AEDC-TR-77-97

AN AERODYNAMIC COEFFICIENT PREDICTION TECHNIQUE FOR SLENDER BODIES WITH LOW ASPECT RATIO FINS AT MACH NUMBERS FROM 0.6 TO 3.0 AND ANGLES OF ATTACK FROM 0 TO 180 DEGREES

William B. Baker, Jr.,
ARO, Inc., a Sverdrup Corporation Company

PROPULSION WIND TUNNEL FACILITY
ARNOLD ENGINEERING DEVELOPMENT CENTER
AIR FORCE SYSTEMS COMMAND
ARNOLD AIR FORCE STATION, TENNESSEE 37389

March 1978

Final Report for Period July 1, 1974 – August 1, 1977

Approved for public release; distribution unlimited.

Prepared for

AIR FORCE FLIGHT DYNAMICS LABORATORY (AFFDL/FGC)
WRIGHT-PATTERSON AIR FORCE BASE, OHIO 45433

NOTICES

When U. S. Government drawings, specifications, or other data are used for any purpose other than a definitely related Government procurement operation, the Government thereby incurs no responsibility nor any obligation whatsoever, and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data, is not to be regarded by implication or otherwise, or in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

Qualified users may obtain copies of this report from the Defense Documentation Center.

References to named commercial products in this report are not to be considered in any sense as an indorsement of the product by the United States Air Force or the Government.

This report has been reviewed by the Information Office (OI) and is releasable to the National Technical Information Service (NTIS). At NTIS, it will be available to the general public, including foreign nations.

APPROVAL STATEMENT

This report has been reviewed and approved.

Alexander F. Money

ALEXANDER F. MONEY
Project Manager, Research Division
Directorate of Test Engineering

Approved for publication:

FOR THE COMMANDER

Marion L. Laster

MARION L. LASTER
Director of Test Engineering
Deputy for Operations

UNCLASSIFIED

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER (14) AEDC-TR-77-97	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) (6) AN AERODYNAMIC COEFFICIENT PREDICTION TECHNIQUE FOR SLENDER BODIES WITH LOW ASPECT RATIO FINS AT MACH NUMBERS FROM 0.6 TO 3.0 AND ANGLES OF ATTACK FROM 0 TO 180 DEGREES.		5. TYPE OF REPORT & PERIOD COVERED Final Report - July 1, 1974 - August 1, 1977
		6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) (10) William B. Baker, Jr ~~ARO, Inc.~~		8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS Arnold Engineering Development Center Air Force Systems Command Arnold Air Force Station, Tennessee 37389		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS Program Element 62201F
11. CONTROLLING OFFICE NAME AND ADDRESS Air Force Flight Dynamics Laboratory (AFFDL/FGC), Wright-Patterson Air Force Base, Ohio 45433		12. REPORT DATE (11) Mar [redacted] 78
		13. NUMBER OF PAGES 370 (12) 362 p.
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office) (9) Final rept. (Jul 74- 1 Aug 77)		15. SECURITY CLASS. (of this report) UNCLASSIFIED
		15a. DECLASSIFICATION DOWNGRADING SCHEDULE N/A

16. DISTRIBUTION STATEMENT (of this Report)

Approved for public release; distribution unlimited.

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

Available in DDC

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

aerodynamic characteristics	fins	wind tunnels
predictions	computations	
methodology	transonic flow	
slender bodies	supersonic flow	

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

In order to extend the state-of-the-art aerodynamic coefficient prediction methodology at high angles of attack, a semi-empirical prediction technique has been developed for the prediction of normal force and pitching moment coefficients for slender body alone and slender body plus fin configurations. Additionally, installed fin normal force, root bending and hinge moment coefficients are calculated. The semi-empirical prediction technique is valid for

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE

042 550 **UNCLASSIFIED** EB

20. ABSTRACT (Continued)

slender bodies with low aspect ratio fins at Mach numbers from 0.6 to 3.0 and angles of attack from 0 to 180 degrees. The range of validity of the prediction technique for the low aspect ratio fins is: aspect ratio from 0.5 to 2.0; taper ratio from 0 to 1.0 and span ratio from 0.3 to 0.5. Wind tunnel testing was accomplished in order to provide the data base from which the prediction technique was derived. The data base provides the first parametric set of data at angles of attack, from 0 to 180 degrees, and not only provided the base for the semi-empirical prediction technique developed herein, but will provide a standard of comparison for high angle of attack prediction methodology developed in the future.

PREFACE

The work reported herein was conducted by the Arnold Engineering Development Center (AEDC), Air Force Systems Command (AFSC), under Program Element 62201F at the request of the Air Force Flight Dynamics Laboratory (AFFDL). The results of the investigation were obtained by ARO, Inc., AEDC Division (a Sverdrup Corporation Company), operating contractor of AEDC, AFSC, Arnold Air Force Station, Tennessee, under ARO Project Numbers 34A-37A, P43C-C4A, and P34A-K2A. The investigation was conducted from July 1, 1974 to August 1, 1977. The Air Force project monitors were Maj. K. B. Harwood (CF) and Mr. A. F. Money, both of the AEDC Deputy for Operations. The project sponsor was Mr. William Lane, AFFDL/FGC. The manuscript was prepared originally to satisfy partial requirements for a Doctor of Philosophy degree from the University of Tennessee Space Institute, Tullahoma, Tennessee; with modifications this manuscript was submitted for publication as a technical report on September 28, 1977.

CONTENTS

TABLES

FIGURES

Figure		Page

1. INTRODUCTION

Since the days of the early airships when the calculation of aerodynamic forces on the airships hulls was required, the methods for predicting slender body aerodynamics have been extended in direct proportion to the increased performance of the various slender body air vehicle configurations. Increased maneuverability and increased air speeds required the development of prediction techniques which were valid at higher angles of attack and supersonic Mach numbers. Continuing the trend to increased maneuverability, applications for the flight of slender body configurations at angles to 180 degrees are being seen in the new generation flight vehicles currently being considered. The aerodynamic coefficient prediction techniques which were valid at angles of attack of approximately 20 or 30 degrees are no longer sufficient for preliminary design studies. The new concepts in slender body flight vehicles require new prediction techniques valid to 180 degrees angle of attack.

An aerodynamic coefficient prediction technique which meets the above need is herein developed. The prediction technique relies on semi-empirical procedures for the calculation of normal force coefficients and pitching moment coefficients for slender body configurations with low aspect ratio fins. Additionally, the normal force coefficient for the fin in the presence of the body is determined along with the longitudinal and lateral center of pressure of the force.

Because the need to operate slender body flight vehicles at high angles of attack had not been established until recently, there was a complete dearth of experimental, parametric data for slender body configurations with low aspect ratio fins at high angles of attack. The small amount of data on configurations at high angles of attack that was available was highly configuration oriented and in some cases classified. The experimental, parametric data obtained as a part of this investigation is the first data of its kind and represents a broad base from which to develop empirical aerodynamic coefficient prediction methodology. The lack of parametric data for slender body configurations at high angles of attack before this time has hampered the development of empirical techniques for the prediction of aerodynamic coefficients. The future development of purely theoretical prediction techniques also requires a standard of comparison to evaluate the validity of their prediction capabilities. A data base which meets the requirements for developing empirical aerodynamic coefficient prediction techniques as well as providing a standard of comparison for theoretical techniques has been established by Baker (1)[1].

---

[1]Numbers in parentheses refer to similarly numbered references in the bibliography.

In order to provide a set of data which could readily be used to develop empirical methods for the calculation of the aerodynamic coefficients, it was necessary to determine the effects of each major component of a generalized, finned, slender body on the forces and moments for the complete configuration. In order to determine these effects, a wind tunnel test was conducted on a series of parametric models. Provisions were made to test tail fins alone, using a reflection plane technique, so that the tail fin contribution to the total force and moment coefficient could be isolated. Also a generalized slender body was tested using a technique which allows the measurement of forces and moments on a single fin simultaneously with the total combined forces and moments acting on the complete configuration. The generalized configuration was tested both with and without tail fins. The change in the force and moment coefficients due to the addition of the fins, combined with the measured force and moment coefficients on the metric fin in the presence of the body and the fin alone, allows the determination of the mutual interference of the fins and body.

A basic ogive cylinder body was designed along with a series of twelve tail fins which provided a parametric variation of the taper ratio, span ratio, and the aspect ratio of the fins. In order to provide data for a wide range of values of body length for the data set, tests were conducted, using slender bodies with a total length of 10-, 12-, 12.66-, and 15-calibers (i.e., 10-, 12-, 12.66-, and 15-body diameters). Most of the data were obtained using the 10-caliber body and all 12 of the tail fins were tested with the 10-caliber body. The 12- and 12.66-caliber bodies were tested without tail fins and the 15-caliber body was tested alone and with the three tail fins having an aspect ratio of 0.5 and with the fin having an aspect ratio of 2.0, span ratio of 0.4, and taper ratio of 0.5.

II. EARLY HIGH ANGLE OF ATTACK PREDICTION METHODOLOGY

The early requirements for the calculation of aerodynamic forces and moments on slender body configurations were related to studies of rigid airships. A potential flow slender body theory was developed by Munk (2) which was quite adequate for angles of attack up to approximately five degrees. The potential flow equations for pitching moment and cross force per unit length, for airship hulls, are given in Equations 19 and 23 of Reference (2).

$$m = U^2 \frac{\rho}{2} (K_2 - K_1) \sin 2\alpha \tag{2.1}$$

$$df = \left[U^2 \frac{\rho}{2} \sin 2\alpha \frac{dS}{dx} \right] dx \tag{2.2}$$

Where

$\rho(K_2 - K_1)$ is the apparent mass of the airship.

Tsien (3) showed that Munk's formulation was valid for slender bodies at moderate supersonic speeds.

At angles of attack above approximately five degrees, Munk's slender body theory begins to underpredict the normal force coefficient of a slender body. Modifications to Munk's theory have been made to account for the viscous crossflow contributions to the forces and moments. This modification of Munk's theory, which has come to be known as the crossflow theory, was developed in 1951 through the work of Allen and Perkins (4) who assumed that the viscous contribution to the aerodynamic forces and moments on slender bodies at angle of attack could be separated from the potential flow contribution. Thus, the force and moment equations were written as the sum of the potential term formulated by Munk (2) in 1924 and the viscous crossflow term formulated by Allen and Perkins (4). From the work of Ward (5), which showed that the potential cross force is directed midway between the normal to the axis of the body and the normal to the wind direction, Allen modified the potential cross force term. Then by adding his viscous cross force term, Allen developed the following equations from Reference (4) for lift and pitching moment coefficients.

$$C_L = \frac{S_b}{S} \sin 2\alpha \cos \frac{\alpha}{2} + C_{d_c} \frac{S_p}{S} \sin^2\alpha \cos \alpha \qquad (2.3)$$

$$C_m = \left[\frac{V - S_b(\ell - X_m)}{dS}\right] \sin 2\alpha \cos \frac{\alpha}{2}$$

$$+ C_{d_c} \frac{S_p}{S} \frac{(X_m - \overline{X})}{d} \sin^2 \alpha \qquad (2.4)$$

Jorgensen (6) formulated the equations in terms of normal force, C_N, and pitching moment, C_m, for slender bodies at high angles of attack and included the term η to modify the two dimensional crossflow drag, C_{d_c}, for the effects of a finite length body. The term η which modifies the two dimensional drag coefficient to approximate the drag coefficient for a finite length cylinder is determined from the data obtained by Goldstein (7). Jorgensen's equation for normal force coefficient for the angle of attack range $0 \leq \alpha \leq 180$ degrees is given by

$$C_N = \left(\frac{S_b}{S}\right) \sin (2\alpha') \cos \frac{(\alpha')}{2} + \eta \, C_{d_c} \left(\frac{S_p}{S}\right) \sin^2 (\alpha') \quad (2.5)$$

The pitching moment equation for the angle of attack range $0 \leq \alpha \leq 90$ degrees is given by

$$C_m = \left[\frac{V - S_b (\ell - X_m)}{S \, d}\right] \sin (2\alpha') \cos \left(\frac{\alpha'}{2}\right)$$

$$+ \eta C_{d_c} \left(\frac{S_p}{S}\right) \frac{(X_m - \overline{X})}{d} \sin^2 (\alpha') \quad (2.6)$$

and the pitching moment equation for the angle of attack range $90 < \alpha \leq 180$ degrees is given by

$$C_m = - \left[\frac{V - S_b X_m}{S \, d}\right] \sin (2\alpha') \cos \left(\frac{\alpha'}{2}\right)$$

$$+ \eta C_{d_c} \left(\frac{S_p}{S}\right) \frac{(X_m - \overline{X})}{d} \sin^2 (\alpha') \quad (2.7)$$

where

$$\alpha' = \alpha \qquad 0 \leq \alpha \leq 90 \text{ degrees}$$

$$\alpha' = 180 - \alpha \qquad 90 < \alpha \leq 180 \text{ degrees}$$

The location of the aerodynamic center given by

$$XCP = \frac{C_m}{C_N} \tag{2.8}$$

Over the years the potential term of the equations has remained essentially unchanged and the greatest effort toward improving the cross flow theory has been associated with the crossflow drag portion of the viscous term. The most recent crossflow drag work is that of Fidler and Bateman (8). The dramatic effect of the viscous contribution to the total forces and moments on a slender body is illustrated in Figure 1 taken from Reference (6). The variation with angle of attack of the first terms of Jorgensen's normal force equation (Equation 2.5) and pitching moment equations (Equations 2.6 and 2.7) which represents Allen's modifications to Munk's slender body potential theory, are compared with the complete normal force and pitching moment equations. The shaded portion of the figure represents the viscous contribution to the crossflow theory. Because the potential term of the equation contains sin (2α) the term goes to zero at 90 degrees angle of attack, indicating that at 90 degrees the coefficients are totally determined by the viscous term. In the case of the normal force, when the slender body is at 90 degrees angle of attack, the normal force is coincident with the drag, thus the normal force is due to the skin friction and separated flow over the lee side of the body, both viscous phenomena.

Jorgensen's formulation of the crossflow theory equations for slender bodies at high angles of attack will be used as the basis for the body alone portion of the theory developed herein.

Numerous calculation schemes have been developed for slender body configurations, both with and without fin or wings. Besides Jorgensen (6), others developing calculation procedures for slender bodies alone at high angles of attack are Fidler and Batemen (8), Kellock and Miller (9), Thompson (10), and Gregoriou (11). Calculation procedures developed for slender bodies with fins and/or wings have been written by Nikolitsch (12), Moore (13), Darling (14), Eaton (15), and Fidler and Batemen (16, 17), all of which are basically low to moderate angle of attack programs. High angle of attack programs for bodies with fins and/or wings were written by Saffell, et al. (18), Tipping, et al. (19) and Aiello (20). Mendenhall, et al. (21) provides a user's manual for four different computer programs for predicting aerodynamic coefficients. One program is the computer version of Jorgensen's method and the other three programs are low angle of attack body plus wing and fin programs. The details of three of the above high angle of attack aerodynamic coefficient prediction programs will now be discussed. All three of the programs are based on various formulations of Allen's crossflow theory.

LSU[2] High Angle of Attack Aerodynamic Coefficient Prediction Program

The LSU high angle of attack aerodynamic coefficient prediction program (Table 1A), was written by Captain Robert E. Kellock (9). The program calculates aerodynamic coefficients for a body alone configuration. The primary calculation scheme was formulated by Kelly (22). The normal force is assumed to vary along the body and the total normal force and pitching moment are determined by integrating the normal force distribution along the body. The body is divided into elements and the crossflow drag is assumed to vary from one element to another. The crossflow drag of each increment is calculated as the drag of an impulsively started cylinder. The time parameter associated with the impulsively started cylinder is related to the axial velocity and the axial position of the incremental element. The drag data of Schwabe (23) for an impulsively started cylinder were used to modify the steady-state crossflow drag coefficient, taken from Hoerner (24), as a function of crossflow Mach number and crossflow Reynolds number. The crossflow drag at each element is used with the

---

[2]LSU is an abbreviation for Louisiana State University.

Table 1

Aerodynamic Coefficient Prediction Program

Program Name	Mach Number Range	Angle of Attack Range	Configuration: Nose	Configuration: Body	Configuration: Wing	Configuration: Fin	Control Options	Typical Case Preparation Time	Limitations
A LSU High Alpha Master's Thesis LSU 1971	Subsonic Transonic Supersonic Hypersonic	$0 \leq \alpha \leq 90$ deg in 5-deg increments (internal to program)	Sharp cone, ogive parabolic power series	Cylinder, no boattail	None	None	None	One-half hr	Approximations and unrefined curve fits cause discontinuities in coefficients No axial-force calculated
B NSRDC High Alpha NSRDC Rept. No. 3645, March 1971	Subsonic Transonic Supersonic $\beta \cdot AR \leq 10$ Maximum of 16 Mach numbers per shot	-180 deg $\leq \alpha \leq 180$ deg Maximum of 48 alphas per shot	Blunt or sharp ogive or cone	Cylinder, no boattail	Either unswept mid-chord or T.E. Up to two separate wings can be used in tandem Orientation: (+) only	Either unswept mid-chord or T.E. Orientation: (+) only	Canard Wing or tail -180 deg $\leq \delta \leq 180$ For no control surface, δ must = 0 Maximum of 16 deltas per shot	One hr	Drag questionable for M = 3.0 because prediction methods valid only to M = 3 Drag also questionable for low α
C CAMS Martin Marietta OR 12,034, June 1972	$0.5 \leq M \leq 0.9$ $M = 1.0$ $1.2 \leq M \leq 10$ Maximum of 10 Mach Nos.	$0 \leq \alpha \leq 180$ deg $0 \leq \alpha \leq 45$ deg For some coefficients $\alpha = 0$ programmed maximum of 10 alphas per shot	3/4 power L-D HACK L-V HACK spherical sharp cone or ogive Blunt cone or ogive	Cylinder with or without cone or ogive Boattail, conduits, lugs, or inlets	Double delta or swept L.E., T.E., or mid-chord Various wing sections with or without end plates Orientation: Planar (-) Cruciform (+) Triform (λ) Cruciform (x)	Double delta or swept L.E., T.E., or mid-chord Various tail sections Orientation: Conventional (⊥) Planar (-) Cruciform (+) Triform (λ) Cruciform (x)	Wing, tail, or canard Maximum δ and increment in δ Optional	Two hr	Limited at transonic Mach numbers

crossflow theory to calculate a distribution of normal force along the body. The three-dimensional effects of the finite length cylinder are accounted for by the values of η given by Goldstein (7). The predictions of normal force and pitching moment made with the LSU program were compared with the data from the high angle of attack data set in Reference (1).

NSRDC[3] High Angle of Attack Aerodynamic Coefficient Prediction Program

The NSRDC high angle of attack aerodynamic coefficient prediction program (Table 1B) was written by Saffell, Howard, and Brooks (18). It consists of a main program and three subroutines. The main program calculates the body alone lift, drag and pitching moment coefficients using the crossflow drag theory. Three-dimensional effects are accounted for by the values of η given by Goldstein. The values of Cd_c are determined from Allen and Perkins (25). The lift coefficients for the wings and tails and the wing-body and tail-body interference factors are calculated using linear relations for the lifting surfaces modified by a function of sin α and constrained to be zero at $\alpha = 90$ degrees. The lift of the tail surfaces is further modified to account for the vortices shed from the wing surfaces. The pitching moment calculations are based on the formulation of the equation by Allen. The drag

[3]NSRDC is an abbreviation for Naval Ship Research and Development Center.

calculations are based on the methods from the USAF DATCOM (26). Calculations were made using the NSRDC Program and compared with the data from the high alpha data set in Reference (1). The program computes the static aerodynamic coefficients for bodies with wings, tails, and strakes, including control surface deflections, for an angle-of-attack range from -180 to 180 degrees.

Computer Aided Missile Synthesis Program (CAMS)

The CAMS program written by Tipping, et al. (19) is used to design a complete missile system. The program uses an iteration scheme to vary the many design parameters associated with a missile design. The aerodynamics module of the CAMS program (Table 1C) can be used by itself as a coefficient prediction program. It is the most complex of the coefficient prediction programs discussed here because of the number of different configurations that can be analyzed. The program is similar to the other programs in that it requires geometric characteristics of the model and flight conditions as program inputs to calculate the aerodynamic coefficients. The calculation scheme is similar to the other prediction programs in that the potential and viscous crossflow terms are combined linearly for the body alone normal force and pitching moment coefficients. Empirical data are used extensively throughout the program for determining the effects of fins, strakes, etc. For each Mach number range, transonic, supersonic, and hypersonic, different relations are used for the linear and nonlinear lift contributions of the various components of the configuration. For the body alone, the crossflow theory is used with modification for boattail effects. Calculations were made for the high angle of attack data base models and compared with the experimentally determined coefficients in Reference (1).

III. EXPERIMENTAL TECHNIQUES

Wind Tunnel Description

The tests which established the data base were conducted in the Aerodynamic Wind Tunnel (4T) of the Propulsion Wind Tunnel Facility (PWT) and the Supersonic Wind Tunnel (A) of the Von Karman Gas Dynamics Facility (VKF) at the Arnold Engineering Development Center (AEDC).

The Aerodynamic Wind Tunnel (4T) is a continuous flow, closed-circuit, variable density wind tunnel capable of operating at stagnation pressures of 300 to 3700 psfa and at Mach numbers from 0.1 to 2.0. The Mach number is continuously variable from M = 0.1 to 1.3 and nozzle inserts can be installed to reach M = 1.6 and 2.0. The nozzle consists of a contraction section which serves as a transition from a circular stilling chamber to a rectangular nozzle. The solid block, sonic nozzle is composed of flat sidewalls and contoured top and bottom walls. The desired Mach number is generated by controlling the pressure ratio across the nozzle and by regulating the plenum suction. The test section is 4 ft square and 12.5 ft long. It is equipped with four variable porosity walls adjustable from 0 to 10%. The two test section sidewalls are fixed and the top and bottom walls are adjustable ±1/2 degree from parallel. The test section is enclosed by a 14 x 14 ft square plenum chamber which can be evacuated allowing part of the tunnel main flow to be removed through the test section walls to both generate supersonic flow and reduce wall interference.

The Supersonic Wind Tunnel (A) is a continuous, closed-circuit, variable-density wind tunnel with an automatically driven flexible-plate-type nozzle and a 40 x 40 in. test section. The tunnel can be operated at Mach numbers from 1.5 to 6.0 at maximum stagnation pressures from 4,200 to 28,000 psfa, respectively, and stagnation temperatures up to 750°R (M = 6). Minimum operation pressures range from about one-tenth to one-twentieth of the maximum at each Mach number. Although Tunnel A is primarily a supersonic tunnel it can be operated subsonically from Mach numbers 0.2 to 0.8 by opening the throat (M = 1.2 setting) and closing the diffuser until the tunnel chokes at that point. The tunnel is equipped with a model injection system which allows removal of the model from the test section for model changes while the tunnel remains in operation.

Wind Tunnel Models

Two different type models were tested in Tunnels 4T and A. The first type of model was a strut supported slender body tested both with and without tail fins. Body alone, body plus fin and fin the presence of the body data were obtained with this model. This model was designed so that it had less than 1% blockage in the tunnel at 90 degrees angle of attack. The second model type was a reflection plane mounted fin which was tested to obtain fin alone data. The fins had less than 0.6% blockage at 90 degrees angle of attack and the total blockage including the reflection plane was less than 1.5%.

Slender bodies having total lengths of 10-, 12-, 12.66-, and 15-calibers were tested. Each body consists of a 2.5-caliber sharp tangent ogive nose, designated N2, and a cylindrical afterbody. The basic dimensions of the ogive nose and cylindrical afterbodies are given in Figure 2. The 7.5-, 9.5-, 10.16-, and 12.5-caliber afterbodies are designated as A1, A2, A4, and A3, respectively.

Two different size tail fins were used in the test. The tail fins tested with the reflection plane were geometrically similar to but three times larger than the fins tested with the slender body. The dimensions of the fins used with the reflection plane are given in Table 2. The

Table 2

Dimensions of Reflection Plane-Mounted Fins

Tail Fin Config	S_{f}', in.^{2}	AR	b/2, in.	λ	Λ	A, in.	C_T', in.	B, in.	C_R', in.	HL/C_R	T_R', in.	T_T', in.
T16	7.916	2.0	2.821	1.0	90°	0.800	2.813	1.140	2.813	0.45	0.140	0.140
T13	7.916	2.0	2.821	0.5	56°19′	1.158	1.873	1.140	3.749	0.55	0.187	0.187
T12	7.942	2.0	2.821	0	26°34′	1.172	0	1.140	5.625	0.62	0.187	0.187
T21	3.5119	2.0	1.874	1.0	90°	0.696	1.874	0.696	1.874	0.45	0.125	0.125
T23	3.6066	2.0	1.875	0.5	55°38′	0.713	1.282	0.694	2.565	0.55	0.125	0.125
T22	3.5156	2.0	1.875	0	26°34′	0.728	0	0.694	3.750	0.62	0.125	0.125
T11	7.028	1.0	1.875	1.0	90°	0.800	3.749	0.800	3.749	0.45	0.140	0.140
T15	7.024	1.0	1.875	0.5	36°54′	1.165	2.497	1.140	4.996	0.55	0.187	0.187
T14	7.028	1.0	1.875	0	14°3′	1.195	0	1.140	7.499	0.62	0.187	0.187
T32	14.036	0.5	1.875	1.0	90°	1.587	7.499	1.587	7.499	0.45	0.250	0.250
T31	14.030	0.5	1.875	0.5	20°36′	1.626	4.990	1.587	9.980	0.55	0.250	0.125
T36	14.056	0.5	1.875	0	7°8′	1.682	0	1.587	14.998	0.62	0.250	0.250

dimensions of the fins tested in conjunction with the slender body are shown in Figure 3. Because of the smaller size, the fins tested with the slender body are not as detailed as those tested on the reflection plane. The tail fin configurations are identified by the designation Txx, where the two digit number (xx) is given in Table 2 and Figure 3 along with the fin dimensions. Thus, the total configuration designation for a typical configuration is N2A1T32. The nomenclature described above was adopted to be consistent with that for a similar set of models tested extensively at relatively lower angles of attack by Fidler and Bateman (8).

For each fin type, rectangular, trapezoidal, or triangular, the hingeline, HL, was located at a different position. For the rectangular fins, represented by $\lambda = 1.0$, the hingeline was normal to the root chord and located at 45% of the root chord measured from the leading edge. For the trapezoidal fins and the triangular fins, $\lambda = 0.5$ and $\lambda = 0.0$, respectively, the hingelines were normal to root chord and were located at 55 and 62% of the root chord, respectively.

Reflection Plane Model Installation

The installation of the reflection plane on the main sting support system in the test section of Tunnel 4T and Tunnel A is shown in Figure 4. The details of the reflection plane assembly are shown in Figure 5. To permit testing through the desired angle-of-attack range, the reflection plane assembly includes a drive mechanism which allows the initial fin angle relative to the reflection plane to be indexed remotely. The assembly also contains provisions for indicating the discrete initial fin angles of 0, 15, 30, 60, 90, 120, 150, and 180 degrees. After remotely setting the initial fin angle, the angle-of-attack sweep is made, using the main model support system.

Generalized Slender Body Installation

Two strut mounting techniques were used to support the generalized slender body models and achieve the angle-of-attack range from 0 to 180 degrees. A typical installation of each mounting technique is shown in Figure 6 for the $\ell/d = 10$ configuration in Tunnels A and 4T and Figure 7 for the $\ell/d = 15$ configuration in Tunnel 4T. The details of the model installations are shown in Figures 8, 9, 10, and 11 for $\ell/d = 10$, 12, 12.66, and 15 models, respectively. The model support system includes a clutch face joint which allows the initial or prebend angle of the model to be varied in five-degree increments from 2.5 to 177.5 degrees.

Instrumentation

Aerodynamic loads on the fins during the reflection plane portion of the tests were measured, using a three-component internal strain-gage balance. The positive direction of the forces and moments are shown in Figure 12.

Strain gages were attached to the sting for the transonic tests so that the angle of attack of the fins could be corrected for both balance deflections and deflection of the sting caused by loads on the non-metric portion of the reflection plane and sting.

Aerodynamic loads on the slender body plus fin models were measured with a six-component internal strain-gage balance. In addition, a three-component internal strain-gage balance, mounted at the rear of the model, measured the aerodynamic loads on one fin. The positive directions of the forces and moments are shown in Figure 13 for the slender body model.

Test Procedure

The reflection plane tests were conducted in two phases: the first at transonic speeds in Tunnel 4T and the second at supersonic speeds in Tunnel A. In both tunnels the initial angle of the fin was indexed remotely in 30-deg increments, and at each setting an angle-of-attack sweep was made using the automatic pitch support system of the tunnel. The pitch-pause technique, in which the automatic pitch mechanism stops at each discrete angle of attack to record data, was used in Tunnel 4T. The continuous sweep technique, in which the automatic pitch mechanism moves continuously while the data are recorded, was used in Tunnel A. Several pitch-pause sweeps were made to check the continuous sweep data. In Tunnel 4T the data were recorded while the angle of attack was increasing, whereas in Tunnel A the data were recorded while the angle of attack was decreasing. The boundary layer on the fins was allowed to transition naturally.

The generalized missile models were tested in a manner very similar to the reflection plane-mounted fin models. The transonic tests were conducted in Tunnel 4T, and the supersonic tests were conducted in Tunnel A. The pitch-pause technique, with the model pitching in the positive direction, was used in Tunnel 4T. The continuous sweep technique, with the model pitching in the negative direction, was used in Tunnel A. The prebend angle (α_{Ai}) was manually set by adjusting the clutch face joint to the desired angle. During the tests in Tunnel 4T, the prebend angles were adjusted in 30-deg increments. The angle of attack was varied during the test using the main support pitch system. The 35-deg movement of the Tunnel 4T pitch sector allowed a 5-deg overlap in the data at each prebend setting. During the tests in Tunnel A, the prebend angles were adjusted in 25-deg increments. The angle of attack was varied during the test using the main support system. The 20-deg movement of the Tunnel A pitch sector left a 5-deg gap in the data at each prebend setting.

Data were taken with artificially induced transition on the body. The boundary-layer trips consisted of two longitudinal rays of No. 180 grit applied in 0.1 inch wide strips located 30 deg either side of the windward ray (Figure 14). The grit was applied in longitudinal rays because at high angles of attack the conventional application of grit, a small ring of grit around the nose near the tip, would be ineffective. The size of the grit to be used was determined by the method of Braslow and Knox (27). During the test, other grit patterns and sizes were investigated with no appreciable difference in the data from that obtained with the two longitudinal rays of grit. The presence of the grit caused a noticeable difference in the data at Mach numbers 0.6 and 0.8 but no noticeable difference at higher Mach numbers.

The grit which was applied to the model to artificially induce transition had to be reapplied at frequent intervals. The conventional technique of applying grit with Polaroid® print coater as the adhesive proved inadequate, causing the grit to be blown from the model by the air stream. Numerous adhesives were tried with Eastman 910® adhesive being the most effective. The area where grit was applied was outlined with masking tape and the adhesive was applied to the surface. The grit was then blown onto the surface and the masking tape was removed. A uniform distribution of grit with the individual particles not touching each other was strived for.

Test Conditions

The fin alone tests, using the reflection plane technique, were conducted at Reynolds numbers which varied with Mach number. The unit Reynolds number varied from 1.1×10^6 at $M = 0.6$ to 3.2×10^6 at $M = 3.0$. It was planned to conduct the fin alone tests such that the Reynolds number based on fin chord at each Mach number was approximately the same as the Reynolds number based on fin chord in the body plus fin tests. This match was possible at Mach numbers 0.6, 0.8, and 0.9; however, due to operating restrictions, it was necessary to conduct the tests at higher Mach numbers at higher Reynolds numbers.

The tests on generalized slender body configurations both with and without tail fins were conducted at Mach numbers of 0.6, 0.8, 0.9, 1.0, 1.15, 1.3, 1.5, 2.0, 2.5, and 3.0. For most test conditions, a unit Reynolds number of 4×10^6 was maintained resulting in a Reynolds number based on body diameter of 4.2×10^5. For some of the tests on configurations with large fins, the unit Reynolds number was reduced to 1.5×10^6 to prevent overloading the fin balance, resulting in a Reynolds number based on body diameter of 2.6×10^5. For selected configurations, the unit Reynolds number was varied from 2×10^6 to 4×10^6 providing a variation of Reynolds number based on body diameter from 2.1×10^5 to 4.2×10^5.

The model was inspected during every model change and the longitudinal rays of transition grit on the slender body model had to be reapplied approximately every two hours of tunnel operation.

The total temperature in the tunnel was maintained at approximately 100 to 110 degrees F, except for a few cases where the temperature had to be raised as high as 130 degrees F to prevent the formation of fog at supersonic Mach numbers. The tests were conducted with no visible moisture in the test section.

Precision of Measurements

Uncertainties (bands which include 95% of the calibration data) of the basic tunnel parameters (p_t) and (M) were estimated from repeat calibrations of the instrumentation and from the repeatability and uniformity of the test section flow during tunnelcalibrations. The uncertainties were combined using the Taylor series method of error propagation to determine the precision of the reduced parameters presented in Tables 3 and 4.

Table 3

Fin-Alone Data Precision

M_∞	$\pm\Delta M$	$\pm\Delta C_{N_F}$	$\pm\Delta C_{m_H}$	$\pm\Delta C_{m_{RB}}$
0.60	0.002	0.1610	0.128	0.046
0.80	0.003	0.1090	0.086	0.032
0.90	0.004	0.0960	0.075	0.028
1.00	0.005	0.0600	0.048	0.017
1.15	0.008	0.0480	0.036	0.013
1.30	0.010	0.0430	0.035	0.013
1.76	0.020	0.0018	0.0013	0.0095
3.01	0.020	0.0019	0.0014	0.0095

Table 4

Body-Plus-Fin Data Precision

M_∞	$\pm\Delta M$	$\pm\Delta C_N$	$\pm\Delta C_m$	$\pm\Delta C_Y$	$\pm\Delta C_\eta$	$\pm\Delta C_\ell$	$\pm\Delta C_A$	$\pm\Delta C_{N_F}$	$\pm\Delta C_{m_H}$	$\pm\Delta C_{m_{RB}}$
0.60	0.002	0.220	0.780	0.170	0.600	0.170	0.180	0.040	0.025	0.027
0.80	0.003	0.220	0.650	0.140	0.500	0.110	0.150	0.042	0.020	0.023
0.90	0.004	0.220	0.590	0.125	0.460	0.100	0.140	0.040	0.018	0.021
1.00	0.005	0.210	0.520	0.120	0.430	0.090	0.125	0.037	0.017	0.020
1.15	0.008	0.170	0.500	0.110	0.400	0.080	0.12	0.030	0.015	0.018
1.30	0.010	0.130	0.470	0.105	0.390	0.070	0.115	0.020	0.014	0.016
1.51	0.020	0.040	0.140	0.017	0.071	0.032	0.015	0.030	0.029	0.023
2.00	0.020	0.041	0.140	0.018	0.073	0.033	0.015	0.030	0.028	0.024
2.50	0.020	0.044	0.160	0.019	0.078	0.035	0.016	0.033	0.031	0.025
3.01	0.020	0.051	0.180	0.022	0.091	0.041	0.019	0.038	0.035	0.030

IV. AEDC HIGH ANGLE OF ATTACK DATA BASE

Most of the high angle of attack data which were available prior to this investigation were primarily for supersonic Mach numbers and for body alone type configurations as in References (28) through (40). The few examples of data for finned slender bodies are given in References (41) through (47). Again, most of the data are for supersonic Mach numbers. References (44), (45), and (46) contain data at transonic Mach numbers but all three tests were highly configuration oriented and had either large aspect ratio tail fins or ringtails. Only Reference (47) contains transonic data for a slender body with low aspect ratio tail fins.

Because of the complete lack of parametric data at high angles of attack, it was necessary to conduct an extensive wind tunnel test program to establish a set of data from which to develop an empirical aerodynamic coefficient prediction technique. It was desired to have a wide range of parameters typical of finned slender bodies. Thus the main parameters varied in the wind tunnel program were selected to be the total body length, the ratio of the body diameter to the total fin span, the taper ratio of the fins and the aspect ratio of the fins. A basic ogive-cylinder configuration was selected as the slender body to be tested. Mounted on the slender body was a set of four fins in a cruciform plus orientation. The basic configurations were tested at Mach numbers over the range from 0.6 to 3.0 and at angles of attack from 0 to 180 degrees. The three different types of data that were obtained in the data set, fin alone, body alone, and body plus fin, will be discussed individually.

Fin Alone Data

The fin alone data measured for the high angle of attack data set consisted of the fin normal force, hinge moment and root bending moment. Dividing the moments by the normal force resulted in the longitudinal and lateral centers of pressure of the normal force. Typical data obtained for three fin alone configurations are shown in Figures 15, 16, and 17 at Mach numbers 0.8, 1.3 and 2.0, respectively. The fins have an aspect ratio of 2.0 and semi-span as indicated in Table 2. Subsonically the sudden decrease in fin normal force at approximately 20 to 30 degrees angle of attack represents the typical stall condition with the triangular, $\lambda = 0.0$, fin reaching the highest fin normal force before the stall and the square, $\lambda = 1.0$, fin achieving the lowest. Tests with the aspect ratio 0.5 fin showed the opposite trend. This trend with aspect ratio is reasonable since Bradley, et al. (48) using Polhamus' leading edge suction analogy (49) showed that while the potential lift of a rectangular fin decreased with decreasing aspect ratio the tip vortex lift increased greatly providing an overall increase in lift with decreasing aspect ratio. Polhamus (49), however, showed that the vortex lift of a triangular fin remained relatively constant with decreasing aspect ratio while the potential lift decreased with decreasing aspect ratio resulting in an overall decrease in lift for triangular fins with decreasing aspect ratio. After the stall, the normal force of all three fins increases to a maximum at 90 degrees angle of attack. As can be seen, the stall occurred at higher angles of attack for decreasing taper ratio, a trend also predictable by the leading edge suction analogy.

As the angle of attack of the fins is increased beyond 90 degrees, the subsonic stall again appears, but since all three fins have straight trailing edges, they all behave similar to a $\lambda = 1.0$ fin with the stall occurring at about 180 degrees minus the square fin stall angle. For the tests conducted with fins of smaller aspect ratio, it was noted that the subsonic stall occurred at increasing angle of attack for decreasing aspect ratio. This trend is discussed by Bradley, et al.

At low supersonic Mach numbers, the typical stall does not occur and the normal force increases smoothly to the maximum at 90 degrees angle of attack. A gradual increase in maximum fin normal force was noted with increasing Mach number, up to $M = 1.3$. The maximum fin normal force was approximately the same level at $M = 1.15$ and 1.3.

At higher supersonic Mach numbers, the normal force as a function of angle of attack began to decrease at angles of attack between 50 and 130 degrees with the minimum occurring at 90 degrees. This dip in the normal force can be seen in Figure 17 and is the result of separated flow on the reflection plane ahead of the fin. As the angle of attack of the fin reached approximately 50 degrees the flow on the reflection plane began to separate. The separated flow increased with increasing angle of attack of the fin, Figure 18, until the maximum region of separation was reached with the fin at α = 90 degrees. The separated region decreased in size as the angle of attack was increased beyond 90 degrees until the separation disappeared at approximately 130 degrees angle of attack. The measured normal force at 90 degrees angle of attack decreased with increasing Mach number. The data affected by the separation were corrected before they were used in the development of the prediction technique. The details of this correction are given in the next section.

The variation of root bending moment with angle of attack for all of the fin alone configurations followed very closely the fin normal force variation with the maximum value decreasing with decreasing taper ratio. The resulting lateral center of pressure occurred at approximately the lateral centroid of the fin. The longitudinal center of pressure on the fins began at a forward position on the fin and moved aft with increasing angle of attack to the approximate longitudinal centroid of the fin at 90 degrees angle of attack and then continued on toward the trailing edge as the angle of attack was increased beyond 90 degrees. The trend in longitudinal and lateral centers of pressure was the same for all aspect ratios and Mach numbers.

Corrections to Fin Alone Data

As mentioned earlier, separated flow on the reflection plane resulted in erroneous data for the fin normal force and the root bending moment at supersonic Mach numbers ($1.5 \leq M \leq 3.0$). From oil flow movies it was determined that significant separation was present between the angles of attack of 50 and 130 degrees. Therefore, the data at angles of attack less than 50 degrees and more then 130 degrees were assumed to be correct. The correction to the fin normal force consists of determining a value of fin normal force for each fin at an angle of attack of 90 degrees and fairing a smooth curve from the correct data at 50 degrees through the determined value at 90 degrees to the correct data at 130 degrees. The y-center of pressure of the fin normal force was corrected in the same manner. No effect was noted in the x-center of pressure of the fin normal force due to separation. Therefore no correction was made.

An example of the corrected data is shown in Figure 19 where the fin alone data before and after the modification are compared with the installed fin data.

The maximum value of fin normal force, which was assumed to occur at 90 degrees angle of attack was determined from the calculation of a flat plate at 90 degrees, reference (24) and from a set of data for delta wings alone, Falunin, et al. Reference (50). The calculated value for a flat plate was $C_{N_F} = 1.7$ over the Mach range from 1.5 to 3.0. The delta wing data, for an AR = 0.706 wing had values of C_{N_F} of 1.38, 1.754, 1.759 and 1.694 at Mach numbers of 1.5, 2.0, 2.5, and 3.0, respectively. Figure 20 shows data from the high angle of attack data set for a series of AR = 1.0 fins compared with the flat plate calculation and the delta wing data. Since the data from the high angle of attack data set indicate that there is a decrease in C_{N_F} as a function of taper ratio, the assumed values of fin normal force indicated by the solid symbols are 1.7 for the rectangular fin, 1.65 for the trapazodial fin and 1.6 for the triangular fin. These values are assumed constant with Mach number from Mach numbers 1.5 to 3.0. The assumed values of C_{N_F} compared with other data from the high angle of attack data set are shown in Figures 20b and c for aspect ratio 2.0 and 0.5, respectively.

The correction to the y-center of pressure was made over the same angle of attack range that the normal force correction was made. In order to determine the y center of pressure at 90 degrees angle of attack, the assumption was made that the center of pressure was 10% inboard of the centroid of the exposed fin area. A smooth curve was then assumed beginning with the measured data at 50 degrees angle of attack, passing through the assumed point at 90 degrees and continuing to the measured data at 130 degrees angle of attack. An example of the corrected data compared with the fin alone and installed fin data is shown in Figure 21.

As has been stated, no correction was made for the x center of pressure. A comparison of the x center of pressure measured for the fin alone and installed fin cases is shown in Figure 22.

Body Alone Data

The body alone data measured for the high angle of attack data base consisted of normal force, pitching moment, side force, yawing moment, rolling moment and axial force. Only the pressure of the normal force was determined by dividing the measured pitching moment by the measured normal force. Typical examples of the body alone data are shown for four different length models in Figures 23 and 24 for Mach numbers 0.8 and 1.3, respectively. The magnitude of the normal force at both subsonic and low supersonic Mach numbers increases with body length approximately in proportion to the increase in planform area associated with the increase in body length. At subsonic Mach numbers, the normal force increases smoothly up to approximately 60 degrees angle of attack. In the angle of attack range from 0 to 40 degrees, Thompson (10) has described the wake behind a slender body to be steady while the wake in the angle of attack range from 40 to 60 degrees is described as quasi-steady. In both the steady and quasi-steady regions the normal force are expected to increase smoothly with angle of attack. Above 60 degrees, Thompson describes the wake as unsteady and indicates that the level of normal force should decrease. The data in Figure 23 for the different length bodies do not decrease above 60 degrees but it does level off with a gradual increase to the maximum value at 90 degrees. Also noted in Figure 23 for the $\ell/d = 10$ configuration, N2A1T00, the data obtained at 90 degrees angle of attack with the aft mounted strut, Figure 8, does not agree with the data obtained using the nose mounted strut, Figure 9. This mismatch in data which occurred at Mach numbers 0.6 and 0.8 is an indication of support interference at subsonic Mach numbers. The support interference problem will be discussed in a later section.

At supersonic Mach numbers, the normal force increases smoothly to the maximum at 90 degrees angle of attack for all of the body lengths tested. The maximum normal force for each body length increased gradually with increasing subsonic Mach number. The maximum normal force was approximately the same for Mach numbers 1.0 and 1.15 and began a gradual decrease in level with increasing supersonic Mach numbers.

No indication of support interference was observed at supersonic Mach numbers.

The body alone pitching moment showed the same trend, with body length as the normal force, with the maximum and minimum levels increasing with body length in approximate proportion to the increase in body planform area fore and aft of the moment reference center. The maximum and minimum levels of pitching moment for each body length increased in magnitude for increasing Mach number up to M = 0.9. At Mach number 1.0, the magnitude of the maximum value of pitching moment began to decrease with increasing Mach number. Beyond M = 1.0, the magnitude of both the maximum and minimum values of pitching moment showed a decrease with increasing Mach number. The angle of attack at which the maximum pitching moment occurs decreases slightly with increasing Mach number while the angle of attack at which the minimum value of pitching moment occurs increases slightly with increasing Mach number.

Interference in the form of mismatch in the data obtained using the forward and aft struts was observed in the pitching moment at M = 0.6 and angle of attack of 90 degrees. This interference is attributed to the proximity of the model base to the wind tunnel wall for the forward strut supported ℓ/d = 12.66 and 15 slender body models, Figures 10 and 11. The position of the ℓ/d = 15 model relative to the wind tunnel wall at 90 degrees angle of attack is seen in Figure 7. At a Mach number of 0.8 the mismatch was almost undectable, Figure 23, and at higher Mach numbers the data from the forward and aft strut mounted models were in excellent agreement at 90 degrees.

Throughout the data base, excellent matching was obtained at the angles of attack where a strut or prebend angle change was made and data were obtained at overlapping angles of attack. In only a very few cases was mismatch observed. For every slender body configuration tested over the complete angle of attack range from 0 to 180 degrees, four prebend angle changes were made and one strut change was made. Thus five overlaps occur for each configuration tested over the complete angle of attack range. The excellent matching was obtained in all coefficients measured.

Body Plus Fin and Installed Fin Data

The body plus fin data measured for the high angle of attack data base are the same as described for the body alone case. Again, only the normal force and pitching moment data will be discussed here. Body plus fin data typical of the data in the data base are shown in Figures 25, 26, and 27 Mach numbers 0.8, 1.3, and 2.0. The data shown are for three configurations, each having an $\ell/d = 10$ body and tail fins having taper ratios of 0.0, 0.5, and 1.0. Each tail fin has an aspect ratio of 2.0 and a span ratio of 0.4. As can be seen from the figures, the body plus fin normal force data are essentially independent of taper ratio. This trend is typical of most of the data except for the data obtained with the AR = 2.0 and d/b' = 0.3 fins, where at Mach numbers 0.6 and 0.8 significant vortex lift was developed on the triangular fin at angles of attack up to the fin stall angle causing a significantly higher fin normal force resulting in a higher total normal force. It should be noted that the semi-span of the d/b' = 0.3 fin is greater than for the other fins. Thus the fin protruded further into the freestream, resulting in the least body influence. For the triangular fins with smaller semi-spans, the presence of the body appears to decrease the amount of vortex lift developed.

For fins having a constant aspect ratio of 2.0 and a constant taper ratio of either 0.0, 0.5, or 1.0, the maximum total normal force was increased by decreasing the span ratio from 0.4 to 0.3. Decreasing the span ratio physically means increasing the semi-span; therefore, if the aspect ratio is held constant, the smaller span ratio results in a larger area fin. The increased force with decreasing span ratio then is probably caused both by increasing the fin area and by moving the centroid of the fin further out into the airstream.

The data obtained for the configurations having a constant span ratio of 0.5 and constant taper ratios of either 0.0, 0.5, or 1.0 show that decreasing the aspect ratio from

1.0 to 0.5 resulted in an increase in maximum total normal force. Just as above, decreasing the aspect ratio with constant semi-span results in an increase in fin area and a resulting increase in total normal force.

For configurations having the fin area approximately constant, changing the span ratio, taper ratio, and aspect ratio had relatively little effect. The effect of Mach number and angle of attack on the body plus fin maximum total normal force is essentially the same as for the body alone configuration.

The pitching moment unlike the total normal force has a slight dependence on taper ratio at subsonic Mach numbers for all of the taper ratio 0.0, triangular fins. For the aspect ratio 2.0 fin with span ratio 0.3, the increase in vortex lift on the triangular fin resulted in a significantly more negative pitching moment up to slightly above the fin stall angle. The aspect ratio 2.0, span ratio 0.4 fin, and the aspect ratio 1.0 fins have pitching moments slightly more negative for the triangular fin due to the longitudinal centroid of the fin being further aft than for the other two fins. The aspect ratio 0.5 triangular fin, just as in the fin alone case, had a lower value of fin normal force than the taper ratio 1.0 and 0.5 fins. Therefore, the resulting pitching moment had a less negative magnitude than the other two fins. As would be expected, changing the fin area has a significant effect on the pitching moment with largest fins having the most negative pitching moment.

The pitching moment as a function of angle of attack, as seen in Figure 25, smoothly decreases to a minimum at approximately 35 to 40 degrees angle of attack. The pitching moment then increases to a maximum at approximately 55 degrees angle of attack followed by another decrease to a second minimum of approximately 120 degrees. This reversal of slope of the pitching moment at 35 to 40 degrees angle of attack diminishes with increasing Mach number. At a Mach number of 1.15 an inflection point in the curve occurs at 35 to 40 degrees angle of attack and at supersonic Mach numbers the pitching moment decreases continually to approximately 120 degrees angle of attack beyond which the pitching moment increases to zero at 180 degrees angle of attack.

In addition to showing body plus fin data, Figures 19 and 20 also show typical installed fin data. The measured quantities associated with the installed fin data are the same as those measured for the fin alone data. The effect of the presence of the body on the variation of fin normal force with angle of attack is a function of span ratio at angles of attack below 75 degrees. For span ratios of 0.3 and 0.4 the effect is to slightly decrease the level of fin normal force while for a span ratio of 0.5, the level is either maintained or increased slightly. For all fins, the presence of the body causes an increase in the level of fin normal force at angles of attack above 75 degrees. The effect of the presence of the body on fin normal force was consistent throughout the Mach number range.

Another significant effect of the presence of the body is seen in $Y_{CP_{Fin}}$, the lateral center of pressure of the fin. Since the spanwise pressure distribution of the fin alone is modified by the presence of the body the effect is to move the center of pressure of the installed fin inboard over the complete angle of attack range. This trend holds true for all of the fins at all Mach numbers. Not only does the body alter the pressure distribution over the fin but the fin also alters the pressure distribution over the body. This modification of the fin pressure distribution by the body will later be referred to as the body on fin interference and the modification of the body pressure distribution by the fin will be referred to as the fin on body interference.

Support Interference

The mismatch in the body alone normal force at 90 degrees angle of attack and M = 0.8, Figure 23, for the nose mounted and aft mounted struts was an indication of possible support interference. Another indication was the disagreement between data obtained using a sting support and data obtained using a strut support at angles of attack between 70 and 90 degrees, Reference (1). In order to determine whether or not support interference was present, a series of tests was conducted including free flight aeroballistics range tests at transonic speeds and angles of attack of 90 degrees. It was determined that the aft strut supported configurations gave measured normal-force coefficients which were too low at Mach numbers of 0.6 and 0.8 and angles of attack from 70 to 90 degrees, with little or no support interference indicated at higher Mach numbers. A second series of tests, Altstatt and Dietz (51), used sting supported models with dummy struts and strut supported models with dummy stings to determine the extent and the magnitude of the support interference for the ℓ/d = 10 body alone configuration from the AEDC high angle of attack data set Reference (1).

The normal-force coefficient corrected for support interference is shown in Figure 23 for the ℓ/d = 10 configuration. Only the data over the angle of attack range from 70 to 90 degrees, obtained with aft mounted strut model of Figure 8a was corrected. The data obtained using the nose mounted strut model of Figure 8b over the angle of attack range from 90 to 180 degrees matches exactly with the corrected data, indicating that there is little or no support interference associated with the nose mounted strut. The nose mounted strut does not interfer with the body wake whereas the aft mounted strut is located on the body and lies in the body wake acting like a splitter plate, reducing the crossflow drag of the body and thus reducing the normal force, Nelson (52).

For the configurations longer than $\ell/d = 10$ in Figure 23, the effect of the strut cannot be determined exactly; however, it would be expected that some degree of support interference exists over the same angle of attack range. For the longer models, the support strut intersects the body in both the aft and forward mounting configurations used to obtain data in the angle of attack range from 0 to 90 degrees and 90 to 180 degrees, respectively. For these configurations, the strut is always in the body wake.

There was no noticeable effect of the support on the measured pitching-moment coefficient at the angles of attack and Mach numbers at which the tests were conducted.

In contrast with the body alone data of Figure 23 where support interference was indicated by the mismatch of data at 90 degrees angle of attack for the two support strut configurations, the body plus fin data of Figure 25 show no mismatch at 90 degrees. In Figure 25, the nose mounted strut data blend smoothly with the data from the aft-mounted strut. Since the addition of fins to the model for both the nose mounted and aft mounted strut configurations provide the same measured normal force at 90 degrees angle of attack, it is possible that the presence of the fin on the leeside of the model has an effect on the body wake similar to that of the strut. If this were the case, then the effect of the strut would be reduced or eliminated. A better understanding of support interference for finned slender bodies at high angles of attack is needed.

V. SEMI-EMPIRICAL THEORY

The prediction of normal force and pitching moment coefficients for slender body configurations using the slender body aerodynamics theories discussed in Section II, while adequate for preliminary design at low angles of attack are generally not adequate at angles of attack above approximately 45 degrees. A semi-empirical theory based on a modified crossflow theory with empirical relations for the effects of tail fins, which is adequate for preliminary design purposes, is herein proposed.

The total normal force and pitching moment for a given slender body configuration is made up of contributions by each component of the configuration and the mutual interference of the components with each other. The dominant contribution comes from the body alone forces and moments with the fin alone forces and the fin center of pressure relative to the moment reference center providing the next largest contribution. The interference of the body on the fin normal force and the interference of the fin on the body normal force contribute to the total normal force, while the interference forces along with their effective centers of pressure contribute to the total pitching moment. The interference forces on the fin and body are those which result from the modification of the pressure distribution on one component due to the presence of the other component. The determination of the interference forces and their centers of pressure at small angles of attack is discussed by Pitts, et al. (53). The total normal force on the configuration is described in Reference (53) as being made up of a linear combination of the component forces and the interference forces. The total pitching moment on the configuration is described as being made up of the component forces acting at their centers of pressure and the interference forces acting at their centers of pressure. For the empirical determination of the interference forces used in theory developed herein, incremental interference forces $\Delta C_{N_{BOF}}$ and $\Delta C_{N_{FOB}}$ are evaluated from the measured forces on the individual components and combinations of components. Effective centers of pressure, $X_{CP_{BOF}}$ and $X_{CP_{FOB}}$, are then evaluated from the measured moments of the individual and combined components. The centers of pressure of the interference forces are described as effective centers of pressure because they are not determined from actual pressure distributions but only inferred from the measured data. The semi-empirical calculation procedure which follows provides for the determination of each contributing factor to the buildup of the normal force and pitching moment and then combines the factors linearly to determine the total normal force and pitching moment coefficients.

It is assumed in the development of this prediction technique that the total normal force coefficient, for a slender body with four fins arranged in a cruciform plus orientation, is made up of a linear combination of the contributions of each component given by:

$$C_N = C_{N_{BA}} + 2(C_{N_{FA}})\left(\frac{S_f}{S}\right) + \Delta C_{N_{FOB}}\left(\frac{S_f}{S}\right) + 2(\Delta C_{N_{BOF}})\left(\frac{S_f}{S}\right) \quad (5.1)$$

where each component is converted to a common reference area. The pitching moment coefficient is likewise assumed to be a linear combination of the force contributions along with their centers of pressure or effective centers of pressure. The pitching moment equation for the slender body with four fins is given by:

$$C_m = C_{m_{BA}} + 2(C_{N_{FA}})(X_{CP_{FA}})\left(\frac{S_f}{S}\right) + (\Delta C_{N_{FOB}})(X_{CP_{FOB}})\left(\frac{S_f}{S}\right) + 2(\Delta C_{N_{BOF}})(X_{CP_{BOF}})\left(\frac{S_f}{S}\right) \quad (5.2)$$

where $X_{CP_{FOB}}$ and $X_{CP_{BOF}}$ are the effective centers of pressure of the incremental forces due to interference. The development of the calculation procedure is now established.

Body Alone Method

This part of the procedure calculates the forces and moments for slender finless bodies at angles of attack to 180 degrees. The method is based on a modification of the crossflow theory formulated by Jorgensen (6). The crossflow drag coefficient variation with Mach number and Reynolds number is a modification of the variation reported by Fidler and Bateman (8) and the variation used in the USAF Datcom (26). The equation for normal force coefficient for the angle of attack range $0 \leq \alpha \leq 180$ degrees is given by:

$$C_{N_{BA}} = \left(\frac{S_b}{S}\right) \sin\,(2\alpha') \cos\left(\frac{\alpha'}{2}\right) + \eta C_{d_c} \left(\frac{S_p}{S}\right) \sin^2\,(\alpha') \tag{5.3}$$

The modified pitching moment equation for the angle of attack range $0 \leq \alpha \leq 90$ degrees is given by:

$$C_{m_{BA}} = \left[\frac{V - S_b\,(\ell - X_m)}{S\,d}\right] \sin\,(2\alpha') \cos\left(\frac{\alpha'}{2}\right) + \eta C_{d_c} \left(\frac{S_p}{S}\right) \frac{(X_m - \bar{X})}{d} \sin^2\,(\alpha') + Z \tag{5.4}$$

and the pitching moment equation for the angle of attack range $90 < \alpha \leq 180$ degrees is given by:

$$C_{m_{BA}} = -\left[\frac{V - S_b X_m}{S\ d}\right] \sin\ (2\alpha') \cos\left(\frac{\alpha'}{2}\right)$$

$$+ \eta C_{d_c}\left(\frac{S_p}{S}\right)\left[\frac{(X_m - \overline{X})}{d}\right] \sin^2\ (\alpha') + Z \qquad (5.5)$$

where $\alpha' = \alpha \qquad 0 \leq \alpha \leq 90$ degrees

$\alpha' = 180 - \alpha \qquad 90 < \alpha \leq 180$ degrees $\qquad$ (5.6)

The location of the aerodynamic center given by:

$$X_{CP_{BA}} = \frac{C_{m_{BA}}}{C_{N_{BA}}} \qquad (5.7)$$

is measured from the moment reference location and is positive forward of the moment reference point.

The term η is used to modify the two-dimensional drag coefficient to approximate the drag coefficient for a finite length cylinder and is determined from the data obtained by Goldstein (7). The variation of η as a function of length to diameter ratio of the cylinder, shown in Figure 28, was obtained by a least squares, fifth order polynomial curve fit approximating Goldstein's η curve in Reference (7). It has been customary in the past to assume that the finite length correction applied only at subsonic Mach numbers and at Mach numbers of 1.0 or greater, the term was constant and equal to 1.0. This assumption causes a discontinuous change in the normal force and pitching moment at a Mach number of 1.0.

However, since there is a mixture of both subsonic and supersonic flow over the body at high subsonic Mach numbers, a rapid but smooth change in η would be the most likely variation. Also the discontinuous change in η at $M = 1.0$ results in an overprediction of C_N at $M = 1.0$ and $\alpha = 90$ degrees. Therefore, a hyperbolic tangent variation in η over the region $0.95 \leq M \leq 1.35$ has been assumed in the development of this technique. The variation of η with ℓ/d of the configuration is determined from Figure 21 and then modified for Mach number in the range $0.95 \leq M \leq 1.35$ by the following equation:

$$\eta = \eta + [(1.0 - \eta)/2]\,[1.0 + \text{Tanh}\{(M-1.0)(15.0/M^4)\}] \quad (5.8)$$

The fourth power of the Mach number in the last term allows for a rapid increase in η in the region $0.95 \leq M \leq 1.0$ with a slower increase in η in the region $1.0 < M \leq 1.35$.

The crossflow drag coefficient, C_{d_c}, used in this procedure, is shown in Figure 29 as a function of crossflow Mach number, free-stream Mach number, and crossflow Reynolds number. For a crossflow Mach number up to 0.6, the crossflow drag variation was taken from Reference (8). At higher crossflow Mach numbers, the crossflow drag is assumed to be a function of crossflow Mach number only and is represented by a modification of the crossflow drag from the USAF Datcom (26).

The term Z, which appears in the pitching moment equation, is the empirical modification to the crossflow theory to make the theory fit the observed pitching moment data from the high angle of attack data base. The term is a function of both Mach number and angle of attack for Mach numbers less than 2.0. The term Z was determined by subtracting the pitching moment coefficient calculated by Jorgensen's formulation of the crossflow theory from the measured pitching moment coefficient:

$$Z = C_{m_{measured}} - C_{m_{calculated}} \tag{5.9}$$

For each Mach number, Z, as a function of angle of attack, was normalized by its maximum value. The resulting δ is shown in Figure 30 for each Mach number. A curve, $\bar{\delta}$ (weighted toward M = 0.9), also shown in Figure 30, represents the variation of δ with angle of attack. The $\bar{\delta}$ was represented by a Chebyshev polynomial for machine computation. The normalizing factor, Z_{MAX}, is shown in Figure 31 as a function of Mach number. The Z_{MAX} variation with Mach number was also represented by a Chebyshev polynomial for machine computation. The coefficients of the polynomial for both $\bar{\delta}$ and Z_{MAX} are given in Table 5.

Another empirical factor was added to account for a body with (ℓ/d) different from the data used to determine the correction. Thus the resulting factor is given by:

$$Z = (Z_{MAX})\ (\bar{\delta})\ \left(\frac{\ell/d}{10}\right)^2 \tag{5.10}$$

Table 5

Coefficients of Chebyshev Polynomials

$\bar{\delta}$	z_{MAX}
-1.19012E-01	5.56792E+00
-2.61068E-01	-3.86348E+00
1.41951E-01	-3.83133E-01
4.53981E-01	2.15263E+00
-3.71147E-02	4.52087E-01
-2.38234E-01	-3.49564E-01
8.02296E-03	3.80121E-01
2.41076E-02	-1.24466E-01
-2.44889E-02	-1.07408E+00
2.18215E-02	-6.48346E-02
5.00011E-03	-1.05244E+00
-3.46462E-02	-3.29285E-01
2.56479E-02	-9.00879E-01
	2.18353E-02
	-4.90295E-01

Interference Factors

The incremental interference force coefficients $\Delta C_{N_{FOB}}$ and $\Delta C_{N_{BOF}}$, or interference factors, along with their effective centers of pressure were determined from the data in the high angle of attack data set. Only the data obtained for the $\ell/d = 10$ total length configurations were used to empirically determine the interference factors. The computer program used to determine the interference coefficients is described in Appendix D.

The incremental normal force coefficient on the fin due to the presence of the body was determined by subtracting the normal force coefficient measured on the fins alone from the normal force coefficient measured on the fins in the presence of the body.

$$\Delta C_{N_{BOF}} = C_{N_{FB}} - C_{N_{FA}} \tag{5.11}$$

The above interference factor has a reference area based on the fin area and will be converted to a reference area based on body cross sectional area in the final normal force and pitching moment equations.

The incremental interference normal force coefficient on the body due to the presence of the fin can now be determined by rearranging the assumed equation for the total normal force coefficient, Equation 5.1.

$$\Delta C_{N_{FOB}} = \left[C_N - C_{N_{BA}} - 2(C_{N_{FA}}) \left(\frac{S_f}{S} \right) \right.$$

$$\left. - 2(\Delta C_{N_{BOF}}) \left(\frac{S_f}{S} \right) \right] \left(\frac{S}{S_f} \right) \quad (5.12)$$

Again this interference is based on fin area and will be converted in the final equation. Now with the two interference factors known, their effective centers of pressure must be determined. The effective center of pressure in the X direction relative to the fin hingeline can be determined for the interference factor $\Delta C_{N_{BOF}}$ by using the measured fin hinge moment for the fin alone and fin in the presence of the body cases. The interference hinge moment is obtained by subtracting the hinge moment measured on the fins alone from the hinge moment measured on the fins in the presence of the body. The following equation is given for the interference hinge moment

$$(\Delta C_{N_{BOF}})(X_{CP_{BFH}}) = (C_{N_{FB}})(CP_{X_{HLB}}) - (C_{N_{FA}})(CP_{X_{HLA}}) \quad (5.13)$$

resulting in

$$X_{CP_{BFH}} = \frac{(C_{N_{FB}})(CP_{X_{HLB}}) - (C_{N_{FA}})(CP_{X_{HLA}})}{(\Delta C_{N_{BOF}})} \quad (5.14)$$

The lateral effective center of pressure $Y_{CP_{BOF}}$ can be determined in a like manner from the measured fin alone and installed fin root bending moments.

The effective center of pressure of the interference is related to the hingeline and is nondimensionalized by the root chord length. It must now be determined relative to the center of gravity of the configuration and nondimensionalized by the body diameter for use in the final pitching moment equation. The hingeline location, X_{HL}, relative to the center of gravity for finned bodies, is an input parameter and is negative aft of the center of gravity. It follows that:

$$X_{CP_{BOF}} = X_{HL} + X_{CP_{BFH}} \left(\frac{C_R}{d} \right) \tag{5.15}$$

The effective center of pressure of the interference factor, $\Delta C_{N_{FOB}}$, can now be determined by rearranging the equation for the total pitching moment coefficient, Equation 5.2.

$$X_{CP_{FOB}} = \frac{C_m - C_{m_{BA}} - 2\,(\Delta C_{N_{BOF}}) \left(\frac{S_f}{S} \right) (X_{CP_{BOF}}) - 2(C_{N_{FA}})(X_{CP_{FA}}) \left(\frac{S_f}{S} \right)}{\Delta C_{N_{FOB}} \left(\frac{S_f}{S} \right)} \tag{5.16}$$

where

$$X_{CP_{FA}} = X_{HL} + CP_{X_{HLA}} \left(\frac{C_R}{d} \right) \tag{5.17}$$

By the nature of the equation, the effective center of pressure, $X_{CP_{FOB}}$, is nondimensionalized by the body diameter.

The interference factors and their effective centers of pressure have been mathematically represented by a hypersurface determined at each Mach number and angle of attack, using a multiple linear regression technique. The dependent variable on the surface is represented as a function of the three ratios - taper, aspect, and span - which define the fin.

Fin Alone Method

The fin alone contribution to the total normal force coefficient and total pitching moment coefficient is determined by a surface fit to the measured data at each angle of attack and Mach number. The surface was determined in a manner similar to the interference factors by the multiple linear regression technique. The fin alone variables of fin normal force, $C_{N_{FA}}$, center of pressure location in the X direction, $CP_{X_{HLA}}$, and center of pressure location in the Y direction, $CP_{Y_{RCA}}$, are determined at each Mach number and angle of attack by an equation which is a function of the two ratios, taper and aspect, which are independent of the body and define the fin.

Multiple Linear Regression Technique

The multiple linear regression technique, used to represent the calculated interference factors and the measured fin alone data by surface equations, is a standard application program for the IBM scientific subroutine package, Reference (54).

Subroutines from the scientific package used to perform the multiple linear regression are CORRE, ORDER, MINV, and MULTR and a detailed description of each may be found in Reference (54). These subroutines were incorporated into an overall program described in Appendix E, which prepared the calculated coefficients for analysis by defining the surface equations and setting up matrices containing the dependent and independent variables. A regression analysis was performed for each parameter at each Mach number and each angle of attack combination. Since ten Mach numbers and 91 angles of attack were used, 910 regression analyses were conducted for each of the eight parameters, $\Delta C_{N_{FOB}}$, $\Delta C_{N_{BOF}}$, $X_{CP_{FOB}}$, $Y_{CP_{BOF}}$, $X_{CP_{BFH}}$, $C_{N_{FA}}$, $CP_{X_{HLA}}$, and $CP_{Y_{RCA}}$.

Subroutine CORRE was used to determine the means, the standard deviations, and the correlation matrix for the parameter being analyzed. The subroutine ORDER then selected a dependent variable and a subset of independent variables from the larger set of variables resulting from subroutine CORRE for the parameter. The correlation matrix of the subset selected by ORDER was inverted by subroutine MINV and finally the regression coefficients and confidence level indicators were determined by subroutine MULTR. The regression coefficients for each parameter and the equation for that parameter are tabulated in Appendix B for the interference coefficients and Appendix C for the fin alone parameters.

VI. DISCUSSION OF COMPUTATION TECHNIQUE

The calculation of the normal force and pitching moment for a finned slender body may be carried out by either hand or machine computation. An example of each will be provided. The hand calculation will provide estimations where only a few angles of attack and Mach number cases are needed. Where more extensive calculations are required, the computer program will provide quick answers for a minimum amount of input. The range of inputs to the computation technique is shown in Table 6.

Hand Calculation

For a given finned slender body, the total normal force and pitching moment coefficients are given by Equations 5.1 and 5.2 respectively. Each component of the two equations is determined separately. The body alone normal force is determined from Equation 5.3 and the body alone pitching moment is determined by Equations 5.4 and 5.5. The factors Cd_c and η are determined from Figures 29 and 28, respectively. The factor Z is determined from Equation 5.10 with $\bar{\delta}$ and Z_{MAX} determined from Figures 30 and 31, respectively.

The interference factors and their effective centers of pressure are determined from the regression coefficients, $\beta_0 \ldots \beta_4$, tabulated in Appendix B, and the general equation:

Table 6

High Angle of Attack Coefficient Prediction Program

Mach Number Range	Angle of Attack Range	Nose	Configuration Body	Fin	Control Option
		Sharp Cone	Cylinder	$0 \leq \lambda \leq 1.0$	
$0.6 \leq M \leq 3.0$	$0 \leq \alpha \leq 180$	Blunt Cone	With or		
		Sharp Ogive	Without	$0.5 \leq AR \leq 2.0$	None
		Blunt Ogive	Conical		
			Boattail	$0.3 \leq d/b' \leq 0.5$	

$$\text{Factor} = \beta_0 + \beta_1\lambda + \beta_2\lambda^2 + \beta_3\,AR + \beta_4(d/b') \qquad (6.1)$$

The fin alone contributions are determined by the regression coefficients, $\beta_0 \ldots \beta_3$, tabulated in Appendix C, and the general equation:

$$\text{Fin Alone} = \beta_0 + \beta_1\lambda + \beta_2\lambda^2 + \beta_3\,AR \qquad (6.2)$$

Since the regression coefficients are determined for discrete Mach numbers and angles of attack, values for other Mach numbers and angles of attack must be determined by linear interpolation. An example of a hand calculation is given in Appendix F.

Machine Calculation

Machine computations are carried out using an IBM 370/165 computer. The program used is described in Appendix G. Only the salient features of the program will be described here. The basic description of the nose, body, and fins are input as well as the flight conditions such as Mach number and either altitude or Reynolds number. A subroutine in the program calculates Reynolds number from Mach number and altitude using data from Reference (55) if altitude rather than Reynolds number is input. The equations from Appendix I are programmed so that only the basic dimensions of nose type, nose length, nose radius, body diameter, and body length are required to establish the slender body configuration. The span ratio, aspect ratio, and taper ratio describe the fin configuration.

The regression coefficients are input to the program from magnetic tape and are called into the program and stored on a disk file for use when needed. For each configuration input to the program, the aerodynamic coefficients are calculated for each of the ten Mach numbers: 0.6, 0.8, 0.9, 1.0, 1.15, 1.3, 1.5, 2.0, 2.5, and 3.0. In addition, for each Mach number, the coefficients are determined at angles of attack from 0 to 180 degrees at 2-degree intervals. After all of the coefficients are calculated, linear interpolations are performed at each angle of attack to provide calculations at desired Mach numbers other than those used in the primary calculations. For each desired Mach number, the coefficients are printed for each angle of attack from 0 to 180 degrees at 2-degree intervals.

The effects on the normal force and pitching moment coefficients of roll of the fins from the vertical and horizontal planes to an arbitrary roll position, ϕ is accomplished to a first order approximation by multiplying the terms containing $C_{N_{FA}}$ and $\Delta C_{N_{BOF}}$ in the normal force and pitching moment coefficient, Equations 5.1 and 5.2 respectively by ($\sin \phi + \cos \phi$). It should be noted that the effects of the fins rolling through the body vortices is not included in the approximation. The fin normal force coefficient, root bending and hinge moment are determined for the $\phi = 0$ case only.

Machine calculations were used for the calculation of coefficients for comparison with data for the verification of the computation technique. An example of a machine calculation is given in Appendix H.

VII. VERIFICATION

Due to the almost total lack of unclassified high angle of attack data for finned slender bodies at transonic Mach numbers, the verification of the computation technique will have to be based primarily on data from the high angle of attack data base. The verification will be accomplished in three ways. First, computations made using the aerodynamic coefficient prediction technique developed herein, will be compared with typical data from the high angle of attack data base which were used to determine the interference factors. Second, computations will be compared with data from the high angle of attack data base, which were not used to determine the interference factors. Finally, computations will be compared with some of the limited amount of unclassified, high angle of attack data from the literature.

High Angle of Attack Data Used to Determine Interference Coefficients

Comparisons are made in Figures 32, 33, and 34 at Mach numbers of 0.8, 1.3, and 2.0, respectively, of the measured and calculated aerodynamic force and moment coefficients for the $\ell/d = 10$ ogive cylinder body used as the body alone configuration for determining the interference coefficients. While data are compared only at one subsonic, one low supersonic, and one supersonic Mach number, they are typical of the comparisons at the other Mach numbers. The mismatch in the measured and calculated center of pressure at very low and very high angles of attack is the result of missing the pitching moment slightly and dividing by a very small normal force coefficient. Since the symbols on the normal force and pitching moment plots approximate the error band of the data, it can be seen that at M = 0.8, the calculated values of normal force coefficient lie within the error band for most of the angle of attack range, except around 90 degrees, where the modification of Jorgensen's body alone crossflow theory does not account for the reduced normal force when the wake becomes unsteady and where the support interference has affected the data. The pitching moment coefficient prediction is within the error band of the data for much of the angle of attack range except for two segments around 55 degrees and from 135 degrees to 165 degrees. At M = 1.3, thenormal force coefficient prediction is within the error band of the data except for a small segment around 90 degrees that is within a maximum of approximately 15% of the measured data. The pitching moment coefficient prediction is within the error band of the data over much of the angle of attack range, with a maximum deviation of approximately 15% at 155 degrees angle of attack. At M = 2.0, the normal force coefficient prediction is within the error band of the data over mostof the range except from 100 to 140 degrees where the maximum deviation is less than 10% of the measured data. The pitching-moment coefficient prediction is on the edge of the error band over most of the angle of attack range except from an angle of attack from 100 to 140 degrees where the maximum deviation is approximately 12% from the measured data.

A typical finned configuration used to determine the interference coefficients is configuration N2A1T35. The data for this configuration are compared with predicted values at Mach numbers of 0.8, 1.3, and 2.0 in Figures 35, 36, and 37, respectively. The center of pressure, normal force coefficient and pitching moment coefficient agree within approximately 15% over the entire angle of attack range at M = 0.8. For finned configurations, the installed fin characteristics such as fin normal force coefficient and the X and Y centers of pressure are calculated. Also determined from the fin normal force and the centers of pressure are the hinge moment and root bending coefficients for the fin. The predicted fin normal force coefficient in Figure 35 is within the error band of the data except for the peak due to vortex-lift on the triangular fin at approximately 30 degrees. The pronounced peak does not occur for the λ = 1.0 and 0.5 fins and was not effectively represented in the surface fit since the variation with taper ratio was represented by only a second order form in the equation. The root bending and hinge moment are represented within the error band of the data over much of the angle of attack range and fairly well over the rest of the range. The X and Y centers of pressure show the same variation from the data that the fin moments show. The comparison of the measured and predicted aerodynamic coefficients for the configuration N2A1T35 at a low supersonic Mach number is shown in Figure 36 at M = 1.3. The center of pressure and pitching moment coefficient predictions are within the error band of the data over much of the angle of attack range, with maximum deviations of approximately 12%. The normal force coefficient prediction is within 10% over the angle of attack range where it is not within the error band of the data. For this case the fin normal force coefficient prediction is within the error band of the data. The hinge moment prediction is in close agreement with the data except between 35 and 45 degrees angle of attack and again at about 150 degrees. The root bending is also in close agreement with the data. The X and Y centers of pressure again show thesame variation from the data as the hinge moment and root bending. The discrepancies in the X and Y centers of pressure are the result of a poor surface fit of the calculated value of the effective center of pressure of the incremental interference force on the fin. These discrepancies do not detract from the technique as a predictive tool because of the nature of the X and Y center of pressure variation with angle of attack and the resulting hinge moment and root bending variation with angle of attack. Since the discrepancies occur in a region of fairly constant variation of the parameters with angle of attack, a line could be faired through the mean of the discrepancies and result in a prediction within less than 10% of the measured values. The predicted normal force at M = 2.0 lies within the error band of the data at angles of attack up to 100 degrees; beyond 100 degrees the maximum deviation is less than 10% from the measured normal force. The pitching-moment coefficient which was predicted lies within the error band except for a region between 90 and 140 degrees where the prediction follows the trend of the data with less than 14% deviation from the measured pitching moment. Excellent agreement is obtained for the fin variables with the same type deviations discussed for the M = 1.3 case.

Other Data from High Angle of Attack Data Base

It would be expected that the data used to develop an empirical prediction technique would be in excellent agreement with the predicted values as it was in the previous section. In this section, data from the high angle of attack data base using the same fins but a different length body will be compared with coefficients calculated using the high angle of attack coefficient prediction technique.

The measured aerodynamic coefficients for the ℓ/d = 15 body alone configuration are compared with predicted coefficients in Figure 38 at a Mach number of 0.8. Just as in the subsonic data for the ℓ/d = 10 configuration, excellent agreement is obtained except for the angle of attack range from 60 to 120 degrees where the unsteady wake and suspected support interference affect the measured data. Agreement within 15% is obtained in the pitching moment coefficient except in the angle of attack range from 120 to 160 degrees where the technique overpredicts the pitching moment coefficient by a maximum of about 40%. The center of pressure is in error for angles of attack above 120 degrees due to the error in pitching moment.

Supersonically, as shown in Figure 39, at a Mach number of 1.3 the predicted aerodynamic coefficients for the $\ell/d = 15$ body alone configuration are in much closer agreement with the data. The normal force coefficient is in error by less than 10%. The correction to the pitching moment coefficient derived for the $\ell/d = 10$ configuration causes a flattening in the curve between about 20 and 50 degrees angle of attack, resulting in the underprediction of the pitching moment coefficient in this range. Over the rest of the angle of attack range, agreement within a maximum of 15% is obtained.

The subsonic case at $M = 0.8$ for the finned $\ell/d = 15$ configuration, N2A3T31 with AR = 0.5 fins, is shown in Figure 40. The predicted normal force coefficient is within a maximum of 15% of the measured value and except for one small range of angles about 30 degrees, where an error of approximately 20% occurs, the pitching moment coefficient prediction is within 15% of the measured value. Most of the error in the coefficients can be attributed to the error in the predicted body alone coefficients. The predicted, installed fin normal force agrees with the measured values within less than 15% over the complete angle of attack range. The X and Y centers of pressure and the fin moments again display the same discrepancies discussed earlier but again the level of the parameter can be estimated by fairing.

The supersonic case for configuration N2A3T31 is shown in Figure 41 for a Mach number of 1.3. Excellent agreement is seen for this configuration between the measured and predicted normal force pitching moment and installed fin normal force coefficients. The coefficients are predicted within 10% over the entire angle of attack range. Even the predicted fin moments and centers of pressure are in close agreement with the measured values.

The data for a second finned $\ell/d = 15$ configuration, N2A3T13, with AR = 2.0 fins, is now compared with the predicted coefficients. The subsonic case for M = 0.8 is shown in Figure 42. As in other cases at subsonic Mach numbers, excellent agreement in normal force coefficient is obtained except in the unsteady wake region around 90 degrees angle of attack where a maximum error of approximately 15% occurs. The pitching moment coefficient agrees almost within the error band of the data except at angles of attack between 116 and 146 degrees where a maximum error of approximately 20% occurs. The fin characteristics of normal force and root bending are slightly underpredicted at angles of attack above 80 degrees while the other fin characteristics are in excellent agreement. Complete data were not available at M = 1.3, but the comparison of measured and predicted coefficients at M = 1.15 is shown in Figure 43. The measurements and predictions are in excellent agreement, which is typical of the previous comparisons at supersonic Mach numbers.

High Angle of Attack Data from Literature

In this section, data from recent tests at high angles of attack are compared with the theoretical predictions. Data for a slender body reported by Fleeman and Nelson (36) provide a comparison of the body alone predictive capability of the prediction technique. The slender body consists of a 2.5 caliber sharp ogive nose with a 12.05 caliber cylinder afterbody. The model was tested using a sting support at angles of attack from 0 degrees to 45 degrees and from 135 degrees to 180 degrees. At angles of attack from 45 degrees to 135 degrees, a strut support was used. The strut support intersected the aft portion of the body at a 90 degree angle. The predicted values of normal force and pitching moment are compared with the measured data in Figure 44. At Mach numbers of 0.6 and 0.8, the normal force agreement is excellent except around 90 degrees angle of attack, where th nsteady wake effect and possible support interference cause approximately 17 to 20% disagreement. The predicted pitching moment coefficient agrees with the data for both M = 0.6 and 0.8 up to 100 degrees angle of attack. Between 100 degrees and 160 degrees, the theory predicts a much lower value of the coefficient than was measured. Just as with the previously described data, the agreement is excellent at the supersonic and low supersonic Mach numbers.

Another slender body configuration test was conducted by Baker and Reichenau (40). The tests were conducted for a series of air and ground launched strategic missile concepts. The data for a typical configuration from the test are compared with predicted normal force and pitching moment coefficients in Figure 45. The configuration selected is N3B2. The N3 designates a blunt ogive nose, 2.14 calibers in length with spherical blunting. The afterbody, B2, is a cylinder 6.15 calibers in length. The model was supported by a sting in the angle of attack range from 0 degrees to 45 degrees and with a forward swept strut in the angle of attack range from 40 degrees to 180 degrees. The large forward swept strut would be expected to produce more interference to the data than the strut of Reference (36), which intersected the body at 90 degrees or the support arrangement used in the high angle of attack data base which has a 45 degree rearward sweep. The discontinuities in the data resulting from support interference at 40 degrees angle of attack are evident in Figure 45, where the measured and predicted values of normal force and pitching moment coefficient are compared. At a Mach number of 0.6, only fair agreement is obtained with the normal force coefficient, while very good agreement is obtained in pitching moment coefficient. Much better agreement is obtained at Mach number 0.8 with the error in normal force of only about 10%. The agreement in pitching moment is very good with greatest disagreement being in the angle of attack range from 140 degrees to 160 degrees. At supersonic Mach numbers the effect of the strut appears to cause a decrease in the level of the normal force and pitching moment coefficient. The agreement between the measured and predicted normal force and pitching moment coefficients is excellent for the data obtained with the sting support; however, the data from strut support model is in disagreement with the theory.

The only high angle of attack data for a slender body with low aspect ratio fins at transonic Mach numbers other than the data in the high angle of attack data base are reported by Jenke (47). The tests were conducted on a modified basic finner model to measure the roll damping, the Magnus force and the static stability. The model was supported by an "L" shaped strut arrangement. A six-component balance was attached to the horizontal leg of the strut and a roll mechanism was attached to the balance. The model was then attached to the roll mechanism. With the model in place, the vertical leg of the strut was approximately 3.25 model diameters behind the model. The model consisted of a 2.5 caliber sharp ogive nose and a 7.5 caliber cylinder afterbody. Four fins were mounted in a cruciform plus orientation. The fins had a taper ratio of 0.5, an aspect ratio of 1.0, and a span ratio of 0.5. The model had a roll rate of approximately 100 radians/second during the test.

The comparison of the measured and predicted aerodynamic coefficients is shown in Figure 45. At a Mach number of 0.6, the maximum disagreement in normal force coefficient of approximately 36% occurs at 45 degrees. Better agreement is obtained at lower angles and at 90 degrees. The trend of the pitching moment is correct, including the increase in the coefficient to a maximum at approximately 60 to 65 degrees angle of attack. However, the magnitude of the pitching moment at the maximum is not in agreement. The agreement in normal force coefficient at a Mach number of 0.8 is much better than at 0.6, with the predicted values within less than 10% of the measured data. Again, the magnitude of the measured and predicted values of pitching moment coefficient at the maximum between 30 and 70 degrees angle of attack do not agree. Supersonically, at Mach numbers of 1.15, 1.3, 1.5, 2.0 and 2.5, the agreement in both normal force and pitching moment is very good.

VIII. CONCLUSIONS

Conclusions

A series of slender body configurations, both with and without tail fins, were tested at transonic and supersonic Mach numbers and at angles of attack to 180 degrees. Additionally, the tail fins were tested alone on a reflection plane at transonic and supersonic Mach numbers and at angles of attack to 180 degrees. The parametric variation of model length and the fin aspect, taper, and span ratios provide a significant data base for body alone, fin alone, body plus fin and installed fin configurations. Prior to this effort, there was a complete dearth of parametric data for slender bodies with low aspect ratio fins at transonic and supersonic Mach numbers in the very high angle of attack range. The data base established through this effort provides a basis for the development of the semi-empirical aerodynamic coefficient prediction technique reported herein. The data base also will provide a standard of comparison for completely theoretical aerodynamic coefficient prediction techniques being developed.

A semi-empirical theory, adequate for preliminary design purposes, has been developed for the prediction of aerodynamic coefficients for finned slender bodies at angles of attack from 0 to 180 degrees and Mach numbers from 0.6 to 3.0.

The theory is based on a modification of the crossflow theory as formulated by Jorgensen with empirical relations for the effects of tail fins. An empirical set of interference factors was determined to correct the fin alone data for the presence of the body and allow for the determination of the installed fin aerodynamic characteristics. Empirical interference factors were also determined to account for the increment in body force due to the presence of the fin. A multiple linear regression technique was used to put the vast amount of interference factor and fin alone data into a form which is simple to use and provides the capability for the determination of interference factors and fin alone data for arbitrary low aspect ratio fins within the range of the data base. Equations involving regression coefficients and the aspect, taper, and span ratios of the fins are used to calculate the interference factors and fin alone aerodynamic coefficients.

A computer program has been written to provide rapid calculation of the aerodynamic coefficients for multiple configurations at user selected Mach numbers and Reynolds numbers or altitudes. The aerodynamic coefficients predicted by the program are within 15% or better of the measured data over most of the angle of attack range.

BIBLIOGRAPHY

1. Baker, W. B. "High Angle of Attack Experimental Data," Arnold Engineering Development Center, Arnold Air Force Station, Tennessee, May 1976.

2. Munk, M. M. "The Aerodynamic Forces on Airship Hulls," NACA Report No. 184, 1924.

3. Tsien, Hsue-Shen. "Supersonic Flow Over an Inclined Body of Revolution," Journal of Aeronautical Sciences, Vol. 5, No. 12, October 1938, pp. 480-483.

4. Allen, J. H. and Perkins, E. W. "A Study of Effects of Viscosity on Flow Over Slender Inclined Bodies of Revolution," NACA Report 1048, 1951.

5. Ward, G. N. "Supersonic Flow Past Slender Pointed Bodies," Quarterly Journal of Mechanics and Applied Mathematics, Vol. 2, Part I, March 1949, pp. 75-97.

6. Jorgensen, L. H. "Prediction of Static Aerodynamic Characteristics for Space-Shuttle-Like, and Other Bodies at Angles of Attack from 0° to 180°," NASA TN D6996, January 1973.

7. Goldstein, S. Modern Developments in Fluid Dynamics. Oxford, 1938.

8. Fidler, J. E. and Bateman, M. C. "Aerodynamic Methodology (Isolated Fins and Bodies)," USAMC-OR12,399, March 1973.

9. Kellock, Robert E. and Miller, Percy H. "Aerodynamic Characteristics of Basic Nose-Cylinder Bodies for Large Ranges of Angle of Attack," Louisiana State University, 1971.

10. Thompson, K. D. "The Estimation of Viscous Normal Force, Pitching Moment, Side Force and Yawing Moment on Bodies of Revolution at Incidences up to 90°," WRE - Report - 782 (WR & D), October 1972.

11. Gregoriou, G. "Ein Rechenprogramm zur Abschätzung von Beiwerten rotationssymmetrischer Rümpfe bei extrem hoher Anstellung," MBB UA-371-75 (A computing program to estimate the aerodynamic coefficients of bodies of revolution at extremely high angles of attack).

12. Nikolitsch, D. "Theoretisches Verfahren zur Beiwert-Berechnung von Rümpfen und Flügel-Rumpfanordnungen bis zu extrem hohen Anstellwinkeln," MBB UA-307-75 (A theoretical method for calculating the coefficients of body and wing-body combinations at extremely high angles of attack).

13. Moore, F. G. "Aerodynamics of Guided and Unguided Weapons, Part I - Theory and Application," NWL - TR - 3018, December 1973.

14. Darling, J. A. "Handbook of Blunt-Body Aerodynamics, Volume I - Static Stability," NOLTR 73-225, December 1973.

15. Eaton, P. T. "A Method for Predicting the Static Aerodynamic Characteristics of Low-Aspect-Ratio Configurations," DTMB Report 2216, June 1966.

16. Fidler, J. E. and Bateman, M. C. "Aerodynamic Methodology (Bodies with and without Tails in Transonic Flow)," OR 12,851, January 1974.

17. Fidler, J. E. and Bateman, M. C. "Aerodynamic Methodology (Bodies with Tails at Arbitrary Roll Angle)," OR 13,375-1, December 1974.

18. Saffell, Bernard F., Jr., Howard, Millard L. and Brooks, Eugene N., Jr. "A Method for Predicting the Static Aerodynamic Characteristics of Typical Missile Configurations for Angles of Attack to 180 Degrees," NSRDC Report 3645, March 1971.

19. Tipping, Derrick E., et al. "Computer Aided Missile Synthesis (CAMS)," Martin Marietta Corporation, OR 12,034, June 1972.

20. Aiello, G. F. "Aerodynamic Methodology Bodies with Tails at Arbitrary Roll Angles (Transonic and Supersonic," OR 14,145, April 1976.

21. Mendenhall, M. R., Goodwin, F. K., Dillenius, M. F. E., and Kline, D. M. "Computer Programs for Calculating the static Longitudinal Aerodynamic Characteristics of Wing-Body-Tail Configurations," NASA CR-2474, January 1975.

22. Kelly, H. R. "The Estimation of Normal Force, Drag, and Pitching Moment Coefficients for Blunt Based Bodies of Revolution at Large Angles of Attack," Journal of the Aeronautical Sciences, Vol. 21, No. 8, pp. 549-555, August 1954.

23. Schwabe, M. "Pressure Distribution in Non-Uniform Two-Dimensional Flow," NACA-TM-1039, 1943.

24. Hoerner, Sighard F. Fluid Dynamic Drag. Distributer of Dr. Hoerner's Books, Brick Town, New Jersey, 1958.

25. Allen, H. J. and Perkins, E. W. "Characteristics of Flow Over Inclined Bodies of Revolution," NACA RMA50L07, March 1951.

26. Finck, R. D. "USAF Stability and Control DATCOM," McDonnell Douglas Corporation, Douglas Aircraft Division, October 1960, Revised January 1975.

27. Braslow, A. L. and Knox, E. C. "Simplified Method of Determination of Critical Height of Distributed Roughness Particles for Boundary Layer Transition at Mach Numbers from 0 to 5," NACA TN 4363, September 1958.

28. Jorgensen, L. H. and Nelson, E. R. "Experimental Aerodynamic Characteristics for a Cylindrical Body of Revolution with Side Strakes and Various Noses at Angles of Attack from 0° to 58° and Mach Numbers from 0.6 to 2.0," NASA TMX3130, March 1975.

29. Coe, P. L., Jr. and Chambers, J. R. "Asymmetric Lateral Directional Characteristics of Pointed Bodies of Revolution at High Angles of Attack," NASA TN D-7095, November 1972.

30. Penland, J. A. and Armstrong, W. O. "Static Longitudinal Aerodynamic Characteristics of Several Wing and Blunt Body Shapes Applicable for Use as Reentry Configurations at a Mach Number of 6.8 and Angles of Attack up to 90°," NASA TMX-65, October 1959.

31. Smith, Fred M. "The Aerodynamic Characteristics of Bodies of Revolution at Mach Numbers of 1.37, 1.98, and 3.90 at Angles of Attack to 90°," NASA TMX-311, August 1960.

32. Jernell, Lloyd S. "Aerodynamic Characteristics of Bodies of Revolution at Mach Numbers from 1.5 to 2.86 and Angles of Attack to 180°," NASA TMX-1658, October 1968.

33. Andrews, C. D. and Aver, A. C. "Static Longitudinal Stability Characteristics of the Tactical Pershing Missile Re-entry Body at Angles of Attack to 140 Degrees," ABMA Report No. RG-TN-6-60, August 15, 1960.

34. Wardlaw, A. B., Jr. "Experimental Study of Forces and Moments on Circular Bodies at High Angle of Attack," NSWC/NOL/TR 75-66, 1975.

35. Letko, W. "A Low-Speed Experimental Study of the Directional Characteristics of a Sharp-Nosed Fuselage Through a Large Angle of Attack Range at Zero Angle of Sideslip," NACA TN 2911, March 1953.

36. Fleeman, E. L. and Nelson, R. C. "Aerodynamic Forces and Moments on a Slender Body with a Jet Plume for Angles of Attack up to 180 Degrees," AIAA Paper No. 74-110, January 30-February 1, 1974.

37. Penland, J. A. "Aerodynamic Force Characteristics of a Series of Lifting Cone and Cone-Cylinder Configurations at a Mach Number of 6.83 and Angles of Attack up to 130°," NASA TND840, June 1961.

38. Penland, J. A. "Aerodynamic Characteristics of a Circular Cylinder at Mach Number 6.86 and Angles of Attack up to 90°," NACA TN3861, January 1957.

39. Jorgensen, L. H. and Treon, S. L. "Measured and Estimated Aerodynamic Characteristics for a Model of a Rocket Booster at Mach Numbers from 0.6 to 4 and at Angles of Attack from 0° to 180°," NASA TMX580, September 1961.

40. Baker, D. C. and Reichenau, D. E. A. "High Angle of Attack Experimental Data," Arnold Engineering Development Center, Arnold Air Force Station, Tennessee, April 1975.

41. McKinney, R. L. "Longitudinal Stability and Control Characteristics of an Air-to-Air Missile Configuration at Mach Numbers of 2.30 and 4.60 and Angles of Attack from -45° to 90°," NASA TMX-846, August 1963.

42. Uselton, B. L. and Uselton, J. C. "Test Mechanism for Measuring Pitch Damping Derivatives of Missile Configurations at High Angles of Attack," AEDC-TR-75-43, May 1975.

43. Boehly, W. A. "Aerodynamic Characteristics of Missile Configurations with Body Fineness Ratios 6 and 10 at M = 1.86 and Angles of Attack to 90°," NSRDC Technical Note AL-90, February 1969.

44. Summers, W. E. "High Angle of Attack Experimental Data," Arnold Engineering Development Center, Arnold Air Force Station, Tennessee, April 1968.

45. Hartley, R. M. and Durkin, J. M. "Transonic Aerodynamic Characteristics of a Small Air-to-Air Missile (AAM) Model," NSRDC Test Report AL-62, May 1970.

46. Hall, R. T. "A Wind Tunnel Investigation of the Hypersonic Air-to-Ground Rocket (HAGR) Over an Angle of Attack Range from 0° to 180° at Subsonic, Transonic, and Supersonic Speeds," NOLTR 69-70, April 1969.

47. Jenke, L. M. "Experimental Roll Damping, Magnus and Static Stability Characteristics of Two Slender Missile Configurations at High Angles of Attack (0-90 Degrees) and Mach Numbers 0.2 through 2.5," AEDC-TR-76-58, 1976.

48. Bradley, R. G., Smith, C. W., and Bhateley, I. C., "Vortex-Lift Prediction for Complex Wing Planforms," Journal of Aircraft, Vol. 10, No. 6, June 1973, pp. 379-381.

49. Polhamus, E. C. "Prediction of Vortex-Lift Characteristics by a Leading-Edge Suction Analogy," Journal of Aircraft, Vol. 8, No. 4, April 1971, pp. 193-199.

50. Falunin, M. P., Ul'yanov, G. S., Malchin, A. A., and Mosin, A. F. "Supersonic Aerodynamic Characteristics of Delta Wings at High Angles of Attack." Izv. AN SSSR, MZhG (Fluid Dynamics), Vol. 3, No. 5, pp. 154-157, 1968.

51. Altstatt, M. C. and Dietz, W. E. "Support Interference on an Ogive-Cylinder Model at High Angle of Attack in Transonic Flow," AEDC-TR-77- (To be published)

52. Nelson, R. C. "1976 USAF-ASEE Summer Faculty Research Program - Final Report," AFOSR-TR-76-1419, pp. 13-1 through 13-31, Sept. 1976 (ADA033822).

53. Pitts, William C., Neilsen, Jack N., and Kaattari, George E. "Lift and Center of Pressure of Wing-Body-Tail Combinations at Subsonic, Transonic, and Supersonic Speeds," NACA Report 1307, 1957.

54. IBM Application Program. "System/360 Scientific Subroutine Package, Version III, Programmers Manual, Program Number (360A-CM-C3X)," GH20-0205-4, Fifth Edition, August 1970.

55. Minzner, R. A., Champion, K.S.W. and Pond, H. L. "The ARDC Model Atmosphere, 1959," AFCRC-TR-59-267, August 1959.

APPENDIX A

ILLUSTRATIONS

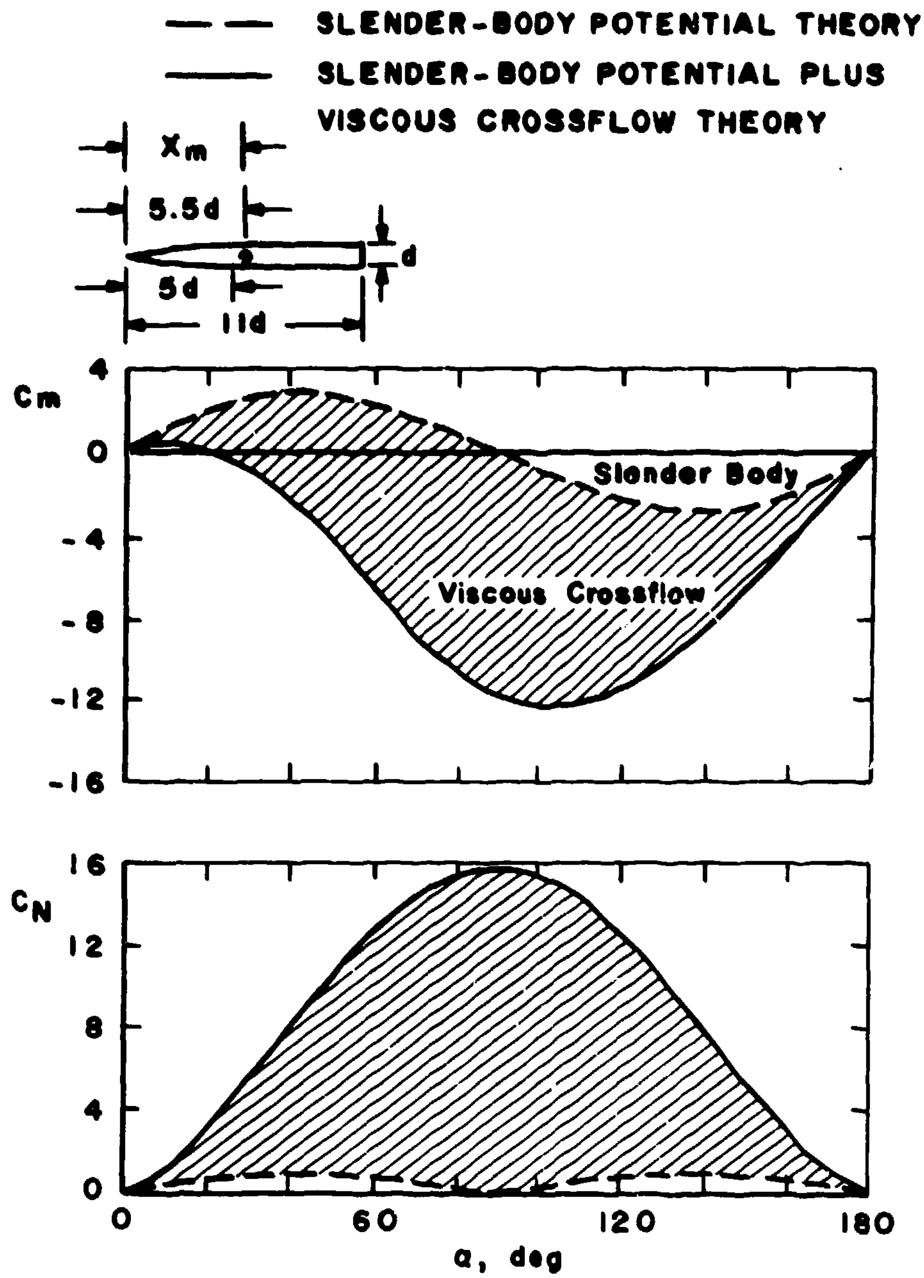
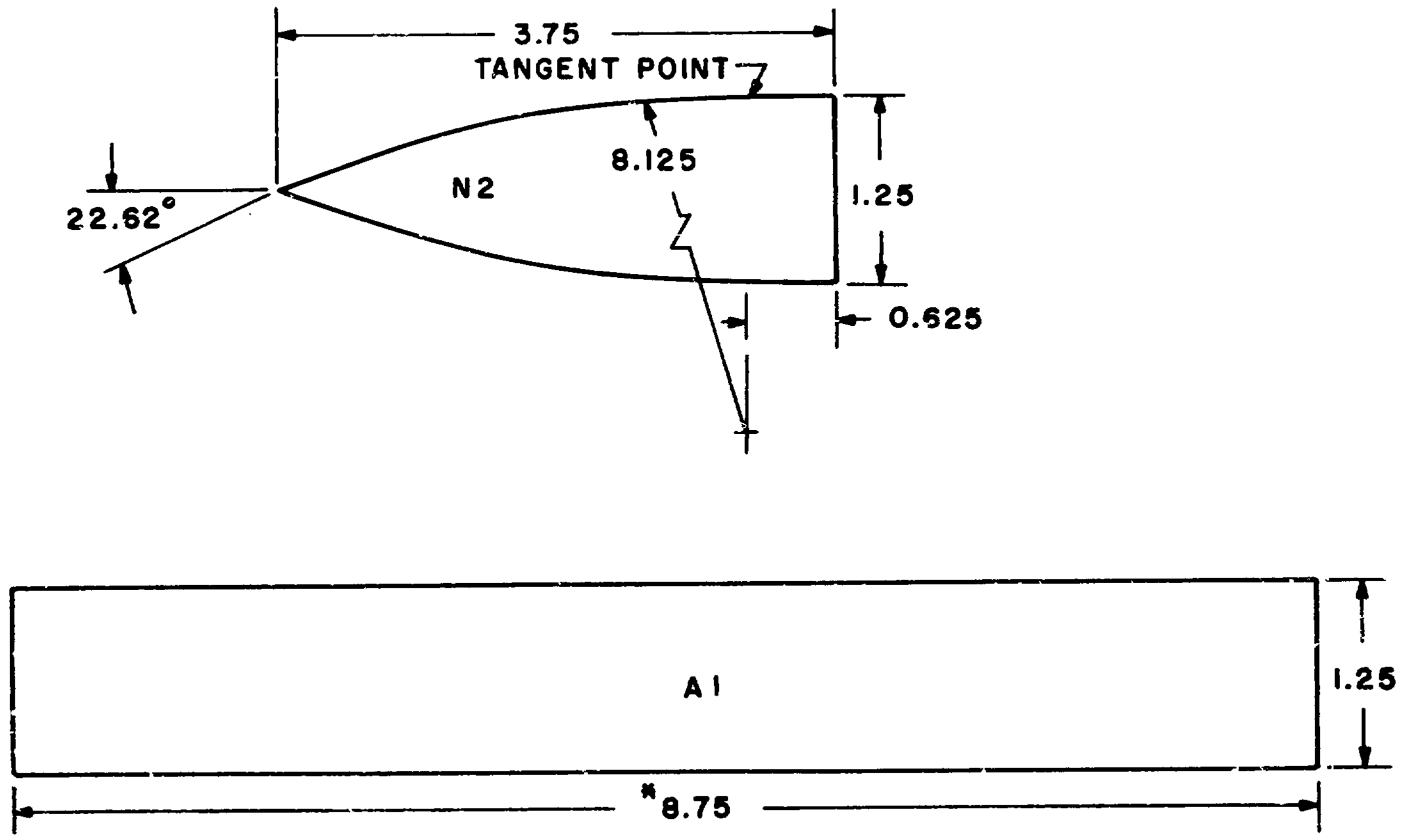


Figure 1. Viscous contribution to normal force and pitching moment coefficients at high angles of attack and M = 2.9.



*BODY	LENGTH
A1	8.75
A2	11.25
A3	15.00
A4	12.08

ALL DIMENSIONS IN INCHES

Figure 2. Model nose and afterbodies.

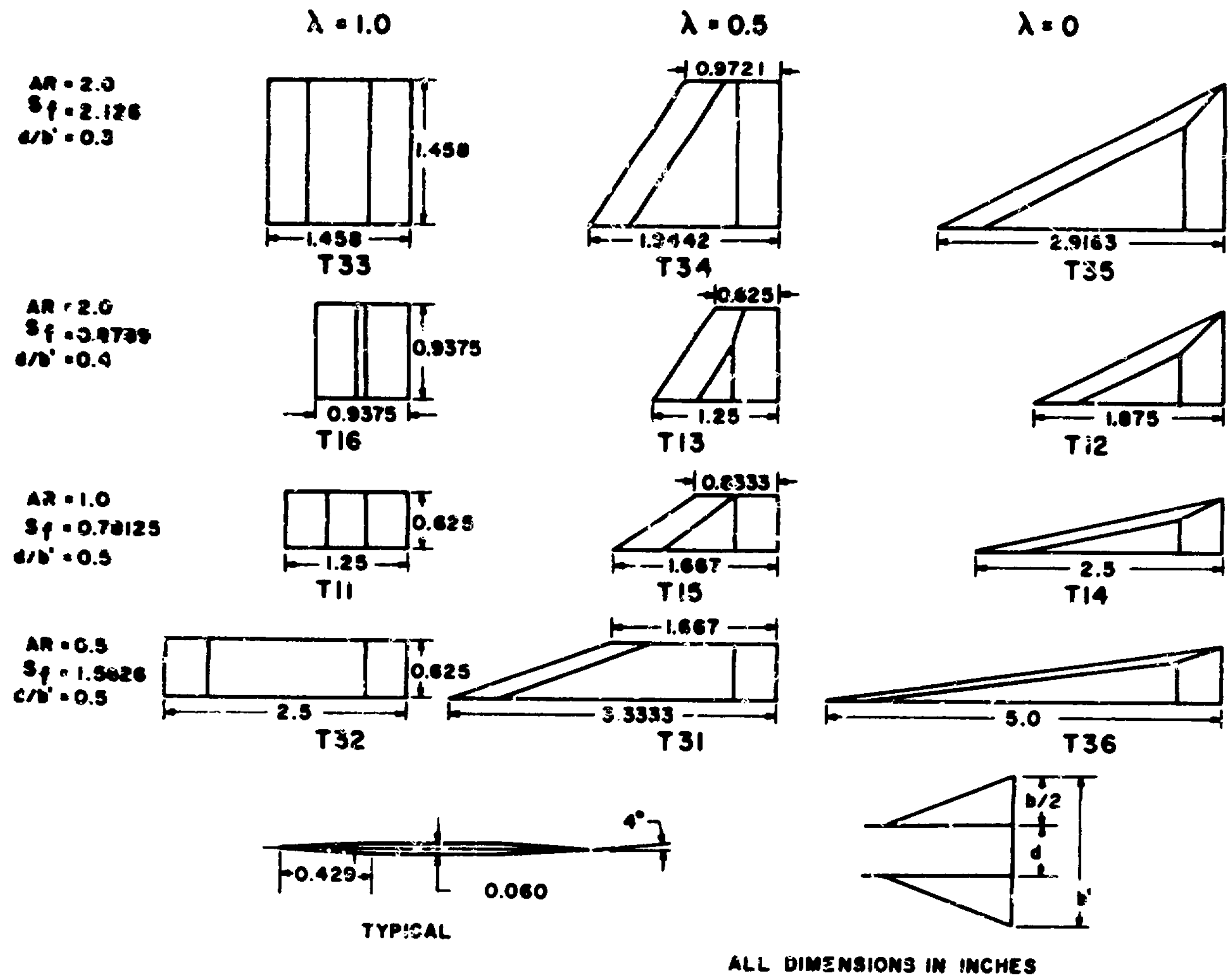
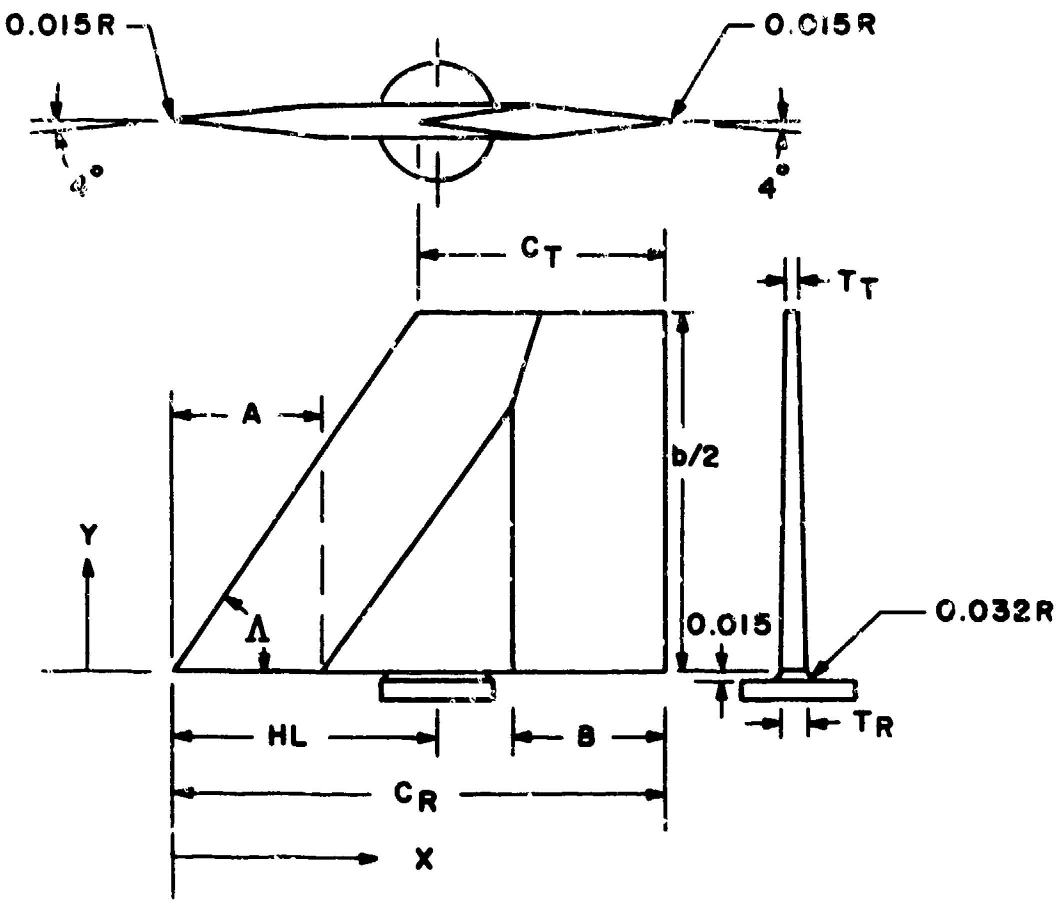


Figure 3. Schematic of tail fins.



SEE TABLE 2 FOR DIMENSIONS

Figure 3. (Continued)

Tunnel 4T

Tunnel A

Figure 4. Installation of reflection plane.

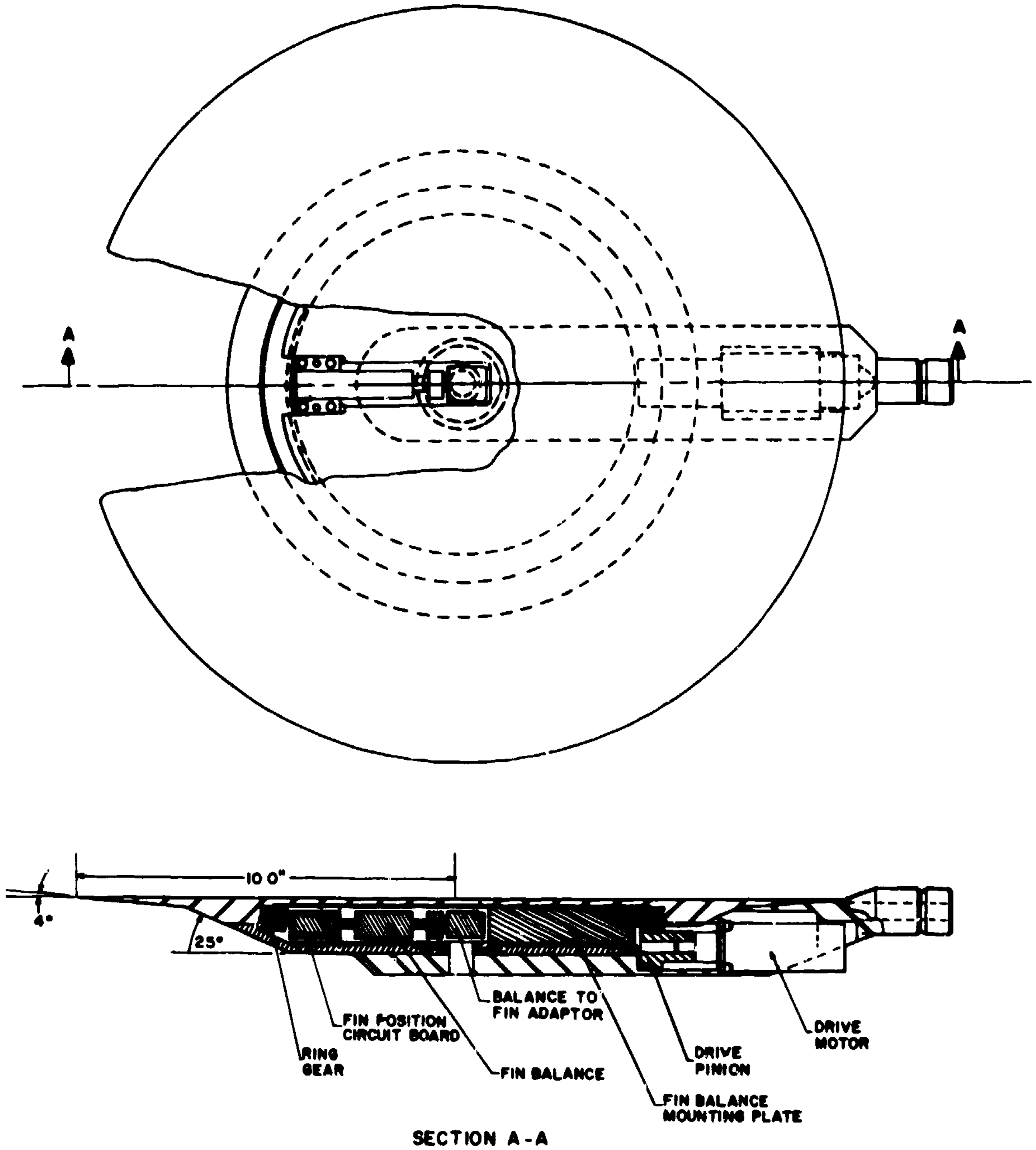
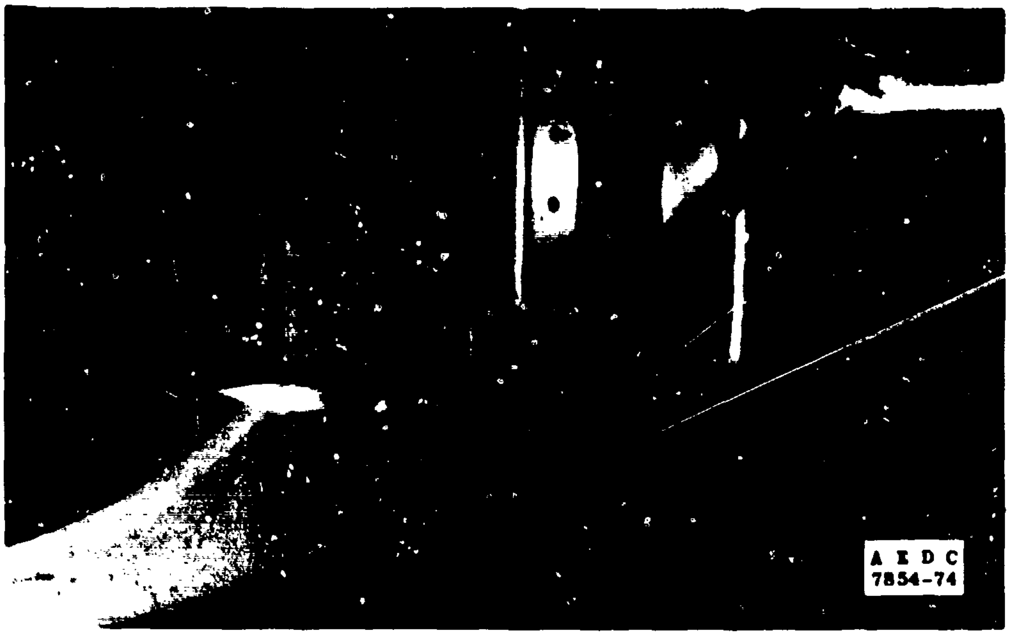


Figure 5. Reflection plane assembly.



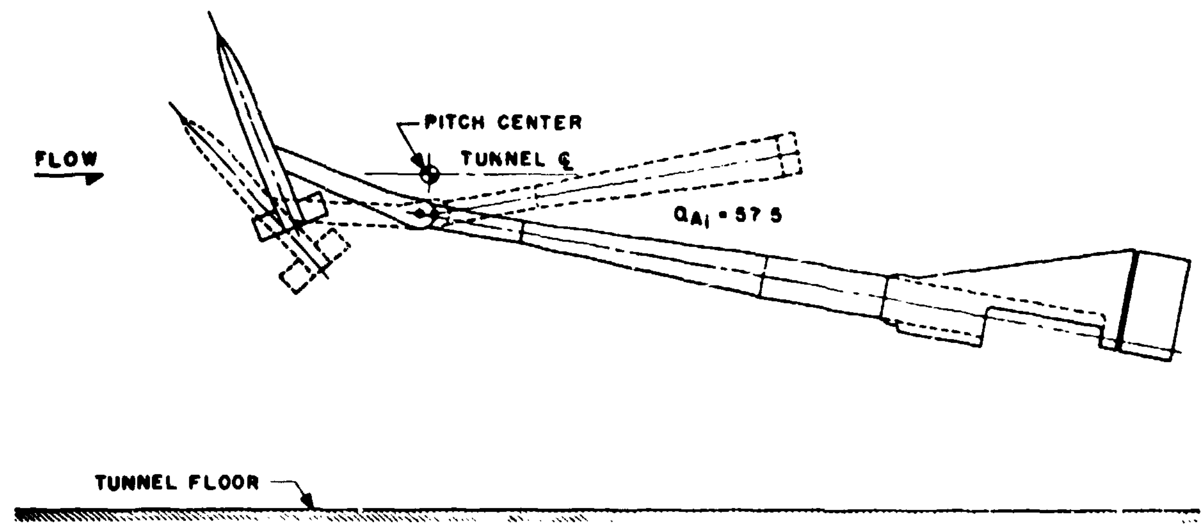


Figure 6. Installation of ℓ/d = 10 slender body in Tunnel A and Tunnel 4T.

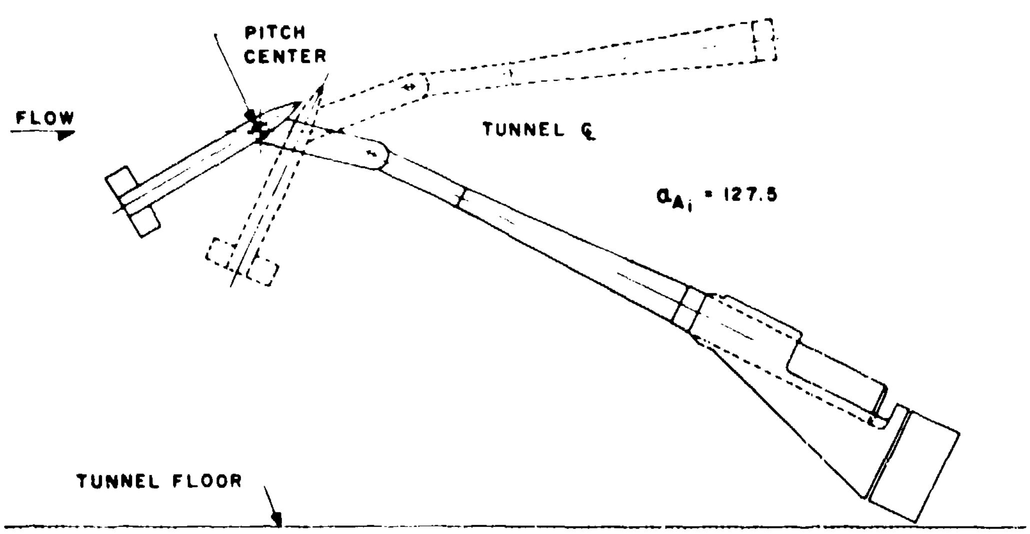
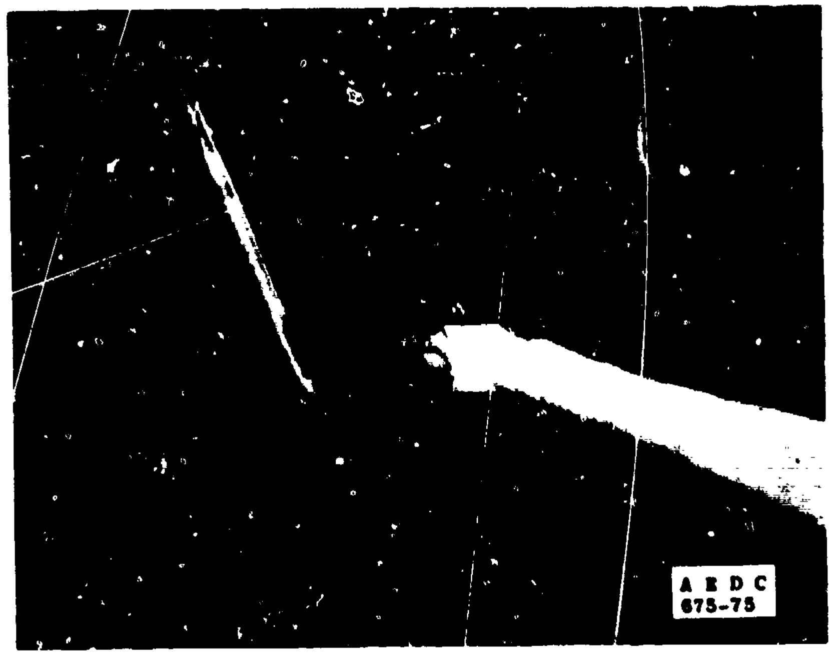


Figure 6. (Continued)



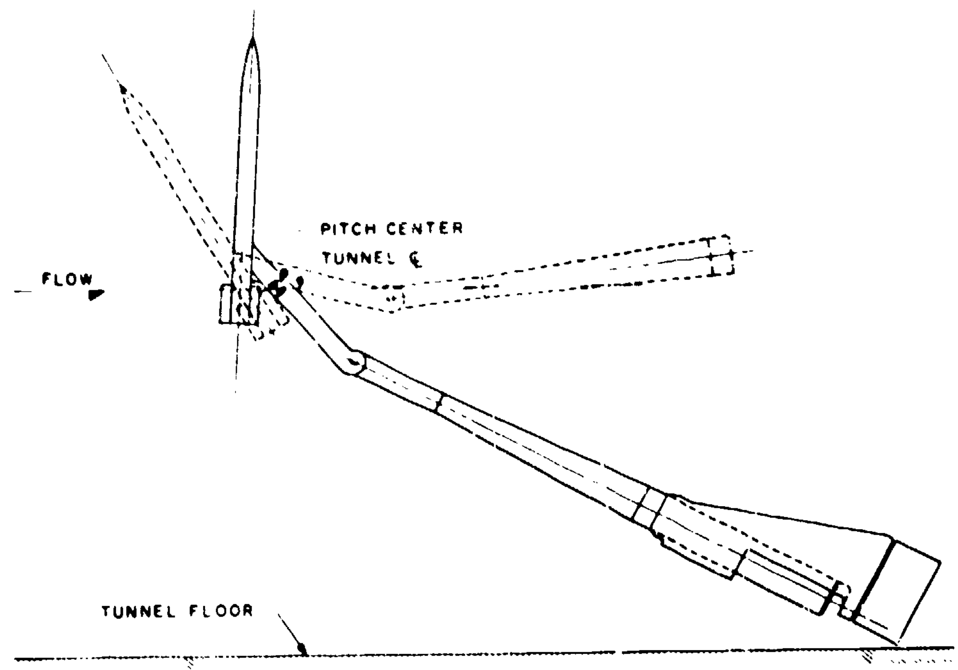
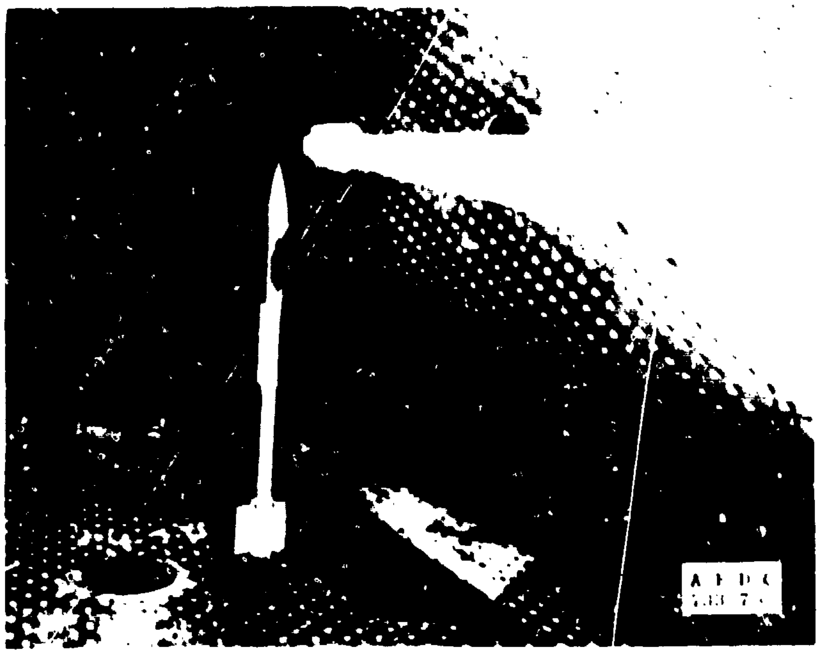


Figure 7. Installation of $\ell/d = 15$ slender body in Tunnel 4T.



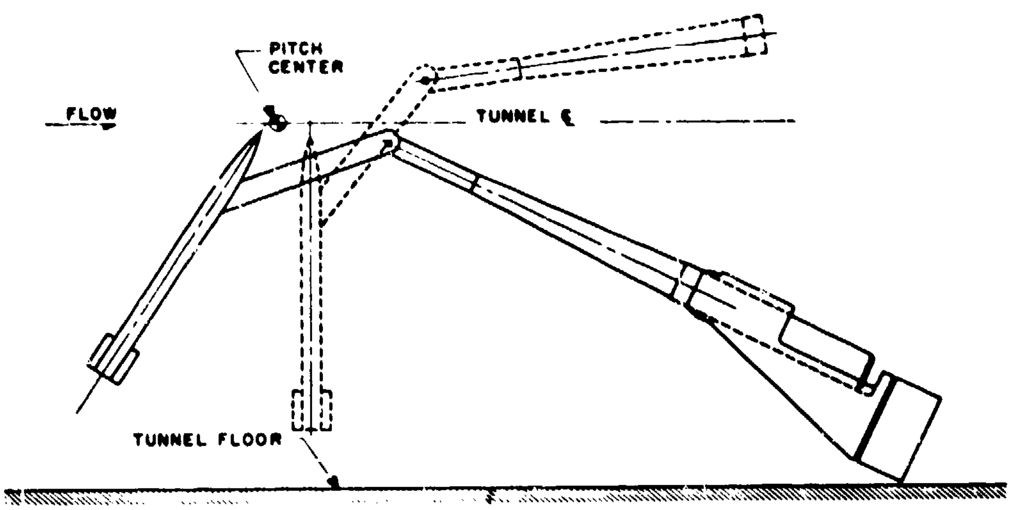


Figure 7. (Continued)

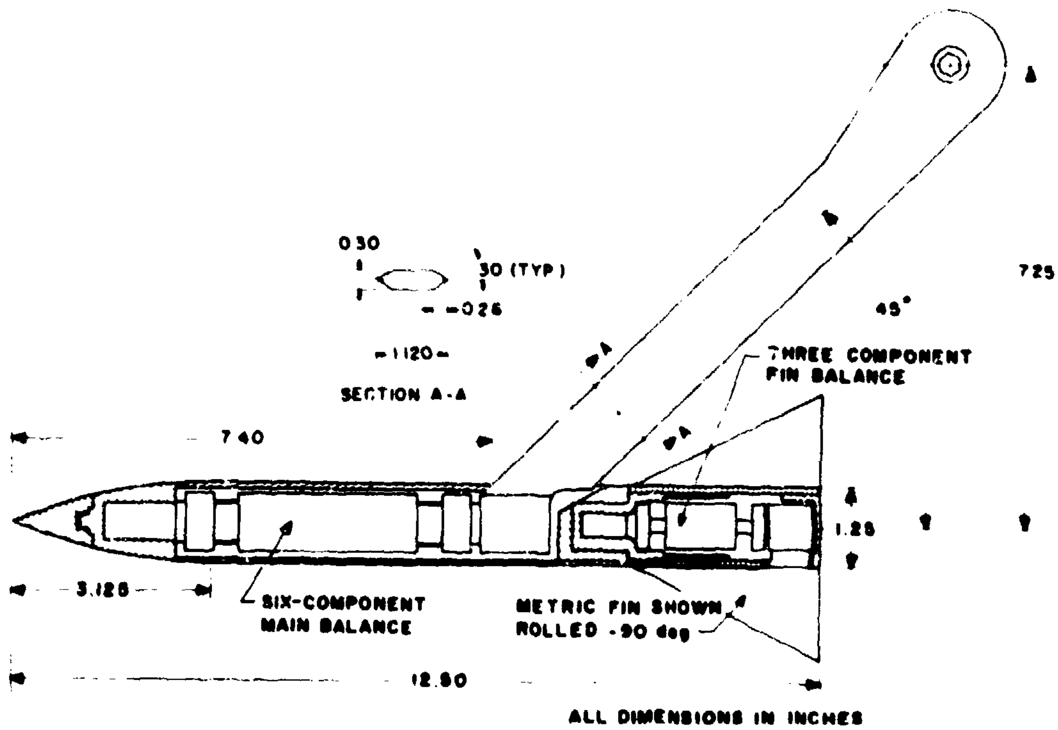


Figure 8. Details of $\ell/d = 10$ slender body model.

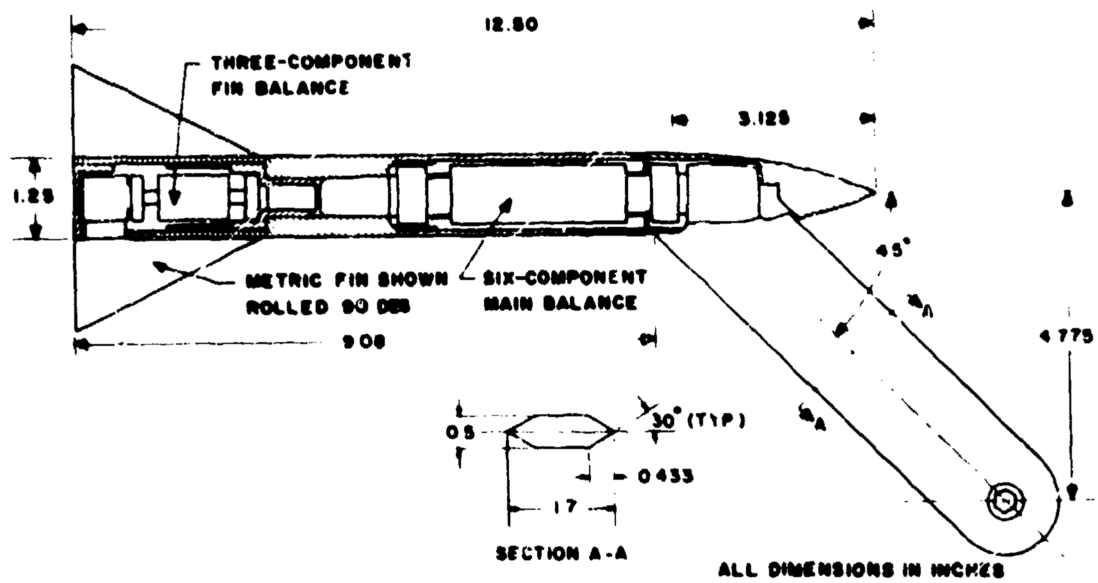


Figure 8. (Continued)

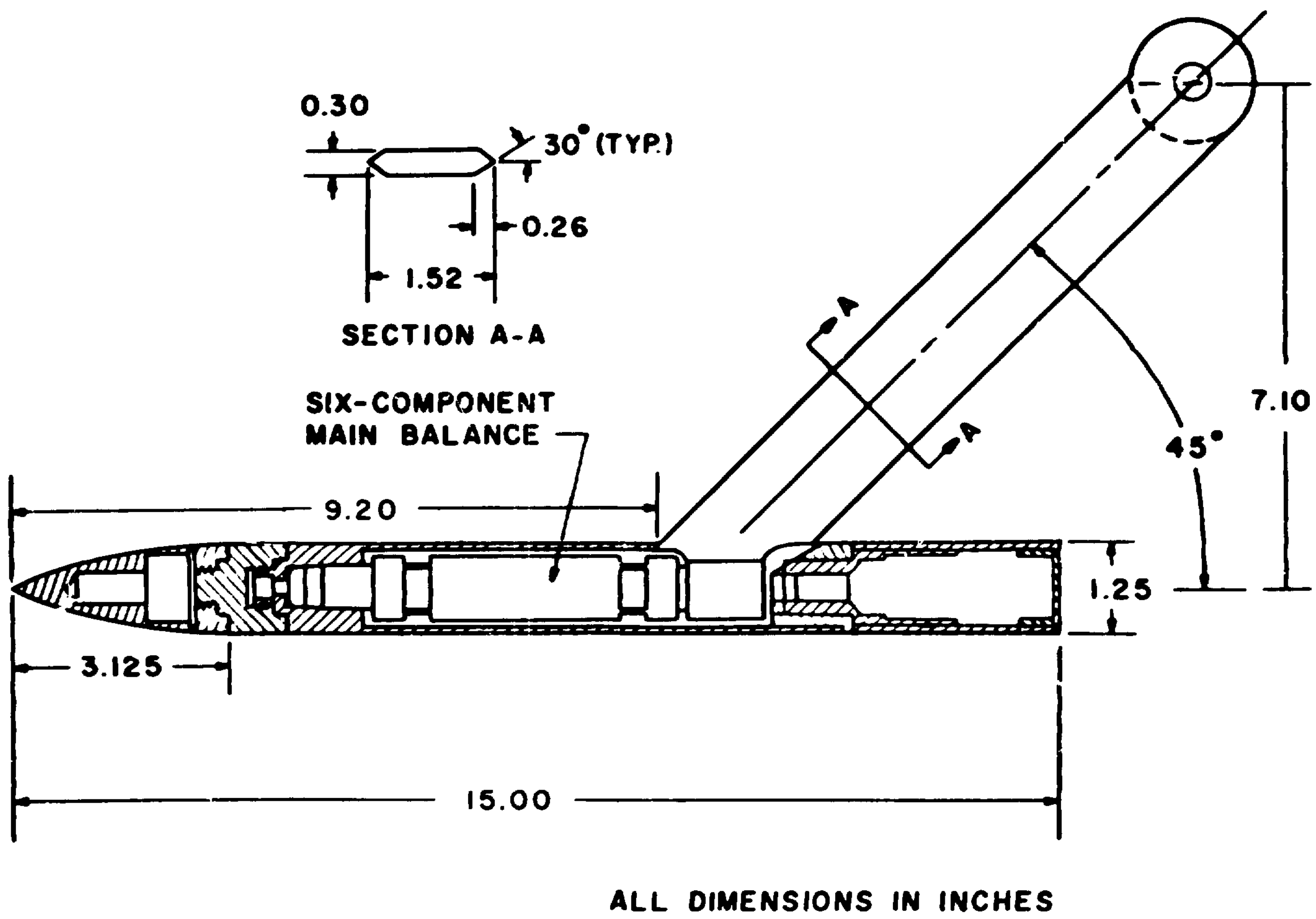


Figure 9. Details of $\ell/d = 12$ slender body model.

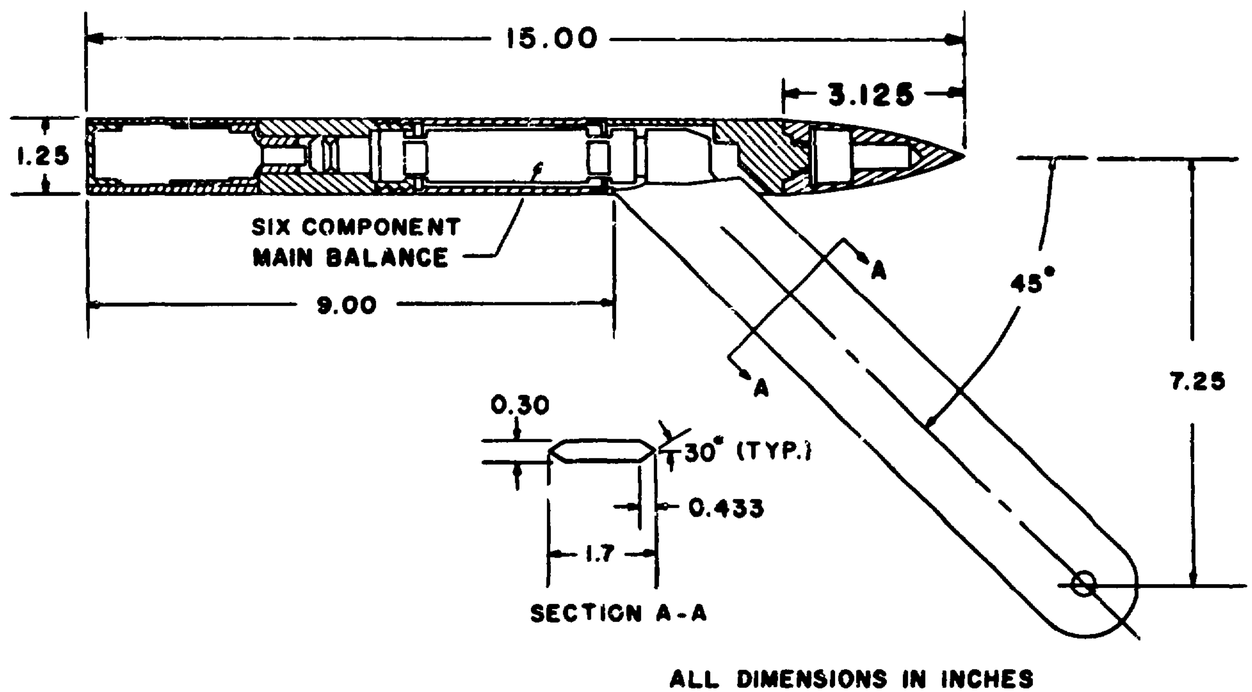


Figure 9. (Continued)

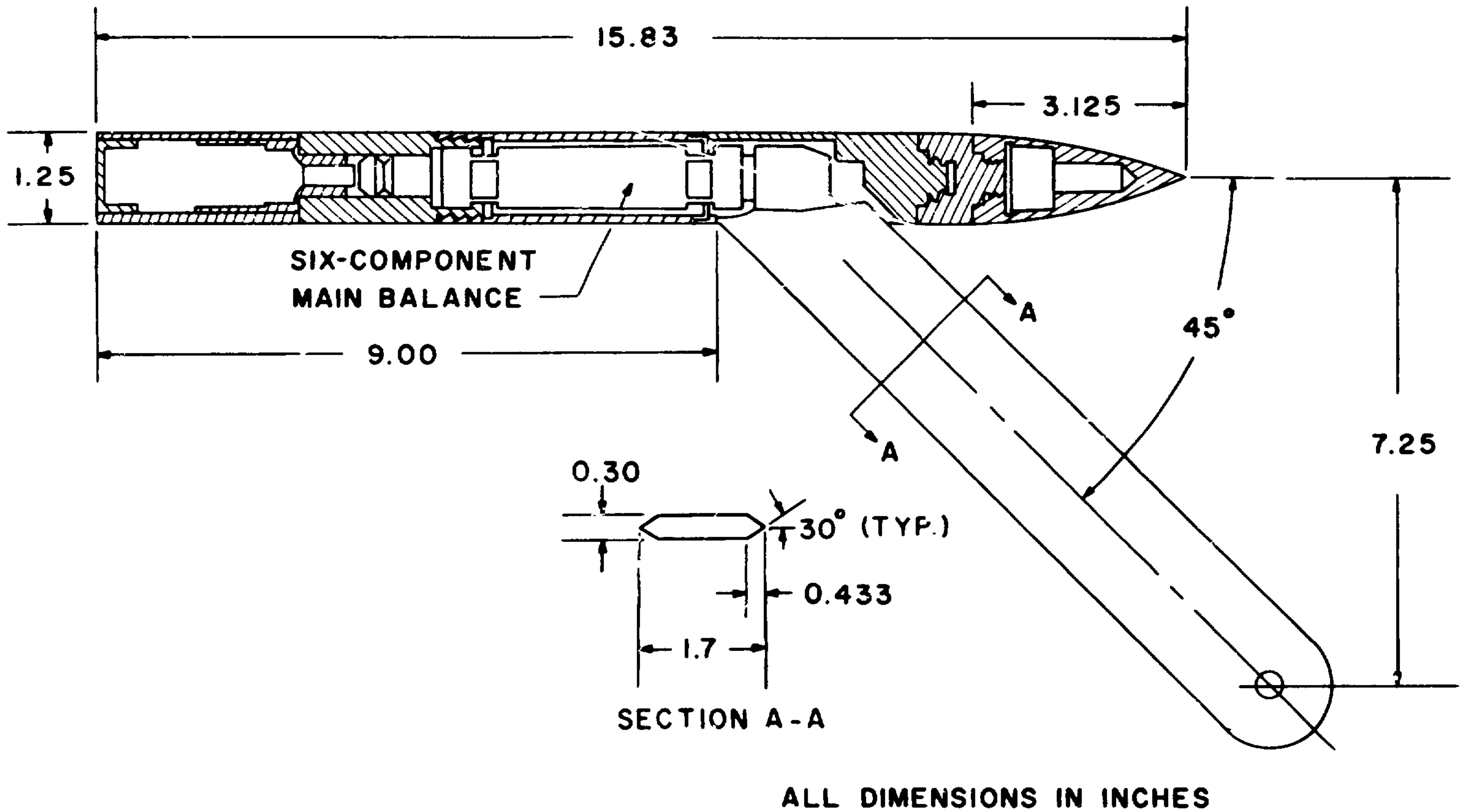


Figure 10. Details of $\ell/d = 12.66$ slender body model.

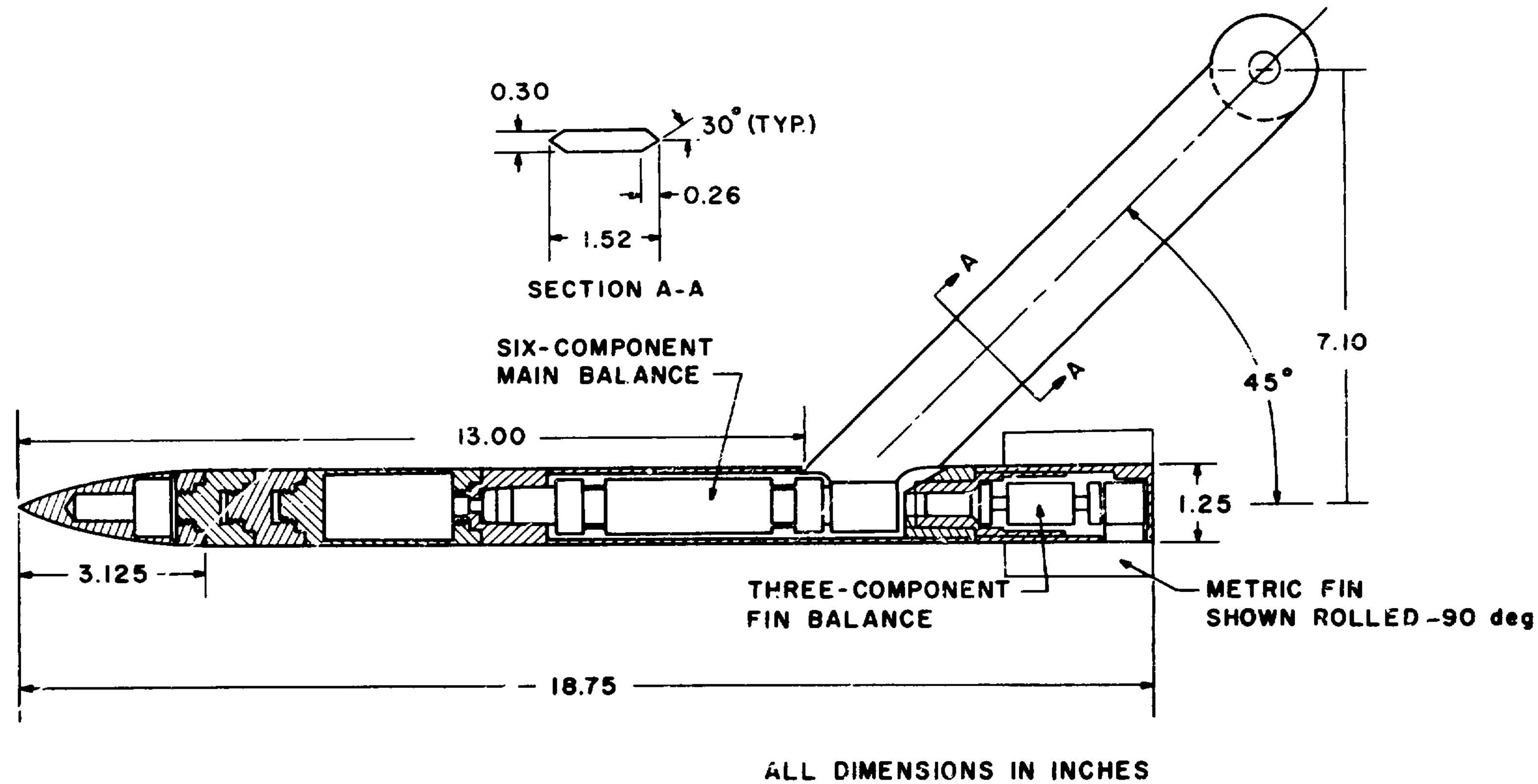


Figure 11. Details of ℓ/d = 15 slender body model.

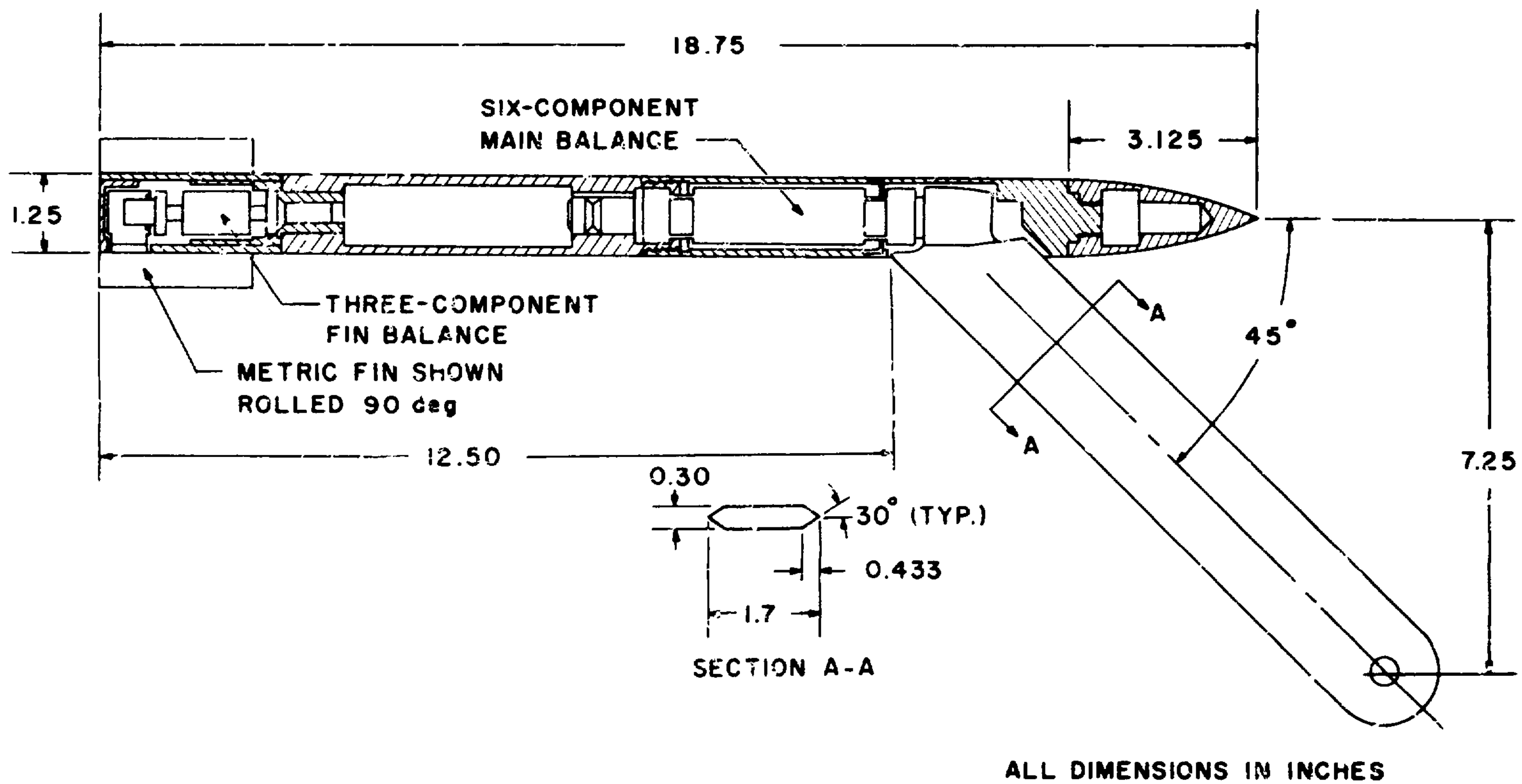


Figure 11. (Continued)

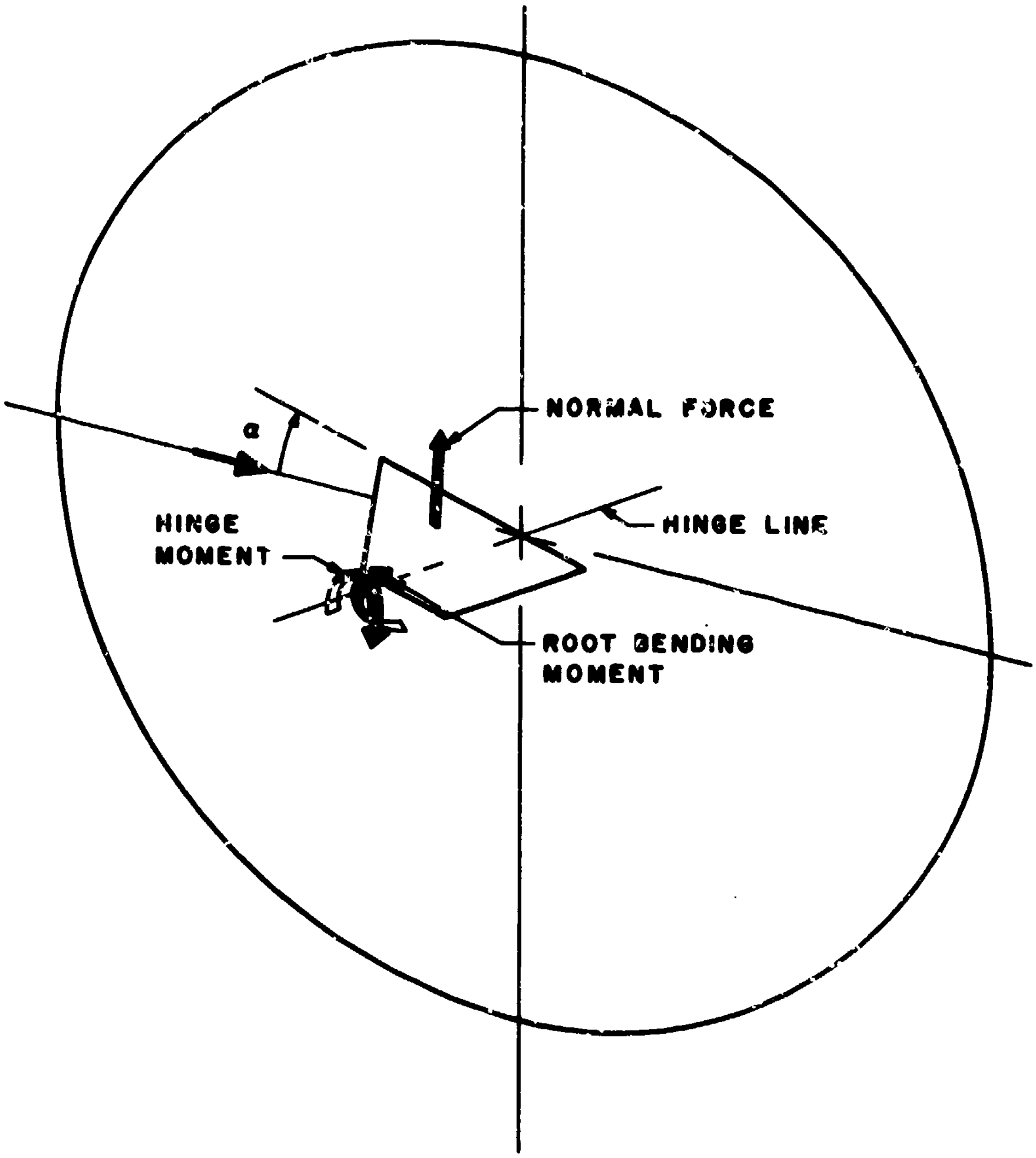


Figure 12. Positive forces and moments for reflection plane models.

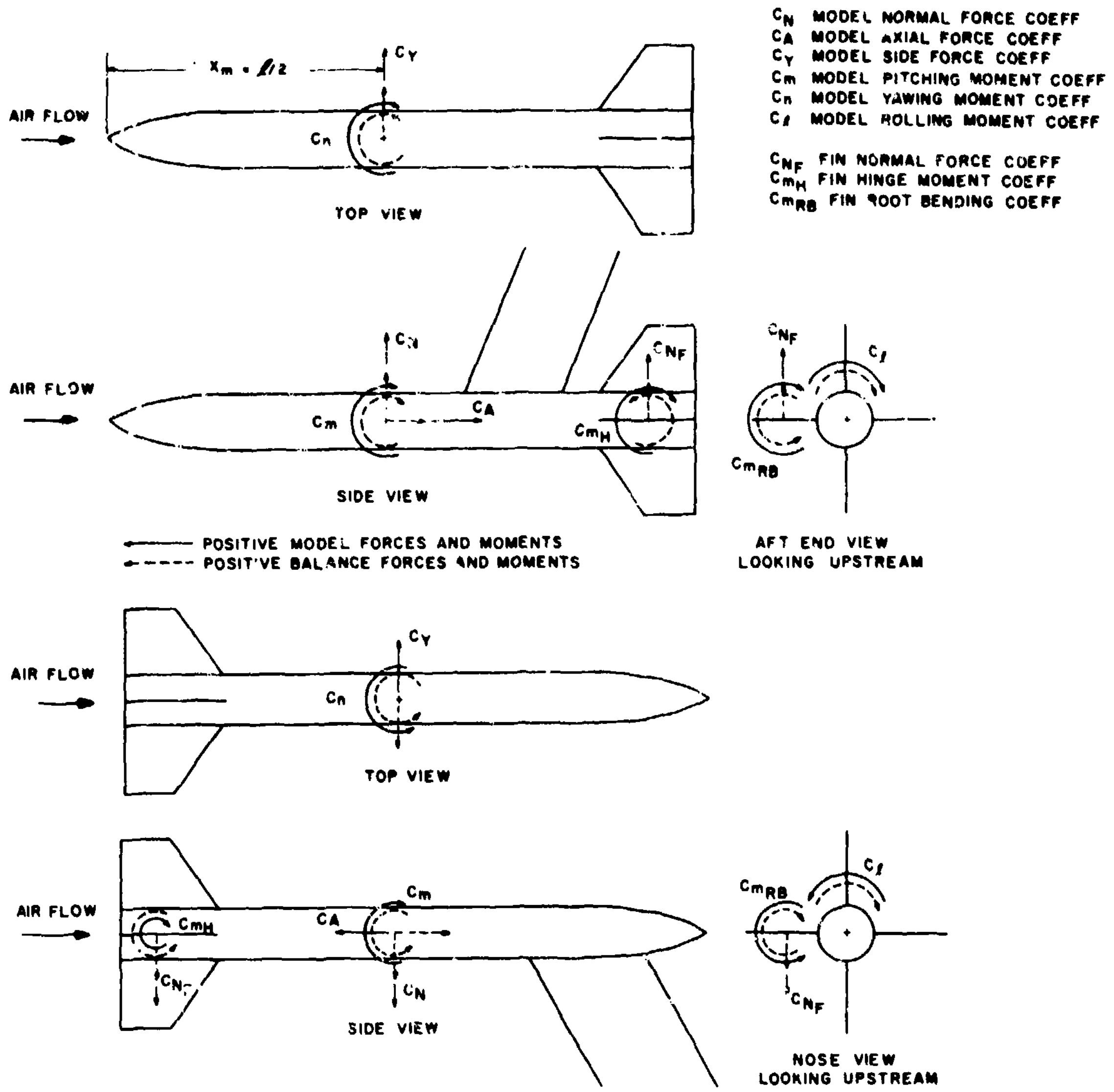


Figure 13. Positive forces and moments for slender body models.

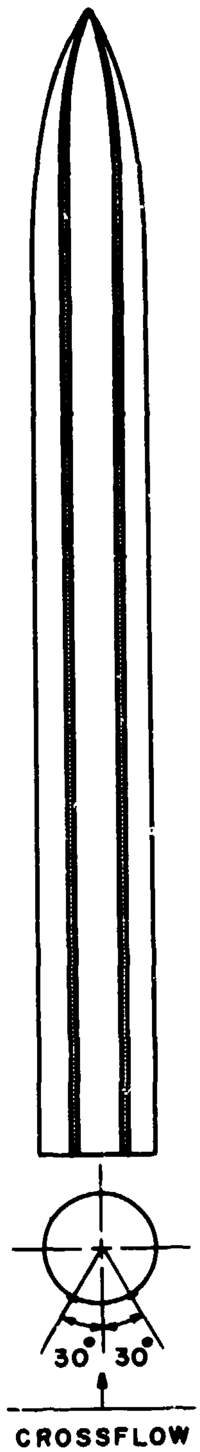


Figure 14. Transition grit pattern.

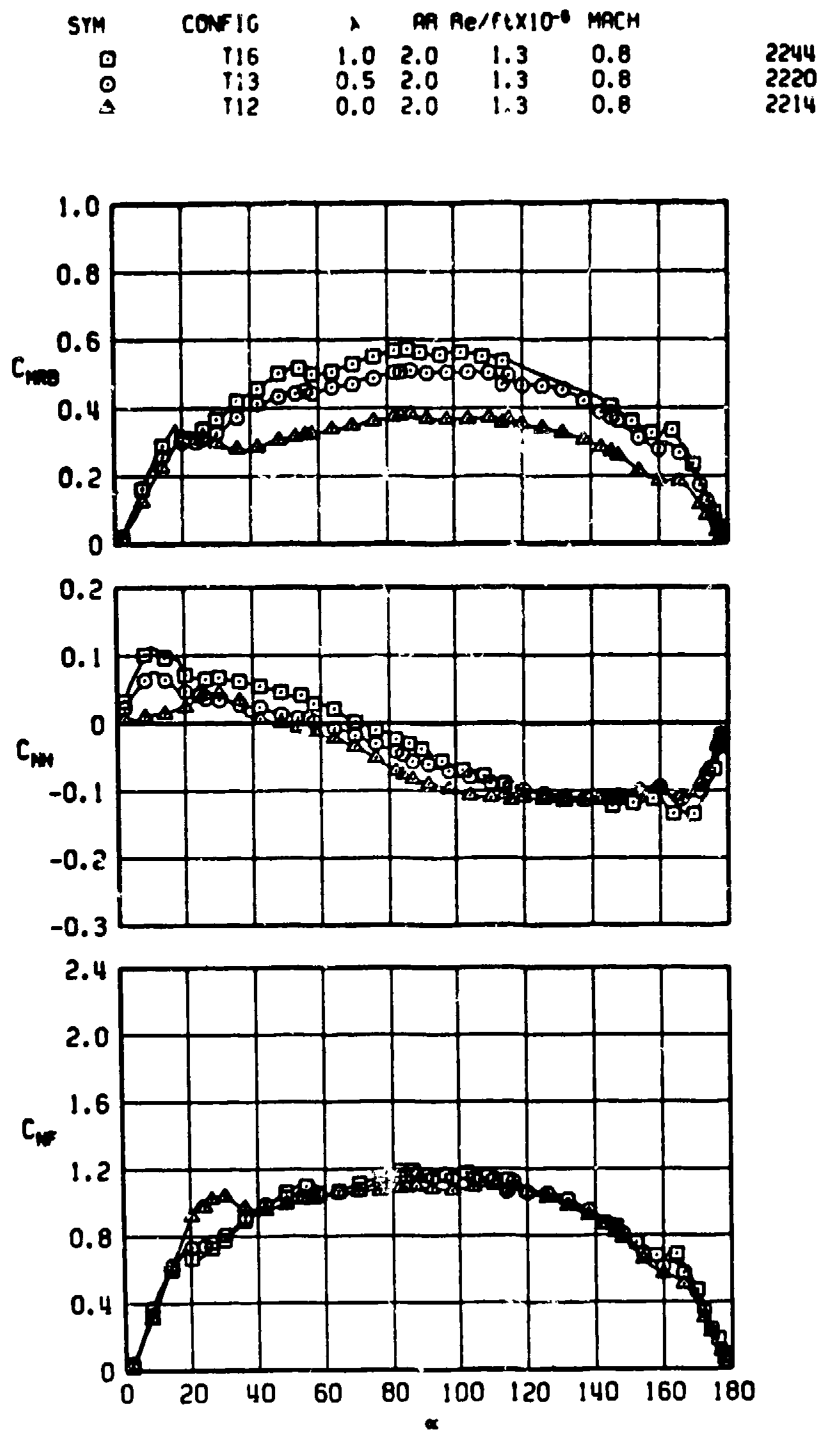


Figure 15. Typical fin alone data for three fins with AR = 2.0 and different taper ratios, tested on reflection plane, M = 0.8.

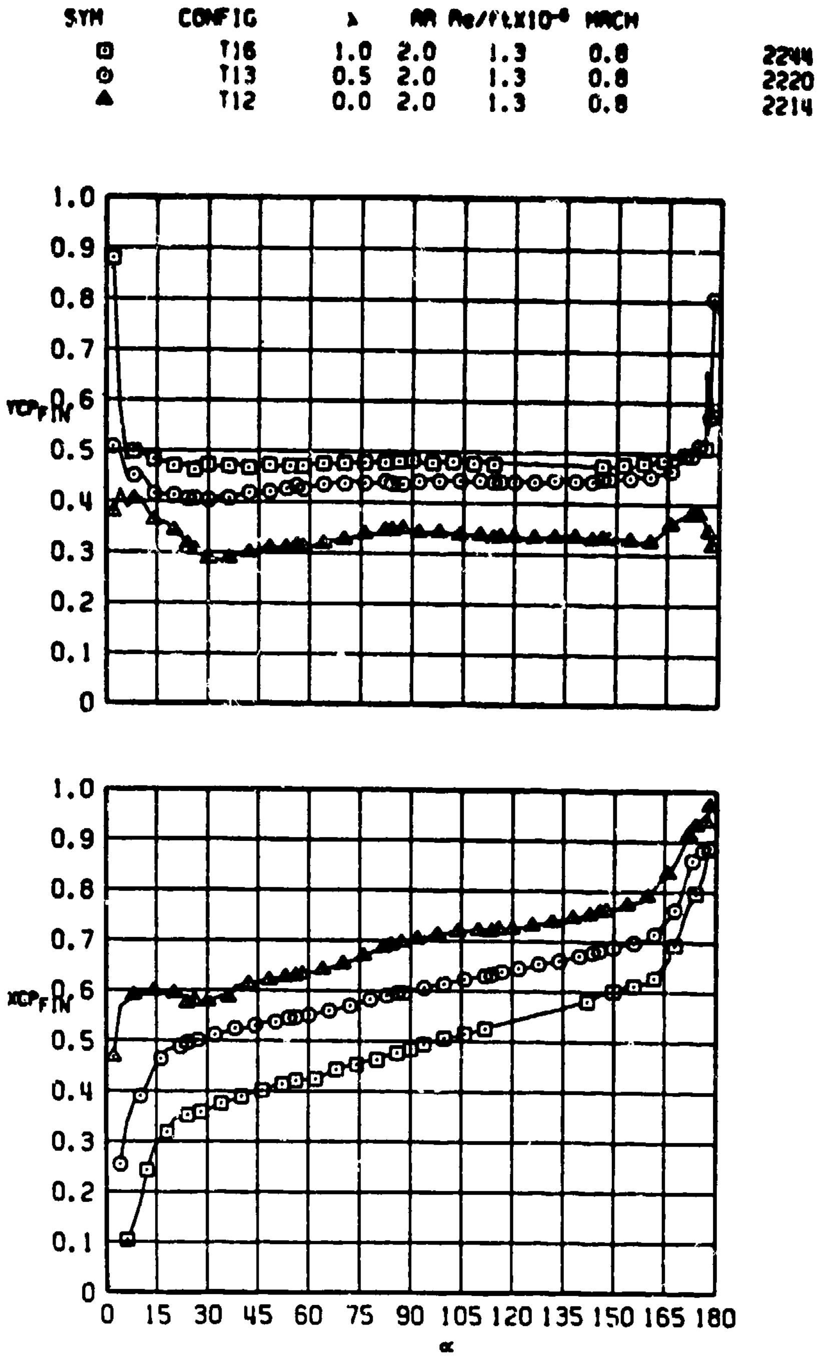


Figure 15. (Continued)

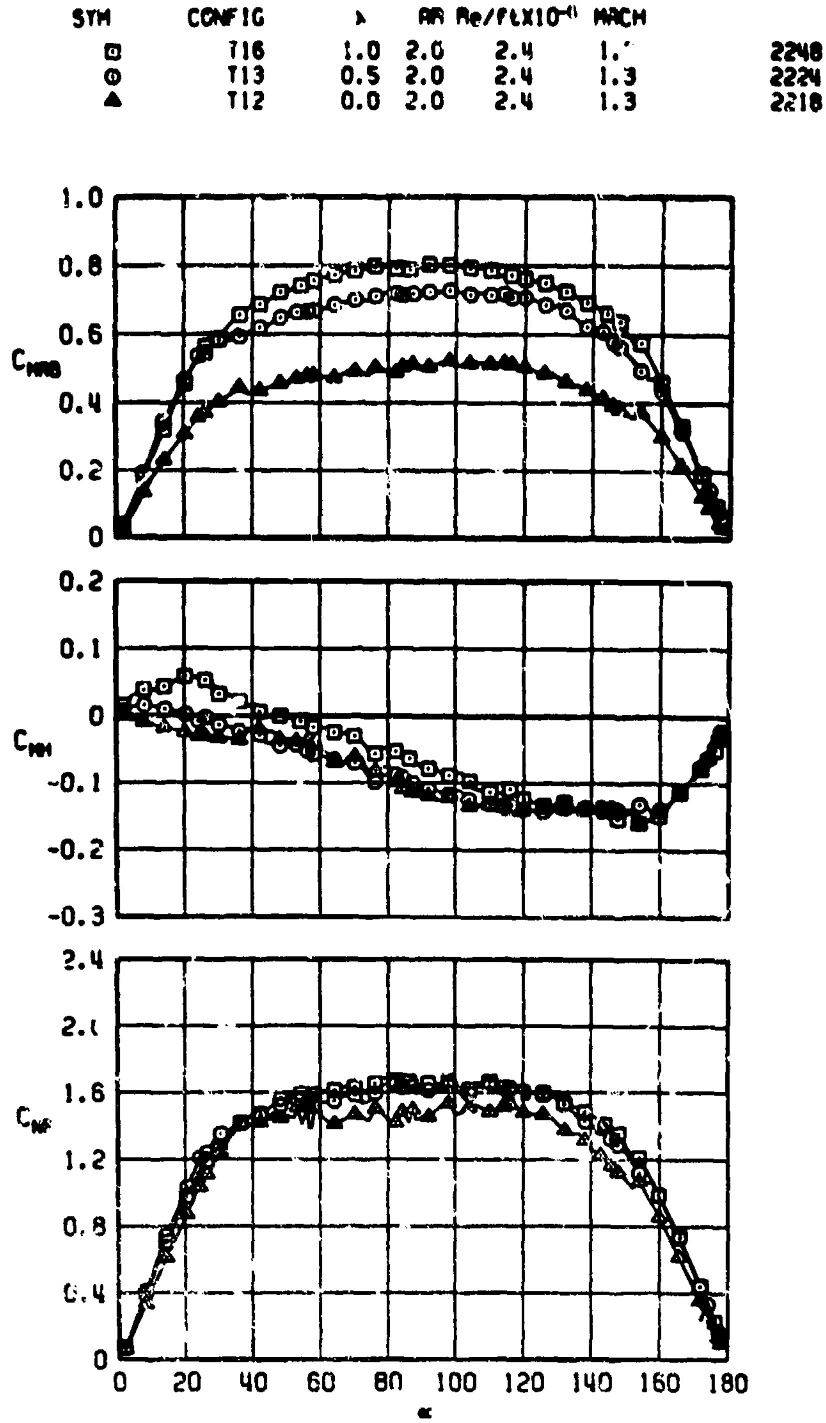


Figure 16. Typical fin alone data for three fins with AR = 2.0 and different taper ratios, tested on reflection plane, M = 1.3.

SYM	CONFIG	λ	AR	Re/ftX10^{-6}	MACH	
⊡	T16	1.0	2.0	2.4	1.3	2248
⊙	T13	0.5	2.0	2.4	1.3	2224
▲	T12	0.0	2.0	2.4	1.3	2218

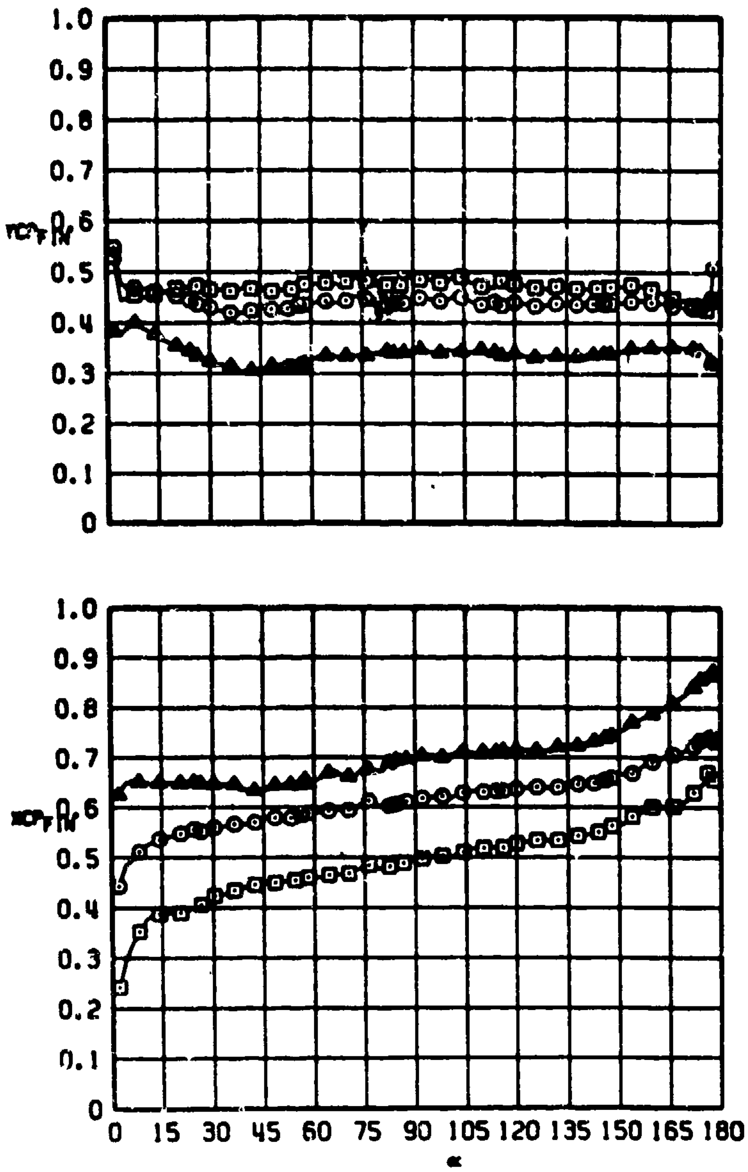


Figure 16. (Continued)

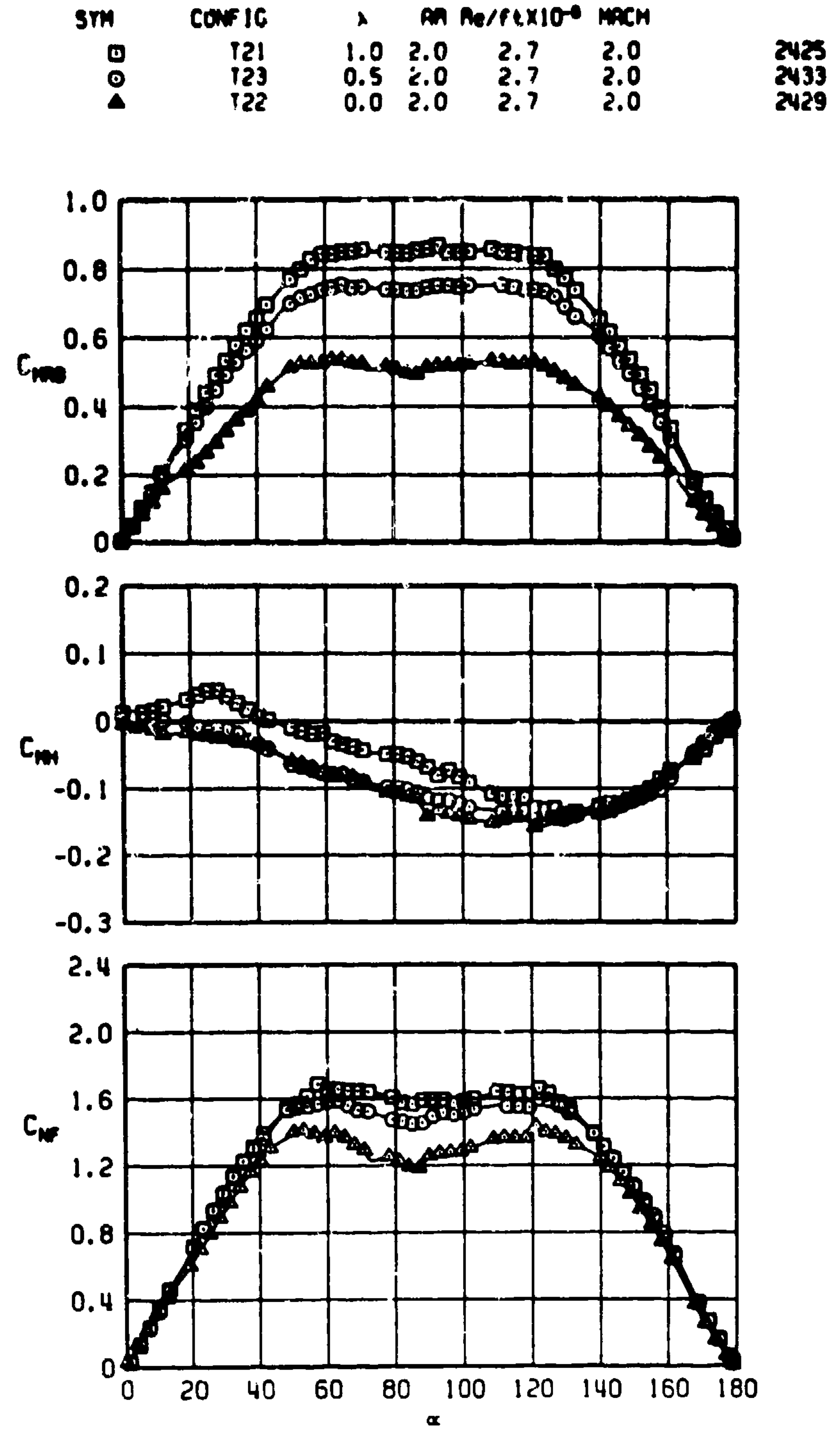


Figure 17. Typical fin alone data for three fins with AR = 2.0 and different taper ratios, tested on reflection plane, M = 2.0.

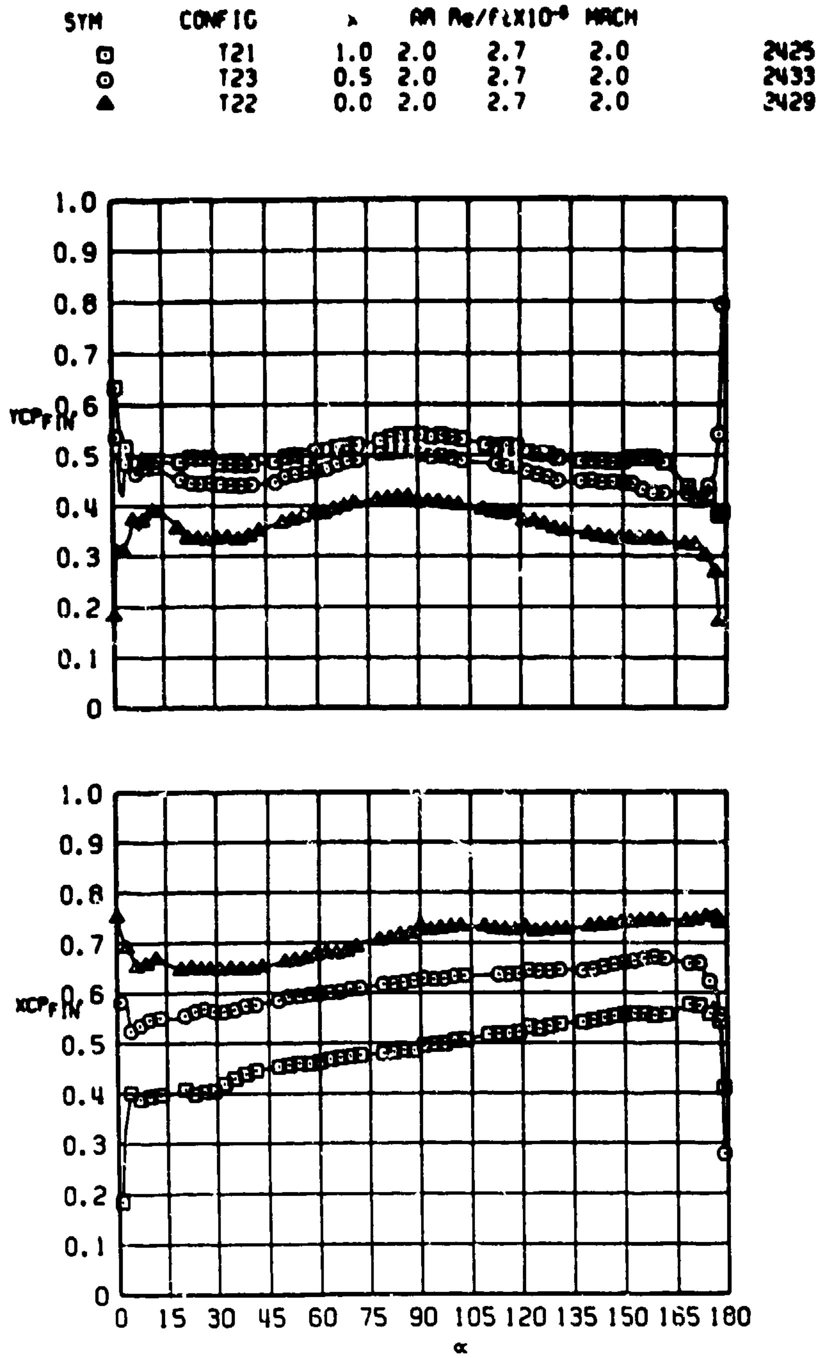


Figure 17. (Continued)

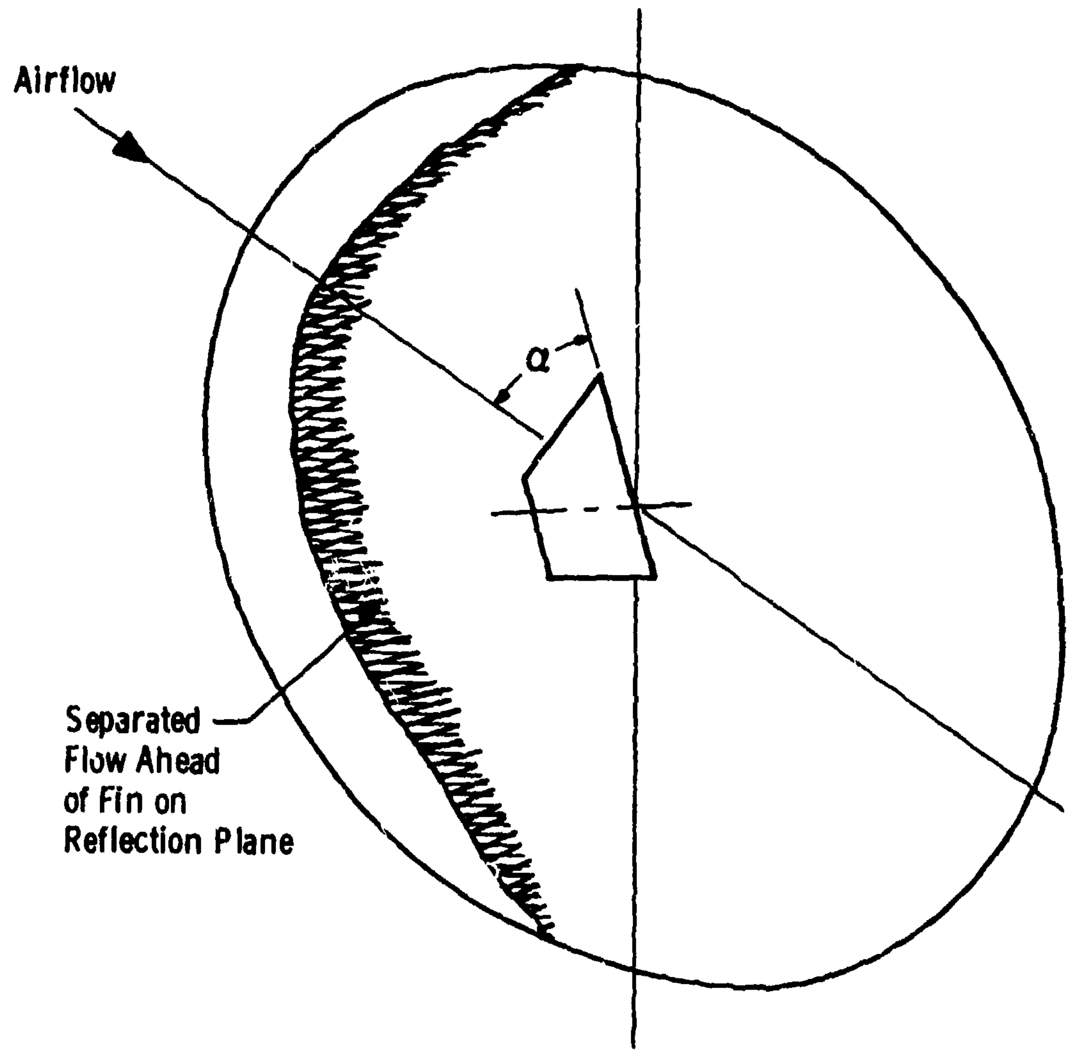


Figure 18. Separated flow region on reflection plane at supersonic Mach numbers.

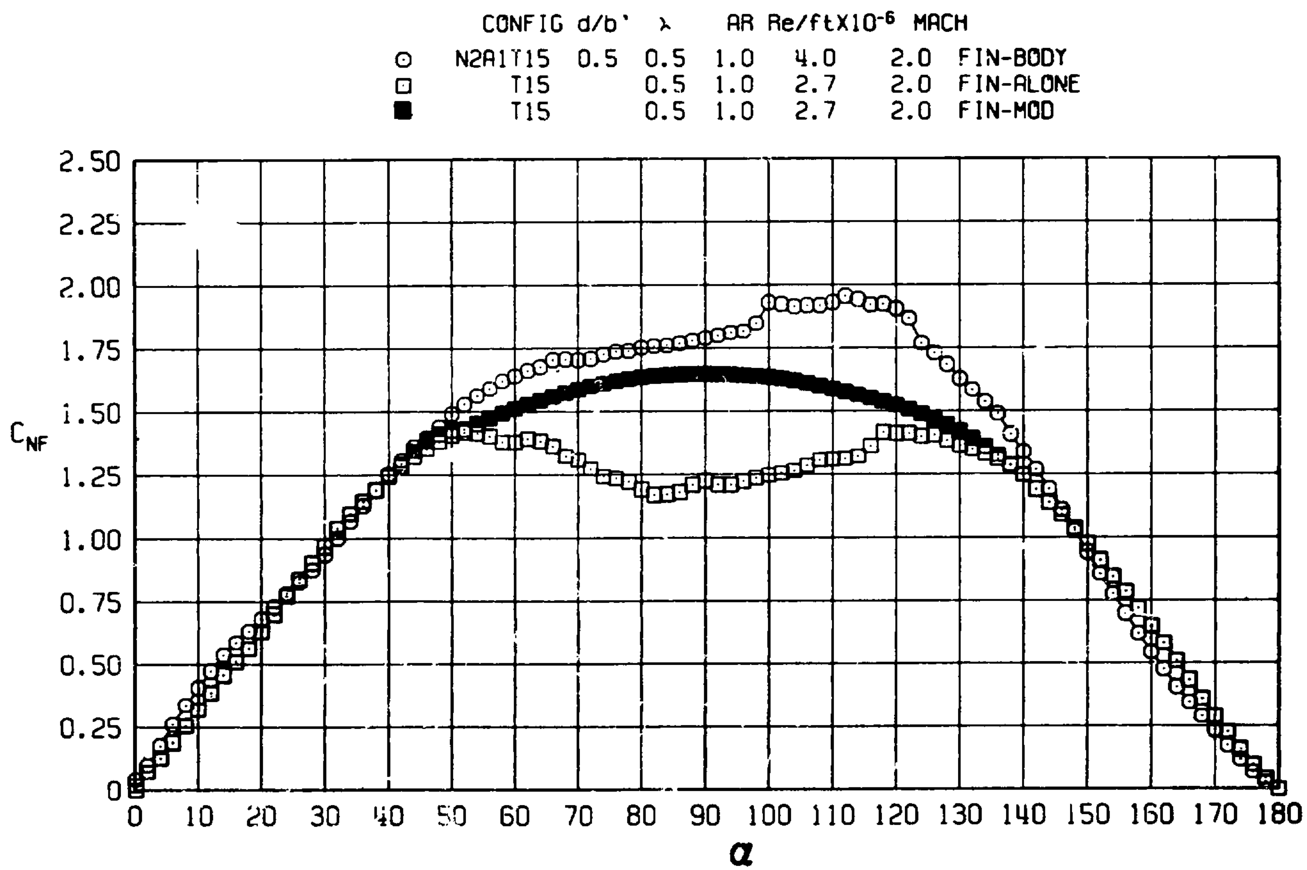


Figure 19. Comparison of measured and modified fin alone normal force with installed fin normal force.

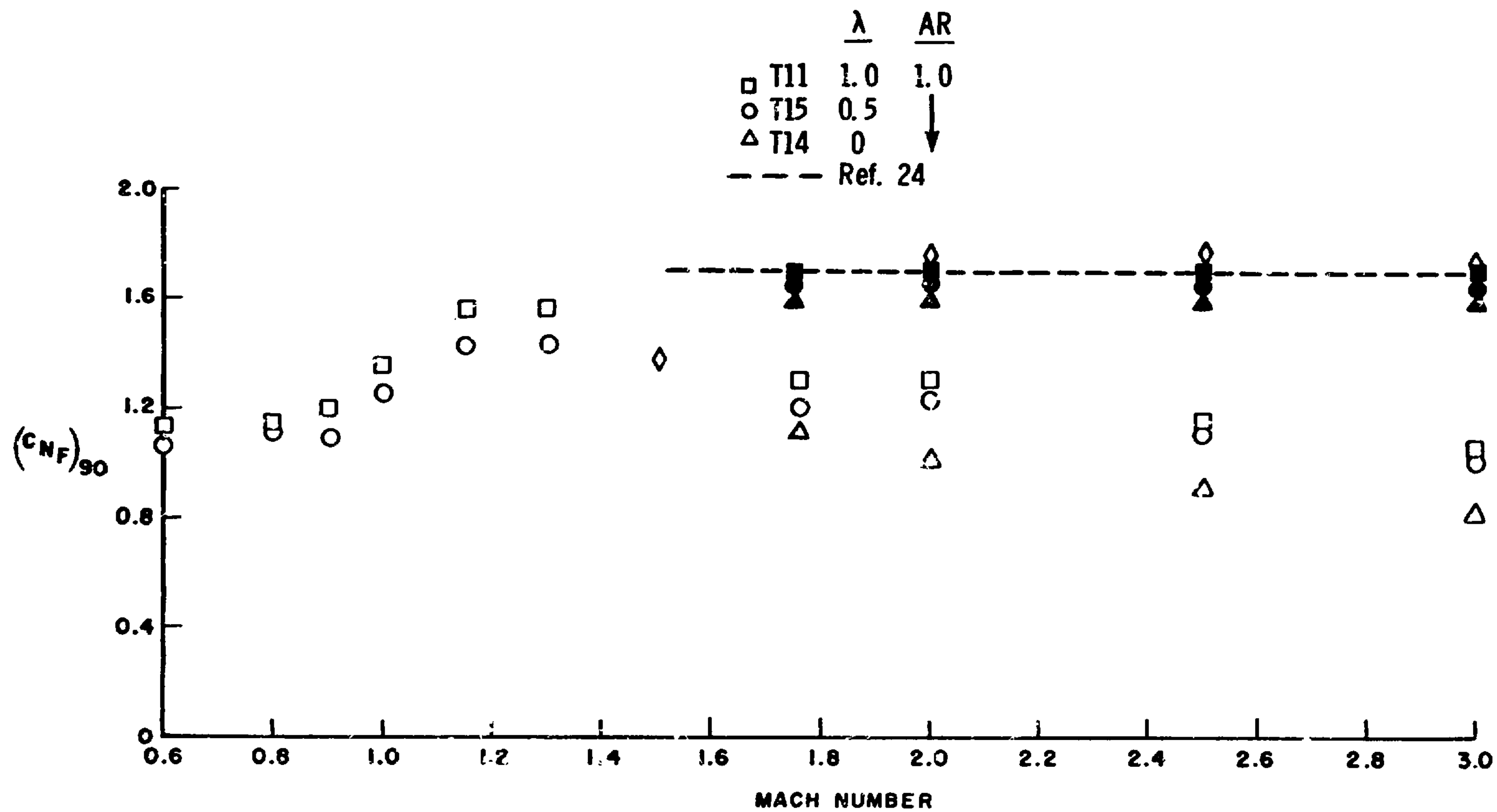


Figure 20. Mach number variation of fin normal force at α = 90 deg.

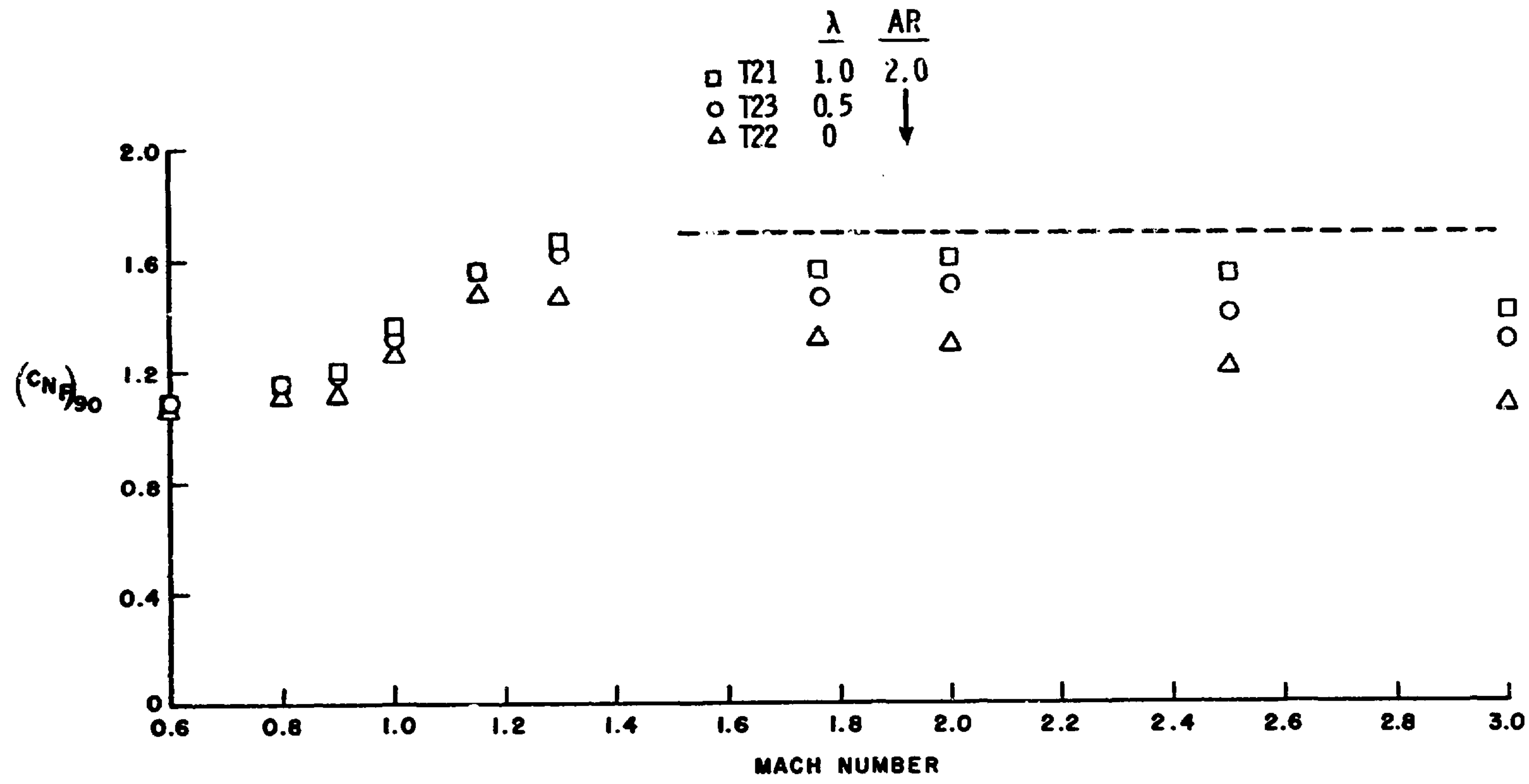


Figure 20. (Continued)

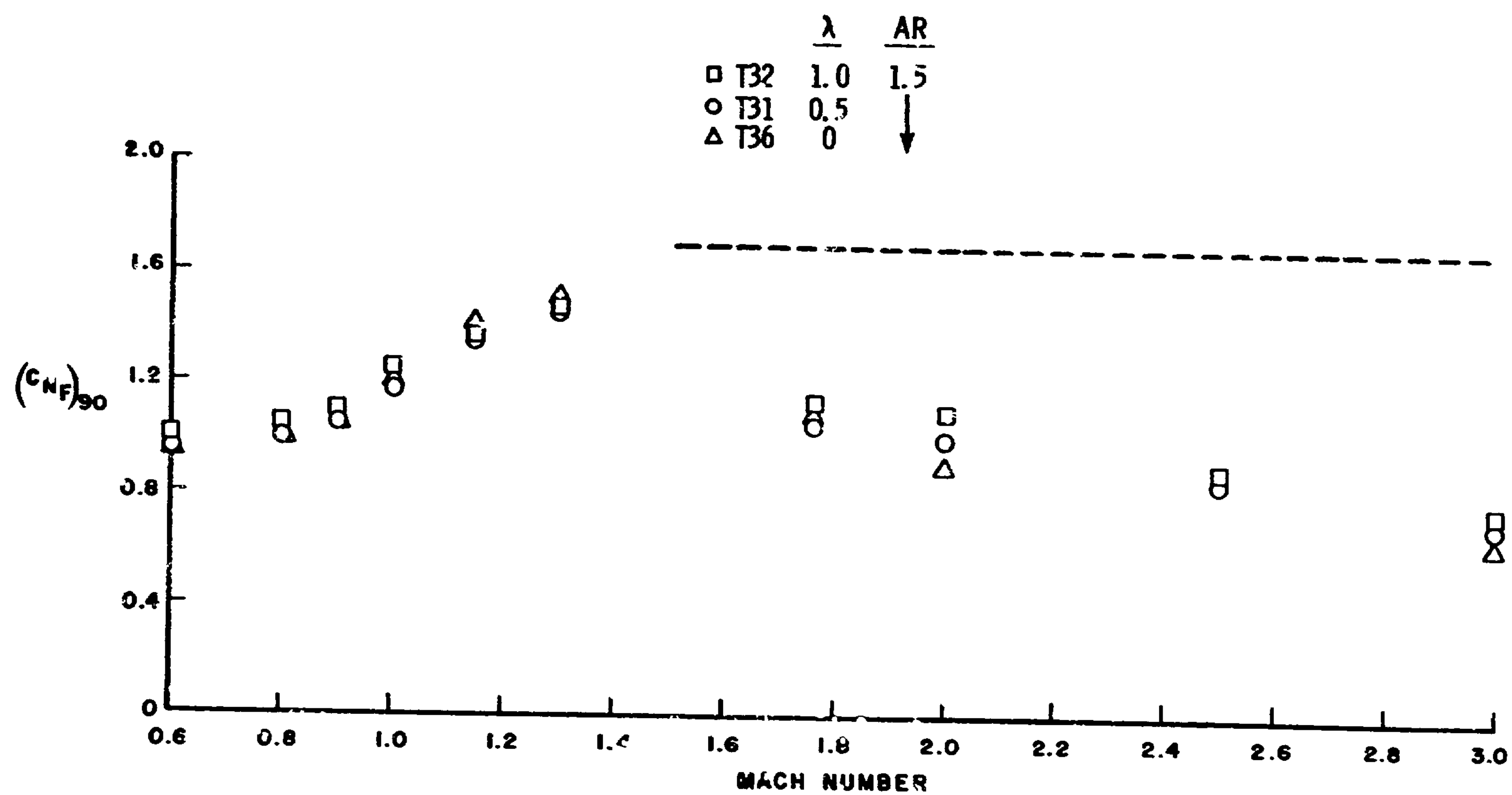


Figure 20. (Continued)

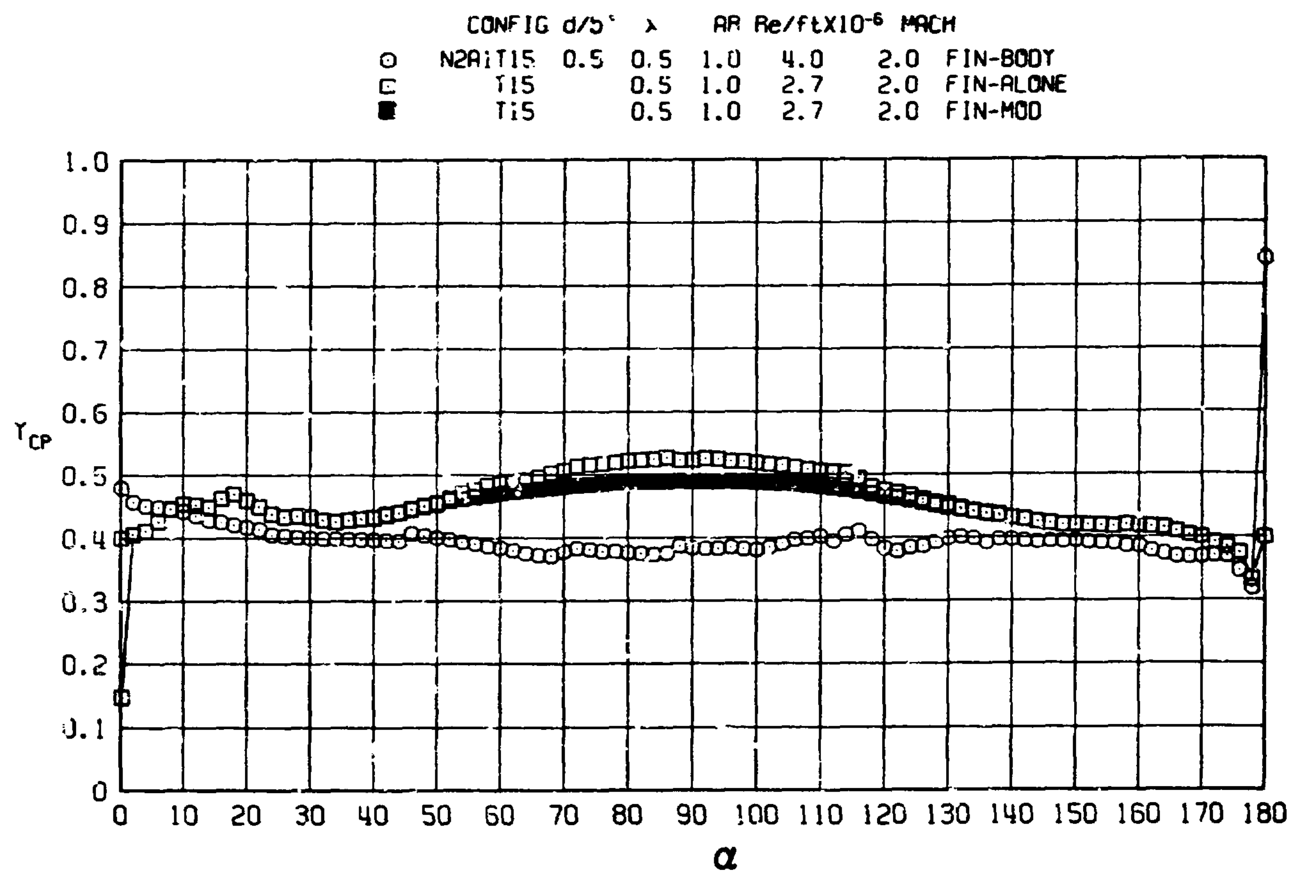


Figure 21. Comparison of measured and modified fin alone Y center of pressure with installed fin Y center of pressure.

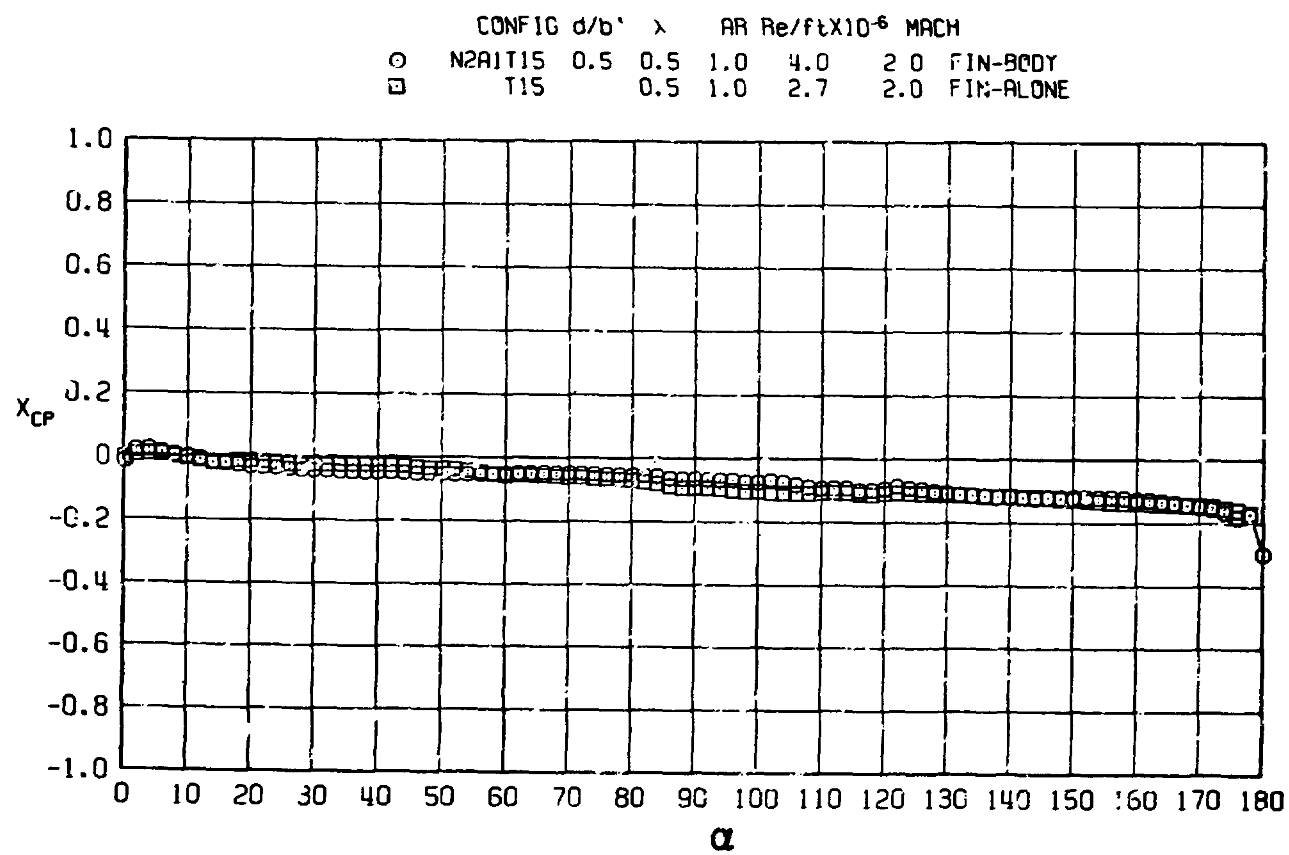


Figure 22. Comparison of measured fin alone X center of pressure with installed fin X center of pressure.

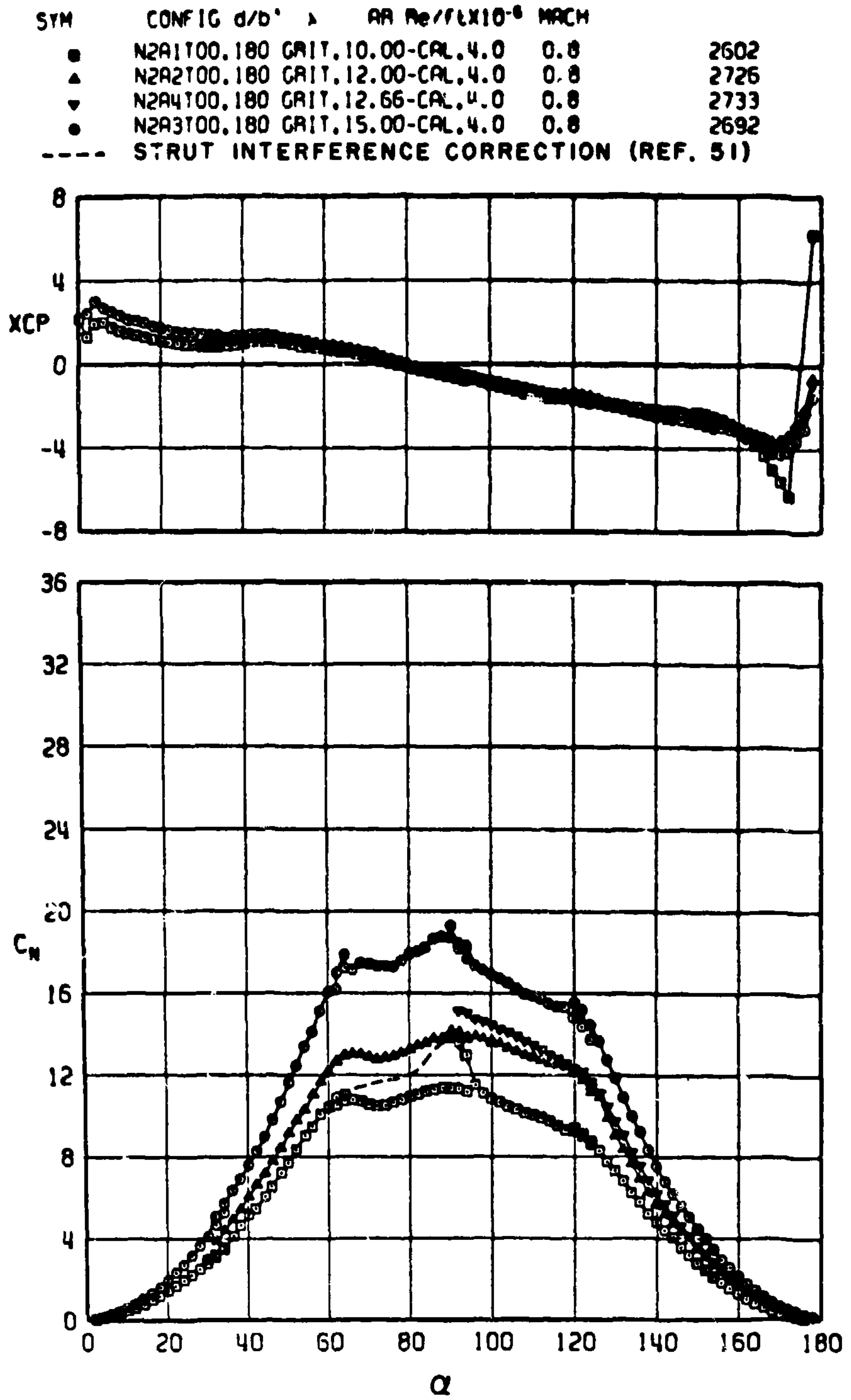


Figure 23. Typical body alone data for four different body lengths, M = 0.8.

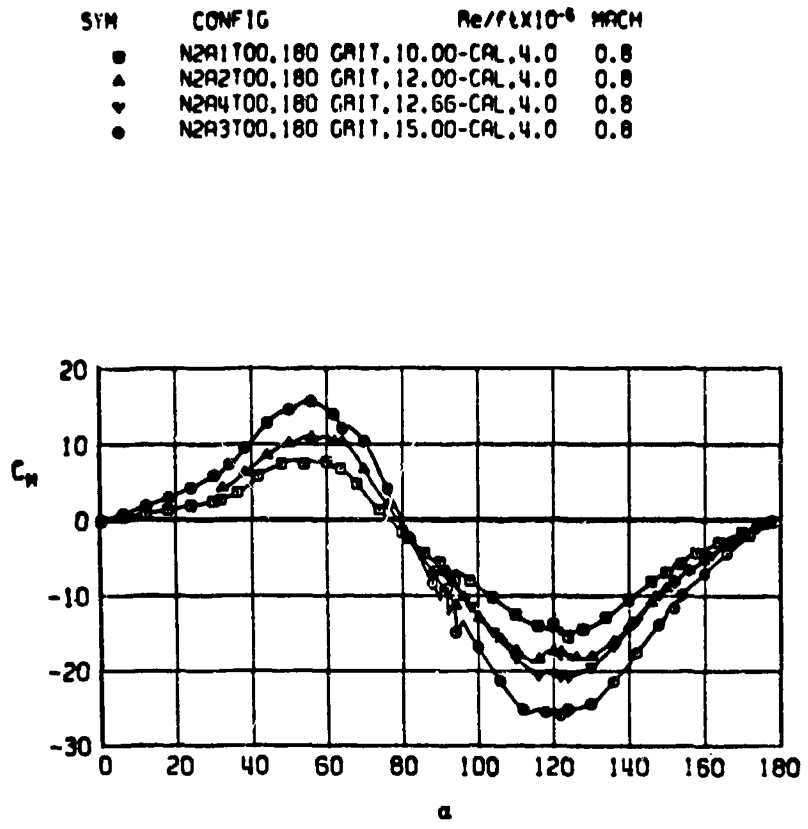


Figure 23. (Continued)

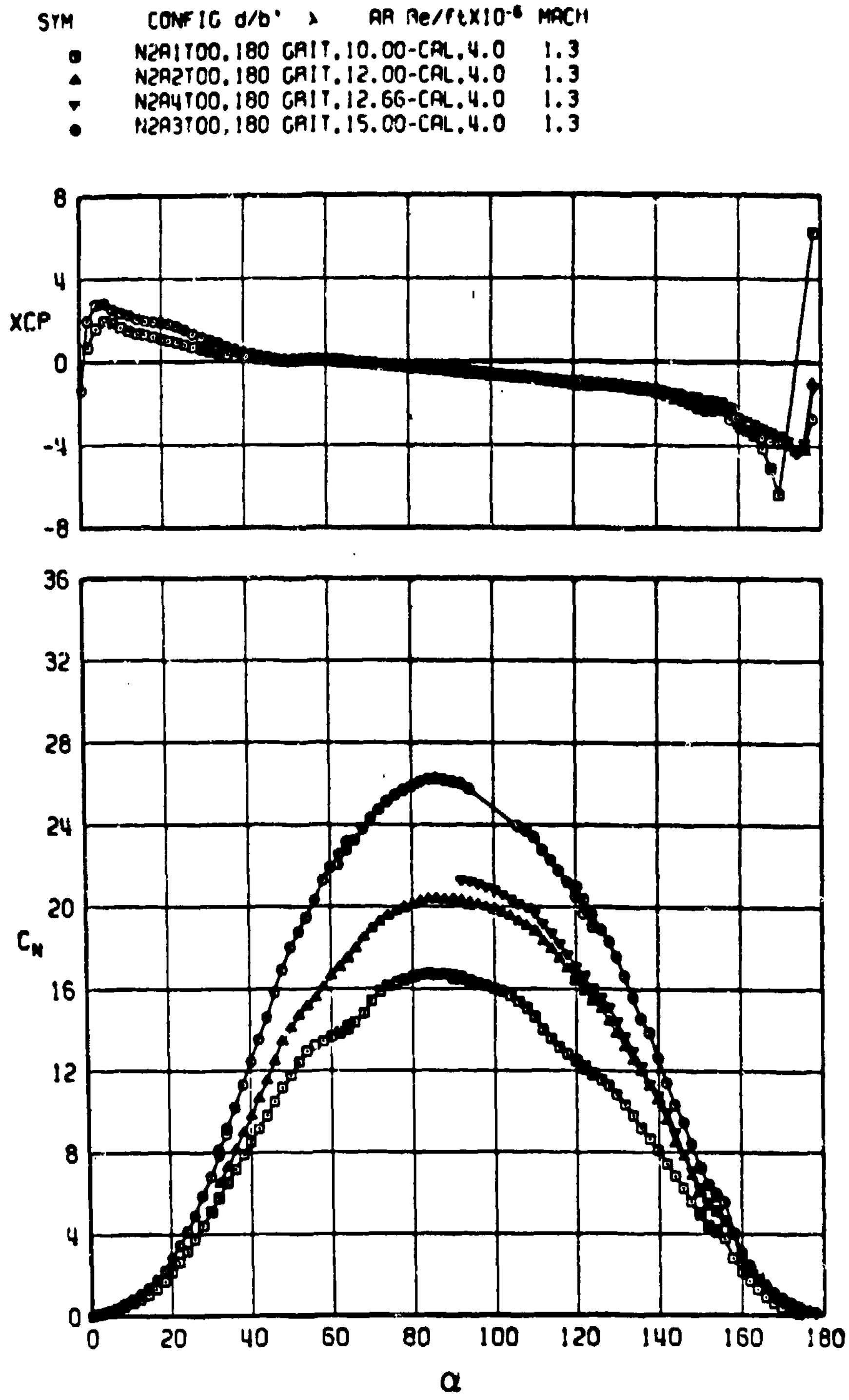


Figure 24. Typical body alone data for four different body lengths, M = 1.3.

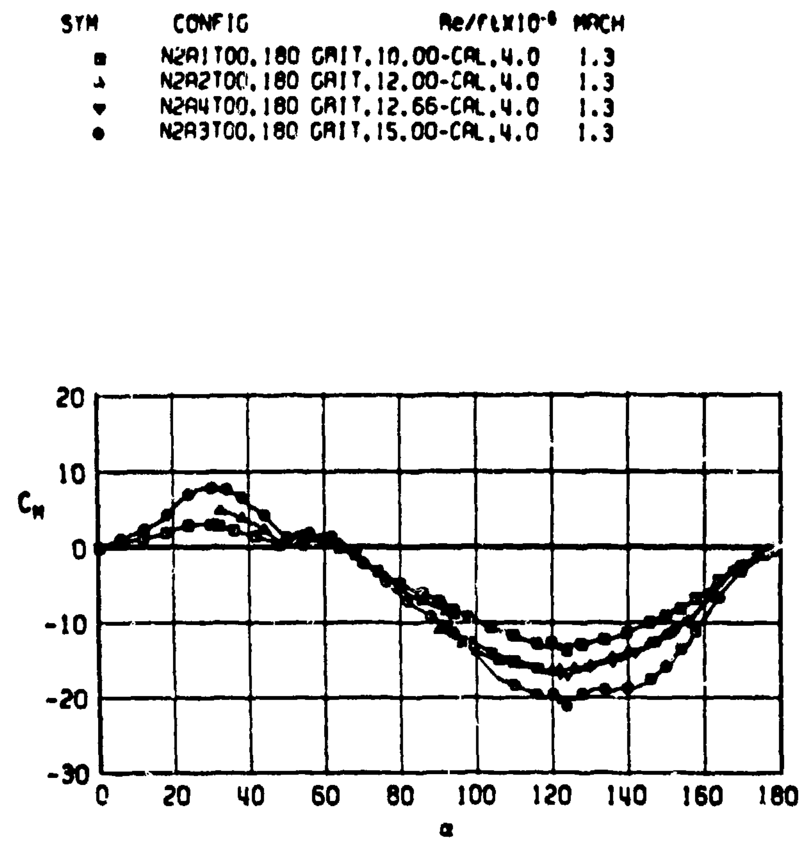


Figure 24. (Continued)

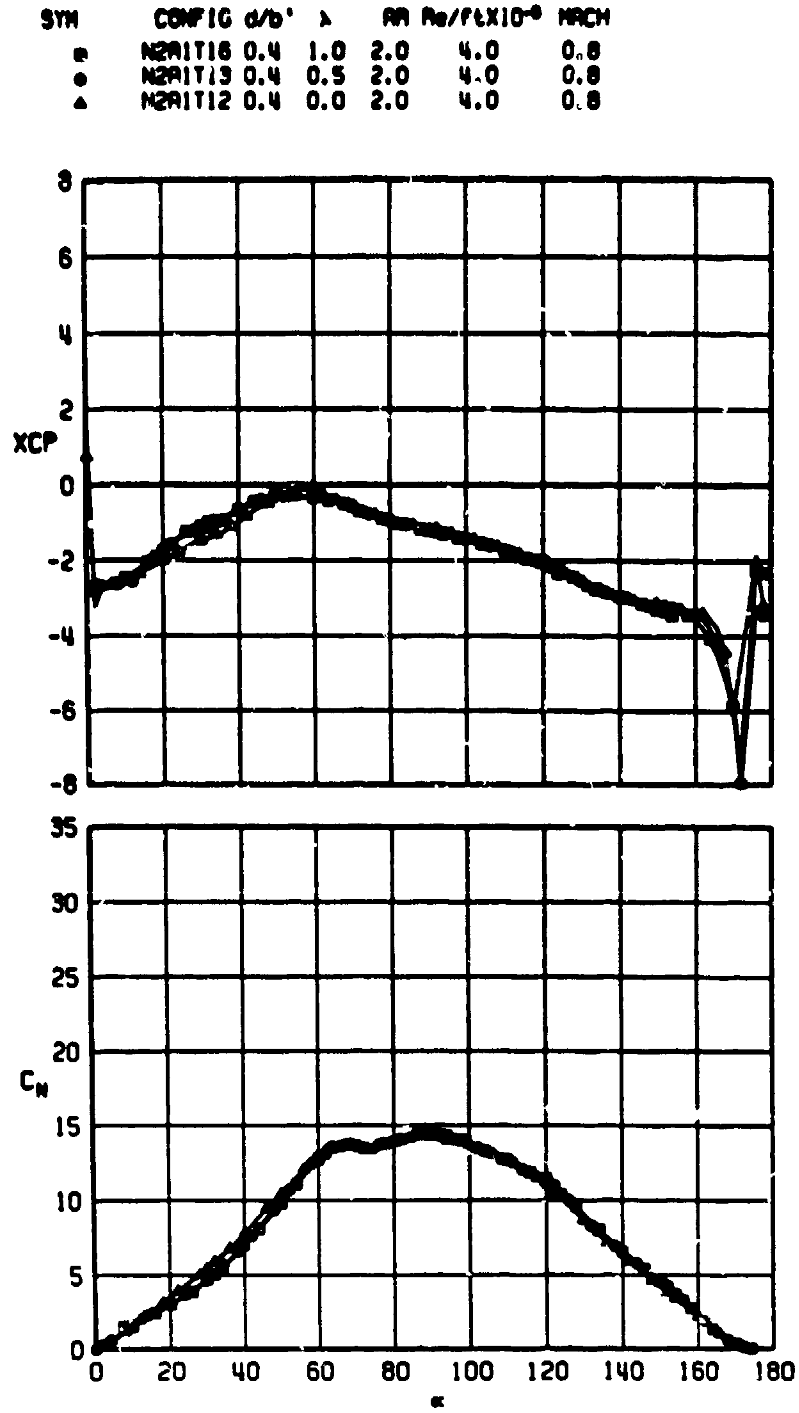


Figure 25. Typical body plus fin data for three finned bodies having AR = 2.0 and d/b' = 0.4 fins with different taper ratios, M = 0.8.

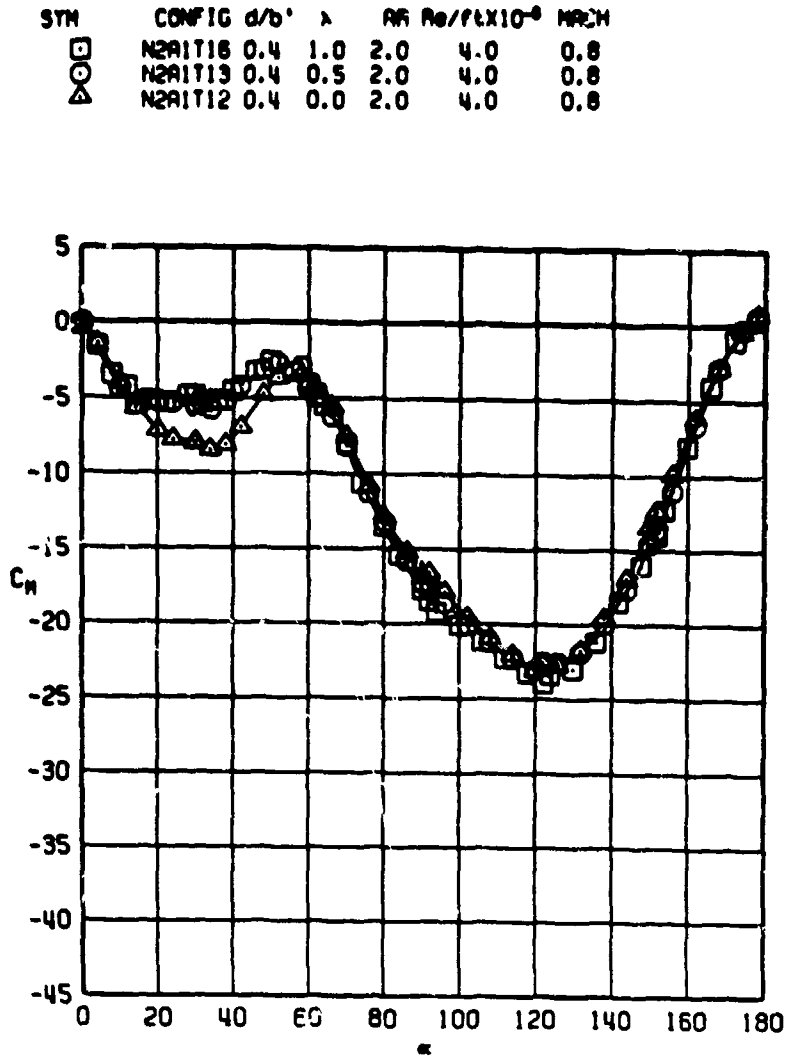


Figure 25. (Continued)

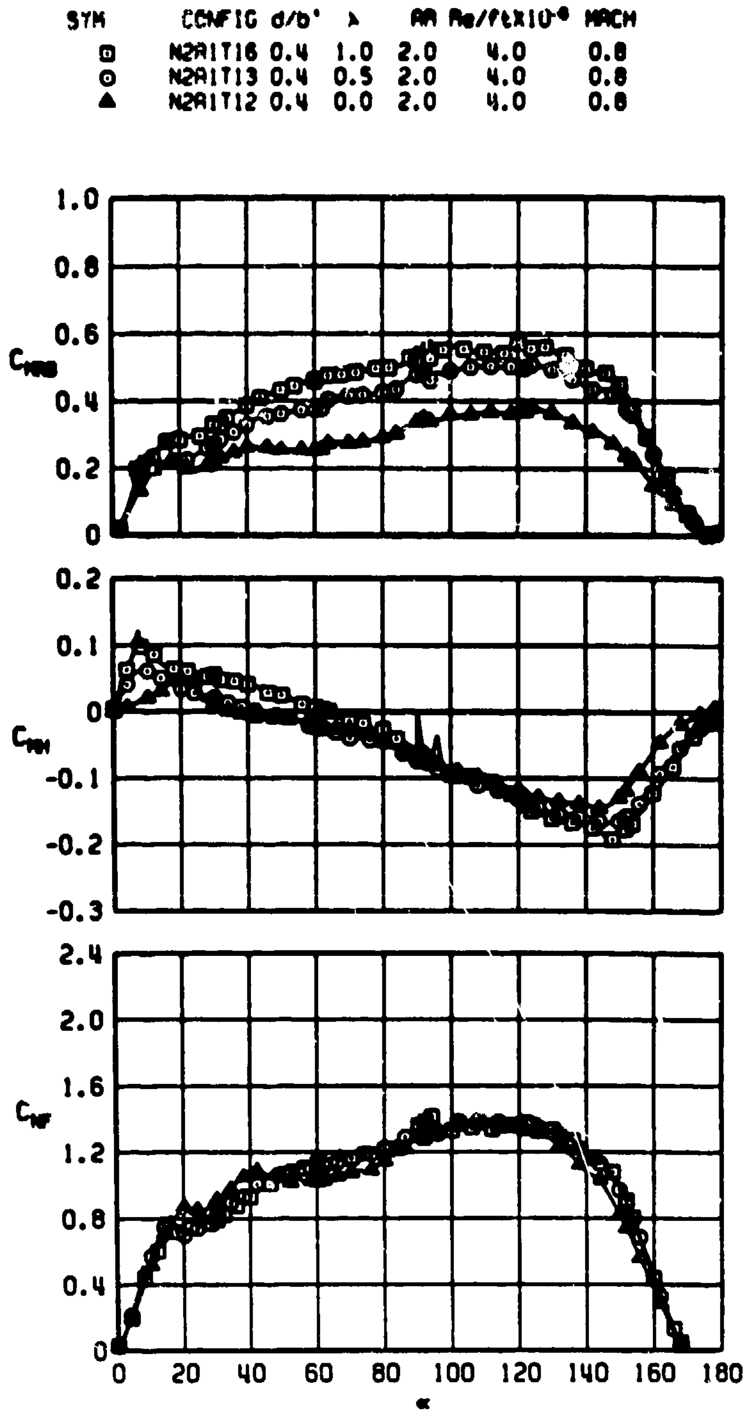


Figure 25. (Continued)

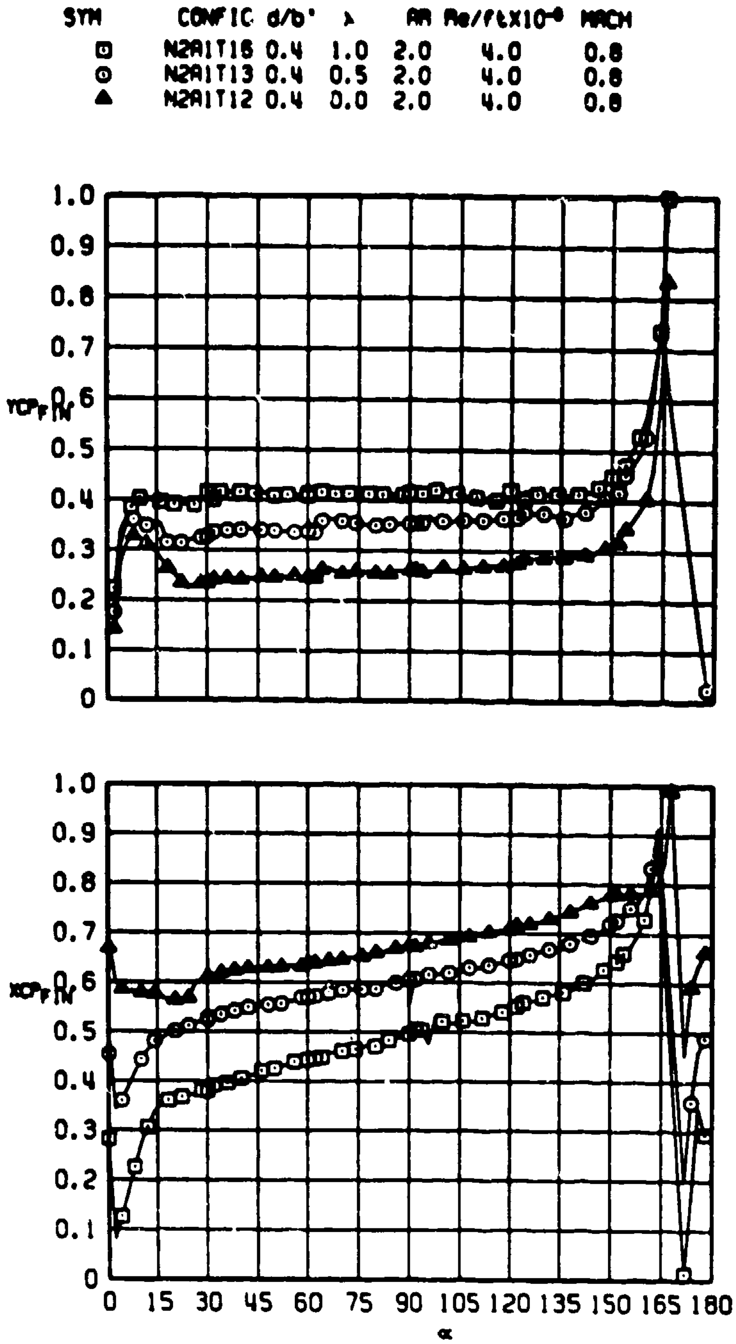


Figure 25. (Continued)

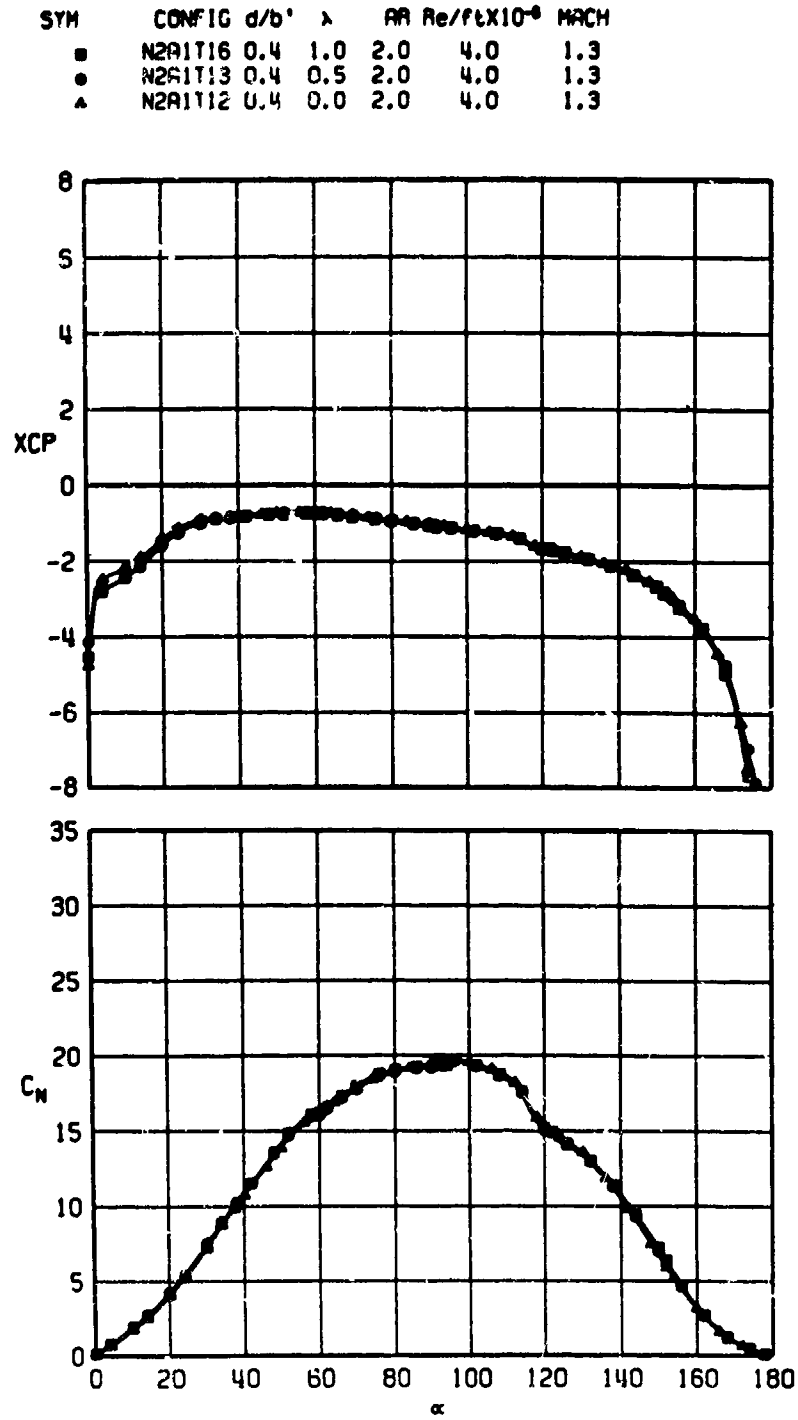


Figure 26. Typical body plus fin data for three finned bodies having AR = 2.0 and d/b' = 0.4 fins with different taper ratios, M = 1.3.

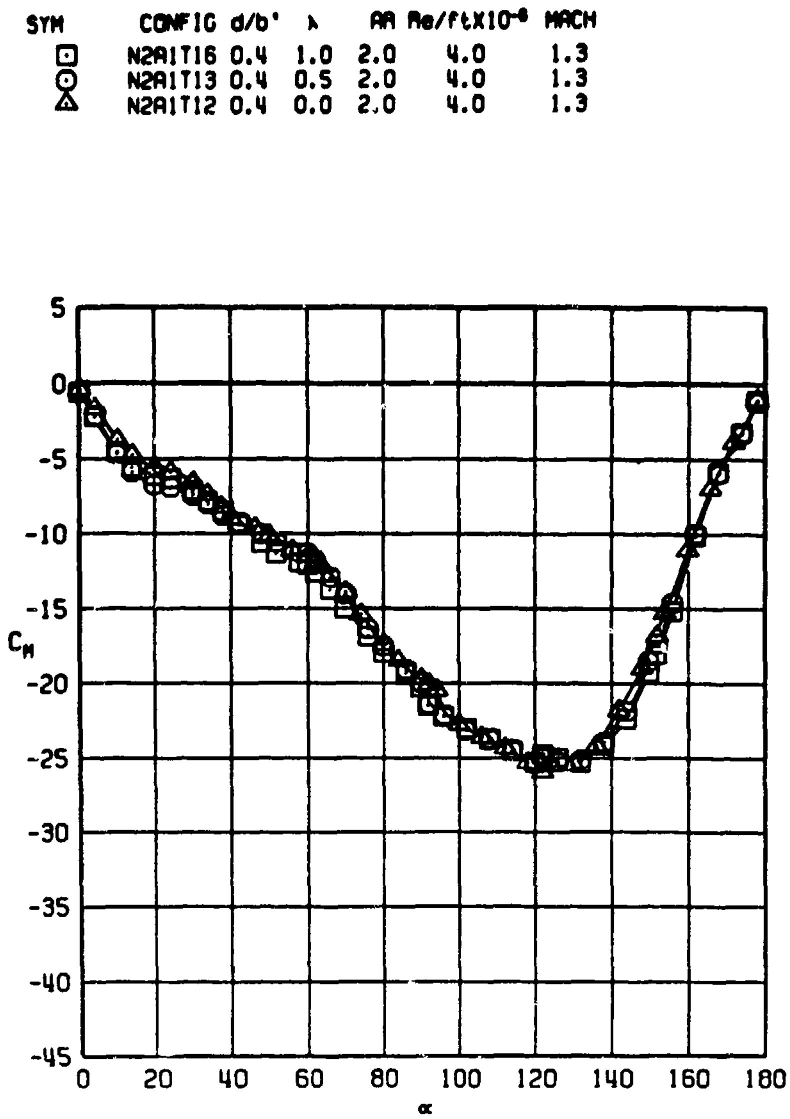


Figure 26. (Continued)

SYM	CONFIG	d/b'	λ	AR	Re/ftX10^{-6}	MACH
⊡	N2A1T16	0.4	1.0	2.0	4.0	1.3
⊙	N2A1T13	0.4	0.5	2.0	4.0	1.3
△	N2A1T12	0.4	0.0	2.0	4.0	1.3

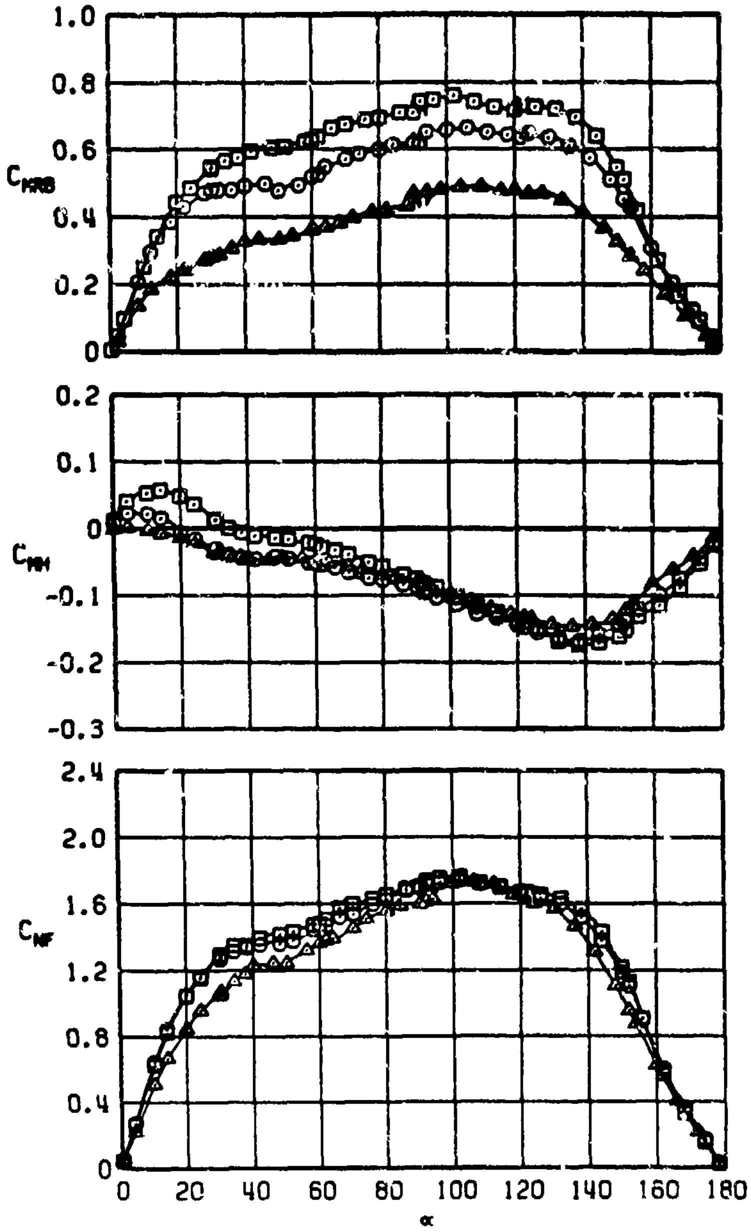


Figure 26. (Continued)

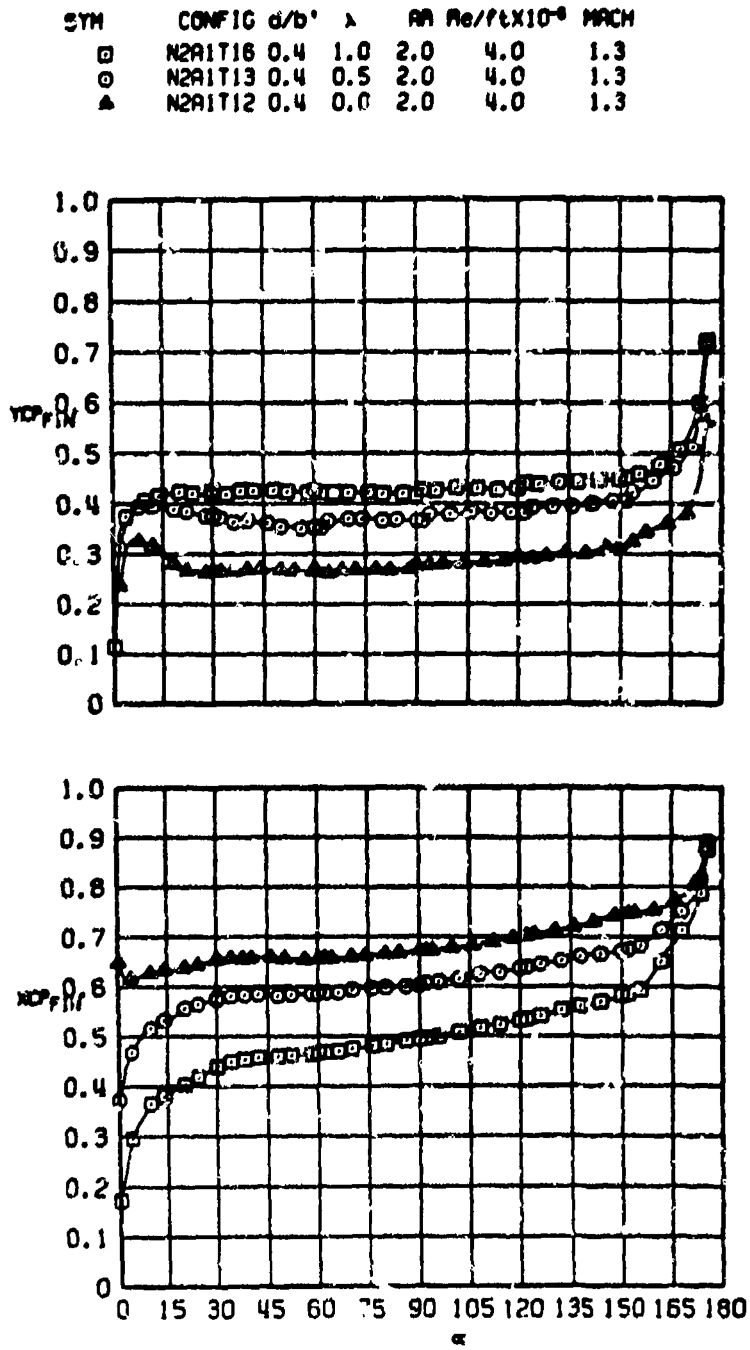


Figure 26. (Continued)

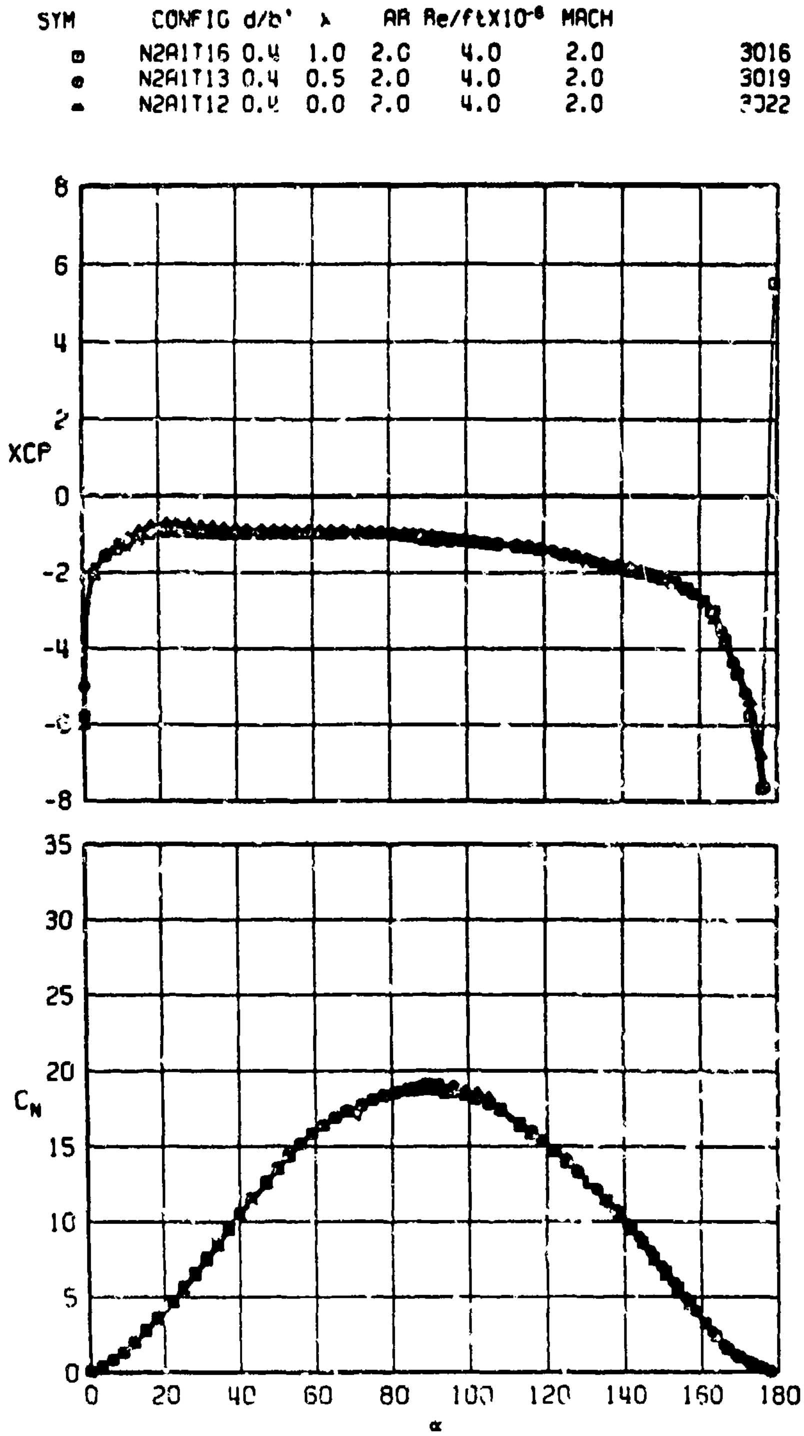


Figure 27. Typical body plus fin data for three finned bodies having AR = 2.0 and d/b' = 0.4 fins with different taper ratios, M = 2.0.

SYM	CONFIG	d/b'	λ	AR	Re/ftX10⁻⁶	MACH	
⊡	N2A1T16	0.4	1.0	2.0	4.0	2.0	3016
⊙	N2A1T13	0.4	0.5	2.0	4.0	2.0	3019
△	N2A1T12	0.4	0.0	2.0	4.0	2.0	3022

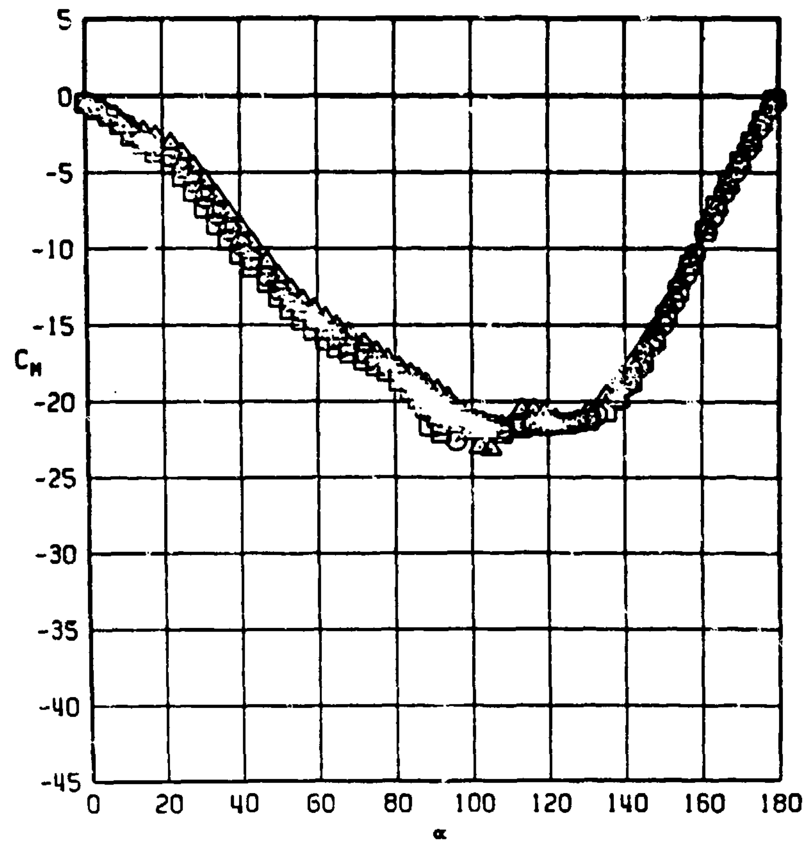


Figure 27. (Continued)

SYM	CONFIG	d/b'	λ	AR	Re/ftX10⁻⁶	MACH	
□	N2A1T16	0.4	1.0	2.0	4.0	2.0	3016
⊙	N2A1T13	0.4	0.5	2.0	4.0	2.0	3019
△	N2A1T12	0.4	0.0	2.0	4.0	2.0	3022

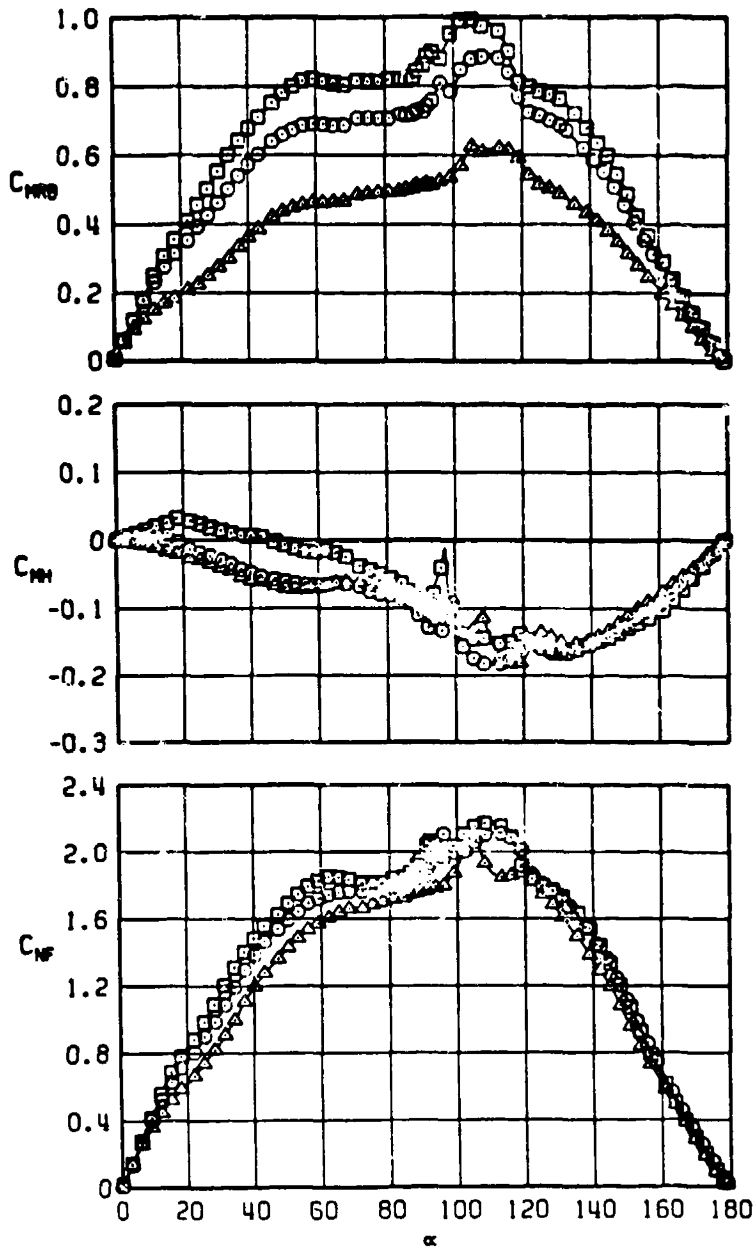


Figure 27. (Continued)

SYM	CONFIG	d/b'	λ	AR	Re/ftX10^-6	MACH	
⊡	N2A1T16	0.4	1.0	2.0	4.0	2.0	3016
⊙	N2A1T13	0.4	0.5	2.0	4.0	2.0	3019
△	N2A1T12	0.4	0.0	2.0	4.0	2.0	3022

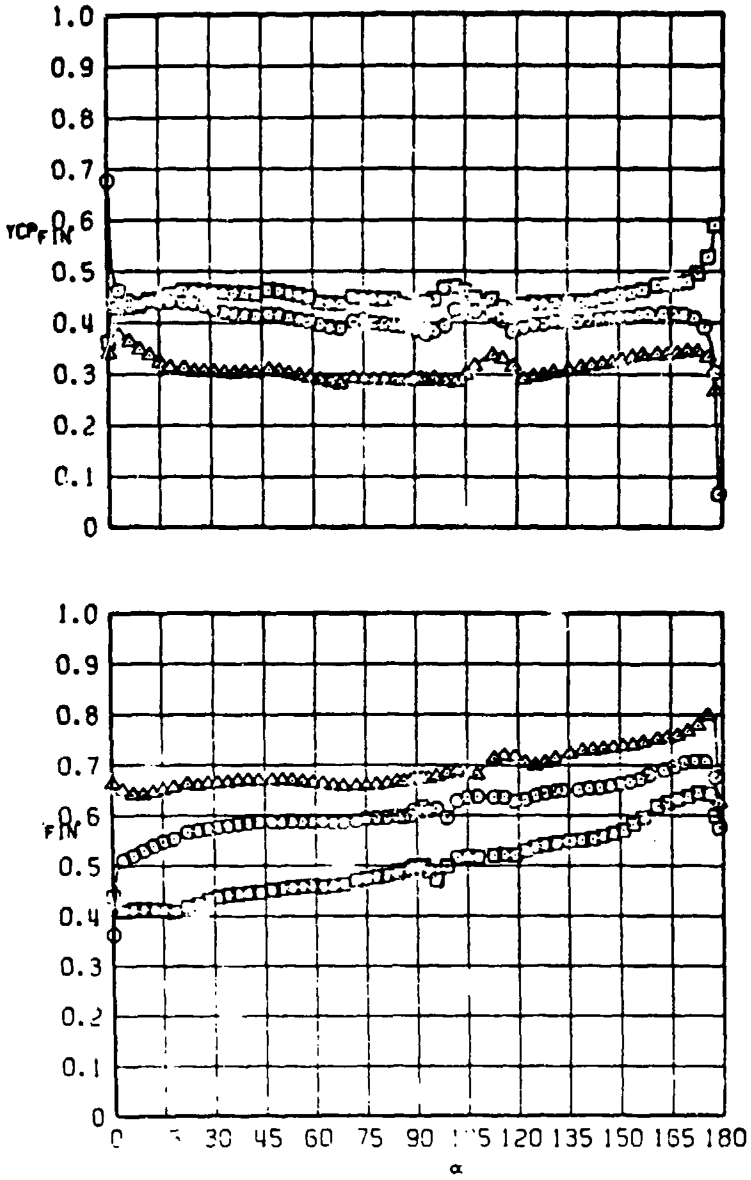


Figure 27. (Continued)

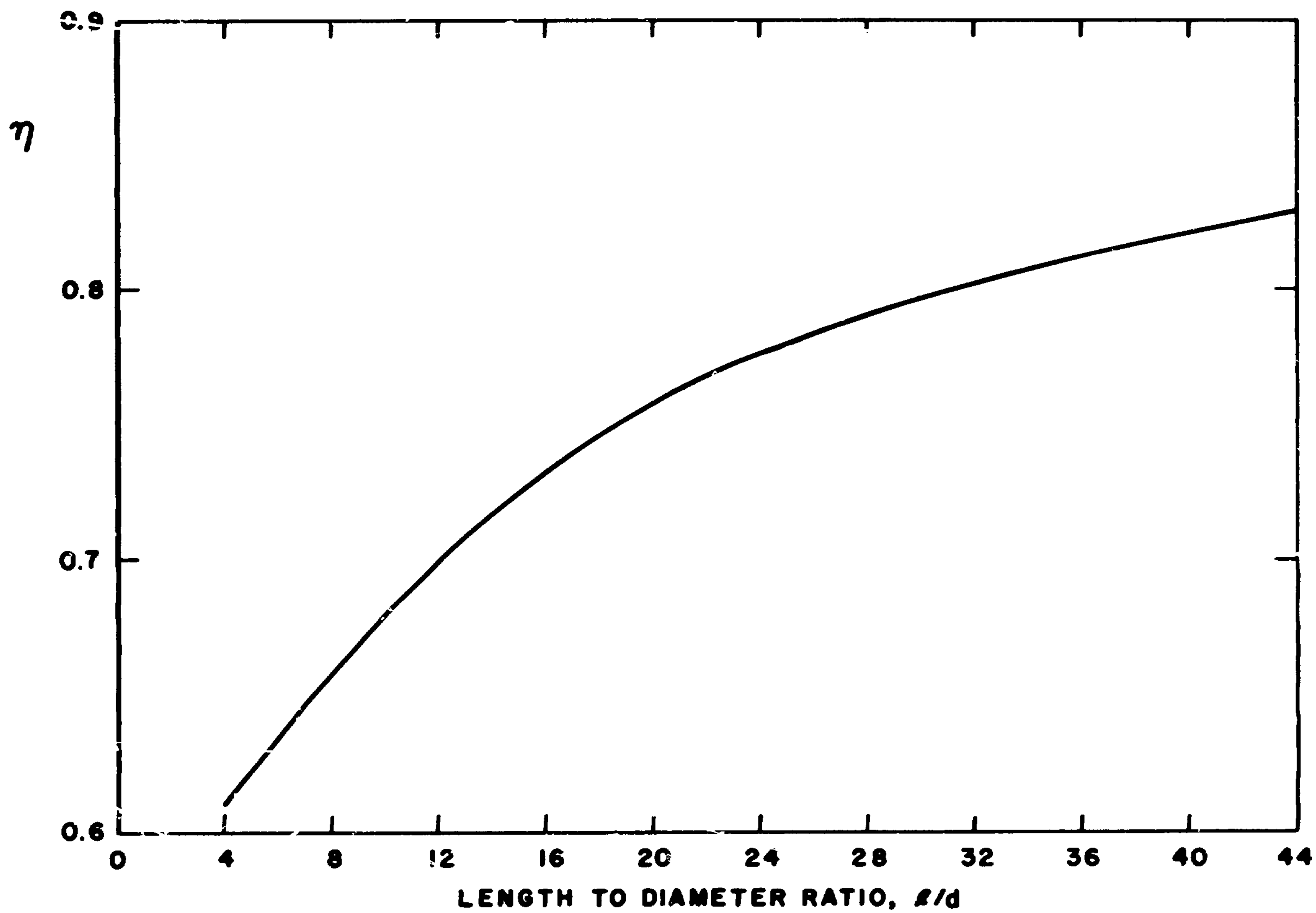
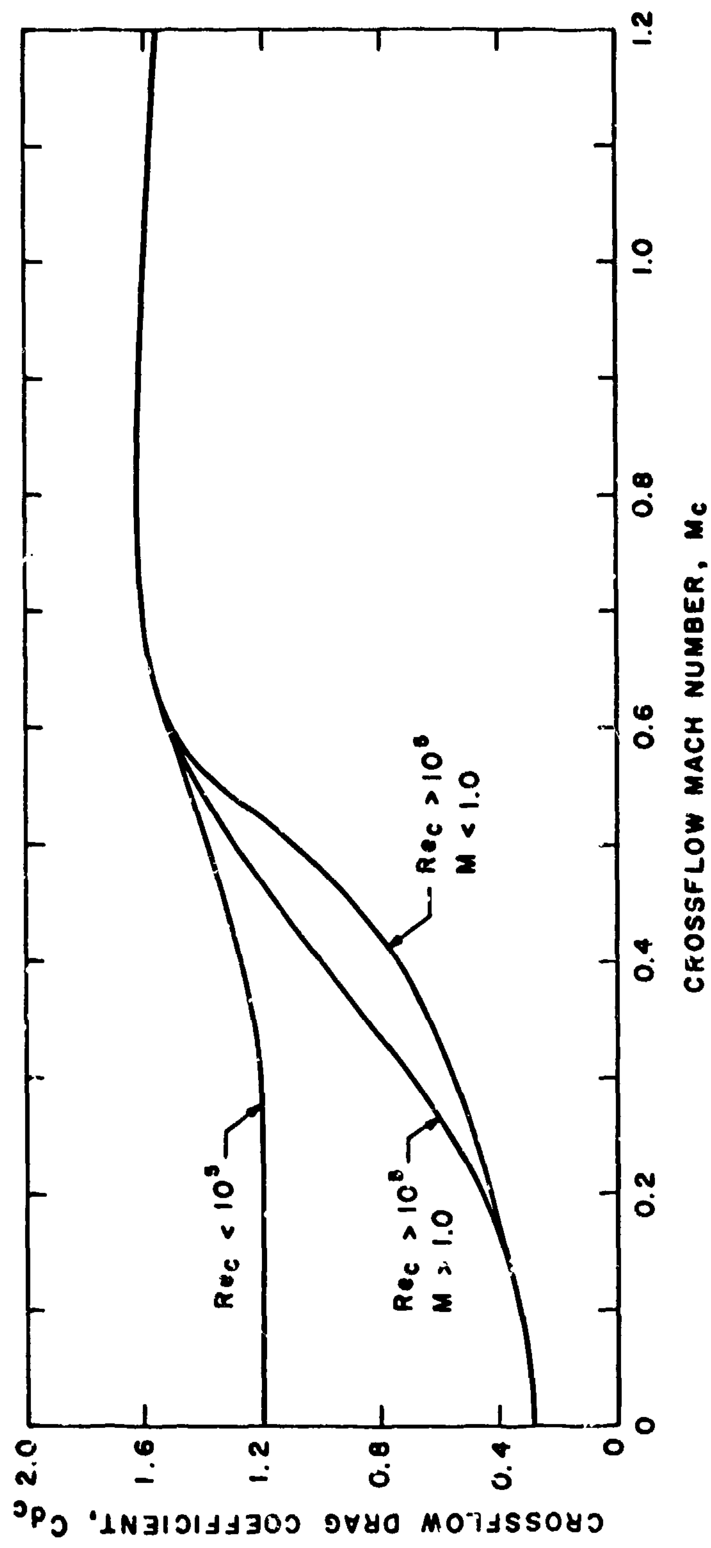


Figure 28. Finite length cylinder correction.


CROSSFLOW DRAG COEFFICIENT, C_{d_c}
2.0
1.6
1.2
0.8
0.4
0
0
0.2
0.4
0.6
0.8
1.0
1.2
CROSSFLOW MACH NUMBER, Mc
$Re_c < 10^5$
$Re_c > 10^5$
$M > 1.0$
$Re_c > 10^5$
$M < 1.0$

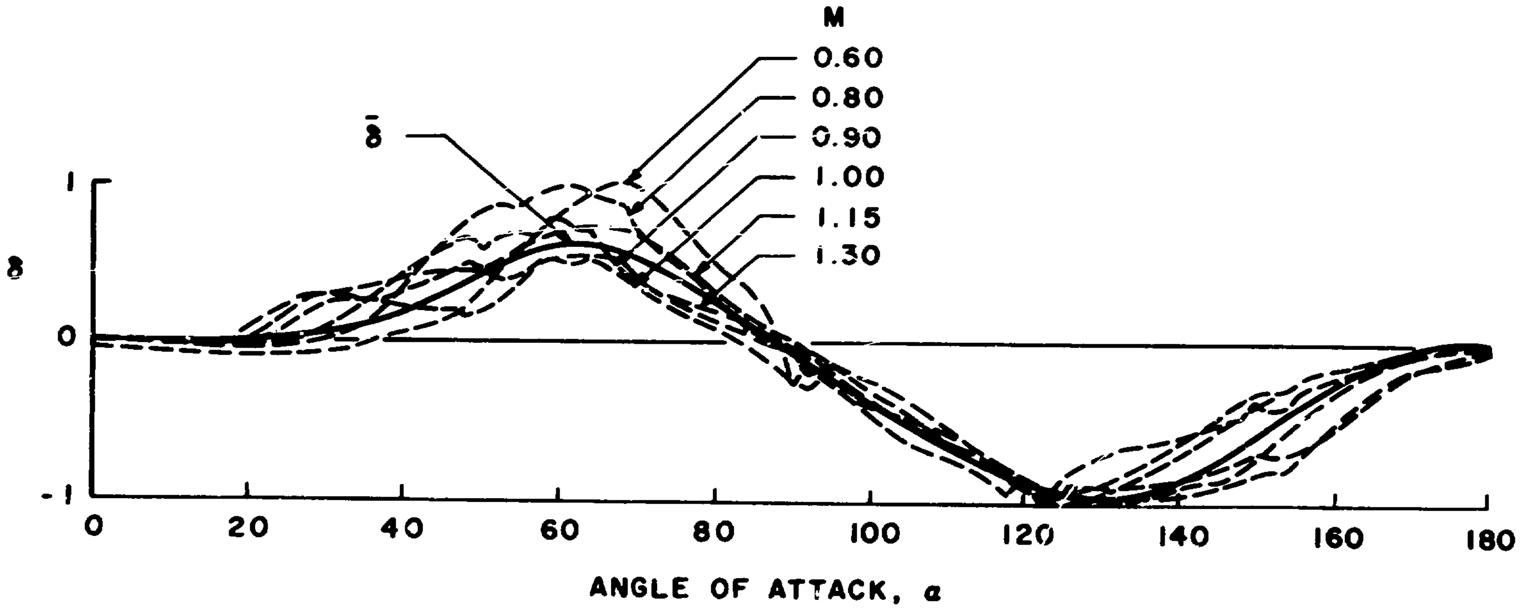


Figure 30. Non-dimensional body alone pitching moment coefficient correction.

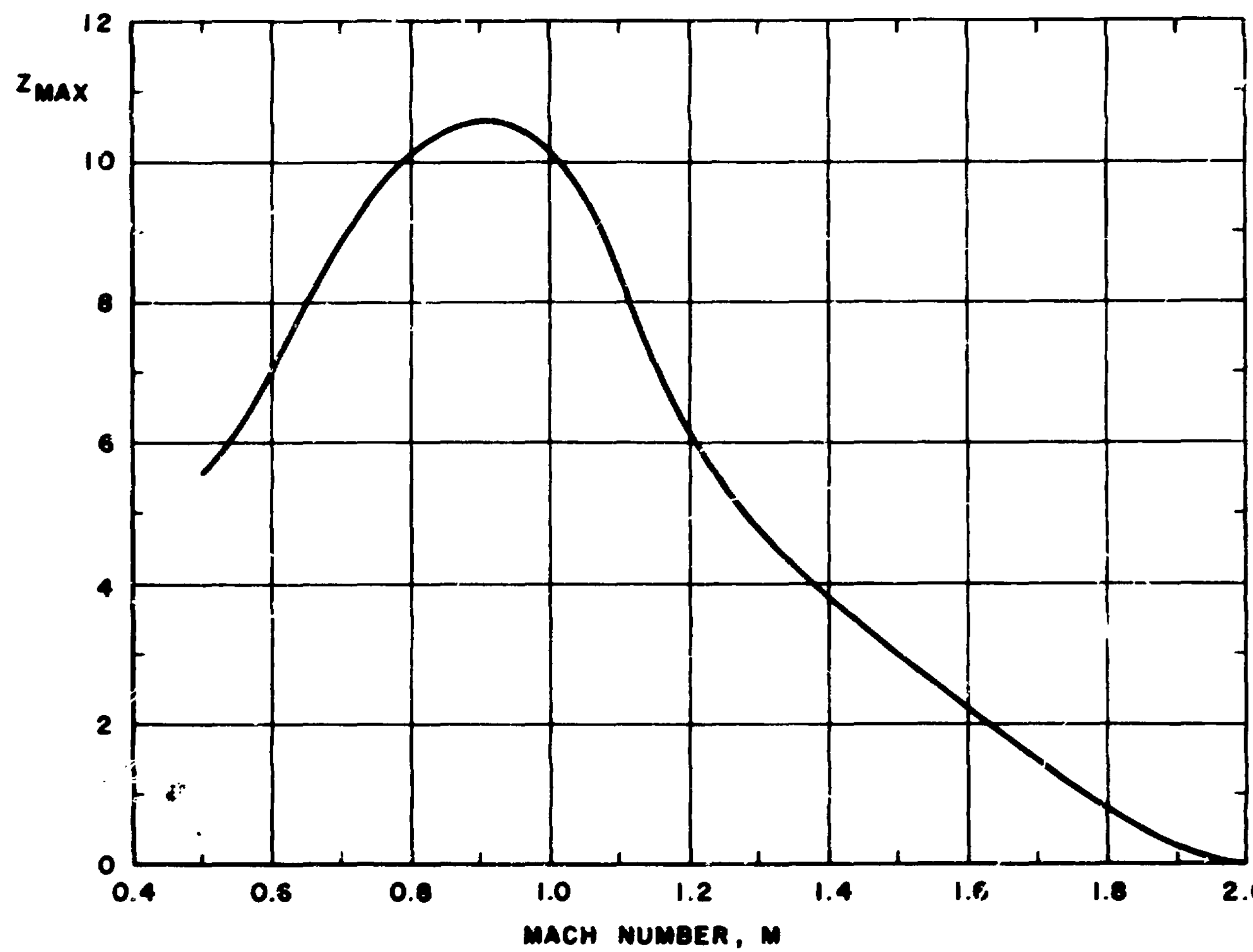


Figure 31. Mach number variation of maximum value of body alone pitching moment coefficient correction.

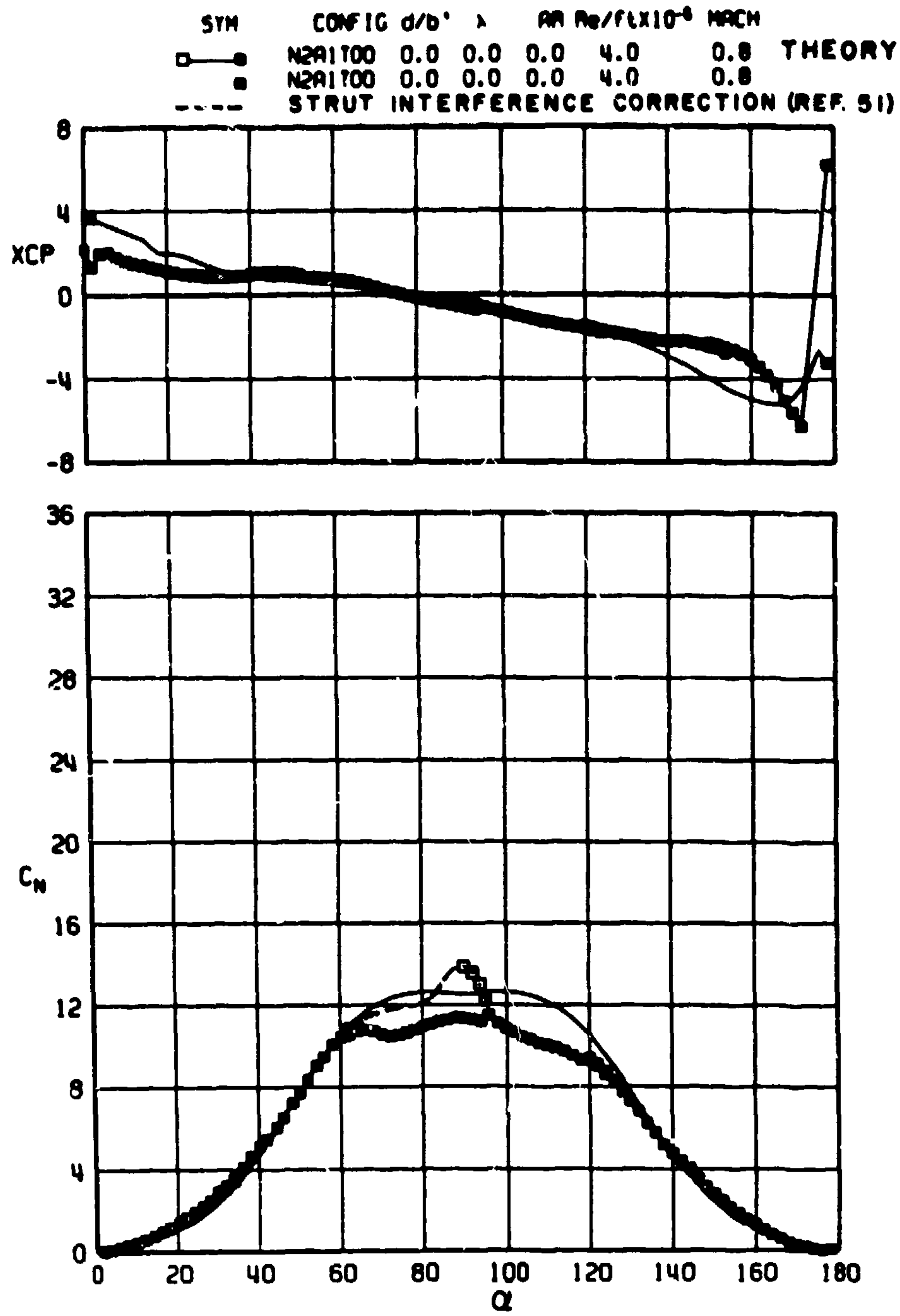


Figure 32. Comparison of typical, measured body alone data used to determine interference coefficients and predicted body alone coefficients, M = 0.8.

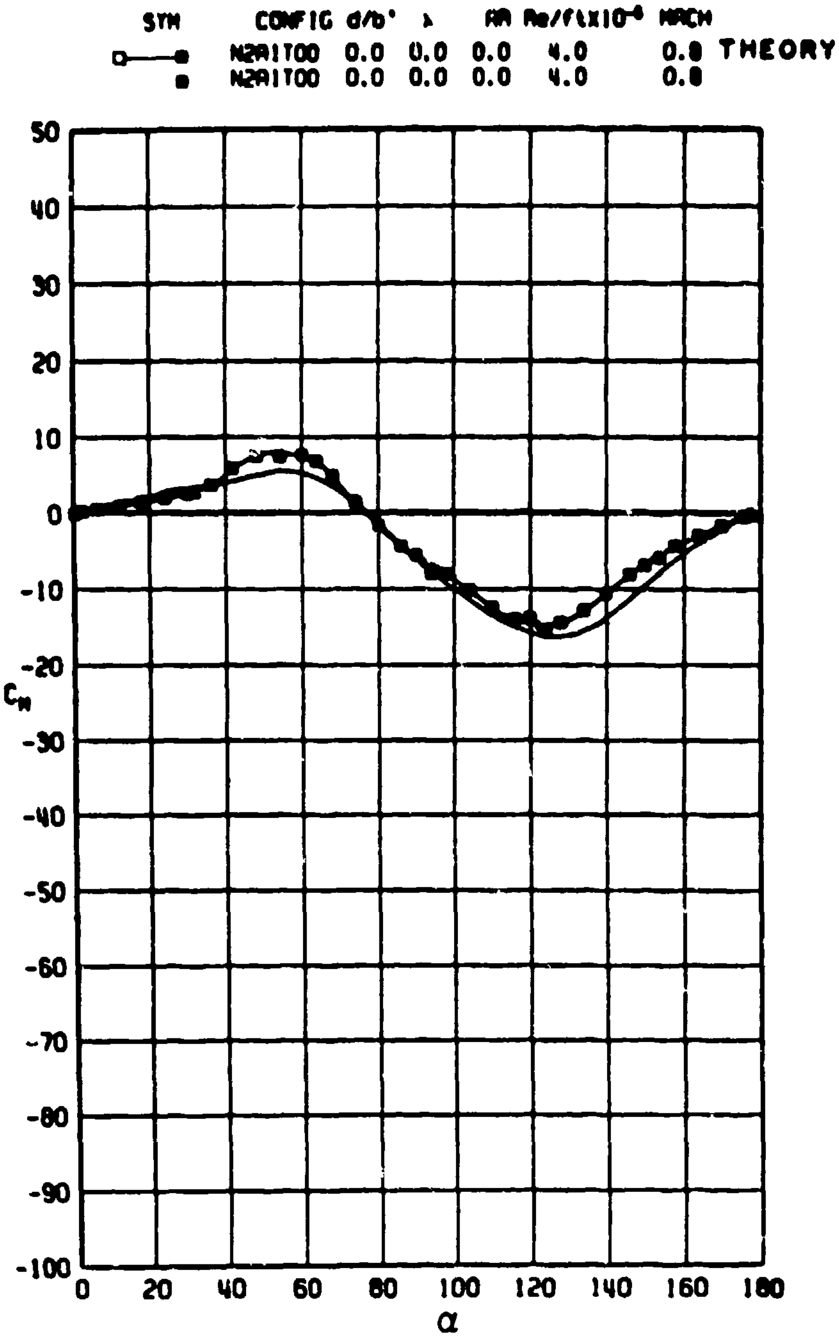


Figure 32. (Continued)

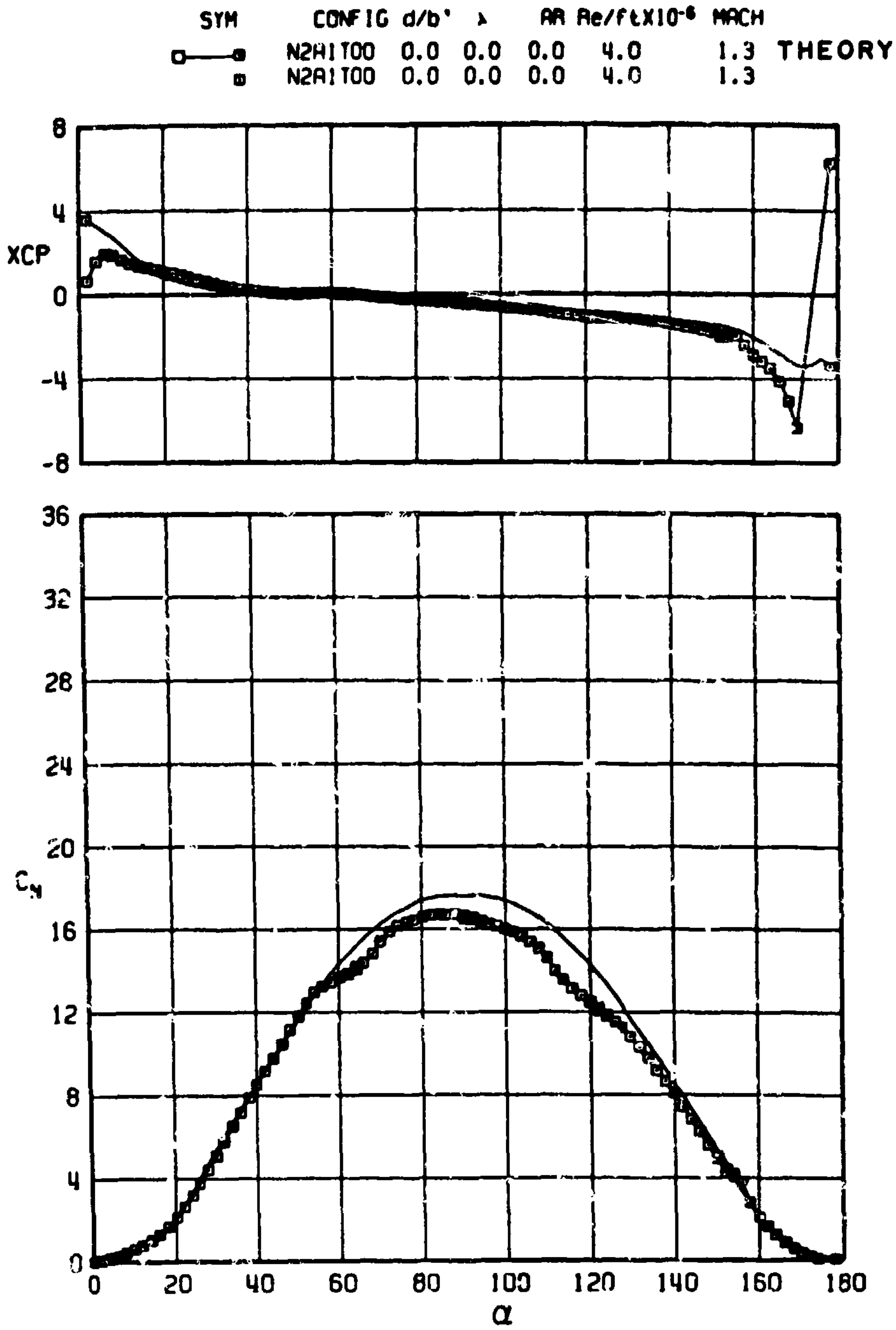


Figure 33. Comparison of typical, measured body alone data used to determine interference coefficients and predicted body alone aerodynamic coefficients, M = 1.3.

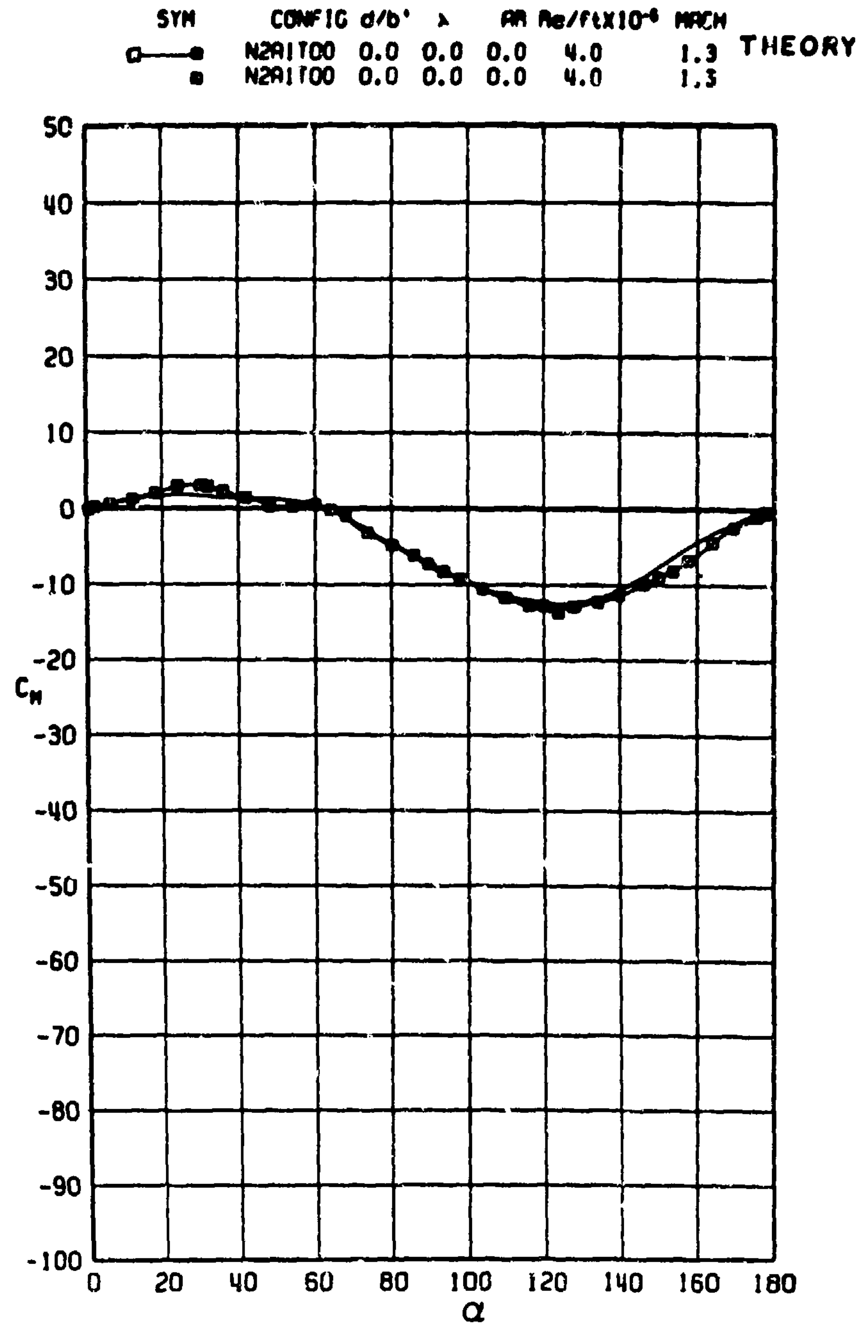


Figure 33. (Continued)

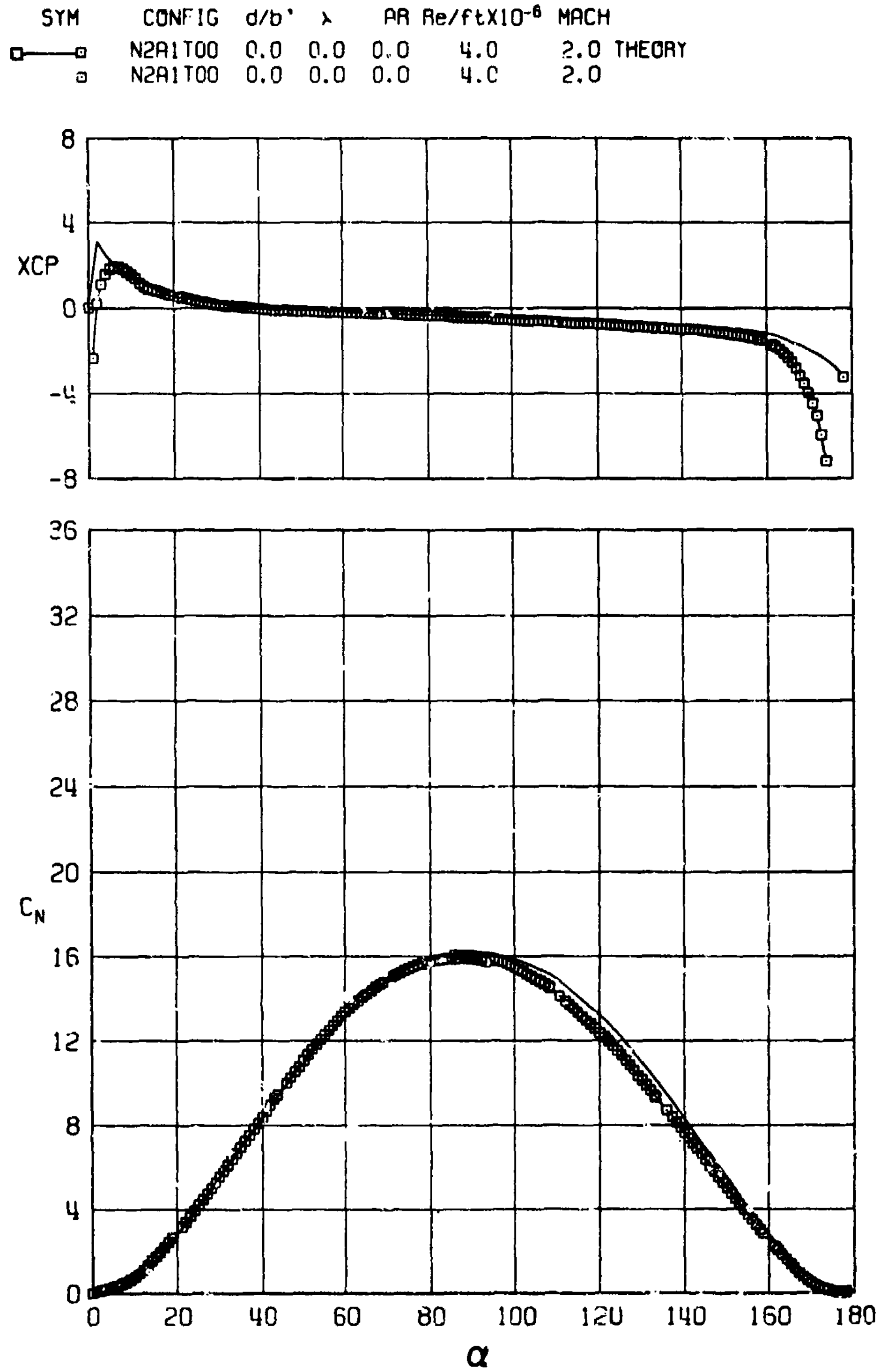


Figure 34. Comparison of typical, measured body alone data used to determine interference coefficients, M = 1.3.

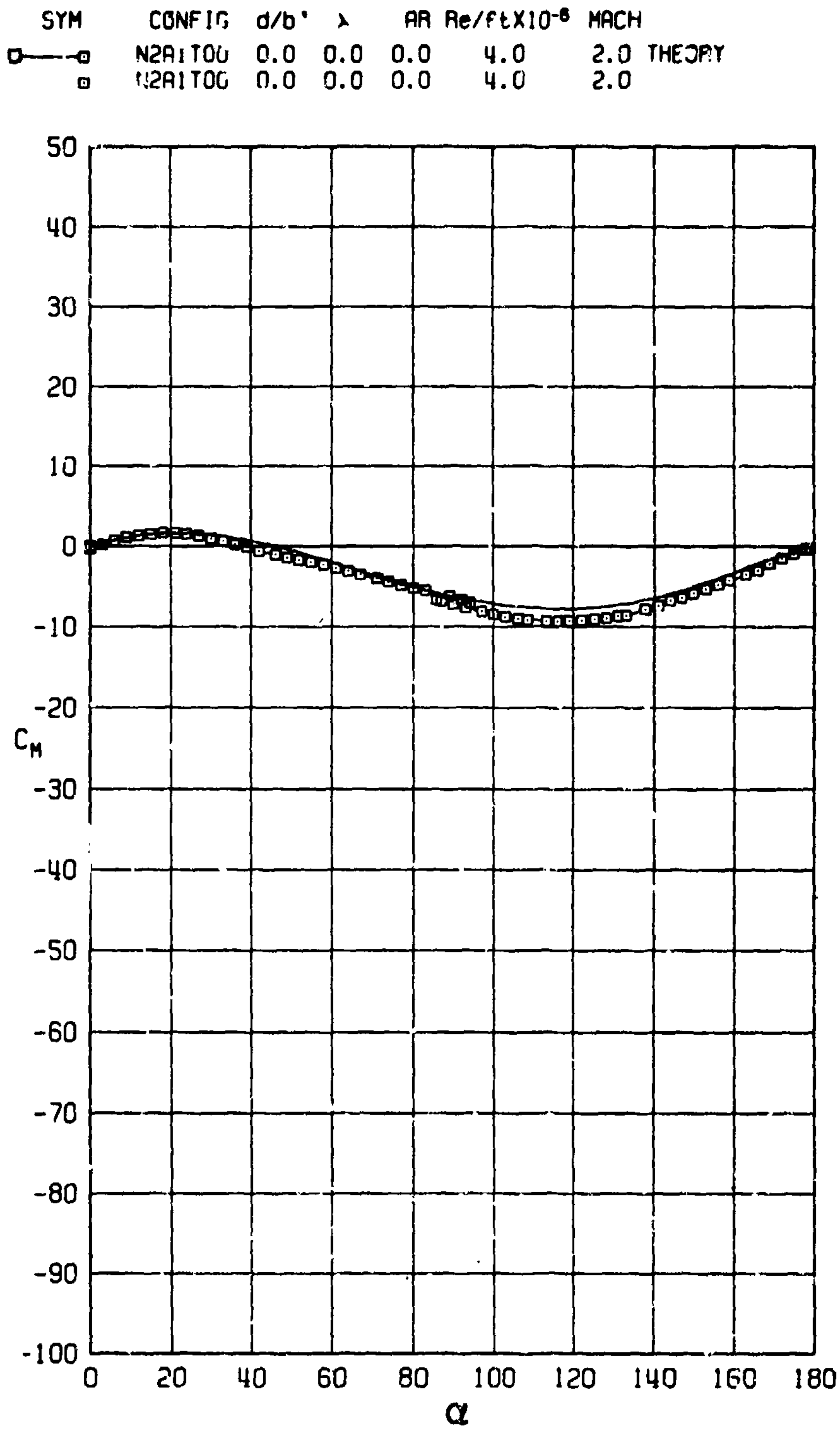


Figure 34. (Continued)

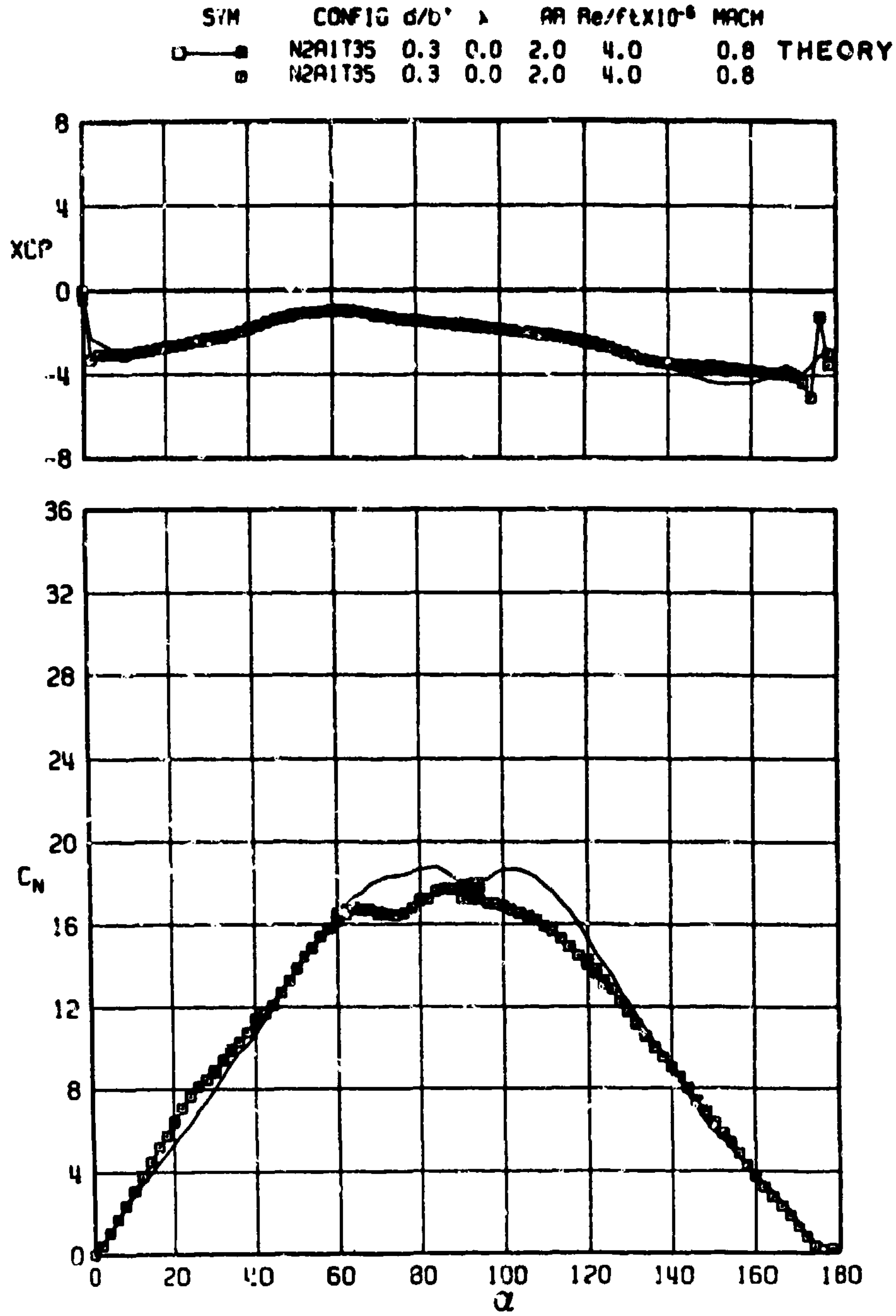


Figure 35. Comparison of typical, measured body plus fin data used to determine interference coefficients and predicted body plus fin aerodynamic coefficients, M = 0.8.

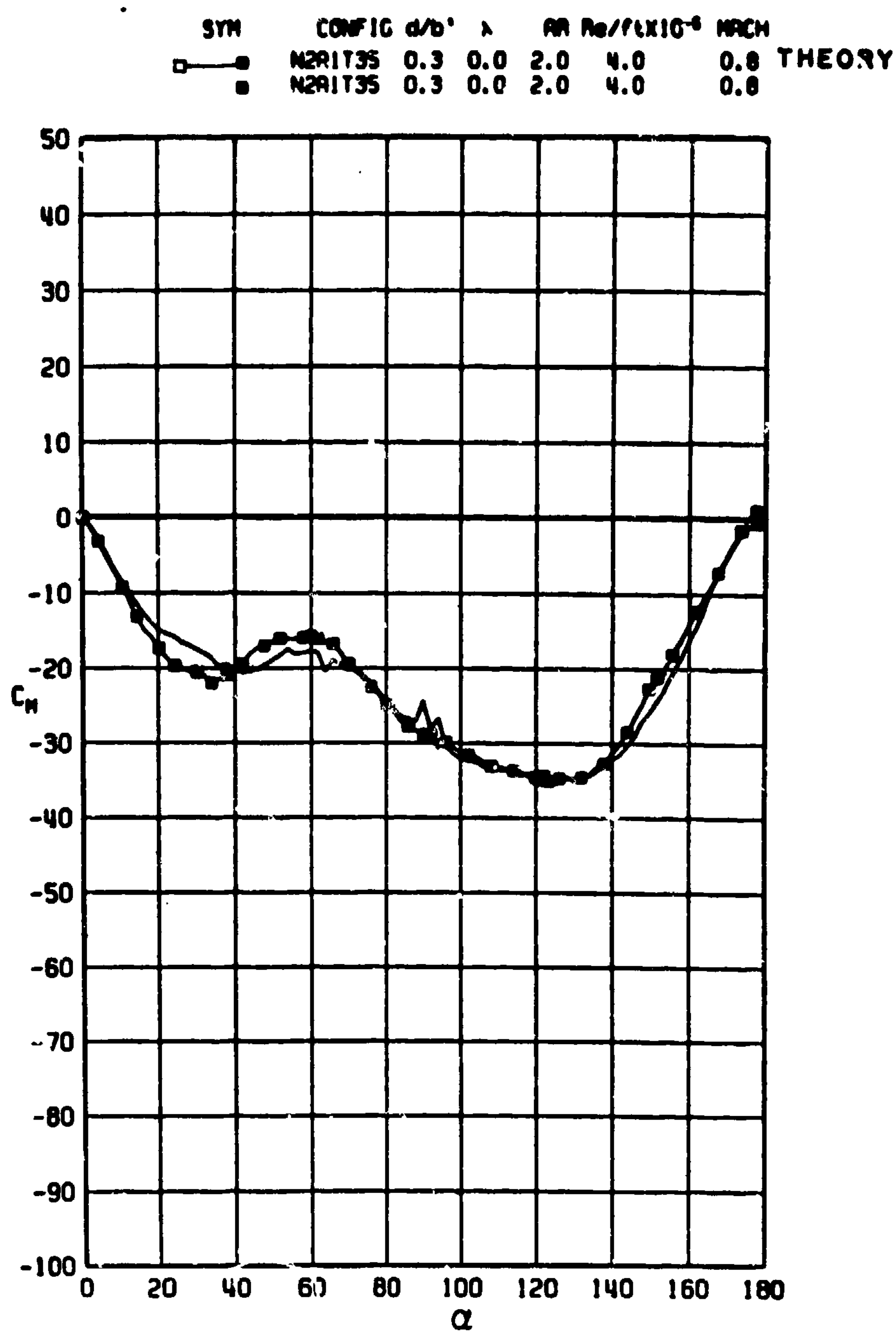


Figure 35. (Continued)

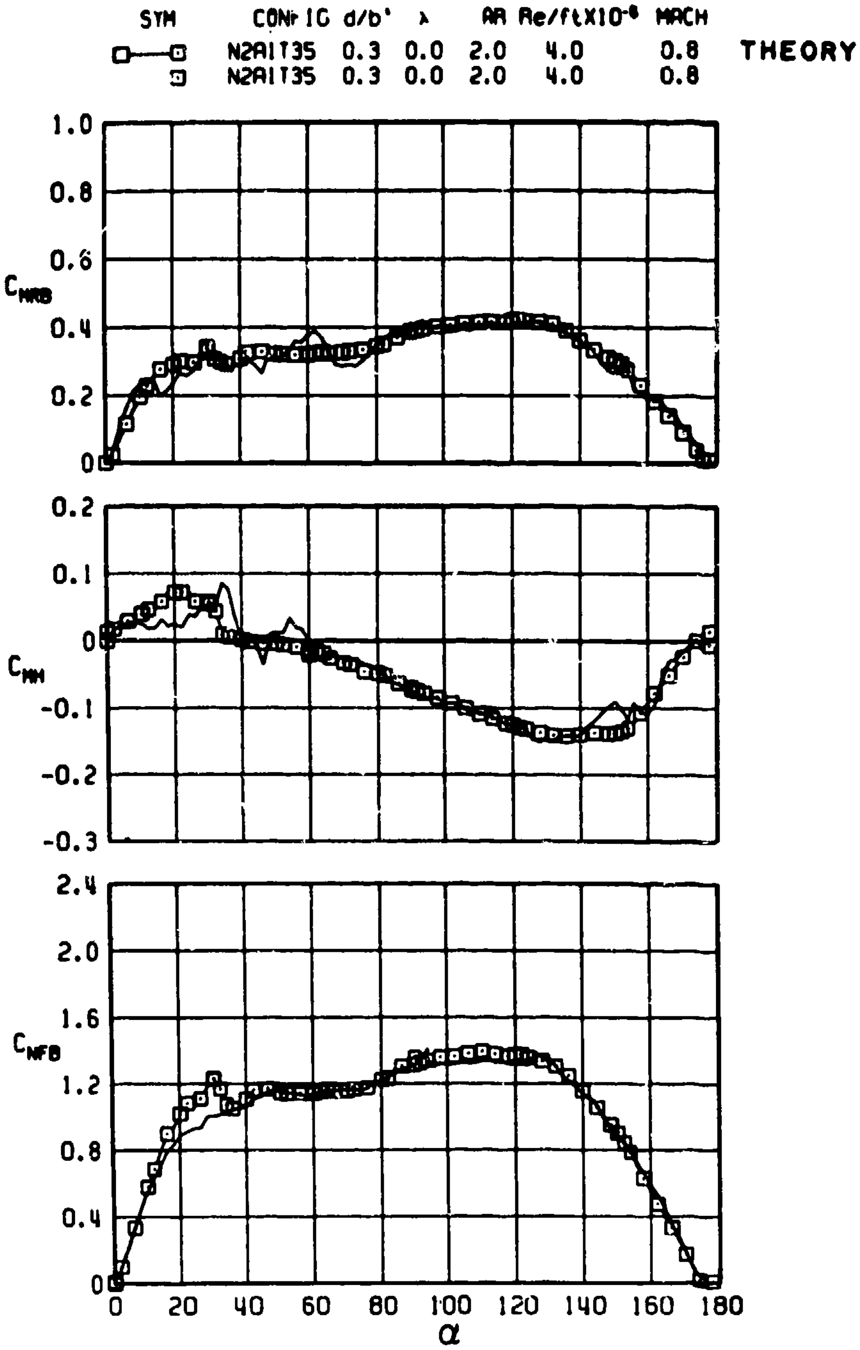


Figure 35. (Continued)

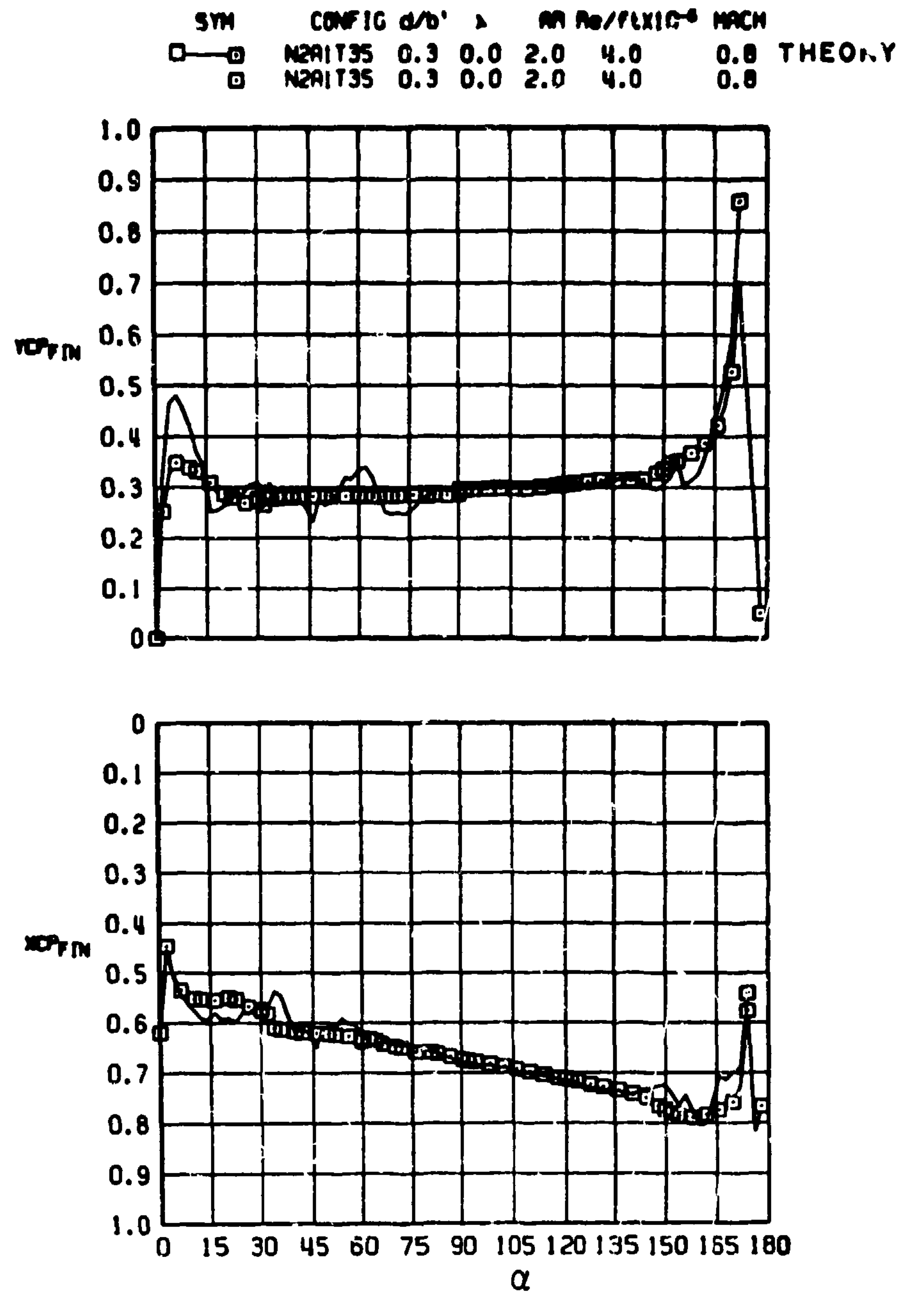


Figure 35. (Continued)

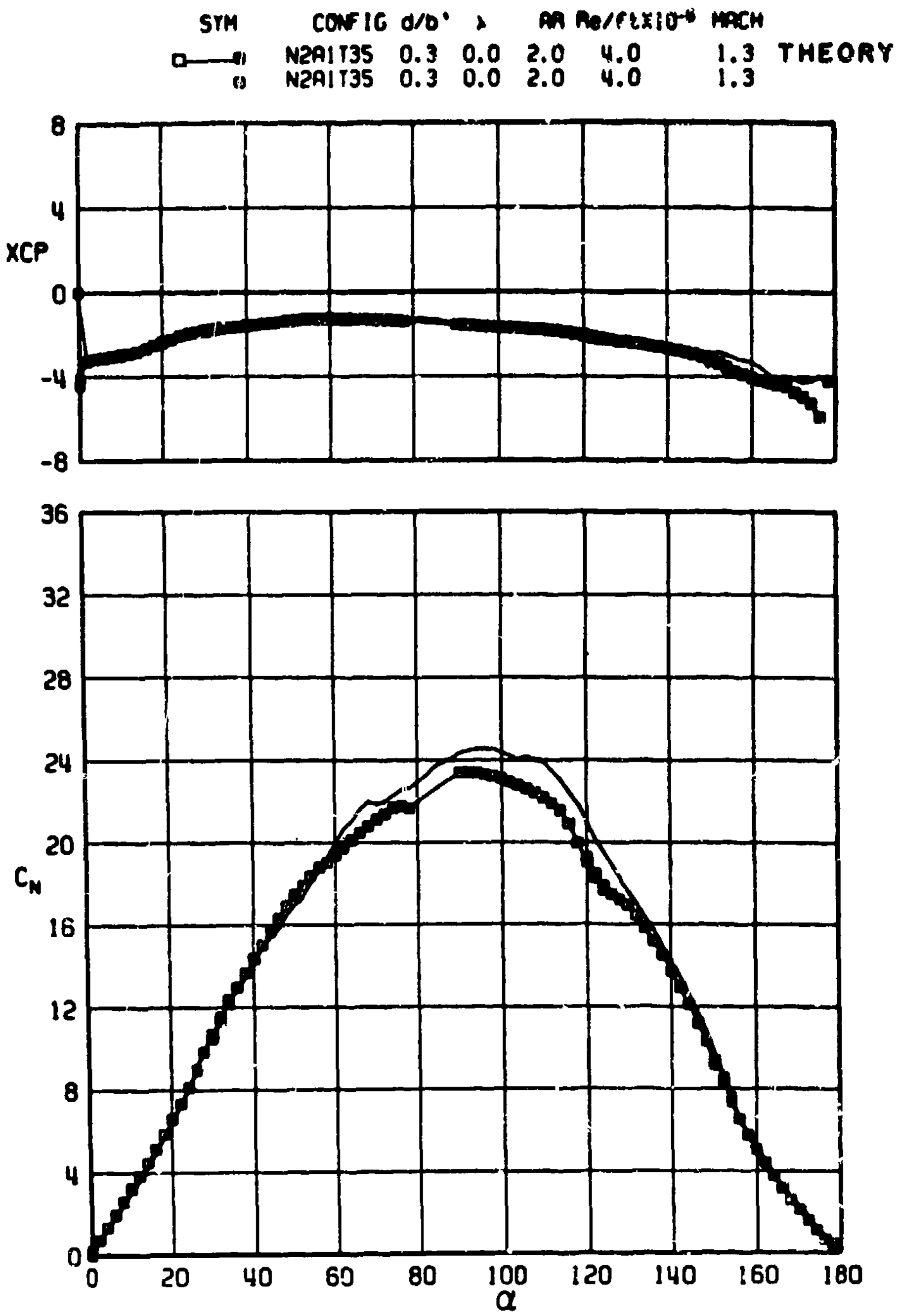


Figure 36. Comparison of typical, measured body plus fin data used to determine interference coefficients and predicted body plus fin aerodynamic coefficients, M = 1.3.

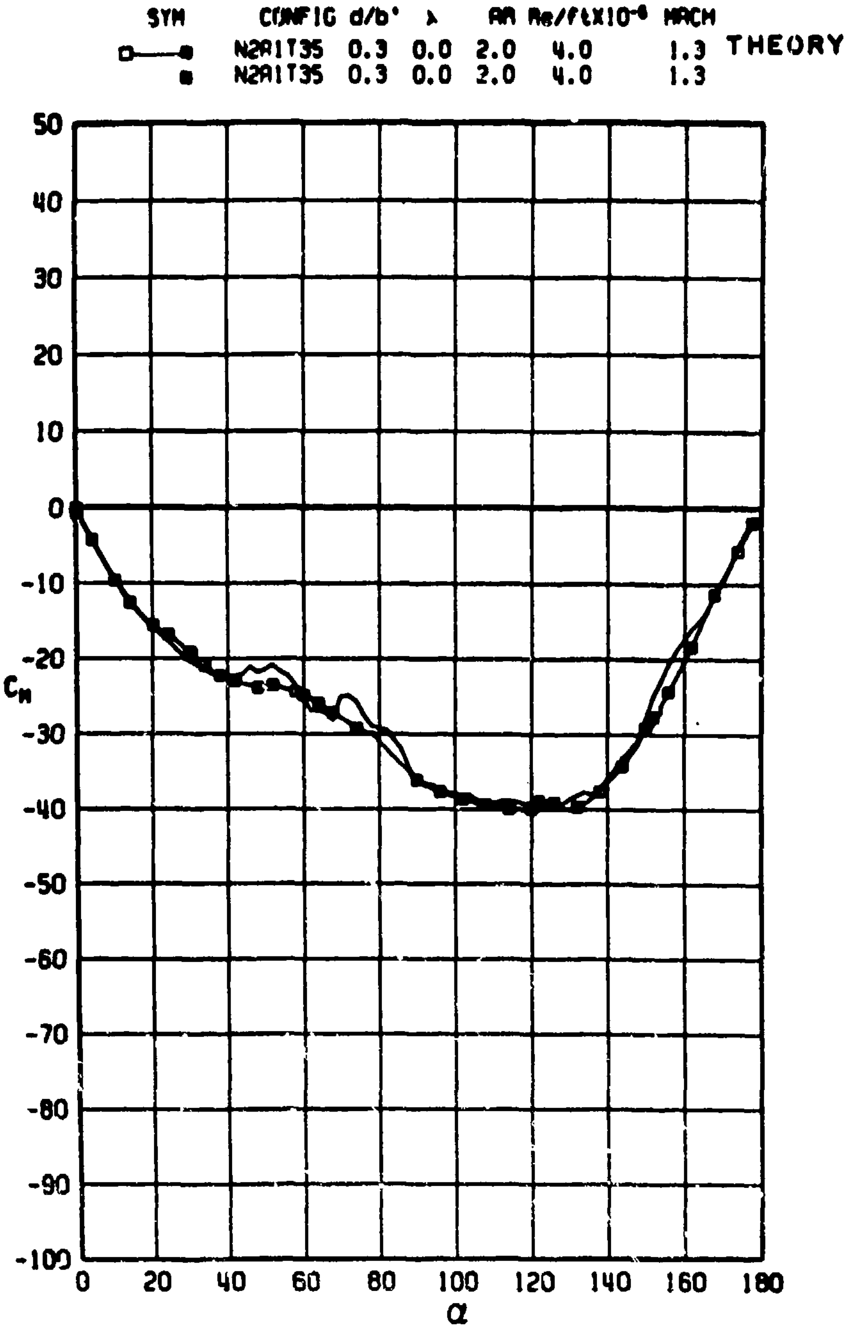


Figure 36. (Continued)

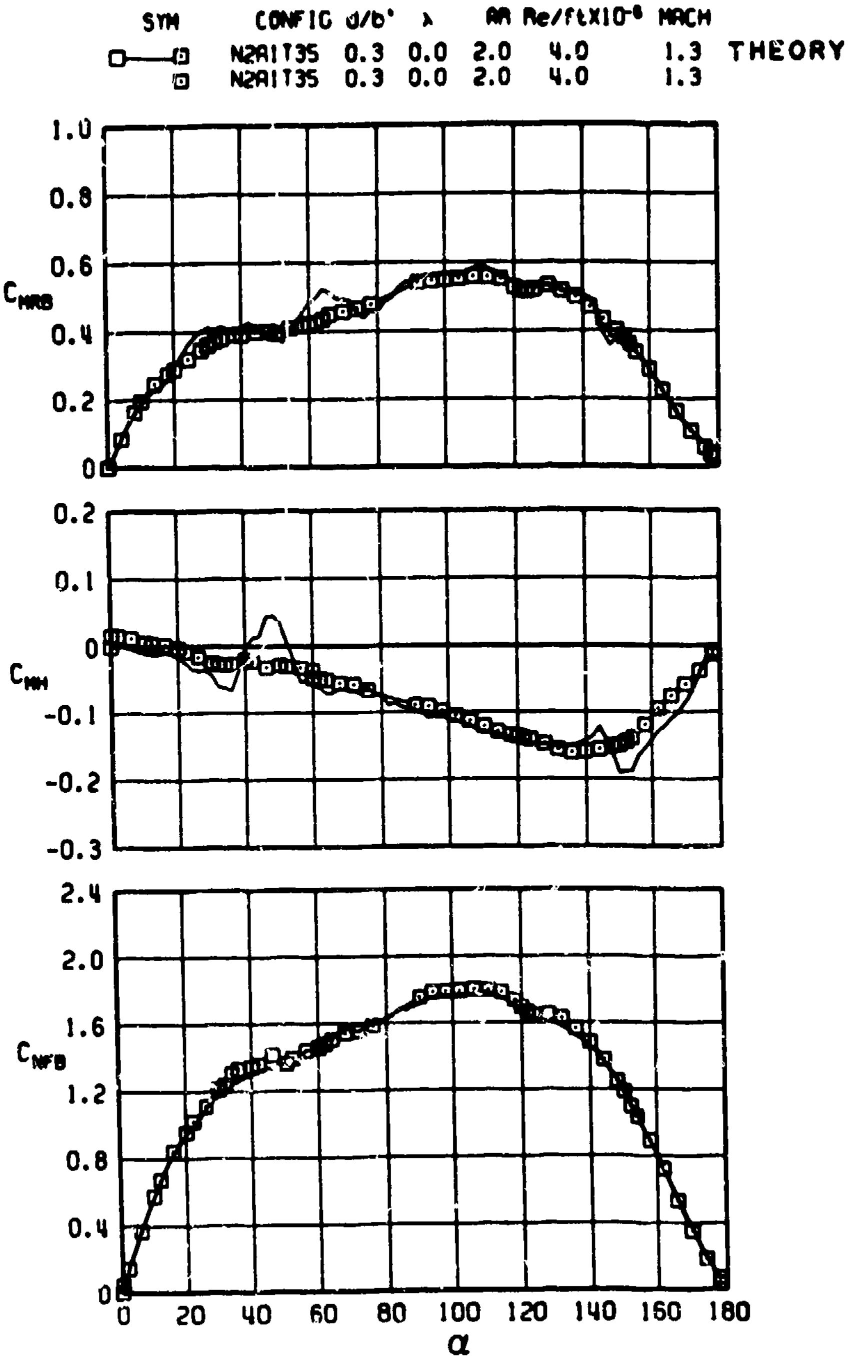


Figure 36. (Continued)

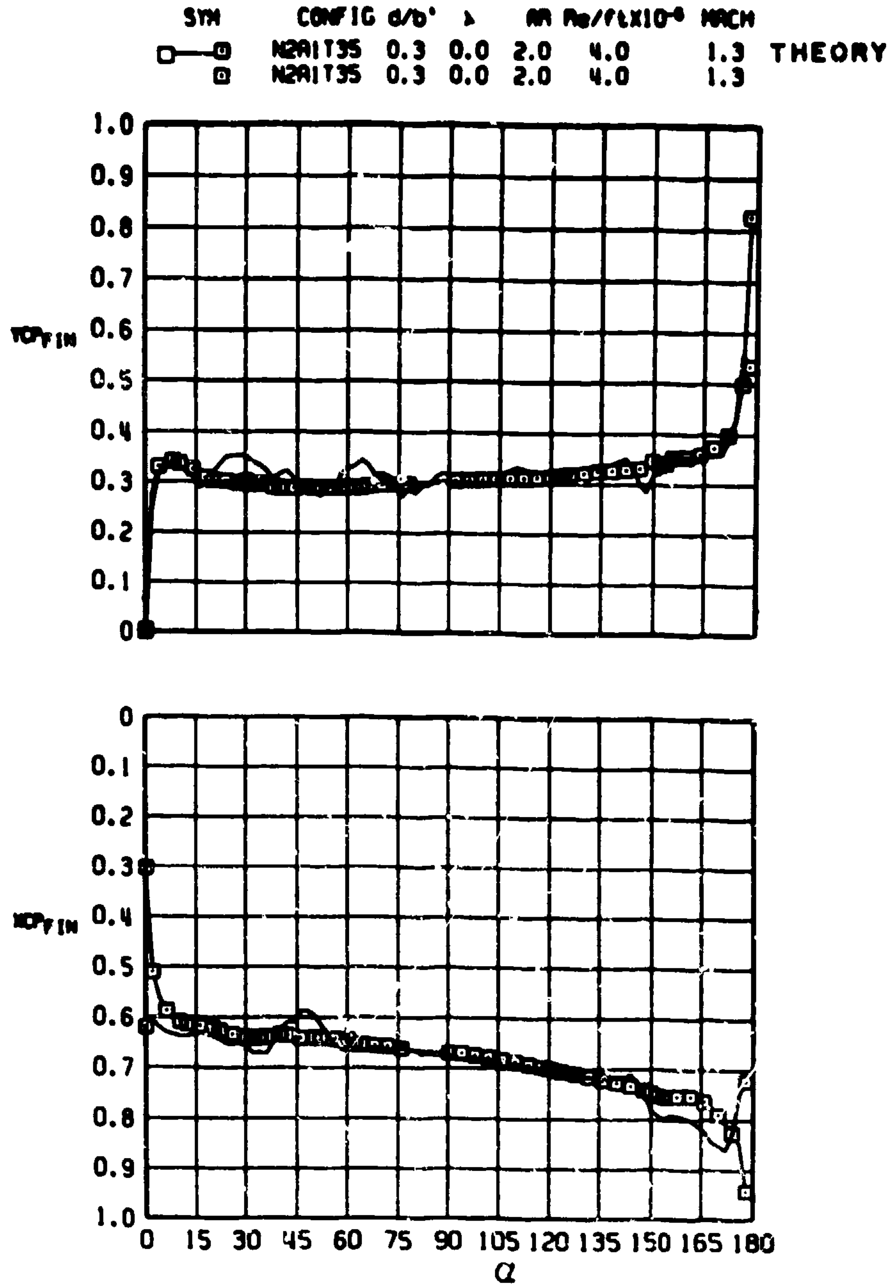


Figure 36. (Continued)

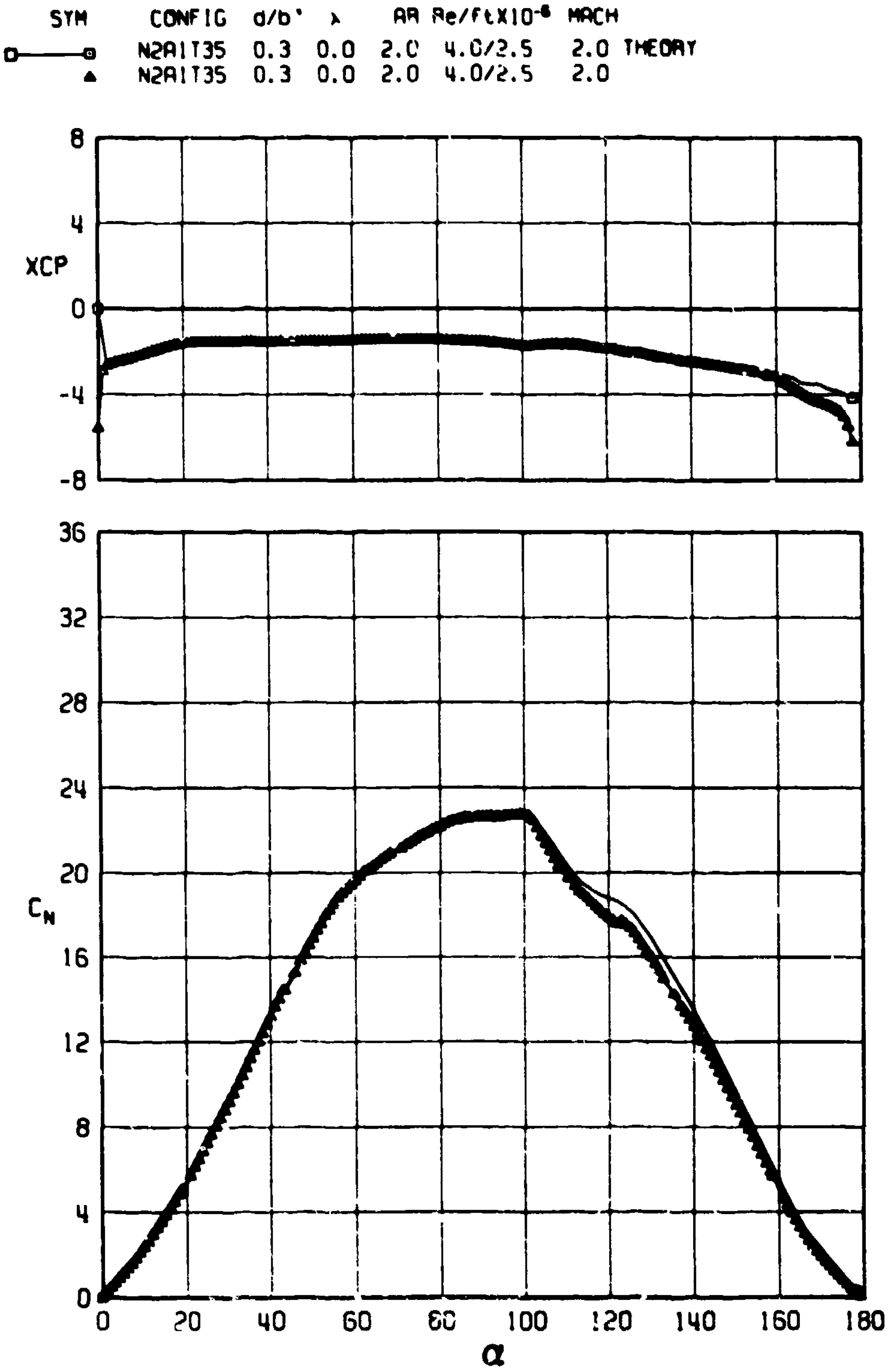


Figure 37. Comparison of typical, measured body plus fin data used to determine interference coefficients and predicted body plus fin aerodynamic coefficients, M = 1.3.

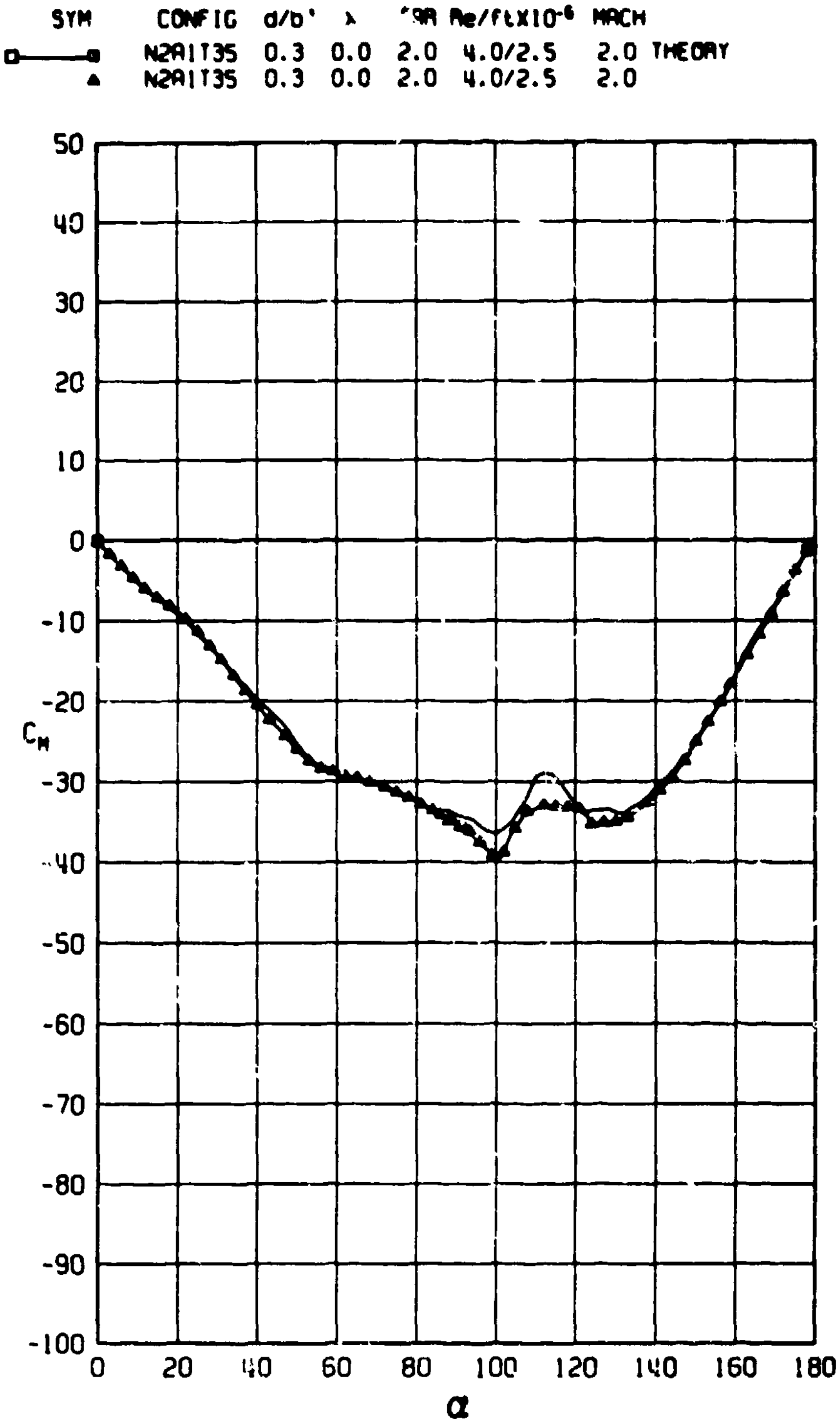


Figure 37. (Continued)

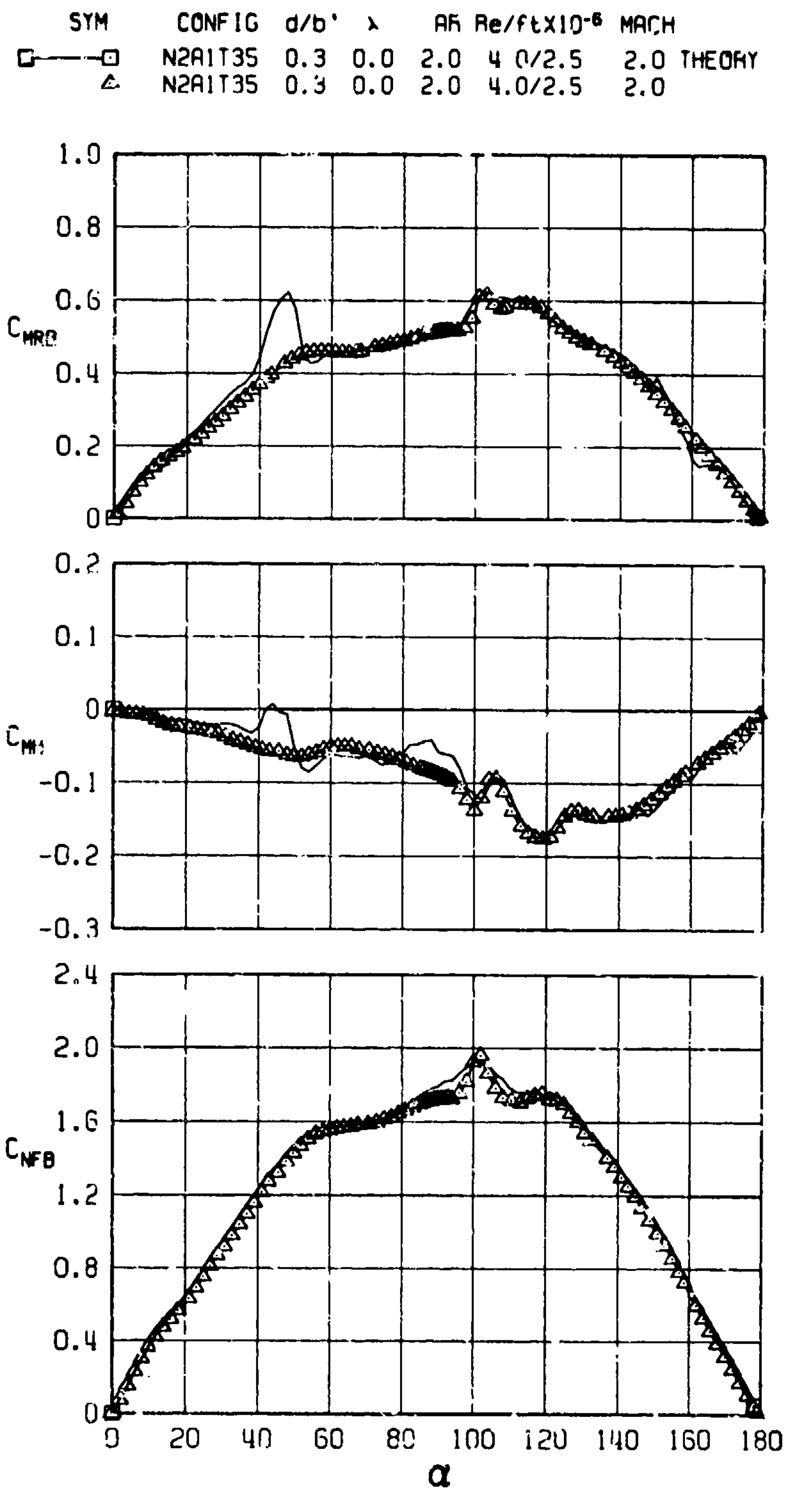


Figure 37. (Continued)

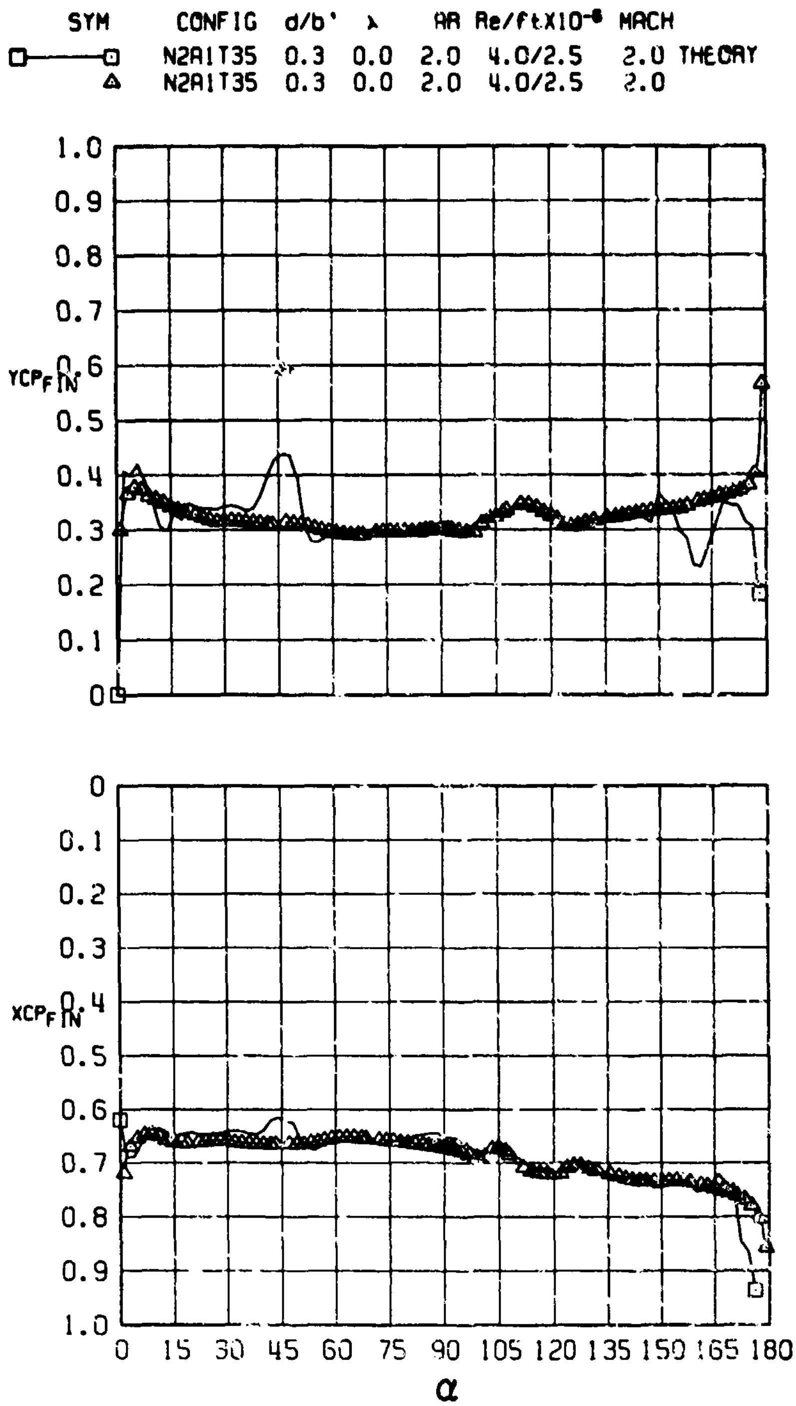


Figure 37. (Continued)

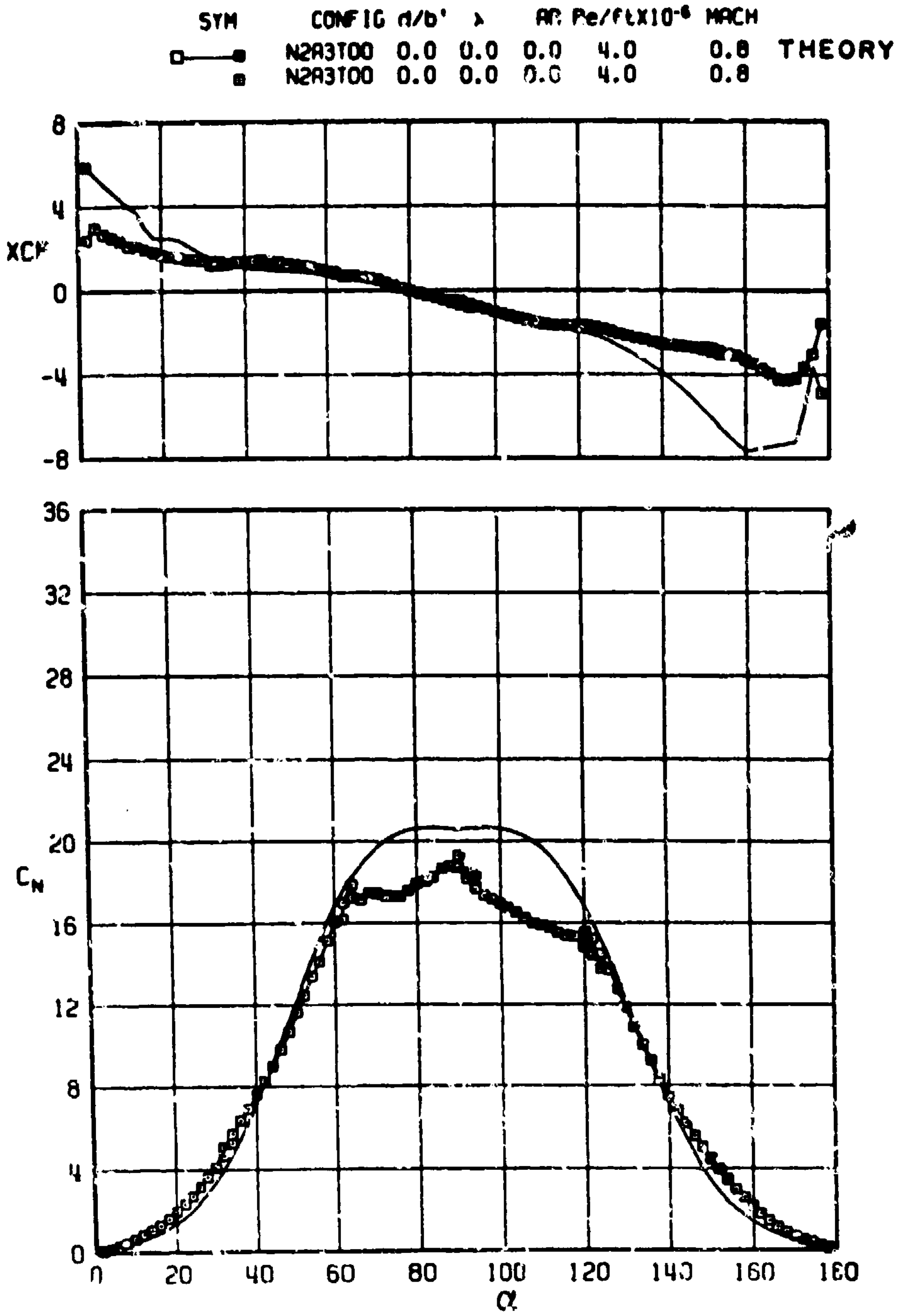


Figure 38. Comparison of typical, measured ℓ/d = 15 body alone data and predicted body alone aerodynamic coefficients, M = 0.8.

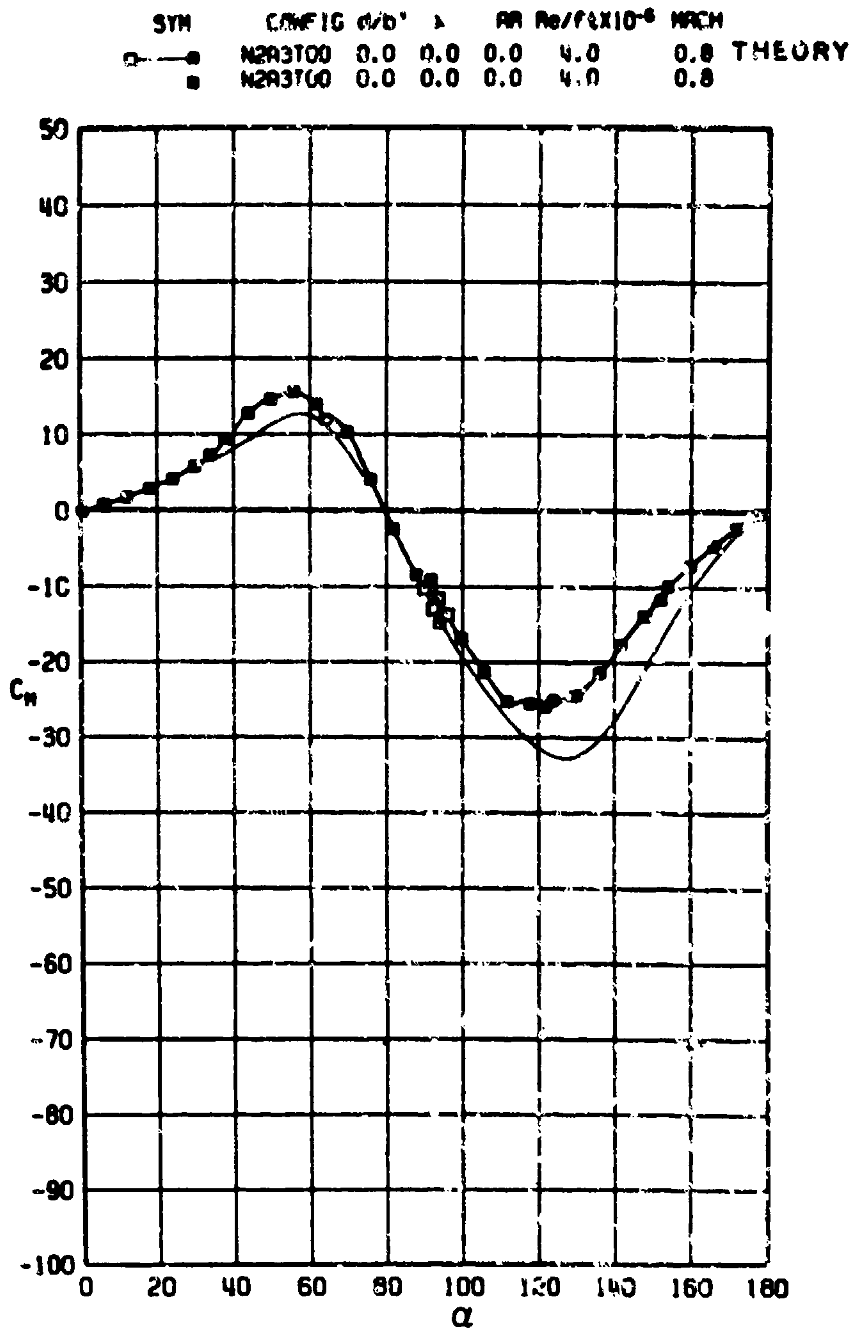


Figure 38. (Continued)

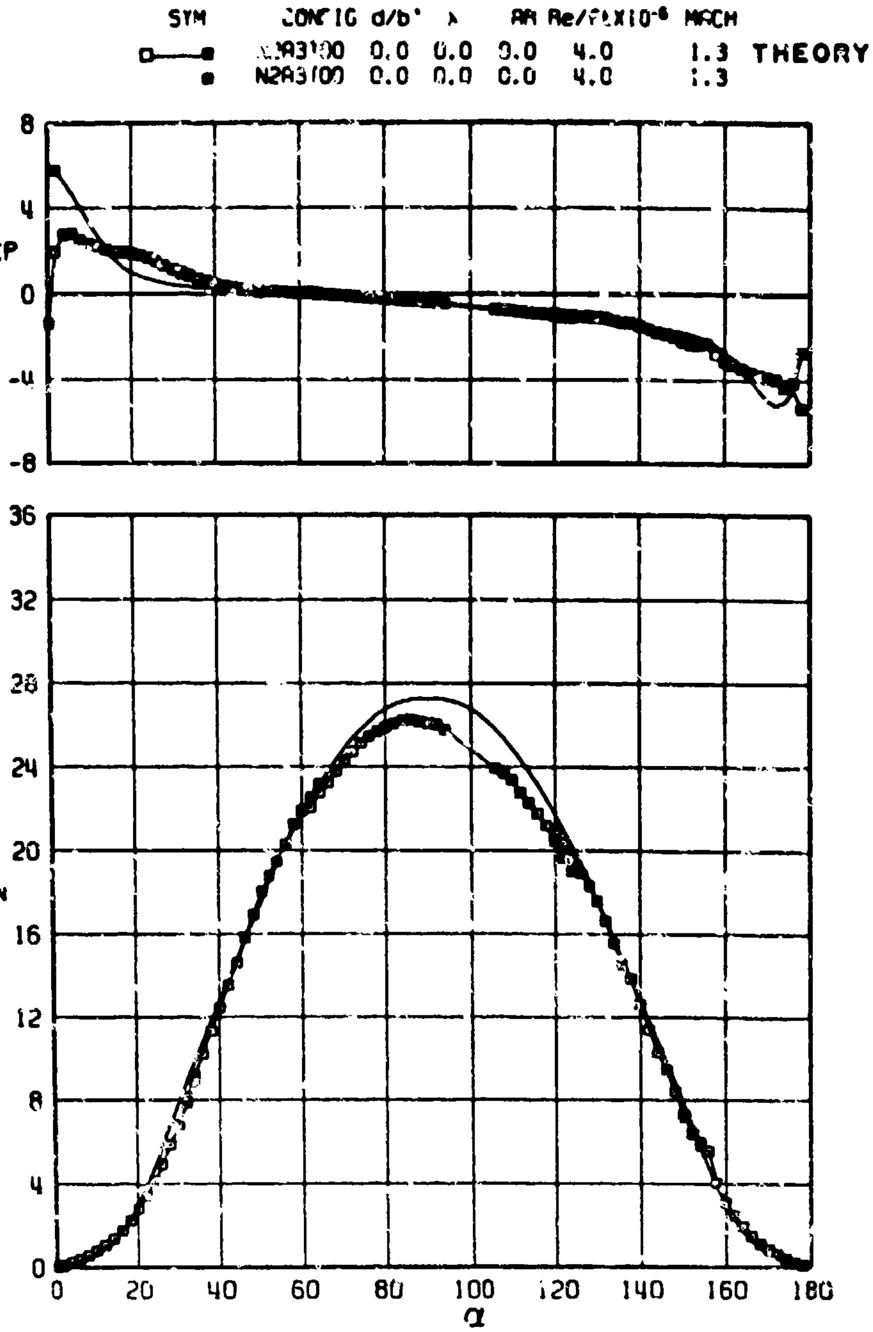


Figure 39. Comparison of typical, measured ℓ/d = 15 body alone data and predicted body alone aerodynamic coefficients, M = 1.3.

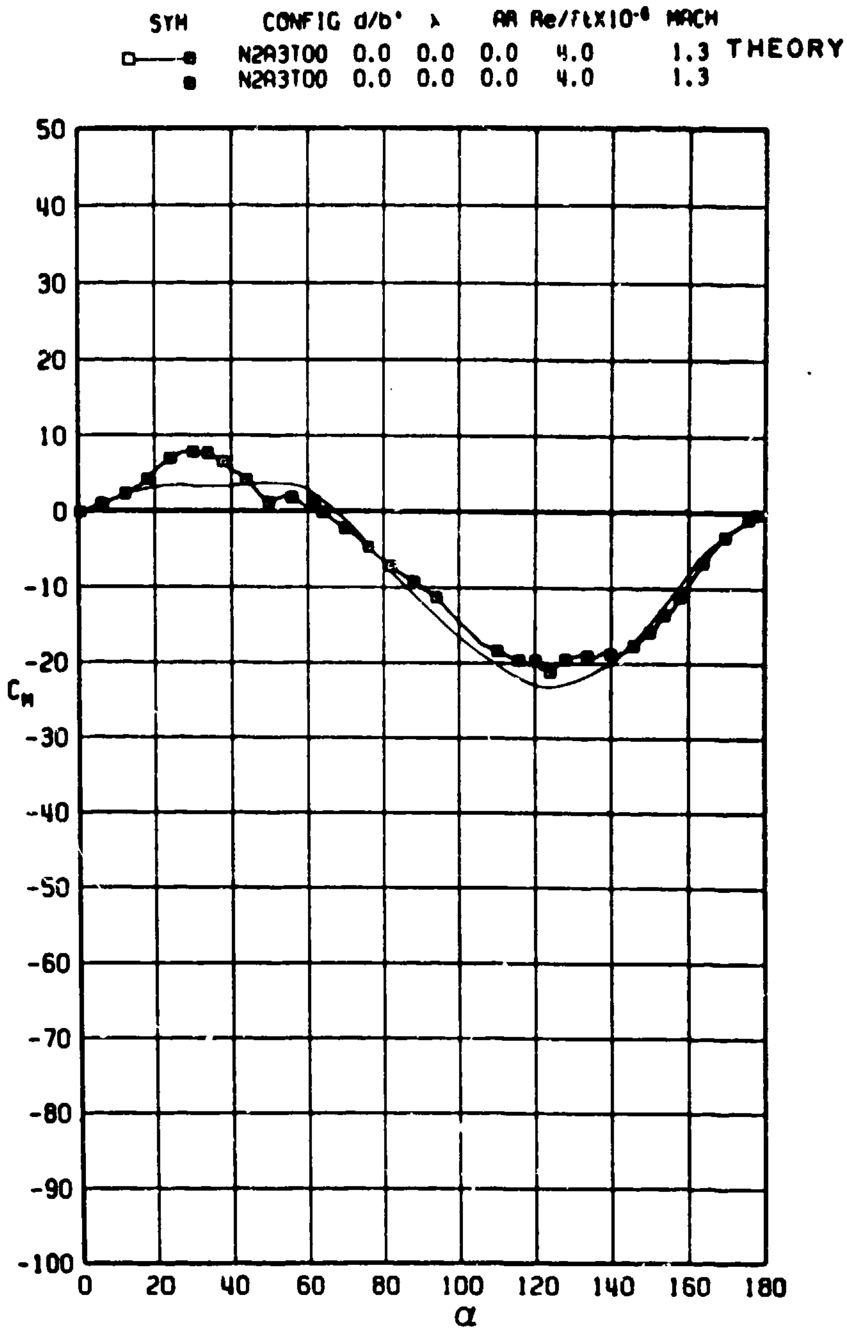


Figure 39. (Continued)

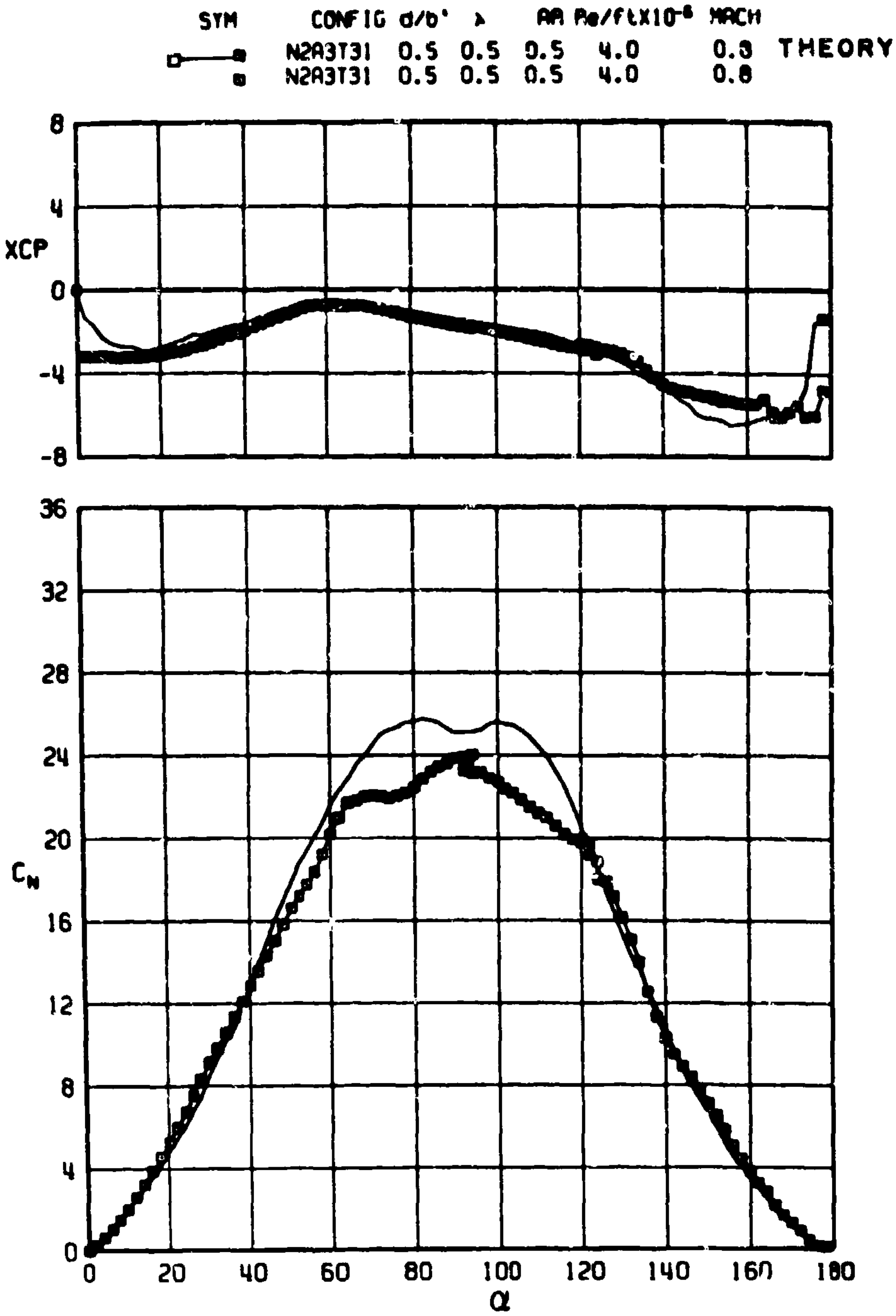


Figure 40. Comparison of typical, measured ℓ/d = 15 body plus AR = 0.5 fin data and predicted body plus fin aerodynamic coefficients, M = 0.8.

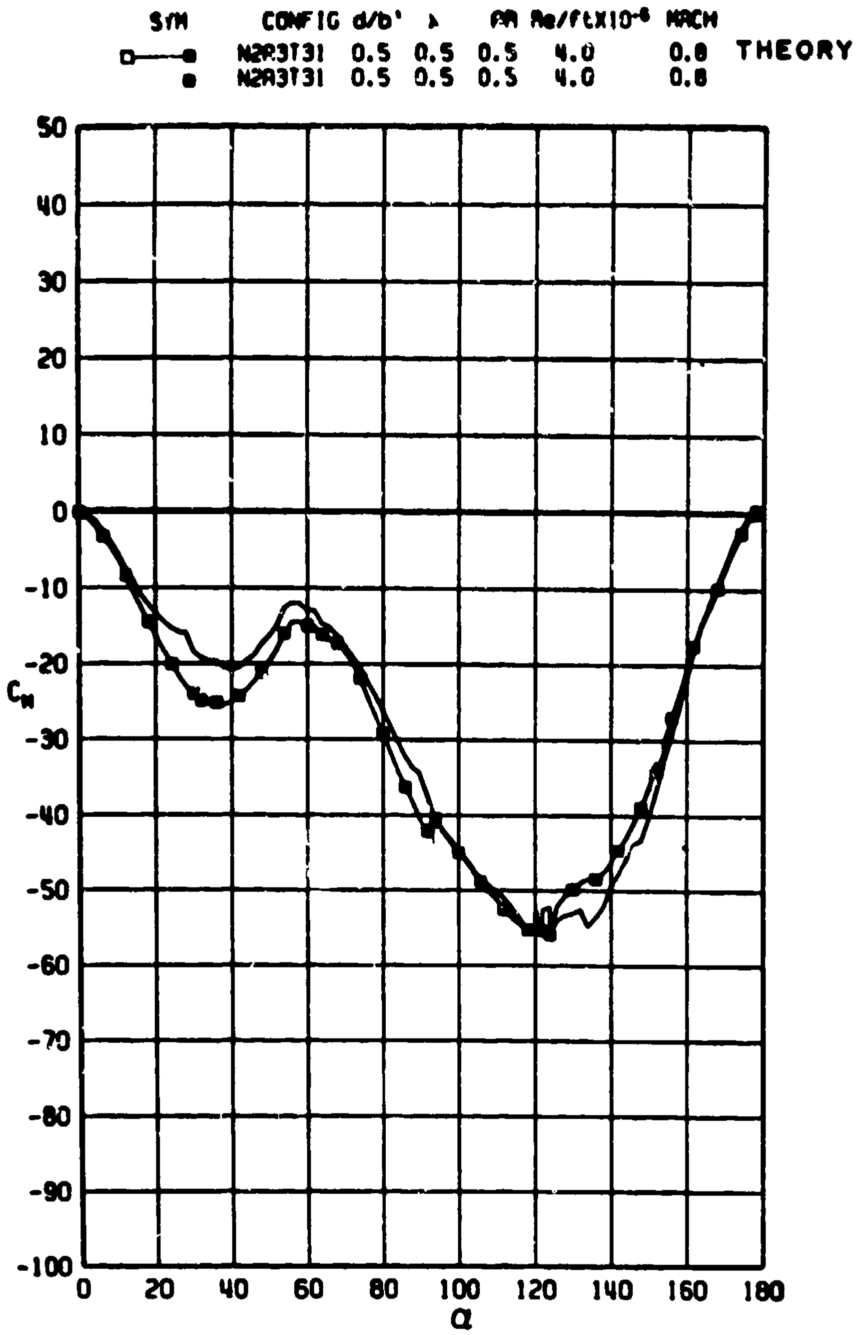


Figure 40. (Continued)

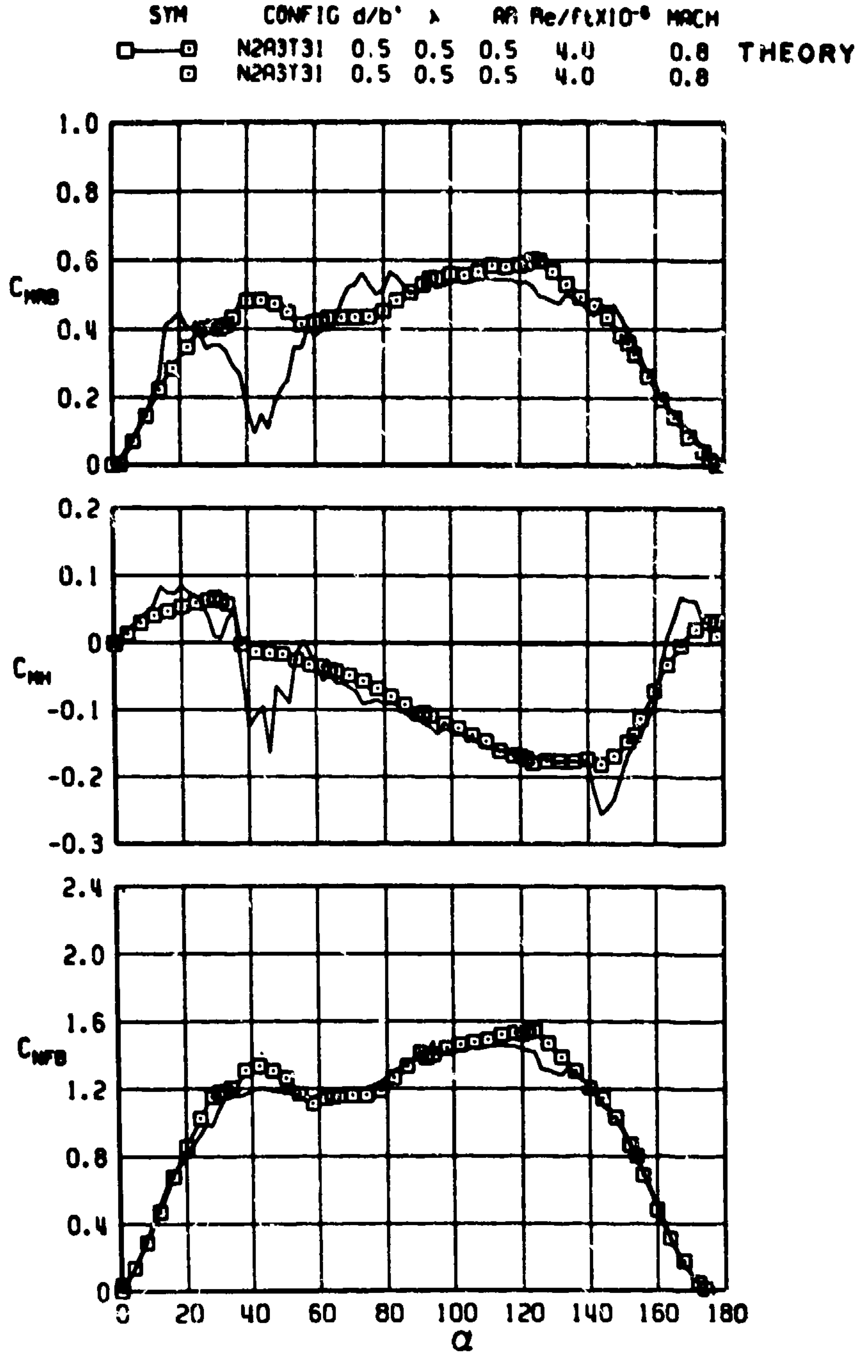


Figure 40. (Continued)

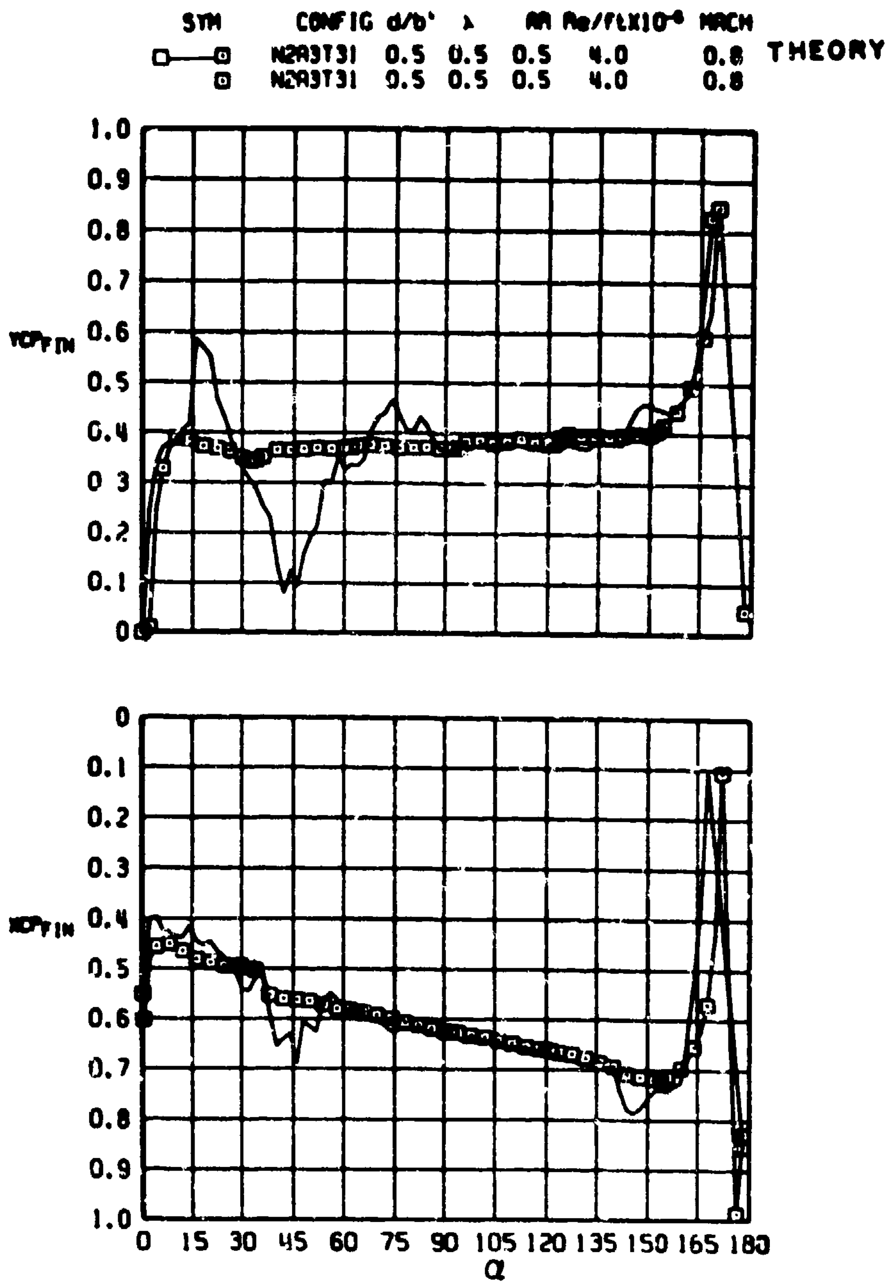


Figure 40. (Continued)

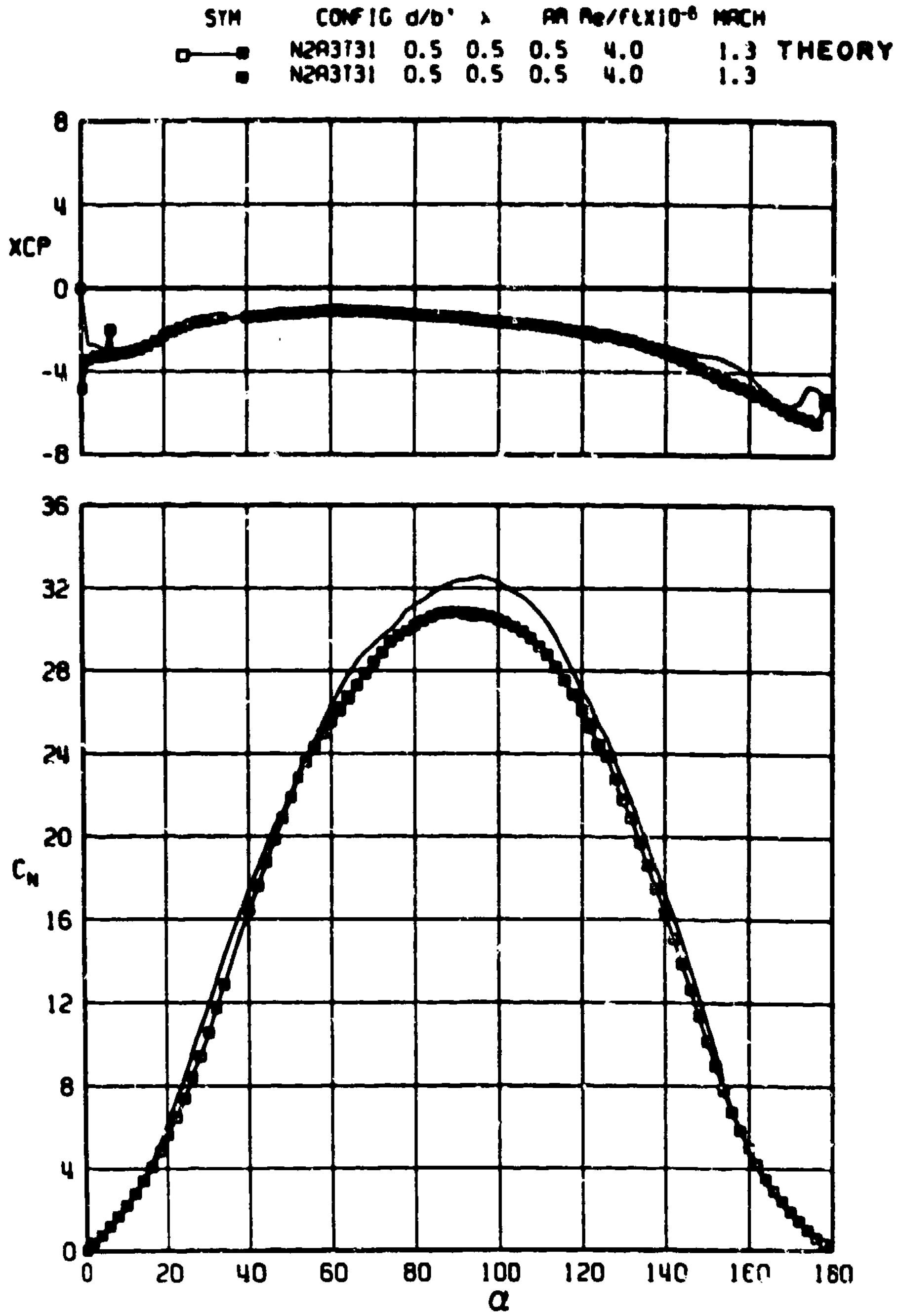


Figure 11. Comparison of typical, measured ℓ/d = 15 body plus AR = 0.5 fin data and predicted body plus fin aerodynamic coefficients, M = 1.3.

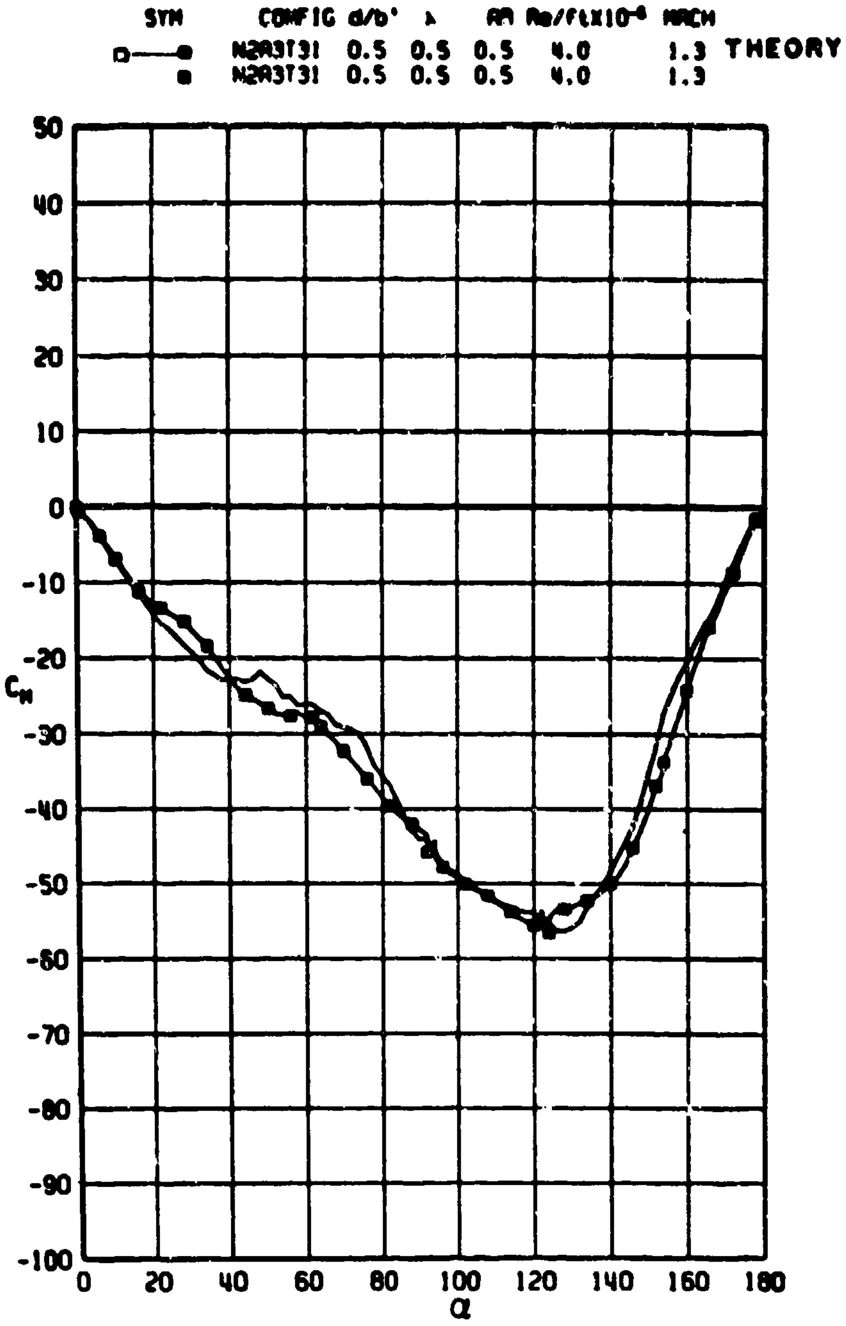


Figure 41. (Continued)

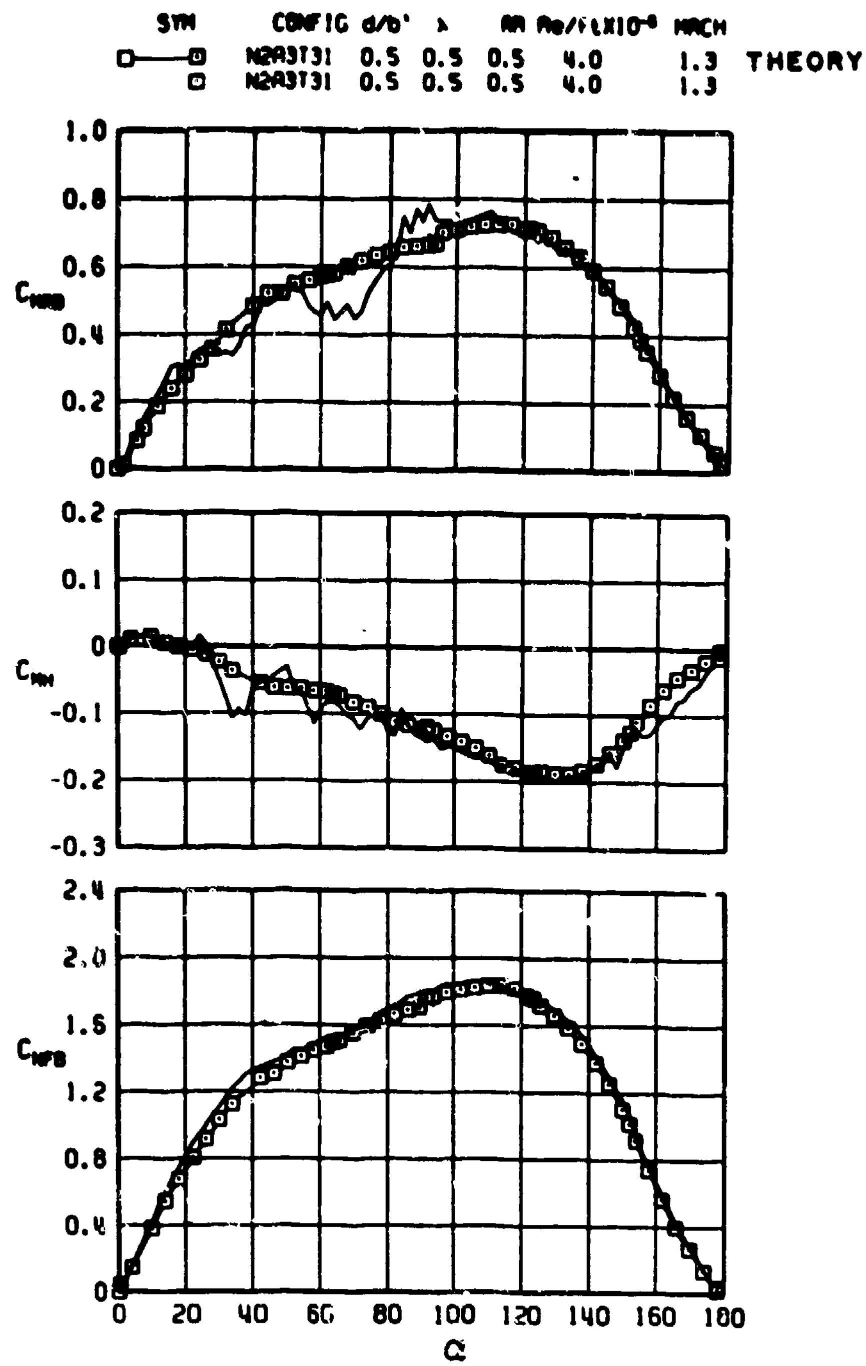


Figure 41. (Continued)

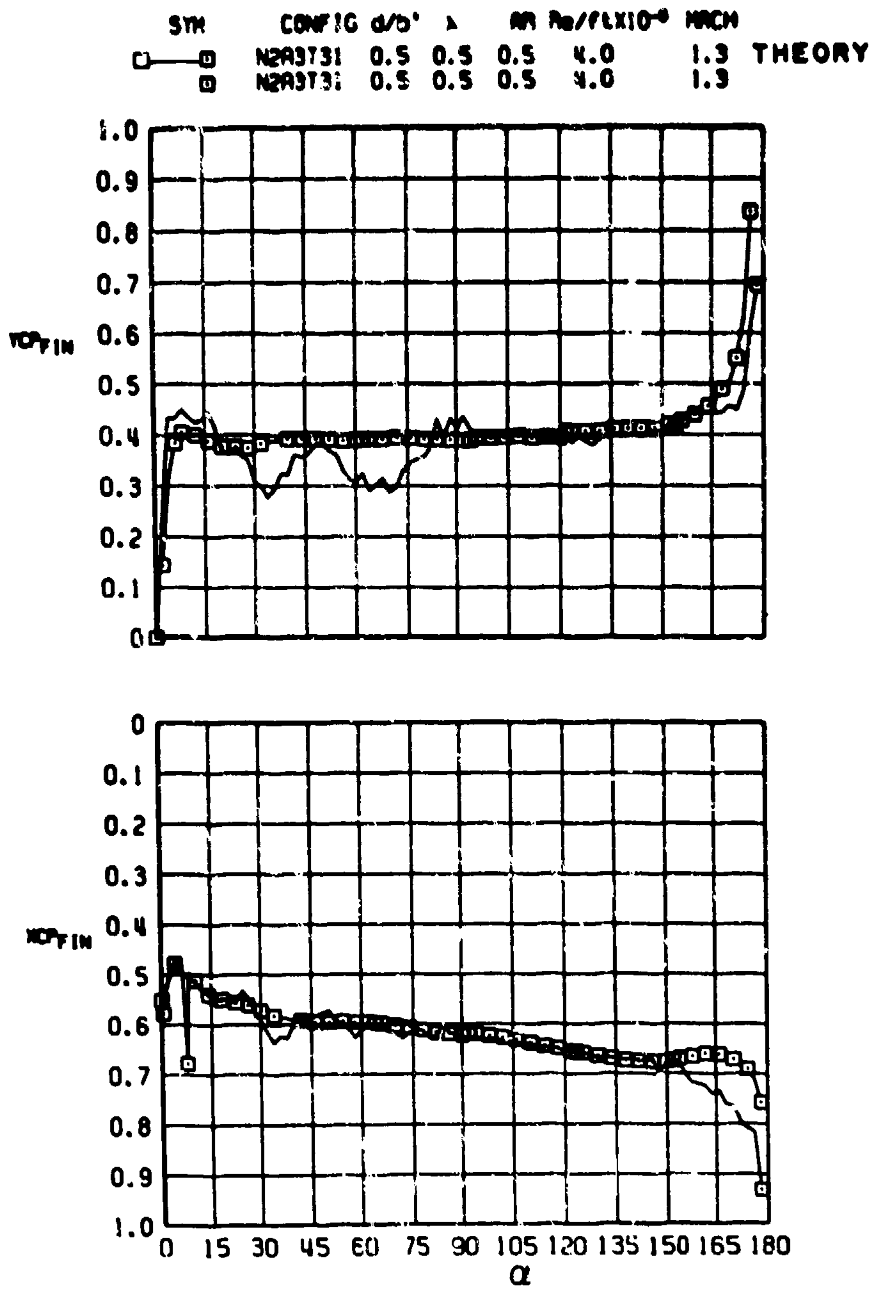


Figure 41. (Continued)

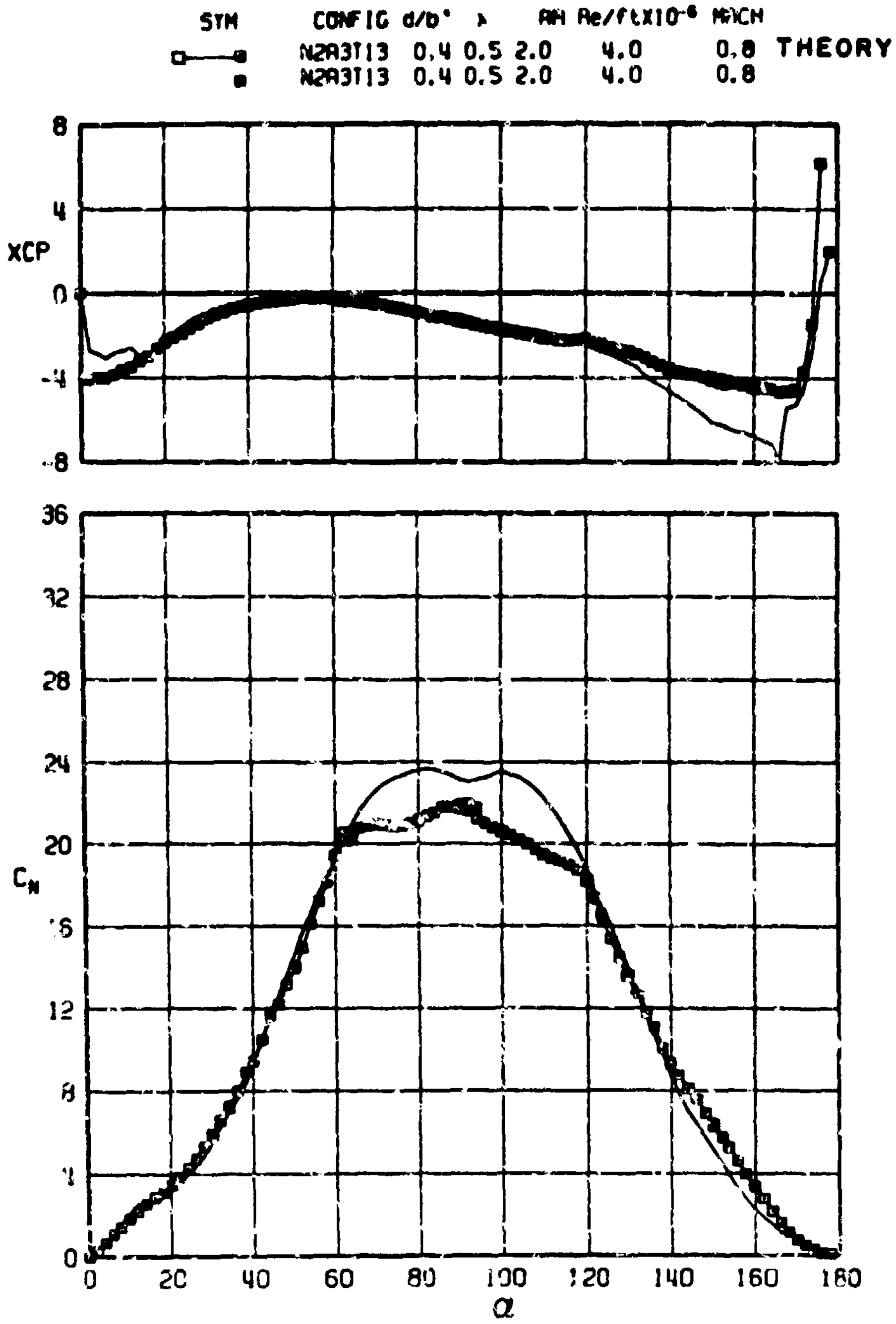


Figure 42. Comparison of typical, measured ℓ/d = 15 body plus AR = 2 fin data and predicted body plus fin aerodynamic coefficients, M = 0.8.

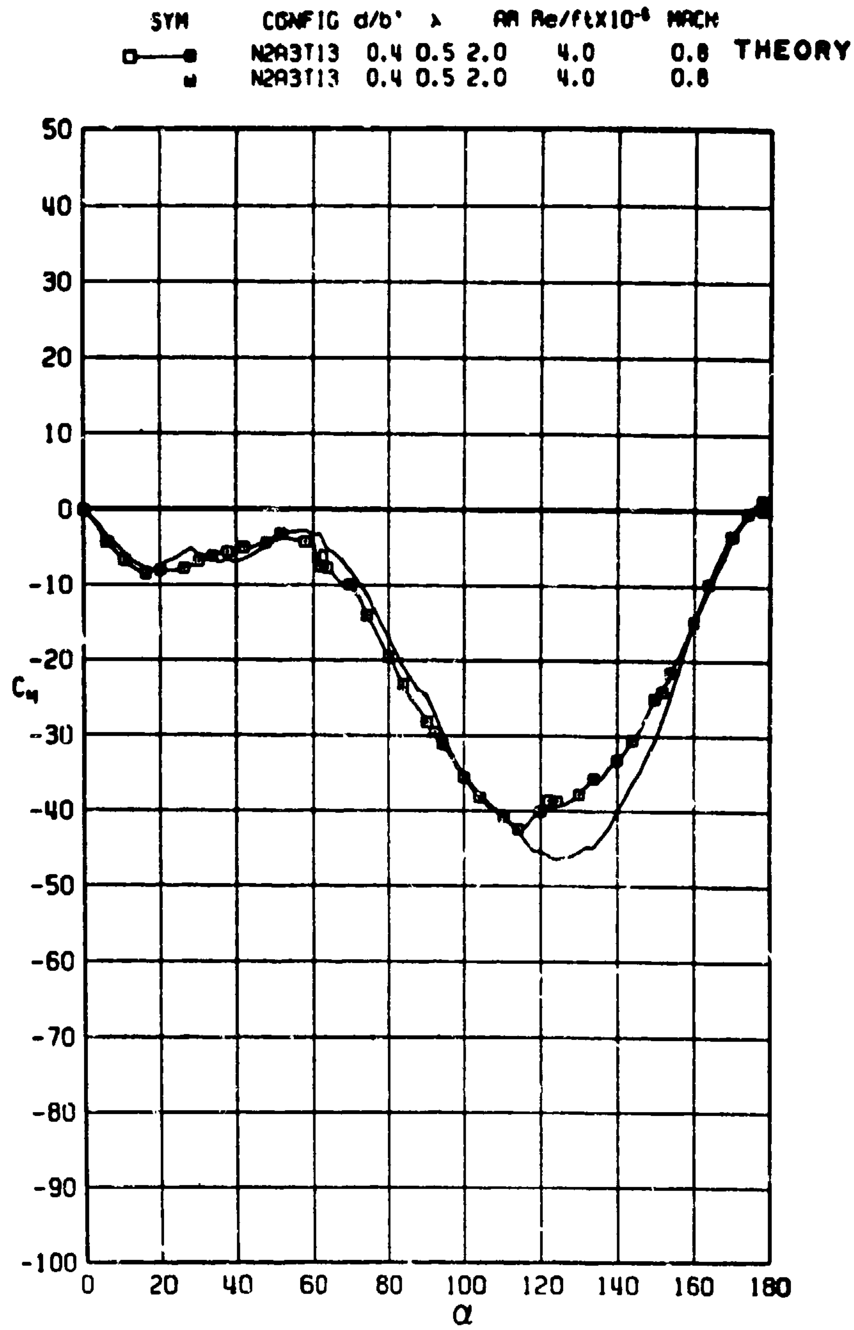


Figure 42. (Continued)

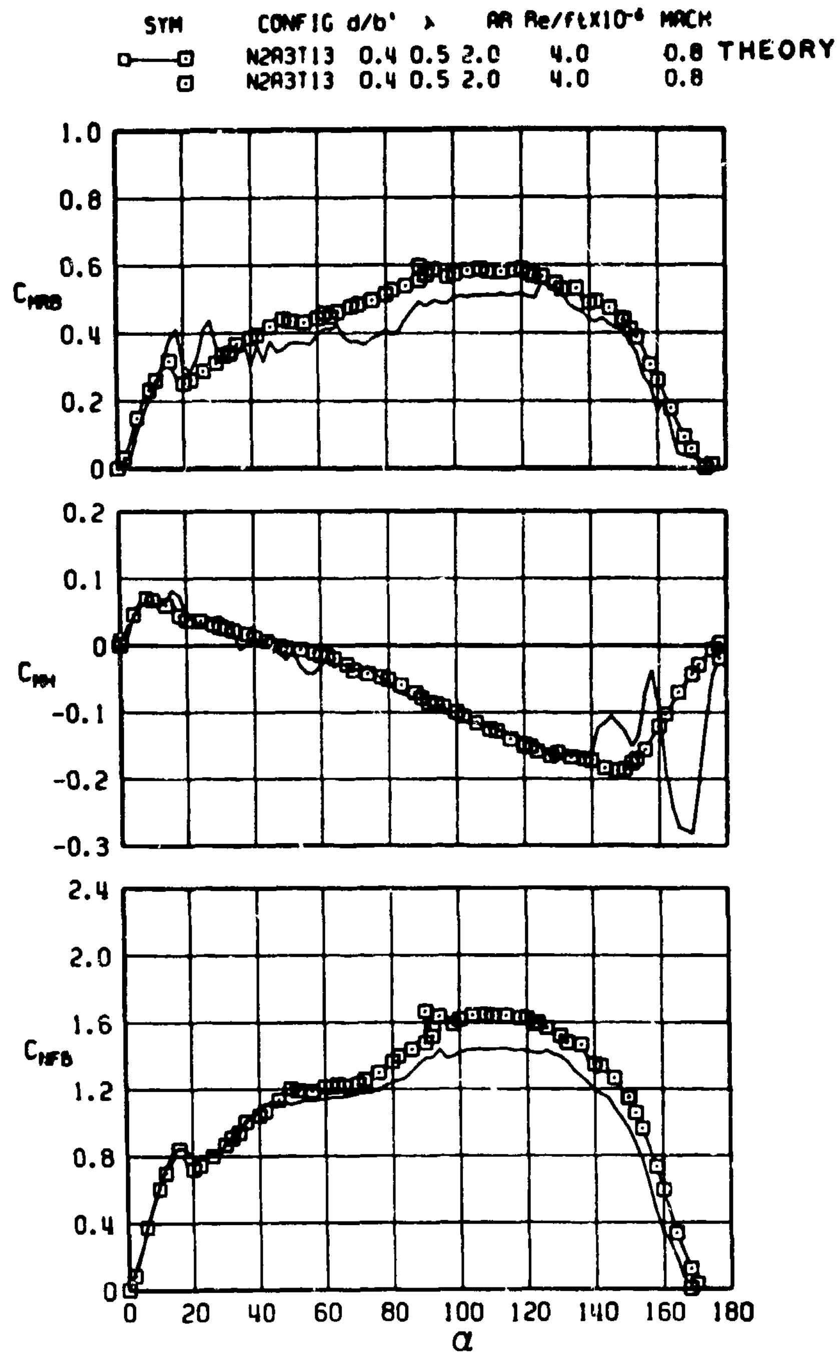


Figure 42. (Continued)

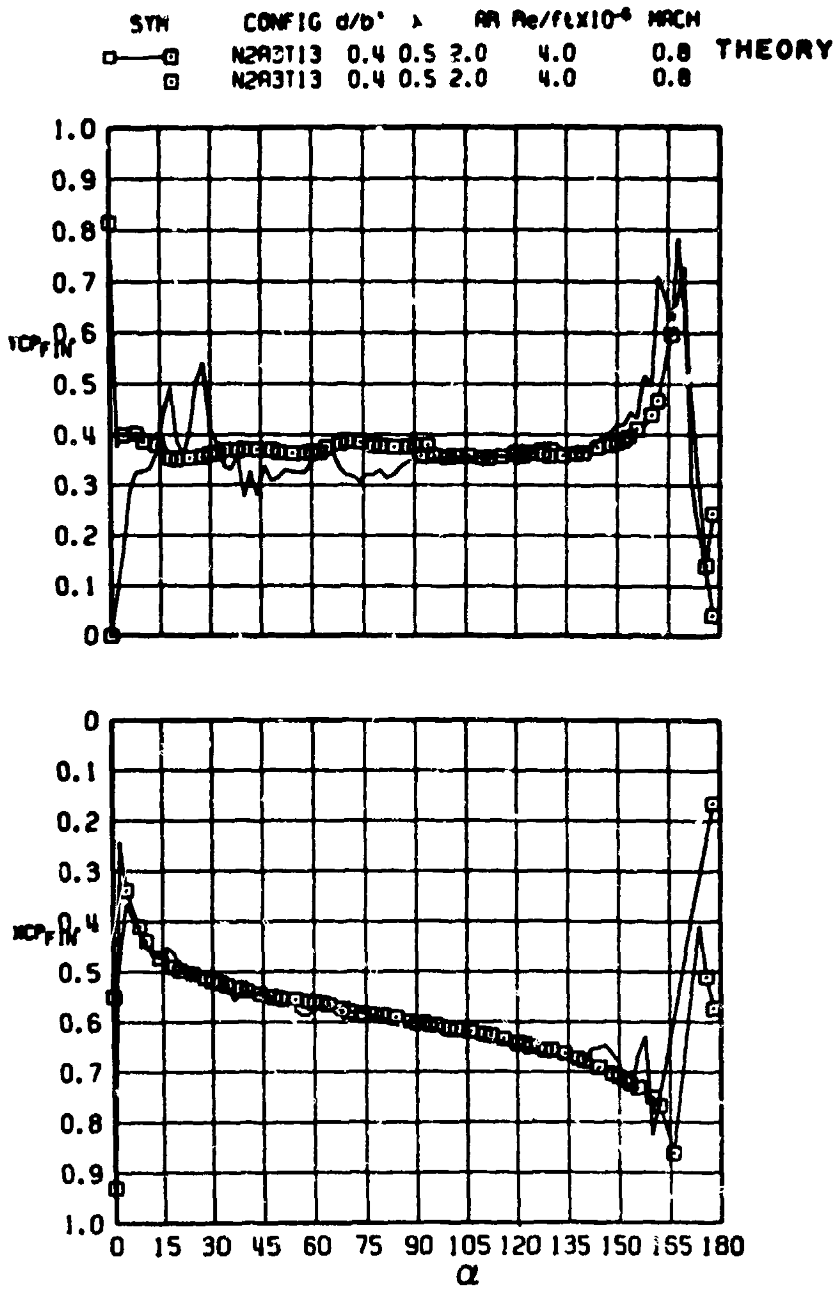


Figure 42. (Continued)

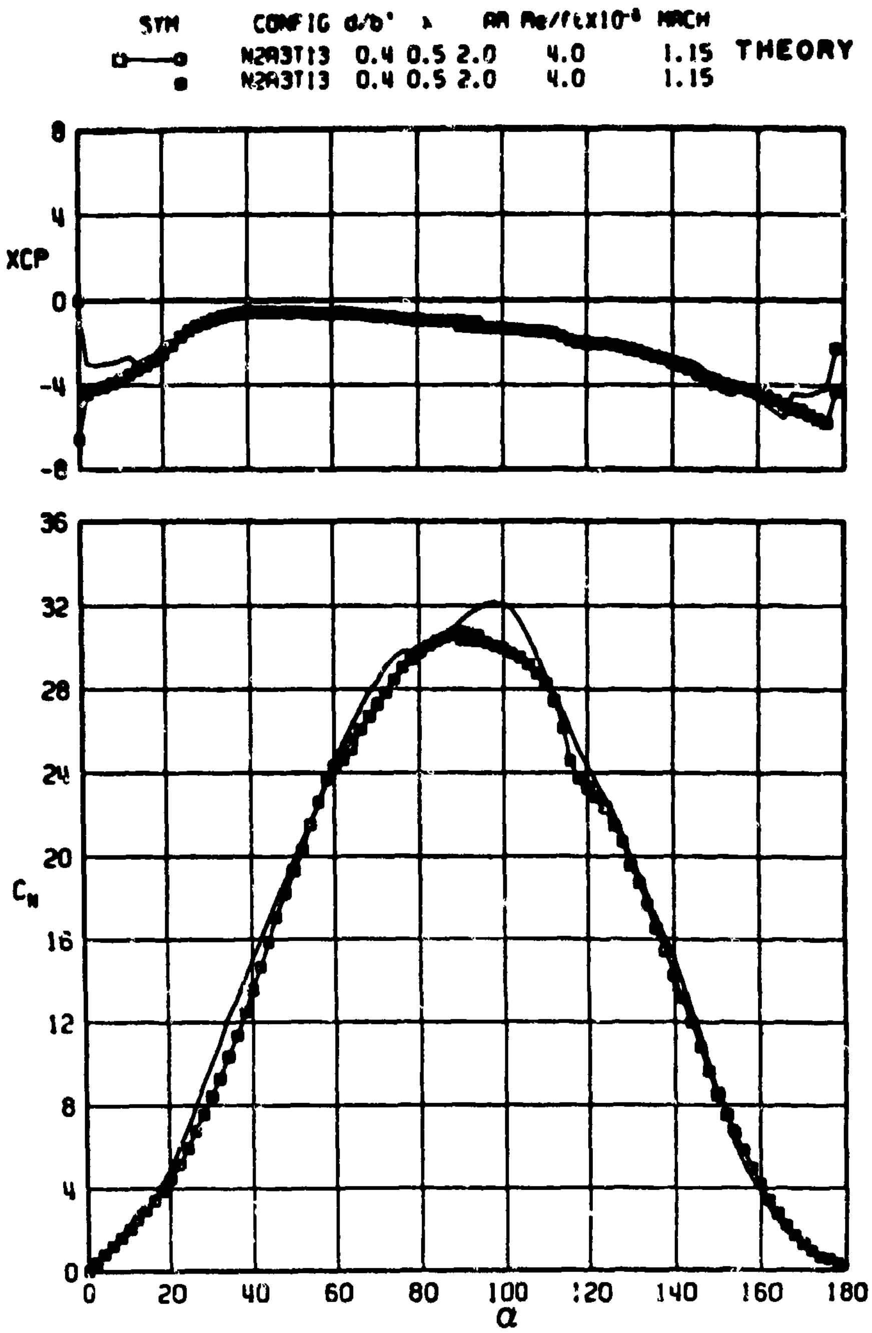


Figure 43. Comparison of typical, measured ℓ/d = 1.5 body plus AR = 2.0 fin data and predicted body plus fin aerodynamic coefficients, M = 1.15.

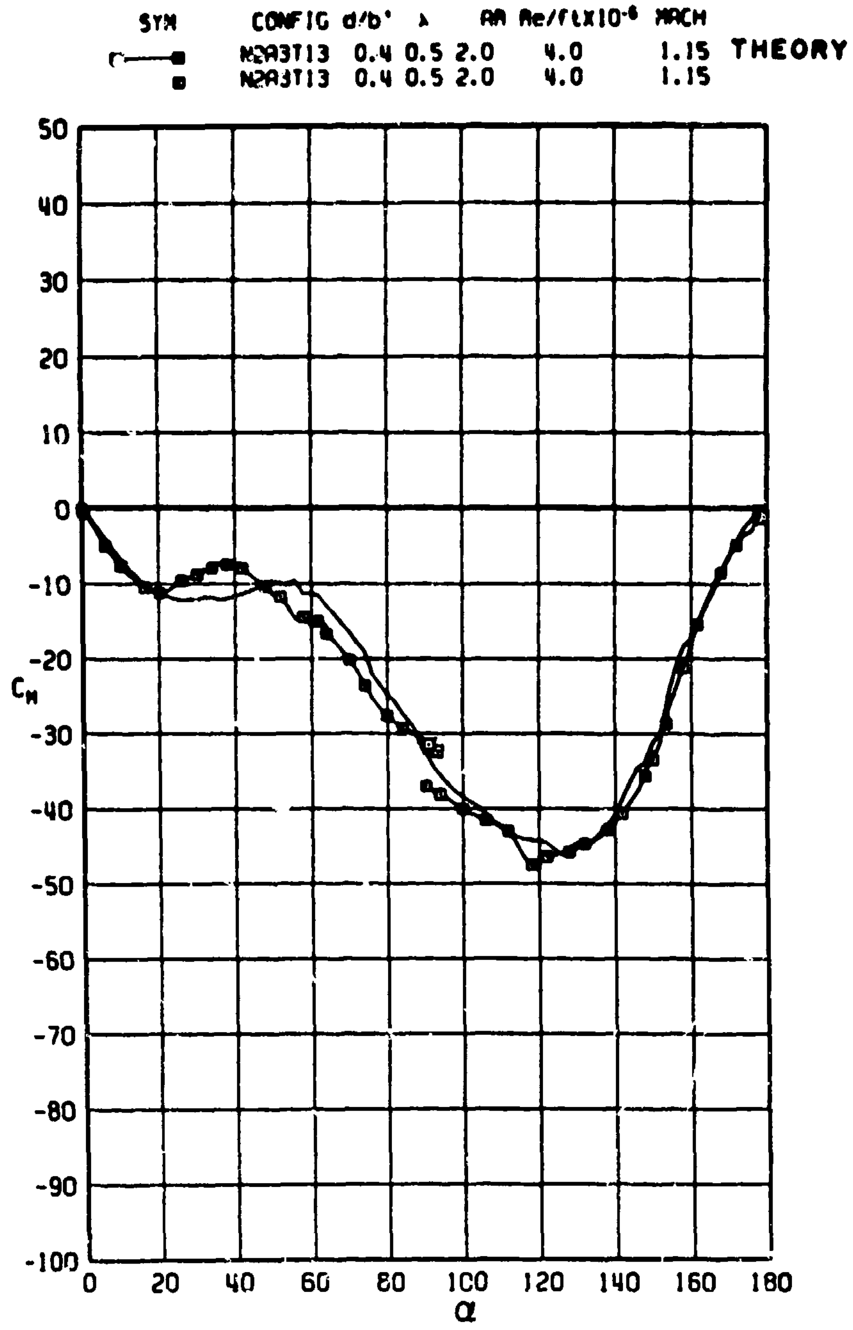


Figure 43. (Continued)

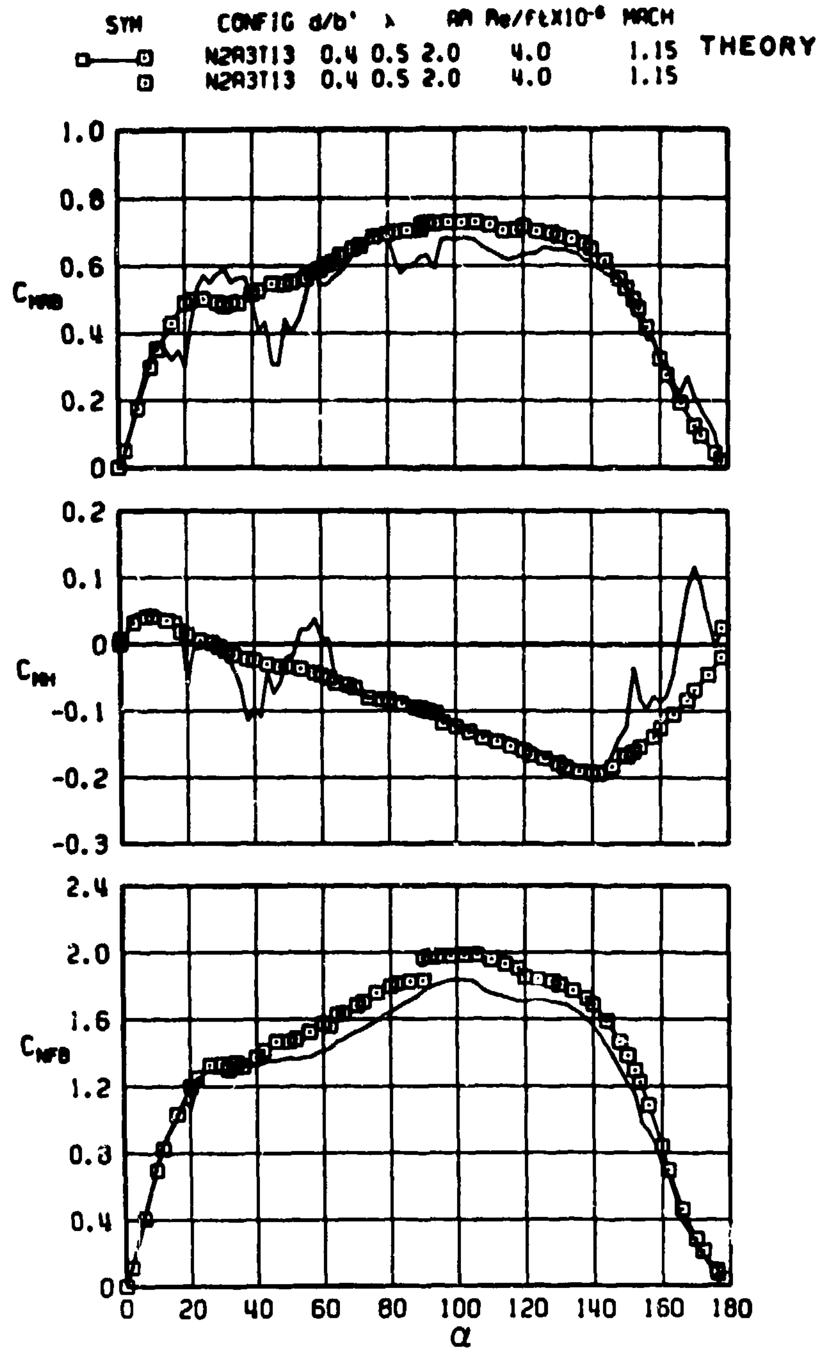


Figure 43. (Continued)

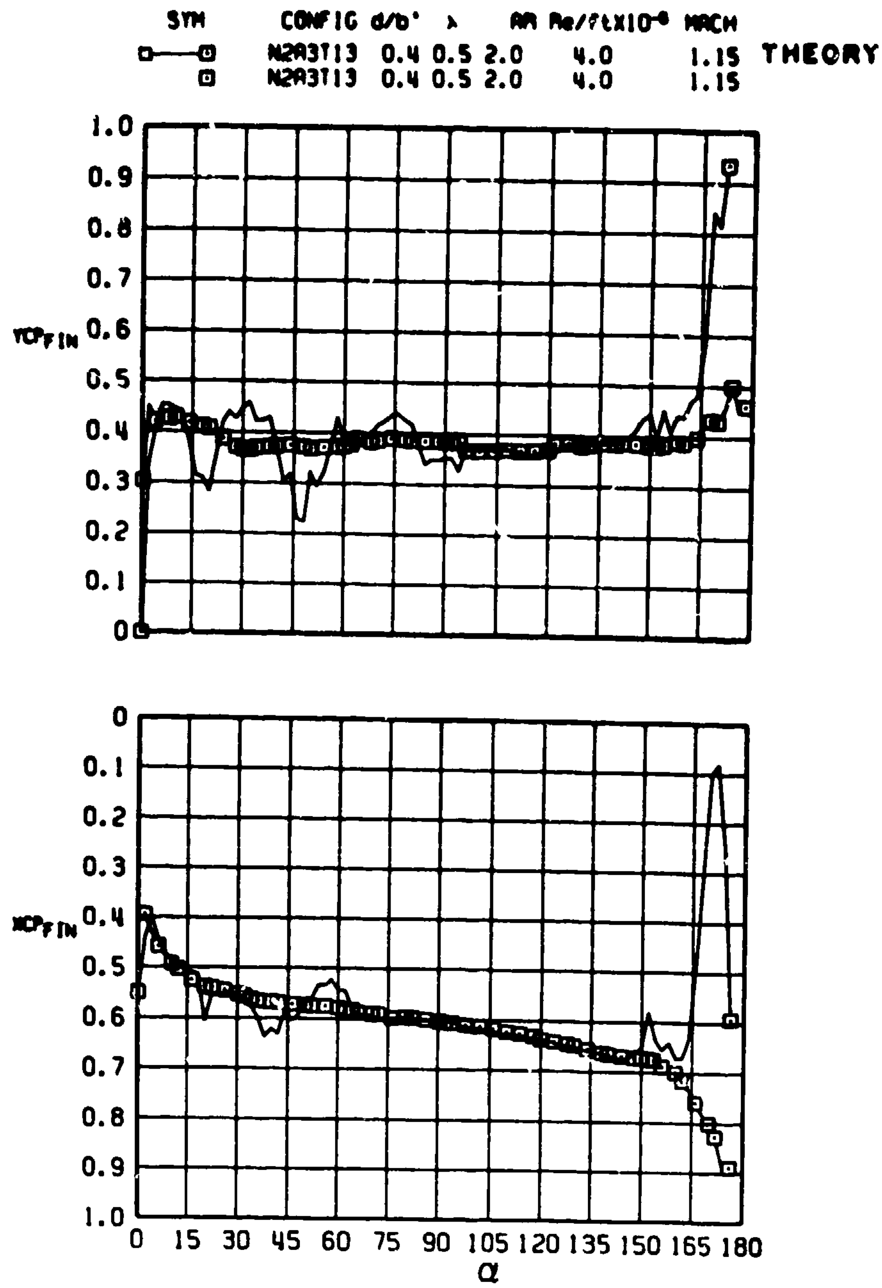


Figure 43. (Continued)

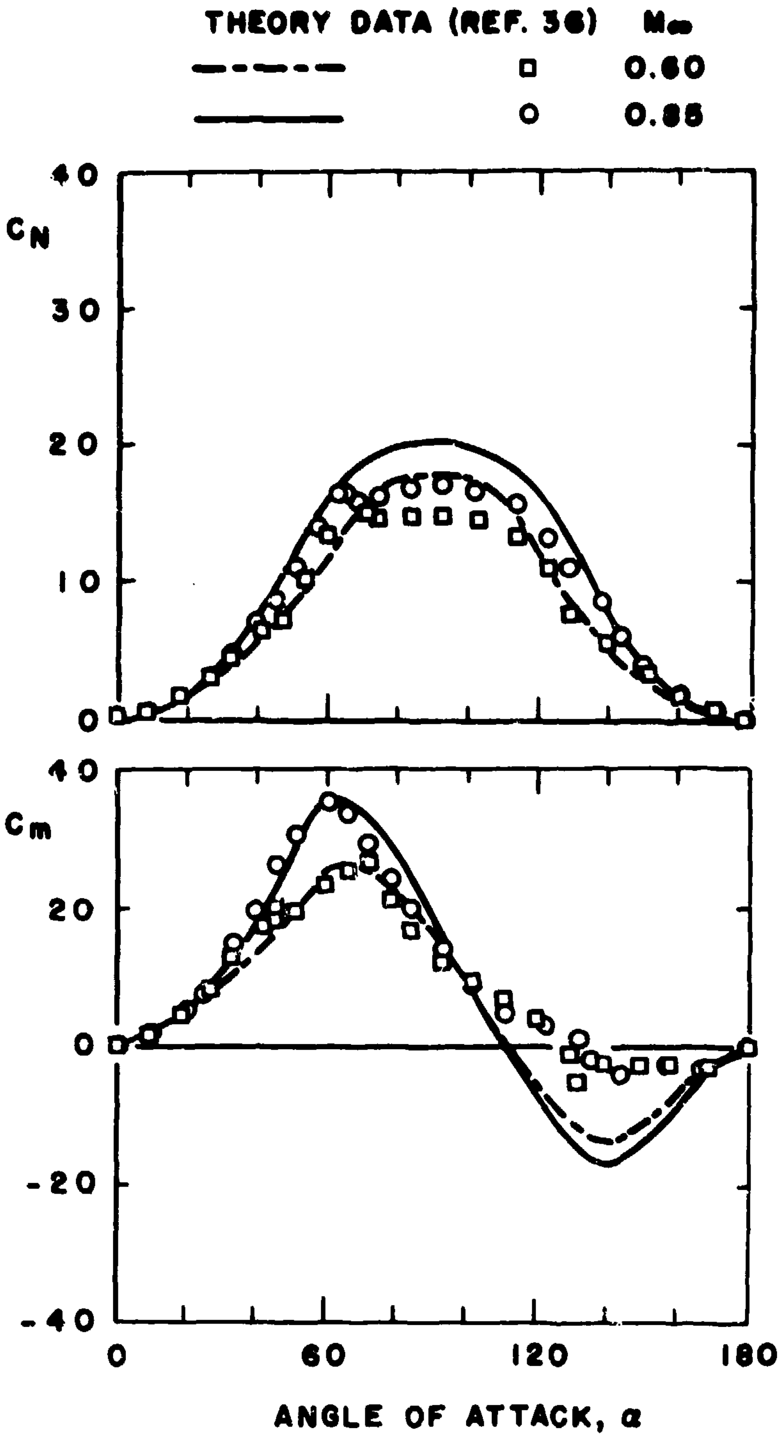


Figure 44. Comparison of measured and predicted coefficients for an ℓ/d = 15 slender body with a 2.5 cal. nose and a cylinder afterbody.

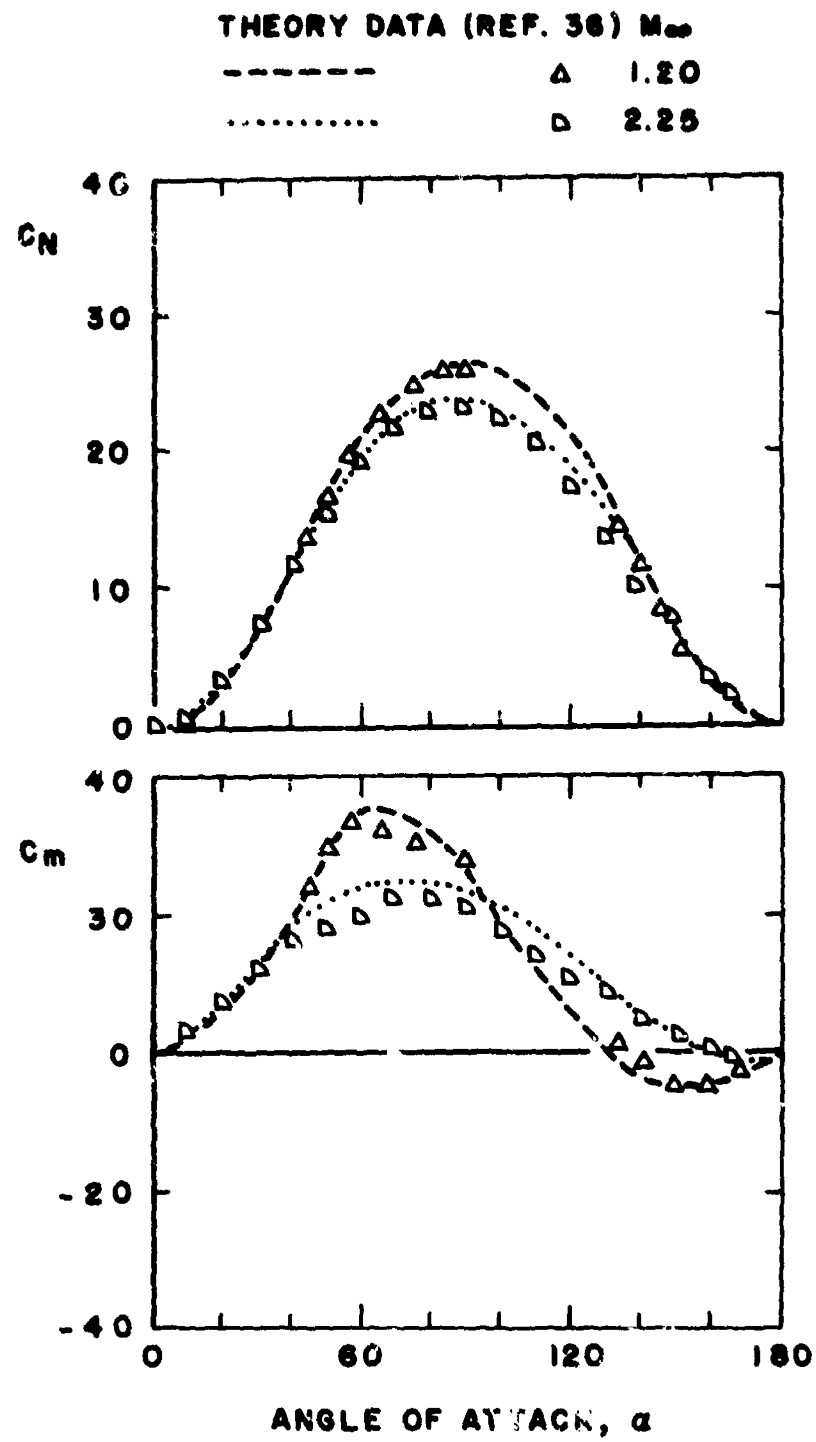


Figure 44. (Continued)

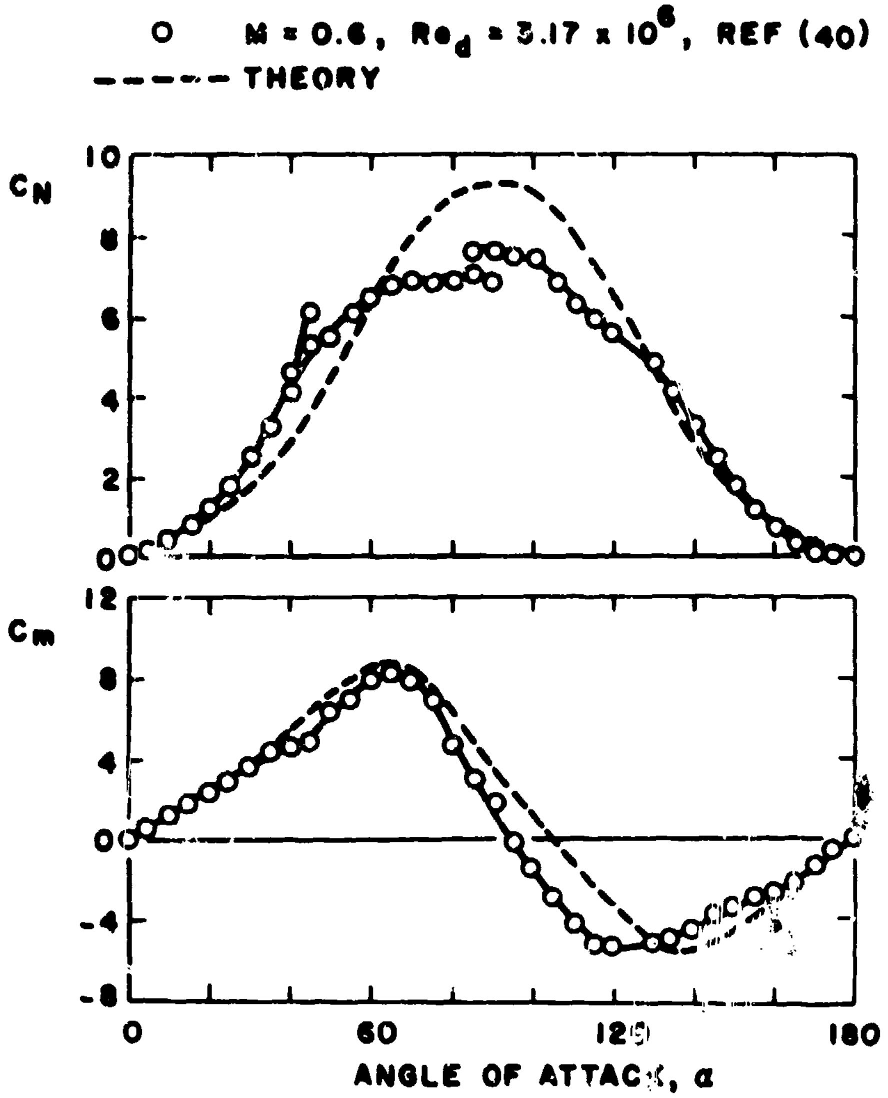


Figure 45. Comparison of measured and predicted coefficients for configuration N3B2 of the MX missile having a blunted, 2.14 cal. ogive nose and 6.15 cal. cylindrical afterbody.

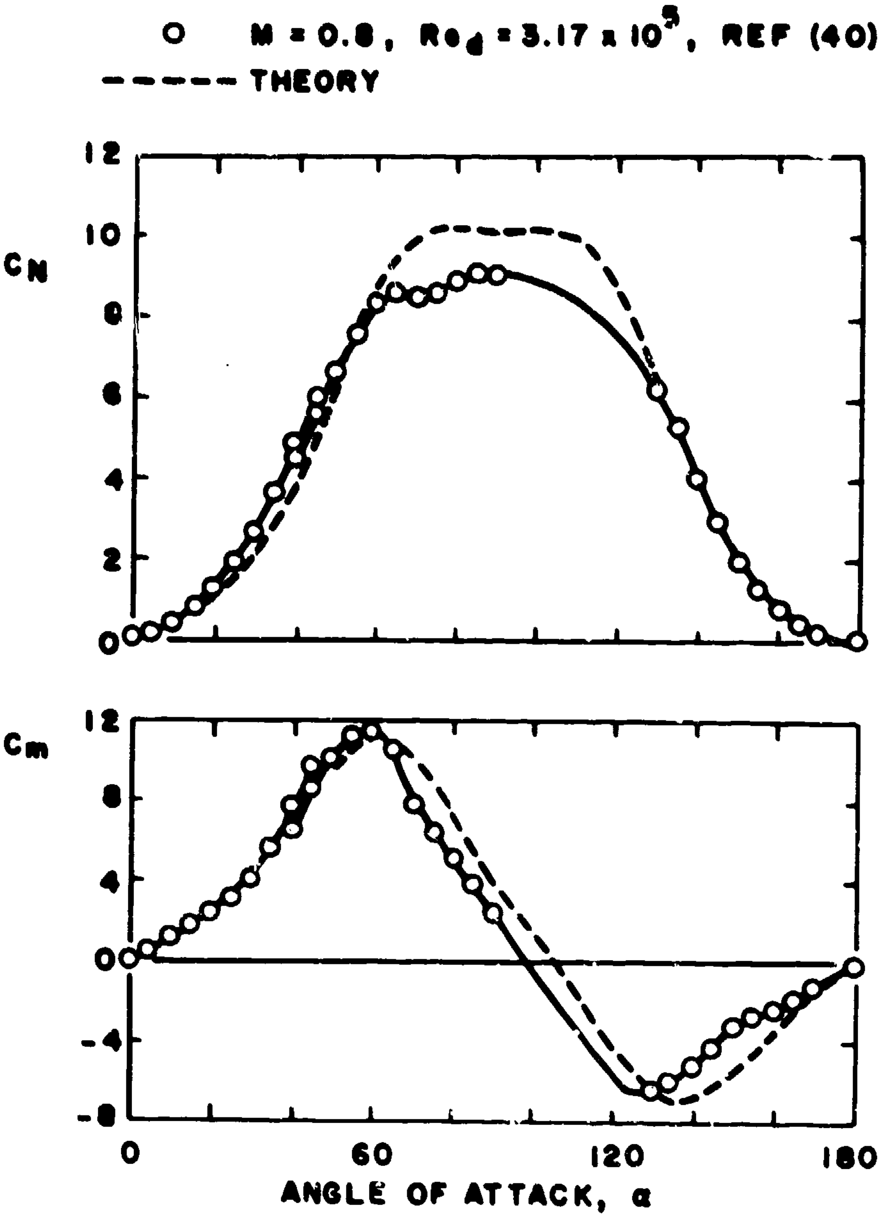


Figure 45. (Continued)

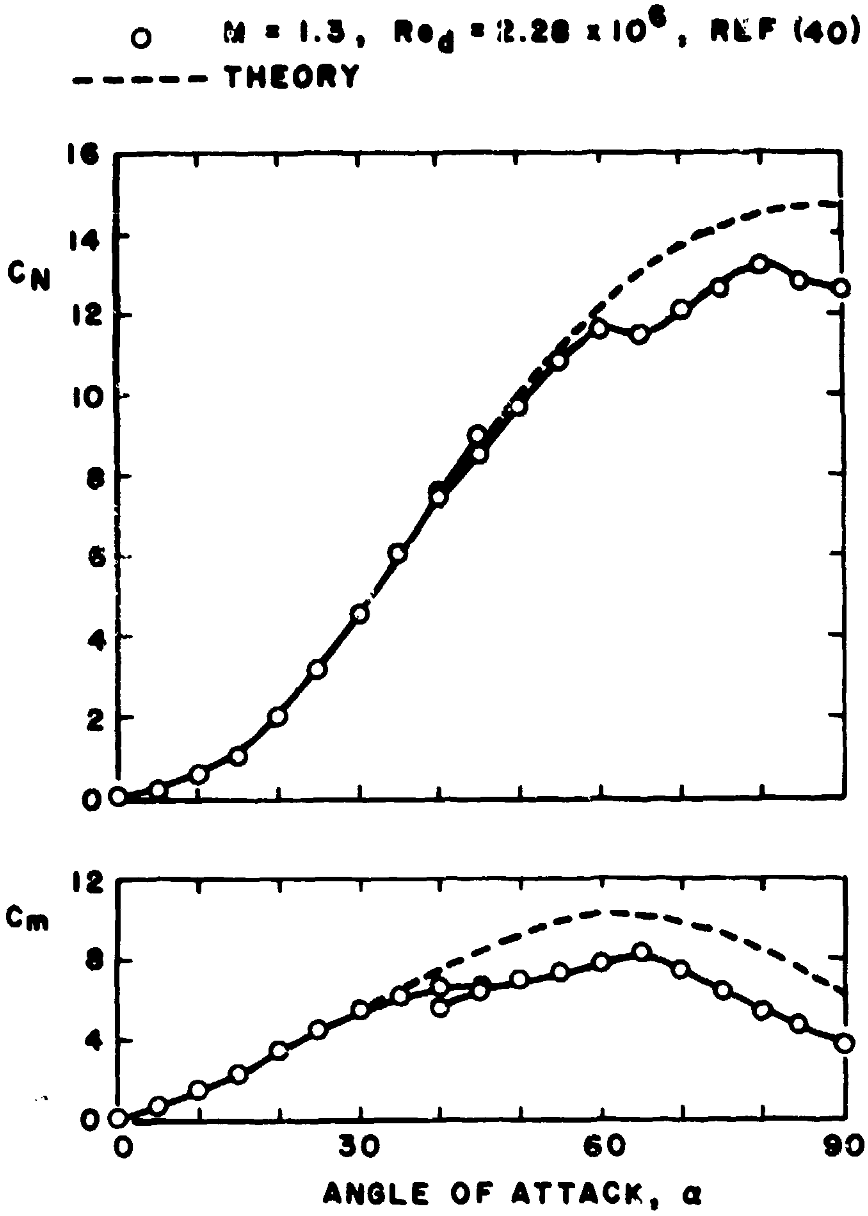


Figure 45. (Continued)

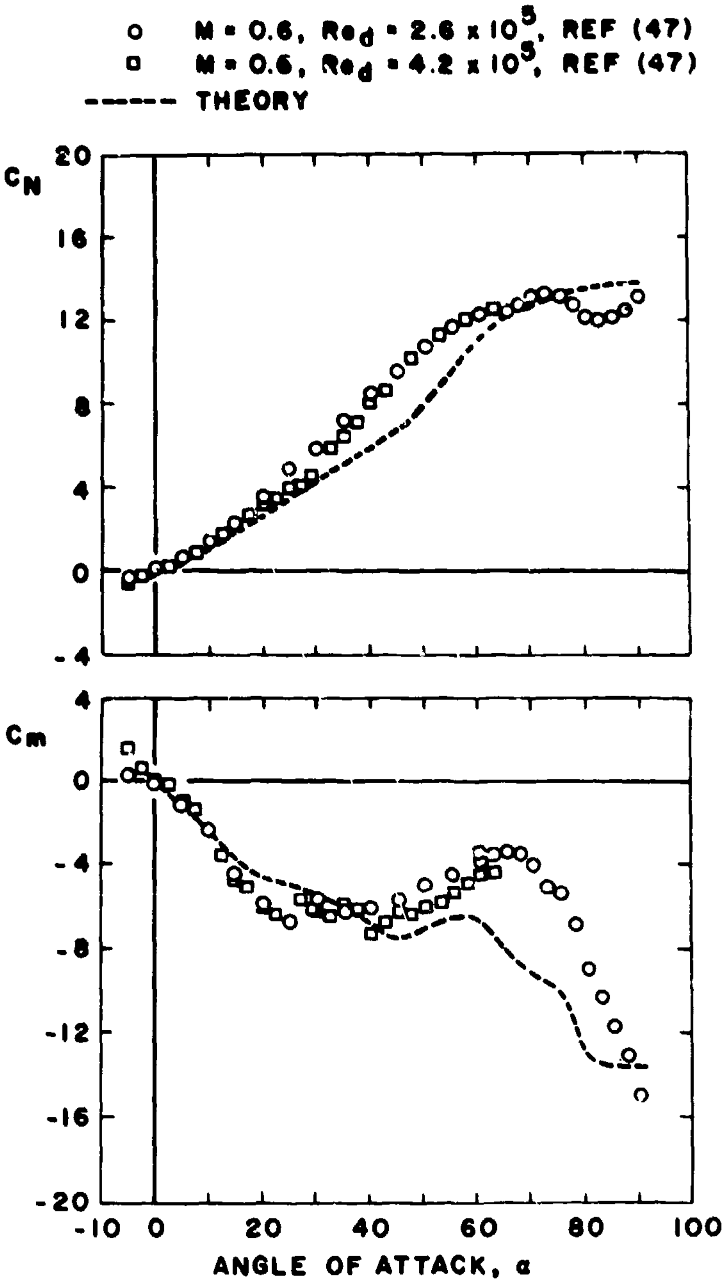


Figure 46. Comparison of measured and predicted coefficients for a modified basic finner model having an ogive cylinder body and low aspect ratio fins.

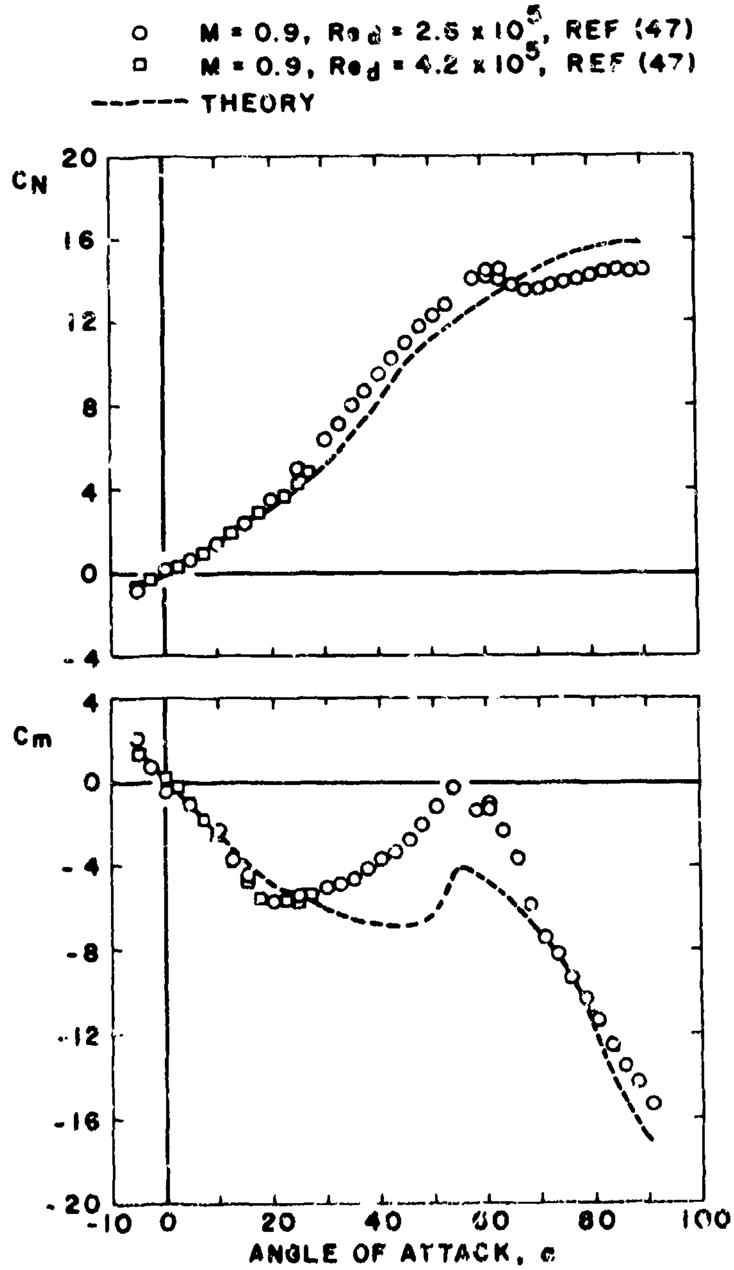


Figure 46. (Continued)

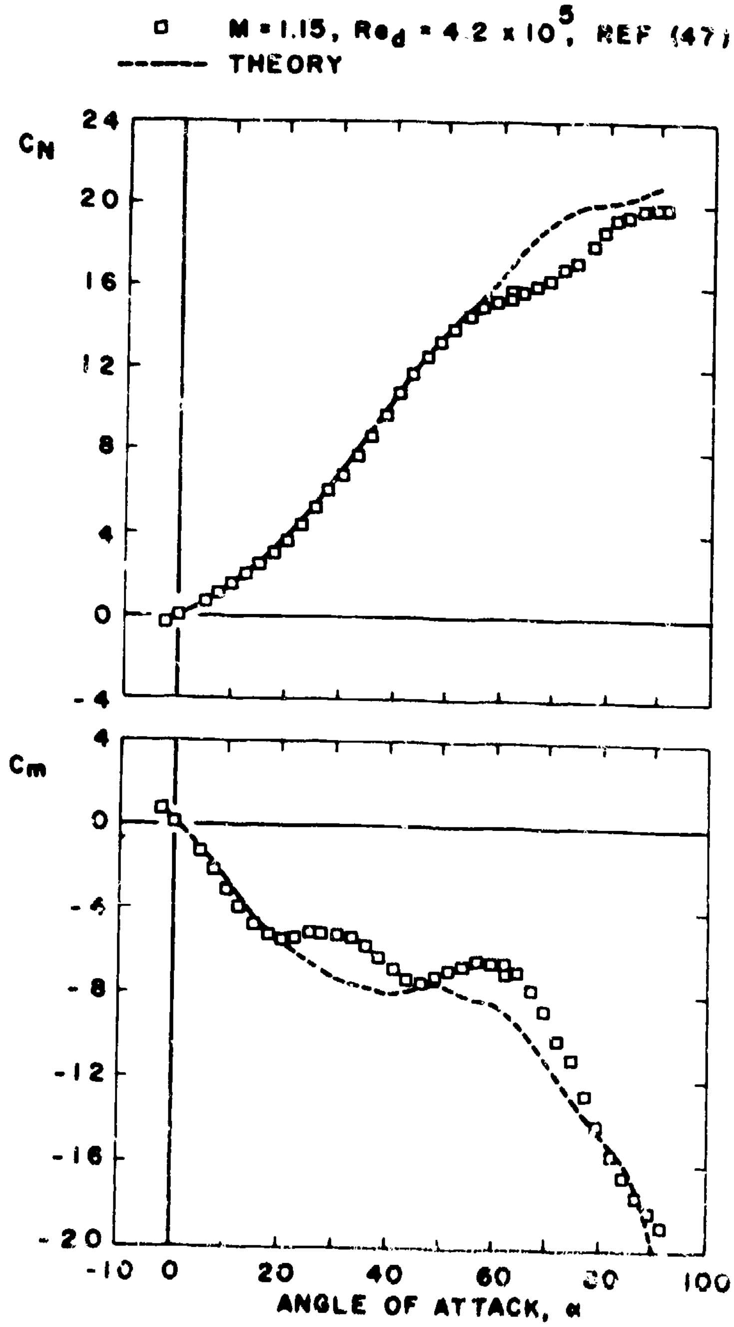


Figure 46. (Continued)

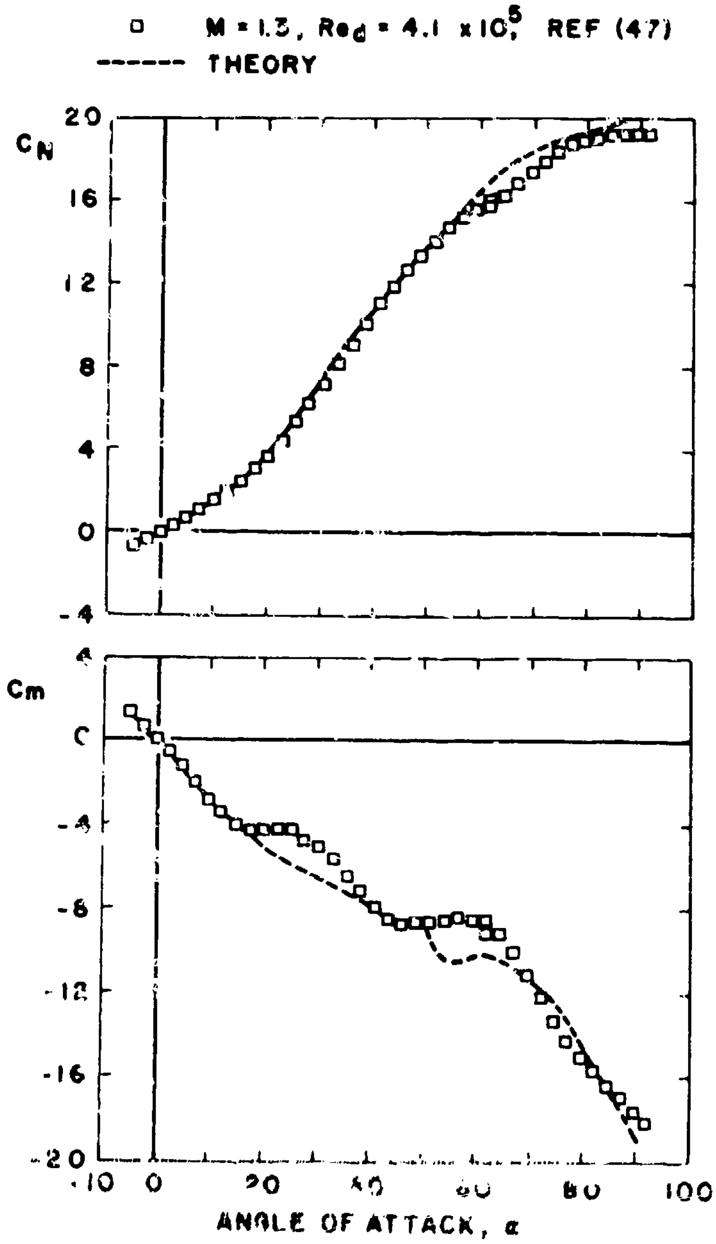


Figure 46. (Continued)

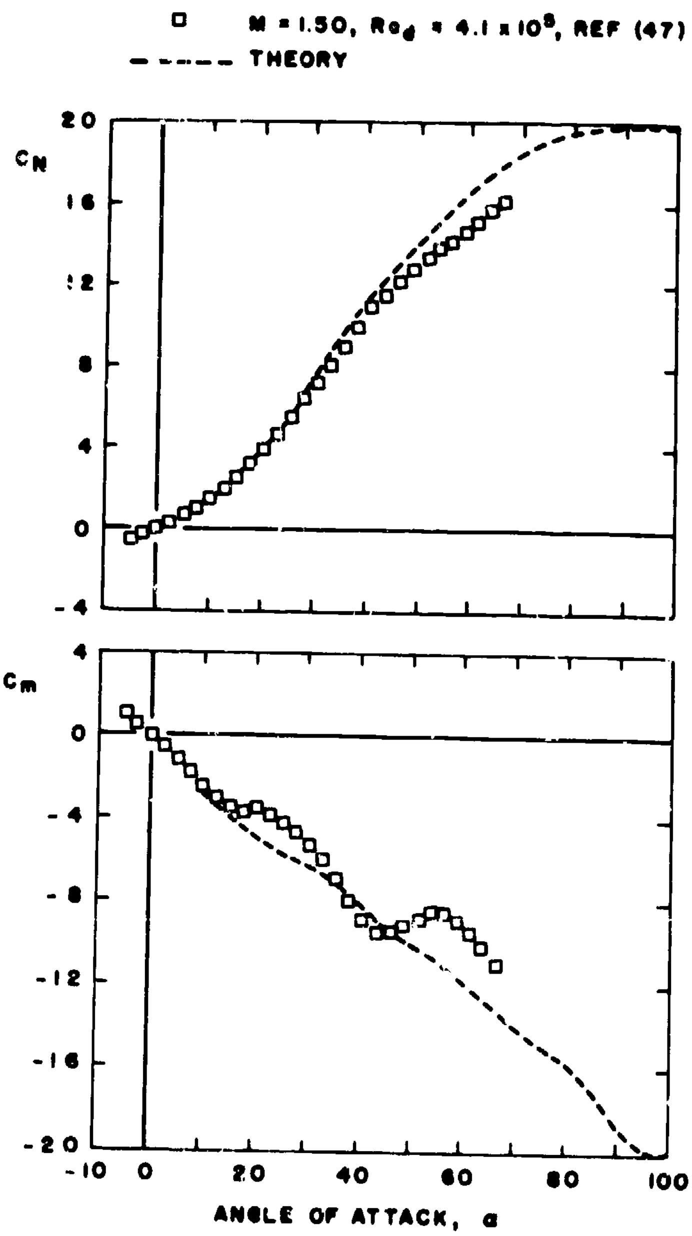


Figure 46 (Continued)

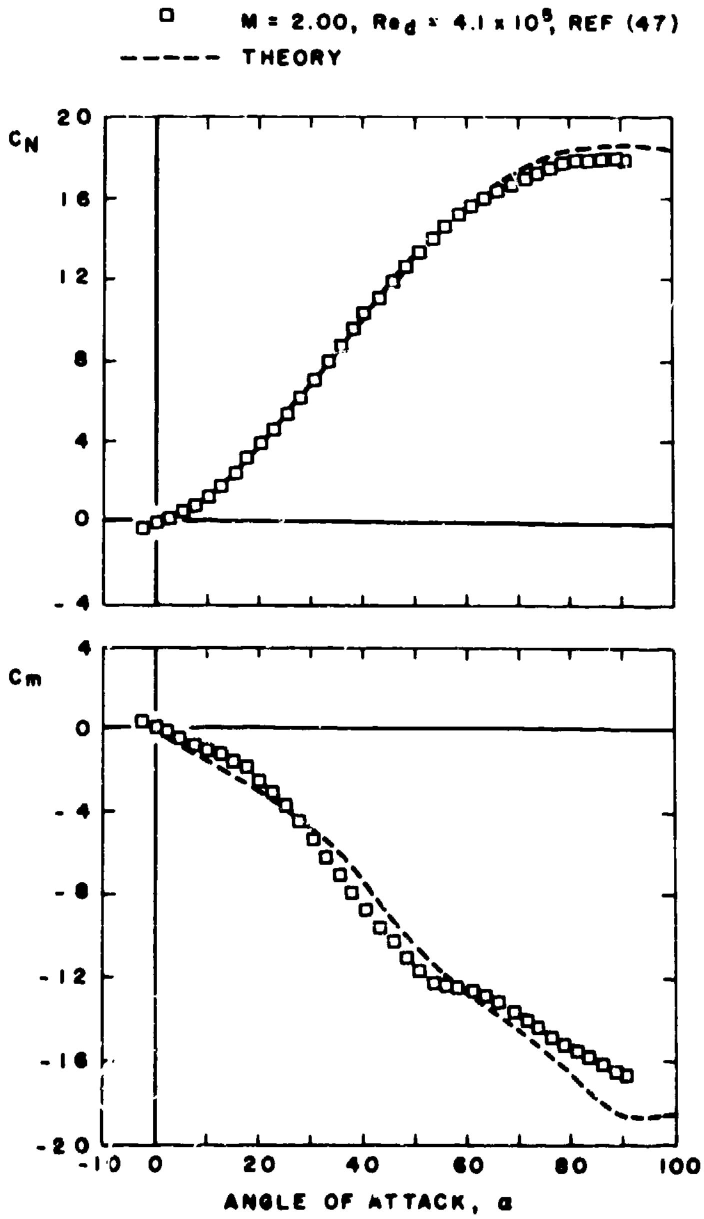


Figure 46 (Continued)

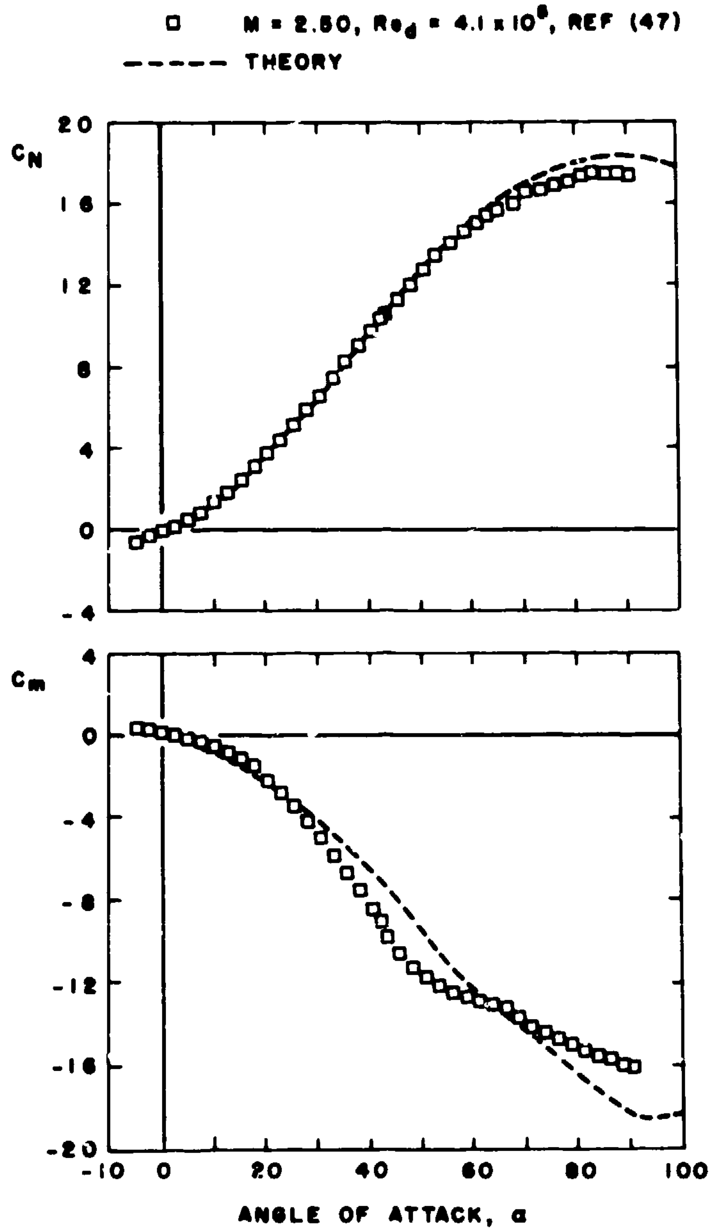


Figure 46 (Continued)

Preceding Page Blank - Fil[illegible]

APPENDIX B

INTERFERENCE

REGRESSION COEFFICIENTS

Table B-1

Regression Coefficients for $\Delta C_{N_{FOB}}$

REGRESSION COEFFICIENTS FOR EQUATION

ΔCNFOB =B1(0)+B1(1)*(TAPER RATIO)+B1(2)*(TAPER RATIO)**2+B1(3)*(ASPECT RATIO)+B1(4)*(SPAN RATIO)

		COEFFICIENTS FOR ΔCNFOB						COEFFICIENTS FOR ΔCNFOB				
MACH	ALPHA	B1(0)	B1(1)	B1(2)	B1(3)	B1(4)	ALPHA	B1(0)	B1(1)	B1(2)	B1(3)	B1(4)
0.60	0.0	0.0	0.0	0.0	0.0	0.0	92.0	-4.2436	2.7503	-1.9717	0.0957	3.2162
0.60	2.0	-0.3989	-0.0583	0.1202	0.1076	0.7554	94.0	-6.1068	0.7509	-0.3269	1.4807	11.7089
0.60	4.0	-0.6367	-0.0184	0.0949	0.1373	0.9127	96.0	-6.6857	0.3448	0.8891	1.6925	12.9394
0.60	6.0	-0.7081	0.0163	0.0537	0.2095	1.8096	98.0	-7.0641	-0.1916	0.5736	1.7577	13.9428
0.60	8.0	-0.8489	0.3508	0.0231	0.2690	1.9038	100.0	-6.5940	-0.6105	0.9852	1.6806	13.1010
0.60	10.0	-0.6929	0.5667	-0.0363	0.2291	1.8057	102.0	-5.0200	-0.3303	0.6267	1.2905	10.2220
0.60	12.0	-0.4190	-0.1861	0.1825	0.1015	1.5499	104.0	-3.8619	-0.4964	0.7082	1.0129	8.0967
0.60	14.0	-0.3948	-0.4382	0.4311	[illegible]	[illegible]	106.0	-2.6170	-0.6191	0.7082	0.7045	5.6944
0.60	16.0	-0.4811	[illegible]	0.3654	0.1307	2.0909	108.0	-2.8420	-0.4442	0.5903	0.6307	5.5343
0.60	18.0	-0.4106	-0.3399	0.3047	0.1520	2.3405	110.0	-2.0293	[illegible]	0.3632	0.5029	[illegible]
0.60	20.0	-0.4792	-0.2246	0.1474	0.1293	2.9174	112.0	-1.9307	-0.5809	0.4252	0.4012	4.3052
0.60	22.0	-0.6472	-0.4841	0.2677	0.1520	3.6715	114.0	-2.2709	-0.8062	0.6373	0.5517	5.1806
0.60	24.0	-0.9243	-0.4746	0.2240	0.1687	4.7330	116.0	-2.3859	-0.8343	0.7196	0.5916	5.0743
0.60	26.0	-0.4495	-1.0815	0.7617	0.0631	4.3081	118.0	-1.8797	-0.9842	0.7980	0.5063	4.5144
0.60	28.0	-1.0160	-0.4620	0.1536	0.0827	5.0880	120.0	0.3771	-0.5460	0.5348	-0.0109	0.6997
0.60	30.0	-0.4580	-0.2698	-0.0993	-0.0520	5.0290	122.0	1.3495	0.2837	-0.1768	-0.3492	-0.9872
0.60	32.0	-0.4238	-0.4180	-0.2030	-0.0223	5.5223	124.0	2.6782	-0.3159	0.1402	-0.6080	-2.3609
0.60	34.0	-1.3874	-1.0877	0.4422	0.1011	7.9994	126.0	3.1603	-0.3529	-0.0900	-0.8340	-2.8514
0.60	36.0	0.2237	-1.2573	0.5489	-0.1654	6.0012	128.0	3.0007	-0.4186	-0.0899	-0.7983	-2.5700
0.60	38.0	0.9220	-1.2112	0.5439	-0.3216	3.7376	130.0	2.9695	-0.4670	0.0869	-0.6795	-1.9431
0.60	40.0	1.4746	-0.8608	0.3495	-0.4252	2.4210	132.0	2.3824	-0.5600	0.1699	-0.5960	-1.6810
0.60	42.0	2.1004	-1.3334	0.6822	-0.6114	1.0031	134.0	2.4163	-0.7172	0.2472	-0.6201	-1.7403
0.60	44.0	2.5613	-1.1109	0.5274	-0.7723	0.9661	136.0	1.8694	-0.5209	0.1120	-0.4962	-0.3768
0.60	46.0	2.9005	-1.0960	0.6087	-0.8790	0.8836	138.0	1.7184	-0.0746	0.2683	-0.4308	-0.7359
0.60	48.0	3.2133	0.1694	-0.6959	-1.0939	-0.9085	140.0	1.9399	-0.8220	0.4362	-0.4495	-1.3663
0.60	50.0	2.9849	0.0821	-0.5914	-1.0180	-0.0911	142.0	1.7628	-0.7204	0.4238	-0.4142	-1.5751
0.60	52.0	0.8543	0.5300	-1.2761	-0.5557	3.9990	144.0	1.3964	-0.6504	0.3069	-0.3837	-0.7097
0.60	54.0	-1.4560	0.9167	-1.8090	0.0234	0.2292	146.0	1.1104	-0.6862	0.4320	-0.2776	-0.3170
0.60	56.0	-3.5464	1.2385	-2.1113	0.6023	11.0588	148.0	0.9169	-0.6966	0.3587	-0.2682	-0.1730
0.60	58.0	-5.2873	1.3660	-2.1015	1.6405	14.0589	150.0	0.8313	-0.3701	0.2809	-0.2312	-0.1497
0.60	60.0	-5.3608	0.3019	-1.1903	1.2813	14.7017	152.0	0.3987	-0.1546	0.1159	-0.1341	0.5306
0.60	62.0	-6.3725	-0.1350	-0.7206	1.6827	14.1706	154.0	0.2893	-0.1856	0.0111	-0.0490	0.7620
0.60	64.0	-6.5256	0.5357	-1.1317	1.7652	14.0308	156.0	0.2362	0.0035	-0.0927	-0.0358	0.6947
0.60	66.0	-5.6885	-0.4939	-0.3048	1.6200	14.6949	158.0	0.0908	0.0427	-0.1287	-0.0004	0.9259
0.60	68.0	-5.0335	-0.5418	-0.0704	1.4262	13.5093	160.0	-0.0123	0.1457	-0.2723	0.0441	1.6709
0.60	70.0	-4.8079	-0.9244	0.3104	1.3851	12.9165	162.0	0.1346	0.1287	-0.2934	0.0111	0.0353
0.60	72.0	-4.7177	-1.0609	0.4466	1.3685	12.3969	164.0	0.4676	-0.0222	-0.1595	-0.0619	0.2129
0.60	74.0	-4.1792	-0.8273	0.3421	1.1756	10.9318	166.0	0.5607	-0.2149	0.0067	-0.0804	-0.3072
0.60	76.0	-2.8948	-0.2918	0.0332	0.8823	7.7916	168.0	0.9251	-0.2471	0.0838	-0.1612	-0.0993
0.60	78.0	-2.7678	2.1257	-1.8308	0.5166	6.9335	170.0	0.9716	-0.2246	0.0990	-0.1032	-1.1314
0.60	80.0	-1.9819	3.1335	-2.5743	0.2166	5.1399	172.0	0.6958	-0.1068	0.0312	-0.1085	-0.0924
0.60	82.0	-0.5217	2.8016	-2.2657	-0.0943	2.1809	174.0	0.2323	0.6193	-0.0737	-0.0455	-0.1987
0.60	84.0	2.0008	0.4349	-1.2654	-0.4442	-0.6454	176.0	-0.9250	-0.8089	-0.0476	0.6191	0.2946
0.60	86.0	1.8711	0.5738	-1.2277	-0.4845	0.0167	178.0	-0.1308	-0.0577	-0.0262	0.0254	0.4677
0.60	88.0	1.7169	0.6576	-1.1895	-0.6489	0.0048	180.0	0.0	0.0	0.0	0.0	0.0
0.60	90.0	-3.5716	3.0071	-2.1900	0.7825	6.7352						

Table B-1 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

ΔCNFOB =B1(0)+B1(1)*(TAPER RATIO)+B1(2)*(TAPER RATIO)^2+B1(3)*(ASPECT RATIO)+B1(4)*(SPAN RATIO)

		COEFFICIENTS FOR ΔCNFOB						COEFFICIENTS FOR ΔCNFOB				
MACH	ALPHA	B1(0)	B1(1)	B1(2)	B1(3)	B1(4)	ALPHA	B1(0)	B1(1)	B1(2)	B1(3)	B1(4)
0.80	0.0	0.0	0.0	0.0	0.0	0.0	92.0	0.6302	0.3174	-0.0720	-0.0317	-0.2706
0.80	2.0	-0.3271	0.0726	-0.0023	0.0053	0.5952	94.0	0.5454	0.1014	0.1610	-0.0192	0.0319
0.80	4.0	-0.4563	0.0734	-0.0049	0.1431	0.0978	96.0	-0.0494	0.0905	0.1990	0.1103	1.3362
0.80	6.0	-0.5540	0.1174	-0.0377	0.1906	1.1299	98.0	-0.7204	-0.0652	0.3010	0.2029	3.0621
0.80	8.0	-0.6983	0.0950	-0.0119	0.2405	1.5406	100.0	-1.0547	-0.1646	0.3007	0.3033	3.9011
0.80	10.0	-0.7540	0.0799	-0.0797	0.2415	1.9037	102.0	-0.7192	-0.3043	0.4023	0.2023	3.3072
0.80	12.0	-0.7822	0.0239	-0.0503	0.2395	2.3597	104.0	-0.5312	-0.4226	0.5702	0.2206	3.1926
0.80	14.0	-0.7629	-0.1069	0.1443	0.2345	2.6042	106.0	0.0606	-0.3371	0.4073	0.0940	1.0503
0.80	16.0	-0.6523	-0.3306	0.2941	0.1031	2.7513	108.0	0.2109	-0.2040	0.4649	0.0319	1.9011
0.80	18.0	-0.6014	-0.2611	0.1768	0.1915	3.1048	110.0	0.2136	-0.3379	0.5243	0.0216	1.2000
0.80	20.0	-0.9014	-0.1763	0.0176	0.2227	3.0666	112.0	0.5039	-0.2727	0.4042	-0.0577	0.5796
0.80	22.0	-0.7859	-0.2006	-0.0755	0.1053	4.0837	114.0	0.6699	-0.3733	0.5428	-0.0933	-0.1090
0.80	24.0	-0.6410	-0.3953	0.0071	0.1377	4.2728	116.0	0.6213	-0.5054	0.5033	-0.1020	-0.0904
0.80	26.0	0.0403	-0.9405	0.4500	0.0040	3.5130	118.0	0.9769	-0.4341	0.5496	-0.1967	-1.0216
0.80	28.0	0.0337	-0.0751	0.4113	-0.0539	3.0695	120.0	1.0750	-0.3232	0.4307	-0.3007	-3.[illegible]
0.80	30.0	0.2737	-0.0152	0.2399	-0.0986	3.0365	122.0	2.6224	-0.4150	0.6023	-0.6398	-4.6172
0.80	32.0	0.1836	-0.9124	0.2576	-0.0591	4.2306	124.0	3.2405	-0.2450	0.4196	-0.7360	-5.9767
0.80	34.0	0.0735	-1.0008	0.3311	-0.2.17	3.3220	126.0	0.0552	-0.3671	0.3929	-0.0714	-0.2117
0.80	36.0	2.3044	-1.0282	0.2391	-0.5275	0.7235	128.0	-0.0816	-0.3066	0.3678	-0.0326	-3.[illegible]
0.80	38.0	3.0186	-0.9968	0.2656	-0.0146	-0.1057	130.0	0.1527	-0.0061	0.4095	-0.0[illegible]	-0.2024
0.80	40.0	3.1670	-0.9379	0.2041	-0.0489	-0.4405	132.0	0.2318	-0.0511	0.4305	-0.1381	-0.2190
0.80	42.0	2.2538	-0.0039	0.1076	-0.6753	1.3515	134.0	3.6308	0.0322	0.[illegible]	-0.0341	-5.0783
0.80	44.0	1.7188	-1.0172	0.2951	-0.5505	2.4345	136.0	3.5204	0.0916	-0.1101	-0.0611	-6.0712
0.80	46.0	1.6834	-0.7045	0.0502	-0.5622	2.4596	138.0	2.7650	0.0735	-0.1596	-0.6693	-4.1237
0.80	48.0	1.2213	-0.7343	0.0345	-0.4688	3.1515	140.0	2.4266	-0.0133	-0.1606	-0.5702	-3.6933
0.80	50.0	0.9723	-0.3006	-0.3683	-0.3803	3.3069	142.0	2.0079	-0.0648	-0.0580	-0.4761	-2.7061
0.80	52.0	0.0176	-0.2265	-0.4355	-0.3035	3.1225	144.0	1.0399	-0.1221	0.0216	-0.4378	-2.4503
0.80	54.0	0.3026	-0.4500	-0.1260	-0.1611	3.3978	146.0	0.0504	-0.0353	0.0220	-0.2203	-0.4066
0.80	56.0	-0.1700	-0.5721	-0.0135	0.6291	4.0566	148.0	0.5516	-0.0015	-0.0270	-0.1600	0.0004
0.80	58.0	0.0980	-0.6193	0.2116	-0.0453	3.1795	150.0	0.1744	0.1603	-0.1060	-0.0615	0.7720
0.80	60.0	-0.7224	-0.4067	0.1706	0.1025	4.4509	152.0	-0.2022	0.2496	-0.2530	0.0295	1.5096
0.80	62.0	-1.7024	-0.5521	0.2166	0.5010	6.1013	154.0	-0.3203	0.1725	-0.1001	0.0575	1.7434
0.80	64.0	-2.4076	-0.6541	0.3660	0.7022	7.1524	156.0	-0.2064	0.1190	-0.1794	0.0704	1.6736
0.80	66.0	-2.8308	-0.4386	0.2205	0.7909	7.9712	158.0	-0.2662	0.2224	-0.2719	0.0023	1.9048
0.80	68.0	-2.9594	-0.4965	0.2015	0.0331	8.0982	160.0	-0.0234	0.2222	-0.2006	0.0156	1.1170
0.80	70.0	-2.9441	-0.3975	0.1425	0.0091	8.1540	162.0	0.0067	0.0903	-0.1573	-0.0019	0.9991
0.80	72.0	-2.6262	-0.0699	-0.0291	6.7082	7.6663	164.0	0.2041	0.0229	-0.2016	-0.0306	0.5603
0.80	74.0	-2.5184	-0.1339	0.1497	0.6071	7.3030	166.0	0.7239	-0.1540	-0.0744	-0.1376	-0.3192
0.80	76.0	-2.4326	-0.2376	0.2763	0.6440	7.2131	168.0	0.9721	-0.2015	0.0296	-0.1980	-0.9053
0.80	78.0	-2.3515	-0.0452	0.0713	0.6206	7.0458	170.0	1.1559	-0.0050	-0.0413	-0.2512	-1.3903
0.80	80.0	-2.0705	-0.0826	0.1078	0.6072	6.3506	172.0	0.6621	-0.0111	-0.0727	-0.1493	-0.7063
0.80	82.0	-2.4188	0.0313	-0.0082	0.6065	6.9307	174.0	0.0701	-0.0491	-0.0213	-0.0049	0.0767
0.80	84.0	-2.0631	-0.0343	0.1425	0.6375	6.0576	176.0	-0.0609	-0.0464	-0.0260	0.0132	0.2679
0.80	86.0	-1.4500	0.2489	-0.0737	0.4002	4.5225	178.0	-0.1559	-0.0516	-0.0205	0.0208	0.5130
0.80	88.0	-0.5187	0.3656	-0.1300	0.2590	2.3050	180.0	0.0	0.0	0.0	0.0	0.0
0.80	90.0	0.2538	0.3829	-0.1137	0.0691	0.6290						

Table B-1 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

ΔCNFOB =B1(0)+B1(1)*(TAPER RATIO)+B1(2)*(TAPER RATIO)**2+B1(3)*(ASPECT RATIO)+B1(4)*(SPAN RATIO)

		COEFFICIENTS FOR ΔCNFOB						COEFFICIENTS FOR ΔCNFOB				
MACH	ALPHA	B1(0)	B1(1)	B1(2)	B1(3)	B1(4)	ALPHA	B1(0)	B1(1)	B1(2)	B1(3)	B1(4)
0.90	0.0	0.0	0.0	0.0	0.0	0.0	92.0	-2.0760	0.3693	-0.1302	0.0000	7.2420
0.90	2.0	-0.3665	0.1013	-0.0299	0.0067	0.5719	94.0	-2.5327	0.4982	-0.2097	0.7232	6.5144
0.90	4.0	-0.5718	0.1243	-0.0529	0.1690	1.0207	96.0	-1.6462	0.2203	-0.0503	0.4420	4.4000
0.90	6.0	-0.8726	0.1687	-0.0814	0.2764	1.6607	98.0	-0.0307	-0.0607	0.3299	0.2733	3.3633
0.90	8.0	-0.9472	0.1669	-0.0601	0.3191	1.8909	100.0	-0.2819	-0.0771	0.2244	0.1560	2.4501
0.90	10.0	-0.7328	0.2087	-0.1796	0.2582	1.6634	102.0	0.2544	-0.2099	0.3228	0.0160	1.5290
0.90	12.0	-0.9801	0.1297	-0.1602	0.3318	2.6074	104.0	0.5069	-0.1309	0.2200	-0.0042	1.0078
0.90	14.0	-1.0156	-0.1199	0.0520	0.3070	3.0619	106.0	0.9678	-0.2505	0.3276	-0.1620	0.1390
0.90	16.0	-0.7208	-0.2442	0.1057	0.2265	2.8046	108.0	1.1169	-0.3009	0.3816	-0.2066	-0.1741
0.90	18.0	-0.6053	-0.2943	0.1013	0.1030	2.9539	110.0	0.0052	-0.4436	0.4910	-0.1064	0.0337
0.90	20.0	-0.6346	-0.2044	0.0157	0.1073	3.3560	112.0	0.0807	-0.9021	0.5670	-0.1567	-0.1390
0.90	22.0	-0.4780	-0.3312	0.0505	0.1376	3.4902	114.0	0.9763	-0.0523	0.6004	-0.1936	-0.5609
0.90	24.0	-0.0456	-0.6388	0.2913	0.0321	3.1972	116.0	0.6797	-0.7406	0.7054	-0.1250	-0.1677
0.90	26.0	-0.1155	-0.0799	0.4740	0.0262	3.7203	118.0	1.1625	-0.7450	0.8800	-0.2300	-1.4400
0.90	28.0	-0.2111	-0.8364	0.3461	0.0329	4.3239	120.0	2.2790	-0.6807	0.7672	-0.5020	-3.0609
0.90	30.0	0.9983	-0.9311	0.4135	-0.2263	2.2595	122.0	3.2040	-0.0132	0.0737	-0.7000	-5.5463
0.90	32.0	0.9342	-0.8600	0.2607	-0.2202	2.7789	124.0	-0.2967	0.2518	0.2627	-0.3009	0.1307
0.90	34.0	1.4128	-1.1414	0.5240	-0.3744	2.1013	126.0	0.0497	-0.0520	-1.1720	0.2500	0.0666
0.90	36.0	2.5567	-0.8515	0.3144	-0.6912	-0.8437	128.0	0.4509	-0.5204	-0.0445	0.2075	0.0209
0.90	38.0	2.0395	-0.8612	0.2304	-0.7648	-0.6087	130.0	0.5371	-0.3222	-0.9021	0.2022	0.0516
0.90	40.0	2.9930	-0.9401	0.3437	-0.8153	-0.7884	132.0	0.5279	-0.5363	-0.9086	0.2036	-0.0133
0.90	42.0	2.9679	-0.8925	0.2788	-0.8116	-0.6960	134.0	0.3000	-0.4000	-0.7009	0.3000	-0.2567
0.90	44.0	2.4201	-0.6593	0.0788	-0.7179	0.2656	136.0	-0.2000	0.0	-0.2000	0.1000	-0.2942
0.90	46.0	1.9038	-0.4068	-0.2306	-0.5887	1.1287	138.0	-5.3956	0.2079	0.3009	0.0315	-0.1704
0.90	48.0	1.5952	-0.3119	-0.2814	-0.4809	1.3617	140.0	0.4213	-0.6404	0.4149	-0.2207	-0.2029
0.90	50.0	0.7555	0.0357	-0.4442	-0.2907	2.1869	142.0	2.6000	0.3303	-0.2000	-0.0011	-0.0023
0.90	52.0	0.2083	0.0260	-0.3761	-0.1297	2.5964	144.0	2.1696	0.2536	-0.1036	-0.4049	-3.7965
0.90	54.0	-0.2653	-0.1293	-0.1592	0.0423	3.0103	146.0	1.6963	0.1003	-0.0093	-0.3024	-2.3007
0.90	56.0	-0.5706	0.2197	-0.3327	0.1597	3.0313	148.0	0.0193	0.2320	-0.1936	-0.2081	-0.9004
0.90	58.0	-1.0148	0.3034	-0.3062	0.4906	4.9968	150.0	0.1260	0.3176	-0.2343	-0.9000	0.5367
0.90	60.0	-2.0014	0.4725	-0.4220	0.6549	6.2901	152.0	-0.1261	0.2009	-0.1209	0.0152	1.1040
0.90	62.0	-3.0990	0.3251	-0.2474	0.8376	7.2170	154.0	-0.3009	0.3246	-0.2306	0.0760	1.9967
0.90	64.0	-3.5460	0.5047	-0.4026	0.9041	8.1339	156.0	-0.5230	0.3706	-0.3792	0.1300	2.0206
0.90	66.0	-4.0690	0.3092	-0.2042	1.1208	9.2681	158.0	-0.6225	0.4277	-0.4446	0.1164	1.0713
0.90	68.0	-4.7213	0.4580	-0.4624	1.3088	10.0209	160.0	-0.2261	0.3471	-0.3793	0.0634	1.4304
0.90	70.0	-4.7487	0.4022	-0.3424	1.2865	10.0812	162.0	-0.1342	0.1006	-0.2633	0.0650	1.2005
0.90	72.0	-4.8729	0.2341	-0.1233	1.2912	10.9004	164.0	0.1507	0.0003	-0.1500	-0.0167	0.7633
0.90	74.0	-4.5292	0.1726	-0.0290	1.1906	10.3104	166.0	0.4111	-0.1371	-0.0611	-0.9067	0.1070
0.90	76.0	-4.3681	0.1767	-0.0348	1.1577	9.8890	168.0	0.9133	-0.2100	0.0423	-0.7025	-0.0190
0.90	78.0	-4.4483	-0.0699	0.1745	1.1904	10.1632	170.0	1.1210	-0.2336	0.0019	-0.2491	-1.3610
0.90	80.0	-4.7145	0.2139	-0.0696	1.2379	10.9500	172.0	1.0306	-0.1675	0.0180	-0.2207	-1.7934
0.90	82.0	-4.1572	-0.0084	0.1095	1.1197	9.6452	174.0	0.0376	0.0707	-0.1300	-0.0404	0.1410
0.90	84.0	-4.2934	0.3511	-0.1353	1.1719	9.7002	176.0	-0.1631	0.5670	-0.1601	-0.0007	0.9100
0.90	86.0	-4.2849	0.6257	-0.3894	1.1179	9.7071	178.0	-0.1222	-0.0636	-0.0027	0.0003	0.3001
0.90	88.0	-3.6646	0.5621	-0.2347	1.0351	8.6863	180.0	0.0	0.0	0.0	0.0	0.0
0.90	90.0	-3.5323	0.3607	-0.0849	0.9084	8.6986						

Table 3-1 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

ΔCNFOB =B1(0)+B1(1)*(TAPER RATIO)+B1(2)*(TAPER RATIO)**2+B1(3)*(ASPECT RATIO)+B1(4)*(SPAN RATIO)

COEFFICIENTS FOR ΔCNFOB

MACH	ALPHA	B1(0)	B1(1)	B1(2)	B1(3)	B1(4)
1.00	0.0	0.0	0.0	0.0	0.0	0.0
1.00	2.0	-0.5056	0.1357	-0.0004	0.1370	0.0156
1.00	4.0	-0.5006	0.2095	-0.1005	0.1978	0.9730
1.00	6.0	-1.0767	0.2632	-0.1616	0.3333	2.6271
1.00	8.0	-1.1691	0.3464	-0.2010	0.3766	2.3095
1.00	10.0	-1.3277	0.3076	-0.1020	0.4055	2.0625
1.00	12.0	-0.9762	0.3701	-0.3615	0.3195	2.5735
1.00	14.0	-5.0756	0.1113	-0.1507	0.2975	2.7300
1.00	16.0	-0.9133	-0.0048	0.0054	0.2097	3.1767
1.00	18.0	-0.0593	-0.0629	0.0171	0.2556	3.4057
1.00	20.0	-0.0170	-0.2065	0.1356	0.2039	3.7692
1.00	22.0	-0.3961	-0.1764	-0.0173	0.1963	3.3496
1.00	24.0	-0.9065	-0.3250	0.1031	0.1249	3.1679
1.00	26.0	-0.0564	-0.4436	0.1751	0.0796	3.3672
1.00	28.0	-0.4363	-0.4401	0.0098	0.1669	4.2932
1.00	30.0	0.3182	-0.9670	0.6365	-0.0267	3.0669
1.00	32.0	0.9097	-0.0620	0.4031	-0.2010	1.0060
1.00	34.0	1.5023	-0.6018	0.1207	-0.4099	0.9534
1.00	36.0	1.4443	-1.1227	0.4941	-0.3425	0.0076
1.00	38.0	1.7562	-0.0121	0.2142	-0.4350	0.0048
1.00	40.0	1.9407	-0.0397	0.3312	-0.4972	-0.4395
1.00	42.0	1.9733	-0.4602	0.0494	-0.5651	-0.7995
1.00	44.0	1.9257	-0.0901	-0.3301	-0.5104	-0.0913
1.00	46.0	0.9920	0.0356	-0.4799	-0.3019	0.0036
1.00	48.0	-0.1095	-0.4444	-0.1479	0.0346	3.1237
1.00	50.0	-1.5787	-1.9253	0.1105	0.6042	5.5779
1.00	52.0	-1.9452	-1.5342	0.4837	0.6032	5.5025
1.00	54.0	-2.1777	-2.0991	0.9671	0.7316	5.4290
1.00	56.0	-2.9544	-1.3055	0.3234	0.9474	6.3296
1.00	58.0	-3.0201	-1.4935	0.0427	0.0999	6.9105
1.00	60.0	-2.2678	-1.6891	1.0562	0.7377	5.4629
1.00	62.0	-1.0452	-0.0003	0.5460	0.5670	4.7930
1.00	64.0	-1.9796	0.2011	-0.2556	0.5210	5.0170
1.00	66.0	-1.0415	0.7004	-0.5911	0.4361	5.0269
1.00	68.0	-2.0346	0.5469	-0.3532	0.6054	6.9370
1.00	70.0	-3.6404	0.4336	-0.2095	0.0612	0.5792
1.00	72.0	-4.3946	-0.0332	0.2086	1.0222	9.6604
1.00	74.0	-4.2760	-0.1504	0.3257	1.0029	9.3757
1.00	76.0	-3.9138	0.2575	0.1160	0.9206	0.3740
1.00	78.0	-4.2409	0.3043	0.0356	0.9128	9.0797
1.00	80.0	-5.0094	0.3955	0.0913	1.2502	12.1327
1.00	82.0	-5.5049	0.6000	-0.0457	1.1052	11.4040
1.00	84.0	-4.6605	0.9566	-0.3901	0.9546	9.2453
1.00	86.0	-3.5497	0.9007	-0.3589	0.7281	7.5476
1.00	88.0	-4.6390	0.0940	-0.3731	0.9365	9.5714
1.00	90.0	-4.4456	0.7064	-0.2612	0.0046	9.2526

COEFFICIENTS FOR ΔCNFOB

ALPHA	B1(0)	B1(1)	B1(2)	B1(3)	B1(4)
92.0	-5.3958	0.0542	9.1600	1.1915	11.0071
94.0	-6.2609	-0.2097	0.0633	1.4636	12.7106
96.0	-6.0692	-1.0037	1.0710	1.3601	12.0610
98.0	-6.2015	-0.6476	0.5356	1.4099	13.5773
100.0	-6.7077	-0.4961	0.4650	1.9096	10.6033
102.0	-7.6022	-0.5615	0.4706	1.6760	10.6616
104.0	-5.0576	-0.0166	0.5659	1.2901	14.0505
106.0	-3.6737	-0.6575	0.5003	0.7063	9.6767
108.0	-2.3617	-0.5163	0.3970	0.4976	7.3005
110.0	-1.0116	-0.0606	0.5292	0.2066	6.6320
112.0	-0.5532	-0.0300	0.7616	0.0650	3.1107
114.0	0.1916	-1.0362	0.0976	-0.1211	2.3303
116.0	1.0771	-1.6450	1.3064	-0.3220	0.7099
118.0	1.5164	-1.5250	1.2724	-0.6449	-0.4960
120.0	3.1329	-1.4962	1.2366	-0.0604	-3.5604
122.0	4.1606	-1.0601	1.5632	-1.2674	-5.5100
124.0	4.7265	-1.1646	1.1219	-1.3000	-6.0282
126.0	4.1309	-0.5660	0.5625	-1.1913	-6.5472
128.0	0.2366	-0.7674	0.1656	-0.1019	-0.1211
130.0	3.0960	-0.3560	0.3311	-0.9615	-4.3029
132.0	2.4209	-0.2501	0.1462	-0.7536	-3.0222
134.0	1.9060	-0.2024	0.1916	-0.0020	-2.2305
136.0	1.5372	-0.5154	0.6042	-0.5277	-1.3763
138.0	0.0223	-0.4217	0.3583	-0.3607	0.0993
140.0	0.7616	-0.3070	0.4101	-0.3556	0.1210
142.0	0.6909	-0.4167	0.6650	-0.3136	0.0276
144.0	1.0606	-0.2601	0.3542	-0.5090	-2.0226
146.0	1.2636	-0.2620	0.3200	-0.4316	-1.5765
148.0	2.9626	-0.7693	0.0243	-0.7356	-5.0359
150.0	2.7960	-0.2256	0.2702	-0.7132	-4.9546
152.0	3.0901	-0.2718	0.2293	-0.9497	-6.0000
154.0	3.5199	0.0650	-0.6021	-0.0700	-5.0567
156.0	1.5594	-0.1157	0.1159	-0.3626	-1.0064
158.0	1.2290	-0.0350	-0.0100	-0.2730	-1.2709
160.0	1.3141	-0.1435	0.0561	-0.2903	-1.3470
162.0	1.2592	-0.1456	0.0136	-0.2575	-1.1716
164.0	1.0882	-0.0565	-0.0550	-0.2133	-0.7556
166.0	0.7784	-0.1163	-0.0799	-0.1207	-0.2011
168.0	0.0794	-0.1703	-0.0256	-0.1509	-0.0965
170.0	0.9029	-0.2013	0.0932	-0.2033	-0.0202
172.0	1.0705	-0.2004	6.1506	-0.2395	-1.1577
174.0	0.9093	-0.2193	0.1236	-0.2306	-1.1027
176.0	0.3700	-0.3030	0.2494	-0.1060	-0.2729
178.0	0.0005	-0.2565	0.2047	-0.2011	-1.1700
180.0	0.0	0.0	0.0	0.0	0.0

Table B-1 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

ΔCNFOO =B1(0)+B1(1)*(TAPER RATIO)+B1(2)*(TAPER RATIO)**2+B1(3)*(ASPECT RATIO)+B1(4)*(SPAN RATIO)

		COEFFICIENTS FOR ΔCNFOO						COEFFICIENTS FOR ΔCNFOO				
MACH	ALPHA	B1(0)	B1(1)	B1(2)	B1(3)	B1(4)	ALPHA	B1(0)	B1(1)	B1(2)	B1(3)	B1(4)
1.15	0.0	0.0	0.0	0.0	0.0	0.0	92.0	-7.1895	-0.3282	0.1303	1.6861	16.4299
1.15	2.0	0.1172	0.1440	-0.0468	-0.0238	-0.0015	94.0	-8.0973	-0.4453	0.2952	1.9852	18.6199
1.15	4.0	0.1874	0.2076	-0.0646	-0.0344	0.0166	96.0	-8.8829	-0.0738	-0.0439	2.1211	18.4727
1.15	6.0	0.2842	0.2428	-0.0966	-0.0636	0.0283	98.0	-9.4574	0.2238	-0.2011	2.2044	19.6994
1.15	8.0	0.3604	0.2272	-0.1038	-0.0454	0.0254	100.0	-9.9569	-0.2072	0.2583	2.3687	21.0480
1.15	10.0	0.4587	0.2044	-0.1480	-0.0362	0.0475	102.0	-9.9204	-0.0722	0.0961	2.3752	21.1096
1.15	12.0	0.5456	0.1685	-0.1818	-0.0250	0.0547	104.0	-8.2837	-0.1980	0.1784	2.0084	18.0082
1.15	14.0	0.2760	1.1318	-0.7514	0.0586	-0.1931	106.0	-5.7881	-0.2418	0.2430	1.4712	13.2826
1.15	16.0	0.0950	1.0604	-0.0529	0.0590	0.6263	108.0	-2.7632	-0.3288	6.3882	0.7987	7.0599
1.15	18.0	0.0705	0.8881	-0.7315	0.0740	0.9996	110.0	-0.5318	-0.3882	0.3816	0.2846	3.3380
1.15	20.0	-0.3780	0.7371	-0.5866	0.1081	2.0611	112.0	0.4191	-0.5867	0.5190	0.0180	1.3294
1.15	22.0	-0.4576	0.5873	-0.3931	0.1080	2.5349	114.0	0.0338	-0.7332	0.6158	-0.1229	0.4334
1.15	24.0	-0.2196	0.2319	-0.1780	0.1333	2.3978	116.0	1.5998	-0.6018	0.5642	-0.3848	-1.0639
1.15	26.0	-0.3325	0.2488	-0.2180	0.1586	2.7589	118.0	1.8302	-0.7952	0.6806	-0.4763	-1.5588
1.15	28.0	-0.3966	0.3823	-0.3630	0.1770	2.9716	120.0	1.7475	-0.8784	0.7019	-0.5336	-1.1596
1.15	30.0	0.3866	0.5740	-0.6318	0.0109	1.6221	122.0	1.4154	-1.0933	0.8465	-0.4736	-0.4019
1.15	32.0	0.9131	0.2485	-0.2603	-0.1191	0.7275	124.0	0.4192	-1.1226	0.7783	-0.2898	1.4014
1.15	34.0	0.6748	0.2059	-0.2723	-0.0820	1.2990	126.0	-0.1863	-0.5886	0.3452	-0.1980	2.0771
1.15	36.0	2.0342	0.2168	-0.3580	-0.3903	-1.2981	128.0	0.0993	-0.6293	0.4296	-0.2659	1.5252
1.15	38.0	2.1767	0.2948	-0.4279	-0.4628	-3.4845	130.0	0.3109	-0.6122	0.4117	-0.2612	1.0893
1.15	40.0	2.4357	0.2559	-0.3741	-0.5524	-1.9623	132.0	0.1167	-0.5497	0.3882	-0.2131	1.3943
1.15	42.0	2.2022	0.1128	-0.3068	-0.5318	-1.7539	134.0	0.2726	-0.4778	0.3262	-0.2092	0.9192
1.15	44.0	1.9573	0.1189	-0.3044	-0.4941	-1.1388	136.0	[illegible]	-0.6017	0.5468	-0.2224	0.0896
1.15	46.0	2.1081	0.2055	-0.4307	-0.5705	-1.7898	138.0	0.9208	-0.4039	0.3418	-0.2995	-0.5023
1.15	48.0	2.2485	0.3194	-0.4781	-0.6154	-1.0798	140.0	0.3819	-0.2887	0.2171	-0.1045	0.1751
1.15	50.0	1.4003	0.2367	-0.4032	-0.3687	-1.0617	142.0	0.0853	-0.2784	0.3119	-0.0851	0.7132
1.15	52.0	0.9325	0.6533	-0.7033	-0.2453	-0.5679	144.0	0.9943	-0.0603	0.1217	-0.2246	-1.5496
1.15	54.0	0.3585	0.5526	-0.6878	-0.1326	0.4583	146.0	1.3604	-0.0412	0.1600	-0.2870	-2.4391
1.15	56.0	0.1288	-0.4598	0.1732	0.3236	0.7328	148.0	1.8882	-0.0242	0.1530	-0.3013	-3.5730
1.15	58.0	-1.9194	-0.2926	0.0866	0.4534	4.5798	150.0	2.9544	0.0483	0.0049	-0.0314	-6.0963
1.15	60.0	-2.4594	-0.2307	0.0967	0.6111	5.5524	152.0	0.2810	-0.3263	-0.2625	-0.1466	-0.1279
1.15	62.0	-2.7839	-0.4838	0.3628	0.7341	6.2875	154.0	3.3465	0.2776	-0.2068	-0.7465	-6.6056
1.15	64.0	-2.8641	-0.1255	0.0742	0.7521	6.5799	156.0	3.0737	0.2816	-0.2740	-0.0905	-5.6010
1.15	66.0	-3.1375	-0.5914	0.4646	0.8255	7.3601	158.0	2.0186	-0.6238	0.3913	-0.4161	-2.9075
1.15	68.0	-4.3283	-0.0485	-0.0001	1.1058	9.3398	160.0	0.7694	0.0025	-0.1024	-0.1633	-0.7637
1.15	70.0	-3.7838	-0.0135	0.0068	0.9238	8.2488	162.0	0.8130	-0.1172	0.0176	-0.1520	-0.7780
1.15	72.0	-5.3331	-0.1023	0.1552	1.2092	11.1877	164.0	0.8736	-0.0726	-0.0358	-0.1844	-0.8813
1.15	74.0	-5.6036	-0.0768	0.1919	1.3327	11.3243	166.0	0.0925	-0.0809	-0.0382	-0.1739	-0.7946
1.15	76.0	-5.4131	-0.0639	0.2055	1.2619	10.7072	168.0	0.0657	-0.1618	0.0541	-0.1775	-0.7196
1.15	78.0	-3.8795	0.1558	0.0567	0.8035	7.2388	170.0	0.9435	-0.2536	0.1472	-0.2123	-0.9099
1.15	80.0	-3.3288	-0.1499	0.2276	0.7586	5.1476	172.0	1.0162	-0.1667	0.0066	-0.2397	-1.1753
1.15	82.0	-3.2818	-0.1675	0.3604	0.7438	6.0654	174.0	0.9001	-0.1559	0.0076	-0.2317	-1.2943
1.15	84.0	-3.3533	-0.1367	0.2547	0.7842	6.1496	176.0	0.5038	-0.1011	0.0975	-0.1211	-0.7430
1.15	86.0	-3.8409	-0.2069	0.3052	0.9046	7.3179	178.0	-0.1857	0.0012	0.0048	0.0308	0.9083
1.15	88.0	-4.2575	-0.3133	0.2696	1.0187	8.3738	180.0	0.0	0.0	0.0	0.0	0.0
1.15	90.0	-5.9818	-0.7378	0.6383	1.4047	12.1319						

Table B-1 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

ΔCNFOB =B1(0)+B1(1)*(TAPER RATIO)+B1(2)*(TAPER RATIO)**2+B1(3)*(ASPECT RATIO)+B1(4)*(SPAN RATIO)

		COEFFICIENTS FOR ΔCNFOB						COEFFICIENTS FOR ΔCNFOB				
MACH	ALPHA	B1(0)	B1(1)	B1(2)	B1(3)	B1(4)	ALPHA	B1(0)	B1(1)	B1(2)	B1(3)	B1(4)
1.30	0.0	0.0	0.0	0.0	0.0	0.0	92.0	-2.4092	-0.5636	0.3715	0.6217	5.4462
1.30	2.0	-0.3551	0.1001	-0.0036	0.1108	0.7456	94.0	-3.[illegible]319	-0.2837	0.0542	0.7956	6.7634
1.30	4.0	-0.6207	0.1268	-0.0296	0.1795	1.2926	96.0	-3.5558	-0.1543	0.0582	0.8976	7.5453
1.30	6.0	-0.7282	0.1075	-0.0066	0.2180	1.6023	98.0	-3.7567	-0.1765	0.0954	0.9478	7.9335
1.30	8.0	-0.7869	0.1230	-0.0515	0.2354	1.8656	100.0	-3.9763	-0.0959	0.0214	0.9896	8.3744
1.30	10.0	-0.9073	0.1016	-0.0546	0.2611	2.3025	102.0	-4.0461	-0.0944	0.0462	0.9863	8.4930
1.30	12.0	-0.9116	0.0370	-0.0070	0.2609	2.5312	104.0	-4.2783	-0.1154	0.0842	1.0353	9.0417
1.30	14.0	-0.7138	-0.0505	0.0433	0.2155	2.4098	106.0	-4.1974	-0.2815	0.3719	1.0841	9.0596
1.30	16.0	-0.9457	-0.0828	0.0312	0.2509	3.0740	108.0	-4.5337	-0.2918	0.4145	1.1763	9.7427
1.30	18.0	-1.1031	-0.0398	-0.0517	0.2848	3.6024	110.0	-4.8563	0.0044	0.0873	1.3155	10.2794
1.30	20.0	-0.8521	-0.1224	-0.0259	0.2309	3.3226	112.0	-4.5373	-0.125[illegible]	0.3069	1.2030	9.8282
1.30	22.0	-0.7094	-0.1493	-0.0267	0.1942	3.1972	114.0	-3.1023	-0.1273	0.3688	0.9094	7.0736
1.30	24.0	-0.1829	-0.1589	-0.0205	0.0788	2.3899	116.0	-1.8281	-0.1840	0.3598	0.5953	4.6084
1.30	26.0	-0.0393	-0.1337	-0.0351	0.0487	2.1765	118.0	0.5102	-0.6589	0.6701	-0.0207	0.7556
1.30	28.0	0.2679	-0.2094	0.0411	-0.0180	1.6506	120.0	0.4463	-0.8233	0.7225	-0.0932	0.8173
1.30	30.0	0.4394	-0.3025	0.1020	-0.0431	1.3710	122.0	0.4032	-0.5562	0.3768	-0.2127	1.2474
1.30	32.0	0.8247	-0.0580	-0.0564	-0.1216	0.5145	124.0	0.2098	-1.0989	0.8808	-0.1819	1.6420
1.30	34.0	0.8247	-0.0958	-0.0670	-0.12[illegible]6	0.5822	126.0	0.1236	-0.6323	0.3643	-0.2157	1.9357
1.30	36.0	1.0120	0.0928	-0.2363	-0.1984	0.1804	128.0	[illegible].0269	-0.7711	0.5176	-0.2017	1.9847
1.30	38.0	1.0701	0.0506	-0.2014	-0.2375	0.0785	130.0	-0.6162	-0.6458	0.3901	-0.0204	2.9891
1.30	40.0	1.1521	0.0581	-0.2446	-0.2555	-0.0264	132.0	-1.0632	-0.5235	0.3661	0.1147	3.6207
1.30	42.0	0.9390	0.1507	-0.3228	-0.2239	0.3681	134.0	-0.9605	-0.4038	0.3128	0.1045	3.3041
1.30	44.0	0.5595	0.3755	-0.5705	-0.1738	1.0260	136.0	-1.1537	-0.4348	0.3562	0.2053	3.6427
1.30	46.0	0.2954	0.6613	-0.8218	-0.1454	1.3210	138.0	-1.0638	-0.3385	0.2766	0.2129	3.2881
1.30	48.0	0.3428	0.5573	-0.7039	-0.1281	0.3553	140.0	-0.9557	-0.2082	0.1656	0.2039	2.9145
1.30	50.0	-0.[illegible]665	0.9045	-1.0464	0.0426	1.3492	142.0	-1.1036	-0.2988	0.1784	0.2531	3.1906
1.30	52.0	-0.3304	0.9876	-1.0809	0.0505	1.4208	144.0	-0.9775	-0.0138	0.0458	0.2429	2.6989
1.30	54.0	-0.9824	0.5121	-0.7633	0.1744	2.8109	146.0	-0.5998	-0.0292	0.1138	0.169[illegible]	1.7545
1.30	56.0	-2.1097	0.4208	-0.4870	0.4384	4.6620	148.0	-0.4737	0.1076	0.0022	0.17[illegible]7	1.2843
1.30	56.0	-2.3952	-0.1594	0.0333	0.4922	5.5359	150.0	0.1383	0.1573	-0.0542	0.[illegible]063	-0.0633
1.30	60.0	-1.9063	-0.19[illegible]2	0.0593	0.3917	4.7999	152.0	0.6746	0.5398	-0.4569	-0.0737	-1.3641
1.30	62.0	-2.[illegible]843	-0.38[illegible]3	0.2502	0.5818	5.8055	154.0	1.7896	0.0522	-0.0630	-0.3872	-3.3057
1.30	64.0	-2.5653	-0.1753	0.1172	0.5838	5.8442	156.0	2.5427	0.0419	0.0186	-0.5764	-4.6034
1.30	66.0	-1.8615	-0.4687	0.3864	0.4359	4.7283	158.0	1.1476	0.0671	-0.0537	-0.2590	-2.0286
1.30	68.0	-1.5768	-0.444[illegible]	0.3996	0.3622	3.9932	160.0	0.5279	-0.0849	0.0408	-0.1062	-0.5311
1.30	70.0	0.0679	-0.1058	0.1278	-0.0696	0.6440	162.0	0.5889	-0.1497	0.0953	-0.1129	-0.5929
1.30	72.0	0.2957	-0.1113	0.1183	-0.[illegible]355	0.0023	164.0	0.9182	-0.1973	0.1289	-0.1924	-1.0831
1.30	74.0	-0.0910	-0.0278	-0.0177	-0.0242	0.4956	166.0	0.9718	-0.1785	0.0908	-0.2552	-1.0387
1.30	76.0	-0.4323	-0.2299	0.2240	0.0173	1.1566	168.0	0.9986	-0.1910	0.1190	-0.2303	-0.9673
1.30	78.0	-0.9848	-0.1434	0.1447	0.1277	2.1490	170.0	1.3898	-0.1436	0.0934	-0.2058	-1.7610
1.30	80.0	-0.5567	-0.2575	0.1991	0.0348	1.4092	172.0	1.0982	0.0308	-0.0791	-0.2287	-1.3592
1.30	82.0	-0.1937	-0.4137	0.3300	-0.0271	0.8061	174.0	0.2791	0.1969	-0.2107	-0.0618	0.0342
1.30	84.0	-0.2550	-0.5424	0.3630	0.0208	1.1008	176.0	-0.0457	0.0941	-0.3881	0.0235	0.4462
1.30	86.0	-0.2695	-0.7269	0.4770	0.0547	1.3613	178.0	-0.2400	0.0554	-0.0373	0.0642	0.5935
1.30	88.0	-1.5031	-0.3698	0.133[illegible]	0.3932	3.6764	180.0	0.0	0.0	0.0	0.0	0.0
1.30	90.0	-0.9988	-0.4450	0.2425	0.2875	2.9309						

Table B-1 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

ΔCNFOB =B1(0)+B1(1)*(TAPER RATIO)+B1(2)*(TAPER RATIO)**2+B1(3)*(ASPECT RATIO)+B1(4)*(SPAN RATIO)

		COEFFICIENTS FOR ΔCNFOB						COEFFICIENTS FOR ΔCNFOB				
MACH	ALPHA	B1(0)	B1(1)	B1(2)	B1(3)	B1(4)	ALPHA	B1(0)	B1(1)	B1(2)	B1(3)	B1(4)
1.50	0.0	0.0	0.0	0.0	0.0	0.0	92.0	0.4624	-0.2586	0.1564	-0.0365	-0.3148
1.50	2.0	-0.0035	0.0484	-0.0276	0.0130	0.1384	94.0	0.1343	-0.2451	0.1629	0.0352	0.2985
1.50	4.0	-0.0017	0.0237	-0.0046	0.0210	0.2378	96.0	0.2560	-0.2116	0.1440	0.0107	0.0770
1.50	6.0	0.0042	-0.0134	0.0223	0.0268	0.3435	98.0	-0.2324	-0.1425	0.0566	0.1281	1.0700
1.50	8.0	0.0418	-0.0604	0.0518	0.0256	0.3864	100.0	-0.6434	-0.1235	0.0454	0.2034	1.8364
1.50	10.0	0.0847	-0.1174	0.0850	0.0212	0.4192	102.0	-1.1685	-0.1472	0.0552	0.3146	2.7969
1.50	12.0	0.1993	-0.1673	0.1114	0.0017	0.3438	104.0	-1.7010	-0.2477	0.1630	0.4390	3.7967
1.50	14.0	0.2158	-0.1996	0.1243	0.0004	0.3701	106.0	-2.3177	-0.3405	0.2629	0.5891	5.1066
1.50	16.0	0.2939	-0.2421	0.1430	-0.0134	0.3131	108.0	-3.0143	-0.1616	0.1761	0.6748	6.4313
1.50	18.0	0.8195	-0.2543	0.1322	-0.1192	-0.5030	110.0	-3.8081	0.1402	-0.1231	0.8544	7.8743
1.50	20.0	1.0659	-0.0470	-0.0700	-0.1528	-0.9300	112.0	-4.0173	-0.1011	0.2340	0.9441	8.3694
1.50	22.0	1.0264	-0.1385	-0.0577	-0.1397	-0.6868	114.0	-3.0986	-0.2129	0.2711	0.7697	6.9594
1.50	24.0	0.8830	-0.1169	-0.0835	-0.1078	-0.4010	116.0	-3.6313	-0.2421	0.4011	0.9066	7.7630
1.50	26.0	1.0064	-0.0919	-0.1113	-0.1390	-0.6281	118.0	-2.7761	-0.2919	0.3919	0.7370	6.3215
1.50	28.0	1.0703	-0.1314	-0.0796	-0.1514	-0.7925	120.0	-1.2822	-0.2717	0.3969	0.4202	3.5968
1.50	30.0	1.4215	-0.1238	-0.1033	-0.2311	-1.4246	122.0	-0.5487	-0.4317	0.4493	0.2540	2.2300
1.50	32.0	1.3560	-0.1100	-0.1034	-0.2124	-1.3100	124.0	0.5683	-0.3920	0.3780	-0.0673	0.1586
1.50	34.0	1.3874	-0.1169	-0.1117	-0.2237	-1.3250	126.0	0.2036	-1.1281	0.9777	0.0534	0.6862
1.50	36.0	1.4880	-0.0913	-0.1645	-0.2463	-1.4796	128.0	-0.3498	-0.8076	0.6055	0.1011	1.6837
1.50	38.0	1.2964	-0.1446	-0.1294	-0.2040	-1.1133	130.0	-0.5583	-0.8378	0.5696	0.1219	1.9304
1.50	40.0	1.3589	-0.1072	-0.1758	-0.2103	-1.2401	132.0	-0.7447	-0.6685	0.5230	0.1646	2.0971
1.50	42.0	1.2682	-0.1713	-0.1347	-0.1881	-1.0212	134.0	-0.8414	-0.4577	0.3673	0.2046	2.1813
1.50	44.0	0.8923	-0.2486	-0.0422	-0.1016	-0.4035	136.0	-0.7791	-0.3970	0.3537	0.1944	2.0612
1.50	46.0	0.4062	-0.4008	0.1001	0.0130	0.4965	138.0	-0.8102	-0.1160	0.1009	0.2051	2.0355
1.50	48.0	0.5393	-0.2993	0.1104	-0.0488	-0.0754	140.0	-0.4875	0.1398	-0.1100	0.1236	1.4727
1.50	50.0	0.4878	-0.4068	0.1283	-0.0091	0.3135	142.0	-0.1351	0.1665	-0.1093	0.0501	0.8477
1.50	52.0	-0.4432	-0.4203	0.2408	0.2034	1.8679	144.0	0.0660	0.2530	-0.1952	0.0162	0.4157
1.50	54.0	-0.9446	-0.5481	0.3269	0.3438	2.7488	146.0	0.2070	0.2023	-0.1525	-0.0052	0.1290
1.50	56.0	-1.7222	-0.3474	0.1726	0.5000	4.0584	148.0	0.4300	0.2379	-0.1285	-0.0448	-0.4456
1.50	58.0	-1.1160	-0.1041	-0.1095	0.3386	2.7780	150.0	0.7071	0.3624	-0.2104	-0.1282	-1.1775
1.50	60.0	-1.2604	-0.4353	0.2145	0.3667	3.0815	152.0	1.0872	0.3271	-0.1661	-0.2144	-2.0022
1.50	62.0	-1.1535	-0.2949	0.1153	0.3380	2.6381	154.0	1.7407	0.4016	-0.2436	-0.3777	-3.3609
1.50	64.0	-1.2189	-0.3558	0.1893	0.3369	2.7286	156.0	2.3808	0.2481	-0.0951	-0.5338	-4.7430
1.50	66.0	-1.3268	-0.4103	0.2821	0.3574	2.9127	158.0	2.4581	0.2054	-0.1351	-0.5446	-4.7866
1.50	68.0	-0.6315	-0.2498	0.1240	0.2088	1.7370	160.0	2.3497	-0.0086	0.0309	-0.4965	-4.3472
1.50	70.0	-0.3953	-0.2700	0.1162	0.1468	1.2939	162.0	1.6916	-0.2634	0.1561	-0.2916	-2.9032
1.50	72.0	-0.2364	-0.2675	0.1338	0.1271	1.0366	164.0	1.5026	0.0782	-0.1397	-0.2917	-2.5195
1.50	74.0	0.0205	-0.3514	0.2633	0.0621	0.5410	166.0	1.7728	-0.0914	-0.0582	-0.3349	-2.8245
1.50	76.0	0.2854	-0.2889	0.1943	-0.0130	0.1459	168.0	1.3317	-0.0600	-0.0678	-0.2395	-1.9318
1.50	78.0	0.4355	-0.4405	0.3545	-0.0437	-0.2013	170.0	1.0083	0.0054	-0.1154	-0.1709	-1.3423
1.50	80.0	0.6549	-0.4730	0.3872	-0.0974	-0.6523	172.0	0.7491	0.0468	-0.1261	-0.1198	-0.9196
1.50	82.0	0.3908	-0.4461	0.3562	-0.0349	-0.2298	174.0	0.4354	0.0386	-0.0898	-0.0564	-0.4335
1.50	84.0	0.1079	-0.5626	0.4485	0.0313	0.3777	176.0	0.1752	0.0513	-0.0736	-0.0087	-0.0755
1.50	86.0	0.0071	-0.5121	0.4525	0.0773	0.6334	178.0	0.0137	0.0345	-0.0456	0.0148	0.0989
1.50	88.0	0.0106	-0.5097	0.3248	0.0875	0.5711	180.0	0.0	0.0	0.0	0.0	0.0
1.50	90.0	0.1729	-0.3730	0.2160	0.0403	0.2121						

Table B-1 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

ΔCNFOB =B1(0)+B1(1)*(TAPER RATIO)+B1(2)*(TAPER RATIO)**2+B1(3)*(ASPECT RATIO)+B1(4)*(SPAN RATIO)

		COEFFICIENTS FOR ΔCNFOB						COEFFICIENTS FOR ΔCNFOB				
MACH	ALPHA	B1(0)	B1(1)	B1(2)	B1(3)	B1(4)	ALPHA	B1(0)	B1(1)	B1(2)	B1(3)	B1(4)
2.00	0.0	0.0	0.0	0.0	0.0	0.0	92.0	-1.5731	-0.3020	-0.1952	0.4020	3.3729
2.00	2.0	-0.0289	0.0700	-0.0621	0.0154	0.1343	94.0	-1.7974	-0.5701	-0.0317	0.4346	3.7965
2.00	4.0	0.0128	0.0609	-0.0654	0.0104	0.1224	96.0	-1.9227	-0.9228	0.2467	0.4602	4.0816
2.00	6.0	0.0595	0.0360	-0.0541	0.0046	0.1048	98.0	-1.7447	-1.1428	0.4914	0.3943	3.8293
2.00	8.0	0.0692	-0.0081	-0.0247	0.0069	0.1496	100.0	-2.2727	-1.3007	0.6475	0.5061	4.6998
2.00	10.0	0.1589	-0.0559	0.0084	-0.0099	0.0339	102.0	-2.5111	-1.4459	0.8129	0.5889	5.5923
2.00	12.0	0.0698	-0.0650	0.0141	0.0125	0.2343	104.0	-3.1629	-1.3124	0.7349	0.6372	6.1056
2.00	14.0	0.0750	-0.1118	0.0543	0.0120	0.2479	106.0	-3.3664	-1.2056	0.6789	0.6435	6.3657
2.00	16.0	0.2134	-0.1119	0.0466	-0.0143	0.0563	108.0	-3.5024	-1.0545	0.6436	0.6263	6.4197
2.00	18.0	0.1662	-0.1452	0.0812	-0.0035	0.1484	110.0	-3.6041	-0.8877	0.5717	0.6153	6.4732
2.00	20.0	-0.1869	-0.3245	0.2546	0.0732	0.7539	112.0	-3.7698	-0.7839	0.5291	0.6427	6.6145
2.00	22.0	0.1224	-0.1510	0.0685	0.0079	0.2485	114.0	-3.6325	-0.7128	0.5596	0.6107	6.2773
2.00	24.0	0.1384	-0.1428	0.0553	0.0053	0.2113	116.0	-3.2968	-0.6248	0.5131	0.5561	5.7205
2.00	26.0	0.0780	-0.1499	0.0659	0.0211	0.3455	118.0	-2.9826	-0.4856	0.4894	0.5190	5.1346
2.00	28.0	0.0820	-0.1523	0.0585	0.0254	0.3703	120.0	-2.6806	-0.4814	0.4384	0.4844	4.7982
2.00	30.0	0.1904	-0.1586	0.0442	0.0058	0.2460	122.0	-2.3434	-0.3905	0.3208	0.4524	4.3584
2.00	32.0	0.2823	-0.1273	-0.0035	-0.0128	0.1052	124.0	-2.0418	-0.5470	0.4013	0.4190	4.0758
2.00	34.0	0.4004	-0.1254	-0.0055	-0.0357	-0.0508	126.0	-1.9039	-0.5987	0.4180	0.4186	3.9969
2.00	36.0	0.5800	-0.1228	-0.0215	-0.0702	-0.3049	128.0	-1.7199	-0.4939	0.3026	0.3941	3.7295
2.00	38.0	0.6828	-0.1165	-0.0234	-0.0901	-0.4647	130.0	-1.5124	-0.5713	0.3707	0.3709	3.4551
2.00	40.0	0.6730	-0.1101	-0.0258	-0.0836	-0.4115	132.0	-1.5371	-0.2452	0.1165	0.3823	3.4536
2.00	42.0	0.7846	-0.0607	-0.0874	-0.1104	-0.5991	134.0	-1.5391	-0.2742	0.2056	0.3838	3.4448
2.00	44.0	0.6622	-0.0281	-0.1106	-0.0892	-0.3868	136.0	-1.2802	-0.1225	0.0910	0.3364	2.9358
2.00	46.0	0.8265	0.0323	-0.1601	-0.1189	-0.6264	138.0	-1.4645	-0.0666	0.0987	0.3868	3.3906
2.00	48.0	0.9228	-0.0310	-0.1321	-0.1386	-0.6527	140.0	-1.2265	0.0997	-0.0319	0.3368	2.7331
2.00	50.0	0.8925	0.1541	-0.3122	-0.1312	-0.6155	142.0	-0.8025	0.1188	-0.0393	0.2323	1.9815
2.00	52.0	0.7387	0.0173	-0.2223	-0.0897	-0.2802	144.0	-0.7089	0.0751	0.0246	0.2142	1.8017
2.00	54.0	0.6926	0.0363	-0.2865	-0.0747	-0.1541	146.0	-0.6813	0.2868	-0.1371	0.2118	1.7083
2.00	56.0	0.5283	-0.0594	-0.2333	-0.0341	0.1954	148.0	-0.4706	0.3007	-0.1243	0.1703	1.2864
2.00	58.0	0.4479	-0.1542	-0.1505	-0.0168	0.2604	150.0	-0.2038	0.3167	-0.1379	0.1052	0.7606
2.00	60.0	0.5118	-0.1713	-0.1177	-0.0398	0.1125	152.0	-0.1028	0.2144	-0.0207	0.0788	0.5274
2.00	62.0	0.5446	-0.2872	-0.0680	-0.0483	0.0976	154.0	0.0911	0.0793	0.0927	0.0371	0.1380
2.00	64.0	0.4451	-0.2877	-0.0548	-0.0304	0.2055	156.0	0.4432	0.0745	0.0697	-0.0484	-0.5437
2.00	66.0	0.5221	-0.2445	-0.0536	-0.0411	0.0131	158.0	0.6237	0.0633	0.0528	-0.0925	-0.9350
2.00	68.0	0.7205	-0.2949	0.0294	-0.0969	-0.3784	160.0	0.7684	-0.0471	0.1310	-0.1370	-1.2273
2.00	70.0	0.7365	-0.4467	0.1769	-0.0980	-0.4514	162.0	0.9660	-0.0309	0.1103	-0.1880	-1.6395
2.00	72.0	0.7781	-0.4479	0.1944	-0.1018	-0.5583	164.0	0.9634	-0.0703	0.1197	-0.1878	-1.6657
2.00	74.0	0.7708	-0.4188	0.1974	-0.1027	-0.5549	166.0	1.0258	-0.0798	0.0605	-0.2033	-1.7939
2.00	76.0	0.7741	-0.4168	0.2626	-0.1018	-0.5974	168.0	0.8855	-0.0730	0.0365	-0.1680	-1.3726
2.00	78.0	0.7498	-0.5171	0.3759	-0.0917	-0.5297	170.0	0.6847	-0.0943	0.0330	-0.1224	-0.9347
2.00	80.0	0.4737	-0.4463	0.3702	-0.0345	-0.0945	172.0	0.5740	-0.0855	0.0159	-0.0995	-0.7421
2.00	82.0	0.2456	-0.4174	0.3038	0.0360	0.3174	174.0	0.4498	-0.0354	-0.0193	-0.0791	-0.5655
2.00	84.0	0.0243	-0.2826	0.0986	0.0734	0.7070	176.0	0.2612	-0.0097	-0.0230	-0.0444	-0.3069
2.00	86.0	-0.4311	-0.0714	-0.1994	0.1765	1.4803	178.0	0.1866	0.0268	-0.0432	-0.0389	-0.2718
2.00	88.0	-0.5990	-0.0437	-0.3171	0.2020	1.7172	180.0	0.0	0.0	0.0	0.0	0.0
2.00	90.0	-0.9388	-0.1550	-0.2893	0.2736	2.3015						

Table B-1 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

ΔCNFOB =B1(0)+B1(1)*(TAPER RATIO)+B1(2)*(TAPER RATIO)**2+B1(3)*(ASPECT RATIO)+B1(4)*(SPAN RATIO)

		COEFFICIENTS FOR ΔCNFOB						COEFFICIENTS FOR ΔCNFOB				
MACH	ALPHA	B1(0)	B1(1)	B1(2)	B1(3)	B1(4)	ALPHA	B1(0)	B1(1)	B1(2)	B1(3)	B1(4)
2.50	0.0	0.0	0.0	0.0	0.0	0.0	92.0	-2.3117	-1.6665	0.7751	0.5410	5.0635
2.50	2.0	0.1737	-0.0241	0.0286	-0.0313	-0.2701	94.0	-2.0134	-1.7522	0.8376	0.4610	4.4481
2.50	4.0	0.1809	-0.0533	0.0451	-0.0289	-0.2364	96.0	-2.0807	-1.9647	1.0258	0.4433	4.5743
2.50	6.0	0.2154	-0.0714	0.0515	-0.0333	-0.2591	98.0	-2.3231	-1.7397	0.8132	0.4718	4.8461
2.50	8.0	0.2467	-0.0972	0.0709	-0.0363	-0.2793	100.0	-2.5773	-1.9006	0.9568	0.5170	5.2585
2.50	10.0	0.2655	-0.0954	0.0644	-0.0400	-0.2960	102.0	-2.8743	-1.9497	1.0583	0.5494	5.6665
2.50	12.0	0.3302	-0.0831	0.0378	-0.0508	-0.3880	104.0	-3.2000	-1.9000	1.0000	0.6000	5.9000
2.50	14.0	0.4122	-0.0761	0.0246	-0.0669	-0.5060	106.0	-3.3000	-1.8000	1.0000	0.6000	6.1000
2.50	16.0	0.3717	-0.1011	0.0502	-0.0592	-0.4242	108.0	-3.5000	-1.7000	1.0000	0.6000	6.2000
2.50	18.0	0.3776	-0.0858	0.0354	-0.0607	-0.4408	110.0	-3.5000	-1.6000	0.9000	0.6000	6.3000
2.50	20.0	-0.0060	0.0042	-0.0795	0.0094	0.1645	112.0	-3.4000	-1.5000	0.9000	0.6000	6.1000
2.50	22.0	0.3747	-0.1074	0.0338	-0.0597	-0.3620	114.0	-3.3000	-1.4000	0.8000	0.5000	5.7000
2.50	24.0	0.4579	-0.1224	0.0460	-0.0752	-0.4777	116.0	-3.2785	-1.1406	0.7667	0.5044	5.3662
2.50	26.0	0.5664	-0.1227	0.0447	-0.0976	-0.6439	118.0	-3.0974	-0.8878	0.6009	0.5037	5.1425
2.50	28.0	0.6501	-0.1231	0.0442	-0.1135	-0.7736	120.0	-3.2629	-0.7147	0.4446	0.5773	5.6503
2.50	30.0	0.7571	-0.1375	0.0624	-0.1354	-0.9339	122.0	-2.6224	-0.5598	0.2445	0.4871	4.7525
2.50	32.0	0.3472	-0.1271	0.0566	-0.1519	-1.0754	124.0	-2.3716	-0.8819	0.4090	0.4742	4.5721
2.50	34.0	0.8388	-0.1230	0.0536	-0.1475	-1.0484	126.0	-1.9554	-1.6042	0.4265	0.4067	4.0994
2.50	36.0	0.8681	-0.1319	0.0600	-0.1521	-1.0830	128.0	-1.8484	-0.9671	0.3482	0.3976	3.9916
2.50	38.0	0.8784	-0.1194	0.0500	-0.1527	-1.0842	130.0	-1.5275	-1.1035	0.4829	0.3518	3.5978
2.50	40.0	0.9453	-0.0942	0.0353	-0.1680	-1.2080	132.0	-1.6975	-1.1498	0.5441	0.3917	3.8839
2.50	42.0	1.0093	-0.1103	0.0391	-0.1771	-1.2695	134.0	-1.7899	-1.1344	0.5731	0.4257	4.0809
2.50	44.0	1.2557	-0.1589	0.0924	-0.2381	-1.6904	136.0	-1.8358	-0.6757	0.2078	0.4503	4.0555
2.50	46.0	1.4866	-0.1609	0.0817	-0.2729	-1.9937	138.0	-1.7215	-0.5403	0.1426	0.4283	3.8706
2.50	48.0	1.2230	-0.1028	0.0320	-0.2129	-1.4307	140.0	-1.2198	-0.5176	0.1581	0.3449	3.0698
2.50	50.0	1.3071	-0.0884	-0.0115	-0.2273	-1.5270	142.0	-1.0600	-0.2421	0.0607	0.3139	2.7394
2.50	52.0	1.3996	-0.0610	-0.0633	-0.2488	-1.6105	144.0	-0.8668	-0.2602	0.1490	0.2616	2.4199
2.50	54.0	1.3742	-0.0586	-0.0908	-0.2450	-1.5054	146.0	-1.0064	-0.0142	-0.0168	0.2891	2.5760
2.50	56.0	1.2848	0.0455	-0.2283	-0.2291	-1.3284	148.0	-0.8954	0.1628	-0.1122	0.2592	2.2362
2.50	58.0	1.1787	0.0620	-0.2700	-0.2078	-1.1271	150.0	-0.7703	0.2033	-0.0986	0.2291	1.9622
2.50	60.0	1.1571	0.0414	-0.2387	-0.2093	-1.0932	152.0	-0.3813	0.1182	-0.0031	0.1499	1.2834
2.50	62.0	0.9968	0.0856	-0.2854	-0.1765	-0.8051	154.0	-0.1859	0.0056	0.1201	0.1107	0.8077
2.50	64.0	0.8230	0.1075	-0.3114	-0.1413	-0.5092	156.0	-0.0206	-0.0532	0.1683	0.0689	0.5058
2.50	66.0	0.7339	0.1053	-0.3139	-0.1177	-0.3279	158.0	0.2047	-0.0344	0.1254	0.0134	0.0637
2.50	68.0	1.1649	0.0553	-0.1984	-0.2115	-1.0506	160.0	0.3285	-0.0281	0.1106	-0.0080	-0.2271
2.50	70.0	1.1165	-0.1372	-0.0360	-0.1740	-0.8171	162.0	0.5491	-0.0249	0.0856	-0.0749	-0.6827
2.50	72.0	1.0976	-0.0565	-0.0979	-0.1878	-0.8262	164.0	0.5867	-0.0252	0.0705	-0.0909	-0.8136
2.50	74.0	0.9469	0.0636	-0.2122	-0.1563	-0.5799	166.0	0.6299	-0.0637	0.0936	-0.1972	-0.9382
2.50	76.0	0.5475	0.1932	-0.3457	-0.0684	0.0604	168.0	0.5780	-0.0514	0.0691	-0.1008	-0.8592
2.50	78.0	0.0574	0.2069	-0.4073	0.0362	0.9214	170.0	0.5801	-0.0633	0.0458	-0.1041	-0.8316
2.50	80.0	-0.5742	0.3063	-0.5941	0.1673	2.0382	172.0	0.3503	-0.0766	0.0358	-0.0547	-0.3814
2.50	82.0	-1.4761	0.3714	-0.7743	0.3521	3.6149	174.0	0.2108	-0.0601	0.0222	-0.0281	-0.1491
2.50	84.0	-1.6929	0.0971	-0.6249	0.4013	4.0649	176.0	0.0978	-0.0282	0.0012	-0.0083	0.0076
2.50	86.0	-1.7756	-0.3479	-0.2612	0.4392	4.2061	178.0	0.0197	0.0170	-0.0232	0.0003	0.0706
2.50	88.0	-2.2188	-0.9098	0.2266	0.5195	4.8970	180.0	0.0	0.0	0.0	0.0	0.0
2.50	90.0	-1.9218	-1.4098	0.5321	0.4608	4.4508						

Table B-1 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

ΔCNFOB =B1(0)+B1(1)*(TAPER RATIO)+B1(2)*(TAPER RATIO)**2+B1(3)*(ASPECT RATIO)+B1(4)*(SPAN RATIO)

		COEFFICIENTS FOR ΔCNFOB						COEFFICIENTS FOR ΔCNFOB				
MACH	ALPHA	B1(0)	B1(1)	B1(2)	B1(3)	B1(4)	ALPHA	B1(0)	B1(1)	B1(2)	B1(3)	B1(4)
3.00	0.0	0.0	0.0	0.0	0.0	0.0	92.0	-3.2184	-1.3956	0.3143	0.8278	6.9763
3.00	2.0	0.1482	-0.0258	0.0318	-0.0258	-0.2187	94.0	-2.7742	-1.5942	0.5216	0.7565	6.4671
3.00	4.0	0.1532	-0.0543	0.0472	-0.0225	-0.1800	96.0	-3.2389	-1.6581	0.3488	0.7539	6.8993
3.00	6.0	0.2403	-0.0757	0.0600	-0.0410	-0.3115	98.0	-3.3169	-1.5714	0.4767	0.7794	6.9342
3.00	8.0	0.3896	-0.1075	0.0514	-0.0750	-0.5746	100.0	-3.6388	-1.6662	0.5691	0.8349	7.4135
3.00	10.0	0.4487	-0.1071	0.0878	-0.0891	-0.6742	102.0	-3.7145	-1.7459	0.6726	0.8249	7.4297
3.00	12.0	0.3406	-0.0784	0.0284	-0.0515	-0.4077	104.0	-3.8062	-1.5755	0.5012	0.8226	7.6709
3.00	14.0	0.3077	-0.0598	-0.0081	-0.0351	-0.2866	106.0	-4.0237	-1.4537	0.5002	0.8116	7.3000
3.00	16.0	0.1307	-0.0650	-0.0219	0.0135	0.0809	108.0	-4.4472	-1.5319	0.6237	0.8657	8.2277
3.00	18.0	-0.0241	-0.0393	-0.0575	0.0551	0.3963	110.0	-4.7539	-1.5178	0.5910	0.9147	8.6938
3.00	20.0	-0.5191	0.2823	-0.3513	0.1526	1.2157	112.0	-4.6311	-1.2502	0.4993	0.8783	9.2759
3.00	22.0	-0.1212	-0.0276	-0.1258	0.0922	0.6794	114.0	-4.3293	-1.4610	0.7951	0.9296	7.7242
3.00	24.0	-0.1204	-0.0322	-0.1346	0.1007	0.7358	116.0	-4.5949	-1.0110	0.5162	0.8955	8.0511
3.00	26.0	-0.0081	-0.0277	-0.1453	0.0987	0.7268	118.0	-4.6013	-0.8698	0.4301	0.9292	8.1708
3.00	28.0	-0.0519	-0.0225	-0.1572	0.0966	0.6962	120.0	-4.5357	-0.7926	0.2780	0.9438	8.3602
3.00	30.0	-0.0012	-0.0301	-0.1523	0.0909	0.6532	122.0	-3.9826	-0.3716	-0.1343	0.8946	7.5167
3.00	32.0	0.0592	-0.0181	-0.1613	0.0823	0.5730	124.0	-3.6480	-0.7040	0.0532	0.8542	7.7427
3.00	34.0	-0.0059	-0.0088	-0.1749	0.1626	0.7175	126.0	-3.4707	-0.6926	-0.0484	0.8426	7.1454
3.00	36.0	-0.0540	-0.0074	-0.1889	0.1206	0.8447	128.0	-3.5665	-0.6192	-0.1604	0.8807	7.4181
3.00	38.0	-0.0586	0.0085	-0.2039	0.1272	0.8953	130.0	-3.0808	-0.8777	0.0687	0.7976	6.7943
3.00	40.0	-0.1507	0.0439	-0.2408	0.1550	1.1001	132.0	-2.7995	-0.6481	-0.1391	0.7461	6.3929
3.00	42.0	-0.2442	0.0384	-0.2583	0.1858	1.3435	134.0	-3.0429	-0.6411	-0.1184	0.8199	6.7777
3.00	44.0	-0.0476	0.0153	-0.2559	0.1470	1.0338	136.0	-2.7275	-0.4681	-0.1360	0.7455	6.2315
3.00	46.0	0.0796	-0.0084	-0.2073	0.1221	0.8762	138.0	-2.6194	-0.3583	-0.1155	0.7446	5.8128
3.00	48.0	0.0133	0.0561	-0.2857	0.1422	1.0866	140.0	-1.9239	-0.4081	-0.0610	0.5941	4.6783
3.00	50.0	-0.0029	0.0726	-0.3335	0.1537	1.2619	142.0	-1.8099	-0.1790	-0.2652	0.5733	4.4485
3.00	52.0	0.1200	0.1021	-0.3896	0.1261	1.5612	144.0	-1.7085	-0.0348	-0.3018	0.5546	4.2284
3.00	54.0	0.1238	0.1165	-0.4291	0.1252	1.1089	146.0	-1.7963	0.2190	-0.4831	0.5710	4.2612
3.00	56.0	-0.0373	0.2157	-0.5687	0.1590	1.4327	148.0	-1.8137	0.3714	-0.5294	0.5642	4.1870
3.00	58.0	-0.2331	0.2259	-0.5978	0.1996	1.8149	150.0	-1.6504	0.3837	-0.4594	0.5137	3.8246
3.00	60.0	-0.2735	0.1993	-0.5544	0.2051	1.9257	152.0	-1.4584	0.2495	-0.2657	0.4632	3.4583
3.00	62.0	-0.3144	0.2310	-0.5762	0.1996	1.9287	154.0	-1.2405	0.1140	-0.0968	0.4095	3.0083
3.00	64.0	-0.3912	0.2431	-0.5827	0.2084	2.0311	156.0	-1.0083	0.0387	-0.0156	0.3450	2.5557
3.00	66.0	-0.4600	0.2282	-0.5597	0.2206	2.1542	158.0	-0.7027	0.0459	-0.0353	0.2654	1.9453
3.00	68.0	-0.3767	0.2241	-0.5361	0.1933	2.0255	160.0	-0.4522	0.0023	-0.0112	0.1935	1.3971
3.00	70.0	-0.0660	0.1180	-0.3769	0.1339	1.5190	162.0	-0.1497	0.0434	-0.0528	0.1221	0.7693
3.00	72.0	0.0963	0.1056	-0.3560	0.0940	1.3081	164.0	0.0505	0.0332	-0.0462	0.0623	0.3023
3.00	74.0	0.0581	0.1663	-0.4175	0.0999	1.2719	166.0	0.2781	-0.0213	0.0089	-0.0050	-0.2046
3.00	76.0	-0.2623	0.3098	-0.5790	0.1742	1.7562	168.0	0.4430	-0.0285	0.0232	-0.0590	-0.5753
3.00	78.0	-0.6519	0.3238	-0.6412	0.2545	2.4120	170.0	0.5933	-0.0528	0.0248	-0.1032	-0.8947
3.00	80.0	-1.1257	0.4438	-0.8692	0.3579	3.2281	172.0	0.3994	-0.0655	0.0137	-0.0622	-0.4775
3.00	82.0	-1.0583	0.5522	-1.1359	0.5160	4.4617	174.0	0.3079	-0.0472	-0.0036	-0.0467	-0.3426
3.00	84.0	-1.9364	0.3625	-1.0826	0.5389	4.6628	176.0	0.2282	-0.0194	-0.0166	-0.0365	-0.2954
3.00	86.0	-2.4246	-0.2027	-0.6229	0.6568	5.5937	178.0	0.1795	0.0254	-0.0401	-0.0352	-0.2526
3.00	88.0	-3.1016	-0.7901	-0.2268	0.8283	6.7650	180.0	0.0	0.0	0.0	0.0	0.0
3.00	90.0	-2.9720	-1.2288	0.1700	0.7724	6.5383						

Table B-2

Regression Coefficients for $\Delta C_{N_{BOF}}$

REGRESSION COEFFICIENTS FOR EQUATION

ΔCNBOF =B2(0)+B2(1)*(TAPER RATIO)+B2(2)*(TAPER RATIO)**2+B2(3)*(ASPECT RATIO)+B2(4)*(SPAN RATIO)

		COEFFICIENTS FOR ΔCNBOF						COEFFICIENTS FOR ΔCNBOF				
MACH	ALPHA	B2(0)	B2(1)	B2(2)	B2(3)	B2(4)	ALPHA	B2(0)	B2(1)	B2(2)	B2(3)	B2(4)
0.60	0.0	0.0	0.0	0.0	0.0	0.0	92.0	0.5143	0.1618	-0.1173	-0.0087	-0.4348
0.60	2.0	-0.0538	0.0238	-0.0248	0.0377	0.1973	94.0	0.5006	0.1732	-0.1339	-0.0725	-0.3672
0.60	4.0	-0.0398	-0.0006	-0.0204	0.0309	0.2495	96.0	0.5397	0.0684	-0.0821	-0.0874	-0.4109
0.60	6.0	0.0207	0.0191	-0.0395	0.0311	0.1941	98.0	0.4294	0.0920	-0.1218	-0.0821	-0.1811
0.60	8.0	0.0984	0.0280	-0.0376	0.0226	0.1061	100.0	0.4799	0.0903	-0.1290	-0.0974	-0.2024
0.60	10.0	0.1709	0.0676	-0.0767	-0.0083	0.0445	102.0	0.4786	0.1373	-0.1761	-0.0963	-0.2419
0.60	12.0	0.0915	0.1329	-0.1574	0.0056	0.2305	104.0	0.4079	0.0719	-0.1081	-0.0864	-0.0972
0.60	14.0	0.1542	0.1354	-0.1909	-0.0288	0.2136	106.0	0.4936	0.9608	-0.1078	-0.0997	-0.2315
0.60	16.0	0.2887	0.1036	-0.1751	-0.0754	0.0652	108.0	0.4821	0.0205	-0.0660	-0.0999	-0.2192
0.60	18.0	0.3698	0.0717	-0.1416	-0.1125	-0.0778	110.0	0.4460	0.0001	-0.0520	-0.0959	-0.1107
0.60	20.0	0.5792	-0.0284	-0.0166	-0.1401	-0.5078	112.0	0.4435	-0.0103	-0.0474	-0.0933	-0.0958
0.60	22.0	0.7776	-0.0401	0.0211	-0.1787	-0.9417	114.0	0.4234	-0.0075	-0.0722	-0.0083	-0.0734
0.60	24.0	0.8570	-0.6800	0.0942	-0.2029	-1.1231	116.0	0.4363	0.0323	-0.1250	-0.1015	0.0080
0.60	26.0	0.8094	-0.1098	0.1145	-0.1749	-1.1392	118.0	0.4095	-0.0970	0.0006	-0.0864	0.0755
0.60	28.0	0.8136	-0.1755	0.1648	-0.1489	-1.2461	120.0	0.3099	-0.0338	-0.0567	-0.0732	0.2691
0.60	30.0	0.7441	-0.2348	0.2208	-0.1067	-1.2127	122.0	0.4436	0.0356	-0.1262	-0.1091	0.0869
0.60	32.0	0.6130	-0.2238	0.2244	-0.0680	-1.0418	124.0	0.5211	0.0293	-0.1208	-0.1293	-0.0068
0.60	34.0	0.6694	-0.2340	0.1792	-0.0583	-1.1597	126.0	0.6455	0.0008	-0.1037	-0.1506	-0.1938
0.60	36.0	0.3367	-0.1725	0.0564	0.0115	-0.5032	128.0	0.7121	-0.0167	-0.0635	-0.1636	-0.3036
0.60	38.0	0.15[illegible]	-0.1123	-0.0445	0.0424	-0.0870	130.0	0.7083	-0.0227	-0.0443	-0.1520	-0.3253
0.60	40.0	0.0196	-0.0695	-0.1037	0.0663	0.2374	132.0	0.7068	-0.0593	-0.0039	-0.1364	-0.3699
0.60	42.0	-0.0803	0.0898	-0.2355	0.0620	0.4478	134.0	0.7067	-0.0932	0.0301	-0.1326	-0.3705
0.60	44.0	0.1990	0.0599	-0.1620	-0.0265	0.0256	136.0	0.6015	-0.1493	0.0928	-0.0947	-0.3025
0.60	46.0	-0.0200	0.1330	-0.2299	0.0125	0.3676	138.0	0.4827	[illegible]	0.0968	-0.0610	-0.2027
0.60	48.0	0.1863	0.0122	-0.0950	-0.0283	-0.0164	140.0	0.3494	-0.1089	0.0821	-0.0249	-0.0867
0.60	50.0	0.2328	0.1268	-0.1870	-0.0391	-0.1754	142.0	0.3237	-0.1358	0.1042	0.0085	-0.1798
0.60	52.0	0.3280	0.1951	-0.2079	-0.0820	-0.3501	144.0	0.1605	-0.0542	0.0160	0.0665	-0.0365
0.60	54.0	0.4064	0.2392	-0.2325	-0.1032	-0.4951	146.0	0.1476	0.0639	-0.0515	0.0709	-0.1147
0.60	56.0	0.4255	0.2610	-0.2243	-0.1018	-0.6080	148.0	0.2419	0.0059	-0.0344	0.0540	-0.3851
0.60	58.0	0.3346	0.1876	-0.1735	-0.0772	-0.4463	150.0	0.4160	0.0957	-0.0313	0.0263	-0.7731
0.60	60.0	0.3795	0.1767	-0.1589	-0.0811	-0.5621	152.0	0.7423	0.0830	-0.0217	-0.0281	-1.4224
0.60	62.0	0.3637	0.1655	-0.1031	-0.0670	-0.5899	154.0	1.0880	0.0896	-0.0316	-0.1054	-2.0643
0.60	64.0	0.3910	0.1617	-0.0940	-0.0705	-0.4346	156.0	1.3710	-0.0431	0.0621	-0.1910	-2.5752
0.60	66.0	0.4142	0.1929	-0.1324	-0.0830	-0.6521	158.0	1.6324	0.0326	-0.0764	-0.2674	-2.9892
0.60	68.0	0.4059	0.1984	-0.1356	-0.0812	-0.6368	160.0	1.8171	-0.1850	0.1227	-0.3758	-3.2473
0.60	70.0	0.4140	0.1946	-0.1601	-0.0812	-0.6238	162.0	1.7598	-0.2297	0.1560	-0.3996	-3.1242
0.60	72.0	0.4435	0.1319	-0.1025	-0.0879	-0.6542	164.0	1.6547	-0.2358	0.1331	-0.4315	-2.8536
0.60	74.0	0.3659	0.1507	-0.1234	-0.0733	-0.5352	166.0	1.6931	-0.1816	0.0956	-0.4479	-2.7232
0.60	76.0	0.4117	0.1619	-0.1148	-0.0814	-0.6212	168.0	1.5507	-0.2376	0.1770	-0.4527	-2.6093
0.60	78.0	0.4506	0.2205	-0.1522	-0.0957	-0.6743	170.0	1.3791	-0.1898	0.1243	-0.4061	-2.3566
0.60	80.0	0.5585	0.1924	-0.1269	-0.1174	-0.8170	172.0	1.2297	-0.1567	0.1020	-0.3622	-2.1225
0.60	82.0	0.6220	0.1435	-0.0948	-0.1236	-0.8947	174.0	0.8801	-0.1254	0.1130	-0.2646	-1.5970
0.60	84.0	0.0615	-0.0155	-0.0151	0.0506	0.0127	176.0	0.5073	-0.1216	0.1145	-0.1531	-0.9452
0.60	86.0	0.1028	0.0008	-0.0369	0.0465	0.0139	178.0	0.2121	-0.0481	0.0367	-0.0675	-0.4891
0.60	88.0	0.1107	0.0249	-0.0358	0.0394	0.0302	180.0	0.0	0.0	0.0	0.0	0.0
0.60	90.0	0.5218	0.2157	-0.1897	-0.0969	-0.4934						

Table B-2 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

ΔCNBOF =B2(0)+B2(1)*(TAPER RATIO)+B2(2)*(TAPER RATIO)**2+B2(3)*(ASPECT RATIO)+B2(4)*(SPAN RATIO)

	COEFFICIENTS FOR ΔCNBOF						COEFFICIENTS FOR ΔCNBOF					
MACH	ALPHA	B2(0)	B2(1)	B2(2)	B2(3)	B2(4)	ALPHA	B2(0)	B2(1)	B2(2)	B2(3)	B2(4)
0.80	0.0	0.0	0.0	0.0	0.0	0.0	92.0	0.5658	0.1048	-0.1396	-0.1887	-0.2864
0.80	2.0	-0.0906	0.0046	-0.0085	0.0382	0.2492	94.0	0.3138	0.1042	-0.1394	-0.0489	0.1751
0.80	4.0	0.0835	-0.0003	-0.0153	0.0236	0.1433	96.0	0.1388	-0.0053	-0.0476	-0.0399	0.5276
0.80	6.0	0.0783	0.0319	-0.0480	0.0107	0.0593	98.0	0.3486	0.0764	-0.1328	-0.0759	0.1588
0.80	8.0	0.1737	0.0160	-0.0249	-0.0076	-0.0529	100.0	0.2170	0.1025	-0.1636	-0.0513	0.3988
0.80	10.0	0.1938	0.0538	-0.0579	-0.0160	-0.0422	102.0	0.1735	0.0902	-0.1513	-0.0390	0.4695
0.80	12.0	0.1807	0.1635	-0.1082	-0.0318	0.0381	104.0	0.1924	0.0845	-0.1421	-0.0423	0.4520
0.80	14.0	0.2239	0.2153	-0.2479	-0.0583	0.0173	106.0	0.1785	0.0736	-0.1398	-0.0367	0.4927
0.80	16.0	0.4233	0.1636	-0.2148	-0.1092	-0.2814	108.0	0.2078	0.0416	-0.1039	-0.0377	0.4194
0.80	18.0	0.5102	-0.0093	-0.0071	-0.1588	-0.4178	110.0	0.2269	0.0437	-0.0989	-0.0394	0.3931
0.80	20.0	0.8072	-0.1699	0.1605	-0.2075	-0.9714	112.0	0.2335	0.0425	-0.0989	-0.0389	0.3827
0.80	22.0	0.8626	-0.2253	0.2512	-0.2276	-1.1192	114.0	0.2146	0.1032	-0.1537	-0.0254	0.4053
0.80	24.0	0.8506	-0.2663	0.2889	-0.2087	-1.1339	116.0	0.1935	0.0596	-0.1235	-0.0218	0.4843
0.80	26.0	0.7900	-0.0545	0.0978	-0.2045	-1.0999	118.0	0.2105	0.0589	-0.1322	-0.0343	0.5241
0.80	28.0	0.8305	-0.1249	0.1606	-0.1773	-1.2875	120.0	0.2096	0.0581	-0.1126	-0.0334	0.5125
0.80	30.0	0.7154	0.0809	-0.0484	-0.1494	-1.1328	122.0	0.2346	0.0194	-0.0887	-0.0346	0.4634
0.80	32.0	0.6400	0.1084	-0.0692	-0.1342	-0.9808	124.0	0.2381	0.0137	-0.0586	-0.0321	0.4487
0.80	34.0	0.5371	0.0943	-0.0729	-0.1103	-0.7554	126.0	0.3528	-0.0179	-0.0460	0.0194	0.0839
0.80	36.0	0.4124	0.1185	-0.1331	-0.0998	-0.4160	128.0	0.3508	-0.0077	-0.0445	0.0189	0.0843
0.80	38.0	0.3614	0.1363	-0.1684	-0.1049	-0.2347	130.0	0.3361	0.0014	-0.0416	0.0153	0.0080
0.80	40.0	0.3282	0.1989	-0.2633	-0.0908	-0.1110	132.0	0.3327	0.0101	-0.0378	0.0093	0.0045
0.80	42.0	0.4719	0.1495	-0.2407	-0.1119	-0.3432	134.0	0.4551	0.0707	-0.0514	-0.0569	-0.1208
0.80	44.0	0.4062	0.1878	-0.2869	-0.0963	-0.2712	136.0	0.4301	0.0551	-0.0136	-0.0467	-0.1507
0.80	46.0	0.4863	0.1059	-0.2060	-0.1088	-0.4305	138.0	0.4285	0.0489	0.0032	-0.0443	-0.2125
0.80	48.0	0.5087	0.0678	-0.1657	-0.1094	-0.5017	140.0	0.3695	0.0752	-0.0135	-0.0294	-0.1921
0.80	50.0	0.5643	0.0678	-0.1339	-0.1231	-0.6704	142.0	0.3144	0.1149	-0.0634	-0.0084	-0.1893
0.80	52.0	0.5620	0.1520	-0.1937	-0.1282	-0.7623	144.0	0.1541	0.1366	-0.0817	0.0393	-0.0861
0.80	54.0	0.4827	0.1633	-0.1735	-0.0863	-0.7196	146.0	0.0180	0.2045	-0.1474	0.0872	0.0684
0.80	56.0	0.4203	0.1763	-0.1334	-0.0658	-0.6612	148.0	0.1026	0.1395	-0.0698	0.0778	-0.1847
0.80	58.0	0.3648	0.1540	-0.1054	-0.0502	-0.5868	150.0	0.1565	0.1273	-0.0567	0.0752	-0.3888
0.80	60.0	0.4308	0.1939	-0.1287	-0.0673	-0.6954	152.0	0.4438	0.0811	-0.0339	0.0217	-0.9462
0.80	62.0	0.4574	0.1972	-0.1389	-0.0716	-0.7245	154.0	0.8903	0.1394	-0.1115	-0.0708	-1.8132
0.80	64.0	0.4938	0.1614	-0.0988	-0.0867	-0.7560	156.0	1.2170	0.0756	-0.0855	-0.1728	-2.3511
0.80	66.0	0.4442	0.1071	-0.1396	-0.0793	-0.6489	158.0	1.5862	-0.0405	-0.0146	-0.2827	-2.9624
0.80	68.0	0.4375	0.1834	-0.1404	-0.0814	-0.6054	160.0	1.6749	-0.1650	0.0899	-0.3408	-3.1833
0.80	70.0	0.3866	0.1817	-0.1551	-0.0805	-0.4731	162.0	1.7225	-0.1695	0.0681	-0.3945	-3.1539
0.80	72.0	0.3728	0.1643	-0.1493	-0.0752	-0.3601	164.0	1.6862	-0.2660	0.1636	-0.4128	-2.8828
0.80	74.0	0.3377	0.1308	-0.1168	-0.0672	-0.2084	166.0	1.4790	-0.3331	0.2410	-0.4230	-2.6072
0.80	76.0	0.3095	0.0980	-0.0882	-0.0742	-0.2765	168.0	1.4203	-0.2882	0.1974	-0.4209	-2.5137
0.80	78.0	0.3485	0.1244	-0.1203	-0.0770	-0.3399	170.0	1.3115	-0.2913	0.2217	-0.4129	-2.2021
0.80	80.0	0.3910	0.1134	-0.1039	-0.0844	-0.3719	172.0	1.0267	-0.2518	0.1887	-0.3439	-1.8282
0.80	82.0	0.4493	0.1211	-0.1242	-0.1033	-0.4126	174.0	0.7214	-0.1236	0.0823	-0.2534	-1.3139
0.80	84.0	0.5686	0.1191	-0.1352	-0.1218	-0.5660	176.0	0.4022	-0.1119	0.0756	-0.1418	-0.7745
0.80	86.0	0.5452	0.1823	-0.1771	-0.1170	-0.4785	178.0	0.1346	-0.0873	0.0465	-0.0504	-0.2836
0.80	88.0	0.4302	0.1816	-0.1741	-0.0833	-0.2299	180.0	0.0	0.0	0.0	0.0	0.0
0.80	90.0	0.3691	0.1436	-0.1472	-0.0688	-0.0498						

Table B-2 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

ΔCNBOF =B2(0)+B2(1)*(TAPER RATIO)+B2(2)*(TAPER RATIO)**2+B2(3)*(ASPECT RATIO)+B2(4)*(SPAN RATIO)

		COEFFICIENTS FOR ΔCNBOF						COEFFICIENTS FOR ΔCNBOF				
MACH	ALPHA	B2(0)	B2(1)	B2(2)	B2(3)	B2(4)	ALPHA	B2(0)	B2(1)	B2(2)	B2(3)	B2(4)
0.90	0.0	0.0	0.0	0.0	0.0	0.0	92.0	0.3338	[illegible]	-0.1037	-0.0522	0.1704
0.90	2.0	[illegible]	0.0264	-0.0461	0.0120	0.1195	94.0	0.1966	[illegible]	-0.0775	-0.0165	0.4437
0.90	4.0	0.1079	0.0207	-0.0502	-0.0157	-0.0187	96.0	0.2502	0.1405	-0.1542	-0.6432	0.3719
0.90	6.0	0.2013	0.0286	-0.0619	-0.0346	-0.1247	98.0	0.0527	0.0992	-0.1304	-0.0026	0.7173
0.90	8.0	0.3221	0.0562	-0.0754	-0.0549	-0.3026	100.0	0.0720	0.1210	-0.1506	-0.0154	0.7284
0.90	10.0	0.3475	0.0540	-0.0740	-0.0704	-0.2931	102.0	0.0668	0.1267	-0.1554	-0.0124	0.7385
0.90	12.0	0.2794	0.2141	-0.2432	-0.0688	-0.1416	104.0	0.0783	0.0803	-0.1042	-0.0117	0.7187
0.90	14.0	0.2705	0.2954	-0.3112	-0.0740	[illegible]	106.0	0.0905	0.0846	-0.1041	-0.0135	0.7055
0.90	16.0	0.3904	0.2783	-0.2867	-0.0993	-0.2975	108.0	0.1402	0.0838	-0.0969	-0.0212	0.6140
0.90	18.0	0.4086	0.2642	-0.2593	-0.1277	-0.2987	110.0	0.1073	0.0709	-0.0762	-0.0069	0.6533
0.90	20.0	0.7206	-0.0624	0.0750	-0.2011	-0.8180	112.0	0.1331	0.0984	-0.0966	-0.0088	0.5934
0.90	22.0	[illegible]	-0.0956	0.1356	-0.2173	-1.0245	114.0	0.1544	0.1333	-0.1269	-0.0049	0.5842
0.90	24.0	[illegible]	-0.1109	0.1333	-0.2111	-1.0619	116.0	0.0945	0.1630	[illegible]	[illegible]	0.6515
0.90	26.0	0.8411	0.0255	-0.0006	-0.2131	-1.1987	118.0	0.1235	0.1773	-0.1453	0.0140	0.6431
0.90	28.0	0.7714	0.1008	-0.0363	-0.1942	-1.1495	120.0	0.1129	0.1779	-0.1344	0.0170	0.6440
0.90	30.0	0.7690	0.1868	-0.1453	-0.1023	-1.1207	122.0	0.1612	0.1821	-0.1273	0.0071	0.5014
0.90	32.0	0.5370	0.2451	-0.2264	-0.1225	-0.7248	124.0	0.3416	0.1900	-0.0069	0.0050	0.0291
0.90	34.0	0.6014	0.2410	-0.2599	-0.1308	-0.7301	126.0	0.4177	0.2000	-0.0086	0.0100	-0.0244
0.90	36.0	0.6706	0.2650	-0.2881	-0.1427	-0.8055	128.0	0.3998	0.2100	0.0117	0.0150	-0.0240
0.90	38.0	0.5581	0.3209	-0.3736	-0.1244	-0.5607	130.0	0.3959	0.2200	-0.0000	0.0200	-0.0295
0.90	40.0	0.5813	0.3187	-0.3847	-0.1335	-0.5743	132.0	0.3698	0.2300	0.0083	0.0250	-0.0353
0.90	42.0	0.5454	0.3279	-0.3974	-0.1253	-0.5145	134.0	0.5682	0.2400	-0.2442	0.0200	-0.0539
0.90	44.0	0.5181	0.3336	-0.3912	-0.1260	-0.4706	136.0	0.5998	0.2500	-0.3361	0.0150	-0.0473
0.90	46.0	0.5991	0.2761	-0.3368	-0.1405	-0.6317	138.0	0.4726	0.2700	-0.1605	0.0100	-0.0281
0.90	48.0	0.7054	0.2524	-0.2868	-0.1533	-0.9159	140.0	0.3157	0.2800	-0.0806	0.0050	-0.0110
0.90	50.0	0.6992	0.2550	-0.2652	-0.1387	-1.0034	142.0	0.1960	0.2900	-0.1727	0.0	0.1645
0.90	52.0	0.5655	0.2355	-0.2295	-0.0974	-0.8500	144.0	0.1827	0.3365	-0.2170	0.0027	0.0545
0.90	54.0	0.4355	0.2373	-0.2002	-0.0539	-0.6865	146.0	0.1621	0.3391	-0.2182	0.0222	-0.0503
0.90	56.0	0.3813	0.3050	-0.2305	-0.0478	-0.6118	148.0	0.2096	0.3591	-0.2266	0.0279	-0.2833
0.90	58.0	0.4132	0.2491	-0.1632	-0.0594	-0.6660	150.0	0.3123	0.2745	-0.1951	0.0345	-0.6005
0.90	60.0	0.4172	0.2339	-0.1483	-0.0561	-0.6865	152.0	0.4587	0.2155	-0.1675	0.0118	-0.9381
0.90	62.0	0.4947	0.2562	-0.1932	-0.0754	-0.7906	154.0	0.7018	0.1667	-0.1595	-0.0478	-1.3957
0.90	64.0	0.4368	0.2631	-0.2000	-0.0718	-0.6590	156.0	1.0432	0.1426	-0.1832	-0.1284	-2.0336
0.90	66.0	0.3993	0.2345	-0.1762	-0.0708	-0.5535	158.0	1.3149	0.0493	-0.1167	-0.2166	-2.4748
0.90	68.0	0.3504	0.2429	-0.2092	-0.0667	-0.4278	160.0	1.5381	-0.0783	-0.0301	-0.3019	-2.8415
0.90	70.0	0.2990	0.2329	-0.1937	-0.0656	-0.3029	162.0	1.6289	-0.2093	0.0648	-0.3722	-2.9490
0.90	72.0	0.2045	0.1965	-0.1751	-0.0533	-0.1107	164.0	1.4899	-0.1767	0.0503	-0.3947	-2.6865
0.90	74.0	0.1103	0.1954	-0.1787	-0.0427	0.0743	166.0	1.3019	-0.3332	0.2167	-0.4189	-2.2674
0.90	76.0	0.2078	0.1035	-0.1201	-0.0598	-0.0581	168.0	1.1573	-0.3421	0.2443	-0.4207	-1.9056
0.90	78.0	0.2868	0.0466	-0.0671	-0.0764	-0.1624	170.0	1.2982	-0.2560	0.1601	-0.4523	-2.2679
0.90	80.0	0.3963	0.1109	-0.1267	-0.0878	-0.3334	172.0	1.0480	-0.2049	0.1267	-0.4022	-1.8747
0.90	82.0	0.3145	0.1285	-0.1411	-0.0783	-0.1212	174.0	0.6587	-0.1634	0.1043	-0.2911	-1.1594
0.90	84.0	0.3776	0.2198	-0.2286	-0.0985	-0.1524	176.0	0.3561	-0.1164	0.0742	-0.1675	-0.6689
0.90	86.0	0.5044	0.1444	-0.1646	-0.1087	-0.2092	178.0	0.0503	-0.0642	0.0513	-0.0406	-0.1476
0.90	88.0	0.4582	0.1709	-0.1882	-0.1014	-0.1341	180.0	0.0	0.0	0.0	0.0	0.0
0.90	90.0	0.2526	0.0502	-0.0574	-0.0421	0.2732						

Table B-2 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

ΔCNBOF =B2(0)+B2(1)*(TAPER RATIO)+B2(2)*(TAPER RATIO)**2+B2(3)*(ASPECT RATIO)+B2(4)*(SPAN RATIO)

		COEFFICIENTS FOR ΔCNBOF						COEFFICIENTS FOR ΔCNBOF				
MACH	ALPHA	B2(0)	B2(1)	B2(2)	B2(3)	B2(4)	ALPHA	B2(0)	B2(1)	B2(2)	B2(3)	B2(4)
1.00	0.0	0.0	0.0	0.0	0.0	0.0	92.0	0.2534	0.1986	-0.1952	-0.0325	0.4794
1.00	2.0	-0.0058	-0.0127	0.0067	0.0071	0.0853	94.0	0.0478	0.1672	-0.1904	0.0266	0.8933
1.00	4.0	0.1343	-0.0335	0.0160	-0.0247	-0.1005	96.0	-0.1764	0.2187	-0.2288	0.0298	1.2873
1.00	6.0	0.2432	-0.0017	-0.0217	-0.0469	-0.2416	98.0	-0.0192	0.1908	-0.2118	0.0677	1.0685
1.00	8.0	0.3744	0.0469	-0.0602	-0.0721	-0.4448	100.0	0.1373	0.1689	-0.1785	0.0159	0.8282
1.00	10.0	0.5529	0.0913	-0.0971	-0.1152	-0.7204	102.0	0.3419	0.1883	-0.1858	-0.0330	0.4845
1.00	12.0	0.6572	0.0717	-0.0806	-0.1497	-0.8520	104.0	0.4894	0.1262	-0.1373	-0.0696	0.2563
1.00	14.0	0.6686	-0.0801	-0.0133	-0.1763	-0.7967	106.0	0.5277	0.1861	-0.1130	-0.0797	.1636
1.00	16.0	0.6032	-0.0460	0.0169	-0.1806	-0.6379	108.0	0.5388	0.1396	-0.1447	-0.0846	0.1255
1.00	18.0	0.5640	-0.1304	0.0620	-0.1972	-0.5026	110.0	0.5371	0.1698	-0.1276	-0.0923	0.0974
1.00	20.0	0.8222	-0.1906	0.1298	-0.2852	-0.9201	112.0	0.5623	0.0958	-0.0785	-0.1034	0.0387
1.00	22.0	0.8271	-0.3160	0.2448	-0.3067	-0.9374	114.0	0.4929	0.2836	-0.1872	-0.0844	0.1887
1.00	24.0	0.9612	-0.3053	0.2670	-0.3551	-1.2357	116.0	0.5578	0.1959	-0.1408	-0.0947	-0.0543
1.00	26.0	1.0852	-0.2137	0.1801	-0.4111	-1.4567	118.0	0.4481	0.1997	-0.1468	-0.0888	0.1850
1.00	28.0	1.0681	-0.0993	0.0728	-0.4111	-1.5230	120.0	0.4748	0.1538	-0.1853	-0.0835	0.1297
1.00	30.0	1.0287	0.0390	-0.0753	-0.3776	-1.5182	122.0	0.4849	0.0992	-0.0259	-0.1067	0.1659
1.00	32.0	1.0133	0.1581	-0.1601	-0.3589	-1.5993	124.0	0.3937	0.0890	-0.0533	-0.1168	0.4572
1.00	34.0	0.9681	0.3232	-0.3035	-0.3244	-1.5935	126.0	0.4137	0.1584	-0.1258	-0.1328	0.4733
1.00	36.0	0.8559	0.2905	-0.2961	-0.2808	-1.3623	128.0	0.4877	-0.0518	-0.0732	-0.1288	0.5000
1.00	38.0	0.8812	0.1954	-0.2356	-0.2618	-1.1964	130.0	0.4755	0.0983	-0.0588	-0.1698	0.4155
1.00	40.0	0.7886	0.2212	-0.2592	-0.2588	-1.1184	132.0	0.4219	0.1861	-0.0598	-0.1629	0.5813
1.00	42.0	0.7127	0.2764	-0.3075	-0.2504	-0.9275	134.0	0.4337	0.0814	-0.0176	-0.1676	0.4273
1.00	44.0	0.6668	0.2462	-0.2638	-0.2248	-0.8723	136.0	0.4741	0.0118	0.0428	-0.1675	0.3221
1.00	46.0	0.7850	0.2138	-0.2828	-0.2238	-1.1431	138.0	0.5376	0.0850	-0.0546	-0.1537	0.1491
1.00	48.0	0.6576	0.3582	-0.3281	-0.1888	-1.0285	140.0	0.5530	0.0050	0.0098	-0.1553	0.0679
1.00	50.0	0.6585	0.1991	-0.1766	-0.1686	-1.0291	142.0	0.5659	0.0140	-0.0253	-0.1574	-0.0422
1.00	52.0	0.6678	0.3151	-0.2654	-0.1708	-1.1128	144.0	0.6597	-0.0115	-0.0286	-0.1716	-0.2835
1.00	54.0	0.5521	0.2866	-0.2701	-0.1327	-0.8972	146.0	0.9158	-0.0294	-0.0492	-0.2119	-0.8212
1.00	56.0	0.5433	0.3141	-0.2905	-0.1347	-0.9111	148.0	1.0154	-0.1694	-0.0063	-0.2147	-1.0958
1.00	58.0	0.5254	0.1885	-0.1694	-0.1178	-0.8469	150.0	1.1097	-0.1178	-0.0052	-0.2517	-1.4636
1.00	60.0	0.5544	0.2189	-0.1615	-0.1864	-0.9736	152.0	1.1932	-0.1277	-0.0112	-0.2634	-1.5371
1.00	62.0	0.4683	0.2281	-0.1585	-0.0852	-0.7686	154.0	1.2990	-0.2121	0.0390	-0.3059	-1.7424
1.00	64.0	0.3471	0.2428	-0.1748	-0.0576	-0.5812	156.0	1.5995	-0.3849	0.1539	-0.3809	-2.3365
1.00	66.0	0.3287	0.3312	-0.2444	-0.0589	-0.5312	158.0	1.9499	-0.2959	0.1351	-0.4899	-2.9579
1.00	68.0	0.1958	0.2949	-0.2286	-0.0377	-0.2321	160.0	1.7786	-0.2728	0.1177	-0.4849	-2.6799
1.00	70.0	0.1476	0.3087	-0.2382	-0.0346	-0.0968	162.0	1.8469	-0.3137	0.1788	-0.5225	-2.8328
1.00	72.0	-0.0165	0.2889	-0.1625	-0.0166	0.2828	164.0	1.8135	-0.3738	0.2344	-0.5368	-2.7893
1.00	74.0	-0.0459	0.2849	-0.1728	-0.0281	0.3318	166.0	1.7795	-0.3285	0.1960	-0.5319	-2.7784
1.00	76.0	0.1989	0.2855	-0.2812	-0.0614	-0.0796	168.0	1.5211	-0.2924	0.1722	-0.4858	-2.3548
1.00	78.0	0.2599	0.2841	-0.1815	-0.0723	-0.1182	170.0	1.3338	-0.2305	0.1392	-0.4387	-2.0779
1.00	80.0	0.0923	0.1668	-0.1446	-0.0378	0.2591	172.0	1.0840	-0.0903	0.0315	-0.3687	-1.7471
1.00	82.0	0.0590	0.1466	-0.1492	-0.0239	0.4873	174.0	0.7558	-0.0188	-0.0177	-0.2842	-1.2982
1.00	84.0	-0.0873	0.1523	-0.1469	-0.0146	0.6259	176.0	0.4945	0.0610	-0.0801	-0.1645	-0.8488
1.00	86.0	0.0913	0.2227	-0.1998	-0.0349	0.5389	178.0	0.2331	0.0497	-0.0502	-0.0712	-0.4448
1.00	88.0	0.0451	0.1537	-0.1314	-0.0842	0.6912	180.0	0.0	0.0	0.0	0.0	0.0
1.00	90.0	0.0890	0.1986	-0.1973	-0.0072	0.7183						

Table B-2 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

ΔCNBOF =B2(0)+B2(1)*(TAPER RATIO)+B2(2)*(TAPER RATIO)**2+B2(3)*(ASPECT RATIO)+B2(4)*(SPAN RATIO)

COEFFICIENTS FOR ΔCNBOF							COEFFICIENTS FOR ΔCNBOF					
MACH	ALPHA	B2(0)	B2(1)	B2(2)	B2(3)	B2(4)	ALPHA	B2(0)	B2(1)	B2(2)	B2(3)	B2(4)
1.15	0.0	0.0	0.0	0.0	0.0	0.0	92.0	0.2372	0.1364	-0.1327	-0.0686	0.3388
1.15	2.0	0.0142	0.0107	0.0001	0.0276	0.0172	94.0	0.3380	0.1896	-0.1609	-0.0937	0.2105
1.15	4.0	0.0475	-0.0032	-0.0029	0.0320	0.0097	96.0	0.5430	0.1959	-0.1370	-0.1297	-0.0904
1.15	6.0	0.0810	-0.0175	-0.0066	0.0375	0.0034	98.0	0.6410	0.1671	-0.1409	-0.1520	-0.2395
1.15	8.0	0.0952	-0.0219	-0.0125	0.0460	0.0060	100.0	0.6611	0.1750	-0.1633	-0.1591	-0.2582
1.15	10.0	0.0903	-0.0081	-0.0140	0.0520	0.0134	102.0	0.6633	0.1515	-0.1473	-0.1572	-0.2970
1.15	12.0	0.0819	0.0033	-0.0149	0.0587	0.0203	104.0	0.6893	0.1516	-0.1578	-0.1627	-0.2433
1.15	14.0	-0.0473	-0.4490	0.2807	-0.0043	0.9265	106.0	0.7601	0.1461	-0.1402	-0.1982	-0.4390
1.15	16.0	0.0263	-0.3730	0.2345	-0.0309	0.7598	108.0	0.8799	0.1175	-0.1311	-0.2237	-0.6382
1.15	18.0	-0.0631	-0.2649	0.1259	-0.0453	0.8143	110.0	0.8251	0.0886	-0.0956	-0.2185	-0.5720
1.15	20.0	0.2154	-0.1794	0.0635	-0.0894	0.3562	112.0	0.7195	0.1070	-0.1137	-0.1903	-0.4379
1.15	22.0	0.2596	-0.1739	0.0751	-0.0947	0.1848	114.0	0.6414	0.0909	-0.0953	-0.1896	-0.3334
1.15	24.0	0.2913	-0.1465	0.0324	-0.1162	0.0702	116.0	0.5133	0.0842	-0.0794	-0.1681	-0.1394
1.15	26.0	0.4333	-0.0945	0.0371	-0.1404	-0.2331	118.0	0.4363	0.0746	-0.0643	-0.1541	-0.0007
1.15	28.0	0.4891	-0.1763	0.1241	-0.1720	-0.3696	120.0	0.4059	0.0534	-0.0372	-0.1557	0.1121
1.15	30.0	0.4374	-0.2000	0.1720	-0.1689	-0.3612	122.0	0.3304	0.0730	-0.0487	-0.1626	0.2653
1.15	32.0	0.4764	-0.0861	0.0612	-0.1927	-0.4980	124.0	0.3024	0.0357	-0.0370	-0.1361	0.3475
1.15	34.0	0.4702	0.0208	-0.0467	-0.1974	-0.5639	126.0	0.3380	0.0253	-0.0050	-0.1330	0.2649
1.15	36.0	0.4263	0.1440	-0.1567	-0.1901	-0.5635	128.0	0.4250	-0.0306	0.0246	-0.1409	0.1239
1.15	38.0	0.4892	0.1367	-0.1467	-0.2010	-0.6960	130.0	0.4926	-0.0563	0.0397	-0.1422	-0.0167
1.15	40.0	0.4487	0.0975	-0.1126	-0.1804	-0.6748	132.0	0.5416	-0.0582	0.0223	-0.1485	-0.1225
1.15	42.0	0.5064	0.1263	-0.1370	-0.1938	-0.7949	134.0	0.5784	-0.1002	0.0481	-0.1357	-0.2297
1.15	44.0	0.5105	0.1162	-0.1305	-0.1685	-0.8287	136.0	0.5295	-0.1053	0.0363	-0.1146	-0.2079
1.15	46.0	0.5007	0.0272	-0.0517	-0.1717	-0.8512	138.0	0.5728	-0.1162	0.0378	-0.1130	-0.3461
1.15	48.0	0.4959	0.1117	-0.1102	-0.1738	-0.8773	140.0	0.6432	-0.1343	0.0557	-0.1161	-0.5317
1.15	50.0	0.4619	0.1579	-0.1502	-0.1712	-0.8121	142.0	0.7643	-0.1303	0.0409	-0.1308	-0.7982
1.15	52.0	0.5457	0.1763	-0.1736	-0.1928	-0.9366	144.0	0.9041	-0.1164	0.0381	-0.1625	-1.0933
1.15	54.0	0.4914	0.1591	-0.1498	-0.1845	-0.8228	146.0	0.9704	-0.1165	0.0331	-0.1821	-1.2461
1.15	56.0	0.5004	0.1717	-0.1417	-0.1793	-0.8529	148.0	1.0794	-0.1178	0.0254	-0.2228	-1.4709
1.15	58.0	0.4085	0.1602	-0.1422	-0.1537	-0.6978	150.0	1.1506	-0.1326	0.0266	-0.2544	-1.5526
1.15	60.0	0.4402	0.1468	-0.1415	-0.1459	-0.7551	152.0	1.2750	-0.0809	0.0197	-0.3288	-1.5408
1.15	62.0	0.5339	0.1701	-0.1558	-0.1529	-0.9390	154.0	1.2600	-0.2451	0.1916	-0.3692	-1.6080
1.15	64.0	0.4673	0.2356	-0.2022	-0.1389	-0.9204	156.0	1.3100	-0.2375	0.1360	-0.3843	-1.6580
1.15	66.0	0.3433	0.1994	-0.1786	-0.1149	-0.5895	158.0	1.3300	-0.4364	0.2914	-0.3753	-1.7080
1.15	68.0	0.2935	0.2147	-0.2038	-0.1049	-0.4726	160.0	1.3702	-0.5181	0.3267	-0.4618	-1.7380
1.15	70.0	0.1926	0.1664	-0.1625	-0.0847	-0.2532	162.0	1.3219	-0.5776	0.3542	-0.4011	-1.7473
1.15	72.0	0.1625	0.1711	-0.1692	-0.0875	-0.1449	164.0	1.3432	-0.5012	0.3113	-0.4139	-1.8567
1.15	74.0	0.1242	0.1927	-0.1810	-0.0796	-0.0486	166.0	1.3218	-0.3569	0.2956	-0.4185	-1.9361
1.15	76.0	0.0869	0.1838	-0.1656	-0.0727	0.0724	168.0	1.3500	-0.2517	0.1248	-0.4840	-2.6735
1.15	78.0	0.0268	0.1016	-0.1644	-0.0579	0.2964	170.0	1.2014	-0.0292	-0.0299	-0.3692	-2.1191
1.15	80.0	0.1080	0.1435	-0.1406	-0.0730	0.2059	172.0	1.0929	0.4931	-0.0836	-0.3120	-1.9222
1.15	82.0	0.1832	0.1619	-0.1597	-0.0782	0.1086	174.0	0.9841	0.2764	-0.2103	-0.2552	-1.7287
1.15	84.0	0.0890	0.0963	-0.1168	-0.0396	0.3446	176.0	0.5444	0.3048	-0.2224	-0.1588	-1.1248
1.15	86.0	0.1078	0.0551	-0.0528	-0.0436	0.3724	178.0	0.2435	0.1295	-0.0009	-0.0868	-0.5294
1.15	88.0	0.2821	0.0742	-0.0649	-0.0649	0.2728	180.0	0.0	0.0	0.0	0.0	0.0
1.15	90.0	0.1990	0.1701	-0.1588	-0.0652	0.3347						

Table B-2 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

ΔCNWOF =B2(0)+B2(1)*(TAPER RATIO)+B2(2)*(TAPER RATIO)**2+B2(3)*(ASPECT RATIO)+B2(4)*(SPAN RATIO)

		COEFFICIENTS FOR ΔCNWOF						COEFFICIENTS FOR ΔCNWOF				
MACH	ALPHA	B2(0)	B2(1)	B2(2)	B2(3)	B2(4)	ALPHA	B2(0)	B2(1)	B2(2)	B2(3)	B2(4)
1.30	0.0	0.0	0.0	0.0	0.0	0.0	92.0	0.4806	0.0492	-0.0882	-0.1126	-0.1695
1.30	2.0	0.0652	0.1140	-0.1114	0.0115	0.0113	94.0	0.4229	0.0153	-0.0172	-0.1067	-0.0246
1.30	4.0	0.1212	0.1357	-0.1323	-0.0010	-0.0816	96.0	0.4925	0.1022	-0.0994	-0.1271	-0.1408
1.30	6.0	0.1687	0.1699	-0.1381	-0.0111	-0.1120	98.0	0.4767	0.0958	-0.0998	-0.1321	-0.0738
1.30	8.0	0.1946	0.1741	-0.1587	-0.0169	-0.1252	100.0	0.4768	0.0793	-0.1145	-0.1220	-0.0257
1.30	10.0	0.2071	0.1911	-0.1530	-0.0230	-0.1262	102.0	0.4062	0.1042	-0.1220	-0.1000	-0.0302
1.30	12.0	0.2771	0.2160	-0.1749	-0.0423	-0.2279	104.0	0.4412	0.0682	-0.0805	-0.1116	0.0237
1.30	14.0	0.3232	0.1931	-0.1544	-0.0570	-0.2910	106.0	0.5850	-0.0403	-0.0006	-0.1964	-0.1869
1.30	16.0	0.3896	0.2018	-0.1472	-0.0774	-0.4096	108.0	0.6946	-0.1897	0.1050	-0.1753	-0.3237
1.30	18.0	0.3876	0.1829	-0.1227	-0.0827	-0.4361	110.0	0.7319	-0.1998	0.0845	-0.1813	-0.3703
1.30	20.0	0.4301	0.1826	-0.1151	-0.1014	-0.5220	112.0	0.7257	-0.2144	0.1120	-0.1887	-0.3603
1.30	22.0	0.3950	0.1900	-0.1273	-0.1091	-0.4512	114.0	0.6871	-0.1352	0.0788	-0.1863	-0.3262
1.30	24.0	0.4842	0.0973	-0.0283	-0.1429	-0.6276	116.0	0.6502	-0.1518	0.1036	-0.1692	-0.3083
1.30	26.0	0.5536	0.1137	-0.0140	-0.1500	-0.6356	118.0	0.6662	-0.1519	0.1179	-0.1782	-0.3449
1.30	28.0	0.4931	0.1808	-0.0827	-0.1328	-0.7946	120.0	0.5378	-0.1462	0.1046	-0.1651	-0.1050
1.30	30.0	0.4933	0.1390	-0.0112	-0.1378	-0.8872	122.0	0.4984	-0.1496	0.1162	-0.1642	-0.0155
1.30	32.0	0.5362	0.1330	-0.0502	-0.1549	-0.9427	124.0	0.4517	-0.1123	0.0891	-0.1600	0.0434
1.30	34.0	0.5944	0.1796	-0.0559	-0.1700	-1.0308	126.0	0.4553	-0.1069	0.0726	-0.1576	0.0094
1.30	36.0	0.5011	0.2218	-0.1202	-0.1581	-0.8855	128.0	0.4927	-0.1827	0.0960	-0.1537	-0.0083
1.30	38.0	0.5534	0.1846	-0.1180	-0.1637	-0.9629	130.0	0.4898	-0.1958	0.1296	-0.1373	-0.0910
1.30	40.0	0.5334	0.1805	-0.1316	-0.1635	-0.9132	132.0	0.5092	-0.1910	0.1251	-0.1225	-0.1043
1.30	42.0	0.5164	0.2050	-0.1422	-0.1492	-0.8905	134.0	0.5448	-0.1701	0.1173	-0.1217	-0.3108
1.30	44.0	0.5162	0.2220	-0.1727	-0.1477	-0.9104	136.0	0.5631	-0.1118	0.0461	-0.1100	-0.4191
1.30	46.0	0.4245	0.2614	-0.2123	-0.1440	-0.7260	138.0	0.6076	-0.1207	0.0593	-0.1127	-0.5699
1.30	48.0	0.5625	0.1771	-0.1623	-0.1702	-0.9320	140.0	0.6665	-0.0867	0.0113	-0.1146	-0.7346
1.30	50.0	0.5970	0.1042	-0.0577	-0.2003	-0.9470	142.0	0.7096	-0.1103	0.0490	-0.1516	-0.8635
1.30	52.0	0.5726	0.1526	-0.1334	-0.2022	-0.8972	144.0	0.8133	-0.1420	0.0786	-0.1504	-1.0763
1.30	54.0	0.5405	0.1378	-0.1165	-0.1844	-0.8821	146.0	0.8876	-0.1387	0.0702	-0.1719	-1.2683
1.30	56.0	0.5370	0.2638	-0.1676	-0.1768	-0.8443	148.0	0.9666	-0.1310	0.0631	-0.1923	-1.4452
1.30	58.0	0.5239	0.1401	-0.1308	-0.1645	-0.7807	150.0	1.1077	-0.1033	0.0401	-0.2573	-2.0465
1.30	60.0	0.5304	0.0784	-0.0979	-0.1530	-0.7707	152.0	1.2997	-0.1308	0.0848	-0.2944	-2.0679
1.30	62.0	0.5362	0.0659	-0.1174	-0.1401	-0.7169	154.0	1.2303	-0.1438	0.1002	-0.2984	-1.9673
1.30	64.0	0.4362	0.0748	-0.1142	-0.1092	-0.5350	156.0	1.2734	-0.1921	0.1367	-0.3230	-2.0451
1.30	66.0	0.4065	0.0336	-0.0787	-0.1078	-0.4479	158.0	1.[illegible]	-0.2094	0.2165	-0.3308	-2.0469
1.30	68.0	0.4007	0.0286	-0.0570	-0.1081	-0.4369	160.0	1.3876	-0.3063	0.2209	-0.3633	-2.1224
1.30	70.0	0.2406	0.0921	-0.1288	-0.0782	-0.1520	162.0	1.3061	-0.2805	0.1925	-0.3634	-2.0858
1.30	72.0	0.1601	0.0683	-0.0918	-0.0553	0.0157	164.0	1.2447	-0.2636	0.1668	-0.3466	-1.9769
1.30	74.0	0.1143	0.0624	-0.0866	-0.0376	0.1167	166.0	1.0997	-0.2543	0.1658	-0.3195	-1.7320
1.30	76.0	0.1115	0.0133	-0.0578	-0.0433	0.1759	168.0	0.9999	-0.2208	0.1466	-0.2900	-1.4982
1.30	78.0	0.1062	-0.0838	0.0465	-0.0792	0.1188	170.0	0.7452	-0.1992	0.1358	-0.2375	-1.1444
1.30	80.0	0.2928	-0.1876	0.1330	-0.0856	-0.0255	172.0	0.5561	-0.1492	0.1068	-0.1927	-0.8327
1.30	82.0	0.3308	-0.1888	0.1351	-0.0807	-0.0574	174.0	0.3919	-0.1148	0.0945	-0.1456	-0.5000
1.30	84.0	0.4168	-0.0129	-0.0248	-0.1073	-0.1762	176.0	0.2498	-0.0789	0.0733	-0.0953	-0.3969
1.30	86.0	0.3854	-0.0116	-0.0032	-0.0908	-0.0947	178.0	0.0928	-0.0317	0.0296	-0.0388	-0.1547
1.30	88.0	0.4632	0.0248	-0.0470	-0.1066	-0.2192	180.0	0.0	0.0	0.0	0.0	0.0
1.30	90.0	0.4444	0.0548	-0.0763	-0.0996	-0.1538						

Table B-2 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

ΔCNBOF =B2(0)+B2(1)*(TAPER RATIO)+B2(2)*(TAPER RATIO)**2+B2(3)*(ASPECT RATIO)+B2(4)*(SPAN RATIO)

		COEFFICIENTS FOR ΔCNBOF					COEFFICIENTS FOR ΔCNBOF					
MACH	ALPHA	B2(0)	B2(1)	B2(2)	B2(3)	B2(4)	ALPHA	B2(0)	B2(1)	B2(2)	B2(3)	B2(4)
1.50	0.0	0.0	0.0	0.0	0.0	0.0	92.0	-0.3629	0.0419	-0.0614	0.1207	0.8659
1.50	2.0	0.1629	0.0794	-0.0656	-0.0388	-0.1624	94.0	-0.3147	0.0111	-0.0313	0.1132	0.8095
1.50	4.0	0.2671	0.0974	-0.0710	-0.0654	-0.2550	96.0	-0.2317	0.0032	-0.0744	0.0981	0.7009
1.50	6.0	0.3555	0.1270	-0.0873	-0.0774	-0.3287	98.0	-0.2116	0.0491	-0.0660	0.0955	0.6779
1.50	8.0	0.4353	0.1740	-0.1176	-0.0988	-0.3854	100.0	-0.1956	0.0529	-0.0730	0.0934	0.6630
1.50	10.0	0.5211	0.2055	-0.1356	-0.1189	-0.4639	102.0	-0.2031	0.0670	-0.0898	0.0949	0.6993
1.50	12.0	0.5631	0.2348	-0.1406	-0.1355	-0.4795	104.0	-0.1905	0.0559	-0.0847	0.0932	0.7138
1.50	14.0	0.6109	0.2933	-0.2015	-0.1487	-0.5342	106.0	-0.1959	0.0387	-0.0812	0.0970	0.7556
1.50	16.0	0.6965	0.3182	-0.2161	-0.1672	-0.6692	108.0	-0.2099	0.0011	-0.0593	0.1010	0.8133
1.50	18.0	0.6604	0.3329	-0.2187	-0.1603	-0.6523	110.0	-0.1555	-0.0234	-0.0533	0.0875	0.7830
1.50	20.0	0.6807	0.3592	-0.2415	-0.1750	-0.6568	112.0	-0.1432	-0.0578	-0.0288	0.0813	0.8043
1.50	22.0	0.7411	0.3694	-0.2439	-0.1981	-0.7892	114.0	-0.1756	-0.1016	0.0120	0.0839	0.8923
1.50	24.0	0.8060	0.3285	-0.1982	-0.2150	-0.9091	116.0	-0.1551	-0.1277	0.0310	0.0778	0.8928
1.50	26.0	0.9346	0.2552	-0.1411	-0.2461	-1.1278	118.0	-0.1805	-0.1617	0.0588	0.0824	0.9704
1.50	28.0	0.9685	0.2344	-0.1114	-0.2603	-1.2025	120.0	-0.1224	-0.2257	0.1139	0.0690	0.9107
1.50	30.0	0.9571	0.2306	-0.1118	-0.2627	-1.1823	122.0	-0.0213	-0.2631	0.1434	0.0477	0.7676
1.50	32.0	0.9400	0.2316	-0.1336	-0.2594	-1.1545	124.0	0.0478	-0.2988	0.1764	0.0285	0.6803
1.50	34.0	1.0213	0.1969	-0.1153	-0.2719	-1.2836	126.0	0.0820	-0.3256	0.1964	0.0154	0.6499
1.50	36.0	1.0046	0.2065	-0.1313	-0.2692	-1.2439	128.0	0.1363	-0.3185	0.1913	0.0027	0.5968
1.50	38.0	0.8669	0.2726	-0.1986	-0.2391	-1.0308	130.0	0.1813	-0.3125	0.1983	-0.0114	0.5326
1.50	40.0	0.8409	0.2242	-0.1657	-0.2315	-0.9423	132.0	0.3026	-0.2778	0.1723	-0.0393	0.3769
1.50	42.0	0.7471	0.2480	-0.1911	-0.2048	-0.8283	134.0	0.4885	-0.2707	0.1757	-0.0851	0.0218
1.50	44.0	0.6197	0.2558	-0.1961	-0.1729	-0.6570	136.0	0.6152	-0.2469	0.1732	-0.1213	-0.2111
1.50	46.0	0.5137	0.2550	-0.1822	-0.1430	-0.5583	138.0	0.7326	-0.1981	0.1375	-0.1543	-0.4568
1.50	48.0	0.3845	0.2231	-0.1550	-0.1192	-0.3787	140.0	0.8250	-0.1571	0.1131	-0.1860	-0.6490
1.50	50.0	0.2503	0.1996	-0.1281	-0.0718	-0.2053	142.0	0.8911	-0.1247	0.1015	-0.2067	-0.8137
1.50	52.0	0.2535	0.1930	-0.1522	-0.0685	-0.2147	144.0	0.9665	-0.0865	0.0635	-0.2261	-1.0858
1.50	54.0	0.0879	0.1496	-0.1191	-0.0267	0.0479	146.0	1.1801	-0.0603	0.0725	-0.2562	-1.2789
1.50	56.0	-0.0402	0.0872	-0.0578	0.0101	0.2519	148.0	1.2268	-0.0464	0.0595	-0.2867	-1.5315
1.50	58.0	-0.0617	0.1460	-0.1326	0.0131	0.2884	150.0	1.3334	-0.0823	0.1082	-0.3154	-1.7379
1.50	60.0	-0.0670	0.1714	-0.1634	0.0198	0.3118	152.0	1.4437	-0.1026	0.1094	-0.3437	-1.9440
1.50	62.0	-0.1321	0.1753	-0.1584	0.0354	0.4111	[illegible]	1.5413	-0.1209	0.1190	-0.3646	-2.1354
1.50	64.0	-0.1912	0.1836	-0.1616	0.0502	0.4946	[illegible]	1.5873	-0.1453	0.1252	-0.3808	-2.2364
1.50	66.0	-0.2392	0.1700	-0.1656	0.0646	0.5755	158.0	1.5726	-0.1749	0.1426	-0.3828	-2.2257
1.50	68.0	-0.2365	0.1640	-0.1661	0.0649	0.5694	160.0	1.4834	-0.1955	0.1555	-0.3683	-2.0923
1.50	70.0	-0.1905	0.1515	-0.1466	0.0529	0.4691	162.0	1.3684	-0.1775	0.1186	-0.3431	-1.9246
1.50	72.0	-0.1714	0.1502	-0.1527	0.0512	0.4428	164.0	1.2227	-0.2050	0.1382	-0.3093	-1.6917
1.50	74.0	-0.2611	0.0914	-0.1058	0.0716	0.5945	166.0	1.0542	-0.1545	0.1934	-0.2709	-1.4370
1.50	76.0	-0.2351	0.0834	-0.0944	0.0686	0.5596	168.0	0.8361	-0.1127	0.0710	-0.2187	-1.0897
1.50	78.0	-0.2686	0.0518	-0.0676	0.0793	0.6208	170.0	0.7194	-0.0798	0.0454	-0.1862	-0.9293
1.50	80.0	-0.2570	0.0459	-0.0719	0.0808	0.6130	172.0	0.5691	-0.0732	0.0428	-0.1459	-0.7119
1.50	82.0	-0.2850	0.0559	-0.0841	0.0907	0.6676	174.0	0.4469	-0.0763	0.0503	-0.1060	-0.5676
1.50	84.0	-0.2755	0.0829	-0.1126	0.0919	0.6734	176.0	0.2777	-0.0713	0.0511	-0.0627	-0.3967
1.50	86.0	-0.2581	0.0585	-0.0875	0.0934	0.6588	178.0	0.0957	-0.0071	0.0030	-0.0196	-0.1122
1.50	88.0	-0.3910	0.0204	-0.0400	0.1265	0.8900	180.0	0.0	0.0	0.0	0.0	0.0
1.50	90.0	-0.3857	0.0504	-0.0668	0.1250	0.8860						

Table B-2 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

ΔCNBOF =B2(0)+B2(1)*(TAPER RATIO)+B2(2)*(TAPER RATIO)**2+B2(3)*(ASPECT RATIO)+B2(4)*(SPAN RATIO)

		COEFFICIENTS FOR ΔCNBOF						COEFFICIENTS FOR ΔCNBOF				
MACH	ALPHA	B2(0)	B2(1)	B2(2)	B2(3)	B2(4)	ALPHA	B2(0)	B2(1)	B2(2)	B2(3)	B2(4)
2.00	0.0	0.0	0.0	0.0	0.0	0.0	92.0	0.4760	0.3474	-0.2295	-0.0346	-0.0186
2.00	2.0	-0.0458	0.0320	-0.0323	0.0024	0.1327	94.0	0.1685	0.3143	-0.2343	0.0362	-0.0540
2.00	4.0	-0.0151	0.0770	-0.0739	-0.0110	0.1430	96.0	0.2957	0.2681	-0.2072	0.0167	-0.2137
2.00	6.0	0.0490	0.0668	-0.0663	-0.0232	0.4959	98.0	0.2561	0.1556	-0.1131	0.0358	-0.0839
2.00	8.0	0.0973	0.1120	-0.1017	-0.0395	0.5556	100.0	0.2434	-0.0076	0.0240	0.0440	0.0104
2.00	10.0	0.1769	0.1364	-0.1112	-0.0577	-0.0555	102.0	0.1489	0.0439	-0.0112	0.0649	0.1947
2.00	12.0	0.2606	0.1503	-0.1106	-0.0773	-0.1919	104.0	0.1677	0.0894	-0.0989	0.0650	0.1965
2.00	14.0	0.3032	0.1615	-0.0973	-0.0925	-0.2551	106.0	0.0035	0.2057	-0.0505	0.0826	0.4192
2.00	16.0	0.3772	0.1669	-0.0885	-0.1136	-0.3724	108.0	-0.0028	0.3421	-0.1611	0.0705	0.4091
2.00	18.0	0.4730	0.1769	-0.0898	-0.1400	-0.5295	110.0	-0.1185	0.5005	-0.3140	0.0836	0.6309
2.00	20.0	0.5693	0.1941	-0.1006	-0.1719	-0.7007	112.0	-0.1378	0.5299	-0.3384	0.0823	0.6876
2.00	22.0	0.6692	0.1626	-0.0743	-0.1999	-0.8537	114.0	-0.1145	0.5047	-0.3729	0.0724	0.7186
2.00	24.0	0.7200	0.1603	-0.0642	-0.2203	-0.9660	116.0	-0.1145	0.3349	-0.2742	0.0694	0.7951
2.00	26.0	0.8148	0.1225	-0.0275	-0.2394	-1.1060	118.0	-0.1378	0.1938	-0.2212	0.0708	0.9860
2.00	28.0	0.8647	0.1117	-0.0070	-0.2530	-1.1936	120.0	-0.0860	-0.0459	-0.0584	0.0523	0.8980
2.00	30.0	0.8240	0.1006	0.0061	-0.2430	-1.1425	122.0	0.0985	-0.1988	0.0494	0.0130	0.6835
2.00	32.0	0.8352	0.1355	-0.0167	-0.2499	-1.1607	124.0	0.1788	-0.2212	0.0763	-0.0074	0.4649
2.00	34.0	0.7899	0.1487	-0.0348	-0.2413	-1.0721	126.0	0.2987	-0.2243	0.0962	-0.0414	0.2718
2.00	36.0	0.7566	0.1450	-0.0421	-0.2363	-0.9891	128.0	0.3963	-0.1593	0.0828	-0.0766	0.0788
2.00	38.0	0.7621	0.1539	-0.0655	-0.2538	-0.9676	130.0	0.4347	-0.1231	0.0587	-0.0948	-0.0372
2.00	40.0	0.7935	0.1497	-0.0714	-0.2400	-0.9790	132.0	0.4963	-0.0978	0.0449	-0.1150	-0.1574
2.00	42.0	0.7994	0.1565	-0.0863	-0.2362	-0.9702	134.0	0.5725	-0.0703	0.0303	-0.1392	-0.3113
2.00	44.0	0.7784	0.1962	-0.1172	-0.2235	-0.9518	136.0	0.6192	-0.0564	0.0229	-0.1545	-0.4548
2.00	46.0	0.8012	0.2307	-0.1446	-0.2167	-1.0396	138.0	0.7270	-0.0359	0.0153	-0.1818	-0.6365
2.00	48.0	0.8087	0.2379	-0.1375	-0.2056	-1.0702	140.0	0.8187	-0.0224	0.0214	-0.2052	-0.8231
2.00	50.0	0.7859	0.2365	-0.1208	-0.1802	-1.0442	142.0	0.8740	0.0094	-0.0018	-0.2222	-0.9695
2.00	52.0	0.7536	0.2271	-0.1094	-0.1710	-0.9903	144.0	0.9374	0.0145	-0.0070	-0.2356	-1.1121
2.00	54.0	0.6929	0.2211	-0.1041	-0.1510	-0.8989	146.0	1.0041	0.0152	-0.0023	-0.2510	[illegible]
2.00	56.0	0.5759	0.1989	-0.0866	-0.1282	-0.6959	148.0	1.0593	0.0133	0.0026	-0.2655	-1.4016
2.00	58.0	0.4390	0.1869	-0.0798	-0.0893	-0.4746	150.0	1.0949	0.0104	-0.0031	-0.2784	-1.4941
2.00	60.0	0.2796	0.1942	-0.0940	-0.0529	-0.2297	152.0	1.1591	0.0016	0.0023	-0.2925	-1.6231
2.00	62.0	0.1077	0.1848	-0.0974	-0.0133	0.0413	154.0	1.1978	-0.0263	0.0157	-0.3047	-1.6949
2.00	64.0	-0.0240	0.1712	-0.0970	0.0157	0.2395	156.0	1.1683	-0.0502	0.0323	-0.3021	-1.6436
2.00	66.0	-0.1447	0.1666	-0.1547	0.0418	0.4245	158.0	1.1256	-0.0677	0.0414	-0.2920	-1.6187
2.00	68.0	-0.2115	0.1533	-0.1124	0.0507	0.5106	160.0	1.0894	-0.0762	0.0416	-0.2830	-1.5791
2.00	70.0	-0.2035	0.1499	-0.1104	0.0580	0.4666	162.0	1.0333	-0.0733	0.0314	-0.2653	-1.5059
2.00	72.0	-0.2072	0.1600	-0.1336	0.0596	0.4514	164.0	0.9630	-0.0642	0.0184	-0.2452	-1.4077
2.00	74.0	-0.2116	0.1506	-0.1287	0.0614	0.4559	166.0	0.8614	-0.0622	0.0164	-0.2177	-1.2487
2.00	76.0	-0.1630	0.1213	-0.1018	0.0522	0.3760	168.0	0.7554	-0.0617	0.0148	-0.1809	-1.0807
2.00	78.0	-0.0300	0.0913	-0.0498	0.0208	0.1459	170.0	0.6493	-0.0594	0.0088	-0.1616	-0.9135
2.00	80.0	0.0379	0.0936	-0.0357	0.0104	0.0307	172.0	0.5228	-0.0585	0.0155	-0.1315	-0.7255
2.00	82.0	0.2058	0.1438	-0.0895	-0.0115	-0.2432	174.0	0.3937	-0.0337	0.0019	-0.0983	-0.5922
2.00	84.0	0.3647	0.1276	-0.0196	-0.0481	-0.5808	176.0	0.2564	-0.0269	0.0030	-0.0641	-0.3978
2.00	86.0	0.3988	0.2065	-0.0943	-0.0369	-0.5758	178.0	0.1265	-0.0141	-0.0046	-0.0208	-0.1808
2.00	88.0	0.4841	0.3614	-0.1750	-0.0500	-0.6868	180.0	0.0	0.0	0.0	0.0	0.0
2.00	90.0	0.4949	0.4011	-0.2695	-0.0476	-0.6998						

Table B-2 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

ΔCNBOF = B2(0)+B2(1)*(TAPER RATIO)+B2(2)*(TAPER RATIO)**2+B2(3)*(ASPECT RATIO)+B2(4)*(SPAN RATIO)

		COEFFICIENTS FOR ΔCNBOF						COEFFICIENTS FOR ΔCNBOF				
MACH	ALPHA	B2(0)	B2(1)	B2(2)	B2(3)	B2(4)	ALPHA	B2(0)	B2(1)	B2(2)	B2(3)	B2(4)
2.50	0.0	0.0	0.0	0.0	0.0	0.0	92.0	0.2111	0.5281	-0.4803	0.0650	-0.0734
2.50	2.0	0.0010	0.0344	-0.0433	-0.0116	0.0216	94.0	0.1789	0.2095	-0.2028	0.0829	0.1352
2.50	4.0	-0.0021	0.1057	-0.1084	-0.0168	0.0735	96.0	0.1144	-0.0031	0.1366	0.1023	0.3515
2.50	6.0	0.0594	0.0960	-0.0998	-0.0311	0.0210	98.0	0.0618	-0.1106	0.1688	0.1156	0.4751
2.50	8.0	0.1327	0.1320	-0.1251	-0.0489	-0.0709	100.0	-0.1083	-0.0688	0.1581	0.1448	0.7391
2.50	10.0	0.1913	0.1655	-0.1433	-0.0634	-0.1482	102.0	-0.2161	0.0558	0.0825	0.1537	0.9277
2.50	12.0	0.2307	0.1644	-0.1360	-0.0723	-0.2359	104.0	-0.4200	0.1988	-0.0929	0.1600	1.5200
2.50	14.0	0.2809	0.1542	-0.1221	-0.0867	-0.3125	106.0	-0.5400	0.3600	-0.2800	0.1000	1.0800
2.50	16.0	0.3660	0.1641	-0.1202	-0.1106	-0.4398	108.0	-0.5200	0.5200	-0.3900	0.1700	1.1200
2.50	18.0	0.4235	0.1437	-0.0961	-0.1268	-0.5156	110.0	-0.4600	0.6600	-0.4600	0.1600	1.1000
2.50	20.0	0.4893	0.1390	-0.0921	-0.1476	-0.6188	112.0	-0.3000	0.7000	-0.5200	0.1400	1.0800
2.50	22.0	0.5284	0.1637	-0.1115	-0.1645	-0.6872	114.0	-0.3000	0.7000	-0.5800	0.1200	1.0400
2.50	24.0	0.5754	0.1798	-0.1180	-0.1806	-0.7640	116.0	-0.2287	0.3758	-0.5672	0.0822	1.0598
2.50	26.0	0.6448	0.1966	-0.1290	-0.1983	-0.8759	118.0	-0.1754	0.4245	-0.4493	0.0715	1.0824
2.50	28.0	0.7285	0.1817	-0.1146	-0.2161	-1.0051	120.0	-0.2313	0.0959	-0.1973	0.0886	1.2275
2.50	30.0	0.7773	0.1604	-0.0829	-0.2285	-1.0752	122.0	-0.1308	-0.1121	-0.0315	0.0649	1.0900
2.50	32.0	0.8246	0.1730	-0.0842	-0.2391	-1.1501	124.0	0.0265	-0.1807	0.0403	0.0196	0.8186
2.50	34.0	0.8991	0.1867	-0.0873	-0.2591	-1.2523	126.0	0.1033	-0.1426	0.0376	-0.0110	0.6268
2.50	36.0	0.9413	0.1751	-0.0615	-0.2741	-1.3018	128.0	0.2077	-0.1089	0.0256	-0.0490	0.4033
2.50	38.0	0.9687	0.1580	-0.0378	-0.2816	-1.3267	130.0	0.3144	-0.1211	0.0514	-0.0738	0.2173
2.50	40.0	1.0026	0.1692	-0.0568	-0.2858	-1.3531	132.0	0.4150	-0.0964	0.0432	-0.1001	0.0140
2.50	42.0	1.0059	0.2156	-0.1055	-0.2787	-1.3470	134.0	0.4839	-0.0796	0.0392	-0.1227	-0.1291
2.50	44.0	0.9656	0.2588	-0.1422	-0.2585	-1.2936	136.0	0.5868	-0.0803	0.0496	-0.1506	-0.3400
2.50	46.0	0.8980	0.2874	-0.1592	-0.2331	-1.2486	138.0	0.6798	-0.0941	0.0678	-0.1748	-0.5319
2.50	48.0	0.8909	0.3153	-0.1666	-0.2174	-1.2586	140.0	0.7327	-0.0772	0.0551	-0.1891	-0.6622
2.50	50.0	0.9042	0.3309	-0.1679	-0.2066	-1.2905	142.0	0.734[illegible]	-0.0417	0.0228	-0.1899	-0.7128
2.50	52.0	0.9286	0.3048	-0.1363	-0.1998	-1.3301	144.0	0.7980	-0.0023	-0.0068	-0.2059	-0.8661
2.50	54.0	1.0178	0.2783	-0.1041	-0.2093	-1.4731	146.0	0.8627	0.0267	-0.0225	-0.2226	-1.0232
2.50	56.0	0.9543	0.2437	-0.0751	-0.1872	-1.3603	148.0	0.8968	0.0323	-0.0282	-0.2333	-1.1784
2.50	58.0	0.8655	0.2098	-0.0490	-0.1609	-1.2120	150.0	0.8922	0.0154	-0.0100	-0.2382	-1.1597
2.50	60.0	0.7260	0.1755	-0.0196	-0.1276	-0.9926	152.0	0.9191	0.0054	-0.0110	-0.2432	-1.2377
2.50	62.0	0.5575	0.1415	0.0102	-0.0890	-0.7350	154.0	0.9396	-0.0136	-0.0136	-0.2418	-1.2957
2.50	64.0	0.3908	0.1051	0.0397	-0.0527	-0.4796	156.0	0.9338	-0.0127	-0.0188	-0.2319	-1.3175
2.50	66.0	0.2111	0.0757	0.0415	-0.0139	-0.2033	158.0	0.9025	-0.0256	-0.0066	-0.2199	-1.2870
2.50	68.0	0.0648	0.0433	0.0594	0.0190	0.0121	160.0	0.8608	-0.0414	0.0092	-0.2040	-1.2412
2.50	70.0	-0.0262	0.0105	0.0756	0.0363	0.1256	162.0	0.7930	-0.0170	-0.0057	-0.1839	-1.1610
2.50	72.0	0.2799	-0.0361	0.1728	-0.0270	-0.4244	164.0	0.7193	-0.0211	-0.0009	-0.1659	-1.0525
2.50	74.0	0.3877	-0.0942	0.2403	-0.0466	-0.6[illegible]45	166.0	0.6362	-0.0330	0.0086	-0.1428	-0.9223
2.50	76.0	0.6153	-0.1455	0.3224	-0.0938	-0.9948	168.0	0.5498	-0.0396	0.0155	-0.1201	-0.7848
2.50	78.0	0.8797	0.0581	0.1305	-0.1452	-1.4544	170.0	0.4590	-0.0430	0.0217	-0.0964	-0.6677
2.50	80.0	1.0175	0.0615	0.1902	-0.1636	-1.7150	172.0	0.3685	-0.0210	0.0030	-0.0774	-0.5137
2.50	82.0	1.0004	0.2424	0.0401	-0.1503	-1.7028	174.0	0.2728	-0.0118	-0.0032	-0.0560	-0.3773
2.50	84.0	0.9652	0.4650	-0.1845	-0.1382	-1.6328	176.0	0.1905	-0.0162	0.0056	-0.0364	-0.2648
2.50	86.0	0.7095	0.7430	-0.4761	-0.0746	-1.2022	178.0	0.0989	-0.0102	0.0038	-0.0146	-0.1427
2.50	88.0	0.5140	0.7277	-0.5072	-0.0210	-0.7492	180.0	0.0	0.0	0.0	0.0	0.0
2.50	90.0	0.2482	0.6351	-0.4547	0.0423	-0.2167						

Table B-2 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

ΔCNBOF =B2(0)+B2(1)*(TAPER RATIO)+B2(2)*(TAPER RATIO)**2+B2(3)*(ASPECT RATIO)+B2(4)*(SPAN RATIO)

MACH	ALPHA	B2(0)	B2(1)	B2(2)	B2(3)	B2(4)	ALPHA	B2(0)	B2(1)	B2(2)	B2(3)	B2(4)
		COEFFICIENTS FOR ΔCNBOF						COEFFICIENTS FOR ΔCNBOF				
3.00	0.0	0.0	0.0	0.0	0.0	0.0	92.0	0.0579	0.4841	-0.3148	0.0878	0.2138
3.00	2.0	-0.0185	-0.0097	0.0628	0.0245	0.0073	94.0	0.0712	0.2610	-0.1494	0.1005	0.3141
3.00	4.0	0.0332	-0.0042	0.0638	0.0211	-0.0409	96.0	0.0243	-0.1089	0.1872	0.1147	0.3261
3.00	6	0.0669	0.0338	0.0107	0.0096	-0.0201	98.0	-0.0567	-0.1669	0.2418	0.1331	0.7231
3.00	8	0.1533	0.0987	-0.0758	-0.0145	-0.0965	100.0	-0.2580	-0.1368	0.2564	0.1673	1.0842
3.00	10.	0.2234	0.1517	-0.1289	-0.0345	-0.1875	102.0	-0.3678	0.0132	0.1686	0.174[illegible]	1.2229
3.00	12.0	0.2591	0.1750	-0.1467	-0.0466	-0.2346	104.0	-0.7004	0.3072	-0.0261	0.2212	1.7158
3.00	14.0	0.3141	0.1842	-0.1483	-0.0585	-0.3239	106.0	-0.7657	0.6202	-0.2788	0.2049	1.7975
3.00	16.0	0.3963	0.2514	-0.1935	-0.0818	-0.4801	108.0	-0.6127	0.8635	-0.5006	0.1703	1.4993
3.00	18.0	0.4531	0.2614	-0.1925	-0.0941	-0.5828	110.0	-0.5630	[illegible]	-0.5930	0.1489	1.4314
3.00	20.0	0.5137	0.2702	-0.1920	-0.1111	-0.6862	112.0	-0.5550	0.9138	-0.5791	0.1556	1.4137
3.00	22.0	0.5564	0.2800	-0.1964	-0.1265	-0.7559	114.0	-0.3623	0.8232	-0.5876	0.1139	1.2272
3.00	24.0	0.5815	0.2919	-0.2042	-0.1351	-0.7816	116.0	-0.2780	0.6421	-0.5260	0.1041	1.1689
3.00	26.0	0.6368	0.2903	-0.2006	-0.1495	-0.8559	118.0	-0.2406	0.3660	-0.4161	0.1005	1.2232
3.00	28.0	0.6992	0.3245	-0.2294	-0.1670	-0.9434	120.0	-0.2197	0.0698	-0.2044	0.1026	1.2537
3.00	30.0	0.7650	0.3146	-0.2220	-0.1834	-1.0280	122.0	-0.1399	-0.1535	-0.0319	0.0868	1.1443
3.00	32.0	0.8275	0.3047	-0.2045	-0.1977	-1.1184	124.0	0.0498	-0.2287	0.0449	0.0370	0.8450
3.00	34.0	0.9046	0.2876	-0.1762	-0.2122	-1.2348	126.0	0.0932	-0.1906	0.0461	0.0126	0.7155
3.00	36.0	0.9496	0.2706	-0.1488	-0.2211	-1.2982	128.0	0.1878	-0.1632	0.0403	-0.0128	0.5167
3.00	38.0	0.9609	0.2359	-0.1049	-0.2223	-1.3005	130.0	0.2778	-0.183[illegible]	0.0756	-0.0405	0.3660
3.00	40.0	1.0051	0.2037	-0.0686	-0.2311	-1.3504	132.0	0.3815	-0.1572	0.0671	-0.0669	0.1585
3.00	42.0	1.0163	0.2151	-0.0725	-0.2309	-1.3611	134.0	0.4701	-0.1263	0.0507	-0.0907	-0.0295
3.00	44.0	0.9781	0.2481	-0.0979	-0.2159	-1.3126	136.0	0.5786	-0.1285	0.0607	-0.1176	-0.2492
3.00	46.0	0.8890	0.2771	-0.1142	-0.1920	-1.2265	138.0	0.6696	-0.1365	0.0811	-0.1406	-0.4443
3.00	48.0	0.8788	0.3186	-0.1432	-0.1798	-1.2306	140.0	[illegible]	-0.1085	0.0658	-0.1553	-0.5977
3.00	50.0	0.8978	0.3490	-0.1703	-0.1733	-1.2736	142.0	0.7390	-0.0759	0.0402	-0.1543	-0.6498
3.00	52.0	0.9196	0.3272	-0.1478	-0.1694	-1.3064	144.0	0.7910	0.0079	-0.0180	-0.1751	-0.8121
3.00	54.0	1.0030	0.2983	-0.1138	-0.1812	-1.4405	146.0	0.8683	0.0515	-0.0576	-0.1937	-0.9906
3.00	56.0	0.9447	0.2609	-0.0829	-0.1624	-1.3383	148.0	0.9267	0.0728	-0.0819	-0.2065	-1.1485
3.00	58.0	0.9585	0.2225	-0.0518	-0.1390	-1.1953	150.0	0.9372	0.0465	-0.0530	-0.2106	-1.2129
3.00	60.0	0.7219	0.1858	-0.0207	-0.1084	-0.9822	152.0	0.9519	0.0435	-0.0502	-0.2062	-1.3021
3.00	62.0	0.5455	0.1481	0.0141	-0.0710	-0.7095	154.0	0.9557	-0.0034	-0.0041	-0.2002	-1.3203
3.00	64.0	0.3775	0.1100	0.0357	-0.0367	-0.4518	156.0	[illegible]	0.0317	-0.0380	-0.1928	-1.3138
3.00	66.0	0.1933	0.0780	0.0496	0.0005	-0.1673	158.0	0.8926	0.0493	-0.0514	-0.1798	-1.2763
3.00	68.0	0.0361	0.0412	0.0741	0.0329	0.0689	160.0	0.8495	0.0165	-0.0245	-0.1646	-1.2220
3.00	70.0	-0.0617	0.0053	0.0947	0.0491	0.1055	162.0	0.7819	0.0157	-0.0230	-0.1463	-1.1290
3.00	72.0	0.2199	-0.0392	0.1858	-0.0127	-0.3076	164.0	0.7032	0.0133	-0.0197	-0.1280	-1.0202
3.00	74.0	0.3557	-0.1049	0.2670	-0.0374	-0.5460	166.0	0.6319	0.0366	-0.0836	-0.1300	-0.8725
3.00	76.0	0.5937	-0.1575	0.3499	-0.0873	-0.9527	168.0	0.5489	0.0495	-0.1097	-0.1180	-0.7340
3.00	78.0	0.7433	0.0187	0.2104	-0.1246	-1.1917	170.0	0.4529	0.0456	-0.1002	-0.0954	-0.5941
3.00	80.0	0.9025	0.0070	0.3016	-0.1581	-1.4567	172.0	0.3601	0.0447	-0.0881	-0.0757	-0.4671
3.00	82.0	0.8622	0.1848	0.1535	-0.1438	-1.3952	174.0	0.2533	0.0271	-0.0710	-0.0580	-0.3008
3.00	84.0	0.7100	0.3874	-0.0325	-0.1049	-1.1382	176.0	0.1693	0.0270	-0.0634	-0.0388	-0.1931
3.00	86.0	0.4300	0.6593	-0.3103	-0.0387	-0.6602	178.0	0.0656	0.0206	-0.0579	-0.0191	-0.0447
3.00	88.0	0.2961	0.6687	-0.3801	0.0072	-0.3352	180.0	0.0	0.0	0.0	0.0	0.0
3.00	90.0	0.0629	0.5835	-0.3509	0.0676	0.1374						

Table B-3

Regression Coefficients for $X_{CP_{FOB}}$

REGRESSION COEFFICIENTS FOR EQUATION

XCPFOB=B3(0)+B3(1)*(TAPER RATIO)+B3(2)*(TAPER RATIO)**2+B3(3)*(ASPECT RATIO)+B3(4)*(SPAN RATIO)

		COEFFICIENTS FOR XCPFOB						COEFFICIENTS FOR XCPFOB				
MACH	ALPHA	B3(0)	B3(1)	B3(2)	B3(3)	B3(4)	ALPHA	B3(0)	B3(1)	B3(2)	B3(3)	B3(4)
0.60	0.0	0.0	0.0	0.0	0.0	0.0	92.0	-21.3289	-3.6835	3.6316	3.5263	33.7438
0.60	2.0	-7.3781	-3.0001	1.8796	0.6363	17.2042	94.0	-17.5145	-0.4365	0.1967	2.8281	27.6427
0.60	4.0	-2.0519	-2.3154	1.2216	-1.0134	6.6565	96.0	-14.5724	0.4484	-0.1123	2.7486	20.5718
0.60	6.0	-2.8563	-1.3625	0.6464	-0.6258	5.5570	98.0	-12.7289	-0.0086	0.2955	2.5740	17.7843
0.60	8.0	-2.4987	-0.4049	-0.0495	-0.5913	2.7028	100.0	-11.8289	-0.2811	0.6905	2.5912	16.1602
0.60	10.0	-0.9141	-0.5907	0.1896	-0.9918	-1.7769	102.0	-11.4016	0.1758	0.1989	2.5686	15.5178
0.60	12.0	-0.3955	-2.1221	1.6728	-0.9882	-3.3813	104.0	-13.0069	0.2901	0.2503	2.9797	18.0983
0.60	14.0	-0.4614	-1.9403	1.5474	-0.9402	-3.5111	106.0	-15.7675	0.7571	-0.0065	3.6305	21.3940
0.60	16.0	-1.2038	-0.2509	-0.0006	-0.8396	-2.5604	108.0	-14.4060	0.8813	0.0050	3.3630	18.6349
0.60	18.0	-0.3823	-1.0564	0.6998	-0.9460	-4.3386	110.0	-15.9750	2.7403	-1.5776	3.4700	20.6471
0.60	20.0	-0.5639	-0.6040	0.2460	-0.9331	-3.8352	112.0	-17.0706	2.8509	-1.7210	3.6648	21.5876
0.60	22.0	-0.4436	-0.9522	0.7085	-0.8423	-4.2509	114.0	-17.5152	1.6755	-0.7902	3.9923	21.7391
0.60	24.0	-0.8092	-0.6753	0.3808	-0.7496	-3.0204	116.0	-21.5991	6.0283	-5.5199	4.7146	29.3489
0.60	26.0	-1.6383	-0.0702	-0.1973	-0.5388	-2.0319	118.0	-16.1671	3.3636	-2.3922	3.9754	20.3263
0.60	28.0	-2.1420	-0.1057	-0.1244	-0.3097	-1.2714	120.0	-14.1688	11.1996	-10.6743	2.6929	16.2029
0.60	30.0	-2.6830	-0.4449	0.2181	-0.2168	-0.3586	122.0	-6.8258	12.6720	-11.5473	0.1311	5.5814
0.60	32.0	-2.3714	-0.6156	0.5917	-0.0961	-0.9291	124.0	2.8582	9.8664	-10.3732	-1.5721	-12.1386
0.60	34.0	-3.9431	-0.2795	0.3453	0.1548	1.9343	126.0	9.1776	6.0949	-6.1063	-3.1778	-23.7301
0.60	36.0	-2.6791	-0.0140	-0.3396	-0.4090	-6.7582	128.0	15.8354	6.4276	-7.8621	-4.4569	-36.9422
0.60	38.0	-2.2736	0.1611	-0.5120	-0.5326	-1.5104	130.0	13.8602	6.7857	-8.0358	-3.9750	-35.6604
0.60	40.0	-0.2744	0.3913	-0.4716	-0.9220	-5.3085	132.0	12.2478	4.9083	-5.3905	-3.3660	-33.8570
0.60	42.0	1.8333	-0.2864	0.0065	-1.5194	-8.6528	134.0	16.0303	1.6178	-1.9977	-4.3865	-40.2761
0.60	44.0	5.6882	-2.1555	2.0508	-2.5497	-14.8514	136.0	5.8079	4.2164	-4.3088	-2.2962	-22.4611
0.60	46.0	7.3770	-3.4598	3.5607	-3.2653	-17.4310	138.0	3.0382	3.0859	-3.1625	-1.6173	-17.7644
0.60	48.0	10.2837	0.5966	-0.9028	-4.1582	-23.9719	140.0	5.6484	0.6039	-1.1476	-2.1722	-23.0702
0.60	50.0	7.5709	1.2742	-1.7727	-3.7872	-17.9556	142.0	5.9416	0.7037	-0.9765	-2.4638	-24.6795
0.60	52.0	3.7592	-0.7484	-0.1403	-2.7151	-10.2963	144.0	1.0387	-0.0467	-0.3942	-1.1353	-16.2784
0.60	54.0	-0.4252	1.6670	-2.4069	-1.4967	-2.8504	146.0	-2.5425	-0.2880	0.5683	-0.4460	-8.3540
0.60	56.0	-3.3340	1.9428	-2.5495	-0.3688	1.8124	148.0	-2.7845	1.2606	-0.4845	-0.3062	-8.9032
0.60	58.0	-5.2321	1.6514	-2.1834	0.2410	5.0384	150.0	5.5747	1.5466	-0.7720	-2.0416	-26.2616
0.60	60.0	-2.9069	1.7542	-1.8606	-0.1469	0.2482	152.0	-3.9591	3.7404	-2.1243	-0.0110	-6.4635
0.60	62.0	-5.5623	1.2723	-1.4334	0.7710	4.1877	154.0	-7.4813	3.0149	-2.7537	1.5547	0.8076
0.60	64.0	-4.9859	1.6250	-1.5262	0.5548	2.9476	156.0	-2.9257	3.3844	-2.6110	0.4380	-5.9112
0.60	66.0	-0.8209	-0.7840	0.5781	-0.2932	-3.7201	158.0	-3.4544	2.8253	-2.5445	0.5853	-3.0250
0.60	68.0	-1.6894	-0.2954	0.0712	-0.0818	-2.2710	160.0	-4.4835	2.5296	-3.0457	0.9900	-0.2501
0.60	70.0	-1.9878	-0.3311	-0.0531	0.0358	-2.0504	162.0	-3.4118	1.7952	-2.7991	0.7136	-0.8128
0.60	72.0	-1.5011	-0.2889	-0.1678	0.0221	-3.1203	164.0	0.5206	1.2856	-2.6976	-0.3538	-6.2988
0.60	74.0	3.5460	2.9762	-2.3053	-1.5414	-12.8832	166.0	10.8181	-4.8748	2.6041	-2.2658	-24.3370
0.60	76.0	-5.9581	5.1092	-3.7624	-0.6010	1.8905	168.0	17.0772	-6.5474	4.0064	-3.7967	-34.2983
0.60	78.0	0.2990	4.2170	-3.0392	-1.2796	-12.2678	170.0	20.0853	-8.0797	5.9191	-4.6799	-39.1598
0.60	80.0	-7.8036	5.3640	-3.9858	-0.9849	4.2941	172.0	9.7730	-8.2910	8.2218	-3.3262	-19.9961
0.60	82.0	-18.2516	5.9803	-3.3549	1.1137	20.1049	174.0	-0.7694	-6.7740	6.8556	-0.6043	-3.3550
0.60	84.0	-5.0771	6.5242	-5.7505	-2.3593	2.5047	176.0	-13.5578	-7.0592	8.2927	2.3756	18.9689
0.60	86.0	-4.4403	6.2379	-5.5907	-2.1327	2.3241	178.0	-27.4903	-1.1944	3.2431	4.9446	43.1085
0.60	88.0	-4.8561	5.9319	-4.3368	-1.4281	2.3680	180.0	0.0	0.0	0.0	0.0	0.0
0.60	90.0	-29.1418	2.7207	-3.3556	5.1967	44.8083						

Table B-3 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

XCPFOB=B3(0)+B3(1)*(TAPER RATIO)+B3(2)*(TAPER RATIO)**2+B3(3)*(ASPECT RATIO)+B3(4)*(SPAN RATIO)

		COEFFICIENTS FOR XCPFOB						COEFFICIENTS FOR XCPFOB				
MACH	ALPHA	B3(0)	B3(1)	B3(2)	B3(3)	B3(4)	ALPHA	B3(0)	B3(1)	B3(2)	B3(3)	B3(4)
0.80	0.0	0.0	0.0	[illegible]	0.0	0.0	92.0	-3.2438	-0.4300	0.3253	0.3294	3.6519
0.80	2.0	2.2564	-4.2362	[illegible]	-2.2968	5.2971	94.0	3.4115	-6.2641	4.5353	0.0628	-8.7230
0.80	4.0	4.8212	-3.8291	[illegible]	-2.8184	-3.0755	96.0	-0.2210	-0.3841	0.6091	-0.4767	-5.0870
0.80	6.0	4.4375	-3.3822	[illegible]	-2.4510	-7.3625	98.0	-0.4556	-0.4523	0.3898	-0.5907	-1.0167
0.80	8.0	-1.0826	-0.2619	[illegible]	-0.9806	-1.5989	100.0	-1.4252	0.0294	-0.1171	-0.2789	0.7317
0.80	10.0	-1.7806	-0.5961	0.3709	-0.8136	-0.5597	102.0	-0.6290	-0.2210	0.1794	-0.3349	-0.3757
0.80	12.0	-1.6024	-0.4789	[illegible]	-0.8157	-1.0532	104.0	-0.0084	0.0579	-0.1087	-0.3537	-1.0533
0.80	14.0	-1.5240	-0.3912	0.0705	-0.8003	-1.8239	106.0	-0.8309	0.1619	-0.1462	-0.1453	0.7552
0.80	16.0	-1.7573	-0.2754	-0.0236	-0.7223	-1.6992	108.0	-1.3728	0.6035	-0.5377	0.0419	2.2605
0.80	18.0	-1.5970	-0.3607	0.0691	-0.7269	-2.0010	110.0	-2.3508	1.4172	-1.4712	0.3652	4.6540
0.80	20.0	-2.1795	-0.7783	0.4466	-0.5702	-1.0200	112.0	-3.9694	1.4830	-1.6616	0.8680	8.6231
0.80	22.0	-1.9360	-0.7823	0.5383	-0.6050	-1.4667	114.0	-6.8355	1.2040	-1.5428	1.5902	13.8714
0.80	24.0	-2.2965	-0.8311	0.6677	-0.5047	-0.9166	116.0	-1.1522	-0.1039	0.3329	0.5602	2.7855
0.80	26.0	-2.7607	-0.4930	0.4032	-0.3529	0.0216	118.0	10.8422	-5.5276	4.3732	-1.6739	-18.0457
0.80	28.0	-3.0690	-0.2136	0.1969	-0.2226	0.4426	120.0	19.2342	3.7561	-3.1447	-3.6840	-38.5932
0.80	30.0	-2.1834	-0.4898	0.4754	-0.3252	-1.3636	122.0	6.2582	9.1883	-8.9030	-1.4651	-17.3176
0.80	32.0	2.6690	0.2303	-0.3551	-0.2004	-0.4539	124.0	-5.9422	13.0910	-14.9027	0.7352	1.6682
0.80	34.0	-1.9954	-0.0763	-0.1705	-0.3853	-1.6322	126.0	-6.2926	3.8820	-2.7946	-1.1457	3.5832
0.80	36.0	2.3862	0.7017	-1.5114	-1.5347	-9.7851	128.0	-8.2749	3.6134	-1.1581	-0.2751	3.5126
0.80	38.0	5.4719	1.3545	-2.8766	-2.3149	-15.0203	130.0	-10.8416	5.4349	1.5309	0.0781	4.5138
0.80	40.0	6.4235	0.0260	-1.2493	-2.7446	-16.0441	132.0	-13.6323	6.4665	4.0107	1.0186	5.2619
0.80	42.0	2.7197	0.5066	-1.4026	-1.9368	-9.6452	134.0	-18.7511	-11.2773	6.6388	6.8733	22.8474
0.80	44.0	1.2487	0.0522	-0.8625	-1.5337	-6.7632	136.0	-13.1311	-9.4184	3.7815	5.1234	16.2330
0.80	46.0	2.9109	0.1356	-1.3075	-1.8704	-9.4057	138.0	-5.0634	2.1444	-5.5461	2.9354	1.0184
0.80	48.0	2.0257	-0.7849	-0.2644	-1.1947	-7.5556	140.0	-1.0236	5.6684	-6.0494	-0.1862	-4.3643
0.80	50.0	1.9583	0.4902	-1.3187	-1.7191	-7.9209	142.0	-14.5257	5.0668	-5.0989	2.2468	19.0580
0.80	52.0	2.8408	0.6235	-1.8260	-1.9325	-9.3266	144.0	-11.3939	-1.8496	1.3275	0.7567	15.4559
0.80	54.0	1.4874	0.0096	-1.0093	-1.5892	-6.7535	146.0	-5.6794	-0.3742	0.4931	-0.6325	4.8230
0.80	56.0	-0.1685	0.4419	-1.8340	-1.3242	-4.0484	148.0	-13.4382	-2.5646	1.7736	1.8491	13.8362
0.80	58.0	0.2984	0.6936	-2.1173	-1.6119	-5.5169	150.0	-5.8607	3.6401	-2.6462	0.2020	-3.2414
0.80	60.0	0.0451	-0.1938	-0.8682	-1.2062	-5.5899	152.0	-5.6792	5.1326	-3.4576	0.6636	-2.8354
0.80	62.0	-3.3083	0.3036	-1.1783	-0.0316	0.2707	154.0	-5.9425	3.7986	-2.7208	0.7558	0.2596
0.80	64.0	-3.8884	0.3116	-1.1829	-0.1074	-0.2873	156.0	-5.8288	2.8528	-2.1882	0.9799	-0.1631
0.80	66.0	-3.1604	-0.4827	-0.0201	-0.1008	-0.1636	158.0	-4.6855	3.2595	-2.7031	0.8052	-1.0866
0.80	68.0	-4.3245	-0.8503	0.3966	0.2800	1.8886	160.0	-4.0039	2.6176	-2.4293	0.7025	-0.7247
0.80	70.0	-4.2253	-0.2750	-0.0538	0.1635	2.1001	162.0	-3.6866	1.3353	-1.7334	0.6103	0.4645
0.80	72.0	-2.5522	-0.3004	-0.0509	-0.1955	-0.1889	164.0	-2.6039	1.5465	-2.7602	0.3911	-0.6788
0.80	74.0	-2.0717	0.0377	-0.1614	-0.3327	-1.0338	166.0	5.6885	-3.6824	1.8517	-1.1693	-14.8105
0.80	76.0	-1.8171	-0.3219	0.3271	-0.4694	-1.3108	168.0	10.3221	-4.4395	1.7039	-2.0229	-25.2718
0.80	78.0	-1.8295	0.4042	-0.4370	-0.5945	-2.5984	170.0	12.4380	-2.8147	0.5439	-2.9644	-27.2975
0.80	80.0	-0.9338	0.3717	-0.1005	-0.6095	-2.6168	172.0	2.1787	-1.9178	0.4216	-0.9082	-10.4288
0.80	82.0	-1.9660	0.1568	-0.3188	-0.3131	-0.1750	174.0	-8.5126	-0.0718	-1.0985	1.5459	7.9166
0.80	84.0	-1.7027	0.1588	-0.3357	-0.3318	-0.5796	176.0	-11.9367	1.9760	-2.1616	2.9625	12.9952
0.80	86.0	-1.8746	0.4275	-0.5331	-0.2388	-0.2116	178.0	-17.8722	1.9724	-1.7799	4.5983	22.5284
0.80	88.0	-2.2842	0.8760	-0.8496	-0.1301	0.5572	180.0	0.0	0.0	0.0	0.0	0.0
0.80	90.0	-4.2692	-1.4182	-1.0671	0.5936	-0.0113						

Table B-3 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

XCPFOB=B3(0)+B3(1)*(TAPER RATIO)+B3(2)*(TAPER RATIO)**2+B3(3)*(ASPECT RATIO)+B3(4)*(SPAN RATIO)

		COEFFICIENTS FOR XCPFOB						COEFFICIENTS FOR XCPFOB				
MACH	ALPHA	B3(0)	B3(1)	B3(2)	B3(3)	B3(4)	ALPHA	B3(0)	B3(1)	B3(2)	B3(3)	B3(4)
0.90	0.0	0.0	0.0	0.0	0.0	0.0	92.0	0.5267	-0.1492	0.2189	-0.6869	-5.3629
0.90	2.0	-6.3749	-2.6371	3.4096	0.9566	0.3965	94.0	0.8061	0.3313	-0.5514	-0.6396	-5.8135
0.90	4.0	-1.6261	-0.2223	-0.0427	-1.0440	1.8399	96.0	1.9138	-0.8882	1.1617	-1.2844	-6.9992
0.90	6.0	-1.6320	-0.2351	0.1276	-0.0287	0.1861	98.0	2.3561	-0.4884	0.9414	-1.2585	-7.9456
0.90	8.0	-1.7383	0.1369	-0.1610	-0.7327	-1.5739	100.0	2.9542	-0.0435	0.4753	-1.2970	-9.1510
0.90	10.0	-2.2636	-0.0670	0.1250	-0.7013	-0.8431	102.0	4.3071	-0.6890	1.8325	-1.5395	-10.4902
0.90	12.0	-2.3703	-0.2951	0.2691	-0.6205	-0.3989	104.0	5.6195	-0.2982	0.6420	-1.7735	-12.5193
0.90	14.0	-2.7235	-0.4911	0.3349	-0.5251	-0.2537	106.0	6.3193	-0.0083	0.3289	-1.9164	-13.4661
0.90	16.0	-2.5543	-0.3834	0.2102	-0.5336	-0.6336	108.0	4.7662	0.2426	-0.0244	-1.5718	-10.1382
0.90	18.0	-2.2622	-0.6458	0.4213	-0.6450	-1.3942	110.0	2.4740	1.1785	-0.9662	-0.9765	-4.9735
0.90	20.0	-1.7540	-0.8284	0.5684	-0.6916	-2.2540	112.0	3.5149	-1.8022	1.3998	-0.7134	-6.2472
0.90	22.0	-2.1078	-0.8324	0.6199	-0.6215	-1.6320	114.0	9.2250	-5.4891	6.3279	-1.0618	-16.7384
0.90	24.0	-2.3998	-0.7758	0.6621	-0.4444	-1.0307	116.0	11.8325	-6.7873	7.7399	-1.5026	-20.9941
0.90	26.0	-3.3045	-0.6345	0.5016	-0.2324	0.6778	118.0	20.4978	-15.1474	15.4210	-2.8784	-34.7653
0.90	28.0	-3.9469	-0.2429	0.1335	-0.0552	1.7461	120.0	17.8491	-11.9630	11.4323	-3.3008	-28.9064
0.90	30.0	-3.0193	-0.5531	0.2073	-0.3766	-0.3186	122.0	15.8638	-11.6252	11.3916	-3.1979	-28.4208
0.90	32.0	-2.6054	0.0456	-0.2912	-0.2135	-1.3131	124.0	4.2441	-3.4674	-3.5484	-0.6010	-2.4062
0.90	34.0	-0.6253	0.1934	-0.7995	-0.8811	-3.8471	126.0	-10.8328	-14.2119	3.4027	8.0074	1.4053
0.90	36.0	3.7799	0.8993	-1.8180	-2.1279	-12.2405	128.0	-21.8406	-16.7143	13.9034	8.1236	2.4702
0.90	38.0	3.0280	0.7948	-2.2994	-2.1788	-11.2933	130.0	-20.2336	-18.0704	11.8798	9.4157	2.6351
0.90	40.0	4.1815	0.1640	-1.5961	-2.4069	-12.0167	132.0	-27.8236	-17.5000	10.0000	4.1943	2.1833
0.90	42.0	6.2514	0.6461	-2.3951	-2.8877	-15.1714	134.0	-10.9666	-16.5000	7.0000	-0.2870	-0.2665
0.90	44.0	3.5465	0.2997	-2.1249	-2.8076	-13.7631	136.0	34.8555	-15.0000	5.5000	15.4004	1.6644
0.90	46.0	6.5859	1.0901	-3.2902	-2.9638	-15.4307	138.0	-10.2419	-14.0000	3.3939	2.6148	2.3848
0.90	48.0	6.8992	0.5343	-2.8922	-3.0926	-15.3837	140.0	-11.8901	-12.5000	3.8155	2.6876	3.1397
0.90	50.0	10.0483	-0.9214	-1.2506	-3.7519	-21.9979	142.0	-5.2345	-11.2810	10.2029	3.7942	-3.3469
0.90	52.0	2.6344	0.6243	-2.6267	-2.2871	-9.9894	144.0	-16.8601	-8.2585	5.8028	5.7927	13.2533
0.90	54.0	-3.0818	1.0477	-1.9758	-1.0599	-1.7343	146.0	-24.8002	-5.3244	3.5403	5.7931	31.4715
0.90	56.0	-11.3993	7.1023	-6.3600	1.0665	9.9851	148.0	-29.1275	-1.3013	0.8494	5.4173	39.5370
0.90	58.0	-9.4860	4.3295	-4.2809	1.2456	5.5644	150.0	-16.5974	4.8389	-3.6959	2.7773	17.6263
0.90	60.0	-7.7729	2.7498	-2.1911	0.4298	3.7812	152.0	-12.3480	3.9945	-2.8489	2.0257	11.0286
0.90	62.0	-8.8899	2.1790	-2.5337	1.0601	5.7231	154.0	-10.5917	5.2438	-3.6253	1.6841	7.6965
0.90	64.0	-4.4360	0.6569	-0.2808	0.1333	-1.2293	156.0	-6.1119	3.8092	-2.9302	1.0734	0.8497
0.90	66.0	-8.0793	1.8536	-1.3804	1.3355	6.7499	158.0	-5.0494	3.4776	-2.8465	0.8015	0.0377
0.90	68.0	-6.9728	2.0335	-1.8295	1.1158	5.8530	160.0	-4.3577	3.1246	-2.8635	0.5988	-0.1911
0.90	70.0	-5.4383	2.0681	-1.7795	0.6922	3.2949	162.0	-5.5365	1.9254	-2.2907	0.8102	3.7750
0.90	72.0	-6.2133	1.3144	-1.8410	0.7709	4.8777	164.0	-4.5672	2.0510	-3.8199	0.6263	3.0272
0.90	74.0	-6.4154	1.3872	-0.7783	0.7132	5.4461	166.0	3.1391	-1.2033	-1.0585	-0.7449	-9.8041
0.90	76.0	-5.6313	0.9651	-0.7459	0.5863	4.2402	168.0	3.6345	-2.6115	0.6994	-1.0200	-10.2635
0.90	78.0	-4.5710	0.5593	-0.2341	0.3613	2.1407	170.0	-0.9033	-3.1166	1.4636	0.2870	-3.3958
0.90	80.0	-3.7513	0.8206	-0.6311	0.3615	0.9774	172.0	-11.4842	-10.2722	10.8739	1.8904	17.0899
0.90	82.0	-3.6994	0.6435	-0.5352	0.1663	1.3106	174.0	-19.3775	-10.7230	9.8443	3.8914	31.9126
0.90	84.0	-3.5135	1.0531	-0.8878	0.1284	1.0545	176.0	-30.5159	-11.4330	10.7085	6.8037	49.1896
0.90	86.0	-2.3707	1.1104	-0.9750	-0.0613	-1.4520	178.0	-26.3540	-7.0572	7.5320	6.7876	40.4687
0.90	88.0	-2.5863	0.9890	-0.8403	0.0043	0.4854	180.0	0.0	0.0	0.0	0.0	0.0
0.90	90.0	-1.7129	0.1308	-0.0039	-0.1788	-1.2421						

Table B-3 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

XCPFOB=B3(0)+B3(1)*(TAPER RATIO)+B3(2)*(TAPER RATIO)**2+B3(3)*(ASPECT RATIO)+B3(4)*(SPAN RATIO)

		COEFFICIENTS FOR XCPFOB						COEFFICIENTS FOR XCPFOB				
MACH	ALPHA	B3(0)	B3(1)	B3(2)	B3(3)	B3(4)	ALPHA	B3(0)	B3(1)	B3(2)	B3(3)	B3(4)
1.00	0.0	0.0	0.0	0.0	0.0	0.0	92.0	-12.5474	5.0680	-2.5059	2.5976	11.7763
1.00	2.0	-13.4592	-1.1594	1.0533	1.0239	20.3997	94.0	-9.4970	3.0246	0.1794	0.6016	0.2914
1.00	4.0	-2.3961	2.0339	-1.2898	-0.7276	-0.0929	96.0	-18.9691	3.0243	0.0451	3.1711	26.1650
1.00	6.0	-1.8144	-2.0992	1.1343	-1.0378	2.7716	98.0	-8.4768	0.2601	0.3567	1.3130	10.7822
1.00	8.0	-0.4247	-1.1644	0.7877	-1.0849	-2.4221	100.0	-4.1658	0.2492	0.2680	0.5416	4.4480
1.00	10.0	-0.8625	-1.0949	0.9333	-1.0378	-2.7243	102.0	-2.2978	0.3055	0.1354	0.1909	1.7349
1.00	12.0	-1.1376	-0.9263	0.8721	-0.9328	-3.2068	104.0	-1.0655	0.3937	-0.0372	-0.3724	-6.2831
1.00	14.0	-2.0852	-0.6212	0.4079	-0.7342	-1.8263	106.0	-0.0310	0.6040	-0.3747	-0.3207	-2.1169
1.00	16.0	-1.6796	-1.0663	0.8231	-0.7108	-2.7279	108.0	0.2202	0.6316	-0.4367	-0.4712	-2.7316
1.00	18.0	-1.8176	-0.7836	0.4972	-0.6050	-2.5557	110.0	0.7274	0.6571	-0.5569	-0.6478	-3.5784
1.00	20.0	-3.1862	-1.4656	1.0402	-0.1287	-0.0567	112.0	0.3078	0.3278	-0.1385	-0.6319	-2.6925
1.00	22.0	-2.8127	-0.8554	0.6292	-0.2661	-0.5141	114.0	-0.1393	0.5995	4.2359	-3.4126	-1.8638
1.00	24.0	-3.2223	-0.7790	0.6203	-0.1737	0.1527	116.0	-6.7279	1.8976	-2.3874	4.0255	10.5376
1.00	26.0	-3.8095	-0.3672	0.1813	-0.2538	-0.3724	118.0	-3.5950	-0.8652	0.5485	0.7204	3.4568
1.00	28.0	-4.8912	-0.1775	-0.0230	0.0039	1.0290	120.0	-6.8981	-2.4256	5.1950	1.2742	7.3384
1.00	30.0	-2.9275	-1.1961	0.9721	-0.2592	-0.9128	122.0	-9.5562	-2.2507	1.8897	2.2839	22.9775
1.00	32.0	-2.4382	-1.0137	1.2805	-0.4310	-1.6759	124.0	-21.6457	-6.5871	5.2496	4.7723	35.7682
1.00	34.0	-0.0503	0.2079	-2.1156	-1.5637	-2.8427	126.0	-20.2347	-4.0724	2.8446	5.3135	28.4918
1.00	36.0	0.4726	-1.6165	-1.7253	-1.9286	-4.4633	128.0	-5.1181	5.1680	1.8383	-1.3538	2.4183
1.00	38.0	3.8582	0.2808	-4.8139	-2.9481	-9.4726	130.0	-40.7185	-8.3333	7.4896	10.1236	66.3300
1.00	40.0	6.0038	-2.0128	-2.4863	-3.6153	-12.5712	132.0	-39.6297	1.8810	-0.6326	6.7911	62.9035
1.00	42.0	-8.2118	-9.3164	7.2658	-0.9331	10.4893	134.0	-36.0255	11.2542	-7.1865	5.5751	52.7068
1.00	44.0	-4.6563	-10.6523	8.9531	-1.4587	3.7914	136.0	-20.4305	13.9469	-9.2218	2.4645	27.6458
1.00	46.0	-6.2723	-7.4184	6.2792	-0.5917	5.6293	138.0	2.0003	8.8681	-4.2430	-1.8906	-12.0183
1.00	48.0	-6.3548	-5.0703	3.3208	-0.4485	5.7637	140.0	-5.9875	2.7173	0.5293	0.9923	1.6709
1.00	50.0	-4.1381	-1.2338	0.6669	-0.1874	-0.3675	142.0	-9.8293	5.8352	-3.4922	2.5274	7.8873
1.00	52.0	-19.9366	-11.2664	13.3845	3.6404	24.7792	144.0	-17.5888	4.4134	-5.5747	5.3587	20.7084
1.00	54.0	-21.5492	-12.4022	15.3552	4.5575	23.3990	146.0	-43.9675	-8.4712	6.9947	12.9918	64.6401
1.00	56.0	-31.7173	-14.2531	16.3466	3.6437	42.3323	148.0	-54.4984	-2.3586	-1.4755	15.5332	82.0329
1.00	58.0	-21.8804	-10.3007	10.0495	3.9448	28.3389	150.0	-25.3272	-1.9195	-0.4439	9.5218	28.2348
1.00	60.0	7.7450	-6.5233	7.0542	-2.8475	-25.1591	152.0	-37.4947	-4.1911	2.8316	12.0529	47.8780
1.00	62.0	-9.7784	-2.0367	0.8971	0.6459	10.1437	154.0	-36.5802	-5.9170	5.0890	10.4226	69.3618
1.00	64.0	-7.0676	-0.7625	-0.0176	0.0263	5.1668	156.0	-17.2143	-4.1897	5.5089	3.2307	21.3369
1.00	66.0	-4.6244	3.2832	-2.7927	-0.3682	1.8510	158.0	-6.5051	5.7660	-1.4446	-0.3694	0.7155
1.00	68.0	-6.4865	1.9289	-1.5969	0.3528	3.6080	160.0	-4.5355	-0.9873	3.5869	-0.6551	0.0666
1.00	70.0	-6.9962	0.9255	-0.5546	0.4716	7.0523	162.0	-2.8437	-4.1868	4.9123	-0.2852	-1.5088
1.00	72.0	-10.5345	-0.3323	0.4378	1.1358	13.1801	164.0	-3.8511	-1.6307	0.9484	0.1128	1.8892
1.00	74.0	-11.1270	-0.7610	0.8643	1.2082	13.9988	166.0	4.9914	1.2214	-3.7991	-1.1938	-13.6301
1.00	76.0	-7.7610	1.9652	-1.3206	0.4454	6.5554	168.0	7.3167	1.3995	-4.2548	-1.6985	-33.6304
1.00	78.0	-9.5168	1.1492	-0.1934	0.5992	10.4203	170.0	3.7259	-3.4802	1.8848	-1.5690	-8.0859
1.00	80.0	-11.1264	1.1485	-0.3474	1.0748	13.6595	172.0	11.1319	-3.7738	1.8487	-3.8401	-28.9474
1.00	82.0	-14.3753	5.1061	-3.1735	2.1481	15.9056	174.0	1.0518	-4.0817	3.7160	-1.2985	-3.2248
1.00	84.0	-13.6757	6.0841	-3.7917	1.7558	14.0018	176.0	1.9032	8.9519	-6.7463	-3.3147	-6.2634
1.00	86.0	-13.3795	10.1674	-6.4464	1.6878	10.8841	178.0	2.6597	9.2913	-9.2982	-2.9164	-7.2197
1.00	88.0	-14.9603	8.8562	-5.5320	2.4282	14.5423	180.0	0.0	0.0	0.0	0.0	0.0
1.00	90.0	-16.1890	8.7603	-5.6682	2.8725	17.1831						

Table B-3 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

XCPFOB=B3(0)+B3(1)*(TAPER RATIO)+B3(2)*(TAPER RATIO)**2+B3(3)*(ASPECT RATIO)+B3(4)*(SPAN RATIO)

		COEFFICIENTS FOR XCPFOB						COEFFICIENTS FOR XCPFOB				
MACH	ALPHA	B3(0)	B3(1)	B3(2)	B3(3)	B3(4)	ALPHA	B3(0)	B3(1)	B3(2)	B3(3)	B3(4)
1.15	0.0	0.0	0.0	0.0	0.0	0.0	92.0	-9.1892	1.3780	-0.4620	1.5887	18.4076
1.15	2.0	-1.1785	-1.4715	-0.0929	-0.0250	-0.3276	94.0	-5.3947	1.2562	-0.6437	0.7984	5.6493
1.15	4.0	-3.3369	-0.1372	-0.1756	0.1083	0.0580	96.0	-5.7769	0.0284	0.4310	0.9463	7.2720
1.15	6.0	-3.5078	-0.2233	-0.1426	0.1416	0.0470	98.0	-4.0347	0.2465	0.1087	0.6505	4.8517
1.15	8.0	-3.8936	-0.5164	0.2026	0.1781	-0.2092	100.0	-2.9793	0.4994	-0.0562	0.4980	3.4126
1.15	10.0	-4.2638	-0.5404	0.0560	0.2950	0.0233	102.0	-2.3073	0.6823	-0.2387	0.4077	2.4834
1.15	12.0	-4.4933	-0.4981	0.1665	0.3310	0.1446	104.0	-1.0134	0.9331	-0.4896	0.3555	1.6018
1.15	14.0	-1.5148	-1.2639	1.1262	-0.7329	-3.1904	106.0	-1.4682	1.0661	-0.5953	0.3065	0.7990
1.15	16.0	-2.3949	0.1556	0.0915	-0.4647	-2.3818	108.0	-0.4946	1.0689	-0.6054	0.0810	-1.3354
1.15	18.0	-3.3495	-0.1564	0.3811	-0.2010	-0.4195	110.0	0.7950	1.0738	-0.6728	-0.2757	-4.0548
1.15	20.0	-4.9187	-0.4186	0.3479	0.2108	2.8267	112.0	1.0944	0.9978	-0.6530	-0.4754	-4.8469
1.15	22.0	-5.9184	-0.7845	0.5192	0.4119	5.0013	114.0	0.8940	0.5983	-0.2106	-0.5660	-4.6399
1.15	24.0	-5.9180	-2.6468	1.8985	0.3870	6.1276	116.0	4.2703	0.8009	0.6472	-1.5481	-10.7232
1.15	26.0	-5.4970	-1.7469	1.2683	0.3195	4.4907	118.0	14.2720	-7.4729	8.4949	-3.7551	-28.5123
1.15	28.0	-5.4925	-1.5642	1.2113	0.3927	4.6394	120.0	9.3018	-6.1372	6.7314	-3.4394	-18.2479
1.15	30.0	-4.5727	-0.7566	0.5753	0.2341	2.2845	122.0	26.7294	-12.7347	13.4557	-6.5641	-49.2148
1.15	32.0	-4.8655	-0.3794	0.4294	0.2369	2.6213	124.0	26.5453	-11.1489	10.2595	-6.3988	-48.7874
1.15	34.0	-6.6078	0.2360	-0.1058	0.6713	5.6213	126.0	61.9643	-2.8248	2.7234	-11.9813	-115.9669
1.15	36.0	-0.3973	1.5742	-1.7731	-0.9917	-6.1205	128.0	66.0285	-6.4328	6.6925	-13.1999	-124.4982
1.15	38.0	1.3648	2.7251	-2.7845	-1.5464	-9.2728	130.0	66.2625	-3.4025	5.2255	-14.1230	-127.1262
1.15	40.0	4.8161	3.9260	-3.1895	-2.6386	-15.4007	132.0	55.1249	-0.9333	3.1183	-13.4919	-104.4789
1.15	42.0	5.1345	3.5251	-3.5929	-2.8527	-15.2536	134.0	38.0283	-4.5483	7.3[illegible]25	-10.9234	-76.7530
1.15	44.0	2.5411	2.6457	-2.7132	-2.3747	-10.2675	136.0	14.5464	-12.2623	13.8978	-6.6230	-32.2690
1.15	46.0	9.4551	4.6532	-4.9678	-4.3839	-22.2640	138.0	-18.6194	3.4189	-7.8867	0.1676	25.3162
1.15	48.0	12.9498	5.2566	-5.4864	-5.5653	-28.0981	140.0	-25.0787	-4.7603	-1.4753	2.5046	37.2632
1.15	50.0	14.9334	5.1481	-4.9071	-4.4897	-36.2457	142.0	-42.1863	-2.3525	-2.0695	7.9169	63.4973
1.15	52.0	15.7531	1.6890	1.2305	-4.9743	-41.9678	144.0	-27.8213	-0.9571	-3.1866	7.7855	37.7597
1.15	54.0	24.9276	5.3214	-2.5654	-6.0956	-59.30[illegible]	146.0	-29.6572	-2.1881	-2.4814	8.3146	46.5289
1.15	56.0	9.8159	-3.0320	5.7067	-2.8930	-37.8008	148.0	-12.2232	14.1563	-17.2894	6.7878	14.2470
1.15	58.0	-7.9173	2.6039	0.8957	-0.1127	-1.8205	150.0	29.6738	-5.0880	4.3152	-1.3510	-52.96[illegible]9
1.15	60.0	-15.9425	2.7101	-2.4377	1.7969	17.0039	152.0	18.7929	-11.5199	-14.6738	2.0037	-5.6708
1.15	62.0	-14.9979	-0.4509	-0.8164	2.5518	16.6500	154.0	21.1221	-5.2477	6.2826	-0.8432	-38.8304
1.15	64.0	-14.1367	0.8643	-1.0517	2.2814	15.3092	156.0	12.8719	-6.6940	8.9927	-2.0039	-22.2083
1.15	66.0	-9.3102	2.0013	-1.4879	1.0542	8.3086	158.0	-11.0722	-13.7213	16.3357	-0.4937	22.0298
1.15	68.0	-10.6248	2.2956	-1.6413	1.3751	10.9893	160.0	-13.6815	-12.1011	14.8747	-0.2103	21.3643
1.15	70.0	-10.2833	1.6612	-1.1411	1.4195	10.5312	162.0	-16.9269	-7.8834	10.8647	1.4055	23.4941
1.15	72.0	-10.7019	0.9407	-0.5335	1.6652	11.8580	164.0	-13.6967	-5.9171	8.2428	0.8512	19.9897
1.15	74.0	-13.1730	0.5138	-0.0388	2.1892	15.7595	166.0	-8.7940	-4.6800	5.8496	0.0825	12.5404
1.15	76.0	-28.6747	-4.8174	5.5281	4.1919	43.8443	168.0	-7.5906	-5.9511	6.5730	-0.1675	11.5521
1.15	78.0	-27.9393	2.5799	0.7009	3.1878	37.5399	170.0	-1.9491	-6.6210	5.3573	-1.2076	2.5406
1.15	80.0	-42.0830	2.7952	-1.3431	4.5759	64.4219	172.0	-1.6471	-6.1708	4.2928	-1.6054	3.1946
1.15	82.0	-40.3214	7.9094	-7.1322	4.6888	60.7848	174.0	-6.2693	-3.4444	2.7830	-1.0512	11.8910
1.15	84.0	-39.5959	9.2152	-9.0520	5.0456	59.0991	176.0	-15.1094	-5.5434	3.9487	2.3429	24.0633
1.15	86.0	-32.5809	8.6488	-7.6107	4.6287	46.7346	178.0	-6.1127	-2.8983	2.0824	0.1394	6.7101
1.15	88.0	-24.5157	4.4264	-2.4607	4.2235	31.6570	180.0	0.0	0.0	0.0	0.0	0.0
1.15	90.0	-13.8036	-0.2058	1.1027	2.3799	17.8430						

Table B-3 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

XCPFOB=B3(0)+B3(1)*(TAPER RATIO)+B3(2)*(TAPER RATIO)**2+B3(3)*(ASPECT RATIO)+B3(4)*(SPAN RATIO)

		COEFFICIENTS FOR XCPFOB						COEFFICIENTS FOR XCPFOB				
MACH	ALPHA	B3(0)	B3(1)	B3(2)	B3(3)	B3(4)	ALPHA	B3(0)	B3(1)	B3(2)	B3(3)	B3(4)
1.30	0.0	0.0	0.0	0.0	0.0	0.0	92.0	-0.6460	1.0031	-1.7905	-1.0145	-3.9556
1.30	2.0	-5.4506	-1.4790	1.5304	-0.1912	7.6307	94.0	0.0186	-1.1729	1.1589	-0.0405	-4.3754
1.30	4.0	-5.0186	-0.0127	0.8855	-0.0497	4.8948	96.0	-8.2079	-9.3944	0.9430	1.1192	9.6030
1.30	6.0	-3.9758	-0.0116	1.0529	-0.2521	1.9056	98.0	-7.6154	-0.0612	0.7931	1.0016	0.9562
1.30	8.0	-3.4298	-0.7306	0.9837	-0.3742	0.2027	100.0	-6.9560	0.4761	0.4124	1.0199	0.0657
1.30	10.0	-3.0763	-0.4103	0.5781	-0.2971	1.1943	102.0	-6.7478	0.7937	0.1898	1.0210	7.0360
1.30	12.0	-3.7844	-0.5548	0.7589	-0.2491	0.9796	104.0	-5.1427	1.3799	-0.5063	0.8020	5.5454
1.30	14.0	-3.5210	-0.0671	0.9792	-0.2362	0.4769	106.0	-4.1329	1.4995	-0.7323	0.6561	4.3313
1.30	16.0	-5.3723	-0.6088	0.6075	0.0748	3.7246	108.0	-3.0132	1.2307	-0.5943	0.6416	4.0186
1.30	18.0	-7.3445	-0.0872	-0.1309	0.5204	7.2249	110.0	-3.2357	0.9062	-0.3408	0.6412	3.2896
1.30	20.0	-6.6086	-0.1479	0.1097	0.5243	5.5447	112.0	-2.4174	6.9912	-0.4345	0.5764	1.0246
1.30	22.0	-6.5669	0.0877	-0.2140	0.5060	5.5645	114.0	-2.5670	1.4639	-0.7484	0.7668	0.9866
1.30	24.0	-4.0764	0.0353	-0.0444	-0.0271	1.2913	116.0	0.0078	1.6730	-0.0461	0.2262	-4.4268
1.30	26.0	-4.3135	0.1623	-0.0568	0.0539	1.3850	118.0	1.9953	1.6059	-0.4687	-0.4294	-8.3428
1.30	28.0	-4.0150	0.2096	-0.1108	-0.0217	0.7231	120.0	2.4208	1.1090	0.3168	-0.0757	-9.4057
1.30	30.0	-5.1707	-0.0264	-0.3547	0.1643	3.1921	122.0	-0.0192	-2.9899	4.7907	-0.0440	13.0663
1.30	32.0	-3.6744	1.1437	-0.8897	-0.1221	-0.3561	124.0	9.4031	-7.9946	10.6254	-3.9435	-19.3595
1.30	34.0	-4.1224	-0.2248	0.2972	-0.0336	1.2175	126.0	-1.5067	-8.0056	8.7312	-2.3659	0.0618
1.30	36.0	-3.3519	1.4374	-1.5895	-0.4751	-0.5668	128.0	-1.5113	-10.0513	13.0044	-3.0186	-0.7707
1.30	38.0	-3.2369	1.3750	-1.6388	-0.7248	-0.5442	130.0	1.4203	-12.3303	13.7480	-2.7172	-5.9338
1.30	40.0	-2.2426	1.9334	-2.1446	-0.8979	-2.1537	132.0	-2.9777	-9.3167	11.9636	-0.9824	-1.2438
1.30	42.0	-2.7786	2.5088	-2.6386	-0.8986	-1.1185	134.0	-2.7131	-4.1489	6.5751	-1.1255	-1.9638
1.30	44.0	-4.6144	2.3236	-2.6361	-0.5406	2.2447	136.0	-13.2926	-1.2555	1.5598	1.0444	17.0233
1.30	46.0	-5.9374	3.5684	-3.8999	-0.4979	4.7063	138.0	-13.4594	-1.3760	1.6734	1.2446	16.6535
1.30	48.0	-5.3789	6.4086	-6.6891	-0.7335	2.4238	140.0	-13.0787	0.3064	-0.1059	1.3008	14.3256
1.30	50.0	-6.5955	8.6597	-7.6736	-0.0057	0.4426	142.0	-12.2456	0.0412	0.3419	1.5470	12.6233
1.30	52.0	-9.3499	3.8815	0.2915	-0.4259	6.2936	144.0	-11.2052	1.1701	-0.2342	1.4153	0.5201
1.30	54.0	-1.1009	-8.2593	12.8354	-1.9440	-8.0618	146.0	-8.5925	2.6460	-0.5308	0.8334	-1.4798
1.30	56.0	-5.7671	-1.1851	3.6272	-0.6729	-2.1763	148.0	-12.0523	3.1744	-1.2666	1.7449	6.1119
1.30	58.0	-19.4063	-3.4459	4.3902	2.1999	23.7511	150.0	-11.9122	5.9218	-7.1459	2.0840	5.0767
1.30	60.0	-22.4975	-0.0480	-1.4414	2.4408	32.1029	152.0	-9.0598	1.1503	-3.5298	2.1919	6.6174
1.30	62.0	-22.5760	1.6265	-3.3387	2.8188	32.3779	154.0	-17.0161	-4.0271	2.1242	4.2300	23.4059
1.30	64.0	-23.8556	2.0672	-3.2053	3.0678	34.1947	156.0	-19.7956	4.1005	-7.2632	5.0500	27.5290
1.30	66.0	-15.1004	-1.7083	0.8255	1.5328	20.9231	158.0	-4.0943	4.3320	-6.9054	2.5219	0.0001
1.30	68.0	-19.9340	-3.7509	2.7571	2.2506	20.2102	160.0	-14.4626	-6.5487	2.8634	2.0064	23.2933
1.30	70.0	-5.5061	-2.6521	0.3227	0.8220	0.1043	162.0	-10.2310	-12.0003	10.5421	1.3609	16.6236
1.30	72.0	-7.0093	1.3657	-1.4556	3.9028	-3.4306	164.0	-6.7930	-10.1710	8.9670	-0.4201	10.0559
1.30	74.0	12.9565	9.3377	-6.7300	2.3037	-47.0622	166.0	-9.5430	-14.1097	13.6201	3.0211	14.0727
1.30	76.0	29.0281	6.8403	-5.1038	1.2239	-80.6994	168.0	0.0094	-4.4121	1.4342	-1.3178	-5.0542
1.30	78.0	54.7789	7.5936	-5.0530	-2.0177	-133.2301	170.0	0.2160	-2.2462	-0.0315	-2.0592	-19.9374
1.30	80.0	40.3275	3.8632	-2.1758	0.0689	-106.3780	172.0	3.2040	-4.3014	3.5493	-2.3938	-0.4299
1.30	82.0	40.1863	4.0399	-2.7105	-1.5627	-101.9242	174.0	1.6244	1.7078	-2.6359	-1.0808	-6.2169
1.30	84.0	16.7203	0.9240	-0.2559	-0.6989	-52.2653	176.0	-1.0542	-1.3305	0.9963	-0.9244	-2.5602
1.30	86.0	15.1625	0.6608	-1.1780	-2.1146	-43.4923	178.0	-6.1055	-2.6619	2.6444	0.0301	6.0788
1.30	88.0	2.9741	-0.8664	-1.6289	-1.5231	-16.4607	180.0	0.0	0.0	0.0	0.0	0.0
1.30	90.0	-2.2863	-1.6052	1.1981	-0.6737	-2.3870						

Table B-3 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

XCPFOB=B3(0)+B3(1)*(TAPER RATIO)+B3(2)*(TAPER RATIO)**2+B3(3)*(ASPECT RATIO)+B3(4)*(SPAN RATIO)

		COEFFICIENTS FOR XCPFOS					COEFFICIENTS FOR XCPFOB					
MACH	ALPHA	B3(0)	B3(1)	B3(2)	B3(3)	B3(4)	ALPHA	B3(0)	B3(1)	B3(2)	B3(3)	B3(4)
1.50	0.0	0.0	0.0	0.0	0.0	0.0	92.0	6.9046	-7.4550	5.9955	-2.1879	-24.9134
1.50	2.0	1.0221	0.8043	-0.4989	-1.1094	-10.3916	94.0	-7.9320	-3.3927	3.3158	0.9015	2.8326
1.50	4.0	0.5624	0.5620	-0.2854	-1.1358	-9.1005	96.0	-3.5159	-3.4619	4.4118	0.8131	-4.3940
1.50	6.0	-0.8557	0.0169	0.1095	-0.8492	-6.2207	98.0	-7.7510	-0.3719	1.4226	0.9973	5.7937
1.50	8.0	-1.2310	-0.1936	0.2059	-0.7554	-5.4470	100.0	-9.3297	0.4368	1.2400	1.2664	9.4171
1.50	10.0	-1.7573	-0.3134	0.2967	-0.6600	-4.4753	102.0	-7.3263	2.1181	0.1077	0.9599	6.7292
1.50	12.0	-1.4176	-0.6463	0.5303	-0.7622	-4.8186	104.0	-3.7884	3.7523	-1.3942	0.3968	1.5794
1.50	14.0	-3.1718	-0.6242	0.5267	-0.3854	-2.0909	106.0	-3.7151	4.4349	-2.6266	0.5026	2.3009
1.50	16.0	-3.5618	-0.8193	0.7085	-0.3325	-1.4027	108.0	-4.3579	5.4820	-3.6692	0.6173	3.6165
1.50	18.0	1.4649	-1.1541	1.0108	-1.4648	-9.6721	110.0	-4.1830	4.7894	-3.1815	0.6804	3.9276
1.50	20.0	1.5788	2.0546	-1.7976	-1.2548	-10.8257	112.0	-2.9068	3.3169	-2.0775	0.4747	2.3997
1.50	22.0	1.7879	1.0126	-1.3795	-1.2805	-10.0978	114.0	-2.3538	1.9195	-1.1305	0.4448	2.1226
1.50	24.0	-2.0840	1.2456	-1.3605	-0.4214	-3.6101	116.0	-2.3884	1.4408	-0.8416	0.5115	2.5051
1.50	26.0	-0.8035	0.9522	-1.2789	-0.8015	-5.7572	118.0	-2.1651	1.6955	-0.9720	0.4802	1.9231
1.50	28.0	-2.4197	1.1877	-1.7108	-0.3796	-3.0451	120.0	-1.0169	1.9132	-0.9726	0.2574	-0.5286
1.50	30.0	3.4997	1.5327	-2.7076	-1.7858	-12.5696	122.0	1.0280	1.5701	-0.4810	-0.1527	-4.9360
1.50	32.0	-1.9750	1.7282	-2.3096	-0.3754	-4.0253	124.0	1.9650	1.1095	0.6883	-0.4724	-8.8301
1.50	34.0	-0.8640	1.4056	-2.1115	-0.6757	-5.6151	126.0	-9.8194	2.5463	-2.3448	1.2827	8.3902
1.50	36.0	-0.3886	1.9844	-2.8126	-0.8537	-6.5595	128.0	-4.8859	-3.1307	1.5005	-0.0781	3.6211
1.50	38.0	-3.6125	1.5208	-2.2597	-0.1418	-1.0048	130.0	-21.9948	-6.6859	2.8073	3.0685	30.4719
1.50	40.0	-3.0823	1.8741	-2.7145	-0.2293	-2.1105	132.0	-28.2952	-11.3575	8.1172	4.1995	40.1387
1.50	42.0	-4.1846	1.4655	-2.2992	-0.0208	0.1516	134.0	-26.5368	-1.1842	0.4327	4.1200	33.9836
1.50	44.0	-5.3540	1.2501	-2.4306	0.1412	1.6789	136.0	-21.2628	-1.2009	1.6204	3.0090	25.2777
1.50	46.0	-9.2393	-1.0866	-0.0129	1.1758	8.1393	138.0	-21.6957	3.0680	-2.7196	3.1259	26.4944
1.50	48.0	-6.4868	-1.9925	0.8631	0.4405	3.0767	140.0	-12.8871	7.2872	-6.0775	0.9090	11.5093
1.50	50.0	-10.4866	-1.4127	0.4605	1.3217	9.8161	142.0	-2.5071	8.5060	-6.2952	-1.7423	-6.3415
1.50	52.0	-7.6972	-1.4072	0.3825	0.7234	5.1064	144.0	-3.3357	8.2300	-5.6933	-1.5219	-6.0094
1.50	54.0	-11.4125	-1.8374	0.2897	1.7008	11.6661	146.0	-0.2515	8.6573	-5.3908	-2.0554	-13.8172
1.50	56.0	-16.3803	-0.3831	-1.2658	2.7014	20.4343	148.0	4.8065	4.1055	-1.8441	-2.9537	-21.0526
1.50	58.0	-23.2287	0.0041	-3.5034	3.8078	29.6510	150.0	6.2111	-0.5282	1.2807	-2.9055	-21.5406
1.50	60.0	-23.2135	-5.0688	1.9270	3.7879	29.6287	152.0	0.5282	-2.5580	1.3696	-1.1587	-7.4871
1.50	62.0	-33.1898	-7.1647	2.9558	5.9233	43.6806	154.0	-23.7184	-8.2498	5.7419	4.8841	37.0401
1.50	64.0	-41.2099	-10.9662	6.5374	7.3421	57.4026	156.0	-35.2678	-15.2546	11.5775	8.4357	61.9850
1.50	66.0	-43.2973	-14.7215	11.6171	7.6898	61.3867	158.0	-42.2966	-17.6753	13.2310	9.9765	75.2734
1.50	68.0	-24.3485	-5.8596	4.2182	4.0392	28.7805	160.0	-55.6345	-17.0804	13.3336	12.9573	94.8538
1.50	70.0	-23.6407	-5.9643	2.6916	3.5272	27.3350	162.0	-59.7156	-16.1710	14.1970	13.4796	101.4693
1.50	72.0	-9.4001	-2.0463	-1.0010	0.6804	4.4603	164.0	-52.4467	-8.8475	5.7666	11.1702	85.6828
1.50	74.0	-6.0540	-5.0662	2.8664	-0.2103	-1.5508	166.0	-50.5977	-4.0334	2.5704	10.3202	77.1271
1.50	76.0	6.9151	-1.4248	-0.8776	-3.4718	-21.6392	168.0	-11.8721	-0.3940	1.6406	1.7368	8.6479
1.50	78.0	6.3377	1.5739	-3.3995	-3.8555	-21.4684	170.0	2.9671	2.9547	-2.7855	-1.8153	-17.2487
1.50	80.0	8.9658	-4.5594	1.5056	-4.3587	-26.3927	172.0	11.7047	0.1685	-2.4308	-3.3807	-26.3538
1.50	82.0	-0.3504	-0.9854	-1.4386	-2.4271	-11.7207	174.0	6.8131	-0.5617	-1.1362	-2.3162	-16.9385
1.50	84.0	0.4286	-7.5452	5.8040	-1.6935	-12.8489	176.0	-0.6788	-0.8269	0.1941	-0.5448	-3.4749
1.50	86.0	1.1346	-20.6454	16.2094	-0.9101	-10.9925	178.0	-2.6083	-4.2872	3.2538	0.1608	2.4429
1.50	88.0	2.2952	-12.0601	9.0496	-0.7211	-16.3502	180.0	0.0	0.0	0.0	0.0	0.0
1.50	90.0	1.3202	-10.1720	7.7726	-0.9463	-14.9291						

Table B-3 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

XCPFOB=B3(0)+B3(1)*(TAPER RATIO)+B3(2)*(TAPER RATIO)**2+B3(3)*(ASPECT RATIO)+B3(4)*(SPAN RATIO)

		COEFFICIENTS FOR XCPFOB						COEFFICIENTS FOR XCPFOB				
MACH	ALPHA	B3(0)	B3(1)	B3(2)	B3(3)	B3(4)	ALPHA	B3(0)	B3(1)	B3(2)	B3(3)	B3(4)
2.00	0.0	0.0	0.0	0.0	0.0	0.0	92.0	4.0989	-5.7031	4.7163	-1.6252	-15.0163
2.00	2.0	-0.2607	3.0485	-2.8413	-0.4462	-5.1816	94.0	10.1678	-2.2091	2.0621	-3.3599	-24.8084
2.00	4.0	-1.5512	2.6000	-2.3827	-0.2750	-3.7810	96.0	6.5045	1.5872	-0.8573	-2.2494	-19.5621
2.00	6.0	-2.1544	1.9868	-1.7118	-0.1720	-2.8765	98.0	6.8184	-0.0947	1.8788	-2.6194	-19.4859
2.00	8.0	-2.6410	1.5002	-1.2007	-0.0809	-2.1326	100.0	8.6635	1.0529	-1.6421	-3.1341	-20.7573
2.00	10.0	-1.6269	1.0024	-0.8087	-0.3466	-4.3738	102.0	10.3737	-2.0602	1.6806	-3.3712	-22.5699
2.00	12.0	-4.4740	1.6900	-1.1514	0.3076	0.5698	104.0	10.6196	-4.6619	4.2187	-3.8781	-21.6150
2.00	14.0	-6.0279	0.7605	-0.1865	0.6505	3.1087	106.0	17.4514	-2.7649	3.4531	-5.8286	-33.2560
2.00	16.0	-5.7607	1.1600	-0.6311	0.5721	2.4785	108.0	17.8398	-1.1437	2.4534	-6.1462	-34.6820
2.00	18.0	-5.7434	0.6737	-0.2039	0.5465	2.3700	110.0	16.7959	2.6322	0.2391	-6.4889	-33.9685
2.00	20.0	-13.2204	-1.9789	2.6151	2.1362	13.6295	112.0	7.5135	4.1690	-1.9854	-3.8957	-18.2703
2.00	22.0	-9.7308	-0.1412	-0.1903	1.2694	9.6563	114.0	7.2379	4.2165	-2.5060	-3.8444	-16.7753
2.00	24.0	-10.5840	0.0405	-0.5567	1.6234	11.0860	116.0	18.3438	7.2514	-5.2242	-6.6545	-33.7995
2.00	26.0	-12.2796	-0.5132	0.3742	1.8457	13.9470	118.0	22.6166	10.0548	-8.7708	-7.1837	-40.5485
2.00	28.0	-11.6774	-0.1694	0.[illegible]190	1.7629	12.0809	120.0	25.4338	10.4347	-8.5997	-7.0567	-45.9393
2.00	30.0	-11.4117	0.1738	-0.2285	1.7214	12.67[illegible]0	122.0	18.7871	10.9863	-9.8229	-4.1843	-36.3374
2.00	32.0	-10.6251	1.1811	-1.4909	1.5128	11.1172	124.0	25.4575	10.0073	-5.9571	-6.3023	-50.5651
2.00	34.0	-10.7908	1.1574	-1.2406	1.5528	11.4689	126.0	9.9857	-0.5252	4.6621	-7.9517	-24.4130
2.00	36.0	-9.7948	0.9624	-1.2282	1.3496	9.9763	128.0	3.4432	0.7357	1.9978	-1.6516	-13.7366
2.00	38.0	-8.8479	1.1376	-1.3838	1.1365	8.2338	130.0	-15.3465	-5.8667	7.2803	2.2190	17.6257
2.00	40.0	-10.4078	1.4589	-1.5174	1.5128	10.9791	132.0	-34.3122	-6.0011	5.5968	6.0532	47.9757
2.00	42.0	-10.1300	1.4265	-1.7225	1.4298	10.2998	134.0	-28.2437	-0.4381	0.1572	4.5626	37.9090
2.00	44.0	-10.1908	2.0079	-2.4330	1.2801	10.2145	136.0	-31.6640	4.0472	-4.5787	5.3619	42.9611
2.00	46.0	-2.9312	2.6214	-3.8732	-0.3670	-1.9510	138.0	-30.2915	1.4357	-0.8803	4.9933	40.1898
2.00	48.0	-7.8216	1.2156	-1.8156	0.8897	6.3341	140.0	-24.9474	2.2257	-1.1443	3.7927	30.9699
2.00	50.0	-5.1593	3.3338	-4.3198	0.0989	1.6261	142.0	-22.4642	2.8755	-1.5527	3.0177	26.0032
2.00	52.0	-5.6385	2.4970	-4.0219	0.1942	2.0235	144.0	-21.2796	1.7902	-0.0437	2.7998	23.6867
2.00	54.0	-5.3077	3.1397	-5.5095	0.0629	2.3668	146.0	-17.5818	5.5555	-2.8176	1.9991	17.2040
2.00	56.0	-8.3947	2.5030	-5.3094	0.8110	7.8938	148.0	-9.7570	9.5650	-5.3593	0.5312	0.5555
2.00	58.0	-4.2786	3.0243	-7.1855	-6.2799	1.2795	150.0	-9.0668	7.4467	-3.9951	0.1722	1.2383
2.00	60.0	-5.5697	2.3010	-6.2769	0.0568	2.8080	152.0	-7.0196	7.2984	-2.8570	-0.3701	-3.7466
2.00	62.0	-21.5912	0.2930	-4.2992	3.8610	26.3392	154.0	-8.7051	6.3052	-2.5073	-0.2152	0.4848
2.00	64.0	-21.5163	-0.7455	-3.5999	3.9235	27.6231	156.0	-27.7664	7.7190	-4.9915	3.5553	34.9441
2.00	66.0	-17.0240	-1.3341	-1.6492	2.8992	20.3122	158.0	-42.7292	7.2029	-6.1152	6.7130	63.4299
2.00	68.0	-13.0114	-1.7984	-1.3170	2.1575	12.3905	160.0	-59.1763	2.1205	-3.6888	9.8453	95.8471
2.00	70.0	-6.3157	-5.3987	2.2439	0.8173	-1.0914	162.0	-82.6338	0.5163	-1.7341	15.2335	138.4177
2.00	72.0	0.2187	-10.1837	6.6523	-0.7022	-10.7081	164.0	-89.8517	-2.9896	-1.0779	17.6036	151.0085
2.00	74.0	-1.6974	-9.0380	6.7975	-0.4151	-7.0844	166.0	-83.0108	-3.8191	0.7331	16.3401	130.8636
2.00	76.0	8.1290	-6.0035	3.2675	-2.9578	-22.3930	168.0	-55.2070	0.8909	-3.9090	10.9124	90.8520
2.00	78.0	9.3969	-7.3734	4.7477	-3.2528	-23.6643	170.0	-25.8571	-2.0520	-0.7970	4.9453	39.2896
2.00	80.0	9.6272	-8.0544	6.2539	-3.1767	-25.5767	172.0	-8.9423	-0.7759	-1.4335	1.3991	7.9966
2.00	82.0	-1.1431	-4.6617	3.1380	-0.7020	-6.4456	174.0	9.0695	-1.6477	0.9231	-2.6019	-24.3031
2.00	84.0	2.9557	-5.8660	5.4912	-1.5991	-13.5938	176.0	8.9623	0.1782	-1.6359	-2.8583	-21.5166
2.00	86.0	3.5690	-6.0543	5.9875	-1.6951	-13.5820	178.0	16.2520	-2.3962	0.5208	-4.6477	-31.7588
2.00	88.0	17.3566	-5.5041	5.3144	-4.5900	-38.1724	180.0	0.0	0.0	0.0	0.0	0.0
2.00	90.0	10.7526	-5.7177	5.0080	-3.2007	-26.5641						

Table B-3 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

XCPFOB=B3(0)+B3(1)*(TAPER RATIO)+B3(2)*(TAPER RATIO)**2+B3(3)*(ASPECT RATIO)+B3(4)*(SPAN RATIO)

		COEFFICIENTS FOR XCPFOB						COEFFICIENTS FOR XCPFOB				
MACH	ALPHA	B3(0)	B3(1)	B3(2)	B3(3)	B3(4)	ALPHA	B3(0)	B3(1)	B3(2)	B3(3)	B3(4)
2.50	0.0	0.0	0.0	0.0	0.0	0.0	92.0	0.2394	2.7212	-3.2236	-0.9018	-7.6582
2.50	2.0	-6.6764	0.1315	0.5018	0.2151	5.4803	94.0	6.4777	-1.2540	0.7001	-2.2494	-18.2510
2.50	4.0	-3.5643	10.4661	-9.7283	-1.1456	-0.6611	96.0	2.8418	-0.2061	-0.7945	-1.2677	-11.9190
2.50	6.0	6.8557	9.6065	-9.4531	-3.2503	-18.8161	98.0	5.4951	-2.0318	1.1038	-1.7973	-16.1146
2.50	8.0	11.6803	6.0158	-6.0889	-3.8015	-27.5151	100.0	2.0690	-0.3510	-0.1972	-1.2754	-10.6633
2.50	10.0	17.8731	-0.4316	0.3584	-4.6868	-39.2362	102.0	1.9813	3.6666	-2.8106	-1.7401	-11.2233
2.50	12.0	17.2991	-3.5235	3.4677	-4.2194	-38.9694	104.0	-1.2399	-2.7487	-3.2467	-1.3102	-0.3576
2.50	14.0	19.1197	-1.6090	1.0903	-4.7930	-41.4156	106.0	-0.4758	-2.8990	-2.8765	-2.0844	-0.4564
2.50	16.0	15.6652	-0.4437	-0.0006	-4.1166	-34.7897	108.0	-2.9835	-0.0600	-4.2109	-0.0200	3.3584
2.50	18.0	15.5178	0.9575	-1.5401	-4.1884	-34.4762	110.0	-3.8585	-0.0650	-3.2403	-0.0250	0.7602
2.50	20.0	14.3095	-4.5084	3.6460	-3.9161	-33.4808	112.0	-5.9294	-0.0700	-4.9693	-0.0300	8.9580
2.50	22.0	7.7880	4.0054	-5.3219	-2.9983	-20.1783	114.0	-1.7693	-0.0750	-5.3142	-0.0400	4.5064
2.50	24.0	7.2849	4.2372	-5.1458	-2.8207	-19.1946	116.0	10.4344	-0.0800	0.4956	-2.7398	-24.3839
2.50	26.0	9.6070	4.4201	-5.4907	-3.4044	-22.6544	118.0	16.2496	-3.7426	3.9685	-3.8359	-34.8465
2.50	28.0	9.1150	4.5961	-5.6678	-3.2788	-21.8989	120.0	21.2650	3.1686	-1.5743	-4.9253	-44.8863
2.50	30.0	9.9393	4.3907	-5.2379	-3.5197	-23.1210	122.0	16.8827	7.9319	-6.0807	-3.9456	-35.5204
2.50	32.0	5.8200	4.0322	-4.3062	-2.4399	-16.6834	124.0	14.7170	12.2936	-9.7267	-3.1177	-34.2056
2.50	34.0	1.8868	3.6983	-3.9178	-1.4870	-9.9298	126.0	29.1564	24.9923	-17.6427	-6.3406	-59.7220
2.50	36.0	0.5991	2.8830	-3.2273	-1.1847	-7.6481	128.0	24.4853	25.6866	-16.1264	-5.2161	-54.4915
2.50	38.0	-3.0226	2.7076	-2.8007	-0.3748	-1.6161	130.0	33.2805	28.5688	-18.1511	-7.0021	-68.5781
2.50	40.0	-1.9651	2.9518	-2.8457	-0.7008	-3.8850	132.0	19.1282	27.8102	-17.1562	-4.2793	-46.6039
2.50	42.0	-6.0164	2.0155	-2.2525	0.3413	3.6988	134.0	23.5095	17.5699	-7.4531	-5.6700	-51.8134
2.50	44.0	-6.5161	-0.6648	0.7576	0.6503	2.9155	136.0	22.5541	-0.3852	7.1235	-5.9135	-46.4948
2.50	46.0	-13.7849	4.0243	-3.1972	1.9687	16.5811	138.0	3.0345	-6.9542	10.7333	-1.4248	-13.6252
2.50	48.0	-4.4440	1.0489	-1.5083	0.0562	1.5595	140.0	-3.3701	-9.9187	8.6710	-0.6787	-0.2725
2.50	50.0	-3.8600	1.4535	-2.3475	-0.0621	0.5189	142.0	-15.9813	-10.1682	6.9542	1.8170	21.1323
2.50	52.0	-2.4818	1.6710	-2.8343	-0.4170	-1.6722	144.0	-16.9666	-6.0663	4.4733	2.1951	21.8548
2.50	54.0	-4.3135	1.6617	-3.1574	-0.0013	1.4651	146.0	-16.9728	-1.2713	1.1134	2.2847	20.8494
2.50	56.0	-4.1746	2.8241	-5.4422	-0.1246	1.3549	148.0	-15.7687	2.0802	-1.1647	1.9708	17.3819
2.50	58.0	-0.2479	3.3820	-7.3726	-1.1990	-4.6312	150.0	-13.0042	3.1550	-1.6757	1.4097	12.4538
2.50	60.0	6.3004	3.2124	-7.7448	-2.8807	-15.2210	152.0	-7.8473	2.5003	-0.8596	0.4054	3.2825
2.50	62.0	2.1906	3.0346	-7.0474	-1.8618	-8.9700	154.0	-4.3855	0.7330	1.0594	-0.2012	-2.7587
2.50	64.0	0.5366	2.8072	-6.9292	-1.4954	-6.4029	156.0	-2.2405	0.0388	1.6334	-0.6670	-5.6457
2.50	66.0	0.4546	1.9109	-5.6557	-1.3825	-6.2340	158.0	0.6175	0.0935	1.5247	-1.2917	-10.5803
2.50	68.0	0.3919	1.4963	-4.6532	-1.3382	-6.6143	160.0	0.9507	2.1701	-0.0666	-1.1942	-12.9122
2.50	70.0	3.1550	-3.1310	0.8940	-1.2960	-10.0405	162.0	6.6744	4.1837	-1.8690	-2.8051	-23.0091
2.50	72.0	0.9065	-0.1424	-1.5375	-1.3908	-7.5416	164.0	12.5334	4.4458	-2.5524	-4.1817	-33.5766
2.50	74.0	3.3819	0.0979	-1.8693	-1.9817	-11.5170	166.0	12.2142	5.7964	-3.4013	-3.9321	-35.4651
2.50	76.0	-0.5828	-0.0757	-1.1392	-1.0116	-5.4448	168.0	7.5211	2.4294	-0.9631	-2.4346	-26.2337
2.50	78.0	-4.5605	-0.0939	-1.2392	-0.1282	1.2019	170.0	15.1562	1.8819	-2.7494	-4.4283	-35.5776
2.50	80.0	1.7814	-1.8212	2.3241	-1.3751	-9.5431	172.0	10.8658	-2.0602	0.6662	-3.5249	-24.5820
2.50	82.0	-0.4897	-1.5361	1.9888	-0.8744	-5.7233	174.0	6.9995	-2.2425	1.1645	-2.5201	-16.7250
2.50	84.0	-2.1189	-1.4563	1.9730	-0.4791	-3.0110	176.0	0.9764	-1.4987	0.8536	-0.9680	-5.1912
2.50	86.0	-2.8978	-0.0198	0.4937	-0.2756	-1.8199	178.0	-7.8285	-3.5824	3.0174	0.1669	2.5916
2.50	88.0	2.9049	0.1972	0.4487	-1.3998	-12.7864	180.0	0.0	0.0	0.0	0.0	0.0
2.50	90.0	7.4113	-0.2552	-0.2691	-2.6176	-19.0799						

Table B-3 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

XCPFOB=B3(0)+B3(1)*(TAPER RATIO)+B3(2)*(TAPER RATIO)**2+B3(3)*(ASPECT RATIO)+B3(4)*(SPAN RATIO)

		COEFFICIENTS FOR XCPFOB						COEFFICIENTS FOR XCPFOB				
MACH	ALPHA	B3(0)	B3(1)	B3(2)	B3(3)	B3(4)	ALPHA	B3(0)	B3(1)	B3(2)	B3(3)	B3(4)
3.00	0.0	0.0	0.0	0.0	0.0	0.0	92.0	-37.8446	-4.9094	7.5594	7.3863	57.7394
3.00	2.0	-3.1723	7.8830	-4.1230	-0.2127	-4.8053	94.0	-31.8669	-1.7710	2.8832	6.6849	46.0230
3.00	4.0	-8.0377	5.2439	-5.4405	0.7662	2.7344	96.0	-38.8841	6.5885	-6.7681	8.7186	56.7456
3.00	6.0	-6.6708	7.5244	-3.7145	-0.0312	1.8888	98.0	-27.6338	5.8014	-6.8658	6.0155	39.5266
3.00	8.0	-3.1078	14.2902	-9.9840	-0.6757	-7.0794	100.0	-7.7626	2.2903	-5.1749	1.1042	9.4765
3.00	10.0	0.1455	12.6806	-9.1603	-1.3738	-11.4007	102.0	-1.5863	2.4078	-4.7693	-0.9058	-1.0588
3.00	12.0	-7.1573	8.5747	-6.3344	1.0546	3.4853	104.0	-6.3813	4.3751	-6.1646	0.0179	5.8682
3.00	14.0	-10.1629	4.8254	-4.0153	1.9405	11.8622	106.0	-7.6521	-4.6152	2.8728	0.4673	9.2167
3.00	16.0	-7.0961	3.5662	-3.2639	1.3588	7.6695	108.0	-13.1893	-10.6601	7.6864	2.2294	19.7769
3.00	18.0	-7.0280	3.0891	-2.8581	1.3798	8.3033	110.0	-21.1747	-13.6766	8.8952	3.9529	34.5735
3.00	20.0	-2.1514	3.5608	-4.0710	0.7155	-0.0599	112.0	-25.1778	-8.6844	4.5292	5.4584	40.4255
3.00	22.0	-3.4324	4.0611	-5.2893	0.9996	1.6726	114.0	-24.5459	-11.3501	6.6965	5.5022	40.7528
3.00	24.0	-2.0116	4.5530	-6.2187	0.8030	-1.1283	116.0	-21.8717	-10.4629	6.4982	4.9260	35.9288
3.00	26.0	-4.0908	3.8093	-5.0367	1.1060	2.8083	118.0	-17.0566	-4.4282	2.5440	4.3477	24.6893
3.00	28.0	-4.6122	3.7323	-4.9761	1.1874	3.6361	120.0	-15.3344	9.1993	-8.4852	3.7668	18.3322
3.00	30.0	-5.9592	3.2878	-4.2419	1.3697	6.1542	122.0	4.4624	15.4538	-11.3424	-1.2331	-14.9726
3.00	32.0	-7.1327	3.1563	-3.9234	1.5638	8.1905	124.0	15.7882	13.4266	-8.0771	-3.6473	-34.3358
3.00	34.0	-7.6333	2.7321	-3.4537	1.6287	9.2223	126.0	19.6637	11.1613	-7.6288	-4.4607	-39.1498
3.00	36.0	-7.7599	2.6252	-3.4161	1.6550	9.3938	128.0	15.2937	6.7437	-3.6827	-3.6516	-31.6873
3.00	38.0	-8.5319	2.3798	-3.1979	1.8052	10.7566	130.0	2.8626	0.3840	0.6211	-1.1034	-10.5993
3.00	40.0	-9.1927	1.9730	-2.6097	1.8719	12.0312	132.0	-8.0288	-1.4743	0.3351	1.1215	8.9917
3.00	42.0	-9.7448	1.6229	-2.1207	1.9380	13.1462	134.0	-29.2885	-4.2934	1.6289	5.3081	43.3686
3.00	44.0	-10.5098	1.5482	-2.0325	2.0568	14.3340	136.0	-37.2697	-8.0980	2.7478	7.4978	57.2818
3.00	46.0	-11.1140	2.4533	-2.8987	1.9973	15.4370	138.0	-38.7991	-6.6872	1.1663	7.2463	59.8039
3.00	48.0	-9.7546	1.0050	-1.4354	1.8195	12.7547	140.0	-29.8918	-5.7206	0.5098	5.5887	44.2674
3.00	50.0	-9.9876	1.1626	-1.6867	1.8929	13.0649	142.0	-13.9525	-2.6894	-1.8962	2.4406	16.8056
3.00	52.0	-10.3704	1.1203	-1.6139	1.9881	13.5440	144.0	-6.5946	-1.8014	-1.8817	1.0047	3.4894
3.00	54.0	-11.0008	1.1342	-1.8137	2.1696	14.4553	146.0	-5.9727	1.4457	-3.7426	0.9639	1.9751
3.00	56.0	-11.3980	1.2050	-2.1777	2.2768	15.0228	148.0	-8.0952	2.2644	-3.1628	1.1483	5.8655
3.00	58.0	-11.4685	1.0374	-2.1729	2.2864	15.1082	150.0	-8.2998	2.3862	-2.5978	1.0618	6.3373
3.00	60.0	-10.9366	0.6625	-1.7615	2.1502	14.1271	152.0	-8.0513	1.4877	-1.8703	0.9174	6.6116
3.00	62.0	-10.3839	0.7849	-2.0124	2.0142	13.0875	154.0	-6.9042	0.6387	-0.8098	0.6723	4.7424
3.00	64.0	-9.7404	0.8546	-2.2850	1.8734	11.8773	156.0	-5.7127	0.1924	0.4984	0.3837	2.0792
3.00	66.0	-9.2694	0.3622	-1.7215	1.7788	11.0779	158.0	-4.5966	0.2774	0.4482	0.0995	0.0260
3.00	68.0	-8.9326	0.3921	-1.7798	1.6796	10.4281	160.0	-4.0285	-0.3435	1.0182	-0.0828	-0.0215
3.00	70.0	-7.8846	-0.6197	-0.5066	1.4988	8.0579	162.0	0.1223	-1.3546	2.2588	-0.8556	-0.0991
3.00	72.0	-7.9245	0.1136	-1.2595	1.3488	8.2656	164.0	9.7154	7.0848	-3.7153	-3.6476	-29.5864
3.00	74.0	-5.8669	-0.1547	-0.8527	1.0844	6.4515	166.0	23.1958	5.9685	-4.5988	-6.9678	-52.2717
3.00	76.0	-5.7983	-0.3868	-0.5204	0.8238	4.6072	168.0	24.7237	4.5518	-1.6413	-7.4595	-58.3837
3.00	78.0	-4.4939	-0.9108	0.4234	0.5030	2.3966	170.0	28.3323	3.5999	-3.8796	-8.4028	-62.8644
3.00	80.0	-11.3461	0.2338	-1.8400	1.8927	13.8276	172.0	35.6053	-4.1764	2.9831	-9.9865	-70.5684
3.00	82.0	-11.0462	0.4208	-1.8426	1.8067	13.1802	174.0	26.4822	-6.7546	4.6883	-7.4591	-52.8888
3.00	84.0	-11.5732	0.3216	-0.8155	1.8686	14.1826	176.0	29.3931	-13.9425	11.4667	-8.2541	-54.1228
3.00	86.0	-15.7023	-1.8780	1.6353	2.4908	21.6769	178.0	24.7619	-15.6380	13.4839	-7.2251	-47.7096
3.00	88.0	-29.3196	-4.9746	7.0262	5.1416	44.9947	180.0	0.0	0.0	0.0	0.0	0.0
3.00	90.0	-36.7815	-7.8813	11.3271	6.8977	56.8533						

Table B-4

Regression Coefficients for $Y_{CP_{BOF}}$

REGRESSION COEFFICIENTS FOR EQUATION

YCPBOF=B4(0)+B4(1)*(TAPER RATIO)+B4(2)*(TAPER RATIO)**2+B4(3)*(ASPECT RATIO)+B4(4)*(SPAN RATIO)

COEFFICIENTS FOR YCPBOF							COEFFICIENTS FOR YCPBOF					
MACH	ALPHA	B4(0)	B4(1)	B4(2)	B4(3)	B4(4)	ALPHA	B4(0)	B4(1)	B4(2)	B4(3)	B4(4)
0.60	0.0	0.0	0.0	0.0	0.0	0.0	92.0	2.0239	0.3663	-0.2257	-0.3603	-3.0795
0.60	2.0	0.4085	0.1105	-0.0454	-0.0330	-1.1877	94.0	1.6304	0.3920	-0.2472	-0.2797	-3.1001
0.60	4.0	2.1770	-0.3139	0.0080	-0.5731	-3.1675	96.0	1.7747	0.2202	-0.0280	-0.3294	-3.3023
0.60	6.0	1.4319	-0.0123	0.3609	-0.3520	-1.9001	98.0	1.8967	0.4506	-0.3099	-0.3560	-3.4763
0.60	8.0	1.5134	0.1344	0.2260	-0.3621	-2.1030	100.0	2.2368	0.3530	-0.2699	-0.4408	-3.9748
0.60	10.0	1.5962	0.2337	0.0997	-0.3073	-2.3239	102.0	1.8273	0.3231	-0.2190	-0.3449	-3.2999
0.60	12.0	1.7703	0.2044	0.0988	-0.4229	-2.6713	104.0	1.8750	0.3901	-0.2694	-0.3464	-3.4027
0.60	14.0	2.7242	1.0366	-0.8406	-0.5997	-4.4725	106.0	1.9656	0.3226	-0.2271	-0.3701	-3.5059
0.60	16.0	[illegible]	1.5353	-1.5082	-1.1203	-6.0990	108.0	1.9779	0.3392	-0.2303	-0.3961	-3.5652
0.60	18.0	2.6920	4.0529	-3.7062	-0.7493	-4.5114	110.0	2.0893	0.3601	-0.2910	-0.4239	-3.6180
0.60	20.0	-0.9119	3.5221	-2.7914	0.0253	1.5065	112.0	2.0037	0.2130	-0.1361	-0.3972	-3.4656
0.60	22.0	[illegible]	3.4674	-2.0015	-0.0566	1.9052	114.0	1.8409	0.4137	-0.3993	-0.3682	-3.1404
0.60	24.0	-1.0160	1.8037	-1.4907	0.1946	2.0735	116.0	1.8529	0.3119	-0.3103	-0.3678	-3.0970
0.60	26.0	[illegible]	1.5669	-1.3985	-0.1838	-0.1797	118.0	1.4255	0.2396	-0.1520	-0.2539	-2.4166
0.60	28.0	1.1813	0.4331	-0.3949	-0.3134	-1.0131	120.0	1.5444	0.1914	-0.1326	-0.2753	-2.5009
0.60	30.0	-2.6031	2.0445	-2.6388	0.0634	3.7366	122.0	1.4631	0.2353	-0.1930	-0.2716	-2.3966
0.60	32.0	-0.1416	0.5807	-0.4287	0.1324	0.2347	124.0	1.6296	0.2022	-0.1648	-0.2975	-2.6490
0.60	34.0	-3.9839	4.2012	-4.2587	1.0658	6.1084	126.0	1.2543	0.1869	-0.1088	-0.2215	-1.9170
0.60	36.0	-1.5573	3.1911	-3.3091	0.4600	2.1601	128.0	1.2120	0.1741	-0.0721	-0.2100	-1.8508
0.60	38.0	-1.2053	3.3047	-3.5751	0.4773	0.9991	130.0	1.1644	0.1881	-0.0877	-0.1988	-1.7770
0.60	40.0	-1.4750	3.3173	-2.8673	0.4273	1.6275	132.0	1.0340	0.2226	-0.1222	-0.1687	-1.5794
0.60	42.0	3.0699	2.7487	-2.5787	-0.7756	-5.0724	134.0	1.0696	0.1593	-0.0643	-0.1639	-1.6433
0.40	44.0	2.4391	1.6753	-1.4979	-0.5701	-4.3159	136.0	1.1403	0.2439	-0.1413	-0.1799	-1.7962
0.60	46.0	6.2704	0.0660	0.0803	-1.6193	-10.7604	138.0	1.1296	0.1408	-0.0372	-0.1641	-1.8049
0.60	48.0	6.7316	-1.7273	2.6202	-1.6363	-12.2043	140.0	1.9017	0.1104	0.0054	-0.1130	-1.7098
0.60	50.0	7.5863	-3.9248	4.9810	-1.8416	-13.2333	142.0	2.0289	-1.3635	2.2506	-0.7262	-4.1049
0.60	52.0	2.6985	-5.0854	5.6040	-0.3138	-6.2114	144.0	1.0615	-1.6326	2.4300	-0.4266	-2.0358
0.60	54.0	-0.5525	-5.0901	6.6056	0.5679	-1.7613	146.0	3.7756	-1.6839	[illegible]	-1.0734	-5.3157
0.60	56.0	-0.0071	-5.5738	6.4010	0.5460	-3.0657	148.0	2.9828	-2.0891	3.4871	-0.7418	-4.4992
0.30	58.0	0.3808	-6.1198	6.0996	0.4680	-3.4567	150.0	4.0715	-1.5317	3.1512	-1.1056	-6.1632
0.60	60.0	4.4395	-3.4729	4.3360	-0.0448	-10.7703	152.0	3.7350	-0.7036	1.0257	-1.0502	-4.0509
0.30	62.0	1.2046	-1.2566	1.8067	0.1956	-5.7501	154.0	1.0780	-0.5722	1.5412	-0.5575	-2.0941
0.60	64.0	5.0010	-2.2295	2.6499	-0.7767	-10.9999	156.0	2.2556	1.0782	-0.9732	-0.6243	-2.9100
0.60	66.0	3.6081	-0.7734	1.2444	-0.4263	-8.0643	158.0	4.0044	1.0108	-1.6510	-1.0204	-5.4436
0.60	68.0	2.1892	-0.0147	0.3825	-0.0051	-6.7961	160.0	2.0756	0.7718	-0.7167	-0.4835	-2.9008
0.60	70.0	1.4836	-0.9927	0.0226	0.4208	-5.7152	162.0	1.0046	0.3201	-0.1475	-0.1525	-1.3765
0.60	72.0	1.8892	-0.9624	0.6183	0.3265	-6.4456	164.0	-0.1394	0.5605	-0.0771	0.0270	0.2477
0.60	74.0	3.2219	0.4580	-0.3816	-0.0557	-9.1590	166.0	-1.0822	1.3372	-0.8262	0.5987	1.9632
0.60	76.0	1.8186	0.0720	0.1435	0.2326	-6.7331	168.0	-2.4261	1.0921	-0.1512	0.7457	2.2605
0.60	78.0	2.1349	0.1258	0.1738	0.0714	-6.0551	170.0	-0.0910	0.4378	0.6117	0.2010	0.3794
0.60	80.0	1.5312	-0.3435	0.4723	0.1234	-4.5734	172.0	0.1299	0.7084	0.5994	-0.0523	-1.0669
0.60	82.0	3.5168	-1.0196	0.0103	-0.4876	-7.2136	174.0	-0.5270	0.3277	0.7386	0.1695	-0.1322
0.60	84.0	-1.0609	-0.5539	0.1553	0.5909	-0.0234	176.0	-0.1604	0.5396	0.2017	0.1175	-0.5090
0.60	86.0	-0.5630	-0.1390	0.1256	0.2887	0.0023	178.0	-0.6224	0.5216	-0.5040	0.3572	0.1416
0.60	88.0	-0.3982	0.0345	0.1742	0.1332	0.0179	180.0	0.0	0.0	0.0	0.0	0.0
0.60	90.0	2.8044	-0.1495	0.2996	-0.5765	-5.1480						

Table B-4 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

YCPBOF=B4(0)+B4(1)*(TAPER RATIO)+B4(2)*(TAPER RATIO)**2+B4(3)*(ASPECT RATIO)+B4(4)*(SPAN RATIO)

		COEFFICIENTS FOR YCPBOF						COEFFICIENTS FOR YCPBOF				
MACH	ALPHA	B4(0)	B4(1)	B4(2)	B4(3)	B4(4)	ALPHA	B4(0)	B4(1)	B4(2)	B4(3)	B4(4)
0.80	0.0	0.0	0.0	0.0	0.0	0.0	92.0	1.7794	0.2243	-0.1440	-0.3403	-3.1672
0.80	2.0	3.5454	0.0117	0.1187	-0.7854	-5.8048	94.0	1.8710	0.3895	-0.3327	-0.3804	-3.2761
0.80	4.0	4.3454	0.5094	-0.8383	-0.8621	-7.2472	96.0	1.3935	0.7895	-0.0110	-0.2691	-2.4260
0.80	6.0	4.2863	0.9378	-1.4125	-0.7389	-7.1890	98.0	1.4409	0.1491	-0.0679	-0.2807	-2.4411
0.80	8.0	3.9968	0.9583	-1.4210	-0.6946	-6.8677	100.0	1.4397	0.2995	-0.1959	-0.2618	-2.5047
0.80	10.0	3.9768	0.8075	-1.1671	-0.7308	-6.8039	102.0	1.2769	0.3345	-0.2448	-0.2450	-2.1063
0.80	12.0	3.6977	0.9504	-1.2967	-0.7191	-6.2744	104.0	1.2153	0.2348	-0.1349	-0.2267	-2.0012
0.80	14.0	3.8991	1.4680	-1.6635	-0.5743	-5.4684	106.0	1.2996	0.2977	-0.2034	-0.2303	-2.2396
0.80	16.0	0.5364	3.5369	-3.5503	-0.2768	-8.0687	108.0	1.3336	0.2747	-0.1747	-0.2651	-2.2690
0.80	18.0	-4.8859	4.6370	-4.4450	0.9842	8.0926	110.0	1.2053	0.2831	-0.1894	-0.2303	-2.0181
0.80	20.0	-2.3674	4.5275	-5.0197	0.4299	4.2577	112.0	1.2453	0.2955	-0.2062	-0.2327	-2.0876
0.80	22.0	-1.5807	3.2215	-3.6621	0.3703	2.7068	114.0	1.0984	0.3380	-0.2354	-0.1798	-1.8775
0.80	24.0	-0.2091	1.8593	-2.0968	0.0070	0.6265	116.0	1.0849	0.3738	-0.2002	-0.1806	-1.8201
0.80	26.0	5.6175	-0.4855	0.2363	-1.3817	-0.9757	118.0	1.0989	0.3189	0.2373	-0.1868	-1.7711
0.80	28.0	7.3746	-2.4539	2.2876	-1.6444	-12.3711	120.0	1.0188	0.3125	-0.2038	-0.1688	-1.6711
0.80	30.0	7.1703	-2.0656	1.7580	-1.4779	-12.4285	122.0	1.1301	0.2136	-0.1050	-0.2018	-1.7944
0.80	32.0	3.3690	-2.1569	2.2198	-0.5921	-6.1054	124.0	1.0924	0.1637	-0.0753	-0.1829	-1.7112
0.80	34.0	3.8310	-3.0982	3.0860	-0.7210	-6.4032	126.0	0.1447	0.0455	0.0158	0.0262	0.0088
0.80	36.0	1.1183	-2.3112	3.3965	-0.2253	-2.3348	128.0	0.1468	0.0385	0.0162	0.0284	0.0123
0.80	38.0	-0.7881	-2.2780	3.2657	0.2348	1.6629	130.0	0.1438	0.0320	0.0246	0.0291	0.0107
0.80	40.0	0.1929	-3.0548	5.2497	0.0259	-0.7164	132.0	0.1335	0.0417	0.0242	0.0275	0.0166
0.80	42.0	-1.0978	-4.2450	5.8118	0.6390	2.3514	134.0	1.0524	0.2792	-0.1493	-0.1672	-1.6815
0.80	44.0	0.1474	-3.7293	5.2044	0.0467	-1.3742	136.0	1.1001	0.2814	-0.1325	-0.1813	-1.7525
0.80	46.0	-2.0272	-3.4890	5.4371	0.6130	1.6281	138.0	1.0484	0.3164	-0.1580	-0.1588	-1.7167
0.80	48.0	2.3813	-3.3951	4.5477	-0.3530	-5.4268	140.0	1.0719	0.3619	-0.1802	-0.1627	-1.8205
0.80	50.0	5.4857	-3.8485	5.2383	-1.1981	-10.7058	142.0	0.9811	0.3588	-0.1661	-0.1233	-1.6068
0.80	52.0	6.2216	-3.2181	4.5810	-1.3054	-12.3303	144.0	1.2708	0.9676	-0.7418	-0.2318	-2.1748
0.80	54.0	5.6248	-1.7780	2.6802	-1.1515	-10.9296	146.0	1.5972	1.4891	-1.1493	-0.3788	-2.7536
0.80	56.0	4.2828	-2.4860	2.8498	-0.7253	-8.3598	148.0	2.2397	1.9374	-1.4985	-0.4783	-3.9844
0.80	58.0	5.3869	-1.3488	1.3581	-1.0780	-9.5958	150.0	2.5329	2.2899	-1.8109	-0.5247	-4.4761
0.80	60.0	3.8622	-2.2885	1.9351	-0.4229	-5.5038	152.0	2.4421	1.8017	-1.4554	-0.5177	-3.9264
0.80	62.0	2.4161	-2.2418	1.8987	-0.2984	-4.1581	154.0	0.4846	1.0209	-0.9314	0.0422	-0.6184
0.80	64.0	3.5413	-1.4078	1.3860	-0.6171	-6.6199	156.0	1.8652	1.5330	-1.2284	-0.2212	-1.5637
0.80	66.0	3.8273	0.8027	-0.3828	-0.5758	-6.7474	158.0	1.3562	0.6914	-0.3632	-0.2785	-2.0857
0.80	68.0	6.1335	2.5708	-1.5859	-1.5225	-12.2278	160.0	0.6604	0.9813	-0.5488	-0.0946	-1.0857
0.80	70.0	7.4588	3.8665	-2.0148	-1.9511	-14.2744	162.0	0.2080	0.0934	-0.0497	-0.0663	0.3668
0.80	72.0	8.1841	3.2399	-2.1631	-2.1868	-15.5398	164.0	-0.1106	0.4192	-0.2052	0.0912	0.3535
0.80	74.0	9.3897	4.0675	-2.6559	-2.6619	-17.6092	166.0	-0.4484	0.5919	-0.5373	0.2416	0.5870
0.80	76.0	7.9331	2.5464	-1.7199	-2.1423	-14.6518	168.0	-0.6435	0.7969	-0.7403	0.3303	0.6635
0.80	78.0	6.4572	1.3187	-0.8168	-1.6627	-11.8596	170.0	-0.8230	0.7960	-0.8045	0.4067	0.8088
0.80	80.0	5.4282	1.0773	-0.9548	-1.3333	-9.8846	172.0	-0.4991	0.6951	-0.6161	0.3034	0.3303
0.80	82.0	6.9280	1.1533	-1.4218	-1.7187	-11.8784	174.0	-0.6489	0.5587	-0.4845	0.3581	0.4352
0.80	84.0	5.7483	0.8260	-1.0318	-1.3765	-9.9135	176.0	-0.0808	0.3531	-0.2884	0.1531	-0.3881
0.80	86.0	3.3864	0.7594	-0.6864	-0.7499	-5.9792	178.0	0.5328	0.3833	-0.2733	0.0042	-1.1676
0.80	88.0	1.9660	0.4162	-0.2526	-0.4072	-3.6734	180.0	0.0	0.0	0.0	0.0	0.0
0.80	90.0	1.4469	0.3585	-0.1887	-0.2723	-2.7049						

Table B-4 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

YCPBOF=B4(0)+B4(1)*(TAPER RATIO)+B4(2)*(TAPER RATIO)**2+B4(3)*(ASPECT RATIO)+B4(4)*(SPAN RATIO)

		COEFFICIENTS FOR YCPBOF						COEFFICIENTS FOR YCPBOF				
MACH	ALPHA	B4(0)	B4(1)	B4(2)	B4(3)	B4(4)	ALPHA	B4(0)	B4(1)	B4(2)	B4(3)	B4(4)
0.90	0.0	0.0	0.0	0.0	0.0	0.0	92.0	1.3512	0.1233	0.0053	-0.2390	-2.3665
0.90	2.0	2.5751	-0.0571	0.3060	-0.0353	-3.6978	94.0	1.0692	0.2420	-0.0910	-0.1711	-1.8806
0.90	4.0	3.0940	0.2152	-0.2305	-1.1085	-5.5343	96.0	1.0995	0.1930	-0.0654	-0.1998	-1.8758
0.90	6.0	2.9615	0.4750	-0.4055	-0.7636	-4.3047	98.0	1.0366	0.2140	-0.1152	-0.1875	-1.7616
0.90	8.0	2.4409	0.3975	-0.2566	-0.6002	-3.5923	100.0	0.8348	0.3171	-0.2043	-0.1511	-1.4230
0.90	10.0	2.4930	0.2392	-0.0724	-0.7096	-3.5600	102.0	0.9613	0.2822	-0.1545	-0.1692	-1.6377
0.90	12.0	3.2754	1.0456	-0.9047	-0.9120	-4.9652	104.0	0.9532	0.2401	-0.1090	-0.1671	-1.6082
0.90	14.0	1.6065	2.3669	-2.2631	-0.6761	-2.2123	106.0	0.9701	0.2774	-0.1394	-0.1652	-1.4504
0.90	16.0	0.4776	2.5031	-2.3343	-0.3294	-0.3143	108.0	1.0144	0.2663	-0.1271	-0.1758	-1.7010
0.90	18.0	0.3105	2.7020	-3.0504	-0.4361	0.6581	110.0	1.0245	0.2619	-0.0985	-0.1740	-1.7181
0.90	20.0	-2.1313	1.0702	-2.3276	0.2010	4.6927	112.0	1.0248	0.2679	-0.1267	-0.1672	-1.7276
0.90	22.0	-4.0677	3.1222	-3.1931	0.7495	7.2979	114.0	0.9627	0.3143	-0.1620	-0.1650	-1.6218
0.90	24.0	-2.6330	2.7629	-2.9199	0.5020	4.5509	116.0	0.8464	0.2806	-0.1212	-0.1064	-1.4349
0.90	26.0	-2.0047	3.4342	-3.2194	0.6619	4.0053	118.0	0.8638	0.2978	-0.1328	-0.1171	-1.4191
0.90	28.0	2.5097	2.3135	-2.5312	-0.6025	-4.4957	120.0	0.8264	0.2706	-0.1199	-0.1097	-1.3261
0.90	30.0	3.5554	2.2634	-2.6500	-0.7081	-6.2028	122.0	0.7964	0.2517	-0.1101	-0.1032	-1.2354
0.90	32.0	3.4554	-0.0047	-0.3324	-0.5576	-5.9676	124.0	0.2919	-0.0138	-0.1062	0.0149	-0.0178
0.90	34.0	7.3146	-0.4058	0.1715	-1.6920	-12.3087	126.0	0.0760	-0.0612	0.1930	0.1467	-0.0356
0.90	36.0	7.0703	0.5030	-0.5175	-1.7629	-12.0981	128.0	0.0793	-0.0087	0.1742	0.1507	-0.0265
0.90	38.0	7.1997	0.3087	-0.6137	-1.7392	-11.6179	130.0	0.0932	-0.0067	0.1675	0.1519	-0.0323
0.90	40.0	9.6126	-0.6055	0.2279	-2.3954	-15.2134	132.0	0.1115	-0.1563	0.1493	0.1819	-0.0401
0.90	42.0	5.6940	-0.0902	0.0625	-1.3917	-9.1932	134.0	0.0	0.0	-5.2073	0.0	0.0027
0.90	44.0	3.9409	-0.4048	0.7708	-0.9350	-6.6947	136.0	0.0	0.0	-4.4911	0.0	0.0053
0.90	46.0	0.8370	-0.4489	1.4259	-0.1310	-2.5605	138.0	0.2162	0.0191	-0.0576	0.0979	-0.0278
0.90	48.0	2.2935	0.8061	0.7009	-0.5659	-5.5702	140.0	0.1846	0.0973	0.0144	0.0048	0.0018
0.90	50.0	4.4606	1.1746	0.7081	-0.0946	-3.7546	142.0	0.8591	0.3636	-0.1025	-0.0962	-1.4304
0.90	52.0	0.8925	1.9747	0.0485	-0.1352	-4.7967	144.0	1.2402	0.9636	-0.7258	-0.2194	-2.0369
0.90	54.0	1.2170	3.5505	-1.6925	-0.2165	-5.0459	146.0	1.9229	1.3946	-0.9968	-0.4198	-3.1101
0.90	56.0	3.9438	4.3009	-2.7698	-0.0904	-10.2777	148.0	2.4427	1.9253	-1.3505	-0.5626	-4.1319
0.90	58.0	3.6082	2.7867	-1.6132	-0.7817	-9.0250	150.0	2.9584	2.2645	-1.6427	-0.6953	-4.9546
0.90	60.0	2.2795	3.2772	-1.7069	-0.4433	-7.7750	152.0	2.6769	1.9784	-1.2984	-0.6286	-4.4529
0.90	62.0	3.2972	3.7046	-2.1570	-0.7174	-9.6067	154.0	3.6836	0.6936	-0.1257	-0.7408	-5.8807
0.90	64.0	4.9200	4.0429	-2.4000	-1.2212	-11.7266	156.0	3.5461	1.4369	-1.1283	-0.6694	-5.7222
0.90	66.0	6.5443	3.6726	-2.1525	-1.7423	-13.5752	158.0	4.0972	-0.1662	0.1011	-0.9480	-7.0310
0.90	68.0	6.6136	3.5251	-2.2636	-1.7764	-13.2811	160.0	4.4260	0.3463	-0.1265	-0.7258	-6.9831
0.90	70.0	8.0281	3.7751	-2.3096	-2.2396	-15.3381	162.0	3.3571	0.8033	-0.5844	-0.4807	-5.6069
0.90	72.0	8.6378	3.6822	-2.4115	-2.4556	-16.0796	164.0	2.3259	0.7245	-0.5572	-0.2736	-3.9051
0.90	74.0	7.4639	2.8366	-2.1726	-2.1517	-13.5540	166.0	0.6460	1.0266	-0.9143	-0.0810	[illegible]
0.90	76.0	8.0625	1.7753	-1.6771	-2.2529	-14.9185	168.0	-0.2883	0.6325	-0.5955	0.1777	0.2717
0.90	78.0	9.5082	0.7816	-0.8209	-2.5902	-16.1355	170.0	-0.2777	0.6391	-0.6009	0.2299	0.2410
0.90	80.0	9.1912	0.6302	-1.1741	-2.2661	-15.3151	172.0	-0.0564	0.6586	-0.5379	0.1444	-0.0843
0.90	82.0	5.1233	0.5956	-0.7820	-1.2916	-8.7250	174.0	0.9783	0.8009	-0.6544	0.1167	-0.3893
0.90	84.0	3.7856	0.6187	-0.6459	-0.9320	-6.5312	176.0	0.0861	0.2001	-0.0692	0.1196	-0.3919
0.90	86.0	2.6686	0.4861	-0.3863	-0.6094	-4.7319	178.0	0.4340	0.3793	-0.2283	-0.0013	-0.8791
0.90	88.0	2.1246	0.3160	-0.1968	-0.4677	-3.7283	180.0	0.0	0.0	0.0	0.0	0.0
0.90	90.0	1.4807	0.1124	0.0299	-0.2622	-2.4913						

Table B-4 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

YCPBOF=B4(0)+B4(1)*(TAPER RATIO)+B4(2)*(TAPER RATIO)**2+B4(3)*(ASPECT RATIO)+B4(4)*(SPAN RATIO)

		COEFFICIENTS FOR YCPBOF						COEFFICIENTS FOR YCPBOF				
MACH	ALPHA	B4(0)	B4(1)	B4(2)	B4(3)	B4(4)	ALPHA	B4(0)	B4(1)	B4(2)	B4(3)	B4(4)
1.00	0.0	0.0	0.0	0.0	0.0	0.0	92.0	1.0588	0.2695	-0.1276	-0.1747	-1.7667
1.00	2.0	1.3029	-0.7747	0.8430	-0.2843	-2.5636	94.0	0.9761	0.3119	-0.1516	-0.1503	-1.6244
1.00	4.0	3.9862	-1.3557	1.3860	-1.0091	-6.1226	96.0	0.7848	0.2459	-0.1160	-0.0924	-1.2634
1.00	6.0	5.6548	-1.5455	1.7749	-1.4231	-8.7089	98.0	0.8665	0.2473	-0.1183	-0.1138	-1.3701
1.00	8.0	4.4054	-0.5102	0.7756	-1.1247	-6.8224	100.0	0.8756	0.2817	-0.1489	-0.1220	-1.3599
1.00	10.0	4.3069	-0.6377	1.0220	-1.1047	-6.7736	102.0	0.9048	0.2638	-0.1137	-0.1291	-1.4086
1.00	12.0	3.0872	0.1241	0.5843	-0.7475	-5.4354	104.0	1.0434	0.2357	-0.0898	-0.1550	-1.6600
1.00	14.0	2.7957	1.5642	-0.7744	-0.4357	-5.6626	106.0	1.0186	0.2815	-0.1280	-0.1488	-1.6189
1.00	16.0	0.1755	2.8989	-2.2451	0.4019	-1.9021	108.0	1.0233	0.2978	-0.1406	-0.1555	-1.6422
1.00	18.0	-0.3387	1.3997	-1.2672	0.6748	-0.8479	110.0	1.0416	0.3005	-0.1401	-0.1584	-1.6796
1.00	20.0	-0.7860	0.4814	-0.0612	0.6563	0.2562	112.0	1.1234	0.2678	-0.1019	-0.1774	-1.8357
1.00	22.0	-0.9517	1.3014	-0.6166	0.5121	0.4086	114.0	1.1483	0.3369	-0.1665	-0.1800	-1.9124
1.00	24.0	-1.5186	1.6203	-0.6124	0.5813	1.4097	116.0	1.0913	0.3396	-0.1688	-0.1647	-1.8237
1.00	26.0	-1.9106	1.6878	-0.8957	0.6581	2.3211	118.0	1.0267	0.3493	-0.1578	-0.1586	-1.6995
1.00	28.0	-2.3845	1.1995	-0.4646	0.7482	3.2223	120.0	0.9557	0.3487	-0.1812	-0.1330	-1.5702
1.00	30.0	-2.6016	-0.0366	0.3011	0.7522	4.7278	122.0	1.1322	0.2528	-0.0849	-0.1791	-1.7931
1.00	32.0	-2.4041	-1.8091	1.6129	0.6559	5.7743	124.0	1.0842	0.3336	-0.1745	-0.1884	-1.6450
1.00	34.0	-0.8718	-1.0004	0.7583	0.3183	3.1251	126.0	0.9380	0.3089	-0.1517	-0.1489	-1.3564
1.00	36.0	-1.4707	-0.4079	-0.0061	0.3846	4.7000	128.0	0.2124	0.0991	-0.0484	0.0273	0.0001
1.00	38.0	1.5415	-0.9725	0.5121	-0.3117	0.4391	130.0	0.9478	0.2914	-0.1275	-0.1507	-1.3515
1.00	40.0	3.2149	1.2255	-1.0241	-0.4419	-4.5034	132.0	1.0148	0.2465	-0.0961	-0.1642	-1.4429
1.00	42.0	0.2195	0.9746	-0.1648	0.1121	0.2772	134.0	0.9918	0.2736	-0.1108	-0.1599	-1.4211
1.00	44.0	-2.4573	1.1581	0.0084	0.7614	3.6286	136.0	1.0059	0.2174	-0.0602	-0.1649	-1.4229
1.00	46.0	-6.6291	0.7612	0.4692	1.4502	10.5263	138.0	1.0772	0.2666	-0.1085	-0.1701	-1.5841
1.00	48.0	-10.0606	3.1503	-1.6645	2.2366	14.5490	140.0	1.1517	0.2650	-0.1034	-0.1870	-1.7281
1.00	50.0	-9.9997	5.2080	-3.6123	2.2646	12.9687	142.0	1.2652	0.2951	-0.1319	-0.2018	-1.9746
1.00	52.0	-11.4204	6.7436	-5.7326	2.4909	15.6660	144.0	1.4491	0.3103	-0.1786	-0.2283	-2.3282
1.00	54.0	-8.4991	6.2750	-6.3343	1.9691	12.0258	146.0	1.1950	0.2714	-0.1049	-0.1110	-2.1529
1.00	56.0	-6.0944	4.7455	-4.3845	1.5369	7.6157	148.0	1.8298	0.1565	-0.0159	-0.2195	-3.3206
1.00	58.0	-2.9641	1.4707	-2.3265	1.0047	3.6887	150.0	2.1013	-0.3929	0.6486	-0.2391	-3.9390
1.00	60.0	2.2377	-1.2403	0.3869	-0.1857	-4.4900	152.0	2.8354	-0.6097	0.9549	-0.4467	-5.0834
1.00	62.0	5.4699	-2.8094	1.9987	-0.9211	-9.1147	154.0	1.4112	-0.1178	0.7991	-0.2342	-2.5464
1.00	64.0	3.6994	-4.0438	2.9988	-0.6216	-5.1630	156.0	-0.6385	1.6934	-1.2919	0.2115	1.0104
1.00	66.0	1.9968	-3.8546	2.7057	-0.1997	-1.8814	158.0	1.9551	2.3705	-1.8464	-0.1010	-4.3892
1.00	68.0	0.3767	-3.2121	2.0754	0.2299	0.3296	160.0	0.5225	1.3866	-0.8579	0.0531	-1.5297
1.00	70.0	-1.4601	-2.4214	1.6679	0.6439	2.7575	162.0	1.2987	2.1079	-1.6352	-0.2501	-2.2872
1.00	72.0	-3.1600	-2.3466	1.6693	0.9679	5.4093	164.0	1.2552	1.6473	-1.4881	-0.3559	-1.1098
1.00	74.0	-4.0074	-1.4722	1.0610	1.0772	6.1315	166.0	1.7611	2.2134	-2.0233	-0.5219	-1.8542
1.00	76.0	-2.2184	-2.3998	1.7670	0.6127	3.6877	168.0	2.4239	2.0527	-1.8922	-0.6900	-2.8212
1.00	78.0	1.4885	0.2153	-0.2564	-0.3307	-3.0273	170.0	2.7716	1.5491	-1.4269	-0.7585	-3.3289
1.00	80.0	1.6550	0.4218	-0.1577	-0.4409	-3.2009	172.0	1.1371	1.5259	-1.5184	-0.2433	-1.4355
1.00	82.0	1.9774	0.7545	-0.4538	-0.5035	-3.7306	174.0	-2.1709	1.1222	-1.2084	0.8195	2.2768
1.00	84.0	1.2490	0.6762	-0.3845	-0.3155	-2.4253	176.0	-3.0048	1.0586	-1.2282	1.1755	2.8434
1.00	86.0	1.3688	0.6403	-0.3723	-0.2954	-2.5726	178.0	-3.0962	0.5806	-0.9452	1.2527	2.8429
1.00	88.0	1.1144	0.3131	-0.1045	-0.2104	-1.9831	180.0	0.0	0.0	0.0	0.0	0.0
1.00	90.0	0.9934	0.3052	-0.1371	-0.1667	-1.7009						

Table B-4 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

YCPBOF=B4(0)+B4(1)*(TAPER RATIO)+B4(2)*(TAPER RATIO)**2+B4(3)*(ASPECT RATIO)+B4(4)*(SPAN RATIO)

		COEFFICIENTS FOR YCPBOF						COEFFICIENTS FOR YCPBOF				
MACH	ALPHA	B4(0)	B4(1)	B4(2)	B4(3)	B4(4)	ALPHA	B4(0)	B4(1)	B4(2)	B4(3)	B4(4)
1.15	0.0	0.0	0.0	0.0	0.0	0.0	92.0	2.2214	0.4007	-0.1800	-0.4886	-3.8722
1.15	2.0	0.5961	-0.0014	-0.1353	-0.1398	-0.1545	94.0	2.7807	0.2763	-0.0687	-0.6635	-4.4650
1.15	4.0	0.4780	-0.0432	-0.0798	-0.0516	-0.0785	96.0	1.6642	0.3094	-0.1532	-0.3262	-2.7979
1.15	6.0	0.3997	0.0203	-0.0776	-0.0234	-0.0511	98.0	1.7193	0.2621	-0.1058	-0.3371	-2.8687
1.15	8.0	0.3625	0.0208	-0.0688	-0.0000	-0.0568	100.0	1.7942	0.2736	-0.1157	-0.3569	-2.9878
1.15	10.0	0.2819	0.0655	-0.0511	0.0107	-0.0425	102.0	1.7373	0.2879	-0.1248	-0.3414	-2.9087
1.15	12.0	0.1622	0.0909	-0.0056	0.0446	-0.0300	104.0	1.7771	0.2515	-0.0879	-0.3457	-2.9679
1.15	14.0	2.1219	0.0536	0.2711	-0.5091	-3.2834	106.0	1.9832	0.3268	-0.1513	-0.3941	-3.3596
1.15	16.0	4.3398	-0.8182	1.2451	-1.1210	-6.8607	108.0	2.5436	0.3107	-0.1818	-0.5396	-4.2624
1.15	18.0	5.2717	0.0060	0.5424	-1.4322	-8.6160	110.0	2.9161	0.2633	-0.1433	-0.6392	-4.8688
1.15	20.0	7.1586	0.3230	-0.1304	-2.0026	-11.3700	112.0	3.1431	0.2671	-0.1338	-0.7056	-5.2721
1.15	22.0	6.6634	0.1712	-0.2268	-1.8003	-10.6387	114.0	3.4893	0.2036	-0.0252	-0.8102	-5.8821
1.15	24.0	2.5048	0.0834	-1.0798	-0.7598	-3.9175	116.0	3.6913	0.2953	-0.1307	-0.8804	-6.2067
1.15	26.0	0.5419	0.1402	-0.7360	-0.0713	-0.7650	118.0	3.1736	0.3406	-0.1607	-0.7528	-5.3605
1.15	28.0	-2.9749	0.9772	-1.0420	0.8343	4.2593	120.0	2.5395	0.2848	-0.0862	-0.5927	-4.2643
1.15	30.0	0.7302	-0.6745	1.0712	0.3289	-2.7356	122.0	2.2412	0.1615	0.0040	-0.5129	-3.6398
1.15	32.0	2.1845	-1.5301	1.8286	-0.0323	-4.1390	124.0	2.1423	0.1355	0.0215	-0.4667	-3.4891
1.15	34.0	0.0239	-1.1966	1.9406	0.1767	0.5685	126.0	1.7270	0.1794	-0.0184	-0.3551	-2.7755
1.15	36.0	1.7534	-0.6974	1.1602	-0.1475	-2.6562	128.0	1.8756	0.0613	0.0557	-0.3780	-2.9799
1.15	38.0	1.5405	-1.1454	1.5721	-0.1080	-2.1585	130.0	1.9976	0.0017	0.1022	-0.3977	-3.1770
1.15	40.0	-0.4079	0.8712	-0.3581	0.2374	0.9419	132.0	1.8520	0.1084	-0.0241	-0.3530	-2.9598
1.15	42.0	-1.6019	2.7180	-2.2487	0.3629	3.3870	134.0	1.9144	0.0932	-0.0094	-0.3625	-3.0811
1.15	44.0	0.4416	4.0156	-3.1184	-0.0747	-0.9314	136.0	1.9484	0.1152	-0.0250	-0.3616	-3.1872
1.15	46.0	-1.0421	6.6086	-5.6886	0.0366	2.2122	138.0	2.4982	-0.2247	0.2070	-0.4806	-3.8654
1.15	48.0	-1.6838	[illegible]	-6.4438	0.2585	2.0203	140.0	2.1643	0.1227	-0.0497	-0.3677	-3.7032
1.15	50.0	-0.3992	4.4588	-2.8595	0.1042	-0.2605	142.0	2.5729	0.2122	-0.1809	-0.4340	-4.4804
1.15	52.0	-1.6759	4.7463	-3.0461	0.2872	2.3112	144.0	3.3822	0.1728	-0.2244	-0.5935	-5.9344
1.15	54.0	-2.0391	3.5542	-1.7945	0.3991	2.9417	146.0	3.8280	0.3431	-0.5022	-0.6588	-6.8036
1.15	56.0	-1.2352	1.4658	0.4659	0.4042	1.2057	148.0	2.2265	-0.0943	0.3717	-0.2201	-4.5738
1.15	58.0	-0.5751	-1.4445	3.1285	0.6563	-1.0032	150.0	1.0164	0.1622	0.0927	0.1313	-2.7463
1.15	60.0	2.5047	1.5013	0.2695	0.3156	-7.5408	152.0	1.5589	-0.4293	-0.7347	0.0308	-0.4908
1.15	62.0	4.0214	1.7001	-0.0315	0.2454	-10.6046	154.0	-1.2038	-0.4658	1.0636	0.4513	1.7267
1.15	64.0	5.4789	1.6832	-0.5967	0.6207	-15.0619	156.0	-1.9770	0.9985	-0.6035	0.5001	3.2091
1.15	66.0	5.8343	1.6770	-1.1383	0.6404	-15.8773	158.0	-1.5626	-0.0008	0.2498	0.4402	2.7915
1.15	68.0	3.5882	2.2757	-1.7048	0.8359	-11.3456	160.0	-0.5502	0.2973	-0.0735	0.2465	1.1180
1.15	70.0	2.2811	0.0084	0.4123	1.0035	-7.9961	162.0	-0.4742	0.0501	0.1100	0.1979	1.2208
1.15	72.0	0.5192	-0.0768	0.1880	1.0786	-4.0542	164.0	-0.1547	0.1152	0.0203	0.1068	0.7728
1.15	74.0	-2.6734	-0.5953	1.0385	1.5821	1.2103	166.0	-0.8266	-1.0762	1.0409	0.2970	2.1222
1.15	76.0	-4.0963	-1.4260	1.7966	1.6038	4.5162	168.0	-0.5304	-1.0987	1.4412	0.3654	0.3275
1.15	78.0	-2.2229	-2.7099	2.7116	0.9130	2.9853	170.0	0.5904	-0.7949	0.9331	0.0160	-0.7802
1.15	80.0	-1.4466	-0.5875	0.7296	0.4322	1.8369	172.0	0.1383	-0.9244	1.1505	0.1367	-0.2245
1.15	82.0	2.1649	0.7761	-0.1489	-0.6096	-4.4643	174.0	-0.6614	-1.5205	1.8177	0.3987	0.6583
1.15	84.0	3.6471	0.3990	-0.3862	-0.8953	-6.4003	176.0	-0.7784	-1.1935	1.6088	0.4296	0.3495
1.15	86.0	2.7288	0.1740	0.0497	-0.6483	-4.8575	178.0	0.5095	-1.1401	1.8564	-0.6060	-1.5688
1.15	88.0	2.6812	0.1965	-0.0125	-0.6422	-4.6452	180.0	0.0	0.0	0.0	0.0	0.0
1.15	90.0	2.1457	0.2034	0.0223	-0.4802	-3.7139						

Table B-4 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

YCPBOF=B4(0)+B4(1)*(TAPER RATIO)+B4(2)*(TAPER RATIO)**2+B4(3)*(ASPECT RATIO)+B4(4)*(SPAN RATIO)

		COEFFICIENTS FOR YCPBOF						COEFFICIENTS FOR YCPBOF				
MACH	ALPHA	B4(0)	B4(1)	B4(2)	B4(3)	B4(4)	ALPHA	B4(0)	B4(1)	B4(2)	B4(3)	B4(4)
1.30	0.0	0.0	0.0	0.0	0.0	0.0	92.0	6.1482	-0.0369	-0.3023	-1.5491	-9.7557
1.30	2.0	1.1516	-0.1612	0.4307	-0.2943	-1.6018	94.0	5.7735	-0.6338	0.3861	-1.4535	-9.1138
1.30	4.0	1.3392	-0.0093	0.3176	-0.3287	-1.7429	96.0	3.3491	-0.1063	0.1676	-0.7978	-5.4079
1.30	6.0	1.3543	0.2202	0.0955	-0.3082	-1.9357	98.0	3.4119	-0.2059	0.2816	-0.8124	-5.5037
1.30	8.0	1.1703	0.4426	-0.0959	-0.2829	-1.6940	100.0	3.0263	-0.2005	0.2352	-0.6980	-4.8582
1.30	10.0	1.2052	0.4873	-0.0842	-0.2761	-1.9205	102.0	2.2636	0.0446	0.0463	-0.5129	-3.6764
1.30	12.0	1.3995	0.6139	-0.1315	-0.3256	-2.4325	104.0	2.3427	0.0815	0.0124	-0.5323	-3.3078
1.30	14.0	1.7285	0.8463	-0.2940	-0.4230	-3.1460	106.0	2.9624	-0.0457	0.0871	-0.6809	-4.7801
1.30	16.0	2.7875	1.2927	-0.5221	-0.7433	-5.1822	108.0	3.8941	-0.2703	0.1998	-0.9037	-6.2215
1.30	18.0	3.1784	1.0473	-0.2323	-0.8394	6.0052	110.0	4.6367	-0.3211	0.1680	-1.0736	-7.4077
1.30	20.0	3.3712	0.0542	0.6600	-0.8609	-6.2875	112.0	4.0944	-0.4479	0.4129	-0.9269	-6.6183
1.30	22.0	1.5787	0.7073	-0.1633	-0.3975	-3.5367	114.0	4.0113	-0.4856	0.5059	-0.9317	-6.4849
1.30	24.0	-4.9476	3.5066	-3.2695	1.0614	6.8001	116.0	3.6162	-0.5243	0.5576	-0.8483	-5.8440
1.30	26.0	-4.3981	2.9867	-2.7607	1.0502	5.4726	118.0	3.5772	-0.4861	0.5335	-0.8346	-5.7921
1.30	28.0	-4.5378	2.2094	-2.3061	1.3430	5.5529	120.0	4.0523	-0.6607	0.6518	-0.9641	-6.4827
1.30	30.0	-4.9857	-0.9700	0.9593	1.5493	6.0024	122.0	4.2829	-0.6033	0.5490	-1.0295	-6.7733
1.30	32.0	-3.7996	-1.0108	1.1165	1.6486	2.4640	124.0	3.7656	-0.7529	0.8196	-0.8750	-6.0389
1.30	34.0	-4.8184	-1.9736	2.4856	1.9636	3.9073	126.0	3.5680	-0.4859	0.5107	-0.8119	-5.6896
1.30	36.0	-3.3154	-1.7822	2.4861	1.7588	0.6577	128.0	3.4753	-0.6482	0.7457	-0.7833	-5.5779
1.30	38.0	-1.2899	-1.4854	2.1944	1.2919	-2.3236	130.0	3.7038	-1.1112	1.1686	-0.8616	-5.8358
1.30	40.0	-3.2033	-1.1186	1.8699	1.6256	1.2992	132.0	2.6511	-0.3340	0.4001	-0.5044	-3.9562
1.30	42.0	-4.9565	-0.3621	1.8384	1.7752	5.2093	134.0	[illegible]	-0.1820	0.2546	-0.4846	-4.0728
1.30	44.0	-3.9401	-0.9656	2.2094	1.6952	3.6353	136.0	2.6465	-0.0409	0.1319	-0.5022	-4.4862
1.30	46.0	-3.0569	-1.0320	1.9994	1.3549	3.0599	138.0	2.7450	0.0226	0.0447	-0.4882	-4.8019
1.30	48.0	-4.2247	-3.7676	4.6100	1.5112	6.8966	140.0	3.1909	0.0912	-0.0782	-0.5650	-5.6539
1.30	50.0	-6.0298	-3.9873	3.9226	1.7330	11.1504	142.0	3.9875	0.1110	-0.1214	-0.7138	-6.9801
1.30	52.0	-7.4552	-5.7857	6.0082	2.0448	14.1521	144.0	4.2649	-0.6202	0.8656	-0.8685	-7.4760
1.30	54.0	-8.3030	-6.0302	6.3503	2.2762	14.7923	146.0	1.6799	-0.8396	1.6581	-0.4098	-2.9144
1.30	56.0	-7.9516	-6.1685	6.3846	2.2496	14.1738	148.0	-3.3169	1.2866	-0.2199	0.8574	4.6738
1.30	58.0	-8.7418	-4.8965	5.0583	2.4044	14.4335	150.0	-3.5320	0.8158	-0.1887	1.0075	5.2414
1.30	60.0	-11.5649	-3.2929	3.0841	3.4726	18.0113	152.0	-2.9237	1.3103	-0.6729	0.8329	4.1729
1.30	62.0	-8.6919	0.0209	-0.1435	2.6360	12.7275	154.0	-1.0169	0.3978	0.0198	0.5394	0.9877
1.30	64.0	-11.4052	0.9792	-1.6800	3.6043	16.2991	156.0	-1.6081	0.1729	0.0949	0.5078	3.0132
1.30	66.0	-10.8944	0.8338	-1.5236	3.1295	14.3660	158.0	-1.3068	-0.0990	0.1149	0.3621	2.8533
1.30	68.0	-9.5736	1.9243	-2.2172	2.6969	13.5627	160.0	-0.7902	-0.3033	-0.0986	0.1770	2.3431
1.30	70.0	-11.6312	-0.4978	0.4965	3.0322	17.9180	162.0	-0.0545	0.3735	-0.3202	0.0184	1.0047
1.30	72.0	-9.5203	-0.2546	0.8361	2.4883	14.3002	164.0	0.0795	0.1737	-0.0789	0.0199	0.5962
1.30	74.0	-6.1387	1.0126	0.2341	1.4928	8.4269	166.0	0.2281	-0.1117	0.2406	-0.0126	0.3259
1.30	76.0	-4.2752	0.9689	0.5020	0.8135	8.5712	168.0	0.7125	-0.5529	0.8708	-0.1098	-0.6804
1.30	78.0	-5.2868	1.0143	-0.1667	1.0819	7.7603	170.0	[illegible]	-0.6315	0.9936	0.0059	-0.7318
1.30	80.0	-4.5265	0.8721	-0.2325	1.0687	6.5242	172.0	0.0581	-0.5134	1.0318	0.1570	-0.7220
1.30	82.0	0.6093	0.0972	0.1088	-0.1687	-1.4325	174.0	-0.2125	-0.2003	0.8474	0.2628	-0.8188
1.30	84.0	2.0285	1.7073	-1.7479	-0.5266	-3.6648	176.0	-0.3243	0.9971	0.0022	0.2606	[illegible]
1.30	86.0	4.8907	-0.6706	0.5543	-1.2403	-7.8529	178.0	0.1749	0.6032	0.4483	0.8318	[illegible]
1.30	88.0	6.6789	-0.1236	-0.2769	-1.6787	-10.6629	180.0	0.0	0.0	0.0	0.0	[illegible]
1.30	90.0	4.5262	-0.2192	0.1074	-1.1239	-7.2566						

Table B-4 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

YCPBOF=B4(0)+B4(1)*(TAPER RATIO)+B4(2)*(TAPER RATIO)**2+B4(3)*(ASPECT RATIO)+B4(4)*(SPAN RATIO)

		COEFFICIENTS FOR YCPBOF						COEFFICIENTS FOR YCPBOF				
MACH	ALPHA	B4(0)	B4(1)	B4(2)	B4(3)	B4(4)	ALPHA	B4(0)	B4(1)	B4(2)	B4(3)	B4(4)
1.50	0.0	0.0	0.0	0.0	0.0	0.0	92.0	-1.2139	0.3827	-0.5812	0.2243	0.9691
1.50	2.0	0.6007	-0.3175	0.4486	-0.0508	-0.3020	94.0	-0.6860	0.2862	-0.4543	0.1218	0.2023
1.50	4.0	-0.0254	-0.2634	0.4049	0.0465	0.8181	96.0	-0.1349	0.2310	-0.3643	0.0181	-0.6016
1.50	6.0	0.2251	0.1763	-0.0615	-0.0624	0.3653	98.0	0.0880	0.3697	-0.4717	-0.0281	-0.9028
1.50	8.0	0.4734	0.1867	-0.0631	-0.0986	-0.1660	100.0	0.1801	0.4355	-0.5344	-0.0435	-1.0153
1.50	10.0	0.6662	0.2304	-0.0592	-0.1355	-0.6083	102.0	0.2200	0.4805	-0.5656	-0.0521	-0.9928
1.50	12.0	0.8127	0.4409	-0.2311	-0.1607	-0.9710	104.0	0.2980	0.4995	-0.5872	-0.0548	-1.0184
1.50	14.0	0.6156	0.6844	-0.3868	-0.1918	-1.0817	106.0	0.2936	0.5008	-0.6113	-0.0602	-0.9176
1.50	16.0	0.9433	0.9230	-0.5475	-0.2370	-1.4342	108.0	0.2777	0.4220	-0.5607	-0.0602	-0.7843
1.50	18.0	1.0633	1.0338	-0.6098	-0.2630	-1.7549	110.0	0.4338	0.3025	-0.4556	-0.0993	-0.9179
1.50	20.0	1.1528	1.1369	-0.6603	-0.2964	-1.9919	112.0	0.4726	0.2046	-0.3673	-0.1117	-0.8778
1.50	22.0	1.6315	1.1587	-0.6597	-0.3571	-3.0067	114.0	0.4277	0.1142	-0.2601	-0.1069	-0.7297
1.50	24.0	1.6263	1.5177	-0.8535	-0.4204	-3.1772	116.0	0.4261	0.0858	-0.2028	-0.1093	-0.6762
1.50	26.0	3.3556	3.1139	-1.8028	-0.9866	-6.8521	118.0	0.3790	0.0806	-0.1654	-0.1034	-0.5526
1.50	28.0	4.0643	3.2638	-1.9183	-1.0617	-8.5845	120.0	0.5201	0.0647	-0.1249	-0.1304	-0.7669
1.50	30.0	3.7390	2.5152	-1.4253	-1.2426	-6.7063	122.0	0.6703	0.0496	-0.0938	-0.1570	-1.0066
1.50	32.0	3.9359	2.1204	-1.1348	-1.2334	-7.0212	124.0	0.8334	0.0596	-0.0893	-0.1906	-1.2506
1.50	34.0	4.0212	1.7285	-0.7957	-1.1901	-7.2777	126.0	0.8027	0.1227	-0.1354	-0.1839	-1.1733
1.50	36.0	3.2356	1.0456	-0.3223	-0.9838	-5.6424	128.0	0.8417	0.1786	-0.1797	-0.1864	-1.2215
1.50	38.0	2.8664	2.5316	-1.4227	-0.9803	-5.8342	130.0	0.9183	0.2141	-0.1999	-0.1940	-1.3439
1.50	40.0	1.6583	2.9262	-1.7268	-0.7460	-4.0548	132.0	1.0925	0.2656	-0.2067	-0.2211	-1.6517
1.50	42.0	1.5610	4.2016	-2.6262	-0.7366	-4.8784	134.0	1.2887	0.2932	-0.2023	-0.2555	-1.9958
1.50	44.0	1.3711	5.6267	-3.6578	-0.7590	-5.4891	136.0	1.4548	0.3083	-0.1972	-0.2892	-2.2876
1.50	46.0	2.9040	6.6361	-4.0935	-1.2445	-9.1270	138.0	1.6216	0.3534	-0.2309	-0.3257	-2.6015
1.50	48.0	3.3660	7.1441	-4.6684	-1.2785	-10.6564	140.0	1.8479	0.3716	-0.2463	-0.3733	-3.0311
1.50	50.0	4.1101	6.6626	-4.3577	-1.4762	-11.8585	142.0	2.1059	0.5205	-0.3500	-0.4243	-3.6023
1.50	52.0	3.7925	5.0919	-3.3255	-1.3433	-10.3483	144.0	2.3636	0.6321	-0.4182	-0.4718	-4.1657
1.50	54.0	2.5232	3.2265	-2.1946	-0.9796	-7.7639	146.0	2.8169	0.7027	-0.4239	-0.5520	-5.0939
1.50	56.0	1.2160	1.4723	-0.8721	-0.6082	-4.7211	148.0	3.1334	0.9786	-0.6325	-0.6267	-5.7621
1.50	58.0	0.4866	1.5232	-1.1550	-0.5768	-2.8461	150.0	3.5803	1.5357	-0.9519	-0.7910	-6.6727
1.50	60.0	-0.9821	1.4786	-1.4691	-0.2303	0.2945	152.0	2.5637	2.0595	-1.4616	-0.5224	-5.1492
1.50	62.0	-2.2217	2.0598	-2.0958	-0.0105	2.4025	154.0	0.5457	1.8958	-1.4870	-0.1352	-0.9637
1.50	64.0	-3.4814	2.4740	-2.5417	0.2142	4.4179	156.0	-2.4171	0.4026	-0.3744	0.5605	4.9527
1.50	66.0	-4.3348	2.6064	-2.7343	0.3901	5.7492	158.0	-2.5740	0.8248	-0.6802	0.6026	4.9355
1.50	68.0	-4.8327	2.6928	-2.0324	0.5051	6.4036	160.0	-4.1834	-1.6048	0.9780	1.0595	9.1575
1.50	70.0	-5.2439	2.6185	-2.9314	0.6054	7.0098	162.0	-1.8902	-0.1653	-0.1169	0.5654	4.5649
1.50	72.0	-4.7268	2.0087	-2.5642	0.6286	6.0572	164.0	-1.5059	0.5912	-0.6823	0.6478	2.9438
1.50	74.0	-5.2341	1.5576	-1.9771	0.7341	6.9965	166.0	-0.8903	1.2264	-1.0895	0.4594	1.6088
1.50	76.0	-4.5440	1.3327	-1.8394	0.6728	5.8357	168.0	-1.5481	1.7931	-1.5200	0.5591	2.6264
1.50	78.0	-3.6581	0.7000	-1.1512	0.5883	4.2580	170.0	-0.3021	2.3698	-1.9120	0.1101	0.6921
1.50	80.0	-3.1170	0.5421	-1.1090	0.5173	3.4790	172.0	0.0388	2.7570	-2.0603	-0.1222	0.1872
1.50	82.0	-2.8166	0.5112	-1.0637	0.4878	3.0679	174.0	-0.7319	1.8532	-1.2782	0.0014	1.9451
1.50	84.0	-2.1774	0.5982	-1.1048	0.3915	2.1399	176.0	-1.0384	1.9083	-1.4604	0.0310	2.6513
1.50	86.0	-1.5890	0.4115	-0.8393	0.3040	1.2379	178.0	-1.2165	1.6299	-1.0529	0.0762	2.8459
1.50	88.0	-1.9384	0.3733	-0.6344	0.3846	2.0228	180.0	0.0	0.0	0.0	0.0	0.0
1.50	90.0	-1.5579	0.4553	-0.6799	0.3020	1.4366						

Table B-4 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

YCPBOF=B4(0)+B4(1)*(TAPER RATIO)+B4(2)*(TAPER RATIO)**2+B4(3)*(ASPECT RATIO)+B4(4)*(SPAN RATIO)

		COEFFICIENTS FOR YCPBOF						COEFFICIENTS FOR YCPBOF				
MACH	ALPHA	B4(0)	B4(1)	B4(2)	B4(3)	B4(4)	ALPHA	B4(0)	B4(1)	B4(2)	B4(3)	B4(4)
2.00	0.0	0.0	0.0	0.0	0.0	0.0	92.0	2.4990	1.3435	-1.0455	-0.4794	-5.8506
2.00	2.0	1.8839	0.2958	0.6463	-0.2556	-3.5029	94.0	1.7561	1.2951	-0.8819	-0.3611	-4.3206
2.00	4.0	0.6392	-0.3582	0.7384	0.0831	-0.9573	96.0	1.9014	1.2569	-0.9253	-0.3889	-4.3308
2.00	6.0	1.8721	0.0124	0.1983	-0.2338	-2.8988	98.0	2.0464	1.0502	-0.8469	-0.3750	-4.4198
2.00	8.0	1.0305	0.0132	-0.0792	-0.1211	-1.1845	100.0	1.8830	0.7313	-0.5743	-0.3331	-3.8122
2.00	10.0	0.6176	0.6558	-0.4336	-0.1539	-0.7166	102.0	1.5253	0.6073	-0.4566	-0.2372	-3.0060
2.00	12.0	0.0148	1.7260	-1.1582	-0.1954	-0.0141	104.0	1.1541	0.5037	-0.3935	-0.1632	-2.3011
2.00	14.0	0.1395	2.6027	-1.7708	-0.3289	-0.5169	106.0	0.9864	0.5847	-0.4001	-0.1517	-1.8301
2.00	16.0	2.8807	2.3363	-1.5493	-0.7307	-5.5155	108.0	0.8701	0.4465	-0.3692	-0.1233	-1.5816
2.00	18.0	4.0325	3.0277	-1.9647	-0.9661	-8.0822	110.0	0.7282	0.3547	-0.2023	-0.0952	-1.2251
2.00	20.0	4.0208	1.1541	-0.7151	-0.1517	-7.3447	112.0	0.8403	0.1865	-0.1660	-0.1093	-1.3079
2.00	22.0	0.8265	-1.4436	1.7622	-0.1337	-0.6384	114.0	0.7760	0.1683	-0.1616	-0.1076	-1.1251
2.00	24.0	-2.5644	-1.5420	1.8752	0.4758	6.1730	116.0	0.6084	0.1519	-0.1840	-0.0906	-0.7991
2.00	26.0	-3.3955	-1.2509	1.7494	0.6013	7.7067	118.0	0.2435	0.0605	-0.1956	-0.0558	-0.1950
2.00	28.0	-5.4250	-0.3206	1.1407	0.8450	11.5869	120.0	0.4745	-0.0641	-0.0739	-0.1211	-0.5216
2.00	30.0	-6.3050	-0.2404	1.0517	1.0517	12.9964	122.0	0.7276	0.0877	-0.1984	-0.1647	-1.0502
2.00	32.0	-5.6267	-0.0539	0.7679	1.0068	11.4839	124.0	0.8084	0.1609	-0.2468	-0.2020	-1.2116
2.00	34.0	-4.4384	0.2989	-0.0780	0.8719	9.2072	126.0	0.9157	0.2308	-0.2693	-0.2260	-1.4169
2.00	36.0	-0.5514	-1.5674	1.0870	0.1419	2.5174	128.0	1.0252	0.3102	-0.3181	-0.2455	-1.5083
2.00	38.0	1.1047	-2.1481	1.1578	0.0355	-0.5618	130.0	1.0742	0.3617	-0.3291	-0.2532	-1.6994
2.00	40.0	2.4405	-5.1994	2.9935	-0.0599	-1.5912	132.0	1.1169	0.3888	-0.3421	-0.2599	-1.7663
2.00	42.0	2.7221	-7.0980	4.3518	0.1036	-1.7633	134.0	1.3474	0.4100	-0.3462	-0.3027	-2.1857
2.00	44.0	2.8305	-8.4164	5.5558	0.1339	-0.9786	136.0	1.6224	0.3790	-0.3047	-0.3563	-2.6793
2.00	46.0	3.3272	-7.1896	4.4846	-0.0096	-2.3258	138.0	1.9260	0.4173	-0.3386	-0.4100	-3.2564
2.00	48.0	3.6982	-5.0386	3.8521	-0.2929	-3.7222	140.0	2.4755	0.5177	-0.4492	-0.5011	-4.3569
2.00	50.0	2.6210	-2.8382	1.9999	-0.3157	-3.1319	142.0	3.1194	0.5828	-0.5442	-0.6053	-5.5965
2.00	52.0	1.7388	0.5816	-0.2554	-0.5264	-3.1119	144.0	3.5565	1.1396	-1.0050	-0.6681	-6.6472
2.00	54.0	3.5106	2.8187	-1.7456	-0.8220	-8.1161	146.0	1.7584	0.7818	-0.6553	-0.4307	-2.5737
2.00	56.0	3.2531	2.7903	-1.7095	-0.7661	-7.8402	148.0	0.3129	-0.2799	0.5460	-0.3157	1.0871
2.00	58.0	2.3852	2.0938	-1.2431	-0.6153	-5.7511	150.0	-1.7529	-2.9711	2.3381	0.2695	5.9075
2.00	60.0	1.8081	2.0616	-1.2263	-0.5289	-4.7926	152.0	-1.8275	-1.7425	1.5140	0.2873	4.7458
2.00	62.0	1.2169	1.9404	-1.1700	-0.4346	-3.7732	154.0	-2.4456	-1.7900	1.6962	0.4268	5.9397
2.00	64.0	0.3968	2.0535	-1.2637	-0.3175	-2.5508	156.0	-5.5765	-1.5669	1.6074	0.9741	11.4072
2.00	66.0	-0.7032	2.2771	-1.4947	-0.1492	-0.8528	158.0	-6.1588	-1.9542	1.9433	0.9566	12.4866
2.00	68.0	-1.6173	2.3859	-1.7324	0.0293	0.4588	160.0	-8.3092	-0.3763	0.4780	1.1136	16.1334
2.00	70.0	-2.2789	3.1355	-2.3335	0.1724	0.8094	162.0	-7.1816	0.0847	-0.0705	0.9517	14.1130
2.00	72.0	-2.7589	3.7077	-3.0834	0.2483	1.3288	164.0	-4.4832	0.2413	-0.6340	0.5971	9.5089
2.00	74.0	-3.0211	3.5817	-3.0356	0.3190	1.6715	166.0	-1.6079	0.4607	-0.9403	0.2067	4.3531
2.00	76.0	-1.9691	3.0733	-2.7006	0.1946	-0.1867	168.0	0.2161	0.9948	-1.7829	-0.0624	1.2905
2.00	78.0	-0.8648	2.8443	-2.6464	0.0420	-2.1535	170.0	0.8408	1.1345	-1.8475	-0.2611	0.3624
2.00	80.0	0.3318	2.5047	-2.3721	-0.1248	-4.0258	172.0	1.2858	0.9794	-1.6006	-0.3669	-0.4353
2.00	82.0	2.9812	2.2487	-2.2052	-0.5235	-8.7185	174.0	1.5566	2.2874	-2.3740	-0.3499	-2.1540
2.00	84.0	2.7184	1.4730	-1.3939	-0.5575	-7.5723	176.0	1.4047	2.2029	-2.2481	-0.2730	-2.1473
2.00	86.0	3.2190	1.4019	-1.0016	-0.6405	-8.1163	178.0	-0.5353	1.0575	-0.9795	-0.0124	1.4881
2.00	88.0	2.7614	1.0836	-0.8525	-0.5383	-6.6227	180.0	0.0	0.0	0.0	0.0	0.0
2.00	90.0	2.7334	1.2500	-0.9475	-0.5430	-6.5097						

Table B-4 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

YCPBOF=B4(0)+B4(1)*(TAPER RATIO)+B4(2)*(TAPER RATIO)**2+B4(3)*(ASPECT RATIO)+B4(4)*(SPAN RATIO)

		COEFFICIENTS FOR YCPBOF						COEFFICIENTS FOR YCPBOF				
MACH	ALPHA	B4(0)	B4(1)	B4(2)	B4(3)	B4(4)	ALPHA	B4(0)	B4(1)	B4(2)	B4(3)	B4(4)
2.50	0.0	0.0	0.0	0.0	0.0	0.0	92.0	3.2566	2.0204	-1.4615	-0.6527	-6.7772
2.50	2.0	1.5963	-0.8841	0.7378	-0.2154	-2.0755	94.0	2.7184	1.8813	-1.4585	-0.4972	-5.6114
2.50	4.0	1.5790	-0.3653	0.0794	-0.2545	-1.7668	96.0	2.2188	1.1873	-0.8270	-0.4007	-4.2809
2.50	6.0	-1.2648	-0.8147	0.5804	0.5399	2.8341	98.0	1.6173	0.8947	-0.5968	-0.2659	-3.0863
2.50	8.0	-2.1984	-0.2505	0.1541	0.7089	4.1114	100.0	1.3258	0.8306	-0.5750	-0.2100	-2.3581
2.50	10.0	-1.9481	-1.9776	1.3373	0.6990	4.8557	102.0	1.1276	0.7515	-0.5345	-0.1690	-1.9512
2.50	12.0	-1.5258	-1.4974	0.9483	0.5546	3.9556	104.0	0.2551	0.1217	-0.1290	-0.0266	-0.1600
2.50	14.0	-0.5365	-1.7739	1.2033	0.4517	2.1849	106.0	0.1823	0.0630	-0.0678	0.0213	-0.1280
2.50	16.0	0.9572	-2.2960	1.5946	0.2442	-0.3864	108.0	-0.3649	0.0	0.6071	0.1991	-0.1000
2.50	18.0	2.0048	-2.9459	2.0585	0.1103	-2.0997	110.0	0.1933	0.0	-0.4230	0.1338	-0.0800
2.50	20.0	2.2324	-1.9793	1.3712	-0.0365	-2.8497	112.0	-0.1023	0.0	0.4803	0.2094	-0.0600
2.50	22.0	1.4797	-0.8861	0.5623	-0.0628	-1.7966	114.0	0.0085	0.0	0.3643	0.2357	-0.0300
2.50	24.0	2.0452	-0.7876	0.2529	-0.1992	-2.7332	116.0	0.3502	0.0016	-0.1496	-0.0292	-0.1371
2.50	26.0	3.7841	-1.0339	0.2349	-0.5309	-5.8392	118.0	0.3140	-0.0691	-0.1387	-0.0456	-0.1321
2.50	28.0	4.7194	-1.5788	0.6975	-0.6736	-7.4852	120.0	0.4883	-0.1924	0.0229	-0.0931	-0.4996
2.50	30.0	5.2014	-0.4451	-0.6595	-0.7474	-8.3886	122.0	0.5864	-0.0333	-0.0613	-0.1378	-0.7318
2.50	32.0	5.1935	-0.4006	-0.7293	-0.7148	-8.4962	124.0	0.5711	0.0922	-0.1127	-0.1508	-0.7663
2.50	34.0	5.3060	-0.9733	-0.0566	-0.8146	-8.4851	126.0	0.5239	0.1679	-0.1395	-0.1549	-0.6824
2.50	36.0	5.2149	-1.6851	0.8198	-0.8899	-8.0247	128.0	0.5914	0.2169	-0.1578	-0.1727	-0.7838
2.50	38.0	5.6133	-2.4965	1.5285	-0.8505	-8.9835	130.0	0.6804	0.2211	-0.1398	-0.1832	-0.9348
2.50	40.0	4.0633	-2.0555	1.0305	-0.4990	-6.2013	132.0	0.7992	0.2160	-0.1052	-0.1961	-1.1462
2.50	42.0	2.7305	-2.0890	0.9925	-0.2111	-3.5437	134.0	0.8840	0.2700	-0.1222	-0.2034	-1.3253
2.50	44.0	0.6197	-2.3754	1.2909	0.1949	0.3336	136.0	1.0955	0.3481	-0.1530	-0.2340	-1.7669
2.50	46.0	-0.1698	-1.1543	0.3085	0.2769	1.2166	138.0	1.3261	0.3826	-0.1662	-0.2638	-2.2309
2.50	48.0	-2.9424	-0.8931	0.3671	0.6611	6.0989	140.0	1.5990	0.4987	-0.2436	-0.2932	-2.8235
2.50	50.0	-2.7050	-0.8987	0.4776	0.5427	5.8519	142.0	1.9470	0.6543	-0.3381	-0.3343	-3.5892
2.50	52.0	-1.7195	-1.2265	0.7125	0.3290	4.4805	144.0	2.1172	0.2332	-0.0969	-0.3282	-3.4953
2.50	54.0	0.4361	0.2077	-0.2715	-0.2577	0.2342	146.0	3.1306	-0.2886	0.3937	-0.4291	-5.1841
2.50	56.0	0.9532	1.4736	-1.1756	-0.3302	-1.6054	148.0	3.5021	-3.4283	2.7882	-0.0531	-4.9527
2.50	58.0	2.1614	3.8457	-2.8542	-0.5487	-5.4185	150.0	5.8638	-3.5914	3.1538	-0.5886	-8.7833
2.50	60.0	1.9806	4.8858	-3.6809	-0.5406	-5.5951	152.0	8.1024	-5.4326	4.9082	-1.1289	-12.0619
2.50	62.0	0.9294	4.5979	-3.5541	-0.3699	-3.4157	154.0	9.2631	-4.7576	4.2353	-1.5290	-14.[illegible]604
2.50	64.0	-0.1138	5.1835	-4.1501	-0.2314	-1.5507	156.0	10.8851	-5.4311	5.0625	-2.0411	-16.6339
2.50	66.0	-0.6765	5.2763	-4.2628	-0.1482	-0.7452	158.0	10.5472	-5.4009	5.1391	-1.9911	-16.1400
2.50	68.0	-1.5538	4.7066	-3.8966	0.0111	0.8826	160.0	9.5726	-3.4574	3.5384	-1.8846	-14.9874
2.50	70.0	-2.8077	4.7491	-3.9008	0.1968	2.8025	162.0	6.0091	-3.0738	3.0634	-0.8568	-9.3132
2.50	72.0	-2.8027	3.9447	-3.2624	0.2461	2.6108	164.0	0.1378	-2.0939	2.3934	0.5339	0.0276
2.50	74.0	-0.6106	3.1978	-2.4023	-0.0550	-2.0901	166.0	-3.9519	1.2346	-0.4919	1.4991	5.9146
2.50	76.0	0.6007	4.0356	-3.1452	-0.2722	-4.7101	168.0	-3.3028	0.8617	0.0398	1.2846	4.8029
2.50	78.0	3.0310	6.6186	-5.1350	-0.7039	-10.6333	170.0	-3.1555	0.5457	0.3707	1.1785	4.6173
2.50	80.0	4.2453	7.2711	-5.5966	-0.9104	-13.0545	172.0	-2.0519	1.1537	-0.4295	0.7933	3.2168
2.50	82.0	5.1127	6.2943	-4.8080	-1.0418	-13.9466	174.0	-0.5281	1.8868	-1.4587	0.3378	1.0253
2.50	84.0	4.9574	5.9509	-4.0797	-1.0403	-13.4136	176.0	-0.7412	2.4038	-2.0728	0.3379	1.5355
2.50	86.0	4.3525	4.9074	-3.2394	-0.9213	-11.4063	178.0	2.0338	1.6802	-1.7601	-0.3003	-2.8756
2.50	88.0	4.1796	3.3649	-2.0350	-0.8398	-10.0821	180.0	0.0	0.0	0.0	0.0	0.0
2.50	90.0	2.4356	1.8173	-1.0041	-0.5146	-5.5529						

Table B-4 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

YCPBOF=B4(0)+B4(1)*(TAPER RATIO)+B4(2)*(TAPER RATIO)**2+B4(3)*(ASPECT RATIO)+B4(4)*(SPAN RATIO)

		COEFFICIENTS FOR YCPBOF						COEFFICIENTS FOR YCPBOF				
MACH	ALPHA	B4(0)	B4(1)	B4(2)	B4(3)	B4(4)	ALPHA	B4(0)	B4(1)	B4(2)	B4(3)	B4(4)
3.00	0.0	0.0	0.0	0.0	0.0	0.0	92.0	3.0236	2.0068	-1.3623	-0.6360	-6.2822
3.00	2.0	1.5575	-1.3101	0.4883	-0.2275	-1.2574	94.0	2.0080	1.6731	-1.0459	-0.4053	-4.2349
3.00	4.0	1.2193	-1.0469	0.6646	-0.1479	-0.9511	96.0	1.5518	1.2360	-0.7564	-0.2830	-3.0901
3.00	6.0	0.9737	-0.6323	0.6130	-0.0764	-0.8967	98.0	1.3875	0.8280	-0.4654	-0.2361	-2.5612
3.00	8.0	0.7605	-0.1205	0.3390	-0.0474	-0.8233	100.0	1.1675	0.7856	-0.4859	-0.1895	-2.0519
3.00	10.0	0.9487	0.1015	0.1377	-0.0775	-1.2584	102.0	0.9933	0.7168	-0.4624	-0.1518	-1.6930
3.00	12.0	1.1415	0.2231	-0.0323	-0.1225	-1.5746	104.0	1.0230	0.5379	-0.3702	-0.1600	-1.5805
3.00	14.0	1.2544	0.4554	-0.2612	-0.1711	-1.7804	106.0	1.0360	0.3853	-0.2614	-0.1400	-1.5463
3.00	16.0	1.4451	0.1164	-0.0320	-0.1741	-1.9867	108.0	1.0500	0.1631	-0.0888	-0.1311	-1.4268
3.00	18.0	1.3064	0.1169	0.0130	-0.1953	-1.6764	110.0	0.9503	-0.0637	0.0841	-0.1094	-1.1287
3.00	20.0	1.9869	0.3987	-0.2559	-0.3604	-2.9222	112.0	0.7721	-0.0141	-0.0142	-0.0826	-0.7841
3.00	22.0	3.3471	1.6259	-1.0652	-0.7867	-5.7124	114.0	0.5621	-0.0026	-0.0482	-0.0577	-0.4514
3.00	24.0	4.1675	2.3159	-1.4988	-1.0610	-7.3987	116.0	0.2817	0.0264	-0.1572	-0.0240	-0.0188
3.00	26.0	4.4714	2.8817	-1.8373	-1.2004	-8.1493	118.0	0.2774	-0.0313	-0.1510	-0.0410	-0.0691
3.00	28.0	5.4080	3.4895	-2.2274	-1.4439	-10.1302	120.0	0.3710	-0.1890	0.0409	-0.0763	-0.2721
3.00	30.0	5.2196	3.8525	-2.5122	-1.3450	-10.2347	122.0	0.4603	-0.0474	-0.0339	-0.1154	-0.4815
3.00	32.0	6.0032	4.4258	-3.0043	-1.5264	-11.8288	124.0	0.4106	0.0465	-0.0560	-0.1202	-0.4359
3.00	34.0	6.3171	4.9765	-3.3881	-1.5703	-12.8602	126.0	0.4030	0.1035	-0.0844	-0.1262	-0.4133
3.00	36.0	4.3947	3.4974	-2.4164	-1.0536	-8.8462	128.0	0.4897	0.1379	-0.1063	-0.1436	-0.5427
3.00	38.0	2.9675	2.1186	-1.4640	-0.8268	-5.2026	130.0	0.5568	0.1422	-0.0875	-0.1508	-0.6529
3.00	40.0	1.6884	0.8893	-0.6389	-0.6137	-1.9711	132.0	0.6485	0.1354	-0.0559	-0.1599	-0.8075
3.00	42.0	1.1065	0.2972	-0.2377	-0.4975	-0.5720	134.0	0.7214	0.1885	-0.0792	-0.1659	-0.9586
3.00	44.0	-0.5732	-1.5670	1.0117	-0.1194	3.5721	136.0	0.8589	0.2500	-0.1040	-0.1850	-1.2404
3.00	46.0	-0.9361	-1.4366	0.9539	-0.0500	4.1583	138.0	0.9832	0.2956	-0.1209	-0.2010	-1.4944
3.00	48.0	-0.5594	-1.0276	0.6842	-0.0431	2.8697	140.0	1.0533	0.3705	-0.1544	-0.2055	-1.6649
3.00	50.0	1.1935	1.0939	-0.7469	-0.3213	-2.0352	142.0	1.1242	0.4002	-0.1718	-0.1990	-1.7840
3.00	52.0	1.0508	1.0068	-0.6961	-0.2818	-1.7638	144.0	1.3248	0.2372	-0.0372	-0.1941	-2.1111
3.00	54.0	2.7309	3.1919	-2.1745	-0.5872	-6.4212	146.0	1.5211	0.4742	-0.2246	-0.1704	-2.6152
3.00	56.0	2.7543	3.6464	-2.5277	-0.5921	-6.7408	148.0	1.6710	0.8141	-0.4127	-0.1658	-3.1404
3.00	58.0	1.6244	2.8423	-2.0514	-0.3939	-4.0013	150.0	1.8438	1.0654	-0.6022	-0.1852	-3.6055
3.00	60.0	0.9963	2.8635	-2.1418	-0.2980	-2.7456	152.0	1.5385	0.8879	-0.5205	-0.1659	-2.7672
3.00	62.0	0.5067	2.9508	-2.2231	-0.2251	-1.9364	154.0	0.5052	-0.3710	0.2685	0.0457	0.0606
3.00	64.0	0.0352	3.2639	-2.4963	-0.1670	-1.2571	156.0	0.6759	-0.6167	0.5930	0.0680	-0.4058
3.00	66.0	-0.1050	3.1422	-2.3540	-0.1443	-1.2997	158.0	0.8813	-0.6634	0.6627	0.0408	-0.0308
3.00	68.0	-0.3708	3.1841	-2.3443	-0.1045	-1.2062	160.0	0.1003	0.7186	-0.6398	0.1297	0.5160
3.00	70.0	0.4035	4.6591	-3.1525	-0.2492	-4.3905	162.0	-0.8944	1.2091	-1.2411	0.2300	2.4512
3.00	72.0	1.0152	5.4976	-3.6455	-0.3390	-6.6402	164.0	-2.6632	2.0286	-2.2864	0.4433	5.8577
3.00	74.0	1.4315	5.8467	-3.8545	-0.4109	-7.8494	166.0	-6.1047	2.9456	-3.4730	1.0485	11.9552
3.00	76.0	1.7087	5.8033	-3.8601	-0.4812	-8.2546	168.0	-6.4313	3.4188	-4.0663	1.0781	12.5829
3.00	78.0	2.0212	6.5664	-4.4699	-0.5723	-8.9633	170.0	-5.4118	3.6827	-4.2571	0.8554	10.5576
3.00	80.0	2.2600	6.2006	-3.9495	-0.6352	-9.0888	172.0	-2.4178	3.3404	-3.9283	0.2903	5.2532
3.00	82.0	2.5691	5.3149	-3.2336	-0.6944	-8.8521	174.0	-0.3788	2.5727	-2.6791	0.0266	1.0132
3.00	84.0	2.9490	4.7560	-2.7441	-0.7442	-9.0257	176.0	1.6827	1.7074	-1.0867	-0.2022	-3.2300
3.00	86.0	2.9804	3.9773	-2.2675	-0.7082	-8.1436	178.0	0.8970	0.9078	-0.5832	-0.1531	-1.1987
3.00	88.0	2.3362	2.0732	-1.0575	-0.5422	-5.6209	180.0	0.0	0.0	0.0	0.0	0.0
3.00	90.0	2.4957	1.8892	-1.0747	-0.5357	-5.6260						

Table B-5

Regression Coefficients for $X_{CP_{BFH}}$

REGRESSION COEFFICIENTS FOR EQUATION

XCPBFH=BS(0)+BS(1)*(TAPER RATIO)+BS(2)*(TAPER RATIO)**2+BS(3)*(ASPECT RATIO)+BS(4)*(SPAN RATIO)

		COEFFICIENTS FOR XCPBFH						COEFFICIENTS FOR XCPBFH				
MACH	λ	BS(0)	BS(1)	BS(2)	BS(3)	BS(4)	ALPHA	BS(0)	BS(1)	BS(2)	BS(3)	BS(4)
0.60	0.0	0.0	0.0	0.0	0.0	0.0	92.0	-0.2551	-0.0950	-0.0683	0.0780	0.3332
0.60	2.0	2.6533	-0.1061	0.7332	-0.6917	-4.0275	94.0	-0.1742	-0.0720	-0.0849	0.0420	0.2157
0.60	4.0	1.0901	0.2471	-0.0937	-0.1597	-1.9804	96.0	0.1066	-0.1424	-0.0477	-0.0192	-0.3582
0.60	6.0	0.7573	0.2539	-0.1533	-0.0995	-1.3404	98.0	-0.1451	-0.1721	-0.0038	0.0203	0.2792
0.60	8.0	0.8053	0.1341	-0.0809	-0.1401	-1.3197	100.0	0.0876	-0.1428	-0.0476	-0.0290	-0.1045
0.60	10.0	0.8043	-0.0067	-0.0263	-0.1560	-1.2110	102.0	0.0134	-0.2337	0.0649	-0.0116	0.0342
0.60	12.0	0.7456	0.0148	-0.2078	-0.1806	-0.9477	104.0	-0.0069	-0.2206	0.0463	-0.0123	0.0854
0.60	14.0	1.2609	0.0089	-0.3564	-0.3162	-1.6915	106.0	0.0623	-0.2628	0.0864	-0.0394	-0.0045
0.60	16.0	2.1714	0.0962	-0.6968	-0.5077	-3.0747	108.0	0.0429	-0.2263	0.0557	-0.0283	-0.0036
0.60	18.0	1.5975	0.1955	-0.7962	-0.3349	-2.1235	110.0	0.1359	-0.1540	-0.0517	-0.0670	-0.1255
0.60	20.0	0.9617	0.3640	-0.9081	-0.2091	-0.0827	112.0	0.0239	-0.2205	0.0446	-0.0382	0.0306
0.60	22.0	-0.5343	0.5942	-0.7974	0.1682	1.3129	114.0	0.1299	-0.1486	-0.0440	-0.0679	-0.1452
0.60	24.0	1.1914	0.1019	-0.2075	-0.3007	-1.4791	116.0	0.1797	-0.1401	-0.0502	-0.0830	-0.2450
0.60	26.0	0.6783	0.6086	-0.8167	-0.2028	-0.4981	118.0	0.0841	-0.1613	-0.0007	-0.0530	-0.1366
0.60	28.0	0.7414	0.2936	-0.6682	-0.1744	-0.6166	120.0	-0.0282	-0.1760	0.0367	-0.0294	0.0297
0.60	30.0	-0.1659	-1.2678	0.5515	0.0852	1.2594	122.0	-0.0138	-0.1801	0.0378	-0.0380	0.0128
0.60	32.0	0.7162	-0.5782	0.0368	-0.1980	-2.1566	124.0	0.0453	-0.2129	0.0679	-0.0478	-0.0954
0.60	34.0	2.4124	0.0816	-1.1605	-0.6220	-3.1814	126.0	0.1694	-0.1983	0.0423	-0.0797	-0.2990
0.60	36.0	1.9678	0.0223	-0.3671	-0.5285	-2.4137	128.0	0.1721	-0.2097	0.0596	-0.0759	-0.3182
0.60	38.0	2.0922	0.4465	-0.7409	-0.4435	-3.[illegible]90	130.0	0.1616	-0.1874	0.0471	-0.0789	-0.3184
0.60	40.0	1.2063	0.1189	0.0212	-0.3282	-1.8726	132.0	0.1748	-0.2059	0.0550	-0.0765	-0.3290
0.60	42.0	-0.6851	1.0281	-0.9986	0.2752	-0.1023	134.0	0.1783	-0.2264	0.0845	-0.0774	-0.3447
0.60	44.0	0.2474	0.7578	-0.7640	0.0238	-1.3573	136.0	0.1451	-0.2448	0.1008	-0.0744	-0.2857
0.60	46.0	-1.3891	1.8072	-1.9860	0.5318	0.2787	138.0	0.2409	-0.2359	0.0815	-0.0920	-0.4586
0.60	48.0	-1.2087	1.3577	-1.1742	0.4169	0.2724	140.0	0.3232	-0.2490	0.0732	-0.1075	-0.5928
0.60	50.0	-2.7337	1.4379	-1.3729	0.8757	2.3488	142.0	-0.3237	0.3722	-0.7958	0.0979	0.2278
0.60	52.0	-1.3163	-0.0508	0.4089	0.4429	0.7862	144.0	0.2178	0.4765	-0.8459	-0.0787	-0.5075
0.60	54.0	0.6759	-1.4377	1.5731	-0.1052	-1.4114	146.0	1.4639	1.7071	-2.0766	-0.4884	-2.0804
0.60	56.0	-0.8346	-1.5332	1.7821	0.2663	0.9265	148.0	1.7747	2.5293	-3.2354	-0.5167	-2.7202
0.60	58.0	0.1872	-1.8179	1.9055	0.0366	-0.5704	150.0	1.6973	1.1162	-1.7338	-0.4962	-2.4445
0.60	60.0	-0.3521	-1.4200	1.5266	0.1945	-0.1353	152.0	2.2819	1.7064	-2.3877	-0.7988	-2.5529
0.60	62.0	-0.6795	-0.4616	0.6394	0.2737	-0.0155	154.0	3.8471	1.0994	-1.9412	-1.2009	-4.6078
0.60	64.0	0.5763	-0.0320	-0.2093	-0.0396	-1.5581	156.0	0.2579	1.0311	-2.4119	-0.1550	1.0211
0.60	66.0	1.1775	-0.2428	-0.0363	-0.2466	-2.3044	158.0	0.1645	0.2842	-1.0254	-0.0856	0.3858
0.60	68.0	1.6025	0.0769	-0.3231	-0.2153	-2.0347	160.0	-1.4539	-1.0659	0.9094	0.3497	2.1906
0.60	70.0	1.6439	0.4654	-0.7993	-0.3689	-3.1434	162.0	-1.4219	-2.7072	2.9204	0.3704	1.8068
0.60	72.0	2.7049	0.7670	-1.0640	-0.6692	-4.0943	164.0	-0.6784	-7.9644	4.0075	0.0368	0.4825
0.60	74.0	1.8906	0.5783	-0.9716	-0.4327	-3.5246	166.0	-2.2300	-1.5821	3.1167	0.4709	1.6623
0.60	76.0	1.9323	0.4937	-0.7914	-0.4524	-3.5989	168.0	-2.3549	-0.3648	2.0879	0.4148	1.7327
0.60	78.0	1.2333	0.5562	-0.7144	-0.2870	-2.4793	170.0	-2.1936	0.4158	0.9771	0.3419	1.7852
0.60	80.0	1.9309	0.7759	-0.8580	-0.4908	-3.6562	172.0	-1.7306	-0.0005	1.4976	0.1975	1.2768
0.60	82.0	1.4682	0.4619	-0.5419	-0.3030	-2.8713	174.0	-1.2838	-0.0036	1.2042	0.1091	0.9496
0.60	84.0	-0.5034	-0.1117	-0.2023	0.1861	0.2561	176.0	-0.9027	0.0818	0.8577	0.0312	0.6708
0.60	86.0	-0.3873	-0.0016	-0.0767	0.0821	0.1963	178.0	-2.2491	0.4856	-0.4435	0.5824	2.6303
0.60	88.0	-0.3045	0.0209	-0.0387	0.0486	0.1508	180.0	0.0	0.0	0.0	0.0	0.0
0.60	90.0	-0.1271	-0.0691	-0.1251	0.0522	0.0810						

Table B-5 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

XCPBFM=B5(0)+B5(1)*(TAPER RATIO)+B5(2)*(TAPER RATIO)**2+B5(3)*(ASPECT RATIO)+B5(4)*(SPAN RATIO)

	COEFFICIENTS FOR XCPBFM						COEFFICIENTS FOR XCPBFM					
MACH	ALPHA	B5(0)	B5(1)	B5(2)	B5(3)	B5(4)	ALPHA	B5(0)	B5(1)	B5(2)	B5(3)	B5(4)
0.80	0.0	0.0	0.0	0.0	0.0	0.0	92.0	-0.1132	-0.0655	-0.0524	0.0459	0.0510
0.80	2.0	1.7706	0.0340	0.2478	-0.3272	-3.1243	94.0	-0.1935	-0.0099	-0.0046	0.0560	0.2039
0.80	4.0	1.2242	0.1410	0.0524	-0.1941	-2.2022	96.0	-0.3786	-0.1961	0.1255	0.1089	0.5226
0.80	6.0	0.9552	0.0774	0.1010	-0.1259	-1.7254	98.0	0.1476	-0.0865	-0.0704	-0.0273	-0.2673
0.80	8.0	0.8808	0.0416	0.0302	-0.1533	-1.4300	100.0	-0.0349	-0.1188	-0.0261	0.0006	0.0765
0.80	10.0	0.8492	-0.1485	0.0859	-0.1929	-1.1758	102.0	0.0154	-0.1315	0.0072	-0.0001	-0.0294
0.80	12.0	0.7814	-0.1770	-0.0435	-0.1988	-0.9317	104.0	-0.0020	-0.1467	0.0258	-0.0041	0.0255
0.80	14.0	0.8288	-0.0230	-0.3549	-0.1954	-0.8796	106.0	-0.1168	-0.1089	-0.0273	0.0121	0.2401
0.80	16.0	0.3193	0.0742	-0.5686	-0.0177	-0.1249	108.0	-0.0282	-0.1558	0.0405	-0.0055	0.0808
0.80	18.0	-0.4466	0.3041	-0.9048	0.1595	1.1801	110.0	-0.0717	-0.1418	0.0367	0.0086	0.1289
0.80	20.0	-0.1867	0.7617	-1.4386	0.1079	0.6934	112.0	-0.0289	-0.1211	0.0113	-0.0024	0.0443
0.80	22.0	0.5131	0.8451	-1.3248	-0.0513	-0.7313	114.0	-0.0348	-0.1033	0.0030	-0.0041	0.0365
0.80	24.0	0.2335	1.0510	-1.4946	0.0589	-0.3803	116.0	-0.0439	-0.0816	-0.0204	-0.0059	0.0478
0.80	26.0	0.4661	0.1044	-0.5720	0.0329	-0.4867	118.0	-0.0922	-0.0885	-0.0086	0.0048	0.1891
0.80	28.0	0.8800	0.0524	-0.5739	-0.1018	-1.1884	120.0	-0.0661	-0.0896	-0.0107	-0.0034	0.0641
0.80	30.0	0.9745	-1.3130	0.5460	-0.0981	-1.2489	122.0	-0.0168	-0.0884	-0.0178	-0.0152	-0.0270
0.80	32.0	1.3789	-1.0778	-0.1810	-0.1632	-1.9749	124.0	-0.0293	-0.0981	0.0010	-0.0118	-0.0182
0.80	34.0	2.1894	-2.1643	0.7965	-0.3894	-2.1229	126.0	-0.0750	-0.0980	0.0087	-0.0051	0.0860
0.80	36.0	3.1898	-2.1681	1.3920	-0.7399	-3.8858	128.0	-0.0682	-0.1063	0.0164	-0.0163	0.0815
0.80	38.0	0.4777	-1.1735	0.9856	-0.0368	-0.7946	130.0	-0.0789	-0.1148	0.0145	-0.0088	-0.0087
0.80	40.0	-1.4448	-0.5710	0.9886	0.4416	1.4225	132.0	-0.0805	-0.1266	0.0219	-0.0017	-0.0032
0.80	42.0	-1.0036	-1.1881	1.5649	0.3153	1.1356	134.0	0.0552	-0.1450	0.0338	-0.0375	-0.1775
0.80	44.0	-1.1358	-0.3852	0.7655	0.3513	1.0392	136.0	0.0590	-0.1774	0.0686	-0.0370	-0.1983
0.80	46.0	-2.5027	-0.2706	1.0486	0.7081	2.5822	138.0	0.1356	-0.1817	0.0781	-0.0522	-0.3529
0.80	48.0	0.3974	-0.7663	0.8175	-0.6156	-1.0688	140.0	0.2098	-0.1989	0.0735	-0.0782	-0.4751
0.80	50.0	1.5782	-1.4705	1.3324	-0.2868	-3.0152	142.0	-0.6908	0.0612	-0.4093	0.2423	0.6279
0.80	52.0	0.1680	-1.2587	1.1537	0.1272	-0.8757	144.0	-1.2613	-0.2208	-0.3282	0.4346	1.3782
0.80	54.0	2.5347	-1.7531	1.2597	-0.5511	-3.4364	146.0	-1.6243	-0.3802	-0.2666	0.5518	1.8904
0.80	56.0	3.1116	-1.0523	0.5298	-0.7404	-4.4014	148.0	-1.7594	-0.6184	-0.0910	0.5830	2.1646
0.80	58.0	2.3597	-1.3016	0.7893	-0.5325	-3.2577	150.0	-1.5899	-0.9024	0.1756	0.5208	2.0617
0.80	60.0	1.3049	-0.5887	0.2607	-0.2585	-2.0800	152.0	-0.0039	-0.8591	0.4486	0.0098	-0.1270
0.80	62.0	-0.1407	0.4110	-0.4576	0.1284	-0.6778	154.0	1.3133	-0.4120	0.8684	-0.3762	-2.2522
0.80	64.0	0.7977	0.3461	-0.3627	-0.1514	-1.9664	156.0	0.6676	-0.9725	0.5148	-0.1849	-1.0847
0.80	66.0	-0.0953	-0.2902	0.0225	0.1191	-0.2183	158.0	-0.7201	-0.9289	0.6878	0.1495	1.0113
0.80	68.0	-0.0994	-0.2313	0.0001	0.1017	-0.1497	160.0	-1.9728	0.0729	-0.1434	0.4530	2.6185
0.80	70.0	-0.0730	-0.2948	0.0375	0.1106	-0.1410	162.0	-3.5331	1.2827	-0.9328	0.0731	3.0992
0.80	72.0	-0.1840	-0.3935	0.0587	0.1461	0.0836	164.0	-3.8807	1.5731	-1.1615	1.0403	3.9410
0.80	74.0	-1.1662	-0.8169	0.2950	0.4347	1.8915	166.0	-3.9750	1.5575	-1.3241	1.0999	4.0713
0.80	76.0	-0.7949	-0.5169	0.1223	0.3081	1.1643	168.0	-4.5959	1.6344	-1.7178	1.3064	4.9926
0.80	78.0	-0.4165	-0.2798	-0.1653	0.2047	0.5373	170.0	-4.2473	1.3788	-1.5261	1.1887	4.7253
0.80	80.0	-0.3927	-0.1933	-0.0972	0.1787	0.4352	172.0	-3.6742	1.0023	-1.1496	1.0048	4.1567
0.80	82.0	0.2064	-0.1450	-0.1390	0.0170	-0.5084	174.0	-2.9031	0.7156	-0.7312	0.7488	3.3042
0.80	84.0	0.0428	-0.0085	-0.2222	0.0324	-0.2642	176.0	-1.8109	0.3190	-0.2831	0.4373	2.0423
0.80	86.0	-0.0929	-0.0519	-0.1136	0.0675	-0.0602	178.0	-1.5842	0.2362	-0.1850	0.3591	1.9354
0.80	88.0	-0.1906	-0.0721	-0.0435	0.0748	0.1246	180.0	0.0	0.0	0.0	0.0	0.0
0.80	90.0	-0.4919	0.1453	-0.2589	0.1435	0.6203						

Table B-5 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

XCPBFH=B5(0)+B5(1)*(TAPER RATIO)+B5(2)*(TAPER RATIO)**2+B5(3)*(ASPECT RATIO)+B5(4)*(SPAN RATIO)

		COEFFICIENTS FOR XCPBFH						COEFFICIENTS FOR XCPBFH				
MACH	ALPHA	B5(0)	B5(1)	B5(2)	B5(3)	B5(4)	ALPHA	B5(0)	B5(1)	B5(2)	B5(3)	B5(4)
0.90	0.0	0.0	0.0	0.0	0.0	0.0	92.0	-0.1997	-0.0563	-0.0303	0.0607	0.2023
0.90	2.0	1.5827	0.0425	0.3990	-0.2248	-2.9899	94.0	-0.2133	-0.0750	0.0007	0.0582	0.2467
0.90	4.0	0.2239	0.0873	0.4094	0.1579	-0.5197	96.0	-0.2137	-0.1840	0.0579	0.0584	0.2944
0.90	6.0	0.1789	0.3195	-0.0040	0.1238	-0.6479	98.0	0.0025	-0.1197	0.0202	0.0256	-0.0995
0.90	8.0	0.7475	0.1522	0.0155	-0.0522	-1.3538	100.0	-0.1655	-0.1396	0.0544	0.0359	0.1341
0.90	10.0	0.7962	-0.1848	0.1754	-0.1161	-1.1903	102.0	-0.0559	-0.1480	0.0644	0.0223	0.0645
0.90	12.0	0.6907	-0.4806	0.2707	-0.0972	-0.8487	104.0	-0.0996	-0.1207	0.0311	0.0195	0.1723
0.90	14.0	1.1382	-0.0816	-0.6148	-0.2975	-1.0790	106.0	-0.1002	-0.1358	0.0414	0.0200	0.1916
0.90	16.0	0.6186	-0.1334	-0.2976	-0.1098	-0.5121	108.0	-0.0929	-0.1263	0.0308	0.0128	0.1714
0.90	18.0	2.2934	-0.6540	0.1850	-0.5332	-3.1205	110.0	-0.0898	-0.1305	0.0400	0.0114	0.1562
0.90	20.0	2.4573	-1.1705	0.9360	-0.5161	-3.5520	112.0	-0.1129	-0.1331	0.0455	0.0163	0.1051
0.90	22.0	3.2132	-1.1448	1.0053	-0.7471	-4.0965	114.0	-0.0633	-0.0983	0.0243	0.0068	0.0734
0.90	24.0	3.9251	-1.6622	1.5653	-0.8020	-6.1127	116.0	-0.0646	-0.0683	0.0003	0.0055	0.0689
0.90	26.0	3.7223	-1.3838	0.9880	-0.8924	-5.5323	118.0	-0.0729	-0.0825	0.0163	0.0051	0.0617
0.90	28.0	3.3166	-1.2478	0.8664	-0.8320	-4.7997	120.0	-0.0549	-0.0901	0.0292	0.0009	0.0199
0.90	30.0	2.4321	-1.0974	0.8254	-0.6218	-3.4871	122.0	-0.0606	-0.0935	0.0297	0.0025	0.0236
0.90	32.0	1.6435	-0.1962	0.0312	-0.4293	-2.6283	124.0	-0.0533	-0.0144	0.0401	-0.0314	-0.0123
0.90	34.0	2.7140	0.0268	-0.1719	-0.6860	-4.4137	126.0	-0.0593	0.0104	-0.0244	-0.0385	0.0096
0.90	36.0	3.0001	-0.0230	-0.1462	-0.7940	-4.7239	128.0	-0.0530	0.0013	-0.0360	-0.0355	0.0085
0.90	38.0	2.3415	0.0220	-0.2877	-0.5655	-3.9189	130.0	-0.0553	-0.0803	-0.0446	-0.0395	0.0144
0.90	40.0	1.9775	0.1899	-0.3351	-0.4817	-3.4961	132.0	-0.0695	0.0643	-0.0457	-0.0500	0.0246
0.90	42.0	3.2107	0.3511	-0.7438	-0.7879	-5.3599	134.0	-0.4643	1.0977	0.5538	-0.1098	-0.0101
0.90	44.0	2.5505	0.5045	-0.7509	-0.6146	-4.6119	136.0	-0.0606	-0.0877	0.0106	-0.0544	-0.0134
0.90	46.0	2.7276	0.5057	-0.7643	-0.6468	-4.8818	138.0	-0.1452	-0.0325	0.0372	-0.0056	0.0106
0.90	48.0	2.5269	-0.0319	-0.1839	-0.5936	-4.3920	140.0	-0.0911	-0.1100	0.0430	-0.0019	-0.0215
0.90	50.0	2.0789	0.1674	-0.3181	-0.4610	-3.8420	142.0	0.1302	-0.2067	0.1093	-0.0564	-0.3504
0.90	52.0	1.5607	0.3521	-0.4810	-0.3235	-3.1401	144.0	-0.0289	-0.4804	0.3620	-0.0030	-0.1314
0.90	54.0	0.8088	0.2049	-0.3136	-0.1599	-1.7261	146.0	-0.6155	-0.5995	0.2864	0.1919	0.6777
0.90	56.0	0.0120	0.5057	-0.4436	0.0331	-0.7010	148.0	-0.3498	-0.6848	0.1034	0.1909	0.1350
0.90	58.0	-0.8760	0.7996	-0.6294	0.2813	0.2991	150.0	-0.2419	-0.6965	0.0153	0.2171	-0.2385
0.90	60.0	-0.6788	0.5151	-0.4493	0.2406	0.1585	152.0	-0.5205	-0.8675	0.2425	0.2414	0.3717
0.90	62.0	-1.1194	0.8464	-0.6984	0.3717	0.5212	154.0	-0.8870	-1.1959	0.4505	0.2839	0.8523
0.90	64.0	-0.5499	0.4872	-0.4383	0.2142	-0.0318	156.0	-1.2404	-0.5081	0.1386	0.2437	1.6514
0.90	66.0	-0.3655	0.2530	-0.2967	0.1648	-0.0807	158.0	-4.0604	-0.2299	0.1716	0.8676	5.6259
0.90	68.0	-0.3997	0.1179	-0.2431	0.1811	0.1233	160.0	-6.4212	0.3250	-0.2847	1.2766	9.6032
0.90	70.0	-0.5509	-0.2518	0.0417	0.2332	0.5699	162.0	-5.7247	0.3445	-0.2824	1.1379	8.6344
0.90	72.0	-0.3673	-0.1630	-0.0649	0.1868	0.2895	164.0	-5.6579	0.6800	-0.7269	1.2576	7.8135
0.90	74.0	-0.7989	-0.4441	0.1104	0.3308	1.0680	166.0	-4.0253	0.5966	-0.4926	1.5092	6.0644
0.90	76.0	-0.4120	-0.2208	-0.2030	0.1627	0.5742	168.0	-3.4638	1.0619	-1.1190	0.9758	3.7510
0.90	78.0	-0.3106	-0.3756	0.0405	0.1551	0.3530	170.0	-2.9614	0.8090	-0.8575	0.7902	3.2405
0.90	80.0	0.1983	0.1164	-0.4438	0.0130	-0.5349	172.0	-2.7824	0.6811	-0.7425	0.7292	2.9162
0.90	82.0	-0.2413	0.0060	-0.1625	0.1298	0.1162	174.0	-2.1359	0.5295	-0.5191	0.5379	2.3126
0.90	84.0	-0.3254	-0.0899	-0.1488	0.1274	0.3210	176.0	-1.4310	0.3180	-0.3214	0.3195	1.6052
0.90	86.0	-0.2881	-0.0454	-0.0692	0.1121	0.2892	178.0	-1.1908	0.3244	-0.2686	0.2664	1.3484
0.90	88.0	-0.2748	0.0110	-0.1080	0.0933	0.2602	180.0	0.0	0.0	0.0	0.0	0.0
0.90	90.0	-0.3261	-0.0205	-0.0408	0.0092	0.3931						

Table B-5 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

XCPBFM=BS(0)+BS(1)*(TAPER RATIO)+BS(2)*(TAPER RATIO)**2+BS(3)*(ASPECT RATIO)+BS(4)*(SPAN RATIO)

		COEFFICIENTS FOR XCPBFM						COEFFICIENTS FOR XCPBFM				
MACH	ALPHA	BS(0)	BS(1)	BS(2)	BS(3)	BS(4)	ALPHA	BS(0)	BS(1)	BS(2)	BS(3)	BS(4)
1.00	0.0	0.0	0.0	0.0	0.0	0.0	92.0	-0.2777	-0.0472	-0.0152	0.0324	0.3026
1.00	2.0	0.6249	0.0411	1.0515	-0.0606	-1.1150	94.0	-0.2003	-0.0445	-0.0099	0.0001	0.3249
1.00	4.0	0.0237	0.4307	0.5208	0.1459	-0.2576	96.0	-0.2177	-0.0560	0.0002	0.0599	0.2301
1.00	6.0	-2.7494	1.3472	-0.8069	0.9660	3.8063	98.0	-0.2056	-0.0626	0.0060	0.0574	0.2401
1.00	8.0	-3.4939	1.3237	-0.9786	1.0680	5.3736	100.0	-0.1436	-0.0784	0.0255	0.0415	0.1545
1.00	10.0	-3.0724	1.4197	-1.3158	1.0066	4.8266	102.0	-0.1279	-0.0787	0.0239	0.0363	0.1434
1.00	12.0	-2.1931	0.7214	-0.7578	0.7950	3.5051	104.0	-0.1160	-0.0735	0.0195	0.0290	0.1383
1.00	14.0	-1.0512	0.4035	-0.4670	0.4658	1.8373	106.0	-0.1201	-0.0904	0.0383	0.0314	0.1630
1.00	16.0	0.3924	0.1322	-0.3361	0.0437	-0.3939	108.0	-0.0926	-0.0903	0.0328	0.0218	0.1100
1.00	18.0	1.9497	-0.1225	-0.0470	-0.3061	-3.2082	110.0	-0.0641	-0.1017	0.0376	0.0142	0.0664
1.00	20.0	1.7080	0.2715	-0.3033	-0.3303	-2.8887	112.0	-0.0869	-0.1056	0.0301	0.0190	0.1050
1.00	22.0	1.1743	-0.4165	0.3741	-0.2229	-1.8917	114.0	-0.0816	-0.0835	0.0137	0.0156	0.0932
1.00	24.0	-0.2437	0.0508	0.2033	-0.0693	0.6545	116.0	-0.0575	-0.1033	0.0217	0.0134	0.0479
1.00	26.0	0.1076	0.6399	-0.3444	-0.1273	-0.3039	118.0	-0.0537	-0.0905	0.0197	0.0079	0.0324
1.00	28.0	0.5907	0.0457	-0.5325	-0.1966	-1.3463	120.0	-0.0306	-0.0839	0.0134	0.0030	-0.0032
1.00	30.0	0.5217	0.3919	-0.3606	-0.1760	-0.7578	122.0	-0.0366	-0.0936	0.0256	-0.0006	-0.0000
1.00	32.0	-0.3549	0.5757	-0.6005	0.0471	0.5640	124.0	-0.0407	-0.0626	-0.0212	-0.0099	0.3216
1.00	34.0	0.1718	0.7618	-0.2030	-0.1402	-0.6873	126.0	-0.0227	-0.1095	0.0373	-0.0102	-0.0206
1.00	36.0	-0.2995	0.4211	0.0311	-0.0322	0.3043	128.0	-0.0051	-0.0442	0.0324	-0.0169	0.0150
1.00	38.0	-1.5424	1.0476	-0.4724	0.2640	1.8065	130.0	-0.0156	-0.1256	0.0630	-0.0137	-0.0629
1.00	40.0	-1.0695	0.0062	0.3127	0.1692	1.7024	132.0	-0.0202	-0.1237	0.0512	-0.0120	-0.0576
1.00	42.0	-0.7417	-0.6256	0.8072	0.3116	0.3768	134.0	0.0129	-0.1314	0.0546	-0.0242	-0.1110
1.00	44.0	-0.7268	-1.1002	1.6297	0.3315	0.1742	136.0	0.0372	-0.1903	0.1069	-0.0336	-0.1400
1.00	46.0	-1.6295	-1.0328	1.6998	0.4769	1.6112	138.0	0.0952	-0.2006	0.1010	-0.0506	-0.2095
1.00	48.0	-1.6042	-0.0799	1.5125	0.4609	1.5467	140.0	0.1540	-0.2214	0.1012	-0.0703	-0.2079
1.00	50.0	-1.5530	-0.0976	1.4527	0.4556	1.5379	142.0	0.3301	-0.2774	0.1242	-0.1273	-0.5664
1.00	52.0	-1.6105	-0.9412	1.5386	0.3305	2.5477	144.0	0.4441	-0.2051	0.0824	-0.1737	-0.6250
1.00	54.0	-1.2179	-0.9157	1.3291	0.3205	1.0296	146.0	1.2459	-0.2321	-0.1505	-0.3007	-1.0090
1.00	56.0	-0.9624	-0.5105	0.7935	0.2310	1.4607	148.0	1.1933	-0.3674	-0.0150	-0.4095	-1.5705
1.00	58.0	-1.2965	-0.0932	1.0943	0.2035	2.3135	150.0	1.1491	-0.5596	0.2076	-0.4063	-1.4408
1.00	60.0	-0.7621	-0.0393	0.6560	0.1293	1.4065	152.0	0.9052	-0.9469	0.6666	-0.3001	-1.0456
1.00	62.0	0.6010	-1.0023	0.9640	-0.2174	-0.6180	154.0	-0.7736	-1.3921	1.3358	-0.0155	2.1005
1.00	64.0	1.2931	-0.6741	0.3280	-0.2201	-2.0076	156.0	-0.9344	-0.5297	0.5319	0.0500	2.1989
1.00	66.0	1.1998	-0.6372	0.2413	-0.2261	-1.7430	158.0	0.0206	-0.2370	0.4296	-0.2726	0.4636
1.00	68.0	1.2094	-0.6105	0.2507	-0.2519	-1.0511	160.0	1.1568	1.1632	-0.9060	-0.6676	-1.0593
1.00	70.0	1.3249	-0.2605	0.0452	-0.2769	-2.1757	162.0	3.1911	2.7969	-2.3904	-1.1631	-4.6456
1.00	72.0	1.2209	0.2201	-0.2001	-0.2490	-2.3210	164.0	4.6966	3.0796	-2.4966	-1.6372	-6.5229
1.00	74.0	-0.1432	1.0595	-0.0994	0.1315	-0.9447	166.0	4.5576	3.6403	-3.3775	-1.5092	-6.1320
1.00	76.0	-0.1049	0.6025	-0.5229	0.0910	-0.6634	168.0	4.6103	3.3467	-3.1394	-1.5921	-6.0779
1.00	78.0	-0.0505	0.6319	-0.6370	0.0313	-0.4055	170.0	2.8065	2.4039	-2.1590	-1.0652	-3.9083
1.00	80.0	0.0946	0.4022	-0.4321	0.0341	-0.6668	172.0	0.9503	1.3042	-1.1205	-0.4357	-1.5005
1.00	82.0	-0.4045	-0.0269	-0.1006	0.1045	0.4896	174.0	-3.5530	0.0556	0.3207	0.0516	4.1431
1.00	84.0	-0.5092	0.0465	-0.1210	0.1984	0.5914	176.0	-5.8261	-0.9701	0.9169	1.6127	7.1744
1.00	86.0	-0.4085	-0.0143	-0.3560	0.1406	0.3006	178.0	-7.0147	-3.2290	2.0976	2.1503	10.4997
1.00	88.0	-0.3194	-0.0108	-0.0520	0.1087	0.2063	180.0	0.0	0.0	0.0	0.0	0.0
1.00	90.0	-0.2020	-0.0167	-0.0303	0.0915	0.2605						

Table B-5 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

XCPBFN=BS(0)+BS(1)*(TAPER RATIO)+BS(2)*(TAPER RATIO)**2+BS(3)*(ASPECT RATIO)+BS(4)*(SPAN RATIO)

		COEFFICIENTS FOR XCPBFN						COEFFICIENTS FOR XCPBFN				
MACH	ALPHA	BS(0)	BS(1)	BS(2)	BS(3)	BS(4)	ALPHA	BS(0)	BS(1)	BS(2)	BS(3)	BS(4)
1.15	0.0	0.0	0.0	0.0	0.0	0.0	92.0	-0.4975	-0.1068	-0.0154	0.1675	0.6653
1.15	2.0	0.0207	0.3490	0.0741	-0.0014	-0.0169	94.0	-0.5718	-0.1052	-0.0342	0.1064	0.4198
1.15	4.0	-0.1244	0.4344	0.1115	0.0292	0.0630	96.0	-0.2192	-0.1482	0.0427	0.0871	0.2778
1.15	6.0	-0.1639	0.3873	0.0963	0.0343	0.0926	98.0	-0.1797	-0.1563	0.0344	0.0750	0.2586
1.15	8.0	-0.1248	0.3113	0.1036	0.0198	0.0693	100.0	-0.1565	-0.1315	0.0175	0.0672	0.2153
1.15	10.0	-0.0638	0.2313	0.0798	0.0095	0.0456	102.0	-0.1366	-0.1185	0.0005	0.0566	0.1006
1.15	12.0	-0.0226	0.1716	0.0086	0.0114	0.0318	104.0	-0.1358	-0.1293	0.0232	0.0524	0.1916
1.15	14.0	0.1293	-0.0824	0.1078	0.0716	-0.2172	106.0	-0.1392	-0.1494	0.0286	0.0448	0.2329
1.15	16.0	0.1758	-0.1356	0.0923	0.0073	-0.3504	108.0	-0.1583	-0.1716	0.3401	0.0406	0.2534
1.15	18.0	0.1901	-0.1432	0.0115	0.1062	-0.3688	110.0	-0.0971	-0.1716	0.0362	0.0305	0.1013
1.15	20.0	1.3797	0.1502	-0.4827	-0.1967	-2.1785	112.0	-0.1200	-0.1712	0.0304	0.0359	0.2436
1.15	22.0	2.3679	-0.2800	-0.1089	-0.4743	-3.6709	114.0	-0.1250	-0.2024	0.0411	0.0351	0.2584
1.15	24.0	2.3209	-0.2088	-0.3056	-0.4770	-3.6311	116.0	-0.1751	-0.2012	0.0378	0.0421	0.3533
1.15	26.0	2.3131	0.2378	-0.5946	-0.4052	-4.0371	118.0	-0.0453	-0.1763	0.0873	0.0040	0.1339
1.15	28.0	1.2066	-0.0994	-0.1251	-0.1548	-2.2984	120.0	-0.0253	-0.1588	0.0094	-0.0097	0.0008
1.15	30.0	0.6722	-0.2830	0.2065	0.0506	-1.6871	122.0	-0.0395	-0.1469	0.0130	-0.0141	0.0996
1.15	32.0	-0.4441	-0.2531	0.1782	0.1513	0.6477	124.0	-0.0109	-0.1708	0.0382	-0.0260	0.0620
1.15	34.0	-0.4274	0.4154	-0.4454	0.0986	0.7814	126.0	0.1046	-0.1916	0.0543	-0.0565	-0.1488
1.15	36.0	-3.9137	-0.2795	0.2266	0.0417	6.6363	128.0	0.1717	-0.2357	0.0979	-0.0746	-0.2536
1.15	38.0	-3.4767	1.4457	-1.7026	0.6320	6.4138	130.0	0.1827	-0.2504	0.1004	-0.0779	-0.2731
1.15	40.0	-3.1419	1.1241	-1.3234	0.6480	5.3193	132.0	0.3925	-0.2125	0.0384	-0.1321	-0.5983
1.15	42.0	-2.6151	1.4273	-1.6266	0.4870	4.6850	134.0	0.4631	-0.2270	0.0517	-0.1537	-0.7131
1.15	44.0	0.0775	0.0630	-0.7052	-0.1957	0.3705	136.0	0.5397	-0.2622	0.0583	-0.1805	-0.8063
1.15	46.0	0.5578	2.0217	-1.7721	-0.3649	-0.3946	138.0	0.5781	-0.2547	0.0381	-0.1935	-0.8725
1.15	48.0	1.0917	2.2400	-2.0048	-0.6956	-2.4659	140.0	0.8522	-0.2831	0.0155	-0.2641	-1.2641
1.15	50.0	2.6166	1.6501	-1.0803	-0.9309	-3.4743	142.0	1.1790	-0.2870	-0.0479	-0.3477	-1.7444
1.15	52.0	2.3011	1.3208	-0.6806	-0.9146	-2.6944	144.0	2.0395	-0.2876	-0.2709	-0.5664	-3.0399
1.15	54.0	1.6300	-0.0047	0.9186	-0.6060	-2.5121	146.0	2.8345	-0.0896	-0.5663	-0.7675	-4.2613
1.15	56.0	1.3333	-0.4363	1.2844	-0.3216	-2.1462	148.0	2.0058	-0.0467	-0.5404	-0.6105	-2.7521
1.15	58.0	1.0632	-1.7454	2.4007	-0.2452	-2.4101	150.0	0.9267	0.0445	-0.5962	-0.4079	-0.8059
1.15	60.0	0.1677	-2.0339	2.2938	-0.0510	-0.4196	152.0	-1.0168	0.9172	1.2229	-0.6641	0.5981
1.15	62.0	-2.2671	-2.0955	2.4318	0.3052	3.6491	154.0	-0.9109	-0.5741	0.4981	-0.0916	2.3324
1.15	64.0	-4.0339	-0.7982	0.7425	0.8791	7.0657	156.0	-0.8970	-0.6399	0.4612	-0.1377	2.7738
1.15	66.0	-4.0557	-0.6401	0.4828	1.0608	6.8573	158.0	-0.9188	-0.5414	0.4112	-0.2246	3.0549
1.15	68.0	-5.1582	-1.5593	1.3309	1.0536	8.5665	160.0	0.8044	0.3695	-0.3570	-0.5424	-0.1639
1.15	70.0	-4.3984	-1.1625	1.2766	0.7776	7.5291	162.0	1.9472	1.3028	-1.1202	-0.8262	-2.2585
1.15	72.0	-3.1641	-0.7609	0.9367	0.5193	5.4128	164.0	1.5031	0.6159	-0.5099	-0.6687	-1.5815
1.15	74.0	-2.3818	-0.1047	0.4123	0.3917	3.8369	166.0	1.9963	-0.3265	0.4262	-0.4978	-1.1201
1.15	76.0	-2.1364	1.0406	-0.6772	0.4841	2.5366	168.0	0.6578	-1.1376	1.3824	-0.2908	-1.0623
1.15	78.0	-1.6634	0.9522	-0.7601	0.4062	1.8473	170.0	-0.8631	-2.0623	3.0422	0.1704	1.1516
1.15	80.0	-1.1751	0.4987	-0.4554	0.3349	1.2605	172.0	-1.6372	-2.9107	3.1815	0.4107	1.9472
1.15	82.0	-0.8678	0.1997	-0.4313	0.2385	0.5182	174.0	-3.0398	-2.3778	2.9540	0.8257	3.2614
1.15	84.0	-0.6490	0.2891	-0.3490	0.2237	0.6700	176.0	-2.0653	-1.3143	1.8095	0.5330	1.8317
1.15	86.0	-0.5625	0.1191	-0.2558	0.2018	0.6106	178.0	-2.0978	-1.7302	2.5425	0.7025	3.1605
1.15	88.0	-0.5209	0.0061	-0.1601	0.1907	0.6337	180.0	0.0	0.0	0.0	0.0	0.0
1.15	90.0	-0.4701	-0.0215	-0.0915	0.1655	0.5732						

Table B-5 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

XCPWFN=BS(0)+BS(1)*(TAPER RATIO)+BS(2)*(TAPER RATIO)**2+BS(3)*(ASPECT RATIO)+BS(4)*(SPAN RATIO)

		COEFFICIENTS FOR XCPWFN						COEFFICIENTS FOR XCPWFN				
MACH	ALPHA	BS(0)	BS(1)	BS(2)	BS(3)	BS(4)	ALPHA	BS(0)	BS(1)	BS(2)	BS(3)	BS(4)
1.30	0.0	0.0	0.0	0.0	0.0	0.0	92.0	-0.6649	0.1034	-0.2294	0.2318	0.0483
1.30	2.0	0.0542	0.0056	0.1784	-0.0649	-1.7252	94.0	-0.6703	0.2636	-0.4018	0.2130	0.9053
1.30	4.0	0.5341	0.0342	0.1486	-0.0192	-1.0661	96.0	-0.5367	0.0315	-0.1412	0.1903	0.7236
1.30	6.0	0.3883	-0.0048	0.2853	0.0161	-0.6122	98.0	-0.4075	0.0107	-0.1223	0.1480	0.5425
1.30	8.0	0.3313	-0.1193	0.2869	0.0036	-0.6301	100.0	-0.1597	-0.0341	-0.0975	0.0617	0.1827
1.30	10.0	0.2699	-0.1229	0.1891	0.0595	-0.5278	102.0	-0.1307	-0.0533	-0.0976	0.0867	0.1339
1.30	12.0	0.1777	-0.2063	0.2605	0.0461	-0.3687	104.0	-0.2666	-0.0016	-0.1138	0.0904	0.4027
1.30	14.0	0.2067	-0.2356	0.2738	0.0425	-0.4065	106.0	-0.3637	0.0111	-0.1056	0.1178	0.5512
1.30	16.0	0.0776	-0.3834	0.3427	0.0926	-0.1326	108.0	-0.3006	0.0560	-0.1513	0.0896	0.4348
1.30	18.0	0.5294	-0.4360	0.3795	0.0080	-0.6782	110.0	-0.1805	-0.0453	-0.0057	0.0982	0.2576
1.30	20.0	0.9362	-0.4991	0.4183	-0.1097	-1.5325	112.0	-0.1239	-0.1105	-0.0469	0.0433	0.1965
1.30	22.0	1.6778	-0.5780	0.4395	-0.2808	-2.7722	114.0	-0.1252	-0.0759	-0.0776	0.0342	0.2134
1.30	24.0	2.2570	0.3240	-0.5953	-0.3982	-3.0671	116.0	-0.0087	-0.0393	-0.1362	0.0140	0.1036
1.30	26.0	1.5966	0.5440	-0.8215	-0.3086	-2.8492	118.0	-0.0879	-0.1403	-0.0346	0.0202	0.1693
1.30	28.0	0.2855	1.0342	-1.1179	0.0125	-1.1538	120.0	0.0149	-0.1931	0.0117	-0.0084	0.0023
1.30	30.0	2.3107	-0.1914	-0.1104	-0.3503	-4.9616	122.0	0.1173	-0.1705	-0.0245	-0.0350	-0.1524
1.30	32.0	3.0411	-1.3403	0.8459	-0.3328	-6.6777	124.0	0.0961	-0.1796	-0.0041	-0.0467	-0.0980
1.30	34.0	2.1085	-2.4139	2.1858	-0.0567	-5.3217	126.0	0.3154	-0.2687	0.0931	-0.1136	-0.4295
1.30	36.0	1.1607	-1.5827	1.3303	0.1674	-3.9549	128.0	0.5071	-0.2870	0.1109	-0.1646	-0.7518
1.30	38.0	-1.9239	-1.9238	1.7109	0.0437	1.0703	130.0	0.0373	-0.6193	0.3969	-0.2697	-1.1882
1.30	40.0	-3.4486	-0.1451	0.0321	0.0407	4.5814	132.0	0.6227	-0.4089	0.1778	-0.2856	-0.8853
1.30	42.0	-5.7973	-3.0079	1.4531	1.0843	9.3178	134.0	0.6374	-0.3873	0.1903	-0.2013	-0.9615
1.30	44.0	-7.4248	0.1886	0.2726	1.4467	11.9619	136.0	0.6686	-0.3317	0.0843	-0.2032	-1.0146
1.30	46.0	-5.8515	0.4501	0.2109	0.9849	9.7107	138.0	0.9366	-0.3017	0.0276	-0.2746	-1.4347
1.30	48.0	-6.6075	1.5640	-0.9004	1.0806	11.0390	140.0	1.3739	-0.3050	-0.0744	-0.3017	-2.0904
1.30	50.0	-5.0327	1.7516	-1.1590	0.0711	8.1955	142.0	1.7265	-0.4519	0.0236	-0.4684	-2.5093
1.30	52.0	-4.5777	0.1772	0.3056	1.0273	6.9149	144.0	2.2175	-0.0584	-0.5619	-0.5207	-3.5942
1.30	54.0	-4.1591	-0.0100	0.4459	1.0186	6.8549	146.0	1.0504	-0.2979	-0.2100	-0.3511	-1.1536
1.30	56.0	-1.3249	-0.6580	1.2666	0.5515	1.6326	148.0	-0.3002	-1.0376	1.0448	-0.0859	1.0338
1.30	58.0	-2.9366	-0.1891	0.7162	0.9357	3.2599	150.0	-1.1738	-0.1939	0.2015	0.0094	2.7123
1.30	60.0	-2.0301	0.0418	0.5403	0.6008	2.8416	152.0	-0.4134	0.4298	-0.3256	-0.2291	1.4327
1.30	62.2	0.2369	-0.1396	0.5646	0.0865	-1.3674	154.0	-0.3956	0.7775	-0.9048	-0.3023	1.2095
1.30	64.0	0.6415	-0.0685	0.3765	-0.0439	-1.8687	156.0	0.7509	0.2530	0.1826	-0.4328	-1.2608
1.30	66.0	0.8399	0.4039	-0.3049	0.0051	-2.4525	158.0	1.1176	0.4929	0.1053	-0.4961	-2.2614
1.30	68.0	-0.3045	0.2689	-0.3570	0.2601	-0.2309	160.0	-0.1718	-1.2630	2.0024	-0.0698	-0.0469
1.30	70.0	-0.3752	0.4397	-0.5800	0.2428	-0.3074	162.0	-0.4049	-2.0930	2.8052	0.0063	-0.2373
1.30	72.0	-1.7788	0.2358	-0.1901	0.5945	2.1824	164.0	0.3855	-2.4583	2.9744	-0.1304	-1.2756
1.30	74.0	-0.8613	0.3942	-0.4741	0.3823	6.0388	166.0	-0.3563	-3.3695	3.9505	0.1462	-0.4305
1.30	76.0	0.0044	0.5347	-0.6998	0.2018	-0.4919	168.0	0.0469	-3.6039	4.1914	-0.1630	-1.5093
1.36	78.0	-0.6793	0.5325	-0.6278	0.2766	0.6535	170.0	0.3802	-3.0392	3.6183	-0.0855	-1.2907
1.30	80.0	-1.3000	0.0515	-0.1390	0.4509	2.0766	172.0	-0.5165	-2.3984	2.7955	0.1576	0.0046
1.30	82.0	-1.2596	-0.0834	0.0263	0.3832	1.6955	174.0	-0.8092	-1.2011	1.6152	0.1917	0.4636
1.30	84.0	0.1408	0.6216	-0.8680	0.0032	-0.4964	176.0	-1.3537	-0.0913	0.6450	0.2018	1.1617
1.30	86.0	-0.5286	0.3728	-0.4758	0.1683	0.5658	178.0	-1.2009	0.3635	0.2901	0.2014	1.1139
1.30	88.0	-0.5918	0.1343	-0.2365	0.2058	0.7237	180.0	0.0	0.0	0.0	0.0	0.0
1.30	90.0	-0.6322	0.0821	-0.1655	0.2221	0.7784						

Table B-5 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

XCPBFH=BS(0)+BS(1)*(TAPER RATIO)+BS(2)*(TAPER RATIO)**2+BS(3)*(ASPECT RATIO)+BS(4)*(SPAN RATIO)

		COEFFICIENTS FOR XCPBFH						COEFFICIENTS FOR XCPBFH				
MACH	ALPHA	BS(0)	BS(1)	BS(2)	BS(3)	BS(4)	ALPHA	BS(0)	BS(1)	BS(2)	BS(3)	BS(4)
1.50	0.0	0.0	0.0	0.0	0.0	0.0	92.0	1.1962	0.2569	-0.6691	-0.1890	-1.2097
1.50	2.0	-1.1614	0.0804	-0.1159	0.3511	2.1173	94.0	0.0523	0.0167	-0.6309	-0.1579	-0.8536
1.50	4.0	-0.4908	0.0263	0.0261	0.1057	0.9910	96.0	0.7539	-0.0625	-0.3722	-0.1532	-0.6078
1.50	6.0	-0.5712	0.0843	-0.0009	0.0787	1.0955	98.0	0.6730	-0.0803	-0.2937	-0.1047	-0.1115
1.50	8.0	-0.3728	0.0560	0.0227	0.0818	0.6602	100.0	0.4584	-0.2377	-0.1093	-0.1093	-0.0828
1.50	10.0	-0.3905	0.0137	0.0519	0.0608	0.5112	102.0	0.4942	-0.3662	0.0174	-0.1043	-0.2940
1.50	12.0	-0.2518	-0.0533	0.0676	0.0610	0.4759	104.0	0.4882	-0.2515	-0.0695	-0.1233	-0.2139
1.50	14.0	-0.2154	-0.1322	0.1247	0.0555	0.4348	106.0	0.6763	-0.2232	-0.0247	-0.1011	-0.5270
1.50	16.0	-0.2197	-0.1048	0.1042	0.0459	0.4490	108.0	0.5698	-0.0744	-0.1450	-0.1040	-0.4855
1.50	18.0	-0.2695	-0.0163	0.0403	0.0329	0.3191	110.0	0.6530	0.0087	-0.1999	-0.2107	-0.5638
1.50	20.0	-0.2649	0.0034	0.0337	0.0189	0.4929	112.0	0.6592	0.0232	-0.1835	-0.2206	-0.5701
1.50	22.0	-0.1075	0.0643	-0.0132	-0.0135	0.3260	114.0	0.6440	0.0214	-0.1215	-0.2011	-0.6702
1.50	24.0	-0.6327	0.1775	-0.0530	-0.0584	-0.0517	116.0	0.6614	0.1467	-0.2592	-0.2101	-0.7397
1.50	26.0	0.8528	0.7702	-0.4331	-0.3122	-1.8817	118.0	0.6738	0.1638	-0.2448	-0.2076	-0.8017
1.50	28.0	1.3704	1.2872	-0.7517	-0.4137	-3.3086	120.0	0.5717	0.1119	-0.2174	-0.1811	-0.6528
1.50	30.0	1.9595	1.4769	-0.8611	-0.5872	-4.4094	122.0	0.5330	0.1648	-0.3055	-0.1617	-0.6431
1.50	32.0	1.2380	0.0877	-0.5451	-0.4683	-2.5843	124.0	0.4951	0.0871	-0.2153	-0.1508	-0.6347
1.50	34.0	0.3332	-0.7797	0.5682	-0.2735	0.0969	126.0	0.4602	0.0244	-0.1443	-0.1479	-0.5973
1.50	36.0	0.3308	-0.8736	0.6922	-0.2456	-0.0578	128.0	0.3892	0.0291	-0.1462	-0.1247	-0.5308
1.50	38.0	-0.1143	-0.8459	0.6016	-0.1744	0.8110	130.0	0.3462	0.0413	-0.1546	-0.1165	-0.4899
1.50	40.0	0.1827	-0.3029	0.2149	-0.1677	-0.2619	132.0	0.2564	0.0346	-0.1600	-0.0961	-0.3425
1.50	42.0	0.0161	0.6791	-0.4760	-0.2481	-2.1610	134.0	0.2631	0.0425	-0.1670	-0.0997	-0.3952
1.50	44.0	0.8946	0.8673	-0.6201	-0.2271	-2.4516	136.0	0.2490	0.0180	-0.1322	-0.0950	-0.3029
1.50	46.0	2.9961	2.2741	-1.5193	-0.6065	-7.4572	138.0	0.2418	-0.0258	-0.0839	-0.0914	-0.3050
1.50	48.0	2.1192	1.5359	-1.1302	-0.4115	-5.1747	140.0	0.2454	-0.0432	-0.0559	-0.0909	-0.4122
1.50	50.0	3.0979	1.6307	-1.2677	-0.5291	-7.1447	142.0	0.2060	-0.1115	0.0174	-0.0796	-0.3432
1.50	52.0	2.2037	0.8437	-0.8677	-0.3074	-4.8954	144.0	0.2324	-0.1272	0.0149	-0.0761	-0.4134
1.50	54.0	1.5569	0.2028	-0.5986	-0.1682	-3.2387	146.0	0.1480	-0.1804	0.0919	-0.0526	-0.2929
1.50	56.0	1.2617	0.1466	-0.4705	-0.1026	-2.5716	148.0	0.0174	-0.1398	0.0520	-0.0297	-0.0496
1.50	58.0	0.4169	-0.0062	-0.5162	0.0642	-0.8360	150.0	0.3879	-0.3086	0.2508	-0.1144	-0.7808
1.50	60.0	0.4122	-0.0786	-0.3852	0.0764	-0.8521	152.0	0.1183	-0.4967	0.4559	-0.0643	-0.1817
1.50	62.0	0.0725	-0.2838	-0.3076	0.1552	-0.1630	154.0	0.2370	-0.0201	0.6180	-0.1001	0.0167
1.50	64.0	0.0466	-0.1475	-0.4213	0.1802	-0.2172	156.0	0.0589	0.2179	-0.3291	-0.2355	-1.4742
1.50	66.0	0.6813	-0.2371	-0.4366	0.0755	-1.2152	158.0	0.0522	0.4909	-0.3225	-0.2402	-2.0467
1.50	68.0	0.7108	-0.3040	-0.4746	0.1116	-1.2152	160.0	0.1420	-0.1255	0.2515	-0.1031	-0.6195
1.50	70.0	0.5343	-0.2772	-0.6420	0.1801	-0.9010	162.0	-0.9449	-0.7747	0.0797	0.0058	1.4884
1.50	72.0	0.8230	-0.3257	-0.5938	0.1047	-1.2217	164.0	-2.5583	-2.5939	2.0419	0.3571	5.1906
1.50	74.0	0.6732	-0.5136	-0.4845	0.1465	-0.8402	166.0	-3.0512	-2.8676	2.7168	0.4813	6.0143
1.50	76.0	0.3699	-0.5923	-0.3347	0.1882	-0.3738	168.0	-2.7501	-2.2080	2.1592	0.4803	5.1837
1.50	78.0	0.4345	-0.3422	-0.4773	0.1334	-0.5333	170.0	-2.7718	-2.0844	2.1825	0.4161	5.0279
1.50	80.0	0.6031	-0.1134	-0.6028	0.0456	-0.7880	172.0	-0.9168	-2.3828	2.3514	0.1860	1.6495
1.50	82.0	0.5509	-0.1616	-0.5668	0.0236	-0.5080	174.0	1.1330	-2.9816	2.0653	-0.3551	-1.6979
1.50	84.0	0.5728	-0.2530	-0.3593	-0.0136	-0.5054	176.0	2.7372	-2.5835	2.3330	-0.7289	-4.3801
1.50	86.0	0.2984	-0.3087	-0.1618	-0.0340	0.0895	178.0	3.8069	-2.7237	2.4577	-0.9301	-6.3127
1.50	88.0	0.9399	-0.0674	-0.4082	-0.1480	-1.0182	180.0	0.0	0.0	0.0	0.0	0.0
1.50	90.0	1.0785	0.0852	-0.5287	-0.1774	-1.2715						

Table B-5 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

XCPBFH=B5(0)+B5(1)*(TAPER RATIO)+B5(2)*(TAPER RATIO)**2+B5(3)*(ASPECT RATIO)+B5(4)*(SPAN RATIO)

		COEFFICIENTS FOR XCPBFH						COEFFICIENTS FOR XCPBFH				
MACH	ALPHA	B5(0)	B5(1)	B5(2)	B5(3)	B5(4)	ALPHA	B5(0)	B5(1)	B5(2)	B5(3)	B5(4)
2.00	0.0	0.0	0.0	0.0	0.0	0.0	92.0	0.4918	-0.8910	0.3465	-0.0014	-0.0764
2.00	2.0	0.5483	1.2679	-1.0802	-0.0316	-1.6151	94.0	0.4349	-0.7829	0.2485	0.0166	-0.0633
2.00	4.0	-1.8684	0.0932	-0.1416	0.3654	3.2202	96.0	-0.1701	-0.6481	0.2099	0.1066	0.9241
2.00	6.0	-0.6320	0.1863	-0.2278	0.1075	1.1014	98.0	-0.3281	-0.3543	0.0257	0.0976	1.0963
2.00	8.0	0.0978	-0.2719	0.1110	0.0525	-0.0964	100.0	-0.0569	-0.2693	-0.0906	0.0187	0.6191
2.00	10.0	0.0110	-0.1812	0.0816	0.0537	0.0249	102.0	0.3078	-0.4086	0.0890	-0.0814	0.0711
2.00	12.0	0.0425	-0.2847	0.1678	0.0653	-0.0632	104.0	0.6633	-0.4597	0.1294	-0.1404	-0.5666
2.00	14.0	-0.2543	0.0051	-0.0228	0.0701	0.3424	106.0	0.7355	-0.7319	0.4181	-0.1420	-0.6689
2.00	16.0	0.2537	0.0590	0.0174	-0.0439	-0.6739	108.0	0.8103	-0.7362	0.4563	-0.1662	-0.7980
2.00	18.0	0.7933	0.2012	-0.0983	-0.1239	-1.8731	110.0	0.8244	-0.5914	0.3602	-0.1947	-0.8826
2.00	20.0	-0.1845	-1.3812	1.0742	0.0457	0.9284	112.0	0.6703	-0.4423	0.2589	-0.1893	-0.6689
2.00	22.0	0.4027	-1.3623	0.9717	-0.0814	-0.2429	114.0	0.4448	-0.2554	0.1158	-0.1511	-0.3950
2.00	24.0	-0.8067	-0.6525	0.4394	0.1139	1.8327	116.0	0.4724	-0.0818	-0.0153	-0.1687	-0.4895
2.00	26.0	-2.3642	-0.4247	0.4458	0.3692	4.7117	118.0	0.4344	-0.0011	-0.0591	-0.1646	-0.4593
2.00	28.0	-3.4181	-0.5112	0.7109	0.4927	6.7643	120.0	0.3951	0.1550	-0.2106	-0.1523	-0.4027
2.00	30.0	-4.6840	-0.6575	0.9184	0.7474	8.9943	122.0	0.3630	0.1865	-0.2520	-0.1314	-0.3872
2.00	32.0	-4.8357	-0.4660	0.7812	0.8007	9.1144	124.0	0.4366	0.0830	-0.2379	-0.1456	-0.4603
2.00	34.0	-5.2879	0.0302	0.1686	0.9994	9.6227	126.0	0.4511	-0.0176	-0.1246	-0.1427	-0.4504
2.00	36.0	-4.2347	-1.1806	1.1304	0.8362	7.8446	128.0	0.4734	-0.1906	-0.0251	-0.1374	-0.5163
2.00	38.0	-2.4576	-1.5002	1.1402	0.6972	4.4695	130.0	0.4361	-0.2300	0.0354	-0.1225	-0.5164
2.00	40.0	-1.2768	-2.3497	1.6757	0.5404	2.5636	132.0	0.4021	-0.2233	0.0417	-0.1205	-0.5022
2.00	42.0	0.5385	-4.4133	3.0721	0.2039	0.3756	134.0	0.3831	-0.2241	0.0521	-0.1195	-0.5118
2.00	44.0	0.2092	-4.7363	3.3603	0.2423	1.3888	136.0	0.3236	-0.2111	0.0465	-0.1127	-0.4237
2.00	46.0	1.5128	-2.4533	1.4880	-0.0522	-1.9777	138.0	0.3066	-0.2284	0.0504	-0.1067	-0.4250
2.00	48.0	0.1354	-2.5728	1.7468	0.1404	0.7866	140.0	0.4164	-0.2161	0.0016	-0.1142	-0.6914
2.00	50.0	-0.4847	-1.0014	0.6635	0.0997	1.3246	142.0	0.4434	-0.2156	-0.0171	-0.1117	-0.7505
2.00	52.0	0.9485	0.7393	-0.5099	-0.1420	-2.5659	144.0	0.4105	-0.2400	-0.0009	-0.0974	-0.7040
2.00	54.0	1.2758	1.0234	-0.7059	-0.1842	-3.3584	146.0	-0.1573	-0.4298	0.1712	-0.0180	0.5507
2.00	56.0	1.0423	0.6384	-0.4722	-0.1238	-2.6305	148.0	0.6385	-0.0034	0.2168	-0.1473	-1.7456
2.00	58.0	0.8201	0.3265	-0.3256	-0.0637	-1.9340	150.0	0.6487	-0.0414	0.1776	-0.1762	-1.4677
2.00	60.0	0.7960	-0.0290	-0.1182	-0.0193	-1.6427	152.0	0.4593	-0.4416	0.5660	-0.1126	-1.0638
2.00	62.0	0.8080	-0.1755	-0.0321	0.0059	-1.5932	154.0	-0.3225	-0.1838	0.2765	0.1213	0.1653
2.00	64.0	0.7780	-0.1890	-0.0805	0.0219	-1.4947	156.0	-0.2012	-0.4496	0.4614	0.1051	0.0610
2.00	66.0	1.0557	-0.4911	0.0433	0.0124	-1.7825	158.0	0.2898	0.0620	0.0347	0.0335	-0.9634
2.00	68.0	1.0628	-0.4647	-0.0817	0.0505	-1.8313	160.0	-0.4010	0.5736	-0.1759	0.1330	-0.0534
2.00	70.0	1.5843	-0.9256	0.0778	0.0769	-2.6895	162.0	0.7521	1.4072	-0.8430	-0.0399	-2.4012
2.00	72.0	2.2295	-1.2118	0.1371	0.0223	-3.6802	164.0	1.5948	0.5320	0.3369	-0.1441	-4.0582
2.00	74.0	2.3085	-1.6154	0.3450	0.0616	-3.6144	166.0	1.3454	-0.5875	1.3763	-0.0236	-3.5016
2.00	76.0	1.6987	-1.4056	0.1596	0.1152	-2.4410	168.0	0.2626	-1.3108	2.2094	0.1342	-1.5921
2.00	78.0	1.3542	-1.0773	-0.1319	0.1242	-1.7925	170.0	-1.1724	-1.3735	2.1552	0.4824	0.7722
2.00	80.0	1.3350	-0.7676	-0.3618	0.0584	-1.7671	172.0	-3.7391	-1.6994	2.4966	0.7778	5.2571
2.00	82.0	1.3594	-0.4981	-0.5001	0.0042	-1.7959	174.0	-4.5025	-0.4372	1.3460	0.9769	6.1107
2.00	84.0	0.7346	-0.8266	-0.1079	0.0490	-0.3470	176.0	-5.9209	-0.7885	1.5447	1.1070	9.0669
2.00	86.0	0.4922	-0.9631	0.1775	0.0281	0.1966	178.0	-5.9655	-1.1945	1.7694	1.0744	9.5685
2.00	88.0	0.9365	-0.8449	0.2108	-0.0817	-0.7321	180.0	0.0	0.0	0.0	0.0	0.0
2.00	90.0	0.6268	-1.0069	0.3825	-0.0140	-0.1860						

Table B-5 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

XCPBFH=B5(0)+B5(1)*(TAPER RATIO)+B5(2)*(TAPER RATIO)**2+B5(3)*(ASPECT RATIO)+B5(4)*(SPAN RATIO)

		COEFFICIENTS FOR XCPBFH						COEFFICIENTS FOR XCPBFH				
MACH	ALPHA	B5(0)	B5(1)	B5(2)	B5(3)	B5(4)	ALPHA	B5(0)	B5(1)	B5(2)	B5(3)	B5(4)
2.50	0.0	0.0	0.0	0.0	0.0	0.0	92.0	-0.9944	-1.2406	0.8819	0.2317	2.6937
2.50	2.0	-1.7642	-1.3754	1.6676	0.4338	2.7534	94.0	-0.3703	-0.7914	0.3957	0.0736	1.4698
2.50	4.0	-0.6441	-0.5705	0.4655	0.0864	1.3791	96.0	0.0416	-0.2467	-0.1163	-0.0356	0.6565
2.50	6.0	-0.7758	-0.1700	0.0486	0.1392	1.3196	98.0	0.4190	-0.2741	-0.0141	-0.1403	0.0125
2.50	8.0	-2.4052	-0.5841	0.3441	0.5519	4.2733	100.0	1.0287	-0.6650	0.3359	-0.2530	-0.9160
2.50	10.0	-2.4721	-1.4076	0.8452	0.6046	4.8591	102.0	1.4652	-0.9673	0.3621	-0.3301	-1.5103
2.50	12.0	-0.6176	-1.0393	0.6174	0.1644	1.5405	104.0	0.3522	-0.3386	0.3173	-0.1312	-0.0950
2.50	14.0	-1.4162	-1.5719	1.0418	0.4145	2.9425	106.0	0.2641	-0.3059	0.3935	-0.1103	-0.0657
2.50	16.0	0.1475	-1.4259	0.9831	0.0877	0.1494	108.0	-0.0186	-0.0603	0.0087	0.4437	-0.2533
2.50	18.0	0.4833	-1.9699	1.3734	0.1039	-0.3518	110.0	0.3236	-0.0600	-0.4420	0.3180	0.1270
2.50	20.0	0.3566	-1.8268	1.3000	0.0634	-0.1991	112.0	0.4247	-0.0506	-0.4407	0.3140	-0.1601
2.50	22.0	1.7217	-2.3827	1.8624	-0.2883	-2.4493	114.0	0.4536	-0.0400	-0.4822	0.1656	-0.1049
2.50	24.0	1.6857	-3.0025	2.6570	-0.4928	2.1304	116.0	0.5827	-0.1743	0.1030	-0.1868	-0.6269
2.50	26.0	2.3709	-3.7233	3.3334	-0.6187	[illegible].2779	118.0	0.5268	-0.0432	0.0307	-0.1842	-0.5560
2.50	28.0	4.1335	-5.0805	4.6104	-0.9918	-6.1279	120.0	0.4578	0.1913	-0.2134	-0.1733	-0.4063
2.50	30.0	3.5710	-4.1790	3.6696	-0.8463	-5.2318	122.0	0.2561	0.1643	-0.2058	-0.1320	-0.0538
2.50	32.0	2.7161	-3.4265	2.9809	-0.6115	-4.0313	124.0	0.3542	-0.0072	-0.1145	-0.1418	-0.1627
2.50	34.0	3.2582	-3.4583	2.9564	-0.6391	-5.2861	126.0	0.5649	-0.2812	0.0863	-0.1701	-0.4745
2.50	36.0	3.4397	-3.3958	2.9236	-0.7117	-5.5348	128.0	0.5130	-0.3391	0.1449	-0.1564	-0.4680
2.50	38.0	2.4393	-2.6193	2.1889	-0.4696	-3.9731	130.0	0.4383	-0.3683	0.1803	-0.1451	-0.4011
2.50	40.0	1.5993	-2.4138	2.0347	-0.2321	-2.6815	132.0	0.3902	-0.2754	0.1201	-0.1321	-0.4507
2.50	42.0	0.9351	-2.2220	1.8357	-0.0726	-1.3998	134.0	0.3243	-0.2369	0.1120	-0.1215	-0.4252
2.50	44.0	-0.1552	-1.9437	1.5736	0.1383	0.5864	136.0	0.3244	-0.2194	0.1201	-0.1186	-0.5048
2.50	46.0	-0.2700	-1.9085	1.5955	0.1635	0.5966	138.0	0.2820	-0.2655	0.2010	-0.1038	-0.5051
2.50	48.0	-1.5006	-1.3242	1.1009	0.3532	2.6692	140.0	0.3124	-0.2083	0.1701	-0.1026	-0.6405
2.50	50.0	-1.1893	-1.0610	0.8480	0.3109	2.0547	142.0	0.2953	-0.1360	0.1265	-0.0902	-0.5984
2.50	52.0	-0.0136	-0.5132	0.4584	0.0140	-0.1100	144.0	0.4235	-0.1177	0.1596	-0.1122	-1.0012
2.50	54.0	-0.1799	-0.8050	0.6395	0.0888	0.3244	146.0	0.5856	-0.3292	0.3049	-0.1381	-1.1165
2.50	56.0	-0.3426	-0.9880	0.7302	0.1410	0.7850	148.0	2.5526	-0.3909	0.3027	-0.5778	-4.2400
2.50	58.0	-0.1318	-0.7672	0.4945	0.1261	0.3495	150.0	2.5923	0.3793	-0.1721	-0.6617	-4.4461
2.50	60.0	0.4211	0.1651	-0.2252	0.0145	-1.1053	152.0	2.4595	0.7222	-0.5164	-0.6303	-4.4357
2.50	62.0	0.2951	0.1077	-0.2408	0.0179	-0.6638	154.0	-0.9125	2.2051	-1.6534	0.0831	0.7532
2.50	64.0	0.1449	0.4039	-0.5769	0.0282	-0.2823	156.0	-0.9950	2.2028	-1.4648	-0.0060	0.9081
2.50	66.0	0.1161	0.0894	-0.5956	0.1511	0.0224	158.0	-3.1353	1.5713	-1.0512	0.5178	4.7533
2.50	68.0	-0.2462	-0.7188	-0.1577	0.2820	1.2312	160.0	-1.7830	1.2151	-0.9437	0.0884	2.9305
2.50	70.0	0.4035	-1.9475	0.6771	0.2568	0.5953	162.0	-0.3829	1.5006	-1.1222	-0.3289	0.5850
2.50	72.0	0.4785	-2.9919	1.3739	0.3057	0.8848	164.0	3.3700	0.4557	-0.7067	-1.2507	-4.9190
2.50	74.0	1.4258	-4.5303	2.7915	0.1733	-0.7183	166.0	5.6915	-1.4350	0.9139	-1.7956	-8.2315
2.50	76.0	2.1005	-4.5136	2.7279	0.0290	-1.7691	168.0	3.2345	-0.6922	0.2907	-1.1590	-4.3725
2.50	78.0	2.3014	-4.6059	2.6924	-0.0300	-1.7788	170.0	1.2604	-0.3292	0.1183	-0.6668	-1.2670
2.50	80.0	2.9675	-4.5205	2.5232	-0.1798	-2.8644	172.0	0.4456	0.3641	-0.5375	-0.4884	0.1115
2.50	82.0	1.9495	-4.7211	2.7533	-0.0587	-0.7309	174.0	0.2758	0.2152	-0.3634	-0.4348	0.3746
2.50	84.0	1.1624	-4.7085	3.1339	-0.0001	0.4998	176.0	0.5236	-0.7019	0.6145	-0.3766	-0.2898
2.50	86.0	0.7089	-4.2216	2.9071	0.0393	1.0091	178.0	0.7983	-1.3812	1.1986	-0.3502	-0.8376
2.50	88.0	-0.3272	-2.2127	1.1654	0.1384	2.5660	180.0	0.0	0.0	0.0	0.0	0.0
2.50	90.0	-0.0286	-1.4211	0.7617	0.1004	1.2125						

Table B-5 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

XCPBFH=B5(0)+B5(1)*(TAPER RATIO)+B5(2)*(TAPER RATIO)**2+B5(3)*(ASPECT RATIO)+B5(4)*(SPAN RATIO)

		COEFFICIENTS FOR XCPBFH						COEFFICIENTS FOR XCPBFH				
MACH	ALPHA	B5(0)	B5(1)	B5(2)	B5(3)	B5(4)	ALPHA	B5(0)	B5(1)	B5(2)	B5(3)	B5(4)
3.00	0.0	0.0	0.0	0.0	0.0	0.0	92.0	-0.8281	-1.3323	0.7114	0.2138	2.5715
3.00	2.0	-1.2415	-0.7097	2.0046	0.4928	0.7487	94.0	-0.4573	-0.9165	0.3607	0.0875	1.7609
3.00	4.0	-0.3250	-0.3491	1.0935	0.2401	-0.4071	96.0	-0.0194	-0.4833	0.0253	-0.0472	0.9309
3.00	6.0	-0.3489	-0.0467	0.4703	0.1208	0.1123	98.0	0.2719	-0.4134	0.0418	-0.1256	0.3889
3.00	8.0	-0.0238	0.1073	-0.0452	-0.0232	-0.0648	100.0	0.9574	-0.7169	0.3101	-0.2527	-0.6747
3.00	10.0	-0.1574	0.5757	-0.8872	-0.1416	0.5515	102.0	1.5690	-1.0030	0.5244	-0.3706	-1.5416
3.00	12.0	-0.1120	0.4882	-0.5920	-0.0910	0.1913	104.0	2.0355	-1.3914	0.8294	-0.4316	-2.1970
3.00	14.0	-0.2067	0.7211	-1.0106	-0.1529	0.5614	106.0	2.2756	-1.4847	0.9376	-0.4571	-2.6384
3.00	16.0	-0.0468	0.2910	-0.1667	-0.0511	-0.1868	108.0	2.1081	-1.3367	0.8480	-0.4436	-2.4460
3.00	18.0	0.1054	0.2166	-0.0879	-0.0999	-0.4124	110.0	1.5919	-1.0119	0.6330	-0.3658	-1.7252
3.00	20.0	0.7683	0.4659	-0.2657	-0.2707	-1.6425	112.0	1.0753	-0.6676	0.4104	-0.2846	-1.0630
3.00	22.0	1.5800	1.1285	-0.7557	-0.4722	-3.4163	114.0	0.7027	-0.3530	0.1948	-0.2186	-0.6389
3.00	24.0	2.0171	1.2594	-0.8394	-0.6080	-4.1454	116.0	0.6342	-0.1605	0.0976	-0.2188	-0.6254
3.00	26.0	1.8018	1.3053	-0.8494	-0.5939	-3.7640	118.0	0.4515	-0.0124	-0.0032	-0.1915	-0.3545
3.00	28.0	2.438[illegible]	1.7154	-1.1192	-0.7938	-5.0066	120.0	0.3966	0.2330	-0.2714	-0.1871	-0.2648
3.00	30.0	2.5095	1.9290	-1.2559	-0.817[illegible]	-5.2620	122.0	0.2504	0.1506	-0.2398	-0.1561	0.0281
3.00	32.0	3.6045	3.3013	-2.1732	-1.0067	-8.3071	124.0	0.3759	-0.0560	-0.0980	-0.1670	-0.1534
3.00	34.0	3.9178	4.0266	-2.6514	-1.0471	-9.5015	126.0	0.5432	-0.2817	0.0819	-0.1916	-0.4264
3.00	36.0	3.9997	4.3664	-2.8486	-1.0133	-10.1076	128.0	0.4651	-0.3308	0.1340	-0.1724	-0.3878
3.00	38.0	3.6553	4.1010	-2.6413	-0.9404	-9.3557	130.0	0.3633	-0.3401	0.1565	-0.1554	-0.2885
3.00	40.0	3.6750	4.2034	-2.6868	-0.9117	-9.5811	132.0	0.2772	-0.2998	0.1402	-0.1382	-0.2458
3.00	42.0	3.2921	3.7949	-2.4179	-0.7809	-8.7129	134.0	0.2179	-0.2603	0.1232	-0.1264	-0.2292
3.00	44.0	1.8433	2.0583	-1.2480	-0.4596	-4.9794	136.0	0.2208	-0.1482	0.0478	-0.1341	-0.3302
3.00	46.0	1.1347	0.8765	-0.4371	-0.3270	-2.9073	138.0	0.2184	-0.1512	0.0859	-0.1286	-0.4048
3.00	48.0	0.1988	-0.0500	0.1929	-0.1110	-0.6685	140.0	0.2559	-0.1009	0.0514	-0.1279	-0.5340
3.00	50.0	-0.1834	-0.3623	0.3727	-0.0023	0.1998	142.0	0.2453	-0.0761	0.0223	-0.1114	-0.5613
3.00	52.0	0.5628	0.4567	-0.2216	-0.0904	-1.8359	144.0	0.4169	-0.1453	0.0718	-0.1240	-0.8925
3.00	54.0	0.4077	0.0453	0.0378	-0.0266	-1.3409	146.0	0.3550	-0.1587	0.2137	-0.1247	-0.8175
3.00	56.0	0.7054	0.2501	-0.1101	-0.0586	-2.0749	148.0	0.3245	0.0047	0.2342	-0.1339	-0.9047
3.00	58.0	0.5040	-0.7060	0.0999	-0.0089	-1.4234	150.0	-0.3246	-0.3076	0.6725	-0.0715	0.5071
3.00	60.0	0.4848	-0.2860	0.1694	0.0149	-1.2205	152.0	-0.2900	-0.6665	0.8862	-0.1249	0.7427
3.00	62.0	0.5659	-0.4027	0.1943	0.0147	-1.2469	154.0	-0.5007	-1.4830	1.3664	-0.0885	1.6924
3.00	64.0	0.4983	-0.3935	0.0468	0.0548	-1.0625	156.0	0.1434	-2.2085	2.1360	-0.1880	0.4151
3.00	66.0	1.0138	-0.9299	0.4570	0.0142	-1.9577	158.0	0.0674	-2.1381	2.0653	-0.1876	0.5543
3.00	68.0	1.7337	-1.7608	1.0457	-0.0080	-3.1110	160.0	0.6057	-2.7208	2.6645	-0.2766	-0.4772
3.00	70.0	1.9712	-2.3890	1.4174	0.0150	-3.2707	162.0	0.4268	-2.6159	2.5991	-0.2388	-0.2143
3.00	72.0	1.9239	-4.0733	2.5955	0.1282	-2.5367	164.0	0.1648	-2.9421	3.1674	-0.0874	-0.0565
3.00	74.0	1.8651	-4.4714	2.8088	0.1199	-1.9957	166.0	-0.3267	-2.9077	3.3360	0.1176	0.2897
3.00	76.0	2.0424	-5.2505	3.3059	0.0846	-1.6428	168.0	0.1958	-3.0210	3.6713	0.1302	-0.9147
3.00	78.0	2.1120	-5.6394	3.4214	0.0787	-1.2265	170.0	-0.4681	-2.2841	2.9941	0.1840	0.4177
3.00	80.0	1.8149	-5.9875	3.8159	0.0645	-0.2609	172.0	-0.0836	-1.9911	2.5177	0.0681	-0.0896
3.00	82.0	1.0213	-5.6687	3.5811	0.1294	1.3716	174.0	-0.2263	-1.6922	1.8600	0.0199	0.4638
3.00	84.0	-0.1142	-6.0415	4.0175	0.2942	3.5529	176.0	0.0765	-2.5788	2.2227	-0.0979	0.9111
3.00	86.0	-0.8211	-5.4458	3.5937	0.3424	4.7254	178.0	-0.0714	-1.5912	1.4532	-0.0461	0.4678
3.00	88.0	0.4213	-2.8139	1.8248	0.0690	0.7664	180.0	0.0	0.0	0.0	0.0	0.0
3.00	90.0	-0.3634	-1.9819	1.2735	0.1428	1.9102						

APPENDIX C

FIN ALONE

REGRESSION COEFFICIENTS

Preceding Page Blank - NO FILM

Table C-1

Regression Coefficients for $C_{N_{FA}}$

REGRESSION COEFFICIENTS FOR EQUATION

CNFA =B6(0)+B6(1)*(TAPER RATIO)+B6(2)*(TAPER RATIO)**2+B6(3)*(ASPECT RATIO)

COEFFICIENTS FOR CNFA

MACH	ALPHA	B6(0)	B6(1)	B6(2)	B6(3)
0.60	0.0	0.0	0.0	0.0	0.0
0.60	2.0	0.0014	0.0233	-0.0379	0.0148
0.60	4.0	0.0044	0.0549	-0.0596	0.0562
0.60	6.0	0.0222	0.1082	-0.1080	0.0934
0.60	8.0	0.0515	0.1624	-0.1596	0.1268
0.60	10.0	0.0894	0.1933	-0.1916	0.1492
0.60	12.0	0.1421	0.1969	-0.1965	0.1685
0.60	14.0	0.2012	0.2269	-0.2132	0.1801
0.60	16.0	0.2745	0.2248	-0.2199	0.1863
0.60	18.0	0.3702	0.2659	-0.2725	0.1733
0.60	20.0	0.5217	0.2539	-0.3137	0.1101
0.60	22.0	0.6421	0.2056	-0.2857	0.0682
0.60	24.0	0.7799	0.1400	-0.2910	0.0279
0.60	26.0	0.8838	0.1792	-0.3375	-0.0136
0.60	28.0	0.9972	0.1053	-0.2098	-0.0465
0.60	30.0	1.0835	-0.1054	-0.0785	-0.0744
0.60	32.0	1.1657	-0.1042	-0.0740	-0.1128
0.60	34.0	1.1741	-0.0627	-0.0502	-0.1339
0.60	36.0	1.1563	0.0087	-0.0631	-0.1380
0.60	38.0	1.1403	0.0241	-0.0263	-0.1533
0.60	40.0	1.0621	0.0601	-0.0968	-0.0954
0.60	42.0	0.9899	0.0225	-0.0506	-0.0447
0.60	44.0	0.9714	0.0018	-0.0231	-0.0210
0.60	46.0	0.9686	-0.0357	0.0140	-0.0179
0.60	48.0	1.0031	-0.0435	0.0258	-0.0147
0.60	50.0	1.0113	-0.0529	0.0409	-0.0092
0.60	52.0	1.0136	-0.0392	0.0350	0.0096
0.60	54.0	0.9808	-0.0255	0.0343	0.0161
0.60	56.0	0.9947	0.0016	0.0026	0.0173
0.60	58.0	0.9677	0.0475	-0.0213	0.0157
0.60	60.0	0.9954	0.0415	-0.0192	0.0144
0.60	62.0	1.0348	0.0239	-0.0203	0.0074
0.60	64.0	1.0207	0.0028	-0.0008	0.0075
0.60	66.0	1.0218	-0.0287	0.0237	0.0068
0.60	68.0	1.0203	-0.0122	0.0182	0.0089
0.60	70.0	1.0102	-0.0249	0.0414	0.0168
0.60	72.0	0.9991	0.0141	0.0065	0.0252
0.60	74.0	1.0005	-0.0139	0.0403	0.0285
0.60	76.0	1.0123	-0.0210	0.0419	0.0254
0.60	78.0	1.0142	-0.0119	0.0302	0.0271
0.60	80.0	1.0124	-0.0013	0.0181	0.0316
0.60	82.0	1.0172	0.0137	0.0126	0.0298
0.60	84.0	1.0114	-0.0165	0.0011	0.0326
0.60	86.0	1.0063	-0.0276	0.0001	0.0319
0.60	88.0	0.9841	0.0228	0.0210	0.0303
0.60	90.0	0.9696	0.0266	0.0232	0.0435

COEFFICIENTS FOR CNFA

ALPHA	B6(0)	B6(1)	B6(2)	B6(3)
92.0	0.9564	0.0406	0.0248	0.0464
94.0	0.9515	0.0254	0.0477	0.0430
96.0	0.9446	0.0244	0.0559	0.0494
98.0	0.9385	0.0667	0.0155	0.0460
100.0	0.9266	0.0531	0.0361	0.0534
102.0	0.9337	0.0484	0.0377	0.0500
104.0	0.9345	0.0849	0.0032	0.0479
106.0	0.9370	0.0935	0.0012	0.0409
108.0	0.9395	0.1291	-0.0435	0.0414
110.0	0.9332	0.1809	-0.0879	0.0397
112.0	0.9373	0.1603	-0.0709	0.0379
114.0	0.9324	0.1314	-0.0443	0.0361
116.0	0.9108	0.1217	-0.0234	0.0443
118.0	0.8989	0.1493	-0.0974	0.0481
120.0	0.8945	0.1095	-0.0220	0.0438
122.0	0.8824	0.1149	-0.0226	0.0464
124.0	0.8754	0.1164	-0.0230	0.0447
126.0	0.8797	0.0737	0.0184	0.0372
128.0	0.8777	0.0742	0.0636	0.0332
130.0	0.8875	0.0629	0.0071	0.0226
132.0	0.9096	0.0717	-0.0181	0.0015
134.0	0.9194	0.0835	-0.0392	-0.0118
136.0	0.9337	0.1040	-0.0736	-0.0302
138.0	0.9428	0.1502	-0.1239	-0.0468
140.0	0.9775	0.1347	-0.0872	-0.0855
142.0	1.0402	0.1798	-0.0722	-0.1531
144.0	1.0376	0.1855	-0.0875	-0.1679
146.0	1.0061	0.1448	-0.0565	-0.1596
148.0	0.9630	0.1735	-0.0887	-0.1497
150.0	0.9042	0.1954	-0.1143	-0.1359
152.0	0.8360	0.2499	-0.1545	-0.1132
154.0	0.7479	0.2608	-0.1559	-0.0968
156.0	0.6724	0.2383	-0.1395	-0.0736
158.0	0.5829	0.2586	-0.1584	-0.0328
160.0	0.4905	0.2838	-0.1498	0.0138
162.0	0.3667	0.3178	-0.1728	0.0863
164.0	0.2577	0.2721	-0.1339	0.1420
166.0	0.1998	0.2013	-0.0949	0.1493
168.0	0.1472	0.1989	-0.1355	0.1461
170.0	0.1088	0.1325	-0.0520	0.1159
172.0	0.0793	0.0817	-0.0302	0.0908
174.0	0.0524	0.0587	-0.0206	0.0731
176.0	0.0237	0.0428	-0.0173	0.0504
178.0	0.0138	-0.0109	0.0173	0.0299
180.0	0.0	0.0	0.0	0.0

Table C-1 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

CNFA =B6(0)+B6(1)*(TAPER RATIO)+B6(2)*(TAPER RATIO)**2+B6(3)*(ASPECT RATIO)

		COEFFICIENTS FOR CNFA					COEFFICIENTS FOR CNFA			
MACH	ALPHA	B6(0)	B6(1)	B6(2)	B6(3)	ALPHA	B6(0)	B6(1)	B6(2)	B6(3)
0.80	0.0	0.0	0.0	0.0	0.0	92.0	0.9610	0.0914	-0.0037	0.0669
0.80	2.0	0.0048	0.0116	-0.0299	0.0171	94.0	0.9517	0.0947	0.0008	0.0571
0.80	4.0	0.0123	0.0550	-0.0654	0.0534	96.0	0.9470	0.0986	0.0036	0.0680
0.80	6.0	0.0268	0.1955	-0.1088	0.0963	98.0	0.9366	0.1033	0.0108	0.0719
0.80	8.0	0.0527	0.1849	-0.1813	0.1313	100.0	0.9370	0.1125	0.0023	0.0713
0.80	10.0	0.0963	0.2226	-0.2207	0.1562	102.0	0.9330	0.1249	-0.0099	0.0750
0.80	12.0	0.1487	0.1990	-0.1951	0.1805	104.0	0.9372	0.1477	-0.0325	0.0785
0.80	14.0	0.2143	0.2192	-0.2190	0.1931	106.0	0.9391	0.1661	-0.0481	0.0694
0.80	16.0	0.2921	0.2353	-0.2368	0.1906	108.0	0.9474	0.1686	-0.0476	0.0619
0.80	18.0	0.3842	0.2175	-0.2211	0.1818	110.0	0.9501	0.1744	-0.0599	0.0593
0.80	20.0	0.5224	0.2375	-0.2857	0.1348	112.0	0.9542	0.1840	-0.0693	0.0560
0.80	22.0	0.6465	0.2333	-0.3086	0.0962	114.0	0.9611	0.1465	-0.0473	0.0415
0.80	24.0	0.7589	0.2484	-0.3393	0.0437	116.0	0.9555	0.1292	-0.0320	0.0405
0.80	26.0	0.8587	0.0960	-0.2807	0.0163	118.0	0.9013	0.1464	-0.0259	0.0601
0.80	28.0	0.9604	-0.0543	-0.0642	-0.0241	120.0	0.8988	0.1391	-0.0209	0.0604
0.80	30.0	1.0529	-0.0777	-0.0393	-0.0618	122.0	0.8911	0.1538	-0.0376	0.0600
0.80	32.0	1.1171	-0.0785	-0.0316	-0.0895	124.0	0.8838	0.1565	-0.0307	0.0586
0.80	34.0	1.1158	-0.1002	0.0239	-0.0903	126.0	0.8781	0.1539	-0.0486	0.0572
0.80	36.0	0.9981	0.0420	-0.1381	-0.0205	128.0	0.8682	0.1656	-0.0586	0.0546
0.80	38.0	0.9723	-0.0189	-0.0530	-0.0019	130.0	0.8618	0.1710	-0.0706	0.0536
0.80	40.0	0.9147	0.0511	-0.0667	0.0188	132.0	0.8636	0.1532	-0.0504	0.0466
0.80	42.0	0.9109	0.0855	-0.0786	0.0261	134.0	0.8625	0.1320	-0.0503	0.0399
0.80	44.0	0.9328	0.0334	-0.0284	0.0288	136.0	0.8605	0.1436	-0.0792	0.0287
0.80	46.0	0.9456	0.0275	-0.0206	0.0329	138.0	0.8603	0.1568	-0.1014	0.1189
0.80	48.0	0.9495	0.0469	-0.0172	0.0354	140.0	0.8760	0.1196	-0.0666	0.1050
0.80	50.0	0.9591	0.0699	-0.0338	0.0378	142.0	0.8774	0.0811	-0.0281	-0.0058
0.80	52.0	0.9784	0.0693	-0.0248	0.0355	144.0	0.8654	0.0733	-0.0209	-0.0140
0.80	54.0	0.9873	0.0789	-0.0313	0.0293	146.0	0.8922	-0.0445	0.1572	-0.0561
0.80	56.0	1.0115	0.0359	-0.0221	0.0158	148.0	0.8934	0.1719	-0.0547	-0.0350
0.80	58.0	1.0220	0.0489	-0.0192	0.0077	150.0	0.8654	0.2157	-0.0951	-0.0125
0.80	60.0	1.0358	0.0291	-0.0093	0.0063	152.0	0.8019	0.2580	-0.1285	-0.0134
0.80	62.0	1.0368	0.0249	-0.0074	0.0077	154.0	0.7251	0.2905	-0.1519	-0.0450
0.80	64.0	1.0463	0.0389	-0.0151	0.0124	156.0	0.6469	0.2873	-0.1414	-0.0480
0.80	66.0	1.0342	0.0074	0.0177	0.0148	158.0	0.5655	0.3062	-0.1502	-0.0133
0.80	68.0	1.0286	0.0021	0.0245	0.0205	160.0	0.4863	0.3491	-0.1844	0.0197
0.80	70.0	1.0218	-0.0036	0.0380	0.0286	162.0	0.3657	0.3687	-0.2027	0.0849
0.80	72.0	1.0198	-0.0129	0.0519	0.0345	164.0	0.2679	0.3173	-0.1646	0.1311
0.80	74.0	1.0188	0.0063	0.0329	0.0389	166.0	0.2068	0.2420	-0.1223	0.1482
0.80	76.0	1.0180	0.0347	0.0164	0.0395	168.0	0.1472	0.2076	-0.1083	0.1517
0.80	78.0	1.0228	0.0393	0.0137	0.0441	170.0	0.0963	0.1641	-0.0791	0.1443
0.80	80.0	1.0313	0.0420	0.0159	0.0406	172.0	0.0639	0.1316	-0.0665	0.1207
0.80	82.0	1.0351	0.0574	0.0059	0.0412	174.0	0.0373	0.0783	-0.0281	0.0914
0.80	84.0	1.0287	0.0341	0.0397	0.0454	176.0	0.0190	0.0232	0.0074	0.0683
0.80	86.0	1.0156	0.0246	0.0315	0.0527	178.0	0.0138	-0.0115	0.0200	0.0231
0.80	88.0	1.0028	0.0363	0.0308	0.0516	180.0	0.0	0.0	0.0	0.0
0.80	90.0	0.9711	0.0837	-0.0057	0.0647					

Table C-1 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

CNFA =B6(0)+B6(1)*(TAPER RATIO)+B6(2)*(TAPER RATIO)**2+B6(3)*(ASPECT RATIO)

		COEFFICIENTS FOR CNFA					COEFFICIENTS FOR CNFA			
MACH	ALPHA	B6(0)	B6(1)	B6(2)	B6(3)	ALPHA	B6(0)	B6(1)	B6(2)	B6(3)
0.90	0.0	0.0	0.0	0.0	0.0	92.0	0.9880	0.0613	0.0340	0.0683
0.90	2.0	0.0061	-0.5341	0.0245	0.0194	94.0	0.9710	0.0626	0.0463	0.0753
0.90	4.0	0.0095	-0.0017	-0.0051	0.0636	96.0	0.9626	0.0730	0.0487	0.0746
0.90	6.0	0.0263	0.0502	-0.0464	0.1107	98.0	0.9573	0.0754	0.0531	0.0751
0.90	8.0	0.0476	0.1282	-0.1133	0.1504	100.0	0.9558	0.0632	0.0611	0.0824
0.90	10.0	0.0865	0.1712	-0.1595	0.1823	102.0	0.9565	0.0702	0.0592	0.0840
0.90	12.0	0.1580	0.1423	-0.1277	0.1982	104.0	0.9635	0.1125	0.0161	0.0795
0.90	14.0	0.2180	0.1541	-0.1480	0.2086	106.0	0.9672	0.1164	0.0083	0.0805
0.90	16.0	0.3019	0.1629	-0.1706	0.2056	108.0	0.9707	0.1275	-0.0015	0.0753
0.90	18.0	0.3987	0.1541	-0.1578	0.1968	110.0	0.9796	0.1269	-0.0063	0.0679
0.90	20.0	0.4981	0.1954	-0.2280	0.1697	112.0	0.9840	0.1182	0.0007	0.0652
0.90	22.0	0.6305	0.2122	-0.2716	0.1168	114.0	0.9829	0.0435	0.0541	0.0561
0.90	24.0	0.7306	0.1884	-0.2302	0.0735	116.0	0.9988	0.0228	0.0492	0.0361
0.90	26.0	0.3365	0.0900	-0.1441	0.0360	118.0	0.9389	0.0457	0.0515	0.0573
0.90	28.0	0.9284	0.0102	-0.0790	0.0319	120.0	0.9313	0.0547	0.0387	0.0564
0.90	30.0	0.9949	0.0050	-0.0602	-0.0326	122.0	0.9276	0.0523	0.0337	0.0554
0.90	32.0	1.0292	0.1096	-0.1594	-0.0555	124.0	0.9203	0.0445	0.0425	0.0566
0.90	34.0	0.9650	0.0013	-0.1019	0.0048	126.0	0.9059	0.0813	0.0060	0.0595
0.90	36.0	0.9554	-0.1218	0.0235	0.0232	128.0	0.9034	0.0724	0.0200	0.0526
0.90	38.0	0.9254	-0.0962	0.0422	0.0384	130.0	0.8900	0.0823	0.0085	0.0549
0.90	40.0	0.9116	-0.0392	0.0097	0.0504	132.0	0.8617	0.0821	0.0233	0.0682
0.90	42.0	0.9157	-0.0086	0.0002	0.0530	134.0	0.8370	0.0728	0.0325	0.0807
0.90	44.0	0.9332	0.0150	-0.0090	0.0493	136.0	0.8276	0.0644	0.0361	0.0782
0.90	46.0	0.9351	0.0030	0.0240	0.0587	138.0	0.8337	0.0603	0.0265	0.0629
0.90	48.0	0.9426	0.0307	0.0169	0.0577	140.0	0.8246	0.0730	-0.0038	0.0588
0.90	50.0	0.9691	0.0554	-0.0017	0.0466	142.0	0.8218	0.0810	-0.0138	0.0456
0.90	52.0	1.0032	0.0644	-0.0172	0.0322	144.0	0.8189	0.0305	0.0305	0.0351
0.90	54.0	1.0322	-0.0262	0.0510	0.0155	146.0	0.8117	0.0036	0.0590	0.0230
0.90	56.0	1.0551	-0.0680	0.0718	0.0096	148.0	0.8092	-0.0053	0.0720	0.0040
0.90	58.0	1.0525	0.0147	0.0047	0.0113	150.0	0.8230	0.1226	0.0166	-0.0474
0.90	60.0	1.0654	-0.0034	0.0151	0.0105	152.0	0.7800	0.2139	-0.0478	-0.0541
0.90	62.0	1.0639	-0.0130	0.0309	0.0142	154.0	0.7134	0.2469	-0.0699	-0.0401
0.90	64.0	1.0594	-0.0330	0.0509	0.0204	156.0	0.6356	0.2630	-0.0776	-0.0215
0.90	66.0	1.0488	-0.0280	0.0554	0.0249	158.0	0.5549	0.2543	-0.0638	0.0014
0.90	68.0	1.0473	-0.0353	0.0688	0.0287	160.0	0.4650	0.2773	-0.0828	0.0332
0.90	70.0	1.0446	-0.0368	0.0736	0.0361	162.0	0.3750	0.2983	-0.1143	0.0755
0.90	72.0	1.0418	-0.0240	0.0708	0.0421	164.0	0.2673	0.2716	-0.1033	0.1364
0.90	74.0	1.0455	-0.0146	0.0734	0.0465	166.0	0.2214	0.1893	-0.0638	0.1380
0.90	76.0	1.0477	0.0429	0.0238	0.0472	168.0	0.1656	0.1107	-0.0189	0.1479
0.90	78.0	1.0489	0.0344	0.0415	0.0572	170.0	0.0807	0.1101	-0.0262	0.1891
0.90	80.0	1.0548	0.0427	0.0319	0.0554	172.0	0.0438	0.0487	0.0108	0.1663
0.90	82.0	1.0621	0.0513	0.0202	0.0497	174.0	0.0214	-0.0035	0.0410	0.1306
0.90	84.0	1.0453	-0.0235	0.0956	0.0633	176.0	0.0031	-0.0402	0.0629	0.0901
0.90	86.0	1.0433	-0.0271	0.0905	0.0584	178.0	0.0010	-0.0778	0.0829	0.0437
0.90	88.0	1.0126	0.0453	0.0394	0.0635	180.0	0.0	0.0	0.0	0.0
0.90	90.0	0.9949	0.0339	0.0581	0.0706					

Table C-1 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

CNFA =B6(0)+B6(1)*(TAPER RATIO)+B6(2)*(TAPER RATIO)**2+B6(3)*(ASPECT RATIO)

		COEFFICIENTS FOR CNFA					COEFFICIENTS FOR CNFA			
MACH	ALPHA	B6(0)	B6(1)	B6(2)	B6(3)	ALPHA	B6(0)	B6(1)	B6(2)	B6(3)
1.00	0.0	0.0	0.0	0.0	0.0	92.0	1.1204	0.0727	0.0431	0.0633
1.00	2.0	-0.0014	0.0233	-0.0341	0.0356	94.0	1.1211	0.0851	0.0363	0.0505
1.00	4.0	-0.0018	0.0845	-0.0798	0.0851	96.0	1.1179	0.0841	0.0439	0.0594
1.00	6.0	0.0076	0.1440	-0.1161	0.1341	98.0	1.1214	0.1087	0.0261	0.0622
1.00	8.0	0.0319	0.2103	-0.1668	0.1770	100.0	1.1191	0.1157	0.0180	0.0656
1.00	10.0	0.0669	0.2944	-0.2391	0.2150	102.0	1.1166	0.1125	0.0176	0.0731
1.00	12.0	0.1071	0.3841	-0.3143	[illegible]	104.0	1.1124	0.1270	0.0059	0.0758
1.00	14.0	0.1640	0.4588	-0.3769	0.2755	106.0	1.1167	0.1339	-0.0051	0.0715
1.00	16.0	0.2299	0.5321	-0.4382	0.2934	108.0	1.1204	0.1224	0.0098	0.0641
1.00	18.0	0.2977	0.5977	-0.4817	0.3042	110.0	1.1237	0.0946	0.0192	0.0657
1.00	20.0	0.3956	0.5727	-0.4451	0.2915	112.0	1.1319	0.1344	-0.0176	0.0635
1.00	22.0	0.4904	0.5797	-0.4443	0.2829	114.0	1.1460	0.0560	0.0485	0.0508
1.00	24.0	0.5993	0.5858	-0.4680	0.2670	116.0	1.1662	0.0763	-0.0088	0.0420
1.00	26.0	0.6871	0.5323	-0.4221	0.2605	118.0	1.1550	0.0295	0.0460	0.0439
1.00	28.0	0.7968	0.4352	-0.3119	0.2283	120.0	1.1696	0.0380	0.0453	0.0350
1.00	30.0	0.8901	0.4111	-0.2966	0.1885	122.0	1.1626	0.0686	0.0049	0.0494
1.00	32.0	0.9850	0.2837	-0.2039	0.1486	124.0	1.1298	0.0601	0.0386	0.0743
1.00	34.0	1.0211	0.1027	-0.0430	0.1431	126.0	1.0908	0.1067	-0.0075	0.0989
1.00	36.0	0.9997	0.0610	0.0086	0.1515	128.0	1.0739	0.1582	-0.0608	0.1032
1.00	38.0	0.9674	0.1195	-0.0223	0.1614	130.0	1.0557	0.2036	-0.1119	0.1060
1.00	40.0	0.9658	0.1684	-0.0768	0.1640	132.0	1.0352	0.2161	-0.1282	0.1179
1.00	42.0	0.9813	0.1548	-0.0717	0.1630	134.0	1.0344	0.2159	-0.1353	0.1209
1.00	44.0	0.9936	0.1772	-0.0846	0.1493	136.0	1.0071	0.2571	-0.1685	0.1265
1.00	46.0	1.0012	0.2258	-0.1310	0.1403	138.0	0.9998	0.2022	-0.0963	0.1219
1.00	48.0	1.0254	0.1390	-0.0452	0.1332	140.0	0.9623	0.2726	-0.1507	0.1295
1.00	50.0	1.0461	0.1612	-0.0705	0.1198	142.0	0.9456	0.2766	-0.1177	0.1246
1.00	52.0	1.0788	0.1555	-0.0674	0.1057	144.0	0.9070	0.3706	-0.1614	0.1228
1.00	54.0	1.1144	0.0570	0.0372	0.0732	146.0	0.8879	0.4794	-0.2214	0.1075
1.00	56.0	1.1476	0.0286	0.0601	0.0602	148.0	0.8797	0.5332	-0.2451	0.0821
1.00	58.0	1.1345	0.1436	-0.0368	0.0543	150.0	0.8219	0.5503	-0.2402	0.0893
1.00	60.0	1.2083	0.1524	-0.1043	0.0035	152.0	0.7607	0.5604	-0.2278	0.0963
1.00	62.0	1.1944	0.1310	-0.0739	0.0177	154.0	0.6686	0.5670	-0.2177	0.1166
1.00	64.0	1.1922	0.1205	-0.0765	0.0212	156.0	0.5844	0.5621	-0.2312	0.1388
1.00	66.0	1.1882	0.0926	-0.0471	0.0268	158.0	0.5037	0.5408	-0.2542	0.1696
1.00	68.0	1.1804	0.0678	-0.0179	0.0302	160.0	0.4145	0.4873	-0.2170	0.2101
1.00	70.0	1.1742	0.0486	0.0107	0.0345	162.0	0.3193	0.4925	-0.2663	0.2481
1.00	72.0	1.1634	0.0925	-0.0261	0.0473	164.0	0.2512	0.4333	-0.2291	0.2432
1.00	74.0	1.1538	0.1007	-0.0256	0.0544	166.0	0.1852	0.3783	-0.1963	0.2349
1.00	76.0	1.1590	0.0821	0.0006	0.0655	168.0	0.1258	0.2948	-0.1380	0.2231
1.00	78.0	1.1569	0.0948	-0.0059	0.0682	170.0	0.0764	0.2132	-0.0868	0.2052
1.00	80.0	1.1628	0.1034	-0.0105	0.0617	172.0	0.0350	0.1396	-0.0380	0.1817
1.00	82.0	1.1707	0.0967	0.0087	0.0522	174.0	0.0135	0.0483	0.0223	0.1470
1.00	84.0	1.1886	0.0714	0.0051	0.0491	176.0	0.0019	-0.0210	0.0619	0.1044
1.00	86.0	1.1843	0.0388	0.0389	0.0544	178.0	0.0041	-0.0780	0.0915	0.0521
1.00	88.0	1.1527	0.0818	0.0212	0.0562	180.0	0.0	0.0	0.0	0.0
1.00	90.0	1.1228	0.1028	0.0040	0.0654					

Table C-1* (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

CNFA =B6(0)+B6(1)*(TAPER RATIO)+B6(2)*(TAPER RATIO)**2+B6(3)*(ASPECT RATIO)

		COEFFICIENTS FOR CNFA					COEFFICIENTS FOR CNFA			
MACH	ALPHA	B6(0)	B6(1)	B6(2)	B6(3)	ALPHA	B6(0)	B6(1)	B6(2)	B6(3)
1.15	0.0	0.0	0.0	0.0	0.0	92.0	1.3132	-0.0108	0.0758	0.0960
1.15	2.0	-0.0038	-0.0434	0.0332	0.0382	94.0	1.3181	-0.0510	0.1099	0.1029
1.15	4.0	-0.0157	0.0358	-0.0222	0.0873	96.0	1.3167	-0.0459	0.1125	0.1046
1.15	6.0	0.0110	0.0544	-0.0373	0.1290	98.0	1.3262	-0.0489	0.1007	0.1075
1.15	8.0	0.0211	0.1516	-0.1051	0.1694	100.0	1.3273	-0.0151	0.0855	0.1048
1.15	10.0	0.0688	0.1993	-0.1440	0.1988	102.0	1.3333	0.0125	0.0618	0.0985
1.15	12.0	0.1004	0.2955	-0.2140	0.2292	104.0	1.3266	0.0396	0.0414	0.1004
1.15	14.0	0.1521	0.3584	-0.2621	0.2516	106.0	1.3330	0.0281	0.0504	0.1029
1.15	16.0	0.2201	0.3953	-0.2916	0.2677	108.0	1.3177	0.0430	0.0499	0.1117
1.15	18.0	0.2785	0.4806	-0.3562	0.2790	110.0	1.3066	0.0674	0.0169	0.1107
1.15	20.0	0.3301	-0.0535	0.1858	0.3059	112.0	1.3120	0.0950	0.0128	0.1046
1.15	22.0	0.4346	0.5021	-0.3544	0.2791	114.0	1.3115	0.1203	-0.0185	0.1058
1.15	24.0	0.5209	0.4963	-0.3354	0.2793	116.0	1.3125	0.1215	-0.0170	0.1020
1.15	26.0	0.6175	0.5237	-0.3946	0.2565	118.0	1.3199	0.1053	-0.0072	0.0954
1.15	28.0	0.7028	0.5104	-0.3693	0.2399	120.0	1.3130	0.1158	-0.0216	0.0914
1.15	30.0	0.7806	0.4751	-0.3400	0.2306	122.0	1.3035	0.1285	-0.0379	0.0983
1.15	32.0	0.8633	0.4123	-0.2735	0.2128	124.0	1.2936	0.1491	-0.0605	0.0882
1.15	34.0	0.9508	0.3573	-0.2237	0.1921	126.0	1.2707	0.1818	-0.0867	0.0921
1.15	36.0	1.0366	0.3325	-0.2047	0.1606	128.0	1.2463	0.2147	-0.1051	0.0958
1.15	38.0	1.0762	0.2679	-0.1347	0.1516	130.0	1.2272	0.2320	-0.1180	0.0971
1.15	40.0	1.1196	0.2587	-0.1267	0.1384	132.0	1.2028	0.2782	-0.1238	0.0946
1.15	42.0	1.1414	0.2892	-0.1500	0.1319	134.0	1.1734	0.3112	-0.1451	0.0936
1.15	44.0	1.1528	0.2742	-0.1324	0.1352	136.0	1.1579	0.3537	-0.1717	0.0852
1.15	46.0	1.1757	0.2494	-0.1173	0.1336	138.0	1.1371	0.3936	-0.1850	0.0762
1.15	48.0	1.1797	0.2192	-0.0817	0.1350	140.0	1.1041	0.4396	-0.2019	0.0702
1.15	50.0	1.1904	0.1717	-0.0302	0.1326	142.0	1.0696	0.4749	-0.2186	0.0629
1.15	52.0	1.2163	0.1651	-0.0242	0.1197	144.0	1.0220	0.5058	-0.2331	0.0668
1.15	54.0	1.2216	0.1504	-0.0315	0.1235	146.0	0.9541	0.5265	-0.2336	0.0789
1.15	56.0	1.2499	0.1253	-0.0182	0.1051	148.0	0.8673	0.5260	-0.2342	0.1081
1.15	58.0	1.2635	0.1536	-0.0319	0.0985	150.0	0.7830	0.3501	-0.2544	0.1274
1.15	60.0	1.2708	0.1549	-0.0299	0.0951	152.0	0.7034	0.6068	-0.3116	0.1486
1.15	62.0	1.2918	0.1280	-0.011[illegible]	0.0896	154.0	0.6269	0.6252	-0.3551	0.1683
1.15	64.0	1.3094	0.0954	0.0183	0.0878	156.0	0.5692	0.6000	-0.3500	0.1771
1.15	66.0	1.3204	0.0801	0.0269	0.0899	158.0	0.4979	0.5800	-0.3400	0.2020
1.15	68.0	1.3279	0.0630	0.0409	0.0914	160.0	0.4100	0.5400	-0.3200	0.2124
1.15	70.0	1.3246	0.0619	0.0374	0.0995	162.0	0.3500	0.4900	-0.3000	0.2564
1.15	72.0	1.3119	0.0556	0.0414	0.1104	164.0	0.2800	0.4500	-0.2600	0.2454
1.15	74.0	1.3066	0.0563	0.0407	0.1128	166.0	0.1900	0.3800	-0.2200	0.2278
1.15	76.0	1.3064	0.0526	0.0387	0.1149	168.0	0.1500	0.3500	-0.1800	0.2115
1.15	78.0	1.3046	0.0545	0.0463	0.1121	170.0	0.1000	0.3000	-0.1400	0.1836
1.15	80.0	1.3251	0.0119	0.0782	0.1058	172.0	0.0500	0.2500	-0.1200	0.1554
1.15	82.0	1.3409	-0.0026	0.0907	0.0970	174.0	0.0300	0.1700	-0.0900	0.1144
1.15	84.0	1.3379	0.0249	0.0773	0.0797	176.0	0.0200	0.1000	-0.0509	0.0701
1.15	86.0	1.3336	0.0380	0.0428	0.0838	178.0	0.0100	0.0500	-0.0300	-0.0064
1.15	88.0	1.3216	0.0445	0.0383	0.0915	180.0	0.0	0.0	0.0	0.0
1.15	90.0	1.3194	-0.0111	0.0793	0.0946					

Table C-1 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

CNFA =B6(0)+B6(1)*(TAPER RATIO)+B6(2)*(TAPER RATIO)**2+B6(3)*(ASPECT RATIO)

		COEFFICIENTS FOR CNFA					COEFFICIENTS FOR CNFA			
MACH	ALPHA	B6(0)	B6(1)	B6(2)	B6(3)	ALPHA	B6(0)	B6(1)	B6(2)	B6(3)
1.30	0.0	0.0	0.0	0.0	0.0	92.0	1.4046	-0.0278	0.0970	0.0665
1.30	2.0	-0.0023	-0.0782	0.0696	0.0404	94.0	1.4003	-0.0270	0.0687	0.0776
1.30	4.0	0.0033	-0.0216	0.0274	0.0830	96.0	1.3980	-0.0193	0.0710	0.0874
1.30	6.0	0.0267	0.0367	-0.0166	0.1210	98.0	1.3870	-0.0015	0.0680	0.0958
1.30	8.0	0.0505	0.1051	-0.0712	0.1531	100.0	1.3671	-0.0248	0.1165	0.0882
1.30	10.0	0.0889	0.1778	-0.1293	0.1804	102.0	1.3854	-0.0277	0.0772	0.0748
1.30	12.0	0.1334	0.2430	-0.1741	0.2033	104.0	1.3868	0.0299	0.0235	0.0781
1.30	14.0	0.1838	0.3105	-0.2236	0.2220	106.0	1.3588	0.1375	-0.0529	0.0966
1.30	16.0	0.2421	0.3605	-0.2579	0.2353	108.0	1.3429	0.2579	-0.1309	0.0961
1.30	18.0	0.3051	0.4146	-0.2947	0.2429	110.0	1.3351	0.2479	-0.0916	0.0933
1.30	20.0	0.3721	0.4459	-0.3136	0.2494	112.0	1.3381	0.2461	-0.1003	0.0937
1.30	22.0	0.4404	0.4761	-0.3337	0.2548	114.0	1.3279	0.1736	-0.0553	0.1021
1.30	24.0	0.5014	0.5602	-0.4131	0.2664	116.0	1.3303	0.2102	-0.1000	0.0905
1.30	26.0	0.5809	0.5731	-0.4266	0.2565	118.0	1.2917	0.2676	-0.1398	0.1038
1.30	28.0	0.6604	0.5443	-0.3872	0.2459	120.0	1.2688	0.2573	-0.1154	0.1128
1.30	30.0	0.7483	0.5328	-0.3946	0.2268	122.0	1.2459	0.2633	-0.1310	0.1229
1.30	32.0	0.8296	0.4993	-0.3559	0.2105	124.0	1.2335	0.2826	-0.1456	0.1242
1.30	34.0	0.9027	0.4649	-0.3191	0.1969	126.0	1.2210	0.3052	-0.1511	0.1238
1.30	36.0	0.9720	0.3998	-0.2557	0.1842	128.0	1.2010	0.3406	-0.1680	0.1240
1.30	38.0	1.0324	0.4124	-0.2513	0.1573	130.0	1.1814	0.4051	-0.2185	0.1151
1.30	40.0	1.0716	0.3618	-0.1960	0.1482	132.0	1.1693	0.4343	-0.2367	0.1083
1.30	42.0	1.1159	0.3073	-0.1416	0.1289	134.0	1.1498	0.4400	-0.2305	0.0968
1.30	44.0	1.1592	0.2218	-0.0717	0.1169	136.0	1.1289	0.4438	-0.2192	0.0966
1.30	46.0	1.1725	0.1791	-0.0331	0.1225	138.0	1.1037	0.4853	-0.2381	0.0880
1.30	48.0	1.1823	0.2101	-0.0497	0.1258	140.0	1.0691	0.4603	-0.1942	0.0857
1.30	50.0	1.1942	0.2662	-0.1080	0.1304	142.0	1.0726	0.4755	-0.2127	0.0937
1.30	52.0	1.2126	0.3065	-0.1454	0.1199	144.0	0.9533	0.5303	-0.2408	0.1074
1.30	54.0	1.2595	0.1829	-0.0342	0.1135	146.0	0.9027	0.5583	-0.2792	0.1183
1.30	56.0	1.2767	0.0653	0.0353	0.1190	148.0	0.8546	0.5517	-0.2793	0.1283
1.30	58.0	1.2775	0.1679	-0.0319	0.1009	150.0	0.7923	0.5778	-0.3182	0.1360
1.30	60.0	1.2787	0.2217	-0.0811	0.0950	152.0	0.7249	0.5745	-0.3241	0.1423
1.30	62.0	1.2777	0.2176	-0.0640	0.0893	154.0	0.6415	0.4401	-0.2109	0.1845
1.30	64.0	1.2961	0.1656	-0.0253	0.0818	156.0	0.5677	0.4357	-0.2151	0.1910
1.30	66.0	1.3116	0.1200	0.0185	0.0852	158.0	0.4744	0.5184	-0.3060	0.2106
1.30	68.0	1.3332	0.0509	0.0663	0.0952	160.0	0.4077	0.4944	-0.2921	0.2078
1.30	70.0	1.3514	0.0222	0.0832	0.0842	162.0	0.3380	0.4611	-0.2691	0.2056
1.30	72.0	1.3815	-0.0363	0.1173	0.0611	164.0	0.2704	0.4222	-0.2450	0.2033
1.30	74.0	1.3879	-0.0450	0.1174	0.0550	166.0	0.2092	0.3494	-0.2298	0.1968
1.30	76.0	1.3897	0.0384	0.0342	0.0768	168.0	0.1571	0.3380	-0.1997	0.1832
1.30	78.0	1.3858	0.1960	-0.0768	0.0762	170.0	0.[illegible]07	0.2934	-0.1809	0.1652
1.30	80.0	1.3889	0.2693	-0.1377	0.0643	172.0	0.0714	0.2402	-0.1507	0.1429
1.30	82.0	1.3953	0.2432	-0.1139	0.0592	174.0	0.0396	0.1648	-0.1001	0.1162
1.30	84.0	1.4055	0.0822	-0.0069	0.0679	176.0	0.0181	0.1044	-0.0638	0.0847
1.30	86.0	1.4169	0.1298	-0.0704	0.0456	178.0	0.0110	0.0385	-0.0142	0.0467
1.30	88.0	1.4164	0.0935	-0.0218	0.0492	180.0	0.0	0.0	0.0	0.0
1.30	90.0	1.4101	0.0381	0.0296	0.0588					

Table C-1 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

CNFA =B6(0)+B6(1)*(TAPER RATIO)+B6(2)*(TAPER RATIO)**2+B6(3)*(ASPECT RATIO)

		COEFFICIENTS FOR CNFA					COEFFICIENTS FOR CNFA			
MACH	ALPHA	B6(0)	B6(1)	B6(2)	B6(3)	ALPHA	B6(0)	B6(1)	B6(2)	B6(3)
1.50	0.0	0.0	0.0	0.0	0.0	92.0	1.5990	0.1007	-0.0005	0.0002
1.50	2.0	0.0190	0.0050	-0.0086	0.0360	94.0	1.5962	0.1025	-0.0018	0.0008
1.50	4.0	0.0497	0.0313	-0.0241	0.0525	96.0	1.5919	0.1054	-0.0038	0.0017
1.50	6.0	0.0883	0.0761	-0.0581	0.0648	98.0	1.5861	0.1091	-0.0064	0.0029
1.50	8.0	0.1234	0.1102	-0.0795	0.0833	100.0	1.5791	0.1134	-0.0094	0.0044
1.50	10.0	0.1618	0.1575	-0.1100	0.0994	102.0	1.5700	0.1184	-0.0129	0.0063
1.50	12.0	0.2022	0.2027	-0.1418	0.1174	104.0	1.5576	0.1249	-0.0175	0.0087
1.50	14.0	0.2492	0.2329	-0.1545	0.1286	106.0	1.5413	0.1344	-0.0242	0.0119
1.50	16.0	0.2977	0.2724	-0.1793	0.1330	108.0	1.5208	0.1480	-0.0338	0.0164
1.50	18.0	0.3477	0.3096	-0.2046	0.1376	110.0	1.4955	0.1672	-0.0471	0.0222
1.50	20.0	0.3997	0.3459	-0.2299	0.1465	112.0	1.4660	0.1930	-0.0657	0.0290
1.50	22.0	0.4536	0.3742	-0.2525	0.1560	114.0	1.4331	0.2276	-0.0896	0.0360
1.50	24.0	0.5108	0.3956	-0.2648	0.1600	116.0	1.3974	0.2669	-0.1175	0.0432
1.50	26.0	0.5624	0.4222	-0.2750	0.1644	118.0	1.3592	0.3100	-0.1481	0.0507
1.50	28.0	0.6256	0.4145	-0.2715	0.1681	120.0	1.3190	0.3553	-0.1803	0.0583
1.50	30.0	0.6852	0.4105	-0.2667	0.1682	122.0	1.2772	0.4009	-0.2128	0.0662
1.50	32.0	0.7395	0.4156	-0.2539	0.1699	124.0	1.2343	0.4452	-0.2444	0.0744
1.50	34.0	0.7957	0.3988	-0.2283	0.1679	126.0	1.1907	0.4865	-0.2738	0.0828
1.50	36.0	0.8333	0.3993	-0.2191	0.1717	128.0	1.1468	0.5231	-0.2997	0.0914
1.50	38.0	0.8832	0.3723	-0.1874	0.1687	130.0	1.1032	0.5533	-0.3210	0.1002
1.50	40.0	0.9244	0.3872	-0.1925	0.1601	132.0	1.0602	0.5753	-0.3364	0.1093
1.50	42.0	0.9756	0.3781	-0.1849	0.1492	134.0	1.0183	0.5875	-0.3447	0.1186
1.50	44.0	1.0336	0.3534	-0.1682	0.1360	136.0	0.9779	0.5882	-0.3446	0.1282
1.50	46.0	1.0937	0.3215	-0.1474	0.1217	138.0	0.9395	0.5757	-0.3349	0.1380
1.50	48.0	1.1512	0.2907	-0.1276	0.1075	140.0	0.9035	0.5481	-0.3143	0.1481
1.50	50.0	1.2014	0.2695	-0.1136	0.0945	142.0	0.8871	0.4638	-0.2593	0.1519
1.50	52.0	1.2432	0.2552	-0.1039	0.0836	144.0	0.8512	0.4339	-0.2504	0.1539
1.50	54.0	1.2797	0.2401	-0.0938	0.0749	146.0	0.8156	0.4168	-0.2517	0.1499
1.50	56.0	1.3122	0.2250	-0.0837	0.0675	148.0	0.7620	0.4043	-0.2413	0.1504
1.50	58.0	1.3419	0.2106	-0.0741	0.0609	150.0	0.7044	0.3789	-0.2260	0.1570
1.50	60.0	1.3703	0.1977	-0.0655	0.0544	152.0	0.6404	0.4010	-0.2529	0.1570
1.50	62.0	1.3981	0.1858	-0.0575	0.0478	154.0	0.5778	0.3734	-0.2319	0.1599
1.50	64.0	1.4252	0.1743	-0.0498	0.0414	156.0	0.5192	0.3740	-0.2376	0.1545
1.50	66.0	1.4512	0.1632	-0.0424	0.0353	158.0	0.4532	0.3845	-0.2533	0.1541
1.50	68.0	1.4758	0.1528	-0.0354	0.0294	160.0	0.3920	0.3592	-0.2345	0.1521
1.50	70.0	1.4987	0.1431	-0.0289	0.0240	162.0	0.3325	0.3183	-0.1948	0.1455
1.50	72.0	1.5195	0.1343	-0.0230	0.0191	164.0	0.2745	0.3059	-0.1905	0.1375
1.50	74.0	1.5383	0.1264	-0.0177	0.0146	166.0	0.2187	0.2574	-0.1557	0.1267
1.50	76.0	1.5547	0.1195	-0.0131	0.0107	168.0	0.1680	0.2252	-0.1369	0.1123
1.50	78.0	1.5668	0.1136	-0.0091	0.0074	170.0	0.1190	0.1916	-0.1130	0.0957
1.50	80.0	1.5797	0.1086	-0.0058	0.0048	172.0	0.0793	0.1519	-0.0886	0.0780
1.50	82.0	1.5881	0.1049	-0.0032	0.0029	174.0	0.0515	0.1085	-0.0617	0.0548
1.50	84.0	1.5939	0.1024	-0.0016	0.0015	176.0	0.0244	0.0687	-0.0374	0.0347
1.50	86.0	1.5975	0.1009	-0.0006	0.0006	178.0	0.0112	0.0080	0.0056	0.0110
1.50	88.0	1.5994	0.1002	-0.0001	0.0001	180.0	0.0	0.0	0.0	0.0
1.50	90.0	1.6000	0.1000	0.0000	-0.0000					

Table C-1 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

CNFA =B6(0)+B6(1)*(TAPER RATIO)+B6(2)*(TAPER RATIO)**2+B6(3)*(ASPECT RATIO)

		COEFFICIENTS FOR CNFA					COEFFICIENTS FOR CNFA			
MACH	ALPHA	B6(0)	B6(1)	B6(2)	B6(3)	ALPHA	B6(0)	B6(1)	B6(2)	B6(3)
2.00	0.0	0.0	0.0	0.0	0.0	92.0	1.5990	0.1005	-0.0004	0.0002
2.00	2.0	0.0358	0.0093	-0.0138	0.0243	94.0	1.5962	0.1020	-0.0015	0.0008
2.00	4.0	0.0667	0.0169	-0.0128	0.0389	96.0	1.5918	0.1042	-0.0033	0.0018
2.00	6.0	0.1010	0.0600	-0.0402	0.0486	98.0	1.5859	0.1072	-0.0055	0.0031
2.00	8.0	0.1371	0.0810	-0.0495	0.0635	100.0	1.5780	0.1108	-0.0082	0.0047
2.00	10.0	0.1776	0.1175	-0.0687	0.0723	102.0	1.5694	0.1149	-0.0113	0.0067
2.00	12.0	0.2204	0.1628	-0.0989	0.0809	104.0	1.5563	0.1203	-0.0154	0.0092
2.00	14.0	0.2616	0.2073	-0.1279	0.0917	106.0	1.5395	0.1280	-0.0213	0.0127
2.00	16.0	0.2980	0.2330	-0.1397	0.1010	108.0	1.5180	0.1389	-0.0296	0.0176
2.00	18.0	0.3379	0.2552	-0.1497	0.1107	110.0	1.4941	0.1539	-0.0410	0.0236
2.00	20.0	0.3846	0.2760	-0.1571	0.1217	112.0	1.4651	0.1740	-0.0557	0.0314
2.00	22.0	0.4310	0.3130	-0.1870	0.1320	114.0	1.4325	0.1988	-0.0729	0.0406
2.00	24.0	0.4809	0.3414	-0.2097	0.1408	116.0	1.3966	0.2272	-0.0921	0.0507
2.00	26.0	0.5340	0.3756	-0.2367	0.1448	118.0	1.3579	0.2582	-0.1127	0.0616
2.00	28.0	0.5877	0.3961	-0.2504	0.1493	120.0	1.3170	0.2906	-0.1342	0.0730
2.00	30.0	0.6481	0.4059	-0.2549	0.1476	122.0	1.2743	0.3234	-0.1559	0.0847
2.00	32.0	0.7018	0.4249	-0.2701	0.1551	124.0	1.2304	0.3555	-0.1774	0.0963
2.00	34.0	0.7528	0.4235	-0.2603	0.1585	126.0	1.1857	0.3859	-0.1980	0.1077
2.00	36.0	0.7965	0.3871	-0.2162	0.1653	128.0	1.1408	0.4134	-0.2173	0.1185
2.00	38.0	0.8362	0.3890	-0.2046	0.1675	130.0	1.0961	0.4371	-0.2347	0.1286
2.00	40.0	0.8629	0.4185	-0.2166	0.1745	132.0	1.0521	0.4558	-0.2496	0.1375
2.00	42.0	0.9118	0.4059	-0.2005	0.1697	134.0	1.0094	0.4684	-0.2615	0.1452
2.00	44.0	0.9741	0.3789	-0.1812	0.1565	136.0	0.9684	0.4739	-0.2690	0.1512
2.00	46.0	1.0421	0.3451	-0.1610	0.1386	138.0	0.9297	0.4713	-0.2739	0.1554
2.00	48.0	1.1082	0.3122	-0.1424	0.1196	140.0	0.8937	0.4594	-0.2733	0.1575
2.00	50.0	1.1651	0.2879	-0.1278	0.1030	142.0	0.8601	0.4213	-0.2507	0.1555
2.00	52.0	1.2111	0.2706	-0.1160	0.0905	144.0	0.8242	0.3934	-0.2390	0.1533
2.00	54.0	1.2510	0.2537	-0.1045	0.0809	146.0	0.7885	0.3806	-0.2366	0.1516
2.00	56.0	1.2862	0.2375	-0.0935	0.0731	148.0	0.7357	0.3624	-0.2312	0.1491
2.00	58.0	1.3185	0.2223	-0.0832	0.0663	150.0	0.6847	0.3422	-0.2204	0.1489
2.00	60.0	1.3494	0.2083	-0.0736	0.0593	152.0	0.6263	0.3351	-0.2167	0.1459
2.00	62.0	1.3798	0.1952	-0.0647	0.0521	154.0	0.5661	0.3340	-0.2179	0.1464
2.00	64.0	1.4093	0.1824	-0.0560	0.0451	156.0	0.5077	0.3272	-0.2180	0.1450
2.00	66.0	1.4377	0.1701	-0.0477	0.0384	158.0	0.4546	0.3218	-0.2180	0.1383
2.00	68.0	1.4645	0.1586	-0.0398	0.0321	160.0	0.4001	0.2969	-0.1990	0.1309
2.00	70.0	1.4894	0.1478	-0.0325	0.0262	162.0	0.3479	0.2789	-0.1842	0.1196
2.00	72.0	1.5122	0.1379	-0.0258	0.0208	164.0	0.2957	0.2524	-0.1649	0.1091
2.00	74.0	1.5327	0.1291	-0.0198	0.0159	166.0	0.2435	0.2280	-0.1504	0.0973
2.00	76.0	1.5507	0.1214	-0.0146	0.0117	168.0	0.1924	0.2028	-0.1324	0.0858
2.00	78.0	1.5658	0.1149	-0.0101	0.0081	170.0	0.1407	0.1581	-0.1117	0.0743
2.00	80.0	1.5779	0.1096	-0.0065	0.0052	172.0	0.0902	0.1574	-0.1010	0.0626
2.00	82.0	1.5869	0.1056	-0.0038	0.0031	174.0	0.0650	0.1153	-0.0700	0.0461
2.00	84.0	1.5932	0.1028	-0.0019	0.0016	176.0	0.0360	0.0826	-0.0580	0.0293
2.00	86.0	1.5972	0.1011	-0.0007	0.0007	178.0	0.0152	0.0435	-0.0235	0.0103
2.00	88.0	1.5994	0.1003	-0.0002	0.0002	180.0	0.0	0.0	0.0	0.0
2.00	90.0	1.6000	0.1000	0.0000	-0.0000					

Table C-1 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

CNFA =B6(0)+B6(1)*(TAPER RATIO)+B6(2)*(TAPER RATIO)**2+B6(3)*(ASPECT RATIO)

		COEFFICIENTS FOR CNFA					COEFFICIENTS FOR CNFA			
MACH	ALPHA	B6(0)	B6(1)	B6(2)	B6(3)	ALPHA	B6(0)	B6(1)	B6(2)	B6(3)
2.50	0.0	0.0	0.0	0.0	0.0	92.0	1.5989	0.1005	-0.0004	0.0002
2.50	2.0	0.0323	0.0140	-0.0071	0.0206	94.0	1.5958	0.1020	-0.0016	0.0008
2.50	4.0	0.0867	0.1473	-0.1352	0.0094	96.0	1.5908	0.1044	-0.0034	0.0018
2.50	6.0	0.0940	0.0525	-0.0294	0.0393	98.0	1.5843	0.1076	-0.0058	0.0031
2.50	8.0	0.1272	0.0739	-0.0402	0.0493	100.0	1.5763	0.1115	-0.0087	0.0048
2.50	10.0	0.1633	0.1039	-0.0577	0.0556	102.0	1.5658	0.1158	-0.0120	0.0067
2.50	12.0	0.2009	0.1485	-0.0875	0.0569	104.0	1.5514	0.1211	-0.0163	0.0093
2.50	14.0	0.2350	0.1889	-0.1102	0.0664	106.0	1.5327	0.1290	-0.0223	0.0127
2.50	16.0	0.2664	0.2063	-0.1236	0.0758	108.0	1.5095	0.1407	-0.0311	0.0175
2.50	18.0	0.3000	0.2243	-0.1318	0.0839	110.0	1.4815	0.1577	-0.0436	0.0238
2.50	20.0	0.3389	0.2491	-0.1410	0.0931	112.0	1.4487	0.1811	-0.0606	0.0318
2.50	22.0	0.3807	0.2573	-0.1346	0.1030	114.0	1.4117	0.2104	-0.0816	0.0414
2.50	24.0	0.4258	0.2761	-0.1418	0.1121	116.0	1.3710	0.2440	-0.1057	0.0522
2.50	26.0	0.4721	0.2924	-0.1469	0.1192	118.0	1.3272	0.2806	-0.1318	0.0639
2.50	28.0	0.5163	0.3387	-0.1774	0.1245	120.0	1.2809	0.3188	-0.1592	0.0762
2.50	30.0	0.5643	0.3857	-0.2189	0.1302	122.0	1.2328	0.3572	-0.1868	0.0888
2.50	32.0	0.6164	0.4077	-0.2347	0.1348	124.0	1.1833	0.3945	-0.2137	0.1012
2.50	34.0	0.6596	0.4226	-0.2417	0.1452	126.0	1.1331	0.4292	-0.2389	0.1133
2.50	36.0	0.7017	0.4618	-0.2762	0.1570	128.0	1.0827	0.4600	-0.2616	0.1246
2.50	38.0	0.7433	0.4940	-0.2994	0.1651	130.0	1.0328	0.4854	-0.2808	0.1348
2.50	40.0	0.7828	0.5066	-0.2976	0.1687	132.0	0.9839	0.5042	-0.2955	0.1436
2.50	42.0	0.8358	0.4935	-0.2783	0.1636	134.0	0.9366	0.5149	-0.3048	0.1507
2.50	44.0	0.9054	0.4584	-0.2508	0.1504	136.0	0.8915	0.5161	-0.3078	0.1558
2.50	46.0	0.9820	0.4132	-0.2208	0.1329	138.0	0.8492	0.5064	-0.3035	0.1584
2.50	48.0	1.0560	0.3698	-0.1939	0.1147	140.0	0.8102	0.4844	-0.2910	0.1583
2.50	50.0	1.1179	0.3399	-0.1756	0.0995	142.0	0.7758	0.4355	-0.2587	0.1541
2.50	52.0	1.1673	0.3198	-0.1620	0.0882	144.0	0.7406	0.3685	-0.2114	0.1507
2.50	54.0	1.2113	0.2985	-0.1466	0.0790	146.0	0.7033	0.3169	-0.1828	0.1466
2.50	56.0	1.2510	0.2770	-0.1305	0.0712	148.0	0.6602	0.3007	-0.1832	0.1430
2.50	58.0	1.2875	0.2566	-0.1149	0.0642	150.0	0.6119	0.2898	-0.1860	0.1416
2.50	60.0	1.3222	0.2383	-0.1012	0.0573	152.0	0.5604	0.2830	-0.1837	0.1358
2.50	62.0	1.3559	0.2215	-0.0889	0.0504	154.0	0.5082	0.2761	-0.1707	0.1267
2.50	64.0	1.3886	0.2052	-0.0770	0.0436	156.0	0.4630	0.2558	-0.1575	0.1135
2.50	66.0	1.4200	0.1895	-0.0655	0.0371	158.0	0.4135	0.2518	-0.1596	0.1042
2.50	68.0	1.4498	0.1748	-0.0547	0.0310	160.0	0.3680	0.2389	-0.1549	0.0921
2.50	70.0	1.4774	0.1610	-0.0446	0.0253	162.0	0.3270	0.2037	-0.1329	0.0801
2.50	72.0	1.5027	0.1484	-0.0354	0.0201	164.0	0.2799	0.1875	-0.1240	0.0720
2.50	74.0	1.5254	0.1371	-0.0272	0.0154	166.0	0.2318	0.1736	-0.1153	0.0627
2.50	76.0	1.5453	0.1272	-0.0199	0.0113	168.0	0.1851	0.1581	-0.1054	0.0531
2.50	78.0	1.5621	0.1189	-0.0138	0.0078	170.0	0.1430	0.1390	-0.0940	0.0423
2.50	80.0	1.5755	0.1122	-0.0089	0.0051	172.0	0.1046	0.1017	-0.0645	0.0351
2.50	82.0	1.5855	0.1072	-0.0053	0.0030	174.0	0.0713	0.0702	-0.0413	0.0250
2.50	84.0	1.5925	0.1038	-0.0027	0.0016	176.0	0.0421	0.0506	-0.0301	0.0154
2.50	86.0	1.5970	0.1015	-0.0011	0.0006	178.0	0.0196	0.0208	-0.0104	0.0034
2.50	88.0	1.5993	0.1003	-0.0003	0.0001	180.0	0.0	0.0	0.0	0.0
2.50	90.0	1.6000	0.1000	0.0000	-0.0000					

Table C-1 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

CNFA =B6(0)+B6(1)*(TAPER RATIO)+B6(2)*(TAPER RATIO)**2+B6(3)*(ASPECT RATIO)

		COEFFICIENTS FOR CNFA					COEFFICIENTS FOR CNFA			
MACH	ALPHA	B6(0)	B6(1)	B6(2)	B6(3)	ALPHA	B6(0)	B6(1)	B6(2)	B6(3)
3.00	0.0	0.0	0.0	0.0	0.0	92.0	1.5985	0.1005	-0.0004	0.0002
3.00	2.0	0.1092	0.1207	-0.2256	-0.0685	94.0	1.5956	0.1020	-0.0014	0.0007
3.00	4.0	0.1011	0.0878	-0.1457	-0.0308	96.0	1.5905	0.1043	-0.0031	0.0016
3.00	6.0	0.1053	0.0786	-0.0998	-0.0036	98.0	1.5837	0.1074	-0.0054	0.0027
3.00	8.0	0.1195	0.0801	-0.0730	0.0148	100.0	1.5755	0.1111	-0.0082	0.0040
3.00	10.0	0.1419	0.0937	-0.0681	0.0279	102.0	1.5650	0.1148	-0.0112	0.0055
3.00	12.0	0.1716	0.1166	-0.0786	0.0367	104.0	1.5508	0.1192	-0.0151	0.0074
3.00	14.0	0.2069	0.1399	-0.0909	0.0410	106.0	1.5328	0.1261	-0.0207	0.0102
3.00	16.0	0.2522	0.1290	-0.0787	0.0471	108.0	1.5078	0.1375	-0.0290	0.0142
3.00	18.0	0.2983	0.1359	-0.0785	0.0486	110.0	1.4775	0.1553	-0.0400	0.0198
3.00	20.0	0.3432	0.1440	-0.0812	0.0539	112.0	1.4413	0.1798	-0.0563	0.0272
3.00	22.0	0.3642	0.1570	-0.0840	0.0624	114.0	1.4005	0.2095	-0.0743	0.0358
3.00	24.0	0.4241	0.1713	-0.0822	0.0687	116.0	1.3559	0.2430	-0.0944	0.0453
3.00	26.0	0.4631	0.2065	-0.0998	0.0758	118.0	1.3082	0.2791	-0.1159	0.0559
3.00	28.0	0.5049	0.2036	-0.0835	0.0842	120.0	1.2580	0.3164	-0.1381	0.0667
3.00	30.0	0.5453	0.2337	-0.0967	0.0927	122.0	1.2062	0.3536	-0.1606	0.0776
3.00	32.0	0.5913	0.2796	-0.1333	0.0993	124.0	1.1534	0.3894	-0.1827	0.0883
3.00	34.0	0.6412	0.3239	-0.1726	0.1028	126.0	1.1004	0.4225	-0.2037	0.0984
3.00	36.0	0.6902	0.3634	-0.2047	0.1070	128.0	1.0479	0.4516	-0.2232	0.1081
3.00	38.0	0.7352	0.4147	-0.2468	0.1105	130.0	0.9965	0.4753	-0.2404	0.1165
3.00	40.0	0.7781	0.4638	-0.2895	0.1160	132.0	0.9471	0.4925	-0.2540	0.1235
3.00	42.0	0.8328	0.4802	-0.3054	0.1158	134.0	0.9004	0.5017	-0.2654	0.1289
3.00	44.0	0.9033	0.4547	-0.2870	0.1072	136.0	0.8571	0.5016	-0.2727	0.1324
3.00	46.0	0.9601	0.4060	-0.2488	0.0948	138.0	0.8178	0.4918	-0.2750	0.1335
3.00	48.0	1.0538	0.3530	-0.2052	0.0798	140.0	0.7834	0.4685	-0.2721	0.1321
3.00	50.0	1.1151	0.3147	-0.1708	0.0685	142.0	0.7519	0.4241	-0.2510	0.1255
3.00	52.0	1.1642	0.2918	-0.1493	0.0606	144.0	0.7184	0.3224	-0.1827	0.1276
3.00	54.0	1.2083	0.2721	-0.1332	0.0543	146.0	0.6808	0.2680	-0.1454	0.1226
3.00	56.0	1.2485	0.2547	-0.1206	0.0490	148.0	0.6423	0.2439	-0.1344	0.1169
3.00	58.0	1.2856	0.2389	-0.1097	0.0442	150.0	0.5992	0.2290	-0.1353	0.1117
3.00	60.0	1.3206	0.2237	-0.0984	0.0394	152.0	0.5550	0.2129	-0.1307	0.0991
3.00	62.0	1.3544	0.2087	-0.0865	0.0347	154.0	0.5068	0.2206	-0.1548	0.0849
3.00	64.0	1.3874	0.1941	-0.0749	0.0300	156.0	0.4618	0.1896	-0.1257	0.0784
3.00	66.0	1.4196	0.1801	-0.0638	0.0256	158.0	0.4156	0.1629	-0.1073	0.0667
3.00	68.0	1.4489	0.1669	-0.0532	0.0213	160.0	0.3683	0.1618	-0.1091	0.0559
3.00	70.0	1.4767	0.1546	-0.0434	0.0174	162.0	0.3233	0.1443	-0.0969	0.0464
3.00	72.0	1.5021	0.1433	-0.0345	0.0138	164.0	0.2799	0.1290	-0.0800	0.0389
3.00	74.0	1.5250	0.1332	-0.0264	0.0106	166.0	0.2135	0.0977	-0.0330	0.0551
3.00	76.0	1.5449	0.1244	-0.0194	0.0078	168.0	0.1631	0.0719	-0.0009	0.0561
3.00	78.0	1.5618	0.1169	-0.0134	0.0054	170.0	0.1265	0.0522	0.0103	0.0486
3.00	80.0	1.5753	0.1109	-0.0087	0.0035	172.0	0.0915	0.0341	0.0166	0.0380
3.00	82.0	1.5854	0.1064	-0.0052	0.0020	174.0	0.0530	0.0258	0.0211	0.0349
3.00	84.0	1.5925	0.1033	-0.0027	0.0010	176.0	0.0270	0.0071	0.0321	0.0242
3.00	86.0	1.5970	0.1013	-0.0011	0.0004	178.0	-0.0023	-0.0090	0.0501	0.0107
3.00	88.0	1.5993	0.1003	-0.0002	0.0001	180.0	0.0	0.0	0.0	0.0
3.00	90.0	1.6000	0.1000	0.0000	-0.0000					

Table C-2

Regression Coefficients for $CP_{X_{HLA}}$

REGRESSION COEFFICIENTS FOR EQUATION

CPXHLA=B7(0)+B7(1)*(TAPER RATIO)+B7(2)*(TAPER RATIO)**2+B7(3)*(ASPECT RATIO)

		COEFFICIENTS FOR CPXHLA					COEFFICIENTS FOR CPXHLA			
MACH	ALPHA	B7(0)	B7(1)	B7(2)	B7(3)	ALPHA	B7(0)	B7(1)	B7(2)	B7(3)
0.60	0.0	0.0	0.0	0.0	0.0	92.0	-0.0857	-0.0238	0.0605	0.0091
0.60	2.0	[illegible]	0.5717	-0.4206	0.0655	94.0	-0.0929	-0.0201	0.0545	0.0114
0.60	4.0	-0.0149	0.3642	0.1594	0.0232	96.0	-0.1001	-0.0120	0.0457	0.0127
0.60	6.0	-0.0265	0.2678	0.1009	0.0219	98.0	-0.1066	-0.0156	0.0499	0.0156
0.60	8.0	-0.0376	0.2525	0.0706	0.0357	100.0	-0.1153	-0.0176	0.0524	0.0171
0.60	10.0	-0.0310	0.2472	0.0442	0.0286	102.0	-0.1232	-0.0093	0.0414	0.0193
0.60	12.0	-0.0287	0.2362	0.0126	0.0263	104.0	-0.1296	-0.0059	0.0378	0.0211
0.60	14.0	-0.0195	0.2103	0.0126	0.0224	106.0	-0.1375	-0.0004	0.0329	0.0248
0.60	16.0	-0.0139	0.2058	-0.0276	0.0169	106.0	-0.1410	-0.0060	0.0395	0.0249
0.60	18.0	-0.0025	0.1874	-0.0406	0.0087	110.0	-0.1450	-0.0022	0.0365	0.0262
0.60	20.0	-0.0039	0.1650	-0.0375	0.0109	112.0	-0.1478	0.0076	0.0257	0.0258
0.60	22.0	-0.0069	0.1454	-0.0442	0.0155	114.0	-0.1503	0.0092	0.0246	0.0258
0.60	24.0	-0.0037	0.1251	-0.0350	0.0167	116.0	-0.1499	0.0131	0.0169	0.0246
0.60	26.0	-0.0016	0.1000	-0.0762	0.0168	118.0	-0.1505	0.0084	0.0209	0.0230
0.60	28.0	0.0017	0.0763	0.0032	0.0146	120.0	-0.1529	0.0141	0.0150	0.0232
0.60	30.0	0.0036	0.0382	0.0342	0.0140	122.0	-0.1546	0.0182	0.0087	0.0230
0.60	32.0	0.0047	0.0356	0.0348	0.0135	124.0	-0.1560	0.0231	0.0056	0.0217
0.60	34.0	0.0178	0.0234	0.0330	0.0074	126.0	-0.1574	0.0277	-0.0017	0.0213
0.60	36.0	0.0196	-0.0059	0.0562	0.0065	128.0	-0.1584	0.0316	-0.0059	0.0195
0.60	38.0	0.0184	0.0104	0.0427	0.0011	130.0	-0.1605	0.0312	-0.0054	0.0189
0.60	40.0	0.0014	0.0241	0.0226	0.0088	132.0	-0.1640	0.0386	-0.0109	0.0187
0.60	42.0	0.0093	-0.0200	0.0567	0.0069	134.0	-0.1684	0.0477	-0.0187	0.0189
0.60	44.0	0.0051	-0.0208	0.0599	0.0063	136.0	-0.1742	0.0558	-0.0251	0.0204
0.60	46.0	-0.0007	-0.0477	0.0859	0.0096	138.0	-0.1800	0.0618	-0.0289	0.0214
0.60	48.0	-0.0011	-0.0509	0.0861	0.0087	140.0	-0.1885	0.0638	-0.0294	0.0247
0.60	50.0	-0.0027	-0.0489	0.0833	0.0082	142.0	-0.2048	0.0490	-0.0243	0.0356
0.60	52.0	-0.0106	-0.0349	0.0736	0.0085	144.0	-0.2120	0.0511	-0.0295	0.0381
0.60	54.0	-0.0118	-0.0318	0.0688	0.0077	146.0	-0.2159	0.0529	-0.0291	0.0376
0.60	56.0	-0.0206	-0.0252	0.0665	0.0104	148.0	-0.2194	0.0535	-0.0313	0.0378
0.60	58.0	-0.0243	-0.0234	0.0660	0.0103	150.0	-0.2217	0.0594	-0.0390	0.0375
0.60	60.0	-0.0282	-0.0169	0.0626	0.0101	152.0	-0.2257	0.0568	-0.0334	0.0386
0.60	62.0	-0.0328	-0.0088	0.0570	0.0110	154.0	-0.2287	0.0691	-0.0487	0.0381
0.60	64.0	-0.0326	-0.0162	0.0648	0.0087	156.0	-0.2383	0.0712	-0.0443	0.0417
0.60	66.0	-0.0352	-0.0135	0.0632	0.0085	158.0	-0.2497	0.0575	-0.0270	0.0441
0.60	68.0	-0.0369	-0.0223	0.0726	0.0072	160.0	-0.2697	0.0727	-0.0475	0.0502
0.60	70.0	-0.0383	-0.0234	0.0717	0.0057	162.0	-0.2898	0.0866	-0.0582	0.0527
0.60	72.0	-0.0410	-0.0263	0.0754	0.0050	164.0	-0.2978	0.0904	-0.0675	0.0444
0.60	74.0	-0.0415	-0.0251	0.0718	0.0030	166.0	-0.3079	0.0990	-0.0806	0.0384
0.60	76.0	-0.0473	-0.0208	0.0689	0.0047	168.0	-0.3190	0.0828	-0.0618	0.0336
0.60	78.0	-0.0493	-0.0262	0.0730	0.0029	170.0	-0.3259	0.0945	-0.0848	0.0243
0.60	80.0	-0.0535	-0.0322	0.0796	0.0034	172.0	-0.3471	0.1225	-0.1154	0.0268
0.60	82.0	-0.0562	-0.0318	0.0766	0.0042	174.0	-0.3796	0.1074	-0.0966	0.0409
0.60	84.0	-0.0620	-0.0258	0.0647	0.0040	176.0	-0.4556	0.1986	-0.1751	0.0731
0.60	86.0	-0.0681	-0.0220	0.0609	0.0055	178.0	-0.6132	0.3375	-0.3135	0.1652
0.60	88.0	-0.0725	-0.0305	0.0683	0.0064	180.0	0.0	0.0	0.0	0.0
0.60	90.0	-0.0797	-0.0274	0.0657	0.0079					

Table C-2 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

CPXMLA=B7(0)+B7(1)*(TAPER RATIO)+B7(2)*(TAPER RATIO)**2+B7(3)*(ASPECT RATIO)

		COEFFICIENTS FOR CPXMLA				COEFFICIENTS FOR CPXMLA				
MACH	ALPHA	B7(0)	B7(1)	B7(2)	B7(3)	ALPHA	B7(0)	B7(1)	B7(2)	B7(3)
0.80	0.0	0.0	0.0	0.0	0.0	92.0	-0.0810	-0.0252	0.0608	0.0052
0.80	2.0	-0.0327	0.8016	-0.5694	0.0915	94.0	-0.0865	-0.0214	0.0547	0.0065
0.80	4.0	-0.0416	0.5208	-0.0568	0.0483	96.0	-0.0945	-0.0185	0.0530	0.0078
0.80	6.0	-0.0289	0.3454	0.0466	0.0222	98.0	-0.1033	-0.0167	0.0504	0.0109
0.80	8.0	-0.0317	0.2704	0.0525	0.0264	100.0	-0.1117	-0.0169	0.0497	0.0138
0.80	10.0	-0.0331	0.2567	0.0285	0.0271	102.0	-0.1198	-0.0152	0.0481	0.0165
0.80	12.0	-0.0212	0.2576	-0.0137	0.0154	104.0	-0.1274	-0.0117	0.0437	0.0195
0.80	14.0	-0.0080	0.2128	-0.0090	0.0037	106.0	-0.1327	-0.0077	0.0393	0.0208
0.80	16.0	-0.0037	0.1796	-0.0063	0.0035	108.0	-0.1375	-0.0045	0.0363	0.0220
0.80	18.0	-0.0010	0.1560	-0.0079	0.0023	110.0	-0.1408	-0.0020	0.0336	0.0224
0.80	20.0	0.0022	0.1395	-0.0096	-0.0000	112.0	-0.1437	0.0028	0.0285	0.0225
0.80	22.0	0.0013	0.1205	-0.0073	0.0031	114.0	-0.1456	0.0013	0.0291	0.0224
0.80	24.0	0.0031	0.0916	-0.0010	0.0083	116.0	-0.1471	0.0008	0.0290	0.0222
0.80	26.0	0.0041	0.0702	0.0120	0.0073	118.0	-0.1502	0.0037	0.0268	0.0223
0.80	28.0	0.0019	0.0354	0.0408	0.0109	120.0	-0.1518	0.0057	0.0236	0.0219
0.80	30.0	0.0029	0.0277	0.0439	0.0103	122.0	-0.1532	0.0081	0.0212	0.0215
0.80	32.0	0.0079	0.0389	0.0276	0.0059	124.0	-0.1545	0.0114	0.0172	0.0208
0.80	34.0	0.0172	0.0230	0.0281	0.0038	126.0	-0.1555	0.0127	0.0159	0.0200
0.80	36.0	0.0154	-0.0119	0.0495	0.0078	128.0	-0.1564	0.0166	0.0116	0.0185
0.80	38.0	0.0158	-0.0283	0.0665	0.0034	130.0	-0.1576	0.0142	0.0124	0.0180
0.80	40.0	0.0157	-0.0228	0.0603	0.0004	132.0	-0.1600	0.0225	0.0044	0.0177
0.80	42.0	0.0109	-0.0193	0.0552	0.0015	134.0	-0.1608	0.0263	-0.0004	0.0167
0.80	44.0	0.0101	-0.0240	0.0587	0.0003	136.0	-0.1625	0.0307	-0.0054	0.0163
0.80	46.0	0.0056	-0.0508	0.0853	0.0028	138.0	-0.1637	0.0308	-0.0044	0.0147
0.80	48.0	-0.0107	-0.0278	0.0687	0.0074	140.0	-0.1709	0.0420	-0.0123	0.0163
0.80	50.0	-0.0149	-0.0186	0.0611	0.0076	142.0	-0.1773	0.0505	-0.0192	0.0172
0.80	52.0	-0.0182	-0.0165	0.0583	0.0078	144.0	-0.1885	0.0702	-0.0362	0.0196
0.80	54.0	-0.0226	-0.0238	0.0688	0.0089	146.0	-0.1989	0.0837	-0.0555	0.0232
0.80	56.0	-0.0254	-0.0133	0.0588	0.0092	148.0	-0.2102	0.0605	-0.0360	0.0295
0.80	58.0	-0.0237	-0.0168	0.0615	0.0064	150.0	-0.2173	0.0551	-0.0323	0.0323
0.80	60.0	-0.0252	-0.0178	0.0617	0.0056	152.0	-0.2211	0.0484	-0.0272	0.0331
0.80	62.0	-0.0260	-0.0172	0.0628	0.0047	154.0	-0.2246	0.0519	-0.0314	0.0328
0.80	64.0	-0.0267	-0.0220	0.0569	0.0029	156.0	-0.2341	0.0558	-0.0330	0.0363
0.80	66.0	-0.0273	-0.0184	0.0626	0.0011	158.0	-0.2444	0.0541	-0.0293	0.0392
0.80	68.0	-0.0301	-0.0184	0.0616	0.0008	160.0	-0.2611	0.0578	-0.0396	0.0437
0.80	70.0	-0.0319	-0.0253	0.0686	-0.0005	162.0	-0.2774	0.0768	-0.0536	0.0427
0.80	72.0	-0.0357	-0.0266	0.0694	-0.0003	164.0	-0.2915	0.0824	-0.0580	0.0409
0.80	74.0	-0.0383	-0.0336	0.0770	-0.0011	166.0	-0.3081	0.0816	-0.0605	0.0411
0.80	76.0	-0.0414	-0.0340	0.0768	-0.0013	168.0	-0.3214	0.0879	-0.0774	0.0373
0.80	78.0	-0.0458	-0.0324	0.0741	-0.0011	170.0	-0.3321	0.0863	-0.0851	0.0289
0.80	80.0	-0.0510	-0.0302	0.0720	-0.0000	172.0	-0.3395	0.0586	-0.0636	0.0165
0.80	82.0	-0.0549	-0.0293	0.0688	-0.0001	174.0	-0.3635	0.0481	-0.0625	0.0194
0.80	84.0	-0.0563	-0.0312	0.0689	-0.0009	176.0	-0.4003	0.0463	-0.0783	0.0330
0.80	86.0	-0.0610	-0.0319	0.0696	-0.0004	178.0	-0.4790	0.0394	-0.1259	0.0701
0.80	88.0	-0.0672	-0.0304	0.0666	0.0019	180.0	0.0	0.0	0.0	0.0
0.80	90.0	-0.0729	-0.0305	0.0655	0.0029					

Table C-2 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

CPXMLA=B7(0)+B7(1)*(TAPER RATIO)+B7(2)*(TAPER RATIO)**2+B7(3)*(ASPECT RATIO)

MACH	ALPHA	B7(0)	B7(1)	B7(2)	B7(3)	ALPHA	B7(0)	B7(1)	B7(2)	B7(3)
		COEFFICIENTS FOR CPXMLA					COEFFICIENTS FOR CPXMLA			
0.90	0.0	0.0	0.0	0.0	0.0	92.0	-0.0833	-0.0268	0.0590	0.0043
0.90	2.0	0.0085	0.1170	0.4093	0.0396	94.0	-0.0892	-0.0179	0.0518	0.0061
0.90	4.0	-0.0326	0.7624	-0.3116	0.0310	96.0	-0.0962	-0.0097	0.0452	0.0076
0.90	6.0	-0.0274	0.4493	-0.0437	0.0151	98.0	-0.1046	-0.0100	0.0454	0.0105
0.90	8.0	-0.0353	0.3320	0.0136	0.0183	100.0	-0.1111	-0.0143	0.0489	0.0126
0.90	10.0	-0.0365	0.2856	0.0186	0.0192	102.0	-0.1183	-0.0101	0.0409	0.0154
0.90	12.0	-0.0337	0.2511	0.0167	0.0162	104.0	-0.1247	-0.0102	0.0409	0.0177
0.90	14.0	-0.0282	0.2052	0.0273	0.0117	106.0	-0.1295	-0.0096	0.0388	0.0189
0.90	16.0	-0.0270	0.1867	-0.0041	-0.0047	108.0	-0.1367	-0.0074	0.0377	0.0208
0.90	18.0	-0.0063	0.1654	-0.0186	-0.0035	110.0	-0.1385	-0.0026	0.0334	0.0216
0.90	20.0	-0.0002	0.1444	-0.0262	-0.0063	112.0	-0.1414	-0.0019	0.0317	0.0221
0.90	22.0	-0.0015	0.1112	-0.0097	-0.0010	114.0	-0.1422	-0.0042	0.0321	0.0211
0.90	24.0	0.0029	0.0751	0.0143	0.0001	116.0	-0.1439	-0.0060	0.0329	0.0205
0.90	26.0	0.0005	0.0511	0.0321	0.0016	118.0	-0.1459	-0.0005	0.0277	0.0208
0.90	28.0	-0.0014	0.0289	0.0513	0.0040	120.0	-0.1475	0.0069	0.0250	0.0206
0.90	30.0	-0.0004	0.0296	0.0062	0.0033	122.0	-0.1484	0.0065	0.0245	0.0198
0.90	32.0	-0.0002	0.0392	0.0280	0.0037	124.0	-0.1496	0.0036	0.0194	0.0196
0.90	34.0	0.0001	0.0398	0.0154	0.0046	126.0	-0.1496	0.0089	0.0222	0.0179
0.90	36.0	-0.0011	0.0125	0.0354	0.0075	128.0	-0.1524	0.0049	0.0189	0.0183
0.90	38.0	0.0072	0.0003	0.0429	0.0001	130.0	-0.1536	0.0061	0.0186	0.0176
0.90	40.0	0.0136	-0.0199	0.0562	-0.0027	132.0	-0.1540	0.0116	0.0095	0.0158
0.90	42.0	0.0121	-0.0208	0.0551	-0.0031	134.0	-0.1554	0.0126	0.0062	0.0151
0.90	44.0	0.0097	-0.0204	0.0617	-0.0019	136.0	-0.1579	0.0153	0.0055	0.0150
0.90	46.0	0.0075	-0.0506	0.0660	-0.0017	138.0	-0.1615	0.0224	0.0000	0.0154
0.90	48.0	-0.0111	-0.0271	0.0646	0.0041	140.0	-0.1643	0.0275	-0.0027	0.0148
0.90	50.0	-0.0149	-0.0216	0.0607	0.0046	142.0	-0.1693	0.0355	-0.0091	0.0149
0.90	52.0	-0.0175	-0.0226	0.0617	0.0049	144.0	-0.1775	0.0455	-0.0175	0.0164
0.90	54.0	-0.0242	-0.0265	0.0708	0.0072	146.0	-0.1905	0.0532	-0.0266	0.0209
0.90	56.0	-0.0292	-0.0301	0.0714	0.0042	148.0	-0.2012	0.0543	-0.0216	0.0259
0.90	58.0	-0.0229	-0.0304	0.0709	0.0041	150.0	-0.2139	0.0490	-0.0242	0.0323
0.90	60.0	-0.0235	-0.0307	0.0721	0.0030	152.0	-0.2219	0.0427	-0.0196	0.0352
0.90	62.0	-0.0221	-0.0302	0.0694	0.0009	154.0	-0.2292	0.0407	-0.0162	0.0365
0.90	64.0	-0.0227	-0.0316	0.0714	-0.0005	156.0	-0.2350	0.0484	-0.0206	0.0366
0.90	66.0	-0.0247	-0.0290	0.0698	-0.0013	158.0	-0.2440	0.0580	-0.0284	0.0387
0.90	68.0	-0.0274	-0.0339	0.0750	-0.0016	160.0	-0.2355	0.0592	-0.0301	0.0415
0.90	70.0	-0.0309	-0.0367	0.0765	-0.0017	162.0	-0.2690	0.0469	-0.0217	0.0443
0.90	72.0	-0.0350	-0.0414	0.0814	-0.0017	164.0	-0.2545	0.0806	-0.0542	0.0431
0.90	74.0	-0.0362	-0.0374	0.0771	-0.0026	166.0	-0.3170	0.0625	-0.0443	0.0452
0.90	76.0	-0.0416	-0.0391	0.0789	-0.0015	168.0	-0.3315	0.0366	-0.0333	0.0413
0.90	78.0	-0.0484	-0.0344	0.0727	-0.0026	170.0	-0.3328	0.0010	-0.0196	0.0205
0.90	80.0	-0.0689	-0.0372	0.0731	-0.0023	172.0	-0.3516	-0.0444	0.0136	0.0234
0.90	82.0	-0.0932	-0.0360	0.0720	-0.0018	174.0	-0.3743	-0.1193	0.0675	0.0283
0.90	84.0	-0.0860	-0.0345	0.0700	-0.0029	176.0	-0.4044	-0.3660	0.2701	0.0371
0.90	86.0	-0.0619	-0.0352	0.0694	-0.0009	178.0	-0.5051	0.1713	-0.3234	0.0676
0.90	88.0	-0.0669	-0.0375	0.0713	0.0011	180.0	0.0	0.0	0.0	0.0
0.90	90.0	-0.0729	-0.0323	0.0656	0.0021					

Table C-2 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

CPXHLA=B7(0)+B7(1)*(TAPER RATIO)+B7(2)*(TAPER RATIO)**2+B7(3)*(ASPECT RATIO)

MACH	ALPHA	B7(0)	B7(1)	B7(2)	B7(3)	ALPHA	B7(0)	B7(1)	B7(2)	B7(3)
		COEFFICIENTS FOR CPXHLA				COEFFICIENTS FOR CPXHLA				
1.00	0.0	0.0	0.0	0.0	0.0	92.0	-0.0748	-0.0264	0.0535	0.0019
1.00	2.0	0.0160	1.0024	-0.5742	-0.0562	94.0	-0.0813	-0.0227	0.0497	0.0035
1.00	4.0	0.0211	0.3549	0.9312	-0.0556	96.0	-0.0884	-0.0136	0.0451	0.0054
1.00	6.0	-0.0085	0.3257	-0.0282	-0.0335	98.0	-0.0941	-0.0161	0.0450	0.0068
1.00	8.0	-0.0113	0.2079	-0.0285	-0.0237	100.0	-0.1015	-0.0139	0.0419	0.0096
1.00	10.0	-0.0195	0.1263	0.0103	-0.0216	102.0	-0.1082	-0.0145	0.0405	0.0123
1.00	12.0	-0.0219	0.1037	0.0327	-0.0188	104.0	-0.1133	-0.0153	0.0397	0.0144
1.00	14.0	-0.0262	0.1435	0.0366	-0.0134	106.0	-0.1170	-0.0126	0.0358	0.0147
1.00	16.0	-0.0335	0.1270	0.0407	-0.0095	108.0	-0.1214	-0.0117	0.0358	0.0159
1.00	18.0	-0.0347	0.1248	0.0445	-0.0061	110.0	-0.1255	-0.0430	0.0328	0.0169
1.00	20.0	-0.0363	0.1045	0.0459	-0.0008	112.0	-0.1276	-0.0065	0.0303	0.0173
1.00	22.0	-0.0381	0.0786	0.0554	0.0008	114.0	-0.1306	-0.0584	0.0307	0.0178
1.00	24.0	-0.0323	0.0725	0.0436	-0.0023	116.0	-0.1325	-0.0255	0.0291	0.0170
1.00	26.0	-0.0313	0.0614	0.0321	-0.0010	118.0	-0.1340	0.0002	0.0235	0.0176
1.00	28.0	-0.0296	0.0106	0.0229	-0.0065	120.0	-0.1341	-0.0033	0.0272	0.0166
1.00	30.0	-0.0257	0.0532	0.0377	0.0024	122.0	-0.1352	-0.0000	0.0223	0.0165
1.00	32.0	-0.0198	0.0384	0.0736	-0.0012	124.0	-0.1386	-0.0028	0.0207	0.0189
1.00	34.0	-0.0105	0.0030	0.0267	-0.0049	126.0	-0.1398	0.0075	0.0156	0.0171
1.00	36.0	0.0005	-0.0113	0.0520	-0.0055	128.0	-0.1418	0.0156	0.0078	0.0163
1.00	38.0	0.0133	-0.0542	0.0797	-0.0063	130.0	-0.1464	0.0203	0.0036	0.0160
1.00	40.0	0.0079	-0.0491	0.0739	-0.0047	132.0	-0.1449	0.0245	0.0005	0.0160
1.00	42.0	0.0051	-0.0443	0.0678	-0.0044	134.0	-0.1478	0.0273	-0.0023	0.0162
1.00	44.0	0.0036	-0.0352	0.0583	-0.0037	136.0	-0.1523	0.0358	-0.0097	0.0175
1.00	46.0	-0.0013	-0.0574	0.0799	-0.0024	138.0	-0.1576	0.0461	-0.0108	0.0184
1.00	48.0	-0.0025	-0.0817	0.0732	-0.0032	140.0	-0.1646	0.0125	-0.0105	0.0209
1.00	50.0	-0.0032	-0.0561	0.0766	-0.0035	142.0	-0.1701	0.0210	-0.0191	0.0260
1.00	52.0	-0.0156	-0.0317	0.0680	0.0033	144.0	-0.1862	0.0531	-0.0193	0.0295
1.00	54.0	-0.0179	-0.0305	0.0660	0.0005	146.0	-0.1903	0.0535	-0.0180	0.0333
1.00	56.0	-0.0251	-0.0418	0.0700	0.0010	148.0	-0.2061	0.0553	-0.0197	0.0347
1.00	58.0	-0.0222	-0.0299	0.0685	0.0005	150.0	-0.2100	0.0625	-0.0253	0.0384
1.00	60.0	-0.0270	-0.0420	0.0767	0.0052	152.0	-0.2195	0.0708	-0.0256	0.0391
1.00	62.0	-0.0235	-0.0380	0.0606	-0.0017	154.0	-0.2324	0.0097	-0.0465	0.0427
1.00	64.0	-0.0249	-0.0369	0.0699	-0.0020	156.0	-0.2410	0.1356	-0.0672	0.0421
1.00	66.0	-0.0265	-0.0400	0.0726	-0.0026	158.0	-0.2612	0.1145	-0.0720	0.0449
1.00	68.0	-0.0290	-0.0392	0.0720	-0.0030	160.0	-0.2625	0.1647	-0.0644	0.0365
1.00	70.0	-0.0309	-0.0397	0.0723	-0.0038	162.0	-0.2779	0.0966	-0.0598	0.0313
1.00	72.0	-0.0341	-0.0435	0.0768	-0.0054	164.0	-0.2920	0.1010	-0.0578	0.0351
1.00	74.0	-0.0367	-0.0413	0.0744	-0.0046	166.0	-0.3079	0.0935	-0.0537	0.0390
1.00	76.0	-0.0392	-0.0297	0.0720	-0.0049	168.0	-0.3268	0.0761	-0.0408	0.0444
1.00	78.0	-0.0427	-0.0360	0.0677	-0.0042	170.0	-0.3493	0.0627	-0.0292	0.0518
1.00	80.0	-0.0477	-0.0345	0.0667	-0.0033	172.0	-0.3737	0.0315	-0.0050	0.0589
1.00	82.0	-0.0521	-0.0362	0.0644	-0.0020	174.0	-0.4050	-0.0033	0.0695	0.0712
1.00	84.0	-0.0542	-0.0308	0.0455	-0.0023	176.0	-0.4319	-0.1001	0.1974	0.0768
1.00	86.0	-0.0579	-0.0351	0.0532	-0.0025	178.0	-0.4458	0.1270	-0.1922	0.0699
1.00	88.0	-0.0631	-0.0327	0.0607	-0.0012	180.0	0.0	0.0	0.0	0.0
1.00	90.0	-0.0675	-0.0323	0.0597	-0.0007					

Table C-2 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

CPXMLA=B7(0)+B7(1)*(TAPER RATIO)+B7(2)*(TAPER RATIO)**2+B7(3)*(ASPECT RATIO)

		COEFFICIENTS FOR CPXMLA					COEFFICIENTS FOR CPXULA			
MACH	ALPHA	B7(0)	B7(1)	B7(2)	B7(3)	ALPHA	B7(0)	B7(1)	B7(2)	B7(3)
1.15	0.0	0.0	0.0	0.0	0.0	92.0	-0.0679	-0.0381	0.0603	-0.0007
1.15	2.0	-0.0164	-0.3977	0.7026	0.0075	94.0	-0.0732	-0.0350	0.0575	0.0008
1.15	4.0	0.0670	0.5435	-0.1670	-0.0837	96.0	-0.0782	-0.0344	0.0557	0.0029
1.15	6.0	0.0113	0.4817	-0.1152	-0.0500	98.0	-0.0870	-0.0281	0.0518	0.0053
1.15	8.0	0.0030	0.2930	-0.0591	-0.0367	100.0	-0.0891	-0.0336	0.0544	0.0066
1.15	10.0	-0.0119	0.2325	-0.0363	-0.0254	102.0	-0.0939	-0.0313	0.0512	0.0068
1.15	12.0	-0.0182	0.1874	-0.0093	-0.0192	104.0	-0.0974	-0.0274	0.0465	0.0094
1.15	14.0	-0.0254	0.1503	0.0043	-0.0143	106.0	-0.1034	-0.0203	0.0432	0.0111
1.15	16.0	-0.0314	0.1350	0.0145	-0.0096	108.0	-0.1082	-0.0182	0.0396	0.0128
1.15	18.0	-0.0342	0.1068	0.0314	-0.0050	110.0	-0.1108	-0.0197	0.0396	0.0141
1.15	20.0	-0.0495	-0.2763	0.4039	0.0006	112.0	-0.1150	-0.0160	0.0360	0.0193
1.15	22.0	-0.0347	0.0755	0.0397	-0.0010	114.0	-0.1191	-0.0139	0.0356	0.0155
1.15	24.0	-0.0305	0.0546	0.0526	-0.0008	116.0	-0.1222	-0.0122	0.0342	0.0169
1.15	26.0	-0.0298	0.0456	0.0464	-0.0020	118.0	-0.1243	-0.0109	0.0334	0.0169
1.15	28.0	-0.0300	0.0361	0.0475	-0.0016	120.0	-0.1265	-0.0077	0.0296	0.0172
1.15	30.0	-0.0307	0.0374	0.0363	-0.0001	122.0	-0.1286	-0.0022	0.0252	0.0171
1.15	32.0	-0.0310	0.0091	0.0207	-0.0005	124.0	-0.1306	-0.0001	0.0240	0.0175
1.15	34.0	-0.0300	0.0200	0.0339	0.0002	126.0	-0.1325	0.0030	0.0200	0.0173
1.15	36.0	-0.0272	0.0110	0.0419	0.0014	128.0	-0.1359	0.0136	0.0132	0.0173
1.15	38.0	-0.0224	0.0267	0.0212	-0.0016	130.0	-0.1390	0.0166	0.0093	0.0183
1.15	40.0	-0.0142	0.0080	0.0282	-0.0030	132.0	-0.1430	0.0161	0.0080	0.0201
1.15	42.0	-0.0086	-0.0217	0.0501	-0.0021	134.0	-0.1491	0.0175	0.0075	0.0219
1.15	44.0	-0.0035	-0.0400	0.0618	-0.0044	136.0	-0.1546	0.0235	0.0031	0.0235
1.15	46.0	-0.0011	-0.0513	0.0696	-0.0059	138.0	-0.1590	0.0303	-0.0027	0.0245
1.15	48.0	-0.0030	-0.0452	0.0637	-0.0056	140.0	-0.1663	0.0332	-0.0040	0.0266
1.15	50.0	-0.0062	-0.0392	0.0372	-0.0057	142.0	-0.1736	0.0401	-0.0095	0.0287
1.15	52.0	-0.0130	-0.0234	0.0440	-0.0041	144.0	-0.1814	0.0426	-0.0004	0.0308
1.15	54.0	-0.0140	-0.0382	0.0575	-0.0066	146.0	-0.1878	0.0530	-0.0150	0.0315
1.15	56.0	-0.0198	-0.0434	0.0640	-0.0027	148.0	-0.1961	0.0562	-0.0206	0.0339
1.15	58.0	-0.0234	-0.0396	0.0625	-0.0019	150.0	-0.2032	0.0600	-0.0220	0.0343
1.15	60.0	-0.0232	-0.0400	0.0620	-0.0035	152.0	-0.2086	0.0651	-0.0253	0.0333
1.15	62.0	-0.0248	-0.0403	0.0644	-0.0034	154.0	-0.2175	0.0531	-0.0110	0.0329
1.15	64.0	-0.0271	-0.0398	0.0643	-0.0037	156.0	-0.2347	0.0877	-0.0372	0.0331
1.15	66.0	-0.0294	-0.0439	0.0680	-0.0032	158.0	-0.2454	0.1093	-0.0551	0.0306
1.15	68.0	-0.0310	-0.0433	0.0685	-0.0036	160.0	-0.2436	0.0990	-0.0440	0.0254
1.15	70.0	-0.0322	-0.0432	0.0687	-0.0005	162.0	-0.2631	0.1116	-0.0607	0.0295
1.15	72.0	-0.0346	-0.0427	0.0673	-0.0049	164.0	-0.2775	0.1125	-0.0607	0.0329
1.15	74.0	-0.0379	-0.0435	0.0705	-0.0045	166.0	-0.2967	0.1125	-0.0598	0.0374
1.15	76.0	-0.0411	-0.0426	0.0696	-0.0042	168.0	-0.3181	0.1030	-0.0406	0.0440
1.15	78.0	-0.0447	-0.0440	0.0701	-0.0029	170.0	-0.3394	0.0959	-0.0412	0.0509
1.15	80.0	-0.0498	-0.0385	0.0649	-0.0028	172.0	-0.3676	0.0650	-0.0094	0.0615
1.15	82.0	-0.0515	-0.0381	0.0630	-0.0025	174.0	-0.4025	-0.0024	0.0510	0.0751
1.15	84.0	-0.0528	-0.0448	0.0702	-0.0030	176.0	-0.4406	-0.2111	0.2302	0.0935
1.15	86.0	-0.0550	-0.0498	0.0753	-0.0034	178.0	-0.4440	0.0638	-0.1093	0.0965
1.15	88.0	-0.0597	-0.0454	0.0703	-0.0025	180.0	0.0	0.0	0.0	0.0
1.15	90.0	-0.0646	-0.0394	0.0624	-0.0014					

Table C-2 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

CPXMLA=B7(0)+B7(1)*(TAPER RATIO)+B7(2)*(TAPER RATIO)**2+B7(3)*(ASPECT RATIO)

		COEFFICIENTS FOR CPXMLA				COEFFICIENTS FOR CPXMLA				
MACH	ALPHA	B7(0)	B7(1)	B7(2)	B7(3)	ALPHA	B7(0)	B7(1)	B7(2)	B7(3)
1.30	0.0	0.0	0.0	0.0	0.0	92.0	-0.0605	-0.0300	0.0535	-0.0061
1.30	2.0	0.0086	0.3975	0.1237	-0.1259	94.0	-0.0653	-0.0406	0.0631	-0.0045
1.30	4.0	0.0235	0.4185	-0.1127	-0.0619	96.0	-0.0690	-0.0454	0.0633	-0.0022
1.30	6.0	-0.0026	0.3023	-0.0560	-0.0390	98.0	-0.0756	-0.0320	0.0473	0.0011
1.30	8.0	-0.0138	0.2367	-0.0290	-0.0285	100.0	-0.0830	-0.0277	0.0514	0.0040
1.30	10.0	-0.0179	0.1890	-0.0140	-0.0234	102.0	-0.0910	-0.0365	0.0597	0.0065
1.30	12.0	-0.0235	0.1616	-0.0137	-0.0173	104.0	-0.0943	-0.0459	0.0605	0.0072
1.30	14.0	-0.0287	0.1294	0.0030	-0.0114	106.0	-0.0964	-0.0367	0.0481	0.0069
1.30	16.0	-0.0334	0.1087	0.0136	-0.0070	108.0	-0.0994	-0.0258	0.0388	0.0081
1.30	18.0	-0.0349	0.0894	0.0240	-0.0025	110.0	-0.1039	-0.0109	0.0306	0.0082
1.30	20.0	-0.0388	0.0759	0.0301	-0.0001	112.0	-0.1087	-0.0071	0.0303	0.0092
1.30	22.0	-0.0383	0.0618	0.0373	0.0004	114.0	-0.1146	-0.0178	0.0384	0.0133
1.30	24.0	-0.0367	0.0425	0.0401	0.0003	116.0	-0.1193	-0.0206	0.0433	0.0143
1.30	26.0	-0.0370	0.0320	0.0519	0.0016	118.0	-0.1187	-0.0052	0.0265	0.0129
1.30	28.0	-0.0384	0.0254	0.0537	0.0030	120.0	-0.1219	-0.0006	0.0243	0.0128
1.30	30.0	-0.0350	0.0181	0.0519	0.0007	122.0	-0.1257	-0.0072	0.0320	0.0144
1.30	32.0	-0.0354	0.0129	0.0521	0.0020	124.0	-0.1303	-0.0090	0.0329	0.0169
1.30	34.0	-0.0337	0.0060	0.0537	0.0015	126.0	-0.1331	-0.0083	0.0295	0.0181
1.30	36.0	-0.0318	0.0062	0.0475	0.0001	128.0	-0.1364	-0.0012	0.0222	0.0194
1.30	38.0	-0.0291	-0.0073	0.0526	0.0025	130.0	-0.1413	0.0087	0.0169	0.0211
1.30	40.0	-0.0234	-0.0012	0.0397	0.0004	132.0	-0.1437	0.0152	0.0105	0.0208
1.30	42.0	-0.0186	-0.0070	0.0400	-0.0018	134.0	-0.1449	0.0150	0.0038	0.0199
1.30	44.0	-0.0149	-0.0216	0.0525	-0.0051	136.0	-0.1475	0.0205	0.0032	0.0200
1.30	46.0	-0.0157	-0.0446	0.0745	-0.0046	138.0	-0.1533	0.0180	0.0062	0.0227
1.30	48.0	-0.0197	-0.0554	0.0850	-0.0032	140.0	-0.1582	0.0209	0.0083	0.0232
1.30	50.0	-0.0230	-0.0350	0.0637	-0.0012	142.0	-0.1649	0.0289	0.0026	0.0242
1.30	52.0	-0.0262	-0.0245	0.0511	-0.0002	144.0	-0.1706	0.0382	-0.0070	0.6252
1.30	54.0	-0.0250	-0.0317	0.0588	-0.0022	146.0	-0.1744	0.0406	-0.0084	0.0245
1.30	56.0	-0.0232	-0.0532	0.0888	-0.0041	148.0	-0.1828	0.0582	-0.0216	0.0232
1.30	58.0	-0.0294	-0.0427	0.0734	-0.0039	150.0	-0.1890	0.0672	-0.0285	0.0237
1.30	60.0	-0.0301	-0.0329	0.0651	-0.0046	152.0	-0.1948	0.0768	-0.0368	0.0235
1.30	62.0	-0.0335	-0.0249	0.0582	-0.0047	154.0	-0.2011	0.0993	-0.0574	0.0207
1.30	64.0	-0.0373	-0.0186	0.0524	-0.0058	156.0	-0.2084	0.1028	-0.0584	0.0208
1.30	66.0	-0.0373	-0.0359	0.0704	-0.0072	158.0	-0.2148	0.0995	-0.0544	0.0196
1.30	68.0	-0.0398	-0.0347	0.0671	-0.0024	160.0	-0.2255	0.1064	-0.0583	0.0215
1.30	70.0	-0.0418	-0.0353	0.0669	-0.0016	162.0	-0.2388	0.1095	-0.0571	0.0250
1.30	72.0	-0.0421	-0.0492	0.0796	-0.0024	164.0	-0.2557	0.1162	-0.0583	0.0306
1.30	74.0	-0.0451	-0.0607	0.0889	-0.0051	166.0	-0.2739	0.1211	-0.0593	0.0361
1.30	76.0	-0.0478	-0.0732	0.0934	-0.0029	168.0	-0.2939	0.1283	-0.0643	0.0424
1.30	78.0	-0.0513	-0.0505	0.0722	0.0004	170.0	-0.3147	0.1366	-0.0721	0.0482
1.30	80.0	-0.0531	-0.0346	0.0570	0.0013	172.0	-0.3382	0.1394	-0.0798	0.0555
1.30	82.0	-0.0549	-0.0165	0.0433	-0.0028	174.0	-0.3633	0.1374	-0.0897	0.0649
1.30	84.0	-0.0518	-0.0575	0.0814	-0.0023	176.0	-0.3948	0.1252	-0.0931	0.0811
1.30	86.0	-0.0533	-0.0543	0.0763	-0.0031	178.0	-0.4343	0.0832	-0.0767	0.1117
1.30	88.0	-0.0569	-0.0332	0.0526	-0.0048	180.0	0.0	0.0	0.0	0.0
1.30	90.0	-0.0574	-0.0261	0.0461	-0.0064					

Table C-2 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

CPXHLA=B7(0)+B7(1)*(TAPER RATIO)+B7(2)*(TAPER RATIO)**2+B7(3)*(ASPECT RATIO)

		COEFFICIENTS FOR CPXHLA					COEFFICIENTS FOR CPXHLA			
MACH	ALPHA	B7(0)	B7(1)	B7(2)	B7(3)	ALPHA	B7(0)	B7(1)	B7(2)	B7(3)
1.50	0.0	0.0	0.0	0.0	0.0	92.0	-0.0940	-0.0381	0.0844	0.0034
1.50	2.0	-0.0349	0.1584	0.0401	-0.0117	94.0	-0.0985	-0.0282	0.0724	0.0074
1.50	4.0	-0.0521	0.1523	0.0154	0.0099	96.0	-0.1002	-0.0458	0.0915	0.0076
1.50	6.0	-0.0544	0.1073	0.0379	0.0185	98.0	-0.0956	0.0076	0.0287	0.0010
1.50	8.0	-0.0302	0.0706	0.0506	-0.0050	100.0	-0.1053	0.0269	0.0082	0.0049
1.50	10.0	-0.0301	0.0578	0.0526	-0.0046	102.0	-0.1243	0.0375	0.0067	0.0128
1.50	12.0	-0.0429	0.0475	0.0709	0.0021	104.0	-0.1335	0.0235	0.0224	0.0173
1.50	14.0	-0.0456	0.0409	0.0724	0.0032	106.0	-0.1332	0.0877	0.0335	0.0175
1.50	16.0	-0.0474	0.0210	0.0840	0.0071	108.0	-0.1333	-0.0127	0.0476	0.0195
1.50	18.0	-0.0495	0.0030	0.0936	0.0117	110.0	-0.1419	-0.0286	0.0518	0.0266
1.50	20.0	-0.0491	-0.0075	0.0964	0.0132	112.0	-0.1486	-0.0092	0.0380	0.0292
1.50	22.0	-0.0496	-0.0139	0.0998	0.0142	114.0	-0.1476	0.0064	0.0192	0.0266
1.50	24.0	-0.0485	-0.0109	0.0886	0.0135	116.0	-0.1519	-0.0049	0.0333	0.0285
1.50	26.0	-0.0452	-0.0199	0.0898	0.0124	118.0	-0.1546	-0.0065	0.0366	0.0291
1.50	28.0	-0.0448	-0.0103	0.0782	0.0105	120.0	-0.1604	0.0147	0.0183	0.0296
1.50	30.0	-0.0455	0.0005	0.0639	0.0104	122.0	-0.1608	0.0118	0.0265	0.0283
1.50	32.0	-0.0420	-0.0068	0.0664	0.0083	124.0	-0.1587	0.0221	0.0146	0.0271
1.50	34.0	-0.0396	-0.0116	0.0666	0.0073	126.0	-0.1574	0.0275	0.0059	0.0268
1.50	36.0	-0.0344	-0.0053	0.0572	0.0040	128.0	-0.1530	0.0279	0.0043	0.0248
1.50	38.0	-0.0335	-0.0074	0.0591	0.0033	130.0	-0.1568	0.0229	0.0098	0.0247
1.50	40.0	-0.0303	-0.0168	0.0659	0.0020	132.0	-0.1591	0.0253	0.0077	0.0253
1.50	42.0	-0.0287	-0.0279	0.0750	0.0005	134.0	-0.1616	0.0276	0.0058	0.0259
1.50	44.0	-0.0261	-0.0339	0.0764	-0.0021	136.0	-0.1620	0.0327	-0.0015	0.0255
1.50	46.0	-0.0247	-0.0357	0.0730	-0.0035	138.0	-0.1629	0.0393	-0.0107	0.0254
1.50	48.0	-0.0237	-0.0390	0.0736	-0.0047	140.0	-0.1655	0.0429	-0.0158	0.0259
1.50	50.0	-0.0282	-0.0392	0.0774	-0.0042	142.0	-0.1661	0.0464	-0.0199	0.0246
1.50	52.0	-0.0324	-0.0316	0.0731	-0.0044	144.0	-0.1626	0.0483	-0.0236	0.0211
1.50	54.0	-0.0351	-0.0357	0.0803	-0.0040	146.0	-0.1594	0.0497	-0.0269	0.0180
1.50	56.0	-0.0360	-0.0455	0.0884	-0.0044	148.0	-0.1601	0.0487	-0.0269	0.0173
1.50	58.0	-0.0367	-0.0403	0.0830	-0.0053	150.0	-0.1624	0.0497	-0.0280	0.0164
1.50	60.0	-0.0329	-0.0519	0.0926	-0.0079	152.0	-0.1654	0.0492	-0.0271	0.0154
1.50	62.0	-0.0349	-0.0388	0.0838	-0.0092	154.0	-0.1728	0.0565	-0.0336	0.0172
1.50	64.0	-0.0337	-0.0325	0.0775	-0.0101	156.0	-0.1830	0.0620	-0.0350	0.0210
1.50	66.0	-0.0368	-0.0625	0.1080	-0.0087	158.0	-0.1947	0.0649	-0.0328	0.0261
1.50	68.0	-0.0467	-0.0670	0.1159	-0.0091	160.0	-0.2059	0.0760	-0.0395	0.0283
1.50	70.0	-0.0455	-0.0610	0.1144	-0.0089	162.0	-0.2181	0.0945	-0.0580	0.0325
1.50	72.0	-0.0497	-0.0442	0.1035	-0.0103	164.0	-0.2318	0.1072	-0.0479	0.0373
1.50	74.0	-0.0547	-0.0050	0.0649	-0.0118	166.0	-0.2516	0.1176	-0.0745	0.0449
1.50	76.0	-0.0609	-0.0212	0.0738	-0.0065	168.0	-0.2746	0.1299	-0.0700	0.0556
1.50	78.0	-0.0650	-0.0517	0.0971	-0.0011	170.0	-0.2930	0.1528	-0.1010	0.0642
1.50	80.0	-0.0616	-0.0545	0.0997	-0.0034	172.0	-0.3172	0.1912	-0.1326	0.0723
1.50	82.0	-0.0620	-0.0182	0.0739	-0.0100	174.0	-0.3517	0.2221	-0.1592	0.3966
1.50	84.0	-0.0700	-0.0120	0.0633	-0.0055	176.0	-0.4045	0.2393	-0.1457	0.1171
1.50	86.0	-0.0788	-0.0129	0.0530	0.0020	178.0	-0.4507	0.4063	-0.2093	0.1565
1.50	88.0	-0.0843	-0.0221	0.0620	0.0033	180.0	0.0	0.0	0.0	0.0
1.50	90.0	-0.0873	-0.0333	0.0746	0.0034					

Table C-2 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

CPXMLA=B7(0)+B7(1)*(TAPER RATIO)+B7(2)*(TAPER RATIO)**2+B7(3)*(ASPECT RATIO)

COEFFICIENTS FOR CPXMLA

MACH	ALPHA	B7(C)	B7(1)	B7(2)	B7(3)
2.00	0.0	0.0	0.0	0.0	0.0
2.00	2.0	-0.0513	0.0946	0.0701	-0.0088
2.00	4.0	-0.0423	0.1713	-0.0467	-0.0111
2.00	6.0	-0.0435	0.1029	0.0045	0.0021
2.00	8.0	-0.0415	0.0877	0.0105	-0.0001
2.00	10.0	-0.0412	0.0552	0.0298	0.0022
2.00	12.0	-0.0428	0.0425	0.0447	0.0018
2.00	14.0	-0.0441	0.0154	0.0684	0.0049
2.00	16.0	-0.0446	0.0100	0.0687	0.0084
2.00	18.0	-0.0449	0.0069	0.0687	0.0098
2.00	20.0	-0.0427	-0.0022	0.0763	0.0075
2.00	22.0	-0.0434	-0.0146	0.0893	0.0079
2.00	24.0	-0.0429	-0.0295	0.1022	0.0083
2.00	26.0	-0.0417	-0.0381	0.1064	0.0084
2.00	28.0	-0.0418	-0.0363	0.1008	0.0089
2.00	30.0	-0.0416	-0.0307	0.0900	0.0095
2.00	32.0	-0.0402	-0.0263	0.0824	0.0073
2.00	34.0	-0.0378	-0.0232	0.0746	0.0057
2.00	36.0	-0.0337	-0.0164	0.0635	0.0031
2.00	38.0	-0.0291	-0.0223	0.0647	0.0002
2.00	40.0	-0.0228	-0.0332	0.0699	-0.0030
2.00	42.0	-0.0203	-0.0404	0.0767	-0.0051
2.00	44.0	-0.0176	-0.0478	0.0855	-0.0080
2.00	46.0	-0.0227	-0.0403	0.0803	-0.0075
2.00	48.0	-0.0264	-0.0353	0.0772	-0.0078
2.00	50.0	-0.0249	-0.0399	0.0817	-0.0104
2.00	52.0	-0.0281	-0.0349	0.0784	-0.0102
2.00	54.0	-0.0304	-0.0329	0.0772	-0.0106
2.00	56.0	-0.0319	-0.0339	0.0790	-0.0108
2.00	58.0	-0.0339	-0.0427	0.0900	-0.0107
2.00	60.0	-0.0374	-0.0410	0.0909	-0.0119
2.00	62.0	-0.0376	-0.0366	0.0865	-0.0130
2.00	64.0	-0.0384	-0.0374	0.0867	-0.0121
2.00	66.0	-0.0390	-0.0392	0.0914	-0.0138
2.00	68.0	-0.0388	-0.0500	0.1020	-0.0144
2.00	70.0	-0.0397	-0.0389	0.0932	-0.0167
2.00	72.0	-0.0440	-0.0191	0.0786	-0.0178
2.00	74.0	-0.0565	0.0078	0.0607	-0.0164
2.00	76.0	-0.0544	-0.0090	0.0728	-0.0168
2.00	78.0	-0.0537	-0.0269	0.0862	-0.0162
2.00	80.0	-0.0616	-0.0321	0.0941	-0.0124
2.00	82.0	-0.0653	-0.0399	0.0997	-0.0110
2.00	84.0	-0.0790	-0.0260	0.0836	-0.0054
2.00	86.0	-0.0930	-0.0240	0.0702	0.0033
2.00	88.0	-0.1024	-0.0067	0.0455	0.0073
2.00	90.0	-0.0982	0.0061	0.0419	-0.0012

COEFFICIENTS FOR CPXMLA

ALPHA	B7(0)	B7(1)	B7(2)	B7(3)
92.0	-0.0968	0.0019	0.0491	-0.0030
94.0	-0.1040	-0.0034	0.0587	0.0006
96.0	-0.1136	0.0017	0.0523	0.0050
98.0	-0.1237	0.0103	0.0380	0.0097
100.0	-0.1368	0.0254	0.0246	0.0147
102.0	-0.1450	0.0485	0.0072	0.0160
104.0	-0.1331	0.0228	0.0279	0.0110
106.0	-0.1393	0.0129	0.0253	0.0162
108.0	-0.1520	0.0102	0.0225	0.0243
110.0	-0.1649	0.0244	0.0132	0.0307
112.0	-0.1730	0.0381	0.0041	0.0340
114.0	-0.1736	0.0368	0.0091	0.0333
116.0	-0.1761	0.0365	0.0005	0.0347
118.0	-0.1784	0.0376	0.0075	0.0355
120.0	-0.1779	0.0459	-0.0015	0.0334
122.0	-0.1738	0.0410	0.0008	0.0307
124.0	-0.1757	0.0402	0.0027	0.0329
126.0	-0.1761	0.0437	-0.0018	0.0330
128.0	-0.1751	0.0496	-0.0089	0.0314
130.0	-0.1741	0.0548	-0.0157	0.0295
132.0	-0.1742	0.0596	-0.0218	0.0293
134.0	-0.1734	0.0606	-0.0248	0.0289
136.0	-0.1728	0.0566	-0.0221	0.0287
138.0	-0.1711	0.0537	-0.0205	0.0278
140.0	-0.1663	0.0545	-0.0238	0.0247
142.0	-0.1624	0.0474	-0.0198	0.0223
144.0	-0.1583	0.0419	-0.0181	0.0199
146.0	-0.1554	0.0394	-0.0181	0.0184
148.0	-0.1557	0.0341	-0.0147	0.0176
150.0	-0.1568	0.0345	-0.0155	0.0168
152.0	-0.1607	0.0356	-0.0157	0.0179
154.0	-0.1665	0.0396	-0.0188	0.0192
156.0	-0.1746	0.0400	-0.0166	0.0222
158.0	-0.1831	0.0434	-0.0168	0.0255
160.0	-0.1944	0.0518	-0.0215	0.0310
162.0	-0.2055	0.0687	-0.0351	0.0354
164.0	-0.2150	0.0904	-0.0563	0.0381
166.0	-0.2232	0.0976	-0.0621	0.0410
168.0	-0.2343	0.1087	-0.0700	0.0455
170.0	-0.2536	0.1396	-0.0957	0.0538
172.0	-0.2778	0.1586	-0.1013	0.0617
174.0	-0.3158	0.2152	-0.1480	0.0822
176.0	-0.3411	0.2734	-0.1958	0.0858
178.0	-0.4025	0.3694	-0.2746	0.1290
180.0	0.0	0.0	0.0	0.0

Table C-2 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

CPXMLA=B7(0)+B7(1)*(TAPER RATIO)+B7(2)*(TAPER RATIO)**2+B7(3)*(ASPECT RATIO)

		COEFFICIENTS FOR CPXMLA				COEFFICIENTS FOR CPXMLA				
MACH	ALPHA	B7(0)	B7(1)	B7(2)	B7(3)	ALPHA	B7(0)	B7(1)	B7(2)	B7(3)
2.50	0.0	0.0	0.0	0.0	0.0	92.0	-0.1377	0.0410	0.0206	0.0104
2.50	2.0	-0.0256	0.0332	0.0563	-0.0089	94.0	-0.1558	0.0416	0.0285	0.0192
2.50	4.0	-0.0515	0.1441	-0.0591	0.0137	96.0	-0.1669	0.0433	0.0257	0.0246
2.50	6.0	-0.0452	0.0858	-0.0069	0.0199	98.0	-0.1747	0.0408	0.0270	0.0274
2.50	8.0	-0.0631	0.0728	-0.0029	0.0068	100.0	-0.1802	0.0484	0.0162	0.0292
2.50	10.0	-0.0457	0.0539	0.0155	0.0087	102.0	-0.1845	0.0486	0.0169	0.0305
2.50	12.0	-0.0516	0.0365	0.0385	0.0149	104.0	-0.1912	0.0515	0.0150	0.0336
2.50	14.0	-0.0476	0.0243	0.0365	0.0111	106.0	-0.1946	0.0490	0.0165	0.0353
2.50	16.0	-0.0442	0.0012	0.0566	0.0110	108.0	-0.2029	0.0544	0.0120	0.0390
2.50	18.0	-0.0417	-0.0175	0.0739	0.0113	110.0	-0.2066	0.0614	0.0028	0.0408
2.50	20.0	-0.0401	-0.0281	0.0840	0.0104	112.0	-0.2071	0.0709	-0.0072	0.0408
2.50	22.0	-0.0432	-0.0086	0.0652	0.0105	114.0	-0.2094	0.0746	-0.0097	0.0417
2.50	24.0	-0.0454	-0.0137	0.0703	0.0114	116.0	-0.2132	0.0739	-0.0110	0.0443
2.50	26.0	-0.0448	-0.0185	0.0739	0.0118	118.0	-0.2138	0.0728	-0.0135	0.0448
2.50	28.0	-0.0443	-0.0335	0.0875	0.0124	120.0	-0.2135	0.0809	-0.0218	0.0430
2.50	30.0	-0.0439	-0.0458	0.0995	0.0118	122.0	-0.2117	0.0785	-0.0242	0.0445
2.50	32.0	-0.0434	-0.0425	0.0951	0.0102	124.0	-0.2117	0.0771	-0.0239	0.0464
2.50	34.0	-0.0415	-0.0343	0.0837	0.0076	126.0	-0.2108	0.0860	-0.0328	0.0461
2.50	36.0	-0.0389	-0.0339	0.0802	0.0052	128.0	-0.2062	0.0875	-0.0350	0.0437
2.50	38.0	-0.0366	-0.0328	0.0773	0.0030	130.0	-0.2007	0.0887	-0.0378	0.0413
2.50	40.0	-0.0344	-0.0278	0.0701	0.0012	132.0	-0.1931	0.0842	-0.0364	0.0376
2.50	42.0	-0.0318	-0.0284	0.0681	0.0001	134.0	-0.1860	0.0806	-0.0364	0.0342
2.50	44.0	-0.0285	-0.0323	0.0698	-0.0023	136.0	-0.1790	0.0794	-0.0397	0.0302
2.50	46.0	-0.0263	-0.0329	0.0697	-0.0048	138.0	-0.1720	0.0774	-0.0425	0.0261
2.50	48.0	-0.0241	-0.0327	0.0706	-0.0080	140.0	-0.1660	0.0718	-0.0411	0.0228
2.50	50.0	-0.0221	-0.0366	0.0783	-0.0124	142.0	-0.1616	0.0656	-0.0392	0.0206
2.50	52.0	-0.0225	-0.0289	0.0743	-0.0152	144.0	-0.1573	0.0617	-0.0409	0.0189
2.50	54.0	-0.0256	-0.0191	0.0692	-0.0168	146.0	-0.1524	0.0561	-0.0417	0.0165
2.50	56.0	-0.0284	-0.0150	0.0681	-0.0184	148.0	-0.1469	0.0382	-0.0291	0.0140
2.50	58.0	-0.0336	-0.0152	0.0745	-0.0191	150.0	-0.1402	0.0183	-0.0128	0.0094
2.50	60.0	-0.0392	-0.0203	0.0814	-0.0169	152.0	-0.1390	0.0157	-0.0117	0.0080
2.50	62.0	-0.0428	-0.0280	0.0897	-0.0143	154.0	-0.1389	0.0190	-0.0188	0.0081
2.50	64.0	-0.0466	-0.0337	0.0940	-0.0113	156.0	-0.1426	0.0224	-0.0221	0.0120
2.50	66.0	-0.0511	-0.0113	0.0819	-0.0165	158.0	-0.1459	0.0332	-0.0336	0.0147
2.50	68.0	-0.0527	-0.0248	0.0947	-0.0166	160.0	-0.1514	0.0403	-0.0377	0.0183
2.50	70.0	-0.0522	-0.0145	0.0864	-0.0191	162.0	-0.1592	0.0492	-0.0411	0.0231
2.50	72.0	-0.0485	-0.0111	0.0874	-0.0236	164.0	-0.1647	0.0528	-0.0407	0.0250
2.50	74.0	-0.0536	-0.0202	0.0950	-0.0214	166.0	-0.1737	0.0632	-0.0472	0.0288
2.50	76.0	-0.0689	-0.0095	0.0769	-0.0129	168.0	-0.1842	0.0736	-0.0542	0.0338
2.50	78.0	-0.0843	0.0012	0.0643	-0.0056	170.0	-0.2018	0.0833	-0.0554	0.0427
2.50	80.0	-0.0914	-0.0023	0.0753	-0.0042	172.0	-0.2214	0.1309	-0.0986	0.0471
2.50	82.0	-0.1242	0.0339	0.0157	0.0161	174.0	-0.2432	0.1519	-0.1205	0.0584
2.50	84.0	-0.1470	0.0287	0.0118	0.0289	176.0	-0.2597	0.1551	-0.1269	0.0657
2.50	86.0	-0.1078	-0.0542	0.1517	-0.0050	178.0	-0.3076	0.2029	-0.1607	0.0981
2.50	88.0	-0.1201	-0.0051	0.0823	0.0021	180.0	0.0	0.0	0.0	0.0
2.50	90.0	-0.1301	0.0449	0.0227	0.0037					

Table C-2 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

CPXMLA=B7(0)+B7(1)*(TAPER RATIO)+B7(2)*(TAPER RATIO)**2+B7(3)*(ASPECT RATIO)

COEFFICIENTS FOR CPXMLA

MACH	ALPHA	B7(0)	B7(1)	B7(2)	B7(3)
3.00	0.0	0.0	0.0	0.0	0.0
3.00	2.0	-0.4473	-0.3186	0.9134	0.3774
3.00	4.0	-0.5193	-0.4219	1.0731	0.4295
3.00	6.0	-0.4275	-0.3827	0.9169	0.3536
3.00	8.0	-0.3072	-0.2630	0.6405	0.2530
3.00	10.0	-0.1846	-0.1351	0.3679	0.1431
3.00	12.0	-0.0972	-0.0443	0.1709	0.0651
3.00	14.0	-0.0580	0.0001	0.0745	0.0299
3.00	16.0	-0.0541	0.0352	0.0291	0.0199
3.00	18.0	-0.0630	0.0422	0.0248	0.0253
3.00	20.0	-0.0651	0.0408	0.0299	0.0249
3.00	22.0	-0.0595	0.0239	0.0428	0.0215
3.00	24.0	-0.0559	0.0190	0.0438	0.0194
3.00	26.0	-0.0543	0.0032	0.0555	0.0196
3.00	26.0	-0.0542	0.0144	0.0437	0.0196
3.00	30.0	-0.0503	-0.0020	0.0562	0.0175
3.00	32.0	-0.0493	-0.0178	0.0728	0.0166
3.00	34.0	-0.0490	-0.0318	0.0856	0.0178
3.00	36.0	-0.0497	-0.0334	0.0844	0.0179
3.00	38.0	-0.9494	-0.0385	0.0871	0.0179
3.00	40.0	-0.0477	-0.0426	0.0897	0.0159
3.00	42.0	-0.0435	-0.0463	0.0921	0.0109
3.00	44.0	-0.0399	-0.0378	0.0824	0.0071
3.00	46.0	-0.0356	-0.0288	0.0712	0.0033
3.00	48.0	-0.0308	-0.0220	0.0620	-0.0007
3.00	50.0	-0.0265	-0.0242	0.0660	-0.0056
3.00	52.0	-0.0247	-0.0190	0.0684	-0.0112
3.00	54.0	-0.0264	-0.0017	0.0600	-0.0153
3.00	56.0	-0.0281	0.0083	0.0569	-0.0187
3.00	58.0	-0.0315	0.0149	0.0550	-0.0202
3.00	60.0	-0.0348	0.0208	0.0530	-0.0215
3.00	62.0	-0.0376	0.0187	0.0592	-0.0215
3.00	64.0	-0.0435	0.0122	0.0701	-0.0187
3.00	66.0	-0.0470	0.0012	0.0844	-0.0181
3.00	68.0	-0.0490	0.0015	0.0863	-0.0198
3.00	70.0	-0.0523	-0.0033	0.0963	-0.0220
3.00	72.0	-0.0519	-0.0012	0.0967	-0.0249
3.00	74.0	-0.0563	-0.0106	0.1094	-0.0240
3.00	76.0	-0.0695	-0.0044	0.1064	-0.0194
3.00	78.0	-0.0837	0.0032	0.1021	-0.0140
3.00	80.0	-0.0950	0.0062	0.1048	-0.0093
3.00	82.0	-0.1056	0.0265	0.0880	-0.0066
3.00	84.0	-0.1191	0.0373	0.0773	-0.0018
3.00	86.0	-0.1250	0.0038	0.1048	0.0028
3.00	88.0	-0.1327	0.0621	0.0955	0.0070
3.00	90.0	-0.1455	0.0013	0.0894	0.0137

COEFFICIENTS FOR CPXMLA

ALPHA	B7(0)	B7(1)	B7(2)	B7(3)
92.0	-0.1504	0.0412	0.0485	0.0142
94.0	-0.1627	0.0805	0.0124	0.0197
96.0	-0.1781	0.0788	0.0142	0.0288
98.0	-0.1893	0.0665	0.0214	0.0338
100.0	-0.1982	0.0671	0.0136	0.0379
102.0	-0.2078	0.0572	0.0187	0.0438
104.0	-0.2173	0.0433	0.0289	0.0488
106.0	-0.2178	0.0482	0.0216	0.0489
108.0	-0.2226	0.0541	0.0171	0.0506
110.0	-0.2216	0.0608	0.0074	0.0490
112.0	-0.2205	0.0569	0.0105	0.0482
114.0	-0.2230	0.0599	0.0079	0.0492
116.0	-0.2256	0.0595	0.0079	0.0506
118.0	-0.2253	0.0586	.0061	0.0513
120.0	-0.2249	0.0648	-0.0022	0.0519
122.0	-0.2249	0.0757	-0.0145	0.0527
124.0	-0.2238	0.0856	-0.0240	0.0530
126.0	-0.2207	0.0955	-0.0361	0.0521
128.0	-0.2146	0.0998	-0.0395	0.0491
130.0	-0.2070	0.0973	-0.0384	0.0462
132.0	-0.1993	0.0977	-0.0416	0.0431
134.0	-0.1909	0.0943	-0.0435	0.0396
136.0	-0.1821	0.0792	-0.0359	0.0378
138.0	-0.1738	0.0727	-0.0342	0.0336
140.0	-0.1672	0.0661	-0.0322	0.0298
142.0	-0.1623	0.0615	-0.0323	0.0263
144.0	-0.1569	0.0692	-0.0429	0.0209
146.0	-0.1482	0.0583	-0.0429	0.0172
148.0	-0.1400	0.0413	-0.0362	0.0132
150.0	-0.1346	0.0216	-0.0205	0.0115
152.0	-0.1380	0.0185	-0.0167	0.0174
154.0	-0.1372	0.0037	-0.0043	0.0174
156.0	-0.1383	0.0301	-0.0270	0.0175
158.0	-0.1424	0.0411	-0.0349	0.0201
160.0	-0.1437	0.0352	-0.0291	0.0217
162.0	-0.1485	0.0381	-0.0287	0.0246
164.0	-0.1557	0.0466	-0.0305	0.0271
166.0	-0.1735	0.0401	-0.0066	0.0337
168.0	-0.1894	0.0473	-0.0016	0.0400
170.0	-0.1964	0.0773	-0.0338	0.0427
172.0	-0.1934	0.1504	-0.1218	0.0282
174.0	-0.2013	0.1050	-0.0577	0.0271
176.0	-0.1970	0.2452	-0.2367	0.0289
178.0	-0.2522	-0.0546	0.0280	0.1492
180.0	0.0	0.0	0.0	0.0

Table C-3

Regression Coefficients for $CP_{Y_{RCA}}$

REGRESSION COEFFICIENTS FOR EQUATION

CPYRCA=BB(0)+BB(1)*(TAPER RATIO)+BB(2)*(TAPER RATIO)**2+BB(3)*(ASPECT RATIO)

COEFFICIENTS FOR CPYRCA						COEFFICIENTS FOR CPYRCA				
MACH	ALPHA	BJ(0)	BB(1)	BB(2)	BB(3)	ALPHA	BB(0)	BB(1)	BB(2)	BB(3)
0.60	0.0	0.0	0.0	0.0	0.0	92.0	0.3575	0.2707	-0.1267	-0.0150
0.60	2.0	0.2600	-0.1420	-0.1032	0.2096	94.0	0.3600	0.2587	-0.1100	-0.0140
0.60	4.0	0.2339	0.1292	-0.3652	0.0543	96.0	0.3595	0.2680	-0.1274	-0.0153
0.60	6.0	0.3701	0.1974	-0.1467	0.0146	98.0	0.3616	0.2447	-0.1050	-0.0126
0.60	8.0	0.3803	0.1870	-0.1098	0.0154	100.0	0.3610	0.2463	-0.1065	-0.0107
0.60	10.0	0.3593	0.2295	-0.0976	0.0153	102.0	0.3656	0.2547	-0.1109	-0.0163
0.60	12.0	0.3610	0.3430	-0.2066	0.0080	104.0	0.3662	0.2564	-0.1246	-0.0164
0.60	14.0	0.3614	0.2805	-0.1015	0.0028	106.0	0.3648	0.2590	-0.1271	-0.0149
0.60	16.0	0.3522	0.2406	-0.1169	0.0016	108.0	0.3628	0.2456	-0.1144	-0.0129
0.60	18.0	0.3295	0.3074	-0.1554	0.0033	110.0	0.3585	0.2255	-0.0918	-0.0091
0.60	20.0	0.3232	0.3015	-0.1451	0.0022	112.0	0.3578	0.2442	-0.1173	-0.0094
0.60	22.0	0.3306	0.2056	-0.1320	-0.0060	114.0	0.3566	0.2336	-0.1029	-0.0087
0.60	24.0	0.3200	0.3022	-0.1590	-0.0075	116.0	0.3555	0.2435	-0.1183	-0.0078
0.60	26.0	0.3135	0.2866	-0.1168	-0.0084	118.0	0.3603	0.2338	-0.1119	-0.0119
0.60	28.0	0.3162	0.2603	-0.0858	-0.0103	120.0	0.3528	0.2502	-0.1252	-0.0073
0.60	30.0	0.3103	0.3227	-0.1498	-0.0137	122.0	0.3524	0.2369	-0.1125	-0.0069
0.60	32.0	0.2987	0.2516	-0.0763	-0.0078	124.0	0.3545	0.2448	-0.1183	-0.0092
0.60	34.0	0.2897	0.2636	-0.0903	-0.0038	126.0	0.3479	0.2523	-0.1308	-0.0051
0.60	36.0	0.2729	0.2899	-0.1037	0.0055	128.0	0.3465	0.2404	-0.1181	-0.0043
0.60	38.0	0.2727	0.2034	-0.1104	0.0095	130.0	0.3484	0.2372	-0.1160	-0.0051
0.60	40.0	0.2724	0.2753	-0.1171	0.0135	132.0	0.3455	0.2257	-0.1046	-0.0015
0.60	42.0	0.2390	0.2857	-0.1229	0.0162	134.0	0.3479	0.2178	-0.0970	-0.0030
0.60	44.0	0.2750	0.2787	-0.1031	0.0121	136.0	0.3464	0.2208	-0.1006	-0.0020
0.60	46.0	0.2802	0.2969	-0.1340	0.0101	138.0	0.3460	0.2127	-0.0908	-0.0014
0.60	48.0	0.2821	0.3035	-0.1447	0.0098	140.0	0.3530	0.2091	-0.0934	-0.0040
0.60	50.0	0.2843	0.2987	-0.1398	0.0100	142.0	0.3639	0.2323	-0.1169	-0.0126
0.60	52.0	0.2926	0.3052	-0.1493	0.0052	144.0	0.3714	0.2292	-0.1126	-0.0146
0.60	54.0	0.2719	0.3064	-0.1465	0.0052	146.0	0.3731	0.2150	-0.0929	-0.0160
0.60	56.0	0.2995	0.2994	-0.1480	0.0056	148.0	0.3758	0.2160	-0.0970	-0.0180
0.60	58.0	0.3047	0.2763	-0.1244	0.0023	150.0	0.3765	0.2048	-0.0805	-0.0179
0.60	60.0	0.3056	0.2773	-0.1219	0.0029	152.0	0.3736	0.2236	-0.0861	-0.0209
0.60	62.0	0.3109	0.2962	-0.1412	-0.0001	154.0	0.3761	0.2464	-0.1165	-0.0225
0.60	64.0	0.3127	0.2670	-0.1316	0.0001	156.0	0.3692	0.2429	-0.1071	-0.0182
0.60	66.0	0.3176	0.3004	-0.1427	-0.0014	158.0	0.3763	0.2382	-0.1118	-0.0195
0.60	68.0	0.3214	0.2972	-0.1416	-0.0026	160.0	0.3750	0.2408	-0.1169	-0.0176
0.60	70.0	0.3223	0.3190	-0.1666	-0.0011	162.0	0.3802	0.2005	-0.0816	-0.0144
0.60	72.0	0.3295	0.2969	-0.1415	-0.0049	164.0	0.3800	0.2202	-0.1212	-0.0396
0.60	74.0	0.3325	0.2938	-0.1423	-0.0059	166.0	0.3734	0.2447	-0.1428	0.0043
0.60	76.0	0.3333	0.2990	-0.1473	-0.0045	168.0	0.3591	0.1917	-0.0783	0.0156
0.60	78.0	0.3391	0.2790	-0.1276	-0.0065	170.0	0.3435	0.2339	-0.1417	0.0254
0.60	80.0	0.3416	0.2740	-0.1177	-0.0089	172.0	0.3227	0.2123	-0.1105	0.0271
0.60	82.0	0.3453	0.2676	-0.1133	-0.0093	174.0	0.2820	0.1648	-0.0345	0.0602
0.60	84.0	0.3499	0.2600	-0.1229	-0.0114	176.0	0.2447	0.2013	-0.0750	0.0892
0.60	86.0	0.3477	0.2769	-0.1273	-0.0104	178.0	0.0959	0.1749	-0.0405	0.1144
0.60	88.0	0.3984	0.2631	-0.1172	-0.0131	180.0	0.0	0.0	0.0	0.0
0.60	90.0	0.3850	0.2756	-0.1296	-0.0143					

Table C-3 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

CPYRCA=BB(0)+BB(1)*(TAPER RATIO)+BB(2)*(TAPER RATIO)**2+BB(3)*(ASPECT RATIO)

		COEFFICIENTS FOR CPYRCA					COEFFICIENTS FOR CPYRCA			
MACH	ALPHA	BB(0)	BB(1)	BB(2)	BB(3)	ALPHA	BB(0)	BB(1)	BB(2)	BB(3)
0.80	0.0	0.0	0.0	0.0	0.0	92.0	0.3597	0.2666	-0.1157	-0.0112
0.80	2.0	0.2530	-0.1396	-0.0186	0.1147	94.0	0.3652	0.2754	-0.1312	-0.0136
0.80	4.0	0.2733	-0.0102	0.0965	0.1040	96.0	0.3663	0.2921	-0.1465	-0.0143
0.80	6.0	0.3335	0.0508	0.0017	0.0447	98.0	0.3661	0.2643	-0.1215	-0.0128
0.80	8.0	0.3563	0.1006	-0.0306	0.0294	100.0	0.3667	0.2482	-0.1078	-0.0120
0.80	10.0	0.3477	0.1660	-0.0675	0.0279	102.0	0.3687	0.2609	-0.1223	-0.0139
0.80	12.0	0.3463	0.2541	-0.1312	0.0117	104.0	0.3677	0.2540	-0.1199	-0.0127
0.80	14.0	0.3511	0.1941	-0.0620	0.0011	106.0	0.3661	0.2444	-0.1095	-0.0116
0.80	16.0	0.3500	0.2107	-0.0016	-0.0020	108.0	0.3659	0.2538	-0.1248	-0.0113
0.80	18.0	0.3446	0.2049	-0.1401	-0.0036	110.0	0.3631	0.2535	-0.1211	-0.0092
0.80	20.0	0.3392	0.2450	-0.0985	-0.0060	112.0	0.3606	0.2379	-0.1072	-0.0077
0.80	22.0	0.3304	0.2475	-0.0946	-0.0050	114.0	0.3604	0.2444	-0.1145	-0.0087
0.80	24.0	0.3224	0.2472	-0.0870	-0.0005	116.0	0.3593	0.2278	-0.0995	-0.0070
0.80	26.0	0.3184	0.2451	-0.0987	-0.0080	118.0	0.3580	0.2306	-0.1123	-0.0062
0.80	28.0	0.3112	0.2283	-0.1023	-0.0062	120.0	0.3554	0.2378	-0.1118	-0.0049
0.80	30.0	0.3046	0.2397	-0.0720	-0.0051	122.0	0.3524	0.2393	-0.1117	-0.0035
0.80	32.0	0.3013	0.2457	-0.0770	-0.0036	124.0	0.3526	0.2416	-0.1141	-0.0042
0.80	34.0	0.2853	0.2597	-0.0868	0.0034	126.0	0.3520	0.2459	-0.1165	-0.0043
0.80	36.0	0.2775	0.2526	-0.0761	0.0076	128.0	0.3512	0.2338	-0.1061	-0.0037
0.80	38.0	0.2690	0.2656	-0.0879	0.0144	130.0	0.3484	0.2272	-0.0986	-0.0014
0.80	40.0	0.2743	0.2687	-0.0962	0.0127	132.0	0.3471	0.2209	-0.1021	-0.0001
0.80	42.0	0.2768	0.2735	-0.1054	0.0132	134.0	0.3463	0.2286	-0.1031	0.0009
0.80	44.0	0.2820	0.2643	-0.0984	0.0114	136.0	0.3427	0.2313	-0.1055	0.0029
0.80	46.0	0.2847	0.2835	-0.1172	0.0116	138.0	0.3447	0.2208	-0.0975	0.0015
0.80	48.0	0.2964	0.2635	-0.1054	0.0075	140.0	0.3477	0.2036	-0.0823	0.0010
0.80	50.0	0.3004	0.2661	-0.1061	0.0054	142.0	0.3506	0.2132	-0.0953	0.0001
0.80	52.0	0.3023	0.2726	-0.1155	0.0052	144.0	0.3541	0.2054	-0.0901	-0.0019
0.80	54.0	0.3024	0.2721	-0.1161	0.0050	146.0	0.3573	0.1972	-0.0812	-0.0030
0.80	56.0	0.3036	0.2770	-0.1213	0.0073	148.0	0.3619	0.2160	-0.1032	-0.0060
0.80	58.0	0.3127	0.2666	-0.1090	0.0014	150.0	0.3673	0.2119	-0.0949	-0.0087
0.80	60.0	0.3132	0.2810	-0.1246	0.0013	152.0	0.3690	0.2095	-0.0861	-0.0109
0.80	62.0	0.3109	0.2847	-0.1255	-0.0004	154.0	0.3699	0.2131	-0.0944	-0.0122
0.80	64.0	0.3183	0.2833	-0.1268	0.0007	156.0	0.3668	0.2323	-0.1102	-0.0106
0.80	66.0	0.3228	0.2958	-0.1392	-0.0005	158.0	0.3715	0.2225	-0.1007	-0.0116
0.80	68.0	0.3263	0.2971	-0.1409	-0.0016	160.0	0.3763	0.2375	-0.1129	-0.0158
0.80	70.0	0.3389	0.2963	-0.1401	-0.0035	162.0	0.3812	0.2366	-0.1162	-0.0129
0.80	72.0	0.3310	0.3092	-0.1512	-0.0020	164.0	0.3664	0.2081	-0.0984	-0.0091
0.80	74.0	0.3338	0.2863	-0.1283	-0.0028	166.0	0.3802	0.2060	-0.1051	-0.0026
0.80	76.0	0.3381	0.2729	-0.1168	-0.0040	168.0	0.3829	0.1996	-0.0998	0.0050
0.80	78.0	0.3405	0.2820	-0.1275	-0.0051	170.0	0.3768	0.1947	-0.1021	0.0132
0.80	80.0	0.3450	0.2752	-0.1182	-0.0071	172.0	0.3659	0.1543	-0.0632	0.0242
0.80	82.0	0.3476	0.2723	-0.1193	-0.0061	174.0	0.3508	0.1480	-0.0472	0.0340
0.80	84.0	0.3493	0.2822	-0.1313	-0.0060	176.0	0.2813	0.1039	-0.0339	0.0640
0.80	86.0	0.3531	0.2751	-0.1261	-0.0090	178.0	0.2409	-0.1581	0.2650	0.0962
0.80	88.0	0.3520	0.2894	-0.1402	-0.0072	180.0	0.0	0.0	0.0	0.0
0.80	90.0	0.3571	0.2805	-0.1312	-0.0108					

Table C-3 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

CPYRCA=BB(0)+BB(1)*(TAPER RATIO)+BB(2)*(TAPER RATIO)**2+BB(3)*(ASPECT RATIO)

		COEFFICIENTS FOR CPYRCA					COEFFICIENTS FOR CPYRCA			
MACH	ALPHA	BB(0)	BB(1)	BB(2)	BB(3)	ALPHA	BB(0)	BB(1)	BB(2)	BB(3)
0.90	0.0	0.0	0.0	0.0	0.0	92.0	0.3815	0.3029	-0.1516	-0.0114
0.90	2.0	0.2302	-0.7489	1.0093	0.0076	94.0	0.3838	0.2946	-0.1632	-0.0117
0.90	4.0	0.3243	-0.0031	0.1031	0.0543	96.0	0.3867	0.2858	-0.1388	-0.0118
0.90	6.0	0.3775	0.0404	0.0452	0.0191	98.0	0.3869	0.2920	-0.1447	-0.0113
0.90	8.0	0.3716	0.1304	-0.0299	0.0150	100.0	0.3894	0.2887	-0.1468	-0.0126
0.90	10.0	0.3676	0.1916	-0.0807	0.0197	102.0	0.3898	0.2901	-0.1493	-0.0124
0.90	12.0	0.3495	0.1801	-0.0575	0.0145	104.0	0.3804	0.2747	-0.1353	-0.0111
0.90	14.0	0.3477	0.1721	-0.0340	0.0077	106.0	0.3882	0.2738	-0.1344	-0.0115
0.90	16.0	0.3513	0.2239	-0.0873	0.0003	108.0	0.3868	0.2760	-0.1387	-0.0109
0.90	18.0	0.3304	0.2510	-0.1003	0.0016	110.0	0.3833	0.2729	-0.1381	-0.0088
0.90	20.0	0.3375	0.2470	-0.0980	-0.0029	112.0	0.3846	0.2733	-0.1381	-0.0105
0.90	22.0	0.3302	0.2611	-0.1085	-0.0030	114.0	0.3825	0.2767	-0.1436	-0.0097
0.90	24.0	0.3240	0.2624	-0.0826	-0.0054	116.0	0.3823	0.2726	-0.1388	-0.0107
0.90	26.0	0.3218	0.2270	-0.0694	-0.0064	118.0	0.3828	0.2728	-0.1463	-0.0100
0.90	28.0	0.3118	0.2357	-0.0642	-0.0032	120.0	0.3583	0.2834	-0.1498	-0.0081
0.90	30.0	0.3054	0.2461	-0.0993	-0.0024	122.0	0.3541	0.2855	-0.1207	-0.0055
0.90	32.0	0.3061	0.2540	-0.0805	0.0011	124.0	0.3539	0.2829	-0.1504	-0.0060
0.90	34.0	0.2890	0.2387	-0.0712	0.0070	126.0	0.3546	0.2810	-0.1488	-0.0067
0.90	36.0	0.2841	0.2462	-0.0738	0.0099	128.0	0.3505	0.2865	-0.1388	-0.0035
0.90	38.0	0.2817	0.2622	-0.0902	0.0105	130.0	0.3477	0.2638	-0.1318	-0.0011
0.90	40.0	0.2771	0.2624	-0.0876	0.0125	132.0	0.3461	0.2741	-0.1442	-0.0015
0.90	42.0	0.2794	0.2658	-0.0949	0.0121	134.0	0.3465	0.2702	-0.1419	-0.0020
0.90	44.0	0.2817	0.3008	-0.0916	0.0135	136.0	0.3446	0.2723	-0.1432	-0.0015
0.90	46.0	0.2899	0.2745	-0.1072	0.0080	138.0	0.3419	0.2650	-0.1379	0.0012
0.90	48.0	0.2999	0.2965	-0.0923	0.0043	140.0	0.3435	0.2653	-0.1373	0.0010
0.90	50.0	0.3056	0.2846	-0.1045	0.0032	142.0	0.3430	0.2626	-0.1333	0.0012
0.90	52.0	0.3058	0.2689	-0.1072	0.0037	144.0	0.3499	0.2816	-0.1599	-0.0020
0.90	54.0	0.3028	0.2832	-0.1153	0.0070	146.0	0.3542	0.2980	-0.1631	-0.0035
0.90	56.0	0.3092	0.2985	-0.1307	0.0036	148.0	0.3510	0.2637	-0.1443	-0.0007
0.90	58.0	0.3134	0.2908	-0.1296	0.0014	150.0	0.3543	0.2658	-0.1351	-0.0031
0.90	60.0	0.3163	0.2954	-0.1333	0.0005	152.0	0.3603	0.2651	-0.1307	-0.0005
0.90	62.0	0.3201	0.3011	-0.1397	-0.0007	154.0	0.3643	0.2759	-0.1546	-0.0106
0.90	64.0	0.3233	0.3029	-0.1396	-0.0021	156.0	0.3670	0.2686	-0.1408	-0.0115
0.90	66.0	0.3252	0.3155	-0.1516	-0.0011	158.0	0.3672	0.2680	-0.1452	-0.0120
0.90	68.0	0.3291	0.3161	-0.1524	-0.0021	160.0	0.3700	0.2747	-0.1520	-0.0143
0.90	70.0	0.3318	0.3146	-0.1528	-0.0025	162.0	0.3743	0.3179	-0.1966	-0.0165
0.90	72.0	0.3317	0.3207	-0.1566	-0.0032	164.0	0.4021	0.2874	-0.0995	-0.0175
0.90	74.0	0.3357	0.3063	-0.1439	-0.0040	166.0	0.3869	0.2711	-0.1640	-0.0070
0.90	76.0	0.3376	0.2994	-0.1365	-0.0023	168.0	0.3893	0.3029	-0.1939	-0.0051
0.90	78.0	0.3436	0.3027	-0.1429	-0.0051	170.0	0.3787	0.2751	-0.1646	0.0030
0.90	80.0	0.3465	0.2857	-0.1259	-0.0064	172.0	0.3772	0.3293	-0.2173	0.0032
0.90	82.0	0.3497	0.2828	-0.1250	-0.0060	174.0	0.3549	0.4002	-0.3427	0.0004
0.90	84.0	0.3517	0.3029	-0.1471	-0.0084	176.0	0.3384	0.6103	-0.4230	0.0094
0.90	86.0	0.3522	0.2970	-0.1439	-0.0072	178.0	0.2022	0.6463	-0.4873	0.0013
0.90	88.0	0.3567	0.2896	-0.1380	-0.0086	180.0	0.0	0.0	0.0	0.0
0.90	90.0	0.3805	0.3066	-0.1953	-0.0102					

Table C-3 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

CPYRCA=B0(0)+B0(1)*(TAPER RATIO)+B0(2)*(TAPER RATIO)**2+B0(3)*(ASPECT RATIO)

		COEFFICIENTS FOR CPYRCA					COEFFICIENTS FOR CPYRCA			
MACH	ALPHA	B0(0)	B0(1)	B0(2)	B0(3)	ALPHA	B0(0)	B0(1)	B0(2)	B0(3)
1.00	0.0	0.0	0.0	0.0	0.0	92.0	0.3586	0.2901	-0.1395	-0.0117
1.00	2.0	0.3018	-0.1034	0.3003	0.0336	94.0	0.3599	0.2805	-0.1324	-0.0112
1.00	4.0	0.3592	0.2867	-0.1635	0.0183	96.0	0.3606	0.2867	-0.1304	-0.0116
1.00	6.0	0.4008	0.1864	-0.1161	0.0047	98.0	0.3608	0.2672	-0.1288	-0.0112
1.00	8.0	0.3766	0.2340	-0.1344	0.0121	100.0	0.3624	0.2648	-0.1203	-0.0116
1.00	10.0	0.3634	0.2271	-0.1013	0.0133	102.0	0.3628	0.2635	-0.1214	-0.0122
1.00	12.0	0.3710	0.3251	-0.2114	0.0044	104.0	0.3652	0.2812	-0.1407	-0.0130
1.00	14.0	0.3521	0.2801	-0.1504	0.0093	106.0	0.3638	0.2606	-0.1224	-0.0122
1.00	16.0	0.3447	0.2703	-0.1382	0.0086	108.0	0.3632	0.2561	-0.1197	-0.0119
1.00	18.0	0.3402	0.2829	-0.1511	0.0089	110.0	0.3644	0.2513	-0.1148	-0.0125
1.00	20.0	0.3435	0.2544	-0.1103	0.0041	112.0	0.3639	0.2620	-0.1301	-0.0127
1.00	22.0	0.3379	0.2492	-0.1606	0.0041	114.0	0.3615	0.2605	-0.1269	-0.0106
1.00	24.0	0.3331	0.2600	-0.1079	0.0016	116.0	0.3631	0.2567	-0.1210	-0.0127
1.00	26.0	0.3260	0.2605	-0.1093	0.0025	118.0	0.3613	0.2581	-0.1279	-0.0105
1.00	28.0	0.3219	0.2457	-0.0934	0.0021	120.0	0.3636	0.2376	-0.1010	-0.0133
1.00	30.0	0.3201	0.2361	-0.0818	-0.0013	122.0	0.3603	0.2523	-0.1239	-0.0114
1.00	32.0	0.3118	0.2378	-0.0802	0.0008	124.0	0.3552	0.2476	-0.1156	-0.0078
1.00	34.0	0.3047	0.2359	-0.0754	0.0022	126.0	0.3556	0.2445	-0.1133	-0.0087
1.00	36.0	0.2907	0.2522	-0.0817	0.0057	128.0	0.3533	0.2533	-0.1256	-0.0072
1.00	38.0	0.2853	0.2714	-0.0962	0.0056	130.0	0.3536	0.2411	-0.1195	-0.0068
1.00	40.0	0.2862	0.2617	-0.0882	0.0069	132.0	0.3528	0.2435	-0.1165	-0.0061
1.00	42.0	0.2877	0.2781	-0.1068	0.0066	134.0	0.3508	0.2297	-0.1039	-0.0054
1.00	44.0	0.2907	0.2748	-0.1065	0.0075	136.0	0.3478	0.2332	-0.1100	-0.0030
1.00	46.0	0.2945	0.2728	-0.1054	0.0066	138.0	0.3497	0.2326	-0.1101	-0.0044
1.00	48.0	0.2976	0.2832	-0.1189	0.0056	140.0	0.3529	0.2135	-0.0963	-0.0044
1.00	50.0	0.3007	0.2812	-0.1186	0.0059	142.0	0.3541	0.2294	-0.1123	-0.0044
1.00	52.0	0.3025	0.2825	-0.1249	0.0021	144.0	0.3570	0.2197	-0.1034	-0.0066
1.00	54.0	0.3109	0.2782	-0.1162	0.0001	146.0	0.3580	0.2294	-0.1138	-0.0061
1.00	56.0	0.3171	0.2713	-0.1089	-0.0027	148.0	0.3569	0.2379	-0.1250	-0.0040
1.00	58.0	0.3145	0.2777	-0.1165	0.0001	150.0	0.3624	0.2436	-0.1244	-0.0091
1.00	60.0	0.3186	0.2890	-0.1298	-0.0016	152.0	0.3677	0.2453	-0.1279	-0.0112
1.00	62.0	0.3224	0.2925	-0.1336	-0.0028	154.0	0.3763	0.2305	-0.1141	-0.0150
1.00	64.0	0.3242	0.2868	-0.1230	-0.0039	156.0	0.3828	0.2749	-0.1580	-0.0179
1.00	66.0	0.3272	0.2910	-0.1290	-0.0040	158.0	0.3852	0.2248	-0.1116	-0.0155
1.00	68.0	0.3310	0.2939	-0.1333	-0.0047	160.0	0.3858	0.2351	-0.1239	-0.0089
1.00	70.0	0.3338	0.2929	-0.1352	-0.0047	162.0	0.3846	0.2376	-0.1262	-0.0068
1.00	72.0	0.3363	0.2837	-0.1247	-0.0053	164.0	0.3866	0.2378	-0.1271	-0.0086
1.00	74.0	0.3382	0.2848	-0.1264	-0.0058	166.0	0.3957	0.3215	-0.2157	-0.0141
1.00	76.0	0.3401	0.2893	-0.1320	-0.0063	168.0	0.3912	0.2461	-0.1404	-0.0118
1.00	78.0	0.3439	0.2813	-0.1265	-0.0063	170.0	0.3881	0.2511	-0.1438	-0.0115
1.00	80.0	0.3434	0.2834	-0.1276	-0.0056	172.0	0.3904	0.3613	-0.2688	-0.0179
1.00	82.0	0.3457	0.2811	-0.1260	-0.0060	174.0	0.3642	0.3262	-0.2005	-0.0057
1.00	84.0	0.3481	0.2812	-0.1275	-0.0066	176.0	0.3290	0.5400	-0.6098	0.0115
1.00	86.0	0.3534	0.2803	-0.1265	-0.0103	178.0	0.2519	0.2224	0.0095	0.0460
1.00	88.0	0.3519	0.2943	-0.1408	-0.0091	180.0	0.0	0.0	0.0	0.0
1.00	90.0	0.3588	0.2859	-0.1339	-0.0130					

Table C-3 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

CPYRCA=BB(0)+BB(1)*(TAPER RATIO)+BB(2)*(TAPER RATIO)**2+BB(3)*(ASPECT RATIO)

COEFFICIENTS FOR CPYRCA

MACH	ALPHA	BB(0)	BB(1)	BB(2)	BB(3)
1.15	0.0	0.0	0.0	0.0	0.0
1.15	2.0	0.2499	0.4112	-0.2213	0.0469
1.15	4.0	0.4479	0.1366	-0.0822	-0.0121
1.15	6.0	0.3979	0.4531	-0.2803	-0.0044
1.15	8.0	0.4113	0.3553	-0.2023	-0.0068
1.15	10.0	0.3839	0.3830	-0.2784	-0.0044
1.15	12.0	0.3797	0.3502	-0.2446	-0.0038
1.15	14.0	0.3729	0.3402	-0.2251	-0.0018
1.15	16.0	0.3477	0.3087	-0.2436	0.0036
1.15	18.0	0.3528	0.3238	-0.1964	0.0029
1.15	20.0	0.3359	0.2718	-0.1288	0.0061
1.15	22.0	0.3421	0.2758	-0.1548	0.0015
1.15	24.0	0.3243	0.3019	-0.1473	0.0053
1.15	26.0	0.3285	0.2834	-0.1358	0.0030
1.15	28.0	0.3265	0.2624	-0.1292	0.0005
1.15	30.0	0.3229	0.2748	-0.1213	0.0004
1.15	32.0	0.3165	0.2741	-0.1152	-0.0001
1.15	34.0	0.3155	0.2629	-0.1049	-0.0006
1.15	36.0	0.3167	0.2625	-0.1069	-0.0028
1.15	38.0	0.3117	0.2614	-0.1037	-0.0017
1.15	40.0	0.3092	0.2636	-0.1037	-0.0009
1.15	42.0	0.3021	0.2603	-0.0944	0.0024
1.15	44.0	0.3030	0.2739	-0.1111	0.0007
1.15	46.0	0.3036	0.2802	-0.1175	0.0007
1.15	48.0	0.3070	0.2806	-0.1212	0.0003
1.15	50.0	0.3112	0.2803	-0.1230	-0.0009
1.15	52.0	0.3116	0.2783	-0.1214	0.0003
1.15	54.0	0.3135	0.2794	-0.1217	-0.0001
1.15	56.0	0.3190	0.2782	-0.1233	-0.0012
1.15	58.0	0.3208	0.2851	-0.1296	-0.0019
1.15	60.0	0.3241	0.2836	-0.1292	-0.0031
1.15	62.0	0.3262	0.2858	-0.1308	-0.0037
1.15	64.0	0.3274	0.2926	-0.1393	-0.0039
1.15	66.0	0.3302	0.2890	-0.1345	-0.0040
1.15	68.0	0.3315	0.2883	-0.1341	-0.0045
1.15	70.0	0.3353	0.2874	-0.1337	-0.0061
1.15	72.0	0.3378	0.2902	-0.1370	-0.0060
1.15	74.0	0.3388	0.2583	-0.1334	-0.0063
1.15	76.0	0.3400	0.2860	-0.1322	-0.0070
1.15	78.0	0.3410	0.2834	-0.1305	-0.0063
1.15	80.0	0.3424	0.2833	-0.1310	-0.0067
1.15	82.0	0.3437	0.2823	-0.1323	-0.0061
1.15	84.0	0.3452	0.2785	-0.1292	-0.0056
1.15	86.0	0.3470	0.2776	-0.1262	-0.0068
1.15	88.0	0.3453	0.2806	-0.1270	-0.0056
1.15	96.0	0.3497	0.2934	-0.1433	-0.0088

COEFFICIENTS FOR CPYRCA

ALPHA	BB(0)	BB(1)	BB(2)	BB(3)
92.0	0.3525	0.2873	-0.1375	-0.0134
94.0	0.3523	0.2838	-0.1340	-0.0096
96.0	0.3519	0.2811	-0.1319	-0.0088
98.0	0.3542	0.2746	-0.1270	-0.0102
100.0	0.3542	0.2741	-0.1279	-0.0108
102.0	0.3547	0.2696	-0.1252	-0.0096
104.0	0.3553	0.2678	-0.1247	-0.0105
106.0	0.3558	0.2656	-0.1253	-0.0108
108.0	0.3571	0.2681	-0.1216	-0.0107
110.0	0.3571	0.2606	-0.1238	-0.0109
112.0	0.3574	0.2607	-0.1267	-0.0107
114.0	0.3590	0.2562	-0.1221	-0.0113
116.0	0.3575	0.2554	-0.1216	-0.0102
118.0	0.3583	0.2502	-0.1186	-0.0108
120.0	0.3577	0.2476	-0.1172	-0.0101
122.0	0.3570	0.2450	-0.1161	-0.0099
124.0	0.3550	0.2422	-0.1127	-0.0083
126.0	0.3555	0.2402	-0.1112	-0.0081
128.0	0.3539	0.2406	-0.1122	-0.0072
130.0	0.3545	0.2447	-0.1173	-0.0076
132.0	0.3552	0.2407	-0.1140	-0.0080
134.0	0.3562	0.2406	-0.1168	-0.0076
136.0	0.3549	0.2433	-0.1204	-0.0061
138.0	0.3566	0.2449	-0.1229	-0.0067
140.0	0.3562	0.2438	-0.1239	-0.0059
142.0	0.3575	0.2390	-0.1202	-0.0061
144.0	0.3614	0.2422	-0.1237	-0.0076
146.0	0.3622	0.2460	-0.1273	-0.0077
148.0	0.3643	0.2521	-0.1320	-0.0094
150.0	0.3676	0.2527	-0.1319	-0.0112
152.0	0.3700	0.2516	-0.1325	-0.0114
154.0	0.3729	0.2636	-0.1459	-0.0109
156.0	0.3795	0.2475	-0.1371	-0.0087
158.0	0.3822	0.2446	-0.1338	-0.0087
160.0	0.3219	0.3951	-0.2336	0.0003
162.0	0.2706	0.5366	-0.3303	0.0050
164.0	0.3252	0.3963	-0.2378	-0.0025
166.0	0.3351	0.3889	-0.2298	-0.0049
168.0	0.3481	0.3912	-0.2524	-0.0087
170.0	0.3490	0.3828	-0.2489	-0.0091
172.0	0.3462	0.4891	-0.2710	-0.0109
174.0	0.3584	0.5811	-0.3582	-0.0154
176.0	0.3498	0.7282	-0.5699	-0.0172
178.0	0.3364	0.2645	-0.0585	-0.0077
180.0	0.0	0.0	0.0	0.0

Table C-3 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

CPYRCA=BB(0)+BB(1)*(TAPER RATIO)+BB(2)*(TAPER RATIO)**2+BB(3)*(ASPECT RATIO)

	COEFFICIENTS FOR CPYRCA					COEFFICIENTS FOR CPYRLA				
MACH	ALPHA	BB(0)	BB(1)	BB(2)	BB(3)	ALPHA	BB(0)	BB(1)	BB(2)	BB(3)
1.30	0.0	0.0	0.0	0.0	0.0	92.0	0.3365	0.2709	-0.1169	0.0033
1.30	2.0	0.4990	0.2112	-0.1675	-0.0548	94.0	0.3398	0.2714	-0.1196	0.0019
1.30	4.0	0.5267	0.3514	-0.3273	-0.0606	96.0	0.3433	0.2691	-0.1172	-0.0008
1.30	6.0	0.5106	0.2004	-0.1899	-0.0478	98.0	0.3457	0.2679	-0.1196	-0.0029
1.30	8.0	0.4916	0.1832	-0.1518	-0.0399	100.0	0.3486	0.2686	-0.1213	-0.0032
1.30	10.0	0.4811	0.1993	-0.1571	-0.0415	102.0	0.3456	0.2775	-0.1273	0.0001
1.30	12.0	0.4594	0.2199	-0.1648	-0.0347	104.0	0.3459	0.2632	-0.1202	-0.0008
1.30	14.0	0.4461	0.2152	-0.1487	-0.0316	106.0	0.3498	0.2575	-0.1138	-0.0036
1.30	16.0	0.4332	0.2168	-0.1392	-0.0294	108.0	0.3534	0.2417	-0.1032	-0.0051
1.30	18.0	0.4220	0.2082	-0.1219	-0.0266	110.0	0.3562	0.2334	-0.1007	-0.0061
1.30	20.0	0.4143	0.2114	-0.1202	-0.0252	112.0	0.3580	0.2347	-0.1020	-0.0055
1.30	22.0	0.4118	0.1893	-0.0949	-0.0248	114.0	0.3582	0.2492	-0.1149	-0.0079
1.30	24.0	0.4083	0.1396	-0.0450	-0.0231	116.0	0.3554	0.2424	-0.1046	-0.0046
1.30	26.0	0.3990	0.1349	-0.0313	-0.0214	118.0	0.3571	0.2387	-0.1021	-0.0065
1.30	28.0	0.3935	0.1404	-0.0310	-0.0222	120.0	0.3579	0.2403	-0.1070	-0.0071
1.30	30.0	0.3897	0.1357	-0.0221	-0.0237	122.0	0.3599	0.2459	-0.1114	-0.0078
1.30	32.0	0.3820	0.1394	-0.0205	-0.0228	124.0	0.3606	0.2379	-0.1045	-0.0108
1.30	34.0	0.3741	0.1433	-0.0197	-0.0208	126.0	0.3599	0.2343	-0.1033	-0.0112
1.30	36.0	0.3647	0.1530	-0.0253	-0.0180	128.0	0.3602	0.2276	-0.1016	-0.0106
1.30	38.0	0.3547	0.1714	-0.0378	-0.0167	130.0	0.3576	0.2293	-0.1023	-0.0078
1.30	40.0	0.3423	0.1906	-0.0477	-0.0116	132.0	0.3560	0.2296	-0.1029	-0.0064
1.30	42.0	0.3352	0.2113	-0.0635	-0.0092	134.0	0.3561	0.2315	-0.1065	-0.0066
1.30	44.0	0.3267	0.2399	-0.0885	-0.0050	136.0	0.3554	0.2356	-0.1128	-0.0070
1.30	46.0	0.3217	0.2683	-0.1136	-0.0077	138.0	0.3568	0.2353	-0.1147	-0.0075
1.30	48.0	0.3219	0.2765	-0.1215	-0.0037	140.0	0.3575	0.2370	-0.1153	-0.0073
1.30	50.0	0.3207	0.2649	-0.1074	-0.0043	142.0	0.3625	0.2235	-0.1049	-0.0092
1.30	52.0	0.3197	[illegible]	-0.0992	-0.0020	144.0	0.3609	0.2302	-0.1076	-0.0087
1.30	54.0	0.3137	0.2772	-0.1221	0.0027	146.0	0.3509	0.2294	-0.1071	-0.0067
1.30	56.0	0.3131	0.2912	-0.1285	0.0015	148.0	0.3629	0.2190	-0.1062	-0.0071
1.30	58.0	0.3197	0.2698	-0.1110	0.0015	150.0	0.3610	0.2261	-0.1066	-0.0068
1.30	60.0	0.3233	0.2570	-0.0996	0.0018	152.0	0.3611	0.2217	-0.1026	-0.0053
1.30	62.0	0.3257	0.2639	-0.1036	0.0025	154.0	0.3620	0.2180	-0.1005	-0.0036
1.30	64.0	0.3263	0.2698	-0.1105	0.0027	156.0	0.3612	0.2143	-0.0982	-0.0026
1.30	66.0	0.3230	0.2683	-0.1116	0.0011	158.0	0.3634	0.2184	-0.1027	-0.0043
1.30	68.0	0.3289	0.2748	-0.1173	0.0007	160.0	0.3622	0.2241	-0.1089	-0.0051
1.30	70.0	0.3287	0.2828	-0.1229	0.0011	162.0	0.3437	0.2187	-0.1063	-0.0058
1.30	72.0	0.3254	0.2863	-0.1225	0.0045	164.0	0.3648	0.2184	-0.1059	-0.0070
1.30	74.0	0.3275	0.2847	-0.1204	0.0040	166.0	0.3696	0.2033	-0.0967	-0.0101
1.30	76.0	0.3312	0.2787	-0.1186	0.0017	168.0	0.3675	0.2035	-0.1020	-0.0088
1.30	78.0	0.3337	0.2676	-0.1146	-0.0012	170.0	0.3602	0.2099	-0.1033	-0.0125
1.30	80.0	0.3366	0.2562	-0.1029	-0.0026	172.0	0.3589	0.2184	-0.1098	-0.0099
1.30	82.0	0.3403	0.2530	-0.1020	-0.0025	174.0	0.3441	0.2512	-0.1275	-0.0069
1.30	84.0	0.3373	0.2771	-0.1214	-0.0010	176.0	0.3046	0.3182	-0.1535	0.0020
1.30	86.0	0.3321	0.2779	-0.1187	0.0052	178.0	0.2899	0.3798	-0.1531	0.0028
1.30	88.0	0.3340	0.2758	-0.1205	0.0049	180.0	0.0	0.0	0.0	0.0
1.30	90.0	[illegible]	0.2745	-0.1176	0.0047					

Table C-3 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

CPYRCA=B8(0)+B8(1)*(TAPER RATIO)+B8(2)*(TAPER RATIO)**2+B8(3)*(ASPECT RATIO)

		COEFFICIENTS FOR CPYRCA					COEFFICIENTS FOR CPYRCA			
MACH	ALPHA	B8(0)	B8(1)	B8(2)	B8(3)	ALPHA	B8(0)	B8(1)	B8(2)	B8(3)
1.50	0.0	0.0	0.0	0.0	0.0	92.0	0.3667	0.3054	-0.1222	-0.0000
1.50	2.0	0.4918	0.0951	-0.1019	-0.0474	94.0	0.3667	0.3051	-0.1221	-0.0000
1.50	4.0	0.4055	0.2428	-0.2192	0.0002	96.0	0.3667	0.3046	-0.1220	-0.0000
1.50	6.0	0.3793	0.1260	-0.0788	0.0349	98.0	0.3666	0.3039	-0.1219	0.0000
1.50	8.0	0.3738	0.2224	-0.1515	0.0244	100.0	0.3666	0.3030	-0.1217	0.0000
1.50	10.0	0.3710	0.2858	-0.2053	0.0191	102.0	0.3666	0.3019	-0.1213	0.0000
1.50	12.0	0.3699	0.2708	-0.1766	0.0103	104.0	0.3666	0.3004	-0.1210	-0.0000
1.50	14.0	0.3612	0.2656	-0.1674	0.0140	106.0	0.3665	0.2985	-0.1206	-0.0001
1.50	16.0	0.3610	0.2482	-0.1470	0.0135	108.0	0.3664	0.2961	-0.1201	-0.0000
1.50	18.0	0.3600	0.2421	-0.1348	0.0115	110.0	0.3662	0.2932	-0.1195	0.0001
1.50	20.0	0.3488	0.2571	-0.1374	0.0123	112.0	0.3660	0.2898	-0.1187	0.0002
1.50	22.0	0.3385	0.2845	-0.1465	0.0072	114.0	0.3658	0.2859	-0.1177	0.0003
1.50	24.0	0.3337	0.2777	-0.1426	0.0100	116.0	0.3657	0.2816	-0.1165	0.0003
1.50	26.0	0.3313	0.2835	-0.1467	0.0075	118.0	0.3656	0.2769	-0.1152	0.0003
1.50	28.0	0.3245	0.2878	-0.1431	0.0069	120.0	0.3655	0.2720	-0.1138	0.0003
1.50	30.0	0.3217	0.2768	-0.1300	0.0079	122.0	0.3654	0.2670	-0.1123	0.0003
1.50	32.0	0.3243	0.2668	-0.1218	0.0058	124.0	0.3653	0.2617	-0.1109	0.0003
1.50	34.0	0.3257	0.2591	-0.1191	0.0073	126.0	0.3652	0.2565	-0.1094	0.0002
1.50	36.0	0.3244	0.2482	-0.1055	0.0078	128.0	0.3651	0.2512	-0.1081	0.0002
1.50	38.0	0.3241	0.2437	-0.0992	0.0085	130.0	0.3649	0.2460	-0.1068	0.0001
1.50	40.0	0.3245	0.2393	-0.0954	0.0111	132.0	0.3647	0.2410	-0.1058	0.0001
1.50	42.0	0.3271	0.2412	-0.0951	0.0109	134.0	0.3645	0.2361	-0.1049	0.0002
1.50	44.0	0.3307	0.2467	-0.0973	0.0100	136.0	0.3643	0.2316	-0.1043	0.0002
1.50	46.0	0.3349	0.2541	-0.1007	0.0087	138.0	0.3639	0.2274	-0.1040	0.0003
1.50	48.0	0.3388	0.2613	-0.1041	0.0074	140.0	0.3635	0.2236	-0.1040	0.0004
1.50	50.0	0.3418	0.2664	-0.1064	0.0065	142.0	0.3603	0.2266	-0.1091	0.0013
1.50	52.0	0.3441	0.2700	-0.1077	0.0060	144.0	0.3579	0.2266	-0.1092	0.0013
1.50	54.0	0.3464	0.2735	-0.1091	0.0054	146.0	0.3545	0.2287	-0.1115	0.0018
1.50	56.0	0.3485	0.2769	-0.1105	0.0048	148.0	0.3522	0.2206	-0.1965	0.0026
1.50	58.0	0.3505	0.2801	-0.1119	0.0043	150.0	0.3491	0.2249	-0.1104	0.0027
1.50	60.0	0.3524	0.2830	-0.1131	0.0038	152.0	0.3507	0.2114	-0.0976	0.0020
1.50	62.0	0.3541	0.2857	-0.1142	0.0033	154.0	0.3526	0.2244	-0.1110	0.0003
1.50	64.0	0.3558	0.2884	-0.1153	0.0029	156.0	0.3525	0.2063	-0.0926	0.0035
1.50	66.0	0.3574	0.2909	-0.1163	0.0024	158.0	0.3565	0.1867	-0.0726	0.0022
1.50	68.0	0.3589	0.2933	-0.1173	0.0020	160.0	0.3609	0.1882	-0.0744	-0.0029
1.50	70.0	0.3604	0.2956	-0.1182	0.0017	162.0	0.3691	0.2026	-0.0973	-0.0085
1.50	72.0	0.3617	0.2976	-0.1190	0.0013	164.0	0.3747	0.1927	-0.0914	-0.0107
1.50	74.0	0.3629	0.2994	-0.1197	0.0010	166.0	0.3807	0.1832	-0.0853	-0.0146
1.50	76.0	0.3640	0.3010	-0.1204	0.0007	168.0	0.3844	0.1606	-0.0673	-0.0155
1.50	78.0	0.3648	0.3024	-0.1210	0.0005	170.0	0.3908	0.1551	-0.0825	-0.0127
1.50	80.0	0.3654	0.3035	-0.1214	0.0003	172.0	0.3962	0.1279	-0.0650	-0.0155
1.50	82.0	0.3659	0.3044	-0.1217	0.0002	174.0	0.3796	0.0717	-0.0562	0.0026
1.50	84.0	0.3662	0.3050	-0.1220	0.0001	176.0	0.4140	-0.0489	0.0897	0.0070
1.50	86.0	0.3665	0.3053	-0.1221	0.0001	178.0	0.3919	-0.3608	0.3395	0.0808
1.50	88.0	0.3666	0.3055	-0.1222	0.0000	180.0	0.0	0.0	0.0	0.0
1.50	90.0	0.3667	0.3055	-0.1222	-0.0000					

Table C-3 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

CPYRCA=BB(0)+BB(1)*(TAPER RATIO)+BB(2)*(TAPER RATIO)**2+BB(3)*(ASPECT RATIO)

		COEFFICIENTS FOR CPYRCA					COEFFICIENTS FOR CPYRCA			
MACH	ALPHA	BB(0)	BB(1)	BB(2)	BB(3)	ALPHA	BB(0)	BB(1)	BB(2)	BB(3)
2.00	0.0	0.0	0.0	0.0	0.0	92.0	0.3667	0.3055	-0.1221	-0.0000
2.00	2.0	0.4493	-0.0467	0.0906	-0.0214	94.0	0.3667	0.3050	-0.1221	-0.0000
2.00	4.0	0.3859	0.1472	-0.0772	0.0050	96.0	0.3667	0.3045	-0.1219	-0.0000
2.00	6.0	0.3776	0.1781	-0.1043	0.0117	98.0	0.3666	0.3038	-0.1218	-0.0001
2.00	8.0	0.3853	0.2557	-0.1796	-0.0017	100.0	0.3665	0.3030	-0.1215	-0.0001
2.00	10.0	0.3753	0.2687	-0.1905	0.0078	102.0	0.3665	0.3018	-0.1211	-0.0002
2.00	12.0	0.3572	0.2640	-0.1670	0.0187	104.0	0.3665	0.3003	-0.1206	-0.0004
2.00	14.0	0.3483	0.2453	-0.1406	0.0203	106.0	0.3665	0.2983	-0.1200	-0.0005
2.00	16.0	0.3408	0.2783	-0.1653	0.0168	108.0	0.3663	0.2958	-0.1193	-0.0006
2.00	18.0	0.3331	0.3107	-0.1665	0.0127	110.0	0.3659	0.2928	-0.1187	-0.0004
2.00	20.0	0.3325	0.2997	-0.1666	0.0088	112.0	0.3654	0.2893	-0.1179	-0.0003
2.00	22.0	0.3285	0.2937	-0.1523	0.0068	114.0	0.3652	0.2850	-0.1169	-0.0003
2.00	24.0	0.3261	0.2779	-0.1345	0.0068	116.0	0.3651	0.2803	-0.1157	-0.0004
2.00	26.0	0.3222	0.2664	-0.1212	0.0091	118.0	0.3652	0.2751	-0.1143	-0.0007
2.00	28.0	0.3206	0.2663	-0.1188	0.0091	120.0	0.3654	0.2696	-0.1128	-0.0010
2.00	30.0	0.3150	0.2712	-0.1225	0.0121	122.0	0.3657	0.2639	-0.1112	-0.0014
2.00	32.0	0.3187	0.2557	-0.1090	0.0097	124.0	0.3659	0.2581	-0.1096	-0.0018
2.00	34.0	0.3230	0.2489	-0.1036	0.0073	126.0	0.3660	0.2523	-0.1079	-0.0023
2.00	36.0	0.3251	0.2539	-0.1074	0.0057	128.0	0.3660	0.2466	-0.1063	-0.0027
2.00	38.0	0.3313	0.2489	-0.1049	0.0028	130.0	0.3659	0.2411	-0.1047	-0.0030
2.00	40.0	0.3334	0.2432	-0.1048	0.0027	132.0	0.3656	0.2360	-0.1032	-0.0033
2.00	42.0	0.3363	0.2517	-0.1063	0.0027	134.0	0.3650	0.2314	-0.1018	-0.0034
2.00	44.0	0.3392	0.2565	-0.1077	0.0025	136.0	0.3641	0.2273	-0.1006	-0.0035
2.00	46.0	0.3422	0.2619	-0.1091	0.0022	138.0	0.3628	0.2238	-0.0996	-0.0033
2.00	48.0	0.3450	0.2672	-0.1104	0.0019	140.0	0.3612	0.2212	-0.0988	-0.0030
2.00	50.0	0.3473	0.2717	-0.1119	0.0016	142.0	0.3542	0.2273	-0.1026	-0.0007
2.00	52.0	0.3492	0.2752	-0.1132	0.0013	144.0	0.3489	0.2342	-0.1065	-0.0005
2.00	54.0	0.3510	0.2783	-0.1142	0.0012	146.0	0.3444	0.2372	-0.1092	0.0009
2.00	56.0	0.3526	0.2811	-0.1149	0.0011	148.0	0.3408	0.2351	-0.1057	0.0032
2.00	58.0	0.3541	0.2836	-0.1156	0.0010	150.0	0.3389	0.2365	-0.1055	0.0029
2.00	60.0	0.3555	0.2860	-0.1163	0.0009	152.0	0.3381	0.2326	-0.1030	0.0052
2.00	62.0	0.3569	0.2884	-0.1170	0.0008	154.0	0.3414	0.2238	-0.0946	0.0035
2.00	64.0	0.3582	0.2907	-0.1177	0.0007	156.0	0.3434	0.2109	-0.0806	0.0015
2.00	66.0	0.3595	0.2929	-0.1184	0.0006	158.0	0.3474	0.2007	-0.0731	-0.0006
2.00	68.0	0.3607	0.2950	-0.1190	0.0005	160.0	0.3511	0.2010	-0.0779	-0.0024
2.00	70.0	0.3618	0.2969	-0.1196	0.0004	162.0	0.3536	0.2040	-0.0825	-0.0052
2.00	72.0	0.3628	0.2987	-0.1201	0.0003	164.0	0.3588	0.2122	-0.0957	-0.0102
2.00	74.0	0.3637	0.3002	-0.1206	0.0002	166.0	0.3600	0.2145	-0.1008	-0.0131
2.00	76.0	0.3646	0.3016	-0.1210	0.0002	168.0	0.3616	0.2151	-0.1066	-0.0156
2.00	78.0	0.3652	0.3028	-0.1214	0.0001	170.0	0.3797	0.1882	-0.1000	-0.0246
2.00	80.0	0.3657	0.3038	-0.1217	0.0001	172.0	0.3806	0.1722	-0.0868	-0.0257
2.00	82.0	0.3661	0.3046	-0.1219	0.0001	174.0	0.3776	0.1790	-0.0987	-0.0209
2.00	84.0	0.3663	0.3051	-0.1221	0.0000	176.0	0.3804	0.1980	-0.1190	-0.0277
2.00	86.0	0.3665	0.3054	-0.1222	0.0000	178.0	0.4105	0.2502	-0.1743	-0.0596
2.00	88.0	0.3666	0.3055	-0.1222	0.0000	180.0	0.0	0.0	0.0	0.0
2.00	90.0	0.3667	0.3055	-0.1222	-0.0000					

Table C-3 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

CPYRCA=BB(0)+BB(1)*(TAPER RATIO)+BB(2)*(TAPER RATIO)**2+BB(3)*(ASPECT RATIO)

		COEFFICIENTS FOR CPYRCA					COEFFICIENTS FOR CPYRCA			
MACH	ALPHA	BB(0)	BB(1)	BB(2)	BB(3)	ALPHA	BB(0)	BB(1)	BB(2)	BB(3)
2.50	0.0	0.0	0.0	0.0	0.0	92.0	0.3667	0.3054	-0.1222	-0.0000
2.50	2.0	0.3723	-0.0237	0.0594	0.0136	94.0	0.3667	0.3051	-0.1221	-0.0001
2.50	4.0	0.3523	0.3181	-0.2263	0.0126	96.0	0.3667	0.3046	-0.1221	-0.0001
2.50	6.0	0.3576	0.2046	-0.1171	0.0023	98.0	0.3666	0.3039	-0.1219	-0.0002
2.50	8.0	0.3491	0.2635	-0.1622	-0.0008	100.0	0.3666	0.3031	-0.1218	-0.0003
2.50	10.0	0.3342	0.2912	-0.1763	0.0097	102.0	0.3666	0.3019	-0.1214	-0.0004
2.50	12.0	0.3195	0.2984	-0.1655	0.0172	104.0	0.3665	0.3003	-0.1208	-0.0006
2.50	14.0	0.3196	0.2786	-0.1525	0.0194	106.0	0.3665	0.2984	-0.1202	-0.0009
2.50	16.0	0.3191	0.2857	-0.1563	0.0219	108.0	0.3664	0.2961	-0.1199	-0.0011
2.50	18.0	0.3185	0.3018	-0.1680	0.0217	110.0	0.3662	0.2935	-0.1200	-0.0013
2.50	20.0	0.3164	0.3127	-0.1719	0.0178	112.0	0.3662	0.2903	-0.1202	-0.0015
2.50	22.0	0.3167	0.3361	-0.1941	0.0145	114.0	0.3664	0.2868	-0.1197	-0.0019
2.50	24.0	0.3195	0.3147	-0.1774	0.0139	116.0	0.3668	0.2810	-0.1187	-0.0024
2.50	26.0	0.3191	0.3080	-0.1688	0.0133	118.0	0.3674	0.2754	-0.1174	-0.0029
2.50	28.0	0.3236	0.2689	-0.1362	0.0127	120.0	0.3680	0.2693	-0.1157	-0.0035
2.50	30.0	0.3276	0.2413	-0.1054	0.0100	122.0	0.3686	0.2629	-0.1139	-0.0042
2.50	32.0	0.3336	0.2352	-0.1031	0.0069	124.0	0.3692	0.2565	-0.1121	-0.0049
2.50	34.0	0.3415	0.2264	-0.0961	0.0032	126.0	0.3696	0.2503	-0.1103	-0.0055
2.50	36.0	0.3503	0.2136	-0.0849	-0.0008	128.0	0.3699	0.2443	-0.1086	-0.0062
2.50	38.0	0.3570	0.2053	-0.0779	-0.0031	130.0	0.3698	0.2388	-0.1072	-0.0068
2.50	40.0	0.3600	0.2054	-0.0779	-0.0035	132.0	0.3695	0.2340	-0.1062	-0.0074
2.50	42.0	0.3608	0.2109	-0.0804	-0.0032	134.0	0.3688	0.2301	-0.1056	-0.0078
2.50	44.0	0.3615	0.2195	-0.0842	-0.0029	136.0	0.3676	0.2272	-0.1056	-0.0082
2.50	46.0	0.3619	0.2294	-0.0886	-0.0026	138.0	0.3659	0.2256	-0.1063	-0.0085
2.50	48.0	0.3623	0.2390	-0.0928	-0.0023	140.0	0.3636	0.2254	-0.1078	-0.0086
2.50	50.0	0.3628	0.2464	-0.0961	-0.0021	142.0	0.3550	0.2354	-0.1154	-0.0063
2.50	52.0	0.3632	0.2521	-0.0986	-0.0019	144.0	0.3480	0.2549	-0.1331	-0.0049
2.50	54.0	0.3635	0.2574	-0.1010	-0.0017	146.0	0.3425	0.2660	-0.1420	-0.0039
2.50	56.0	0.3638	0.2624	-0.1032	-0.0015	148.0	0.3403	0.2580	-0.1335	-0.0042
2.50	58.0	0.3641	0.2671	-0.1052	-0.0014	150.0	0.3409	0.2449	-0.1169	-0.0081
2.50	60.0	0.3644	0.2715	-0.1072	-0.0012	152.0	0.3424	0.2401	-0.1135	-0.0100
2.50	62.0	0.3647	0.2756	-0.1090	-0.0011	154.0	0.3448	0.2431	-0.1247	-0.0112
2.50	64.0	0.3650	0.2796	-0.1108	-0.0009	156.0	0.3436	0.2405	-0.1253	-0.0080
2.50	66.0	0.3652	0.2834	-0.1125	-0.0008	158.0	0.3427	0.2494	-0.1350	-0.0088
2.50	68.0	0.3655	0.2871	-0.1141	-0.0007	160.0	0.3405	0.2498	-0.1351	-0.0066
2.50	70.0	0.3657	0.2905	-0.1156	-0.0005	162.0	0.3313	0.2766	-0.1507	-0.0037
2.50	72.0	0.3659	0.2936	-0.1169	-0.0004	164.0	0.3345	0.2630	-0.1403	-0.0060
2.50	74.0	0.3661	0.2964	-0.1182	-0.0003	166.0	0.3327	0.2585	-0.1409	-0.0059
2.50	76.0	0.3663	0.2988	-0.1193	-0.0002	168.0	0.3317	0.2466	-0.1343	-0.0052
2.50	78.0	0.3664	0.3009	-0.1202	-0.0002	170.0	0.3307	0.2144	-0.1008	-0.0019
2.50	80.0	0.3665	0.3025	-0.1209	-0.0001	172.0	0.3206	0.2497	-0.1407	0.0037
2.50	82.0	0.3666	0.3037	-0.1214	-0.0001	174.0	0.3088	0.2810	-0.1795	0.0107
2.50	84.0	0.3666	0.3046	-0.1217	-0.0000	176.0	0.3045	0.2581	-0.1668	0.0093
2.50	86.0	0.3667	0.3051	-0.1220	-0.0000	178.0	0.2261	0.4945	-0.3581	0.0073
2.50	88.0	0.3667	0.3054	-0.1222	-0.0000	180.0	0.0	0.0	0.0	0.0
2.50	90.0	0.3667	0.3055	-0.1222	-0.0000					

Table C-3 (Continued)

REGRESSION COEFFICIENTS FOR EQUATION

CPYRCA=B8(0)+B8(1)*(TAPER RATIO)+B8(2)*(TAPER RATIO)**2+B8(3)*(ASPECT RATIO)

		COEFFICIENTS FOR CPYRCA					COEFFICIENTS FOR CPYRCA			
MACH	ALPHA	B8(0)	B8(1)	B8(2)	B8(3)	ALPHA	B8(0)	B8(1)	B8(2)	B8(3)
3.00	0.0	0.0	0.0	0.0	0.0	92.0	0.3667	0.3054	-0.1222	-0.0000
3.00	2.0	0.4785	0.5376	-0.6371	-0.1126	94.0	0.3667	0.3050	-0.1221	-0.0000
3.00	4.0	0.4712	0.5051	-0.5743	-0.1150	96.0	0.3667	0.3045	-0.1220	-0.0000
3.00	6.0	0.4441	0.4574	-0.4917	-0.0843	98.0	0.3668	0.3038	-0.1218	-0.0001
3.00	8.0	0.4049	0.4325	-0.4207	-0.0484	100.0	0.3668	0.3028	-0.1216	-0.0001
3.00	10.0	0.3699	0.3961	-0.3252	-0.0218	102.0	0.3668	0.3015	-0.1210	-0.0001
3.00	12.0	0.3422	0.3721	-0.2592	-0.0059	104.0	0.3669	0.2994	-0.1202	-0.0002
3.00	14.0	0.3214	0.3360	-0.2053	0.0094	106.0	0.3670	0.2970	-0.1194	-0.0003
3.00	16.0	0.2976	0.3829	-0.2300	0.0141	108.0	0.3671	0.2945	-0.1189	-0.0004
3.00	18.0	0.2804	0.3895	-0.2345	0.0262	110.0	0.3672	0.2922	-0.1198	-0.0005
3.00	20.0	0.2774	0.3893	-0.2224	0.0251	112.0	0.3675	0.2897	-0.1193	-0.0007
3.00	22.0	0.2868	0.3831	-0.2225	0.0232	114.0	0.3679	0.2864	-0.1191	-0.0010
3.00	24.0	0.2975	0.3794	-0.2287	0.0216	116.0	0.3684	0.2824	-0.1183	-0.0012
3.00	26.0	0.3095	0.3439	-0.2083	0.0201	118.0	0.3690	0.2778	-0.1172	-0.0015
3.00	28.0	0.3239	0.3531	-0.2251	0.0134	120.0	0.3696	0.2727	-0.1158	-0.0019
3.00	30.0	0.3394	0.3110	-0.1933	0.0080	122.0	0.3702	0.2672	-0.1141	-0.0022
3.00	32.0	0.3446	0.2711	-0.1514	0.0050	124.0	0.3708	0.2615	-0.1123	-0.0025
3.00	34.0	0.3452	0.2553	-0.1302	0.0042	126.0	0.3713	0.2556	-0.1104	-0.0028
3.00	36.0	0.3504	0.2400	-0.1152	0.0019	128.0	0.3718	0.2495	-0.1084	-0.0031
3.00	38.0	0.3573	0.2238	-0.1022	0.0011	130.0	0.3721	0.2435	-0.1066	-0.0033
3.00	40.0	0.3626	0.2125	-0.0908	0.0002	132.0	0.3722	0.2376	-0.1049	-0.0035
3.00	42.0	0.3642	0.2145	-0.0890	-0.0001	134.0	0.3721	0.2319	-0.1034	-0.0036
3.00	44.0	0.3647	0.2222	-0.0915	-0.0002	136.0	0.3717	0.2265	-0.1022	-0.0037
3.00	46.0	0.3646	0.2328	-0.0962	-0.0001	138.0	0.3711	0.2215	-0.1014	-0.0037
3.00	48.0	0.3643	0.2433	-0.1009	0.0001	140.0	0.3701	0.2171	-0.1010	-0.0036
3.00	50.0	0.3643	0.2506	-0.1037	0.0001	142.0	0.3609	0.2203	-0.1018	-0.0024
3.00	52.0	0.3645	0.2555	-0.1049	0.0001	144.0	0.3527	0.2647	-0.13[illegible]1	-0.0075
3.00	54.0	0.3647	0.2604	-0.1065	0.0001	146.0	0.3484	0.2775	-0.1516	-0.0083
3.00	56.0	0.3649	0.2652	-0.1083	0.0001	148.0	0.3441	0.2657	-0.1434	-0.0086
3.00	58.0	0.3651	0.2697	-0.1100	0.0001	150.0	0.3403	0.2398	-0.1176	-0.0083
3.00	60.0	0.3653	0.2739	-0.1115	0.0001	152.0	0.3339	0.2280	-0.1061	-0.0004
3.00	62.0	0.3655	0.2777	-0.1128	0.0001	154.0	0.3358	0.2130	-0.0889	-0.0029
3.00	64.0	0.3656	0.2814	-0.1141	0.0001	156.0	0.3319	0.2546	-0.1232	-0.0060
3.00	66.0	0.3658	0.2850	-0.1153	0.0000	158.0	0.3255	0.2865	-0.1483	-0.0066
3.00	68.0	0.3659	0.2884	-0.1164	0.0000	160.0	0.3272	0.2624	-0.1287	-0.0037
3.00	70.0	0.3661	0.2915	-0.1175	0.0000	162.0	0.3258	0.2737	-0.1408	-0.0008
3.00	72.0	0.3662	0.2944	-0.1185	0.0000	164.0	0.3229	0.2823	-0.1450	0.0004
3.00	74.0	0.3663	0.2970	-0.1193	0.0000	166.0	0.3141	0.3021	-0.1678	-0.0062
3.00	76.0	0.3664	0.2993	-0.1201	0.0000	168.0	0.3008	0.3109	-0.1786	-0.0074
3.00	78.0	0.3665	0.3012	-0.1208	0.0000	170.0	0.2764	0.3441	-0.1881	0.0042
3.00	80.0	0.3666	0.3027	-0.1213	0.0000	172.0	0.2405	0.3906	-0.1973	0.0096
3.00	82.0	0.3666	0.3038	-0.1216	0.0000	174.0	0.2267	0.4209	-0.1992	-0.0115
3.00	84.0	0.3666	0.3046	-0.1219	0.0000	176.0	0.1399	1.0321	-0.5093	-0.1146
3.00	86.0	0.3667	0.3052	-0.1221	0.0000	178.0	0.0986	1.0792	-0.7182	-0.0565
3.00	88.0	0.3667	0.3054	-0.1222	0.0000	180.0	0.0	0.0	0.0	0.0
3.00	90.0	0.3667	0.3055	-0.1222	-0.0000					

APPENDIX D

DATA ANALYSIS PROGRAM

APPENDIX D

DATA ANALYSIS PROGRAM

The data analysis program is relatively short, consisting of a MAIN program and five subroutines (ORDER, SWAP, INTERP, DIM and FORIT). All of the data in the high alpha data base, obtained during numerous wind tunnel entries over a two-year period were placed on one reel of magnetic tape for analysis by the data analysis program. The various data part numbers for a given configuration and Mach number which go together to make up an angle of attack sweep from 0 to 180 degrees were given common identification numbers on the tape.

The MAIN program reads the data tape and places the data in a sequential disk file to be searched repeatedly to bring the various body alone, fin alone and body plus fin data into the program so that the interference factors and their effective centers of pressure can be calculated. To begin the computation for a given fin configuration and a given Mach number, the index numbers of the fin alone, the body alone and the body plus fin data are read in MAIN. The disk file is then searched for the required data. When one of the input index numbers is found, the data are placed into one of three sets of arrays depending on whether the data are for fin alone, body alone, or body plus fin. The sets of arrays are made up of data for the normal force and pitching moment coefficients for both the body alone and body plus fin as well as the fin normal force, root bending and hinge moment coefficients for both the fin alone and the fin the presence of the body. After the search of the disk file is complete, the data from each array are placed in an ascending order of angle of attack and duplicate angles of attack are eliminated by subroutines ORDER and SWAP. Once the arrays are ordered, subroutine INTERP is called for each array and a relaxed second derivative, cubic spline interpolation is performed to determine the values of each array at even angles of attack from 0 to 180 degrees. The use of the interpolation also fills in any small gap in the data due to bad data points which were left out or places where problems in the wind tunnel test precluded obtaining the data.

With the data in each array determined at even angles of attack, the interference factors and effective centers of pressure were obtained using the dimensions of the selected fin obtained from subroutine DIM and Equations 5.11, 5.12, 5.14, and 5.16 from Section V and an array based on angle of attack for each factor was established. Because of scatter in the data, it was necessary to smooth the determined values of the interference factors and effective centers of pressure as well as the fin alone coefficients before the regression coefficients could be determined. In order to do this, the values of each array were approximated by a twenty term Fourier series using subroutine FORIT. Subroutine FORIT is a standard IBM scientific package subroutine described in Reference (54). The standard deviation, σ, of the values in the arrays from the Fourier series approximation was then determined. The values of the factors in the arrays were then compared with the approximated values using the Fourier series. Any value that deviated from the approximation by more than 2σ was placed equal to the approximated value at that angle of attack plus or minus one σ depending on whether the value from the array was greater or less than the approximated value.

The smoothed values of the interference factors, their effective centers of pressure and the fin alone coefficients were then placed into a larger set of arrays which were functions of angle of attack, Mach number, taper ratio, aspect ratio and span ratio. After the values were placed into these large arrays control was shifted back to the read statements in MAIN and a new fin configuration was analyzed. After all of the fin configurations in the data base that were tested with the $\ell/d = 10$ body had been analyzed and placed in the large arrays, the large arrays were then written on a magnetic tape for further analysis by the regression coefficient program.

APPENDIX E

REGRESSION COEFFICIENT PROGRAM

PRECEDING PAGE BLANK - FILMED

APPENDIX E

REGRESSION COEFFICIENT PROGRAM

The data in the high angle of attack data base associated with the fins were obtained for twelve different fins each having different combinations of taper, aspect and span ratios. A schematic in Figure (E-1) shows the relationship of each fin to the others in the data base. The three ratios describe a cube where one dimension is represented by the taper ratio, another dimension is represented by the aspect ratio with the final dimension being represented by the span ratio. Every combination of the three ratios was not tested but the ones where data were obtained are indicated. It can be seen that at each angle of attack and Mach number combination, a "cube" is defined for each interference factor ($\Delta C_{N_{FOB}}$ and $\Delta C_{N_{BOF}}$) and effective center of pressure ($X_{CP_{FOB}}$, $Y_{CP_{BOF}}$, and $X_{CP_{BFH}}$). Thus, in order to provide for the determination of interference factors and effective centers of pressure for arbitrary fins with characteristics which fall within the "cube", a regression analysis using a least squares technique was used to fit a hypersurface to the calculated factors. The form of the equation for the hypersurface was assumed from the way the data in the data base were obtained. Since data were obtained at only two different aspect ratios while holding the other ratios constant, a linear function of aspect ratio was assumed. Also since data were obtained at only two span ratios while holding the other ratios constant, then a linear relation was assumed for span ratio. For each combination of span and aspect ratio, data were obtained for three taper ratios, thus a quadratic function of taper ratio was assumed. The hypersurface equation for a typical interference factor therefore is:

$$\Delta C_{N_{FOB}} = \beta_o + \beta_1 \lambda + \beta_2 \lambda^2 + \beta_3 \, AR + \beta_4 \, (d/b')$$

For every combination of the three ratios at which data were taken, an equation is formed. Thus for the twelve combinations, a system of twelve equations is developed. The multiple linear regression technique then takes the twelve equations and determines the regression coefficients $\beta_o \ldots \beta_4$ which allows the calculation of $\Delta C_{N_{FOB}}$ for arbitrary values of the taper, aspect and span ratios. Since the fin alone characteristics for a given Mach number, angle of attack combination are a function of only taper ratio and aspect ratio, a system of nine equations are determined with the form:

$$C_{N_{FA}} = \beta_o + \beta_1 \lambda + \beta_2 \lambda^2 + \beta_3 \, AR$$

and the regression analysis is performed to determine the regression coefficients $\beta_o \ldots \beta_3$.

The computer program which was written to determine the regression coefficients consists of a MAIN program and eight subroutines, Figure (E-2), the MAIN program calls subroutine CALCO to prepare the data for analysis. A regression analysis is done for each factor at each Mach number, angle of attack combination. Thus CALCO sets up a column matrix of dependent variables and a 4 x 12 rectangular matrix of independent variables which represent the systems of 12 equations for each of the interference factors and effective centers of pressure. CALCO also sets up a column matrix of dependent variables and a 3 x 9 rectangular matrix of independent variables which represent the systems of nine equations for each of the fin alone characteristics. The data which make up these matrices are provided by subroutine DAP which reads the magnetic tape produced by the data analysis program (Appendix D). Since the data are supplied by subroutine DAP, subroutine DATA called by subroutine CORRE consists only of return and end statements. After the matrices are established for each factor at the first Mach number, angle of attack combination subroutine MULREG is called for each interference factor, effective center of pressure and fin alone characteristic.

Subroutine MULREG places the column matrix of dependent variables into the first column of a rectangular working matrix. Then the matrix of independent variables is placed into the remaining columns. With the rectangular working matrix subroutine MULREG then calls consecutively subroutines CORRE, ORDER, MINV, and MULTR, which were taken from the IBM Scientific Subroutine Package, Reference (54), to perform the multiple linear regression analysis. Control is then returned to subroutine CALCO.

After subroutine MULREG is called for each factor and a regression analysis is performed for each factor, the resulting regression coefficients are placed into a large array set up for each factor which is a function of Mach number and angle of attack. Now a new regression analysis is performed for each factor at the next Mach number angle of attack combination and these regression coefficients are added to the large arrays. When regression analyses are completed for each Mach number, angle of attack combination, eight large arrays of regression coefficients result which represent $\Delta C_{N_{FOB}}$, $\Delta C_{N_{BOF}}$, $X_{CP_{FOB}}$, $Y_{CP_{BOF}}$, and $X_{CP_{BFH}}$ as functions of Mach number, angle of attack, taper ratio, aspect ratio, and span ratio and $C_{N_{FA}}$, $CP_{X_{HLA}}$, and $CP_{Y_{RCA}}$ as functions of Mach number, angle of attack, taper ratio, and aspect ratio. These large arrays are then written on magnetic tape to be used in the coefficient prediction program, and the regression coefficients are printed out for a permanent record.

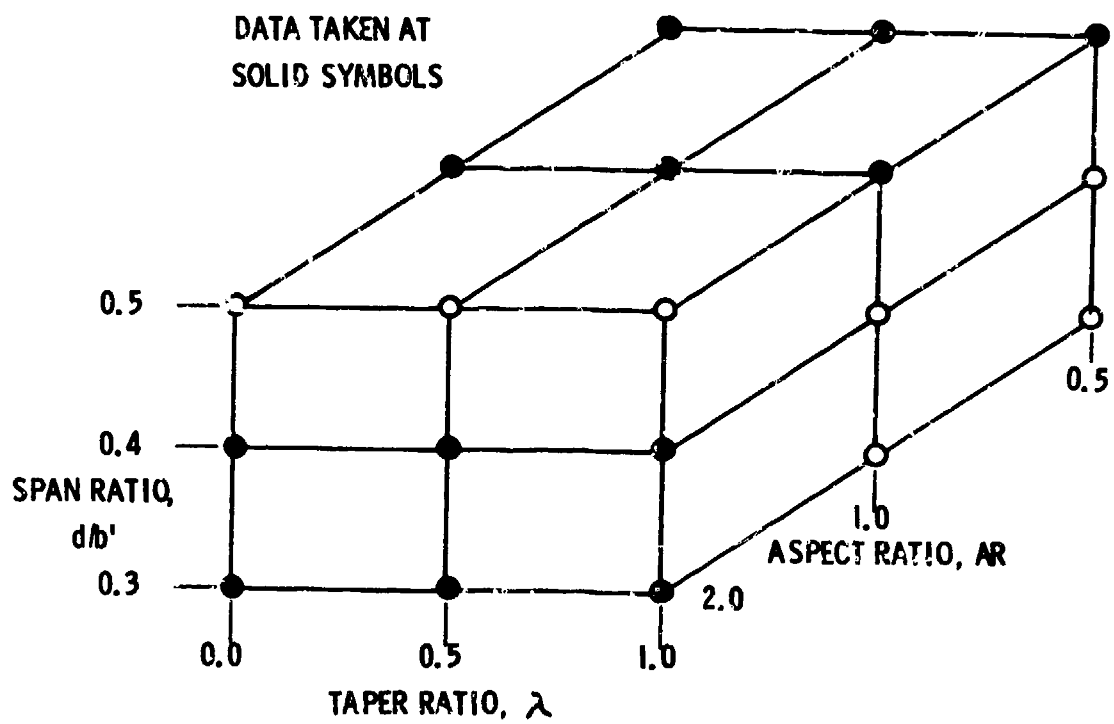


Figure E-1. Range of fin variables.

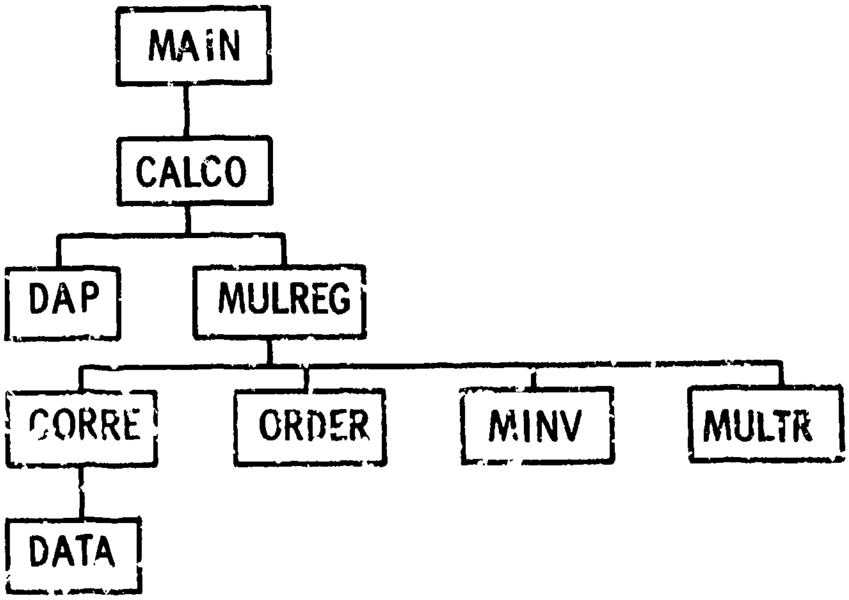


Figure E-2. Subroutine flow chart for the regression coefficient program.

APPENDIX F

HAND CALCULATION EXAMPLE

APPENDIX F

HAND CALCULATION EXAMPLE

Calculate the total normal force and pitching moment coefficients at a Mach number of 0.6, Reynolds number based on body diameter of 4×10^5 and angle of 120 degrees for a finned slender body having a sharp tangent ogive nose and a cylindrical afterbody with the following dimensions:

$$\text{Moment reference} = \ell/2$$

$$(\ell_n/d) = 2.5$$

$$(\ell_b/d) = 7.5$$

$$d = 1.25 \text{ inches}$$

$$X_{HL} = -5.5635 \text{ inches}$$

The four fins are arranged in cruciform plus orientation with the trailing edge flush with the aft end of the body and have the following characteristics:

$$\lambda = 1.0$$

$$AR = 1.0$$

$$d/b' = 0.5$$

$$HL = 0.45$$

By hand calculation, Equation 5.4 and the formulas from Appendix I determine:

Total length	$\ell = 12.5$ in.
Moment ref location	$X_m = 6.25$ in.
Fin area	$S_f = 0.7813$ in.^{2}
Base area, S_b = cross sectional area, S	$S = 1.2272$ in.^{2}
Nose-body planform area	$S_p = 14.3436$ in.^{2}
Nose-body volume	$V = 13.5738$ in.^{2}
Location of centroid of area	$\bar{X} = 6.7391$ in.
Root chord	$C_R = 1.25$ in.

From Figure 28 for an $\ell/d = 10$ configuration, η is determined to be:

$$\eta = 0.682$$

Since M is less than 0.95, η will not be changed by Equation 5.8.

From Figure 29 for $M = 0.6$ and $Re_d = 4.17 \times 10^5$

$$M_c = M \sin \alpha = 0.5196$$

$$Re_c = Re_d \sin \alpha = 3.6 \times 10^5$$

$$Cd_c = 1.17$$

Now from Equation 5.3 we get

$$C_{N_{BA}} = 7.76$$

From Figure 30 at $\alpha = 120$ degrees, we get

$$\bar{\delta} = -0.88$$

and from Figure 31 at $M = 0.6$, we get

$$Z_{MAX} = 7.1$$

Thus from Equation 5.10 we get

$$Z = (\bar{\delta})(Z_{MAX}) \left(\frac{\ell/d}{10}\right)^2$$

$$Z = -6.248$$

Now from Equation 5.5 we get

$$C_{m_{BA}} = -11.88$$

Now from Appendix B we get the regression coefficients for the interference factors and their effective centers of pressure.

$$\Delta C_{N_{FOB}} = \beta_o + \beta_1 \lambda + \beta_2 \lambda^2 + \beta_3 \, AR + \beta_4 \, (d/b')$$

$$\Delta C_{N_{FOB}} = 0.5989$$

Where $\beta_o = 0.3771$

$\beta_1 = -0.5460$ $\beta_3 = -0.0169$

$\beta_2 = 0.5348$ $\beta_4 = 0.4997$

$$\Delta C_{N_{BOF}} = \beta_o + \beta_1 \lambda + \beta_2 \lambda^2 + \beta_3 \, AR + \beta_4 \, (d/b')$$

$$\Delta C_{N_{BOF}} = 0.2806$$

Where $\beta_o = 0.3099$

$\beta_1 = -0.0338$ $\beta_3 = -0.0732$

$\beta_2 = -0.0567$ $\beta_4 = 0.2691$

$$X_{CP_{FOB}} = \beta_o + \beta_1 \lambda + \beta_2 \lambda^2 + \beta_3 \, AR + \beta_4 \, (d/b')$$

$$X_{CP_{FOB}} = -2.8492$$

Where $\beta_o = -14.1688$ $\beta_3 = 2.6929$

$\beta_1 = 11.1996$ $\beta_4 = 16.2029$

$\beta_2 = -10.6743$

$$X_{CP_{BFH}} = \beta_o + \beta_1\lambda + \beta_2\lambda^2 + \beta_3\ AR + \beta_4\ (d/b')$$

$$X_{CP_{BFH}} = -0.1821$$

Where $\beta_o = -0.0282$ $\beta_3 = -0.0294$

$\beta_1 = -0.1760$ $\beta_4 = 0.0297$

$\beta_2 = 0.0367$

$$Y_{CP_{BOF}} = \beta_o + \beta_1\lambda + \beta_2\lambda^2 + \beta_3\ AR + \beta_4\ (d/b')$$

$$Y_{CP_{BOF}} = 0.0334$$

Where $\beta_o = 1.5444$ $\beta_3 = -0.2753$

$\beta_1 = 0.1914$ $\beta_4 = -2.5889$

$\beta_2 = -0.1326$

From Appendix C we get the regression coefficients to calculate the fin alone contributions to the normal force and pitching moment coefficients.

$$C_{N_{FA}} = \beta_o + \beta_1\lambda + \beta_2\lambda^2 + \beta_3\ AR$$

$$C_{N_{FA}} = 1.025$$

Where $\beta_o = 0.8945$ $\beta_2 = -0.0228$

$\beta_1 = 0.1095$ $\beta_3 = 0.0438$

$$CP_{X_{HLA}} = \beta_o + \beta_1\lambda + \beta_2\lambda^2 + \beta_3\ AR$$

$$CP_{X_{HLA}} = -0.1006$$

Where $\beta_o = -0.1529$ $\beta_2 = 0.0150$

$\beta_1 = 0.0141$ $\beta_3 = 0.0232$

$$CP_{Y_{RCA}} = \beta_o + \beta_1\lambda + \beta_2\lambda^2 + \beta_3\ AR$$

$$CP_{Y_{RCA}} = 0.4705$$

Where $\beta_o = 0.3528$ $\beta_2 = -0.1252$

$\beta_1 = 0.2502$ $\beta_3 = -0.0073$

The calculated parameters along with the dimensional characteristics of the configuration are now substituted into the following equations for normal force, pitching moment, fin normal force in the presence of the body and the fin X and Y centers of pressure in the presence of the body.

$$C_N = C_{N_{BA}} + 2(C_{N_{FA}})\left(\frac{S_f}{S}\right) + \Delta C_{N_{FOB}}\left(\frac{S_f}{S}\right) + 2(\Delta C_{N_{BOF}})\left(\frac{S_f}{S}\right)$$

$$C_N = 9.80$$

$$X_{CP_{FA}} = X_{HL} + CP_{X_{HLA}}\left(\frac{C_R}{d}\right)$$

$$X_{CP_{FA}} = -5.6631$$

$$X_{CP_{BOF}} = X_{HL} + X_{CP_{BFH}}\left(\frac{C_R}{d}\right)$$

$$X_{CP_{BOF}} = -5.7456$$

$$C_m = C_{m_{BA}} + 2(C_{N_{FA}})(X_{CP_{FA}})\left(\frac{S_f}{S}\right) + (\Delta C_{N_{FOB}})(X_{CP_{FOB}})\left(\frac{S_f}{S}\right)$$

$$+ 2(\Delta C_{N_{BOF}})(X_{CP_{BOF}})\left(\frac{S_f}{S}\right)$$

$$C_m = -30.56$$

$$C_{N_{FB}} = C_{N_{FA}} + \Delta C_{N_{BOF}}$$

$$C_{N_{FB}} = 1.30$$

$$CP_{X_{HLB}} = \frac{\left(C_{N_{FA}}\right)\left(CP_{X_{HLA}}\right) + \left(\Delta C_{N_{BOF}}\right)\left(X_{CP_{BFH}}\right)}{C_{N_{FB}}}$$

$$CP_{X_{HLB}} = -0.118$$

$$CP_{Y_{RCB}} = \frac{\left(C_{N_{FA}}\right)\left(CP_{Y_{RCA}}\right) + \left(C_{N_{BOF}}\right)\left(Y_{CP_{BOF}}\right)}{C_{N_{FB}}}$$

$$CP_{Y_{RCB}} = 0.376$$

$$C_{m_{RB}} = (C_{N_{FB}})(CP_{Y_{RCB}})$$

$$C_{m_{RB}} = 0.4915$$

$$C_{m_H} = (C_{N_{FB}})(CP_{X_{HLB}})$$

$$C_{m_H} = -0.154$$

APPENDIX G

COEFFICIENT PREDICTION PROGRAM

APPENDIX G

COEFFICIENT PREDICTION PROGRAM

The high angle of attack aerodynamic coefficient prediction program is written in FORTRAN IV for the IBM 370 Computer. It consists of a MAIN program and 14 subroutines as shown in Figure (G-1). The MAIN program consists of read statements for the title, body geometry, and flight conditions such as Mach number and either altitude or Reynolds number based on body diameter. The title is read using a 20A4 format and the geometry for each component nose, body and boattail is read using an I10 format for the indicator of nose, body or boattail type and the lengths and moment reference location are read using an F10.4 format. The flight conditions are read using a format statement containing an implied DO loop, where the number of Mach numbers, Reynolds numbers or altitudes is read using an I10 format and the Mach numbers are read using an F10.4 format. The Reynolds numbers are read using an E14.4 format. Either Reynolds number or altitude is read into the program and a blank card is inserted for the one not read in. Using the input geometry, cross-sectional areas are calculated and subroutines OGIVE, NOSE, BODY and BTAIL are called to calculate the planform areas, volumes and centroids of the various body components using the equations of Appendix I. Subroutine OGIVE determines the theoretical length of the ogive if only the ogive radius and body diameter are given. The total body planform area, volume and centroid are then calculated in MAIN.

With all of the areas, volumes and lengths determined, subroutine COEFF is called to begin the computation of the aerodynamic coefficients. For a given body, calculations for any number of fins can be made. The number of fins is read, using an I10 format. At this point, the fin title, fin ratios, and fin orientation are read into the program. The title is read using a 20A4 format and the taper ratio, aspect ratio, and span ratio are read in using an F10.4 format. The ratio of the hinge line location measured from the leading edge of the root chord to the root chord length and the hinge line location measured in calibers from the moment reference point are read using an F10.4 format. The hinge line location is a negative number if it is located aft of the moment reference point. The fin orientation measured from the vertical is read in degrees using an F10.4 format. If a body alone calculation is desired, then the number of fins is input as zero and only a fin title card is required. A form is provided, Figure (G-2), for preparing the program inputs. Spaces are provided for five different fin configurations, but any number can be input. With the fin characteristics, subroutine FINDIM is called to calculate the dimensions and areas of the fins.

Subroutine PAGER is now called to print a title page showing all the dimensions of the body and first fin to be calculated. Subroutine CO is now called to determine the crossflow drag and the finite length body correction, η. At this point, if altitude has been input rather than Reynolds number, then subroutine RENOLD is called to determine the Reynolds number based on body diameter using the Mach number, altitude and curve fits of atmospheric data from Reference (55).

With all of the body dimensions the crossflow drag and the η evaluated, subroutine NORM is called to determine the body alone normal force and pitching moment coefficients and the body alone center of pressure. The empirical correction to the body alone pitching moment coefficient is determined by calling subroutine CSPS to evaluate the Chebyshev polynomial for the correction. Subroutine CSPS is a standard IBM subroutine from Reference (54).

Now to evaluate the interference factors, their effective centers of pressure, and the fin alone characteristics, subroutine BAKER is called. This subroutine reads the regression coefficients from a magnetic tape and sets up a direct access file for subsequent calculations. It is this subroutine that contributes the most to the amount of core required to run this program. Since all of the calculations in this program are initially done at Mach numbers of 0.6, 0.8, 0.9, 1.0, 1.15, 1.3, 1.5, 2.0, 2.5, and 3.0 for even angles of attack from 0 to 180 degrees, arrays of interference factors and fin alone coefficients are determined as a function of the specific Mach numbers and angles of attack using the regression coefficients and the taper, aspect, and span ratio for the fin configuration being calculated. With the arrays of interference factors and fin alone coefficients, subroutine DOIT is called to determine the total normal force and pitching moment coefficients, the center of pressure for the complete configuration and the installed fin normal force, root bending and hinge moment coefficients as well as the X and Y centers of pressure of the normal force on the fin.

Subroutine PAGER is now called again to print the calculated coefficients. Up to this point, all of the calculations have been made at internally determined Mach numbers. Therefore, before the results can be printed, linearly interpolated values of the coefficients are determined using subroutine LINE at the user specified Mach numbers. If input Mach number is below M = 0.6 or above M = 3.0, a note is printed and the coefficients are extrapolated to the requested Mach number. Coefficients are printed at even angles of attack from 0 to 180 degrees. After the coefficients for all of the fin configurations for the first body are determined, control is returned to COEFF to start the computation process for the next Reynolds number or altitude or if the altitude or Reynolds number loops are complete, control is returned to MAIN to read in the next body configuration.

A listing of the Fortran portion of the program follows.

```
C*----------------------------------MAIN PROGRAM-----------------------------------*
C**********************************************************************************
C*                              AEDC  PWT/4T
C*                        HIGH ALPHA COEFFICIENT PROGRAM
C**********************************************************************************
C*****************************NOMENCLATURE*****************************************
C      A        TOTAL PLANFORM AREA
C      D        BODY DIAMETER,REFERENCE LENGTH
C      J        OUTPUT PRINT CONTROL
C      R        OGIVE RADIUS
C      S        BODY CROSS SECTIONAL AREA, REFERENCE AREA
C      V        TOTAL VOLUME
C      Z        EMPIRICAL CORRECTION TO BODY ALONE PITCHING MOMENT

C      AB       PLAN AREA OF BODY
C      AN       PLAN AREA OF NOSE
C      CM       CALCULATED PITCHING MOMENT
C      CN       CALCULATED NORMAL FORCE
C      DT       DIAMETER OF BASE
C      IB       BODY INDICATOR
C      IN       NOSE INDICATOR
C      L2       LENGTH FROM BASE OF NOSE TO ORIGIN OF SPHERICAL BLUNTING
C      LB       LENGTH OF BODY
C      LT       TOTAL ACTUAL LENGTH
C      NA       NUMBER OF ALPHAS
C      NM       NUMBER OF MACH NUMBERS
C      R1       DISTANCE FROM ORIGIN OF R TO ORIGIN OF SPHERICAL BLUNTING
C      R2       DISTANCE FROM ORIGIN OF R TO CENTERLINE OF NOSE
C      RE       INPUT REYNOLDS NUMBER
C      RM       INPUT MACH NUMBER
C      RN       BLUNT NOSE RADIUS
C      ST       BASE AREA
C      XM       INPUT MACH NUMBER  ALSO DISTANCE FROM NOSE TO CG

C      ABT      PLAN AREA OF BOATTAIL
C      ALT      INPUT ALTITUDE
C      APB      SPECIAL INPUT BODY PLAN AREA
C      APN      SPECIAL INPUT NOSE PLAN AREA
C      CDC      CROSSFLOW DRAG
C      CMH      HINGE MOMENT COEFFICIENT
C      CMB      BODY ALONE PITCHING MOMENT COEFFICIENT
C      CNB      BODY ALONE NORMAL FORCE     COEFFICIENT
C      CNF      FIN NORMAL FORCE COEFFICIENT
C      CNN      NORMAL FORCE AT NINETY DEG
C      ETA      FINITE CYLINDER LENGTH CORRECTION FACTOR
C      FIN      ARRAY OF FIN DIMENSIONS
C      IBT      BOATTAIL INDICATOR
C      LBT      LENGTH OF BOATTAIL
C      LL1      DISTANCE FROM BASE OF NOSE TO PERPENDICULAR FROM TANGENT
                OF NOSE BLUNTING TO NOSE CENTERLINE
C      LL2      ACTUAL LENGTH OF NOSE
C      LNT      THEORETICAL NOSE LENGTH
C      LOD      LENGTH TO DIAMETER RATIO
C      LTT      TOTAL THEORETICAL LENGTH
C      NRE      NUMBER OF REYNOLDS NUMBERS
C      REC      CROSSFLOW REYNOLDS NUMBER
```

```
C     REI     INPUT REYNOLDS NUMBER
C     RLL     NONDIMENSIONAL LENGTH,  SR,NOSE
C     RMC     CROSSFLOW MACH NUMBER
C     RMN     MACH NUMBER USED TO CALCULATE REYNOLDS NUMBER
C     RNO     NONDIMENSIONAL NOSE RADIUS
C     XAC     CENTER OF PRESSURE
C     XCP     X CENTER OF PRESSURE OF FIN
C     XHL     DISTANCE FROM CG TO HINGELINE, IN CALIBERS
C     XRE     CALCULATED REYNOLDS NUMBER, SUBSCRIPTED

C     ANS1    INTERPOLATED VALUE OF CN
C     ANS2    INTERPOLATED VALUE OF CM
C     ANS3    INTERPOLATED VALUE OF XAC
C     ANS4    INTERPOLATED VALUE OF CNB
C     ANS5    INTERPOLATED VALUE OF CMB
C     ANS6    INTERPOLATED VALUE OF XACB
C     ANS7    INTERPOLATED VALUE OF CNF
C     ANS8    INTERPOLATED VALUE OF CNF
C     ANS8    INTERPOLATED VALUE OF CPXMLB
C     ANS9    INTERPOLATED VALUE OF CPYRCB
C     AONU    LOG OF SPEED OF SOUND OVER KINEMATIC VISCOSITY
C     APBT    SPECIAL INPUT BOATTAIL PLAN AREA
C     CMRB    FIN ROOT BENDING COEFFICIENT
C     CNFA    FIN ALONE NORMAL FORCE COEFFICIENT
C     NALT    NUMBER OF ALTITUDES
C     RENM    CALCULATED REYNOLDS NUMBER
C     VOBT    VOLUME OF BOATTAIL
C     VOLB    VOLUME OF BODY
C     VOLN    VOLUME OF NOSE
C     XACB    BODY ALONE CENTER OF PRESSURE
C     XBAR    CENTROID FROM NOSE OF MISSILE
C     XCGN    MOMENT REFERENCE POINT MEASURED FROM ACTUAL NOSE

C     ALPHA   ANGLE OF ATTACK
C     ALPHP   ALPHP=ALPHR.LE.90,ALPHP=3.141593-ALPHR.GT.90 DEGREES
C     ALPHR   ANGLE OF ATTACK IN RADIANS
C     ALTIT   ALTITUDE IN SUBROUTINE RENOLD
C     ANS10   INTERPOLATED VALUE OF CMRB
C     ANS11   INTERPOLATED VALUE OF CMH
C     CNBOF   BODY ON FIN INTERFERENCE FACTOR
C     CNFOB   FIN ON BODY INTERFERENCE FACTOR
C     XBABT   CENTROID OF BOATTAIL
C     XBARB   CENTROID OF BODY
C     XBARN   CENTROID OF NOSE

C     REGCO1  REGRESSION COEFFICIENT FOR CNFOR
C     REGCO2  REGRESSION COEFFICIENT FOR CNBCF
C     REGCO3  REGRESSION COEFFICIENT FOR XCPFOB
C     REGCO4  REGRESSION COEFFICIENT FOR YCPBOF
C     REGCO5  REGRESSION COEFFICIENT FOR XCPBFH
C     REGCO6  REGRESSION COEFFICIENT FOR CNFA
C     REGCO7  REGRESSION COEFFICIENT FOR CPXMLA
C     REGCO8  REGRESSION COEFFICIENT FOR CPYRCA
C     XCPBOF  EFFECTIVE CENTER OF PRESSURE OF BODY ON FIN INTER. FACTOR
C     XCPFOB  EFFECTIVE CENTER OF PRESSURE OF FIN ON BODY INTER. FACTOR
C++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
```

```
              C
0007               REAL LB,LT,L2,L3,LBT,LL1,LL2,LNT,LOD,LTT
0008               COMMON/MAN /A,J,TITLE(20),IN,LNT,D,RN,APN,AN,R,IB,LB,APB,AB,
                  1IBT,LBT,DT,APBT,ABT,LT,ST,S,LOD,VOLN,VOLB,VOBT,V,LL2,CM(10,91)
0009               COMMON/BARX/XBARN,XBARB,XBABT,XBAR
0010               COMMON/COEF/RM(10),RE(10),CDC(10,91),CNN(10,91),NM,NRE,ALPHA(91),
                  1ALPHP(91),ALPHR(91),NA,REI,CN(10,91),ALTIT(13),AONU(13),NALT,
                  2ALT(10),DUMDUM,XRE(10),ETA(10),RMC(10,91),REC(10,91),XAC(10,91)
0011               COMMON/F/FIN(8),CNF(10,91),XCP(10,91),YCP(10,91),CNB(10,91),
                  *CMR(10,91),XACB(10,91),CPXHLB(10,91),CPYRCB(10,91),TITLEF(20)
0012               COMMON/CA/ CASE
0013               COMMON XCGN,XHL,CMRB(10,91),CMH(10,91),CPXFNB(10,91),PHI
0014               COMMON/ MAC/ NXM,XM(10)
0015            10 FORMAT(I10,(5F10.4))
0016            15 FORMAT(I10,(5E14.4))
0017            20 FORMAT(20A4)
0018               IND=0
0019               CASE=0.0
0020             1 READ(5,20,END=500)TITLE
0021               READ(5,10)IN,LNT,RN,R,APN
0022               READ(5,10)IB,LB,D,XCGN,APR
0023               READ(5,10)IBT,LBT,DT,APBT
0024               READ(5,10)NXM,(XM(I),I=1,NXM)
0025               READ(5,15)NRE,(RE(I),I=1,NRE)
0026               READ(5,15)NALT,(ALT(I),I=1,NALT)
0027               NA=91
0028               NM=10
0029               RM(1)=0.6
0030               RM(2)=0.8
0031               RM(3)=0.9
0032               RM(4)=1.0
0033               RM(5)=1.15
0034               RM(6)=1.3
0035               RM(7)=1.5
0036               RM(8)=2.0
0037               RM(9)=2.5
0038               RM(10)=3.0
0039               DO 25  IA=1,NA
0040               ALPHA(IA)=2.0*(IA-1)
0041               ALPHR(IA) = ALPHA(IA)/57.295
0042               IF(ALPHA(IA).LE.90.0)ALPHP(IA)=ALPHR(IA)
0043               IF(ALPHA(IA).GT.90.0)ALPHP(IA)=3.14159265-ALPHR(IA)
0044            25 CONTINUE
0045               AN = 0.
0046               AB = 0.
0047               ABT = 0.
0048               VOLN=0.0
0049               VOLB=0.0
0050               VOBT=0.0
              C    REFERENCE AREA
0051               S = (3.141593*D**2)/4
              C    BASE AREA
0052               ST=(3.141593*DT**2.0)/4.0
0053               IF(D.NE.0.0) GO TO 55
0054               D=1.0
0055               WRITE(6,56)
```

```
   56 FORMAT(1H1,27HBODY DIAMETER INPUT AS ZERO)
   55 CONTINUE
      IF(DT.NE.0.0) GO TO 57
      DT=1.0
      ST = S
      WRITE(6,58)
   58 FORMAT(1H1,27HBASE DIAMETER INPUT AS ZERO)
   57 CONTINUE
C     CALCULATE THEORETICAL NOSE LENGTH WHEN NOT INPUT
      IF(IN.GT.3.AND.LNT.EQ.0.0)CALL OGIVE(R,D,LNT)
      IF(IN.EQ.0) GO TO 40
C     CALCULATE PLAN AREA OF NOSE
      CALL NOSE
   40 CONTINUE
      IF(IB.EQ.0)GO TO 50
C     CALCULATE PLAN AREA OF BODY
      CALL BODY
   50 CONTINUE
      IF(IBT.EQ.0) GO TO 60
C     CALCULATE PLAN AREA OF BOATTAIL
      CALL BTAIL
   60 CONTINUE
C     SUM PLANFORM AREAS
      A = AN + AB + ABT
C     SUM LENGTHS
      LT=LL2 + LB + LBT
      LTT = LNT + LB + LBT
      LOD = LT/D
C     TOTAL VOLUME
      V = VOLN + VOLB + VOBT
C     CENTROID FROM NOSE OF MISSILE
      XBAR = ((XBARN*AN)+(LL2+XBARB)*AB+(LL2+LB+XBABT)*ABT)/A
C     USING AREAS CALCULATE COEFFICIENTS
      CALL COEFF(IND)
      GO TO 1
  500 CONTINUE
      STOP
      END
```

```
FORTRAN IV G LEVEL  21              OGIVE            DATE = 77245         12/32/40              PAGE 0001

 0001              SUBROUTINE OGIVE(R,D,LNT)
 0002              REAL LNT
            C      WHEN INPUT GIVES ONLY OGIVE RADIUS AND BODY DIAMETER
            C      THIS SUBROUTINE CALCULATES THE THEROTIC L NOSE LENGTH
 0003              R1 = R - D/2
 0004              LNT = (R**2 - R1**2)**0.5
 0005              RETURN
 0006              END
```

```
0001          SUBROUTINE NOSE
0002          REAL LB,LT,L2,L3,LNT,LL1,LL2,LNT,LOD,LTT
0003          COMMON/MAN /A,J,TITLE(20),IN,LNT,D,RN,APN,AN,R,IB,LB,APB,AB,
             1IBT,L3T,DT,APBT,ABT,LT,ST,S,LOD,VOLN,VOLB,VOBT,V,LL2,CM(10,91)
0004          COMMON/BARX/XBARN,XBARB,XBABT,XBAR
0005          PI = 3.141593
0006          IF(IN.EQ.1)GO TO 50
0007          IF(IN.EQ.2)GO TO 10
0008          IF(IN.EQ.3)GO TO 20
0009          IF(IN.GT.3)GO TO 30
        C     CALCULATE PLAN AREA OF SHARP CONE
0010       10 AN = LNT * D/2
        C     CALCULATE VOLUME OF SHARP CONE
0011          VOLN=(1.0/3.0)*S*LNT
0012          LL2 = LNT
        C      CENTROID OF SHAPP CONE
0013          XBARN=2.*LNT/3.
0014          GO TO 52
        C     CALCULATE PLAN AREA OF BLUNT CONE
0015       20 AN = (LNT * D/2) - (RN**2)*((LNT/(D/2)) -ATAN(LNT/(D/2)))
        C     CALCULATE VOLUME OF BLUNT CONE
0016          L3=(RN**2.+(LNT**2.*RN**2.)/(D/2)**2.)**0.5
0017          L2=LNT-L3
0018          LL1=L2+RN*((D/2.)/((D/2.)**2+LNT**2)**0.5)
0019          LL2=L2+RN
0020          V1=(((3.141593)*(D/2)**2.)/LNT**2.0)*(LNT**2.*LL1-LNT*LL1**2. +
             1LL1**3./3.)
0021          V2=(3.141593*RN**2.)*(LL1-LL2)
0022          V3=(3.141593)*(LL1**3./3.-LL1**2.*L2+LL1*L2**2.)
0023          V4=(3.141593)*(LL2**3./3.-LL2**2.*L2+LL2*L2**2.)
0024          VOLN=V1 + V2 - V3 + V4
        C     CENTROID OF BLUNT CONE
0025          RN0=RN/LL1
0026          RL2=L2/LL1
0027          RLL=LL2/LL1
0028          RLN = LNT/LL1
0029          XBAR1 = (LL1**3.)/(3.*AN)*((D/2)/LNT)*(3.*RLN-2.)
0030          XBAR2=(LL1**3/(3.*AN))*(2.*(RN0**2-(1.-RL2)**2)**(3./2.)-
             12*(RN0**2-(RLL-RL2)**2)**(3./2.)-RL2*(RN0**2.-(1.-RL2)**2)**0.5*
             2(3*(1.-RL2))+3*(RN0**2)*ARSIN((1.-RL2)/RN0)+((RN0**2-(RLL-RL2)**2)
             3**0.5)*(3*(RLL-RL2))+3*RN0**2*(ARSIN((RLL-RL2)/RN0)))
0031          XBARN = LL2 - (XBAR1 + XBAR2)
0032          GO TO 52
        C     CALCULATE PLAN AREA OF SHARP OGIVE
0033       30 R = ((LNT**2) + (D/2)**2)/D
0034          AN1 = (R**2)* ARSIN(LNT/R) - (LNT)*(R - (D/2))
0035          IF(IN.EQ.5)GO TO 40
0036          AN = AN1
        C     CALCULATE VOLUME OF SHARP OGIVE
0037          R2=R-(D/2)
0038          L2 = ((R-RN)**2.-(R-D/2.)**2.)**0.5
0039          LL1 = L2 * (1.+RN/(R-RN))
0040          LL2 = L2 + RN
0041           VOLN=(PI*LNT**3)*
             *((R**2/LNT**2)*(1.0-(R2/LNT)*ARSIN(LNT/R))-(1./3.))
        C     CENTROID OF SHARP OGIVE
```

```
FORTRAN IV G LEVEL  21                NOSE              DATE = 77245          12/32/46              PAGE 0002

0042              XBARN=LL2-(2.*R**3-3.*R2*R**2+R2**3)/(3.*AN)
0043              GO TO 52
            C     CALCULATE PLAN AREA OF BLUNT OGIVE
0044           40 R1 = (R - RN)
0045              R2 = (R - D/2)
0046              L3 = LNT - (R1**2 - R2**2)**0.5
0047              X = (L3 + R1 + R )/2
0048              Y = ((X - L3)*(X - R)*(X - R1)/X)**0.5
0049              PSI = 2*(ATAN(Y/(X - L3)))
0050              AR = (R**2)*(PSI) - (R*R1)*SIN(PSI)
0051              BETA = 2*(ATAN(Y/(X - R)))
0052              ASA = (RN**2)*(3.141593 - BETA)
0053              AN = AN1 - AR + ASA
0054              L2=(R1**2-R2**2)**0.5
0055              THETA=3.141593-BETA
0056              LL1=L2*(1.+RN/R1)
0057              LL2=L2+RN
            C     CALCULATE VOLUME OF BLUNT OGIVE
0058              Y0 = (R-D/2)
0059              R0=R/LL1
0060              RN0=RN/LL1
0061              Y1=Y0/LL1
0062              RLL=LL2/LL1
0063              RL2=L2/LL1
0064              V1=PI*(LL1**3)*((R0**2)*(1.-Y1*ARSIN(1./R0))-1./3.+
                 1(Y1**2)*(1.-((R0**2.-1.)**0.5)/Y1)))
0065              V2=PI*(LL1**3)*((RN0**2-RL2**2)*(RLL-1.)+1./3.-(RLL**3)/3.
                 1+(L2/LL1)*(RLL**2-1.))
0066              VOLN= V1 + V2
            C     CENTOID OF BLUNT OGIVE
0067              R0=R/LL1
0068              RN0=RN/LL1
0069              RLL=LL2/LL1
0070              RL2=L2/LL1
0071              Y1=Y0/LL1
0072              XBAR1=(LL1**3/(3.*AN))*(2.*R0**3.-2.*(R0**2.-1)**(3./2.)-3.*(Y1))
0073              XBAR2=(LL1**3/(3.*AN))*(2.*(RN0**2-(1.-RL2)**2)**(3./2.)-
                 12*(RN0**2-(RLL-RL2)**2)**(3./2.)-RL2*(RN0**2.-(1.-RL2)**2)**0.5*
                 2(3*(1.-RL2))+3*(RN0**2)*ARSIN((1.-RL2)/RN0)+((RN0**2-(RLL-RL2)**2)
                 3**0.5)*(3*(RLL-RL2))+3*RN0**2*(ARSIN((RLL-RL2)/RN0)))
0074              XBARN = LL2 - (XBAR1 + XBAR2)
0075              GO TO 52
            C     PLAN AREA OF ODD NOSE
0076           50 AN = APN
0077              VOLN = (S/2.) * LNT
0078              XBARN = (2./3.) * LNT
0079           52 CONTINUE
0080              RETURN
0081              END
```

```
FORTRAN IV G LEVEL  21                  BODY                 DATE = 77245          12/32/40                PAGE 0001

 0001                 SUBROUTINE BODY
 0002                 REAL LB,LT,L2,L3,LBT,LL1,LL2,LNT,LOD,LTT
 0003                 COMMON/MAN /A,J,TITLE(20),IN,LNT,D,RN,APN,AN,R,IB,LB,APB,AB,
                     1IBT,LBT,UT,APBT,ABT,LT,ST,S,LOD,VOLN,VOLB,VOBT,V,LL2,CM(10,91)
 0004                 COMMON/BARX/XBARN,XBARB,XBABT,XBAR
 0005                 IF(IB.EQ.1) GO TO 10
 0006                 IF(IB.EQ.2) GO TO 20
              C       CALCULATE PLAN AREA OF CYLINDRICAL BODY
 0007              20 AB = LB * D
              C       VOLUME OF BODY
 0008                 VOLB = S * LB
              C       CENTROID OF BODY
 0009                 XBARB=LB/2.
 0010                 GO TO 30
              C       PLAN AREA OF ODD BODY
 0011              10 AB = APB
 0012                 VOLB = S * LB
 0013              30 CONTINUE
 0014                 RETURN
 0015                 END
```

```
FORTRAN IV G LEVEL  21                  BTAIL              DATE = 77245        12/32/40            PAGE 0001

 0001                 SUBROUTINE BTAIL
 0002                 REAL LB,LT,L2,L3,LBT,LL1,LL2,LNT,LOD,LTT
 0003                 COMMON/MAN /A,J,TITLE(20),IN,LNT,D,RN,APN,AN,R,IB,LB,APB,AB,
                     1IBT,LBT,DT,APBT,ABT,LT,ST,S,LOD,VOLN,VOLB,VOBT,V,LL2,CM(10,91)
 0004                 COMMON/BARX/XBARN,XBARB,XBABT,XBAR
 0005                 IF(IBT.EQ.1)GO TO 10
 0006                 IF(IBT.EQ.2)GO TO 20
 0007                 IF(IBT.EQ.3)GO TO 30
             C        CALCULATE PLAN AREA OF CONICAL BOATTAIL
 0008              20 ABT = LBT*(D + DT)/2
             C        VOLUME OF CONICAL BOATTAIL
 0009                 VOBT = ((ST + S)/2) * LBT
             C         CENTROID OF BOATTAIL
 0010                 XBABT=(LBT/3.)*(2.*DT+D)/(DT+D)
 0011                 GO TO 40
 0012              30 ABT = 1.0
 0013                 GO TO 40
             C        PLAN AREA OF ODU BOATTAIL
 0014              10 ABT = APBT
 0015                 VOBT = ((S+ST)/2)*LBT
 0016                 XBABT=(LBT/3.)*(2.*DT+D)/(DT+D)
 0017              40 CONTINUE
 0018                 RETURN
 0019                 END
```

```
0001          SUBROUTINE COEFF(IND)
0002          REAL LB,LT,L2,L3,LAT,LL1,LL2,LNT,LOD,LTT
0003          COMMON XCGN,XML,CNRB(10,91),CNM(10,91),CPXFNB(10,91),PHI
0004          COMMON/MAN /A,J,TITLE(20),IN,LNT,D,RN,APN,AN,R,IB,LB,APB,AB,
             1IBT,LBT,DT,APBT,ABT,LT,ST,S,LOD,VOLN,VOLB,VOBT,V,LL2,CM(10,91),
0005          COMMON/COEF/RM(10),RE(10),CDC(10,91),CNM(10,91),NM,NRE,ALPHA(91),
             1ALPHP(91),ALPHR(91),NA,REI,CN(10,91),ALTIT(13),AONU(13),NALT,
             2ALT(10),DUMDUM,XRE(10),ETA(10),RMC(10,91),REC(10,91),XAC(10,91)
0006          COMMON/F/FIN(8),CNF(10,91),XCP(10,91),YCP(10,91),CNB(10,91),
             *CMB(10,91),XACB(10,91),CPXMLB(10,91),CPYRCB(10,91),TITLEF(20)
0007          COMMON/CA/ CASE
        C     IF ALTITUDE IS NOT INPUT REYNOLDS NUMBER BASED ON BODY DIAMETER
        C     MUST BE INPUT
0008          READ(5,10)NF
0009       10 FORMAT(I10)
0010       15 FORMAT(20A4)
0011          DO 300 I=1,NF
0012          READ(5,15)TITLEF
0013          J = 1
0014          CALL PAGER
0015          PHI=0.0
0016          IF(NF.EQ.0) GO TO 500
0017          READ(5,20)FIN(1),FIN(2),FIN(3),FIN(8),XML,PHI
0018          PHI=PHI/57.2957796
0019          CALL FINDIM
0020       20 FORMAT(8F10.4)
0021          IF(NALT.GT.0.0)GO TO 40
0022          DO 110 IR = 1,NRE
0023          ALTI=0.0
0024          RENM=RE(IR)
0025          REI=RE(IR)
0026          CALL CO(ALTI,RENM)
0027          IF(I.GT.1)GO TO 50
0028          CALL NORM
0029       50 CONTINUE
0030          IND=IND+1
0031          CALL BAKER(IND,FIN)
0032          CALL DOIT
0033          J = 2
0034          CALL PAGER
0035      110 CONTINUE
0036          GO TO 500
0037       40 CONTINUE
        C     IF ALTITUDE IS INPUT REYNOLDS NUMBER IS CALCULATED
0038          DO 290 IAL = 1,NALT
0039          ALTI=ALT(IAL)
0040          RENM=0.0
0041          CALL CO(ALTI,RENM)
0042          IF(I.GT.1)GO TO 62
0043          CALL NORM
0044       62 CONTINUE
0045          IND=IND+1
0046          CALL BAKER(IND,FIN)
0047          CALL DOIT
0048          J=3
0049          CALL PAGER
```

```
  200 CONTINUE
  500 CONTINUE
  300 CONTINUE
      RETURN
  600 CONTINUE
      XHL=0.0
      DO 80 I=1,8
      FIN(I)=0.0
    0 CONTINUE
      DO 60  I=1,NM
      DO 70  II=1,NA
      CN(I,II)=0.0
      CM(I,II)=0.0
      XAC(I,II)=0.0
      CNF(I,II)=0.0
      CPXHLB(I,II)=0.0
      CPYRCB(I,II)=0.0
   70 CONTINUE
   60 CONTINUE
      IF(NALT.GT.0) G. TO 140
      DO 1110 IR=1,NRE
      ALTI=0.0
      RENM=RE(IR)
      REI=RE(IR)
      CALL CO(ALTI,RENM)
      CALL NORM
      J=2
      CALL PAGER
 1110 CONTINUE
      GO TO 1500
  140 CONTINUE
      DO 1200 IAL=1,NALT
      ALTI=ALT(IAL)
      RENM=0.0
      CALL CO(ALTI,RENM)
      CALL NORM
      J=3
      CALL PAGER
 1200 CONTINUE
 1500 CONTINUE
      RETURN
      END
```

```
FORTRAN IV G LEVEL  21                  PAGER              DATE = 77245          12/32/40                    PAGE 0001

0001                 SUBROUTINE PAGER
0002                 REAL LB,LT,L2,L3,LBT,LL1,LL2,LNT,LOD,LTT
0003                 COMMON XCGN,XHL,CMRB(10,91),CMH(10,91),CPXFNB(10,91),PHI
0004                 COMMON/MAN /A,J,TITLE(20),IN,LNT,D,RN,APN,AN,R,IB,LB,APB,AB,
                    1IBT,LBT,DT,APBT,ABT,LT,ST,S,LOD,VOLN,VOLB,VOBT,V,LL2,CM(10,91)
0005                 COMMON/BARX/XBARN,XBARB,XBABT,XBAR
0006                 COMMON/COEF/RM(10),RE(10),CDC(10,91),CNN(10,91),NM,NRE,ALPHA(91),
                    1ALPHP(91),ALPHR(91),NA,REI,CN(10,91),ALTIT(13),AONU(13),NALT,
                    2ALT(10),DUMDUM,XRE(10),ETA(10),RMC(10,91),REC(10,91),XAC(10,91)
0007                 COMMON/F/FIN(8),CNF(10,91),XCP(10,91),YCP(10,91),CNB(10,91),
                    *CMB(10,91),XACB(10,91),CPXHLB(10,91),CPYRCB(10,91),TITLEF(20)
0008                 COMMON/CA/ CASE
0009                 COMMON/ MAC/ NXM,XM(10)
0010                 COMMON/ ANS/ ANS1(10,91),ANS2(10,91),ANS3(10,91),ANS4(10,91),
                    *ANS5(10,91),ANS6(10,91),ANS7(10,91),ANS8(10,91),ANS9(10,91),
                    *ANS10(10,91),ANS11(10,91)
0011                 IF(J.NE.1)GO TO 1000
0012                 WRITE(6,100)
0013             100 FORMAT(1HA//30X,11HAEDC-PWT/4T/20X,
                    *30HHIGH ALPHA COEFFICIENT PROGRAM//)
0014                 WRITE(6,150)TITLE
0015                 WRITE(6,150)TITLEF
0016             150 FORMAT(10X,20A4)
0017                 WRITE(6,200)
0018             200 FORMAT(//10X,21HMISSILE CONFIGURATION//)
0019                 WRITE(6,205)
0020             205 FORMAT(10X,
                    1'IN=0, NO NOSE       IB=0, NC BODY      IBT=0, NO BOATTAIL'/10X,
                    2'IN=1, ODD NOSE      IB=1, ODD BODY     IBT=1, ODD BOATTAIL'/10X,
                    3'IN=2, SHARP CONE    IB=2, CYLINDER     IBT=2, CONICAL BOATTAIL'/10X,
                    4'IN=3, BLUNT CONE'/10X,
                    5'IN=4, SHARP OGIVE'/10X,
                    6'IN=5, BLUNT OGIVE'//)
0021                 WRITE(6,215)
0022             215 FORMAT(1X,'ALL DIMENSIONS IN INCHES'/)
0023                 IF(IN.NE.0)GO TO 210
0024                 WRITE(6,220)
0025             220 FORMAT(10X,7HNO NOSE)
0026                 GO TO 510
0027             210 WRITE(6,250)IN
0028             250 FORMAT(10X,17HNOSE INDICATOR = ,I1)
0029                 WRITE(6,300)LNT,RN,LL2
0030             300 FORMAT(10X,26HTHEORETICAL NOSE LENGTH = ,F10.4,5X,
                    114HNOSE RADIUS = ,F10.4/10X,21HACTUAL NOSE LENGTH = ,F10.4)
0031                 IF(IN.LT.4)GO TO 10
0032                 WRITE(6,400)R
0033             400 FORMAT(10X,15HOGIVE RADIUS = ,F10.4)
0034              10 WRITE(6,500)AN,VOLN,XBARN
0035             500 FORMAT(10X,20HPLAN AREA OF NOSE = ,F10.4,5X,17HVOLUME OF NOSE = ,
                    1F10.4/10X,19HCENTROID OF NOSE = ,F10.4)
0036             510 CONTINUE
0037                 IF(IB.NE.0)GO TO 530
0038                 WRITE(6,520)
0039             520 FORMAT(10X,7HNO BODY)
0040                 GO TO 750
0041             530 WRITE(6,600)IB
```

```
0042      600 FORMAT(10X,17HBODY INDICATOR = ,I1)
0043          WRITE(6,700)LB,D,AE,VOLB,XBARB
0044      700 FORMAT(10X,14HBODY LENGTH = ,F10.4,5X,16HBCDY DIAMETER = ,F10.4/10
             1X,20HPLAN AREA OF BODY = ,F10.4,5X,17HVOLUME OF BODY = ,F10.4/10X,
             219HCENTROID OF BODY = ,F10.4)
0045      750 CONTINUE
0046          IF(IBT.NE.0)GO TO 820
0047          WRITE(6,800)
0048      800 FORMAT(10X,11HNO BOATTAIL)
0049          GO TO 950
0050      820 WRITE(6,850)IBT
0051      850 FORMAT(10X,21HBOATTAIL INDICATOR = ,I1)
0052          WRITE(6,900)LBT,DT,ABT,VOBT,XBABT
0053      900 FORMAT(10X,18HBOATTAIL LENGTH = ,F10.4,5X,20HBOATTAIL DIAMETER = ,
             1F10.4/10X,24HPLAN AREA OF BOATTAIL = ,F10.4,5X,21HVOLUME OF BOATTA
             2IL = ,F10.4/10X,22HCENTROID OF BOATTAIL = ,F10.4)
0054      950 CONTINUE
0055          WRITE(6,910)A,V,S,ST
0056      910 FORMAT(10X,29HTOTAL PLAN AREA OF MISSILE = ,F10.4,5X,15HTOTAL VOLU
             1ME = ,F10.4/10X,23HCROSS SECTIONAL AREA = ,F10.4,5X,12HBASE AREA =
             2 ,F10.4)
0057          WRITE(6,920)LOD,LT,XBAR
0058      920 FORMAT(10X,27HLENGTH TO DIAMETER RATIO = ,F10.4,5X,27HACTUAL LENGT
             1H OF MISSILE = ,F10.4/10X,32HCENTROID FROM NOSE OF MISSILE = ,
             2F10.4)
0059          WRITE(6,924) XCGN
0060      924 FORMAT(10X,'CG FORM NOSE OF MISSILE = ',F10.4)
0061      925 FORMAT(//10X,'FIN CONFIGURATION'//10X,
             *'FIN ORIENTATION = ',F5.1/10X,'FIN TAPER RATIO = ',F5.2/10X,
             *'FIN ASPECT RATIO=',F5.2/10X,'FIN SPAN RATIO=',F5.2/10X,
             *'FIN EXPOSED AREA=',F10.4/10X,'TIP CHORD LENGTH=',F10.4/10X,
             *'ROOT CHORD LENGTH=',F10.4/10X,'EXPOSED SEMI-SPAN=',F10.4/10X,
             *'HINGE LOCATION=',F10.4)
0062     1000 CONTINUE
0063          IF(J.NE.2) GO TO 2000
0064          XHLI=XHL*D
0065          WRITE(6,1005) XHLI
0066     1005 FORMAT(10X,'HINGELINE FROM CG OF MISSILE =',F10.4)
0067          PHI=PHI*57.2957796
0068          WRITE(6,925)PHI,FIN
0069     1010 FORMAT(10X,18HREYNOLDS NUMBER = ,1PE14.4)
0070          Z=0.0
0071          DO 1009 I=1,NXM
0072          DO 1008 IA=1,91
0073          ANS1(I,IA)=0.0
0074          ANS2(I,IA)=0.0
0075          ANS3(I,IA)=0.0
0076          ANS4(I,IA)=0.0
0077          ANS5(I,IA)=0.0
0078          ANS6(I,IA)=0.0
0079          ANS7(I,IA)=0.0
0080          ANS8(I,IA)=0.0
0081          ANS9(I,IA)=0.0
0082          ANS10(I,IA)=0.0
0083          ANS11(I,IA)=0.0
0084     1008 CONTINUE
```

```
 1009 CONTINUE
      DO 1100 I=1,NXM
      CASE=CASE+1.0
      WRITE(6,100)
      WRITE(6,150)TITLE
      WRITE(6,150)TITLEF
      WRITE(6,1010)REI
      WRITE(6,1020) XM(I)
      CALL LINE(I)
      WRITE(6,9401)CASE
 9401 FORMAT(10X,5HCASE=,F6.2)
      WRITE(6,1030)
 1020 FORMAT(/10X,14HMACH NUMBER = ,F10.4)
 1030 FORMAT(/1X,'ALPHA      CN        CA        XAC       CNB       CMB
     *      XACB      CNF       CPXMLB    CPYRCB    CMRB      CMH'/)
      DO 1090 IA = 1,NA
      WRITE(6,1040)ALPHA(IA),ANS1(I,IA),ANS2(I,IA),ANS3(I,IA),
     *ANS4(I,IA),ANS5(I,IA),ANS6(I,IA),ANS7(I,IA),ANS8(I,IA),
     *ANS9(I,IA),ANS10(I,IA),ANS11(I,IA)
      IF(ALPHA(IA).EQ.90.0)GO TO 1095
      GO TO 1099
 1095 CONTINUE
      WRITE(6,100)
      WRITE(6,150)TITLE
      WRITE(6,150)TITLEF
      WRITE(6,1010)REI
      WRITE(6,1020) XM(I)
      WRITE(6,9401)CASE
      WRITE(6,1030)
 1099 CONTINUE
 1040 FORMAT(1X,F5.1,11F10.4)
 1090 CONTINUE
 1100 CONTINUE
 2000 CONTINUE
      IF(J.NE.3)GO TO 3000
      XMLI=XML*D
      WRITE(6,1005) XMLI
      PHI=PHI*57.2957796
      WRITE(6,925)PHI,FIN
 2010 FORMAT(10X,19HALTITUDE IN FEET = ,1PE14.4)
      DO 2100 I=1,NXM
      CALL RENOLD(ALTI,XM(I),XRE(I),D)
      CASE=CASE+1.0
      WRITE(6,100)
      WRITE(6,150)TITLE
      WRITE(6,150)TITLEF
      WRITE(6,2010)ALTI
      WRITE(6,2020)XM(I),XRE(I)
      CALL LINE(I)
      WRITE(6,9401)CASE
 2020 FORMAT(/10X,14HMACH NUMBER = ,F10.4,5X,
     118HREYNOLDS NUMBER = ,1PE14.4)
      WRITE(6,1030)
      DO 2090 IA=1,NA
      WRITE(6,1040)ALPHA(IA),ANS1(I,IA),ANS2(I,IA),ANS3(I,IA),
     *ANS4(I,IA),ANS5(I,IA),ANS6(I,IA),ANS7(I,IA),ANS8(I,IA),
```

```
           *ANS9(I,IA),ANS10(I,IA),ANS11(I,IA)
            IF(ALPHA(IA).EQ.99.0)GO TO 1094
            GO TO 1098
       1094 CONTINUE
            WRITE(6,100)
            WRITE(6,150)TITLE
            WRITE(6,150)TITLEF
            WRITE(6,2010)ALTI
            WRITE(6,2020)XM(I),XRE(I)
            WRITE(6,9401)CASE
            WRITE(6,1030)
       1098 CONTINUE
       2090 CONTINUE
       2100 CONTINUE
       3000 CONTINUE
            RETURN
            END
```

```
FORTRAN IV G LEVEL  21              FINPIM            DATE = 77245         12/32/40              PAGE 0001

 0001            SUBROUTINE FINDIM
 0002            REAL LB,LT,L2,L3,LBT,LL1,LL2,LNT,LOD,LTT
 0003            COMMON/MAN /A,J,TITLE(20),IN,LNT,D,RN,APN,AN,R,IB,LB,APB,AB,
                1IBT,LBT,DT,APBT,A3T,LT,ST,S,LOD,VOLN,VOLB,VOBT,V,LL2,CM(10,91)
 0004            COMMON/F/FIN(8),CNF(1^,91),XCP(10,91),YCP(10,91),CNB(10,91),
                *CMB(10,91),XACB(10,91),CPXHLB(10,91),CPYRCB(10,91),TITLEF(20)
           C     FIN(1)=TAPER RATIO
           C     FIN(2)=ASPECT RATIO
           C     FIN(3)=SPAN RATIO
           C     FIN(4)=FIN EXPOSED AREA
           C     FIN(5)=TIP CHORD LENGTH
           C     FIN(6)=ROOT CHORD LENGTH
           C     FIN(7)=FIN EXPOSEC SEMI=SPAN
           C     FIN(8)=HINGE LOCATION FROM LE OF FIN ROOT CHORD/FIN ROOT CHORD
 0005            BPRIME=D/FIN(3)
 0006            B=BPRIME-D
 0007            SF=(B**2)/(2.0*FIN(2))
 0008            BO2=B/2.0
 0009            RCL=(2.0*SF)/(BO2*(FIN(1)+1.0))
 0010            TCL=RCL*FIN(1)
 0011            FIN(4)=SF
 0012            FIN(5)=TCL
 0013            FIN(6)=RCL
 0014            FIN(7)=BO2
 0015            RETURN
 0016            END
```

```
FORTRAN IV G LEVEL  21                CO                DATE = 77245        12/32/40                PAGE 0001

0001                 SUBROUTINE CO(ALTI,RENM)
0002                 COMMON/COEF/RM(10),RE(10),CDC(10,91),CNN(10,91),NM,NRE,ALPHA(91),
                    1ALPHP(91),ALPHR(91),NA,REI,CN(10,91),ALTIT(13),AONU(13),NALT,
                    2ALT(10),DUMDUM,XRE(10),ETA(10),RMC(10,91),REC(10,91),XAC(10,91)
               C     CDC CURVE FIT ACCORDING TO MARTIN
0003                 DO 100 IM = 1,NM
0004                 RMN=RM(IM)
0005                 DO 7 IA = 1,NA
0006                 IF(ALTI.NE.0.0)CALL RENOLD(ALTI,RMN,RENM,D)
0007                 XRE(IM)=RENM
0008                 RMC(IM,IA) = RM(IM)*SIN(ALPHP(IA))
0009                 REC(IM,IA) = XRE(IM)*SIN(ALPHP(IA))
0010                 IF(REC(IM,IA).LE.100000.0.AND.RMC(IM,IA).LE.0.8) GO TO 10
0011                 IF(RMC(IM,IA).GT.0.8.AND.RMC(IM,IA).LE.4.0) GO TO 15
0012                 IF(REC(IM,IA).GT.100000.0.AND.RM(IM).GT.1.0.AND.RMC(IM,IA).LE.0.8)
                    1GO TO 20
0013                 IF(REC(IM,IA).GT.100000.0.AND.RM(IM).LE.1.0.AND.RMC(IM,IA).LE.0.8)
                    1GO TO 30
0014                 IF(RMC(IM,IA).GT.4.0) GO TO 35
               C     CALCULATE CDC AS FUNCTION OF CROSS FLOW MACH NO AND CROSS FLOW RE
0015              10 CDC(IM,IA)=0.7604504+6.383659*RMC(IM,IA)-34.75968*RMC(IM,IA)**2.0+
                    185.67196*RMC(IM,IA)**3.0-90.303*RMC(IM,IA)**4.0+33.90701*RMC(IM,IA
                    2)**5.0
0016                 GO TO 50
0017              20 CDC(IM,IA)=0.2843437+0.3676577*RMC(IM,IA)-1.873819*RMC(IM,IA)**2.0
                    1+31.92413*RMC(IM,IA)**3.0-57.71046*RMC(IM,IA)**4.0+29.05925*RMC(IM
                    2,IA)**5.0
0018                 GO TO 50
0019              30 CDC(IM,IA)=0.2759876+1.046625*RMC(IM,IA)-6.343155*RMC(IM,IA)**2.0+
                    125.6352*RMC(IM,IA)**3.0-21.0177*RMC(IM,IA)**4.0
0020                 GO TO 50
0021              15 CDC(IM,IA)=0.9181575+2.201892*RMC(IM,IA)-2.413674*RMC(IM,IA)**2.0+
                    11.096802*RMC(IM,IA)**3.0-0.227369*RMC(IM,IA)**4.0+0.01777765*RMC(I
                    2M,IA)**5.0
0022                 GO TO 50
0023              35 CDC(IM,IA)=1.3
0024              50 CONTINUE
0025               7 CONTINUE
0026             100 CONTINUE
0027                 RETURN
0028                 END
```

```
FORTRAN IV G LEVEL  21              RENOLD          DATE = 77245        12/32/40              PAGE 0001

      SUBROUTINE RENOLD(ALTI,HMN,RENM,D)
      DIMENSION AONU(13),ALTIT(13)
C     ALTIT IS ALTITUDE AND AONU IS THE LOG OF THE SPEED OF SOUND OVER
C     THE KINEMATIC VISCOSITY
      ALTIT(1)=0.0
      AONU(1)=6.85125835
      ALTIT(2)=10000.0
      AONU(2)=6.72835378
      ALTIT(3)=20000.0
      AONU(3)=6.59659710
      ALTIT(4)=25000.0
      AONU(4)=6.52762990
      ALTIT(5)=30000.0
      AONU(5)=6.45484486
      ALTIT(6)=35000.0
      AONU(6)=6.38021124
      ALTIT(7)=40000.0
      AONU(7)=6.28103337
      ALTIT(8)=45000.0
      AONU(8)=6.17897695
      ALTIT(9)=50000.0
      AONU(9)=6.07554696
      ALTIT(10)=55000.0
      AONU(10)=5.97034688
      ALTIT(11)=60000.0
      AONU(11)=5.86687781
      ALTIT(12)=80000.0
      AONU(12)=5.44404480
      ALTIT(13)=140000.0
      AONU(13)=4.20951501
      DO 75  I=1,13
      IF(ALTI.GE.ALTIT(I).AND.ALTI.LE.ALTIT(I+1))GO TO 60
      GO TO 75
   60 P=(ALTI-ALTIT(I))/(ALTIT(I+1)-ALTIT(I))
      AON=AONU(I)+P*(AONU(I+1)-AONU(I))
      GO TO 80
   75 CONTINUE
   80 CONTINUE
      RENM=10.0**AON*RMN*D/12.0
      RETURN
      END
```

```
0001          SUBROUTINE NORM
0002          REAL LB,LT,L2,L3,LBT,LL1,LL2,LNT,LOD,LTT
0003          COMMON/MAN /A,J,TITLE(20),IN,LNT,D,RN,APN,AN,R,IB,LB,APB,AB,
             1IBT,LBT,DT,APBT,ABT,LT,ST,S,LOD,VOLN,VOLB,VOBT,V,LL2,CM(10,91)
0004          COMMON/BARX/XBARN,XBARB,XBABT,XBAR
0005          COMMON/COEF/RM(10),RE(10),CDC(10,91),CNN(10,91),NM,NRE,ALPHA(91),
             1ALPHP(91),ALPHR(91),NA,REI,CN(10,91),ALTIT(13),AONU(13),NALT,
             2ALT(10),DUMDUM,XRE(10),ETA(10),RMC(10,91),REC(10,91),XAC(10,91)
0006          COMMON/F/FIN(8),CNF(10,91),XCP(10,91),YCP(10,91),CNB(10,91),
             *CMB(10,91),XACB(10,91),CPXMLB(10,91),CPYRCB(10,91),TITLEF(20)
0007          COMMON XCGN,XML,CMRB(10,91),CMH(10,91),CPXFNB(10,91),PHI
0008          DIMENSION CZM(15),CZA(15)
0009          DATA CZM/5.56792,-3.86348,-0.383133,2.15263,0.452887,-0.349564,
             *0.380121,-0.124466,-1.07408,-.0648346,-1.05244,-.329285,-.900879,
             *0.0218353,-0.490295/
0010          DATA CZA/-1.19012E-01,-2.61068E-01,1.41951E-01,4.53981E-01,
             *-3.71147E-02,-2.38234E-01,8.02296E-03,2.41076E-02,-2.44889E-02,
             *2.18215E-02,5.00011E-03,-3.46462E-02,2.56479E-02/
0011          DO 100 IM = 1,NM
0012          Z=0.0
0013          ETA(IM)=.547590+.017077*LOD-.00039716*(LOD**2)+.000003520*(LOD**3)
0014          ET=ETA(IM)
        C
        C     MODIFICATION OF ETA IN REGION OF MACH=1.0
        C
0015          ETA(IM)=ETA(IM)+((1.-ETA(IM))/2.)*(1.+TANH((RM(IM)-1.)*(15./RM(IM)
             ***4)))
0016          IF(RM(IM).GT.1.35)ETA(IM)=1.0
0017          NA1=NA-1
0018          DO 200 IA = 2,NA1
        C
        C     CHEBYCHEV POLYNOMIALS DEFINED ONLY ON INTERVAL :
        C     MACH=0 TO MACH=2.0  AND  ALPHA=15 TO ALPHA=180
        C
0019          IF(RM(IM).GE.2.0)GO TO 10
0020          IF(ALPHA(IA).LT.15.0)GO TO 10
0021          ZM=((2./3.)*RM(IM))-(1./3.)
0022          ZA=((1./165.)*ALPHA(IA))-(15./165.)
0023          CALL CSPS(DELTAB,ZA,CZA,12)
0024          CALL CSPS(CORRM,ZM,CZM,14)
0025          Z=DELTAB*CORRM*(LOD/10.)**2
0026       10 CONTINUE
        C
        C     EQUATION FROM NASA TN D-6996
        C
0027          CNB(IM,IA)=(ST/S)*SIN(2*ALPHP(IA))*COS(ALPHP(IA)/2)+ETA(IM)*(CDC(I
             1M,IA)*(A/S)*(SIN(ALPHP(IA)))**2.0)
0028          XM=XCGN
0029          IF(ALPHA(IA).GT.90) GO TO 50
0030          CMB(IM,IA)=(((V-ST*(LT-XM))/(S*D))*SIN(2*ALPHP(IA))*COS(ALPHP(IA)/
             12.)+ETA(IM)*CDC(IM,IA)*(A/S)*((XM-XBAR)/D)*(SIN(ALPHP(IA)))**2.)+Z
0031          GO TO 60
0032       50 CMB(IM,IA)=(-((V-ST*XM)/(S*D))*SIN(2*ALPHP(IA))*COS(ALPHP(IA)/2.)+
             1ETA(IM)*CDC(IM,IA)*(A/S)*((XM-XBAR)/D)*(SIN(ALPHP(IA)))**2.)+Z
0033       60 CONTINUE
0034          XACB(IM,IA)=CMB(IM,IA)/CNB(IM,IA)
```

FORTRAN IV G LEVEL 21 NORM DATE = 77245 12/32/40 PAGE 0002

```
            CNB(IM,1)=0.0
            CNB(IM,91)=0.0
            CMB(IM,1)=0.0
            CMB(IM,91)=0.0
            XACB(IM,1)=0.0
            XACB(IM,91)=0.0
        200 CONTINUE
        100 CONTINUE
            RETURN
            END
```

```
      SUBROUTINE  CSPS(Y,X,C,N)
      DIMENSION C(1)
C
C
C     COMPUTE THE VALUE OF A SERIES OF SHIFTED CHEBYSHEV POLYNOMIALS
C     OF THE FIRST KIND
C
C
C     PARAMETERS
C     Y        VALUE OF THE SERIES
C     X        LOCATION AT WHICH SERIES IS TO BE EVALUATED
C     C        ARRAY OF N+1 COEFFICIENTS
C     N        ORDER OF LARGEST POLYNOMIAL
C
C
C     TEST OF ORDER
C
      IF(N)1,1,2
    1 RETURN
    2 IF(N-2) 3,4,4
    3 Y = C(1)
      RETURN
C
C     INITIALIZATION
C
    4 ARG = X+X-1.0
      ARG = ARG + ARG
      H1 = 0.0
      H0 = 0.0
C
      DO 5 I=1,N
      K =N-I
      H2 = H1
      H1 = H0
    5 H0 = ARG*H1 - H2 + C(K+1)
      Y = 0.50*(C(1)-H2+H0)
      RETURN
      END
```

```
0001             SUBROUTINE BAKER(IND,FIN)
0002             COMMON/NEW/CNFOB(10,91),CNBOF(10,91),XCPFOB(10,91),YCPBOF(10,91),
                *XCPBFK(10,91),CNFA(10,91),CPXMLA(10,91),CPYRCA(10,91),
                *XCPBOF(10,91)
0003             COMMON/RC/REGC01(91,10,5),REGC02(91,10,5),REGC03(91,10,5),
                *REGC04(91,10,5),REGC05(91,10,5),REGC06(91,10,5),REGC07(91,10,5),
                *REGC08(91,10,5)
0004             DIMENSION B(5),FIN(8)
0005             DEFINE FILE 24(16,3000,U,IREC)
0006             IF(IND.GT.1)GO TO 5
0007             READ(12,END=4)REGC01
0008             WRITE(24'1)REGC01
0009             READ(12)REGC02
0010             WRITE(24'IREC)REGC02
0011             READ(12)REGC03
0012             WRITE(24'IREC)REGC03
0013             READ(12)REGC04
0014             WRITE(24'IREC)REGC04
0015             READ(12)REGC05
0016             WRITE(24'IREC)REGC05
0017             READ(12)REGC06
0018             WRITE(24'IREC)REGC06
0019             READ(12)REGC07
0020             WRITE(24'IREC)REGC07
0021             READ(12)REGC08
0022             WRITE(24'IREC)REGC08
0023             GO TO 5
0024       3     FORMAT(1X,'END OF RECORD ON UNIT 12 IND =',I4)
0025       4     WRITE(6,3)IND
0026           5 CONTINUE
0027             READ(24'1)REGC01
0028             DO 12 IB=1,10
0029             DO 11 IA=2,90
0030             DO 10 I=1,5
0031             B(I)=REGC01(IA,IB,I)
0032          10 CONTINUE
0033             CNFOB(IB,IA)=B(1)+B(2)*FIN(1)+B(3)*FIN(1)**2+B(4)*FIN(2)+B(5)*
                *FIN(3)
0034          11 CONTINUE
0035          12 CONTINUE
0036             READ(24'IREC)REGC02
0037             DO 22 IB=1,10
0038             DO 21 IA=2,90
0039             DO 20 I=1,5
0040             B(I)=REGC02(IA,IB,I)
0041          20 CONTINUE
0042             CNBOF(IB,IA)=B(1)+B(2)*FIN(1)+B(3)*FIN(1)**2+B(4)*FIN(2)+B(5)*
                *FIN(3)
0043          21 CONTINUE
0044          22 CONTINUE
0045             READ(24'IREC)REGC03
0046             DO 32 IB=1,10
0047             DO 31 IA=2,90
0048             DO 30 I=1,5
0049             B(I)=REGC03(IA,IB,I)
0050          30 CONTINUE
```

```
      XCPFOB(IB,IA)=B(1)+B(2)*FIN(1)+B(3)*FIN(1)**2+B(4)*FIN(2)+B(5)*
     *FIN(3)
   31 CONTINUE
   32 CONTINUE
      READ(24'IREC)REGCO4
      DO 42 IB=1,10
      DO 41 IA=2,90
      DO 40 I=1,5
      B(I)=REGCO4(IA,IB,I)
   40 CONTINUE
      YCPBOF(IB,IA)=B(1)+B(2)*FIN(1)+B(3)*FIN(1)**2+B(4)*FIN(2)+B(5)*
     *FIN(3)
   41 CONTINUE
   42 CONTINUE
      READ(24'IREC)REGCO5
      DO 52 IB=1,10
      DO 51 IA=2,90
      DO 50 I=1,5
      B(I)=REGCO5(IA,IB,I)
   50 CONTINUE
      XCPBFH(IB,IA)=B(1)+B(2)*FIN(1)+B(3)*FIN(1)**2+B(4)*FIN(2)+B(5)*
     *FIN(3)
   51 CONTINUE
   52 CONTINUE
      READ(24'IREC)REGCO6
      DO 62 IB=1,10
      DO 61 IA=2,90
      DO 60 I=1,4
      B(I)=REGCO6(IA,IB,I)
   60 CONTINUE
      CNFA(IB,IA)=B(1)+B(2)*FIN(1)+B(3)*FIN(1)**2+B(4)*FIN(2)
   61 CONTINUE
   62 CONTINUE
      READ(24'IREC)REGCO7
      DO 72 IB=1,10
      DO 71 IA=2,90
      DO 70 I=1,4
      B(I)=REGCO7(IA,IB,I)
   70 CONTINUE
      CPXMLA(IB,IA)=B(1)+B(2)*FIN(1)+B(3)*FIN(1)**2+B(4)*FIN(2)
   71 CONTINUE
   72 CONTINUE
      READ(24'IREC)REGCO8
      DO 82 IB=1,10
      DO 81 IA=2,90
      DO 80 I=1,4
      B(I)=REGCO8(IA,IB,I)
   80 CONTINUE
      CPYRCA(IB,IA)=B(1)+B(2)*FIN(1)+B(3)*FIN(1)**2+B(4)*FIN(2)
   81 CONTINUE
   82 CONTINUE
    2 CONTINUE
    1 CONTINUE
      RETURN
      END
```

```
      SUBROUTINE DOIT
      REAL LB,LT,L2,L3,LBT,LL1,LL2,LNT,LOD,LTT
      COMMON/COEF/RM(10),RE(10),CDC(10,91),CNN(10,91),NM,NNE,ALPHA(91),
     1ALPHP(91),ALPHR(91),NA,REI,CN(10,91),ALTIT(13),AONU(13),NALT,
     2ALT(10),DUMDUM,XRE(10),ETA(10),RMC(10,91),REC(10,91),XAC(10,91)
      COMMON XCGN,XML,CMRB(10,91),CMH(10,91),CPXFNB(10,91),PHI
      COMMON/NEW/CNFOB(10,91),CNBOF(10,91),XCPFOB(10,91),YCPBOF(10,91),
     *XCPBFH(10,91),CNFA(10,91),CPXMLA(10,91),CPYRCA(10,91),
     *XCPBOF(10,91)
      COMMON/F/FIN(8),CNF(10,91),XCP(10,91),YCP(10,91),CNB(10,91),
     *CMB(10,91),XACB(10,91),CPXMLB(10,91),CPYRCB(10,91),TITLEF(20)
      COMMON/MAN /A,J,TITLE(20),IN,LNT,D,RN,APN,AN,R,IB,LB,APB,AB,
     1INT,LBT,DT,APBT,ABT,LT,ST,S,LOD,VOLN,VOLB,VOBT,V,LL2,CM(10,91)
      DR=FIN(6)/D
      SR= FIN(4)/S
      P=SIN(PHI)*COS(PHI)
      DO 20 IB=1,NM
      NA1=NA-1
      DO 10 IA=2,NA1
      CN(IB,IA)=CMB(IB,IA)+2.0*P*CNFA(IB,IA)*SR+CNFOB(IB,IA)*SR+
     *2.0*P*CNBOF(IB,IA)*SR
      XCPBOF(IB,IA)=XML+XCPBFH(IB,IA)*DR
      CM(IB,IA)=CMB(IB,IA)+
     *2.0*P*CNBOF(IB,IA)*SR*XCPBOF(IB,IA)+
     *CNFOB(IB,IA)*SR*XCPFOB(IB,IA)+
     *2.0*P*CNFA(IB,IA)*(XML+CPXMLA(IB,IA)*DR)*SR
      CNF(IB,IA)=(CNFA(IB,IA)+CNBOF(IB,IA))
      IF(CNF(IB,IA).EQ.0.0)GO TO 10
      CPXMLB(IB,IA)=(CNBOF(IB,IA)*XCPBFH(IB,IA)+CNFA(IB,IA)*CPXMLA(IB,IA
     *))/CNF(IB,IA)
      CMH(IB,IA)=CNF(IB,IA)*CPXMLB(IB,IA)
      CPYRCB(IB,IA)=(CNBOF(IB,IA)*YCPBOF(IB,IA)+CNFA(IB,IA)*CPYRCA(IB,IA
     *))/CNF(IB,IA)
      CMRB(IB,IA)=CNF(IB,IA)*CPYRCB(IB,IA)
      CPXFNB(IB,IA)=FIN(8)-CPXMLB(IB,IA)
      XAC(IB,IA)=CM(IB,IA)/CN(IB,IA)
      IF(XML.EQ.0.0)GO TO 5
      GO TO 10
    5 CNF(IB,IA)=0.0
      CMRB(IB,IA)=0.0
      CMH(IB,IA)=0.0
   10 CONTINUE
      XACB(IB, 1)=0.0
      XACB(IB,91)=0.0
      XAC (IB, 1)=0.0
      XAC (IB,91)=0.0
      CN  (IB, 1)=0.0
      CN  (IB,91)=0.0
      CM  (IB, 1)=0.0
      CM  (IB,91)=0.0
      CNF (IB, 1)=0.0
      CNF (IB,91)=0.0
      CMH(IB, 1)=0.0
      CMH(IB,91)=0.0
      CMRB(IB, 1)=0.0
      CMRB(IB,91)=0.0
```

```
      CPXHLB(IB, 1)=0.0
      CPXHLB(IB,91)=0.0
      CPYRCB(IB, 1)=0.0
      CPYRCB(IB,91)=0.0
   20 CONTINUE
      RETURN
      END
```

```
FORTRAN IV G LEVEL  21                 LINE               DATE = 77245          12/32/40                 PAGE 0001

0001          SUBROUTINE LINE(I)
0002          REAL LB,LT,L2,L3,LBT,LL1,LL2,LNT,LOD,LTT
0003          COMMCN XCGN,XHL,CMRB(10,91),CMH(10,91),CPXFNB(10,91),PHI
0004          COMMON/MAN /A,J,TITLE(20),IN,LNT,D,RN,APN,AN,R,IB,LB,APB,AB,
             1IBT,LBT,D7,APBT,ABT,LT,ST,S,LOD,VOLN,VOLB,VOBT,V,LL2,CM(10,91)
0005          COMMON/COEF/RM(10),RE(10),CDC(10,91),CNN(10,91),NM,NRE,ALPHA(91),
             1ALPHP(91),ALPHR(91),NA,REI,CN(10,91),ALTIT(13),AONU(13),NALT,
             2ALT(10),DUMDUM,XRE(10),ETA(10),RMC(10,91),REC(10,91),XAC(10,91)
0006          COMMON/F/FIN(8),CNF(10,91),XCP(10,91),YCP(10,91),CNB(10,91),
             *CMB(10,91),XACB(10,91),CPXHLB(10,91),CPYRCB(10,91),TITLEF(20)
0007          COMMON/ MAC/ NXM,XM(10)
0008          COMMON/ ANS/ ANS1(10,91),ANS2(10,91),ANS3(10,91),ANS4(10,91),
             *ANS5(10,91),ANS6(10,91),ANS7(10,91),ANS8(10,91),ANS9(10,91),
             *ANS10(10,91),ANS11(10,91)
0009          IF(XM(I).LT.0.6)GO TO 15
0010          IF(XM(I).EQ.0.6)GO TO 20
0011          IF(XM(I).LT.0.8)GO TO 25
0012          IF(XM(I).EQ.0.8)GO TO 30
0013          IF(XM(I).LT.0.9)GO TO 35
0014          IF(XM(I).EQ.0.9)GO TO 40
0015          IF(XM(I).LT.1.0)GO TO 45
0016          IF(XM(I).EQ.1.0)GO TO 50
0017          IF(XM(I).LT.1.15)GO TO 55
0018          IF(XM(I).EQ.1.15)GO TO 60
0019          IF(XM(I).LT.1.30)GO TO 65
0020          IF(XM(I).EQ.1.30)GO TO 70
0021          IF(XM(I).LT.1.5)GO TO 75
0022          IF(XM(I).EQ.1.5)GO TO 80
0023          IF(XM(I).LT.2.0)GO TO 85
0024          IF(XM(I).EQ.2.0)GO TO 90
0025          IF(XM(I).LT.2.5)GO TO 95
0026          IF(XM(I).EQ.2.5)GO TO 101
0027          IF(XM(I).LT.3.0)GO TO 102
0028          IF(XM(I).EQ.3.0)GO TO 103
0029          IF(XM(I).GT.3.0)GO TO 104
0030       20 DO 150 IA=2,90
0031          ANS4(I,IA)=CMB(1,IA)
0032          ANS5(I,IA)=CMB(1,IA)
0033          ANS6(I,IA)=CMB(1,IA)/CNB(1,IA)
0034          IF(XHL.EQ.0.0)GO TO 150
0035          ANS1(I,IA)=CN(1,IA)
0036          ANS2(I,IA)=CM(1,IA)
0037          ANS3(I,IA)=CM(1,IA)/CN(1,IA)
0038          ANS7(I,IA)=CNF(1,IA)
0039          ANS8(I,IA)=CPXHLB(1,IA)
0040          ANS9(I,IA)=CPYRCB(1,IA)
0041          ANS10(I,IA)=CMRB(1,IA)
0042          ANS11(I,IA)=CMH(1,IA)
0043      150 CONTINUE
0044          GO TO 100
0045       15 WRITE(6,10)
0046       10 FORMAT(1X,'MACH NUMBER LESS THAN PROGRAM RANGE,CALCULATION ',
             *' EXTRAPOLATED TO THE LOWER MACH NUMBER')
0047       25 DELTA=(XM(I)-0.6)/(0.8-0.6)
0048          DO 250 IA=2,90
0049          ANS4(I,IA)=CNB(1,IA)+DELTA*(CNB(2,IA)-CNB(1,IA))
```

```
      ANS5(I,IA)=CMB(1,IA)+DELTA*(CMB(2,IA)-CMB(1,IA))
      ANS6(I,IA)=ANS5(I,IA)/ANS4(I,IA)
      IF(XHL.EQ.0.0)GO TO 250
      ANS1(I,IA)=CN(1,IA)+DELTA*(CN(2,IA)-CN(1,IA))
      ANS2(I,IA)=CM(1,IA)+DELTA*(CM(2,IA)-CM(1,IA))
      ANS3(I,IA)=ANS2(I,IA)/ANS1(I,IA)
      ANS7(I,IA)=CNF(1,IA)+DELTA*(CNF(2,IA)-CNF(1,IA))
      ANS8(I,IA)=CPXHLB(1,IA)+DELTA*(CPXHLB(2,IA)-CPXHLB(1,IA))
      ANS9(I,IA)=CPYRCB(1,IA)+DELTA*(CPYRCB(2,IA)-CPYRCB(1,IA))
      ANS10(I,IA)=CMRB(1,IA)+DELTA*(CMRB(2,IA)-CMRB(1,IA))
      ANS11(I,IA)=CMH(1,IA)+DELTA*(CMH(2,IA)-CMH(1,IA))
  250 CONTINUE
      GO TO 100
   30 DO 300 IA=2,90
      ANS4(I,IA)=CNB(2,IA)
      ANS5(I,IA)=CMB(2,IA)
      ANS6(I,IA)=CMB(2,IA)/CNB(2,IA)
      IF(XHL.EQ.0.0)GO TO 300
      ANS1(I,IA)=CN(2,IA)
      ANS2(I,IA)=CM(2,IA)
      ANS3(I,IA)=CM(2,IA)/CN(2,IA)
      ANS7(I,IA)=CNF(2,IA)
      ANS8(I,IA)=CPXHLB(2,IA)
      ANS9(I,IA)=CPYRCB(2,IA)
      ANS10(I,IA)=CMRB(2,IA)
      ANS11(I,IA)=CMH(2,IA)
  300 CONTINUE
      GO TO 100
   35 DELTA=(XM(I)-0.8)/(0.9-0.8)
      DO 350 IA=2,90
      ANS4(I,IA)=CNB(2,IA)+DELTA*(CNB(3,IA)-CNB(2,IA))
      ANS5(I,IA)=CMB(2,IA)+DELTA*(CMB(3,IA)-CMB(2,IA))
      ANS6(I,IA)=ANS5(I,IA)/ANS4(I,IA)
      IF(XHL.EQ.0.0)GO TO 350
      ANS1(I,IA)=CN(2,IA)+DELTA*(CN(3,IA)-CN(2,IA))
      ANS2(I,IA)=CM(2,IA)+DELTA*(CM(3,IA)-CM(2,IA))
      ANS3(I,IA)=ANS2(I,IA)/ANS1(I,IA)
      ANS7(I,IA)=CNF(2,IA)+DELTA*(CNF(3,IA)-CNF(2,IA))
      ANS8(I,IA)=CPXHLB(2,IA)+DELTA*(CPXHLB(3,IA)-CPXHLB(2,IA))
      ANS9(I,IA)=CPYRCB(2,IA)+DELTA*(CPYRCB(3,IA)-CPYRCB(2,IA))
      ANS10(I,IA)=CMRB(2,IA)+DELTA*(CMRB(3,IA)-CMRB(2,IA))
      ANS11(I,IA)=CMH(2,IA)+DELTA*(CMH(3,IA)-CMH(2,IA))
  350 CONTINUE
      GO TO 100
   40 DO 400 IA=2,90
      ANS4(I,IA)=CNB(3,IA)
      ANS5(I,IA)=CMB(3,IA)
      ANS6(I,IA)=CMB(3,IA)/CNB(3,IA)
      IF(XHL.EQ.0.0)GO TO 400
      ANS1(I,IA)=CN(3,IA)
      ANS2(I,IA)=CM(3,IA)
      ANS3(I,IA)=CM(3,IA)/CN(3,IA)
      ANS7(I,IA)=CNF(3,IA)
      ANS8(I,IA)=CPXHLB(3,IA)
      ANS9(I,IA)=CPYRCB(3,IA)
      ANS10(I,IA)=CMRB(3,IA)
```

FORTRAN IV G LEVEL 21 LINE DATE = 77245 12/32/40 PAGE 0003

```
      ANS11(I,IA)=CMH(3,IA)
  400 CONTINUE
      GO TO 100
   45 DELTA=(XM(I)-0.9)/(1.0-0.9)
      DO 450 IA=2,90
      ANS4(I,IA)=CNB(3,IA)+DELTA*(CNB(4,IA)-CNB(3,IA))
      ANS5(I,IA)=CMB(3,IA)+DELTA*(CMB(4,IA)-CMB(3,IA))
      ANS6(I,IA)=ANS5(I,IA)/ANS4(I,IA)
      IF(XML.EQ.0.0)GO TO 450
      ANS1(I,IA)=CN(3,IA)+DELTA*(CN(4,IA)-CN(3,IA))
      ANS2(I,IA)=CM(3,IA)+DELTA*(CM(4,IA)-CM(3,IA))
      ANS3(I,IA)=ANS2(I,IA)/ANS1(I,IA)
      ANS7(I,IA)=CNF(3,IA)+DELTA*(CNF(4,IA)-CNF(3,IA))
      ANS8(I,IA)=CPXHLB(3,IA)+DELTA*(CPXHLB(4,IA)-CPXHLB(3,IA))
      ANS9(I,IA)=CPYRCB(3,IA)+DELTA*(CPYRCB(4,IA)-CPYRCB(3,IA))
      ANS10(I,IA)=CMRB(3,IA)+DELTA*(CMRB(4,IA)-CMRB(3,IA))
      ANS11(I,IA)=CMH(3,IA)+DELTA*(CMH(4,IA)-CMH(3,IA))
  450 CONTINUE
      GO TO 100
   50 DO 500 IA=2,90
      ANS4(I,IA)=CNB(4,IA)
      ANS5(I,IA)=CMB(4,IA)
      ANS6(I,IA)=CMB(4,IA)/CNB(4,IA)
      IF(XML.EQ.0.0)GO TO 500
      ANS1(I,IA)=CN(4,IA)
      ANS2(I,IA)=CM(4,IA)
      ANS3(I,IA)=CM(4,IA)/CN(4,IA)
      ANS7(I,IA)=CNF(4,IA)
      ANS8(I,IA)=CPXHLB(4,IA)
      ANS9(I,IA)=CPYRCB(4,IA)
      ANS10(I,IA)=CMRB(4,IA)
      ANS11(I,IA)=CMH(4,IA)
  500 CONTINUE
      GO TO 100
   55 DELTA=(XM(I)-1.0)/(1.15-1.0)
      DO 550 IA=2,90
      ANS4(I,IA)=CNB(4,IA)+DELTA*(CNB(5,IA)-CNB(4,IA))
      ANS5(I,IA)=CMB(4,IA)+DELTA*(CMB(5,IA)-CMB(4,IA))
      ANS6(I,IA)=ANS5(I,IA)/ANS4(I,IA)
      IF(XML.EQ.0.0)GO TO 550
      ANS1(I,IA)=CN(4,IA)+DELTA*(CN(5,IA)-CN(4,IA))
      ANS2(I,IA)=CM(4,IA)+DELTA*(CM(5,IA)-CM(4,IA))
      ANS3(I,IA)=ANS2(I,IA)/ANS1(I,IA)
      ANS7(I,IA)=CNF(4,IA)+DELTA*(CNF(5,IA)-CNF(4,IA))
      ANS8(I,IA)=CPXHLB(4,IA)+DELTA*(CPXHLB(5,IA)-CPXHLB(4,IA))
      ANS9(I,IA)=CPYRCB(4,IA)+DELTA*(CPYRCB(5,IA)-CPYRCB(4,IA))
      ANS10(I,IA)=CMRB(4,IA)+DELTA*(CMRB(5,IA)-CMRB(4,IA))
      ANS11(I,IA)=CMH(4,IA)+DELTA*(CMH(5,IA)-CMH(4,IA))
  550 CONTINUE
      GO TO 100
   60 DO 600 IA=2,90
      ANS4(I,IA)=CNB(5,IA)
      ANS5(I,IA)=CMB(5,IA)
      ANS6(I,IA)=CMB(5,IA)/CNB(5,IA)
      IF(XML.EQ.0.0)GO TO 600
      ANS1(I,IA)=CN(5,IA)
```

```
      ANS2(I,IA)=CN(5,IA)
      ANS3(I,IA)=CN(5,IA)/CN(5,IA)
      ANS7(I,IA)=CNF(5,IA)
      ANS8(I,IA)=CPXHLB(5,IA)
      ANS9(I,IA)=CPYRCB(5,IA)
      ANS10(I,IA)=CMRB(5,IA)
      ANS11(I,IA)=CMH(5,IA)
  600 CONTINUE
      GO TO 100
   65 DELTA=(XM(I)-1.15)/(1.30-1.15)
      DO 650 IA=2,90
      ANS4(I,IA)=CNB(5,IA)+DELTA*(CNB(6,IA)-CNB(5,IA))
      ANS5(I,IA)=CMB(5,IA)+DELTA*(CMB(6,IA)-CMB(5,IA))
      ANS6(I,IA)=ANS5(I,IA)/ANS4(I,IA)
      IF(XML.EQ.0.0)GO TO 650
      ANS1(I,IA)=CN(5,IA)+DELTA*(CN(6,IA)-CN(5,IA))
      ANS2(I,IA)=CM(5,IA)+DELTA*(CM(6,IA)-CM(5,IA))
      ANS3(I,IA)=ANS2(I,IA)/ANS1(I,IA)
      ANS7(I,IA)=CNF(5,IA)+DELTA*(CNF(6,IA)-CNF(5,IA))
      ANS8(I,IA)=CPXHLB(5,IA)+DELTA*(CPXHLB(6,IA)-CPXHLB(5,IA))
      ANS9(I,IA)=CPYRCB(5,IA)+DELTA*(CPYRCB(6,IA)-CPYRCB(5,IA))
      ANS10(I,IA)=CMRB(5,IA)+DELTA*(CMRB(6,IA)-CMRB(5,IA))
      ANS11(I,IA)=CMH(5,IA)+DELTA*(CMH(6,IA)-CMH(5,IA))
  650 CONTINUE
      GO TO 100
   70 DO 700 IA=2,90
      ANS4(I,IA)=CNB(6,IA)
      ANS5(I,IA)=CMB(6,IA)
      ANS6(I,IA)=CMB(6,IA)/CNB(6,IA)
      IF(XML.EQ.0.0)GO TO 700
      ANS1(I,IA)=CN(6,IA)
      ANS2(I,IA)=CM(6,IA)
      ANS3(I,IA)=CM(6,IA)/CN(6,IA)
      ANS7(I,IA)=CNF(6,IA)
      ANS8(I,IA)=CPXHLB(6,IA)
      ANS9(I,IA)=CPYRCB(6,IA)
      ANS10(I,IA)=CMRB(6,IA)
      ANS11(I,IA)=CMH(6,IA)
  700 CONTINUE
      GO TO 100
   75 DELTA=(XM(I)-1.30)/(1.50-1.30)
      DO 750 IA=2,90
      ANS4(I,IA)=CNB(6,IA)+DELTA*(CNB(7,IA)-CNB(6,IA))
      ANS5(I,IA)=CMB(6,IA)+DELTA*(CMB(7,IA)-CMB(6,IA))
      ANS6(I,IA)=ANS5(I,IA)/ANS4(I,IA)
      IF(XML.EQ.0.0)GO TO 750
      ANS1(I,IA)=CN(6,IA)+DELTA*(CN(7,IA)-CN(6,IA))
      ANS2(I,IA)=CM(6,IA)+DELTA*(CM(7,IA)-CM(6,IA))
      ANS3(I,IA)=ANS2(I,IA)/ANS1(I,IA)
      ANS7(I,IA)=CNF(6,IA)+DELTA*(CNF(7,IA)-CNF(6,IA))
      ANS8(I,IA)=CPXHLB(6,IA)+DELTA*(CPXHLB(7,IA)-CPXHLB(6,IA))
      ANS9(I,IA)=CPYRCB(6,IA)+DELTA*(CPYRCB(7,IA)-CPYRCB(6,IA))
      ANS10(I,IA)=CMRB(6,IA)+DELTA*(CMRB(7,IA)-CMRB(6,IA))
      ANS11(I,IA)=CMH(6,IA)+DELTA*(CMH(7,IA)-CMH(6,IA))
  750 CONTINUE
      GO TO 100
```

```
    80 DO 800 IA=2,90
       ANS4(I,IA)=CNB(7,IA)
       ANS5(I,IA)=CMB(7,IA)
       ANS6(I,IA)=CMB(7,IA)/CNB(7,IA)
       IF(XML.EQ.0.0)GO TO 800
       ANS1(I,IA)=CN(7,IA)
       ANS2(I,IA)=CM(7,IA)
       ANS3(I,IA)=CM(7,IA)/CN(7,IA)
       ANS7(I,IA)=CNF(7,IA)
       ANS8(I,IA)=CPXMLB(7,IA)
       ANS9(I,IA)=CPYRCB(7,IA)
       ANS10(I,IA)=CMRB(7,IA)
       ANS11(I,IA)=CMH(7,IA)
   800 CONTINUE
       GO TO 100
    85 DELTA=(XM(I)-1.50)/(2.00-1.50)
       DO 850 IA=2,90
       ANS4(I,IA)=CNB(7,IA)+DELTA*(CNB(8,IA)-CNB(7,IA))
       ANS5(I,IA)=CMB(7,IA)+DELTA*(CMB(8,IA)-CMB(7,IA))
       ANS6(I,IA)=ANS5(I,IA)/ANS4(I,IA)
       IF(XML.EQ.0.0)GO TO 850
       ANS1(I,IA)=CN(7,IA)+DELTA*(CN(8,IA)-CN(7,IA))
       ANS2(I,IA)=CM(7,IA)+DELTA*(CM(8,IA)-CM(7,IA))
       ANS3(I,IA)=ANS2(I,IA)/ANS1(I,IA)
       ANS7(I,IA)=CNF(7,IA)+DELTA*(CNF(8,IA)-CNF(7,IA))
       ANS8(I,IA)=CPXMLB(7,IA)+DELTA*(CPXMLB(8,IA)-CPXMLB(7,IA))
       ANS9(I,IA)=CPYRCB(7,IA)+DELTA*(CPYRCB(8,IA)-CPYRCB(7,IA))
       ANS10(I,IA)=CMRB(7,IA)+DELTA*(CMRB(8,IA)-CMRB(7,IA))
       ANS11(I,IA)=CMH(7,IA)+DELTA*(CMH(8,IA)-CMH(7,IA))
   850 CONTINUE
       GO TO 100
    90 DO 900 IA=2,90
       ANS4(I,IA)=CNB(8,IA)
       ANS5(I,IA)=CMB(8,IA)
       ANS6(I,IA)=CMB(8,IA)/CNB(8,IA)
       IF(XML.EQ.0.0)GO TO 900
       ANS1(I,IA)=CN(8,IA)
       ANS2(I,IA)=CM(8,IA)
       ANS3(I,IA)=CM(8,IA)/CN(8,IA)
       ANS7(I,IA)=CNF(8,IA)
       ANS8(I,IA)=CPXMLB(8,IA)
       ANS9(I,IA)=CPYRCB(8,IA)
       ANS10(I,IA)=CMRB(8,IA)
       ANS11(I,IA)=CMH(8,IA)
   900 CONTINUE
       GO TO 100
    95 DELTA=(XM(I)-2.00)/(2.50-2.00)
       DO 950 IA=2,90
       ANS4(I,IA)=CNB(8,IA)+DELTA*(CNB(9,IA)-CNB(8,IA))
       ANS5(I,IA)=CMB(8,IA)+DELTA*(CMB(9,IA)-CMB(8,IA))
       ANS6(I,IA)=ANS5(I,IA)/ANS4(I,IA)
       IF(XML.EQ.0.0)GO TO 950
       ANS1(I,IA)=CN(8,IA)+DELTA*(CN(9,IA)-CN(8,IA))
       ANS2(I,IA)=CM(8,IA)+DELTA*(CM(9,IA)-CM(8,IA))
       ANS3(I,IA)=ANS2(I,IA)/ANS1(I,IA)
       ANS7(I,IA)=CNF(8,IA)+DELTA*(CNF(9,IA)-CNF(8,IA))
```

```
0274             ANS8(I,IA)=CPXMLB(8,IA)+DELTA*(CPXMLB(9,IA)-CPXMLB(8,IA))
0275             ANS9(I,IA)=CPYRCB(8,IA)+DELTA*(CPYRCB(9,IA)-CPYRCB(8,IA))
0276             ANS10(I,IA)=CMRB(8,IA)+DELTA*(CMRB(9,IA)-CMRB(8,IA))
0277             ANS11(I,IA)=CMM(8,IA)+DELTA*(CMM(9,IA)-CMM(8,IA))
0278         950 CONTINUE
0279             GO TO 100
0280         101 DO 1010 IA=2,90
0281             ANS4(I,IA)=CNB(9,IA)
0282             ANS5(I,IA)=CMB(9,IA)
0283             ANS6(I,IA)=CMB(9,IA)/CNB(9,IA)
0284             IF(XML.EQ.0.0)GO TO 1010
0285             ANS1(I,IA)=CN(9,IA)
0286             ANS2(I,IA)=CM(9,IA)
0287             ANS3(I,IA)=CM(9,IA)/CN(9,IA)
0288             ANS7(I,IA)=CNF(9,IA)
0289             ANS8(I,IA)=CPXMLB(9,IA)
0290             ANS9(I,IA)=CPYRCB(9,IA)
0291             ANS10(I,IA)=CMRB(9,IA)
0292             ANS11(I,IA)=CMM(9,IA)
0293        1010 CONTINUE
0294             GO TO 100
0295         104 WRITE(6,5)
0296           5 FORMAT(1X,'MACH NO. EXCEEDS RANGE OF PROGRAM,CALCULATION',
                *' EXTRAPOLATED TO THE HIGER MACH NUMBER')
0297         102 DELTA=(XM(I)-2.50)/(3.00-2.50)
0298             DO 1020 IA=2,90
0299             ANS4(I,IA)=CNB(9,IA)+DELTA*(CNB(10,IA)-CNB(9,IA))
0300             ANS5(I,IA)=CMB(9,IA)+DELTA*(CMB(10,IA)-CMB(9,IA))
0301             ANS6(I,IA)=ANS5(I,IA)/ANS4(I,IA)
0302             IF(XML.EQ.0.0)GO TO 1020
0303             ANS1(I,IA)=CN(9,IA)+DELTA*(CN(10,IA)-CN(9,IA))
0304             ANS2(I,IA)=CM(9,IA)+DELTA*(CM(10,IA)-CM(9,IA))
0305             ANS3(I,IA)=ANS2(I,IA)/ANS1(I,IA)
0306             ANS7(I,IA)=CNF(9,IA)+DELTA*(CNF(10,IA)-CNF(9,IA))
0307             ANS8(I,IA)=CPXMLB(9,IA)+DELTA*(CPXMLB(10,IA)-CPXMLB(9,IA))
0308             ANS9(I,IA)=CPYRCB(9,IA)+DELTA*(CPYRCB(10,IA)-CPYRCB(9,IA))
0309             ANS10(I,IA)=CMRB(9,IA)+DELTA*(CMRB(10,IA)-CMRB(9,IA))
0310             ANS11(I,IA)=CMM(9,IA)+DELTA*(CMM(10,IA)-CMM(9,IA))
0311        1020 CONTINUE
0312             GO TO 100
0313         103 DO 1030 IA=2,90
0314             ANS4(I,IA)=CNB(10,IA)
0315             ANS5(I,IA)=CMB(10,IA)
0316             ANS6(I,IA)=CMB(10,IA)/CNB(10,IA)
0317             IF(XML.EQ.0.0)GO TO 1030
0318             ANS1(I,IA)=CN(10,IA)
0319             ANS2(I,IA)=CM(10,IA)
0320             ANS3(I,IA)=CM(10,IA)/CN(10,IA)
0321             ANS7(I,IA)=CNF(10,IA)
0322             ANS8(I,IA)=CPXMLB(10,IA)
0323             ANS9(I,IA)=CPYRCB(10,IA)
0324             ANS10(I,IA)=CMRB(10,IA)
0325             ANS11(I,IA)=CMM(10,IA)
0326        1030 CONTINUE
0327         100 CONTINUE
0328             RETURN
0329             END
```

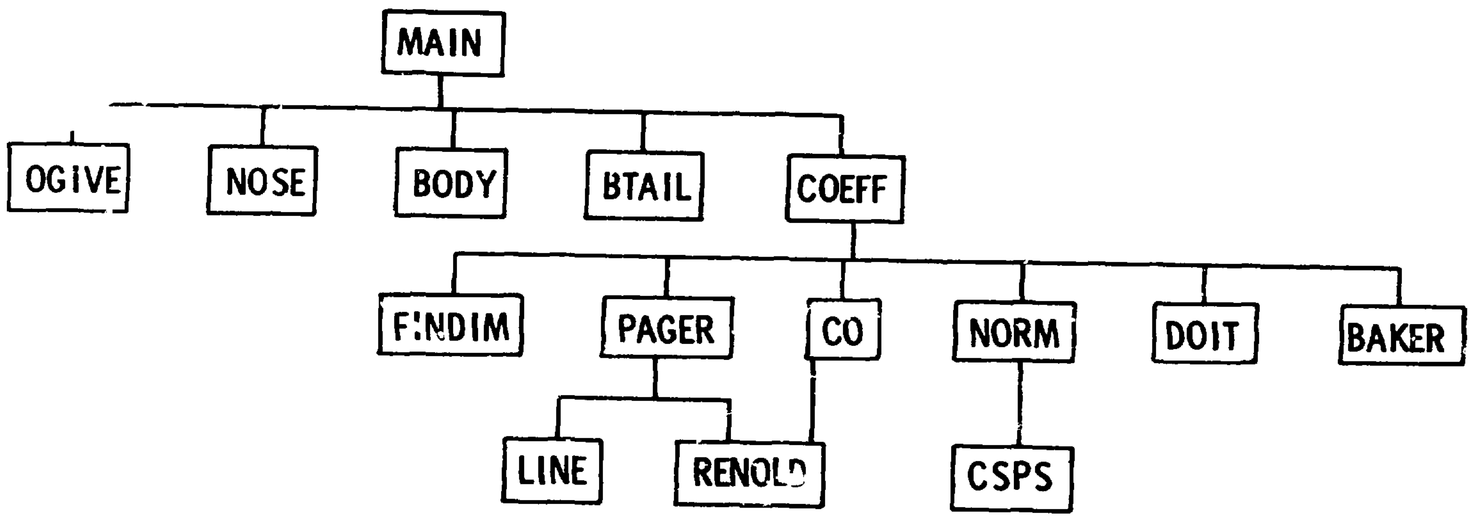


Figure G-1. Subroutine flow chart for the coefficient prediction program.

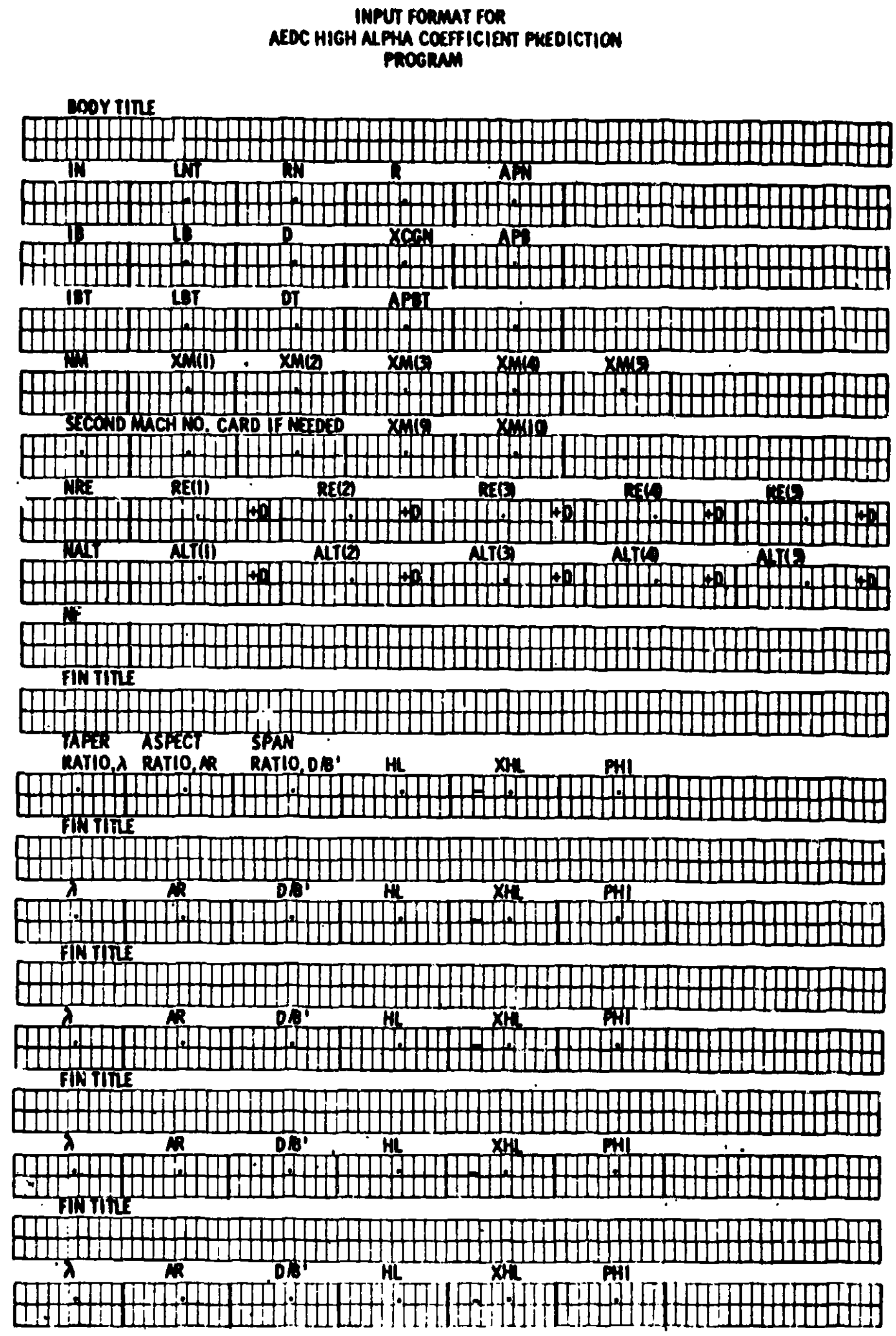


Figure G-2. Program input form for the coefficient prediction program.

APPENDIX H

MACHINE CALCULATION EXAMPLE

APPENDIX H

MACHINE CALCULATION EXAMPLE

The finned slender body configuration used in the machine calculation example to follow is the same one used in the hand calculation example. Included in the example is the program input form filled out for the example configuration, Figure (H-1), the punched input cards for the example configuration, Figure (H-2), the title page printout, Figure (H-3), and the calculated coefficient printout, Figure (H-4).

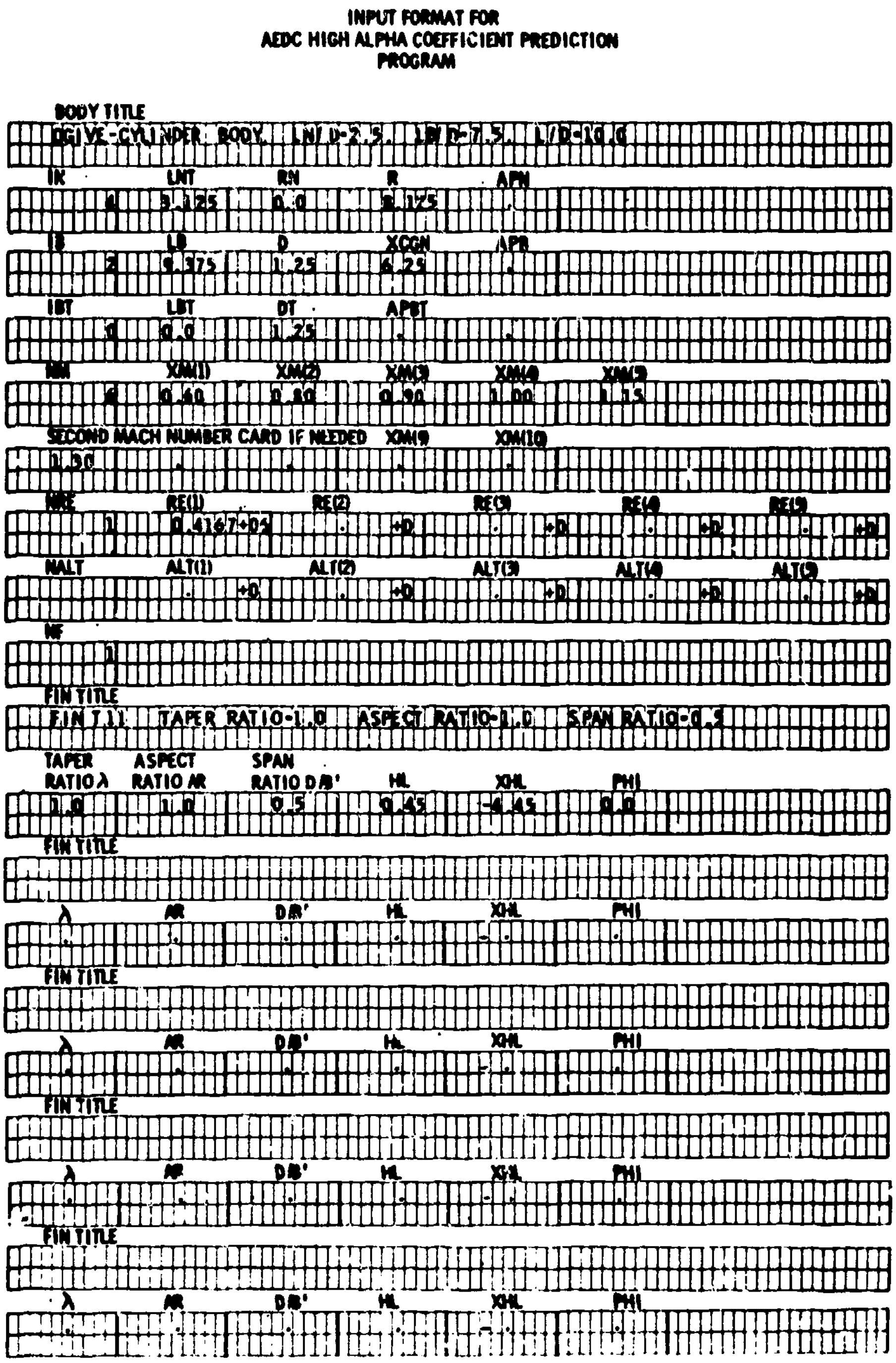


Figure H-1. Program input form for the coefficient prediction program filled out for the example case.

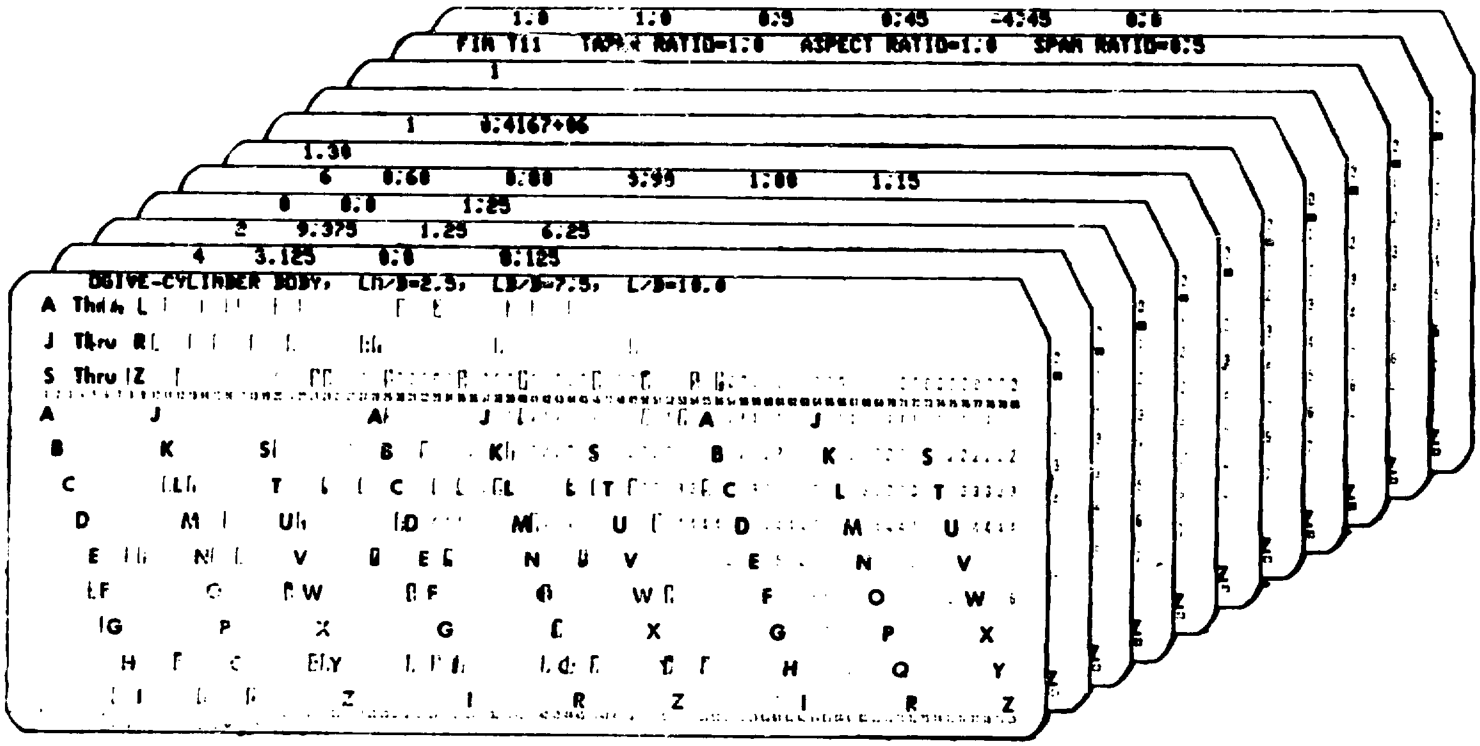


Figure H-2. Input cards for example case.

```
                         AEDC-PWT/4T
                HIGH ALPHA COEFFICIENT PROGRAM

        OGIVE-CYLINDER BODY,  LN/D=2.5,  LAB/D=7.5,  L/D=10.0
        FIN T11   TAPER RATIO=1.0   ASPECT RATIO=1.0   SPAN RATIO=0.5

    MISSILE CONFIGURATION

    IN=0, NO NOSE        IB=0, NO BODY     IBT=0, NO BOATTAIL
    IN=1, OGO NOSE       IB=1, OGO BODY    IBT=1, OGO BOATTAIL
    IN=2, SHARP CONE     IB=2, CYLINDER    IBT=2, CONICAL BOATTAIL
    IN=3, BLUNT CONE
    IN=4, SHARP OGIVE
    IN=5, BLUNT OGIVE

ALL DIMENSIONS IN INCHES

    NOSE INDICATOR = 4
    THEORETICAL NOSE LENGTH =     3.1250     NOSE RADIUS =     0.0
    ACTUAL NOSE LENGTH =     3.1250
    OGIVE RADIUS =     8.1250
    PLAN AREA OF NOSE =     2.6249     VOLUME OF NOSE =     2.0687
    CENTROID OF NOSE =     1.9469
    BODY INDICATOR = 2
    BODY LENGTH =     9.3750     BODY DIAMETER =     1.2500
    PLAN AREA OF BODY =     11.7188     VOLUME OF BODY =     11.5049
    CENTROID OF BODY =     4.6875
    NO BOATTAIL
    TOTAL PLAN AREA OF MISSILE =     14.3436     TOTAL VOLUME =     13.5736
    CROSS SECTIONAL AREA =     1.2272     BASE AREA =     1.2272
    LENGTH TO DIAMETER RATIO =     10.0000     ACTUAL LENGTH OF MISSILE =     12.5000
    CENTROID FROM NOSE OF MISSILE =     6.7301
    CG FROM NOSE OF MISSILE =     6.2500
    HINGELINE FROM CG OF MISSILE =     -5.5625

    FIN CONFIGURATION

    FIN ORIENTATION =    0.0
    FIN TAPER RATIO =  1.00
    FIN ASPECT RATIO= 1.00
    FIN SPAN RATIO= 0.50
    FIN EXPOSED AREA=    0.7813
    TIP CHORD LENGTH=    1.2500
    ROOT CHORD LENGTH=    1.2500
    EXPOSED SEMI-SPAN=    0.6250
    HINGE LOCATION=    0.4500
```

Figure H-3. Configuration identification page printout.

AEDC-PWT/4T
HIGH ALPHA COEFFICIENT PROGRAM

OGIVE-CYLINDER BODY, LN/D=2.3, LAB/D=7.5, L/D=10.0
FIN T11 TAPER RATIO=1.0 ASPECT RATIO=1.0 SPAN RATIO=0.5
REYNOLDS NUMBER = 4.1670E 05

MACH NUMBER = 0.6000
CASE= 1.00

ALPHA	CN	CM	XAC	CNB	CMB	XACB	CNF	CPXHLB	CPYRCB	CHHB	CHH
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2.0	0.2868	-0.0780	-0.2719	0.0783	0.2651	3.3860	0.0831	4.4984	-0.8612	-0.0051	0.0408
4.0	0.5277	-0.4529	-0.8583	0.1768	0.5205	2.9437	0.1589	0.2480	0.4913	0.0781	0.0394
6.0	0.8423	-0.8851	-1.0505	0.2986	0.7635	2.5572	0.2442	0.2190	0.4408	0.1076	0.0535
8.0	1.1615	-1.4747	-1.2697	0.4443	0.9920	2.2324	0.3463	0.1937	0.4479	0.1524	0.0650
10.0	1.4523	-2.0630	-1.4205	0.6136	1.2045	1.9631	0.4240	0.1666	0.4520	0.1917	0.0707
12.0	1.7777	-2.5369	-1.4270	0.8040	1.4002	1.7398	0.4982	0.1245	0.4276	0.2133	0.0620
14.0	1.7855	-2.9505	-1.6525	0.6355	1.7270	2.7175	0.5667	0.0753	0.3643	0.2064	0.0427
16.0	2.0652	-3.5599	-1.7237	0.7524	1.8263	2.4279	0.6296	0.0100	0.3526	0.2220	0.0063
18.0	2.3101	-4.0671	-1.7615	0.8779	1.9403	2.2079	0.6851	0.0331	0.3696	0.2332	0.0227
20.0	2.5771	-4.2604	-1.6532	1.0135	2.2061	2.1767	0.7122	0.0515	0.5107	0.3637	0.0367
22.0	2.8744	-4.4058	-1.5328	1.1610	2.5083	2.1604	0.7432	0.1065	0.4941	0.3672	0.0792
24.0	3.1614	-4.5393	-1.4358	1.3227	2.7825	2.1037	0.7636	0.0950	0.4831	0.3689	0.0726
26.0	3.4214	-4.5379	-1.3263	1.5067	3.0054	2.0026	0.7845	0.0919	0.4537	0.3560	0.0721
28.0	3.7705	-4.7607	-1.2626	1.6970	3.1771	1.8718	0.7970	0.0876	0.4560	0.3634	0.0698
30.0	4.0285	-4.6124	-1.1946	1.9149	3.3108	1.7290	0.8421	0.0849	0.4547	0.3029	0.0715
32.0	4.3783	-4.7625	-1.0877	2.1952	3.4242	1.5888	0.8994	0.0836	0.4606	0.4143	0.0752
34.0	4.8515	-5.0006	-1.0307	2.4199	3.5344	1.4605	0.8958	0.0857	0.4692	0.4203	0.0760
36.0	5.0169	-5.8130	-1.1587	2.7102	3.6550	1.3486	0.9364	0.0803	0.4771	0.4467	0.0752
38.0	5.4211	-6.1515	-1.1347	3.0255	3.7939	1.2536	0.9799	0.0750	0.4600	0.4508	0.0735
40.0	5.7063	-5.7991	-1.0163	3.3689	3.9534	1.1735	0.9614	0.0578	0.4367	0.4199	0.0556
42.0	6.0878	-6.1293	-1.0068	3.7367	4.1301	1.1053	0.9769	0.0232	0.4166	0.4070	0.0227
44.0	6.4911	-6.1207	-0.9429	4.1283	4.3157	1.0454	1.0115	0.0123	0.4155	0.4203	0.0125
46.0	6.8485	-5.8455	-0.8535	4.5417	4.4985	0.9905	1.0284	-0.0196	0.4347	0.4471	-0.0202
48.0	7.1731	-6.6140	-0.9221	4.9742	4.6544	0.9377	1.0378	0.0100	0.4143	0.4299	0.0104
50.0	7.6207	-6.0618	-0.7954	5.4225	4.7985	0.8849	1.0359	0.0108	0.4413	0.4572	0.0112
52.0	8.2300	-6.0585	-0.7361	5.8827	4.8858	0.8305	1.0676	0.0276	0.4221	0.4507	0.0294
54.0	8.8507	-5.7902	-0.6542	6.3507	4.9128	0.7736	1.0761	0.0310	0.4334	0.4564	0.0333
56.0	9.5327	-5.7361	-0.6017	6.8220	4.8680	0.7136	1.0727	0.0370	0.4300	0.4622	0.0397
58.0	10.1702	-5.8492	-0.5751	7.2919	4.7427	0.6504	1.0781	0.0285	0.4303	0.4638	0.0307
60.0	10.6713	-6.2114	-0.5821	7.7556	4.5313	0.5843	1.0671	0.0228	0.4247	0.4532	0.0243
62.0	11.2031	-6.5228	-0.5822	8.2064	4.2312	0.5155	1.0901	0.0110	0.3885	0.4235	0.0120
64.0	11.7298	-7.2144	-0.6151	8.6457	3.8434	0.4445	1.1007	-0.0081	0.3830	0.4216	-0.0089
66.0	12.0442	-7.8940	-0.6554	9.0632	3.3718	0.3720	1.0974	-0.0085	0.3961	0.4346	-0.0093
68.0	12.4794	-8.5168	-0.6825	9.4568	2.8230	0.2985	1.1073	-0.0118	0.3885	0.4302	-0.0131
70.0	12.7634	-9.2251	-0.7228	9.8228	2.2059	0.2246	1.0988	-0.0169	0.3931	0.4319	-0.0185
72.0	12.9796	-9.7076	-0.7479	10.1579	1.5312	0.1507	1.1028	-0.0247	0.3864	0.--1	-0.0272
74.0	13.1282	-10.2416	-0.7801	10.4591	0.8106	0.0775	1.1077	-0.0254	0.3916	0.4338	-0.0281
76.0	13.1722	-10.6981	-0.8122	10.7240	0.0566	0.0053	1.1255	-0.0321	0.3866	0.4351	-0.0361
78.0	13.3653	-12.9667	-0.9701	10.9504	-0.7181	-0.0656	1456	-0.0335	0.3785	0.4336	-0.0374
80.0	13.4805	-12.6997	-0.9421	11.1367	-1.5013	-0.1348	1589	-0.0424	0.3796	0.4399	-0.0491
82.0	13.4707	-12.0930	-0.8977	11.2815	-2.2817	-0.2022	1.1741	-0.0433	0.3818	0.4482	-0.0509
84.0	13.3291	-12.2168	-0.9166	11.3840	-3.0490	-0.2678	1.1764	-0.0552	0.3824	0.4599	-0.0630
86.0	13.4313	-12.8646	-0.9578	11.4433	-3.7944	-0.3316	1.1908	-0.0501	0.4080	0.4859	-0.0596
88.0	13.5032	-13.2255	-0.9794	11.4592	-4.5107	-0.3936	1.2212	-0.0522	0.4215	0.5147	-0.0636
90.0	13.8327	-14.2993	-1.0300	11.4316	-5.1922	-0.4542	1.2673	-0.0645	0.3800	0.4816	-0.0822

Figure A-4. Printout of calculated aerodynamic coefficients.

AEDC-PWT/4T
HIGH ALPHA COEFFICIENT PROGRAM

OGIVE-CYLINDER BODY, LN/D=2.5, LAB/D=7.5, L/D=10.0
FIN T11 TAPER RATIO=1.0 ASPECT RATIO=1.0 SPAN RATIO=0.5
REYNOLDS NUMBER = 4.1670E 05

MACH NUMBER = 0.6000
CASE= 1.00

ALPHA	CN	CM	XAC	CNB	CMB	XACB	CNF	CPXMLB	CPYRCB	CMRB	CMH
92.0	14.0952	-14.2853	-1.0135	11.4592	-5.8416	-0.5098	1.3014	-0.0653	0.3754	0.4886	-0.0850
94.0	14.1853	-15.1613	-1.0688	11.4433	-6.4630	-0.5648	1.3033	-0.0711	0.3896	0.5077	-0.0927
96.0	14.1816	-15.8702	-1.1191	11.3840	-7.0552	-0.6197	1.2875	-0.0782	0.4029	0.5188	-0.1007
98.0	14.2327	-16.3499	-1.1488	11.2815	-7.6177	-0.6752	1.2944	-0.0768	0.3916	0.5068	-0.0994
100.0	14.0383	-16.5851	-1.1814	11.1367	-8.1509	-0.7319	1.2991	-0.0849	0.3844	0.4993	-0.1103
102.0	13.6589	-16.8656	-1.2348	10.9504	-8.6555	-0.7904	1.2932	-0.0852	0.3905	0.5051	-0.1102
104.0	13.2867	-17.0818	-1.2856	10.7240	-9.1325	-0.8516	1.3072	-0.0900	0.3850	0.5032	-0.1176
106.0	12.7877	-17.5878	-1.3754	10.4591	-9.5824	-0.9162	1.3038	-0.0947	0.3854	0.5025	-0.1235
108.0	12.4610	-18.0937	-1.4520	10.1579	-10.0054	-0.9850	1.3041	-0.0964	0.3842	0.5011	-0.1257
110.0	11.9793	-18.4829	-1.5441	9.8228	-10.4009	-1.0589	1.3088	-0.1058	0.3776	0.4941	-0.1389
112.0	11.5386	-18.9261	-1.6411	9.4568	-10.7677	-1.1386	1.3013	-0.1052	0.3799	0.4943	-0.1369
114.0	11.1595	-19.4315	-1.7413	9.0632	-11.1034	-1.2251	1.2993	-0.1119	0.3747	0.4868	-0.1453
116.0	10.7164	-19.6446	-1.8350	8.6457	-11.4046	-1.3191	1.2975	-0.1184	0.3780	0.4881	-0.1536
118.0	10.3019	-19.6721	-1.9096	8.2084	-11.6672	-1.4214	1.2953	-0.1190	0.3846	0.4981	-0.1541
120.0	9.7991	-20.5656	-2.0987	7.7556	-11.8861	-1.5325	1.3055	-0.1181	0.3765	0.4915	-0.1542
122.0	9.3425	-20.7428	-2.2203	7.2919	-12.0557	-1.6533	1.3082	-0.1231	0.3744	0.4898	-0.1610
124.0	8.8444	-21.6775	-2.4510	6.8220	-12.1703	-1.7840	1.3104	-0.1259	0.3752	0.4916	-0.1650
126.0	8.2831	-21.4348	-2.5878	6.3507	-12.2240	-1.9248	1.3032	-0.1340	0.3939	0.5134	-0.1746
128.0	7.9315	-22.2560	-2.8419	5.8827	-12.2115	-2.0758	1.3103	-0.1373	0.3956	0.5183	-0.1808
130.0	7.3776	-22.4419	-3.0419	5.4225	-12.1283	-2.2367	1.3068	-0.1390	0.3934	0.5141	-0.1816
132.0	6.9418	-22.3036	-3.2129	4.9742	-11.9712	-2.4067	1.2869	-0.1427	0.3942	0.5073	-0.1836
134.0	6.4766	-21.9792	-3.3936	4.5417	-11.7387	[illegible]	1.2716	-0.1439	0.3936	0.5006	-0.1829
136.0	6.0268	-21.2163	-3.5203	4.1233	-11.4311	[illegible]	1.2322	-0.1456	0.3925	0.4836	-0.1794
138.0	5.5966	-20.5678	-3.6751	3.7367	-11.0508	-2.9574	1.2042	-0.1512	0.3961	0.4770	-0.1921
140.0	5.1650	-19.9172	-3.8562	3.3689	-10.6028	-3.1472	1.1953	-0.1566	0.3990	0.4769	-0.1872
142.0	4.8189	-19.5481	-4.0566	3.0265	-10.0941	-3.3352	1.2135	-0.2125	0.5485	0.6655	-0.2870
144.0	4.4256	-18.5589	-4.1935	2.7102	-9.5338	-3.5178	1.1432	-0.2008	0.5288	0.6045	-0.2205
146.0	4.1228	-17.5007	-4.2448	2.4199	-8.9328	-3.6914	1.1084	-0.1982	0.6280	0.6960	-0.2197
148.0	3.7823	-16.5469	-4.3754	2.1552	-8.3033	-3.8527	1.0529	-0.2549	0.6000	0.6317	-0.2684
150.0	3.4219	-15.8249	-4.6246	1.9149	-7.6578	-3.9991	0.9706	-0.2226	0.6093	0.5914	-0.2161
152.0	3.1158	-13.8773	-4.4538	1.6974	-7.0086	-4.1290	0.8724	-0.1866	0.5559	0.4858	-0.1688
154.0	2.7512	-12.3269	-4.4306	1.5007	-6.3666	-4.2424	0.7585	-0.1705	0.4839	0.3670	-0.1293
156.0	2.3972	-10.6524	-4.4437	1.3227	-5.7408	-4.3403	0.6146	-0.0842	0.4304	0.2645	-0.0517
158.0	2.0540	-9.0360	-4.3992	1.1610	-5.1369	-4.4245	0.4638	-0.0522	0.5309	0.2463	-0.0262
160.0	1.8017	-8.0827	-4.4861	1.0135	-4.5571	-4.4965	0.3967	-0.2122	0.6349	0.2519	-0.0842
162.0	1.5423	-7.0511	-4.5719	0.8779	-3.9994	-4.5557	0.3225	-0.4429	0.6056	0.1953	-0.1428
164.0	1.2574	-6.1025	-4.8532	0.7524	-3.4585	-4.5964	0.2314	-1.3864	0.4533	0.1049	-0.3209
166.0	0.9696	-4.9664	-5.1221	0.6355	-2.9266	-4.6050	0.1631	-1.7888	0.9645	0.1573	-0.2917
168.0	1.0421	-4.0970	-3.9316	0.8048	-2.5053	-3.1130	0.1113	-2.4589	0.7111	0.0792	-0.2737
170.0	0.7272	-2.8163	-3.8727	0.6136	-1.9387	-3.1597	0.0452	-4.6241	-9.5912	-0.0267	-0.2091
172.0	0.4621	-1.7198	-3.7213	0.4443	-1.3842	-3.1153	-0.0128	17.4883	7.9894	-0.1021	-0.2235
174.0	0.2894	-0.9856	-3.4054	0.2986	-0.8698	-2.9133	-0.0238	4.2064	1.7871	-0.0425	-0.1475
176.0	0.1624	-0.4247	-2.6144	0.1768	-0.4549	-2.5723	-0.0262	3.2828	0.1913	-0.0050	-0.0862
178.0	0.0584	-0.0572	-0.9789	0.0783	-0.2478	-3.1554	-0.0293	-0.1448	-0.0854	0.0259	0.0042
180.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Figure H-4. (Continued)

APPENDIX I

EQUATIONS

APPENDIX I

EQUATIONS

The following equations are used to calculate the plan area, volume and centroid of the nose, body and boattail components which make up a total body alone configuration.

Plan Area of Nose

Sharp Cone (Figure I-1)

$$A_N = \ell_{NT} (d/2)$$

Spherically Blunted Cone (Figure I-1)

$$A_N = \ell_{NT} (d/2) - R_N^2 \left[\frac{\ell_{NT}}{(d/2)} - \tan^{-1} \left\{ \frac{\ell_{NT}}{(d/2)} \right\} \right]$$

Sharp Ogive (Figure I-2)

$$A_N = \frac{\left[\ell_{NT}^2 + (d/2)^2\right]^2}{4(d/2)^2} \sin^{-1} \left[\frac{2\ell_{NT} (d/2)}{\ell_{NT}^2 + (d/2)^2} \right]$$

$$- \left[\frac{\ell_{NT}^3 - \ell_{NT} (d/2)^2}{2(d/2)} \right]$$

Spherically Blunted Ogive (Figure I-2)

1. Determine plan area, A_{N_s}, for sharp ogive

2. Determine parameters, R, R_1, R_2, L_2, L_3, ψ, β and θ

$$R = \left[\frac{\ell_{NT}^2 + (d/2)^2}{2(d/2)} \right]$$

$$R_1 = R - R_N$$

$$R_2 = R - (d/2)$$

$$L_2 = \left[R_1^2 - R_2^2 \right]^{1/2}$$

$$L_3 = \ell_{NT} - L_2$$

$$P_1 = (1/2)\ (L_3 + R + R_1)$$

$$P_2 = \left[\frac{(P_1 - L_3)(P_1 - R)(P_1 - R_1)}{P_1} \right]^{1/2}$$

$$\psi = 2 \tan^{-1} \left[\frac{P_2}{P_1 - L_3} \right]$$

$$\beta = 2 \tan^{-1} \left[\frac{P_2}{P_1 - R} \right]$$

$$\theta = [\pi - \beta]$$

3. Now determine area to be removed from sharp ogive, shaded area (Figure I-1).

$$A_R = 2\left[R^2 \tan^{-1}\left\{\frac{P_2}{P_1 - L_3}\right\} - \frac{(R)(R_1)}{2} \sin \psi\right]$$

$$A_{SA} = \frac{1}{2} \, R_N^{\,2} \, (2\theta)$$

4. The plan area of the spherically blunted ogive is thus

$$A_N = A_{N_s} - A_R + A_{SA}$$

Plan Area of Body

Cylinder

$$A_B = \ell_B(d)$$

Plan Area of Boattail

Truncated Cone

$$A_{BT} = \left(\frac{\ell_{BT}}{2}\right) \quad (d + dT)$$

The plan area of the total slender body is thus:

$$S_p = A_N + A_B + A_{BT}$$

Volume of Nose

Sharp Cone (Figure I-1)

$$V_N = \pi \, \frac{(d/2)^2(\ell_{NT})}{3}$$

Spherically Blunted Cone (Figure I-1)

1. Determine the parameters L_2, L_3, LL_1, LL_2 (see Figure I-2)

$$L_2 = \ell_{NT} - L_3$$

$$L_3 = \left[(R_N)^2 + \frac{(\ell_{NT})^2 \; (R_N)^2}{(d/2)^2} \right]^{1/2}$$

$$LL_1 = L_2 + \frac{R_N(d/2)}{\left[(d/2)^2 + \ell_{NT}{}^2\right]^{1/2}}$$

$$LL_2 = L_2 + R_N$$

2. Determine volume from:

$$V_N = \frac{\pi (d/2)^2}{\ell_{NT}^2} \left[\ell^2{}_{NT}(LL_1) - \ell_{NT}(LL_1)^2 + \frac{(LL_1)^3}{3} \right]$$

$$+ \pi R_N^2 \left[(LL_1) - (LL_2) \right] - \pi \left[\frac{(LL_1)^3}{3} - (LL_1)^2 (L_2) \right.$$

$$\left. + (LL_1)(L_2)^2 \right] + \pi \left[\frac{(LL_2)^3}{3} - (LL_2)^2 (L_2) \right.$$

$$\left. + (L_2)^2 \; (LL_2) \right]$$

<u>Sharp Ogive</u> (Figure I-2)

1. Determine the parameters R, R_2

$$R = \left[\frac{(\ell_{NT})^2 + (d/2)^2}{2(d/2)} \right]$$

$$R_2 = R - (d/2)$$

2. Determine volume by:

$$V_N = \pi \ell_{NT}^3 \left[\frac{R^2}{\ell_{NT}^2} \left\{ 1.0 - \frac{R_2}{\ell_{NT}} \sin^{-1} \left(\frac{\ell_{NT}}{R} \right) \right\} - 1/3 \right]$$

<u>Spherically Blunted Ogive</u> (Figure I-2)

1. Determine the parameters R, R_2, R_1, L_2, LL_1, LL_2, R_o, Y_1, R_{LL}, R_{NO}, R_{L2}

$$R = \left[\frac{(\ell_{NT})^2 + (d/2)}{2(d/2)} \right]$$

$$R_2 = R - (d/2)$$

$$R_1 = R - R_N$$

$$L_2 = \left[R_1^2 - R_2^2 \right]^{1/2}$$

$$LL_1 = L_2 (1 + R_N/R_1)$$

$$LL_2 = L_2 + R_N$$

$$R_o = \frac{R}{LL_1} \quad Y_1 = \frac{R_2}{LL_1} \quad R_{LL} = \frac{LL_2}{LL_1}$$

$$R_{NO} = \frac{R_N}{LL_1} \quad R_{L2} = \frac{L_2}{LL_1}$$

2. Determine volume by:

$$V_N = \pi(LL_1)^3 \left[R_o^2 \left\{ 1.0 - Y_1 \sin^{-1}\left(\frac{1}{R_o}\right)\right\} + Y_1^2 \left\{ 1.0 - \frac{(R_o^2 - 1.0)^{1/2}}{Y_1} \right\} + (R_{NO}^2 - R_{L2}^2)(R_{LL} - 1.0) - \frac{(R_{LL})^3}{3} + R_{L2}\ (R_{LL}^2 - 1.0) \right]$$

Volume of Body

Cylinder

$$V_B = \pi(d/2)^2\ (\ell_B)$$

Volume of Boattail

Truncated Cone

$$V_{BT} = \frac{\pi}{2} \left[(d/2)^2 + (dT/2)^2 \right] (\ell_{BT})$$

The volume of the body is thus:

$$V = V_N + V_B + V_{BT}$$

Centroid of Nose

Sharp Cone (Figure I-1)

$$\bar{X}_N = (2/3)(\ell_{NT})$$

Spherically Blunted Cone (Figure I-1)

1. Determine parameter R_{L_N}

$$R_{L_N} = \frac{\ell_{NT}}{LL_1}$$

2. Using parameters determined for volume of blunt cone, calculate:

$$\overline{X}_{N_1} = \frac{LL_1^3}{3A_N}\left[\frac{(d/2)}{\ell_{NT}}\quad(3\ R_{L_N} - 2.0)\right]$$

$$\overline{X}_{N_2} = \frac{LL_1^3}{3A_N}\left[2\left\{R_{NO}^2 - (1.0 - R_{L2})\right\}^{3/2}\right.$$

$$- 2\left\{R_{NO}^2 - (R_{LL} - R_{L2})^2\right\}^{3/2}$$

$$- R_{L2}\left[\left\{R_{NO}^2 - (1.0 - R_{L2})^2\right\}^{1/2}\left\{3(1.0-R_{L2})\right\}\right.$$

$$+ 3R_{NO}^2\ \sin^{-1}\left\{\frac{(1.0 - R_{L2})}{R_{NO}}\right\}$$

$$+ \left\{R_{NO}^2 - (R_{LL}-R_{L2})^2\right\}^{1/2}\left\{3(R_{LL}-R_{L2})\right\}$$

$$\left.\left. + 3R_{NO}^2\ \sin^{-1}\left\{\frac{(R_{LL} - R_{L2})}{R_{NO}}\right\}\right]\right]$$

3. $\overline{X}_N = LL_2 - (\overline{X}_{N_1} + \overline{X}_{N2})$

<u>Sharp Ogive</u> (Figure I-2)

1. Using parameters determined for volume of sharp ogive, calculate:

$$\overline{X}_N = LL_2 - (2R^3 - 3\ R_2R^2 + R_2{}^3)/(3A_N)$$

Spherically Blunted Ogive (Figure I-2)

1. Using parameters determined for volume of blunt ogive, calculate:

$$\bar{X}_{N_1} = \frac{LL_1^3}{3A_N}\left\{2\,R_o^3 - 2(R_o^2 - 1.0)^{3/2} - 3Y_1\right\}$$

$\bar{X}_{N_2}$ = (same as for blunt cone)

2. $\bar{X}_N = LL_2 - (\bar{X}_{N_1} + \bar{X}_{N_2})$

Centroid of Body

Cylinder

$$\bar{X}_B = \frac{\ell_B}{2}$$

Centroid of Boattail

Truncated Cone

$$\bar{X}_{BT} = \frac{\ell_{BT}}{3}\left[\frac{2\,dT + d}{dT + d}\right]$$

Centroid of Complete Body

$$\bar{X} = \frac{\left[\bar{X}_N A_N + (LL_2 + \bar{X}_B)A_B + (LL_2 + \ell_B + \bar{X}_{BT})A_{BT}\right]}{S_p}$$

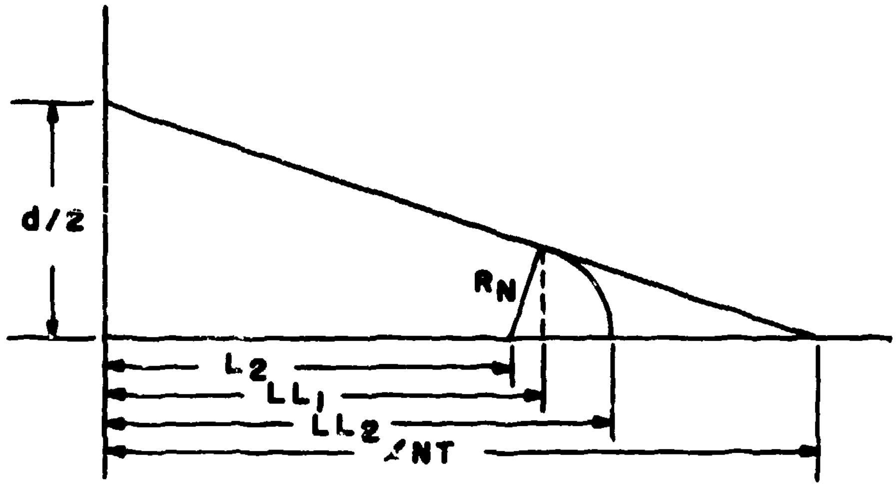


Figure I-1. Blunt cone dimensions.

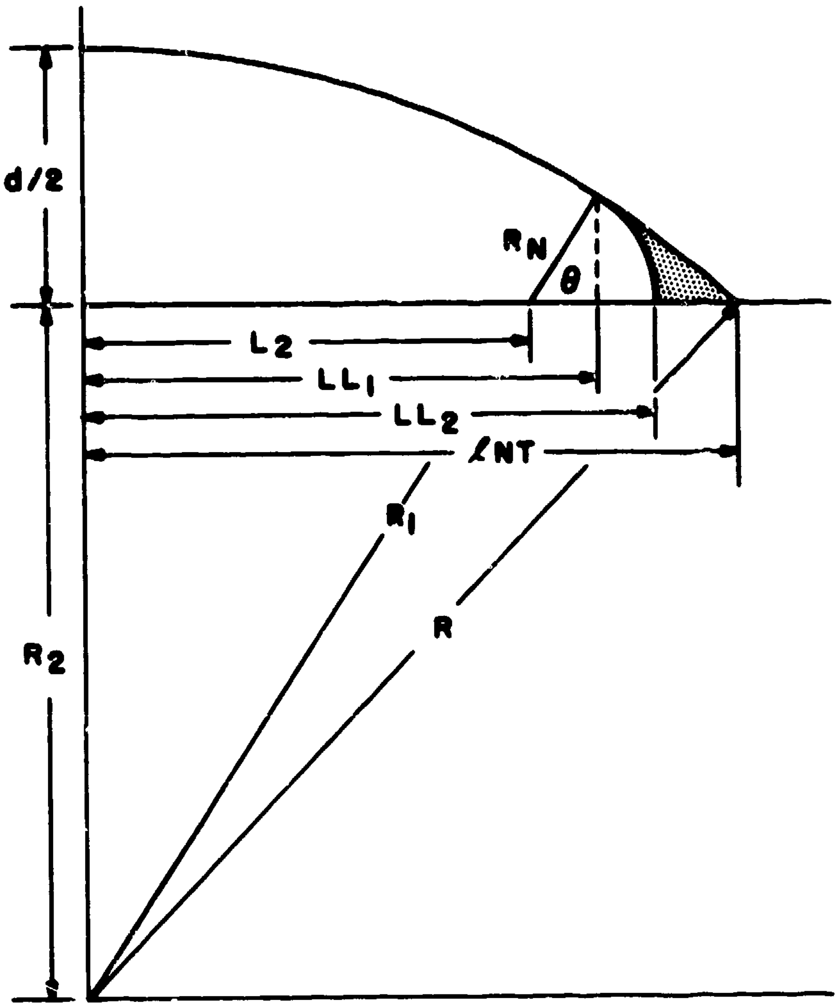


Figure I-2. Blunt ogive dimensions.

NOMENCLATURE

A	Fin forward wedge length, in.
A_B	Plan area of body, in.^{2}
A_{BT}	Plan area of boattail, in.^{2}
A_N	Plan area of nose, in.^{2}
A_{N_s}	Plan area of sharp ogive, in.^{2}
AR	Exposed aspect ratio = $b^2/(2\ S_f)$
A_R	Area involved in plan area calculation
A_{SA}	Area involved in plan area calculation
B	Fin aft wedge length, in.
$b/2$	Exposed fin semispan, in.
b'	Total span of fins plus body, in.
C_{d_c}	Crossflow drag coefficient
C_L	Lift coefficient
C_ℓ	Rolling moment coefficient
C_m	Pitching moment coefficient
$C_{m_{BA}}$	Body alone pitching moment coefficient
C_{m_H}	Hinge-moment coefficient
$C_{m_{RB}}$	Root bending-moment coefficient
C_N	Normal force coefficient
$C_{N_{BA}}$	Body alone normal force coefficient
C_{N_F}	Installed fin normal force coefficient
$C_{N_{FA}}$	Fin alone normal force coefficient

$C_{N_{FB}}$	Fin in presence of body normal force coefficient
C_n	Yawing moment coefficient
C_R	Root chord, in.
C_T	Tip chord, in.
$CP_{X_{HLA}}$	Fin alone center of pressure measured in X direction from hinge line, $1/C_R$
$CP_{X_{HLB}}$	Fin in presence of body center of pressure measured in X direction from hinge line, $1/C_R$
$CP_{Y_{RCA}}$	Fin alone center of pressure measured in Y direction from root chord, 1/(b/2)
$CP_{Y_{RCB}}$	Fin in presence of body center of pressure measured in Y direction from root chord, 1/(b/2)
d	Body diameter, reference length, in.
dT	Base diameter, in.
f	Body normal force, lbs
HL	Hinge line position from leading edge of root chord, $1/C_R$
K_1	Apparent mass factor
K_2	Apparent mass factor
L_2	Distance from base of nose to origin of R_N, in.
L_3	Distance from origin of R_N to theoretical nose, in.
LL_1	Distance from base of nose to perpendicular from tangent of nose blunting to centerline, in.
LL_2	Actual nose length, in.

ℓ	Total configuration length, in.
ℓ_B	Body length, in.
ℓ_N	Nose actual length, in.
ℓ_{NT}	Nose theoretical length, in.
M	Mach number
m	Body pitching moment, in.-lbs
M_c	Crossflow Mach number
P_1	Calculated factor associated with nose planform area
P_2	Calculated factor associated with nose planform area
P_t	Total pressure, psfa
R	Ogive radius, in.
Re_c	Crossflow Reynolds number
Re_d	Reynolds number based on body diameter
Re/ft	Unit Reynolds number
R_{LL}	Ratio of R to LL_1
R_{LN}	Ratio of ℓ_{NT} to LL_1
R_{L2}	Ratio of L_2 to LL_1
R_N	Nose blunting radius, in.
R_{NO}	Ratio of R_N to LL_1
R_O	Ratio of R to LL_1
R_1	Distance from origin of R to origin of R_N, in.
R_2	Distance from origin of R to nose centerline, in.

S	Cross sectional area of body, reference area, in.^{2}
S_b	Area of base, in.^{2}
S_f	Exposed area of one fin, in.^{2}
S_p	Total planform area, in.^{2}
T_R	Thickness of fin at root, in.
T_T	Thickness of fin at tip, in.
U	Free stream velocity
V	Total volume, in.^{3}
V_B	Volume of body, in.^{3}
V_{BT}	Volume of boattail, in.^{3}
V_N	Volume of nose, in.^{3}
$\overline{X}$	Centroid of total plan area, measured from actual nose, in.
$\overline{X}_B$	Centroid of plan area of body, in.
$\overline{X}_{BT}$	Centroid of plan area of boattail, in.
$\overline{X}_N$	Centroid of plan area of nose, in.
$\overline{X}_{N1}$	Centroid of truncated nose, in.
$\overline{X}_{N2}$	Centroid of nose blunting, in.
XCP	Distance from nose to center of pressure, calibers
$X_{CP_{BA}}$	Distance from nose to body alone center of pressure, calibers
$X_{CP_{BOF}}$	Distance from moment reference to effective center of pressure of body on fin interference, calibers

$X_{CP_{BFH}}$	Distance from hinge line to effective center of pressure of body on fin interference, $1/C_R$
$X_{CP_{FA}}$	Distance from moment reference to fin alone center of pressure, calibers
$X_{CP_{Fin}}$	Distance from leading edge of root chord to center of pressure of installed fin, $1/C_R$
$X_{CP_{FOB}}$	Distance from moment reference to effective center of pressure of fin on body interference, calibers
X_{HL}	Distance from moment reference to hinge line, negative aft of moment reference, calibers
X_m	Distance from actual nose to moment reference, in.
$Y_{CP_{BOF}}$	Distance from root chord to effective center of pressure of body on fin interference, $1/(b/2)$
$Y_{CP_{Fin}}$	Distance from root chord to center of pressure of installed fin, $1/(b/2)$
Y_1	Ratio of R_2 to LL_1
Z	Empirical correction to body alone pitching moment coefficient
Z_{MAX}	Maximum value of empirical pitching moment correction
α	Angle of attack
α_{Ai}	Prebend angle
β	Angle associated with nose plan area calculation
β_o	Regression coefficient (intercept)

β_1 Regression coefficient (λ)

β_2 Regression coefficient (λ^2)

β_3 Regression coefficient (AR)

β_4 Regression coefficient (d/b')

$\Delta C_{N_{BOF}}$ Incremental normal force due to body on fin interference

$\Delta C_{N_{FOB}}$ Incremental normal force due to fin on body interference

$\bar{\delta}$ Normalized body alone pitching moment correction

η Ratio of crossflow drag of a circular cylinder of finite length to one of infinite length

θ Angle associated with calculation of nose plan area, radians

Λ Leading edge sweep angle of fin, deg

λ Taper ratio of fin (C_T/C_R)

ρ Air density

σ Standard deviation

ϕ Roll angle, deg

ψ Angle associated with nose plan area calculation, radians