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National Aeronautics and
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Lyndon B. Johnson Space Center
Houston, Texas 77058

SPACE SHUTTLE AEROTHERMODYNAMIC DATA REPORT

N78-75922

(NASA-CR-151409) LOW-SPEED STABILITY AND CONTROL CHARACTERISTICS OF A 0.015 SCALE MODEL 69-0 OF THE SPACE SHUTTLE ORBITER WITH FOREBODY RSI MODIFICATIONS IN THE NASA/LaRC LOW TURBULENCE PRESSURE TUNNEL (LA73A/B)

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LOW-SPEED STABILITY AND CONTROL CHARACTERISTICS OF A 0.015 SCALE MODEL 69-0 OF THE SPACE SHUTTLE ORBITER WITH FOREBODY RSI MODIFICATIONS IN THE NASA/LaRC LOW TURBULENCE PRESSURE TUNNEL (LA73A/B)

Prepared under NASA Contract Number NAS9-13247

by

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Houston, Texas

WIND TUNNEL TEST SPECIFICS:

Test Number:	LaRC LTPT 227/238
NASA Series Number:	LA73A/B
Model Number:	69-0
Test Dates:	12/23 through 31, 1975; 12/10 through 13, 1976
Occupancy Hours:	82/16

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ABSTRACT

Tests were conducted in the NASA/LaRC Low Turbulence Pressure Tunnel from December 23 through 31, 1975 and December 10 through 13, 1976. The model was a Langley-built 0.015 scale SSV Orbiter with forebody modifications to simulate a slight reduction in the reusable surface insulation (RSI) thickness.

Six component aerodynamic force and moment data were obtained at Reynolds numbers of 4.0, 6.0, and 9.0 x 10^6 per foot at a constant Mach number of 0.25. The tests were made over an angle of attack range of about -2° to 20° at constant sideslip angles of 0° and 5°.

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INDEX OF DATA FIGURES (Concluded)

SCHEDULE OF COEFFICIENTS PLOTTED:

(A) C_L, C_D, C_A, C_m, L/D, C_Y, C_η(BODY), C_ℓ(BODY) versus α

C_m versus C_N

(B) C_{Y_β}, C_{η_β}(BODY), C_{ℓ_β}(BODY) versus α

NOMENCLATURE
General

SYMBOL	MNEMONIC	DEFINITION
a		speed of sound; m/sec, ft/sec
C_p	CP	pressure coefficient; $(p_l - p_\infty)/q$
M	MACH	Mach number; V/a
p		pressure; N/m^2, psf
q	Q(NSM) Q(PSF)	dynamic pressure; $1/2\rho V^2$, N/m^2, psf
RN/L	RN/L	unit Reynolds number; per m, per ft
V		velocity; m/sec, ft/sec
α	ALPHA	angle of attack, degrees
β	BETA	angle of sideslip, degrees
ψ	PSI	angle of yaw, degrees
ϕ	PHI	angle of roll, degrees
ρ		mass density; kg/m^3, $slugs/ft^3$
		Reference & C.G. Definitions
A_b		base area; m^2, ft^2
b	BREF	wing span or reference span; m, ft
c.g.		center of gravity
ℓ_{REF} $\bar{c}$	LREF	reference length or wing mean aerodynamic chord; m, ft
S	SREF	wing area or reference area; m^2, ft^2
	MRP	moment reference point
	XMRP	moment reference point on X axis
	YMRP	moment reference point on Y axis
	ZMRP	moment reference point on Z axis

SUBSCRIPTS

b	base
l	local
s	static conditions
t	total conditions
∞	free stream

NOMENCLATURE (Continued)

Body-Axis System

SYMBOL	MNEMONIC	DEFINITION
C_N	CN	normal-force coefficient; $\frac{\text{normal force}}{qS}$
C_A	CA	axial-force coefficient; $\frac{\text{axial force}}{qS}$
C_Y	CY	side-force coefficient; $\frac{\text{side force}}{qS}$
C_{A_b}	CAB	base-force coefficient; $\frac{\text{base force}}{qS}$ $-A_b(p_b - p_\infty)/qS$
C_{A_f}	CAF	forebody axial force coefficient, $C_A - C_{A_b}$
C_m	CLM	pitching-moment coefficient; $\frac{\text{pitching moment}}{qS\ell_{REF}}$
C_n	CYN	yawing-moment coefficient; $\frac{\text{yawing moment}}{qSb}$
C_ℓ	CBL	rolling-moment coefficient; $\frac{\text{rolling moment}}{qSb}$
		Stability-Axis System
C_L	CL	lift coefficient; $\frac{\text{lift}}{qS}$
C_D	CD	drag coefficient; $\frac{\text{drag}}{qS}$
C_{D_b}	CDB	base-drag coefficient; $\frac{\text{base drag}}{qS}$
C_{D_f}	CDF	forebody drag coefficient; $C_D - C_{D_b}$
C_Y	CY	side-force coefficient; $\frac{\text{side force}}{qS}$
C_m	CLM	pitching-moment coefficient; $\frac{\text{pitching moment}}{qS\ell_{REF}}$
C_n	CLN	yawing-moment coefficient; $\frac{\text{yawing moment}}{qSb}$
C_ℓ	CSL	rolling-moment coefficient; $\frac{\text{rolling moment}}{qSb}$
L/D	L/D	lift-to-drag ratio; C_L/C_D
L/D_f	L/DF	lift to forebody drag ratio; C_L/C_{D_f}

NOMENCLATURE (Concluded)

Additions to Standard Nomenclature

SYMBOL	MNEMONIC	DEFINITION
$C_{p_{c,1,2}}$	CPC,1,2	sting cavity pressure coefficient
$C_{p_{b1,2,3,4}}$	CPB1,2,3,4	base cavity pressure coefficient
δ_e	ELEVON	elevon, surface deflection angle, positive deflection trailing edge down; degrees
δ_{BF}	BDFLAP	body flap deflection angle; degrees
A_{SC}		sting cavity area; sq. ft.
C_{Y_β}	DCY/DB	side force coefficient derivative with respect to sideslip angle; $\Delta C_Y/\Delta\beta$
C_{n_β} (BODY)	DCYNDB	yawing moment coefficient derivative with respect to sideslip angle; $\Delta C_n/\Delta\beta$
C_{ℓ_β} (BODY)	DCBLDB	rolling moment coefficient derivative with respect to sideslip angle; $\Delta C_\ell/\Delta\beta$
$\Delta\beta$	DBETA	incremental sideslip angle; degrees

INTRODUCTION

The National Aeronautics and Space Administration is conducting studies to determine if any adverse aerodynamic effects would be produced by slight reductions in the thickness of the reusable surface insulation (RSI) located along the sides of the Space Shuttle Orbiter fuselage forebody. The reductions of interest (a maximum of 2 inches, full scale) would allow weight savings in the nose region while still providing sufficient thermal protective margins for anticipated missions. The potential aerodynamic issues which need evaluation are: the forward pitch control boundary at $M \approx 5.0$ and the longitudinal and lateral-directional stability characteristics at $0.2 \leq M \lesssim 5.0$.

To obtain data over the required speed range, tests have also been conducted in the LaRC 4-Foot Unitary Plan Wind Tunnel (LA71A/B) to obtain supersonic data and in the LaRC 8-Foot Transonic Pressure Tunnel (LA72) to obtain transonic data. The model used throughout these tests was a Langley built 0.015 scale SSV Orbiter with forebody modifications to simulate slight reductions in the reusable surface insulation (RSI) thickness.

In order to determine the subsonic aerodynamic effects of the aforementioned forebody RSI thickness reductions, tests were conducted in the NASA/LaRC Low Turbulence Pressure Tunnel at Reynolds numbers of 4.0, 6.0, and 9.0×10^6 per foot at a constant Mach number of 0.25. The tests were made over an angle of attack range of approximately $-2°$ to $20°$ at constant sideslip angle of $0°$ and $5°$.

The purpose of the present report is to release data obtained during the subsonic phase of the testing.

CONFIGURATIONS INVESTIGATED

The test model was a 0.015 scale model of the Space Shuttle Orbiter constructed at the Langley Research Center from Rockwell furnished model 49-0 line details. The model designation is 69-0.

For this test the Orbiter Forebody contours were modified (see Figure 2) to simulate a reduction in the thermal protective shield area.

The configuration is summarized as follows:

$W\ VS_oEF$ = Baseline = $WC_9E_{26}F_8M_{16}N_{28}R_5V_8S_o$

Component	Definition
B_1	Fuselage per Rockwell Lines VL70-000140A and VL70-000140B (Model SS-A00147)
B_6	B_1 with reduced RSI thickness
B_7	B_1 with reduced RSI thickness and "cheeks" added
C_9	Canopy per Rockwell Lines VL70-000140A and VL70-000143B (Model drawing SS-A00147)
E_{26}	Elevons per Rockwell Lines VL70-000200 (Model drawing SS-A00148)
F_8	Body flap per Rockwell Lines VL70-000145 (Model drawing SS-A00147)
M_{16}	OMS/RCS pods per Rockwell Lines V170-0084010 Model drawing SS-A00147)
N_{28}	OMS engine nozzle per Rockwell Lines VL70-000145 (Model drawing SS-A00147)
R_5	Rudder per Rockwell Lines VL70-000146A (Model drawing SS-A00148)
S_o	Wing fillet per Rockwell V70-30-906-01 (Basic control drawing)
V_8	Vertical tail per Rockwell Lines VL70-000146A (Model drawing SS-A00148)
W	Wing per Rockwell V70-30-906-01 (Basic control drawing)

A complete description of model dimensional data is given in Table III.

TEST CONDITIONS

The tunnel conditions existing during the test are summarized in Table I and the configurations tested are shown in Table II. The model was sting supported and the aerodynamic forces and moments were measured by an internally mounted six-component strain gauge balance. Model angle of attack was varied from approximately -2° to 20° for angles of sideslip of 0° and 5°. Angles-of-attack and sideslip have been corrected for the effects of sting deflection under load.

TEST FACILITY DESCRIPTION

The tests were conducted in the Langley Low Turbulence Pressure Tunnel, which is a variable-pressure, single-return facility with a closed rectangular test section that is 0.914 meter (3.00 ft.) wide and 2.290 meters (7.50 ft.) high. The tunnel can accommodate tests in air at low subsonic Mach numbers and at a Reynolds number per unit length of up to approximately 49.2×10^6 per meter (15.0×10^6 per foot).

DATA REDUCTION

A LaRC 2032 six-component strain gauge balance was used to measure model forces and moments. All final data were presented along a set of body and stability axes (Figure 1) through the nominal center of gravity located at F.S. 1076.7 and FRL 375.0. Drag data presented represent gross data in that no corrections to free-stream conditions in the base regions have been made. Model data were converted to standard NASA coefficients using the following constants:

Reference Area	$S_{ref} = 0.605$ ft.^{2}
Reference Length	$\ell_{ref} = 7.122$ in.
Reference Span	$b_{ref} = 14.05$ in.
Total base area excluding sting cavity	$A_b = 0.0615$ ft.^{2}
Sting cavity area	$A_{sc} = 0.03409$ ft.^{2}

TABLE I

TEST : LTPT 227/238 (LA73A/B)

DATE : 3-2-77

TEST CONDITIONS

MACH NUMBER	REYNOLDS NUMBER (per unit length)	DYNAMIC PRESSURE (pounds/sq. inch)	STAGNATION TEMPERATURE (degrees Fahrenheit)
0.25	4.0×10^6	1.44	100°
↓	6.0×10^6	2.29	100°
	9.0×10^6	3.59	100°

BALANCE UTILIZED: LaRC 2032

	CAPACITY:	ACCURACY:	COEFFICIENT TOLERANCE:
NF	250 lb	± 1.25 lb	
SF	50 lb	± 0.25 lb	
AF	50 lb	± 0.25 lb	
PM	350 in-lb	± 1.75 in-lb	
RM	40 in-lb	± 0.20 in-lb	
YM	60 in-lb	± 0.30 in-lb	

COMMENTS:

TABLE II.

TEST : LaRC LTPT 227/238 (LA73 A/B) DATA SET/RUN NUMBER COLLATION SUMMARY

DATE : 1-13-76/1-24-77

DATA SET IDENTIFIER	CONFIGURATION	PARAMETERS/VALUES α	β	δ_e	δ_{BF}	δ_{SB}	M	RN/L NUMBERS 4.0	6.0	9.0
RJE001	B_1 W V S_0 E F	A	0°	0°	-11.7	OFF	.25	13	15	17
02			5°					14	16	18
03	B_7 W V S_0 E F		0°					3	5	9
04			5°					4	6	10
05			0°							8
RK6001	B_6 W V S_0 E F	A	0	0	-11.7	OFF	.25	3	5	7
2			5					4	6	8

TEST RUN NUMBERS

"R"	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D	RN/L	ALPHA
AJE"	MACH	Q(PSF)	CPB1	CPB2	CPC	CPB3	CPB4				RN/L	ALPHA
AK6	MACH	Q(PSF)	CPC1	CPC2							RN/L	ALPHA

TYPE OF DATA α OR β SCHEDULES

A) α = -2° to 20°

COEFFICIENT SCHEDULES

IDVAR (1) IDVAR (2) NDV

NA[illegible]MSFC-MAF

TABLE III.

MODEL DIMENSIONAL DATA

MODEL COMPONENT : BODY B_1

GENERAL DESCRIPTION : Configuration 140A/B Orbiter Fuselage

NOTE: B_1 is identical to B_{24} except underside of fuselage has been refaired to accept W

MODEL SCALE: 0.015 MODEL DRAWING: SS-A00147, RELEASE 12

DRAWING NUMBER : VL70-000143B, -000200, 000205, -006089, -000145, -000140A, 000140B

DIMENSIONS :	FULL SCALE	MODEL SCALE
* Length (OML: Fwd Sta. X_o=235)-In.	1293.3	19.400
* Length (IML: Fwd Sta. X_o=238)-In.	1290.3	19.355
* Max Width(@ X = 1528.3) - In.	264.0	3.960
Max Depth(@ X_o= 1464) - In.	250.0	3.750
Fineness Ratio		
Area - Ft^2		
Max. Cross-Sectional	340.88	0.077
Planform		
Wetted		
Base		

TABLE III-Continued

MODEL DIMENSIONAL DATA

MODEL COMPONENT : BODY B_6

GENERAL DESCRIPTION : Configuration 140A/B Orbiter Fuselage

NOTE: Identical to B_1 except for reduced RSI thickness on forebody

(See Fig.2)

MODEL SCALE: 0.015 MODEL DRAWING: SS-A00147, RELEASE 12

DRAWING NUMBER : VL70-000143B, -000200, 000205, -006089, -000145, -000140A, 000140B

DIMENSIONS :	FULL SCALE	MODEL SCALE
* Length (OML: Fwd Sta. X_o=235)-In.	1293.3	19.400
* Length (IML: Fwd Sta. X_o=238)-In.	1290.3	19.355
* Max Width (@ X = 1528.3) - In.	264.0	3.960
Max Depth (@ X_o= 1464) - In.	250.0	3.750
Fineness Ratio		
Area - Ft^2		
Max. Cross-Sectional	340.88	0.077
Planform		
Wetted		
Base		

TABLE III-Continued

MODEL DIMENSIONAL DATA

MODEL COMPONENT : BODY B_7

GENERAL DESCRIPTION : Configuration 140A/B Orbiter Fuselage

NOTE: Identical to B_1 except for reduced RSI thickness and the addition of "cheeks" (See Fig. 2)

MODEL SCALE: 0.015 MODEL DRAWING: SS-A00147, RELEASE 12

DRAWING NUMBER : VL70-000143B, -000200, 000205, -006089, -000145, -000140A, 000140B

DIMENSIONS :	FULL SCALE	MODEL SCALE
* Length (OML: Fwd Sta. X_o=235)-In.	1293.3	19.400
* Length(IML: Fwd Sta. X_o=238)-In.	1290.3	19.355
* Max Width (@ X = 1528.3) - In.	264.0	3.960
Max Depth (@ X_o= 1464) - In.	250.0	3.750
Fineness Ratio		
Area - Ft^2		
Max. Cross-Sectional	340.88	0.077
Planform		
Wetted		
Base		

TABLE III—Continued

MODEL DIMENSIONAL DATA

MODEL COMPONENT : CANOPY - C_9

GENERAL DESCRIPTION : Configuration 3A, Canopy used with Fuselage B_{26}.

MODEL SCALE: 0.015 MODEL DRAWING: SS-A00147 , RELEASE 12

DRAWING NUMBER : VL70-000143A/B

DIMENSIONS :	FULL SCALE	MODEL SCALE
Length (X_o = 434.643 to 587)	143.357	2.150
Max Width (@ X_o = 513.127)	152.412	2.286
Max Depth (@ X_o = 485.0)	25.000	0.375
Fineness Ratio		
Area		
Max. Cross-Sectional		
Planform		
Wetted		
Base		

TABLE III - Continued
MODEL DIMENSIONAL DATA

MODEL COMPONENT : ELEVON - E_{26}

GENERAL DESCRIPTION : Configuration 140 A/B Orbiter Elevon

NOTE: VL70-000200 data for (1) of (2) sides. Identical to E_{25} except airfoil thickness.

Model Scale: 0.015 Model Drawings No. SS-A00148

DRAWING NUMBER VL70-000140B VL70-000200

DIMENSIONS :	FULL SCALE	MODEL SCALE
Area	210.0	0.0473
Span (equivalent)	349.2	5.238
Inb'd equivalent chord	118.004	1.770
Outb'd equivalent chord	55.1922	0.828
Ratio movable surface chord/ total surface chord		
At Inb'd equiv. chord	0.2096	0.2096
At Outb'd equiv. chord	0.4004	0.4004
Sweep Back Angles, degrees		
Leading Edge	0.00	0.00
Trailing Edge	10.056	10.056
Hingeline	0.00	0.00
Area Moment (Normal to hinge line)	1587.25	0.00536

TABLE III-Continued
MODEL DIMENSIONAL DATA

MODEL COMPONENT : BODY FLAP -F8

GENERAL DESCRIPTION : Configuration 140A/B Orbiter Body Flap.

Hingeline located at X_o = 1528.3, Z_o = 284.3

MODEL SCALE: 0.015 MODEL DRAWING: SS-A00147, RELEASE 12

DRAWING NUMBER : VL-000140A, VL70-000145

DIMENSIONS :	FULL SCALE	MODEL SCALE
Length (X_0 = 1520 To X_o = 1613)	93.000	1.395
Max Width (In.)	262.00	3.930
Max Depth (X_o = 1520) - In.	23.000	0.345
Fineness Ratio		
Area - Ft^2		
Max. Cross-Sectional		
Planform	150.525	0.0339
Wetted		
Base	41.84722	0.00941

TABLE III–Continued

MODEL DIMENSIONAL DATA

MODEL COMPONENT : OMS Pod (M_{16})

GENERAL DESCRIPTION : Configuration 140D Orbiter OMS Pod

MODEL SCALE: 0.015 MODEL DRAWING NO: SS-A00147

DRAWING NUMBER : VL70-000140D
VL70-008410

DIMENSIONS :	FULL SCALE	MODEL SCALE
Length (OMS Fwd Sta X_o=1310.5) - In.	258.5	3.878
Max Width (@ X_o = 1511) - In.	136.8	2.052
Max Depth (@ X_o = 1511) - In.	74.7	1.121
Fineness Ratio	2.484	2.484
Area - Ft.^{2}		
Max. Cross-Sectional	58.864	0.0132
Planform		
Wetted		
Base		

TABLE III-Continued
MODEL DIMENSIONAL DATA

MODEL COMPONENT: OMS NOZZLES - N28

GENERAL DESCRIPTION: Configuration 140A/B Orbiter OMS Nozzles

MODEL SCALE: 0.015 MODEL DRAWING: SS-A00147 RELEASE 5 (Contour)

DRAWING NUMBER: VL70-000145, (location)

DIMENSIONS:	FULL SCALE	MODEL SCALE
MACH NUMBER		
Length- In.		
Gimbal Point to Exit Plane		
Throat to Exit Plane		
Diameter - In.		
Exit		
Throat		
Inlet		
Area - ft^2		
Exit		
Throat		
Gimbal Point (Station) - In.		
Left Nozzle		
X_o	1518.0	22.770
Y_o	-88.0	-1.320
Z_o	490.2	7.380
Right Nozzle		
X	1518.0	22.770
Y	+88.0	+1.320
Z	492.0	7.380
Null Position - Deg.		
Left Nozzle		
Pitch	15°49'	15°49'
Yaw	12°17'	12°17'
Right Nozzle		
Pitch	15°49'	15°49'
Yaw	12°17'	12°17'

TABLE III–Continued

MODEL DIMENSIONAL DATA

MODEL COMPONENT RUDDER - R_5

GENERAL DESCRIPTION 2A, 3, 3A, and 140A/B Configurations

MODEL SCALE: 0.015 MODEL DRAWING: SS-A00148

DRAWING NUMBER VL70-000146A, VL70-000095, V170-000139

DIMENSIONS	FULL SCALE	MODEL SCALE
*Area Ft^2	100.15	0.0225
Span (equivalent) - In.	201.0	3.015
Inb'd equivalent chord - In.	91.585	1.3738
Outb'd equivalent chord - In.	50.833	0.7625
Ratio movable surface chord/ total surface chord		
At Inb'd equiv. chord	0.400	0.400
At Outb'd equiv. chord	0.400	0.400
Sweep Back Angles, degrees		
Leading Edge	34.83	34.83
Trailing Edge	26.25	26.25
Hingeline	34.83	34.83
Area Moment (Normal to hinge line)	610.92	0.002
Mean Aerodynamic Chord, - In.	73.2	1.098

TABLE III - Continued

MODEL DIMENSIONAL DATA - Continued

MODEL COMPONENT: VERTICAL - V8

GENERAL DESCRIPTION: Configuration 140A/B Orbiter Vertical Tail

MODEL SCALE: 0.015 DRAWING NUMBER: SS-A00148, RELEASE 6

DRAWING NUMBER VL70-000146A

DIMENSIONS:	FULL SCALE	MODEL SCALE
TOTAL DATA		
Area (Theo) - Ft^2 Planform	413.253	0.093
Span (Theo) - In.	315.720	4.736
Aspect Ratio	1.675	1.675
Rate of Taper	0.507	0.507
Taper Ratio	0.404	0.404
Sweep-Back Angles, Degrees.		
Leading Edge	45.000	45.000
*Trailing Edge	26.2	26.2
0.25 Element Line	41.130	41.130
Chords:		
Root (Theo) WP	268.500	4.028
Tip (Theo) WP	108.470	1.627
MAC	199.808	2.997
Fus. Sta. of .25 MAC	1463.50	21.953
W.P. of .25 MAC	635.522	9.533
B.L. of .25 MAC	0.00	0.00
Airfoil Section		
Leading Wedge Angle - Deg.	10.00	10.00
Trailing Wedge Angle - Deg.	14.920	14.920
Leading Edge Radius	2.00	0.030
Void Area	13.17	0.030
Blanketed Area	0.00	0.00

TABLE III - Concluded

MODEL COMPONENT: WING-W

GENERAL DESCRIPTION: Configuration 4

NOTE: Identical to W_{114} except airfoil thickness.

Dihedral angle is along trailing edge of wing.

MODEL SCALE: 0.015 MODEL DRAWING: SS-AC0148

DRAWING NUMBER: V70-30-906-01 (Basic Control Drawing)

DIMENSIONS:	FULL-SCALE	MODEL SCALE
TOTAL DATA		
Area (Theo) Ft^2		
Planform	2690.00	0.605
Wetted		
Span (equivalent) (Theo) In.	936.68	14.050
Aspect Ratio	2.265	2.265
Rate of Taper	1.177	1.177
Taper Ratio	0.200	0.200
Dihedral Angle, degrees	3.500	3.500
Incidence Angle, degrees	0.500	0.500
Aerodynamic Twist, degrees	+3.000	+3.000
Toe-In Angle		
Cant Angle		
Sweep Back Angles, degrees		
Leading Edge	45.000	45.000
Trailing Edge	-10.056	-10.056
0.25 Element Line	35.209	35.209
Chords:		
Root (Wing Sta. 0.0) (Theo) B.P.0.0.	689.24	10.339
Tip, (equivalent) (Theo) B.P.	137.85	2.068
MAC	474.81	7.122
Fus. Sta. of .25 MAC	1136.83	17.052
W.P. of .25 MAC	290.58	4.359
B.L. of .25 MAC	182.13	2.732
Airfoil Section		
Root		
Tip		
EXPOSED DATA		
Area Ft^2	1751.50	0.394
Span, (equivalent) (Theo) In. BP103	720.68	10.810
Aspect Ratio	2.059	2.059
Taper Ratio	0.245	0.245
Chords		
Root BP108	562.09	8.431
Tip 1.00 $\frac{b}{2}$	137.85	2.068
MAC	392.83	5.892
Fus. Sta. of .25 MAC	1185.98	17.790
W.P. of .25 MAC	294.30	4.415
B.L. of .25 MAC	251.77	3.777

Notes:

1. Positive directions of force coefficients, moment coefficients, and angles are indicated by arrows
2. For clarity, origins of wind and stability axes have been displaced from the center of gravity

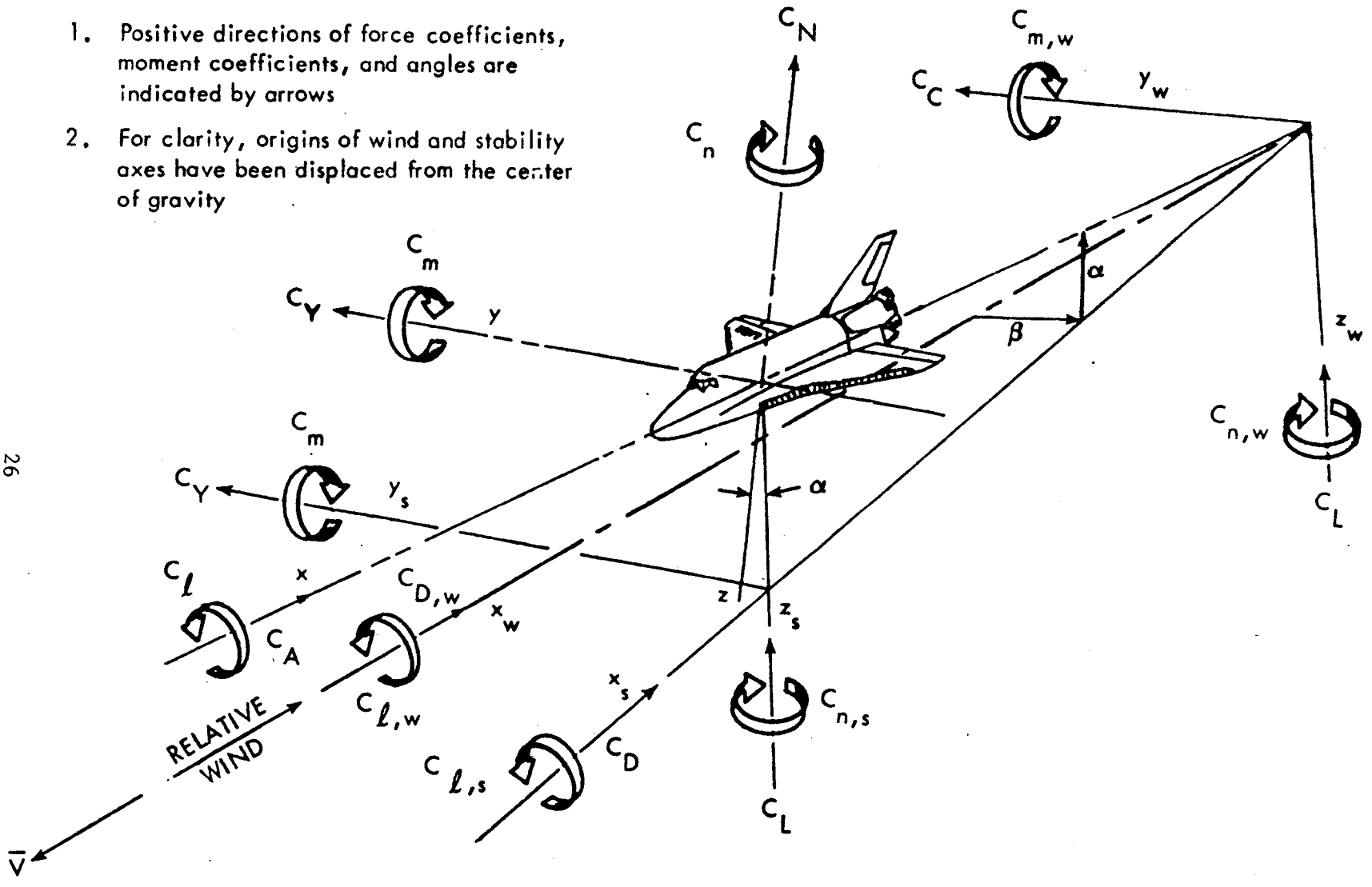
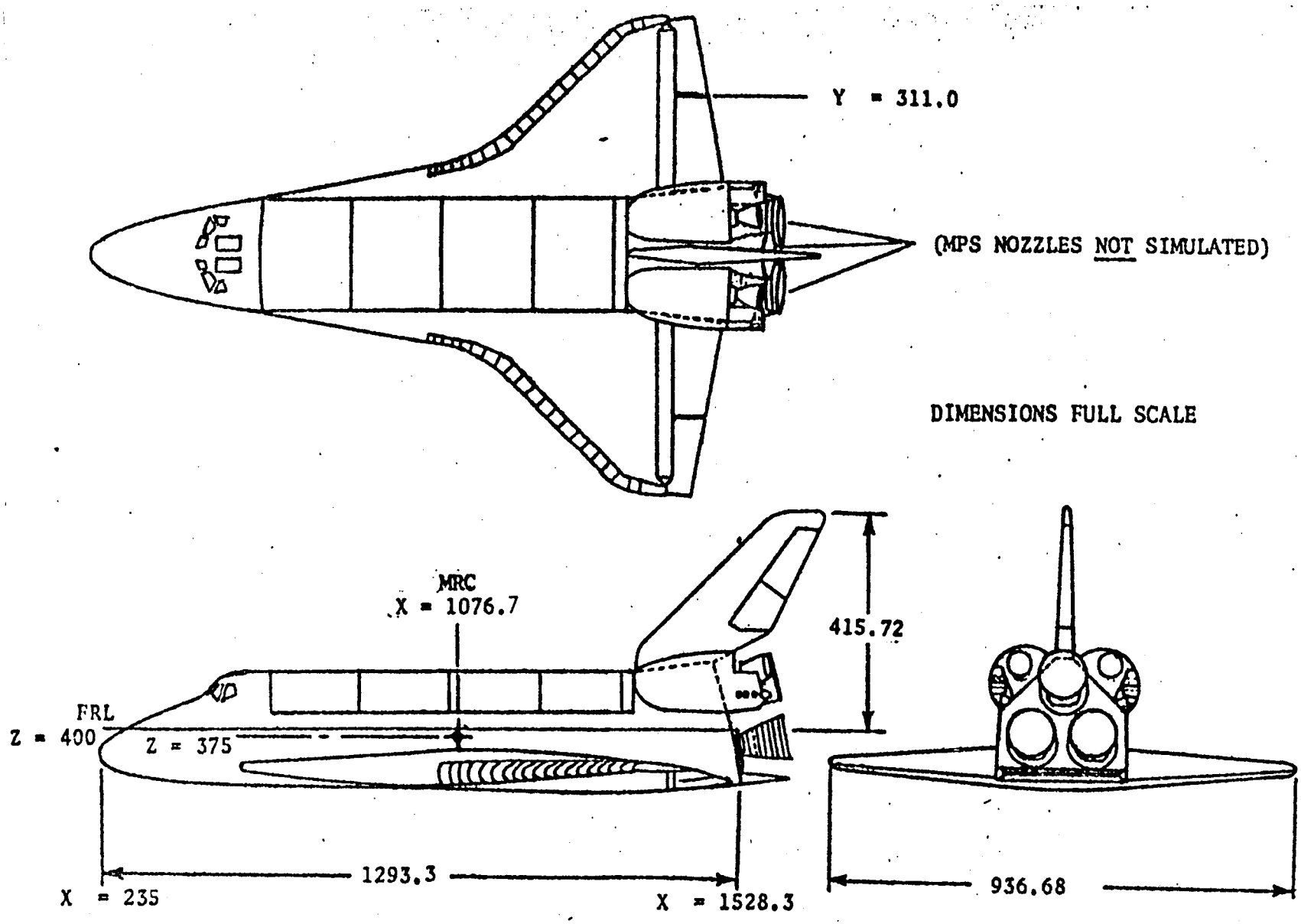
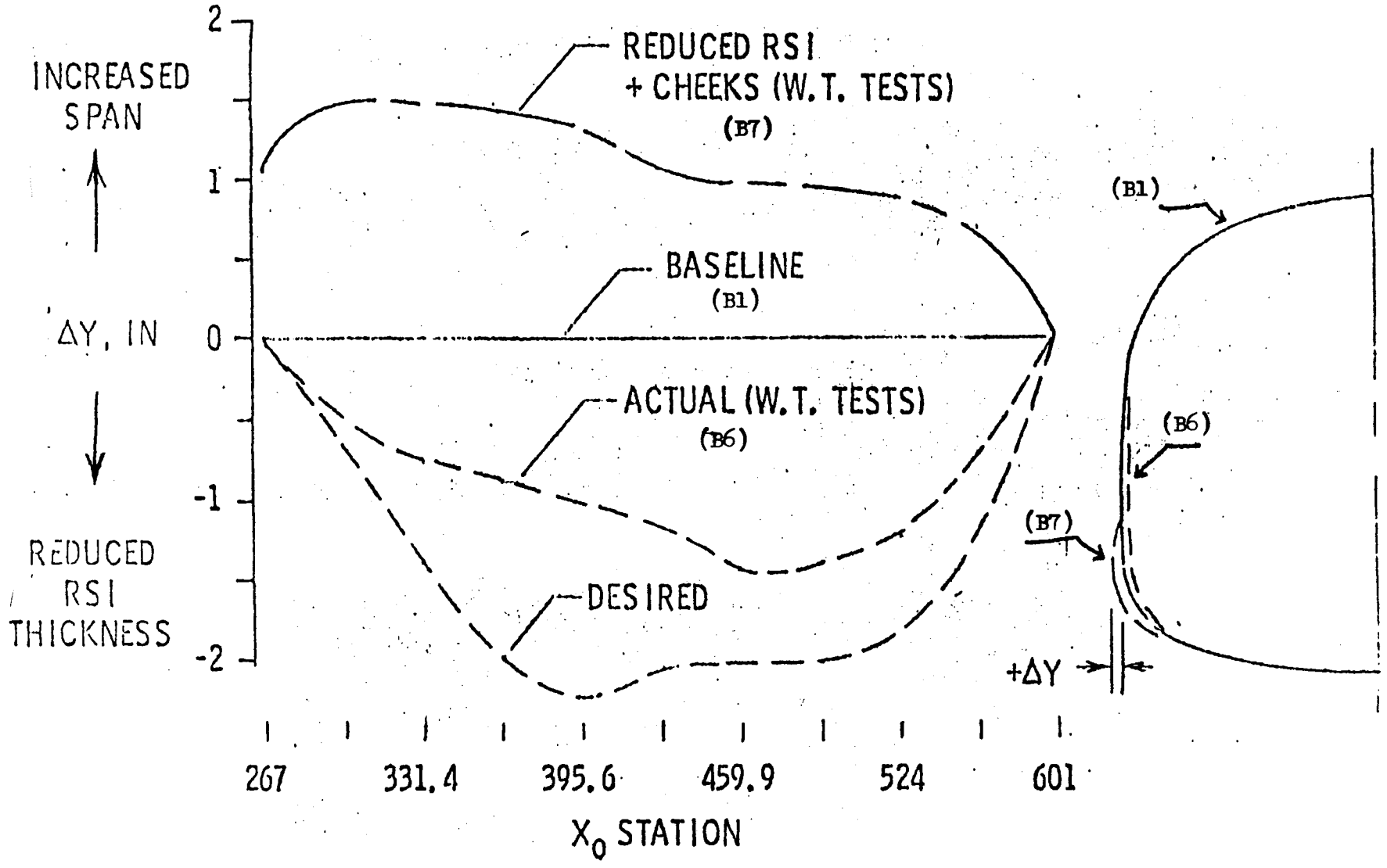


Figure 1. - Axis systems.



a. Shuttle Orbiter General Arrangement

Figure 2. - Model sketches.

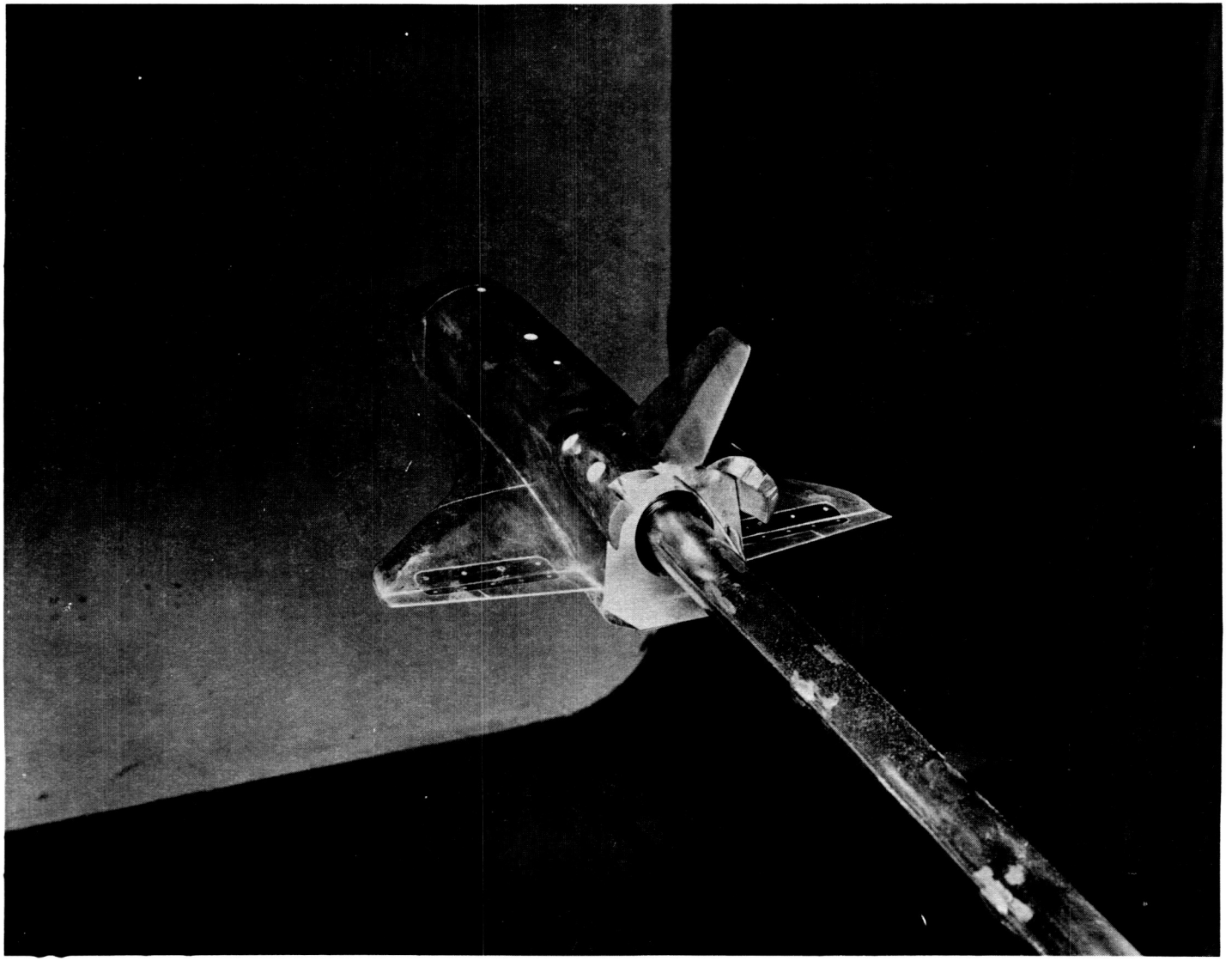


b. Orbiter Forebody RSI Modification

Figure 2. - Concluded.

a. Orbiter Configuration, Front, 3/4 View

Figure 3. Model Photographs



b. Orbiter Configuration, Rear, 3/4 View

Figure 3. Concluded

DATA FIGURES

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	MACH	BETA	BDFLAP	ELEVON
(RJE001)	○	LARC LTPT 227 (LA73) B1WVSOEF	.250	.000	-11.700	.000
(RK6001)	□	LARC LTPT 238(LA73B) B6WVSOEF	.250	.000	-11.700	.000
(RJE003)	◇	LARC LTPT 227 (LA73) B7WVSOEF	.250	.000	-11.700	.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8000	INCHES
BREF	936.6800	INCHES
XMRP	1076.7000	IN. XO
YMRP	.0000	IN. YO
ZMRP	375.0000	IN. ZO
SCALE	.0150	

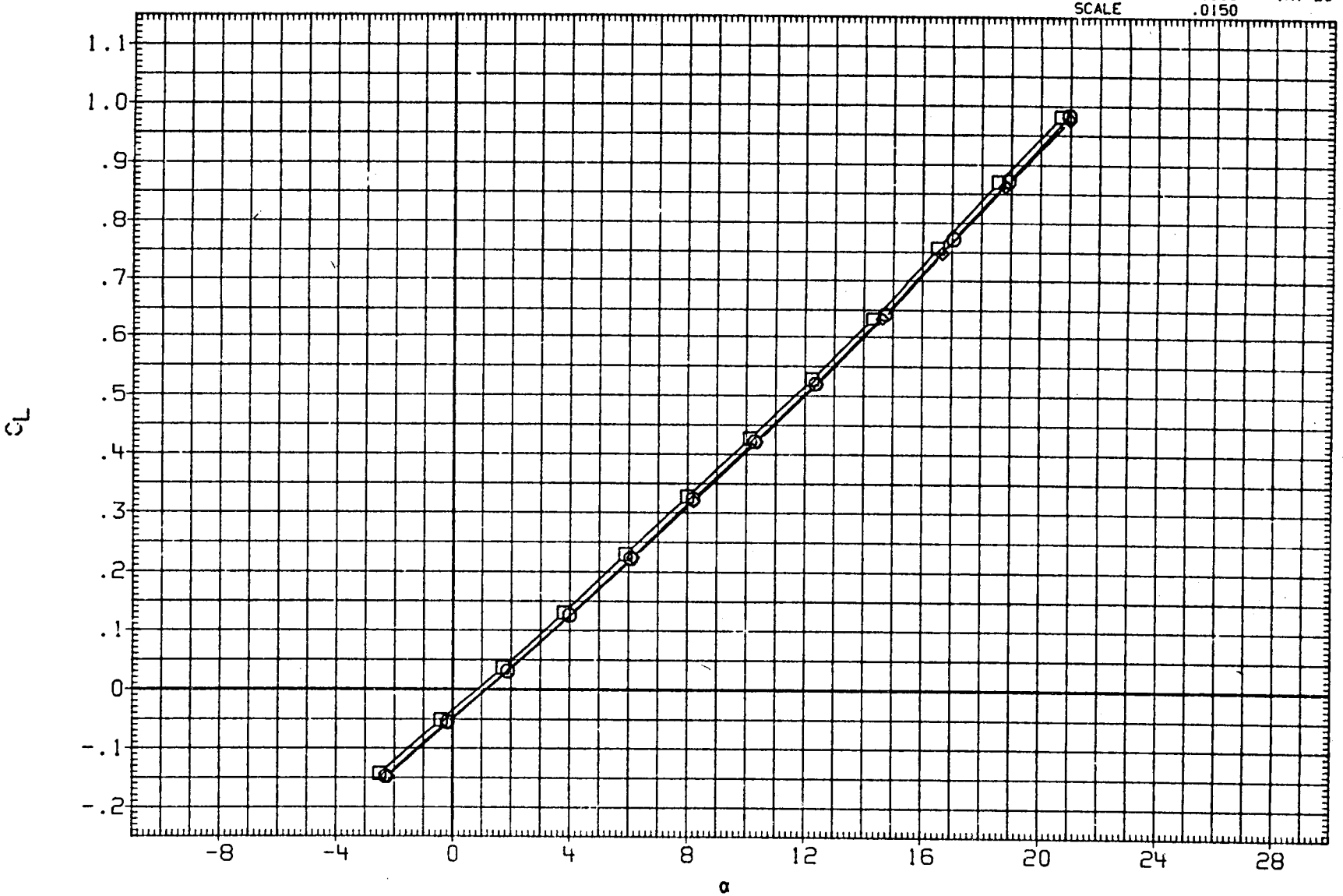


FIGURE 4. AERODYNAMIC CHARACTERISTICS OF B1, B6 AND B7 FOREBODY AT CONSTANT REYNOLDS NUMBER, BETA=0 DEG

(A)RN/L = 4.07

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	MACH	BETA	BDFLAP	ELEVON
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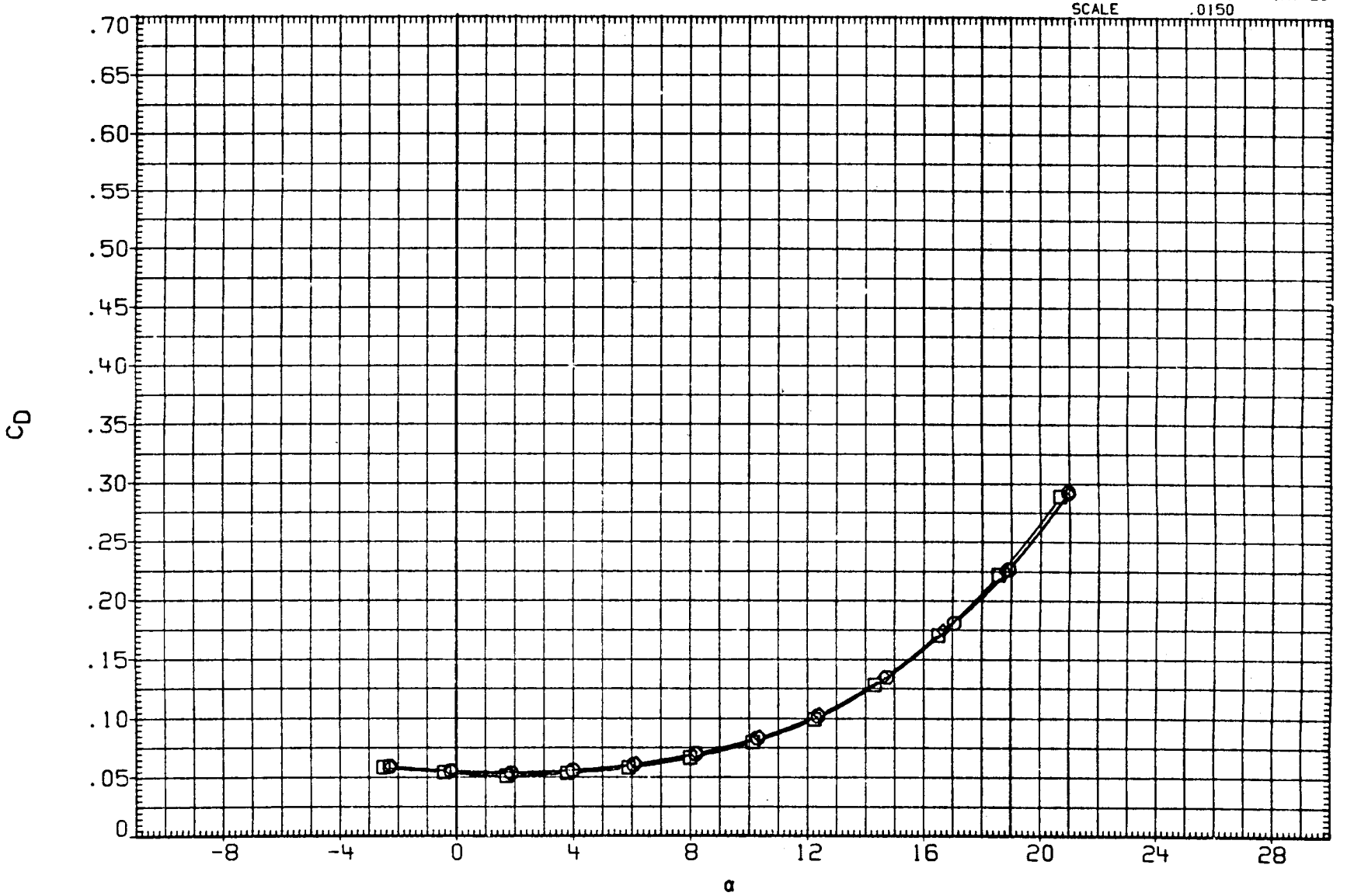

FIGURE 4. AERODYNAMIC CHARACTERISTICS OF B1, B6 AND B7 FOREBODY AT CONSTANT REYNOLDS NUMBER, BETA=0 DEG

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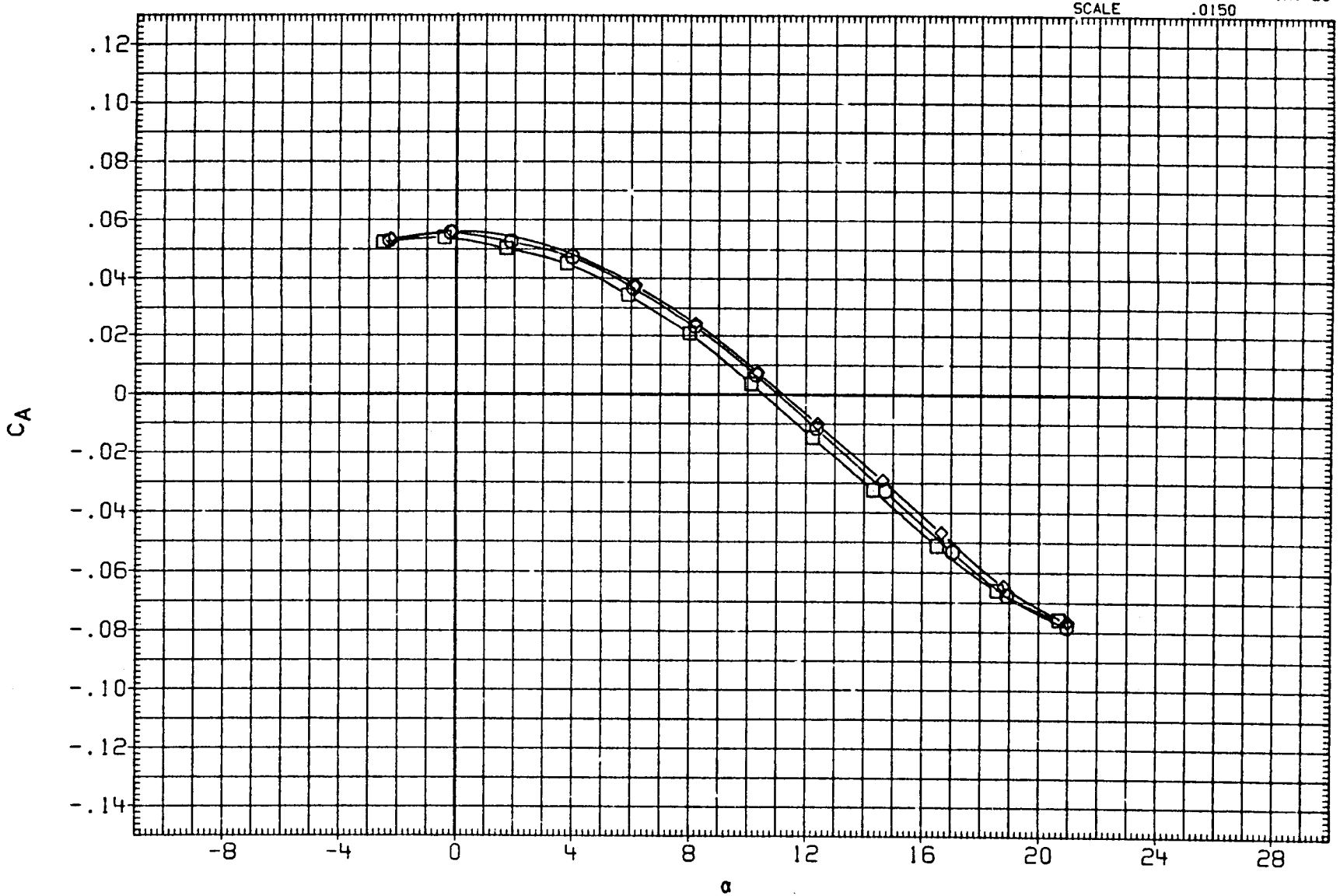

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(RK6001)	□	LARC LTPT 238(LA73B) B6WVS0EF	.250	.000	-11.700	.000
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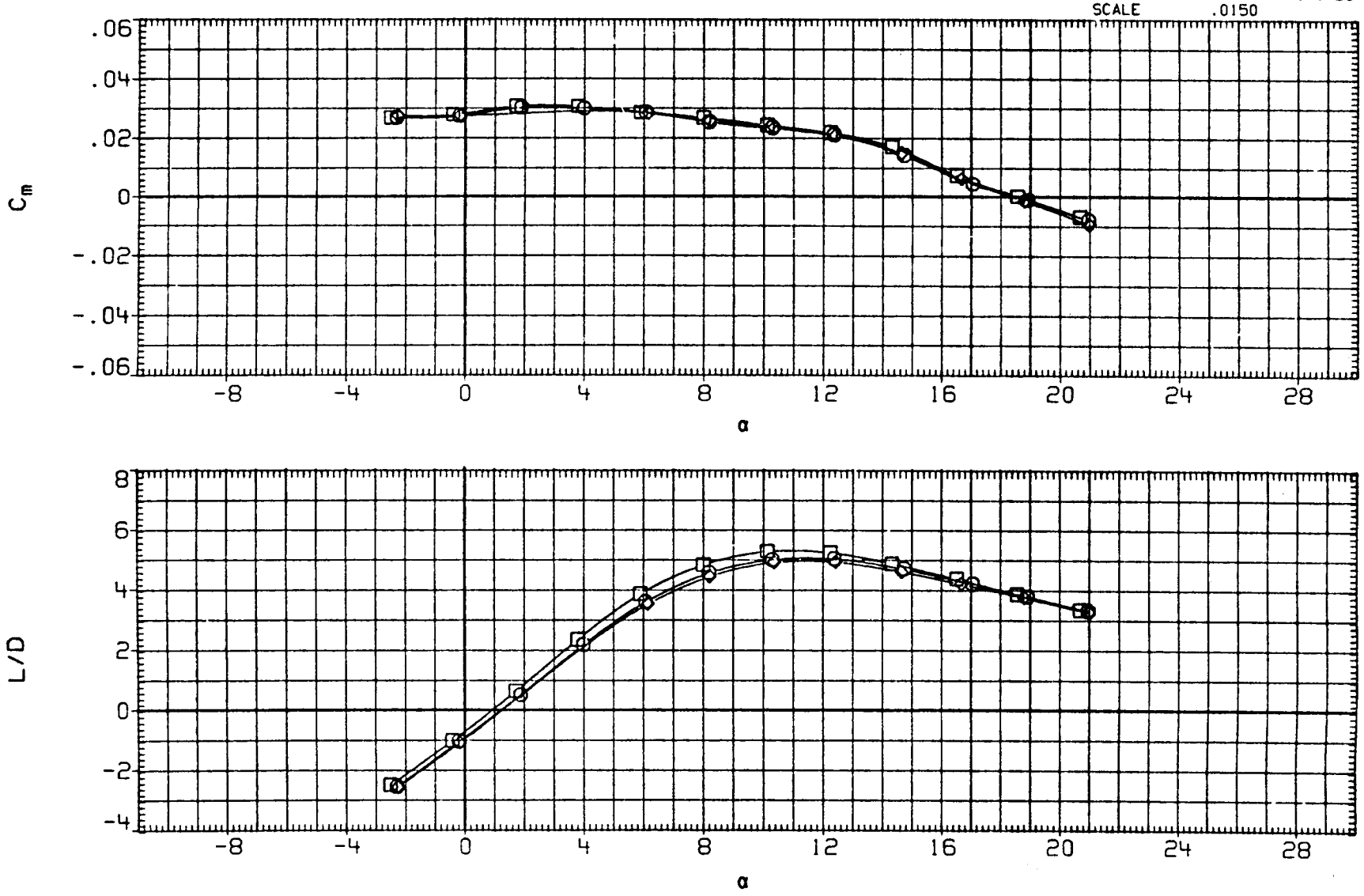

FIGURE 4. AERODYNAMIC CHARACTERISTICS OF B1, B6 AND B7 FOREBODY AT CONSTANT REYNOLDS NUMBER, BETA=0 DEG

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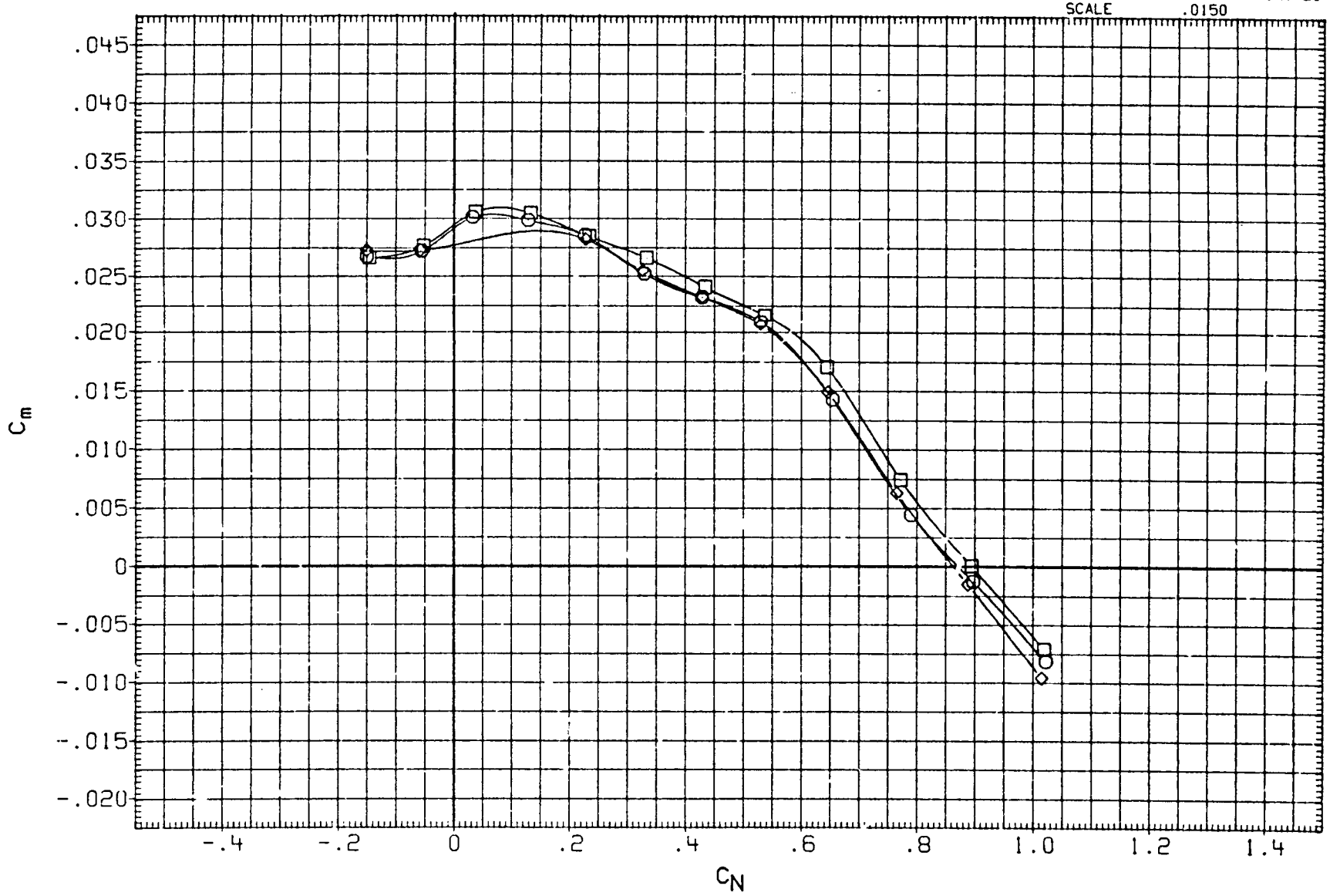

FIGURE 4. AERODYNAMIC CHARACTERISTICS OF B1, B6 AND B7 FOREBODY AT CONSTANT REYNOLDS NUMBER, BETA=0 DEG

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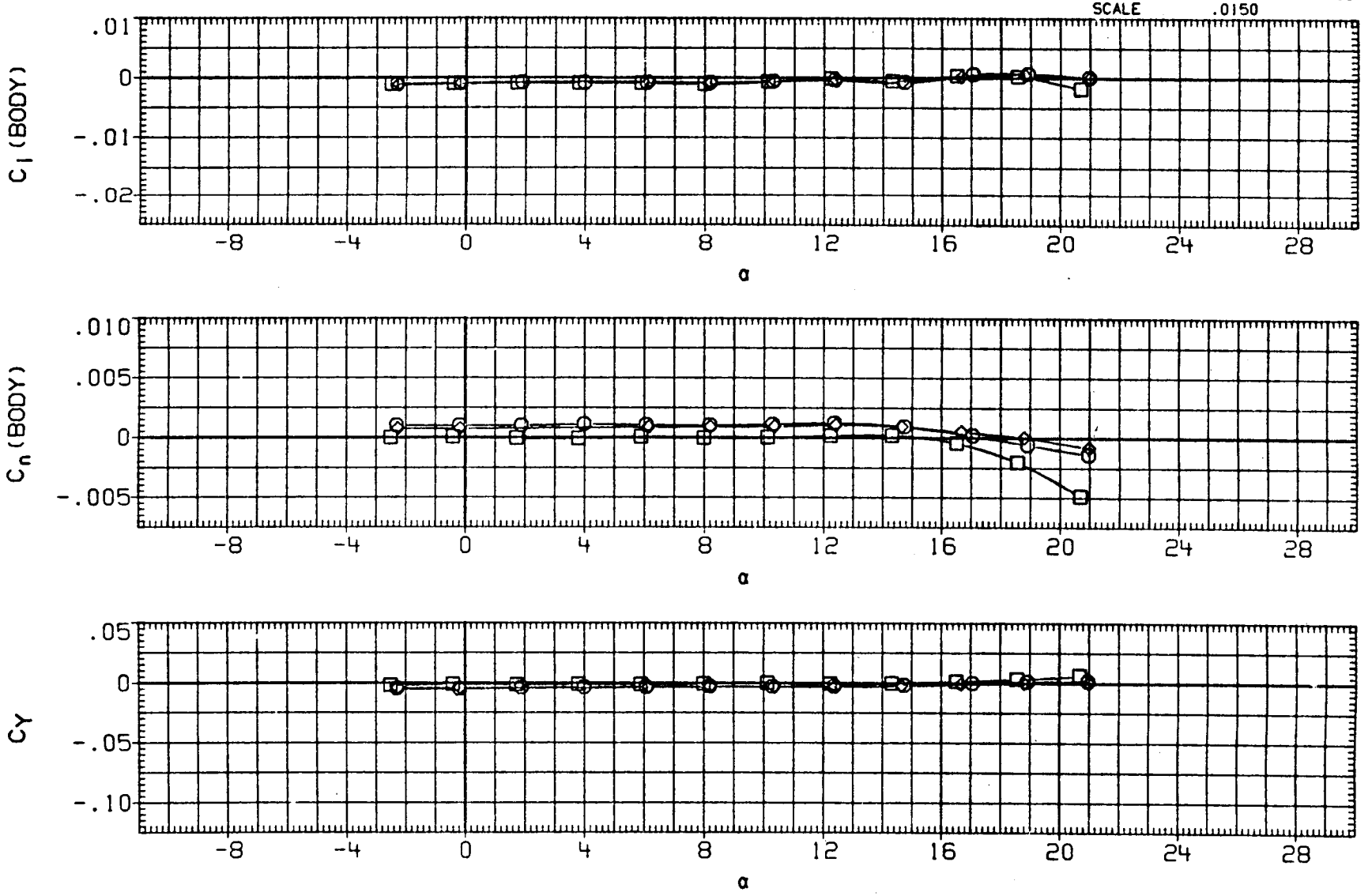

FIGURE 4. AERODYNAMIC CHARACTERISTICS OF B1, B6 AND B7 FOREBODY AT CONSTANT REYNOLDS NUMBER, BETA=0 DEG

(A)RN/L = 4.07

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	MACH	BETA	BDFLAP	ELEVON
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ZMRP	375.0000	IN. ZO
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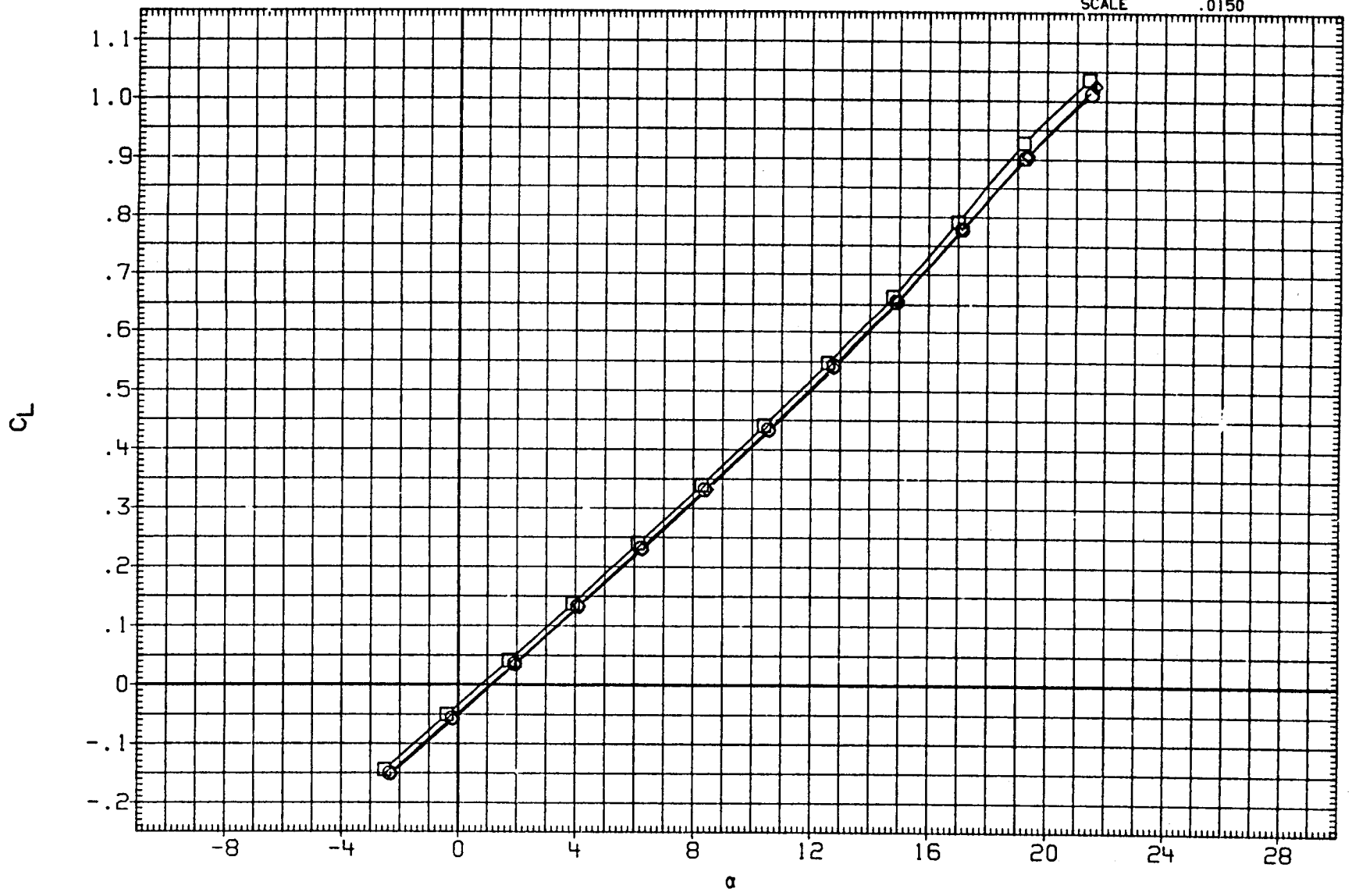

FIGURE 4. AERODYNAMIC CHARACTERISTICS OF B1, B6 AND B7 FOREBODY AT CONSTANT REYNOLDS NUMBER, BETA=0 DEG

(B)RN/L = 6.04

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	MACH	BETA	BDFLAP	ELEVON
(RJE001)	○	LARC LTPT 227 (LA73) B1WVSOEF	.250	.000	-11.700	.000
(RK6001)	□	LARC LTPT 238(LA73B) B6WVSOEF	.250	.000	-11.700	.000
(RJE003)	◇	LARC LTPT 227 (LA73) B7WVSOEF	.250	.000	-11.700	.000

REFERENCE INFORMATION		
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YMRP	.0000	IN. YO
ZMRP	375.0000	IN. ZO
SCALE	.0150	

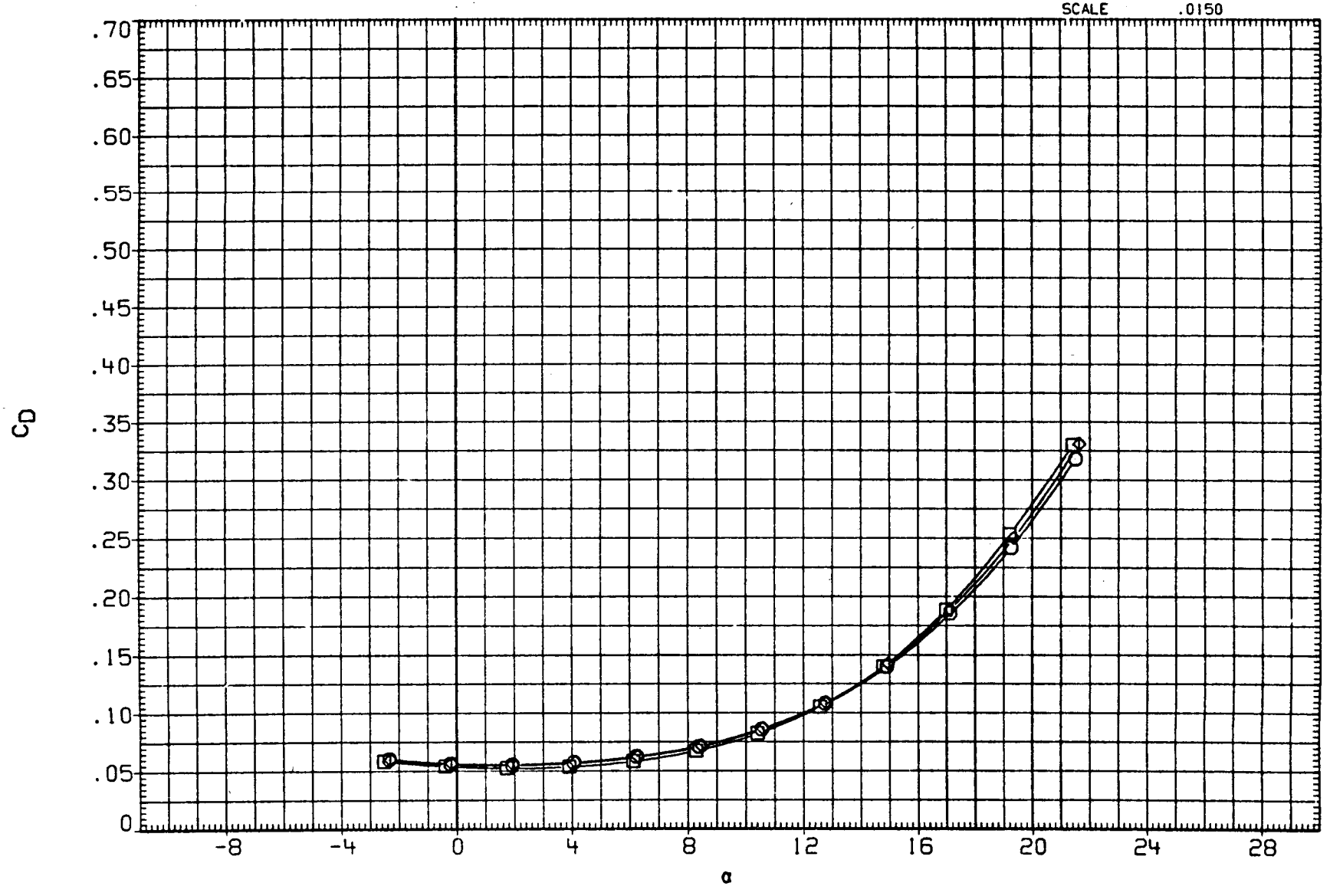

FIGURE 4. AERODYNAMIC CHARACTERISTICS OF B1, B6 AND B7 FOREBODY AT CONSTANT REYNOLDS NUMBER, BETA=0 DEG

(B)RN/L = 6.04

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	MACH	BETA	BDFLAP	ELEVON
(RJE001)	○	LARC LTPT 227 (LA73) B1WVSOEF	.250	.000	-11.700	.000
(RK6001)	□	LARC LTPT 238(LA73B) B6WVSOEF	.250	.000	-11.700	.000
(RJE003)	◇	LARC LTPT 227 (LA73) B7WVSOEF	.250	.000	-11.700	.000

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YMRP	.0000	IN. YO
ZMRP	375.0000	IN. ZO
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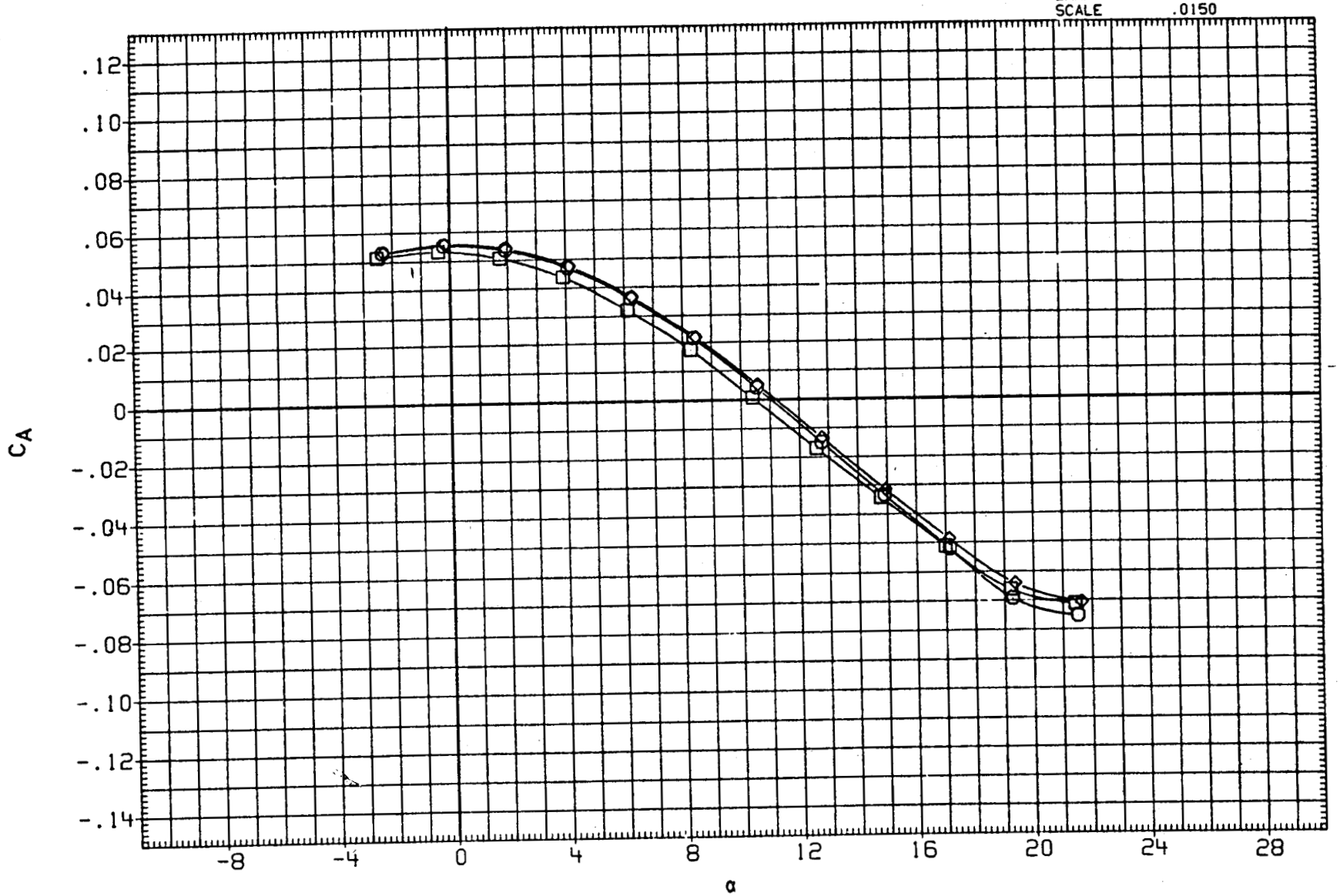

FIGURE 4. AERODYNAMIC CHARACTERISTICS OF B1, B6 AND B7 FOREBODY AT CONSTANT REYNOLDS NUMBER, BETA=0 DEG

(B)RN/L = 6.04

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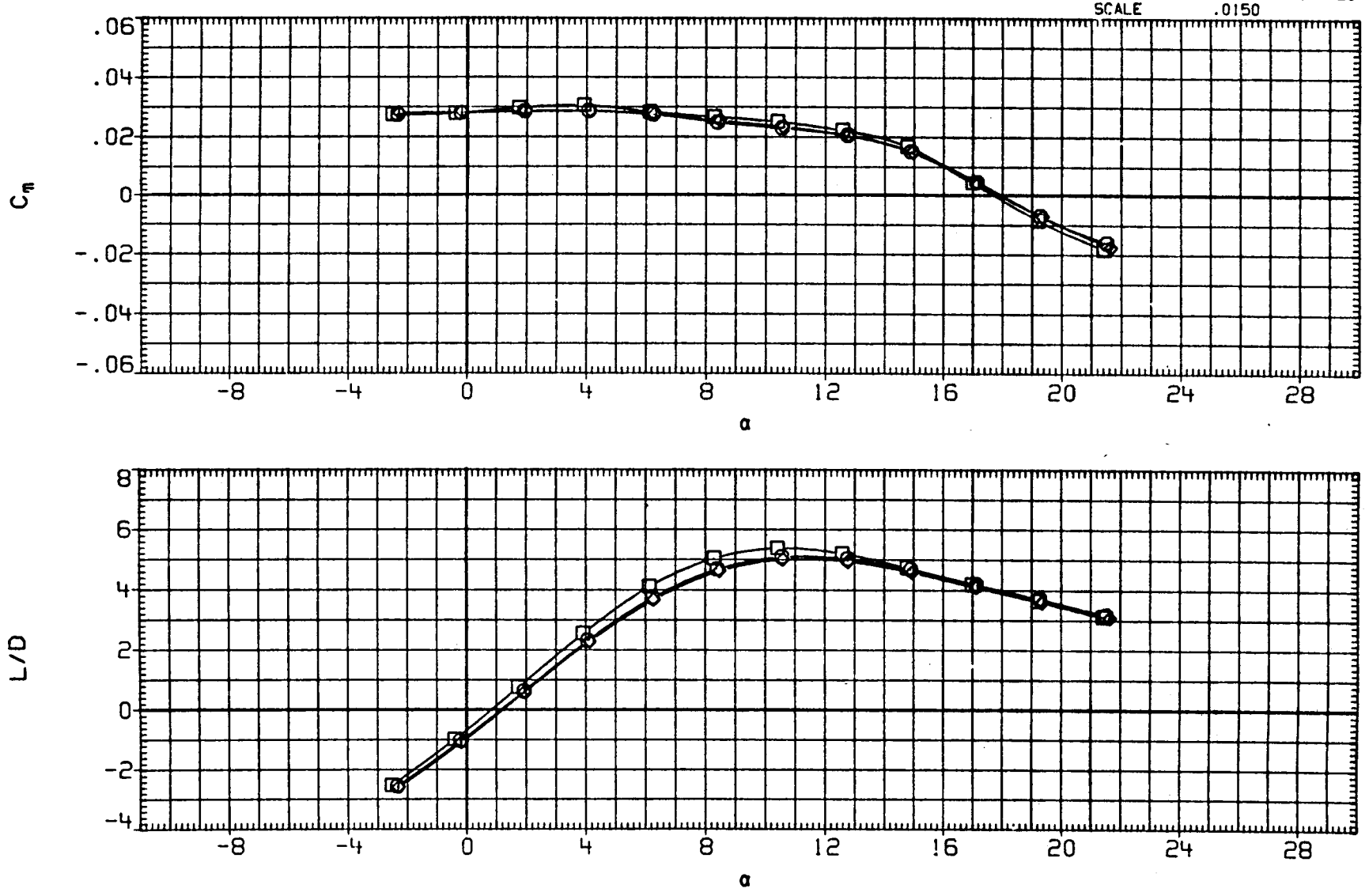

FIGURE 4. AERODYNAMIC CHARACTERISTICS OF B1, B6 AND B7 FOREBODY AT CONSTANT REYNOLDS NUMBER, BETA=0 DEG

(B)RN/L = 6.04

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	MACH	BETA	BDFLAP	ELEVON
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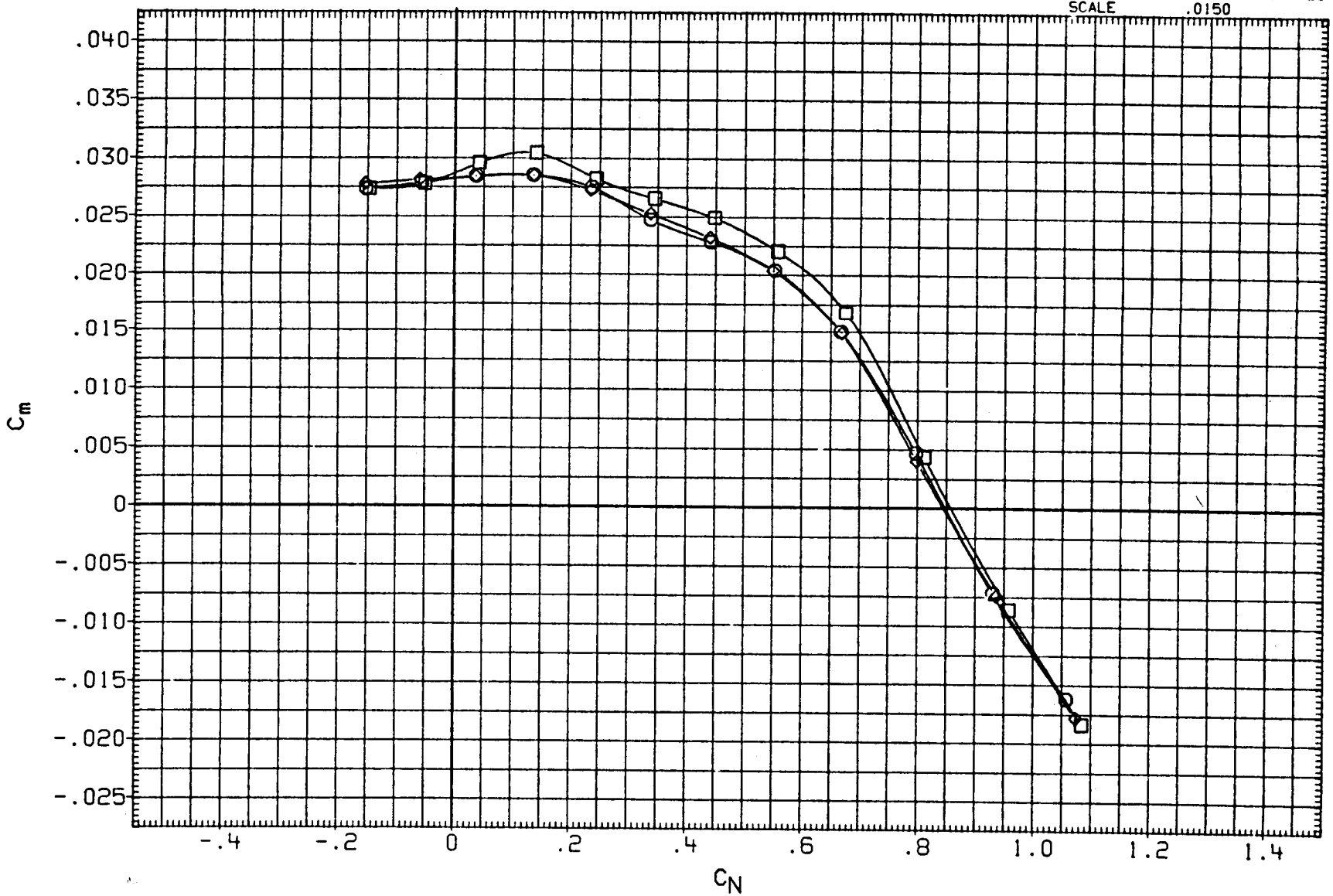

FIGURE 4. AERODYNAMIC CHARACTERISTICS OF B1, B6 AND B7 FOREBODY AT CONSTANT REYNOLDS NUMBER, BETA=0 DEG

(B)RN/L = 6.04

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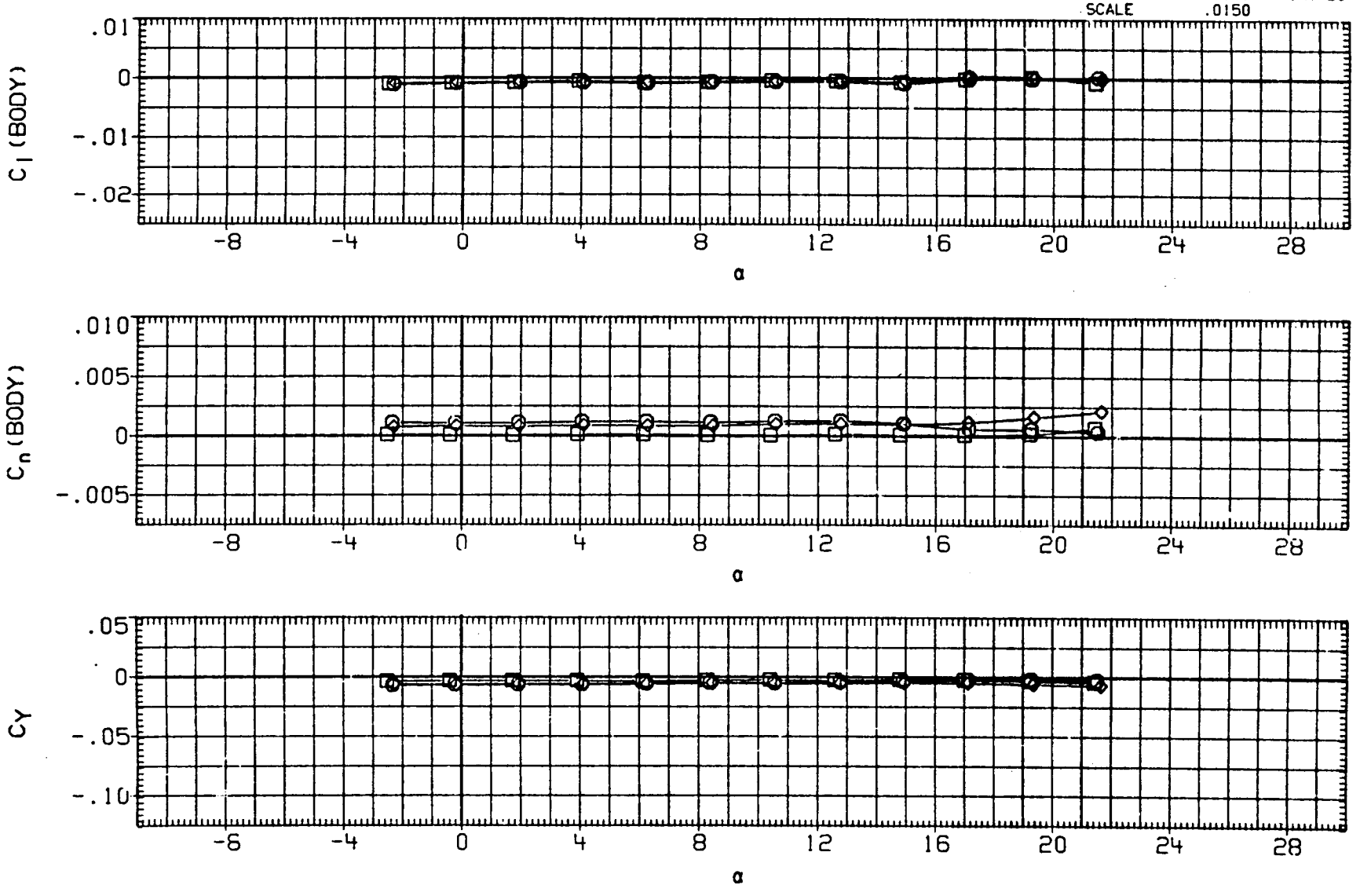

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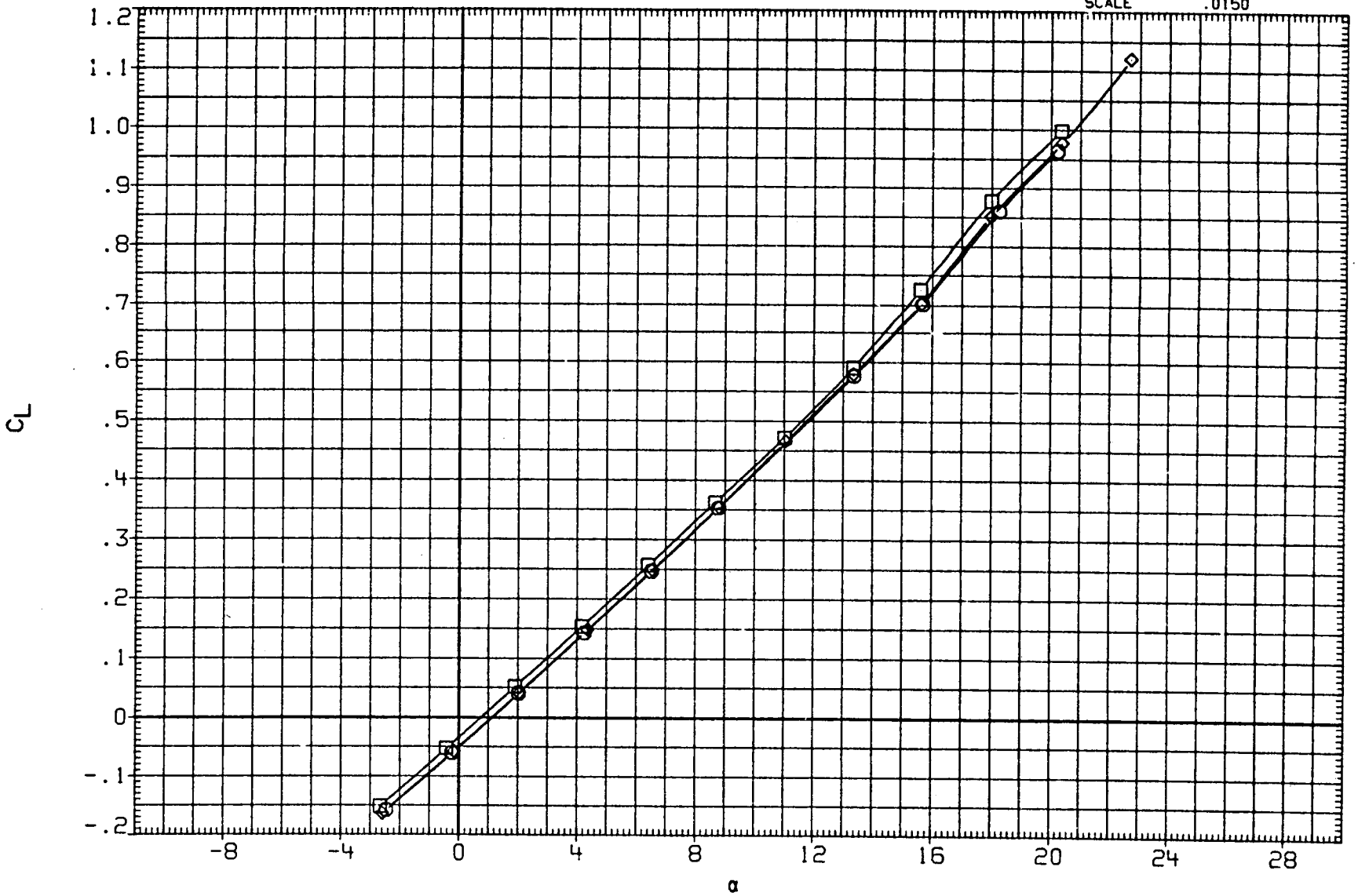

FIGURE 4. AERODYNAMIC CHARACTERISTICS OF B1, B6 AND B7 FOREBODY AT CONSTANT REYNOLDS NUMBER, BETA=0 DEG

(C)RN/L = 9.07

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	MACH	BETA	BDFLAP	ELEVON
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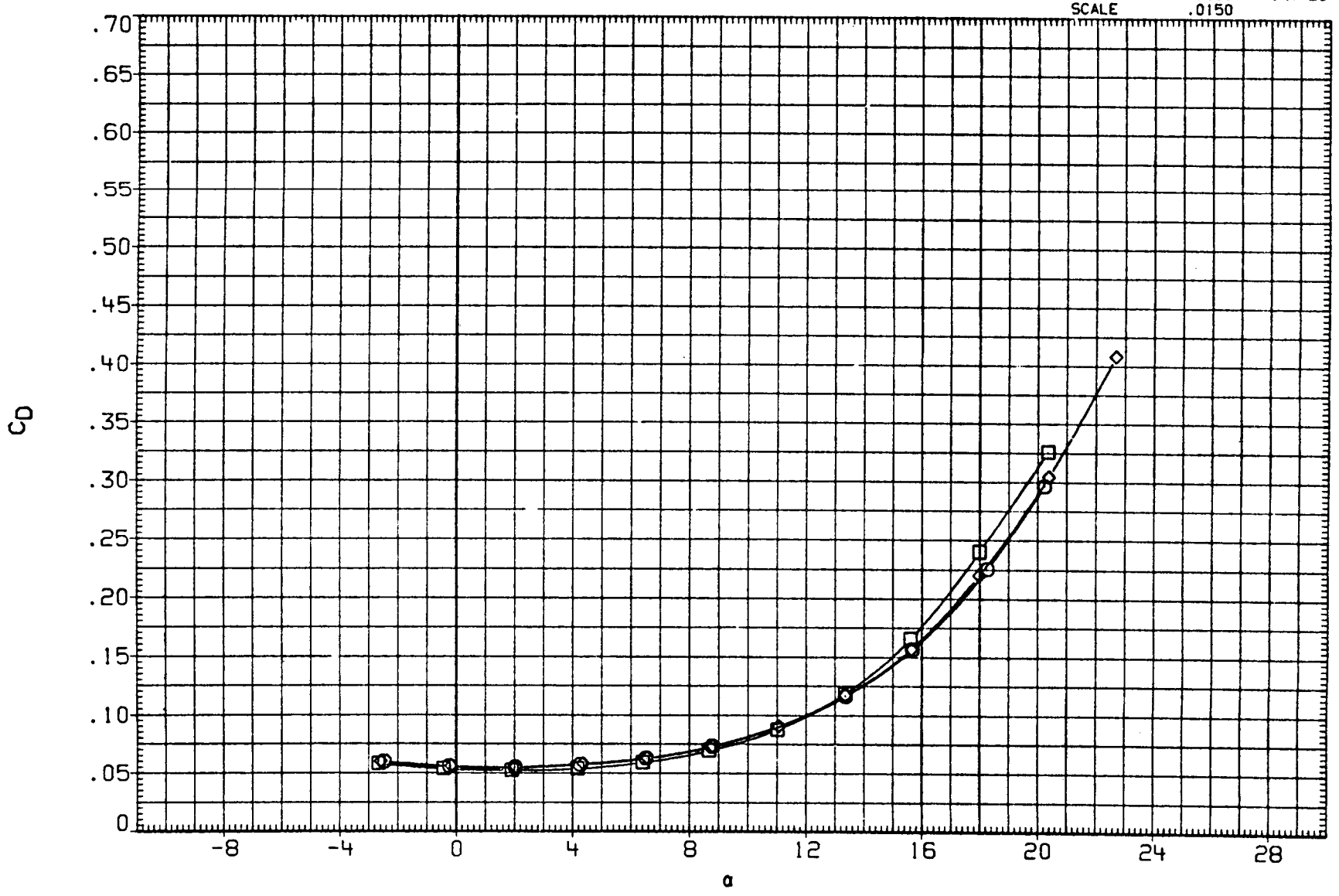
SCALE	.0150	



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(C)RN/L = 9.07

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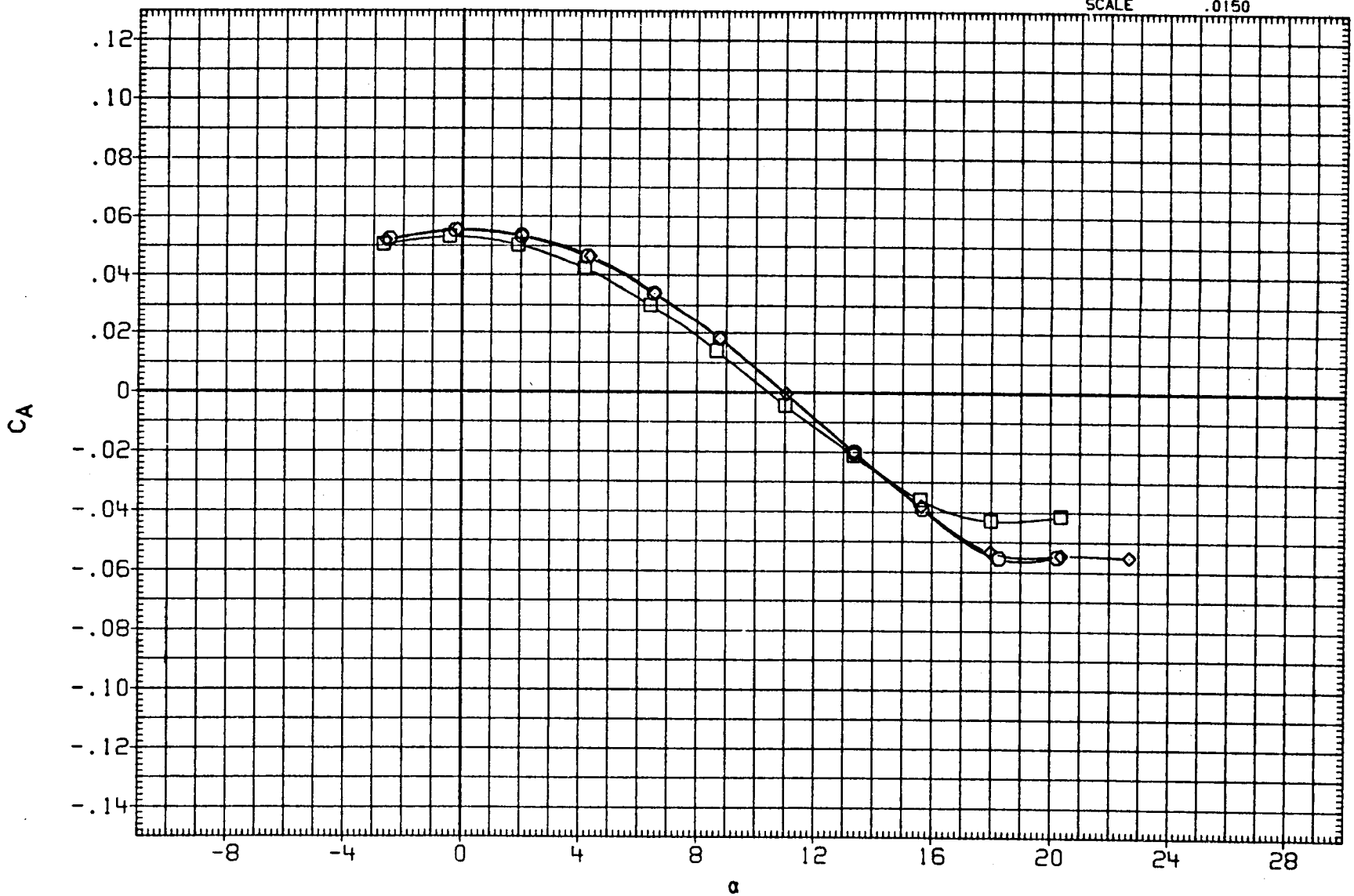

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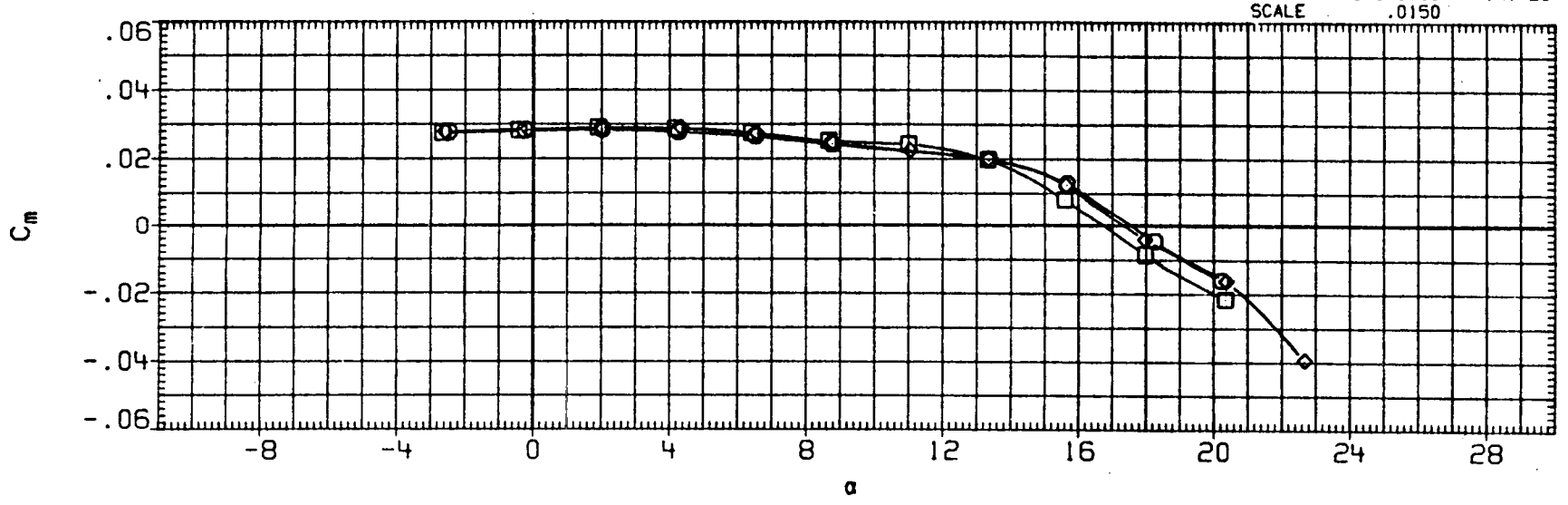
SCALE	.0150	



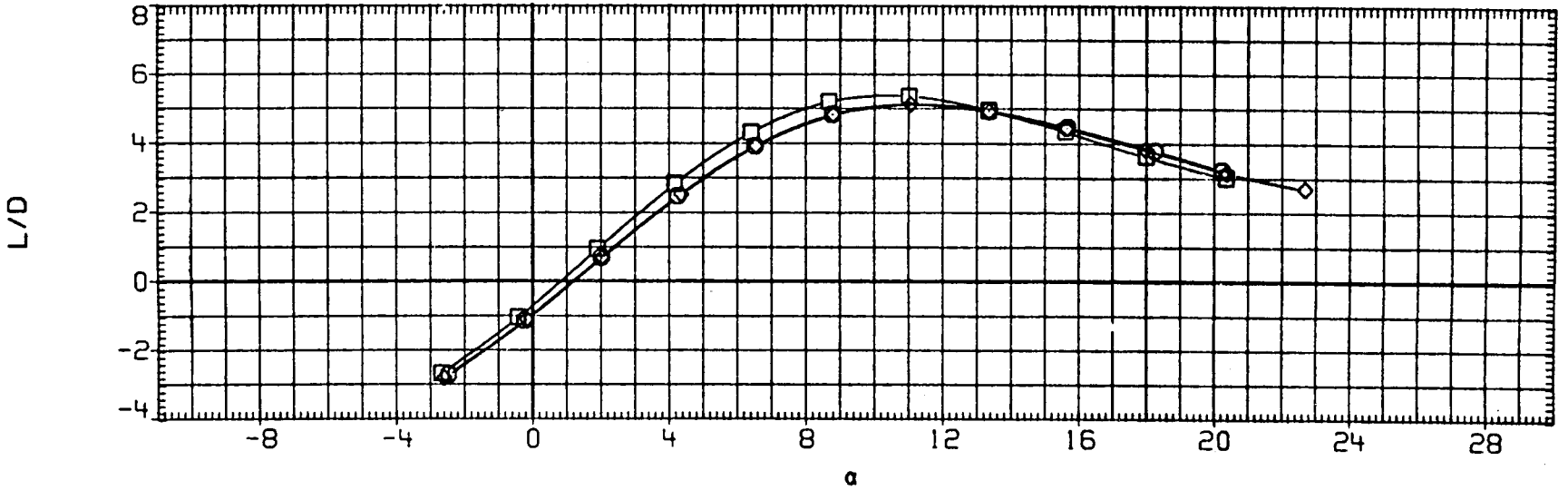


FIGURE 4. AERODYNAMIC CHARACTERISTICS OF B1, B6 AND B7 FOREBODY AT CONSTANT REYNOLDS NUMBER, BETA=0 DEG

(C)RN/L = 9.07

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	MACH	BETA	BDFLAP	ELEVON
(RJE001)	○	LARC LTPT 227 (LA73) B1WVSOEF	.250	.000	-11.700	.000
(RK6001)	□	LARC LTPT 238(LA73B) B6WVSOEF	.250	.000	-11.700	.000
(RJE003)	◇	LARC LTPT 227 (LA73) B7WVSOEF	.250	.000	-11.700	.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8000	INCHES
BREF	936.6800	INCHES
XMRP	1076.7000	IN. XO
YMRP	.0000	IN. YO
ZMRP	375.0000	IN. ZO
SCALE	.0150	

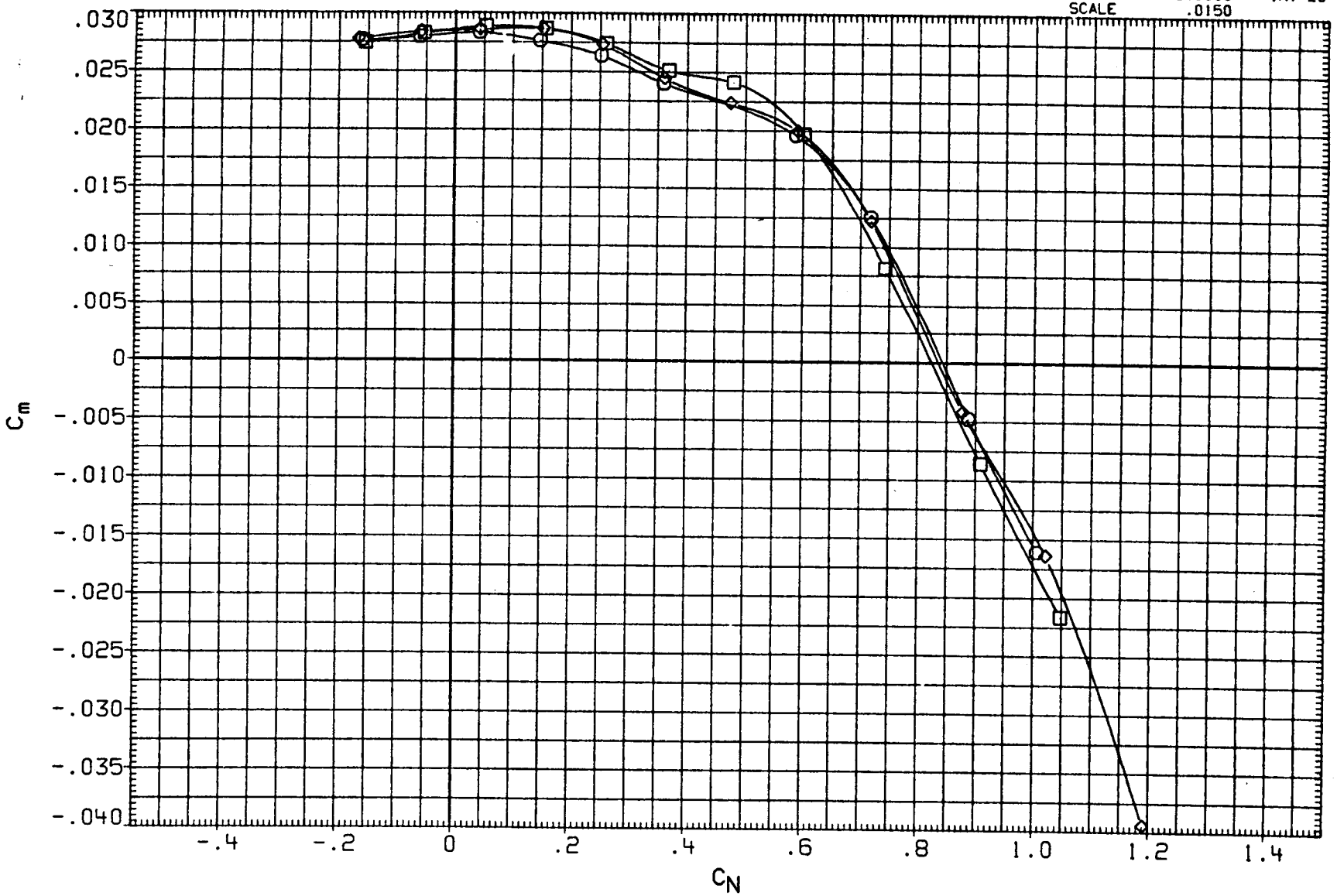


FIGURE 4. AERODYNAMIC CHARACTERISTICS OF B1, B6 AND B7 FOREBODY AT CONSTANT REYNOLDS NUMBER, BETA=0 DEG

(C)RN/L = 9.07

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	MACH	BETA	BDFLAP	ELEVON
(RJE001)	○	LARC LTPT 227 (LA73) B1WVSOEF	.250	.000	-11.700	.000
(RK6001)	□	LARC LTPT 238(LA73B) B6WVSOEF	.250	.000	-11.700	.000
(RJE003)	◇	LARC LTPT 227 (LA73) B7WVSOEF	.250	.000	-11.700	.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8000	INCHES
BREF	936.6800	INCHES
XMRP	1076.7000	IN. XO
YMRP	.0000	IN. YO
ZMRP	375.0000	IN. ZO
SCALE	.0150	

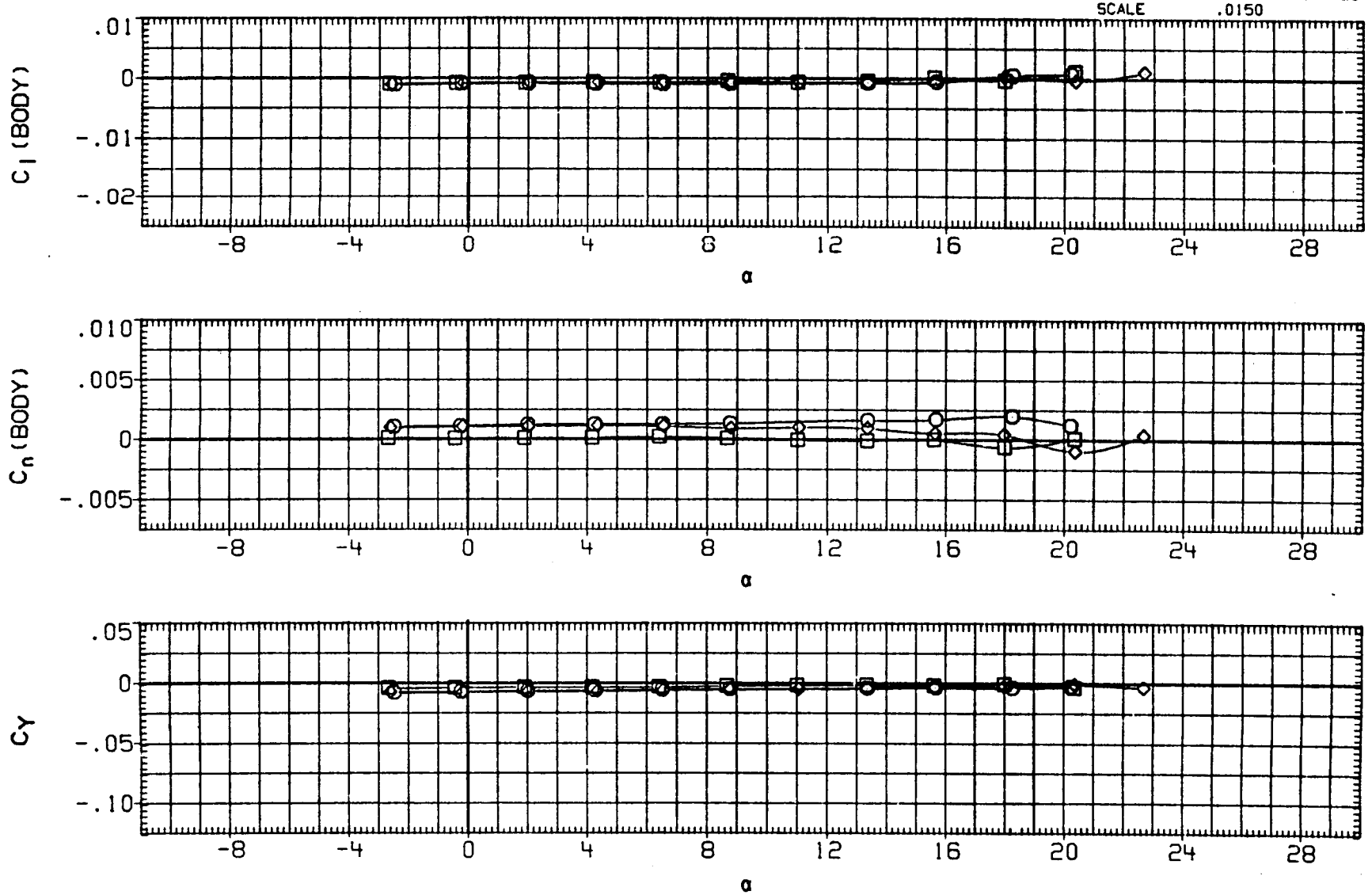


FIGURE 4. AERODYNAMIC CHARACTERISTICS OF B1, B6 AND B7 FOREBODY AT CONSTANT REYNOLDS NUMBER, BETA=0 DEG

(C)RN/L = 9.07

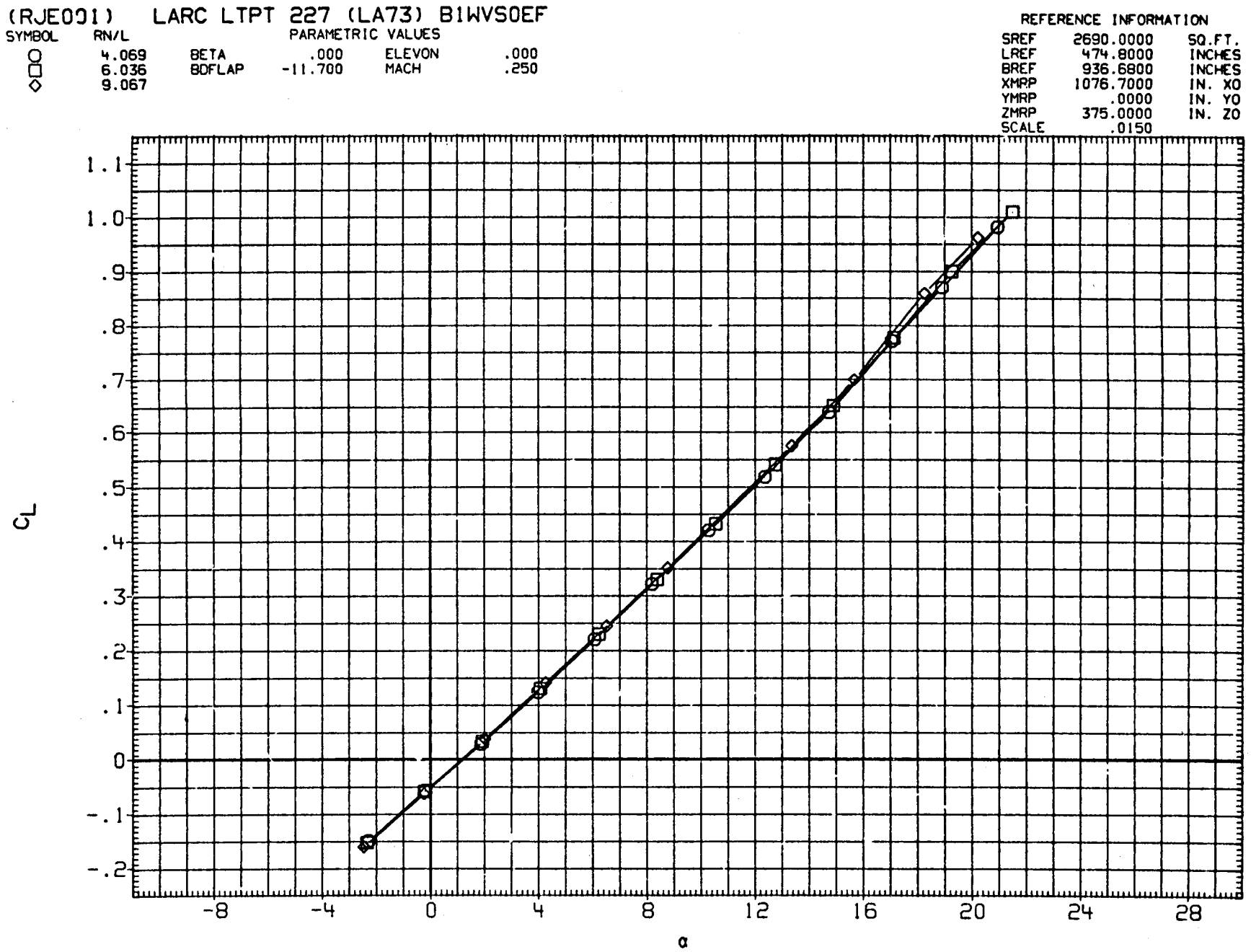


FIGURE 5. EFFECT OF REYNOLDS NUMBER ON AERODYNAMIC CHARACTERISTICS OF B1 FOREBODY, BETA=0 DEG

(RJE001) LARC LTPT 227 (LA73) B1WVS0EF

SYMBOL	RN/L	PARAMETRIC VALUES			
○	4.069	BETA	.000	ELEVON	.000
□	6.036	BDFLAP	-11.700	MACH	.250
◇	9.067				

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8000	INCHES
BREF	936.6800	INCHES
XMRP	1076.7000	IN. XO
YMRP	.0000	IN. YO
ZMRP	375.0000	IN. ZO
SCALE	.0150	

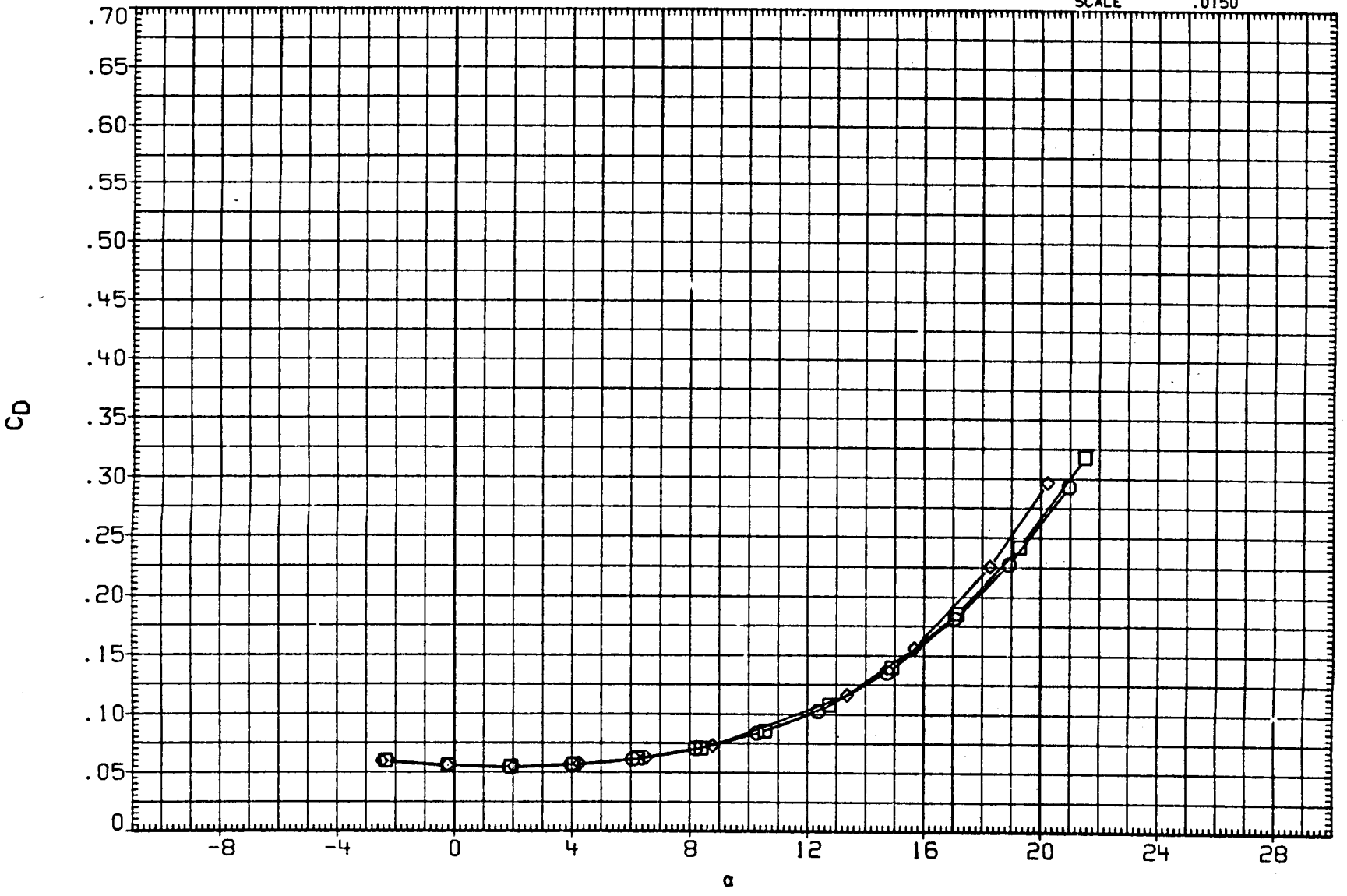


FIGURE 5. EFFECT OF REYNOLDS NUMBER ON AERODYNAMIC CHARACTERISTICS OF B1 FOREBODY, BETA=0 DEG

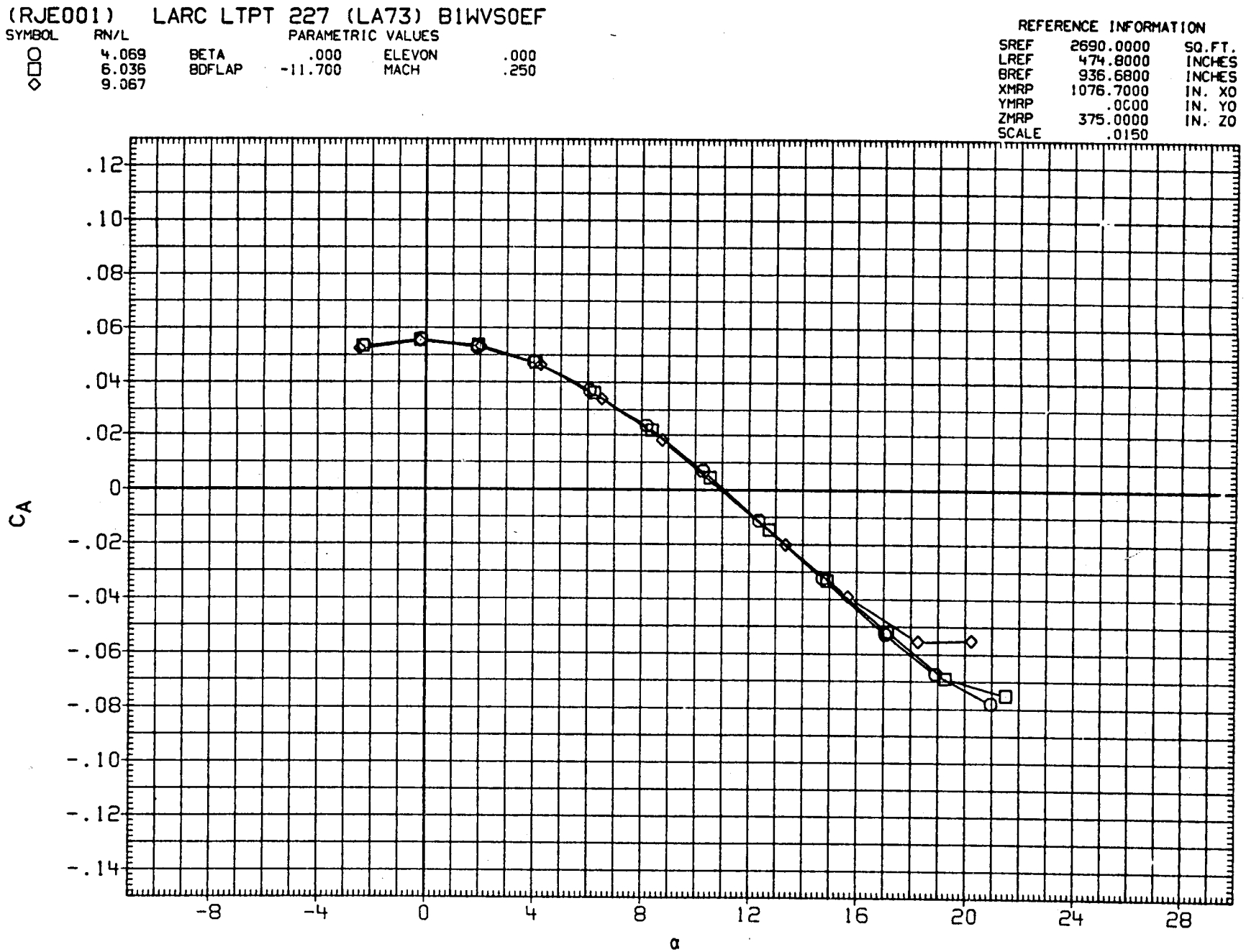


FIGURE 5. EFFECT OF REYNOLDS NUMBER ON AERODYNAMIC CHARACTERISTICS OF B1 FOREBODY, BETA=0 DEG

(RJE001) LARC LTPT 227 (LA73) B1WVS0EF

SYMBOL	RN/L	PARAMETRIC VALUES			
○	4.069	BETA	.000	ELEVON	.000
□	6.036	BDFLAP	-11.700	MACH	.250
◇	9.067				

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8000	INCHES
BREF	936.6800	INCHES
XMRP	1076.7000	IN. XO
YMRP	.0000	IN. YO
ZMRP	375.0000	IN. ZO
SCALE	.0150	

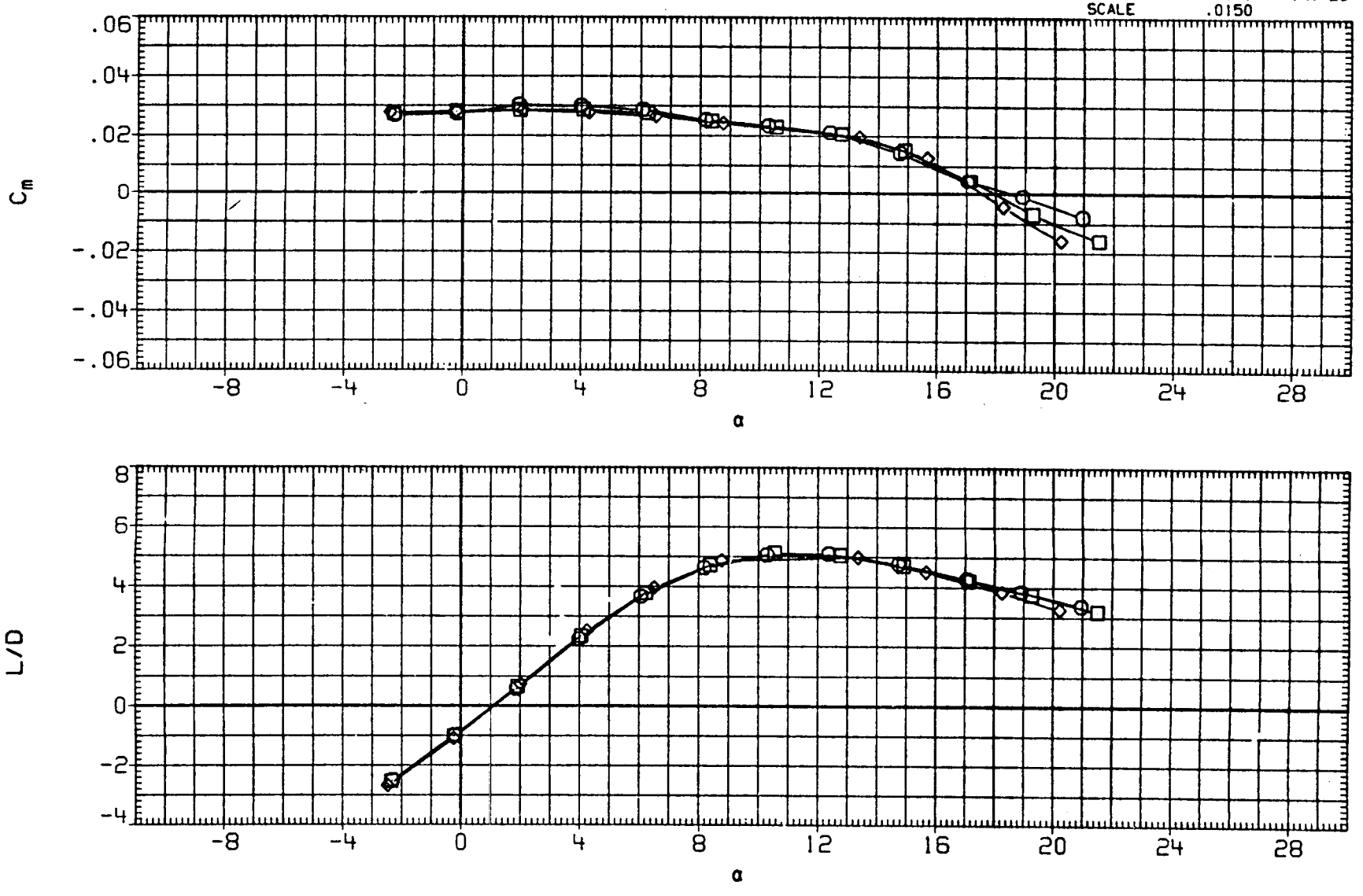


FIGURE 5. EFFECT OF REYNOLDS NUMBER ON AERODYNAMIC CHARACTERISTICS OF B1 FOREBODY, BETA=0 DEG

(RJE001) LARC LTPT 227 (LA73) B1WVS0EF

SYMBOL	RN/L	PARAMETRIC VALUES			
○	4.069	BETA	.000	ELEVON	.000
□	6.036	BDFLAP	-11.700	MACH	.250
◇	9.067				

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8000	INCHES
BREF	936.6800	INCHES
XMRP	1076.7000	IN. XO
YMRP	.0000	IN. YO
ZMRP	375.0000	IN. ZO
SCALE	.0150	

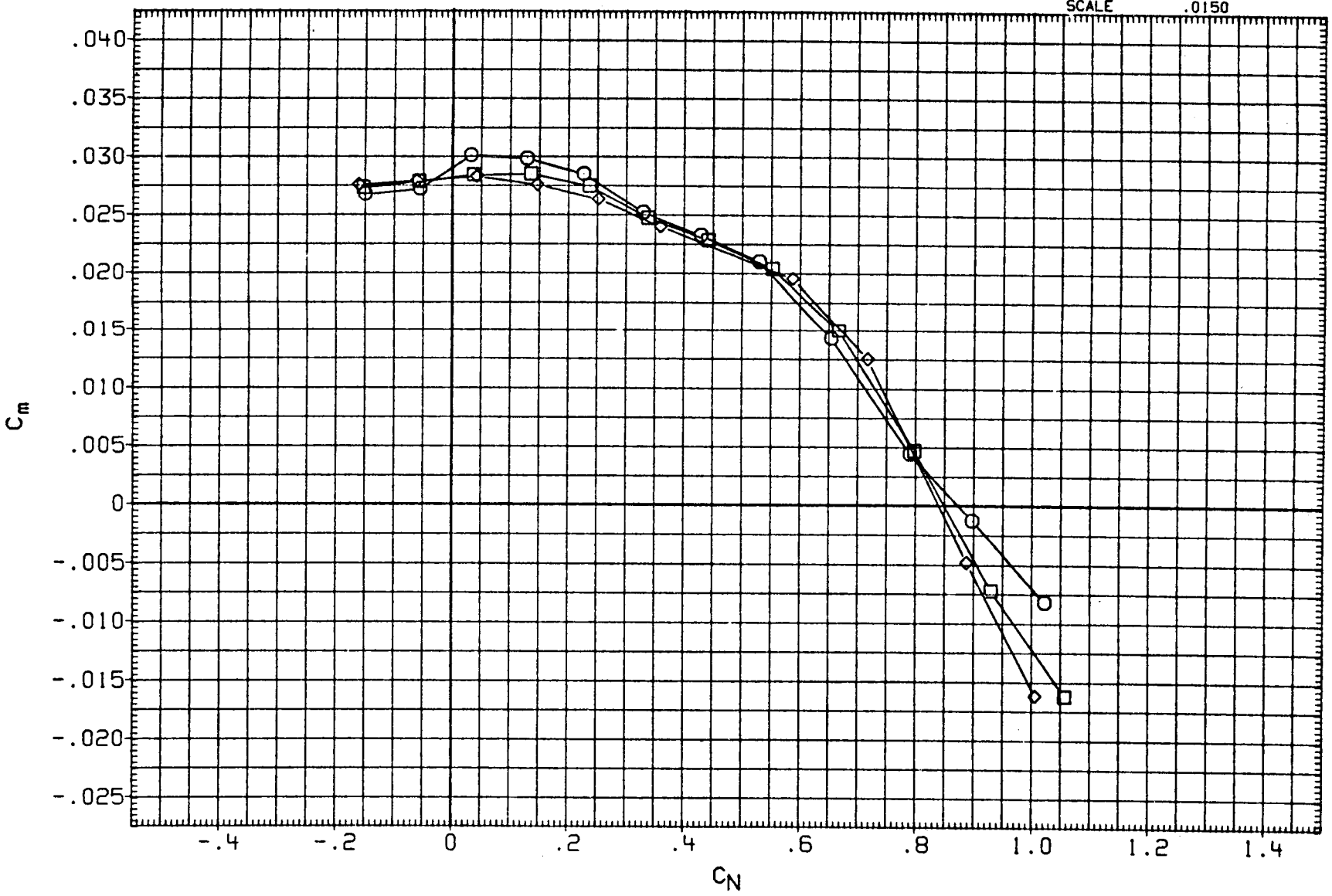


FIGURE 5. EFFECT OF REYNOLDS NUMBER ON AERODYNAMIC CHARACTERISTICS OF B1 FOREBODY, BETA=0 DEG

(RJE001) LARC LTPT 227 (LA73) B1WVS0EF

SYMBOL	RN/L	PARAMETRIC VALUES			
○	4.069	BETA	.000	ELEVON	.000
□	6.036	BDFLAP	-11.700	MACH	.250
◇	9.067				

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8000	INCHES
BREF	936.6800	INCHES
XMRP	1076.7000	IN. XO
YMRP	.0000	IN. YO
ZMRP	375.0000	IN. ZO
SCALE	.0150	

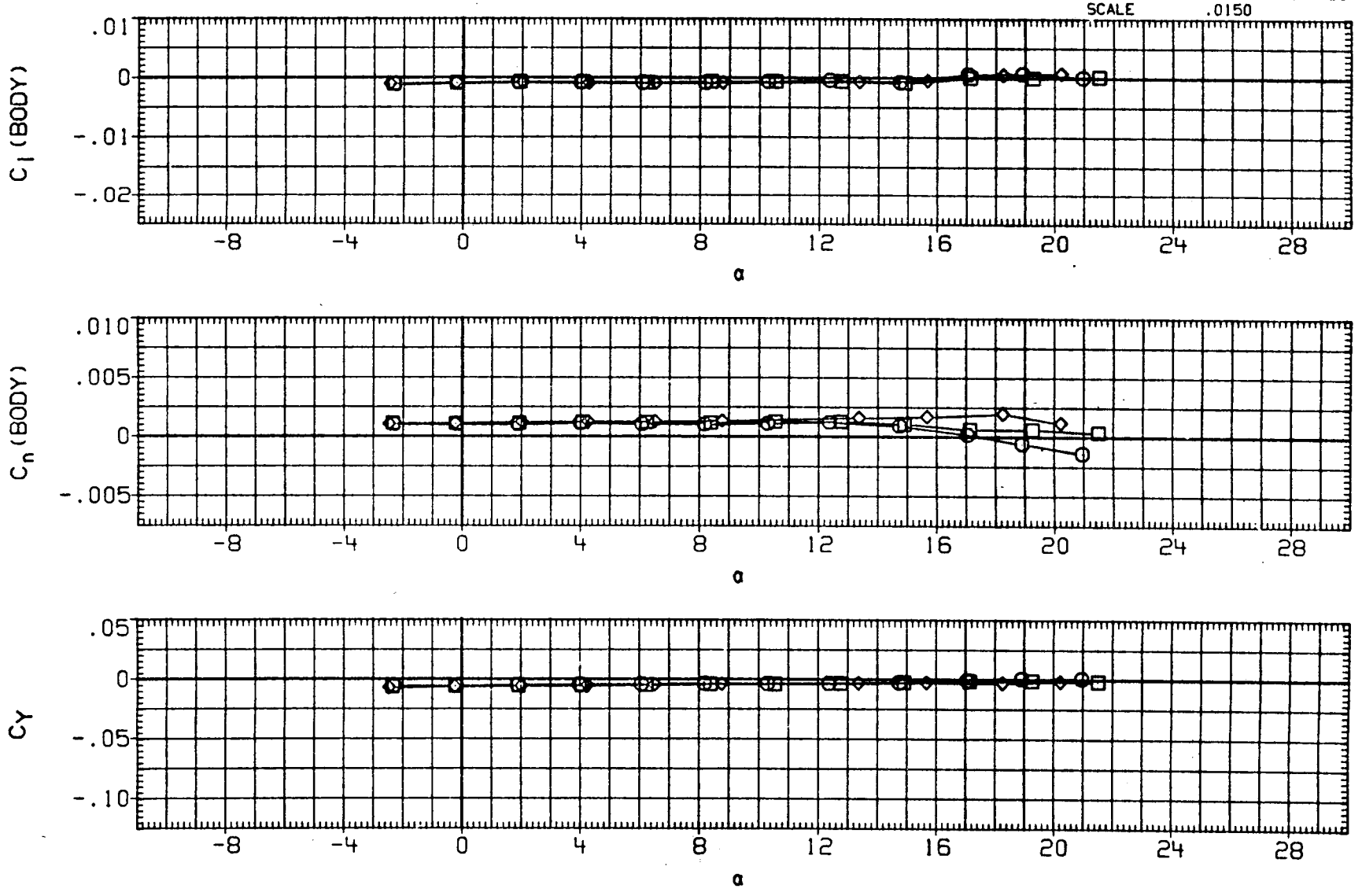


FIGURE 5. EFFECT OF REYNOLDS NUMBER ON AERODYNAMIC CHARACTERISTICS OF B1 FOREBODY, BETA=0 DEG

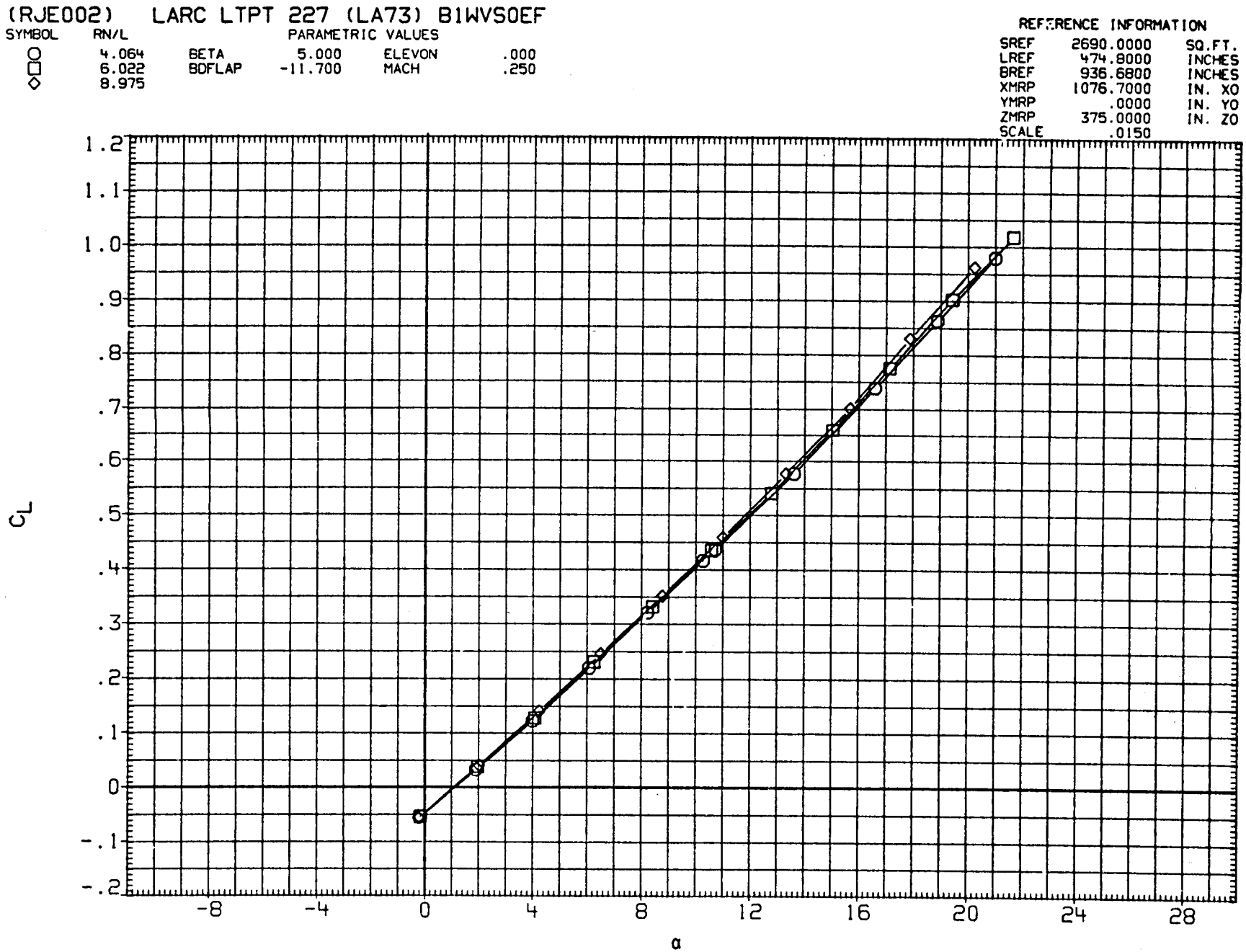


FIGURE 6. EFFECT OF REYNOLDS NUMBER ON AERODYNAMIC CHARACTERISTICS OF B1 FOREBODY, BETA=5 DEG

(RJE002) LARC LTPT 227 (LA73) B1WVS0EF

SYMBOL	RN/L		PARAMETRIC VALUES		
○	4.064	BETA	5.000	ELEVON	.000
□	6.022	BDFLAP	-11.700	MACH	.250
◇	8.975				

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8000	INCHES
BREF	936.6800	INCHES
XMRP	1076.7000	IN. XO
YMRP	.0000	IN. YO
ZMRP	375.0000	IN. ZO
SCALE	.0150	

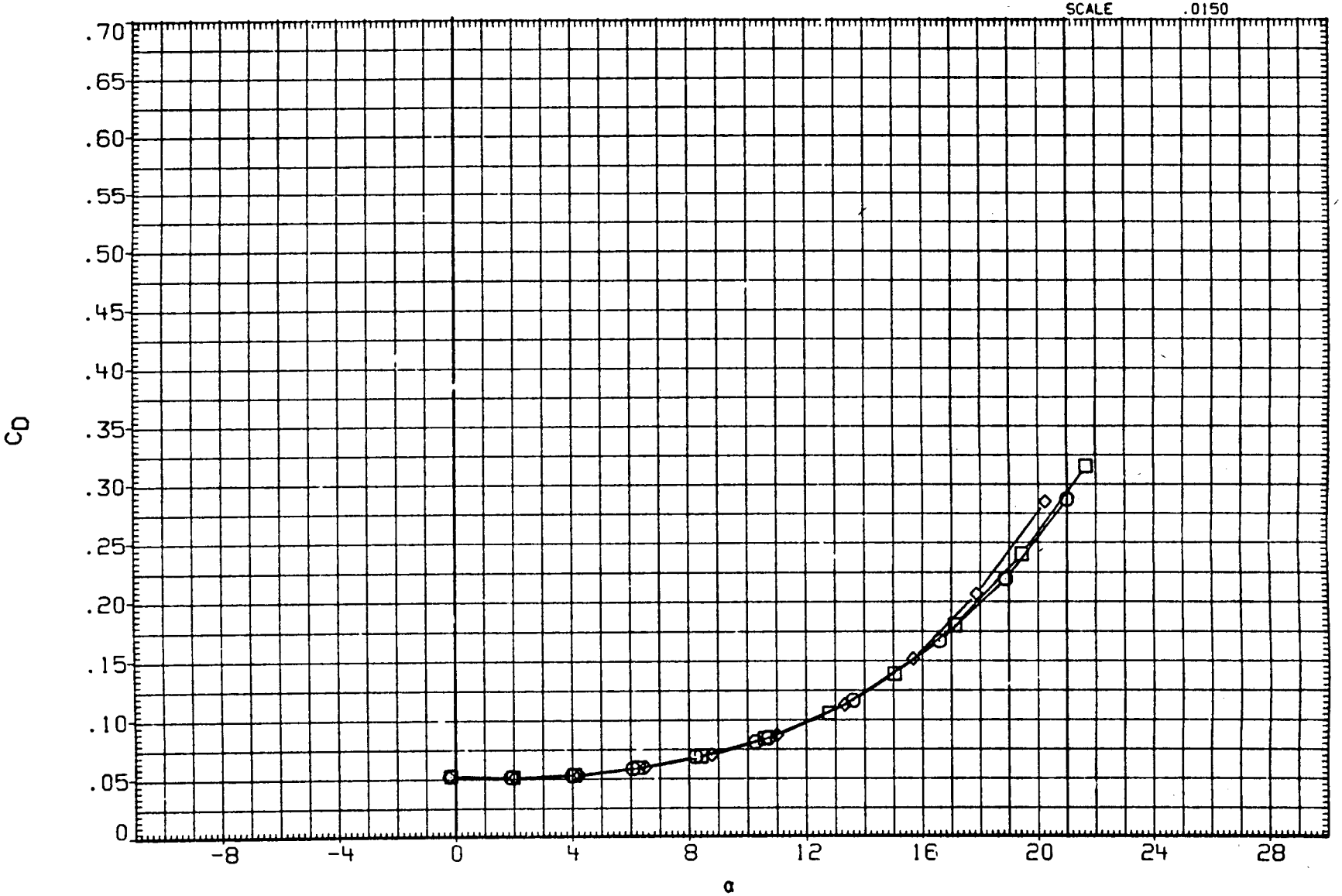


FIGURE 6. EFFECT OF REYNOLDS NUMBER ON AERODYNAMIC CHARACTERISTICS OF B1 FOREBODY, BETA=5 DEG

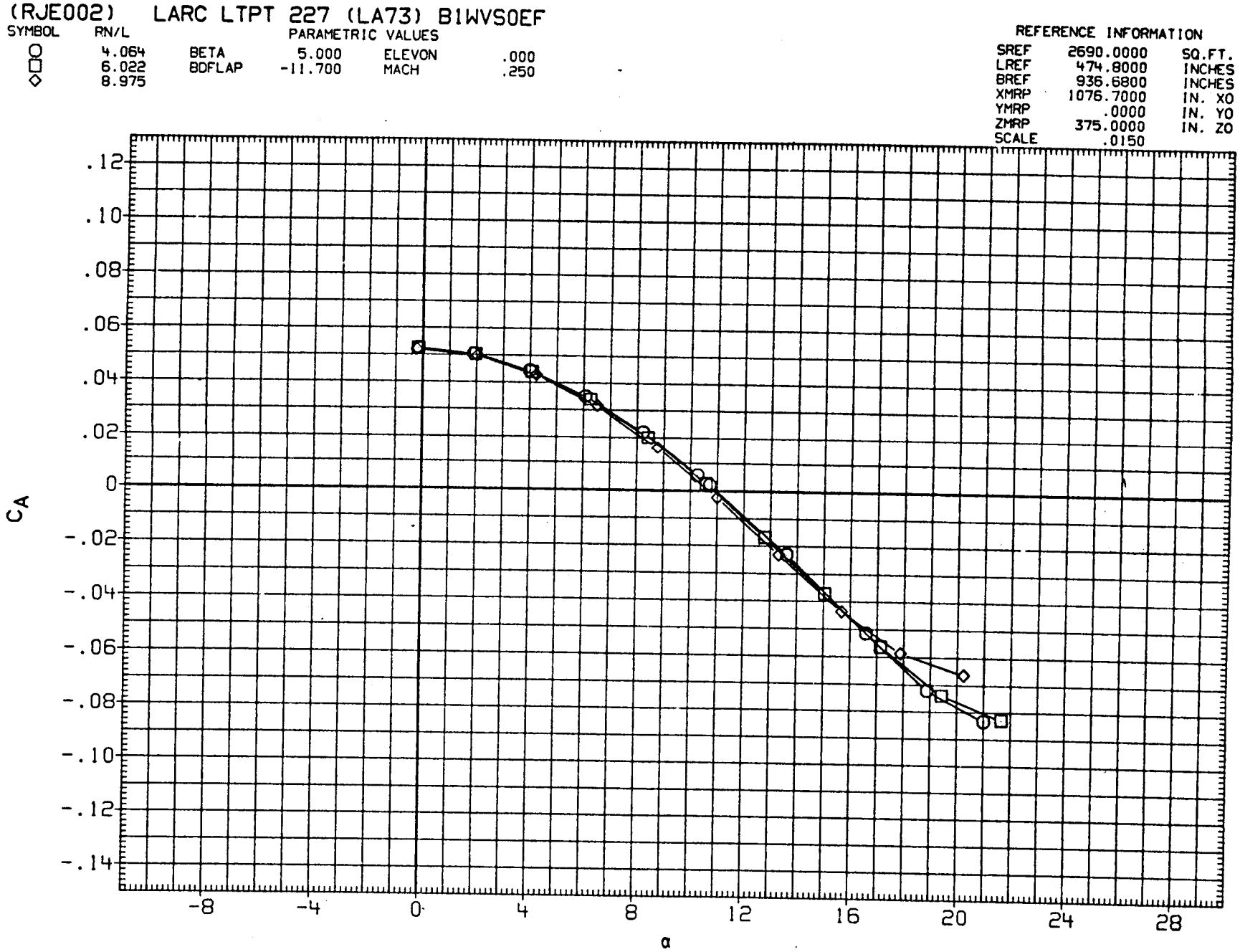


FIGURE 6. EFFECT OF REYNOLDS NUMBER ON AERODYNAMIC CHARACTERISTICS OF B1 FOREBODY, BETA=5 DEG

(RJE002) LARC LTPT 227 (LA73) B1WVS0EF

SYMBOL	RN/L	PARAMETRIC VALUES			
○	4.064	BETA	5.000	ELEVON	.000
□	6.022	BDFLAP	-11.700	MACH	.250
◇	8.975				

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8000	INCHES
BREF	936.6800	INCHES
XMRP	1076.7000	IN. XO
YMRP	.0000	IN. YO
ZMRP	375.0000	IN. ZO
SCALE	.0150	

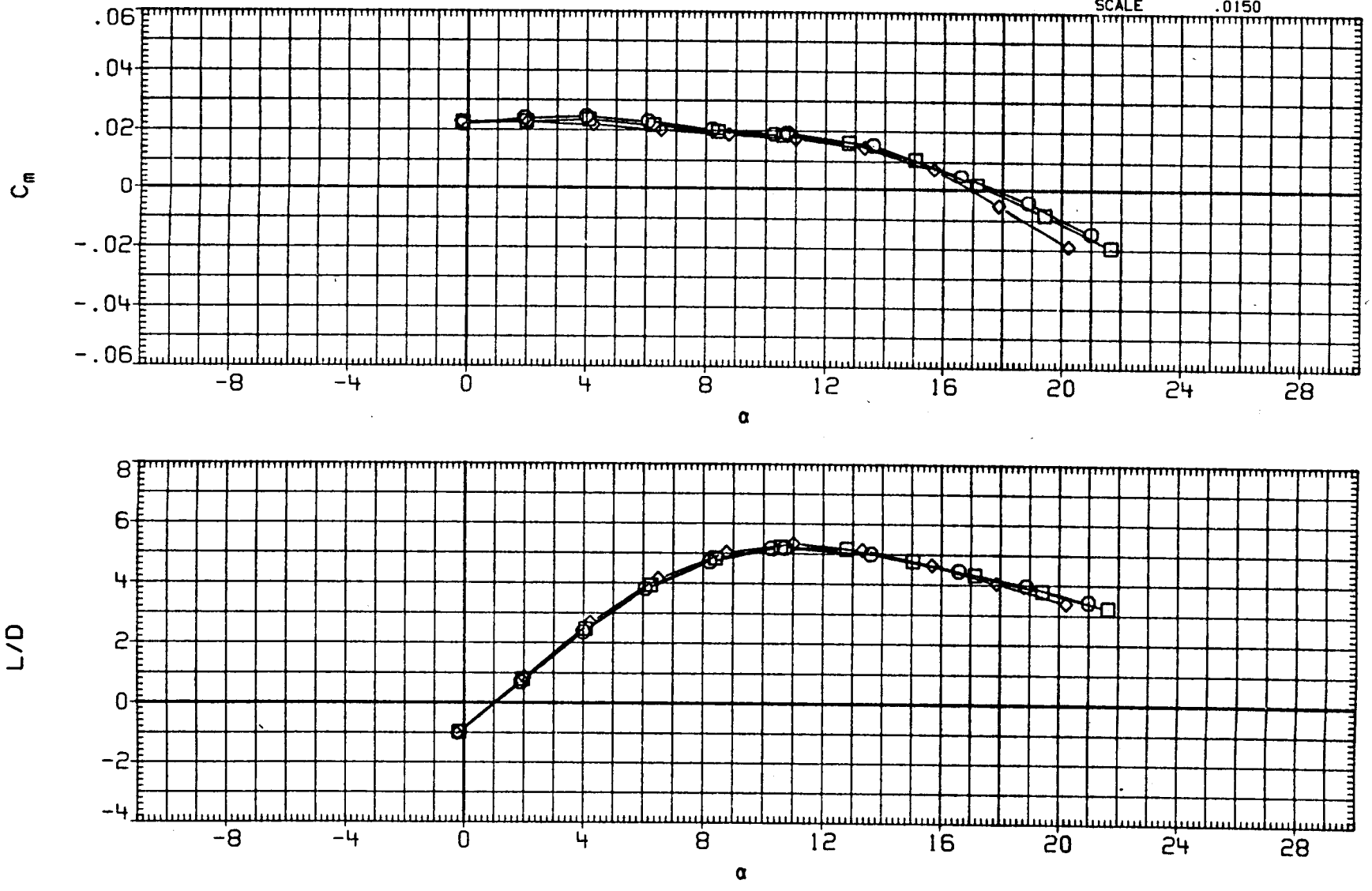


FIGURE 6. EFFECT OF REYNOLDS NUMBER ON AERODYNAMIC CHARACTERISTICS OF B1 FOREBODY, BETA=5 DEG

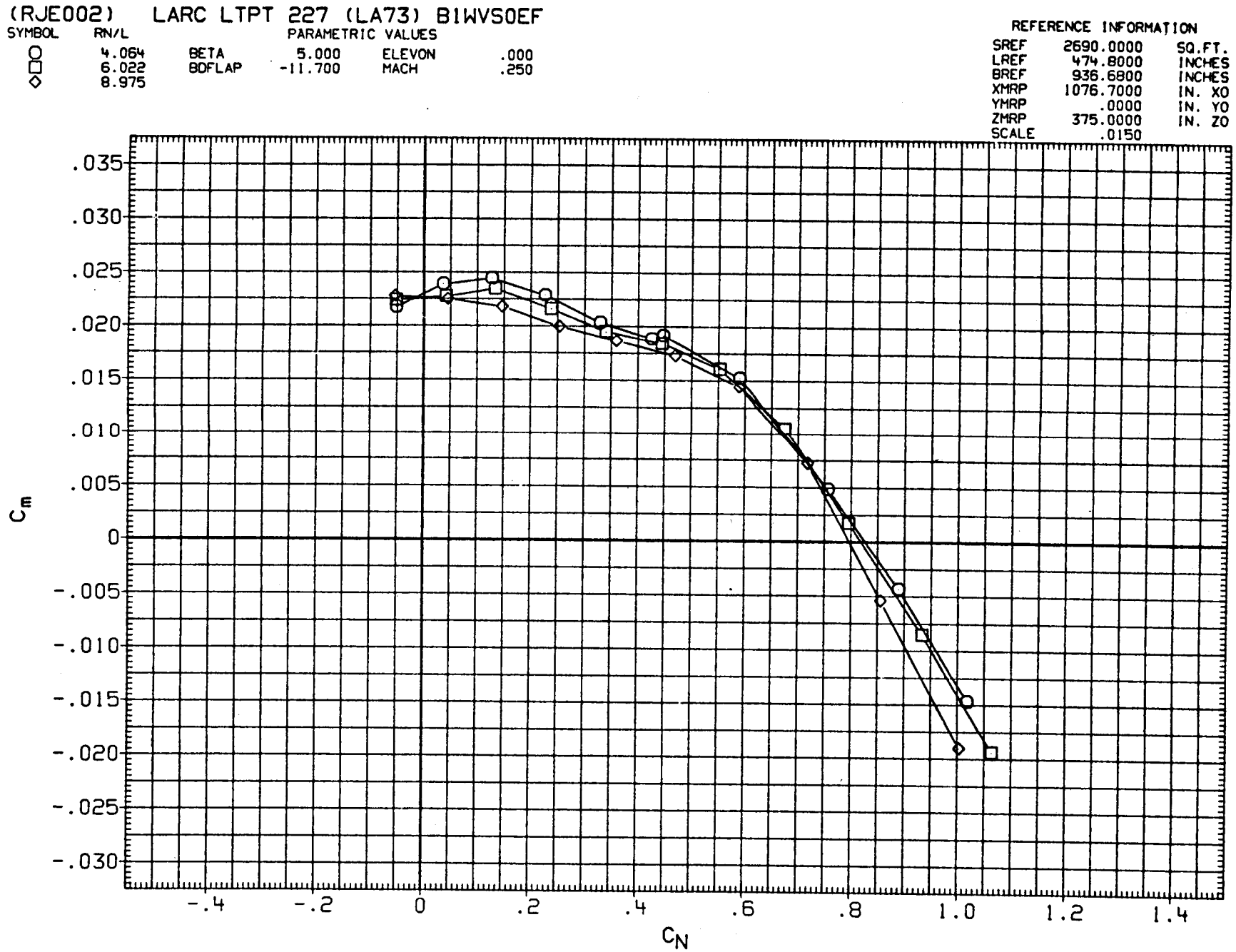


FIGURE 6. EFFECT OF REYNOLDS NUMBER ON AERODYNAMIC CHARACTERISTICS OF B1 FOREBODY, BETA=5 DEG

(RJE002) LARC LTPT 227 (LA73) B1WVS0EF

SYMBOL	RN/L	PARAMETRIC VALUES			
○	4.064	BETA	5.000	ELEVON	.000
□	6.022	BDFLAP	-11.700	MACH	.250
◇	8.975				

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8000	INCHES
BREF	936.6800	INCHES
XMRP	1076.7000	IN. XO
YMRP	.0000	IN. YO
ZMRP	375.0000	IN. ZO
SCALE	.0150	

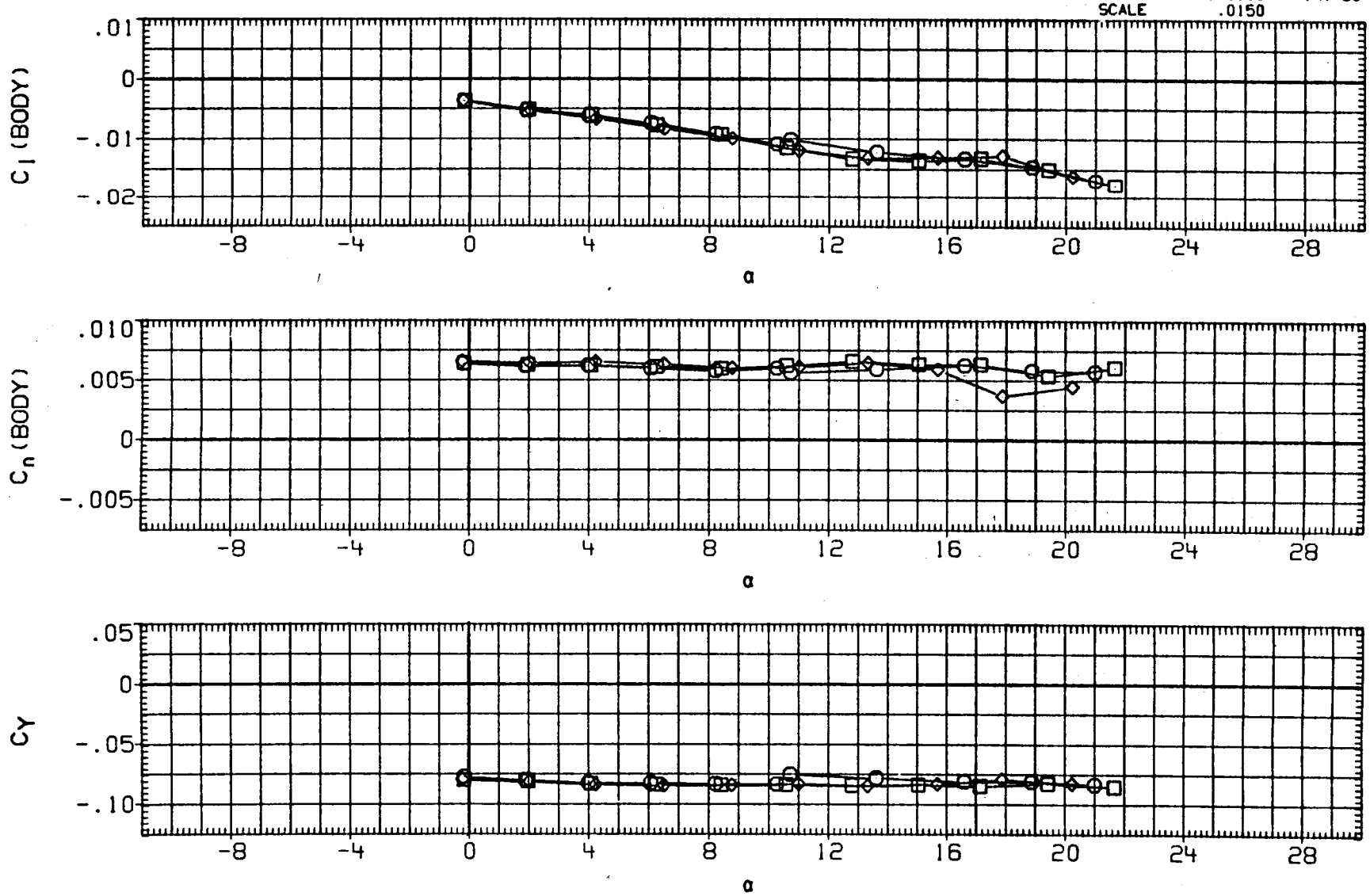


FIGURE 6. EFFECT OF REYNOLDS NUMBER ON AERODYNAMIC CHARACTERISTICS OF B1 FOREBODY, BETA=5 DEG

(RK6001) LARC LTPT 238(LA73B) B6WVSOEF

SYMBOL	RN/L	PARAMETRIC VALUES			
○	4.000	BETA	.000	ELEVON	.000
□	6.028	BDFLAP	-11.700	MACH	.250
◇	9.132				

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8000	INCHES
BREF	936.6800	INCHES
XMRP	1076.7000	IN. XO
YMRP	.0000	IN. YO
ZMRP	375.0000	IN. ZO
SCALE	.0150	

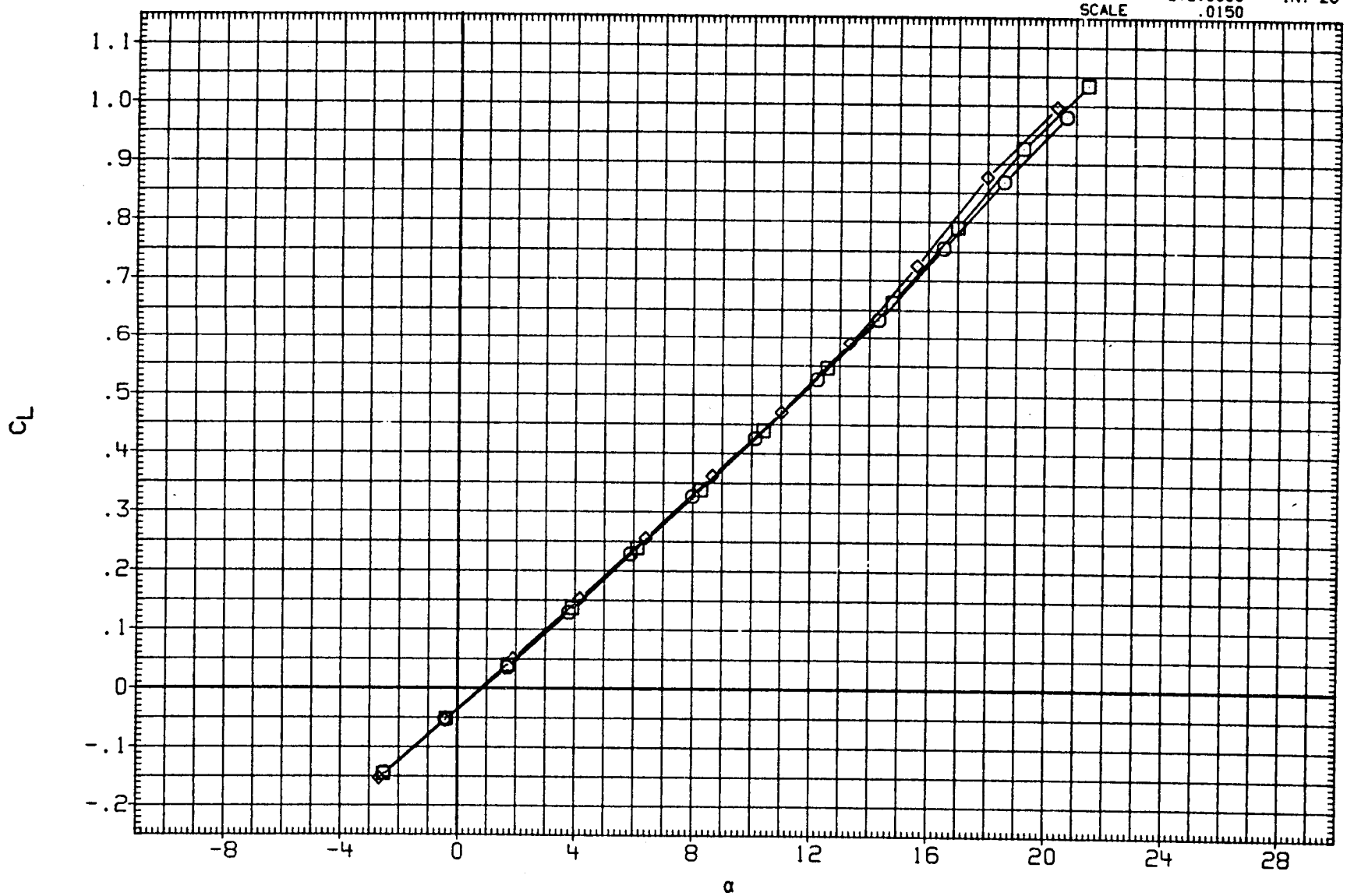


FIGURE 7. EFFECT OF REYNOLDS NUMBER ON AERODYNAMIC CHARACTERISTICS OF B6 FOREBODY, BETA=0 DEG

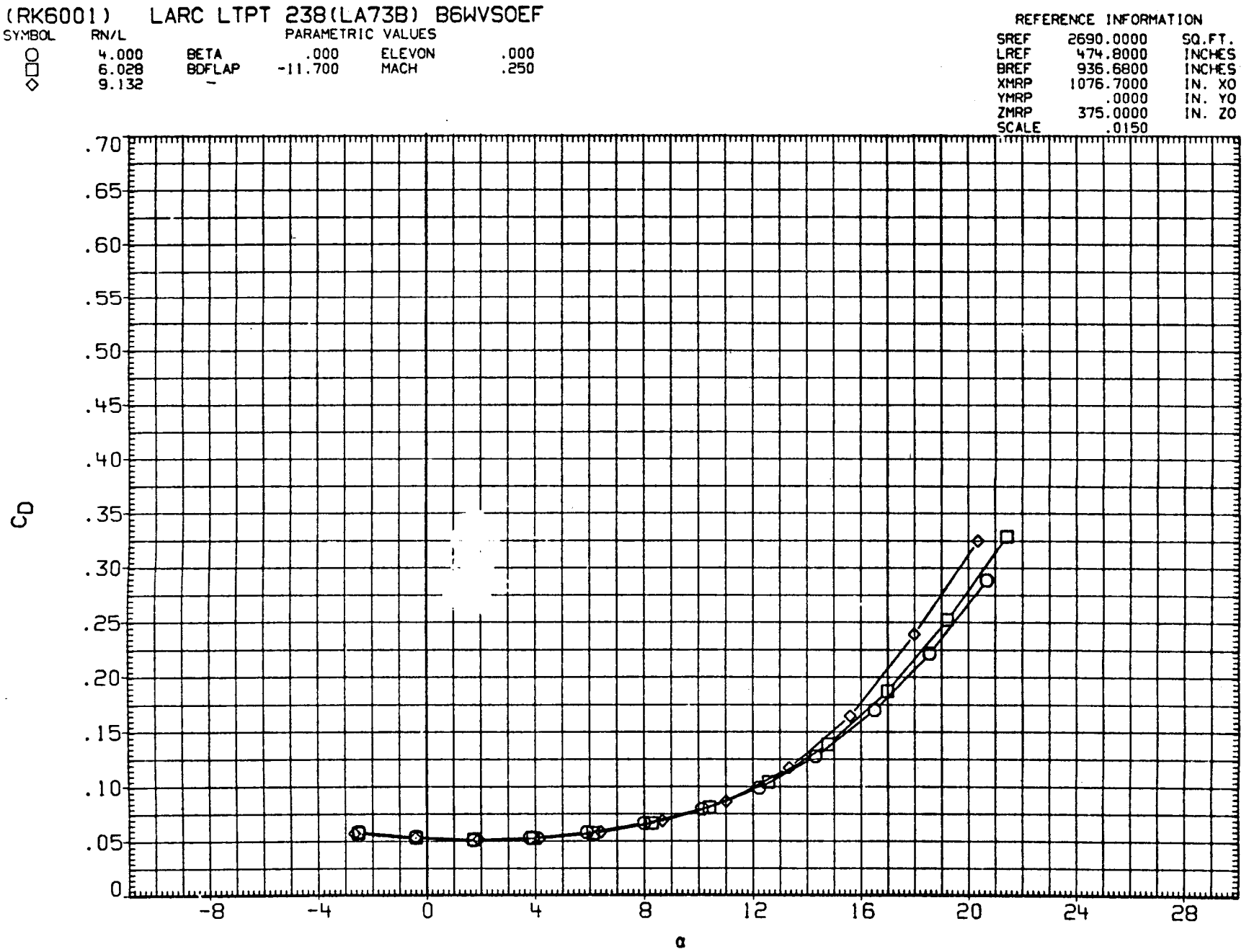


FIGURE 7. EFFECT OF REYNOLDS NUMBER ON AERODYNAMIC CHARACTERISTICS OF B6 FOREBODY, BETA=0 DEG

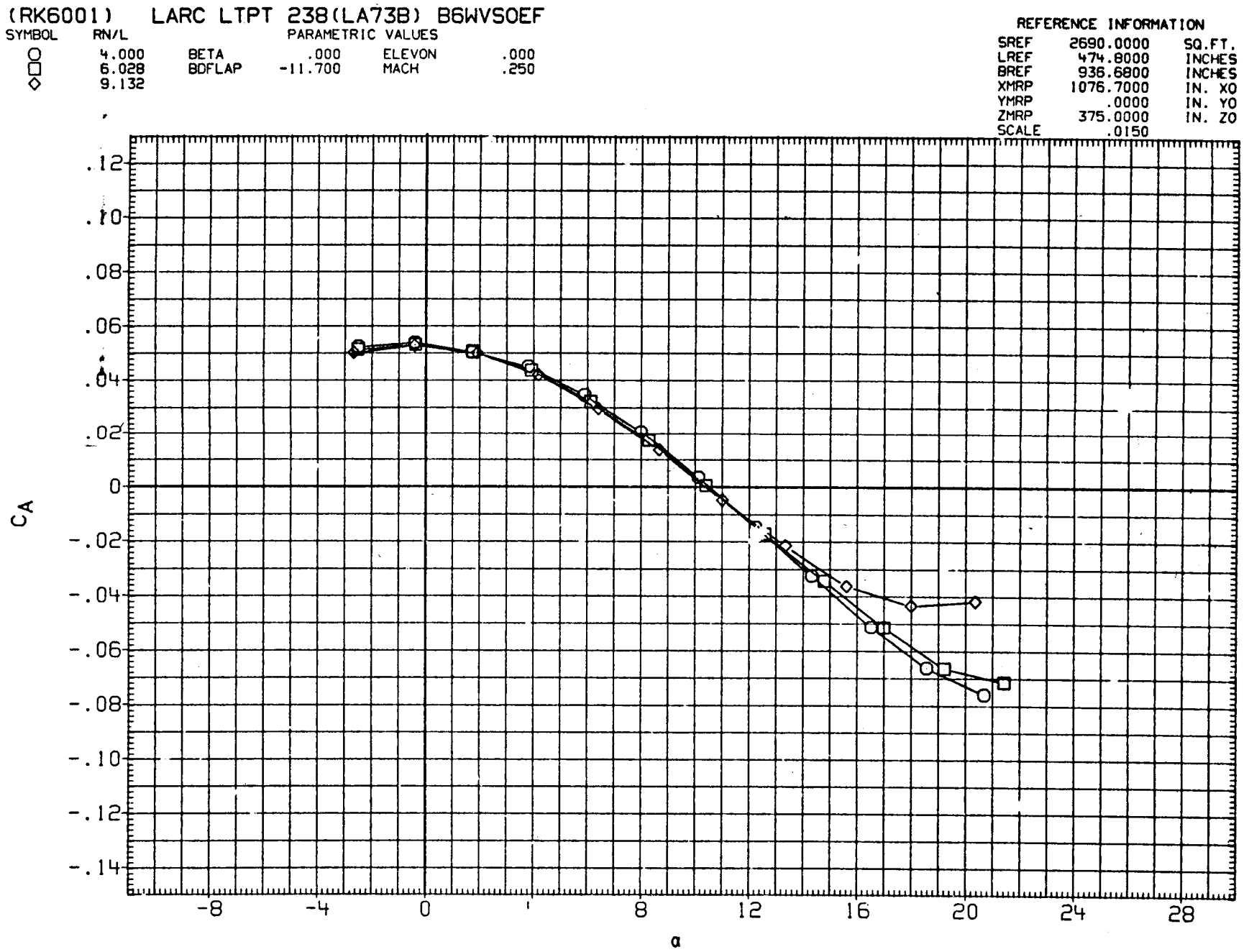


FIGURE 7. EFFECT OF REYNOLDS NUMBER ON AERODYNAMIC CHARACTERISTICS OF B6 FOREBODY, BETA=0 DEG

(RK6001) LARC LTPT 238(LA73B) B6WVSOEF

SYMBOL	RN/L	PARAMETRIC VALUES			
○	4.000	BETA	.000	ELEVON	.000
□	6.028	BDFLAP	-11.700	MACH	.250
◇	9.132				

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8000	INCHES
BREF	936.6800	INCHES
XMRP	1076.7000	IN. XO
YMRP	.0000	IN. YO
ZMRP	375.0000	IN. ZO
SCALE	.0150	

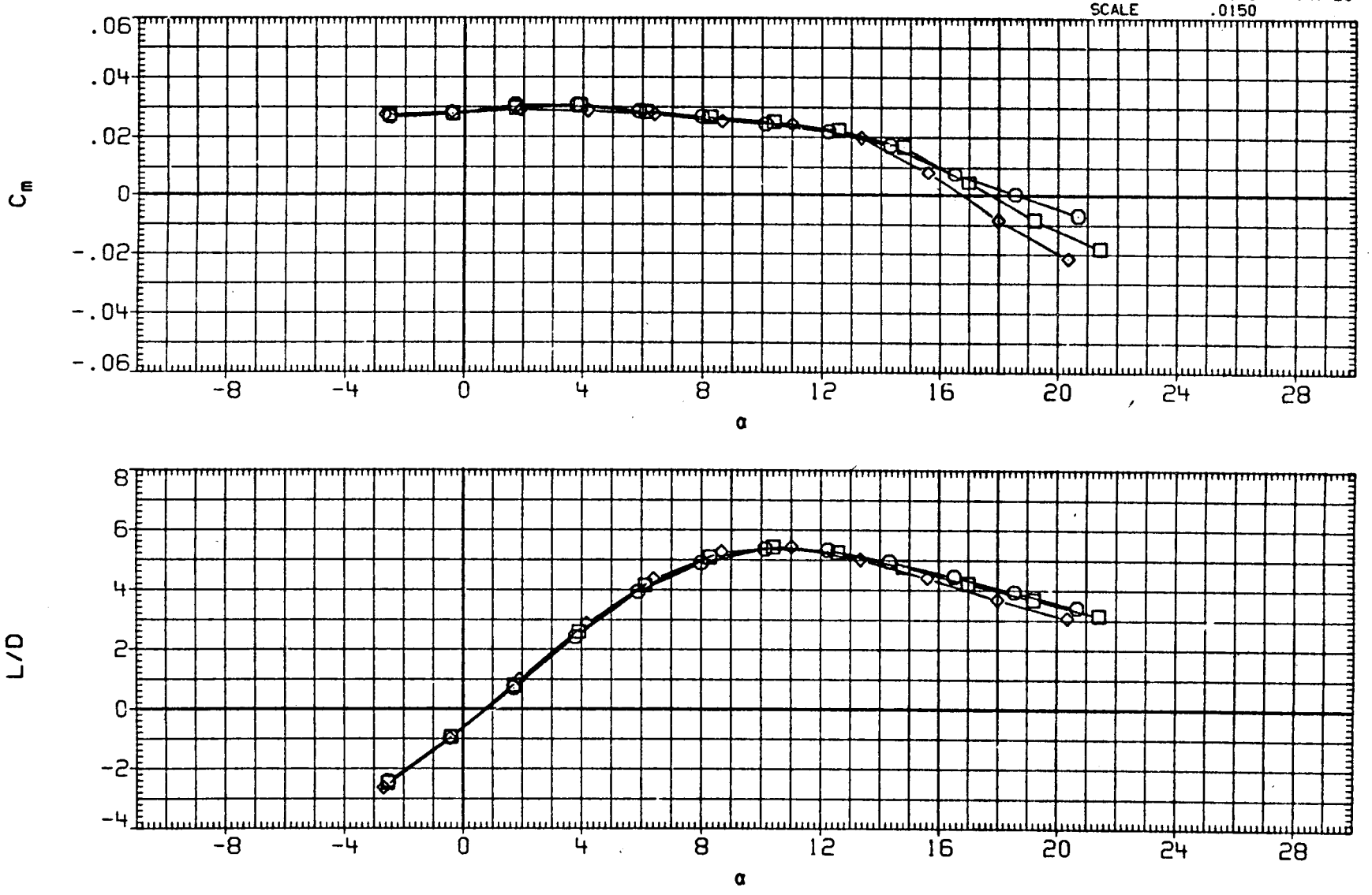


FIGURE 7. EFFECT OF REYNOLDS NUMBER ON AERODYNAMIC CHARACTERISTICS OF B6 FOREBODY, BETA=0 DEG

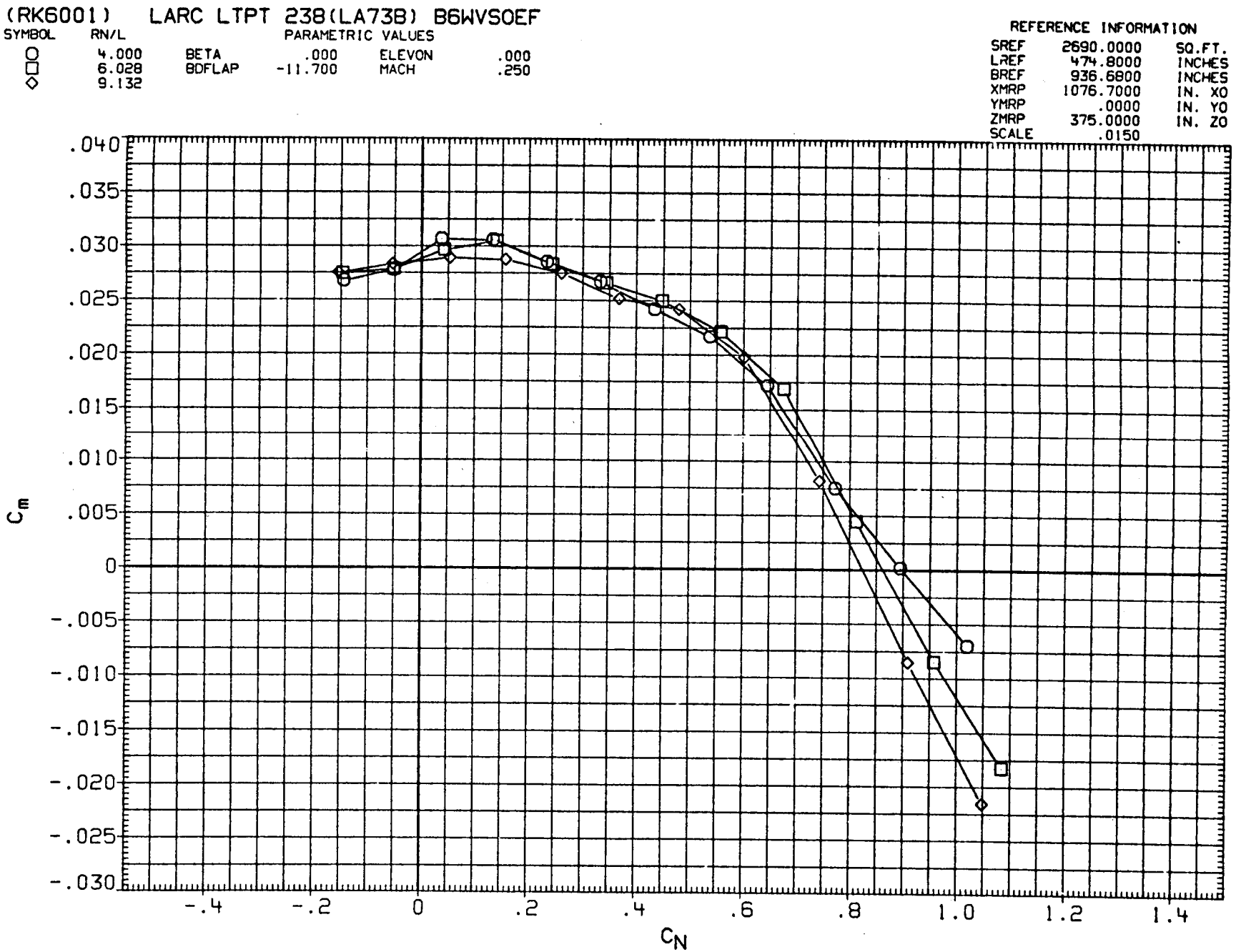


FIGURE 7. EFFECT OF REYNOLDS NUMBER ON AERODYNAMIC CHARACTERISTICS OF B6 FOREBODY, BETA=0 DEG

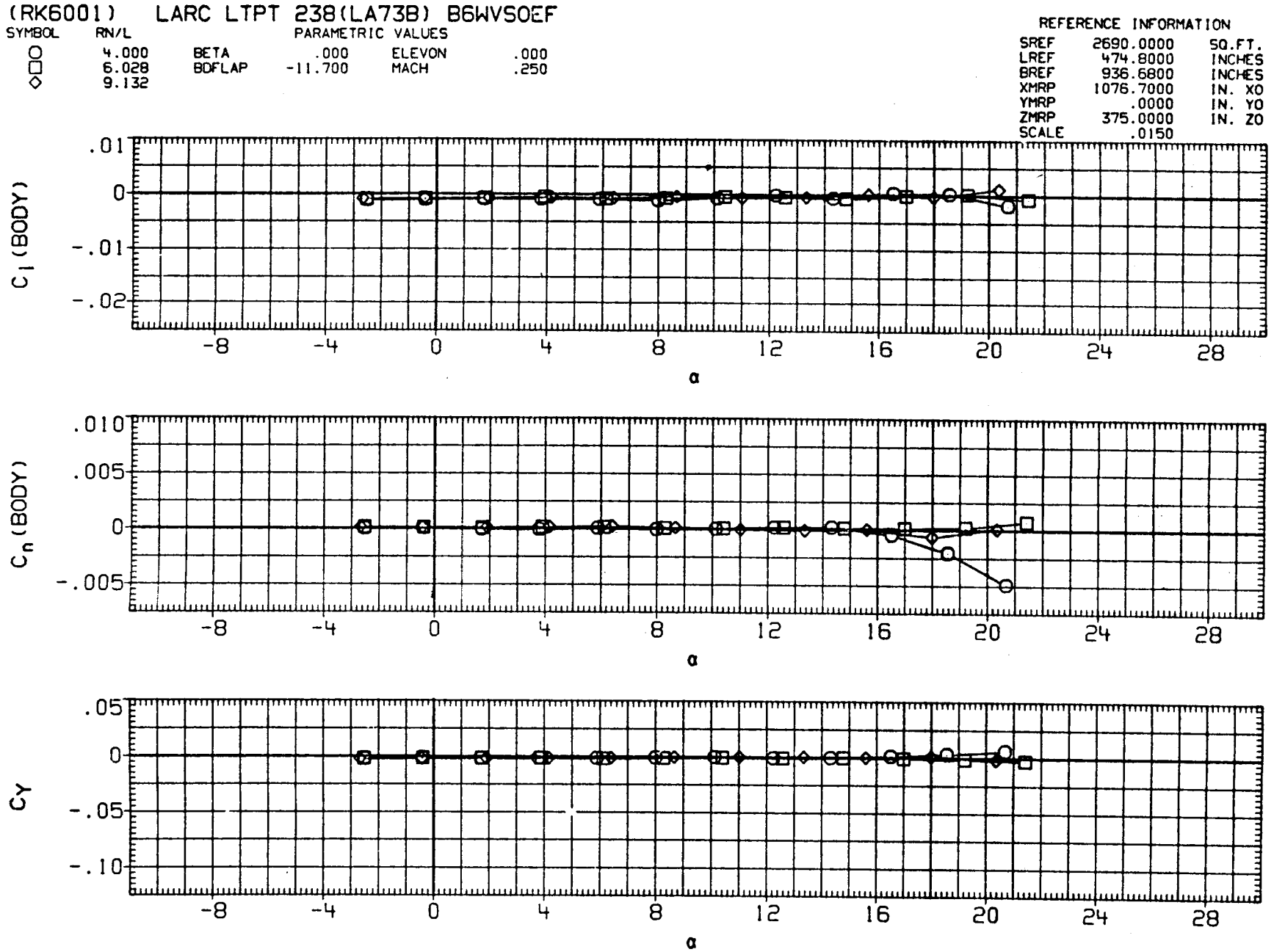


FIGURE 7. EFFECT OF REYNOLDS NUMBER ON AERODYNAMIC CHARACTERISTICS OF B6 FOREBODY, BETA=0 DEG

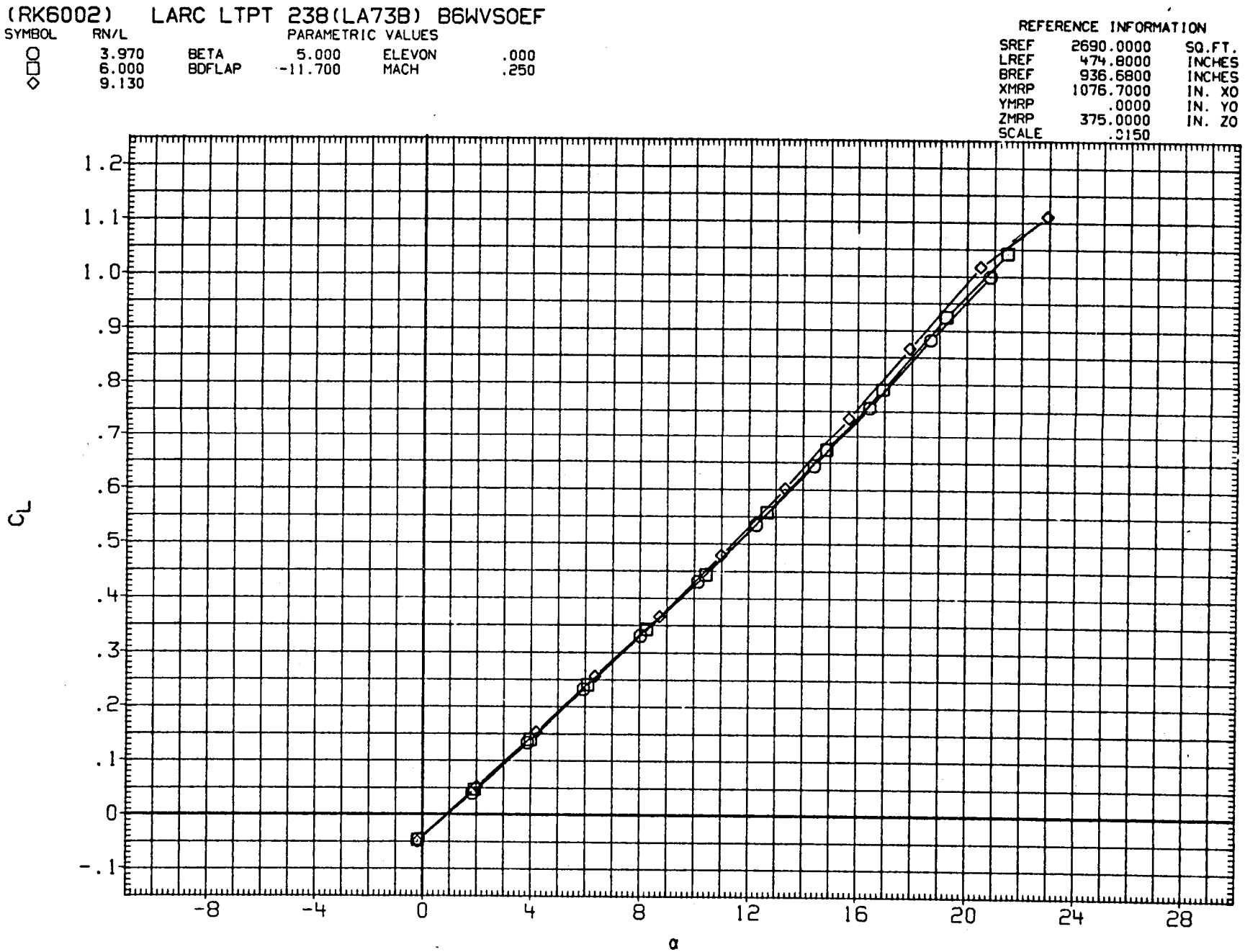


FIGURE 8. EFFECT OF REYNOLDS NUMBER ON AERODYNAMIC CHARACTERISTICS OF B6 FOREBODY, BETA=5 DEG

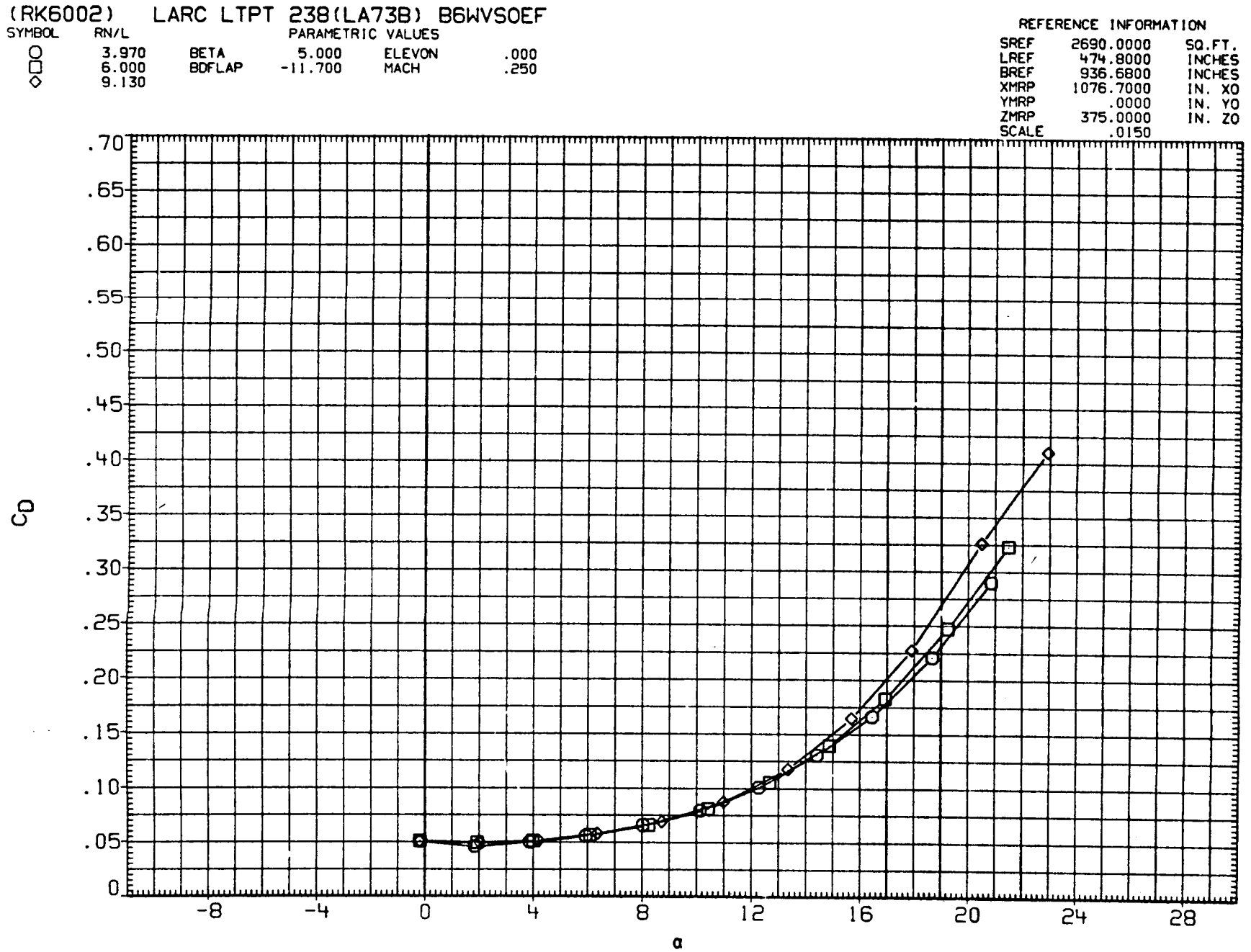


FIGURE 8. EFFECT OF REYNOLDS NUMBER ON AERODYNAMIC CHARACTERISTICS OF B6 FOREBODY, BETA=5 DEG

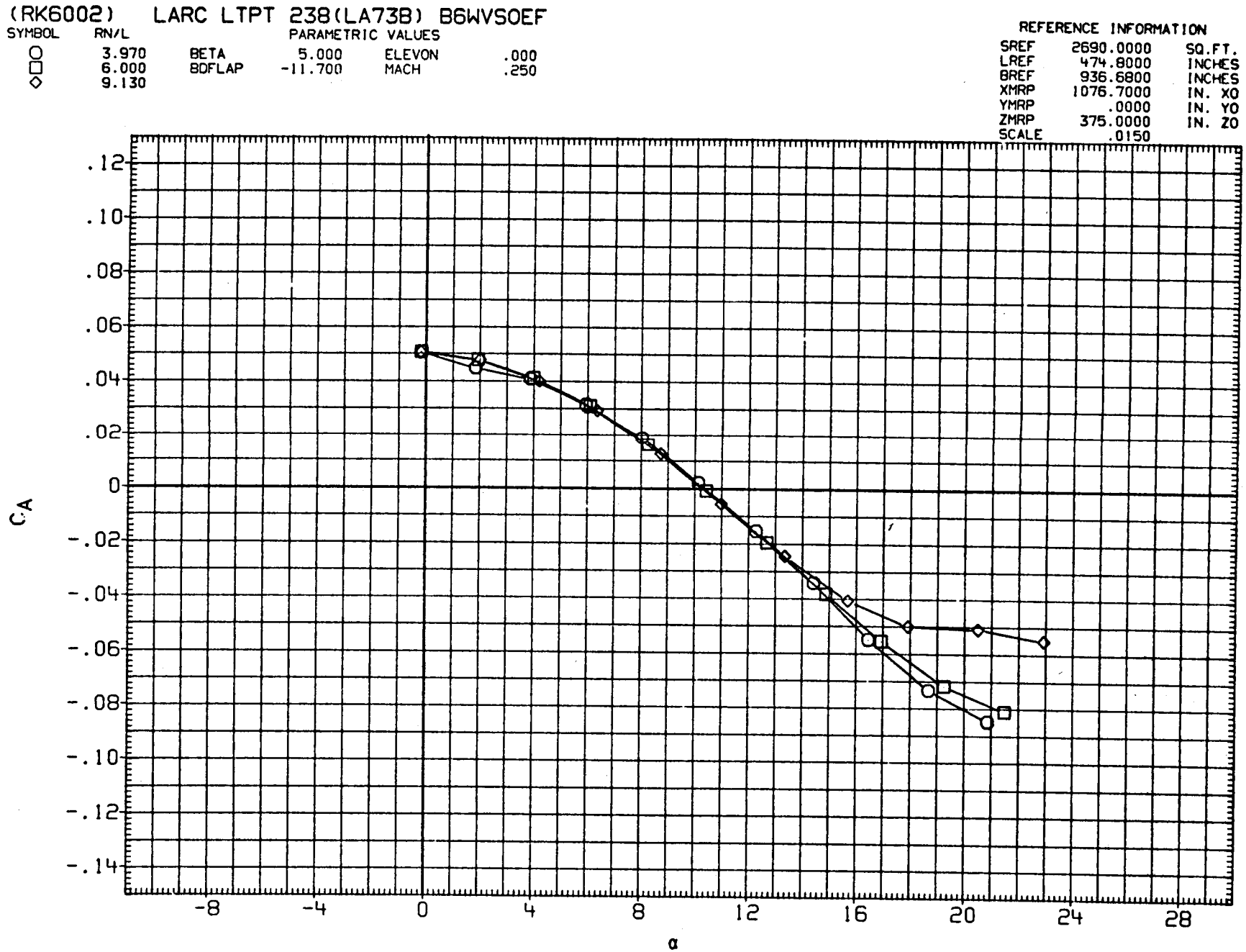


FIGURE 8. EFFECT OF REYNOLDS NUMBER ON AERODYNAMIC CHARACTERISTICS OF B6 FOREBODY, BETA=5 DEG

(RK6002) LARC LTPT 238(LA73B) B6WVSOEF

SYMBOL	RN/L	PARAMETRIC VALUES			
○	3.970	BETA	5.000	ELEVON	.000
□	6.000	BDFLAP	-11.700	MACH	.250
◇	9.130				

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8000	INCHES
BREF	936.6800	INCHES
XMRP	1076.7000	IN. XO
YMRP	.0000	IN. YO
ZMRP	375.0000	IN. ZO
SCALE	.0150	

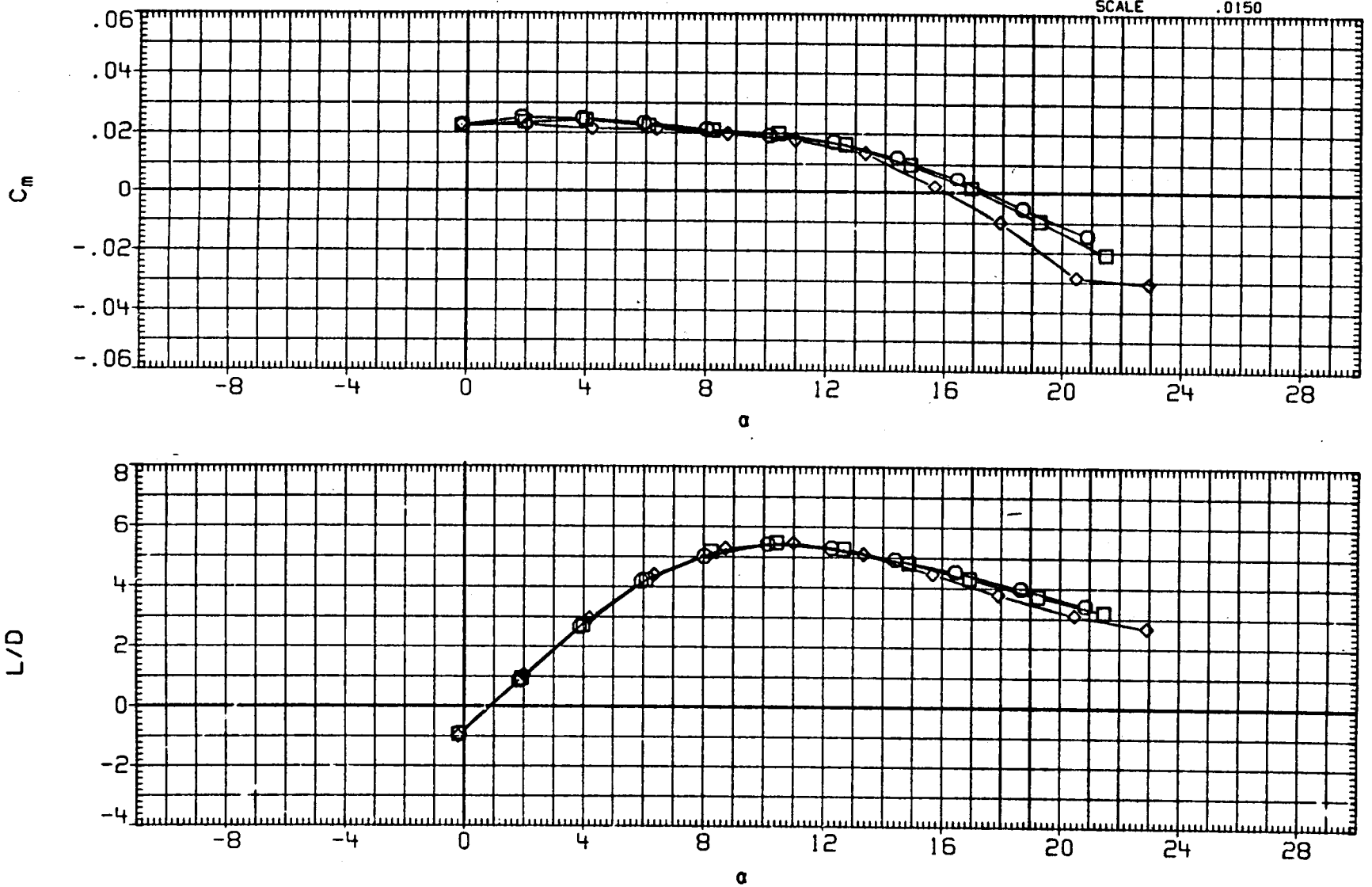


FIGURE 8. EFFECT OF REYNOLDS NUMBER ON AERODYNAMIC CHARACTERISTICS OF B6 FOREBODY, BETA=5 DEG

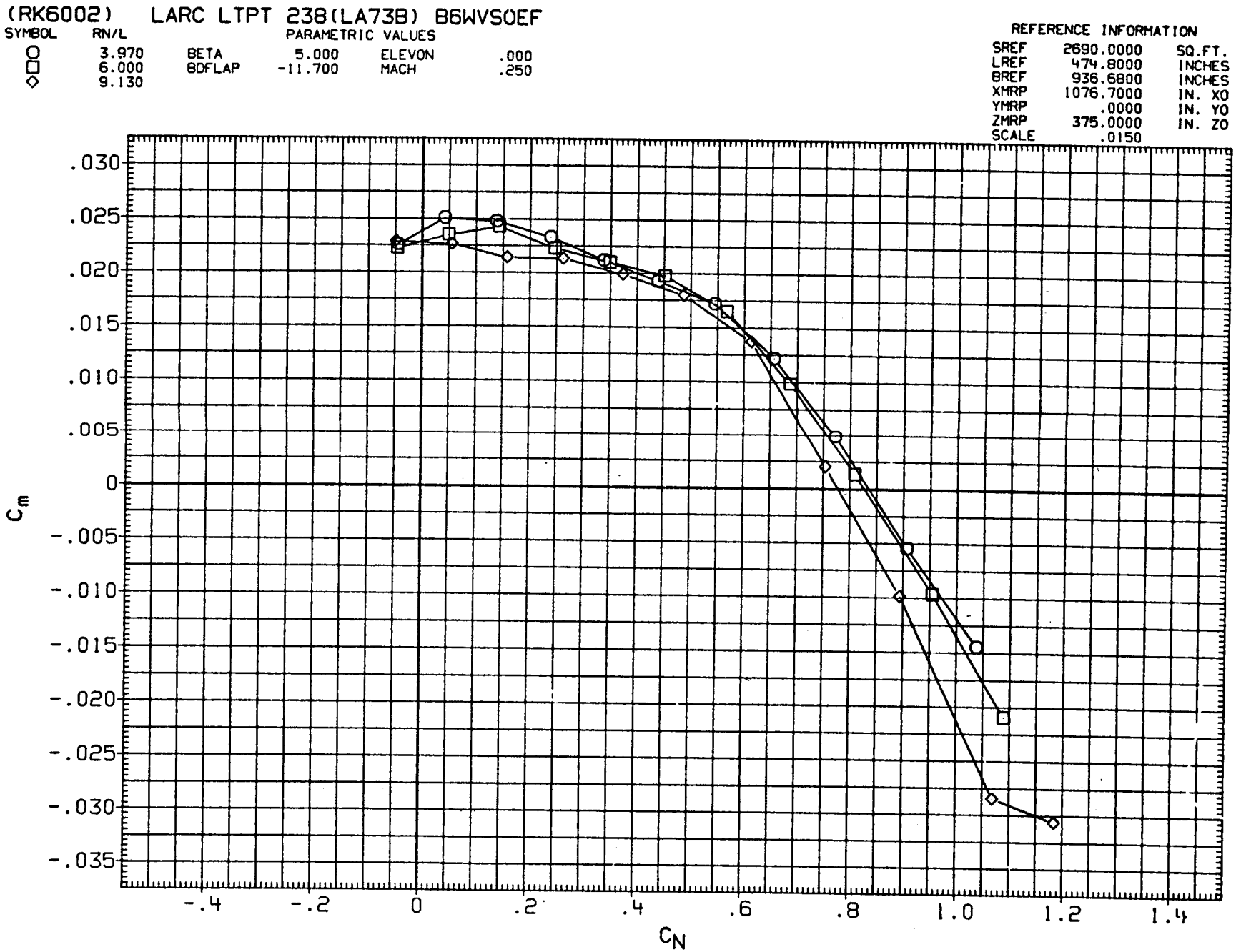


FIGURE 8. EFFECT OF REYNOLDS NUMBER ON AERODYNAMIC CHARACTERISTICS OF B6 FOREBODY, BETA=5 DEG

(RK6002) LARC LTPT 238(LA73B) B6WVSOEF

SYMBOL	RN/L		PARAMETRIC VALUES		
○	3.970	BETA	5.000	ELEVON	.000
□	6.000	BDFLAP	-11.700	MACH	.250
◇	9.130				

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8000	INCHES
BREF	936.6800	INCHES
XMRP	1076.7000	IN. XO
YMRP	.0000	IN. YO
ZMRP	375.0000	IN. ZO
SCALE	.0150	

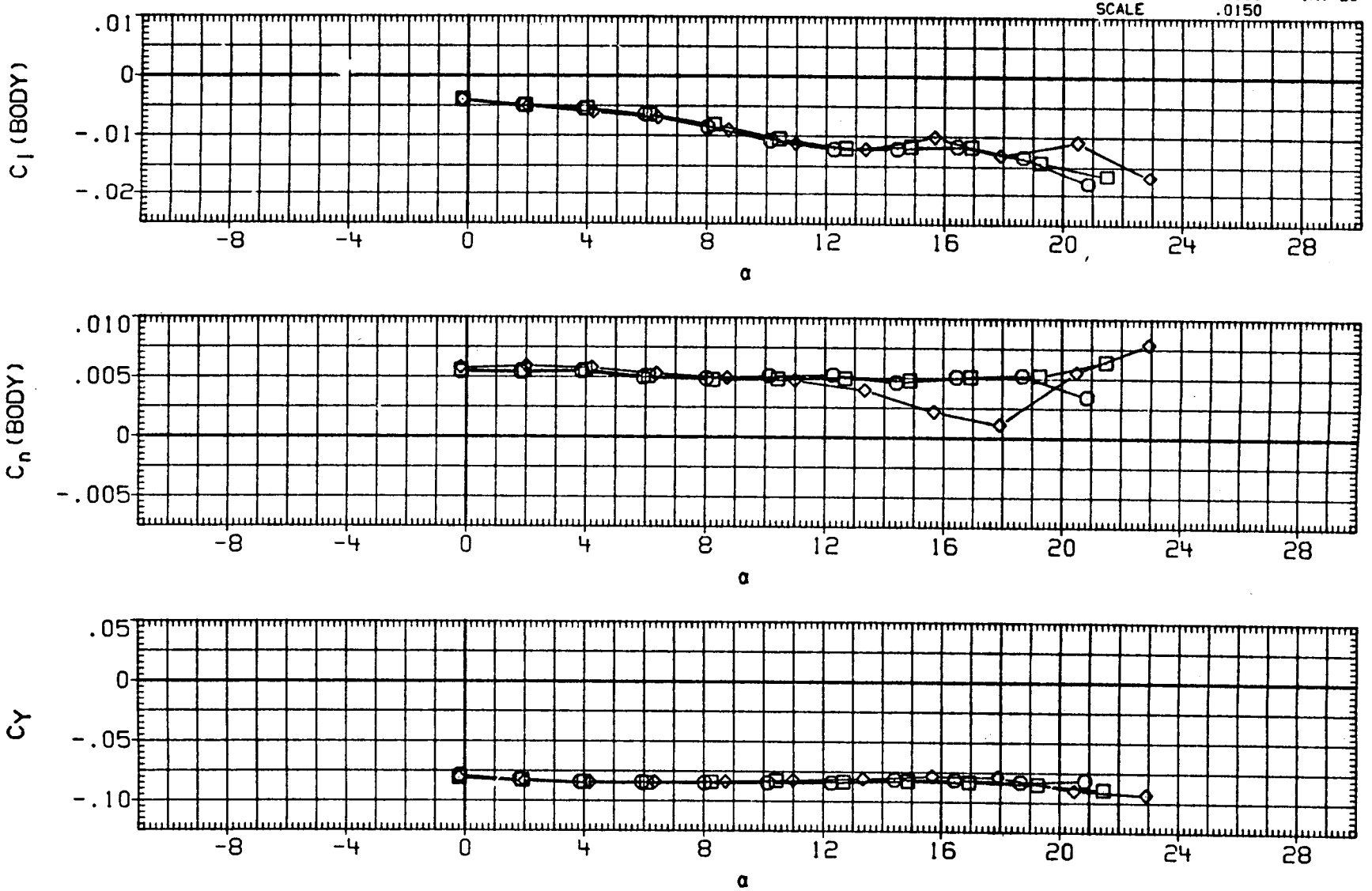


FIGURE 8. EFFECT OF REYNOLDS NUMBER ON AERODYNAMIC CHARACTERISTICS OF B6 FOREBODY, BETA=5 DEG

(RJE003) LARC LTPT 227 (LA73) B7WVS0EF

SYMBOL	RN/L	PARAMETRIC VALUES			
○	4.053	BETA	.000	ELEVON	.000
□	5.861	BDFLAP	-11.700	MACH	.250
◇	9.012				

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8000	INCHES
BREF	936.6800	INCHES
XMRP	1076.7000	IN. XO
YMRP	.0000	IN. YO
ZMRP	375.0000	IN. ZO
SCALE	.0150	

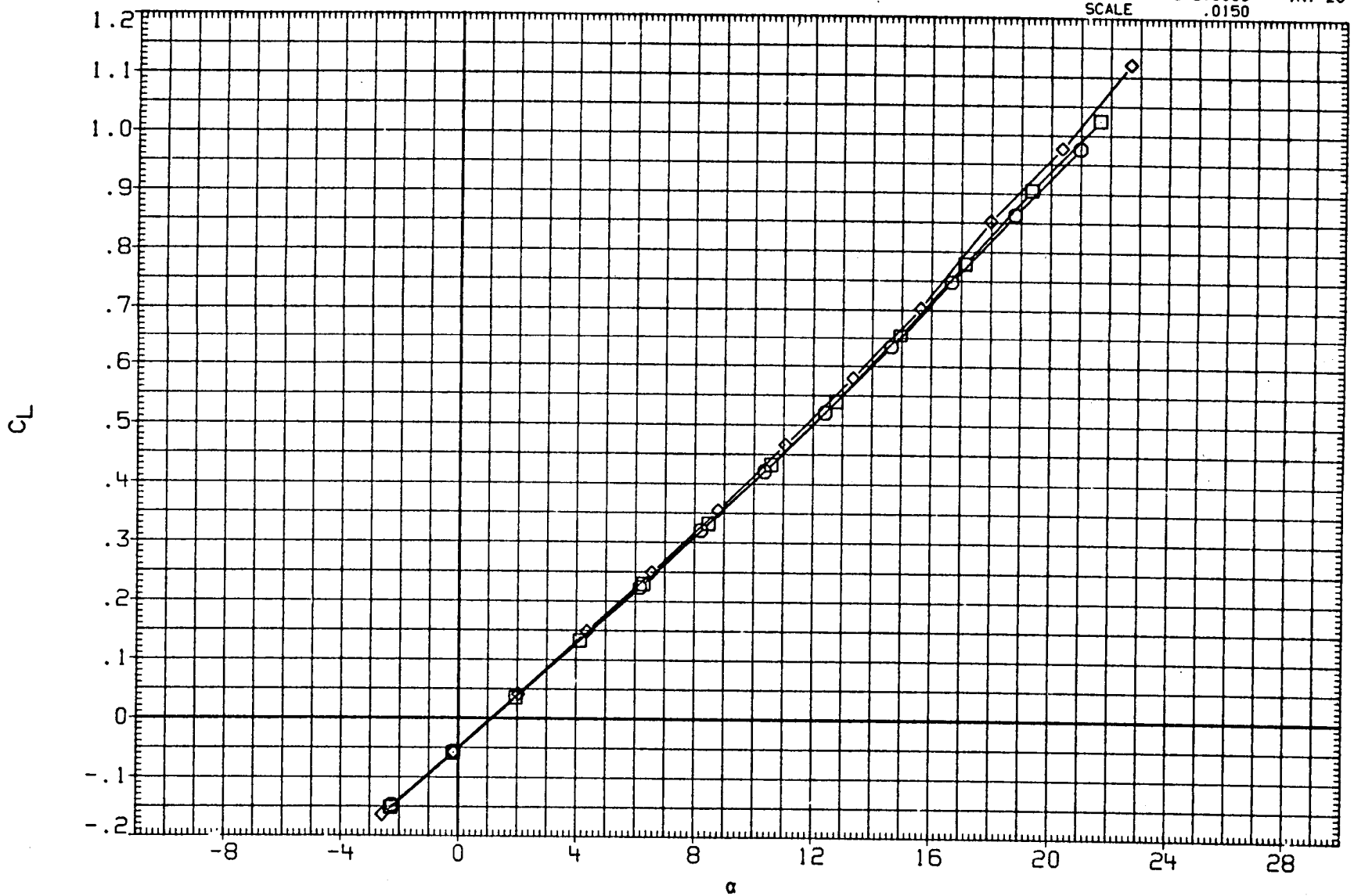


FIGURE 9. EFFECT OF REYNOLDS NUMBER ON AERODYNAMIC CHARACTERISTICS OF B7 FOREBODY, BETA=0 DEG

(RJE003) LARC LTPT 227 (LA73) B7WVSOEF

SYMBOL	RN/L	PARAMETRIC VALUES			
○	4.053	BETA	.000	ELEVON	.000
□	5.861	BDFLAP	-11.700	MACH	.250
◇	9.012				

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8000	INCHES
BREF	936.6800	INCHES
XMRP	1076.7000	IN. XO
YMRP	.0000	IN. YO
ZMRP	375.0000	IN. ZO
SCALE	.0150	

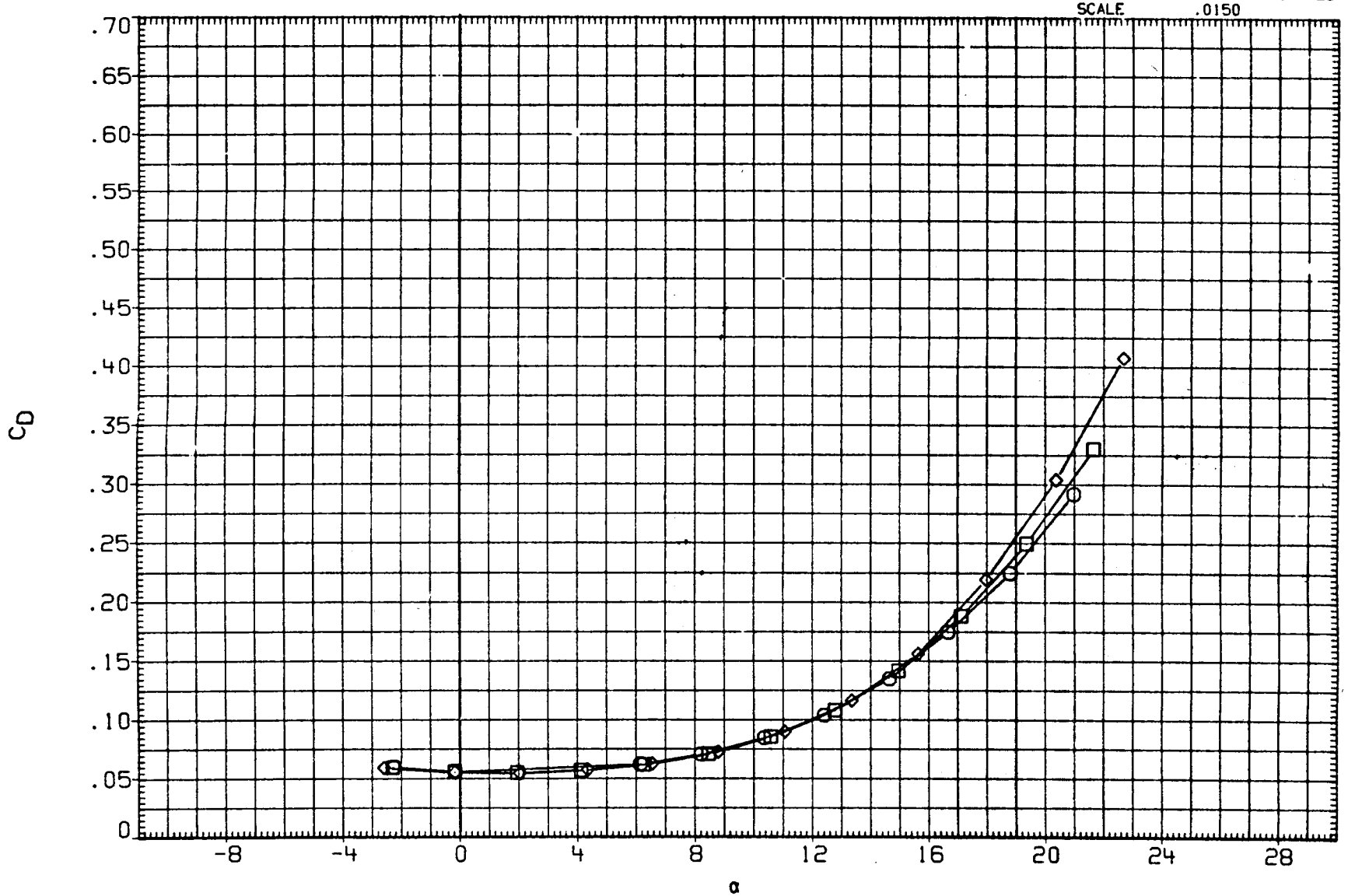


FIGURE 9. EFFECT OF REYNOLDS NUMBER ON AERODYNAMIC CHARACTERISTICS OF B7 FOREBODY, BETA=0 DEG

(RJE003) LARC LTPT 227 (LA73) B7WVSOEF

SYMBOL	RN/L	PARAMETRIC VALUES			
○	4.053	BETA	.000	ELEVON	.000
□	5.861	BDFLAP	-11.700	MACH	.250
◇	9.012				

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8000	INCHES
BREF	936.6800	INCHES
XMRP	1076.7000	IN. XO
YMRP	.0000	IN. YO
ZMRP	375.0000	IN. ZO
SCALE	.0150	

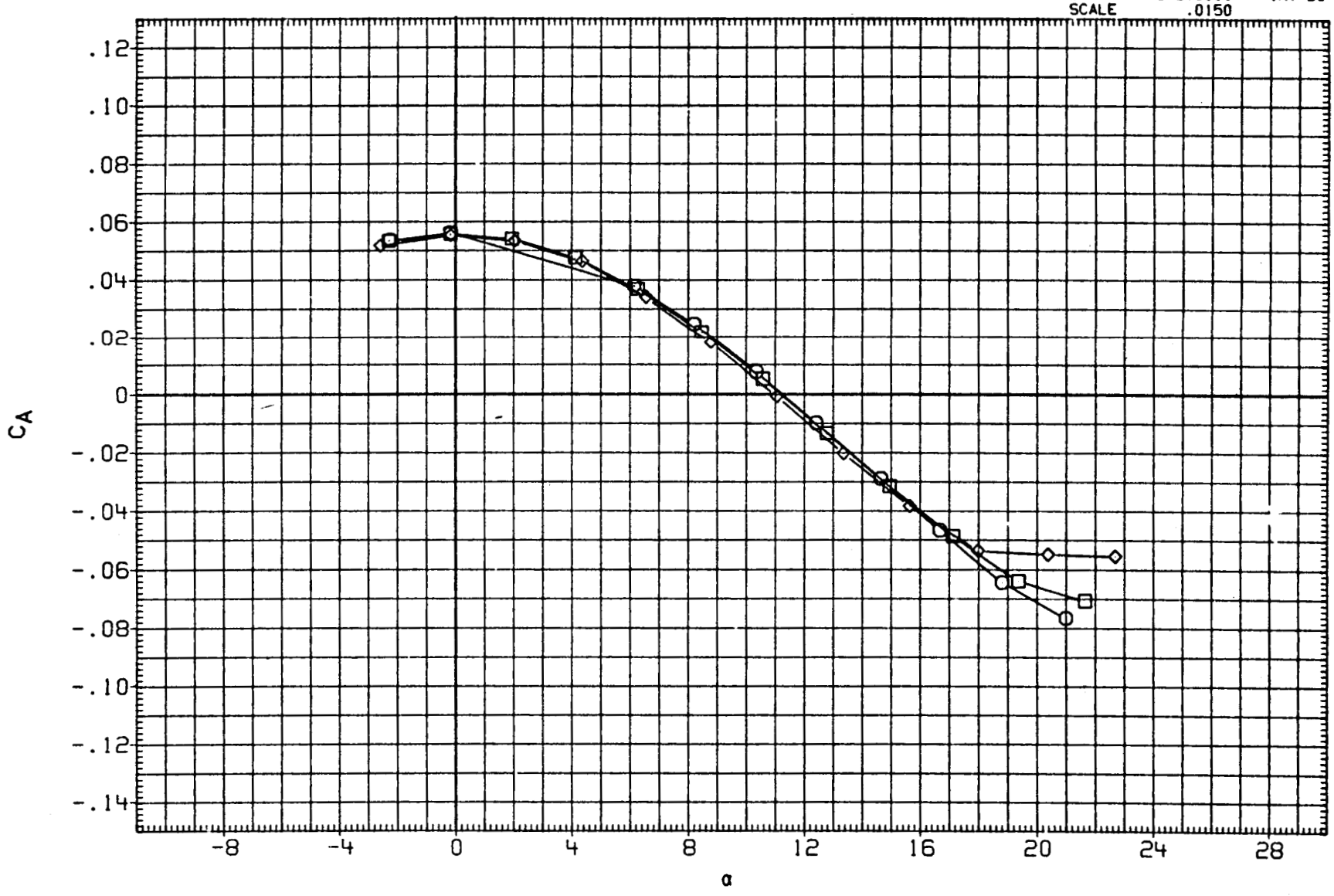


FIGURE 9. EFFECT OF REYNOLDS NUMBER ON AERODYNAMIC CHARACTERISTICS OF B7 FOREBODY, BETA=0 DEG

(RJE003) LARC LTPT 227 (LA73) B7WVS0EF

SYMBOL	RN/L	PARAMETRIC VALUES			
○	4.053	BETA	.000	ELEVON	.000
□	5.861	BDFLAP	-11.700	MACH	.250
◇	9.012				

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8000	INCHES
BREF	936.6800	INCHES
XMRP	1076.7000	IN. XO
YMRP	.0000	IN. YO
ZMRP	375.0000	IN. ZO
SCALE	.0150	

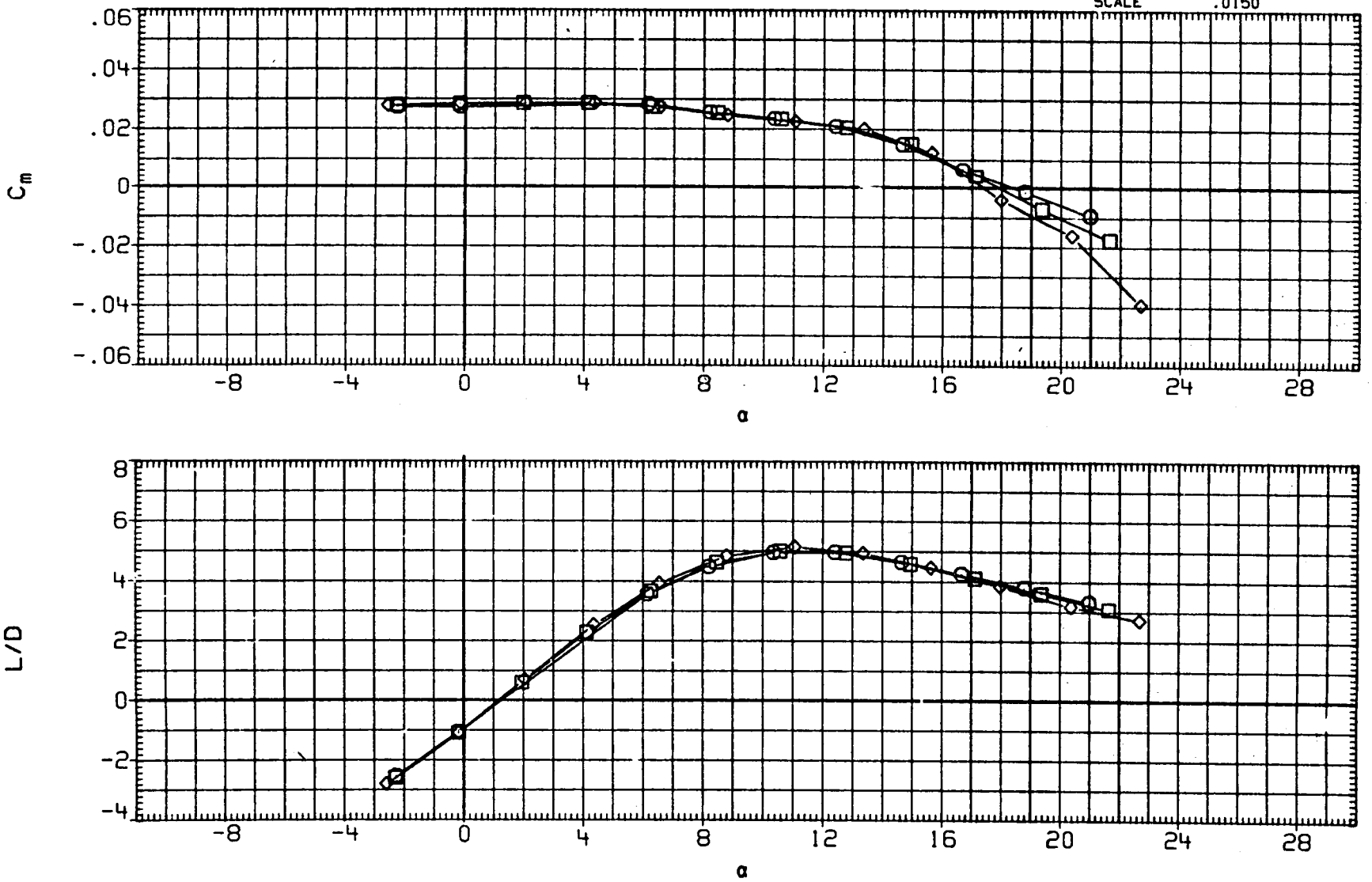


FIGURE 9. EFFECT OF REYNOLDS NUMBER ON AERODYNAMIC CHARACTERISTICS OF B7 FOREBODY, BETA=0 DEG

(RJE003) LARC LTPT 227 (LA73) B7WVS0EF

SYMBOL	RN/L	PARAMETRIC VALUES			
○	4.053	BETA	.000	ELEVON	.000
□	5.861	BDFLAP	-11.700	MACH	.250
◇	9.012				

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8000	INCHES
BREF	936.6800	INCHES
XMRP	1076.7000	IN. XO
YMRP	.0000	IN. YO
ZMRP	375.0000	IN. ZO
SCALE	.0150	

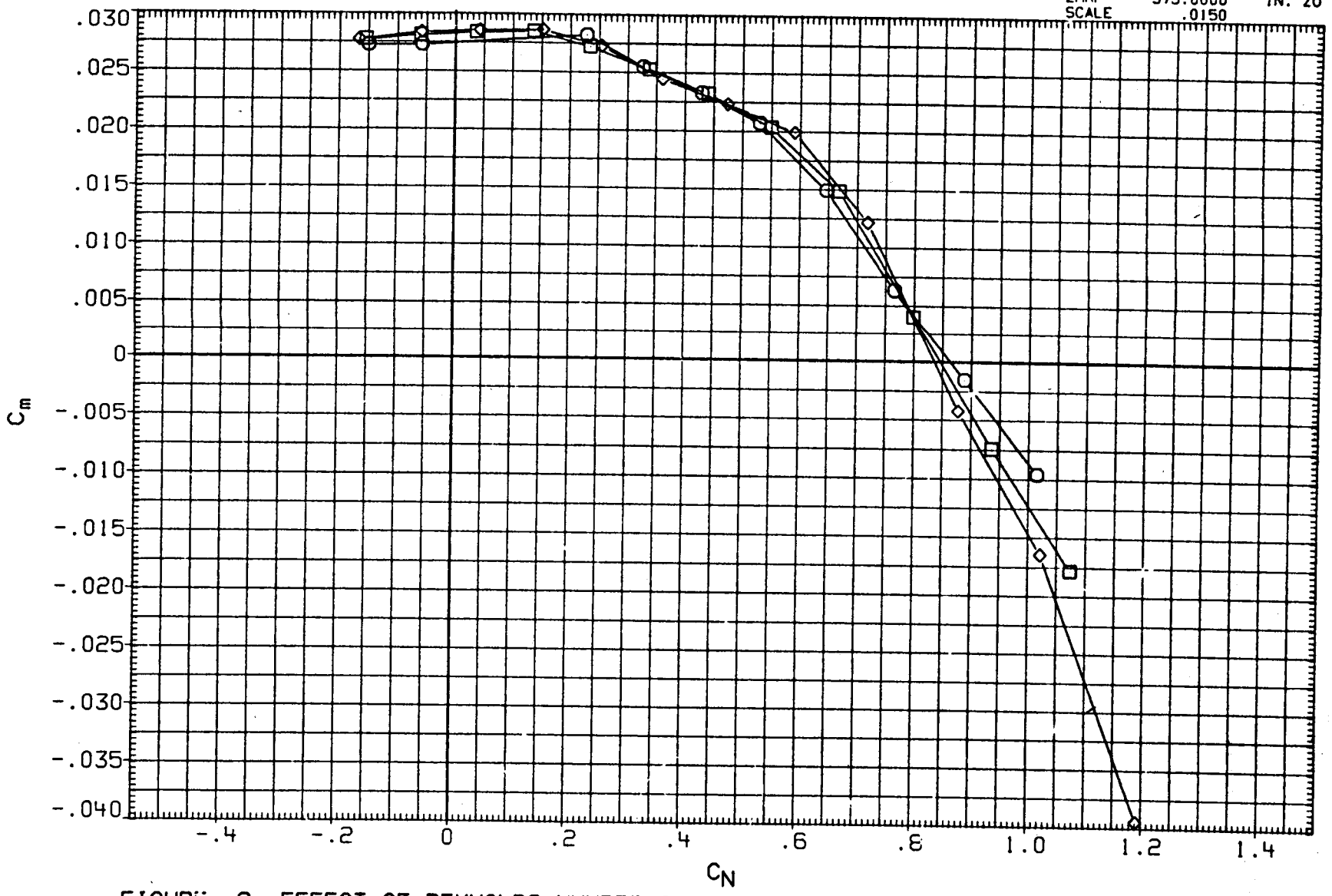


FIGURE 9. EFFECT OF REYNOLDS NUMBER ON AERODYNAMIC CHARACTERISTICS OF B7 FOREBODY, BETA=0 DEG

(RJE003) LARC LTPT 227 (LA73) B7WVSOEF

SYMBOL	RN/L	PARAMETRIC VALUES			
○	4.053	BETA	.000	ELEVON	.000
□	5.861	BDFLAP	-11.700	MACH	.250
◇	9.012				

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8000	INCHES
BREF	936.6800	INCHES
XMRP	1076.7000	IN. XO
YMRP	.0000	IN. YO
ZMRP	375.0000	IN. ZO
SCALE	.0150	

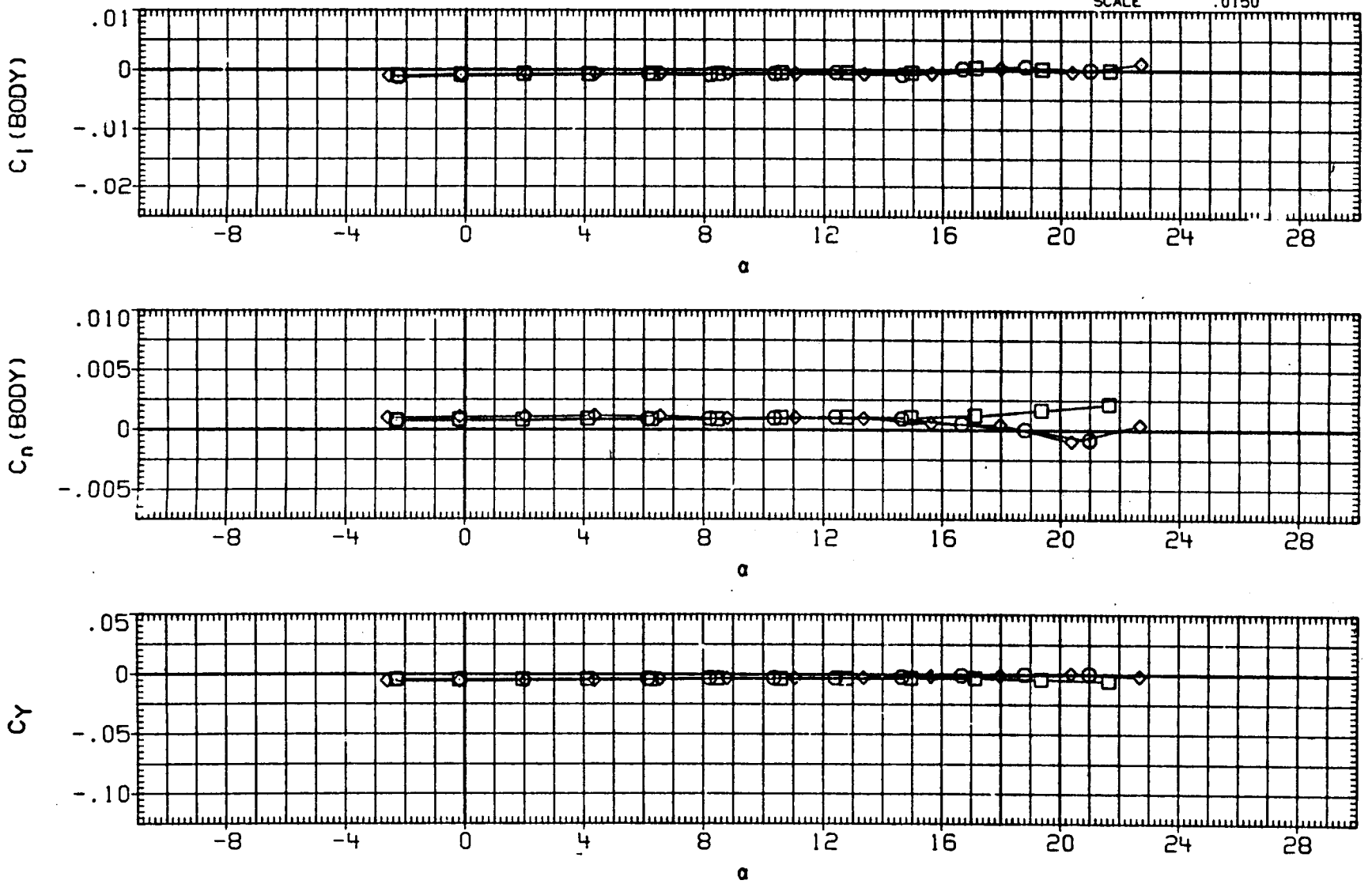


FIGURE 9. EFFECT OF REYNOLDS NUMBER ON AERODYNAMIC CHARACTERISTICS OF B7 FOREBODY, BETA=0 DEG

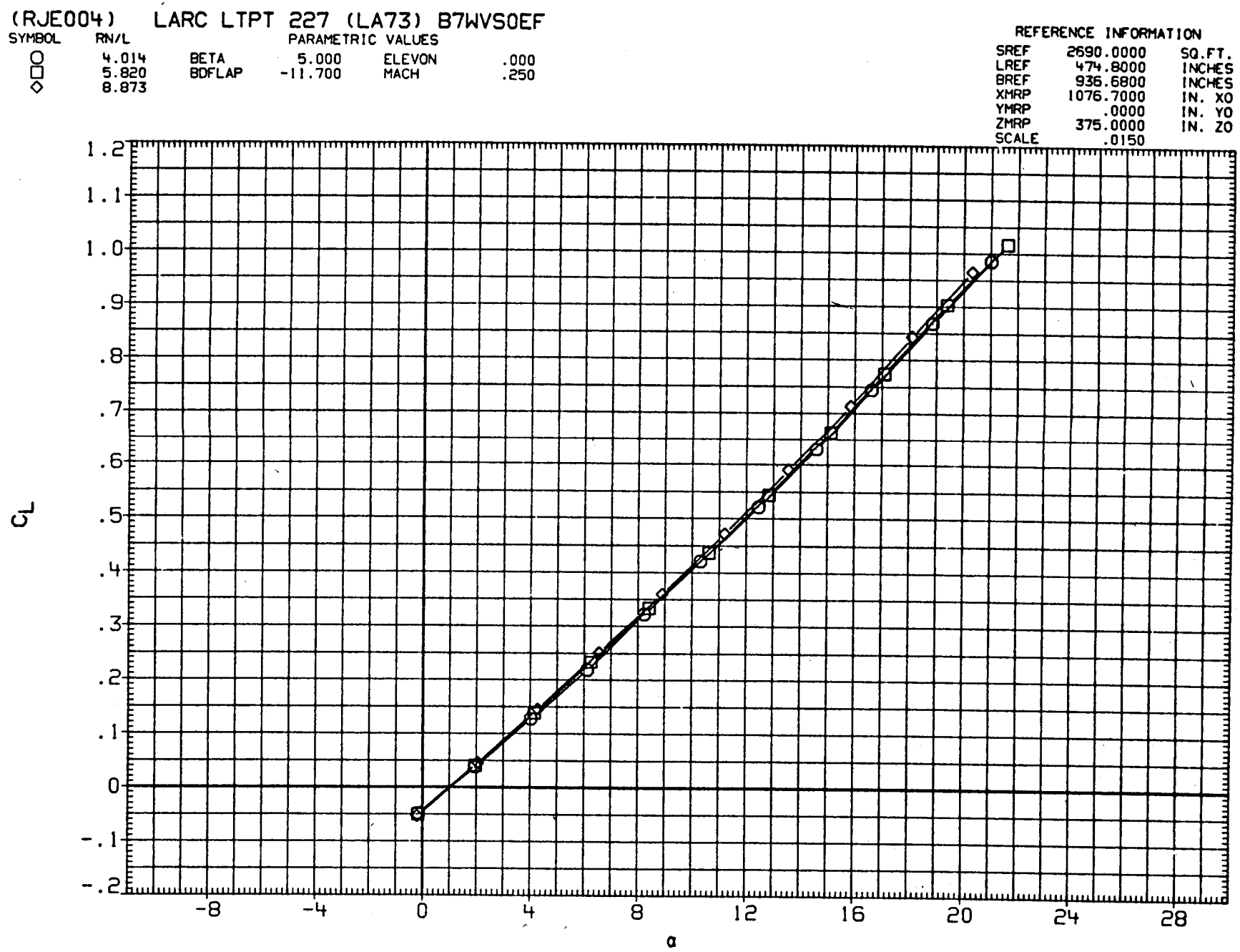


FIGURE 10. EFFECT OF REYNOLDS NUMBER ON AERODYNAMIC CHARACTERISTICS OF B7 FOREBODY, BETA=5 DEG

(RJE004) LARC LTPT 227 (LA73) B7WVS0EF

SYMBOL	RN/L		PARAMETRIC VALUES		
○	4.014	BETA	5.000	ELEVON	.000
□	5.820	BDFLAP	-11.700	MACH	.250
◇	8.873				

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8000	INCHES
BREF	936.6800	INCHES
XMRP	1076.7000	IN. XO
YMRP	.0000	IN. YO
ZMRP	375.0000	IN. ZO
SCALE	.0150	

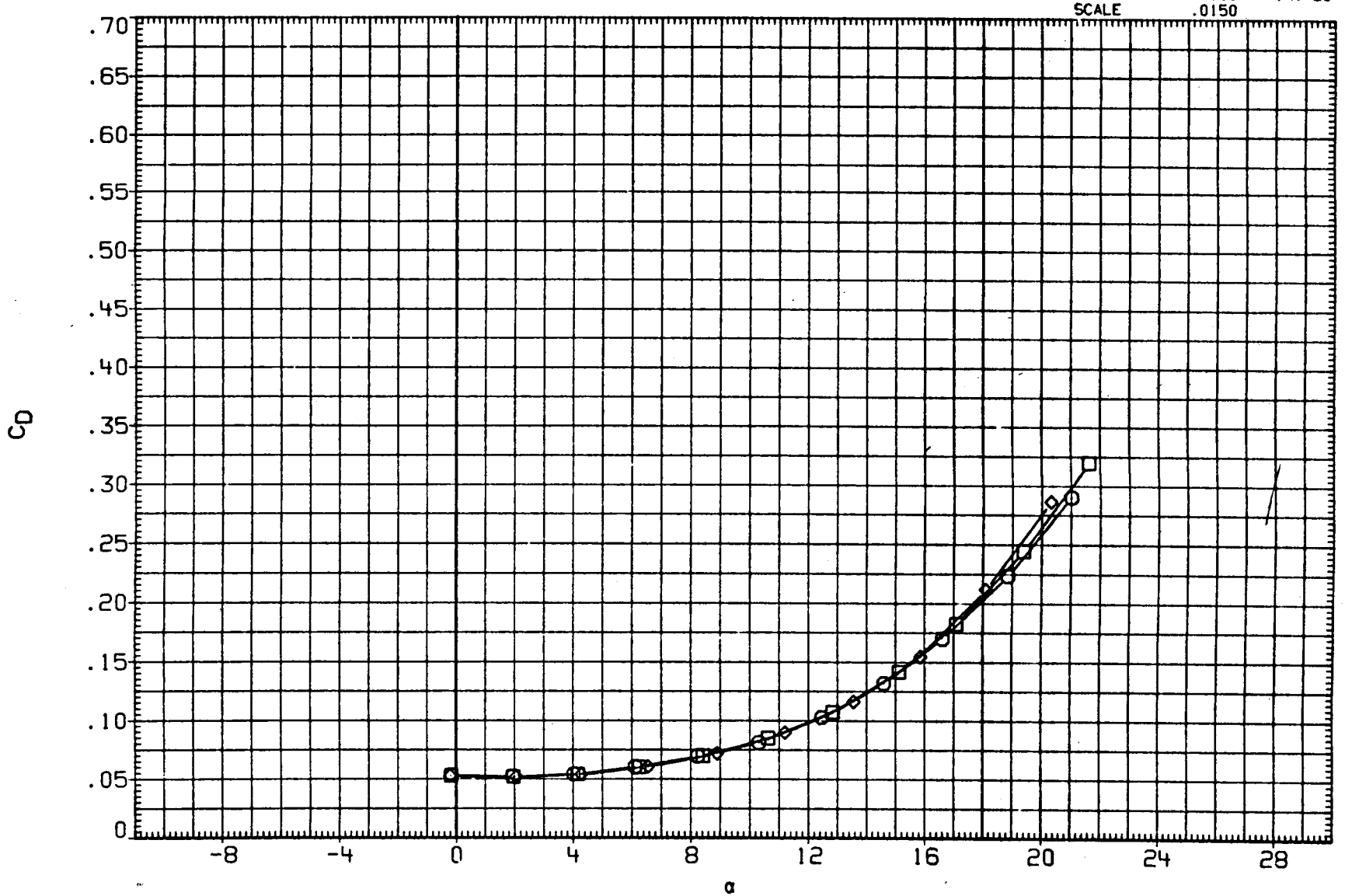


FIGURE 10. EFFECT OF REYNOLDS NUMBER ON AERODYNAMIC CHARACTERISTICS OF B7 FOREBODY, BETA=5 DEG

(RJE004) LARC LTPT 227 (LA73) B7WVS0EF

SYMBOL	RN/L	PARAMETRIC VALUES			
○	4.014	BETA	5.000	ELEVON	.000
□	5.820	BDFLAP	-11.700	MACH	.250
◇	8.873				

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8000	INCHES
BREF	936.6800	INCHES
XMRP	1076.7000	IN. XO
YMRP	.0000	IN. YO
ZMRP	375.0000	IN. ZO
SCALE	.0150	

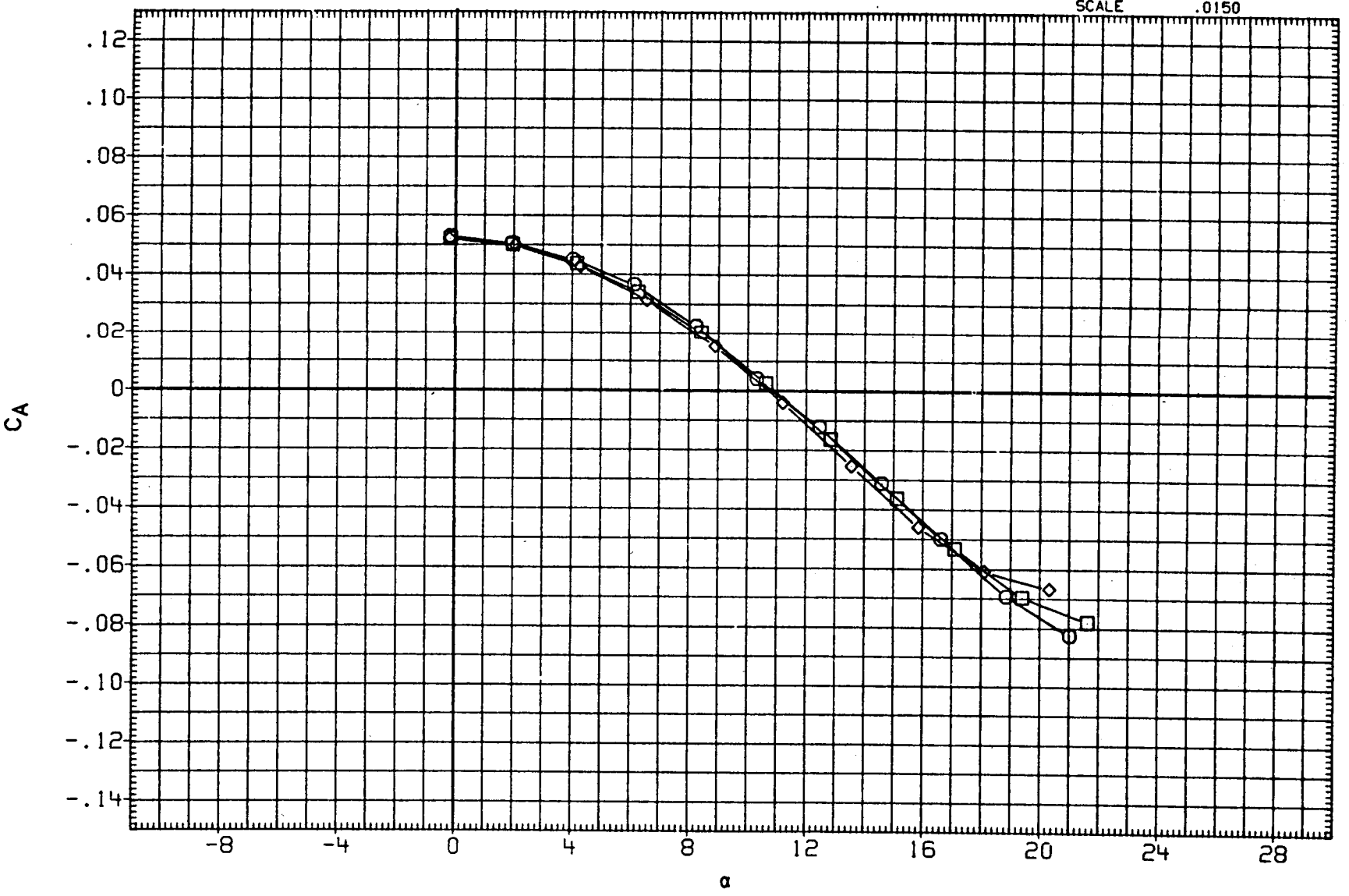


FIGURE 10. EFFECT OF REYNOLDS NUMBER ON AERODYNAMIC CHARACTERISTICS OF B7 FOREBODY, BETA=5 DEG

(RJE004) LARC LTPT 227 (LA73) B7WVSOEF

SYMBOL	RN/L		PARAMETRIC VALUES		
○	4.014	BETA	5.000	ELEVON	.000
□	5.820	BDFLAP	-11.700	MACH	.250
◇	8.873				

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8000	INCHES
BREF	936.6800	INCHES
XMRP	1076.7000	IN. XO
YMRP	.0000	IN. YO
ZMRP	375.0000	IN. ZO
SCALE	.0150	

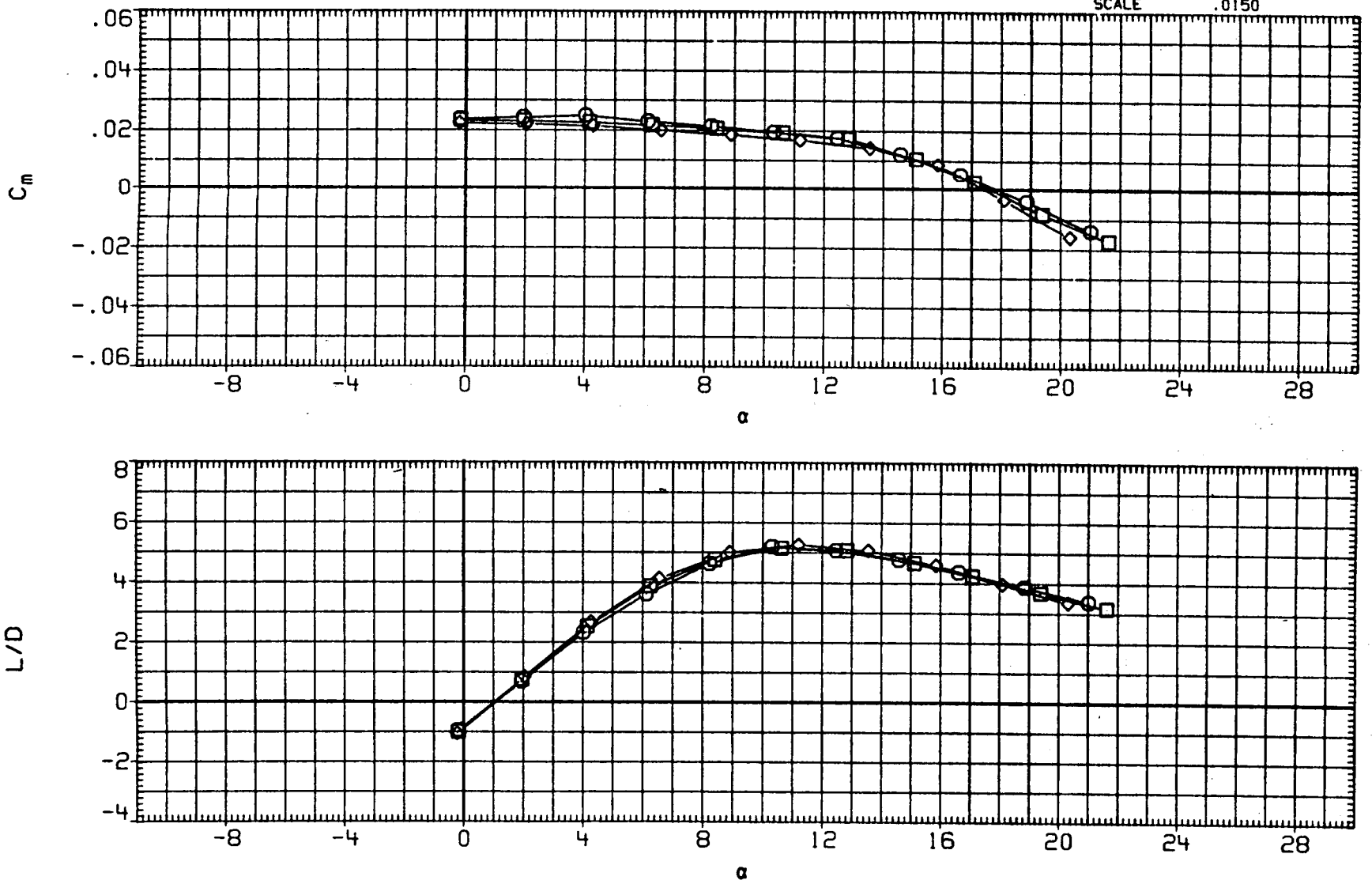


FIGURE 10. EFFECT OF REYNOLDS NUMBER ON AERODYNAMIC CHARACTERISTICS OF B7 FOREBODY, BETA=5 DEG

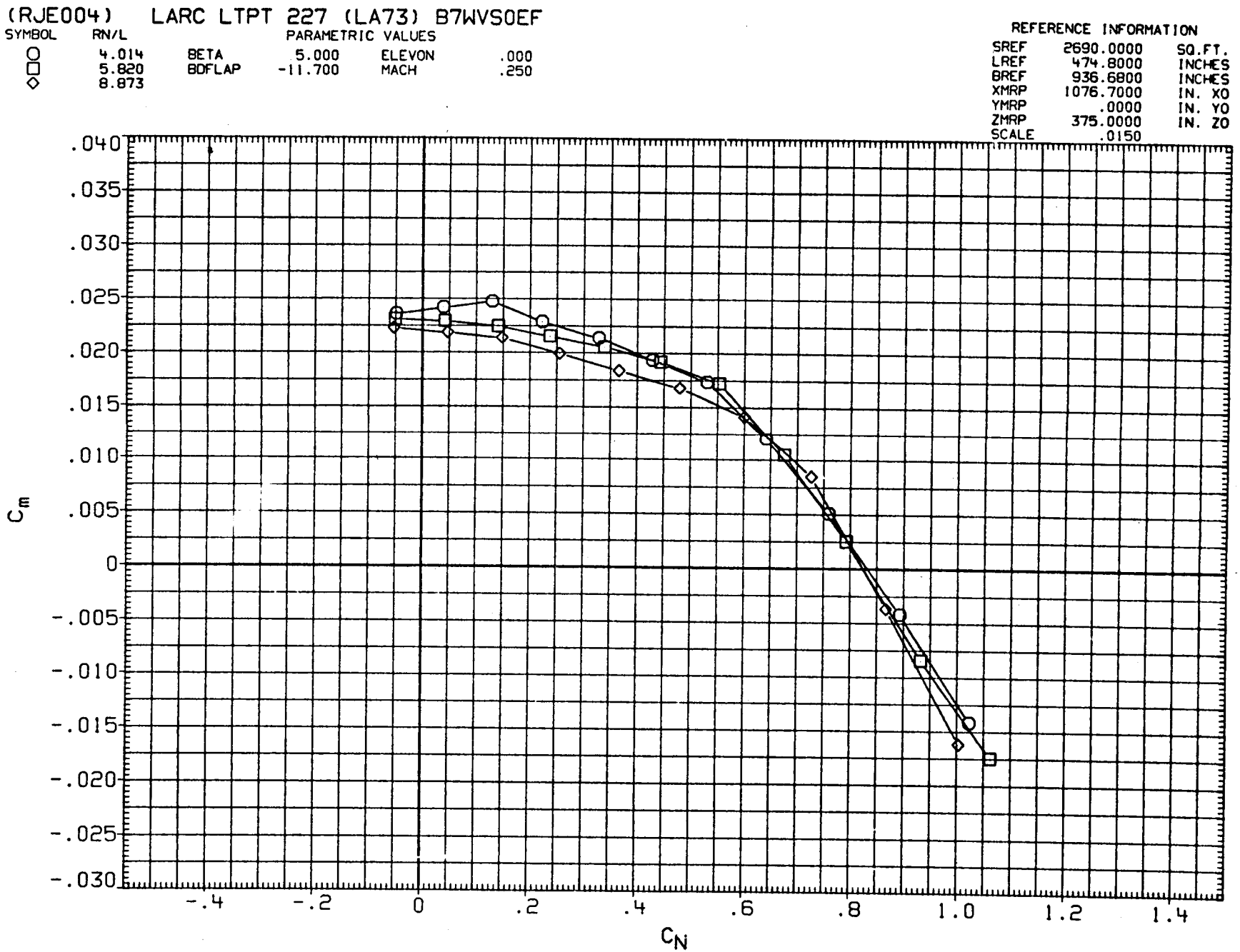


FIGURE 10. EFFECT OF REYNOLDS NUMBER ON AERODYNAMIC CHARACTERISTICS OF B7 FOREBODY, BETA=5 DEG

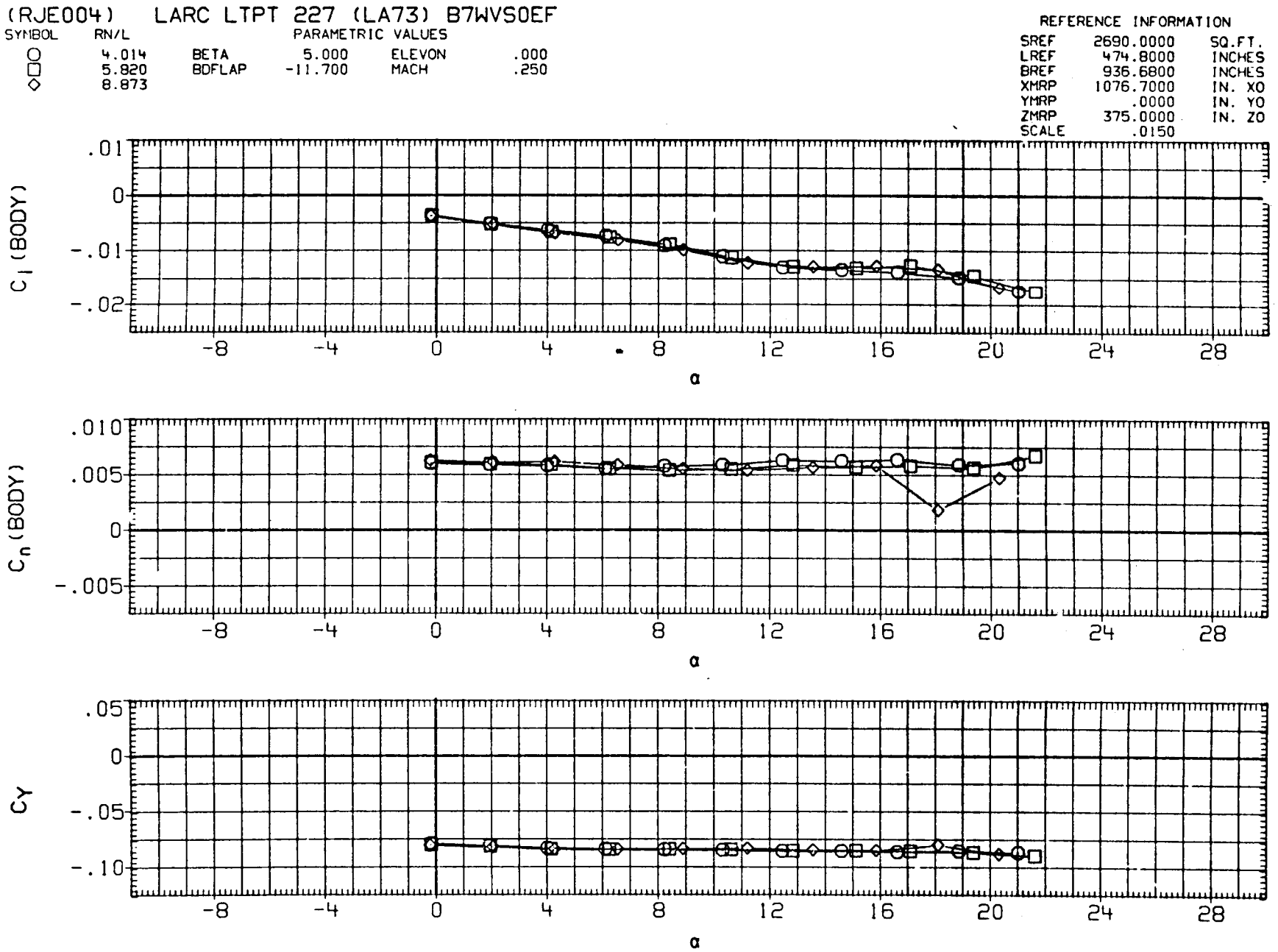


FIGURE 10. EFFECT OF REYNOLDS NUMBER ON AERODYNAMIC CHARACTERISTICS OF B7 FOREBODY, BETA=5 DEG

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	MACH	ELEVON	BDFLAP	DBETA
(CJE001)	○	LARC LTPT 227 (LA73) B1WVSOEF	.250	.000	-11.700	-5.000
(CK6001)	□	LARC LTPT 238(LA73B) B6WVSOEF	.250	.000	-11.700	-5.000
(CJE003)	◇	LARC LTPT 227 (LA73) B7WVSOEF	.250	.000	-11.700	-5.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8000	INCHES
BREF	936.6800	INCHES
XMRP	1076.7000	IN. XO
YMRP	.0000	IN. YO
ZMRP	375.0000	IN. ZO
SCALE	.0150	

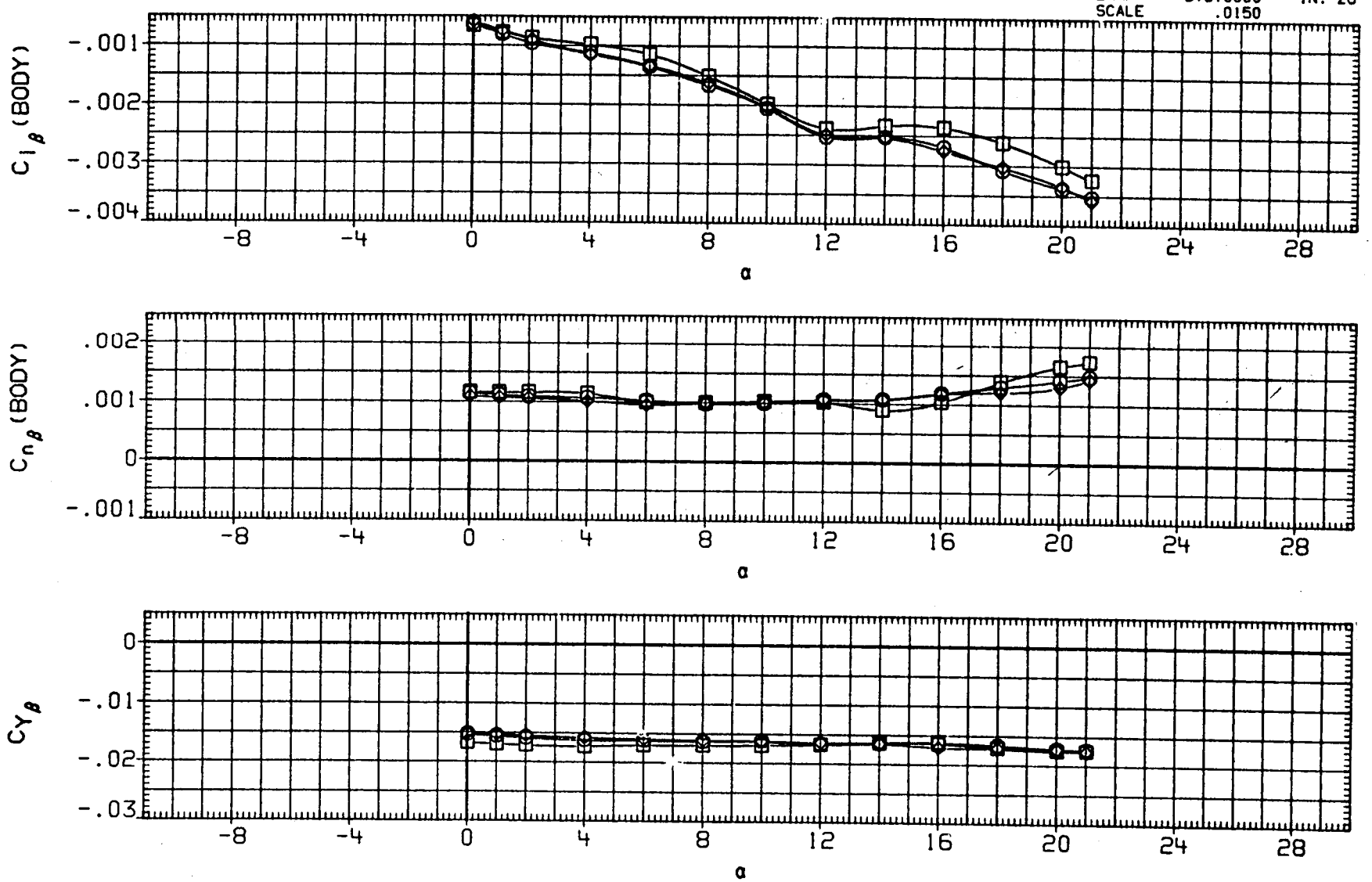


FIGURE 11. LATERAL DIRECTIONAL DERIVATIVES OF B1, B6 AND B7 FOREBODY AT CONSTANT REYNOLDS NUMBER

(A)RN/L = 4.06

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	MACH	ELEVON	BDFLAP	DBETA
(CJE001)	○	LARC LTPT 227 (LA73) B1WVSOEF	.250	.000	-11.700	-5.000
(CK6001)	□	LARC LTPT 238(LA73B) B6WVSOEF	.250	.000	-11.700	-5.000
(CJE003)	◇	LARC LTPT 227 (LA73) B7WVSOEF	.250	.000	-11.700	-5.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8000	INCHES
BREF	936.6800	INCHES
XMRP	1076.7000	IN. XO
YMRP	.0000	IN. YO
ZMRP	375.0000	IN. ZO
SCALE	.0150	

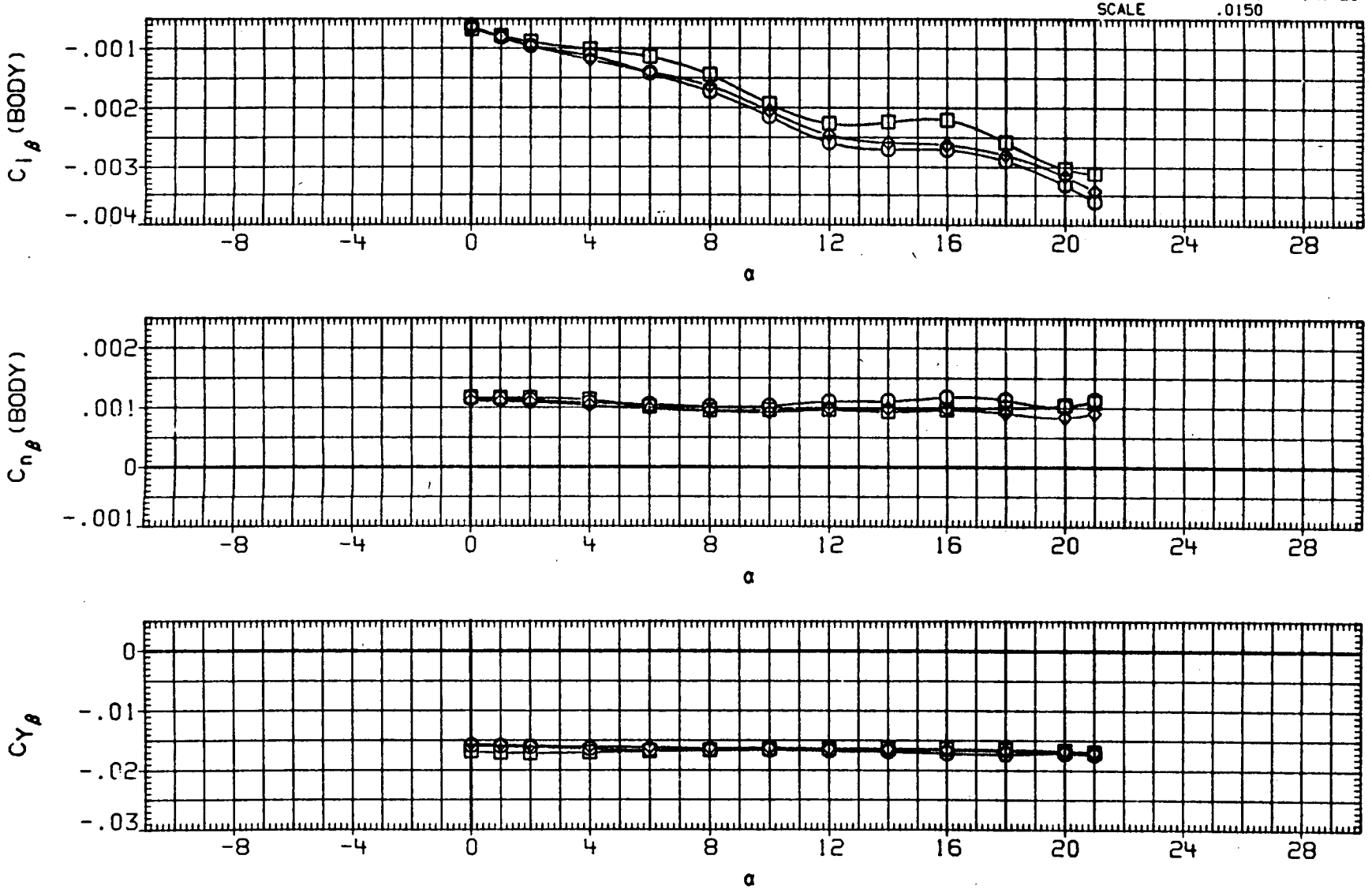


FIGURE 11. LATERAL DIRECTIONAL DERIVATIVES OF B1, B6 AND B7 FOREBODY AT CONSTANT REYNOLDS NUMBER

(B)RN/L = 6.02

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION
(CJE001)	○	LARC LTPT 227 (LA73) B1WVS0EF
(CK6001)	□	LARC LTPT 238(LA73B) B6WVS0EF
(CJE003)	◇	LARC LTPT 227 (LA73) B7WVS0EF

MACH	ELEVON	BDFLAP	DBETA
.250	.000	-11.700	-5.000
.250	.000	-11.700	-5.000
.250	.000	-11.700	-5.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8000	INCHES
BREF	936.6800	INCHES
XMRP	1076.7000	IN. XO
YMRP	.0000	IN. YO
ZMRP	375.0000	IN. ZO
SCALE	.0150	

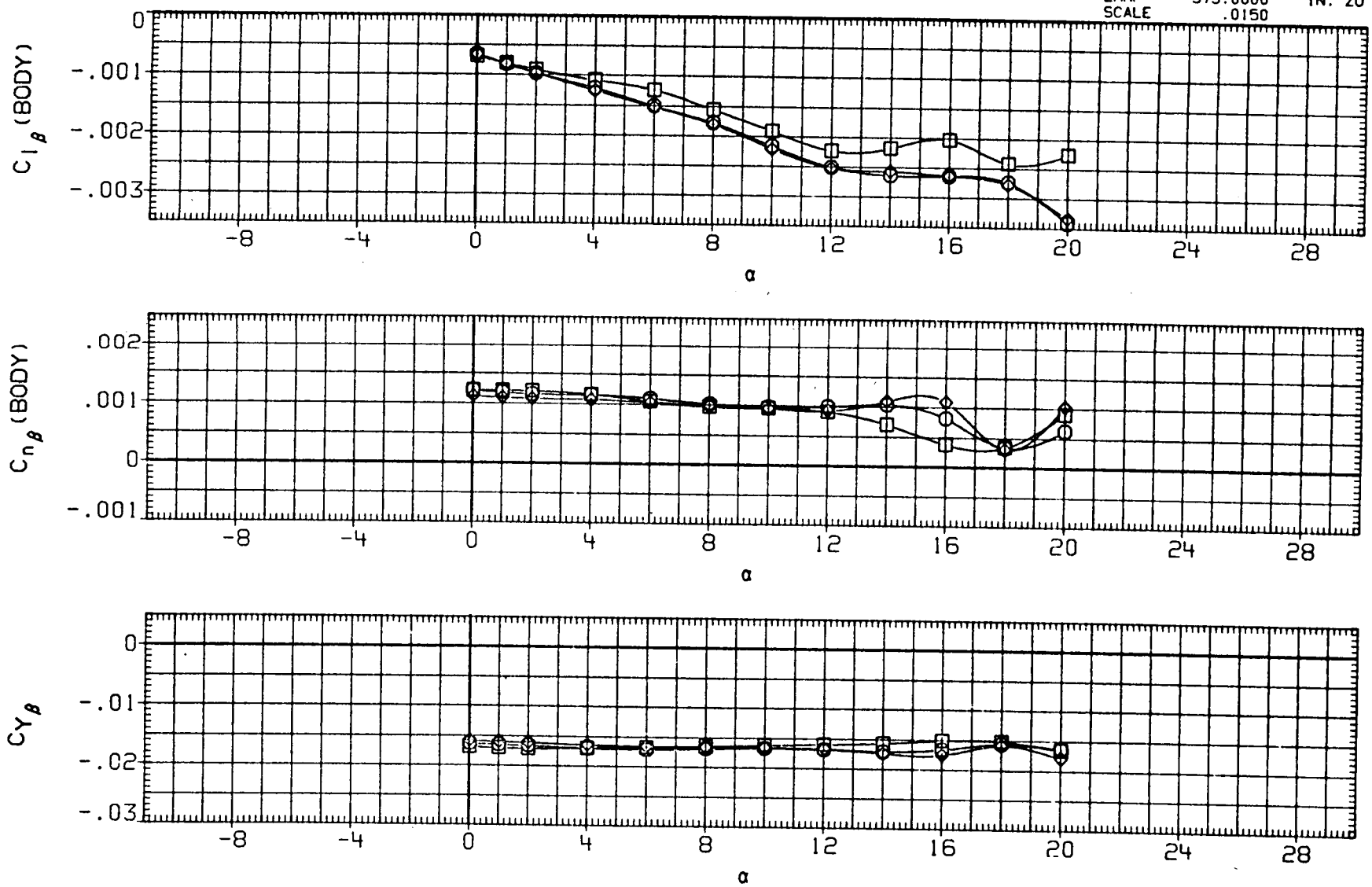


FIGURE 11. LATERAL DIRECTIONAL DERIVATIVES OF B1, B6 AND B7 FOREBODY AT CONSTANT REYNOLDS NUMBER

(C)RN/L = 9.04

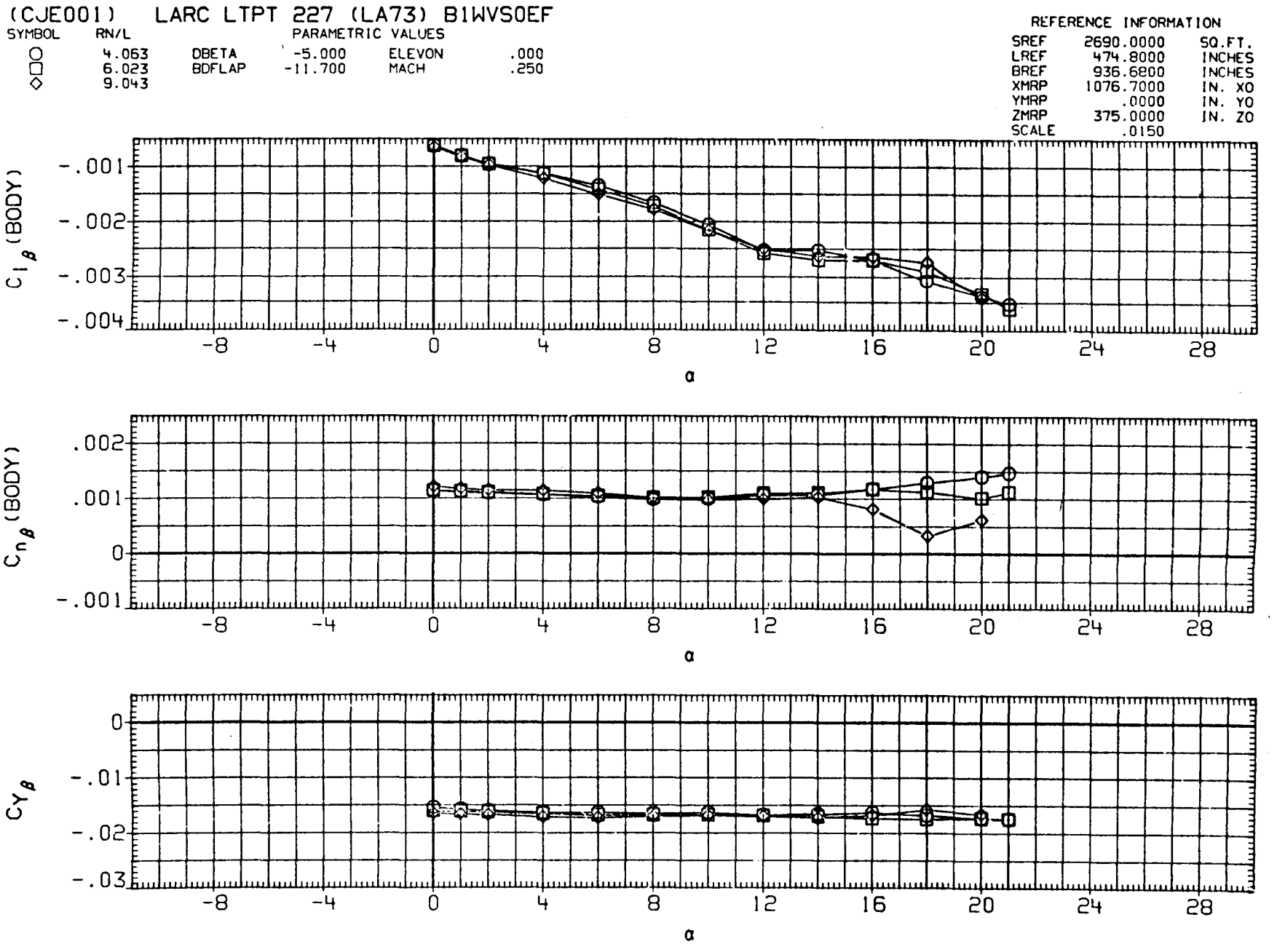


FIGURE 12. EFFECT OF REYNOLDS NUMBER ON B1 FOREBODY LATERAL DIRECTIONAL DERIVATIVES

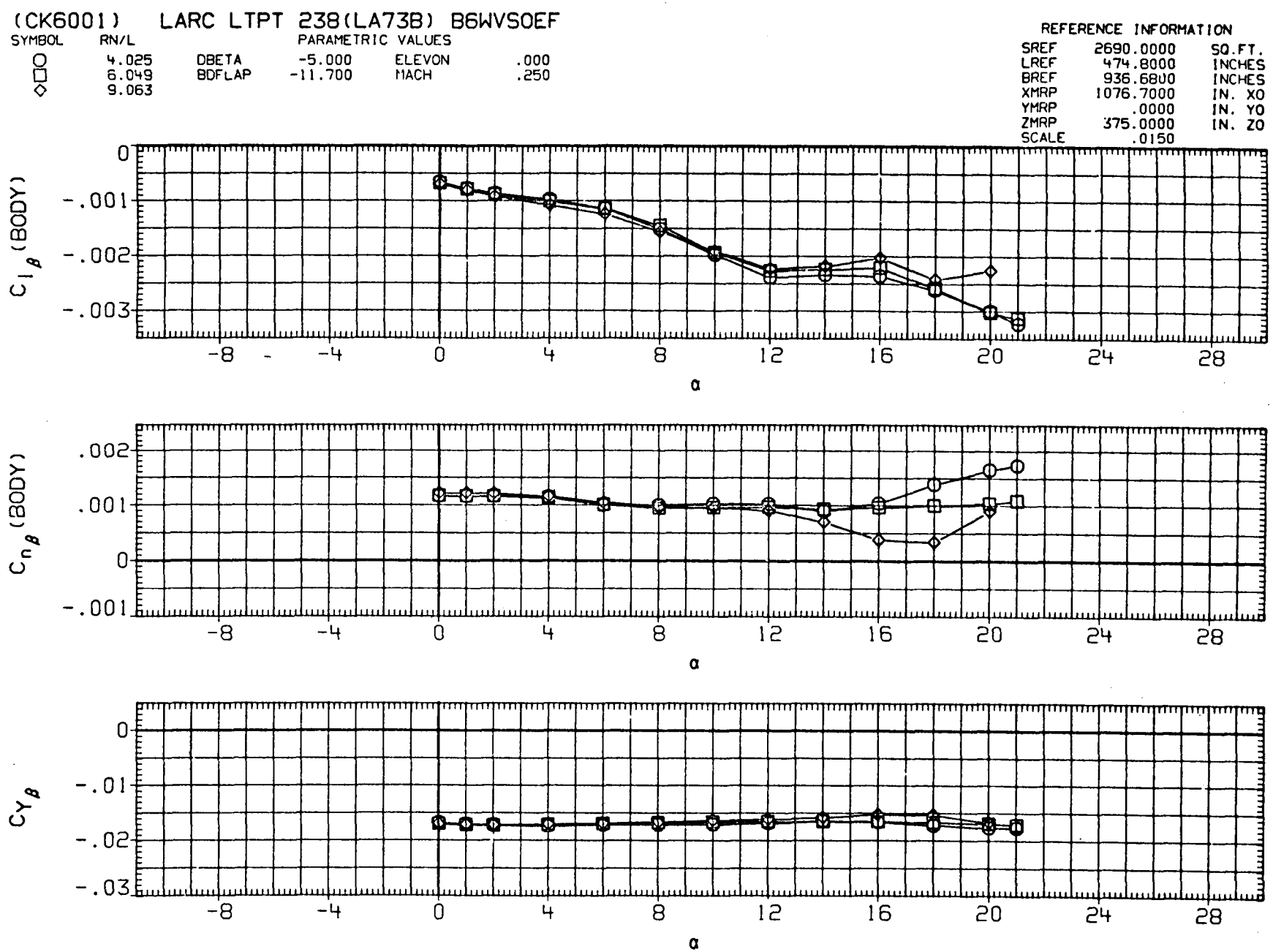


FIGURE 13. EFFECT OF REYNOLDS NUMBER ON B6 FOREBODY LATERAL DIRECTIONAL DERIVATIVES

(CJE003) LARC LTPT 227 (LA73) B7WVSOEF

SYMBOL	RN/L	PARAMETRIC VALUES			
○	4.037	DELTA	-5.000	ELEVON	.000
□	5.881	BDFLAP	-11.700	MACH	.250
◇	8.970				

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8000	INCHES
BREF	936.6800	INCHES
XMRP	1076.7000	IN. XO
YMRP	.0000	IN. YO
ZMRP	375.0000	IN. ZO
SCALE	.0150	

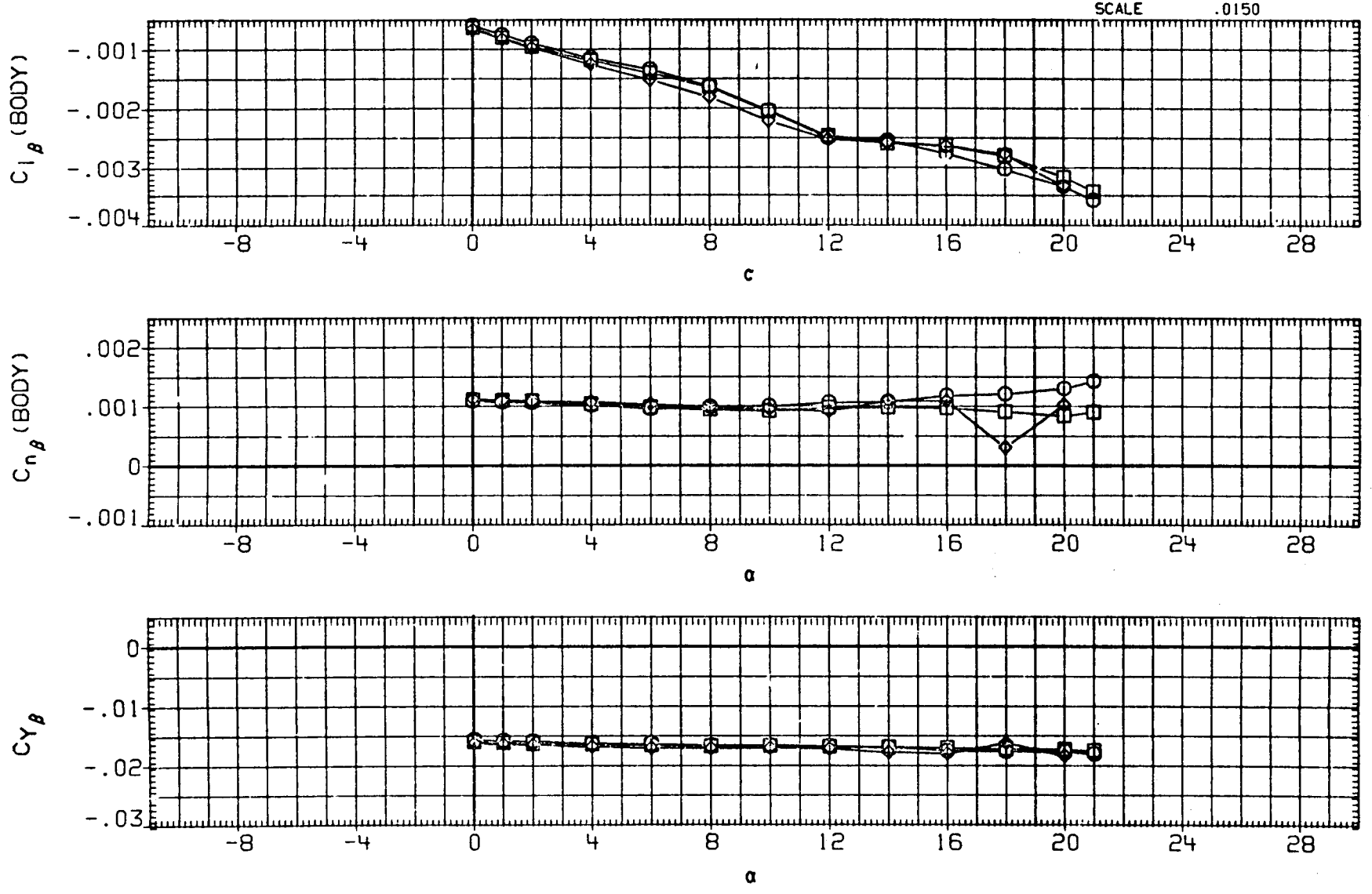


FIGURE 14. EFFECT OF REYNOLDS NUMBER ON B7 FOREBODY LATERAL DIRECTIONAL DERIVATIVES

APPENDIX

TABULATED SOURCE DATA

LARC LTPT 227 (LA73) B1WVS0EF (RJE001) (08 MAR 76)

REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.7000 IN. XO
LREF = 474.8000 INCHES YMRP = .0000 IN. YO
BREF = 936.6800 INCHES ZMRP = 375.0000 IN. ZO
SCALE = .0150

PARAMETRIC DATA

BETA = .000 ELEVON = .000
BDFLAP = -11.700 MACH = .250

RUN NO. 13/ 0 RN/L = 4.06 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
4.069	-2.313	-.02311	-.15117	.05326	.02682	-.00113	.00101	-.00521	-.14889	.05932	-2.50995
4.064	-.192	-.02177	-.05588	.05567	.02728	-.00104	.00099	-.00533	-.05569	.05586	-.99702
4.063	1.876	-.01993	.03179	.05263	.03017	-.00086	.00100	-.00440	.03005	.05364	.56009
4.075	3.980	-.02008	.12830	.04734	.02988	-.00094	.00110	-.00404	.12470	.05613	2.22145
4.063	6.063	-.01859	.22613	.03704	.02858	-.00091	.00106	-.00374	.22095	.06072	3.63894
4.051	8.186	-.02259	.32921	.02332	.02526	-.00090	.00102	-.00327	.32253	.06996	4.61016
4.052	10.290	-.01979	.42891	.00674	.02330	-.00068	.00112	-.00313	.42080	.08325	5.05499
4.058	12.360	-.04456	.52945	-.01136	.02106	-.00044	.00123	-.00278	.51961	.10223	5.08273
4.055	14.734	-.04419	.65388	-.03260	.01435	-.00083	.00092	-.00202	.64067	.13477	4.75372
4.040	17.050	-.02564	.79014	-.05306	.00450	.00057	.00017	-.00044	.77097	.18093	4.26106
4.041	18.906	-.01995	.89723	-.06758	-.00118	.00068	-.00057	.00096	.87072	.22679	3.83938
4.063	20.963	-.01139	1.02200	-.07821	-.00810	.00003	-.00139	.00143	.98234	.29259	3.35736
	GRADIENT	.00052	.04421	-.00099	.00058	.00004	.00001	.00021	.04328	-.00056	.75193

RUN NO. 15/ 0 RN/L = 6.04 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
6.036	-2.356	-.03953	-.15369	.05313	.02738	-.00114	.00110	-.00608	-.15138	.05941	-2.54813
6.023	-.210	-.03575	-.05744	.05531	.02793	-.00096	.00109	-.00516	-.05724	.05552	-1.03093
6.030	1.924	-.03334	.03677	.05350	.02849	-.00080	.00110	-.00528	.03495	.05470	.63894
6.052	4.067	-.03077	.13520	.04700	.02856	-.00078	.00118	-.00488	.13152	.05647	2.32899
6.040	6.239	-.03399	.23631	.03611	.02752	-.00091	.00120	-.00416	.23099	.06158	3.75094
6.040	8.389	-.03808	.33769	.02143	.02481	-.00075	.00114	-.00363	.33095	.07047	4.69633
6.031	10.544	-.02681	.44157	.00420	.02289	-.00068	.00124	-.00364	.43334	.08493	5.10210
6.022	12.759	-.02453	.55231	-.01486	.02046	-.00064	.00127	-.00296	.54196	.10748	5.04217
6.050	14.908	-.01955	.66714	-.03349	.01507	-.00089	.00104	-.00202	.65330	.13927	4.69099
6.052	17.136	-.00284	.79735	-.05208	.00476	-.00002	.00064	-.00092	.77730	.19516	4.19807
6.012	19.266	.00646	.92977	-.06912	-.00715	-.00008	.00061	-.00052	.90050	.24153	3.72835
6.042	21.511	.01176	1.05678	-.07529	-.01614	.00015	.00037	-.00124	1.0'079	.31745	3.18412
	GRADIENT	.00134	.04489	-.00094	.00019	.00006	.00001	.00016	.04396	-.00045	.76162

LARC LTPT 227 (LA73) B1WVSOEF (RJE001) (08 MAR 76)

REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.7000 IN. XO
LREF = 474.8000 INCHES YMRP = .0000 IN. YO
BREF = 936.6800 INCHES ZMRP = 375.0000 IN. ZO
SCALE = .0150

PARAMETRIC DATA

BETA = .000 ELEVON = .000
BDFLAP = -11.700 MACH = .250

RUN NO. 17/ 0 RN/L = 8.98 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
9.067	-2.482	-.05635	-.16145	.05221	.02768	-.00111	.00106	-.00666	-.15904	.05915	-2.68879
9.047	-.241	-.05533	-.06162	.05505	.02798	-.00090	.00111	-.00575	-.06139	.05531	-1.10984
9.014	2.011	-.05831	.04148	.05306	.02835	-.00086	.00123	-.00504	.03959	.05449	.72661
9.035	4.252	-.05443	.14616	.04619	.02765	-.00097	.00124	-.00466	.14234	.05690	2.50149
8.988	6.518	-.05768	.25135	.03390	.02640	-.00096	.00129	-.00389	.24588	.06221	3.95231
8.997	8.769	-.05798	.35923	.01794	.02407	-.00094	.00134	-.00345	.35230	.07250	4.85960
9.004	13.363	-.07250	.58728	-.02034	.01962	-.00077	.00162	-.00259	.57608	.11595	4.96856
9.012	15.674	-.07912	.71695	-.03926	.01260	-.00055	.00169	-.00209	.70090	.15590	4.49569
8.977	18.257	-.08325	.88746	-.05570	-.00473	.00047	.00198	-.00225	.86023	.22513	3.82109
8.976	20.231	-.04229	1.00605	-.05525	-.01607	.00074	.00119	-.00132	.96309	.29605	3.25313
	GRADIENT	.00012	.04569	-.00089	.00001	.00002	.00003	.00030	.04476	-.00034	.77526

LARC LTPT 227 (LA73) B1WVSOEF (RJE002) (08 MAR 76)

REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.7000 IN. XO
LREF = 474.8000 INCHES YMRP = .0000 IN. YO
BREF = 936.6800 INCHES ZMRP = 375.0000 IN. ZO
SCALE = .0150

PARAMETRIC DATA

BETA = 5.000 ELEVON = .000
BDFLAP = -11.700 MACH = .250

RUN NO. 14/ 0 RN/L = 4.06 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
4.064	-.172	4.62959	-.05236	.05234	.02171	-.00380	.00634	-.07673	-.05221	.05250	-.99439
4.038	1.890	4.68811	.03605	.05024	.02389	-.00533	.00615	-.07917	.03437	.05140	.66864
4.025	3.988	4.73724	.12739	.04417	.02442	-.00628	.00619	-.08157	.12401	.05293	2.34298
4.012	6.072	4.77569	.22606	.03485	.02284	-.00745	.00597	-.08181	.22110	.05857	3.77506
4.001	8.220	4.80219	.32913	.02179	.02031	-.00917	.00575	-.08218	.32263	.06863	4.70112
4.019	10.260	4.83778	.42568	.00542	.01880	-.01095	.00599	-.08252	.41791	.08116	5.14936
4.030	10.712	4.29944	.44661	.00189	.01913	-.01022	.00560	-.07437	.43848	.08487	5.16639
4.026	13.610	4.47506	.58971	-.02328	.01522	-.01229	.00593	-.07728	.57863	.11614	4.98199
4.011	16.590	4.82025	.75654	-.05160	.00481	-.01335	.00627	-.08007	.73978	.16656	4.44141
4.053	18.873	4.74222	.88911	-.07237	-.00438	-.01462	.00582	-.07985	.86471	.21913	3.94611
4.056	20.991	4.81682	1.01844	-.08349	-.01470	-.01703	.00572	-.08240	.98076	.28688	3.41866
	GRADIENT	.02587	.04321	-.00197	.00065	-.00060	-.00004	-.00116	.04236	.00011	.80224

LARC LTPT 227 (LA73) B1WVS0EF (RJE002) (08 MAR 76)

REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.7000 IN. XO
LREF = 474.8000 INCHES YMRP = .0000 IN. YO
BREF = 936.6800 INCHES ZMRP = 375.0000 IN. ZO
SCALE = .0150

PARAMETRIC DATA

BETA = 5.000 ELEVON = .000
BDFLAP = -11.700 MACH = .250

RUN NO. 16/ 0 RN/L = 6.02 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
6.022	-.187	4.59785	-.05251	.05227	.02237	-.00374	.00641	-.07913	-.05234	.05244	-.99799
6.027	1.966	4.58499	.04184	.05020	.02271	-.00522	.00627	-.08008	.04009	.05160	.77689
6.000	4.078	4.64526	.13346	.04375	.02345	-.00612	.00620	-.08204	.13001	.05313	2.44699
6.002	6.263	4.65734	.23753	.03376	.02158	-.00778	.00610	-.08268	.23243	.05948	3.90783
6.012	8.408	4.72246	.34012	.01977	.01945	-.00934	.00595	-.08311	.33357	.06929	4.81383
6.004	10.584	4.71590	.44454	.00240	.01838	-.01156	.00620	-.08272	.43654	.08402	5.19571
6.025	12.785	4.72793	.55241	-.01704	.01604	-.01338	.00658	-.08333	.54248	.10563	5.13573
6.019	15.043	4.73725	.67494	-.03747	.01051	-.01362	.00633	-.08293	.66154	.13899	4.75965
6.024	17.129	4.74653	.79530	-.05657	.00171	-.01327	.00633	-.08355	.77669	.18017	4.31091
6.011	19.425	4.72857	.93293	-.07410	-.00857	-.01508	.00536	-.08163	.90447	.24038	3.76270
6.021	21.654	4.71384	1.06391	-.08301	-.01943	-.01782	.00609	-.08408	1.01945	.31543	3.23190
	GRADIENT	.01106	.04360	-.00199	.00025	-.00056	-.00005	-.00068	.04276	.00016	.80779

RUN NO. 18/ 0 RN/L = 8.77 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
8.975	-.233	4.39809	-.05475	.05185	.02274	-.00365	.00656	-.07860	-.05454	.05207	-1.04746
8.989	2.018	4.45112	.04468	.04959	.02246	-.00528	.00645	-.08032	.04290	.05113	.83910
8.939	4.237	4.53324	.14646	.04264	.02177	-.00670	.00650	-.08289	.14291	.05334	2.67905
8.897	6.503	4.58808	.25295	.03138	.01993	-.00832	.00631	-.08351	.24777	.05983	4.14131
8.898	8.767	4.66403	.35972	.01578	.01862	-.00996	.00601	-.08294	.35311	.07042	5.01438
8.883	10.992	4.64359	.46918	-.00261	.01725	-.01201	.00610	-.08233	.46107	.08689	5.30624
8.851	13.311	4.68367	.58919	-.02331	.01437	-.01318	.00645	-.08362	.57873	.11297	5.12292
8.879	15.677	4.67157	.71807	-.04383	.00721	-.01315	.00593	-.08201	.70320	.15184	4.63124
8.842	17.871	4.77632	.85559	-.05886	-.00545	-.01285	.00369	-.07836	.83237	.20654	4.03005
8.772	20.245	4.78548	1.00321	-.06645	-.01907	-.01625	.00449	-.08165	.96423	.28480	3.38561
	GRADIENT	.03022	.04501	-.00206	-.00022	-.00068	-.00001	-.00096	.04417	.00028	.83368

LARC LTPT 227 (LA73) B7WVSOEF (RJE003) (08 MAR 76)

REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.7000 IN. XO
LREF = 474.8000 INCHES YMRP = .0000 IN. YO
BREF = 936.6800 INCHES ZMRP = 375.0000 IN. ZO
SCALE = .0150

PARAMETRIC DATA

BETA = .000 ELEVON = .000
BDFLAP = -11.700 MACH = .250

RUN NO. 3/ 0 RN/L = 4.04 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
4.053	-2.278	-.01769	-.15116	.05365	.02736	-.00123	.00073	-.00458	-.14891	.05962	-2.49783
4.038	-.171	-.01600	-.05787	.05618	.02738	-.00102	.00074	-.00452	-.05771	.05635	-1.02407
4.037	6.150	-.02188	.22800	.03792	.02827	-.00075	.00086	-.00392	.22263	.06213	3.58347
4.038	8.209	-.02204	.32626	.02459	.02556	-.00092	.00088	-.00359	.31940	.07092	4.50358
4.039	10.355	-.01895	.42884	.00761	.02336	-.00069	.00093	-.00346	.42049	.08458	4.97179
4.033	12.407	-.02673	.52939	-.00987	.02080	-.00046	.00104	-.00332	.51914	.10410	4.98682
4.043	14.645	-.01118	.64639	-.02895	.01499	-.00085	.00091	-.00267	.63271	.13541	4.67239
4.039	16.669	-.00680	.76566	-.04661	.00637	.00014	.00048	-.00122	.74686	.17497	4.26854
4.030	18.794	-.00344	.88836	-.06441	-.00143	.00051	.00001	-.00026	.8[illegible]175	.22523	3.82616
4.041	20.982	.02103	1.01503	-.07649	-.00951	-.00005	-.00084	.00026	.97512	.29204	3.33903
	GRADIENT	.00080	.04428	.00120	.00001	.00010	.00000	.00003	.04328	-.00155	.69946

RUN NO. 5/ 0 RN/L = 5.83 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
5.861	-2.312	-.02426	-.15504	.05328	.02783	-.00104	.00075	-.00483	-.15276	.05949	-2.56798
5.881	-.181	-.02775	-.06014	.05576	.02820	-.00087	.00082	-.00519	-.05996	.05595	-1.07156
5.865	1.943	-.02389	.03613	.05407	.02845	-.00077	.00080	-.00462	.03428	.05526	.62030
5.853	4.122	-.02370	.13588	.04757	.02857	-.00078	.00089	-.00464	.13211	.05722	2.30886
5.860	6.267	-.02050	.23396	.03673	.02730	-.00075	.00087	-.00460	.22856	.06205	3.68327
5.858	8.460	-.01559	.33764	.02179	.02532	-.00073	.00087	-.00361	.33076	.07123	4.64371
5.840	10.576	-.02300	.43988	.00530	.02328	-.00058	.00101	-.00388	.43144	.08594	5.02017
5.878	12.778	-.02051	.54922	-.01332	.02043	-.00051	.00104	-.00383	.53857	.10849	4.96435
5.864	14.954	-.01743	.66844	-.03155	.01494	-.00054	.00102	-.00336	.65394	.14201	4.60496
5.821	17.119	-.01449	.79889	-.04866	.00408	.00030	.00120	-.00358	.77782	.18865	4.12300
5.857	19.361	-.01275	.93614	-.06400	-.00736	.00012	.00163	-.00444	.90442	.24996	3.61828
5.833	21.644	-.05197	1.07344	-.07059	-.01773	-.00011	.00215	-.00551	1.02379	.33031	3.09946
	GRADIENT	.00026	.04523	-.00088	.00012	.00004	.00002	.00005	.04429	-.00035	.76185

LARC LTPT 227 (LA73) B7WVS0EF (RJE003) (08 MAR 76)

REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.7000 IN. XO
LREF = 474.8000 INCHES YMRP = .0000 IN. YO
BREF = 936.6800 INCHES ZMRP = 375.0000 IN. ZO
SCALE = .0150

PARAMETRIC DATA

BETA = .000 ELEVON = .000
BDFLAP = -11.700 MACH = .250

RUN NO. 9/ 0 RN/L = 8.90 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
9.012	-2.603	-.04934	-.16713	.05176	.02780	-.00111	.00097	-.00590	-.16461	.05930	-2.77585
8.967	-.170	-.05262	-.05895	.05532	.02844	-.00086	.00106	-.00586	-.05878	.05549	-1.05927
9.043	2.038	-.05241	.04240	.05337	.02861	-.00079	.00109	-.00544	.04048	.05484	.73807
9.031	4.360	-.05483	.15188	.04637	.02871	-.00077	.00114	-.00526	.14792	.05778	2.55995
8.921	6.551	-.05273	.25358	.03397	.02736	-.00069	.00110	-.00438	.24805	.06268	3.95729
8.952	8.787	-.04444	.36047	.01792	.02451	-.00067	.00095	-.00373	.35351	.07278	4.85703
8.904	11.054	-.03549	.47396	-.00075	.02240	-.00072	.00101	-.00332	.46531	.09014	5.16196
8.880	13.352	-.03447	.59038	-.02016	.02002	-.00075	.00093	-.00285	.57907	.11672	4.96107
8.828	15.633	-.00372	.71805	-.03837	.01227	-.00062	.00055	-.00182	.70183	.15654	4.48351
8.864	17.975	-.01072	.87737	-.05363	-.00413	.00025	.00043	-.00124	.85110	.21977	3.87270
8.881	20.375	.05316	1.02142	-.05478	-.01636	-.00034	-.00095	.00050	.97659	.30427	3.20961
8.903	22.681	-.00497	1.19054	-.05535	-.03935	.00104	.00041	-.00173	1.11982	.40800	2.74466
	GRADIENT	-.00071	.04582	-.00077	.00013	.00005	.00002	.00010	.04488	-.00023	.77047

LARC LTPT 227 (LA73) B7WVS0EF (RJE004) (08 MAR 76)

REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.7000 IN. XO
LREF = 474.8000 INCHES YMRP = .0000 IN. YO
BREF = 936.6800 INCHES ZMRP = 375.0000 IN. ZO
SCALE = .0150

PARAMETRIC DATA

BETA = 5.000 ELEVON = .000
BDFLAP = -11.700 MACH = .250

RUN NO. 4/ 0 RN/L = 4.00 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
4.014	-.178	4.80787	-.04973	.05283	.02363	-.00375	.00600	-.07793	-.04957	.05298	-.93557
4.016	1.931	4.81859	.03858	.05057	.02421	-.00514	.00589	-.07960	.03685	.05185	.71077
4.028	4.018	4.87628	.12940	.04492	.02477	-.00634	.00578	-.08189	.12594	.05388	2.33740
4.006	6.106	4.88529	.22229	.03661	.02290	-.00739	.00556	-.08277	.21713	.06005	3.61591
4.001	8.223	4.90217	.32799	.02250	.02142	-.00916	.00575	-.08335	.32140	.06918	4.64581
4.007	10.311	4.89933	.42823	.00412	.01939	-.01112	.00587	-.08357	.42058	.08070	5.21147
4.000	12.446	4.89615	.53037	-.01217	.01741	-.01302	.00629	-.08446	.52053	.10241	5.08254
3.978	14.586	4.89801	.64144	-.03120	.01204	-.01342	.00625	-.08432	.62863	.13134	4.78619
3.974	16.616	4.85365	.76006	-.04996	.00514	-.01384	.00637	-.08514	.74261	.16947	4.38203
3.997	18.859	4.88520	.89251	-.06931	-.00415	-.01482	.00593	-.08421	.86700	.22290	3.88961
3.998	21.020	4.87339	1.02294	-.08237	-.01412	-.01746	.00607	-.08549	.98442	.29003	3.39413
	GRADIENT	.01628	.04269	-.00188	.00027	-.00062	-.00005	-.00094	.04183	.00021	.78002

LARC LTPT 227 (LA73) B7WVSOEF (RJE004) (08 MAR 76)

REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.7000 IN. XO
LREF = 474.8000 INCHES YMRP = .0000 IN. YO
BREF = 936.6800 INCHES ZMRP = 375.0000 IN. ZO
SCALE = .0150

PARAMETRIC DATA

BETA = 5.000 ELEVON = .000
BDFLAP = -11.700 MACH = .250

RUN NO. 6/ 0 RN/L = 5.79 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
5.820	-.184	4.70234	-.05138	.03222	.02314	-.00374	.00609	-.07916	-.05121	.05239	-.97755
5.824	1.954	4.72068	.04178	.05007	.02298	-.00531	.00596	-.08035	.04005	.05147	.77825
5.818	4.158	4.81533	.14042	.04368	.02249	-.00666	.00588	-.08272	.13688	.05375	2.54675
5.801	6.259	4.80064	.23673	.03395	.02158	-.00765	.00556	-.08294	.23162	.05955	3.88928
5.808	8.413	4.81660	.33901	.02019	.02059	-.00899	.00538	-.08287	.33240	.06957	4.77802
5.803	10.626	4.81866	.44359	.00255	.01923	-.01126	.00551	-.08298	.43551	.08431	5.16586
5.799	12.830	4.83173	.55305	-.01637	.01725	-.01291	.00586	-.08408	.54288	.10685	5.08061
5.805	15.120	4.84731	.67585	-.03625	.01052	-.01313	.00570	-.08387	.66191	.14129	4.68471
5.786	17.089	4.78729	.79219	-.05327	.00256	-.01266	.00581	-.08418	.77287	.18187	4.24953
5.796	19.395	4.79600	.93218	-.06959	-.00841	-.01445	.00564	-.08550	.90238	.24392	3.69943
5.788	21.625	4.76696	1.06225	-.07779	-.01741	-.01753	.00675	-.08652	1.01615	.31915	3.18391
	GRADIENT	.02611	.04418	-.00197	-.00015	-.00067	-.00005	-.00082	.04332	.00032	.81163

RUN NO. 10/ 0 RN/L = 8.69 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
8.873	-.210	4.59168	-.05419	.05199	.02232	-.00378	.00629	-.07954	-.05400	.05218	-1.03471
8.799	2.046	4.60201	.04693	.04984	.02194	-.00538	.00613	-.08077	.04512	.05148	.87643
8.787	4.280	4.64523	.14791	.04260	.02143	-.00687	.00616	-.08275	.14431	.05352	2.69667
8.981	6.545	4.63897	.25490	.03138	.01996	-.00819	.00587	-.08278	.24966	.06023	4.14528
9.044	8.896	4.68035	.36553	.01515	.01841	-.00998	.00552	-.08253	.35879	.07150	5.01831
9.027	11.201	4.67580	.47929	-.00383	.01681	-.01224	.00538	-.08194	.47090	.08934	5.27083
9.013	13.552	4.66533	.59981	-.02537	.01416	-.01282	.00567	-.08343	.58906	.11588	5.08312
9.000	15.852	4.63532	.72662	-.04589	.00856	-.01275	.00583	-.08374	.71152	.15434	4.61018
8.981	18.097	4.86446	.86659	-.06078	-.00363	-.01335	.00185	-.07859	.84261	.21141	3.98567
8.693	20.323	4.78735	1.00319	-.06670	-.01614	-.01681	.00477	-.08679	.96391	.28588	3.37177
	GRADIENT	.01191	.04501	-.00209	-.00020	-.00069	-.00003	-.00071	.04417	.00030	.83107

LARC LTPT 227 (LA73) B7WVSOEF (RJE005) (08 MAR 76)

REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.7000 IN. XO
LREF = 474.8000 INCHES YMRP = .0000 IN. YO
BREF = 936.6800 INCHES ZMRP = 375.0000 IN. ZO
SCALE = .0150

PARAMETRIC DATA

BETA = .000 ELEVON = .000
BDFLAP = -11.700 MACH = .250

RUN NO. 8/ 0 RN/L = 9.00 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
8.997	-2.749	.00992	-.15753	.05620	-.04698	-.00111	-.00040	-.00520	-.15466	.06369	-2.42826
9.049	-.388	.00834	-.05849	.05765	-.01614	-.00093	-.00035	-.00513	-.05810	.05804	-1.00099
9.050	2.041	.00892	.04530	.05429	.01628	-.00086	-.00036	-.00512	.04334	.05587	.77567
9.015	4.317	.00337	.14326	.04580	.04670	-.00093	-.00034	-.00480	.13941	.05645	2.46942
9.009	6.749	-.00034	.24801	.03129	.07928	-.00091	-.00031	-.00474	.24262	.06022	4.02878
9.033	9.252	-.00225	.35886	.01215	.11318	-.00075	-.00028	-.00420	.35224	.06969	5.05446
9.015	11.742	.00216	.47136	-.00948	.14808	-.00067	-.00029	-.00456	.46342	.08665	5.34852
9.022	13.963	-.00149	.57609	-.02937	.18020	-.00089	-.00026	-.00426	.56615	.11051	5.12315
9.015	16.357	-.01409	.70003	-.05020	.21801	-.00081	-.00026	-.00451	.68583	.14897	4.60375
9.002	18.973	-.01099	.85914	-.06806	.26768	-.00014	-.00039	-.00605	.83459	.21496	3.88257
8.995	21.431	-.02063	.99098	-.07169	.30823	.00085	-.00044	-.00640	.94866	.29534	3.21204
	GRADIENT	-.00080	.04258	-.00145	.01327	.00003	.00001	.00005	.04163	-.00102	.69693

LARC LTPT 227 (LA73) B1WVSOEF (AJE001) (08 MAR 76)

REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.7000 IN. XO
LREF = 474.8000 INCHES YMRP = .0000 IN. YO
BREF = 936.6800 INCHES ZMRP = 375.0000 IN. ZO
SCALE = .0150

PARAMETRIC DATA

BETA = .000 ELEVON = .000
BDFLAP = -11.700 MACH = .250

RUN NO. 13/ 0 RN/L = 4.06 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	MACH	Q(PSF)	CPB1	CPB2	CPC	CPB3	CPB4
4.069	-2.313	.25002	209.21280	-.26399	-.22657	-.22321	-.25435	-.20949
4.064	-.192	.24972	208.98923	-.26196	-.22422	-.22085	-.25065	-.21011
4.063	1.876	.24997	209.52063	-.25853	-.22215	-.22016	-.24941	-.21184
4.075	3.980	.25029	210.68656	-.25365	-.21861	-.21676	-.24406	-.20551
4.063	6.063	.25008	210.29111	-.24825	-.21327	-.20924	-.24050	-.20027
4.051	8.186	.24937	209.25511	-.24975	-.21317	-.20916	-.24478	-.20069
4.052	10.290	.24907	209.12881	-.24482	-.21542	-.21166	-.24681	-.20626
4.058	12.360	.25015	210.66409	-.24763	-.21821	-.21468	-.24437	-.20752
4.055	14.734	.25004	210.76279	-.24949	-.22502	-.22350	-.25169	-.21410
4.040	17.050	.24914	209.33040	-.26142	-.23350	-.23775	-.25588	-.22713
4.041	18.906	.24910	209.40021	-.26980	-.25020	-.25030	-.26199	-.24494
4.063	20.963	.25063	212.02155	-.29165	-.27380	-.26977	-.28094	-.27961
	GRADIENT	.00005	.23614	.00164	.00124	.00096	.00153	.00049

LARC LTPT 227 (LA73) B1WVSOEF (AJE001) (08 MAR 76)

REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.7000 IN. XO
LREF = 474.8000 INCHES YMRP = .0000 IN. YO
BREF = 936.6800 INCHES ZMRP = 375.0000 IN. ZO
SCALE = .0150

PARAMETRIC DATA

BETA = .000 ELEVON = .000
BDFLAP = -11.700 MACH = .250

RUN NO. 15/ 0 RN/L = 6.04 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	MACH	Q(PSF)	CPB1	CPB2	CPC	CPB3	CPB4
6.036	-2.356	.24852	319.04123	-.26703	-.24511	-.22444	-.25889	-.21200
6.023	-.210	.24823	318.61827	-.26429	-.24059	-.22408	-.25442	-.21714
6.030	1.924	.24864	319.85860	-.26217	-.23868	-.22169	-.25107	-.21225
6.052	4.067	.24965	322.64908	-.25570	-.23261	-.21719	-.24726	-.20777
6.040	6.239	.24918	321.66658	-.24971	-.22896	-.21357	-.24127	-.20439
6.040	8.389	.24921	321.89874	-.24873	-.22807	-.21194	-.24491	-.20482
6.031	10.544	.24883	321.15698	-.24771	-.23080	-.21326	-.24505	-.20847
6.022	12.759	.24861	320.59999	-.24877	-.23496	-.21685	-.24770	-.21162
6.050	14.908	.24985	323.96021	-.25132	-.24425	-.22660	-.25011	-.22001
6.052	17.136	.24986	324.22928	-.26269	-.25297	-.24085	-.25390	-.23275
6.012	19.266	.24824	320.26734	-.27751	-.27932	-.25336	-.26524	-.25873
6.042	21.511	.24975	324.20511	-.30590	-.30809	-.27670	-.29777	-.29729
	GRADIENT	.00018	.56354	.00169	.00184	.00113	.00179	.00082

RUN NO. 17/ 0 RN/L = 8.98 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	MACH	Q(PSF)	CPB1	CPB2	CPC	CPB3	CPB4
9.067	-2.482	.24999	477.95663	-.26863	-.24543	-.22746	-.25742	-.21294
9.047	-.241	.24958	477.17415	-.25989	-.24161	-.22602	-.25520	-.21334
9.014	2.011	.24996	481.84033	-.25871	-.23833	-.22302	-.24904	-.21437
9.035	4.252	.24972	478.76287	-.25266	-.23428	-.21984	-.24696	-.21247
8.988	6.518	.24860	475.33536	-.24948	-.22855	-.21603	-.24164	-.20644
8.997	8.769	.25004	484.61565	-.25020	-.23135	-.21615	-.24361	-.20697
9.004	13.363	.25091	489.55494	-.25367	-.23971	-.22366	-.24878	-.21619
9.012	15.674	.25114	490.92427	-.25497	-.24838	-.23518	-.25139	-.22642
8.977	18.257	.25017	487.90358	-.27647	-.27421	-.25316	-.26631	-.25987
8.976	20.231	.25035	489.15214	-.31012	-.31344	-.27315	-.29567	-.29908
	GRADIENT	-.00002	.31611	.00219	.00164	.00115	.00167	.00002

LARC LTPT 227 (LA73) B1WVS0EF (AJE002) (08 MAR 76)

REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.7000 IN. XO
LREF = 474.8000 INCHES YMRP = .0000 IN. YO
BREF = 936.6800 INCHES ZMRP = 375.0000 IN. ZO
SCALE = .0150

PARAMETRIC DATA

BETA = 5.000 ELEVON = .000
BDFLAP = -11.700 MACH = .250

RUN NO. 14/ 0 RN/L = 4.06 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	MACH	Q(PSF)	CPB1	CPB2	CPC	CPB3	CPB4
4.064	-.172	.25005	211.99294	-.25436	-.23034	-.22479	-.25859	-.23180
4.038	1.890	.24909	210.24193	-.25298	-.22809	-.22034	-.26119	-.22921
4.025	3.988	.24847	209.48470	-.24678	-.22389	-.21808	-.26685	-.23064
4.012	6.072	.24767	208.76397	-.24681	-.22347	-.21436	-.27135	-.22369
4.001	8.220	.24732	208.46507	-.23700	-.21682	-.20976	-.26697	-.22036
4.019	10.260	.24798	210.40202	-.23580	-.21511	-.20816	-.25783	-.21279
4.030	10.712	.24932	212.37042	-.24533	-.21766	-.20800	-.25463	-.20612
4.026	13.610	.24917	212.40970	-.24685	-.21923	-.21382	-.25316	-.21008
4.011	16.590	.24819	211.12493	-.24992	-.22687	-.22879	-.25125	-.22490
4.053	18.873	.25107	216.01965	-.25636	-.23886	-.23707	-.24507	-.23484
4.056	20.991	.25129	216.64701	-.27125	-.25675	-.25261	-.25871	-.25895
	GRADIENT	-.00038	-.60224	.00183	.00155	.00161	-.00199	.00028

RUN NO. 16/ 0 RN/L = 6.02 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	MACH	Q(PSF)	CPB1	CPB2	CPC	CPB3	CPB4
6.022	-.187	.24931	324.82809	-.25478	-.24560	-.22578	-.25768	-.22818
6.027	1.966	.24975	326.40981	-.25356	-.24504	-.22592	-.26249	-.23014
6.000	4.078	.24904	324.83409	-.24657	-.23987	-.22054	-.26182	-.23227
6.002	6.263	.24921	325.74840	-.24858	-.23788	-.21758	-.27147	-.22712
6.012	8.408	.24987	327.73333	-.23955	-.23224	-.21453	-.26296	-.22127
6.004	10.584	.24971	327.67044	-.24481	-.23367	-.21271	-.25298	-.21340
6.025	12.785	.25040	330.16513	-.24845	-.23605	-.21489	-.25295	-.21283
6.019	15.043	.25047	330.71082	-.24845	-.24317	-.22463	-.25420	-.22106
6.024	17.129	.25092	332.32291	-.25453	-.24679	-.23289	-.24872	-.22845
6.011	19.425	.25052	331.62203	-.26332	-.26711	-.24436	-.24990	-.24830
6.021	21.654	.25102	333.67438	-.29003	-.29287	-.26375	-.27118	-.27719
	GRADIENT	-.00006	.00378	.00192	.00134	.00122	-.00097	-.00096

LARC LTPT 227 (LA73) B1WVSOEF (AJE002) (08 MAR 76)

REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.7000 IN. XO
LREF = 474.8000 INCHES YMRP = .0000 IN. YO
BREF = 936.6800 INCHES ZMRP = 375.0000 IN. ZO
SCALE = .0150

PARAMETRIC DATA

BETA = 5.000 ELEVON = .000
BDFLAP = -11.700 MACH = .250

RUN NO. 18/ 0 RN/L = 8.77 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	MACH	Q(PSF)	CPB1	CPB2	CPC	CPB3	CPB4
8.975	-.233	.25135	493.59414	-.26718	-.24864	-.23083	-.26356	-.22422
8.989	2.018	.25215	497.71685	-.25685	-.24387	-.22706	-.25904	-.23181
8.939	4.237	.25081	493.39320	-.26243	-.24217	-.22240	-.26814	-.23219
8.897	6.503	.24992	491.19262	-.24740	-.23878	-.22054	-.26750	-.22902
8.898	8.767	.25013	492.93709	-.24398	-.23560	-.21535	-.26264	-.22078
8.883	10.992	.25021	494.53391	-.24904	-.23604	-.21313	-.24766	-.21060
8.851	13.311	.24948	492.78190	-.25830	-.24189	-.22216	-.25149	-.21455
8.879	15.677	.25073	498.65953	-.25550	-.24633	-.23169	-.25290	-.22654
8.842	17.871	.24990	496.46621	-.25629	-.25592	-.24302	-.25076	-.24284
8.772	20.245	.24798	489.99733	-.28435	-.28747	-.25891	-.27031	-.27636
	GRADIENT	-.00012	-.04045	.00107	.00145	.00189	-.00102	-.00179

LARC LTPT 227 (LA73) B7WVSOEF (AJE003) (08 MAR 76)

REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.7000 IN. XO
LREF = 474.8000 INCHES YMRP = .0000 IN. YO
BREF = 936.6800 INCHES ZMRP = 375.0000 IN. ZO
SCALE = .0150

PARAMETRIC DATA

BETA = .000 ELEVON = .000
BDFLAP = -11.700 MACH = .250

RUN NO. 3/ 0 RN/L = 4.04 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	MACH	Q(PSF)	CPB1	CPB2	CPC	CPB3	CPB4
4.053	-2.278	.24985	204.44025	-.26651	-.22755	-.22249	-.25472	-.20437
4.038	-.171	.24925	204.08146	-.25659	-.22392	-.22080	-.25251	-.20791
4.037	6.150	.24965	205.49977	-.25390	-.21609	-.21081	-.24357	-.20102
4.038	8.209	.24975	205.78753	-.24702	-.21247	-.21013	-.24481	-.20122
4.039	10.355	.24991	206.22187	-.25366	-.21791	-.21142	-.24811	-.20220
4.033	12.407	.24971	205.90286	-.24727	-.21843	-.21538	-.24637	-.20575
4.043	14.645	.24982	206.65367	-.25360	-.22873	-.22307	-.25297	-.21209
4.039	16.669	.25026	207.03802	-.26017	-.23300	-.23510	-.25506	-.22542
4.030	18.794	.24990	206.48962	-.26932	-.24931	-.25000	-.25925	-.24366
4.041	20.982	.25063	207.78610	-.29212	-.27187	-.26442	-.27908	-.27644
	GRADIENT	-.00028	-.17029	.00471	.00172	.00080	.00105	-.00168

LARC LTPT 227 (LA73) B7WVS0EF (AJE003) (08 MAR 76)

REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.7000 IN. XO
LREF = 474.8000 INCHES YMRP = .0000 IN. YO
BREF = 936.6800 INCHES ZMRP = 375.0000 IN. ZO
SCALE = .0150

PARAMETRIC DATA

BETA = .000 ELEVON = .000
BDFLAP = -11.700 MACH = .250

RUN NO. 5/ 0 RN/L = 5.83 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	MACH	Q(PSF)	CPB1	CPB2	CPC	CPB3	CPB4
5.861	-2.312	.25022	312.68130	-.26707	-.24917	-.22698	-.26246	-.21195
5.881	-.181	.25112	315.64662	-.26502	-.24612	-.22585	-.25781	-.21179
5.865	1.943	.25091	315.02421	-.26577	-.24492	-.22373	-.25469	-.21114
5.853	4.122	.25036	313.87095	-.25843	-.23923	-.22058	-.25061	-.20878
5.860	6.267	.25062	314.63286	-.25613	-.23716	-.21690	-.24919	-.20629
5.858	8.460	.25079	315.08923	-.25836	-.23780	-.21531	-.25051	-.20464
5.840	10.576	.25005	313.41907	-.25458	-.23575	-.21605	-.25400	-.20709
5.878	12.778	.25193	318.13089	-.25547	-.24153	-.22193	-.25482	-.21604
5.864	14.954	.25135	316.95970	-.25676	-.24930	-.22896	-.25540	-.22059
5.821	17.119	.24938	312.38277	-.26355	-.25698	-.24287	-.25748	-.23141
5.857	19.361	.25119	316.95086	-.28145	-.27985	-.25789	-.27105	-.26197
5.833	21.644	.25011	314.68988	-.31983	-.32105	-.27998	-.30529	-.30558
	GRADIENT	.00001	.13578	.00122	.00145	.00100	.00180	.00048

RUN NO. 9/ 0 RN/L = 8.90 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	MACH	Q(PSF)	CPB1	CPB2	CPC	CPB3	CPB4
9.012	-2.603	.25114	476.17230	-.27207	-.24742	-.22662	-.25976	-.21412
8.967	-.170	.25043	475.40977	-.26823	-.24381	-.22466	-.25534	-.21091
9.043	2.038	.25280	484.84830	-.26403	-.24190	-.22436	-.25352	-.21105
9.031	4.360	.25300	487.18170	-.25555	-.23629	-.22090	-.24894	-.21114
8.921	6.551	.25091	483.06936	-.24952	-.22983	-.21645	-.24347	-.20593
8.952	8.787	.25235	490.05525	-.24725	-.23187	-.21573	-.24671	-.21004
8.904	11.054	.25114	486.58430	-.25285	-.23584	-.22017	-.24580	-.21405
8.880	13.352	.25071	485.56356	-.25745	-.24129	-.22451	-.25324	-.21508
8.828	15.633	.24947	481.63952	-.25438	-.24896	-.23732	-.25591	-.23054
8.864	17.976	.25050	485.82899	-.27273	-.27476	-.25259	-.26475	-.25244
8.881	20.375	.25107	488.42513	-.31264	-.32073	-.27013	-.30077	-.30509
8.903	22.681	.25180	492.14146	-.36413	-.36411	-.31033	-.35403	-.33922
	GRADIENT	.00034	1.82380	.00232	.00153	.00076	.00149	.00039

LARC LTPT 227 (LA73) B7WVS0EF (AJE004) (08 MAR 76)

REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.7000 IN. XO
LREF = 474.8000 INCHES YMRP = .0000 IN. YO
BREF = 936.6800 INCHES ZMRP = 375.0000 IN. ZO
SCALE = .0150

PARAMETRIC DATA

BETA = 5.000 ELEVON = .000
BDFLAP = -11.700 MACH = .250

RUN NO. 4/ 0 RN/L = 4.00 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	MACH	Q(PSF)	CPB1	CPB2	CPC	CPB3	CPB4
4.014	-.178	.24991	207.76488	-.25369	-.22786	-.22333	-.25730	-.22827
4.016	1.931	.24960	208.25670	-.25292	-.22652	-.22087	-.25801	-.22871
4.028	4.018	.25155	210.81042	-.24411	-.22218	-.21738	-.26167	-.22557
4.006	6.106	.25021	208.96265	-.24110	-.22063	-.21500	-.26730	-.22331
4.001	8.223	.25053	209.64461	-.24315	-.22129	-.21207	-.26676	-.21816
4.007	10.311	.25122	210.97482	-.23768	-.21716	-.20773	-.25153	-.20985
4.000	12.446	.25086	210.69530	-.24570	-.22128	-.21028	-.25239	-.20658
3.988	14.586	.25029	209.94306	-.25164	-.22475	-.21815	-.25480	-.21219
3.974	16.616	.24962	209.09253	-.24799	-.22734	-.22724	-.24629	-.22347
3.997	18.859	.25137	212.15836	-.25628	-.24034	-.23688	-.24501	-.23459
3.998	21.020	.25161	212.92230	-.27106	-.25643	-.25240	-.25906	-.25947
	GRADIENT	.00039	.72496	.00228	.00135	.00142	-.00104	.00064

RUN NO. 6/ 0 RN/L = 5.79 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	MACH	Q(PSF)	CPB1	CPB2	CPC	CPB3	CPB4
5.820	-.184	.25070	317.59287	-.25792	-.24807	-.22634	-.25975	-.23180
5.824	1.954	.25119	319.20107	-.25989	-.24622	-.22534	-.26884	-.23344
5.818	4.158	.25105	319.20752	-.25830	-.24276	-.22067	-.26780	-.23023
5.801	6.259	.25032	317.63830	-.24802	-.24069	-.21807	-.26990	-.22813
5.808	8.413	.25094	319.42521	-.25128	-.24262	-.21419	-.26570	-.22345
5.803	10.626	.25097	319.72665	-.24049	-.23775	-.21108	-.25483	-.21294
5.799	12.830	.25090	319.99401	-.25147	-.23821	-.21701	-.25220	-.21316
5.805	15.120	.25125	321.10448	-.24924	-.24405	-.22637	-.24928	-.22338
5.786	17.089	.25058	319.69686	-.25352	-.24685	-.23291	-.24593	-.23130
5.796	19.395	.25122	321.62078	-.26351	-.26698	-.24272	-.24992	-.25208
5.788	21.625	.25096	321.78060	-.29035	-.29084	-.26464	-.26982	-.27856
	GRADIENT	.00008	.36997	-.00008	.00122	.00131	-.00184	.00037

LARC LTPT 227 (LA73) B7WVS0EF (AJE004) (08 MAR 76)

REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.7000 IN. XO
LREF = 474.8000 INCHES YMRP = .0000 IN. YO
BREF = 936.6800 INCHES ZMRP = 375.0000 IN. ZO
SCALE = .0150

PARAMETRIC DATA

BETA = 5.000 ELEVON = .000
BDFLAP = -11.700 MACH = .250

RUN NO. 10/ 0 RN/L = 8.69 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	MACH	Q(PSF)	CPB1	CPB2	CPC	CPB3	CPB4
8.873	-.210	.25166	490.68935	-.27004	-.25164	-.23097	-.26503	-.22418
8.799	2.046	.24988	485.72992	-.26337	-.24703	-.22627	-.26572	-.22853
8.787	4.280	.25018	488.05507	-.25198	-.24263	-.22358	-.26825	-.23370
8.981	6.545	.25637	512.58432	-.24976	-.24246	-.22007	-.26914	-.22885
9.044	8.896	.25887	523.55359	-.24709	-.23574	-.21900	-.26323	-.22421
9.027	11.201	.25862	523.51949	-.24811	-.23748	-.21673	-.25648	-.21208
9.013	13.552	.25860	524.81750	-.26172	-.24413	-.22219	-.25260	-.21731
9.000	15.852	.25848	524.88969	-.25139	-.24579	-.23292	-.25400	-.23141
8.981	18.097	.25811	524.61274	-.25625	-.25757	-.24156	-.25099	-.24617
8.693	20.323	.24963	492.80476	-.27865	-.28368	-.26094	-.26996	-.27366
	GRADIENT	-.00033	-.58935	.00402	.00201	.00165	-.00072	-.00212

LARC LTPT 227 (LA73) B7WVS0EF (AJE005) (08 MAR 76)

REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.7000 IN. XO
LREF = 474.8000 INCHES YMRP = .0000 IN. YO
BREF = 936.6800 INCHES ZMRP = 375.0000 IN. ZO
SCALE = .0150

PARAMETRIC DATA

BETA = .000 ELEVON = .000
BDFLAP = -11.700 MACH = .250

RUN NO. 8/ 0 RN/L = 9.00 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	MACH	Q(PSF)	CPB1	CPB2	CPC	CPB3	CPB4
8.997	-2.749	.24881	466.78467	-.27752	-.25184	-.22952	-.26514	-.21218
9.049	-.388	.25066	474.06958	-.26312	-.24395	-.22712	-.25450	-.21439
9.050	2.041	.25078	474.99265	-.26133	-.24282	-.22548	-.25409	-.21334
9.015	4.317	.24997	472.30947	-.26314	-.23898	-.22299	-.24916	-.21117
9.009	6.749	.24987	472.44576	-.25135	-.23215	-.21745	-.24664	-.20840
9.033	9.252	.25071	475.86003	-.25930	-.23271	-.21558	-.25307	-.20466
9.015	11.742	.25036	474.70793	-.24807	-.23479	-.21998	-.24771	-.21062
9.022	13.953	.25066	476.29695	-.25379	-.24234	-.22552	-.25499	-.22096
9.015	16.357	.25058	476.22061	-.26306	-.25177	-.23730	-.25856	-.22603
9.002	18.973	.25037	476.00927	-.27259	-.27154	-.25375	-.26629	-.25498
8.995	21.431	.25006	475.40931	-.31049	-.32137	-.27225	-.29868	-.30183
	GRADIENT	.00015	.74695	.00191	.00168	.00090	.00204	.00017

LARC LTPT 238(LA73B) B6WVSOEF (RK6001) (16 MAY 77)

REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.7000 IN. XO
LREF = 474.8000 INCHES YMRP = .0000 IN. YO
BREF = 936.6800 INCHES ZMRP = 375.0000 IN. ZO
SCALE = .0150

PARAMETRIC DATA

BETA = .000 ELEVON = .000
BDFLAP = -11.700 MACH = .250

RUN NO. 3/ 0 RN/L = 3.98 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
4.000	-2.523	.00503	-.14580	.05252	.02673	-.00117	-.00003	-.00238	-.14334	.05888	-2.43440
4.024	-.413	.00157	-.05267	.05413	.02774	-.00108	.00003	-.00154	-.05228	.05451	-.95917
4.011	1.709	.00119	.03730	.05045	.03064	-.00097	-.00007	-.00166	.03577	.05154	.69414
3.967	3.787	.00414	.13277	.04521	.03054	-.00095	-.00009	-.00148	.12950	.05388	2.40328
3.958	5.889	-.00857	.23354	.03466	.02852	-.00096	.00005	-.00146	.22875	.05844	3.91411
3.995	7.989	-.00440	.33315	.02088	.02670	-.00114	-.00004	-.00085	.32701	.06698	4.88230
3.964	10.117	-.02721	.43407	.00382	.02417	-.00077	.00000	-.00040	.42665	.06001	5.33240
3.967	12.234	-.03549	.53672	-.01446	.02168	-.00019	.00016	-.00082	.52760	.09960	5.29707
3.993	14.323	-.03062	.64460	-.03221	.01712	-.00062	.00019	-.00056	.63253	.12825	4.93197
3.968	16.508	-.04513	.77246	-.05101	.00750	.00033	-.00045	.00099	.75511	.17058	4.42670
3.998	18.563	-.02781	.89455	-.06586	.00014	.00021	-.00204	.00308	.86898	.22234	3.90826
3.985	20.681	-.01015	1.01956	-.07573	-.00702	-.00187	-.00487	.00598	.98060	.28922	3.39046
	GRADIENT	-.00015	.04397	-.00121	.00068	.00004	-.00001	.00012	.04306	-.00086	.76784

RUN NO. 5/ 0 RN/L = 6.04 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
6.028	-2.535	.00724	-.14755	.05157	.02742	-.00105	.00011	-.00224	-.14513	.05804	-2.50040
6.053	-.397	.00207	-.05182	.05338	.02783	-.00093	.00008	-.00187	-.05145	.05374	-.95733
6.030	1.735	.00381	.04231	.05076	.02965	-.00082	.00005	-.00167	.04075	.05201	.78344
6.065	3.905	-.00135	.14025	.04386	.03047	-.00058	.00012	-.00185	.13694	.05331	2.56862
6.017	6.118	-.00471	.24368	.03215	.02829	-.00084	.00013	-.00202	.23886	.05794	4.12259
6.055	8.283	.00037	.34465	.01747	.02659	-.00072	.00007	-.00146	.33854	.06693	5.05784
5.982	10.397	-.02105	.44785	.00073	.02498	-.00045	.00006	-.00101	.44037	.08154	5.40030
5.999	12.578	.00269	.55704	-.01696	.02213	-.00054	.00014	-.00134	.54737	.10476	5.22500
6.032	14.779	-.00230	.67558	-.03418	.01680	-.00075	.00012	-.00059	.66195	.13928	4.75277
5.997	16.984	-.01247	.81155	-.05113	.00442	-.00018	.00012	-.00081	.79109	.18815	4.20449
6.018	19.220	-.00198	.95822	-.06611	-.00853	.00010	.00021	-.00180	.92657	.25302	3.66200
6.030	21.420	-.01881	1.08380	-.07120	-.01830	-.00073	.00073	-.00292	1.03494	.32953	3.14067
	GRADIENT	-.00112	.04464	-.00120	.00051	.00007	.00000	.00006	.04375	-.00074	.79009

LARC LTPT 238(LA73B) B6WVSOEF (RK6001) (16 MAY 77)

REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.7000 IN. XO
LREF = 474.8000 INCHES YMRP = .0000 IN. YO
BREF = 936.6800 INCHES ZMRP = 375.0000 IN. ZO
SCALE = .0150

PARAMETRIC DATA

BETA = .000 ELEVON = .000
BDFLAP = -11.700 MACH = .250

RUN NO. 7/ 0 RN/L = 9.10 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
9.132	-2.685	.02322	-.15516	.05037	.02748	-.00100	.00010	-.00269	-.15263	.05758	-2.65053
9.063	-.428	.00649	-.05396	.05294	.02828	-.00087	.00007	-.00220	-.05357	.05335	-1.00416
9.087	1.903	-.00829	.05297	.05021	.02888	-.00078	.00010	-.00181	.05128	.05194	.98718
9.065	4.163	-.01621	.15666	.04223	.02871	-.00068	.00012	-.00173	.15318	.05349	2.86388
9.068	6.402	-.03997	.26080	.02982	.02744	-.00074	.00020	-.00155	.25584	.05872	4.35730
9.075	8.668	-.05302	.36829	.01378	.02515	-.00049	.00010	-.00077	.36201	.06913	5.23659
9.048	11.003	-.07256	.47898	-.00452	.02418	-.00069	-.00004	-.00027	.47103	.08699	5.41498
9.144	13.335	-.08129	.60118	-.02123	.01973	-.00054	-.00009	-.00019	.58987	.11800	4.99906
9.074	15.601	-.09177	.74315	-.03605	.00816	.00008	.00000	-.00033	.72547	.16513	4.39317
9.058	17.987	-.12056	.90885	-.04301	-.00857	-.00036	-.00062	.00073	.87771	.23975	3.66100
9.097	20.355	-.13389	1.04820	-.04149	-.02161	.00112	.00010	-.00195	.99718	.32570	3.06163
	GRADIENT	-.00582	.04557	-.00119	.00019	.00005	.00000	.00014	.04469	-.00060	.81036

LARC LTPT 238(LA73B) B6WVSOEF (RK6002) (16 MAY 77)

REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.7000 IN. XO
LREF = 474.8000 INCHES YMRP = .0000 IN. YO
BREF = 936.6800 INCHES ZMRP = 375.0000 IN. ZO
SCALE = .0150

PARAMETRIC DATA

BETA = 5.000 ELEVON = .000
BDFLAP = -11.700 MACH = .250

RUN NO. 4/ 0 RN/L = 3.94 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
3.970	-.175	4.62155	-.04517	.05063	.02253	-.00405	.00539	-.07895	-.04502	.05077	-.88681
3.977	1.839	4.69256	.04177	.04487	.02508	-.00499	.00535	-.08215	.04031	.04619	.87279
3.971	3.871	4.79006	.13729	.04098	.02477	-.00561	.00541	-.08438	.13421	.05015	2.67604
3.962	5.935	4.86164	.23813	.03134	.02329	-.00651	.00493	-.08454	.23361	.05579	4.18730
3.963	8.022	4.93109	.33754	.01904	.02116	-.00864	.00498	-.08514	.33158	.06596	5.02715
3.952	10.127	4.94377	.43821	.00228	.01924	-.01080	.00510	-.08476	.43099	.07929	5.43534
3.937	12.273	4.95848	.54459	-.01518	.01717	-.01223	.00519	-.08435	.53537	.10093	5.30410
3.939	14.408	4.93854	.65694	-.03399	.01216	-.01213	.00460	-.08161	.64474	.13054	4.93901
3.934	16.445	4.93829	.77238	-.05462	.00484	-.01167	.00509	-.08178	.75625	.16627	4.54821
3.958	18.675	4.93730	.90646	-.07316	-.00551	-.01343	.00522	-.08311	.88216	.22094	3.99271
3.938	20.848	4.98467	1.03738	-.08455	-.01451	-.01805	.00345	-.08166	.99955	.29018	3.44454
	GRADIENT	.04166	.04510	-.00238	.00055	-.00039	.00000	-.00134	.04430	-.00015	.88060

LARC LTPT 238(LA73B) B6WVSOEF (RK6002) (16 MAY 77)

REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.7000 IN. XO
LREF = 474.8000 INCHES YMRP = .0000 IN. YO
BREF = 936.6800 INCHES ZMRP = 375.0000 IN. ZO
SCALE = .0150

PARAMETRIC DATA

BETA = 5.000 ELEVON = .000
BDFLAP = -11.700 MACH = .250

RUN NO. 6/ 0 RN/L = 5.90 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
6.000	-.192	4.68380	-.04674	.05084	.02223	-.00400	.00553	-.08101	-.04657	.05099	-.91322
6.044	1.920	4.71599	.04906	.04792	.02349	-.00495	.00551	-.08272	.04742	.04954	.95736
5.985	3.989	4.83038	.14298	.04131	.02425	-.00550	.00556	-.08435	.13976	.05116	2.73189
5.953	6.090	4.91208	.24581	.03098	.02225	-.00653	.00506	-.08497	.24113	.05688	4.23897
5.962	8.253	4.95664	.34912	.01627	.02096	-.00819	.00477	-.08419	.34317	.06622	5.18251
5.972	10.420	4.93610	.45131	-.00060	.01976	-.01054	.00484	-.08284	.44397	.08103	5.47903
5.952	12.676	4.99465	.56752	-.01944	.01645	-.01203	.00490	-.08356	.55796	.10557	5.28523
5.939	14.870	4.98911	.68720	-.03806	.00979	-.01172	.00478	-.08277	.67395	.13957	4.82864
5.923	16.932	4.97621	.80898	-.05516	.00134	-.01179	.00507	-.08349	.78997	.18285	4.32044
5.939	19.252	4.96293	.95482	-.07151	-.00972	-.01433	.00522	-.08491	.92501	.24731	3.74027
5.903	21.476	5.01043	1.08852	-.08091	-.02099	-.01667	.00638	-.08923	1.04257	.32322	3.22553
	GRADIENT	.03499	.04538	-.00228	.00048	-.00036	.00001	-.00080	.04457	.00004	.87188

RUN NO. 8/ 0 RN/L = 9.23 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
9.130	-.204	4.68909	-.04956	.05063	.02286	-.00401	.00576	-.08123	-.04938	.05080	-.97199
8.987	1.998	4.76413	.05510	.04789	.02262	-.00516	.00588	-.08368	.05340	.04978	1.07266
9.139	4.201	4.87306	.15727	.04020	.02137	-.00607	.00575	-.08479	.15390	.05162	2.98166
9.044	6.355	4.88628	.26188	.02936	.02131	-.00707	.00526	-.08430	.25702	.05817	4.41862
8.991	8.720	5.00506	.37321	.01278	.01985	-.00906	.00494	-.08404	.36696	.06921	5.30243
8.991	10.983	5.03183	.48705	-.00544	.01794	-.01130	.00475	-.08260	.47917	.08745	5.47928
8.978	13.338	5.03223	.61337	-.02439	.01368	-.01217	.00395	-.08116	.60245	.11778	5.11522
8.940	15.675	5.03788	.75377	-.04047	.00201	-.01014	.00219	-.07852	.73667	.16470	4.47[illegible]32
8.939	17.914	5.14720	.89398	-.04984	-.00993	-.01310	.00110	-.07925	.86597	.22755	3.80569
9.108	20.482	5.07508	1.06803	-.05068	-.02850	-.01089	.00552	-.09015	1.01825	.32624	3.12116
9.227	22.916	5.06824	1.18346	-.05470	-.03065	-.01687	.00787	-.09325	1.11135	.41044	2.70773
	GRADIENT	.04176	.04695	-.00237	-.00034	-.00047	-.00000	-.00081	.04615	.00019	.89753

LARC LTPT 238(LA73B) B6WVSOEF (AK6001) (16 MAY 77)

REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.7000 IN. XO
LREF = 474.8000 INCHES YMRP = .0000 IN. YO
BREF = 936.6800 INCHES ZMRP = 375.0000 IN. ZO
SCALE = .0150

PARAMETRIC DATA

BETA = .000 ELEVON = .000
BDFLAP = -11.700 MACH = .250

RUN NO. 3/ 0 RN/L = 3.98 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	MACH	Q(PSF)	CPC1	CPC2
4.000	-2.523	.24984	208.81608	-.21934	-.23140
4.024	-.413	.25152	211.62759	-.21637	-.22685
4.011	1.709	.25077	210.60887	-.21101	-.22275
3.967	3.787	.24804	206.30193	-.20739	-.21321
3.958	5.889	.24747	205.51364	-.20234	-.20488
3.995	7.989	.25013	209.94058	-.19895	-.20660
3.964	10.117	.24818	206.93639	-.20339	-.21011
3.967	12.234	.24854	207.68927	-.20905	-.21545
3.993	14.323	.25035	210.71086	-.21939	-.22425
3.968	16.508	.24899	208.88387	-.23439	-.23889
3.998	18.563	.25116	212.51306	-.25162	-.25218
3.985	20.681	.25030	211.30506	-.27151	-.26028
	GRADIENT	-.00029	-.40416	.00196	.00278

RUN NO. 5/ 0 RN/L = 6.04 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	MACH	Q(PSF)	CPC1	CPC2
6.028	-2.535	.24899	326.62846	-.21955	-.23365
6.053	-.397	.25040	330.16844	-.21784	-.22889
6.030	1.735	.24962	328.44731	-.21244	-.22176
6.065	3.905	.25127	332.72305	-.20803	-.21451
6.017	6.118	.24947	328.61592	-.20147	-.21004
6.055	8.283	.25124	333.21073	-.20448	-.21534
5.982	10.397	.24838	326.27681	-.20618	-.21464
5.999	12.578	.24911	328.23272	-.21384	-.21883
6.032	14.779	.25071	332.47422	-.22662	-.23103
5.997	16.984	.24943	329.54209	-.24212	-.24515
6.018	19.220	.25052	332.65797	-.25635	-.25202
6.038	21.420	.25144	335.16546	-.29168	-.27555
	GRADIENT	.00028	.77340	.00186	.00301

LARC LTPT 238(LA73B) B6WVSOEF (AK6001) (16 MAY 77)

REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.7000 IN. XO
LREF = 474.8000 INCHES YMRP = .0000 IN. YO
BREF = 936.6800 INCHES ZMRP = 375.0000 IN. ZO
SCALE = .0150

PARAMETRIC DATA

BETA = .000 ELEVON = .000
BDFLAP = -11.700 MACH = .250

RUN NO. 7/ 0 RN/L = 9.10 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	MACH	Q(PSF)	CPC1	CPC2
9.132	-2.685	.25037	516.77298	-.22175	-.23079
9.063	-.428	.24894	511.90393	-.21839	-.22958
9.087	1.903	.24975	515.41861	-.21416	-.22140
9.065	4.163	.24929	514.00709	-.20809	-.21398
9.068	6.402	.24959	515.61361	-.20446	-.21403
9.075	8.668	.24987	517.14923	-.20939	-.21565
9.048	11.003	.24938	515.81603	-.20726	-.21802
9.144	13.335	.25232	527.80000	-.22489	-.23035
9.074	15.601	.25051	521.33077	-.23596	-.24082
9.058	17.987	.25034	521.55883	-.25680	-.25477
9.097	20.355	.25158	526.73311	-.29613	-.30263
	GRADIENT	-.00011	-.20530	.00198	.00256

LARC LTPT 238(LA73B) B6WVSOEF (AK6002) (16 MAY 77)

REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.7000 IN. XO
LREF = +74.8000 INCHES YMRP = .0000 IN. YO
BREF = 936.6800 INCHES ZMRP = 375.0000 IN. ZO
SCALE = .0150

PARAMETRIC DATA

BETA = 5.000 ELEVON = .000
BDFLAP = -11.700 MACH = .250

RUN NO. 4/ 0 RN/L = 3.94 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	MACH	Q(PSF)	CPC1	CPC2
3.970	-.175	.24959	209.25379	-.22536	-.23579
3.977	1.839	.25066	211.81683	-.22135	-.23134
3.971	3.871	.25040	211.51499	-.21967	-.23132
3.962	5.935	.25033	211.89037	-.21830	-.23072
3.963	8.022	.25070	212.97534	-.21522	-.22854
3.952	10.127	.25008	212.02681	-.20746	-.22408
3.937	12.273	.24941	211.17961	-.21194	-.22701
3.939	14.408	.24973	211.94894	-.22269	-.23270
3.934	16.445	.24987	212.53088	-.23179	-.23668
3.958	18.675	.25141	215.23147	-.24144	-.24018
3.938	20.848	.25032	213.74489	-.25641	-.25331
	GRADIENT	.00020	.55782	.00141	.00110

LARC LTPT 238(LA73B) B6WVSOEF (AK6002) (16 MAY 77)

REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.7000 IN. XO
LREF = 474.8000 INCHES YMRP = .0000 IN. YO
BREF = 936.6800 INCHES ZMRP = 375.0000 IN. ZO
SCALE = .0150

PARAMETRIC DATA

BETA = 5.000 ELEVON = .000
BDFLAP = -11.700 MACH = .250

RUN NO. 6/ 0 RN/L = 5.90 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	MACH	Q(PSF)	CPC1	CPC2
6.000	-.192	.25048	322.25902	-.22868	-.24283
6.044	1.920	.25267	328.02885	-.22444	-.23203
5.985	3.989	.25089	324.83754	-.22167	-.23451
5.953	6.090	.25008	323.49868	-.21975	-.23494
5.962	8.253	.25074	325.82193	-.21713	-.22500
5.972	10.420	.25146	327.84039	-.21121	-.22611
5.952	12.676	.25102	327.66930	-.21552	-.22826
5.939	14.870	.25075	327.34448	-.22552	-.23598
5.923	16.932	.25022	326.39728	-.23521	-.23564
5.939	19.252	.25113	329.03045	-.24686	-.24224
5.903	21.476	.24969	325.79838	-.26976	-.26593
	GRADIENT	.00010	.62405	.00168	.00200

RUN NO. 8/ 0 RN/L = 9.23 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	MACH	Q(PSF)	CPC1	CPC2
9.130	-.204	.25263	525.05675	-.23193	-.24395
8.987	1.998	.24894	511.98464	-.23274	-.24424
9.139	4.201	.25384	532.39981	-.22720	-.24030
9.044	6.355	.25178	526.64783	-.22132	-.23721
8.991	8.720	.25029	520.49101	-.21863	-.22550
8.991	10.983	.25082	524.06807	-.21431	-.23374
8.978	13.338	.25061	523.56645	-.22268	-.23280
8.940	15.675	.24962	519.92602	-.23508	-.24118
8.939	17.914	.24969	520.57464	-.24832	-.24058
9.108	20.482	.25489	542.31127	-.27857	-.27364
9.227	22.916	.25856	557.97966	-.30758	-.30169
	GRADIENT	.00027	1.66756	.00107	.00083