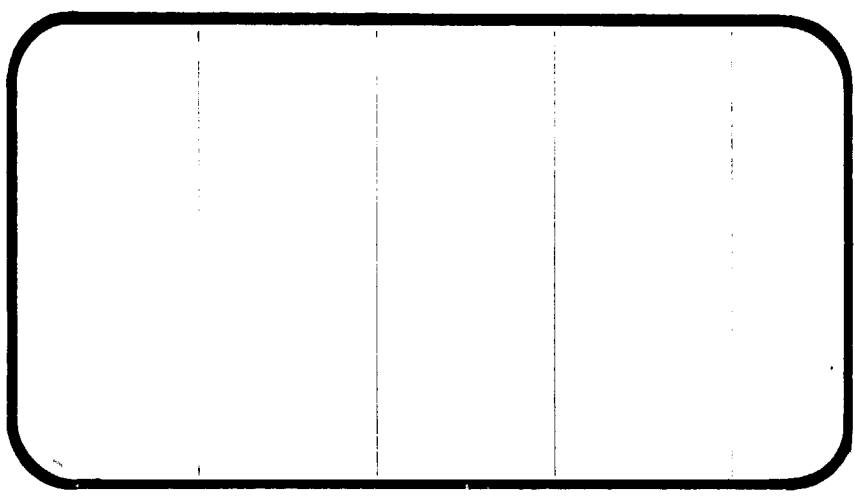




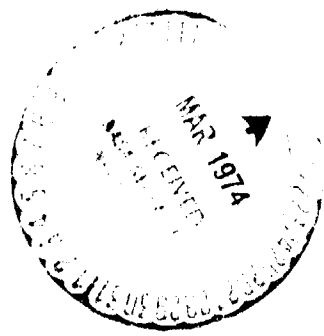
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION



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(CA2CA) ON A 0.015-SCALE 140A/B
CONFIGURATION SPACE SHUTTLE VEHICLE
ORBITER MODEL IN THE (CHRYSLER CORP.)
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SPACE SHUTTLE

AEROTHERMODYNAMIC DATA REPORT

JOHNSON SPACE CENTER
HOUSTON, TEXAS

DATA MANAGEMENT services
SPACE DIVISION  CHRYSLER CORPORATION

February, 1974

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NASA CR-134,081

RESULTS OF INVESTIGATIONS (0A20A)
ON AN 0.015-SCALE 140A/B CONFIGURATION
SPACE SHUTTLE VEHICLE ORBITER MODEL
IN THE NASA/LANGLEY RESEARCH CENTER
UNITARY PLAN WIND TUNNEL

By

M. E. Nichols, Rockwell International

Prepared under NASA Contract Number NAS9-13247

By

Data Management Services
Chrysler Corporation Space Division
New Orleans, La. 70189

for

Engineering Analysis Division

Johnson Space Center
National Aeronautics and Space Administration
Houston, Texas

WIND TUNNEL TEST SPECIFICS:

TEST NUMBER: LARC UPWT 1057
NASA SERIES NO: OA20A
MODEL NUMBER: 49-0
TEST DATES: 10 Sept. thru 12 Sept. 1973

FACILITY COORDINATOR:

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RESULTS OF INVESTIGATIONS (0A20A)
ON AN 0.015-SCALE 140A/B CONFIGURATION
SPACE SHUTTLE VEHICLE ORBITER MODEL
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UNITARY PLAN WIND TUNNEL

By

M. E. Nichols, Rockwell International

ABSTRACT

This report documents data obtained from a wind tunnel test of an 0.015-scale 140A/B configuration SSV Orbiter model in the NASA/Langley Research Center Unitary Plan Wind Tunnel. This test was conducted beginning 10 September 1973, with runs at Mach numbers of 2.5, 3.9, and 4.6 for a constant Reynolds number of $2.5 \times 10^6/\text{foot}$. Only one model configuration, the complete 140A/B Orbiter vehicle, was investigated; various control-surface settings were run through angles-of-attack from -4 to +42 degrees at 0 and +3 degrees of yaw and through angles-of-sideslip from -4 to +6 degrees at 0, +10, +20, and +30 degrees pitch.

The purpose of this test was to establish and verify longitudinal and lateral-directional stability and control characteristics for the updated SSV configuration.

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PLOTTED COEFFICIENTS SCHEDULE:

- (A) CL, CD, CDF, CA, CAF, CAB, CN, CLM, L/D, XCP/L VS. ALPHA
CLM VS. CL, CLM VS. CN, CD VS. CL
- (B) DCL, DCD, DCDF, DCN, DCA, DCAF, DCAB, DCLM VS. ALPHA
- (C) CYN, CBL, CY VS. ALPHA
- (D) DCYNDB, DCBLDB, DCY/DB VS. ALPHA
- (E) CYN, CBL, CY VS. BETA
- (F) CYBETA, CYNBET, CBLBET VS. ALPHA

NOMENCLATURE
General

<u>SYMBOL</u>	<u>SADSAC SYMBOL</u>	<u>DEFINITION</u>
a		speed of sound; m/sec, ft/sec
C _p	CP	pressure coefficient; $(p_1 - p_\infty)/q$
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
$\frac{l}{c}$ _{REF}	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
X _{CG}	XMRP	moment reference point on X axis
Y _{CG}	YMRP	moment reference point on Y axis
Z _{CG}	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

<u>SYMBOL</u>	<u>SADSAC SYMBOL</u>	<u>DEFINITION</u>
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; $\frac{\text{base force}}{qS}$ $-A_b(P_b - P_o)/qS$
C_{A_F}	CAF	forebody axial force coefficient; $C_A - C_{A_b}$
C_m	CM	pitching-moment coefficient; $\frac{\text{pitching moment}}{qS \bar{c} \Delta H}$
C_n	CYN	yawing-moment coefficient; $\frac{\text{yawing moment}}{qS b}$
C_l	CL	rolling-moment coefficient; $\frac{\text{rolling moment}}{qS b}$

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	CM	pitching-moment coefficient; $\frac{\text{pitching moment}}{qS \bar{c} \Delta H}$
C_n	CIN	yawing-moment coefficient; $\frac{\text{yawing moment}}{qS b}$
C_l	CL	rolling-moment coefficient; $\frac{\text{rolling moment}}{qS b}$
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 LIST

<u>SYMBOL</u>	<u>SADSAC SYMBOL</u>	<u>DEFINITION</u>
C_{ASC}	CASC	Sting-cavity axial force coefficient
C_{PB}	CPB	Base pressure coefficient
C_{PSC}	CPSC	Sting-cavity pressure coefficient
X_{cp}/λ_B	XCP/L	Normal force center-of-pressure
P_T	PT	Freestream total pressure, PSF
P	P	Freestream static pressure, PSF
T_T	TT	Freestream total temperature, °R
δ_E	ELEVON	Elevon deflection, degrees
δ_A	AILRON	Aileron deflection, degrees
δ_{BF}	BDFLAP	Bodyflap deflection, degrees
δ_{SB}	SPDBRK	Speedbrake deflection, degrees
δ_R	RUDDER	Rudder deflection, degrees

CONFIGURATION INVESTIGATED

Throughout test OA20A the full 140A/B hybrid configuration Space Shuttle Vehicle Orbiter was used. No configuration buildup was possible in the short test period.

Model (49-0) dimensional data are given for the 140A/B configuration components in another section of this report.

The tested configuration included the following components:

B26	Basic 140A/B configuration fuselage
C9	Basic 140A/B configuration canopy
F7	Basic 140A/B configuration bodyflap
M7	Basic 140A/B configuration OMS/RCS pods
N28	Basic 140A/B configuration OMS engine nozzles
W116	Basic 140A/B configuration wing
E26	Basic 140A/B configuration elevons for W116
V8	Basic 140A/B configuration vertical tail
R5	Basic 140A/B configuration rudder for V8

TEST FACILITY DESCRIPTION

The NASA LRC 4-foot Unitary Plan Wind Tunnel (UPWT) is a closed-circuit, continuous flow, variable density facility. The test section is 4 feet by 4 feet by 7 feet long.

Two tunnel legs are available for supersonic testing in the Mach number ranges 1.47 to 2.86 (Leg No. 1) and 2.29 to 4.63 (Leg No. 2). Leg No. 2 was used for this test. An asymmetric, sliding block nozzle position and total pressure setting provide the test Mach numbers at a specified Reynolds number. Reynolds number can be varied from 0.76 to 7.78 million per foot. Available stagnation pressure variation is 4.0 to 142. psia. Dynamic pressure variation is 95. to 1260. psf with normal operating stagnation temperature about 150°F in Mach modes 2 or 3 and about 175°F in Mach mode 4. The tunnel is equipped with a dry air supply, an evacuating system, and a cooling system. The facility power is approximately 83,000 horsepower.

Model mounting provisions consist of various sting arrangements, including axial (longitudinal), lateral (independent pitch and yaw), and roll movement with side wall support. A Schlieren system and oil flow visualization equipment are available. Data are recorded at the tunnel and reduced off-line at the Langley Computer Center. The tunnel is used for force and moment, pressure, and dynamic stability tests. Hot and cold jet effects and heat transfer have been studied in the UPWT.

DATA REDUCTION

Force and moment data are reduced to coefficient form in both body and stability axis systems. Base and cavity pressure adjustments are applied.

Base Pressure Coefficient

$$CPB = \frac{P_B - P_\infty}{q_\infty}, \text{ where } P_B = \frac{P_{B_F} A_{B_F} + P_{B_M} A_{B_M}}{A_{B_F} + A_{B_M}}$$

Sting-Cavity Pressure Coefficient

$$CPSC = \frac{P_{SC} - P_\infty}{q_\infty}, \text{ where } P_{SC} \text{ is sting-cavity pressure}$$

Sting-Cavity Axial-Force Coefficient

$$CASC = \frac{-(P_{SC} - P_B) A_{SC}}{q_\infty S_W}, \text{ where } A_{SC} \text{ is sting-cavity area and } S_W \text{ is the wing reference area}$$

Fuselage Base Axial-Force Coefficient

$$CAB = - \frac{CPB(A_B) + CPSC(A_{SC})}{S_W}, \text{ where } A_B = A_{B_F} + A_{B_M}$$

Forebody Axial-Force Coefficient

$$CAF = CA - CAB$$

Normal-Force Center of Pressure

$$X_{CP}/L = \frac{X_{CG}}{\ell_B} - \frac{CLM(\bar{c}_w)}{CN(\ell_B)}$$

Where X_{CG} is the longitudinal distance from the model nose to the Moment Reference Center, CLM is the pitching moment coefficient, CN is the normal force coefficient, ℓ_B is the reference body length, and \bar{c}_w is the mean aerodynamic chord of the wing.

REFERENCE DIMENSIONS AND CONSTANTS

<u>Symbol</u>	<u>Definition</u>	<u>Value</u>
A_{BF}	Fuselage base area (excluding cavity)	0.0414 Ft ²
A_{BM}	Base area of OMS pods	0.0201 Ft ²
A_{SC}	Sting-cavity area	0.03409 Ft ²
b_w	Reference wing span	1.171 Ft
\bar{c}_w	Reference MAC	0.5935 Ft
x_B	Reference body length	1.616 Ft
S_w	Reference wing area	0.60525 Ft ²
X_{CG}	Longitudinal length, nose to Moment Reference Center	12.774 in.
Y_{CG}	Lateral length, plane of symmetry to Moment Reference Center	0.000 in.
Z_{CG}	Vertical length, FRP to Moment Reference Center	0.375 in.
A_B	Base area ($A_{BF} + A_{BM}$)	0.0615 Ft ²

MODEL COMPONENT: BODY - B₂₆

GENERAL DESCRIPTION: Configuration 140A/B Orbiter Fuselage

NOTE: B₂₆ identical to B₂₄ except underside of fuselage retained to accept W₁₁₆.

Model Scale = 0.015

MODEL DRAWING NO. SS-A00147

DRAWING NUMBER: VL70-000193
VL70-000193A

<u>DIMENSIONS:</u>	<u>FULL-SCALE</u>	<u>MODEL SCALE</u>
Length (Body Fwd Sta $X_0 = 235$) - in.	<u>1203.3</u>	<u>19.400</u>
Max. Width (at $X_0 = 1520$) - in.	<u>262.0</u>	<u>3.93</u>
Max. Depth (at $X_0 = 1464$) - in.	<u>250.0</u>	<u>3.75</u>
Fineness Ratio	<u>0.26357</u>	<u>0.26357</u>
Area - ft ²		
Max. Cross-Sectional	<u>340.88462</u>	<u>0.07670</u>
Planform	<u> </u>	<u> </u>
Wetted	<u> </u>	<u> </u>
Base	<u> </u>	<u> </u>

MODEL COMPONENT: Canopy - Co

GENERAL DESCRIPTION: Configuration 140A/B Orbiter Fuselage Canopy

Model Scale = 0.015

Model Drawing No. SS-A00147

DRAWING NUMBER

V170-000140A
V170-000142A

DIMENSION:

FULL SCALE

MODEL SCALE

Length ($X_0=134.613$ to 670)

235.357

3.530

Max Width ($X_0=513.127$)

152.412

2.286

Max Depth ($X_0=485.0$)

25.000

0.375

Fineness Ratio

Area

Max Cross-Sectional

Planform

Wetted

Base

MODEL COMPONENT: Bodyflap - V7

GENERAL DESCRIPTION: Configuration 140A/B Orbiter Bodyflap

NOTE: Bodyflap has variable camberline deflection of +13.75° and
-34.25° from null position. Hinge line located at $X_0 = 1522.3$.
 $Z_0 = 234.3$.

Model Scale = 0.015

Model Drawing No. SS-A00147

DRAWING NUMBER

VI70-000140, VI70-000145

<u>DIMENSION:</u>	<u>FULL SCALE</u>	<u>MODEL SCALE</u>
Length ($X_0=1520$ to $X_0=1613$) - IN.	93.000	1.395
Max Width - IN.	262.000	3.930
Max Depth ($X_0 = 1500$) - IN.	23.000	0.345
Fineness Ratio		
Area - Ft ²		
Max Cross-Sectional		
Planform	150.5250	0.0339
Wetted		
Base	41.84722	0.00941

MODEL COMPONENT: OMS PODS- M7

GENERAL DESCRIPTION: Configuration 140A/B Orbiter OMS-Pods

MODEL SCALE: 0.015 Model Drawing No. SS-A00147

DRAWING NUMBER: VL70-000140A
VL70-000145

<u>DIMENSIONS:</u>	<u>FULL SCALE</u>	<u>MODEL SCALE</u>
Length (OMS Fwd Sta $X_0 = 1233.0$) - IN.	<u>327.000</u>	<u>4.905</u>
Max Width (@ $X_0 = 1450.0$) - IN.	<u>94.5</u>	<u>1.418</u>
Max. Depth (@ $X_0 = 1493.0$) - IN.	<u>109.000</u>	<u>1.635</u>
Area		
Max Max Cross-Sectional	<u> </u>	<u> </u>
Planform	<u> </u>	<u> </u>
Wetted	<u> </u>	<u> </u>
Base	<u> </u>	<u> </u>

MODEL COMPONENT: OMS Nozzles (N28)

GENERAL DESCRIPTION: Configuration 140A/B Orbiter OMS Nozzles

MODEL SCALE: 0.015

Model Drawing No. SS-A00147

DRAWING NO.: VL70-000140A

DIMENSIONS:

FULL SCALE

MODEL SCALE

Mach No. _____

Length ~ in.

Gimbal Point to Exit Plane

Throat to Exit plane

Diameter ~ in.

Exit

Throat

Inlet

Area ~ ft²

Exit

Throat

Gimbal Point (Station) ~ in.

X

1518.0

22.77

Y

+ 88.0

1.32

Z

492.0

7.38

Null Position ~ deg.

Pitch

15° 49'

15° 49'

Yaw (Outboard)

12° 17'

12° 17'

MODEL COMPONENT: WING-W₁₂₆

GENERAL DESCRIPTION: Configuration 140A/B Orbiter Wing

NOTE: Identical to W₁₁₁ except airfoil thickness. Dihedral angle is along trailing edge of wing.

MODEL SCALE: 0.015 Model Drawing No. SS-A00148

TEST NO. DWG. NO. VI70-000140B
VI70-000200

DIMENSIONS: FULL-SCALE MODEL SCALE

TOTAL DATA

Area (Theo.) Ft ²		
Planform	<u>2699.00</u>	<u>0.6053</u>
Span (Theo) In.	<u>936.6816</u>	<u>14.050</u>
Aspect Ratio	<u>2.265</u>	<u>2.265</u>
Rate of Taper	<u>1.177</u>	<u>1.177</u>
Taper Ratio	<u>0.200</u>	<u>0.200</u>
Dihedral Angle, degrees	<u>3.500</u>	<u>3.500</u>
Incidence Angle, degrees	<u>0.500</u>	<u>0.500</u>
Aerodynamic Twist, degrees	<u>+ 3.000</u>	<u>+ 3.000</u>
Sweep Back Angles, degrees		
Leading Edge	<u>45.00</u>	<u>45.00</u>
Trailing Edge	<u>10.056</u>	<u>10.056</u>
0.25 Element Line	<u>35.209</u>	<u>35.209</u>
Chords:		
Root (Theo) B.P.O.O.	<u>689.2429</u>	<u>10.339</u>
Tip, (Theo) B.P.	<u>137.8486</u>	<u>2.068</u>
MAC	<u>474.8117</u>	<u>7.222</u>
Fus. Sta. of .25 MAC	<u>1126.721</u>	<u>17.051</u>
W.P. of .25 MAC	<u>291.00</u>	<u>4.365</u>
B.L. of .25 MAC	<u>187.33491</u>	<u>2.810</u>

EXPOSED DATA

Area (Theo) Ft ²		
Span, (Theo) In. BP108	<u>736.6816</u>	<u>11.050</u>
Aspect Ratio	<u>2.058</u>	<u>2.058</u>
Taper Ratio	<u>0.2451</u>	<u>0.2451</u>
Chords		
Root BP108	<u>570.6230</u>	<u>8.559</u>
Tip 1.00 $\frac{b}{2}$	<u>137.8512</u>	<u>2.06</u>
MAC	<u>354.2376</u>	<u>5.314</u>
Fus. Sta. of .25 MAC	<u>1164.237</u>	<u>17.464</u>
W.P. of .25 MAC	<u>292.00</u>	<u>4.380</u>
B.L. of .25 MAC	<u>230.67786</u>	<u>3.595</u>

Airfoil Section (Rockwell Mod NASA)
XXXX-64

Root $\frac{b}{2}$ =	<u>0.113</u>	<u>0.113</u>
Tip $\frac{b}{2}$ =	<u>0.12</u>	<u>0.12</u>

Data for (1) of (2) Sides

Leading Edge Cuff		
Planform Area Ft ²	<u>116.233</u>	<u>0.0266</u>
Leading Edge Intersects Fus M. L. @ Sta	<u>505.0</u>	<u>7.575</u>
Leading Edge Intersects Wing @ Sta	<u>1002.5</u>	<u>15.053</u>

MODEL COMPONENT: ELEVONS - E26

GENERAL DESCRIPTION: Configuration 140A/B Orbiter Elevons

NOTE: VL70 000400 data for (1) of (2) sides. Identical to E25 except
airfoil thickness.

Model Scale = 0.015

Model Drawing No. SS-A00148

DRAWING NUMBER:

VL70 000400
VL70 000400 B

<u>DIMENSIONS:</u>	<u>FULL-SCALE</u>	<u>MODEL SCALE</u>
Area	<u>223.5814</u>	<u>0.0503</u>
Span (equivalent)	<u>369.34</u>	<u>5.525</u>
Inb'd equivalent chord	<u>119.623</u>	<u>1.794</u>
Outb'd equivalent chord	<u>55.1922</u>	<u>0.828</u>
Ratio movable surface chord/ total surface chord		
At Inb'd equiv. chord	<u>0.2096</u>	<u>0.2096</u>
At Outb'd equiv. chord	<u>0.4004</u>	<u>0.4004</u>
Sweep Back Angles, degrees		
Leading Edge	<u>0.00</u>	<u>0.00</u>
Trailing Edge	<u>-10.056</u>	<u>-10.056</u>
Hingeline	<u>0.00</u>	<u>0.00</u>
Area Moment (Normal to hinge line)	<u>851.1502</u>	<u>0.00287</u>

MODEL COMPONENT: VERTICAL - V

GENERAL DESCRIPTION: Configuration 140A/B Orbiter Vertical Tail

NOTE: Similar to V5 with radius on TE upper corner and LE lower corner

where vertical meets fuselage.

Model Scale = 0.015

Model Drawing No. SS-A00148

DRAWING NUMBER:

VI70-00148A
VI70-00148A

DIMENSIONS:

FULL-SCALE

MODEL SCALE

TOTAL DATA

Area (Theo) Ft ²	<u>413.253</u>	<u>0.09298</u>
Planform		
Span (Theo) In	<u>315.420</u>	<u>4.73580</u>
Aspect Ratio	<u>1.675</u>	<u>1.675</u>
Rate of Taper	<u>0.387</u>	<u>0.387</u>
Taper Ratio	<u>0.60319</u>	<u>0.60319</u>
Sweep Back Angles, degrees		
Leading Edge	<u>45.00</u>	<u>45.00</u>
Trailing Edge	<u>25.917</u>	<u>25.917</u>
0.25 Element Line	<u>41.130</u>	<u>41.130</u>
Chords:		
Root (Theo) WP	<u>268.500</u>	<u>4.02750</u>
Tip (Theo) WP	<u>108.400</u>	<u>1.62705</u>
MAC	<u>199.3756</u>	<u>2.99711</u>
Fus. Sta. of .25 MAC	<u>1143.11</u>	<u>21.95250</u>
W. P. of .25 MAC	<u>635.500</u>	<u>9.53283</u>
B. L. of .25 MAC	<u>0.00</u>	<u>0.00</u>
Airfoil Section		
Leading Wedge Angle Deg	<u>10.00</u>	<u>10.00</u>
Trailing Wedge Angle Deg	<u>14.90</u>	<u>14.90</u>
Leading Edge Radius (in) - W.	<u>2.00</u>	<u>0.0300</u>
Void Area	<u>13.17</u>	<u>0.00296</u>
Blanketed Area	<u>0.00</u>	<u>0.00</u>

MODEL COMPONENT: RUDDER - R5

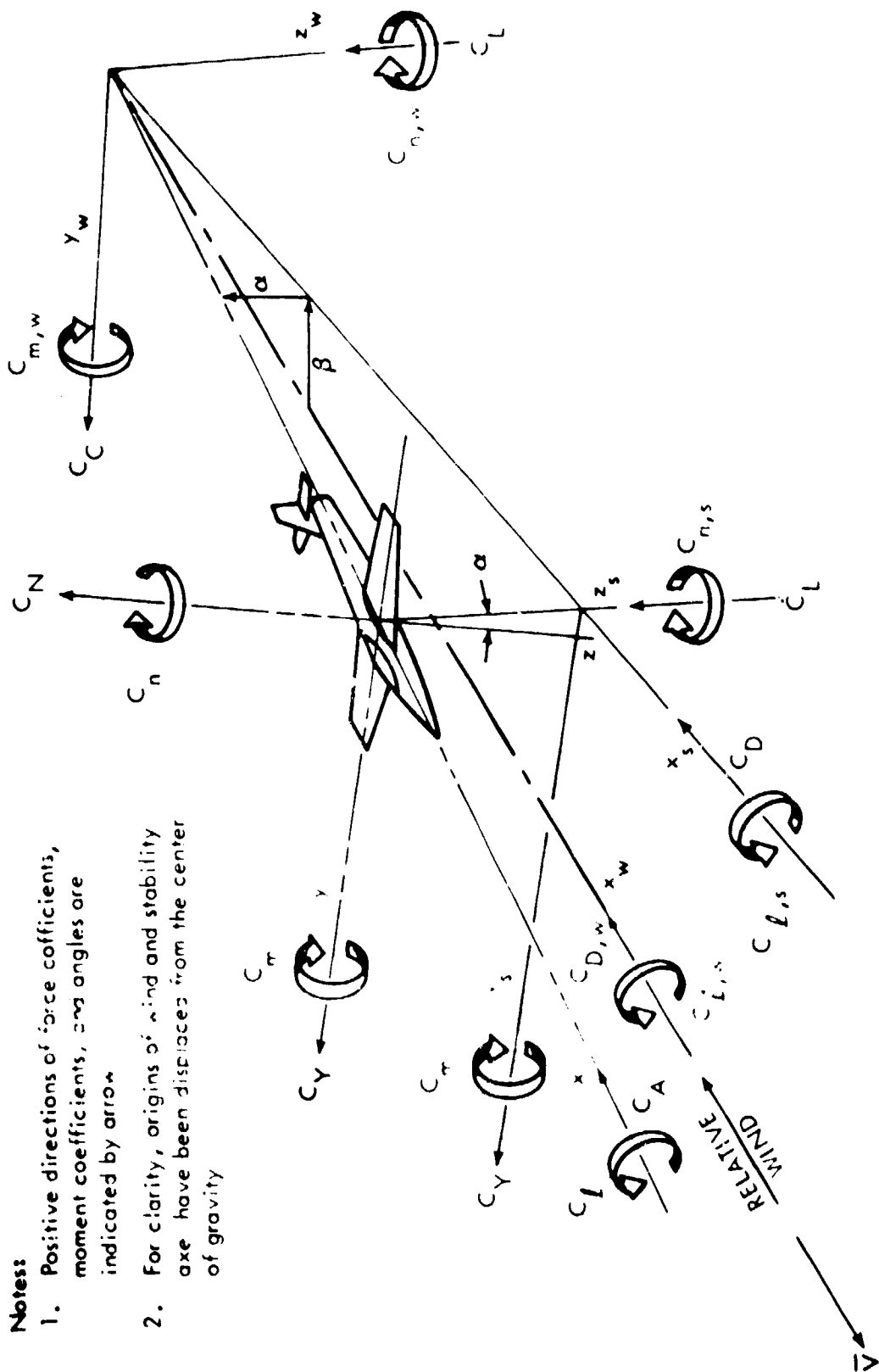
GENERAL DESCRIPTION: 2A, 3, and 3A Configuration per Rockwell Lines

VL70-000095

Model Scale = 0.015

DRAWING NUMBER: VL70-000095

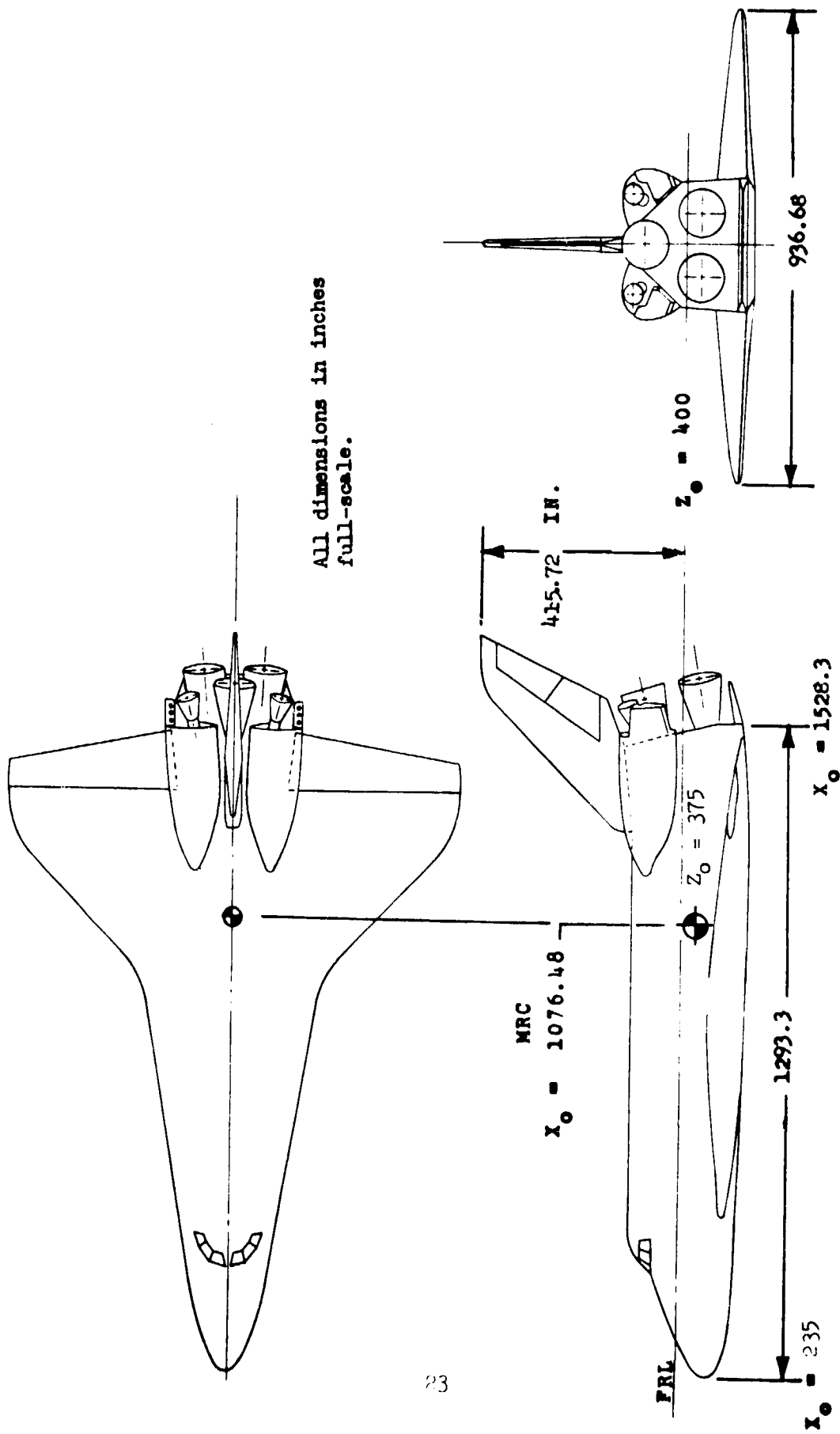
<u>DIMENSIONS:</u>	<u>FULL-SCALE</u>	<u>MODEL SCALE</u>
Area - FT ²	<u>106.38</u>	<u>0.0239</u>
Span (equivalent) - IN.	<u>201.0</u>	<u>3.015</u>
Inb'd equivalent chord	<u>91.585</u>	<u>1.374</u>
Outb'd equivalent chord	<u>50.833</u>	<u>0.762</u>
Ratio movable surface chord/ total surface chord		
At Inb'd equiv. chord	<u>0.400</u>	<u>0.400</u>
At Outb'd equiv. chord	<u>0.400</u>	<u>0.400</u>
Sweep Back Angles, degrees		
Leading Edge	<u>34.83</u>	<u>34.83</u>
Trailing Edge	<u>26.25</u>	<u>26.25</u>
Hingeline	<u>34.83</u>	<u>34.83</u>
Area Moment (Normal to hinge line)- FT ³	<u>526.13</u>	<u>0.00178</u>
Product of Area and Mean Chord		



Notes

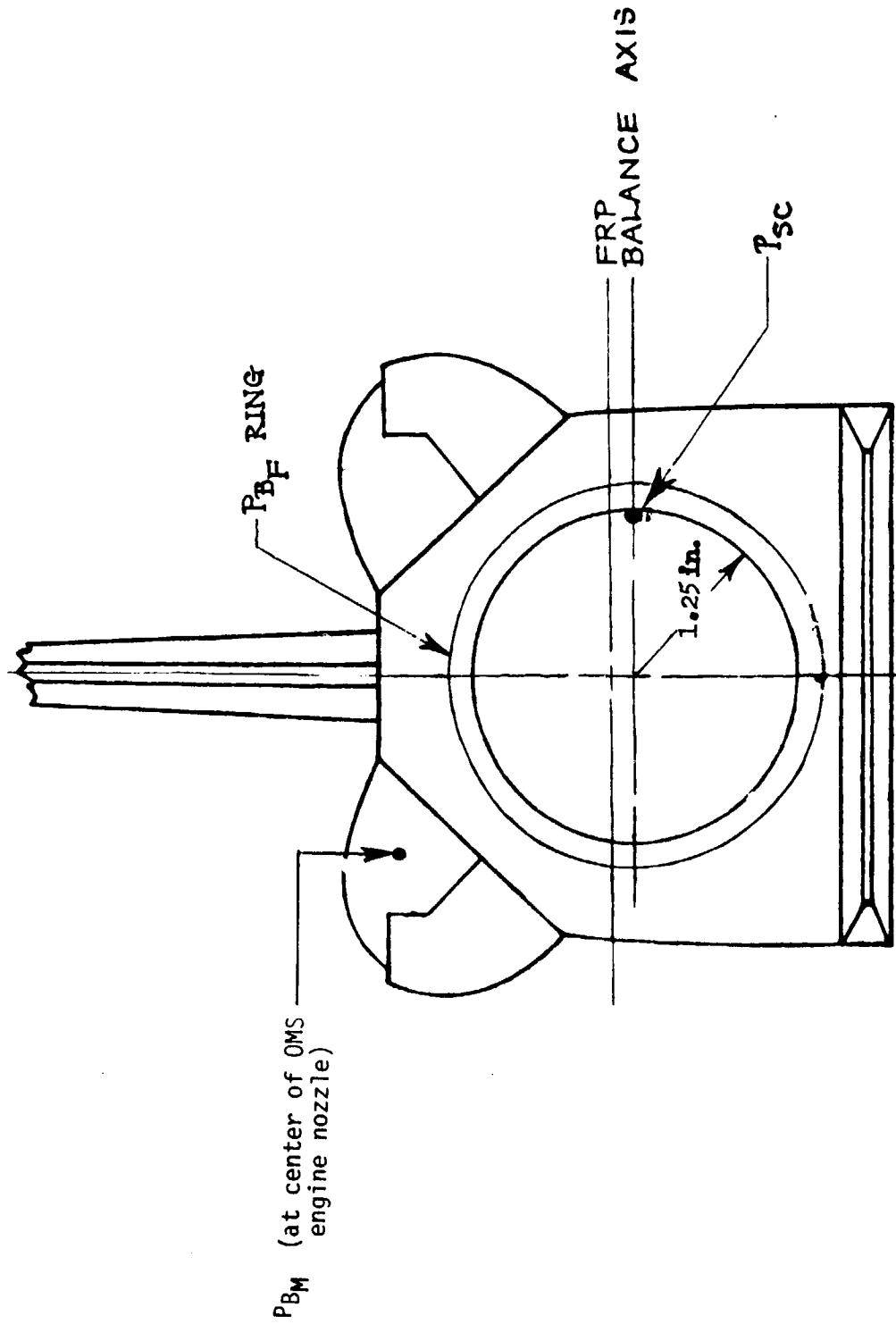
1. Positive directions of force coefficients, moment coefficients, and angles are indicated by arrow
2. For clarity, origins of wind and stability axes have been displaced from the center of gravity

Figure 1. - Axis Systems.



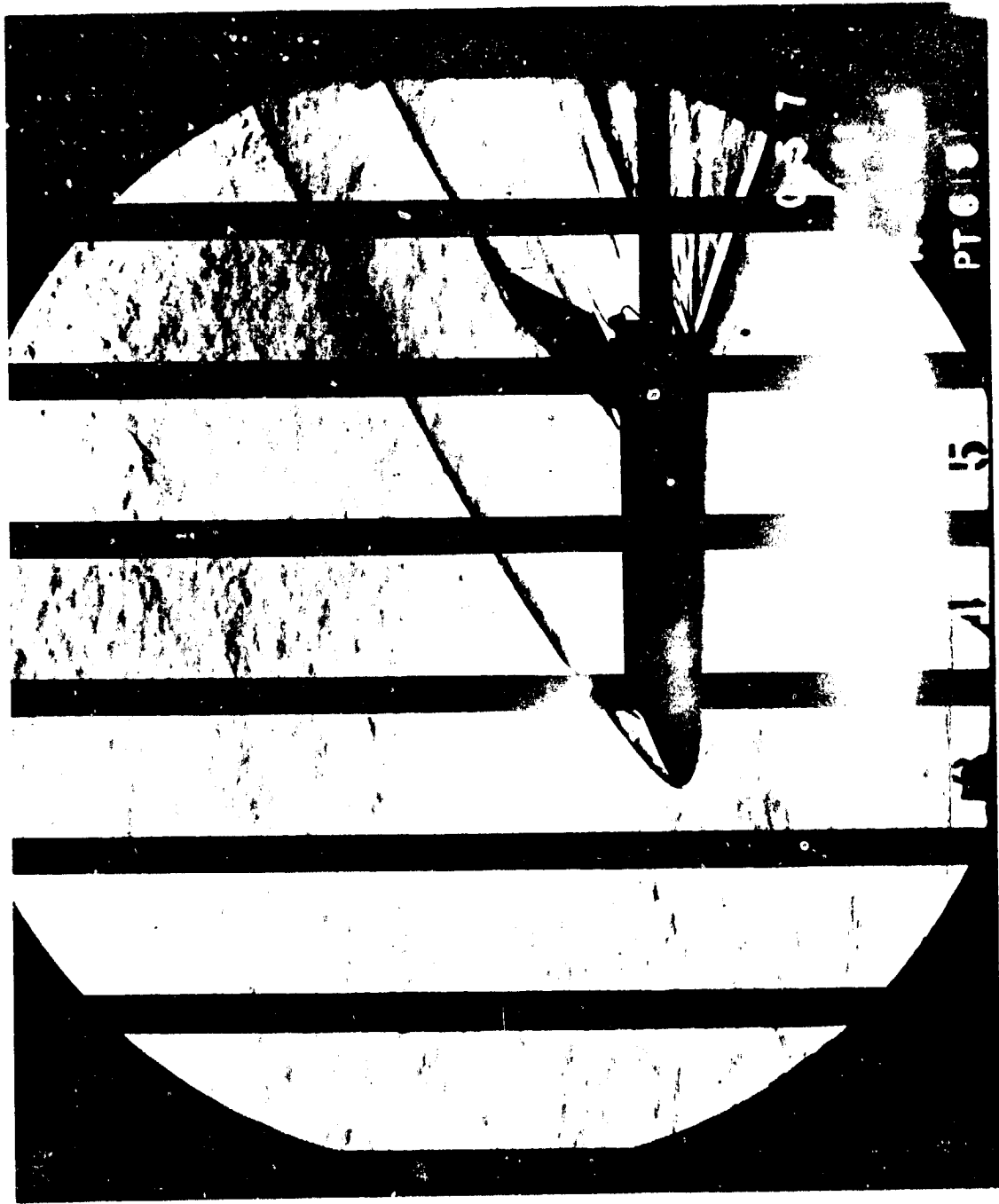
a. SSV Orbiter Configuration 140A/B for Tests OA20A and OA25

Figure 7. - Model Sketches.



b. Esse and Cavity Pressure Locations for Test OA20A

Figure 2. - Concluded.



a. Schlieren Photograph at $\alpha = 0$ and Mach = 2.5

Figure 3. - Model Photographs.



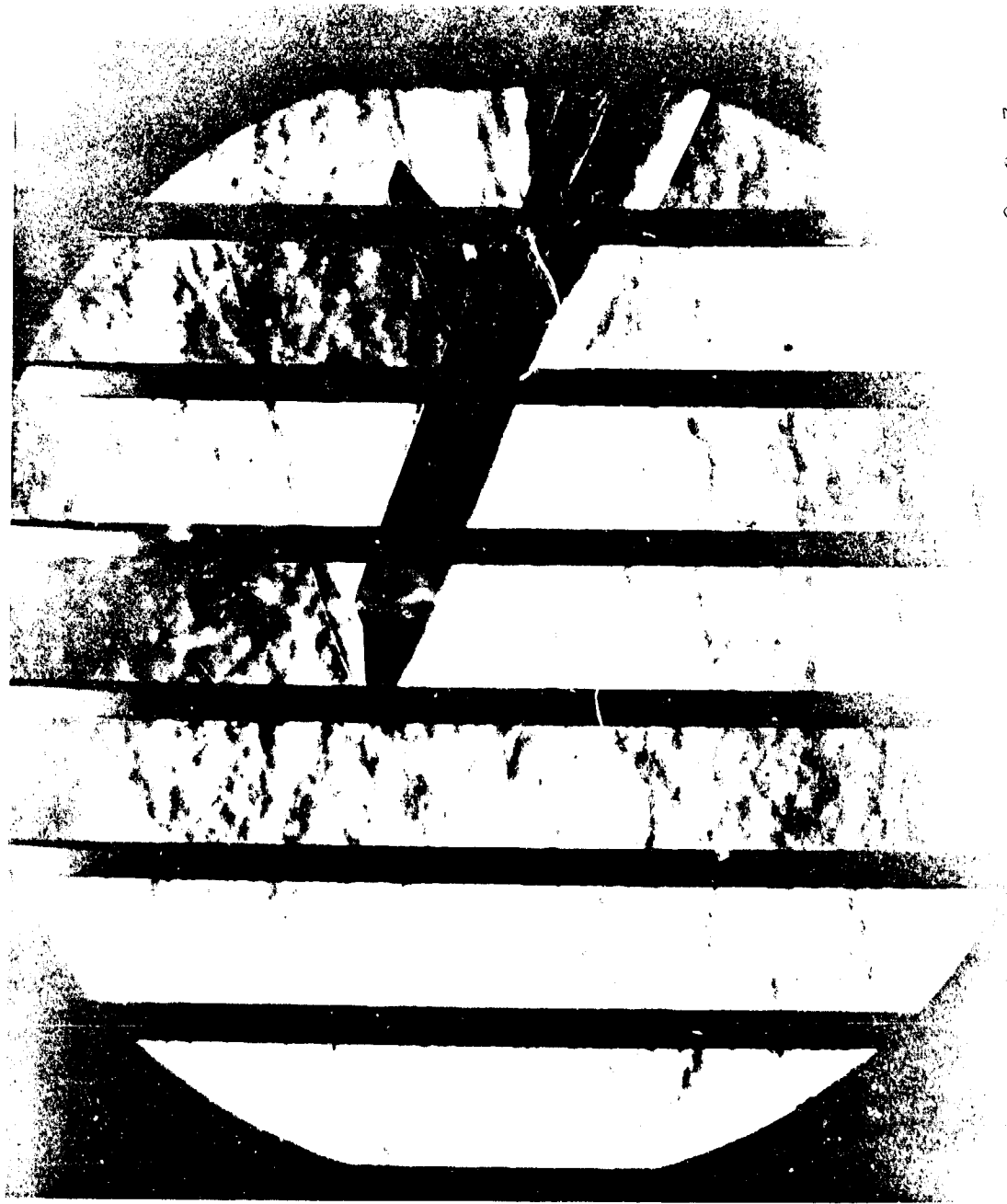
5. Coloured Photograph at Nominal Flight Angle of Attack and Mach 2.5

Figure 3. - Continued.



2. Solitron Photograph at $\alpha = 0$ and Mach = 1.6

Figure 2 - Continued.



2 2 3

d. Schlieren Photograph at Nominal Flight Angle of Attack and Mach = 4.6

Figure 3. - Concluded.

DATA FIGURES

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEV. TR	BOFLAP	SPOBPK	AILRON	REFERENCE INFORMATION
(K22001)	DA-20 LARC UPVT 1057 - 140A/B ORBITTER	.000	-21.000	55.000	.000	SREF 2690.0000 SQ.FT.
(K22007)	DA-20 LARC UPVT 1057 - 140A/B ORBITTER	-40.000	-21.000	55.000	.000	LREF 476.8117 IN.
(K22008)	DA-20 LARC UPVT 1057 - 140A/B ORBITTER	15.000	10.000	55.000	.000	BREF 936.6816 IN.
						XMRP 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150 SCALE

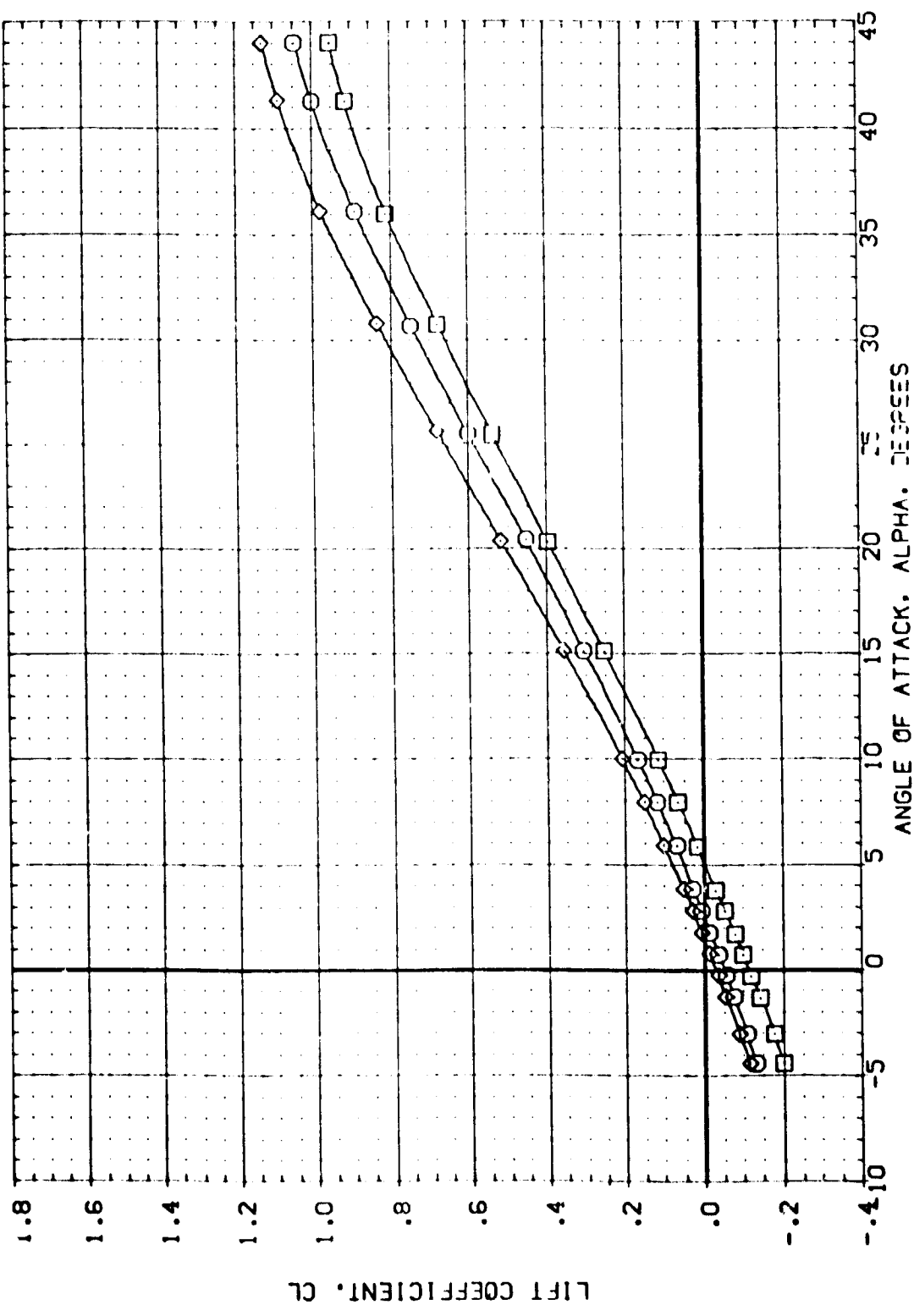


FIG 4 ELEVONS DEFLECTED

(B)MACH = 3.90



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	BOFLAP	SPOBRK	AILRON	REFERENCE INFORMATION
(K02001)	OA-20 LARC UPVT 1057 - 140A/B CRBITER	.000	-21.000	55.000	.000	SREF 2690.0000 SO.FT.
(K02007)	OA-20 LARC UPVT 1057 - 140A/B CRBITER	-40.000	-21.000	55.000	.000	LREF 476.8117 IN.
(K02008)	OA-20 LARC UPVT 1057 - 140A/B CRBITER	15.000	10.000	55.000	.000	BREF 936.6816 IN.
						XTRP 1076.4800 IN.
						YTRP .0000 IN.
						ZTRP 375.0000 IN.
						SCALE .0150

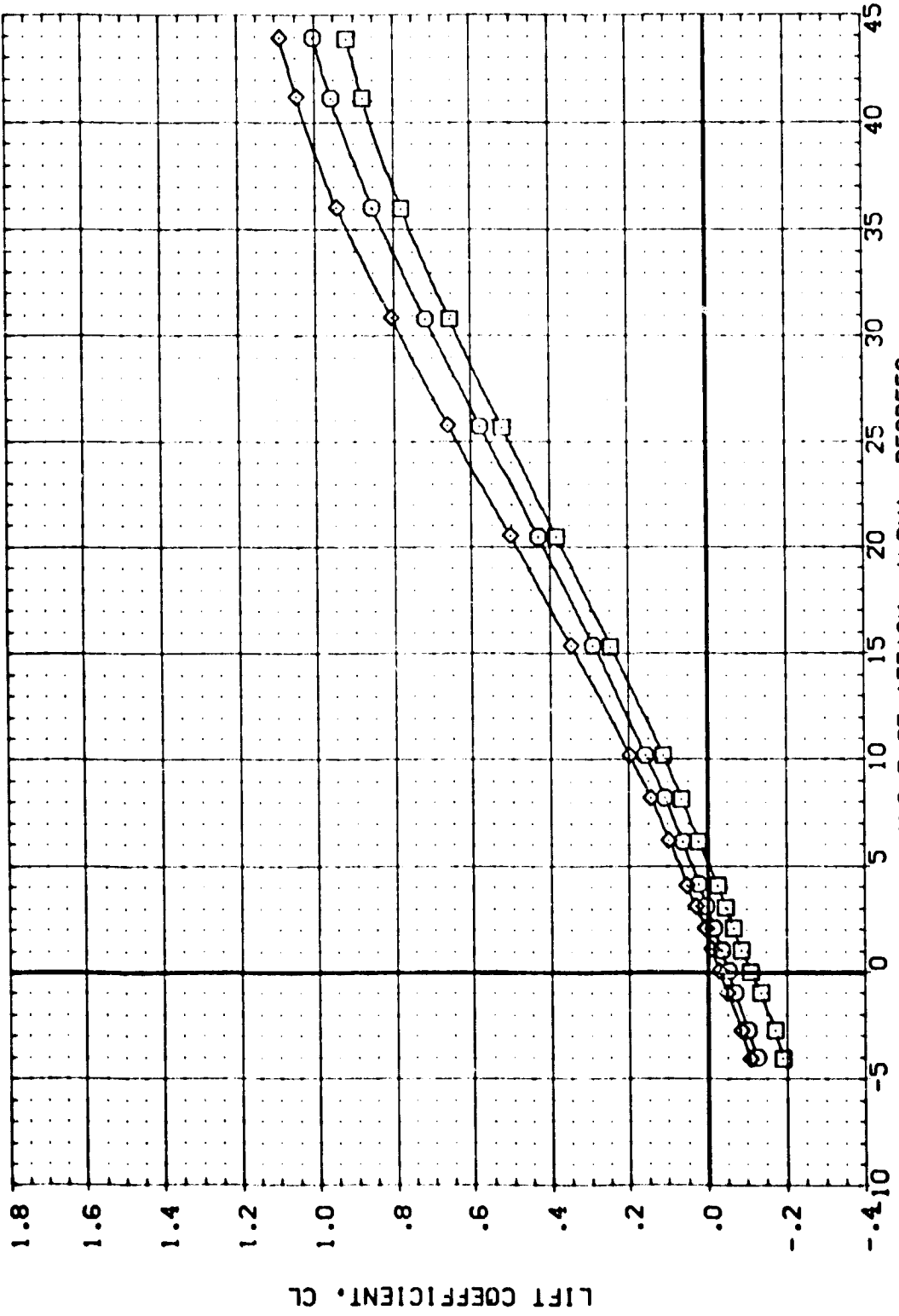


FIG 4 ELEVONS DEFLECTED

(C)MACH = 4.60

DATA SET SYMBOL: (K22001) (K22007) (K22008)

CONFIGURATION DESCRIPTION: CA-20 LARC UPWT 1057 - 14DAVB OR81TER; DA-20 LARC UPWT 1057 - 14DAVB OR81TER; DA-20 LARC UPWT 1057 - 14DAVB OR81TER

ELEVTR: .000, -40.000, 15.000

BOFLAP: -21.000, -21.000, 10.000

SFOBRV: 55.000, 55.000, 55.000

A1LRON: .000, .000, .000

REFERENCE INFORMATION: SREF 2690.0000 SO.FT.; LREF 476.8117 IN.; BRFF 936.6816 IN.; XMRP 1076.4800 IN.; YMRP .0000 IN.; ZMRP 379.0000 IN.; SCALE .0150

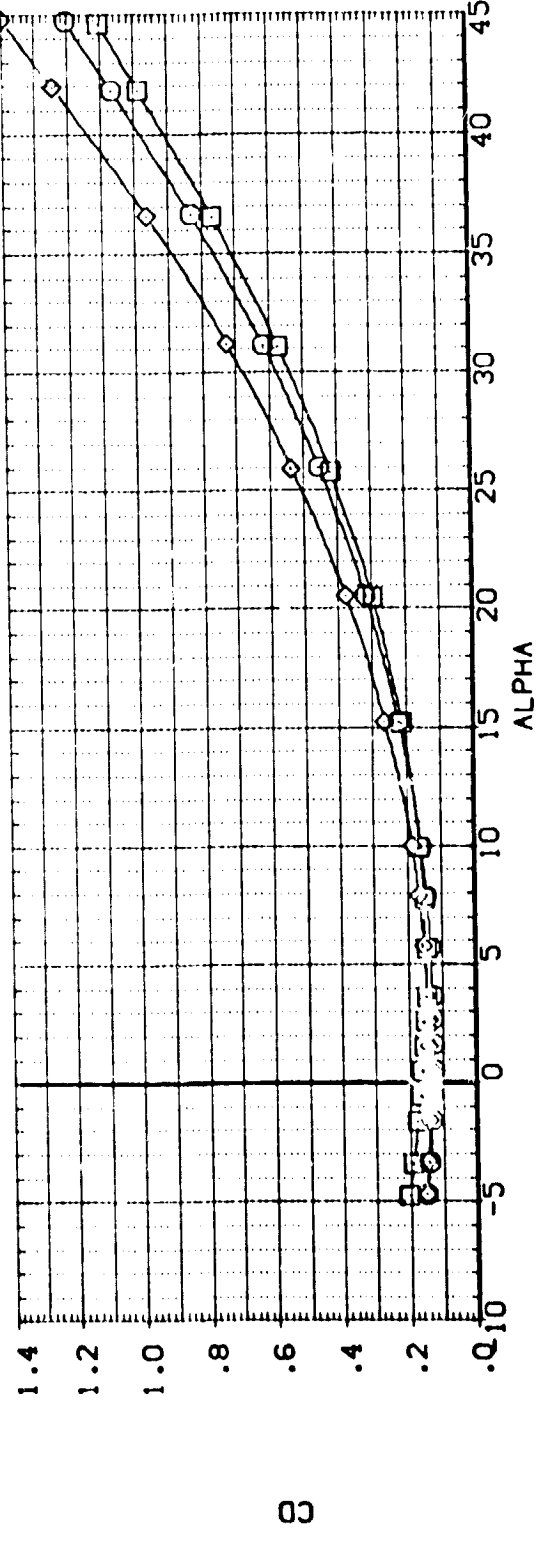
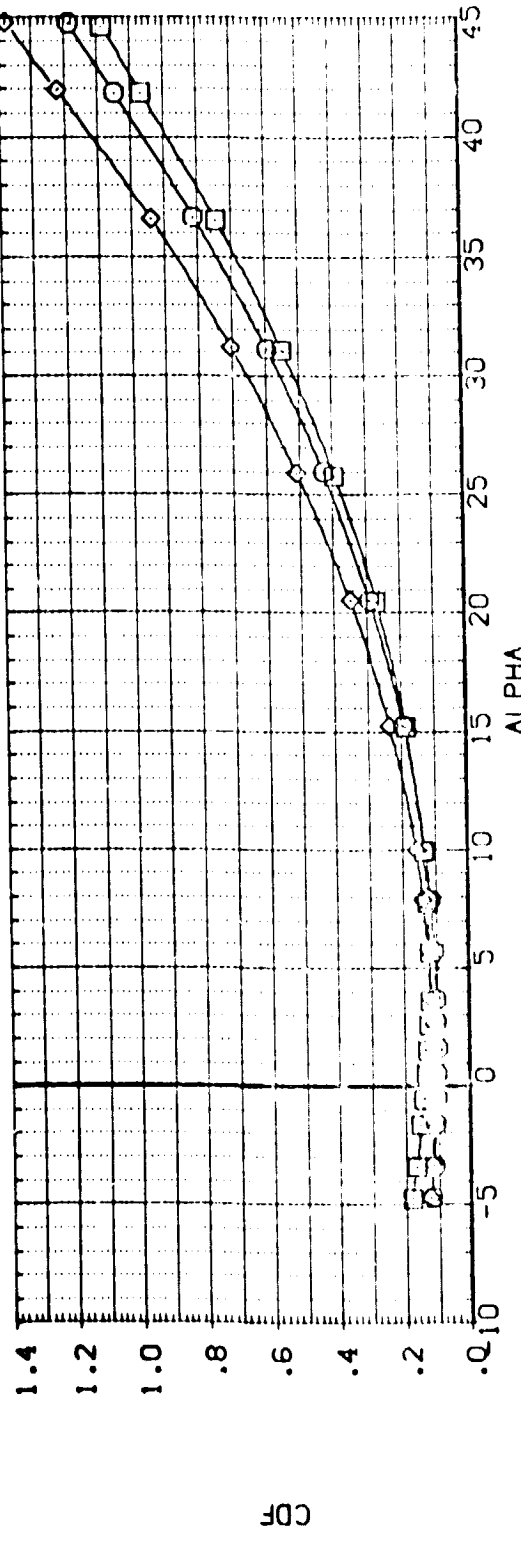


FIG 4 ELEVONS DEFLECTED

(A)MACH = 2.50



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	BDFLAP	SPOBRK	AILTRON	REFERENCE INFORMATION
(#027001)	0A-20 LARC UPVT 1057 - 140A/B ORBITTER	.000	-21.000	53.000	.000	SREF 2690.0000 SO.FT.
(#027007)	0A-20 LARC UPVT 1057 - 140A/B ORBITTER	-40.000	-21.000	53.000	.000	LREF 476.8117 IN.
(#027008)	0A-20 LARC UPVT 1057 - 140A/B ORBITTER	15.000	10.000	53.000	.000	BREF 936.6816 IN.
						XMRP 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150

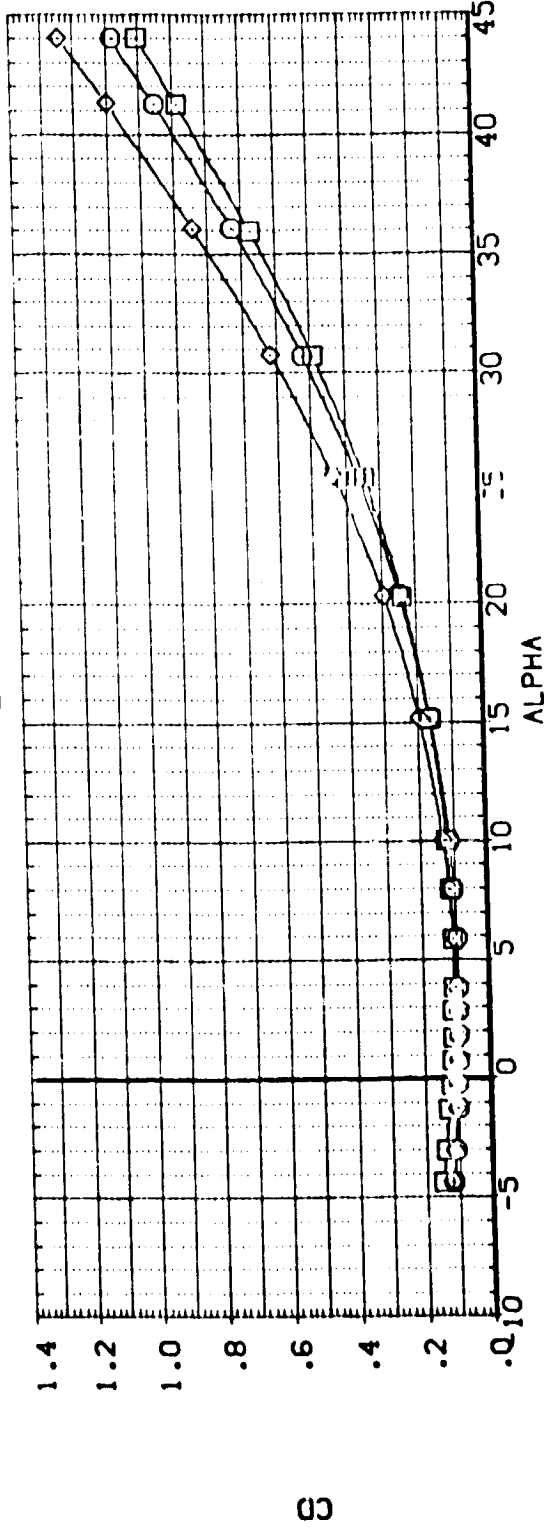
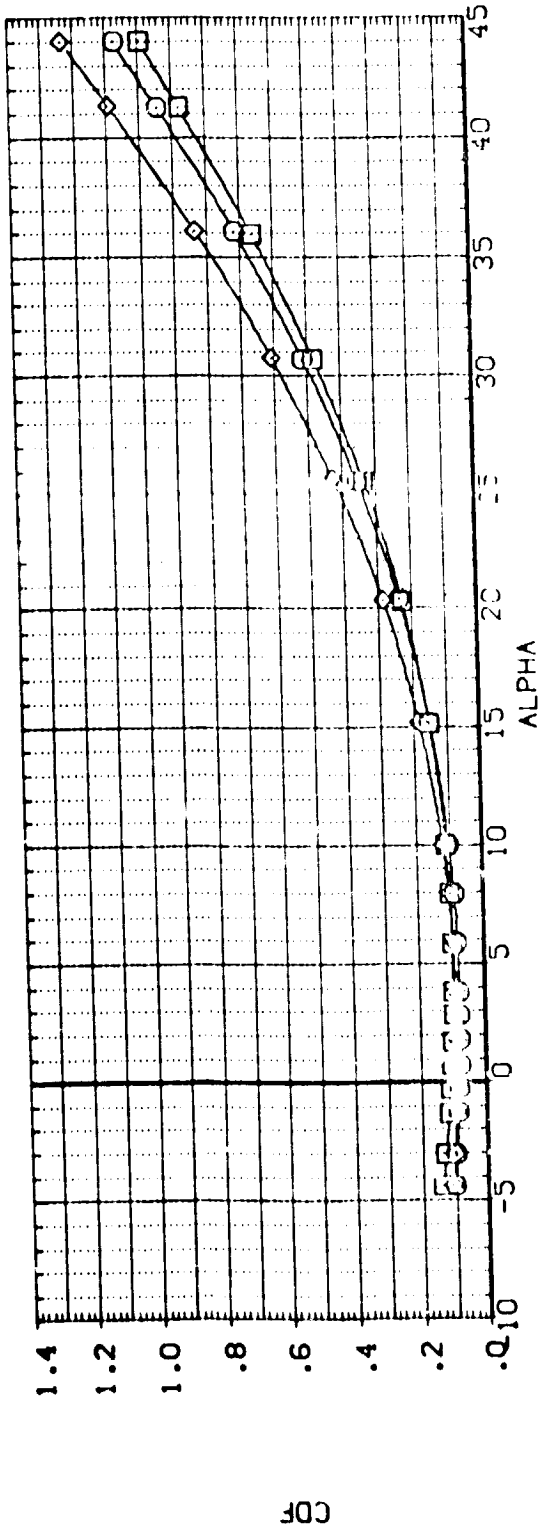


FIG 4 ELEVONS DEFLECTED
(B)MACH = 3.90

DATA SET SYMBOL: (PG2001), (PG2007), (PG2008)

CONFIGURATION DESCRIPTION: DA-20 LARC LPVT 1057 - 140AVB DRBITER, DA-20 LARC LPVT 1057 - 140AVB DRBITER, DA-20 LARC LPVT 1057 - 140AVB DRBITER

ELEVTR: .000, -40.000, 15.000

BDFLAP: -21.000, -21.000, 10.000

SPOBRK: .000, .000, .000

AILRON: .000, .000, .000

REFERENCE INFORMATION: SREF 2690.0000 SQ.FT., LREF 476.8117 IN., BREF 936.6816 IN., XPRP 1076.4800 IN., YPRP .0000 IN., ZPRP 375.0000 IN., SCALE .0150

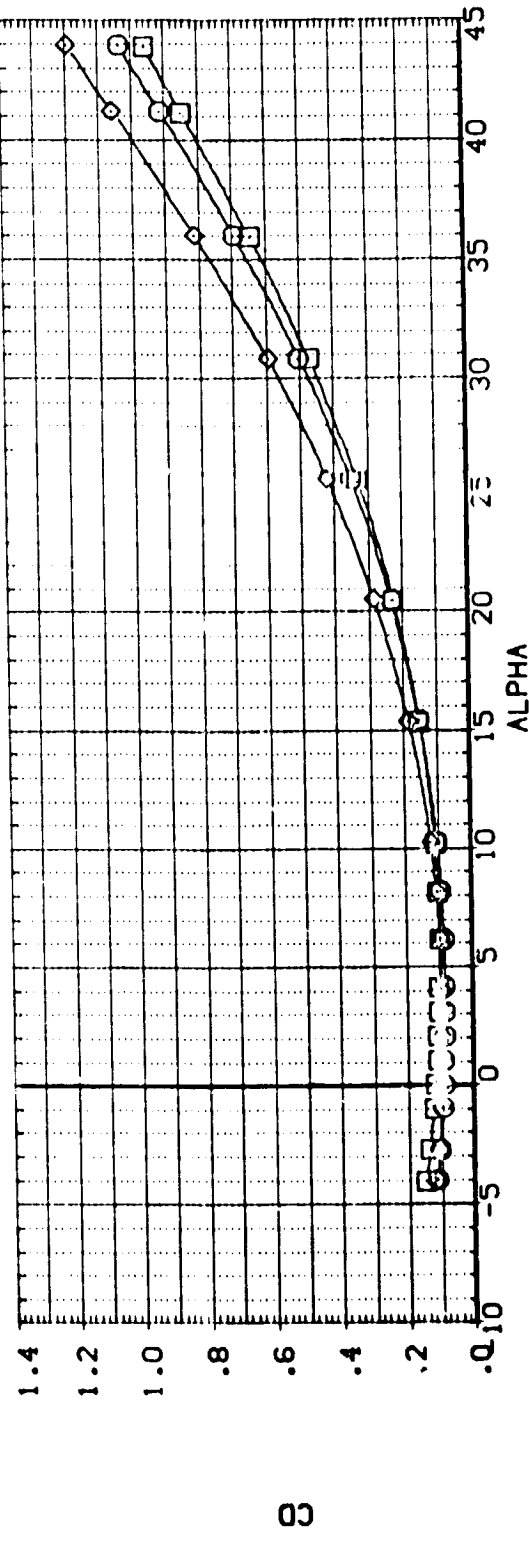
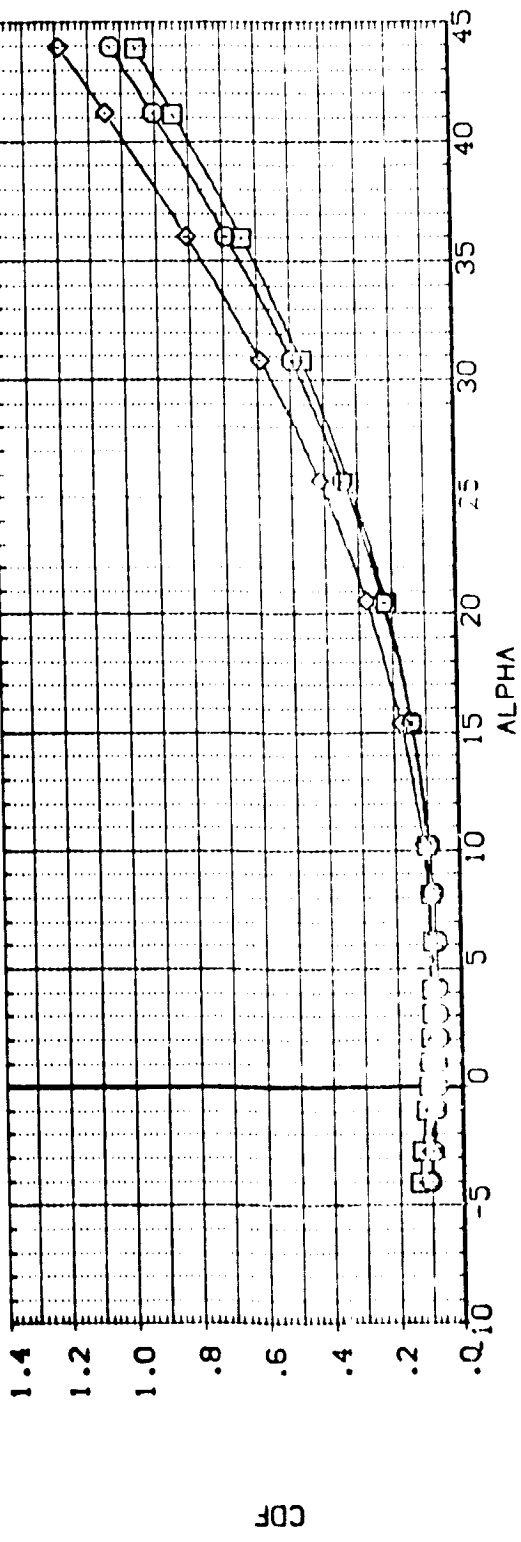


FIG 4 ELEVONS DEFLECTED
(C)MACH = 4.60

DATA SET SYMBOL
 (KG2001)
 (KG2007)
 (KG2008)

CONFIGURATION DESCRIPTION
 CA-20 LARC UPVT 1057 - 140A/R ORBITER
 CA-20 LARC UPVT 1057 - 140A/B ORBITER
 CA-20 LARC UPVT 1057 - 140A/B ORBITER

ELEVTR BOFLAP SPOBRK AIRRON
 .000 -21.000 55.000 .000
 -40.000 -21.000 55.000 .000
 15.000 10.000 55.000 .000

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LRREF 476.8117 IN.
 BRREF 936.6816 IN.
 XMRP 1076.4800 IN.
 YMRP .0000 IN.
 ZMRP 375.0000 IN.
 SCALE .0150 SCALE

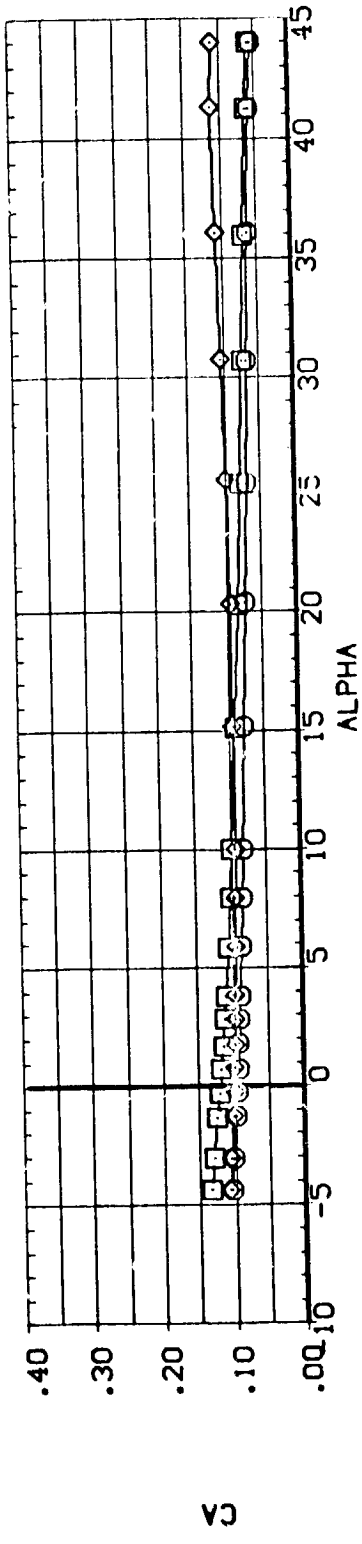
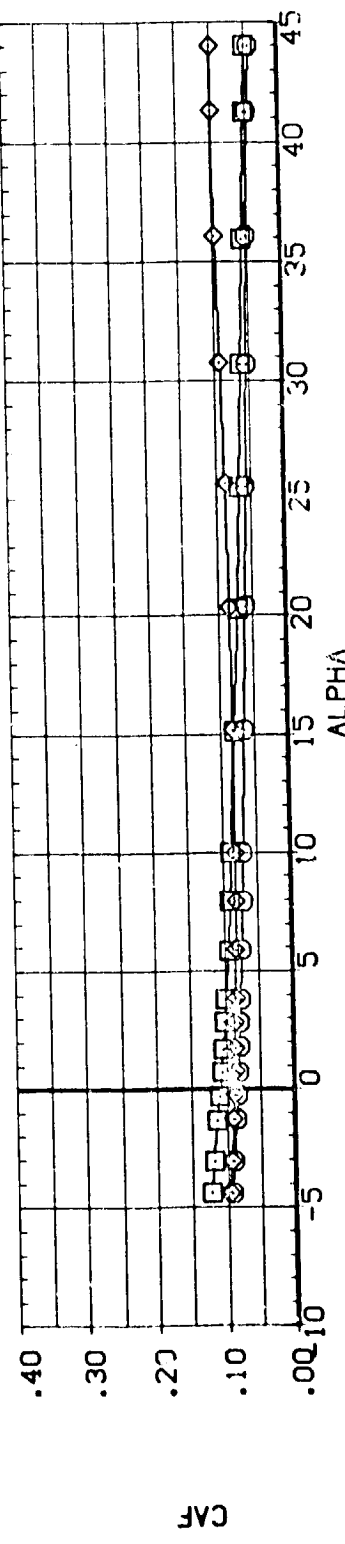
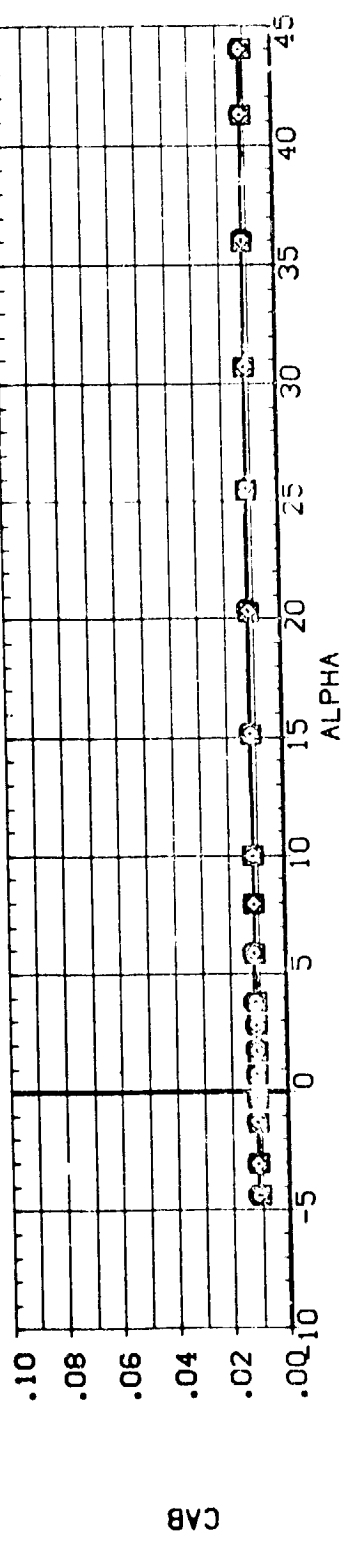


FIG 4 ELEVONS DEFLECTED

(B)MACH = 3.90

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	BOFLAP	SPOBRK	AUORON	REFERENCE INFORMATION
(P22001)	CA-22 LARC UPVT 1057 - 14CAVB 9781TER	.000	-21.000	55.000	.000	SREF 2692.0000 SG.FT.
(P22007)	CA-22 LARC UPVT 1057 - 14CAVB 9781TER	-49.000	-21.000	55.000	.000	LREF 476.8117 IN.
(P22008)	CA-22 LARC UPVT 1057 - 14CAVB 9781TER	15.000	10.000	55.000	.000	BREF 936.6816 IN.
						XREF 1076.4800 IN.
						MPP .0000 IN.
						ZPP .0000 IN.
						SCALE .0150 SCALE

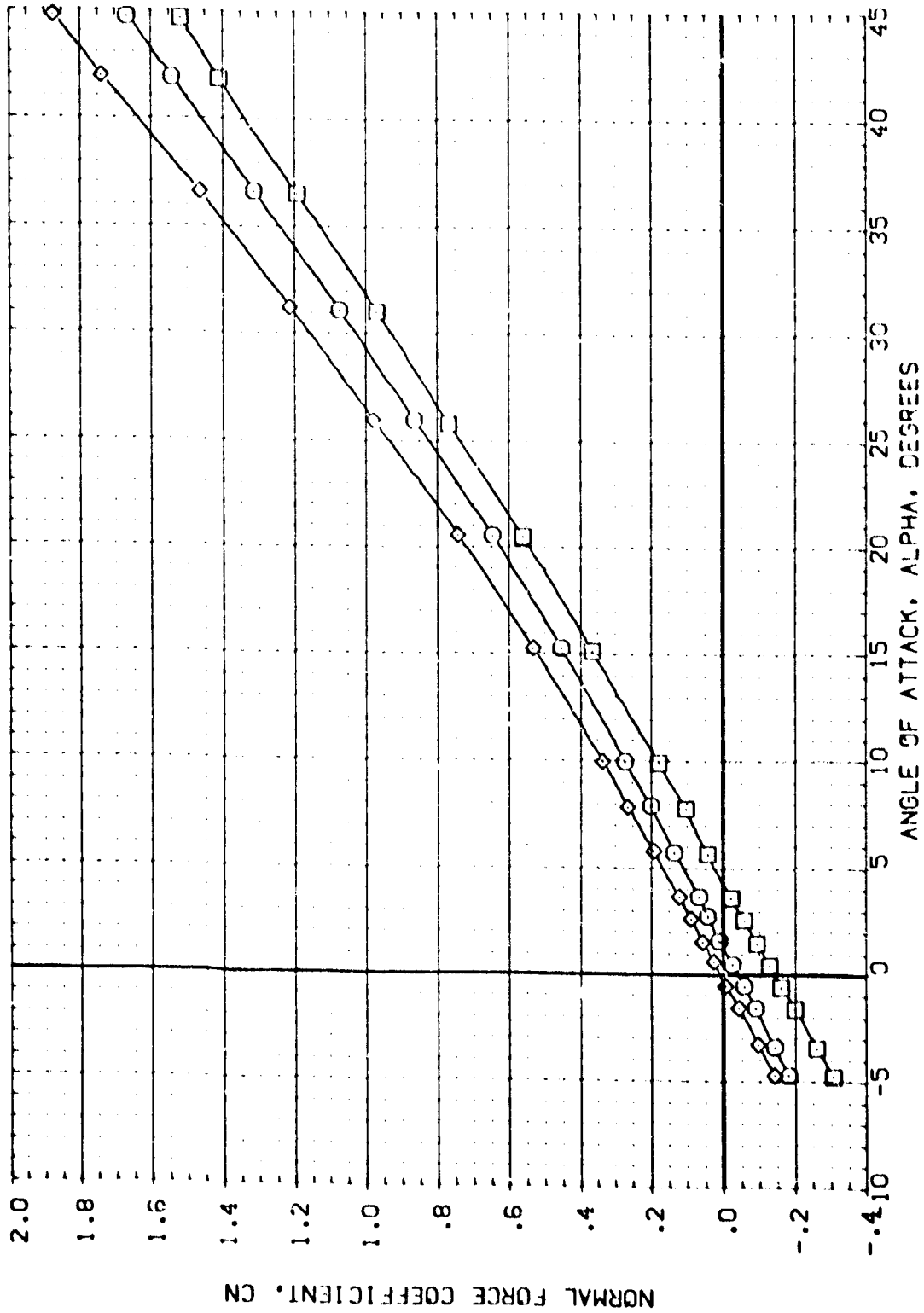


FIG 4 ELEVONS DEFLECTED

(A)MACH = 2.50

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	BOFLAP	SPDRBY	ALTRPON	REFERENCE INFORMATION
102001	CA-20 LAPC UPAC 1057 - 1ACAUB DRB1TER	000	-21.000	55.000	000	SREF 2690.0000 SC.FT.
102007	CA-20 LAPC UPAC 1057 - 1ACAUB DRB1TER	-40.000	-21.000	55.000	000	LREF 475.8117
102008	CA-20 LAPC UPAC 1057 - 1ACAUB DRB1TER	15.000	-10.000	55.000	000	SREF 936.5816
						XREF 1076.4800
						MPP 0000
						ZMPP 0000
						SCALE 375.0000
						SCALE 0.150

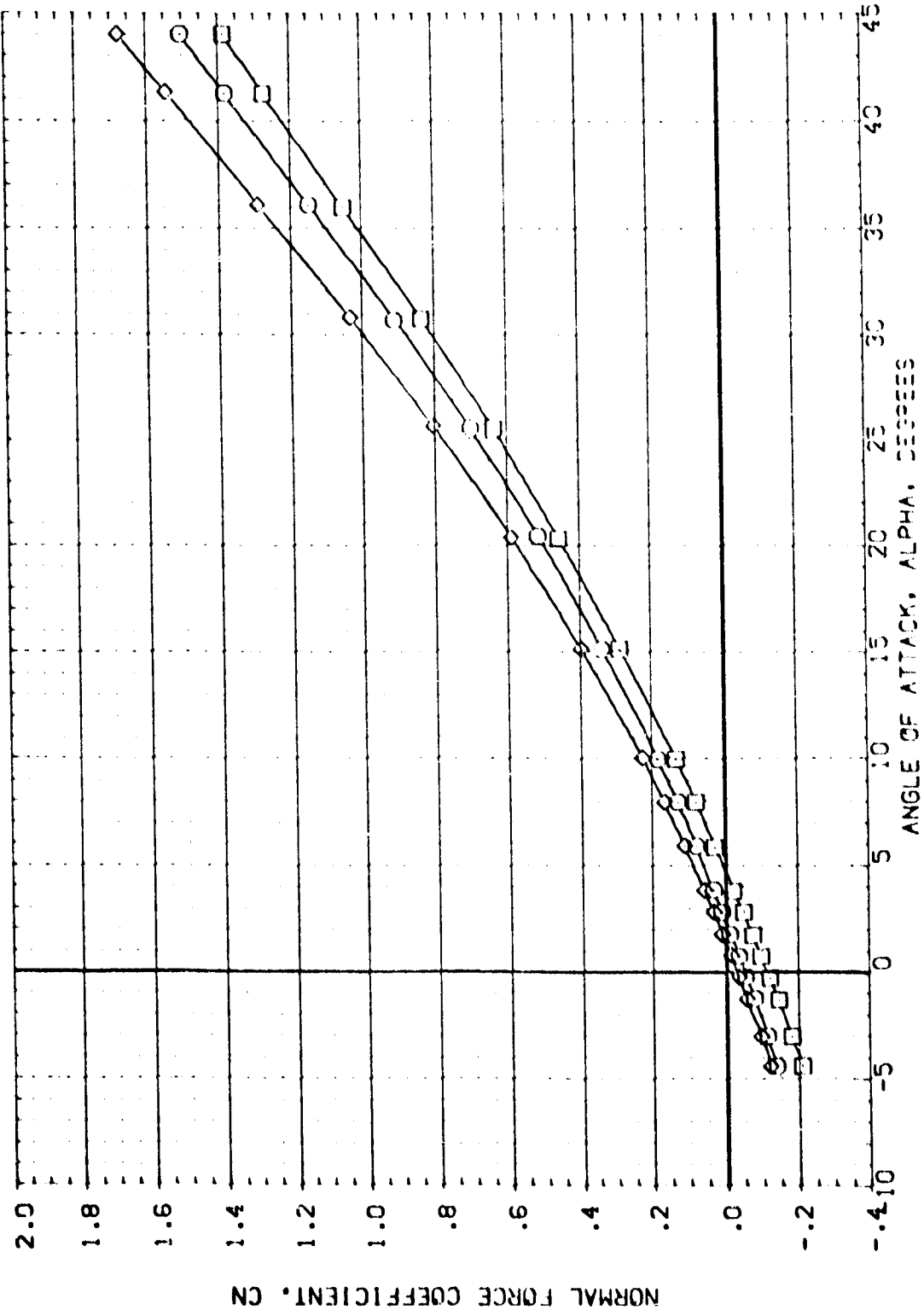


FIG 4 ELEVONS DEFLECTED

(2)MACH = 3.90

DATA SET SYMBOL CONFIGURATION DESCRIPTION ELEVTR BOFLAP SFDRBY AILRON REFERENCE INFORMATION SO.FT.

(2200)	CA-20 LAPC UPV 1957 - 14DAVB ORBITER	.000	-21.000	55.000	.000	SREF	2690.0000	IN.
(2207)	CA-20 LAPC UPV 1957 - 14DAVB ORBITER	-40.000	-21.000	55.000	.000	LREF	476.8117	IN.
(2208)	CA-20 LAPC UPV 1957 - 14DAVB ORBITER	15.000	0.000	55.000	.000	BREF	938.2816	IN.
						XAPP	1078.4800	IN.
						YAPP	0.0000	IN.
						ZAPP	375.0000	IN.
						SCALE	0.150	SCALE

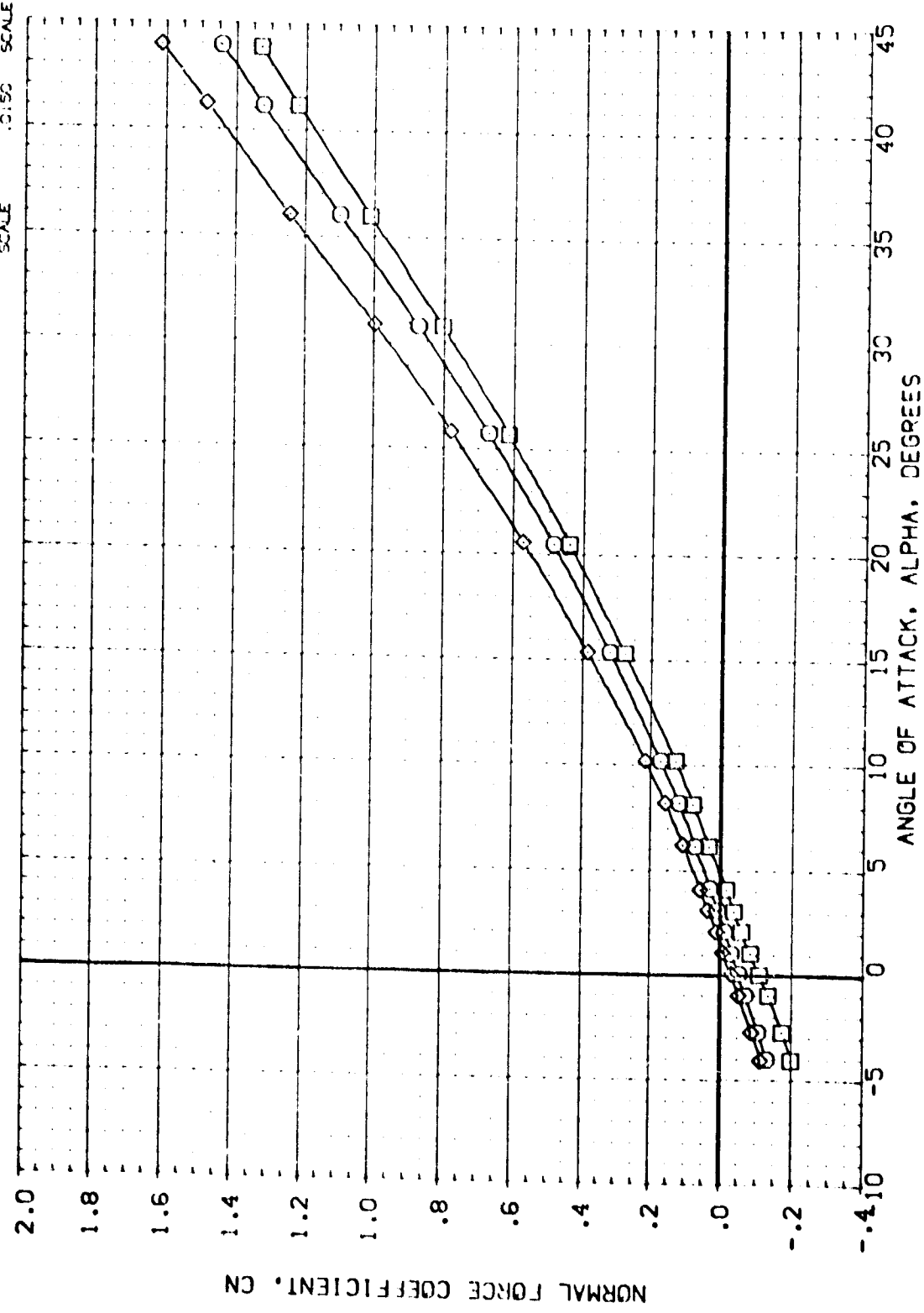


FIG 4 ELEVONS DEFLECTED

(C)MACH = 4.60



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	BOFLAP	SPOBRK	AILRON	REFERENCE INFORMATION
(#22001)	CA-20 LARC UPVT 1057 - 140A/B DRB1TER	.000	-21.000	55.000	.000	SREF 2650.0000 SQ.FT.
(#22007)	CA-20 LARC UPVT 1057 - 140A/B DRB1TER	-40.000	-21.000	55.000	.000	LREF 476.8117 IN.
(#22008)	CA-20 LARC UPVT 1057 - 140A/B DRB1TER	15.000	10.000	55.000	.000	BREF 935.6816 IN.
						XMRP 1076.4800 IN.
						YMRP 21.00 IN.
						ZMRP 375.0000 IN.
						SCALE .0150 SCALE

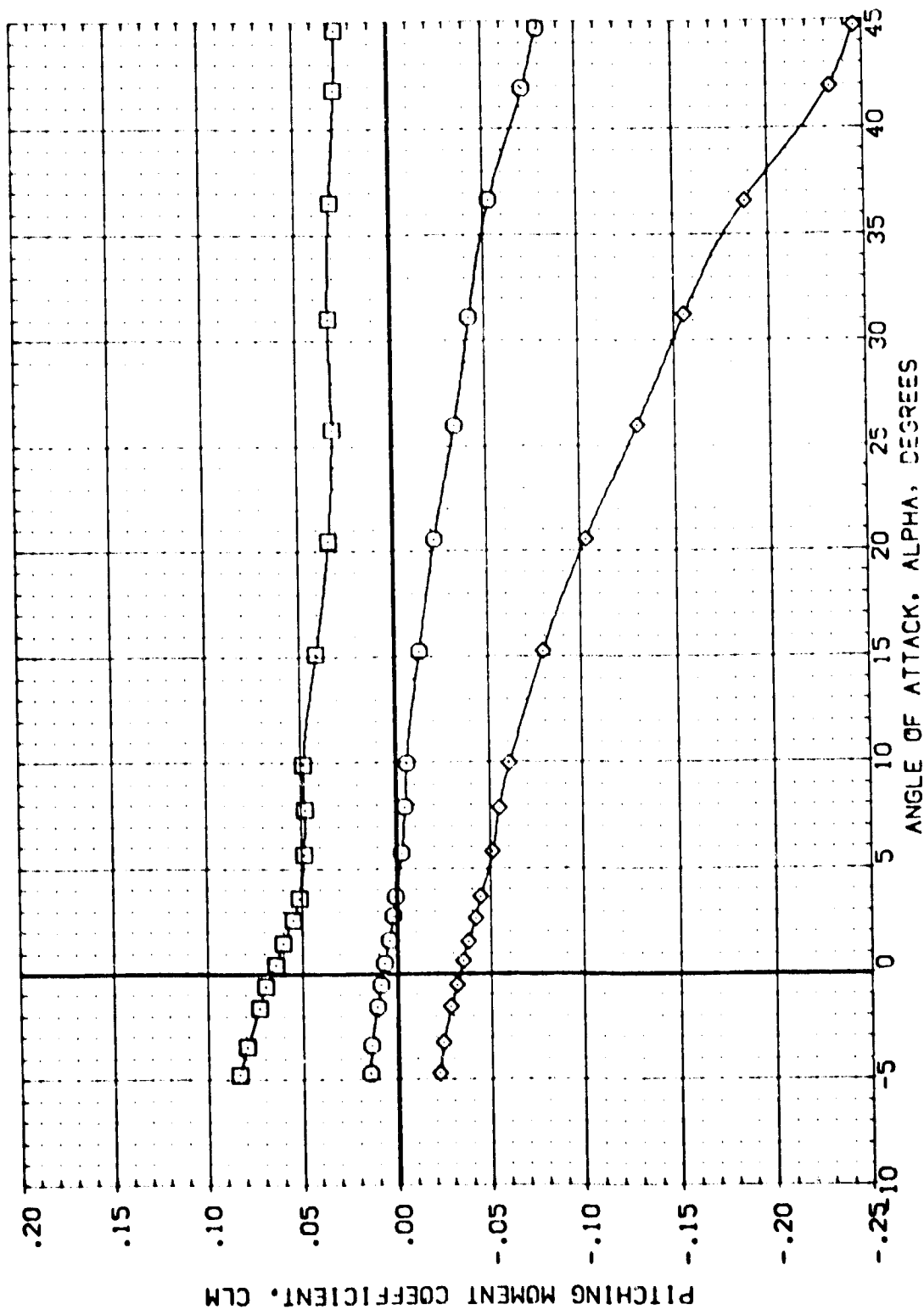


FIG 4 ELEVONS DEFLECTED

(A) MACH = 2.50

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	BOFLAP	SPOBBY	ALUPON	REFERENCE INFORMATION
12200	2A-20 LARC JPMT 1057 - 14CA/B 3PB/ITER	.000	-2.000	55.000	.000	SPRF 2690.0000 50. FT.
12201	2A-20 LARC JPMT 1057 - 14CA/B 3PB/ITER	-40.000	-2.000	55.000	.000	LREF 476 8.17 IN.
12208	2A-20 LARC JPMT 1057 - 14CA/B 3PB/ITER	15.000	10.000	55.000	.000	BRPF 936 58.16 IN.
						XMPF 1076 4800 IN.
						ZMPF 375 2000 IN.
						SCALE 10.50 SCALE

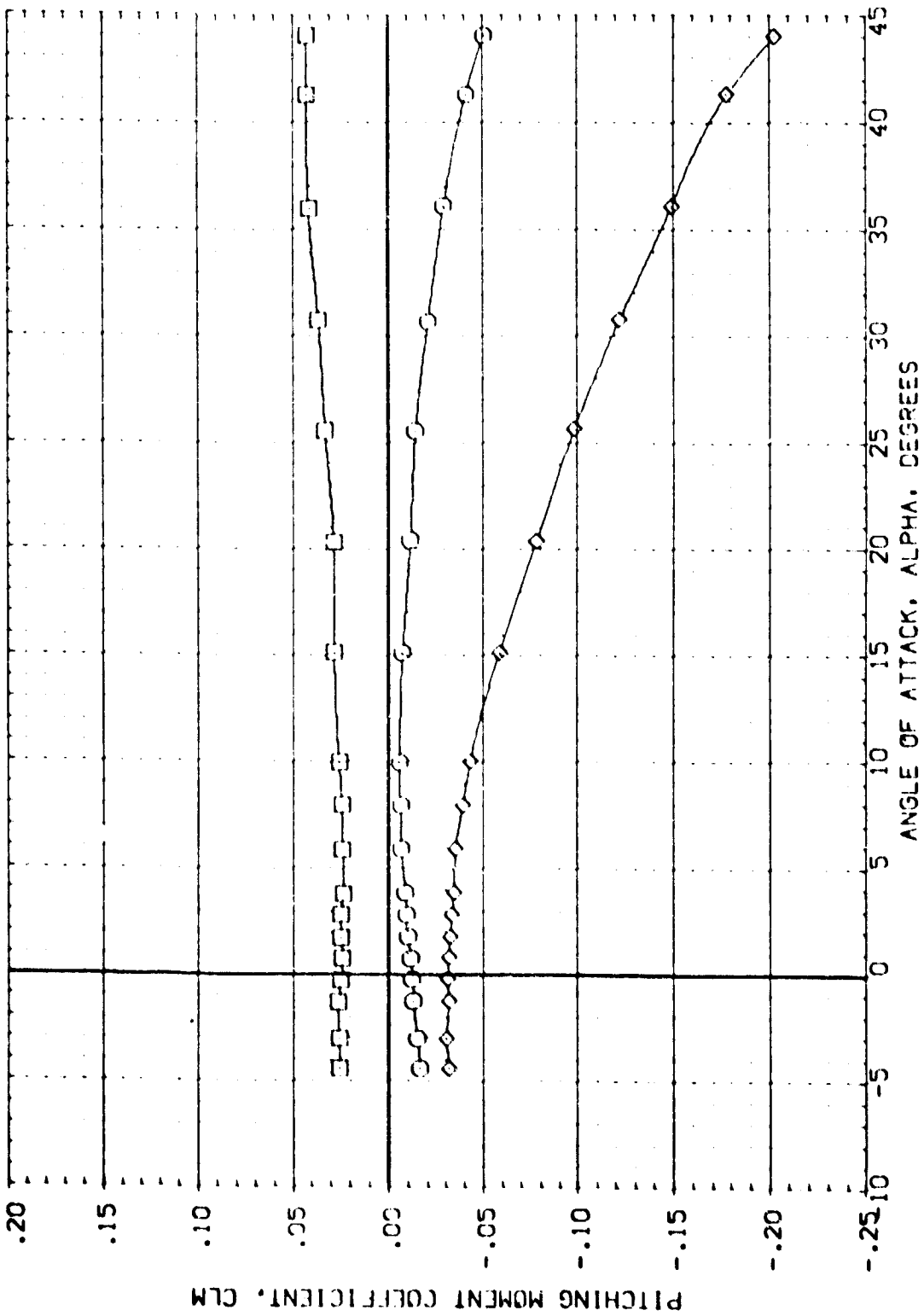


FIG 4 ELEVONS DEFLECTED

(8) MACH = 3.90



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	BOFLAP	SP0BRK	ALLJON	REFERENCE INFORMATION
1022001	CA-20 LAPC JPT 1057 - 142A/B 098 JEP	.000	-21.000	55.000	.000	2690.0000 SQ.FT.
1022007	CA-20 LAPC JPT 1057 - 142A/B 098 JEP	-40.000	-21.000	55.000	.000	476.8117 IN.
1022008	CA-20 LAPC JPT 1057 - 142A/B 098 JEP	15.000	10.000	55.000	.000	936.6815 IN.
						1076.4800 IN.
						2000 IN.
						375.0000 IN.
						0.1500 SCALE

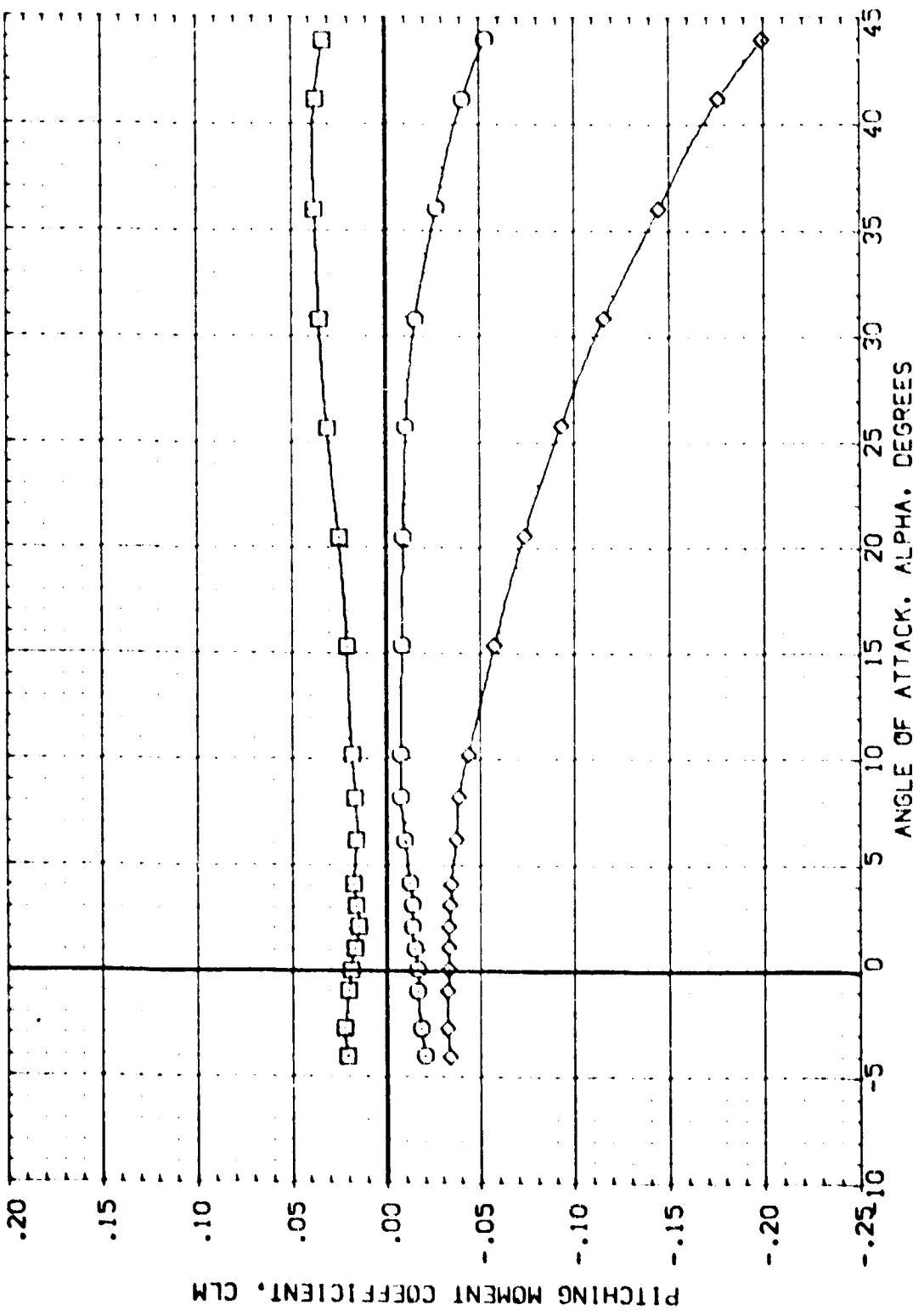


FIG 4 ELEVONS DEFLECTED

COMACH = 4.50

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	BOFLAP	SPDBPY	AILPON	REFERENCE INFORMATION
(P22001)	SA-20 LARC JPV1 1057 - 140A/B 058 TER	.000	21.000	55.000	.000	SREF 2690.0000 50. FT.
(P22007)	SA-20 LARC JPV1 1057 - 140A/B 058 TER	-40.000	-21.000	55.000	.000	LREF 476.8117 IN.
(P22008)	SA-20 LARC JPV1 1057 - 140A/B 058 TER	15.000	10.000	55.000	.000	BREF 936.6816 IN.
						XMPD 1076.4500 IN.
						YMPD 3000 IN.
						ZMPD 375.0000 IN.
						SCALE .0150 SCALE

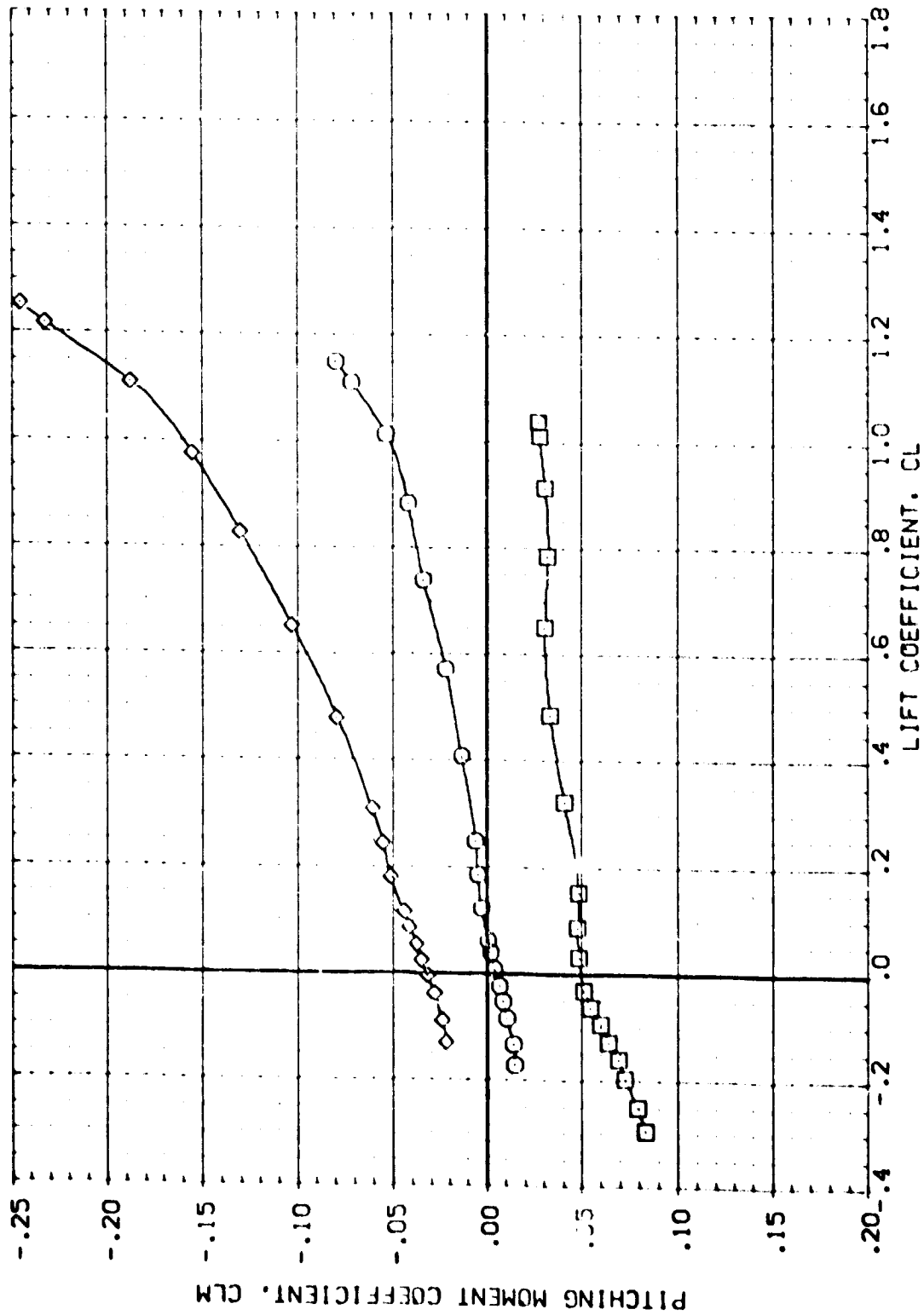


FIG 4 ELEVONS DEFLECTED

(M)MACH = 2.50



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	BOFLAP	SFOBRK	A1LRON	REFERENCE INFORMATION
(K02001)	0A-20 LARC UPVT 1057 - 140A/B 0P8 I TER	.000	-21.000	55.000	.000	SREF 2690.0000 SQ.FT.
(K02007)	0A-20 LARC UPVT 1057 - 140A/B 0P8 I TER	-40.000	-21.000	55.000	.000	LREF 476.8117 IN.
(K02008)	0A-20 LARC UPVT 1057 - 140A/B 0P8 I TER	-15.000	10.000	55.000	.000	BREF 936.6816 IN.
						XMRP 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150 SCALE

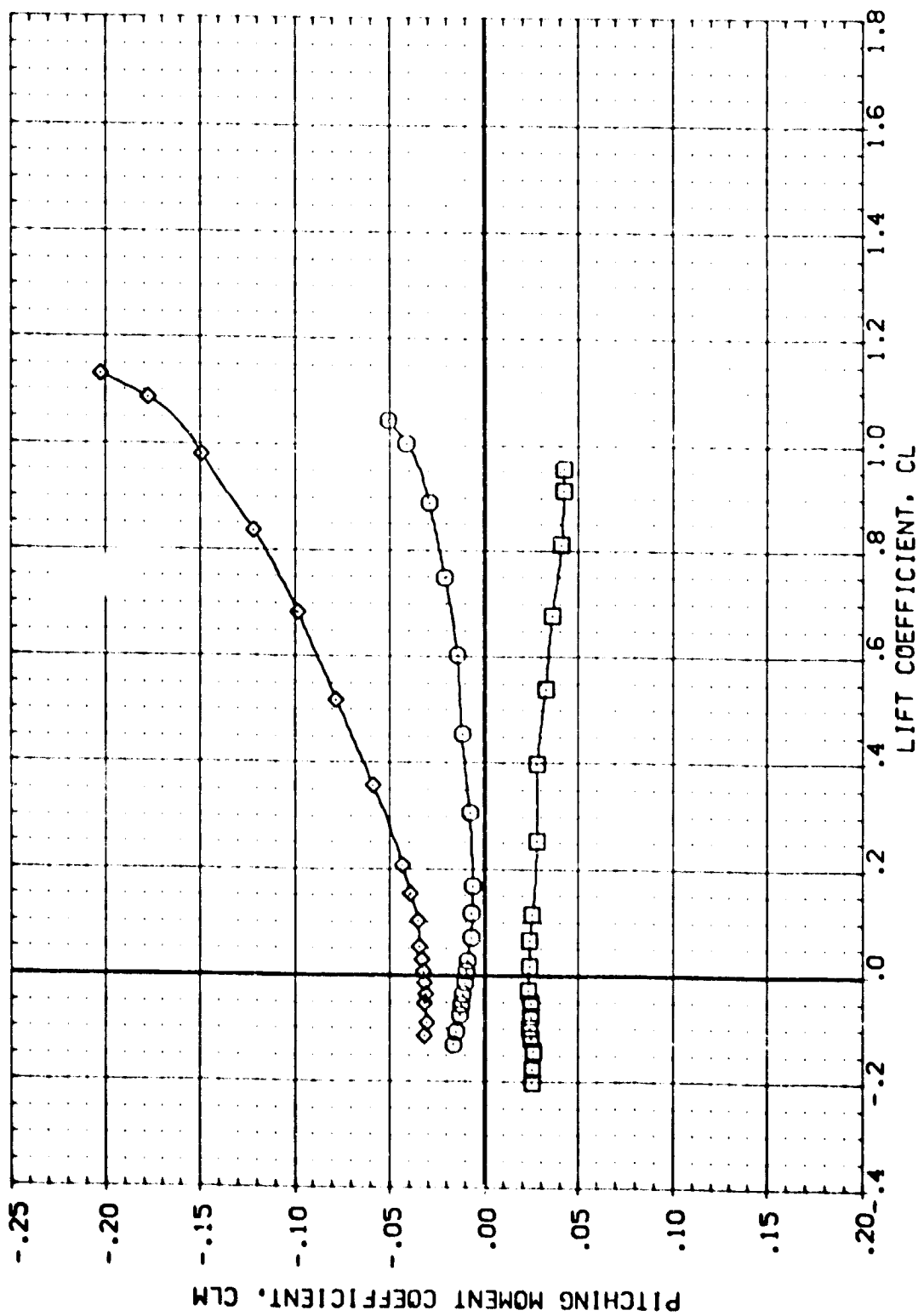


FIG 4 ELEVONS DEFLECTED

(B)MACH = 3.90

DATA SET SYMBOL	CONFIGURATION'S DESCRIPTION	ELEV	BOFLAP	SPDBY	AIRPON	SPEF	REFERENCE INFORMATION
12200	CA-20 WAF SPAC 1057 - 140A/B 378 TER	000	-21.000	51.000	000	2630.0000	SC.F.T.
12200	CA-20 WAF SPAC 1057 - 140A/B 378 TER	-40.000	-21.000	51.000	000	476.8117	IN.
12200	CA-20 WAF SPAC 1057 - 140A/B 378 TER	-15.000	-21.000	51.000	000	936.6816	IN.
						1076.4500	IN.
						375.0000	IN.
						2450.0000	SCALE

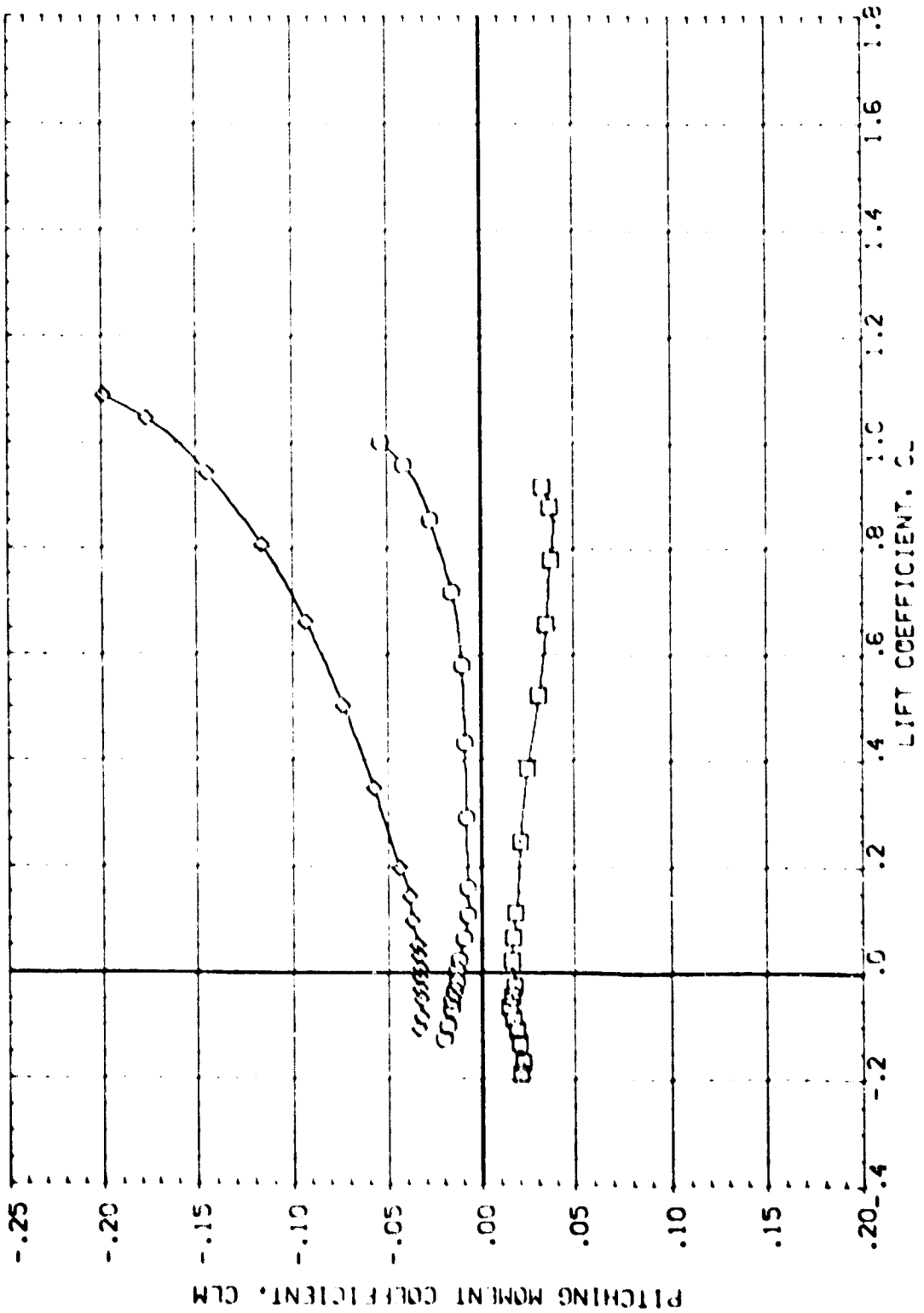


FIG 4 ELEVONS DEFLECTED

(CO)MACH = 4.60



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEV R	BOFLAP	SPDRBK	AILURON	REFERENCE INFORMATION
(P02001)	CA-20 LARC UPVT 1037 - 140A/B DR8 TER	.000	-21.000	\$5.000	.000	SREF 2690.0000 SO.FT.
(P02007)	CA-20 LARC UPVT 1037 - 140A/B DR8 TER	-40.000	-21.000	\$5.000	.000	LREF 476.8117 IN.
(P02008)	CA-20 LARC UPVT 1037 - 140A/B DR8 TER	15.000	10.000	\$5.000	.000	BREF 936.6916 IN.
						XREF 1076.4800 IN.
						YREF .0000 IN.
						ZREF 375.0000 IN.
						SCALE .0150

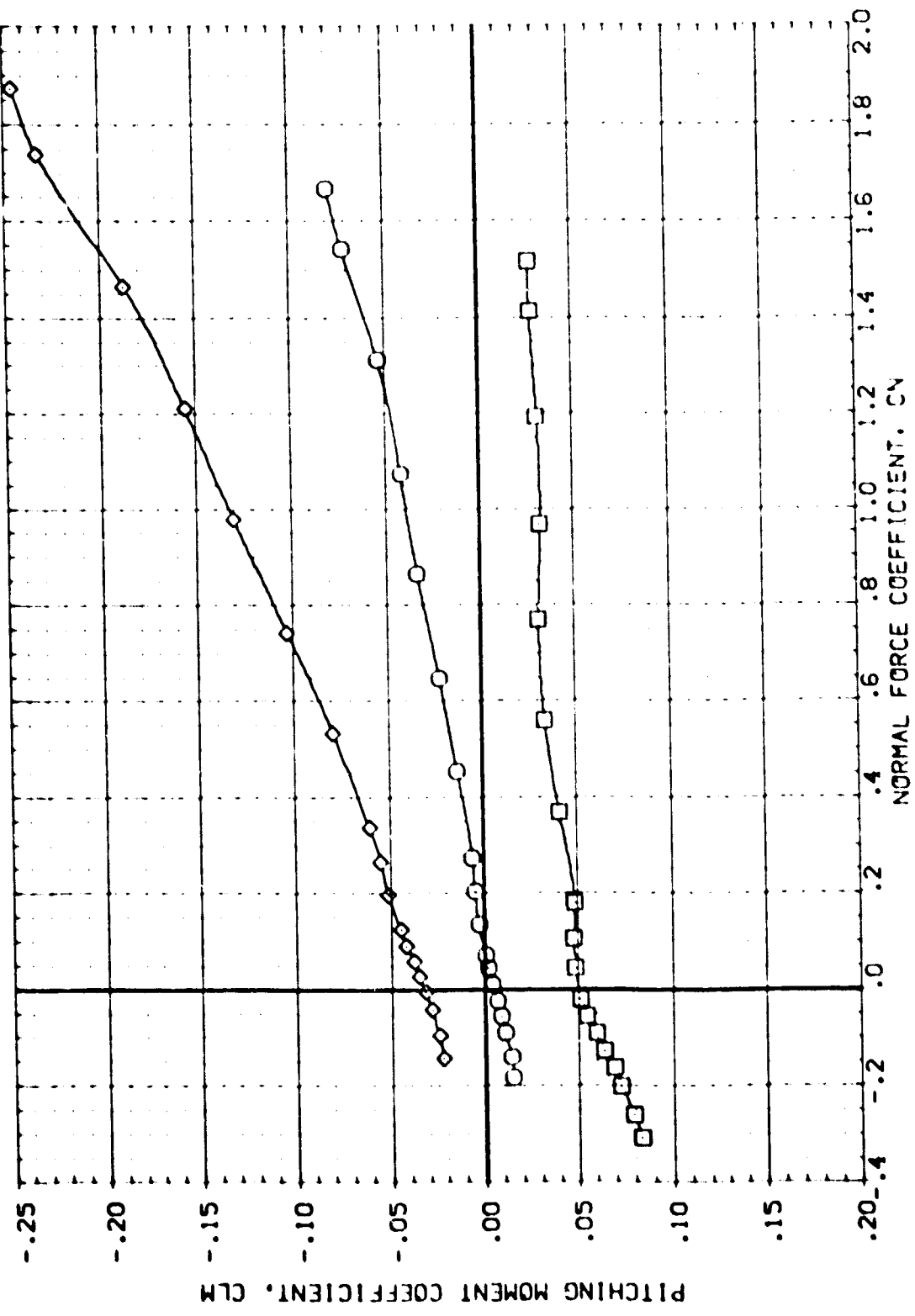


FIG 4 ELEVONS DEFLECTED
(A) MACH = 2.50

DATA SET SYMBOL CONFIGURATION DESCRIPTION REFERENCE INFORMATION

(#22001)	CA-20 LARC UPVT 1057 - 14DAVB ORBITER	SREF	2650.0000	SO.FT.
(#22007)	CA-20 LARC UPVT 1057 - 14DAVB ORBITER	LREF	476.8117	IN.
(#22008)	CA-20 LARC UPVT 1057 - 14DAVB ORBITER	BREF	936.6816	IN.
		XREF	1076.4800	IN.
		YREF	.0000	IN.
		ZREF	375.0000	IN.
		SCALE	.0150	SCALE

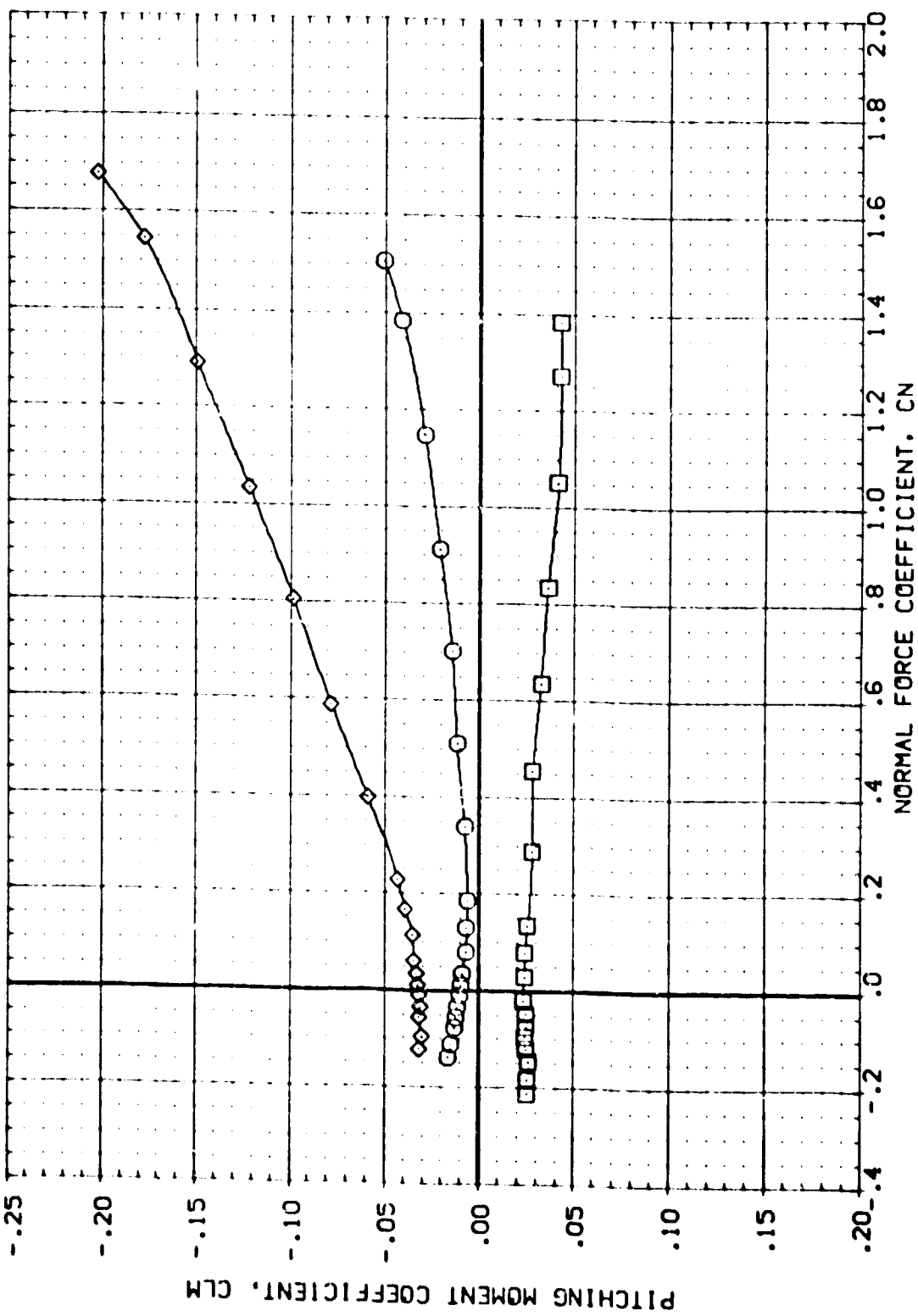


FIG 4 ELEVONS DEFLECTED

(B)MACH = 3.90

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	ROFLAP	SPOBRK	AILRON	REFERENCE INFORMATION
(#22001)	CA-20 LARC UPVT 1057 - 140AVB 0981TER	.000	-21.000	55.000	.000	SPEF 2690.0000 SQ.FT.
(#22007)	CA-20 LARC UPVT 1057 - 140AVB 0981TER	-40.000	-21.000	55.000	.000	LPEF 476.8117 IN.
(#22008)	CA-20 LARC UPVT 1057 - 140AVB 0981TER	15.000	10.000	55.000	.000	BREF 936.6816 IN.
						XMRP 1076.4800 IN.
						ZMRP 375.0000 IN.
						SCALE .0150

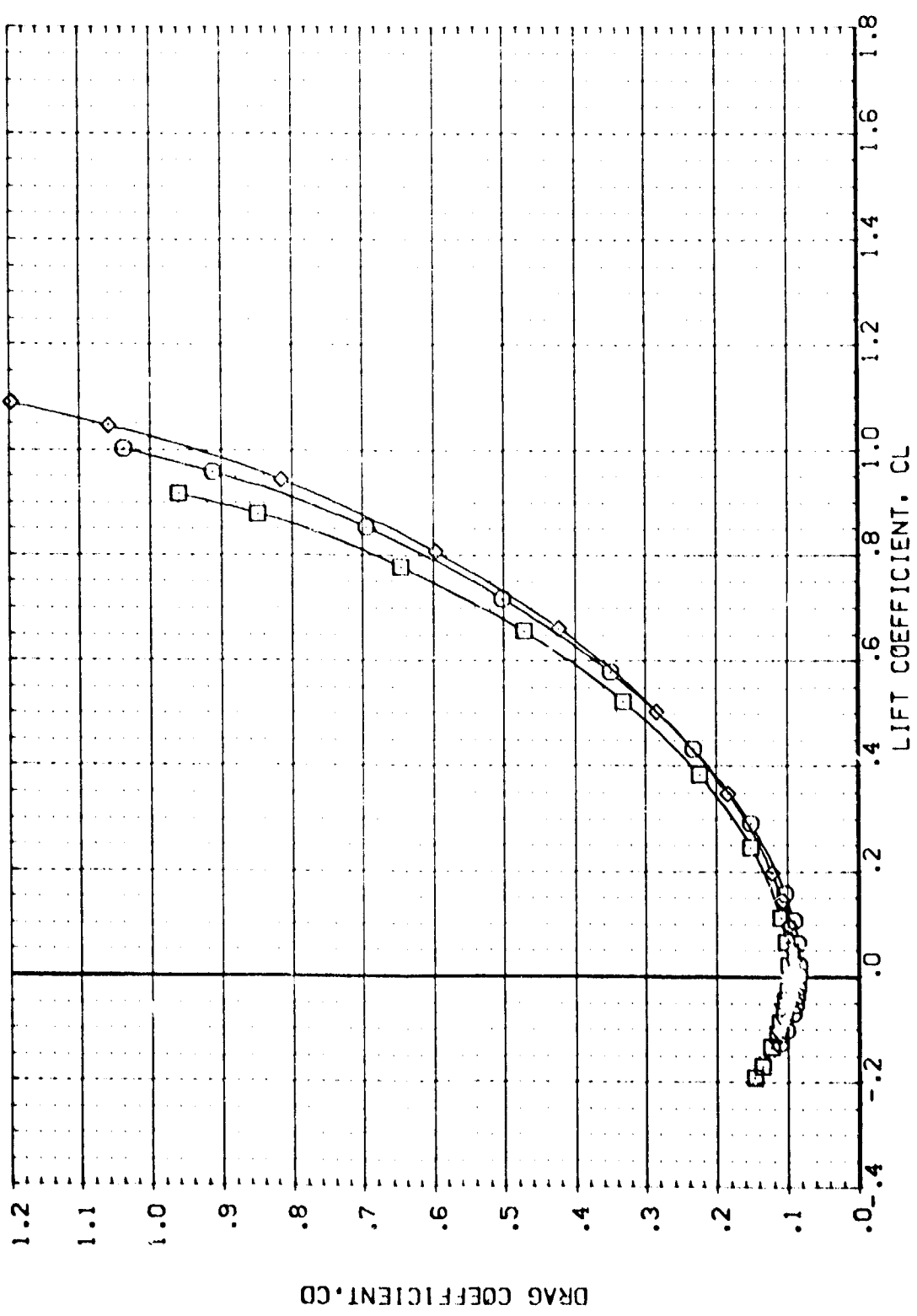


FIG 4 ELEVONS DEFLECTED

(C)MACH = 4.60

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	BOFLAP	SPOBRV	AILRON	REFERENCE INFORMATION
(K22001)	0A-20 LARC UPVT 1057 - 140A/B DRBITER	.000	-21.000	55.000	.000	SREF 2690.0000 SO.FT.
(K22007)	0A-20 LARC UPVT 1057 - 140A/B DRBITER	-40.000	-21.000	55.000	.000	LREF 476.8117 IN.
(K22008)	0A-20 LARC UPVT 1057 - 140A/B DRBITER	15.000	10.000	55.000	.000	BREF 936.6816 IN.
						XPRP 1076.4800 IN.
						YPRP .0000 IN.
						ZPRP 375.0000 IN.
						SCALE .0150 SCALE

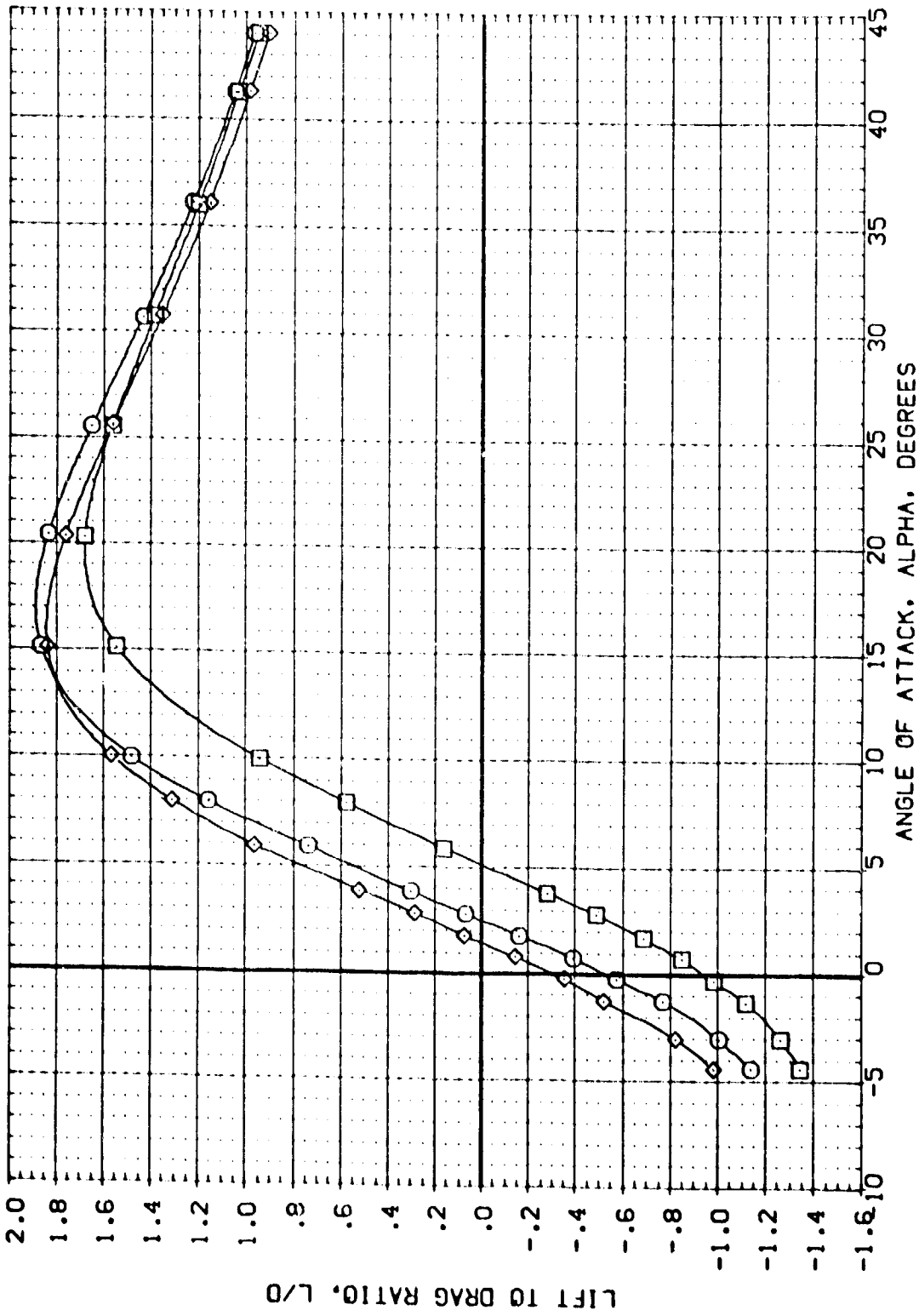


FIG 4 ELEVONS DEFLECTED
 (B)MACH = 3.90
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DATA SET SYMBOL	CONFIGURATION	DESCRIPTION	ELEVATION	BOE UP	SPDRN	ALPHA	REFERENCE INFORMATION
10000	21-22	1007 - 1007	000	000	55	000	2600 0000 50.0
10001	21-22	1007 - 1007	-45	000	55	000	175 8 7
10002	21-22	1007 - 1007	15	000	55	000	500 50.0
10003	21-22	1007 - 1007	000	15	55	000	375 4000
10004			000	000	55	000	375 0000
10005			000	000	55	000	375 0000
10006			000	000	55	000	375 0000
10007			000	000	55	000	375 0000
10008			000	000	55	000	375 0000
10009			000	000	55	000	375 0000
10010			000	000	55	000	375 0000
10011			000	000	55	000	375 0000
10012			000	000	55	000	375 0000
10013			000	000	55	000	375 0000
10014			000	000	55	000	375 0000
10015			000	000	55	000	375 0000
10016			000	000	55	000	375 0000
10017			000	000	55	000	375 0000
10018			000	000	55	000	375 0000
10019			000	000	55	000	375 0000
10020			000	000	55	000	375 0000
10021			000	000	55	000	375 0000
10022			000	000	55	000	375 0000
10023			000	000	55	000	375 0000
10024			000	000	55	000	375 0000
10025			000	000	55	000	375 0000
10026			000	000	55	000	375 0000
10027			000	000	55	000	375 0000
10028			000	000	55	000	375 0000
10029			000	000	55	000	375 0000
10030			000	000	55	000	375 0000
10031			000	000	55	000	375 0000
10032			000	000	55	000	375 0000
10033			000	000	55	000	375 0000
10034			000	000	55	000	375 0000
10035			000	000	55	000	375 0000
10036			000	000	55	000	375 0000
10037			000	000	55	000	375 0000
10038			000	000	55	000	375 0000
10039			000	000	55	000	375 0000
10040			000	000	55	000	375 0000
10041			000	000	55	000	375 0000
10042			000	000	55	000	375 0000
10043			000	000	55	000	375 0000
10044			000	000	55	000	375 0000
10045			000	000	55	000	375 0000
10046			000	000	55	000	375 0000
10047			000	000	55	000	375 0000
10048			000	000	55	000	375 0000
10049			000	000	55	000	375 0000
10050			000	000	55	000	375 0000



ANGLE OF ATTACK, ALPHA, DEGREES

FIG 4 ELEVONS DEFLECTED

COMAC = 4.60

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVATOR	BOFLAP	SPOBBY	AILDRON	REFERENCE INFORMATION
102200	2A-20 LARC JPT 1057 - 40A/B 098:1EP	.000	-21.000	55.000	.000	SREF 2690.0000
102207	2A-20 LARC JPT 1057 - 40A/B 098:1EP	-40.000	-21.000	55.000	.000	LREF 476.8117
102208	2A-20 LARC JPT 1057 - 40A/B 098:1EP	15.000	10.000	55.000	.000	BREF 936.6916
						MREF 1076.4900
						YREF 375.0000
						ZREF 375.0000
						SCALE 10.50

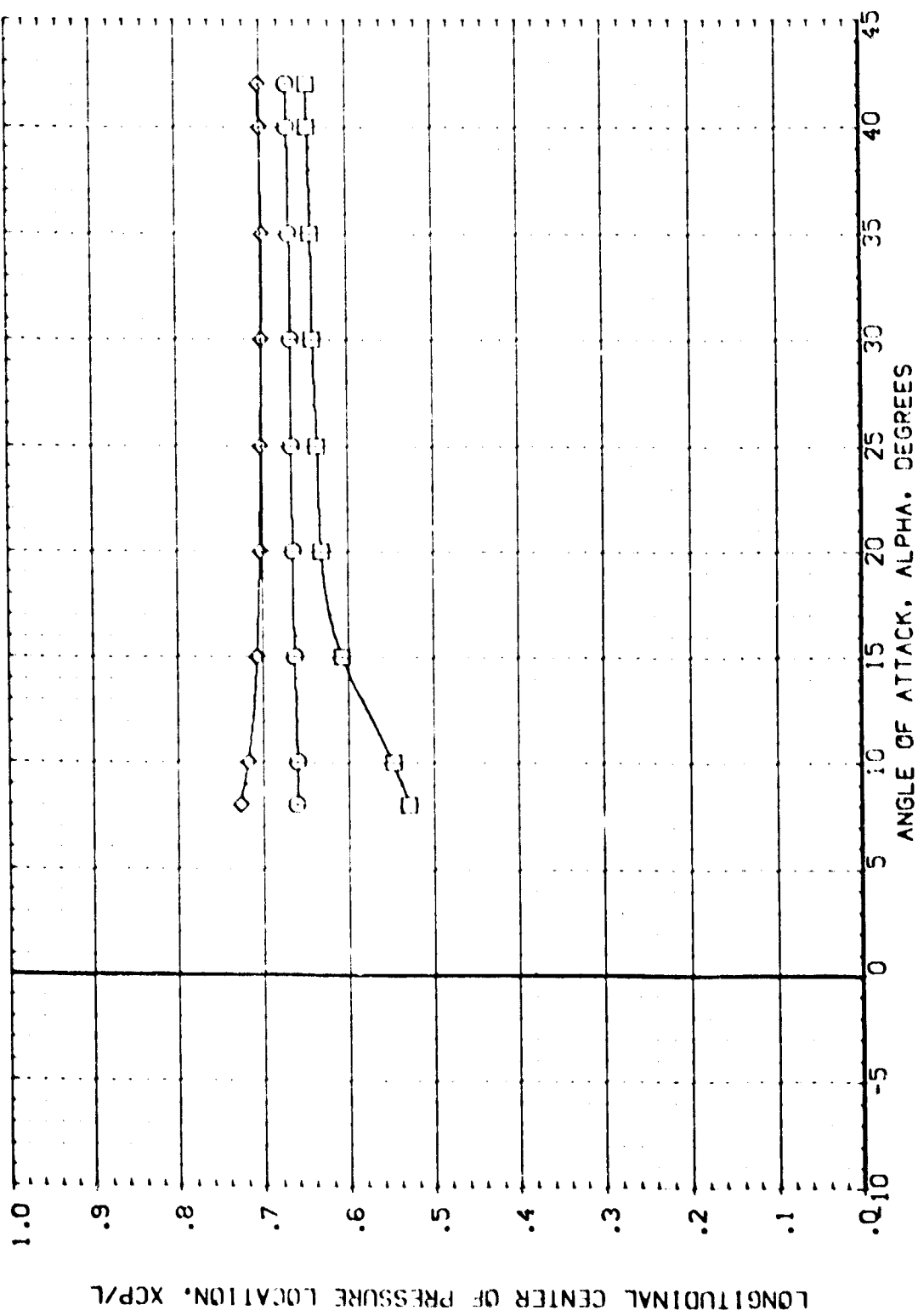


FIG 4 ELEVONS DEFLECTED

(M)MACH = 2.50



DATA SET SYMBOL	CONFIGURATION	DESCRIPTION	ELEVATION	BOULAP	SPDRBY	ALUPOH	REFERENCE INFORMATION
10000	DA-20	UAC JPT	000	-21.000	55.000	000	2690 0000
10001	DA-20	UAC JPT	-40.000	-21.000	55.000	000	475 8.7
10002	DA-20	UAC JPT	000	-19.000	55.000	000	536 58.6
							1076 4800
							2000
							375 0000
							SCALE

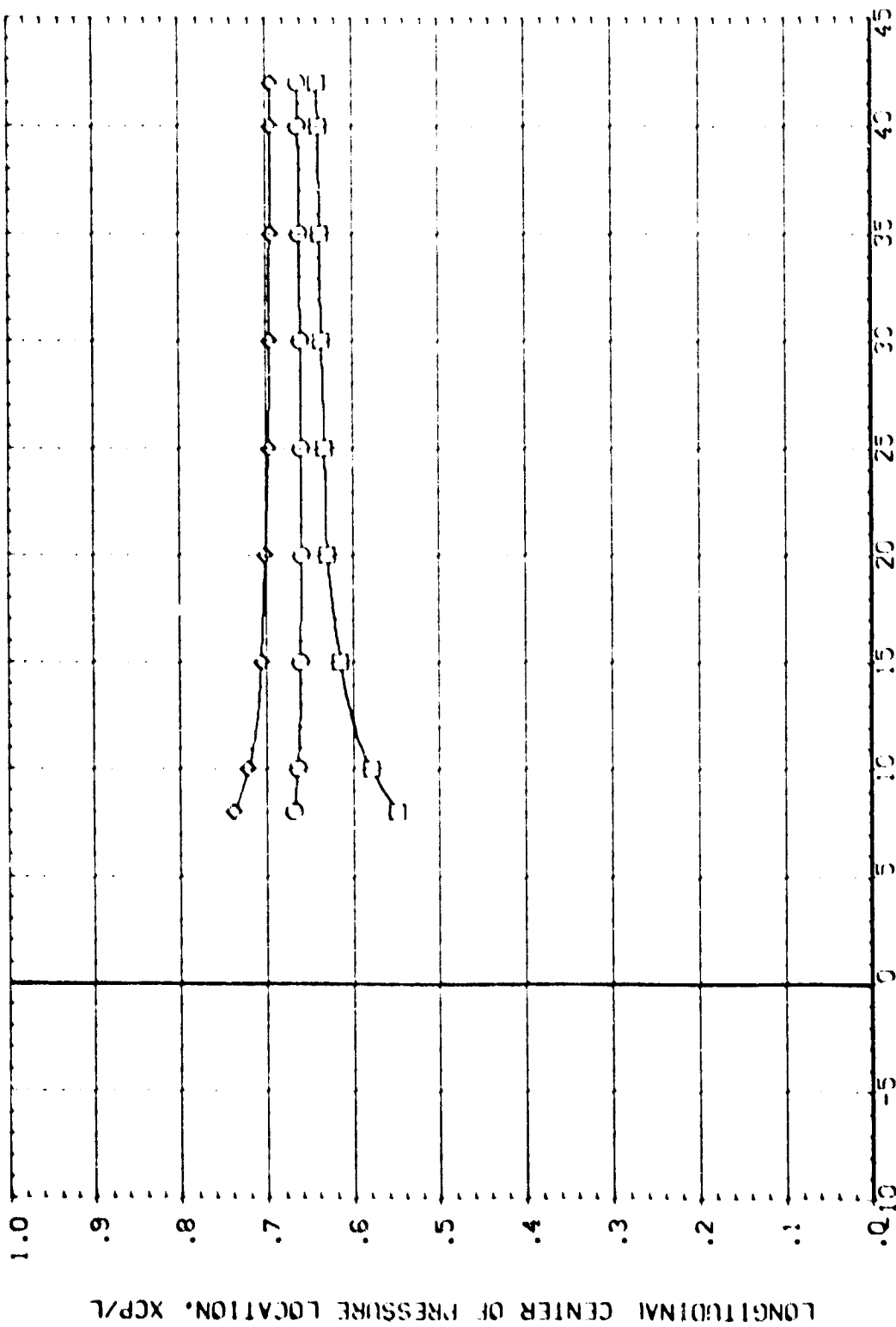


FIG 4 ELEVONS DEFLECTED

CSMACH = 2.90

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	BOFLAP	SPDBRY	ALUJON	REFERENCE INFORMATION
MOZOC1	SA-20 LARC JUV 1057 - 4DAVB DPB:TER	.000	-21.000	55.000	.000	SPREF 2690.0000
MOZOC7	SA-20 LARC JUV 1057 - 4CAVB DPB:TER	-40.000	-21.000	55.000	.000	LPREF 476.8117
MOZOC8	SA-20 LARC JUV 1057 - 4CAVB DPB:TER	15.000	10.000	55.000	.000	BPREF 936.6816
						MPREF 1075.4800
						MPPO 375.0000
						ZSCALE 0.50
						SCALE

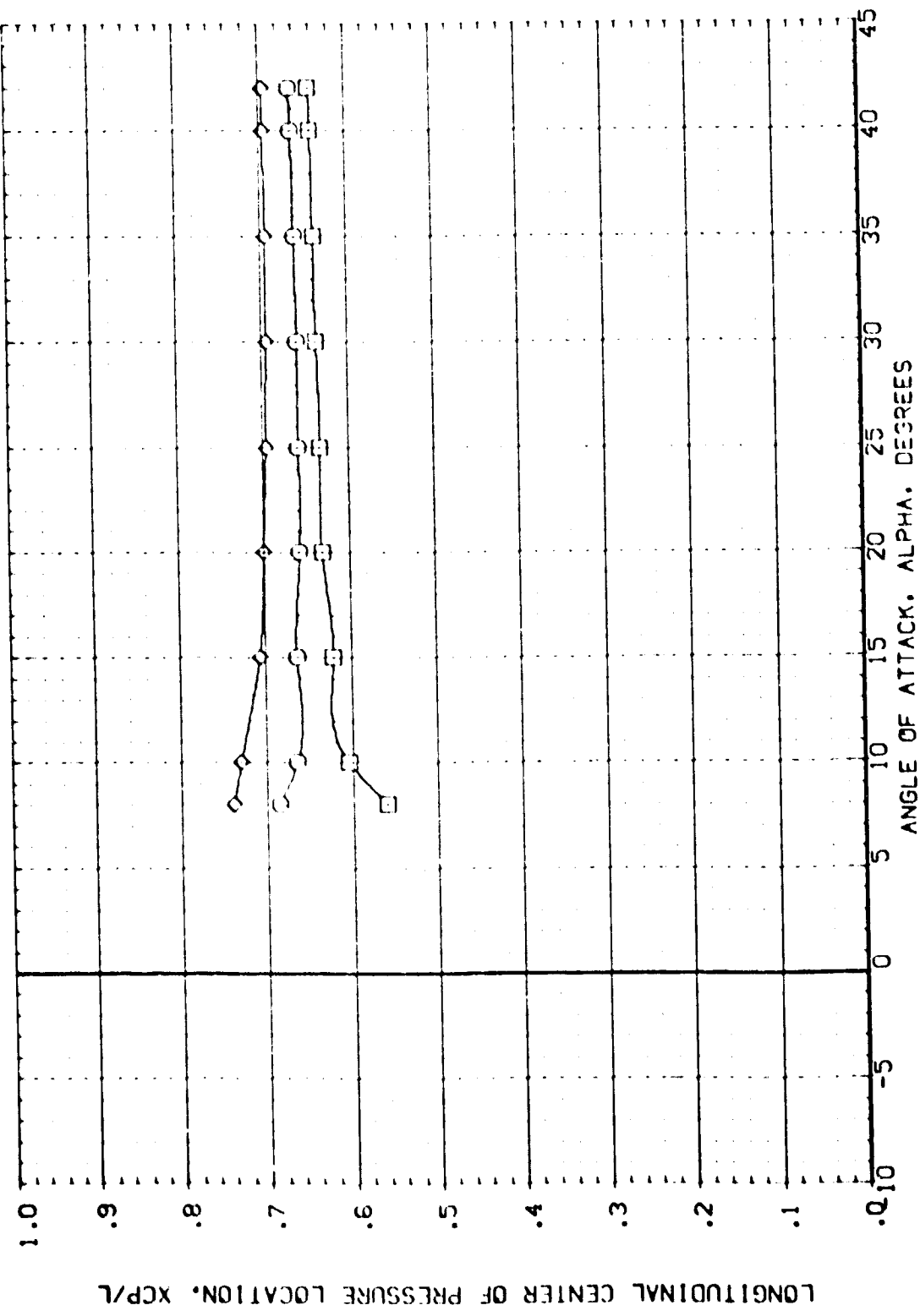


FIG 4 ELEVONS DEFLECTED

(C)MACH = 4.60



DATA SET SYMBOL: ()
CONFIGURATION DESCRIPTION: DA-20 LARC JRV 1057 - 140A/B DRB:TER
DATA NOT AVAILABLE

BOFLAP	ELEVTR	SPOBRN	ALLRON	REFERENCE INFORMATION
-21.000	.000	55.000	.000	SREF 2630.0000 SC.FT.
10.000	.000	55.000	.000	LREF 476.8117 IN.
				BREF 536.2816 IN.
				MREF 1076.4500 IN.
				ZREF 375.0000 IN.
				SCALE 1:1.50

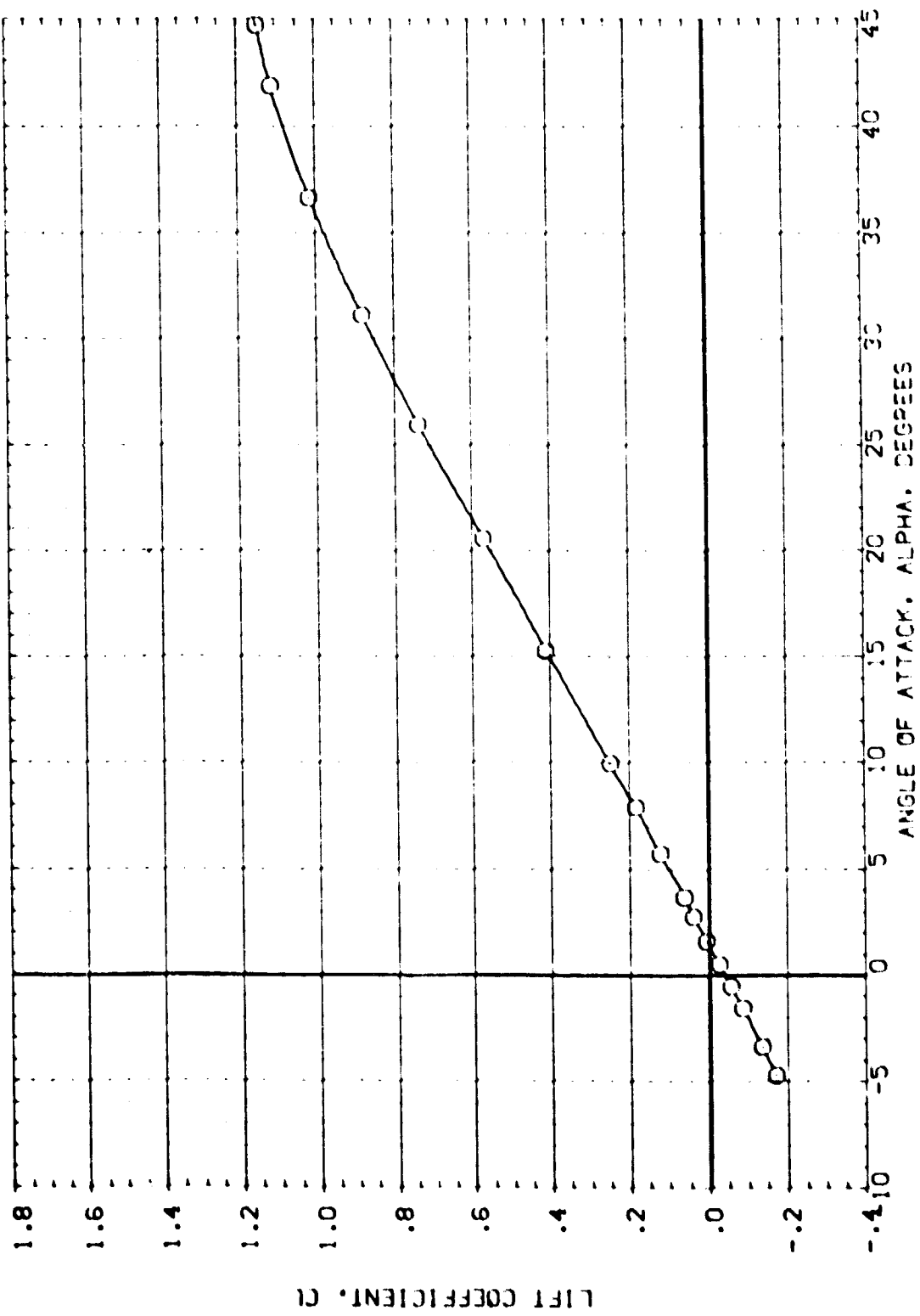


FIG 5 BODYFLAP DEFLECTED
(MACH = 2.50)

DATA SET SYMBOL CONFIGURATION DESCRIPTION

102200	BA-23	LAPC UP	1057	-	140A/B	DRB/ITER
102209	BA-23	LAPC UP	1057	-	140A/B	DRB/ITER

BOFLAP	ELEVTR	SPOBRK	A1LUPN	REFERENCE INFORMATION
-21.000	.000	55.000	.000	SPEE 2890.0000
10.000	.000	55.000	.000	LRPE 478.8117
				BRPE 936.6816
				MRPE 1276.4800
				ZMRP .0000
				ZMRP .0000
				SCALE 0.50

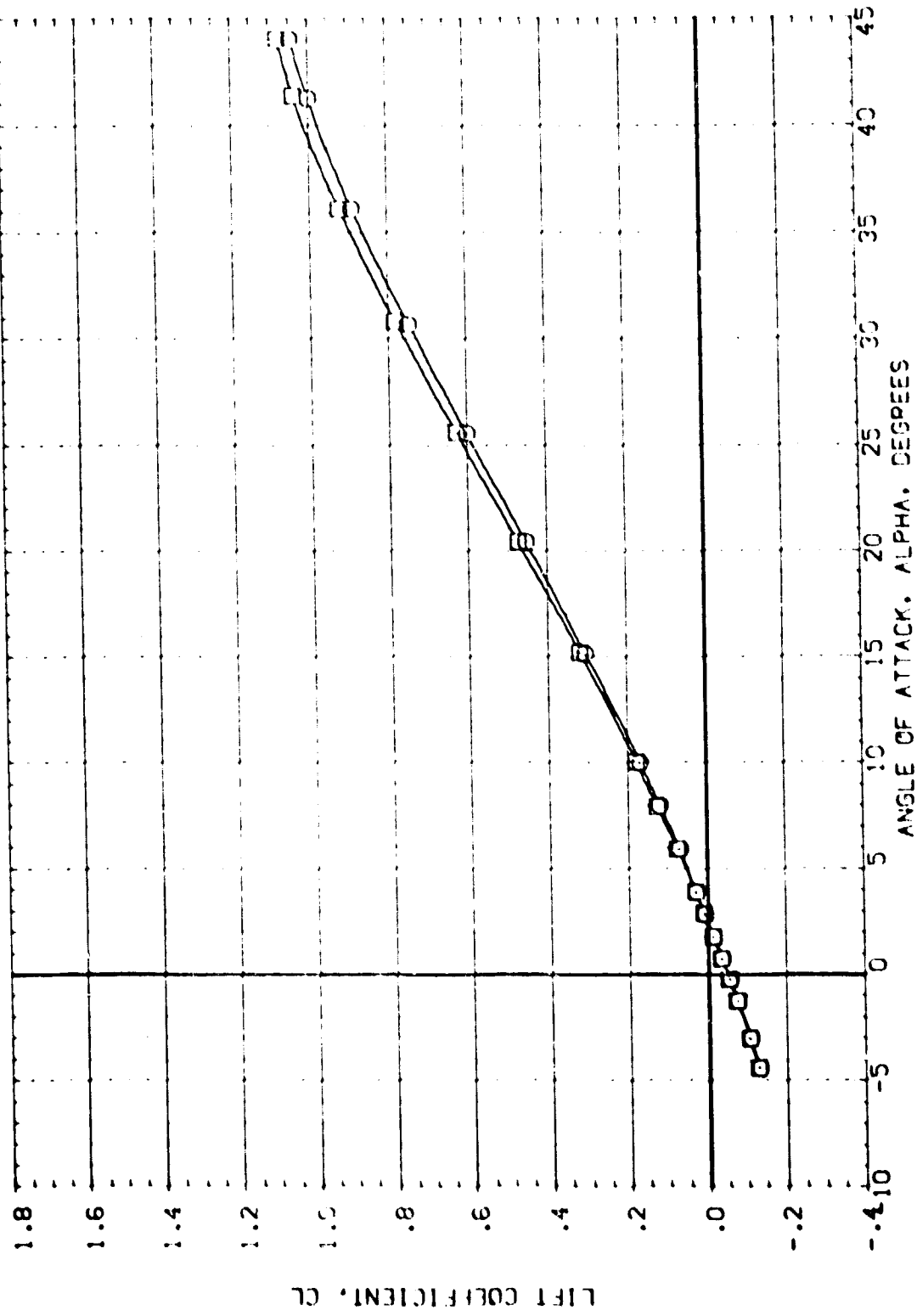


FIG 5 BODYFLAP DEFLECTED

(B)MACH = 3.90



DATA SET SYMBOL: (K02001) (K02009)
 CONFIGURATION DESCRIPTION: CA-20 LARC LPVT 1057 - 140A/B DRBITER
 CA-20 LARC LPVT 1057 - 140A/B DRBITER
 REFERENCE INFORMATION: SREF 2690.0000 SQ. FT.
 LREF 476.8117 IN.
 BREF 936.6816 IN.
 XMPR 1076.4800 IN.
 YMPR .0000 IN.
 ZMPR 375.0000 IN.
 SCALE .0150

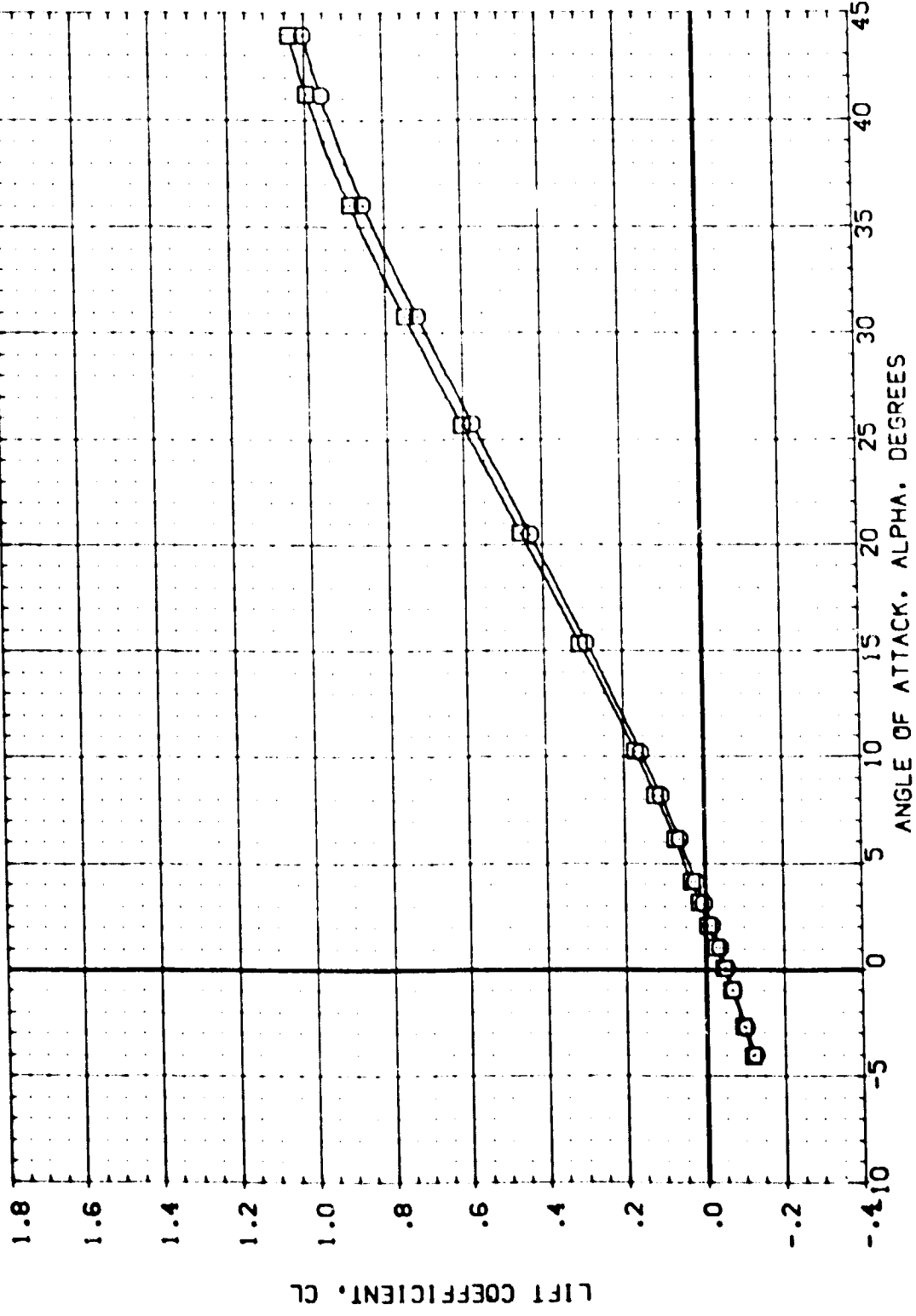


FIG 5 BODYFLAP DEFLECTED

(C)MACH = 4.60

DATA SET SYMBOL: 020011
 CONFIGURATION DESCRIPTION: SA-20 LARC UPVT 1057 - 140A/B ORBITER
 DATA NOT AVAILABLE

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 476.8117 IN.
 BREF 936.6816 IN.
 XMRP 1076.4800 IN.
 YMRP 0000 IN.
 ZMRP 375.0000 IN.
 SCALE .0150

BOFLAP -21.0000
 10.0000
 ELEVTR .0000
 .0000
 SPOBRK 55.0000
 55.0000
 AIRPON .0000
 .0000

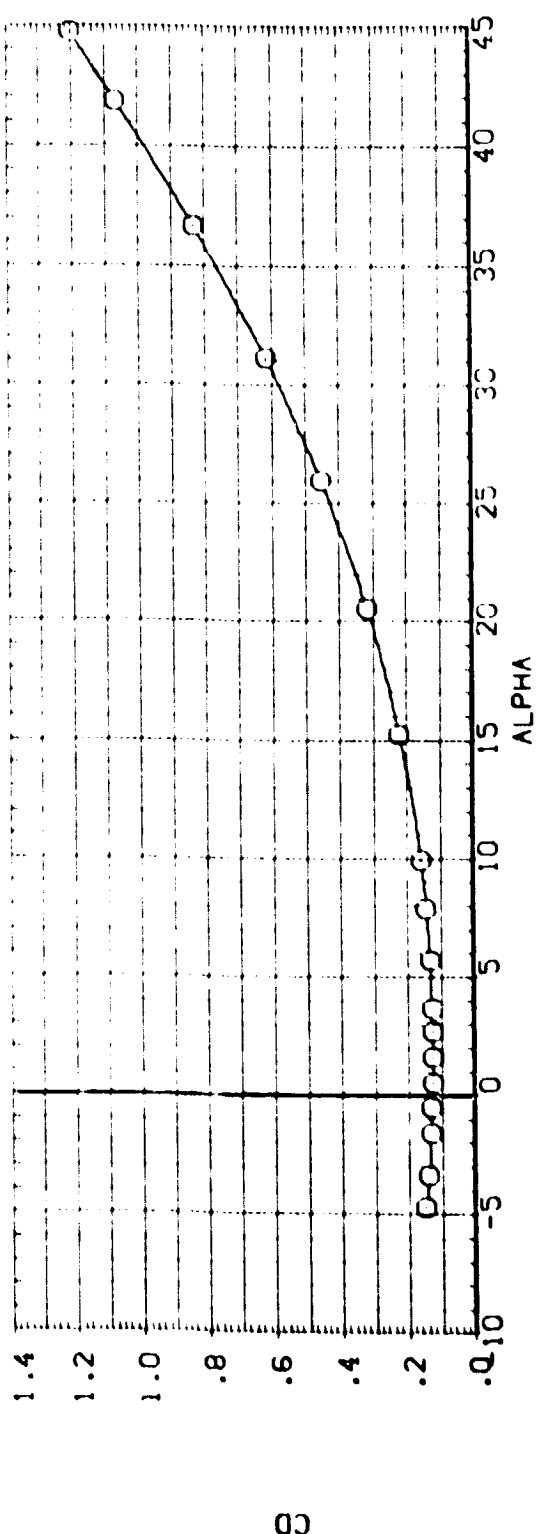
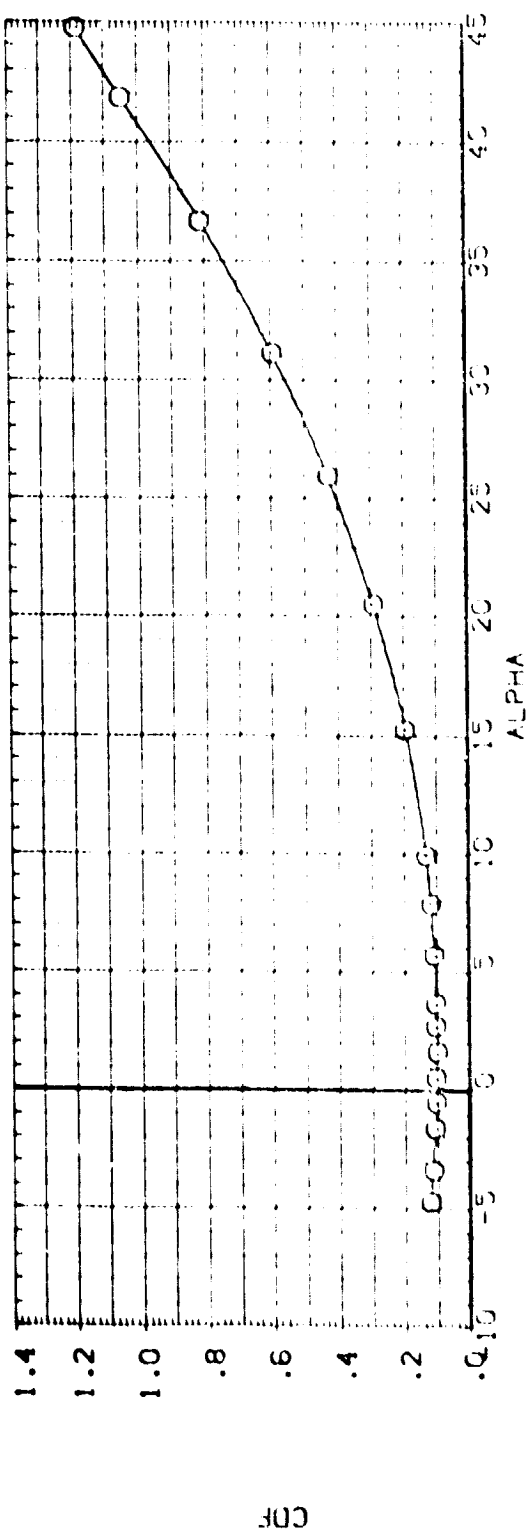



FIG 5 BODYFLAP DEFLECTED

(A)MACH = 2.50



DATA SET SYMBOL:  CONFIGURATION DESCRIPTION
 (K02001) CA-20 LARC UPVT 1057 - 140A/B ORBITTER
 (K02009) CA-20 LARC UPVT 1057 - 140A/B ORBITTER

BOFLAP: -21.000
 ELEVTR: .000
 SPOBRK: 55.000
 AILRON: .000

SREF: 2690.0000
 LREF: 476.8117
 BRFF: 936.6816
 YMRP: 1076.4800
 YMRP: 375.0000
 ZMRP: .0150
 SCALE: 50.FT.

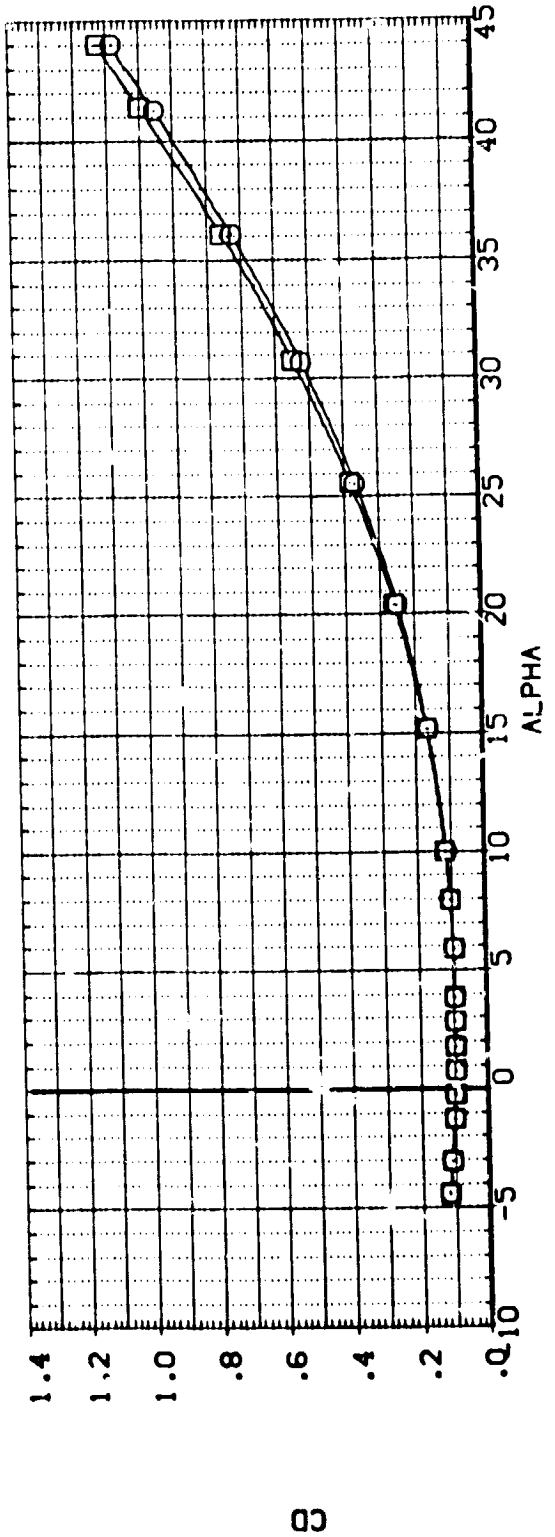
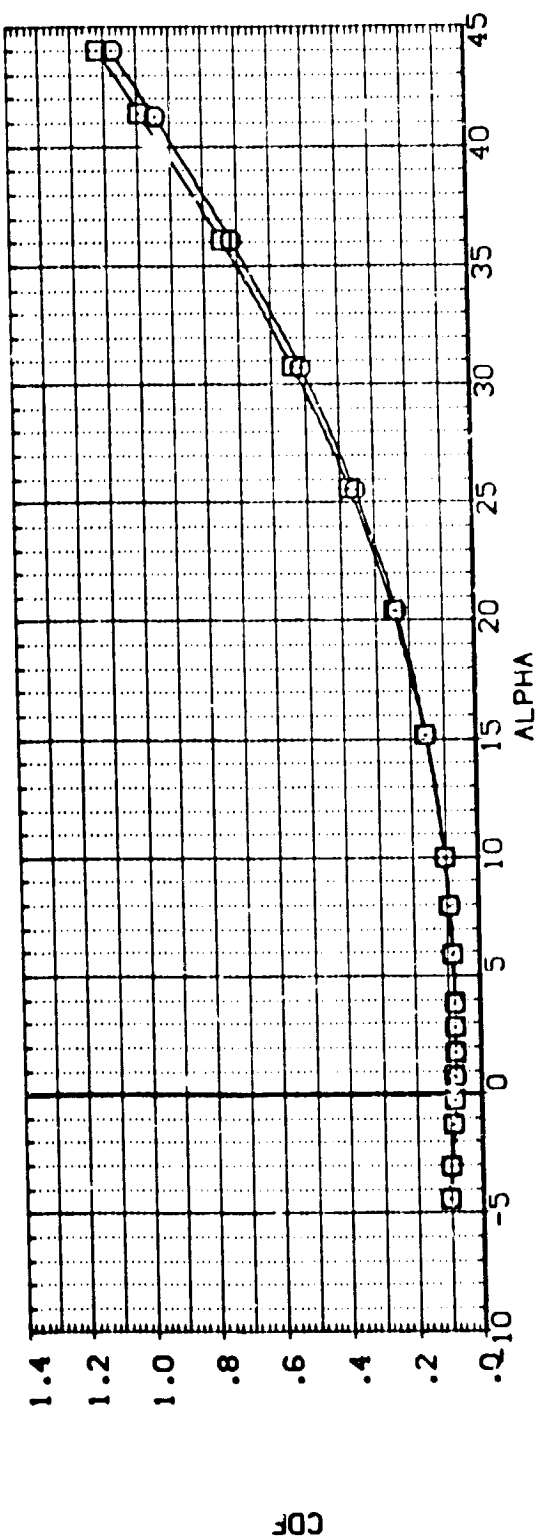


FIG 5 BODYFLAP DEFLECTED
 (B)MACH = 3.90

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (KG2001) OA-20 LARC UPVT 1057 - 140AVB ORBITER
 (KG2009) OA-20 LARC UPVT 1057 - 140AVB ORBITER

BOFLAP ELEVTR SPOBRK AIRLON
 -21.000 .000 55.000 .000
 10.000 .000 55.000 .000

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 476.8117 IN.
 BREF 936.6816 IN.
 XMRP 1076.4800 IN.
 YMRP .0000 IN.
 ZMRP 375.0000 IN.
 SCALE .0150 IN.

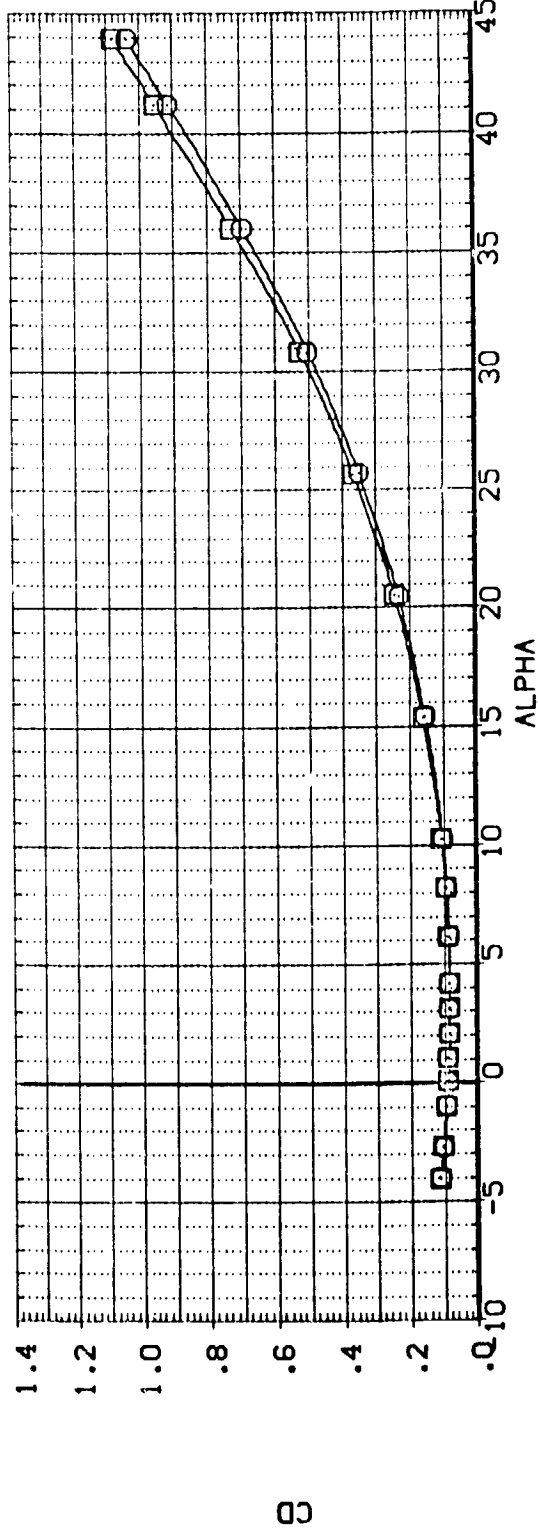
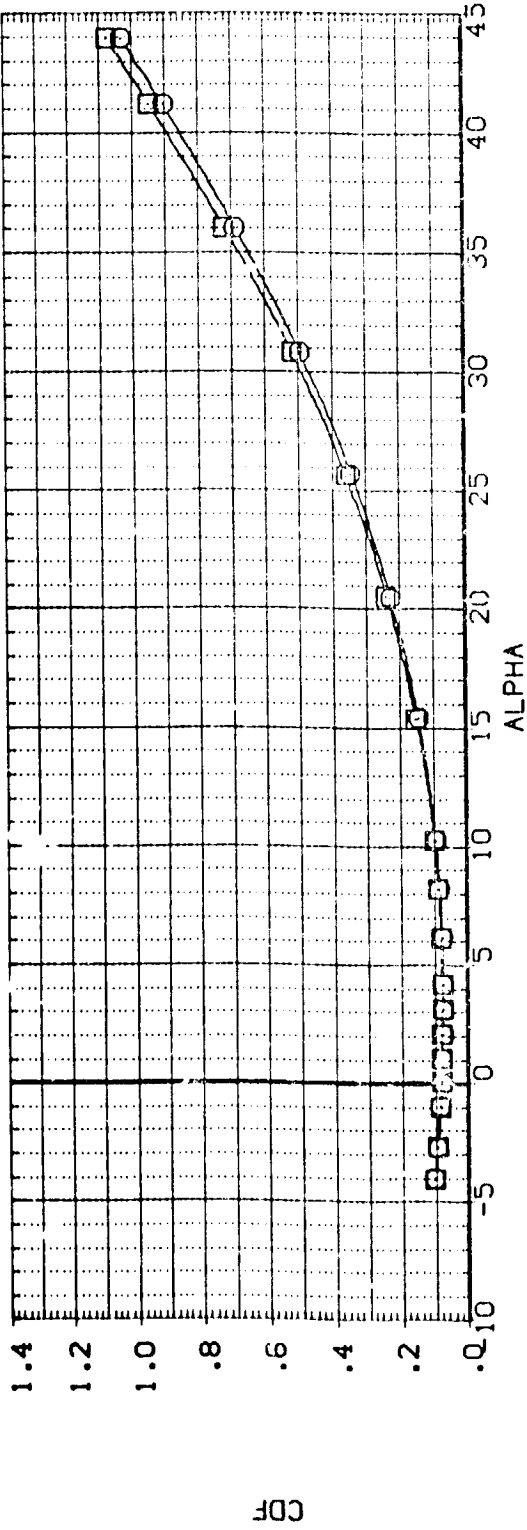


FIG 5 BODYFLAP DEFLECTED

(C)MAC = 4.60



DATA SET SYMBOL (K02001) □
 (K02009)
 CONFIGURATION DESCRIPTION DA-20 LARC UPVT 1057 - 14CA/8 ORBITER
 DATA NOT AVAILABLE

REFERENCE INFORMATION
 SREF 2690.0000 SO.FT.
 LREF 476.8117 IN.
 BREF 936.6816 IN.
 XMRP 1076.4800 IN.
 YMRP .0000 IN.
 ZMRP 375.0000 IN.
 SCALE .0150

BDFLAP -21.000
 10.000
 ELEVTR .000
 .000
 SPOBRK 55.000
 55.000
 AILRON .000
 .000

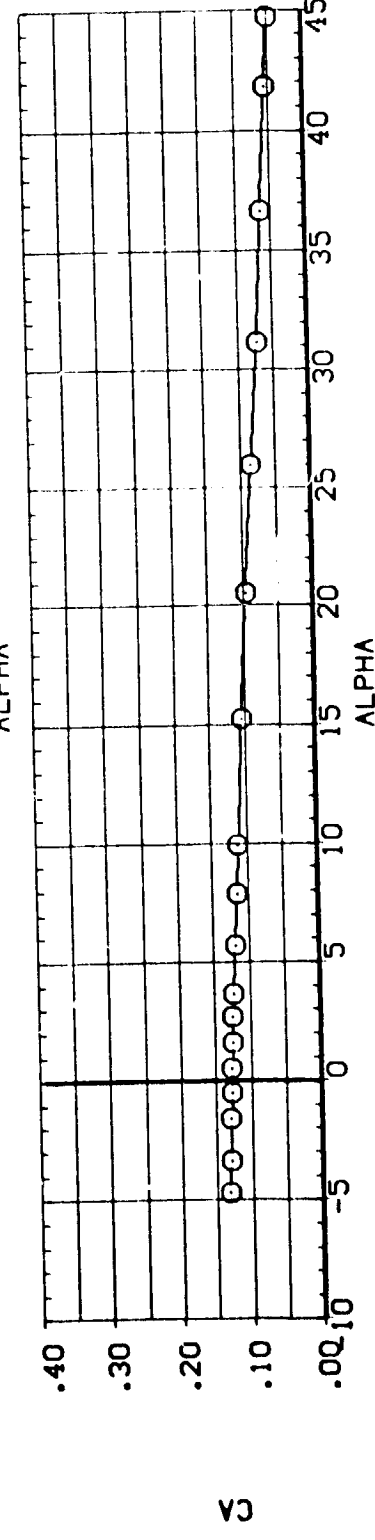
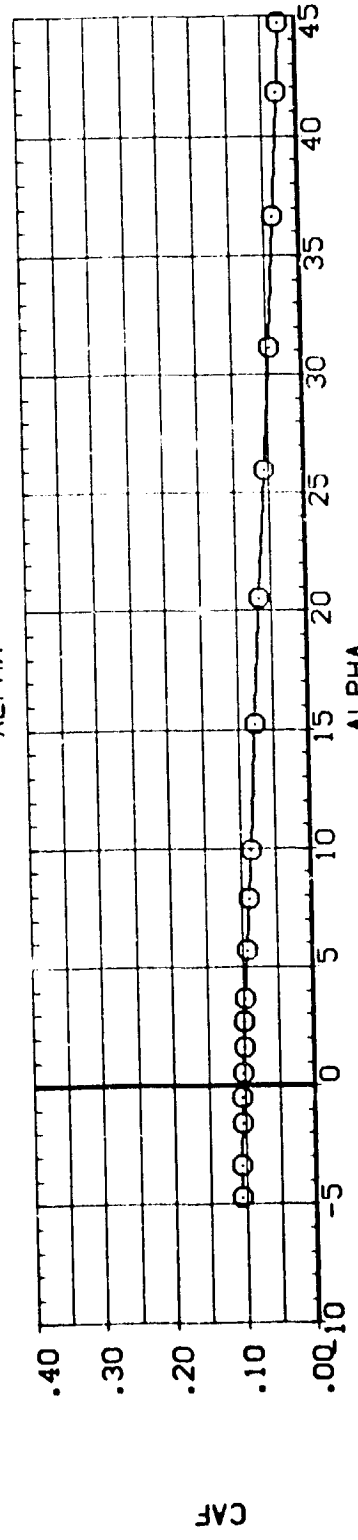
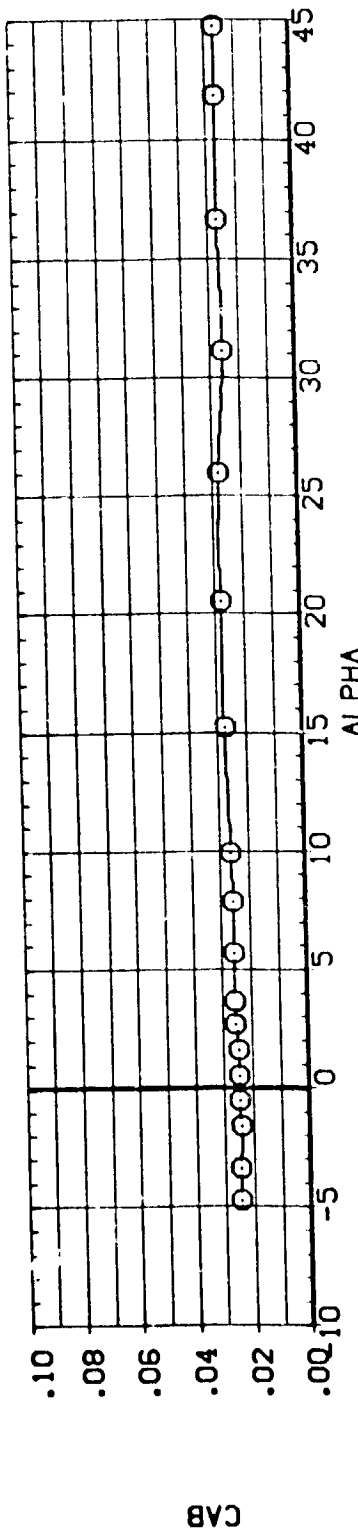


FIG 5 BODYFLAP DEFLECTED
 (A)MACH = 2.50

DATA SET SYMBOL: (K02001) (K02009)

CONFIGURATION DESCRIPTION: CA-20 LARC JUNT 1057 - 140A/B ORBITER
 CA-20 LARC JUNT 1057 - 140A/B ORBITER

REFERENCE INFORMATION: SREF 2690.0000 SQ. FT. IN.
 LREF 476.8117 IN.
 BRFP 936.6916 IN.
 XMRP 1076.4300 IN.
 YMRP .0000 IN.
 ZMRP 375.0000 IN.
 SCALE .0150

BOFLAP: -21.000
 10.000

ELEVTR: .000
 .000

SPOBRK: 55.000
 55.000

AILRON: .000
 .000

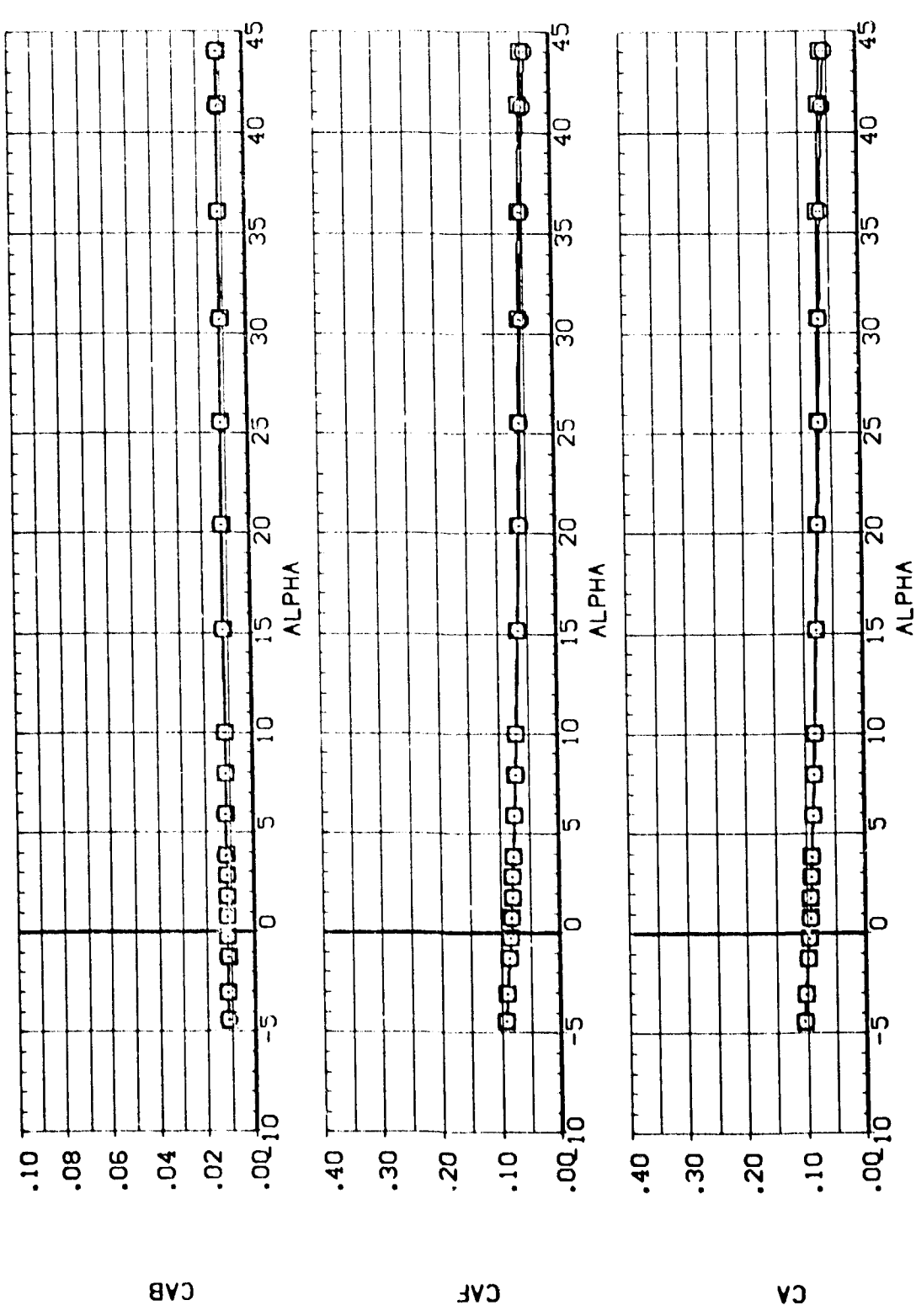


FIG 5 BODYFLAP DEFLECTED
 (3)MACH = 3.90



DATA SET SYMBOL: CAB-28
 CONFIGURATION DESCRIPTION: CAB-28 W/AF 1.57 - 1.42 W/B 0.98 1.12 P
 CAB-28 W/AF 1.57 - 1.42 W/B 0.98 1.12 P

BOF LAR	ELE MP	SPDRY	ALPHA	REFERENCE	INFORMATION
-21.000	.000	55.000	.000	2630.000	50.0 FT.
15.000	.000	55.000	.000	476.817	IN
				336.88.8	IN
				276.490	IN
				275.000	IN
				275.000	SCALE

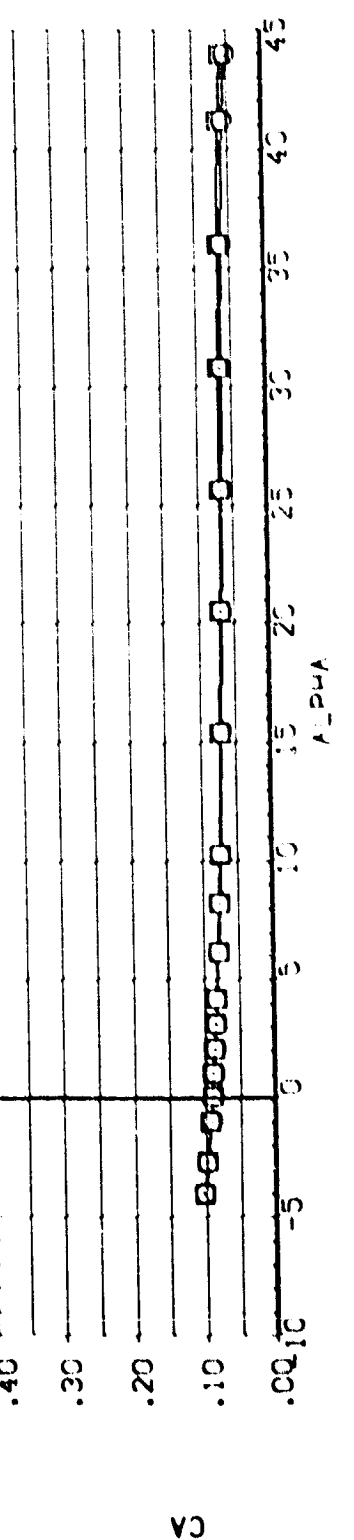
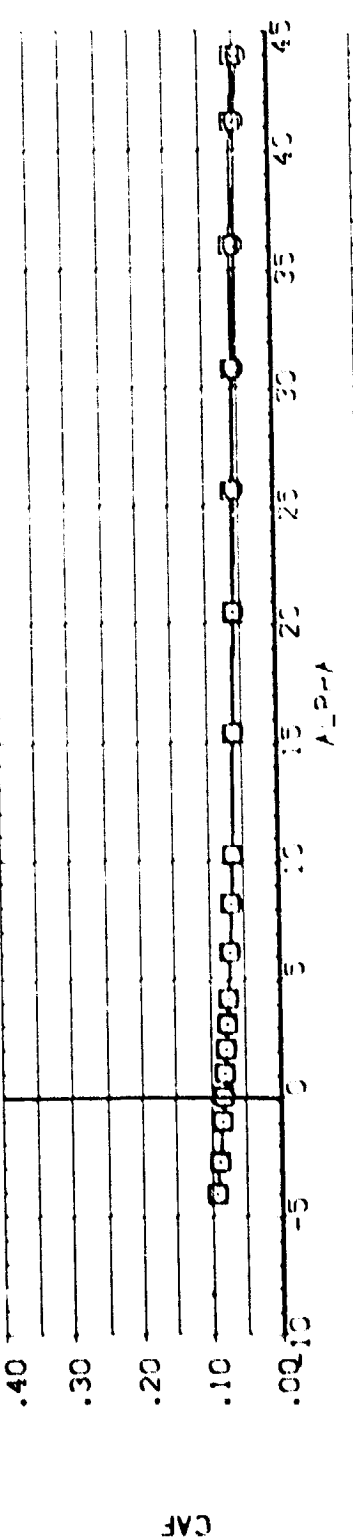
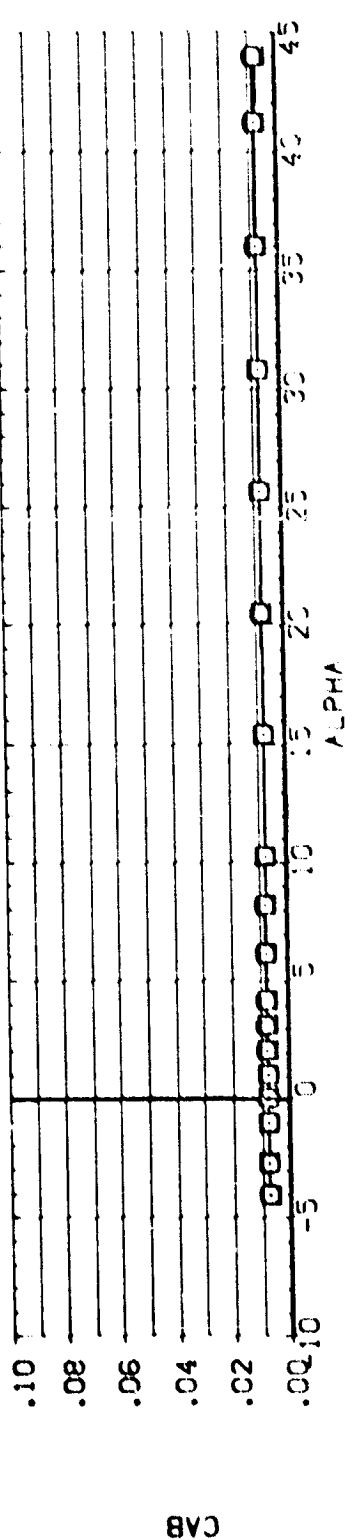


FIG 5 BODYFLAP DEFLECTED
 (C)MACH = 4.50

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 1422001) C 21-20 LARC UPVT 1057 - 142A/B ORBITER
 1422009) C DATA NOT AVAILABLE

BOFLAP -21.000
 ELEVTR .000
 SPOBRK .000
 ALLPON .000

REFERENCE INFORMATION
 SREF 2690.0000 SQ. FT.
 LREF 475.8117 IN.
 BREF 926.6816 IN.
 MPP 1376.4500 IN.
 ZMP 375.0000 IN.
 SCALE 0.150

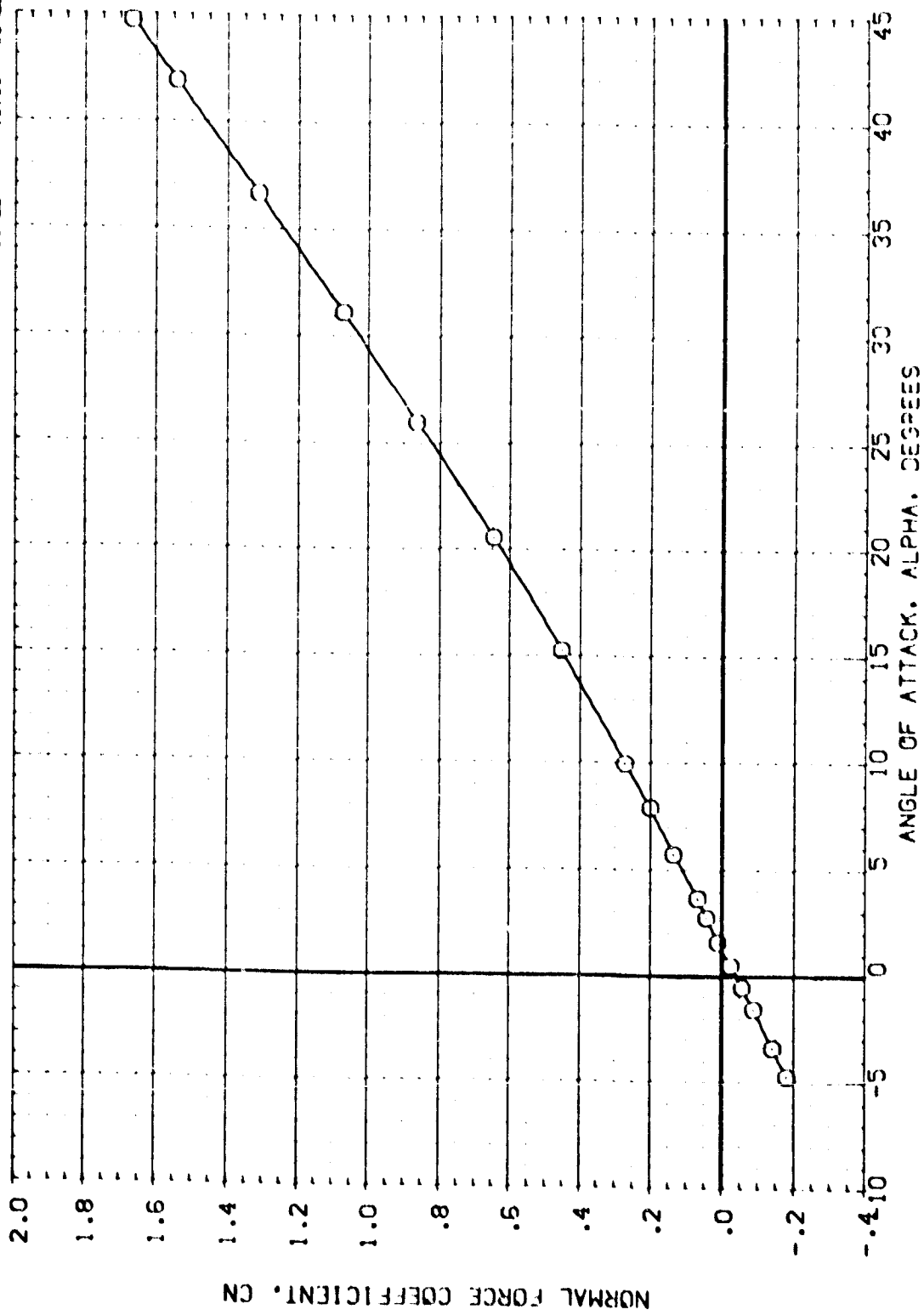


FIG 5 BODYFLAP DEFLECTED

(A)MACH = 2.50



DATA SET SYMBOL: (K02001) (K02009)
CONFIGURATION DESCRIPTION: OA-20 LARC UPVT 1057 - 140AVB ORBITER
 OA-20 LARC UPVT 1057 - 140AVB ORBITER

BOFLAP: -21.000
 10.000

ELEVTR: .000
 .000

SPOBRK: 55.000
 55.000

AILRON: .000
 .000

REFERENCE INFORMATION: SQ. FT.
SREF: 2690.0000
LREF: 476.8117 IN.
BREF: 936.6816 IN.
XMRP: 1076.4800 IN.
YMRP: .0000 IN.
ZMRP: 375.0000 IN.
SCALE: .0150

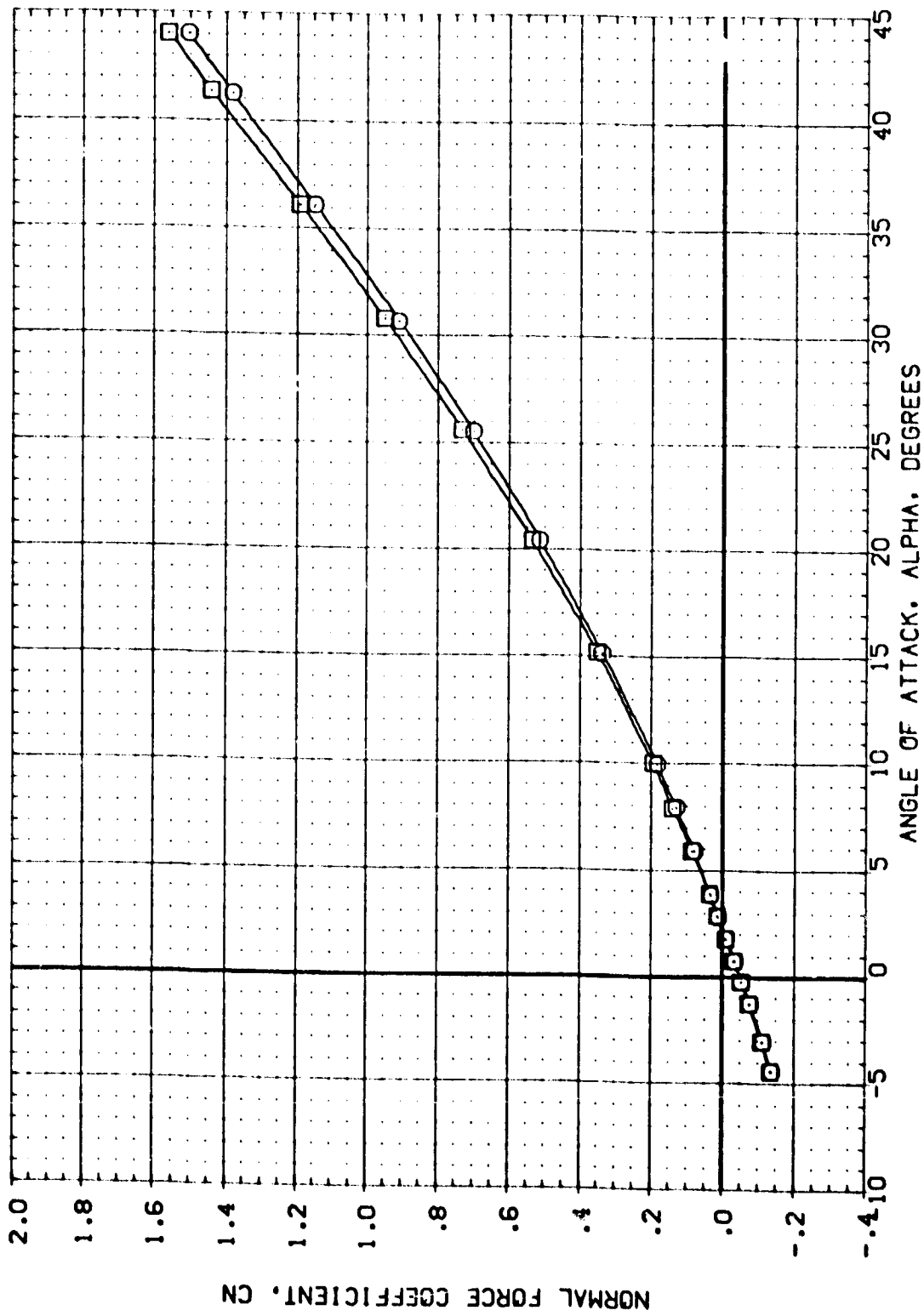


FIG 5 BODYFLAP DEFLECTED
(B)MACH = 3.90

DATA SET SYMBOL	COMPUTATION DESCRIPTION	REF. ANGLE	REF. SCALE	REF. ANGLE	REF. SCALE	REF. ANGLE	REF. SCALE
1	2-22 JAN 1957 - 100/100	0	100	0	100	0	100
2	2-22 JAN 1957 - 100/100	0	100	0	100	0	100
3	2-22 JAN 1957 - 100/100	0	100	0	100	0	100
4	2-22 JAN 1957 - 100/100	0	100	0	100	0	100
5	2-22 JAN 1957 - 100/100	0	100	0	100	0	100
6	2-22 JAN 1957 - 100/100	0	100	0	100	0	100
7	2-22 JAN 1957 - 100/100	0	100	0	100	0	100
8	2-22 JAN 1957 - 100/100	0	100	0	100	0	100
9	2-22 JAN 1957 - 100/100	0	100	0	100	0	100
10	2-22 JAN 1957 - 100/100	0	100	0	100	0	100
11	2-22 JAN 1957 - 100/100	0	100	0	100	0	100
12	2-22 JAN 1957 - 100/100	0	100	0	100	0	100
13	2-22 JAN 1957 - 100/100	0	100	0	100	0	100
14	2-22 JAN 1957 - 100/100	0	100	0	100	0	100
15	2-22 JAN 1957 - 100/100	0	100	0	100	0	100
16	2-22 JAN 1957 - 100/100	0	100	0	100	0	100
17	2-22 JAN 1957 - 100/100	0	100	0	100	0	100
18	2-22 JAN 1957 - 100/100	0	100	0	100	0	100
19	2-22 JAN 1957 - 100/100	0	100	0	100	0	100
20	2-22 JAN 1957 - 100/100	0	100	0	100	0	100
21	2-22 JAN 1957 - 100/100	0	100	0	100	0	100
22	2-22 JAN 1957 - 100/100	0	100	0	100	0	100
23	2-22 JAN 1957 - 100/100	0	100	0	100	0	100
24	2-22 JAN 1957 - 100/100	0	100	0	100	0	100
25	2-22 JAN 1957 - 100/100	0	100	0	100	0	100
26	2-22 JAN 1957 - 100/100	0	100	0	100	0	100
27	2-22 JAN 1957 - 100/100	0	100	0	100	0	100
28	2-22 JAN 1957 - 100/100	0	100	0	100	0	100
29	2-22 JAN 1957 - 100/100	0	100	0	100	0	100
30	2-22 JAN 1957 - 100/100	0	100	0	100	0	100
31	2-22 JAN 1957 - 100/100	0	100	0	100	0	100
32	2-22 JAN 1957 - 100/100	0	100	0	100	0	100
33	2-22 JAN 1957 - 100/100	0	100	0	100	0	100
34	2-22 JAN 1957 - 100/100	0	100	0	100	0	100
35	2-22 JAN 1957 - 100/100	0	100	0	100	0	100
36	2-22 JAN 1957 - 100/100	0	100	0	100	0	100
37	2-22 JAN 1957 - 100/100	0	100	0	100	0	100
38	2-22 JAN 1957 - 100/100	0	100	0	100	0	100
39	2-22 JAN 1957 - 100/100	0	100	0	100	0	100
40	2-22 JAN 1957 - 100/100	0	100	0	100	0	100
41	2-22 JAN 1957 - 100/100	0	100	0	100	0	100
42	2-22 JAN 1957 - 100/100	0	100	0	100	0	100
43	2-22 JAN 1957 - 100/100	0	100	0	100	0	100
44	2-22 JAN 1957 - 100/100	0	100	0	100	0	100
45	2-22 JAN 1957 - 100/100	0	100	0	100	0	100

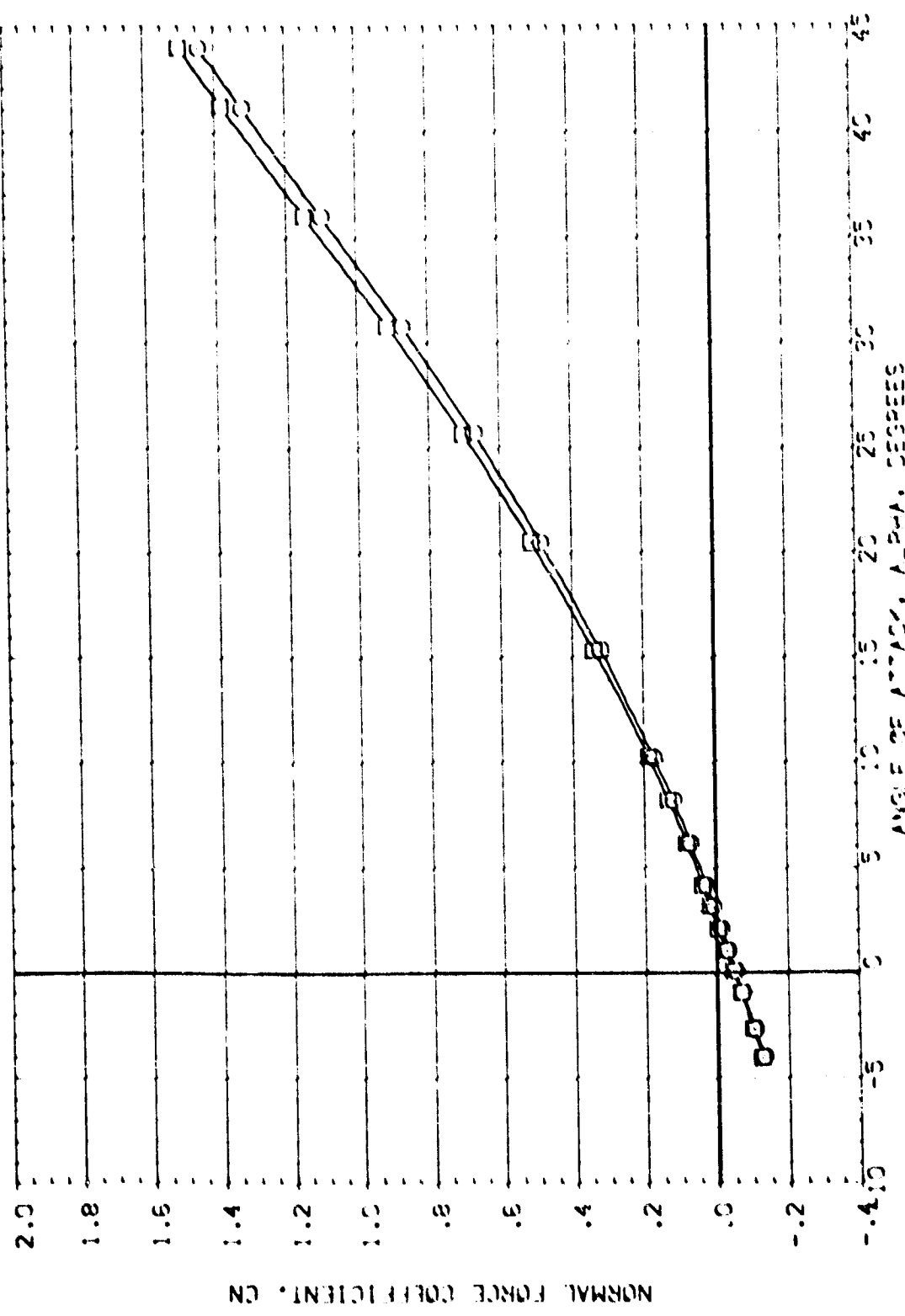


FIG 5 BODYFLAP DEFLECTED

COMACH = 4.80

DATA SET SYMBOL: CA-22 WARE UNIT 1057 - 142AV8 0981TER
 (22001) CA-22 WARE UNIT 1057 - 142AV8 0981TER
 (22009)

BOFLAP: -21.000
 -10.000
 ELEVTR: .000
 .000
 SPDBRN: 55.000
 55.000
 AILPON: .000
 .000

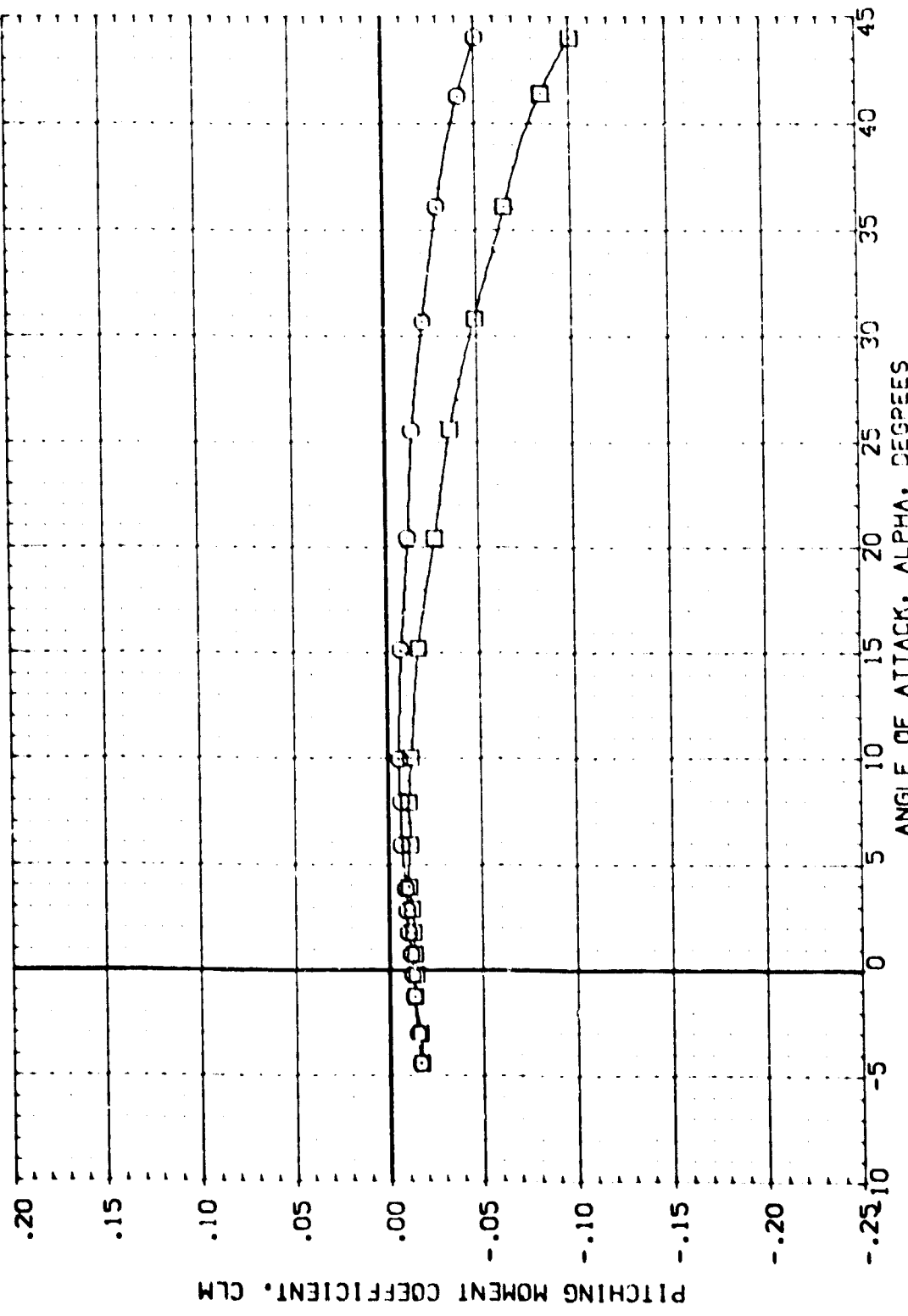


FIG 5 BODYFLAP DEFLECTED

(B)MACH = 3.90



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	ELEVTR	SPOBRN	AILPON	REFERENCE INFORMATION
102200	2A-20 LARC UPV 1057 - 140A/B 0981EP	-21.000	.000	55.000	.000	SREF 2690.0000
1022009	2A-20 LARC UPV 1057 - 140A/B 0981EP	10.000	.000	55.000	.000	LREF 475.9117
						BREF 936.6816
						MREF 1076.4900
						YMPD .0000
						ZMPD .0000
						SCALE .0150

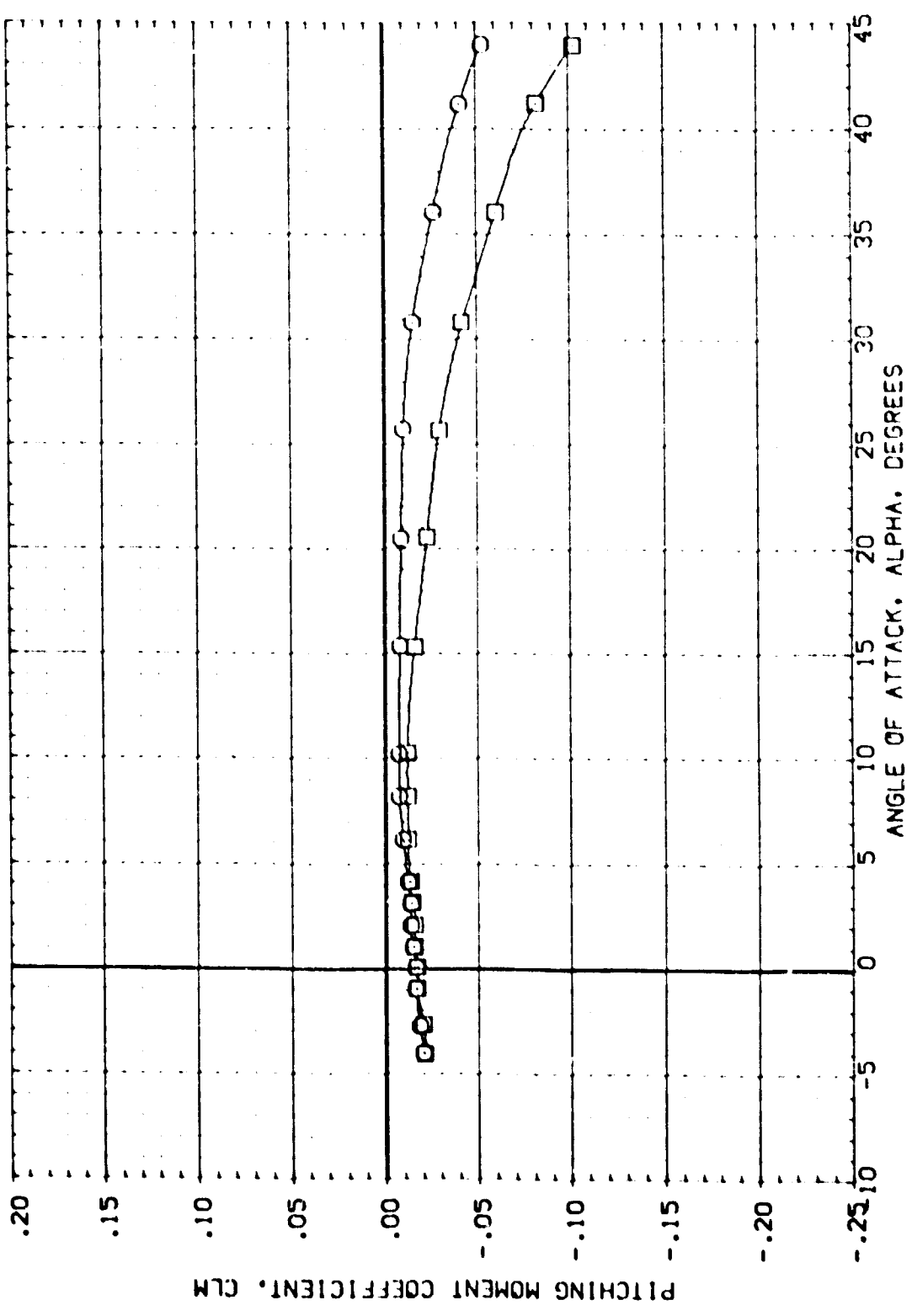


FIG 5 BODYFLAP DEFLECTED

(C)MACH = 4.60

DATA SET SYMBOL: \square CONFIGURATION DESCRIPTION: SA-20 LARC LPVT 1057 - 140A/B ORBITER
 (PC2001) DATA NOT AVAILABLE

BOFLAP: -21.000
 ELEVTR: .000
 SPOBRK: .000
 AIRDRN: .000

REFERENCE INFORMATION:
 SREF: 2690.0000 SO. FT.
 LREF: 476.8117 IN.
 BREF: 936.6816 IN.
 XMRP: 1076.4800 IN.
 YMRP: .0000 IN.
 ZMRP: 375.0000 IN.
 SCALE: .0150

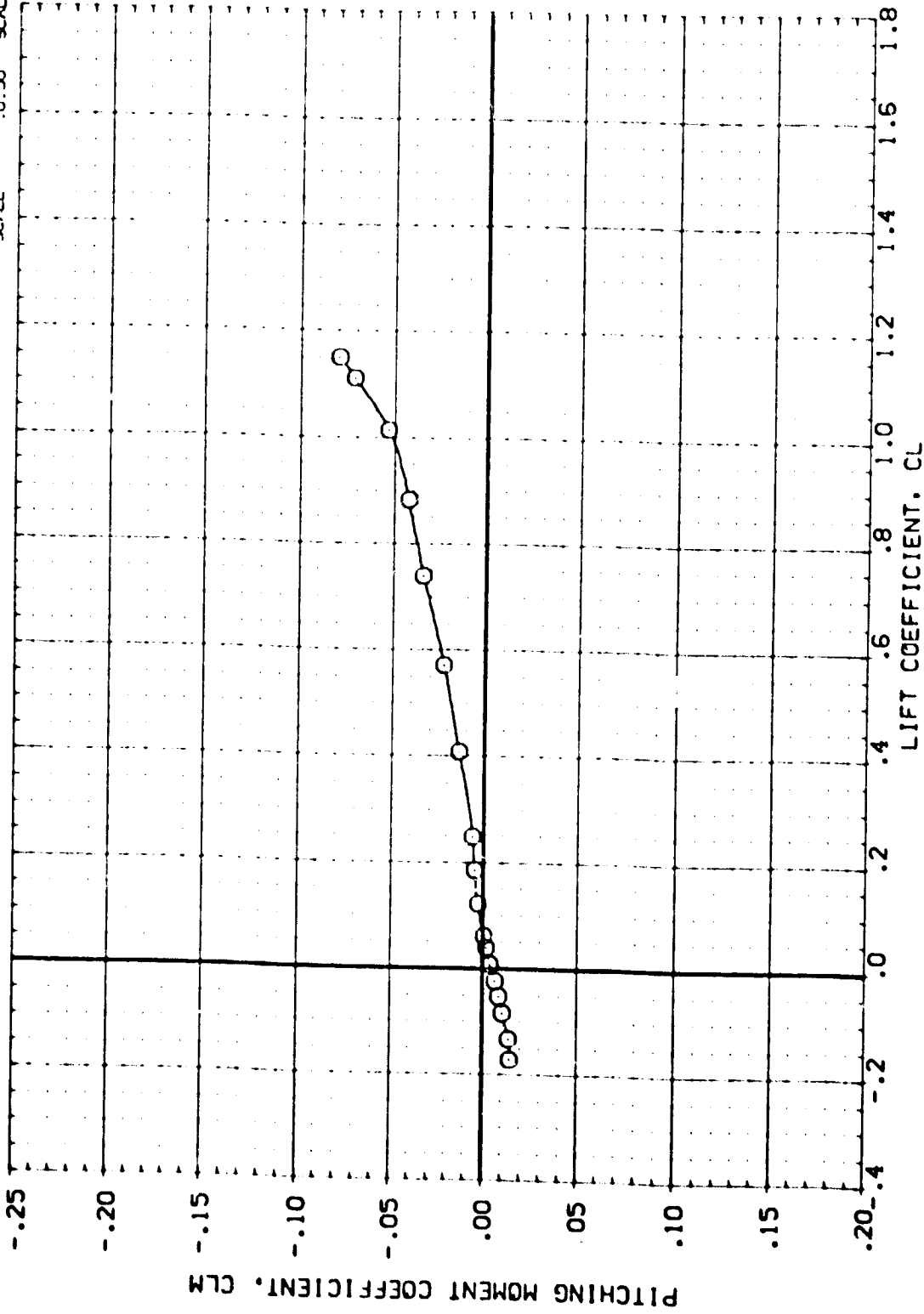


FIG 5 BODYFLAP DEFLECTED
 (A) MACH = 2.50



DATA SET SYMBOL CONFIGURATION DESCRIPTION REFERENCE INFORMATION

(K02001)	DA-20 LARC UPVT 1057 - 140A/B ORBITER	SREF	2690.0000	SO.FT.
(K02009)	DA-20 LARC UPVT 1057 - 140A/B ORBITER	LREF	476.8117	IN.
		BREF	936.6816	IN.
		XMRP	1076.4800	IN.
		YMRP	.0000	IN.
		ZMRP	375.0000	IN.
		SCALE	.0150	SCALE

BDFLAP -21.000
ELEVTR .000
SPOBRK 55.000
AILRON .000

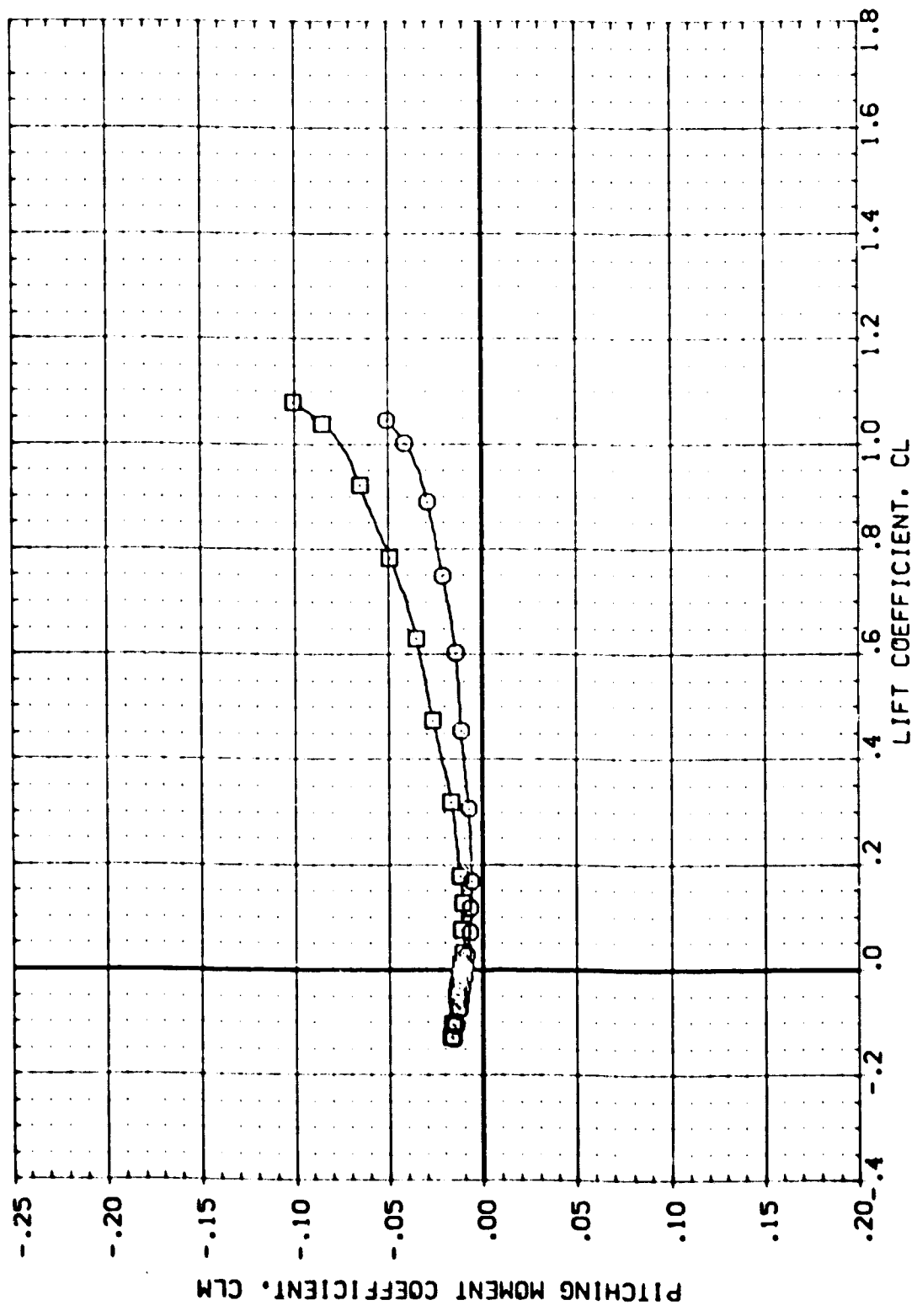


FIG 5 BODYFLAP DEFLECTED
(B)MACH = 3.90

DATA SET SYMBOL: (P02001) (P02009)
 CONFIGURATION DESCRIPTION: CA-20 LARC UPVT 1057 - 140AV8 DR81TER
 CA-20 LARC UPVT 1057 - 140AV8 DR81TER
 REFERENCE INFORMATION:
 SREF: 2690.0000 SO. FT.
 LREF: 476.8117 IN.
 BREF: 936.6816 IN.
 XMPD: 1076.4800 IN.
 YMPD: .0000 IN.
 ZMPD: 379.0000 IN.
 SCALE: .0150

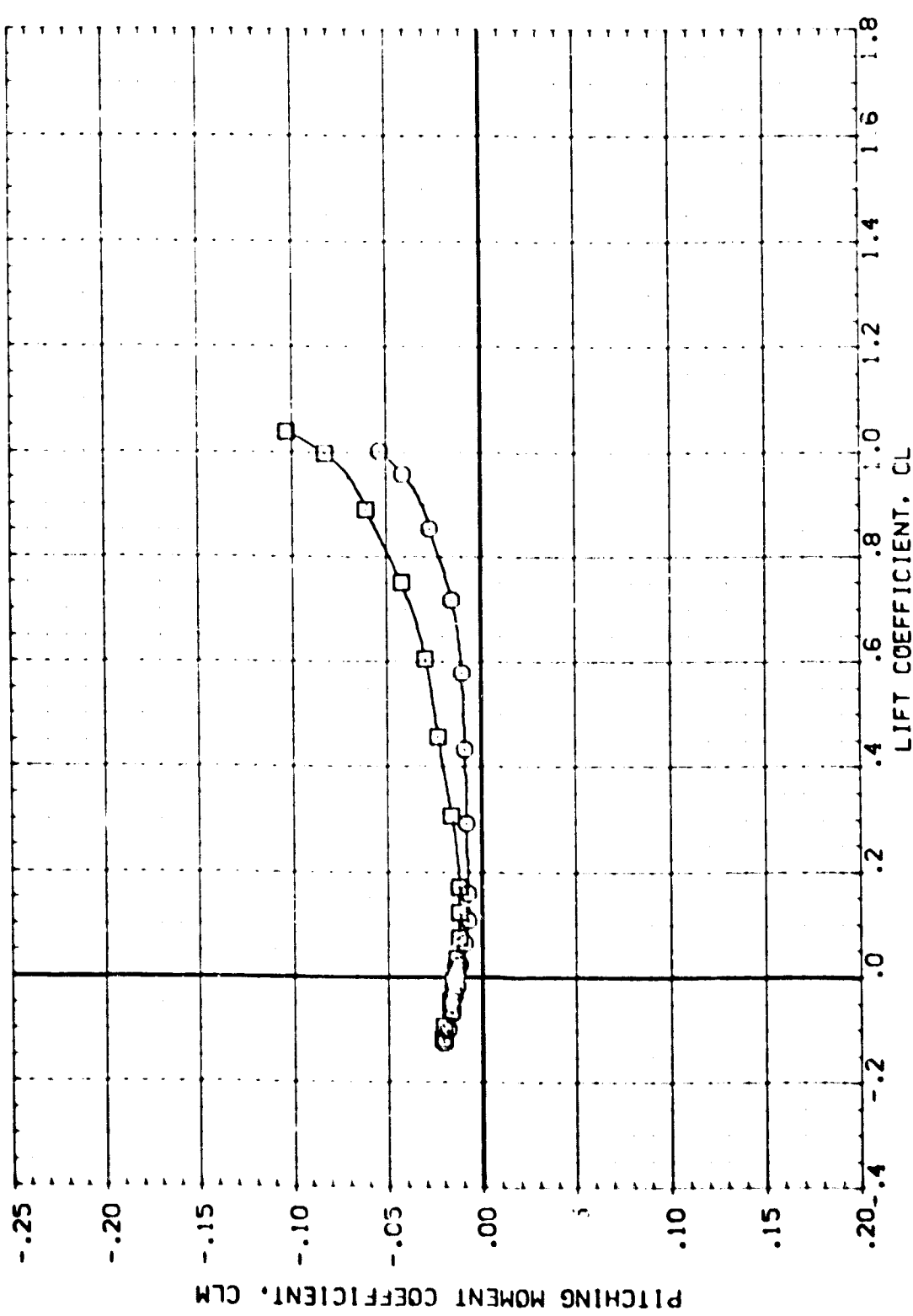


FIG 5 BODYFLAP DEFLECTED

(C)MACH = 4.60



DATA SET SYMBOL (K02001) (K02009) □
CONFIGURATION DESCRIPTION
OA-20 LARC UPVT 1057 - 140A/B ORBITER
DATA NOT AVAILABLE

BDFLAP -21.000
ELEVTR .000
SPOBRK 55.000
A1LRON .000

REFERENCE INFORMATION
SIZE 2690.0000 SO. FT.
LREF 476.8117 IN.
BREF 936.6816 IN.
XMRP 1076.4800 IN.
YMRP .0000 IN.
ZMRP .75.0000 IN.
SCALE .0150

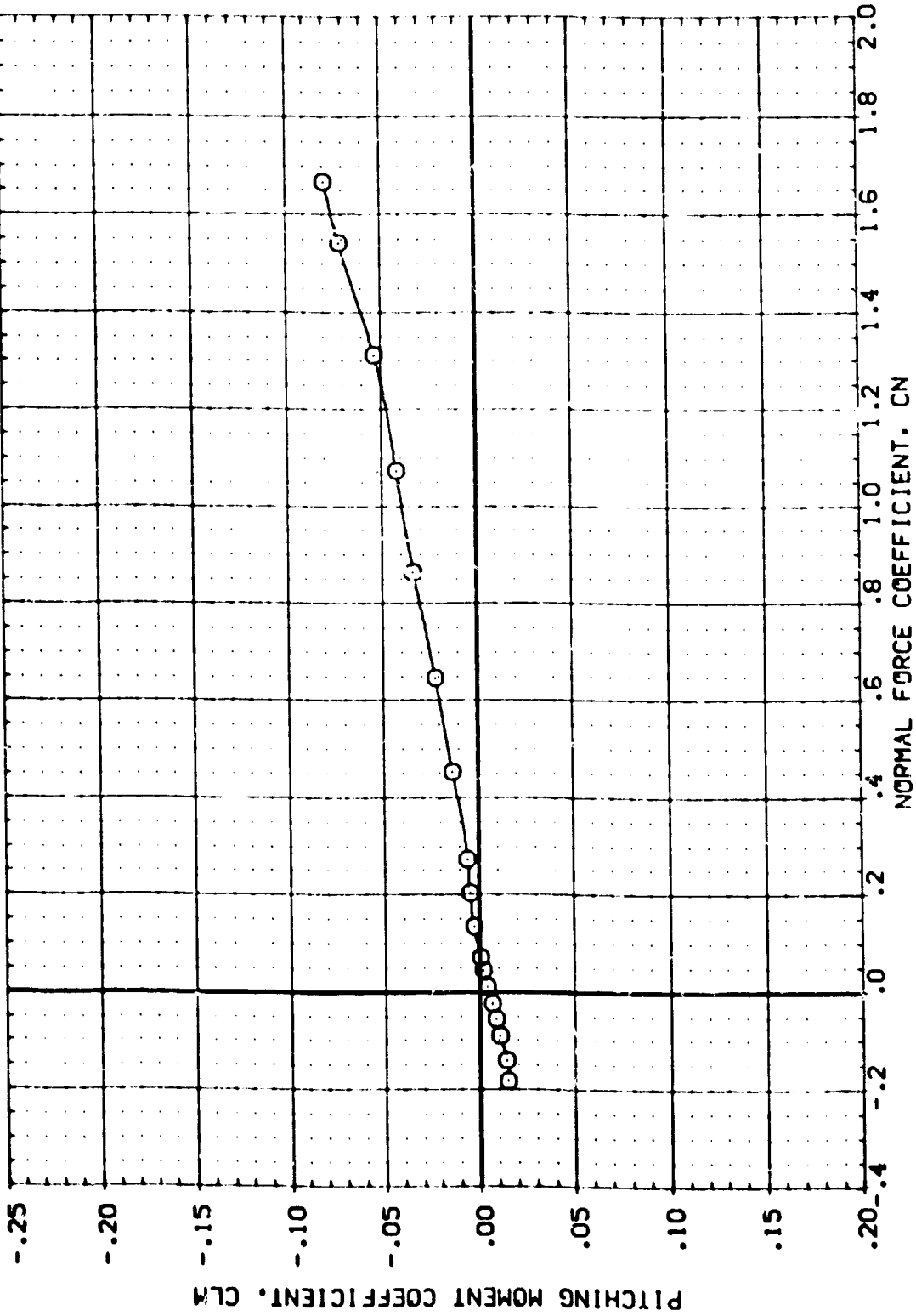


FIG 5 BODYFLAP DEFLECTED
(A)MACH = 2.50

DATA SET SYMBOL CONFIGURATION DESCRIPTION REFERENCE INFORMATION

(R02001) □ OA-20 LARC UPVT 1057 - 140A/B ORBITER SREF 265.0000 SQ.FT.

(R02001) □ OA-20 LARC UPVT 1057 - 140A/B ORBITER LREF 4.38117 IN.

(R02001) □ OA-20 LARC UPVT 1057 - 140A/B ORBITER BREF 9.66916 IN.

(R02001) □ OA-20 LARC UPVT 1057 - 140A/B ORBITER XMRP 1076.4800 IN.

(R02001) □ OA-20 LARC UPVT 1057 - 140A/B ORBITER YMRP 0.0000 IN.

(R02001) □ OA-20 LARC UPVT 1057 - 140A/B ORBITER ZMRP 375.0000 IN.

(R02001) □ OA-20 LARC UPVT 1057 - 140A/B ORBITER SCALE .0150 SCALE

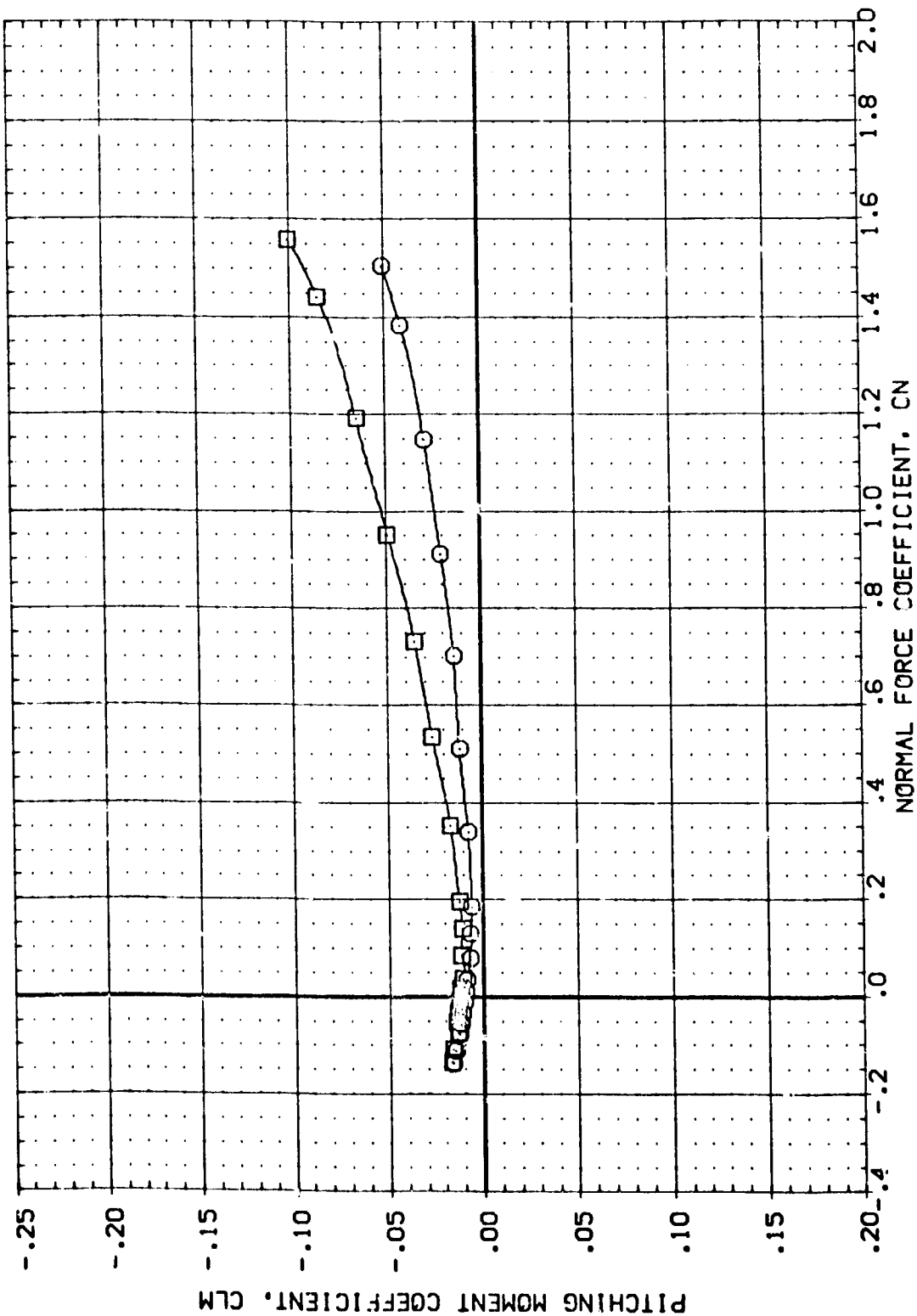


FIG 5 BODYFLAP DEFLECTED
(B)MACH = 3.90



DATA SET SYMBOL CONFIGURATION DESCRIPTION REFERENCE INFORMATION

(K02001)	CA-20 LARC UPVT 1057 - 140A/B DRB:ITER	SREF 2690.0000	SO.FT.
(K02009)	CA-20 LARC UPVT 1057 - 140A/B DRB:TER	LREF 476.8117	IN.
		BREF 936.6816	IN.
		XMRP 1076.4800	IN.
		YMRP .0000	IN.
		ZMRP 375.0000	IN.
		SCALE .0150	SCALE

BOFLAP ELEVTR SPDBRK AILRON

-21.000	.000	55.000	.000
10.000	.000	55.000	.000

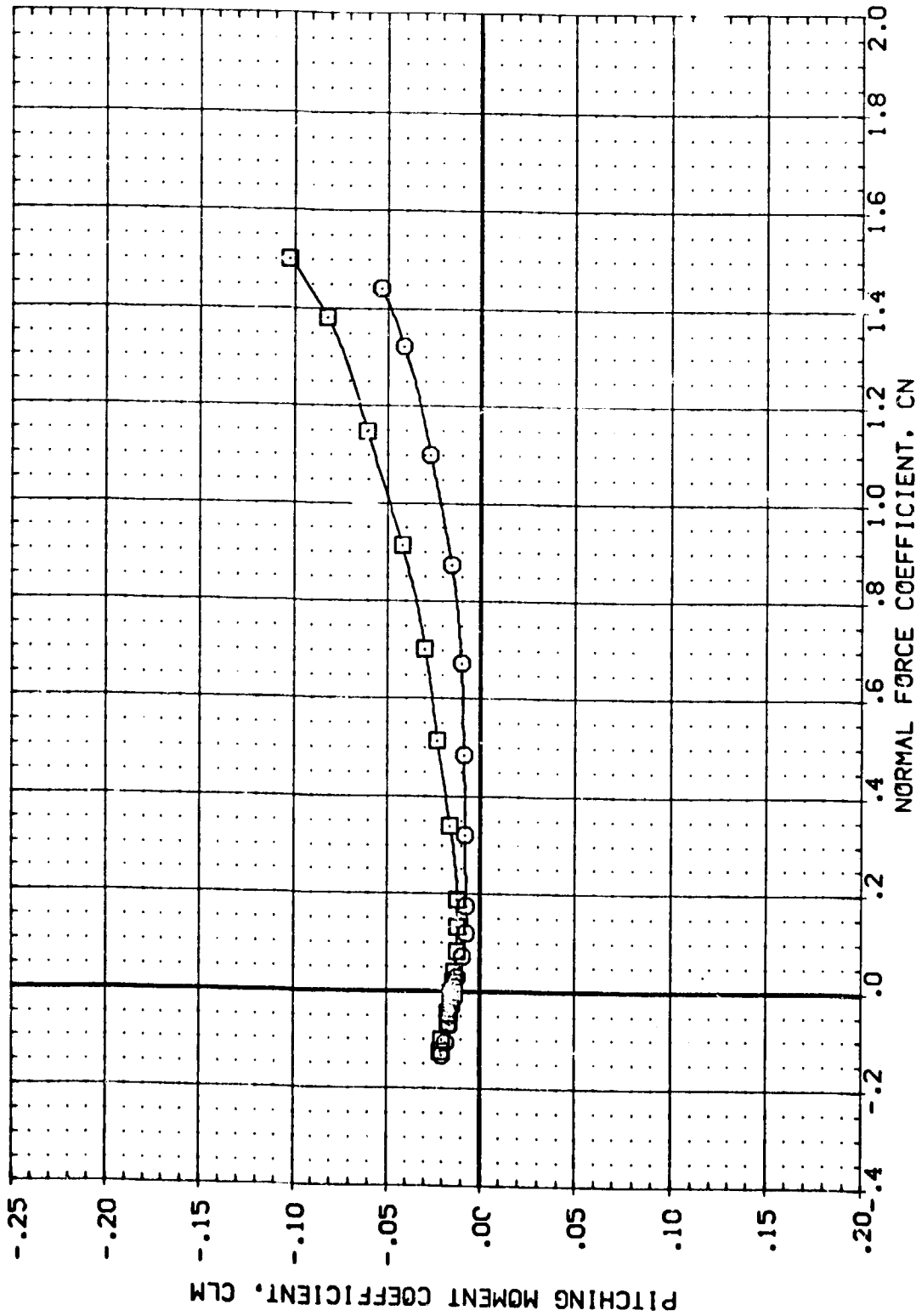


FIG 5 BODYFLAP DEFLECTED

(C)MACH = 4.60

DATA SET SYMBOL (K02001) □
 CONFIGURATION DESCRIPTION (K02009) BA-20 LARC LPVT 1057 - 14'A/B ORBITER
 DATA NOT AVAILABLE

BOFLAP -21.000
 10.000
 ELEVTR .000
 .000
 SPOBRK 55.000
 55.000
 AILRON .000
 .000
 REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 476.8117 IN.
 BREF 936.6916 IN.
 XMRP 1076.4800 IN.
 YMRP .0000 IN.
 ZMRP 375.0000 IN.
 SCALE .0150 SCALE

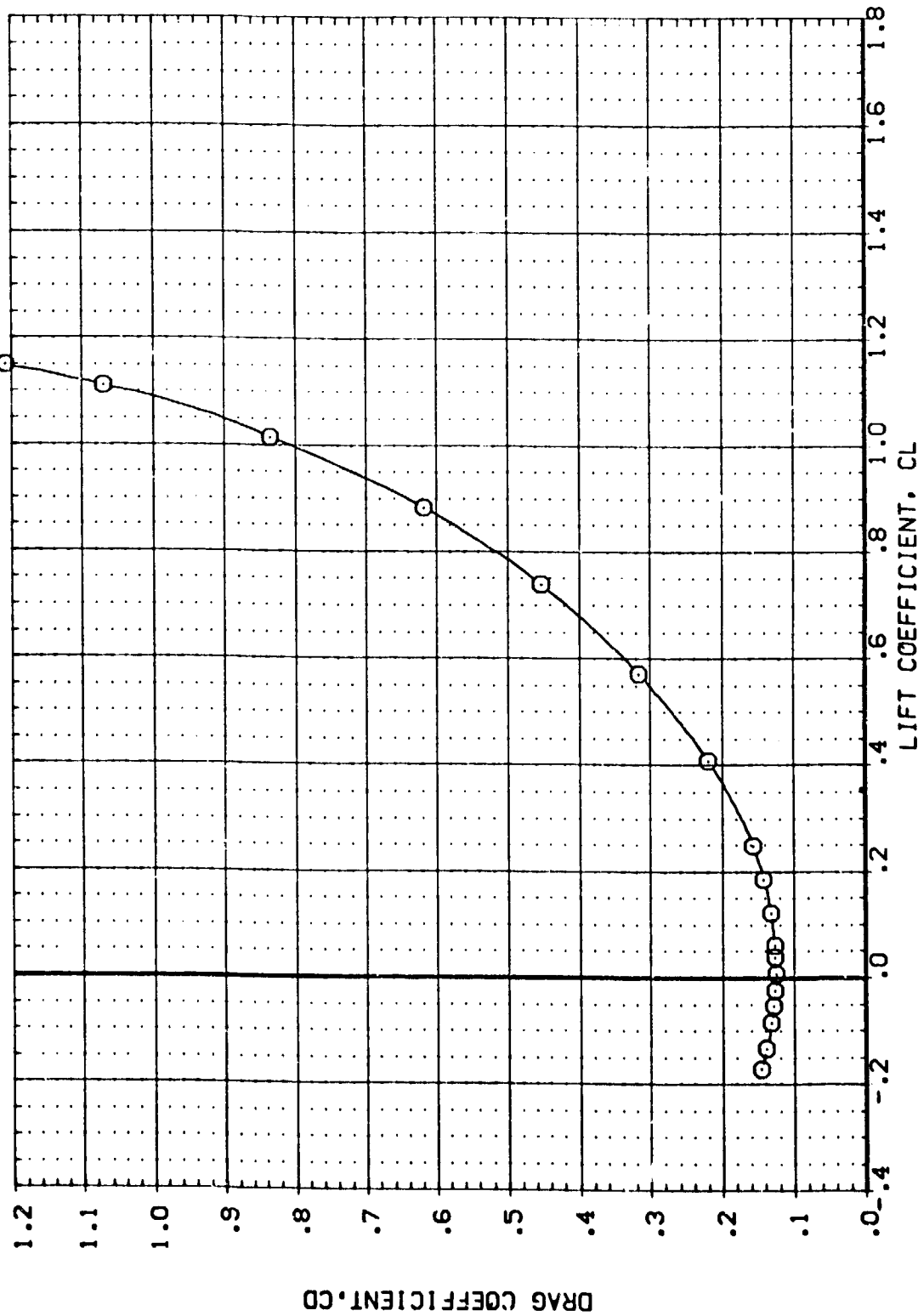


FIG 5 BODYFLAP DEFLECTED
 (A)MACH = 2.50



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	ELEVTR	SPOBRK	AILTRON	REFERENCE INFORMATION
(K02001)	CA-20 LARC UPVT 1057 - 140A/B ORBITTER	-21.000	.000	55.000	.000	SREF 2690.0000 SO.FT.
(K02009)	CA-20 LARC UPVT 1057 - 140A/B ORBITTER	10.000	.000	55.000	.000	LREF 478.8117 IN.
						BREF 936.6816 IN.
						XMRP 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150 SCALE

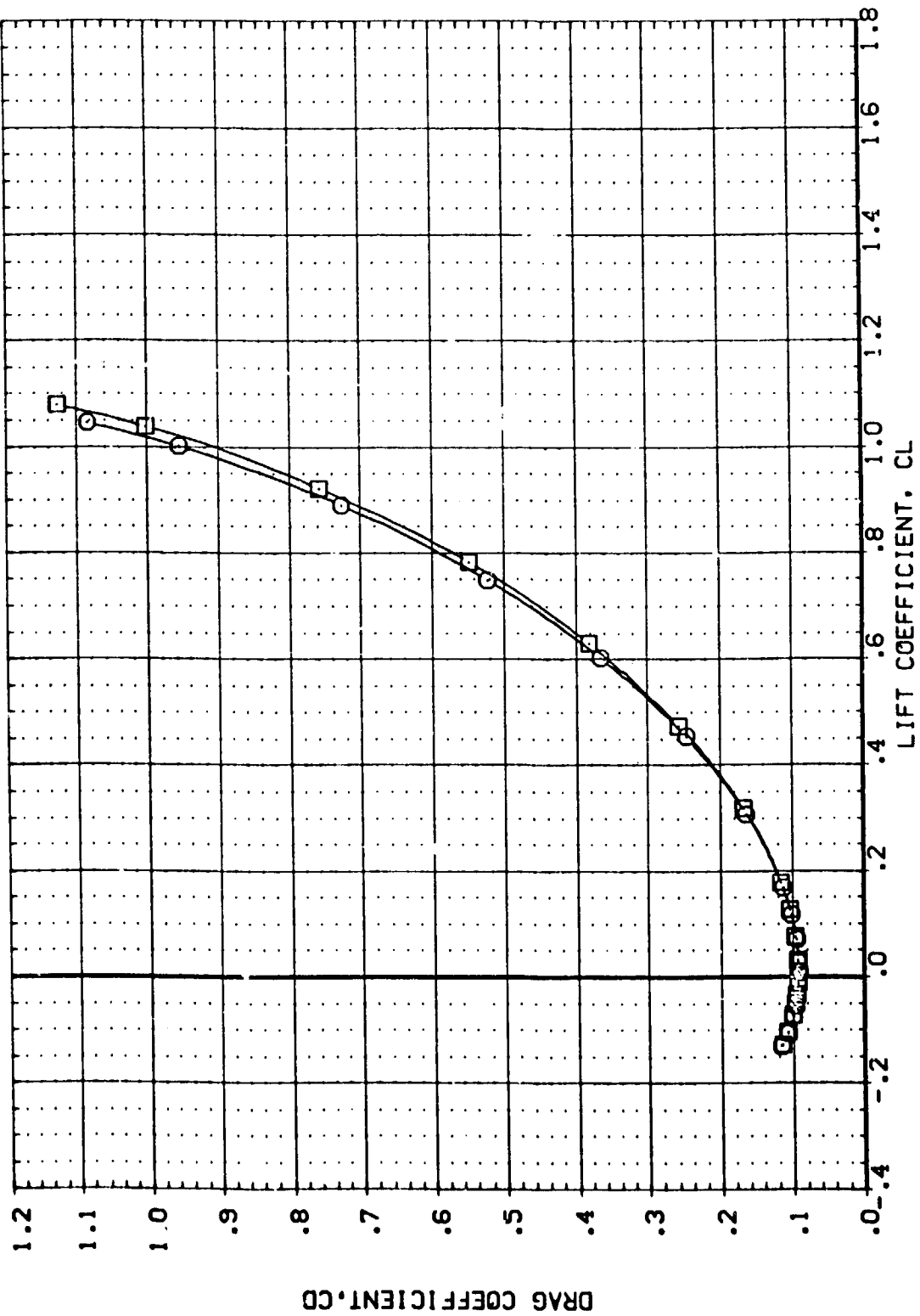


FIG 5 BODYFLAP DEFLECTED

(B)MACH = 3.90

DATA SET SYMBOL: (K02001) (K02009)
 CONFIGURATION DESCRIPTION: DA-20 LARC UPVT 1057 - 140A/B ORBITER
 BOFLAP: -21.000 10.000
 ELEVTR: .000 .000
 SPOBRK: 55.000 55.000
 AILRON: .000 .000
 REFERENCE INFORMATION:
 SREF: 2690.0000 SQ.FT.
 LREF: 476.8117 IN.
 BREF: 936.6816 IN.
 XTRP: 1076.4800 IN.
 YTRP: .0000 IN.
 ZTRP: 375.0000 IN.
 SCALE: .0150

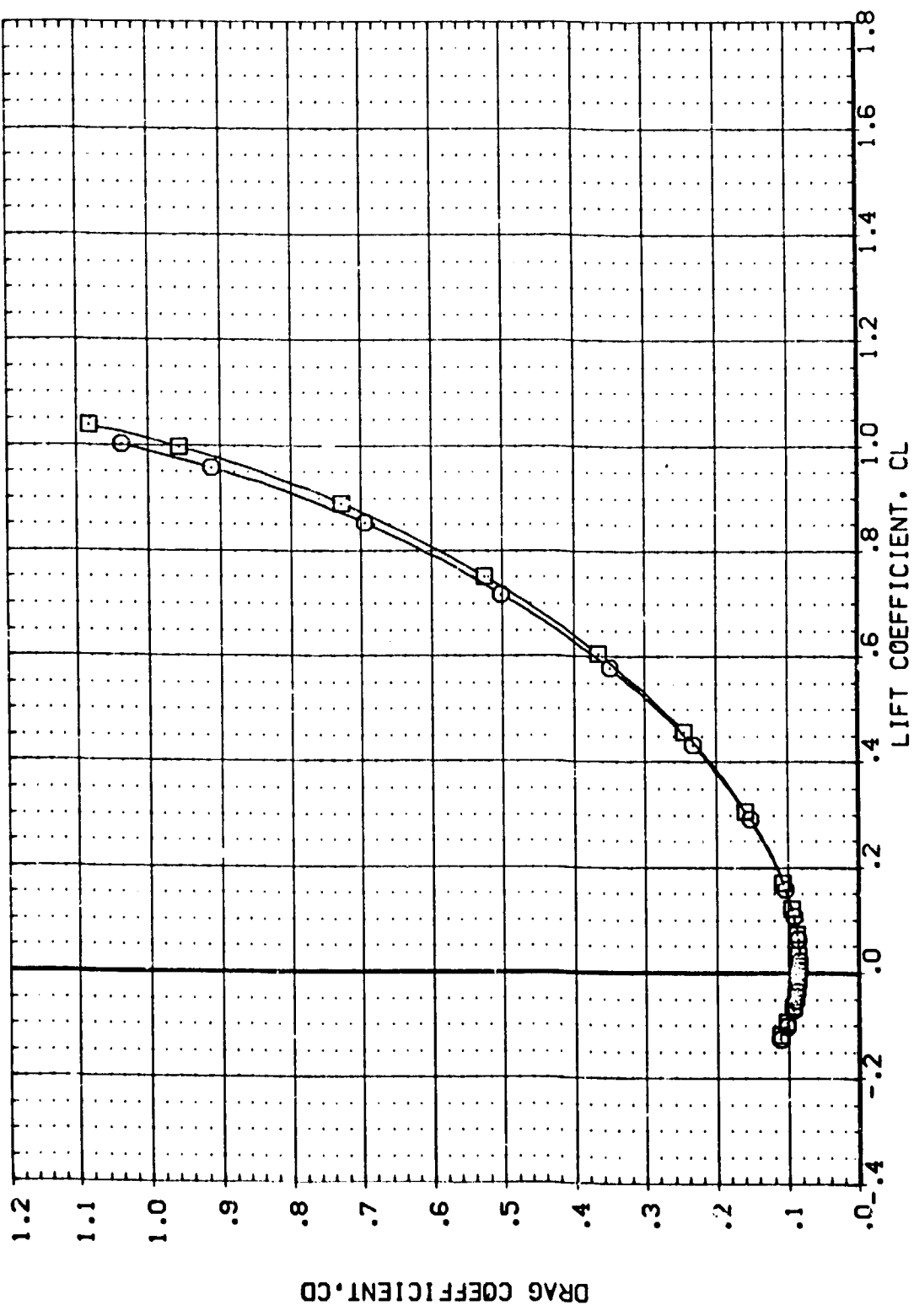


FIG 5 BODYFLAP DEFLECTED

(C)MACH = 4.60



DATA SET SYMBOL: (K02001) (K02009)

CONFIGURATION DESCRIPTION: SA-20 LARC LPVT 1057 - 140A/2 ORBITER
DATA NOT AVAILABLE

BOFLAP: -21.000
ELEVTR: .000
SPOBRK: 55.000
AILRON: .000

REFERENCE INFORMATION: SREF: 2690.0000 SQ.FT.
LREF: 476.8117 IN.
BREF: 936.6816 IN.
XMRP: 1076.4800 IN.
YMRP: .0000 IN.
ZMRP: 375.0000 IN.
SCALE: .0150

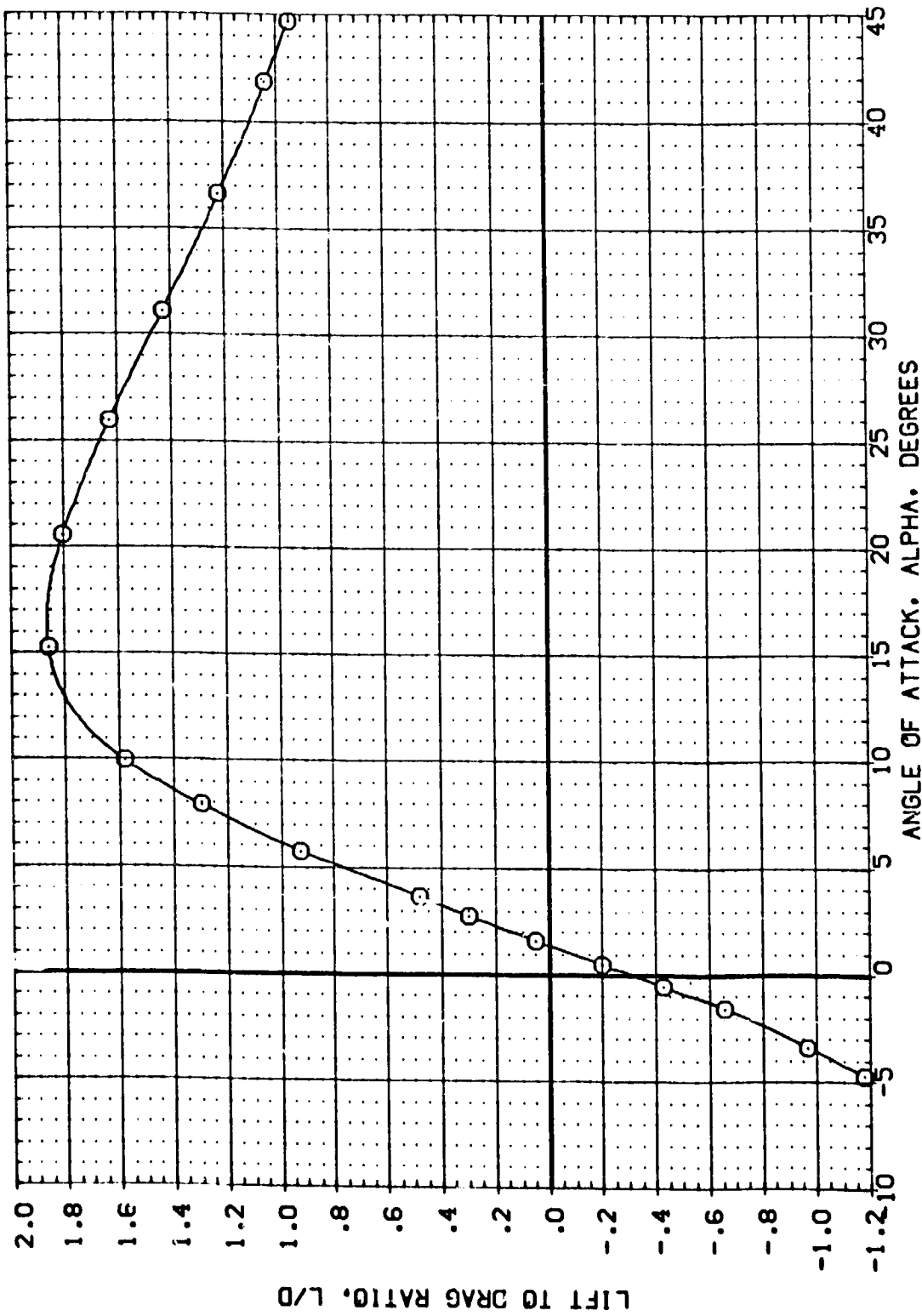


FIG 5 BODYFLAP DEFLECTED

(A)MACH = 2.50

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	ELEVTR	SPOBRK	A1LRON	REFERENCE INFORMATION
(M02001)	GA-20 LARC UPVT 1057 - 140A/B ORBITER	-21.000	.000	55.000	.000	SREF 2690.0000 SQ.FT.
(M02009)	GA-20 LARC UPVT 1057 - 140A/B ORBITER	10.000	.000	55.000	.000	LREF 476.8117 IN.
						BREF 936.6816 IN.
						XMPP 1076.4800 IN.
						YMPP .0000 IN.
						ZMPP 375.0000 IN.
						SCALE .0150 SCALE

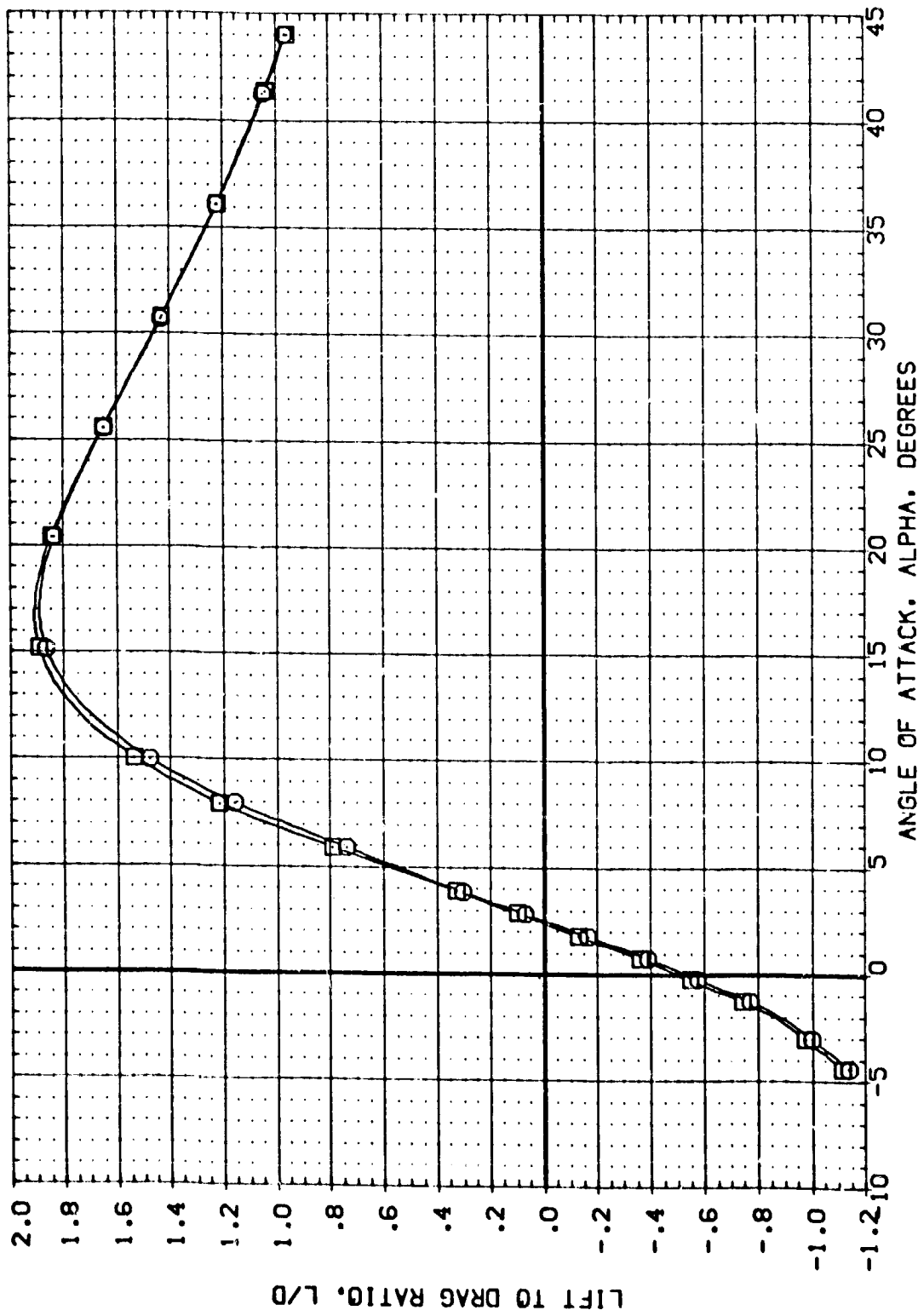


FIG 5 BODYFLAP DEFLECTED

(B)MACH = 3.90



DATA SET: (K02001)	SYMBOL: □	CONFIGURATION DESCRIPTION: CA-20 LARC UPVT 1057 - 140AVE 0981TER	BOFLAP: -21.000	ELEVTR: .000	SPO6BK: 55.000	AILRON: .000	REFERENCE INFORMATION:
(K02009)	□	CA-20 LARC UPVT 1057 - 140AVE 0981TER	10.000	.000	55.000	.000	SREF: 2690.0000 SO.FT.
							LREF: 476.8117 IN.
							BREF: 936.6816 IN.
							XMRP: 1076.4800 IN.
							YMRP: .0000 IN.
							ZMRP: 375.0000 IN.
							SCALE: .0150

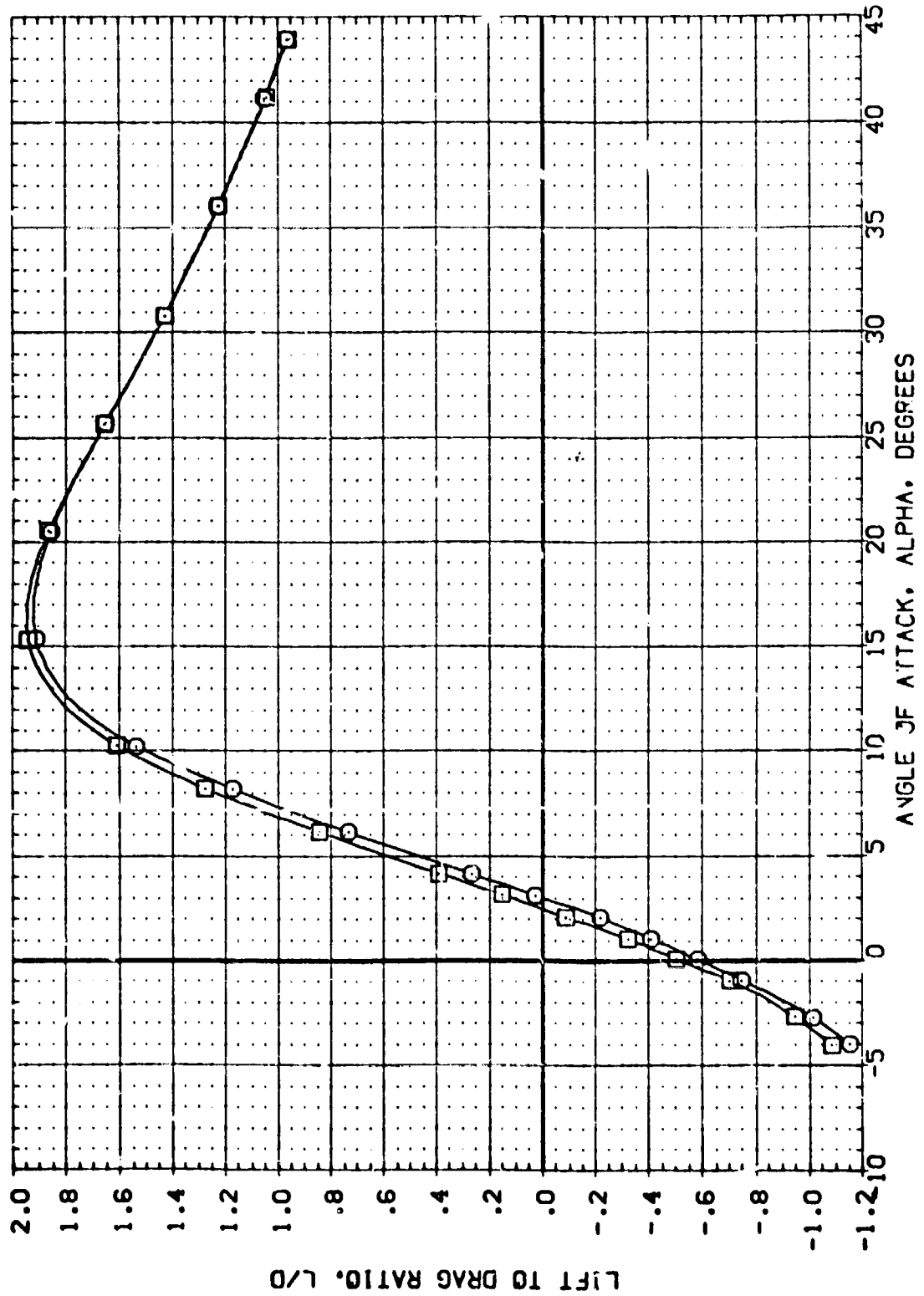


FIG 5 BODYFLAP DEFLECTED

(C)MACH = 4.60

DATA SET SYMBOL: □
 (M02001)
 (M02008)

CONFIGURATION DESCRIPTION

GA-20 LARC LPVT 1057 - 140A/B ORBITER
 DATA NOT AVAILABLE

BOFLAP
 -21.000
 10.000

ELEVTR
 .000
 .000

SPOBRK
 55.000
 55.000

AILRON
 .000
 .000

REFERENCE INFORMATION
 SREF 2690.0000 50.FT.
 LREF 476.8117 IN.
 BREF 936.6816 IN.
 XTRP 1076.4800 IN.
 YTRP .0000 IN.
 ZTRP 375.0000 IN.
 SCALE .0150

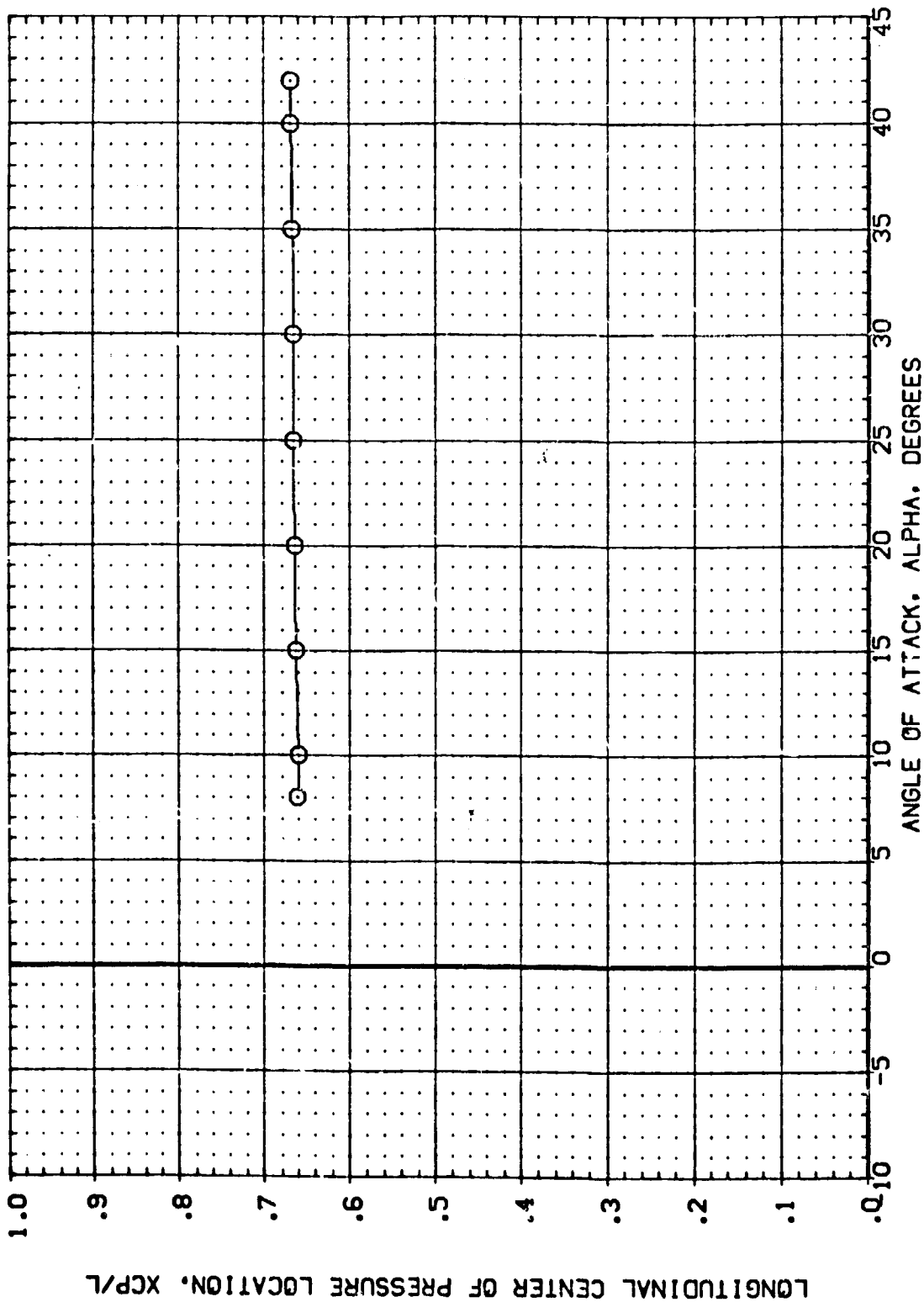


FIG 5 BODYFLAP DEFLECTED

(A)MACH = 2.50



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	ELEVTR	SPOBRK	AILTRON	REFERENCE INFORMATION
(H02001)	GA-20 LARC UPVT 1057 - 140A/B ORBITTER	-21.000	.000	55.000	.000	SREF 2690.0000 SO.FT.
(H02009)	GA-20 LARC UPVT 1057 - 140/B ORBITTER	10.000	.000	55.000	.000	LREF 476.8117 IN.
						BREF 996.6816 IN.
						VMRP 1076.4800 IN.
						ZMRP .0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150 SCALE

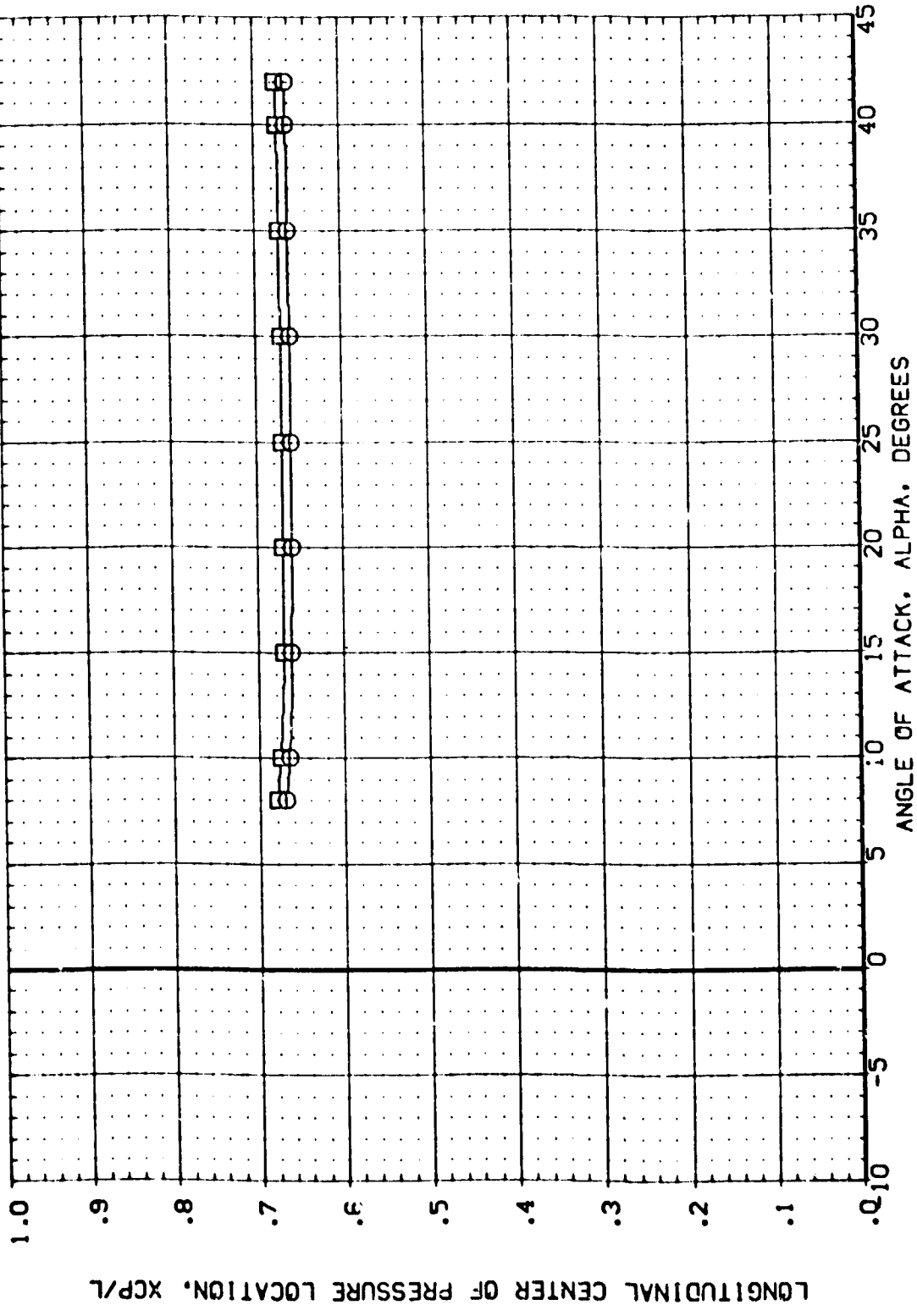


FIG 5 BODYFLAP DEFLECTED

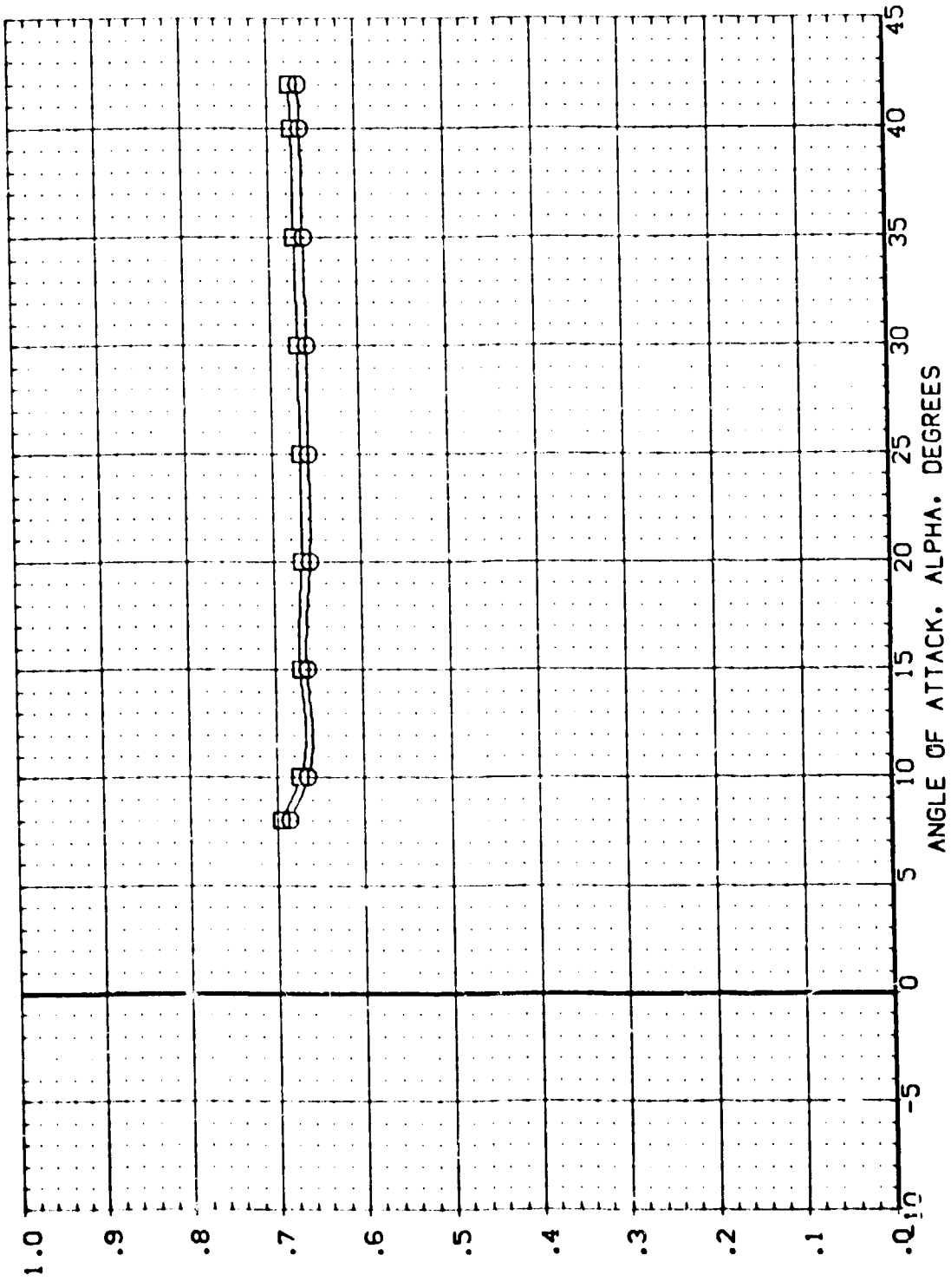
(B)MACH = 3.90

DATA SET SYMBOL: (M22011) (M22009)

CONFIGURATION DESCRIPTION:
 DA-20 LARC UPVT 1057 - 140A/B ORBITER
 DA-20 LARC UPVT 1057 - 140A/B ORBITER

BOFLAP: -21.000
 ELEVTR: .000
 SPOBRK: 55.000
 AIRLON: .000

REFERENCE INFORMATION:
 SREF: 2650.0000 SQ.FT.
 LREF: 476.8117 IN.
 BRFP: 938.6816 IN.
 XMRP: 1076.4800 IN.
 YMRP: .0000 IN.
 ZMRP: 375.0000 IN.
 SCALE: .0150



LONGITUDINAL CENTER OF PRESSURE LOCATION, XCP/L

ANGLE OF ATTACK, ALPHA, DEGREES

FIG 5 BODYFLAP DEFLECTED

(C)MACH = 4.60



DATA SET SYMBOL: (F02007) (F02008) □
CONFIGURATION DESCRIPTION: OA-20 LARC UPVT 1057 - 140A/B ORBITER
DATA NOT AVAILABLE

DELVTR: -40.000, 15.000
BOFLAP: -21.000, 0.000

SPOBRK: 55.000, 55.000
AILRON: .000, .000

REFERENCE INFORMATION:
SREF: 2690.0000 SU.FT.
LREF: 476.8117 IN.
BREF: 936.6816 IN.
XMRP: 1076.4800 IN.
YMRP: .0000 IN.
ZMRP: 375.0000 IN.
SCALE: .0150

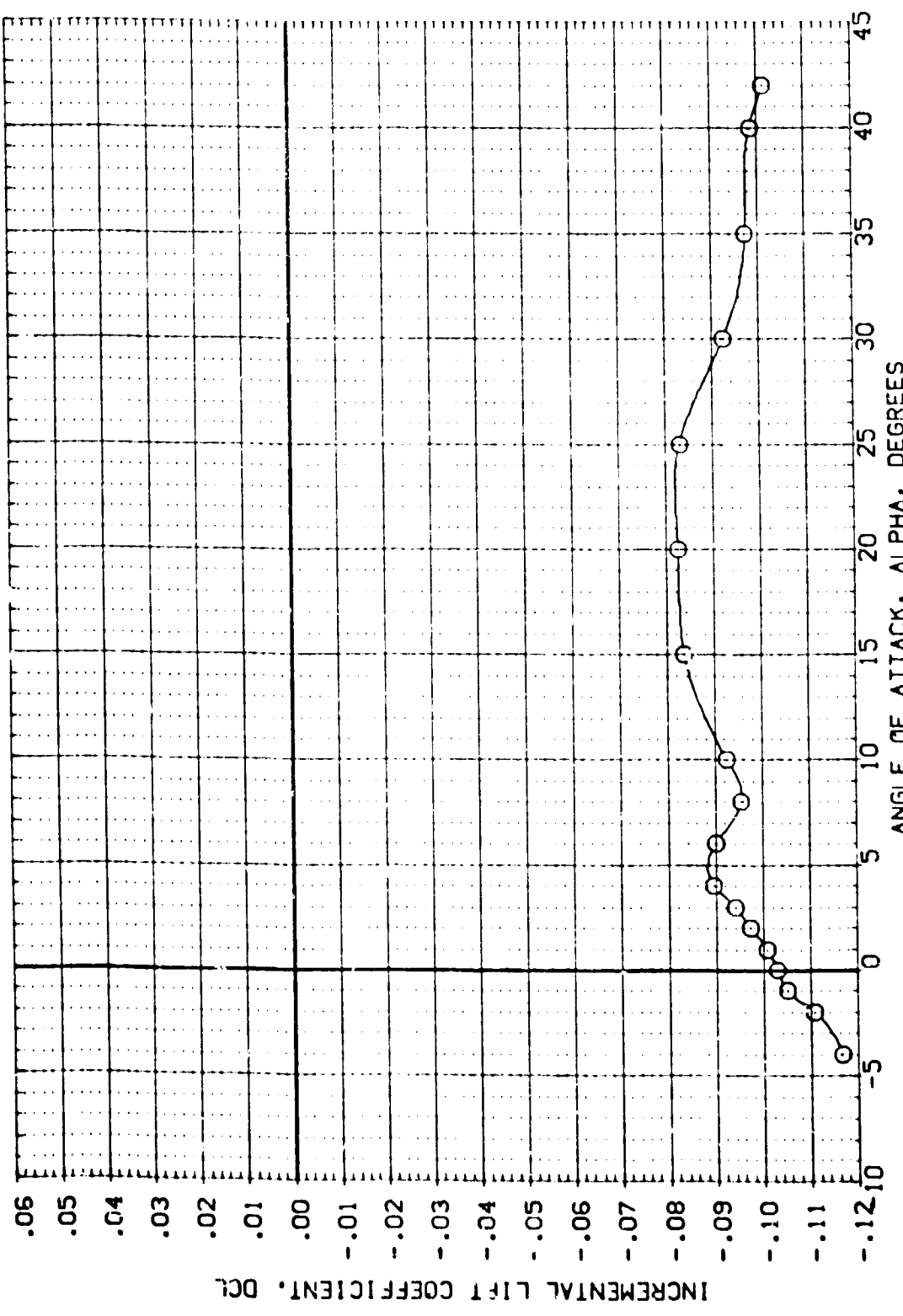


FIG 6 INCREMENTAL EFFECTS OF DEFLECTED ELEVONS
(A)MACH = 2.50

DATA SET SYMBOL: □
 CONFIGURATION DESCRIPTION: CA-20 LARC UPVT 1057 - 14CA/B ORBITER
 CA-20 LARC UPVT 1057 - 14CA/B ORBITER
 REFERENCE INFORMATION:
 SREF: 2690.0000 50.FT.
 LREF: 476.8117 IN.
 BRPF: 936.6816 IN.
 XREF: 1076.4800 IN.
 YREF: .0000 IN.
 ZREF: 375.0000 IN.
 SCALE: .0150 SCALE

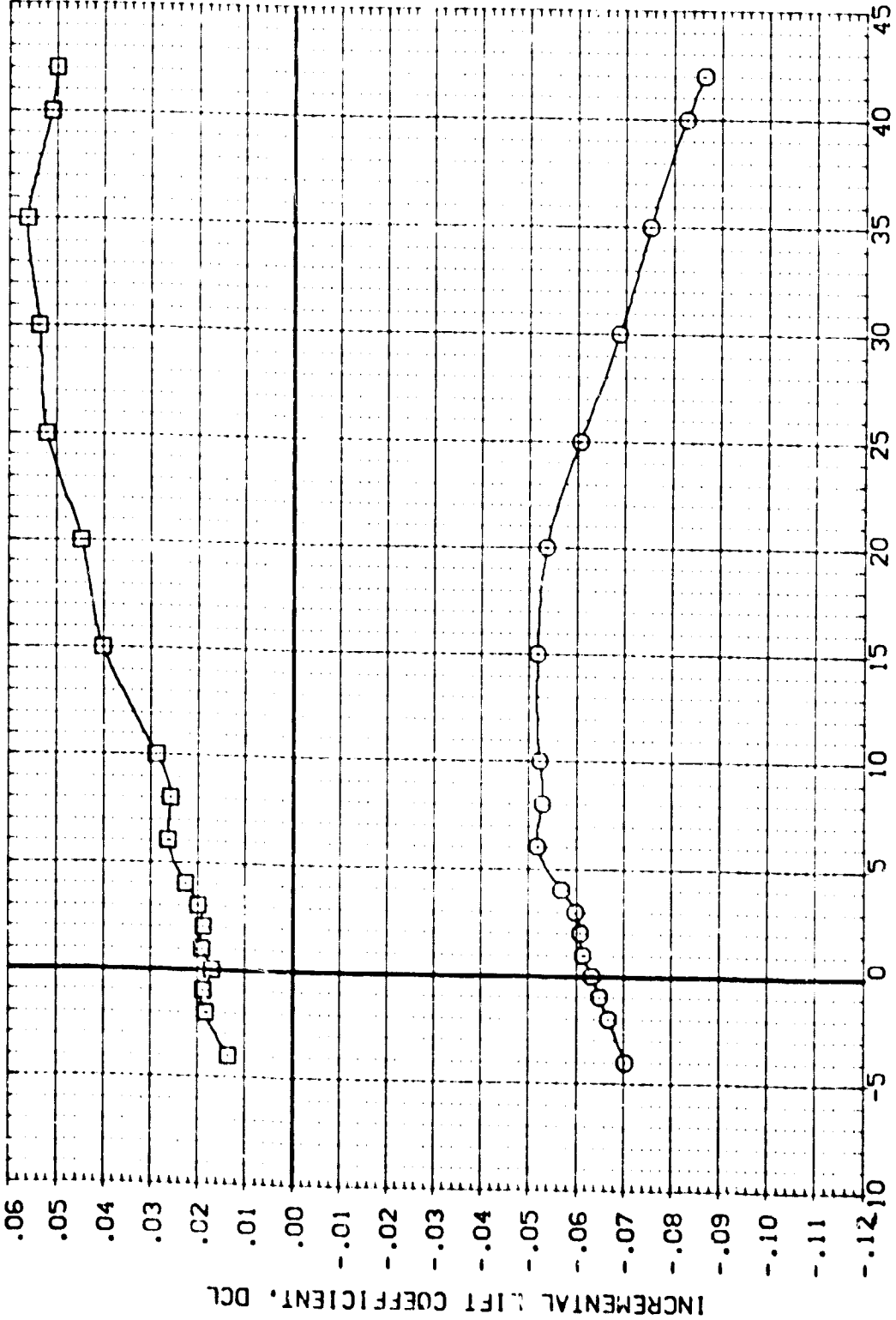


FIG 6 INCREMENTAL EFFECTS OF DEFLECTED ELEVONS

(B) MACH = 3.90



DATA SET SYMBOL COMBINATION DESCRIPTION
 (022001) 2A-20 WAKE UPW 1957 - 1A2A/B 360/180
 (022002) 2A-20 WAKE UPW 1957 - 1A2A/B 0/180

DELTA V	EOFLAP	SPOBPR	ALLOPN	SREF	REFERENCE INFORMATION
-40.000	-21.000	55.000	.000	2690.0000	SO.FY.
15.000	10.000	55.000	.000	476.8117	IN
				536.5616	IN
				1076.4800	IN
				1076.0000	IN
				375.0000	IN
				SCALE	SCALE

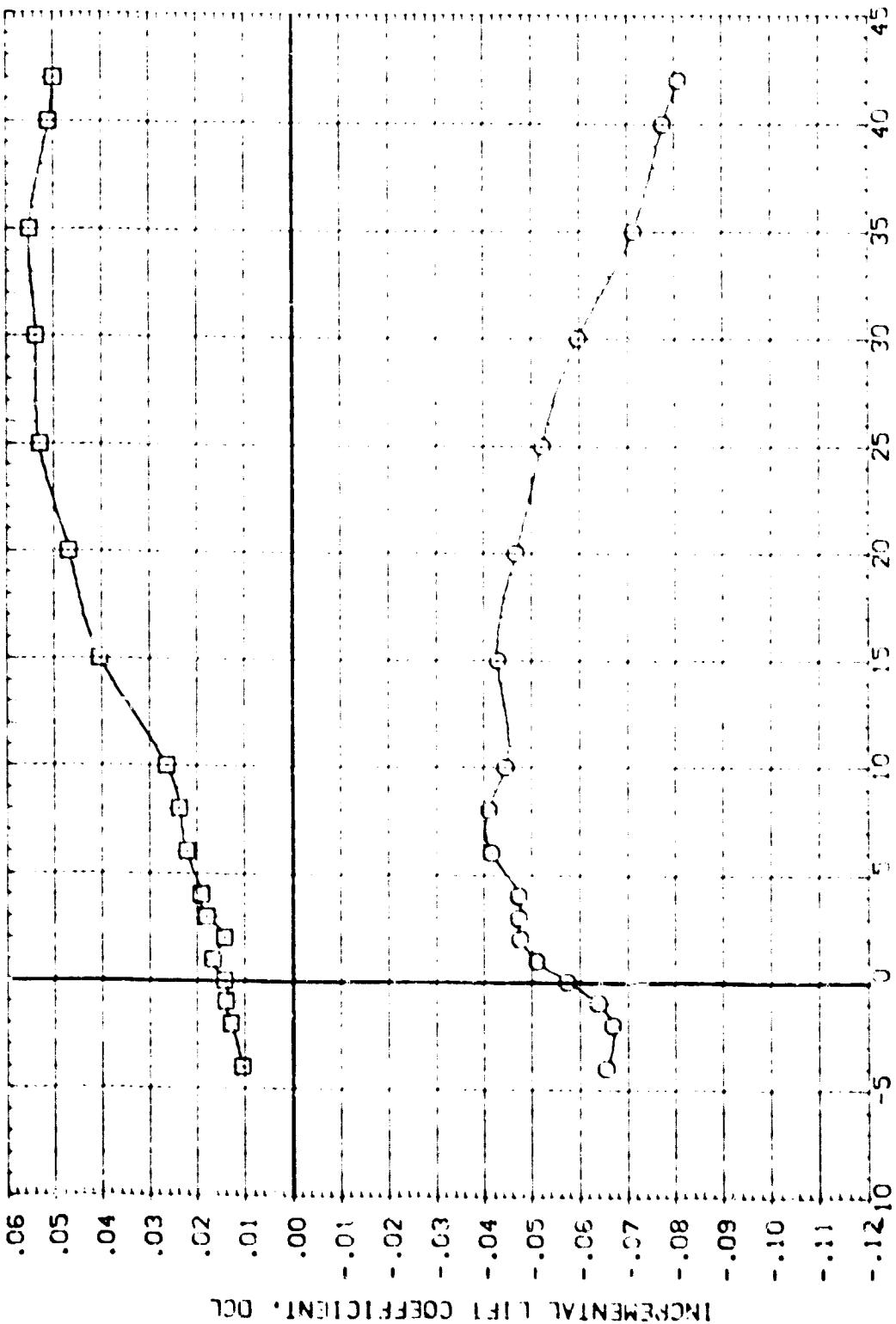


FIG 6 INCREMENTAL EFFECTS OF DEFLECTED ELEVONS
 (COMACH = 4.60)

DATA SET SYMBOL: (FQ2007) □
 CONFIGURATION DESCRIPTION: OA-20 LARC UPMT 1057 - 140A/B ORBITER
 DATA NOT AVAILABLE

DELVTR: -40.000
 BDFLAP: -21.000
 SPOCRK: 55.000
 AILRON: .000

REFERENCE INFORMATION:
 SREF: 2690.0000 SQ.FT.
 LREF: 476.8117 IN.
 BREF: 936.6816 IN.
 XMRP: 1076.4800 IN.
 YMRP: .0000 IN.
 ZMRP: 375.0000 IN.
 SCALE: .0150

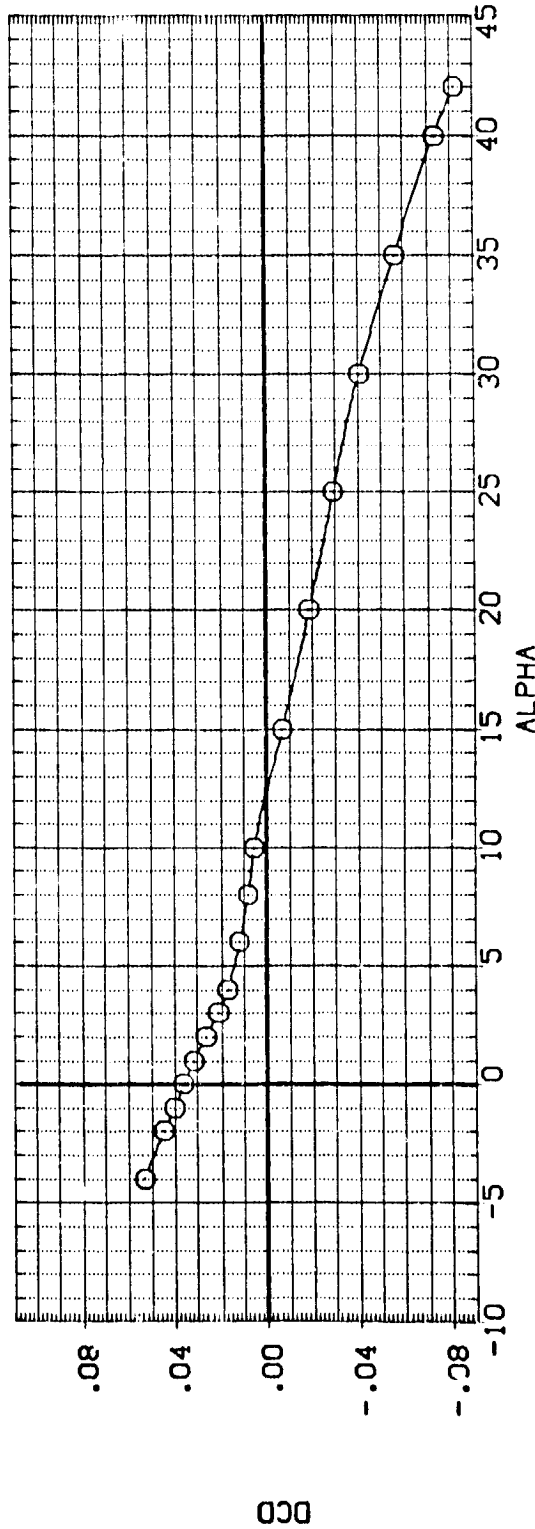
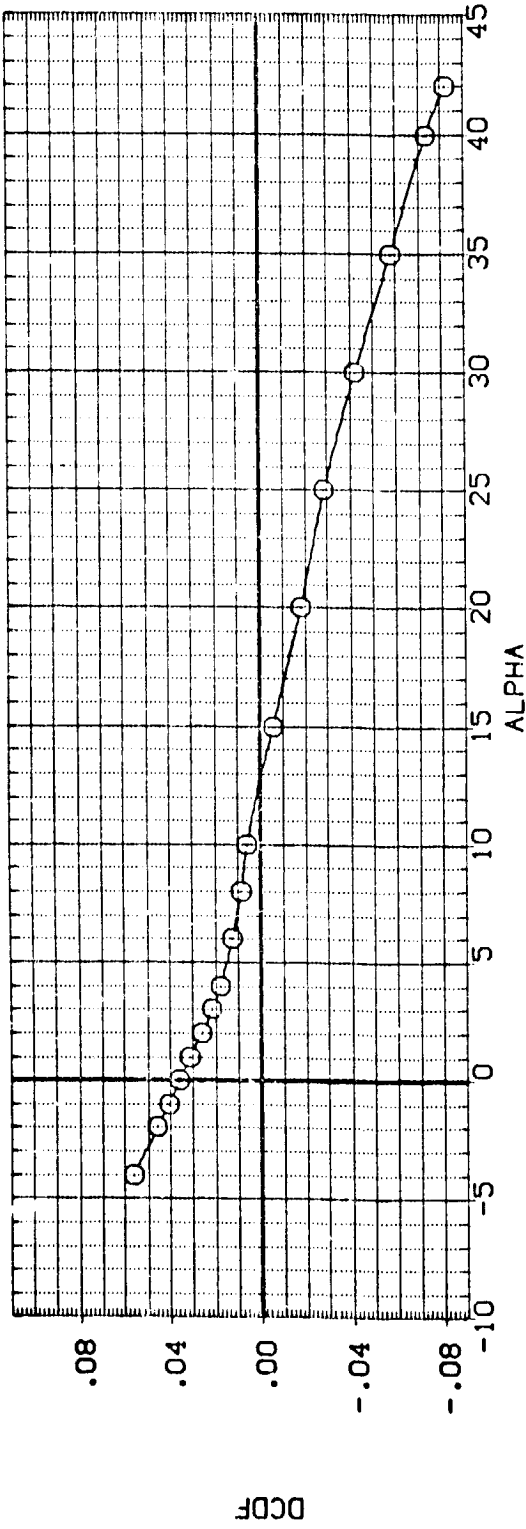


FIG 6 INCREMENTAL EFFECTS OF DEFLECTED ELEVONS

(A)MACH = 2.50



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	DELVTR	BOFLAP	SPOBRK	ALLSON	REFERENCE INFORMATION
(F02007)	CA-20 LARC UPVT 1057 - 140M/B ORBITER	-40.000	-21.000	55.000	.000	SREF 2690.0000 SC.FT.
(F02008)	CA-20 LARC UPVT 1057 - 140M/B ORBITER	15.000	10.000	55.000	.000	LREF 476.8117 IN.
						BREF 936.6816 IN.
						XMRP 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150

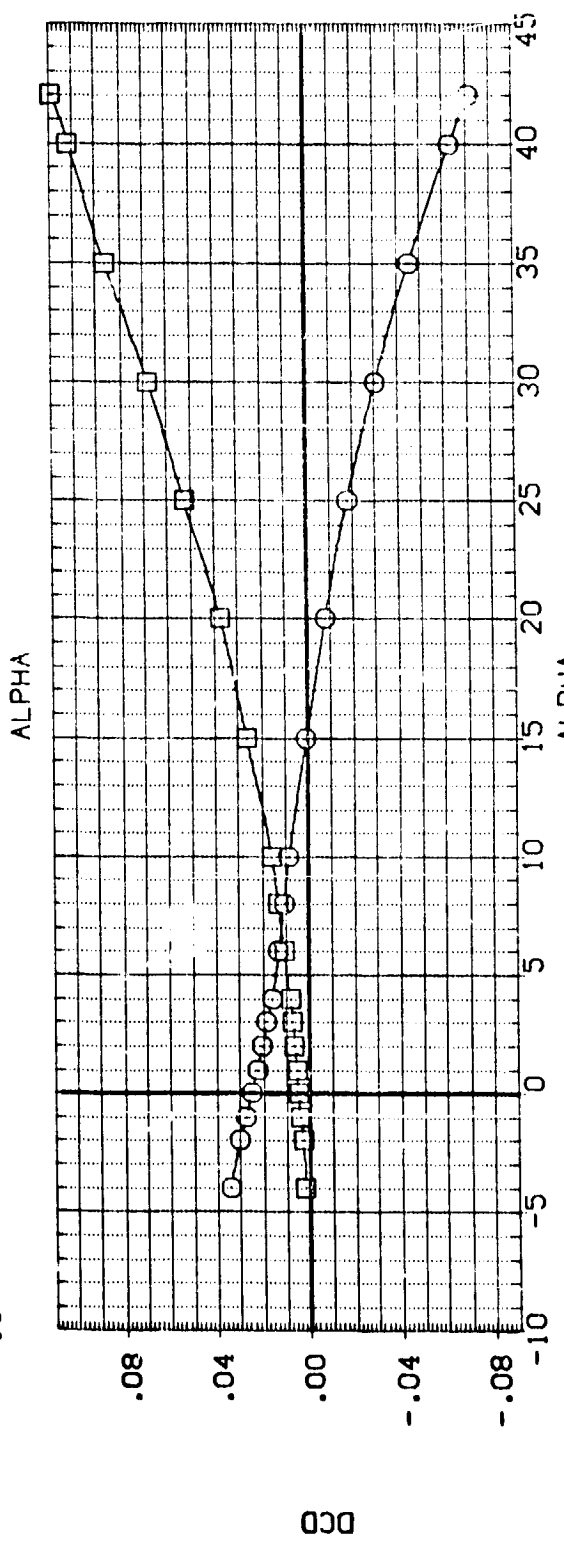
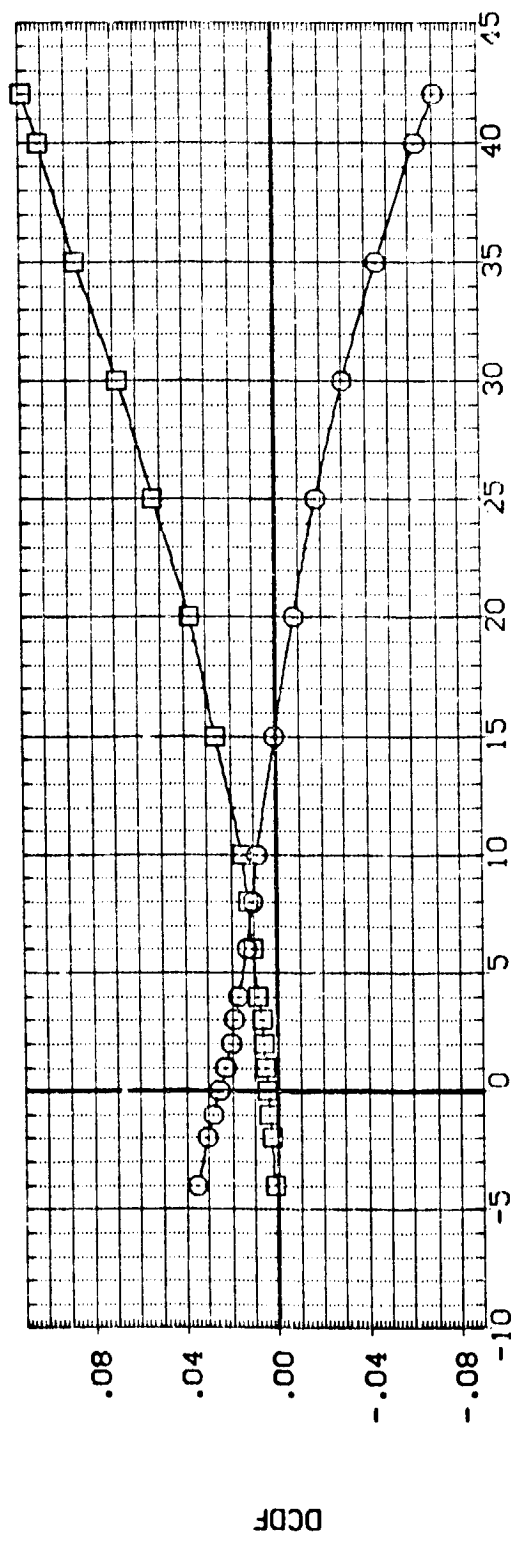


FIG 6 INCREMENTAL EFFECTS OF DEFLECTED ELEVONS

(B)MACH = 3.90

DATA SET SYMBOL (F22007) □ CONFIGURATION DESCRIPTION DA-20 LARC UPVT 1057 - 14DA/B ORBITTER (F22008) □ DA-20 LARC UPVT 1057 - 14DA/B ORBITTER

DELVTR -40.000 BOFLAP -21.000 SPOBRK 55.000 ALLRON .000 REFERENCE INFORMATION SO.FT. 2690.0000 IN. 476.8117 IN. 936.6816 IN. 1076.4800 IN. YMRP .0000 IN. ZMRP 375.0000 IN. SCALE .0150

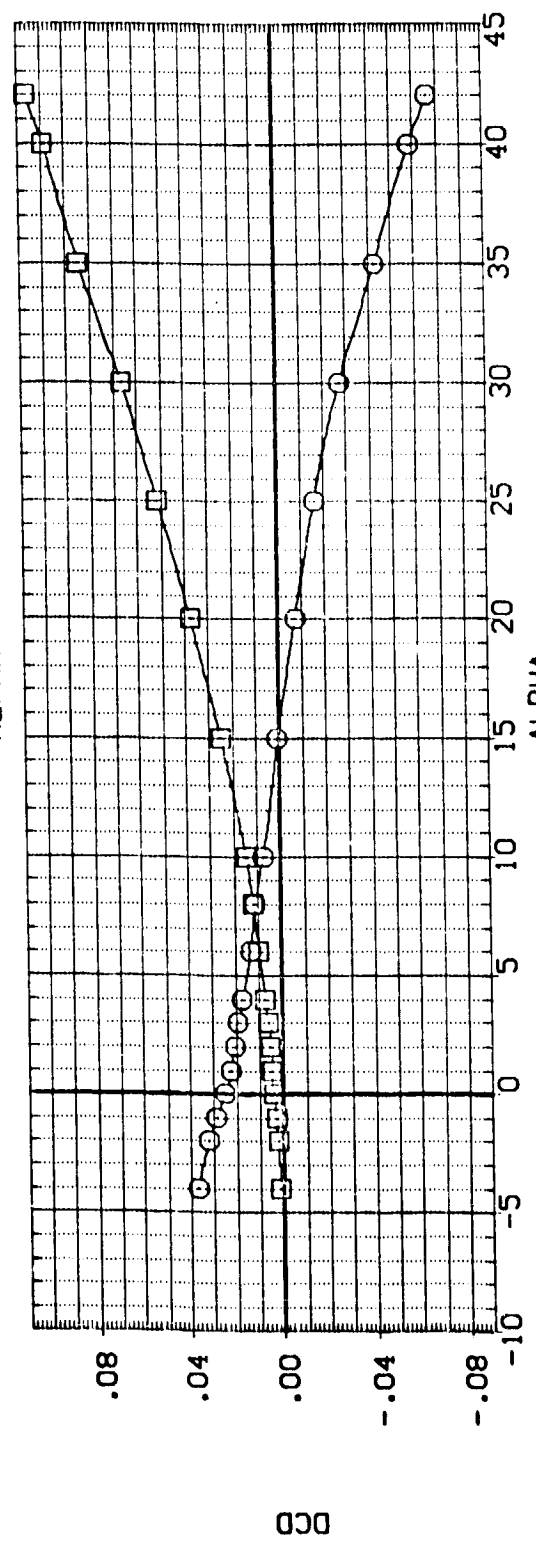
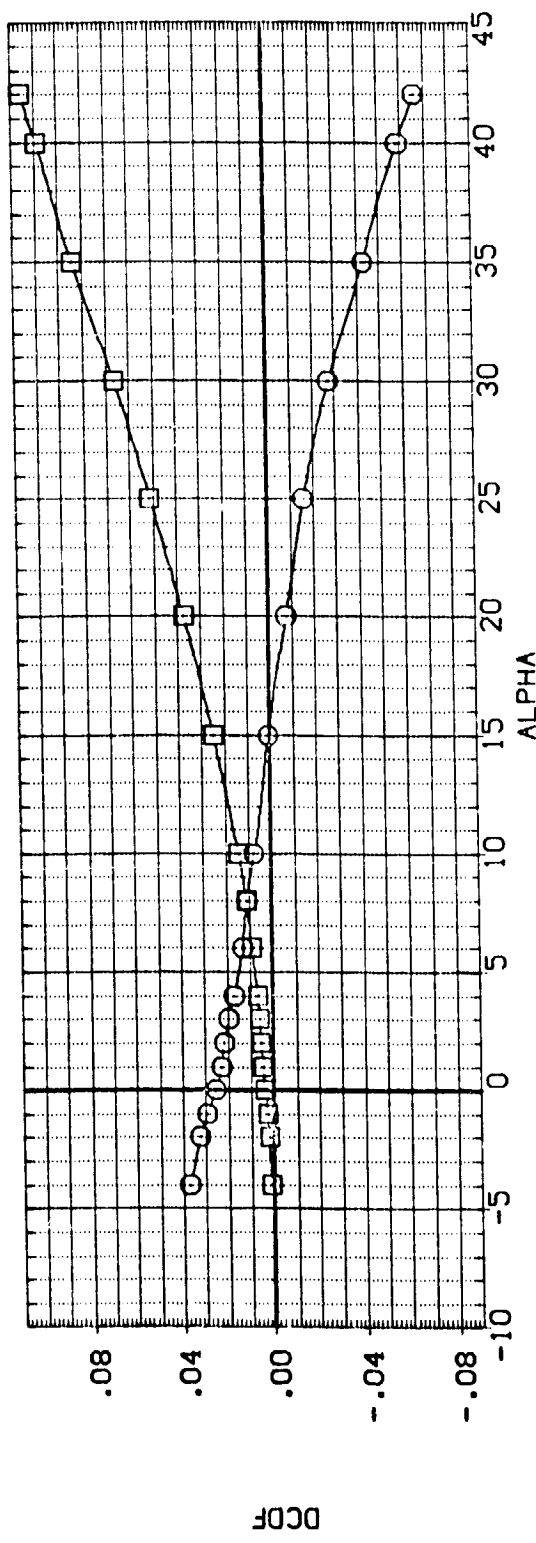


FIG 6 INCREMENTAL EFFECTS OF DEFLECTED ELEVONS

(C)MACH = 4.60



DATA SET SYMBOL □ CONFIGURATION DESCRIPTION
 (F02007) DA-20 LARC UPVT 1057 - 140MVB ORBITER
 (F02008) DATA NOT AVAILABLE

DEL VTR BOFLAP SPOBRK AILRON REFERENCE INFORMATION
 -40.000 -21.000 55.000 .000 SREF 2690.0000 SQ.FT.
 15.000 10.000 55.000 .000 LREF 476.8117 IN.
 BRREF 936.6816 IN.
 XMRP 1076.4800 IN.
 YMRP .0000 IN.
 ZMRP 375.0000 IN.
 SCALE .0150 SCALE

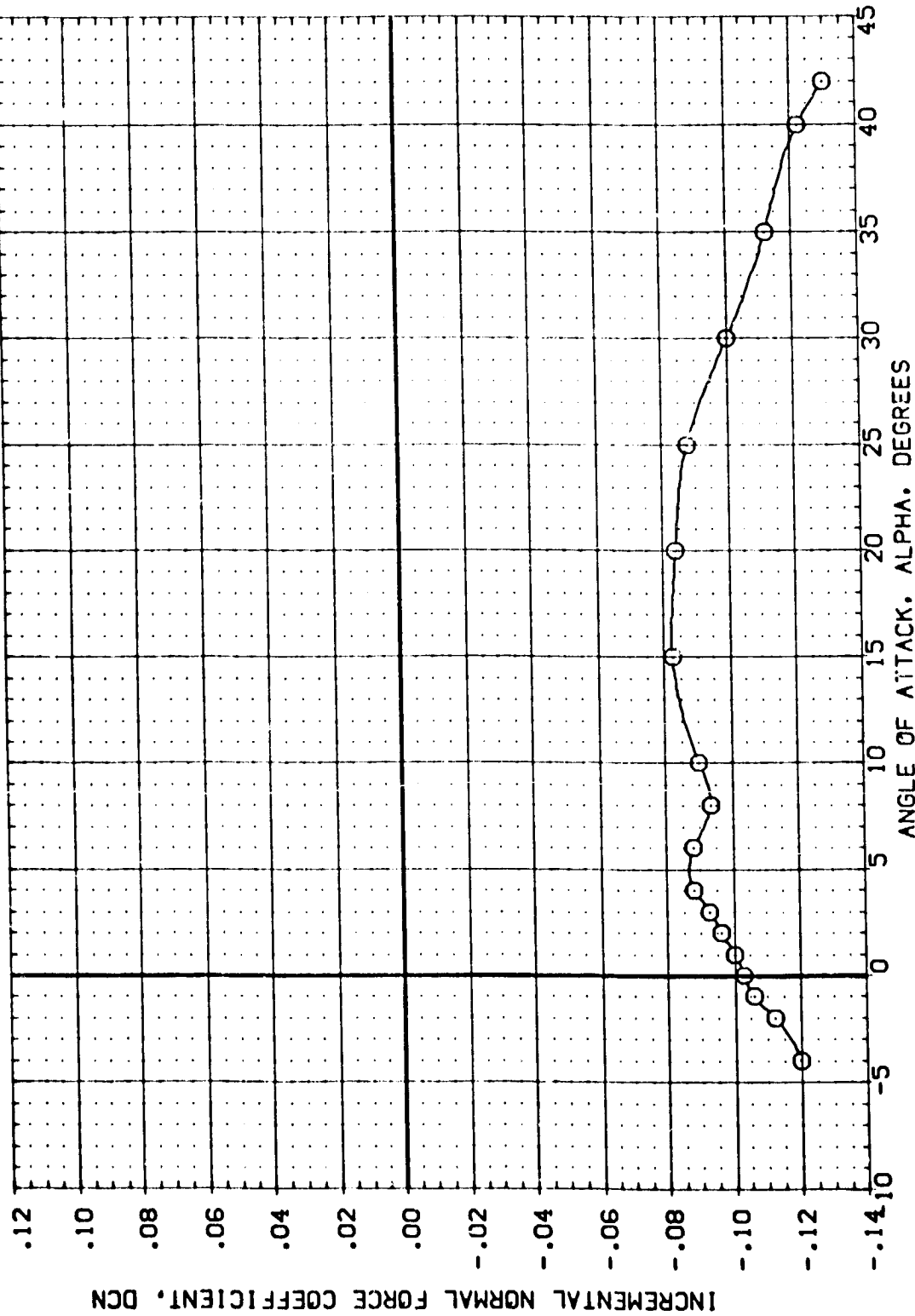


FIG 6 INCREMENTAL EFFECTS OF DEFLECTED ELEVONS

(M)MACH = 2.50

DATA SET SYMBOL (F02007) □ CONFIGURATION DESCRIPTION DA-20 LARC UPVT 1057 - 140A/B ORBITTER
 (F02008) □ DA-20 LARC UPVT 1057 - 140A/B ORBITTER

DELVTR	BOFLAP	SPOBRK	AILRON	SREF	REFERENCE INFORMATION
-40.000	-21.000	55.000	.000	2690.0000	50.FT.
15.000	10.000	55.000	.000	476.8117	IN.
				936.8816	IN.
				1076.4800	IN.
				.0000	IN.
				375.0000	IN.
				.0150	SCALE

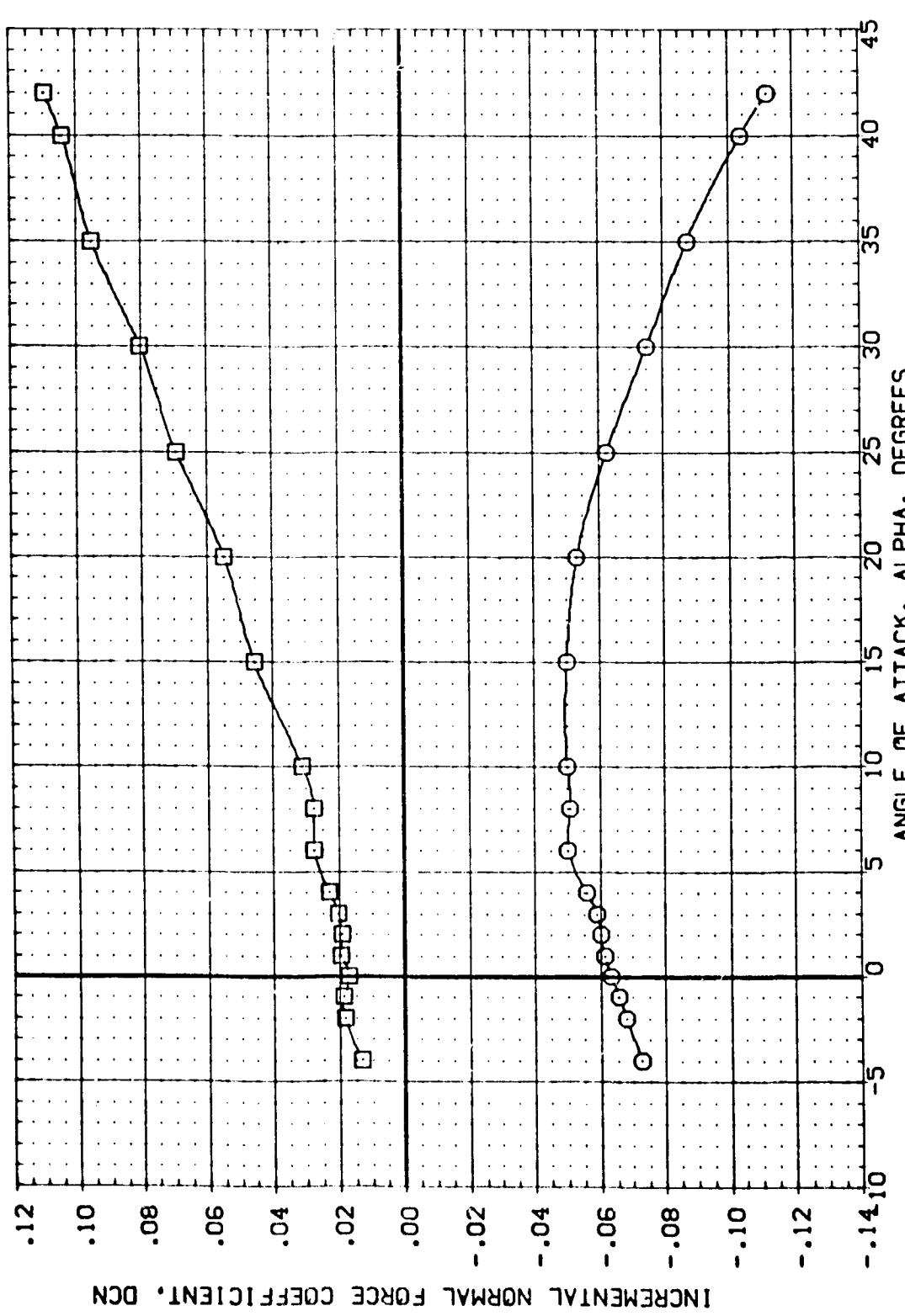


FIG 6 INCREMENTAL EFFECTS OF DEFLECTED ELEVONS

(B)MACH = 3.90



DATA SET SYMBOL (F02007) □ CONFIGURATION DESCRIPTION CA-20 LARC UPVT 1057 - 140A/B ORBITER
(F02008) □ CA-20 LARC UPVT 1057 - 140A/B ORBITER

DELVTR -40.000 15.000 BDFLAP -21.000 10.000 SPOSBRK 55.000 53.000 AILRON .000 .000

REFERENCE INFORMATION SREF 2690.0000 SO.FT. 2690.0000
LREF 476.8117 IN. 476.8117
BREF 936.6816 IN. 936.6816
XMRP 1076.4800 IN. 1076.4800
YMRP .0000 IN. .0000
ZMRP 375.0000 IN. 375.0000
SCALE .0150 IN. .0150

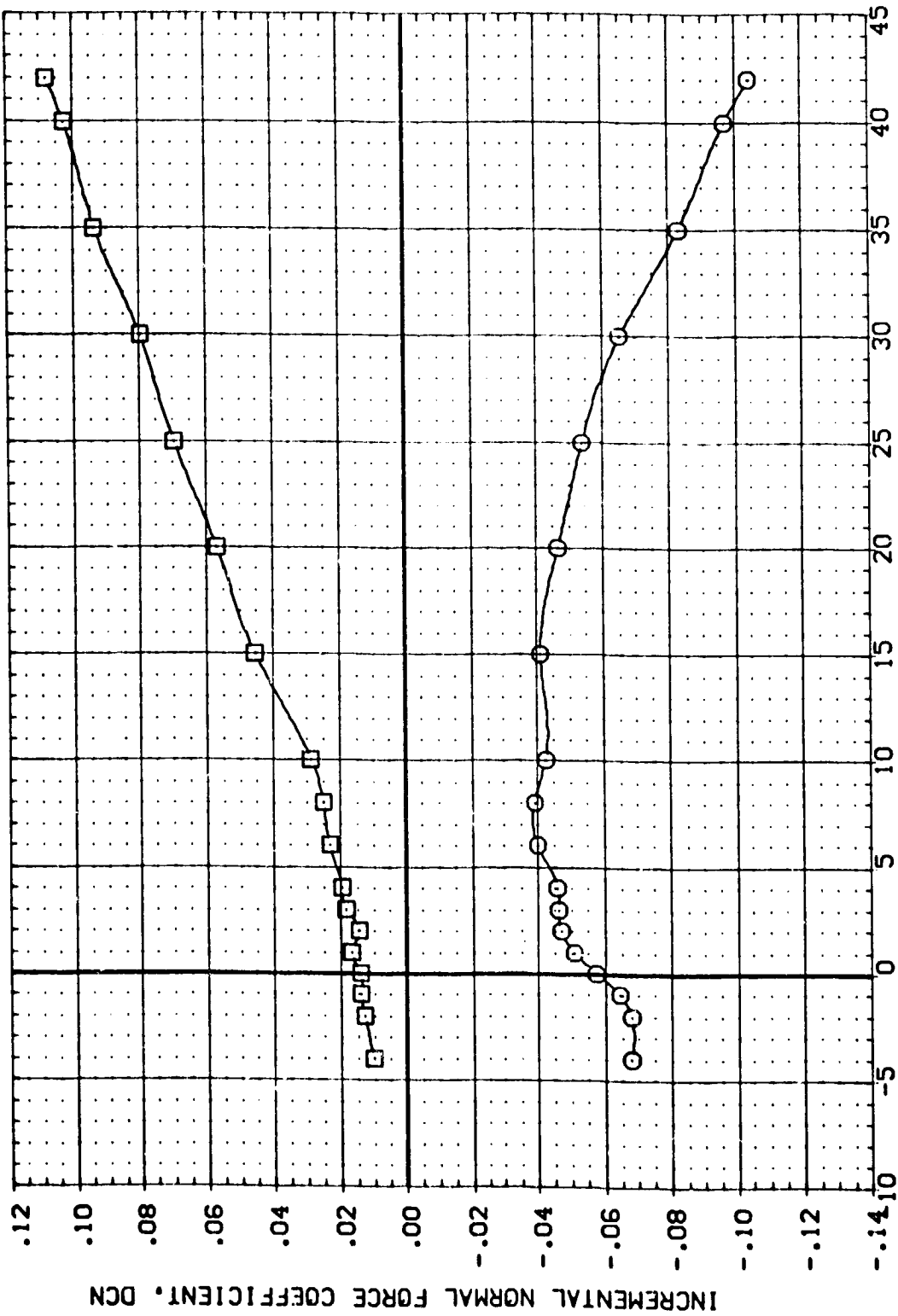


FIG 6 INCREMENTAL EFFECTS OF DEFLECTED ELEVONS

(C)MACH = 4.60

DATA SET SYMBOL (F322027) (F322028) □

CONFIGURATION DESCRIPTION 8A-20 LARC UPVT 1057 - 140A/B ORBITER
DATA NOT AVAILABLE

DELVTR -40.000
BOFLAP -21.000
SPOBRK 55.000
ALLRON .000

SREF 2690.0000
LREF 476.8117
BREF 936.6816
XMRP 1076.4800
YMRP .0000
ZMRP 375.0000
SCALE .0150

REFERENCE INFORMATION SQ.FT. IN. IN. IN. IN. IN. SCALE

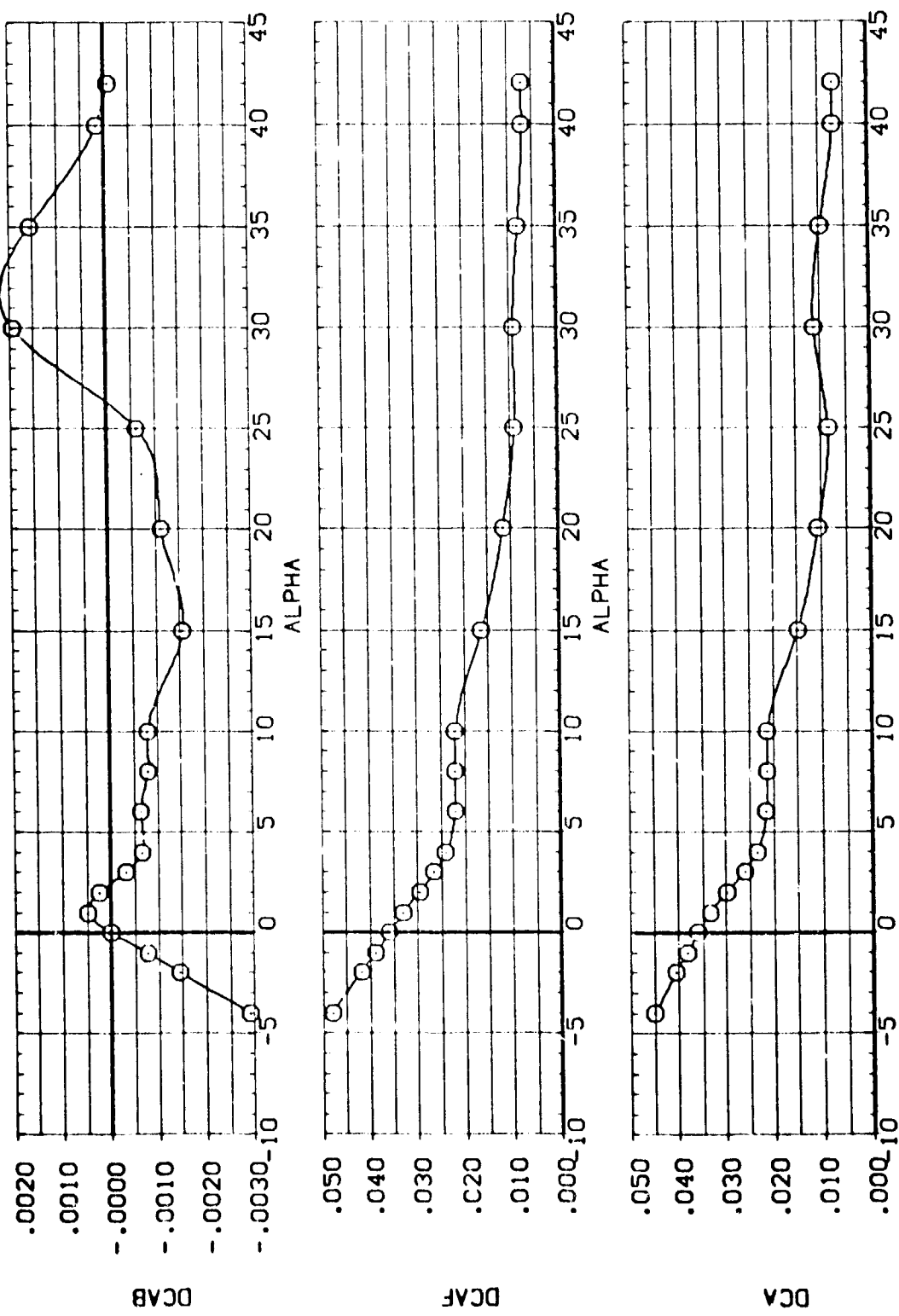


FIG 6 INCREMENTAL EFFECTS OF DEFLECTED ELEVONS

(A)MACH = 2.50



DATA SET SYMBOL (F02007) □
 (F02008) □
 CONFIGURATION DESCRIPTION
 CA-20 LARC UPVT 1057 - 140A/B DRBITER
 CA-20 LARC UPVT 1057 - 140A/B DRBITER
 DELVTR 80FLAP SPOBRK AILRON
 -40.000 -21.000 55.000
 15.000 10.000 55.000
 REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 476.8117 IN.
 BREF 936.6816 IN.
 XPRP 1076.4800 IN.
 YPRP 375.0000 IN.
 ZPRP 375.0000 IN.
 SCALE .0150

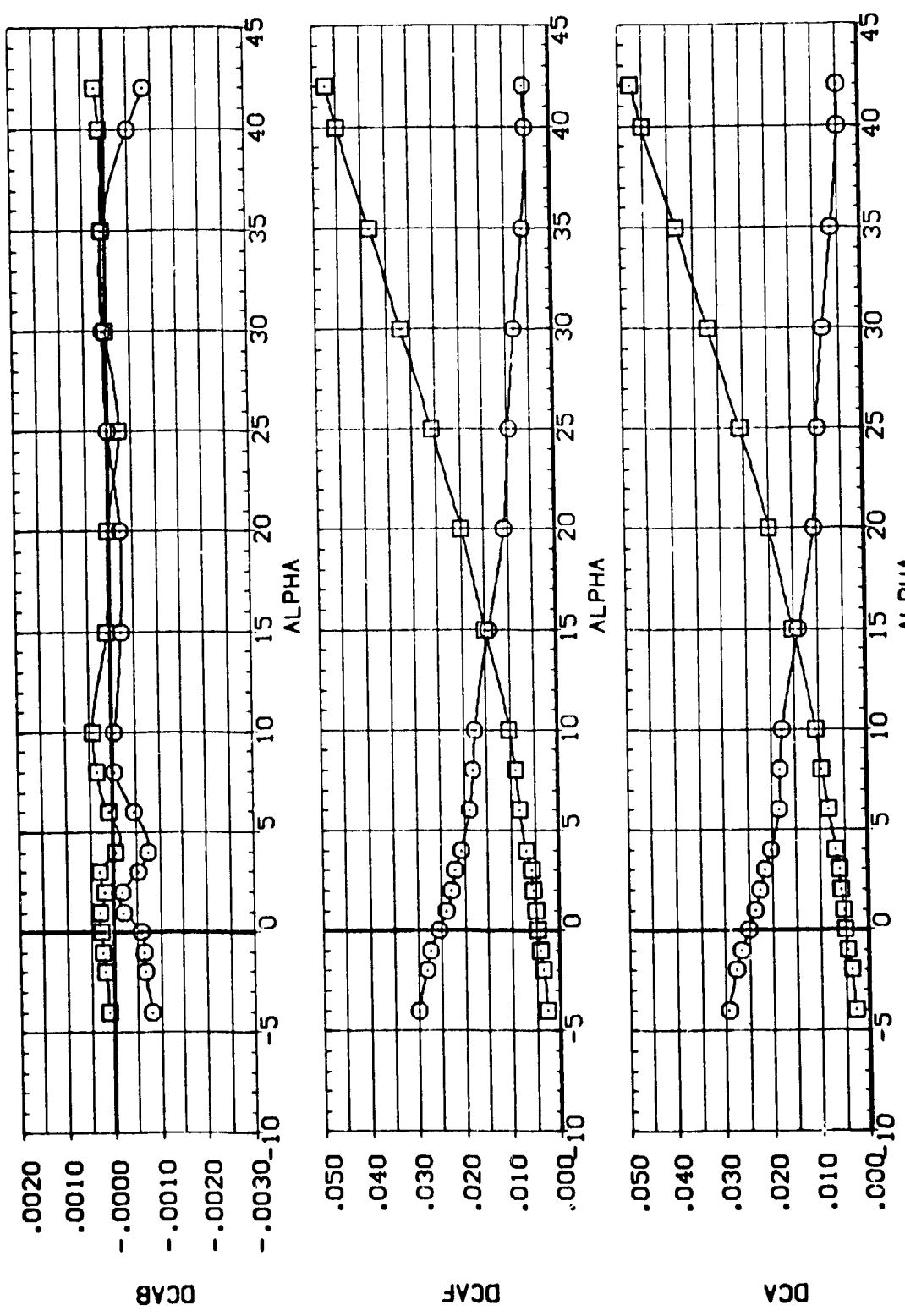


FIG 6 INCREMENTAL EFFECTS OF DEFLECTED ELEVONS
 (B)MACH = 3.90

DATA SET SYMBOL: (FG2007) (FG2008)
 CONFIGURATION DESCRIPTION: OA-20 LARC UPVT 1057 - 140A/B ORB|TER
 REFERENCE INFORMATION: SREF 2690.0000 SO.FT. 476.8117 IN. 936.6816 IN. 1076.4800 IN. 375.0000 IN.
 DELVTR: -40.000 15.000 BOFLAP: -21.000 10.000 SPOBRK: 55.000 55.000 AIRION: .000 .000
 SCALE: .0150

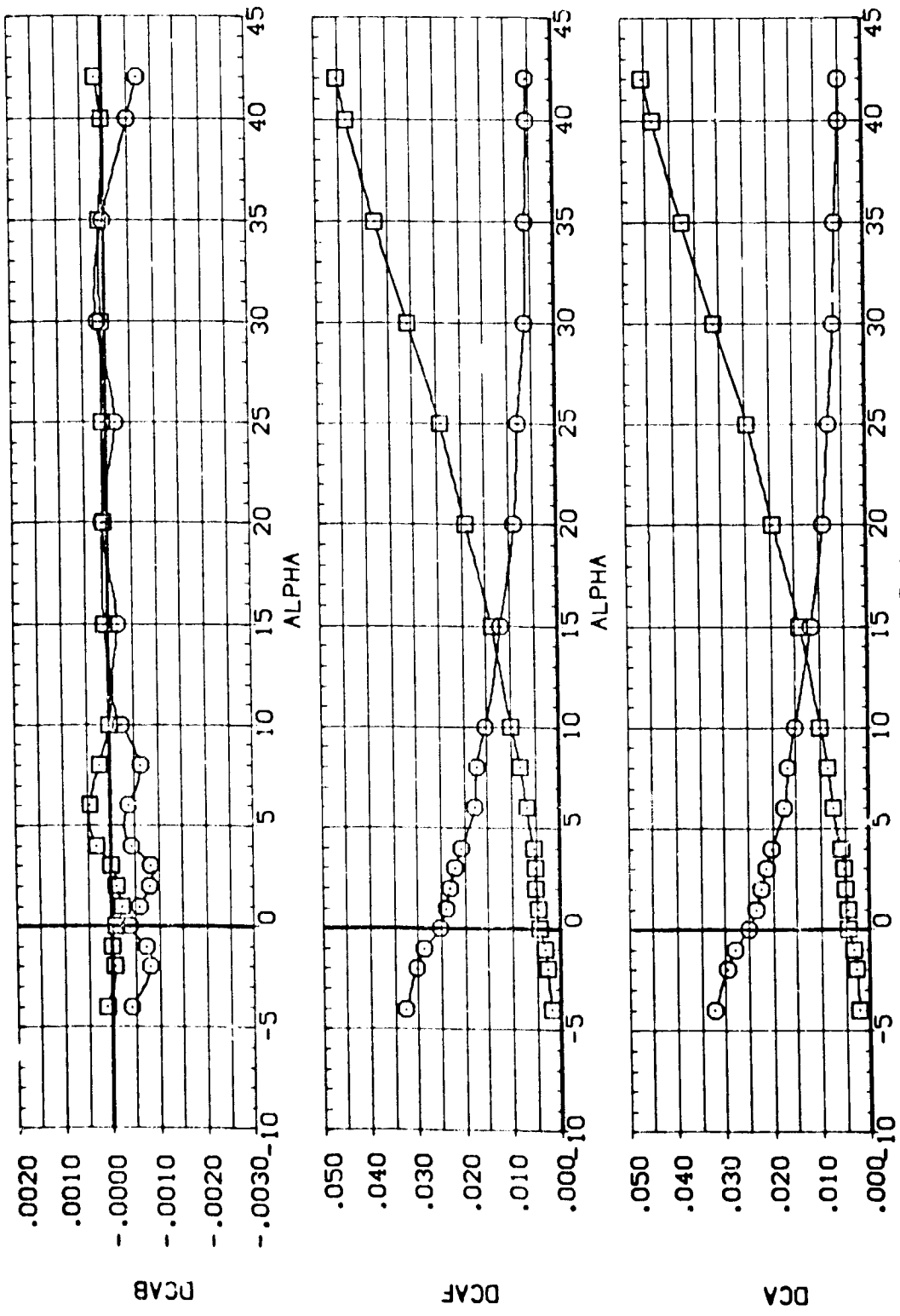


FIG 6 INCREMENTAL EFFECTS OF DEFLECTED ELEVONS

(C)MACH = 4.60



DATA SET SYMBOL: (F02007) (F02008) □
CONFIGURATION DESCRIPTION: OA-20 LARC UNVT 1057 - 140A/B ORBITER
DATA NOT AVAILABLE

DELVTR	BDFLAP	SPOBRK	AILTRN	SREF	LREF	BREF	XPRP	YPRP	ZPRP	SCALE	REFERENCE INFORMATION
-40.000	-21.000	55.000	.000	2690.0000	476.8117	926.6816	1076.4800	.0000	.0000	.0150	SO. FT. IN. IN. IN. IN. IN.

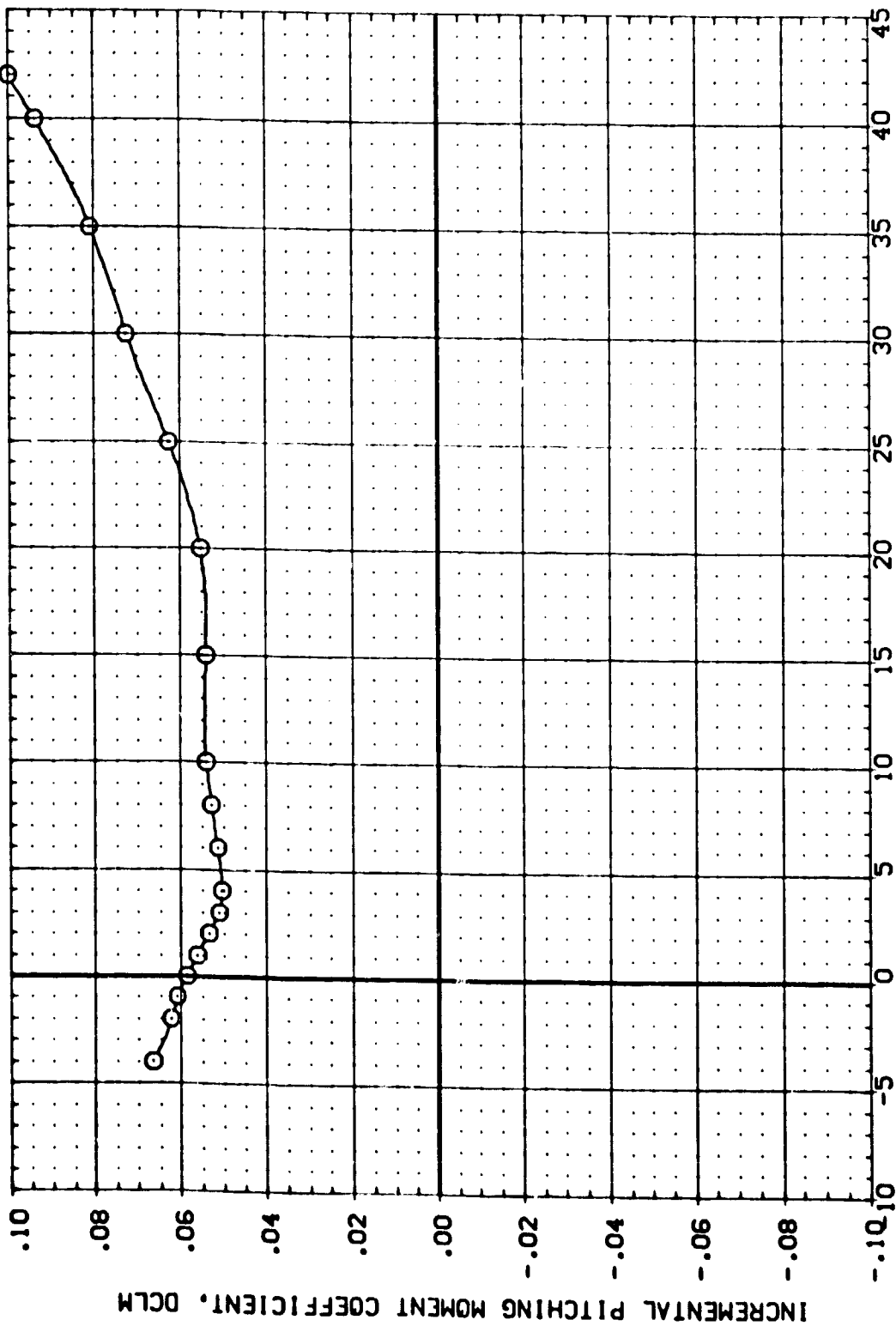


FIG 6 INCREMENTAL EFFECTS OF DEFLECTED ELEVONS

(A)MACH = 2.50

DATA SET SYMBOL: **B**
 (F02007)
 (F02008)

CONFIGURATION DESCRIPTION:
 DA-20 LARC UPVT 1057 - 140A/B ORBITER
 DA-20 LARC UPVT 1057 - 140A/B ORBITER

DELVTR: -40.000
 15.000

BOFLAP: -21.000
 10.000

SPOBRK: 55.000
 55.000

AILRON: .000
 .000

REFERENCE INFORMATION:
 SREF: 2690.0000 SQ. FT.
 LREF: 476.8117 IN.
 BREF: 936.6816 IN.
 XMRP: 1076.4800 IN.
 YMRP: .0000 IN.
 ZMRP: 375.0000 IN.
 SCALE: .0150

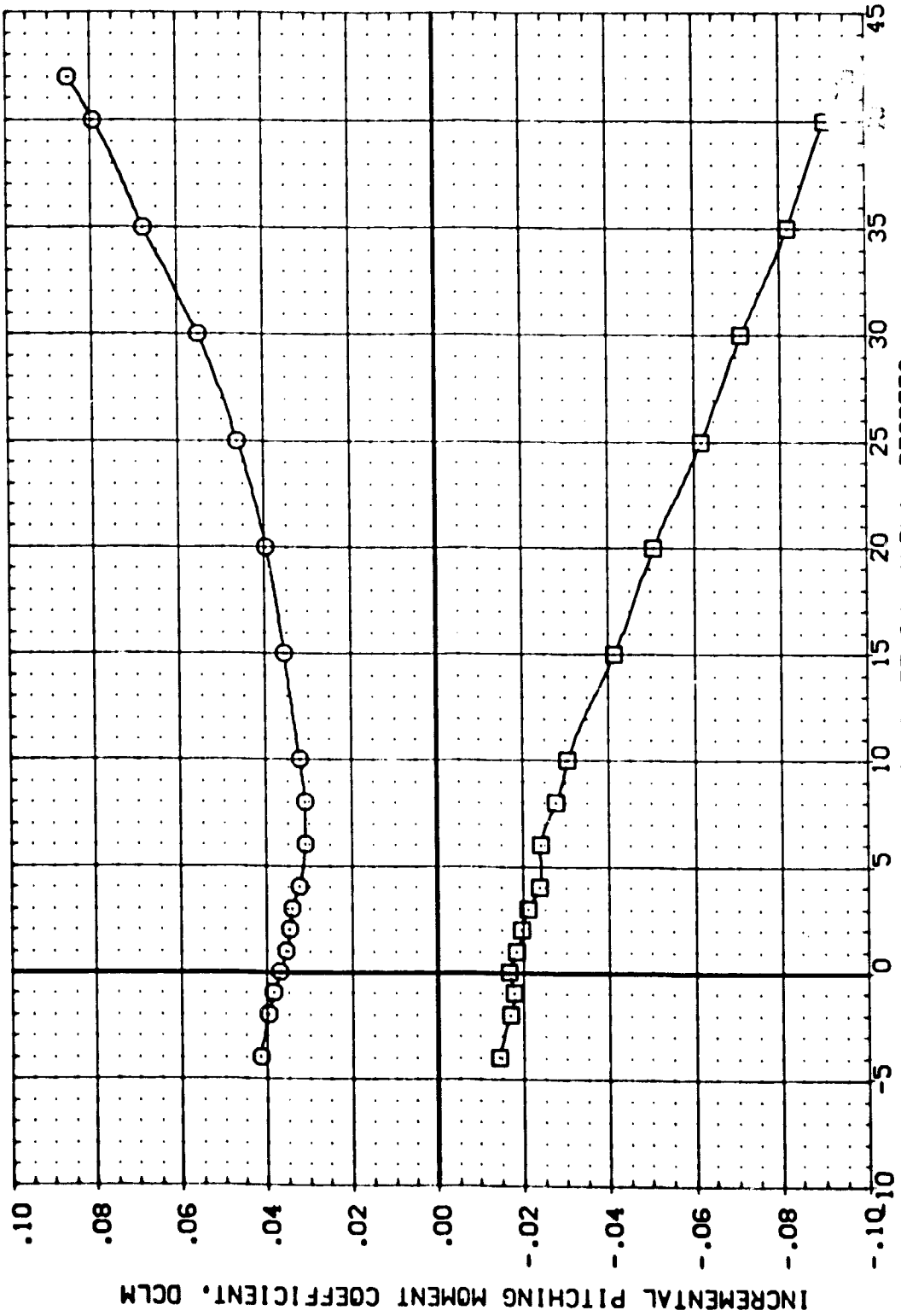


FIG 6 INCREMENTAL EFFECTS OF DEFLECTED ELEVONS

(B)MACH = 3.90



DATA SET SYMBOL: (F02007) (F02008)
 CONFIGURATION DESCRIPTION: CA-20 LARC UPVT 1057 - 140A/B DR81TER, CA-20 LARC UPVT 1057 - 140A/B DR81TER
 DELVTR: -40.000, 15.000
 BOFLAP: -21.000, 10.000
 SPOBRK: 55.000, 55.000
 AILTRN: .000, .000
 REFERENCE INFORMATION:
 SREF: 2690.0000 SQ. FT.
 LAREF: 476.8117 IN.
 BREF: 936.6816 IN.
 XMRP: 1076.4800 IN.
 YMRP: .0000 IN.
 ZMRP: 375.0000 IN.
 SCALE: .0150 SCALE

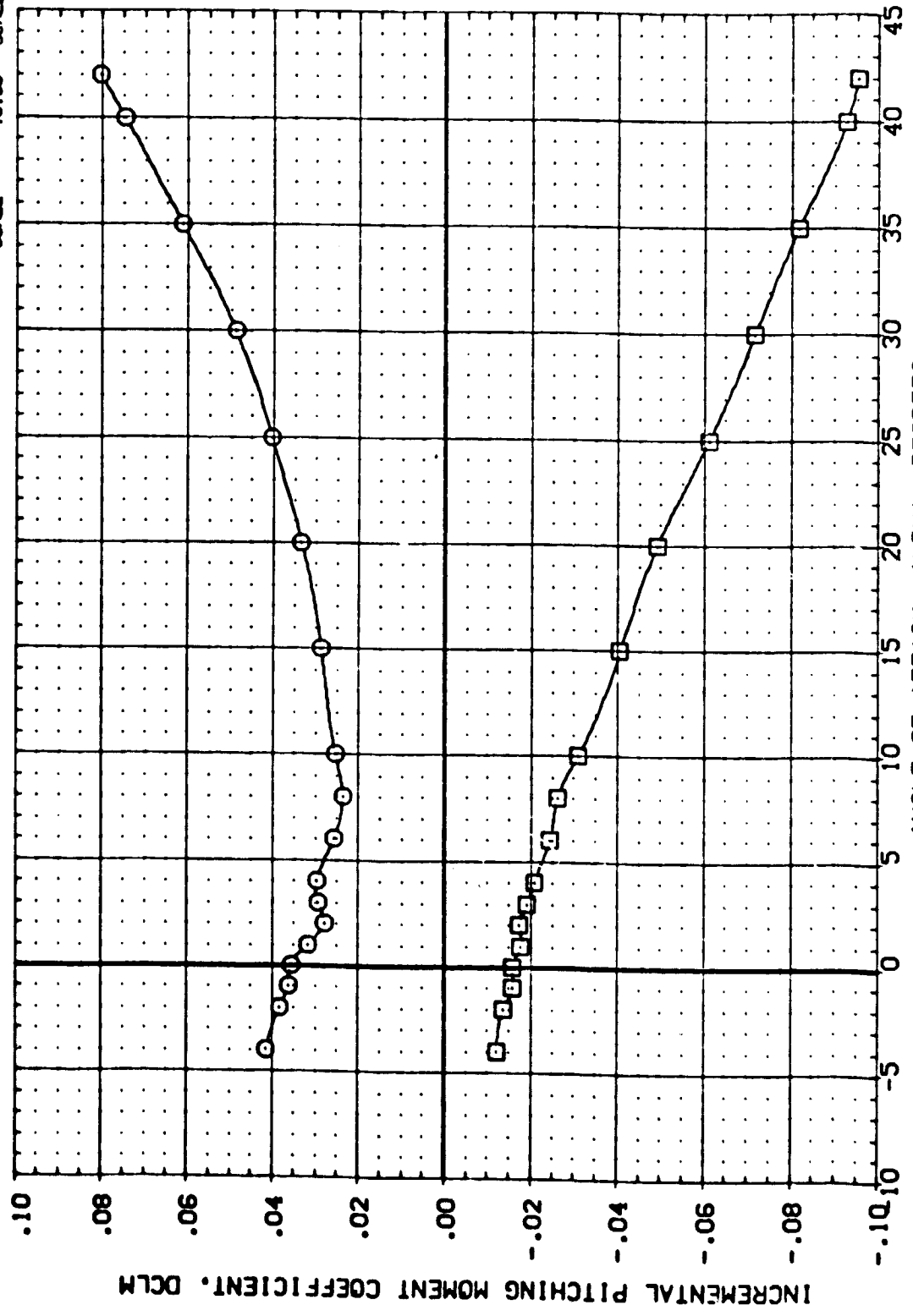


FIG 6 INCREMENTAL EFFECTS OF DEFLECTED ELEVONS

(C)MACH = 4.60

DATA SET SYMBOL (002029) ○ OA-20 LARC UPT 1057 - 140A/B ORBITER

DEDFLP 31.000
ELEVTR .000
SFOBRK 55.000
AILRON .000

REFERENCE INFORMATION
SREF 2690.0000 SO.FT.
LREF 476.8117 IN.
BREF 936.6916 IN.
XPRP 1076.4800 IN.
YPRP .0000 IN.
ZPRP 375.0000 IN.
SCALE .0150 SCALE

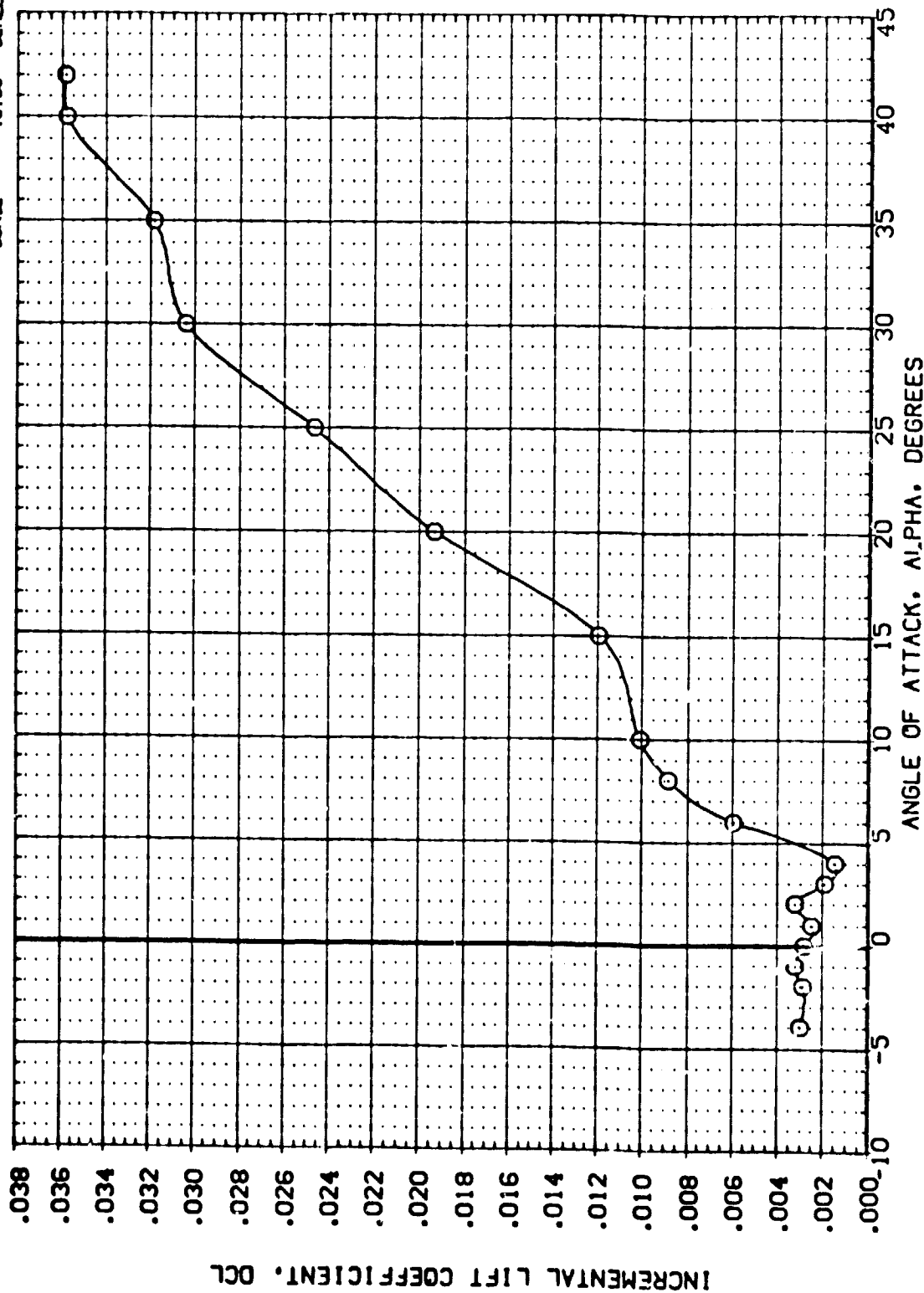


FIG 7 INCREMENTAL EFFECTS OF DEFLECTED BODYFLAP

(A)MACH = 3.90



DATA SET SYMBOL (002009) ○ CONFIGURATION DESCRIPTION 0A-20 LARC UPVT 1057 - 14CAVB DRBITER
 DBDFLP 31.000 ELEVTR .000 SPOBRK 55.000 AILRON .000
 REFERENCE INFORMATION SREF 2690.0000 SQ.FT. LREF 476.8117 IN. BREF 936.6816 IN. XMRP 1076.4800 IN. YMRP .0000 IN. ZMRP 375.0000 IN. SCALE .0150

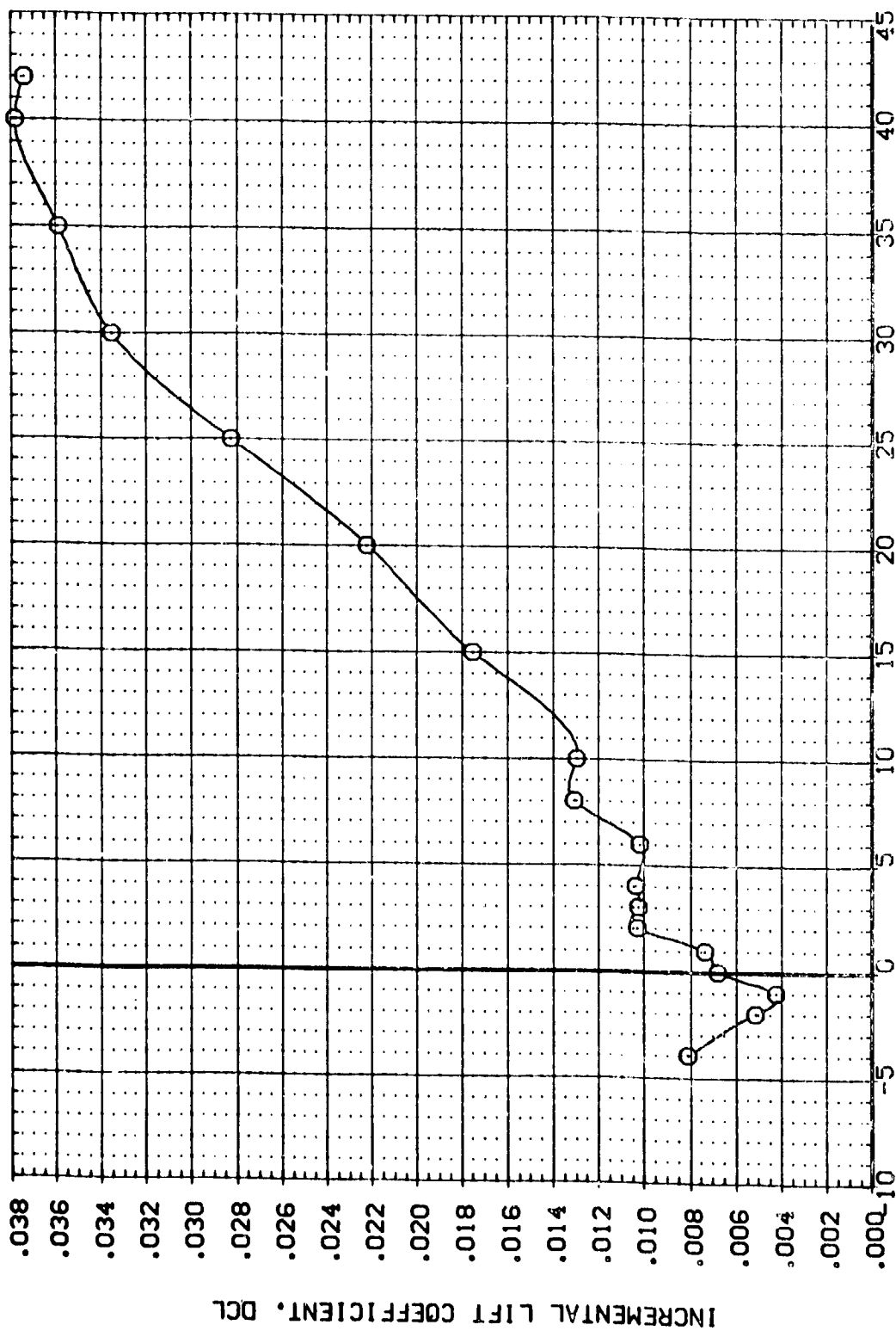


FIG 7 INCREMENTAL EFFECTS OF DEFLECTED BODYFLAP

DATA SET SYMBOL (002009) ○ CONFIGURATION DESCRIPTION CA-20 LARC UPVT 1057 - 140A/B ORBITER

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 476.8117 IN.
 BREF 936.6816 IN.
 XMRP 1076.4800 IN.
 YMRP .0000 IN.
 ZMRP 375.0000 IN.
 SCALE .0150

DBGFLP 31.000
 ELEVTB .000
 SPOBRK 55.000
 AILRON .000

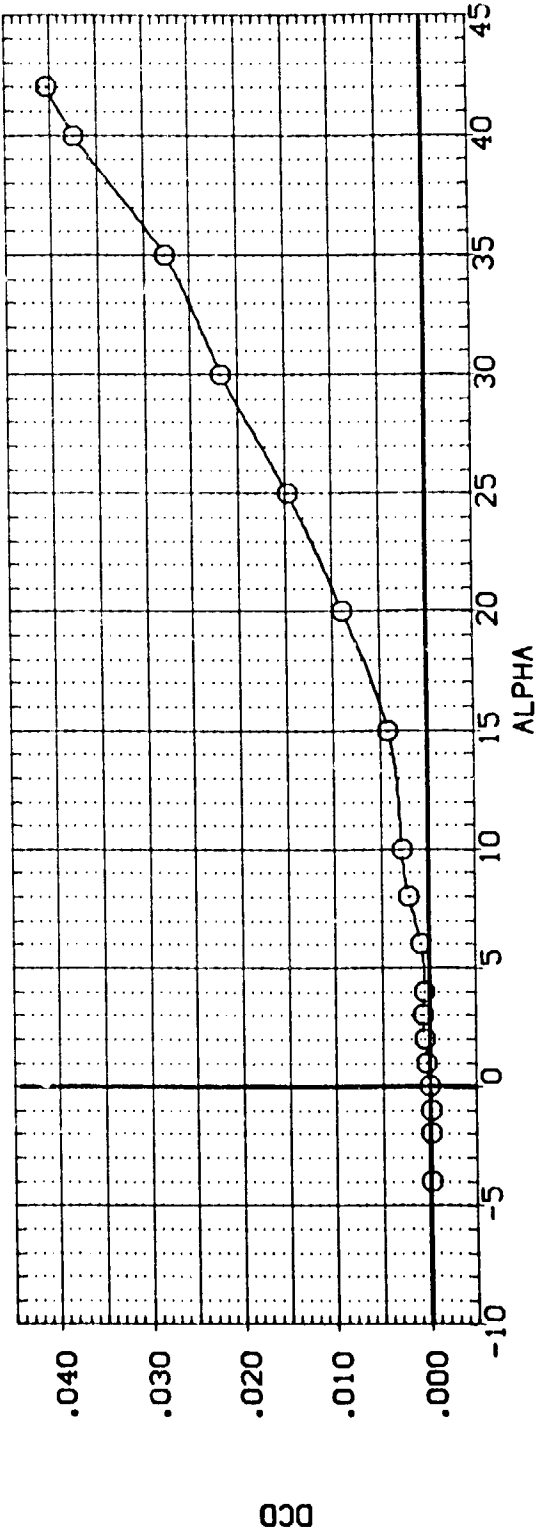
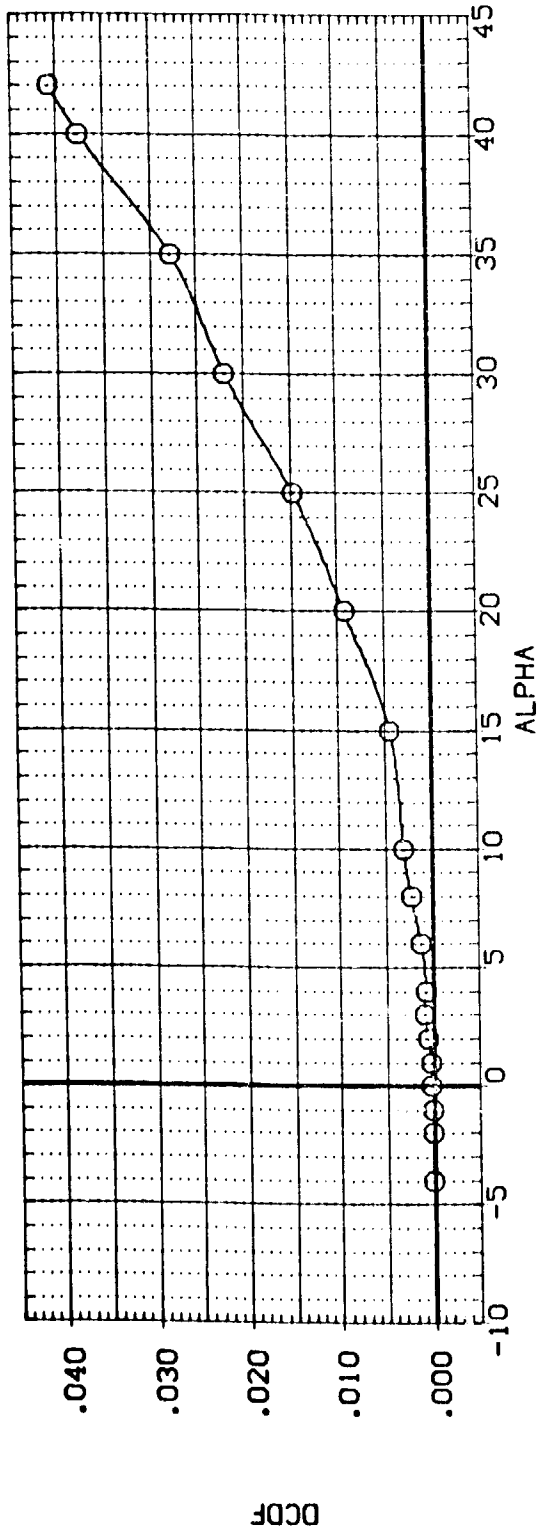


FIG 7 INCREMENTAL EFFECTS OF DEFLECTED BODYFLAP

(A)MACH = 3.90



DATA SET SYMBOL (002009) ○
CONFIGURATION DESCRIPTION DA-20 LARC UPVT 1057 - 140A/B DRBITER

DEDFLP 31.000
ELEVTR .000
SPOBRK 55.000
AILRON .000

REFERENCE INFORMATION
SREF 2690.0000 SQ.FT.
LREF 476.8117 IN.
BREF 936.6816 IN.
XMRP 1076.4800 IN.
YMRP .0000 IN.
ZMRP 375.0000 IN.
SCALE .0150

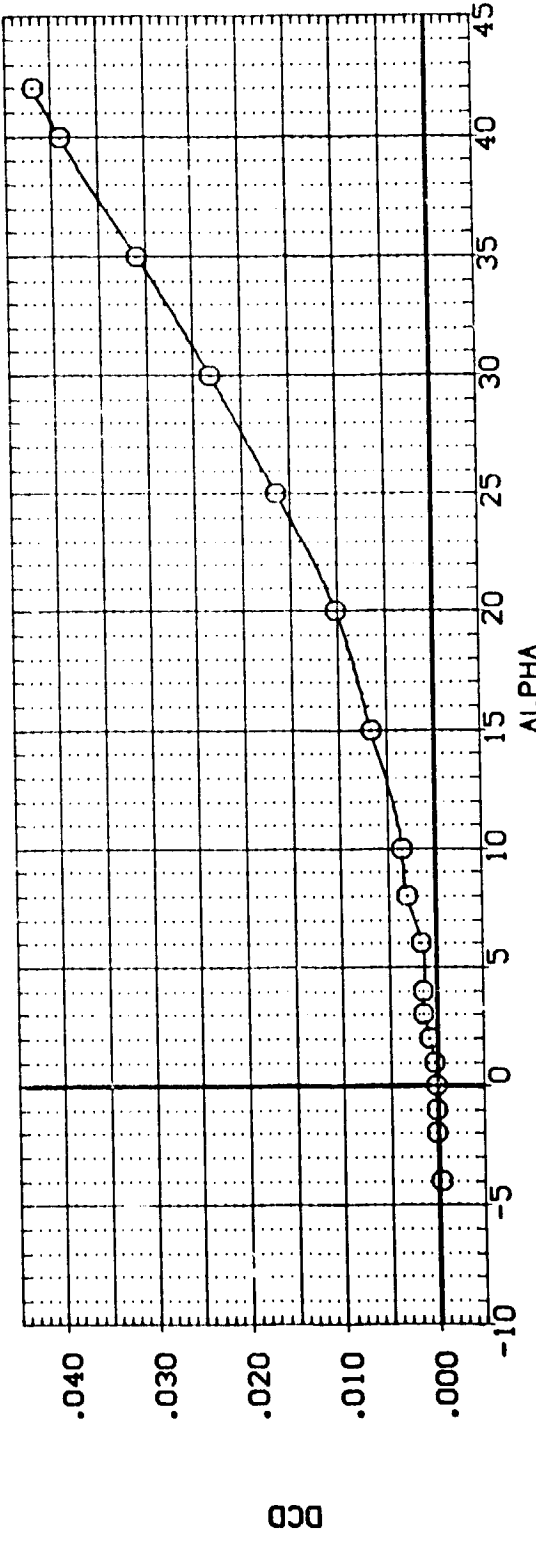
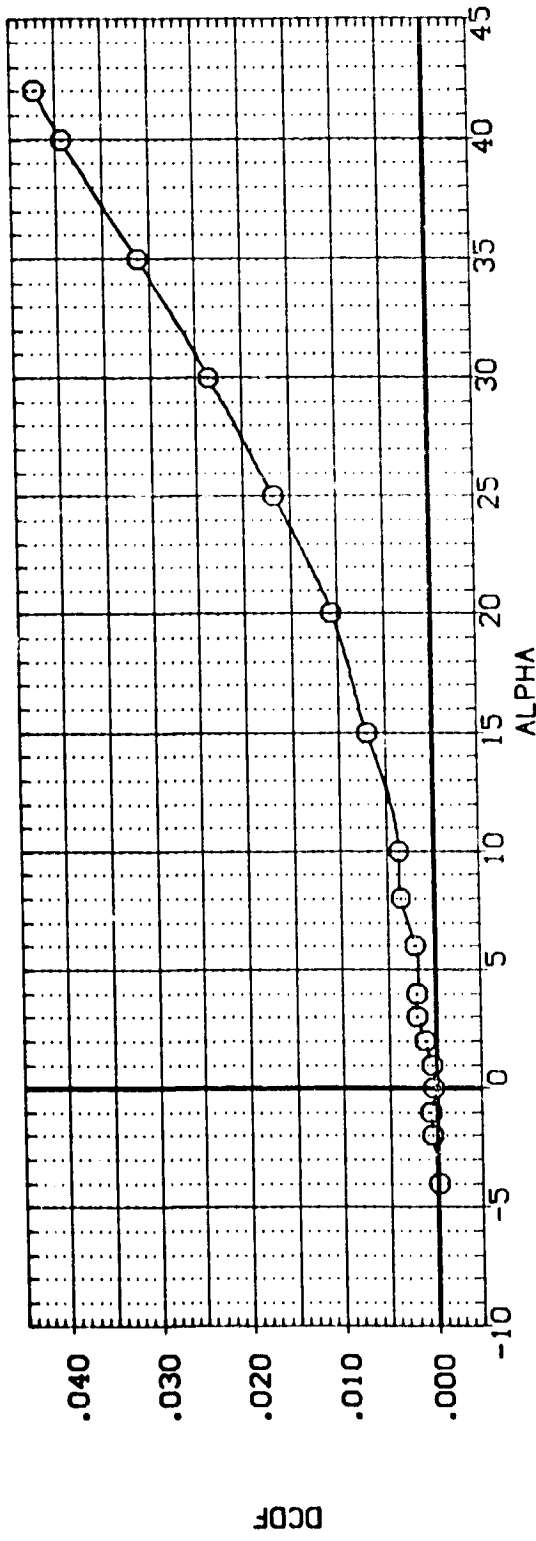


FIG 7 INCREMENTAL EFFECTS OF DEFLECTED BODYFLAP

DATA SET SYMBOL (002009) ○

CONFIGURATION DESCRIPTION OA-20 LARC UPVT 1057 - 14JAVB ORBITER

DBDFLP 31.000

ELEVTR .000

SPOBRK 55.000

AILRON .000

REFERENCE INFORMATION

SREF 2690.0000 SO. FT.

LREF 476.8117 IN.

BREF 936.6816 IN.

XMRP 1076.4800 IN.

YMRP .0000 IN.

ZMRP 375.0000 IN.

SCALE .0150 SCALE

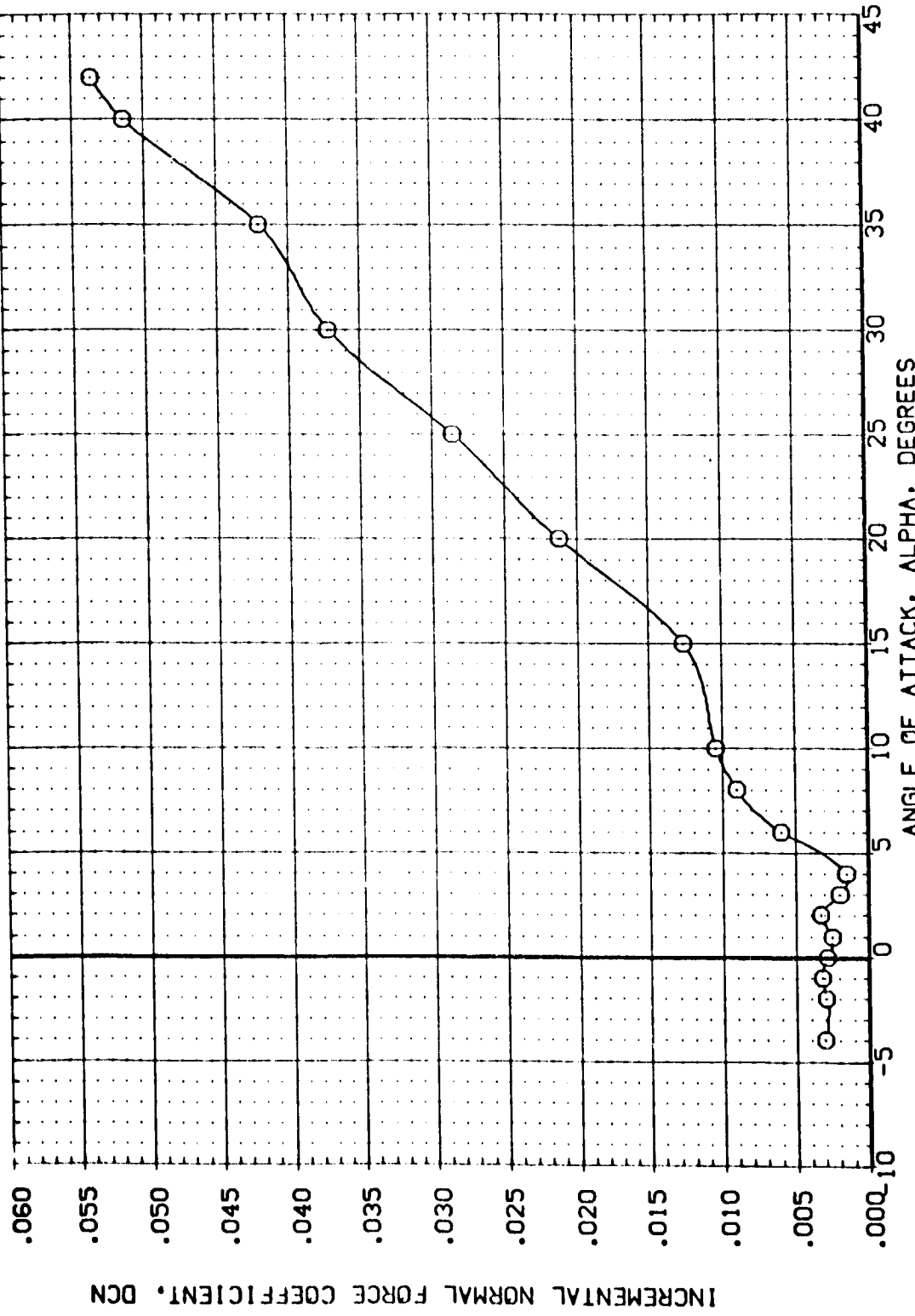


FIG 7 INCREMENTAL EFFECTS OF DEFLECTED BODYFLAP

(A)MACH = 3.90



DATA SET SYMBOL (002009) ○ CONFIGURATION DESCRIPTION DA-20 LARC UPVT 1057 - 140AV8 ORBITER

DEDFLP	ELEVTR	SFOBRK	AIIIRON	SREF	LREF	BREF	YMRP	ZMRP	SCALE
31.000	.000	55.000	.000	2690.0000	476.8117	936.6816	1076.4800	375.0000	.0150

REFERENCE INFORMATION SQ.FT. IN. IN. IN. IN. IN. IN. SCALE

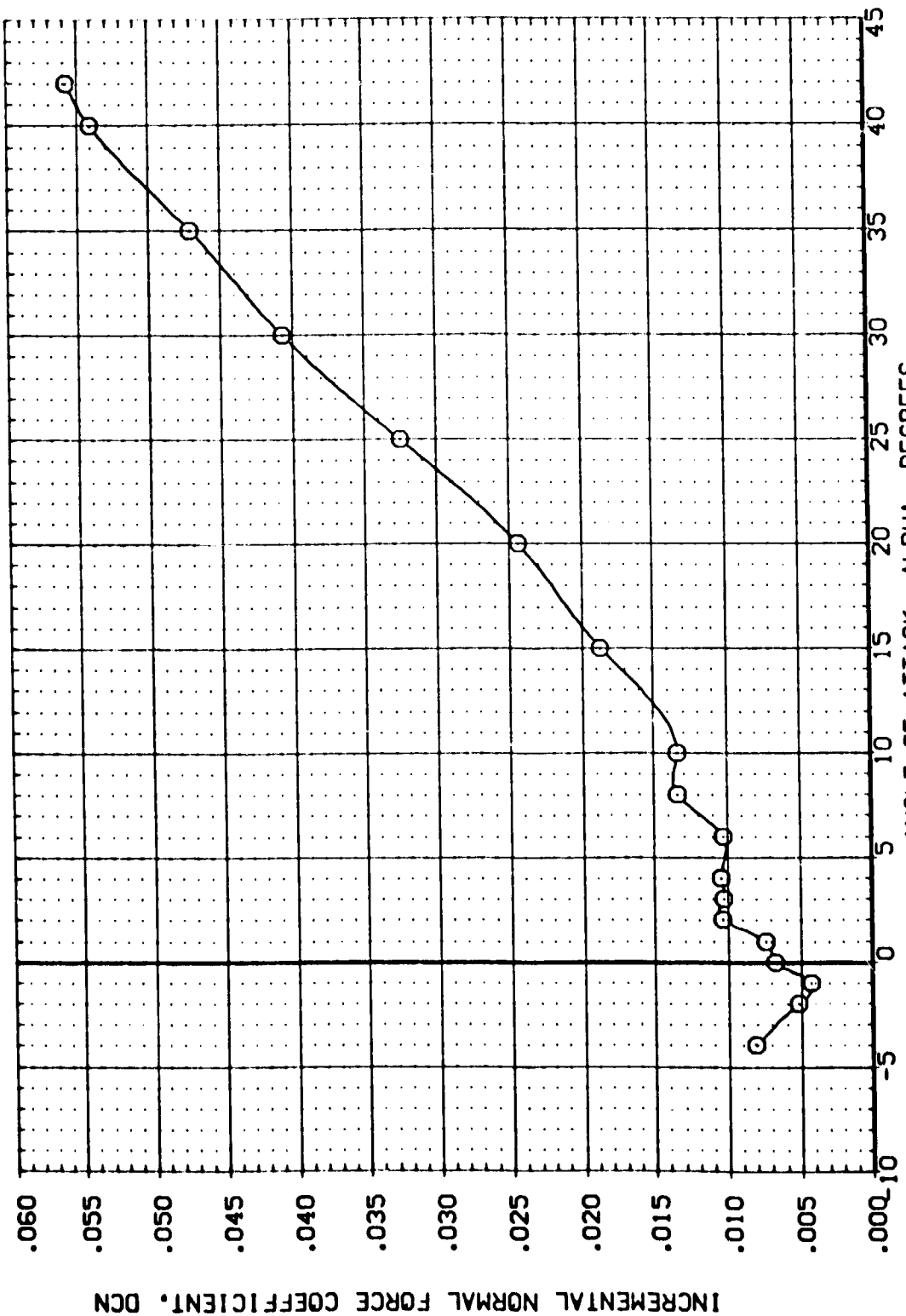


FIG 7 INCREMENTAL EFFECTS OF DEFLECTED BODYFLAP

(B)MACH = 4.60

DATA SET SYMBOL (002009) ○ CONFIGURATION DESCRIPTION OA-20 LARC UPVT 1057 - 140A/B ORBITER

08DFLP 31.000
 ELEVTR .000
 SPOBRK 55.000
 AILRON .000

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 476.8117 IN.
 BREF 936.6816 IN.
 XMRP 1076.4800 IN.
 YMRP .0000 IN.
 ZMRP 375.0000 IN.
 SCALE .0150 SCALE

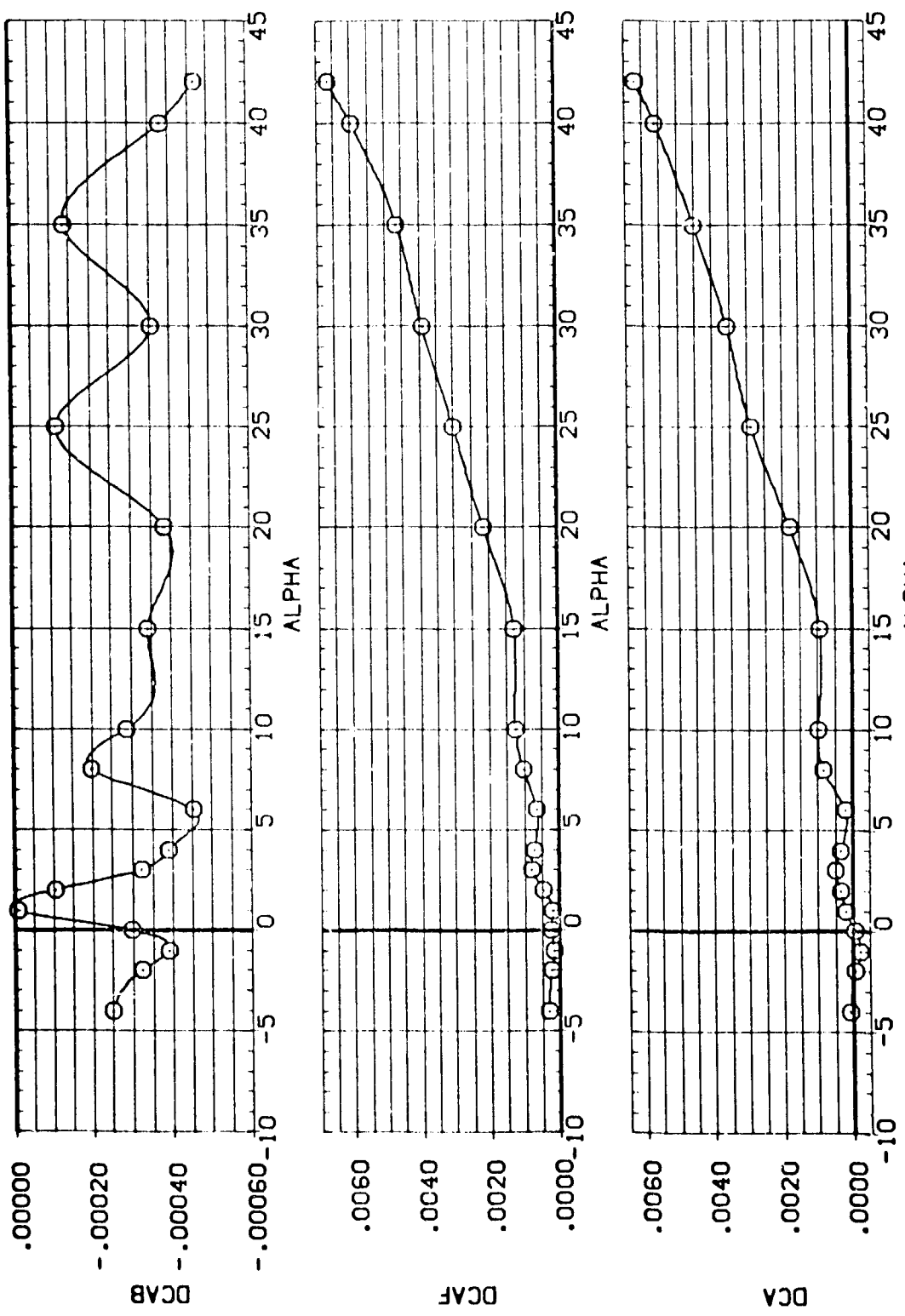


FIG 7 INCREMENTAL EFFECTS OF DEFLECTED BODYFLAP

(A)MACH = 3.90



DATA SET SYM00L CONFIGURATION DESCRIPTION
 (002009) O OA-20 LARC UPVT 1057 - 140A/B ORBITER

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 476.8117 IN.
 BREF 936.6816 IN.
 XMRP 1076.4800 IN.
 YMRP .0000 IN.
 ZMRP 375.0000 IN.
 SCALE .0150 SCALE

DBDFLP 31.000
 ELEVTR .000
 SPOBRK 55.000
 AIRLON .000

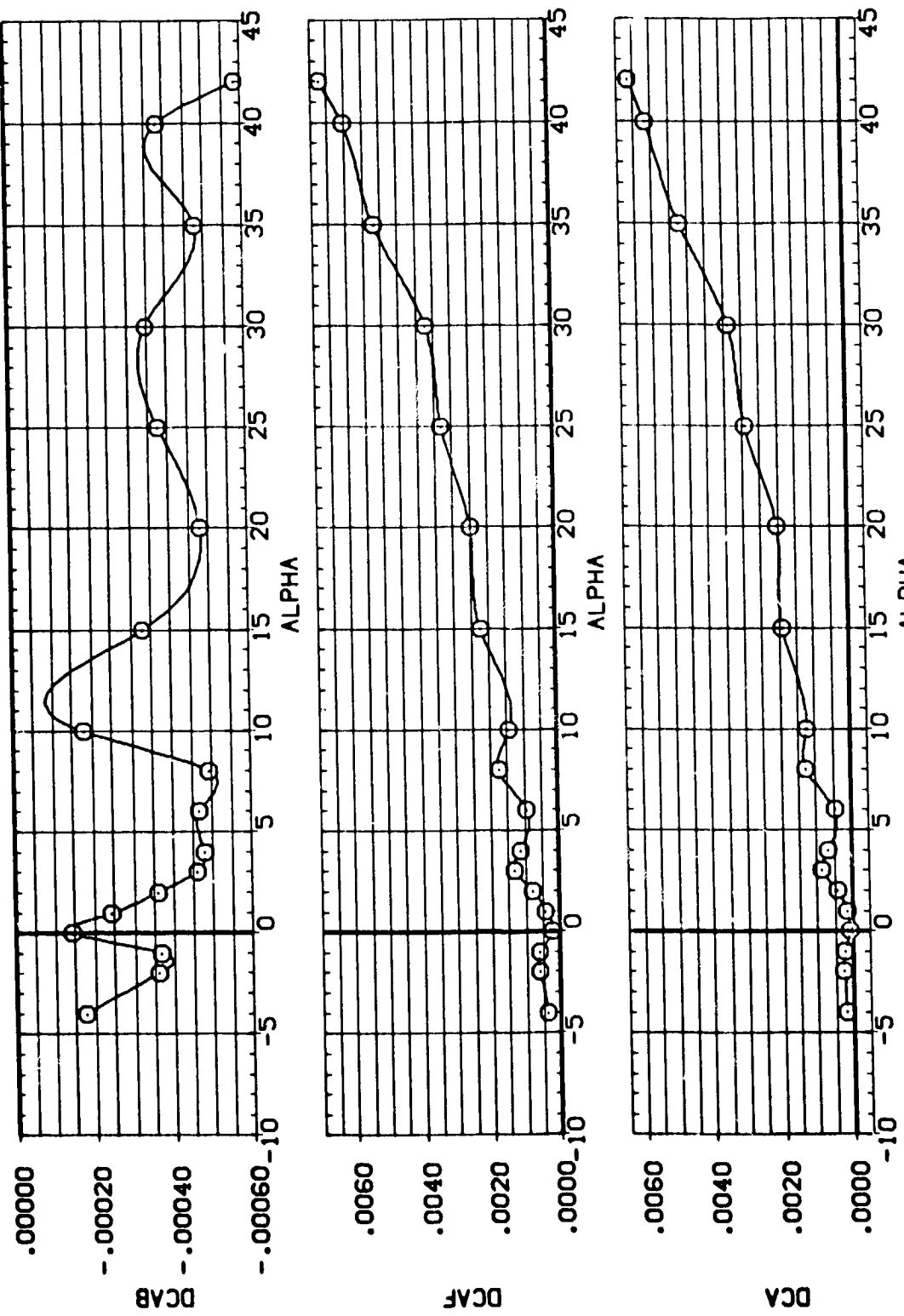


FIG 7 INCREMENTAL EFFECTS OF DEFLECTED BODYFLAP

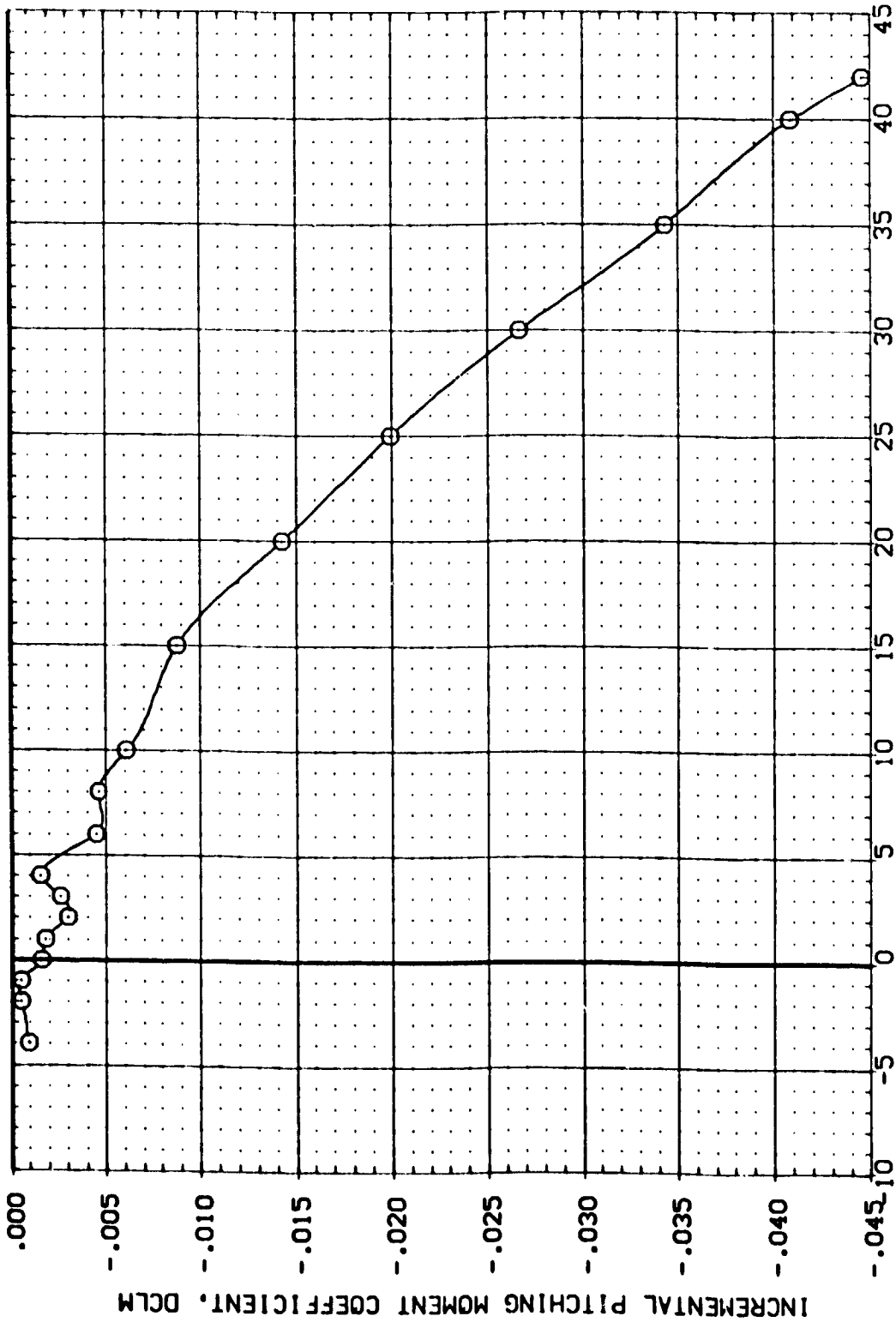
(B)MACH = 4.60

DATA SET SYMBOL (000009) ○ DATA SET SYMBOL (000009) ○

CONFIGURATION DESCRIPTION
0A-20 LARC UPVT 1057 - 140A/B ORBITER

DEDFLP 31.000
ELEVTR .000
SPOBRK 55.000
AILRON .000

REFERENCE INFORMATION
SREF 2690.0000 SQ.FT.
LREF 476.8117 IN.
BREF 936.6816 IN.
XMRP 1076.4800 IN.
YMRP .0000 IN.
ZMRP 375.0000 IN.
SCALE .0150



ANGLE OF ATTACK, ALPHA, DEGREES

FIG 7 INCREMENTAL EFFECTS OF DEFLECTED BODYFLAP

(MACH = 3.90



DATA SET SYMBOL (002009) ○
CONFIGURATION DESCRIPTION DA-20 LARC UPVT 1057 - 140A/B ORBITER

DEDFLP 31.000
ELEVTR .000
SPDRBK 55.000
AILRON .000

REFERENCE INFORMATION
SREF 2690.0000 SQ.FT.
LREF 476.8117 IN.
BREF 936.6816 IN.
XMRP 1076.4800 IN.
YMRP .0000 IN.
ZMRP .0000 IN.
SCALE .0150 SCALE

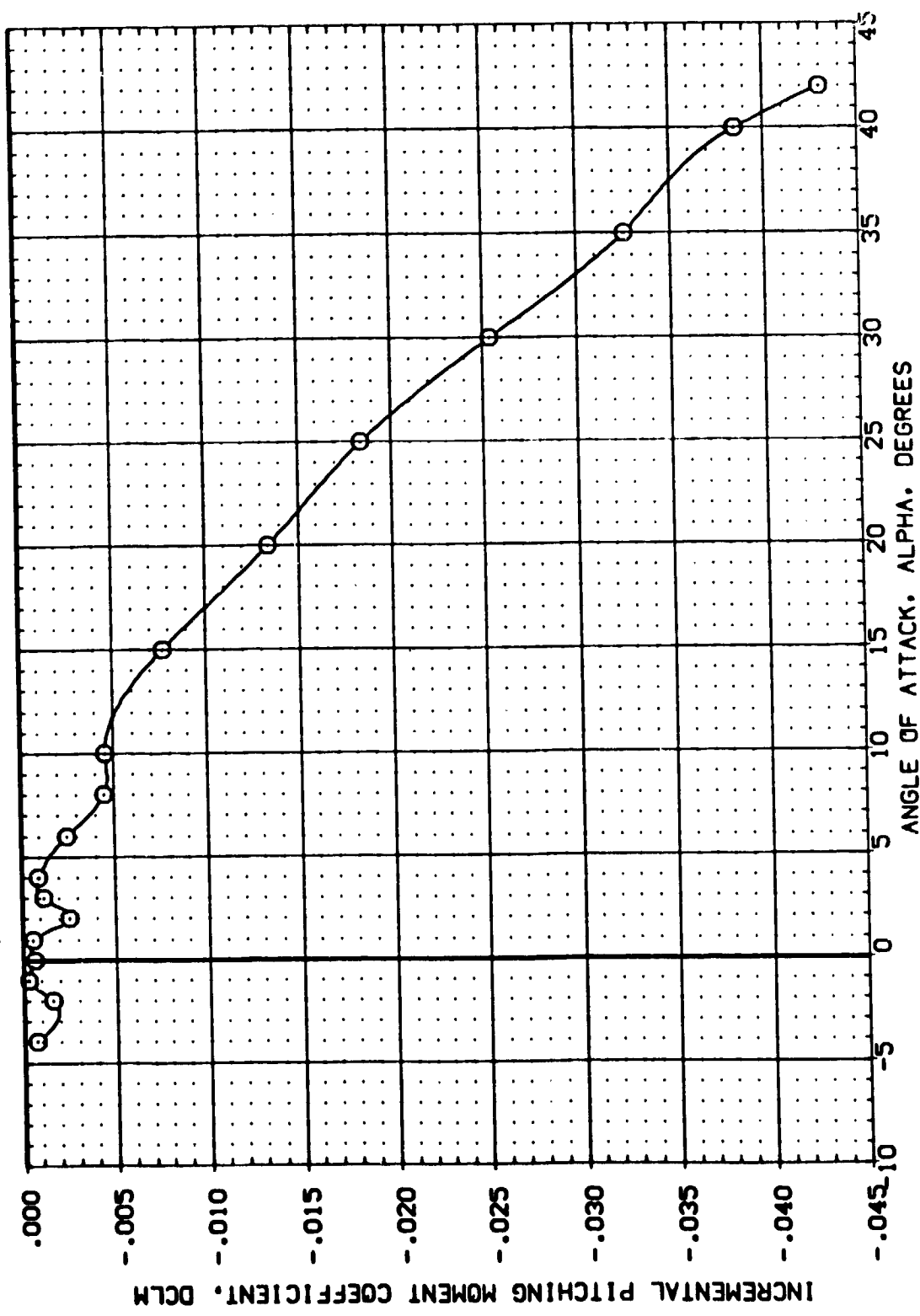


FIG 7 INCREMENTAL EFFECTS OF DEFLECTED BODYFLAP

(B)MACH = 4.60

DATA SET SYMBOL (802001) □
 CONFIGURATION DESCRIPTION DA-20 LARC UPVT 1057 - 140A/B DRBITER
 (802002) □ DA-20 LARC UPVT 1057 - 140A/B DRBITER

BETA .000
 3.000

RUDDER .000
 .000

BOFLAP -21.000
 -21.000

SPOBRK 55.000
 55.000

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 476.8117 IN.
 BREF 936.6816 IN.
 XMRP 1076.4800 IN.
 YMRP .0000 IN.
 ZMRP 375.0000 IN.
 SCALE .0150

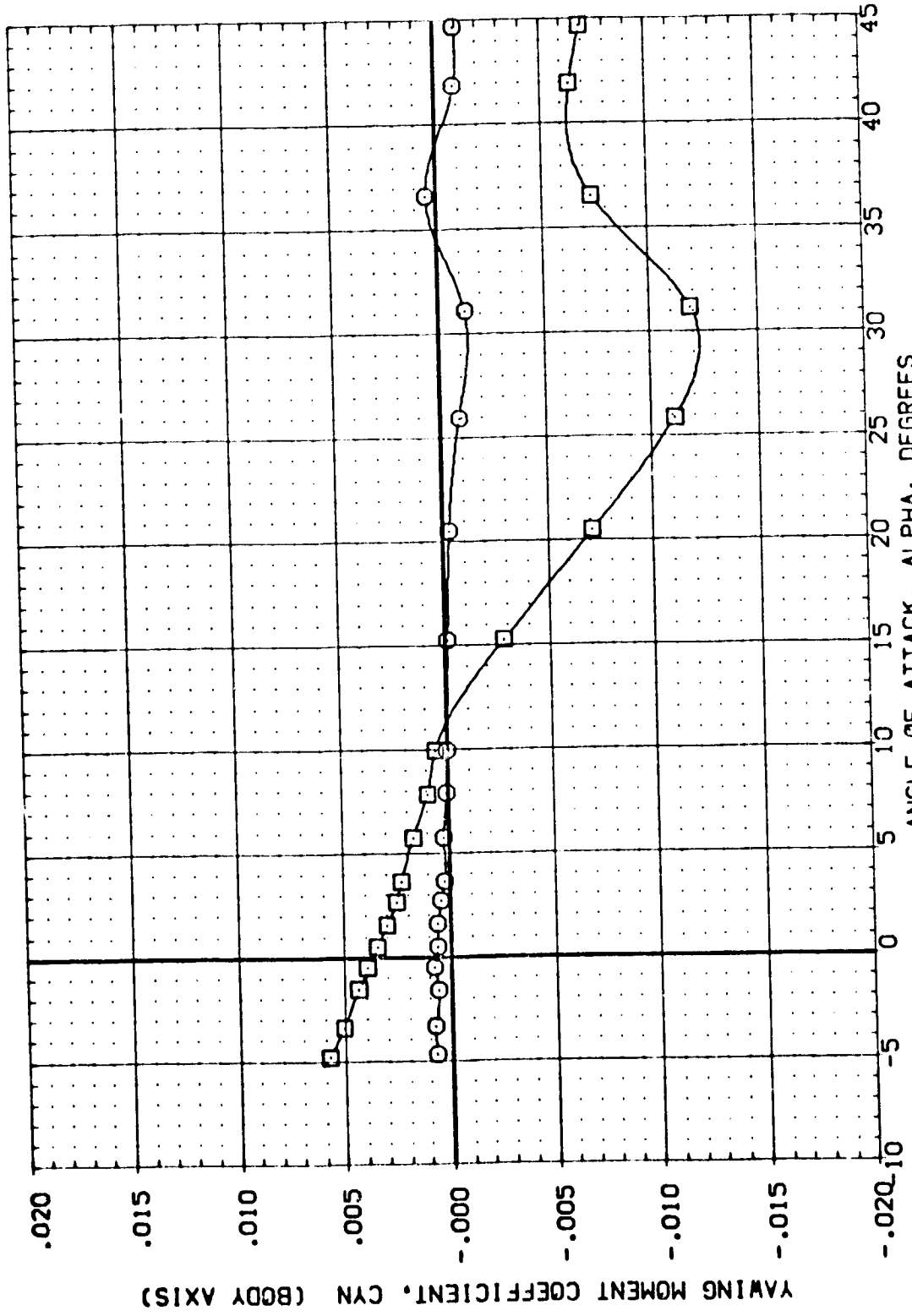


FIG 8 LATERAL-DIRECTIONAL YAW POLAR
 (A)MACH = 2.50



DATA SET SYMBOL: (B02001) □ (B02002) ○
 CONFIGURATION DESCRIPTION: GA-20 LARC UPVT 1057 - 140A/B ORBITER
 GA-20 LARC UPVT 1057 - 140A/B ORBITER
 BETA: .000, 3.000
 RUDDER: .000, .000
 BOFLAP: -21.000, -21.000
 SPOBRK: 55.000, 55.000
 REFERENCE INFORMATION:
 SREF: 2690.0000 SQ. FT.
 LREF: 476.8117 IN.
 BREF: 936.6816 IN.
 XMRP: 1076.4800 IN.
 YMRP: .0000 IN.
 ZMRP: 375.0000 IN.
 SCALE: .0150

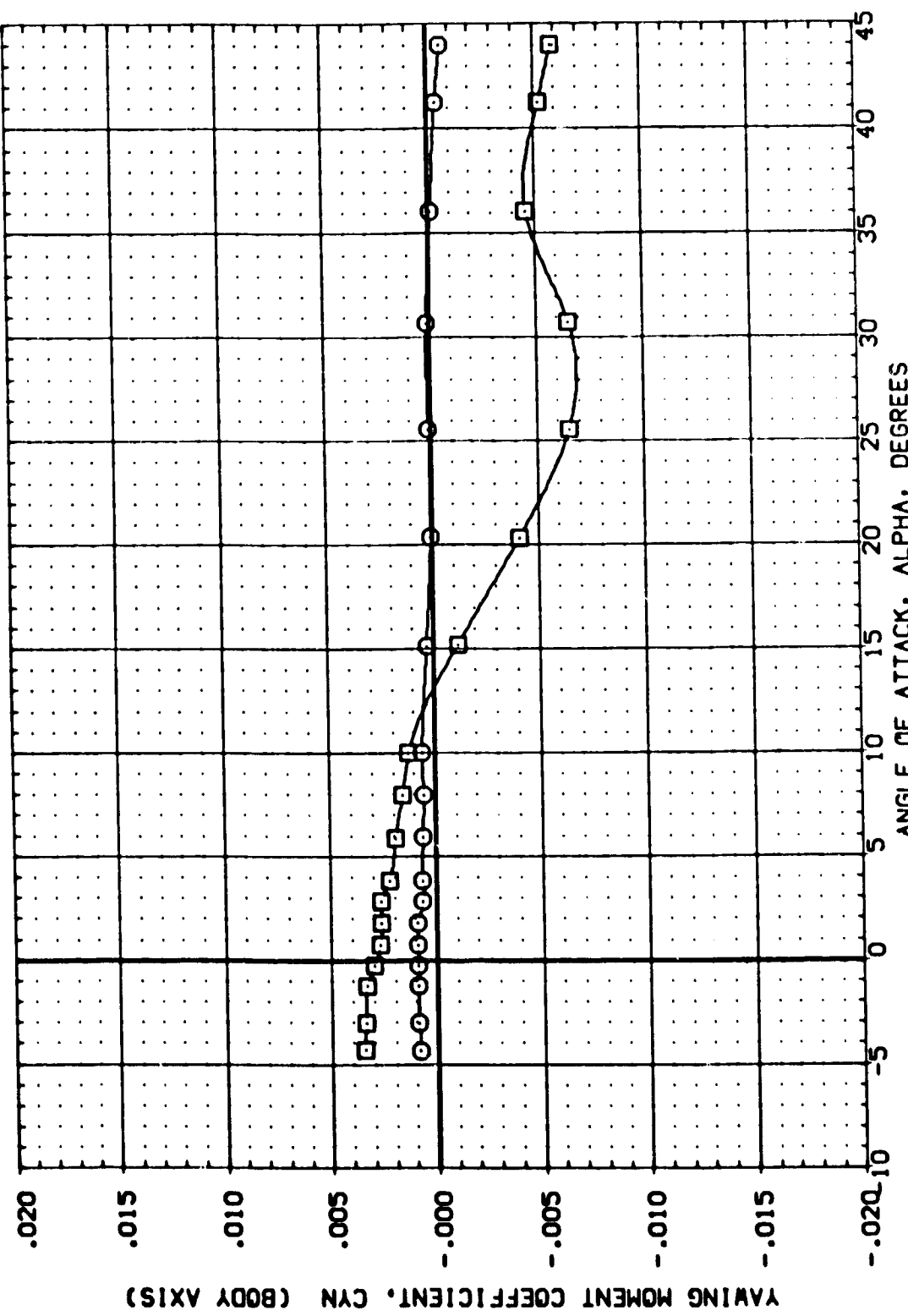


FIG 8 LATERAL-DIRECTIONAL YAW POLAR
 (B)MACH = 3.90

DATA SET SYMBOL: CA-20 LARC UPVT 1057 - 140A/B ORBITER
 (802001) □ CA-20 LARC UPVT 1057 - 140A/B ORBITER

BETA: .000
 3.000

RUDDER: .000
 .000

BDFLAP: -21.000
 -21.000

SPOBRK: 55.000
 55.000

REFERENCE INFORMATION

SREF	2690.0000	SO, FT.
LREF	476.8117	IN.
BREF	935.6816	IN.
XMRP	1076.4800	IN.
YMRP	.0000	IN.
ZMRP	375.0000	IN.
SCALE	.0150	SCALE

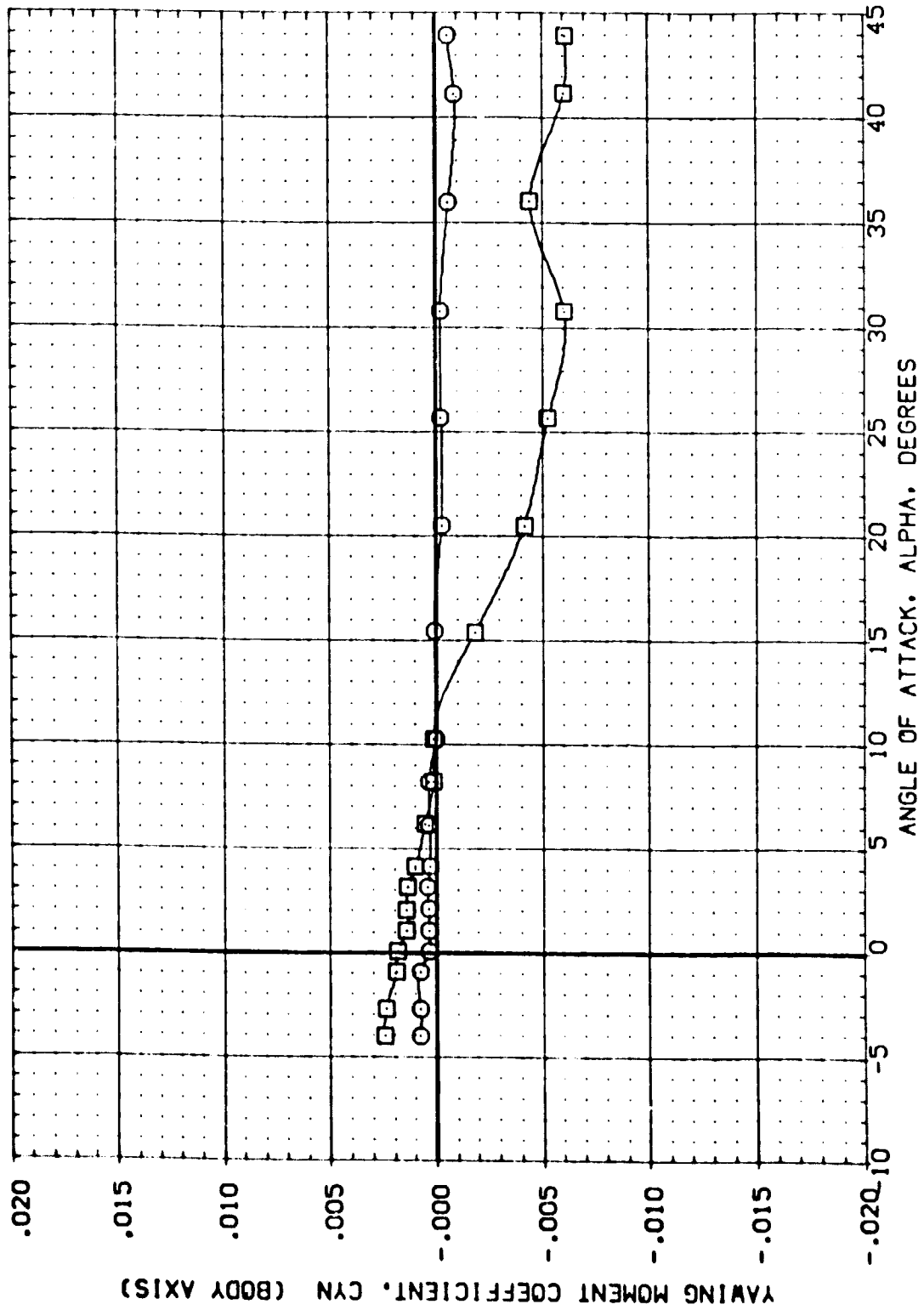


FIG 8 LATERAL-DIRECTIONAL YAW POLAR

(C)MACH = 4.60

DATA SET SYMBOL (B02001) (B02002)
 CONFIGURATION DESCRIPTION CA-20 LARC UPVT 1057 - 140A/B CR811ER CA-20 LARC UPVT 1057 - 140A/B CR811ER
 BETA .000 3.000
 RUDDER .000 .000
 BDFLAP -21.000 -21.000
 SPOBRK 55.000 55.000
 REFERENCE INFORMATION SREF 2690.0000 SQ.FT.
 LREF 476.8117 IN.
 BREF 936.6816 IN.
 XMRP 1076.4800 IN.
 YMRP .0000 IN.
 ZMRP 375.0000 IN.
 SCALE .0150 SCALE

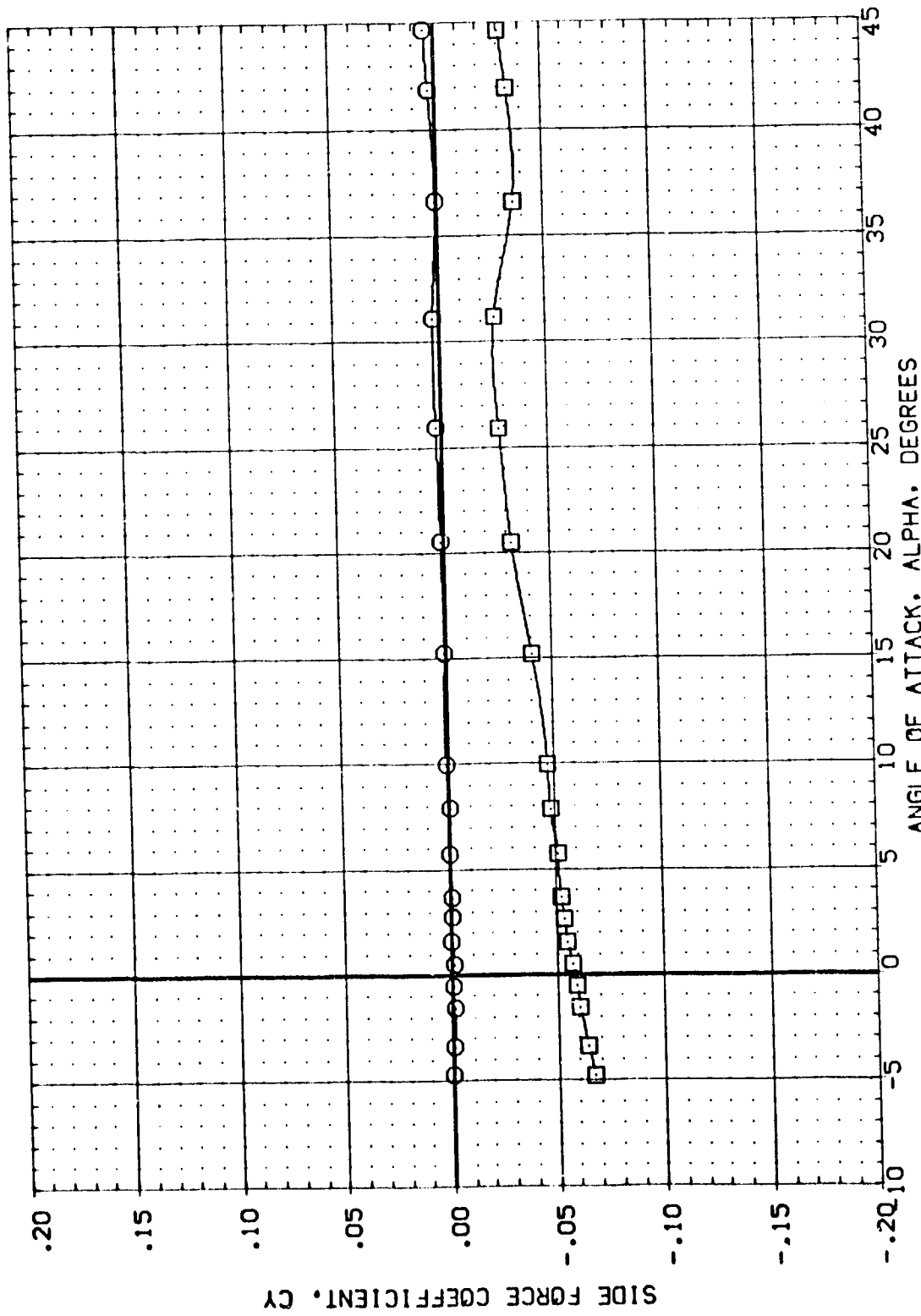


FIG 8 LATERAL-DIRECTIONAL YAW POLAR
 (M)MACH = 2.50
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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	PLUDDER	BDFLAP	SPDRBY	REFERENCE INFORMATION
BC2001	CA-20 LARC UPVT 1057 - 140AVB DRBITER	.000	.000	-21.000	55.000	SREF 2690.0000 SQ.FT.
BC2002	CA-20 LARC UPVT 1057 - 140AVB DRBITER	3.000	.000	-21.000	55.000	LREF 476.9117 IN.
						BREF 936.6816 IN.
						XMPD 1076.4800 IN.
						YMPD .0000 IN.
						ZMPD 375.0000 IN.
						SCALE .0150 SCALE

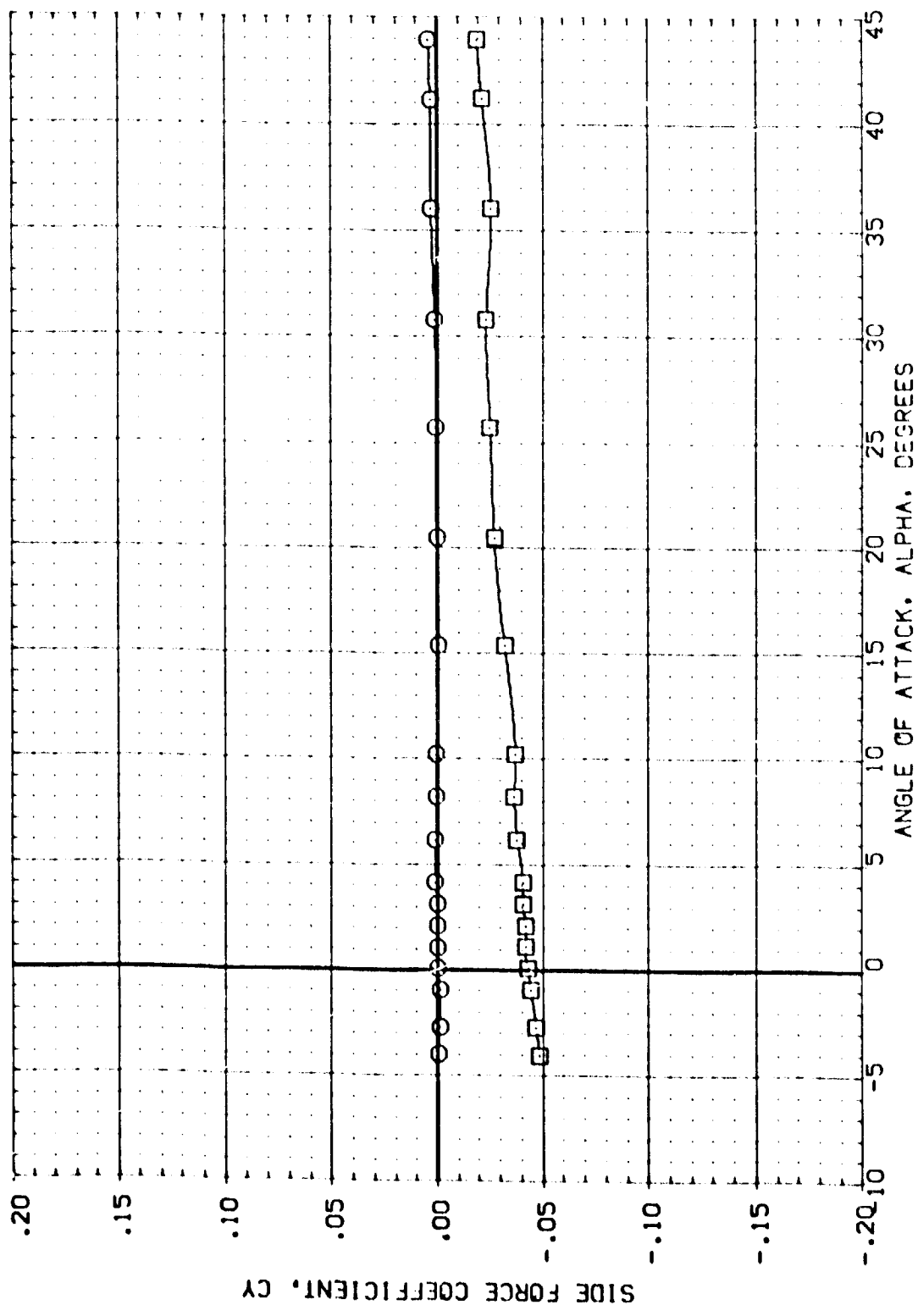


FIG 8 LATERAL-DIRECTIONAL YAW POLAR

(C)MACH = 4.60



DATA SET SYMBOL ○ CA-20 LARC UPVT 1057 - 140A/B ORBITER

DBETA 3.000 SPOBRK 55.000 RUDDER .000 BOFLAP -21.000

REFERENCE INFORMATION
SPREF 2690.0000 SO.FT.
LREF 476.8117 IN.
BREF 936.6816 IN.
XMRP 1076.4800 IN.
YMRP 0000 IN.
ZMRP 375.0000 IN.
SCALE .0150 SCALE

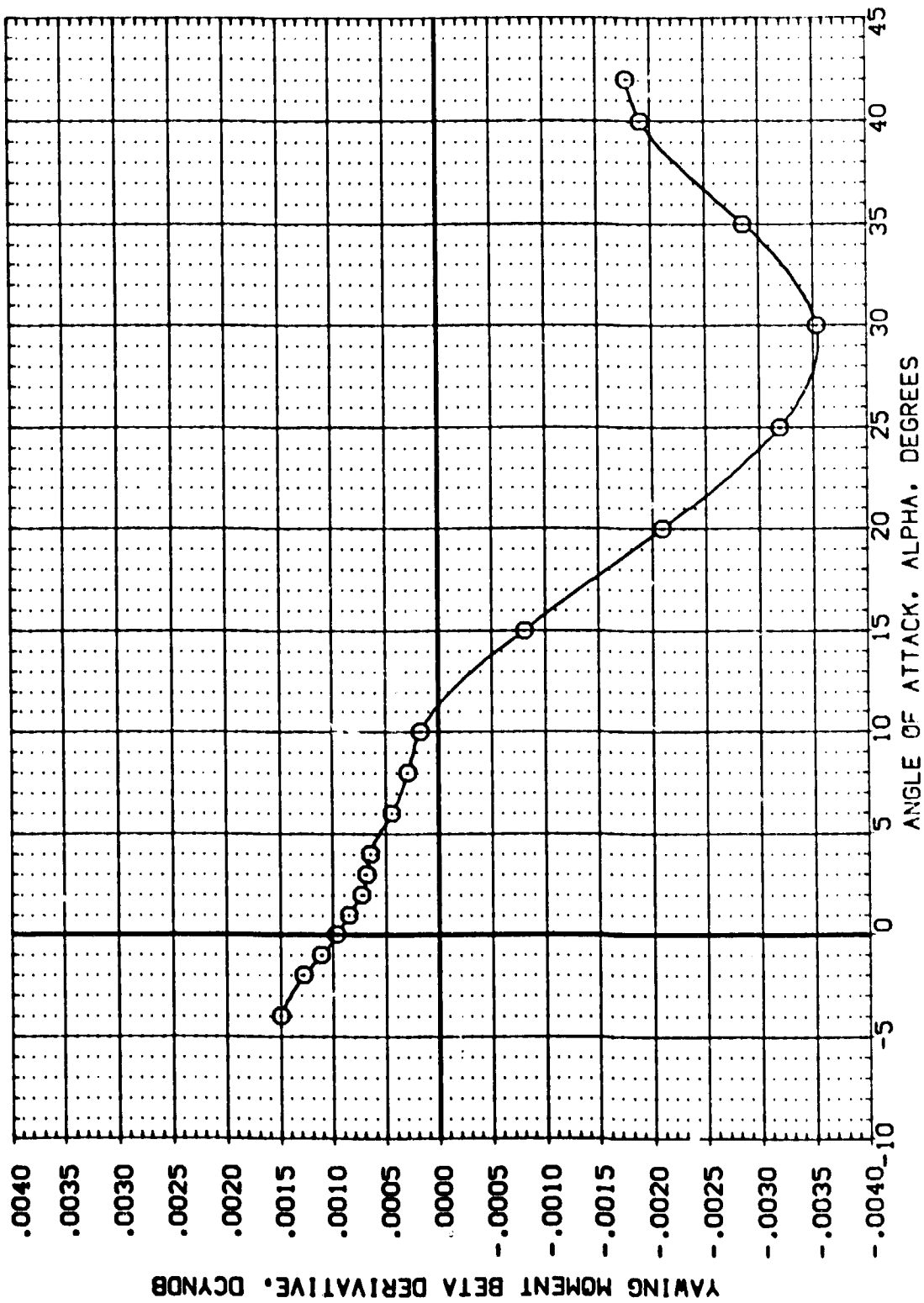


FIG 9 LATERAL-DIRECTIONAL DERIVATIVES

(A) MACH = 2.50

DATA SET SYMBOL: CA-20 LAPC UPV 1057 - 14CAVB 09B1TER

DEBTA 3.000
 SPOBRV 55.000
 P_UOOR .000
 BOFLAP -21.000

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 476.8117 IN.
 BREF 936.5816 IN.
 XREF 1076.4800 IN.
 YMRP .0000 IN.
 ZMRP 375.0000 IN.
 SCALE .0150 SCALE

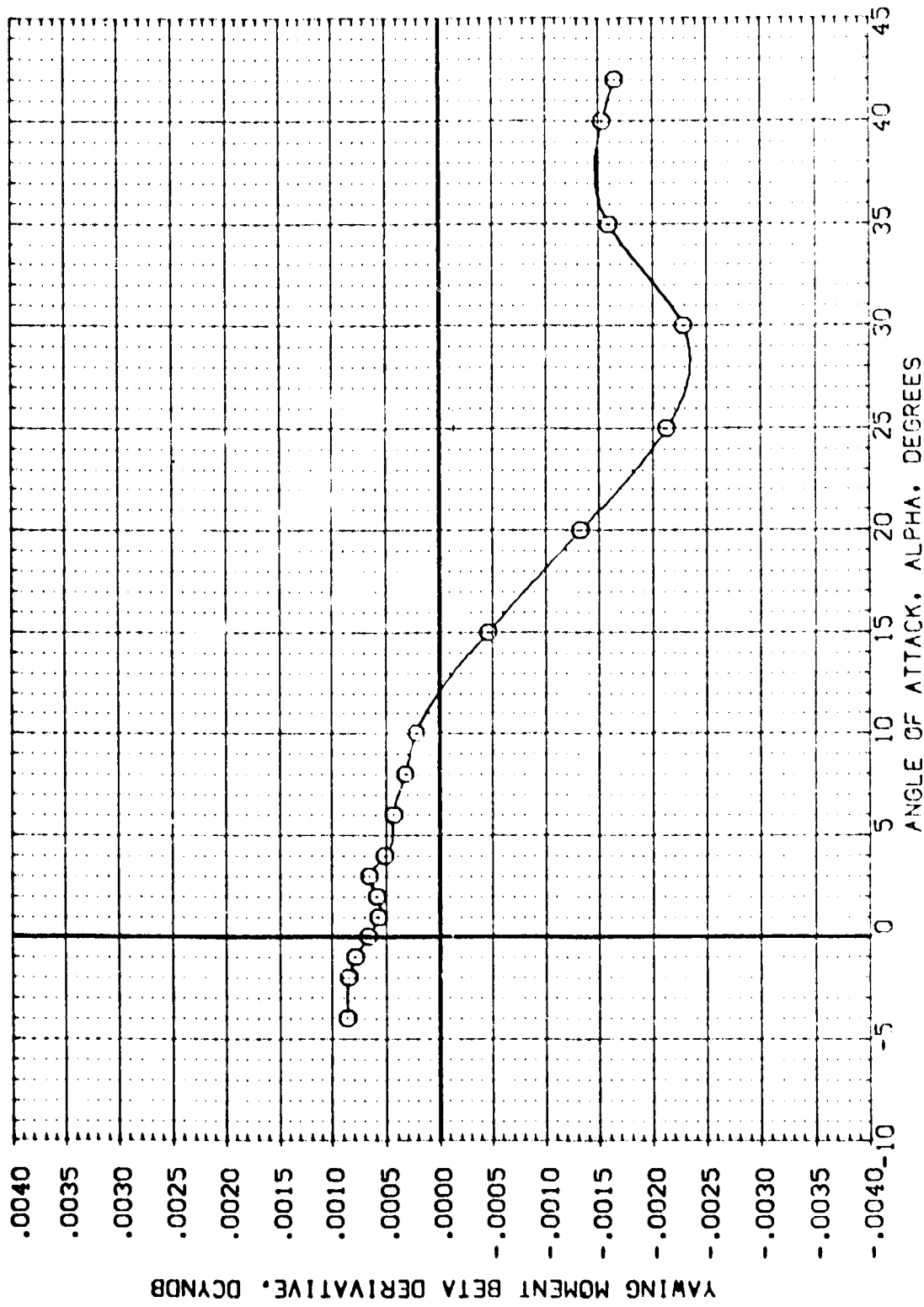


FIG 9 LATERAL-DIRECTIONAL DERIVATIVES

(M)MACH = 3.90



DATA SET SYMBOL (142002) ○
CONFIGURATION DESCRIPTION OA-20 LARC UPVT 1057 - 140A/B DR91TER

DBETA 3.000
SPDRBK 55.000
RUDDER .000
BDFLAP -21.000

REFERENCE INFORMATION
SREF 2690.0000 SO.FT.
LREF 476.8117 IN.
BREF 936.6816 IN.
XPRP 1076.4800 IN.
YMRP .0000 IN.
ZMRP 375.0000 IN.
SCALE .0150

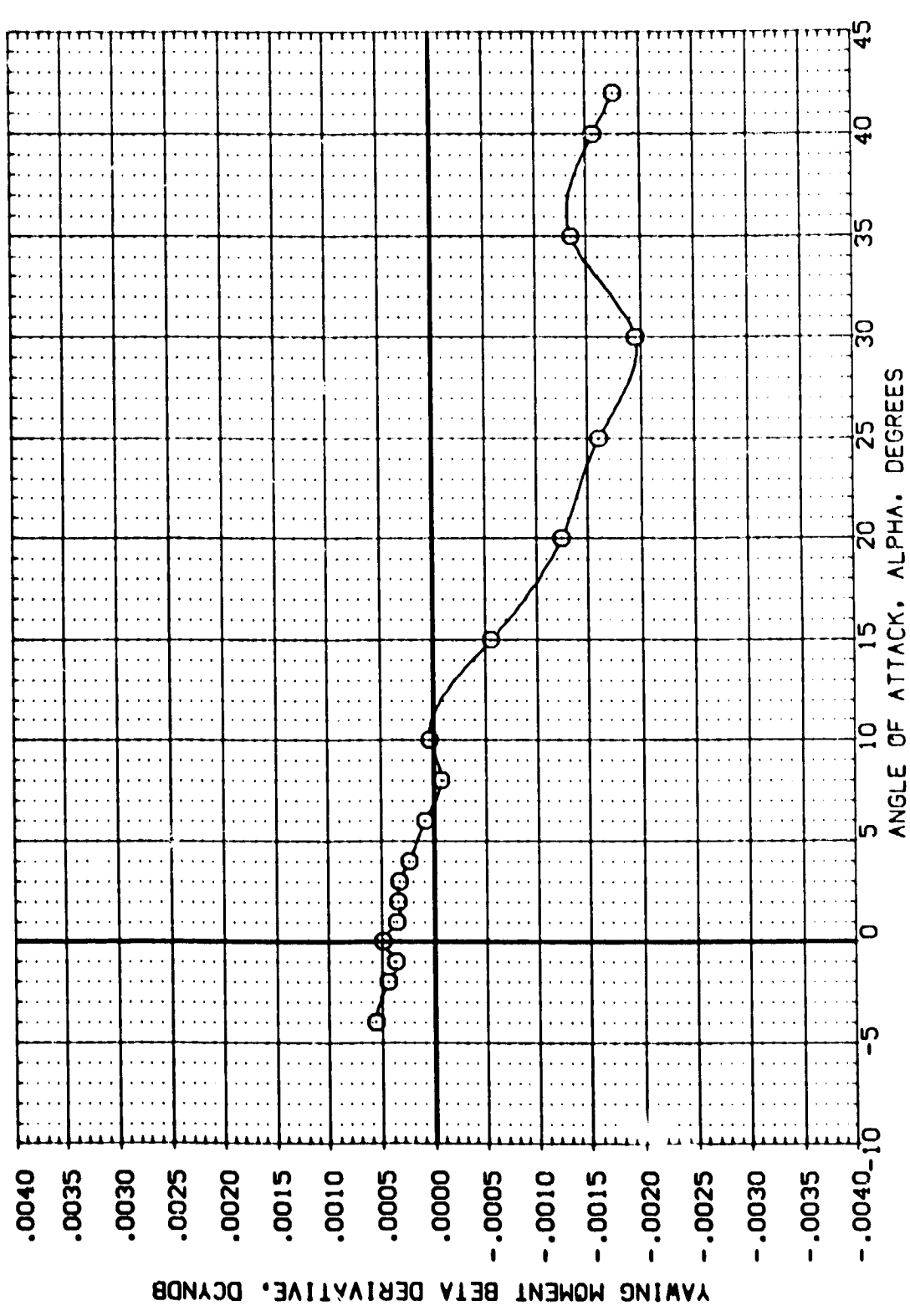


FIG 9 LATERAL-DIRECTIONAL DERIVATIVES

(C)MACH = 4.60

DATA SET SYMBOL: 0A-20 LARC SPW 1057 - 140A/B 09B11EP
 CONFIGURATION DESCRIPTION: 0A-20 LARC SPW 1057 - 140A/B 09B11EP
 REFERENCE INFORMATION:
 SREF 2690.0000 SC.FT.
 LREF 478.8117 IN.
 BREF 938.6815 IN.
 AREF 1076.4500 IN.
 MREF 375.0000 IN.
 ZREF 375.0000 IN.
 SCALE 1.0150 SCALE

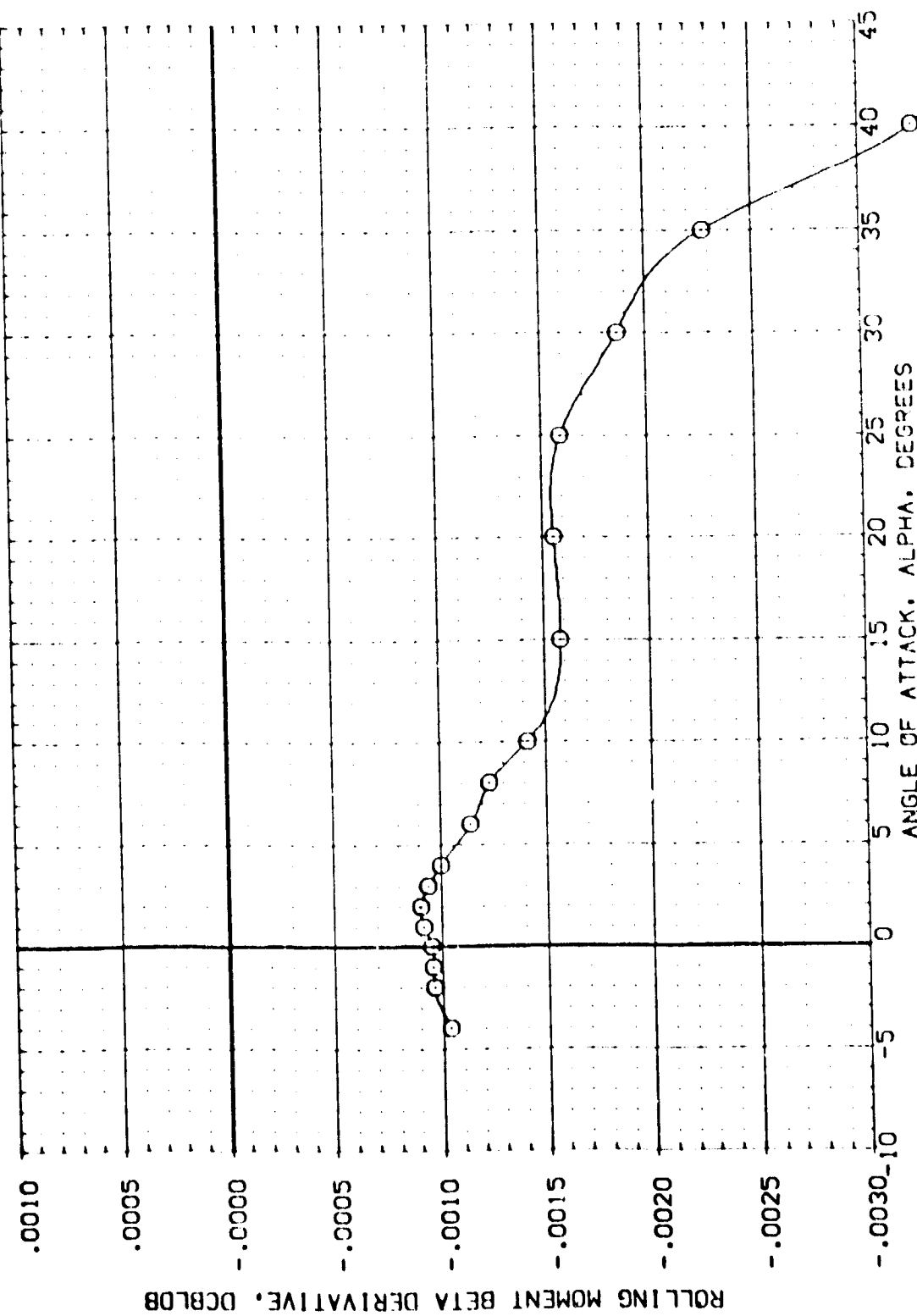


FIG 9 LATERAL-DIRECTIONAL DERIVATIVES

(A)MACH = 2.50



DATA SET SYMBOL (H02002) ○ DA-20 LARC UPAT 1057 - 140M/8 DRBITER

DBETA 3.000 SPOBRK 55.000 RUDDER .000 BOFLAP -21.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	476.8117	IN.
BREF	936.6816	IN.
XMRP	1076.4800	IN.
YMRP	.0000	IN.
ZMRP	375.0000	IN.
SCALE	.0150	SCALE

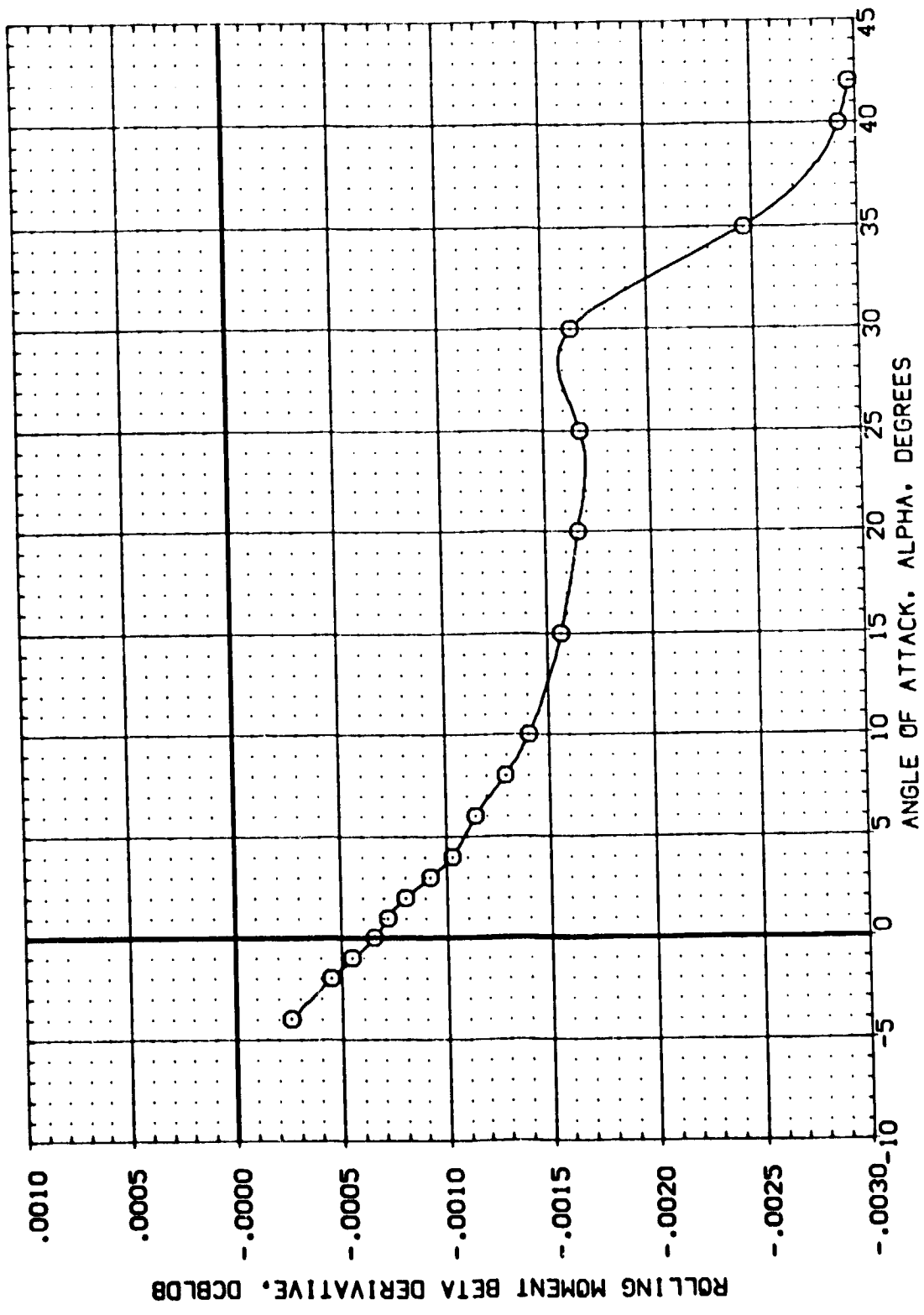


FIG 9 LATERAL-DIRECTIONAL DERIVATIVES

(B)MACH = 3.90

DATA SET SYMBOL (1402022) ○ 0A-20 LARC UPVT 1057 - 140A/B 08811ER

DBETA 3.000 SPOBRK .000 RJODER .000 BOFLAP -21.000

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 476.8117 IN.
 BREF 936.6816 IN.
 XMRP 1076.4800 IN.
 YMRP 375.0000 IN.
 ZMRP 0.0000 IN.
 SCALE .0150

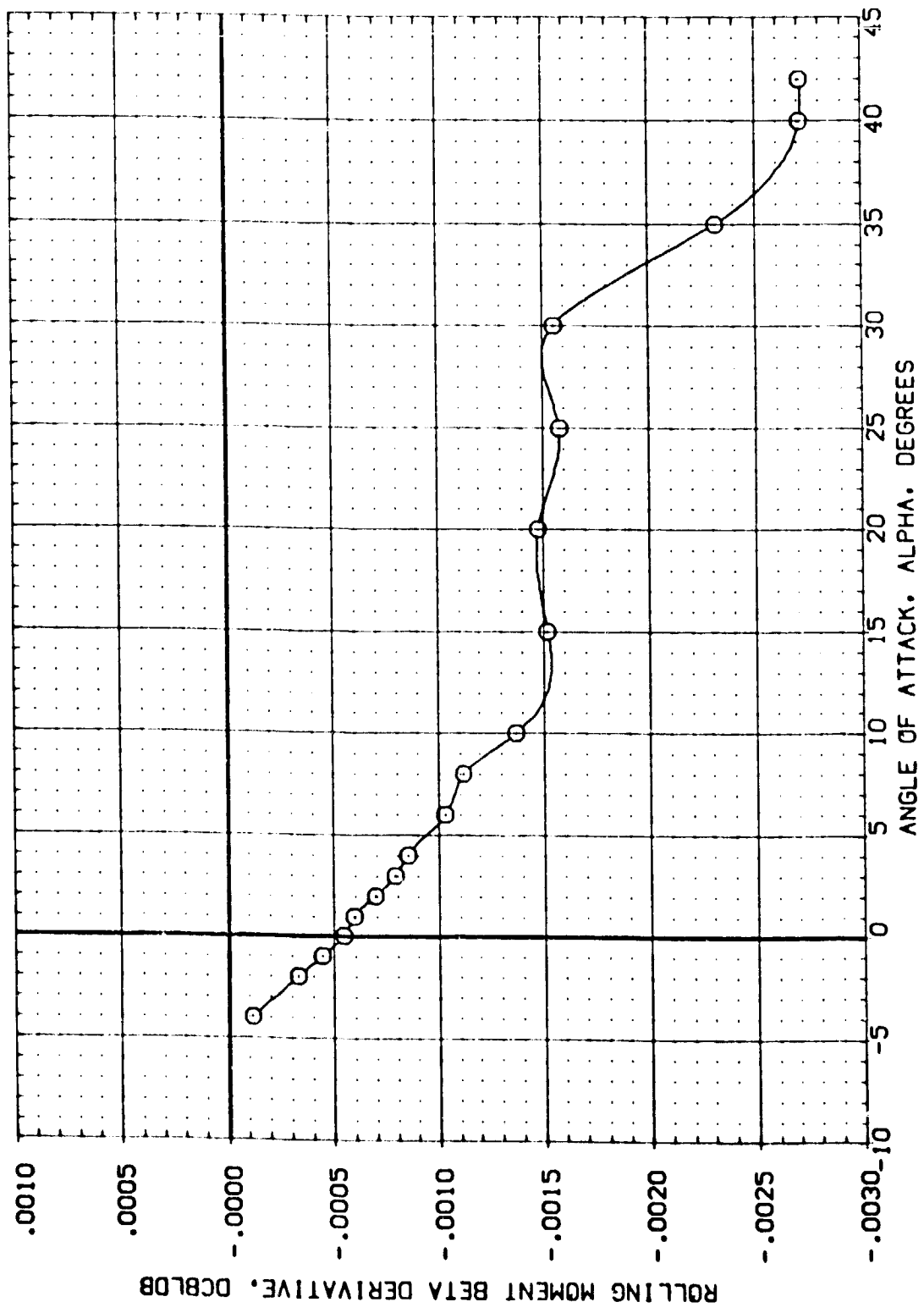


FIG 9 LATERAL-DIRECTIONAL DERIVATIVES

(C)MACH = 4.60



DATA SET SYMBOL ○
(1402002)

CONFIGURATION DESCRIPTION
0A-20 LARC UPVT 1057 - 140A/B ORBITER

DBETA 3.000
SPOBRK 55.000
RUDDER .000
BOFLAP -21.000

REFERENCE INFORMATION
SREF 2690.0000 SG.FT.
LREF 476.8117 IN.
BREF 936.6816 IN.
XMRP 1076.4800 IN.
YMRP 0000 IN.
ZMRP 375.0000 IN.
SCALE .0150

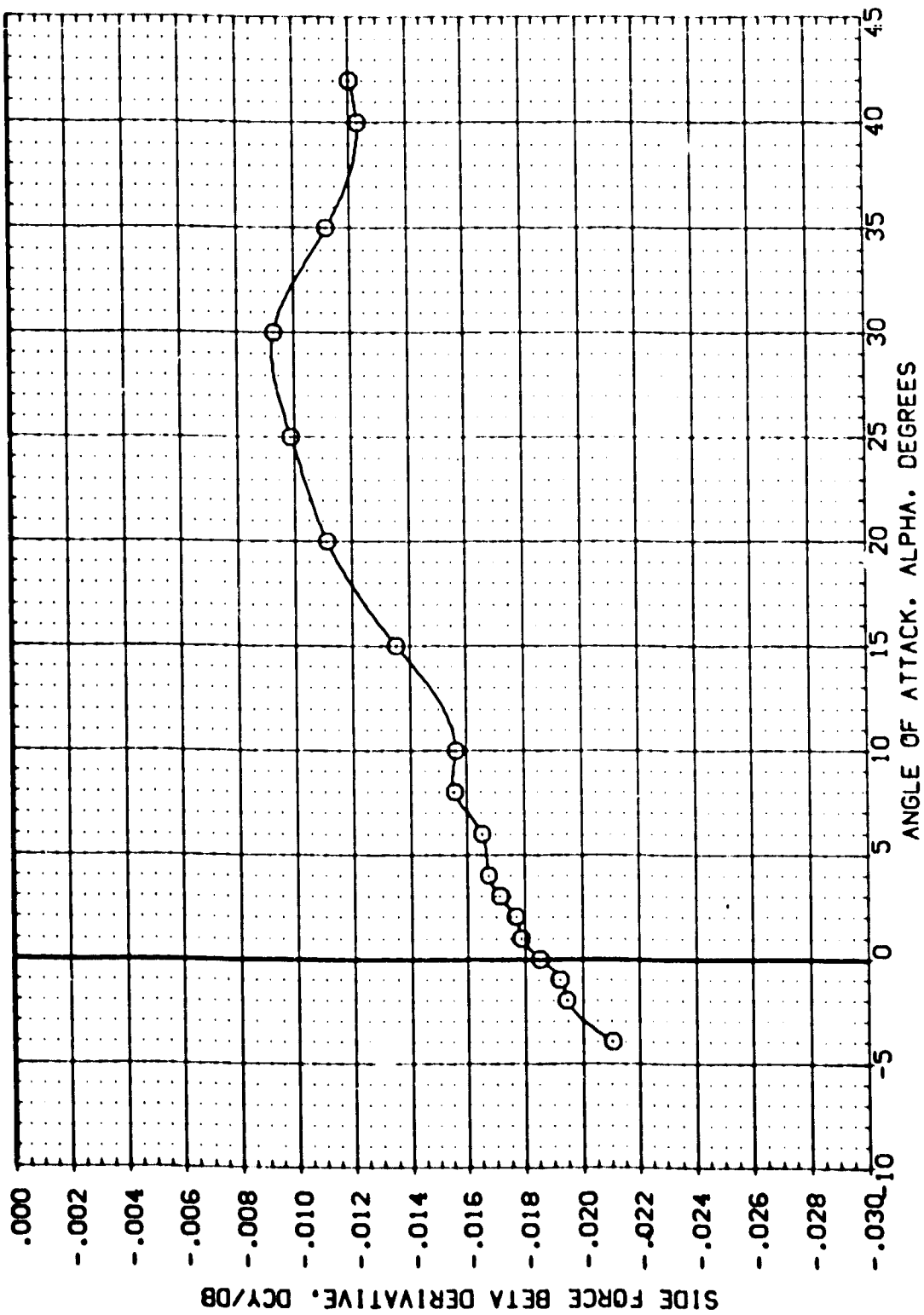


FIG 9 LATERAL-DIRECTIONAL DERIVATIVES

(A)MACH = 2.50

DATA SET SYMBOL: ○ CA-20 LARC UPVT 1057 - 140A/B ORBITER

DETAILED CONFIGURATION DESCRIPTION

DETA SPDBRK RUDDER BOFLAP
 3.000 55.000 .000 -21.000

REFERENCE INFORMATION

SREF 2690.0000 SQ. FT.
 LREF 476.8117 IN.
 BREF 936.6816 IN.
 XMRP 1076.4800 IN.
 YMRP .0000 IN.
 ZMRP 375.0000 IN.
 SCALE .0150

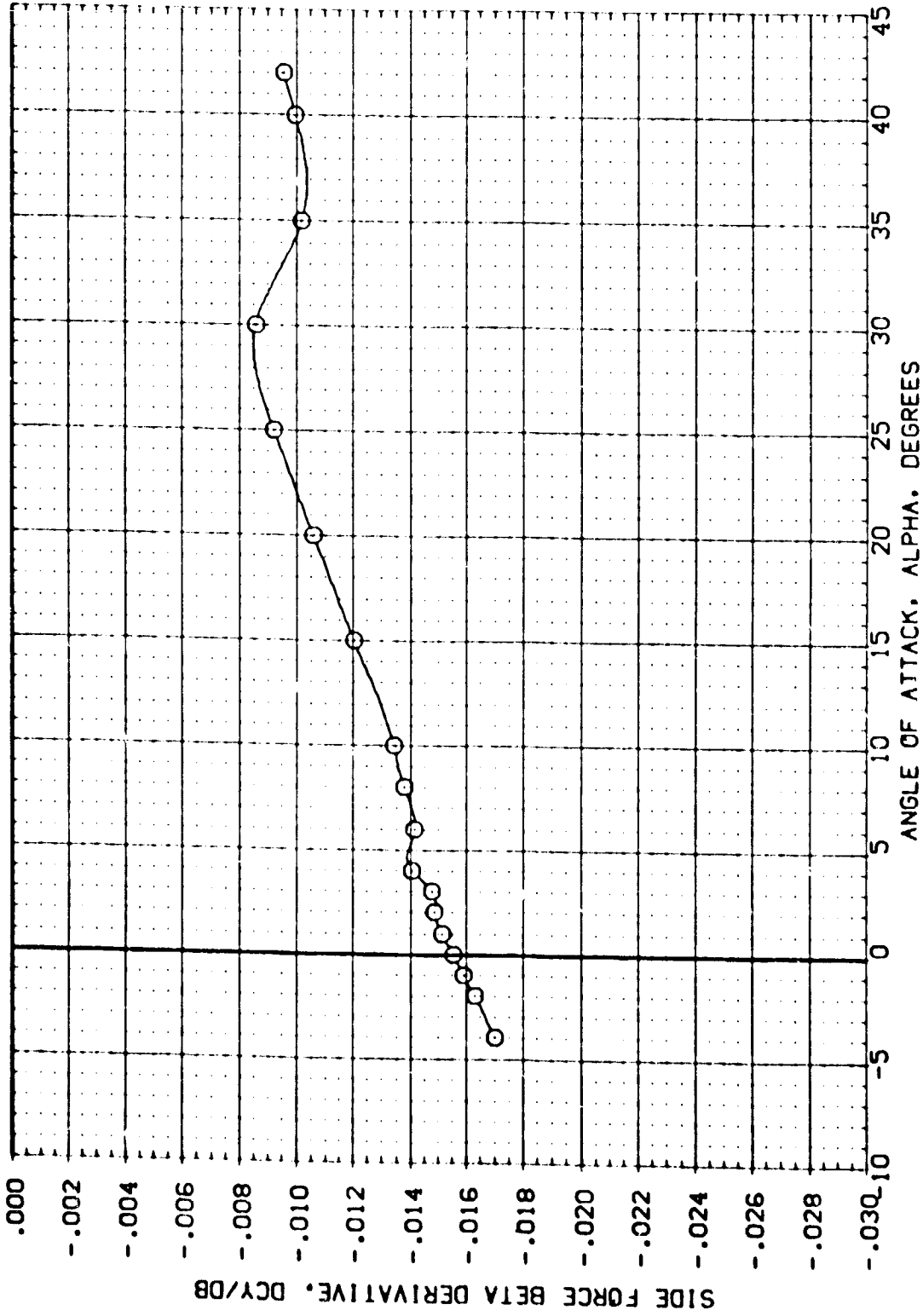


FIG 9 LATERAL-DIRECTIONAL DERIVATIVES

(B)MACH = 3.90



DATA SET SYMBOL: (1-02002) ○
CONFIGURATION DESCRIPTION: OA-20 LARC UPVT 1057 - 140A/B 08BITER

DBETA: 3.000
SPOBRK: 55.000
RUDDER: .000
BDFLAP: -21.000

REFERENCE INFORMATION

SREF	2690.0000	50.FT.
LREF	476.8117	IN.
BREF	936.6816	IN.
XTRP	1076.4600	IN.
YTRP	.0000	IN.
ZTRP	375.0000	IN.
SCALE	.0150	SCALE

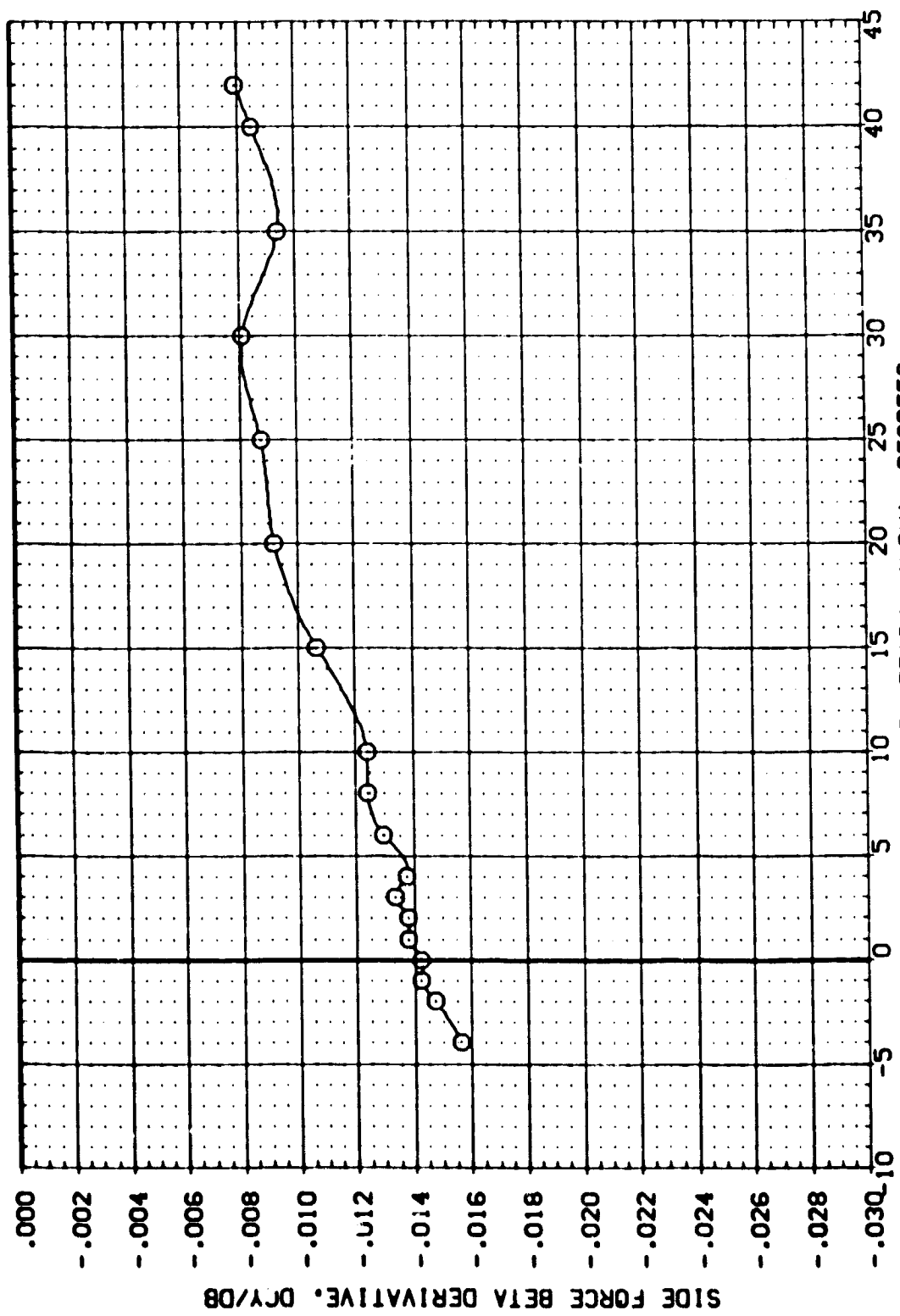


FIG 9 LATERAL-DIRECTIONAL DERIVATIVES
(C)MACH = 4.60

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	SPOBRK	RUDDER	BOFLAP	REFERENCE INFORMATION
(BC2003)	GA-20 LARC UPVT 1057 - 140A/B ORBITER	.000	55.000	.000	-21.000	SREF 2690.0000 SQ.FT.
(BC2004)	GA-20 LARC UPVT 1057 - 140A/B ORBITER	10.000	55.000	.000	-21.000	LREF 478.9117 IN.
(BC2005)	GA-20 LARC UPVT 1057 - 140A/B ORBITER	20.000	55.000	.000	-21.000	BREF 936.6916 IN.
(BC2006)	GA-20 LARC UPVT 1057 - 140A/B ORBITER	30.000	55.000	.000	-21.000	XREF 1076.4800 IN.
						YREF .0000 IN.
						ZREF 375.0000 IN.
						SCALE .0150

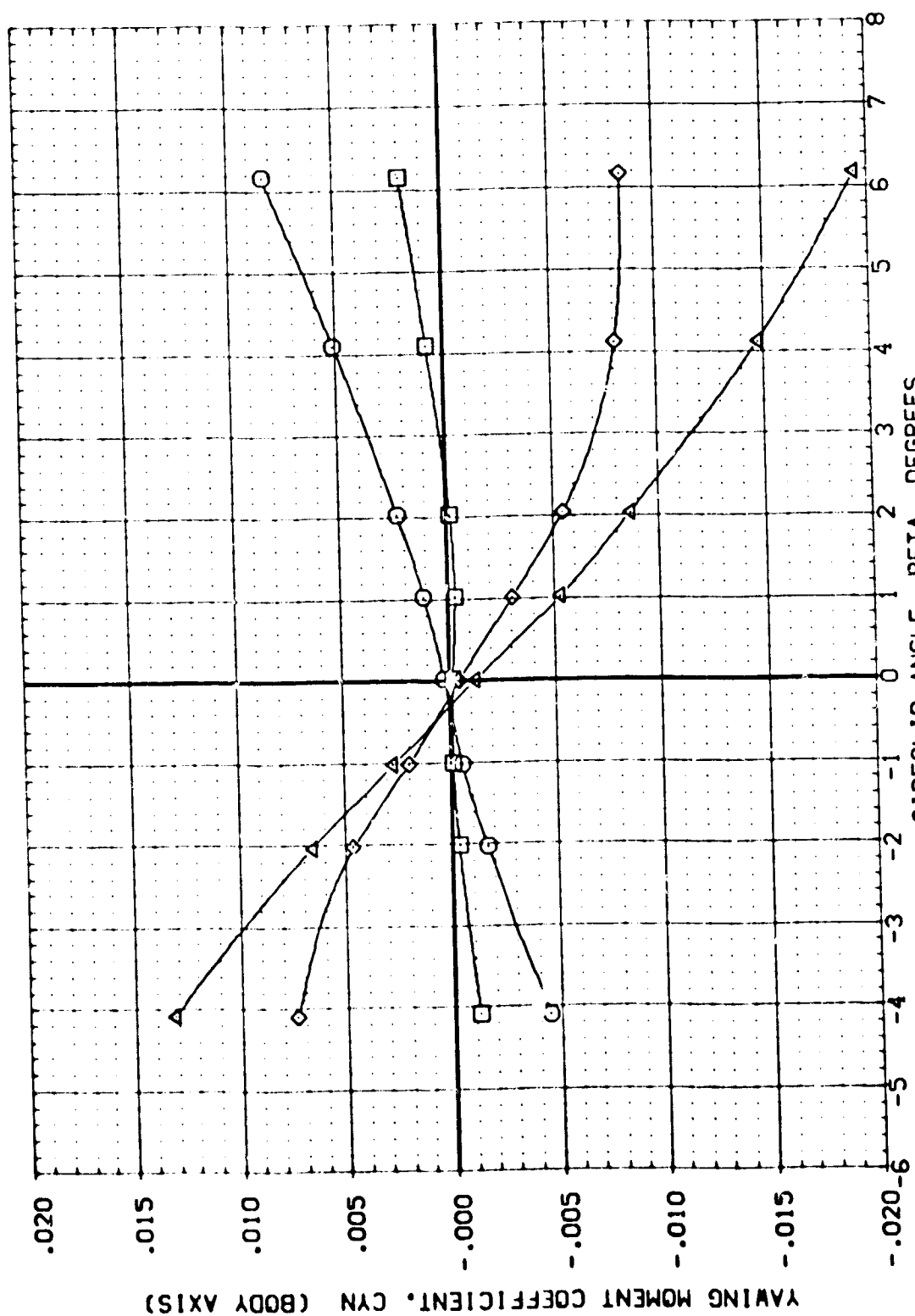


FIG 10 LATERAL-DIRECTIONAL CHARACTERISTICS FROM BETA SWEEPS

(M)MACH = 2.50



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	SPEEDBK	RUDDER	BOFLAP	REFERENCE INFORMATION
(B02003)	GA-20 LARC UPVT 1057 - 140A/VB ORBITER	.000	55.000	.000	-21.000	SREF 2690.0000 SO.FT.
(B02004)	GA-20 LARC UPVT 1057 - 140A/VB ORBITER	10.000	55.000	.000	-21.000	LREF 476.8117 IN.
(B02005)	GA-20 LARC UPVT 1057 - 140A/VB ORBITER	20.000	55.000	.000	-21.000	BREF 936.6816 IN.
(B02006)	GA-20 LARC UPVT 1057 - 140A/VB ORBITER	30.000	55.000	.000	-21.000	XMRP 1076.4600 IN.
						YMRP .0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150

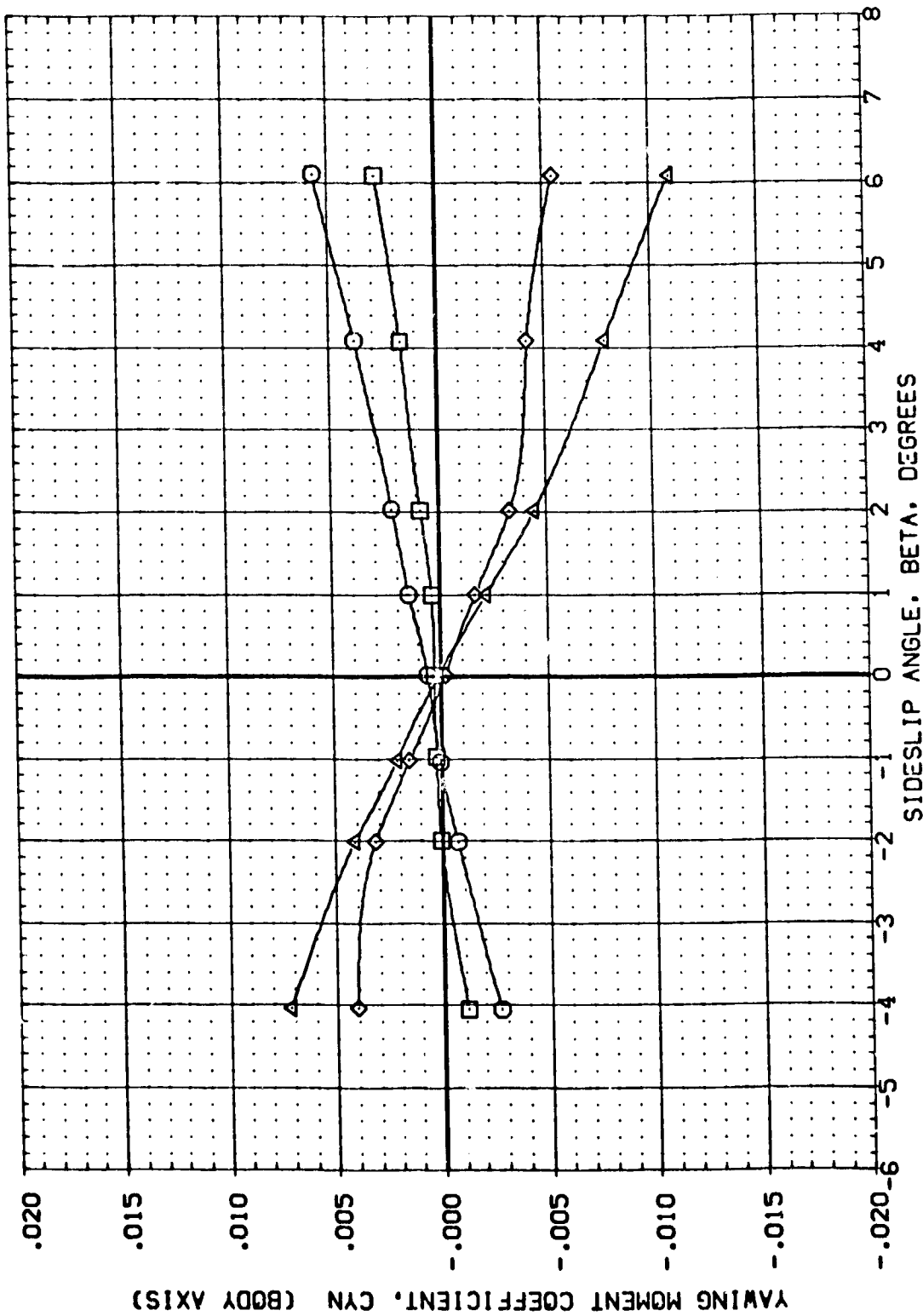


FIG 10 LATERAL-DIRECTIONAL CHARACTERISTICS FROM BETA SWEEPS

(B)MACH = 3.90

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	SPOBRK	RUDDER	80FLAP	REFERENCE INFORMATION
(B02003)	CA-20 LARC LPVT 1057 - 140A/B DRB/ITER	.000	55.000	.000	-21.000	SREF 2690.0000 SQ.FT.
(B02004)	CA-20 LARC LPVT 1057 - 140A/B DRB/ITER	10.000	55.000	.000	-21.000	LREF 476.8117 IN.
(B02005)	CA-20 LARC LPVT 1057 - 140A/B DRB/ITER	20.000	55.000	.000	-21.000	BREF 936.6816 IN.
(B02006)	CA-20 LARC LPVT 1057 - 140A/B DRB/ITER	30.000	55.000	.000	-21.000	XMRP 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150 SCALE

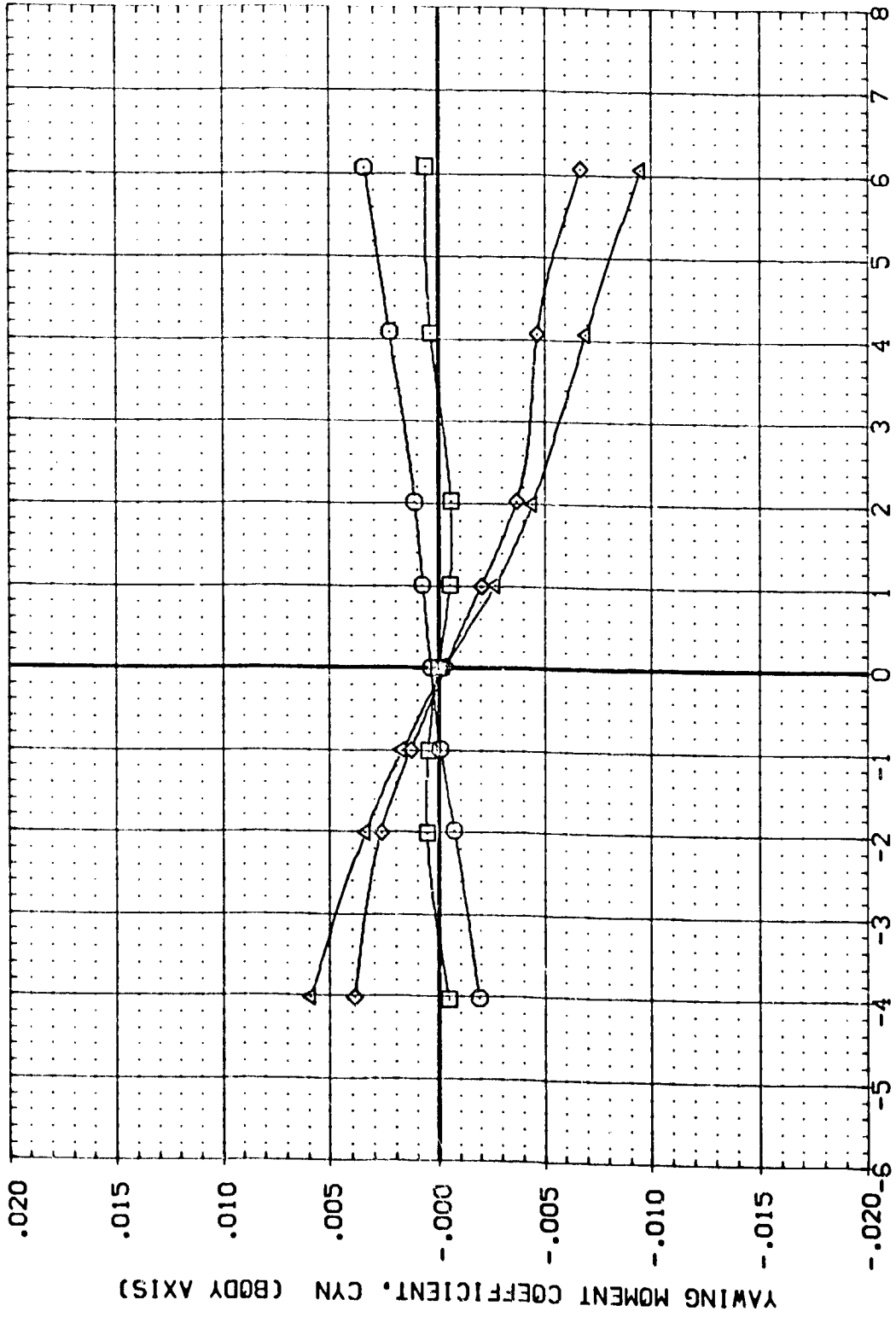


FIG 10 LATERAL-DIRECTIONAL CHARACTERISTICS FROM BETA SWEEPS

(C)MACH = 4.60



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	SPOBRK	RUDDER	BOFLAP	REFERENCE INFORMATION
(B02003)	DA-20 LARC UPVT 1057 - 140A/B D8B TER	.000	55.000	.000	-21.000	SREF 2690.0000 50.FT.
(B02004)	DA-20 LARC UPVT 1057 - 140A/B D8B TER	10.000	55.000	.000	-21.000	LREF 476.8117 IN.
(B02005)	DA-20 LARC UPVT 1057 - 140A/B D8B TER	20.000	55.000	.000	-21.000	BREF 9.36.5816 IN.
(B02006)	DA-20 LARC UPVT 1057 - 140A/B D8B TER	30.000	55.000	.000	-21.000	XTRP 1076.4800 IN.
						YTRP .0000 IN.
						ZTRP .0000 IN.
						SCALE .0150

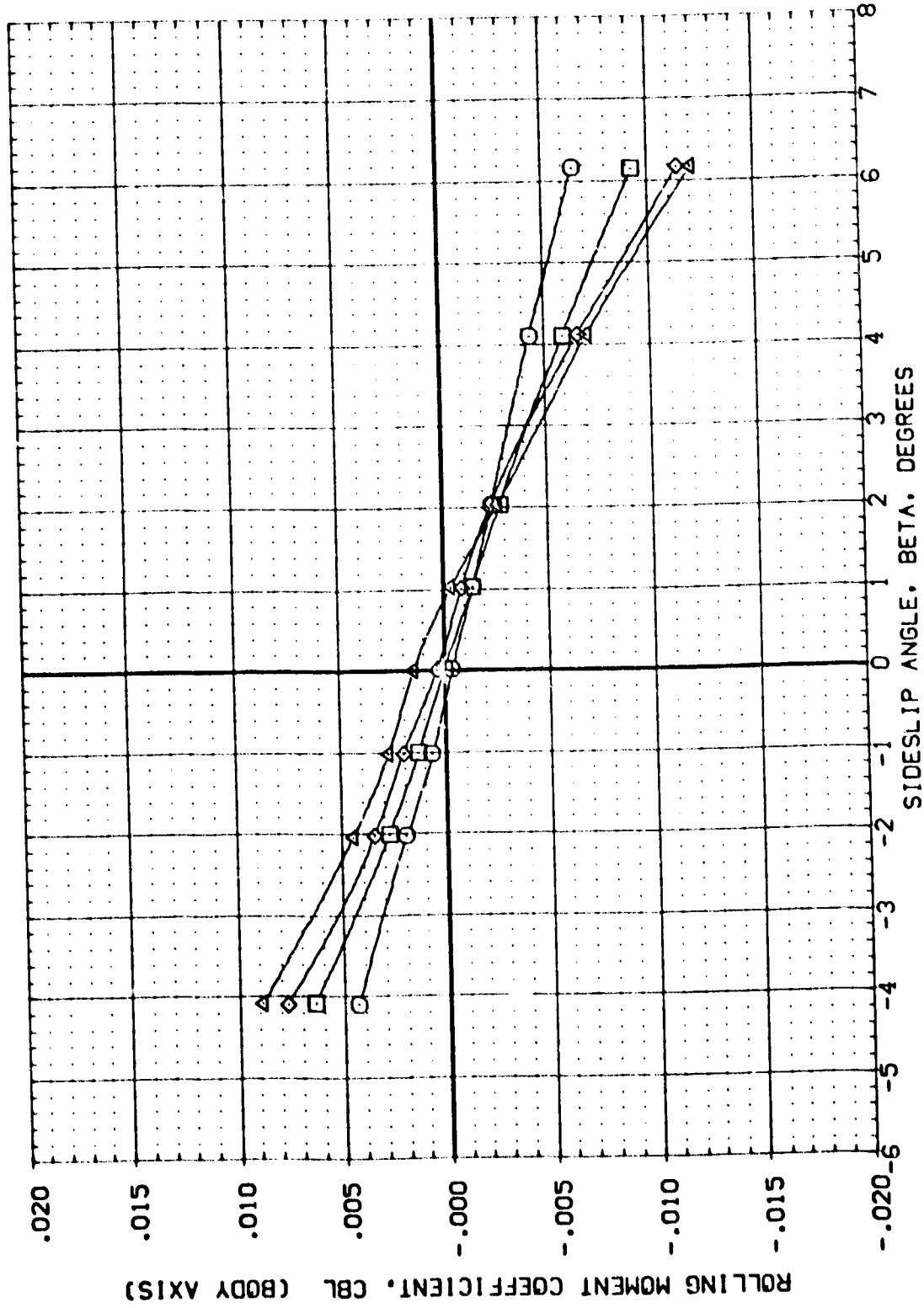


FIG 10 LATERAL-DIRECTIONAL CHARACTERISTICS FROM BETA SWEEPS

(A)MACH = 2.50

REF ID	REF TYPE	REF VALUE	REF UNIT	REF SCALE
1	ALPHA	0.000	DEG	1.000
2	BETA	0.000	DEG	1.000
3	GAMMA	0.000	DEG	1.000
4	DELTA	0.000	DEG	1.000
5	EPSILON	0.000	DEG	1.000
6	ZETA	0.000	DEG	1.000
7	THETA	0.000	DEG	1.000
8	IOTA	0.000	DEG	1.000
9	KAPPA	0.000	DEG	1.000
10	LAMDA	0.000	DEG	1.000
11	MU	0.000	DEG	1.000
12	NU	0.000	DEG	1.000
13	Xi	0.000	DEG	1.000
14	OMEGA	0.000	DEG	1.000
15	PHI	0.000	DEG	1.000
16	CHI	0.000	DEG	1.000
17	PSI	0.000	DEG	1.000
18	OMEGA	0.000	DEG	1.000
19	THETA	0.000	DEG	1.000
20	IOTA	0.000	DEG	1.000
21	KAPPA	0.000	DEG	1.000
22	LAMDA	0.000	DEG	1.000
23	MU	0.000	DEG	1.000
24	NU	0.000	DEG	1.000
25	Xi	0.000	DEG	1.000
26	OMEGA	0.000	DEG	1.000
27	PHI	0.000	DEG	1.000
28	CHI	0.000	DEG	1.000
29	PSI	0.000	DEG	1.000
30	OMEGA	0.000	DEG	1.000
31	THETA	0.000	DEG	1.000
32	IOTA	0.000	DEG	1.000
33	KAPPA	0.000	DEG	1.000
34	LAMDA	0.000	DEG	1.000
35	MU	0.000	DEG	1.000
36	NU	0.000	DEG	1.000
37	Xi	0.000	DEG	1.000
38	OMEGA	0.000	DEG	1.000
39	PHI	0.000	DEG	1.000
40	CHI	0.000	DEG	1.000
41	PSI	0.000	DEG	1.000
42	OMEGA	0.000	DEG	1.000
43	THETA	0.000	DEG	1.000
44	IOTA	0.000	DEG	1.000
45	KAPPA	0.000	DEG	1.000
46	LAMDA	0.000	DEG	1.000
47	MU	0.000	DEG	1.000
48	NU	0.000	DEG	1.000
49	Xi	0.000	DEG	1.000
50	OMEGA	0.000	DEG	1.000

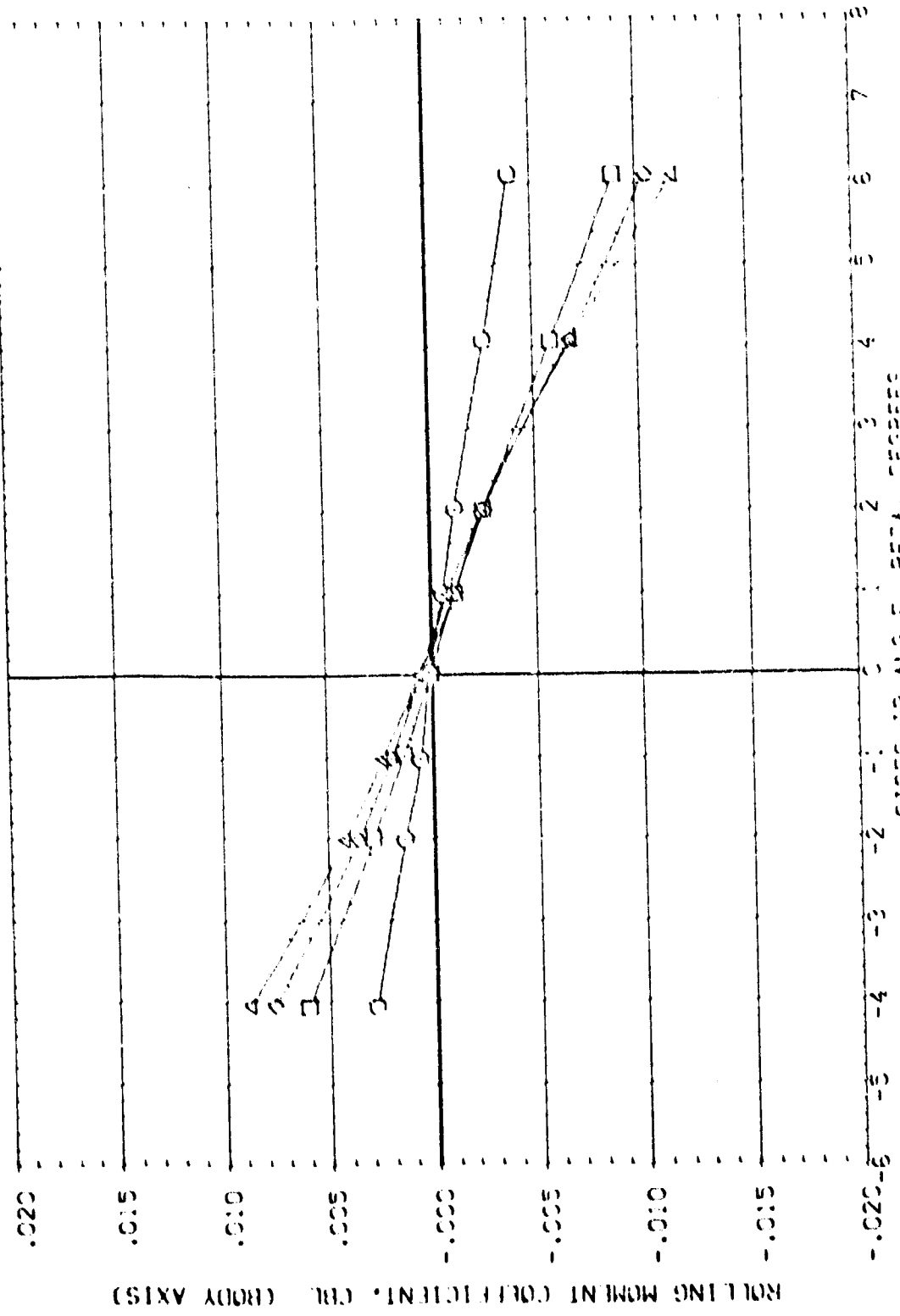


FIG 10 LATERAL-DIRECTIONAL CHARACTERISTICS FROM BETA 0 DEGREE



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	SPOBRK	PLODER	BUSLAP	REFERENCE INFORMATION
802003	2A-20 LARC JPT 157 - 142A/B 0P81TEP	.000	55.000	.000	-21.000	SREF 2690.0000 SQ.FT.
802004	2A-20 LARC JPT 157 - 142A/B 0P81TEP	10.000	55.000	.000	-21.000	LREF 475.8117 IN.
802005	2A-20 LARC JPT 157 - 142A/B 0P81TEP	20.000	55.000	.000	-21.000	SREF 956.5816 IN.
802006	2A-20 LARC JPT 157 - 142A/B 0P81TEP	30.000	55.000	.000	-21.000	LREF 1075.4800 IN.
						MREF 375.0000 IN.
						ZMPP .0150
						SCALE

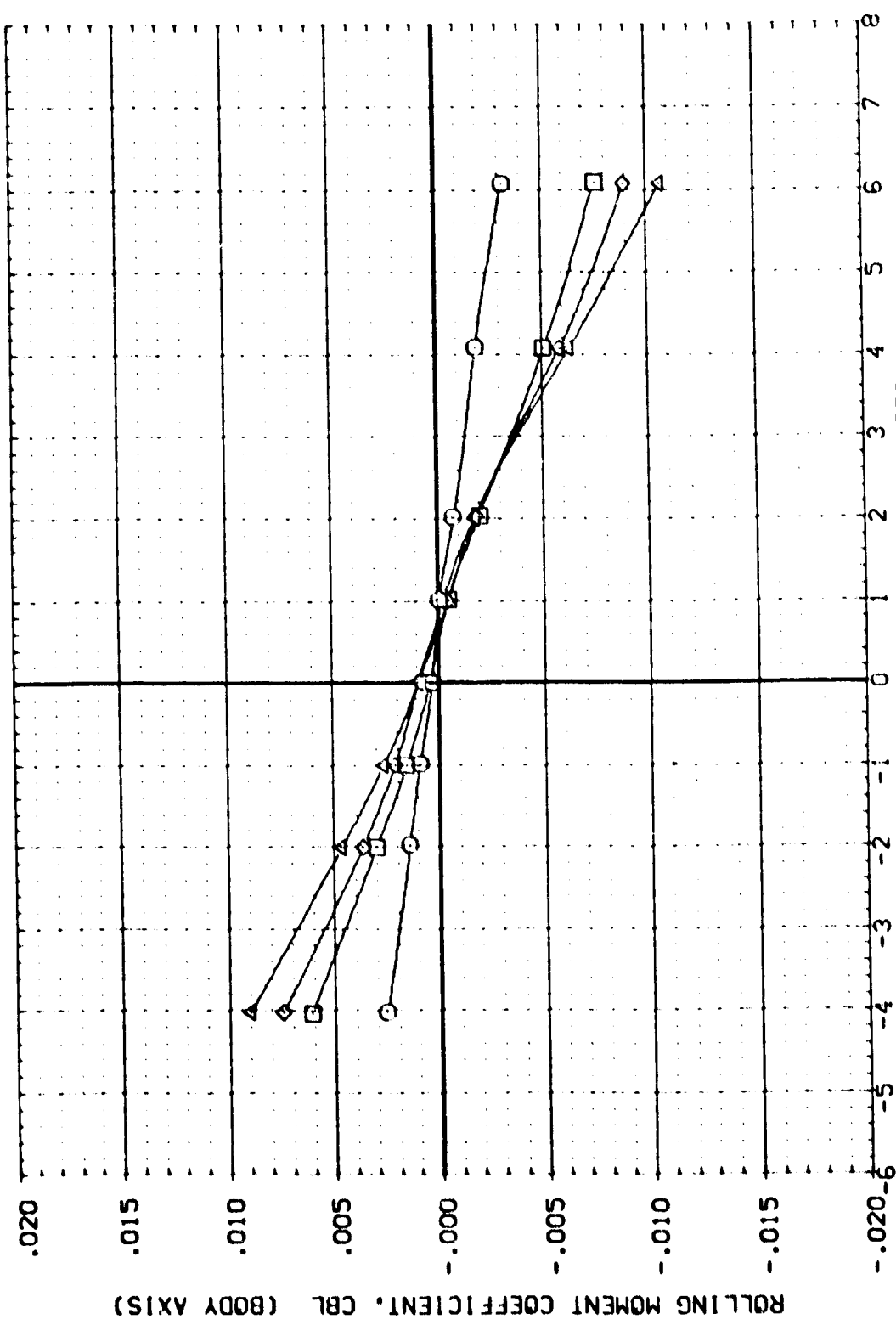


FIG 10 LATERAL-DIRECTIONAL CHARACTERISTICS FROM BETA SWEEPS

(C)MACH = 4.80

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	SPODBY	R-LODER	BOFLAP	REFERENCE INFORMATION	SCALE
B02003	DA-20 LARC JPVT 1057 - 14CA/B 098:TER	.000	55.000	.000	-21.000	SREF 2690.0000	SC.FT.
B02004	DA-20 LARC JPVT 1057 - 14CA/B 098:TER	10.000	55.000	.000	-21.000	LREF 475.8117	N
B02005	DA-20 LARC JPVT 1057 - 14CA/B 098:TER	20.000	55.000	.000	-21.000	BREF 936.6816	N
B02006	DA-20 LARC JPVT 1057 - 14CA/B 098:TER	30.000	55.000	.000	-21.000	XREF 1076.4800	N
						YREF .0000	N
						ZREF 375.0000	N
						ZSCALE .0150	SCALE

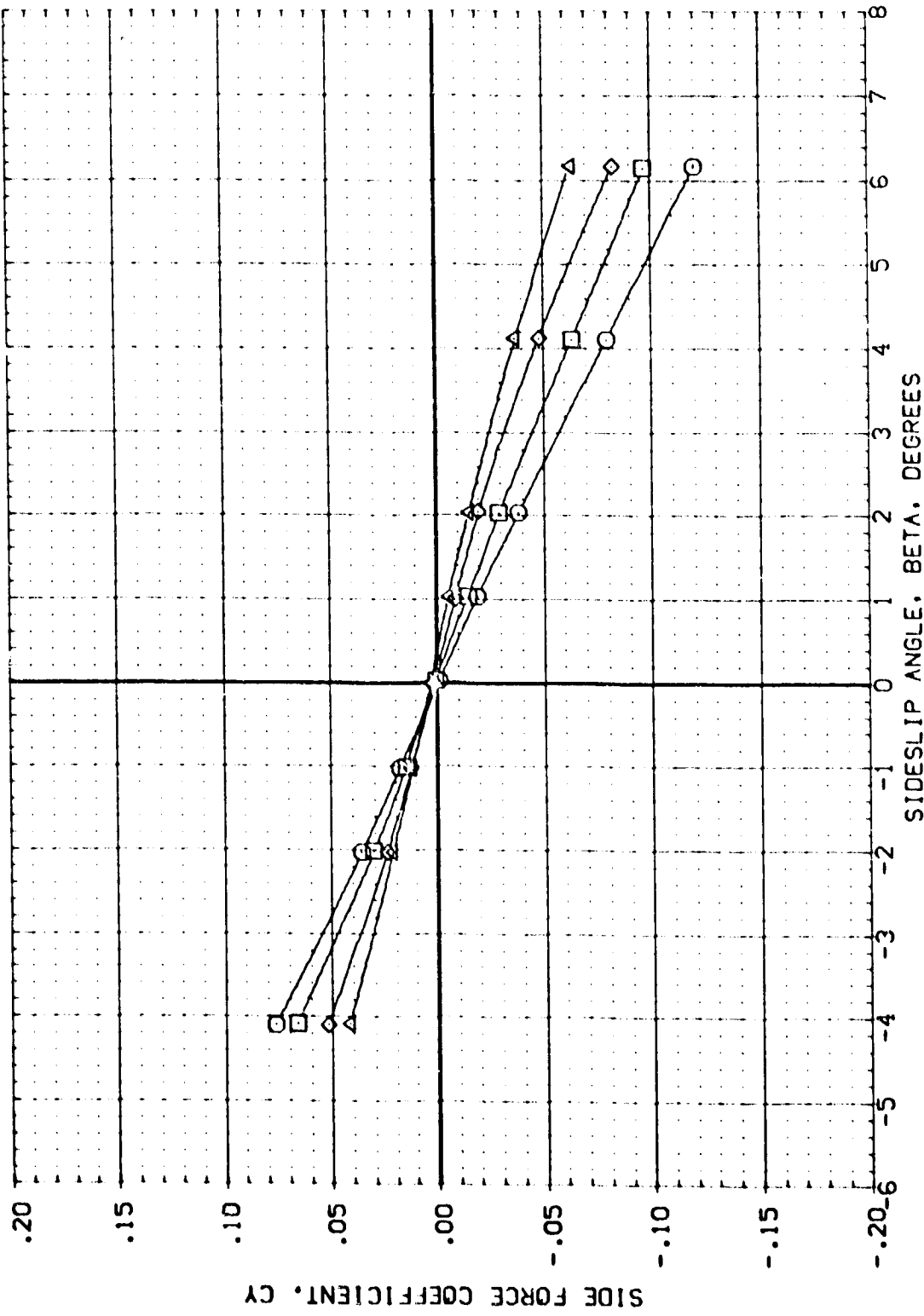


FIG 10 LATERAL-DIRECTIONAL CHARACTERISTICS FROM BETA SWEEPS

(A)MACH = 2.50



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	SPOBRK	RJODER	BOFLAP	REFERENCE INFORMATION
(BC2003)	CA-20 LARC UPVT 1057 - 140AVB ORBITER	.000	55.000	.000	-21.000	SREF 2650.0000 SO.FT.
(BC2004)	CA-20 LARC UPVT 1057 - 140AVB ORBITER	10.000	55.000	.000	-21.000	LREF 476.8117 IN.
(BC2005)	CA-20 LARC UPVT 1057 - 140AVB ORBITER	20.000	55.000	.000	-21.000	BREF 926.6816 IN.
(BC2006)	CA-20 LARC UPVT 1057 - 140AVB ORBITER	30.000	55.000	.000	-21.000	XPRP 1076.4800 IN.
						YPRP .0000 IN.
						ZPRP .0000 IN.
						SCALE .0150

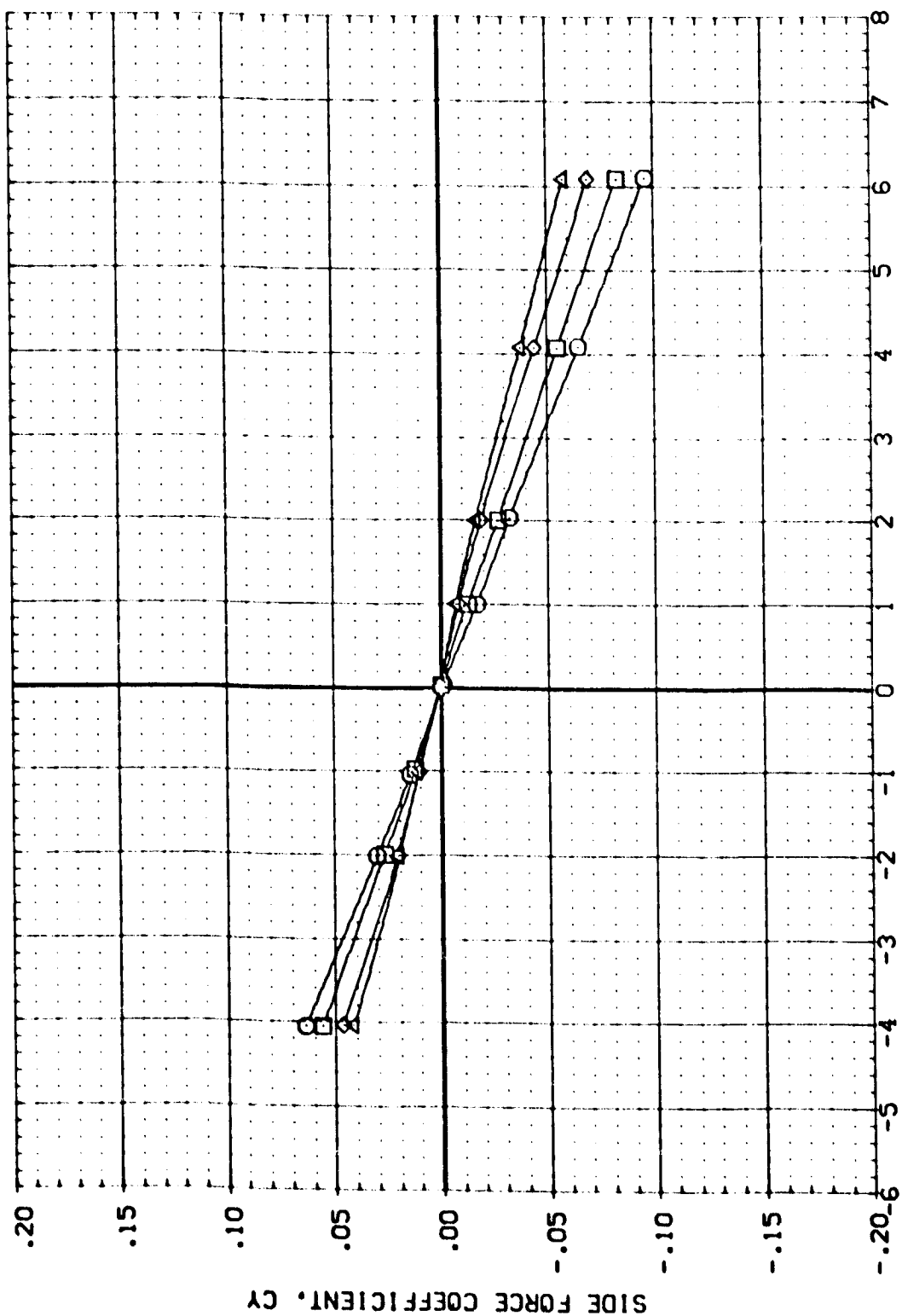


FIG 10 LATERAL-DIRECTIONAL CHARACTERISTICS FROM BETA SWEEPS

(B)MACH = 3.90

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	SFOBBY	RUDDEP	BOFLAP	REFERENCE INFORMATION
BC2003	CA-ZC LARC JUNT 057 - 14CA/B 098 TER	.000	55.000	.000	-21.000	SREF 2690.0000 SC.F.T.
BC2004	CA-ZC LARC JUNT 057 - 14CA/B 098 TER	10.000	55.000	.000	-21.000	LREF 475.8117 IN.
BC2005	CA-ZC LARC JUNT 057 - 14CA/B 098 TER	20.000	55.000	.000	-21.000	BREF 935.6816 IN.
BC2006	CA-ZC LARC JUNT 057 - 14CA/B 098 TER	30.000	55.000	.000	-21.000	YMPP 1075.4800 IN.
						ZMPP 375.0000 IN.
						SCALE .0150 SCALE

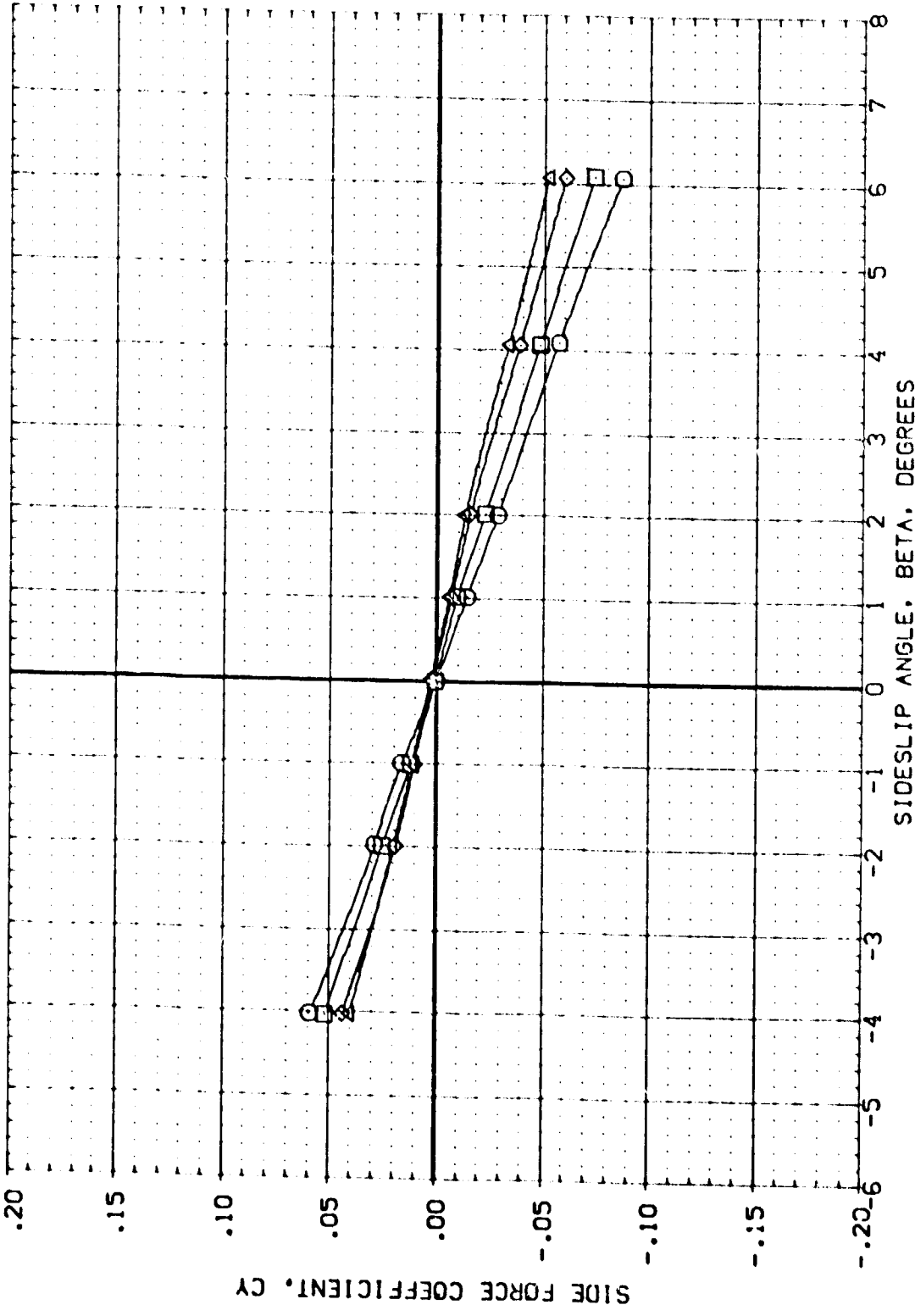


FIG 10 LATERAL-DIRECTIONAL CHARACTERISTICS FROM BETA SWEEPS

(CO)MACH = 4.50



CA-20 LARC UPWT 1057 - 140A/B ORBITER (802003)

SYMBOL		PARAMETRIC VALUES			DATA SOURCE			REFERENCE INFORMATION		
○	2.500	ELEVTR	.000	A1LPOW	.000	DATASET	802003	SREF	2690.0000	50. FT.
□	3.900	P-LODR	.000	SPOBPT	55.000	DATASET	802004	LREF	476.8117	IN.
◇	4.500	BOFLAP	-21.000		20.000	DATASET	802006	BREF	936.5816	IN.
								XREF	1076.4800	IN.
								YREF	.0000	IN.
								ZREF	375.0000	IN.
								SCALE	.0150	SCALE

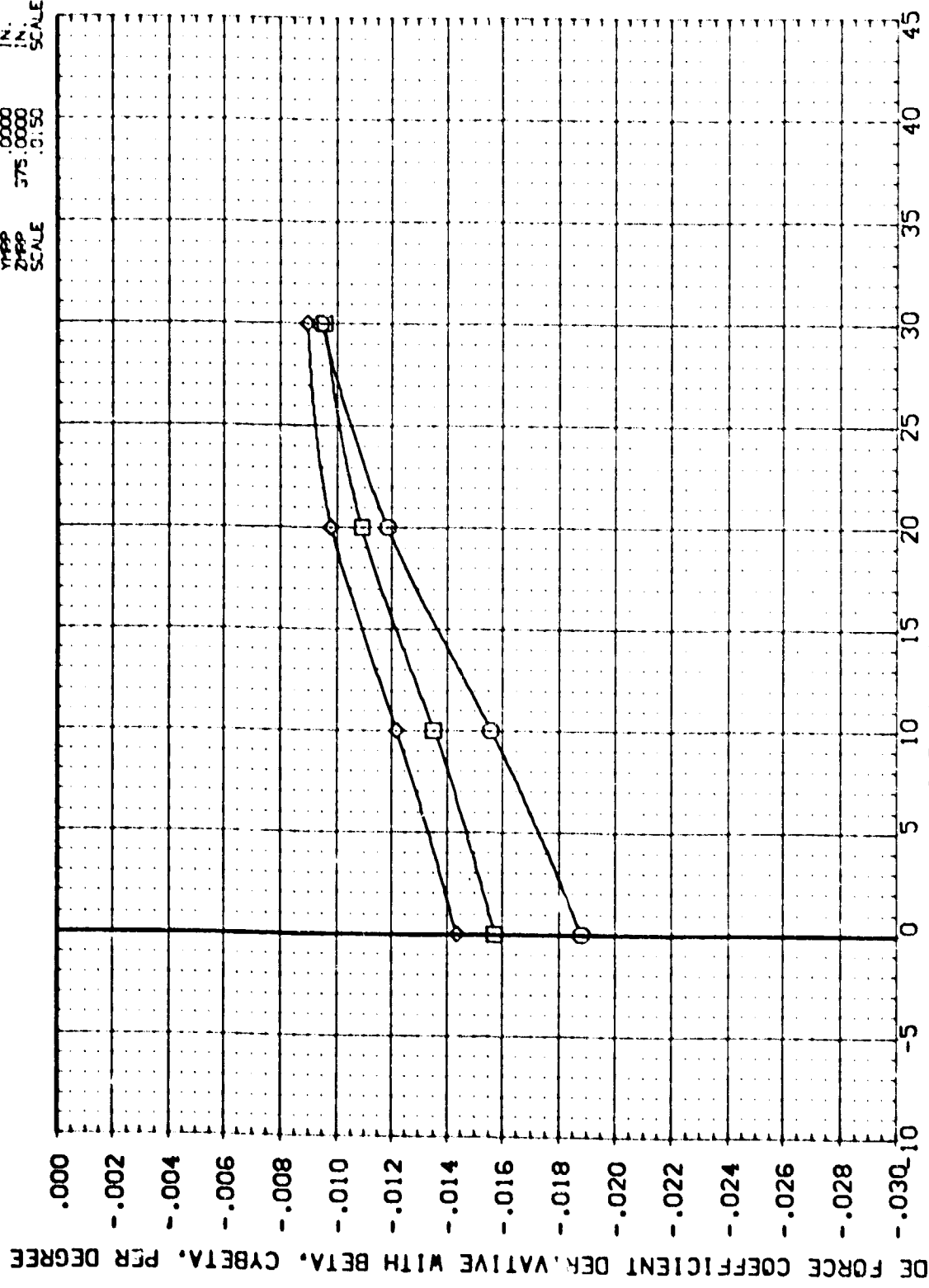


FIG 11 LATERAL-DIRECTIONAL DERIVATIVES FROM BETA SWEEPS

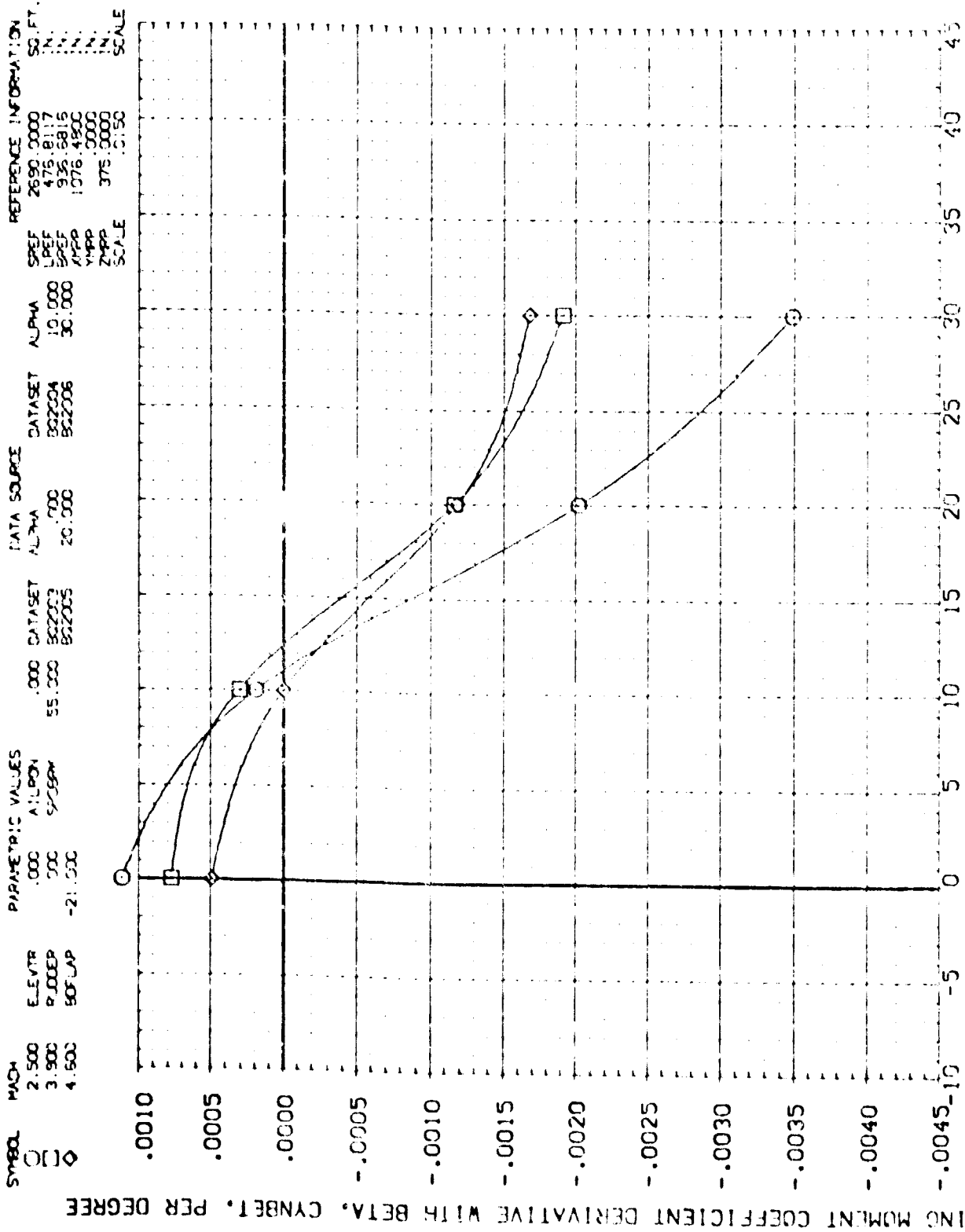


FIG 11 LATERAL-DIRECTIONAL DERIVATIVES FROM BETA SWEEPS

0A-20 LARC UPWT 1057 - 140A/B ORBITER (802003)

SYMBL	MACH	PARAMETRIC VALUES		DATA SOURCE		REFERENCE INFORMATION	
○	2.500	ELEVTR	.000	AIRLON	.000	ALPHA	2650.0000
□	3.900	RUDDER	.000	SPOBRK	55.000	REF	476.8117
◇	4.600	BOFLAP	-21.000	DATASET	802003	ALPHA	10.000
				DATASET	802004	REF	936.6816
				DATASET	802006	REF	1076.4800
						YREF	1775.0000
						ZREF	1775.0000
						SCALE	.0150
						SCALE	

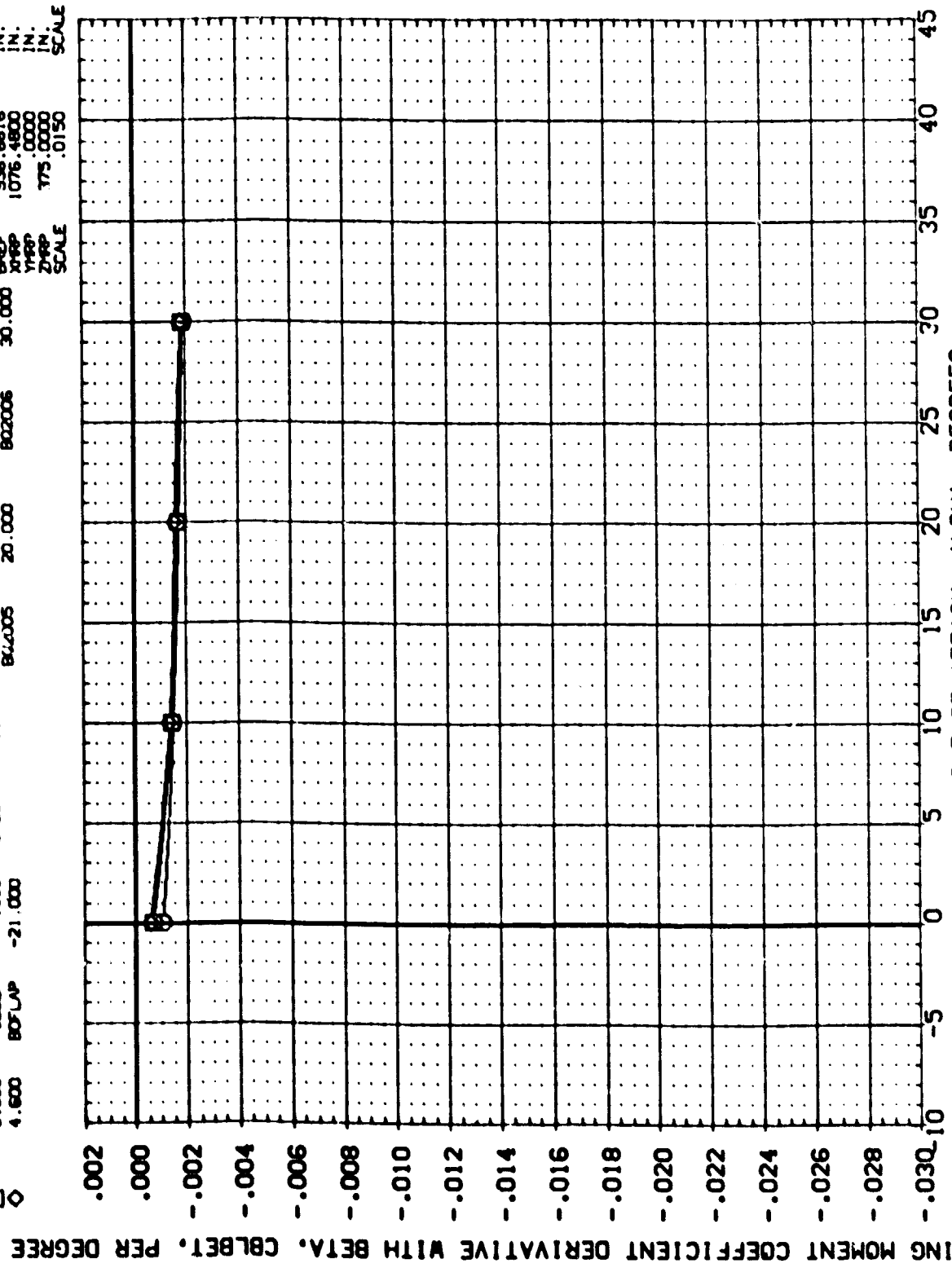


FIG 11 LATERAL-DIRECTIONAL DERIVATIVES FROM BETA SWEEPS

APPENDIX
TABULATED SOURCE DATA

Plotted data listings available on request
from the Data Management System.

ON-20 LARC UPWT 1057 - 140A/B ORBITER

(X20001) (11 DEC 73)

REFERENCE DATA

SREF = 2600.0000 50.FT. WHP = 1076.4800 IN.
 LREF = 476.8117 IN. YHP = .0000 IN.
 BREF = 936.6616 IN. ZHP = 400.0000 IN.
 SCALE = .0150 SCALE

RUN NO. 4/ 0 P/L = 2.50 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	BETA	ON	CA	CLM	CFB	CPC	CFN	CL	CD	L/D
2.900	-4.423	.01673	-1.13957	.10438	-.02169	-.07268	-.06694	-.07747	-.13110	.11483	-1.14169
2.900	-3.145	.01615	-1.13350	.10172	-.02028	-.07267	-.07148	-.07747	-.10794	.10761	-1.00303
2.900	-1.287	.01632	-.07872	.09773	-.01812	-.07267	-.07148	-.07747	-.07653	.09944	-.76962
2.900	-.264	.01642	-.05551	.09552	-.01756	-.07268	-.07149	-.08201	-.05507	.09578	-.57501
2.900	.722	.01652	-.03522	.09373	-.01674	-.07114	-.06696	-.08202	-.03645	.09328	-.39027
2.900	1.766	.01662	-.01213	.09208	-.01492	-.07013	-.06895	-.08202	-.01486	.09166	-.16214
2.900	2.800	.01632	.01190	.09043	-.01439	-.07268	-.07149	-.07747	.00655	.09125	.07183
2.900	3.806	.01643	.03373	.08969	-.01366	-.07523	-.07148	-.08000	.02770	.09173	.30199
2.900	5.803	.01661	.07907	.08634	-.01148	-.07523	-.07148	-.08000	.06975	.09449	.73815
2.900	7.936	.01761	.13019	.08401	-.01092	-.07267	-.07148	-.07747	.11734	.10118	1.15972
2.900	9.966	.01806	.18423	.08217	-.01066	-.07267	-.07148	-.07747	.16719	.12287	1.48126
2.900	15.147	.01831	.33738	.07797	-.01190	-.07523	-.07403	-.08001	.30529	.16342	1.86810
2.900	20.367	.01866	.51222	.07368	-.01556	-.07523	-.07403	-.08001	.45447	.24750	1.83626
2.900	25.536	.01846	.70118	.06962	-.01809	-.07268	-.07403	-.07747	.62666	.36510	1.65067
2.900	30.716	.01834	.91036	.06671	-.02441	-.07267	-.07148	-.07747	.74855	.52238	1.43296
2.900	36.072	.01768	1.14727	.06379	-.03231	-.07268	-.07148	-.07494	.88376	.72707	1.22376
2.900	41.254	.01740	1.38236	.05912	-.04395	-.07523	-.07148	-.08001	1.00026	.95598	1.04632
2.900	45.940	.01749	1.59471	.05456	-.05338	-.07267	-.07148	-.07494	1.08448	1.08414	.96373
GRADIENT		.02116	.03038	-.02103	-.02176	-.02263	-.02070	-.02151	.02808	-.02026	-.20249

RUN NO. 10/ 0 P/L = 2.50 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	BETA	ON	CA	CLM	CFB	CPC	CFN	CL	CD	L/D
3.900	-4.423	.01673	-1.13957	.10438	-.02169	-.07268	-.06694	-.07747	-.13110	.11483	-1.14169
3.900	-3.145	.01615	-1.13350	.10172	-.02028	-.07267	-.07148	-.07747	-.10794	.10761	-1.00303
3.900	-1.287	.01632	-.07872	.09773	-.01812	-.07267	-.07148	-.07747	-.07653	.09944	-.76962
3.900	-.264	.01642	-.05551	.09552	-.01756	-.07268	-.07149	-.08201	-.05507	.09578	-.57501
3.900	.722	.01652	-.03522	.09373	-.01674	-.07114	-.06696	-.08202	-.03645	.09328	-.39027
3.900	1.766	.01662	-.01213	.09208	-.01492	-.07013	-.06895	-.08202	-.01486	.09166	-.16214
3.900	2.800	.01632	.01190	.09043	-.01439	-.07268	-.07149	-.07747	.00655	.09125	.07183
3.900	3.806	.01643	.03373	.08969	-.01366	-.07523	-.07148	-.08000	.02770	.09173	.30199
3.900	5.803	.01661	.07907	.08634	-.01148	-.07523	-.07148	-.08000	.06975	.09449	.73815
3.900	7.936	.01761	.13019	.08401	-.01092	-.07267	-.07148	-.07747	.11734	.10118	1.15972
3.900	9.966	.01806	.18423	.08217	-.01066	-.07267	-.07148	-.07747	.16719	.12287	1.48126
3.900	15.147	.01831	.33738	.07797	-.01190	-.07523	-.07403	-.08001	.30529	.16342	1.86810
3.900	20.367	.01866	.51222	.07368	-.01556	-.07523	-.07403	-.08001	.45447	.24750	1.83626
3.900	25.536	.01846	.70118	.06962	-.01809	-.07268	-.07403	-.07747	.62666	.36510	1.65067
3.900	30.716	.01834	.91036	.06671	-.02441	-.07267	-.07148	-.07747	.74855	.52238	1.43296
3.900	36.072	.01768	1.14727	.06379	-.03231	-.07268	-.07148	-.07494	.88376	.72707	1.22376
3.900	41.254	.01740	1.38236	.05912	-.04395	-.07523	-.07148	-.08001	1.00026	.95598	1.04632
3.900	45.940	.01749	1.59471	.05456	-.05338	-.07267	-.07148	-.07494	1.08448	1.08414	.96373
GRADIENT		.02117	.03037	-.02103	-.02176	-.02266	-.02070	-.02151	.02808	-.02027	-.20249

PARAMETRIC DATA

BETA = .000 ELEVTR = .000
 ALLCON = .000 RUDDER = .000
 SPOBRK = 54.920 BOFLAP = -20.700

REFERENCE DATA

REF = 2690.0000 SQ.FT. YMRP = 1076.4800 IN.
LREF = 476.6117 IN. YMRP = .0000 IN.
BREF = 936.6816 IN. Z-REF = 400.0000 IN.
SCALE = .0120 SCALE

PARAMETRIC DATA

BETA = 3.0000 ELEVTR = .0000
AILRON = .0000 RUDDER = .0000
SPDRK = 54.920 BDFLAP = -20.700

RUN NO. 5/ 0 RNVL = 2.50 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	BETA	ON	CA	CLM	CFB	CFC	CFN	CL	CD	L/D
2.500	-4.821	3.08948	-1.9505	.13201	.00635	-.14049	-.14966	-.16817	-.18326	.14793	-1.23883
2.500	-3.397	3.08759	-1.5122	.13054	.00323	-.15024	-.14966	-.17166	-.14322	.13927	-1.02835
2.500	-1.582	3.08436	-.09337	.12925	.00069	-.15555	-.15319	-.17516	-.08977	.13178	-.68120
2.500	-.524	3.08369	-.05941	.12836	-.00062	-.15733	-.15497	-.17342	-.05824	.12890	-.45180
2.500	.483	3.08196	-.02958	.12745	-.00330	-.15908	-.15495	-.17516	-.03065	.12720	-.24098
2.500	1.544	3.08025	.00437	.12635	-.00460	-.16086	-.15848	-.17692	.00297	.12642	.00767
2.500	2.616	3.07958	.03814	.12500	-.00676	-.16268	-.16201	-.17517	.03239	.12661	.25583
2.500	3.625	3.07829	.06759	.12363	-.00942	-.16488	-.16378	-.16993	.05964	.12765	.46720
2.500	5.730	3.07839	.13272	.12032	-.01091	-.16793	-.16729	-.17167	.12004	.13297	.90274
2.500	7.841	3.07644	.20159	.11647	-.01273	-.17150	-.17084	-.17695	.18381	.14288	1.28649
2.500	9.957	3.07597	.27248	.11242	-.01386	-.17528	-.17261	-.18396	.24894	.15784	1.57716
2.500	15.218	3.07615	.45551	.10523	-.02103	-.18033	-.18140	-.19095	.41192	.22110	1.86302
2.500	20.490	3.07732	.65169	.09525	-.03048	-.17857	-.17788	-.18395	.57712	.31734	1.81864
2.500	25.676	3.08211	.86522	.08559	-.03815	-.17504	-.17261	-.17871	.74199	.45281	1.63865
2.500	31.189	3.08280	1.08127	.07326	-.04938	-.17148	-.16554	-.16468	.88716	.62259	1.42478
2.500	36.587	3.08369	1.31368	.06446	-.05847	-.17148	-.16378	-.16818	1.01640	.83476	1.21759
2.500	41.945	3.07779	1.55432	.05665	-.07633	-.18032	-.17259	-.16818	1.11822	1.08106	1.03437
2.500	44.633	3.07451	1.66480	.05384	-.08007	-.18564	-.17789	-.17346	1.14687	1.20794	.94945
GRADIENT			.03123	-.00096	-.00179	-.00153	-.00174	-.00044	.02891	-.00235	.20610

RUN NO. 11/ 0 RNVL = 2.50 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	BETA	ON	CA	CLM	CFB	CFC	CFN	CL	CD	L/D
3.900	-4.375	3.03464	-1.3842	.10468	-.02214	-.06756	-.06894	-.08001	-.13004	.11494	-1.13134
3.900	-3.023	3.03373	-1.1249	.10178	-.02049	-.06756	-.06894	-.07747	-.10696	.10757	-.99435
3.900	-1.274	3.03183	-.07795	.09827	-.01830	-.07012	-.07148	-.07747	-.07575	.09988	-.75764
3.900	-.289	3.03148	-.05781	.09654	-.01746	-.07267	-.07148	-.07493	-.05732	.09683	-.59202
3.900	.745	3.03113	-.03758	.09462	-.01535	-.07011	-.07148	-.07747	-.03880	.09412	-.41225
3.900	1.781	3.03021	-.01450	.09263	-.01477	-.07012	-.07149	-.07747	-.01737	.09213	-.18855
3.900	2.823	3.03033	.01124	.09062	-.01373	-.07268	-.07149	-.07747	.00677	.09106	.07432
3.900	3.823	3.02896	.03381	.08918	-.01516	-.07268	-.07149	-.07747	.02778	.09124	.30451
3.900	5.848	3.02872	.07952	.08653	-.01276	-.07524	-.07149	-.07748	.06979	.09413	.74145
3.900	7.946	3.02748	.12997	.08420	-.01217	-.07523	-.07403	-.08001	.11708	.10136	1.15309
3.900	9.985	3.02728	.18381	.08270	-.01189	-.07524	-.07403	-.08001	.16669	.11332	1.47095
3.900	15.168	3.02752	.33959	.07813	-.01332	-.07523	-.07403	-.08254	.30731	.16426	1.87087
3.900	20.331	3.02899	.50855	.07385	-.01511	-.07524	-.07404	-.08001	.45120	.24594	1.83460
3.900	25.540	3.02938	.70311	.06988	-.01816	-.07524	-.07404	-.08001	.60428	.36619	1.65017
3.900	30.753	3.02819	.91237	.06720	-.02448	-.07523	-.07403	-.08001	.74971	.52428	1.42999
3.900	36.045	3.02862	1.14256	.06388	-.03186	-.07524	-.07404	-.08001	.88623	.72395	1.22415
3.900	41.275	3.02659	1.37954	.05969	-.04351	-.07524	-.07419	-.07241	.99741	.95491	1.04451
3.900	43.981	3.02619	1.50258	.05557	-.05041	-.07268	-.07148	-.07240	1.04263	1.08339	.96238
GRADIENT			-.02095	-.00190	-.00090	-.00050	-.00034	-.00018	.01921	-.00292	.17623

REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.4000 IN.
 LREF = 476.8117 IN. YMRP = .0000 IN.
 BREF = 936.6816 IN. ZMRP = 400.0000 IN.
 SCALE = .0150 SCALE

PARAMETRIC DATA

BETA = 3.000 ELEVTR = .000
 AILRON = .000 RUDDER = .000
 SPDDBK = 54.920 BDFLAP = -20.700

RUN NO. 17/ 0 RN/L = 2.50 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	BETA	CN	CA	CLM	CPB	CPC	CFN	CL	CD	L/D
4.600	-4.045	3.02309	-1.13654	.10249	-.02580	-.04688	-.04533	-.05295	-.12911	.10987	-1.17513
4.600	-2.716	3.02217	-1.0707	.09653	-.02334	-.04688	-.04859	-.05295	-.10238	.10149	-1.00876
4.600	-.962	3.02082	-.07394	.09282	-.02115	-.04688	-.04859	-.05620	-.07237	.09404	-.76954
4.600	.040	3.01986	-.05550	.09183	-.01938	-.04688	-.04859	-.05295	-.05556	.09049	-.61401
4.600	.061	3.01950	-.03338	.08809	-.01959	-.04688	-.04859	-.05295	-.03500	.08746	-.40023
4.600	2.050	3.01957	-.01491	.08587	-.01783	-.04688	-.04859	-.05295	-.01797	.08528	-.21073
4.600	3.110	3.01863	.01072	.08324	-.01838	-.05015	-.04859	-.05295	.07619	.08370	.07396
4.600	4.111	3.01929	.02858	.08185	-.01662	-.05015	-.04859	-.05620	.02264	.08369	.27051
4.600	6.159	3.01799	.07526	.07874	-.01577	-.05342	-.04859	-.05620	.06637	.08636	.76852
4.600	8.209	3.01772	.12202	.07606	-.01330	-.05015	-.04859	-.05620	.10991	.09271	1.18554
4.600	10.226	3.01790	.17247	.07354	-.01119	-.05015	-.04859	-.05620	.15668	.10299	1.52130
4.600	15.378	3.01725	.32027	.06962	-.01148	-.05342	-.04859	-.05620	.29034	.15206	1.90933
4.600	20.501	3.01725	.48436	.06698	-.01223	-.05342	-.05185	-.05620	.43069	.23254	1.85213
4.600	25.707	3.01761	.67478	.06449	-.01388	-.05342	-.04859	-.05620	.58002	.35080	1.65340
4.600	30.796	3.01739	.86845	.06340	-.01990	-.05342	-.04859	-.05620	.71354	.49959	1.42967
4.600	36.043	3.01681	1.09736	.06200	-.03120	-.05015	-.04859	-.05295	.85188	.69435	1.22686
4.600	41.197	3.01577	1.31980	.05570	-.04498	-.05015	-.04859	-.05295	.95641	.91119	1.04962
4.600	43.935	3.01410	1.43584	.05068	-.05811	-.04688	-.04859	-.04971	.99884	1.03273	.96718
GRADIENT			.02017	-.00229	.00104	-.00039	-.00039	-.00015	.01855	-.00321	.17892

REFERENCE DATA

SREF = 2000.0000 SQ.FT. XMRP = 1076.4800 IN.
 LREF = 476.8117 IN. YMRP = .0000 IN.
 BREF = 936.6816 IN. ZMRP = 400.0000 IN.
 SCALE = .0150 SCALE

PARAMETRIC DATA

ALPHA = .000 ELEVTR = .000
 AIRRON = .000 RUDDER = .000
 SFDORK = 54.920 BDFLAP = -20.700

RUN NO. 6/ 0 RN/L = 2.50 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	ALPHA	ON	CA	CLM	CFB	CFC	CFN	CL	CD	L/D
2.500	-4.101	-.54337	-.05248	.12797	-.00019	-.16265	-.15851	-.18219	-.05126	.12846	-.39906
2.500	-2.033	-.57255	-.05410	.12963	.00164	-.16091	-.15677	-.18046	-.05281	.12917	-.40885
2.500	-1.027	-.55062	-.05405	.12829	.00163	-.15563	-.15503	-.17522	-.05281	.12881	-.41003
2.500	.021	-.55773	-.05386	.12826	.00159	-.15210	-.15328	-.17348	-.05261	.12878	-.40855
2.500	1.029	-.51354	-.05375	.12848	.00068	-.15389	-.15906	-.17524	-.05260	.12896	-.40788
2.500	2.037	-.53079	-.05359	.12873	-.00025	-.15740	-.15152	-.17520	-.05240	.12922	-.40550
2.500	4.114	-.52822	-.05527	.12844	-.00279	-.15737	-.15852	-.17520	-.05408	.12895	-.41940
2.500	6.167	-.53923	-.05494	.12825	-.00552	-.15742	-.15742	-.17349	-.05373	.12876	-.41725
GRADIENT		.00423	-.00023	.00005	-.00033	.00070	.00024	.00089	-.00024	-.00001	-.00169

RUN NO. 12/ 0 RN/L = 2.50 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	ALPHA	ON	CA	CLM	CFB	CFC	CFN	CL	CD	L/D
3.900	-4.060	-.28273	-.05921	.09709	-.01714	-.07267	-.07148	-.08000	-.05873	.09738	-.60314
3.900	-2.015	-.28116	-.05875	.09638	-.01595	-.07012	-.07148	-.08001	-.05827	.09667	-.60282
3.900	-1.036	-.29563	-.05858	.09608	-.01599	-.07012	-.06894	-.08001	-.05808	.09638	-.60264
3.900	.019	-.26299	-.05544	.09556	-.01630	-.07268	-.06894	-.08001	-.05500	.09581	-.57403
3.900	.998	-.27912	-.05528	.09588	-.01763	-.07012	-.06894	-.08001	-.05481	.09615	-.57006
3.900	2.034	-.29631	-.05797	.09626	-.01742	-.07012	-.06894	-.08001	-.05747	.09656	-.59515
3.900	4.089	-.28112	-.05760	.09707	-.01751	-.07012	-.07149	-.07748	-.05712	.09735	-.58673
3.900	6.100	-.27102	-.05430	.09791	-.01790	-.07268	-.07149	-.07748	-.05384	.09816	-.54844
GRADIENT		-.00019	.00026	-.00001	-.00014	.00024	.00012	.00024	-.00026	-.00001	-.00265

RUN NO. 18/ 0 RN/L = 2.50 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	ALPHA	ON	CA	CLM	CFB	CFC	CFN	CL	CD	L/D
4.800	-4.025	-.02245	-.05697	.09043	-.02068	-.05015	-.04859	-.05295	-.05700	.09041	-.63045
4.800	-1.968	.00813	-.05554	.09002	-.02077	-.05015	-.04859	-.05295	-.05656	.09001	-.62831
4.800	-.995	.00793	-.05638	.08962	-.02080	-.04688	-.04859	-.05620	-.05638	.08962	-.62911
4.800	-.001	.04584	-.05615	.08894	-.02083	-.05015	-.04859	-.05620	-.05622	.08889	-.63248
4.800	1.014	.03044	-.05590	.08939	-.02090	-.05015	-.04859	-.05620	-.05595	.08936	-.62615
4.800	2.008	.02446	-.05570	.08983	-.01932	-.04688	-.04859	-.05620	-.05574	.08980	-.62065
4.800	4.092	.02349	-.05536	.09055	-.02105	-.04688	-.04859	-.05295	-.05540	.09052	-.61200
4.800	6.076	.03681	-.05499	.09162	-.02116	-.04688	-.04859	-.05295	-.05505	.09159	-.60108
GRADIENT		.00154	-.00020	-.00000	.00003	.00039	.00000	-.00015	.00020	-.00000	.00218

REFERENCE DATA

SCEF = 2000.0000 50. FT. XREF = 1076.4800 IN.
LREF = 476.8117 IN. YREF = .0000 IN.
BREF = 936.6816 IN. ZREF = 400.0000 IN.
SCALE = .0190 SCALE

PARAMETRIC DATA

ALPHA = 20.000 ELEVTR = .000
AIIUDN = .000 RUDDER = .000
SPOBRK = 54.920 SDFLAP = -20.700

RUN NO. 8 / 0 RNVL = 2.50 GRADIENT INTERVAL = -5.00/ 5.00

MAOH	BETA	ALPHA	ON	CA	CLM	CPB	CPC	CPN	CL	CD	L/D
2.900	-4.103	20.52827	.69089	.09444	-.03142	-.18022	-.17953	-.18209	.37645	.31667	1.82034
2.900	-2.031	20.47364	.64842	.09634	-.02938	-.17844	-.17952	-.18311	.37376	.31706	1.80965
2.900	-1.026	20.46207	.64637	.09635	-.02829	-.18197	-.17950	-.18733	.37198	.31650	1.80721
2.900	.023	20.49447	.64895	.09647	-.02841	-.18021	-.17999	-.18384	.37326	.31725	1.80694
2.900	1.007	20.52376	.64829	.09641	-.02839	-.18018	-.17772	-.18281	.37233	.31760	1.80517
2.900	2.032	20.51363	.64773	.09604	-.02917	-.17849	-.17780	-.18389	.37235	.31669	1.80729
2.900	4.126	20.50319	.65140	.09439	-.03294	-.18017	-.18124	-.18732	.37715	.31660	1.82286
2.900	6.161	20.51473	.65424	.09310	-.03377	-.18079	-.18481	-.18258	.38012	.31648	1.83307
GRADIENT		.00071	.00003	-.00002	-.00014	.00004	-.00004	-.00016	.00003	.00000	.00010

RUN NO. 14 / 0 RNVL = 2.50 GRADIENT INTERVAL = -5.00/ 5.00

MAOH	BETA	ALPHA	ON	CA	CLM	CPB	CPC	CPN	CL	CD	L/D
3.900	-4.937	20.32891	.50762	.07362	-.01651	-.07523	-.07403	-.08701	.45243	.24539	1.83558
3.900	-2.013	20.32958	.50698	.07425	-.01513	-.07524	-.07403	-.08701	.44960	.24576	1.82942
3.900	-1.016	20.31942	.50669	.07427	-.01503	-.07524	-.07404	-.07747	.44937	.24565	1.82969
3.900	.019	20.30930	.50690	.07366	-.01501	-.07524	-.07404	-.08701	.44945	.24488	1.83539
3.900	.997	20.32695	.50822	.07389	-.01496	-.07524	-.07404	-.08701	.44972	.24516	1.83155
3.900	2.013	20.32005	.50597	.07382	-.01464	-.07524	-.07404	-.08701	.44881	.24502	1.83171
3.900	4.085	20.32975	.50829	.07352	-.01632	-.07779	-.07403	-.07747	.45109	.24553	1.83717
3.900	6.096	20.32211	.51054	.07350	-.01647	-.07779	-.07658	-.08701	.45324	.24524	1.84266
GRADIENT		-.00014	.00001	-.00003	.00009	-.00004	-.00000	.00016	.00002	-.00003	.00031

RUN NO. 20 / 0 RNVL = 2.50 GRADIENT INTERVAL = -5.00/ 5.00

MAOH	BETA	ALPHA	ON	CA	CLM	CPB	CPC	CPN	CL	CD	L/D
4.800	-4.022	20.49829	.47932	.06710	-.01193	-.05342	-.05185	-.05620	.42548	.23068	1.84447
4.800	-2.005	20.50637	.47870	.06662	-.01180	-.05015	-.04899	-.05295	.42583	.23079	1.84721
4.800	-1.012	20.49371	.47845	.06666	-.01174	-.05015	-.04899	-.05295	.42482	.22997	1.84731
4.800	.019	20.49436	.48197	.06621	-.01204	-.05015	-.04899	-.05295	.42826	.23080	1.83558
4.800	.993	20.49822	.48175	.06661	-.01200	-.05015	-.04899	-.05295	.42792	.23109	1.83176
4.800	2.024	20.50056	.48152	.06655	-.01195	-.05342	-.05185	-.05620	.42769	.23103	1.83124
4.800	4.089	20.50511	.48084	.06654	-.01181	-.05342	-.04899	-.05594	.42716	.23078	1.83049
4.800	6.073	20.52755	.48031	.06680	-.01335	-.05342	-.04899	-.05620	.42639	.23098	1.84598
GRADIENT		.00128	.00005	-.00006	-.00000	-.00016	.00015	-.00046	.00035	-.00008	.00006

CM-20 LARC UPM 1037 - 140A/B ORBITER

(X02006) (11 DEC 73)

REFERENCE DATA

SPEC = 7090.07971 50.FT. YMRP = 1076.4800 IN.
 LREF = 476.8117 IN. YMRP = .0000 IN.
 BREF = 936.6018 IN. ZMRP = 470.0000 IN.
 SCALE = .0150 SCALE

PARAMETRIC DATA

ALPHA = 30.000 ELEVTR = .000
 ATLRON = .000 RUDDER = .000
 SFDSEF = 54.920 BDFLAP = -20.700

RUN NO. 9/ 0 RN/L = 2.50 GRADIENT INTERVAL = -9.00/ 5.00

MACH	BETA	ALPHA	ON	CA	CLM	CFB	CFC	CFN	CL	CD	L/D
2.900	-4.082	31.13637	1.07054	.07394	-.04832	-.17312	-.16993	-.13208	.87809	-.61604	1.42353
2.900	-2.036	31.07540	1.06982	.07297	-.04722	-.16426	-.16187	-.16604	.87867	-.61462	1.42961
2.900	-1.027	31.02079	1.07066	.07316	-.04642	-.16433	-.16191	-.16383	.87966	-.61504	1.43025
2.900	0.000	31.12143	1.07262	.07274	-.04656	-.16430	-.16014	-.16908	.88066	-.61664	1.42814
2.900	1.029	31.11999	1.07295	.07277	-.04650	-.16249	-.16110	-.17590	.88193	-.61684	1.42915
2.900	2.030	31.12362	1.07671	.07271	-.04762	-.16429	-.16169	-.17129	.88354	-.61842	1.42871
2.900	4.069	31.11640	1.07754	.07371	-.04942	-.17665	-.16992	-.16452	.88398	-.62057	1.42446
2.900	6.096	31.19116	1.07635	.07514	-.04635	-.18199	-.17599	-.15927	.88185	-.62170	1.41845
GRADIENT		.00595	.00769	-.00074	-.00012	-.00030	.00704	.00202	.00080	.00057	-.00001

RUN NO. 15/ 0 RN/L = 2.50 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	ALPHA	ON	CA	CLM	CFB	CFC	CFN	CL	CD	L/D
3.900	-4.030	30.76475	.91185	.06754	-.02351	-.07523	-.07403	-.08001	.74898	-.52446	1.42808
3.900	-2.014	30.75452	.91365	.06650	-.02464	-.07524	-.07404	-.08001	.75095	-.52470	1.43120
3.900	-1.017	30.73228	.91334	.06697	-.02476	-.07524	-.07404	-.07747	.75085	-.52490	1.43209
3.900	0.000	30.75672	.91599	.06718	-.02457	-.07523	-.07149	-.07747	.75280	-.52617	1.43072
3.900	1.006	30.75774	.91572	.06718	-.02364	-.07268	-.07149	-.07494	.75255	-.52604	1.43061
3.900	2.013	30.76844	.91552	.06714	-.02358	-.07267	-.07148	-.07747	.75231	-.52604	1.43012
3.900	4.065	30.75923	.91735	.06746	-.02367	-.07524	-.07404	-.07747	.75324	-.52715	1.43001
3.900	6.096	30.75668	.91650	.06811	-.02347	-.07779	-.07403	-.07747	.75274	-.52725	1.42769
GRADIENT		.00076	.00766	.00001	.00007	.00018	.00018	.00042	.00056	.00036	-.00009

RUN NO. 21/ 0 RN/L = 2.50 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	ALPHA	ON	CA	CLM	CFB	CFC	CFN	CL	CD	L/D
4.000	-4.023	30.64746	.86351	.06283	-.01976	-.05342	-.04859	-.05620	.70914	-.49672	1.42765
4.000	-2.006	30.63964	.86639	.06288	-.01890	-.05342	-.04859	-.05620	.71165	-.49813	1.42864
4.000	-1.013	30.61571	.86597	.06255	-.01982	-.05342	-.04859	-.05295	.71167	-.49734	1.43095
4.000	0.018	30.61550	.86566	.06254	-.01975	-.05342	-.04859	-.05620	.71140	-.49717	1.43092
4.000	1.013	30.79347	.86555	.06262	-.01970	-.05342	-.04859	-.05620	.71147	-.49691	1.43180
4.000	2.005	30.79329	.86526	.06202	-.01965	-.05342	-.04859	-.05620	.71111	-.49710	1.43033
4.000	4.069	30.7914	.86427	.06341	-.02108	-.05015	-.04859	-.05295	.70994	-.49691	1.42880
4.000	6.071	30.60161	.86334	.06372	-.02090	-.05342	.04859	-.05620	.70890	-.49687	1.42673
GRADIENT		-.00798	.00781	.00006	-.00019	.00031	.00000	.00023	.00004	-.00004	.00021

REFERENCE DATA

REF = 2000.0000 50. FT. REF = 1076.4000 IN.
LREF = 478.0117 IN. YREF = .0000 IN.
BREF = 936.0016 IN. ZREF = 400.0000 IN.
SCALE = .0190 SCALE

RUN NO. 24 / 0 RAVL = 2.90 GRADIENT INTERVAL = -9.00 / 9.00

MACH	ALPHA	BETA	ON	CA	CLM	CPB	CPC	CPM	CL	CD	L/C
2.970	-4.814	-0.0025	-3.0946	-1.7049	.07427	-1.1326	-1.1096	-1.1116	-2.0334	.20364	-1.43031
2.972	-3.438	-0.00194	-2.8189	-1.7415	.07079	-1.13645	-1.13431	-1.15281	-2.0009	.18955	-1.32410
2.974	-1.699	-0.00100	-2.5187	-1.6852	.06384	-1.14735	-1.14141	-1.19066	-1.9696	.17429	-1.12974
2.976	-.995	-0.0017	-1.8189	-1.6900	.06024	-1.15904	-1.14851	-1.16458	-1.9016	.16087	-.96094
2.978	.434	-0.0040	-1.2800	-1.6122	.05548	-1.16823	-1.15202	-1.1702	-1.8202	.14729	-.87417
2.979	1.474	-0.0019	-0.9815	-1.5698	.05160	-1.15607	-1.15553	-1.17571	-1.7611	.13456	-.82184
2.979	2.537	.00123	-0.6628	-1.5216	.04645	-1.15007	-1.15583	-1.17024	-1.6297	.14922	-.82111
2.979	3.578	-0.0013	-0.3269	-1.4757	.04346	-1.15831	-1.15587	-1.18170	-1.5185	.14586	-.82188
2.979	4.604	-0.0041	.04452	-1.4205	.04004	-1.15986	-1.15740	-1.19047	-1.4489	.14051	-.81031
2.979	5.778	.00114	.15592	-1.3671	.03775	-1.15874	-1.15555	-1.17945	-1.4635	.14377	-.87622
2.979	6.970	-0.0149	.17908	-1.3275	.04109	-1.15110	-1.15742	-1.17926	-1.4154	.14909	-.95095
2.979	8.148	-0.0142	.36642	-1.1922	.13445	-1.15340	-1.16793	-1.17325	-1.2272	.21088	1.33017
2.979	9.470	-0.0228	.55967	-1.0445	.22805	-1.17143	-1.16793	-1.18271	-1.4371	.29246	1.64746
2.979	10.848	-0.0258	.76714	.03227	.32515	-1.17471	-1.16974	-1.18626	.5979	.41794	1.95645
2.979	12.245	-0.0299	.96779	.09424	.42874	-1.17757	-1.17329	-1.19874	.7855	.57154	2.27437
2.979	13.665	-0.0341	1.15921	.07976	.52728	-1.17765	-1.17156	-1.1861	.91487	.74783	2.59123
2.979	15.109	-0.0387	1.41154	.06209	.62469	-1.17749	-1.16823	-1.17927	1.01018	.94785	2.92229
2.979	16.574	-0.0431	1.61695	.04851	.72418	-1.16694	-1.16822	-1.17925	1.07995	1.10664	3.26997
2.979	18.064	.00134	1.78332	-.00006	.82378	-1.15792	-1.15792	-1.15792	1.1114	1.25688	3.64791

PARAMETRIC DATA

BETA = .0005 ELEVTE = -40.000
ATLSON = .0005 SLODER = .000
SPODER = 54.925 BOFLAP = -29.700

RUN NO. 27 / 5 RAVL = 2.90 GRADIENT INTERVAL = -9.00 / 9.00

MACH	ALPHA	BETA	ON	CA	CLM	CPB	CPC	CPM	CL	CD	L/C
3.970	-4.415	.01805	-2.1315	-1.3419	.01873	-1.06559	-1.04441	-1.07540	-2.0219	.19200	-1.34816
3.970	-3.781	.01619	-1.9674	-1.3716	.01681	-1.06917	-1.04441	-1.07551	-1.7685	.17981	-1.26498
3.970	-1.332	.01636	-1.4641	-1.2437	.01344	-1.06916	-1.04770	-1.07551	-1.6247	.12834	-1.11782
3.970	-.313	.01874	-1.2741	-1.0953	.01016	-1.06916	-1.04997	-1.07572	-1.4991	.11288	-.98413
3.970	.096	.01816	-.9970	-1.1777	.01784	-1.06914	-1.04996	-1.07572	-1.3693	.11658	-.84064
3.970	1.072	.01925	-.6745	-1.1114	.01843	-1.06931	-1.04997	-1.07571	-1.2777	.11292	-.69877
3.970	2.093	.01837	-.34848	-1.0253	.01873	-1.07069	-1.04994	-1.07567	-1.1931	.11003	-.46994
3.970	3.099	.01649	.02298	-1.0007	.01777	-1.07069	-1.04994	-1.07567	-1.1207	.11003	-.27699
3.970	4.092	.01592	.07906	-1.0001	.01894	-1.07069	-1.04996	-1.07561	-1.0643	.11193	-.16734
3.970	5.054	.01617	.13321	.00006	.02048	-1.07068	-1.04996	-1.07561	-1.1419	.12114	.04186
3.970	5.9127	.01641	.09086	.09189	.02312	-1.07068	-1.04996	-1.07561	-1.2294	.14859	1.24826
3.970	6.7313	.01648	.05960	.07915	.02492	-1.07068	-1.04996	-1.07561	-1.3235	.20724	1.67859
3.970	7.5176	.01570	.03449	.07460	.02619	-1.07068	-1.04996	-1.07561	-1.4214	.28764	2.08428
3.970	8.2699	.01571	1.10227	.06966	.02790	-1.07068	-1.04996	-1.07561	-1.5217	.38785	2.47159
3.970	9.0162	.01562	1.27245	.06350	.02928	-1.06914	-1.04996	-1.07561	-1.6249	.50469	2.82482
3.970	9.7445	.01462	1.52417	.05957	.03052	-1.06914	-1.04996	-1.07561	-1.7319	.63409	3.15482
3.970	10.464	.01374	1.75300	-.00001	.03087	-1.06914	-1.04996	-1.07561	-1.8439	.77859	3.47482

SA-22 LABS UNIT 1027 - 142AUB ORBITED

(1427077) (11 DEC 73)

REFERENCE DATA

SREF = 2007.0000 SQ.FT. WREF = 1078.4000 IN.
 LREF = 470.8117 IN. WREF = 1078.4000 IN.
 DREF = 324.0410 IN. WREF = 401.7000 IN.
 SCALE = 0.01% SCALE

PARAMETRIC DATA

BETA = 0.05 ELEVTS = -40.000
 ATLRUM = 0.00 SUDDES = 0.00
 SPSBFA = 54.32 BDFLAR = -20.700

BLA NO. 23 5 PNL = 2.5% GRADIENT INTERVAL = -5.00/ 9.00

BLA NO.	ALPHA	BETA	ON	TA	QUM	CFB	CFE	CFM	TA	TA	L/C
4.070	4.763	0.627	0.724	0.270	0.003	0.440	0.404	0.937	0.247	0.470	0.3034
4.071	2.734	0.637	0.740	0.275	0.023	0.447	0.408	0.935	0.253	0.245	0.2997
4.072	0.170	0.671	0.747	0.279	0.032	0.447	0.408	0.935	0.253	0.220	0.2987
4.073	0.11	0.687	0.752	0.284	0.037	0.474	0.408	0.935	0.253	0.142	0.2942
4.074	0.119	0.694	0.754	0.286	0.041	0.447	0.408	0.935	0.253	0.043	0.2914
4.075	0.129	0.694	0.754	0.286	0.042	0.447	0.408	0.935	0.253	0.042	0.2914
4.076	0.134	0.694	0.754	0.286	0.042	0.447	0.408	0.935	0.253	0.042	0.2914
4.077	0.137	0.694	0.754	0.286	0.042	0.447	0.408	0.935	0.253	0.042	0.2914
4.078	0.137	0.694	0.754	0.286	0.042	0.447	0.408	0.935	0.253	0.042	0.2914
4.079	0.137	0.694	0.754	0.286	0.042	0.447	0.408	0.935	0.253	0.042	0.2914
4.080	0.137	0.694	0.754	0.286	0.042	0.447	0.408	0.935	0.253	0.042	0.2914
4.081	0.137	0.694	0.754	0.286	0.042	0.447	0.408	0.935	0.253	0.042	0.2914
4.082	0.137	0.694	0.754	0.286	0.042	0.447	0.408	0.935	0.253	0.042	0.2914
4.083	0.137	0.694	0.754	0.286	0.042	0.447	0.408	0.935	0.253	0.042	0.2914
4.084	0.137	0.694	0.754	0.286	0.042	0.447	0.408	0.935	0.253	0.042	0.2914
4.085	0.137	0.694	0.754	0.286	0.042	0.447	0.408	0.935	0.253	0.042	0.2914
4.086	0.137	0.694	0.754	0.286	0.042	0.447	0.408	0.935	0.253	0.042	0.2914
4.087	0.137	0.694	0.754	0.286	0.042	0.447	0.408	0.935	0.253	0.042	0.2914
4.088	0.137	0.694	0.754	0.286	0.042	0.447	0.408	0.935	0.253	0.042	0.2914
4.089	0.137	0.694	0.754	0.286	0.042	0.447	0.408	0.935	0.253	0.042	0.2914
4.090	0.137	0.694	0.754	0.286	0.042	0.447	0.408	0.935	0.253	0.042	0.2914
4.091	0.137	0.694	0.754	0.286	0.042	0.447	0.408	0.935	0.253	0.042	0.2914
4.092	0.137	0.694	0.754	0.286	0.042	0.447	0.408	0.935	0.253	0.042	0.2914
4.093	0.137	0.694	0.754	0.286	0.042	0.447	0.408	0.935	0.253	0.042	0.2914
4.094	0.137	0.694	0.754	0.286	0.042	0.447	0.408	0.935	0.253	0.042	0.2914
4.095	0.137	0.694	0.754	0.286	0.042	0.447	0.408	0.935	0.253	0.042	0.2914
4.096	0.137	0.694	0.754	0.286	0.042	0.447	0.408	0.935	0.253	0.042	0.2914
4.097	0.137	0.694	0.754	0.286	0.042	0.447	0.408	0.935	0.253	0.042	0.2914
4.098	0.137	0.694	0.754	0.286	0.042	0.447	0.408	0.935	0.253	0.042	0.2914
4.099	0.137	0.694	0.754	0.286	0.042	0.447	0.408	0.935	0.253	0.042	0.2914
4.100	0.137	0.694	0.754	0.286	0.042	0.447	0.408	0.935	0.253	0.042	0.2914

GRADIENT

CA-20 LAFC UPLT 1057 - 140A/B ORBITER

(102000) (11 DEC 73)

PERIODIC DATA

SACF = 2400.0000 50.0 FT. YMEP = 1076.1000 IN.
 LMEP = 476.8157 IN. YMEP = 1.0000 IN.
 BMEP = 934.8816 IN. ZMEP = 400.1000 IN.
 SCALE = 0.1391 SCALE

BETA = .000 ELEVTR = 15.000
 AIRCON = .000 RUDDER = .000
 SFDRK = 54.920 BOSLAF = 10.500

PUN NO. 2710 RML = 2.50 GRADIENT INTERVAL = -5.00/ 5.00

WACN	ALPHA	BETA	ON	CA	CLM	CFB	CPC	CPI	CL	CC	L/D
4.070	-4.951	-.00254	-11.001	1.0305	-.03006	-.04899	-.04363	-.05427	-1.0024	.11097	-.97536
4.070	-2.740	-.00244	-1.0610	.09956	-.03784	-.04899	-.04363	-.05427	-.00904	.10374	-.01974
4.070	-1.979	-.00171	-.05295	.09534	-.03786	-.04899	-.04363	-.05427	-.05131	.09824	-.53319
4.070	-.954	-.00163	-.03684	.09380	-.03795	-.04896	-.04359	-.05425	-.02092	.09377	-.32977
4.070	1.076	-.00237	-.00066	.09205	-.03803	-.04882	-.04363	-.05427	-.01039	.09187	-.11306
4.070	2.071	-.00290	.00947	.09098	-.03875	-.04899	-.04363	-.05427	.00657	.09128	.07200
4.070	3.002	-.00241	.03554	.08937	-.03864	-.04899	-.04363	-.05427	.03047	.09116	.33645
4.070	4.009	-.00232	.05710	.08846	-.03809	-.04899	-.04363	-.05427	.05570	.09229	.54916
4.070	6.262	-.00154	.10741	.08607	-.04166	-.05186	-.04668	-.05427	.09749	.09717	1.00328
4.070	8.199	-.00135	.15810	.08493	-.04292	-.04896	-.04685	-.05425	.14437	.10661	1.35424
4.070	10.226	-.00216	.21552	.08412	-.04799	-.04899	-.04668	-.05427	.19716	.12104	1.62885
4.070	15.346	-.00194	.30973	.08578	-.05186	-.04899	-.04668	-.05103	.34560	.18462	1.82817
4.070	20.556	-.00120	.37179	.08666	-.05793	-.04896	-.04668	-.05103	.50425	.28378	1.77694
4.070	25.743	-.00156	.47842	.09275	-.09754	-.04899	-.04668	-.05103	.69087	.42164	1.56737
4.070	30.882	-.00185	.59842	.09910	-.12089	-.04896	-.04668	-.05103	.80621	.59783	1.34991
4.070	36.078	-.00189	1.24247	.11455	-.19707	-.04896	-.04668	-.05103	.94381	.81902	1.15778
4.070	41.200	-.00204	1.46436	.10716	-.18210	-.04899	-.04668	-.05103	1.04627	1.05835	.98859
4.070	43.954	-.00209	1.61462	.10558	-.21478	-.04899	-.04363	-.05103	1.09881	1.19697	.87984
4.070	GRADIENT	-.00001	.02126	-.00177	-.00004	.00004	-.00022	-.00022	.01356	-.00029	.19046

PARAMETRIC DATA

OM-20 LARC UPWT 1057 - 10DA/B ORBITER

(K02070) (11 DEC 73)

REFERENCE DATA

SACF = 2090.0000 50.071. 1000P = 1076.4070 IN.
 LCRF = 476.0117 IN. 1000P = .0700 IN.
 BCRF = 936.0010 IN. 2000P = 400.0000 IN.
 SCALE = .0150 SCALE

PARAMETRIC DATA

BETA = .0000 ELEVTR = .0000
 ALLCON = .0000 RUDDER = .0000
 SPOSK = 54.920 BOXFLAP = 10.300

RUN NO. 28/ 0 RW/L = 2.50 GRADIENT INTERVAL = -5.00/ 5.00

MAON	ALPHA	BETA	ON	CA	CLM	CFB	CFC	CFN	CL	CC	L/D
3.970	-4.440	-0.00273	-1.13644	.10440	-.02215	-.04793	-.06914	-.07798	-.12015	.11467	-1.11756
3.970	-3.030	-0.00261	-1.11056	.10181	-.02178	-.04795	-.06916	-.08252	-.10502	.10752	-.97601
3.970	-1.272	-0.00245	-.07568	.09753	-.01835	-.04797	-.06910	-.08740	-.07349	.09919	-.74096
3.970	.271	-0.00234	-.05263	.09341	-.01907	-.04796	-.06917	-.08252	-.05218	.09566	-.54344
3.970	.747	-0.00224	-.03237	.09304	-.01828	-.04796	-.06917	-.08253	-.03359	.09341	-.35959
3.970	1.745	-0.00213	-.00928	.09242	-.01773	-.04795	-.06915	-.08252	-.01209	.09210	-.13130
3.970	2.824	-0.00196	.01375	.09129	-.01719	-.04794	-.06914	-.08251	.09723	.09105	.10552
3.970	3.667	-0.00193	.03644	.08999	-.01537	-.04790	-.06915	-.08252	.09729	.09224	.32036
3.970	5.076	-0.00176	.06460	.08714	-.01501	-.04794	-.06914	-.08251	.07525	.09524	.79707
3.970	7.916	-0.00151	.13055	.08406	-.01354	-.04795	-.06916	-.08251	.12554	.10313	1.21731
3.970	10.012	-0.00125	.19538	.08313	-.01162	-.04794	-.06915	-.08252	.17795	.11503	1.53624
3.970	13.104	-0.00098	.07909	-.02708	-.07305	-.04795	-.06914	-.08251	.16816	.16816	1.89337
3.970	20.397	-0.001361	.03451	.07554	-.03743	-.04794	-.07169	-.08251	.47466	.25708	1.84631
3.970	25.542	-0.001274	.75156	.07259	-.03485	-.04790	-.07175	-.08252	.62863	.36115	1.64931
3.970	30.791	-0.001384	.95174	.07036	-.03261	-.04795	-.06915	-.08252	.70156	.54765	1.42711
3.970	36.045	-0.001369	1.19131	.06852	-.06687	-.04790	-.06915	-.08252	.92239	.75705	1.21840
3.970	41.475	-0.001409	1.44248	.06490	-.04876	-.04795	-.06915	-.08252	1.03970	1.02269	1.03621
3.970	44.074	-0.001402	1.55931	.06135	-.04325	-.04795	-.06661	-.08252	1.07898	1.12739	.55706
GRADIENT	-.00002	-.00000	.02100	-.00177	.00076	-.00000	.00000	-.00000	.01925	-.00275	.17756

RUN NO. 29/ 0 RW/L = 2.50 GRADIENT INTERVAL = -5.00/ 5.00

MAON	ALPHA	BETA	ON	CA	CLM	CFB	CFC	CFN	CL	CC	L/D
4.000	-4.064	-0.00259	-1.12640	.10287	-.02652	-.04706	-.04563	-.05265	-.11694	.10957	-1.08548
4.000	-2.609	-0.00249	-.09623	.09623	-.02340	-.04410	-.04560	-.05264	-.09604	.10147	-.94655
4.000	-.987	-0.00237	-.06720	.09199	-.02160	-.04413	-.04563	-.05264	-.06361	.09314	-.70440
4.000	.042	-0.00190	-.04905	.08942	-.02101	-.04413	-.04563	-.05265	-.04315	.08937	-.50519
4.000	1.027	-0.00163	-.02653	.08772	-.02010	-.04413	-.04563	-.05265	-.02410	.08723	-.32218
4.000	2.001	-0.00154	-.00436	.08594	-.02033	-.04413	-.04563	-.05265	-.00750	.08573	-.08749
4.000	3.140	-0.00146	.01768	.08416	-.01895	-.04413	-.04563	-.05264	.01304	.08502	.15338
4.000	4.130	-0.00138	.03931	.08230	-.01750	-.04410	-.04560	-.05264	.03323	.08502	.39791
4.000	6.139	-0.00122	.06239	.07870	-.01640	-.04410	-.04563	-.05264	.07350	.08502	.64424
4.000	8.207	-0.00103	.13302	.07640	-.01597	-.04410	-.04560	-.05264	.12175	.09460	1.27636
4.000	10.253	-0.00117	.18693	.07397	-.01504	-.04410	-.04563	-.05264	.17177	.10676	1.61000
4.000	13.336	-0.00174	.33223	.07154	-.01390	-.04413	-.04563	-.05264	.30726	.15447	1.93897
4.000	20.546	-0.00213	.66877	-.02649	-.04413	-.04413	-.04563	-.05264	.45646	.24433	1.86672
4.000	25.642	-0.00145	.70287	-.03301	-.04413	-.04413	-.04563	-.05264	.67443	.36515	1.65373
4.000	30.005	-0.00277	.91413	.06602	-.04413	-.04413	-.04563	-.05264	.75095	.52554	1.42691
4.000	36.016	-0.00160	1.14879	.06369	-.04413	-.04413	-.04563	-.05264	.84937	.72744	1.22215
4.000	41.219	-0.00246	1.37962	.06247	-.04413	-.04413	-.04563	-.05264	.93652	.95607	1.04237
4.000	43.343	-0.00145	1.49692	.05864	-.04522	-.04506	-.04234	-.05614	1.03257	1.06239	.95952
GRADIENT	.00000	.00000	.02100	-.00177	.00076	-.00000	.00000	-.00000	.01925	-.00275	.17756

OM-20 LARC UPWT 1037 - 140A/B ORBITER

(2282001) (11 DEC 73)

REFERENCE DATA

SREF = 2090.0000 SQ.FT. XREF = 1076.4000 IN.
 LREF = 476.8117 IN. YREF = .0000 IN.
 SREF = 936.6016 IN. ZREF = 400.0000 IN.
 SCALE = .0190 SCALE

PARAMETRIC DATA

BETA = .0000 ELEVTR = .0000
 AIRLON = .0000 RUDDER = .0000
 SPOBKA = 54.920 DOFLAP = -20.700

RUN NO. 4 / 0 RM/L = 2.50 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	BETA	ON	CA	CLM	CLB	CYN	CY	CFB	CFC	CFN
2.900	-4.736	-.00233	-1.6406	.13153	.00683	-.00036	.00069	.00016	-.15540	-.15303	-.16627
2.900	-3.379	-.00102	-1.4193	.13036	.00691	-.00054	.00075	-.00084	-.15370	-.15487	-.16456
2.900	-1.601	-.00010	-.00995	.12873	.00399	-.00044	.00099	-.00113	-.15016	-.15311	-.16985
2.900	-.531	-.00190	-.05594	.12773	.00160	-.00036	.00076	-.00052	-.15201	-.15316	-.17341
2.900	.495	.00032	-.02404	.12624	-.00019	-.00034	.00062	-.00148	-.15011	-.15482	-.17156
2.900	1.603	-.00153	.00992	.12501	-.00237	-.00027	.00057	-.00011	-.15365	-.15483	-.17156
2.900	2.724	-.00072	.04375	.12414	-.00455	-.00017	.00039	-.00030	-.15970	-.15838	-.17685
2.900	3.656	.00013	.06944	.12306	-.00620	-.00017	.00022	-.00045	-.16175	-.16013	-.17859
2.900	5.716	-.00059	.13481	.11938	-.00928	.00017	.00022	-.00012	-.16175	-.16364	-.18033
2.900	7.670	.00041	.20235	.11523	-.01095	-.00010	.00036	-.00036	-.16174	-.16365	-.17859
2.900	9.936	-.00123	.27113	.11145	-.01194	-.00011	.00001	.00045	-.16435	-.16540	-.17688
2.900	12.245	-.00056	.45252	.10449	-.01901	.00013	-.00071	-.00013	-.17498	-.17430	-.18040
2.900	15.514	-.00045	.64549	.09612	-.02732	.00042	-.00030	.00128	-.18126	-.17428	-.18388
2.900	19.899	-.00064	.84320	.08425	-.03806	.00070	-.00046	.00248	-.17673	-.17429	-.18214
2.900	31.124	-.00041	1.07947	.07267	-.04581	.00106	-.00123	.00295	-.16437	-.16321	-.16814
2.900	36.631	-.000174	1.31196	.06402	-.05672	-.00016	.00047	.00043	-.17321	-.16550	-.17690
2.900	41.957	-.000131	1.54213	.05539	-.07446	.00078	-.00092	.00302	-.17498	-.16726	-.16989
2.900	44.646	-.000345	1.66640	.05117	-.08211	.00103	-.00097	.00473	-.17676	-.16727	-.16815
GRADIENT		.00016	.00036	-.00103	-.00176	.00004	-.00005	-.00001	-.00063	-.00070	-.00151

RUN NO. 10 / 0 RM/L = 2.50 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	BETA	ON	CA	CLM	CLB	CYN	CY	CFB	CFC	CFN
3.900	-4.423	.01603	-1.1397	.10436	-.02189	.00010	.00066	-.00052	-.07268	-.06894	-.07747
3.900	-3.045	.01015	-1.1330	.10172	-.02028	.00010	.00087	-.00065	-.07267	-.07148	-.07747
3.900	-1.267	.01632	-.07672	.09773	-.01912	-.00001	.00066	-.00082	-.07267	-.07148	-.07747
3.900	-.264	.01642	-.05551	.09552	-.01756	-.00001	.00066	-.00094	-.07268	-.07148	-.08001
3.900	.722	.01652	-.03522	.09373	-.01674	-.00001	.00069	-.00104	-.07014	-.06896	-.08002
3.900	1.768	.01682	-.01203	.09206	-.01692	.00000	.00090	-.00115	-.07013	-.06895	-.08002
3.900	2.690	.01932	.01100	.09030	-.01439	.00000	.00063	-.00129	-.07268	-.07149	-.07747
3.900	3.608	.01943	.03373	.08969	-.01386	.00002	.00064	-.00141	-.07523	-.07148	-.08000
3.900	5.603	.01661	.07907	.08624	-.01148	-.00003	.00060	-.00050	-.07523	-.07148	-.08000
3.900	7.936	.01781	.13019	.08401	-.01092	-.00007	.00056	-.00036	-.07267	-.07148	-.07747
3.900	9.946	.01676	.18423	.08217	-.01066	.00006	.00058	-.00008	-.07267	-.07148	-.07747
3.900	13.147	.01631	.33736	.07797	-.01190	.00003	.00032	.00041	-.07523	-.07403	-.08001
3.900	20.347	.01666	.51222	.07368	-.01156	.00031	.00007	.00062	-.07523	-.07403	-.08001
3.900	25.536	.01646	.70116	.06962	-.01009	.00010	.00010	.00062	-.07268	-.07403	-.07747
3.900	30.716	.01634	.91036	.06675	-.02441	.00048	.00014	.00091	-.07267	-.07148	-.07747
3.900	36.072	.01768	1.14727	.06379	-.03251	.00087	-.00014	.00198	-.07268	-.07148	-.07494
3.900	41.254	.01740	1.34236	.05912	-.04395	.00102	-.00041	.00306	-.07523	-.07148	-.07493
3.900	43.940	.01749	1.50471	.05456	-.05338	.00116	-.00067	.00354	-.07267	-.07148	-.07494
GRADIENT		.00017	.02115	-.00183	-.00100	-.00001	-.00003	-.00011	-.00006	-.00009	-.00027

REFERENCE DATA

SPEC : 2000.0000 50.FT. 1000P = 1076.4000 IN.
 LREF : 076.0117 IN. 1000P = .0000 IN.
 SREF : 936.0016 IN. 2000P = 603.0003 IN.
 SCALE : .0197 SCALE

BETA = .0000 ELEVTR = .0000
 AIRBORN = .0000 RUDGER = .0000
 SPODRK = 54.920 55S AP = -20.700

PARAMETRIC DATA

BLM NO. 16/ 0 RMVL = 2.50 GRADIENT INTERVAL = -3.00/ 5.00

MACH	ALPHA	BETA	CH	CA	CLM	CEL	CYN	CY	CPB	CPC	CPN
4.000	-4.036	-0.0056	-0.13399	-0.0050	-0.02390	.00046	.00077	-0.00069	-0.04660	-0.04333	-0.05620
4.000	-2.724	-0.0046	-0.10803	0.0070	-0.0213	.00030	.00077	-0.00101	-0.02015	-0.04859	-0.05295
4.000	-9.80	-0.0032	-0.07095	0.0168	-0.02131	.00031	.00079	-0.00120	-0.02015	-0.04859	-0.05295
4.000	.033	-0.0000	-0.05246	0.0040	-0.02119	.00030	.00037	.00011	-0.04660	-0.04859	-0.05620
4.000	1.030	-0.0002	-0.03369	0.0754	-0.01946	.00031	.00037	.00002	-0.04660	-0.04859	-0.05620
4.000	2.056	-0.0056	-0.01532	0.0552	-0.01773	.00031	.00036	-0.00019	-0.02015	-0.04859	-0.05620
4.000	3.107	-0.0047	-0.00876	0.0336	-0.01796	.00047	.00039	-0.00019	-0.02015	-0.04859	-0.05620
4.000	4.135	-0.0142	0.00030	0.0181	-0.01855	.00029	.00032	0.00114	-0.02015	-0.04859	-0.05620
4.000	6.123	-0.0126	0.07165	0.07822	-0.01378	.00042	.00034	0.00093	-0.02015	-0.04859	-0.05620
4.000	6.172	-0.0109	0.11854	0.07513	-0.01134	.00025	.00035	0.00070	-0.02015	-0.04859	-0.05295
4.000	10.226	-0.0029	0.17265	0.07277	-0.01124	.00039	.00032	0.00039	-0.02015	-0.04859	-0.05295
4.000	15.399	0.0025	0.32187	0.0956	-0.01161	.00051	.00038	-0.00037	-0.02015	-0.04859	-0.05620
4.000	20.471	0.0041	0.46563	0.06675	-0.01238	.00054	.00026	0.00072	-0.02015	-0.04859	-0.05295
4.000	25.716	0.0024	0.67192	0.06449	-0.01372	.00047	.00026	0.00116	-0.02015	-0.04859	-0.05295
4.000	30.622	-0.0029	0.87035	0.06332	-0.01864	.00073	.00024	0.00206	-0.02015	-0.04859	-0.05620
4.000	36.034	-0.0007	1.09911	0.06165	-0.02992	.00130	.00062	0.00314	-0.02015	-0.04859	-0.05620
4.000	41.165	-0.0063	1.32196	0.05682	-0.04378	.00189	.00092	0.00390	-0.02015	-0.04859	-0.05620
4.000	43.930	-0.0163	1.44169	0.05190	-0.05566	.00189	.00157	0.00390	-0.02015	-0.04859	-0.05620
4.000	GRADIENT	-0.0007	0.01968	-0.00229	0.01108	-0.00000	-0.00017	0.00022	-0.02023	-0.00026	-0.00025

OR-20 LARS UPWT 1037 - 140A/B ORBITER

(20RT02) (11 DEC 73)

REFERENCE DATA

SHEP 2071.0770 50.0 FT. SHEP = 1076.4070 IN.
 LUCY = 476.8117 IN. LUCY = 1077.0 IN.
 BDEF = 930.0010 IN. ZHEP = 4761.0770 IN.
 SCALE = 0.0000 SCALE

PARAMETRIC DATA

BETA = 3.0000 ELEVTR = .0000
 ALLRON = .0000 RUDDER = .0000
 SDFDRK = 54.9200 BDFLAP = -21.0000

SUN NO. 57 0 RML = 2.50 GRADIENT INTERVAL = -5.000 5.00

MACH	ALPHA	BETA	CM	CA	CLM	CDL	CFN	CF	CFB	CFC	CFN
2.500	-4.071	3.0000	-1.0205	-1.0205	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	-3.597	3.0000	-1.0322	-1.0322	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	-3.123	3.0000	-1.0437	-1.0437	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	-2.649	3.0000	-1.0553	-1.0553	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	-2.175	3.0000	-1.0668	-1.0668	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	-1.701	3.0000	-1.0784	-1.0784	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	-1.227	3.0000	-1.0899	-1.0899	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	-0.753	3.0000	-1.1015	-1.1015	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	-0.279	3.0000	-1.1130	-1.1130	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	0.195	3.0000	-1.1246	-1.1246	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	0.671	3.0000	-1.1361	-1.1361	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	1.147	3.0000	-1.1477	-1.1477	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	1.623	3.0000	-1.1592	-1.1592	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	2.099	3.0000	-1.1708	-1.1708	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	2.575	3.0000	-1.1823	-1.1823	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	3.051	3.0000	-1.1939	-1.1939	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	3.527	3.0000	-1.2054	-1.2054	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	4.003	3.0000	-1.2170	-1.2170	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	4.479	3.0000	-1.2285	-1.2285	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	4.955	3.0000	-1.2401	-1.2401	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	5.431	3.0000	-1.2516	-1.2516	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	5.907	3.0000	-1.2632	-1.2632	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	6.383	3.0000	-1.2747	-1.2747	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	6.859	3.0000	-1.2863	-1.2863	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	7.335	3.0000	-1.2978	-1.2978	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	7.811	3.0000	-1.3094	-1.3094	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	8.287	3.0000	-1.3209	-1.3209	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	8.763	3.0000	-1.3325	-1.3325	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	9.239	3.0000	-1.3440	-1.3440	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	9.715	3.0000	-1.3556	-1.3556	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	10.191	3.0000	-1.3671	-1.3671	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	10.667	3.0000	-1.3787	-1.3787	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	11.143	3.0000	-1.3902	-1.3902	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	11.619	3.0000	-1.4018	-1.4018	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	12.095	3.0000	-1.4133	-1.4133	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	12.571	3.0000	-1.4249	-1.4249	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	13.047	3.0000	-1.4364	-1.4364	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	13.523	3.0000	-1.4480	-1.4480	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	13.999	3.0000	-1.4595	-1.4595	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	14.475	3.0000	-1.4711	-1.4711	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	14.951	3.0000	-1.4826	-1.4826	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	15.427	3.0000	-1.4942	-1.4942	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	15.903	3.0000	-1.5057	-1.5057	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	16.379	3.0000	-1.5173	-1.5173	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	16.855	3.0000	-1.5288	-1.5288	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	17.331	3.0000	-1.5404	-1.5404	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	17.807	3.0000	-1.5519	-1.5519	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	18.283	3.0000	-1.5635	-1.5635	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	18.759	3.0000	-1.5750	-1.5750	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	19.235	3.0000	-1.5866	-1.5866	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	19.711	3.0000	-1.5981	-1.5981	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	20.187	3.0000	-1.6097	-1.6097	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	20.663	3.0000	-1.6212	-1.6212	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	21.139	3.0000	-1.6328	-1.6328	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	21.615	3.0000	-1.6443	-1.6443	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	22.091	3.0000	-1.6559	-1.6559	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	22.567	3.0000	-1.6674	-1.6674	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	23.043	3.0000	-1.6790	-1.6790	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	23.519	3.0000	-1.6905	-1.6905	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	23.995	3.0000	-1.7021	-1.7021	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	24.471	3.0000	-1.7136	-1.7136	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	24.947	3.0000	-1.7252	-1.7252	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	25.423	3.0000	-1.7367	-1.7367	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	25.899	3.0000	-1.7483	-1.7483	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	26.375	3.0000	-1.7598	-1.7598	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	26.851	3.0000	-1.7714	-1.7714	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	27.327	3.0000	-1.7829	-1.7829	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	27.803	3.0000	-1.7945	-1.7945	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	28.279	3.0000	-1.8060	-1.8060	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	28.755	3.0000	-1.8176	-1.8176	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	29.231	3.0000	-1.8291	-1.8291	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	29.707	3.0000	-1.8407	-1.8407	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	30.183	3.0000	-1.8522	-1.8522	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	30.659	3.0000	-1.8638	-1.8638	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	31.135	3.0000	-1.8753	-1.8753	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	31.611	3.0000	-1.8869	-1.8869	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	32.087	3.0000	-1.8984	-1.8984	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	32.563	3.0000	-1.9100	-1.9100	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	33.039	3.0000	-1.9215	-1.9215	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	33.515	3.0000	-1.9331	-1.9331	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	33.991	3.0000	-1.9446	-1.9446	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	34.467	3.0000	-1.9562	-1.9562	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	34.943	3.0000	-1.9677	-1.9677	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	35.419	3.0000	-1.9793	-1.9793	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	35.895	3.0000	-1.9908	-1.9908	0.0000	0.0000	0.0000	0.0000	-1.0000	-1.0000	-1.0000
2.500	36.371	3.0000	-2.0024	-2.0024	0.0000						

OM-2: LARC UPWT 105 - 140A/B ORBITER

(11 DEC 73)

REFERENCE DATA

SREF = 2090.0000 SQ.FT. XMRP = 1076.4000 IN.
 LREF = 476.0117 IN. YMRP = 0.0000 IN.
 BREF = 936.6016 IN. ZMRP = 400.0000 IN.
 SCALE = .0190 SCALE

PARAMETRIC DATA

BETA = 3.0000 ELEVTR = .0000
 AIRLON = .0000 RUDDER = .0000
 SFCBPK = 54.920 BCFAPL = -20.7000

RUN NO. 17/ 0 RM/L = 2.50 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	BETA	ON	CA	CLM	CBL	CYN	CY	CFB	CFC	CFN
4.000	-4.043	3.02309	-1.13654	.10049	-.02580	.00139	.00248	-.04822	-.04688	-.04533	-.05295
4.000	-2.716	3.02217	-.10707	.09653	-.02334	.00076	.00241	-.04693	-.04688	-.04859	-.05295
4.000	-.962	3.02082	-.07394	.09282	-.02115	.00011	.00192	-.04424	-.04688	-.04859	-.05295
4.000	.340	3.01986	-.05550	.09053	-.01938	-.00021	.00184	-.04290	-.04688	-.04859	-.05295
4.000	1.061	3.01950	-.03238	.08809	-.01959	-.00038	.00143	-.04160	-.04688	-.04859	-.05295
4.000	2.093	3.01957	-.01491	.08587	-.01783	-.00069	.00143	-.04169	-.04688	-.04859	-.05295
4.000	3.110	3.01863	-.01072	.08324	-.01838	-.00086	.00137	-.04039	-.05015	-.04859	-.05295
4.000	4.111	3.01929	.02858	.08185	-.01662	-.00118	.00102	-.04049	-.05015	-.04859	-.05620
4.000	6.159	3.01799	.07526	.07874	-.01577	-.00169	.00054	-.03788	-.05342	-.04859	-.05620
4.000	8.209	3.01772	.12202	.07676	-.01330	-.00219	.00013	-.03669	-.05015	-.04859	-.05620
4.000	10.226	3.01790	.17247	.07354	-.01119	-.00283	.00014	-.03693	-.05015	-.04859	-.05620
4.000	15.378	3.01725	.32027	.06962	-.01148	-.00321	-.00184	-.03206	-.05342	-.04859	-.05620
4.000	20.501	3.01725	.48486	.06698	-.01223	-.00321	-.00416	-.02728	-.05342	-.05185	-.05620
4.000	25.707	3.01761	.67478	.06449	-.01388	-.00319	-.00528	-.02541	-.05342	-.04859	-.05620
4.000	30.796	3.01739	.86845	.06340	-.01990	-.00348	-.00603	-.02353	-.05342	-.04859	-.05620
4.000	36.043	3.01681	1.09736	.06200	-.03120	-.00533	-.00445	-.02592	-.05015	-.04859	-.05295
4.000	41.197	3.01577	1.31980	.05570	-.04498	-.00564	-.00603	-.02136	-.05015	-.04859	-.05295
4.000	43.935	3.01410	1.43584	.05068	-.05811	-.00565	-.00610	-.01909	-.04688	-.04859	-.04971
GRADIENT		-.00052	.02017	-.00229	.00104	-.00030	-.00018	.00101	-.00039	-.00026	-.00015

OM-20 LARC UPWT 1057 - 140A/B ORBITER

(202003) (11 DEC 73)

REFERENCE DATA

SREF = 2690.0000 90. FT. YHREF = 1076.4800 IN.
 LREF = 476.0117 IN. YLREF = .0000 IN.
 BREF = 936.0016 IN. ZHREF = 400.0000 IN.
 SCALE = .0150 SCALE

PARAMETRIC DATA

ALPHA = .000 ELEVTR = .000
 AILRON = .000 RUDDER = .000
 SFD8RK = 54.920 BDFLAP = -20.700

RUN NO. 6/ 0 RN/L = 2.50 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	ALPHA	ON	CA	CLM	CBL	CYN	CY	CFB	CFC	CFN
2.500	-4.101	-.54337	-.05248	.12797	-.00019	.07290	-.001447	-.07670	-.16265	-.07148	-.08000
2.500	-2.033	-.57255	-.05410	.12663	.00099	.00099	-.00165	.03577	-.16091	-.07148	-.08000
2.500	-1.027	-.55062	-.05405	.12829	.00163	.00015	-.00056	.01800	-.15563	-.07148	-.08000
2.500	.021	-.55770	-.05386	.12826	.00159	-.00034	.00023	-.00135	-.15210	-.07148	-.08000
2.500	1.029	-.51554	-.05375	.12848	.00068	-.00093	.00113	-.01912	-.15328	-.07148	-.08000
2.500	2.037	-.53009	-.05359	.12873	-.00025	-.00134	.00230	-.03845	-.15369	-.07148	-.08000
2.500	4.114	-.52822	-.05527	.12844	-.00079	-.00223	.00513	-.15740	-.15152	-.07148	-.08000
2.500	6.167	-.53323	-.05434	.12825	-.00029	-.00328	.00834	-.15737	-.15252	-.07148	-.08000
GRADIENT		-.00423	-.00223	.00205	-.00035	-.00055	.00111	-.01881	-.15742	-.07148	-.08000

RUN NO. 12/ 0 RN/L = 2.50 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	ALPHA	ON	CA	CLM	CBL	CYN	CY	CFB	CFC	CFN
3.900	-4.060	-.28273	-.05221	.09709	-.01714	.00108	-.00268	.06403	-.07267	-.07148	-.08000
3.900	-2.015	-.28116	-.05075	.09638	-.01595	.00054	-.00071	.03045	-.07012	-.07148	-.08000
3.900	-1.036	-.29563	-.05058	.09602	-.01599	.00021	-.00008	.01477	-.07012	-.06894	-.08000
3.900	.019	-.26299	-.05544	.09550	-.01630	.00012	.00061	-.00095	-.07268	-.06894	-.08000
3.900	.998	-.27912	-.05528	.09568	-.01762	-.00010	.00141	-.01664	-.07012	-.06894	-.08000
3.900	2.034	-.29631	-.05797	.09626	-.01742	-.00032	.00220	-.03231	-.07012	-.06894	-.08000
3.900	4.069	-.28142	-.05760	.09707	-.01751	-.00098	.00384	-.06478	-.07012	-.07148	-.08000
3.900	6.100	-.27102	-.05430	.09791	-.01790	-.00142	.00571	-.09614	-.07268	-.07148	-.08000
GRADIENT		-.00019	-.00026	-.00001	-.00014	-.00024	.00078	-.01573	-.00024	-.07148	-.08000

RUN NO. 18/ 0 RN/L = 2.50 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	ALPHA	ON	CA	CLM	CBL	CYN	CY	CFB	CFC	CFN
4.600	-4.025	-.02245	-.05697	.09043	-.02068	.00098	-.00191	.05893	-.05015	-.04859	-.05295
4.600	-1.988	-.00813	-.05654	.09002	-.02077	.00065	-.00073	.02882	-.05015	-.04859	-.05295
4.600	-.995	-.00093	-.05638	.08962	-.02080	.00046	-.00008	.01592	-.04688	-.04859	-.05620
4.600	-.001	-.04584	-.05615	.08994	-.02083	.00030	-.00037	.00013	-.05015	-.04859	-.05620
4.600	1.014	-.03044	-.05590	.08939	-.02090	.00029	.00075	-.01422	-.05015	-.04859	-.05620
4.600	2.008	-.02446	-.05570	.08923	-.02192	-.00074	.00112	-.02886	-.04688	-.04859	-.05620
4.600	4.092	-.02343	-.05536	.09055	-.02105	-.00038	.00223	-.05726	-.04688	-.04859	-.05295
4.600	6.078	-.03861	-.05499	.09162	-.02116	-.00087	.00340	-.06737	-.04688	-.04859	-.05295
GRADIENT		-.00154	-.00020	-.00000	-.00003	-.00016	.00050	-.01435	-.00039	-.04859	-.05000

REFERENCE DATA

SREF = 2690.0000 SQ.FT. YMRP = 1076.4800 IN.
LREF = 476.8117 IN. YMRP = .0000 IN.
BREF = 936.6616 IN. ZMRP = 430.0000 IN.
SCALE = .0150 SCALE

PARAMETRIC DATA

ALPHA = 10.000 ELEVTR = .000
AILRON = .000 RUDDER = .000
SDBREK = 54.920 SDFLAP = -20.700

RUN NO. 7/ 0 RN/L = 2.49 GRADIENT INTERVAL = -5.00/ 5.00

Table with columns: MACH, BETA, ALPHA, CN, CA, CLM, CBL, CYN, CY, CFB, CFC, CFN. Rows for MACH 2.500 to 3.500.

RUN NO. 13/ 0 RN/L = 2.50 GRADIENT INTERVAL = -5.00/ 5.00

Table with columns: MACH, BETA, ALPHA, CN, CA, CLM, CBL, CYN, CY, CFB, CFC, CFN. Rows for MACH 3.500 to 4.500.

RUN NO. 19/ 0 RN/L = 2.50 GRADIENT INTERVAL = -5.00/ 5.00

Table with columns: MACH, BETA, ALPHA, CN, CA, CLM, CBL, CYN, CY, CFB, CFC, CFN. Rows for MACH 4.500 to 5.500.

GM-20 LARC UPWT 1957 - 140A/B ORBITER

(292009) (11 DEC 73)

REFERENCE DATA

SREF = 2090.0000 SQ.FT. YREF = 3.076.4000 IN.
 LREF = 476.6117 IN. YREF = .00000 IN.
 BREF = 936.6616 IN. YREF = 400.00000 IN.
 SCALE = .0190 SCALE

PARAMETRIC DATA

ALPHA = 20.5000 ELEVTR = .5000
 AILCON = .0000 RUDER = .0000
 SPCBK = 54.9200 BCLAP = -20.7000

RUN NO. 8/ 0 PIVL = 2.50 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	ALPHA	ON	CA	CLM	CLB	CYN	CT	CPB	CPC	CFN
2.500	-4.100	20.52627	.65089	.03444	-.03142	.00633	.00741	.05212	-.18022	-.17953	-.18209
2.500	-2.035	20.47584	.64842	.03634	-.02938	.00283	.00464	.02402	-.17644	-.17952	-.18911
2.500	-1.026	20.48277	.64657	.03615	-.02829	.00172	.00295	.01229	-.18197	-.17950	-.18733
2.500	.000	20.49447	.64835	.03647	-.02841	.00034	-.00045	.00126	-.18021	-.17593	-.18394
2.500	1.007	20.52376	.64829	.03641	-.02839	-.00063	-.00062	-.00000	-.18016	-.17772	-.18381
2.500	2.052	20.51943	.64703	.03634	-.02917	-.00184	-.00154	-.00000	-.17645	-.17789	-.18349
2.500	4.126	20.50319	.65146	.03439	-.03294	-.00334	-.00268	-.00481	-.18017	-.18124	-.18732
2.500	6.161	20.51473	.65424	.03315	-.03577	-.00444	-.00344	-.00230	-.18729	-.18481	-.18208
GRADIENT	.00071	.00003	-.00002	-.00014	-.00014	-.00035	-.00022	-.00185	-.00004	-.00004	-.00016

RUN NO. 14/ 0 PIVL = 2.50 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	ALPHA	ON	CA	CLM	CLB	CYN	CT	CPB	CPC	CFN
3.900	-4.037	20.32691	.67062	.03762	-.03161	.00640	.00407	.04664	-.07523	-.07403	-.08001
3.900	-2.013	20.32958	.66698	.03742	-.03153	.00300	.00316	.02102	-.07524	-.07403	-.08001
3.900	-1.016	20.31942	.66669	.03747	-.03150	.00165	.00148	.01083	-.07524	-.07404	-.07747
3.900	.019	20.30930	.66590	.03766	-.03150	.00043	-.00021	.00063	-.07524	-.07404	-.08001
3.900	.997	20.32095	.66522	.03739	-.03149	-.00168	-.00168	-.00042	-.07524	-.07404	-.08001
3.900	2.013	20.32005	.66597	.03732	-.03164	-.00215	-.00336	-.01061	-.07524	-.07404	-.08001
3.900	4.065	20.32975	.66829	.03732	-.03162	-.00355	-.00426	-.01447	-.07779	-.07403	-.07747
3.900	6.096	20.32211	.67154	.03740	-.03167	-.00459	-.00459	-.00920	-.07779	-.07659	-.08001
GRADIENT	-.00014	-.00001	-.00003	-.00009	-.00009	-.00143	-.00116	-.00190	-.00024	-.00000	-.00019

RUN NO. 20/ 0 PIVL = 2.50 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	ALPHA	ON	CA	CLM	CLB	CYN	CT	CPB	CPC	CFN
4.800	-4.022	20.49629	.67932	.03710	-.03193	.00681	.00386	.04353	-.05342	-.05165	-.05620
4.800	-2.005	20.50617	.67870	.03662	-.03190	.00312	.00265	.01908	-.05115	-.04449	-.05295
4.800	-1.012	20.49571	.67645	.03665	-.03174	.00182	.00133	.01140	-.05115	-.04659	-.05295
4.800	.019	20.49236	.67621	.03682	-.03204	.00064	-.00065	.00165	-.05115	-.04449	-.05295
4.800	.993	20.49522	.67665	.03681	-.03200	-.00031	-.00031	-.00075	-.05115	-.04449	-.05295
4.800	2.024	20.50256	.67655	.03619	-.03195	-.00145	-.00369	-.00342	-.05142	-.05142	-.05620
4.800	4.059	20.50511	.67654	.03614	-.03181	-.00261	-.00465	-.00376	-.05142	-.05142	-.05620
4.800	6.073	20.50725	.67641	.03613	-.03185	-.00372	-.00572	-.00572	-.05142	-.05142	-.05620
GRADIENT	.00128	.00035	-.00016	-.00006	-.00005	-.00114	-.00114	-.00116	-.00016	-.00016	-.00146

REFERENCE DATA
 SREF = 2697.0000 SO.FT. YREF = 1076.4900 IN. ALPHA = 30.0000 ELEVE = 0.000
 LREF = 478.8117 IN. YREF = 0.0000 IN. ALBON = 0.0000 RIDGE = 0.000
 BREF = 318.8616 IN. ZREF = 400.0000 IN. SPEED = 54.3200 WFLAP = -27.700
 SCALE = 10000 SCALE

PARAMETRIC DATA

RUN NO. 91 5 PNL = 2.50 GRADIENT INTERVAL = -5.00/ 5.00

MAON	BETA	ALPHA	ON	CA	CLM	CLB	CIN	C1	CPB	CPC	CPN
2.900	-4.092	31.13620	1.0734	0.7394	-0.4832	0.0778	0.1316	0.4176	-0.1732	-0.1693	-0.1829
2.900	-2.036	31.07940	1.0632	0.7297	-0.4722	0.0731	0.0659	0.2127	-0.1626	-0.1618	-0.1674
2.900	-1.027	31.05209	1.0786	0.7115	-0.4642	0.0724	0.0287	0.1172	-0.1641	-0.1591	-0.1593
2.900	0.000	31.12243	1.0722	0.7274	-0.4656	0.0714	-0.0123	0.0795	-0.1640	-0.1574	-0.1606
2.900	1.029	31.11599	1.0725	0.7277	-0.4652	0.0723	-0.0533	-0.0531	-0.1624	-0.1510	-0.1575
2.900	2.074	31.12268	1.0761	0.7271	-0.4752	0.0723	-0.0267	-0.1129	-0.1629	-0.1619	-0.1529
2.900	4.130	31.12845	1.0734	0.7371	-0.4742	0.0707	-0.0147	-0.1271	-0.1766	-0.1649	-0.1642
2.900	6.166	31.15115	1.0735	0.7314	-0.4835	0.0701	-0.0194	-0.1474	-0.1759	-0.1759	-0.1527
GRADIENT	0.0000	0.0000	0.0000	0.0000	-0.0002	0.0004	0.0000	0.0000	0.0000	0.0000	0.0000

RUN NO. 110 0 PNL = 2.50 GRADIENT INTERVAL = -5.00/ 5.00

MAON	BETA	ALPHA	ON	CA	CLM	CLB	CIN	C1	CPB	CPC	CPN
3.900	-4.038	30.76475	0.9185	0.6714	-0.2351	0.0769	0.0715	0.4159	-0.1722	-0.1740	-0.1701
3.900	-2.014	30.75452	0.9135	0.6690	-0.2244	0.0756	0.0411	0.2115	-0.1704	-0.1704	-0.1701
3.900	-1.017	30.73228	0.9134	0.6697	-0.2276	0.0726	0.0210	0.1119	-0.1704	-0.1747	-0.1747
3.900	0.000	30.75672	0.9199	0.6718	-0.2249	0.0760	0.0114	0.0744	-0.1723	-0.1749	-0.1747
3.900	0.996	30.75774	0.9152	0.6718	-0.2364	0.0763	-0.0221	-0.0719	-0.1726	-0.1749	-0.1749
3.900	2.013	30.76944	0.9152	0.6714	-0.2259	0.0721	-0.0450	-0.1219	-0.1727	-0.1744	-0.1747
3.900	4.085	30.75993	0.9179	0.6746	-0.2367	0.0759	-0.0791	-0.1376	-0.1754	-0.1744	-0.1747
3.900	6.096	30.75046	0.9169	0.6811	-0.2347	0.0718	-0.0192	-0.1572	-0.1779	-0.1740	-0.1747
GRADIENT	0.0000	0.0000	0.0000	0.0000	-0.0007	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000

RUN NO. 21 0 PNL = 2.50 GRADIENT INTERVAL = -5.00/ 5.00

MAON	BETA	ALPHA	ON	CA	CLM	CLB	CIN	C1	CPB	CPC	CPN
4.000	-4.023	30.64748	0.8331	0.6283	-0.1976	0.0794	0.0589	0.4722	-0.1534	-0.1489	-0.15620
4.000	-2.004	30.63984	0.8639	0.6268	-0.1830	0.0740	0.0338	0.2704	-0.1534	-0.1489	-0.15620
4.000	-1.013	30.61971	0.8599	0.6255	-0.1902	0.0723	0.0171	0.1134	-0.1534	-0.1489	-0.15295
4.000	0.018	30.61590	0.8666	0.6254	-0.1975	0.0708	-0.0032	0.0722	-0.1534	-0.1489	-0.15620
4.000	1.013	30.79347	0.8555	0.6262	-0.1970	0.0710	-0.0269	-0.0761	-0.1534	-0.1489	-0.15620
4.000	2.005	30.79328	0.8626	0.6302	-0.1965	0.0741	-0.0443	-0.1340	-0.1534	-0.1489	-0.15620
4.000	4.009	30.79144	0.8427	0.6341	-0.2109	0.0754	-0.0769	-0.1398	-0.1505	-0.1489	-0.15295
4.000	6.071	30.67180	0.8334	0.6378	-0.2090	0.0726	-0.0791	-0.1522	-0.1534	-0.1489	-0.15620
GRADIENT	0.0000	0.0000	0.0000	0.0000	-0.0019	0.0016	0.0000	0.0000	0.0000	0.0000	0.0000



DATE 18 JAN 74

TABULATED SOURCE DATA - CAZS

PAGE 25

CAZS LABC UPM 1987 - 10MA/8 ORBITER

(280728) (11 DEC 73)

REFERENCE DATA

SPC = 2000.0000 50.FT. 1000 = 1078.4075 IN.
 LWD = 470.0117 IN. 1000 = 1070.0000 IN.
 SPC = 930.0016 IN. 2000 = 675.0000 IN.
 SCALE = .0197 SCALE

PARAMETRIC DATA

BETA = .000 ELEVTE = 19.000
 AIRBOR = .000 FLUDDR = .000
 SPODR = 54.900 DTPLAP = 10.900

PLAN NO. 271 5 PLAN = 2.90 ORBIT INTERVAL = -9.00/ 9.00

WCH	ALPHA	BETA	CH	CA	CLH	CEL	CIN	CT	CPB	CPC	CPN
4.070	-4.091	-.0024	-1.1581	1.0325	-.03006	.00043	.00266	.00182	-.04899	-.04363	-.04427
4.075	-2.767	-.00244	-.00000	.00000	-.03784	.00044	.00267	.00186	-.04899	-.04363	-.04427
4.070	-.979	-.00171	-.00295	.00334	-.03786	.00045	.00268	.00184	-.04899	-.04363	-.04427
4.075	.024	-.00163	-.00284	.00300	-.03785	.00045	.00268	.00182	-.04899	-.04363	-.04427
4.070	1.076	-.00237	-.00006	.00202	-.03813	.00044	.00268	.00183	-.04899	-.04363	-.04427
4.075	2.071	-.00290	.00007	.00000	-.03804	.00040	.00269	.00183	-.04899	-.04363	-.04427
4.070	3.082	-.00241	.00354	.00337	-.03804	.00041	.00270	.00182	-.04899	-.04363	-.04427
4.075	4.089	-.00292	.00315	.00045	-.03800	.00040	.00271	.00182	-.04899	-.04363	-.04427
4.070	6.202	-.00154	1.0741	.00057	-.04106	.00040	.00271	.00184	-.04899	-.04363	-.04427
4.075	8.199	-.00195	1.0810	.00092	-.04202	.00040	.00271	.00184	-.04899	-.04363	-.04427
4.070	10.228	-.00216	2.1592	.00112	-.04199	.00040	.00271	.00184	-.04899	-.04363	-.04427
4.075	15.348	-.00264	3.8273	.00178	-.04196	.00040	.00271	.00184	-.04899	-.04363	-.04427
4.070	20.598	-.00128	5.7179	.00004	-.03793	.00041	.00271	.00184	-.04899	-.04363	-.04427
4.075	25.743	-.00158	7.7942	.00000	-.03794	.00041	.00271	.00184	-.04899	-.04363	-.04427
4.070	30.882	-.00185	9.9942	.00000	-.03794	.00041	.00271	.00184	-.04899	-.04363	-.04427
4.075	34.078	-.00199	1.24247	1.5455	-.03797	.00041	.00271	.00184	-.04899	-.04363	-.04427
4.070	41.270	-.00204	1.48454	1.0714	-.03795	.00041	.00271	.00184	-.04899	-.04363	-.04427
4.075	43.544	-.00209	1.41482	1.0000	-.03798	.00041	.00271	.00184	-.04899	-.04363	-.04427
GRACIENT		-.00101	.00126	-.00177	-.00104	.00040	.00271	.00184	-.04899	-.04363	-.04427

ON-20 LARC UPWT 1057 - 140A/B ORBITER

(282009) (11 DEC 73)

REFERENCE DATA

REF = 2690.0000 50-FT. XREF = 1076.4000 IN.
 LREF = 476.6117 IN. YREF = .0000 IN.
 BREF = 936.6815 IN. ZREF = 400.0000 IN.
 SCALE = .0150 SCALE

PARAMETRIC DATA

BETA = .000 ELEVTR = .000
 AIRLON = .000 RUDDER = .000
 SPDRK = 54.920 BOFLAP = 10.300

RUN NO. 28/ 0 RN/L = 2.50 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CFB	CFC	CFN
3.900	-4.440	-0.0273	-1.1364	0.10440	-0.02215	0.00020	0.00447	0.01168	-0.06793	-0.06914	-0.07998
3.900	-3.030	-0.0261	-1.10181	0.09181	-0.02178	0.00009	0.00448	0.00154	-0.06795	-0.06816	-0.08252
3.900	1.272	-0.0245	-0.97568	0.09753	-0.01835	0.00009	0.00449	0.00138	-0.06797	-0.06918	-0.08000
3.900	-0.271	-0.0214	-0.95263	0.09541	-0.01907	0.00010	0.00450	0.00125	-0.06796	-0.06917	-0.08252
3.900	0.747	-0.0224	-0.93237	0.09384	-0.01826	0.00010	0.00451	0.00115	-0.06796	-0.06917	-0.08252
3.900	1.745	-0.0213	-0.90928	0.09242	-0.01773	-0.00002	0.00452	0.00104	-0.06795	-0.06915	-0.08252
3.900	2.824	-0.0206	-0.88306	0.09129	-0.01719	0.00009	0.00447	0.00093	-0.06794	-0.06914	-0.08251
3.900	3.867	-0.0195	-0.85644	0.89939	-0.01537	0.00009	0.00447	0.00083	-0.06794	-0.06914	-0.08251
3.900	5.876	-0.00376	0.84660	0.89714	-0.01581	0.00006	0.00444	0.00070	-0.06794	-0.06914	-0.08252
3.900	7.916	-0.00351	1.38555	0.84866	-0.01554	0.00018	0.00446	0.00050	-0.06794	-0.06914	-0.08505
3.900	10.012	-0.00325	1.95338	0.81313	-0.01682	0.00017	0.00449	0.00022	-0.06794	-0.06915	-0.08252
3.900	15.184	-0.00298	3.5136	0.78889	-0.02088	0.00026	0.00423	0.00025	-0.07305	-0.06914	-0.08251
3.900	20.397	-0.00361	5.3450	0.7554	-0.03043	0.00053	-0.00006	0.00378	-0.07049	-0.07169	-0.08251
3.900	25.562	-0.00274	7.3156	0.7259	-0.03885	0.00068	0.00004	0.00278	-0.07050	-0.07170	-0.08252
3.900	30.791	-0.00364	9.5174	0.70336	-0.05261	0.00070	0.00004	0.00190	-0.06795	-0.06915	-0.07998
3.900	36.085	-0.00369	1.19131	0.63352	-0.06860	0.00127	0.00049	0.00089	-0.07050	-0.06915	-0.07998
3.900	41.405	-0.00409	1.44245	0.64690	-0.08906	0.00136	-0.00074	0.00086	-0.06795	-0.06915	-0.07999
3.900	44.004	-0.00402	1.55931	0.61335	-0.10325	0.00164	-0.00099	0.00063	-0.06795	-0.06661	-0.07999
GRADIENT		-0.00002	0.02100	-0.00177	0.00076	-0.00001	0.00000	0.00002	-0.00017	0.00000	-0.00026

RUN NO. 29/ 0 RN/L = 2.50 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CFB	CFC	CFN
4.600	-4.064	-0.02259	-1.12640	0.10087	-0.02652	0.00027	0.00263	0.00193	-0.04086	-0.04563	-0.06255
4.600	-2.699	-0.02249	-1.00072	0.09083	-0.02540	0.00012	0.00263	0.00180	-0.04410	-0.04560	-0.06264
4.600	-1.987	-0.02237	-0.86720	0.09199	-0.02160	0.00012	0.00264	0.00164	-0.04413	-0.04563	-0.05942
4.600	0.062	-0.02170	-0.84505	0.08942	-0.02181	0.00013	0.00260	0.00150	-0.04413	-0.04563	-0.06265
4.600	1.027	-0.02163	-0.82633	0.08772	-0.02010	0.00014	0.00260	0.00141	-0.04413	-0.04563	-0.05942
4.600	2.081	-0.02154	-0.81338	0.8594	-0.02033	0.00014	0.00261	0.00129	-0.04413	-0.04563	-0.06265
4.600	3.140	-0.02146	-0.79768	0.84818	-0.01895	0.00020	0.00262	0.00118	-0.04413	-0.04563	-0.05942
4.600	4.180	-0.02138	0.83931	0.84238	-0.01758	0.00029	0.00263	0.00108	-0.04410	-0.04560	-0.05940
4.600	6.139	-0.02122	0.88239	0.78703	-0.01640	0.00027	0.00263	0.00086	-0.04410	-0.04563	-0.05942
4.600	8.207	-0.02103	1.3302	0.76640	-0.01597	0.00025	0.00266	0.00060	-0.04410	-0.04560	-0.05940
4.600	10.233	-0.02127	1.8693	0.7397	-0.01584	0.00022	0.00266	0.00060	-0.04410	-0.04560	-0.05942
4.600	13.339	-0.02174	2.3823	0.7154	-0.01980	0.00033	-0.00004	0.00072	-0.04413	-0.04563	-0.05942
4.600	17.546	-0.02115	3.1325	0.6877	-0.02649	0.00051	-0.00002	0.00285	-0.04413	-0.04563	-0.05942
4.600	23.642	-0.02145	4.0287	0.6754	-0.03301	0.00070	0.00007	0.00190	-0.04413	-0.04563	-0.05942
4.600	30.805	-0.02277	5.1413	0.6682	-0.04564	0.00056	0.00003	0.00368	-0.04413	-0.04563	-0.05942
4.600	36.016	-0.02180	6.14679	0.6566	-0.06389	0.00122	-0.00060	0.00386	-0.04413	-0.04563	-0.05942
4.600	41.219	-0.02246	7.3762	0.6247	-0.08527	0.00172	-0.00056	0.00548	-0.04413	-0.04563	-0.05942
4.600	43.943	-0.02145	8.4982	0.5764	-0.10522	0.00175	-0.00122	0.00480	-0.04413	-0.04563	-0.05942
GRADIENT		0.00017	0.02019	-0.00222	0.00105	0.00001	-0.00005	-0.00010	0.00025	0.00000	0.00034