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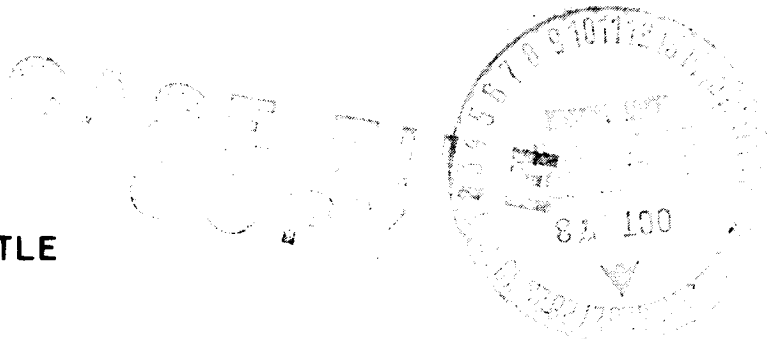
STATIC STABILITY AND CONTROL
 EFFECTIVENESS OF MODELS 12-0 AND 34-0
 OF THE VEHICLE 3 CONFIGURATION

By

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VOLUME II

STATIC STABILITY AND CONTROL
EFFECTIVENESS OF MODELS 12-0 AND 34-0
OF THE VEHICLE 3 CONFIGURATION

By

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STATIC STABILITY AND CONTROL
EFFECTIVENESS OF MODELS 12-0 AND 34-0
OF THE VEHICLE 3 CONFIGURATION

By

E. C. Allen* and T. Tuttle*

ABSTRACT

This report presents static stability and control effectiveness characteristics of two 0.004 scale models of the vehicle 3 configuration. The models have been designated 12-0 and 34-0, but are referred to as 139B and 139 respectively in this report. The components investigated consisted of a single aft body, vertical/rudder, OMS pods with two interchangeable wings, four interchangeable forward bodies, four trimmers, and a spoiler.

The test was conducted in the NASA/MSFC 14 x 14 Inch Trisonic Wind Tunnel over a Mach number range from 0.6 to 4.96. Angles of attack from 0 to 60 degrees and angles of sideslip from -10 to 10 degrees at 0, 10, 20, 30, and 40 degrees angle of attack were tested. Elevon, body flap, and speed brake deflection composed the parametric considerations. No grit was placed on the models during the test.

This document has been divided into three volumes. Volume I contains most of the longitudinal data. Volume II presents the lateral-directional characteristics and some additional longitudinal data. The tabulated source data and incremental data figures are presented in Volume III.

* Rockwell International

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- (A): CLAFO, CIMAFO, CIMCLO, CIALFA, CDAFO, CDFAFO, L/DMAX,
ALFLDM vs. Mach
- (B): CL, CN, CLM, XCP/L vs. ALPHA: CL, CN vs. CIM; CD, CDF, CA,
CAF, CAB, L/D vs. ALPHA; CL vs. CD
- (C): CLM vs. ALPHA
- (D): CY, CYN, CBL vs. BETA
- (E): CYBETA, CYNBET, CBLBET vs. ALPHA
- (F): CYBETA, CYNBET, CBLBET vs. Mach
- (G): DCL, DCD, DCN, DCA, DCAB, DCLM vs. ALPHA
- (H): DCL, DCD, DCN, DCA, DCLM vs. DBF

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
	XMRP	moment reference point on X axis
	YMRP	moment reference point on Y axis
	ZMRP	moment reference point on Z axis

SUBSCRIPTS

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

NOMENCLATURE (Continued)

Body-Axis System

<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; $-(CPBAVG) \frac{A_b - A_c}{S_{ref}} - (CPC) \frac{A_c}{S_{ref}}$
C_{A_f}	CAF	forebody axial force coefficient, $C_A - C_{A_b}$
C_m	CIM	pitching-moment coefficient; $\frac{\text{pitching moment}}{qS l_{REF}}$
C_n	CYN	yawing-moment coefficient; $\frac{\text{yawing moment}}{qSb}$
C_l	CBL	rolling-moment coefficient; $\frac{\text{rolling moment}}{qSb}$

Stability-Axis System

C_L	CL	lift coefficient; $\frac{\text{lift}}{qS}$
C_D	CD	drag coefficient; $\frac{\text{drag}}{qS}$
C_{D_b}	CDB	base-drag coefficient; $\frac{\text{base drag}}{qS}$
C_{D_f}	CDF	forebody drag coefficient; $C_D - C_{D_b}$
C_Y	CY	side-force coefficient; $\frac{\text{side force}}{qS}$
C_m	CIM	pitching-moment coefficient; $\frac{\text{pitching moment}}{qS l_{REF}}$
C_n	CLN	yawing-moment coefficient; $\frac{\text{yawing moment}}{qSb}$
C_l	CSL	rolling-moment coefficient; $\frac{\text{rolling moment}}{qSb}$
L/D	L/D	lift-to-drag ratio; C_L/C_D

NOMENCLATURE (CONTINUED)

ADDITIONS TO NOMENCLATURE

<u>SYMBOL</u>	<u>SADSAC SYMBOL</u>	<u>DEFINITION</u>
δ_{BF}	BDFLAP	body flap, surface deflection angle, positive deflection, trailing edge down; degrees.
δ_e	ELEVTR	elevator, surface deflection angle, positive deflection, trailing edge down; degrees.
δ_{SB}	SPDBRK	speed brake, split rudder inclusive deflection angle between outer surface, left split rudder trailing edge left and right split rudder trailing edge right, $\delta_{rf} = (\delta_{rL} + \delta_{rR})/2$, positive deflection; degrees. SPDBRK = 999.99, basic setting. See Dataset Collation Sheets.
δ_s	SPOILR	spoiler, surface deflection angle, positive deflection, trailing edge down; degrees.
$C_{L\alpha}$	CLALFA	derivative of lift coefficient with respect to alpha, ($\alpha = \pm 5^\circ$); per degree.
$C_{y\beta}$	CYBETA	derivative of side force coefficient with respect to beta ($\beta = \pm 5^\circ$); per degree.
$C_{n\beta}$	CYNBET	derivative of yawing moment coefficient with respect to beta ($\beta = \pm 5^\circ$); per degree, body axis system.
$C_{l\beta}$	CBLBET	derivative of rolling moment coefficient with respect to beta ($\beta = \pm 5^\circ$); per degree, body axis system.
a.c.	XCP/L	local longitudinal aerodynamic center based on body length; moment reference point minus the local longitudinal static stability derivative; $XCP/L = \left[(XMRP/LBody) - (CIM/CN)(LREF/LBody) \right];$ body axis.
$C_{D\alpha=0}$	CDAFO	drag coefficient at zero angle of attack ($\alpha = 0$).
$C_{DF\alpha=0}$	CDFAFO	forebody drag coefficient at zero angle of attack ($\alpha = 0$).

NOMENCLATURE (CONTINUED)

ADDITIONS TO NOMENCLATURE

<u>SYMBOL</u>	<u>SADSAC SYMBOL</u>	<u>DEFINITION</u>
$C_L \alpha = 0$	CLAFO	lift coefficient at zero angle of attack (alpha = 0).
$C_m \alpha = 0$	CIMAFO	pitching moment coefficient at zero angle of attack (alpha = 0).
$C_m (C_L = 0)$	CIMCLO	pitching moment coefficient at zero lift coefficient (CL = 0).
L/D_{max}	L/DMAX	maximum lift-drag ratio.
$\alpha (L/D_{max})$	ALFLDM	angle of attack at maximum lift-drag ratio; degrees.
ΔC_A	DCA	incremental axial force coefficient, algebraic difference of two runs.
ΔC_{A_B}	DCAB	incremental base axial force coefficient, algebraic difference of two runs.
ΔC_{A_F}	DCAF	incremental forebody axial force coefficient, algebraic difference of two runs.
ΔC_D	DCD	incremental drag coefficient, algebraic difference of two runs.
ΔC_{D_F}	DCDF	incremental forebody drag coefficient; algebraic difference of two runs.
ΔC_L	DCL	incremental lift coefficient, algebraic difference of two runs.
ΔC_m	DCLM	incremental pitching moment coefficient, algebraic difference of two runs.
ΔC_N	DCN	incremental normal force coefficient, algebraic difference of two runs.
$\Delta \delta_{BF}$	DBF	incremental body flap, incremental difference between two runs, surface deflection angle, positive deflection, trailing edge down; degrees.

NOMENCLATURE (CONCLUDED)

ADDITIONS TO NOMENCLATURE

<u>SYMBOL</u>	<u>SADSAC SYMBOL</u>	<u>DEFINITION</u>
$\Delta\delta_e$	DE	incremental elevon, algebraic difference of two runs, surface deflection angle, positive deflection, trailing edge down; degrees.
$\Delta\delta_s$	DS	incremental spoiler, incremental difference between two runs, surface deflection angle, positive deflection, trailing edge down; degrees.

MODEL DESCRIPTION

The model geometry (0.004-scale) is shown in figure 2. The model was constructed using aluminum for the wing and stainless steel for the body, elevons, fins, speed brakes, and trimmers. The capability to obtain wing-body-tail, wing-body and body-alone data was provided. In addition, the model had deflected elevons, speed brakes, and body flap for the following combinations:

$$\delta_e = 0, +15^\circ, -20^\circ, -40^\circ \text{ (elevon)}$$

$$\delta_{SB} = 0, 24.92^\circ, 54.92^\circ \text{ (speed brake)}$$

$$\delta_{BF} = 0, 13.75^\circ, -14.25^\circ \text{ (body flap, basic)}$$

$$\delta_{BF} = 0, 13.75^\circ, -22.75^\circ \text{ (body flap, large area)}$$

Deflection angles were obtained by replacing the control surface with a separate surface set to the desired angle.

The model assembly had the following components:

Aft body - stainless steel

Vertical - stainless steel

Speed brakes - stainless steel

OMS pods - stycast

Forward body (4 interchangeable) - stainless steel

1 - per VL70-000139

1 - per VL70-000139, alternate cambered

1 - per VL70-000139B

1 - per VL70-000139B, alternate cambered

Wing and elevons (2 interchangeable) - aluminum

1 - per VL70-000139

1 - per VL70-000139B

Trimmers - four trimmers were tested with the VL70-000139 forward body (see Table IV).

Spoiler - one set of spoilers was tested with the VL70-000139 model configuration, (see sketch, Figure 4).

The model-balance combination was mounted to the tunnel pitch sector using the MSFC double knuckle sting numbers 1 and 3. The alpha and beta schedules noted in Table II required the following sting settings:

MSFC DOUBLE KNUCKLE STING NUMBER 1

α Range (deg)	Offset (deg)	Sting Adapter		Balance Adapter	
		No.	Hole	No.	Hole
A 0 to 20	10	1	53	2	9
B 5 to 25	15	1	53	2	10
H - 10 to 10	0	1	53	113	1
A 0 to 20	10	1	53	113	2
E 20 to 40	30	1	54	113	5
K 40 to 60	50	1	51	1	4

MSFC DOUBLE KNUCKLE STING NUMBER 3

α Range (deg)	Offset (deg)	Sting Adapter		Balance Adapter	
		No.	Hole	No.	Hole
A 0 to 20	10	3	61	3	23

Pressure transducers were used to measure base pressures. Two base pressure tubes and one cavity pressure tube were used. The base pressure tubes were "teed" together. The base and cavity areas are shown in figure 3 along with the base pressure tube locations.

CONFIGURATIONS INVESTIGATED

Configurations investigated consisted of the 0.004 scale models 34-0 and 12-0 (139 and 139B) with and without an alternate cambered forebody.

The model components are:

<u>Symbol</u>		<u>Definition</u>
34-0 (139) Model	12-0 (139B) Model	
B17	B19	orbiter body, basic
B20	B21	orbiter body, alternate cambered
C7	C7	canopy, basic
R5	R5	rudder
V7	V7	vertical tail
W103	W107	wing, basic
W109	W110	wing, alternate for cambered forebody
W105		wing, 500 in. glove radius
F5	F5	body flap
F6	F6	body flap, large area
E22	E23	elevon
M4	M4	OMS pods
H19	H19	trimmer, glove apex (20°)
H20	H20	trimmer, glove apex (10°)
H22	H22	trimmer, cabin (40°)
H23	H23	trimmer, nose (40°)
Z1	Z1	spoiler

CONFIGURATIONS INVESTIGATED
(Continued)

A complete description of these model components is given in Table III entitled Dimensional Data. A description of the test conditions (angles of attack and parametric considerations) to which each model configuration was subjected is contained in Table II entitled Data Set Collations.

TEST FACILITY DESCRIPTION

The Marshall Space Flight Center 14" x 14" Transonic Wind Tunnel is an intermittent blowdown tunnel which operates by high pressure air flowing from storage to either vacuum or atmospheric conditions. A Mach number range from .2 to 5.85 is covered by utilizing two interchangeable test sections. The transonic section permits testing at Mach 0.20 through 2.50, and the supersonic section permits testing at Mach 2.74 through 5.85. Mach numbers between .2 and .9 are obtained by using a controllable diffuser. The range from .95 to 1.3 is achieved through the use of plenum suction and perforated walls. Mach numbers of 1.44, 1.93 and 2.50 are produced by interchangeable sets of fixed contour nozzle blocks. Above Mach 2.50 a set of fixed contour nozzle blocks are tilted and translated automatically to produce any desired Mach number in .25 increments.

Air is supplied to a 6000 cubic foot storage tank at approximately -40°F dew point and 500 psi. The compressor is a three-stage reciprocating unit driven by a 1500 hp motor.

The tunnel flow is established and controlled with a servo actuated gate valve. The controlled air flows through the valve diffuser into the stilling chamber and heat exchanger where the air temperature can be controlled from ambient to approximately 180°F . The air then passes through the test section which contains the nozzle blocks and test region.

Downstream of the test section is a hydraulically controlled pitch sector that provides a total angle of attack range of 20° ($\pm 10^{\circ}$). Sting offsets are available for obtaining various maximum angles of attack up to 90° .

DATA REDUCTION

All model forces and moments were resolved in the body and stability axis systems and are presented in the form of non-dimensional coefficients. The balance centerline is 0.020 inches above the MRP (see Figure 2) and was corrected for pitching and rolling moment.

Two base pressures and one cavity pressure were recorded. The base and cavity areas are shown in Figure 3, along with the base pressure tube locations. Equations used in base pressure coefficient calculations are:

$$C_A = C_{AF} - (CPBAVG) \frac{A_b}{S_{ref}}$$

$$C_{AB} = -(CPBAVG) \frac{A_b - A_c}{S_{ref}} - (CPC) \frac{A_c}{S_{ref}}$$

$$CPBAVG = \text{average base pressure coefficient} = \frac{P_{bavg} - P_\infty}{q}$$

$$CPC = \text{cavity pressure coefficient} = \frac{P_c - P_\infty}{q}$$

Reference dimensions utilized in the reduction of the non-dimensional coefficients are:

	FULL SCALE	MODEL SCALE
REFERENCE AREA (S_{ref})	2690.0 ft. ²	6.198 in. ²
REFERENCE LENGTH (l_{ref}) (M.A.C)	474.8 in.	1.899 in.
REFERENCE SPAN (b_{ref}) (WING SPAN)	936.7 in.	3.747 in.
MOMENT REFERENCE CENTER (MRP) (From Nose)	838.7 in.	3.355 in.

DATA REDUCTION (Concluded)

	<u>FULL SCALE</u>	<u>MODEL SCALE</u>
BODY LENGTH (l_b)	1290.3 in.	5.161 in.
BASE AREA (A_b) (See Fig 2)	434.2 ft. ²	1.0004 in. ²
CAVITY AREA (A_c)	137.5 ft. ²	0.3167 in. ²

Data were corrected for weight tares and sting deflections.

Axial-force and drag coefficients for Mach numbers less than 1.96 for the following datasets (tunnel runs 256 thru 267) are not included in the plotted data and the tabulated listing. This data was judged to be erroneous:

R87048

R87049

R87058

R87066

R87067

R87075 (M = 1.2 only)

TEST : MSFC TWT 574

TABLE I.

DATE : MAY-JUN 73

TEST CONDITIONS

MACH NUMBER	REYNOLDS NUMBER (per unit length)	DYNAMIC PRESSURE (pounds/sq. inch)	STAGNATION TEMPERATURE (degrees Fahrenheit)
0.6	$4.6 \times 10^6/\text{ft.}$	4.35	100
0.9	$5.9 \times 10^6/\text{ft.}$	7.35	100
1.2	$6.1 \times 10^6/\text{ft.}$	9.12	100
1.96	$6.8 \times 10^6/\text{ft.}$	10.22	100
2.99	$4.1 \times 10^6/\text{ft.}$	5.20	140
4.96	$4.9 \times 10^6/\text{ft.}$	3.07	140

BALANCE UTILIZED: MSFC No. 231 Six Component

	CAPACITY:	ACCURACY:	COEFFICIENT TOLERANCE:
NF	<u>122 lbs.</u>	<u>± .61</u>	<u>±.0082</u>
SF	<u>52 lbs.</u>	<u>± .26</u>	<u>±.0035</u>
AF	<u>22 lbs.</u>	<u>± .10</u>	<u>±.0013</u>
PM	<u>122 in-lbs.</u>	<u>± .61</u>	<u>±.0015</u>
RM	<u>30 in-lbs.</u>	<u>± .15</u>	<u>±.0004</u>
YM	<u>53 in-lbs.</u>	<u>± .27</u>	<u>±.0007</u>

COMMENTS:

TABLE II. (Continued)

Sheet 5 of 7

TEST: α A48		MSFC 574		DATE SET/RUN NUMBER COLLATION SUMMARY												DATE:			
DATA SET IDENTIFIER	CONFIGURATION	SCHD.		PARAMETERS/VALUES												MACH NUMBERS (OR ALTERNATE INDEPENDENT VARIABLE)			
		α	β	δ_{EL}	δ_{ER}	δ_{AF}	δ_{SB}	δ_{ADPT}	δ_{AL}	0.6	0.9	1.2	1.96	2.99	4.96	TEST RUN NUMBERS			
887077	ORB 139 W/ALT NOSE	A	0	15	15	13.75	0	ADPT		281	280	279	186	207	206				
78		E	0	15	15	13.75								212	213				
79		A	0	-20	-20	0				282	283	284	189	191	190				
80		E	0	-20	-20	0							185	220	221				
81		A	0	-40	-40	-14.25								215	214				
82		E	0	-40	-40	-14.25								014	015	016	017	010	009
83	ORB 139 W/500° GLOVE	A	0	0	0	0				013									
84		E	0	0	0	0								011	012				

1	7	13	19	25	31	37	43	49	55	61	67	75	76		
COEFFICIENTS													IDVAR (1)	IDVAR (2)	NDV
SCHEDULES															

TABLE II. (Concluded)

sheet 7 of 7

TEST: OA-48 MSFC 574		DATA SET/RUN NUMBER COLLATION SUMMARY										DATE:					
DATA SET IDENTIFIER	CONFIGURATION	SCHD.		PARAMETERS/VALUES				BAL ADPT.	MACH NUMBERS (OR ALTERNATE INDEPENDENT VARIABLE)								
		α	β	δ_{ER}	δ_{BF}	δ_{SB}	δ_{IC}		0.6	0.9	1.2	1.96	2.99	4.%			
R87100	ORB 139B (F6)	E	O	O	O	-22.75	β^{IC}					407	408				
101		A	O	O	O	-22.75						410	409				
102		A	O	O	O	13.75						411	412				
103		E	O	O	O	13.75						414	413				
104		E	O	O	O	O						415	416				
105		A	O	O	O	O						418	417				
106	ORB 139B + H19	E	O	-40	-40	-14.25	β^{IC}						531				
107	+ H20	E	O	-40	-40	-14.25							532				
108	+ H22	10	G	O	O	O						553					
109		20	G	O	O	O							552				
110		A	O	O	O	O						549	548				
111		E	O	O	O	O						550	551				
112	ORB 139 Z1	E	O	-40	-40	-14.25						423	422				
113	ORB 139 B	A	O	O	O	OFF						403	404				
114	ORB 139 B	E	O	O	O	OFF						402	401				

α OR β
SCHEDULES

COEFFICIENTS

7 13 19 25 31 37 43 49 55 61 67 75 76
IDVAR (1) IDVAR (2) NDV

TABLE III. DIMENSIONAL DATA

MODEL COMPONENT: BODY B17

GENERAL DESCRIPTION: Fuselage, 3 configuration, lightweight orbiter per Rockwell Lines VL70-000139

Model Scale = 0.004

DRAWING NUMBER VL70-000139

<u>DIMENSION:</u>	<u>FULL SCALE</u>	<u>MODEL SCALE</u>
Length ~ IN.	<u>1290.3</u>	<u>5.16120</u>
Max Width ~ IN.	<u>267.6</u>	<u>1.07040</u>
Max Depth ~ IN.	<u>244.5</u>	<u>0.9780</u>
Fineness Ratio	<u>4.82175</u>	<u>4.82175</u>
Area ~ Ft ²		
Max Cross-Sectional	<u>386.67</u>	<u>0.00619</u>
Planform	<u> </u>	<u> </u>
Wetted	<u> </u>	<u> </u>
Base	<u> </u>	<u> </u>

TABLE III. (CONTINUED)

MODEL COMPONENT: BODY B19

GENERAL DESCRIPTION: Fuselage, 3 configuration, Lightweight
Orbiter per VL70-000139B

NOTE: Identical to B17 except forebody

Model Scale = 0.004

DRAWING NUMBER

VL70-000139B

DIMENSION:

	<u>FULL SCALE</u>	<u>MODEL SCALE</u>
Length ~ IN.	<u>1290.3</u>	<u>5.16120</u>
Max Width ~ IN.	<u>267.6</u>	<u>1.07040</u>
Max Depth ~ IN.	<u>244.5</u>	<u>0.9780</u>
Fineness Ratio	<u>4.82175</u>	<u>4.82175</u>
Area ~ Ft ²		
Max Cross-Sectional	<u>386.67</u>	<u>0.00619</u>
Planform	<u> </u>	<u> </u>
Wetted	<u> </u>	<u> </u>
Base	<u> </u>	<u> </u>

TABLE III. (CONTINUED)

MODEL COMPONENT: BODY B20

GENERAL DESCRIPTION: Fuselage, 3 configuration, Lightweight Orbiter per Alt. Cambered Forebody for VL70-000139. Note:

B20 Identical to B17 except forebody.

Model Scale = .004.

DRAWING NUMBER	Alt. Cambered Forebody Per VL70-000139	
<u>DIMENSION:</u>	<u>FULL SCALE</u>	<u>MODEL SCALE</u>
Length ~ IN.	<u>1290.3</u>	<u>5.16120</u>
Max Width ~ IN.	<u>267.6</u>	<u>1.07040</u>
Max Depth ~ IN.	<u>244.5</u>	<u>0.9780</u>
Fineness Ratio	<u>4.82175</u>	<u>4.82175</u>
Area ~ Ft ²		
Max Cross-Sectional	<u>386.67</u>	<u>0.00619</u>
Planform	_____	_____
Wetted	_____	_____
Base	_____	_____

TABLE III. (CONTINUED)

MODEL COMPONENT: BODY B21

GENERAL DESCRIPTION: Fuselage, 3 Configuration, Lightweight
Orbiter Per Alt. Cambered Forebody for VL70-000139B.

NOTE: B21 Identical to B19 Except Forebody.

Model Scale = .004

DRAWING NUMBER Alt. Cambered
Forebody For
VL70-000139B

<u>DIMENSION:</u>	<u>FULL SCALE</u>	<u>MODEL SCALE</u>
Length ~ IN.	<u>1290.3</u>	<u>5.16120</u>
Max Width ~ IN.	<u>267.6</u>	<u>1.07040</u>
Max Depth ~ IN.	<u>244.5</u>	<u>0.9780</u>
Fineness Ratio	<u>4.82175</u>	<u>4.82175</u>
Area ~ Ft. ²		
Max Cross-Sectional	<u>386.67</u>	<u>0.00619</u>
Planform	<u> </u>	<u> </u>
Wetted	<u> </u>	<u> </u>
Base	<u> </u>	<u> </u>

TABLE III. (CONTINUED)

MODEL COMPONENT: Canopy - C7

GENERAL DESCRIPTION: Configuration 3 per Rockwell Lines

VL 70-000139

Model Scale = .004

DRAWING NUMBER VL70-000139

<u>DIMENSION:</u>	<u>FULL SCALE</u>	<u>MODEL SCALE</u>
Length ($x_o = 433$ to $x_o = 670$) in.FS	<u>237</u>	<u>0.9480</u>
Max Width	<u> </u>	<u> </u>
Max Depth ($B_o =$ to $B_o = 501$) in.FS	<u> </u>	<u> </u>
Fineness Ratio	<u> </u>	<u> </u>
Area		
Max Cross-Sectional	<u> </u>	<u> </u>
Planform	<u> </u>	<u> </u>
Wetted	<u> </u>	<u> </u>
Base	<u> </u>	<u> </u>

TABLE III. (CONTINUED)

MODEL COMPONENT: R5 - Rudder

GENERAL DESCRIPTION: 2A and 3 configuration per Rockwell lines
VL70-000095 and VL70-000139

Scale Model = .004

DRAWING NUMBER: VL70-000139
VL70-000095

<u>DIMENSIONS:</u>	<u>FULL-SCALE</u>	<u>MODEL SCALE</u>
Area ~ Ft ²	<u>106.38</u>	<u>0.00170</u>
Span (equivalent) ~ IN.	<u>201.0</u>	<u>0.8040</u>
Inb'd equivalent chord	<u>91.585</u>	<u>0.36634</u>
Outb'd equivalent chord	<u>50.833</u>	<u>0.20333</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>
Tailing 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>0.00003</u>
Product of area and mean chord		

TABLE III. (CONTINUED)

MODEL COMPONENT: VERTICAL - V 7 (Lightweight orbiter configuration)GENERAL DESCRIPTION: Centerline vertical tail, double wedge airfoil
with rounded leading edge

Scale Model = .004

DRAWING NUMBER: VL70-0000139
VL70-000095

<u>DIMENSIONS:</u>	<u>FULL-SCALE</u>	<u>MODEL SCALE</u>
<u>TOTAL DATA</u>		
Area (Theo) ~ Ft ² Planform	<u>425.92</u>	<u>0.00682</u>
Span (Theo) ~ In.	<u>315.72</u>	<u>1.26288</u>
Aspect Ratio	<u>1.675</u>	<u>1.675</u>
Rate of Taper	<u>0.507</u>	<u>0.507</u>
Taper Ratio	<u>.404</u>	<u>.404</u>
Sweep Back Angles, degrees		
Leading Edge	<u>45.000</u>	<u>45.000</u>
Trailing Edge	<u>26.249</u>	<u>26.249</u>
0.25 Element Line	<u>41.130</u>	<u>41.130</u>
Chords:		
Root (Theo) WP	<u>268.50</u>	<u>1.0740</u>
Tip (Theo) WP	<u>108.47</u>	<u>0.43388</u>
MAC	<u>199.81</u>	<u>0.79924</u>
Fus. Sta. of .25 MAC	<u>1463.50</u>	<u>5.8540</u>
W. P. of .25 MAC	<u>635.522</u>	<u>2.542088</u>
B. L. of .25 MAC	<u>0.00</u>	<u>0.00</u>
Airfoil Section		
Leading Wedge Angle Deg	<u>10.000</u>	<u>10.000</u>
Trailing Wedge Angle Deg	<u>14.920</u>	<u>14.920</u>
Leading Edge Radius ~IN.	<u>2.00</u>	<u>0.0080</u>
Void Area	<u>13.17</u>	<u>0.00021</u>
Blanketed Area		

TABLE III. (CONTINUED)

MODEL COMPONENT: WING-W103 New Lightweight OrbiterGENERAL DESCRIPTION: Orbiter 3 configuration per lines VL70-000139NOTE: (Dihedral angle is defined at the lower surface of the wing at the 75.33% element line projected into a plane perpendicularto the FRL Scale Model = 0.004

<u>TEST NO.</u>	<u>DWG. NO. VL70-000139</u>	
<u>DIMENSIONS:</u>	<u>FULL-SCALE</u>	<u>MODEL SCALE</u>
<u>TOTAL DATA</u>		
Area (Theo.) Ft ²		
Planform	2690.00	0.04304
Span (Theo In.)	936.68	3.74672
Aspect Ratio	2.265	2.265
Rate of Taper	1.177	1.177
Taper Ratio	0.200	0.200
Dihedral Angle, degrees	3.500	3.500
Incidence Angle, degrees	3.000	3.000
Aerodynamic Twist, degrees	+3.000	+3.000
Sweep Back Angles, degrees		
Leading Edge	45.000	45.000
Trailing Edge	-10.24	-10.24
0.25 Element Line	35.209	35.209
Chords:		
Root (Theo) B.P.O.O.	689.24	2.75696
Tip, (Theo) B.P.	137.85	0.55140
MAC	474.81	1.89924
Fus. Sta. of .25 MAC		4.54756
W.P. of .25 MAC		1.19680
B.L. of .25 MAC		0.72852
<u>EXPOSED DATA</u>		
Area (Theo) Ft ²	1752.29	0.02804
Span, (Theo) In. BP108	720.68	2.88272
Aspect Ratio	2.058	2.058
Taper Ratio	0.2451	0.2451
Chords		
Root BP108	562.40	2.2496
Tip $1.00 \frac{b}{2}$	137.85	0.55140
MAC	393.03	1.57212
Fus. Sta. of .25 MAC	1185.31	4.74124
W.P. of .25 MAC	300.20	1.20080
B.L. of .25 MAC	251.76	1.00704
Airfoil Section (Rockwell Mod NASA)		
XXXX-64		
Root $\frac{b}{2}$ =	.10	.10
Tip $\frac{b}{2}$ =	.12	.12
Data for (1) of (2) Sides		
Leading Edge Cuff		
Planform Area Ft ²	120.33	0.00192
Leading Edge Intersects Fus M. L. @ Sta	560.0	2.240
Leading Edge Intersects Wing @ Sta	1035.0	4.140

TABLE III. (CONTINUED)

MODEL COMPONENT: WING-W 107 New Lightweight Orbiter

GENERAL DESCRIPTION: Orbiter 3 configuration per lines VL70-000139B.

NOTE: Same as W103 except cuff, airfoil, and angle of incidence

Scale Model = 0.004

<u>TEST NO.</u>	<u>DWG. NO. VL70-000139</u>	
<u>DIMENSIONS:</u>	<u>FULL-SCALE</u>	<u>MODEL SCALE</u>
<u>TOTAL DATA</u>		
Area (Theo.) Ft ²	2690.00	0.04304
Planform	936.68	3.74672
Span (Theo In.)	2.265	2.265
Aspect Ratio	1.177	1.177
Rate of Taper	0.200	0.200
Taper Ratio	3.500	3.500
Dihedral Angle, degrees	0.500	0.500
Incidence Angle, degrees	+3.000	+3.000
Aerodynamic Twist, degrees		
Sweep Back Angles, degrees		
Leading Edge	45.000	45.000
Trailing Edge	-10.24	-10.24
0.25 Element Line	35.209	35.209
<u>Chords:</u>		
Root (Theo) B.P.O.O.	689.24	2.75696
Tip, (Theo) B.P.	137.85	0.55140
MAC	474.81	1.89924
Fus. Sta. of .25 MAC	1136.89	4.54756
W.P. of .25 MAC	299.20	1.19680
B.L. of .25 MAC	182.13	0.72852
<u>EXPOSED DATA</u>		
Area (Theo) Ft ²	1752.29	0.02804
Span, (Theo) In. BP108	720.68	2.88272
Aspect Ratio	2.058	2.058
Taper Ratio	0.2451	0.2451
<u>Chords</u>		
Root BP108	562.40	2.2496
Tip 1.00 $\frac{b}{2}$	137.85	0.55140
MAC	393.03	1.57212
Fus. Sta. of .25 MAC	1185.31	4.74124
W.P. of .25 MAC	300.20	1.20080
B.L. of .25 MAC	251.76	1.00704
<u>Airfoil Section (Rockwell Mod NASA)</u>		
<u>XXXX-64</u>		
Root $\frac{b}{2}$ =	.10	.10
Tip $\frac{b}{2}$ =	.12	.12
<u>Data for (1) of (2) Sides</u>		
Leading Edge Cuff		
Planform Area Ft ²	118.333	0.00189
Leading Edge Intersects Fus M. L. @ Sta	500	2.0
Leading Edge Intersects Wing @ Sta	1083.4	4.3336

TABLE III. (CONTINUED)

MODEL COMPONENT: WING-W 109 New Lightweight OrbiterGENERAL DESCRIPTION: Orbiter, configuration per lines Altn. CamberedForebody for VL70-000139 NOTE: Dihedral Angle is definedat the lower surface of the wing at the 75.33% element lineprojected into a plane perpendicular to the FRI

Scale Model = .004

Altn. Cambered Forebod:

TEST NO.DWG. NO. For VL70-000139DIMENSIONS:FULL-SCALEMODEL SCALETOTAL DATAArea (Theo.) Ft²

Planform

2690.00

0.04304

Span (Theo In.)

936.68

3.74672

Aspect Ratio

2.265

2.265

Rate of Taper

1.177

1.177

Taper Ratio

0.200

0.200

Dihedral Angle, degrees

3.500

3.500

Incidence Angle, degrees

3.000

3.000

Aerodynamic Twist, degrees

+3.000

+3.000

Sweep Back Angles, degrees

Leading Edge

45.000

45.000

Trailing Edge

-10.24

-10.24

0.25 Element Line

35.209

35.209

Chords:

Root (Theo) B.P.O.O.

689.24

2.75696

Tip, (Theo) B.P.

137.85

0.55140

MAC

474.81

1.89924

Fus. Sta. of .25 MAC

1136.89

4.54756

W.P. of .25 MAC

299.20

1.19680

B.L. of .25 MAC

182.13

0.72852

EXPOSED DATAArea (Theo) Ft²

1752.29

0.02804

Span, (Theo) In. BP108

720.68

2.88272

Aspect Ratio

2.058

2.058

Taper Ratio

0.2451

0.2451

Chords

Root BP108

562.40

2.2496

Tip $1.00 \frac{b}{2}$

137.85

0.55140

MAC

393.03

1.57212

Fus. Sta. of .25 MAC

1185.31

4.74124

W.P. of .25 MAC

300.20

1.20080

B.L. of .25 MAC

251.76

1.00704

Airfoil Section (Rockwell Mod NASA)
XXXX-64Root $\frac{b}{2}$ =

.10

.10

Tip $\frac{b}{2}$ =

.12

.12

Data for (1) of (2) Sides

Leading Edge Cuff

Planform Area Ft²

120.33

0.00192

Leading Edge Intersects Fus M. L. @ Sta

560.0

2.240

Leading Edge Intersects Wing @ Sta

1035.0

4.140

TABLE III. (CONTINUED)

MODEL COMPONENT: WING-W 110 New Lightweight OrbiterGENERAL DESCRIPTION: Orbiter 3 configuration per lines for VL70-000139BAltn. Cambered ForebodyNOTE: Same as W103 except Cuff, Airfoil, and Angle of IncidenceScale Model = 0.004

TEST NO.	Altn. Cambered Forebo DWG. NO. For VL70-000139B	
	FULL-SCALE	MODEL SCALE
<u>DIMENSIONS:</u>		
<u>TOTAL DATA</u>		
Area (Theo.) Ft ²	2690.00	0.04304
Planform	936.68	3.74672
Span (Theo In.)	2.265	2.265
Aspect Ratio	1.177	1.177
Rate of Taper	0.200	0.200
Taper Ratio	3.500	3.500
Dihedral Angle, degrees	0.500	0.500
Incidence Angle, degrees	+3.000	+3.000
Aerodynamic Twist, degrees		
Sweep Back Angles, degrees		
Leading Edge	45.000	45.000
Trailing Edge	-10.24	-10.24
0.25 Element Line	35.209	35.209
Chords:		
Root (Theo) B.P.O.O.	689.24	2.75696
Tip, (Theo) B.P.	137.85	0.55140
MAC	474.81	1.89924
Fus. Sta. of .25 MAC	1136.89	4.54756
W.P. of .25 MAC	299.20	1.19680
B.L. of .25 MAC	182.13	0.72852
<u>EXPOSED DATA</u>		
Area (Theo) Ft ²	1752.29	0.02804
Span, (Theo) In. BP108	720.68	2.88272
Aspect Ratio	2.058	2.058
Taper Ratio	0.2451	0.2451
Chords		
Root BP108	562.40	2.2496
Tip 1.00 $\frac{b}{2}$	137.85	0.55140
MAC	393.03	1.57212
Fus. Sta. of .25 MAC	1185.31	4.74124
W.P. of .25 MAC	300.20	1.20080
B.L. of .25 MAC	251.76	1.00704
Airfoil Section (Rockwell Mod NASA) XXXX-64		
Root $\frac{b}{2}$ =	.10	.10
Tip $\frac{b}{2}$ =	.12	.12
Data for (1) of (2) Sides		
Leading Edge Cuff		
Planform Area Ft ²	118.333	0.00189
Leading Edge Intersects Fus M. L. @ Sta	500	2.0
Leading Edge Intersects Wing @ Sta	1083.4	4.3336

TABLE III. (CONTINUED)

MODEL COMPONENT: WING-W 105 New Lightweight Orbiter

GENERAL DESCRIPTION: Orbiter 3 Configuration per lines VL70-000139

NOTE: W105 identical to W103 except 500 in. radius used to connect cuff to wing.

Scale model = 0.004

TEST NO.

DWG. NO. VL70-000139 MOD

DIMENSIONS:

FULL-SCALE

MODEL SCALE

TOTAL DATA

Area (Theo.) Ft^2

Planform

2690.00

0.04304

Span (Theo) In.

936.68

3.74672

Aspect Ratio

2.265

2.265

Rate of Taper

1.177

1.177

Taper Ratio

0.200

0.200

Dihedral Angle, degrees

3.500

3.500

Incidence Angle, degrees

3.000

3.000

Aerodynamic Twist, degrees

+3.000

+3.000

Sweep Back Angles, degrees

Leading Edge

45.000

45.000

Trailing Edge

-10.24

-10.24

0.25 Element Line

35.209

35.209

Chords:

Root (Theo) B.P.O.O.

689.24

2.75696

Tip, (Theo) B.P.

137.85

0.55140

MAC

474.81

1.89924

Fus. Sta. of .25 MAC

1136.89

4.54756

W.P. of .25 MAC

299.20

1.19680

B.L. of .25 MAC

182.13

0.72852

EXPOSED DATA

Area (theo) Ft^2

1752.29

7.00916

Span, (Theo) In. BP108

720.68

2.88272

Aspect Ratio

2.058

2.058

Taper Ratio

0.2451

0.2451

Chords

Root BP108

562.40

2.24960

Tip $1.00 \frac{b}{2}$

137.85

0.55140

MAC

393.03

1.57212

Fus. Sta. of .25 MAC

1185.31

4.74124

W.P. of .25 MAC

300.20

1.20008

B.L. of .25 MAC

251.76

1.00704

Airfoil Section (Rockwell Mod NASA)

XXXX-64

Root $\frac{b}{2} =$

.10

.10

Tip $\frac{b}{2} =$

.12

.12

Data for (1) of (2) Sides

Leading Edge Cuff

Planform Area Ft^2

122.67

0.00196

Leading Edge Intersects Fus M. L. @ Sta

569.50

2.2780

Leading Edge Intersects Wing @ Sta

1135.4

4.54160

TABLE III. (CONTINUED)

MODEL COMPONENT: F5 Body Flap

GENERAL DESCRIPTION: 3 configuration per Rockwell lines

VL70-000139

Scale Model = 0.004

DRAWING NUMBER

VL70-000139

DIMENSION:

FULL SCALE

MODEL SCALE

Length ~ IN.

84.70

0.33880

Max Width ~ IN.

267.6

1.07040

Max Depth

Fineness Ratio

Area ~ Ft²

Max Cross-Sectional

Planform

142.5195

0.00228

Wetted

Base

38.0958

0.15238

TABLE III. (CONTINUED)

MODEL COMPONENT: Body Flap - F₆

GENERAL DESCRIPTION: Body Flap for configuration 3,
per lines VL70-000139B

NOTE: Flap adjustable from -32.5° to +13.75"

MODEL SCALE = .004

DRAWING NUMBER _____

<u>DIMENSION:</u>	<u>FULL SCALE</u>	<u>MODEL SCALE</u>
Length ~ in.	<u>107.0</u>	<u>0.4280</u>
Max Width ~ in.	<u>267.6</u>	<u>1.0704</u>
Max Depth	_____	_____
Fineness Ratio	_____	_____
Area ~ Ft ²		
Max Cross-Sectional	_____	_____
Planform	<u>174.55</u>	<u>0.00279</u>
Wetted	_____	_____
Base	<u>38.0958</u>	<u>0.00061</u>

TABLE III. (CONTINUED)

MODEL COMPONENT: Elevon E-22

GENERAL DESCRIPTION: 3 configuration per W103 Rockwell lines

VL70-000139 data for (1) of (2) sides

Scale Model = 0.004

DRAWING NUMBER: VL70-000139

<u>DIMENSIONS:</u>	<u>FULL-SCALE</u>	<u>MODEL SCALE</u>
Area ~ FT ²	<u>205.52</u>	<u>0.00329</u>
Span (equivalent) IN.	<u>353.34</u>	<u>1.41336</u>
Inb'd equivalent chord	<u>114.78</u>	<u>0.45912</u>
Outb'd equivalent chord	<u>55.00</u>	<u>0.220</u>
Ratio movable surface chord/ total surface chord		
At Inb'd equiv. chord	<u>.208</u>	<u>.208</u>
At Outb'd equiv. chord	<u>.400</u>	<u>.400</u>
Sweep Back Angles, degrees		
Leading Edge	<u>0.00</u>	<u>0.00</u>
Tailing Edge	<u>-10.24</u>	<u>-10.24</u>
Hingeline	<u>0.00</u>	<u>0.00</u>
Area Moment (Normal to hinge line) FT ³	<u>1548.07</u>	<u>0.00010</u>

TABLE III. (CONTINUED)

MODEL COMPONENT: Elevon E-23

GENERAL DESCRIPTION: 3 configuration per W107 Rockwell lines

VL70-000139B data for (1) of (2) sides

Scale Model = 0.004

DRAWING NUMBER: VL70-000139B

<u>DIMENSIONS:</u>	<u>FULL-SCALE</u>	<u>MODEL SCALE</u>
Area ~ FT ²	<u>205.52</u>	<u>0.003288</u>
Span (equivalent) ~ IN.	<u>353.34</u>	<u>1.41336</u>
Inb'd equivalent chord	<u>114.78</u>	<u>0.45912</u>
Outb'd equivalent chord	<u>55.00</u>	<u>0.220</u>
Ratio movable surface chord/ total surface chord		
At Inb'd equiv. chord	<u>.208</u>	<u>.208</u>
At Outb'd equiv. chord	<u>.400</u>	<u>.400</u>
Sweep Back Angles, degrees		
Leading Edge	<u>0.00</u>	<u>0.00</u>
Tailing Edge	<u>-10.24</u>	<u>-10.24</u>
Hingeline	<u>0.00</u>	<u>0.00</u>
Area Moment (Normal to hinge line) ~ FT ³	<u>1548.07</u>	<u>0.00010</u>
Product of Area Moment		

TABLE III. (CONTINUED)

MODEL COMPONENT: OMS Pod - M4

GENERAL DESCRIPTION: 3 Lightweight configuration per Rockwell
Lines VL70-000139

Scale Model = 0.004

DRAWING NUMBER VL70-000139

<u>DIMENSION:</u>	<u>FULL SCALE</u>	<u>MODEL SCALE</u>
Length ~ IN.	<u>346.0</u>	<u>1.3840</u>
Max Width ~ IN.	<u>108.0</u>	<u>0.4320</u>
Max Depth ~ IN.	<u>113.0</u>	<u>113.0</u>
Fineness Ratio	<u> </u>	<u> </u>
Area		
Max Cross-Sectional	<u> </u>	<u> </u>
Planform	<u> </u>	<u> </u>
Wetted	<u> </u>	<u> </u>
Base	<u> </u>	<u> </u>

D of OMS Pod

WP = 463.9 INFS: WP400 + 63.9 = 463.9

BP = 80.0 INFS

Length 1214.0 to 1560.0 = 346.0 INFS

NOTE: M4 identical to M3 of 2A configuration except intersection to body

TABLE III. (CONTINUED)

MODEL COMPONENT: Trimmer - H₁₉

GENERAL DESCRIPTION: Trimmer for Configuration 3, per
lines VL70-000139B

NOTE: Data for one (1) Side Only

MODEL SCALE = .004

DRAWING NUMBER _____

<u>DIMENSION:</u>	<u>FULL SCALE</u>	<u>MODEL SCALE</u>
Length ~ in.	<u>222.5</u>	<u>0.890</u>
Max Width ~ in.	<u>66.25</u>	<u>0.265</u>
Max Depth	_____	_____
Fineness Ratio	_____	_____
Area ~ Ft ²		
Max Cross-Sectional		
Planform	<u>55.21</u>	<u>0.000884</u>
Wetted	_____	_____
Base	_____	_____
Included Angle ~ Deg	<u>17.64</u>	<u>17.64</u>
Leading Edge intersects Fuse @ sta.	<u>548.0</u>	<u>2.192</u>
Trailing Edge intersects Fuse @ sta.	<u>748.8</u>	<u>2.995</u>

TABLE III. (CONTINUED)

MODEL COMPONENT: Trimmer H₂₀

GENERAL DESCRIPTION: Trimmer for configuration 3, per lines
VL70-000139B

Model Scale = .004

DRAWING NUMBER _____

<u>DIMENSION:</u>	<u>FULL SCALE</u>	<u>MODEL SCALE</u>
Length ~ In.	<u>204.5</u>	<u>0.818</u>
Max Width ~ In.	<u>42.125</u>	<u>0.1685</u>
Max Depth	_____	_____
Fineness Ratio	_____	_____
Area ~ Ft ²	_____	_____
Max Cross-Sectional Planform	<u>23.74</u>	<u>0.00038</u>
Wetted Base	_____	_____
Included Angle ~ deg	<u>8.95</u>	<u>8.95</u>
Leading Edge intersects Fuse @ sta.	<u>560.75</u>	<u>2.243</u>
Trailing Edge intersects Fuse @ sta.	<u>765.25</u>	<u>3.061</u>

TABLE III. (CONTINUED)

MODEL COMPONENT: Trimmer - H₂₂

GENERAL DESCRIPTION: Trimmer for configuration 3, for lines
VL70-000139B

NOTE: Data for one (1) side only

MODEL SCALE - .004

DRAWING NUMBER _____

<u>DIMENSION:</u>	<u>FULL SCALE</u>	<u>MODEL SCALE</u>
Length ~ in.	<u>137.12</u>	<u>0.5485</u>
Max Width ~ in.	<u>61.75</u>	<u>0.247</u>
Max Depth	_____	_____
Fineness Ratio	_____	_____
Area ~ Ft.	_____	_____
Max Cross-Sectional	_____	_____
Planform	<u>32.745</u>	<u>0.000524</u>
Wetted	_____	_____
Base	_____	_____
Included Angle ~ deg	<u>28.2</u>	<u>28.2</u>
Leading Edge intersects Fuse @ sta.	<u>433.62</u>	<u>1.7345</u>
Trailing Edge intersects Fuse @ sta.	<u>570.75</u>	<u>2.283</u>

TABLE III. (CONTINUED)

MODEL COMPONENT: Trimmer - H₂₃

GENERAL DESCRIPTION: Trimmer for configuration 3, per lines
VL70-000139B, Nose mounted

MODEL SCALE = ,004

DRAWING NUMBER _____

<u>DIMENSION:</u>	<u>FULL SCALE</u>	<u>MODEL SCALE</u>
Length ~ in. (@ $B_0 = 331$)	<u>96.5</u>	<u>0.386</u>
Max Width ~ in.	<u>46.12</u>	<u>0.1845</u>
Max Depth	_____	_____
Fineness Ratio	_____	_____
Area ~ Ft ²		
Max Cross-Sectional		
Planform	<u>21.285</u>	<u>0.000341</u>
Wetted	_____	_____
Base	_____	_____
Included Angle ~ deg	<u>36.12</u>	<u>36.12</u>
Leading Edge intersects Fus @ sta. 280.38	_____	<u>1.1215</u>
Trailing Edge intersects Fus @ sta.	<u>376.87</u>	<u>1.507</u>

TABLE III. (CONCLUDED)

MODEL COMPONENT: Spoiler - B₁

GENERAL DESCRIPTION: Spoiler for configuration 3, lines
drawing VL70-000139.

NOTE: Data for (1) side only

MODEL SCALE = .004





DRAWING NUMBER _____

<u>DIMENSION:</u>	<u>FULL SCALE</u>	<u>MODEL SCALE</u>
Length ~ in.	250.0	1.0
Max Width ~ in.	25	0.10
Max Depth ~ in.	25	0.10
Fineness Ratio		
Area ~ Ft ²		
Max Cross-Sectional	4.34028	0.00007
Planform		
Wetted		
Base		

NOTE: Located on W₁₀₃, 50 in. FS from and parallel to the leading edge. In board end of spoiler is 109.375 in. FS from outer moldline (Y₀ = 217.375)

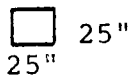
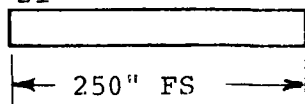
TABLE IV.
AUXILIARY SURFACE CONFIGURATIONS

TRIMMERS

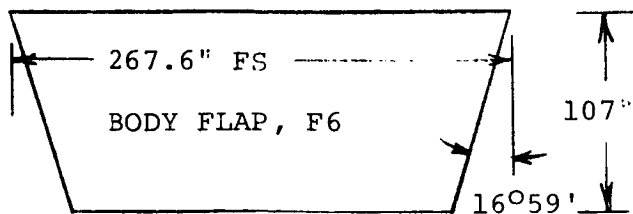
NO.	PLANFORM (Included Radius, FS)	Exposed FT ² , FS (one side)	INCI- DENCE ANGLE	MOUNTING LOCATION (Body Station*)
H19	17.63° 227.3" 	55.2	Same as Glove L.E.	Glove Apex X _O = 548.0
H20	8.95° 209.2" 	23.74	Same as Glove L.E.	Glove Apex X _O = 560.75
H22	28.2° 138.8" 	32.75	0°	Forward Body X _O = 433.6 Z _O = 408.25
H23	36.12° 98.6" 	21.28	0°	Nose X _O = 280.4 Z _O = 331.0

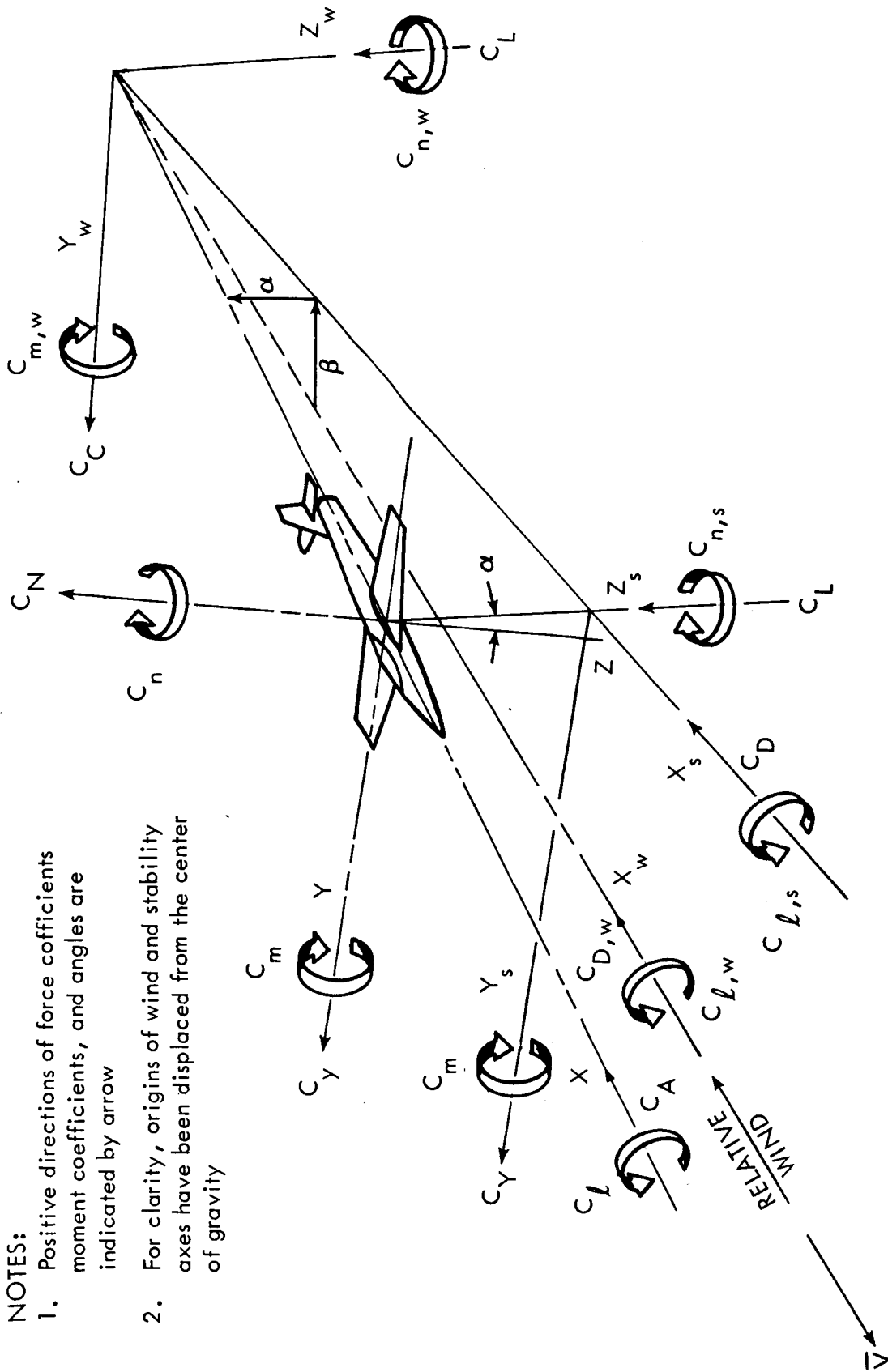
*L.E. Intersection with Fuselage

Spoiler, #1



Spoiler located parallel to and 50" behind L.E. of wing W103 with inboard end at Y_O = 217.375





- 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.

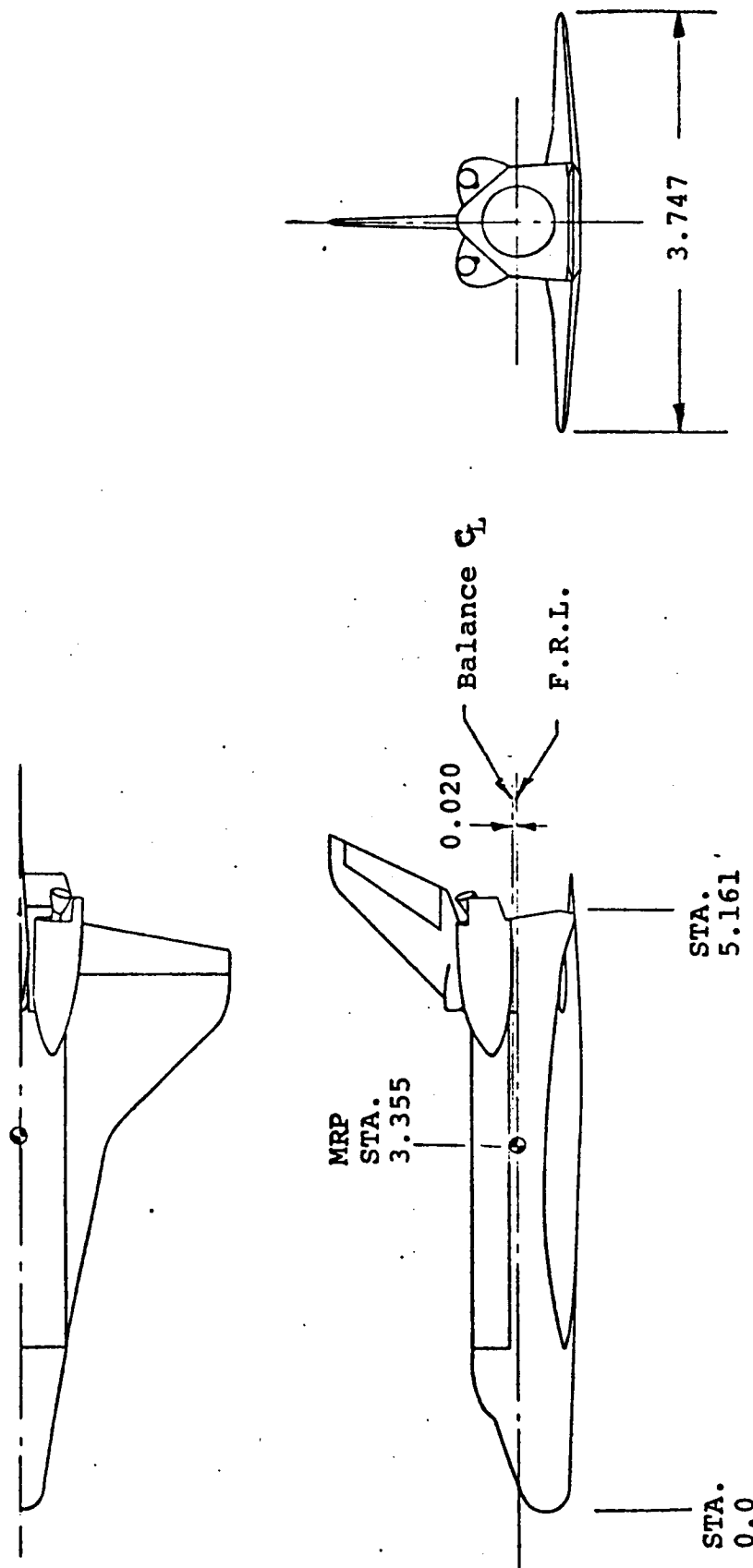


Figure 2. - General Arrangement of Orbiter Model.

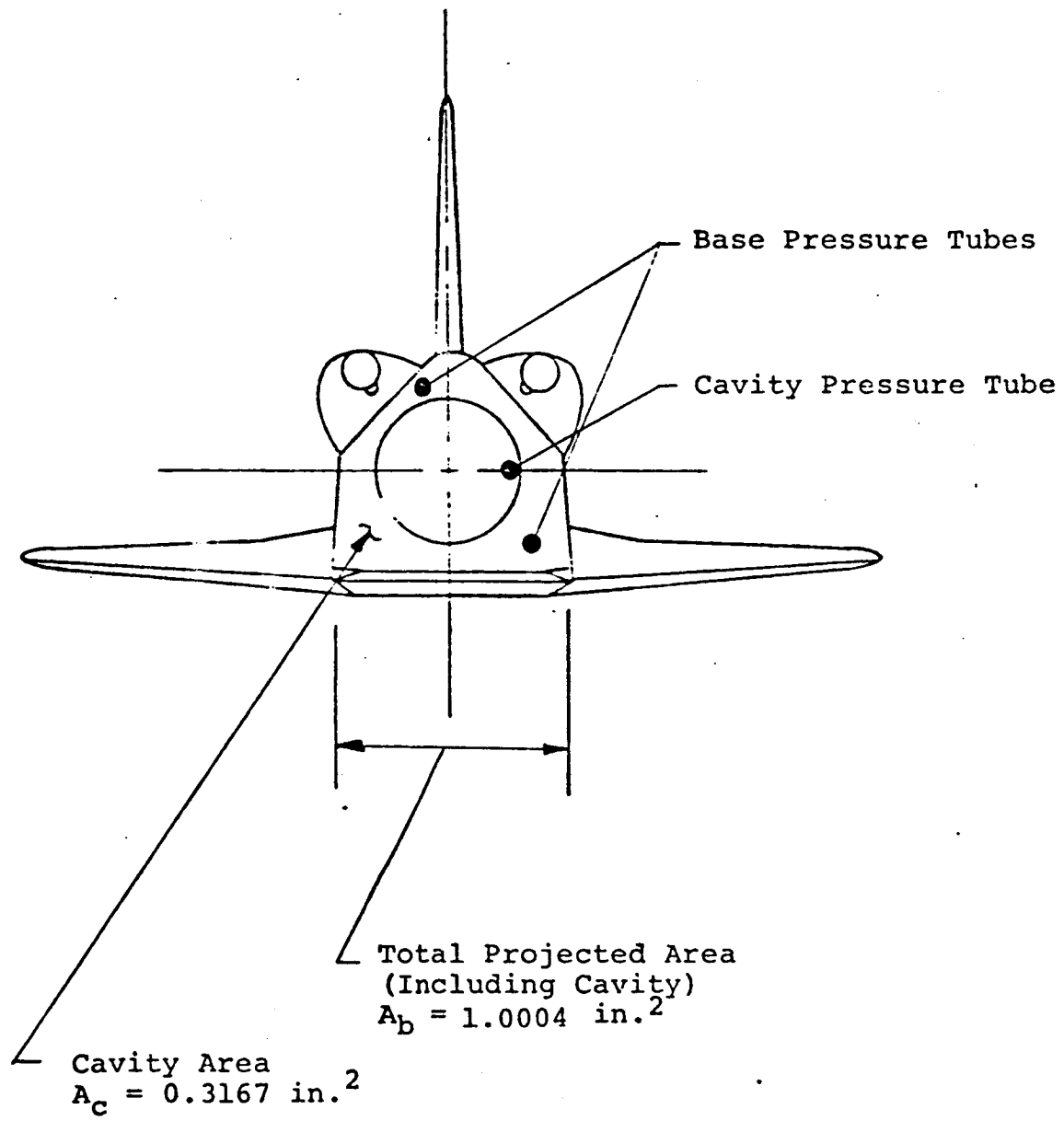


Figure 3. - Definition of Base and Cavity Areas and Pressure Tube Locations.

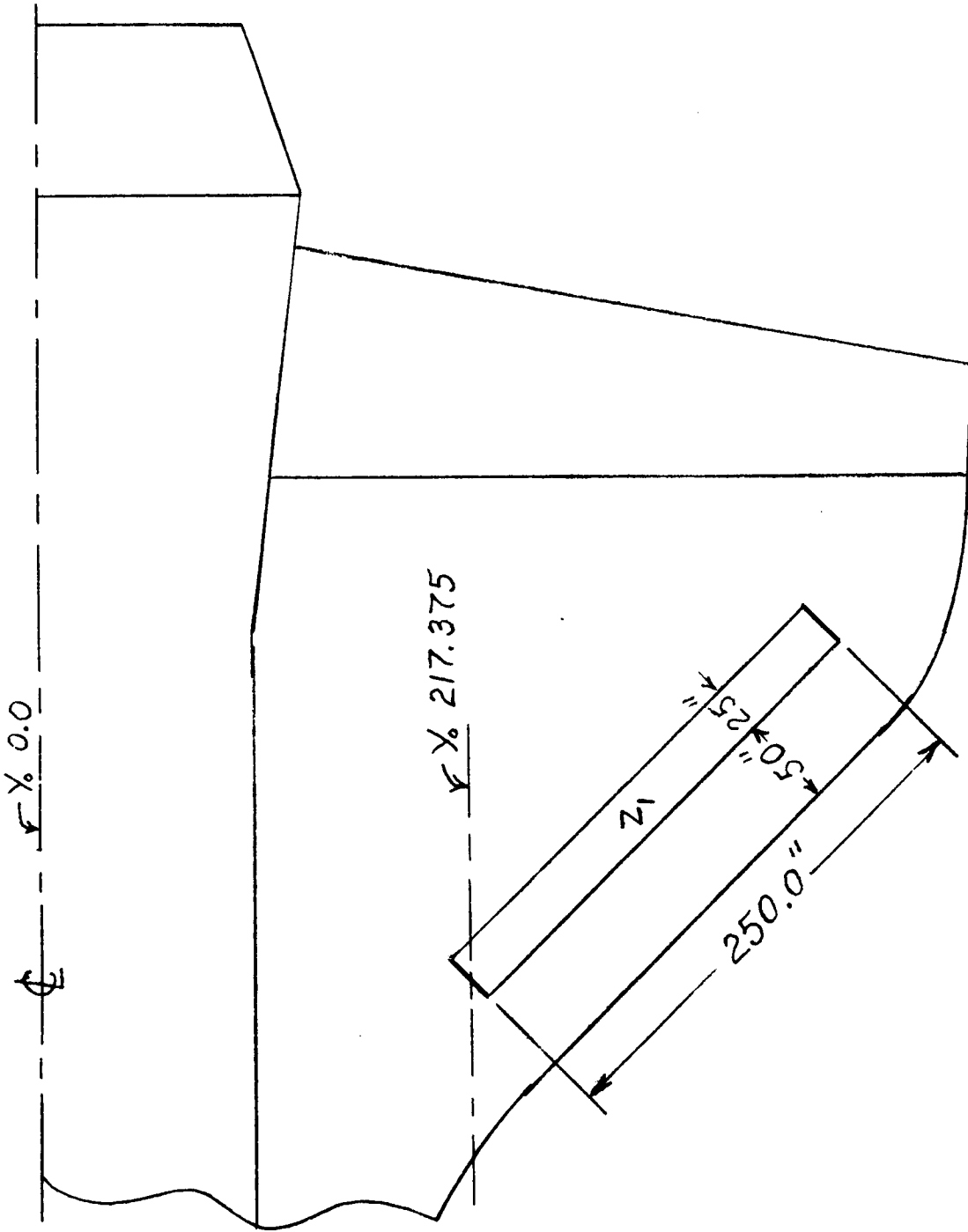
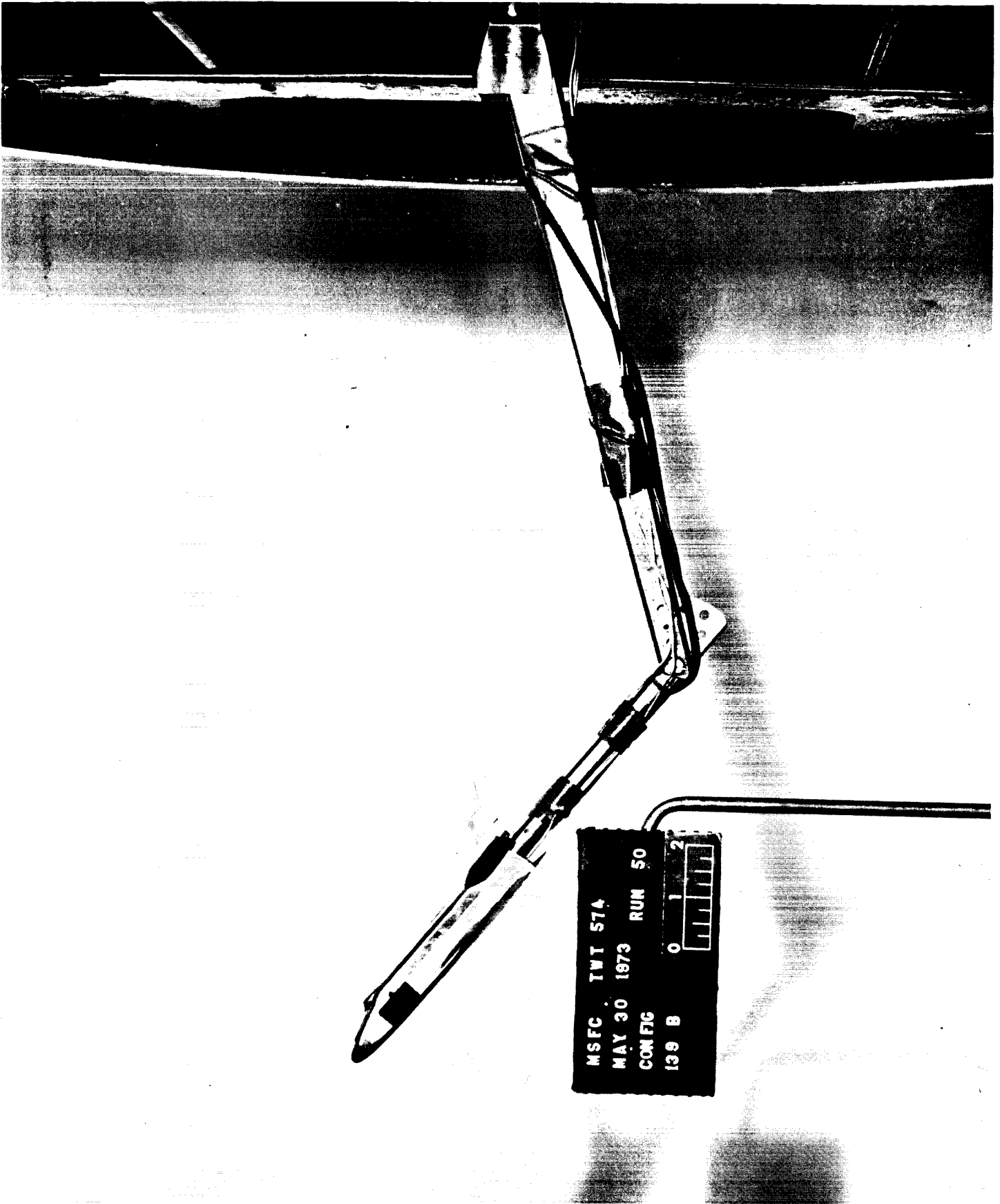
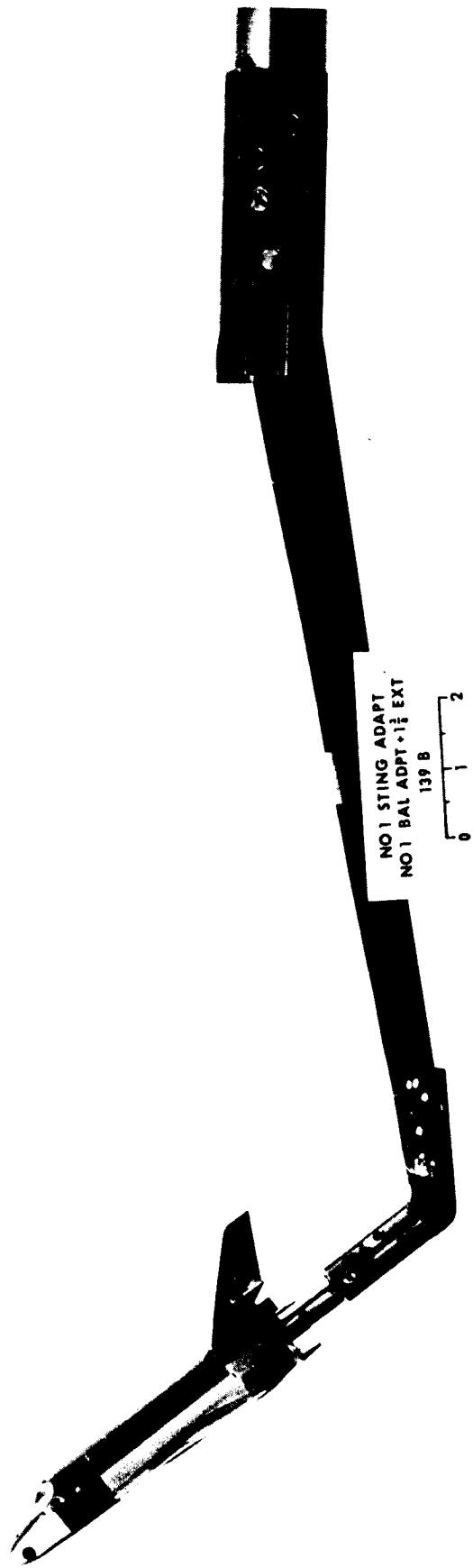


Figure 4. - Location of Spoiler Z1 on Upper Surface of Orbiter Wing W103.

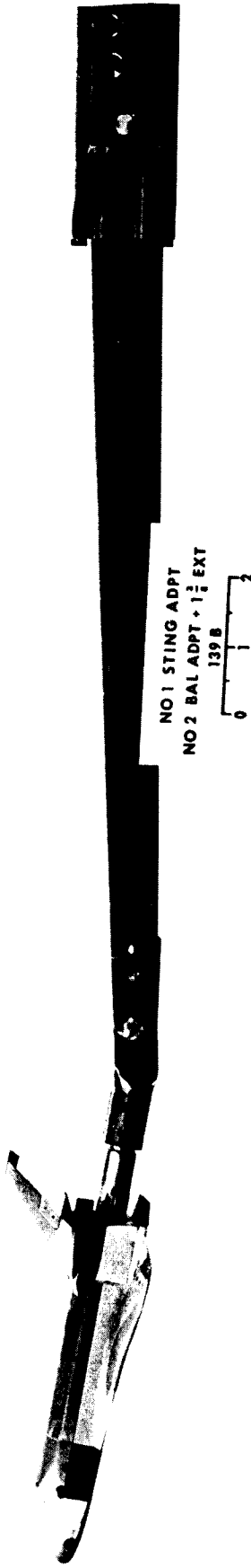


(a) Tunnel Installation Photograph
Figure 5. - Configuration 139B.



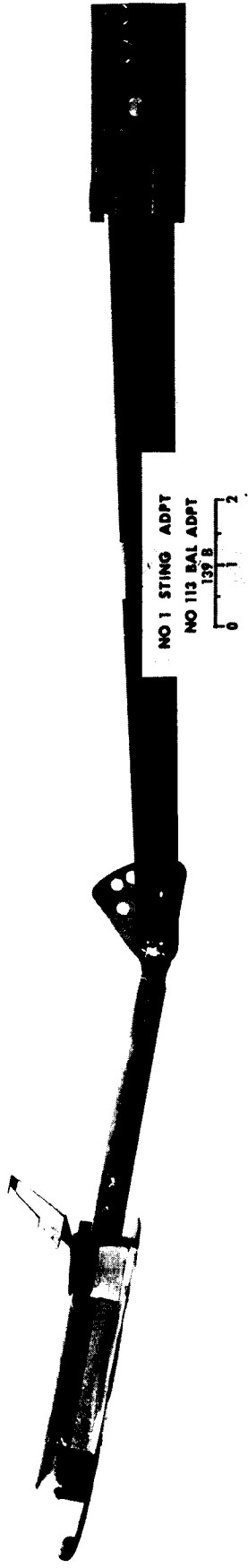
(b) No. 1 Sting Adapter, No. 1 Balance Adapter

Figure 5. - Continued.

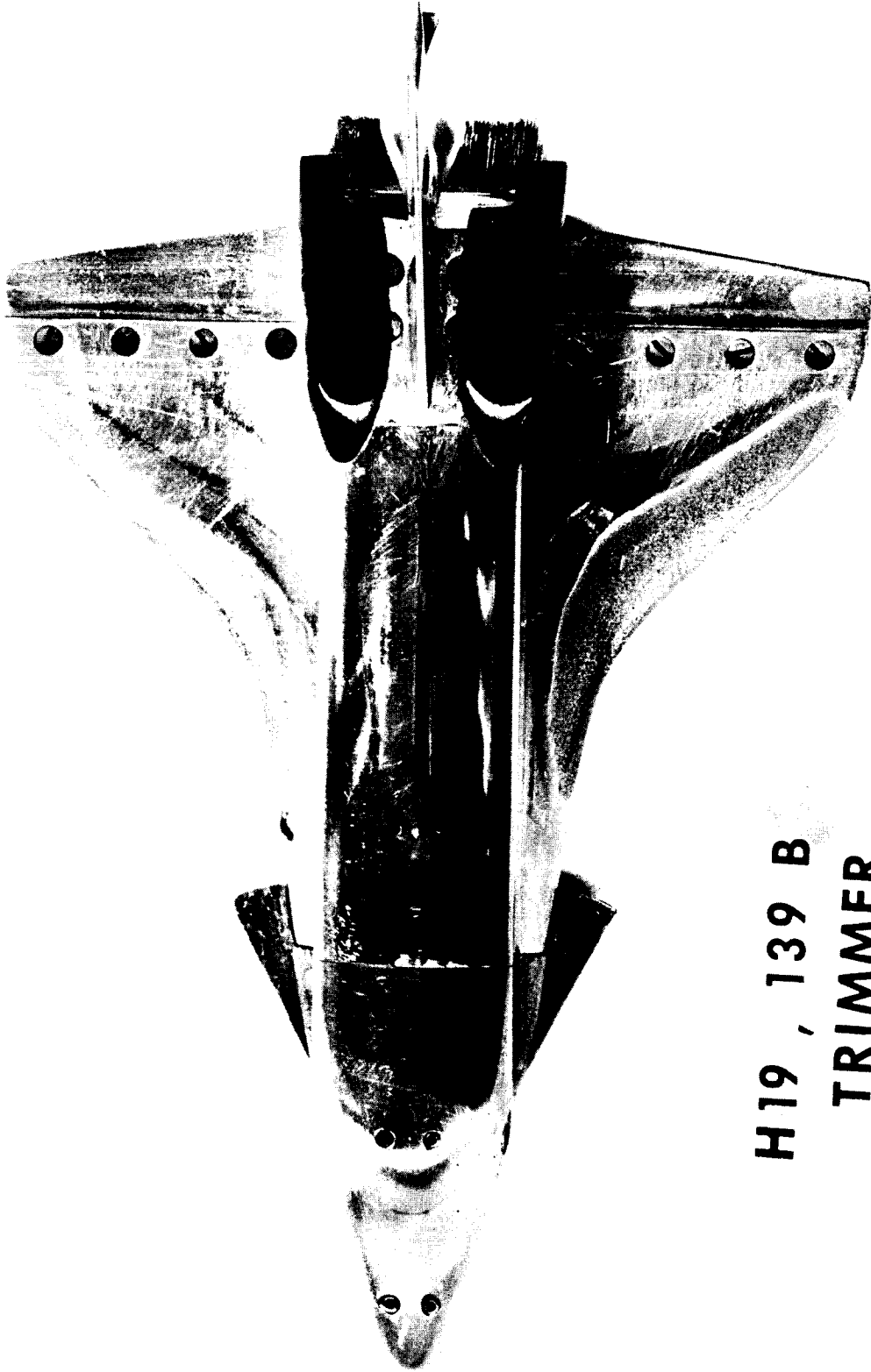


NO 1 STING ADPT
NO 2 BAL ADPT + 1 1/4 EXT
139 B
0 1 2

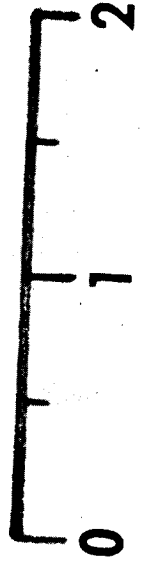
(c) No. 1. Sting Adapter, No. 2 Balance Adapter
Figure 5. - Continued.



(d) No. 1 Sting Adapter, No. 113 Balance Adapter
Figure 5. - Concluded.

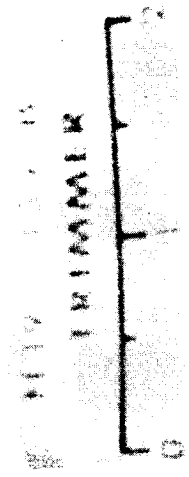


H19 , 139 B
TRIMMER



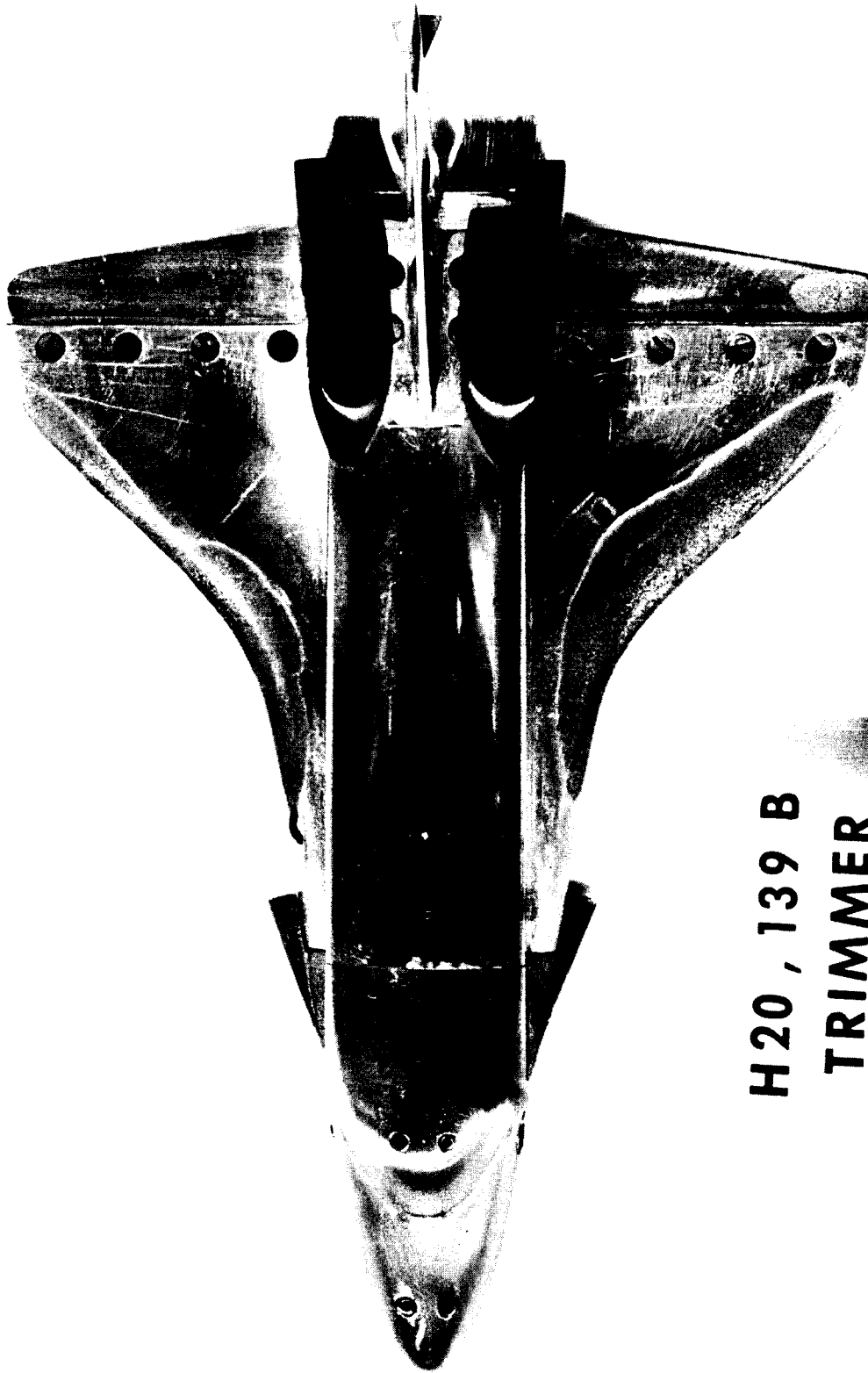
(a) Top View

Figure 6. - Configuration 139B - H19 Trimmer.

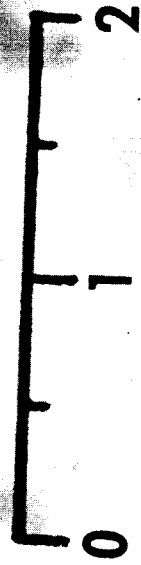


(b) Top Oblique View

Figure 6. - Concluded.



H20, 139 B
TRIMMER

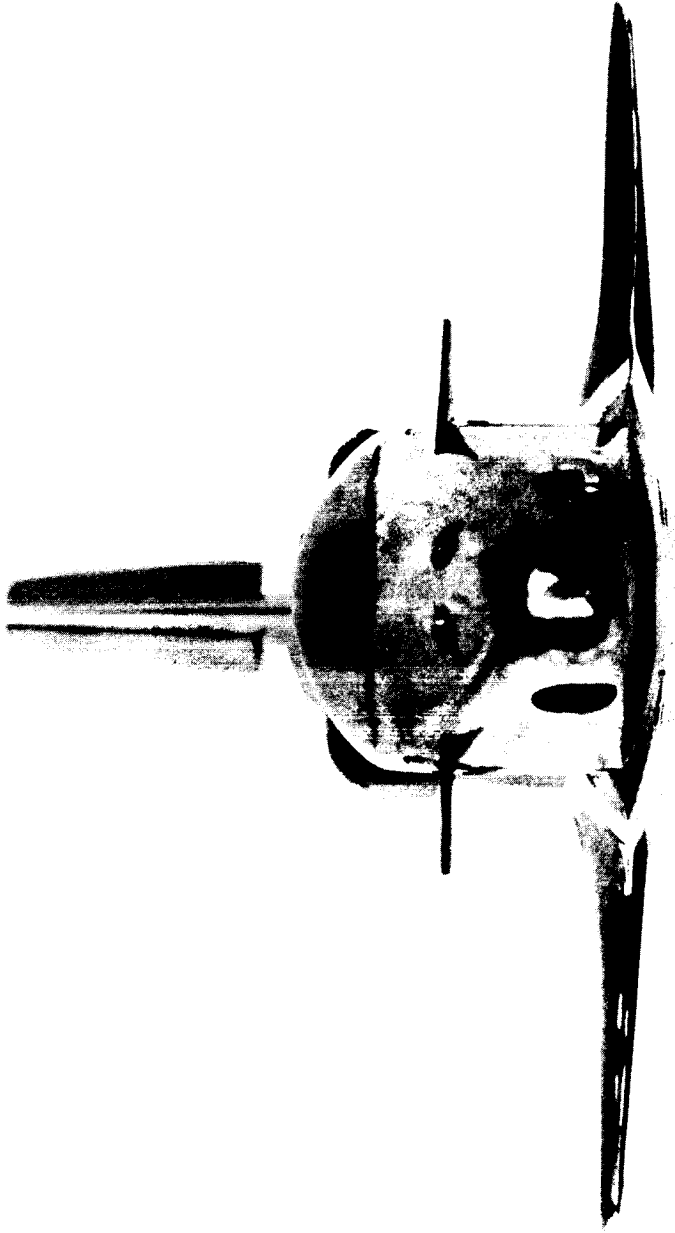


(a) Top View

Figure 7. Configuration 139B - H20 Trimmer.



(b) Top Oblique View
Figure 7. - Concluded.

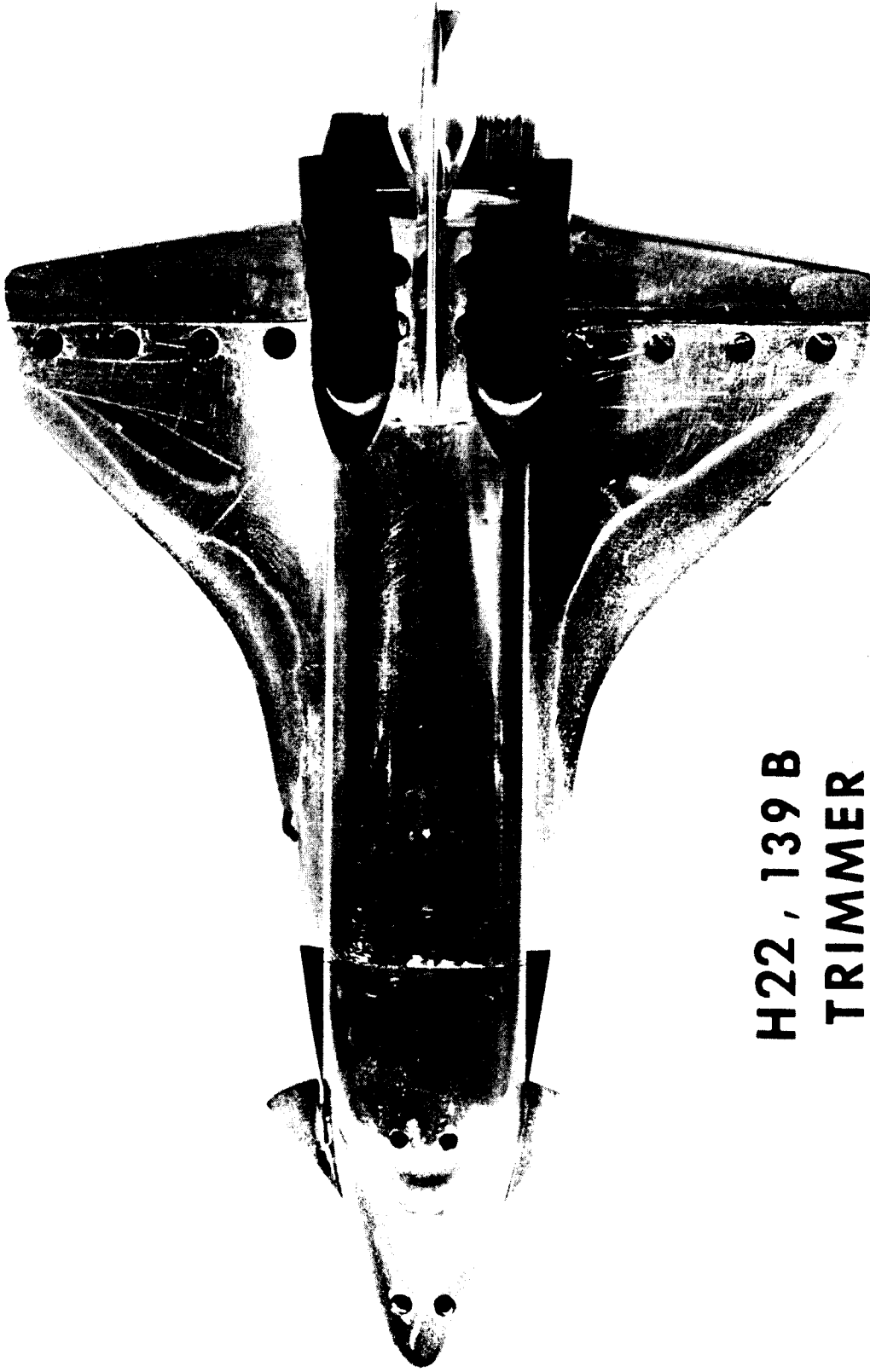


**H22, 139 B
TRIMMER**



(a) Front View

Figure 8. - Configuration 139B - H22 Trimmer



**H22, 139 B
TRIMMER**



(b) Top View

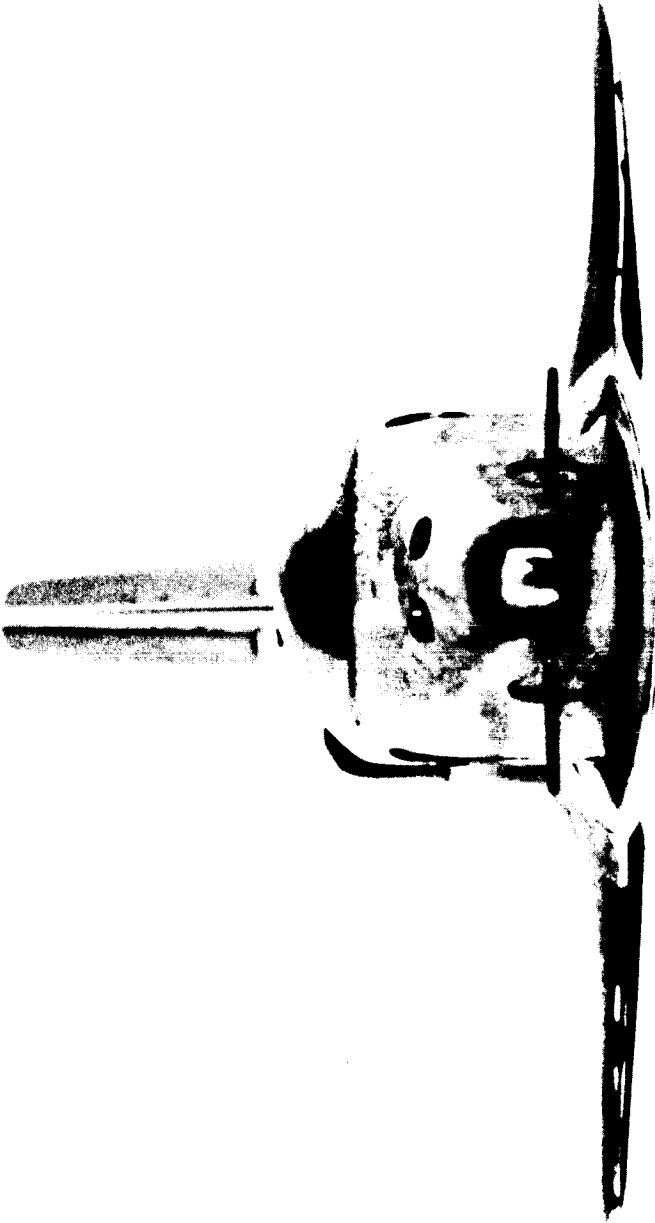
Figure 8. - Continued.



H22-139 II
TRIMMER

(c) Top Oblique View

Figure 8. - Concluded.



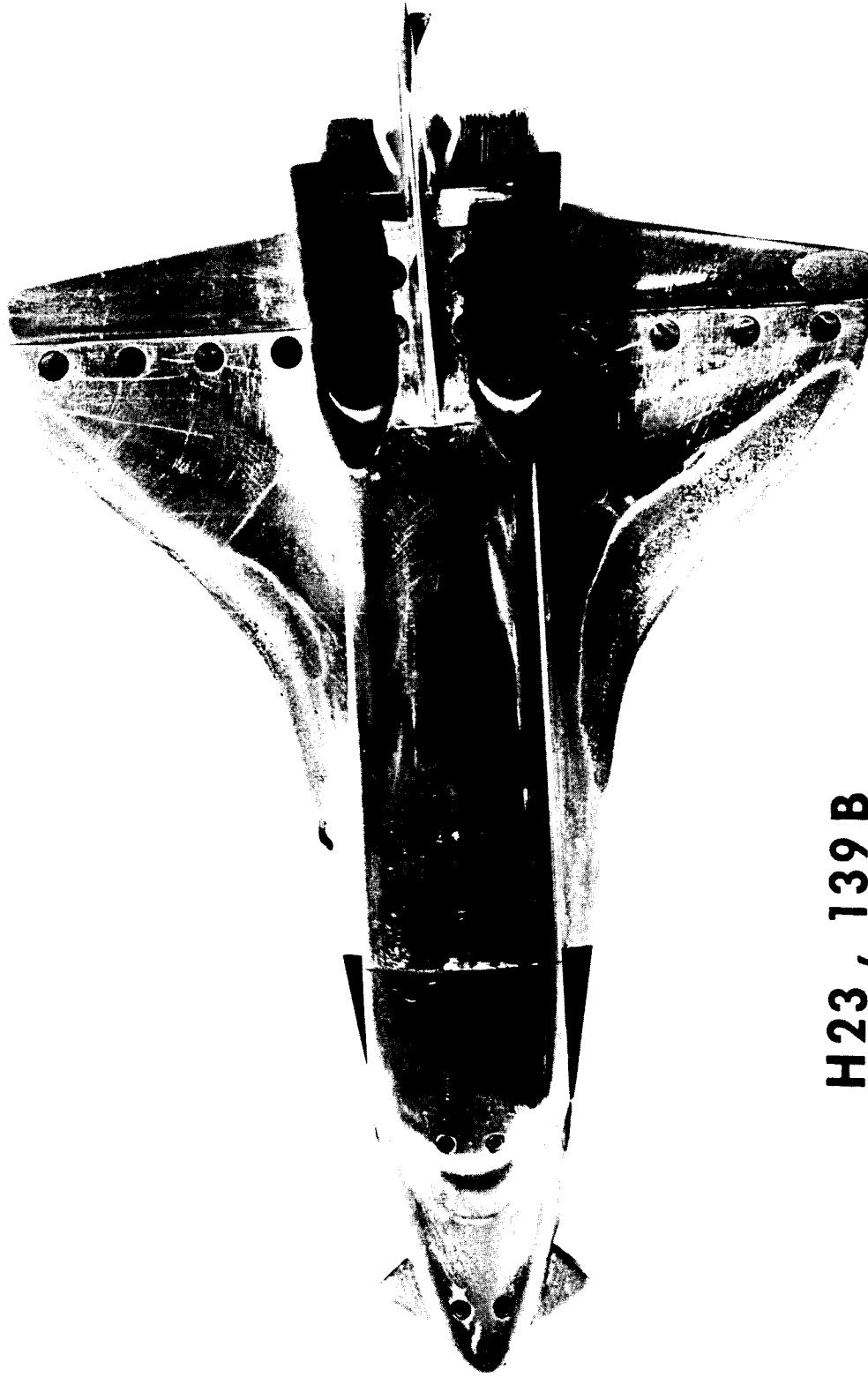
H23, 139B

TRIMMER



(a) Front View

Figure 9. - Configuration 139B - H23 Trimmer.



H23, 139 B

TRIMMER



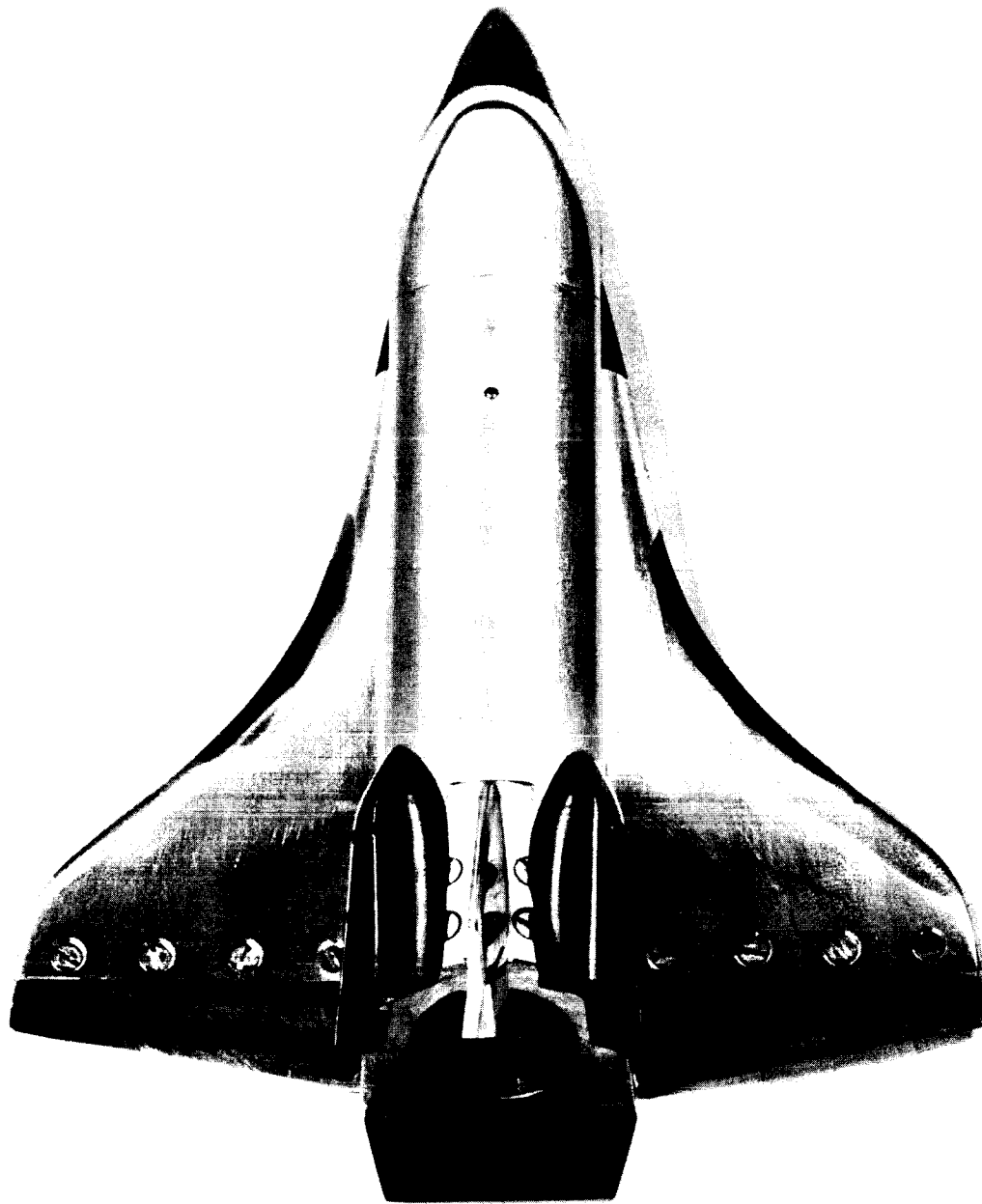
(b) Top View

Figure 9. - Continued.



(c) Top Oblique View

Figure 9. - Concluded.



139 500" R

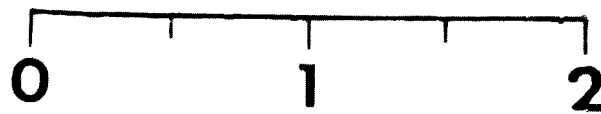
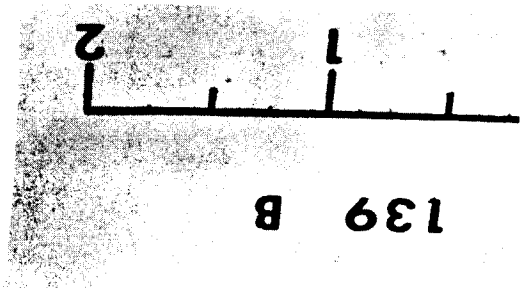
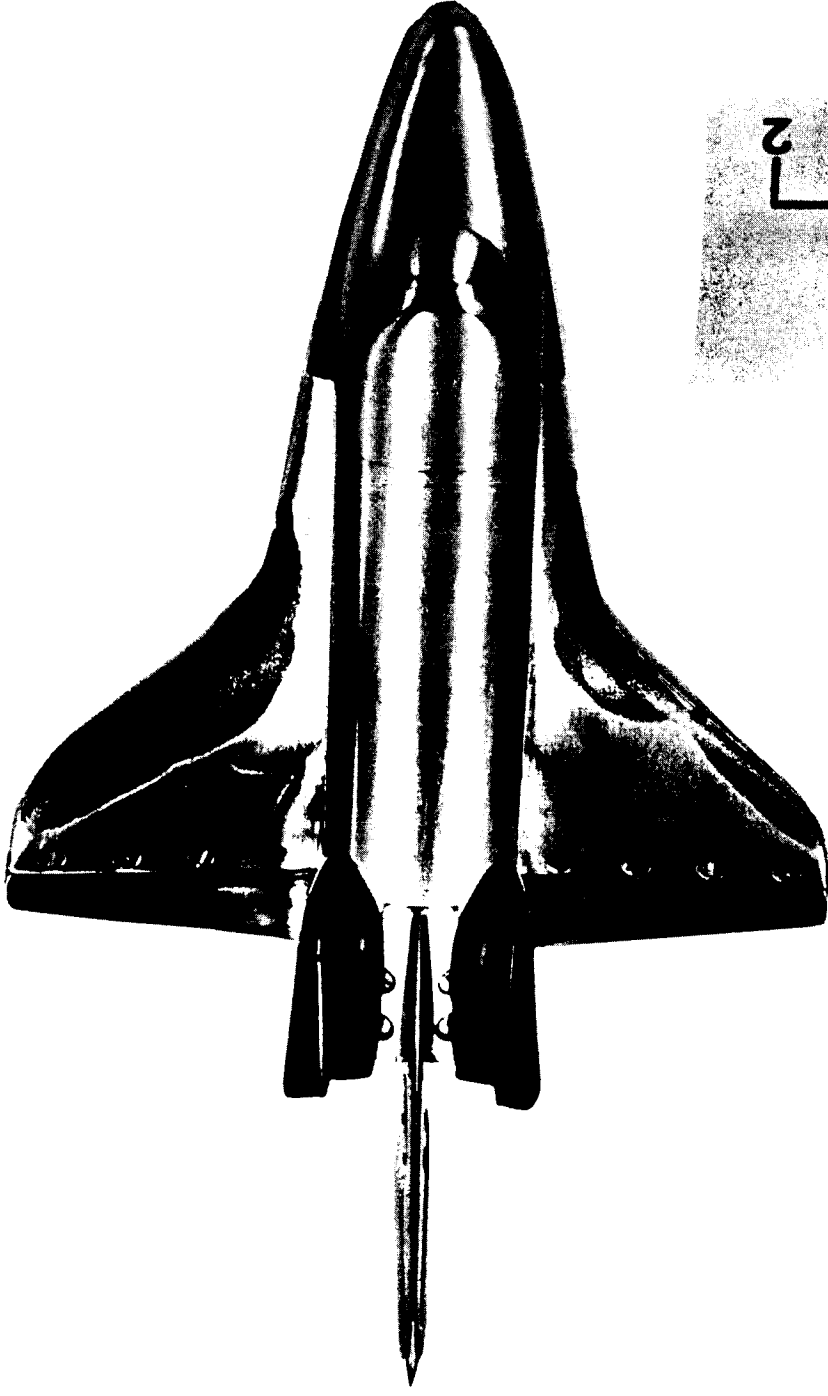
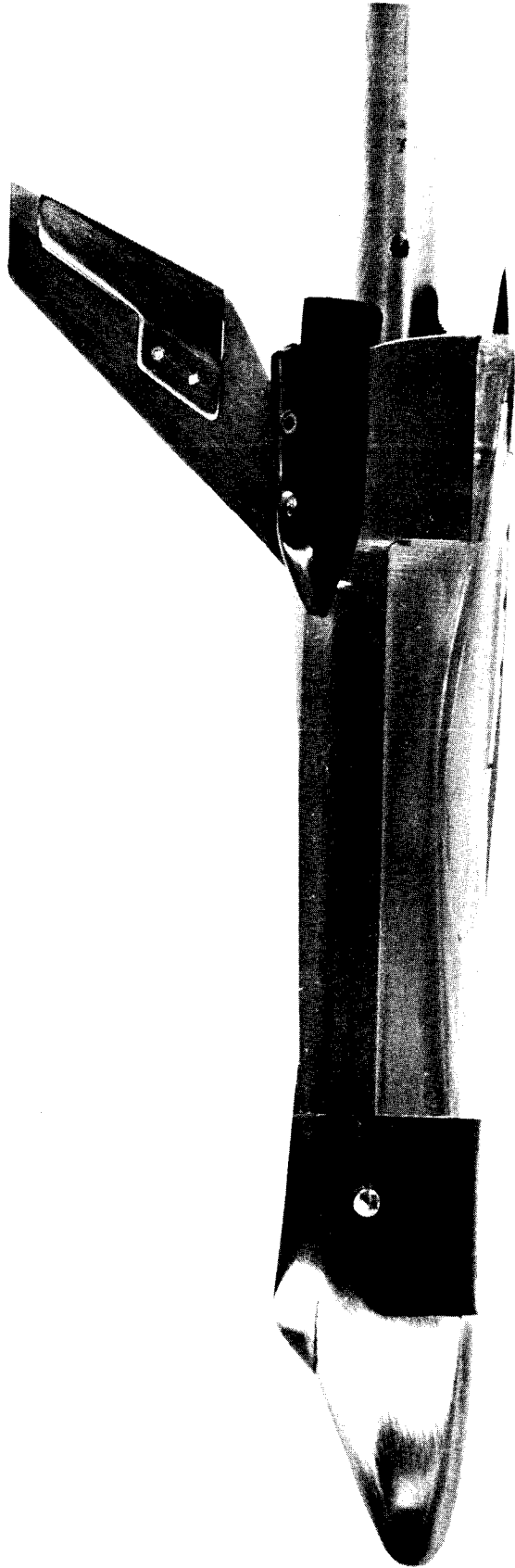


Figure 10. - Configuration 139 With 500 Inch Glove.

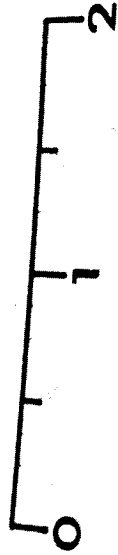


(a) Top View

Figure 11. - Configuration 139B.



139 B



(b) Side View

Figure 11. - Concluded.

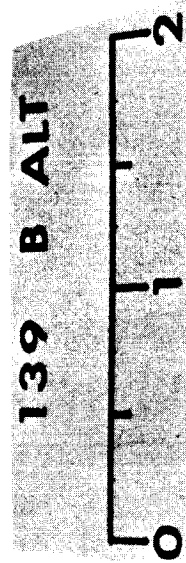
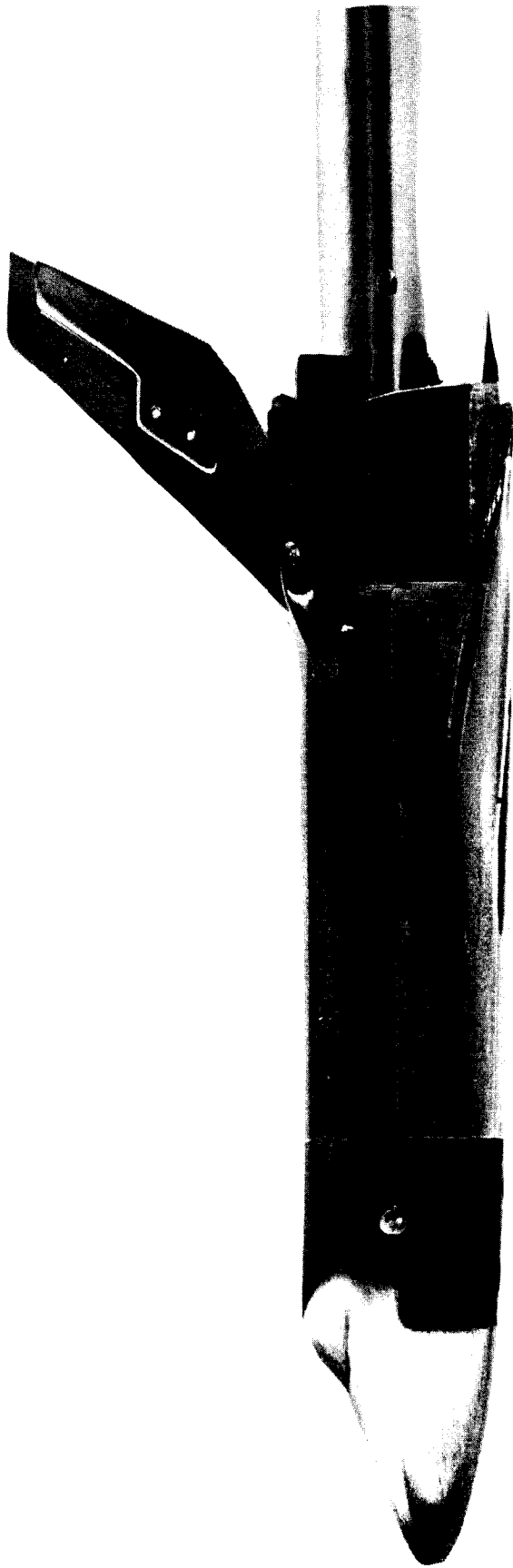
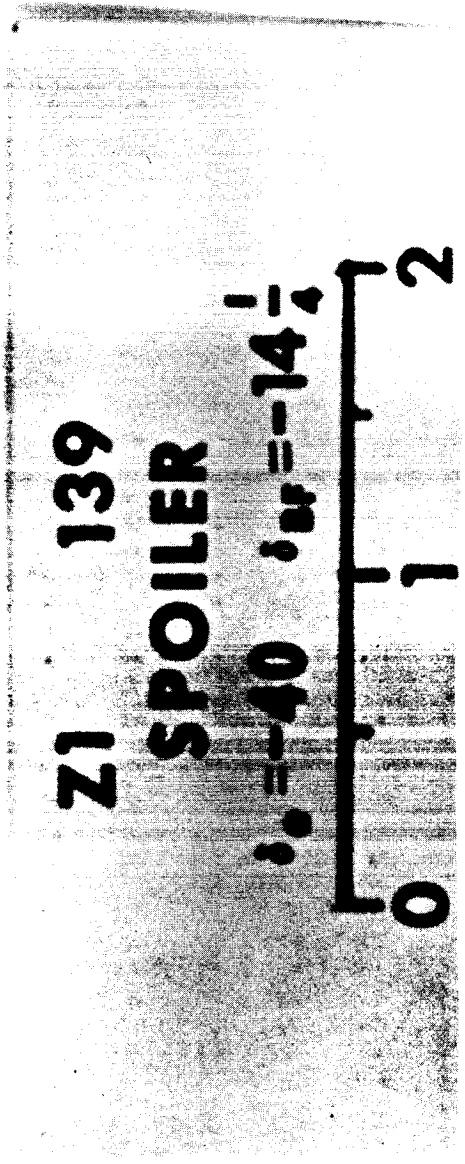
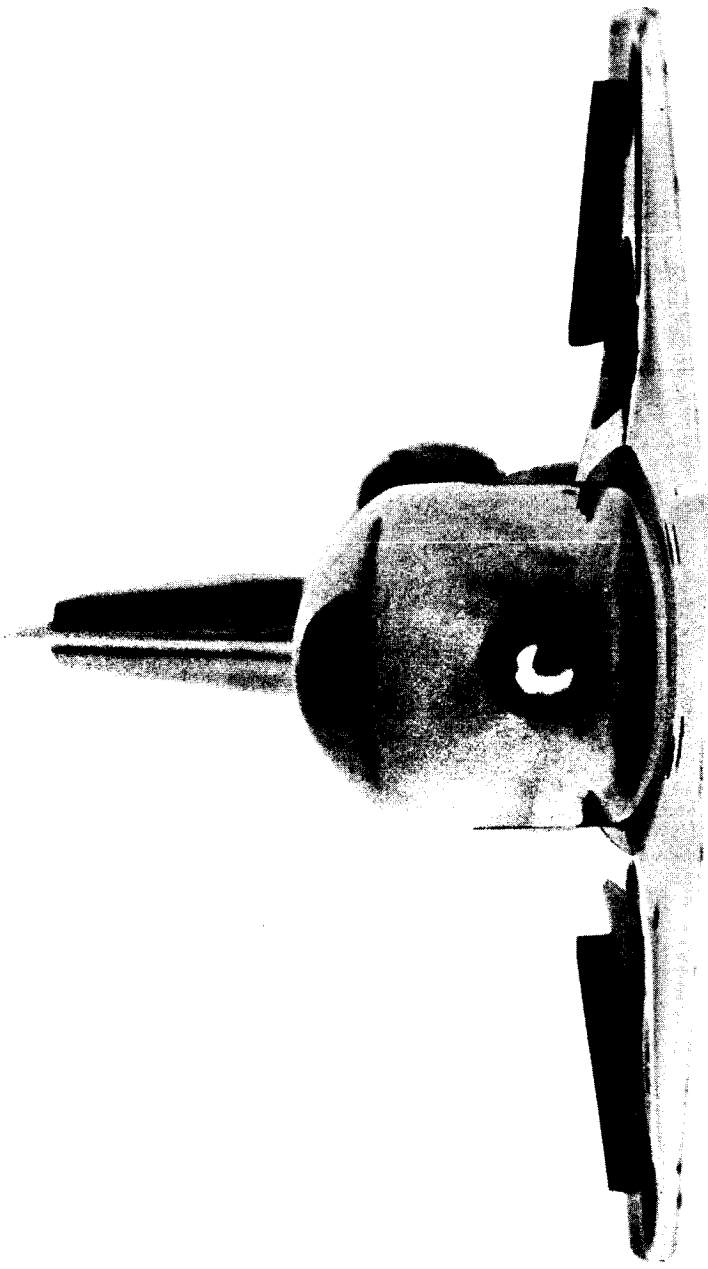
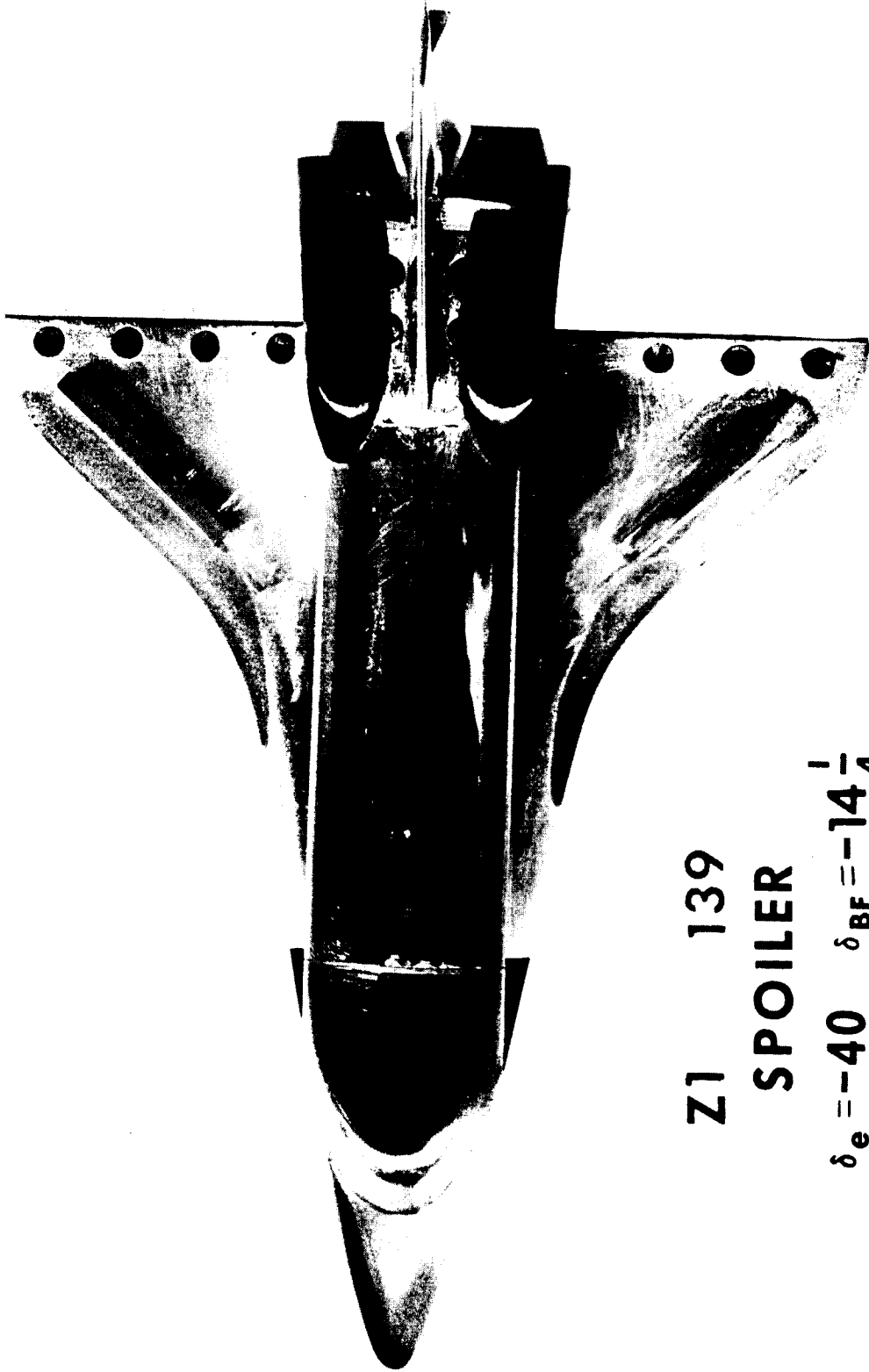


Figure 12. - Configuration 139B With Alternate Nose.



(a) Front View

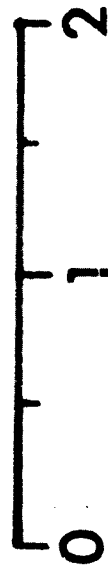
Figure 13. - Configuration 139 - Z1 Spoiler.



Z1 139

SPOILER

$\delta_e = -40$ $\delta_{BF} = -14\frac{1}{4}$



(b) Top View

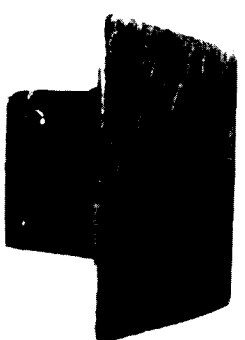
Figure 13. - Continued.



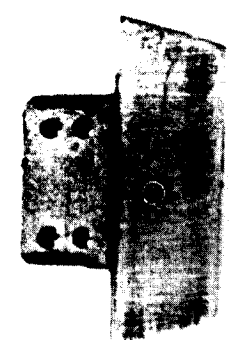
Z1 139
SPOILER
0 1 2
14

(c) Top Oblique View

Figure 13. - Concluded.



F6



F5

BODY FLAPS

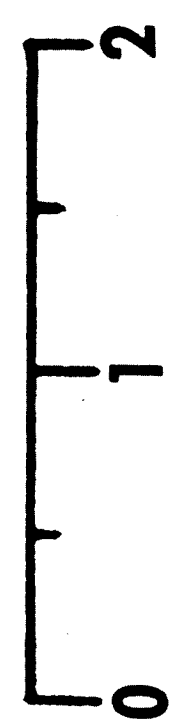


Figure 14. - Body Flaps - F5 and F6.

DATA FIGURES

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(F87508)	MSFC 574(CA48) CRB 1399	.000	.000	999.990	.000	SREF 2690.0000
(F87585)	MSFC 574(CA48) CRB 1399 V/H19	.000	.000	999.990	.000	LREF 474.8000
(F87591)	MSFC 574(CA48) CRB 1399 V/H20	.000	.000	999.990	.000	BREF 936.7000
(F87500)	DATA NOT AVAILABLE	.000	.000	999.990	.000	XMRP 838.7000
(F87533)	MSFC 574(CA48) CRB 1399 V/H23	.000	.000	999.990	.000	YMRP .0000
						ZMRP .0000
						SCALE .0040

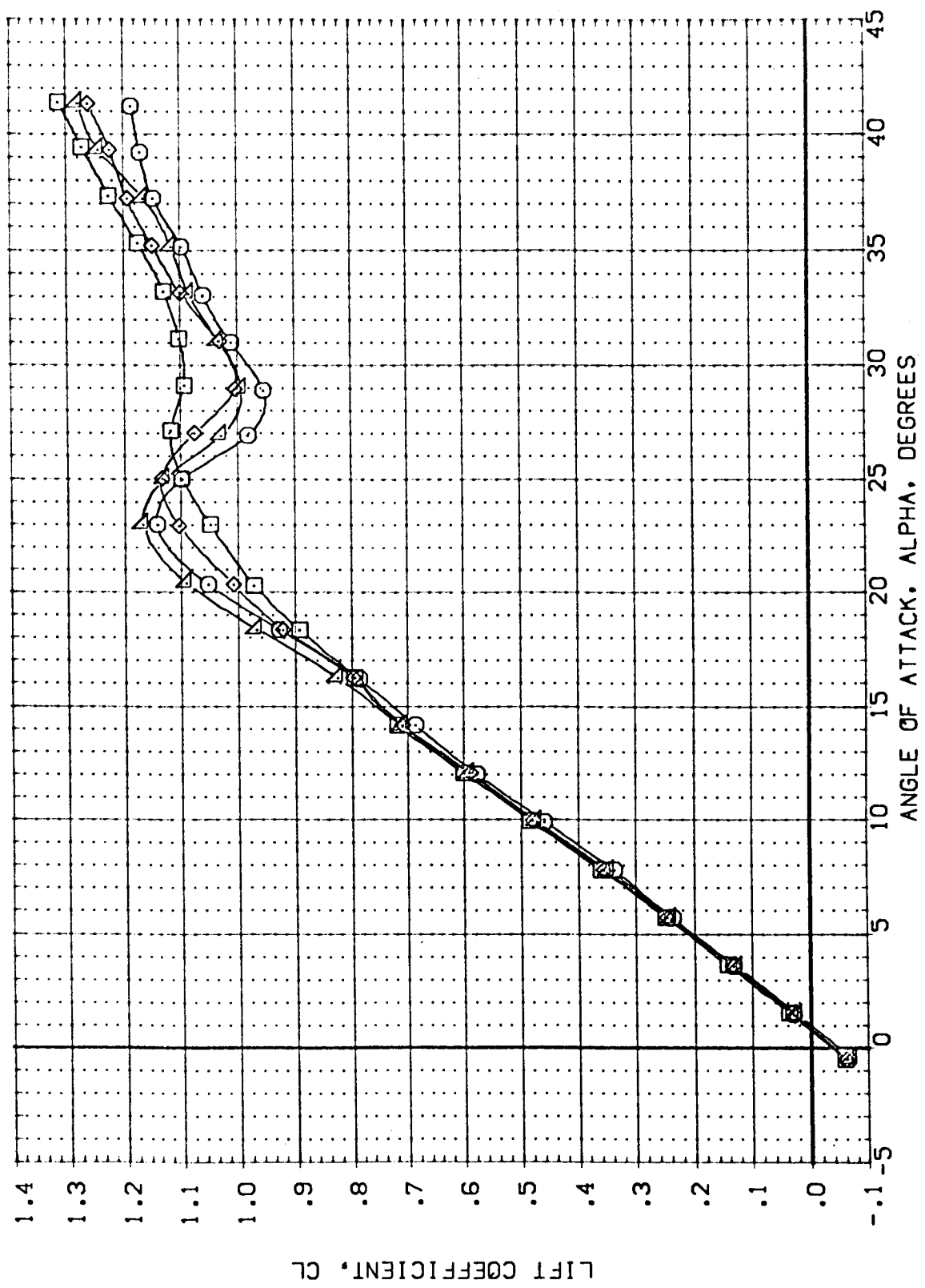


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

(A)MACH = .60

DATA SET SYMBOL: (F87508), (F87585), (F87591), (F87590), (F87593)
 CONFIGURATION DESCRIPTION: MSFC 574(CA48) CRB 1399 V/19, MSFC 574(CA48) CRB 1399 V/19, MSFC 574(CA48) CRB 1399 V/420, DATA NOT AVAILABLE, DATA NOT AVAILABLE
 BETA: .000, .000, .000, .000, .000
 ELEVTR: .000, .000, .000, .000, .000
 SPOBRK: 999.990, 999.990, 999.990, 999.990, 999.990
 BOFLAP: .000, .000, .000, .000, .000
 REFERENCE INFORMATION: SREF 2690.0000 SC.F., LREF 474.8000, BREF 936.7000, XMRP 838.7000, YMRP .0000, ZMRP .0000, SCALE .0040

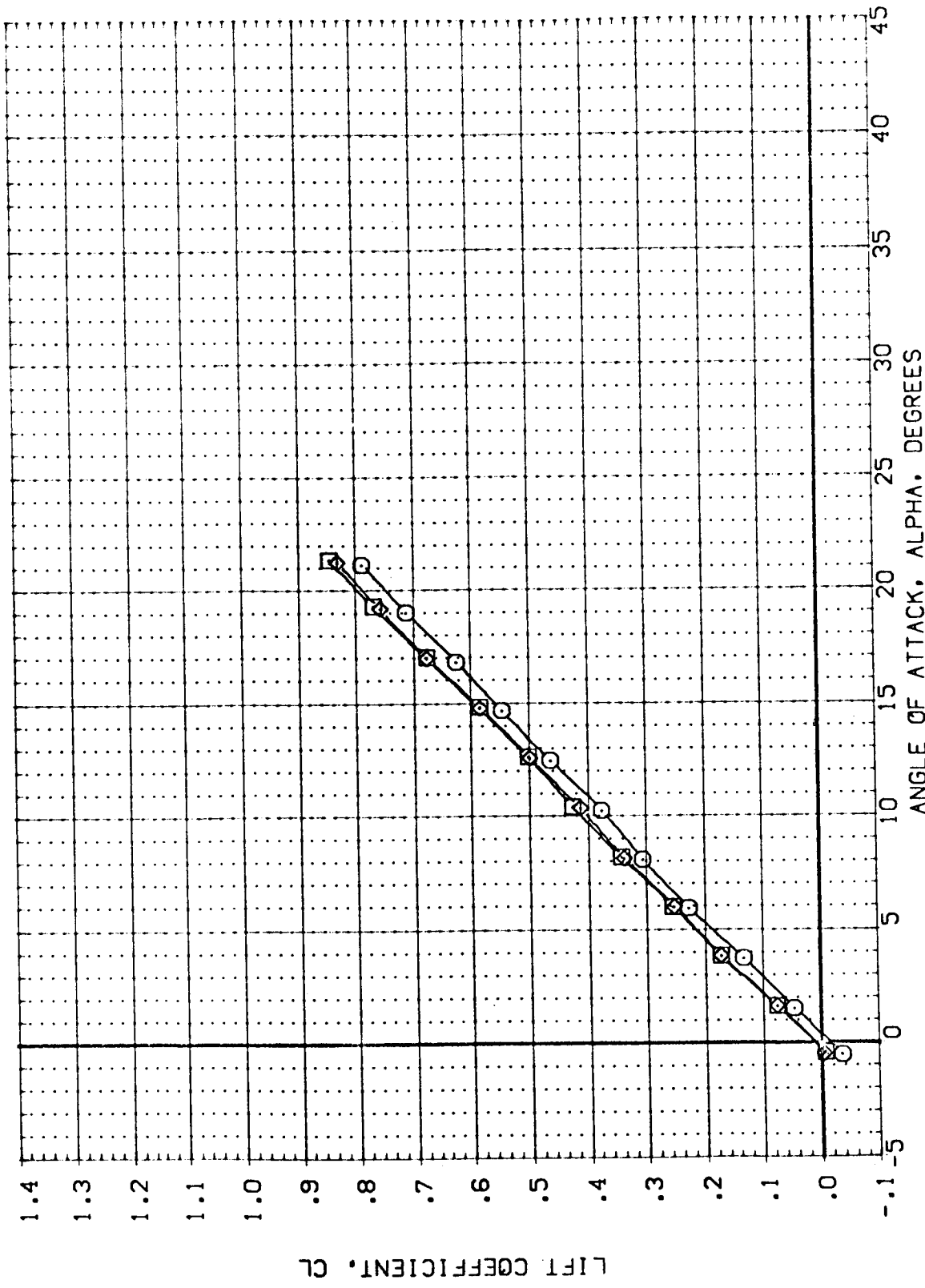


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

(M)MACH = 1.95

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(F87S08)	MSFC 574(CA48) CRB 139B V/H19	.000	.000	999.990	.000	SREF 2690.0000
(F87S85)	MSFC 574(CA48) CRB 139B V/H19	.000	.000	999.990	.000	LREF 474.8000
(F87S91)	MSFC 574(CA48) CRB 139B V/H20	.000	.000	999.990	.000	BREF 936.7000
(F87S00)	MSFC 574(CA48) CRB 139B V/H22	.000	.000	999.990	.000	XVRP 838
(F87S93)	MSFC 574(CA48) CRB 139B V/H23	.000	.000	999.990	.000	YVRP .0000
						ZVRP .0000
						SCALE .0010

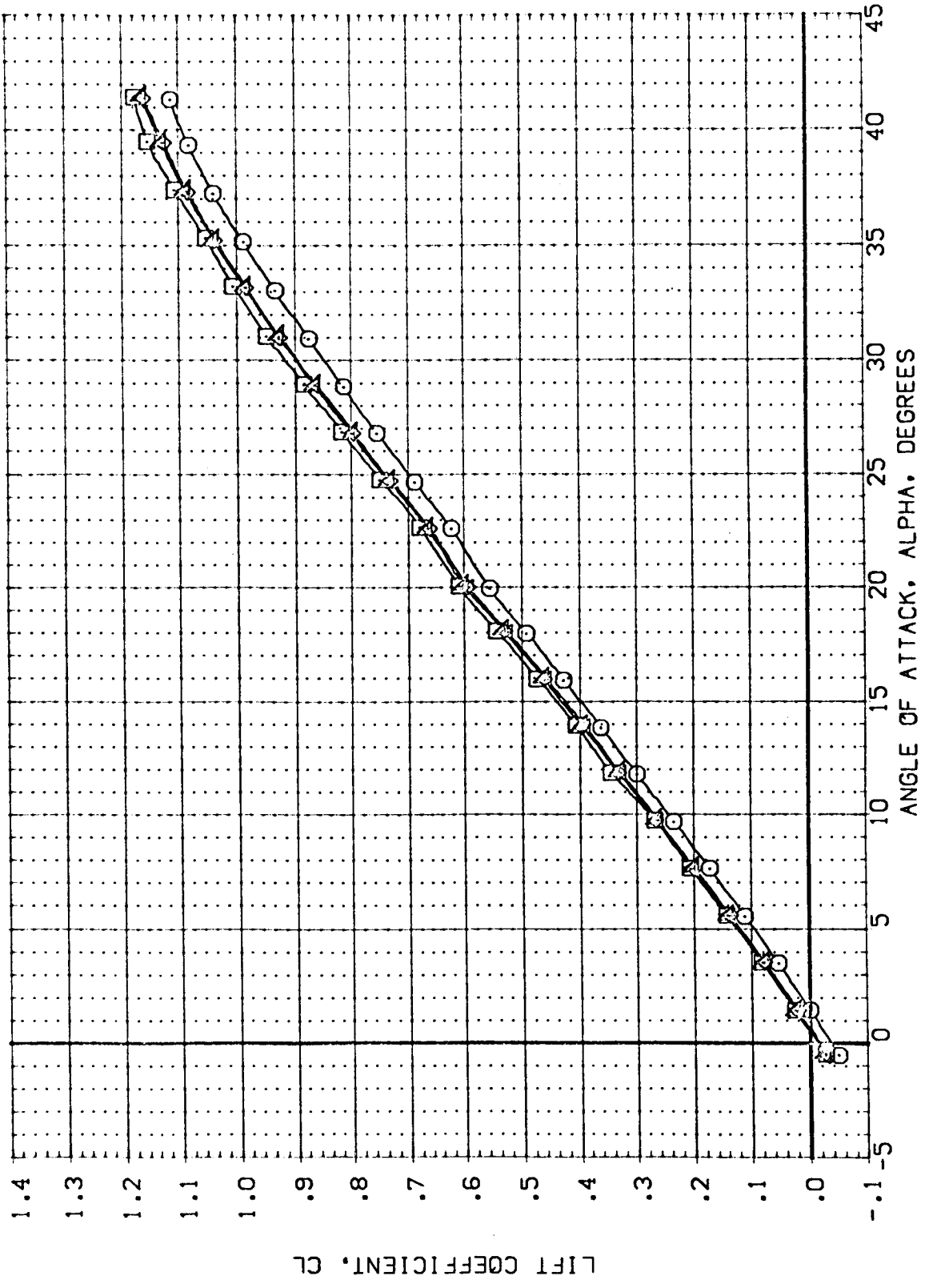


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

(M)MACH = 2.99

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F875C8) MSFC 574 (CA48) CRB 139B W/H19
 (F875B5) MSFC 574 (CA48) CRB 139B W/H18
 (F875B1) MSFC 574 (CA48) CRB 139B W/H20
 (F875C0) DATA NOT AVAILABLE
 (F875B3) MSFC 574 (CA48) CRB 139B W/H23

BETA .000
 ELEVTR .000
 SPCBRK 999.990
 BOFLAP .000
 REFERENCE INFORMATION
 SREF 2690.0000 SC.FT.
 LREF 474.8000
 BREF 936.7000
 XMRB 838.0000
 YMRB .0000
 ZMRB .0000
 SCALE .0010

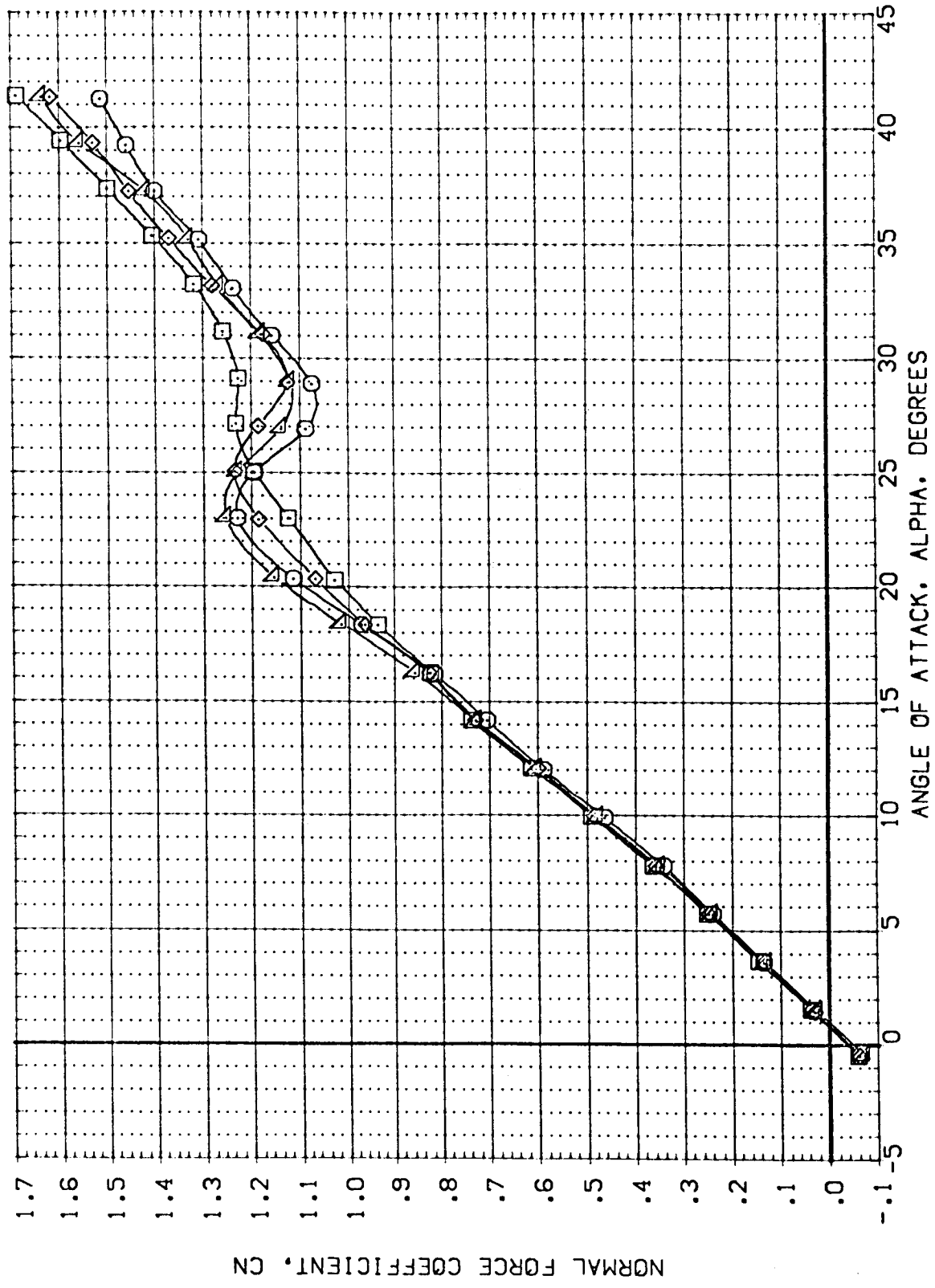


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

CALMACH = .60

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87S08)	MSC 574(CA48) CRB 1398 W/H19	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(F87S09)	MSC 574(CA48) CRB 1398 W/H19	.000	.000	999.990	.000	LREF 474.8000
(F87S10)	MSC 574(CA48) CRB 1398 W/H20	.000	.000	999.990	.000	BREF 936.7000
(F87S11)	MSC 574(CA48) CRB 1398 W/H22	.000	.000	999.990	.000	XMRP 7000
(F87S12)	MSC 574(CA48) CRB 1398 W/H23	.000	.000	999.990	.000	YMRP 7000
(F87S13)		.000	.000	999.990	.000	ZMRP 7000
						SCALE .0010

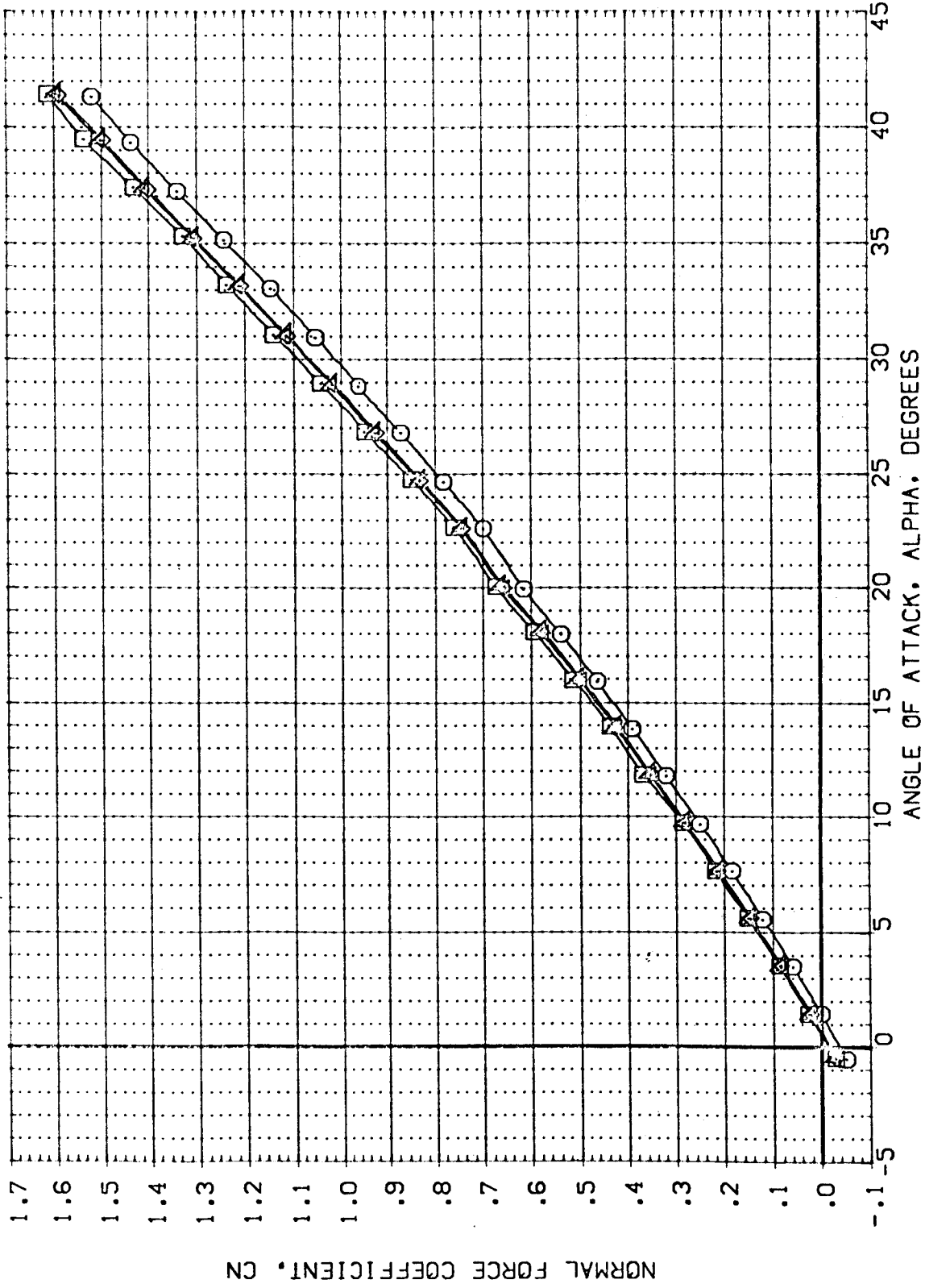


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

(M)MACH = 2.99

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87S28) O MSFC 574(CA48) CRB 139B W/H19
 (F87S85) X MSFC 574(CA48) CRB 139B W/H20
 (F87S81) X MSFC 574(CA48) CRB 139B W/H22
 (F87S10) X MSFC 574(CA48) CRB 139B W/H23
 (F87S23) X MSFC 574(CA48) CRB 139B W/H23

BETA ELEVTR SPOBRK BDFLAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SREF 2690.0000 SC.F.
 .000 .000 999.990 .000 LREF 474.8000
 .000 .000 999.990 .000 BREF 936.7000
 .000 .000 999.990 .000 XMRP 838.0000
 .000 .000 999.990 .000 YMRP .0000
 .000 .000 999.990 .000 ZMRP .0000
 .000 .000 999.990 .000 SCALE .0040

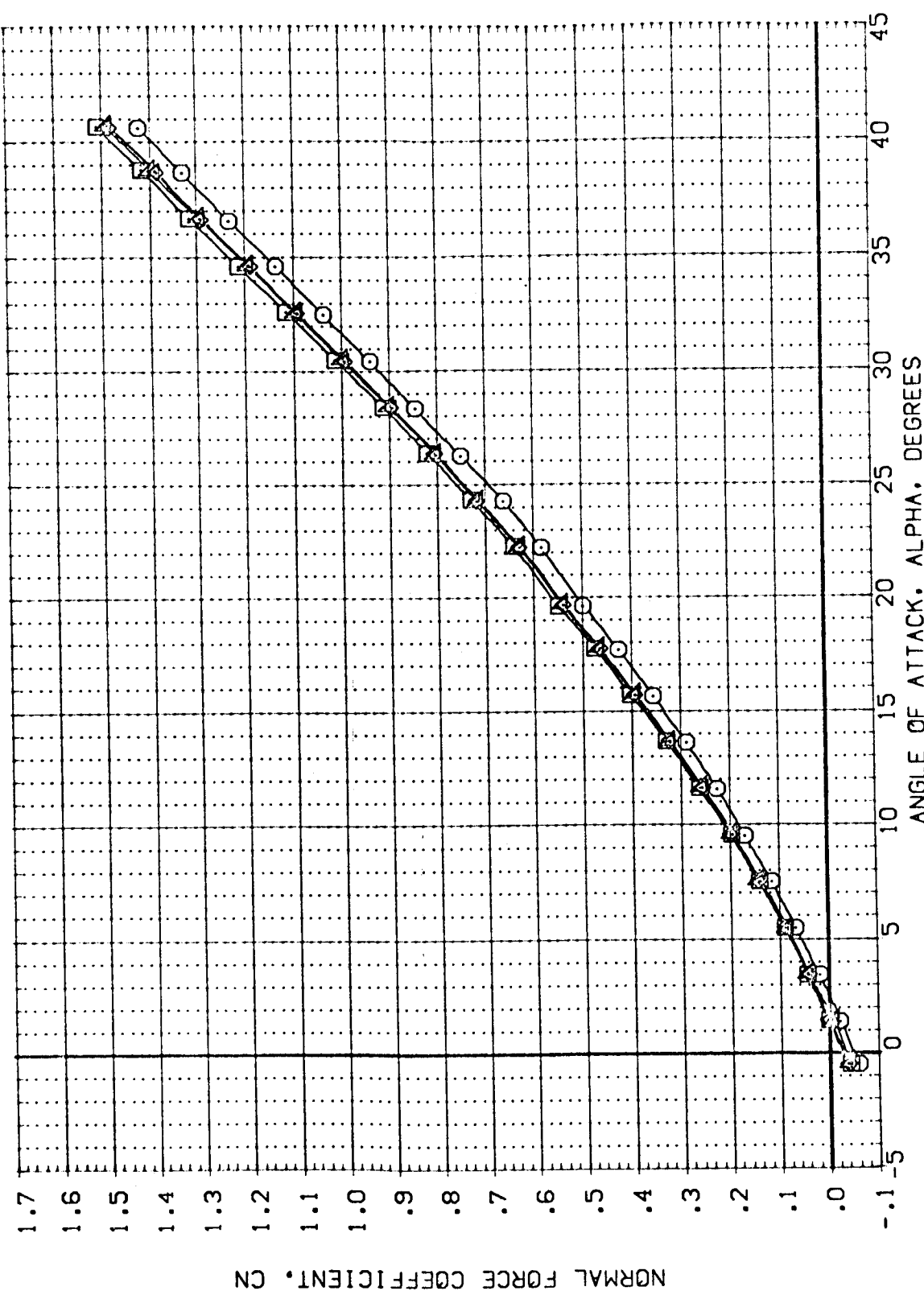


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

(F)MACH = 4.96

DATA SET SYMBO: (F87S28) (F87S29) (F87S30) (F87S31) (F87S32) (F87S33)
 CONFIGURATION DESCRIPTION: MSFC 574(CA48) CRB 1398 V/H19 MSFC 574(CA48) CRB 1398 V/H20 MSFC 574(CA48) CRB 1398 V/H23 DATA NOT AVAILABLE
 BETA: .000 .000 .000 .000 .000 .000
 ELEVTR: .000 .000 .000 .000 .000 .000
 SPOBRK: 999.990 999.990 999.990 999.990 999.990 999.990
 BOFLAP: .000 .000 .000 .000 .000 .000
 REFERENCE INFORMATION: SREF 2690.0000 LREF 474.8000 BREF 936.7000 XMRP 838.0000 YMRP 0.0000 ZMRP 0.0000 SCALE .0040

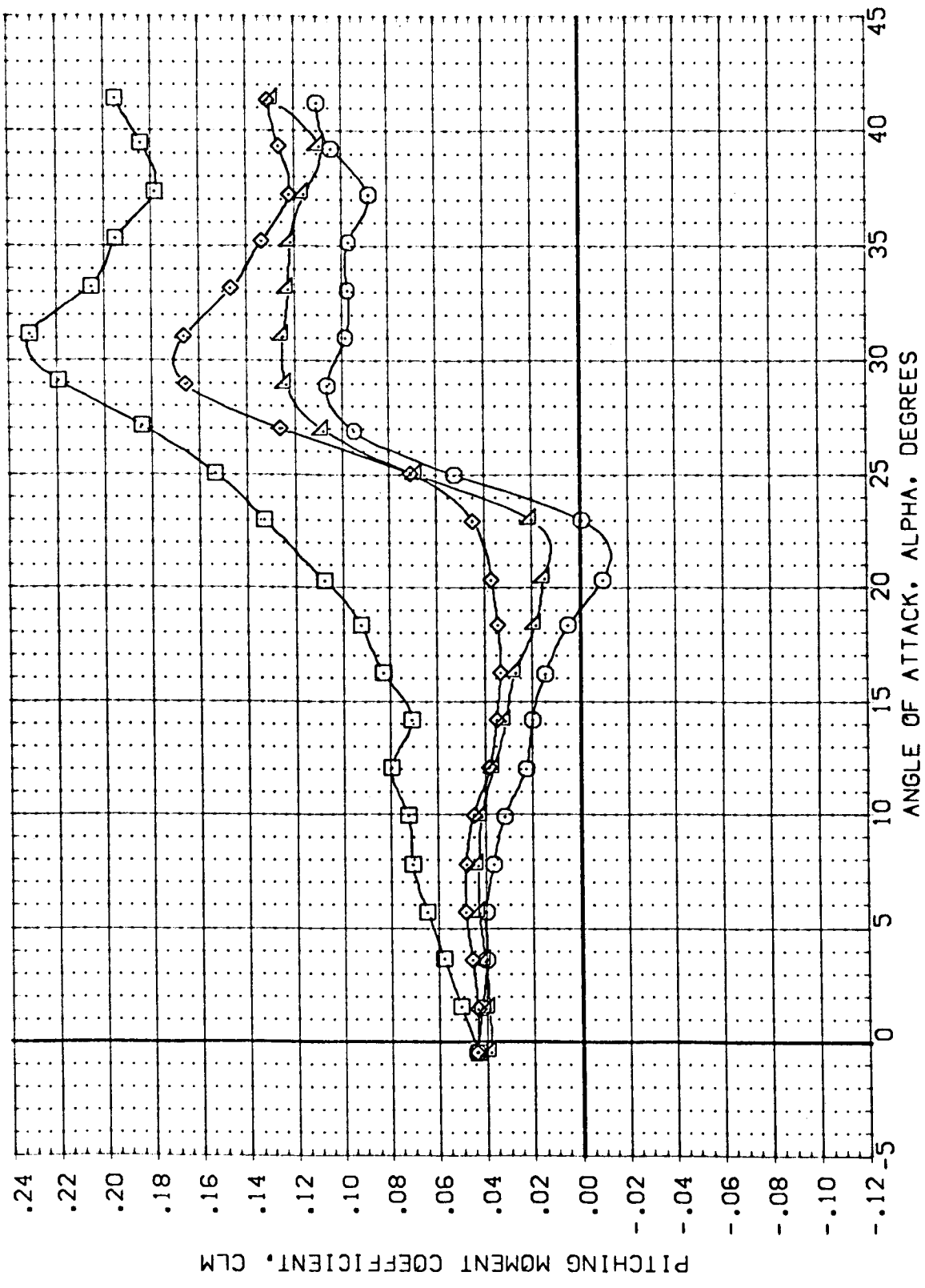


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

(A)MACH = .60

0-2

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BDCLAP	REFERENCE INFORMATION
(F87S28)	MSFC 574(OA48) CR8 1398	.000	.000	999.990	.000	SREF 2690.C000
(F87S85)	MSFC 574(OA48) CR8 1398 V/H19	.000	.000	999.990	.000	REF 474.8000
(F87S21)	MSFC 574(OA48) CR8 1398 V/H20	.000	.000	999.990	.000	BREF 936.7000
(F87S00)	DATA NOT AVAILABLE	.000	.000	999.990	.000	XMRP 838.7000
(F87S93)	MSFC 574(OA48) CR8 1398 V/H23	.000	.000	999.990	.000	YMRP .0000
						ZMRP .0000
						SCALE .0040

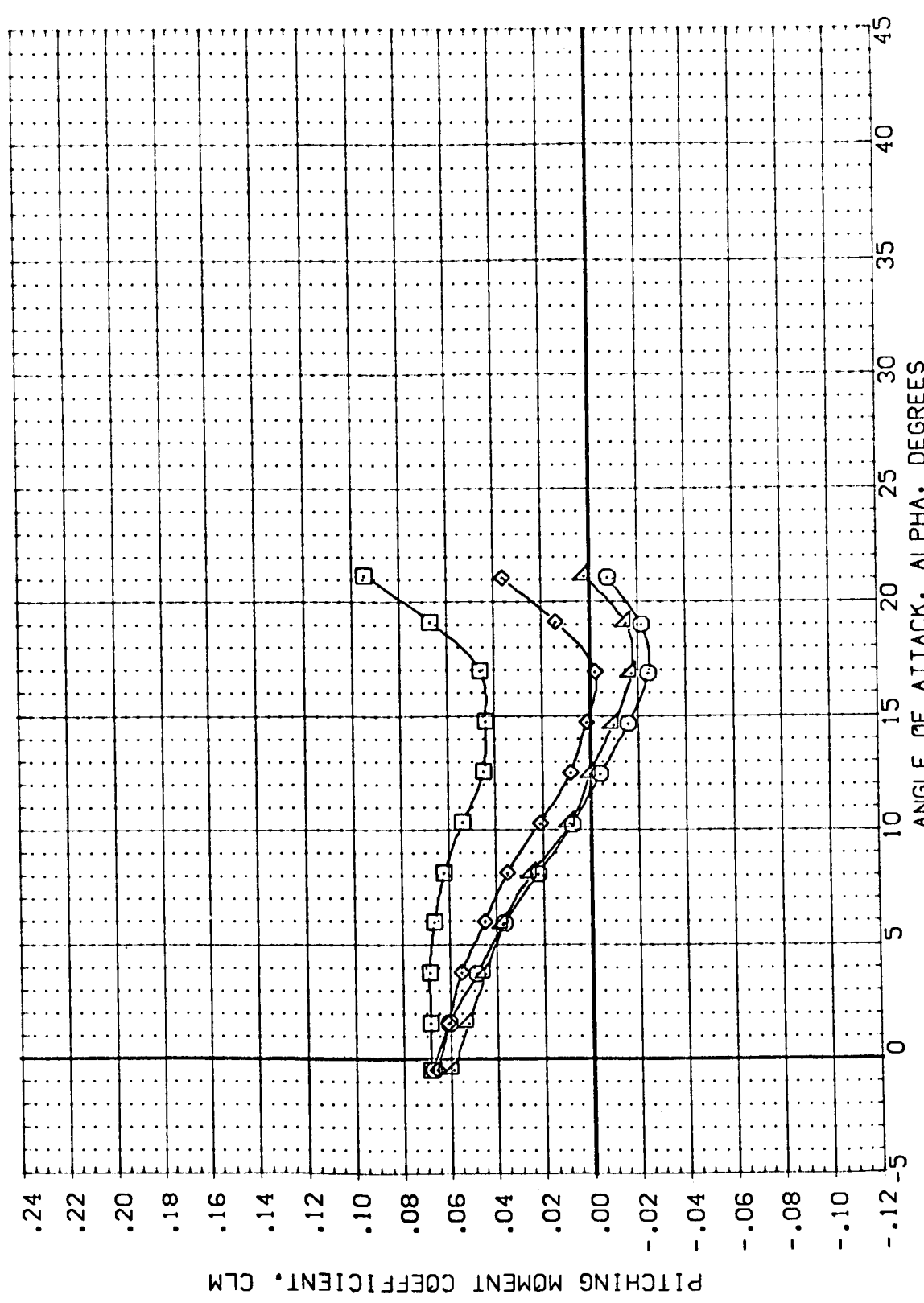


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

(B)MACH = .89

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(F87508)	MSFC 574(CA48) CRB 1398	.000	.000	999.990	.000	SREF 2690.0000
(F87585)	MSFC 574(CA48) CRB 1398 V/H19	.000	.000	999.990	.000	LREF 474.8000
(F87591)	MSFC 574(CA48) CRB 1398 V/H20	.000	.000	999.990	.000	BREF 836.7000
(F87500)	DATA NOT AVAILABLE	.000	.000	999.990	.000	XMRP 838.7000
(F87593)	MSFC 574(CA48) CRB 1398 V/H23	.000	.000	999.990	.000	YMRP .0000
						ZMRP .0000
						SCALE .0010

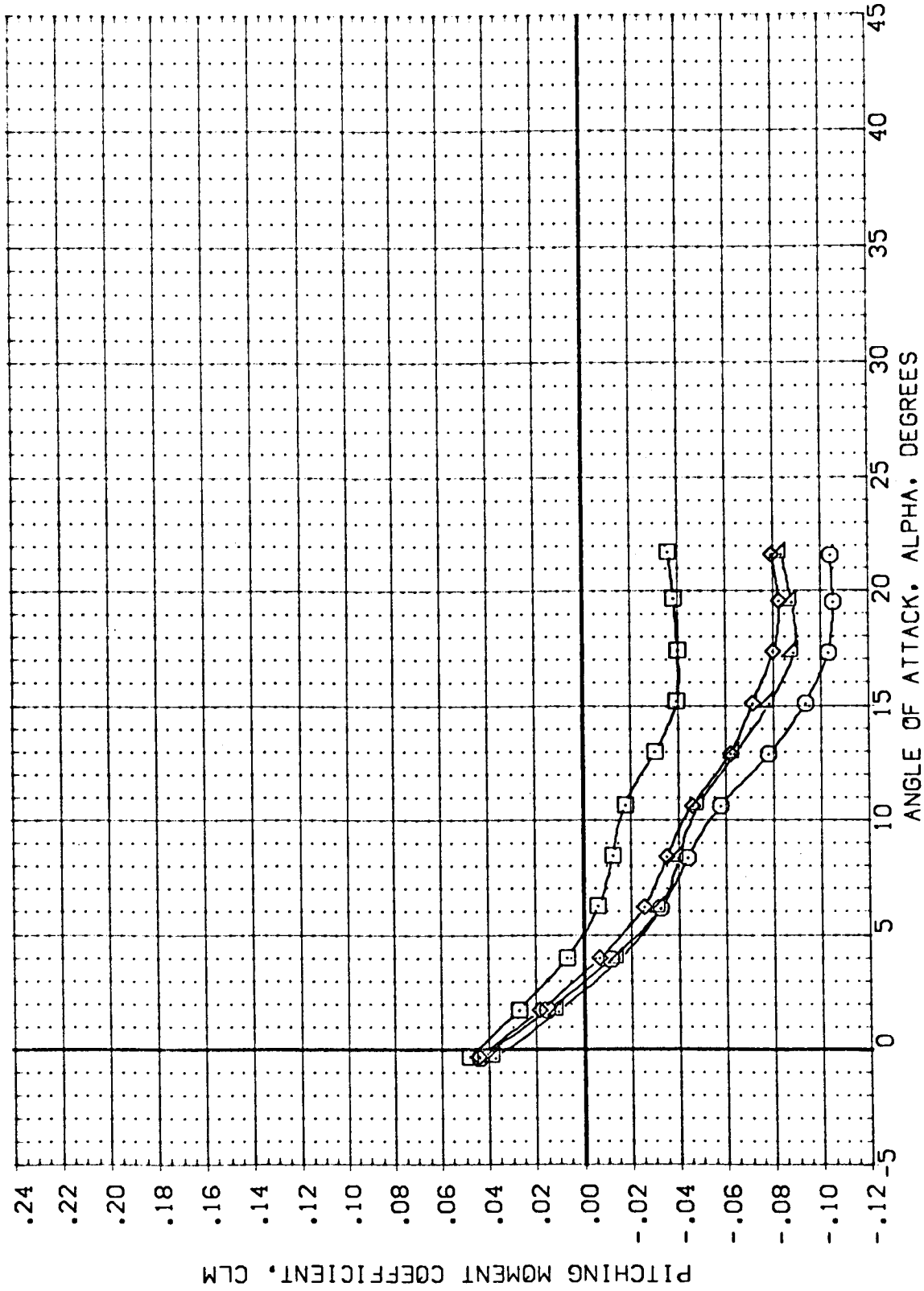


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

(C)MACH = 1.20

DATA SET SYMBOL: (F875C8), (F87585), (F87591), (F875C0), (F87593)
 CONFIGURATION DESCRIPTION: MSFC 574(CA48) CRB 1398 V/H19, MSFC 574(CA48) CRB 1393 V/H20, MSFC 574(CA48) CRB 1398 V/H20, DATA NOT AVAILABLE, DATA NOT AVAILABLE
 BETA: .000, .000, .000, .000, .000
 ELEVTR: .000, .000, .000, .000, .000
 SPOBRK: 999.990, 999.990, 999.990, 999.990, 999.990
 BOFLAP: .000, .000, .000, .000, .000
 REFERENCE INFORMATION: SREF 2690.0000, LREF 474.8000, BREF 936.7000, XWRP 838.7000, YWRP .0000, ZWRP .0000, SCALE .0040

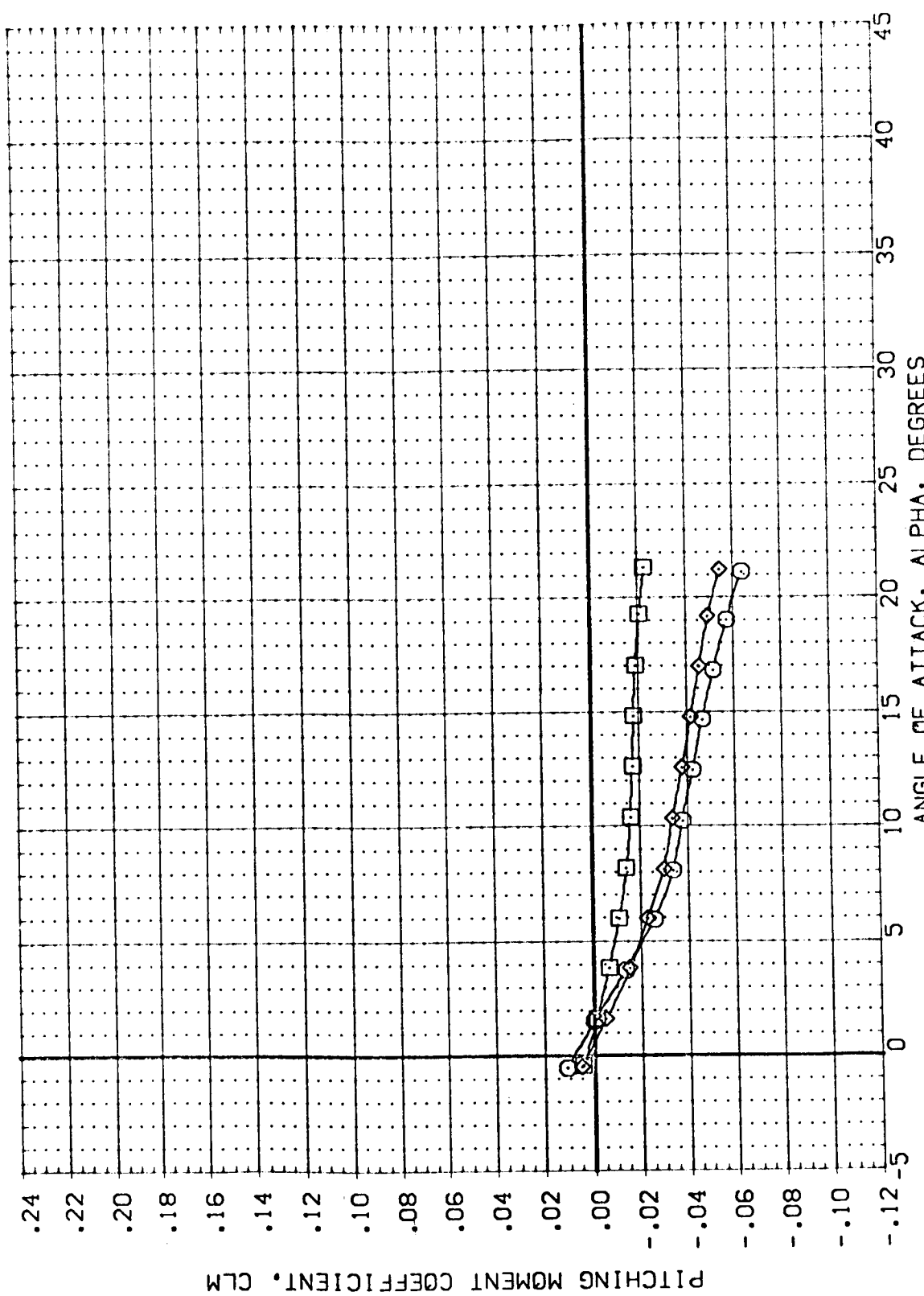


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

(M)MACH = 1.95

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDBRK	BOFLAP	REFERENCE INFORMATION
(F875C8)	MSFC 574(CA48) CRB 1398	.000	.000	999.990	.000	SREF 2690.0000
(F87585)	MSFC 574(CA48) CRB 1393	.000	.000	999.990	.000	LREF 474.8000
(F87591)	MSFC 574(CA48) CRB 1393	.000	.000	999.990	.000	BREF 936.7000
(F875C0)	MSFC 574(CA48) CRB 1398	.000	.000	999.990	.000	XREF 838.7000
(F87593)	MSFC 574(CA48) CRB 1393	.000	.000	999.990	.000	YREF .0000
						ZREF .0000
						SCALE .0040
						SO, FT. /

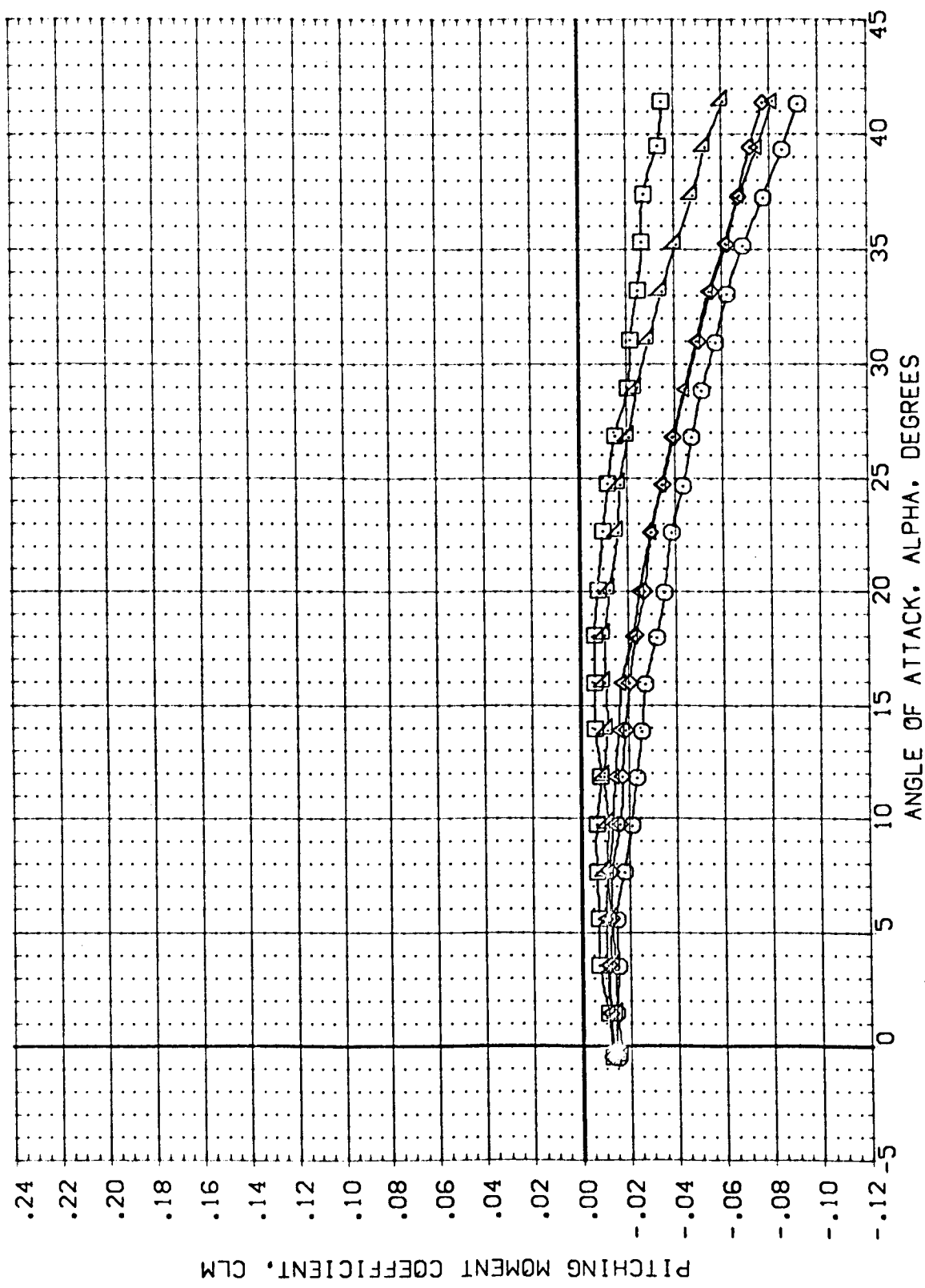


FIG. 13 EFFECT OF TRIMMER ON ORBITER 1398

(M)MACH = 2.99

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87508)	MSFC 574(CA48) CRB 393	.000	.000	999.990	.000	SREF 2690.0000
(F87585)	MSFC 574(CA48) CRB 393 V/H19	.000	.000	999.990	.000	LREF 474.8000
(F87591)	MSFC 574(CA48) CRB 393 V/H20	.000	.000	999.990	.000	BREF 936.7000
(F87593)	MSFC 574(CA48) CRB 393 V/H22	.000	.000	999.990	.000	XMRP 838.7000
(F87593)	MSFC 574(CA48) CRB 393 V/H23	.000	.000	999.990	.000	ZMRP .0000
						SCALE .0040

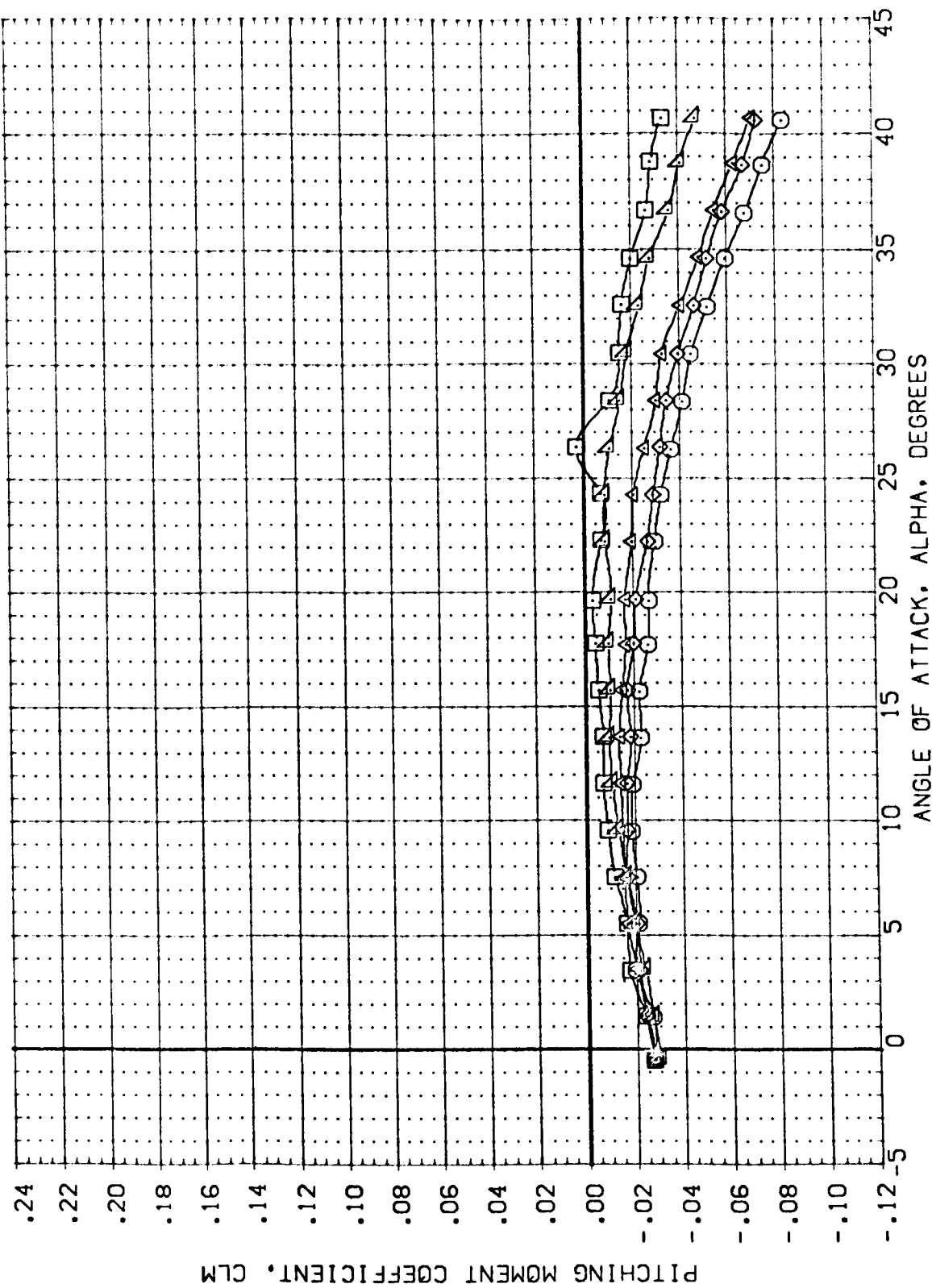


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

(F)MACH = 4.96

L L

DATA SET SYMBOL CONFIGURATION DESCRIPTION REFERENCE INFORMATION

(F87S28)	MSFC 574(CA48) CRB 1398	SREF	2690.0000	SC.F.T.
(F87S29)	MSFC 574(CA48) CRB 1398 W/H19	LREF	474.8000	
(F87S28)	MSFC 574(CA48) CRB 1398 W/H20	BREF	936.7000	
(F87S29)	DATA NOT AVAILABLE	XMRP	838.7000	
(F87S28)	MSFC 574(CA48) CRB 1398 W/H23	ZMRP	.0000	
		SCALE	.0040	

BETA ELEVTR SPCBRK BCFLAP

.000	.000	999.990	.000
.000	.000	999.990	.000
.000	.000	999.990	.000
.000	.000	999.990	.000
.000	.000	999.990	.000

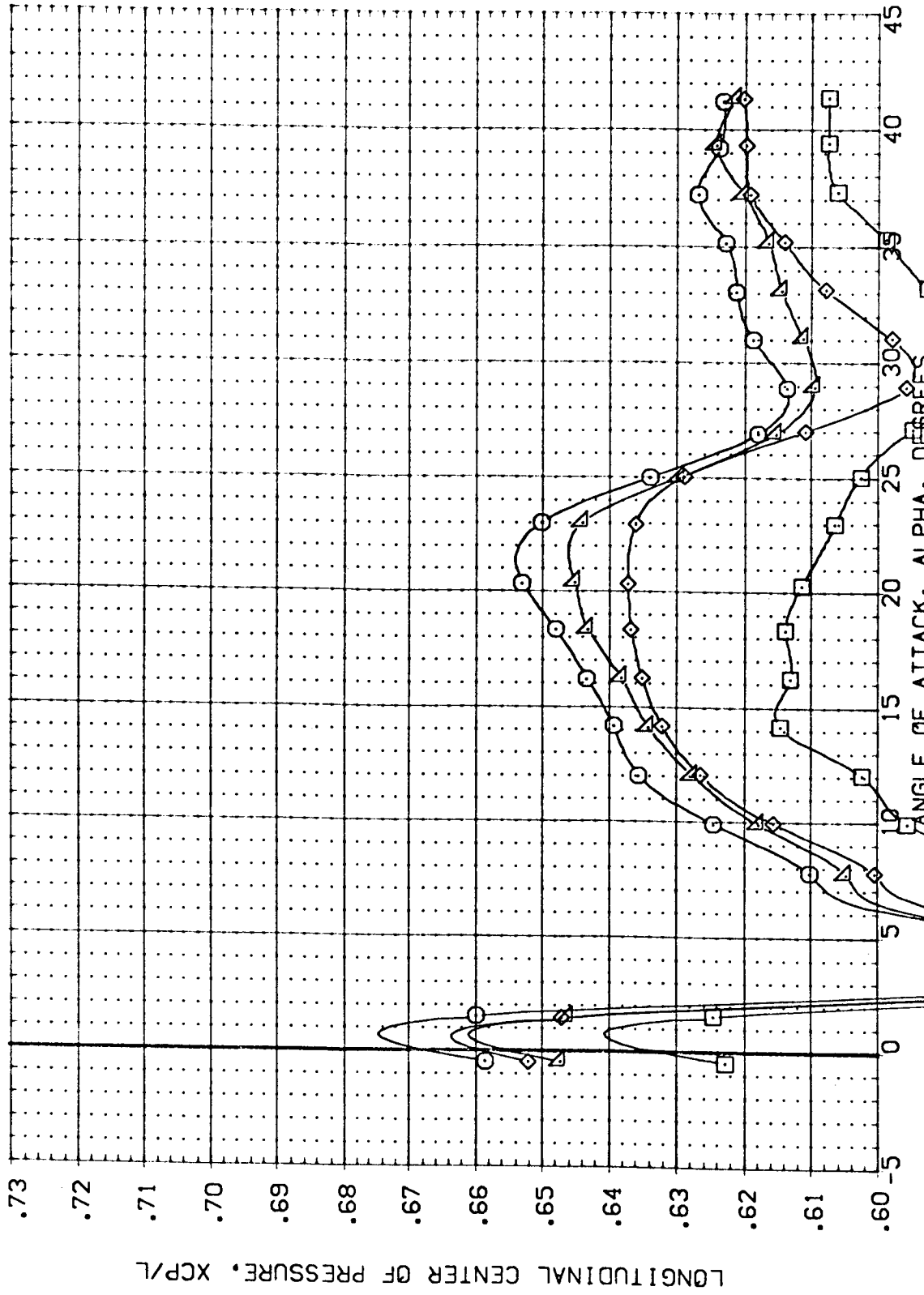


FIG. 13 EFFECT OF TRIMMER ON ORBITER 1398

(A)MACH = .60

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87508)	MSFC 574(CA48) ORB 139B	.000	.000	999.990	.000	SREF 2690.0000
(F87509)	MSFC 574(CA48) ORB 139B	.000	.000	999.990	.000	LREF 474.8000
(F87510)	MSFC 574(CA48) ORB 139B	.000	.000	999.990	.000	XREF 936.7000
(F87511)	MSFC 574(CA48) ORB 139B	.000	.000	999.990	.000	YREF 838.7000
(F87512)	MSFC 574(CA48) ORB 139B	.000	.000	999.990	.000	ZREF .0000
(F87513)	MSFC 574(CA48) ORB 139B	.000	.000	999.990	.000	SCALE .0040

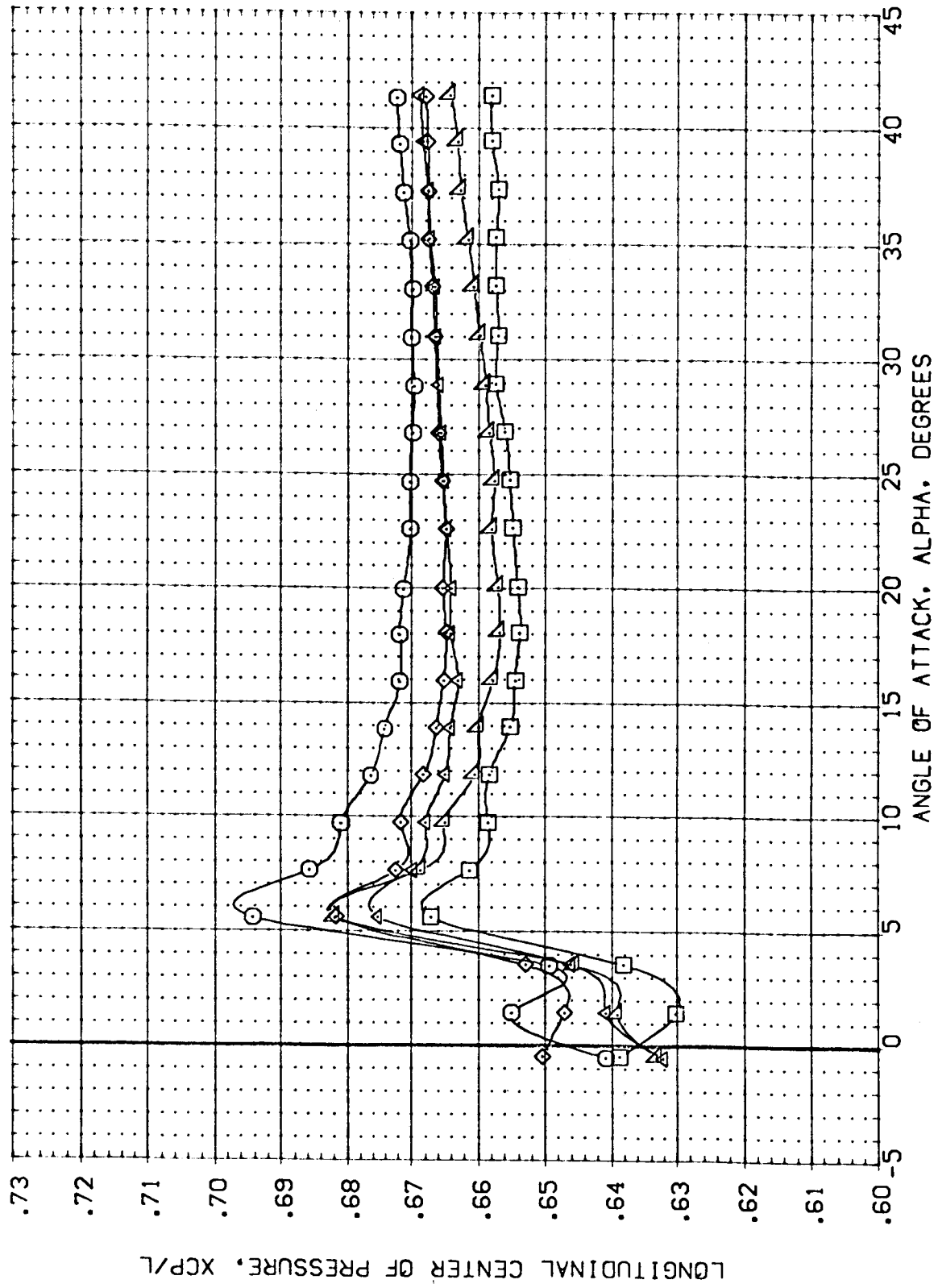


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

CEJ MACH = 2.99

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDBRK	BOFLAP	REFERENCE INFORMATION
(F875C8)	MSFC 574(CA48) CR3 398	.000	.000	999.990	.000	SREF 2690.0000 SC.F.
(F87585)	MSFC 574(CA48) CR3 393 W/H19	.000	.000	999.990	.000	LREF 474.8000 W.
(F87591)	MSFC 574(CA48) CR3 393 W/H20	.000	.000	999.990	.000	BREF 936.7000 W.
(F875C0)	MSFC 574(CA48) CR3 393 W/H22	.000	.000	999.990	.000	XMRP 838.7000 W.
(F87593)	MSFC 574(CA48) CR3 393 W/H23	.000	.000	999.990	.000	YMRP .0000 W.
						ZMRP .0000 W.
						SCALE .0040

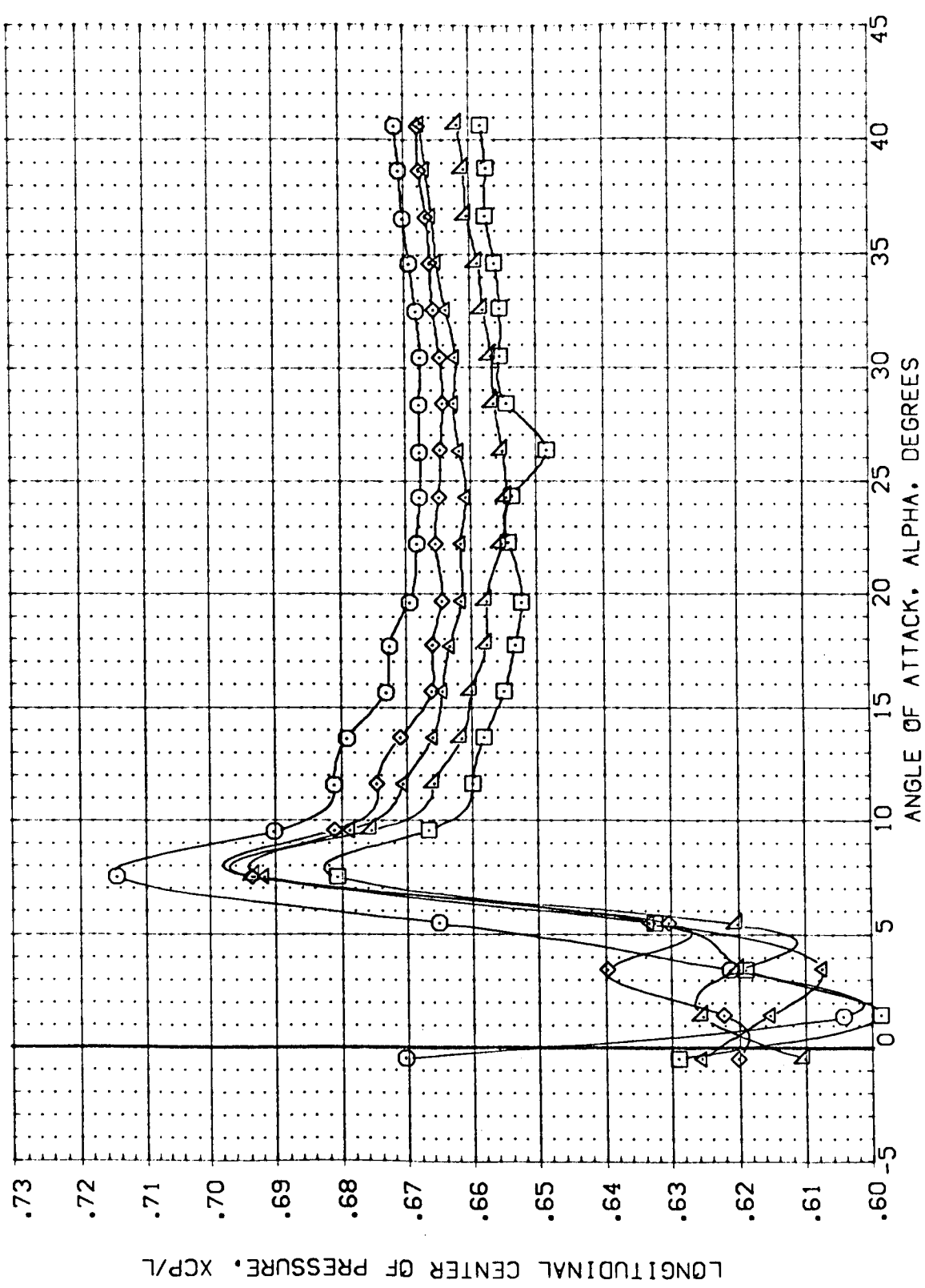


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

CEMACH = 4.96

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87SC8)	MSFC 574(CA48) CRB 1398	.000	.000	999.990	.000	SREF 2690.0000
(F87S85)	MSFC 574(CA48) CRB 1398 W/H19	.000	.000	999.990	.000	LREF 474.8000
(F87S91)	MSFC 574(CA48) CRB 1398 W/H20	.000	.000	999.990	.000	BREF 936.7000
(F87SC0)	MSFC 574(CA48) CRB 1398 W/H22	.000	.000	999.990	.000	XVREF 838.7000
(F87S93)	MSFC 574(CA48) CRB 1398 W/H23	.000	.000	999.990	.000	YVREF .0000
						ZVREF .0000
						SCALE .0040

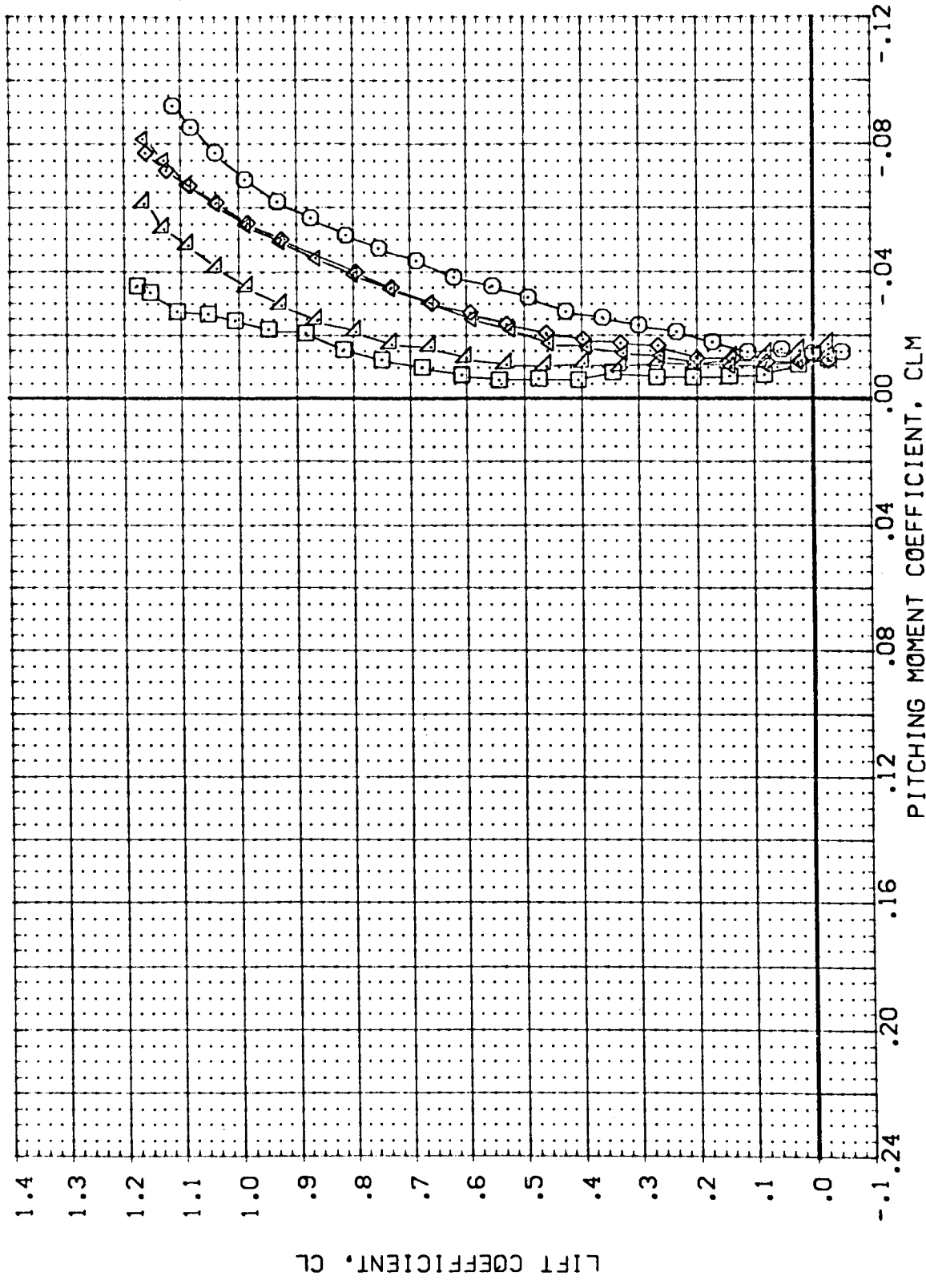


FIG. 13 EFFECT OF TRIMMER ON ORBITER 1398

(E)MACH = 2.99

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(F87S08) MSFC 574(CA48) CR3 1398

(F87S09) MSFC 574(CA48) CR3 1398 V/H19

(F87S10) MSFC 574(CA48) CR3 1398 V/H20

(F87S11) MSFC 574(CA48) CR3 1398 V/H21

(F87S12) MSFC 574(CA48) CR3 1398 V/H22

(F87S13) MSFC 574(CA48) CR3 1398 V/H23

BETA ELEVTR SPCBRK BDFLAP REFERENCE INFORMATION

.000 .000 999.990 .000 SREF 2690.0000

.000 .000 999.980 .000 LREF 474.8000

.000 .000 999.980 .000 BREF 936.7000

.000 .000 999.990 .000 XMRP 838.7000

.000 .000 999.990 .000 YMRP .0000

.000 .000 999.990 .000 ZMRP .0000

SCALE .0040

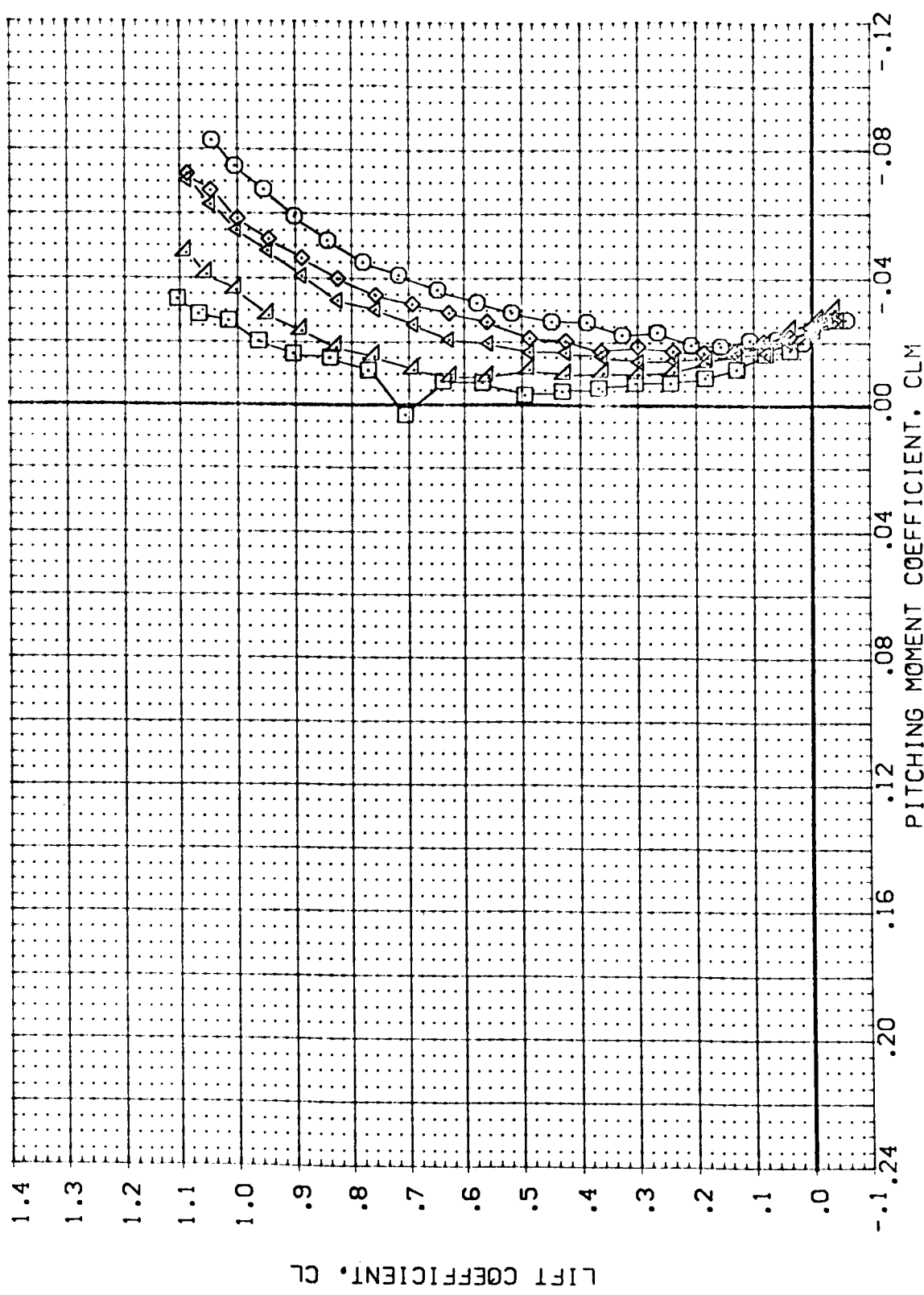


FIG. 13 EFFECT OF TRIMMER ON ORBITER 1398

(F)MACH = 4.96

DATA SET SYMBOL: MSFC 574(CA48) CR3 1398 W/H23
 (F87598) MSFC 574(CA48) CR3 1398 W/H19
 (F87595) MSFC 574(CA48) CR3 1398 W/H20
 (F87597) MSFC 574(CA48) CR3 1398 W/H20
 (F87599) DATA NOT AVAILABLE
 (F87600) DATA NOT AVAILABLE
 (F87593) MSFC 574(CA48) CR3 1398 W/H23

BETA: .000
 .000
 .000
 .000
 .000
 .000
 .000

ELEVTR: .000
 .000
 .000
 .000
 .000
 .000
 .000

SPOBRK: 999.990
 999.990
 999.990
 999.990
 999.990
 999.990
 999.990

BOFLAP: .000
 .000
 .000
 .000
 .000
 .000
 .000

REFERENCE INFORMATION: SREF 2690.0000
 LREF 474.8000
 BREF 936.7000
 XMRP 838.7000
 YMRP .0000
 ZMRP .0000
 SCALE .0040

SC.F.: .000
 .000
 .000
 .000
 .000
 .000
 .000

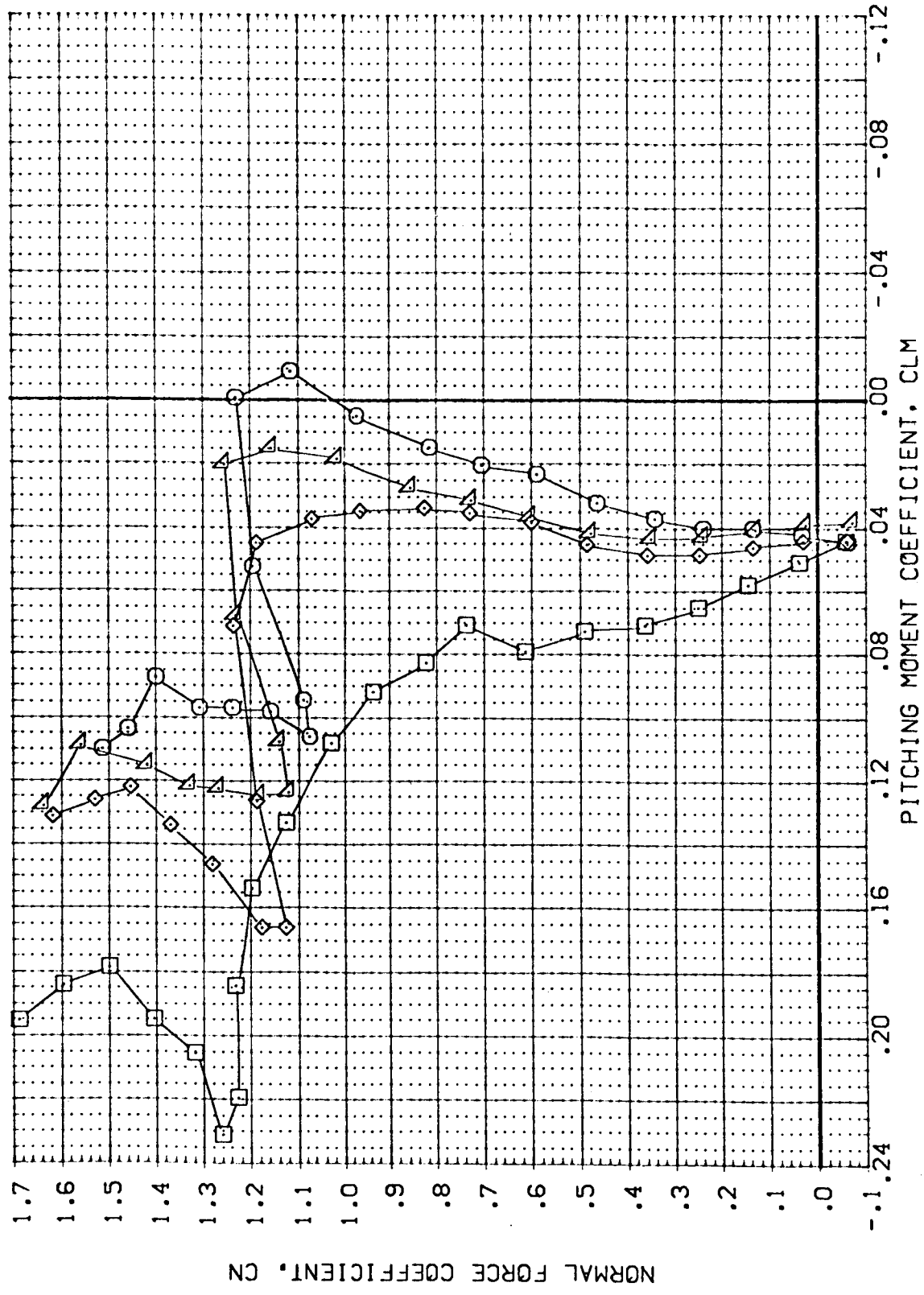


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

(A)MACH = .60

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87528) MSFC 574(CA48) CRB 139B W/H19
 (F87585) MSFC 574(CA48) CRB 139B W/H19
 (F87601) MSFC 574(CA48) CRB 139B W/H20
 (F87500) DATA NOT AVAILABLE
 (F87533) MSFC 574(CA48) CRB 139B W/H23

BETA ELEVTR SPDBRK BOFLAP REFERENCE INFORMATION
 .000 999.990 .000 .000 SREF 2690.0000 SCIF .
 .000 999.990 .000 .000 LREF 474.8000
 .000 999.990 .000 .000 BREF 836.7000
 .000 999.990 .000 .000 XVRP 838.7000
 .000 999.990 .000 .000 YVRP .0000
 .000 999.990 .000 .000 ZVRP .0000
 SCALE .0010

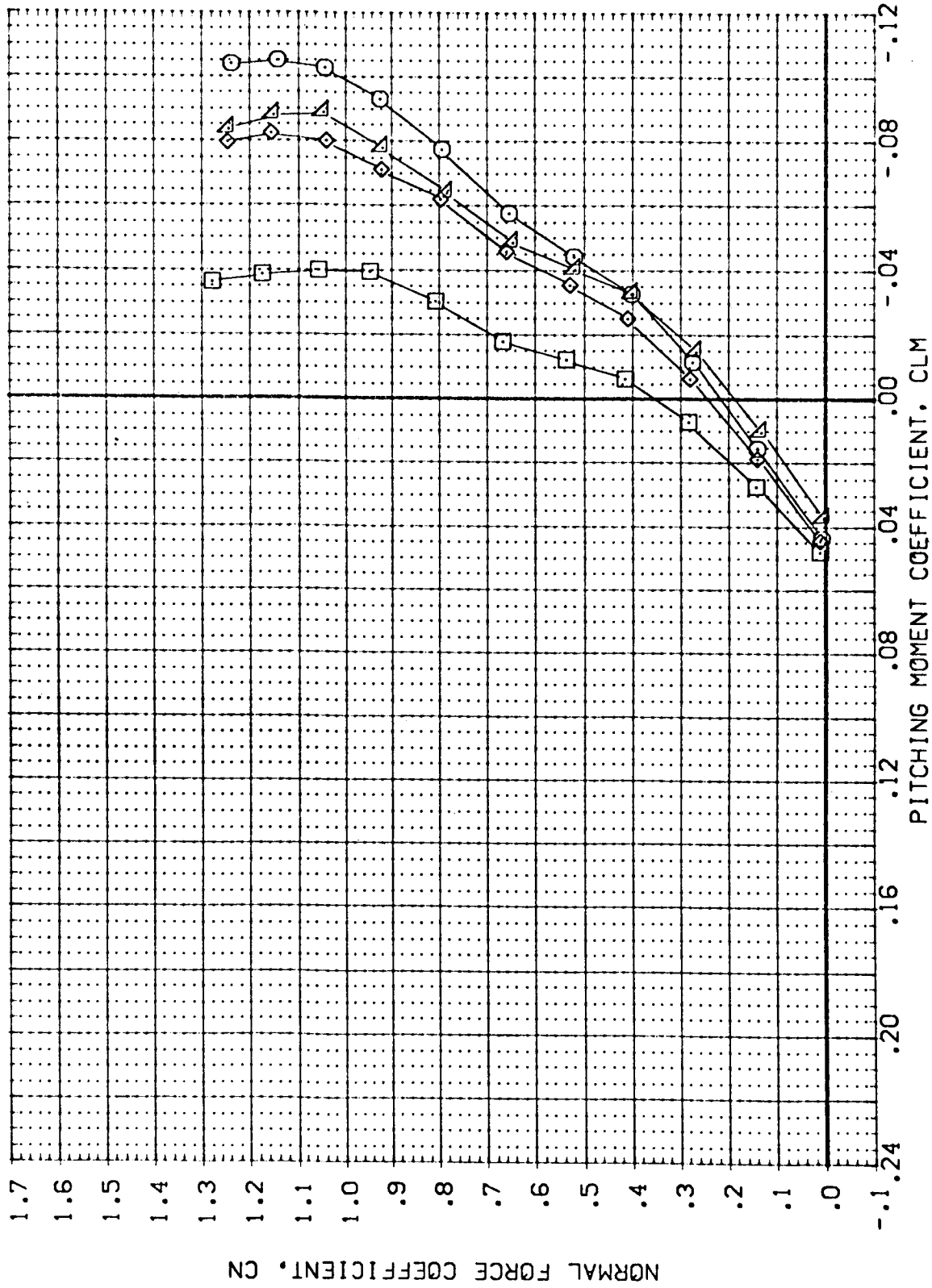


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

(CJMACH = 1.20

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(F87S08)	MSFC 574(CA48) CRB 1398	W/H19
(F87S05)	MSFC 574(CA48) CRB 1398	W/H20
(F87S01)	MSFC 574(CA48) CRB 1398	W/H22
(F87S00)	MSFC 574(CA48) CRB 1398	W/H23
(F87S93)	MSFC 574(CA48) CRB 1398	W/H23

BETA .000
 ELEVTR .000
 SPOBRK .000
 BOFLAP .000
 REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 474.8000
 BREF 936.7000
 XMRP 838.7000
 YMRP .0000
 ZMRP .0000
 SCALE .0010

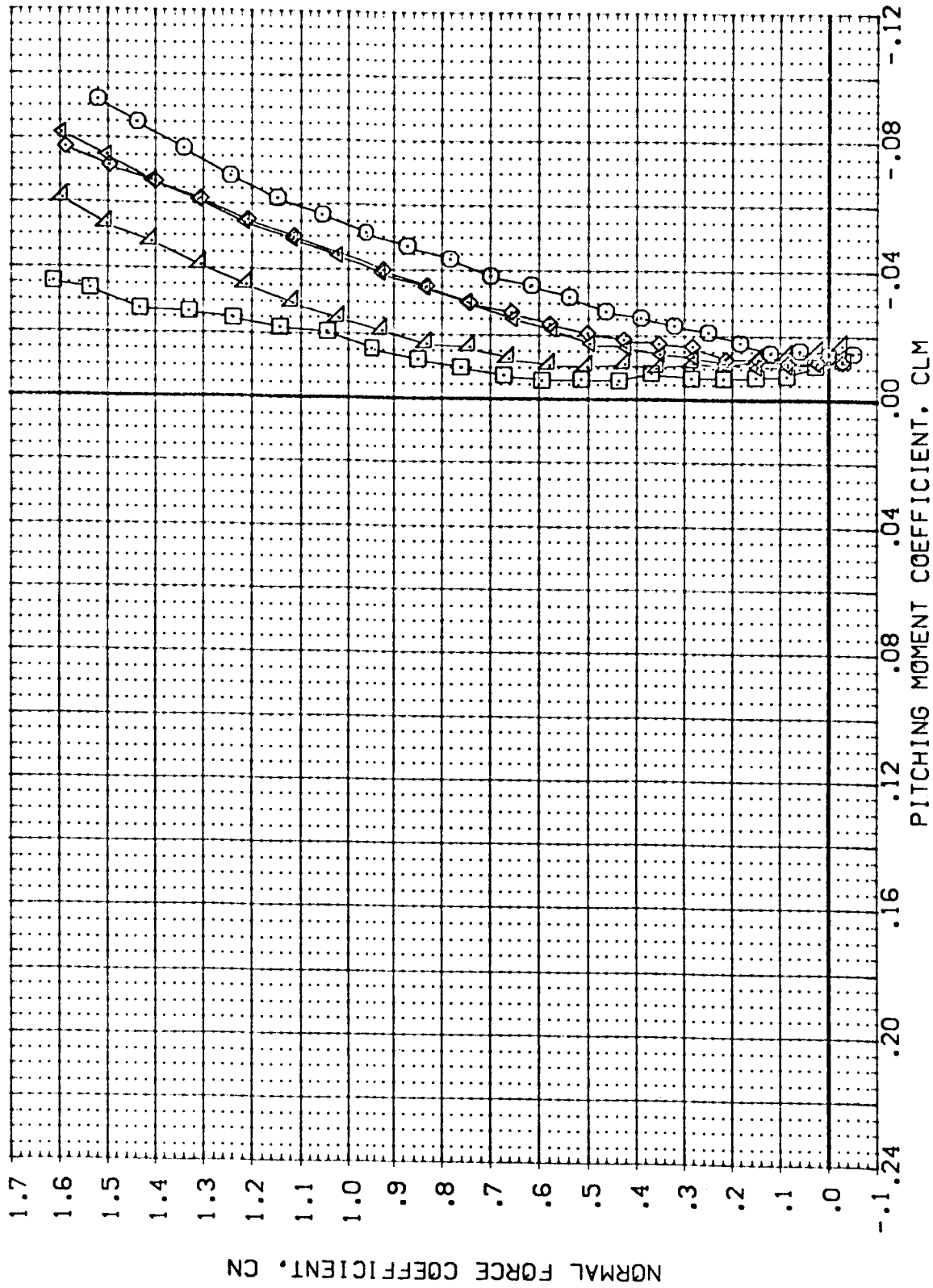


FIG. 13 EFFECT OF TRIMMER ON ORBITER 1398

(M)MACH = 2.99

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPORBK	BOFLAP	REFERENCE INFORMATION
(F875C8)	MSFC 574(CA48) CRB 1398	.000	.000	999.999	.000	SREF 2690.0000
(F87585)	MSFC 574(CA48) CRB 1398 V/H19	.000	.000	999.999	.000	LREF 474.8000
(F87591)	MSFC 574(CA48) CRB 1398 V/H20	.000	.000	999.999	.000	BREF 936.7000
(F875C0)	MSFC 574(CA48) CRB 1398 V/H22	.000	.000	999.999	.000	XMRP 838.7000
(F87593)	MSFC 574(CA48) CRB 1398 V/H23	.000	.000	999.999	.000	YMRP .0000
						ZMRP .0000
						SCALE .0010

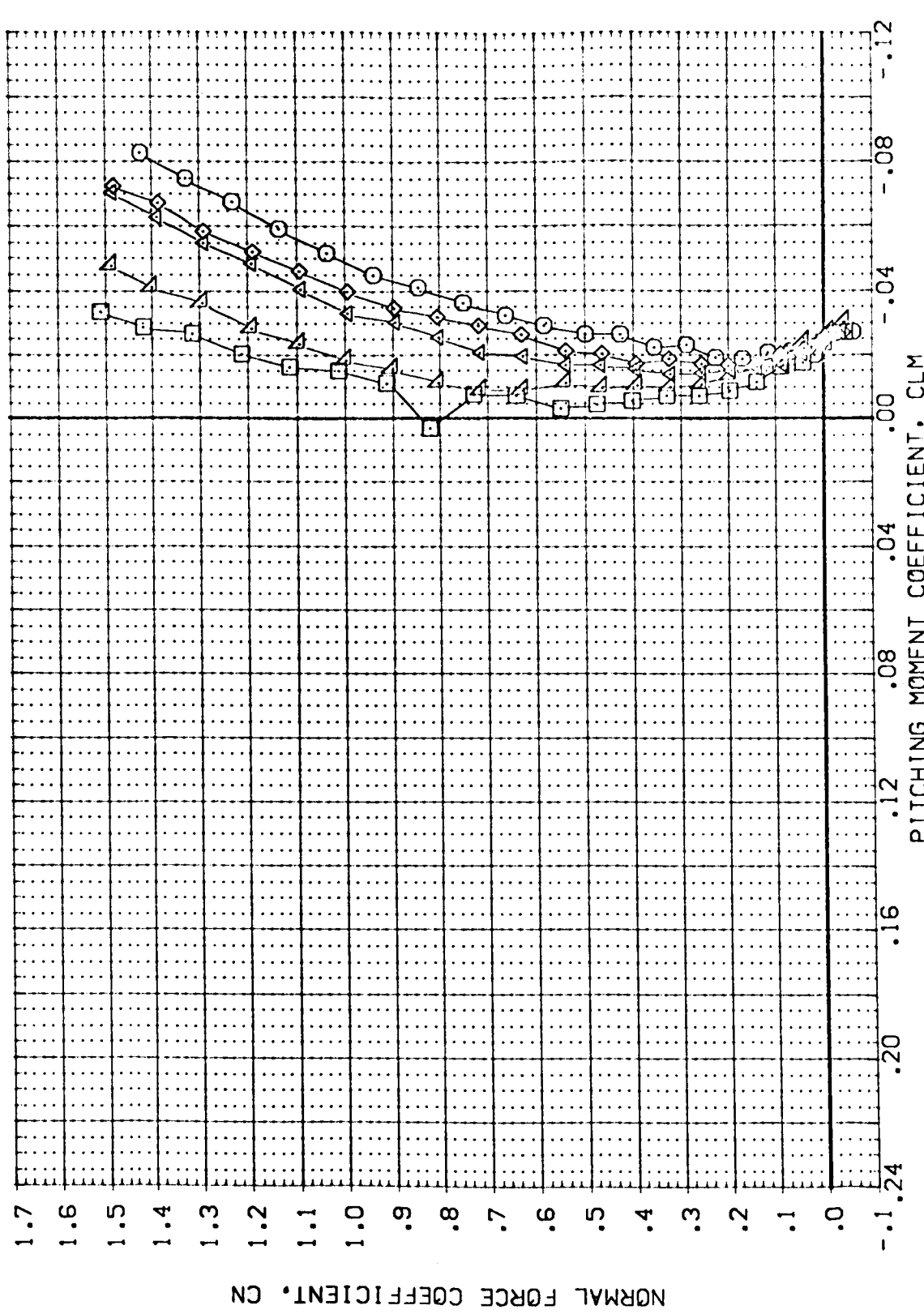


FIG. 13 EFFECT OF TRIMMER ON ORBITER 1398

CFD MACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87508) MSFC 574(OA48) CRB 1398 V/H19
 (F87595) MSFC 574(OA48) CRB 1398 V/H20
 (F87591) MSFC 574(OA48) CRB 1398 V/H20
 (F87500) DATA NOT AVAILABLE
 (F87593) MSFC 574(OA48) CRB 1398 V/H23

BETA ELEVTR SPOBRK BDFLAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SREF 2690.0000 SQ.FT.
 .000 .000 999.990 .000 LREF 474.8000
 .000 .000 999.990 .000 BREF 936.7000
 .000 .000 999.990 .000 XMRP 838.7000
 .000 .000 999.990 .000 YMRP .0000
 .000 .000 999.990 .000 ZMRP .0000
 .000 .000 999.990 .000 SCALE .0010

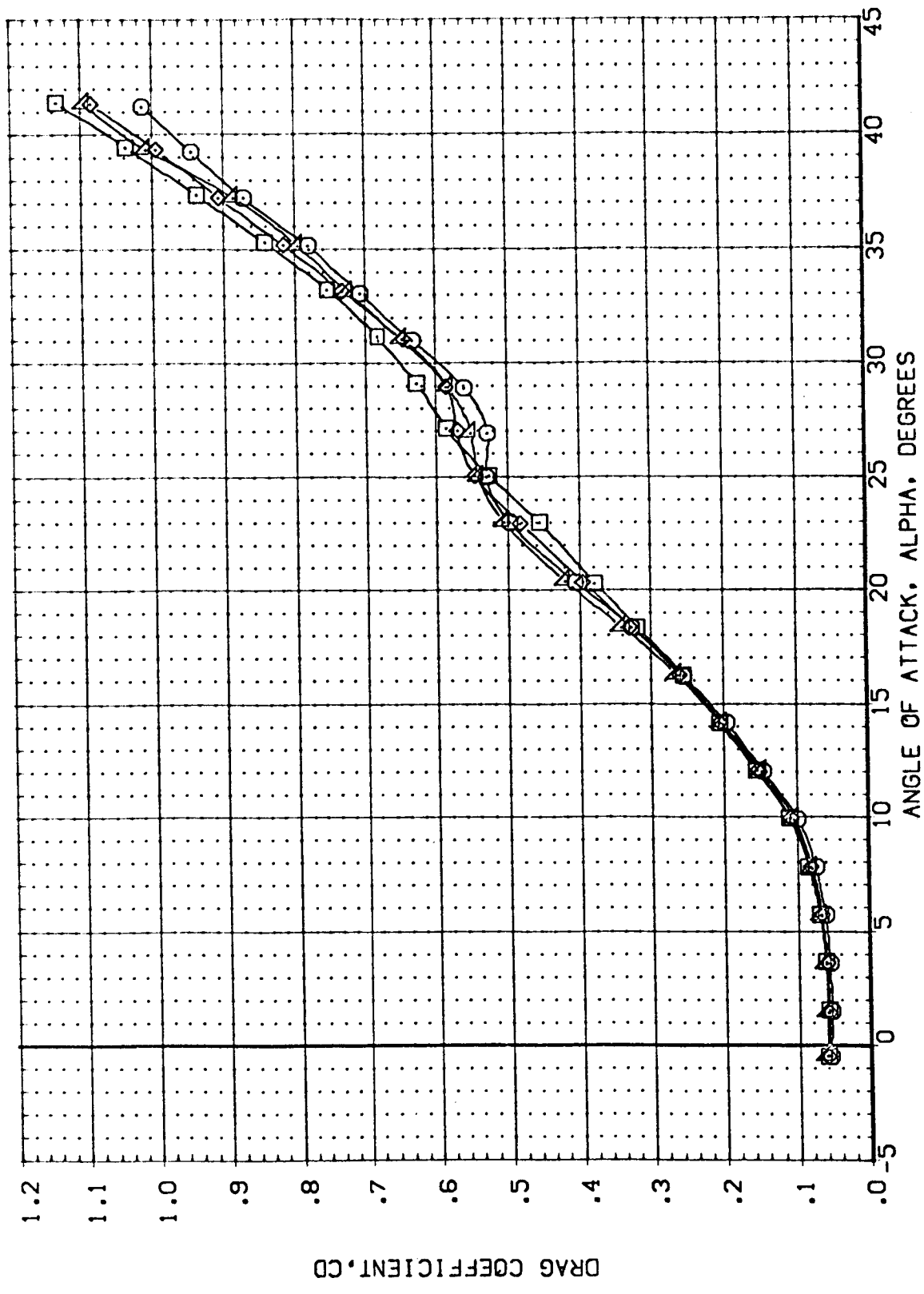


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

(A)MACH = .60

DATA SET SYMBC	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87S08)	MSEC 574(CA48) CRB 1399	.000	.000	999.990	.000	SREF 2690.0000 SC.FT.
(F87S09)	MSEC 574(CA48) CRB 1399 W/H19	.000	.000	999.990	.000	LREF 474.8000 IN.
(F87S01)	MSEC 574(CA48) CRB 1399 W/H20	.000	.000	999.990	.000	BREF 936.7000 IN.
(F87S00)	MSEC 574(CA48) CRB 1399 W/H22	.000	.000	999.990	.000	XREF 838.7000 IN.
(F87S03)	MSEC 574(CA48) CRB 1399 W/H23	.000	.000	999.990	.000	YREF .0000 IN.
						ZREF .0000 IN.
						SCALE .0040

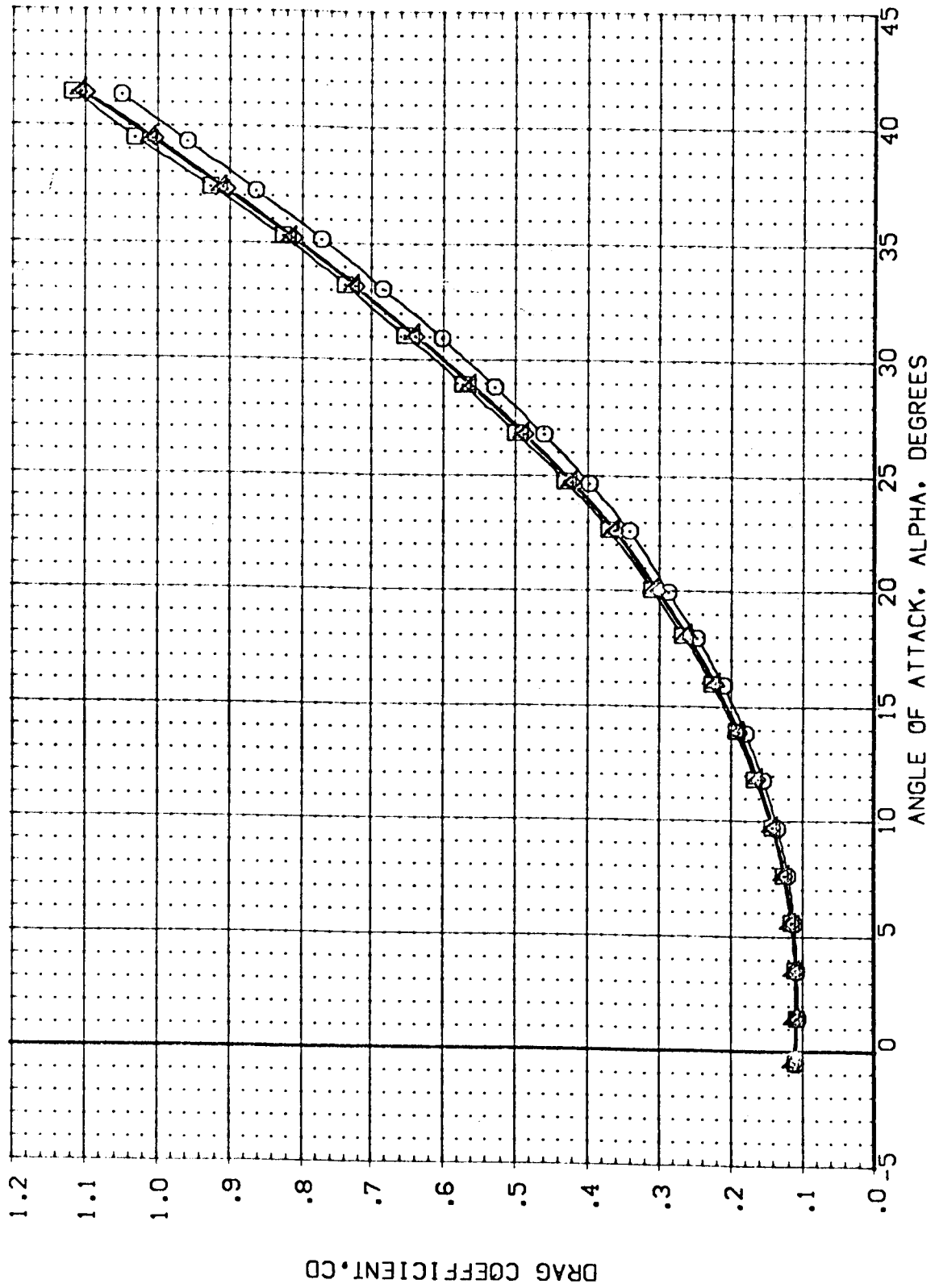


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	3DFLAP	REFERENCE INFORMATION
(F87S08)	MSFC 574(CA48) CR8 1398	.000	.000	999.990	.000	SREF 2690 .0000 SC.F.
(F87S85)	MSFC 574(CA48) CR8 1398 W/H19	.000	.000	999.990	.000	LREF 474.8000
(F87S91)	MSFC 574(CA48) CR8 1398 W/H20	.000	.000	999.990	.000	BREF 936.7000
(F87S00)	MSFC 574(CA48) CR8 1398 W/H22	.000	.000	999.990	.000	XVRP 838.7000
(F87S93)	MSFC 574(CA48) CR8 1398 W/H23	.000	.000	999.990	.000	ZVRP .0000
						SCALE .0040

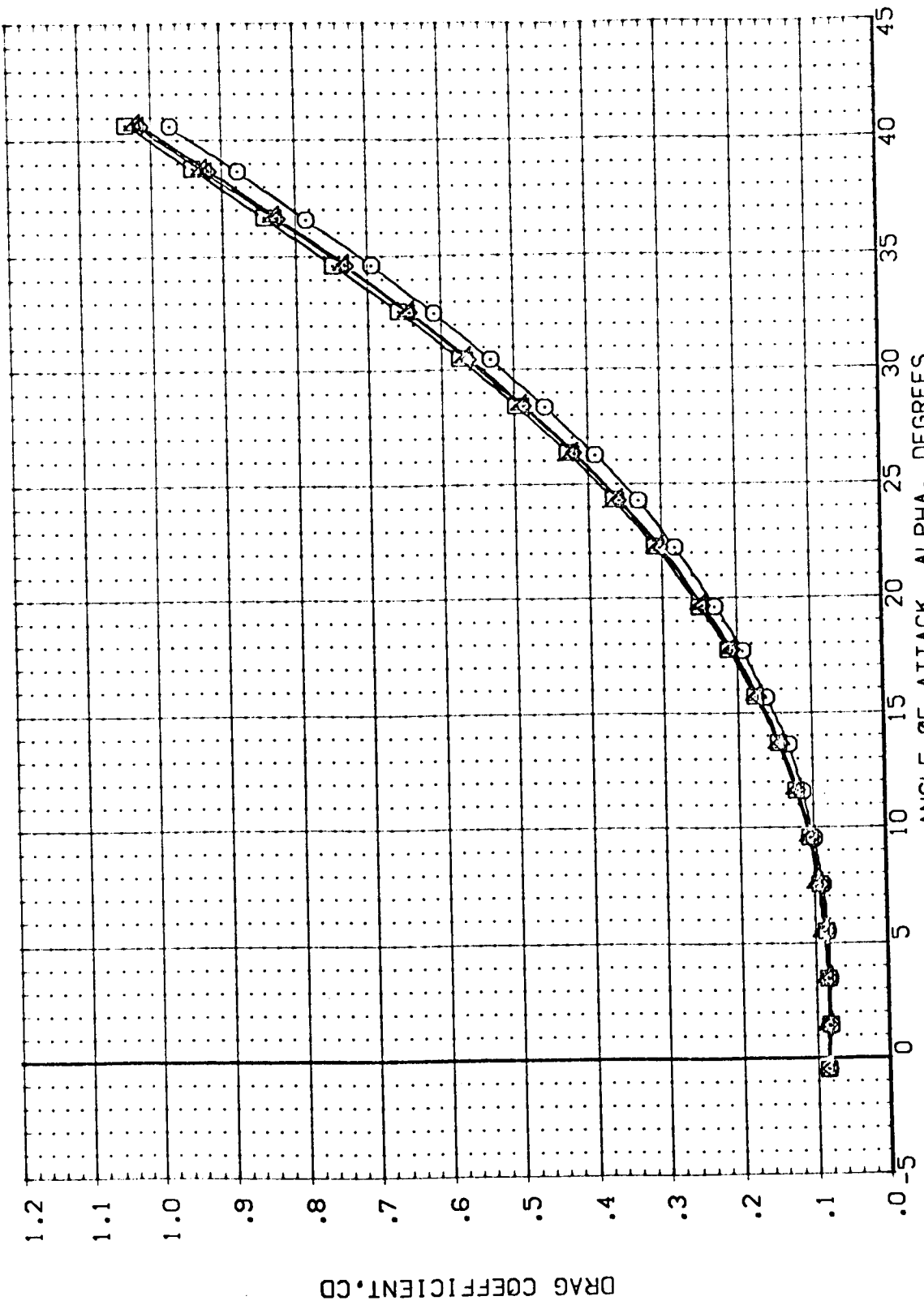


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B
(F)MACH = 4.95

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87508)	MSFC 574(CA48) CRB 139B	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(F87585)	MSFC 574(CA48) CRB 139B W/H19	.000	.000	999.990	.000	LREF 474.8000
(F87591)	MSFC 574(CA48) CRB 139B W/H20	.000	.000	999.990	.000	BREF 936.7000
(F87500)	DATA NOT AVAILABLE	.000	.000	999.990	.000	XMRP 838.7000
(F87593)	MSFC 574(CA48) CRB 139B W/H23	.000	.000	999.990	.000	YMRP .0000
					.000	ZMRP .0000
					.000	SCALE .0040

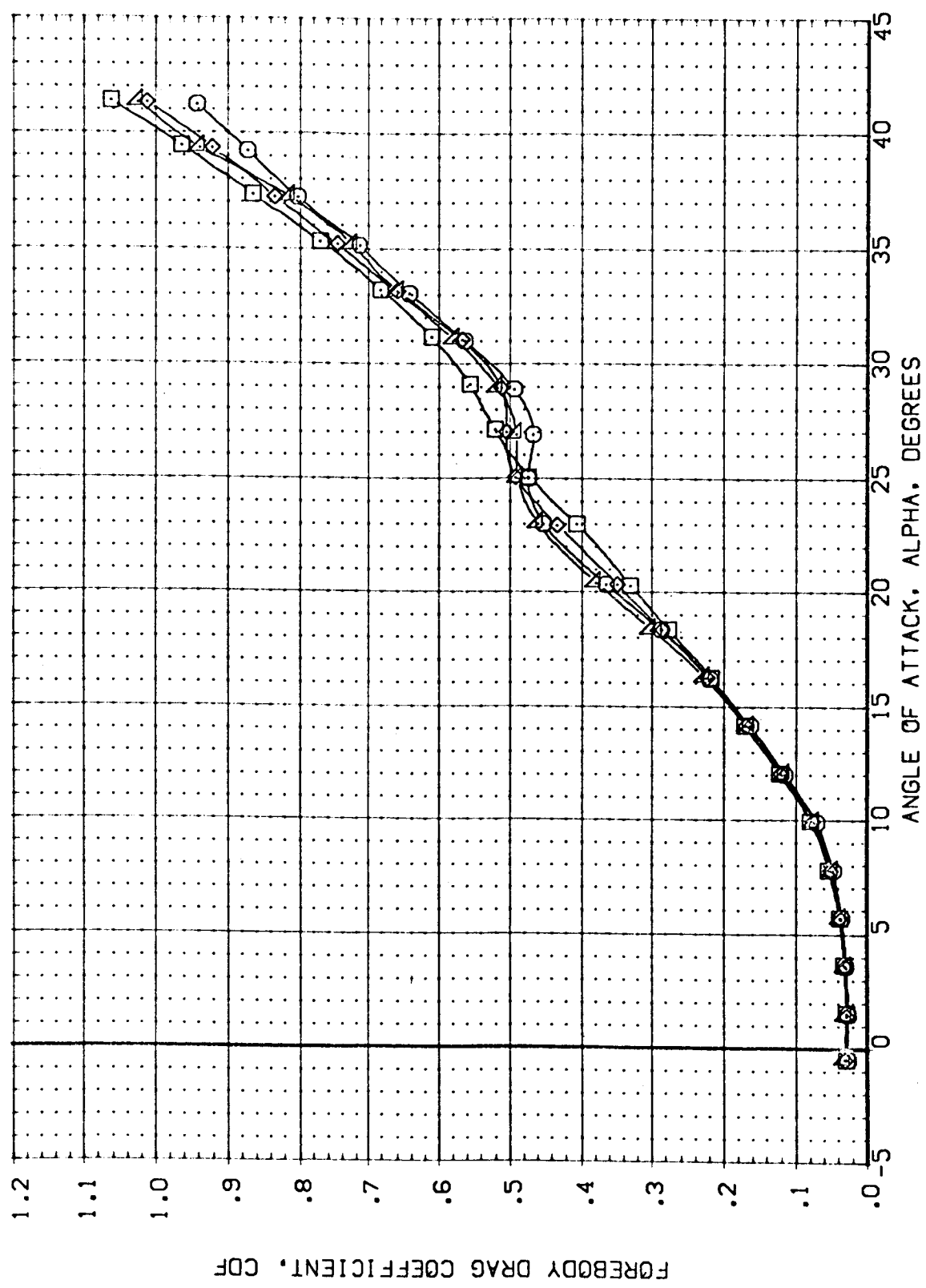


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

(A)MACH = .60

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SFCBRK	BOFLAP	REFERENCE INFORMATION
(F87508)	MSFC 574(CA48) CRB 1399	.000	.000	999.990	.000	SREF 2690.0000 SC.FT.
(F87585)	MSFC 574(CA48) CRB 1399 V/H19	.000	.000	999.990	.000	LREF 474.8000 N.
(F87591)	MSFC 574(CA48) CRB 1399 V/H20	.000	.000	999.990	.000	BREF 936.7000 N.
(F87590)	DATA NOT AVAILABLE	.000	.000	999.990	.000	XMRP .0000 N.
(F87593)	MSFC 574(CA48) CRB 1399 V/H23	.000	.000	999.990	.000	YMRP .0000 N.
						ZMRP .0000 N.
						SCALE .0040

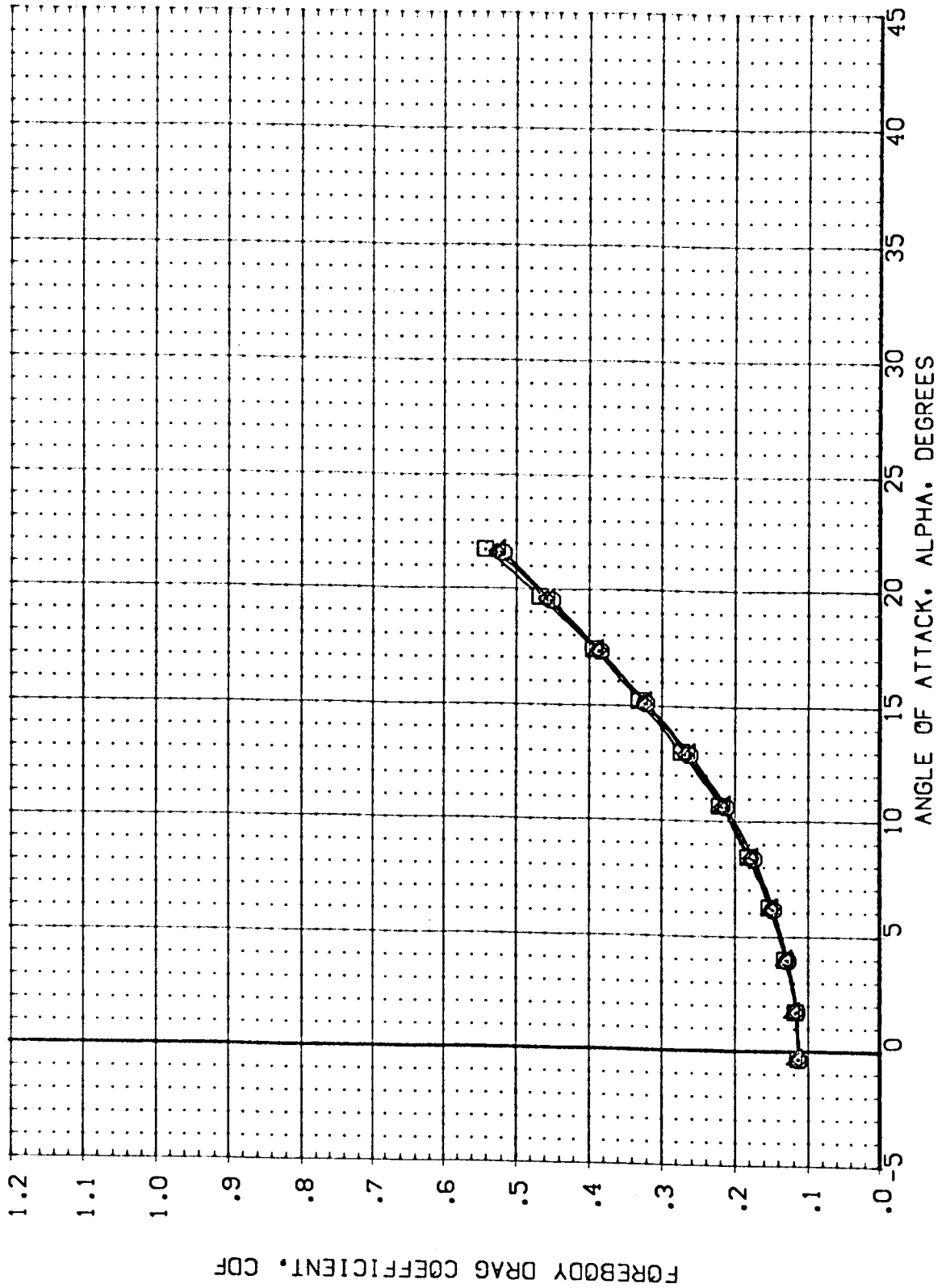


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

(C)MACH = 1.20

DATA SET SYMBOL: \square \circ \triangle \times

CONFIGURATION DESCRIPTION:
 MSFC 574(CA48) CRB 1393 W/H19
 MSFC 574(CA48) CRB 1393 W/H20
 MSFC 574(CA48) CRB 1393 W/H22
 MSFC 574(CA48) CRB 1393 W/H23

BETA: .000
 .000
 .000
 .000
 .000
 .000

ELEVTR: .000
 .000
 .000
 .000
 .000
 .000

SPOBRK: 999.990
 999.990
 999.990
 999.990
 999.990
 999.990

BDFLAP: .000
 .000
 .000
 .000
 .000
 .000

REFERENCE INFORMATION:
 SPCF 2690.0000 SQ.F.T.
 LSCF 474.8000
 SSCF 936.7000
 XVAP 839.7000
 VREF .0000
 ZREF .0000
 SCALE .0010

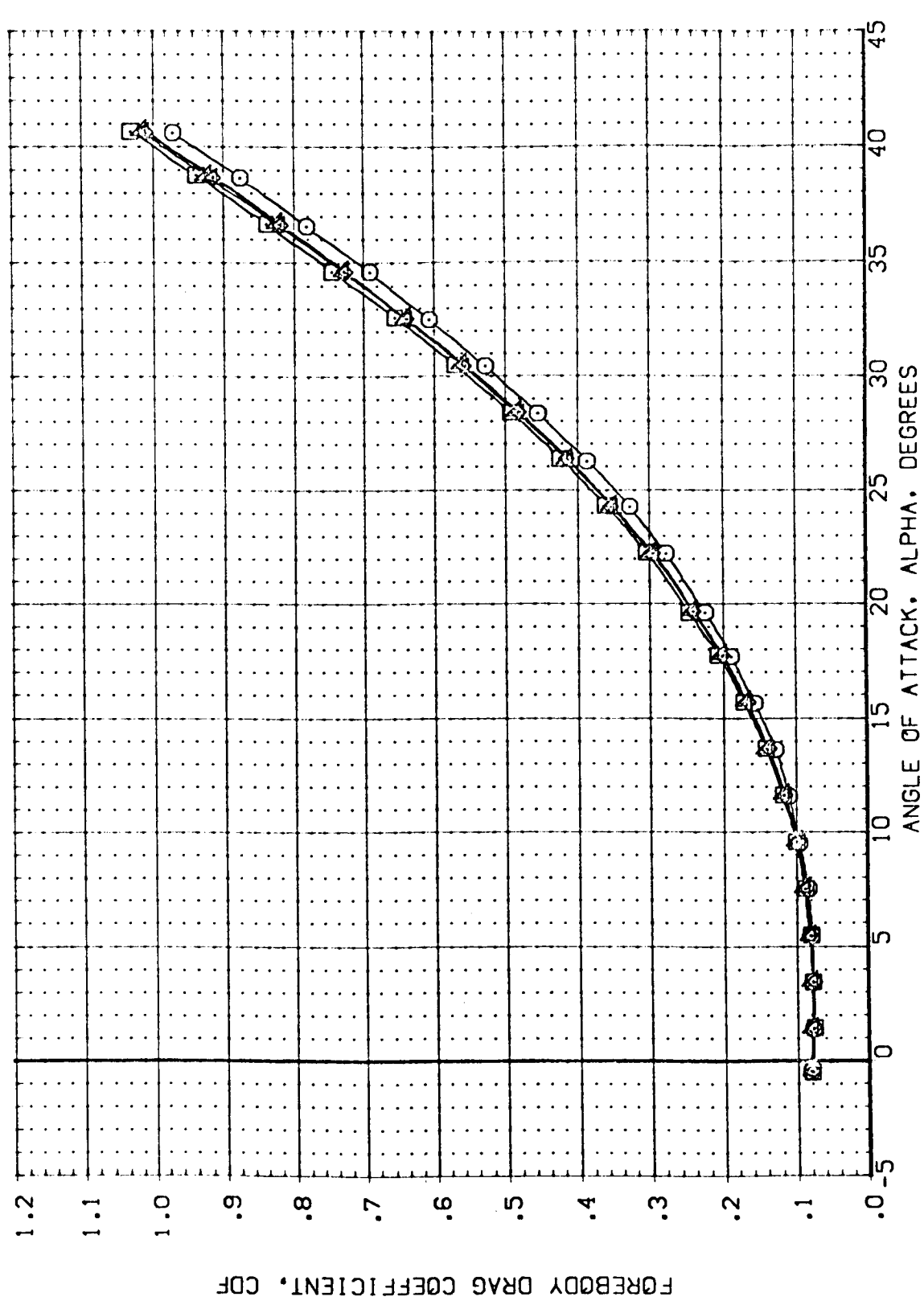


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

(F)MACH = 4.96

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
{F87SC8}	MSFC 574(CA48) CRB 1398	.000	.000	999.990	.000	SREF 2690.0000
{F87S85}	MSFC 574(CA48) CRB 1398 V/H19	.000	.000	999.990	.000	REF 474.8000
{F87S91}	MSFC 574(CA48) CRB 1398 V/H20	.000	.000	999.990	.000	SREF 936.7000
{F87SC0}	DATA NOT AVAILABLE	.000	.000	999.990	.000	XVAP 838.7000
{F87S93}	MSFC 574(CA48) CRB 1398 V/H23	.000	.000	999.990	.000	VVAP .0000
						ZVAP .0000
						SCALE .0010

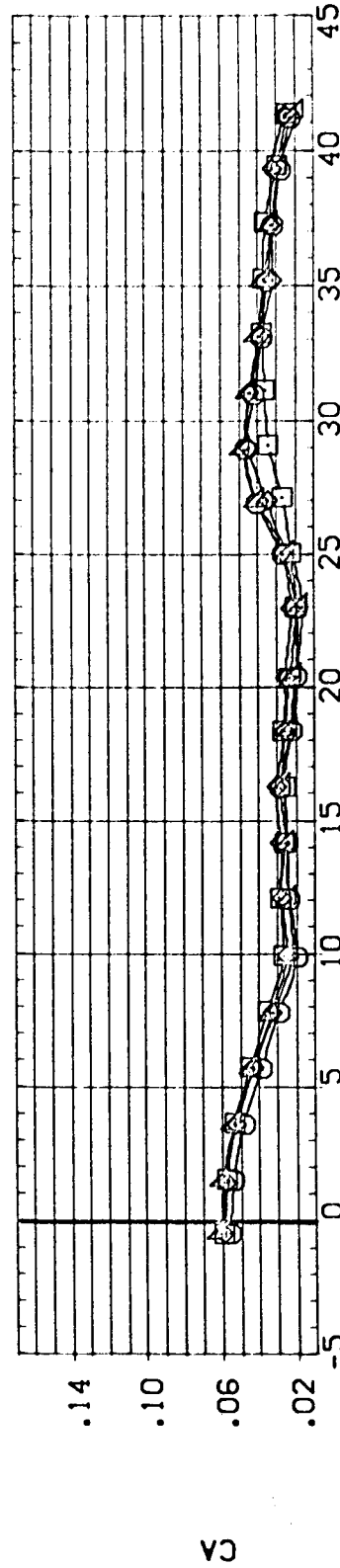
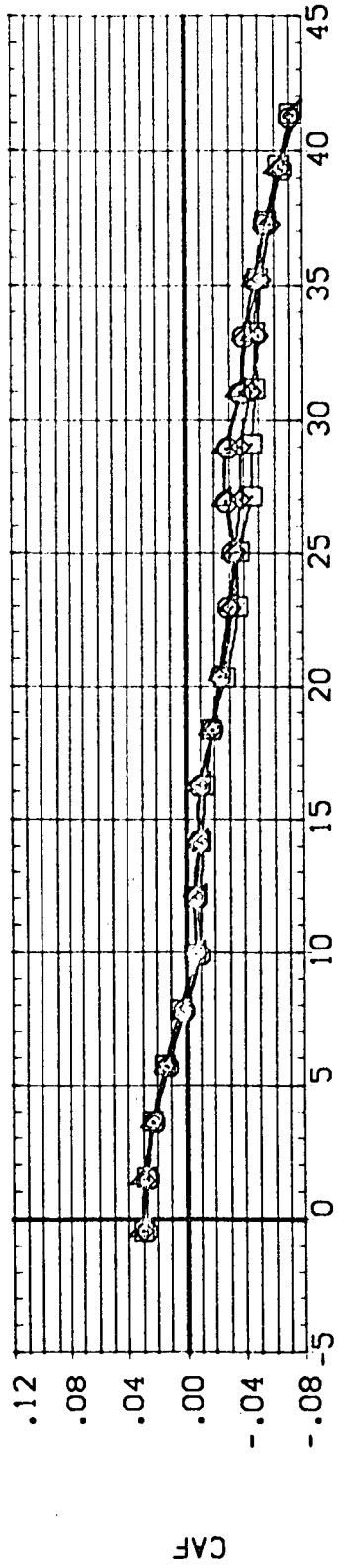
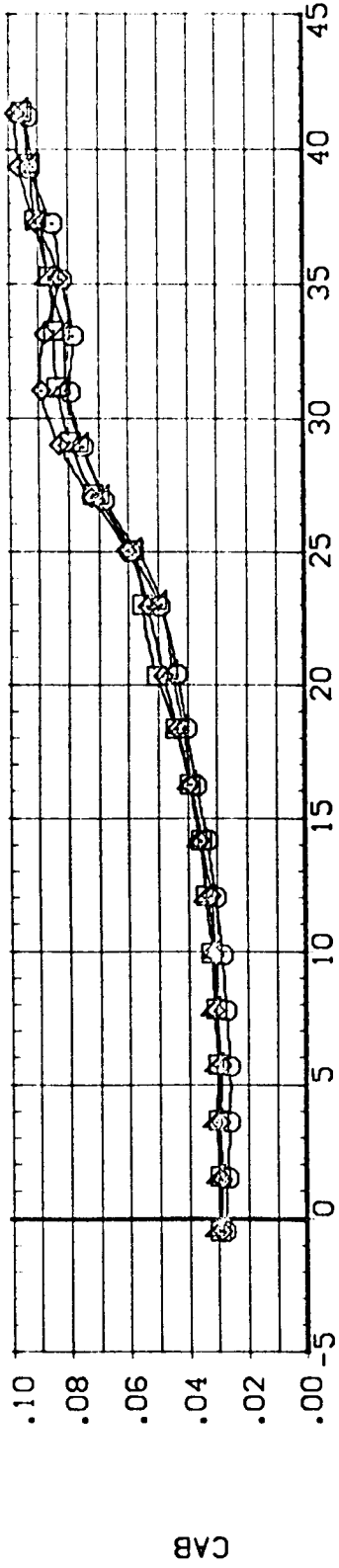


FIG. 13 EFFECT OF TRIMMER ON ORBITER 1398

(A)MACH = .60

DATA SET SYMBOL CONFIGURATION DESCRIPTION REFERENCE INFORMATION

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	REFERENCE INFORMATION
(F87S08)	MSFC 574(CA48) CRB 1398	SREF 269C.0000 SC.F.T.
(F87S85)	MSFC 574(CA48) CRB 1398 W/H19	REF 474.8000
(F87S91)	MSFC 574(CA48) CRB 1398 W/H2C	BREF 936.7000
(F87S00)	DATA NOT AVAILABLE	XREF 838.7000
(F87S93)	MSFC 574(CA48) CRB 1398 W/H23	YREF .0000
		ZREF .0000
		SCALE .0040

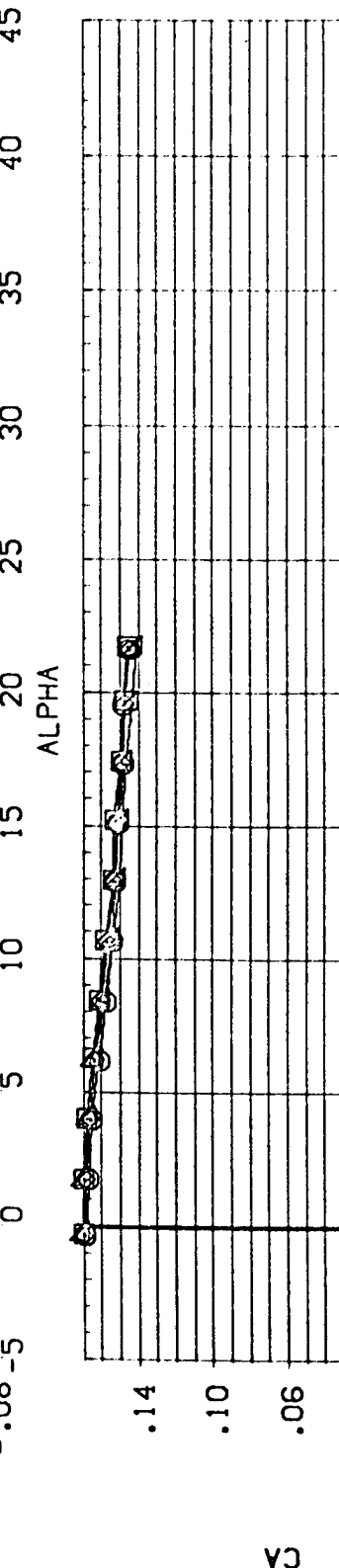
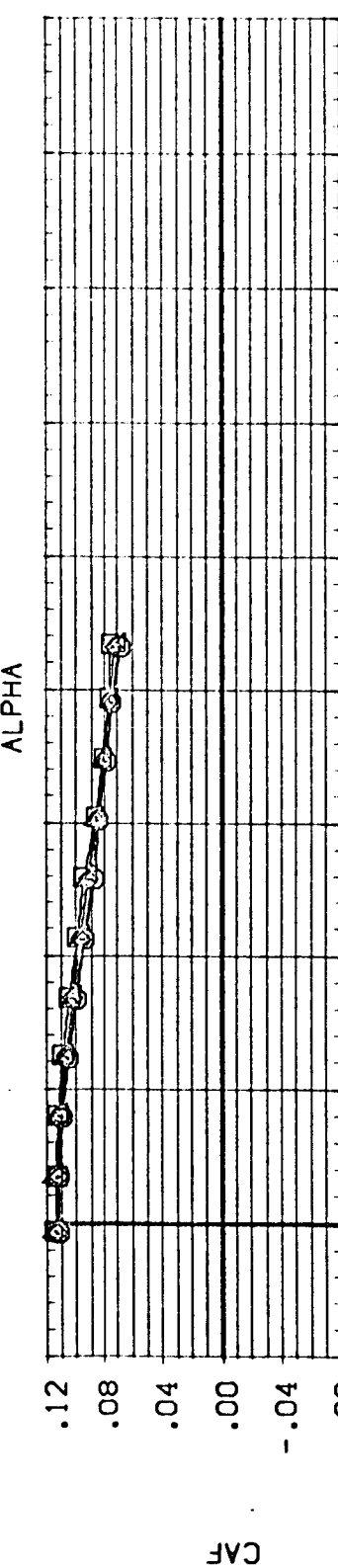
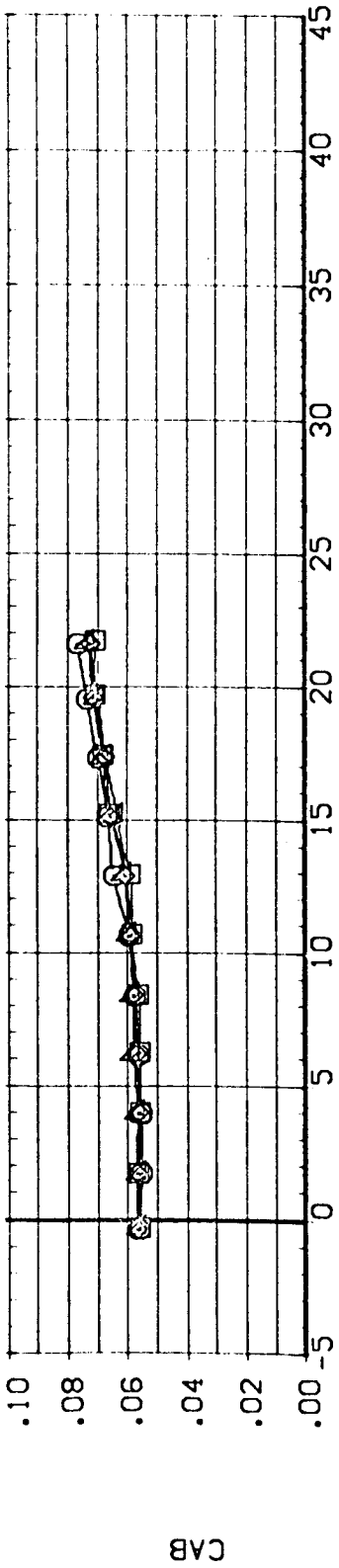


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

CCMACH = :.20

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87528) MSFC 574 (CA48) CRB 139B W/H19
 (F87385) MSFC 574 (CA48) CRB 139B W/H19
 (F87591) MSFC 574 (CA48) CRB 139B W/H20
 (F87500) DATA NOT AVAILABLE
 (F87593) DATA NOT AVAILABLE

BETA ELEVTR SPCBRK BDFLAP REFERENCE INFORMATION SCALE
 .000 .000 999.990 .000 SREF 2690 .0000
 .000 .000 .000 .000 .REF 474 .8000
 .000 .000 .000 .000 .REF 936 .7000
 .000 .000 .000 .000 .XMRP 838 .7000
 .000 .000 .000 .000 .YMRP .0000
 .000 .000 .000 .000 .ZMRP .0000
 .000 .000 .000 .000 .SCALE .0000

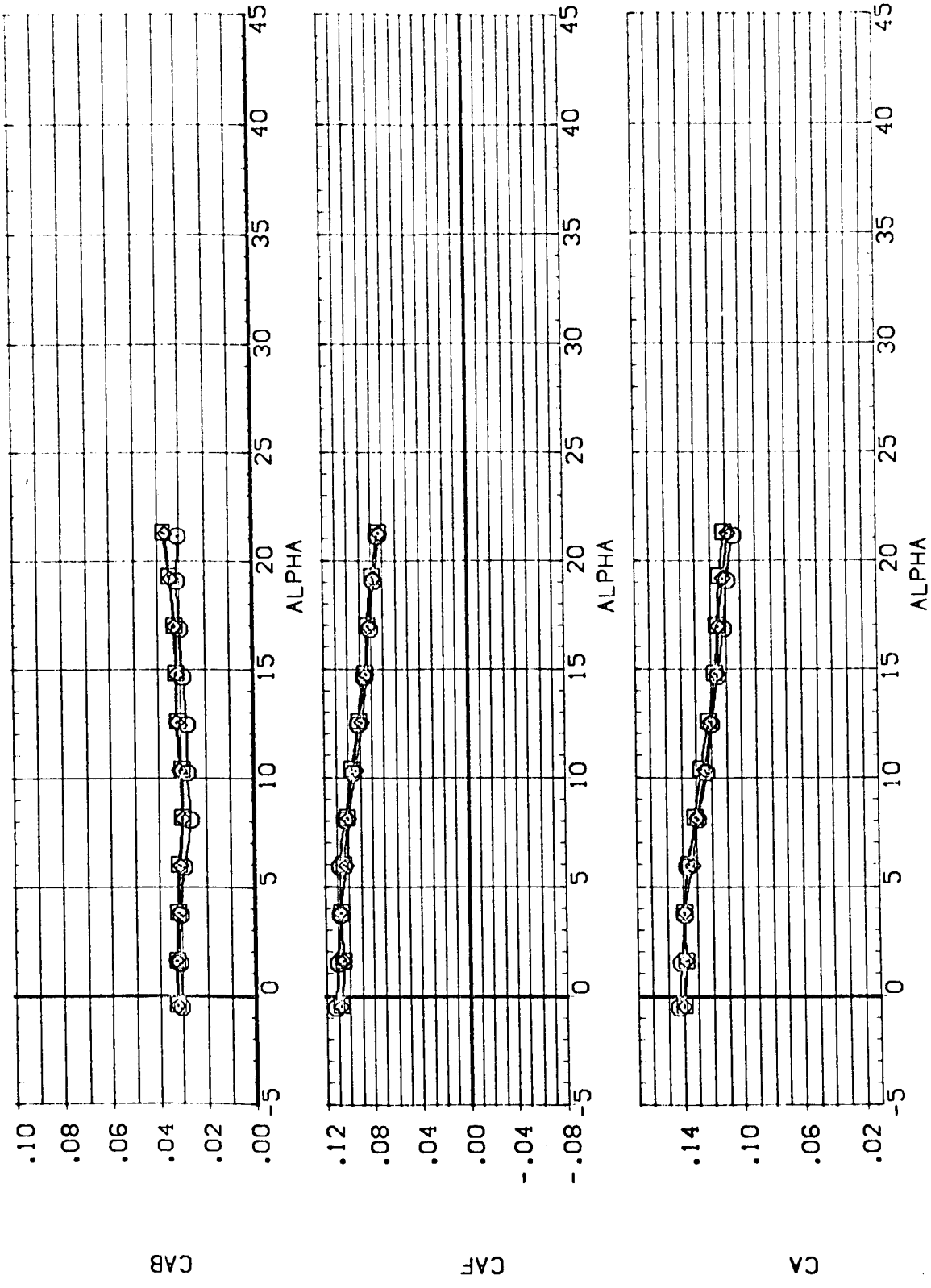


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B
 (0)MACH = 0.95

DATA SET SYMBOL CONFIGURATION DESCRIPTION REFERENCE INFORMATION SCALE

(F87S28)	MSFC 574(CA48) CR3 1398 W/H19	SREF 2690.0000	SCAL .
(F87S85)	MSFC 574(CA48) CR3 1398 W/H19	LREF 474.8000	SCAL .
(F87S91)	MSFC 574(CA48) CR3 1398 W/H20	BREF 936.7000	SCAL .
(F87SC0)	MSFC 574(CA48) CR3 1398 W/H22	X-TRP 838.7000	SCAL .
(F87S93)	MSFC 574(CA48) CR3 1398 W/H23	YMRP .	SCAL .

BETA ELEVTR SPCBRK BOFLAP

.000	.000	999.990	.000
.000	.000	999.990	.000
.000	.000	999.990	.000
.000	.000	999.990	.000
.000	.000	999.990	.000
.000	.000	999.990	.000
.000	.000	999.990	.000

SCALE .0040

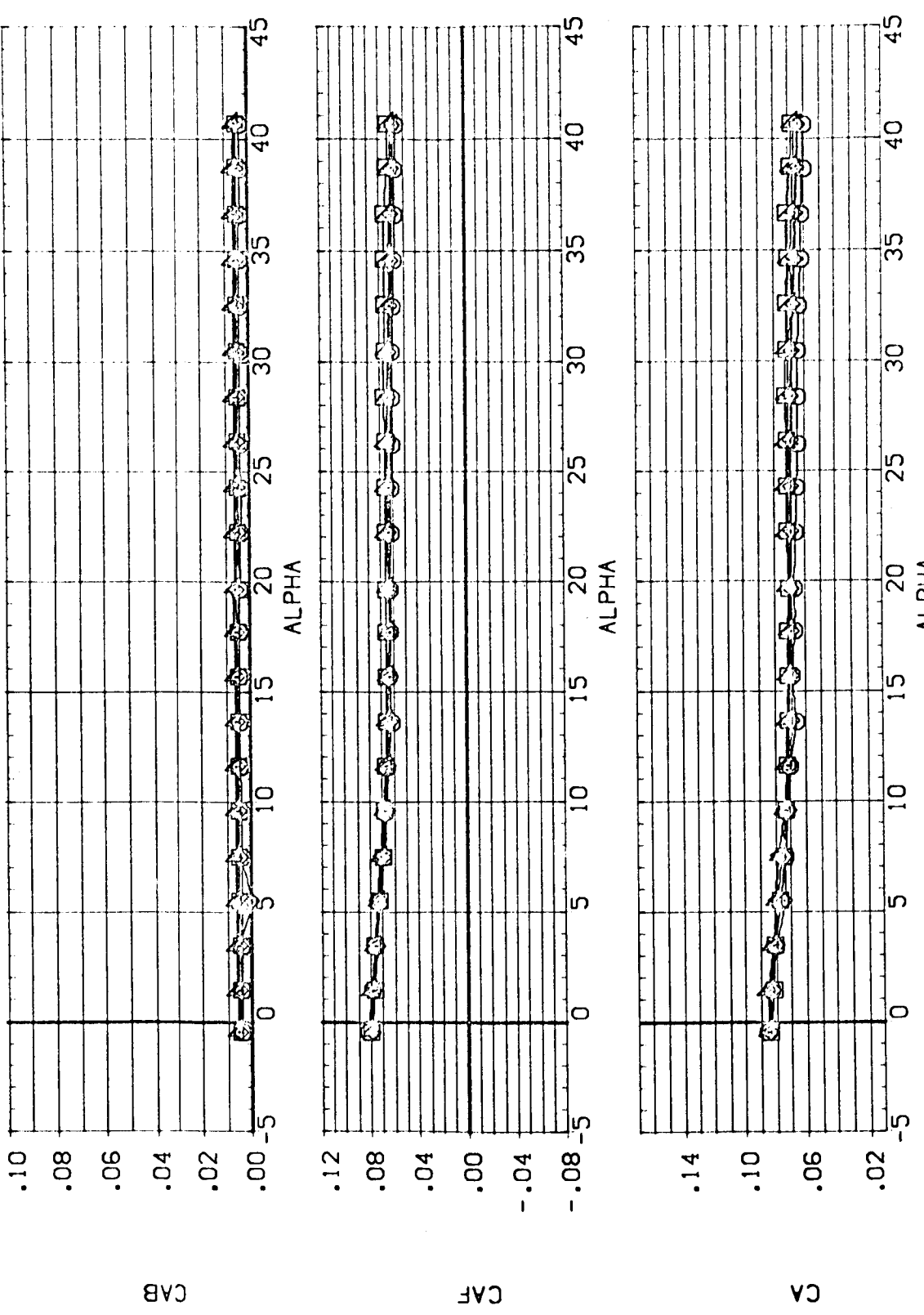


FIG. 13 EFFECT OF TRIMMER ON ORBITER 1398

(F)MACH = 4.96

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPCBRK	BOFLAP	REFERENCE INFORMATION
(F87S08)	MSFC 574(OA18) CRB 139B	.000	.000	999.990	.000	SPCF 2890.0000 SCF
(F87S85)	MSFC 574(OA18) CRB 139B W/H19	.000	.000	999.990	.000	REF 474.8000
(F87S91)	MSFC 574(OA18) CRB 139B W/H20	.000	.000	999.990	.000	BREF 936.7000
(F87S00)	DATA NOT AVAILABLE	.000	.000	999.990	.000	XMRB 838.7000
(F87S93)	MSFC 574(OA18) CRB 139B W/H23	.000	.000	999.990	.000	YMRB .0000
						ZMRB .0000
						SCALE .0010

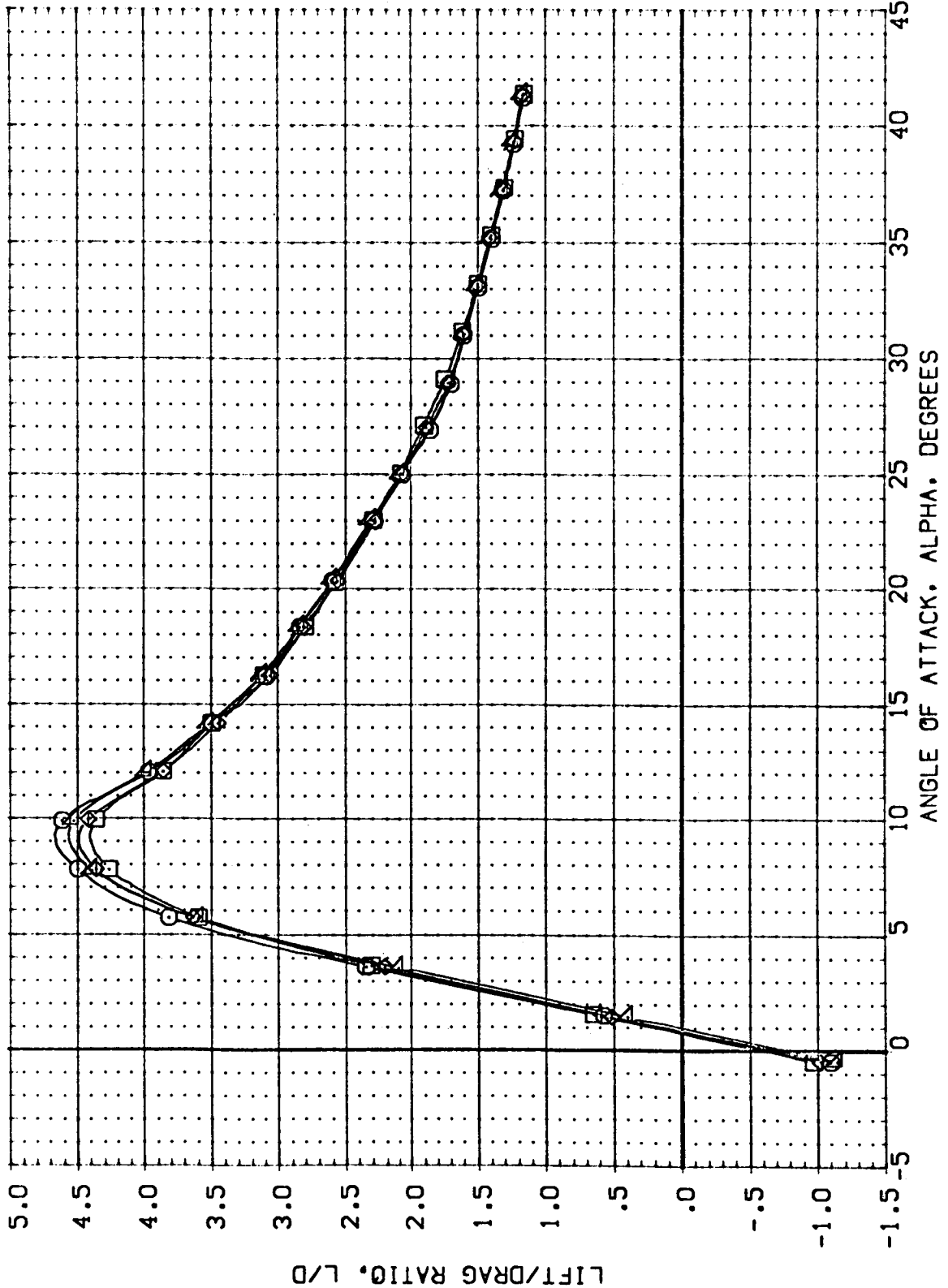


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

(M)MACH = .60

DATA SET SYMBOL: $\text{O} \times$
 CONFIGURATION DESCRIPTION:
 MSFC 574(CA48) CRB 1393 V/H19
 MSFC 574(CA48) CRB 1393 V/H20
 MSFC 574(CA48) CRB 1393 V/H21
 DATA NOT AVAILABLE
 MSFC 574(CA48) CRB 1393 V/H23

BETA: .000
 ELEVTR: .000
 SPOBRK: 999.990
 BOFLAP: .000
 REFERENCE INFORMATION:
 SREF: 2690.0000
 LREF: 474.8000
 BREF: 936.7000
 XMRP: 838.7000
 YMRP: .0000
 ZMRP: .0000
 SCALE: .0040

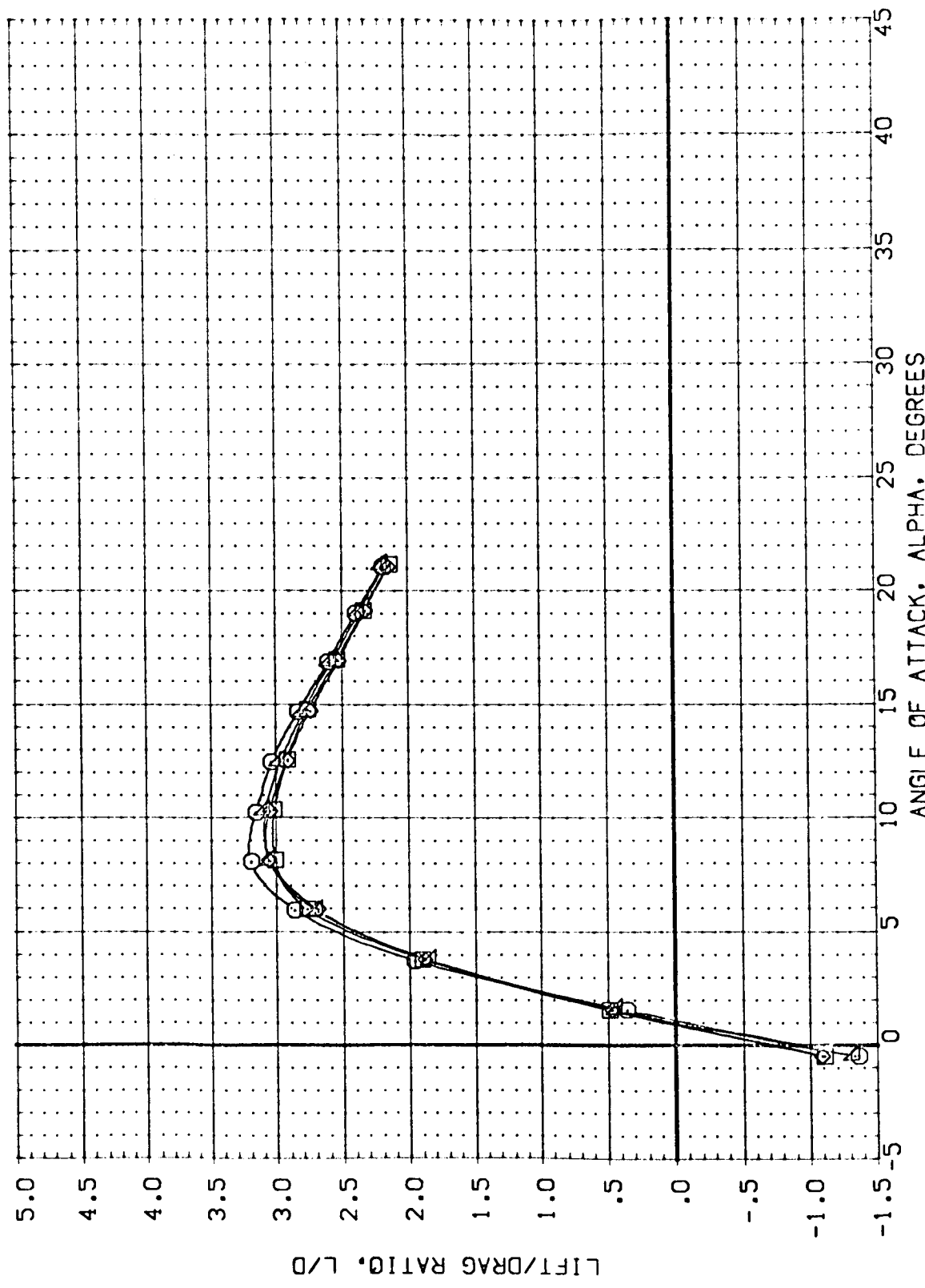


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

(B)MACH = .89

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(F87508)	MSFC 574(CA48) CR8 1399
(F87585)	MSFC 574(CA48) CR8 1399 W/H19
(F87591)	MSFC 574(CA48) CR8 1399 W/H20
(F87590)	MSFC 574(CA48) CR8 1399 W/H22
(F87593)	MSFC 574(CA48) CR8 1399 W/H23

BETA .000
.000
.000
.000
.000

ELEVTR .000
.000
.000
.000
.000

SPCRK 999.990
999.990
999.990
999.990
999.990

BDFLAP .000
.000
.000
.000
.000

REFERENCE INFORMATION

SREF	2690	0000	SCALE
REF	474	8000	SCALE
REF	936	7000	SCALE
XVRP	838	7000	SCALE
YVRP		0000	SCALE
ZVRP		0000	SCALE
SCALE		0000	SCALE

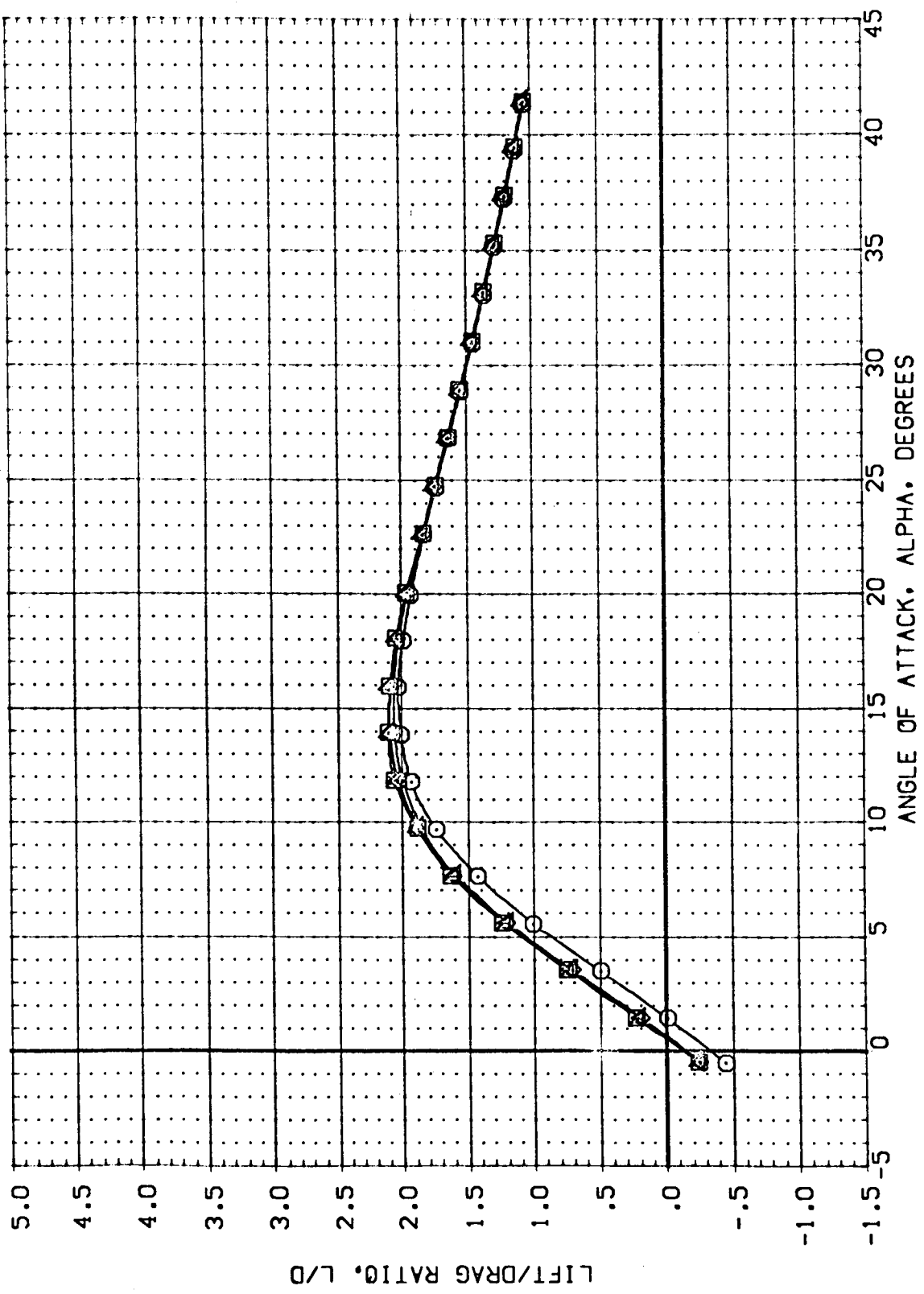


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

(E)MACH = 2.99

DATA SET SYMBOL CONFIGURATION DESCRIPTION BETA ELEVT SPOBRK BDFLAP REFERENCE INFORMATION

(F87S08)	MSFC 574(CA48) CRB 398 V/H19	.000	.000	999.990	.000	SREF 2690.0000
(F87S85)	MSFC 574(CA48) CRB 398 V/H20	.000	.000	999.990	.000	LREF 474.8000
(F87S91)	MSFC 574(CA48) CRB 398 V/H20	.000	.000	999.990	.000	BREF 936.7000
(F87S00)	MSFC 574(CA48) CRB 398 V/H22	.000	.000	999.990	.000	XREF 838.0000
(F87S93)	MSFC 574(CA48) CRB 398 V/H23	.000	.000	999.990	.000	YREF 000.0000
						ZREF 000.0000
						SCALE 0040

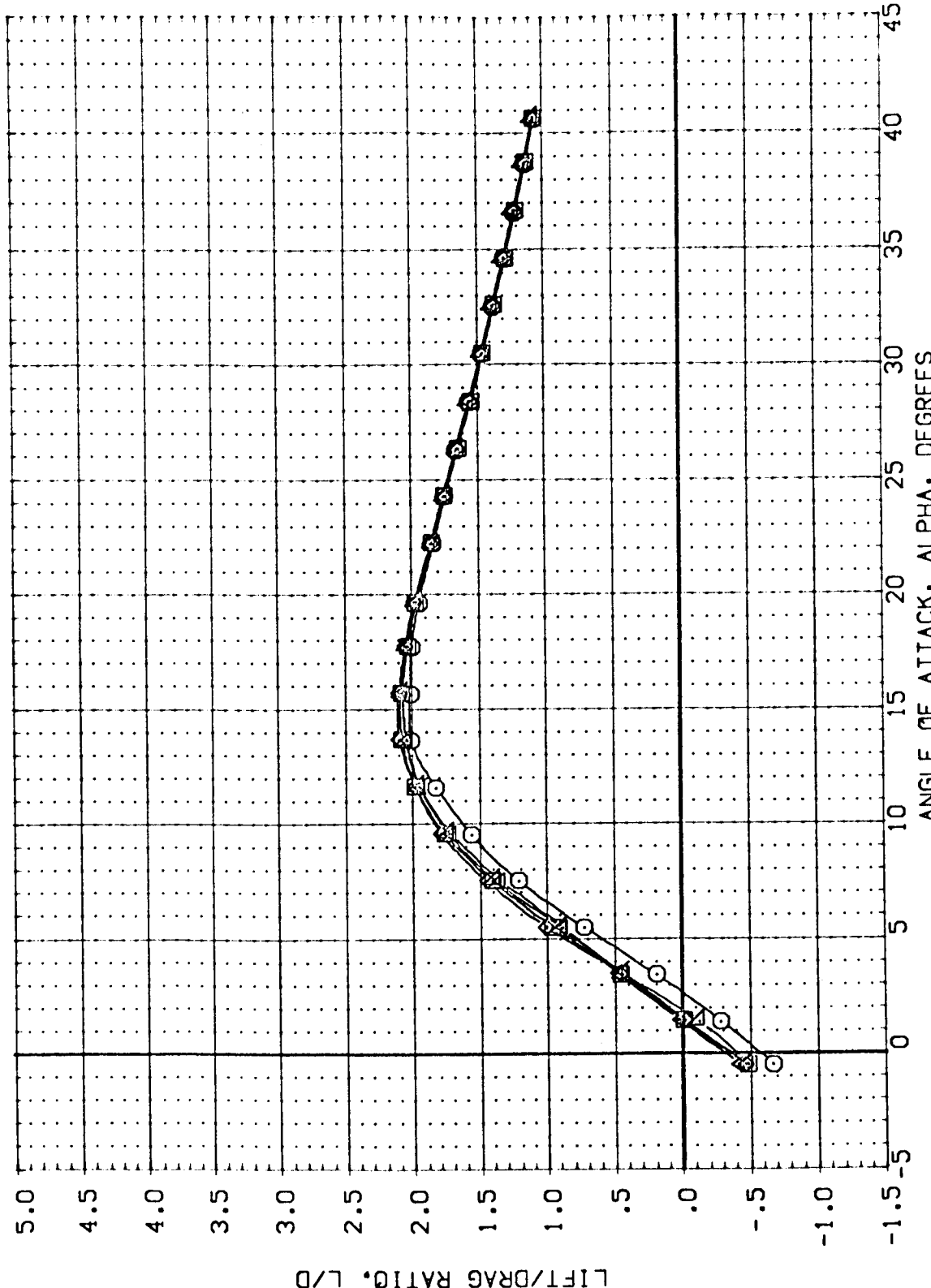


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

(F)MACH = 4.96

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87508)	MSEC 574(CA48) CR3 139B	.000	.000	999.990	.000	SREF 2690.0000
(F87585)	MSEC 574(CA48) CR3 139B W/H19	.000	.000	999.990	.000	LREF 474.8000
(F87591)	MSEC 574(CA48) CR3 139B W/H20	.000	.000	999.990	.000	BREF 936.7000
(F87500)	DATA NOT AVAILABLE	.000	.000	999.990	.000	XTRP 838.7000
(F87593)	MSEC 574(CA48) CR3 139B W/H23	.000	.000	999.990	.000	YTRP .0000
						ZTRP .0000
						SCALE .0040

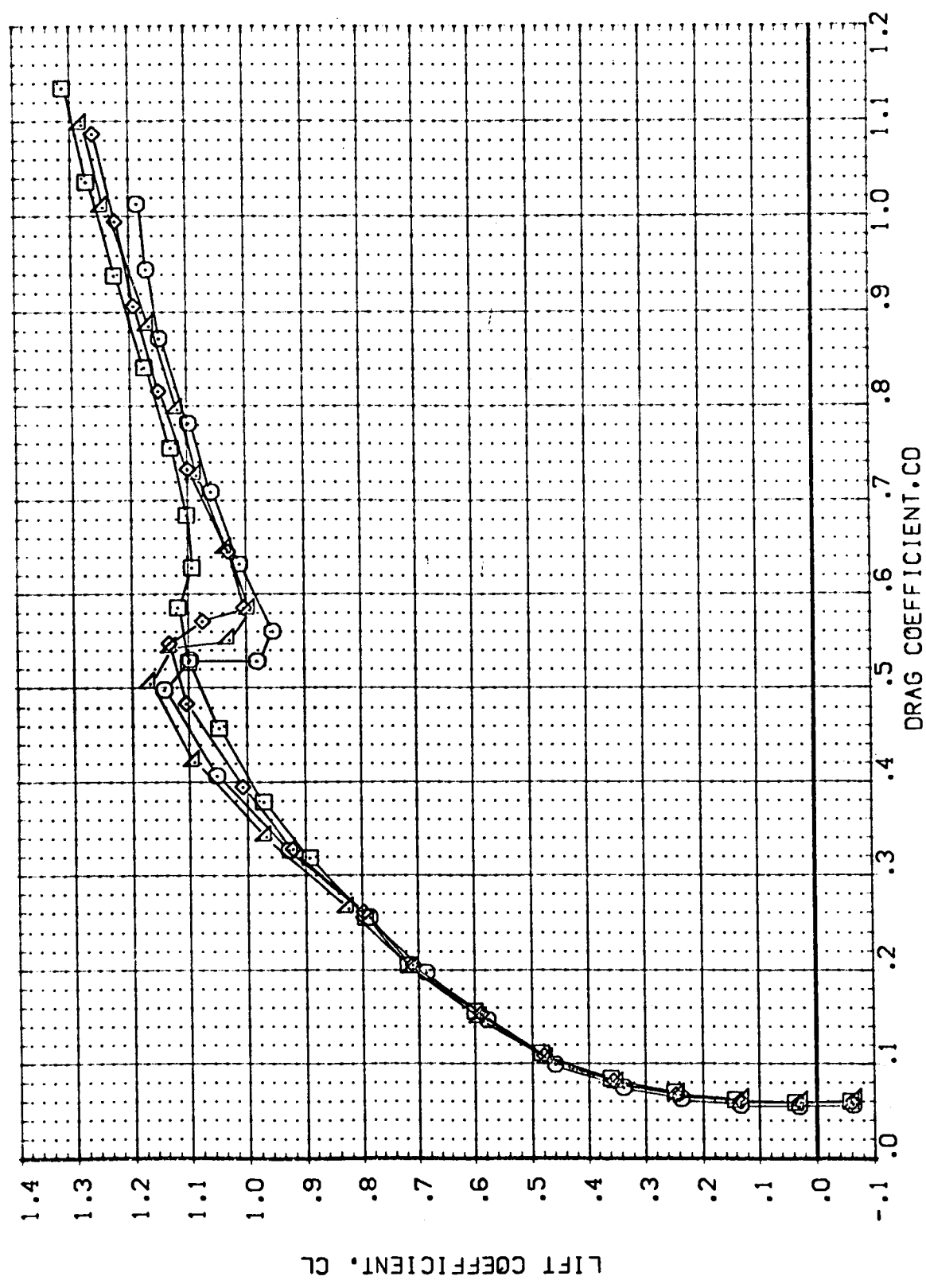


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

(A)MACH = .60

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87508)	MSFC 574(CA48) CR8 1398	.000	.000	999.990	.000	SREF 2690.0000
(F87585)	MSFC 574(CA48) CR8 1399 V/H19	.000	.000	999.990	.000	LREF 474.8000
(F87591)	MSFC 574(CA48) CR8 1399 V/H20	.000	.000	999.990	.000	BREF 836.7000
(F87593)	DATA NOT AVAILABLE	.000	.000	999.990	.000	XMRP 838.7000
	MSFC 574(CA48) CR8 1398 V/H23	.000	.000	999.990	.000	ZMRP .0000
						SCALE .0040

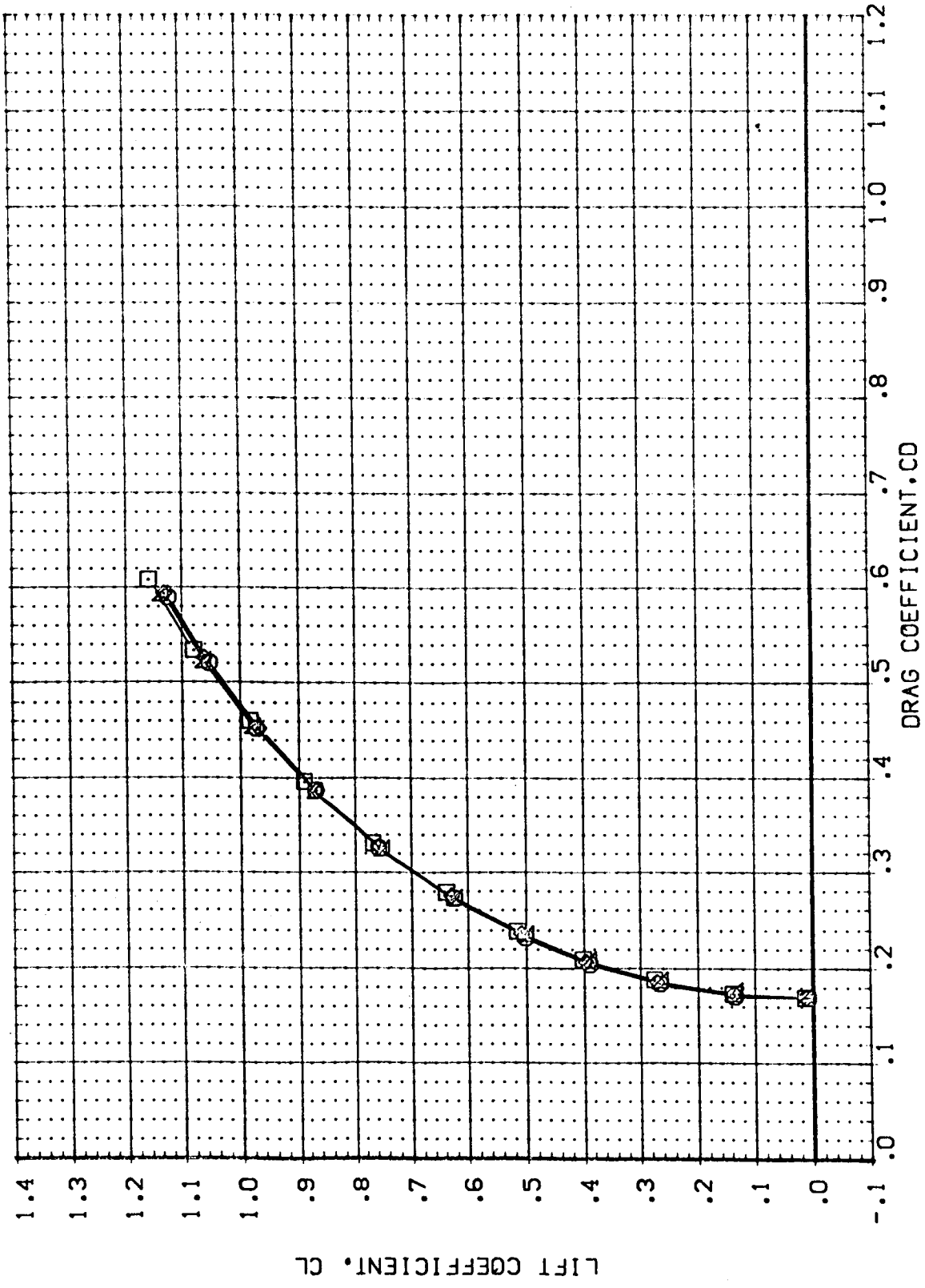


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

(COMACH = 1.20

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87S08) MSFC 574(CA48) CR8 139B W/H19
 (F87S85) MSFC 574(CA48) CR8 139B W/H20
 (F87S91) MSFC 574(CA48) CR8 139B W/H20
 (F87SCC) DATA NO. AVAILABLE
 (F87S93) DATA NO. AVAILABLE

BETA ELEVTR SPCBRK BOFLAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SREF 2690.0000 SC.F. .
 .000 .000 999.990 .000 LREF 474.8000 .
 .000 .000 999.990 .000 BREF 936.7000 .
 .000 .000 999.990 .000 XMRP 938.7000 .
 .000 .000 999.990 .000 YMRP .0000 .
 .000 .000 999.990 .000 ZMRP .0000 .
 .000 .000 .000 .000 SCALE 1.0040

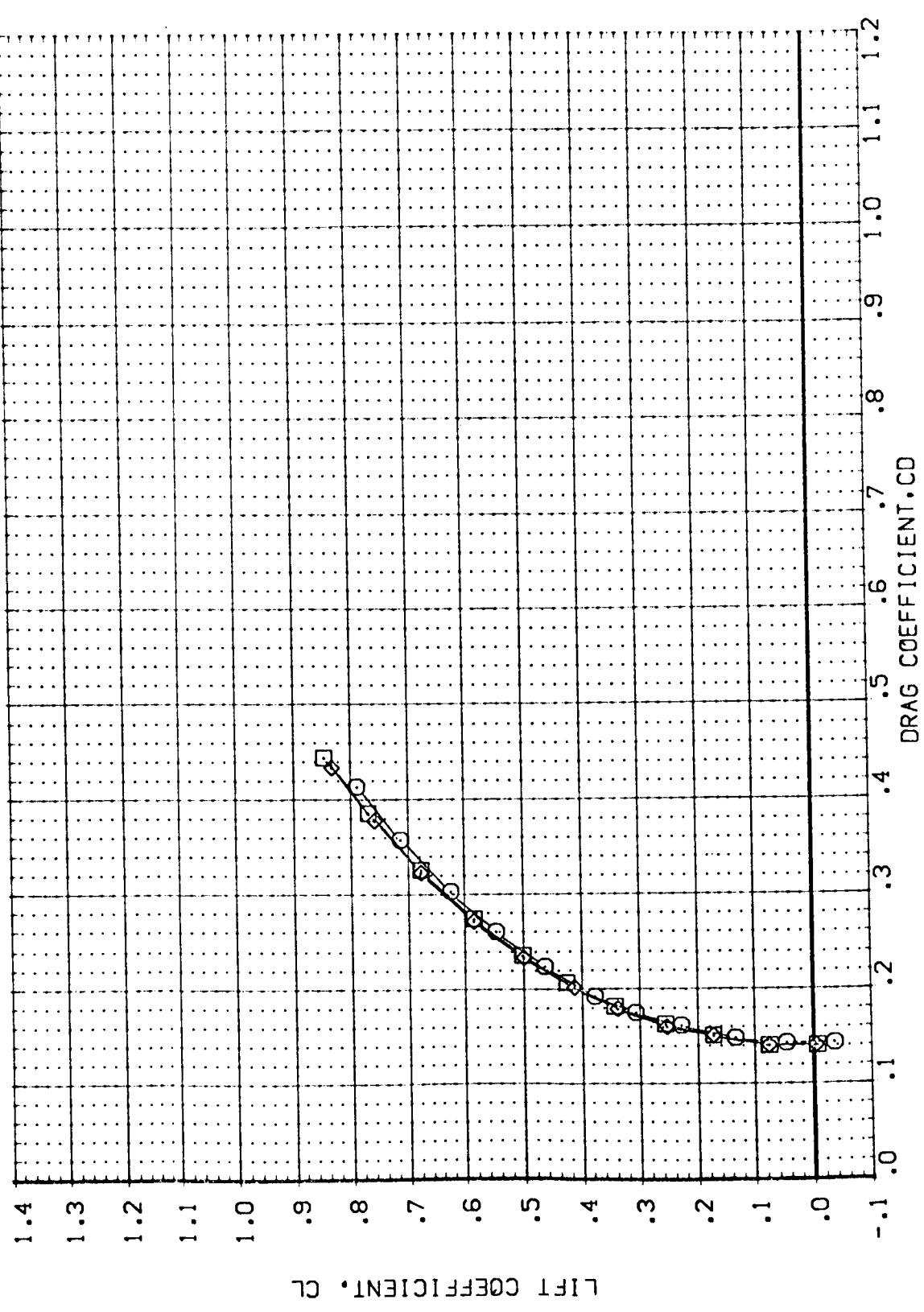


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

() MACH = 1.95

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87508)	MSFC 574(CA48) ORB 1398 W/H19	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(F87585)	MSFC 574(CA48) ORB 1398 W/H19	.000	.000	999.990	.000	LREF 474.8000
(F87591)	MSFC 574(CA48) ORB 1398 W/H20	.000	.000	999.990	.000	BREF 936.7000
(F87500)	MSFC 574(CA48) ORB 1398 W/H22	.000	.000	999.990	.000	XMRP 838.7000
(F87593)	MSFC 574(CA48) ORB 1398 W/H23	.000	.000	999.990	.000	VMRP .0000
						ZMRP .0000
						SCALE .0040

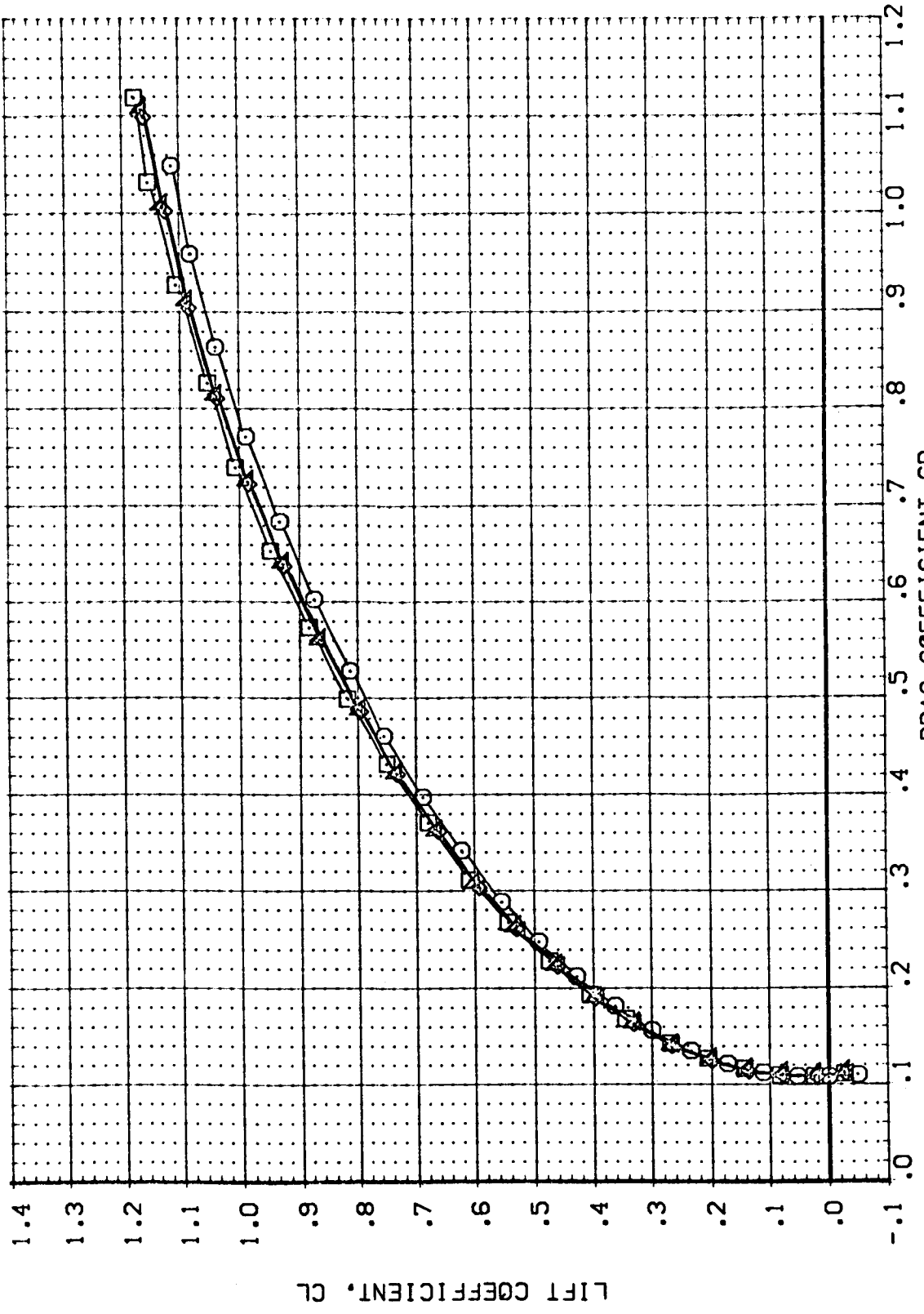


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

(M)MACH = 2.99

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BCFLAP	REFERENCE INFORMATION
(F875C8)	MSFC 574(CA48) CR8 1399	.000	.000	999.990	.000	SREF 2690.0000
(F87585)	MSFC 574(CA48) CR8 1399 W/H19	.000	.000	999.990	.000	LREF 474.8000
(F87591)	MSFC 574(CA48) CR8 1399 W/H20	.000	.000	999.990	.000	BREF 936.7000
(F875C0)	MSFC 574(CA48) CR8 1399 W/H22	.000	.000	999.990	.000	XMRP 838.7000
(F87593)	MSFC 574(CA48) CR8 1399 W/H23	.000	.000	999.990	.000	YMRP .0000
						ZMRP .0040
						SCALE .0040

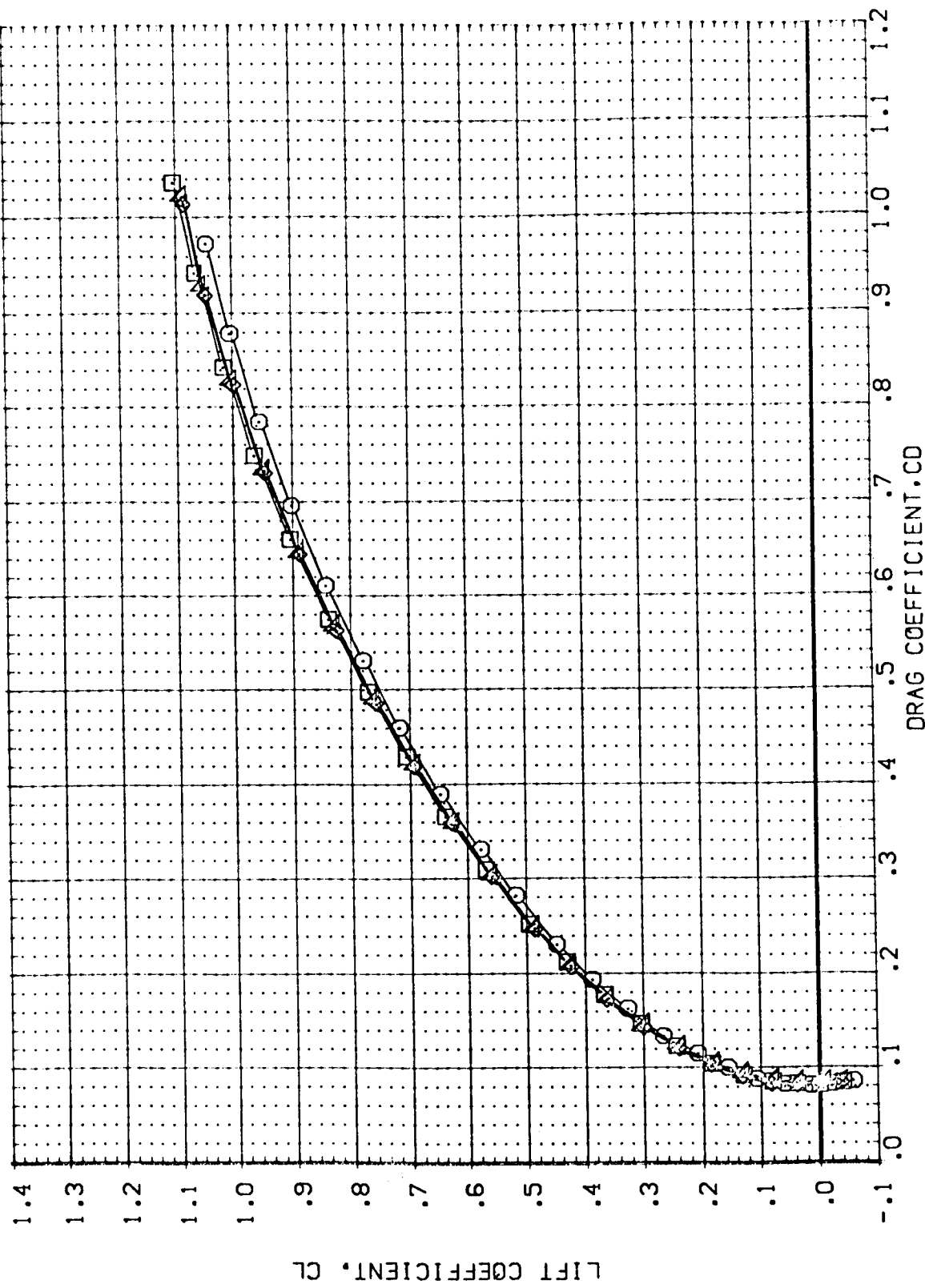


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B

(F)MACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (887508) MSFC 574(OA48) ORB 1398
 (887585) MSFC 574(OA48) ORB 1398 W/H19
 (887591) MSFC 574(OA48) ORB 1398 W/H20
 (887593) MSFC 574(OA48) ORB 1398 W/H22
 (887593) MSFC 574(OA48) ORB 1398 W/H23

BETA ELEVTR SPOBRK BDFLAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SXEF 2690 .0000 SC.F.T.
 .000 .000 999.990 .000 LREF 474.8000
 .000 .000 999.990 .000 BREF 936.7000
 .000 .000 999.990 .000 XREF 864.5000
 .000 .000 999.990 .000 YREF .0000
 .000 .000 999.990 .000 ZREF .0000
 .000 .000 999.990 .000 SCALE .0040

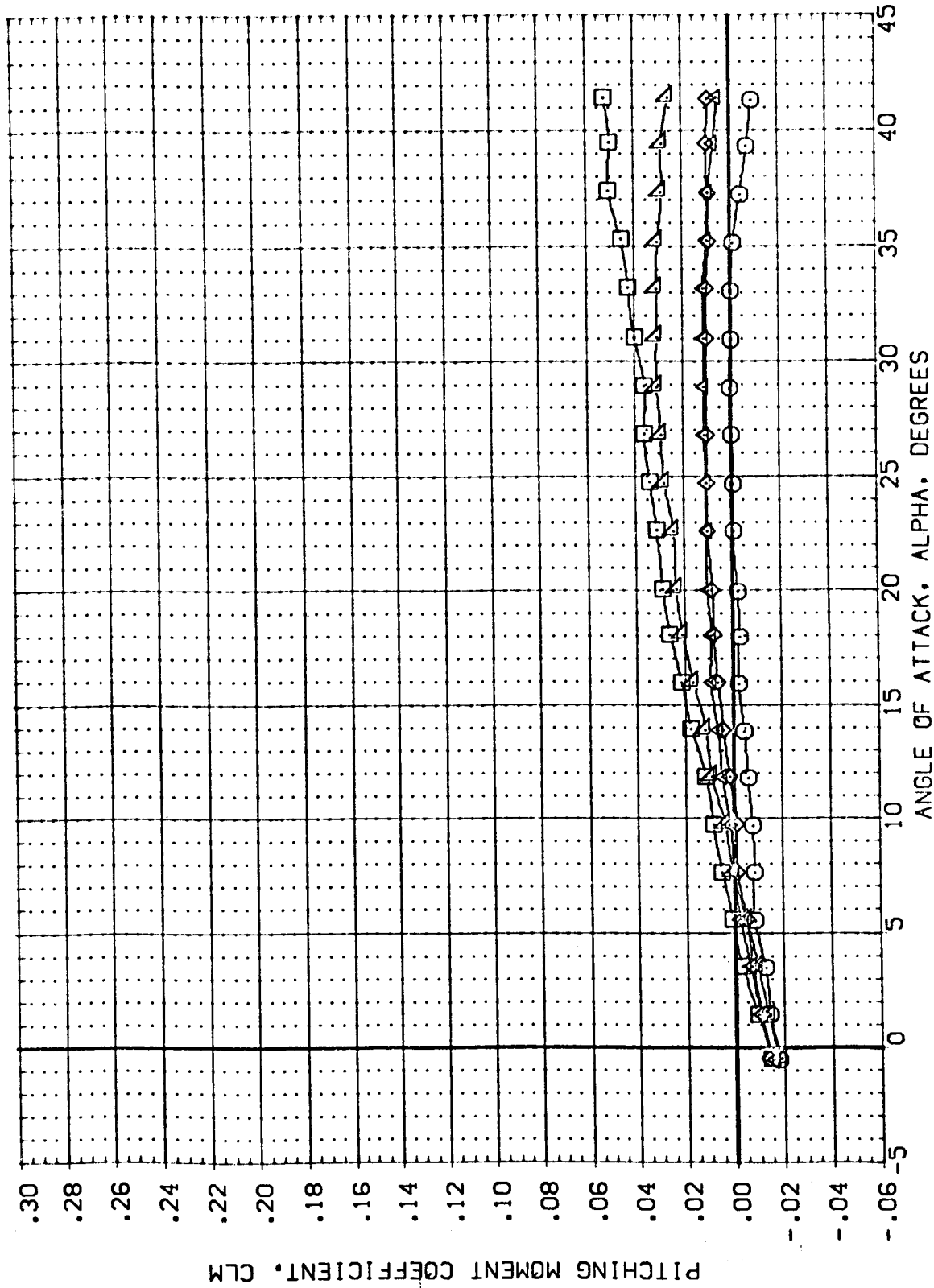


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B (AFT C.G.)

(M)MACH = 2.99

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(S87S08)	MSFC 574(CA48) CR8 139B	.000	.000	999.990	.000	SREF 2690.0000
(S87S09)	MSFC 574(CA48) CR8 139B W/H19	.000	.000	999.990	.000	LRFE 474.8000
(S87S10)	MSFC 574(CA48) CR8 139B W/H20	.000	.000	999.990	.000	BRFE 935.7000
(S87S11)	MSFC 574(CA48) CR8 139B W/H22	.000	.000	999.990	.000	XMRP 864.5000
(S87S12)	MSFC 574(CA48) CR8 139B W/H23	.000	.000	999.990	.000	ZMRP 1000.0000
(S87S93)		.000	.000	999.990	.000	SCALE .0040

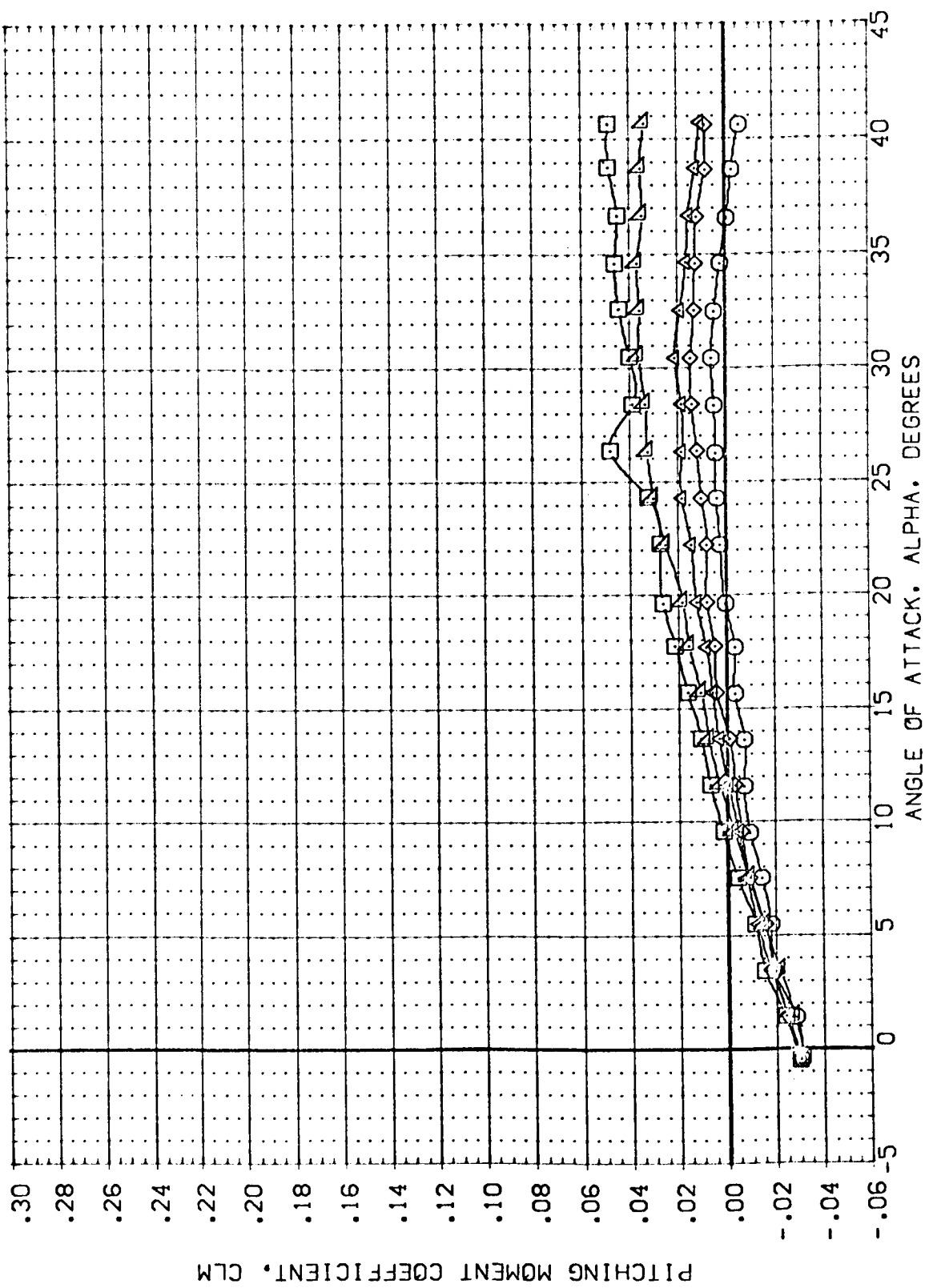


FIG. 13 EFFECT OF TRIMMER ON ORBITER 139B (AFT C.G.)

CDMACH = 4.96

DATA SET SYMBO... CONFIGURATION DESCRIPTION REFERENCE INFORMATION

DATA SET SYMBO...	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDBRK	BDFLAP	REF. INFO
(F87C08)	MSFC 574(CA48) CRB 1399	.000	.000	999.990	.000	SPEF 2690.0000 SC.F.T.
(F87C15)	MSFC 574(CA48) CRB 1399	.000	15.000	999.990	13.750	L-REF 474.8000
(F87C21)	MSFC 574(CA48) CRB 1399	.000	-40.000	999.990	-14.200	B-REF 836.7000
(F87C18)	MSFC 574(CA48) CRB 1399	.000	-20.000	999.990	.000	X-REF 839.7000
(F87C24)	MSFC 574(CA48) CRB 1399	.000	.000	999.990	.000	Y-REF .0000
(F87S98)	DATA NOT AVAILABLE	.000	-20.000	999.990	-14.200	Z-REF .0000
						SCALE .0010

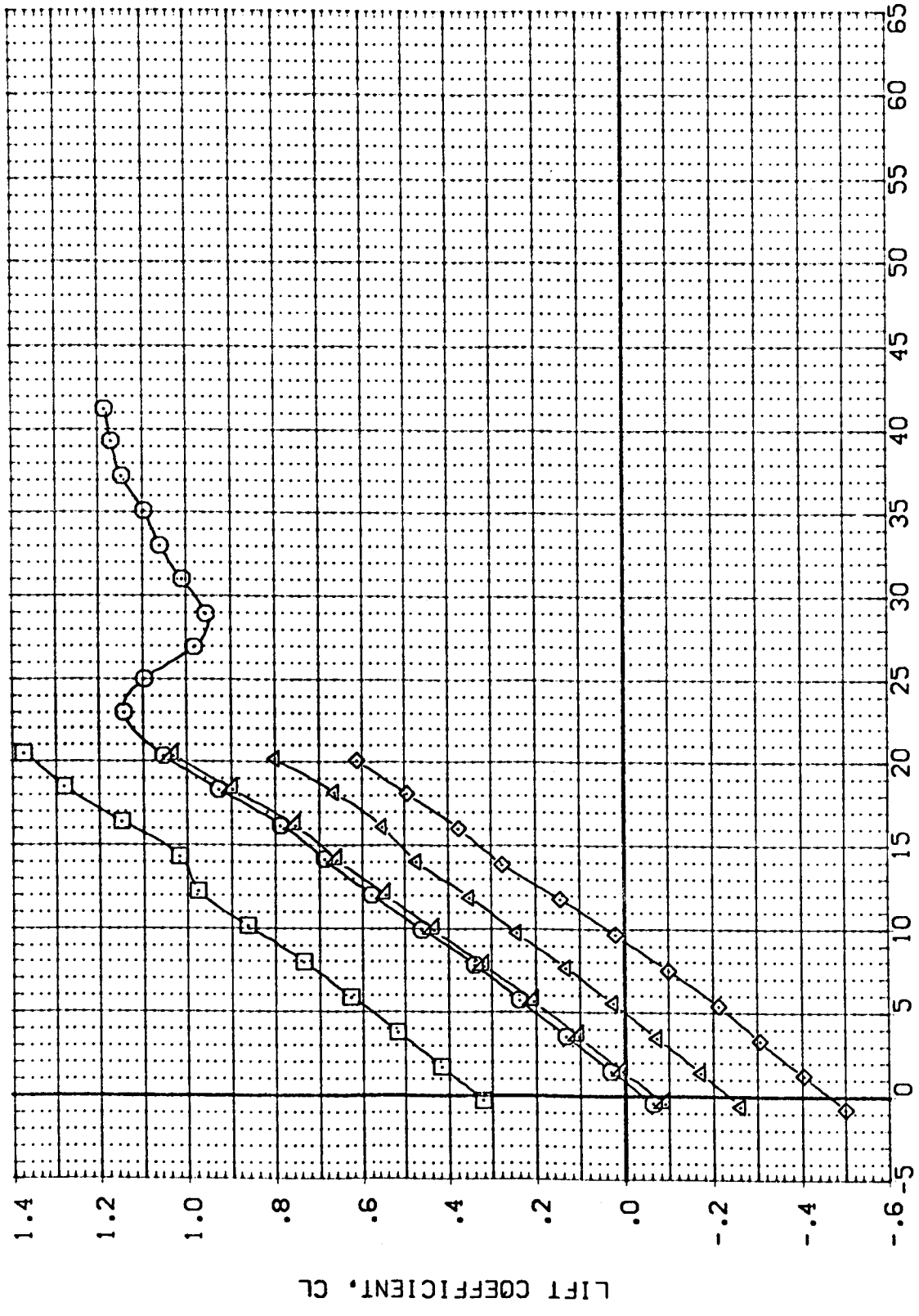


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

(A)MACH = .60

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87C08) MSFC 574 (CA48) CRB 1398
 (F87C15) MSFC 574 (CA48) CRB 1398
 (F87C21) MSFC 574 (CA48) CRB 1398
 (F87C18) MSFC 574 (CA48) CRB 1398
 (F87C24) MSFC 574 (CA48) CRB 1398
 (F87C98) DATA NOT AVAILABLE

BETA ELEVTR SPDRK BDFLAP REFERENCE INFORMATION
 .000 .000 999.999 .000 SPEC 2690 .0000 SC.F.T.
 .000 .000 999.999 .000 LREF 474.8000
 .000 .000 999.999 .000 XMRP 936.7000
 .000 .000 999.999 .000 VMRP 838.7000
 .000 .000 999.999 .000 ZMRP .0000
 .000 .000 999.999 .000 SCALE .0040

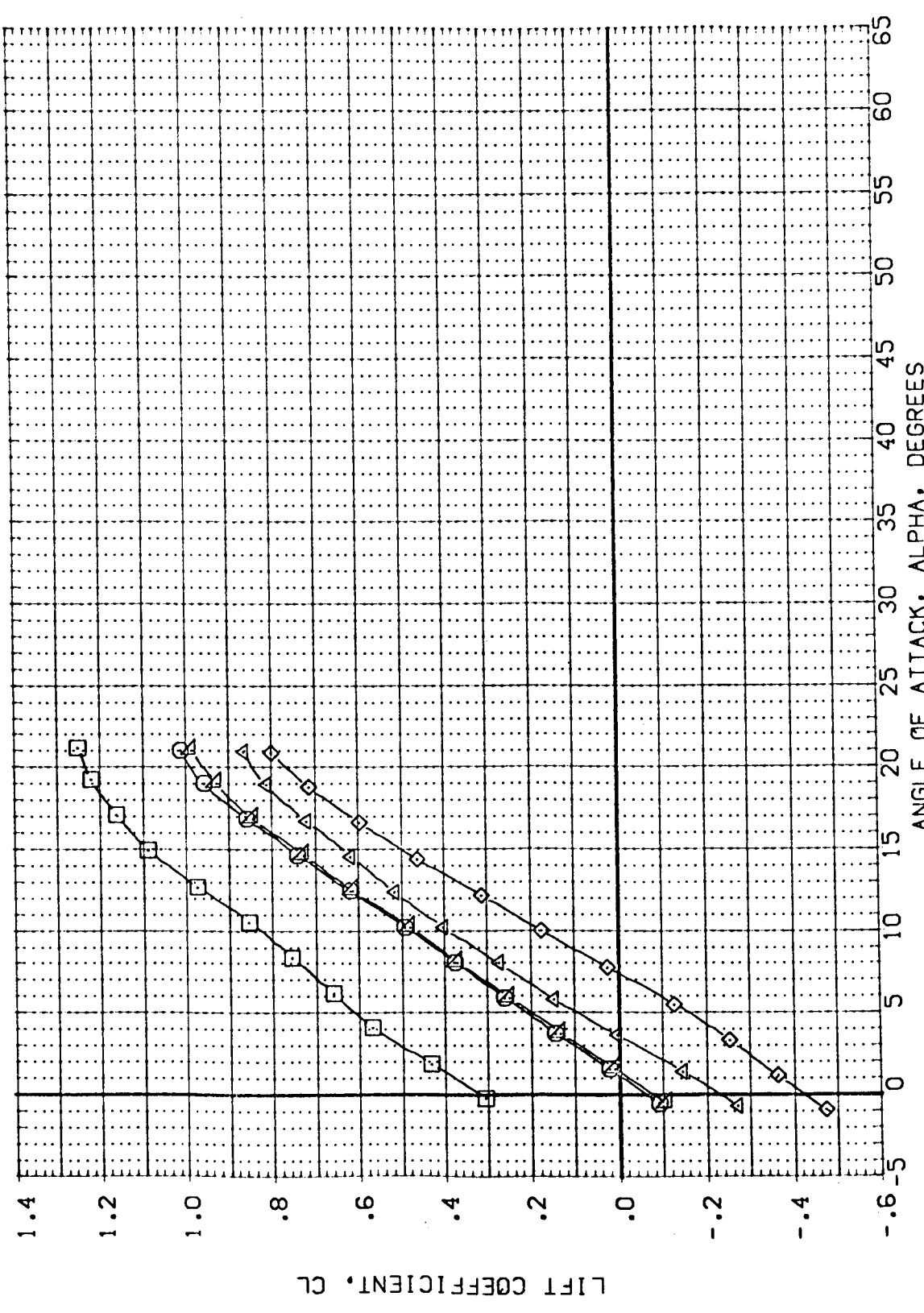


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398

(3) MACH = .89

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BCFLAP	REFERENCE INFORMATION
(F87C08)	MSFC 574(OA48) CRB 1399	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(F87C15)	MSFC 574(OA48) CRB 1393	.000	15.000	999.990	13.750	UREF 474.8000
(F87C21)	MSFC 574(OA48) CRB 1398	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87C18)	MSFC 574(OA48) CRB 1399	.000	-20.000	999.990	.000	XMRP 838.7000
(F87C24)	MSFC 574(OA48) CRB 1398	.000	-20.000	999.990	-14.250	YMRP .0000
(F87S98)	DATA NOT AVAILABLE	.000	-20.000	999.990	-14.250	ZMRP .0000
					SCALE	.0040

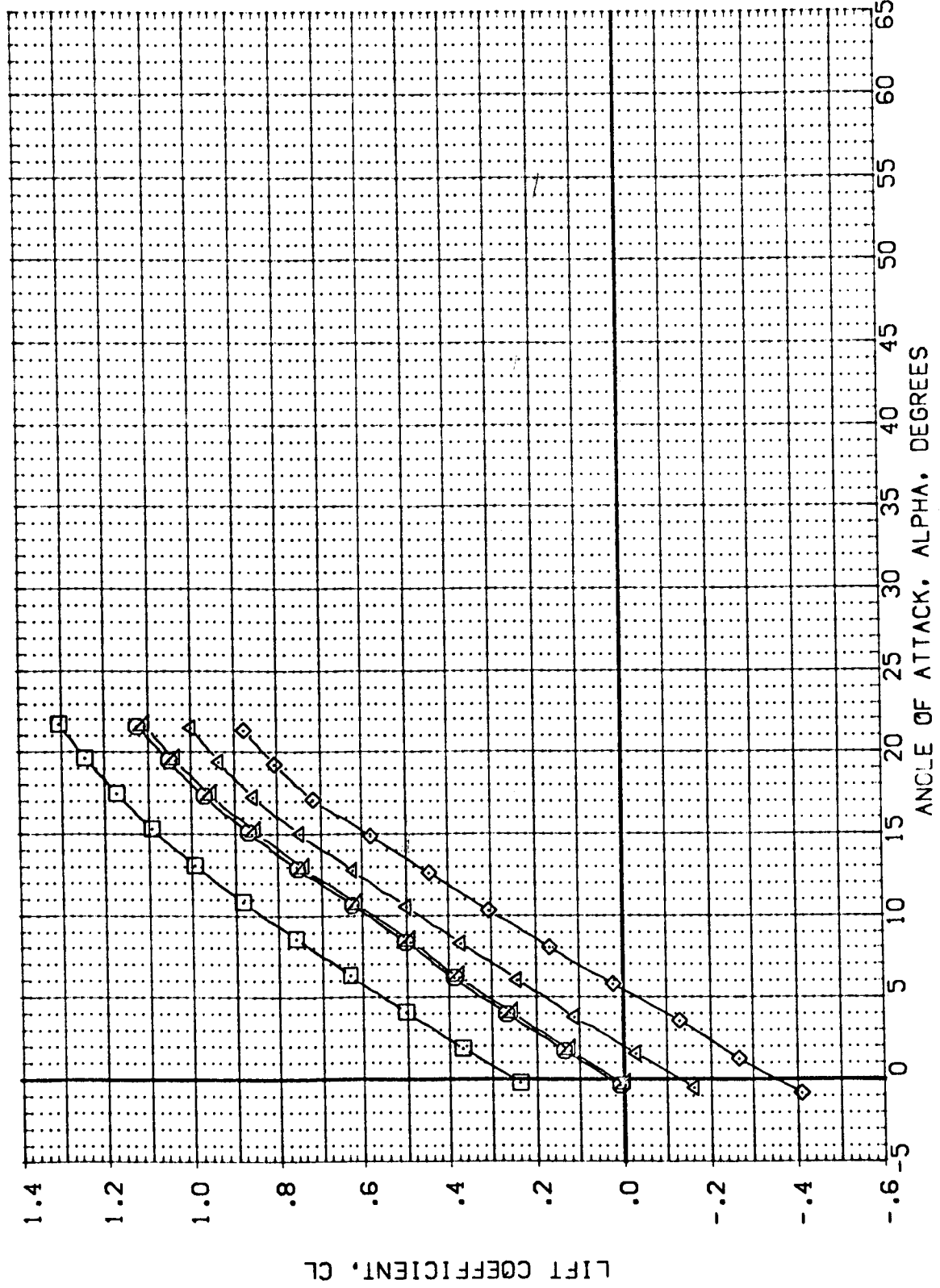


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

(C)MACH = 1.20

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(F87008) MSFC 574(CA48) CRB 1398
 (F87115) MSFC 574(CA48) CRB 1398
 (F87211) MSFC 574(CA48) CRB 1398
 (F87318) MSFC 574(CA48) CRB 1398
 (F87324) MSFC 574(CA48) CRB 1398
 (F87368) DATA NOT AVAILABLE

BETA .000
 ELEVTR .000
 SPOBRK 999.990
 BOFLAP .000
 REF 2690.0000
 LREF 474.8000
 BRPF 936.7000
 XMRP 838.7000
 YMRP .0000
 ZMRP .0000
 SCALE .0040

REFERENCE INFORMATION SQ. FT.

SREF 2690.0000
 LREF 474.8000
 BRPF 936.7000
 XMRP 838.7000
 YMRP .0000
 ZMRP .0000
 SCALE .0040

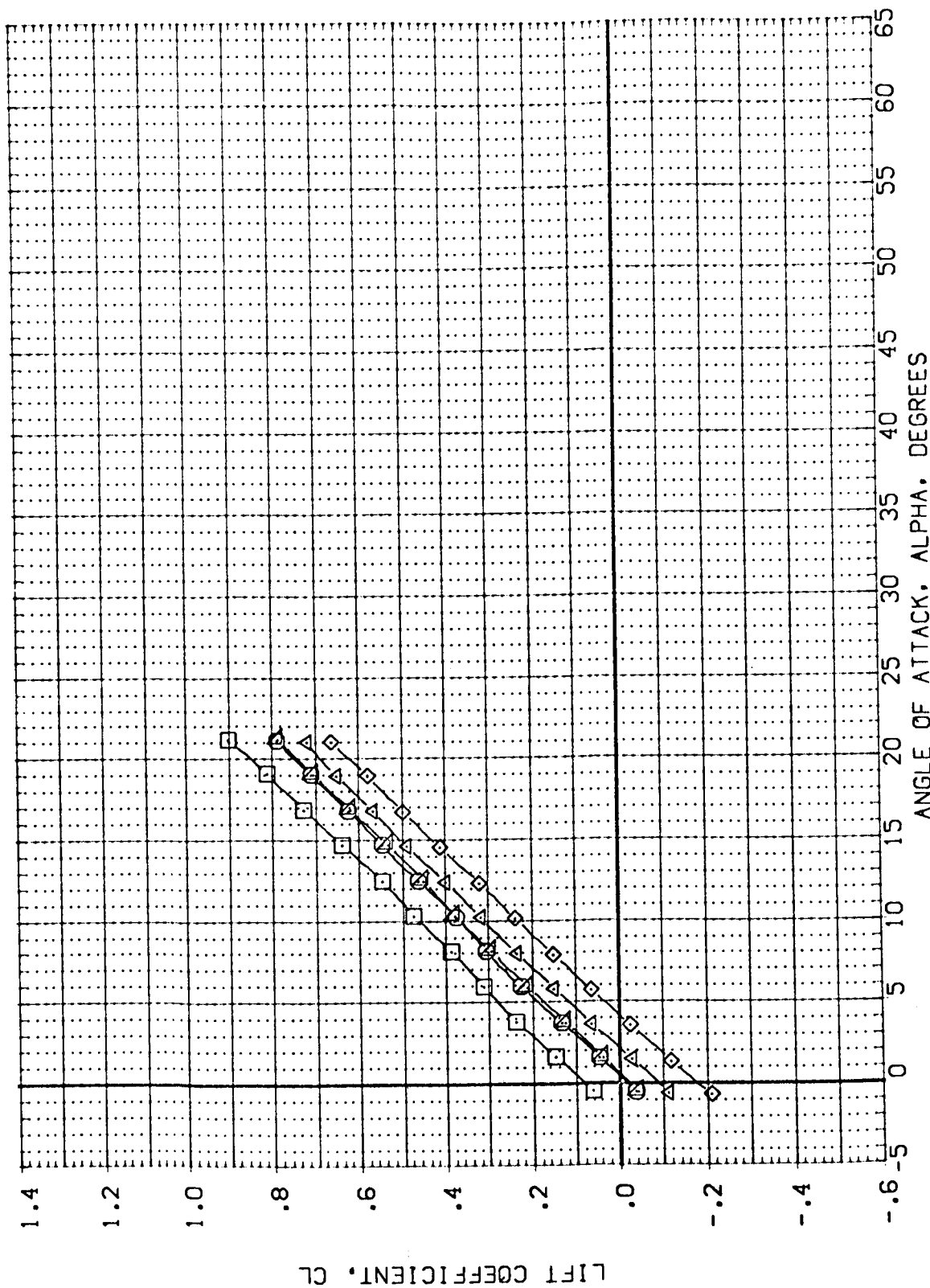


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398
 (M)MACH = 1.95

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(F87C08)	MSFC 574(CA48) CRB 1398	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(F87C15)	MSFC 574(CA48) CRB 1399	.000	15.000	999.990	13.750	LREF 474.8000
(F87C21)	MSFC 574(CA48) CRB 1399	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87C18)	MSFC 574(CA48) CRB 1398	.000	-20.000	999.990	.000	XMRP 838.7000
(F87C24)	MSFC 574(CA48) CRB 1398	.000	.000	999.990	-14.250	YMRP .0000
(F87S98)	DATA NOT AVAILABLE	.000	-20.000	999.990	-14.250	ZMRP .0000
					SCALE	.0010

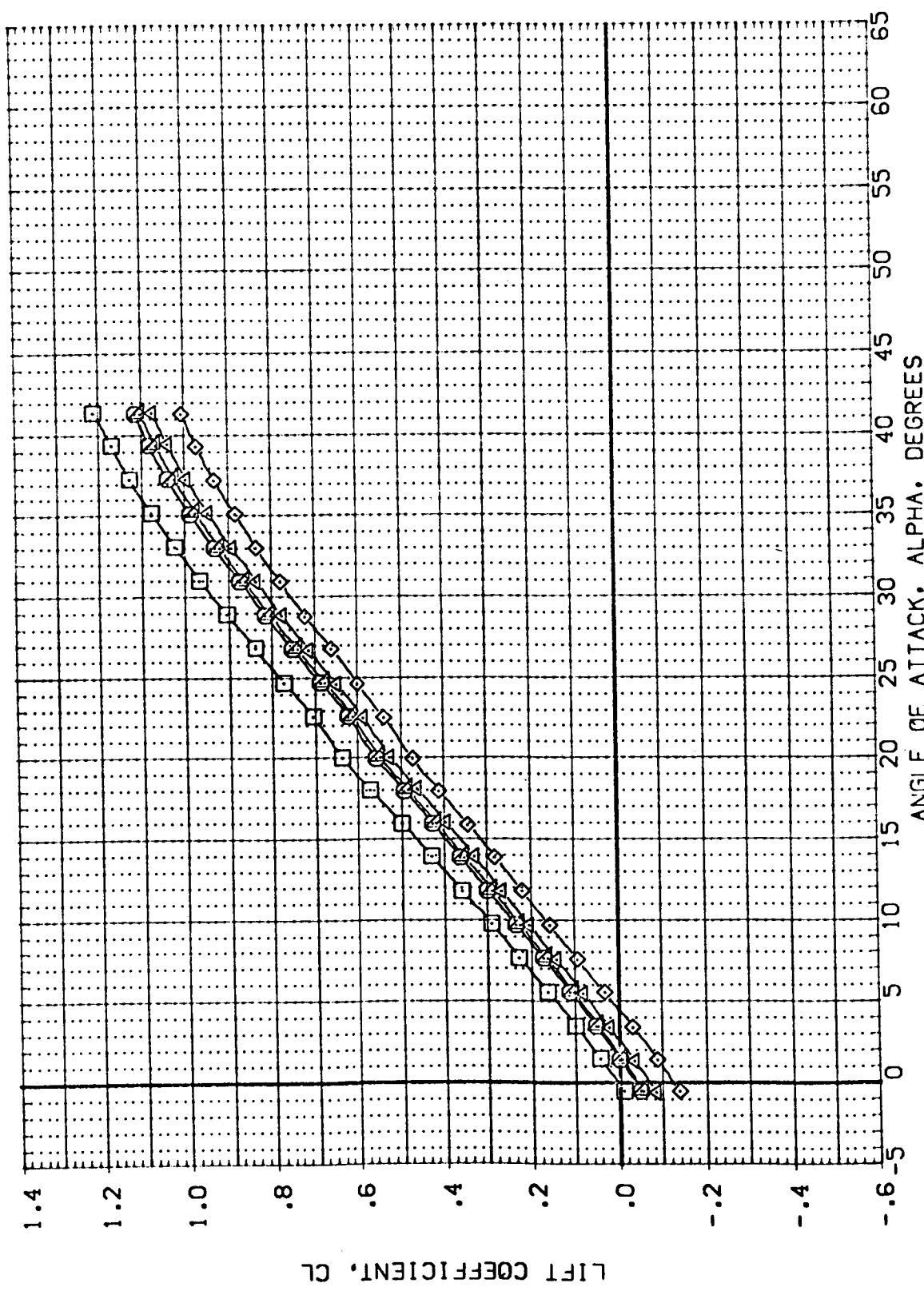


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398

(M)MACH = 2.99

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(F87C08)	MSFC 574(CA48)	CR8 398
(F87C15)	MSFC 574(CA48)	CR8 398
(F87C21)	MSFC 574(CA48)	CR8 398
(F87C18)	MSFC 574(CA48)	CR8 398
(F87C24)	MSFC 574(CA48)	CR8 398
(F87S98)	MSFC 574(CA48)	CR8 398

BETA ELEVTR SPDDBK BOFLAP REFERENCE INFORMATION

.000	999.990	.000	2890.000	SO.FT.
.000	999.990	.000	474.800	SO.FT.
.000	999.990	13.750	636.700	SO.FT.
.000	999.990	-14.250	838.000	SO.FT.
.000	999.990	.000	0.000	SO.FT.
.000	999.990	-14.250	0.000	SO.FT.
.000	999.990	-14.250	0.000	SO.FT.
.000	999.990	-14.250	0.000	SO.FT.
.000	999.990	-14.250	0.000	SO.FT.
.000	999.990	-14.250	0.000	SO.FT.

SCALE

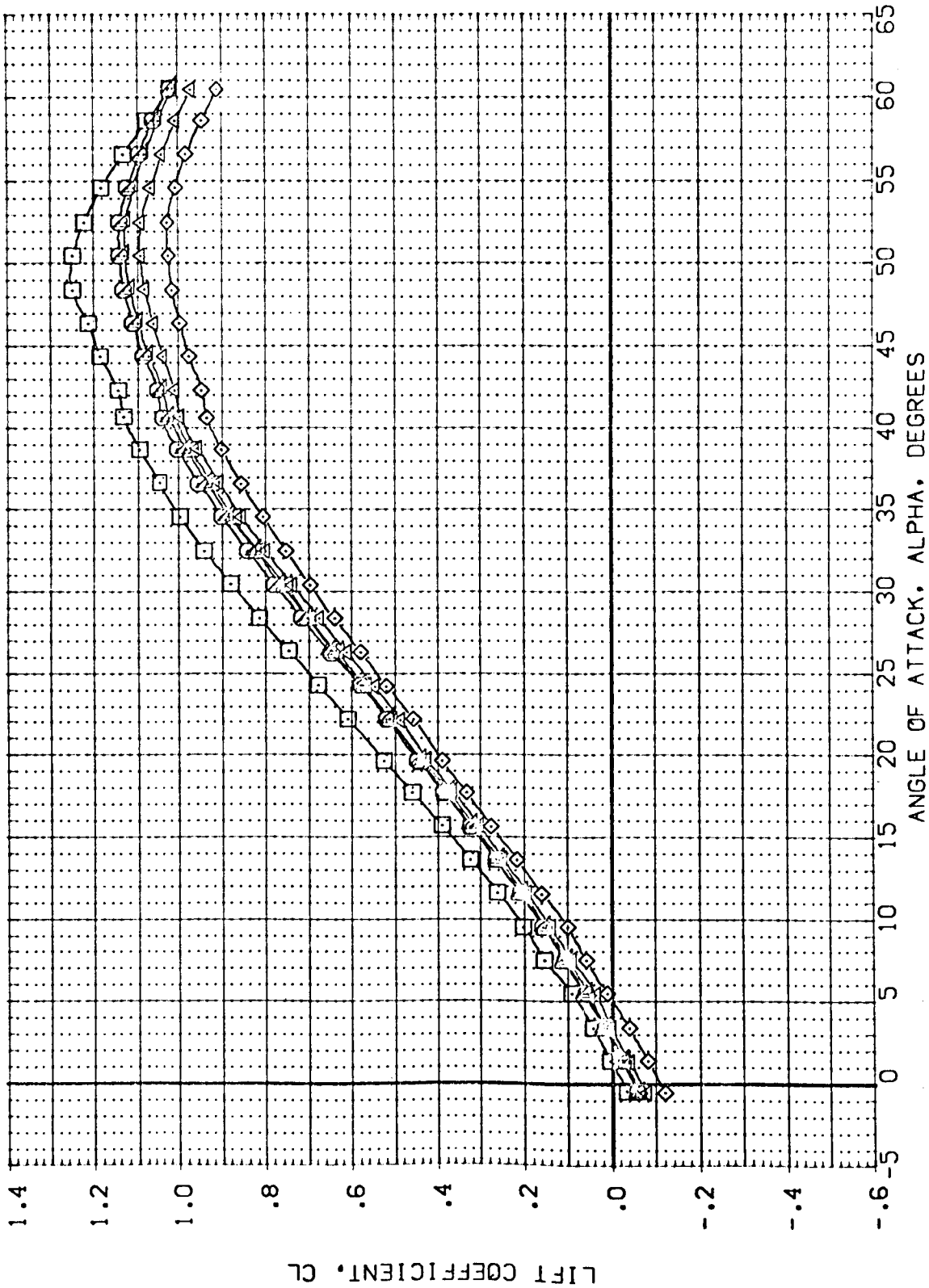


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

(F)MACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION REFERENCE INFORMATION
 (187C08) MSFC 574 (CA48) CRB 1398 SREF 2690.0000
 (187C15) MSFC 574 (CA48) CRB 1398 LREF 474.8000
 (187C21) MSFC 574 (CA48) CRB 1398 BREF 936.7000
 (187C18) MSFC 574 (CA48) CRB 1398 XMRP 838.0000
 (187C24) MSFC 574 (CA48) CRB 1398 YMRP .0000
 (187S98) DATA NOT AVAILABLE ZMRP .0000
 SCALE .0040

BETA ELEVTR SPOBRK BDFLAP
 .000 .000 999.990 .000
 .000 15.000 999.990 13.750
 .000 -40.000 999.990 -14.250
 .000 -20.000 999.990 .000
 .000 .000 999.990 -14.250
 .000 -20.000 999.990 -14.250

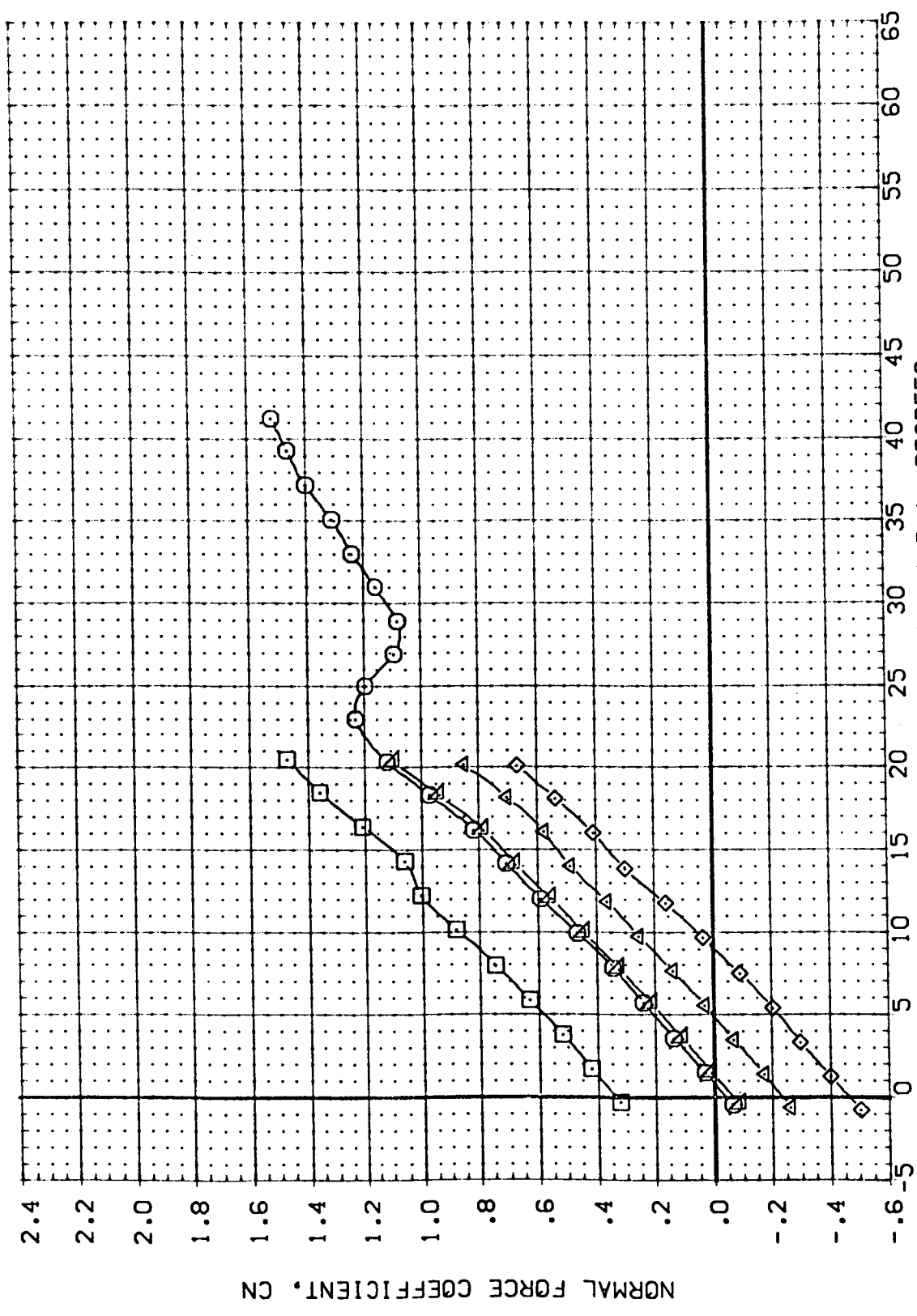


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

(A)MACH = .60

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87C08) MSFC 574(CA48) CRB 139B
 (F87C15) MSFC 574(CA48) CRB 139B
 (F87C21) MSFC 574(CA48) CRB 139B
 (F87C18) MSFC 574(CA48) CRB 139B
 (F87C24) MSFC 574(CA48) CRB 139B
 DATA NOT AVAILABLE

BETA ELEVTR SPDWRK BOFLAP SREF REFERENCE INFORMATION
 .000 .000 999.990 .000 2690.0000 SC.F.T.
 .000 15.000 999.990 13.750 474.8000 N.
 .000 -40.000 999.990 -14.250 936.7000 N.
 .000 -20.000 999.990 .000 838.7000 N.
 .000 .000 999.990 -14.250 .0000
 .000 -20.000 999.990 -14.250 .0000
 SCALE .0040

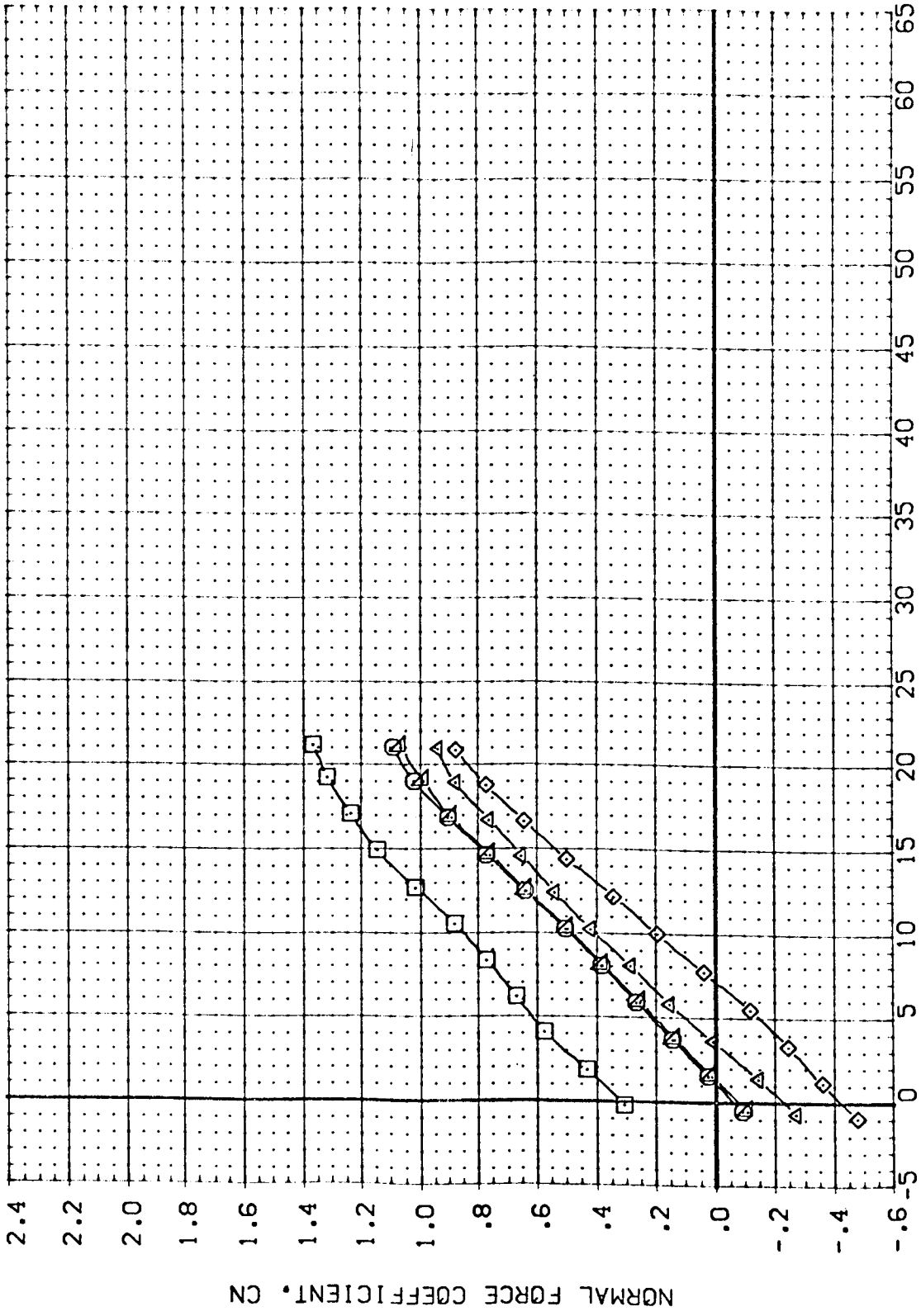


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87C08) MSFC 574(CA48) CRB 399
 (F87C15) MSFC 574(CA48) CRB 393
 (F87C21) MSFC 574(CA48) CRB 398
 (F87C18) MSFC 574(CA48) CRB 399
 (F87C24) MSFC 574(CA48) CRB 399
 (F87S98) DATA NOT AVAILABLE

BETA ELEVTR SPOBRK BOFLAP REFERENCE INFORMATION
 .000 999.990 .000 SREF 2690.0000 SQ.FT.
 .000 15.000 .000 LREF 474.8000 IN.
 .000 -40.000 .000 BREF 936.7000 IN.
 .000 -20.000 .000 XMRP 839.7000 IN.
 .000 .000 .000 YMRP .0000 IN.
 .000 -20.000 .000 ZMRP .0000 IN.
 .000 .000 .000 SCALE .0010

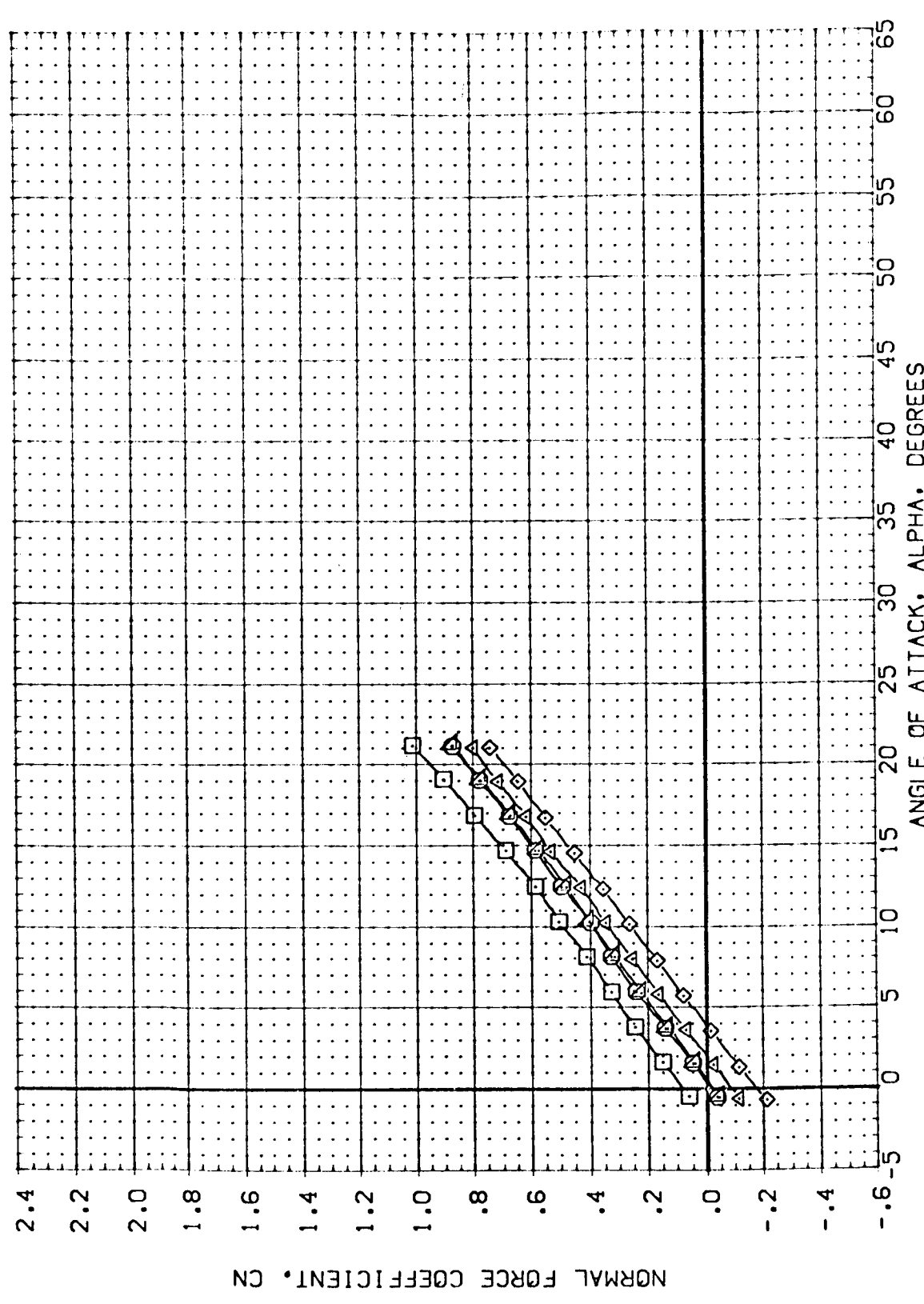


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

(M)MACH = 1.95

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87C08)	MSEC 574(CA48) CRB 1398	.000	.000	999.990	.000	SREF 2690.0000 SC.FT.
(F87C15)	MSEC 574(CA48) CRB 1398	.000	15.000	999.990	13.750	LREF 474.8000
(F87C21)	MSEC 574(CA48) CRB 1398	.000	-40.000	999.990	-14.250	BREF 938.7000
(F87C18)	MSEC 574(CA48) CRB 1398	.000	-20.000	999.990	.000	XMRP 838.7000
(F87C24)	MSEC 574(CA48) CRB 1398	.000	.000	999.990	-14.250	YMRP .0000
(F87S98)	DATA NOT AVAILABLE	.000	-20.000	999.990	-14.250	ZMRP .0000
					SCALE	.0040

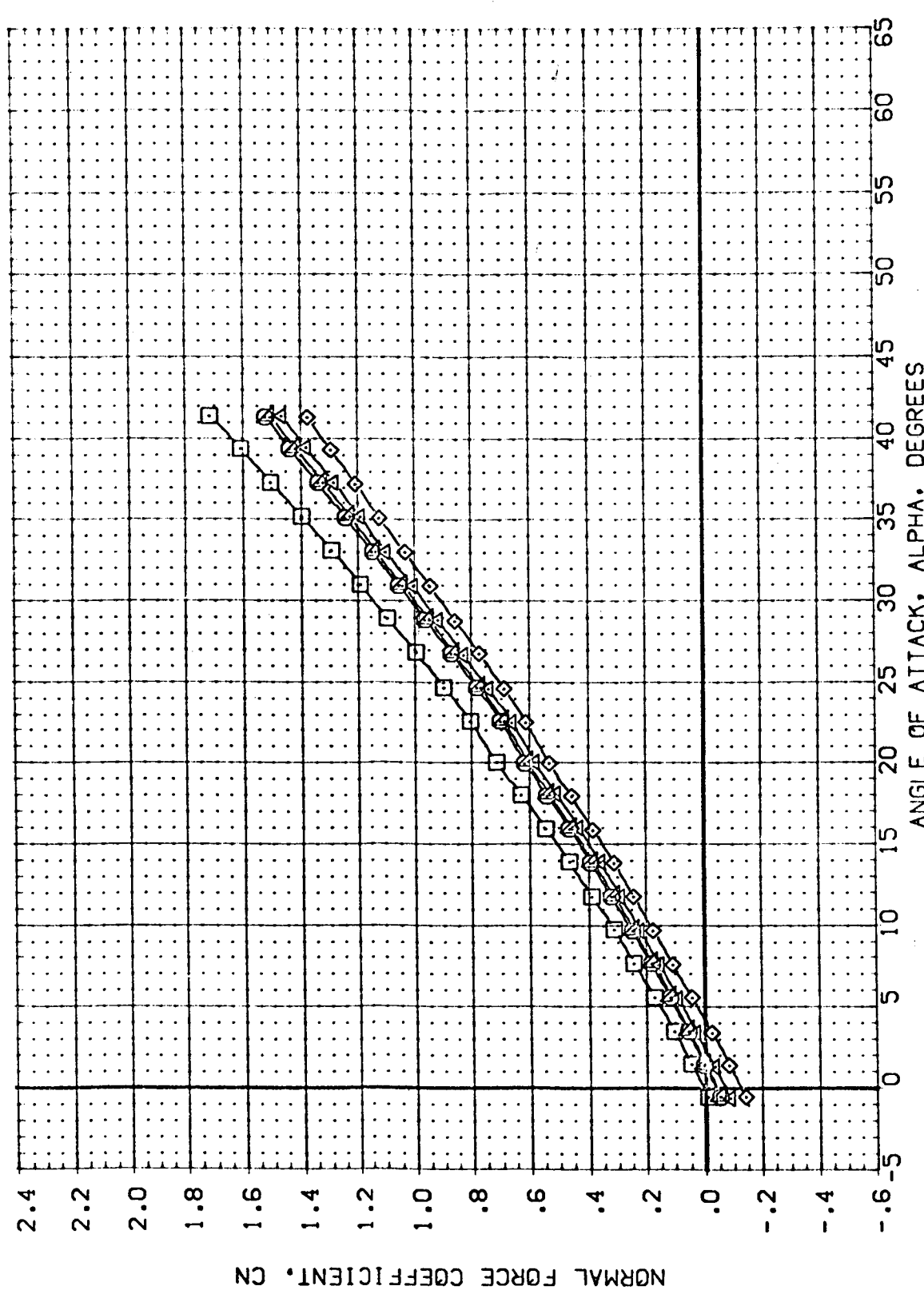
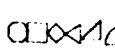


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398

DATA SET SYMBOL:  CONFIGURATION DESCRIPTION: MSFC 574(CA48) CRB 1399
 (FB7C08) MSFC 574(CA48) CRB 1399
 (FB7C15) MSFC 574(CA48) CRB 1399
 (FB7C21) MSFC 574(CA48) CRB 1399
 (FB7C18) MSFC 574(CA48) CRB 1399
 (FB7C24) MSFC 574(CA48) CRB 1399
 (FB7S98) DATA NOT AVAILABLE

BETA: .000
 .000
 .000
 .000
 .000
 .000
 .000
 .000

ELEVTR: .000
 15.000
 -40.000
 -20.000
 -20.000

SPOBRK: 999.990
 999.990
 999.990
 999.990
 999.990

BOFLAP: .000
 13.750
 -14.250
 .000
 -14.250

SCALE: .000
 .000
 .000
 .000
 .000
 .000
 .000
 .000

REFERENCE INFORMATION: SREF 2690.0000 SC.FT.
 LREF 474.8000 N.
 BREF 936.7000 N.
 XMRP 838.7000 N.
 YMRP .0000 N.
 ZMRP .0000 N.
 SCALE .0000

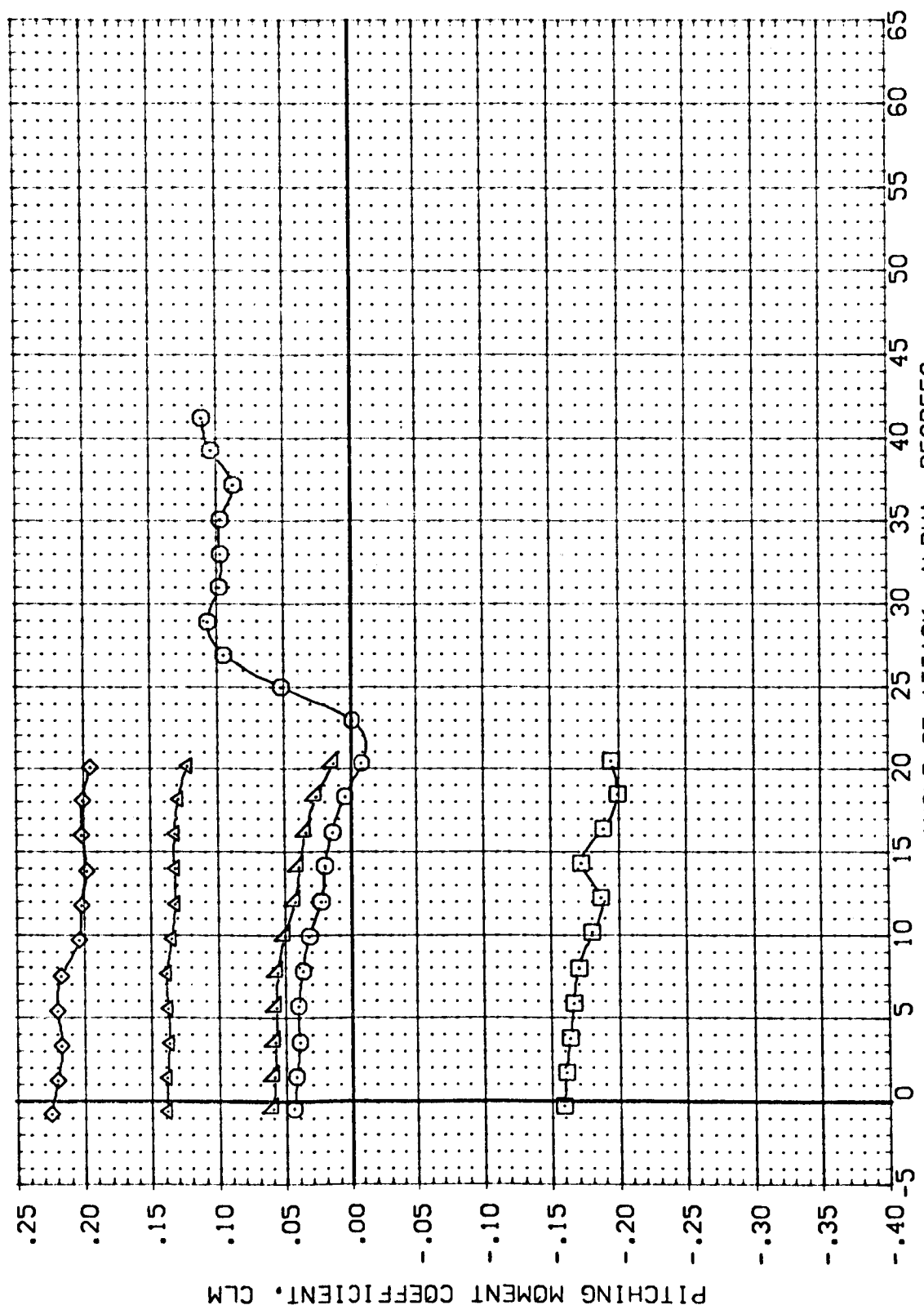


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

(A) MACH = .60

DATA SET SYMBOL: (F87C08) (F87C15) (F87C21) (F87C18) (F87C24) (F87S98)
 CONFIGURATION DESCRIPTION: MSFC 574(CA48) CRB 1398 MSFC 574(CA48) CRB 1398 MSFC 574(CA48) CRB 1398 MSFC 574(CA48) CRB 1398 MSFC 574(CA48) CRB 1398
 DATA NO.: AVAILABLE

BETA: .000 .000 .000 .000 .000 .000
 ELEVTR: .000 15.000 40.000 -20.000 -20.000
 SPOBRK: 999.990 999.990 999.990 999.990 999.990
 BCFLAP: .000 13.750 -14.250 .000 -14.250
 REFERENCE INFORMATION: SREF 2690.0000 LREF 474.8000 BREF 936.7000 XMRP 838.7000 YMRP .0000 ZMRP .0000 SCALE .0040

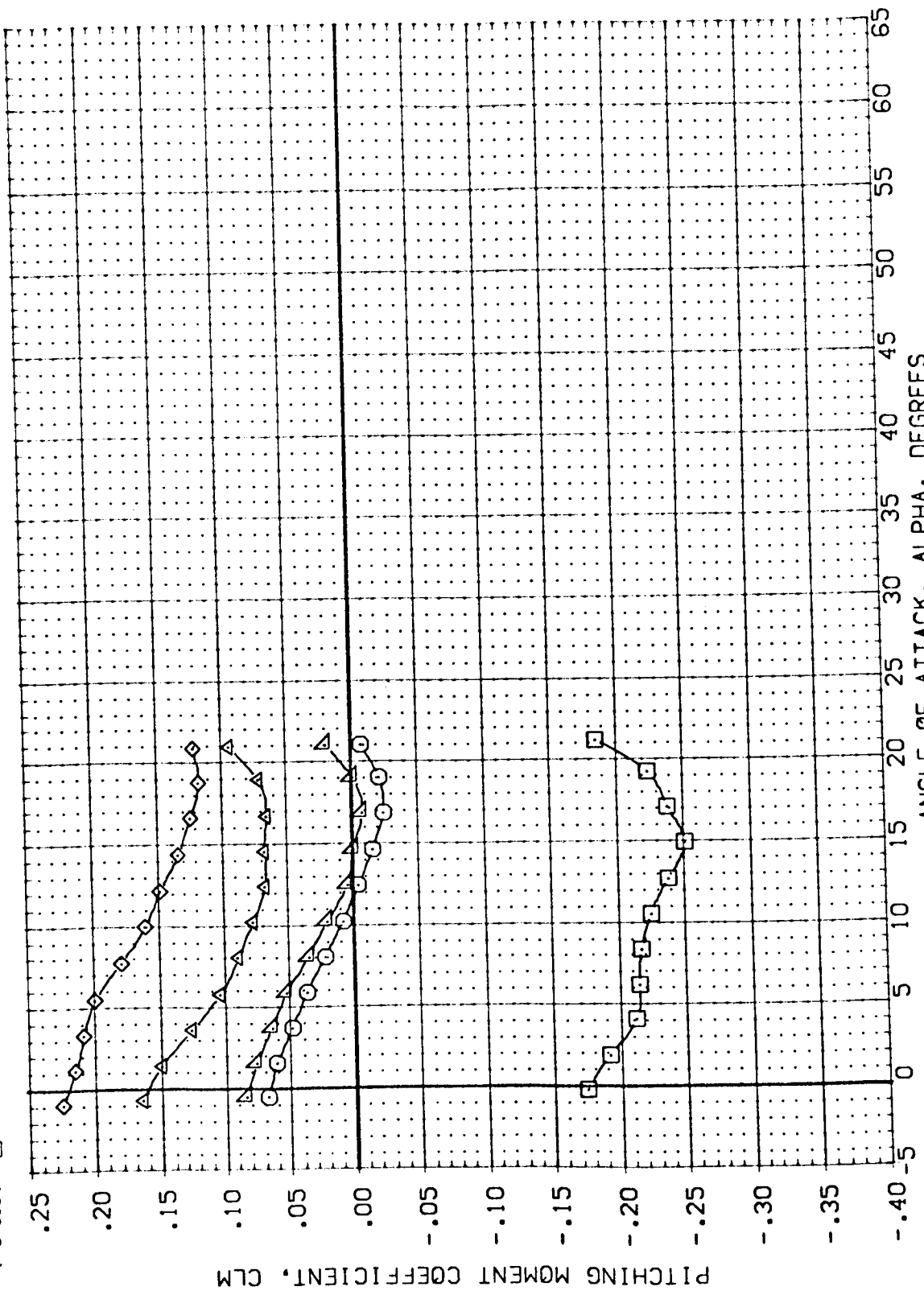


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398

(B)MACH = .89



DATA SET SYMBOL CONFIGURATION DESCRIPTION REFERENCE INFORMATION

(F87C08)	MSFC 574(CA48) CRB 1398	SREF	2690.0000	SC.FT.
(F87C15)	MSFC 574(CA48) CRB 1399	REF	474.8000	SC.FT.
(F87C21)	MSFC 574(CA48) CRB 1398	BRSE	938.7000	SC.FT.
(F87C18)	MSFC 574(CA48) CRB 1393	XMRP	898.7000	SC.FT.
(F87C24)	MSFC 574(CA48) CRB 1398	YMRP	898.7000	SC.FT.
(F87598)	DATA NOT AVAILABLE	SCALE	0.0000	SC.FT.

BETA ELEVTR SPOBRK BOFLAP

.000	.000	999.990	.000
.000	15.000	999.990	13.750
.000	-40.000	999.990	-14.250
.000	-20.000	999.990	.000
.000	-20.000	999.990	-14.250

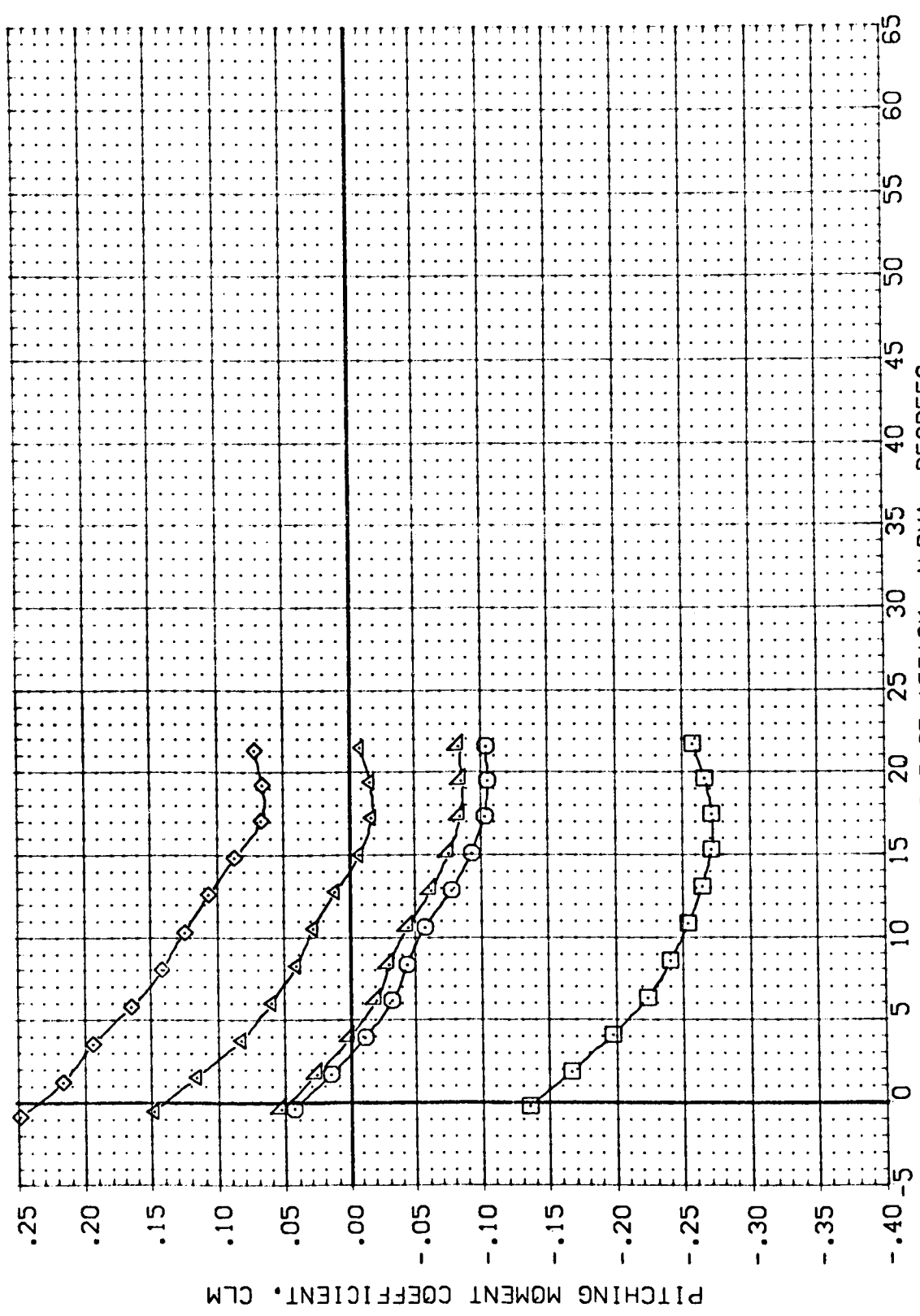


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398

COMACH = 1.20

DATA SET SYMBOL CONFIGURATION DESCRIPTION

MSFC 574(CA48) CRB | 399
 (F87C15)
 MSFC 574(CA48) CRB | 399
 (F87C21)
 MSFC 574(CA48) CR3 | 399
 (F87C18)
 MSFC 574(CA48) CRB | 399
 (F87C24)
 (F87S98)
 DATA NOT AVAILABLE

BETA .000
 .000
 .000
 .000
 .000
 .000
 .000
 .000

ELEVTR .000
 .000
 15.000
 -40.000
 -20.000
 .000
 -20.000

SPOBRK 999.990
 999.990
 999.990
 999.990
 999.990
 999.990
 999.990

BOCLAP .000
 .000
 13.750
 -14.250
 .000
 -14.250
 -14.250

REFERENCE INFORMATION SC.F.T.
 SREF 2690.0000
 LREF 474.8000
 BREF 936.7000
 XWRP 838.7000
 YWRP .0000
 ZWRP .0000
 SCALE .0040

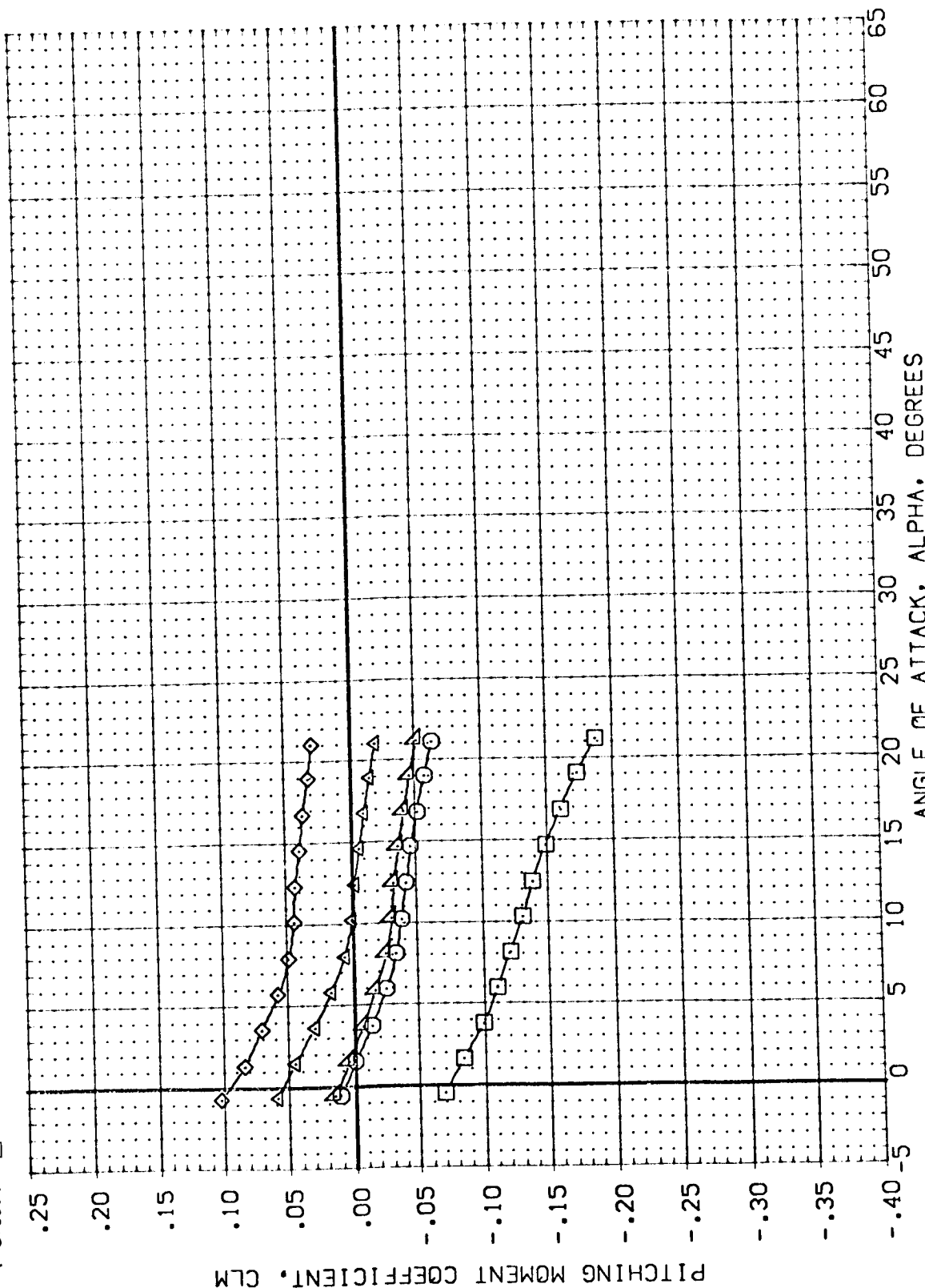


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B
 (CO)MACH = 1.95

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(F87C08)	MSFC 574(CA48) CRB 139B	.000	.000	999.990	.000	SREF 2690.0000
(F87C15)	MSFC 574(CA48) CRB 139B	.000	15.000	999.990	13.750	LREF 474.8000
(F87C21)	MSFC 574(CA48) CRB 139B	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87C18)	MSFC 574(CA48) CRB 139B	.000	-20.000	999.990	.000	XMRP 838.7000
(F87C24)	MSFC 574(CA48) CRB 139B	.000	.000	999.990	-14.250	YMRP .0000
(F87S98)	DATA NOT AVAILABLE	.000	-20.000	999.990	-14.250	ZMRP .0000
					SCALE	SCALE

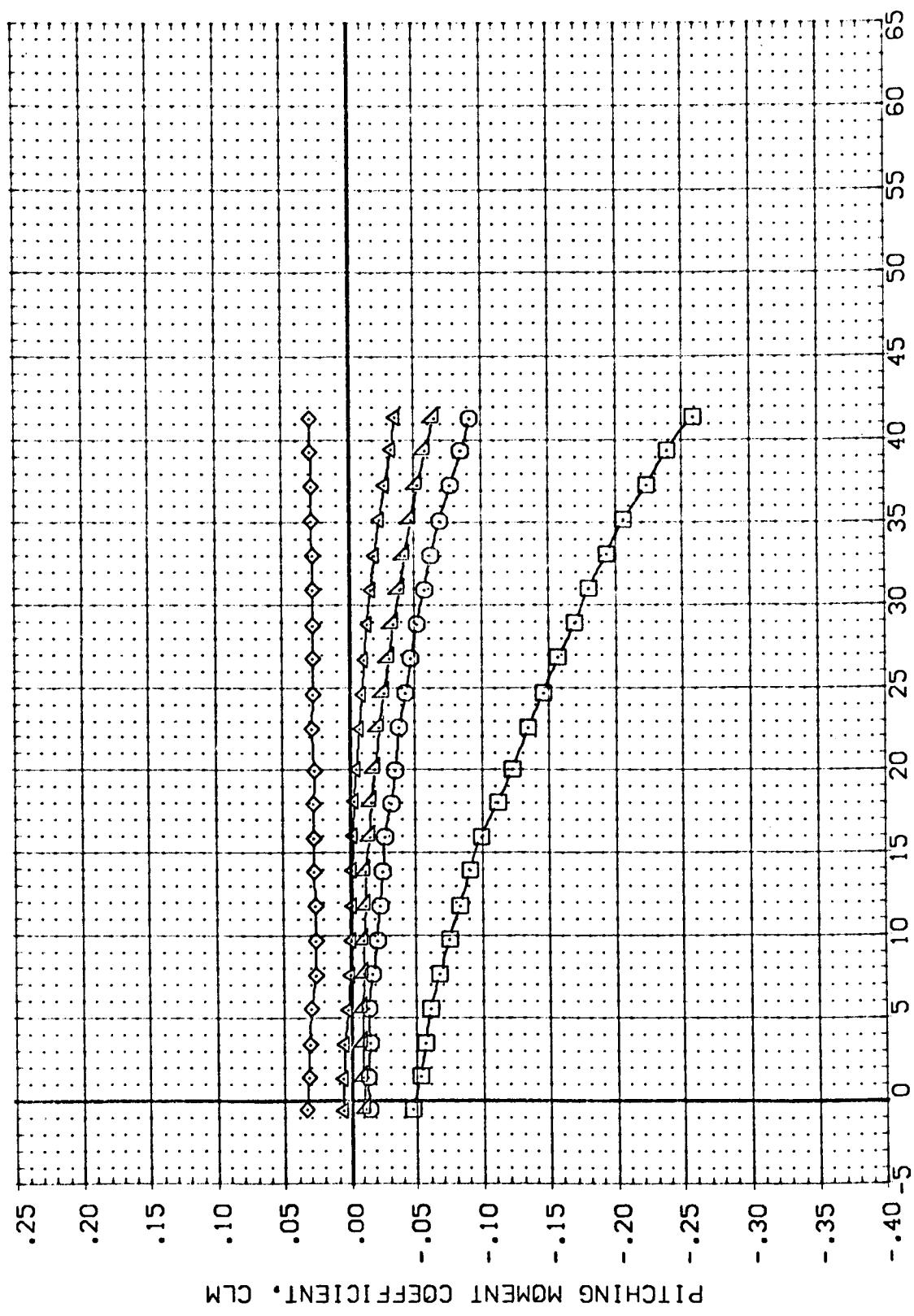


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

CEMACH = 2.99

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(F87C08) MSFC 574(CA48) CRB 1399

(F87C15) MSFC 574(CA48) CRB 1399

(F87C21) MSFC 574(CA48) CRB 1399

(F87C18) MSFC 574(CA48) CRB 1399

(F87C24) MSFC 574(CA48) CRB 1399

(F87S98) DATA NOT AVAILABLE

BETA ELEVTR SPOBRK BOFLAP REFERENCE INFORMATION SC.F.T.

.000 999.990 .000 SREF 2690.0000 N.

.000 999.990 .000 LREF 474.8000 N.

.000 999.990 .000 XREF 936.7000 N.

.000 999.990 .000 YREF 838.7000 N.

.000 999.990 .000 VREF .0000 N.

.000 999.990 .000 ZREF .0000 N.

.000 999.990 .000 SCALE .0010

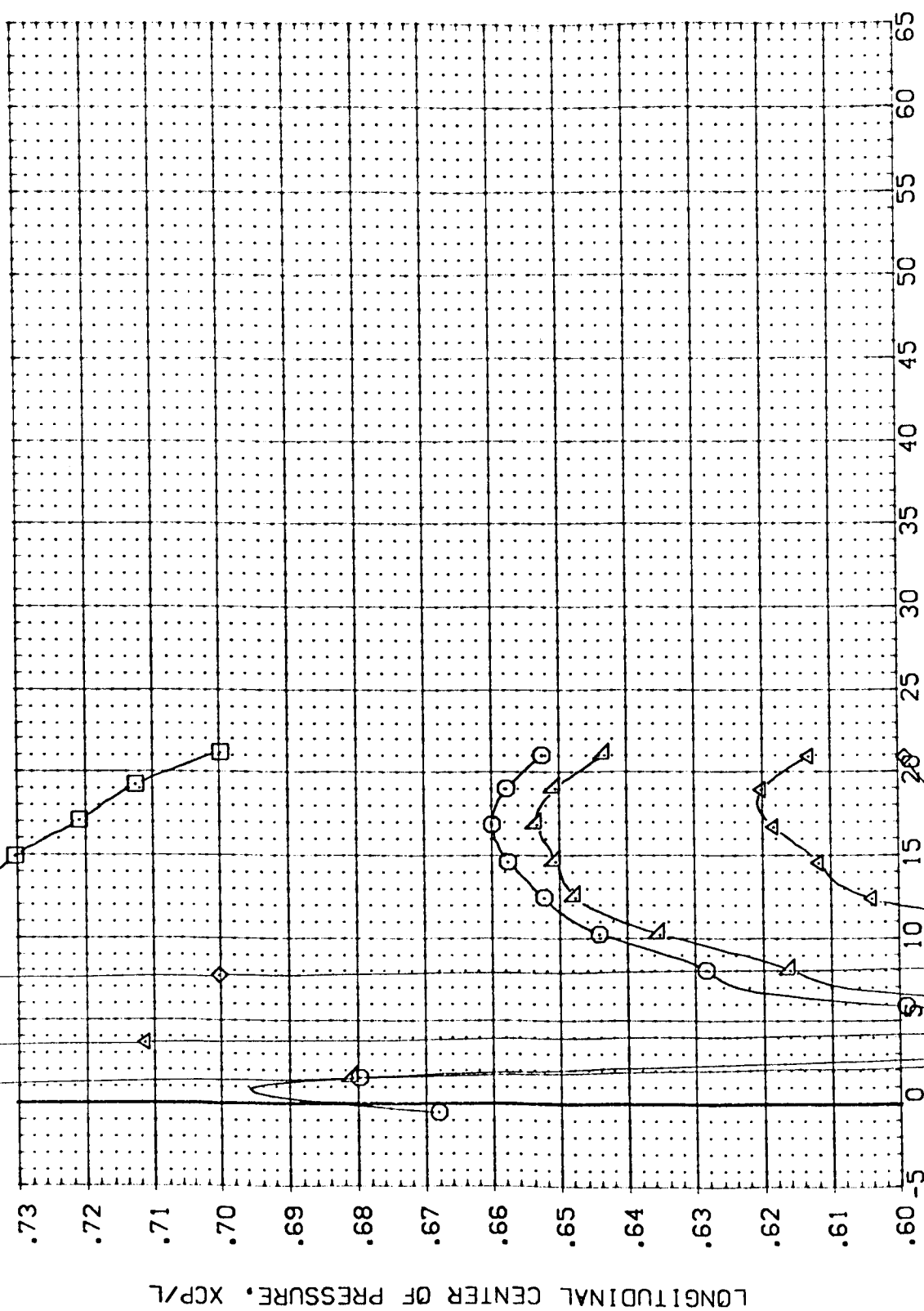


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398
 (B)MACH = .89



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(F87C08)	MSFC 574(CA48) CRB 139B
(F87C15)	MSFC 574(CA48) CRB 139B
(F87C21)	MSFC 574(CA48) CRB 139B
(F87C18)	MSFC 574(CA48) CRB 139B
(F87C24)	MSFC 574(CA48) CRB 139B
(F87S98)	DATA NOT AVAILABLE

BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
.000	.000	999.990	.000	SREF 2690.0000 SC.F.F.
.000	15.000	999.990	13.750	LREF 474.8000
.000	-40.000	999.990	-14.250	BREF 836.7000
.000	-20.000	999.990	.000	XREF 898.7000
.000	.000	999.990	-14.250	YREF .0000
.000	-20.000	999.990	-14.250	ZREF .0000
.000	.000	999.990	.000	SCALE .0010

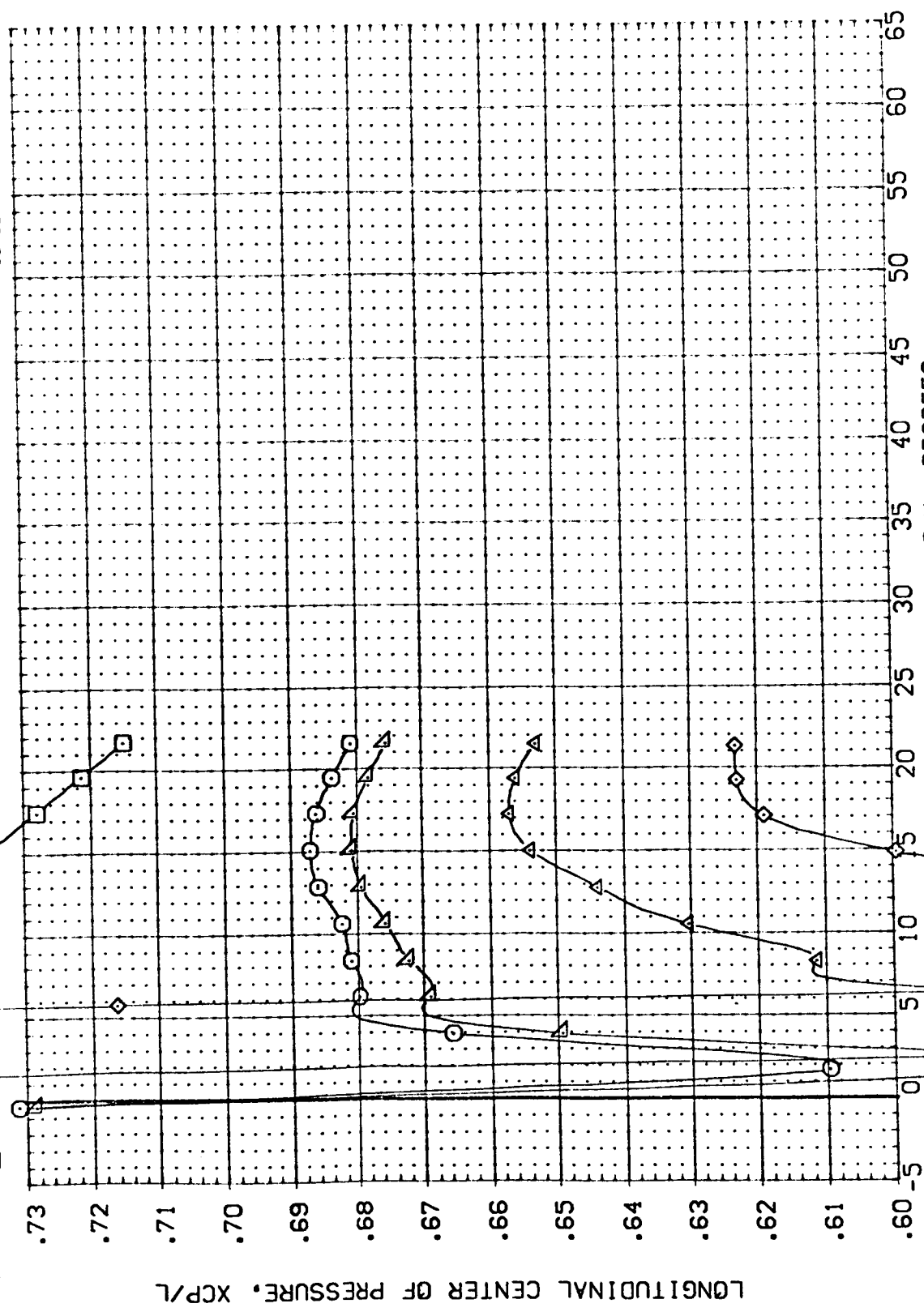


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(F87C08) MSEC 574(CA48) CRB 399

(F87C15) MSEC 574(CA48) CRB 399

(F87C21) MSEC 574(CA48) CRB 399

(F87C18) MSEC 574(CA48) CRB 399

(F87C24) MSEC 574(CA48) CRB 399

(F87S98) DATA NOT AVAILABLE

BETA ELEVTR SPOBRK BOFLAP REFERENCE INFORMATION SQ.F.T.

.000 .000 999.990 .000 SREF 2690.0000

.000 15.000 999.990 13.750 LREF 474.8000

.000 -40.000 999.990 -14.250 BREF 936.7000

.000 -20.000 999.990 .000 XMRP 838.7000

.000 .000 999.990 -14.250 YMRP .0000

.000 -20.000 999.990 .000 ZMRP .0000

SCALE .0010

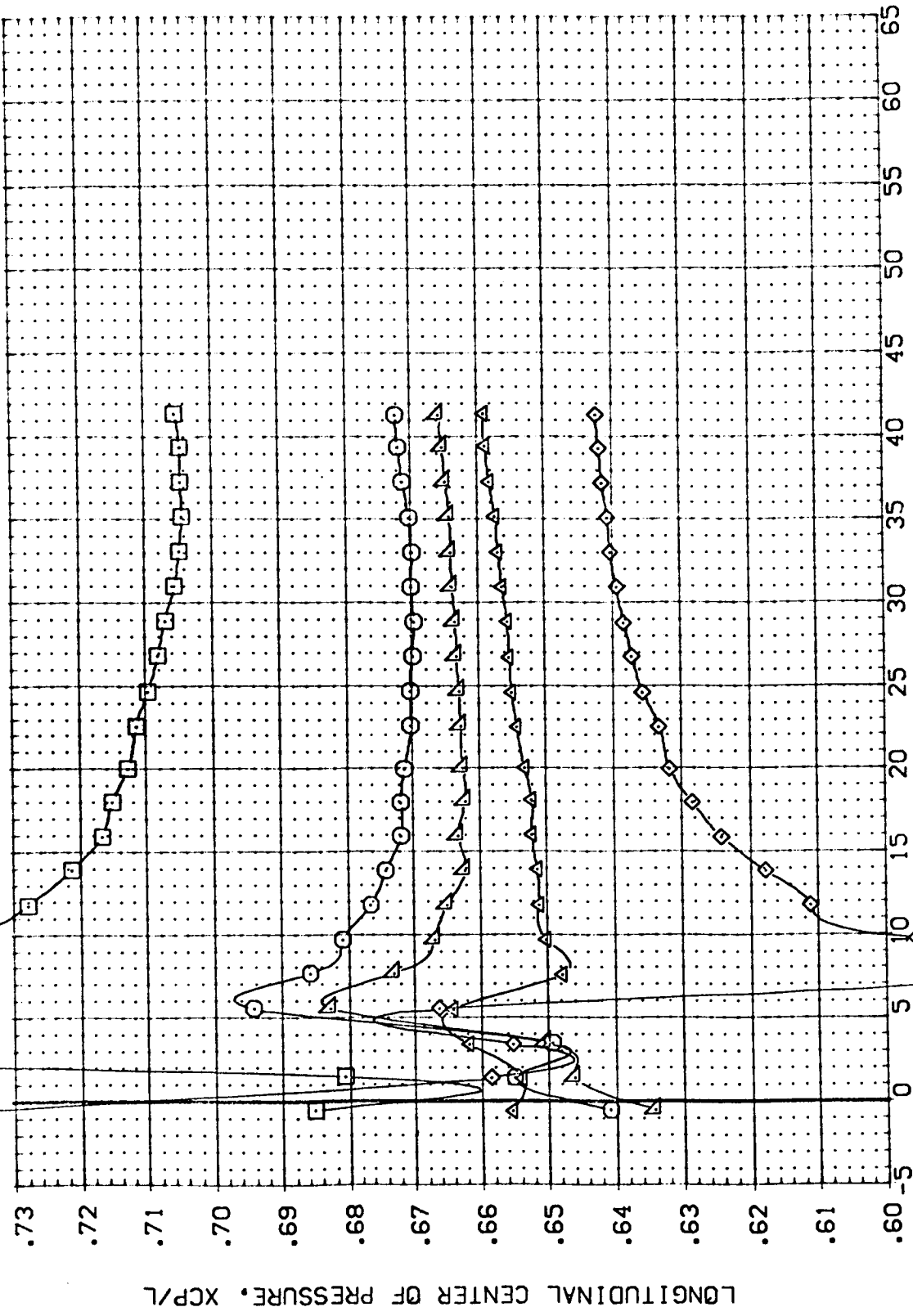


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

(M)MACH = 2.99

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(F87C08)	MSFC 574(CA48) CR3 (399)	.000	.000	999.990	.000	2690.0000 SC.F.
(F87C15)	MSFC 574(CA48) CR3 (399)	.000	15.000	999.990	13.750	474.8000
(F87C21)	MSFC 574(CA48) CR3 (399)	.000	-40.000	999.990	-14.250	936.7000
(F87C18)	MSFC 574(CA48) CR3 (399)	.000	-20.000	999.990	-14.250	838.7000
(F87C24)	MSFC 574(CA48) CR3 (399)	.000	.000	999.990	-14.250	.0000
(F87S98)	MSFC 574(CA48) CR3 (399)	.000	-20.000	999.990	-14.250	.0000
					SCALE	.0010

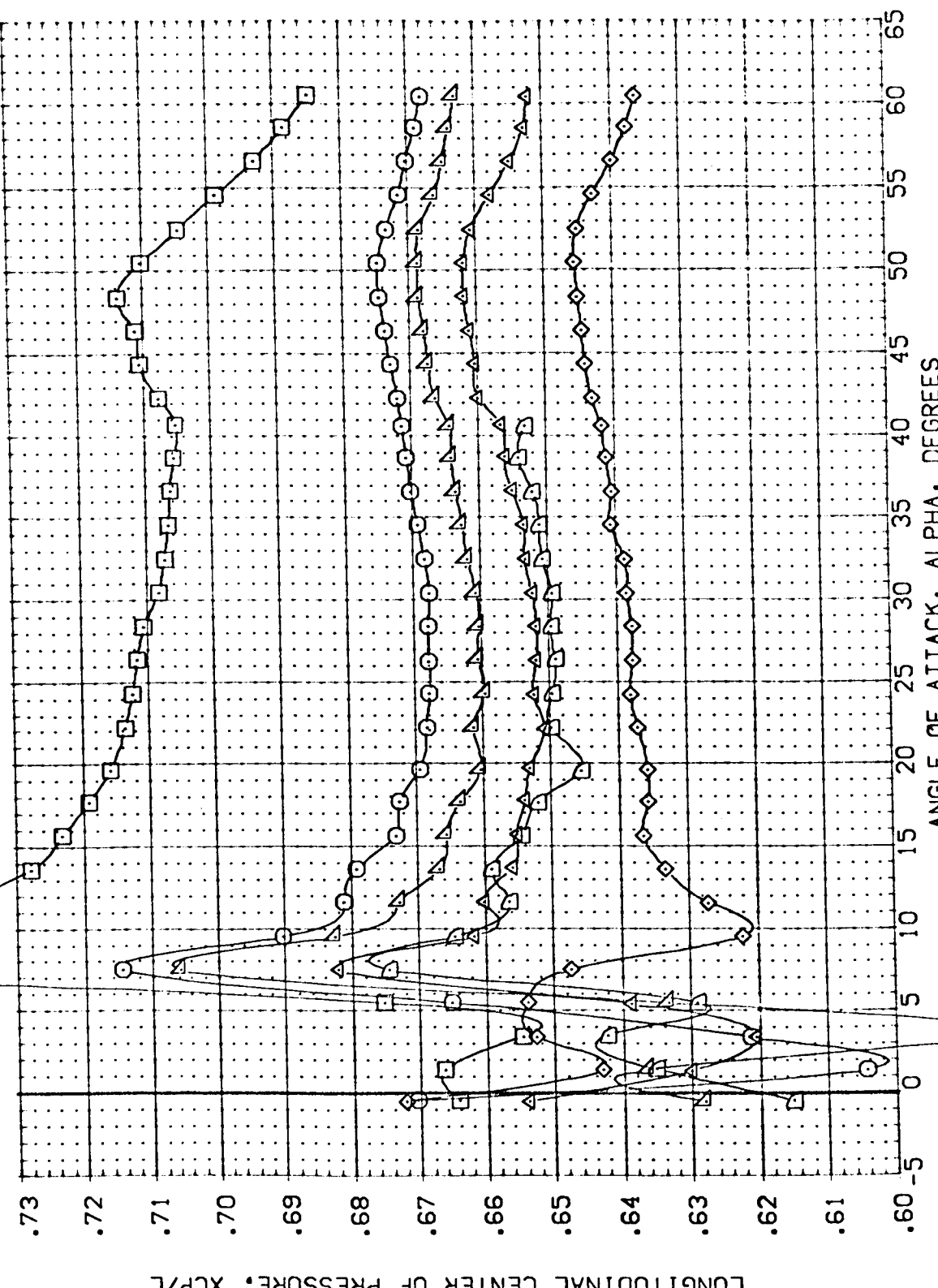


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398
 (F)MACH = 4.96

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87C08)	MSFC 574(CA48) CRB 139B	.000	.000	999.990	.000	SREF 2690.0000
(F87C15)	MSFC 574(CA48) CRB 139B	.000	15.000	999.990	13.750	LREF 474.8000
(F87C21)	MSFC 574(CA48) CRB 139B	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87C18)	MSFC 574(CA48) CRB 139B	.000	-20.000	999.990	.000	XMRP 838.0000
(F87C24)	MSFC 574(CA48) CRB 139B	.000	.000	999.990	-14.250	YMRP 0000.0000
(F87S98)	DATA NOT AVAILABLE	.000	-20.000	999.990	-14.250	ZMRP 0000.0000
					SCALE	SCALE

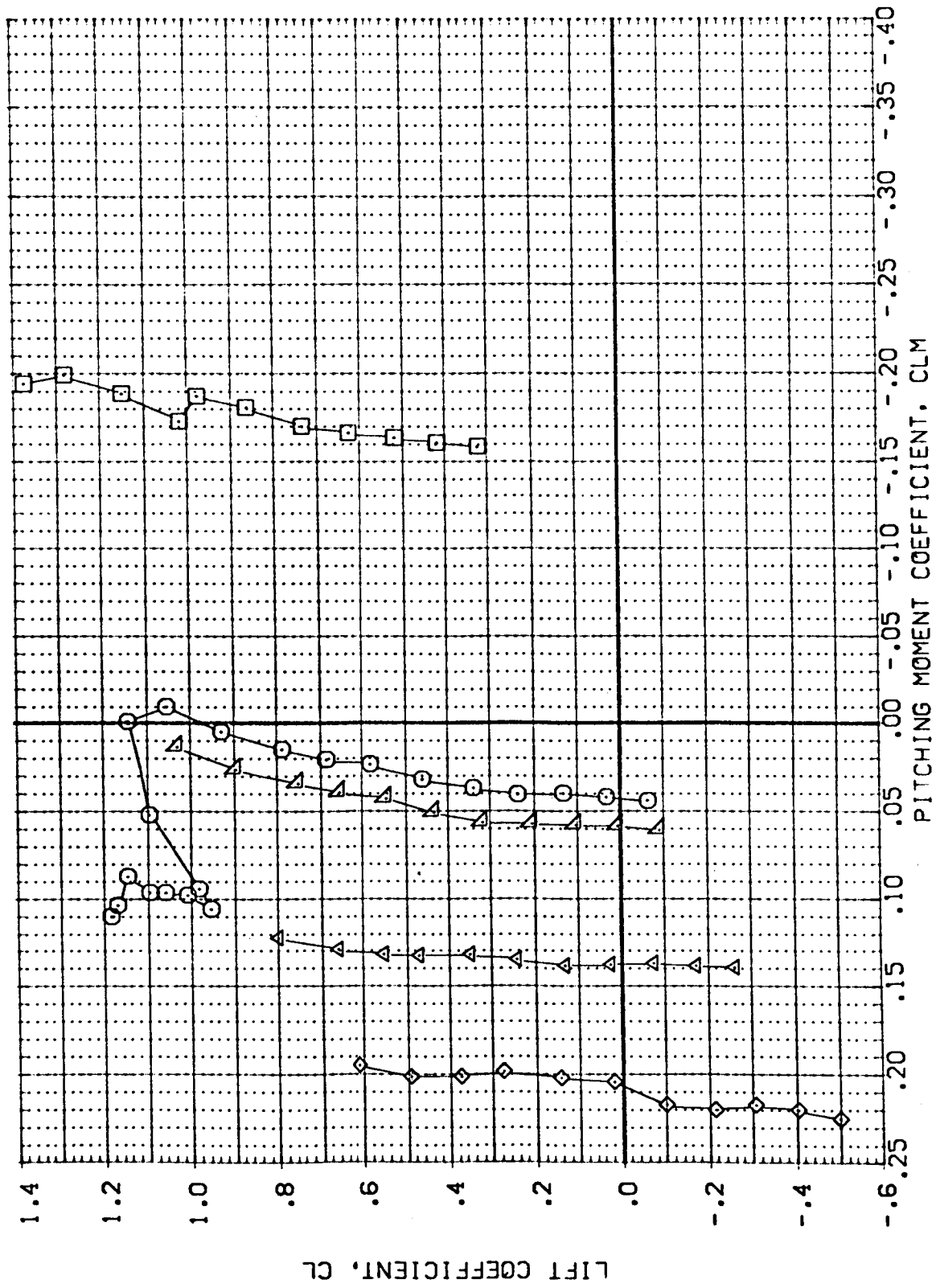


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

REFERENCE INFORMATION
 SREF 2690.0000
 LREF 474.8000
 XMRP 936.7000
 YMRP 838.7000
 ZMRP 0.0000
 SCALE 1.0010

BOFLAP
 SPOBRK
 ELEVTR
 BETA

CONFIGURATION DESCRIPTION
 MSFC 574(CA48) CRB 139B
 MSFC 574(CA48) CRB 393
 MSFC 574(CA48) CRB 393
 MSFC 574(CA48) CRB 393
 MSFC 574(CA48) CRB 393
 DATA NOT AVAILABLE

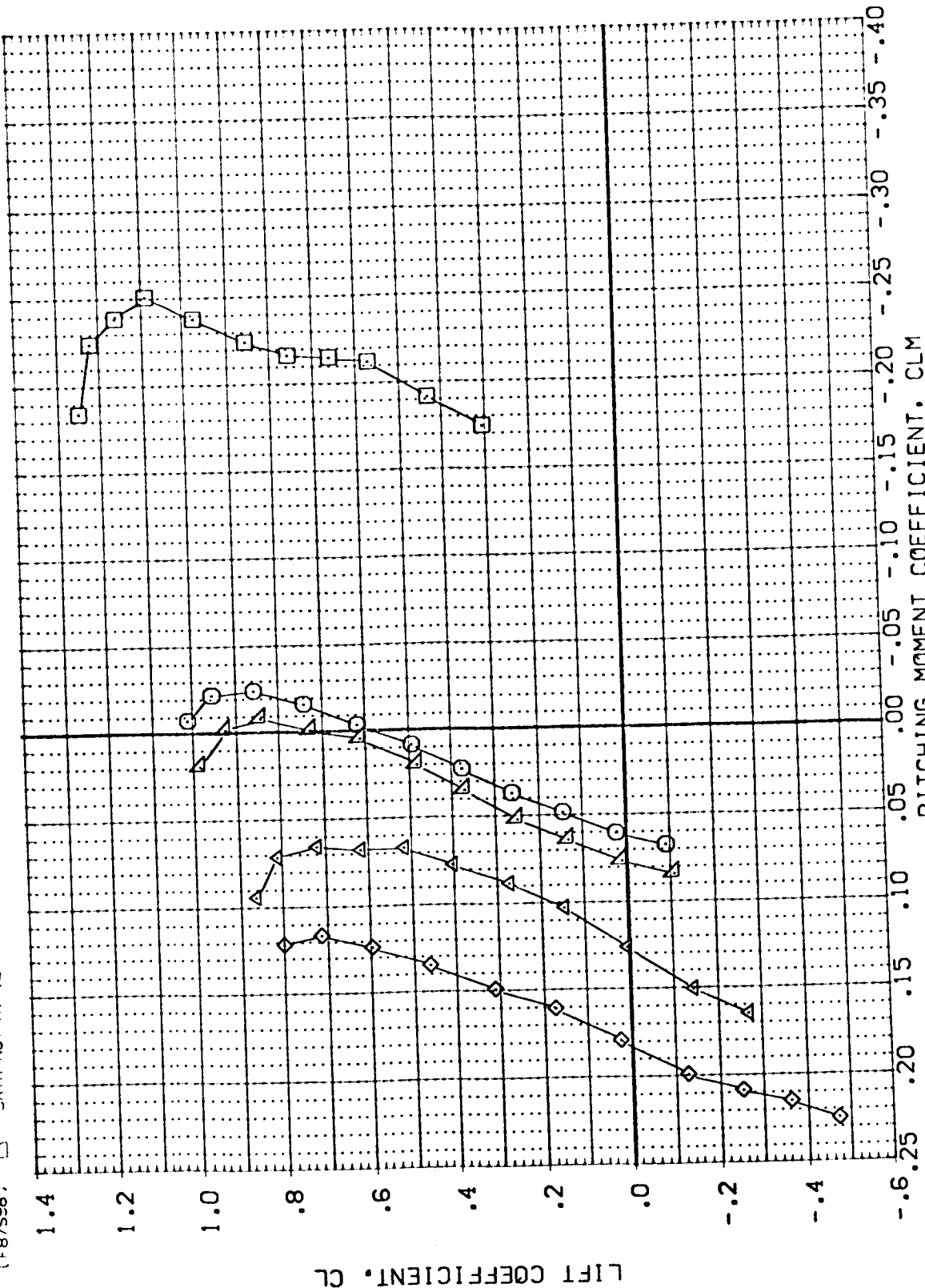


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

(B)MACH = .89

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87C08) MSFC 574(CA48) CRB 1398
 (F87C15) MSFC 574(CA48) CRB 1398
 (F87C21) MSFC 574(CA48) CRB 1398
 (F87C18) MSFC 574(CA48) CRB 1398
 (F87C24) MSFC 574(CA48) CRB 1398
 (F87S98) DATA NOT AVAILABLE

BETA ELEVTR SPOBRK BDFLAP REFERENCE INFORMATION SC.F.T.
 .000 .000 999.990 .000 SREF 2690.0000
 .000 .000 999.990 13.750 LREF 474.8000
 .000 .000 999.990 -14.250 BREF 936.7000
 .000 .000 999.990 .000 XMRP 838.7000
 .000 .000 999.990 -14.250 YMRP .0000
 .000 .000 999.990 -14.250 ZMRP .0000
 SCALE .0040

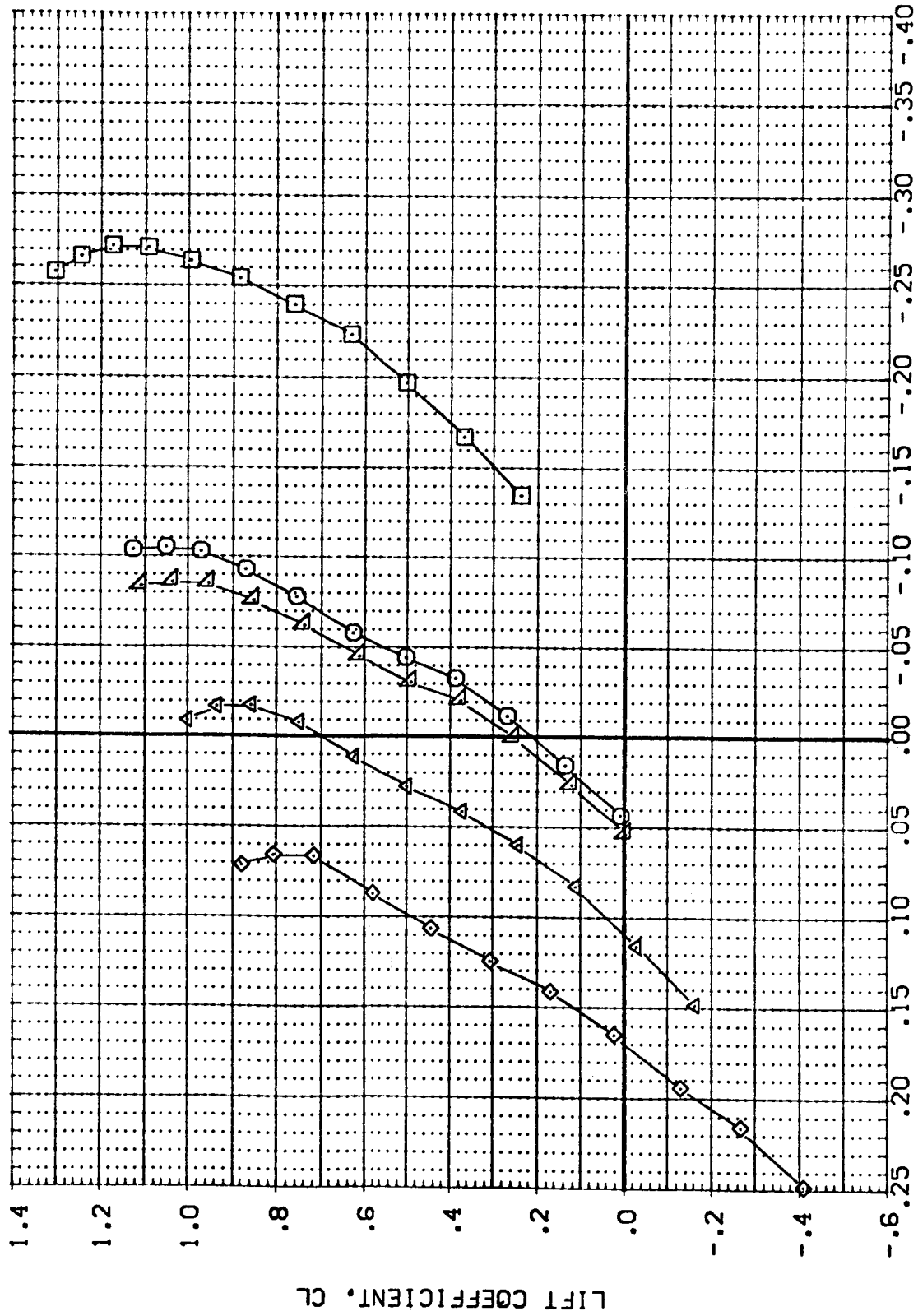


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87C08)	MSFC 574(CA48) ORB 1398	.000	.000	999.990	.000	SREF 2690.0000
(F87C15)	MSFC 574(CA48) ORB 1398	.000	15.000	999.990	13.750	LREF 474.8000
(F87C21)	MSFC 574(CA48) ORB 1398	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87C18)	MSFC 574(CA48) ORB 1398	.000	-20.000	999.990	.000	XMRP 838.7000
(F87C24)	MSFC 574(CA48) ORB 1398	.000	.000	999.990	-14.250	YMRP .0000
(F87S98)	DATA NOT AVAILABLE	.000	-20.000	999.990	-14.250	ZMRP .0000
					SCALE	.0040

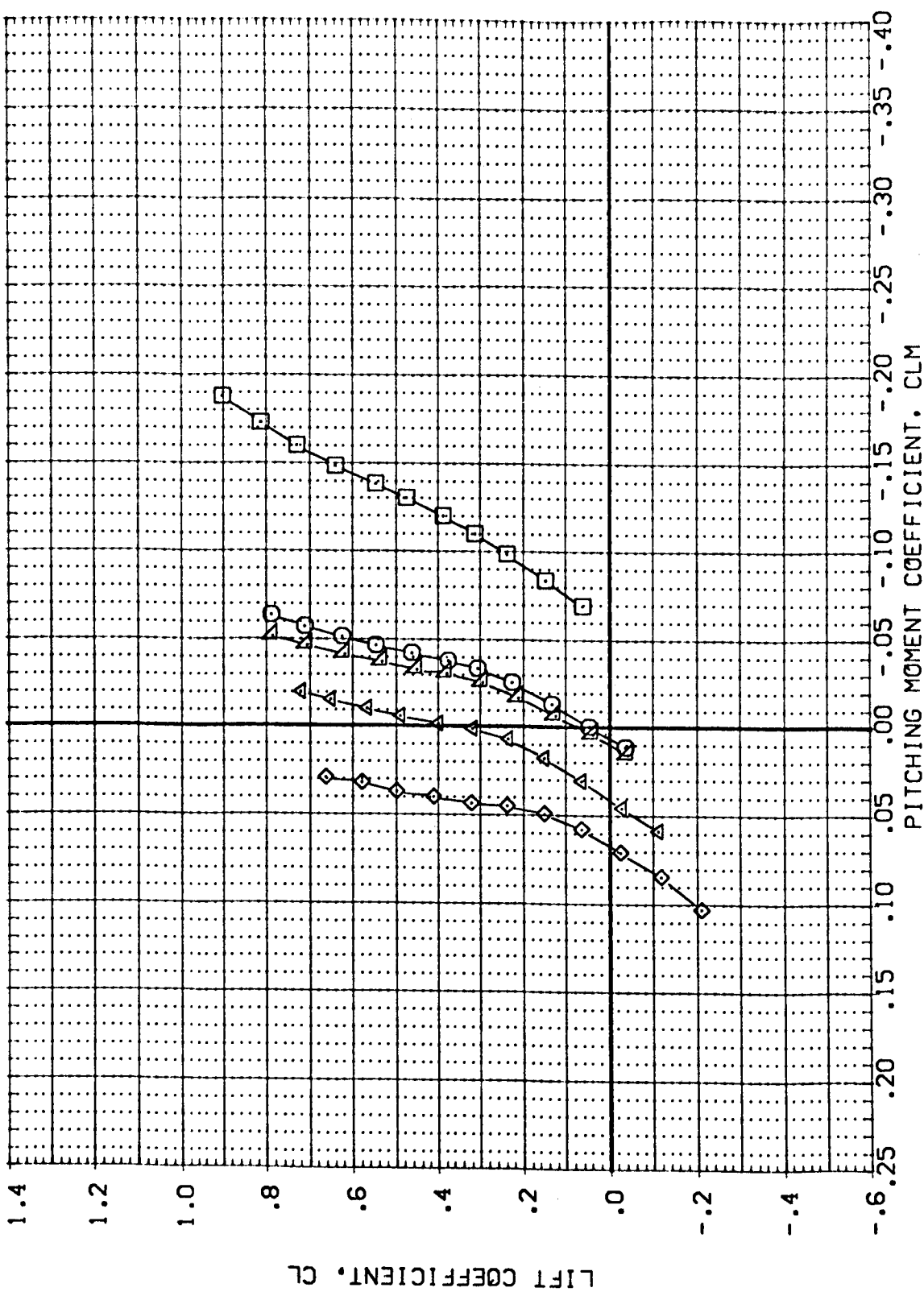


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398

(O)MACH = 1.95

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87C08)	MSFC 574(OA48) CRB 1398	.000	.000	999.990	.000	SREF 2690.0000
(F87C15)	MSFC 574(OA48) CRB 1398	.000	15.000	999.990	13.750	LOEF 474.8000
(F87C21)	MSFC 574(OA48) CRB 1398	.000	-40.000	999.990	-14.250	BRF 936.7000
(F87C18)	MSFC 574(OA48) CRB 1398	.000	-20.000	999.990	.000	XMRP 838.7000
(F87C24)	MSFC 574(OA48) CRB 1398	.000	.000	999.990	-14.250	YMRP .0000
(F87S98)	DATA NOT AVAILABLE	.000	-70.000	999.990	-14.250	ZMRP .0000
						SCALE .0010

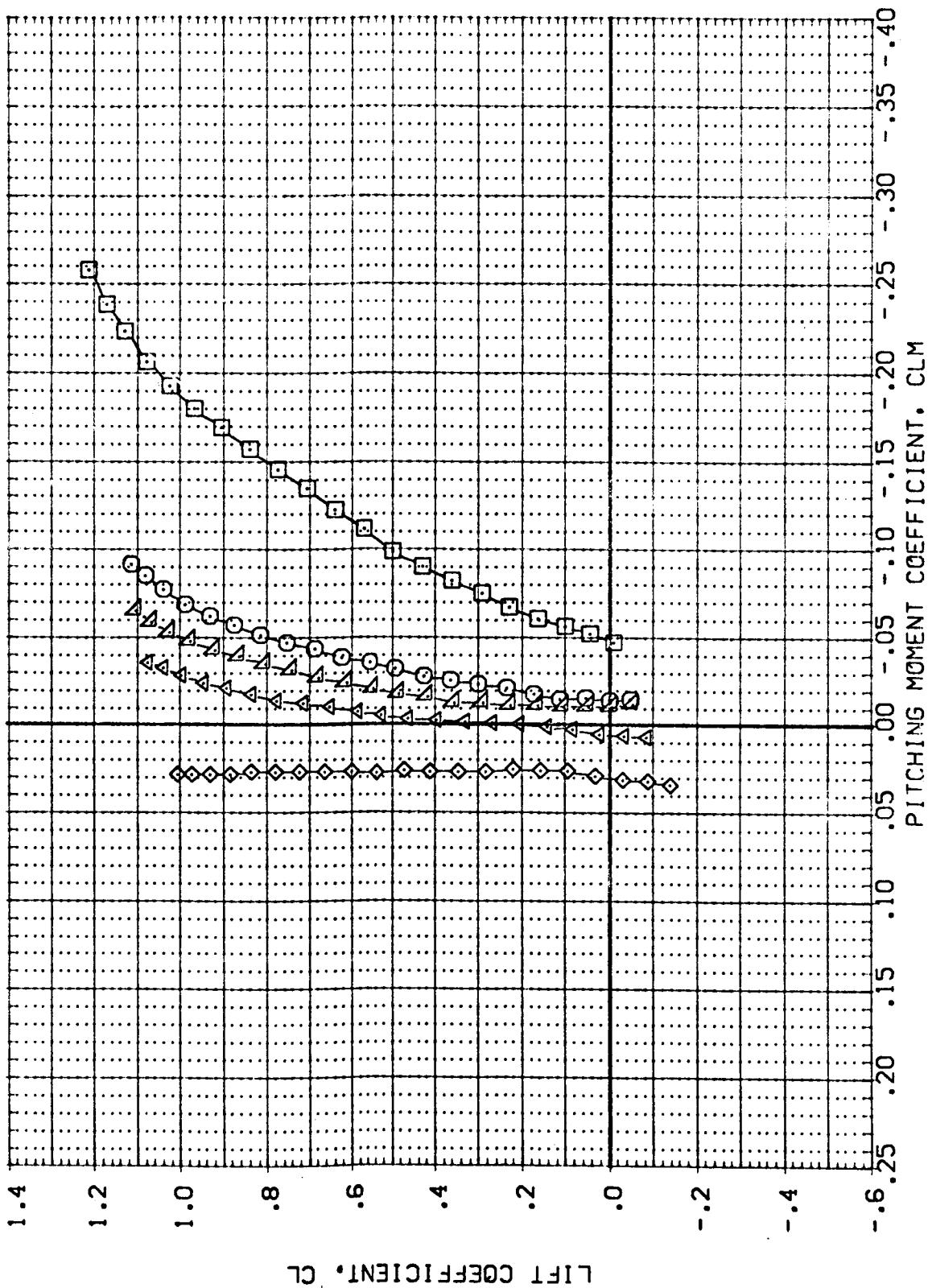


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(F87C08)	MSFC	574(CA48)	093	1093
(F87C15)	MSFC	574(CA48)	093	1093
(F87C21)	MSFC	574(CA48)	093	1093
(F87C18)	MSFC	574(CA48)	093	1093
(F87C24)	MSFC	574(CA48)	093	1093
(F87S68)	MSFC	574(CA48)	093	1093

BETA ELEVTR SPOBRK BOFLAP REFERENCE INFORMATION

.000	.000	999.990	.000	SREF	2690.0000	SG.FT.
.000	15.000	999.990	13.750	LREF	474.8000	IN
.000	-40.000	999.990	-14.250	BREF	936.7000	IN
.000	-20.000	999.990	.000	XMRP	838.0000	IN
.000	.000	999.990	-14.250	YMRP	.0000	IN
.000	-20.000	999.990	-14.250	ZMRP	.0000	IN
				SCALE	.0040	

BOFLAP REFERENCE INFORMATION

.000	999.990	.000	SREF	2690.0000	SG.FT.
13.750	999.990	474.8000	LREF	474.8000	IN
-14.250	999.990	936.7000	BREF	936.7000	IN
.000	999.990	838.0000	XMRP	838.0000	IN
-14.250	999.990	.0000	YMRP	.0000	IN
-14.250	999.990	.0000	ZMRP	.0000	IN
			SCALE	.0040	

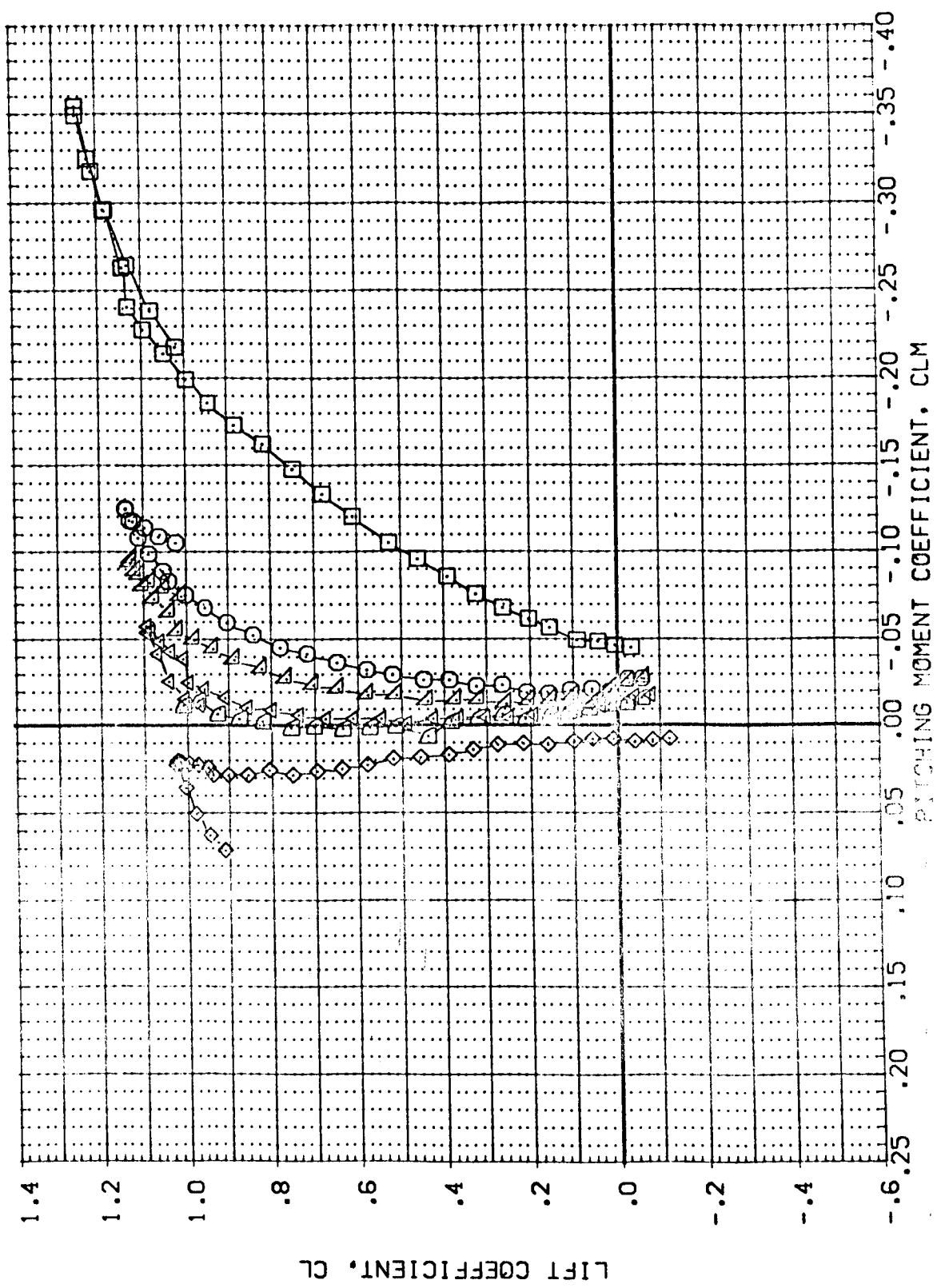


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

(F)MACH = 4.96

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(F87C08)	MSEC 574(CA48) CRB 1398	.000	.000	999.990	.000	SREF 2690.0000
(F87C15)	MSEC 574(CA48) CRB 1399	.000	15.000	999.990	13.750	LREF 474.8000
(F87C21)	MSEC 574(CA48) CRB 1399	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87C18)	MSEC 574(CA48) CRB 1399	.000	-20.000	999.990	.000	VMRP .0000
(F87C24)	MSEC 574(CA48) CRB 1399	.000	.000	999.990	-14.250	VMRP .0000
(F87S98)	DATA NOT AVAILABLE	.000	-20.000	999.990	-14.250	ZMRP .0000
					SCALE	SCALE

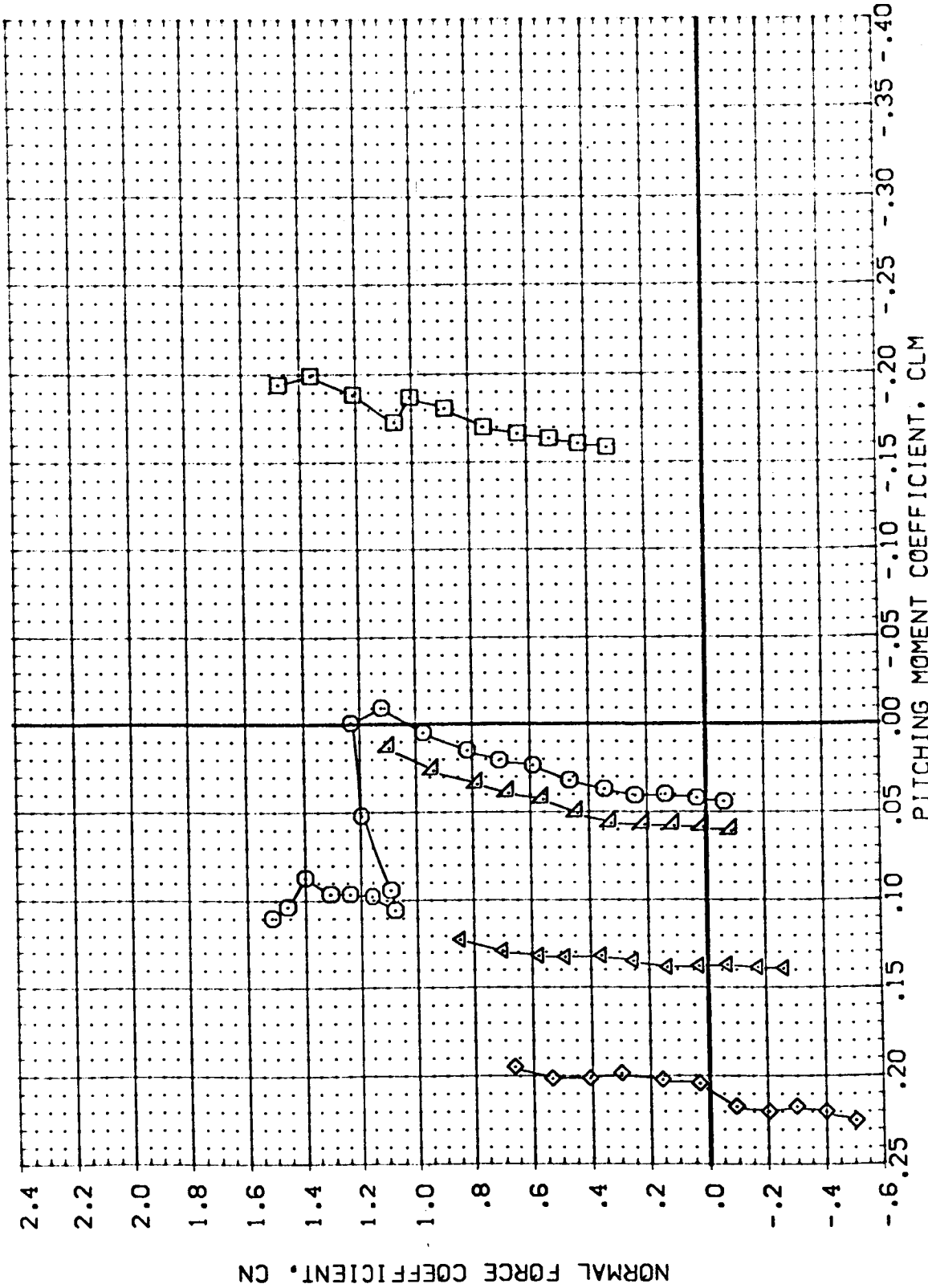


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(F87C08)	MSFC 574(CA48)	CRB	393
(F87C15)	MSFC 574(CA48)	CRB	393
(F87C21)	MSFC 574(CA48)	CRB	393
(F87C18)	MSFC 574(CA48)	CRB	393
(F87C24)	MSFC 574(CA48)	CRB	393
(F87S98)	DATA NOT AVAILABLE		

BETA ELEVTR SPOBRK BCF LAP

.000	.000	999.990	.000
.000	15.000	999.990	13.750
.000	-10.000	999.990	-14.250
.000	-20.000	999.990	.000
.000	-20.000	999.990	-14.250
.000	-20.000	999.990	.000
.000	-20.000	999.990	.000
.000	-20.000	999.990	.000
.000	-20.000	999.990	.000
.000	-20.000	999.990	.000

REFERENCE INFORMATION SQ. FT.

SREF	2690.000
LREF	474.800
BREF	936.700
XMRP	838.700
YMRP	.000
ZMRP	.000
SCALE	.0040

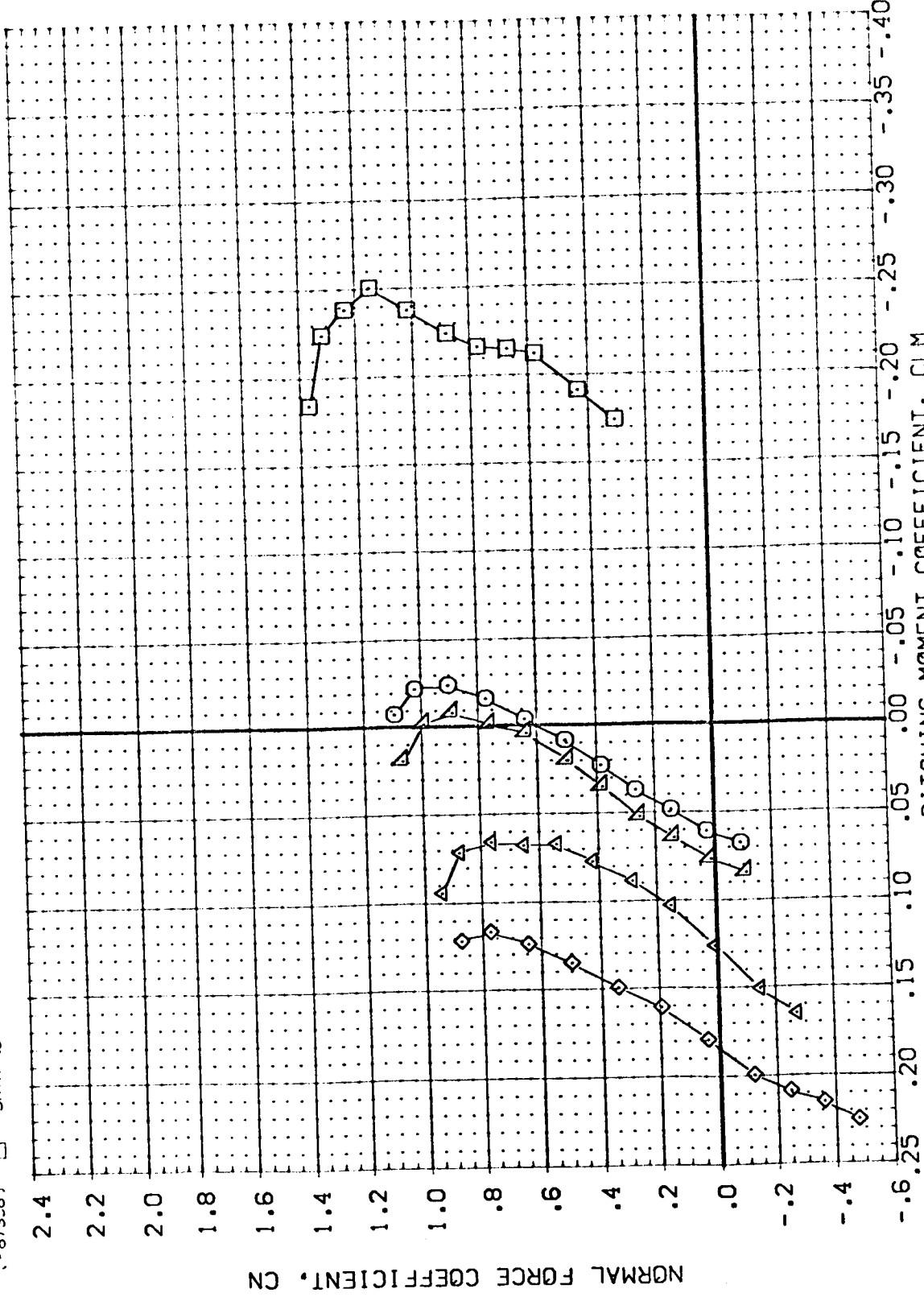


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B
 (B)MACH = .89

REFERENCE INFORMATION
 SREF 2690.0000 SC.F.T.
 LREF 474.8000
 BREF 836.7000
 X-MRP 838.7000
 Y-MRP .0000
 Z-MRP .0000
 SCALE .0040

BETA ELEV'R SPCBRK BDELAP
 .000 .000 999.999 .000
 .000 15.000 999.999 13.750
 .000 -46.000 999.999 -14.250
 .000 -20.000 999.999 .000
 .000 -20.000 999.999 -14.250
 .000 -20.000 999.999 .000

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87C08) MSFC 574 (CA48) CRB 139B
 (F87C15) MSFC 574 (CA48) CRB 139B
 (F87C21) MSFC 574 (CA48) CRB 139B
 (F87C18) MSFC 574 (CA48) CRB 139B
 (F87C24) MSFC 574 (CA48) CRB 139B
 (F87S98) DATA NOT AVAILABLE

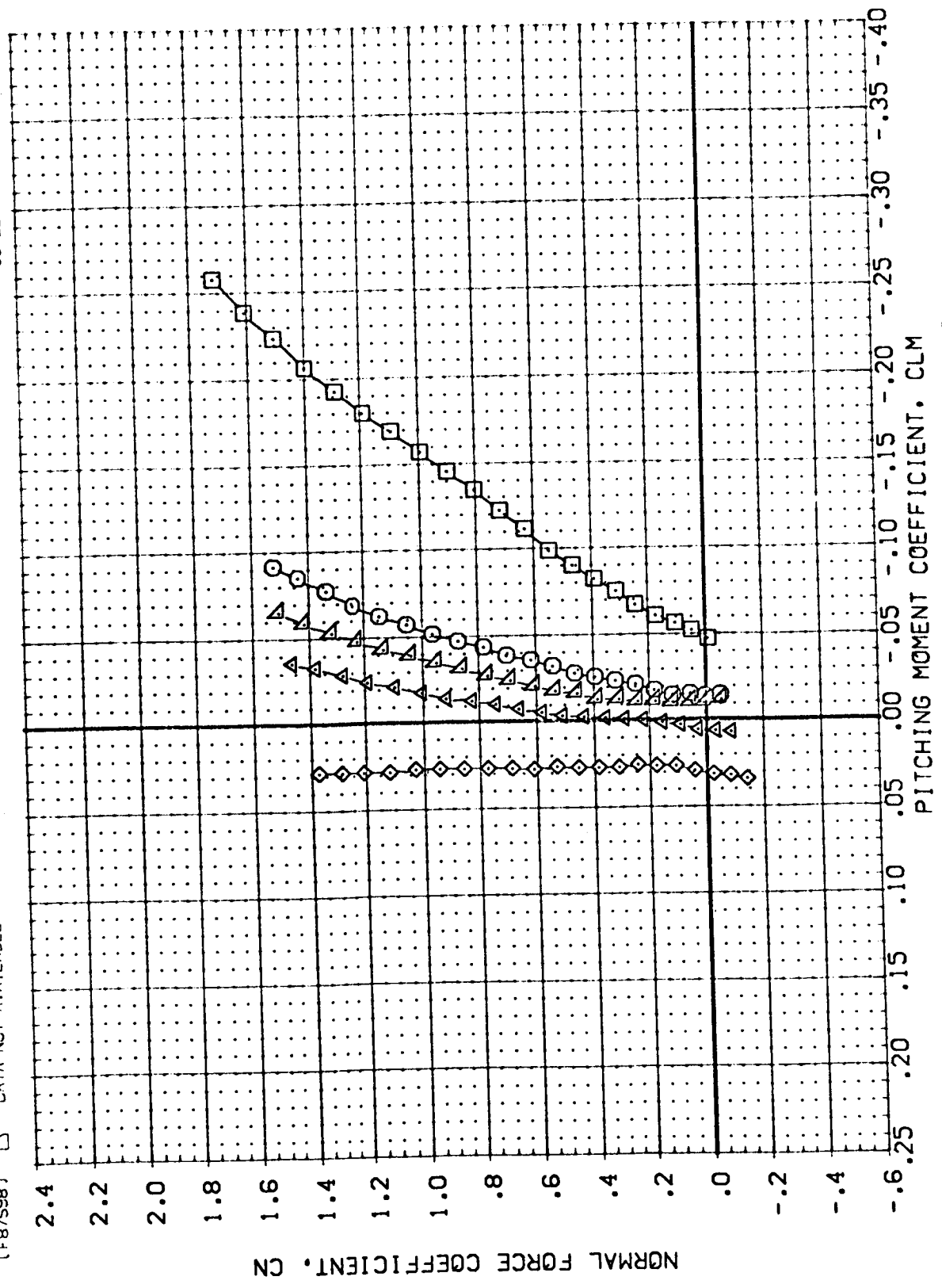


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

(E)MACH = 2.99

DATA SET SYMCL CONFIGURATION DESCRIPTION

(F87C08)	MSFC 574(CA48)	ORB 398
(F87C15)	MSFC 574(CA48)	ORB 398
(F87C21)	MSFC 574(CA48)	ORB 398
(F87C18)	MSFC 574(CA48)	ORB 398
(F87C24)	MSFC 574(CA48)	ORB 398
(F87S98)	MSFC 574(CA48)	ORB 398

BETA ELEVTR SPOBRK BDFLAP REFERENCE INFORMATION

.000	.000	999.990	.000	SRCF	2690.0000	SCALE
.000	15.000	999.990	13.750	LREF	474.8000	
.000	-40.000	999.990	-14.250	BREF	936.7000	
.000	-20.000	999.990	.000	XMRP	838.7000	
.000	.000	999.990	-14.250	ZMRP	.0000	
.000	-20.000	999.990	-14.250	ZMRP	.0000	
				SCALE	.0040	

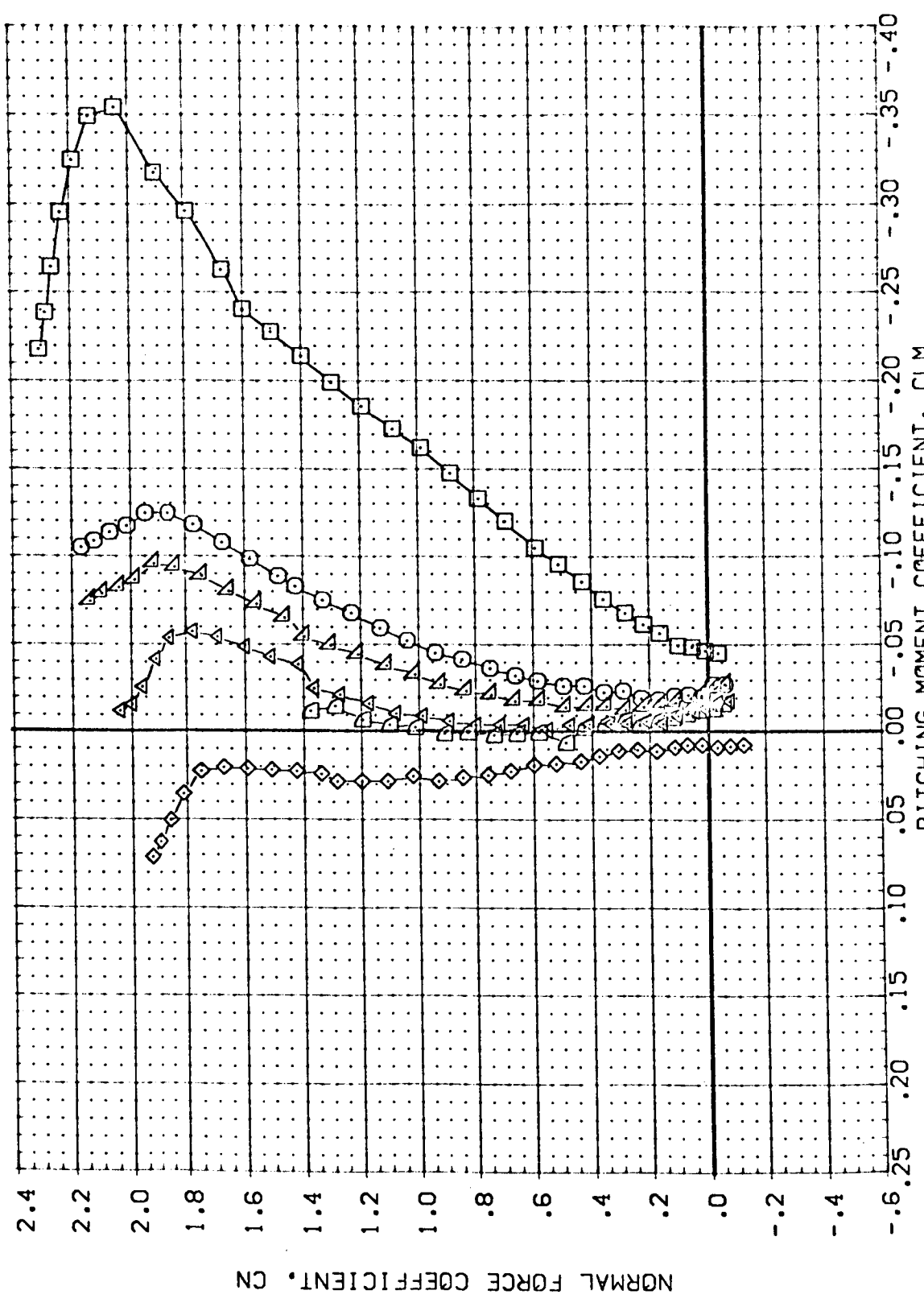


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398

(F)MACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(F87C08)	MSFC 574(CA18) CR3 1393
(F87C15)	MSFC 574(CA18) CR3 1393
(F87C21)	MSFC 574(CA18) CR3 1393
(F87C18)	MSFC 574(CA18) CR3 1393
(F87C24)	MSFC 574(CA18) CR3 1393
(F87S08)	DATA NC AVAIL:LAB.1

BETA ELEV'R SPCBRK BOFLAP

.000	.000	999.990	.000
.000	15.000	999.990	13.750
.000	-40.000	999.990	-14.250
.000	-70.000	999.990	.000
.000	-20.000	999.990	-14.250
.000	-20.000	999.990	-14.250

REFERENCE INFORMATION

SREF	2690.0000	SCALE
LREF	474.8000	
BREF	936.7000	
XMRP	838.7000	
YMRP	.0000	
ZMRP	.0000	
SCALE	.0040	

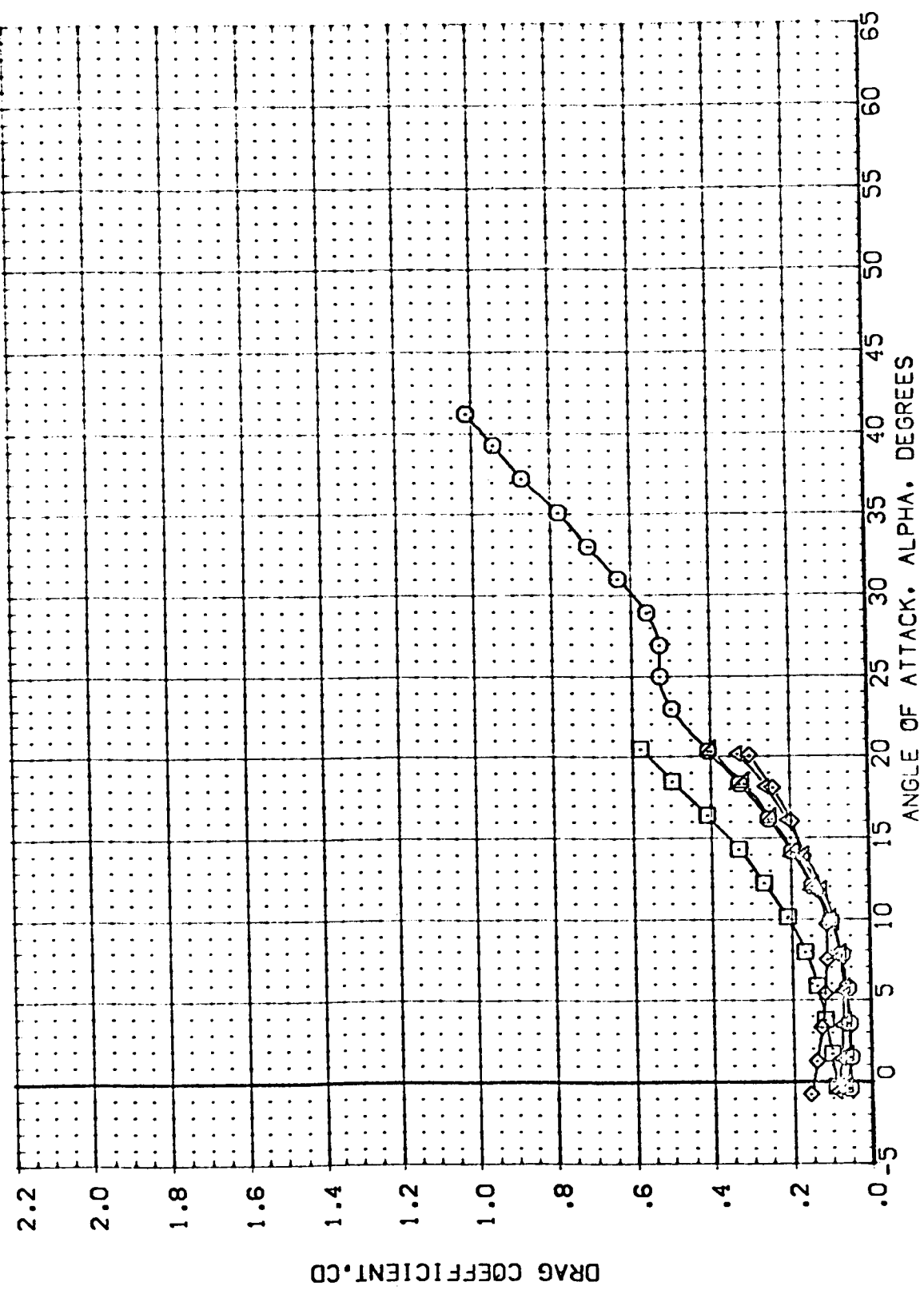


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398

(A)MACH = .60

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87C08) MSFC 574(CA48) CRB | 393
 (F87C15) MSFC 574(CA48) CRB | 393
 (F87C21) MSFC 574(CA48) CRB | 393
 (F87C18) MSFC 574(CA48) CRB | 393
 (F87C24) MSFC 574(CA48) CRB | 393
 (F87S98) DATA NOT AVAILABLE

BETA ELEVTR SPCBRK 3DF_LAP REFERENCE INFORMATION
 .000 .000 999.999 .000 SREF 2590.0000 SQ.FT.
 .000 15.000 999.999 13.750 LREF 474.8000 N.
 .000 -40.000 999.999 -14.250 BREF 936.7000 N.
 .000 -20.000 999.999 -14.250 XMRP 838.7000 N.
 .000 .000 999.999 -14.250 YMRP .0000 N.
 .000 -20.000 999.999 -14.250 ZMRP .0000 N.
 .000 .000 999.999 .000 SCALE .0040

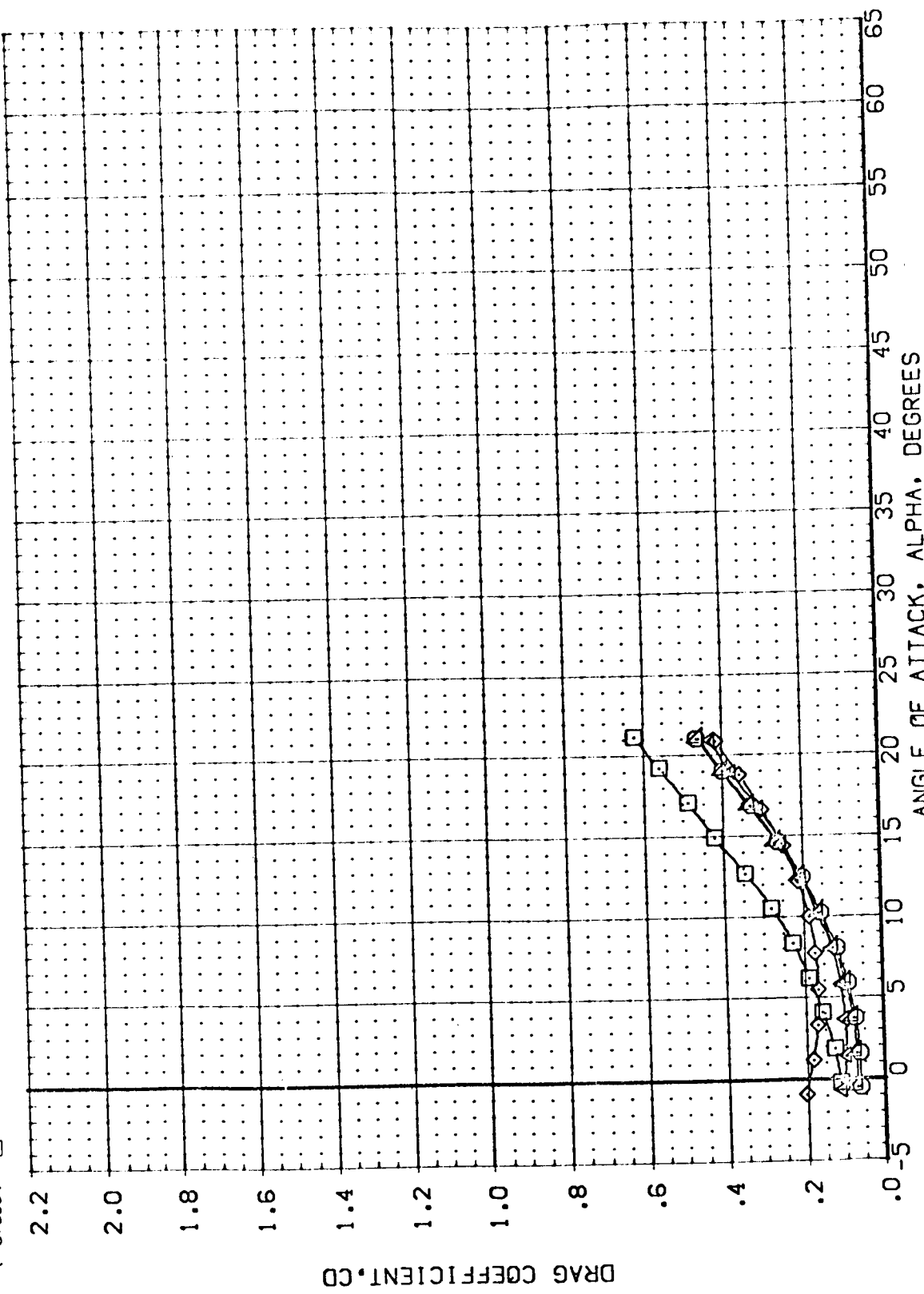


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

(B)MACH = .89

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87C08)	MSFC 574(DA48) CRB 1398	.000	.000	999.990	.000	SREF 2690.0000 SC.FT.
(F87C15)	MSFC 574(DA48) CRB 1398	.000	15.000	999.990	13.750	LREF 474.8000 N.
(F87C21)	MSFC 574(DA48) CRB 1398	.000	-40.000	999.990	-14.250	BREF 936.7000 N.
(F87C18)	MSFC 574(DA48) CRB 1398	.000	-20.000	999.990	.000	XMRP 838.7000 N.
(F87C24)	MSFC 574(CA48) CRB 1398	.000	.000	999.990	.000	VMRP .0000 N.
(F87S68)	DATA NOT AVAILABLE	.000	-20.000	999.990	-14.250	ZMRP .0000 N.
						SCALE .0040

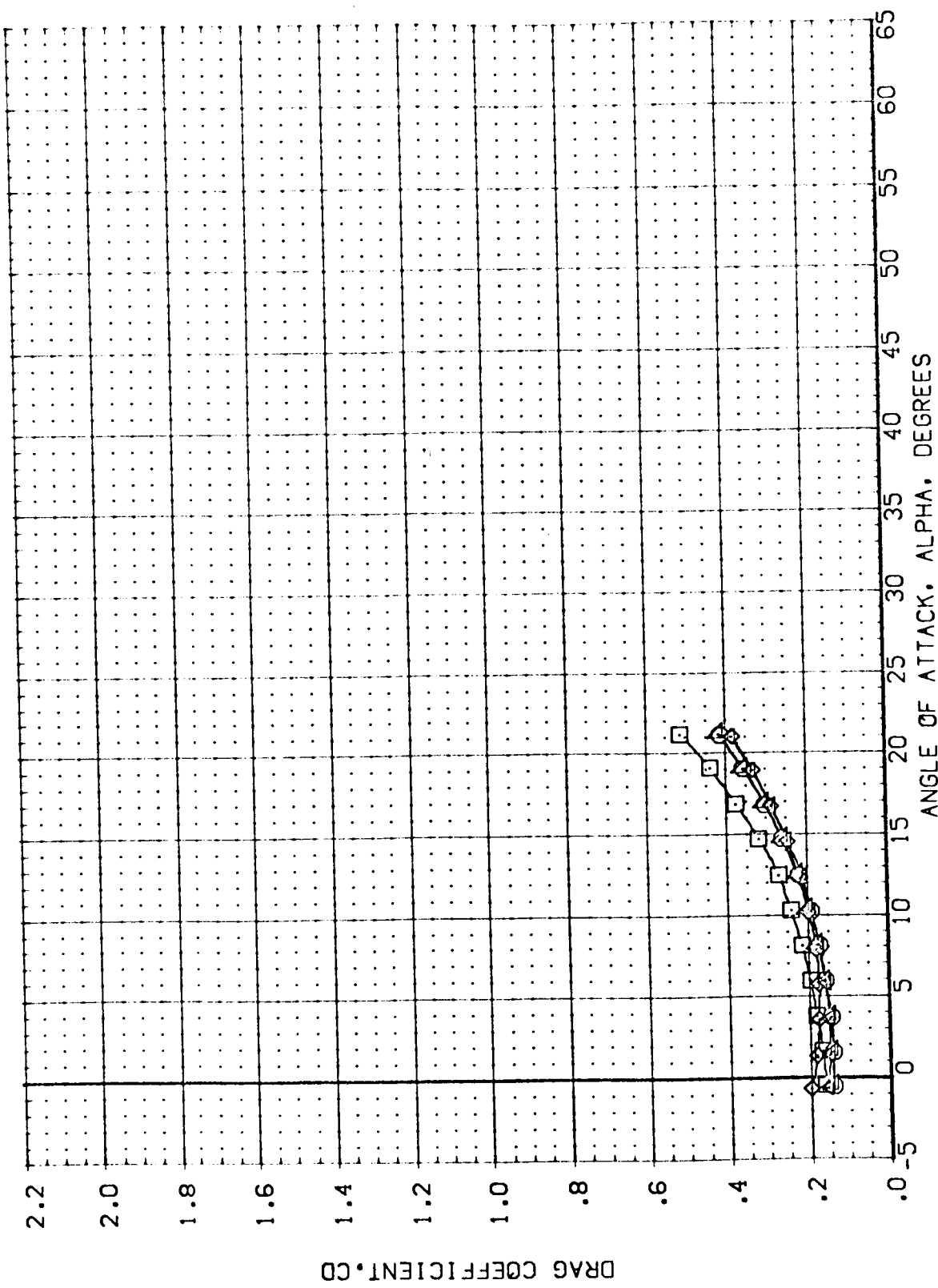


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398

(0) MACH = 1.95

DATA SET SYMBO	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDRK	SOCLAP	REFERENCE INFORMATION
(F87C08)	MSFC 574(CA48) CRB (399)	.000	.000	999.990	.000	SREF 2690.0000
(F87C15)	MSFC 574(CA48) CRB (399)	.000	15.000	999.990	13.750	REF 474.8000
(F87C21)	MSFC 574(CA48) CRB (399)	.000	-40.000	999.990	-14.250	BRF 936.7000
(F87C18)	MSFC 574(CA48) CRB (399)	.000	-20.000	999.990	-14.250	XMR 838.7000
(F87C24)	MSFC 574(CA48) CRB (399)	.000	-20.000	999.990	-14.250	ZMRP .0000
(F87C38)	MSFC 574(CA48) CRB (399)	.000	-20.000	999.990	-14.250	SCALE .0040

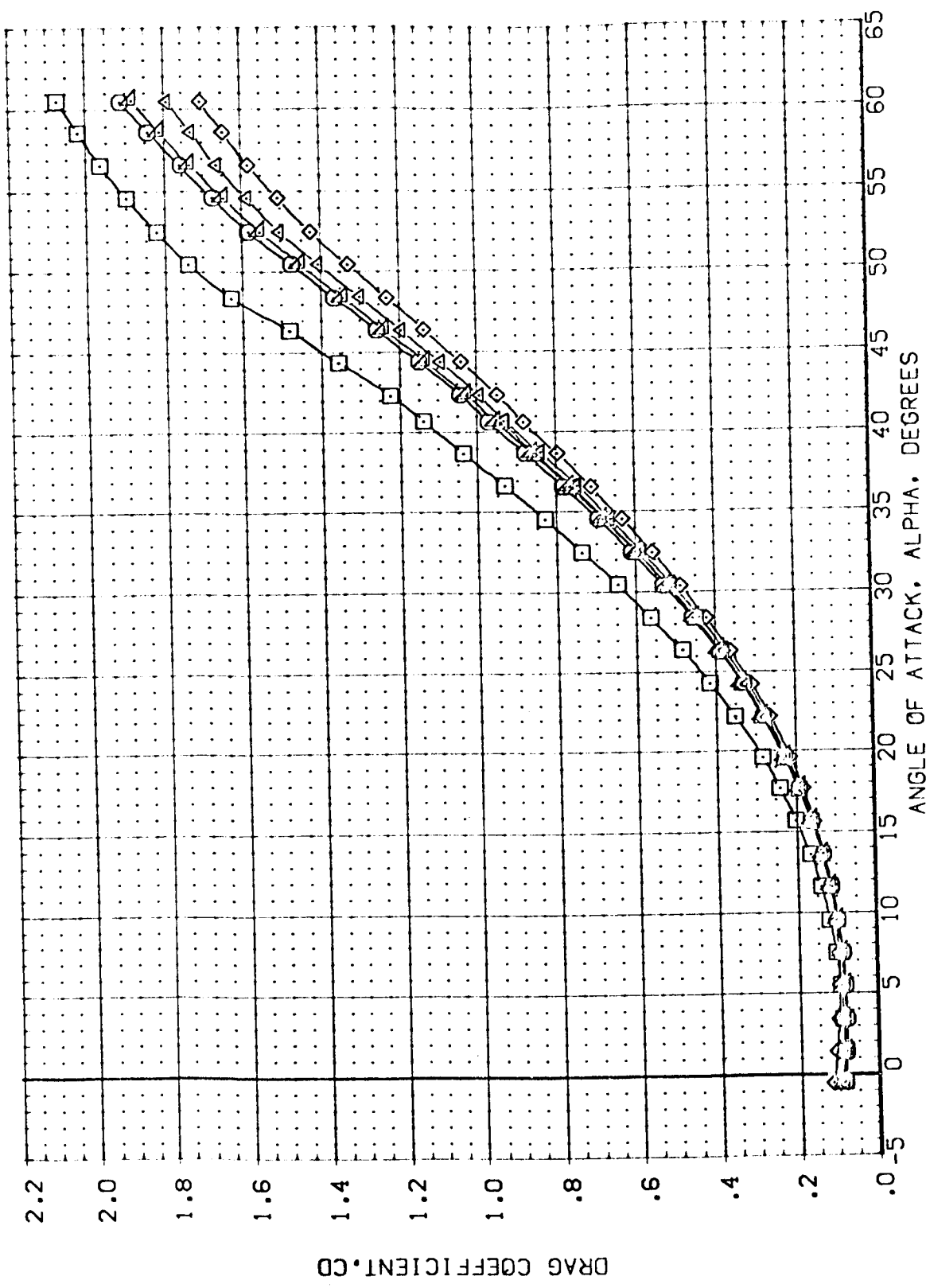


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

(F)MACH = 4.96

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87C98)	MSFC 574(CA48) CRB 1393	.000	.000	999.990	.000	SREF 2690.0000
(F87C15)	MSFC 574(CA48) CRB 1393	.000	15.000	999.990	13.750	LREF 474.8000
(F87C21)	MSFC 574(CA48) CRB 1393	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87C18)	MSFC 574(CA48) CRB 1393	.000	-20.000	999.990	.000	XMRP 838.7000
(F87C24)	MSFC 574(CA48) CRB 1393	.000	.000	999.990	-14.250	YMRP .0000
(F87S98)	DATA NOT AVAILABLE	.000	-20.000	999.990	-14.250	ZMRP .0000
					SCALE	.0040

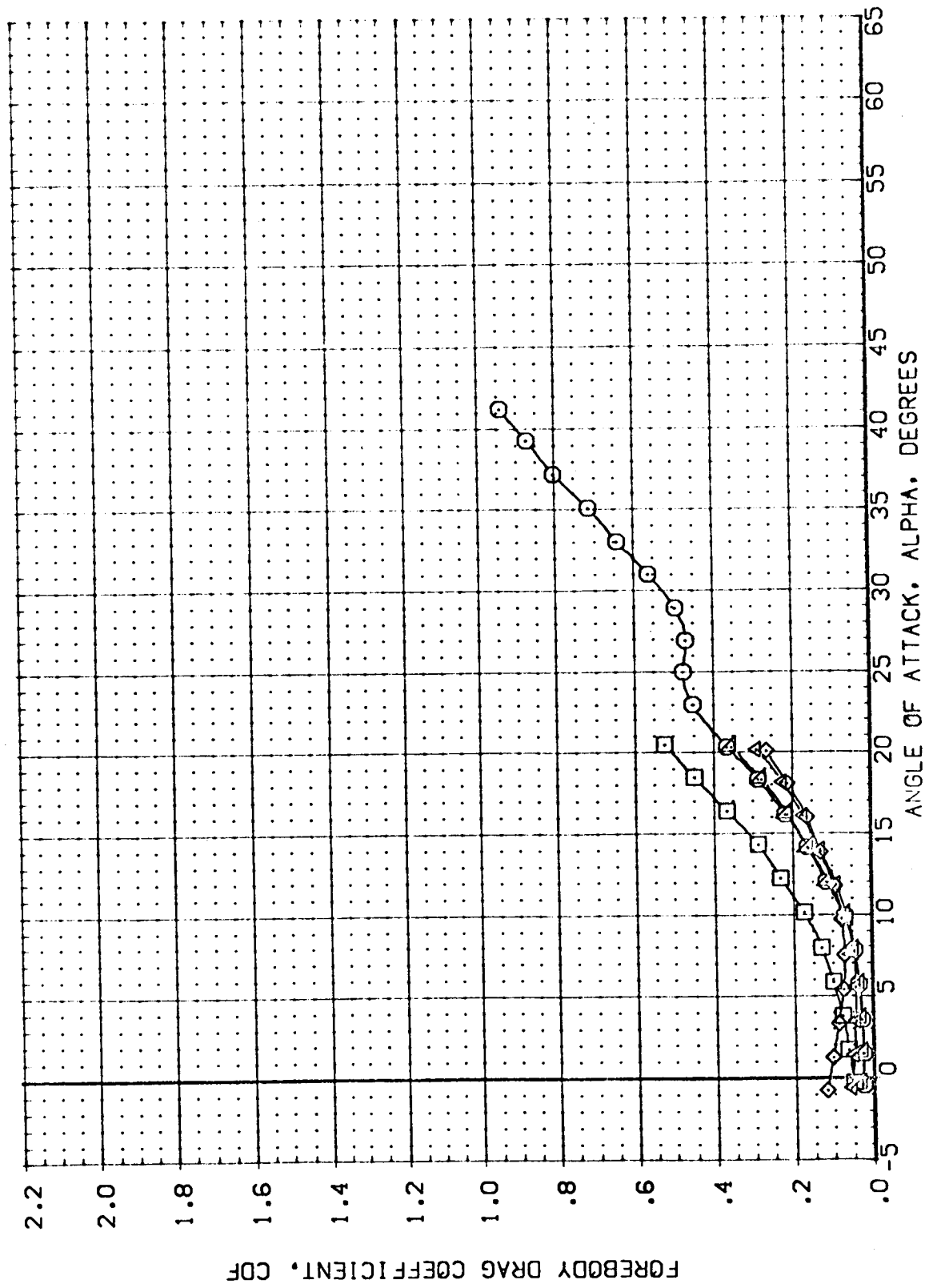


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398

(M)MACH = .60

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(F87C08)	MSFC 574(CA48) CRB 1398
(F87C15)	MSFC 574(CA48) CRB 1399
(F87C21)	MSFC 574(CA48) CRB 1399
(F87C18)	MSFC 574(CA48) CRB 1399
(F87C24)	MSFC 574(CA48) CRB 1399
(F87S98)	DATA NOT AVAILABLE

BETA ELEVTR SPCBRK BOCLAP REFERENCE INFORMATION

.000	.000	999.990	.000	SREF	2690.0000	50.000
.000	15.000	999.990	13.750	LREF	474.8000	77.000
.000	-40.000	999.990	-14.250	BREF	936.7000	77.000
.000	-20.000	999.990	.000	XMRP	838.0000	77.000
.000	.000	999.990	-14.250	YMRP	.0000	77.000
.000	-20.000	999.990	-14.250	ZMRP	.0000	77.000
.000	.000	999.990	.000	SCALE	.0040	

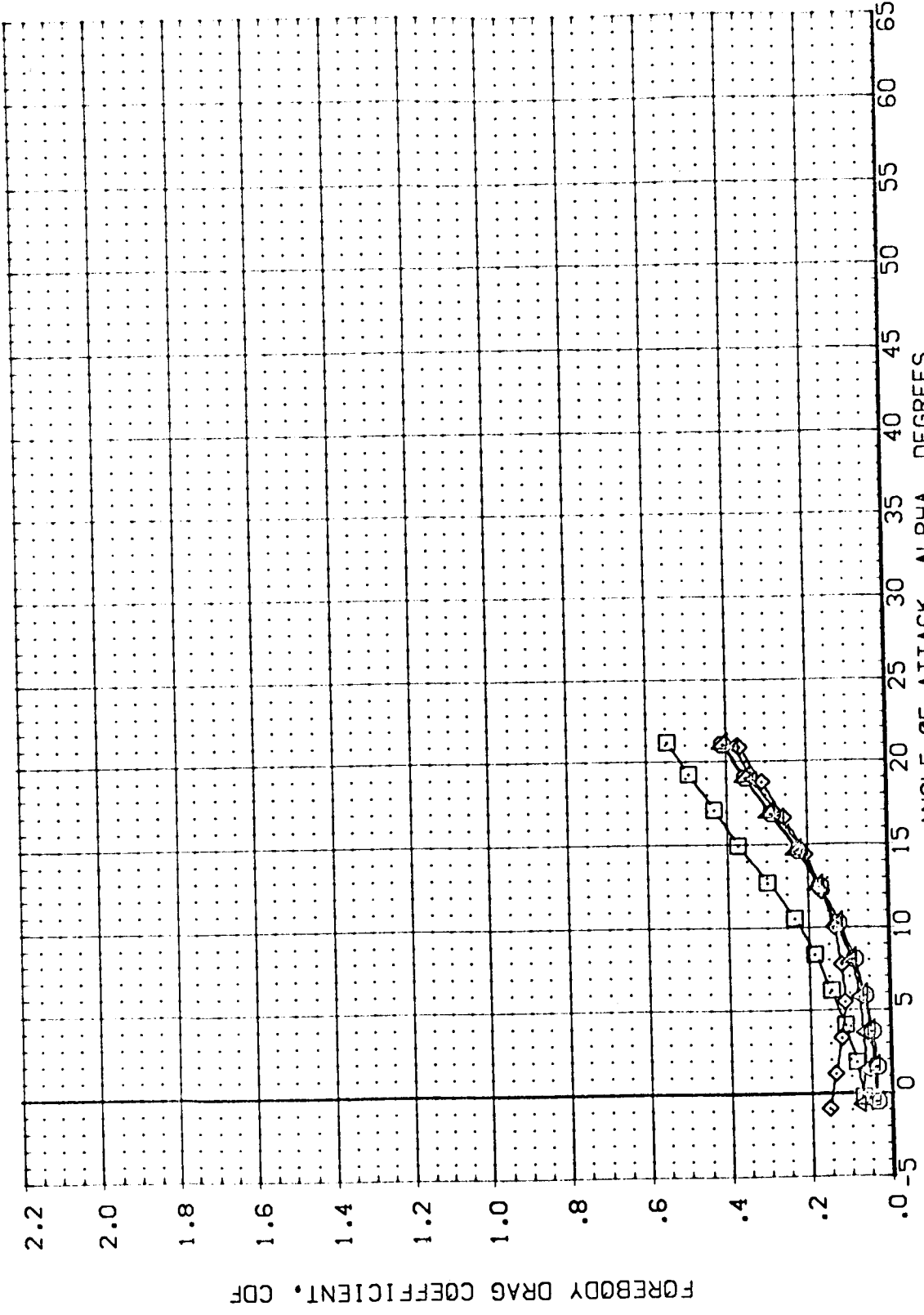


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398

(B)MACH = .89



DATA SET SYMBOL CONFIGURATION DESCRIPTION

{F87C08}	MSFC 574(OA48) ORB 398
{F87C15}	MSFC 574(OA48) ORB 398
{F87C21}	MSFC 574(OA48) ORB 398
{F87C18}	MSFC 574(OA48) ORB 398
{F87C24}	MSFC 574(OA48) ORB 398
{F87S98}	DATA NOT AVAILABLE

BETA ELEVTR SPOBRK 90FLAP REFERENCE INFORMATION

.000	999.990	.000	SPCE	2690.0000	SC.FT.
.000	999.990	13.750	REF	474.8000	IN.
.000	999.990	-14.250	BRFF	936.7000	IN.
.000	999.990	.000	XMRP	838.7000	IN.
.000	999.990	-14.250	YMRP	.0000	IN.
.000	999.990	-14.250	ZMRP	.0000	IN.
.000	999.990	-14.250	SCALE	.0000	IN.

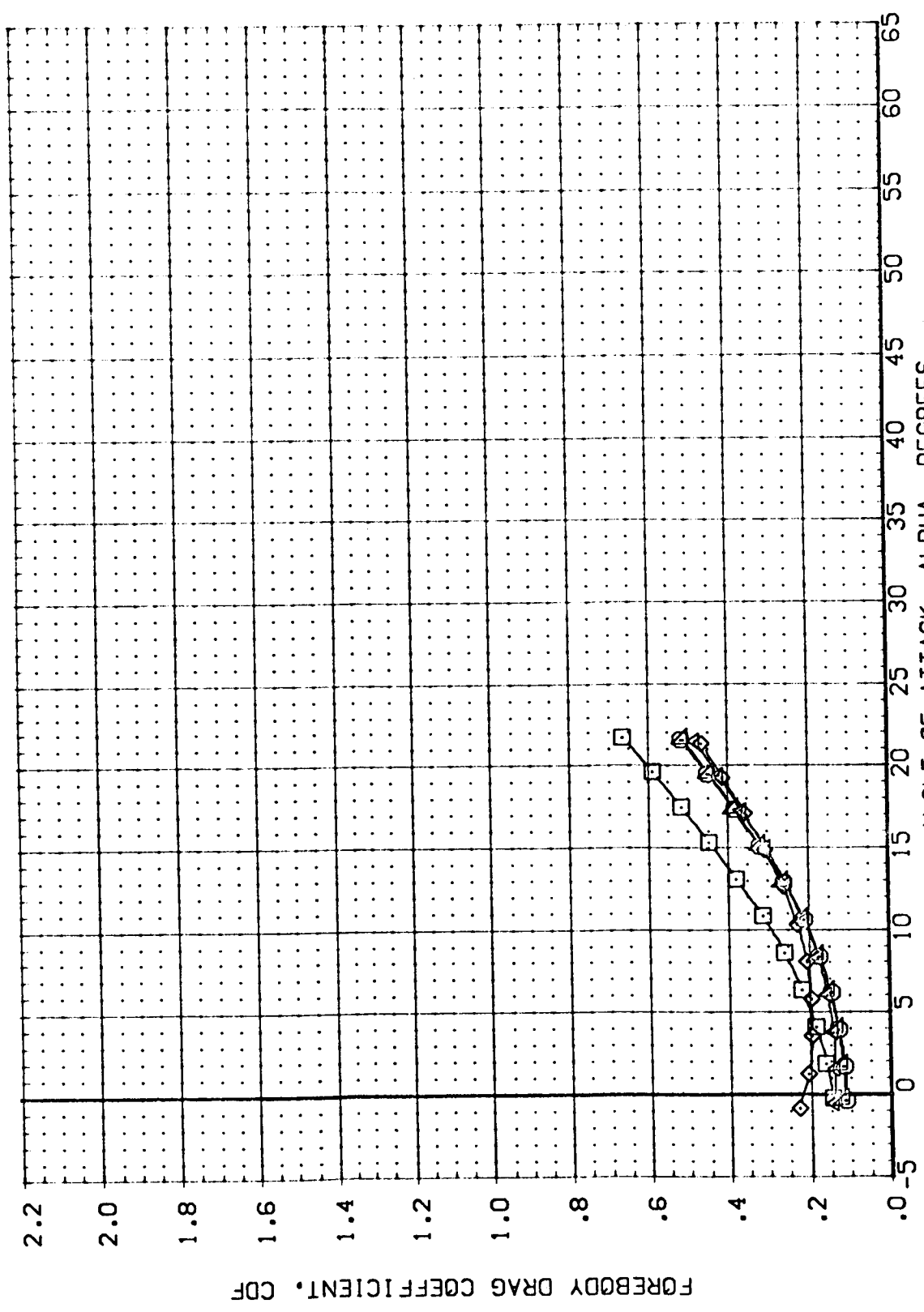


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

{C}MACH = 1.20

DATA SET SYMCL CONFIGURATION DESCRIPTION

(F87C08)	MSFC 574(CA48) CR8 139B
(F87C15)	MSFC 574(CA48) CR8 139B
(F87C21)	MSFC 574(CA48) CR8 139B
(F87C18)	MSFC 574(CA48) CR8 139B
(F87C24)	MSFC 574(CA48) CR8 139B
(F87S98)	DATA NOT AVAILABLE

BETA

.000	ELEVTR	SPOBRK	BOFLAP	SREF	2690.0000	SCALE
.000	15.000	999.990	.000	LREF	474.8000	
.000	-10.000	999.990	13.750	BREF	936.7000	
.000	-20.000	999.990	.000	XMRP	838.7000	
.000		999.990	-14.250	YMRP	.0000	
.000		999.990	-14.250	ZMRP	.0000	
.000		999.990		SCALE	.0040	

REFERENCE INFORMATION

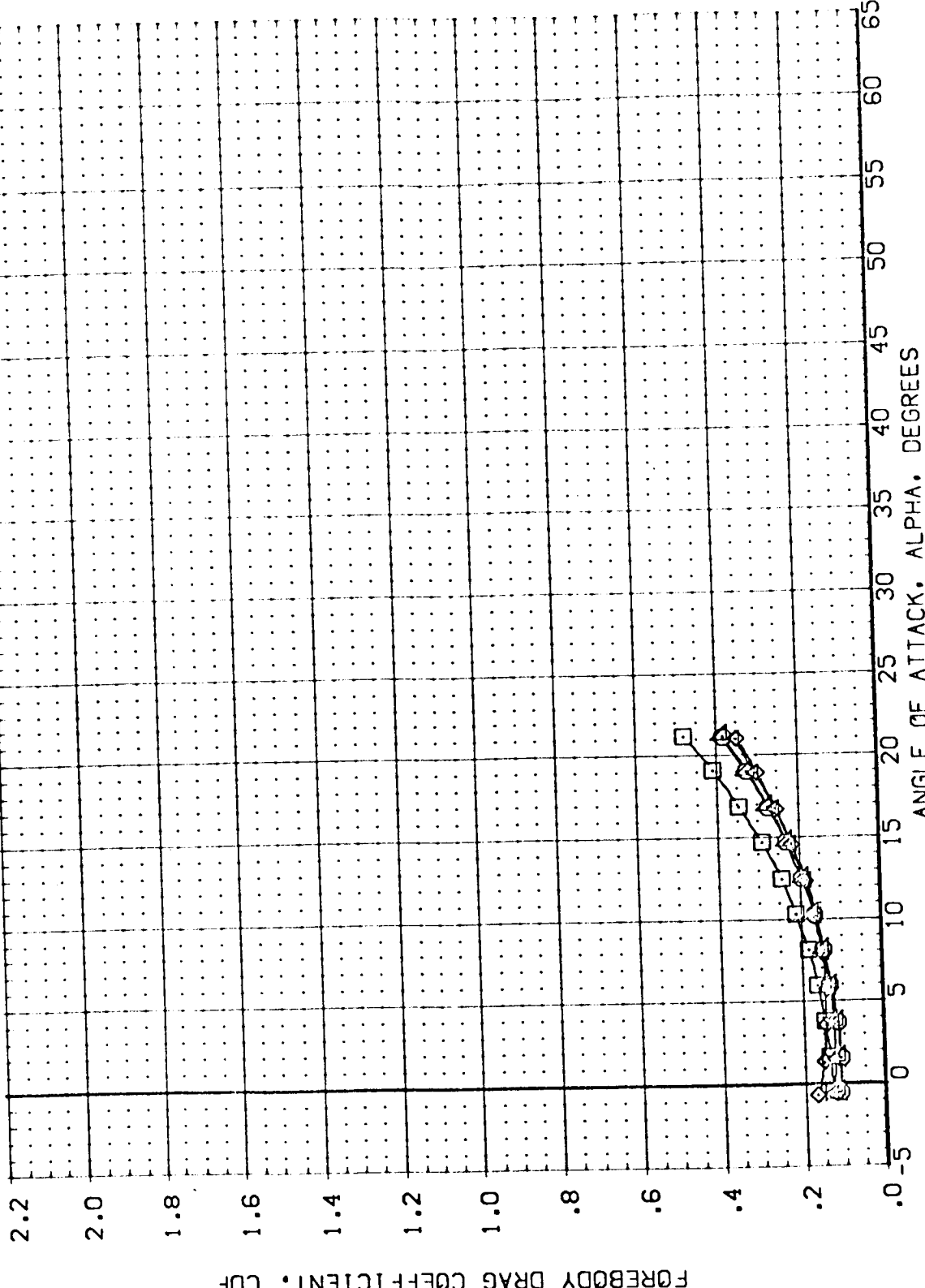


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

COVMACH = 1.95



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDBRK	BCFLAP	REFERENCE INFORMATION
(F87C08)	MSFC 574(CA48) CRB 139B	.000	.000	999.999	.000	SREF 2690.0000 SC.FT.
(F87C15)	MSFC 574(CA48) CRB 399	.000	.500	999.999	13.750	LREF 474.8000
(F87C21)	MSFC 574(CA48) CRB 399	.000	-40.000	999.999	-14.250	BREF 936.7000
(F87C18)	MSFC 574(CA48) CRB 139B	.000	-20.000	999.999	.000	XMRP 938.7000
(F87C24)	MSFC 574(CA48) CRB 139B	.000	.000	999.999	-14.250	YMRP .0000
(F87598)	DATA NOT AVAILABLE	.000	-20.000	999.999	-14.250	ZMRP .0000
					SCALE	.0010

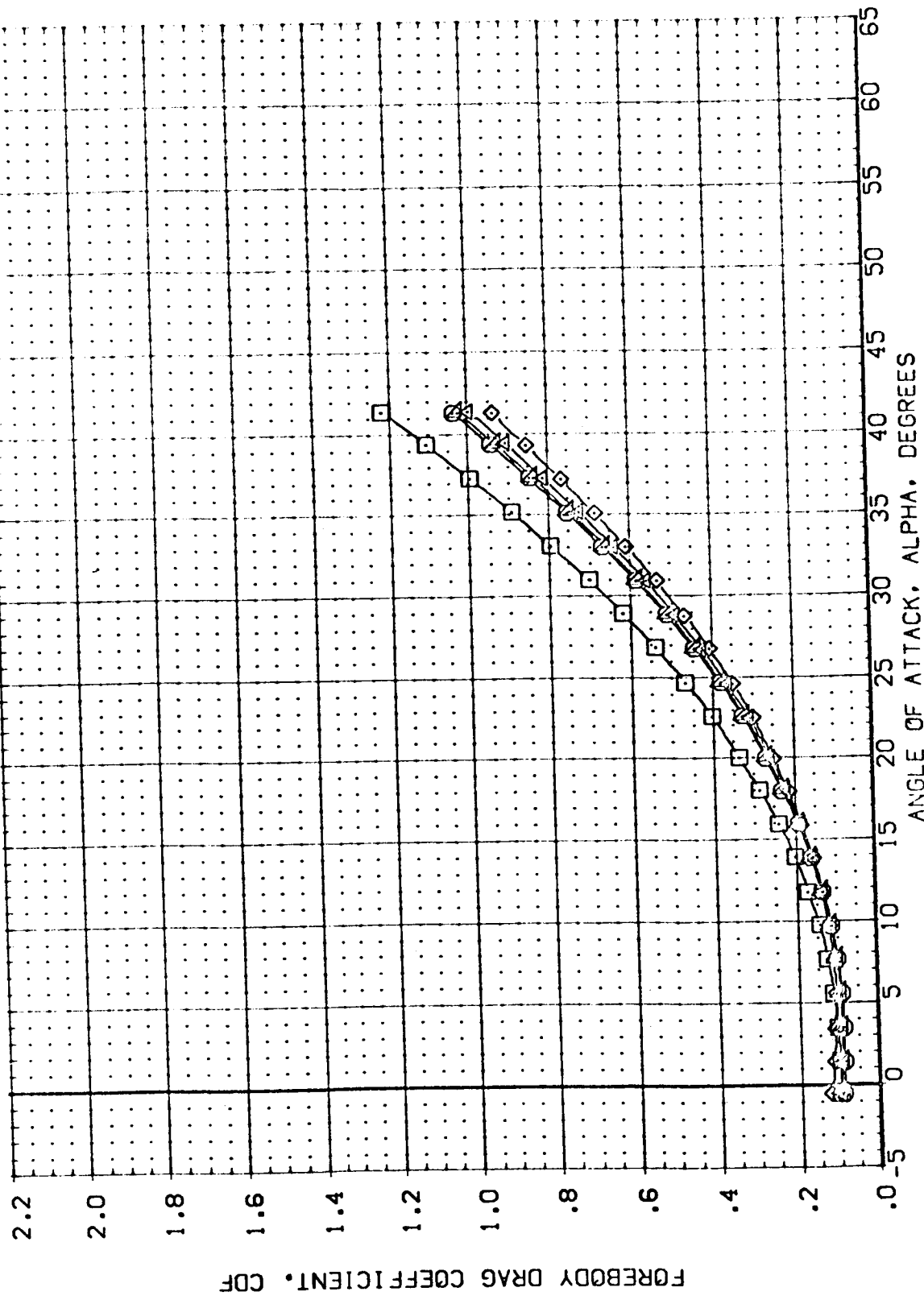


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

(C)MACH = 2.99



DATA SET SYMBOL CONFIGURATION DESCRIPTION REFERENCE INFORMATION

{F87C08} MSFC 574(CA48) CRB 393 SREF 2690.0000 SQ.FT.

{F87C15} MSFC 574(CA48) CRB 393 LREF 474.8000 IN.

{F87C21} MSFC 574(CA48) CRB 393 XMRP 936.7000 IN.

{F87C18} MSFC 574(CA48) CRB 393 YMRP 838.7000 IN.

{F87C24} MSFC 574(CA48) CRB 393 ZMRP IN.

{F87598} DATA NOT AVAILABLE SCALE .0040

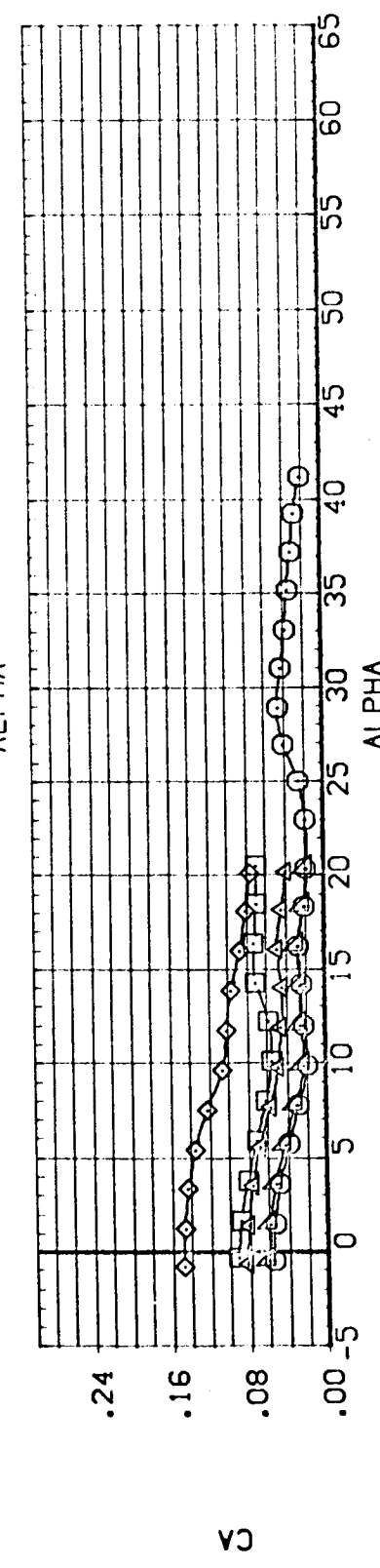
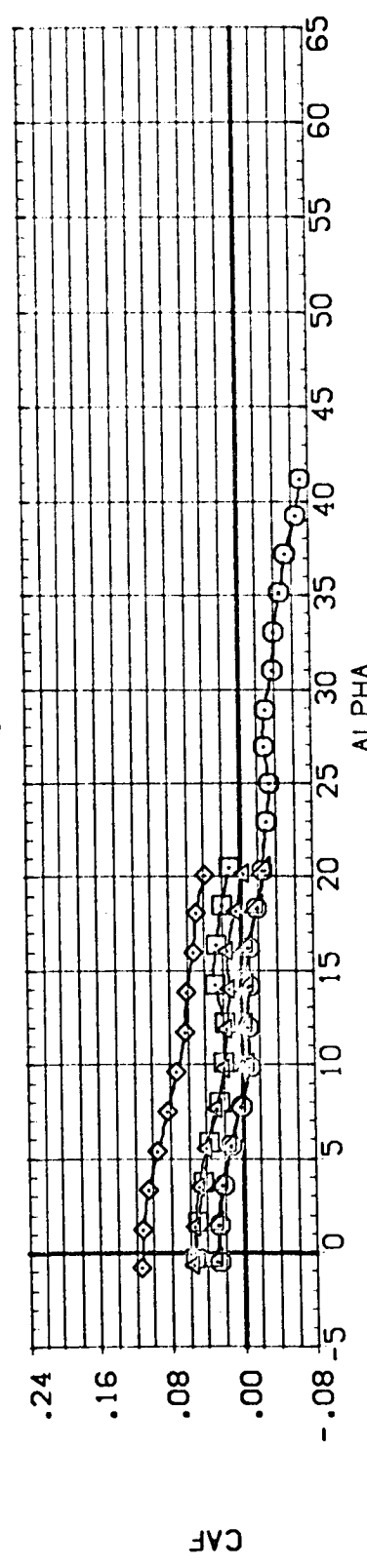
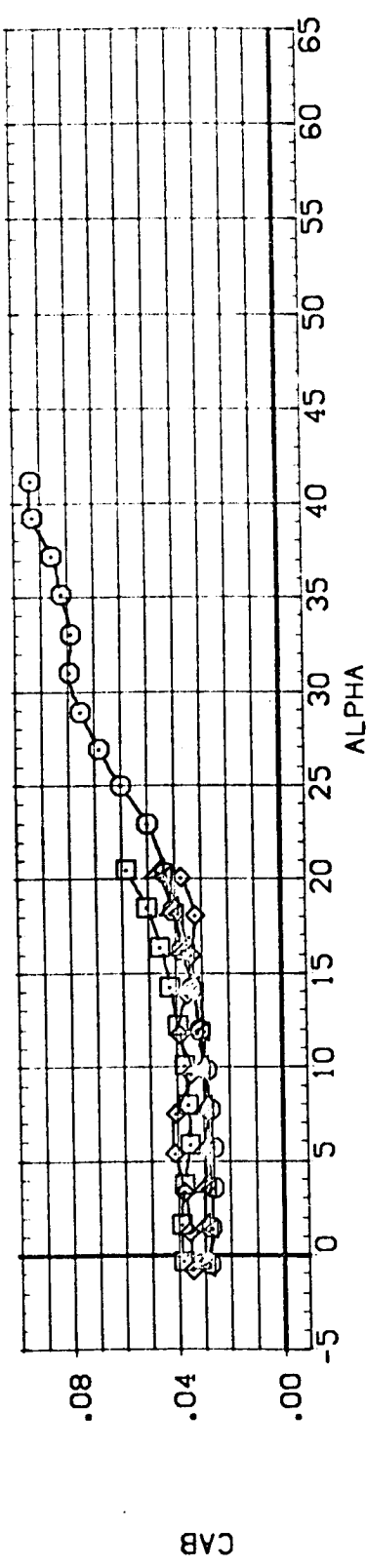


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

(A) MACH = .60



DATA SET SYMBOL CONFIGURATION DESCRIPTION REFERENCE INFORMATION

(F87C08)	MSFC 574(CA48) CR3 399	SREF 2690.0000
(F87C15)	MSFC 574(CA48) CR3 399	REF 474.8000
(F87C21)	MSFC 574(CA48) CR3 399	BRF 936.7000
(F87C18)	MSFC 574(CA48) CR3 399	XMRP 838.7000
(F87C24)	MSFC 574(CA48) CR3 399	ZMRP .0000
(F87S98)	DATA NOT AVAILABLE	SCALE .0040

BETA ELEVTR SPOBRK BOFLAP

.000	.000	999.990	.000
.000	15.000	999.990	13.750
.000	-40.000	999.990	-14.250
.000	-20.000	999.990	.000
.000	-20.000	999.990	-14.250

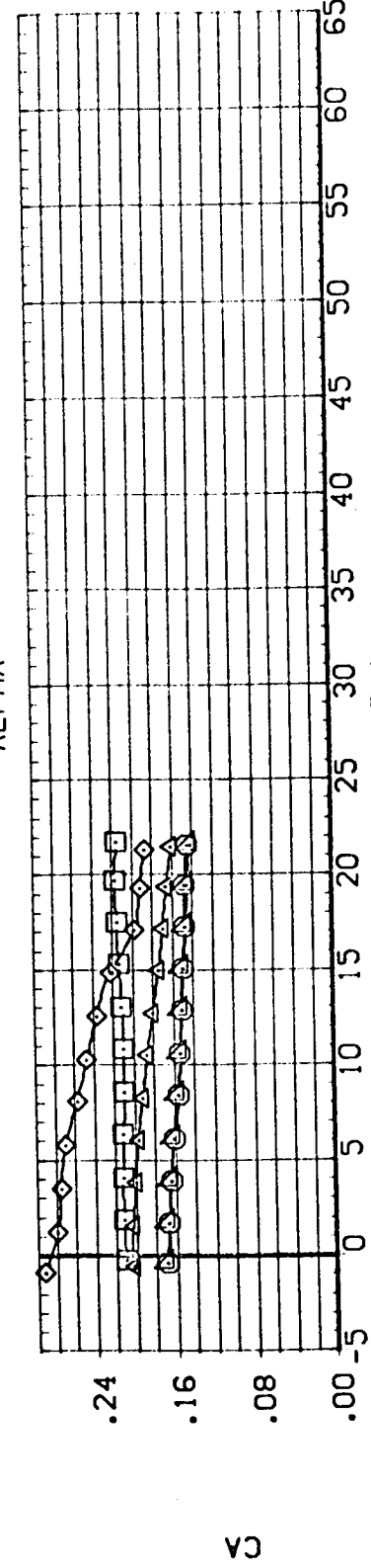
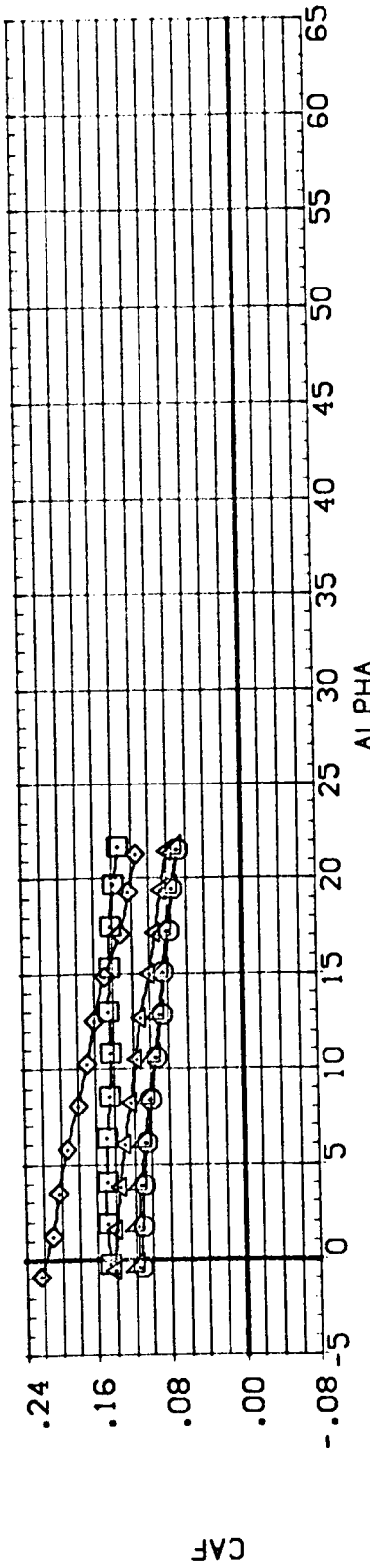
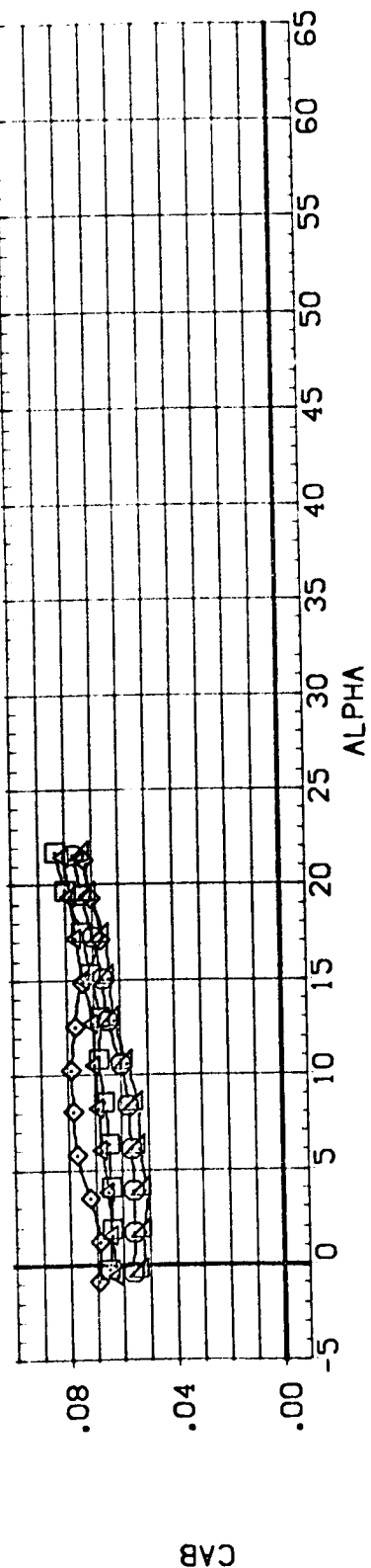


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398

(C)MACH = 1.20

DATA SET SYMBOL
 (F87C08)
 (F87C15)
 (F87C21)
 (F87C18)
 (F87C24)
 (F87598)

CONFIGURATION DESCRIPTION
 MSFC 574(CA48) CR3 1398
 MSFC 574(CA48) CR3 1398
 MSFC 574(CA48) CR3 1398
 MSFC 574(CA48) CR3 1398
 MSFC 574(CA48) CR3 1398
 DATA NOT AVAILABLE

BETA
 .000
 .000
 .000
 .000
 .000
 .000
 .000
 .000

ELEVTR
 .000
 15.000
 -40.000
 -20.000
 -20.000
 -20.000

SPOBRK
 999.999
 999.999
 999.999
 999.999
 999.999
 999.999

BOFLAP
 .000
 13.750
 -14.250
 .000
 -14.250
 -14.250

REFERENCE INFORMATION
 SREF 2690.0000 SG.F.T.
 UREF 474.8000
 BREF 936.7000
 XMRP 838.7000
 YMRP .0000
 ZMRP .0000
 SCALE .0040

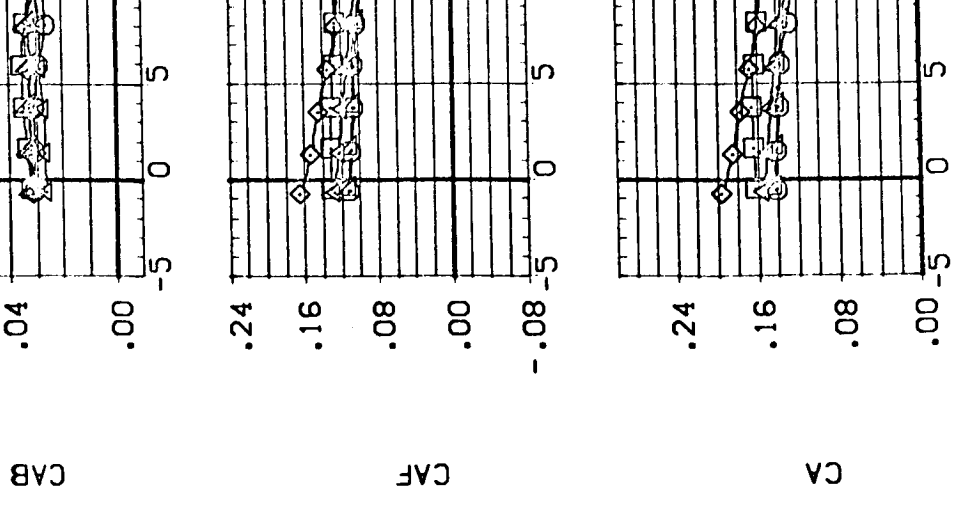
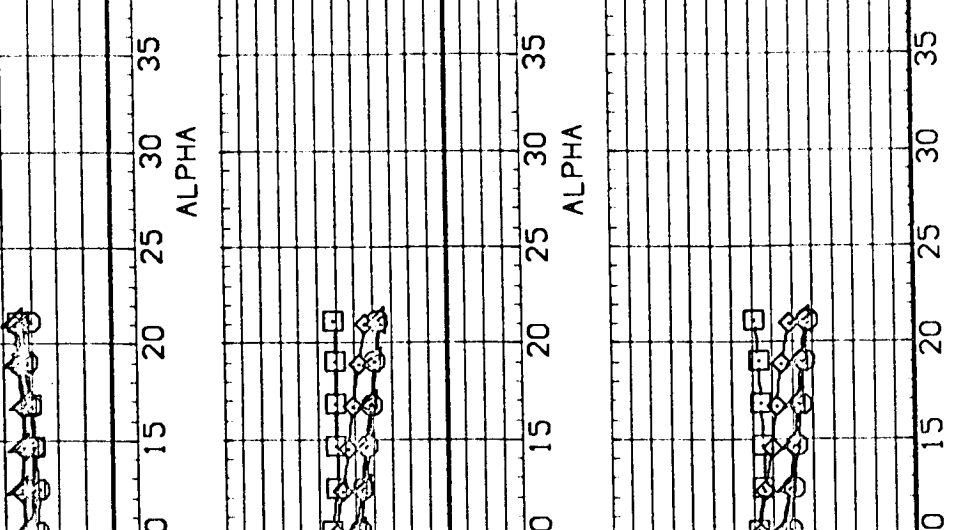
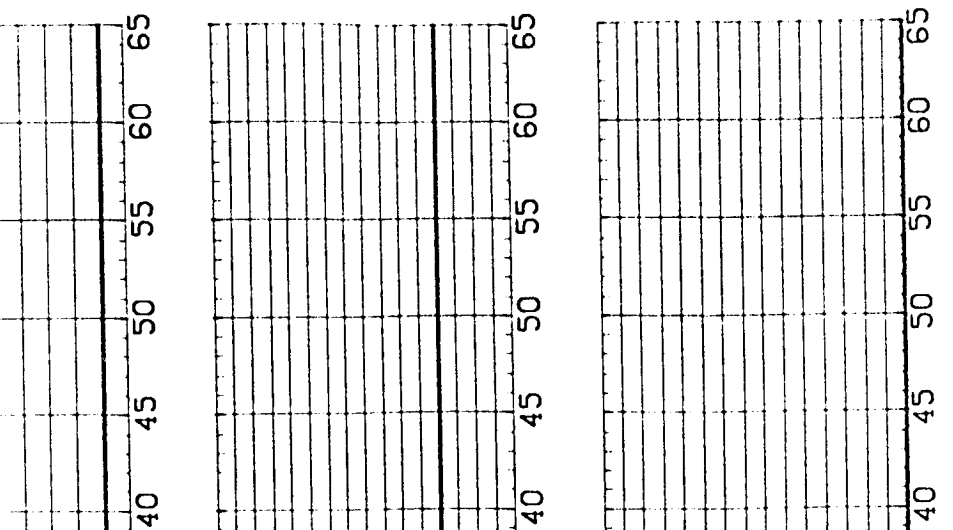


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B
 (C)MACH = 1.95

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION	SCALE
(F87C08)	MSFC 574(CA48) CRB 1398	.000	.000	999.990	.000	SREF 2600	.0000
(F87C15)	MSFC 574(CA48) CRB 1398	.000	15.000	999.990	13.750	LREF 474	.8000
(F87C21)	MSFC 574(CA48) CRB 1398	.000	-40.000	999.990	-14.250	BREF 936	.7000
(F87C18)	MSFC 574(CA48) CRB 1398	.000	-20.000	999.990	.000	XVRP 838	.7000
(F87C24)	MSFC 574(CA48) CRB 1398	.000	.000	999.990	-14.250	ZVRP	.0000
(F87S98)	MSFC 574(CA48) CRB 1398	.000	-20.000	999.990	-14.250	SCALE	.0000

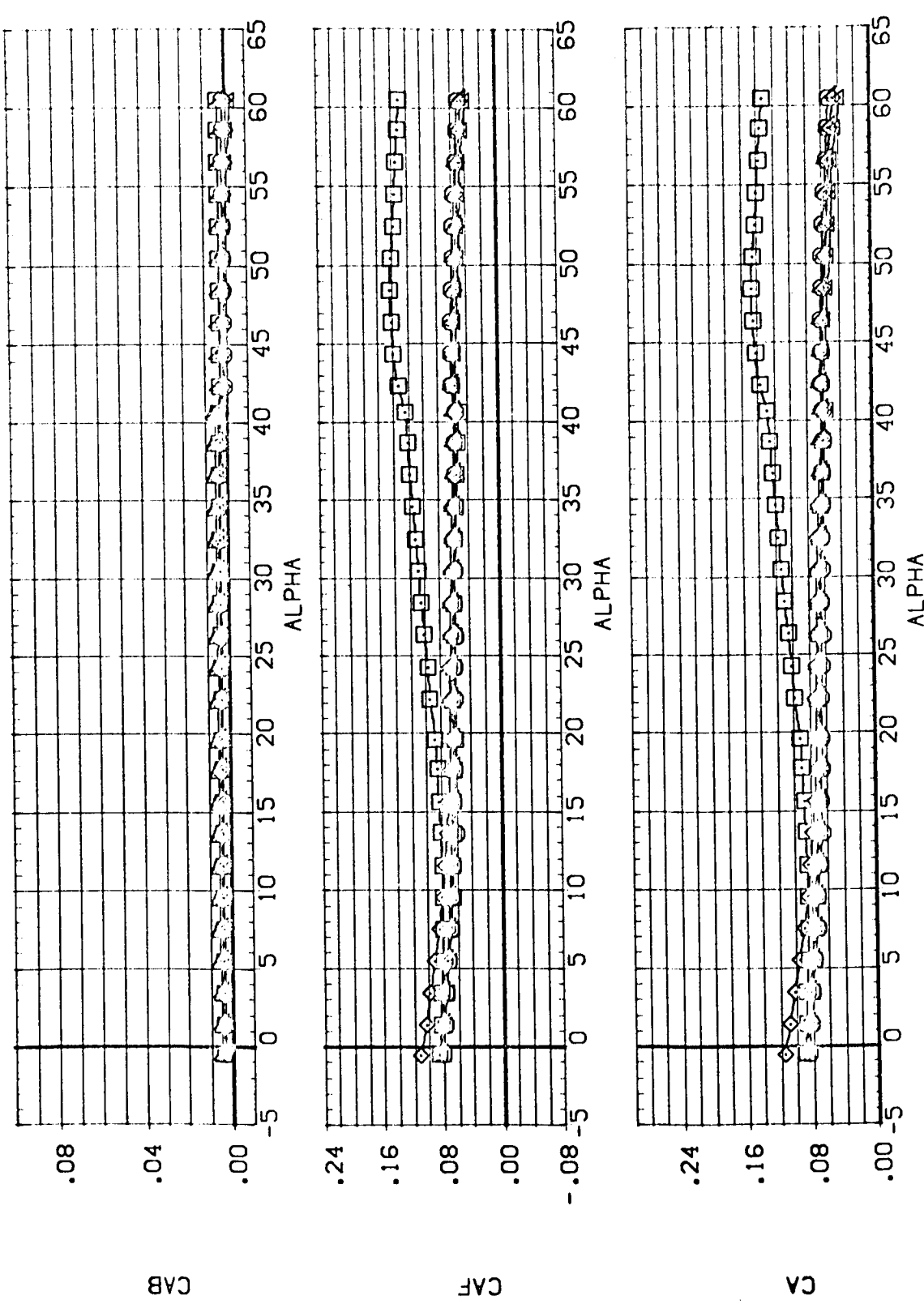


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87C08) M5C 574(CA48) CR3 139B
 (F87C15) M5C 574(CA48) CR3 139B
 (F87C21) M5C 574(CA48) CR3 139B
 (F87C18) M5C 574(CA48) CR3 139B
 (F87C24) M5C 574(CA48) CR3 139B
 (F87S98) DATA NO: AVAILABLE

BETA ELEVTR SPOBRK BOFLAP
 .000 .000 999.999 .000
 .000 15.000 999.999 13.750
 .000 -40.000 999.999 -14.250
 .000 -20.000 999.999 .000
 .000 .000 999.999 -14.250
 .000 -20.000 999.999 -14.250
 .000 .000 999.999 .000

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 474.8000
 BREF 936.7000
 XMRP 838.7000
 YMRP .0000
 ZMRP .0000
 SCALE .0040

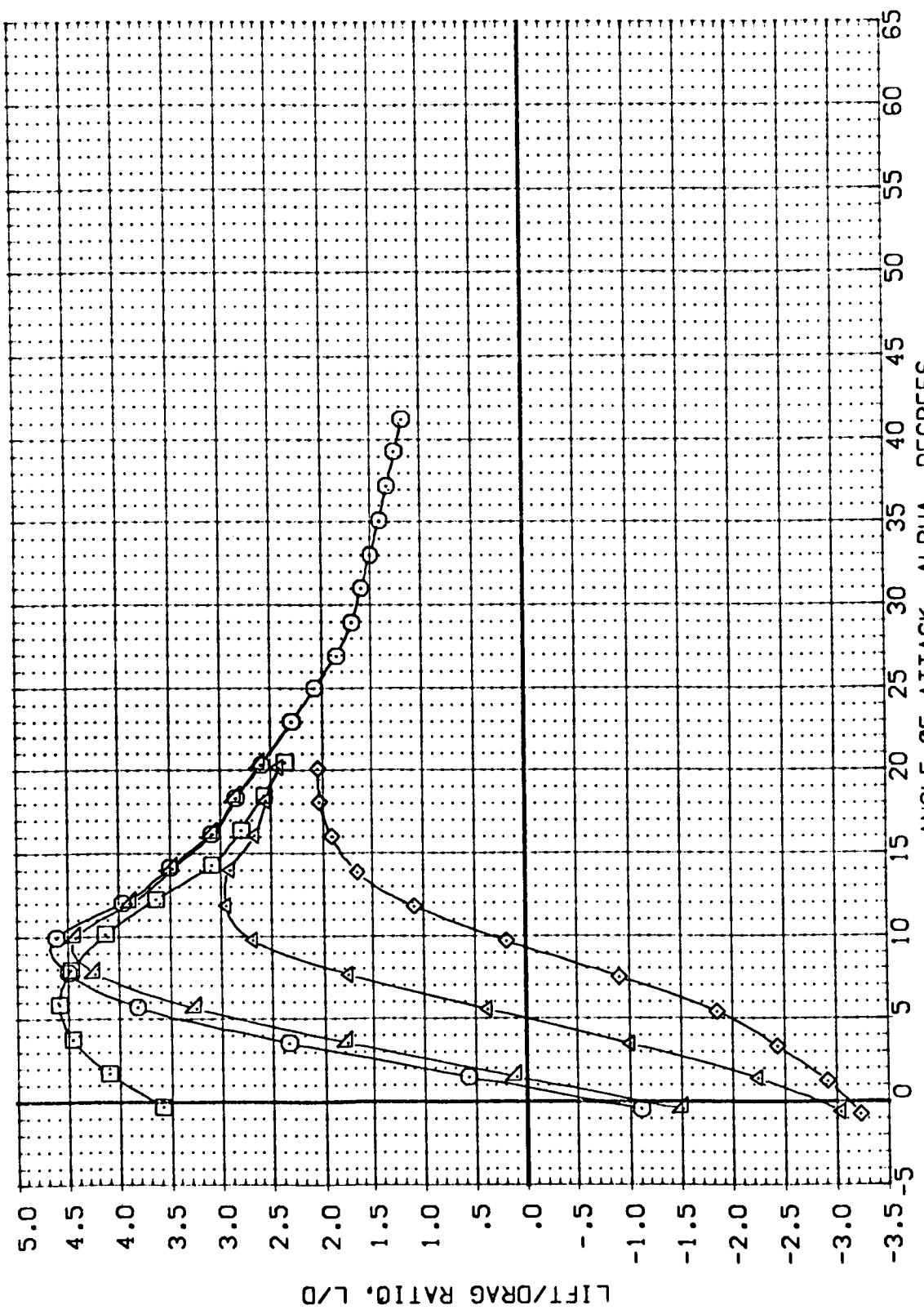


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

(M)MACH = .60

REFERENCE INFORMATION
 SREF 2690.0000 SC.F.T.
 LREF 474.8000
 BREF 936.7000
 XMRP 838.7000
 YMRP 0000
 ZMRP 0000
 SCALE 10040

BETA .000
 ELEVTR .000
 SPOBRK 999.990
 BOFLAP 000
 3.750
 -14.250
 000
 -14.250
 000
 -20.000
 999.990
 SCALE

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87C08) MSFC 574(CA48) CR8 1399
 (F87C15) MSFC 574(CA48) CR8 1399
 (F87C21) MSFC 574(CA48) CR8 1399
 (F87C18) MSFC 574(CA48) CR8 1399
 (F87C24) MSFC 574(CA48) CR8 1399
 (F87S98) DATA NOT AVAILABLE

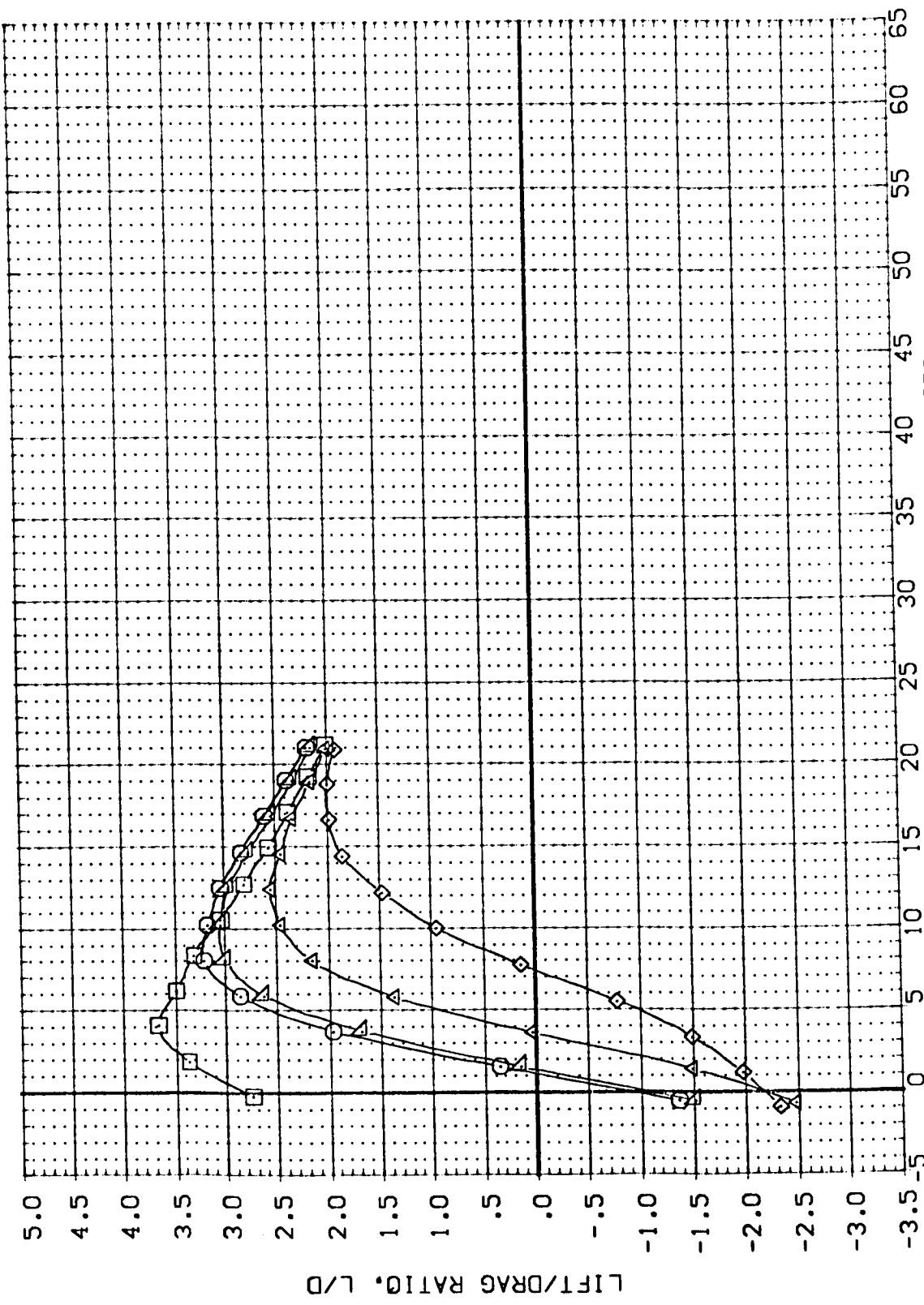


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B
 (B)MACH = .89

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(F87C08) MSFC 574(CA48) CR3 1398

(F87C15) MSFC 574(CA48) CR3 1398

(F87C21) MSFC 574(CA48) CR3 1398

(F87C28) MSFC 574(CA48) CR3 1398

(F87C34) MSFC 574(CA48) CR3 1398

(F87C38) DATA NOT AVAILABLE

BETA .000

ELEVTR .000

SPOBRK 999.99C

BOFLAP .000

SREF 2690.000C

LREF 474.800C

BREF 936.700C

XMRP 838.700C

YMRP .000C

ZMRP .000C

SCALE .0040

REFERENCE INFORMATION

SC.FT.

IN.

IN.

IN.

IN.

IN.

IN.

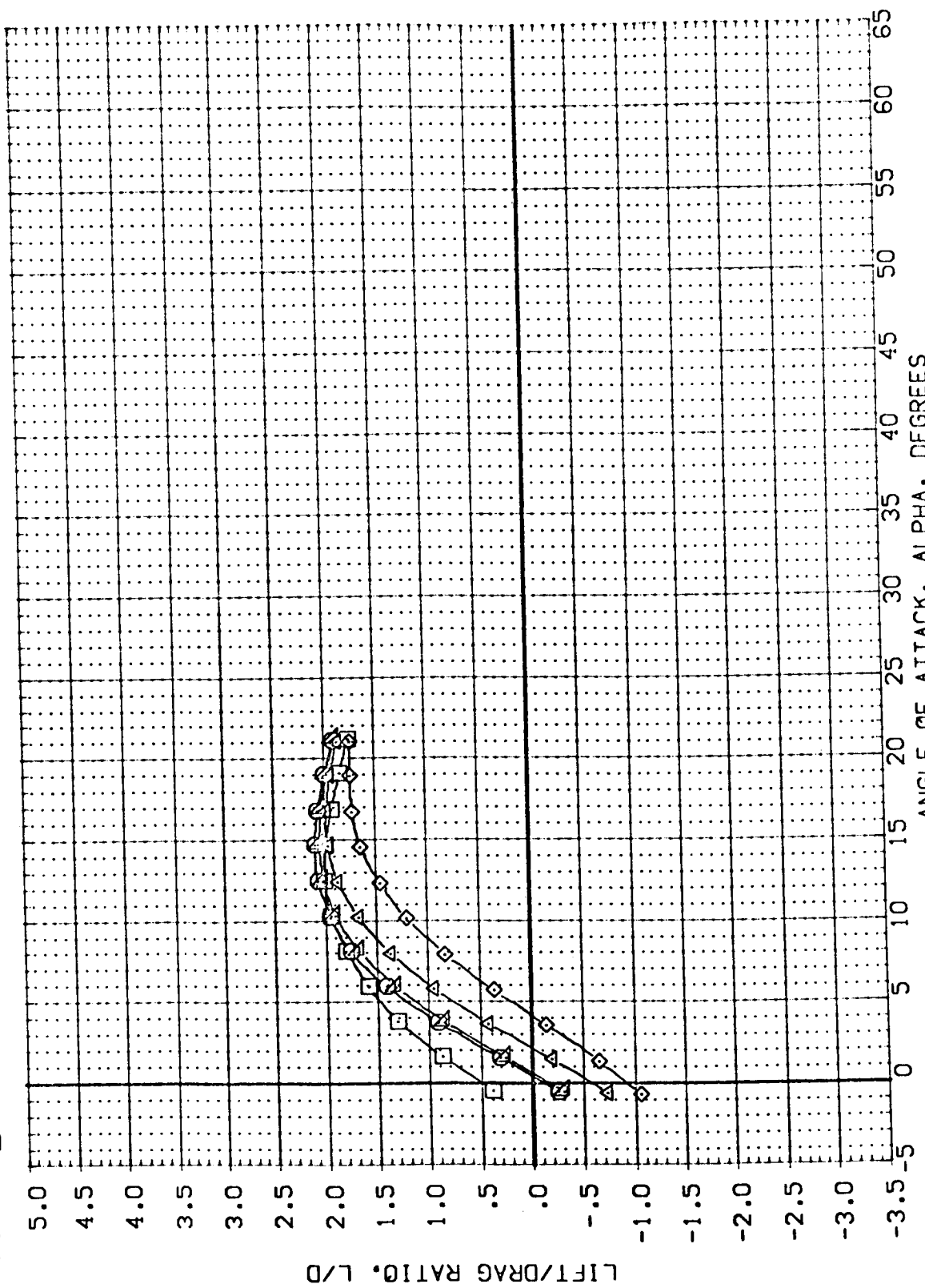


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398

(C)MACH = 1.95

DATA SET SYMBOL: (F87C08), (F87C15), (F87C21), (F87C18), (F87C24), (F87S98)

CONFIGURATION DESCRIPTION: MSFC 574(CA48) CRB 1398, MSFC 574(CA48) CRB 1398, MSFC 574(CA48) CRB 1398, MSFC 574(CA48) CRB 1398, MSFC 574(CA48) CRB 1398, MSFC 574(CA48) CRB 1398

BETA: .000, .000, .000, .000, .000, .000

ELEVTR: .000, 15.000, -40.000, -20.000, -20.000, -20.000

SPOBRK: 999.990, 999.990, 999.990, 999.990, 999.990, 999.990

BOFLAP: .000, 13.750, -14.250, .000, -14.250, -14.250

SCALE: .0040

REFERENCE INFORMATION: SREF 2690.0000 SQ.F., LREF 474.8000 IN., BREF 936.7000 IN., XMRP 838.7000 IN., VMRP .0000 IN., ZMRP .0000 IN.

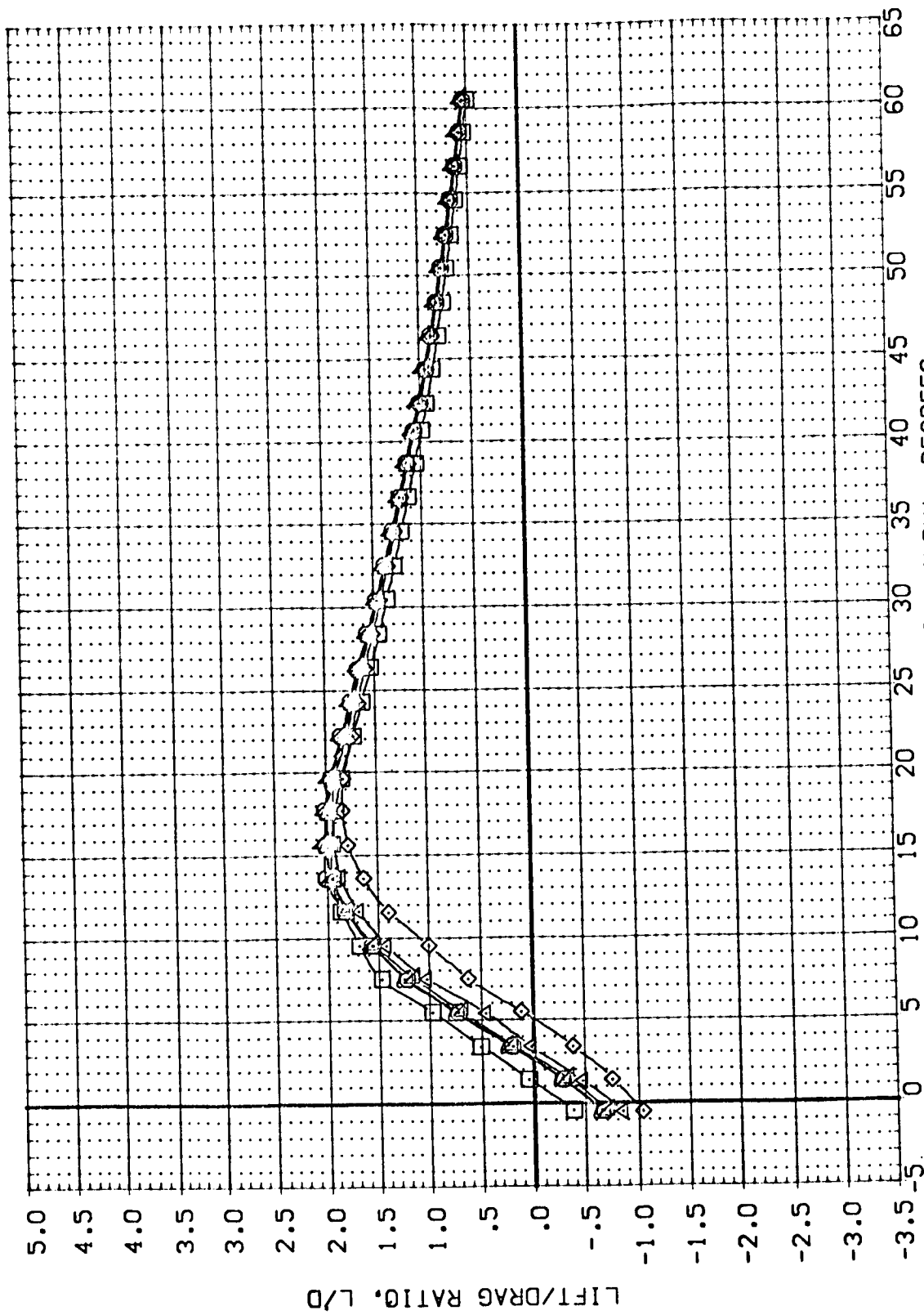


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398

(F)MACH = 4.96

DATA SET SYMBOL: (F87C08) (F87C15) (F87C21) (F87C18) (F87C24) (F87S98)

CONFIGURATION DESCRIPTION: MSFC 574(CA48) CRB 1398 MSFC 574(CA48) CRB 1398 MSFC 574(CA48) CRB 1398 MSFC 574(CA48) CRB 1398 MSFC 574(CA48) CRB 1398 DATA NOT AVAILABLE

BETA: .000 .000 .000 .000 .000 .000

ELEVATOR: .000 15.000 -40.000 -20.000 -20.000

SPDBRK: 999.990 999.990 999.990 999.990 999.990

BOFLAP: .000 13.750 -14.250 .000 -14.250

REFERENCE INFORMATION: SREF 2690 CCCC LREF 474.8000 BREF 936.7000 XMRP 838.7000 YMRP .0000 ZMRP .0000 SCALE .0040

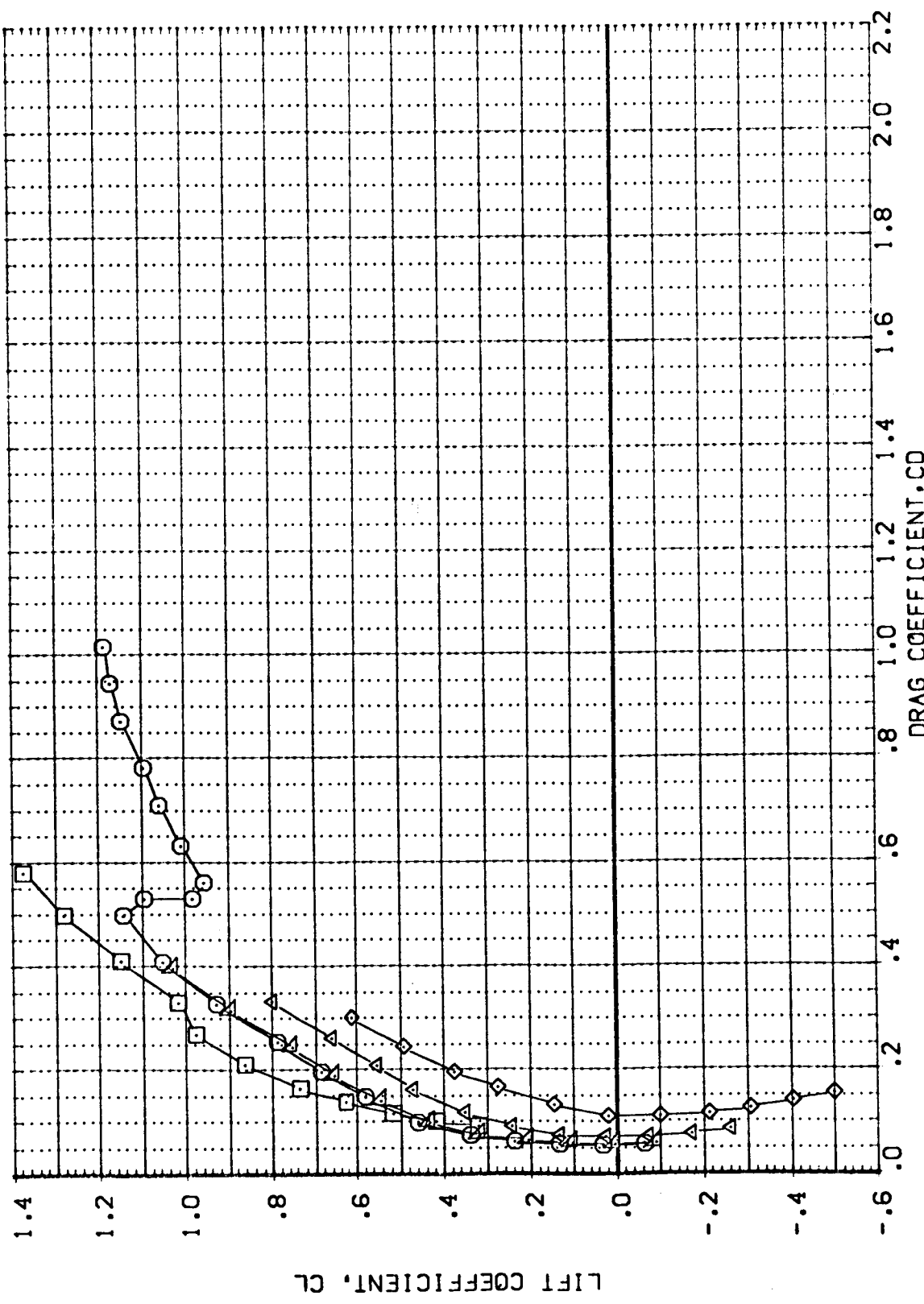


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398

DATA SET SYMBOL: MSFC 574(CA48) CRB 139B
 (F87C08)
 (F87C15)
 (F87C21)
 (F87C18)
 (F87C24)
 (F87S98)
 DATA NOT AVAILABLE

BETA .000
 .000
 .000
 .000
 .000
 .000
 .000
 .000

ELEVTR .000
 15.000
 -40.000
 -20.000
 -20.000

SPOBRK 999.990
 999.990
 999.990
 999.990
 999.990

BDFLAP .000
 13.750
 -14.250
 .000
 -14.250

REFERENCE INFORMATION
 SREF 2690.0000
 LREF 474.8000
 BREF 936.7000
 XMRP 838.7000
 YMRP .0000
 ZMRP .0000
 SCALE .0040

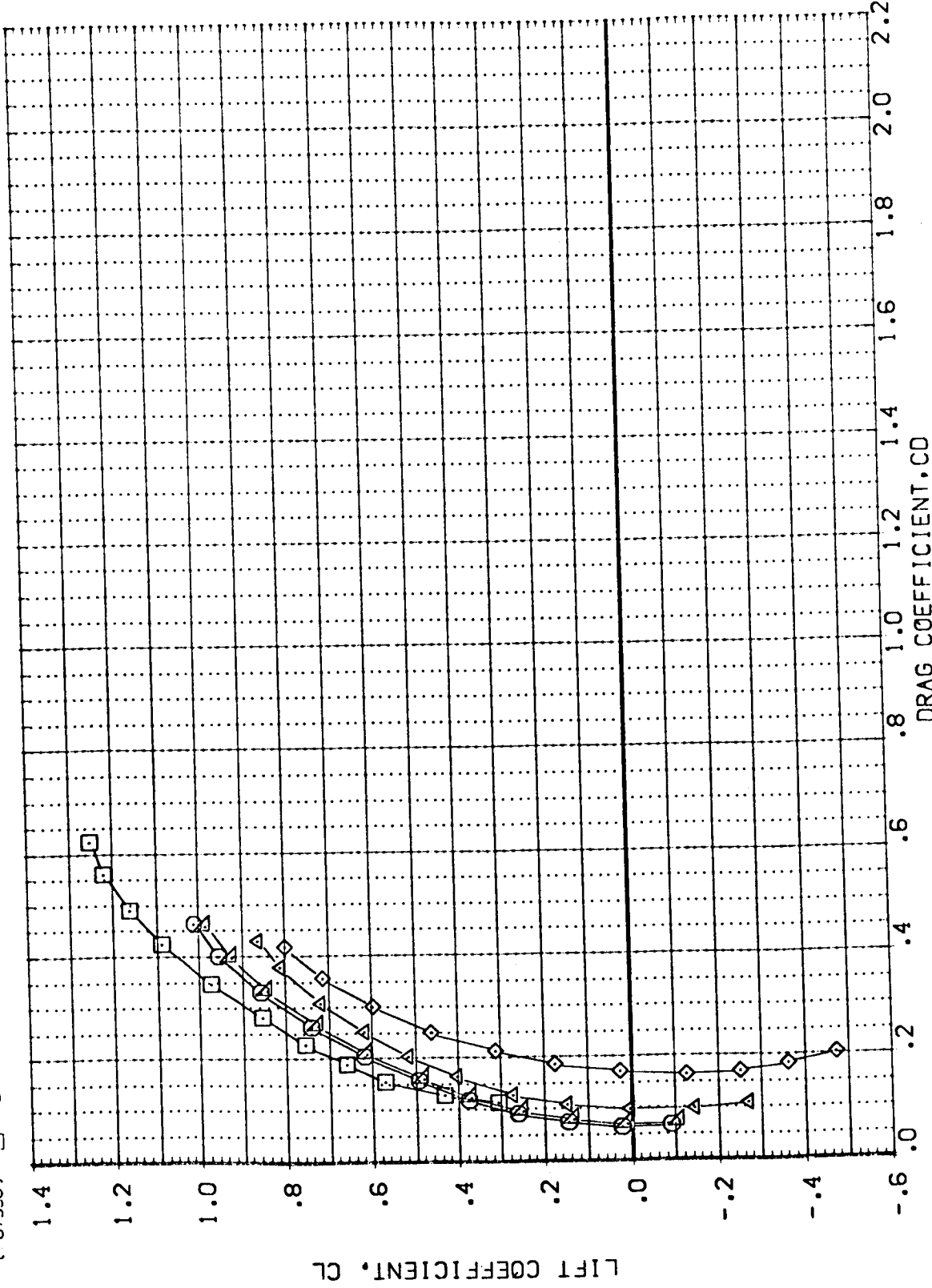


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

(B)MACH = .89

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87C08) MSFC 574(CA48) CRB 139B
 (F87C15) MSFC 574(CA48) CRB 139B
 (F87C21) MSFC 574(CA48) CRB 139B
 (F87C18) MSFC 574(CA48) CRB 139B
 (F87C24) MSFC 574(CA48) CRB 139B
 (F87S98) DATA NOT AVAILABLE

BETA ELEVTR SPOBRK BOFLAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SREF 2590.0000
 .000 15.000 999.990 13.750 LREF 474.8000
 .000 -40.000 999.990 836.7000
 .000 -20.000 999.990 .000 XREF 839.7000
 .000 .000 999.990 .000 VREF .0000
 .000 -20.000 999.990 -14.250 ZREF .0000
 .000 .000 999.990 -14.250 ZVREF .0000
 .000 .000 999.990 .000 SCALE .0010

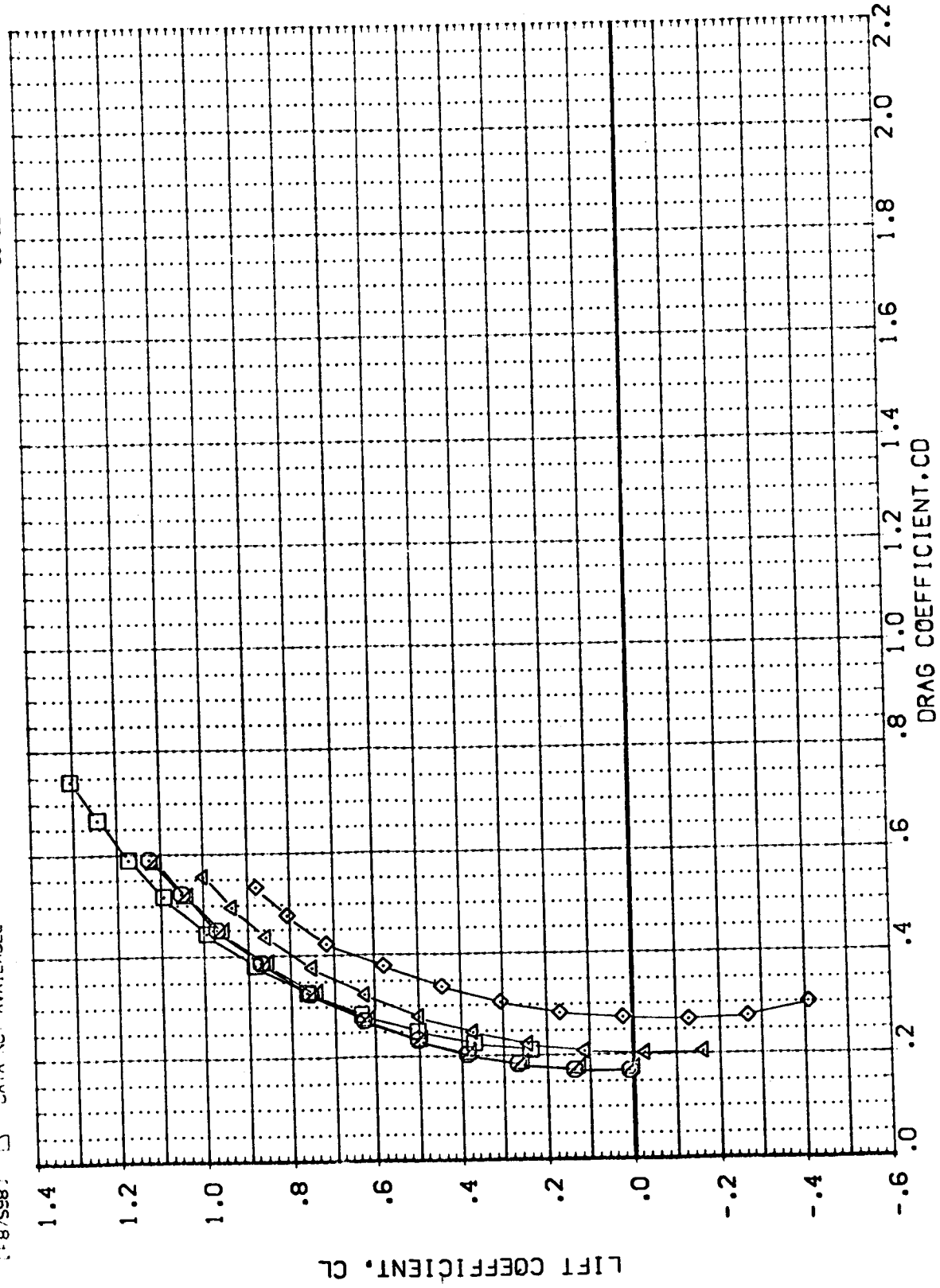


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

(C)MACH = 1.20



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOCLAP	REFERENCE INFORMATION
(F87C08)	MSFC 574(CA48) CRB 1398	.000	.000	999.990	.000	SREF 2690.0000
(F87C15)	MSFC 574(CA48) CRB 1398	.000	15.000	999.990	13.750	LREF 474.8000
(F87C21)	MSFC 574(CA48) CRB 1398	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87C18)	MSFC 574(CA48) CRB 1398	.000	-20.000	999.990	.000	XVRP 838.7000
(F87C24)	MSFC 574(CA48) CRB 1398	.000	-20.000	999.990	-14.250	YVRP .0000
(F87S98)	DATA NOT AVAILABLE	.000	-20.000	999.990	-14.250	ZVRP .0000
						SCALE .0040

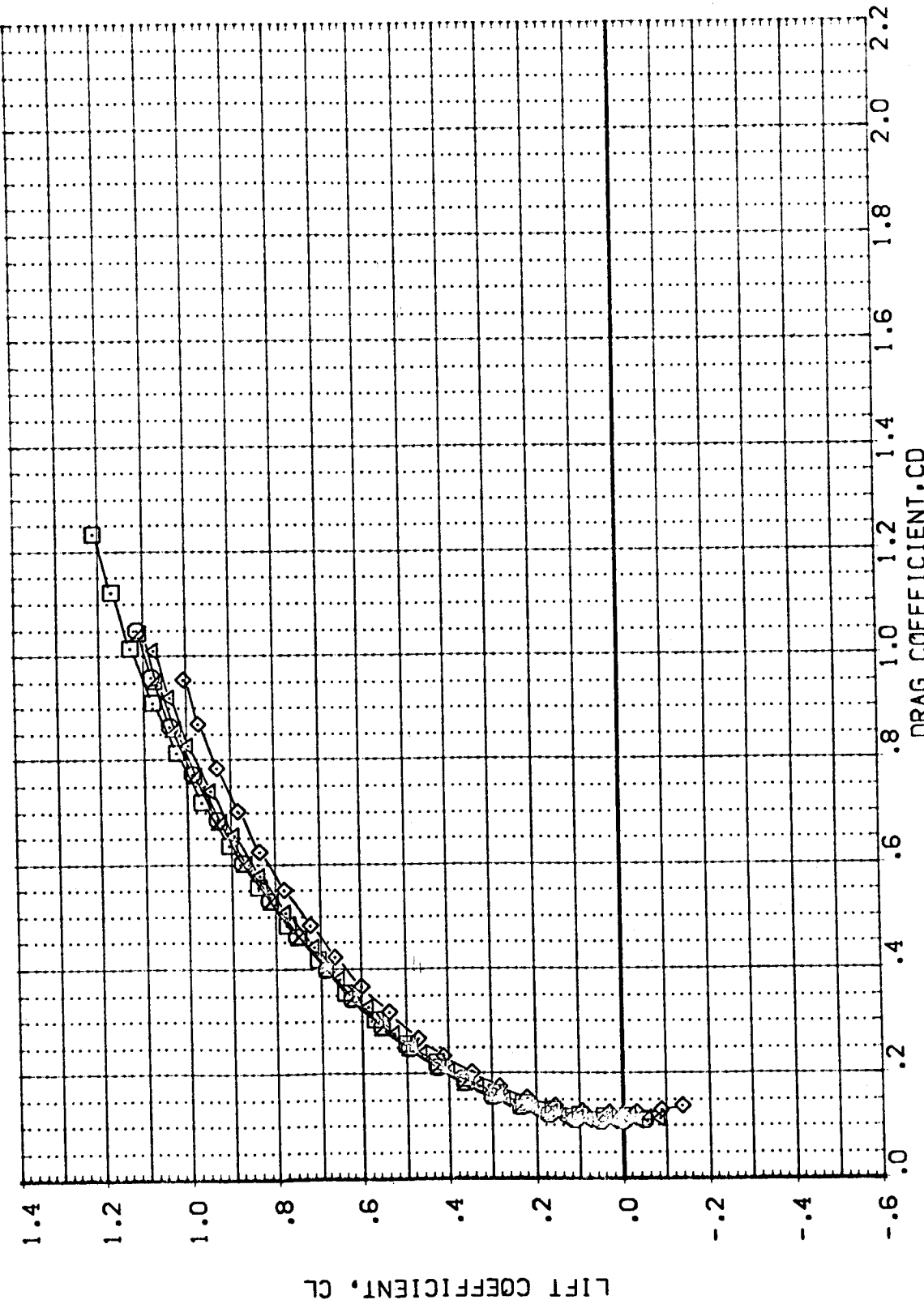


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398

(E)MACH = 2.99

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(F87C08)	MSFC 574(CA48)	CR3 398
(F87C15)	MSFC 574(CA48)	CR3 398
(F87C21)	MSFC 574(CA48)	CR3 398
(F87C18)	MSFC 574(CA48)	CR3 398
(F87C24)	MSFC 574(CA48)	CR3 398
(F87S98)	MSFC 574(CA48)	CR3 398

BETA ELEVTR SPOBRK 9CFLAP

.000	.000	999.999	.000
.000	15.000	999.999	13.750
.000	-40.000	999.999	-14.250
.000	-20.000	999.999	.000
.000	-20.000	999.999	-14.250
.000	-20.000	999.999	-14.250

REFERENCE INFORMATION SC.F.T.

SREF	2690.0000
LREF	474.8000
BREF	936.7000
XMRP	838.7000
YMRP	.0000
ZMRP	.0000
SCALE	.0040

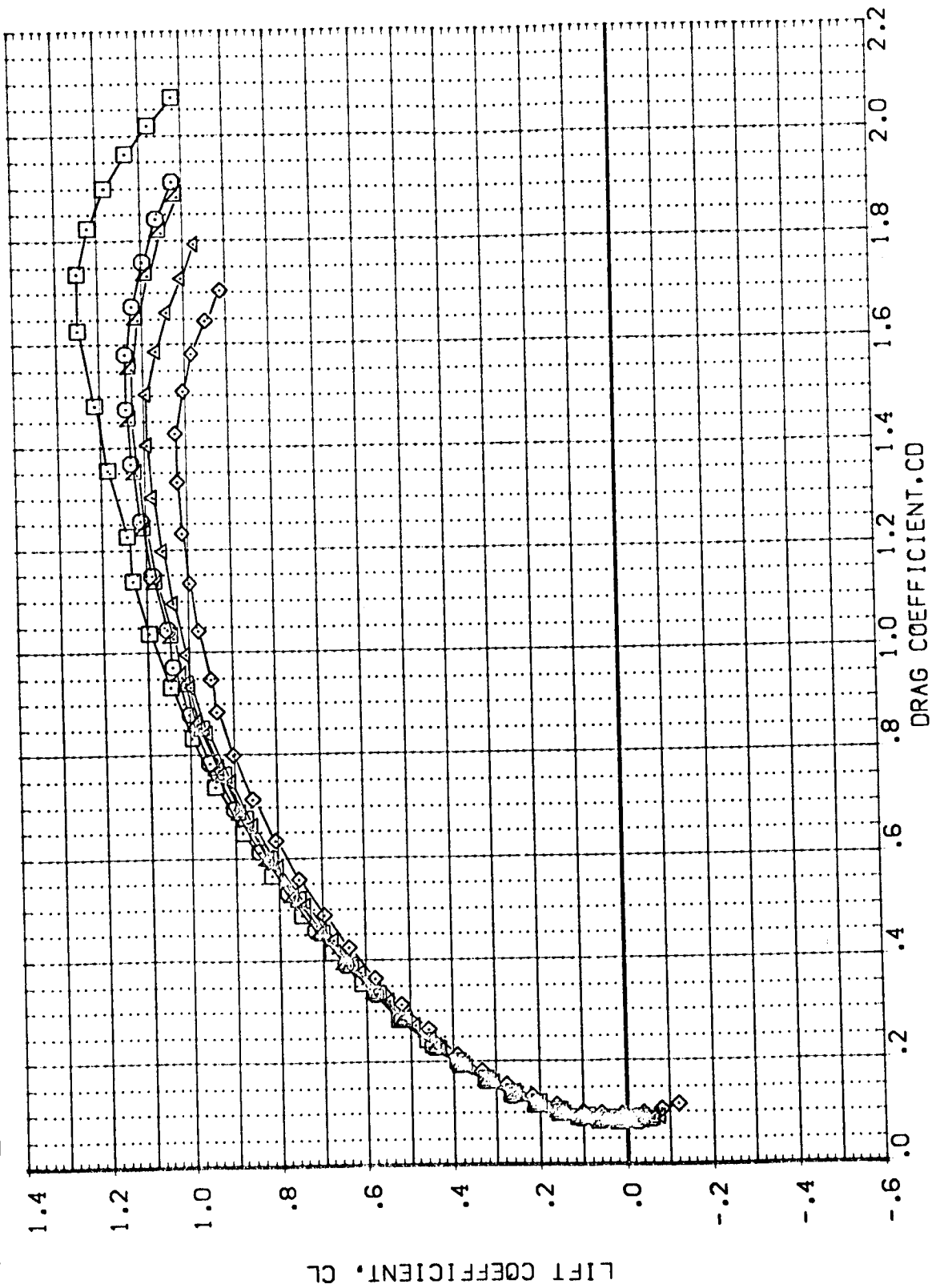


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B

(F)MACH = 4.96

DATA SET SYMBOL: CONFIGURATION DESCRIPTION

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(G87C08)	MSFC 574 (CA48) CRB 139B	.000	.000	999.990	.000	SREF 2690 C0000
(G87C15)	MSFC 574 (CA48) CRB 139B	.000	15.000	999.990	13.750	LREF 474.80000
(G87C21)	MSFC 574 (CA48) CRB 139B	.000	-40.000	999.990	-14.250	BREF 936.70000
(G87C18)	MSFC 574 (CA48) CRB 139B	.000	-20.000	999.990	.000	XMRP 864.50000
(G87C24)	MSFC 574 (CA48) CRB 139B	.000	-20.000	999.990	-14.250	YMRP .00000
(G87C58)	DATA NOT AVAILABLE	.000	-20.000	999.990	-14.250	ZMRP .00000
						SCALE .0040

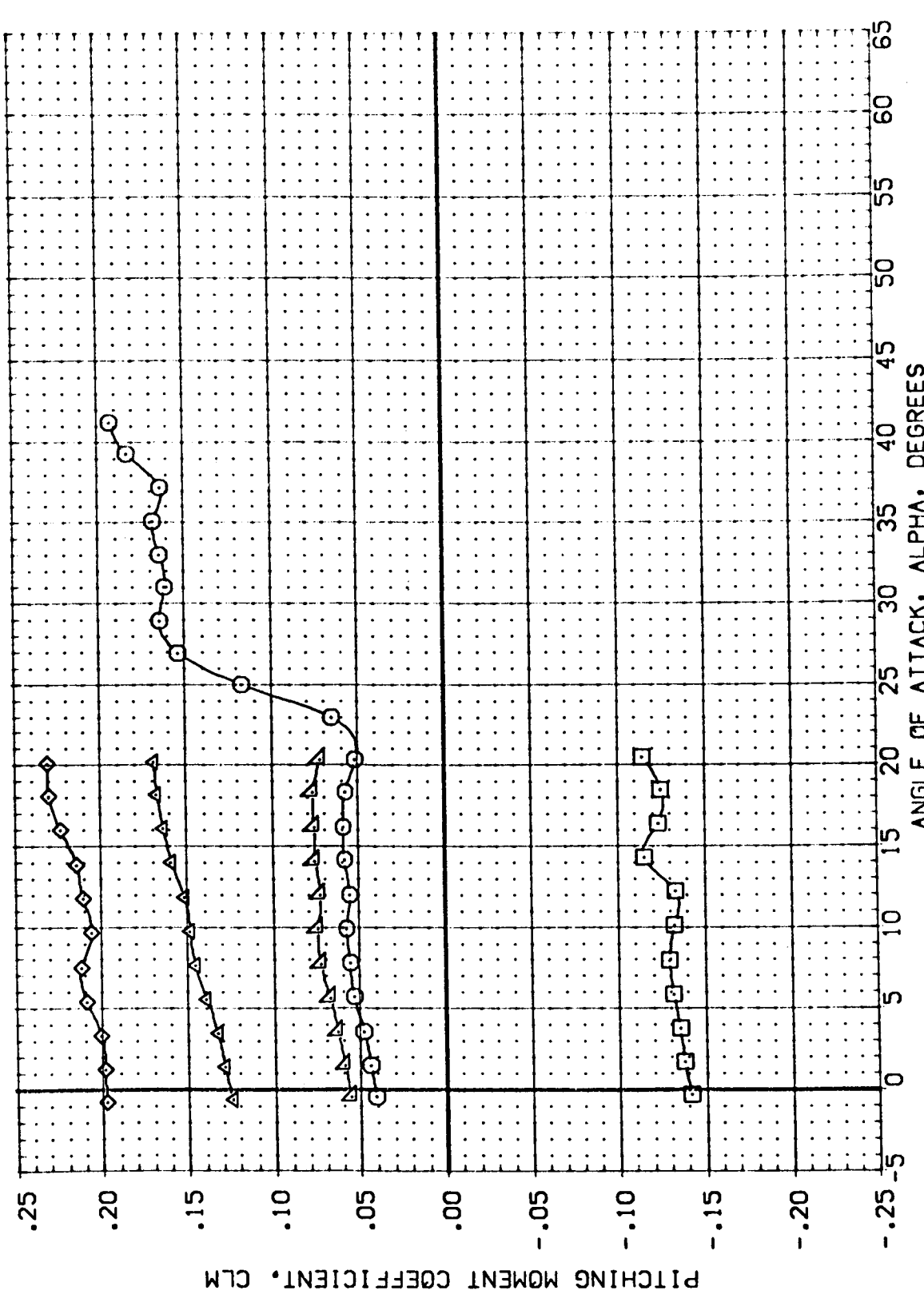


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B (AFT C.G.)

DATA SET SYMBO. CONFIGURATION DESCRIPTION

(G87C08) MSFC 574(CA48) CRB 139B
 (G87C15) MSFC 574(CA48) CRB 139B
 (G87C21) MSFC 574(CA48) CRB 139B
 (G87C18) MSFC 574(CA48) CRB 139B
 (G87C24) MSFC 574(CA48) CRB 139B
 (G87S98) DATA NOT AVAILABLE

BETA .000
 .000
 .000
 .000
 .000
 .000
 .000

ELEVTR .000
 5.000
 -40.000
 -20.000
 -20.000

SPDRY 999.990
 999.990
 999.990
 999.990
 999.990

BOFLAP .000
 13.750
 -14.250
 .000
 -14.250

SCALE .000
 .000
 .000
 .000
 .000
 .000
 .000

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.
 LREF 474.8000
 BREF 936.7000
 XMRP 864.5000
 YMRP .0000
 ZMRP .0000
 .0000

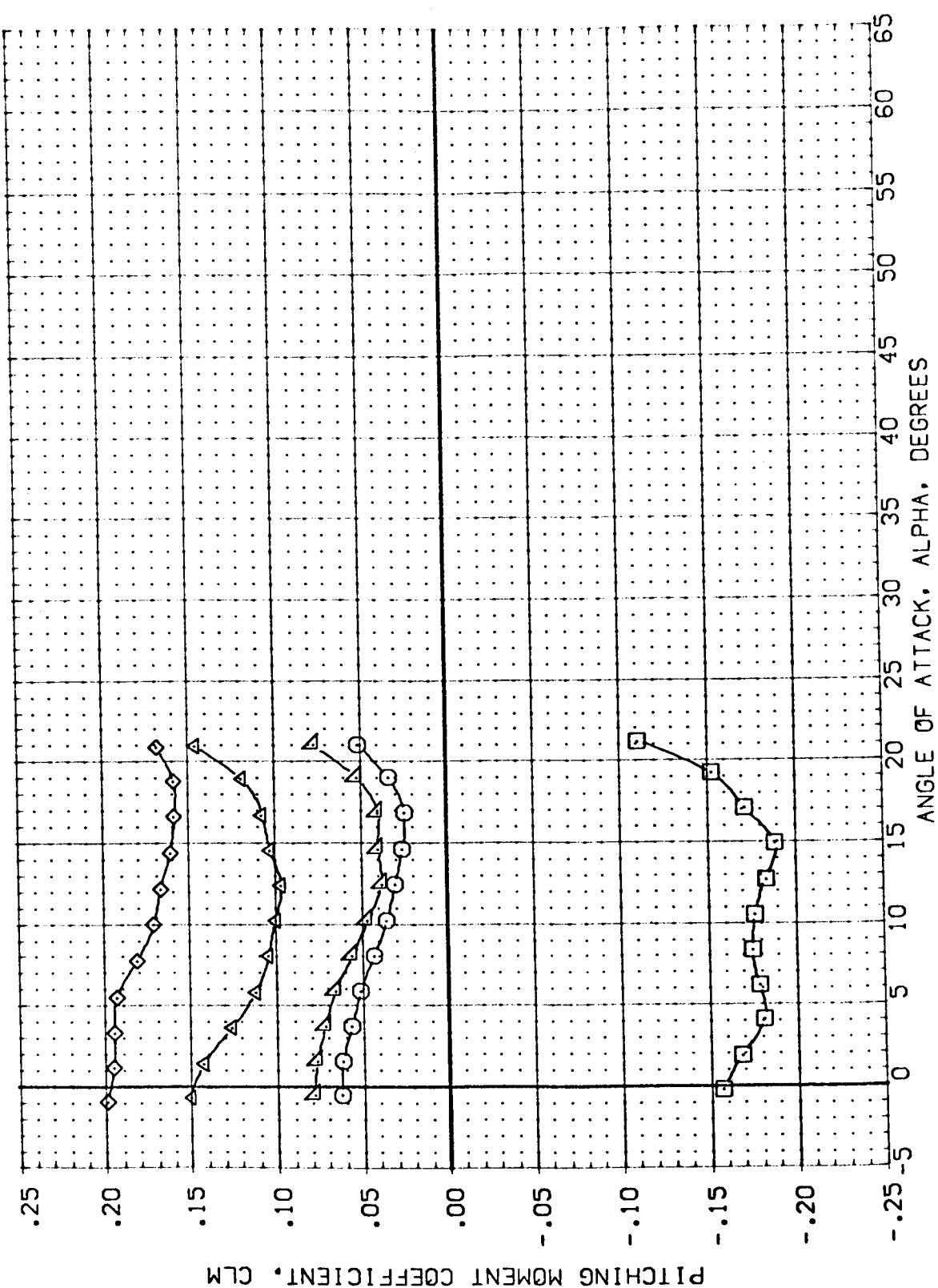
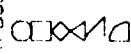


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B (AFT C.G.)

MACH = .89

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DATA SET SYMBO:  CONFIGURATION DESCRIPTION REFERENCE INFORMATION

DATA SET SYMBO	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPBRK	BOF_LAP	REFERENCE INFORMATION
(G87C08)	MSFC 574(OA48) CR8 1393	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(G87C15)	MSFC 574(OA48) CR8 1393	.000	15.000	999.990	13.750	REF 474.8000
(G87C21)	MSFC 574(OA48) CR8 1393	.000	-40.000	999.990	-14.250	BREF 936.7000
(G87C18)	MSFC 574(OA48) CR8 1393	.000	-20.000	999.990	.000	XPRP 864.5000
(G87C24)	MSFC 574(OA48) CR8 1393	.000	.000	999.990	-14.250	YPRP .0000
(G87S98)	DATA NOT AVAILABLE	.000	-20.000	999.990	-14.250	ZPRP .0000
					SCALE	.0040

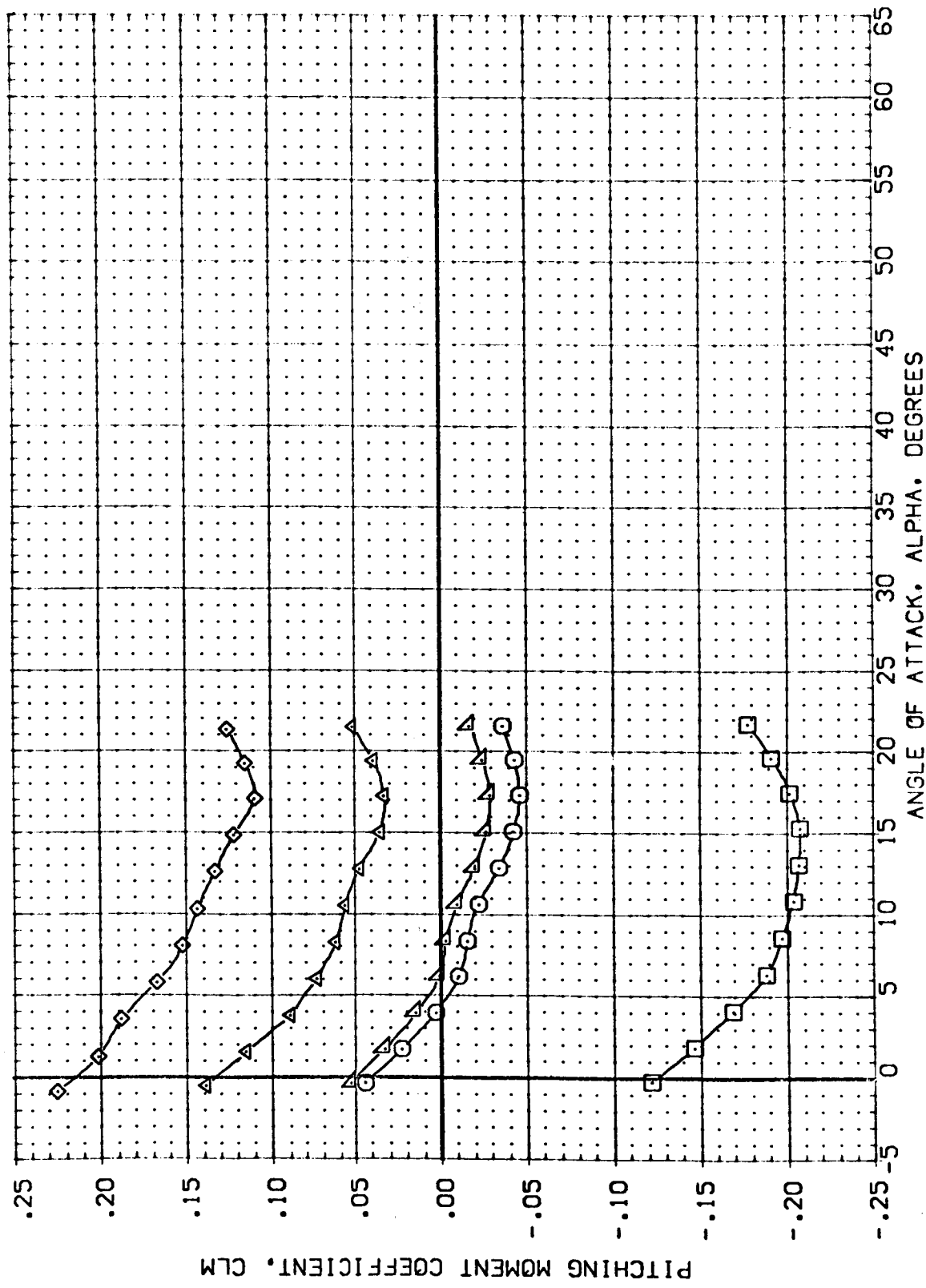


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B (AFT C.G.)

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BCFLAP	REFERENCE INFORMATION
(587C08)	MSFC 574(OA48) ORB 139B	.000	.000	999.990	.000	2690.0000
(587C15)	MSFC 574(OA48) ORB 139B	.000	15.000	999.990	13.750	474.8000
(587C21)	MSFC 574(OA48) ORB 139B	.000	-40.000	999.990	-14.250	936.7000
(587C18)	MSFC 574(OA48) ORB 139B	.000	-20.000	999.990	.000	864.5000
(587C24)	MSFC 574(OA48) ORB 139B	.000	.000	999.990	-14.250	.0000
(587S98)	DATA NOT AVAILABLE	.000	-20.000	999.990	-14.250	.0000
					SCALE	.0040

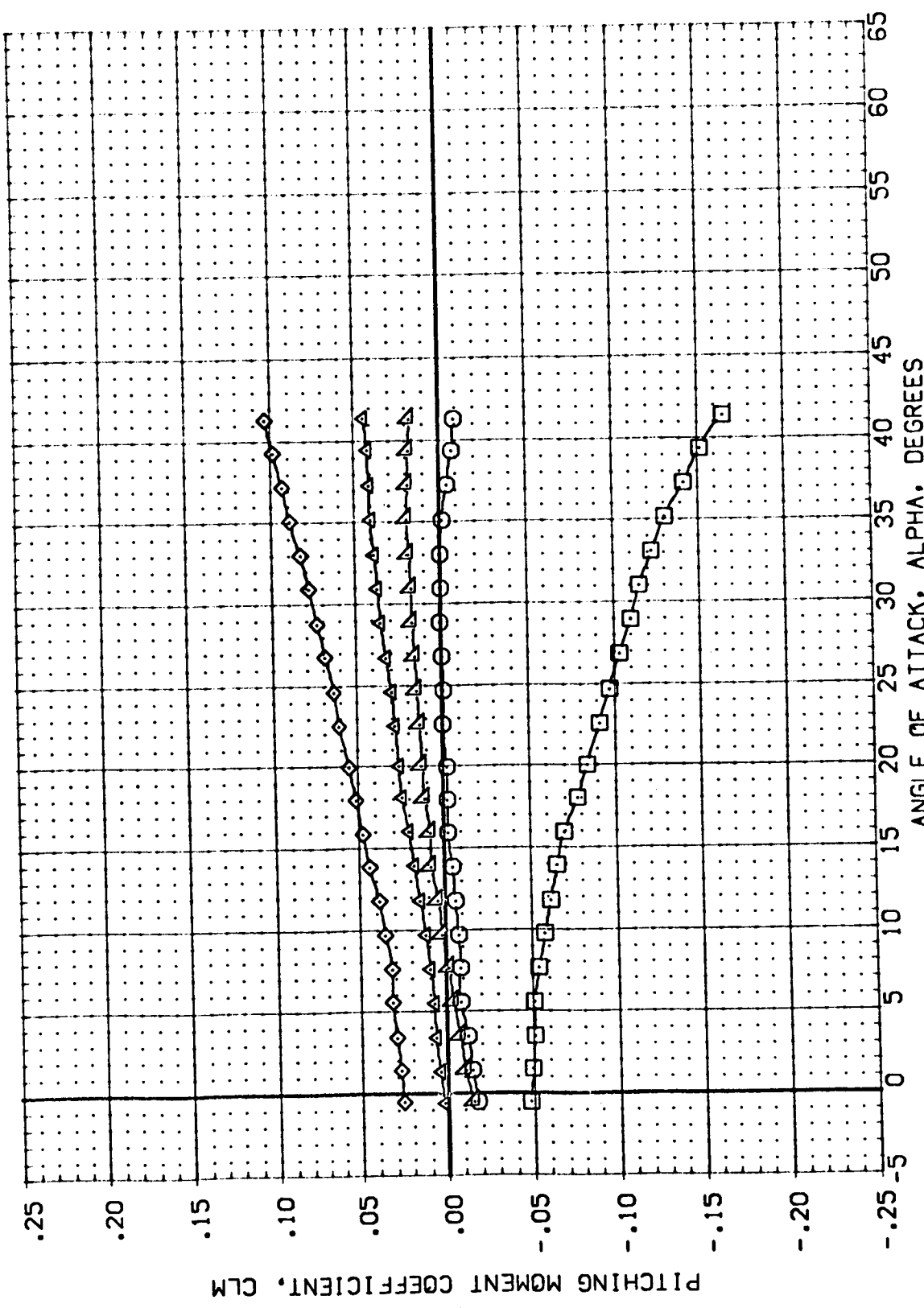


FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B (AFT C.G.)

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDRBK	BOFLAP	REFERENCE INFORMATION
(S87C08)	MSFC 574 (CA48) CRB 1398	.000	.000	999.990	.000	2690.0000
(S87C15)	MSFC 574 (CA48) CRB 398	.000	15.000	999.990	13.750	474.8000
(S87C21)	MSFC 574 (CA48) CRB 398	.000	-40.000	999.990	-14.250	936.7000
(S87C18)	MSFC 574 (CA48) CRB 398	.000	-20.000	999.990	.000	864.5000
(S87C24)	MSFC 574 (CA48) CRB 1398	.000	.000	999.990	-14.250	.0000
(S87S98)	MSFC 574 (CA48) CRB 398	.000	-20.000	999.990	-14.250	.0000
						SCALE
						.0040

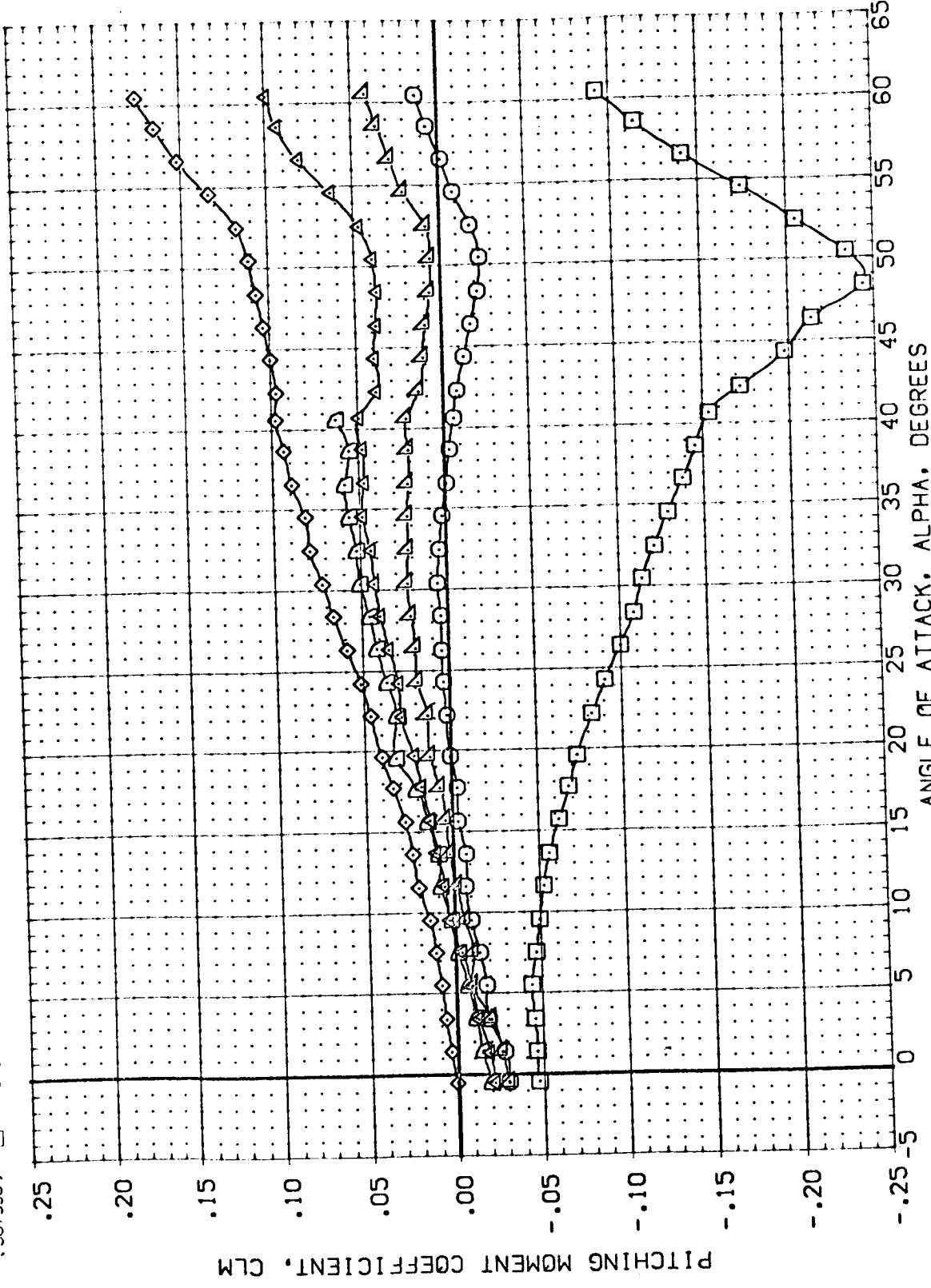





FIG. 14 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398 (AFT C.G.)

(M)MACH = 4.96



DATA SET SYMBOL:    CONFIGURATION DESCRIPTION REFERENCE INFORMATION

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	SREF	SS.F.T.
(F87531)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	.000	2690.0000	IN.
(F87538)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	15.000	999.990	13.750	471.8000	IN.
(F87542)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	-40.000	999.990	-14.250	936.7000	IN.
(F87540)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	-20.000	999.990	.000	839.7000	IN.
(F87544)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	-14.250	.0000	IN.

SCALE: .0040

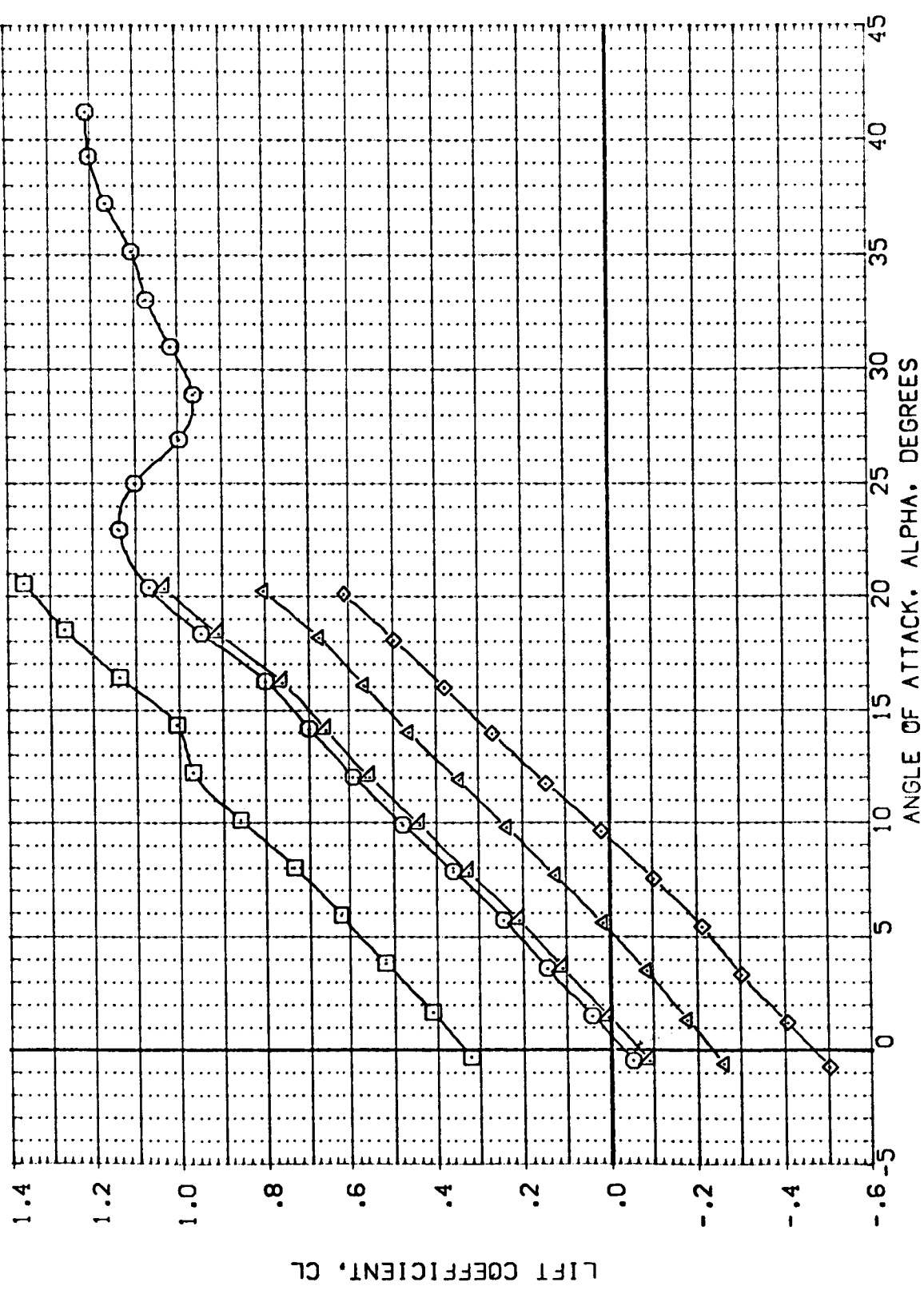


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOSE
 (A)MACH = .6: PAGE 657

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	E-LEVTR	SPDRBK	BDFLAP	REFERENCE INFORMATION
(F87S31)	MS-C 574(CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SCALF .
(F87S38)	MS-C 574(CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	13.750	REF 474.8000
(F87S42)	MS-C 574(CA48) CRB 139B W/ALT NOSE	.000	15.000	999.990	-14.750	BREF 936.7000
(F87S40)	MS-C 574(CA48) CRB 139B W/ALT NOSE	.000	-40.000	999.990	.000	YMRP 838.7000
(F87S44)	MS-C 574(CA48) CRB 139B W/ALT NOSE	.000	-20.000	999.990	-14.750	ZMRP .0000
						SCALE .0040

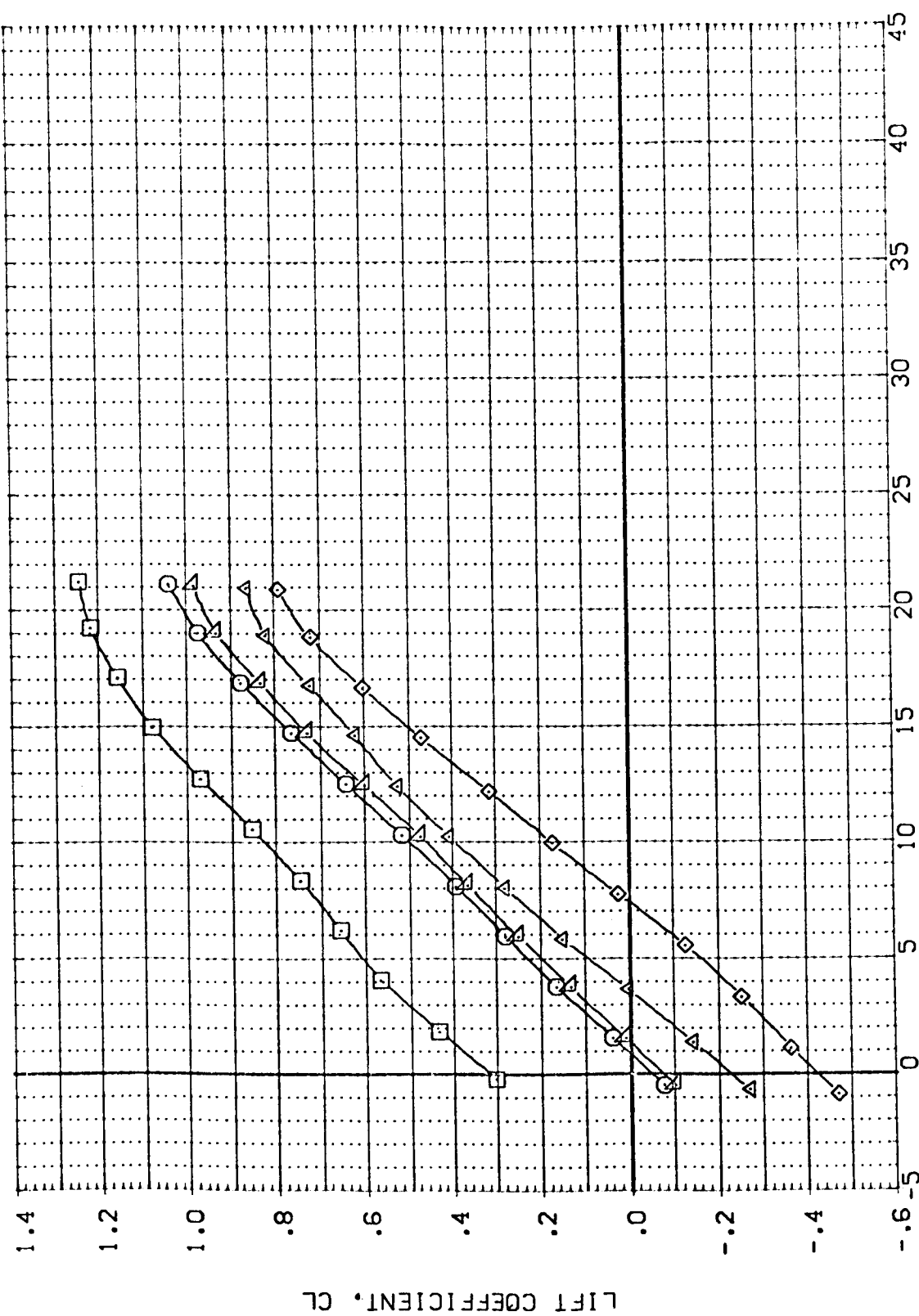


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOSE
 (B)MACH = .90

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87S31)	M5C 574(CA48) CRB 139B W/ALT NOISE	.000	.000	999.990	.000	SREF 2690.0000 SC.F.
(F87S38)	M5C 574(CA48) CRB 139B W/ALT NOISE	.000	15.000	999.990	13.750	LREF 474.8000
(F87S42)	M5C 574(CA48) CRB 139B W/ALT NOISE	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87S40)	M5C 574(CA48) CRB 139B W/ALT NOISE	.000	-20.000	999.990	.000	XREF 838.7000
(F87S44)	M5C 574(CA48) CRB 139B W/ALT NOISE	.000	.000	999.990	-14.250	YREF .0000
						ZMRP .0000
						SCALE .0040

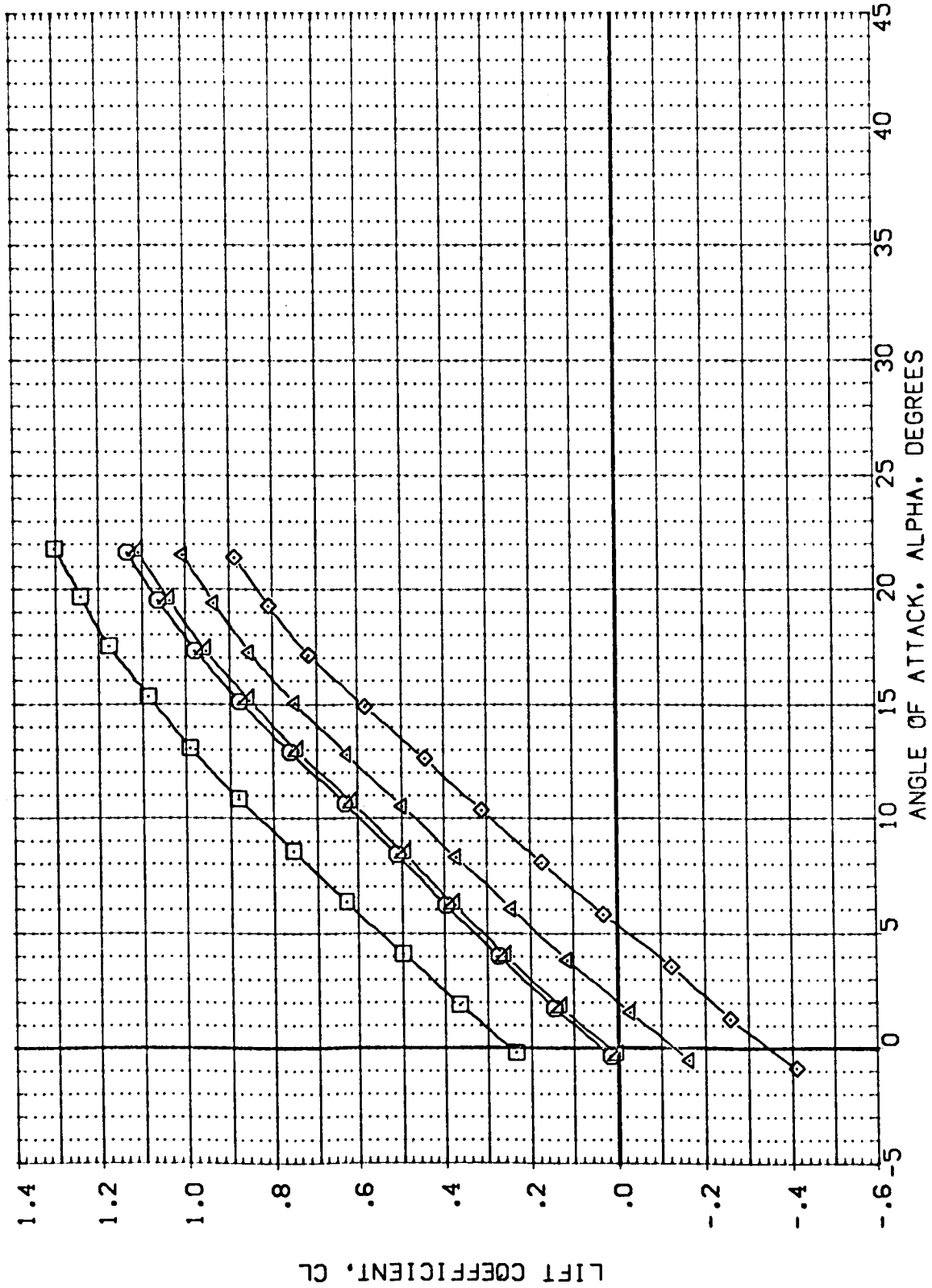


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOISE
 (C)MACH = 1.19 PAGE 659

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87S31)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	.000	999.999	.000	SREF 2690.0000 SC.FT.
(F87S38)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	15.000	999.999	13.750	LREF 474.8000
(F87S42)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	-40.000	999.999	-14.250	BREF 536.7000
(F87S40)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	-20.000	999.999	.000	XWRP 838.7000
(F87S44)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	.000	999.999	-14.250	YWRP .0000
						SCALE .0040

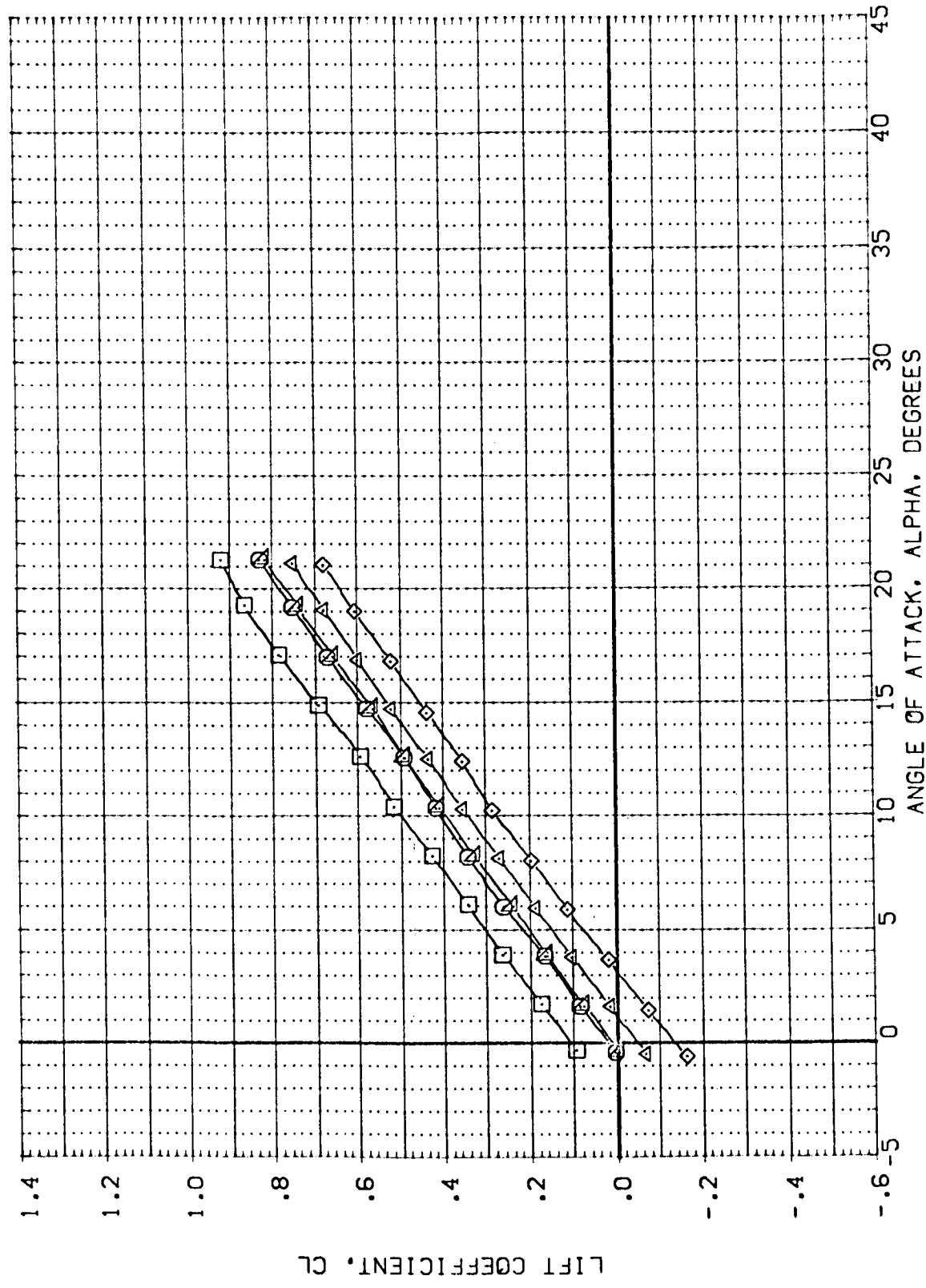


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDBRK	BOFLAP	REFERENCE INFORMATION
(F87S31)	MSFC 574(OA48) ORB 398 V/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(F87S38)	MSFC 574(OA48) ORB 398 V/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000
(F87S42)	MSFC 574(OA48) ORB 398 V/ALT NOSE	.000	-40.000	999.990	-14.250	BREF 536.7000
(F87S43)	MSFC 574(OA48) ORB 398 V/ALT NOSE	.000	-20.000	999.990	.000	XMRP 838.7000
(F87S44)	MSFC 574(OA48) ORB 398 V/ALT NOSE	.000	.000	999.990	-14.250	YMRP .0000
						ZMRP .0000
						SCALE .0040

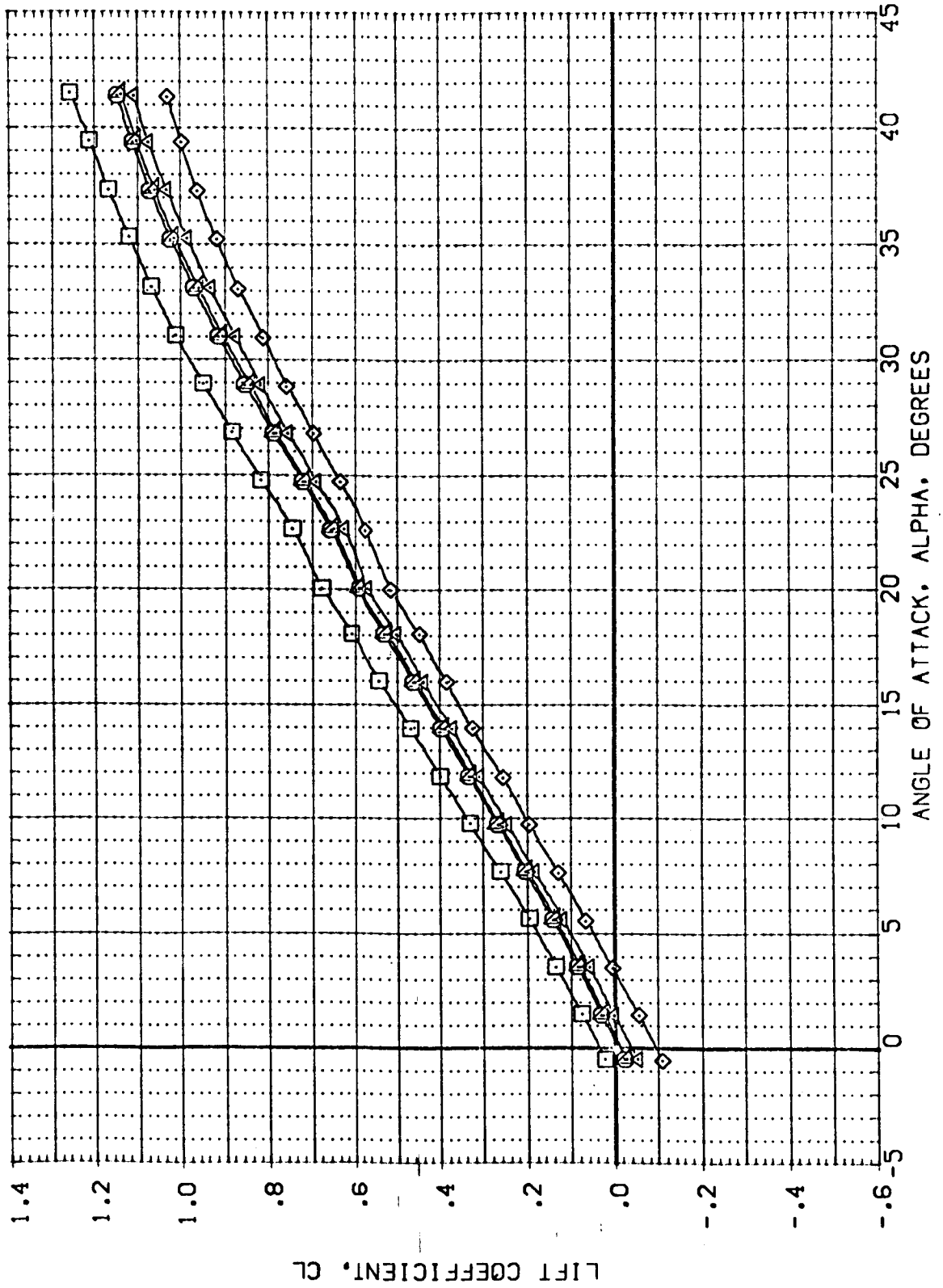


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398 WITH ALTERNATE NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87S31)	MSEC 574(CA48) CRB 1398 W/ALT NOISE	.000	.000	999.990	.000	SREF 2690.0000 SC.F.
(F87S38)	MSEC 574(CA48) CRB 1398 W/ALT NOISE	.000	15.000	999.990	13.750	LREF 474.8000
(F87S42)	MSEC 574(CA48) CRB 1398 W/ALT NOISE	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87S40)	MSEC 574(CA48) CRB 1398 W/ALT NOISE	.000	-20.000	999.990	.000	XMRP 938.7000
(F87S44)	MSEC 574(CA48) CRB 1398 W/ALT NOISE	.000	.000	999.990	-14.250	YMRP .0000
		.000	.000	999.990	.000	ZMRP .0000
		.000	.000	999.990	.000	SCALE .0010

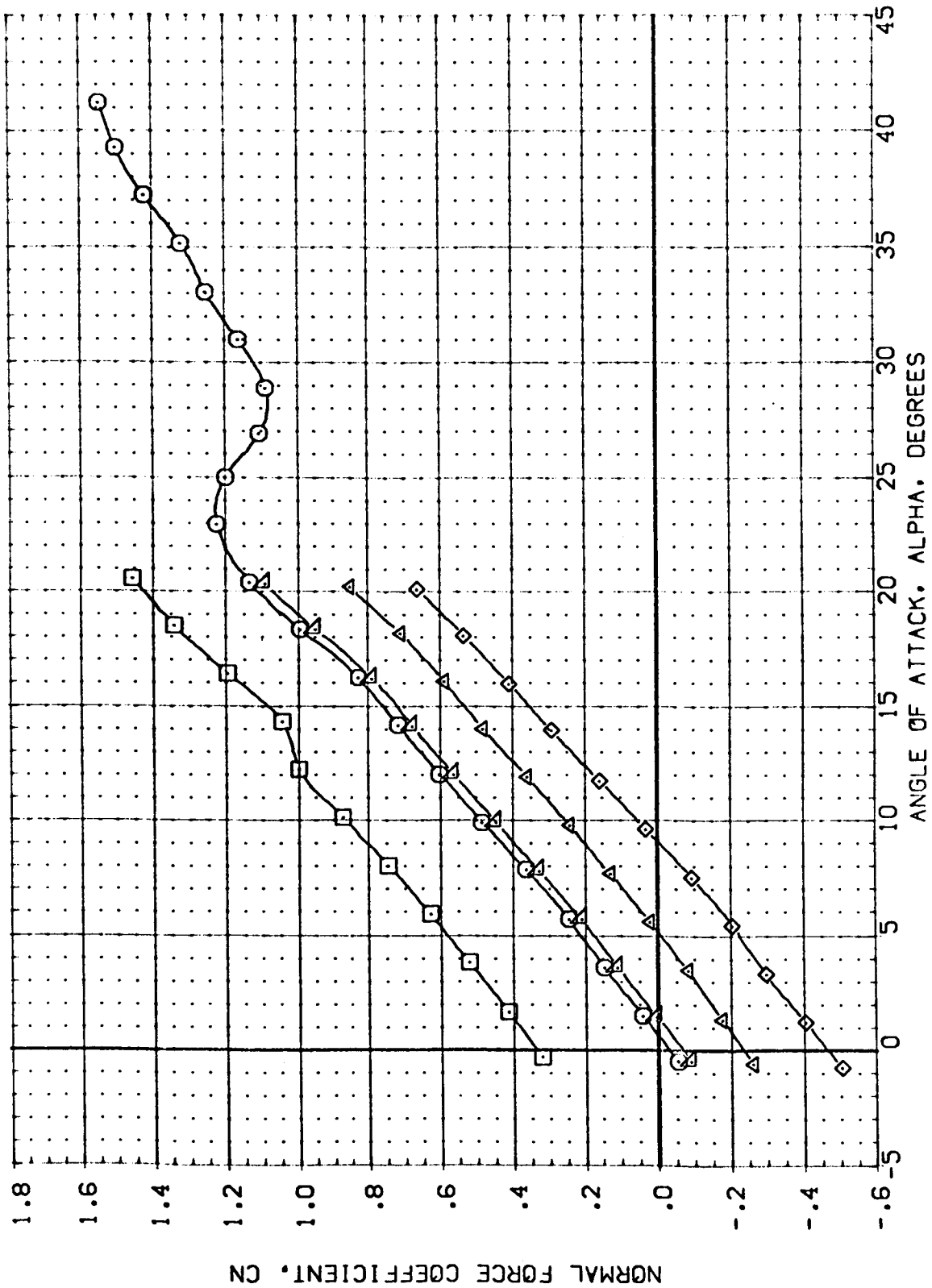


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398 WITH ALTERNATE NOISE
 (A)YACH = .6; PAGE 663

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87531)	MSFC 574(CA48) CRB 393 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(F87538)	MSFC 574(CA48) CRB 393 W/ALT NOSE	.000	15.000	999.990	3.750	RREF 474.8000 N.
(F87542)	MSFC 574(CA48) CRB 393 W/ALT NOSE	.000	-40.000	999.990	-14.250	BREF 936.7000 N.
(F87540)	MSFC 574(CA48) CRB 393 W/ALT NOSE	.000	-20.000	999.990	.000	XMRP 838.7000 N.
(F87544)	MSFC 574(CA48) CRB 393 W/ALT NOSE	.000	.000	999.990	-14.250	YMRP .0000 N.
					ZMRP .0000 N.	SCALE .0040

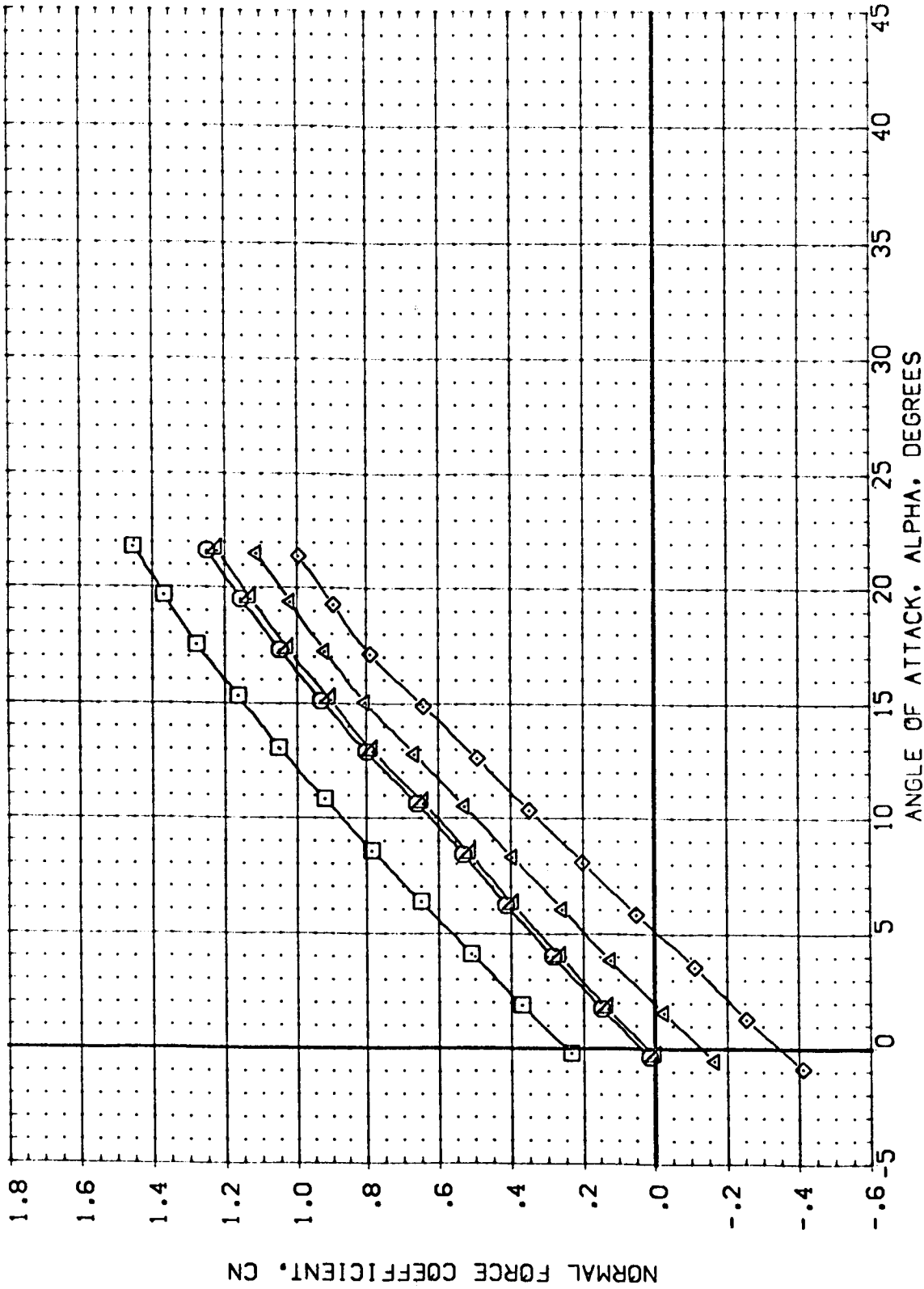


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87531)	MSFC 574(CA48) CRB 393 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000
(F87538)	MSFC 574(CA48) CRB 393 W/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000
(F87542)	MSFC 574(CA48) CRB 393 W/ALT NOSE	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87540)	MSFC 574(CA48) CRB 393 W/ALT NOSE	.000	-ZC	999.990	.000	XMRP 838.7000
(F87544)	MSFC 574(CA48) CRB 393 W/ALT NOSE	.000	.000	999.990	-14.250	YMRP .0000
						ZMRP .0000
						SCALE .0040

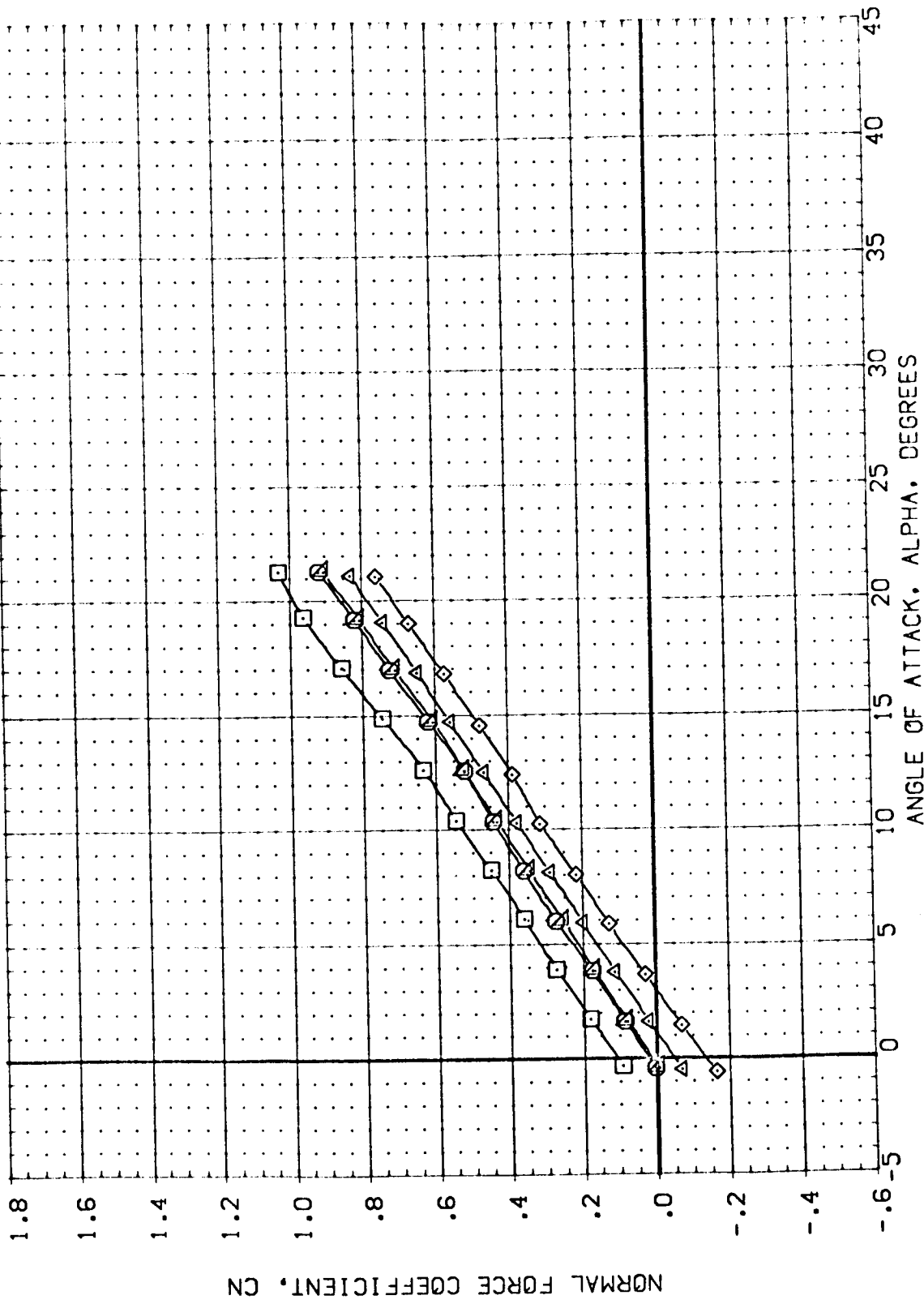


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON CRBITER 1398 WITH ALTERNATE NOSE
 MACH = 1.95
 PAGE 666

DATA SET SYMBO	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(F87531)	MSFC 574(CA48) CRB 1398 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.C000 SC.F.T.
(F87538)	MSFC 574(CA48) CRB 1398 W/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000
(F87542)	MSFC 574(CA48) CRB 1398 W/ALT NOSE	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87540)	MSFC 574(CA48) CRB 1398 W/ALT NOSE	.000	-20.000	999.990	.000	XMRP 838.7000
(F87544)	MSFC 574(CA48) CRB 1398 W/ALT NOSE	.000	.000	999.990	-14.250	ZMRP .0000
						SCALE .0040

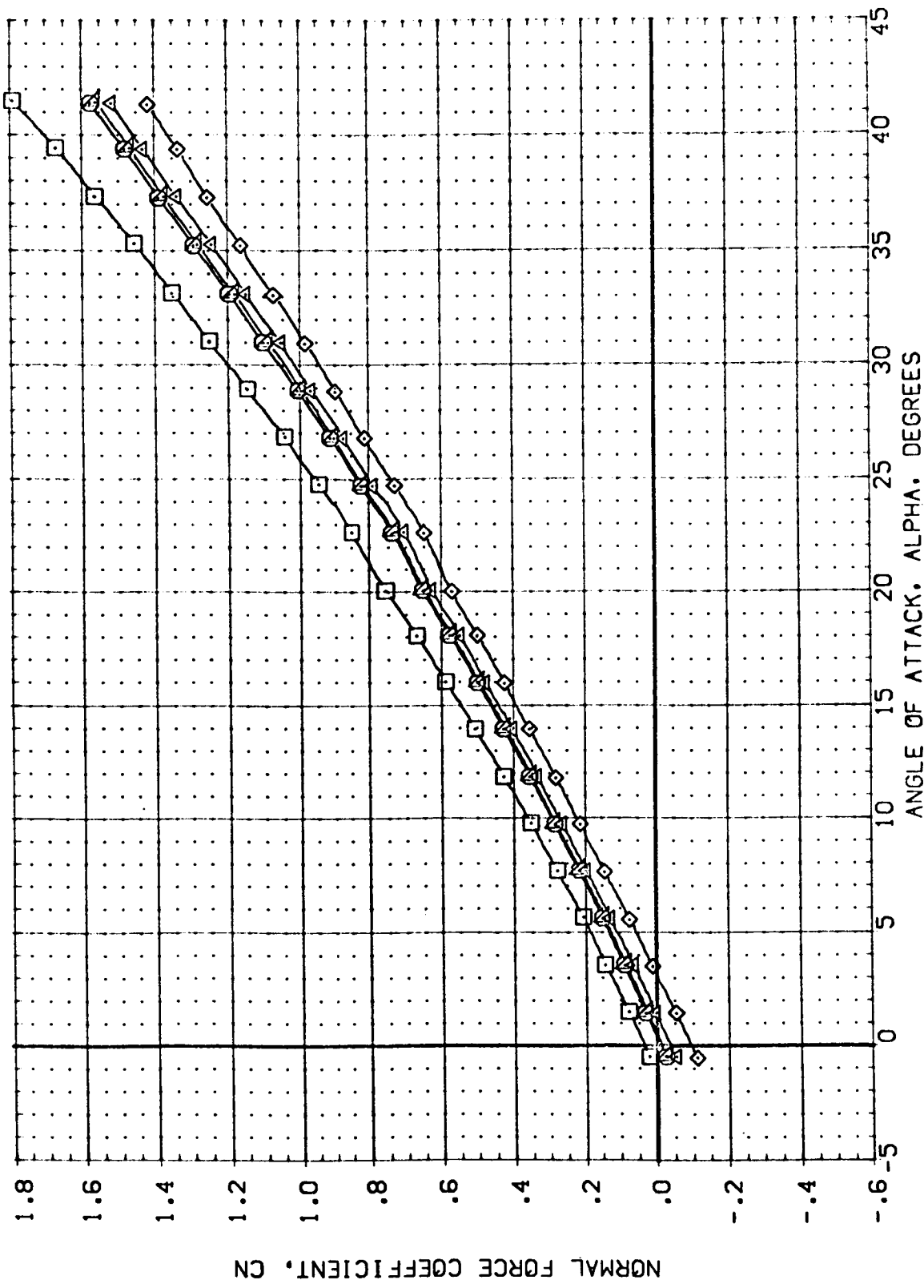


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398 WITH ALTERNATE NOSE

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(F87531)	MSFC 574(CA48)	CRB 393	W/ALT NOSE
(F87538)	MSFC 574(CA48)	CRB 393	W/ALT NOSE
(F87542)	MSFC 574(CA48)	CRB 393	W/ALT NOSE
(F87540)	MSFC 574(CA48)	CRB 393	W/ALT NOSE
(F87544)	MSFC 574(CA48)	CRB 393	W/ALT NOSE

BETA ELEVTR SPCBRK BOFLAP

.000	.000	999.999	.000
.000	15.000	999.999	13.750
.000	-40.000	999.999	-14.250
.000	-20.000	999.999	.000
.000	.000	999.999	-14.250

REFERENCE INFORMATION

SREF	2690	.0000	SCALE
REF	474	.8000	
BRF	936	.7000	
XWRP	838	.0000	
YWRP		.0000	
ZWRP		.0000	
SCALE		.0010	

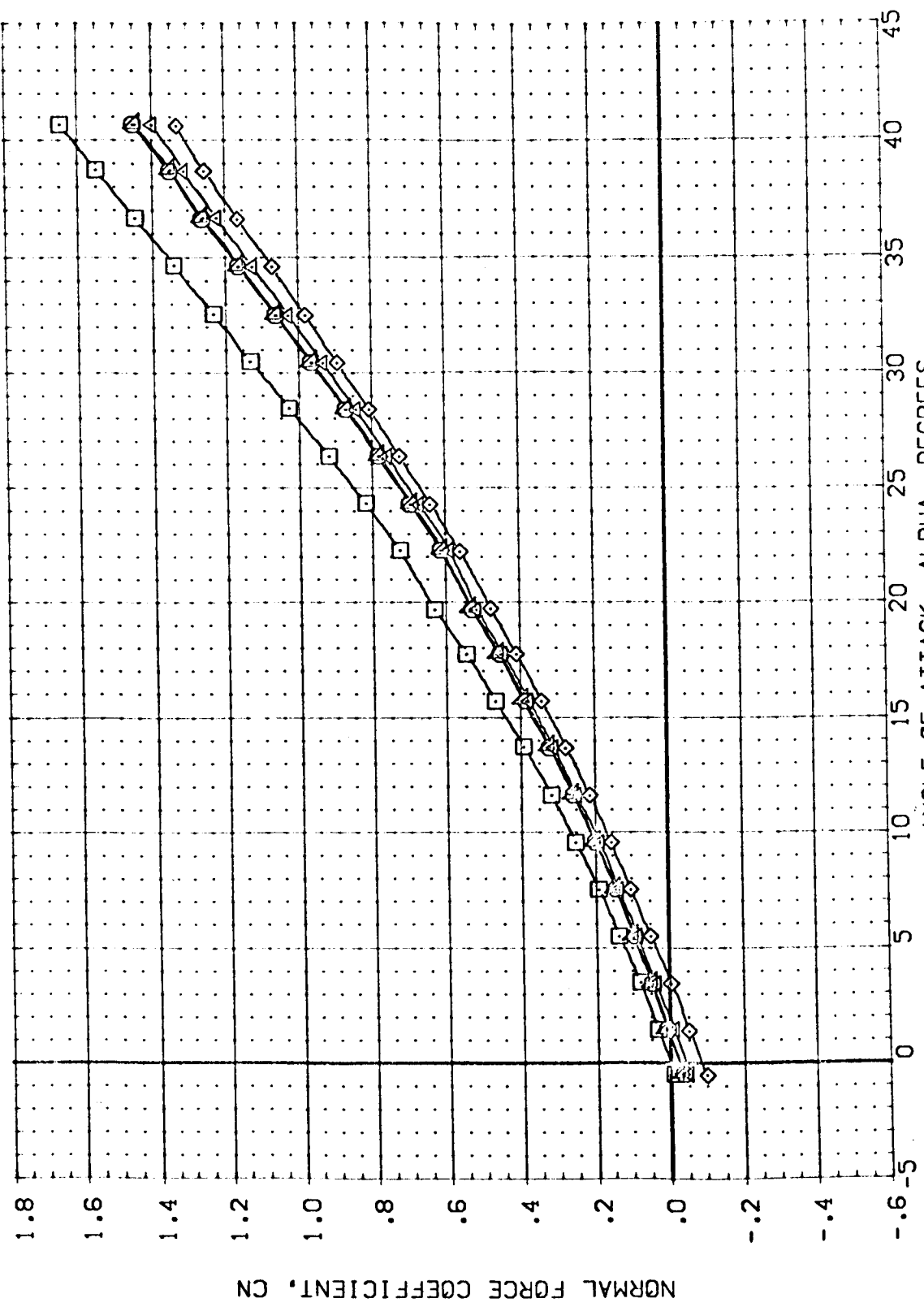


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398 WITH ALTERNATE NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87531)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	.000	SC.FT. 7650.0000
(F87538)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	15.000	999.990	13.750	SC.FT. 474.8000
(F87533)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	-40.000	999.990	-14.250	SC.FT. 936.7000
(F87510)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	-20.000	999.990	-14.250	SC.FT. 838.7000
(F87544)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	-14.250	SC.FT. 0000.0000

SCALE

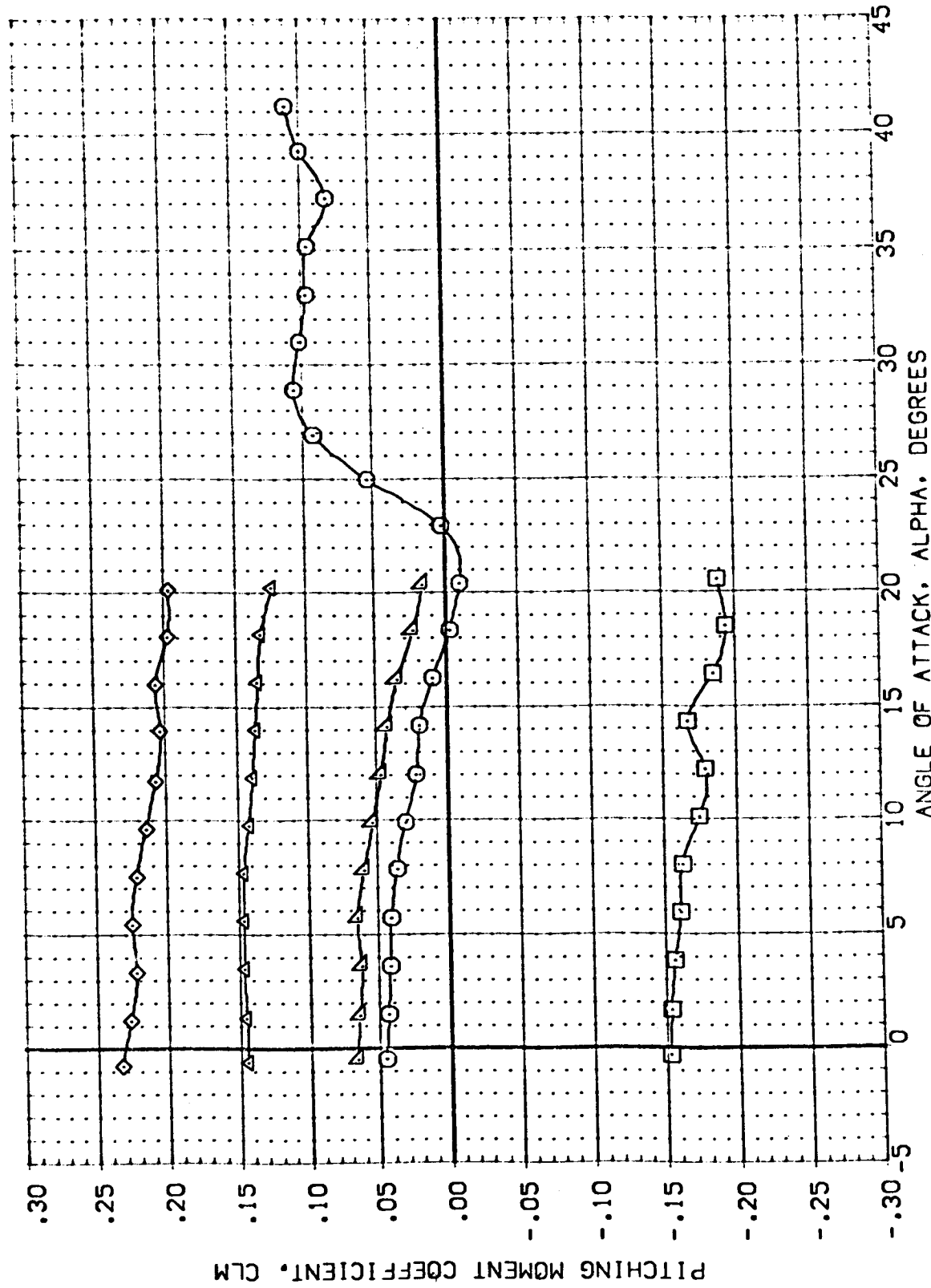


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOSE
 (ADMACH = .6)

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	SCFLAP	REFERENCE INFORMATION
(F87531)	MSFC 574(CA48) CR3 139B W/ALT NCSE	.000	.000	999.999	.000	SREF 2690.0000
(F87538)	MSFC 574(CA48) CR3 139B W/ALT NCSE	.000	15.000	999.999	3.750	LREF 474.8000
(F87542)	MSFC 574(CA48) CR3 139B W/ALT NCSE	.000	-40.000	999.999	-14.250	BREF 936.7000
(F87540)	MSFC 574(CA48) CR3 139B W/ALT NCSE	.000	-20.000	999.999	-14.250	XMRP 838.7000
(F87544)	MSFC 574(CA48) CR3 139B W/ALT NCSE	.000	.000	999.999	-14.250	YMRP .0000
						SCALE .0000
						CCAC .0000

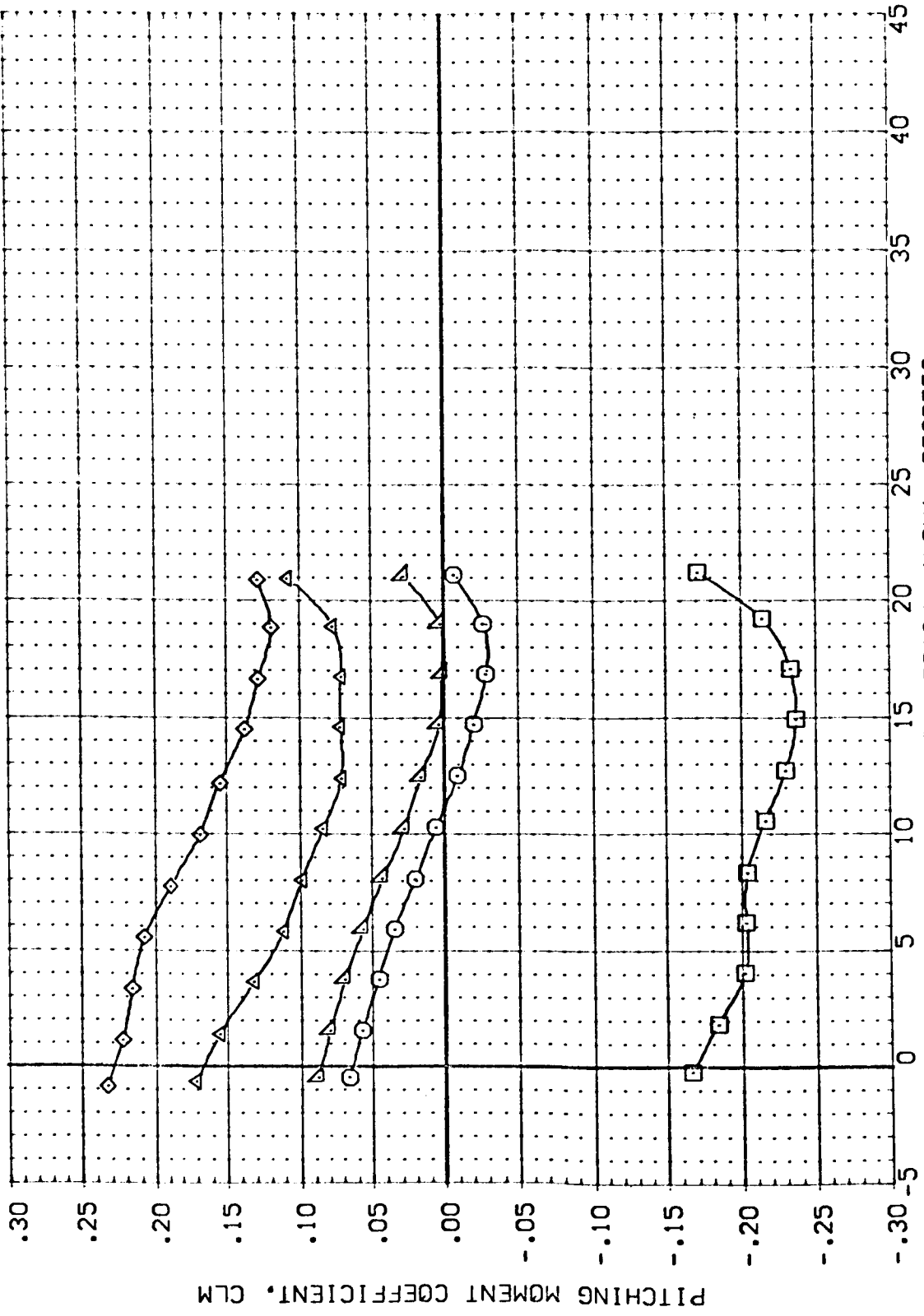


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOSE
 (B)YACH = .90

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDBRK	BOFLAP	REFERENCE INFORMATION
(F87S31)	MSFC 574(CA48) CRB 139B W/ALT NOISE	.000	.000	999.990	.000	SREF 2690.0000
(F87S38)	MSFC 574(CA48) CRB 139B W/ALT NOISE	.000	15.000	999.990	13.750	SREF 474.8000
(F87S42)	MSFC 574(CA48) CRB 139B W/ALT NOISE	.000	-40.000	999.990	-14.250	SREF 939.7000
(F87S40)	MSFC 574(CA48) CRB 139B W/ALT NOISE	.000	-20.000	999.990	.000	SREF 898.7000
(F87S44)	MSFC 574(CA48) CRB 139B W/ALT NOISE	.000	.000	999.990	-14.250	SREF .0000
					ZWRP	.0000
					SCALE	.0040

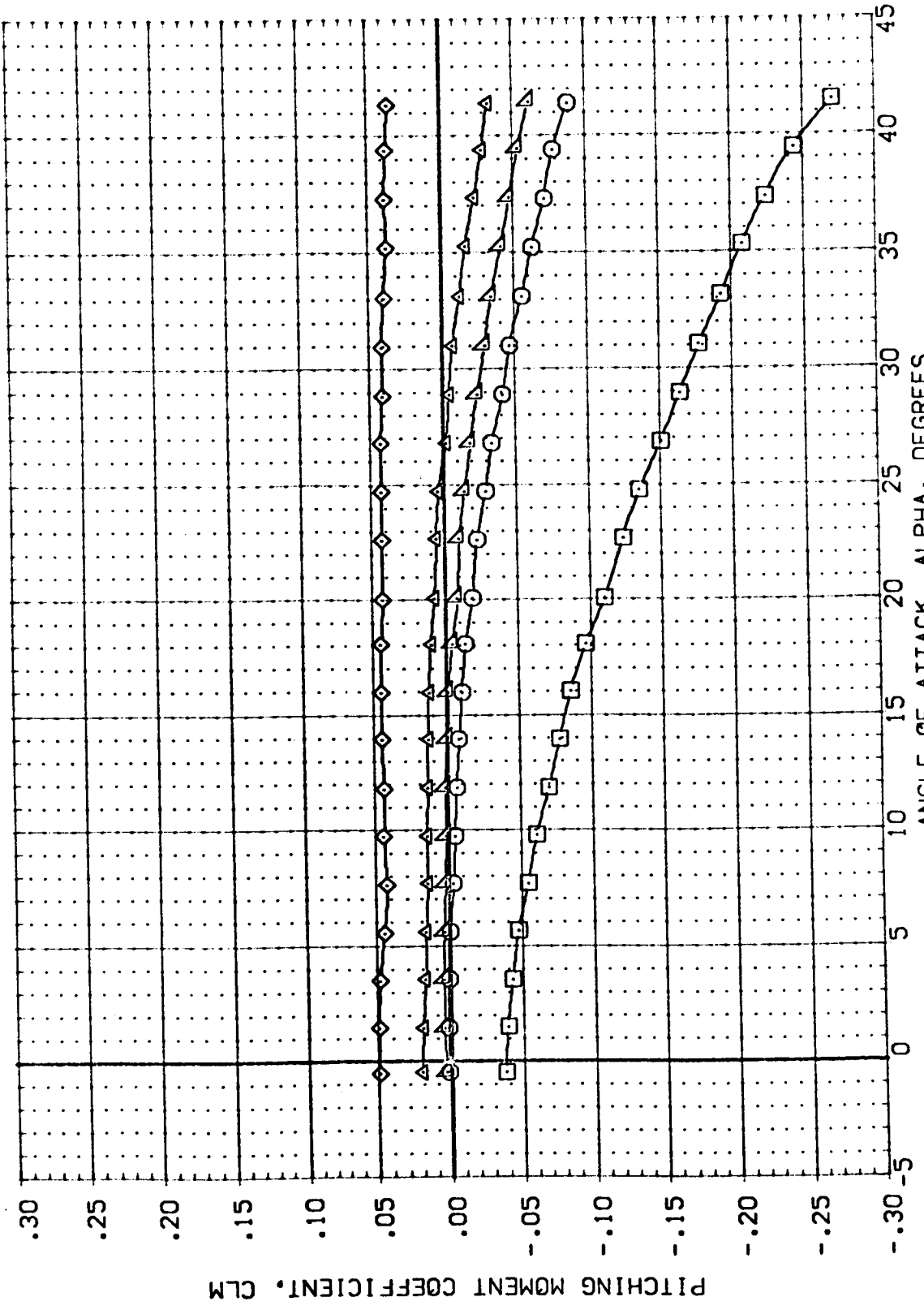


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOISE
 (M)MACH = 2.99 PAGE 673

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOELAP	REFERENCE INFORMATION
(F87S31)	MSEC 574(CA48) CRB 398 W/ALI NOISE	.000	.000	999.990	.000	SREF 2690.0000
(F87S38)	MSEC 574(CA48) CRB 398 W/ALI NOISE	.000	15.000	999.990	13.750	LREF 474.8000
(F87S42)	MSEC 574(CA48) CRB 398 W/ALI NOISE	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87S44)	MSEC 574(CA48) CRB 398 W/ALI NOISE	.000	-20.000	999.990	.000	XMRP 838.7000
		.000	.000	999.990	-14.250	YMRP .0000
		.000	.000	999.990	.000	ZMRP .0000
						SCALE .0040

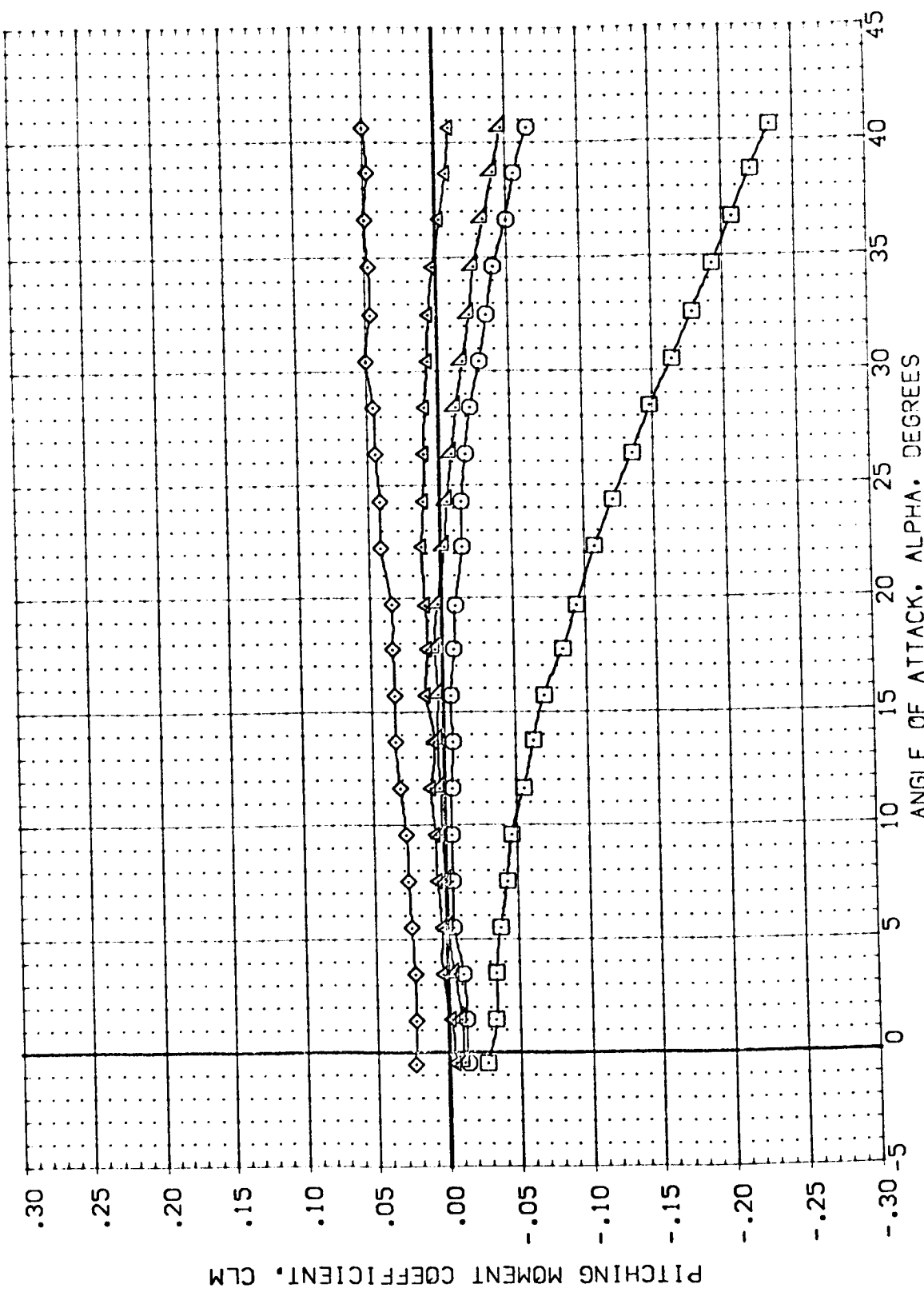


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOISE
 CFMACH = 4.96
 PAGE 874

DATA SET SYMBOL: (F87531), (F87538), (F87542), (F87540), (F87544)

CONFIGURATION DESCRIPTION: MSFC 574(CA#8), CRB 1398 W/ALT NOSE, MSFC 574(CA#8), CRB 1398 W/ALT NOSE, MSFC 574(CA#8), CRB 1398 W/ALT NOSE, MSFC 574(CA#8), CRB 1398 W/ALT NOSE, MSFC 574(CA#8), CRB 1398 W/ALT NOSE

BETA: .000, .000, .000, .000, .000

ELEVTR: .000, 15.000, -40.000, -20.000, .000

SPOBRK: 999.990, 999.990, 999.990, 999.990, 999.990

BDFLAP: .000, 13.750, -14.250, .000, -14.250

REFERENCE INFORMATION: SREF 2690.0000, LREF 474.8000, BREF 936.7000, XMRP 838.7000, YMRP .0000, ZMRP .0000, SCALE .0040

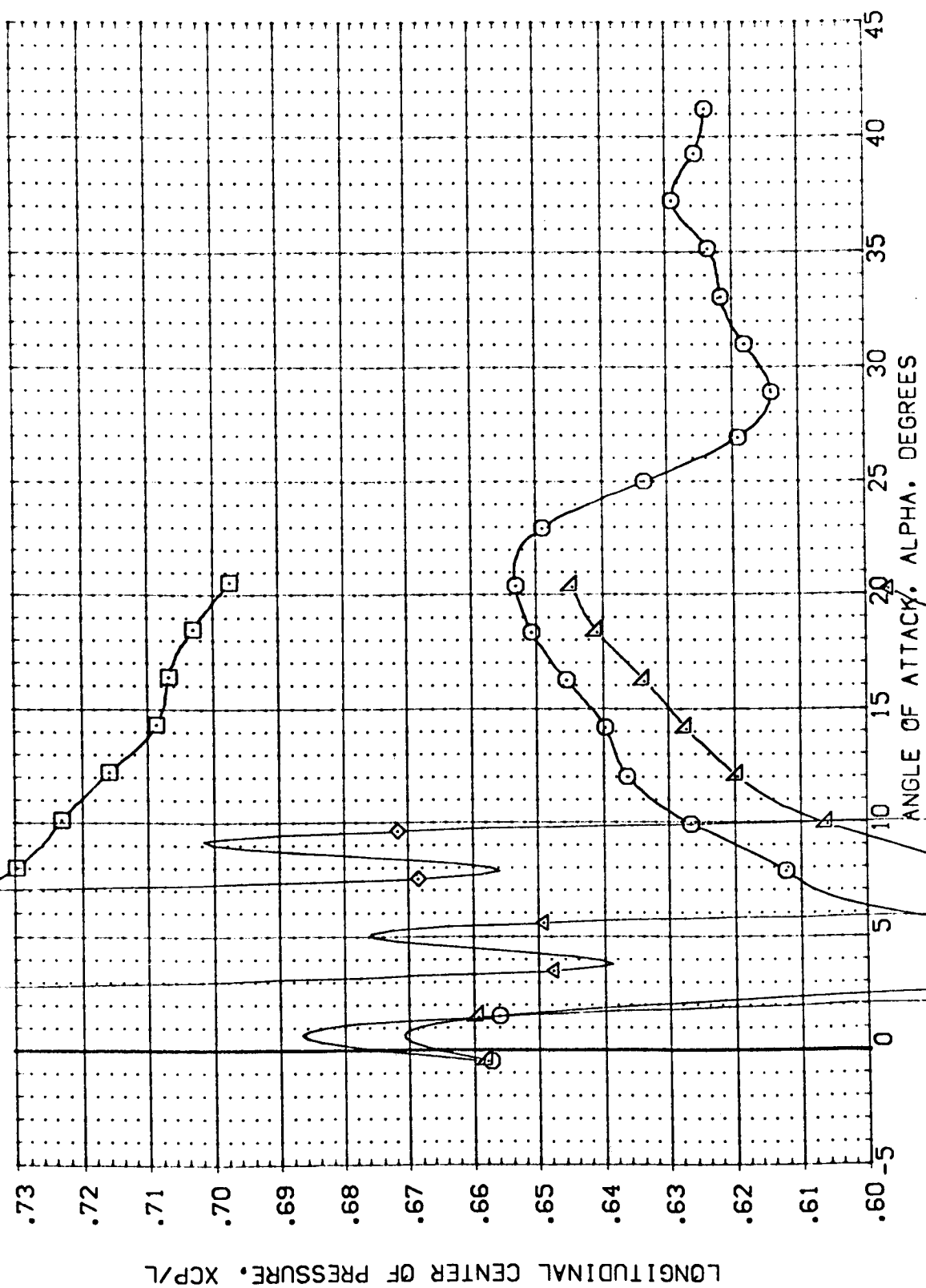


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398 WITH ALTERNATE NOSE
 (M)MACH = .6

DATA SET SYMBOL: CONFIGURATION DESCRIPTION

(F87531)	MSFC 574 (CA48) CRB 398 V/ALT NOSE
(F87538)	MSFC 574 (CA48) CRB 398 V/ALT NOSE
(F87542)	MSFC 574 (CA48) CRB 398 V/ALT NOSE
(F87540)	MSFC 574 (CA48) CRB 398 V/ALT NOSE
(F87544)	MSFC 574 (CA48) CRB 398 V/ALT NOSE

BETA: .000
.000
.000
.000
.000
.000
.000
.000

ELEVTR: .000
15.000
-40.000
-20.000
.000
.000
.000
.000

SPDRBK: 999.990
999.990
999.990
999.990
999.990
999.990
999.990
999.990

BOFLAP: .000
13.750
-14.250
.000
-14.250
.000
.000
.000

REFERENCE INFORMATION

SREF	2690.0000	SC.F.T.
REF	474.8000	IN.
BRF	836.7000	IN.
XVDP	8	IN.
VVDP	839.7000	IN.
ZVDP	.0000	IN.
SCALE	.0040	IN.

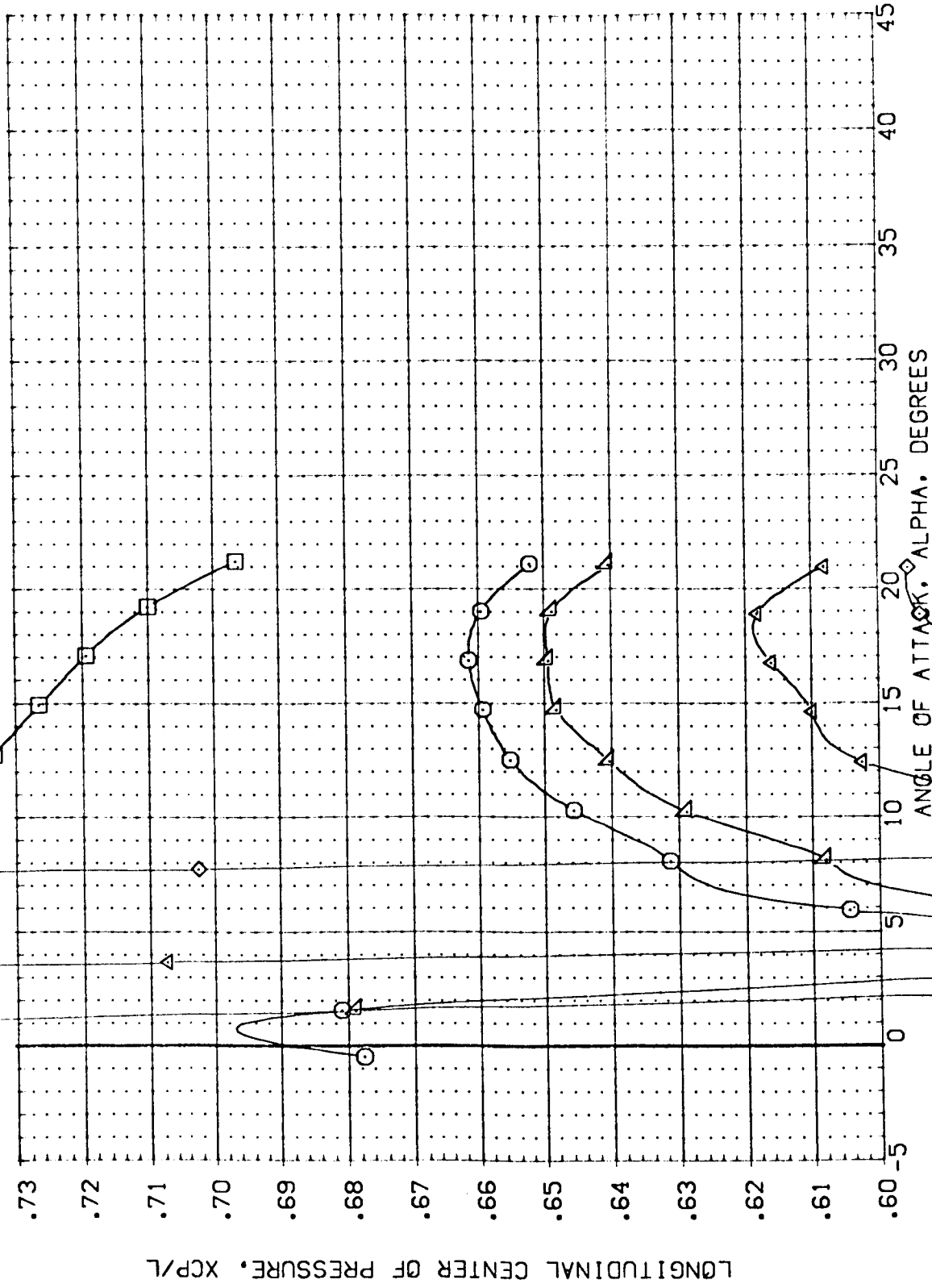
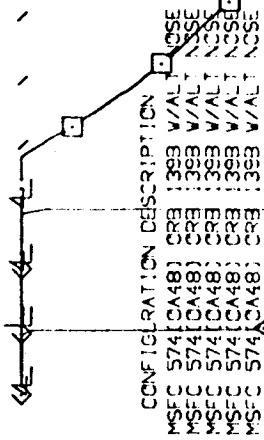


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398 WITH ALTERNATE NOSE
(B)MACH = .90



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(F87531)	MSFC 574 (CA48) CRB 139B W/ALT NCSE	.000	.000	999.990	.000	SREF 2690.0000 SC.F.T.
(F87538)	MSFC 574 (CA48) CRB 139B W/ALT NCSE	.000	15.000	999.990	13.750	LREF 474.8000
(F87542)	MSFC 574 (CA48) CRB 139B W/ALT NCSE	.000	-10.000	999.990	-14.250	BREF 936.7000
(F87540)	MSFC 574 (CA48) CRB 139B W/ALT NCSE	.000	-20.000	999.990	.000	XMRP 838.7000
(F87544)	MSFC 574 (CA48) CRB 139B W/ALT NCSE	.000	.000	999.990	-14.250	ZMRP .0000
						SCALE .0040

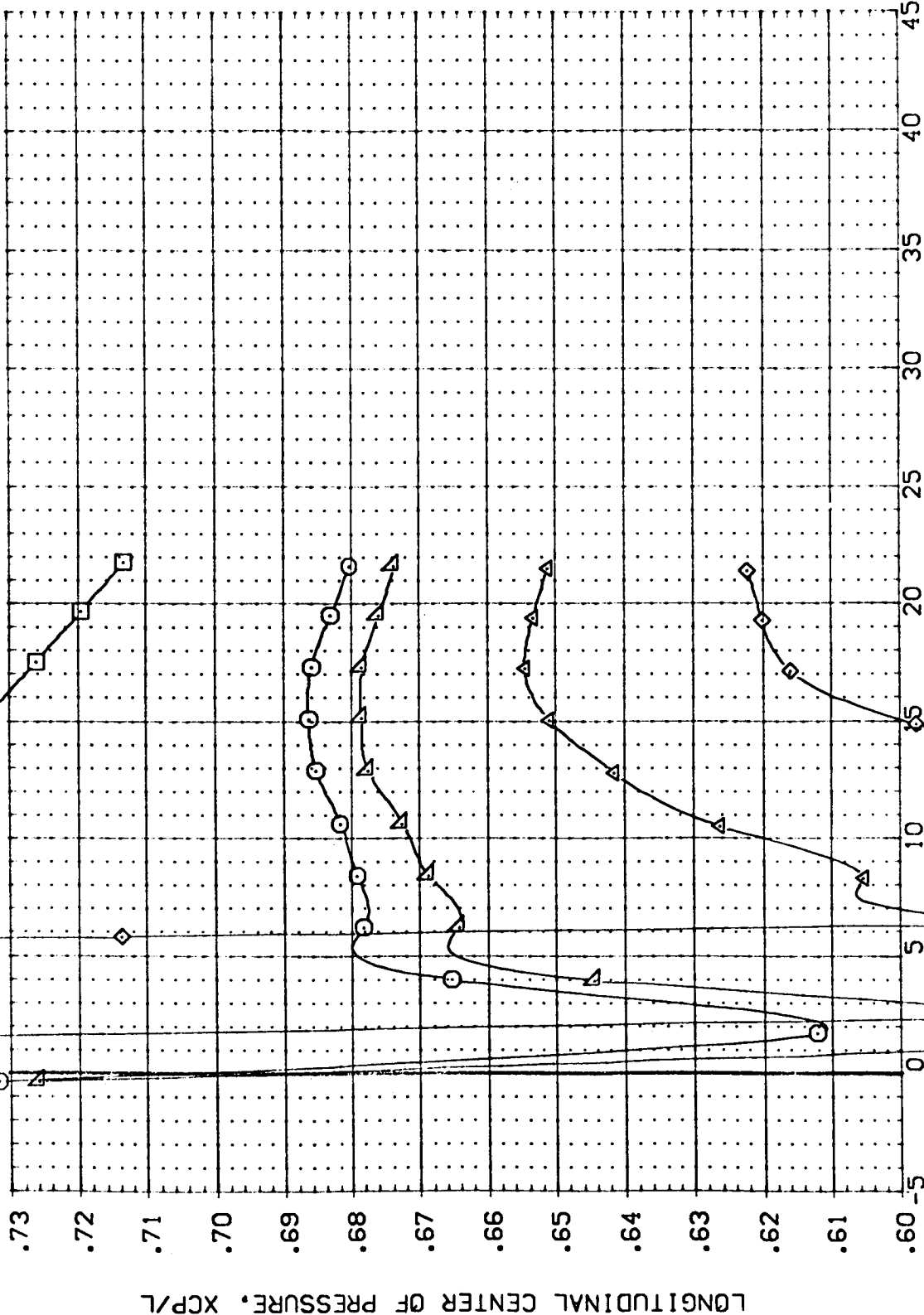


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOSE

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(F87S31)	MSFC 574 (CA48)	CRB 139B	W/ALT	NOSE
(F87S38)	MSFC 574 (CA48)	CRB 139B	W/ALT	NOSE
(F87S42)	MSFC 574 (CA48)	CRB 139B	W/ALT	NOSE
(F87S43)	MSFC 574 (CA48)	CRB 139B	W/ALT	NOSE
(F87S44)	MSFC 574 (CA48)	CRB 139B	W/ALT	NOSE

BETA ELEVTR SPD BRK BOT LAR

.000	.000	999.990	.000	.000
.000	15.000	999.990	13.750	.000
.000	-10.000	999.990	-14.250	.000
.000	.000	999.990	.000	.000
.000	.000	999.990	-14.250	.000

REFERENCE INFORMATION SQ.FT.

2690	.0000
474	.0000
936	.7000
838	.7000
0000	.0000
0000	.0000
0000	.0000
0040	.0000

SCALE

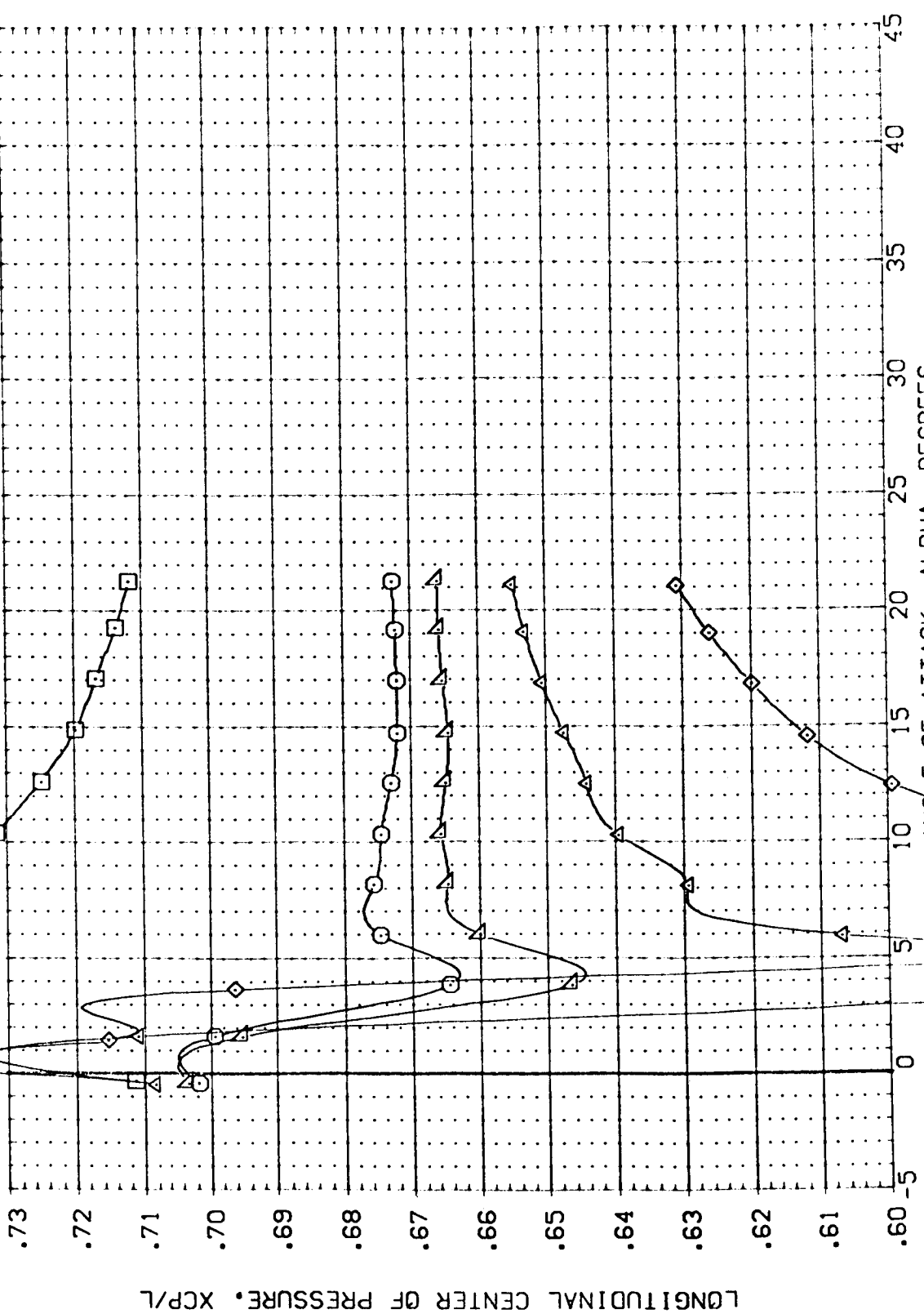


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOSE
 (CROSSACH = .95) PAGE 678



DATA SET SYMBOL CONFIGURATION DESCRIPTION BETA ELEVTR SPOBRK BOFLAP REFERENCE INFORMATION

(F87531)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	.000	SXCF 2690.0000
(F87538)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	15.000	999.990	13.750	BCF 474.8000
(F87542)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	-10.000	999.990	-14.250	BRF 936.7000
(F87540)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	-20.000	999.990	-14.250	XMRP 838.7000
(F87544)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	.000	ZMRP .0000
						SCALE .0010

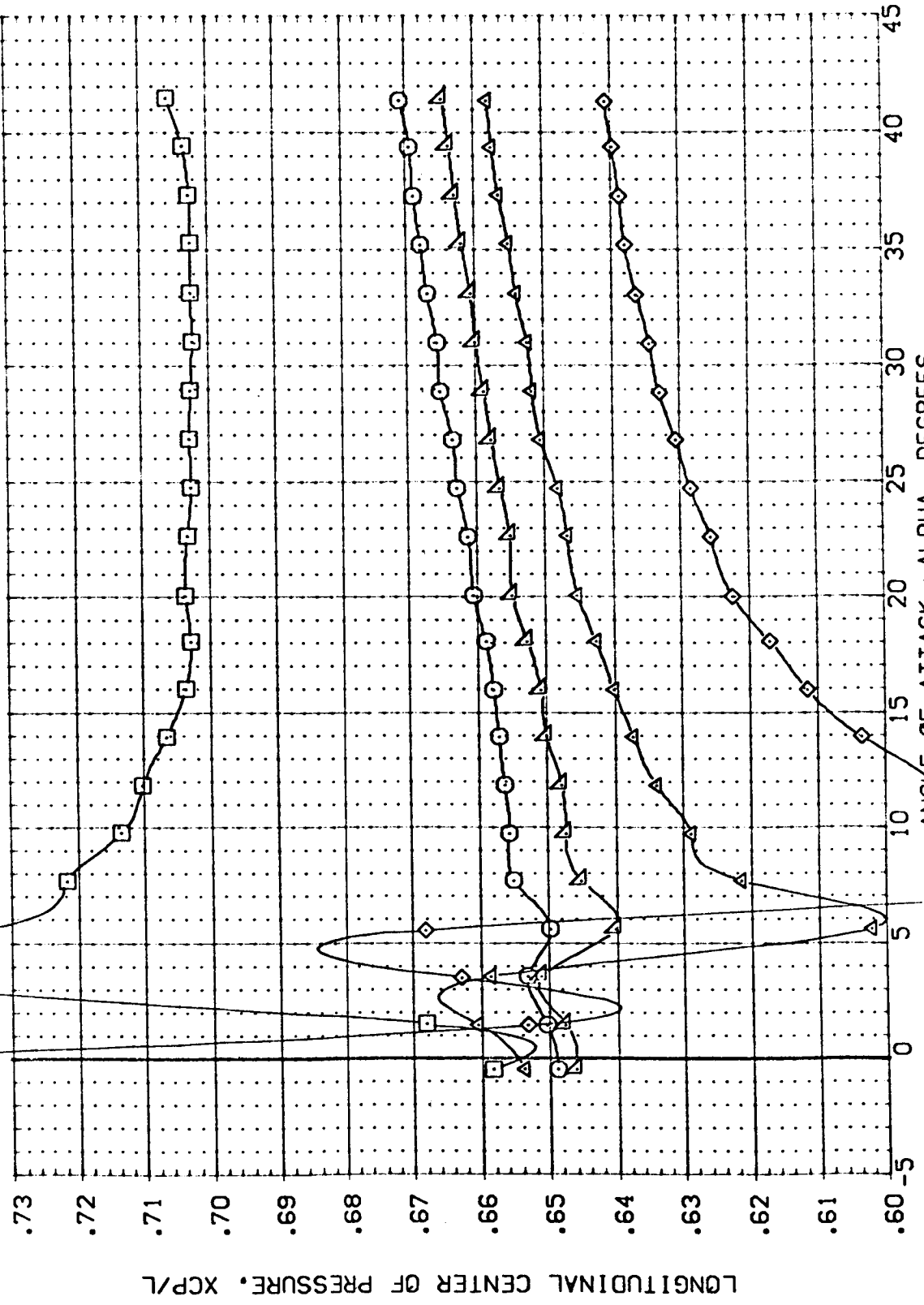


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOSE
 (E)MACH = 2.99 PAGE 679

DATA SET SYMBO: (F87S31) (F87S38) (F87S42) (F87S4C) (F87S44)

CONFIGURATION DESCRIPTION
 MSC 574(CA48) CRB 1393 W/ALT NOISE
 MSC 574(CA48) CRB 1393 W/ALT NOISE
 MSC 574(CA48) CRB 1393 W/ALT NOISE
 MSC 574(CA48) CRB 1393 W/ALT NOISE
 MSC 574(CA48) CRB 1393 W/ALT NOISE

BETA ELEVTR SPCBRK BOFLAP
 .000 .000 999.999 .000
 .000 .000 999.999 13.750
 .000 .000 999.999 -14.250
 .000 .000 999.999 .000
 .000 .000 999.999 -14.250
 .000 .000 999.999 .000

REFERENCE INFORMATION
 SREF 2890.0000 SQ.FT.
 LREF 474.8000
 BREF 936.0000
 YMRP 838.7000
 ZMRP .0000
 SCALE .0040

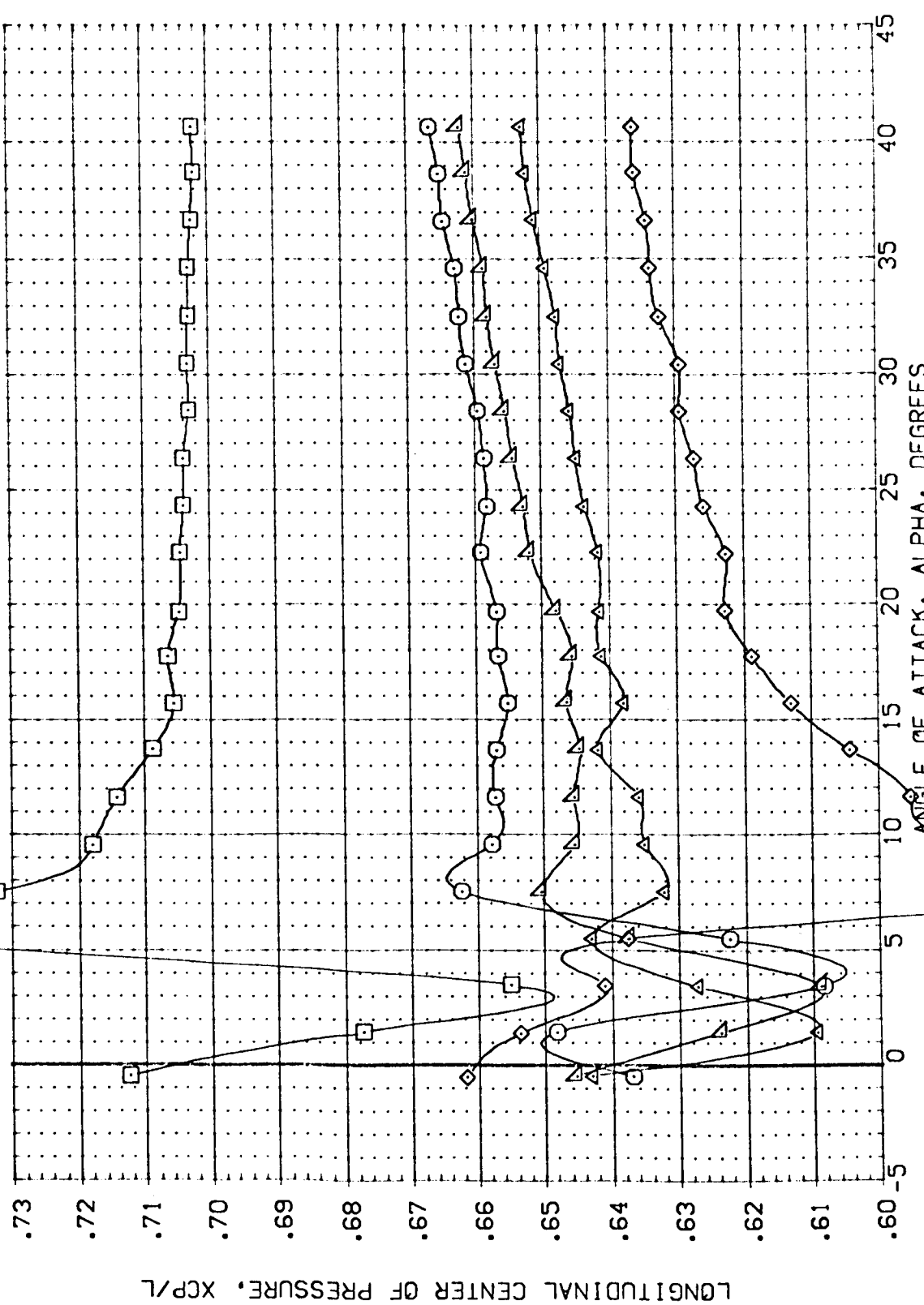


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON CRBITER 139B WITH ALTERNATE NOISE
 (E)YACH = 4.96 PAGE 68C

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87S31)	MSFC 574(CA48) CRB 393 W/ALT N0SE	.000	.000	999.990	.000	SREF 2690.0000
(F87S38)	MSFC 574(CA48) CRB 393 W/ALT N0SE	.000	13.750	999.990	13.750	LREF 474.8000
(F87S42)	MSFC 574(CA48) CRB 393 W/ALT N0SE	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87S40)	MSFC 574(CA48) CRB 393 W/ALT N0SE	.000	-20.000	999.990	.000	XV3P 838.7000
(F87S44)	MSFC 574(CA48) CRB 393 W/ALT N0SE	.000	.000	999.990	-14.250	VW3P .0000
						ZW3P .0000
						SCALE .0000

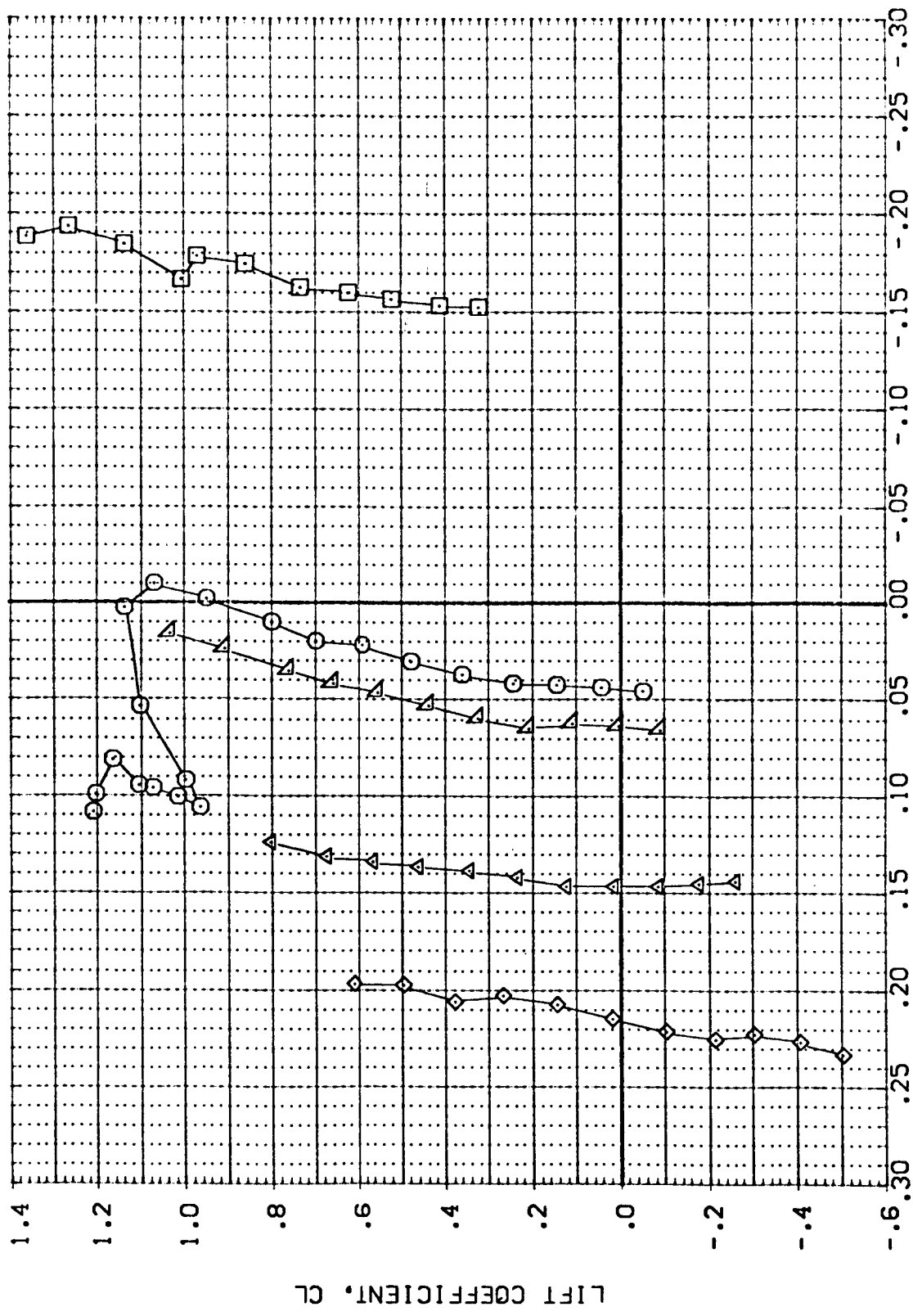


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE N0SE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDRK	BCFLAP	REFERENCE INFORMATION
(F87531)	MSFC 574(CA48) CR3 393 W/ALT NOSE	.000	.000	999.990	.000	SREF 2890.0000 SC.F.
(F87538)	MSFC 574(CA48) CR3 393 W/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000
(F87542)	MSFC 574(CA48) CR3 393 W/ALT NOSE	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87540)	MSFC 574(CA48) CR3 393 W/ALT NOSE	.000	-20.000	999.990	.000	XMRP 838.0000
(F87544)	MSFC 574(CA48) CR3 393 W/ALT NOSE	.000	.000	999.990	-14.250	YMRP .0000
						ZMRP .0000
						SCALE .0010

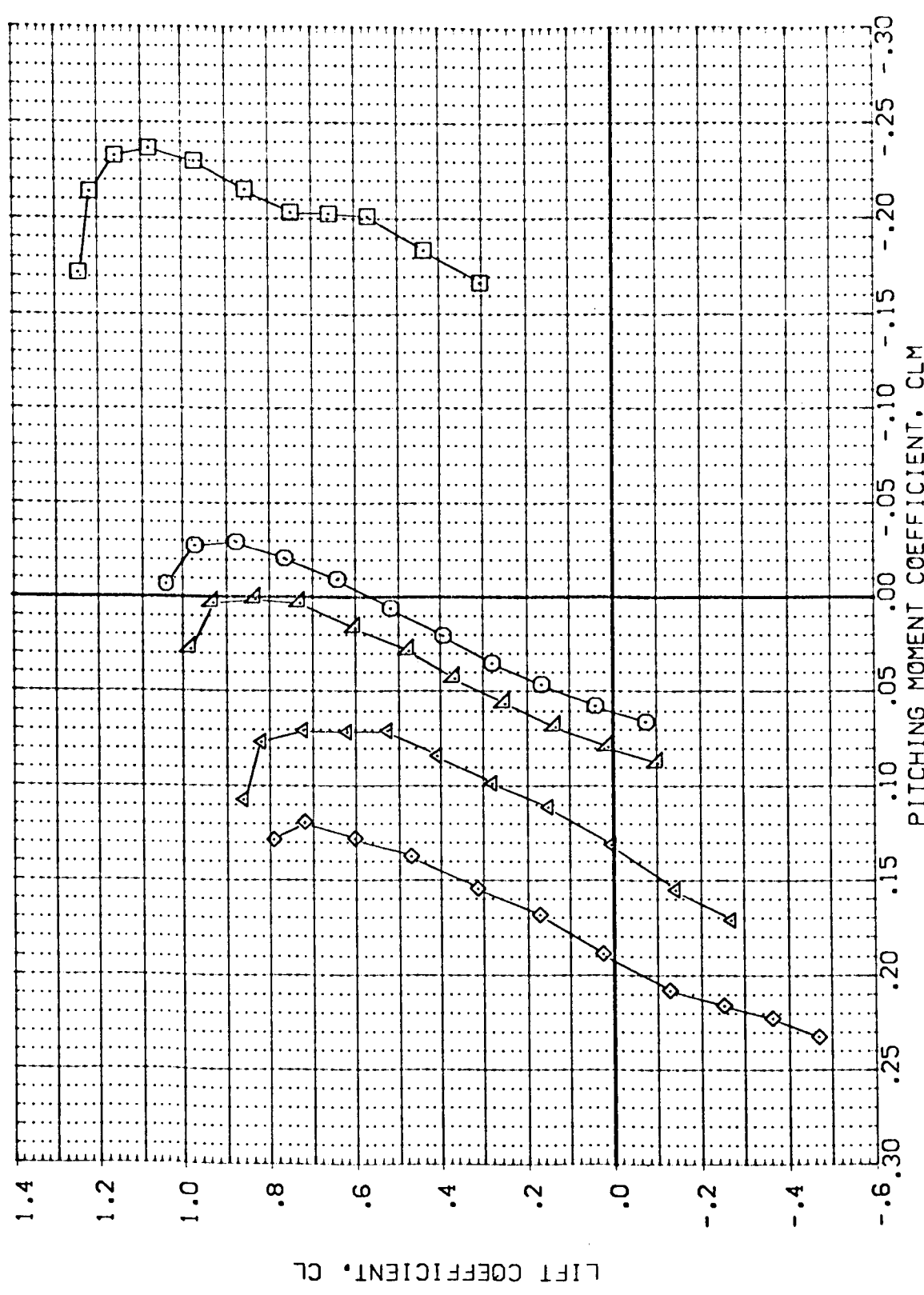


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOSE
 (B) VACH = .90 PAGE 682

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERE	INFORMATION
(F87531)	MSFC 574(CA48) CRB 1398 W/ALT NCSE	.000	.000	999.999	.000	SREF	2990.0000 SC.F.T.
(F87538)	MSFC 574(CA48) CRB 1398 W/ALT NCSE	.000	15.000	999.999	13.750	REF	474.8000
(F87542)	MSFC 574(CA48) CRB 1398 W/ALT NCSE	.000	-10.000	999.999	-14.250	BREF	936.7000
(F87540)	MSFC 574(CA48) CRB 1398 W/ALT NCSE	.000	-20.000	999.999	.000	XMRP	838.7000
(F87544)	MSFC 574(CA48) CRB 1398 W/ALT NCSE	.000	.000	999.999	-14.125	YMRP	.0000
						ZMRP	.0000
						SCALE	.0040

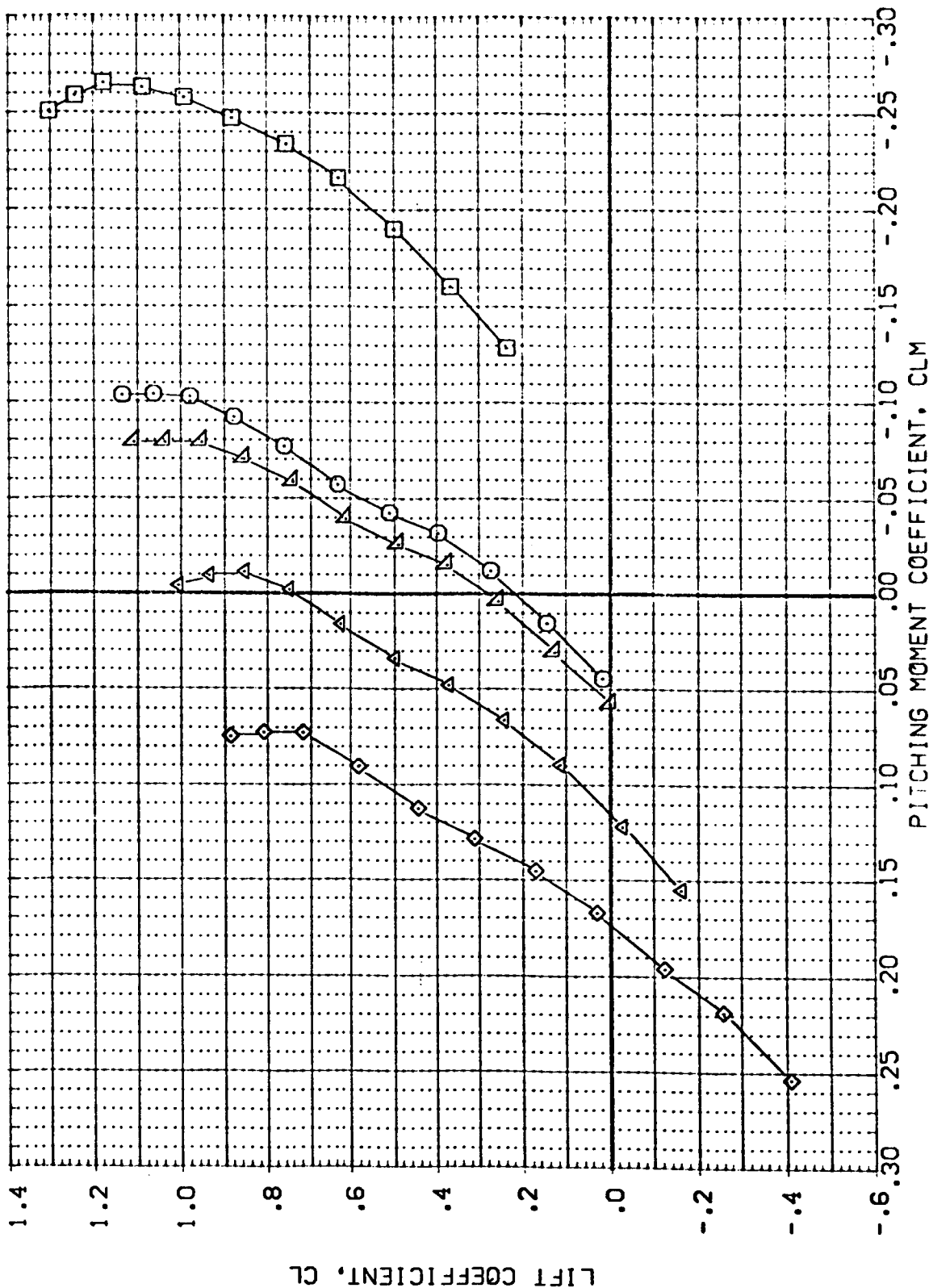


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398 WITH ALTERNATE NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEV'R	SPOBRK	BDFLAP	REFERENCE INFORMATION
(F87931)	MSFC 574(CA48) CR3 1399 W/ALT NCSE	.000	.000	999.990	.000	SREF 2690 C000
(F87938)	MSFC 574(CA48) CR3 1399 W/ALT NCSE	.000	15.000	999.990	13.750	LREF 474 8000
(F87942)	MSFC 574(CA48) CR3 1399 W/ALT NCSE	.000	-10.000	999.990	-14.250	BREF 938 7000
(F87940)	MSFC 574(CA48) CR3 1399 W/ALT NCSE	.000	-20.000	999.990	.000	XVRP 838 7000
(F87944)	MSFC 574(CA48) CR3 1399 W/ALT NCSE	.000	.000	999.990	-14.250	YVRP .0000
						ZVRP .0000
						SCALE .0010

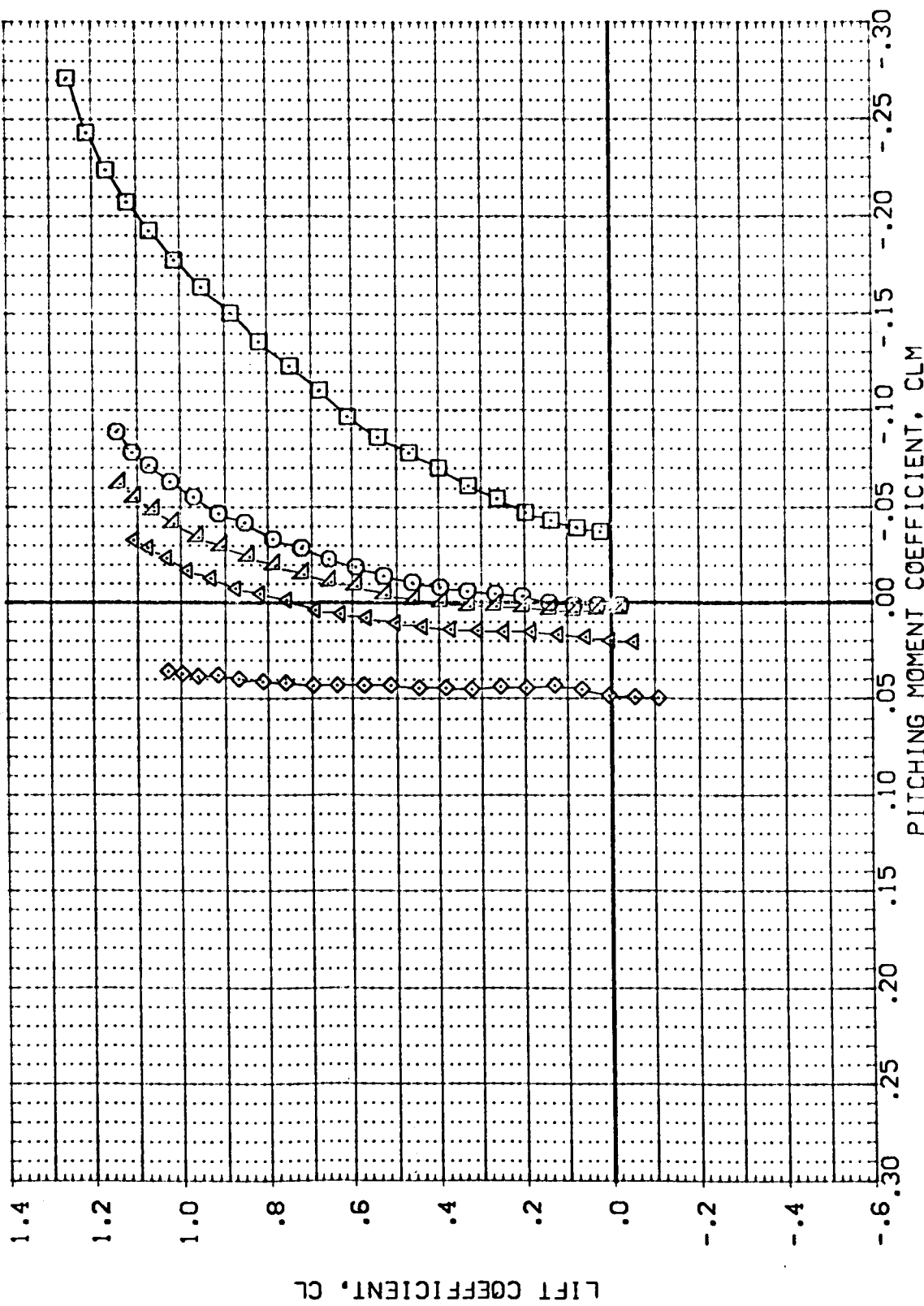


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398 WITH ALTERNATE NOSE
 (M)MACH = 2.99 PAGE 685

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BCFLAP	REFERENCE INFORMATION
(F87531)	MSFC 574(CA48) CRB 1398 W/ALT NCSE	.000	.000	999.990	.000	SREF 2690.0000
(F87538)	MSFC 574(CA48) CRB 1398 W/ALT NCSE	.000	15.000	999.990	13.750	REF 474.8000
(F87542)	MSFC 574(CA48) CRB 1398 W/ALT NCSE	.000	-40.000	999.990	-14.250	REF 936.7000
(F87540)	MSFC 574(CA48) CRB 1398 W/ALT NCSE	.000	-20.000	999.990	.000	XVRP 838.7000
(F87544)	MSFC 574(CA48) CRB 1398 W/ALT NCSE	.000	.000	999.990	-14.250	ZVRP .0000
						SCALE .0040

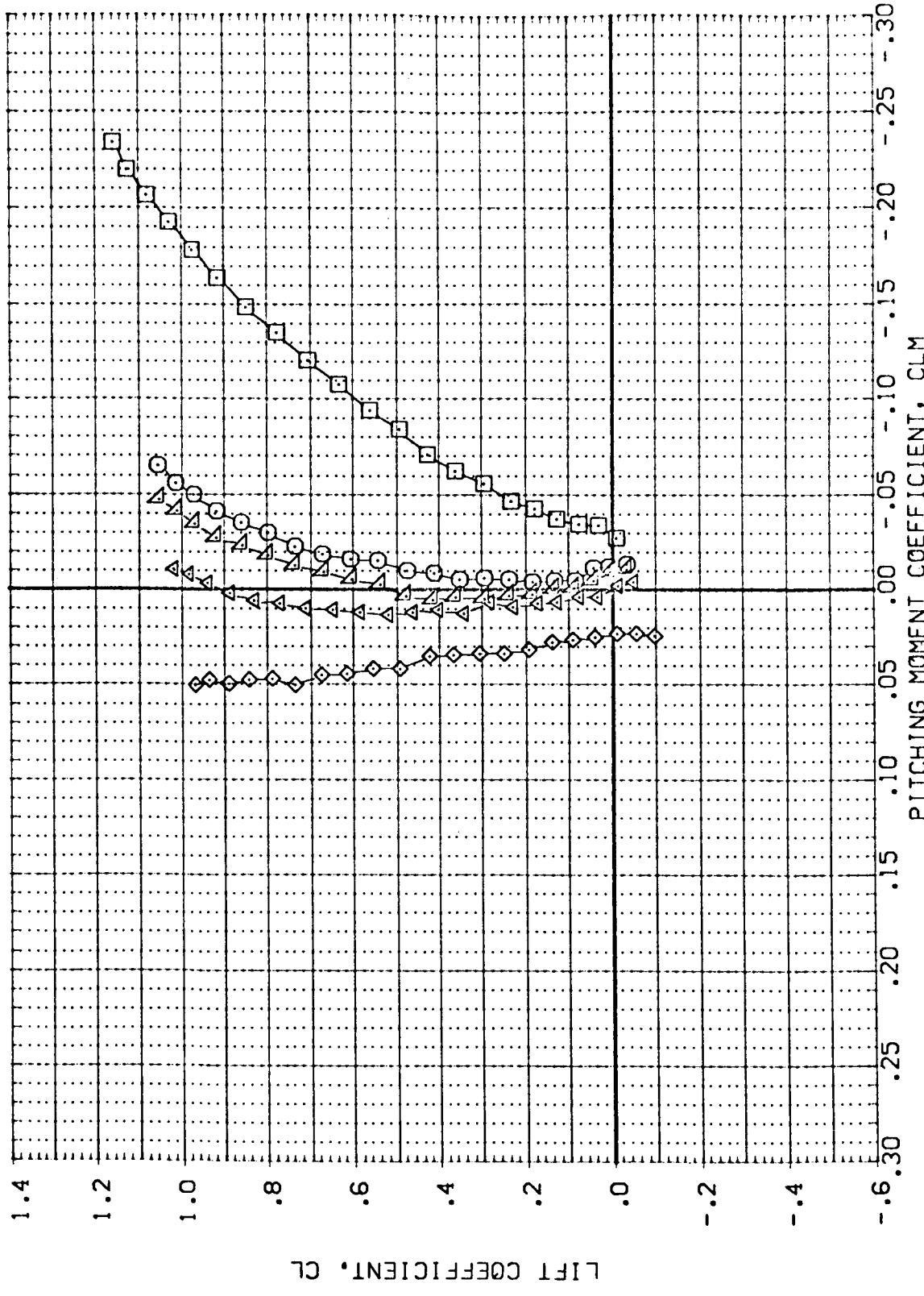


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398 WITH ALTERNATE NOSE
 (M)MACH = 4.96 PAGE 688

DATA SET SYMCL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87S31)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000
(F87S38)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000
(F87S42)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87S40)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	-20.000	999.990	.000	XVRP 838.0000
(F87S44)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	-14.250	YVRP .0000
					ZVRP .0000	SCALE .0040

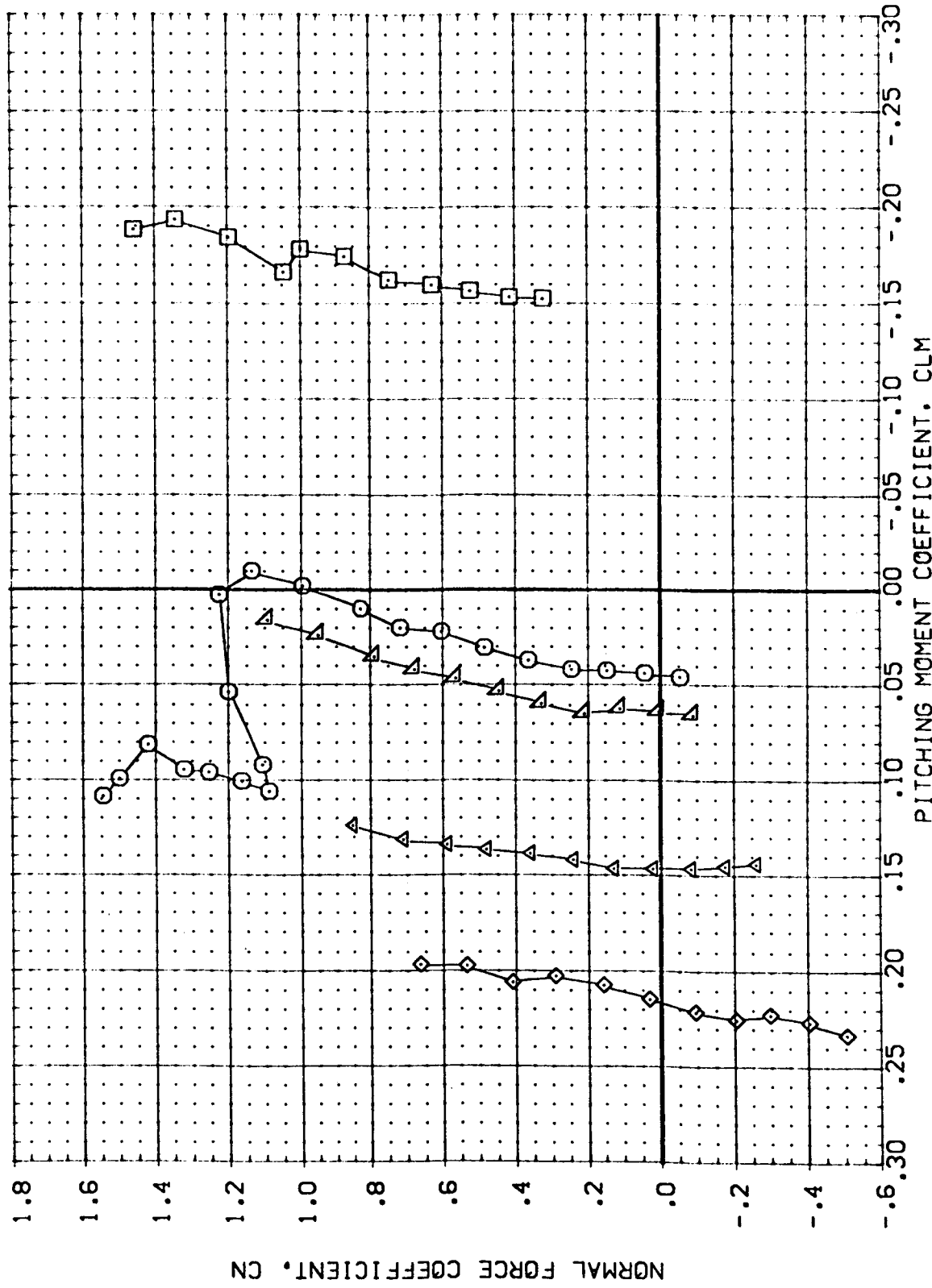


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDBRK	BDFLAP	REFERENCE INFORMATION
(F87S31)	MSFC 574(OA48) CR3 1398 W/ALT NOISE	.000	.000	999.990	.000	SREF 2690.0000 SC.F.
(F87S38)	MSFC 574(OA48) CR3 1398 W/ALT NOISE	.000	.000	999.990	13.750	SREF 474.8000
(F87S42)	MSFC 574(OA48) CR3 1398 W/ALT NOISE	.000	15.000	999.990	-14.250	SREF 938.7000
(F87S40)	MSFC 574(OA48) CR3 1398 W/ALT NOISE	.000	-40.000	999.990	.000	SREF 898.7000
(F87S44)	MSFC 574(OA48) CR3 1398 W/ALT NOISE	.000	-20.000	999.990	-14.250	SREF .0000
						SCALE .0010

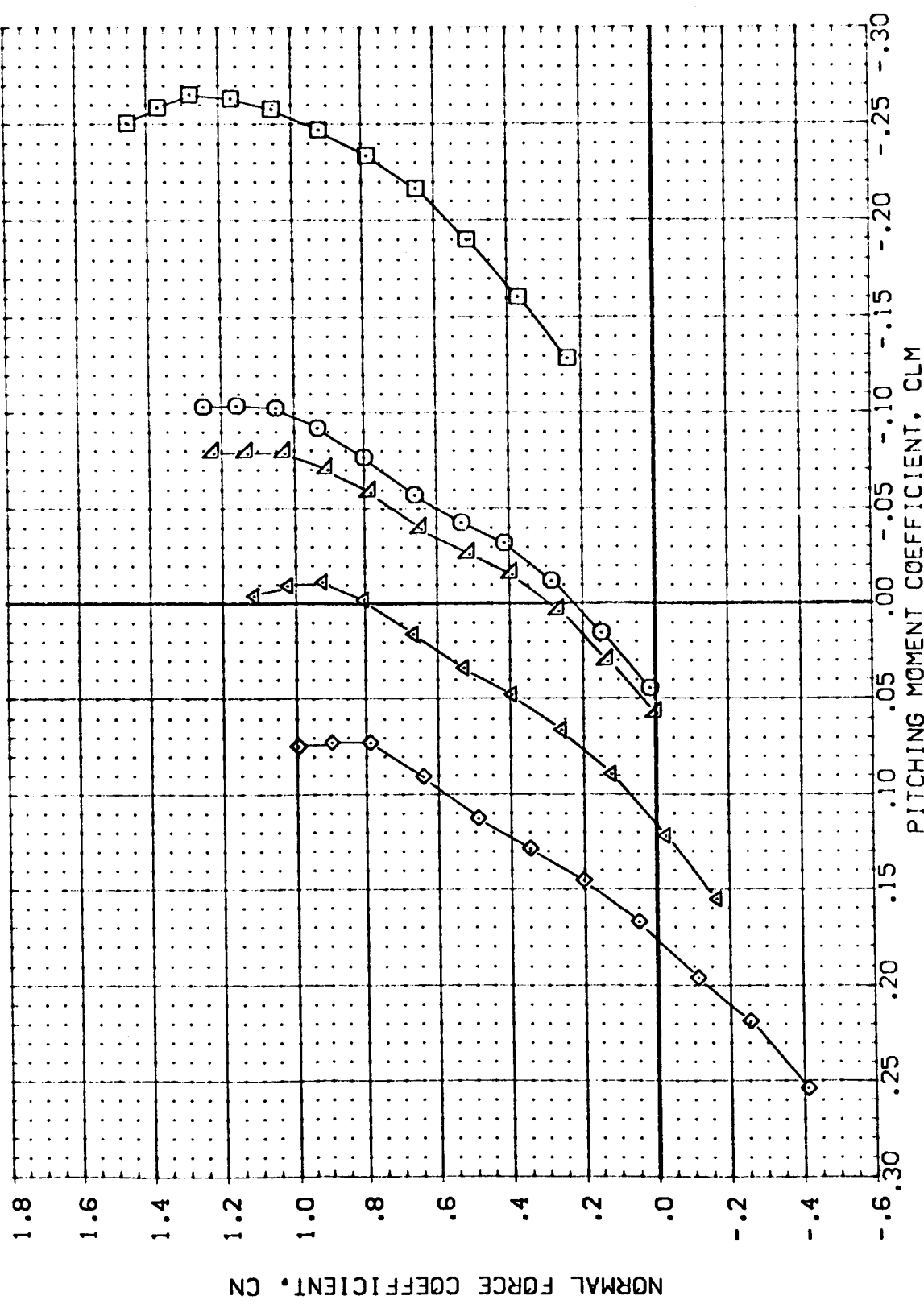


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON CRBITER 1398 WITH ALTERNATE NOISE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(F87S31)	MSFC 574(CA48) CR8 1398 W/ALT NOSE	.000	.000	999.990	.000	SREF: 2690.0000 SC.F.T.
(F87S38)	MSFC 574(CA48) CR8 1398 W/ALT NCSE	.000	.000	999.990	13.750	REF: 474.8000
(F87S32)	MSFC 574(CA48) CR8 1398 W/ALT NCSE	.000	15.000	999.990	-14.250	BREF: 936.7000
(F87S40)	MSFC 574(CA48) CR8 1398 W/ALT NCSE	.000	-5.000	999.990	.000	XMRP: 838.0000
(F87S44)	MSFC 574(CA48) CR8 1398 W/ALT NCSE	.000	-2.000	999.990	-14.250	YMRP: .0000
					ZMRP: .0000	SCALE: .0040

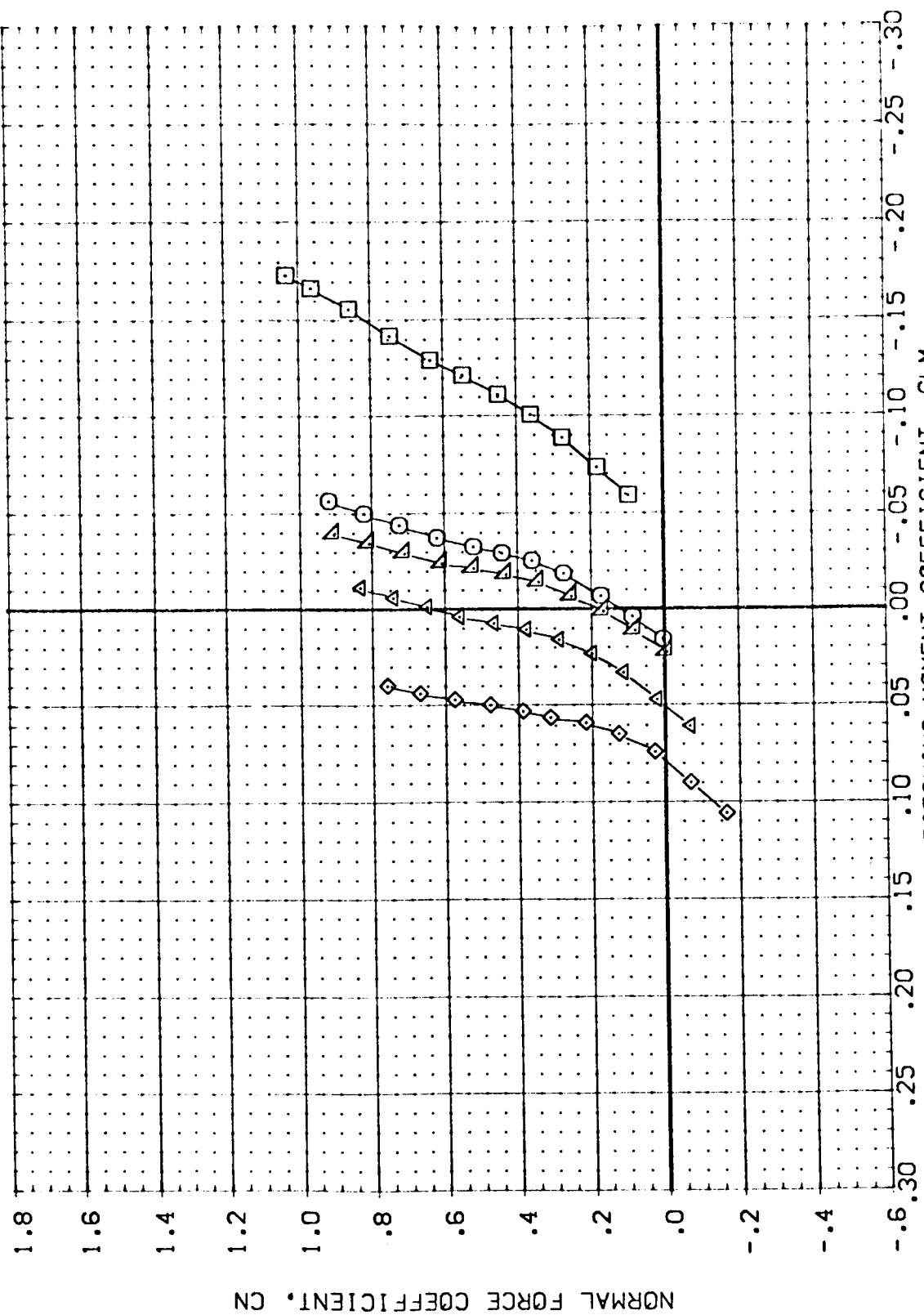


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398 WITH ALTERNATE NOSE
 (C)MACH = 1.95 PAGE 69C

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87531)	MSFC 574(OA48) CRB 139B W/ALT NCSE	.000	.000	999.990	.000	SCALE .0040
(F87538)	MSFC 574(OA48) CRB 139B W/ALT NCSE	.000	15.000	999.990	13.7500	REF 474.8000
(F87542)	MSFC 574(OA48) CRB 139B W/ALT NCSE	.000	-40.000	999.990	-14.0000	BOFL 936.7000
(F87540)	MSFC 574(OA48) CRB 139B W/ALT NCSE	.000	-20.000	999.990	.000	XVBP 838.7000
(F87544)	MSFC 574(OA48) CRB 139B W/ALT NCSE	.000	.000	999.990	-14.0000	YVBP .0000

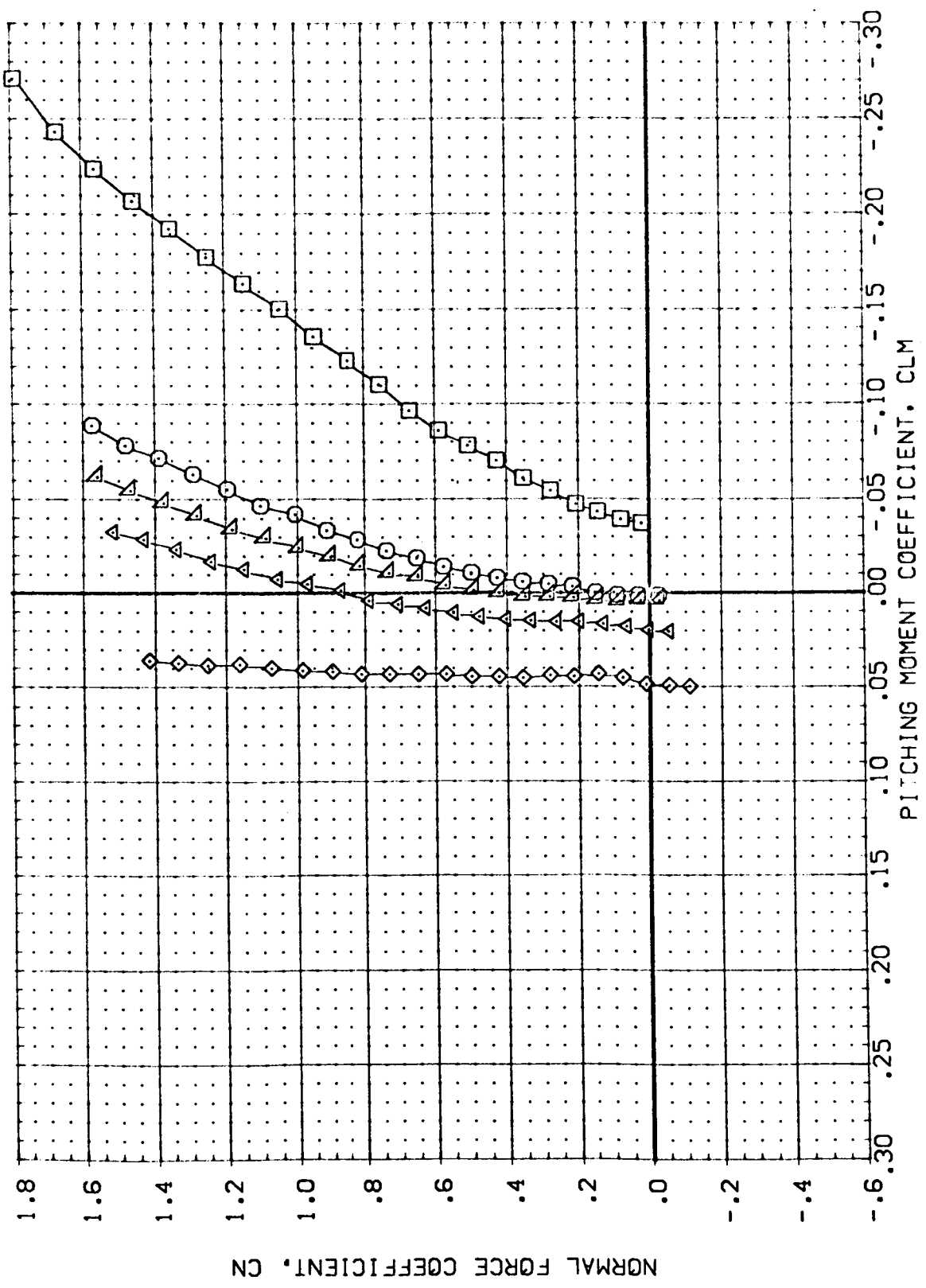


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOSE
 (EJMACH = 2.99) PAGE 69

DATA SET SYMBOL: CONFIGURATION DESCRIPTION: REFERENCE INFORMATION: SQ. FT.
 (F87S3) MSFC 574 (CA48) CRB 1398 V/ALT NCSE 2590.0000
 (F87S38) MSFC 574 (CA48) CRB 1398 V/ALT NCSE 474.8000
 (F87S42) MSFC 574 (CA48) CRB 1398 V/ALT NCSE 936.7000
 (F87S46) MSFC 574 (CA48) CRB 1398 V/ALT NCSE 838.7000
 (F87S44) MSFC 574 (CA48) CRB 1398 V/ALT NCSE .0000
 BETA: ELEVTR: SPOBRK: BDFLAP: SREF: REFERENCE INFORMATION: SQ. FT.
 .000 .000 999.990 .000 SREF 2590.0000
 .000 15.000 999.990 .000 LREF 474.8000
 .000 -40.000 999.990 -14.250 BRFF 936.7000
 .000 -20.000 999.990 .000 XVRP 838.7000
 .000 .000 999.990 -14.250 YVRP .0000
 .000 .000 999.990 .000 ZVRP .0000
 .000 .000 .000 .000 SCALE .0040

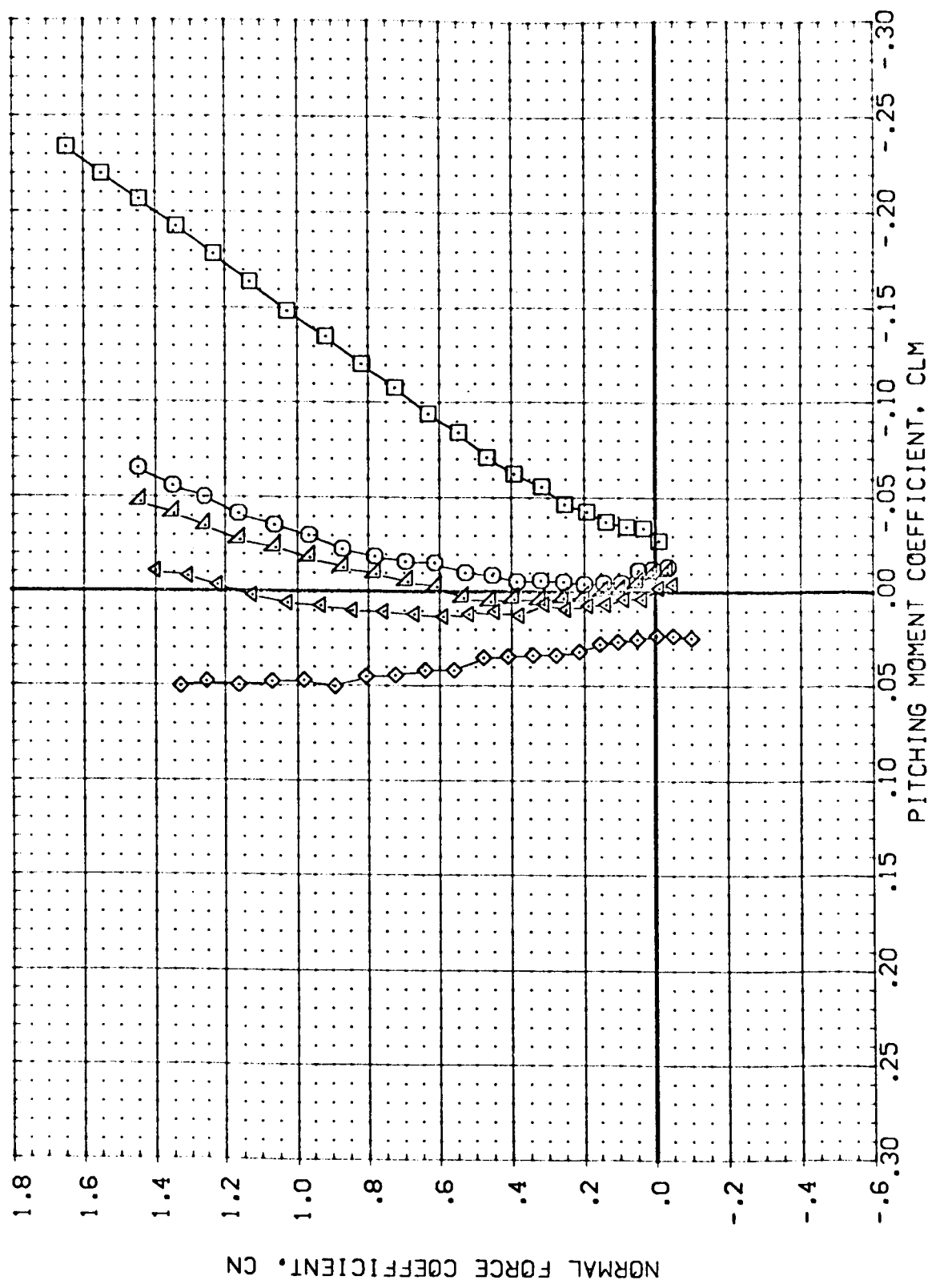


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398 WITH ALTERNATE NOSE
 (F)MACH = 4.96 PAGE 692

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDRBK	BOFLAP	REFERENCE INFORMATION
(F87S31)	MSFC 574(CA48) CRB 399 W/ALT NOISE	.000	.000	999.990	.000	SREF 2690.0000 SC.F.T.
(F87S38)	MSFC 574(CA48) CRB 399 W/ALT NOISE	.000	.000	999.990	13.750	LREF 474.8000
(F87S42)	MSFC 574(CA48) CRB 399 W/ALT NOISE	.000	15.000	999.990	-14.250	BREF 536.7000
(F87S40)	MSFC 574(CA48) CRB 399 W/ALT NOISE	.000	-40.000	999.990	.000	XWRP 0.0000
(F87S44)	MSFC 574(CA48) CRB 399 W/ALT NOISE	.000	-20.000	999.990	-14.250	YWRP 0.0000
						ZWRP 0.0000
						SCALE .0040

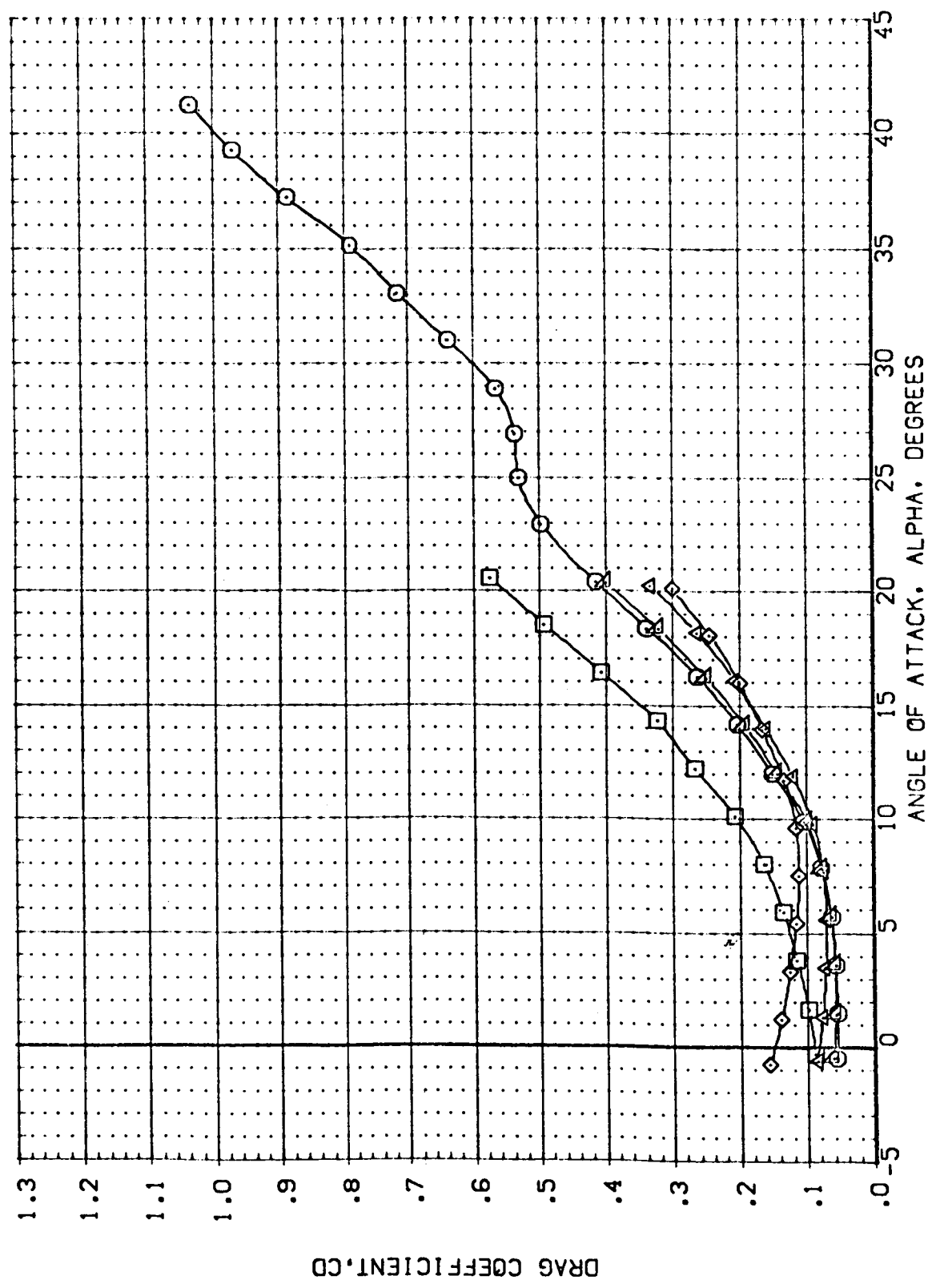


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOSE
 (M)MACH = .6; PAGE 693

DATA SET SYMBOL: (F87531), (F87538), (F87542), (F87540), (F87544)
 CONFIGURATION DESCRIPTION: MSFC 574(CA48) CRB 393 W/ALT NOSE, MSFC 574(CA48) CRB 393 W/ALT NOSE, MSFC 574(CA48) CRB 393 W/ALT NOSE, MSFC 574(CA48) CRB 393 W/ALT NOSE
 BETA: .000, .000, .000, .000
 ELEVTR: .000, 15.000, -40.000, -20.000
 SPOBRK: 999.999, 999.999, 999.999, 999.999
 BDFLAP: .000, 13.750, -14.750, -14.750
 REFERENCE INFORMATION: SREF 2690.0000 SC.F., XREF 474.8000, YREF 936.7000, XWRP 838.7000, YWRP .0000, ZWRP .0000, SCALE .0040

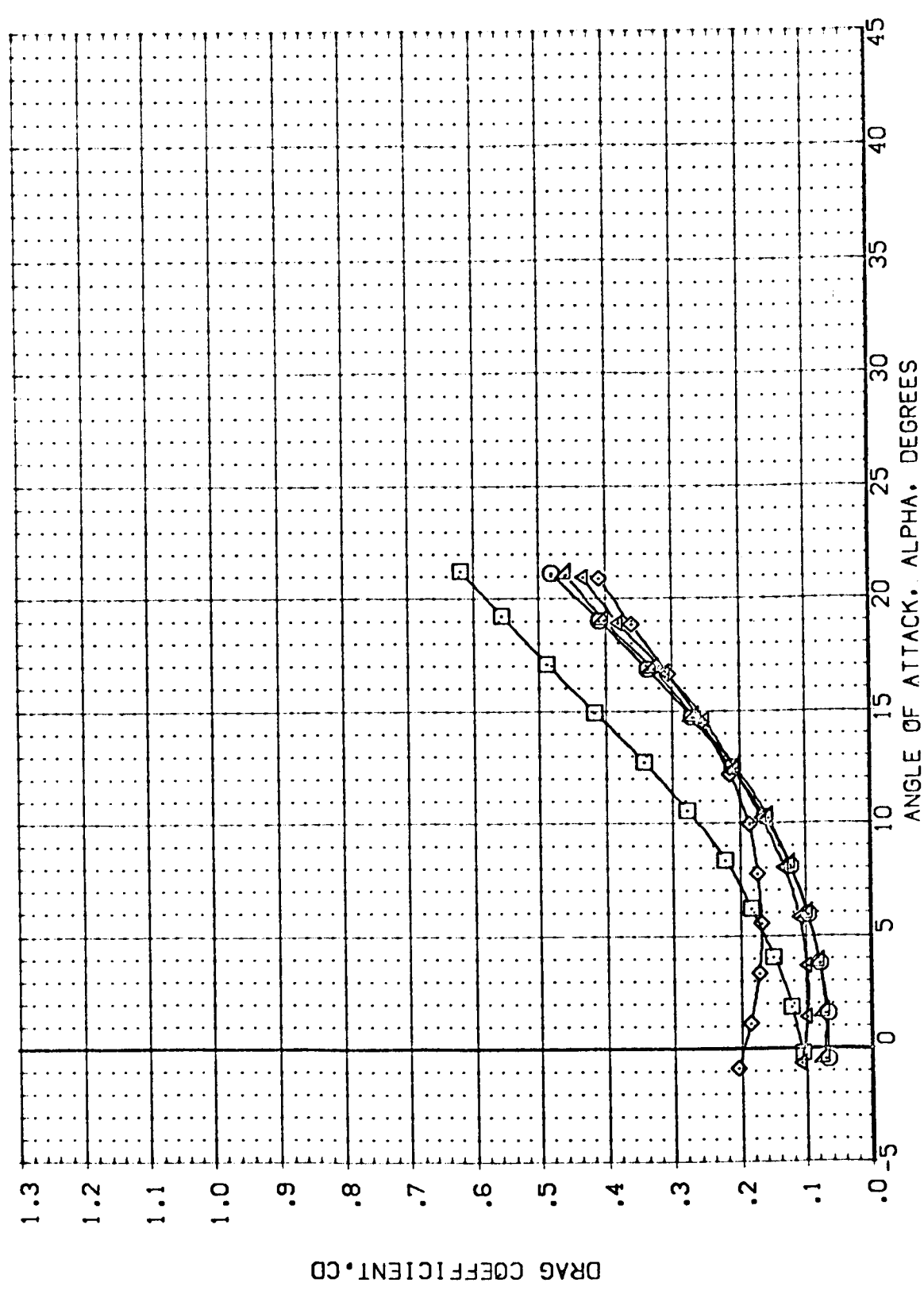


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(F87S31)	MSFC 574(CA48) CR3 393 V/ALT NCSE	.000	.000	999.990	.000	SREF 2690.0000
(F87S38)	MSFC 574(CA48) CR3 393 V/ALT NCSE	.000	15.000	999.990	13.750	LREF 474.8000
(F87S42)	MSFC 574(CA48) CR3 393 V/ALT NCSE	.000	-40.000	999.990	-14.000	BREF 936.7000
(F87S40)	MSFC 574(CA48) CR3 393 V/ALT NCSE	.000	-20.000	999.990	.000	XMRP 838.7000
(F87S44)	MSFC 574(CA48) CR3 393 V/ALT NCSE	.000	.000	999.990	-14.750	YMRP .0000
						ZMRP .0000
						SCALE .0040

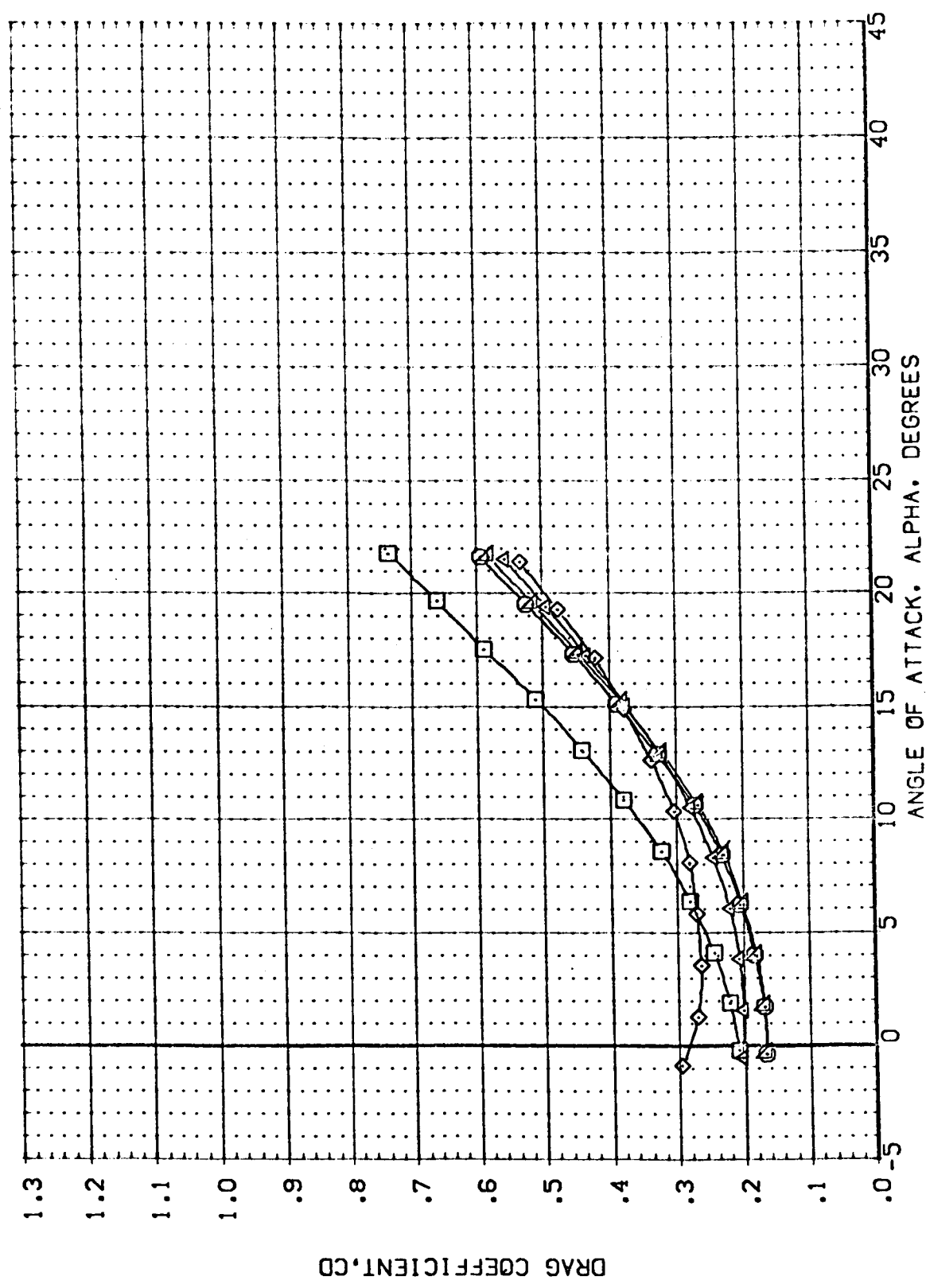


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOSE
 (C)MACH = .19 PAGE 695

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(F87531)	MSFC 574(CA48) CRB 1398 V/ALT NCSE	.000	.000	999.990	.000	SREF 2690.0000
(F87538)	MSFC 574(CA48) CRB 1398 V/ALT NCSE	.000	15.000	999.990	13.750	LREF 474.8000
(F87542)	MSFC 574(CA48) CRB 1398 V/ALT NCSE	.000	-40.000	999.990	-14.750	BREF 936.7000
(F87540)	MSFC 574(CA48) CRB 1398 V/ALT NCSE	.000	-20.000	999.990	.000	XMRP 838.7000
(F87544)	MSFC 574(CA48) CRB 1398 V/ALT NCSE	.000	.000	999.990	-14.750	YMRP .0000
		.000	.000	.000	.000	ZMRP .0000
		.000	.000	.000	.000	SCALE .0040

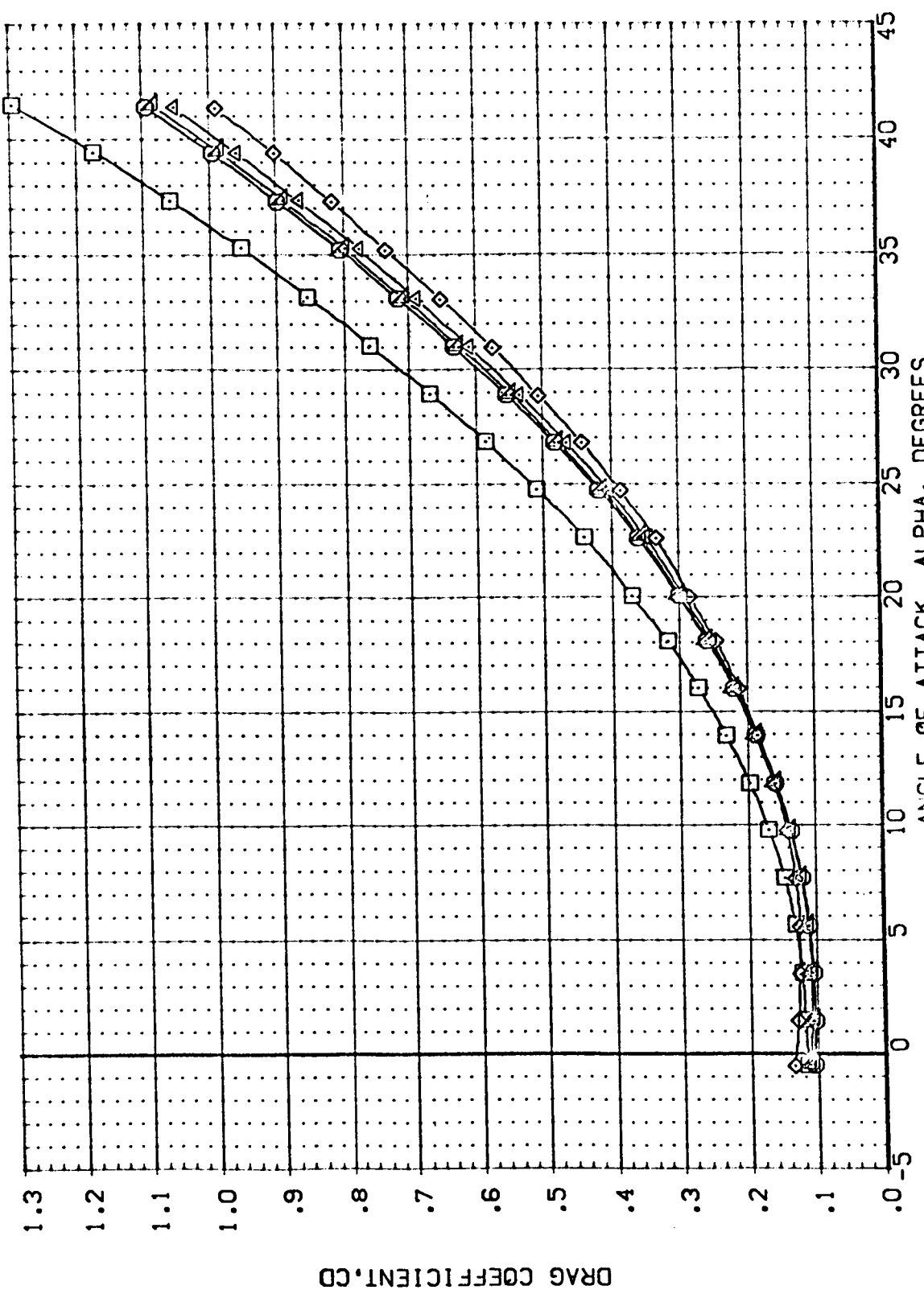


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398 WITH ALTERNATE NOSE
 (E)MACH = 2.99
 PAGE 697

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVATOR	SPDRK	BDFLAP	REFERENCE INFORMATION
(F87S31)	MSFC 574(CA48) CRB 139B W/ALT NCSE	.000	.000	999.990	.000	SREF 2690.0000 SC.FT.
(F87S38)	MSFC 574(CA48) CRB 139B W/ALT NCSE	.000	15.000	999.990	13.750	LREF 474.8000 IN.
(F87S42)	MSFC 574(CA48) CRB 139B W/ALT NCSE	.000	-40.000	999.990	-14.250	BREF 936.7000 IN.
(F87S40)	MSFC 574(CA48) CRB 139B W/ALT NCSE	.000	-20.000	999.990	.000	XMRP 838.7000 IN.
(F87S44)	MSFC 574(CA48) CRB 139B W/ALT NCSE	.000	.000	999.990	-14.250	VMRP .0000 IN.
						ZMRP .0000 IN.
						SCALE .0040

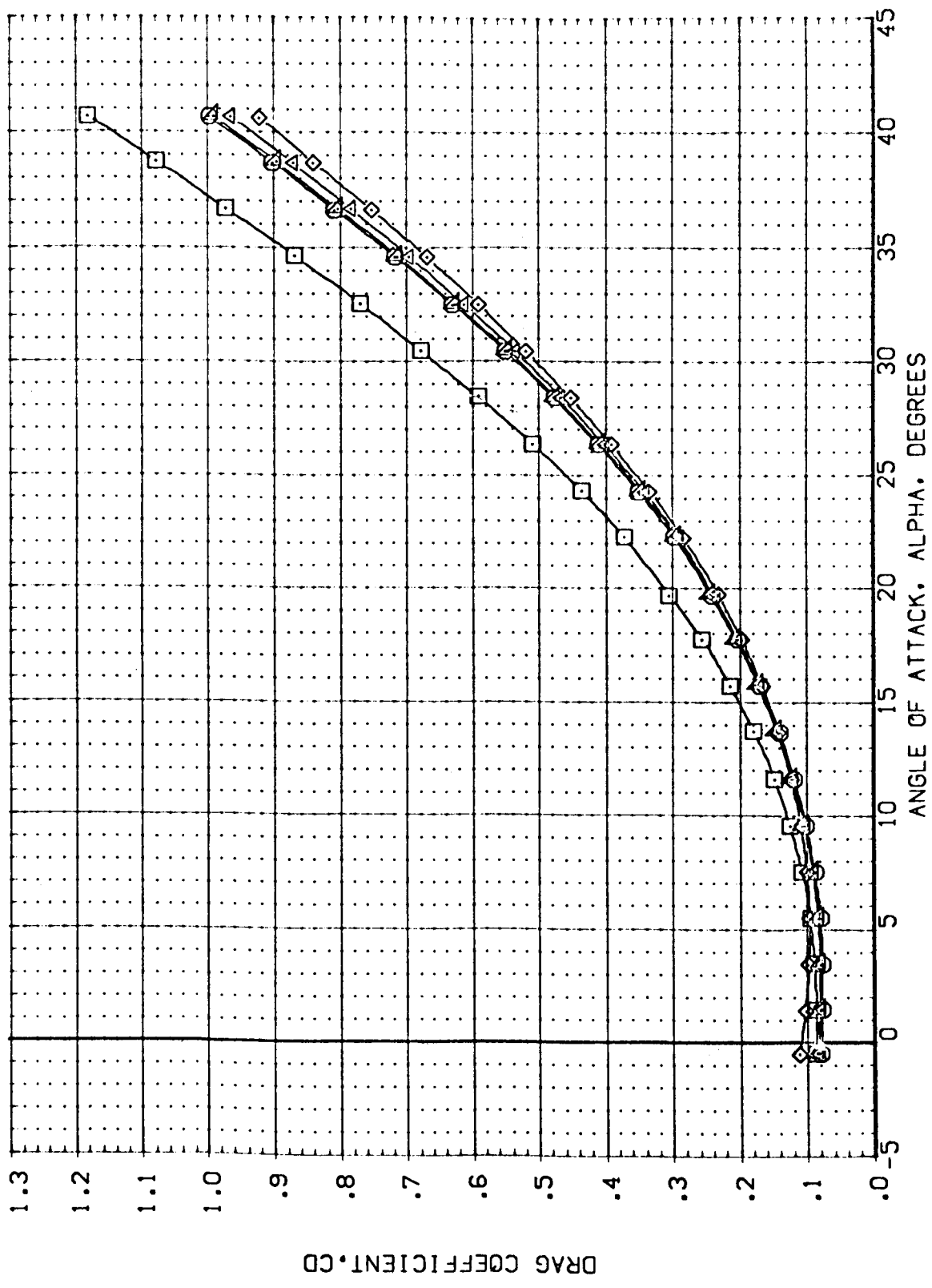


FIG. 15 - EFFECT OF MAX CONTROL DEFLECTION ON CRBITER 139B WITH ALTERNATE NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDRK	BOFLAP	REFERENCE INFORMATION
(F87531)	MSFC 574(CA48) CRB 1398 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000
(F87538)	MSFC 574(CA48) CRB 1398 W/ALT NCSE	.000	15.000	999.990	13.750	LRP 474.8000
(F87542)	MSFC 574(CA48) CRB 1398 W/ALT NCSE	.000	-40.000	999.990	-14.250	BREF 939.7000
(F87540)	MSFC 574(CA48) CRB 1398 W/ALT NOSE	.000	-20.000	999.990	.000	XVRP 839.7000
(F87544)	MSFC 574(CA48) CRB 1398 W/ALT NCSE	.000	.000	999.990	-14.250	VVRP 1000.0000
					ZVRP 1000.0000	SCALE 10000

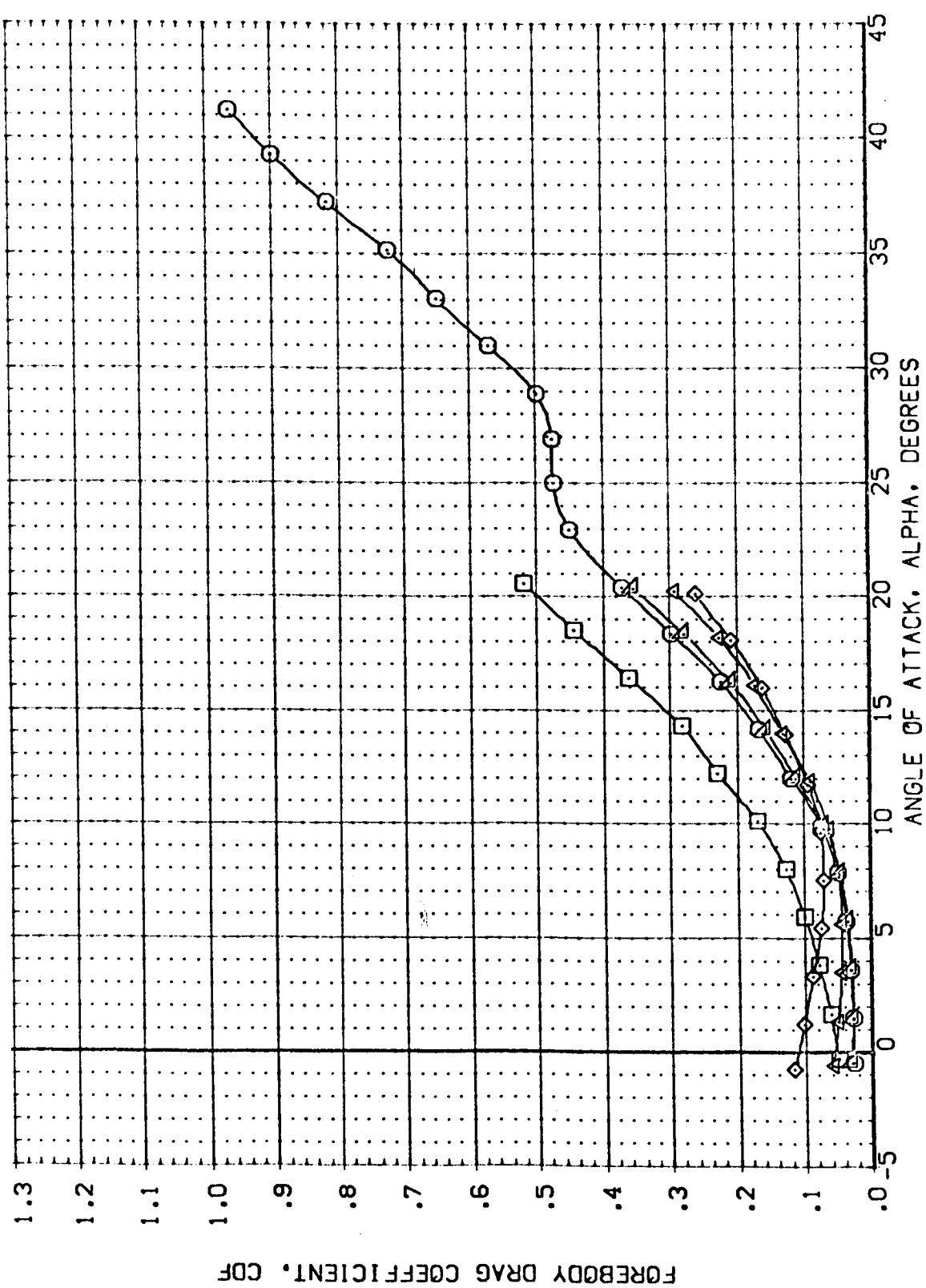


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398 WITH ALTERNATE NOSE
 (M)MACH = .6; PAGE 599

DATA SET SYMBOL: (F87S31) (F87S36) (F87S42) (F87S43) (F87S44)
 CONFIGURATION DESCRIPTION: MSFC 574(CA48) CRB 139B W/ALT NOSE, MSFC 574(CA48) CRB 139B W/ALT NOSE, MSFC 574(CA48) CRB 139B W/ALT NOSE, MSFC 574(CA48) CRB 139B W/ALT NOSE, MSFC 574(CA48) CRB 139B W/ALT NOSE
 BETA: .000, .000, .000, .000, .000
 ELEVTR: .000, 15.000, -40.000, -20.000, .000
 SPOBRK: 999.990, 999.990, 999.990, 999.990, 999.990
 BDFLAP: .000, 13.750, -14.250, .000, -14.750
 REFERENCE INFORMATION: SREF 2690.0000, LREF 474.8000, BREF 936.7000, XMRP 838.7000, YMRP .0000, ZMRP .0000, SCALE .0040

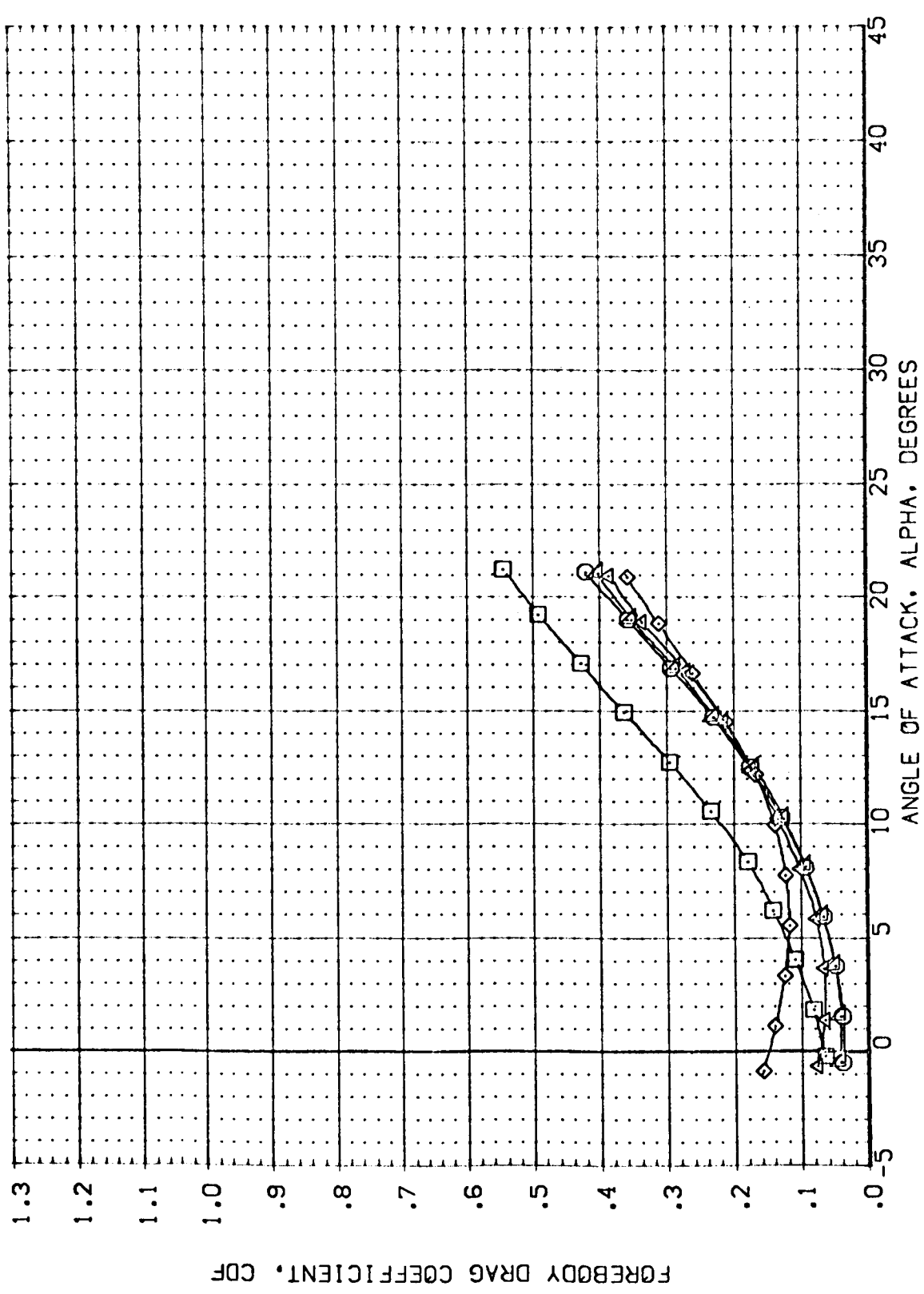


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOSE
 (B)MACH = .90 PAGE 700

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	REF LAP	REFERENCE INFORMATION
(F87S31)	MSFC 574(OA48) CRB 1393 W/ALT NOISE	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(F87S38)	MSFC 574(OA48) CRB 1393 W/ALT NOISE	.000	15.000	999.990	13.750	474.8000
(F87S42)	MSFC 574(OA48) CRB 1393 W/ALT NOISE	.000	-40.000	999.990	-4.250	936.7000
(F87S40)	MSFC 574(OA48) CRB 1393 W/ALT NOISE	.000	-20.000	999.990	.000	838.7000
(F87S44)	MSFC 574(OA48) CRB 1393 W/ALT NOISE	.000	.000	999.990	-4.050	.0000
					ZMRP	.0000
					SCALE	.0040

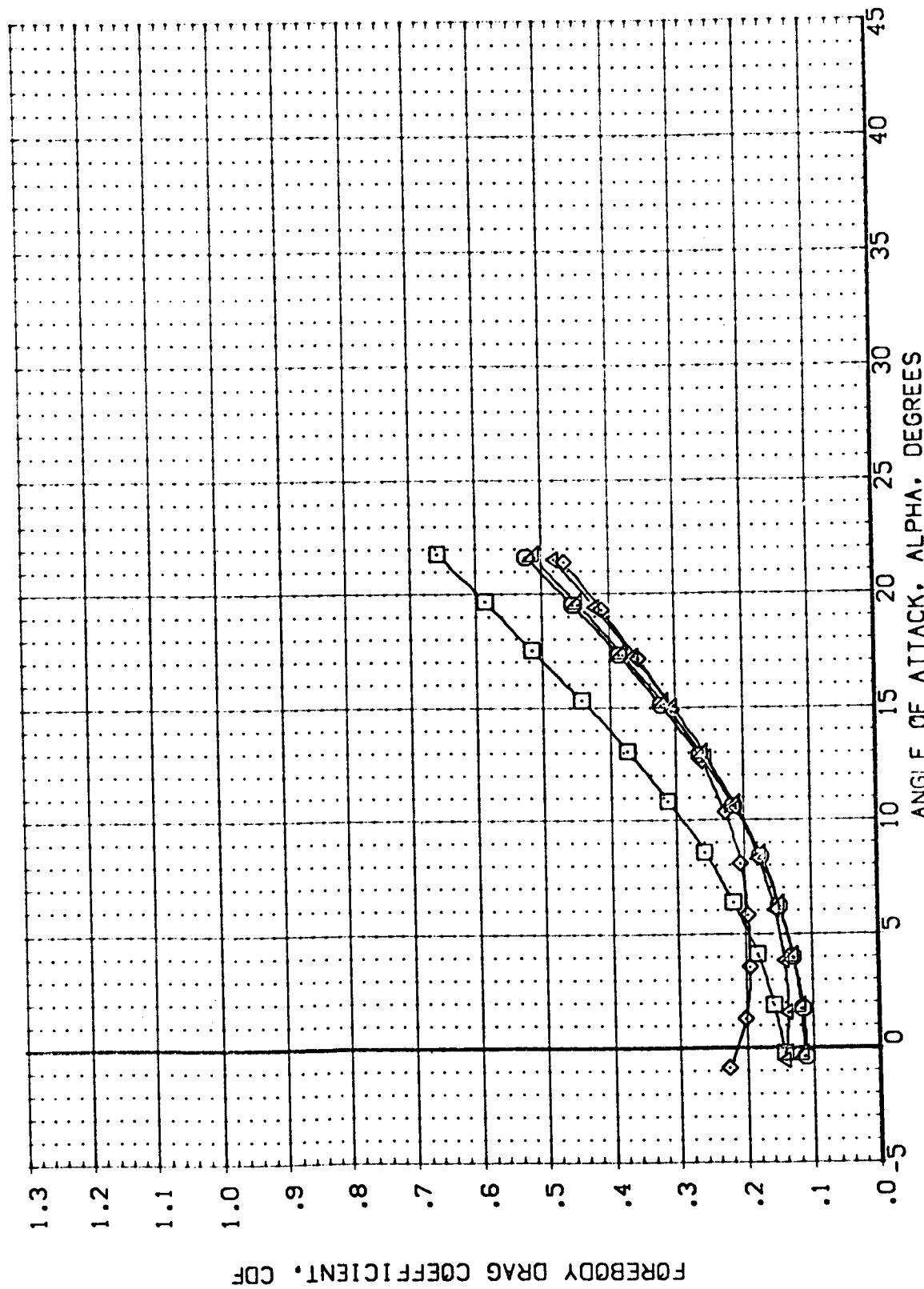


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOISE
 (C)MACH = 1.19 PAGE 70:

DATA SET SYMBOL CONFIGURATION DESCRIPTION REFERENCE INFORMATION

DATA SET SYMBOL	CONFIGURATION	DESCRIPTION	BETA	ELEVTR	SPOBRK	BDFLAP	SREF	REF	SCALE
(F87S31)	MSC 574(CA48)	CRB 139B W/ALT NOSE	.000	.000	999.990	.000	2690.0000	SCA.F.T.	1.000
(F87S36)	MSC 574(CA48)	CRB 139B W/ALT NCSE	.000	15.000	999.990	13.750	474.8000	SCA.F.T.	1.000
(F87S42)	MSC 574(CA48)	CRB 139B W/ALT NCSE	.000	-40.000	999.990	-14.250	936.7000	SCA.F.T.	1.000
(F87S40)	MSC 574(CA48)	CRB 139B W/ALT NCSE	.000	-20.000	999.990	.000	838.7000	SCA.F.T.	1.000
(F87S44)	MSC 574(CA48)	CRB 139B W/ALT NCSE	.000	.000	999.990	-14.250	.0000	SCA.F.T.	1.000
						ZMRP	.0000		
						SCALE	.0040		

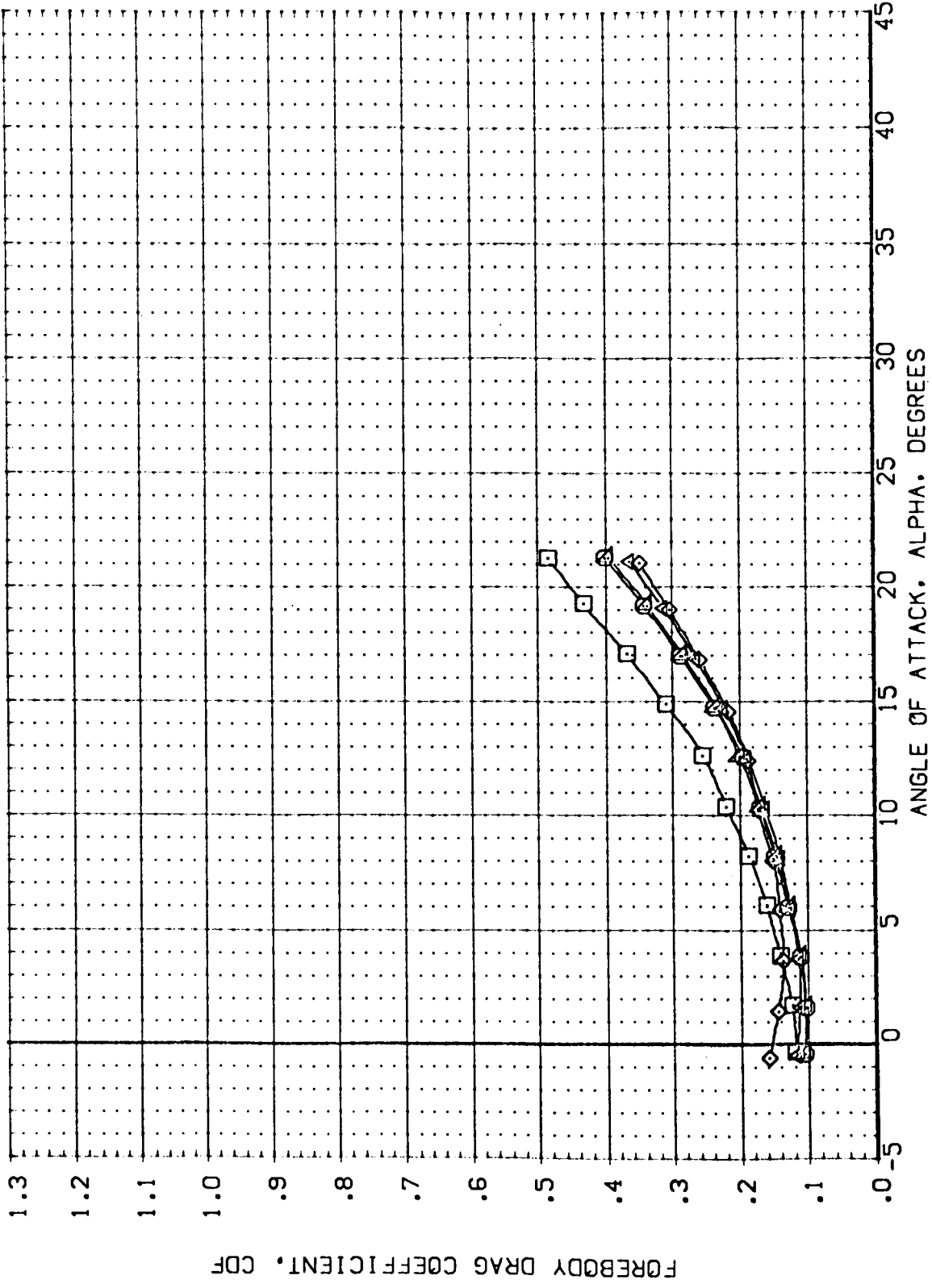


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOSE



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87S31)	MSFC 574(CA48) CRB 139B V/ALT NOSE	.000	.000	999.999	.000	SRCF 2690.0000
(F87S38)	MSFC 574(CA48) CRB 139B V/ALT NOSE	.000	15.000	999.999	13.750	SRCF 474.8000
(F87S42)	MSFC 574(CA48) CRB 139B V/ALT NOSE	.000	-40.000	999.999	-14.200	SRCF 936.7000
(F87S40)	MSFC 574(CA48) CRB 139B V/ALT NOSE	.000	-20.000	999.999	.000	SRCF 898.7000
(F87S44)	MSFC 574(CA48) CRB 139B V/ALT NOSE	.000	.000	999.999	-14.250	SRCF .0000
						SCALE .0010

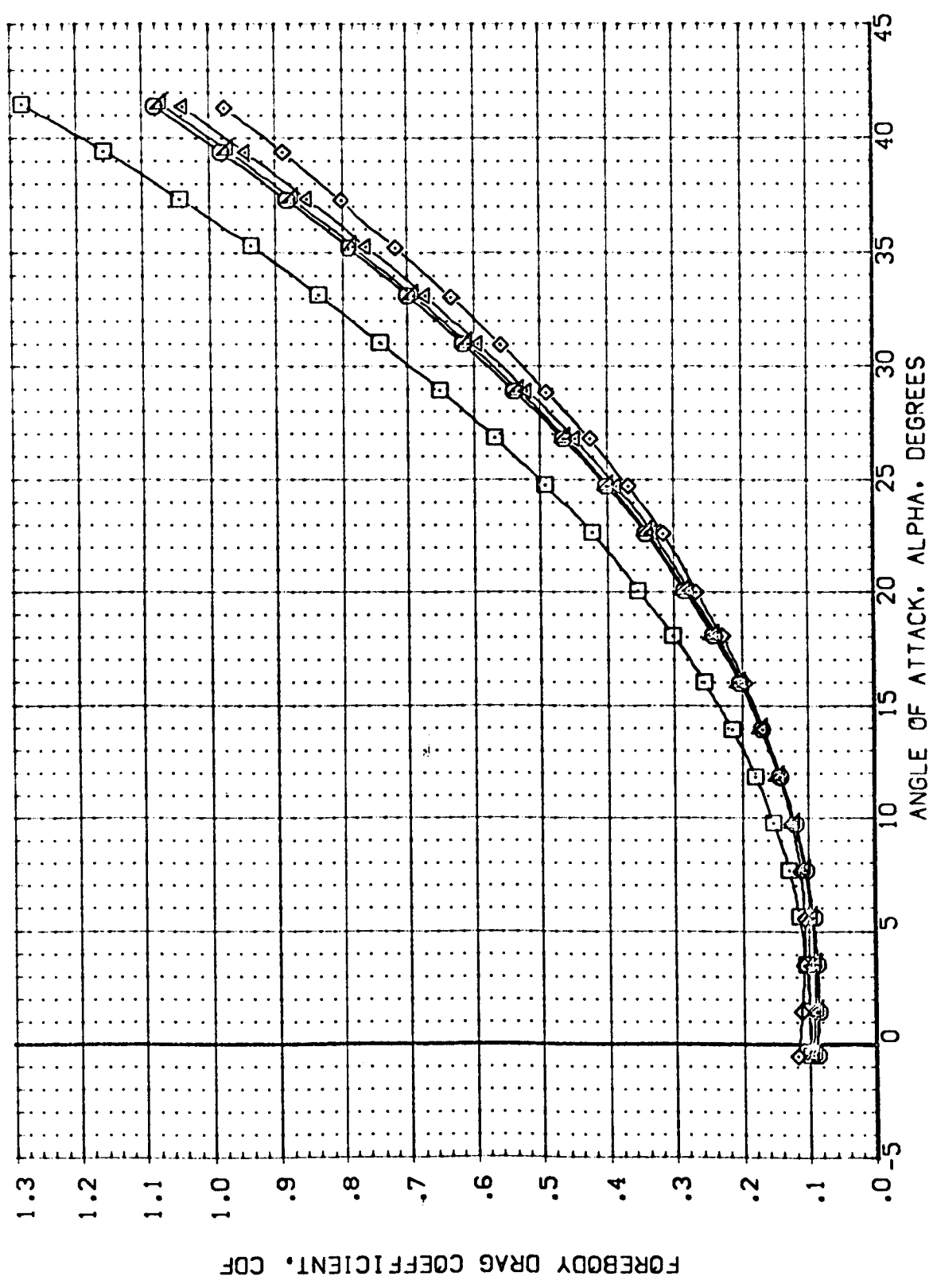


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOSE
 (C)MACH = 2.99
 PAGE 703

DATA SET SYMBOL CONFIGURATION DESCRIPTION BETA ELEVTR SPCBRK BDFLAP REFERENCE INFORMATION

(F87S31)	MSFC 574:CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000
(F87S38)	MSFC 574:CA48) CRB 139B W/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000
(F87S42)	MSFC 574:CA48) CRB 39B W/ALT NOSE	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87S40)	MSFC 574:CA48) CRB 39B W/ALT NOSE	.000	-20.000	999.990	.000	XMRP 838.0000
(F87S44)	MSFC 574:CA48) CRB 39B W/ALT NOSE	.000	.000	999.990	-14.250	YMRP .0000
						ZMRP .0000
						SCALE .0040

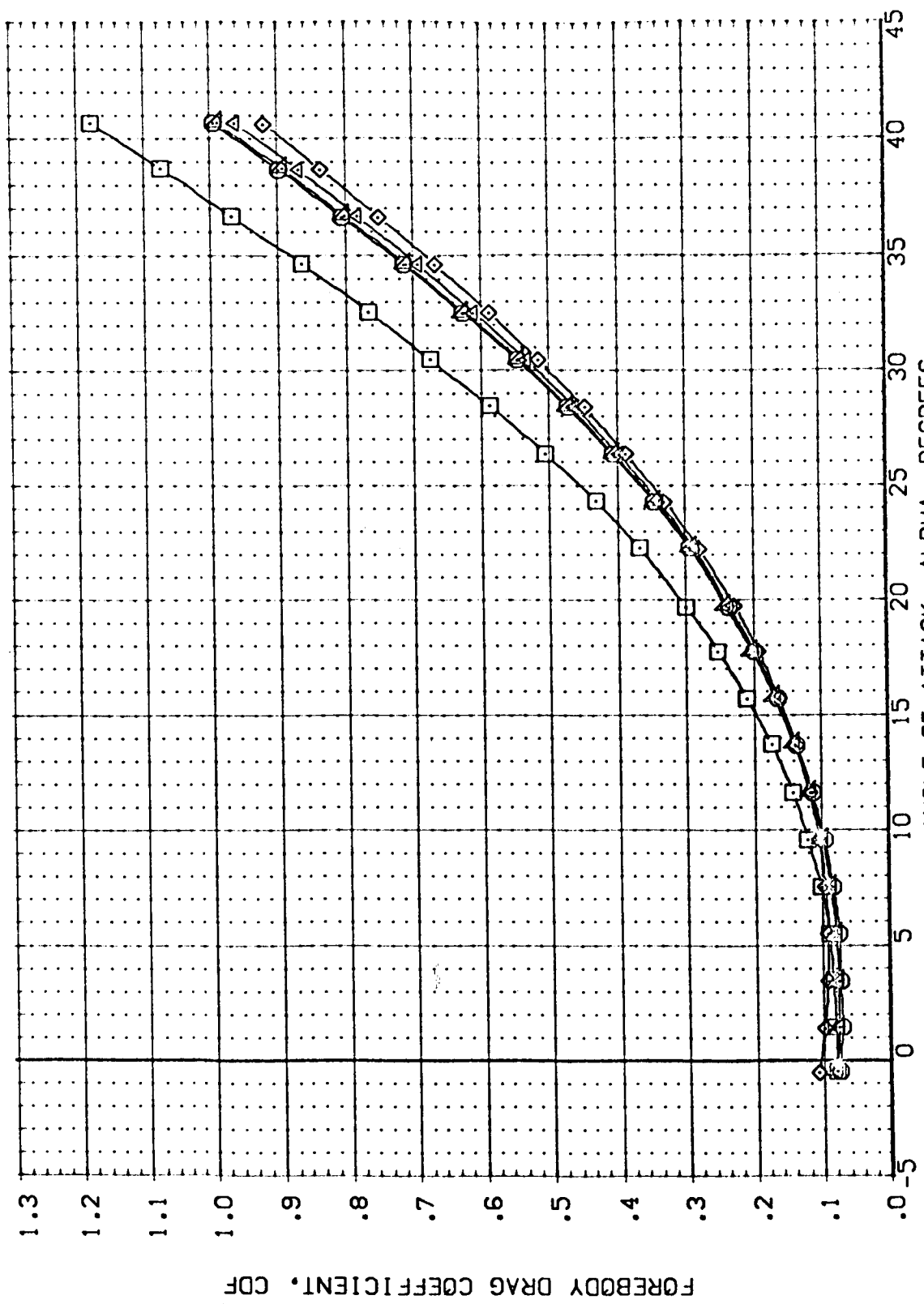


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOSE
 (F)MACH = 4.96 PAGE 704

DATA SET SYMBOL CONFIGURATION DESCRIPTION REFERENCE INFORMATION

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87S31)	MSFC 574(CA48) CRB 1398 W/ALT NOSE	.000	.000	999.999	.000	SREF 2890.0000 SC.FT.
(F87S38)	MSFC 574(CA48) CRB 1398 W/ALT NOSE	.000	15.000	999.999	13.750	LREF 474.8000
(F87S42)	MSFC 574(CA48) CRB 1398 W/ALT NOSE	.000	-40.000	999.999	-14.250	BREF 936.7000
(F87S40)	MSFC 574(CA48) CRB 1398 W/ALT NOSE	.000	-20.000	999.999	.000	XWRP 838.7000
(F87S44)	MSFC 574(CA48) CRB 1398 W/ALT NOSE	.000	.000	999.999	-14.250	YWRP .0000
						ZWRP .0000
						SCALE 1.0040

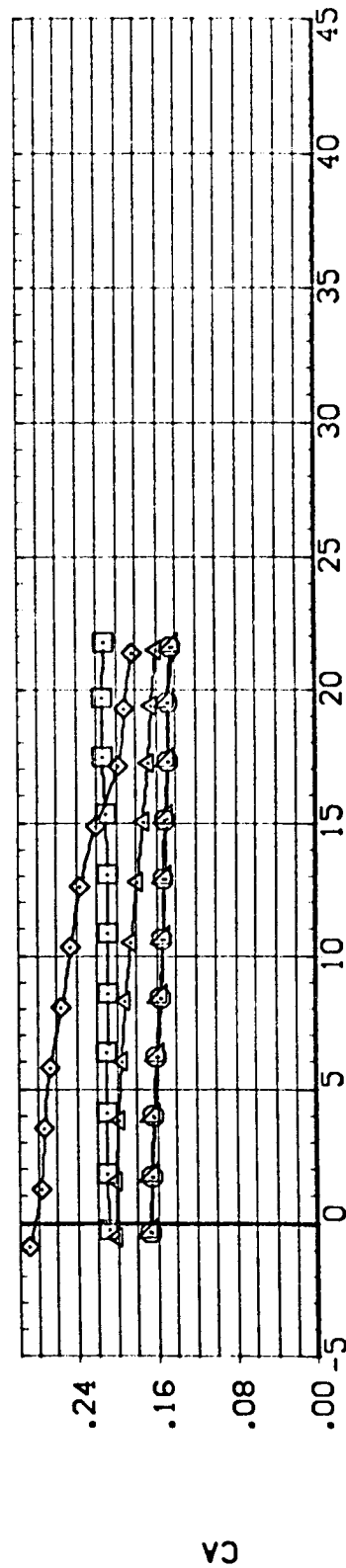
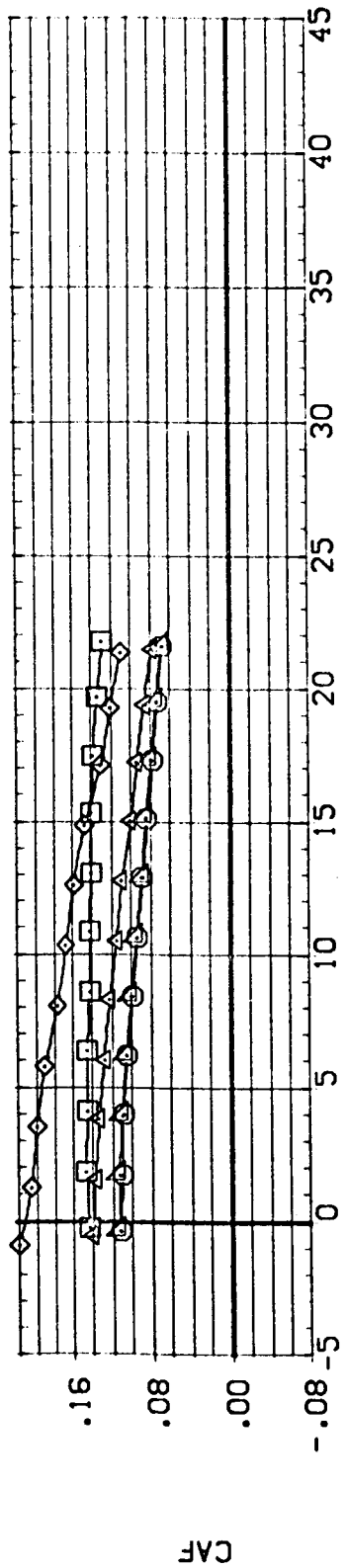
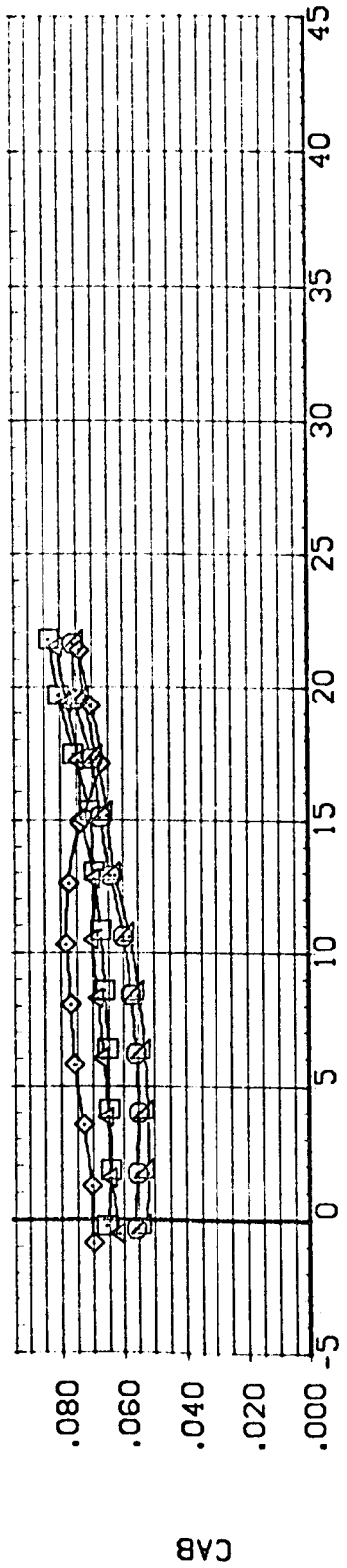


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398 WITH ALTERNATE NOSE

DATA SET SYMBOL: (F87531), (F87538), (F87542), (F87543), (F87544)
 CONFIGURATION DESCRIPTION: MSFC 574(CA48) CR3 393 W/ALT NOSE, MSFC 574(CA48) CR3 393 W/ALT NOSE, MSFC 574(CA48) CR3 393 W/ALT NOSE, MSFC 574(CA48) CR3 393 W/ALT NOSE, MSFC 574(CA48) CR3 393 W/ALT NOSE
 BETA: .000, .000, .000, .000, .000
 ELEVT: .000, .500, -40.000, -20.000, .000, .000, .000
 SPOBRK: 999.990, 999.990, 999.990, 999.990, 999.990, 999.990
 BOFLAP: .000, 13.750, -14.200, .000, .000, -14.200
 REFERENCE INFORMATION: SREF 2690.0000, LREF 474.8000, BREF 936.7000, XWRP 838.7000, YWRP .0000, ZWRP .0000, SCALE .0040

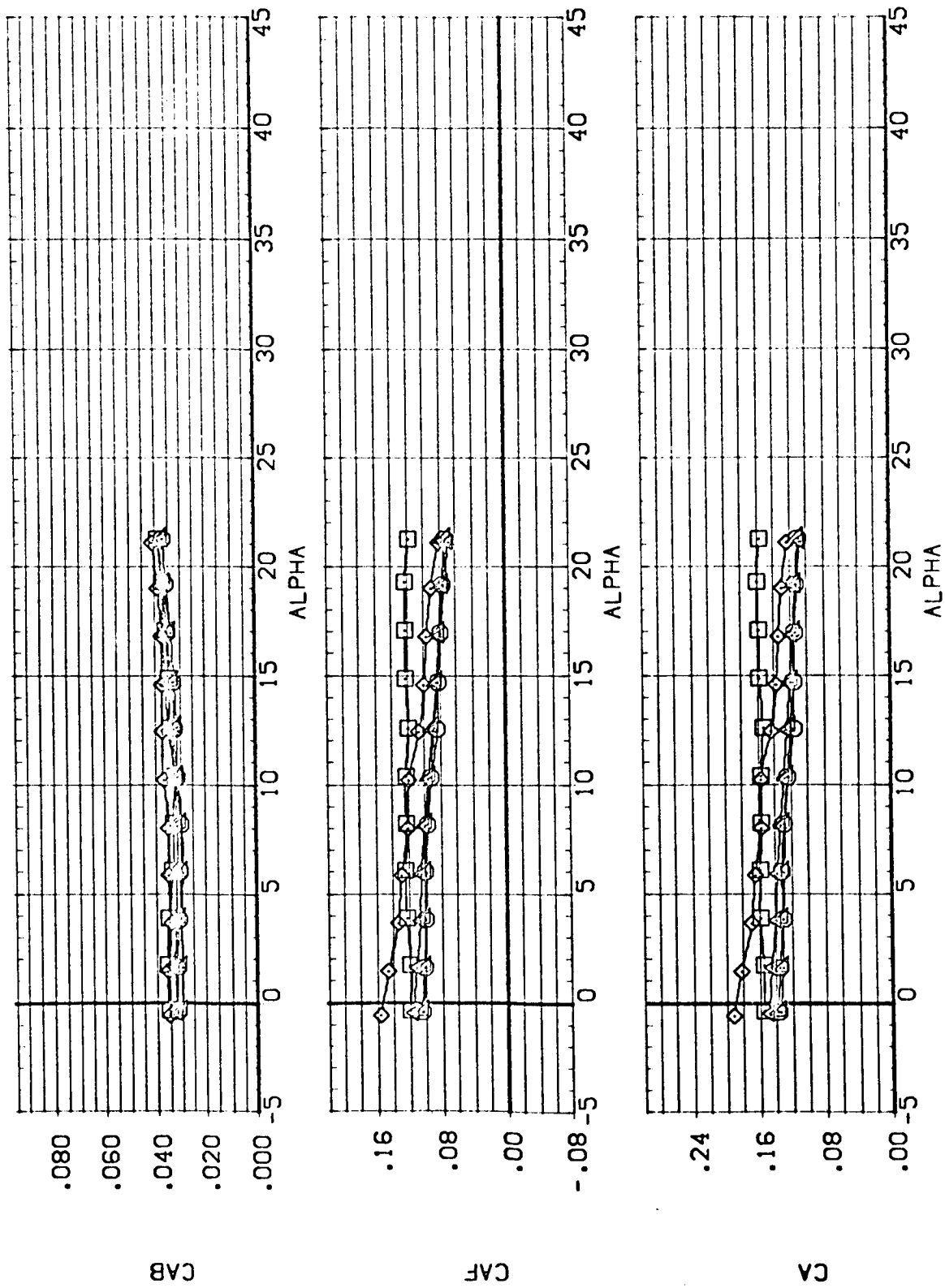


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOSE
 (D)YACH = 1.95
 PAGE 708

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDRBK	BDFLAP	REFERENCE INFORMATION
(F87S31)	MSFC 574 (CA48) CR3 139B W/ALT NOSE	.000	.000	999.990	.000	SREF 2690
(F87S39)	MSFC 574 (CA48) CR3 139B W/ALT NOSE	.000	15.000	999.990	13.750	LREF 474
(F87S42)	MSFC 574 (CA48) CR3 139B W/ALT NOSE	.000	-40.000	999.990	-14.750	BREF 938
(F87S40)	MSFC 574 (CA48) CR3 139B W/ALT NOSE	.000	-20.000	999.990	.000	XMPP 838
(F87S44)	MSFC 574 (CA48) CR3 139B W/ALT NOSE	.000	.000	999.990	-14.750	YMPP
						ZMPP
						SCALE

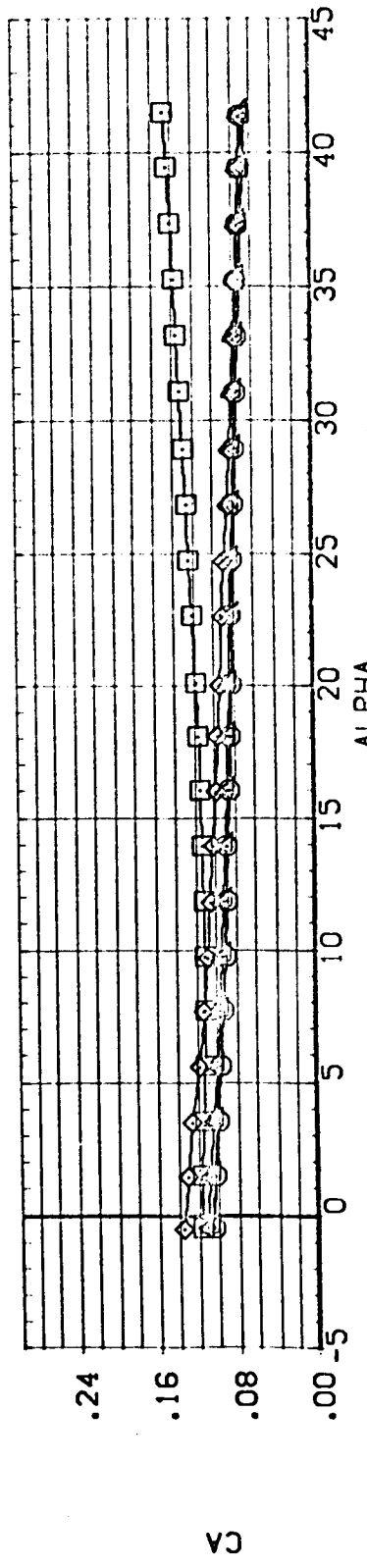
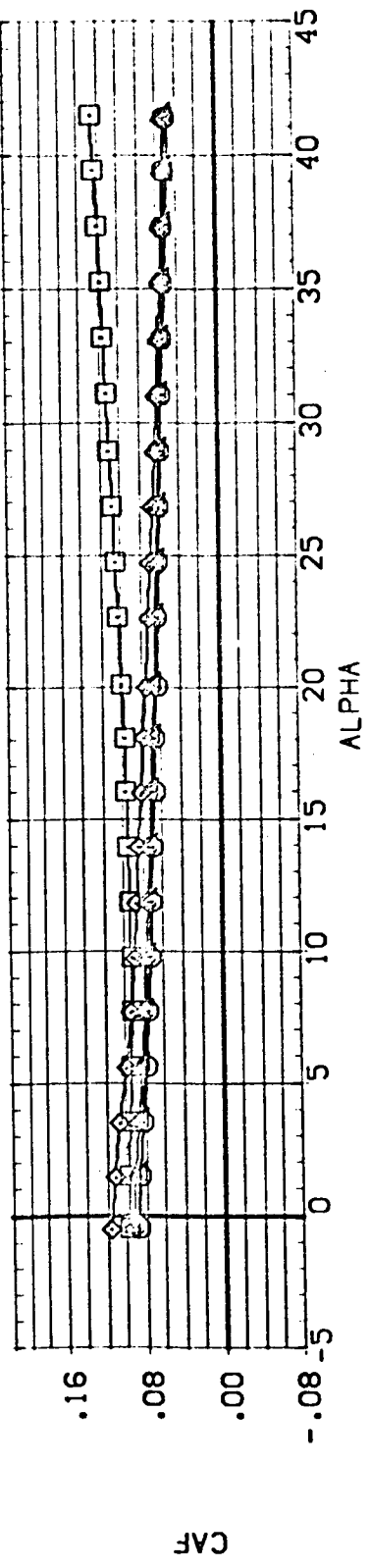
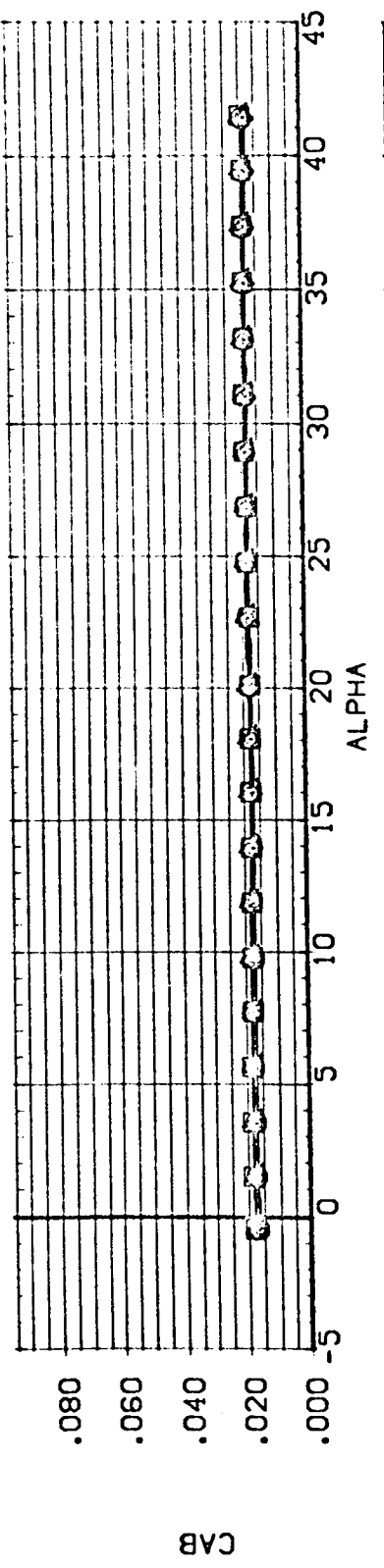


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOSE
 (E)MACH = 2.99 PAGE 709

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPCRBK	BOFLAP	REFERENCE INFORMATION
(F87531)	MSFC 574(CA48) CRB 139B W/ALT NCSE	.000	.000	999.990	.000	2690.0000
(F87538)	MSFC 574(CA48) CRB 139B W/ALT NCSE	.000	15.000	999.990	13.750	474.8000
(F87542)	MSFC 574(CA48) CRB 139B W/ALT NCSE	.000	-40.000	999.990	-14.000	936.7000
(F87540)	MSFC 574(CA48) CRB 139B W/ALT NCSE	.000	-20.000	999.990	-14.000	838.0000
(F87544)	MSFC 574(CA48) CRB 139B W/ALT NCSE	.000	.000	999.990	-14.000	1000.0000
						1000.0000
						SCALE

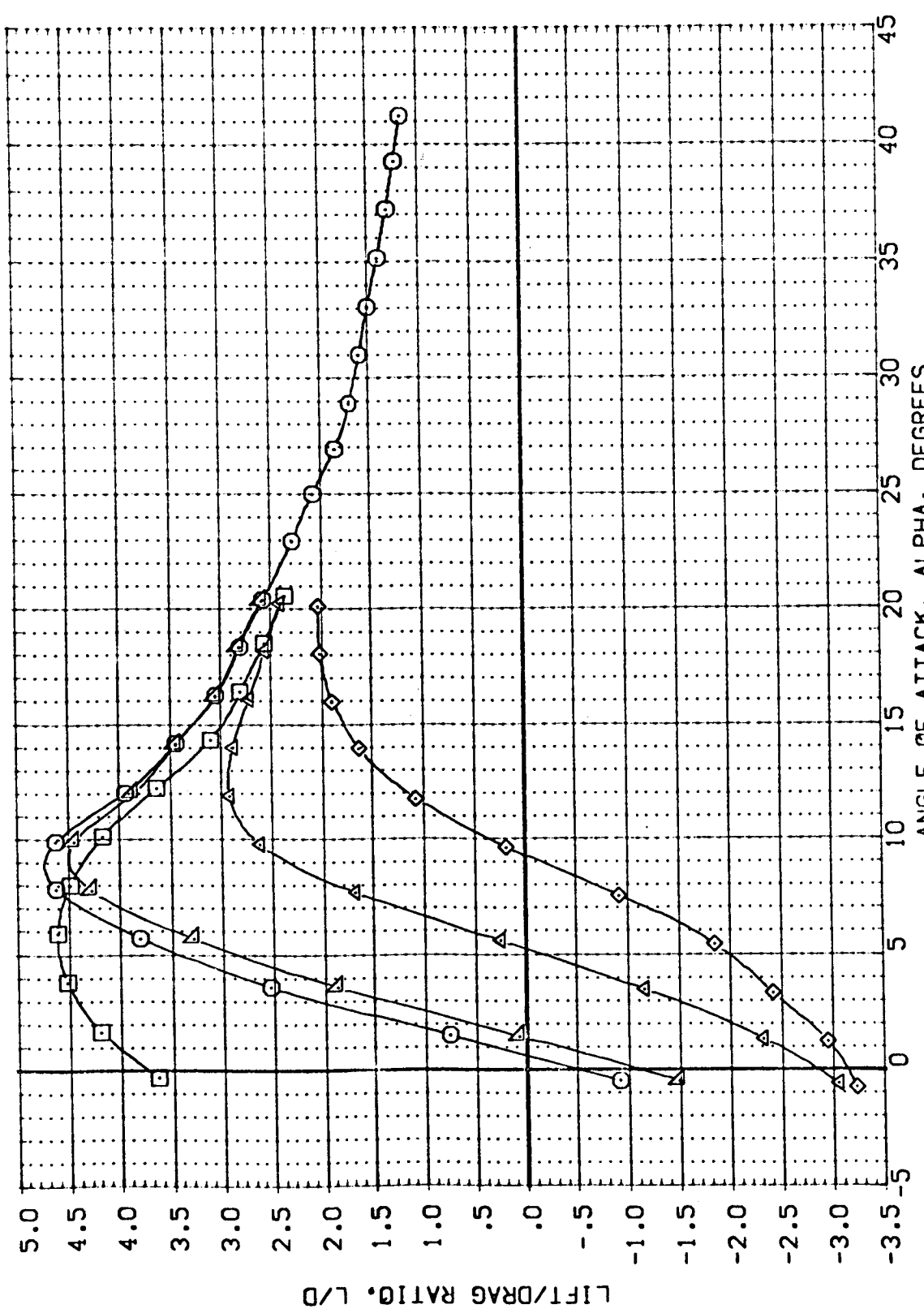


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOISE
 (MACH = .8) PAGE 7

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87531)	MSFC 574 (CA48) CR8 1398 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(F87538)	MSFC 574 (CA48) CR8 1398 W/ALT NOSE	.000	15.000	999.990	13.750	REF 474.8000
(F87542)	MSFC 574 (CA48) CR8 1398 W/ALT NOSE	.000	-40.000	999.990	-14.250	BREF 536.7000
(F87543)	MSFC 574 (CA48) CR8 1398 W/ALT NOSE	.000	-20.000	999.990	.000	XMRP 838.0000
(F87544)	MSFC 574 (CA48) CR8 1398 W/ALT NOSE	.000	.000	999.990	-14.750	XMRP .0000
						ZMRP .0040
						SCALE

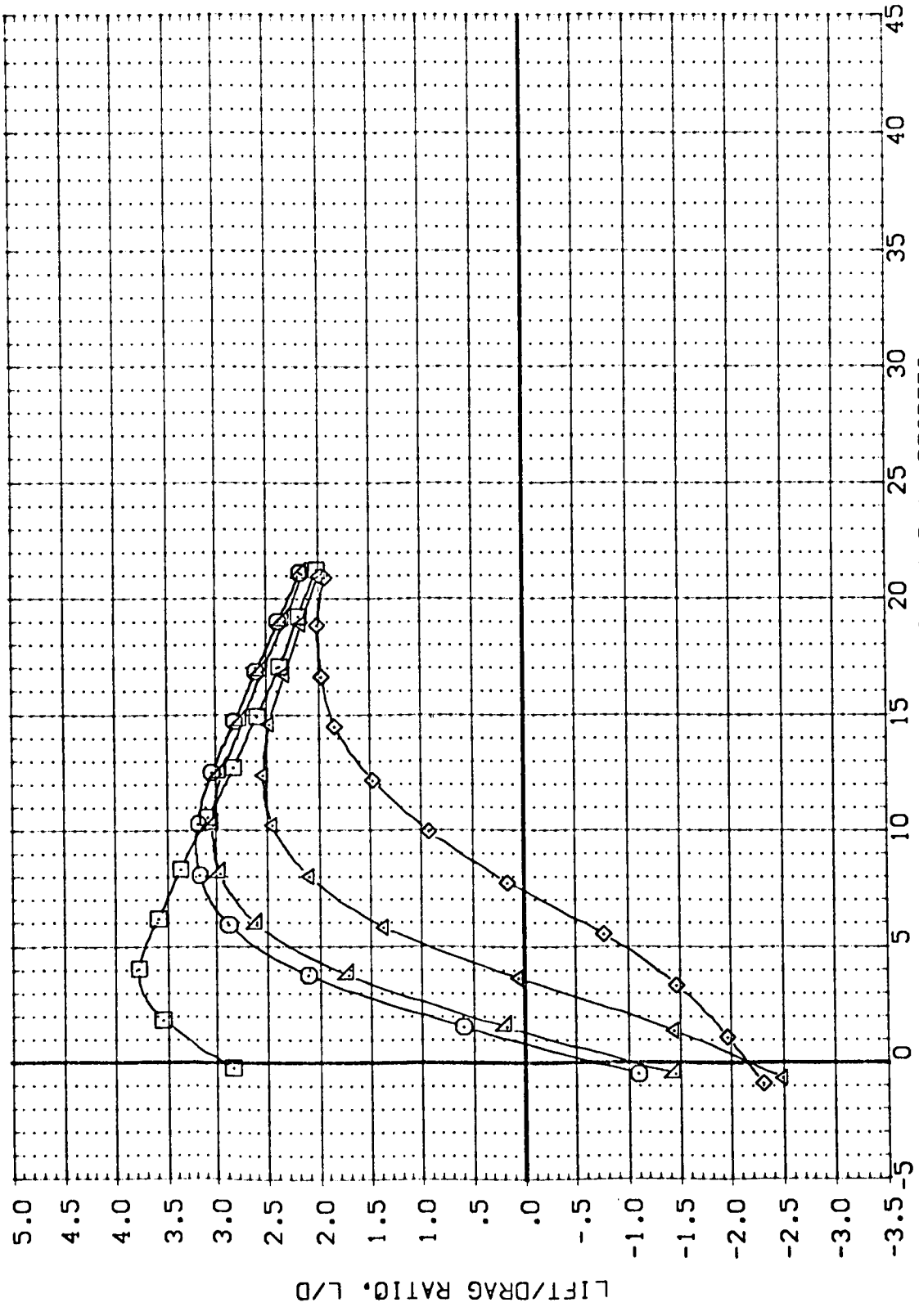


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398 WITH ALTERNATE NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BCFLAP	REFERENCE INFORMATION
(F87531)	MSFC 574(CA48) CRB 393 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690 .0000
(F87538)	MSFC 574(CA48) CRB 393 W/ALT NCSE	.000	15.000	999.990	13.750	LREF 474.8000
(F87542)	MSFC 574(CA48) CRB 393 W/ALT NCSE	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87540)	MSFC 574(CA48) CRB 393 W/ALT NCSE	.000	-20.000	999.990	.000	XMRP 838.7000
(F87544)	MSFC 574(CA48) CRB 393 W/ALT NCSE	.000	.000	999.990	-14.250	YMRP .0000
					ZMRP .0000	SCALE .0040

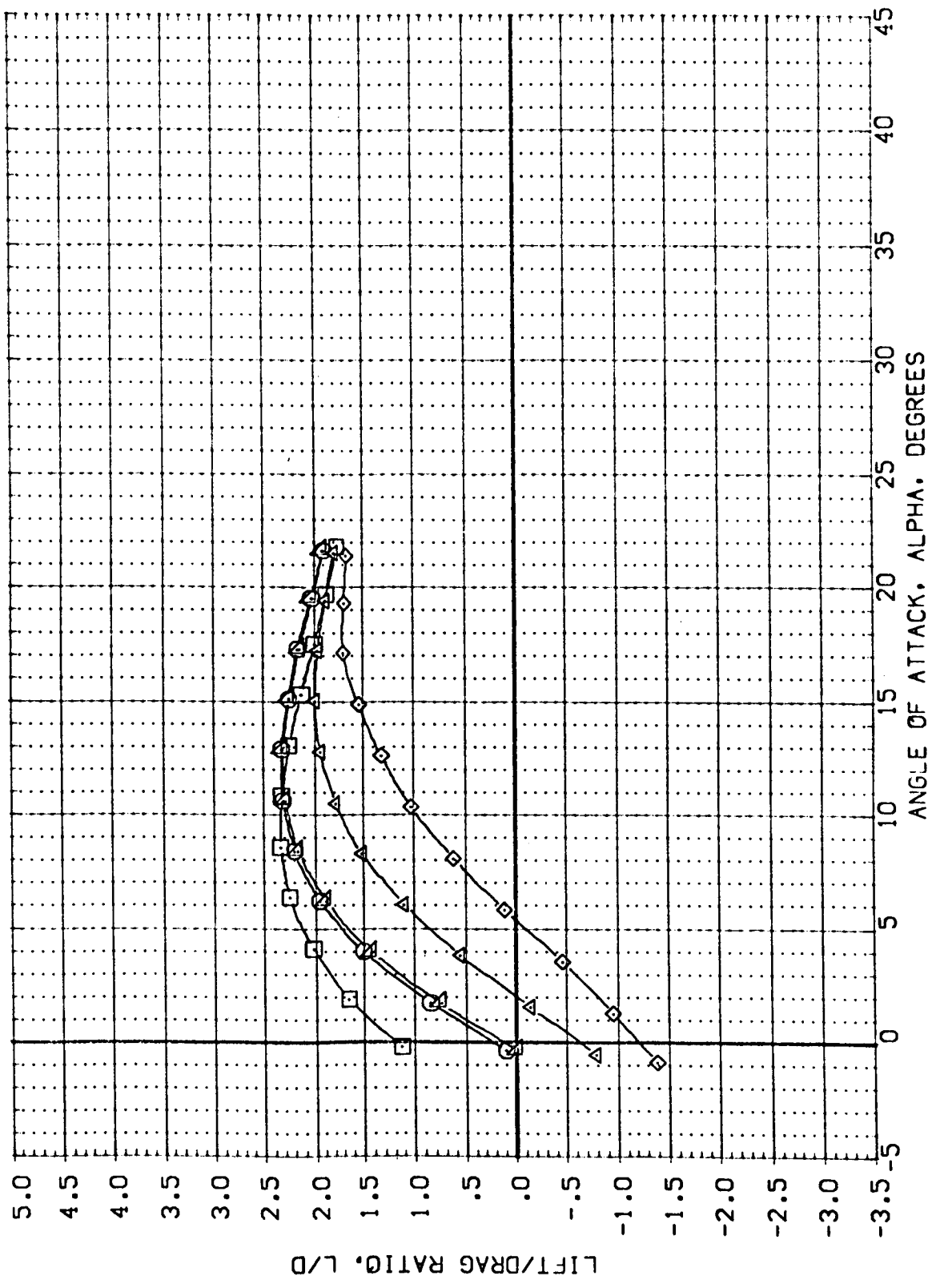


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOSE
 (C)MACH = 1.19 PAGE 7:3

DATA SET SYMBOL CONFIGURATION DESCRIPTION REFERENCE INFORMATION

(F87S31) MSFC 574(CA48) CRB 139B W/ALT NOISE SREF 2680 COCO SC.FT.

(F87S38) MSFC 574(CA48) CRB 139B W/ALT NOISE LREF 4774 COCO

(F87S42) MSFC 574(CA48) CRB 139B W/ALT NOISE SREF 936 COCO

(F87S43) MSFC 574(CA48) CRB 139B W/ALT NOISE XMRP 838 COCO

(F87S44) MSFC 574(CA48) CRB 139B W/ALT NOISE YMRP 838 COCO

BETA ELEVTR SPDWRK BOFLAP SCALE

.000 .000 999.990 .000 10000

.000 .000 999.990 13.750 10000

.000 .000 999.990 -14.250 10000

.000 .000 999.990 .000 10000

.000 .000 999.990 -14.250 10000

.000 .000 999.990 .000 10000

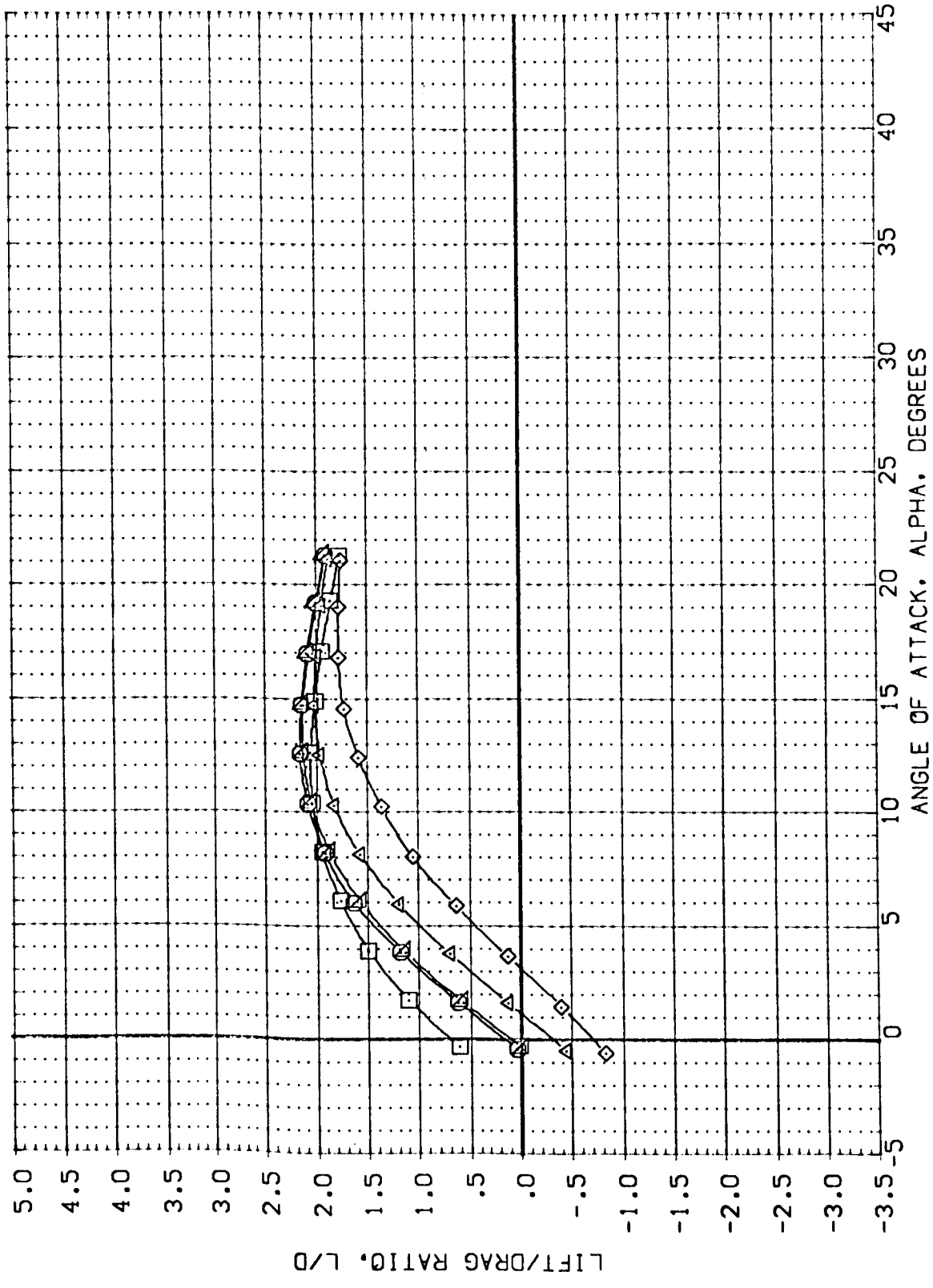


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOISE
 COYACH = 1.95 PAGE 714

DATA SET SYMCL	CONFIGURATION DESCRIPTION	BETA	ELEVATOR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87531)	MSFC 574(CA48) CRB 139B W/ALT NOSE	0.000	0.000	999.990	0.00	SREF 2690 0000
(F87538)	MSFC 574(CA48) CRB 139B W/ALT NCS	0.000	15.000	999.990	13.750	SREF 474 8000
(F87542)	MSFC 574(CA48) CRB 139B W/ALT NCS	0.000	-40.000	999.990	-14.250	SREF 936 7000
(F87540)	MSFC 574(CA48) CRB 139B W/ALT NOSE	0.000	-20.000	999.990	0.000	SREF 839 7000
(F87544)	MSFC 574(CA48) CRB 139B W/ALT NCS	0.000	0.000	999.990	-14.250	SREF 0000 0000
						ZMRP 0000
						SCALE 0040

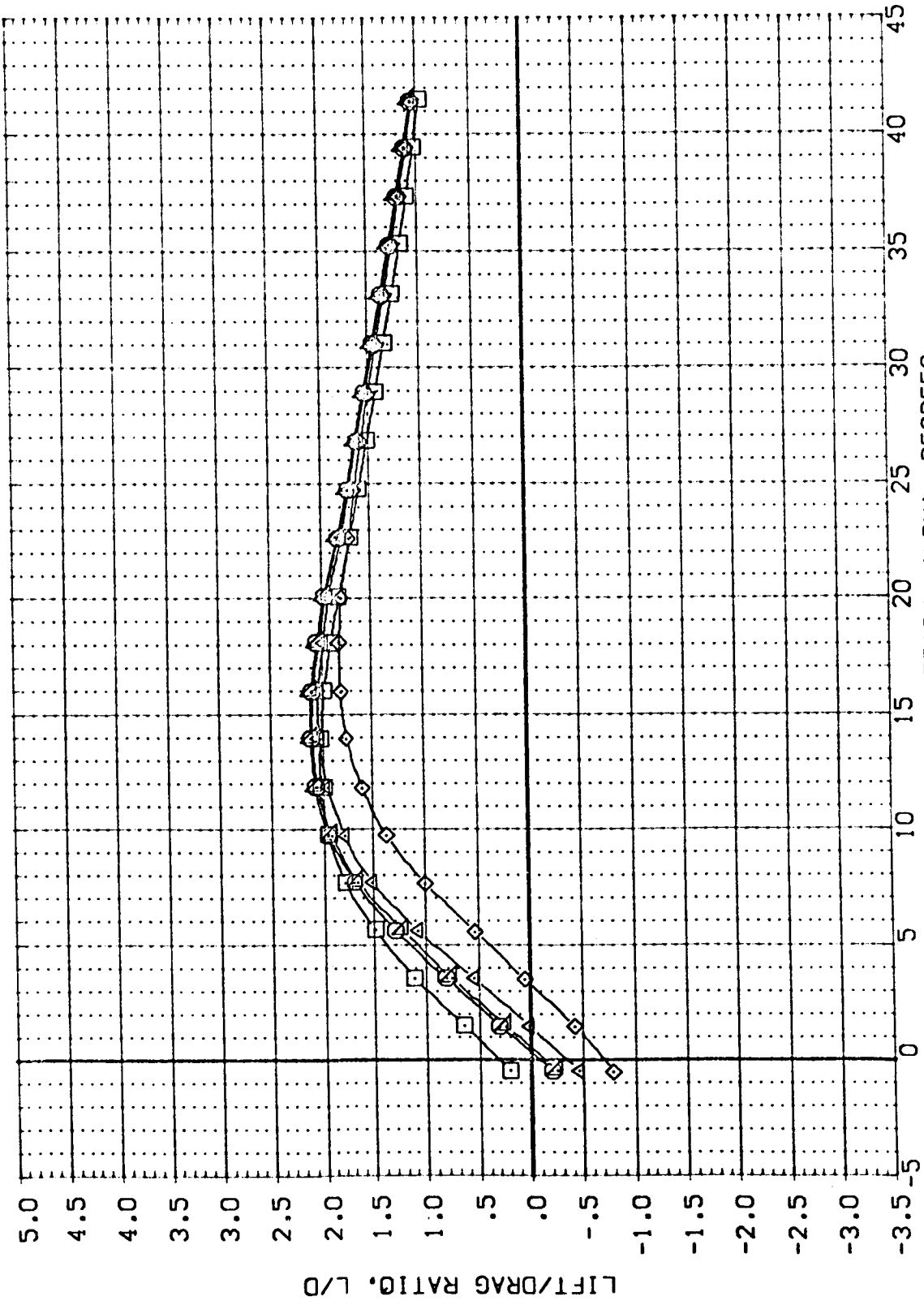


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOSE
 (EDMACH = 2.99) PAGE 715

DATA SET SYMBO.	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(F87531)	574(CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000
(F87538)	574(CA48) CRB 139B W/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000
(F87542)	574(CA48) CRB 139B W/ALT NOSE	.000	-40.000	999.990	-14.250	BREF 936.0000
(F8754C)	574(CA48) CRB 139B W/ALT NOSE	.000	-20.000	999.990	.000	XMRP 838.7000
(F87544)	574(CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	-14.250	ZMRP .0000
						SCALE .0040

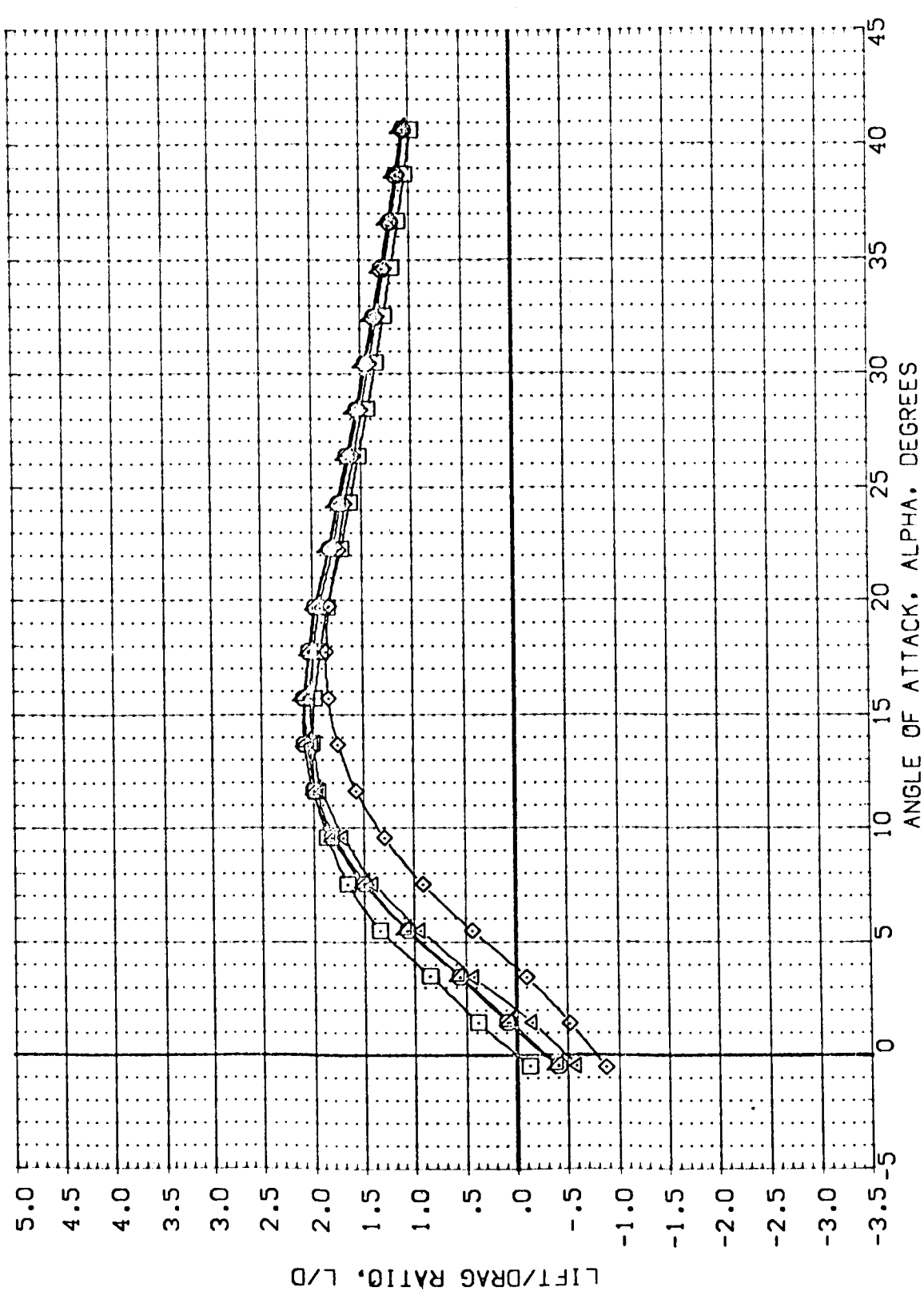


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON CRBITER 139B WITH ALTERNATE NOSE
 (MACH = 4.98) PAGE 718



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	ROFLAP	REFERENCE INFORMATION
(F87531)	MSFC 574(OA48) CRB 39B W/ALT NCSE	.000	.000	999.990	.000	SREF 2690.0000 SC.F.T.
(F87538)	MSFC 574(OA48) CRB 39B W/ALT NCSE	.000	15.000	999.990	13.750	LREF 474.8000
(F87542)	MSFC 574(OA48) CRB 39B W/ALT NCSE	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87540)	MSFC 574(OA48) CRB 39B W/ALT NCSE	.000	-20.000	999.990	.000	XMRP 838.7000
(F87544)	MSFC 574(OA48) CRB 39B W/ALT NCSE	.000	.000	999.990	-14.250	YMRP .0000
						ZMRP .0000
						SCALE .0040

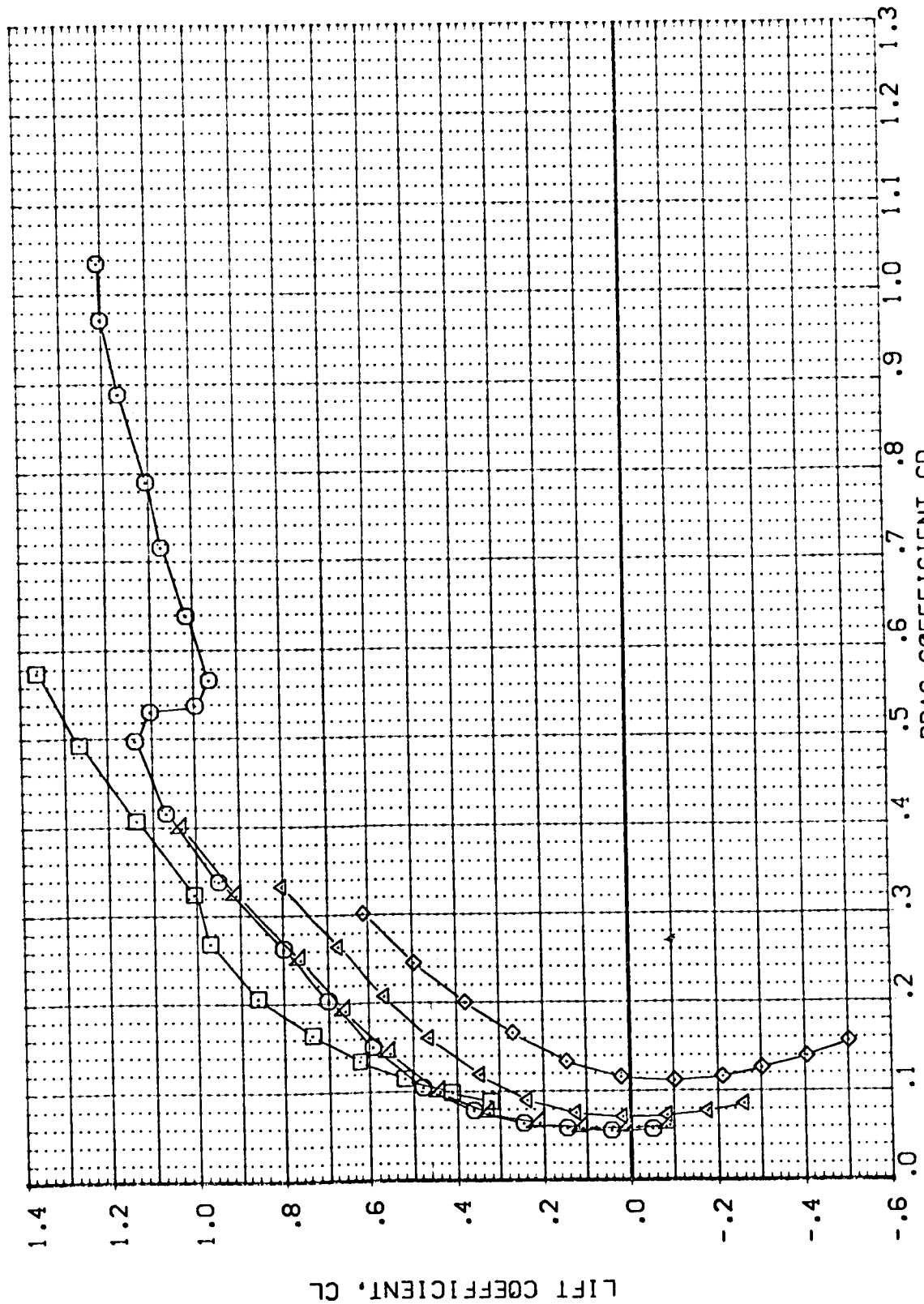


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPCRBK	BOFLAP	REFERENCE INFORMATION
(F87S31)	MSFC 574(CA48) CRB 139B W/ALT NCSE	.000	.000	999.990	.000	2690.0000 SC.F.T.
(F87S38)	MSFC 574(CA48) CRB 139B W/ALT NCSE	.000	15.000	999.990	13.750	474.8000
(F87S32)	MSFC 574(CA48) CRB 139B W/ALT NCSE	.000	-40.000	999.990	-14.000	836.7000
(F87S40)	MSFC 574(CA48) CRB 139B W/ALT NCSE	.000	-20.000	999.990	.000	838.0000
(F87S44)	MSFC 574(CA48) CRB 139B W/ALT NCSE	.000	.000	999.990	-14.750	.0000
					ZMRP	.0000
					SCALE	.0040

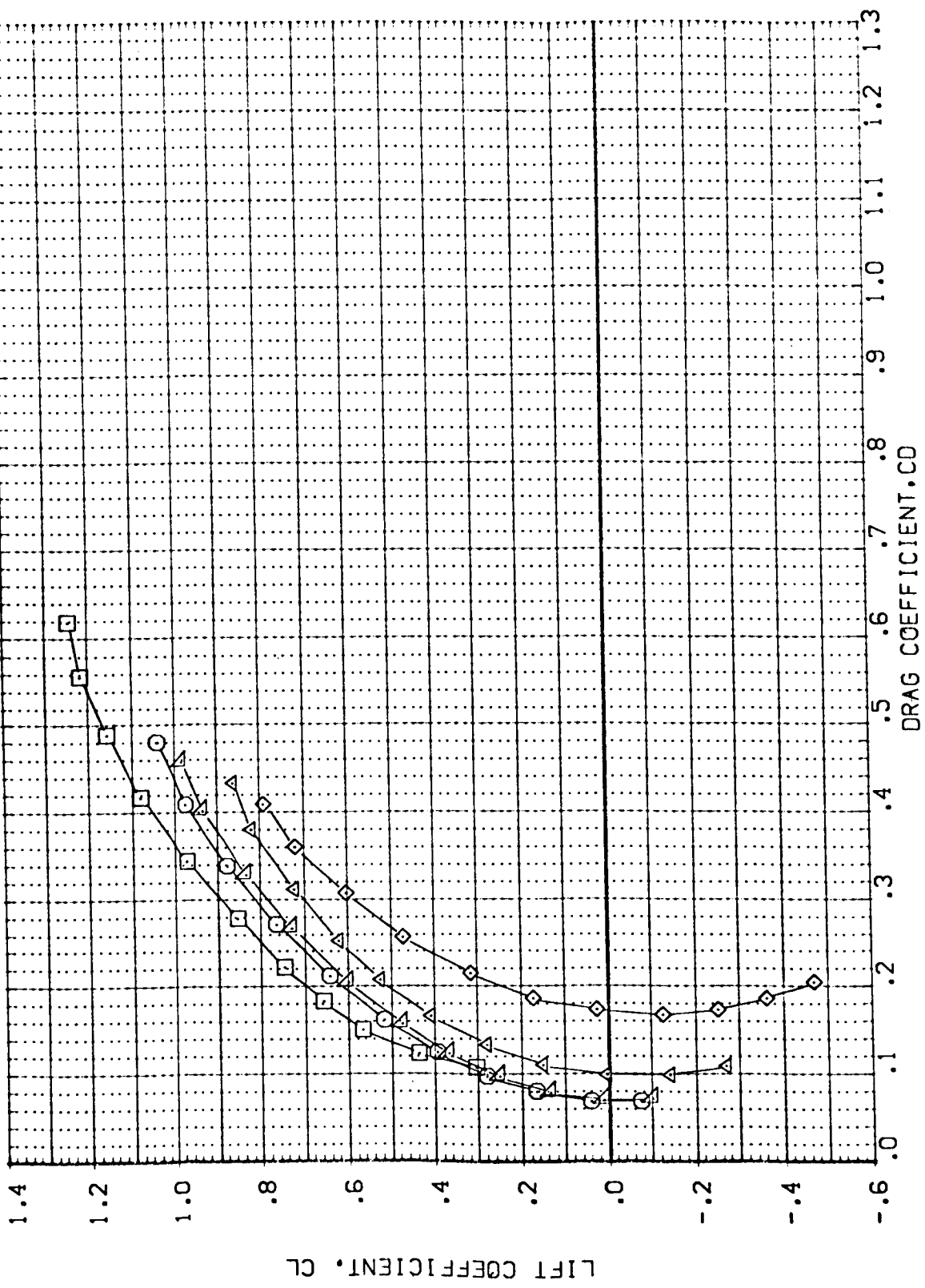


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOISE
 (B)MACH = .90 PAGE 7:8

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVATOR	SPDBRK	BDELAP	REFERENCE INFORMATION
(F87S31)	MSFC 574(OA48) CRB 139B W/ALT NCSE	.000	.000	999.990	.000	SREF 2690.0000 SS.F.T.
(F87S38)	MSFC 574(OA48) CRB 139B W/ALT NCSE	.000	15.000	999.990	13.750	LREF 474.8000
(F87S42)	MSFC 574(OA48) CRB 139B W/ALT NCSE	.000	-10.000	999.990	-14.250	RREF 935.7000
(F87S40)	MSFC 574(OA48) CRB 139B W/ALT NCSE	.000	-20.000	999.990	.000	XMRP 838.7000
(F87S44)	MSFC 574(OA48) CRB 139B W/ALT NCSE	.000	.000	999.990	-14.750	YMRP .0000
						ZMRP .0000
						SCALE .0040

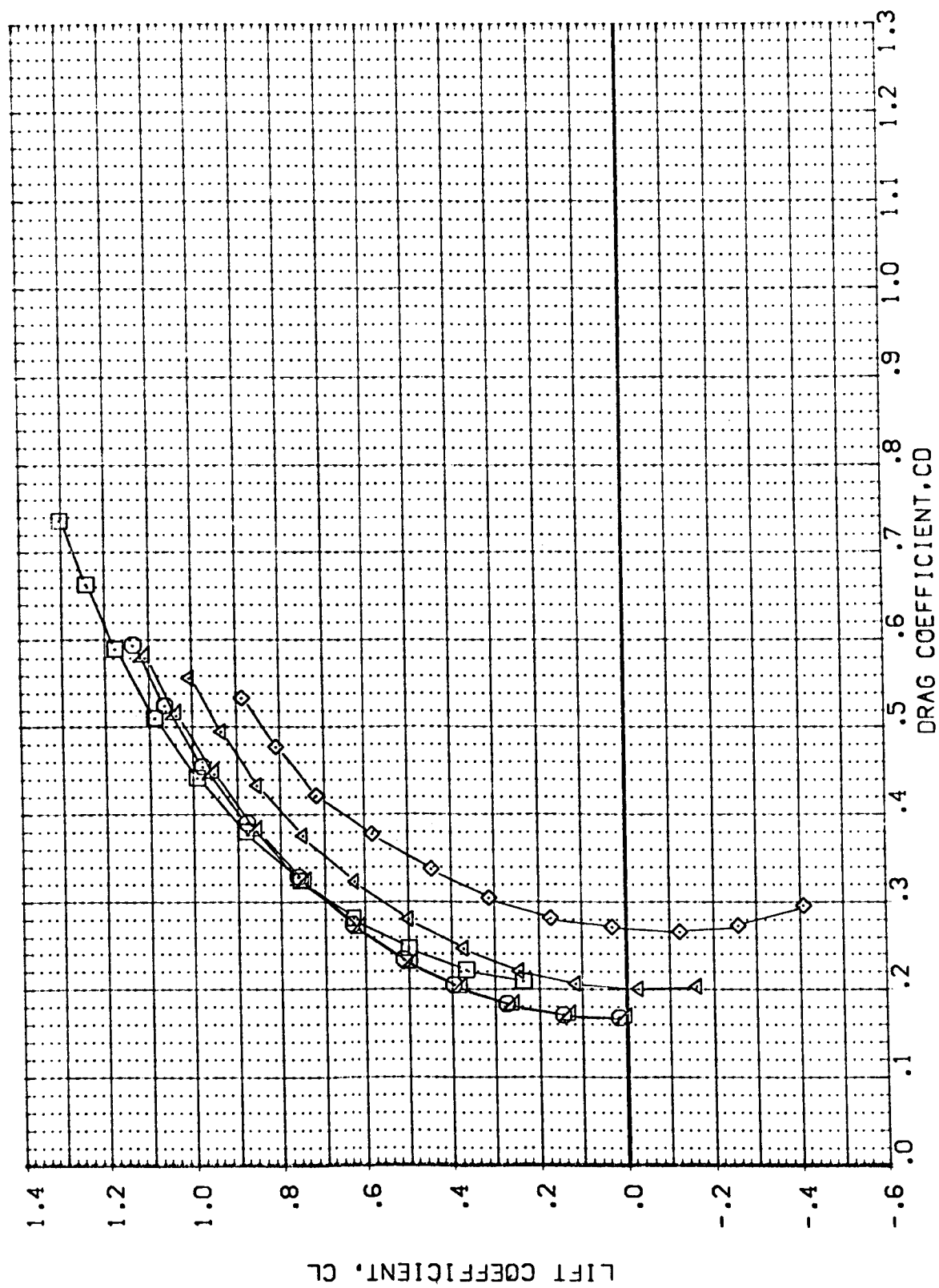


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOISE

C-4

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	E-EVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87931)	MSFC 574(CA48) CRB 393 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000
(F87938)	MSFC 574(CA48) CRB 393 W/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000
(F87942)	MSFC 574(CA48) CRB 393 W/ALT NOSE	.000	-10.000	999.990	-14.250	BREF 936.7000
(F87940)	MSFC 574(CA48) CRB 393 W/ALT NOSE	.000	-2.000	999.990	-14.250	XMRP .0000
(F87944)	MSFC 574(CA48) CRB 393 W/ALT NOSE	.000	.000	999.990	.000	ZMRP .0000
						SCALE .0040

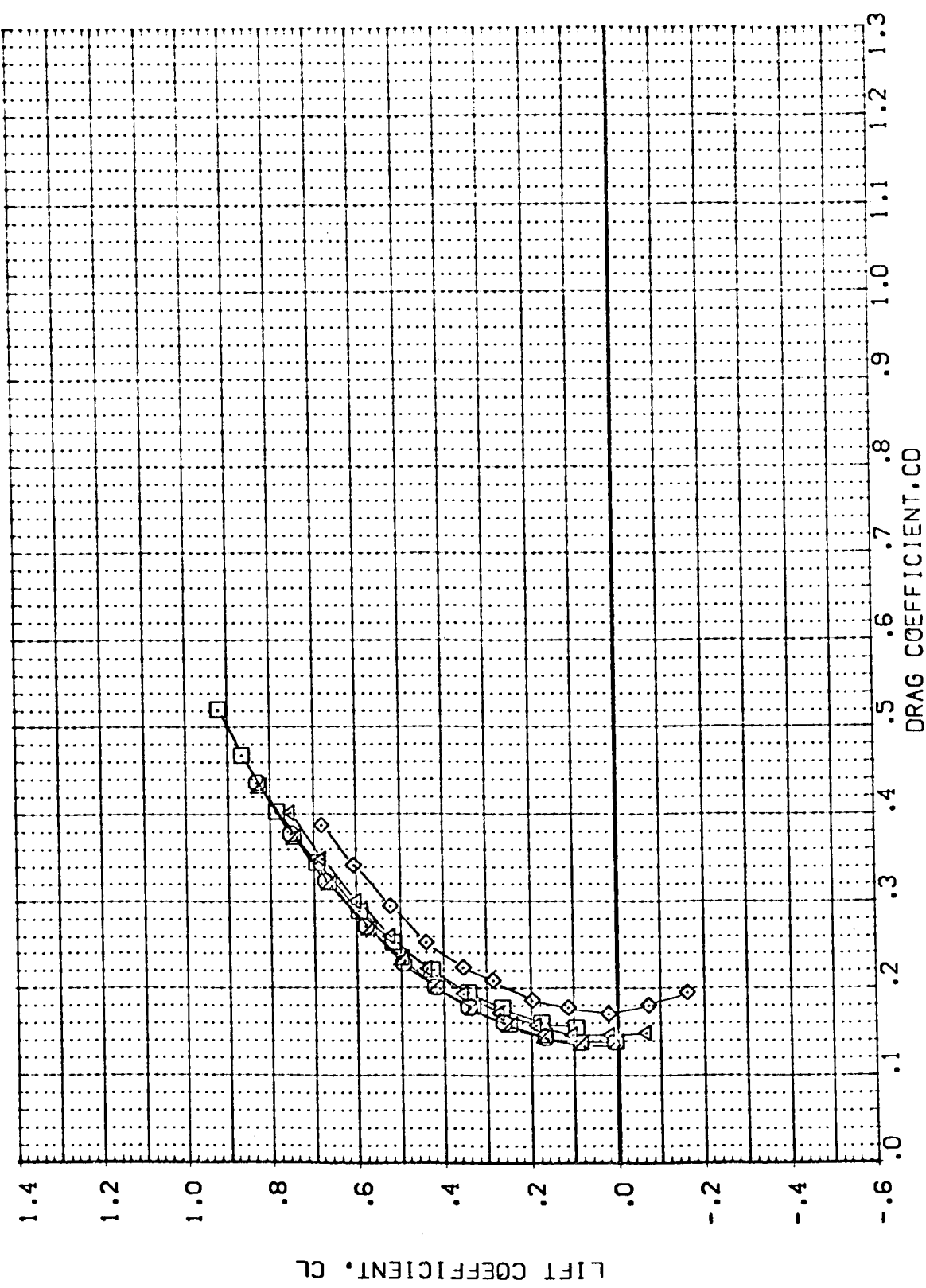


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOSE
 (D)YACH = :.95 PAGE 72C

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(F87531)	MSFC 574(CA48) CR3 1398 W/ALT NCSE	.000	.000	999.990	.000	SPEF 2690.0000
(F87538)	MSFC 574(CA48) CR3 1398 W/ALT NCSE	.000	.15.000	999.990	13.750	LREF 474.8000
(F87547)	MSFC 574(CA48) CR3 1398 W/ALT NCSE	.000	-40.000	999.990	-14.750	BREF 936.7000
(F87540)	MSFC 574(CA48) CR3 1398 W/ALT NCSE	.000	-20.000	999.990	.000	XMRP 838.7000
(F87544)	MSFC 574(CA48) CR3 1398 W/ALT NCSE	.000	.000	999.990	-14.750	YMRP 900.0000
					ZMRP 900.0000	SCALE 10000

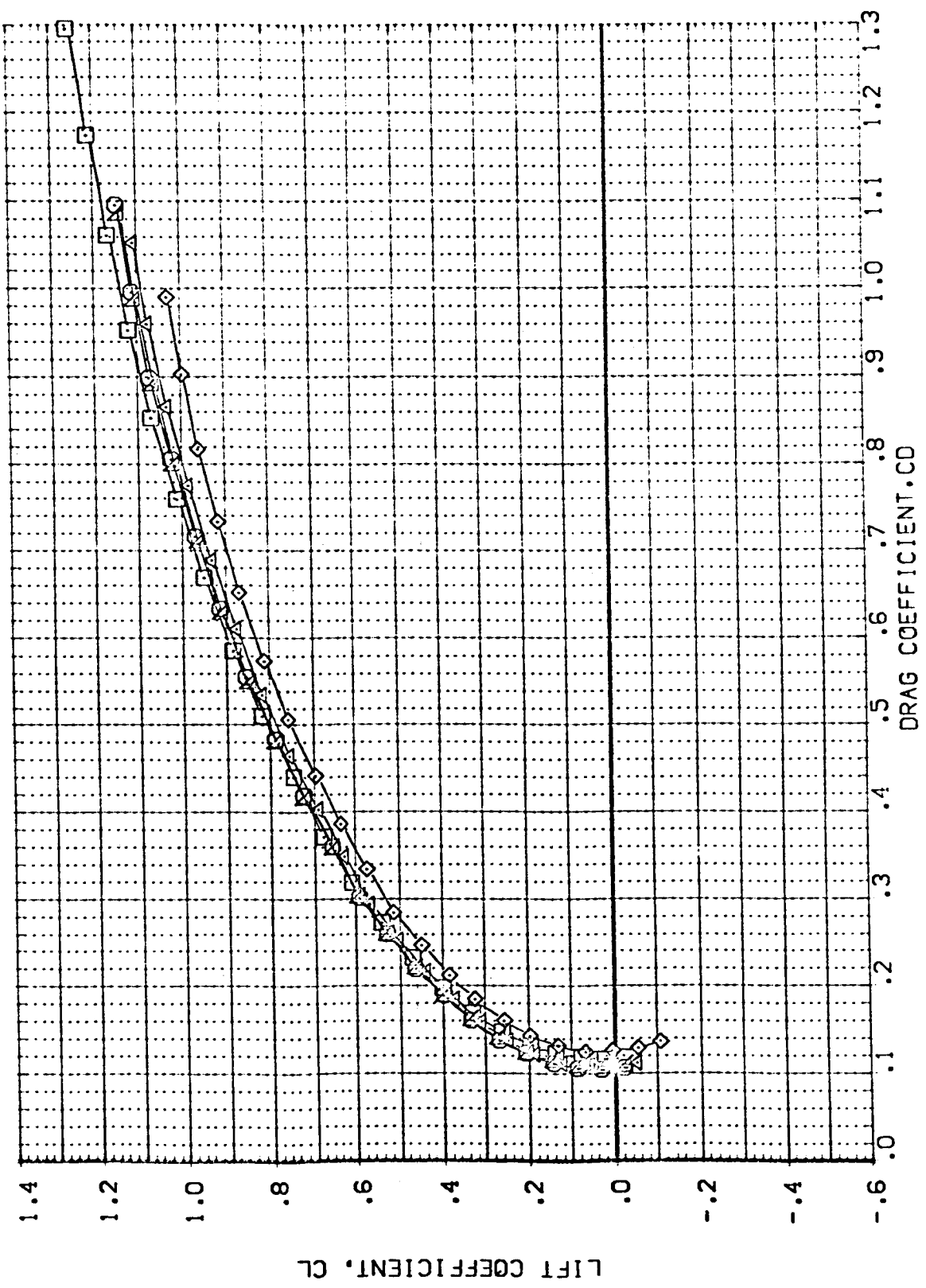


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 1398 WITH ALTERNATE NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOF_LAP	REFERENCE INFORMATION
(F87531)	MSEC 574(CA48) CRB 398 W/ALT NUSE	.000	.000	999.990	.000	SREF 2590.0000
(F87538)	MSEC 574(CA48) CRB 398 W/ALT NUSE	.000	15.000	999.990	13.750	BRF 474.8000
(F87542)	MSEC 574(CA48) CRB 398 W/ALT NUSE	.000	-40.000	999.990	-14.250	BRF 936.7000
(F87540)	MSEC 574(CA48) CRB 398 W/ALT NUSE	.000	-20.000	999.990	-14.000	XVAP .0000
(F87544)	MSEC 574(CA48) CRB 398 W/ALT NUSE	.000	.000	999.990	-14.000	ZVAP .0000
						SCALE .0010

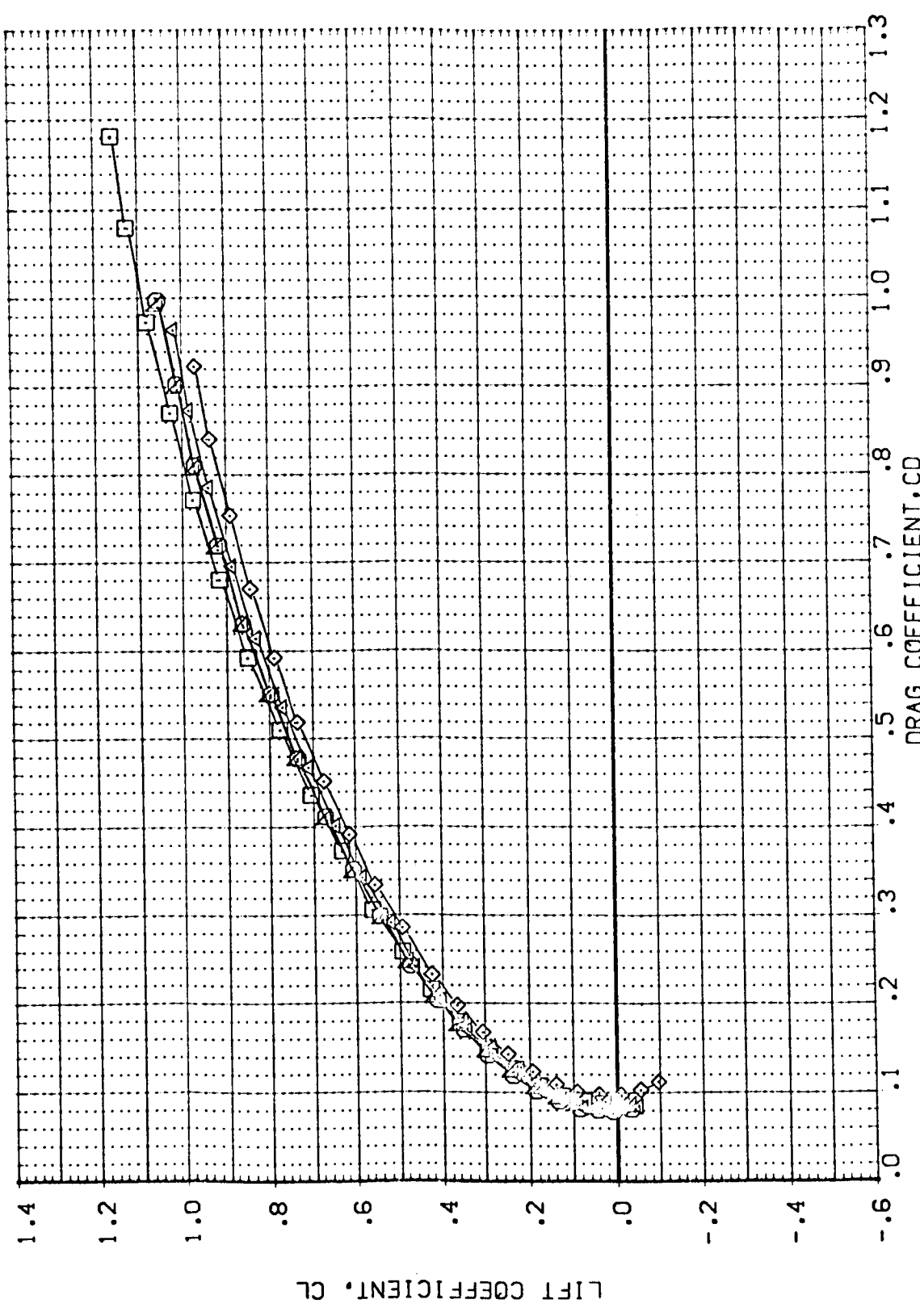


FIG. 15 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139B WITH ALTERNATE NOSE
 (F)MACH = 4.96
 PAGE 722



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BDELAP	REFERENCE INFORMATION
(G87S31)	M5FC 574(CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	.000	2690.0000
(G87S32)	M5FC 574(CA48) CRB 139B W/ALT NOSE	.000	15.000	999.990	13.750	474.8000
(G87S33)	M5FC 574(CA48) CRB 139B W/ALT NOSE	.000	-45.000	999.990	-14.250	936.7000
(G87S34)	M5FC 574(CA48) CRB 139B W/ALT NOSE	.000	-20.000	999.990	.000	864.5000
(G87S35)	M5FC 574(CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	-14.250	.0000
					ZMRB	.0000
					SCALE	.0040

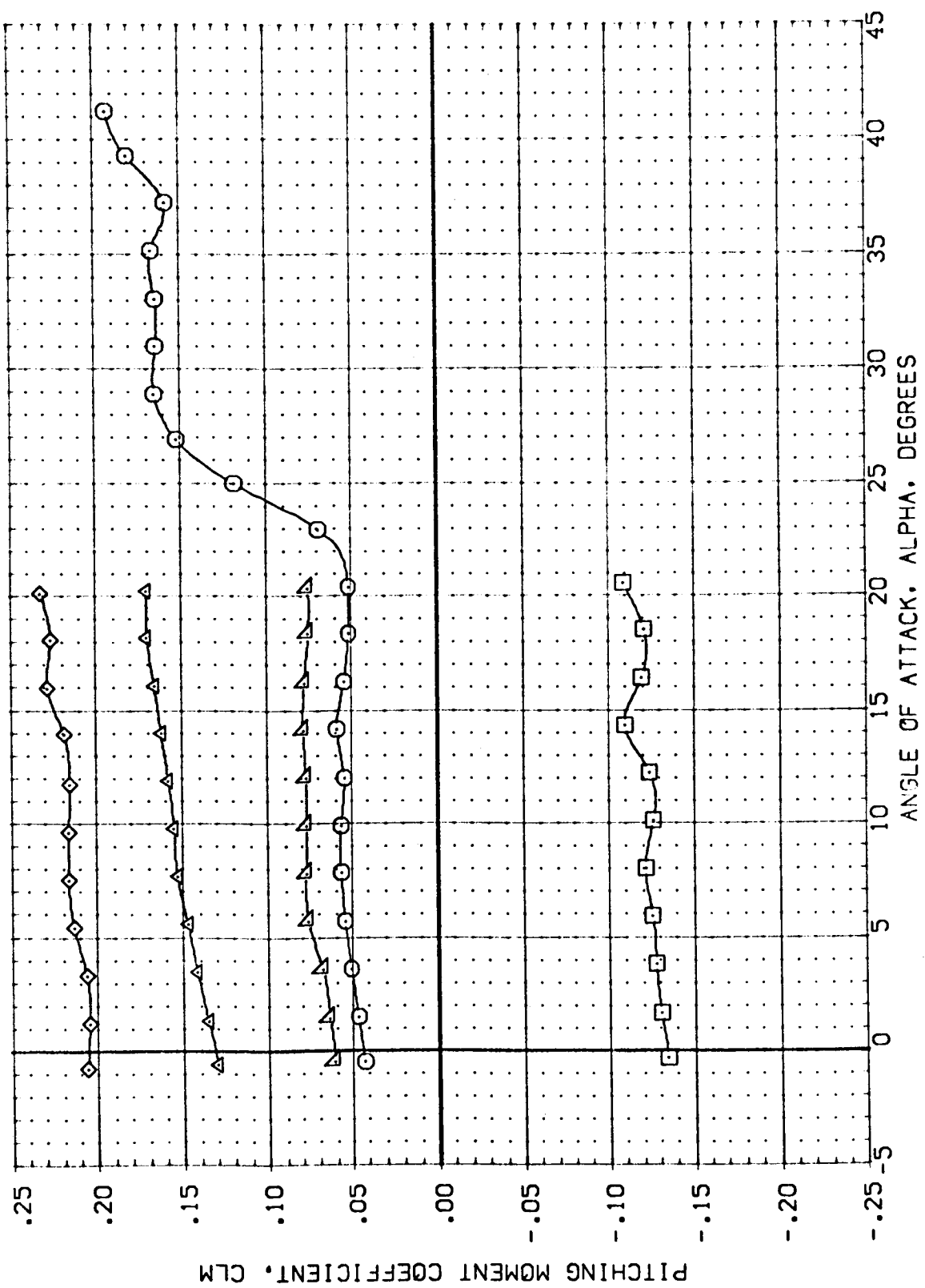


FIG. 15 EFFECT OF MAX CONTROL DEFLEC. ON ORBITER 139B WITH ALT. NOSE(AFT CG)
 (MACH = .6) PAGE 723

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDRBK	BOFLAP	REFERENCE INFORMATION
(87531)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	.000	2690.0000 SO.FT.
(87538)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	15.000	999.990	13.750	474.8000 N.
(87542)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	-40.000	999.990	-14.250	936.7000 N.
(87540)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	-20.000	999.990	.000	864.5000 N.
(87544)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	-14.750	.0000 N.
					ZWRB	.0000
					SCALE	.0040

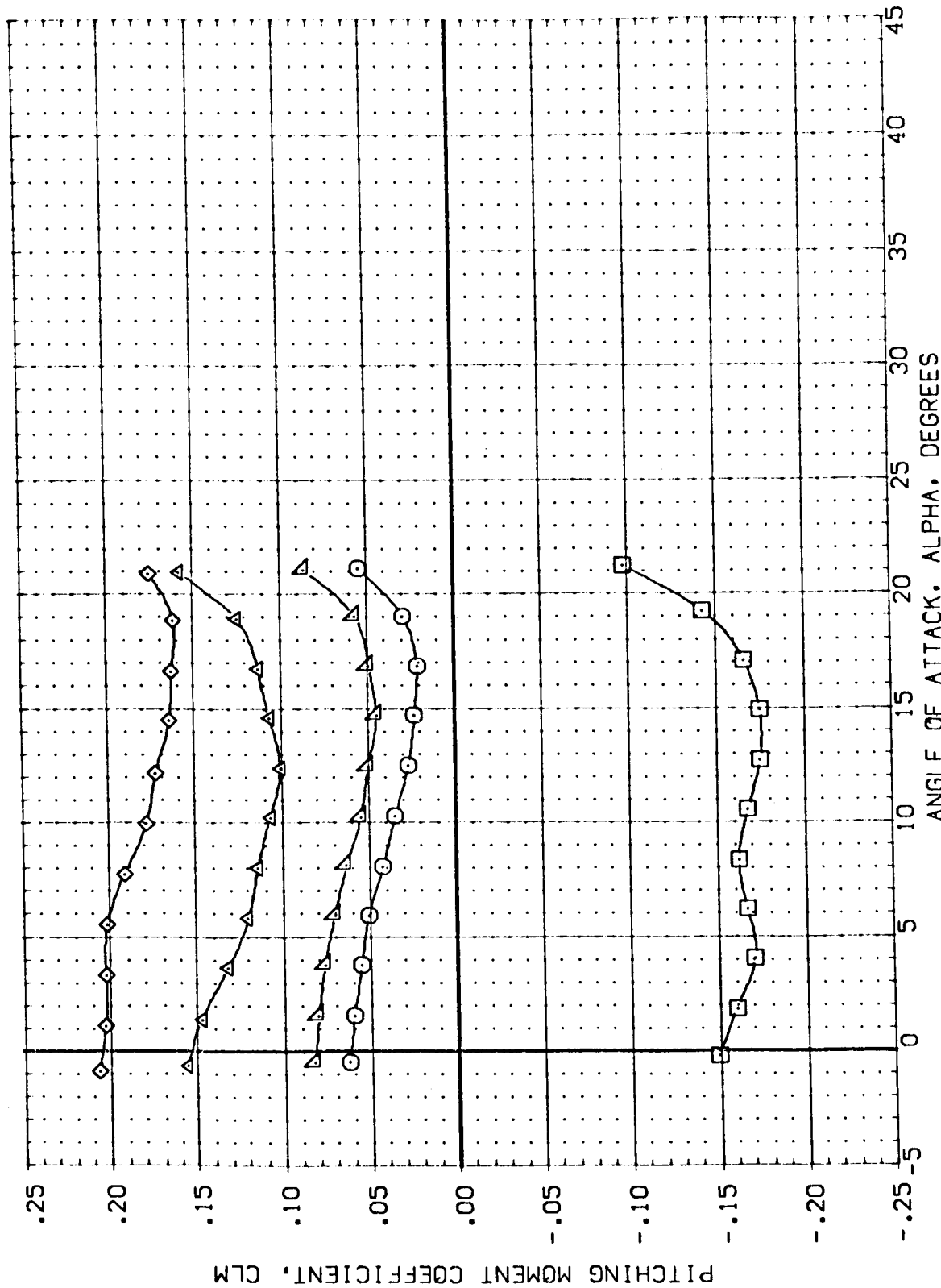


FIG. 15 EFFECT OF MAX CONTROL DEFLEC. ON ORBITER 139B WITH ALT. NOSE(AFT CG)
 (B)YACH = .90 PAGE 724

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDRBK	BDFLAP	REFERENCE INFORMATION
{ 087531 }	MSFC 574(CA48) CRB 1398 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000
{ 087538 }	MSFC 574(CA48) CRB 1398 W/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000
{ 087542 }	MSFC 574(CA48) CRB 1398 W/ALT NOSE	.000	-40.000	999.990	-14.250	BREF 936.7000
{ 087540 }	MSFC 574(CA48) CRB 1398 W/ALT NOSE	.000	-20.000	999.990	.000	XMRP 864.5000
{ 087544 }	MSFC 574(CA48) CRB 1398 W/ALT NOSE	.000	.000	999.990	-14.250	ZMRP .0000
					SCALE	.0040

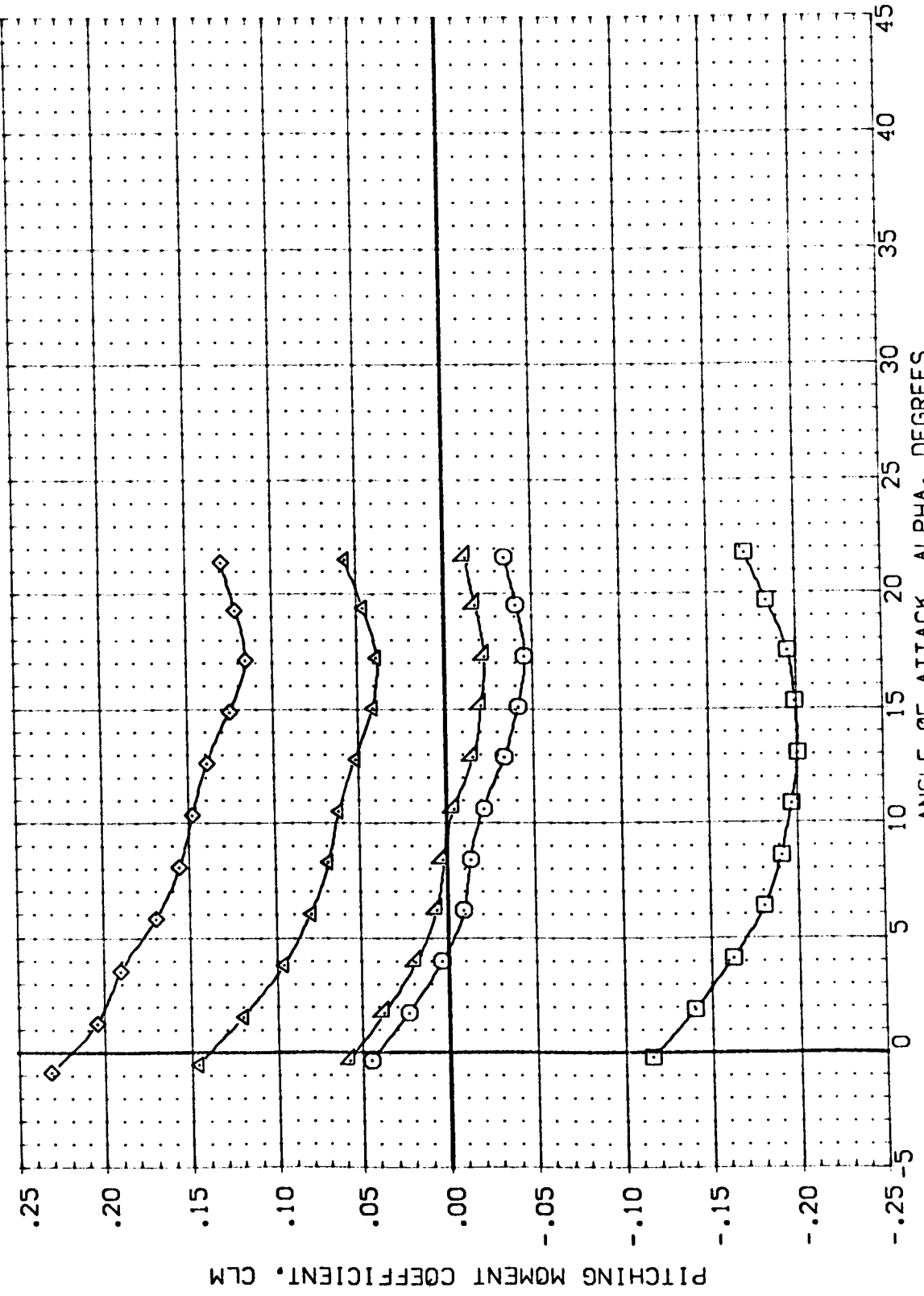


FIG. 15 EFFECT OF MAX CONTROL DEFLEC. ON ORBITER 1398 WITH ALT. NOSE(AFT CG)
 (C)MACH = 1.19 PAGE 725

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(CB7531)	MSFC 574(CA48) ORB 398 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(CB7538)	MSFC 574(CA48) ORB 398 W/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000 N.
(CB7542)	MSFC 574(CA48) ORB 398 W/ALT NOSE	.000	-40.000	999.990	-14.250	BREF 938.7000 N.
(CB7540)	MSFC 574(CA48) CRB 398 W/ALT NOSE	.000	-20.000	999.990	.000	XREF 864.5000 N.
(CB7544)	MSFC 574(CA48) CRB 398 W/ALT NOSE	.000	.000	999.990	-14.250	YREF .0000 N.
					ZREF .0000 N.	SCALE .0040

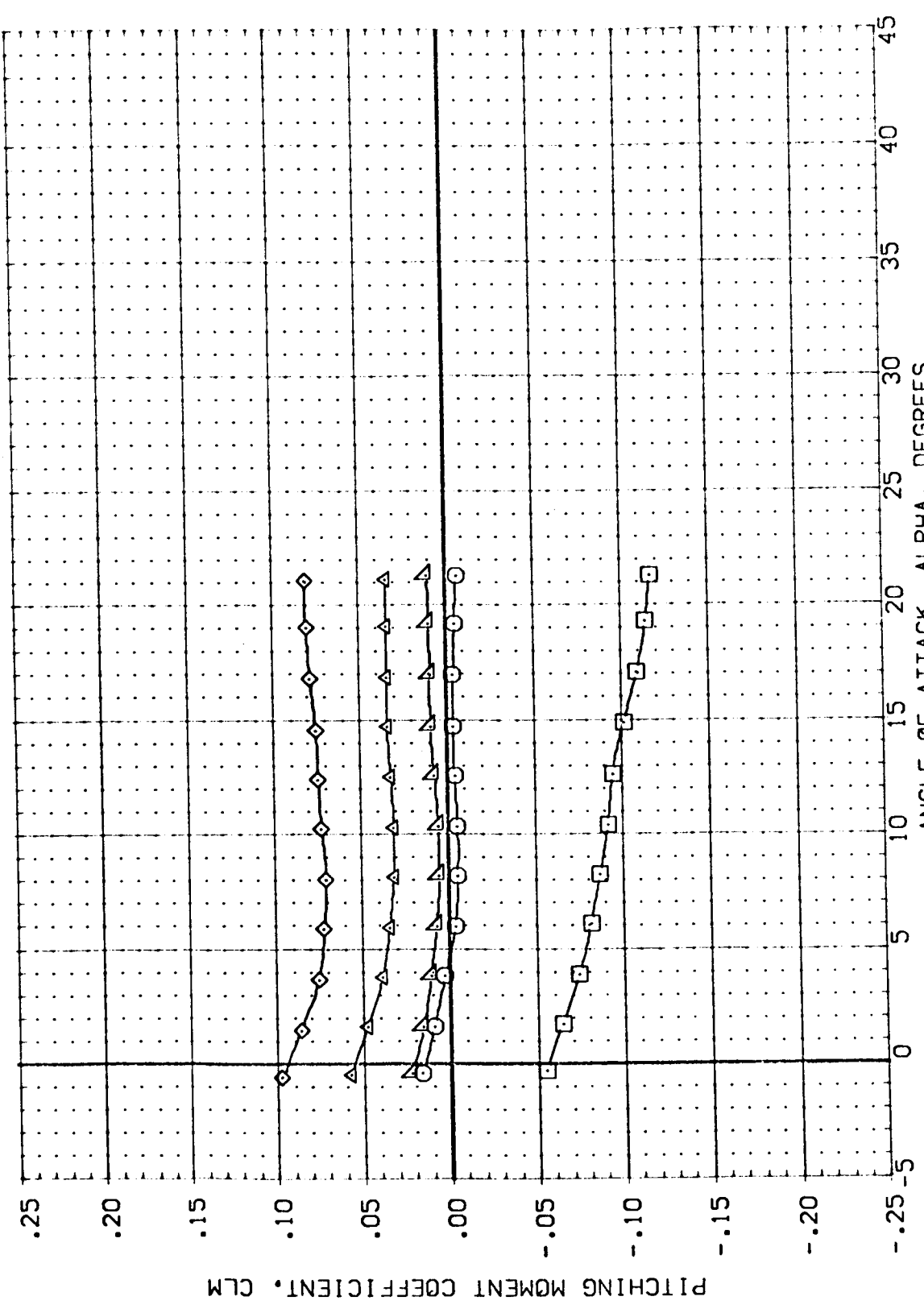


FIG. 15 EFFECT OF MAX CONTROL DEFLEC. ON ORBITER 1398 WITH ALT. NOSE(AFT CG)
 (C)YACH = :.95 PAGE 726

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVATOR	SPDRK	BDFLAP	REFERENCE INFORMATION
(087531)	MSFC 574(CA48) CRB 393 W/ALT NOSE	.000	.000	999.990	.000	SRF 2690.0000 SQ.FT.
(087538)	MSFC 574(CA48) CRB 393 W/ALT NOSE	.000	15.000	999.990	13.750	SRF 474.8000
(087542)	MSFC 574(CA48) CRB 393 W/ALT NOSE	.000	-40.000	999.990	-14.250	SRF 936.7000
(087540)	MSFC 574(CA48) CRB 393 W/ALT NOSE	.000	-20.000	999.990	.000	XMRP 864.5000
(087544)	MSFC 574(CA48) CRB 393 W/ALT NOSE	.000	.000	999.990	-14.250	ZMRP .0000
						SCALE .0040

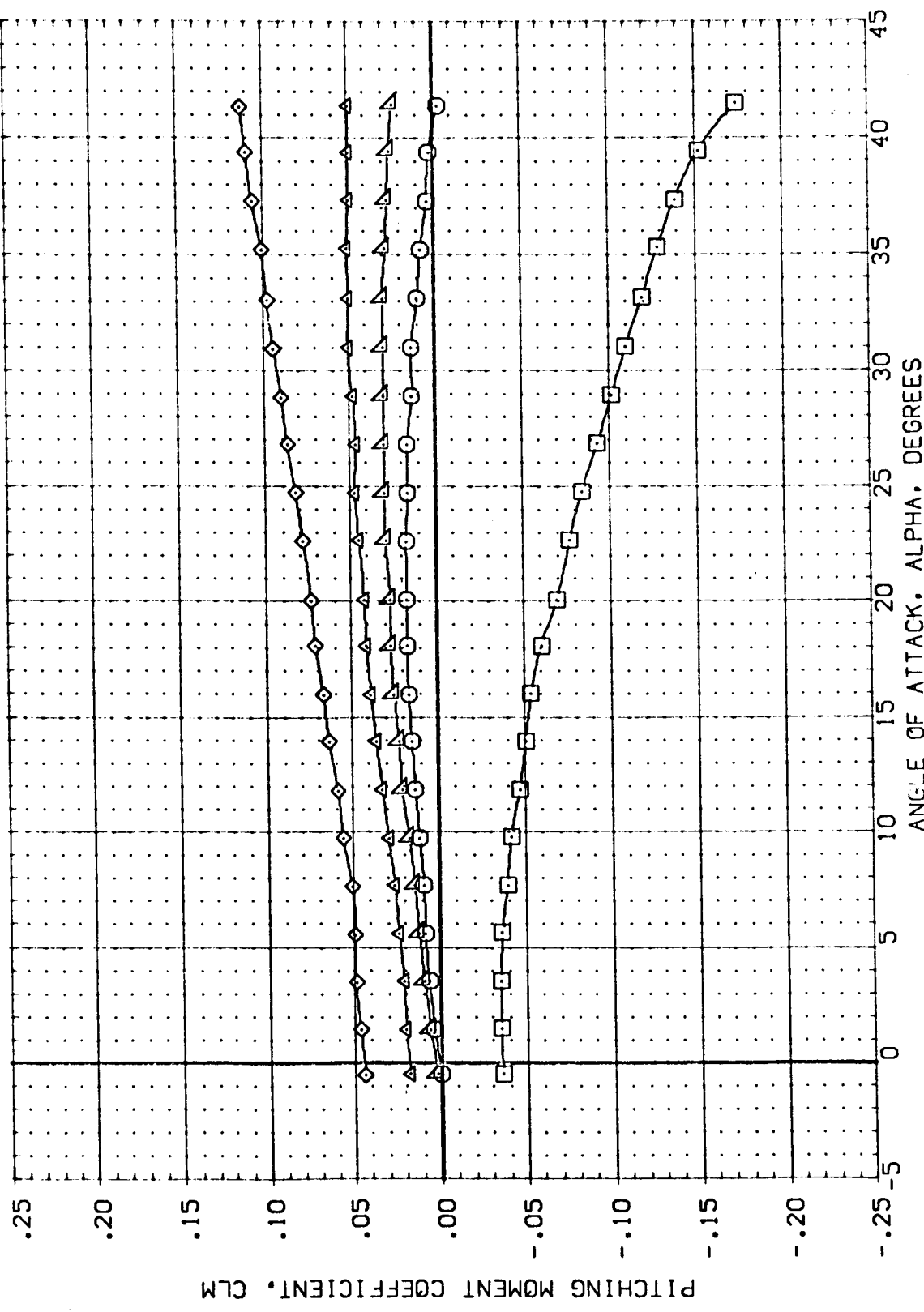


FIG. 15 EFFECT OF MAX CONTROL DEFLEC. ON ORBITER 139B WITH ALT. NOSE(AFT CG)

DATA SET SYMBOL: (B87531) (B87538) (B87542) (B87546) (B87544)
 CONFIGURATION DESCRIPTION: MSFC 574(CA48) CRB 1398 V/ALT NOSE
 MSFC 574(CA48) CRB 1398 V/ALT NOSE
 MSFC 574(CA48) CRB 1398 V/ALT NOSE
 MSFC 574(CA48) CRB 1398 V/ALT NOSE
 MSFC 574(CA48) CRB 1398 V/ALT NOSE
 BETA: .000 .000 .000 .000 .000
 ELEVT: .000 .15 .000 .000 .000
 SPDRK: 999.990 999.990 999.990 999.990 999.990
 BOFLAP: .000 .000 .000 .000 .000
 REFERENCE INFORMATION: SREF 2690.0000
 LREF 474.8000
 BREF 936.7000
 XMRP 854.5000
 YMRP .0000
 ZMRP .0000
 SCALE: .0040

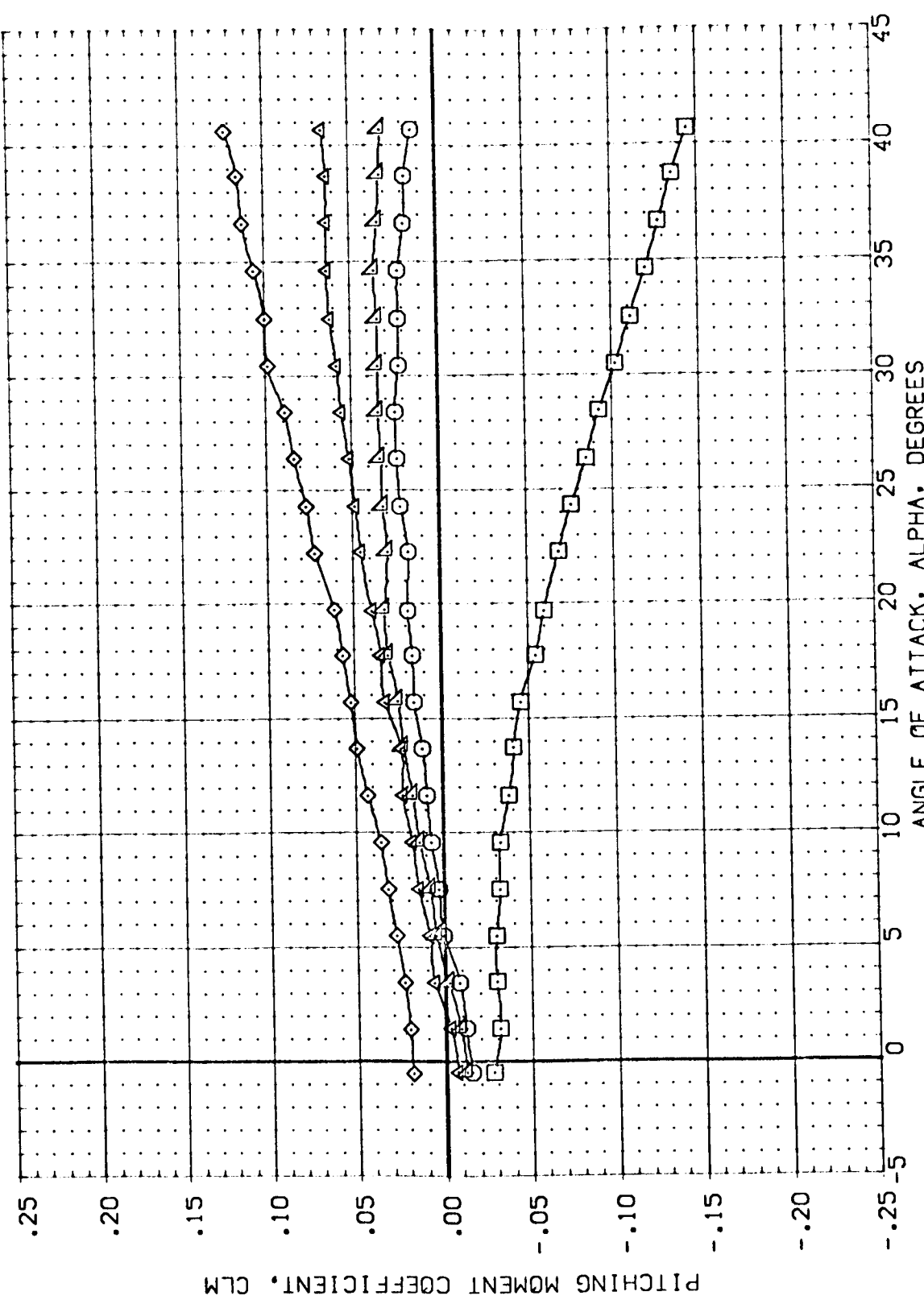


FIG. 15 EFFECT OF MAX CONTROL DEFLEC. ON ORBITER 1398 WITH ALT. NOSE(AFT CG)
 (CROSSACH = 4.96) PAGE 728



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87548) MSFC 574(CA48) ORB 139
 (F87560) MSFC 574(CA48) ORB 139
 (F87564) DATA NOT AVAILABLE
 (F87562) MSFC 574(CA48) ORB 139

BETA ELEVTR SPOBRK BDELAP
 .000 .000 999.990 .000
 .000 .15.000 999.990 13.750
 .000 -10.000 999.990 -14.250
 .000 -20.000 999.990 .000

REFERENCE INFORMATION
 SREF 2690 .0000 SCALE
 .REF 474 .8000
 .REF 536 .5000
 XMRP 838 .7000
 .0000
 .0000
 ZMRP .0000
 SCALE .0040

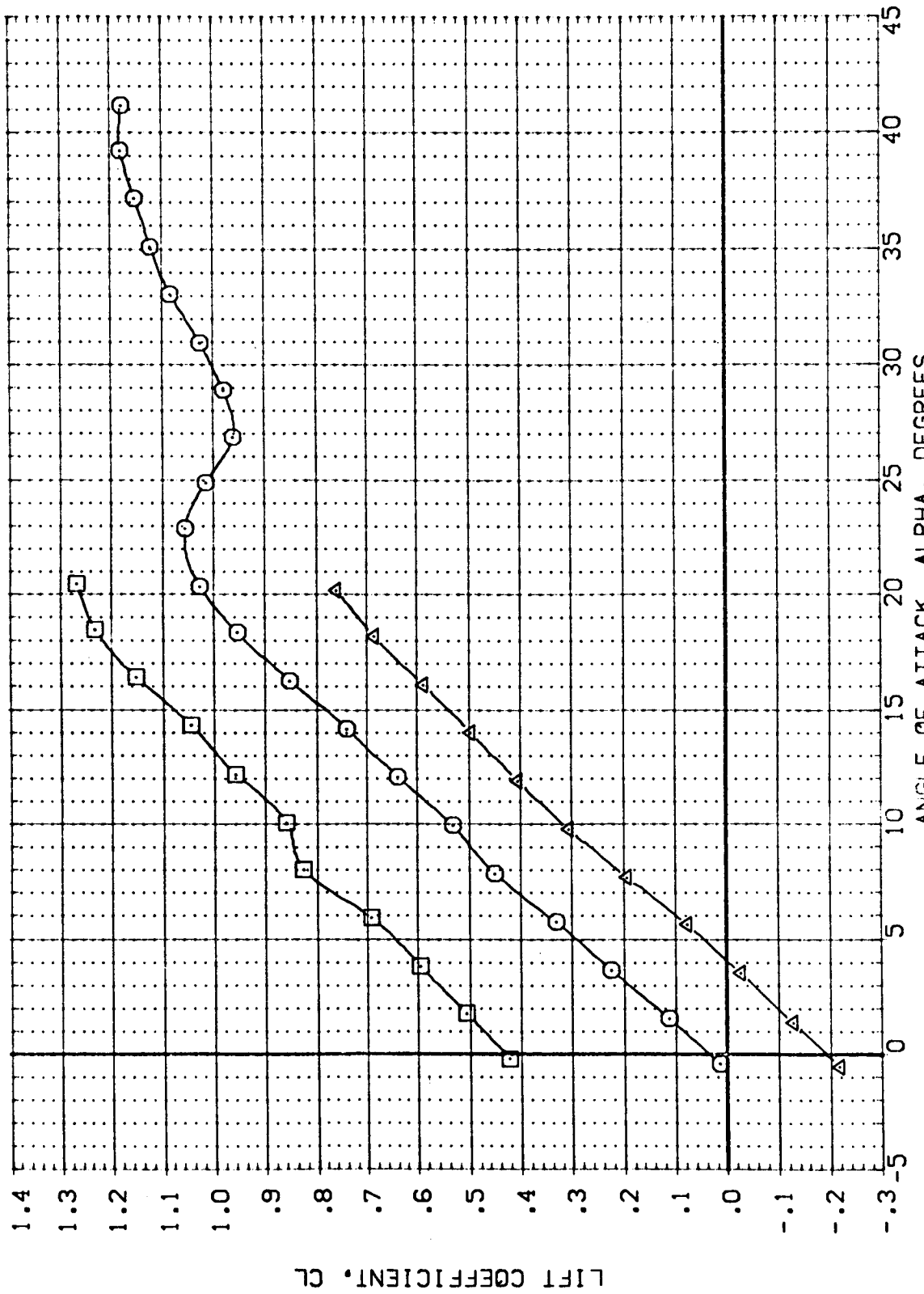


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(A)MACH = .60

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87S48) MSFC 574(CA48) CRB 139
 (F87S50) MSFC 574(CA48) CRB 139
 (F87S52) DATA NOT AVAILABLE
 (F87S61) MSFC 574(CA48) CRB 139
 (F87S62)

BETA ELEVTR SPCBRK BDFLAP
 .000 .000 .999.990 .000
 .000 15.000 .999.990 13.750
 .000 -40.000 .999.990 -14.250
 .000 -20.000 .999.990 .000

REFERENCE INFORMATION
 SREF 2690.0000 SC.F.T.
 LREF 474.8000
 BREF 836.7000
 XWRP 838.7000
 YWRP .0000
 ZWRP .0000
 SCALE .0040

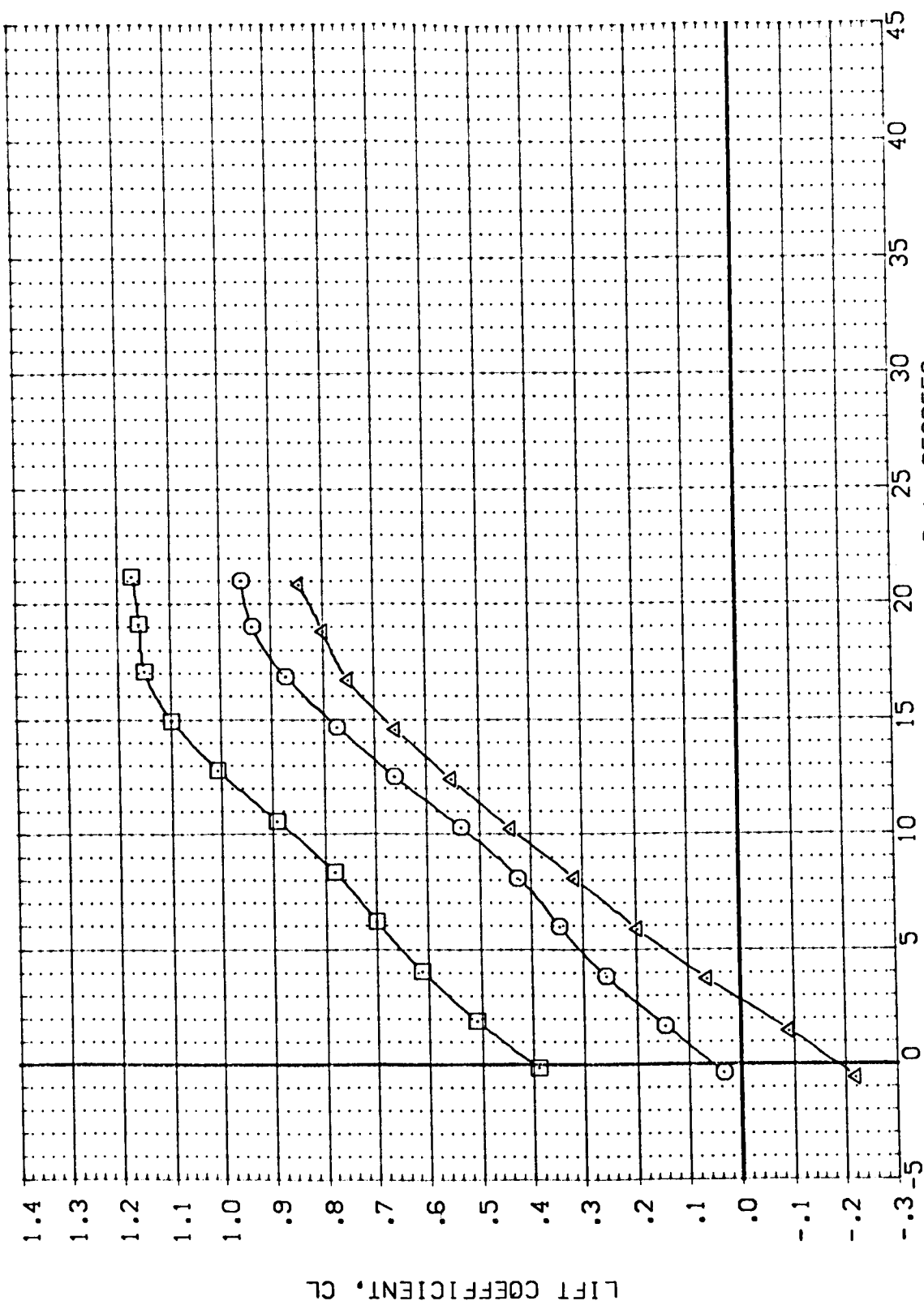


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(B)MACH = .90

REFERENCE INFORMATION
 SREF 2690.0000 SC.F.T.
 UREF 474.8000
 BREF 936.7000
 XMRP 838.7000
 YMRP .0000
 ZMRP .0000
 SCALE .0040

BOFLAP .000
 SPCBRK 999.990
 ELEVTR .000
 .000
 .50000
 -40.000
 -20.000

BETA .000
 .000
 .000
 .000
 .000

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87S48) MSFC 574(CA48) CR3 139
 (F87S50) MSFC 574(CA48) CR3 139
 (F87S64) DATA NOT AVAILABLE
 (F87S62) MSFC 574(CA48) CR3 139

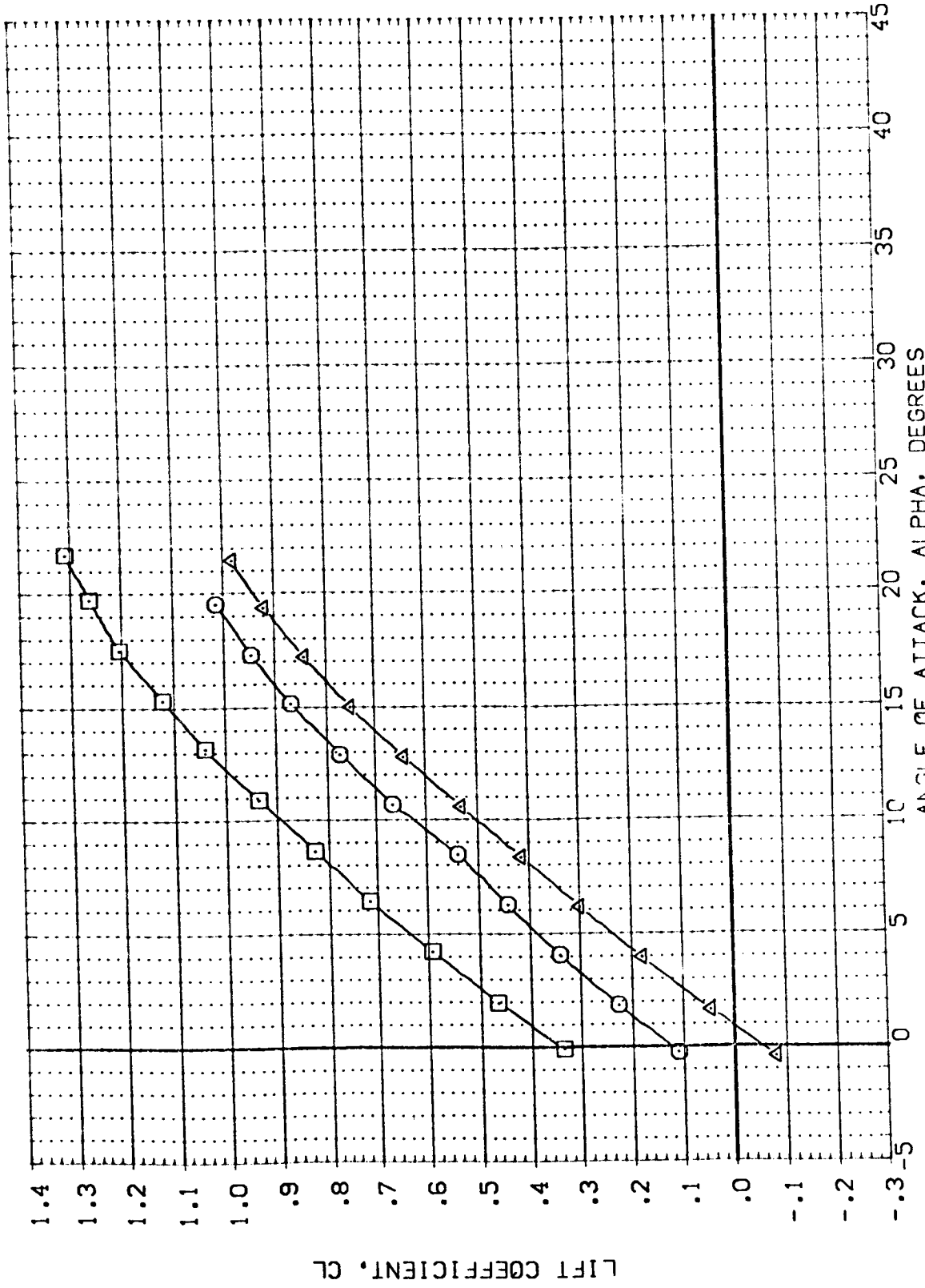


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON CRBITER 139

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87S48) MSFC 574(CA48) CRB 139
 (F87S60) MSFC 574(CA48) CRB 139
 (F87S64) MSFC 574(CA48) CRB 139
 (F87S62) MSFC 574(CA48) CRB 139

BETA ELEVTR SPOBRK BOFLAP REFERENCE INFORMATION
 .000 .000 999.999 .000 SREF 2699.0000 SC.FT.
 .000 15.000 999.999 .000 LREF 474.8000 N.
 .000 -40.000 999.999 -14.750 BRFF 936.7000 N.
 .000 -20.000 999.999 .000 XMRP 836.7000 N.
 .000 .000 .000 .000 ZMRP .0000 N.
 .000 .000 .000 .000 SCALE .0040 N.

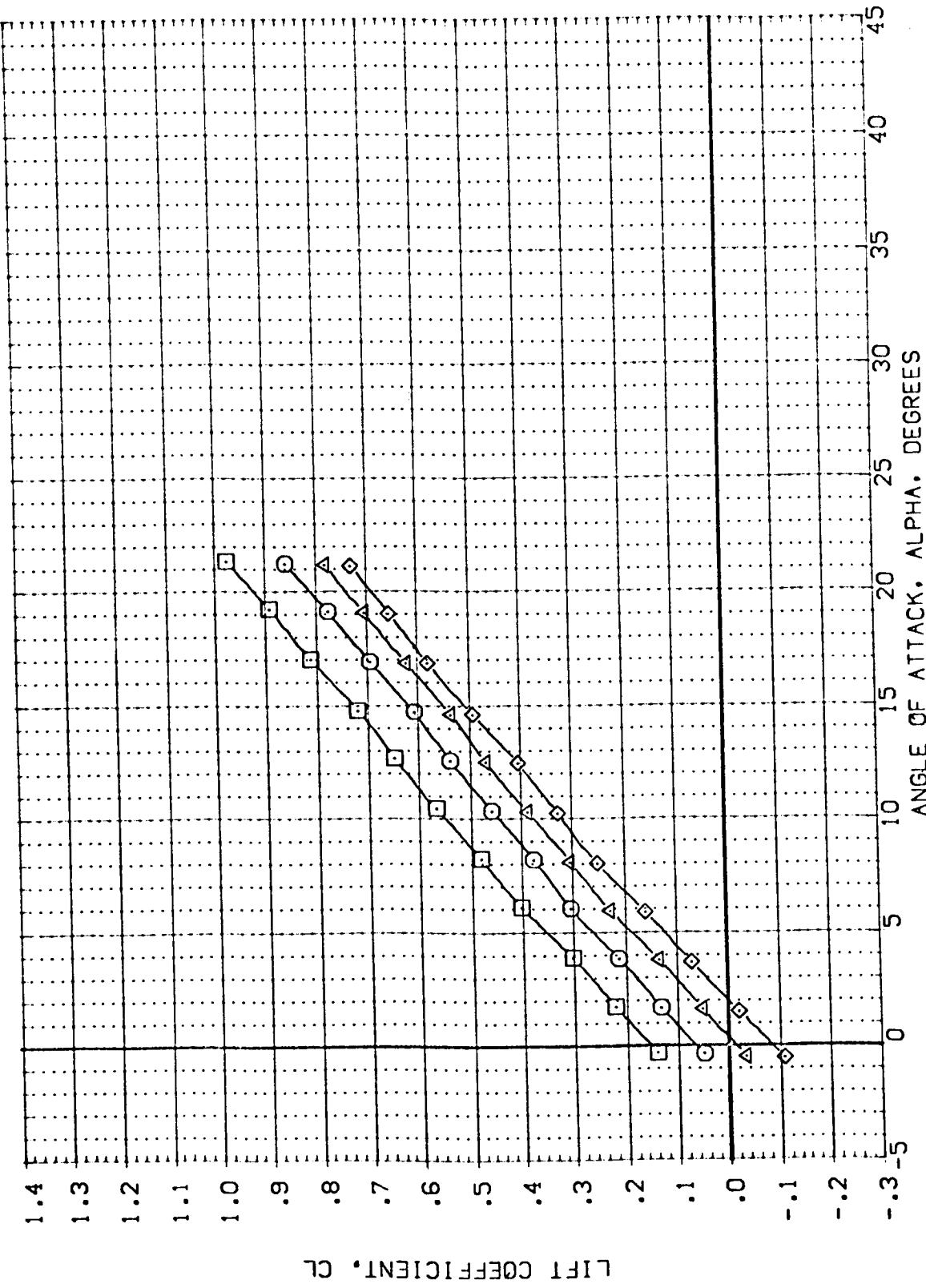


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139
 COMACH = 1.95

DATA SET SYMBOL- CONFIGURATION DESCRIPTION
 (F87S48) MSFC 574(CA48) CR3 | 39
 (F87S60) MSFC 574(CA48) CR3 | 39
 (F87S62) MSFC 574(CA48) CR3 | 39
 (F87S64) MSFC 574(CA48) CR3 | 39

BETA ELEVTR SPOBRK BDFLAP
 .000 .000 999.999 .000
 .000 .000 999.999 .000
 .000 .000 999.999 .000
 .000 .000 999.999 .000
 .000 .000 999.999 .000
 .000 .000 999.999 .000

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 SREF 674.8000
 SREF 948.7000
 SREF 838.7000
 XREF .0000
 YREF .0000
 ZREF .0000
 SCALE .0010

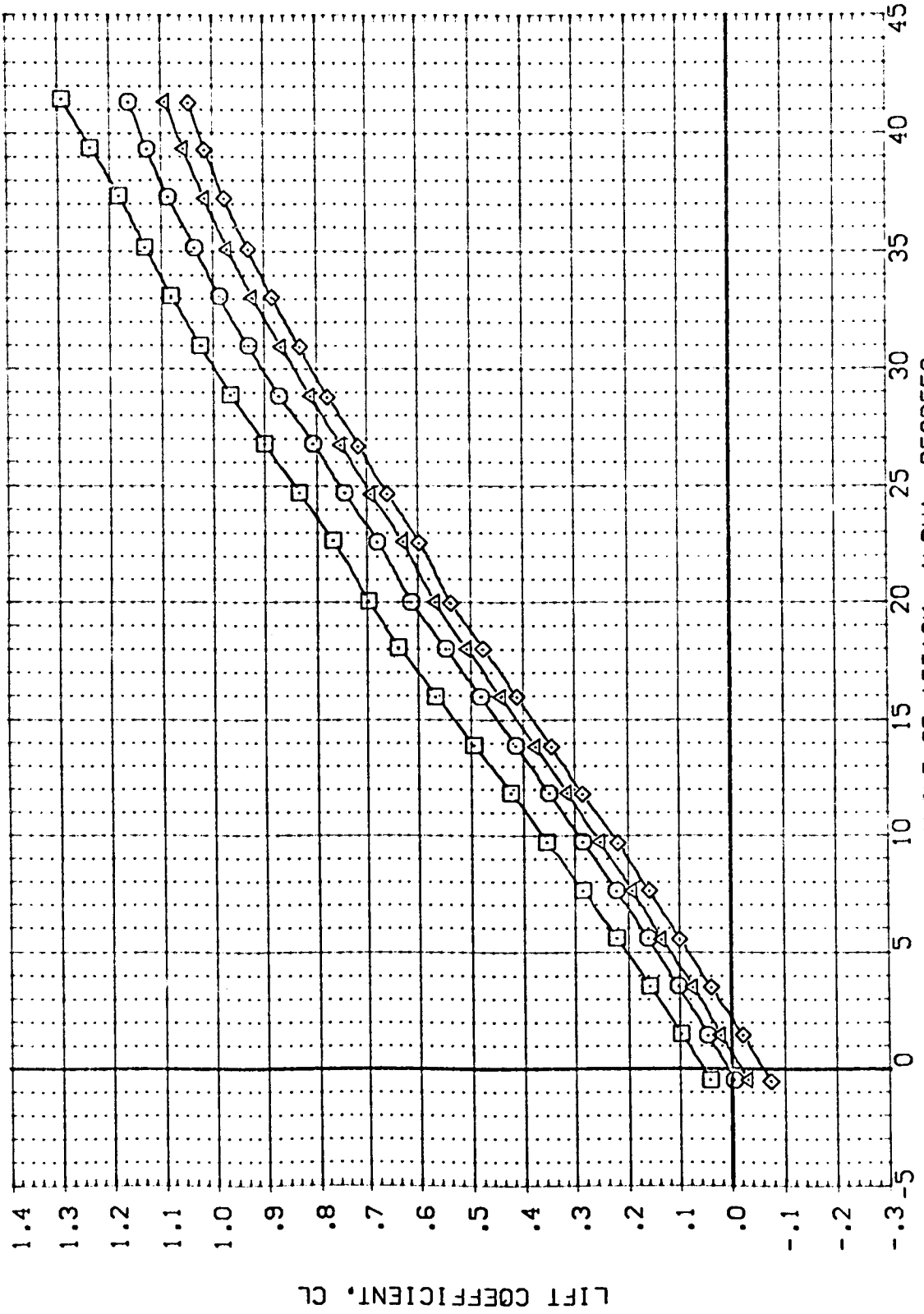


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(E) MACH = 2.99

DATA SET SYMBOL: (F87S48), (F87S50), (F87S54), (F87S52)

CONFIGURATION DESCRIPTION: MSEC 574(CA48) CRB 139, MSEC 574(CA48) CRB 138, MSEC 574(CA48) CRB 139, MSEC 574(CA48) CRB 139

BETA: .000, .000, .000, .000
 ELEVTR: .000, 15.000, -10.000, -20.000
 SPDBRK: 999.990, 999.990, 999.990, 999.990
 BOFLAP: .000, 13.750, -14.250, .000

REFERENCE INFORMATION: SC.F.T., SREF 2690.0000, LREF 474.8000, BREF 935.7000, XMRP 838.7000, ZMRP .0000, SCALE .0040

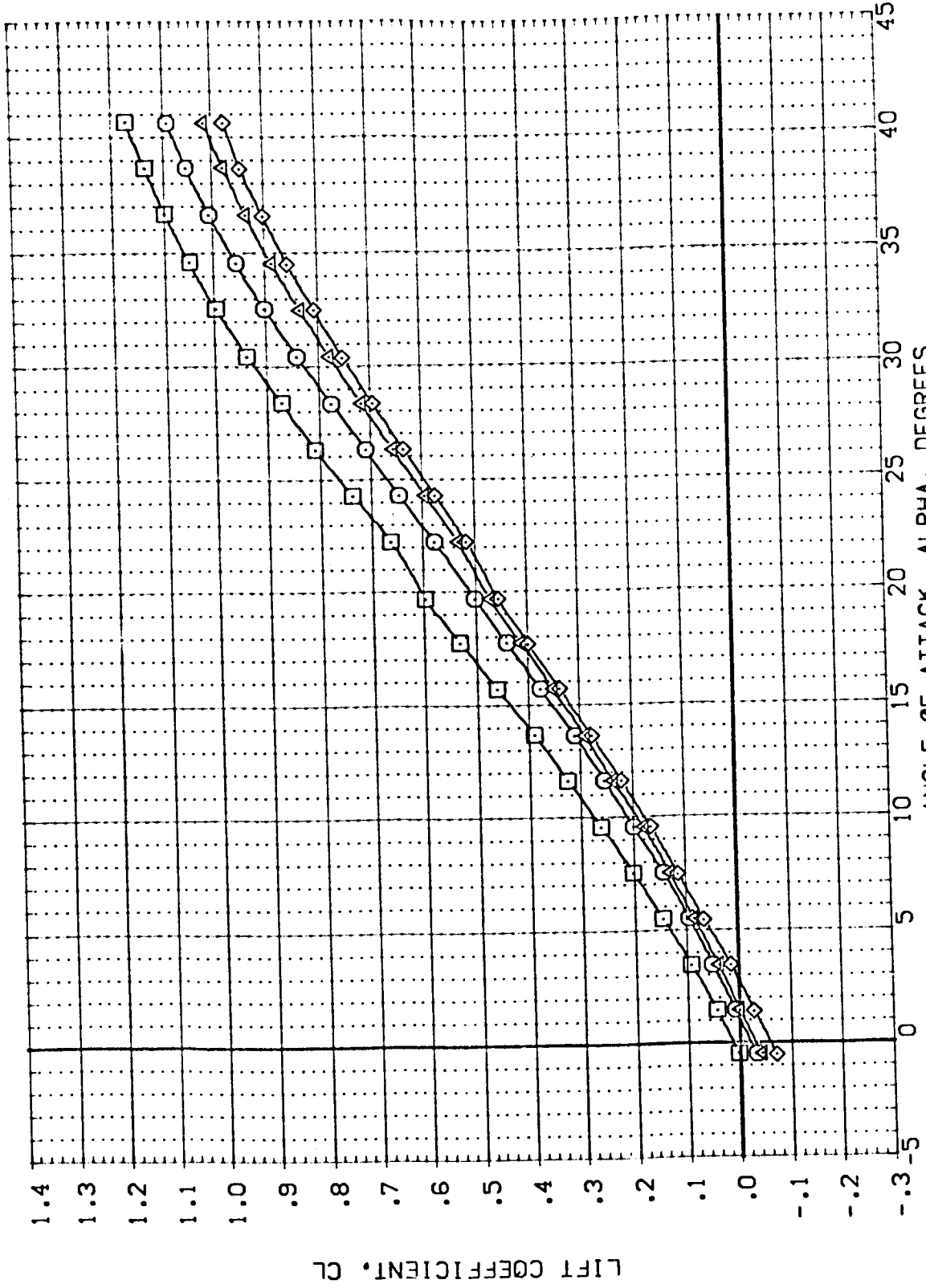


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139
 (C)MACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87548) MSFC 574(CA48) CRB 139
 (F87550) MSFC 574(CA48) CRB 139
 (F87554) DATA NOT AVAILABLE
 (F87552) MSFC 574(CA48) CRB 139

BETA ELEVTR SPDBRK BOFLAP
 .000 .000 999.990 .000
 .000 15.000 999.990 13.750
 .000 -40.000 999.990 -14.250
 .000 -20.000 999.990 .000

REFERENCE INFORMATION
 SREF 2690.0000 SC.FT.
 LREF 474.8000
 BREF 936.7000
 XMRP 838.7000
 YMRP .0000
 ZMRP .0000
 SCALE .0010

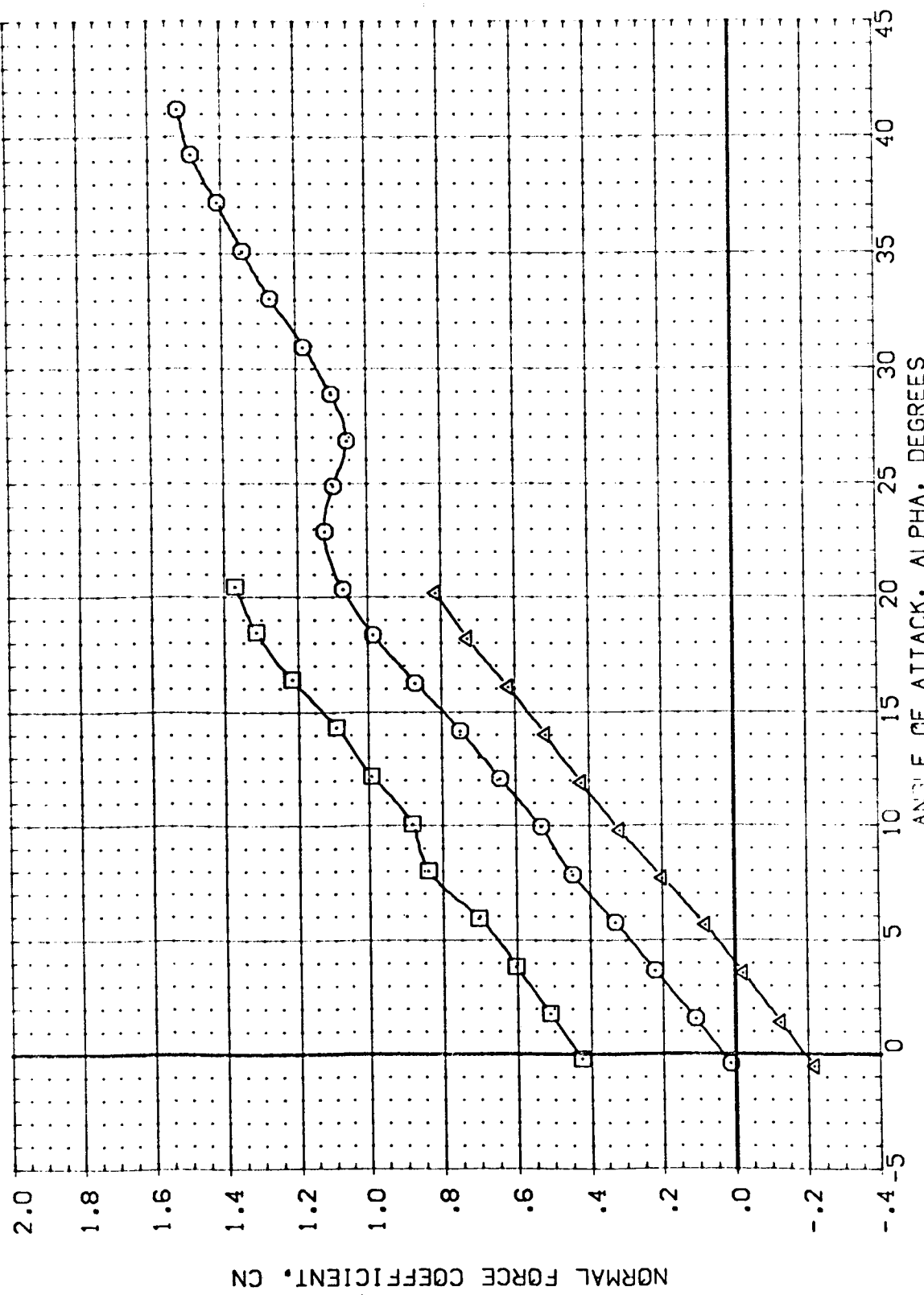


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

CAYMACH = .60

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87548) MSFC 574(CA48) CR3 139
 (F87560) MSFC 574(CA48) CR3 139
 (F87564) DATA NOT AVAILABLE
 (F87562) MSFC 574(CA48) CR3 139

BETA ELEVTR SPOBRK BOFLAP REFERENCE INFORMATION SCALE
 .000 .000 999.990 .000 SREF 2690.0000
 .000 15.000 999.990 13.750 LREF 474.8000
 .000 -49.000 999.990 -14.250 BREF 836.7000
 .000 -22.000 999.990 .000 XVRP 838.7000
 .000 .000 .000 .000 YVRP .0000
 .000 .000 .000 .000 ZVRP .0000
 .000 .000 .000 .000 SCALE .0040

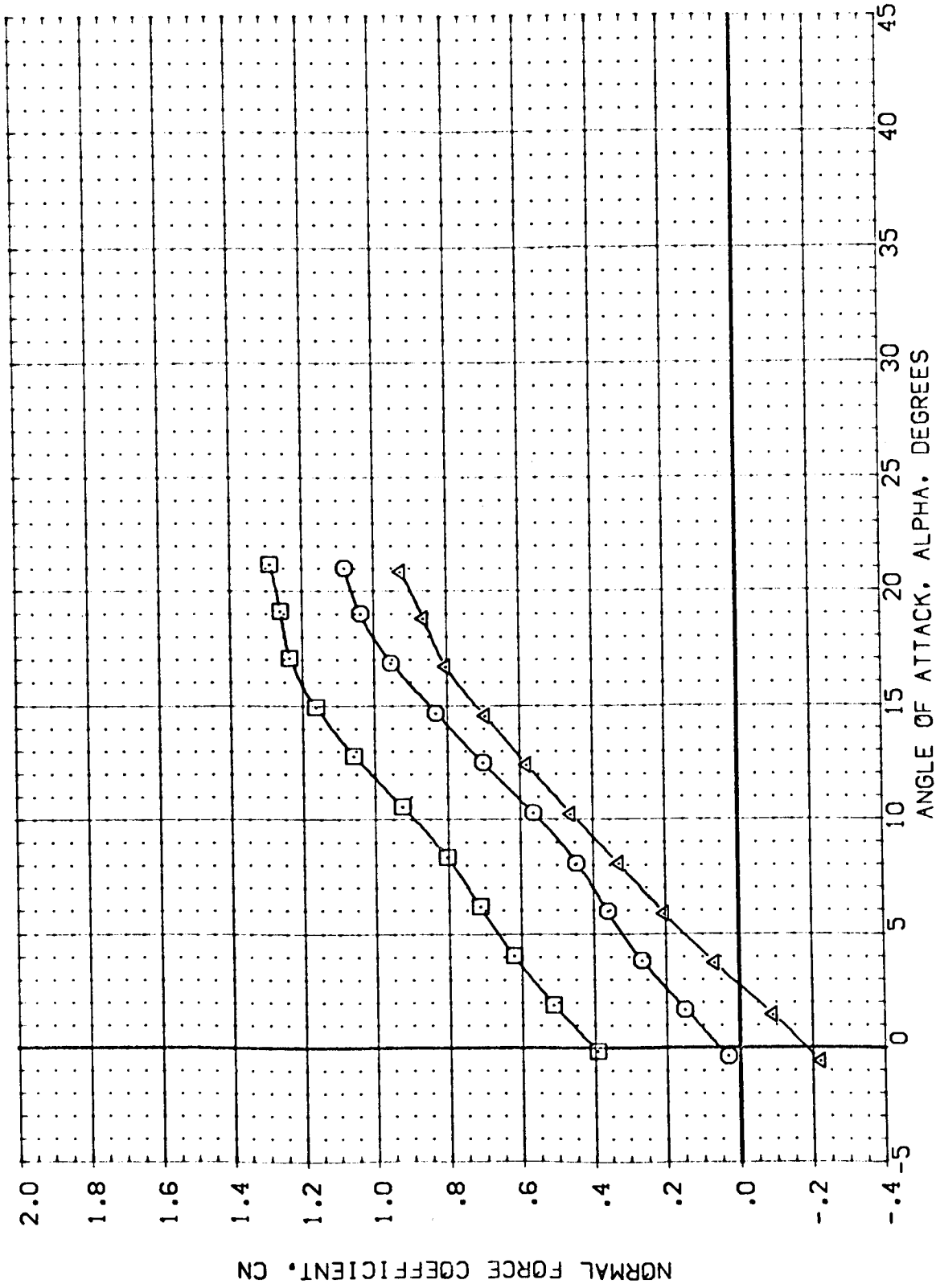


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(B) VACH = .90

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87S48) Q MSFC 574(CA48) CRB :39
 (F87S50) X DATA NOT AVAILABLE
 (F87S62) X MSFC 574(CA48) CRB :39

BETA ELEVTR SPOBRK BOFLAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SREF 2690 .0000 SQ.F.
 .000 .000 999.990 .000 LREF 474.8 .0000
 .000 .000 999.990 .000 BREF 938.7 .0000
 .000 .000 999.990 .000 XMRP 838.7 .0000
 .000 .000 999.990 .000 YMRP .0000
 .000 .000 999.990 .000 ZMRP .0000
 .000 .000 999.990 .000 SCALE .0010

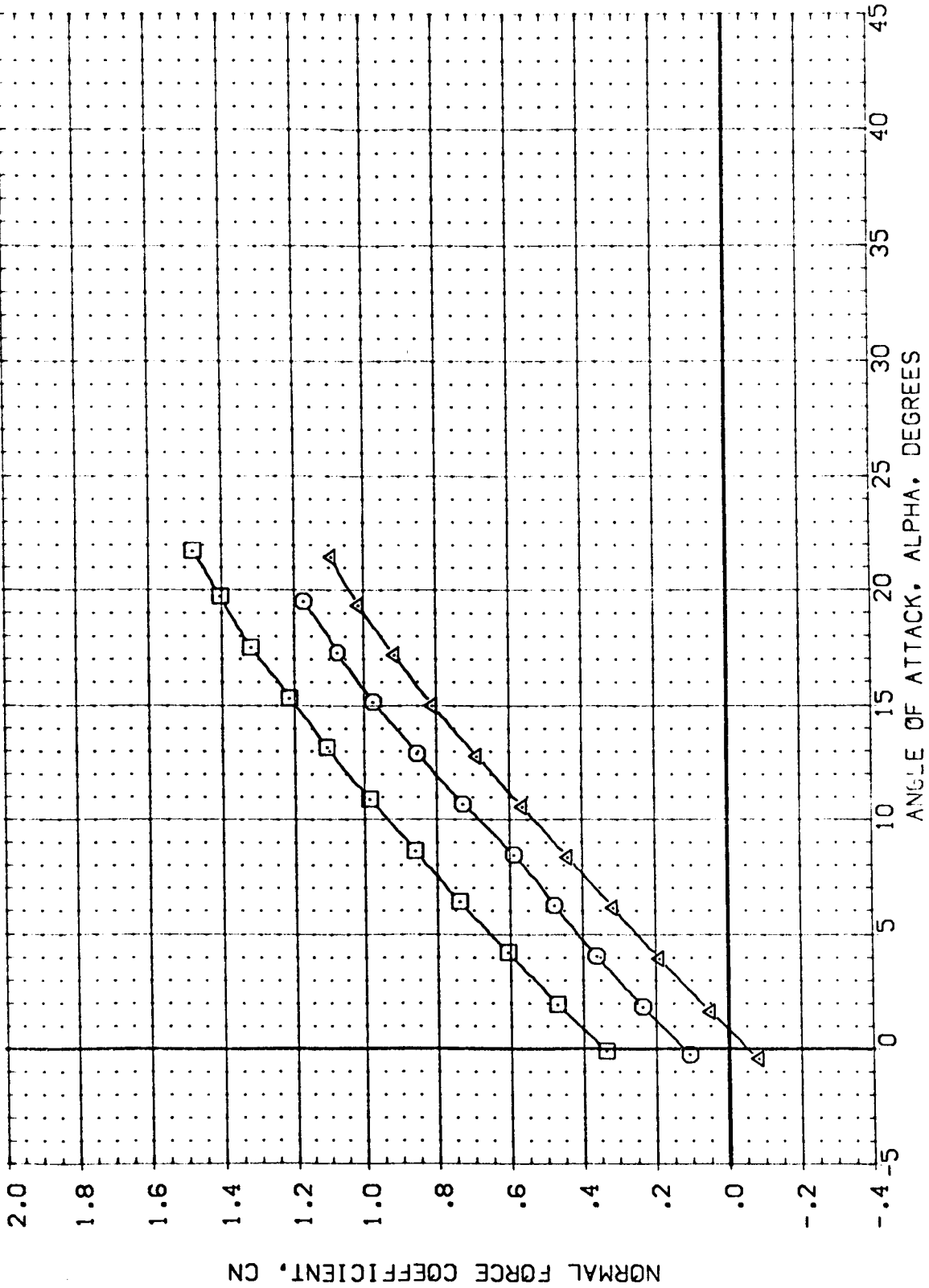


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(F87S4B)	MSFC 574(CA48) CRB 39
(F87S6C)	MSFC 574(CA48) CRB 39
(F87S64)	MSFC 574(CA48) CRB 39
(F87S62)	MSFC 574(CA48) CRB 39

BETA ELEVTR SPOBRK BCFLAP

.000	.000	999.999	.000
.000	.15.000	999.999	13.750
.000	-40.000	999.999	-14.250
.000	-20.000	999.999	.000

REFERENCE INFORMATION

SREF	2690.0000	SC.FT.
LREF	474.8000	IN.
BREF	936.7000	IN.
XWRP	838.7000	IN.
YWRP	.0000	IN.
ZWRP	.0000	IN.
SCALE	.0040	

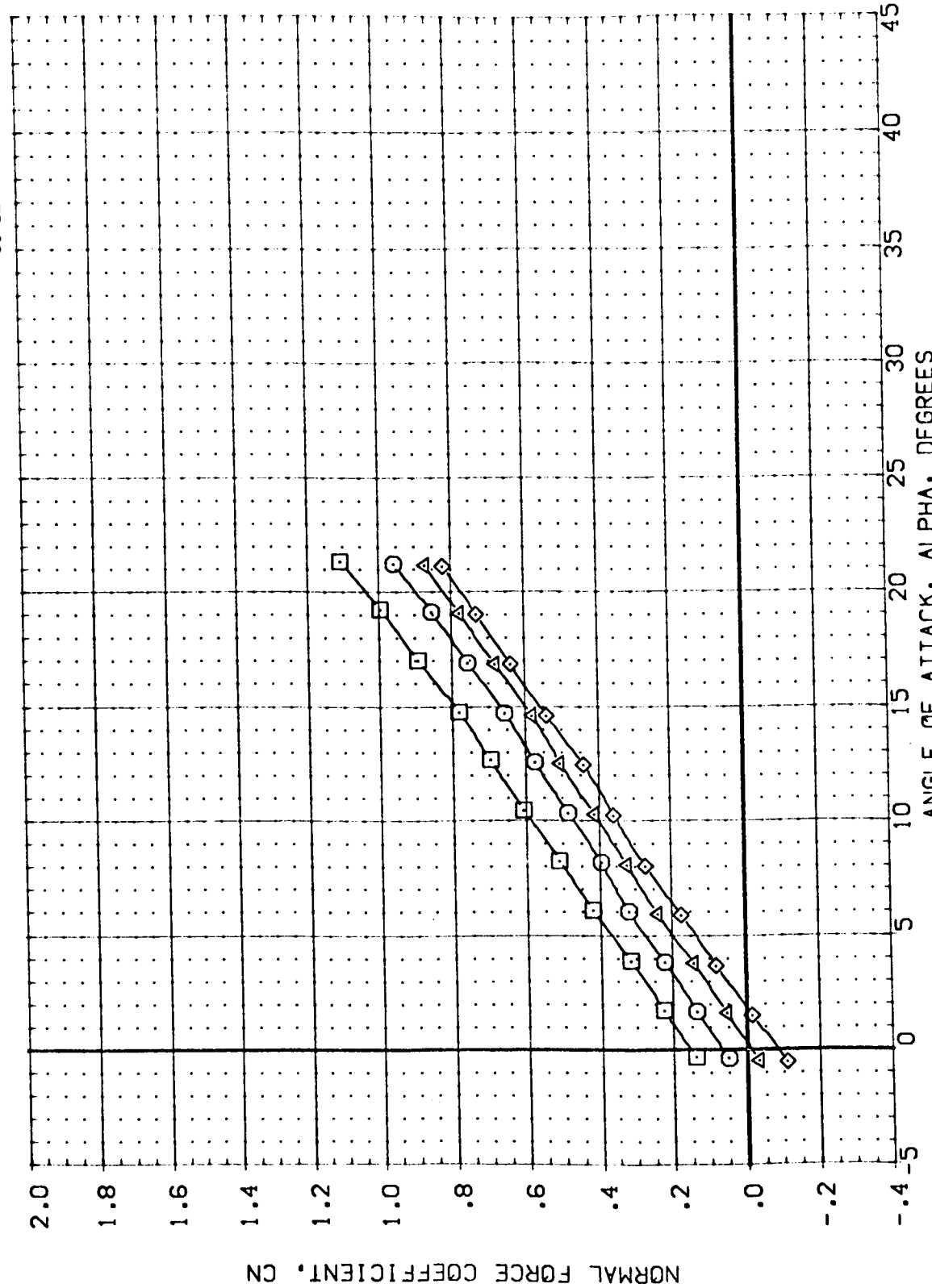


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

COMMACH = 1.95

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPCRBK	BDFLAP	REFERENCE INFORMATION
(F87548)	MSFC 574(CA48) CRB 139	.000	.000	999.990	.000	SREF 2690.0000
(F87560)	MSFC 574(CA48) CRB 139	.000	.000	999.990	13.750	LREF 474.8000
(F87564)	MSFC 574(CA48) CRB 139	.000	.15.000	999.990	-14.250	BREF 936.0000
(F87562)	MSFC 574(CA48) CRB 139	.000	-20.000	999.990	.000	XMRP 838.7000
						YMRP .0000
						ZMRP .0000
						SCALE .0010

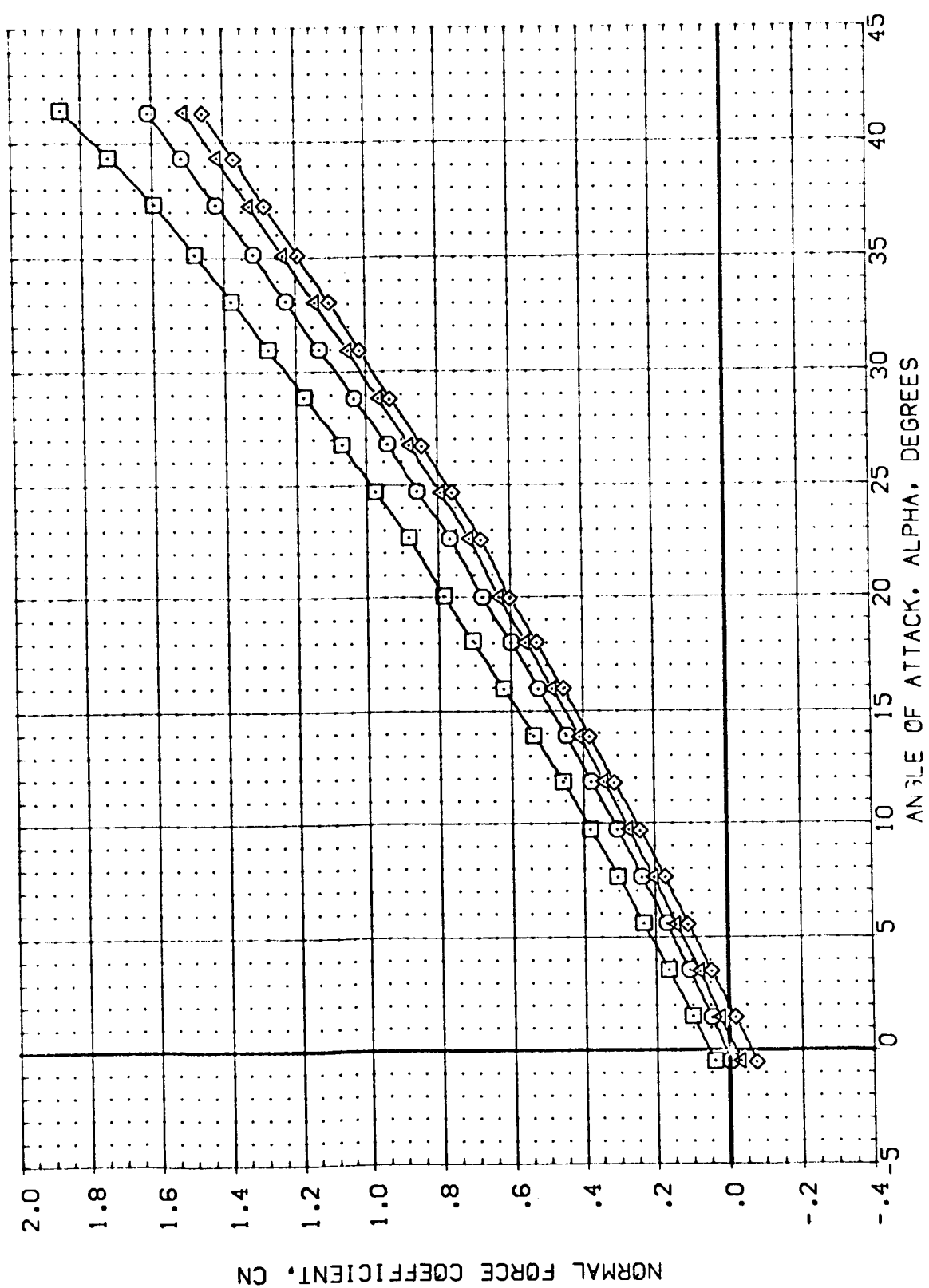


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(M)MACH = 2.99

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDRBK	BCFLAP	REFERENCE INFORMATION	SCALE
(F87548)	MSFC 574(CA48) CRB 139	.000	.000	999.999	.000	SREF 2690.0000	SC.F.T.
(F87560)	MSFC 574(CA48) CRB 139	.000	15.000	999.999	.750	LREF 474.8000	N.
(F87562)	MSFC 574(CA48) CRB 139	.000	-40.000	999.999	14.250	BREF 936.7000	N.
(F87562)	MSFC 574(CA48) CRB 139	.000	-20.000	999.999	.000	XMRB 838.7000	N.
						VMRB .0000	N.
						ZMRB .0000	N.
						SCALE .0040	

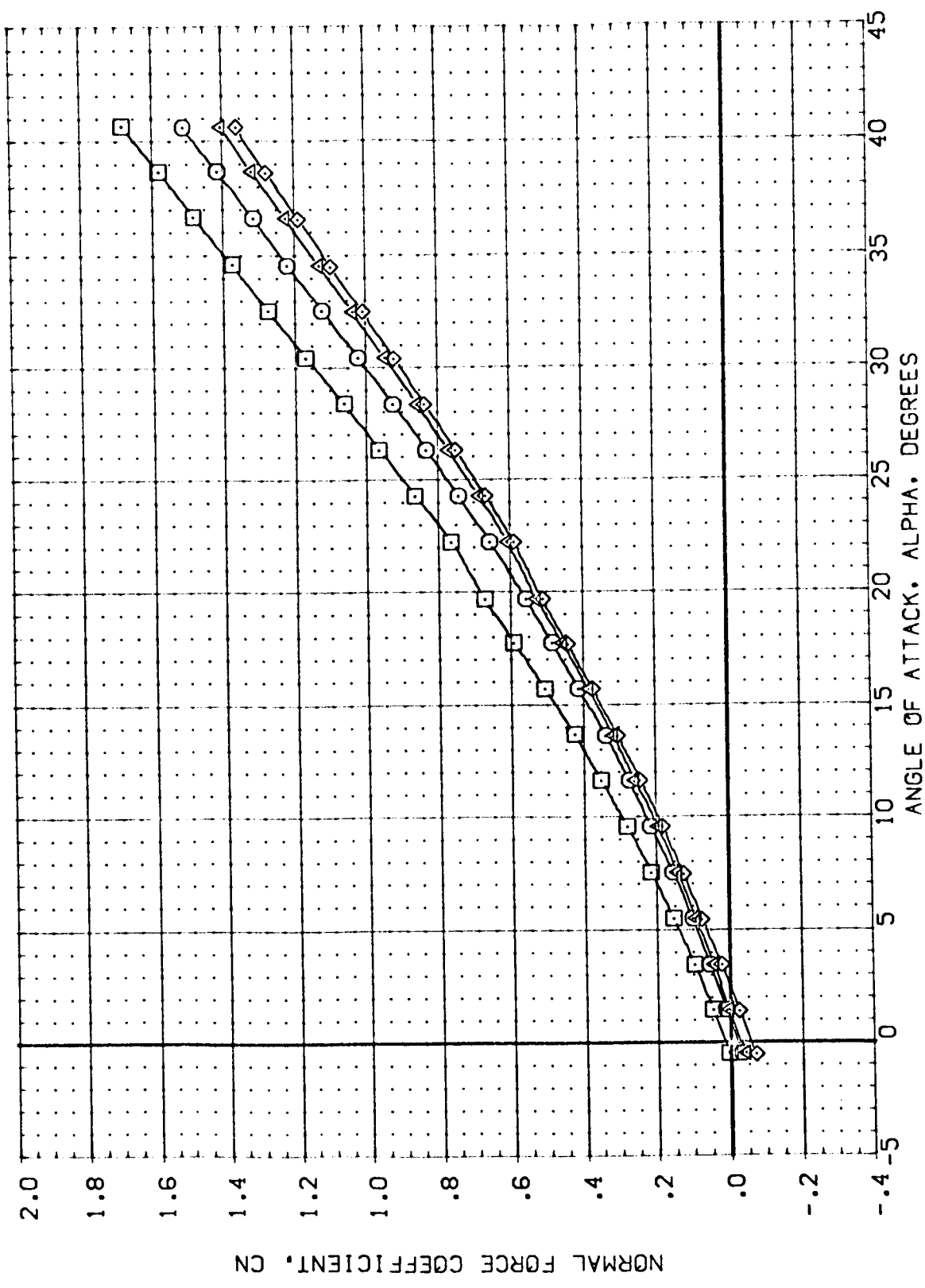


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

CEMACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87568) MSFC 574(CA48) CR3 139
 (F87569) MSFC 574(CA48) CR3 139
 (F87564) DATA NOT AVAILABLE
 (F87562) MSFC 574(CA48) CR3 139

BETA ELEVTR SPOBRK BOFLAP
 .000 .000 999.999 .000
 .000 15.000 999.999 13.750
 .000 -40.000 999.999 -14.250
 .000 -20.000 999.999 .000

REFERENCE INFORMATION
 SREF 2690.0000 SC.F.T.
 REF 474.8000
 BREF 936.5000
 XMRP 838.7000
 YMRP .0000
 ZMRP .0000
 SCALE .0040

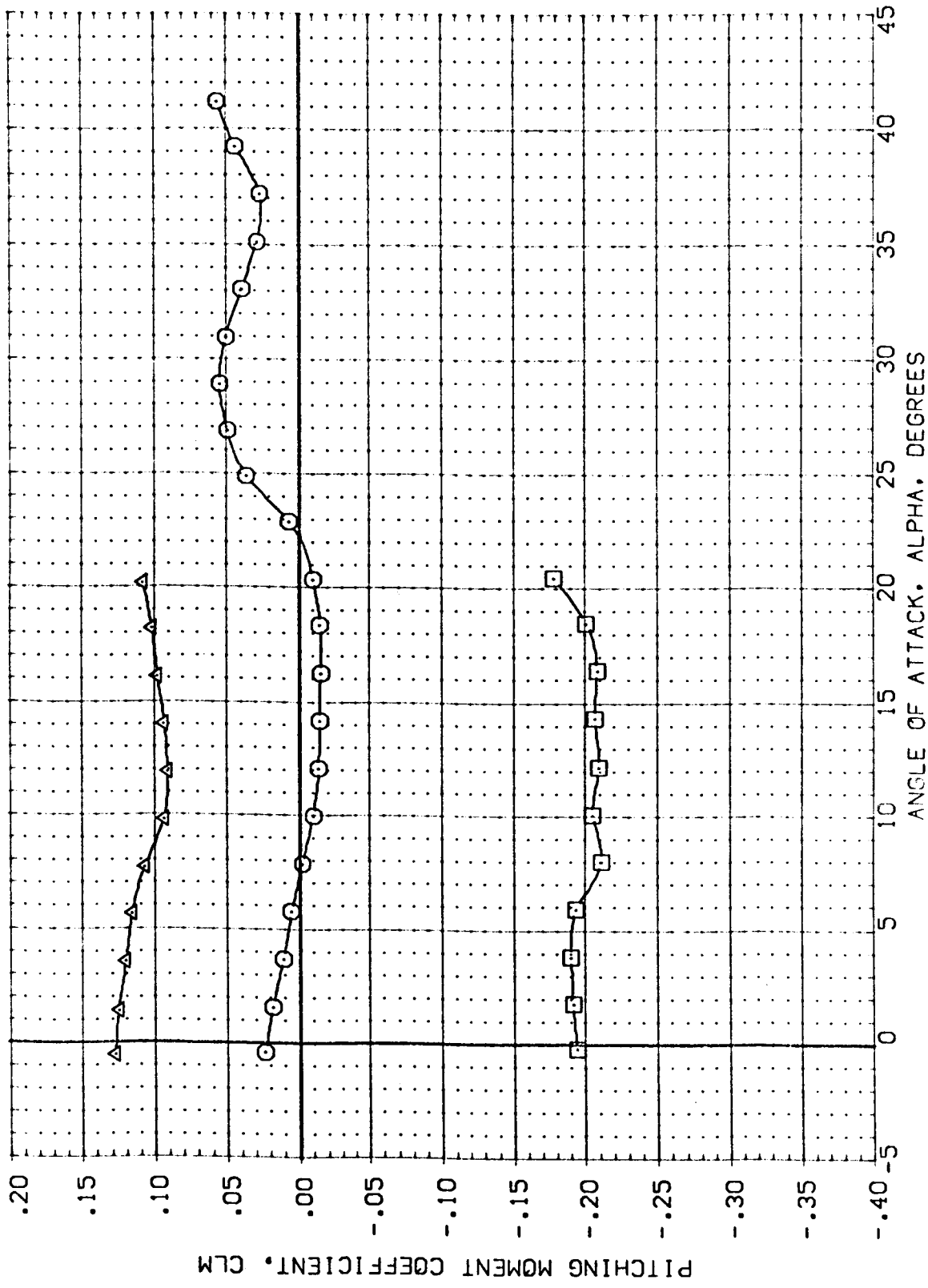


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(A)MACH = .60

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87548) MSFC 574(CA48) CR3 139
 (F87560) MSFC 574(CA48) CR3 139
 (F87564) DATA NOT AVAILABLE
 (F87562) MSFC 574(CA48) CR3 139

BETA
 .000
 .000
 .000
 .000
 .000

ELEVTR
 .000
 .000
 15.000
 -40.000
 -20.000

SPOGRK
 999.999
 999.999
 999.999
 999.999
 999.999

SOFLAP
 .000
 .000
 13.750
 -14.250
 .000

REFERENCE INFORMATION
 SREF 2690.0000 SC.F.
 LREF 474.8000
 BRFL 936.7000
 XMRP 838.7000
 YMRP .0000
 ZMRP .0000
 SCALE .0040

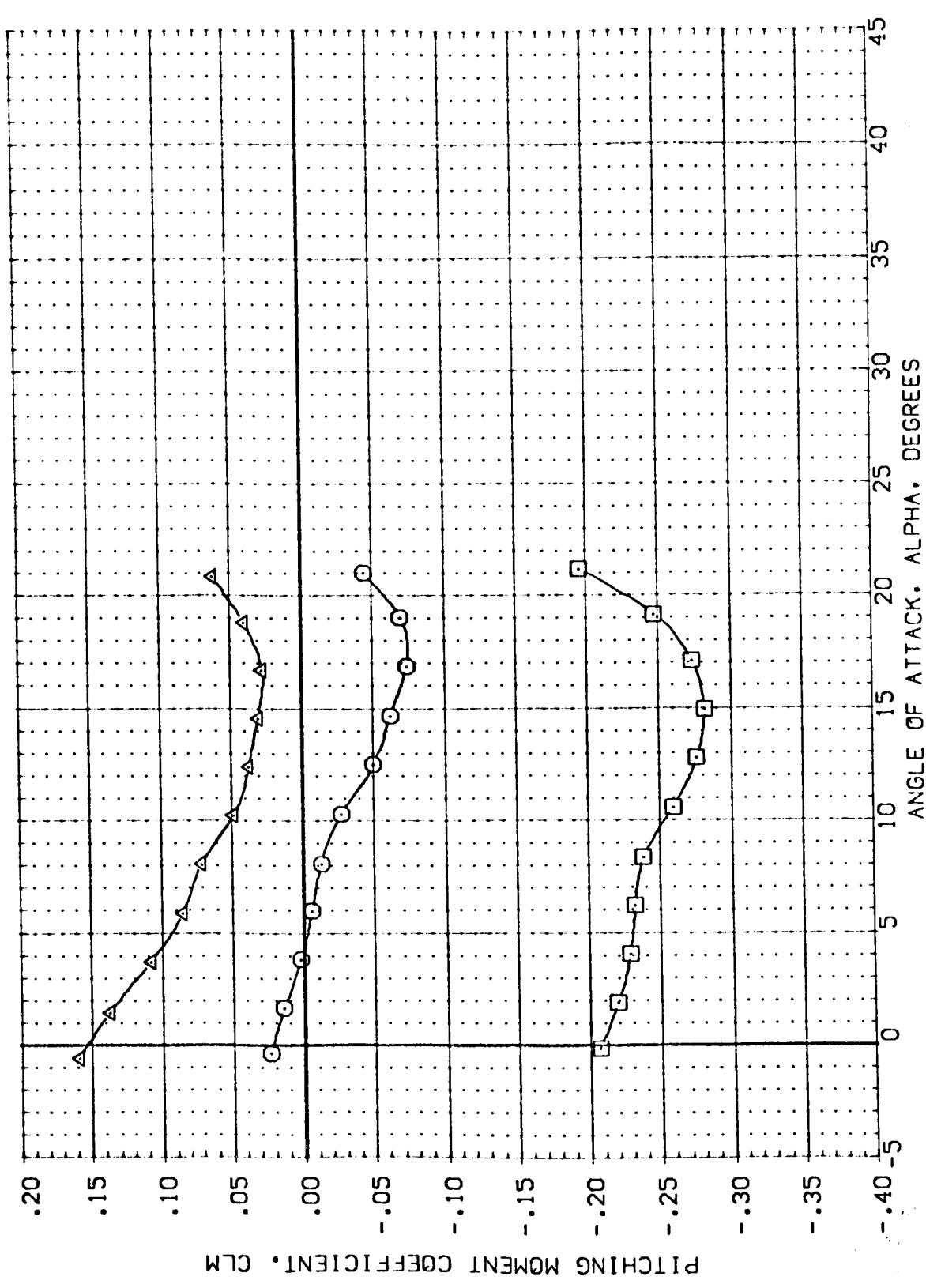


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(B)MACH = .90

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87S48) MSEC 574(CA48) CRB 139
 (F87S60) MSEC 574(CA48) CRB 139
 (F87S64) MSEC 574(CA48) CRB 139
 (F87S62) MSEC 574(CA48) CRB 139

BETA ELEVTR SPCBRK BOFLAP REFERENCE INFORMATION
 .000 .000 999.999 .000 SREF 7690.0000 SC.F.T.
 .000 .000 999.999 .000 LREF 474.8000 N.
 .000 15.000 999.999 13.750 BREF 936.7000 IN.
 .000 -40.000 999.999 -14.250 XMRP 838.7000 IN.
 .000 -20.000 999.999 .000 YMRP .0000 IN.
 .000 .000 .000 .000 ZMRP .0000 IN.
 .000 .000 .000 .000 SCALE .0040

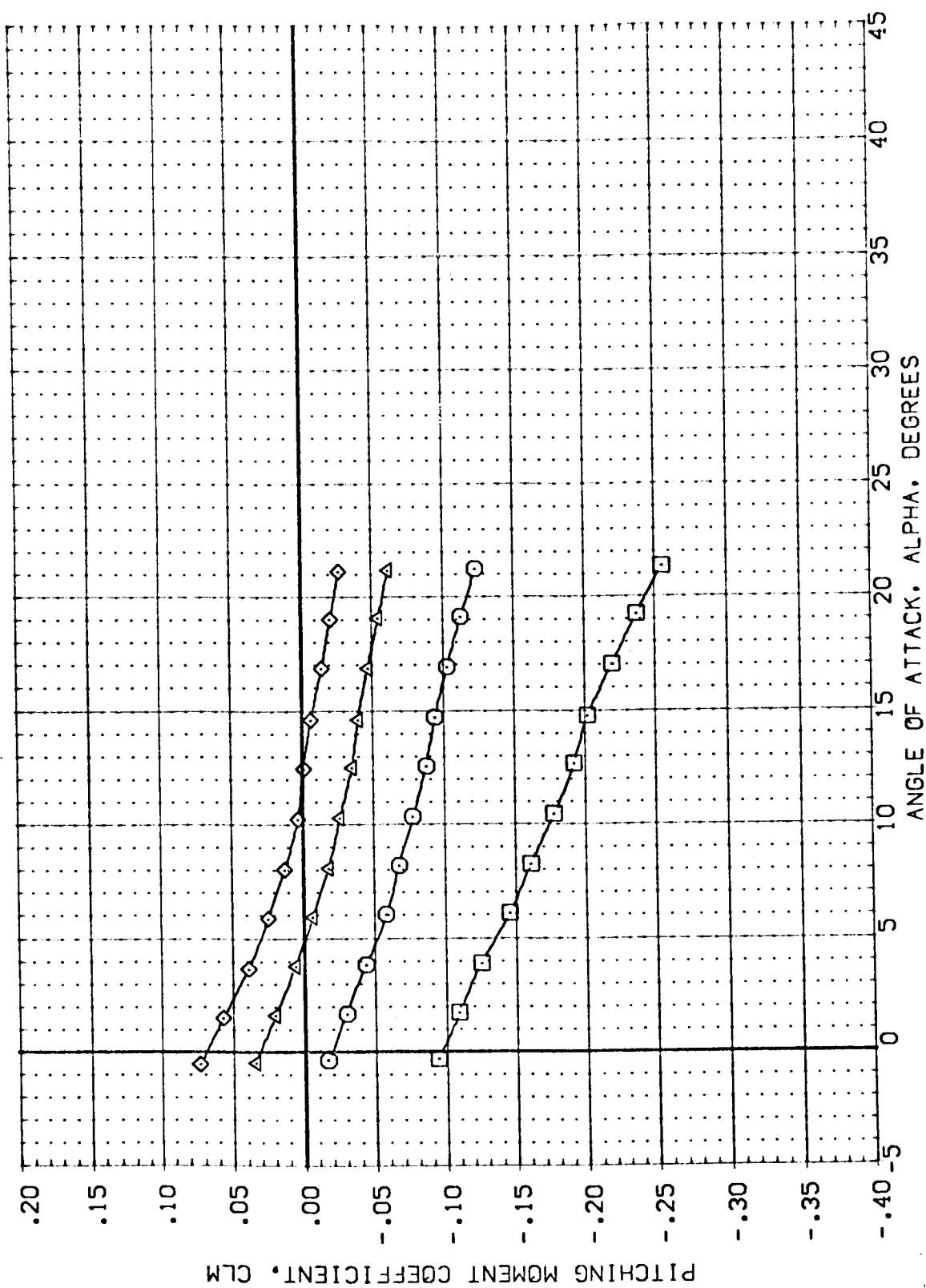


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(C)MACH = :.95

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(F87S48)	MSC 574(CA48) CRB 139	.000	.000	999.990	.000	SREF 2690.0000 SC.F.T.
(F87S60)	MSC 574(CA48) CRB 139	.000	15.000	999.990	13.750	LREF 474.8000
(F87S64)	MSC 574(CA48) CRB 139	.000	-40.000	999.990	-14.250	BREF 836.7000
(F87S62)	MSC 574(CA48) CRB 139	.000	-20.000	999.990	.000	XREF 838.7000
						YREF .0000
						ZREF .0000
						SCALE .0010

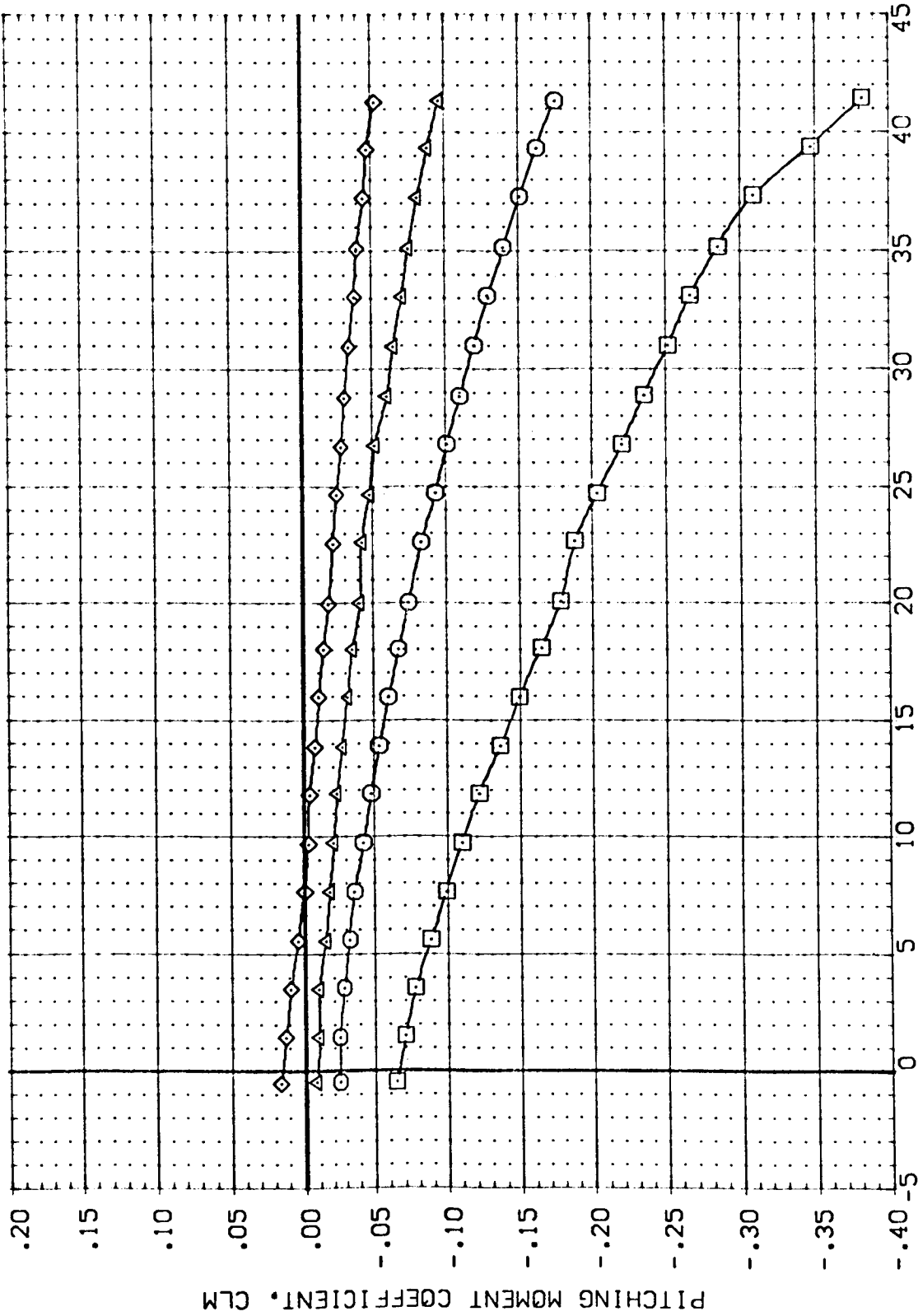


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87548) O 574(CA48) CR3 | 39
 (F87560) X 574(CA48) CR3 | 39
 (F87564) X 574(CA48) CR3 | 39
 (F87562) X 574(CA48) CR3 | 39

BETA ELEVTR SPDGRK BOFLAP REFERENCE INFORMATION
 .000 .000 999.999 .000 SREF 2690.0000 SC.FT.
 .000 .000 999.999 .000 LREF 474.8000
 .000 .000 999.999 .000 BREF 936.7000
 .000 .000 999.999 .000 XREF 838.7000
 .000 .000 999.999 .000 YREF .0000
 .000 .000 999.999 .000 ZREF .0000
 .000 .000 999.999 .000 SCALE .0010

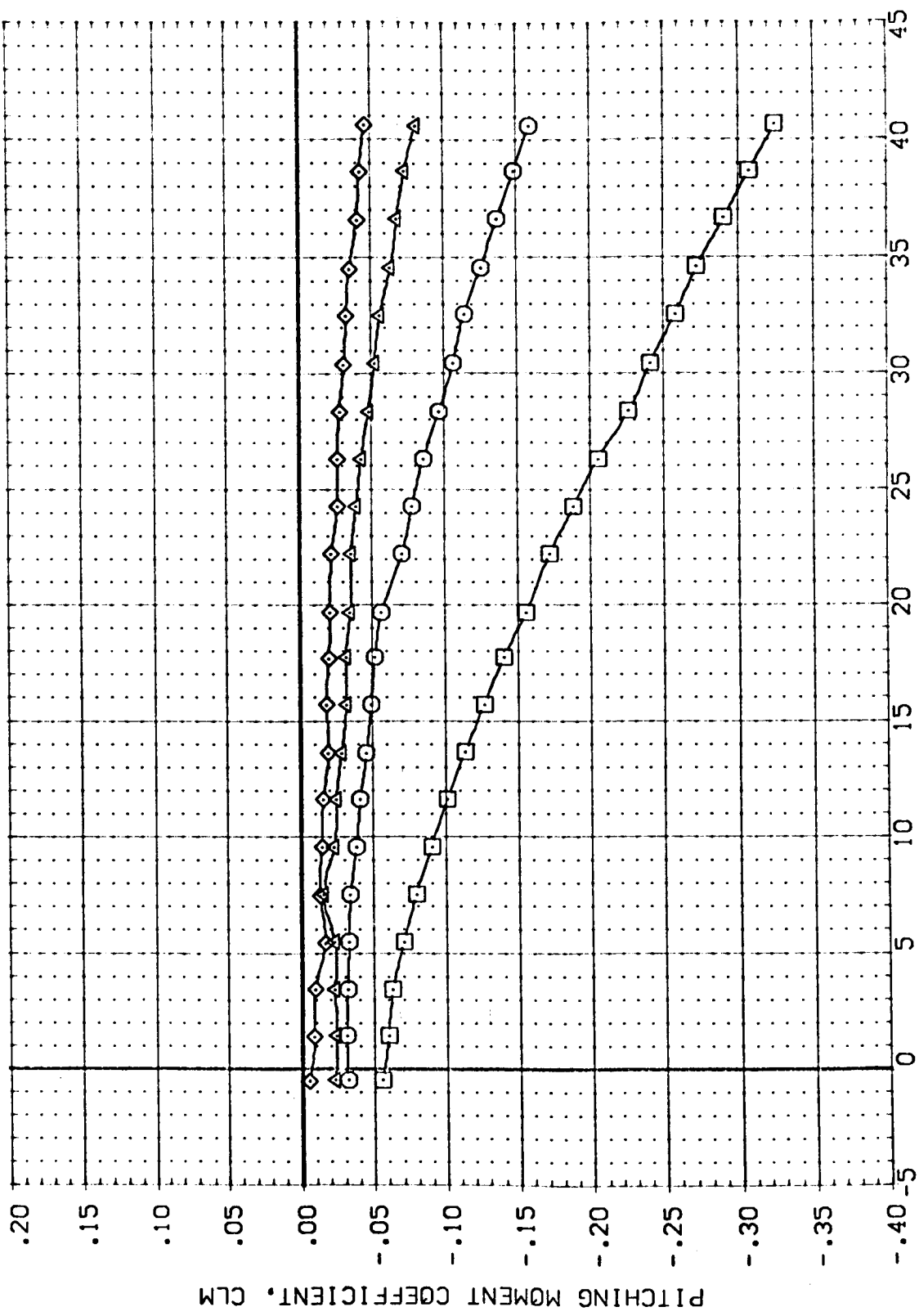


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(F)MACH = 4.96

4-4 L L

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(F87548)	MSFC 574(OA48) CRB 139	.000	.000	999.990	.000	SREF 2690.0000 SC.F.T.
(F87560)	MSFC 574(OA48) CRB 139	.000	15.000	999.990	13.750	LREF 474.8000
(F87562)	DATA NOT AVAILABLE	.000	-40.000	999.990	-14.250	BREF 936.7000
	MSFC 574(OA48) CRB 139	.000	-20.000	999.990	.000	XMRP 838.7000
						ZMRP .0000
						SCALE .0040

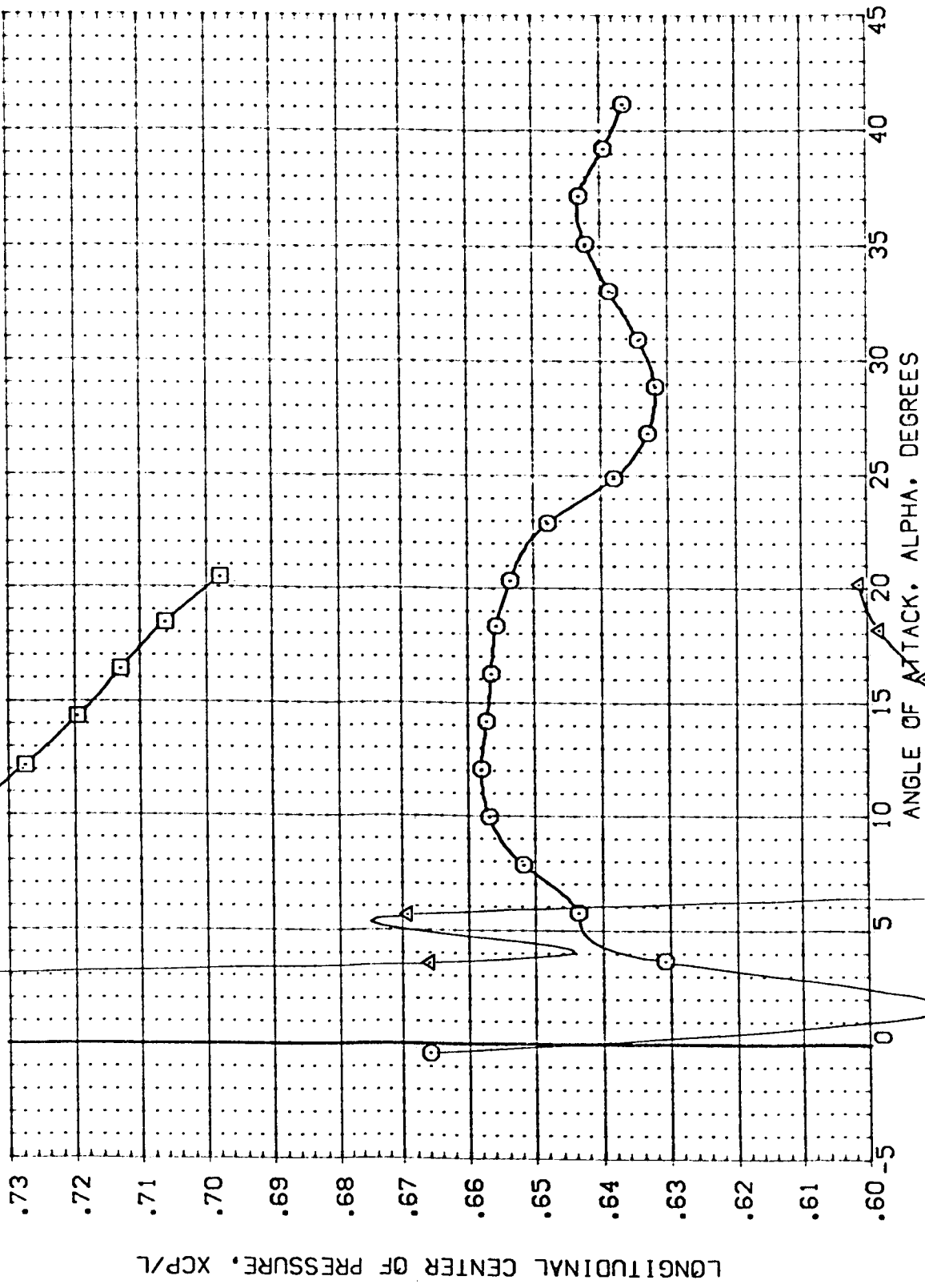


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(M)MACH = .60

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87S48) MSFC 574(CA48) CRB 139
 (F87S62) MSFC 574(CA48) CRB 139
 (F87S61) DATA NOT AVAILABLE
 (F87S62) MSFC 574(CA48) CRB 139

BETA
 .000
 .000
 .000
 .000
 .000
 .000

ELEVTR
 .000
 .000
 15.000
 -40.000
 -20.000

SPOBRK
 999.990
 999.990
 999.990
 999.990
 999.990

BOFLAP
 .000
 13.750
 -14.250
 .000

SCALE
 .0010
 .0010
 .0010
 .0010
 .0010
 .0010

REFERENCE INFORMATION
 SREF 2690.0000 SC.F.T.
 LREF 474.8000
 BREF 936.7000
 XMRP 838.7000
 YMRP .0000
 ZMRP .0000

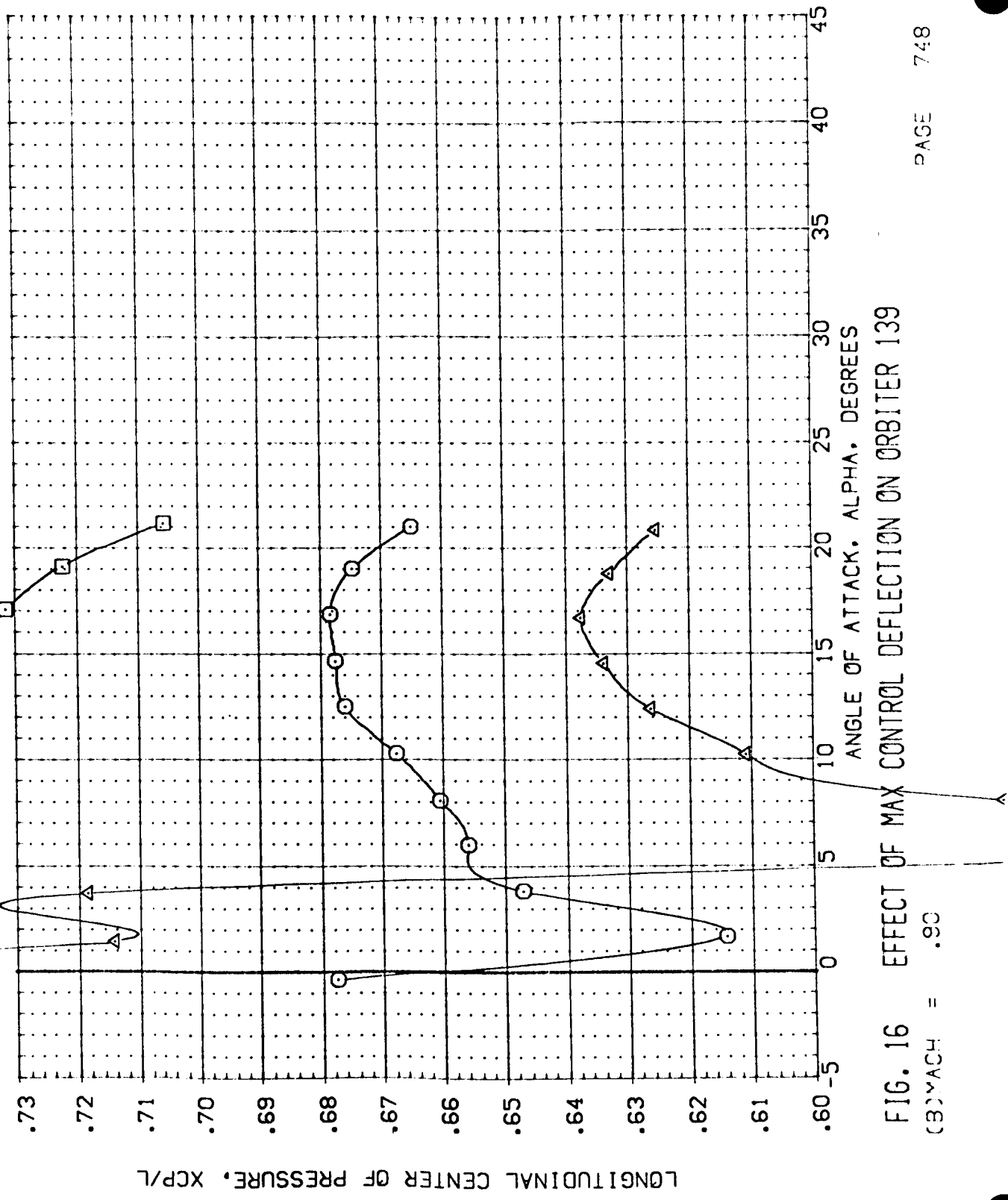


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(B)YACH = .90



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(F87548) (F87560) (F87561) (F87562)

MSFC 574(CA48) CRB 139
 MSFC 574(CA48) CRB 139
 DATA NOT AVAILABLE
 MSFC 574(CA48) CRB 139

BETA

.000
 .000
 .000
 .000

ELEVTR

.000
 15.000
 -40.000
 -20.000

SPOBRK

999.990
 999.990
 999.990
 999.990

BOFLAP

.000
 13.750
 -14.250
 .000

REFERENCE INFORMATION

SREF 2690.0000 SG.FT.
 LREF 474.8000
 BREF 936.7000
 XMRP 838.7000
 YMRP .0000
 ZMRP .0000
 SCALE .0010

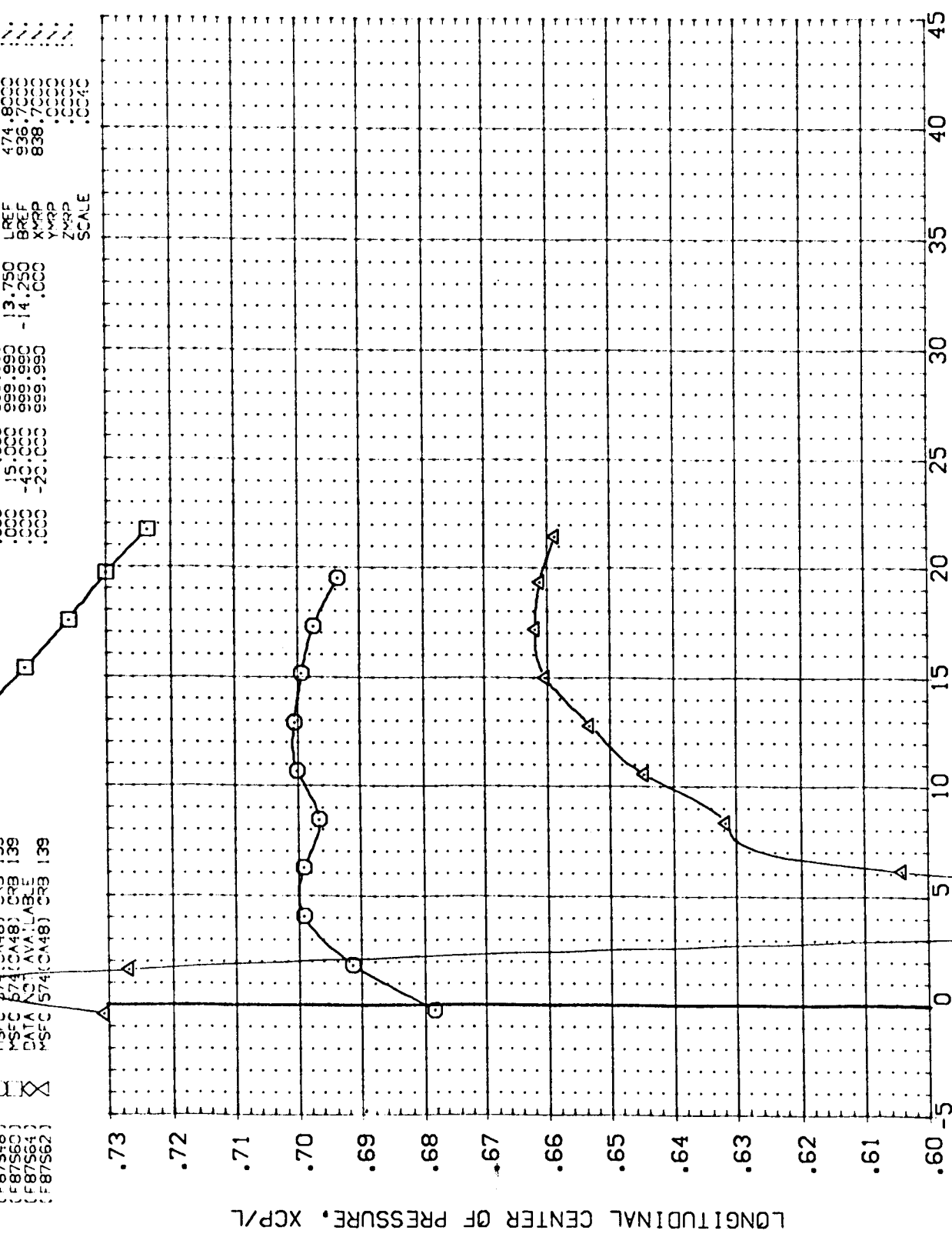


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(COM)MACH = 1.20

DATA SET SYMBOL CONFIGURATION DESCRIPTION

{F87548}	MSFC 574(CA48) CR3 139
{F87560}	MSFC 574(CA48) CR3 139
{F87564}	MSFC 574(CA48) CR3 139
{F87562}	MSFC 574(CA48) CR3 139

BETA

.000
.000
.000
.000
.000
.000

ELEVTR SPOBRK BCF LAP

.000	999.990	.000
15.000	999.990	13.750
-40.000	999.990	-14.250
-20.000	999.990	.000

REFERENCE INFORMATION

SREF	2690.0000	SC.F.T.
LREF	474.8000	SC.F.T.
BREF	936.7000	SC.F.T.
XWRP	838.7000	SC.F.T.
YWRP	.0000	SC.F.T.
ZWRP	.0000	SC.F.T.
SCALE	.0040	SC.F.T.

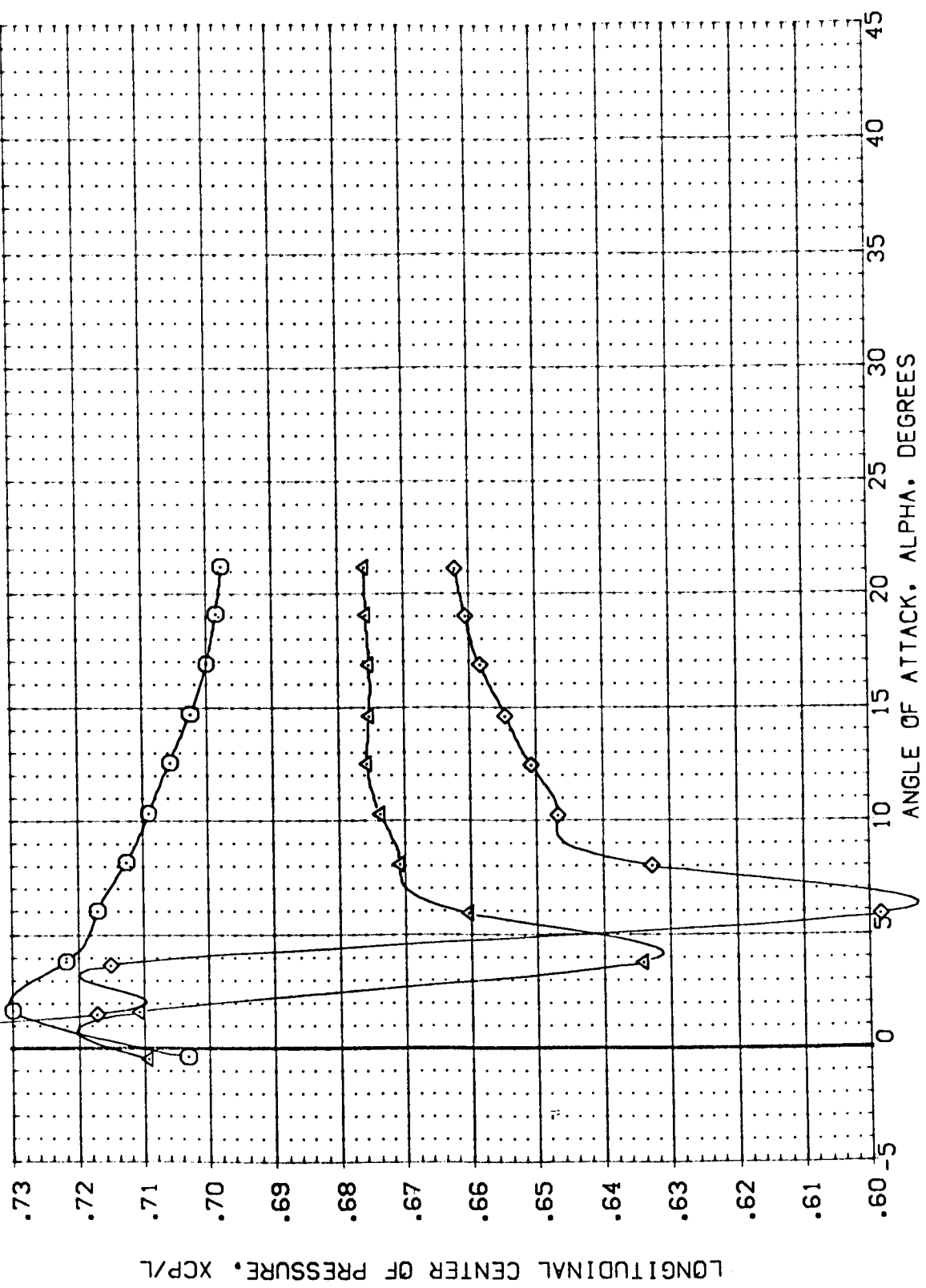


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

{ } MACH = 1.95

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(F87S48)	MSFC 574(CA48)	CRB 139
(F87S51)	MSFC 574(CA48)	CRB 138
(F87S52)	MSFC 574(CA48)	CRB 137
(F87S53)	MSFC 574(CA48)	CRB 136
(F87S54)	MSFC 574(CA48)	CRB 135
(F87S55)	MSFC 574(CA48)	CRB 134
(F87S56)	MSFC 574(CA48)	CRB 133
(F87S57)	MSFC 574(CA48)	CRB 132
(F87S58)	MSFC 574(CA48)	CRB 131
(F87S59)	MSFC 574(CA48)	CRB 130

BETA ELEVTR SPOBRK BOFLAP REFERENCE INFORMATION SQ.F.T.

.000	.000	999.990	.000	SREF	2690	.0000
.000	15.000	999.990	13.750	LREF	474	.8000
.000	-40.000	999.990	-14.250	BREF	936	.7000
.000	-20.000	999.990	.000	XMRP	838	.7000
				VMRP		.0000
				ZMRP		.0000
				SCALE		.0040

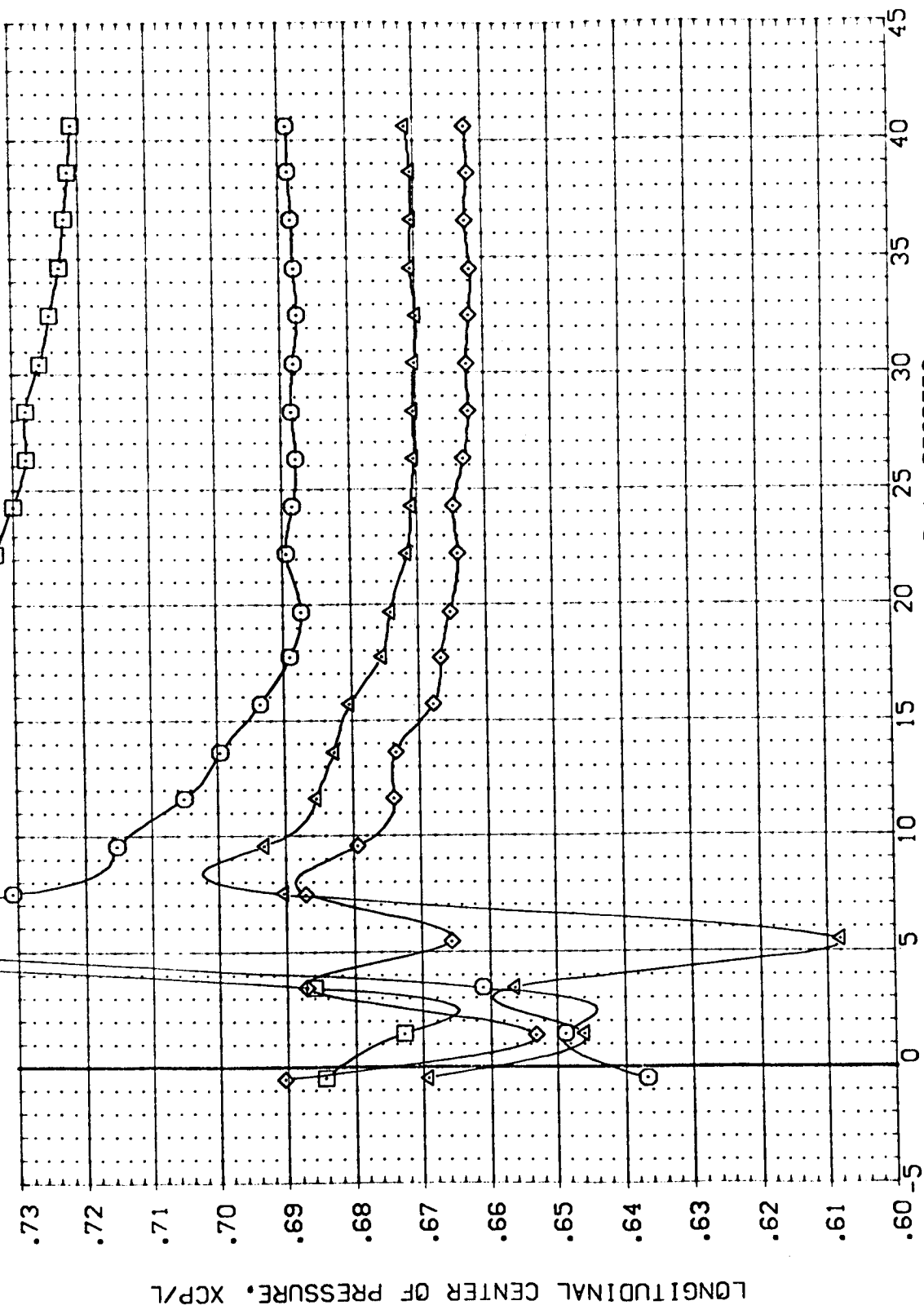


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(F)MACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87548) MSFC 574(CA48) CRB 139
 (F87560) MSFC 574(CA48) CRB 139
 (F87564) DATA NOT AVAILABLE
 (F87562) MSFC 574(CA48) CRB 139

BETA ELEVTR SPOBRK BDFLAP REFERENCE INFORMATION SQ.FT.
 .000 .000 999.990 .000 SREF 2690.0000
 .000 15.000 999.990 13.750 LREF 474.8000
 .000 -40.000 999.990 -14.250 BREF 936.7000
 .000 -20.000 999.990 .000 XMRP 838.7000
 .000 .000 .000 ZMRP .0000
 .000 .000 .000 SCALE .0040

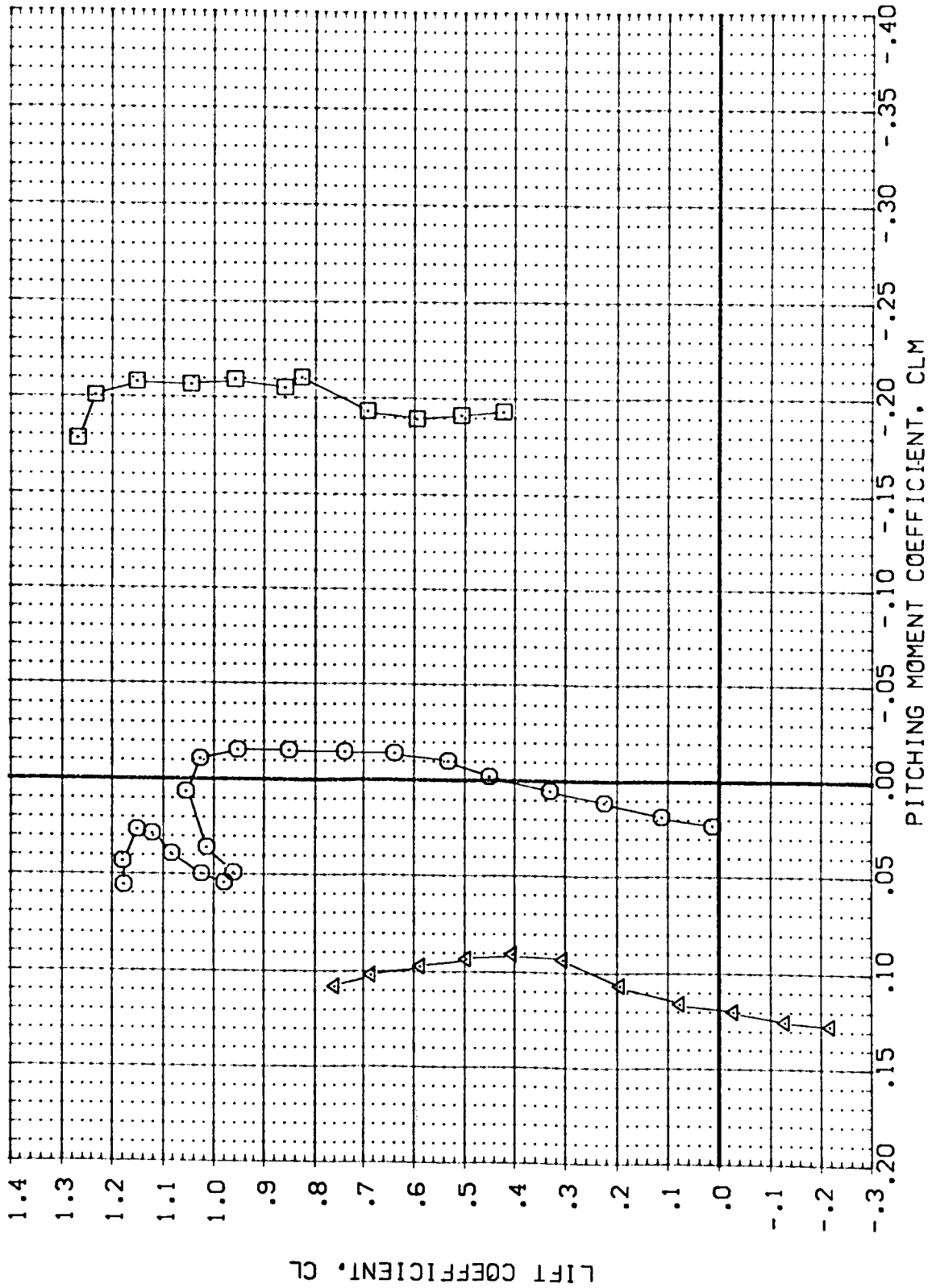


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BDELAP	REFERENCE INFORMATION
{+87548}	MSFC 574(CA48) CR8 139	.000	.000	999.990	.000	SREF 2690.0000
{-87560}	MSFC 574(CA48) CR8 139	.000	15.000	999.990	13.750	LREF 474.8000
{-87564}	DATA NOT AVAILABLE	.000	-40.000	999.990	-14.250	BREF 936.7000
{-87562}	MSFC 574(CA48) CR8 139	.000	-20.000	999.990	.000	XMRP 938.7000
					.000	YMRP .0000
					.000	ZMRP .0000
					.000	SCALE .0040

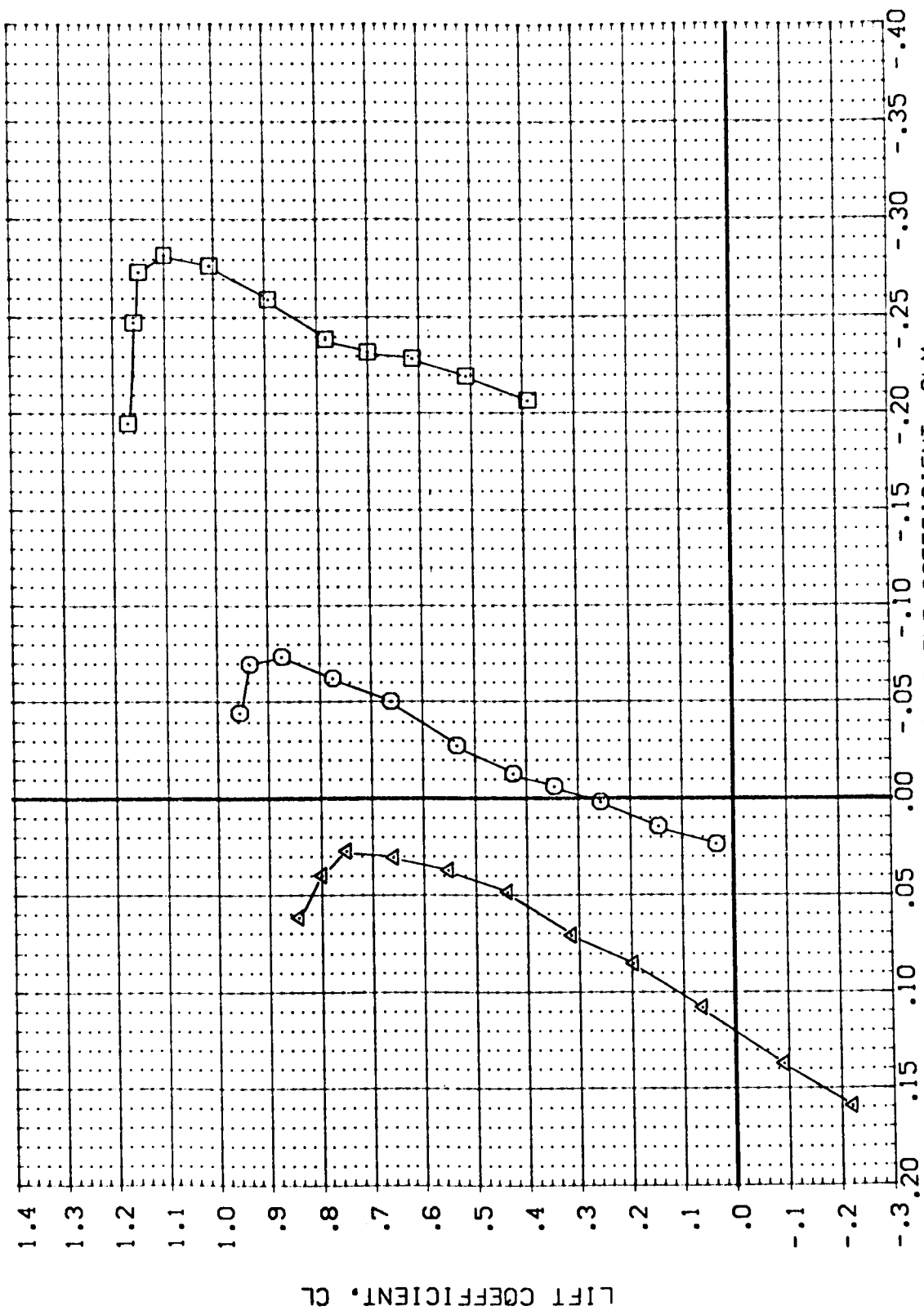


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139
 (B)MACH = .90



DATA SET SYMBOL: Q X
 (F87548) MSEC 574(OA48) CRB 139
 (F87560) MSEC 574(OA48) CRB 139
 (F87564) DATA NOT AVAILABLE
 (F87562) MSEC 574(OA48) CRB 139

CONFIGURATION DESCRIPTION

BETA ELEVTR SPOBRK BOFLAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SREF 2690.0000 SQ.FT.
 .000 15.000 999.990 13.750 LREF 474.8000 IN.
 .000 -40.000 999.990 -14.250 BREF 936.7000 IN.
 .000 -20.000 999.990 .000 XMRP 838.7000 IN.
 .000 .000 .000 .000 YMRP .0000 IN.
 .000 .000 .000 .000 ZMRP .0000 IN.
 SCALE .0040

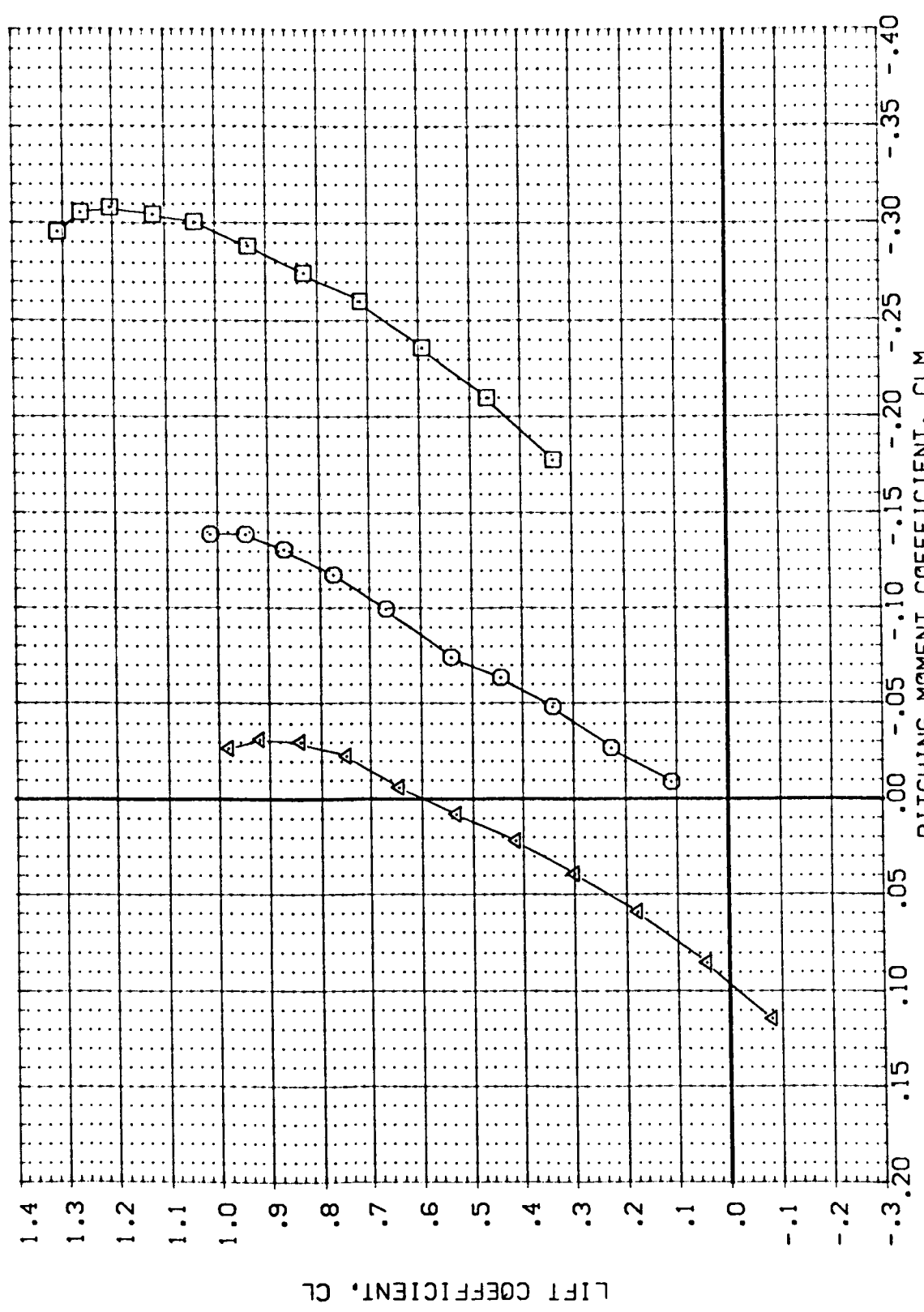


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87S48)	MSFC 574(OA48) CR3 139	.000	.000	999.990	.000	SREF 2690.0000 SC.F.T.
(F87S62)	MSFC 574(OA48) CR3 139	.000	15.000	999.990	13.750	LREF 474.8000
(F87S64)	MSFC 574(OA48) CR3 139	.000	-40.000	999.990	-14.250	BREF 935.7000
(F87S62)	MSFC 574(OA48) CR3 139	.000	-20.000	999.990	.000	XMRP 838.7000
		.000				ZMRP .0000
		.000				SCALE .0040

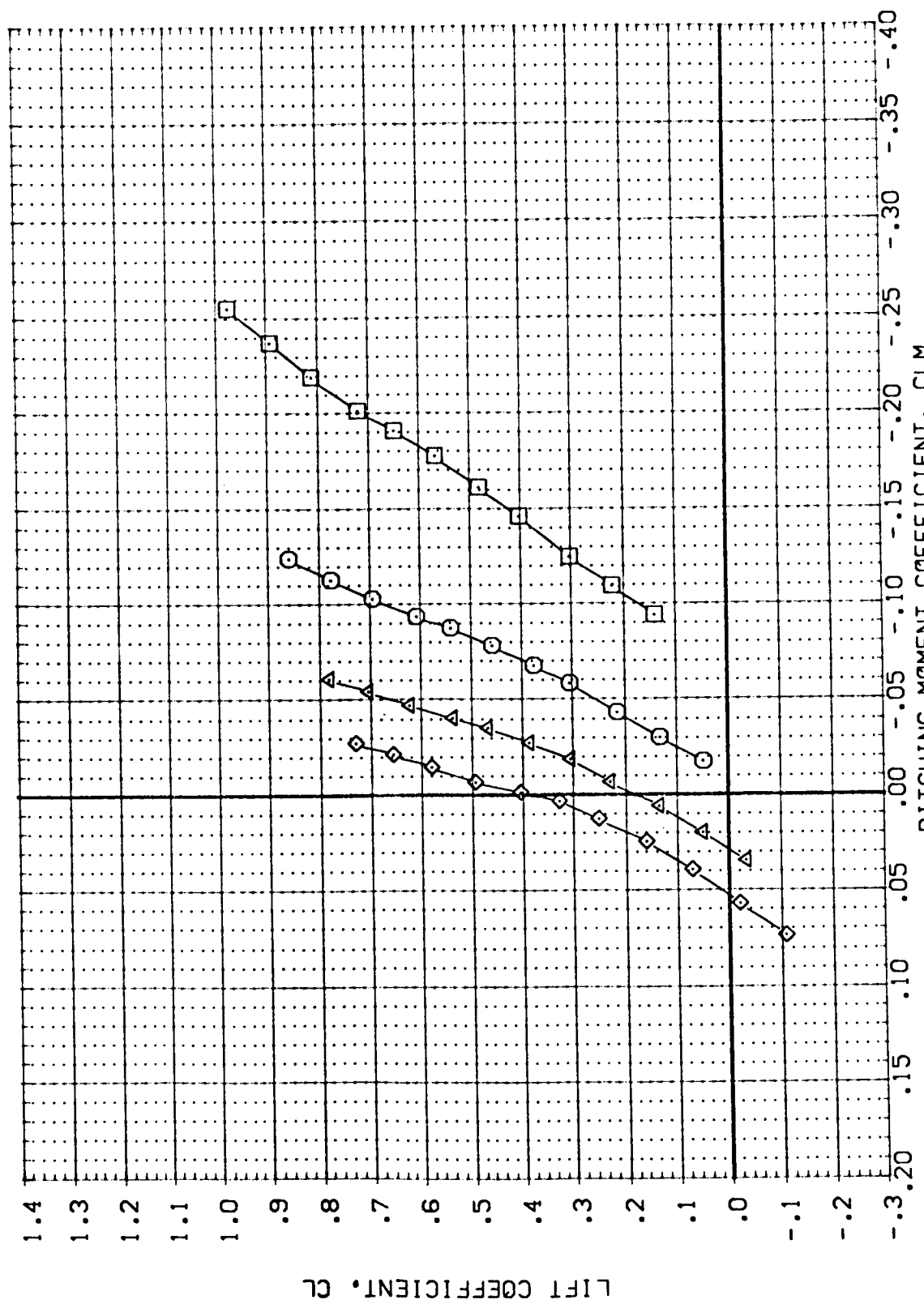


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(D)MACH = 1.95

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
{F87S48}	MSEC 574(CA48) CRB 139	.000	.000	999.990	.000	SREF 2699.0000
{F87S50}	MSEC 574(CA48) CRB 139	.000	15.000	999.990	13.750	LREF 474.8000
{F87S52}	MSEC 574(CA48) CRB 139	.000	-40.000	999.990	-14.250	BREF 936.7000
		.000	-20.000	999.990	.000	XMRP 836.7000
		.000				YMRP .0000
		.000				ZMRP .0000
		.000				SCALE .0040

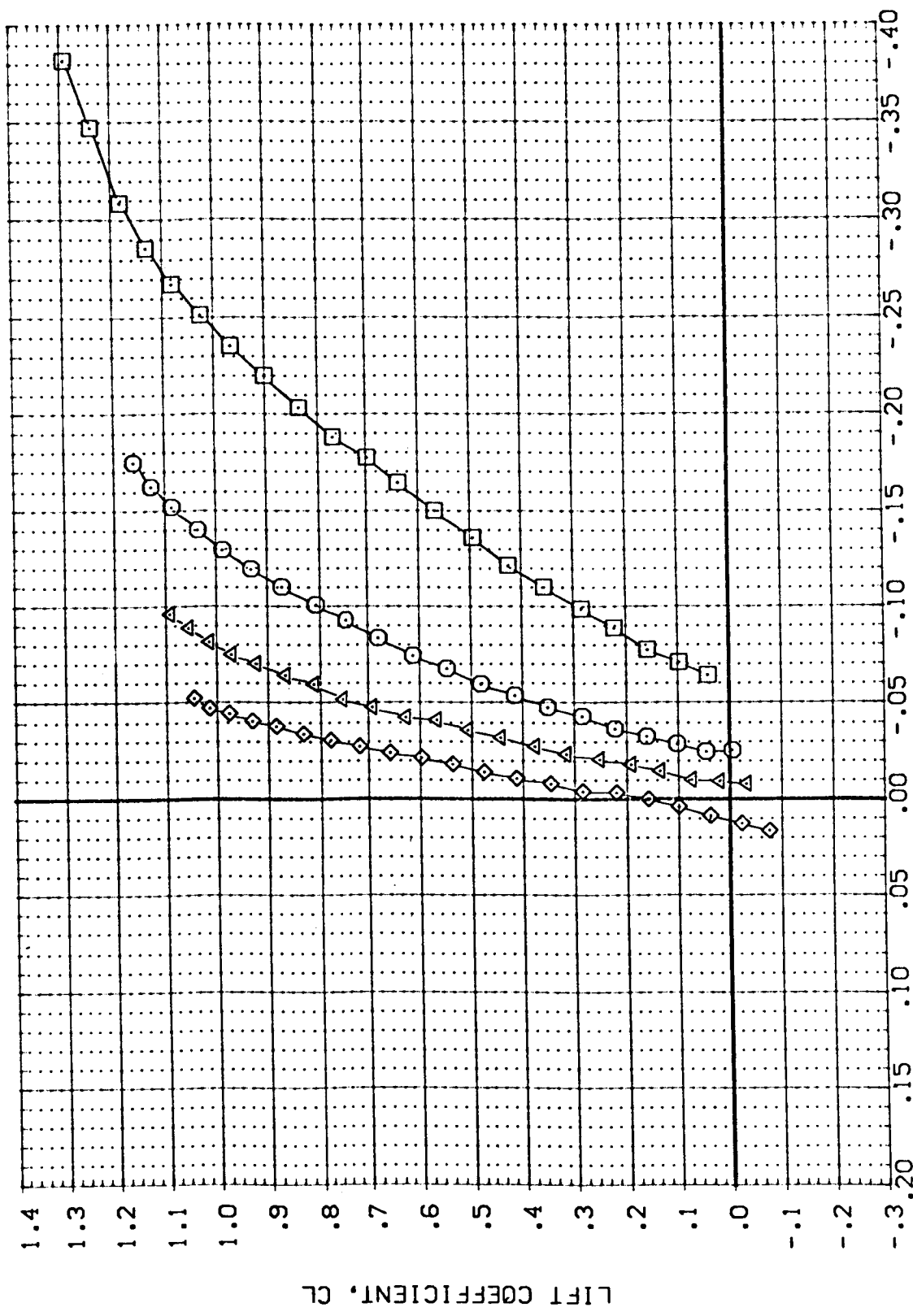


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(E)MACH = 2.99

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(F87548)	WSC 574(CA48) ORB 139	.000	.000	999.990	.000	SREF 2690 0000 SC.F.T.
(F87560)	WSC 574(CA48) ORB 139	.000	15.000	999.990	13.750	LREF 474 8000
(F87564)	WSC 574(CA48) ORB 139	.000	-40.000	999.990	-14.250	BREF 936 8000
(F87562)	WSC 574(CA48) ORB 139	.000	-20.000	999.990	.000	YMRP 838 7000
						ZMRP 0000
						SCALE 10000

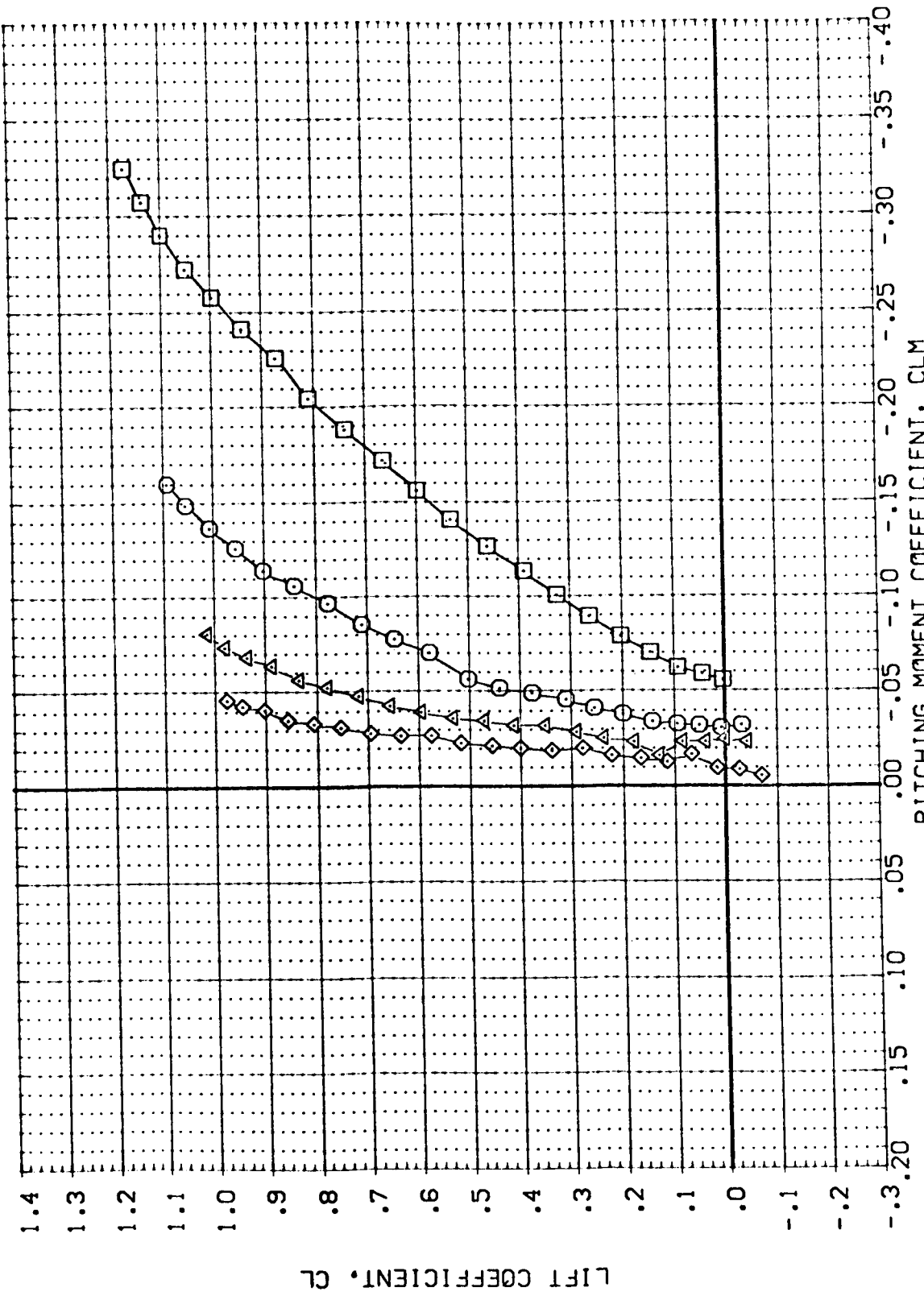


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(F)MACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87548) MSFC 574(CA48) CRB 139
 (F87560) MSFC 574(CA48) CRB 139
 (F87564) DATA NOT AVAILABLE
 (F87562) MSFC 574(CA48) CRB 139

BETA ELEVTR SPDBRK BOFLAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SREF 2690.0000 SQ.F.T.
 .000 15.000 999.990 13.750 LREF 474.8000
 .000 -40.000 999.990 -14.250 BREF 936.7000
 .000 -20.000 999.990 .000 XMRP 838.7000
 .000 .000 .000 YMRP .0000
 .000 .000 .000 ZMRP .0000
 .000 .000 .000 SCALE .0040

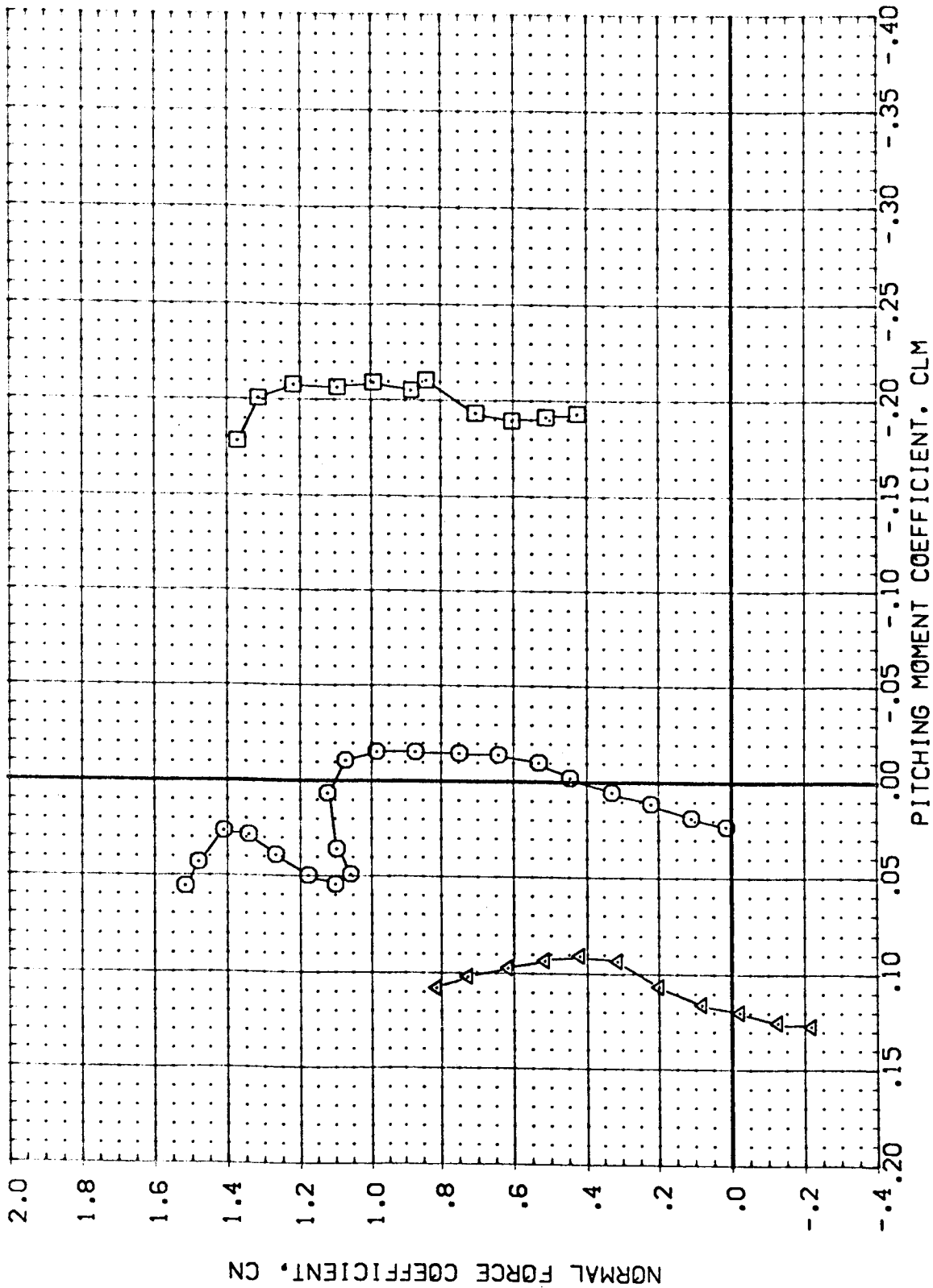


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(A)MACH = .60

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87S48) MSFC 574(CA48) ORB 139
 (F87S63) MSFC 574(CA48) ORB 139
 (F87S64) DATA NOT AVAILABLE
 (F87S62) MSFC 574(CA48) ORB 139

BETA ELEVTR SPDWRK BDFLAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SREF 2690.0000 SQ.FT.
 .000 .000 999.990 .000 LREF 474.8000
 .000 .000 999.990 .000 BREF 936.7000
 .000 .000 999.990 .000 XMRP 838.7000
 .000 .000 999.990 .000 YMRP .0000
 .000 .000 999.990 .000 ZMRP .0000
 .000 .000 999.990 .000 SCALE



FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(B)MACH = .90



DATA SET SYMBOL: (F87S48)
 (F87S60)
 (F87S64)
 (F87S62)

CONFIGURATION DESCRIPTION
 MSFC 574(CA48) CR3 139
 MSFC 574(CA48) CR3 139
 DATA NOT AVAILABLE
 MSFC 574(CA48) CR3 139

BETA: .000
 .000
 .000
 .000
 .000

ELEVTR: .000
 15.000
 -40.000
 -20.000

SPDRBK: 999.990
 999.990
 999.990
 999.990

BOFLAP: .000
 13.750
 -14.250
 .000

REFERENCE INFORMATION
 SREF: 2690.0000
 LREF: 474.8000
 BREF: 936.7000
 XMRP: 838.7000
 YMRP: .0000
 ZMRP: .0000
 SCALE: .0040

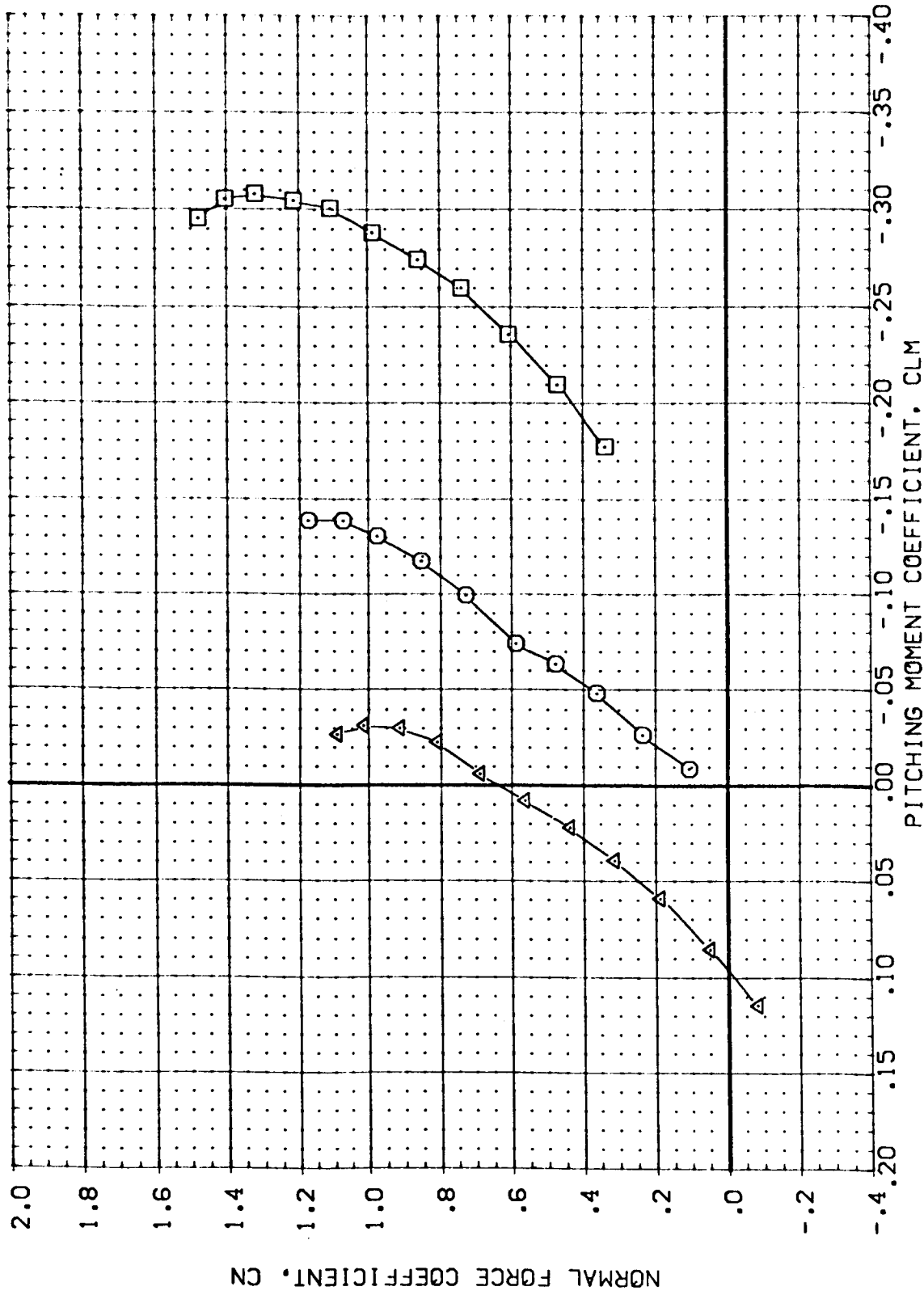


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(C)MACH = 1.20

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOXLAP	REFERENCE INFORMATION
(F87548)	MSEC 574(CA48) CRB 139	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(F87560)	MSEC 574(CA48) CRB 139	.000	15.000	999.990	13.750	LREF 474.8000 IN.
(F87564)	MSEC 574(CA48) CRB 139	.000	-40.000	999.990	-14.750	BREF 936.7000 IN.
(F87562)	MSEC 574(CA48) CRB 139	.000	-20.000	999.990	.000	XMRP 838.7000 IN.
						YMRP .0000
						ZMRP .0000
						SCALE 1.0040

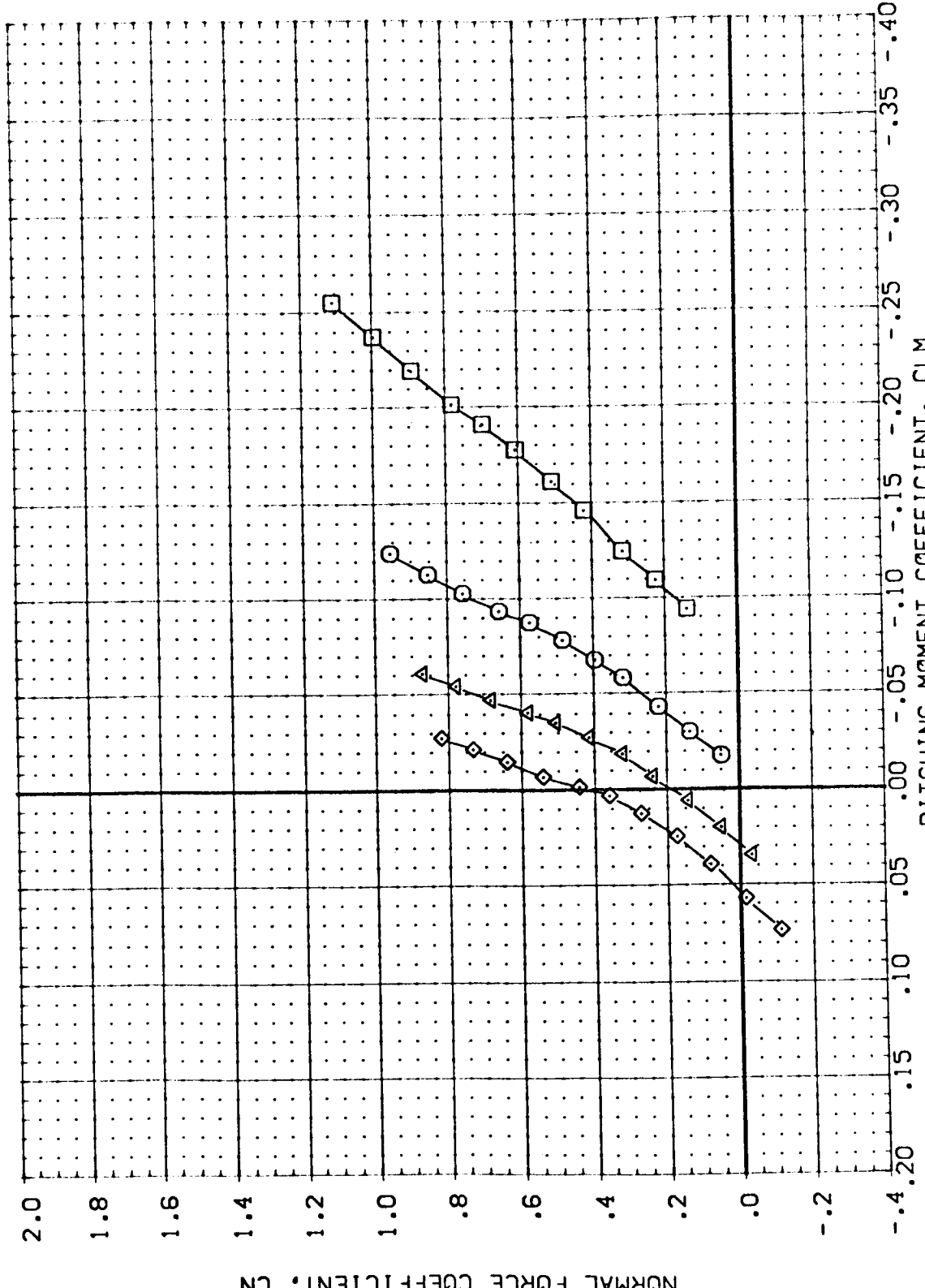


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(C)YACH = 1.95

DATA SET SYMBO: (F87548) (F8756C) (F87594) (F87592)

CONFIGURATION DESCRIPTION
 MSFC 574(CA48) CRB 139
 MSFC 574(CA48) CRB 139
 MSFC 574(CA48) CRB 139
 MSFC 574(CA48) CRB 139

BETA ELEVTR SPCBRK BDFLAP
 .000 999.990
 .000 15.000
 .000 -43.000
 .000 -22.000

REFERENCE INFORMATION
 SREF 2690.0000
 LREF 474.8000
 BREF 936.7000
 XMRP 838.7000
 YMRP .0000
 ZMRP .0000
 SCALE .0010

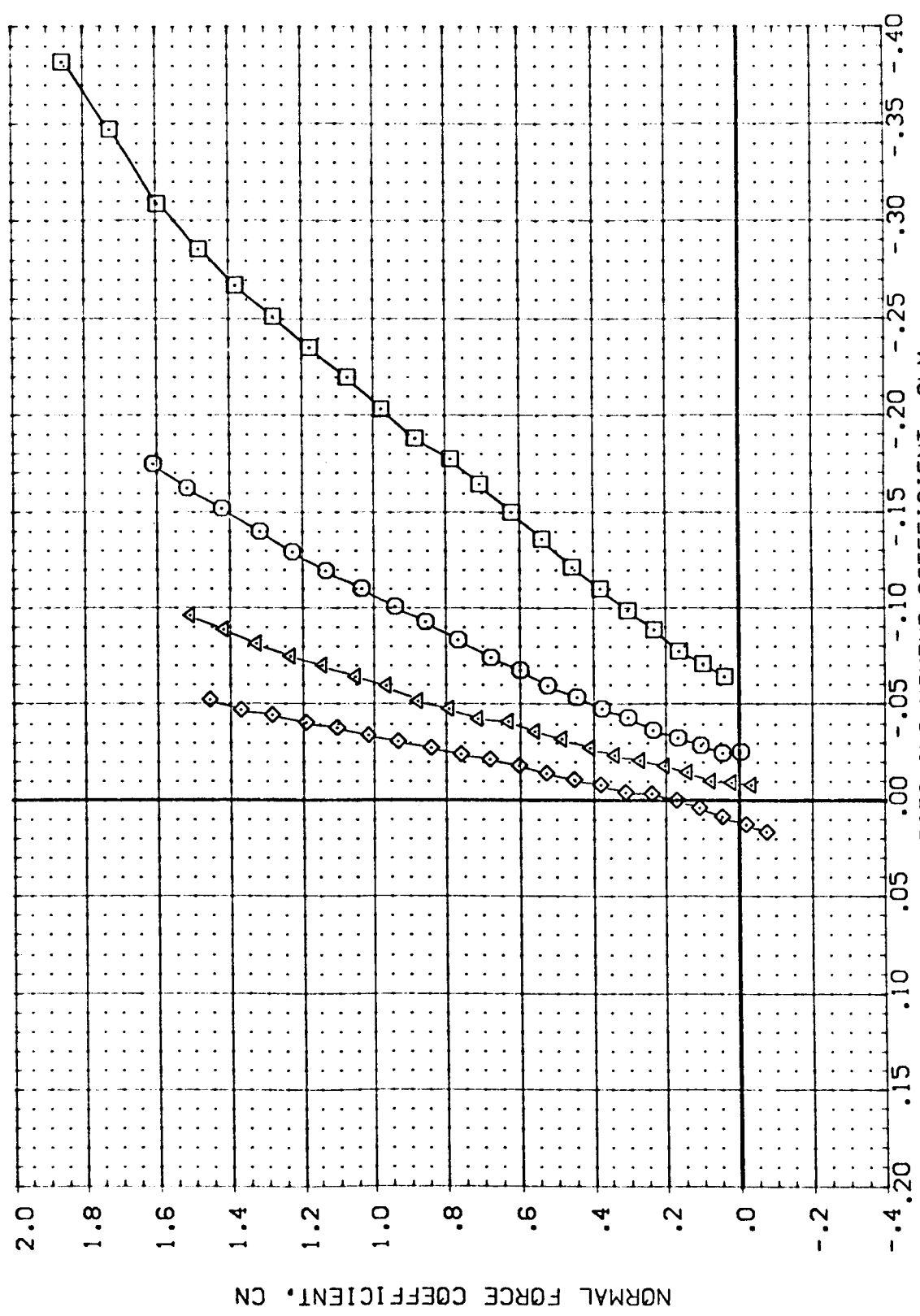


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

DATA SET SYMBOL : CONFIGURATION DESCRIPTION
 (F87548) MSFC 574(CA48) CR3 | 39
 (F87560) MSFC 574(CA48) CR3 | 39
 (F87564) MSFC 574(CA48) CR3 | 39
 (F87562) MSFC 574(CA48) CR3 | 39

BETA ELEV'R SPOBRK BOFLAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SREF 2690.0000
 .000 .000 999.990 .000 LREF 474.8000
 .000 .000 999.990 .000 BREF 936.7000
 .000 .000 999.990 .000 XWRP 838.0000
 .000 .000 999.990 .000 YWRP .0000
 .000 .000 999.990 .000 ZWRP .0000
 .000 .000 999.990 .000 SCALE .0040

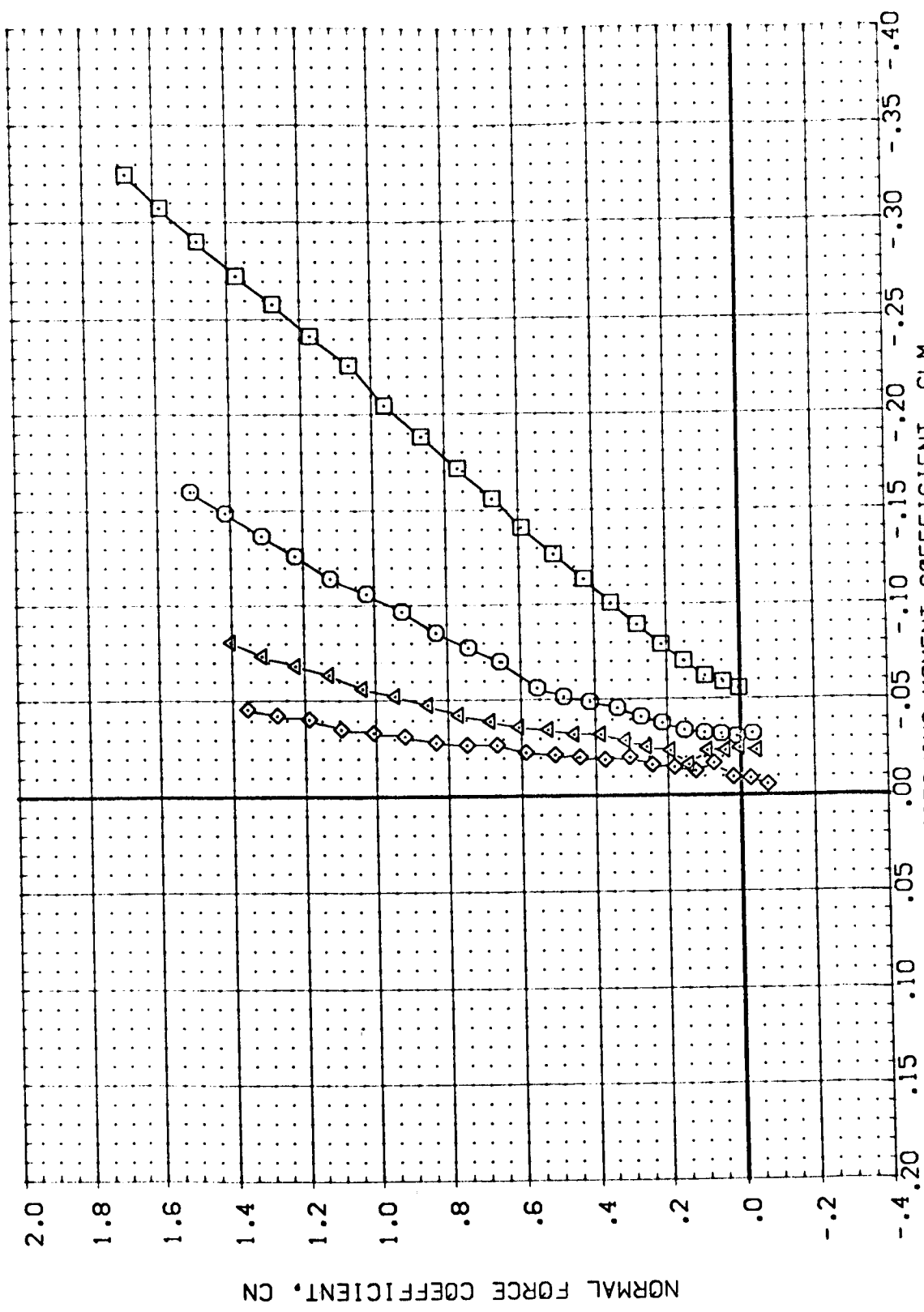


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (X87548) DATA NOT AVAILABLE
 (F87560) MSEC 574 (CA48) CRB 139
 (F87564) DATA NOT AVAILABLE
 (F87562) MSEC 574 (CA48) CRB 139

BETA ELEVTR SPOBRK BDFLAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SREF 2690.0000 SC.F.T.
 .000 15.000 999.990 13.750 LREF 474.8000
 .000 -40.000 999.990 -14.250 BREF 936.7000
 .000 -20.000 999.990 .000 XMRP 838.7000
 .000 .000 .000 ZMRP .0000
 .000 .000 .000 SCALE .0040

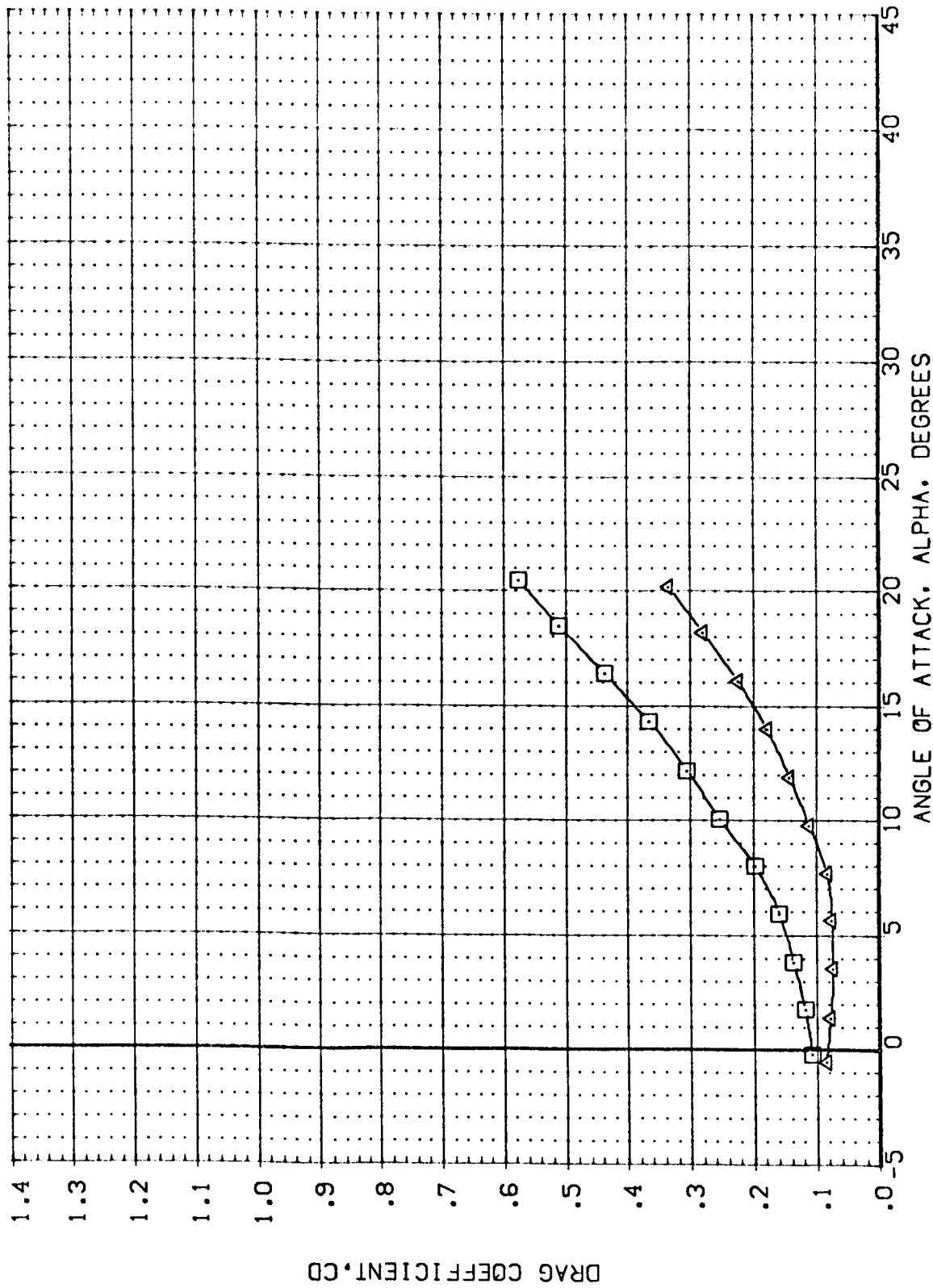


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(A)MACH = .60

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (X87548) DATA NOT AVAILABLE
 (F87560) MSFC 574(CA48) CR8 139
 (F87564) DATA NOT AVAILABLE
 (F87562) MSFC 574(CA48) CR8 139

BETA ELEVTR SPOBRK BOFLAP
 .000 .000 999.990 .000
 .000 15.000 999.990 13.750
 .000 -40.000 999.990 -14.250
 .000 -20.000 999.990 .000

REFERENCE INFORMATION
 SREF 2690.0000 SC.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

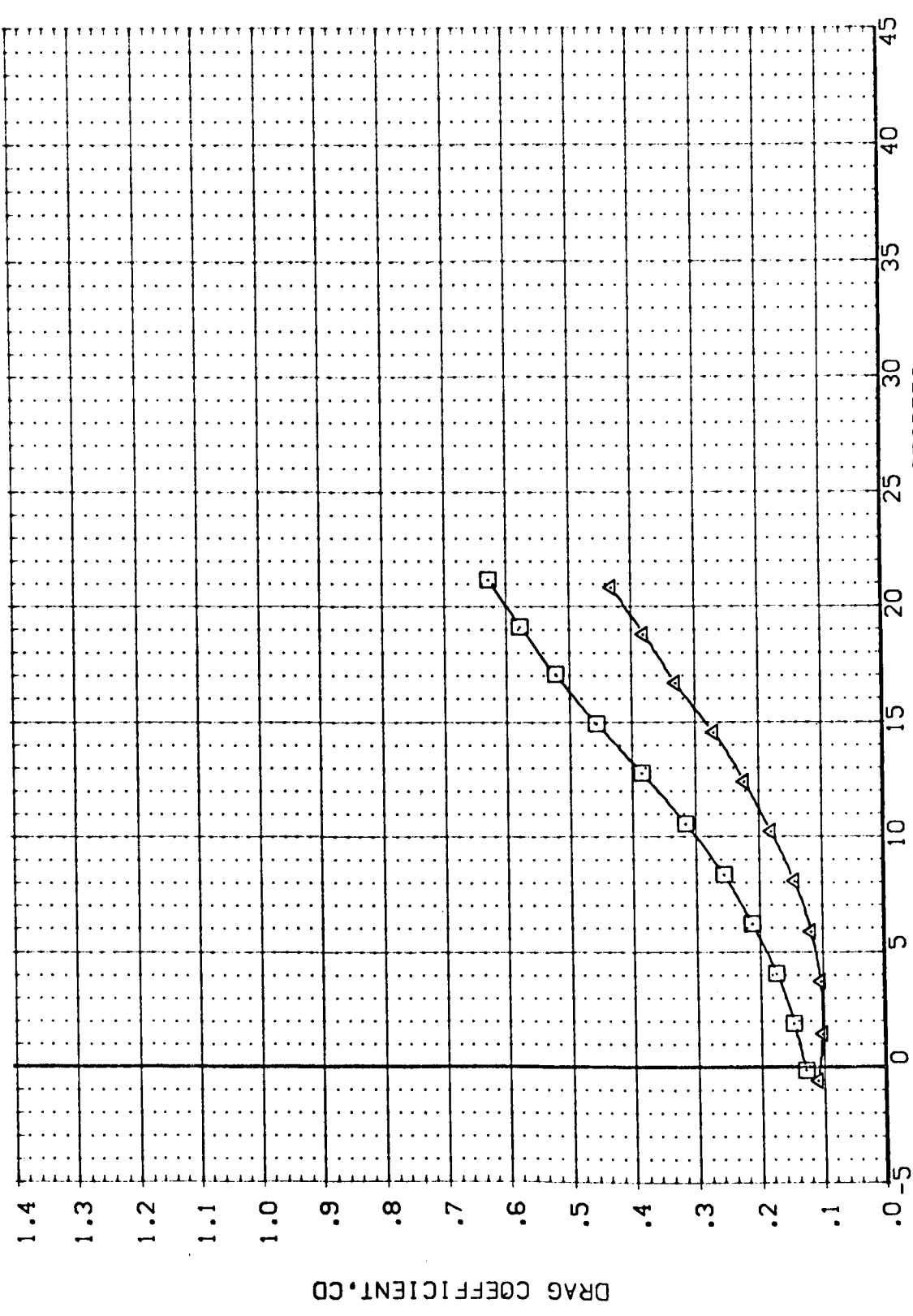


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139
 (B)MACH = .90



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (X87548) DATA NOT AVAILABLE
 (F87560) NSFC 574(CA48) CRB 139
 (F87564) DATA NOT AVAILABLE
 (F87562) NSFC 574(CA48) CRB 139

BETA ELEVTR SPOBRK BDFLAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SREF 2690.0000 SCALF.
 .000 15.000 999.990 13.750 LREF 474.8000
 .000 -40.000 999.990 -14.250 BREF 836.7000
 .000 -22.000 999.990 .000 XWRP 858.7000
 .000 .000 .000 ZWRP .0000
 .000 .000 .000 SCALE .0040

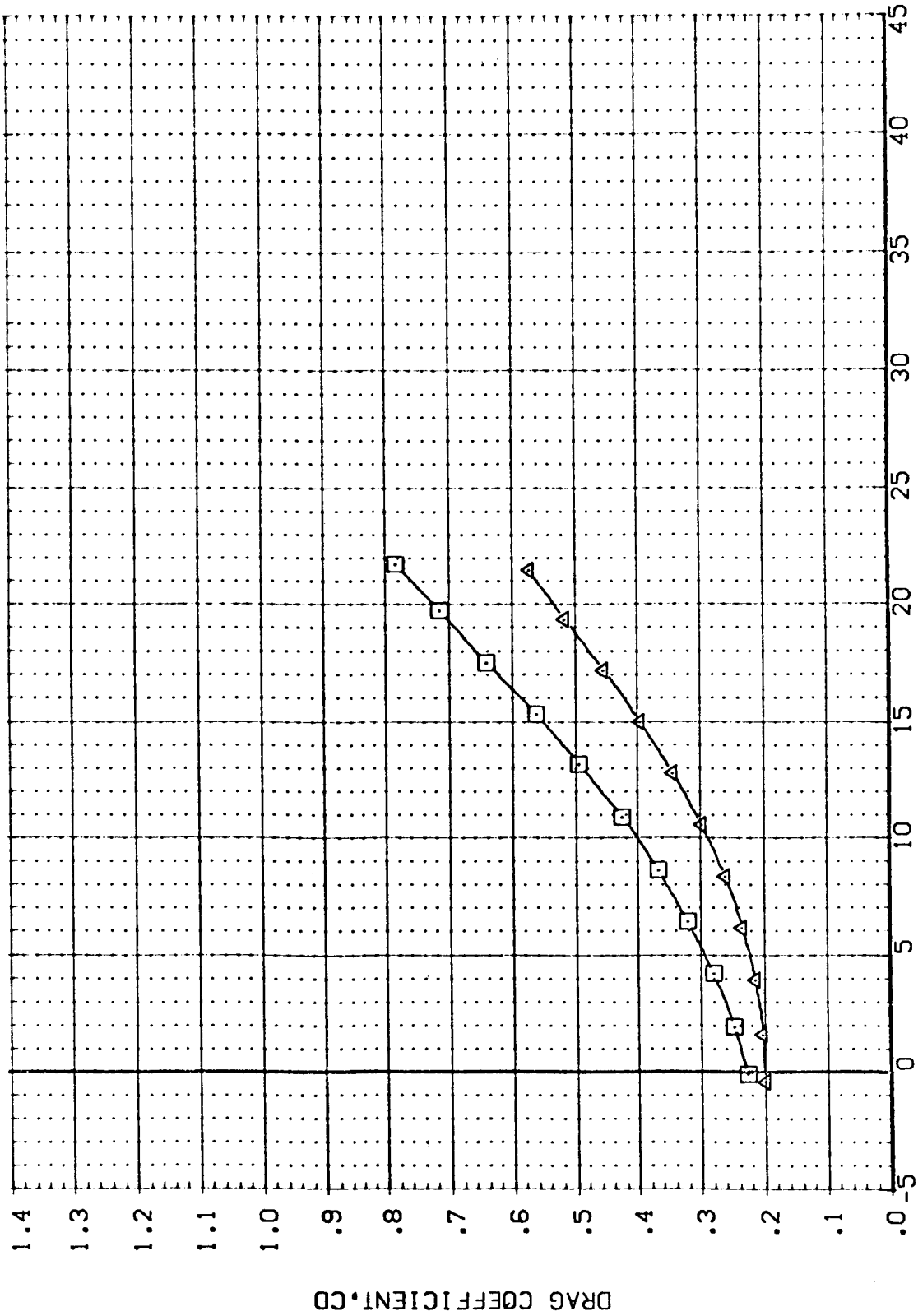


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(CO)MACH = 1.20

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (X87548) O 574(CA48) CR3 | 39
 (F87560) X 574(CA48) CR3 | 39
 (F87564) O 574(CA48) CR3 | 39
 (F87562) X 574(CA48) CR3 | 39

BETA ELEVTR SPDGRK BCFLAP
 .000 .000 999.990 .000
 .000 .500 999.990 13.750
 .000 -40.000 999.990 -14.250
 .000 -20.000 999.990 .000

REFERENCE INFORMATION
 SREF 2690.0000 SC.FT.
 LREF 474.8000
 BREF 936.7000
 XMRP 838.7000
 YMRP .0000
 ZMRP .0000
 SCALE .0010

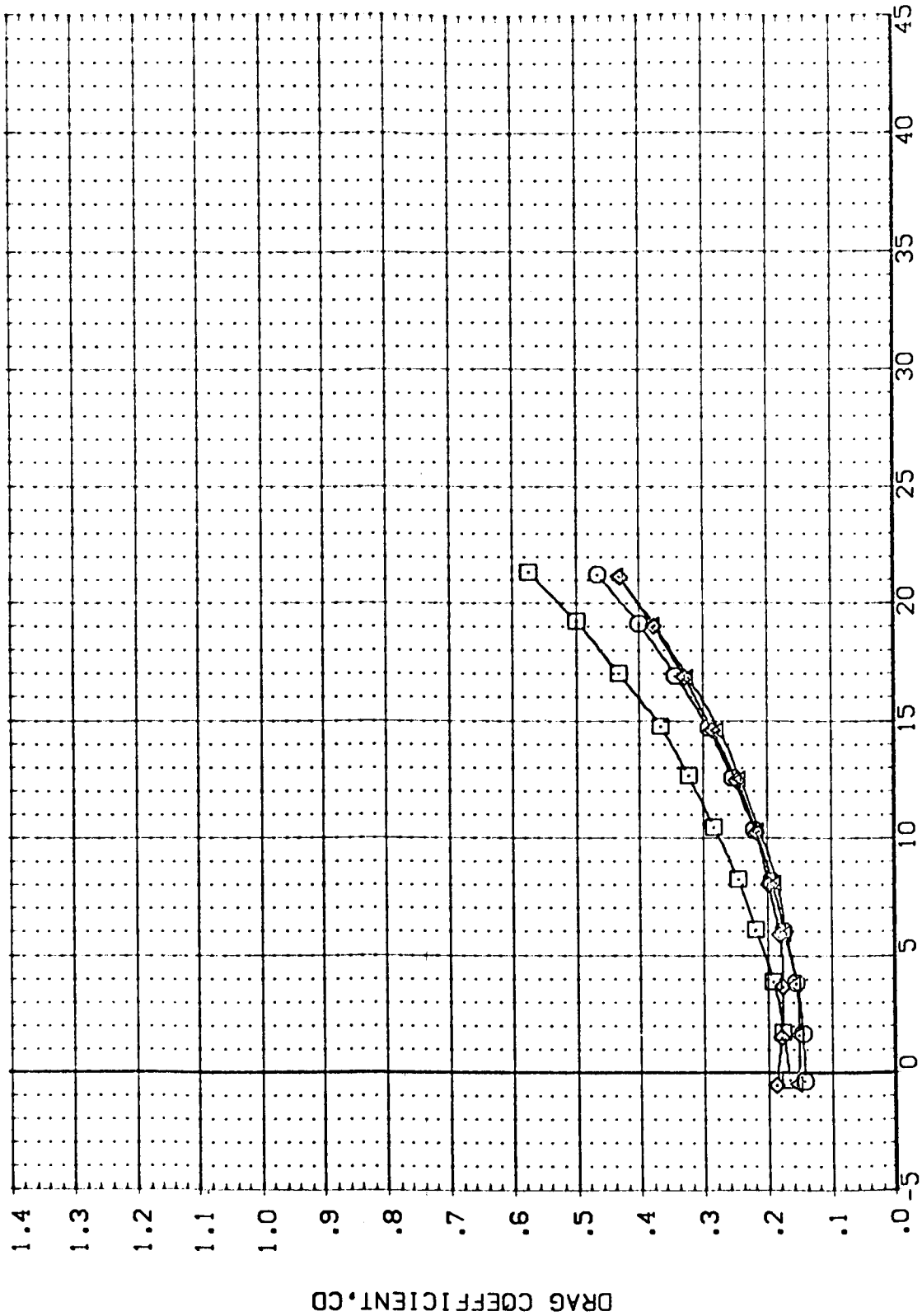


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

COMACH = 1.95

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (X87S48) (MSEC 574(CA48) CR3 :39
 (-87S60) (MSEC 574(CA48) CR3 :39
 (-87S64) (MSEC 574(CA48) CR3 :39
 (-87S62) (MSEC 574(CA48) CR3 :39

BETA ELEVTR SPOGRK BOFLAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SREF 2690.0000 SQ.F.
 .000 .15.000 999.990 13.750 LREF 474.8000 IN.
 .000 -40.000 999.990 -14.250 BRFF 936.7000
 .000 -20.000 999.990 .000 XMRP 838.7000
 .000 .0000 .0000 YMRP .0000
 .0000 .0000 ZMRP .0000
 .0000 .0000 SCALE .0000

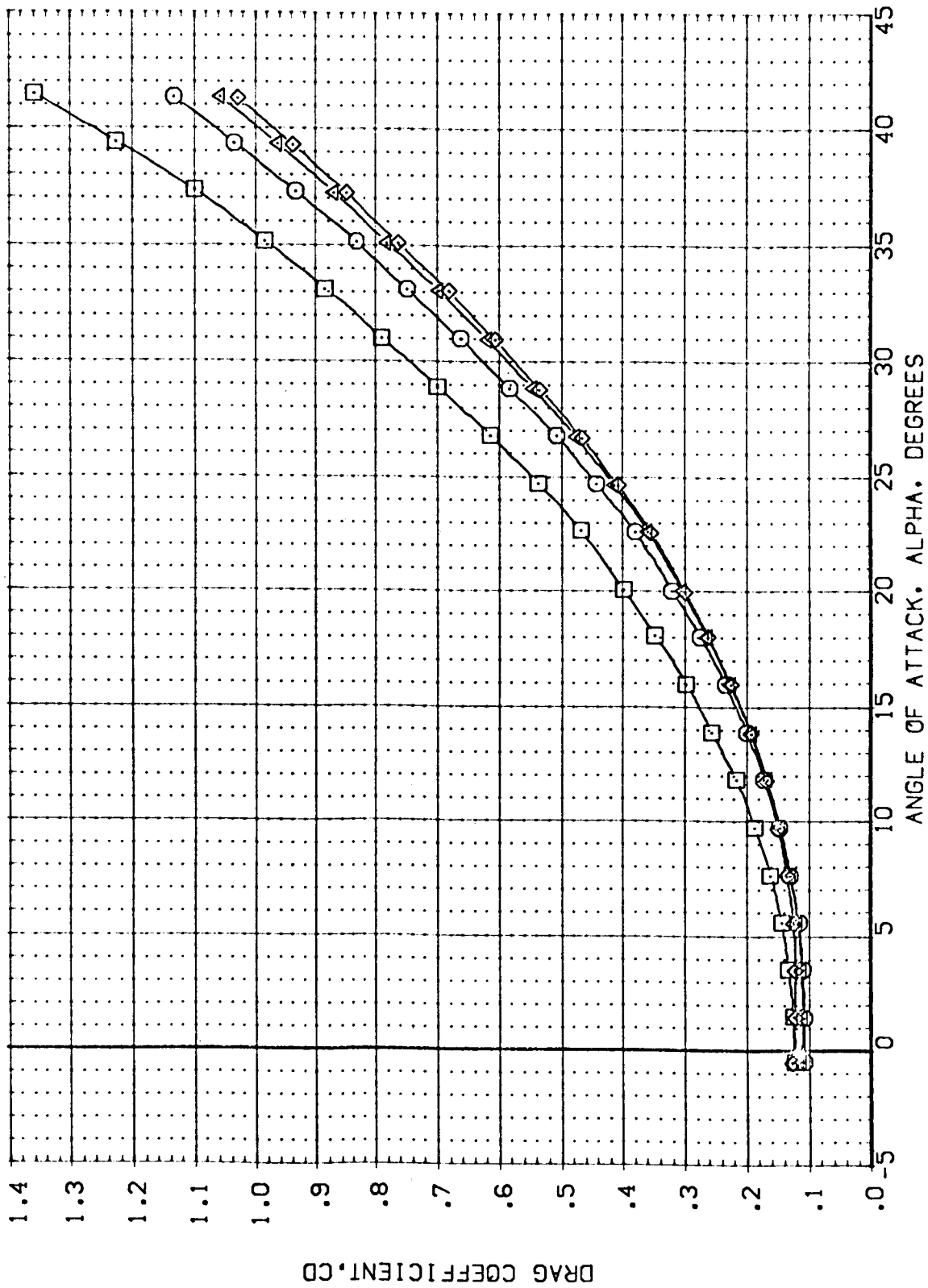


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(C)MACH = 2.99

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (X87548) MSFC 574(CA48) CRB 139
 (F87560) MSFC 574(CA48) CRB 139
 (F87564) MSFC 574(CA48) CRB 139
 (F87562) MSFC 574(CA48) CRB 139

BETA ELEVTR SPOBRK BOFLAP
 .000 .000 999.990 .000
 .000 15.000 999.990 13.750
 .000 -40.000 999.990 -14.250
 .000 -20.000 999.990 .000

REFERENCE INFORMATION
 SREF 2690.0000 SC.F.
 LREF 474.8000
 BREF 936.7000
 XVRP 838.7000
 YVRP .0000
 ZVRP .0000
 SCALE .0010

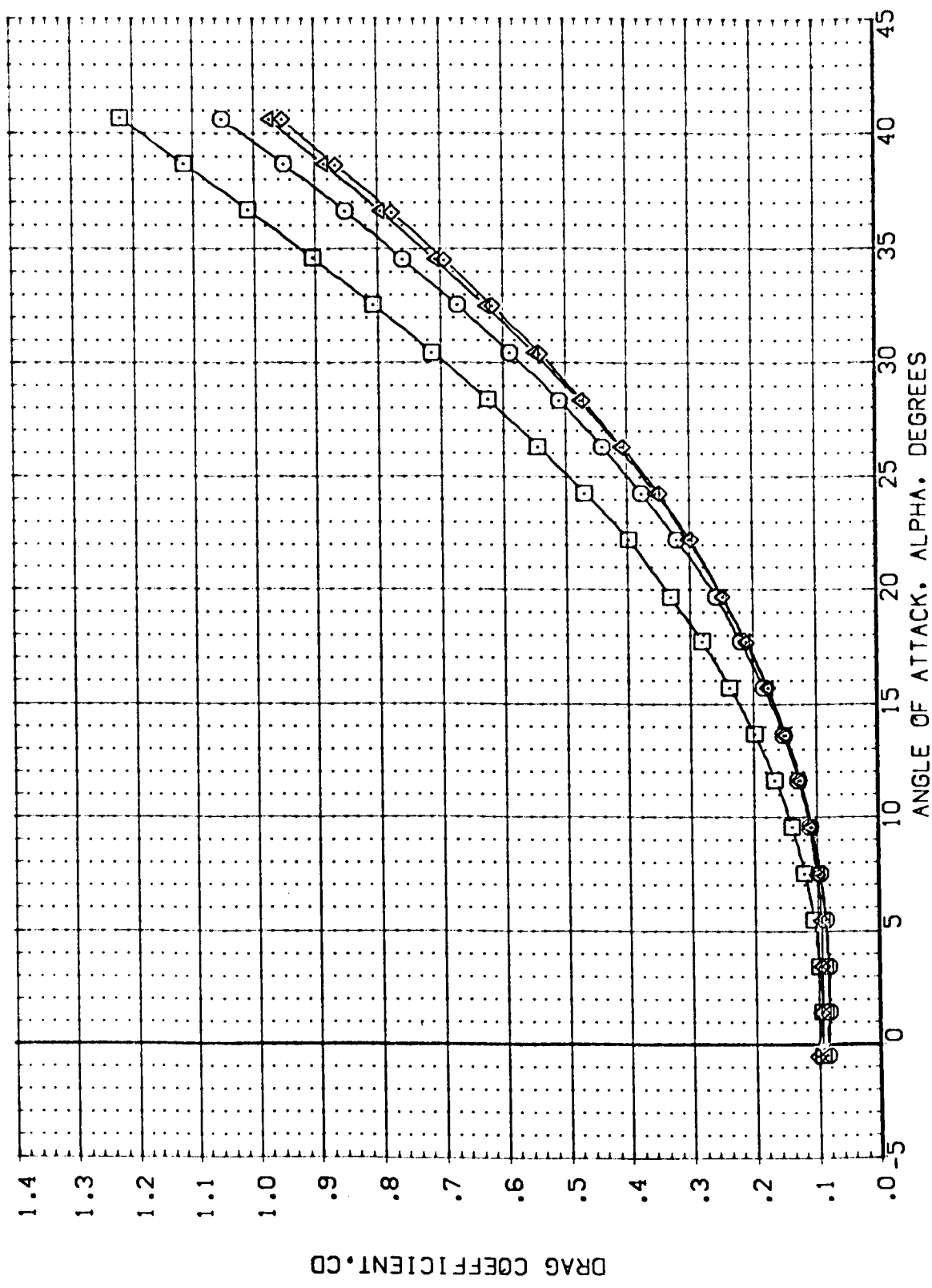


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(M)MACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (X87S48) DATA NOT AVAILABLE
 (F87S60) MSFC 574(CA48) CRB 139
 (F87S64) DATA NOT AVAILABLE
 (F87S62) MSFC 574(CA48) CRB 139

BETA ELEVTR SPOBRK BDFLAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SREF 2690.0000 SC.F.
 .000 15.000 999.990 13.750 LREF 474.8000
 .000 -40.000 999.990 -14.250 BREF 936.7000
 .000 -20.000 999.990 .000 XVRP 838.7000
 .000 .000 .000 ZVRP .0000
 .000 .000 .000 SCALE .0010

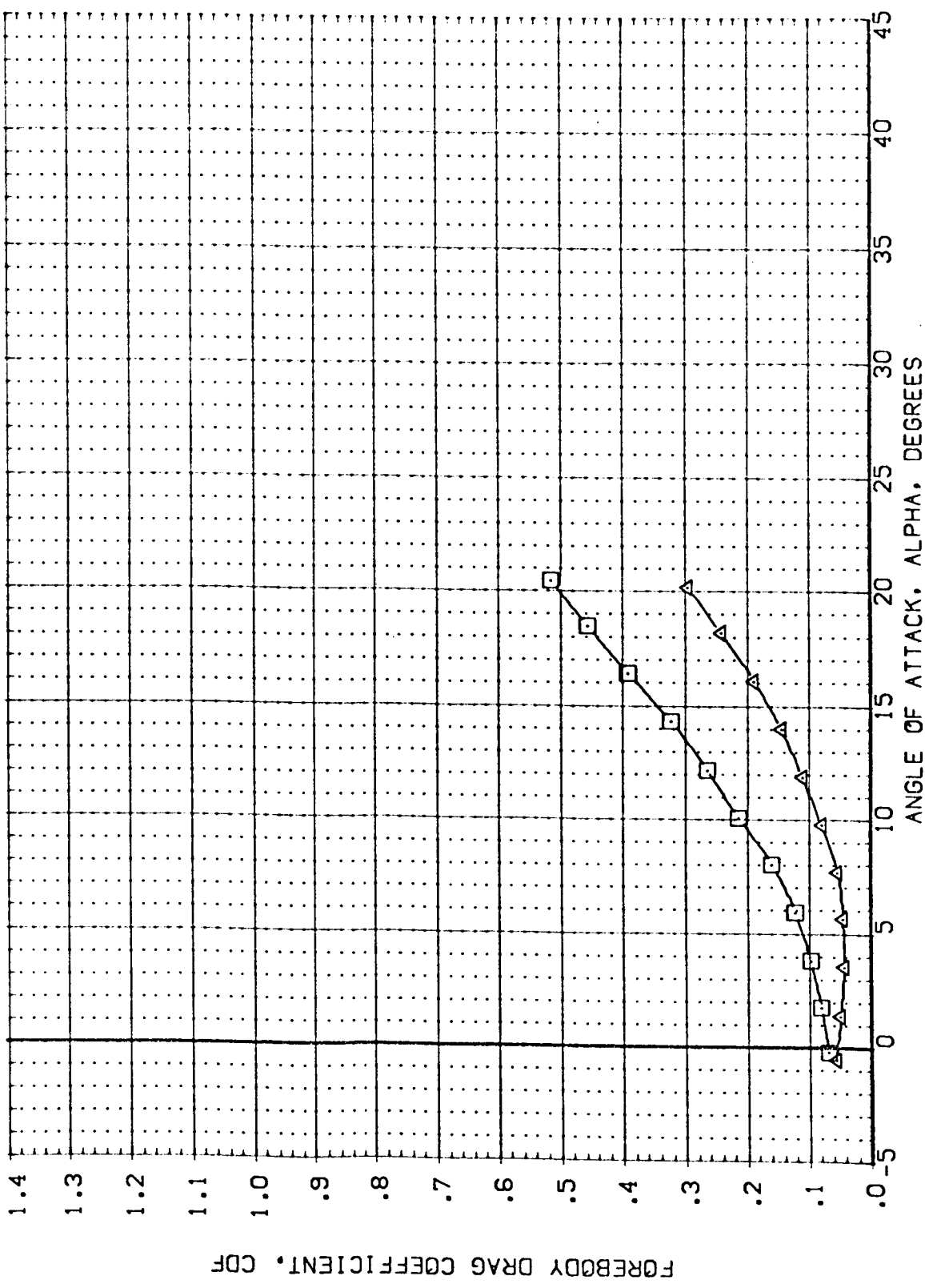


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

DATA SET SYMBO: CONFIGURATION DESCRIPTION
 (X87548) DATA NOT AVAILABLE
 (F8756C) MSFC 574(CA48) CRB 139
 (F8755A) DATA NOT AVAILABLE
 (F87562) MSFC 574(CA48) CRB 139

BETA ELEVTR SPOBRK BDFLAP
 .000 999.990
 .000 999.990
 .000 15.000 999.990
 .000 -40.000 999.990
 .000 -20.000 999.990

REFERENCE INFORMATION
 SREF 2692.0000 SQ.FT.
 LREF 474.8000
 BREF 938.7000
 XMRB 838.7000
 YMRB .0000
 ZMRB .0000
 SCALE .0010

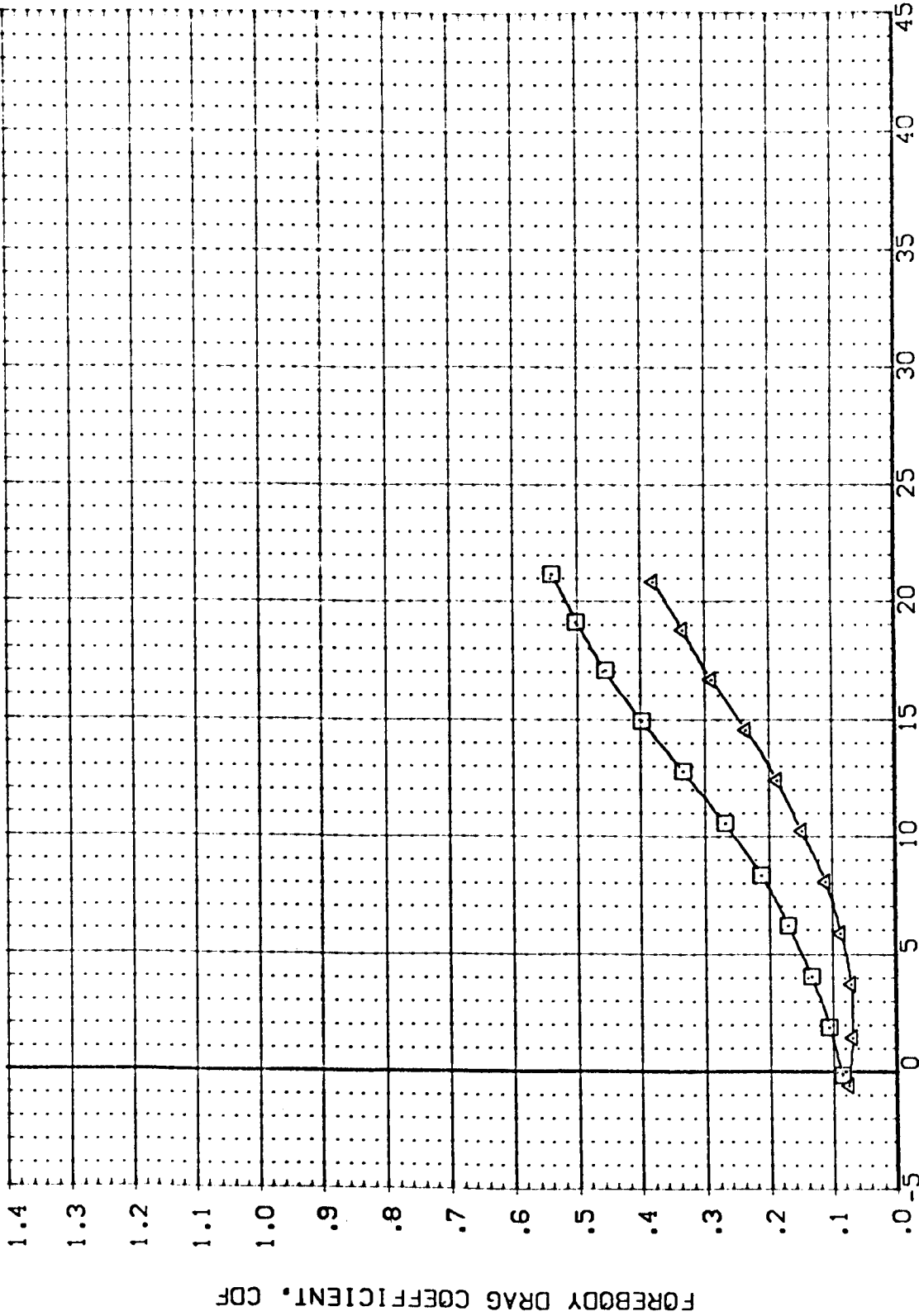
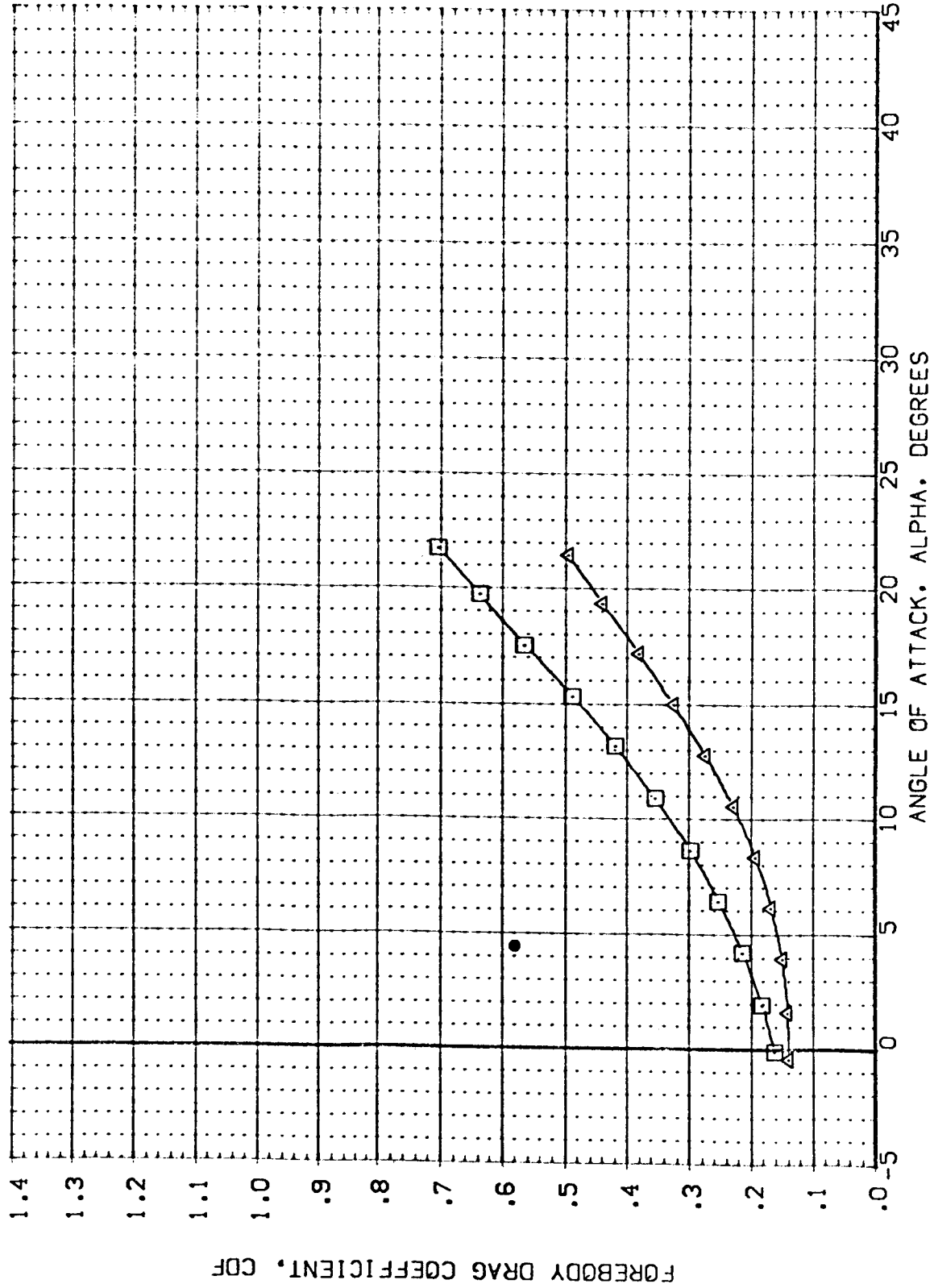


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (X87548) DATA NOT AVAILABLE
 (F87560) MSFC 574(CA48) CR3 139
 (F87564) DATA NOT AVAILABLE
 (F87568) MSFC 574(CA48) CR3 139

BETA ELEVTR SPOBRK BDFLAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SREF 2690.0000 SC.F.T.
 .000 15.000 999.990 13.750 LREF 474.8000
 .000 -40.000 999.990 -14.250 BREF 936.7000
 .000 -20.000 999.990 1.000 XMRP 838.7000
 /MRP .0000
 SCALE .0040



FOREBODY DRAG COEFFICIENT, CDF

ANGLE OF ATTACK, ALPHA, DEGREES

FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (X87S48) MSC 574:(CA48) CRB 139
 (F87S60) MSC 574:(CA48) CRB 139
 (F87S61) MSC 574:(CA48) CRB 139
 (F87S62) MSC 574:(CA48) CRB 139

BETA ELEVTR SPCBRK BCFLAP SREF REFERENCE INFORMATION
 .000 .000 999.990 .000 SREF 2890.0000 SG.F.
 .000 .000 999.990 .000 LREF 474.8000
 .000 .000 999.990 .000 BREF 996.7000
 .000 .000 999.990 .000 XMRP 838.0000
 .000 .000 999.990 .000 YMRP .0000
 .000 .000 999.990 .000 ZMRP .0000
 SCALE .0010

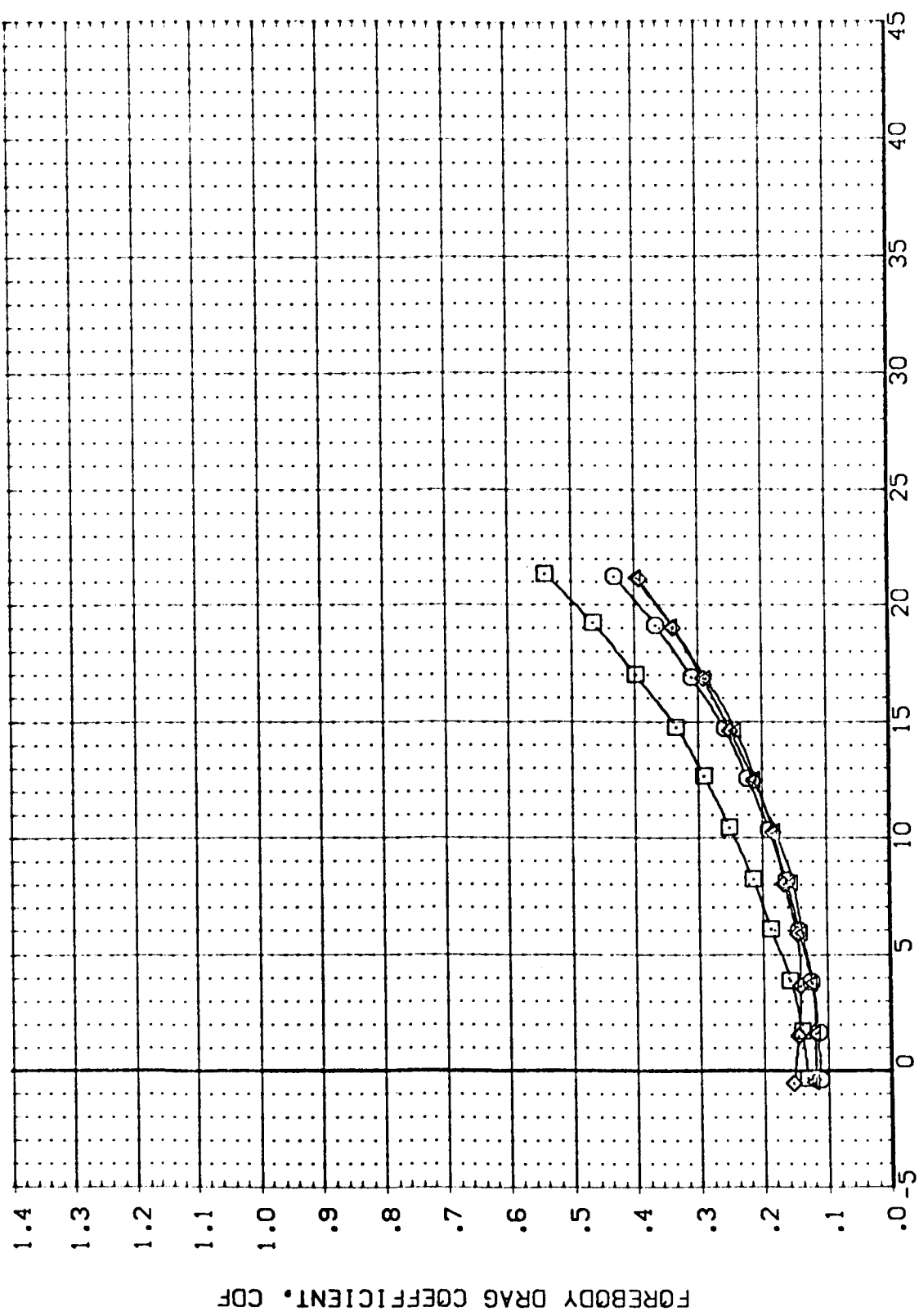


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

COMACH = 1.95

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (X87S48) MSEC 574(CA48) CR3 139
 (F87S60) MSEC 574(CA48) CR3 139
 (F87S64) MSEC 574(CA48) CR3 139
 (F87S62) MSEC 574(CA48) CR3 139

BETA ELEVTR SPOBRK BOFLAP
 .000 999.990
 .000 999.990
 .000 999.990
 .000 999.990
 .000 999.990
 .000 999.990
 .000 999.990

REFERENCE INFORMATION
 SREF 2690.0000 SC.FT.
 LREF 474.8000
 BREF 936.7000
 XMRP 838.7000
 YMRP .0000
 ZMRP .0000
 SCALE .0040

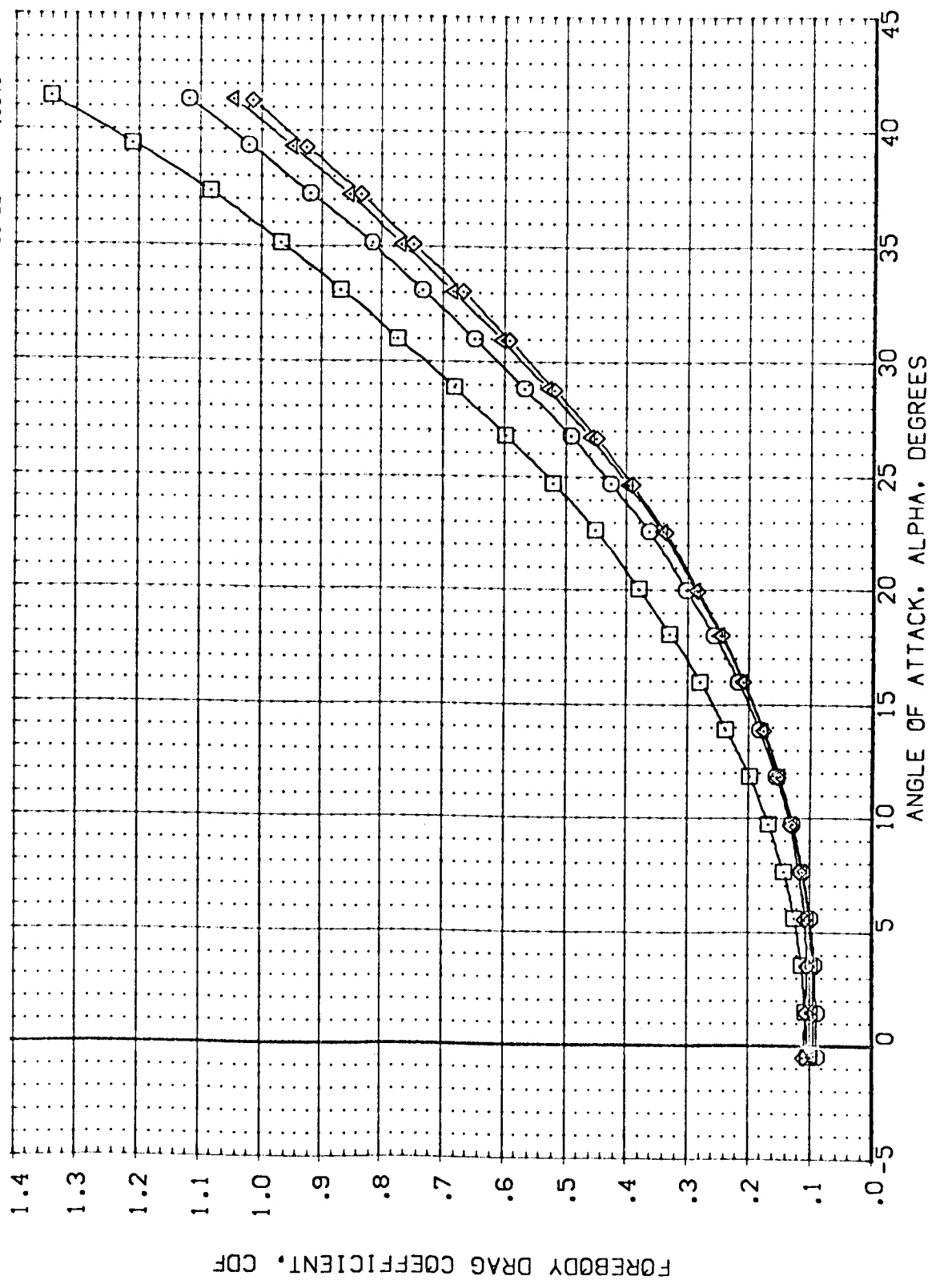


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(M)MACH = 2.99

DATA SET SYMBCL CONFIGURATION DESCRIPTION
 (X87548) WSEC 574(CA48) CRB 139
 (F87560) WSEC 574(CA48) CRB 139
 (F87564) WSEC 574(CA48) CRB 139
 (F87562) WSEC 574(CA48) CRB 139

BETA .000
 .000
 .000
 .000
 .000
 .000
 .000
 .000
 .000
 .000

ELEVTR .000
 .000
 15.000
 -40.000
 -20.000

SPOBRK 999.990
 999.990
 999.990
 999.990
 999.990

BCFLAP .000
 .000
 13.750
 -14.250
 .000

REFERENCE INFORMATION
 SREF 2690.0000
 REF 474.8000
 BRFF 936.7000
 XMRP 838
 YMRP .0000
 ZMRP .0000
 SCALE .0040

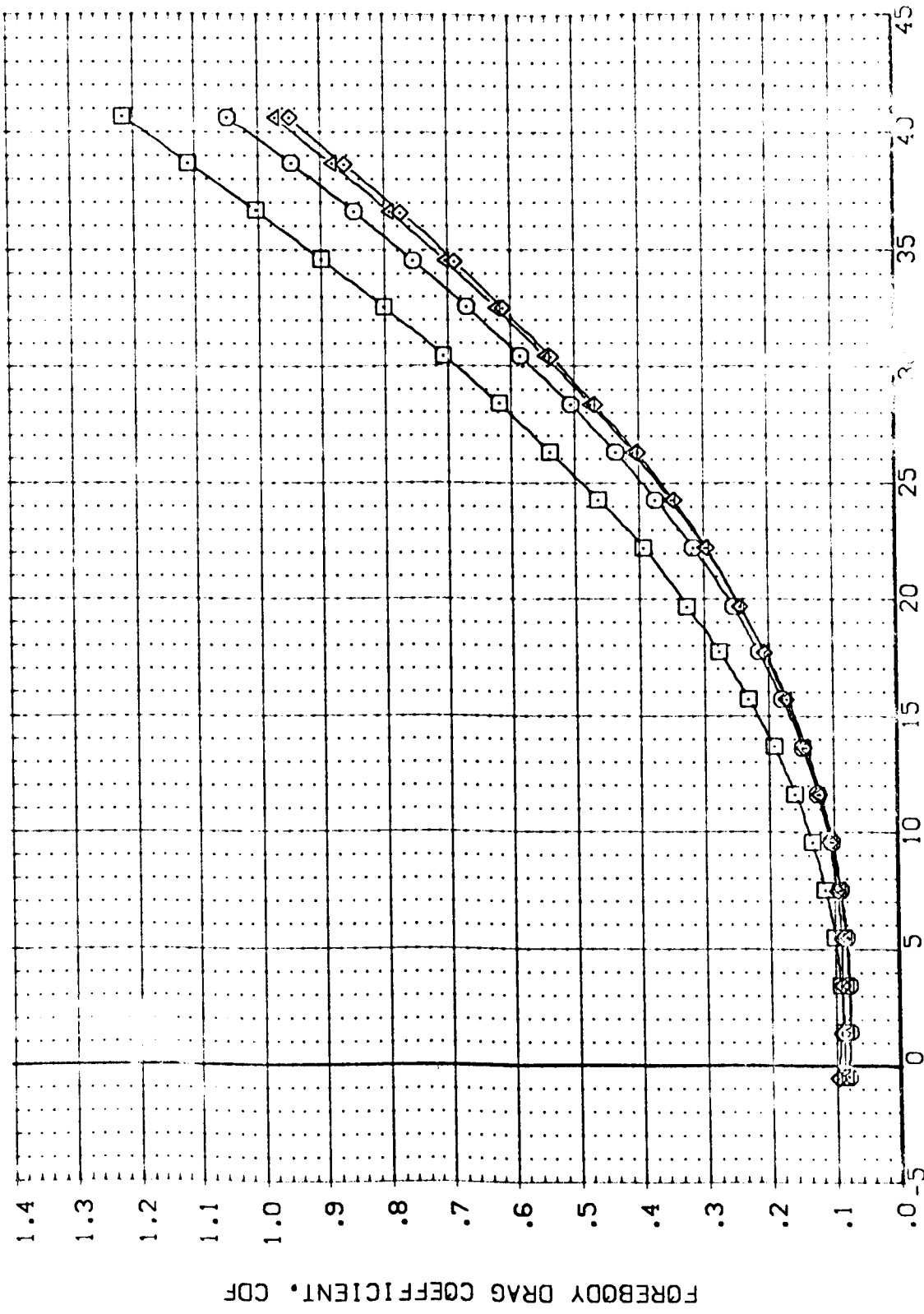


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

COMACH = 4.96

DATA SET SYMBOL: (X87548) (F8756C) (F87564) (F87562)

CONFIGURATION DESCRIPTION: DATA NOT AVAILABLE MSFC 574(CA48) CRB 139 DATA NOT AVAILABLE MSFC 574(CA48) CRB 139

BETA: .000 .000 .000 .000

ELEVTR: .000 .000 .000 .000

SPOBRK: 999.999 999.999 999.999 999.999

BOFLAP: .000 .000 .000 .000

REFERENCE INFORMATION: SREF 2690.0000 LREF 474.8000 BREF 936.7000 XMRP 838.7000 YMRP .0000 SCALE .0040

SC.F.T.: .0000 .0000 .0000 .0000

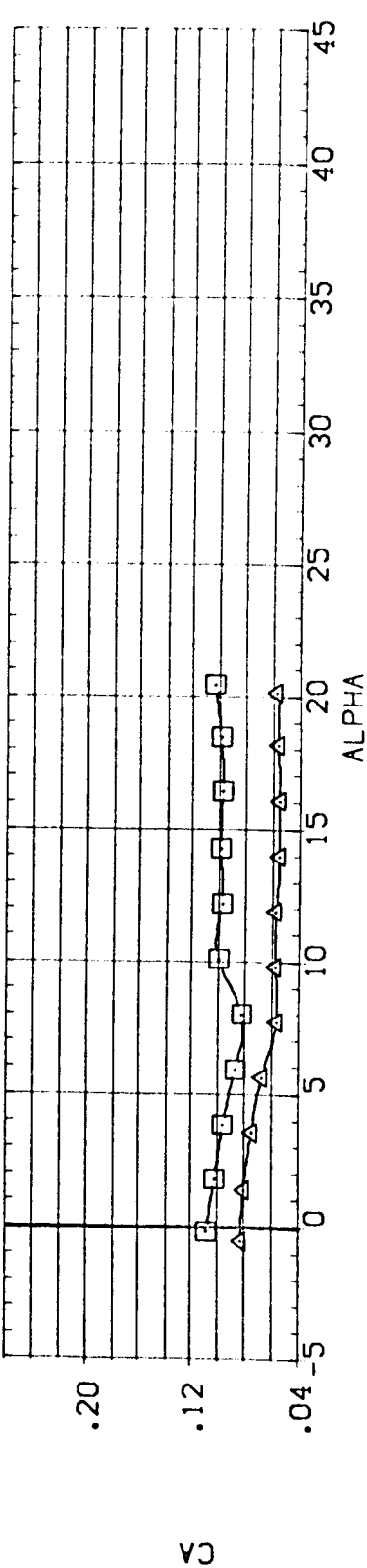
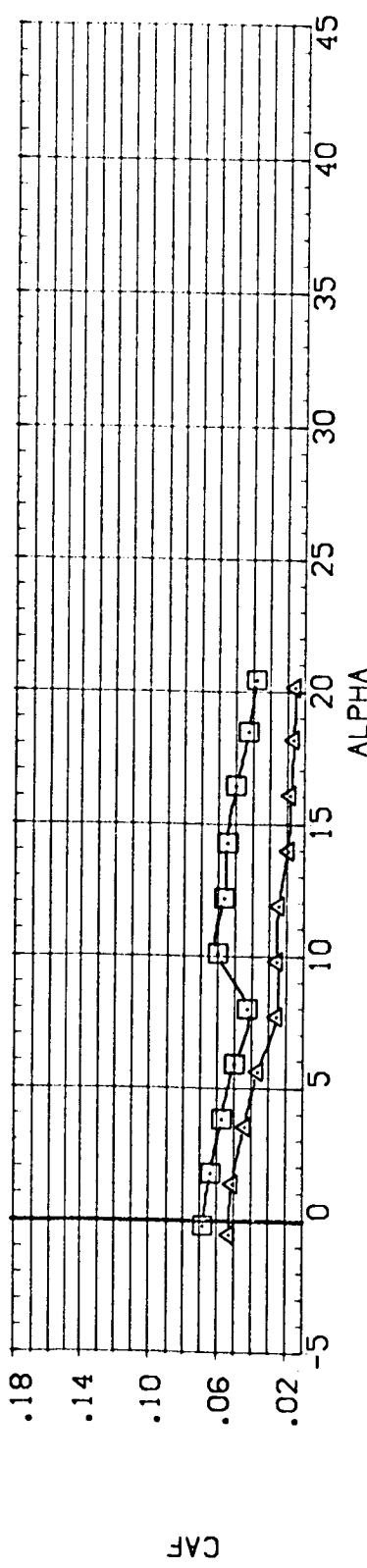
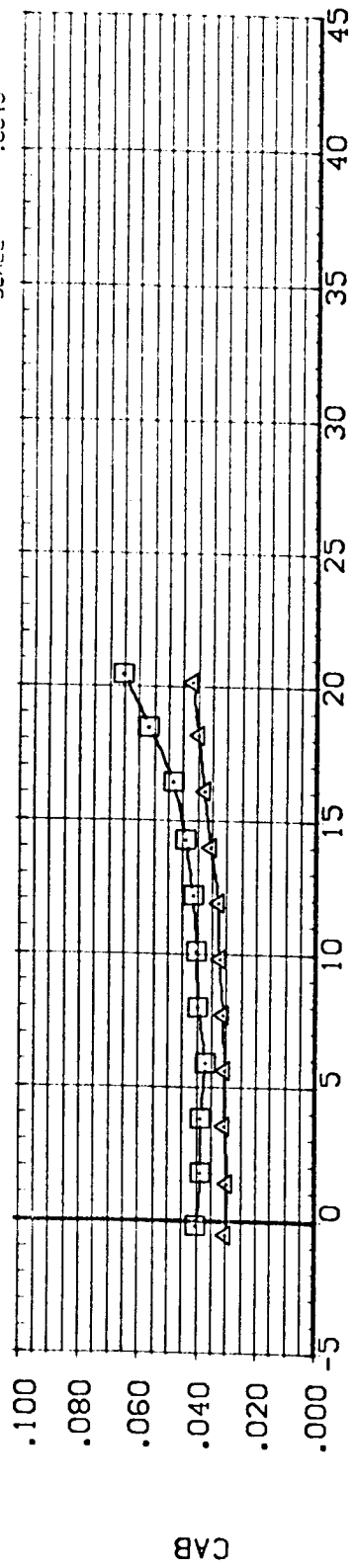


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

CA)MACH = .60

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 X87S48) DATA NOT AVAILABLE
 F87S60) MSFC 574(CA48) CRB 139
 F87S61) DATA NOT AVAILABLE
 F87S62) MSFC 574(CA48) CRB 139

BETA .000
 ELEVTR .000
 SPDBRK 999.990
 BOFLAP .000
 SRFC 2690.0000
 LREF 474.8000
 BRFF 836.0000
 XMRP 838.0000
 YMRP .0000
 ZMRP .0000
 SCALE .0010

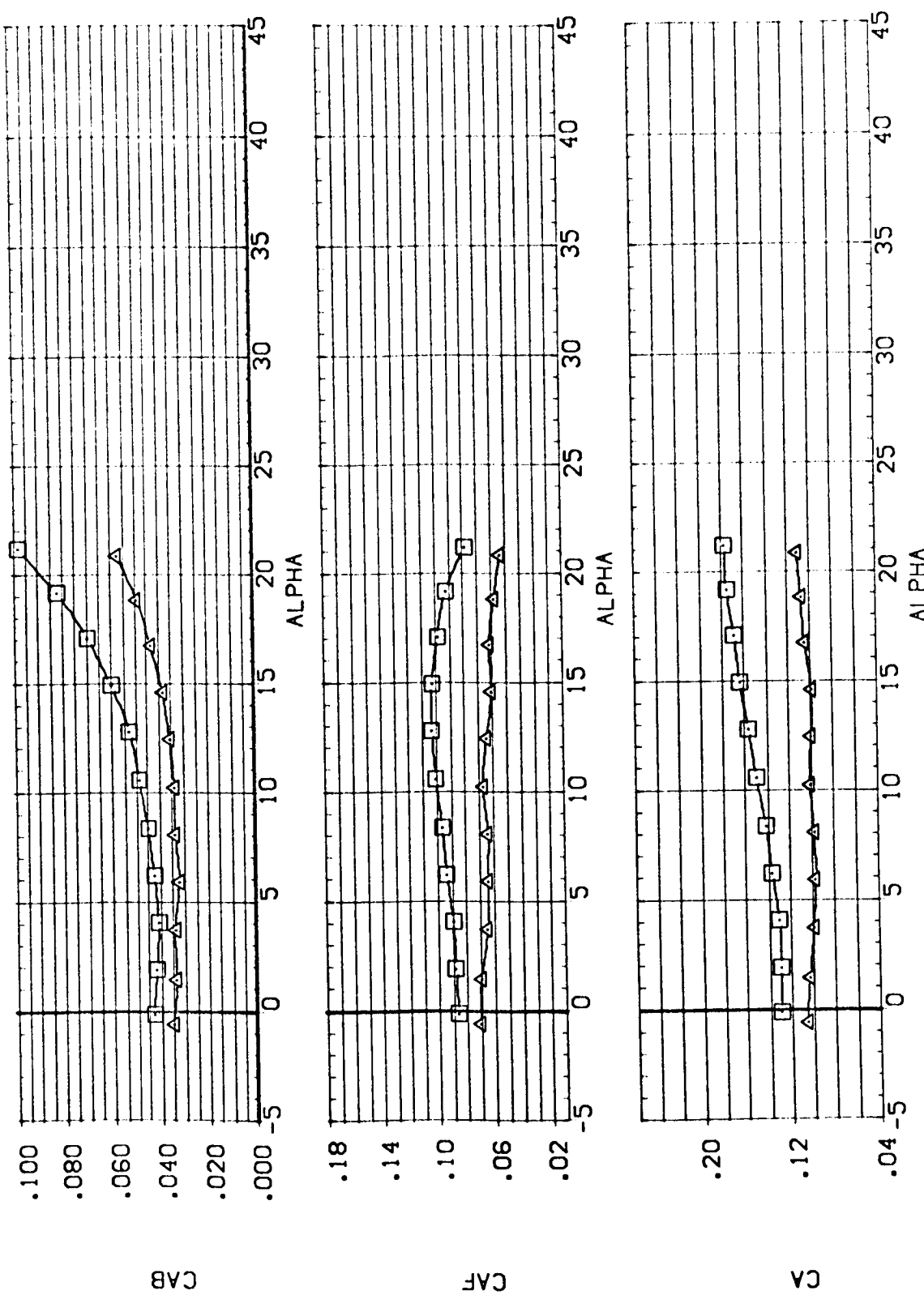


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(B)MACH = .90

DATA SET SYMCL CONFIGURATION DESCRIPTION
 (X87S48) DATA NOT AVAILABLE
 (F87S60) MSFC 574(CA48) CRB 139
 (F87S61) DATA NOT AVAILABLE
 (F87S62) MSFC 574(CA48) CRB 139

BETA ELEVTR SPOBRK BOFLAP SREF REFERENCE INFORMATION
 .000 .000 999.990 .000 2690.0000 SQ.FT.
 .000 15.000 999.990 13.750 474.8000 N.
 .000 -40.000 999.990 836.7000 N.
 .000 -20.000 999.990 838.7000 N.
 .000 .0000 .0000
 .0000 .0000
 .0040 .0040
 SCALE

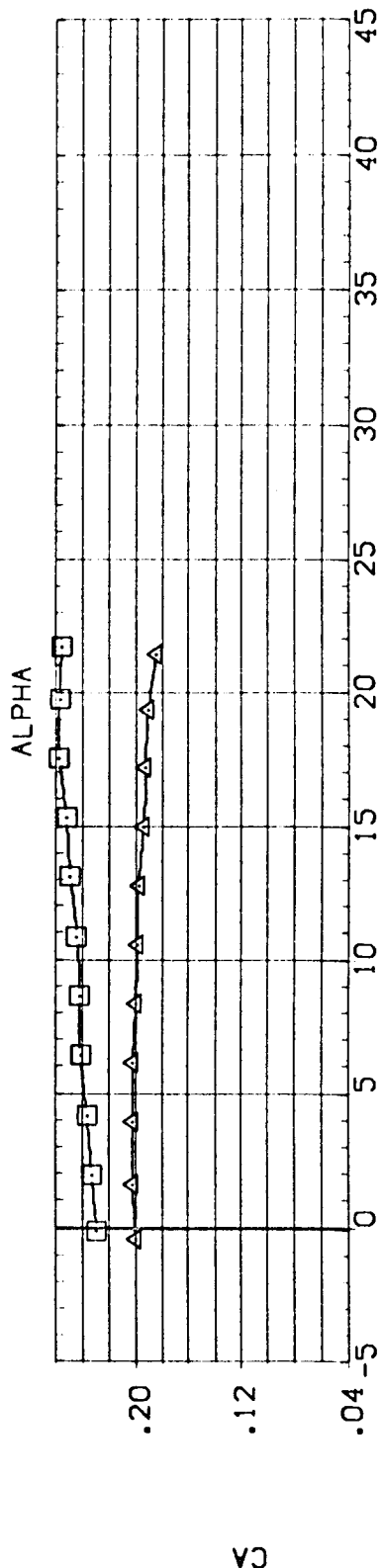
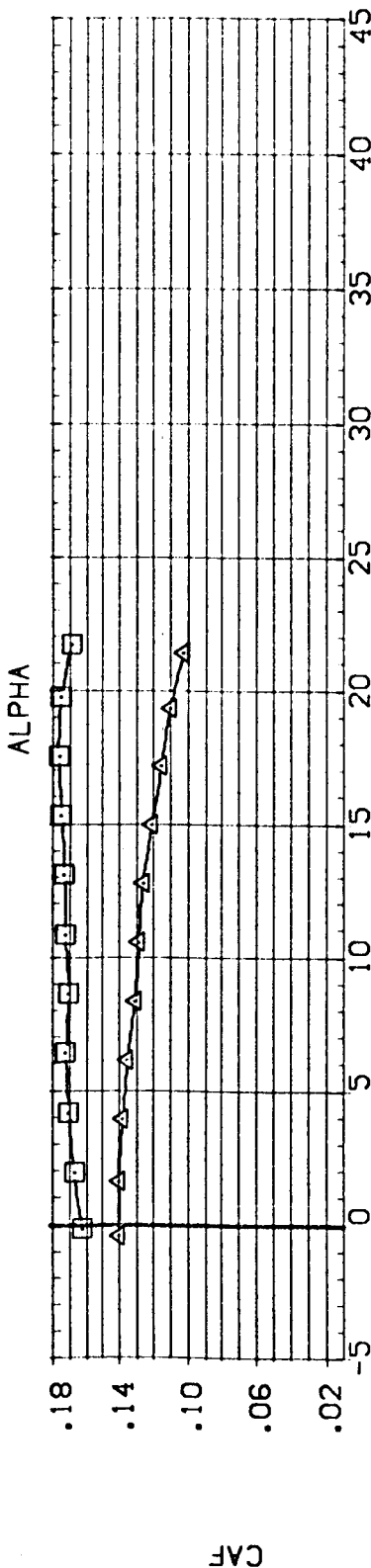
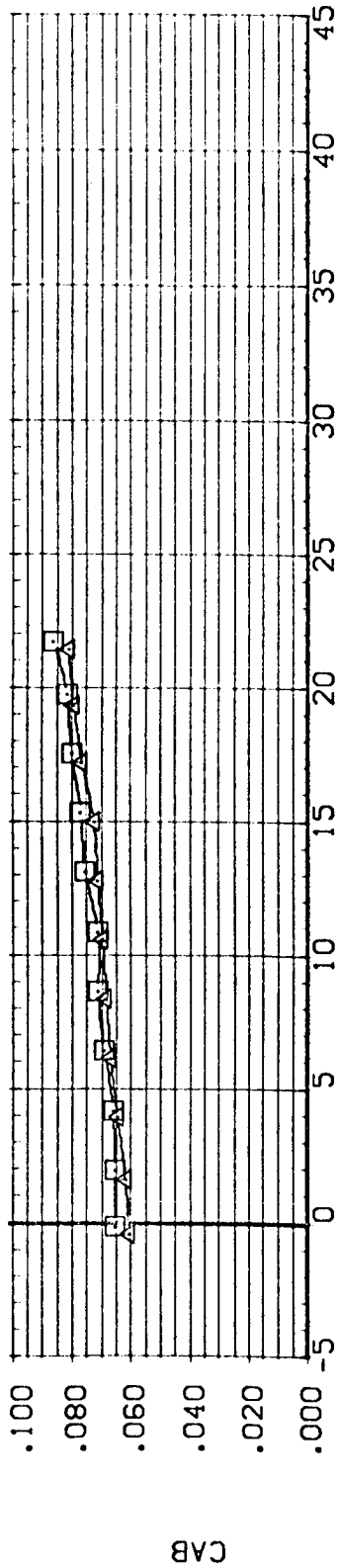


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

DATA SET SYMBOL: (X87548) (F87560) (F87564) (F87562)

CONFIGURATION DESCRIPTION: MSFC 574 (CA48) CR8 | 39 MSFC 574 (CA48) CR8 | 39 MSFC 574 (CA48) CR8 | 39 MSFC 574 (CA48) CR8 | 39

BETA: .000 .000 .000 .000

ELEVTR: .000 .000 .000 .000

SPOBRK: 999.990 999.990 999.990 999.990

BOFLAP: .000 .000 .000 .000

REFERENCE INFORMATION: SREF 2690.0000 SQ.FT. LREF 474.8000 NREF 936.7000 XMRP 838.7000 YMRP .0000 ZMRP .0000 SCALE .0040

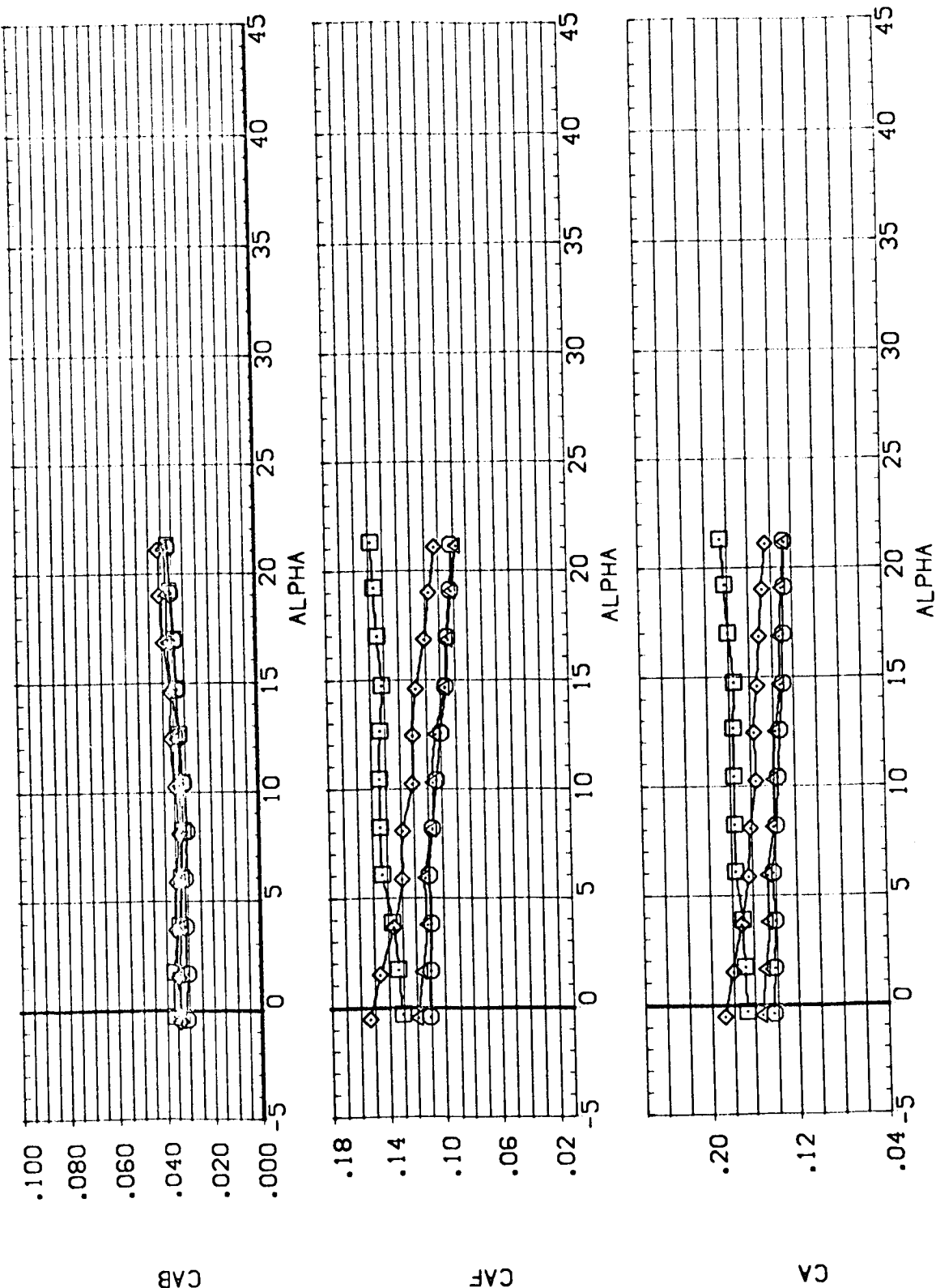


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139
 (C) MACH = 1.95
 PAGE 78C

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(X87548) MSFC 574(CA48) CRB 139

(F87560) MSFC 574(CA48) CRB 139

(F87564) MSFC 574(CA48) CRB 139

(F87562) MSFC 574(CA48) CRB 139

BETA ELEVTR SPOBRK BOFLAP

.000 .000 999.990 .000

.000 .15.000 999.990 .3.750

.000 -40.000 999.990 -14.250

.000 -20.000 999.990 .000

ZMRP .0000

SCALE .0000

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.

LREF 474.8000 N.

BREF 936.7000 N.

XMRP 838.7000 N.

ZMRP .0000

SCALE .0000

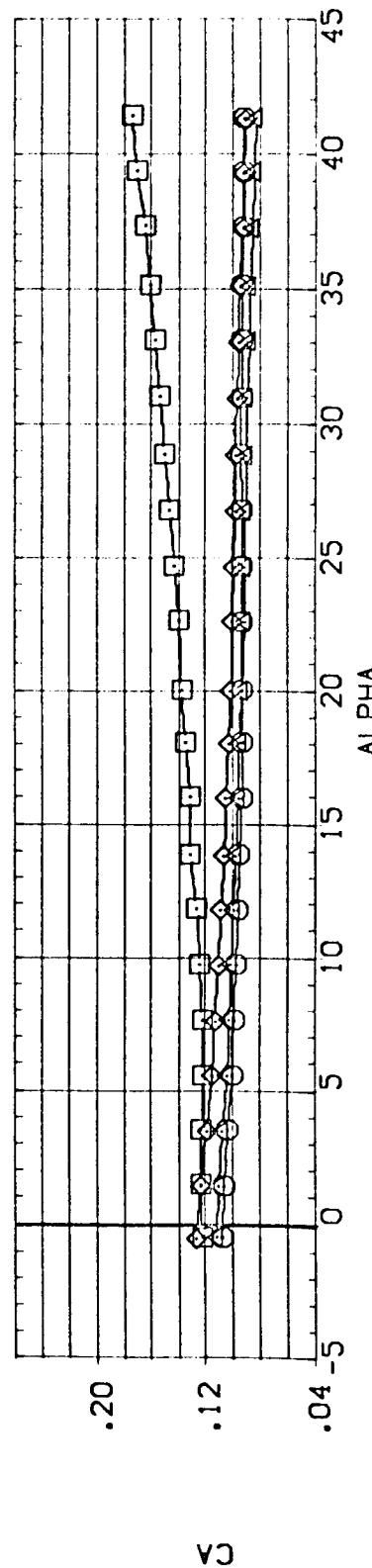
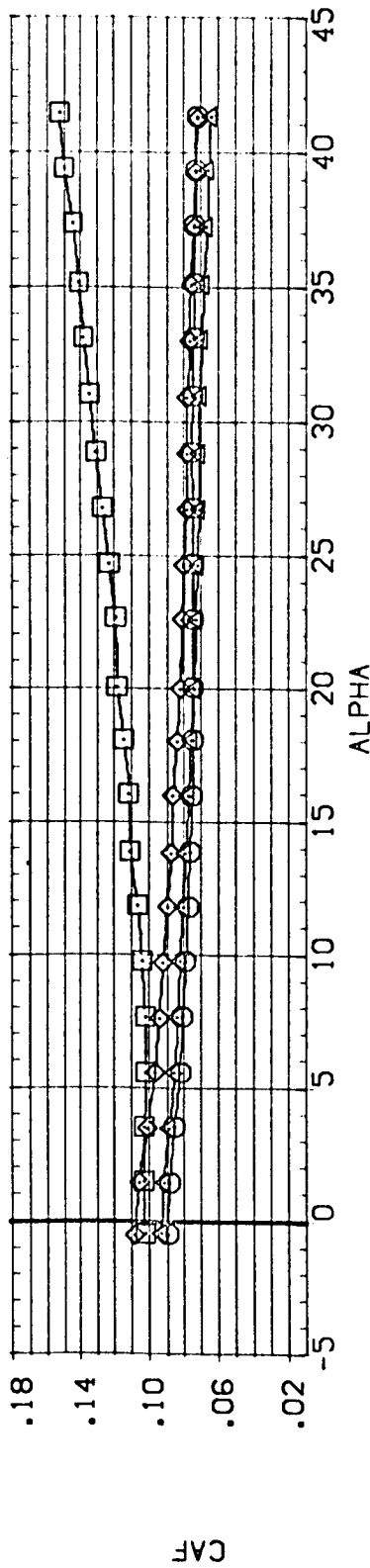
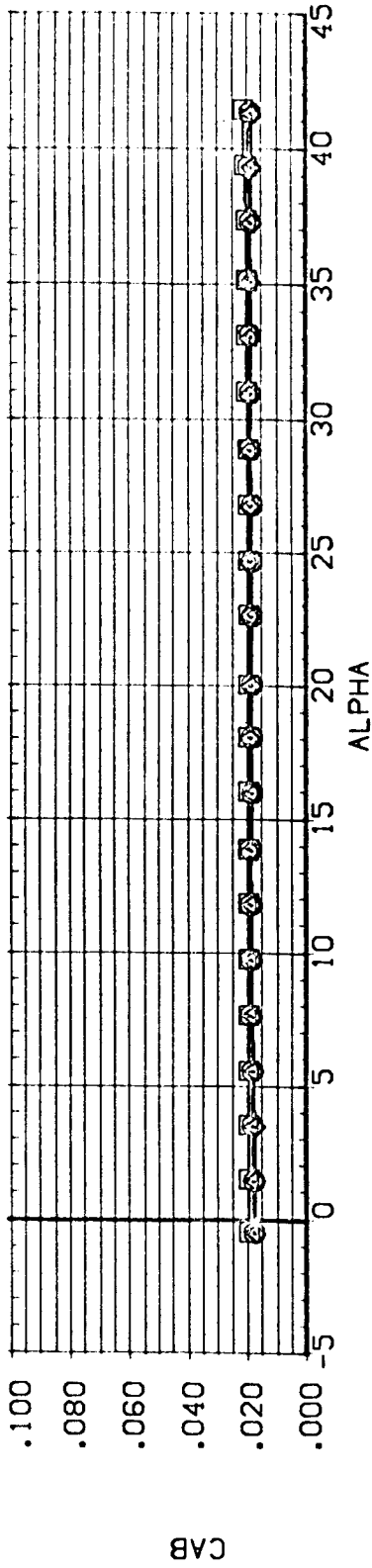


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

DATA SET SYMBOL: (X87548) (F87560) (F87564) (F87562)

CONFIGURATION DESCRIPTION: MSFC 574(CA48) ORB 39 MSFC 574(CA48) CRB 39 MSFC 574(CA48) CRB 39 MSFC 574(CA48) CRB 39

BETA: .000 .000 .000 .000

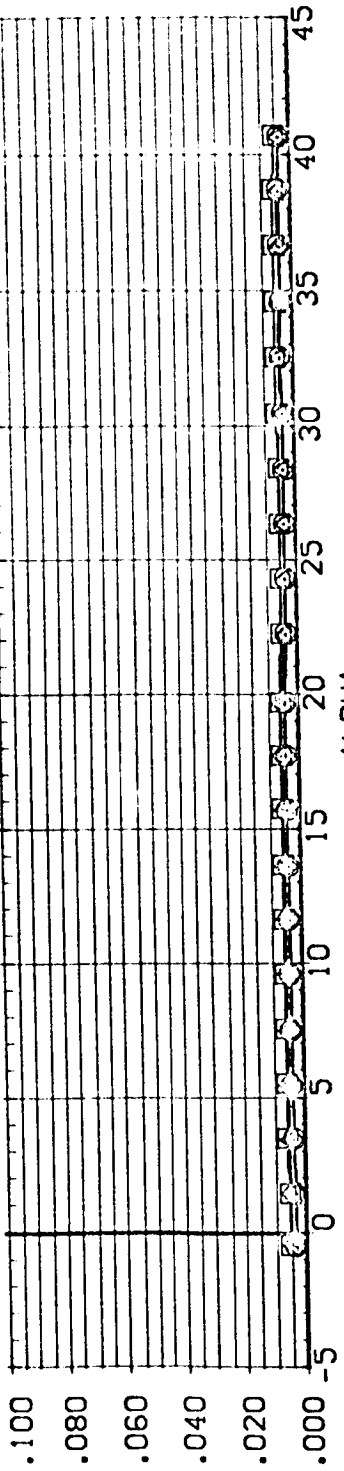
ELEVTR: .000 15.000 -40.000 -20.000

SPOBRK: 999.990 999.990 999.990 999.990

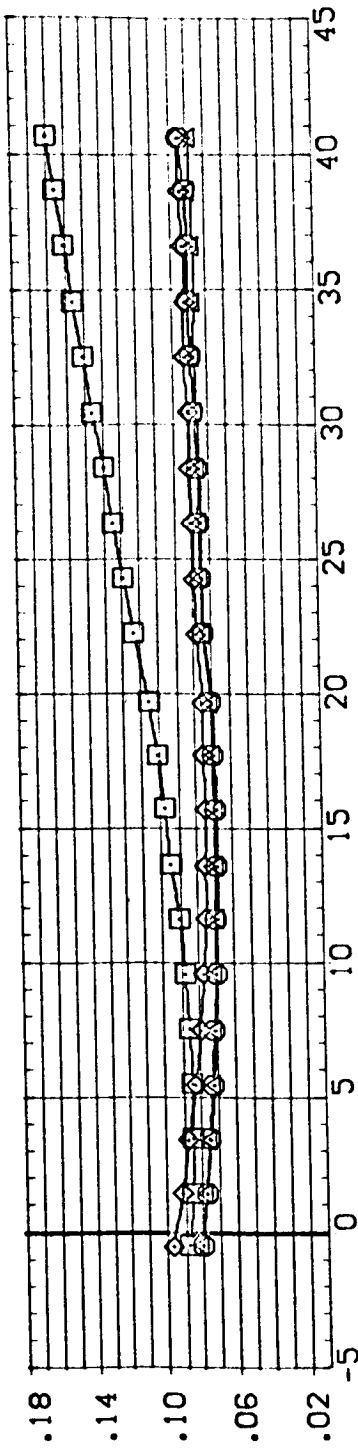
SOFLAP: .000 13.750 14.250 1.000

REFERENCE INFORMATION: SREF 2690.0000 SREF 474.8000 SREF 936.7000 SREF 838.0000 XMRP .0000 XMRP .0000 ZMRP .0000 SCALE .0040

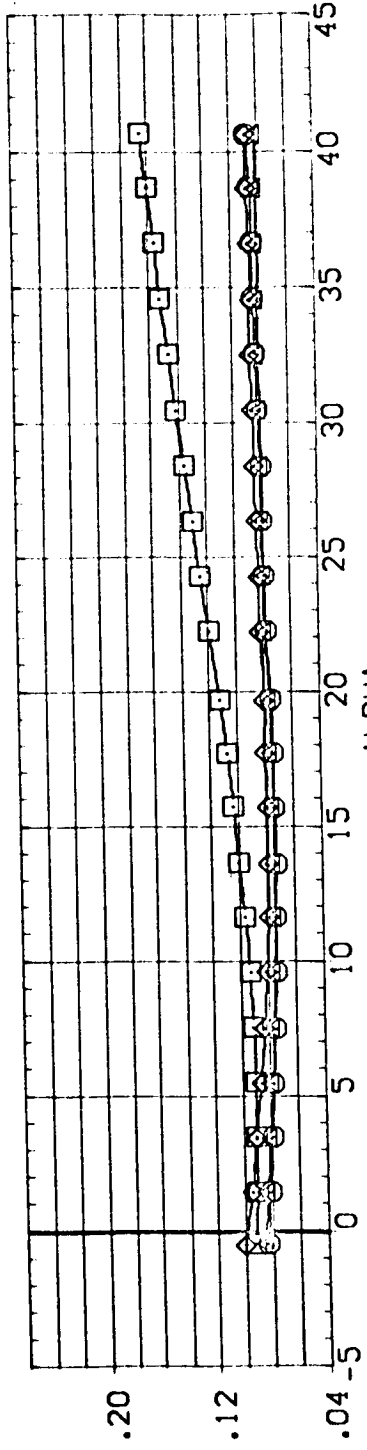
SG.F.: .0000 .0000 .0000 .0000



CAB



CAF



CA

FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(F)MACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (X87548) DATA NOT AVAILABLE
 (F87550) MSFC 574(CA48) CRB 139
 (F87554) DATA NOT AVAILABLE
 (F87562) MSFC 574(CA48) CRB 139

BETA ELEVTR SPOBRK BOFLAP REFERENCE INFORMATION SQ.F.T.
 .000 .000 999.990 .000 SREF 2690.0000
 .000 15.000 999.980 13.750 LREF 474.8000
 .000 -40.000 999.980 -14.250 BREF 836.7000
 .000 -20.000 999.990 .000 XMRP 838.7000
 .000 .000 .000 YMRP .0000
 .000 .000 .000 ZMRP .0000
 .000 .000 .000 SCALE .0040

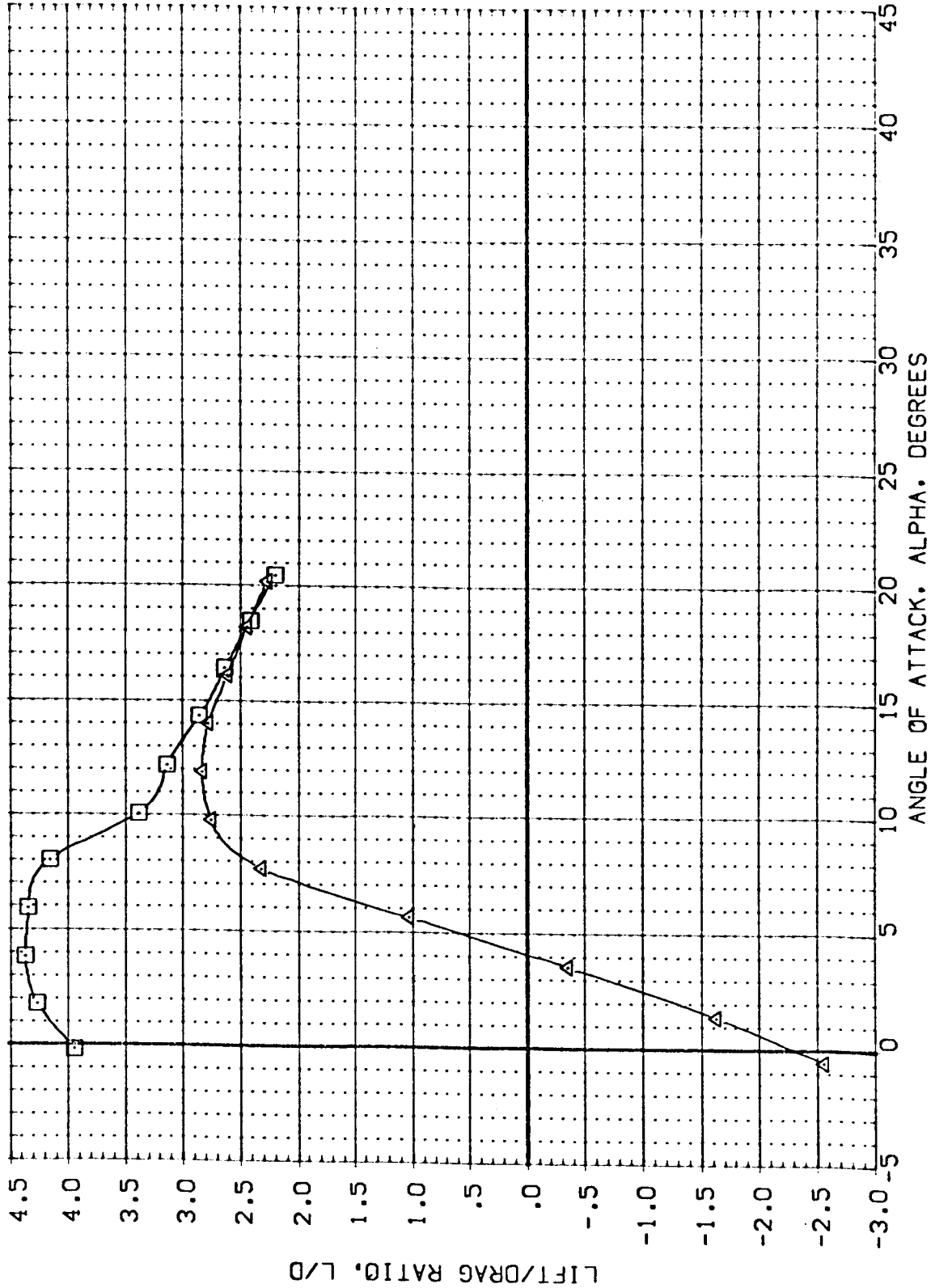


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (X87548) DATA NOT AVAILABLE
 (F87550) MSFC 574(CA48) CRB 139
 (F87554) DATA NOT AVAILABLE
 (F87562) MSFC 574(CA48) CRB 139

BETA ELEVTR SPCBRK BOFLAP REFERENCE INFORMATION SC.FT.
 .000 .000 999.990 .000 SREF 2690.000
 .000 .000 999.990 .000 PREF 474.800
 .000 15.000 999.990 -13.750 BRPF 936.700
 .000 -40.000 999.990 .000 XBRP 898.700
 .000 -20.000 999.990 .000 VBRP .000
 .000 .000 .000 .000 SCALE .0010

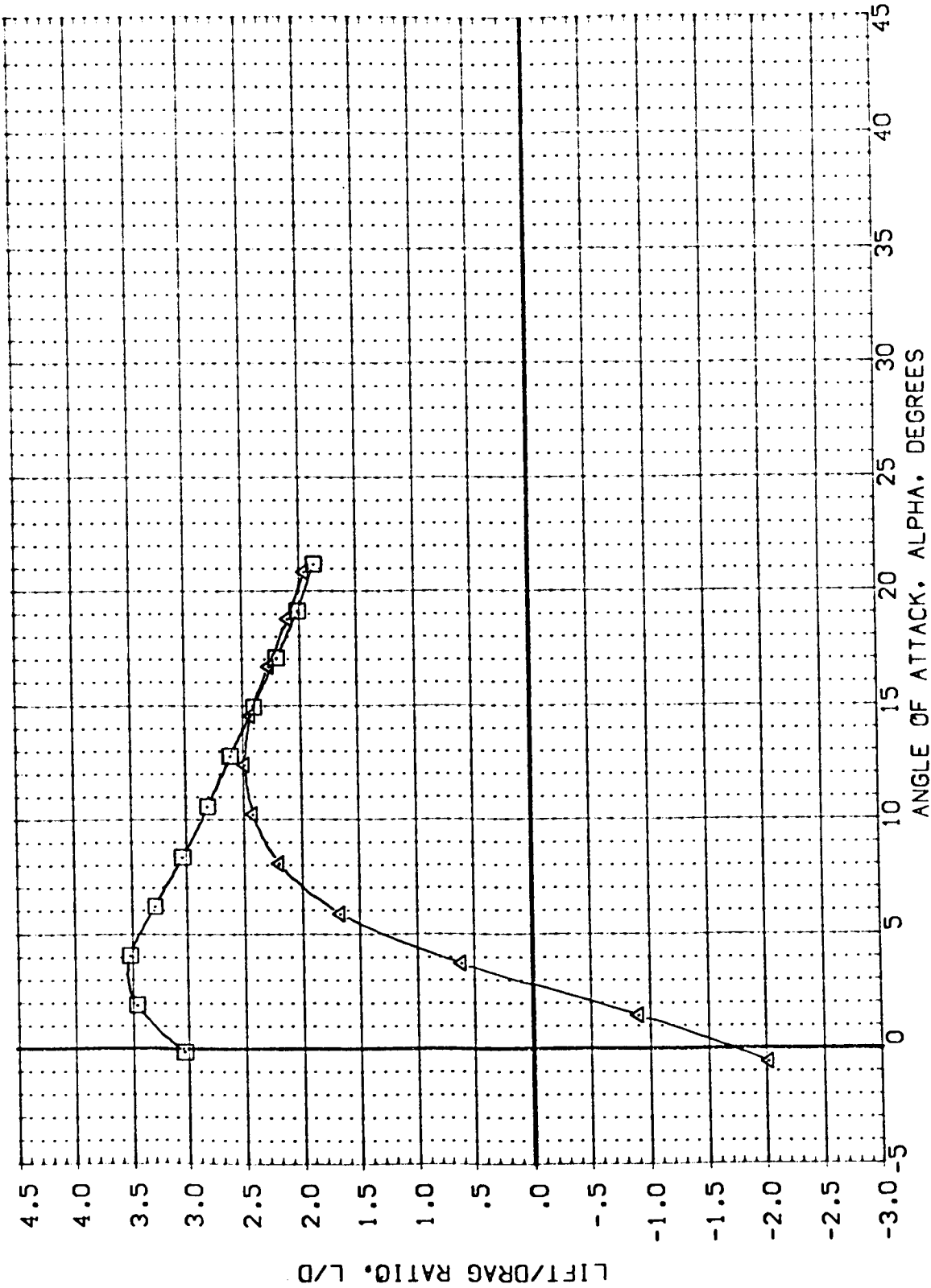


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(B) VACH = .90

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (X87S48) DATA NOT AVAILABLE
 (F87S50) MSFC 574(CA18) CRB 139
 (F87S52) DATA NOT AVAILABLE
 (F87S52) MSFC 574(CA18) CRB 139

BETA ELEVTR SPOBRK BOFLAP REFERENCE INFORMATION
 .000 .000 999.999 .000 SREF 2690.0000 SC.FT.
 .000 .000 999.999 13.750 .REF 4774.8000
 .000 .000 999.999 -14.250 .REF 9336.7000
 .000 .000 999.999 .000 XREF 8338.7000
 .000 .000 999.999 .000 YREF .0000
 .000 .000 999.999 .000 ZREF .0000
 .000 .000 999.999 .000 SCALE .0040

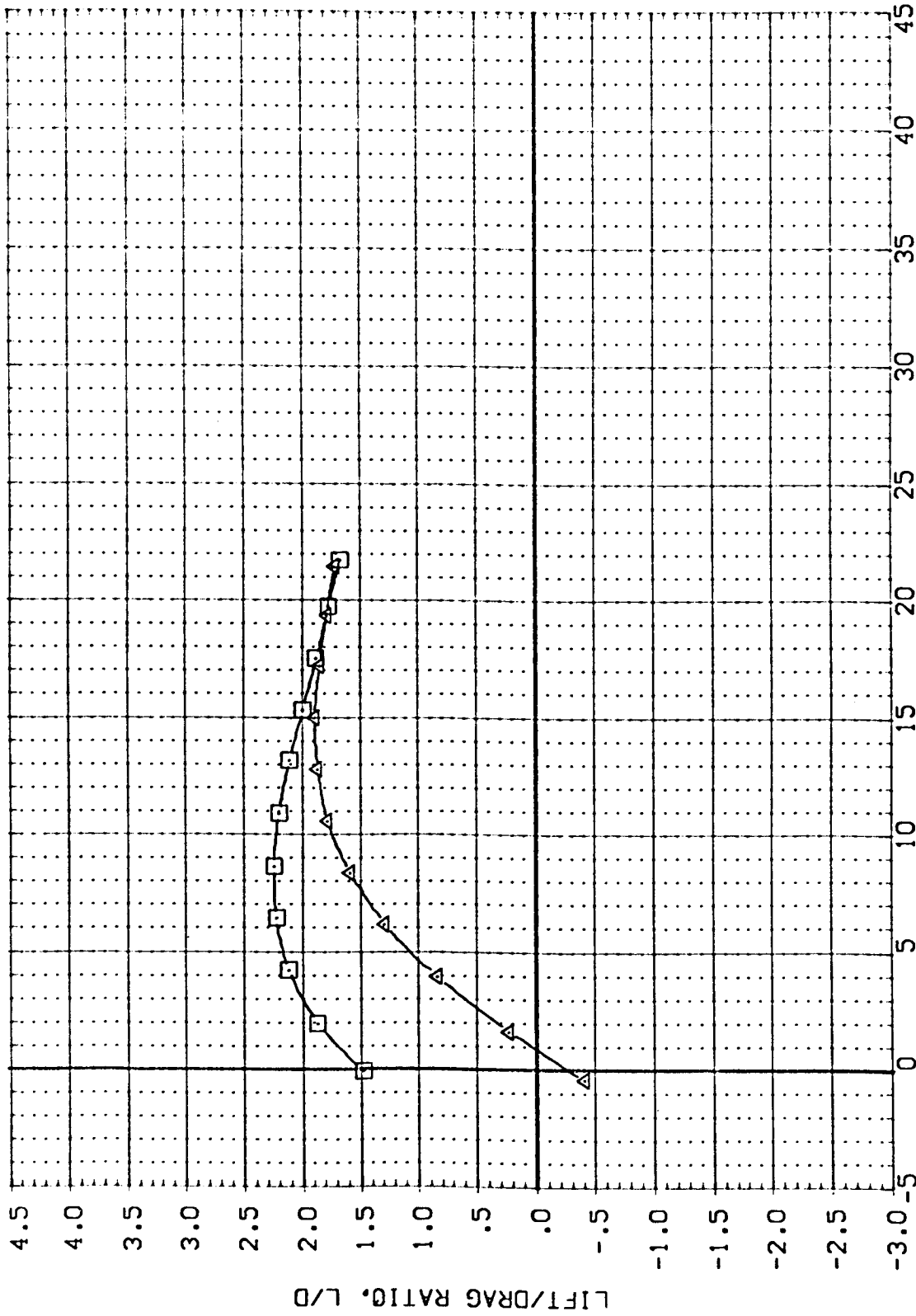


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(C)MACH = 1.20

DATA SET SYMBOL CONFIGURATION DESCRIPTION REFERENCE INFORMATION

X87548)	MSFC 574 (CA48)	CRB 139	BETA	ELEVTR	SPDRK	BDFLAP	SREF	2690.0000	SCALE
F87563)	MSFC 574 (CA48)	CRB 139	.000	.000	999.990	.000	LREF	474.8000	
F87564)	MSFC 574 (CA48)	CRB 139	.000	15.000	999.990	13.750	BREF	936.7000	
F87562)	MSFC 574 (CA48)	CRB 139	.000	-20.000	999.990	-14.250	XMRP	838.7000	
			.000	-20.000	999.990	.000	YMRP	.0000	
			.000	-20.000	999.990	.000	ZMRP	.0000	
							SCALE	.0040	

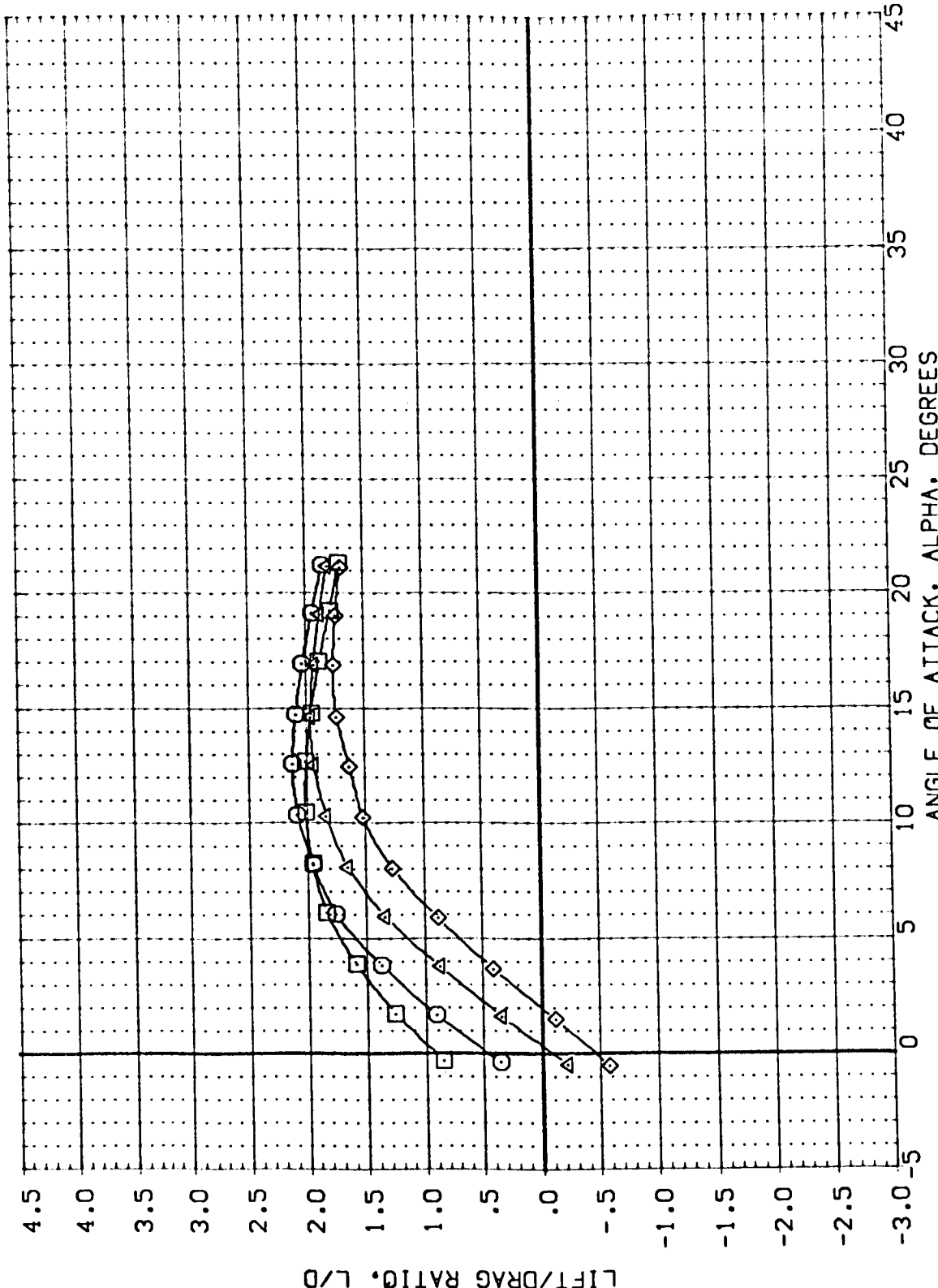


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

COMACH = 1.95

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(X87S48) MSFC 574(CA48) CRB 139

(F87S52) MSFC 574(CA48) CRB 139

(F87S64) MSFC 574(CA48) CRB 139

(F87S62) MSFC 574(CA48) CRB 139

BETA ELEVTR SPOBRK BCFLAP REFERENCE INFORMATION

.000 .000 999.99C .000 SREF 2690.0000 SQ.FT.

.000 15.000 999.99C 13.750 LREF 474.8000

.000 -40.000 999.99C -14.250 BREF 936.7000

.000 -20.000 999.99C .000 XMRP 838.7000

.000 .000 .000 .000 VMRP .0000

.000 .000 .000 .000 ZMRP .0000

.000 .000 .000 .000 SCALE .0040

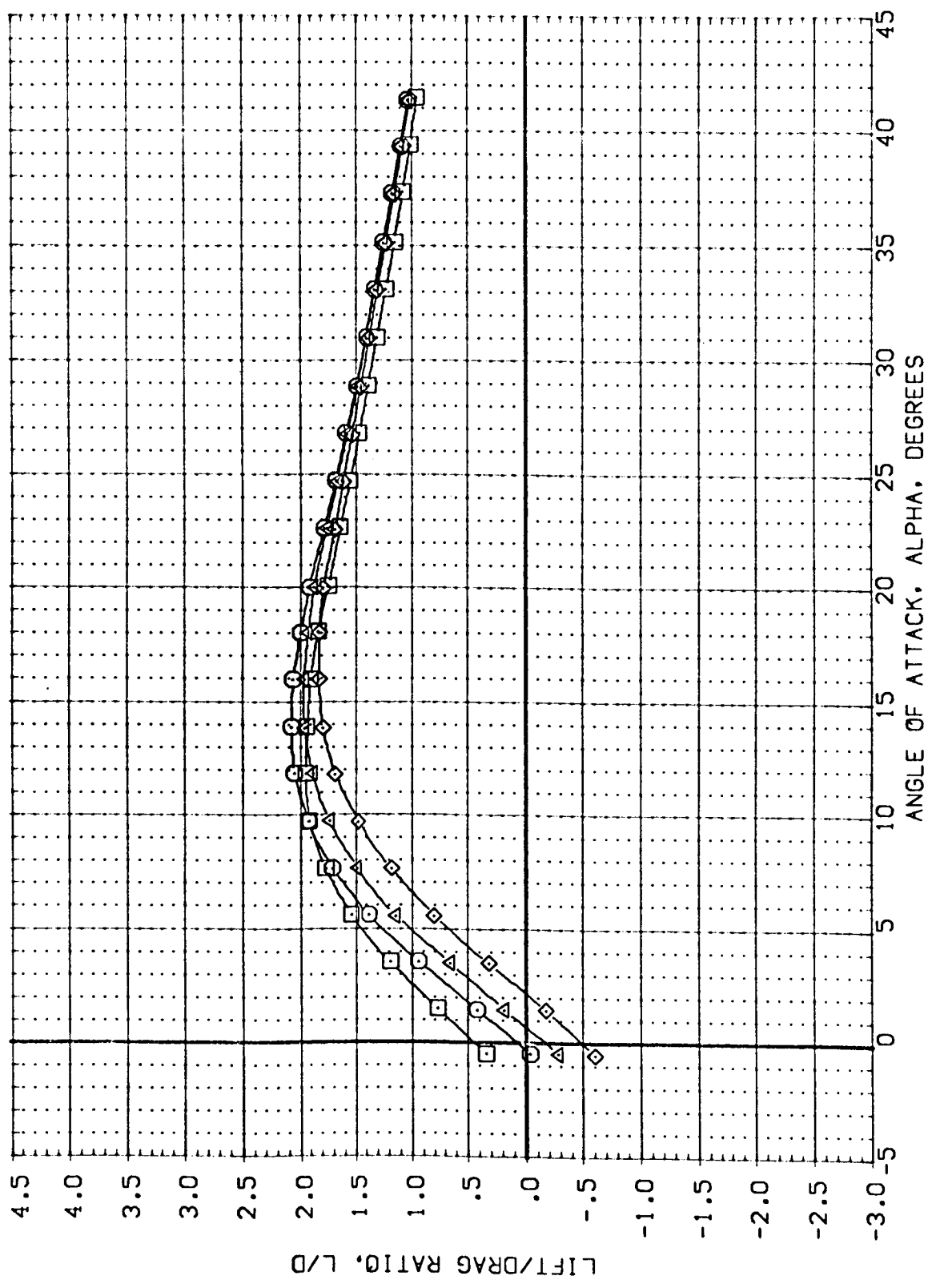


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 X87S48) MSFC 574(CA48) CR3 139
 87S6C) MSFC 574(CA48) CR3 139
 87S64) MSFC 574(CA48) CR3 139
 87S62) MSFC 574(CA48) CR3 139

BETA ELEVTR SPCBRK BCF_LAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SREF 2690.0000 SC.F.T.
 .000 15.000 999.990 13.750 LREF 474.8000
 .000 -40.000 999.990 -14.250 BREF 936.7000
 .000 -20.000 999.990 .000 XVRD 838.7000
 .000 .000 .000 ZVRD .0000
 .000 .000 .000 SCALE .0040

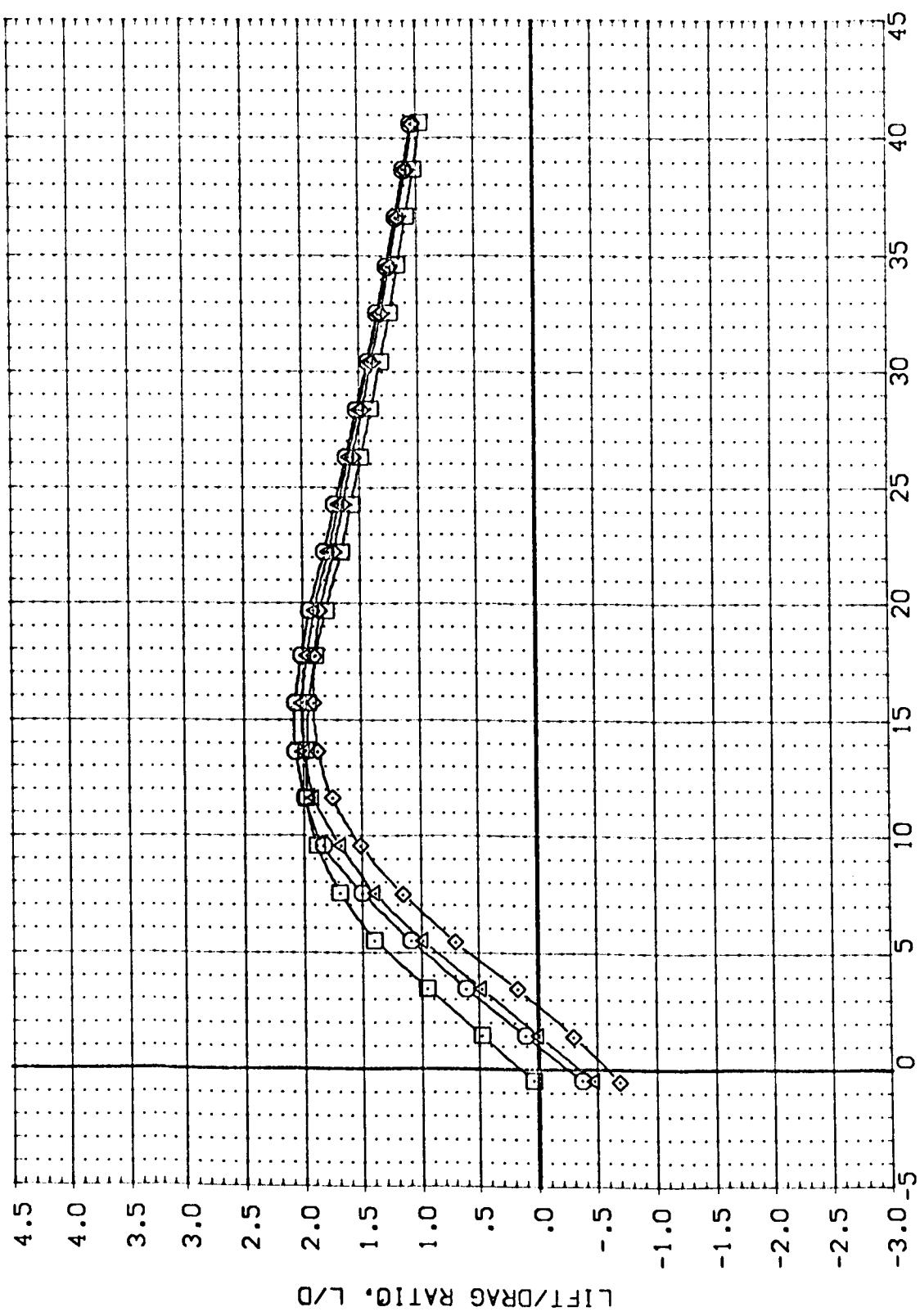


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(M)MACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (X87548) DATA NOT AVAILABLE
 (F87560) MSFC 574(CA48) CRB 139
 (F87564) DATA NOT AVAILABLE
 (F87562) MSFC 574(CA48) CRB 139

BETA ELEVTR SPDGRK BOFLAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SREF 2690.0000 SC.F.
 .000 .15.000 999.990 13.750 LREF 474.8000
 .000 -40.000 999.990 -14.250 BREF 936.7000
 .000 -20.000 999.990 .000 XMRP 838.7000
 .000 .000 .000 .000 ZMRP .0000
 .000 .000 .000 .000 SCALE .0000

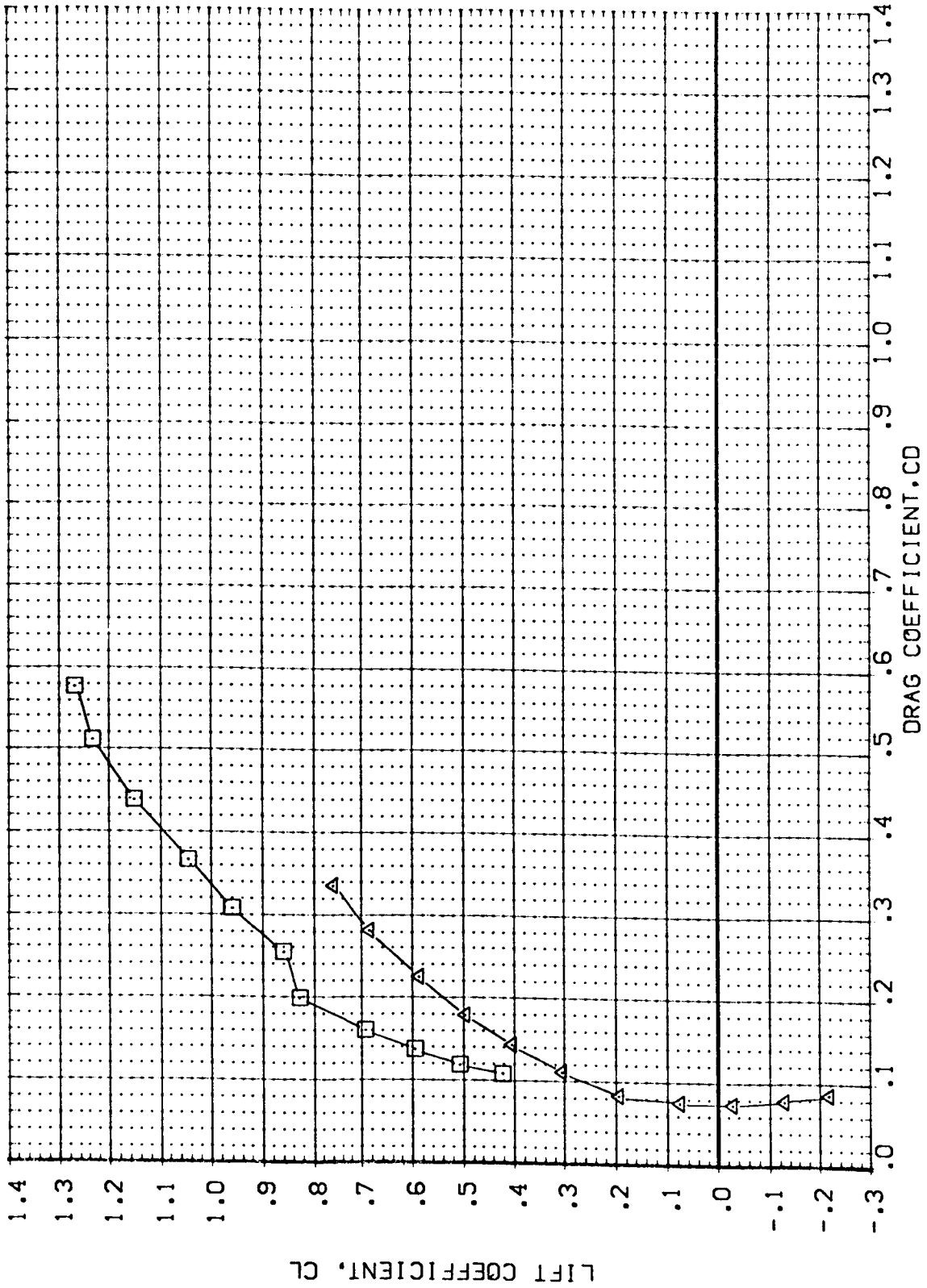


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (X87548) DATA NOT AVAILABLE
 (F87560) MSFC 574(CA48) CRB 139
 (F87564) DATA NOT AVAILABLE
 (F87562) MSFC 574(CA48) CRB 139

BETA ELEVTR SPOBRK SOFLAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SREF 2690.0000 SC.F.T.
 .000 15.000 999.990 13.750 LREF 474.8000
 .000 -40.000 999.990 -14.750 BREF 936.7000
 .000 -20.000 999.990 .000 XMRP 838.7000
 YMRP .0000
 ZMRP .0000
 SCALE .0040

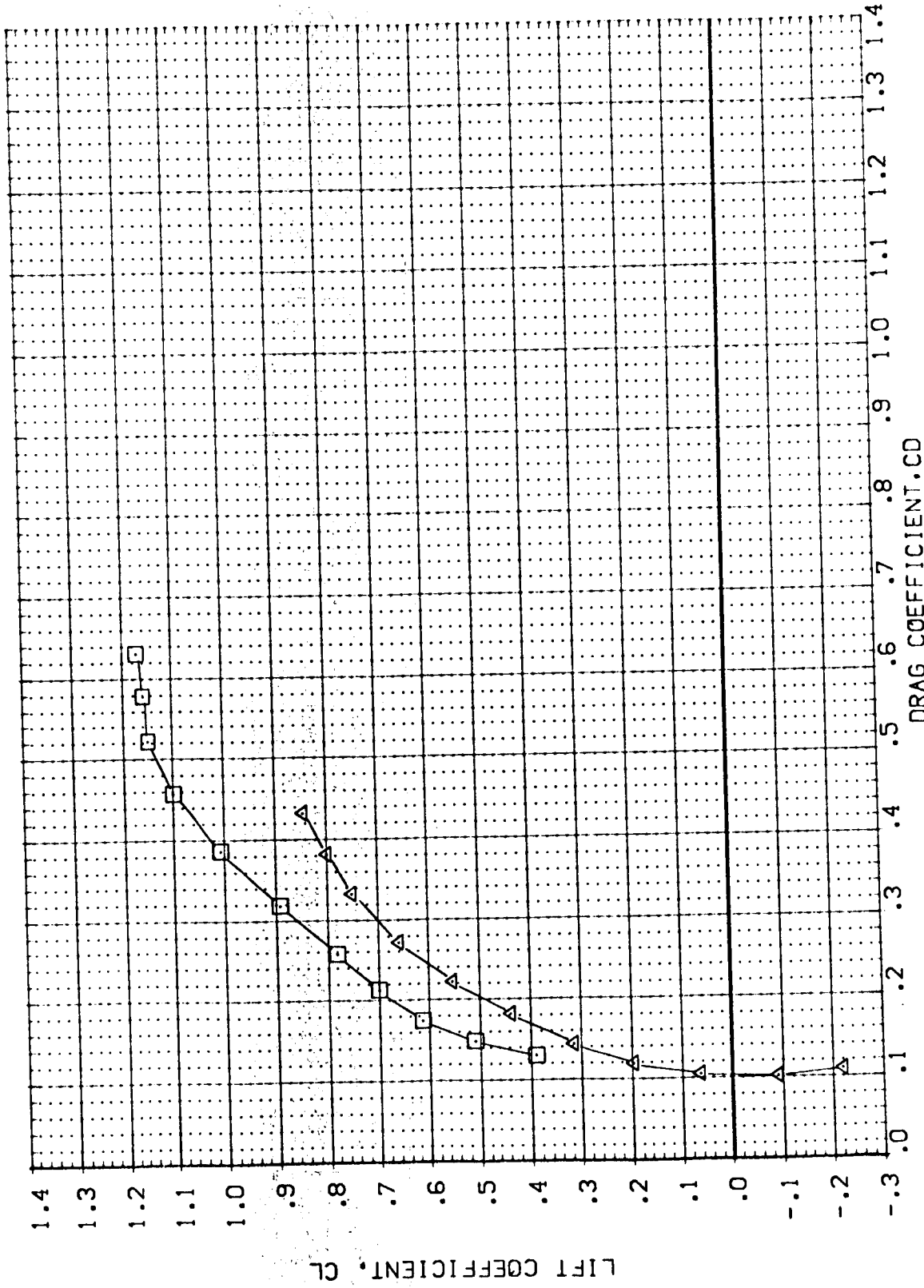


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(B) MACH = .90

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(X87548)	DATA NOT AVAILABLE	.000	.000	999.990	.000	SREF 2690.0000
(F87560)	MSFC 574(CA48) CRB 139	.000	15.000	999.990	13.750	LREF 474.8000
(F87564)	DATA NOT AVAILABLE	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87562)	MSFC 574(CA48) CRB 139	.000	-20.000	999.990	.000	XMRP 838.7000
						YMRP .0000
						ZMRP .0000
						SCALE .0040

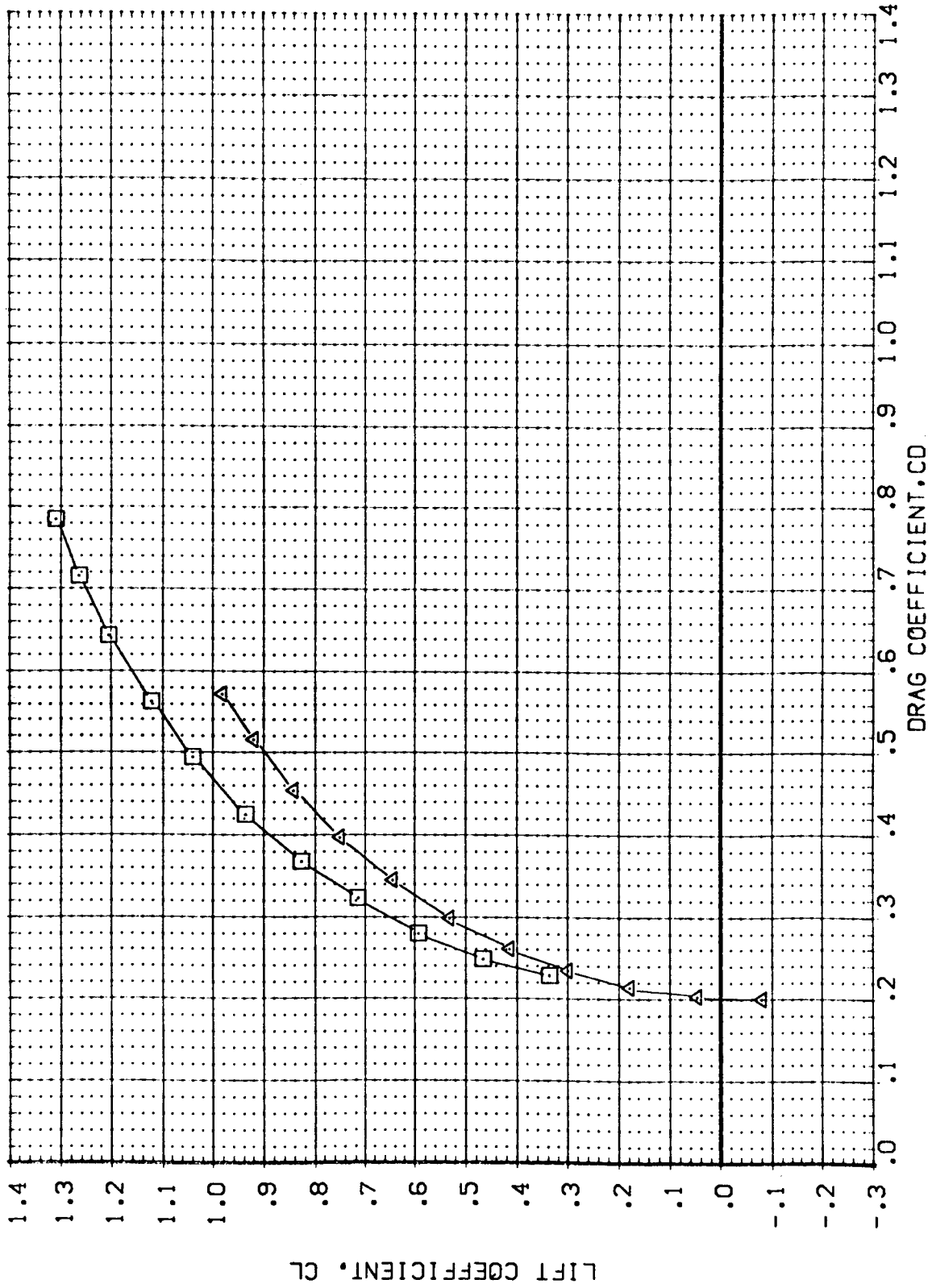


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87S48) MSFC 574(CA48) CRB 139
 (F87S60) MSFC 574(CA48) CRB 139
 (F87S64) MSFC 574(CA48) CRB 139
 (F87S62) MSFC 574(CA48) CRB 139

BETA ELEVTR SPOBRK BDFLAP
 .000 .000 999.990 .000
 .000 15.000 999.990 13.750
 .000 -40.000 999.990 -14.250
 .000 -20.000 999.990 .000

REFERENCE INFORMATION
 SREF 2690.0000 SC.F.T.
 LREF 474.8000
 BREF 936.7000
 XMRP 838.7000
 YMRP .0000
 ZMRP .0000
 SCALE .0040

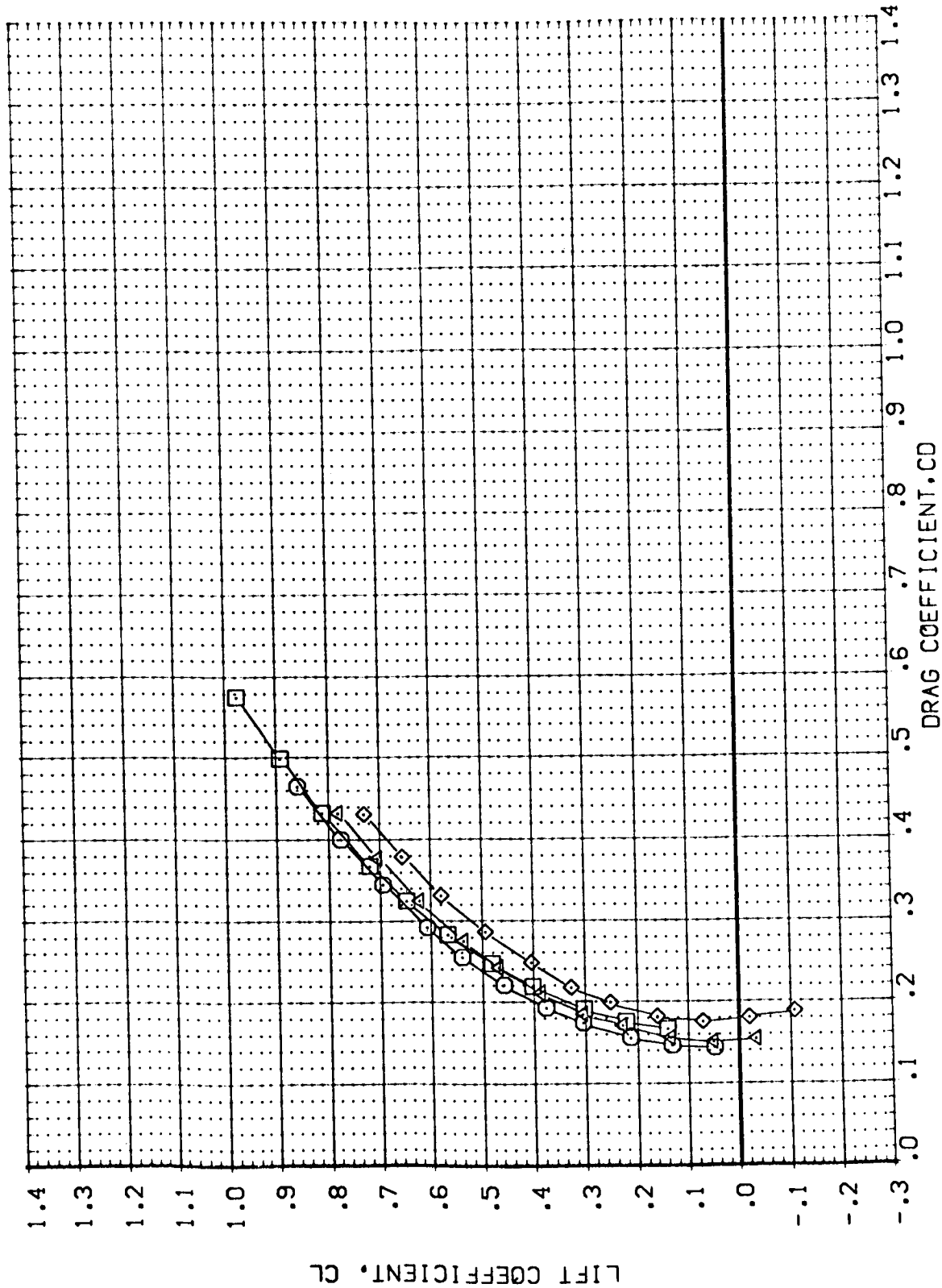


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(C)MACH = 1.95

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (X87548) MSFC 574(CA48) CRB 139
 (F87562) MSFC 574(CA48) CRB 139
 (F87564) MSFC 574(CA48) CRB 139
 (F87562) MSFC 574(CA48) CRB 139

BETA .000
 .000
 .000
 .000

ELEVTR .000
 15.000
 -40.000
 -20.000

SPOBRK 999.990
 999.990
 999.990
 999.990

BOFLAP .000
 13.750
 -14.250
 .000

REFERENCE INFORMATION
 SREF 2690.0000
 LREF 474.8000
 BREF 936.7000
 XMRP 838.7000
 YMRP .0000
 ZMRP .0000
 SCALE .0040

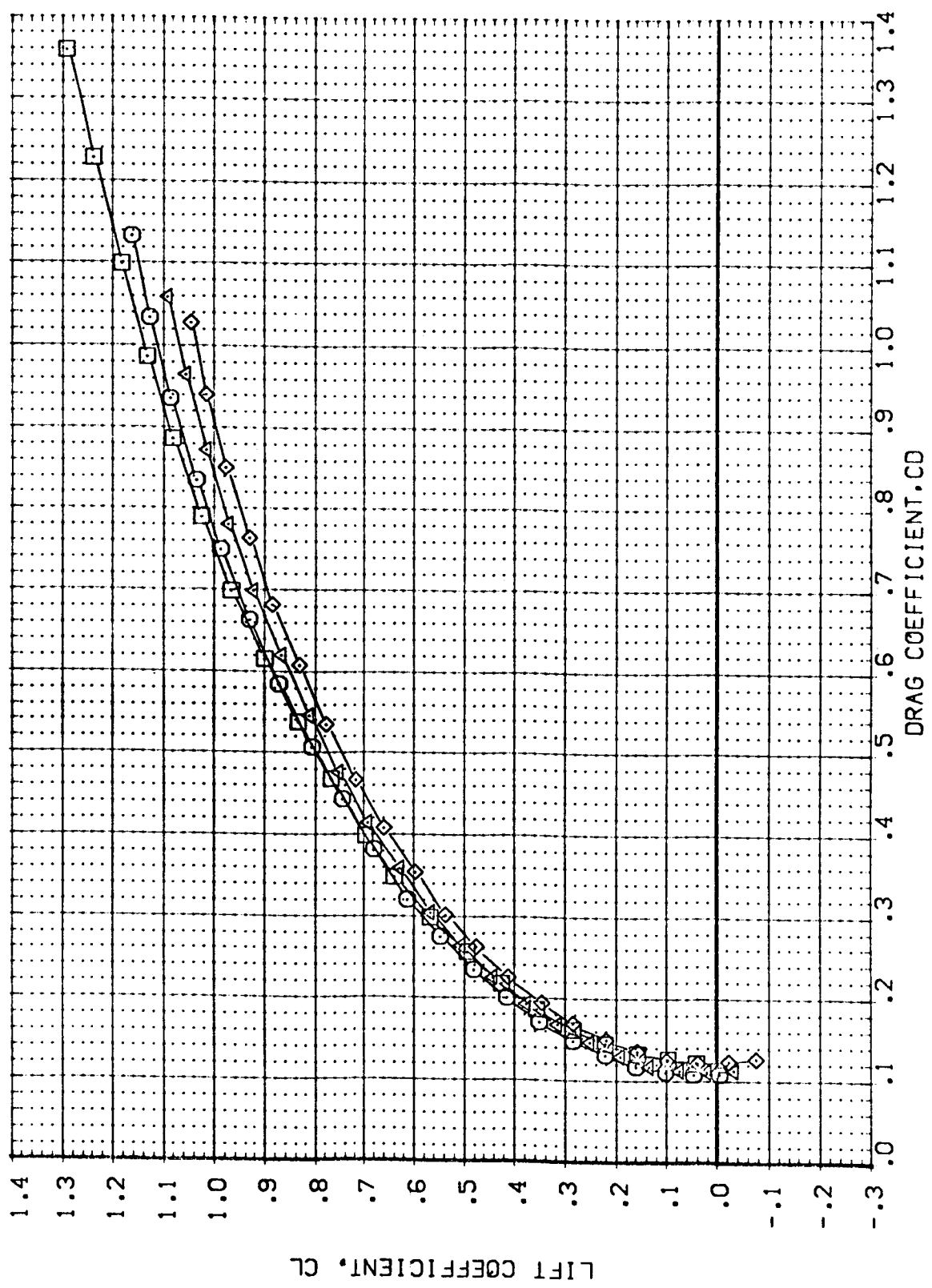


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(X87548) MSFC 574(CA48) ORB | 39

(F87560) MSFC 574(CA48) CRB | 39

(F87564) MSFC 574(CA48) CRB | 39

(F87562) MSFC 574(CA48) CRB | 39

BETA .000

ELEVTR .000

SPOBRK 999.999

BOFLAP .000

SREF 2699.0000

LREF 474.8000

BREF 936.7000

XWRP 898.7000

YWRP .0000

ZWRP .0000

SCALE .0010

REFERENCE INFORMATION

SO.FT. 50.000

IN. 12.000

IN. 12.000

IN. 12.000

IN. 12.000

IN. 12.000

IN. 12.000

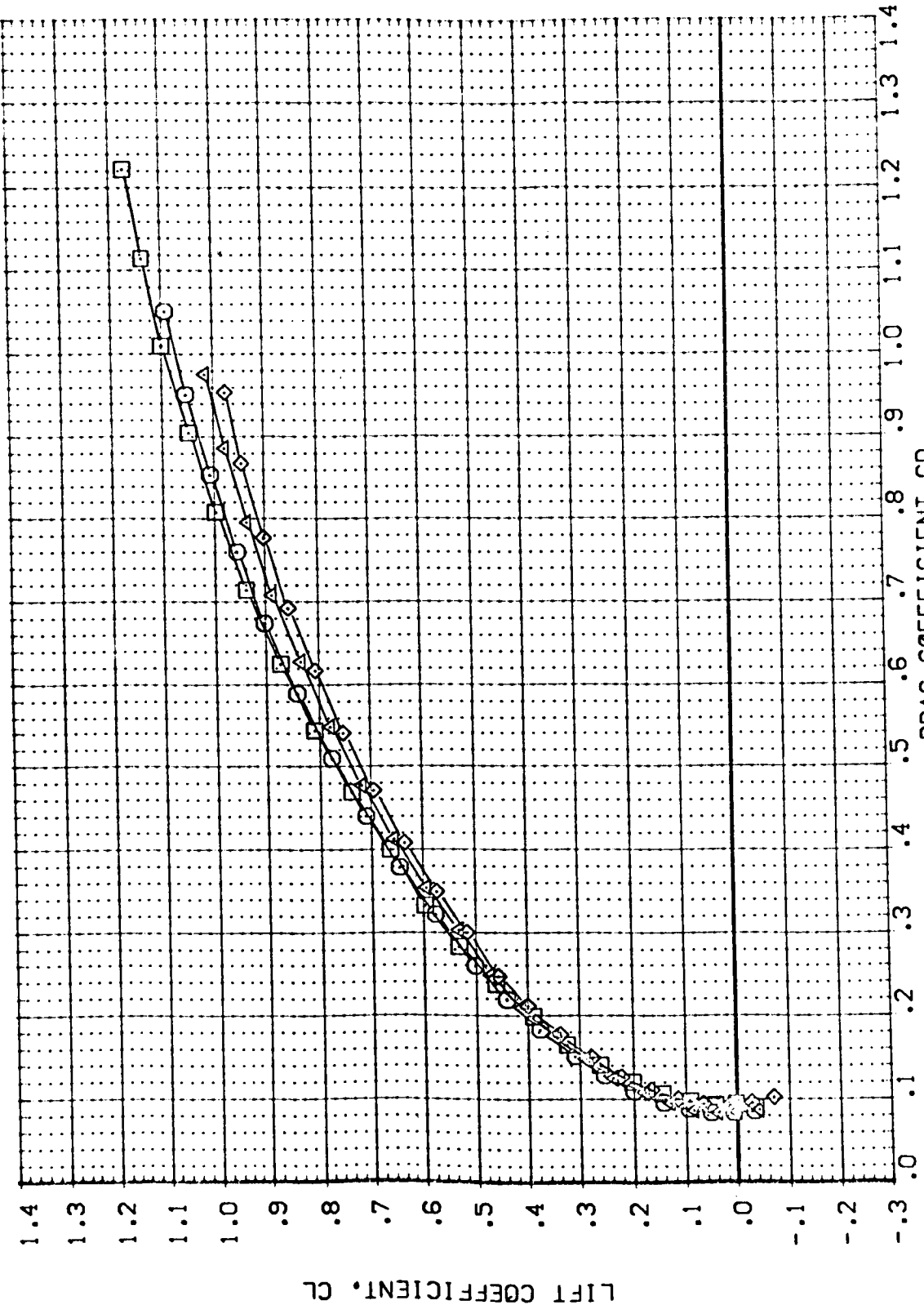


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139

(F)MACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (G87548) ○ MSFC 574(CA48) CRB 139
 (G87560) ○ MSFC 574(CA48) CRB 139
 (G87564) ○ DATA NOT AVAILABLE
 (G87562) ○ MSFC 574(CA48) CRB 139

BETA ELEVTR SPOBRK BOFLAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SREF 2690.0000 SCFT.
 .000 15.000 999.990 13.750 LREF 474.8000
 .000 -40.000 999.990 -14.250 BREF 935.7000
 .000 -20.000 999.990 .000 XWRP 864.5000
 .000 .000 .000 ZWRP .0000
 .000 .000 .000 SCALE .0040

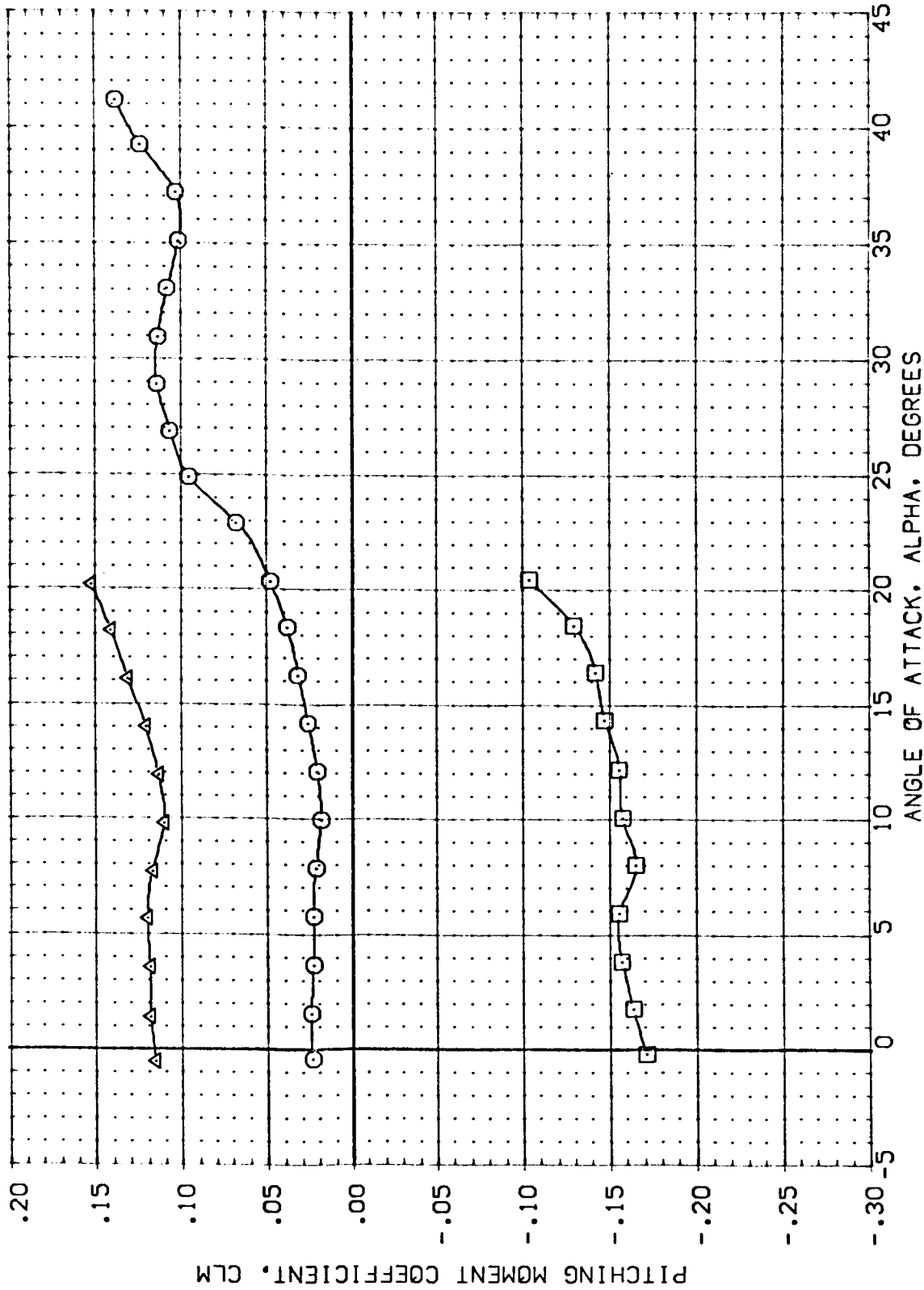


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 (AFT C.G.)

DATA SET SYMBOL CONFIGURATION DESCRIPTION BETA ELEVTR SPOBRK BDFLAP REFERENCE INFORMATION
 (087548) MSC 574(CA48) ORB 139 .000 .000 999.990 .000 SREF 2690.0000 SC.F.T.
 (087560) MSC 574(CA48) ORB 139 .000 15.000 999.990 13.750 LREF 474.8000 "/>

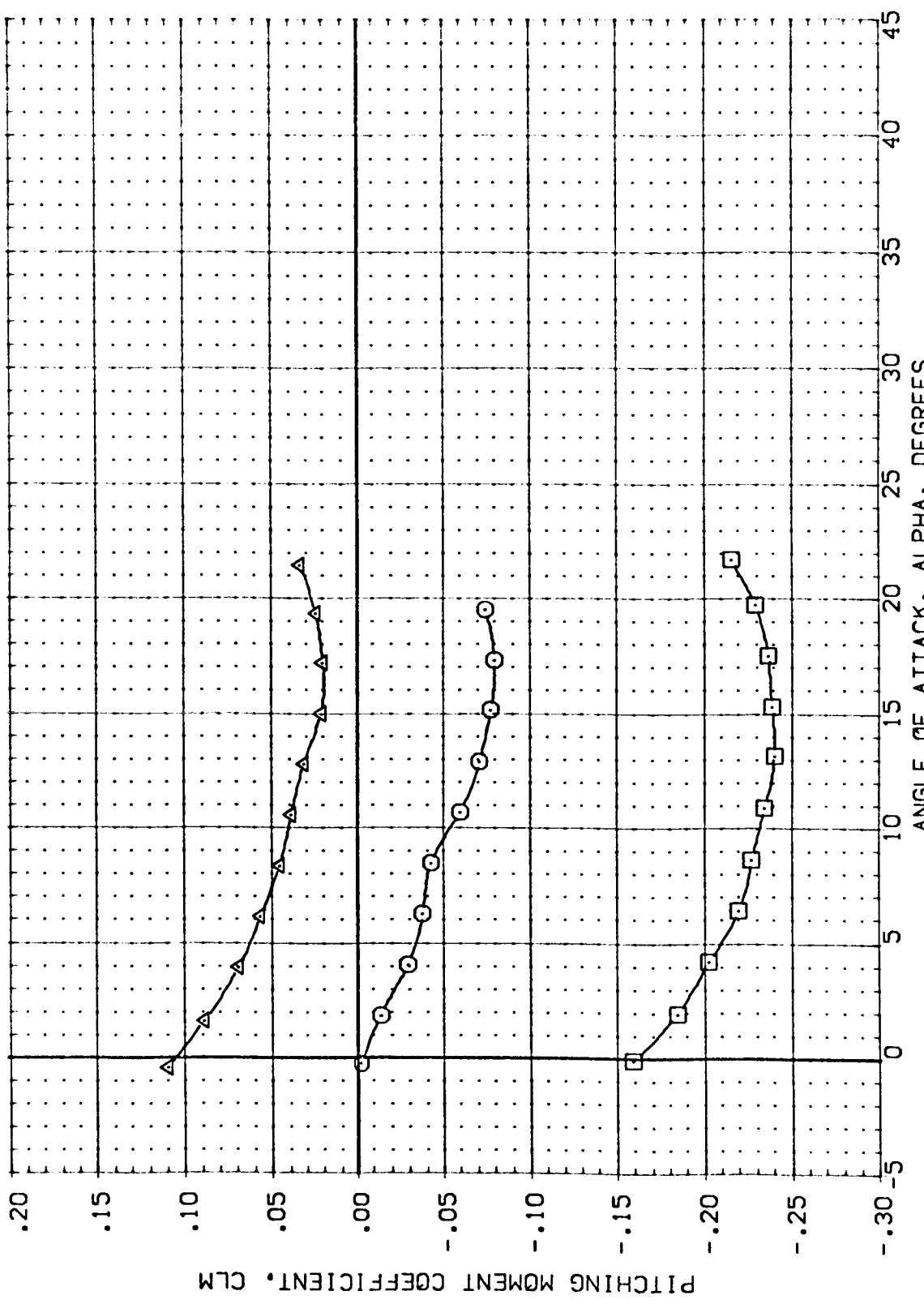


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 (AFT C.G.)

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(S87S48)	MSFC 574(CA48) CRB 139	.000	.000	999.990	.000	289C.0000
(S87S50)	MSFC 574(CA48) CRB 139	.000	15.000	999.990	13.750	474.8000
(S87S52)	MSFC 574(CA48) CRB 139	.000	-40.000	999.990	-14.250	936.7000
(S87S54)	MSFC 574(CA48) CRB 139	.000	-20.000	999.990	.000	864.5000
(S87S52)		.000			.000	0.0000
					ZMOP	.0000
					SCALE	.0040

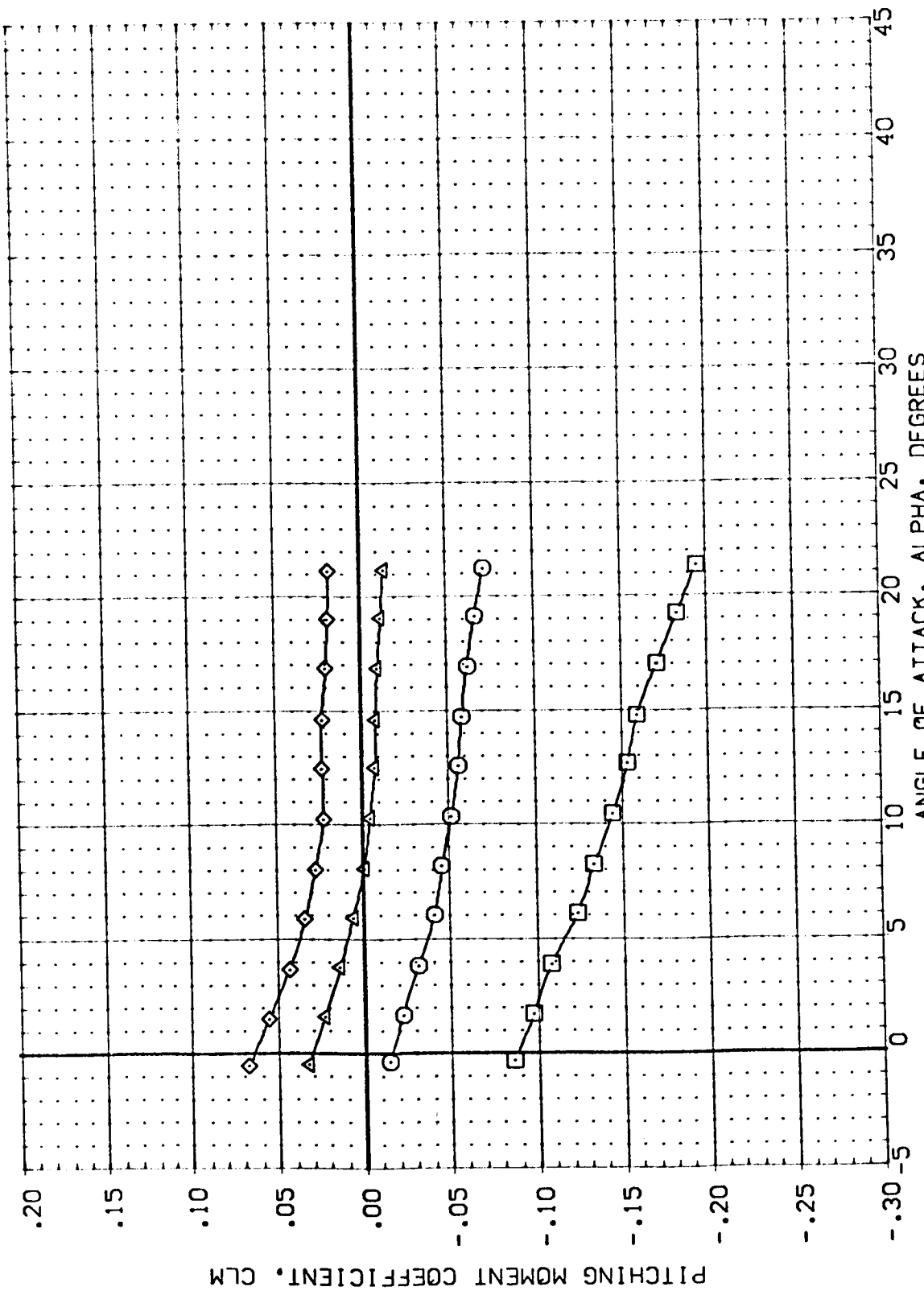


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 (AFT C.G.)

(M)MACH = 1.95

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(C87S48) MSFC 574(CA48) CRB 139

(C87S52) MSFC 574(CA48) CRB 139

(C87S61) MSFC 574(CA48) CRB 139

(C87S62) MSFC 574(CA48) CRB 139

BETA ELEVTR SPOBRK BOFLAP REFERENCE INFORMATION

.000 .000 999.990 .000 SREF 2690.0000 SC.F.F.

.000 .000 999.990 13.750 LREF 474.8000

.000 .000 999.990 -14.250 BREF 936.7000

.000 .000 999.990 .000 XREF 864.5000

.000 .000 999.990 .000 YREF .0000

.000 .000 999.990 .000 ZREF .0000

SCALE .0010

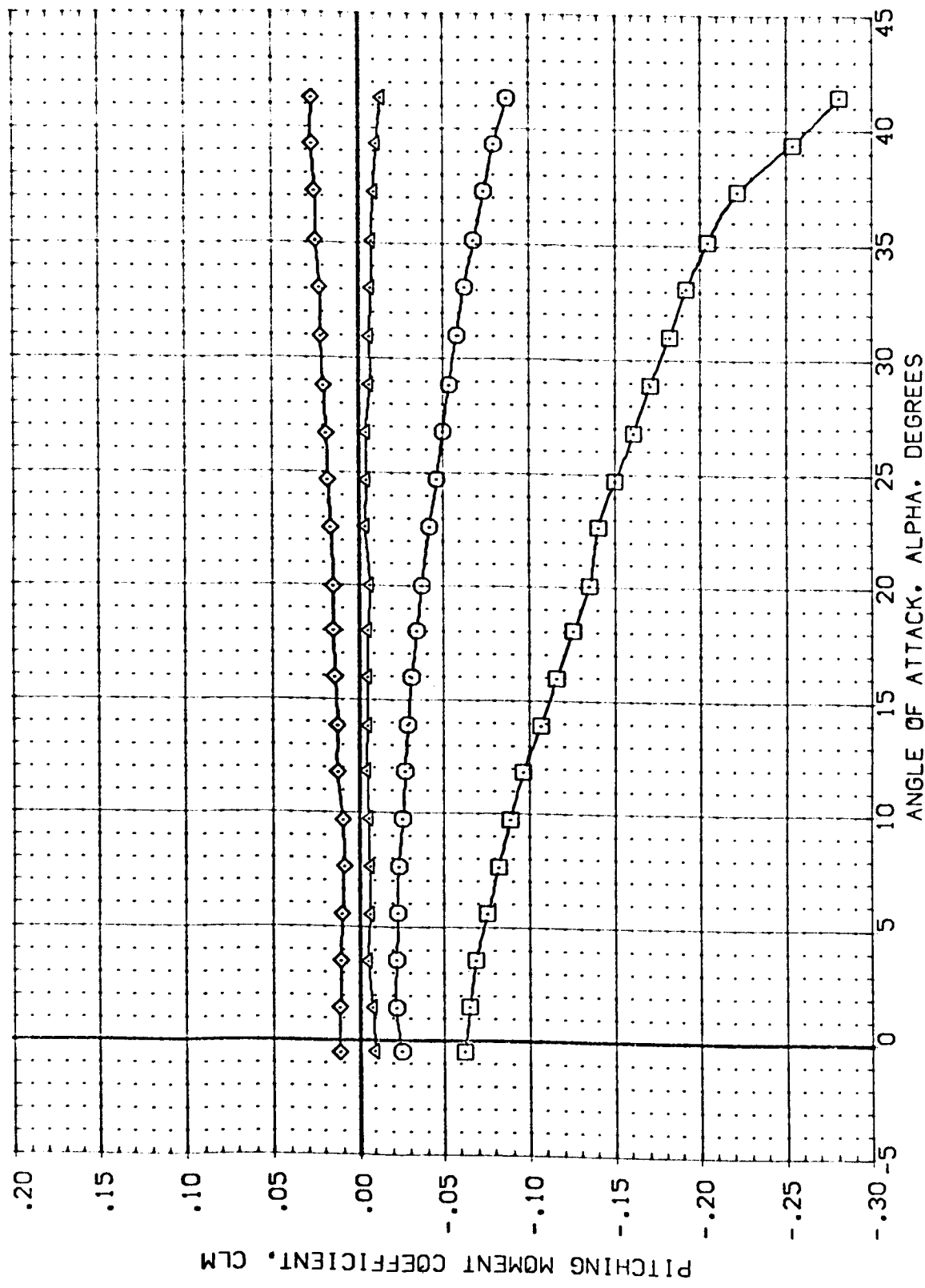


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 (AFT C.G.)

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(387548)	MSFC 574(CA48) CRB 139	.000	.000	999.990	.000	SREF 2690.0000
(387560)	MSFC 574(CA48) CRB 139	.000	15.000	999.990	13.750	LREF 474.8000
(387564)	MSFC 574(CA48) CRB 139	.000	-40.000	999.990	-14.250	BREF 936.7000
(387562)	MSFC 574(CA48) CRB 139	.000	-20.000	999.990	.000	XMRP 864.5000
						VMRP .0000
						ZMRP .0000
						SCALE .0040

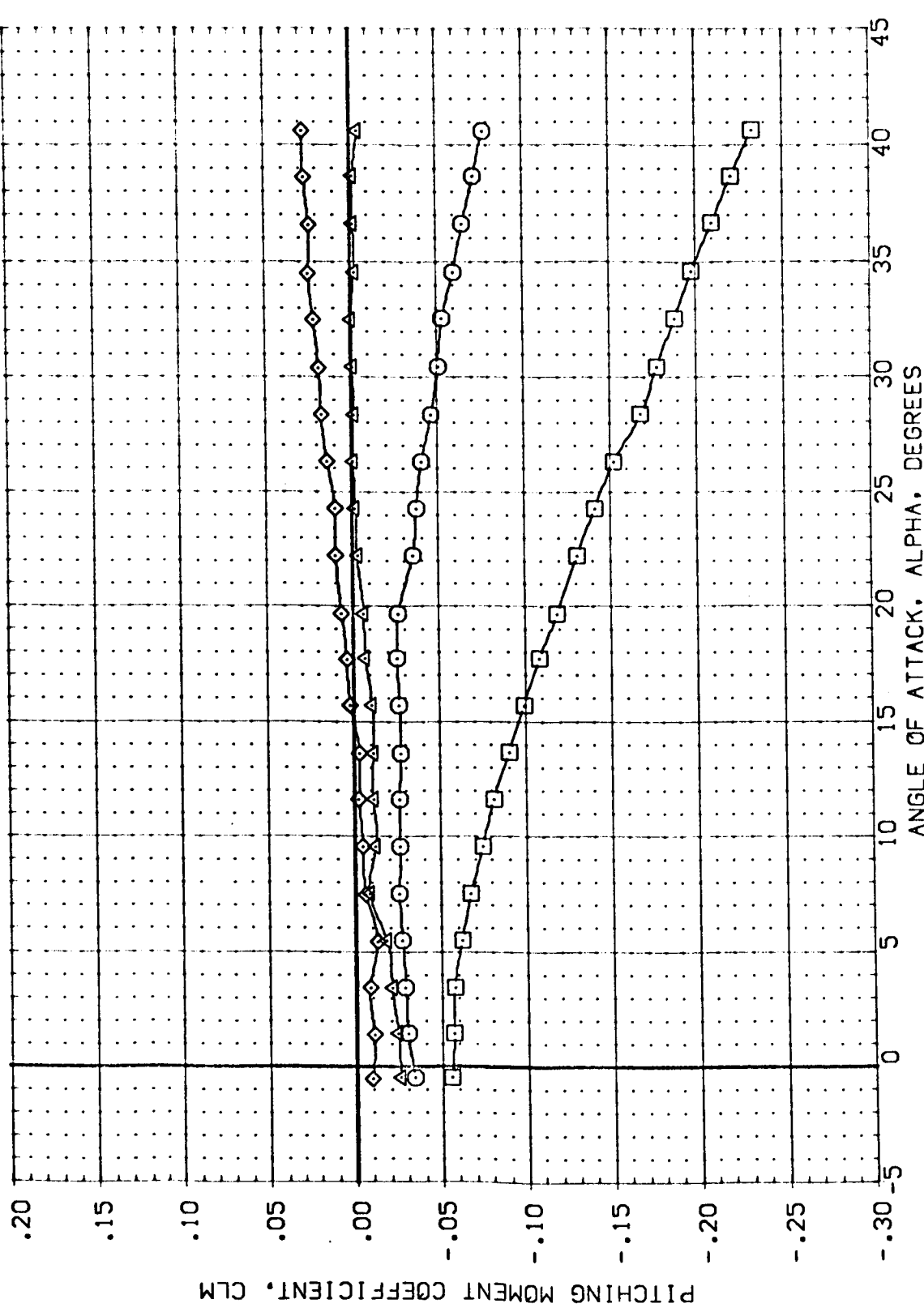


FIG. 16 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 (AFT C.G.)

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDBRK	BOFLAP	REFERENCE INFORMATION
(F87565)	MSFC 574(CA18) ORB 139 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000
(F87567)	MSFC 574(CA18) ORB 139 W/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000
(F87567)	DATA NOT AVAILABLE	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87579)	MSFC 574(CA18) ORB 139 W/ALT NOSE	.000	-20.000	999.990	.000	XMRP 839.7000
						VMPP .0000
						ZMRP .0000
						SCALE .0010

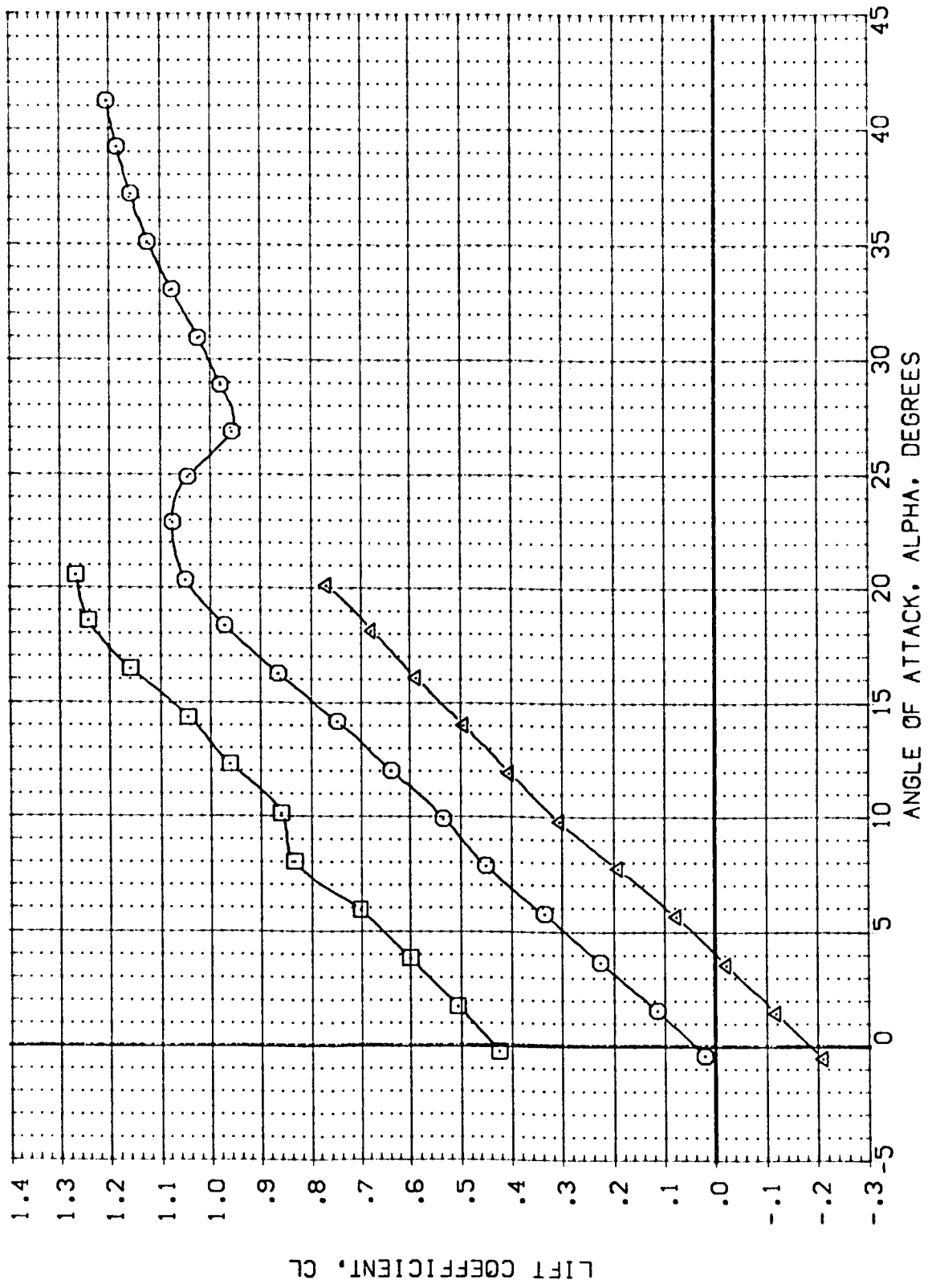


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87566) MSFC 574(CA48) ORB 139 V/ALT NOSE
 (F87577) MSFC 574(CA48) ORB 139 V/ALT NOSE
 (F87581) DATA NOT AVAILABLE
 (F87579) MSFC 574(CA48) ORB 139 V/ALT NOSE

BETA ELEVTR SPOBRK BOFLAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SREF 2690.0000 SQ.FT.
 .000 15.000 999.990 13.750 LREF 474.8000 IN.
 .000 -40.000 999.990 -14.250 BRFP 936.7000 IN.
 .000 -20.000 999.990 .000 XMRP 838.7000 IN.
 .000 .0000 .0000 .0000 YMRP .0000 IN.
 .0000 .0000 .0000 ZMRP .0000 IN.
 SCALE .0040

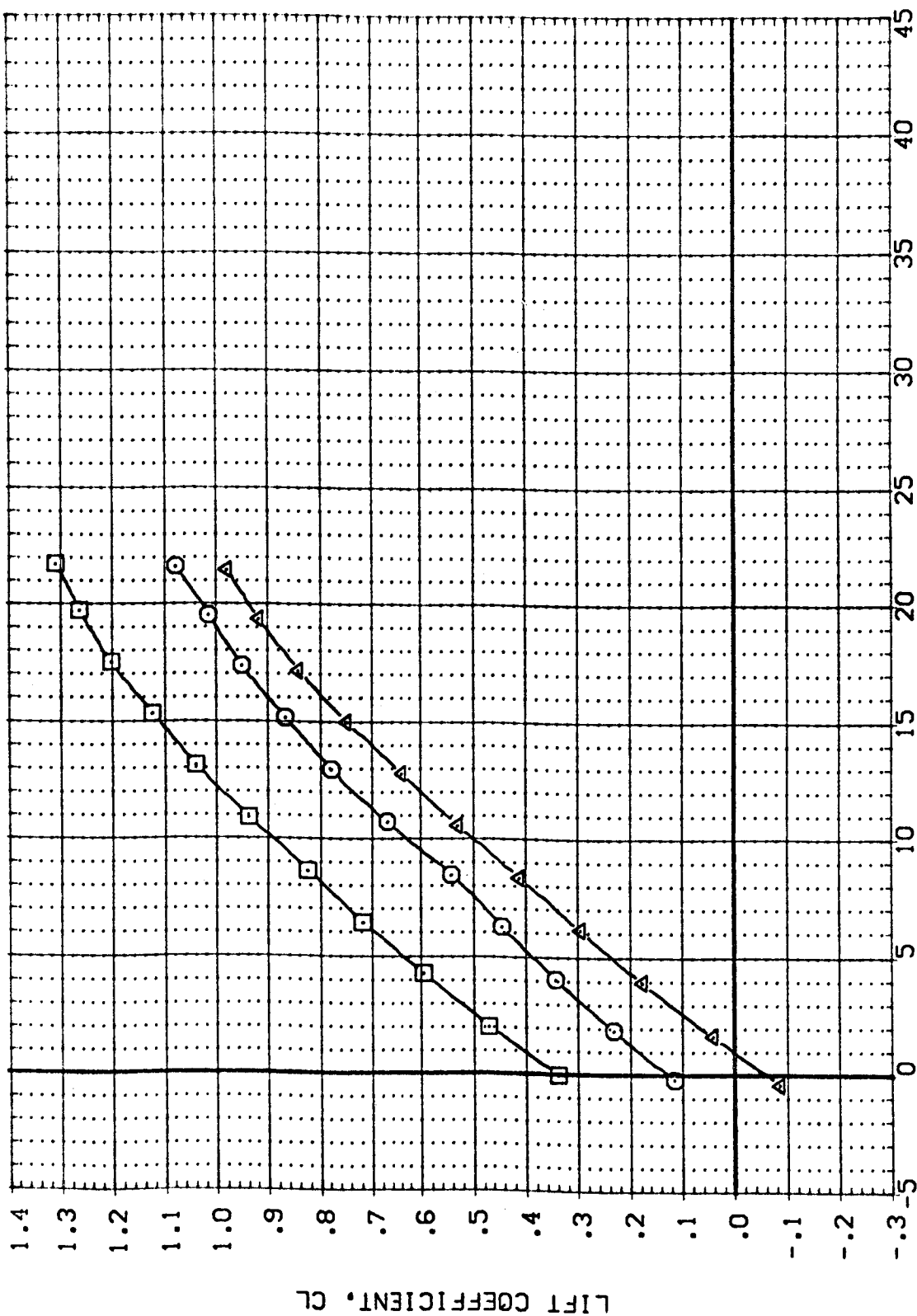


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

(C)MACH = 1.20

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87S66)	MSFC 574(CA48) CRB 139 V/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000
(F87S77)	MSFC 574(CA48) CRB 139 V/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000
(F87S81)	MSFC 574(CA48) CRB 139 V/ALT NOSE	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87S79)	MSFC 574(CA48) CRB 139 V/ALT NOSE	.000	-20.000	999.990	.000	XMRP 838.7000
						YMRP .0000
						ZMRP .0000
						SCALE .0040

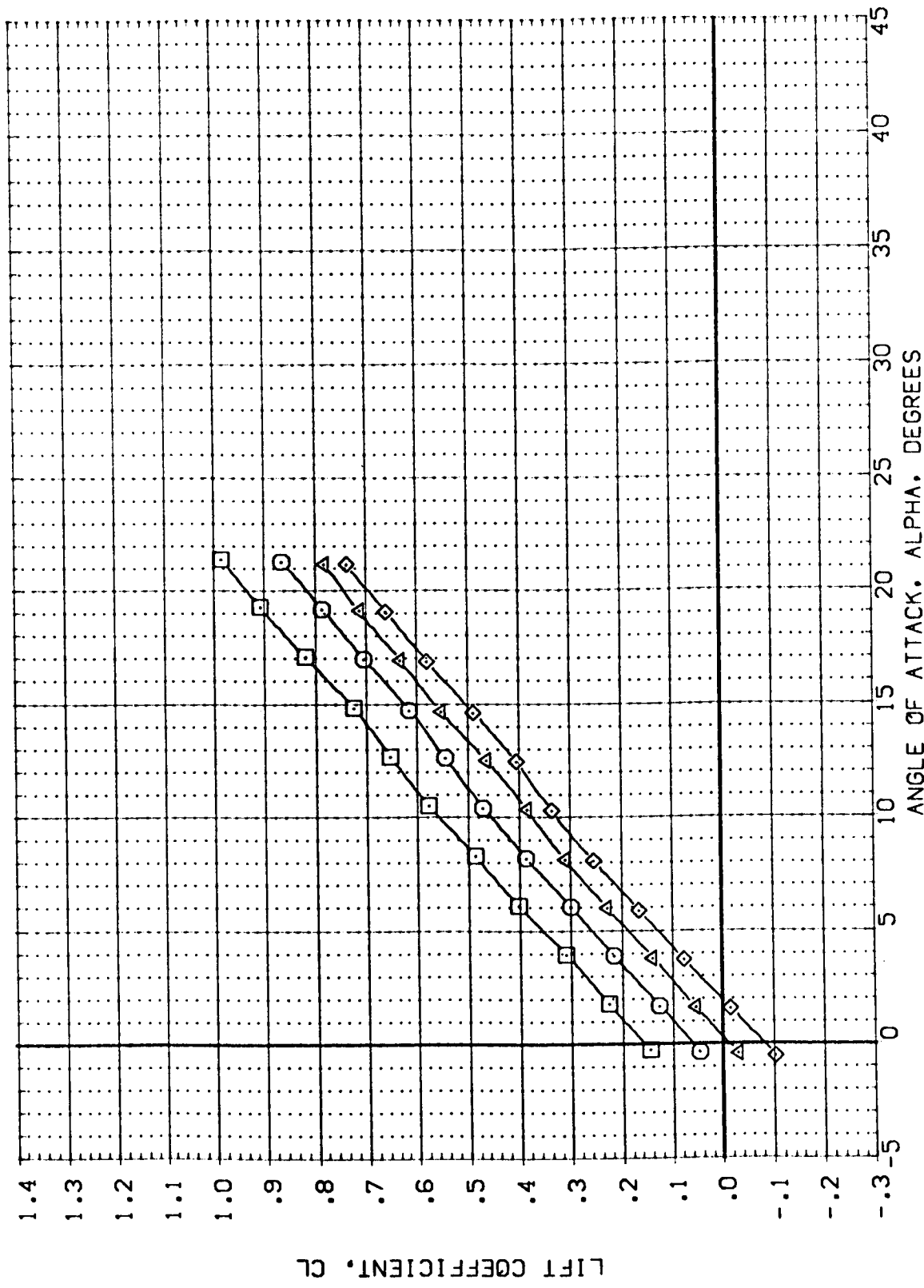


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE
 (M)MACH = 1.95 PAGE 804

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(F87566)	MSFC 574(CA48) CRB 39 W/ALT NCSE	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(F87577)	MSFC 574(CA48) CRB 39 W/ALT NCSE	.000	15.000	999.990	13.750	LREF 474.8000
(F87581)	MSFC 574(CA48) CRB 39 W/ALT NCSE	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87579)	MSFC 574(CA48) CRB 39 W/ALT NCSE	.000	-20.000	999.990	.000	XMRP 838.7000
						YMRP .0000
						ZMRP .0000
						SCALE .0040

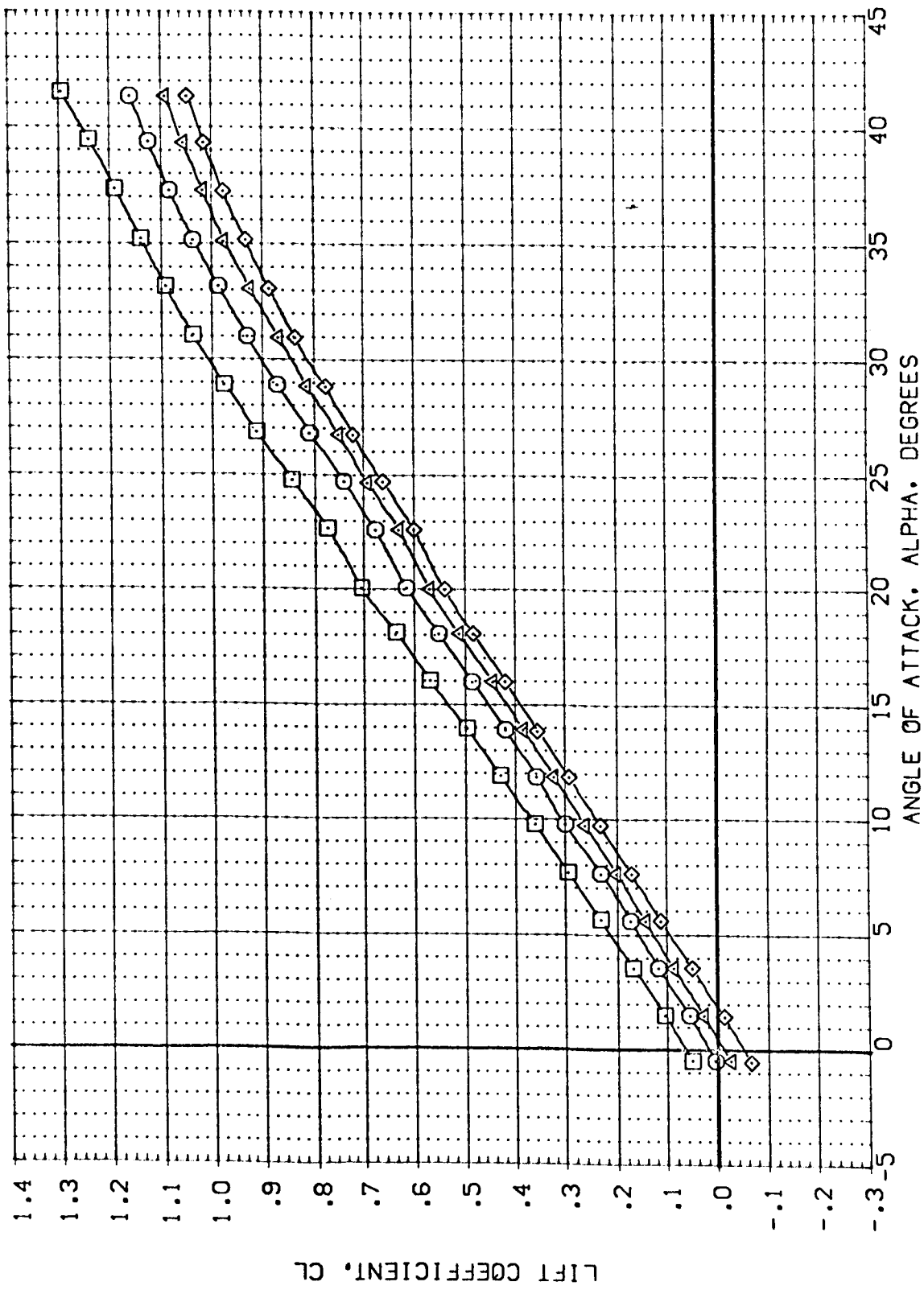


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION	SCALE
{F87566}	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000	0.0000
{F87577}	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000	0.0000
{F87581}	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	-40.000	999.990	-14.250	BREF 936.7000	0.0000
{F87579}	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	-20.000	999.990	.000	XMRP 839.7000	0.0000
						ZMRP .0000	0.0000
						SCALE .00040	

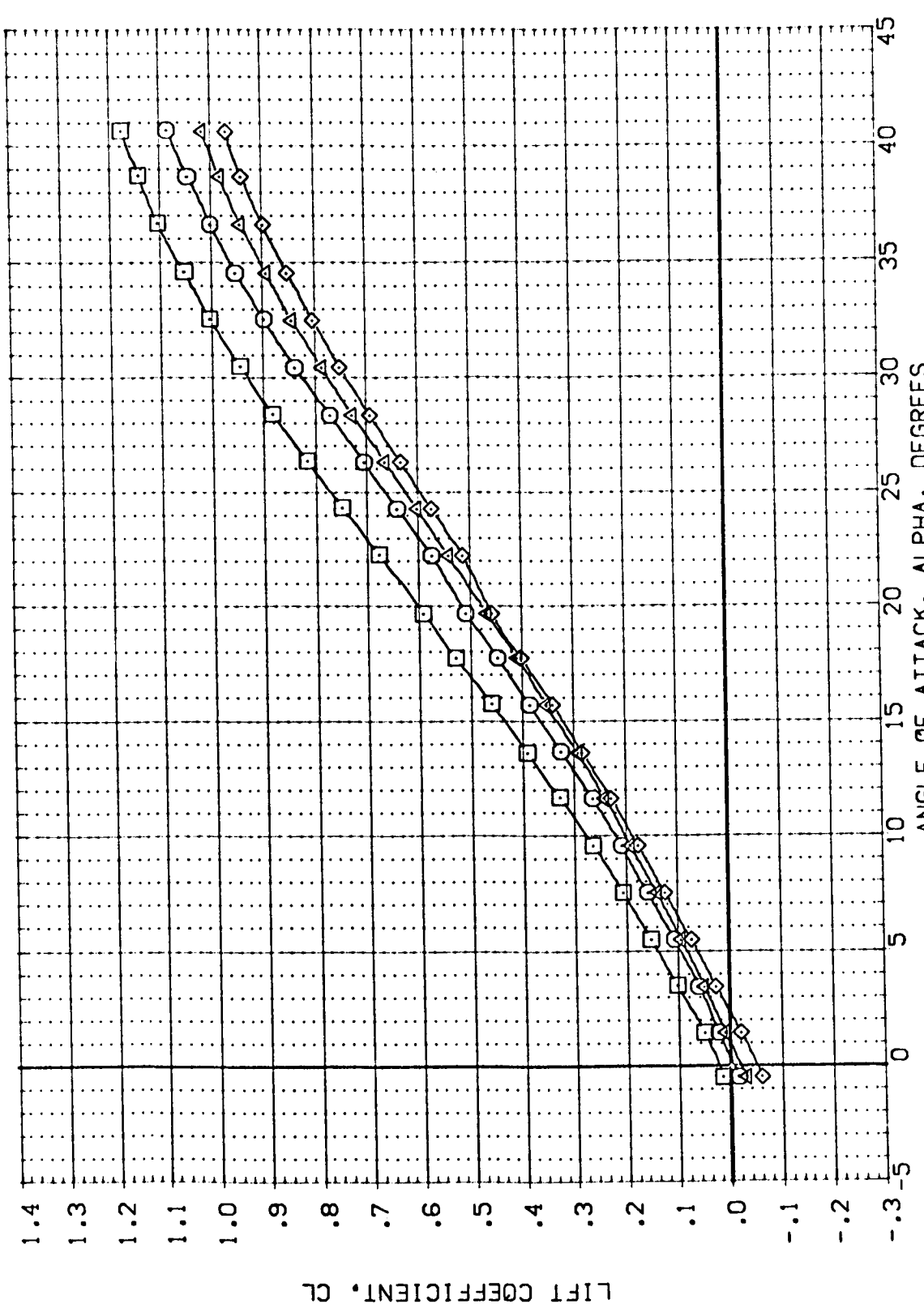


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE
 (M)MACH = 4.96

DATA SET SYMBOL: \bigcirc CONFIGURATION DESCRIPTION: MSFC 574(DA48) CRB 139 W/ALT NOISE
 (F87566) \bigcirc MSFC 574(DA48) CRB 139 W/ALT NOISE
 (F87577) \otimes DATA NOT AVAILABLE
 (F87587) \otimes MSFC 574(CA48) CRB 139 W/ALT NOISE
 (F87578)

BETA: .000
 ELEVTR: .000
 SPOBRK: 999.990
 BDFLAP: .000
 REFERENCE INFORMATION: SC.F.T.
 SREF: 2690.0000
 LREF: 474.8000
 BREF: 936.7000
 XMRP: 838.7000
 YMRP: .0000
 ZMRP: .0000
 SCALE: .0040

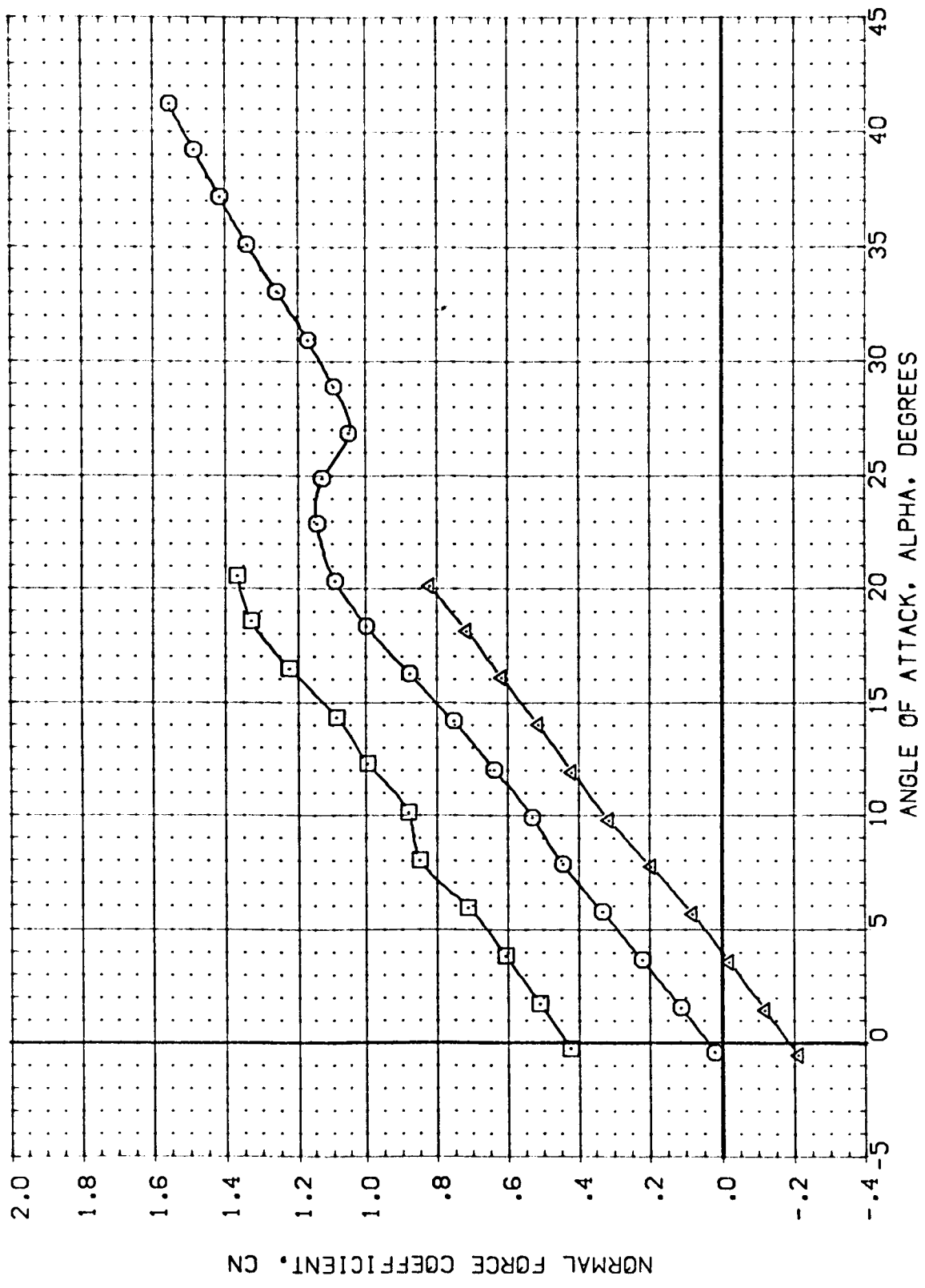


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE
 (A) MACH = .59 PAGE 8C7

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(F87566) MSFC 574(CA48) CRB 139 V/ALT NOSE
(F87577) MSFC 574(CA48) CRB 139 V/ALT NOSE
(F87581) DATA NOT AVAILABLE
(F87579) MSFC 574(CA48) CRB 139 V/ALT NOSE

BETA ELEVTR SPOBRK BOFLAP

.000 .000 999.999 .000
.000 .000 999.999 13.750
.000 -40.000 999.999 -14.250
.000 -20.000 999.999 .000

REFERENCE INFORMATION

SREF 2690.0000 SC.FT.
LREF 474.8000
BREF 936.7000
XWRP 838.7000
YWRP .0000
ZWRP .0000
SCALE .0340

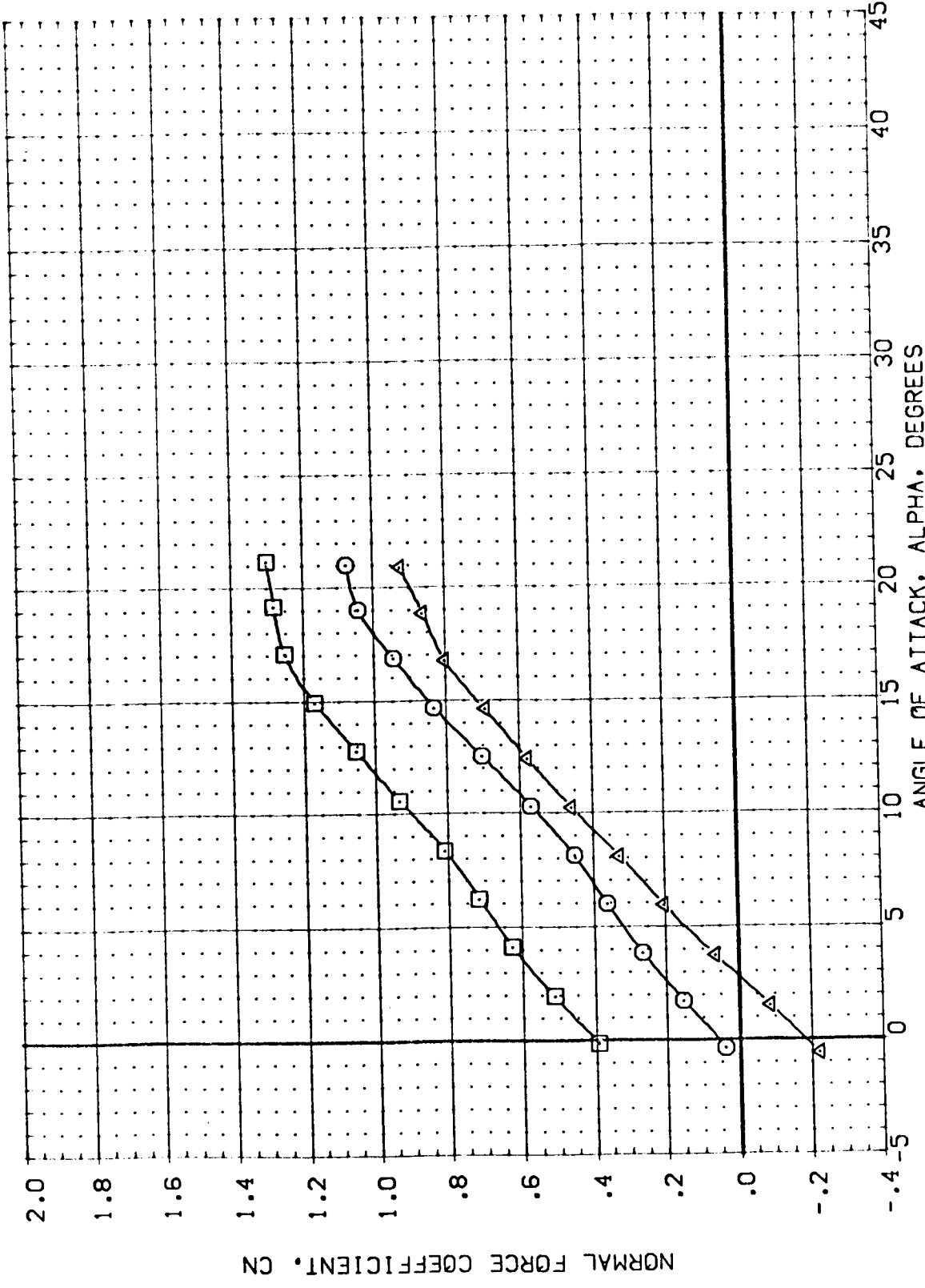


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

(BO)MACH = .90

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (FB7566) ○ MSFC 574(CA48) CRB 139 W/ALT NOSE
 (FB7577) ○ MSFC 574(CA48) CRB 139 W/ALT NOSE
 (FB7581) ○ DATA NOT AVAILABLE
 (FB7579) ○ MSFC 574(CA48) CRB 139 W/ALT NOSE

BETA ELEVTR SPOBRK BDFLAP
 .000 .000 999.990 .000
 .000 15.000 999.990 13.750
 .000 -40.000 999.990 -14.250
 .000 -20.000 999.990 .000

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 474.8000 IN.
 BREF 938.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0010

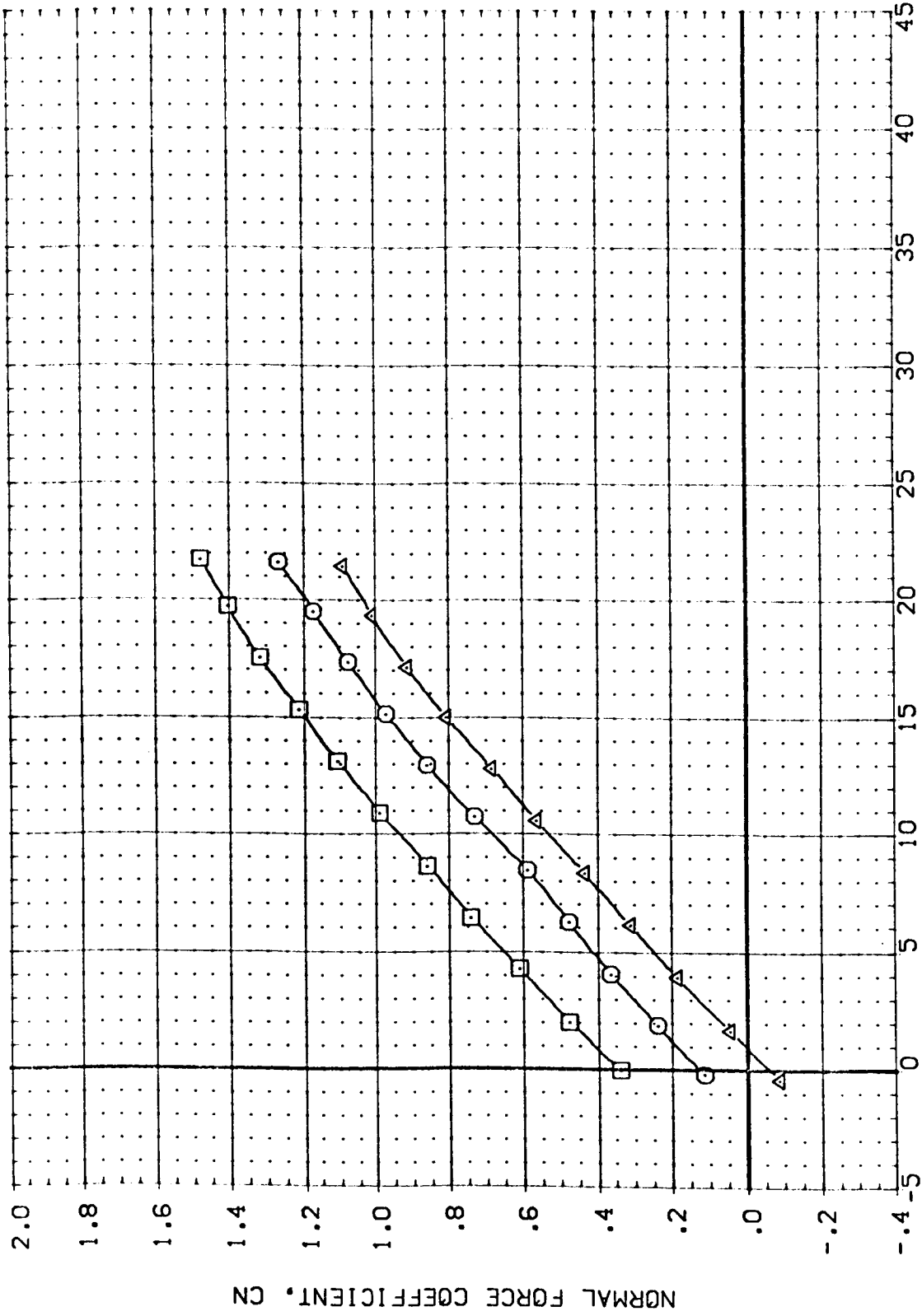


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

DATA SET SYMBOL: :F87S66) :F87S77) :F87S81) :F87S79)
 CONFIGURATION DESCRIPTION: MSEC 574(CA48) CRB :39 W/ALT NOSE / MSEC 574(CA48) CRB :39 W/ALT NOSE / MSEC 574(CA48) CRB :39 W/ALT NOSE / MSEC 574(CA48) CRB :39 W/ALT NOSE

BETA: .000 .000 .000 .000
 ELEVTR: .000 .000 .000 .000
 SPOBRK: 999.990 999.990 999.990 999.990
 BOFLAP: .000 .000 .000 .000
 REFERENCE INFORMATION: SREF 2690.0000 SQ.F.F. / LREF 474.8000 IN. / BREF 936.7000 / XWRP 838 / YWRP .000 / ZWRP .000 / SCALE .0010

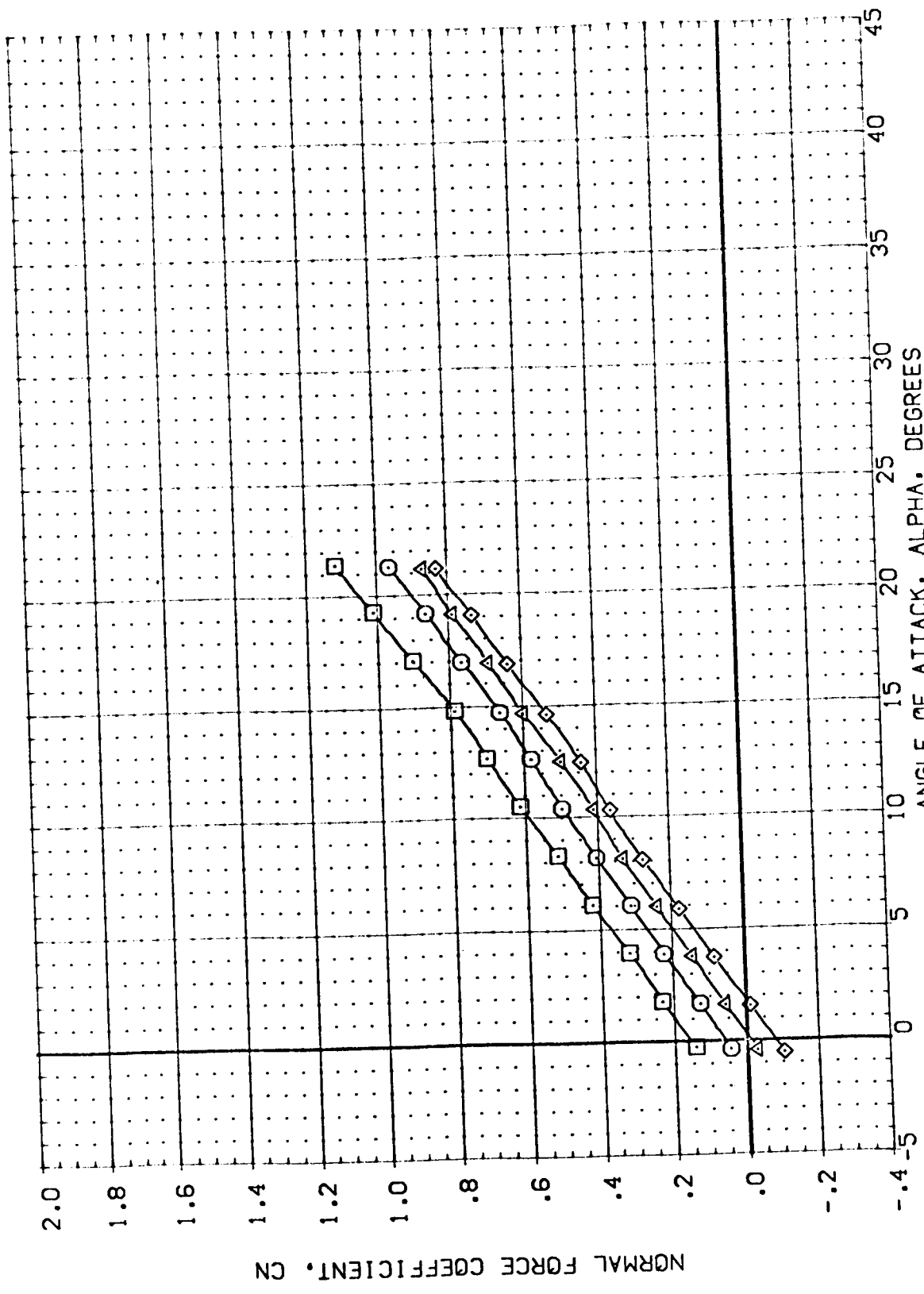


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE
 (C)MACH = 1.95

DATA SET SYMBOL	CONF:GURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(F87566)	MSFC 574(CA48) CRB [39] W/ALT NOSE	.000	.000	999.990	.000	SREF 2690
(F87577)	MSFC 574(CA48) CRB [39] W/ALT NOSE	.000	15.000	999.990	13.750	LREF 474
(F87581)	MSFC 574(CA48) CRB [39] W/ALT NOSE	.000	-40.000	999.990	-14.750	BREF 936
(F87579)	MSFC 574(CA48) CRB [39] W/ALT NOSE	.000	-20.000	999.990	.000	XMRP 838
						YMRP
						ZMRP
						SCALE

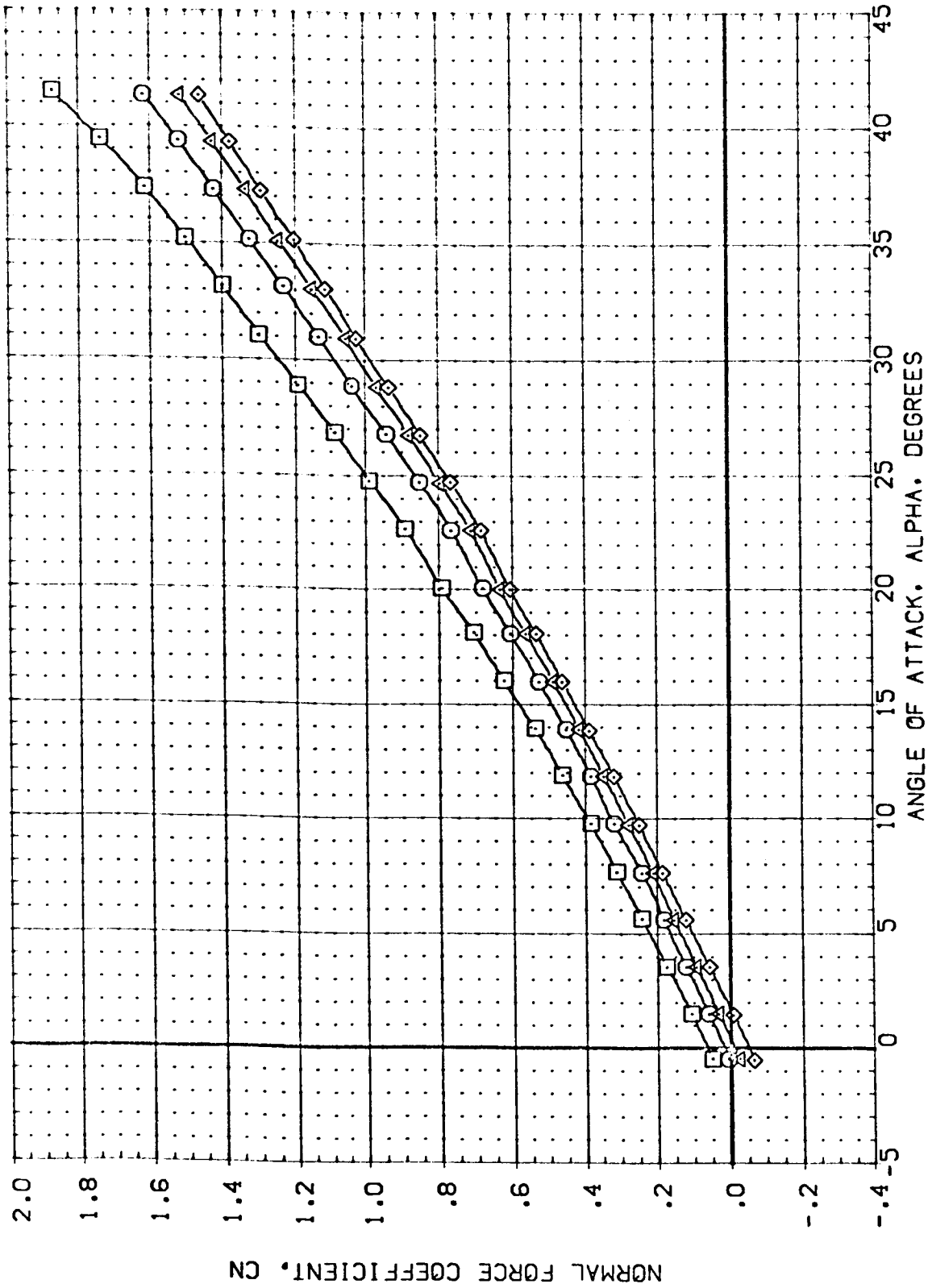


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDRK	BOFLAP	REFERENCE INFORMATION
(F87566)	MSFC 574(CA48) CR3 39 W/ALT NOSE	.000	.000	999.990	.000	SREF 2890.0000 SC.FT.
(F87577)	MSFC 574(CA48) CR3 39 W/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000
(F87581)	MSFC 574(CA48) CR3 39 W/ALT NOSE	.000	-40.000	999.990	-14.250	BREF 836.7000
(F87579)	MSFC 574(CA48) CR3 39 W/ALT NOSE	.000	-20.000	999.990	.000	XMRP 836.7000
						YMRP .0000
						ZMRP .0000
						SCALE .0010

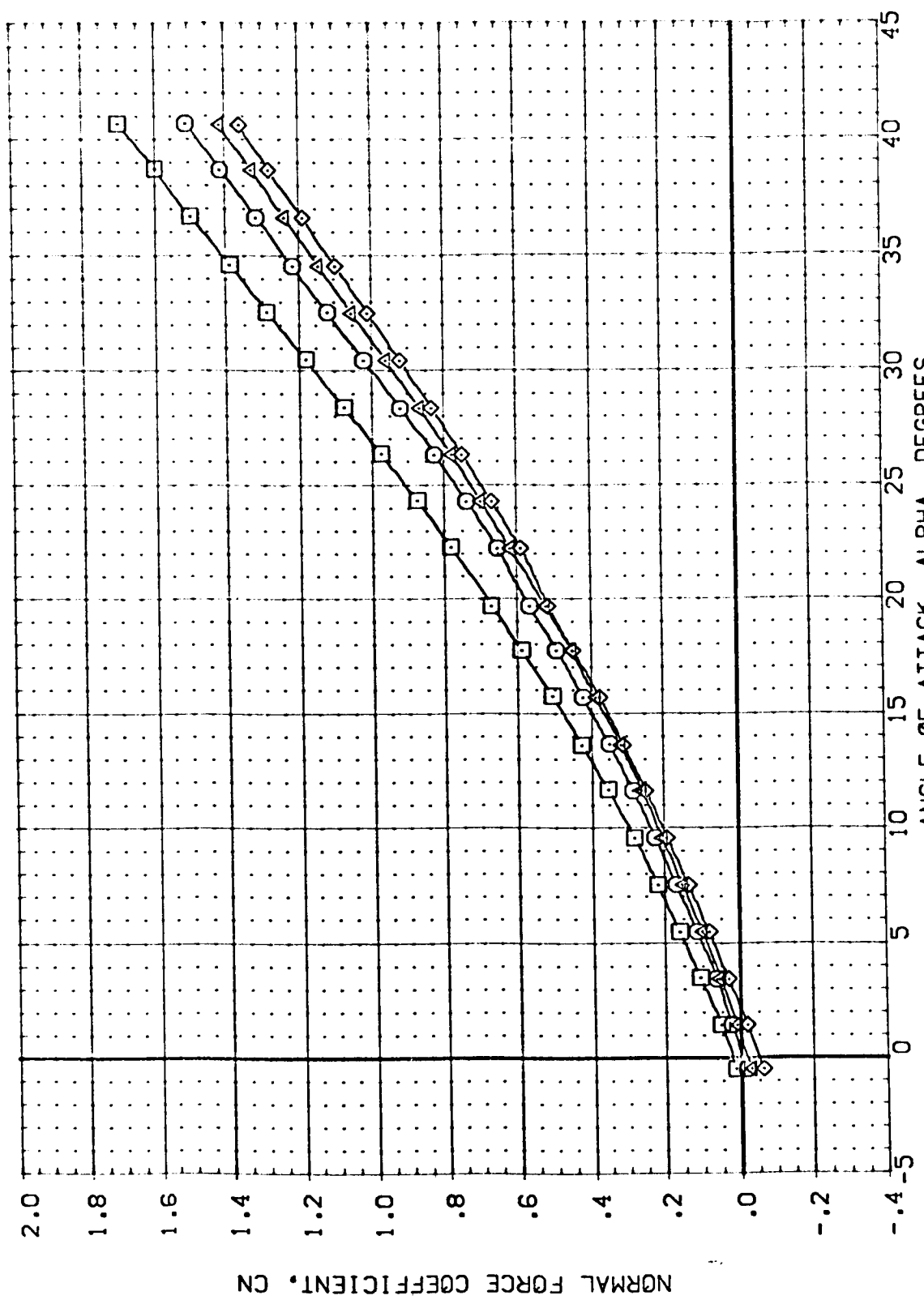


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE
 MACH = 4.96
 PAGE 8:2

DATA SET SYMBOL CONFIGURATION DESCRIPTION BETA ELEVTR SPOBRK BDFLAP REFERENCE INFORMATION

(F87566)	MSFC 574(OA48) CRB 139 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000	50. FT.
(F87577)	MSFC 574(OA48) CRB 139 W/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000	
(F87581)	DATA NOT AVAILABLE	.000	-40.000	999.990	-14.250	BREF 935.7000	
(F87579)	MSFC 574(OA48) CRB 139 W/ALT NOSE	.000	-20.000	999.990	.000	XMRP 838.7000	

ZMRP .0000
SCALE .0010

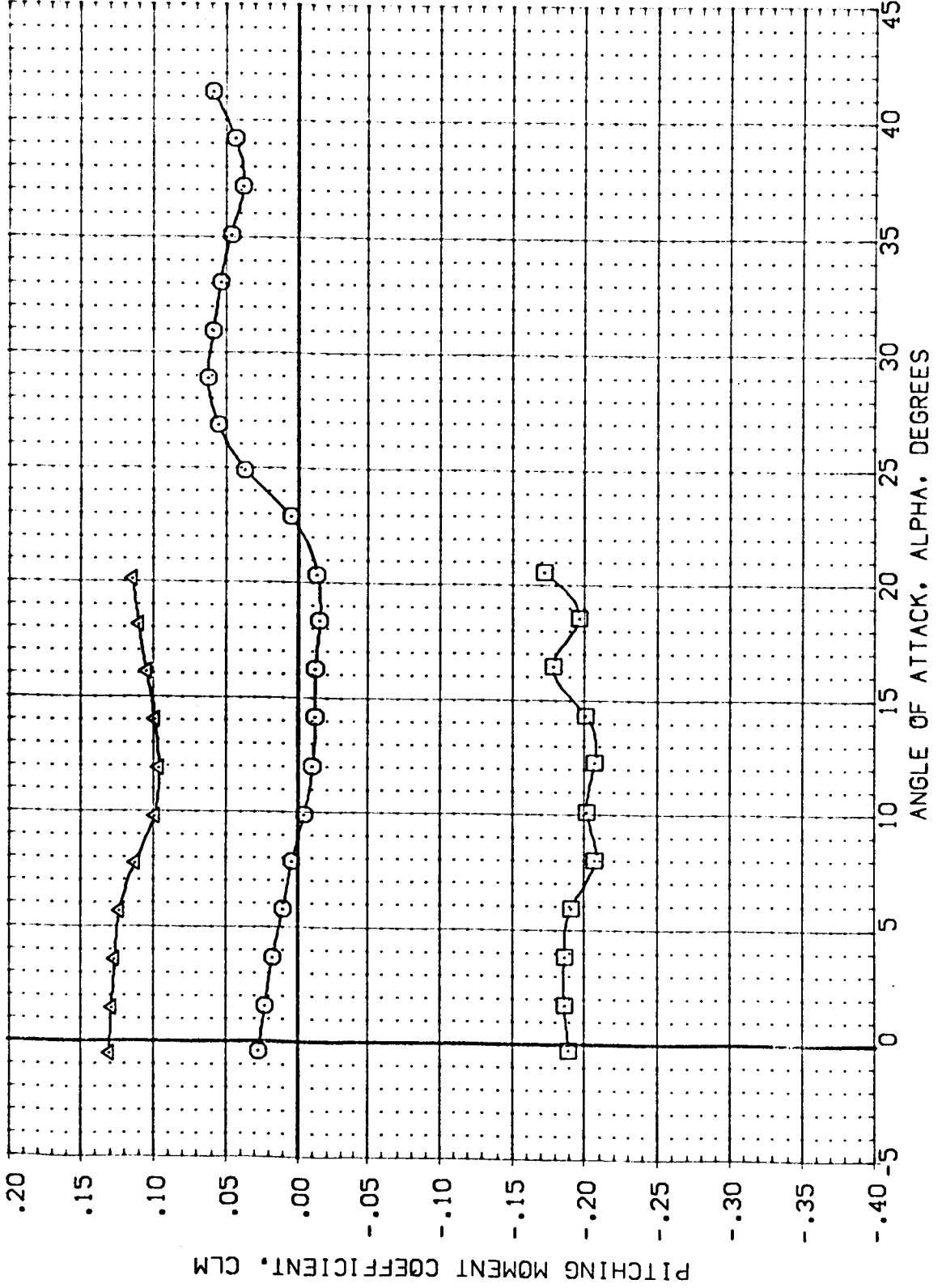


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87566) MSFC 574(OA48) CRB 139 W/ALT NOSE
 (F87577) MSFC 574(OA48) CRB 139 W/ALT NOSE
 (F87581) DATA NOT AVAILABLE
 (F87579) MSFC 574(OA48) CRB 139 W/ALT NOSE

BETA ELEVTR SPCBRK BDFLAP REFERENCE INFORMATION SQ.FT.
 .000 .000 999.990 .000 SREF 2690.0000
 .000 15.000 999.990 13.750 LREF 474.8000
 .000 -40.000 999.990 -14.250 BREF 936.7000
 .000 -20.000 999.990 .000 XMRP 838.0000
 .000 .000 .000 .000 YMRP .0000
 .000 .000 .000 .000 ZMRP .0000
 .000 .000 .000 .000 SCALE .0040

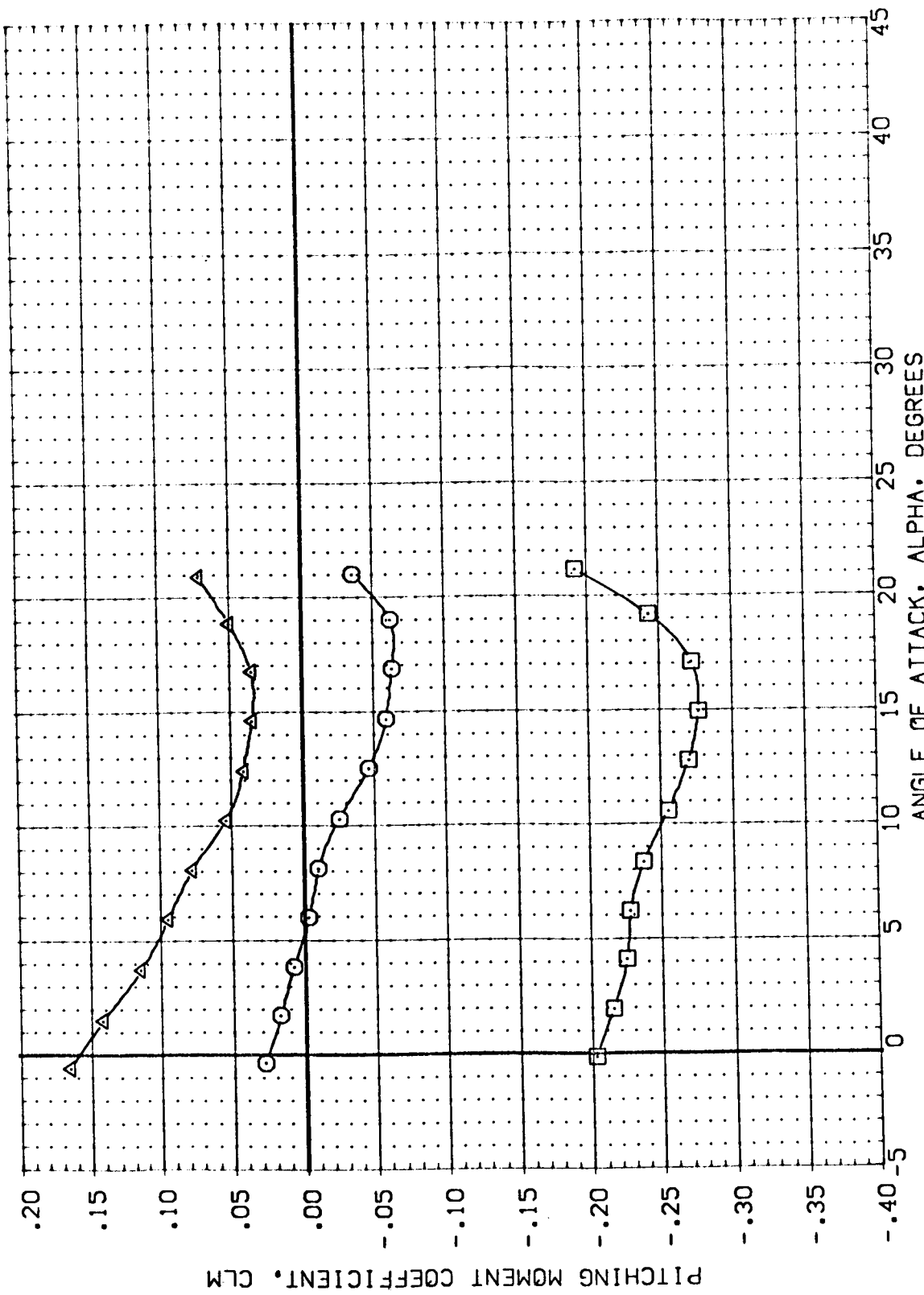


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE
 (3)MACH = .90

DATA SET SYMBOL: (F87566) (F87577) (F87591) (F87579)
 CONFIGURATION: MSFC 574(CA48) DATA NOT AVAILABLE MSFC 574(CA48)
 DESCRIPTION: CRB 139 W/ALT NOSE CRB 139 W/ALT NOSE CRB 139 W/ALT NOSE
 REFERENCE INFORMATION: SREF 2690.0000 LREF 474.8000 BREF 936.7000 XMRP 838.7000 YMRP .0000 ZMRP .0000 SCALE .0040
 BETA: .000 .000 .000 .000
 ELEVTR: .000 .15 .40 -20.000
 SPOBRK: 999.990 999.990 999.990 999.990
 BDFLAP: .000 13.750 -14.250 .000

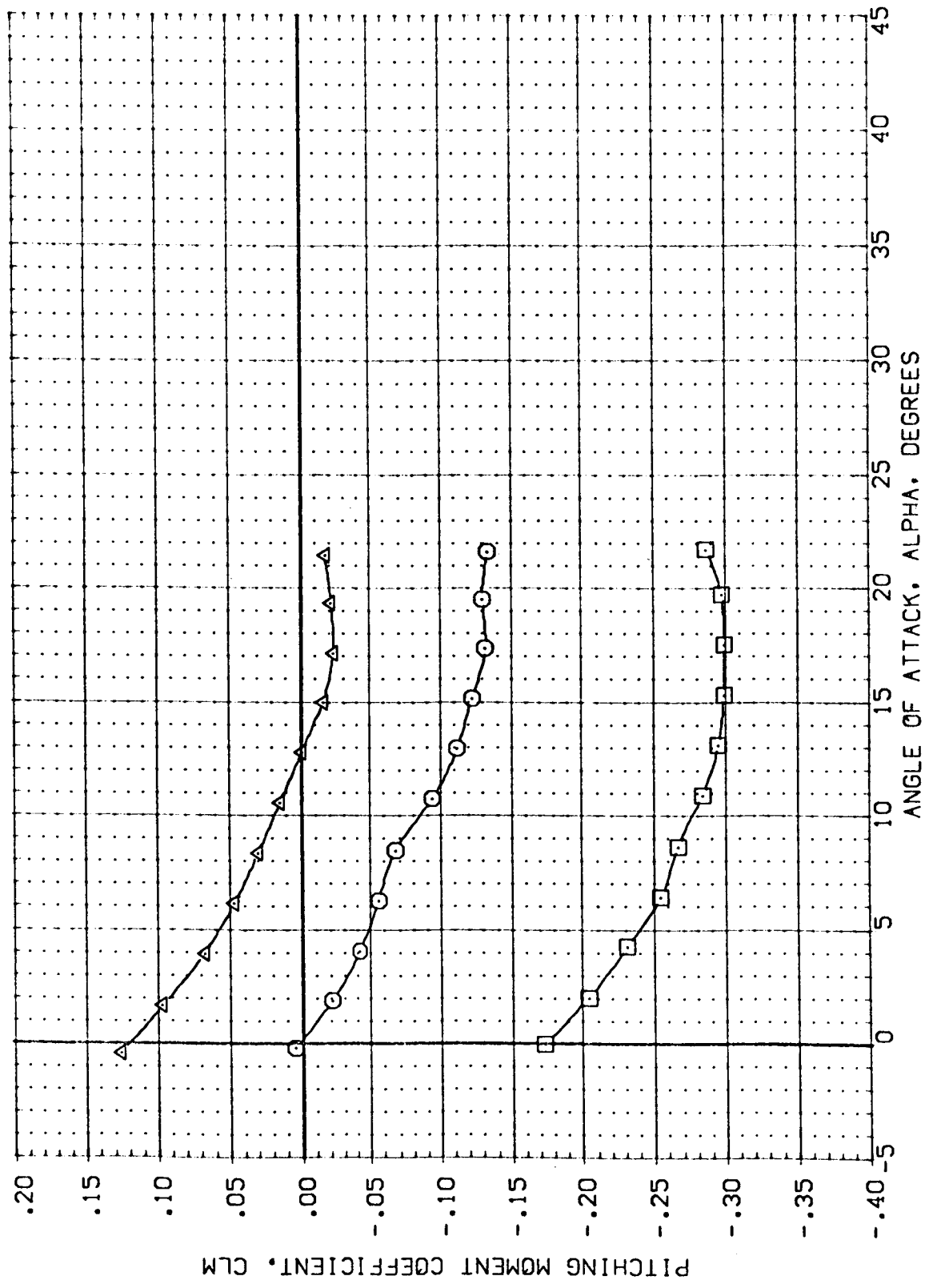


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(F87S66) MSFC 574(CA48) CRB 139 W/ALT NOSE

(F87S77) MSFC 574(CA48) CRB 139 W/ALT NOSE

(F87S81) MSFC 574(CA48) CRB 139 W/ALT NOSE

(F87S79) MSFC 574(CA48) CRB 139 W/ALT NOSE

BETA

.000

.000

.000

.000

ELEVTR

.000

15.000

-40.000

-20.000

SPOBRK

999.990

999.990

999.990

999.990

BOFLAP

.000

13.750

-14.250

.000

REFERENCE INFORMATION

SREF 2690.0000

LREF 474.8000

BREF 936.7000

XMRP 838.7000

VMRP .0000

ZMRP .0000

SCALE .0040

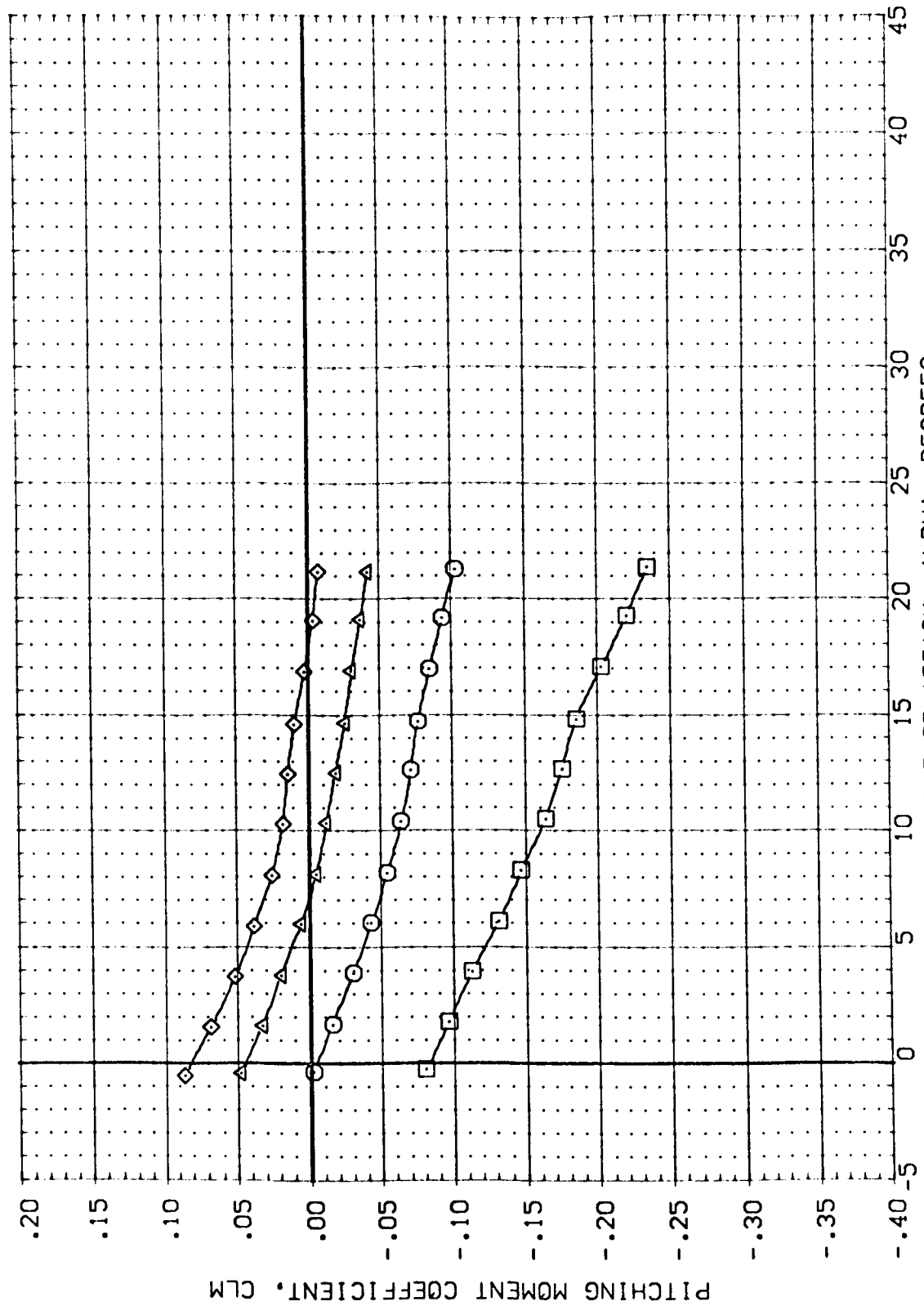


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

(M)MACH = 1.95

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DATA SET SYMBOL CONFIGURATION DESCRIPTION BETA ELEVTR SPOBRK BDFLAP REFERENCE INFORMATION
 (F87569) MSFC 574(CA48) CRB 139 W/ALT NOISE .000 .000 999.990 .000 SREF 2690 .0000
 (F87577) MSFC 574(CA48) CRB 139 W/ALT NOISE .000 .000 999.990 .000 LREF 474 .0000
 (F87581) MSFC 574(CA48) CRB 139 W/ALT NOISE .000 .000 999.990 .000 BREF 936 .0000
 (F87579) MSFC 574(CA48) CRB 139 W/ALT NOISE .000 .000 999.990 .000 XMRP 838 .0000
 .000 .000 .000 .000 YMRP .0000
 .000 .000 .000 .000 ZMRP .0000
 .000 .000 .000 .000 SCALE .0040

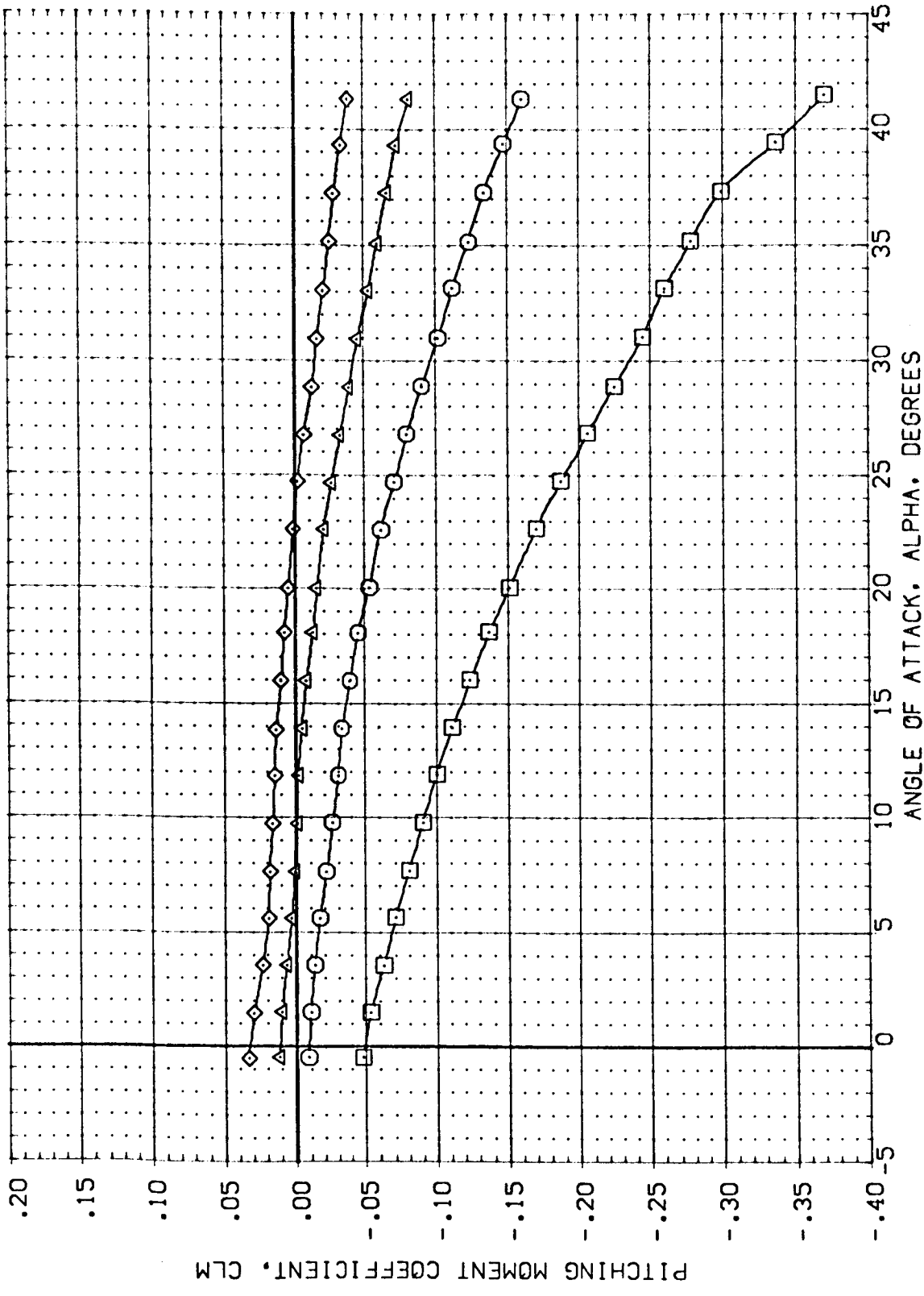


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOISE

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(F87566) MSFC 574(DA48) CR8 139 W/ALT NOSE
 (F87577) MSFC 574(DA48) CR8 139 W/ALT NOSE
 (F87581) MSFC 574(DA48) CR8 139 W/ALT NOSE
 (F87579) MSFC 574(DA48) CR8 139 W/ALT NOSE

BETA ELEVTR SPD8RY BDFLAP REFERENCE INFORMATION

.000 .000 999.999 .000 SREF 2690.0000 SQ.FT.
 .000 15.000 999.999 13.750 LREF 474.8000
 .000 -40.000 999.999 -14.250 BREF 936.7000
 .000 -20.000 999.999 .000 XMRP 838.7000
 .000 .000 .000 .000 ZMRP .0000
 .000 .000 .000 .000 SCALE .0040

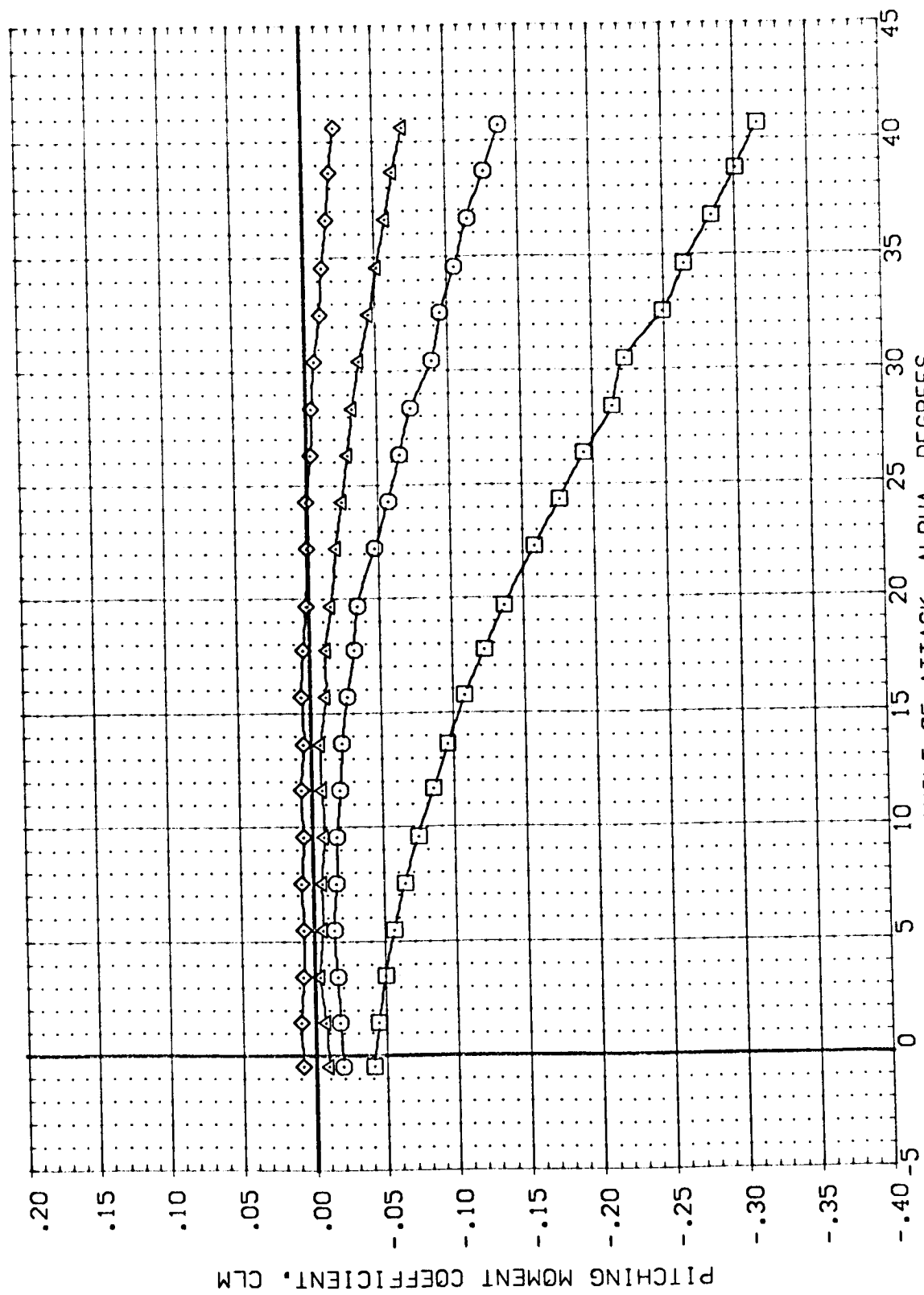


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE
 (F)MACH = 4.96

L L L

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87556)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	.000	999.990	.000	SR6F 2690.0000
(F87577)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	15.000	999.990	13.750	SR6F 474.8000
(F87581)	DATA NOT AVAILABLE	.000	-40.000	999.990	-14.250	SR6F 938.7000
(F87579)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	-20.000	999.990	.000	XMRP 838.7000
					ZMRP	.0000
					SCALE	.0040

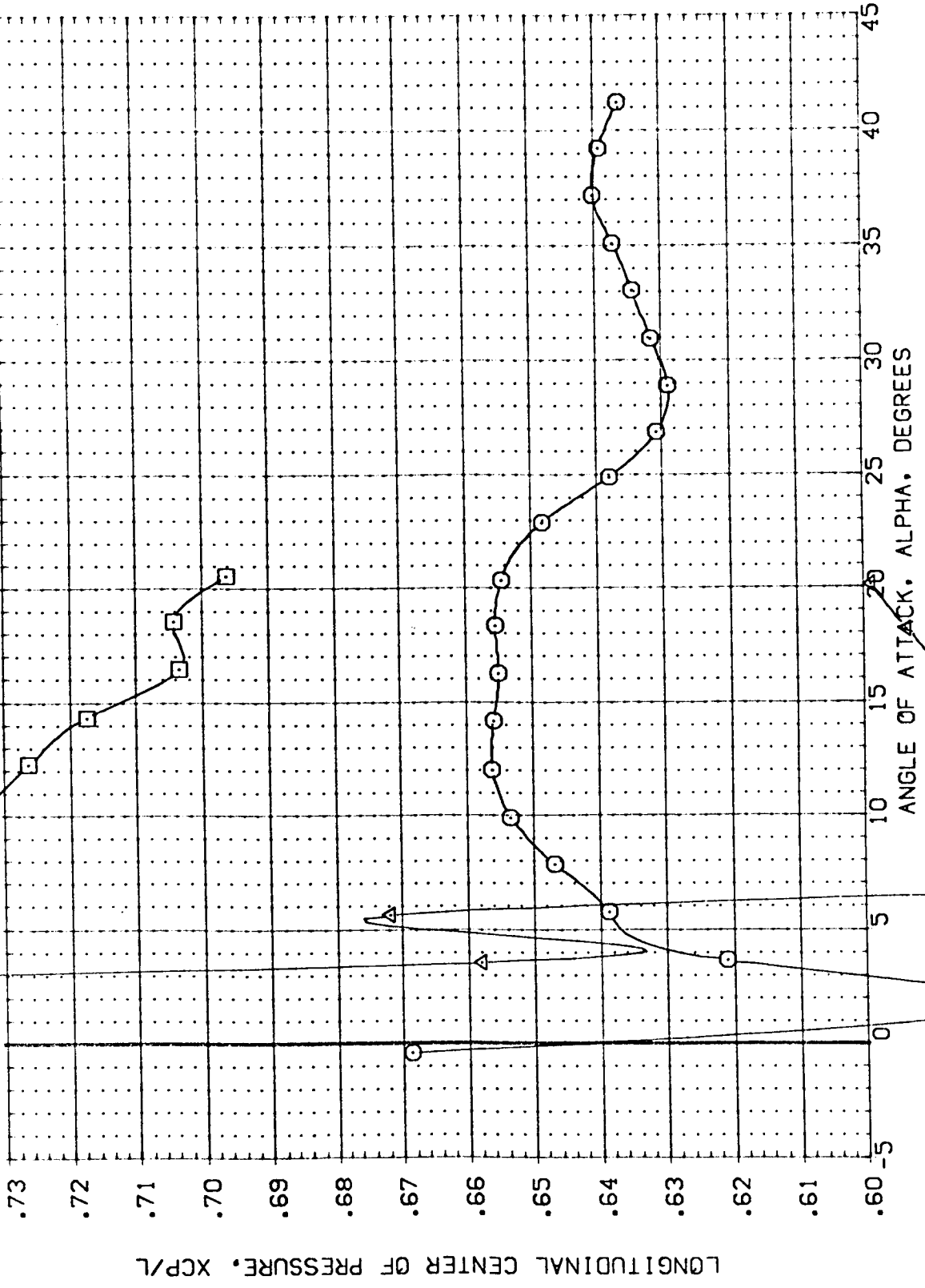


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

(A) MACH = 1.58

REFERENCE INFORMATION
 SQ.FT.
 SREF 2690.0000
 LREF 474.8000
 BREF 936.7000
 XREF 838.0000
 YREF 0000.0000
 ZREF 0000.0000
 SCALE 0040

BOE LAP
 .000
 13.750
 -14.250
 .000

SPDRK
 999.990
 999.990
 999.990
 999.990

ELEVTR
 .000
 15.000
 -40.000
 -20.000

BETA
 .000
 .000
 .000
 .000

CONFIGURATION DESCRIPTION
 MSC 57H(CA48) CRB 139 W/ALT NOSE
 MSC 57G(CA48) CRB 139 W/ALT NOSE
 DATA NOT AVAILABLE
 MSC 57H(CA48) CRB 139 W/ALT NOSE

DATA SET SYMBOL
 (F87S66)
 (F87S77)
 (F87S81)
 (F87S79)



FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87S65) MSEC 574(CA48) CRB 139 W/ALT NCSE
 (F87S77) MSEC 574(CA48) CRB 139 W/ALT NCSE
 (F87S81) DATA NOT AVAILABLE
 (F87S19) MSEC 574(CA48) CRB 139 W/ALT NCSE

BETA ELEVTR SPDDBK SOFLAP REFERENCE INFORMATION
 .000 .000 999.99C .000 SREF 269C.0000 50.F.T.
 .000 15.000 999.99C 13.75C .REF 474.8000
 .000 -40.000 999.99C -14.25C .REF 966.7000
 .000 -20.000 999.99C .000 XREF 899.7000
 .000 .000 .000 .000 VREF .000
 .000 .000 .000 .000 ZREF .000
 .000 .000 .000 .000 SCALE .000

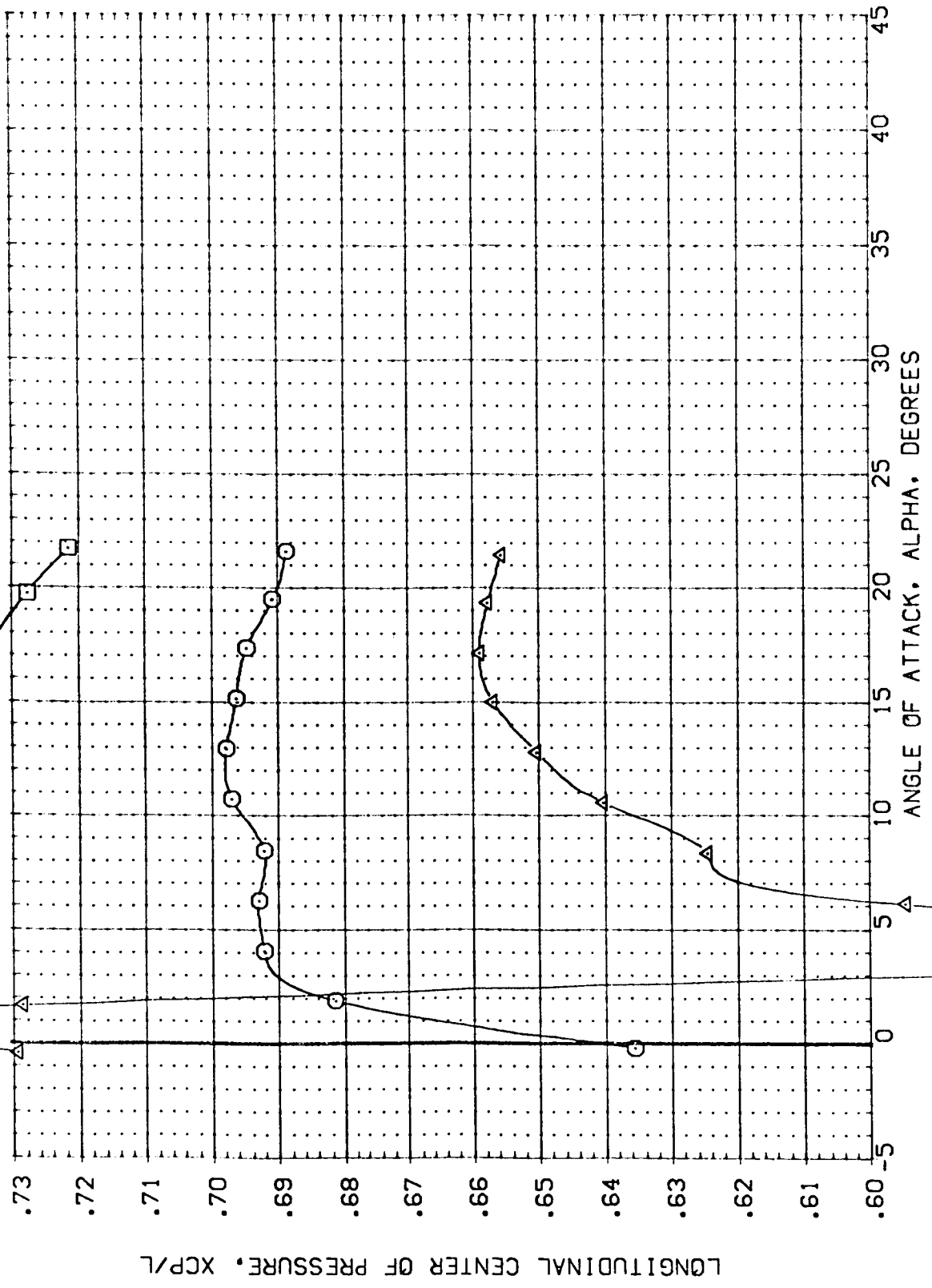


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE
 (C)MACH = :.20 PAGE 82:

DATA SET SYMBOL: (F87S66) (F87S77) (F87S81) (F87S79)
 CONFIGURATION DESCRIPTION: CRB 139 W/ALTERNATE NOSE, CRB 139 W/ALTERNATE NOSE, CRB 139 W/ALTERNATE NOSE, CRB 139 W/ALTERNATE NOSE
 BETA: .000, .000, .000, .000
 ELEVTR: .000, 15.000, -40.000, -20.000
 SPDBRK: 999.990, 999.990, 999.990, 999.990
 BOELAP: .000, 13.750, -14.250, .000
 REFERENCE INFORMATION: SREF 2690.0000, LREF 474.8000, BREF 936.7000, XMRP 838.7000, YMRP .0000, ZMRP .0000, SCALE .0040

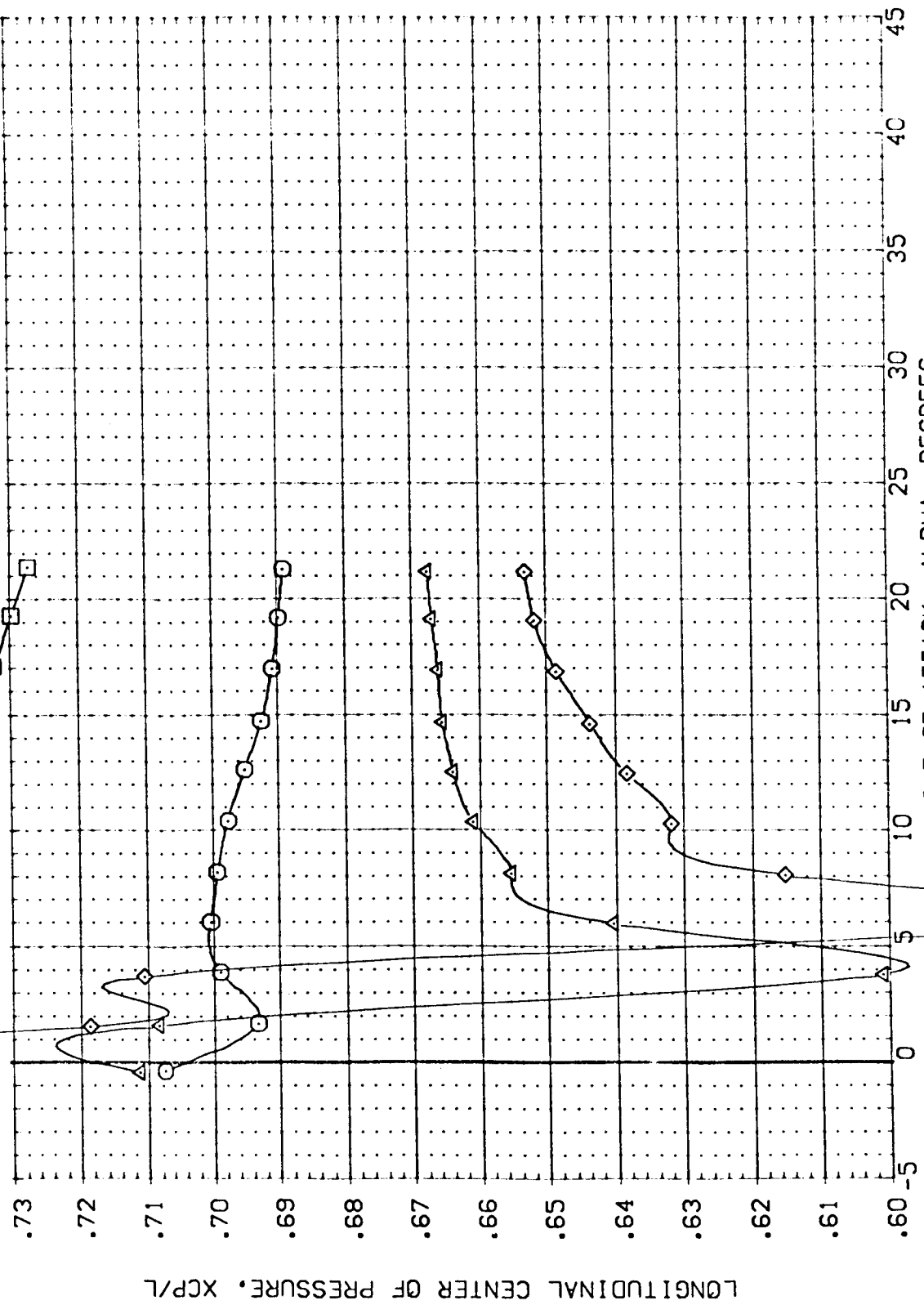


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE
 COMACH = 1.95

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(F87666)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SQ.F.T.
(F87667)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000 IN.
(F87668)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	-40.000	999.990	-14.250	BREF 936.7000 IN.
(F87669)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	-20.000	999.990	.000	XMRP 838.7000 IN.
						ZMRP .0000 IN.
						SCALE .0040

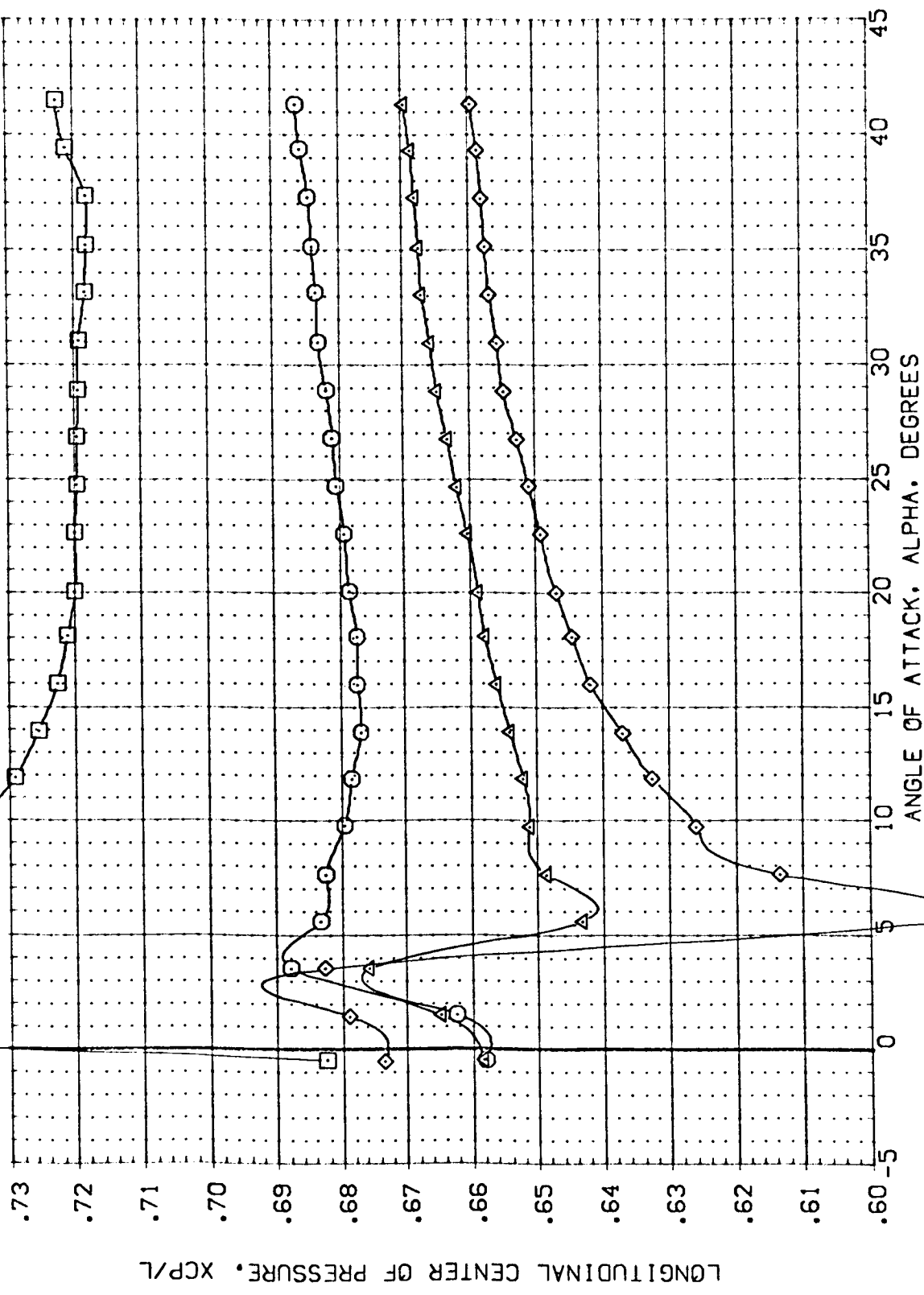


FIG. 17 EFFECT ON MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87566) O MSFC 574(CA48) CRB 39 V/ALT NOSE
 (F87577) X MSFC 574(CA48) CRB 39 V/ALT NOSE
 (F87581) X MSFC 574(CA48) CRB 39 V/ALT NOSE
 (F87579) X MSFC 574(CA48) CRB 39 V/ALT NOSE

BETA ELEVTR SPOBRK 90FLAP REFERENCE INFORMATION SC.F.
 .000 .000 999.990 .000 SREF 2690.0000
 .000 .000 999.990 .000 LREF 474.8000
 .000 .000 999.990 .000 BREF 936.7000
 .000 .000 999.990 .000 XMRP 898.7000
 .000 .000 999.990 .000 YMRP .0000
 .000 .000 999.990 .000 ZMRP .0000
 .000 .000 999.990 .000 SCALE .0040

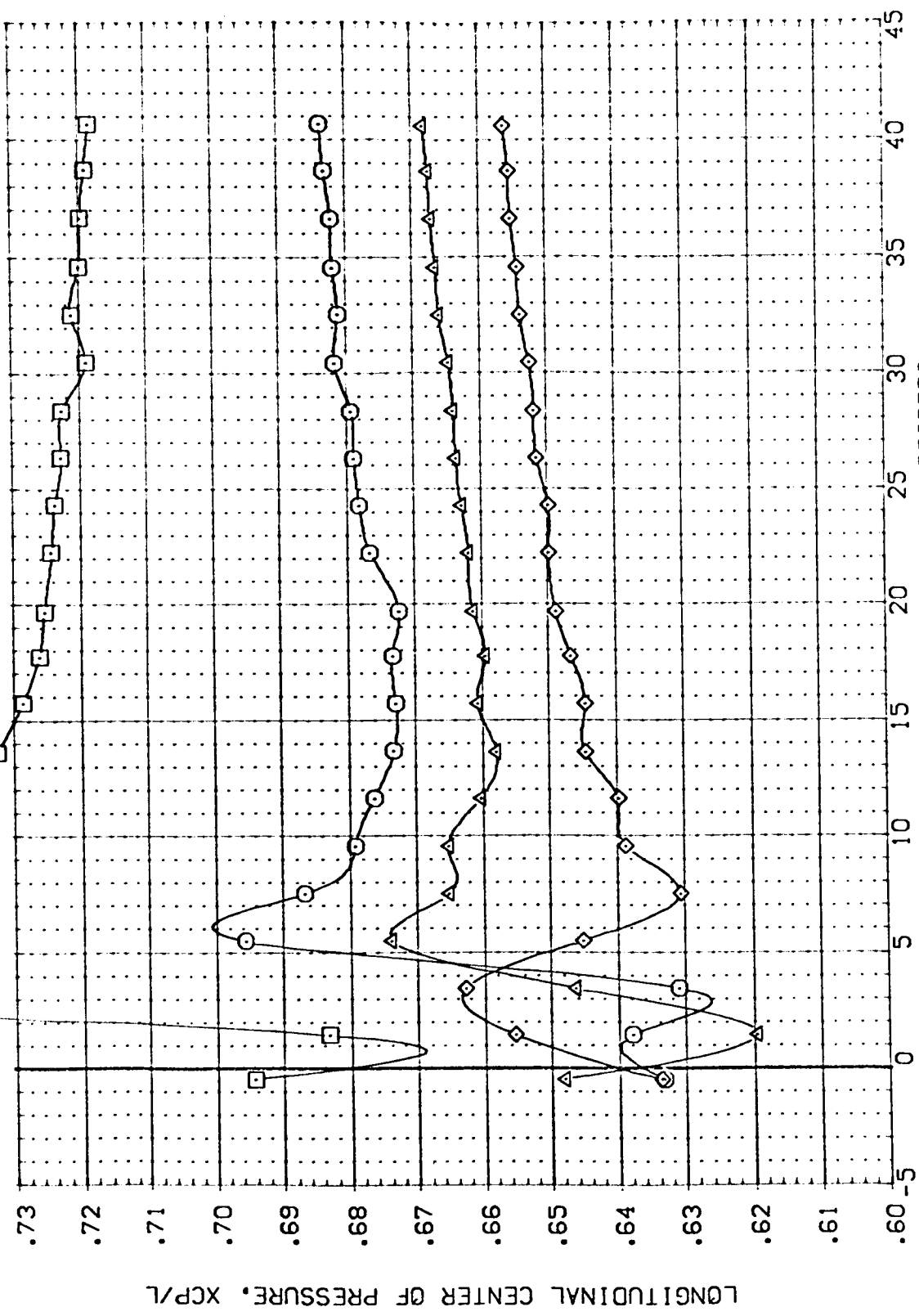


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

(M)MACH = 4.96

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F8/S66)	MSFC 5/4(CA48) CR3 139 W/ALT NOSE	.000	.000	999.990	.000	SREF 7690.0000
(F8/S77)	MSFC 5/4(CA48) CR3 139 W/ALT NOSE	.000	15.000	999.990	13.750	REF 474.8000
(F8/S81)	DATA NOT AVAILABLE	.000	-40.000	999.990	-1.1.200	SCALE 936.7000
(F8/S79)	MSFC 5/4(CA48) CR3 139 W/ALT NOSE	.000	-20.000	999.990	.000	VW99 836.7000
						ZW99 .0000
						SCALE .0010

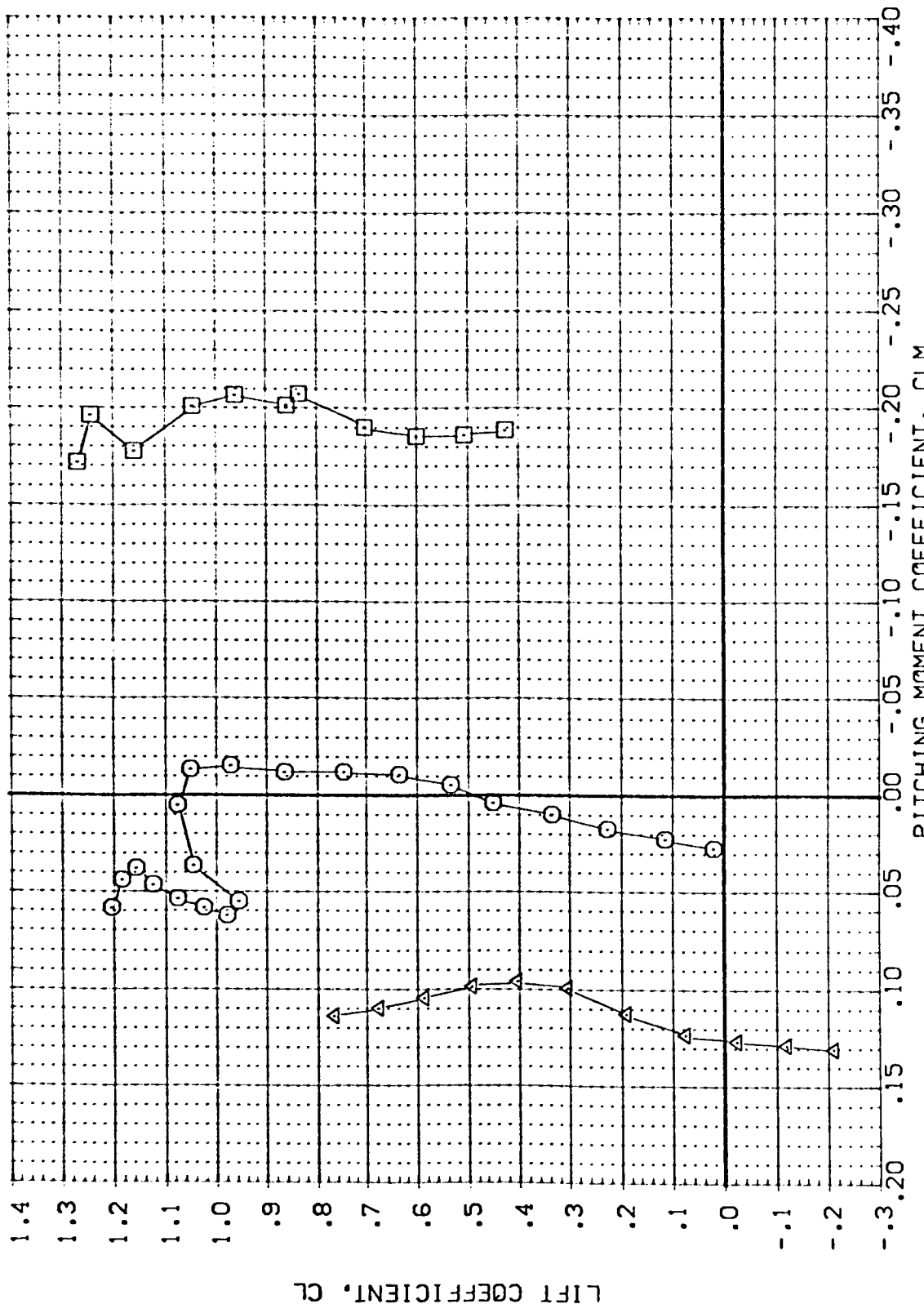


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE
 (A) MACH = .59 PAGE 825

DATA SET SYMBOL: \square \circ \triangle
 CONFIGURATION DESCRIPTION:
 MSFC 574(CA48): CRB 139 W/ALT NOSE
 MSFC 574(CA48): CRB 139 W/ALT NOSE
 DATA NOT AVAILABLE
 MSFC 574(CA48): CRB 139 W/ALT NOSE

BETA: .000
 ELEVTR: .000
 SPCBRK: 999.990
 BOFLAP: .000
 SREF: 2690.0000
 LREF: 474.8000
 BREF: 836.7000
 XMRP: 838.7000
 YMRP: .0000
 ZMRP: .0000
 SCALE: .0040

REFERENCE INFORMATION:
 SCALE: .0040

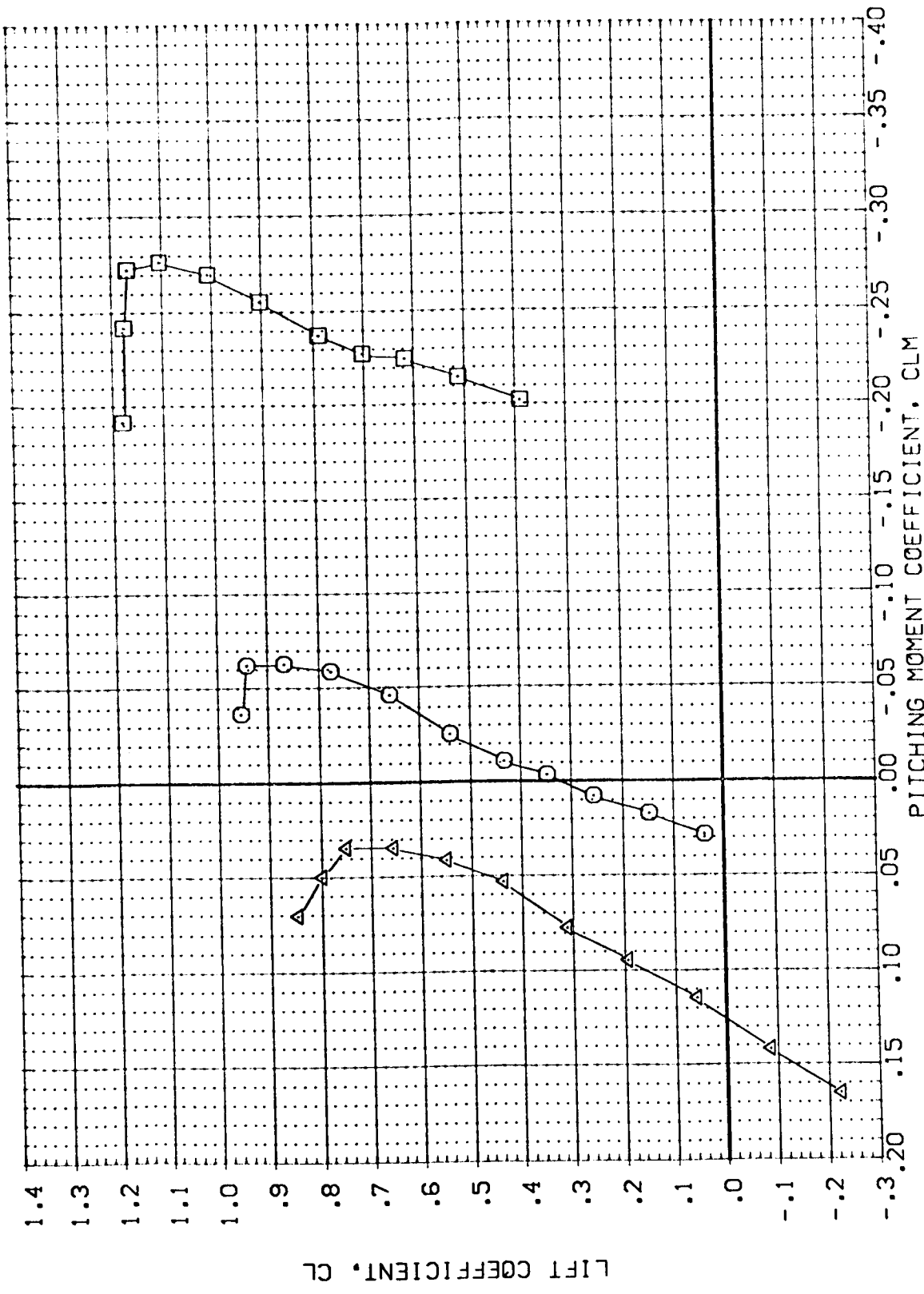


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE
 (B) MACH = .90
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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDBRK	BOFLAP	REFERENCE INFORMATION
(F87556)	MSFC 574(OA48) CRB 139 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000
(F87557)	MSFC 574(OA48) CRB 139 W/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000
(F87558)	DATA NOT AVAILABLE	.000	-40.000	999.990	-14.250	BREF 938.7000
(F87559)	MSFC 574(OA48) CRB 139 W/ALT NOSE	.000	-20.000	999.990	.000	XREF 838.7000
					YREF	.000
					ZREF	.000
					SCALE	.0040

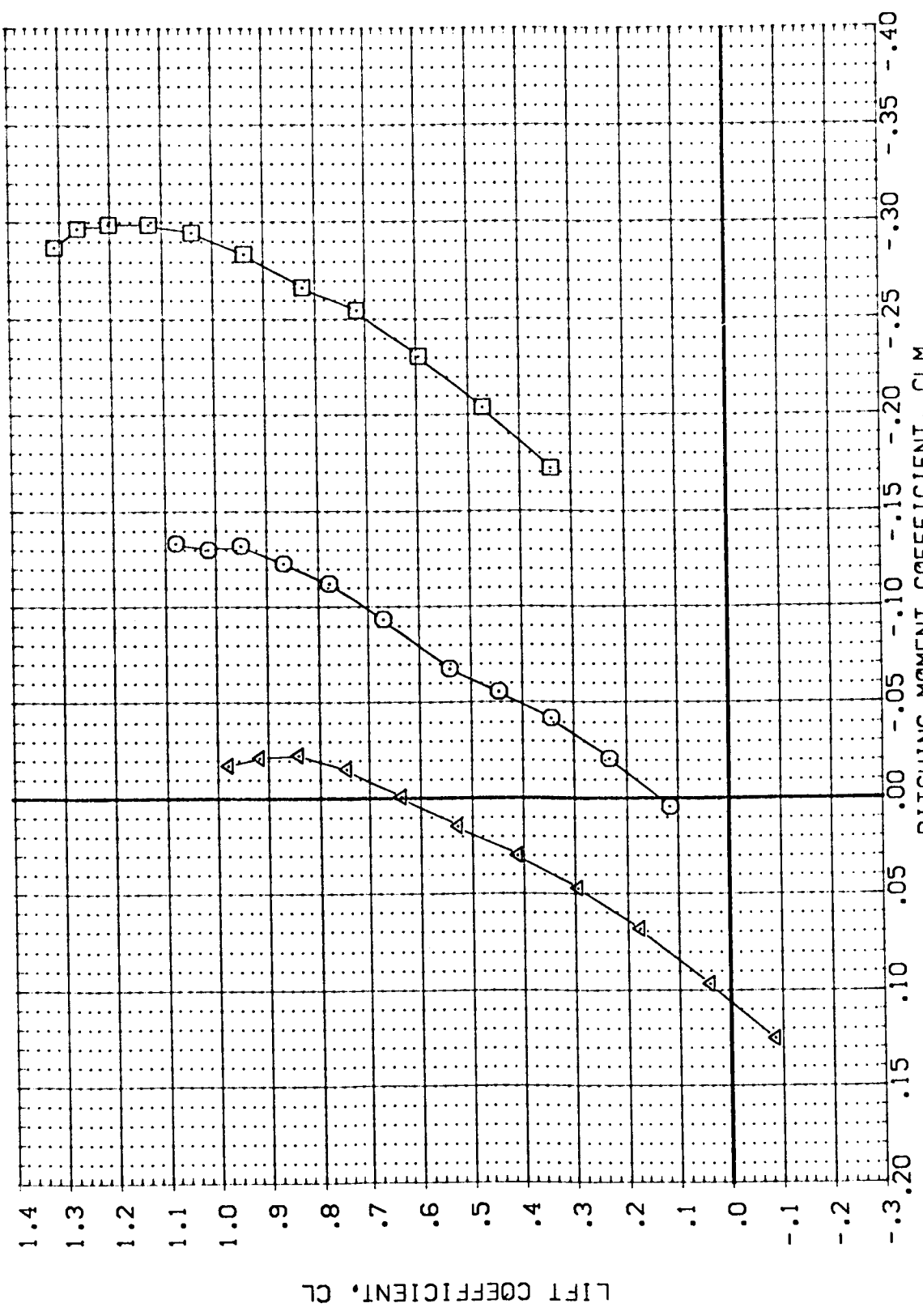


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE
 (C)MACH = 1.20 PAGE 827

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87566)	MSFC 574(CA48) CRB 139 W/ALT NOISE	.000	.000	999.990	.000	SREF 2690.0000
(F87577)	MSFC 574(CA48) CRB 139 W/ALT NOISE	.000	15.000	999.990	13.750	LREF 474.8000
(F87581)	MSFC 574(CA48) CRB 139 W/ALT NOISE	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87579)	MSFC 574(CA48) CRB 139 W/ALT NOISE	.000	-20.000	999.990	.000	XREF 838.7000
						YREF .0000
						ZREF .0000
						SCALE .0000

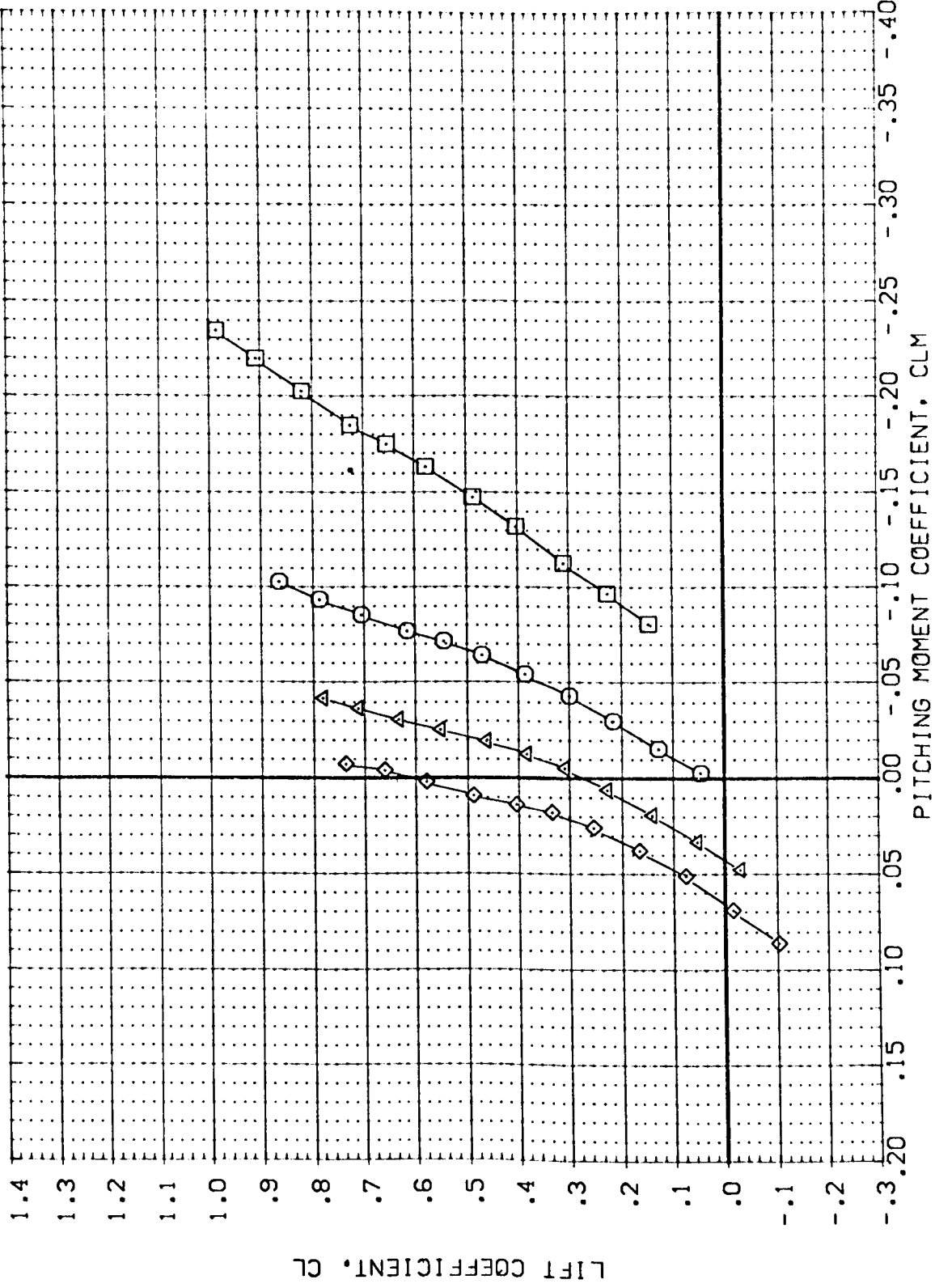


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOISE
 (M)MACH = 1.95 PAGE 828

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPO3RK	BDFLAP	REFERENCE INFORMATION
(F87566)	MSFC 574(CA48) CR3 39 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(F87577)	MSFC 574(CA48) CR3 39 W/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000
(F87581)	MSFC 574(CA48) CR3 39 W/ALT NOSE	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87579)	MSFC 574(CA48) CR3 39 W/ALT NOSE	.000	-20.000	999.990	.000	XMRP 838.7000
						YMRP .0000
						ZMRP .0000
						SCALE .0010

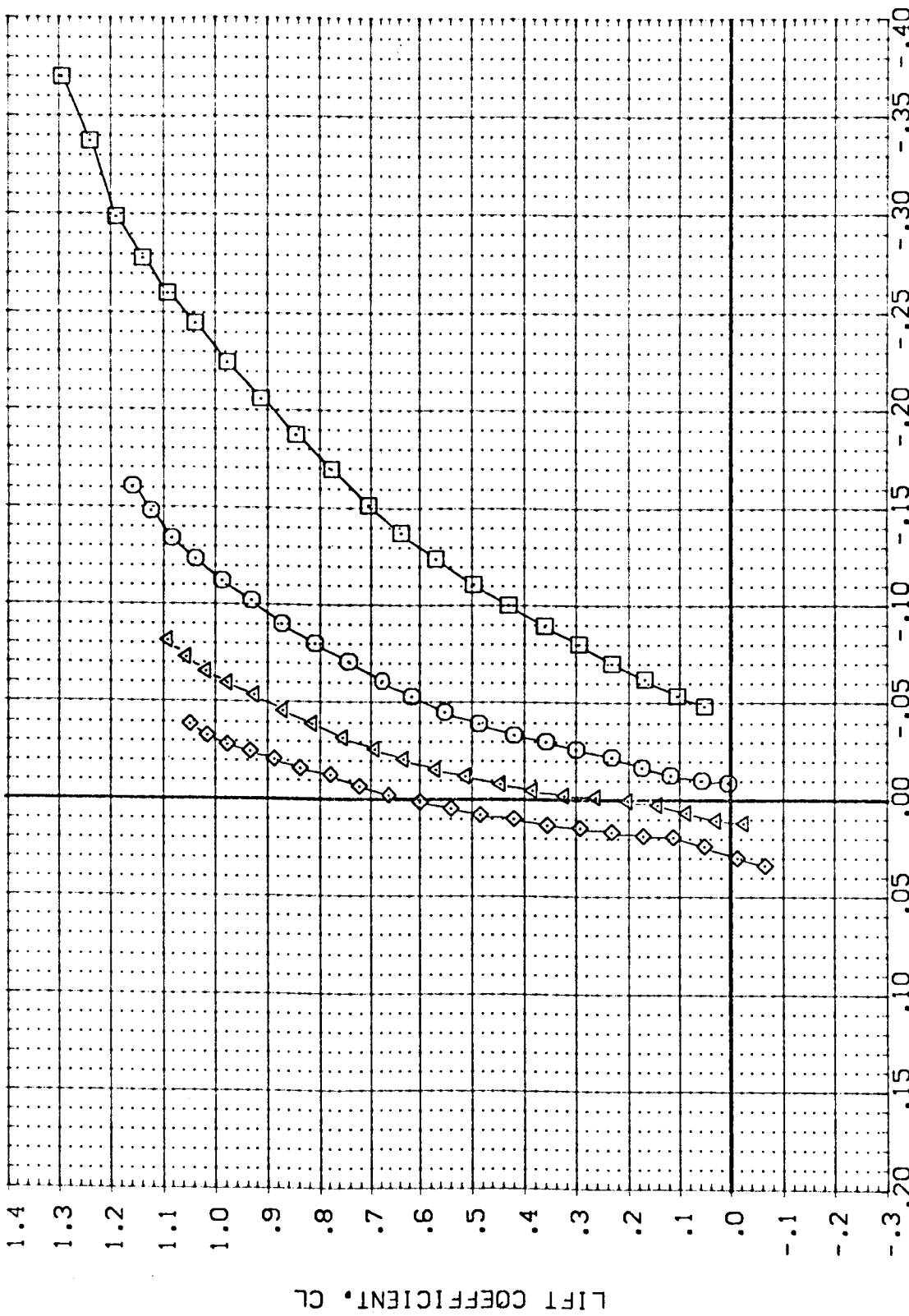


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE
 (M)MACH = 2.99 PAGE 829

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(F87S65)	MSFC 574(CA48) CR3 139 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SQ.F.T.
(F87S77)	MSFC 574(CA48) CR3 139 W/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000
(F87S81)	MSFC 574(CA48) CR3 139 W/ALT NOSE	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87S79)	MSFC 574(CA48) CR3 139 W/ALT NOSE	.000	-20.000	999.990	.000	XMRP 838.7000
						ZMRP .0000
						SCALE .0040

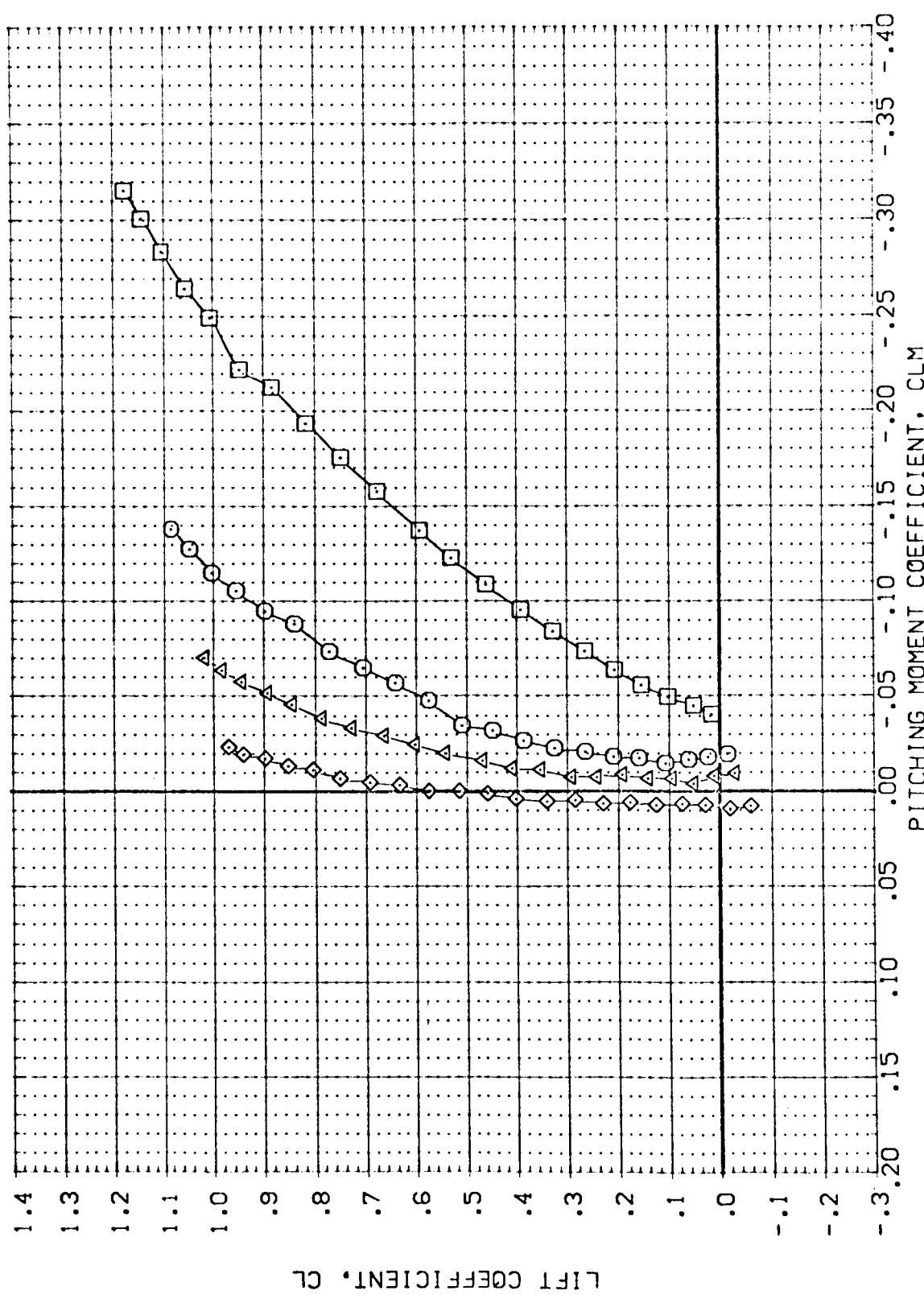


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE
 (F)MACH = 4.96 PAGE 83C

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87565) ○ MSFC 574(CA48) CRB 139 W/ALT NOISE
 (F87577) ○ MSFC 574(CA48) CRB 139 W/ALT NOISE
 (F87581) ○ DATA NOT AVAILABLE
 (F87579) ⊗ MSFC 574(CA48) CRB 139 W/ALT NOISE

BETA ELEVTR SPCBRK BOFLAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SREF 2690.0000 SC.F.
 .000 15.000 999.990 13.750 LREF 474.8000
 .000 -40.000 999.990 -14.250 BREF 936.7000
 .000 -20.000 999.990 .000 XMRP 838.7000
 .000 .000 .000 ZMRP .0000
 .000 .000 .000 SCALE .0040

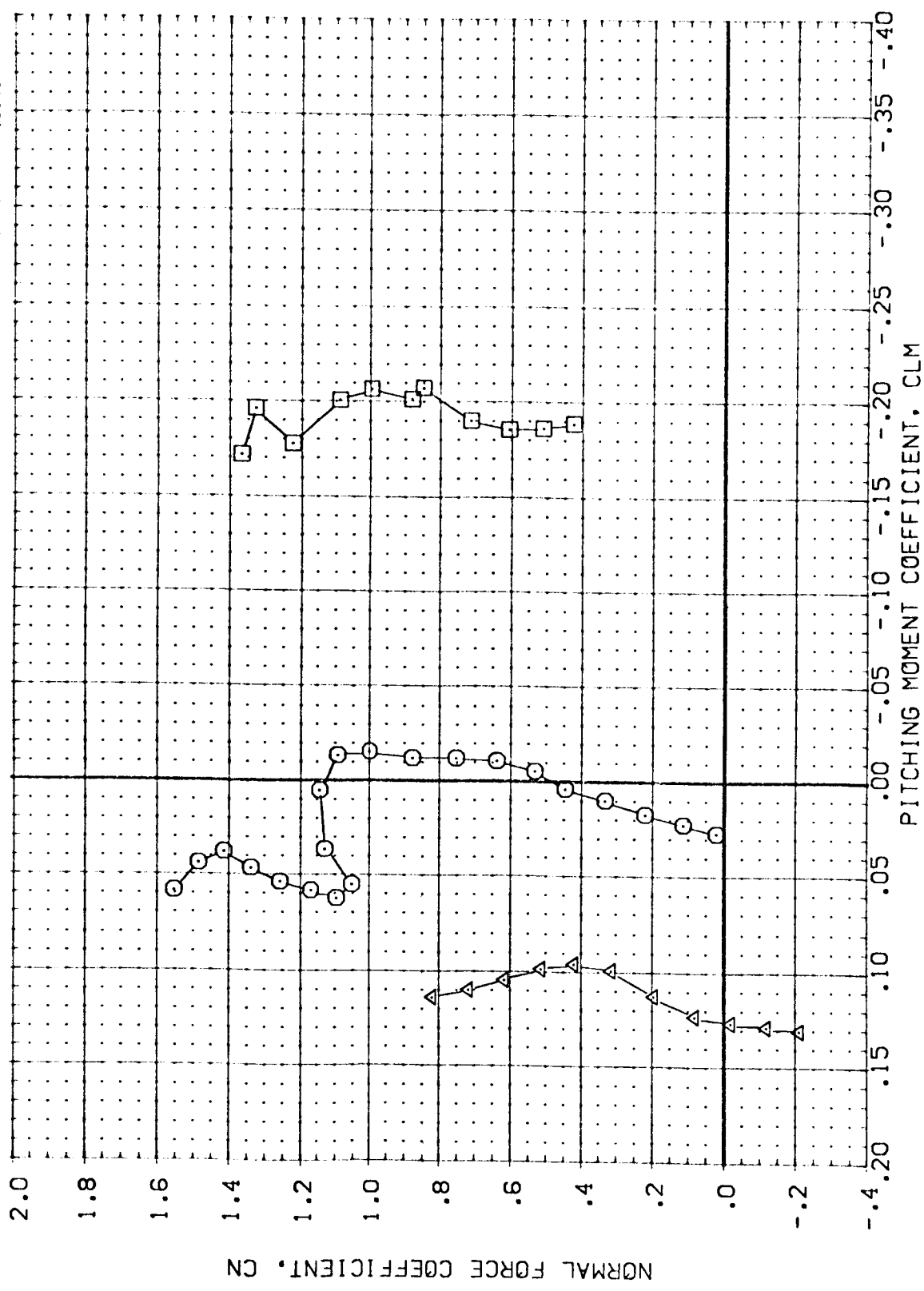


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOISE

DATA SET SYMBOL: ○
 (F87566)
 (F87577)
 (F87581)
 (F87579)

CONFIGURATION DESCRIPTION
 MSFC 574(CA48) CR8 139 W/ALT NOSE
 MSFC 574(CA48) CR8 139 W/ALT NOSE
 DATA NOT AVAILABLE
 MSFC 574(CA48) CR8 139 W/ALT NOSE

BETA
 .000
 .000
 .000
 .000
 .000
 .000

ELEVTR
 .000
 .000
 .15000
 .40000
 -20.000

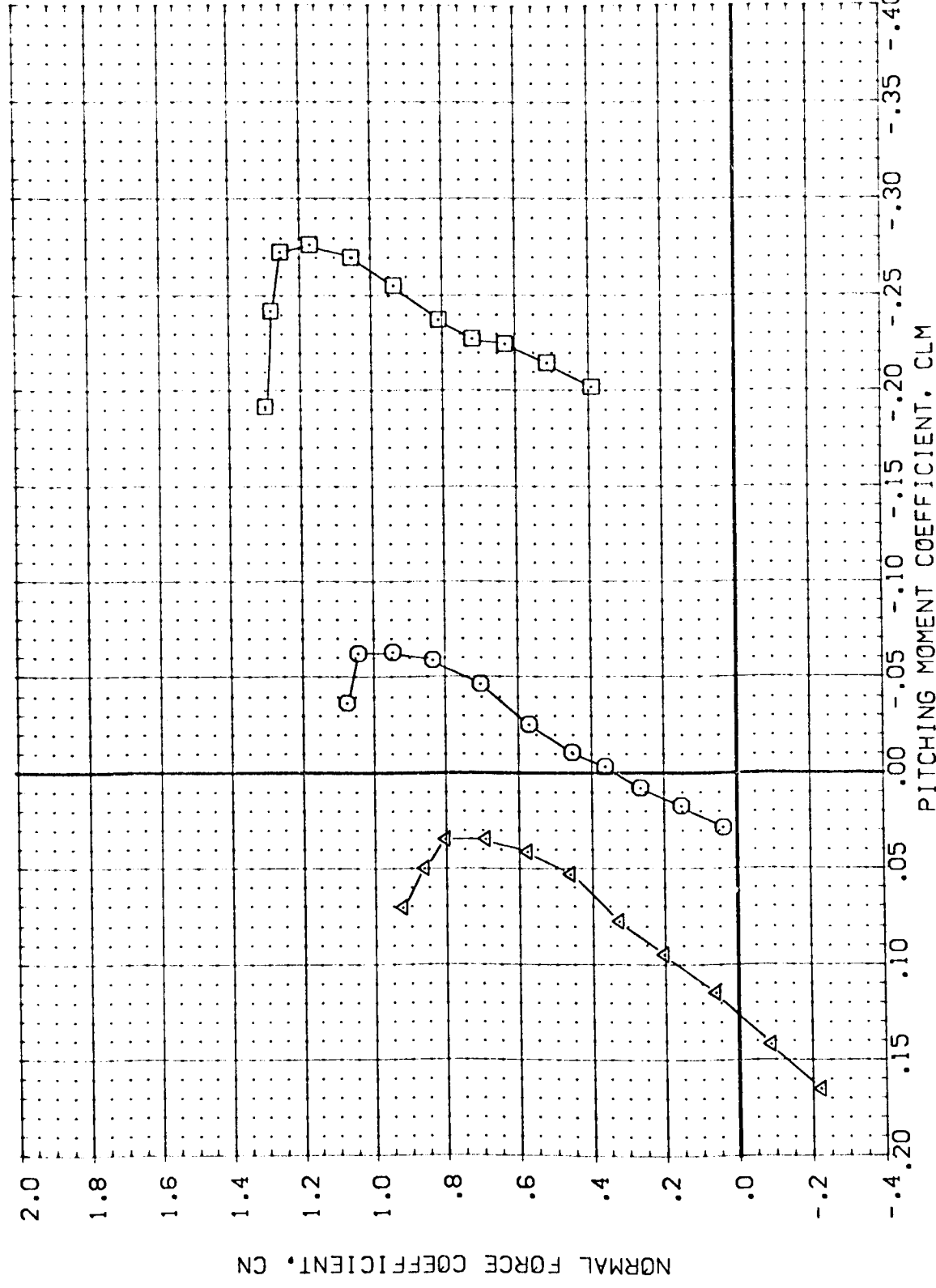


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE
 (B)MACH = .90

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87S86) \square MSFC 574(CA48) CRB 139 W/ALT NOSE
 (F87S87) \circ MSFC 574(CA48) CRB 139 W/ALT NOSE
 (F87S88) \triangle DATA NOT AVAILABLE
 (F87S89) \square MSFC 574(CA48) CRB 139 W/ALT NOSE

BETA ELEVTR SPCBRK BDFLAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SREF 2990.0000 SQ.F.
 .000 15.000 999.990 13.750 LREF 474.8000
 .000 -40.000 999.990 -14.250 BREF 936.7000
 .000 -20.000 999.990 .000 XMRP 838.7000
 .000 .000 .000 .000 YMRP .0000
 .000 .000 .000 .000 ZMRP .0000
 .0040 SCALE

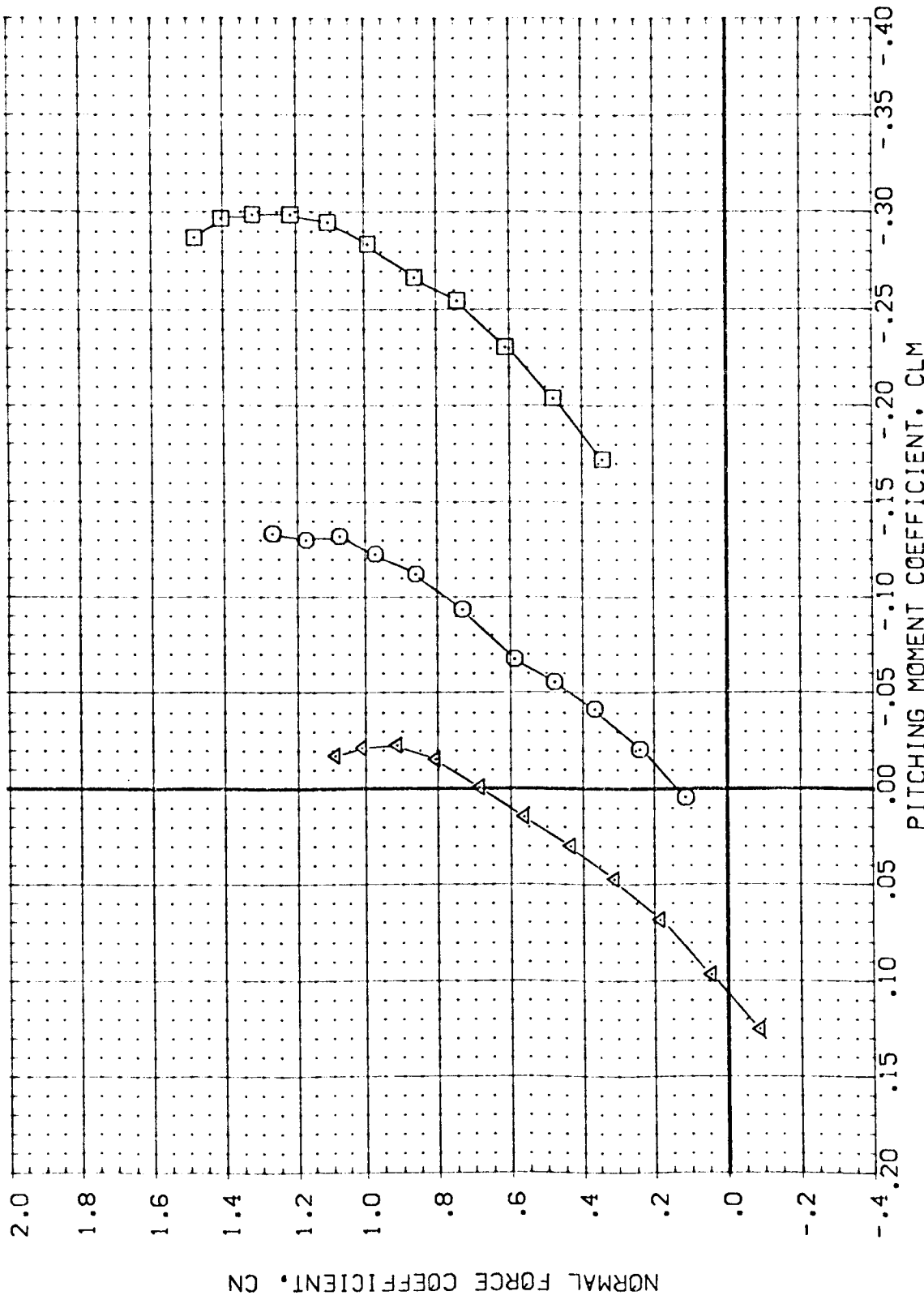


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE
 (CO)MACH = 1.20 PAGE 833

DATA SET SY93C	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDBRK	BOFLAP	REFERENCE INFORMATION
(F87566)	MSFC 574(CA48) CRB 39 W/ALT NOSE	.000	.000	999.990	.000	SREF 2990.0000
(F87577)	MSFC 574(CA48) CRB 39 W/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000
(F87581)	MSFC 574(CA48) CRB 39 W/ALT NOSE	.000	40.000	999.990	14.250	BREF 936.7000
(F87579)	MSFC 574(CA48) CRB 39 W/ALT NOSE	.000	-20.000	999.990	.000	XREF 898.7000
						YREF 936.7000
						ZREF 936.7000
						SCALE .0010

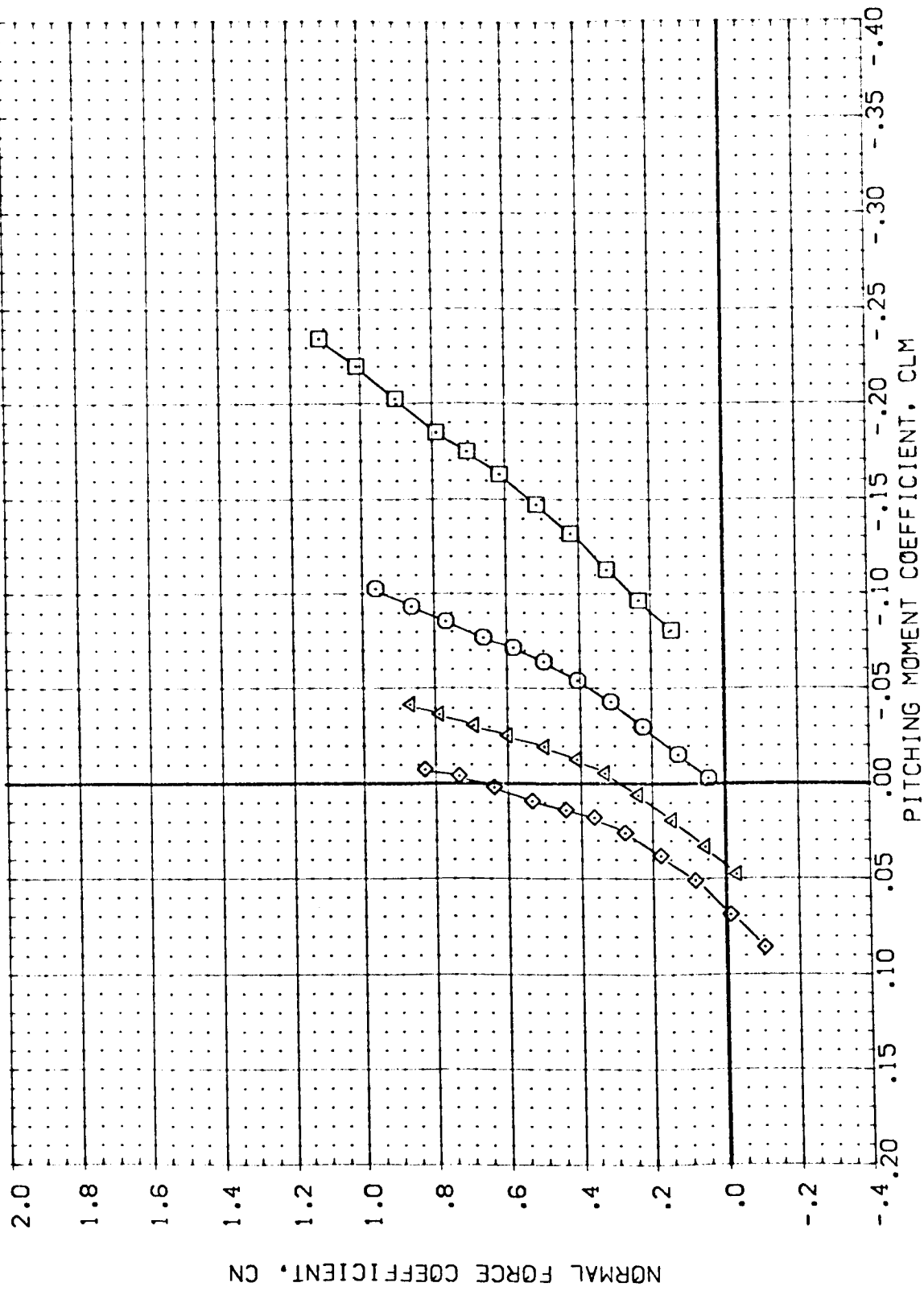


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE
 (C)MACH = 1.95 PAGE 834



DATA SET	SYMBOL	CONFIGURATION	DESCRIPTION	BETA	ELEVTR	SPCRBK	BCFLAP	REFERENCE INFORMATION
(F80S68)	○	M5C 574(CA48)	CRB 139 W/ALT NOSE	.000	.000	999.990	.000	SREF 2890.0000
(F80S77)	○	M5C 574(CA48)	CRB 139 W/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000
(F80S81)	○	M5C 574(CA48)	CRB 139 W/ALT NOSE	.000	-40.000	999.990	-14.250	BREF 936.7000
(F80S95)	◇	M5C 574(CA48)	CRB 139 W/ALT NOSE	.000	-20.000	999.990	.000	XMRP 838.7000
								ZMRP .0000
								SCALE .0010

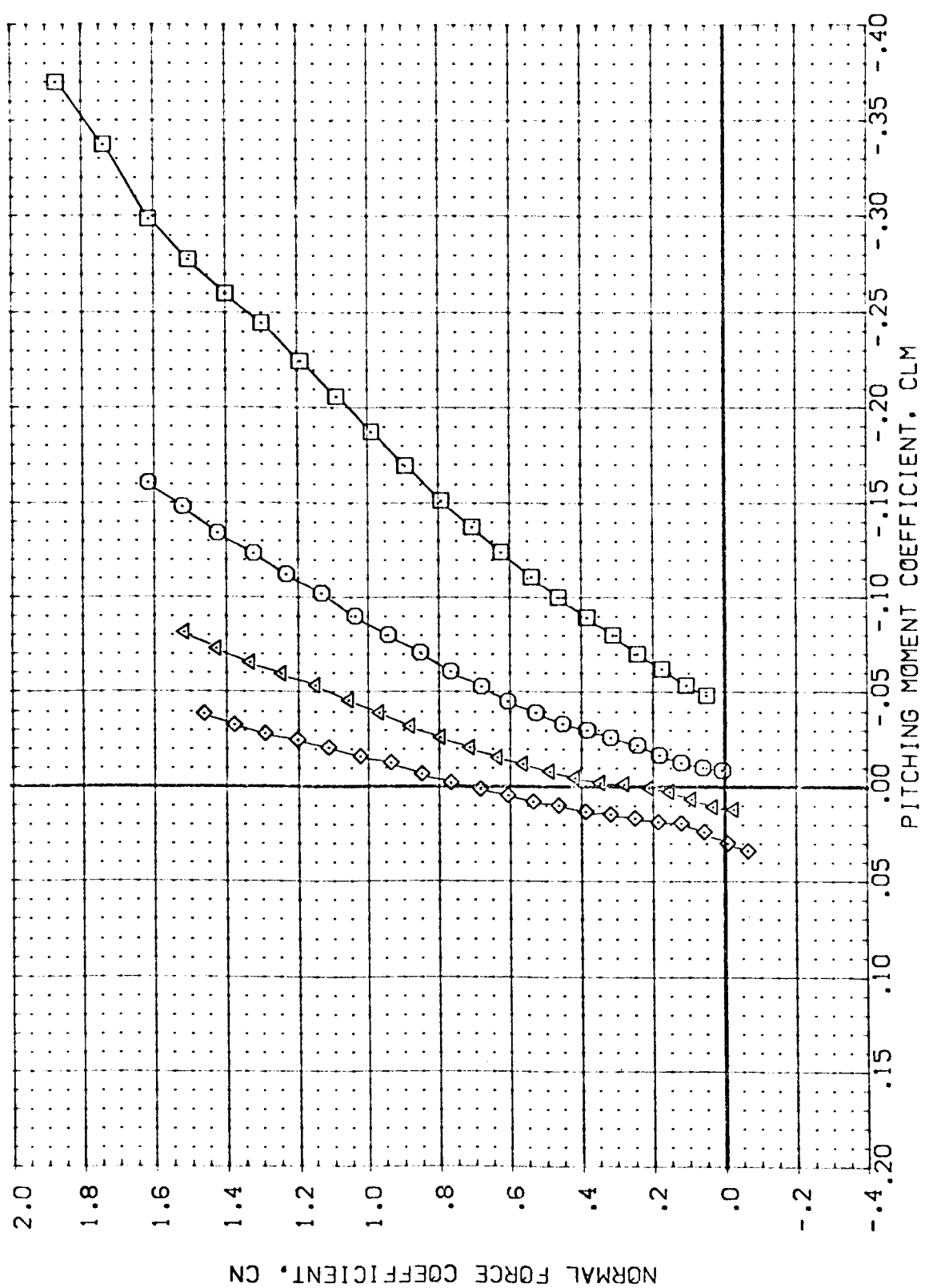


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
:F87S66)	MSFC 574(CA48) CR3 139 W/ALT NOSE	.000	.000	999.999	.000	SREF 2690.0000 SC.F.T.
:F87S77)	MSFC 574(CA48) CR3 139 W/ALT NOSE	.000	15.000	999.999	13.750	LREF 474.8000
:F87S81)	MSFC 574(CA48) CR3 139 W/ALT NOSE	.000	-46.000	999.999	-14.750	BREF 936.7000
:F87S79)	MSFC 574(CA48) CR3 139 W/ALT NOSE	.000	-70.000	999.999	.000	XMRP 838.7000
						YMRP .0000
						ZMRP .0000
						SCALE .0010

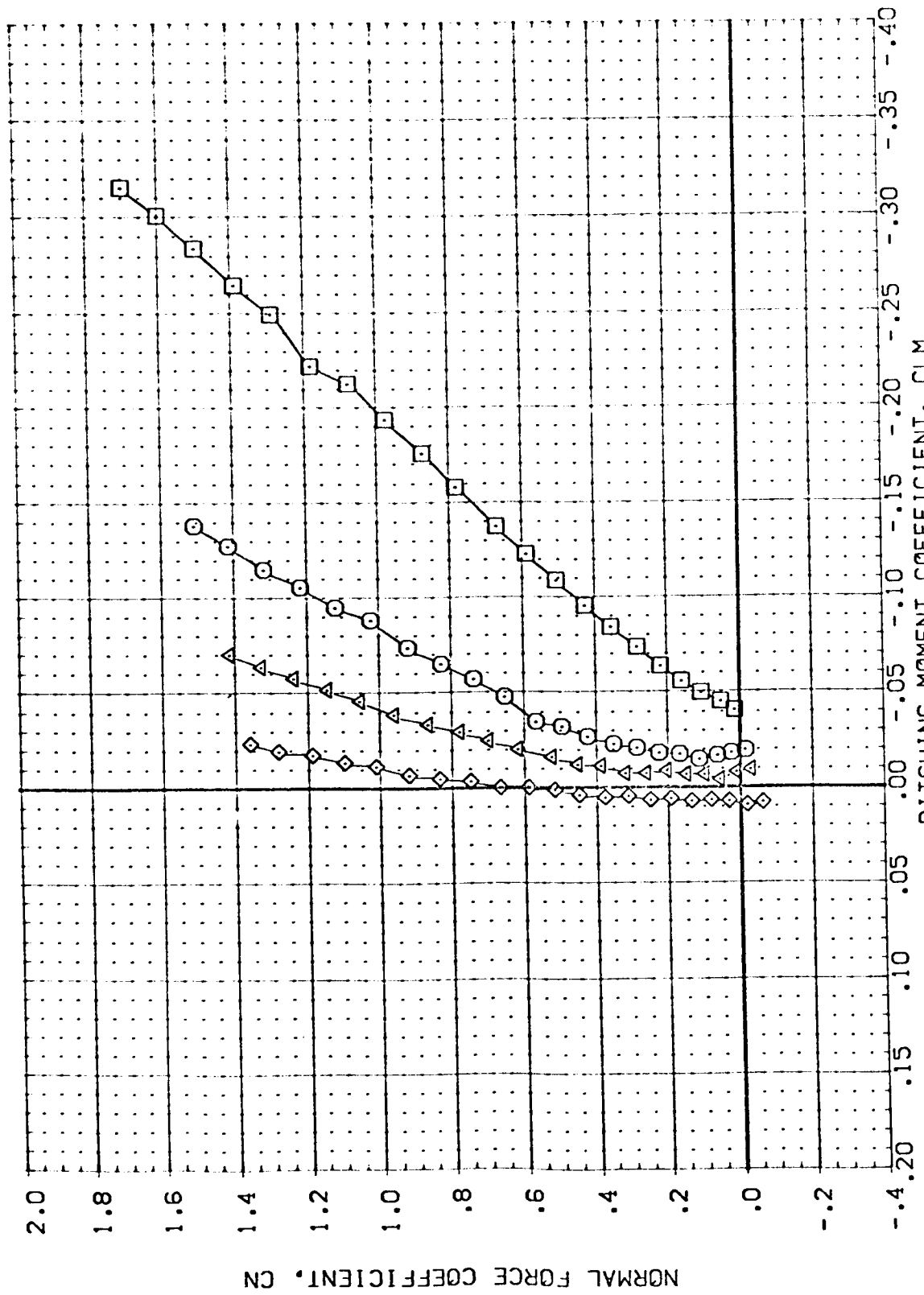


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE
 (F)MACH = 4.96 PAGE 836



DATA SET SYMBOL: (X87/S66) (F87/S77) (F87/S81) (F87/S79)
 CONFIGURATION DESCRIPTION: DATA NOT AVAILABLE MSFC 574(CA48) CRB 139 W/ALT NOSE DATA NOT AVAILABLE MSFC 574(CA48) CRB 139 W/ALT NOSE
 BETA: .000 .000 .000 .000
 ELEVTR: .000 15.000 -40.000 -20.000
 SPCBRK: 999.990 999.990 999.990 999.990
 BDFLAP: .000 13.750 -14.250 .000
 REFERENCE INFORMATION: SREF 2690 SCALF 0000 LREF 474.8000 BREF 936.7000 XMRP 838.7000 YMRP 0.0000 ZMRP 0.0000 SCALE 1.0040

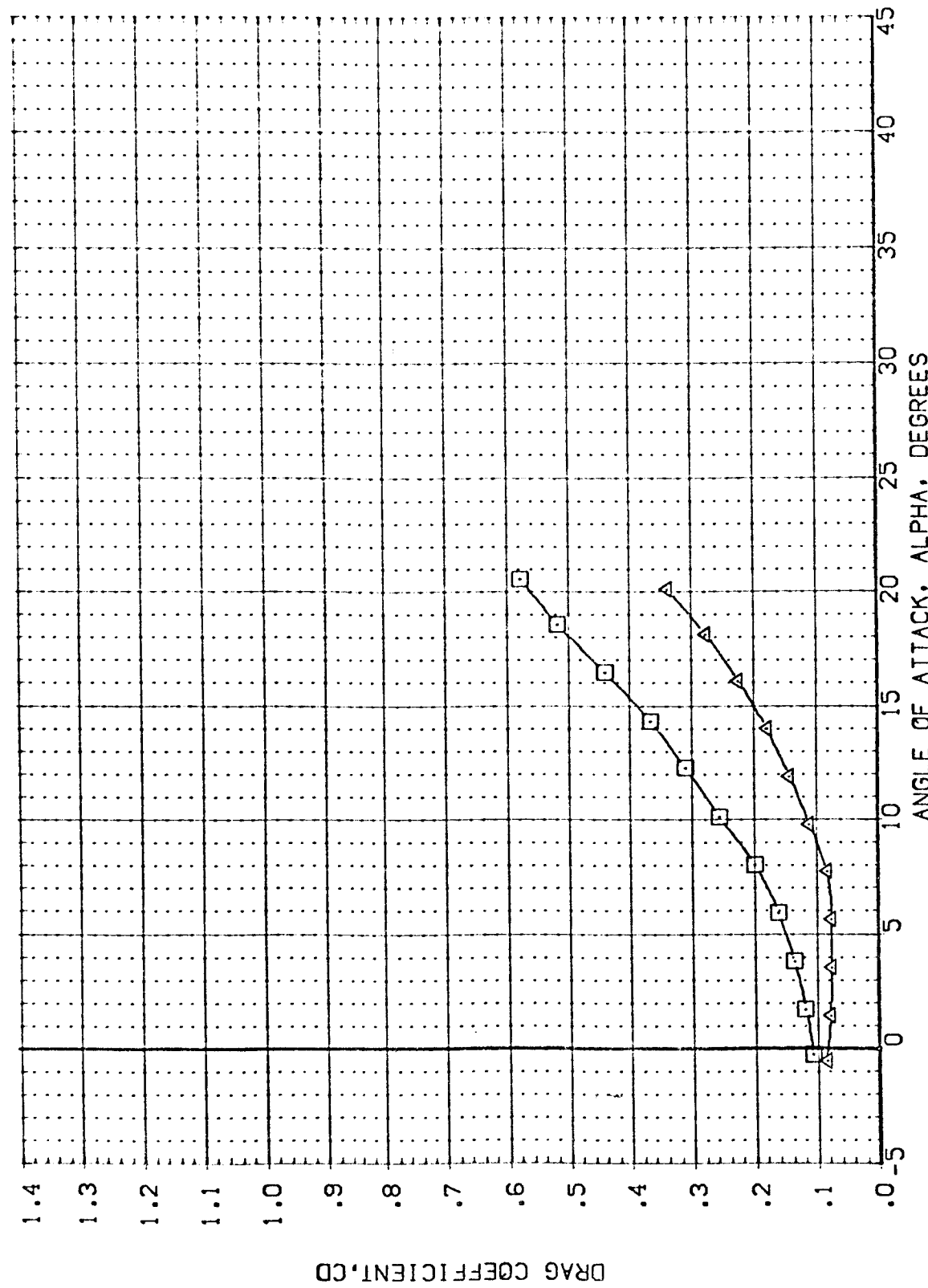


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (X87566) DATA NOT AVAILABLE
 (F87577) MSFC 574(CA48) CR3 139 W/ALT NOSE
 (F87581) DATA NOT AVAILABLE
 (F87579) MSFC 574(CA48) CR3 139 W/ALT NOSE

BETA ELEVTR SPOBRK BDFLAP
 .000 .000 999.990 .000
 .000 15.000 999.990 13.750
 .000 -40.000 999.990 -14.250
 .000 -20.000 999.990 .000

REFERENCE INFORMATION
 SREF 2690.0000 SQ.F.T.
 LREF 474.8000
 BREF 936.7000
 XMRP 838.7000
 YMRP .0000
 ZMRP .0000
 SCALE .0010



FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE
 (B)MACH = .90

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (X87566) DATA NOT AVAILABLE
 (F87577) MSFC 574(CA48) CRB 139 W/ALT NOSE
 (F87581) DATA NOT AVAILABLE
 (F87579) MSFC 574(CA48) CRB 139 W/ALT NOSE

BETA ELEVTR SPOBRK BOFLAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SREF 2690.0000 SQ.FT.
 .000 15.000 999.990 13.750 LREF 474.8000 IN.
 .000 -40.000 999.990 -11.250 BRFF 936.7000 IN.
 .000 -20.000 999.990 .000 XWRP 898.7000 IN.
 .000 .000 .000 .000 WWRP .0000 IN.
 .000 .000 .000 .000 ZWRP .0000 IN.
 .000 .000 .000 .000 SCALE .0000

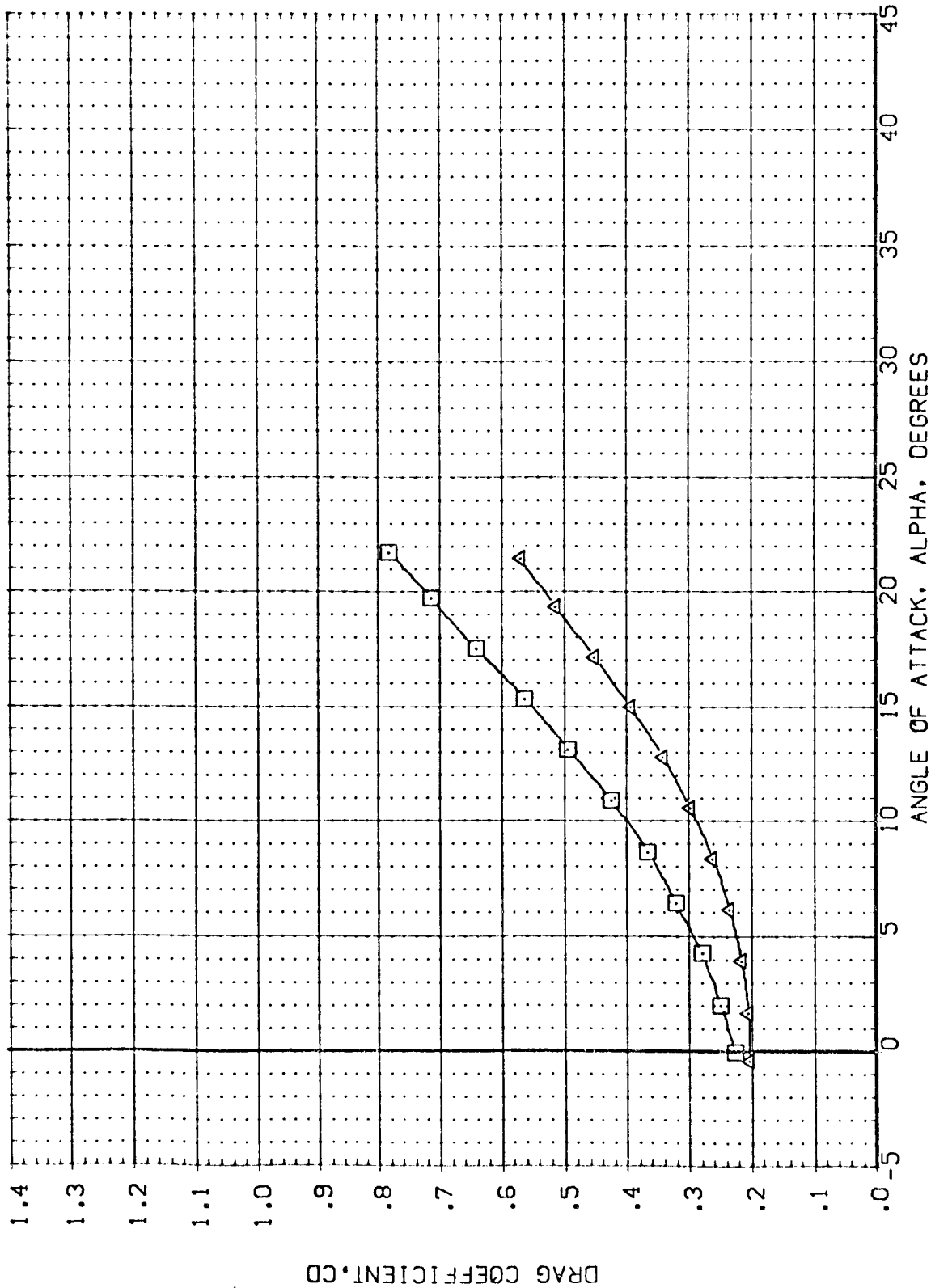


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(187565)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SC.F.T.
(187577)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000
(187581)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	-40.000	999.990	-14.250	BREF 936.7000
(187579)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	-20.000	999.990	.000	XMRP 838.7000
						YMRP .0000
						ZMRP .0000
						SCALE .0040

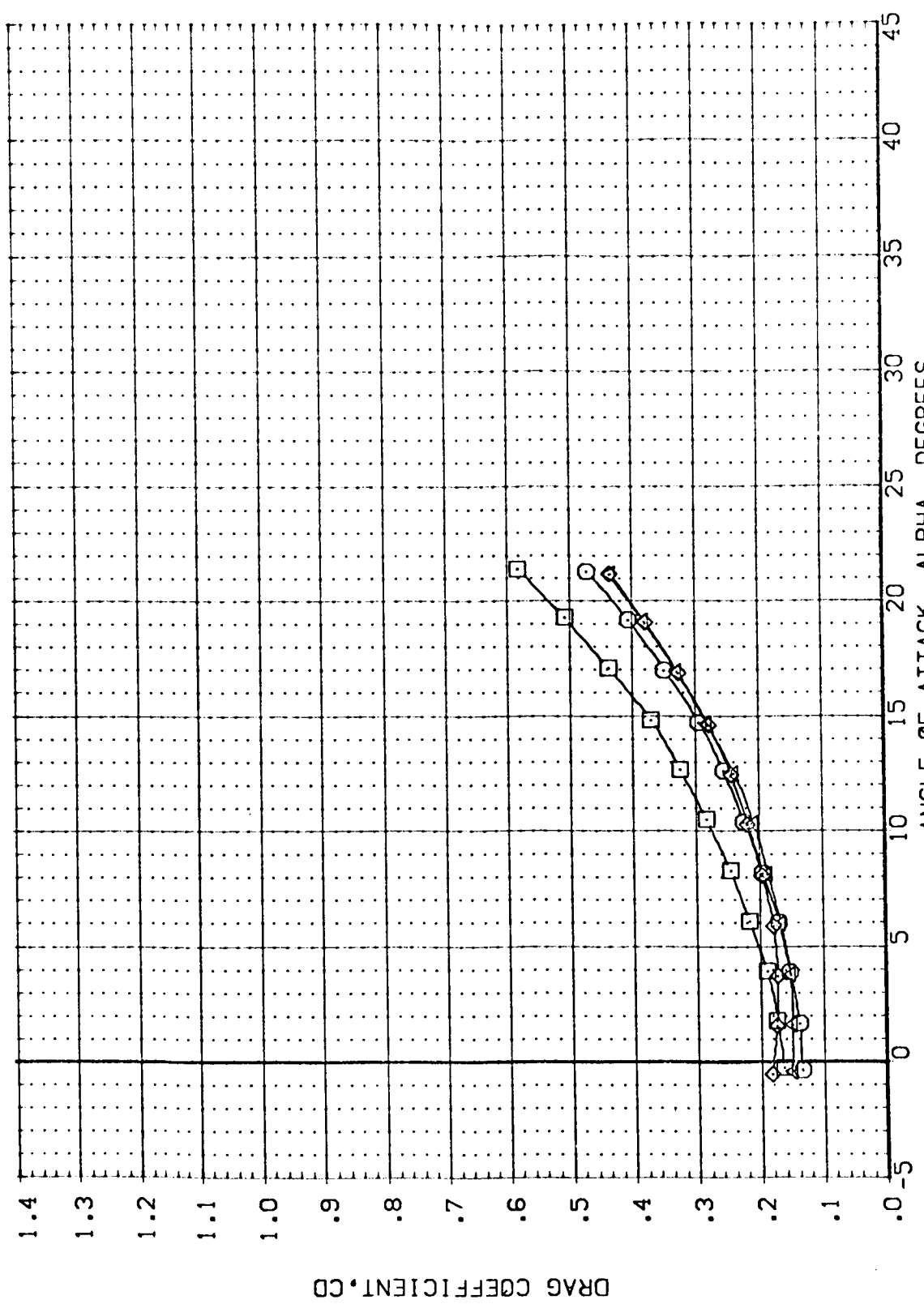


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE
 (M)MACH = 1.95 PAGE 84C

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(X87566)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SC.F.T.
(F87577)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000
(F87581)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87579)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	-20.000	999.990	.000	XMRP 838.7000
						YMRP .0000
						ZMRP .0000
						SCALE .0040

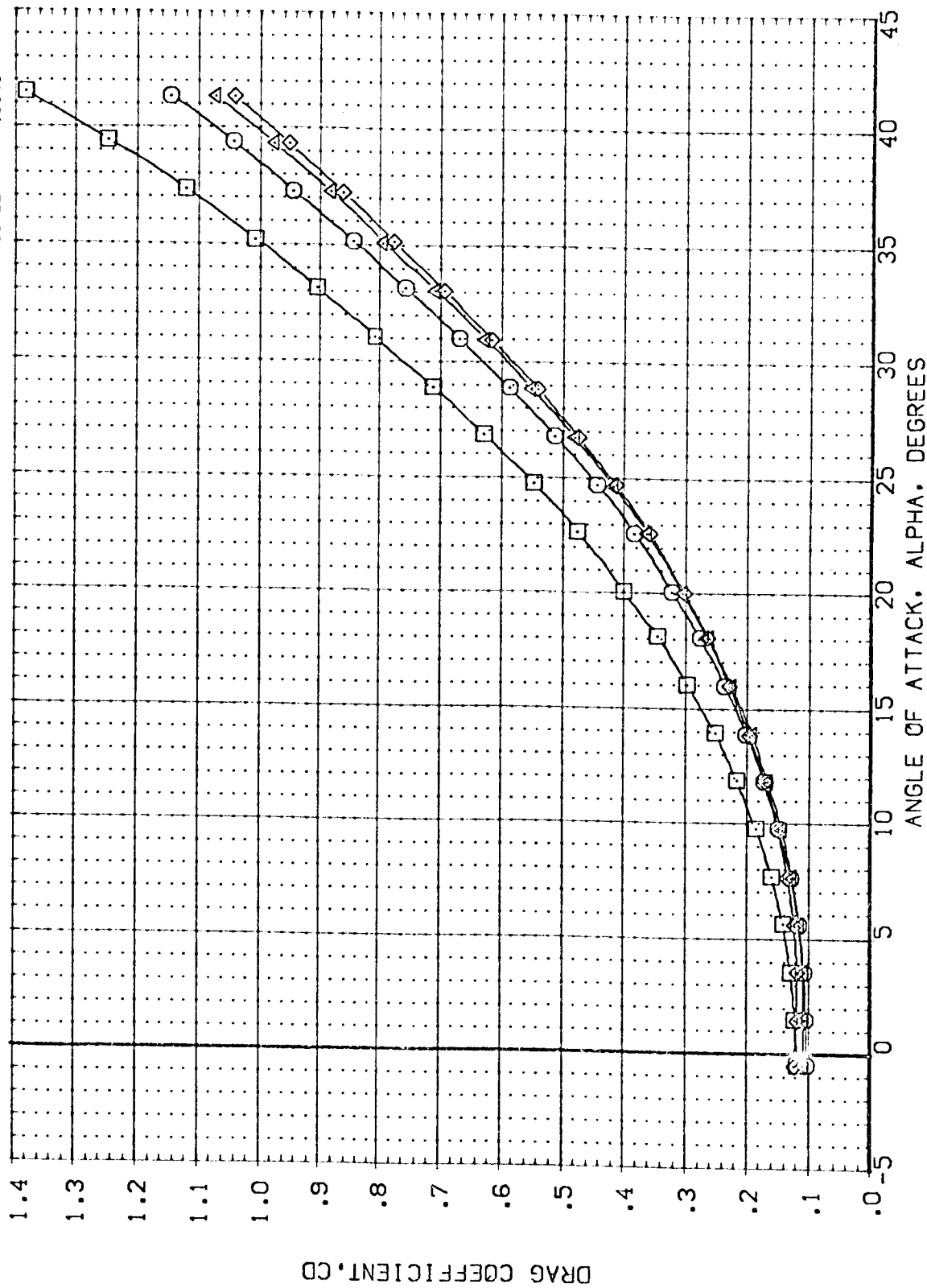


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (X87S66) MSFC 574(CA48) ORB 139 W/ALT NOSE
 (F87S77) MSFC 574(CA48) ORB 139 W/ALT NOSE
 (F87S81) MSFC 574(CA48) ORB 139 W/ALT NOSE
 (F87S79) MSFC 574(CA48) ORB 139 W/ALT NOSE

BETA .000
 .000
 .000
 .000
 .000

ELEVTR .000
 15.000
 -40.000
 -20.000

SPOBRK 999.990
 999.990
 999.990
 999.990

BCFLAP .000
 13.750
 -14.250
 .000
 .000

REFERENCE INFORMATION SC.FT.
 SREF 2690.0000
 LREF 474.8000
 BREF 936.7000
 XMRP 838.0000
 YMRP .0000
 ZMRP .0000
 SCALE .0040

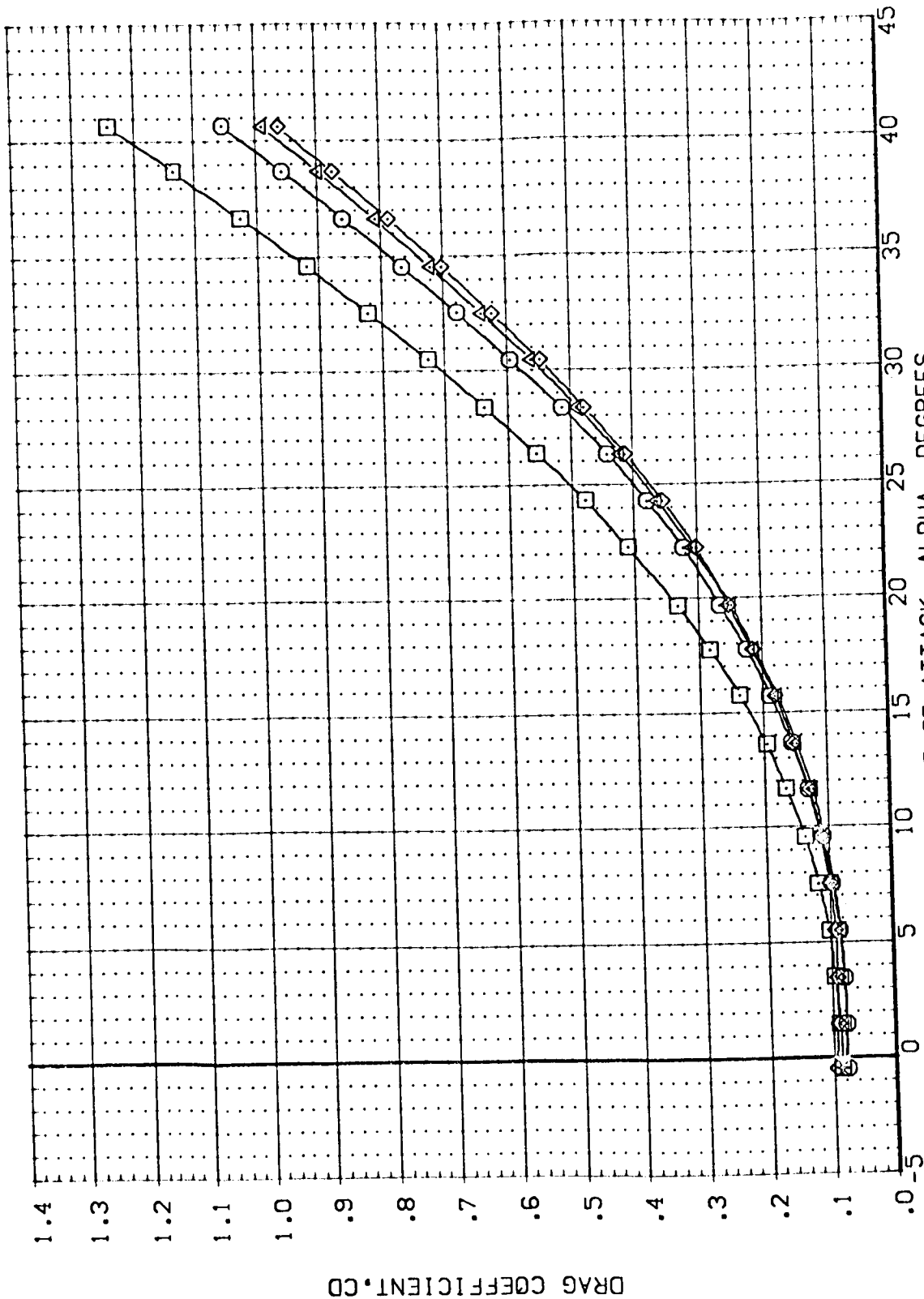


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE
 (F)MACH = 4.96
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DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (X87555) DATA NOT AVAILABLE
 (F87577) MSFC 574(OA48) CRB 139 W/ALT NOSE
 (F87581) DATA NOT AVAILABLE
 (F87579) MSFC 574(OA48) CRB 139 W/ALT NOSE

BETA ELEVTR SPOBRK BDFLAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SREF 2690.0000 SC.F.T.
 .000 15.000 999.990 13.750 LREF 474.8000 IN.
 .000 -40.000 999.990 -14.250 BREF 936.7000 IN.
 .000 -20.000 999.990 .000 XMRP 838.7000 IN.
 .000 .000 .000 ZMRP .0000 IN.
 .000 .000 .000 SCALE .0040

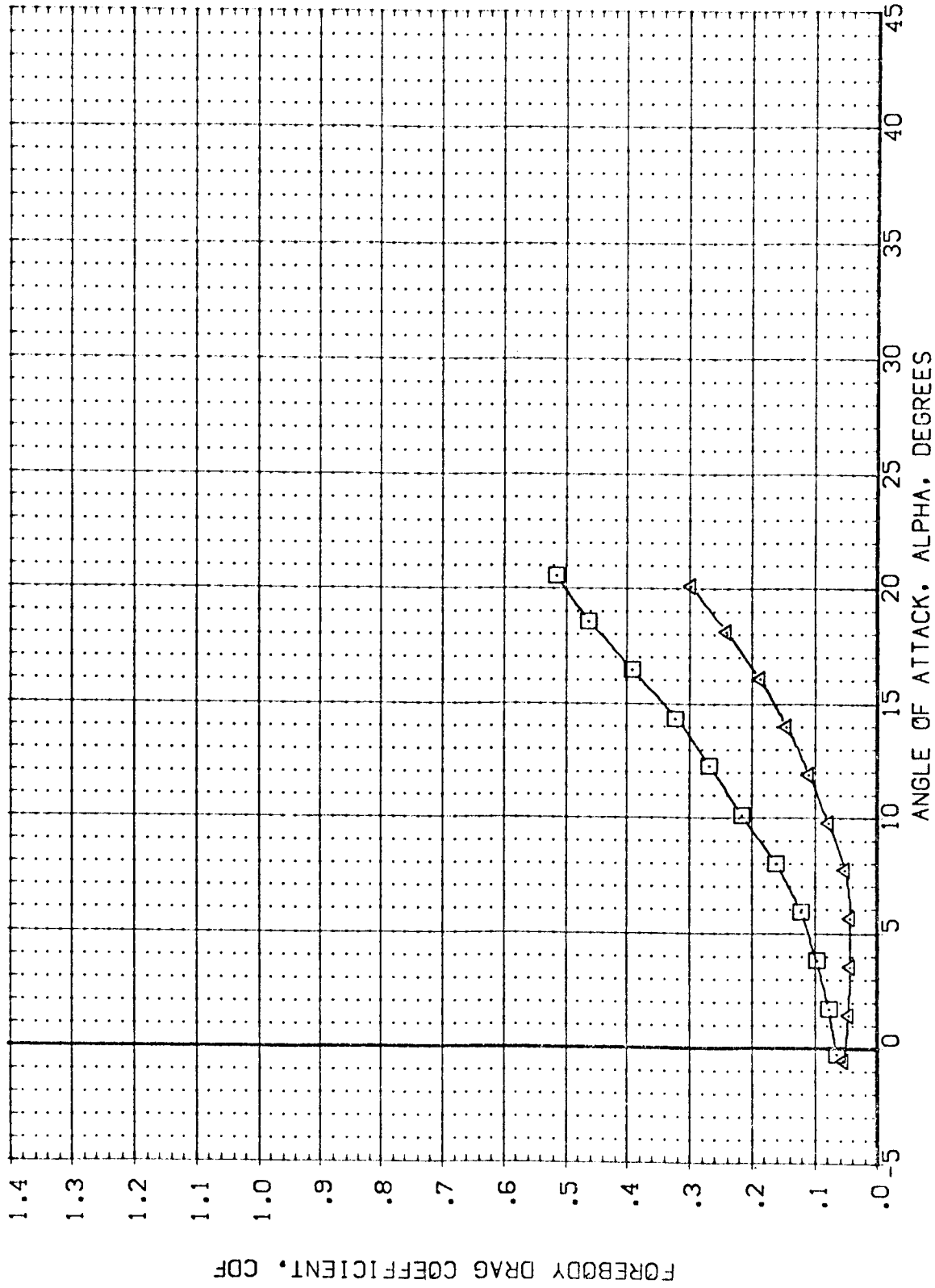


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(X87566) DATA NOT AVAILABLE

(F87577) MSFC 574(OA48) ORB 139 V/ALT NOSE

(F87581) DATA NOT AVAILABLE

(F87581) MSFC 574(OA48) ORB 139 V/ALT NOSE

(F87579)

BETA ELEVTR SPOBRK BOFLAP

.000 .000 999.990 .000

.000 15.000 999.990 13.750

.000 -40.000 999.990 -14.250

.000 -20.000 999.990 .000

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.

LREF 474.8000 IN.

BREF 936.7000 IN.

XMRP 838.7000 IN.

YMRP .0000 IN.

ZMRP .0000 IN.

SCALE .0040

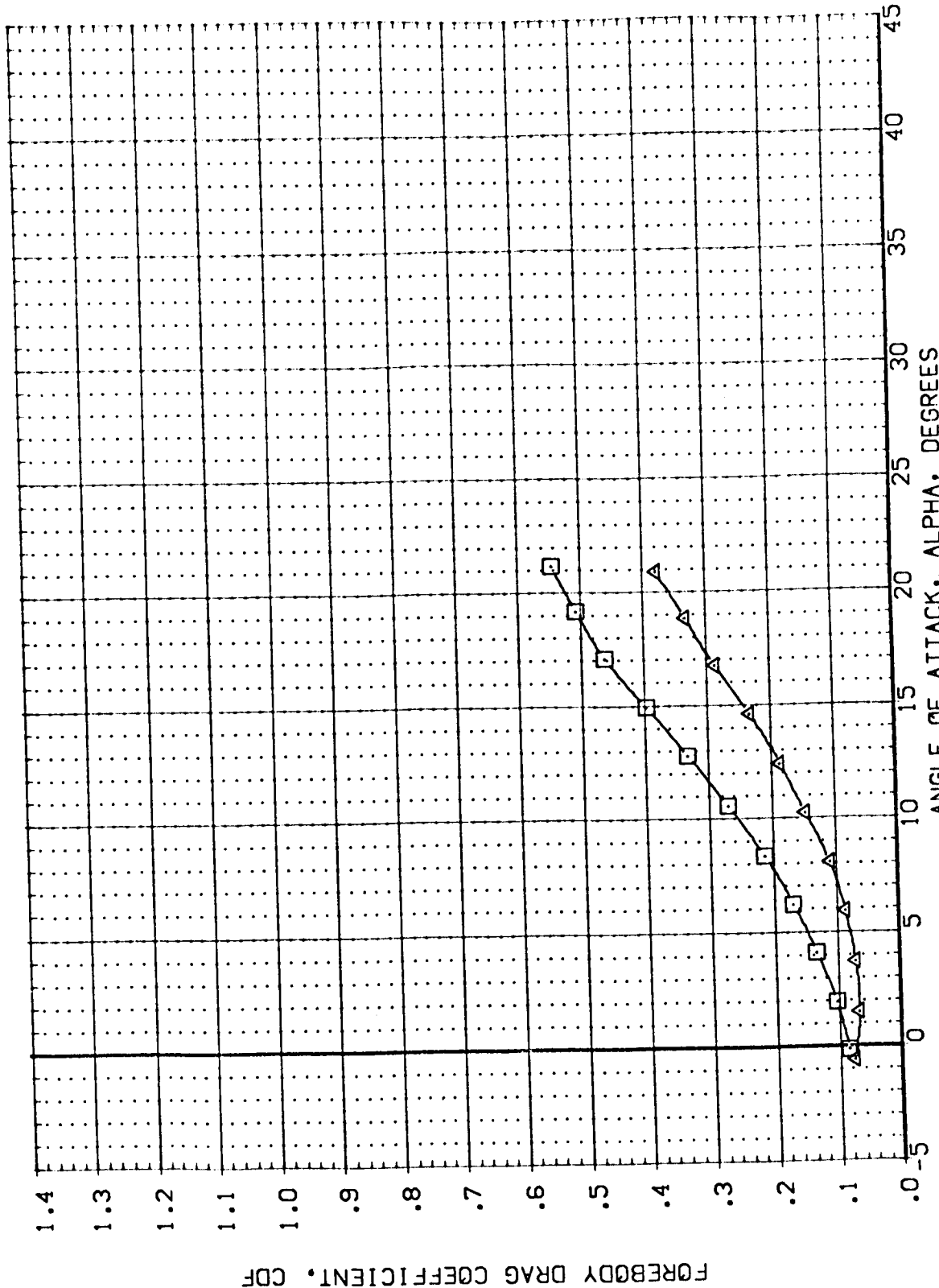


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

(B)MACH = .90

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DATA SET SYMBOL CONFIGURATION DESCRIPTION

(X87S66) DATA NOT AVAILABLE

(F87S77) MSFC 574(CA48) CRB 139 V/ALT NOSE

(F87S81) DATA NOT AVAILABLE

(F87S79) MSFC 574(CA48) CRB 139 V/ALT NOSE

BETA ELEVTR SPOBRK BOFLAP REFERENCE INFORMATION

.000 .000 999.990 .000 SREF 2690.0000 SC.FT.

.000 .000 999.990 13.750 LREF 474.8000 IN.

.000 .000 999.990 -14.250 BREF 936.7000 IN.

.000 .000 999.990 .000 XMRP 838.7000 IN.

.000 .000 .000 .000 ZMRP .0000 IN.

SCALE .0040

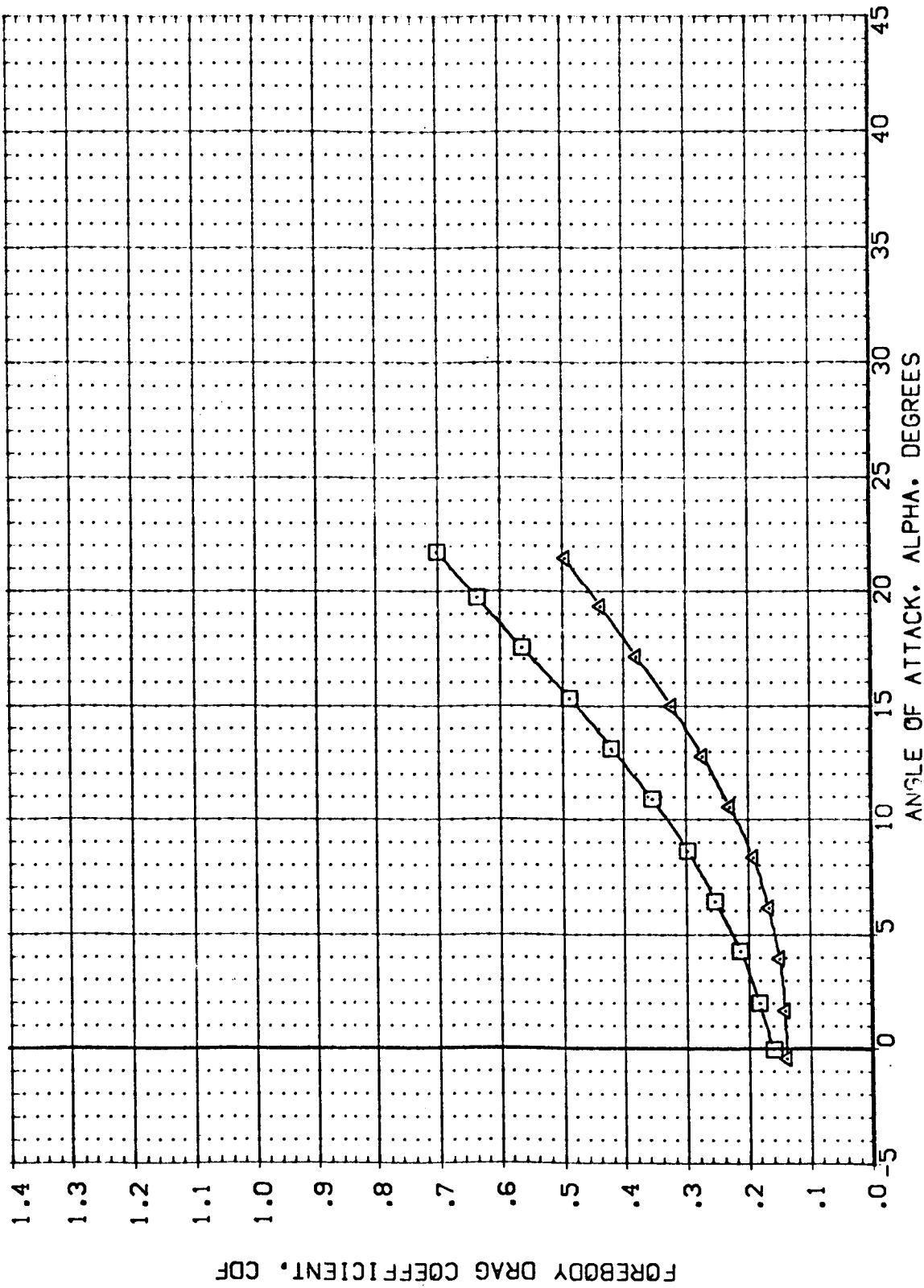


FIG. 17 EFFECT OF MAX CON ROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(X87566)	MSFC 574(CA48) CR8 139 V/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000
(F87577)	MSFC 574(CA48) CR8 139 V/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000
(F87581)	MSFC 574(CA48) CR8 139 V/ALT NOSE	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87579)	MSFC 574(CA48) CR8 139 V/ALT NOSE	.000	-20.000	999.990	.000	YMRP 838.7000
						ZMRP .0000
						SCALE .0040

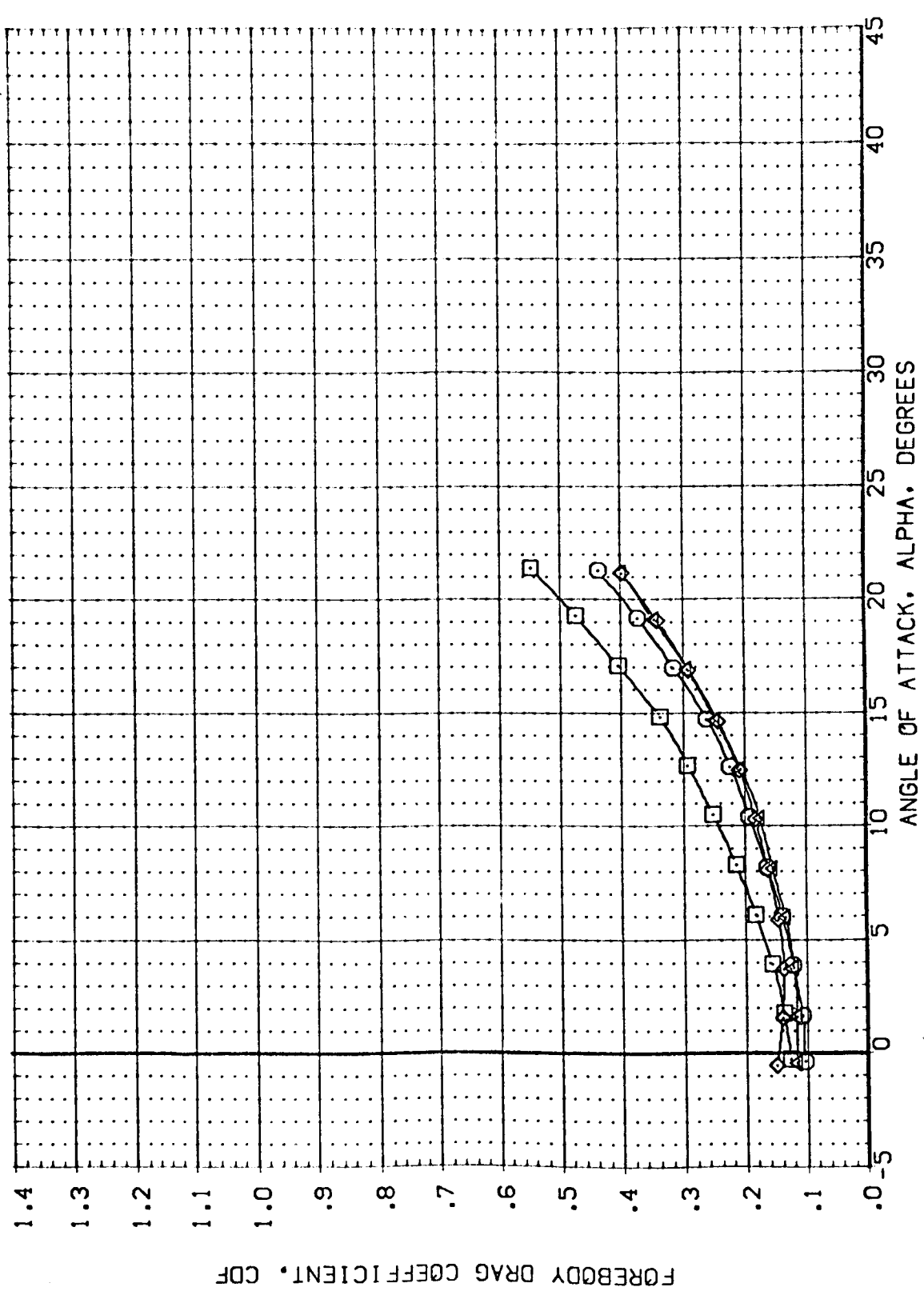


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE
 (D)MACH = 1.95 PAGE 846

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDRBK	BDFLAP	REFERENCE INFORMATION
(X87566)	MSFC 574 (CA48) CRB 139 W/ALT NOSE	.000	.000	999.990	.000	2690 CCCC
(F87577)	MSFC 574 (CA48) CRB 139 W/ALT NOSE	.000	15.000	999.990	13.750	474.8000
(F87581)	MSFC 574 (CA48) CRB 139 W/ALT NOSE	.000	-40.000	999.990	-14.250	936.7000
(F87579)	MSFC 574 (CA48) CRB 139 W/ALT NOSE	.000	-20.000	999.990	.000	838.7000
					ZMRP	.0000
					ZMRP	.0000
					SCALE	.0040

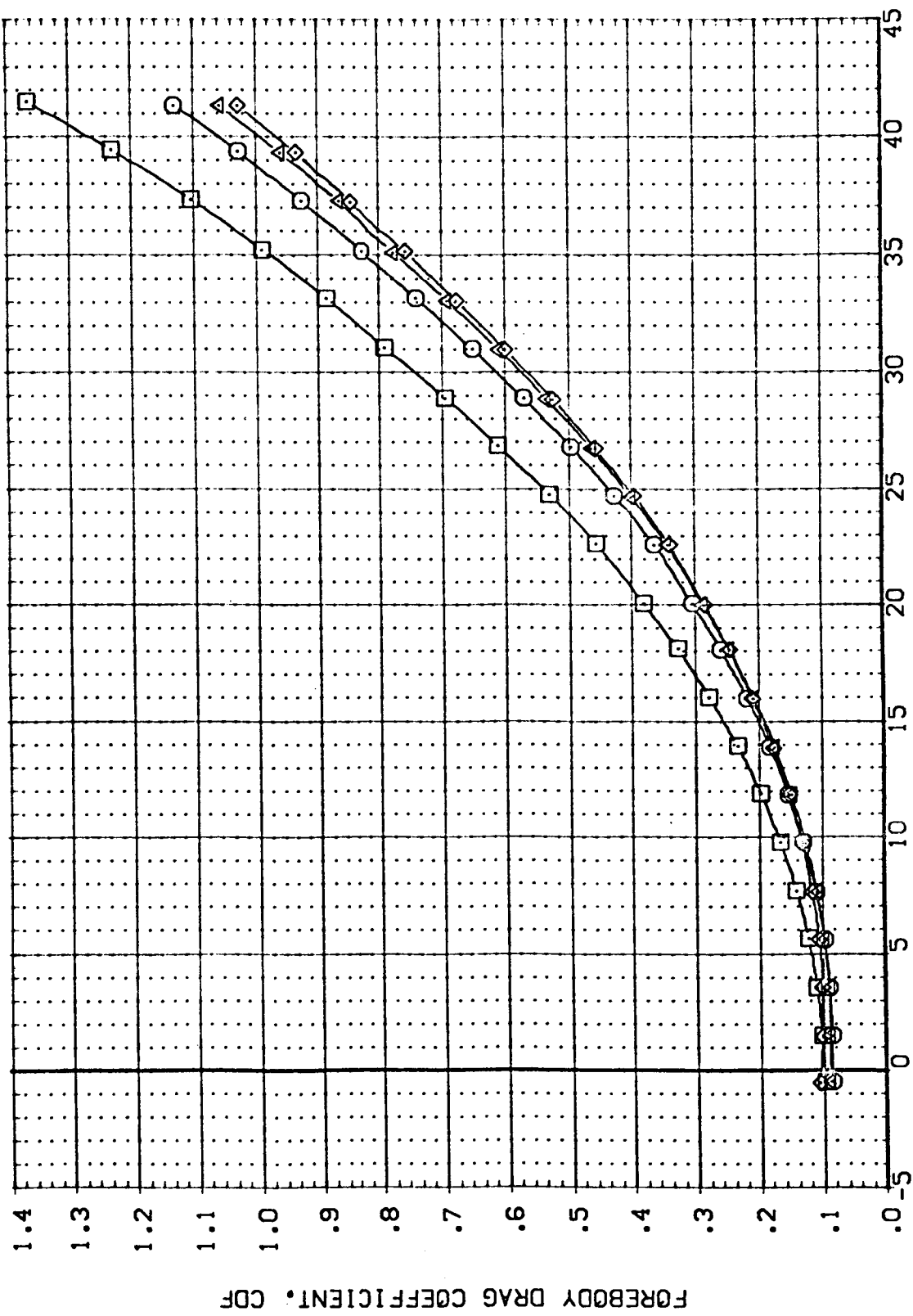


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(X87566) MSFC 574(CA48) CRB | 39 W/ALT NOSE

(F87577) MSFC 574(CA48) CRB | 39 W/ALT NOSE

(F87581) MSFC 574(CA48) CRB | 39 W/ALT NOSE

(F87579) MSFC 574(CA48) CRB | 39 W/ALT NOSE

BETA ELEVTR SPOBRK BOFLAP REFERENCE INFORMATION

.000 .000 999.990 .000 SREF 2690.0000 SO.FT.

.000 15.000 999.990 13.750 LREF 474.8000 IN.

.000 -40.000 999.990 -14.250 BREF 936.7000 IN.

.000 -20.000 999.990 .000 XMRP 838.7000 IN.

.000 .000 .000 .000 YMRP .0000 IN.

.000 .000 .000 .000 ZMRP .0000 IN.

SCALE .0040

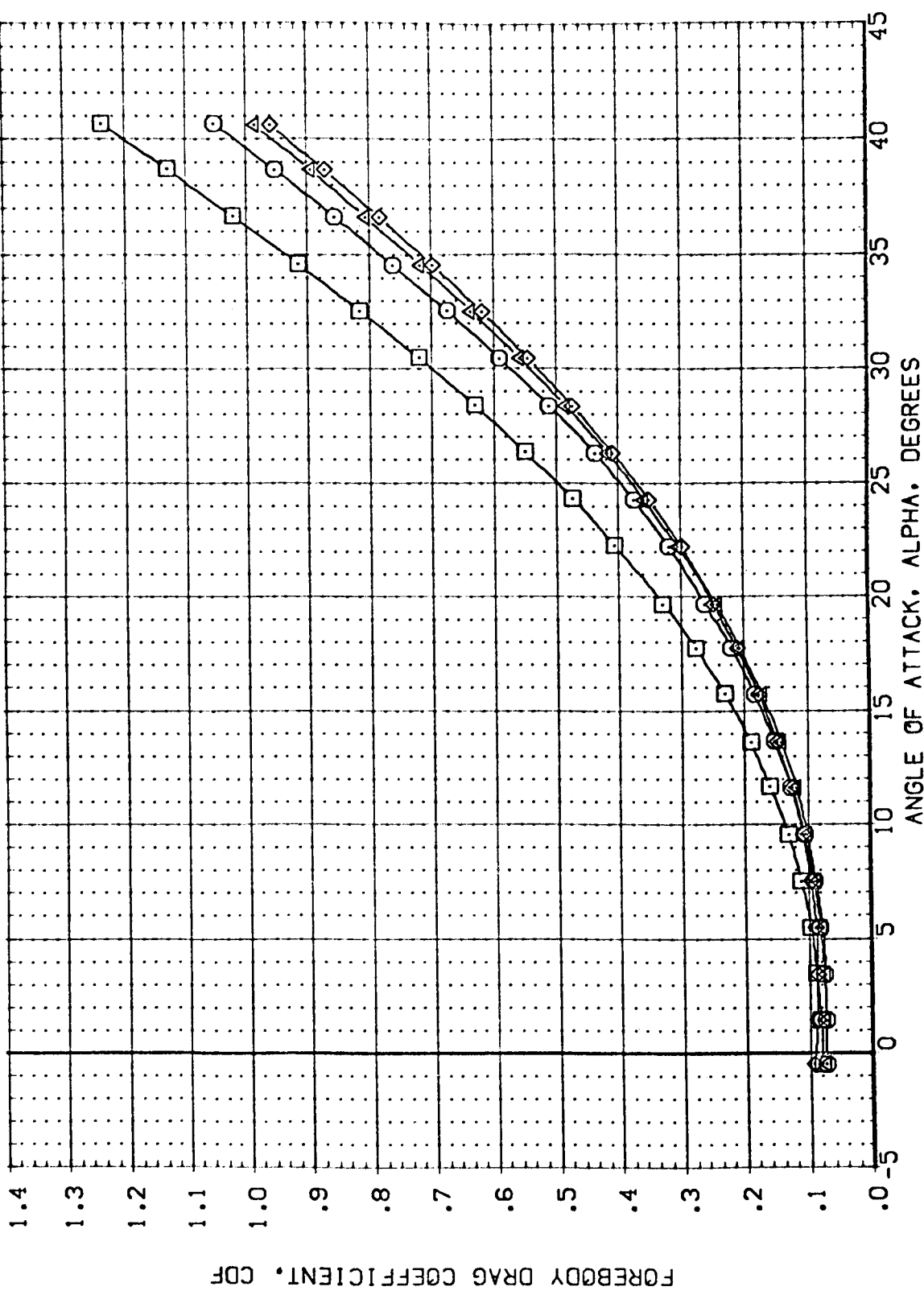


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

(F)MACH = 4.96

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(X87566)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(F87577)	MSFC 574(DA48) CRB 139 W/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000 IN.
(F87581)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	-40.000	999.990	-14.200	BREF 936.7000 IN.
(F87579)	MSFC 574(CA48) CRB 139 W/ALT NOSE	.000	-20.000	999.990	.000	X-REF 838.7000 IN.
						Y-REF .0000 IN.
						Z-REF .0000 IN.
						SCALE .0040

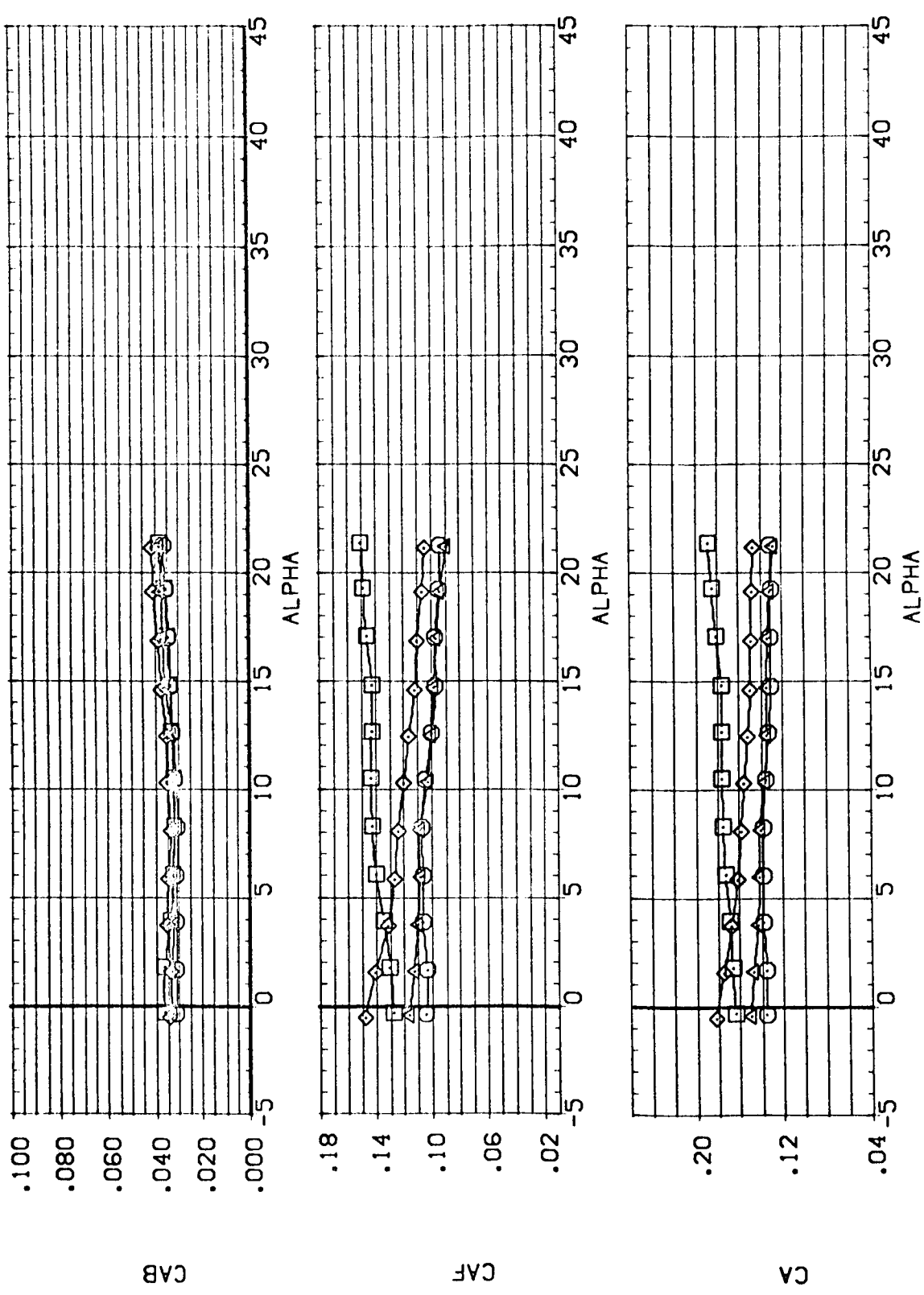


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE
 (D)MACH = 1.95
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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(X87S66)	MSEC 574(CA48) ORB 139 V/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SC.FT.
(F87S77)	MSFC 574(CA48) ORB 139 V/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000 IN.
(F87S81)	MSFC 574(CA48) ORB 139 V/ALT NOSE	.000	-40.000	999.990	-14.250	BREF 936.7000 IN.
(F87S79)	MSFC 574(CA48) ORB 139 V/ALT NOSE	.000	-20.000	999.990	.000	XMRP 838.7000 IN.
					ZMRP	.0000 IN.
					SCALE	.0040

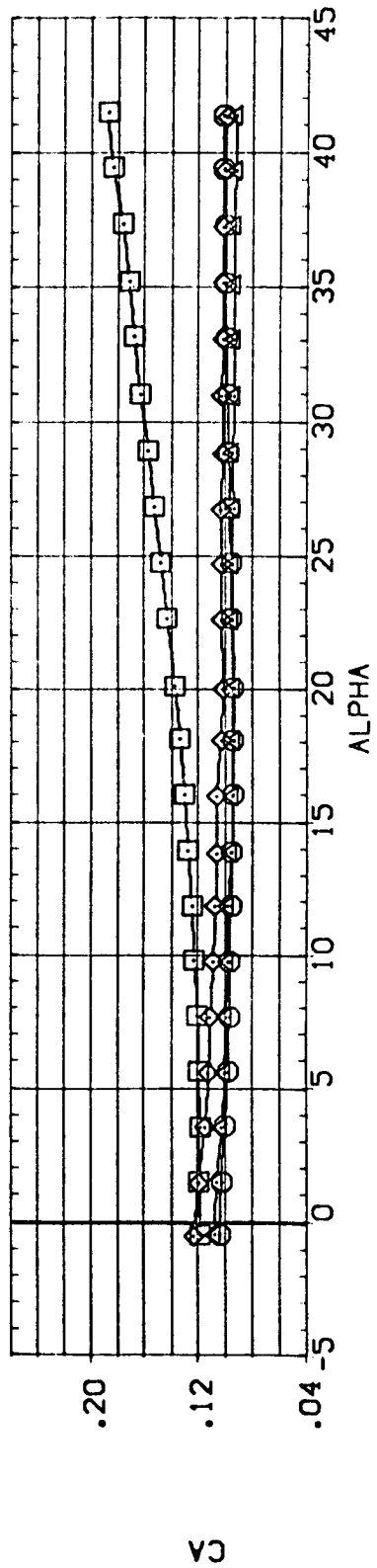
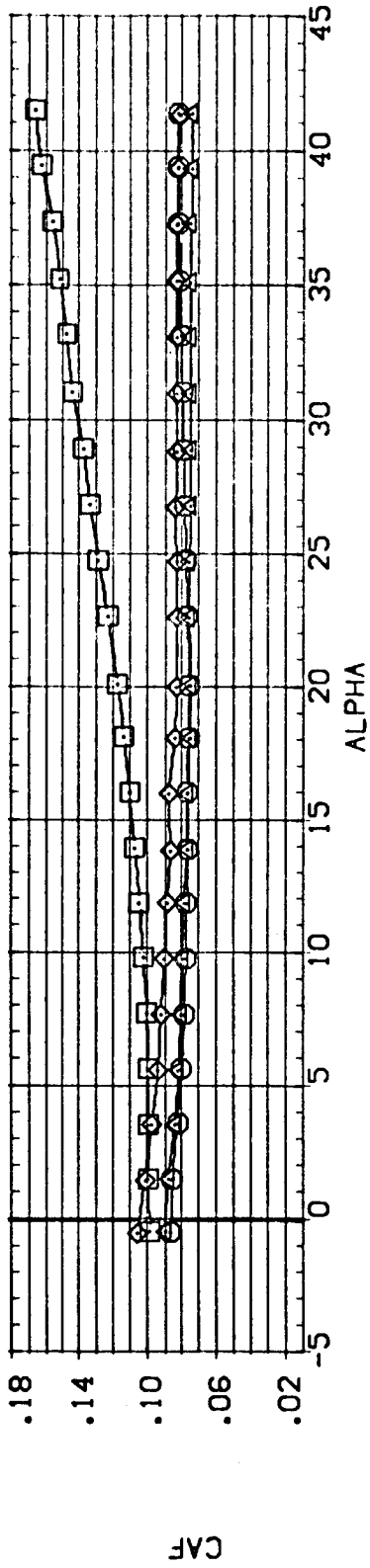
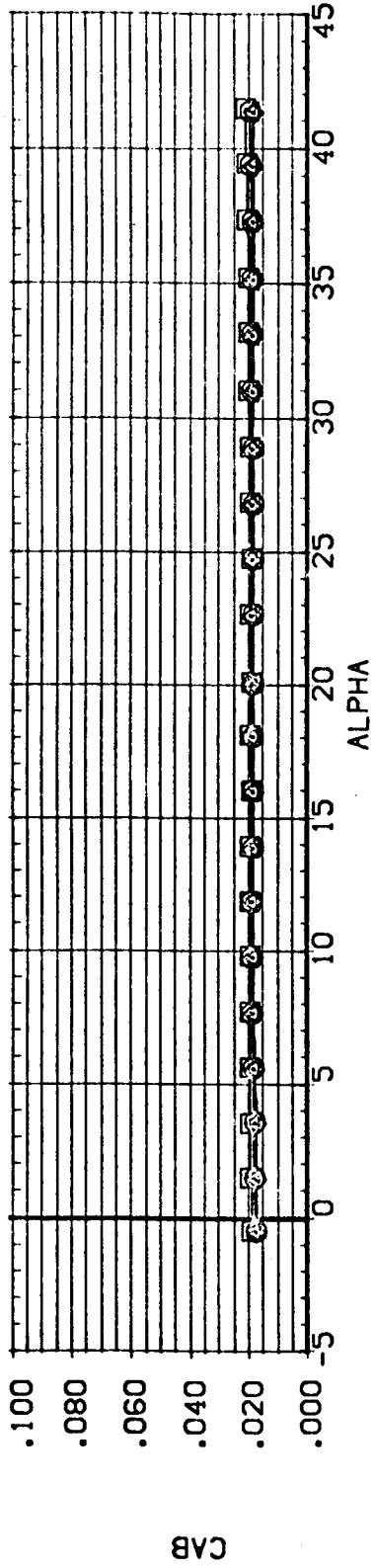
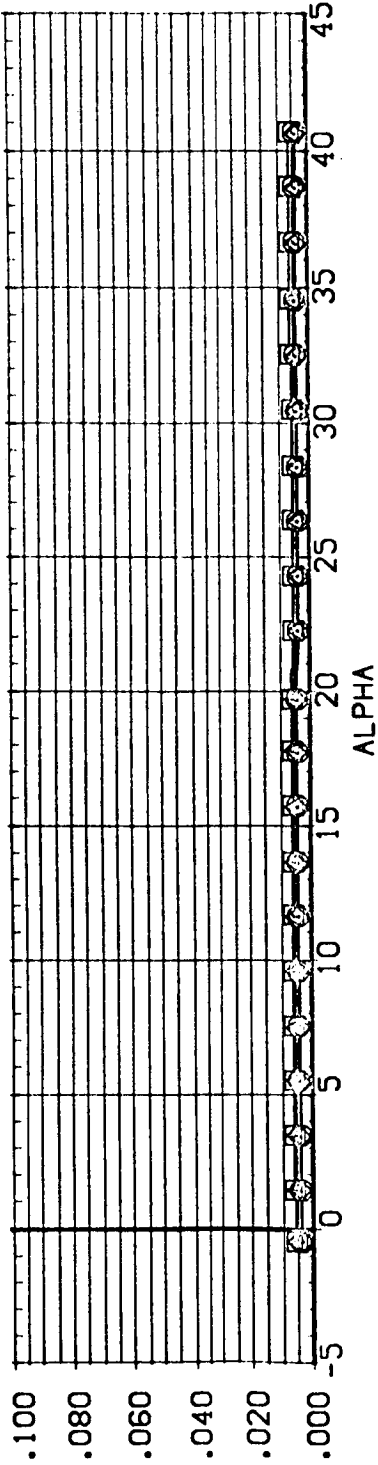


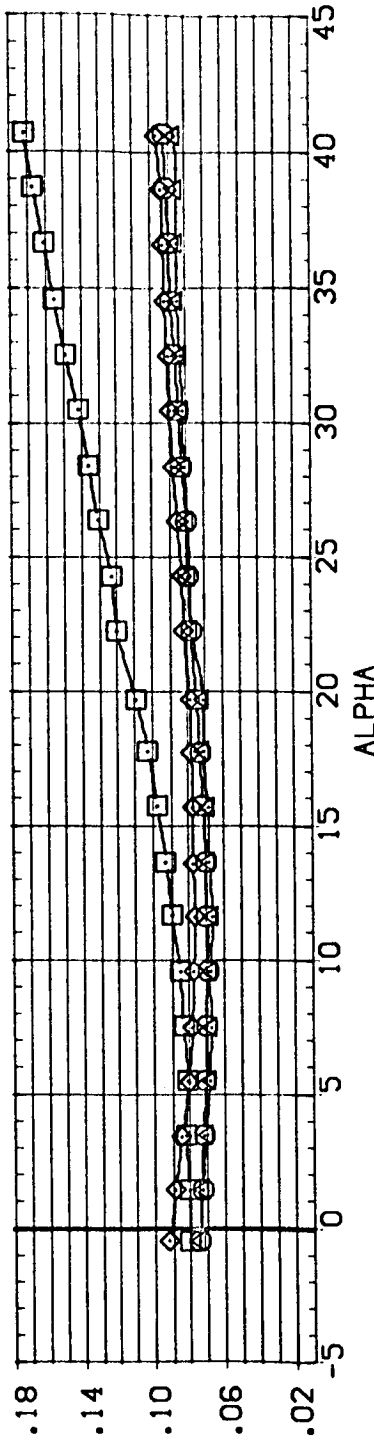
FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (X87S66) MSFC 574(CA48) CRB 139 V/ALT NOSE
 (F87S77) MSFC 574(CA48) CRB 139 V/ALT NOSE
 (F87S81) MSFC 574(CA48) CRB 139 V/ALT NOSE
 (F87S79) MSFC 574(CA48) CRB 139 V/ALT NOSE

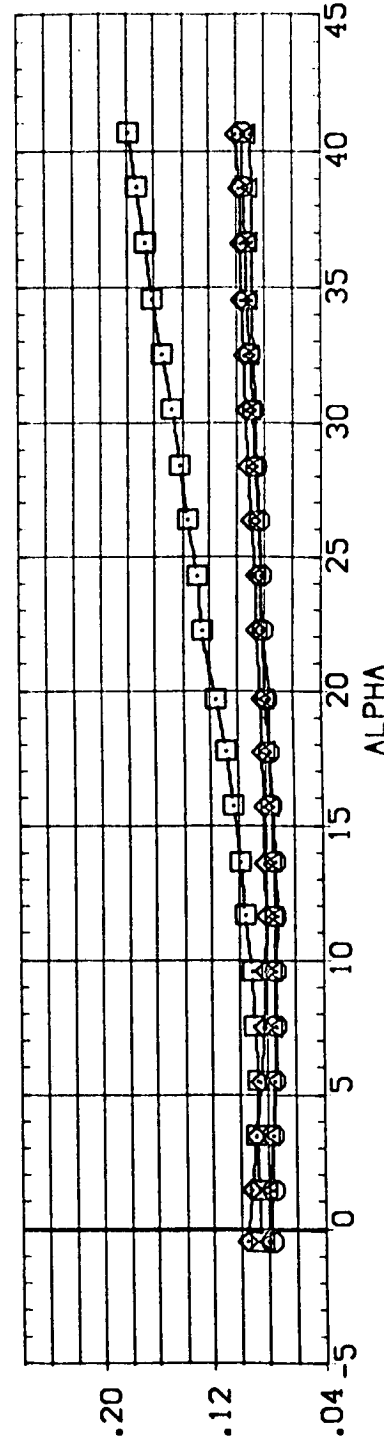
CAB



CAF



CA



BETA .000
 .000
 .000
 .000

ELEVTR .000
 15.000
 -40.000
 -20.000

SPOBRK 999.990
 999.990
 999.990
 999.990

BOELAP .000
 13.750
 -14.250
 .000

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 X-PRP 838.7000 IN.
 Y-PRP .0000 IN.
 Z-PRP .0000 IN.
 SCALE .0040

FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE
 (CF)MACH = 4.96 PAGE 854

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(X87566) DATA NOT AVAILABLE

(F87577) MSFC 574(OA48) CRB 139 V/ALT NOSE

(F87591) DATA NOT AVAILABLE

(F87579) MSFC 574(OA48) CRB 139 V/ALT NOSE

BETA ELEVTR SPOBRK BDFLAP REFERENCE INFORMATION

.000 .000 999.990 .000 SREF 2690.0000 SQ.FT.

.000 15.000 999.990 13.750 LREF 474.8000 IN.

.000 -40.000 999.990 -14.250 BREF 936.7000 IN.

.000 -20.000 999.990 .000 XMRP 838.7000 IN.

.0000 .0000 ZMRP .0000

.0040 SCALE

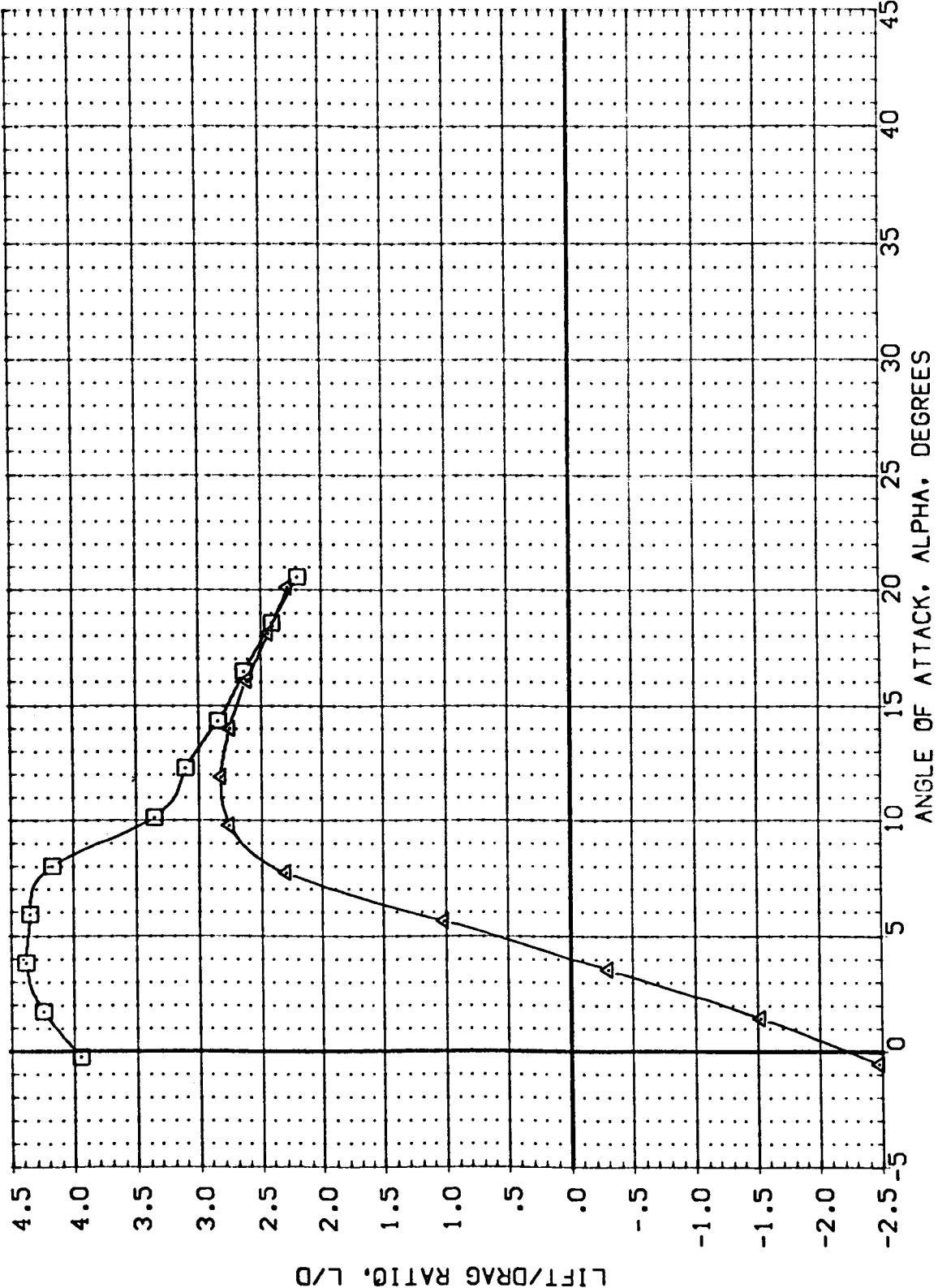


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(X87566) DATA NOT AVAILABLE
 (F87577) MSFC 574 (CA48) CRB 139 W/ALT NOSE
 (F87581) DATA NOT AVAILABLE
 (F87579) MSFC 574 (CA48) CRB 139 W/ALT NOSE

BETA .000
 .000
 .000
 .000

ELEVTR .000
 15.000
 -40.000
 -20.000

SPOBRK 999.990
 999.990
 999.990
 999.990

BDFLAP .000
 13.750
 -14.250
 .000

REFERENCE INFORMATION
 SREF 2690.0000 SG.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

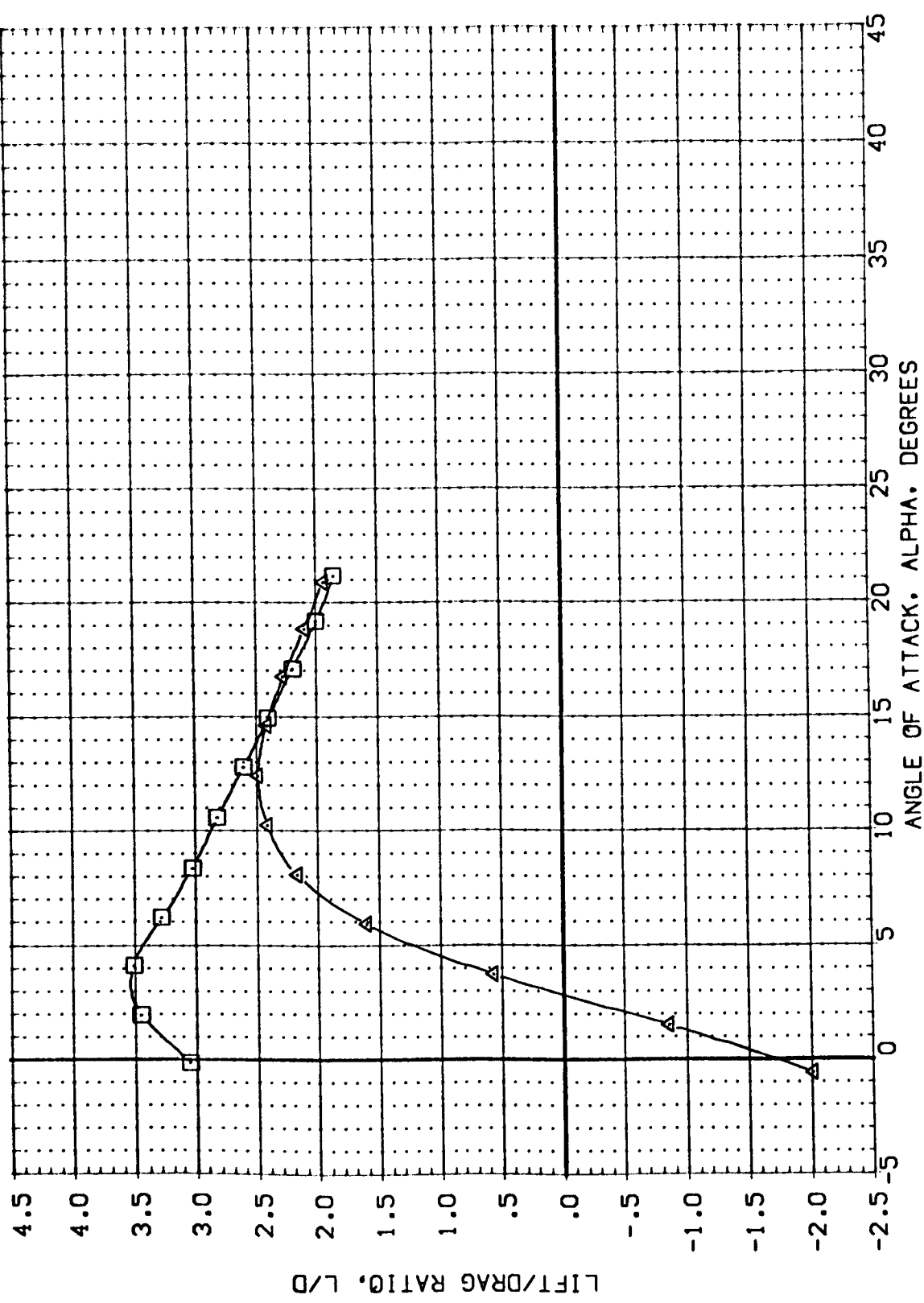


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE
 (B)MACH = .90 PAGE 858

DATA SET SYMBOL: (X87566), (F87577), (F87581), (F87579)

BETA: .000, .000, .000, .000

ELEVTR: .000, 15.000, -40.000, -20.000

SPOBRK: 999.990, 999.990, 999.990, 999.990

BOFLAP: .000, 13.750, -14.250, .000

REFERENCE INFORMATION: SREF 2690.0000, LREF 474.8000, BREF 936.7000, XMRP 838.7000, YMRP .0000, ZMRP .0000, SCALE .0040

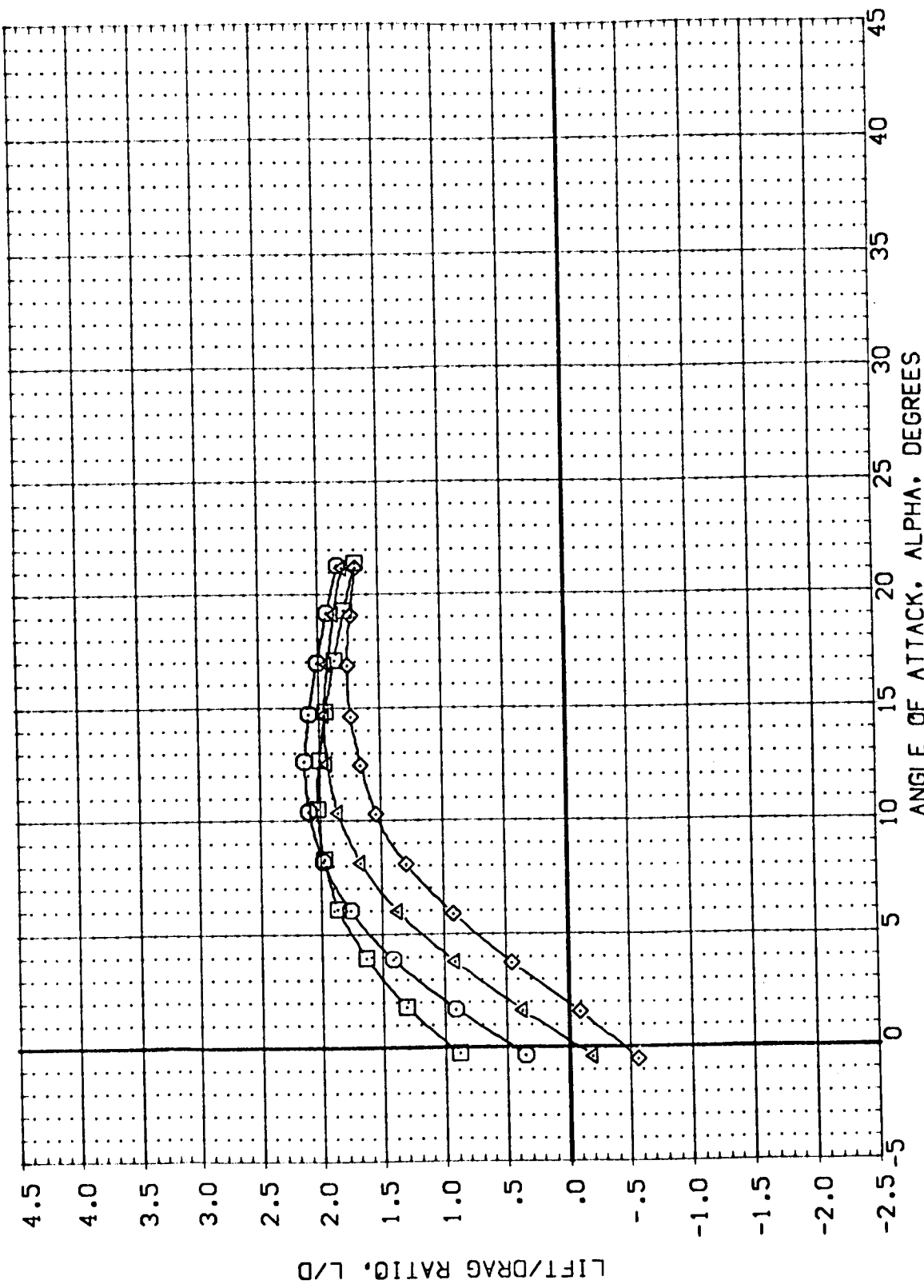


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE (O)MACH = 1.95 PAGE 858

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(X87S66)	MSFC 574(OA48) ORB 139 V/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(F87S77)	MSFC 574(OA48) ORB 139 V/ALT NOSE	.000	15.000	999.990	13.750	LRF 474.8000 IN.
(F87S81)	MSFC 574(OA48) ORB 139 V/ALT NOSE	.000	-40.000	999.990	-14.250	BREF 936.7000 IN.
(F87S79)	MSFC 574(OA48) ORB 139 V/ALT NOSE	.000	-20.000	999.990	.000	XMRP 838.7000 IN.
					YMRP .0000 IN.	ZMRP .0000 IN.
					SCALE .0010	

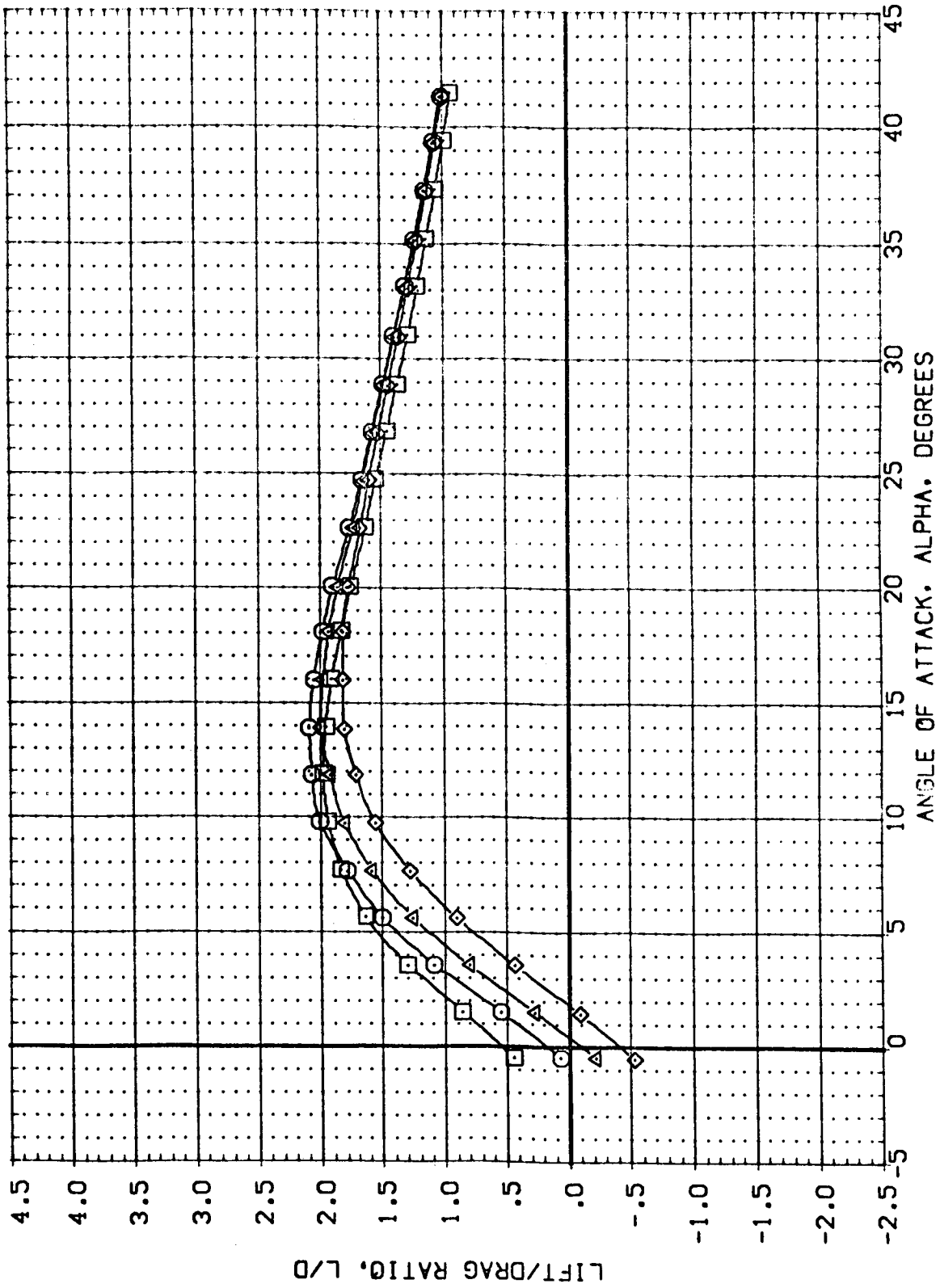


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(X87S66)	MSFC 574(OA48) ORB 139 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(F87S77)	MSFC 574(OA48) ORB 139 W/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000 IN.
(F87S81)	MSFC 574(OA48) ORB 139 W/ALT NOSE	.000	-40.000	999.990	-14.250	BREF 936.7000 IN.
(F87S79)	MSFC 574(OA48) ORB 139 W/ALT NOSE	.000	-20.000	999.990	.000	XMRP 838.7000 IN.
					.000	ZMRP .0000 IN.
					.0040	SCALE .0040

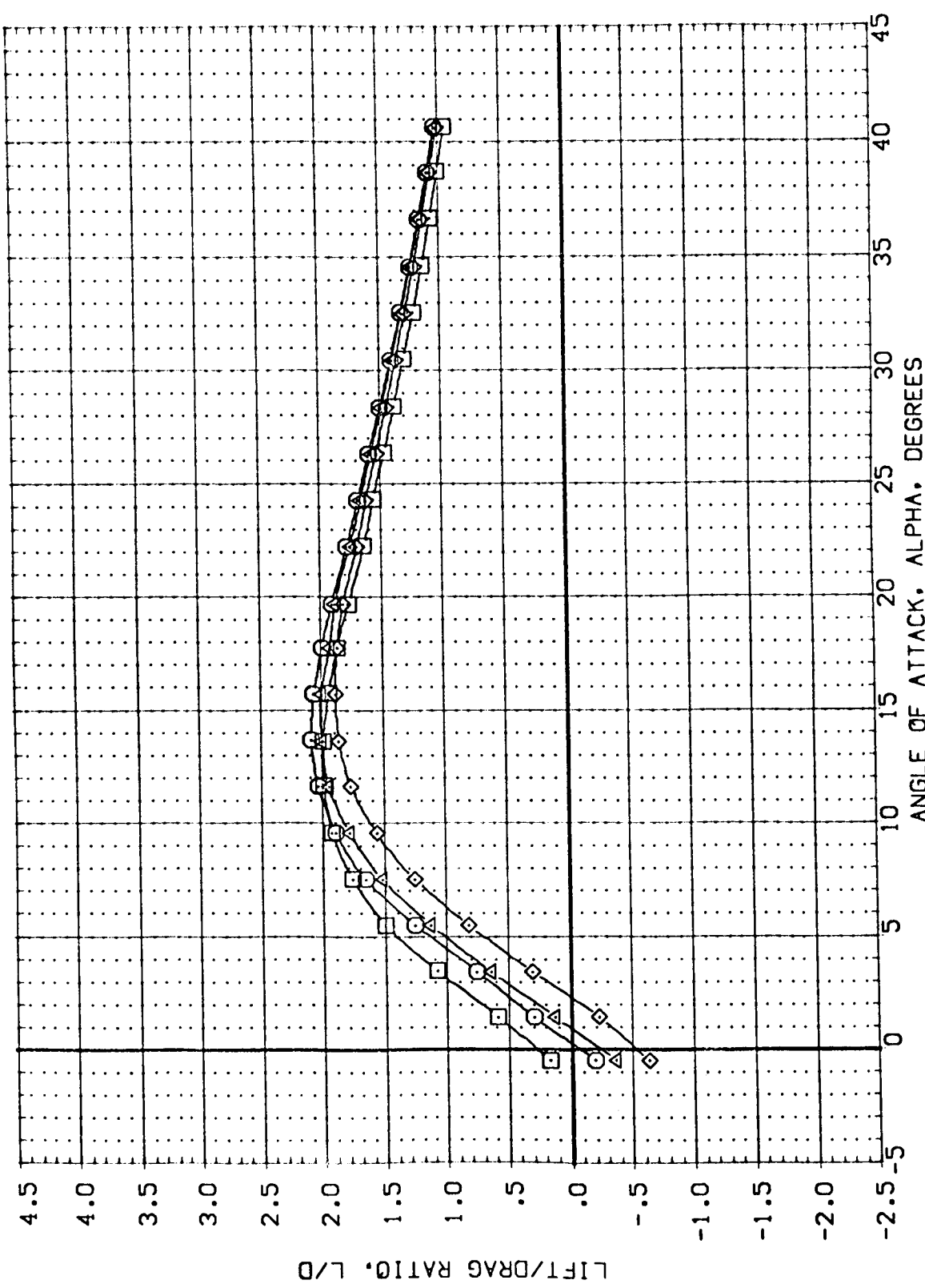


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE
(F)MACH = 4.96 PAGE 860



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (X87566) DATA NOT AVAILABLE
 (F87577) MSFC 574(CA48) CRB 139 V/ALT NOSE
 (F87581) DATA NOT AVAILABLE
 (F87579) MSFC 574(CA48) CRB 139 V/ALT NOSE

BETA ELEVTR SPOBRK BOELAP
 .000 .000 999.990 .000
 .000 15.000 999.990 13.750
 .000 -40.000 999.990 -14.250
 .000 -26.000 999.990 .000

REFERENCE INFORMATION
 SREF 2690.0000 SQ.F.T.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

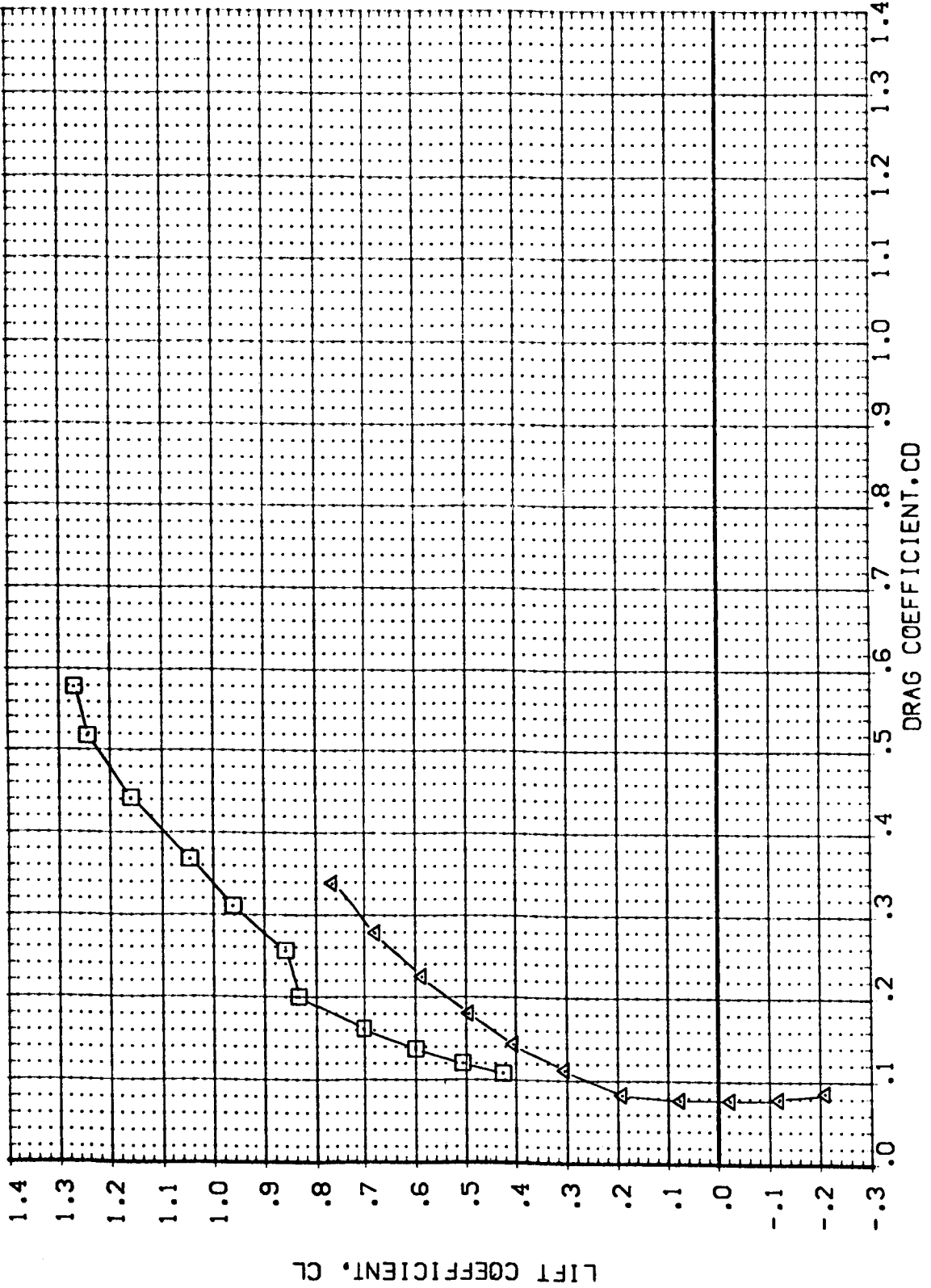


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

CAJ MACH = .60

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (X87S66) DATA NOT AVAILABLE
 (F87S77) MSC 574(OA48) ORB 139 V/ALT NOSE
 (F87S81) DATA NOT AVAILABLE
 (F87S79) MSC 574(OA48) ORB 139 V/ALT NOSE

BETA ELEVTR SPOBRK BOFLAP
 .000 .000 999.990 .000
 .000 15.000 999.990 13.750
 .000 -40.000 999.990 -14.250
 .000 -20.000 999.990 .000

REFERENCE INFORMATION
 SREF 2690.0000 SC.FT.
 LREF 474.8000 IN.
 BRFC 936.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

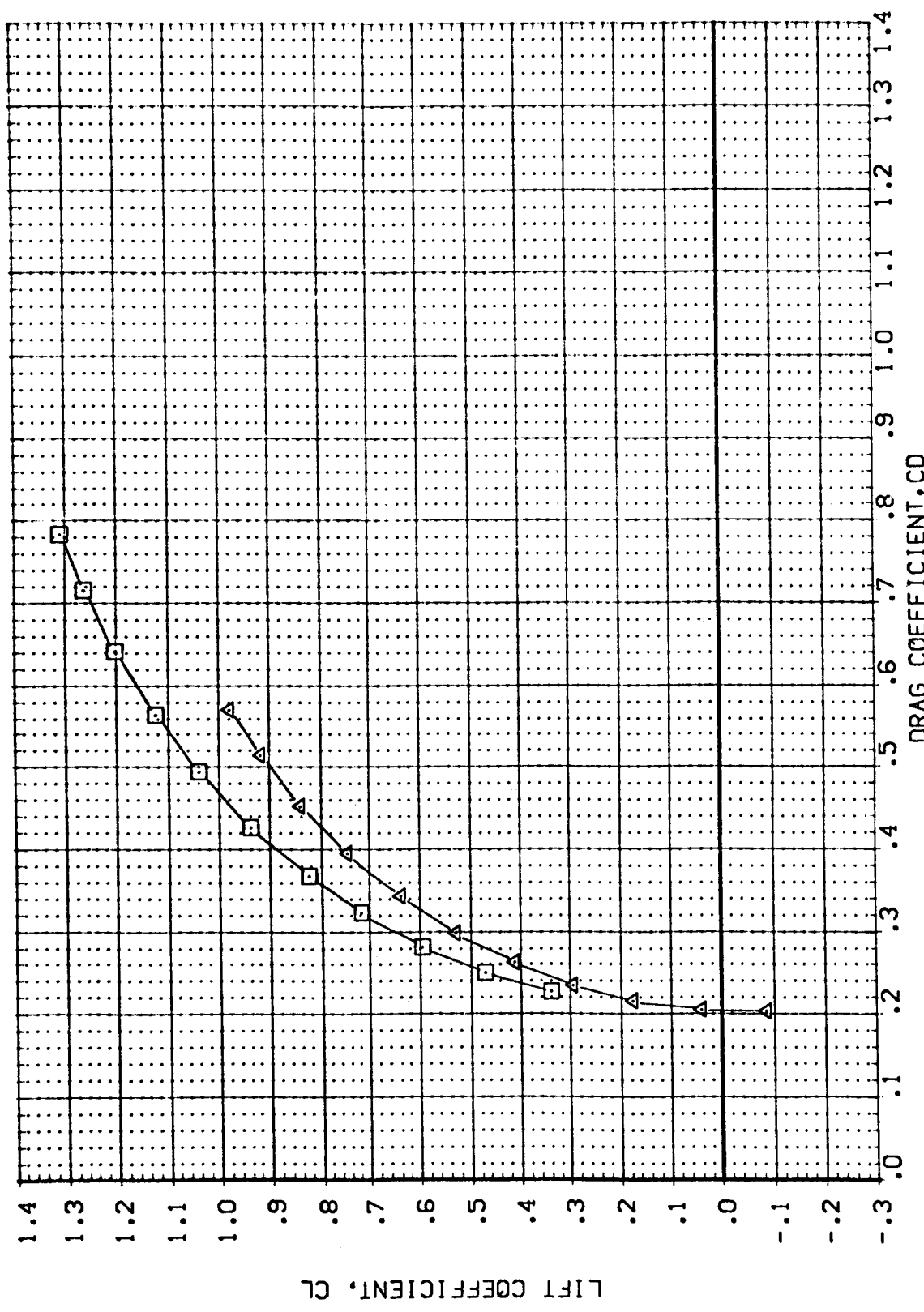


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 474.8000
 BREF 936.7000
 XMRP 838.7000
 YMRP .0000
 ZMRP .0000
 SCALE .0040

BDFLAP .000
 SPOBRK 999.990
 ELEVTR .000
 999.990
 13.750
 -14.250
 .000
 -20.000
 999.990

BETA .000
 .000
 .000
 .000
 .000

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (X87S66) Q MSFC 574(CA48) CRB 139 W/ALT NOSE
 (F87S77) X MSFC 574(CA48) CRB 139 W/ALT NOSE
 (F87S81) X MSFC 574(CA48) CRB 139 W/ALT NOSE
 (F87S79) X MSFC 574(CA48) CRB 139 W/ALT NOSE

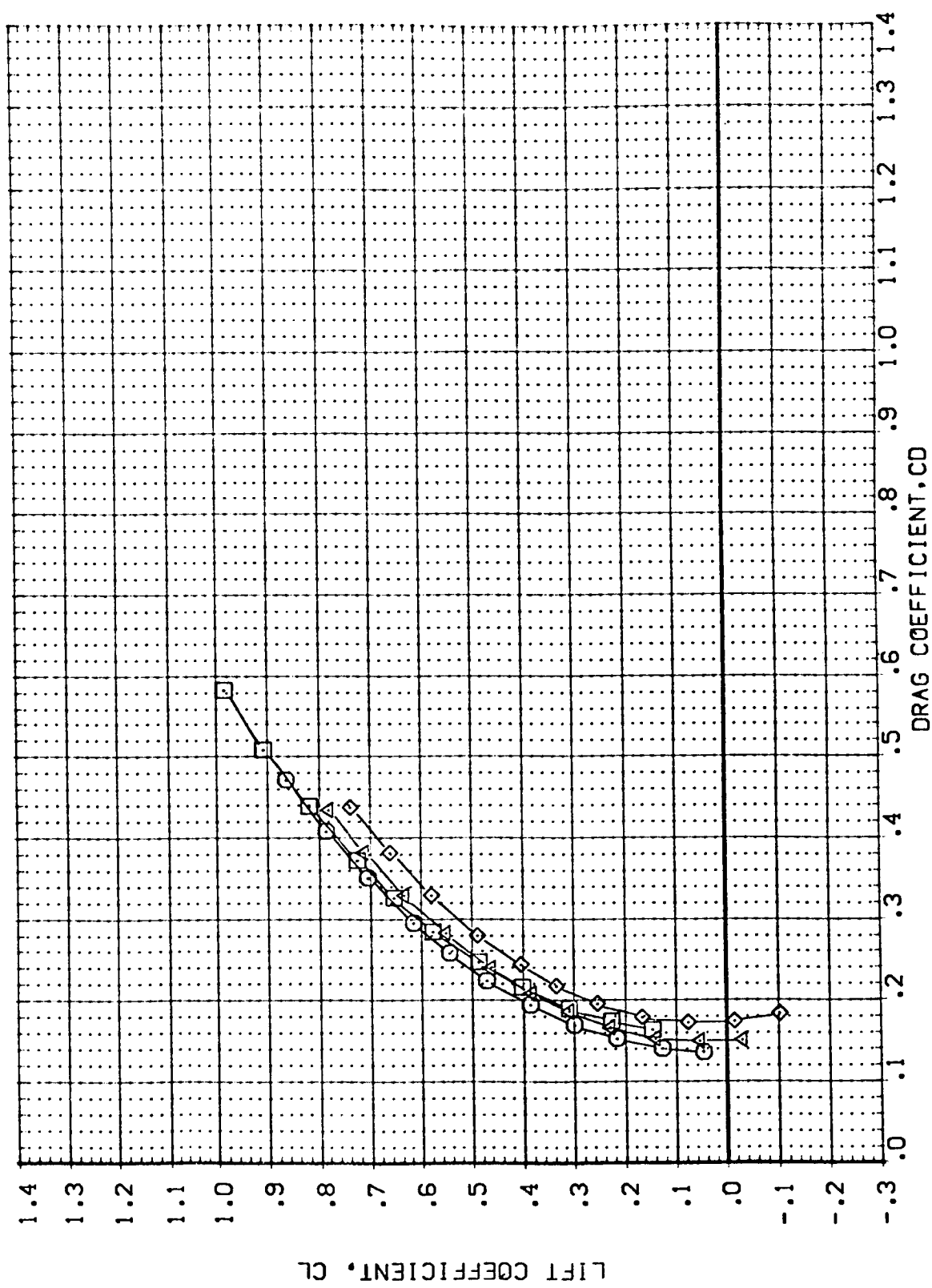


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE
 (CD)MACH = 1.95 PAGE 864

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDRBK	BOFLAP	REFERENCE INFORMATION
(X87S66)	MSFC 574(CA48) ORB 139 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(F87S77)	MSFC 574(CA48) ORB 139 W/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000
(F87S81)	MSFC 574(CA48) ORB 139 W/ALT NOSE	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87S79)	MSFC 574(CA48) ORB 139 W/ALT NOSE	.000	-20.000	999.990	.000	XMRP 836.7000
						YMRP .0000
						ZMRP .0000
						SCALE .0010

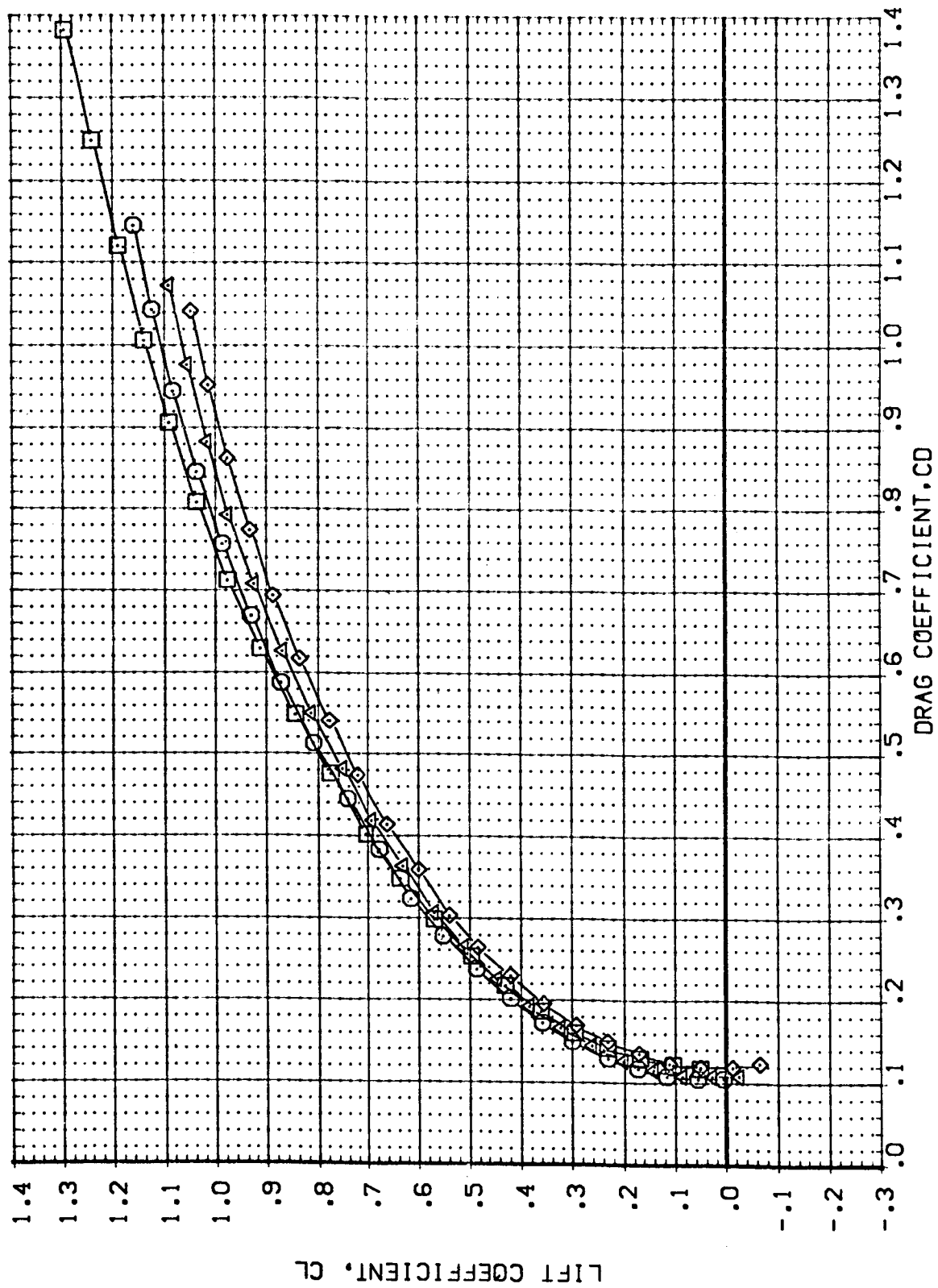


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(X87S66)	MSFC 574(OA48) CRB 139 V/ALT NOISE	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(F87S77)	MSFC 574(OA48) CRB 139 V/ALT NOISE	.000	15.000	999.990	13.750	LREF 474.8000 IN.
(F87S81)	MSFC 574(OA48) CRB 139 V/ALT NOISE	.000	-40.000	999.990	-14.250	BREF 936.7000 IN.
(F87S79)	MSFC 574(OA48) CRB 139 V/ALT NOISE	.000	-20.000	999.990	.000	XMRP 838.7000 IN.
						ZMRP .0000 IN.
						SCALE .0040

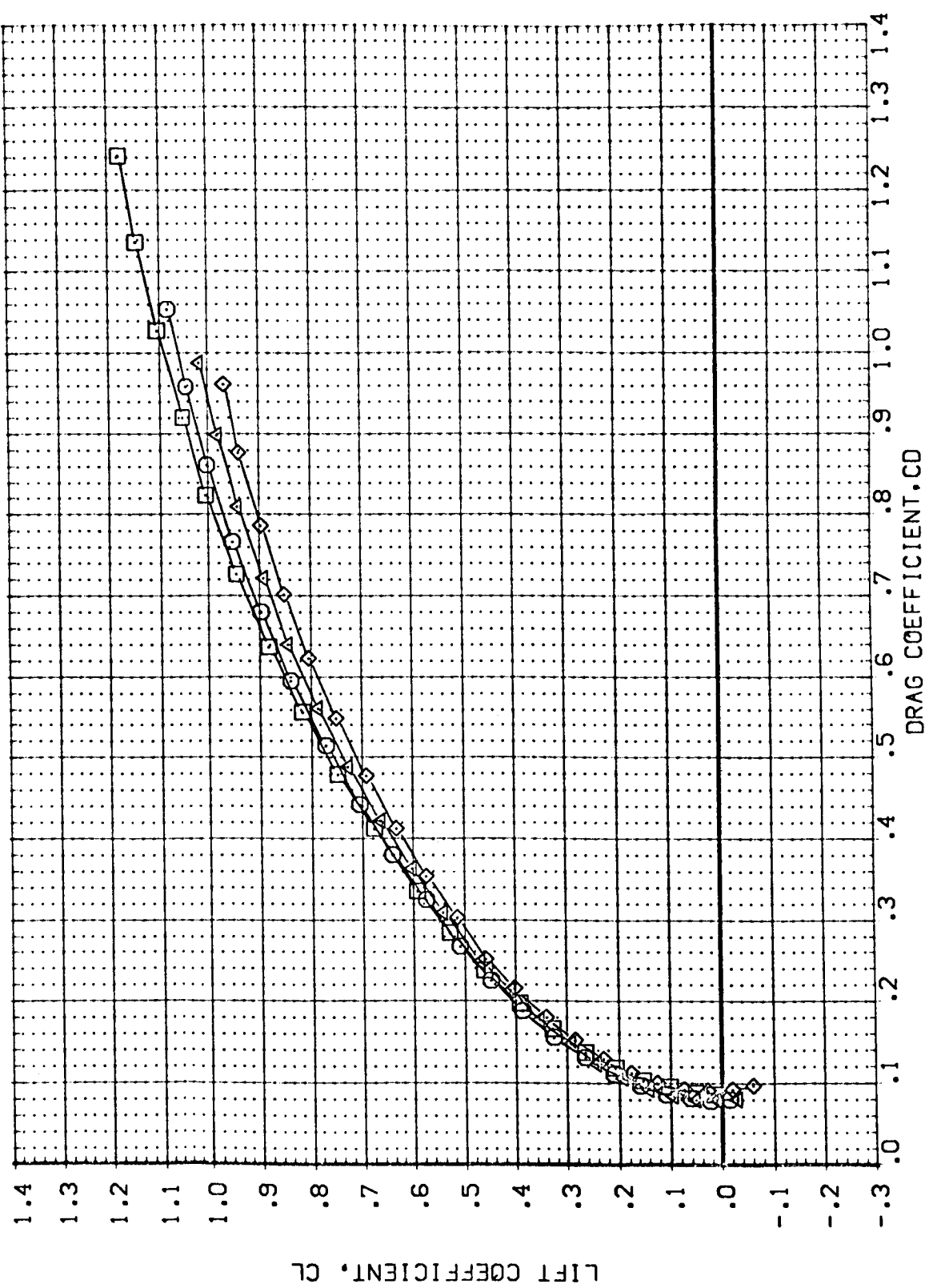


FIG. 17 EFFECT OF MAX CONTROL DEFLECTION ON ORBITER 139 WITH ALTERNATE NOSE
 (F)MACH = 4.96 PAGE 866

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(G87S66)	MSFC 574(CA48) CR3 139 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000
(G87S77)	MSFC 574(CA48) CR3 139 W/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000
(G87S81)	DATA NOT AVAILABLE	.000	-40.000	999.990	-14.250	BREF 936.7000
(G87S79)	MSFC 574(CA48) CR3 139 W/ALT NOSE	.000	-20.000	999.990	.000	XMRP 864.5000
						YMRP .0000
						ZMRP .0000
						SCALE .0040

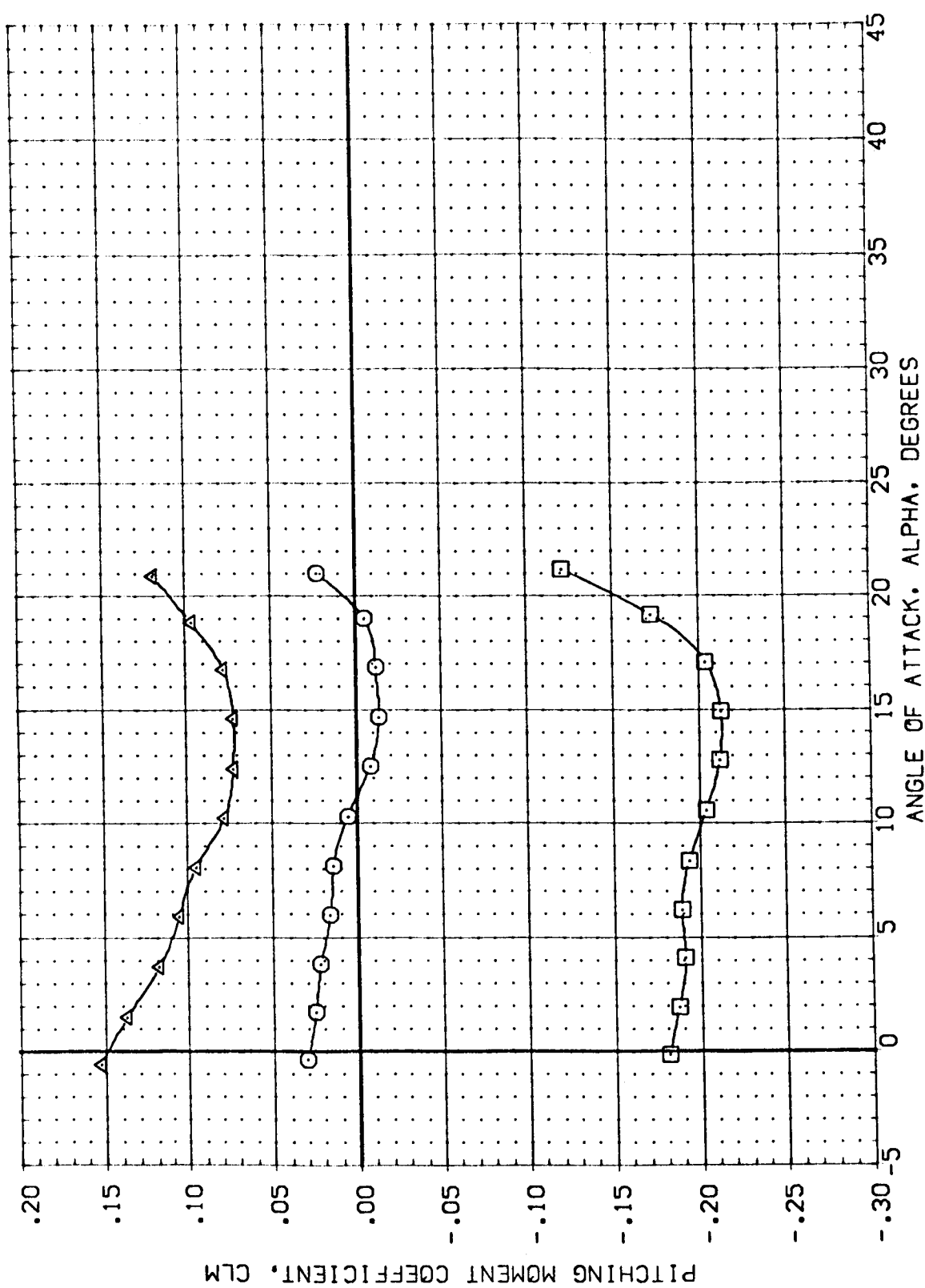


FIG. 17 EFFECT OF MAX CONTROL DEFLEC. ON ORBITER 139 WITH ALT. NOSE(AFT CG)
 (B)MACH = .90

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(G87566)	MSFC 574(OA48) ORB 139 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SC.FT.
(G87577)	MSFC 574(OA48) ORB 139 W/ALT NOSE	.000	15.000	999.990	13.750	LREF 474.8000 IN.
(G87581)	DATA NOT AVAILABLE	.000	-40.000	999.990	-14.250	BREF 936.7000 IN.
(G87579)	MSFC 574(OA48) ORB 139 W/ALT NOSE	.000	-20.000	999.990	.000	XMRP 864.5000 IN.
						YMRP .0000 IN.
						ZMRP .0000 IN.
						SCALE .0040

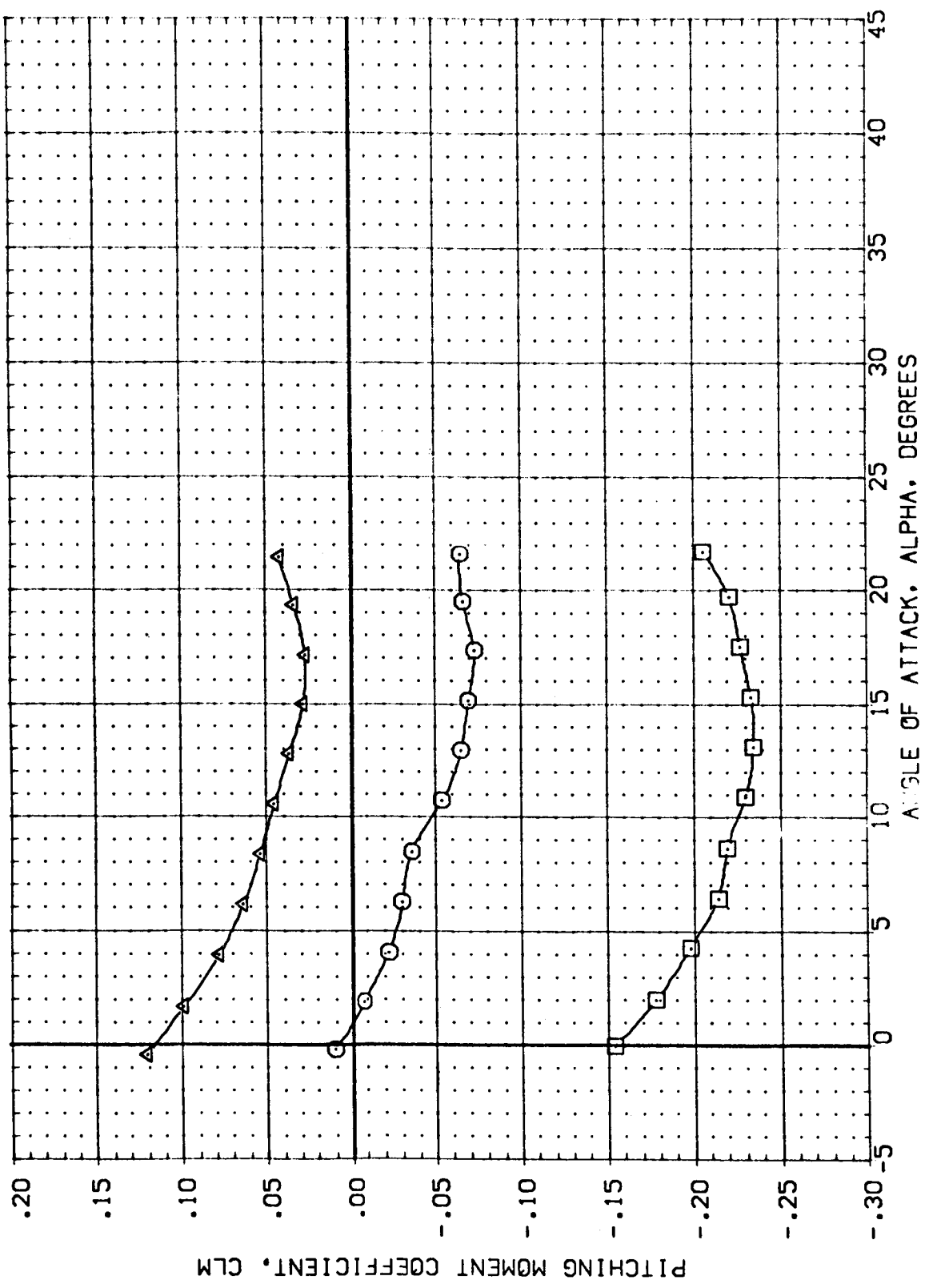


FIG. 17 EFFECT OF MAX CONTROL DEFLEC. ON ORBITER 139 WITH ALT. NOSE(AFT CG)

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(G87566) MSFC 574(CA48) CRB 139 W/ALT NOSE
 (G87577) MSFC 574(CA48) CRB 139 W/ALT NOSE
 (G87581) MSFC 574(CA48) CRB 139 W/ALT NOSE
 (G87579) MSFC 574(CA48) CRB 139 W/ALT NOSE

BETA .000
 .000
 .000
 .000

ELEVTR .000
 15.000
 -40.000
 -20.000

SPOBRK 999.990
 999.990
 999.990
 999.990

BOFLAP .000
 13.750
 -14.250
 .000

REFERENCE INFORMATION

SREF 2690.0000
 LREF 474.8000
 BREF 936.7000
 XMRP 864.5000
 YMRP .0000
 ZMRP .0000
 SCALE .0040

SG.FT. N.
 N.
 N.
 N.
 N.
 N.
 N.

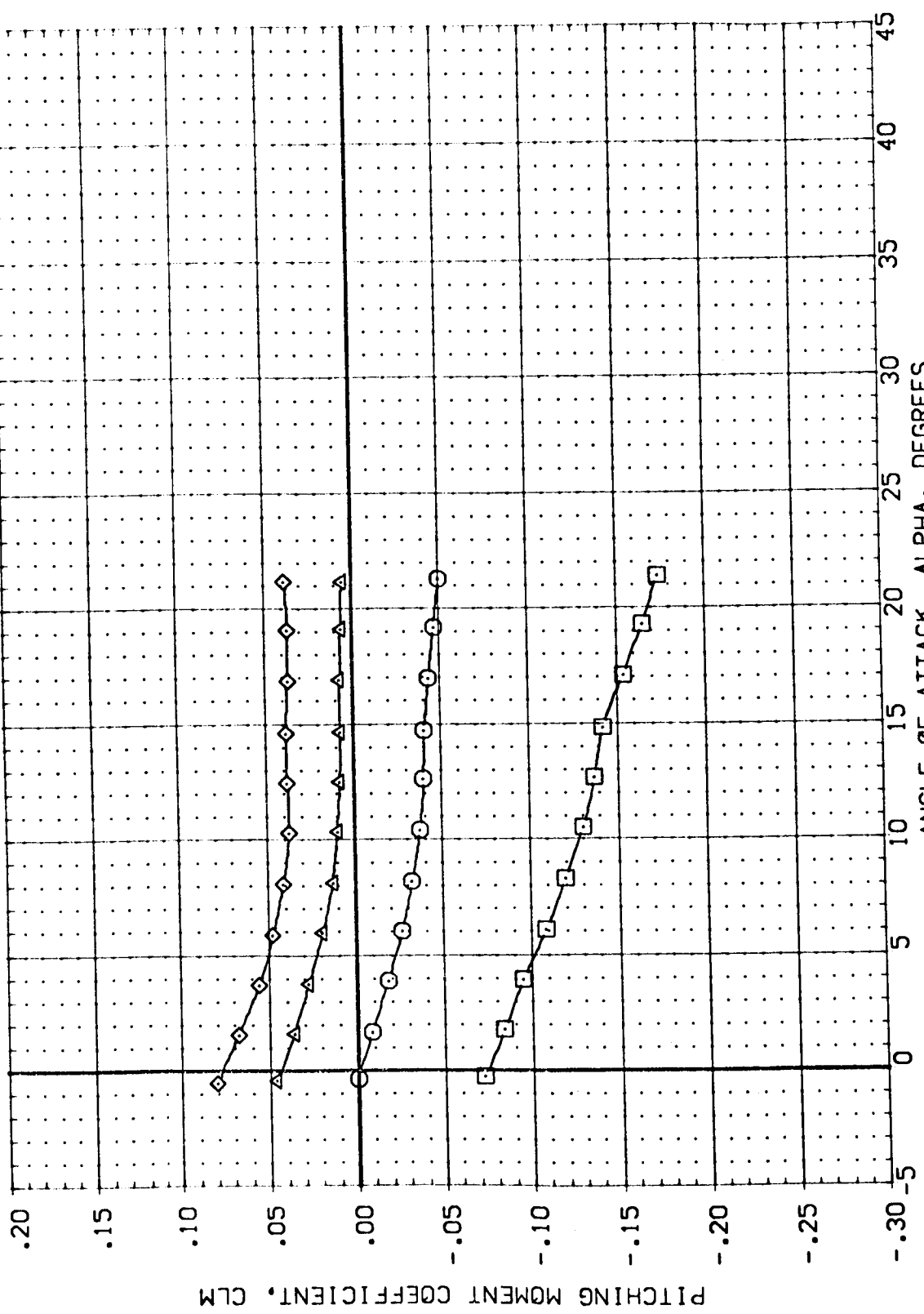


FIG. 17 EFFECT OF MAX CONTROL DEFLEC. ON ORBITER 139 WITH ALT. NOSE (AFT CG)

(D)MACH = 1.95

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DATA SET SYMBOL CONFIGURATION DESCRIPTION

(G87566)	MSFC 574(CA48)	ORB 139	W/ALT NOSE
(G87577)	MSFC 574(CA48)	ORB 139	W/ALT NOSE
(G87581)	MSFC 574(CA48)	ORB 139	W/ALT NOSE
(G87579)	MSFC 574(CA48)	ORB 139	W/ALT NOSE

BETA .000 ELEVTR .000 SPOBRK .000 BOFLAP .000 REFERENCE INFORMATION SQ.FT.
 .000 15.000 999.990 .000 SREF 2690.0000
 .000 -40.000 999.990 13.750 LREF 474.8000
 .000 -20.000 999.990 -14.250 BREF 936.7000
 .000 .000 999.990 .000 XMRP 864.5000
 .000 .000 999.990 .000 YMRP .0000
 .000 .000 999.990 .000 ZMRP .0000
 SCALE .0040

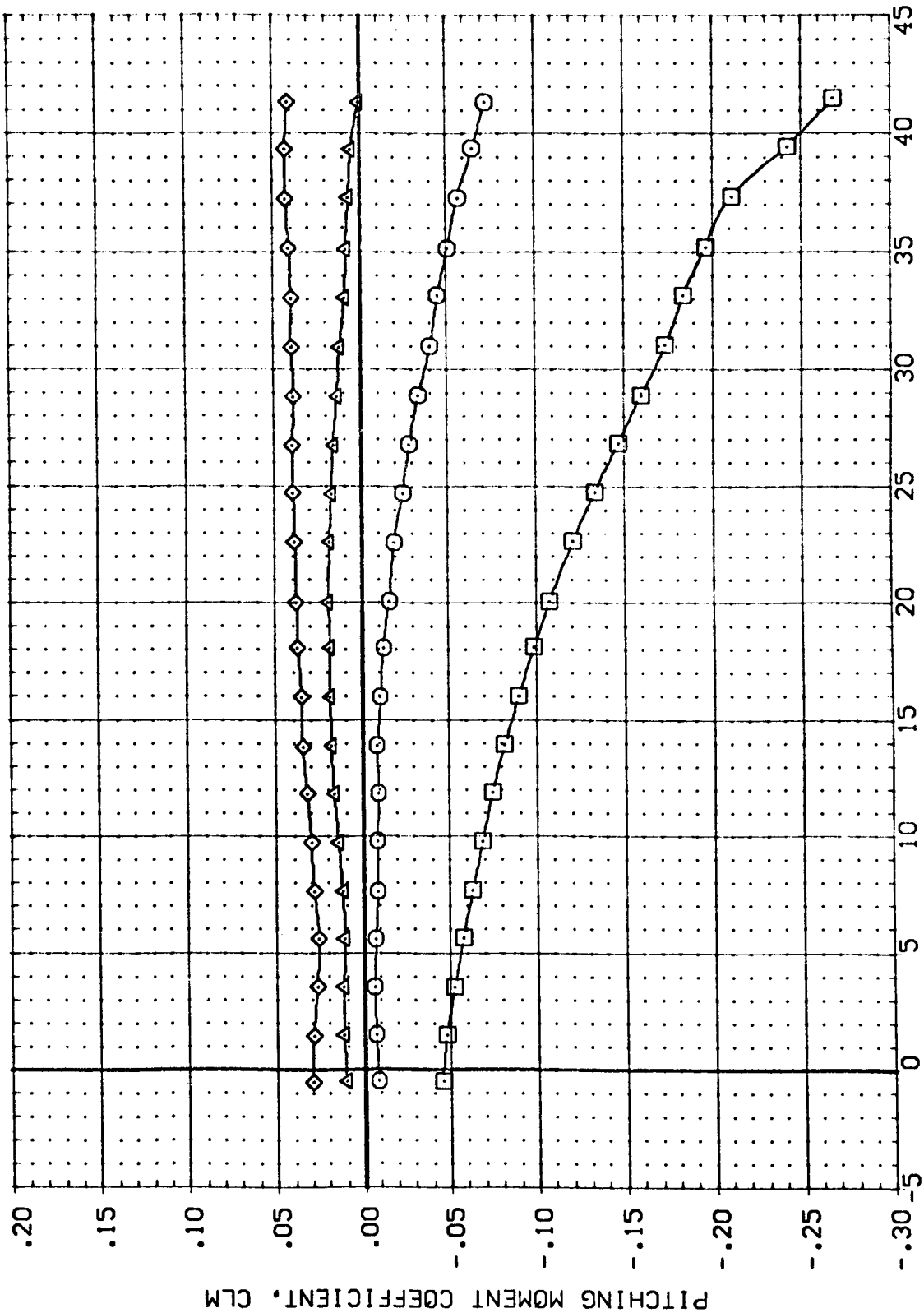


FIG. 17 EFFECT OF MAX CONTROL DEFLEC. ON ORBITER 139 WITH ALT. NOSE(AFT CG)
 (E)MACH = 2.99 PAGE 87:

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(G87566)	MSFC 574(CA48) CR8 139 W/ALT NOSE	.000	.000	999.999	.000	SREF 2690.0000 SC.FT.
(G87577)	MSFC 574(CA48) CR8 139 W/ALT NOSE	.000	15.000	999.999	3.750	LREF 474.8000 IN.
(G87581)	MSFC 574(CA48) CR8 139 W/ALT NOSE	.000	-40.000	999.999	-14.250	BREF 936.7000 IN.
(G87579)	MSFC 574(CA48) CR8 139 W/ALT NOSE	.000	-20.000	999.999	.000	XMRP 864.5000 IN.
						YMRP .0000 IN.
						ZMRP .0000 IN.
						SCALE .0040

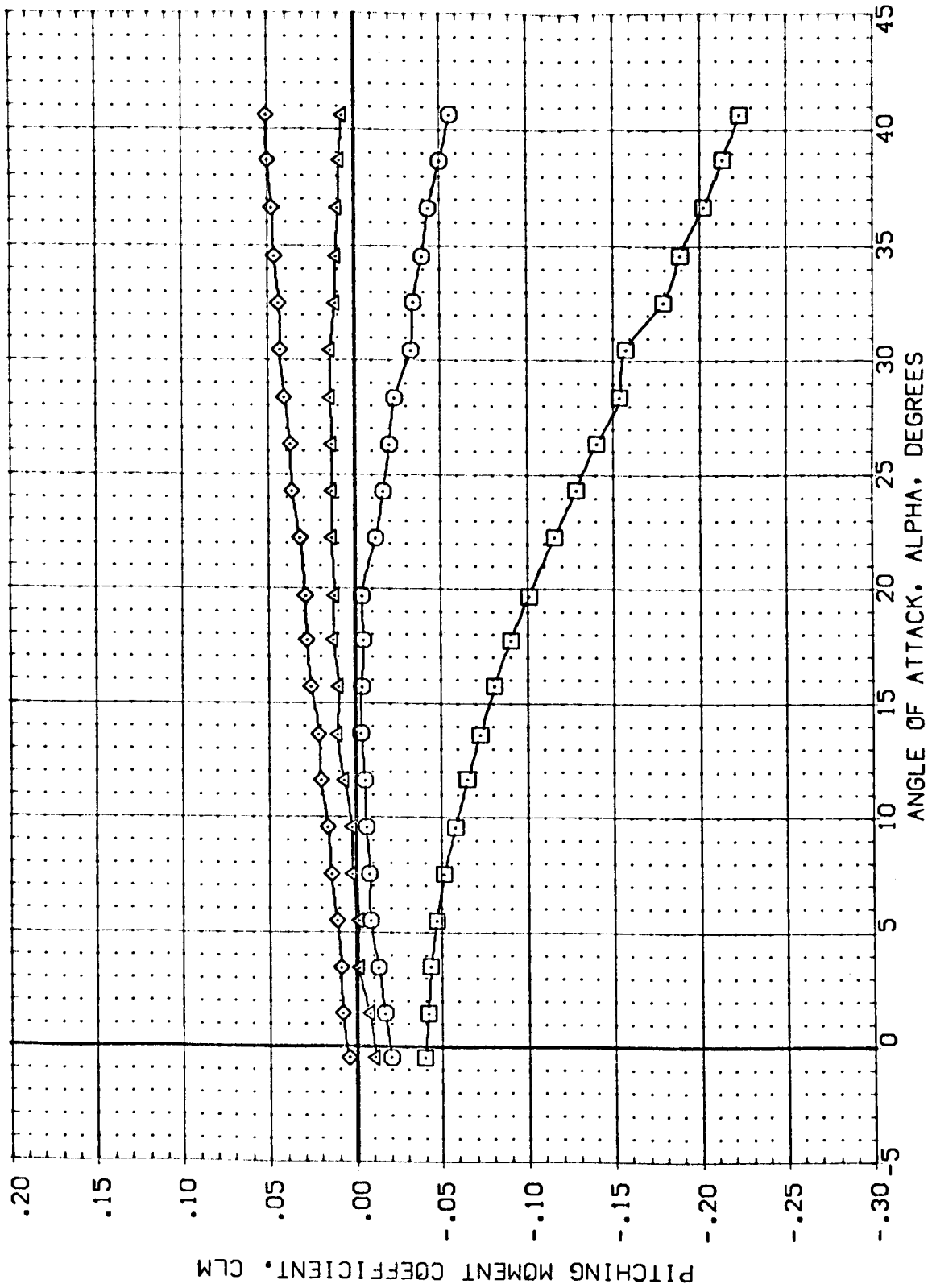


FIG. 17 EFFECT OF MAX CONTROL DEFLEC. ON ORBITER 139 WITH ALT. NOSE(AFT CG)

(F)MACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (187009) MSFC 574(0A48) CRB 1398
 (F87022) MSFC 574(0A48) CRB 1398
 (F87126) DATA NOT AVAILABLE
 (F87127) DATA NOT AVAILABLE

BETA ELEVTR SPOBRK SOFLAP REFERENCE INFORMATION SQ.FT.
 .000 .000 999.990 .000 SREF 2690.0000
 .000 -40.000 999.990 -14.250 LREF 474.8000
 .000 -40.000 999.990 -14.250 BRFC 936.7000
 .000 -40.000 999.990 -14.250 XMRP 838.7000
 .000 .0000 ZMRP .0000
 SCALE .0240

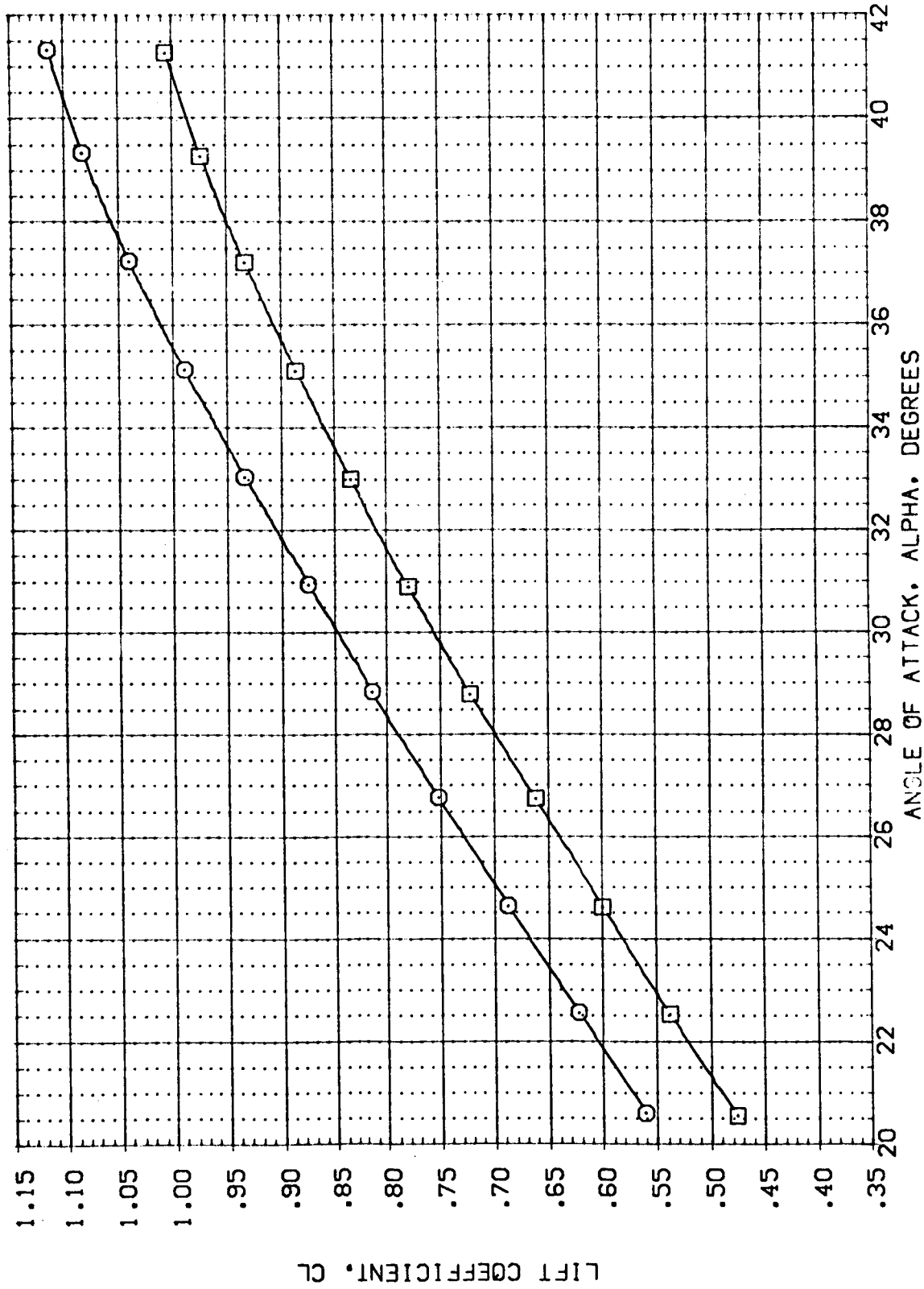


FIG. 18 EFFECT OF TRIMMER WITH CONTROL SURFACES DEFLECTED-1398

(A)MACH = 2.99

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (187099) MSC 574(CA48) CRB 139B
 (F87022) MSC 574(CA48) CRB 139B
 (F87156) MSC 574(CA48) CRB 139B W/H19
 (F87157) MSC 574(CA48) CRB 139B W/H20

BETA ELEVTR SPOBRK BOFLAP REFERENCE INFORMATION SQ.F.T.
 .000 .000 999.990 .000 SREF 2690.0000
 .000 -10.000 999.990 -14.250 LREF 474.8000
 .000 -10.000 999.990 -14.250 BREF 936.7000
 .000 -10.000 999.990 -14.250 XMRP 838.7000
 .000 .000 .000 .000 ZMRP .0000
 .000 .000 .000 .000 SCALE .0040

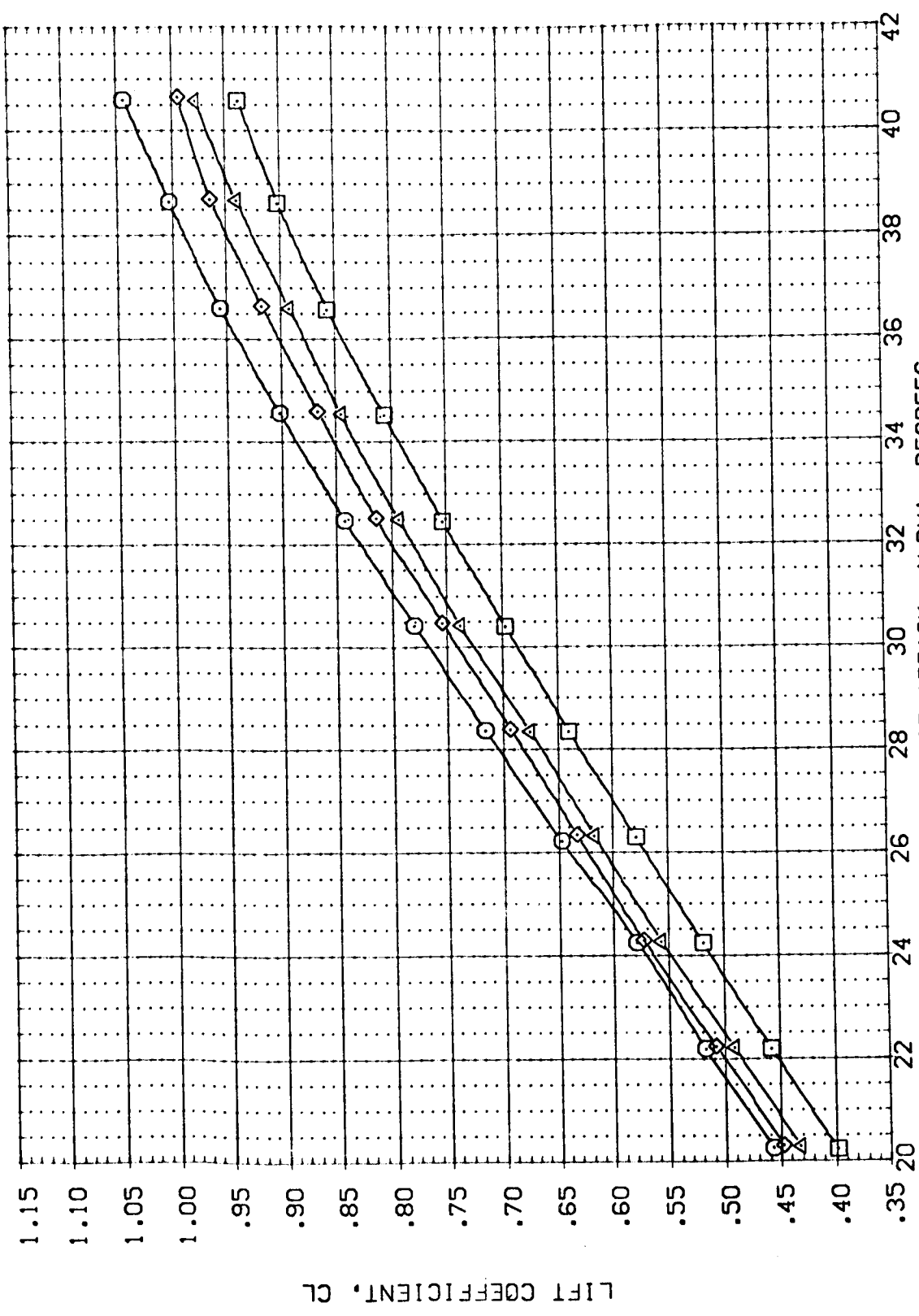


FIG. 18 EFFECT OF TRIMMER WITH CONTROL SURFACES DEFLECTED-139B

(B)MACH = 4.96

DATA SET SYMCL CONFIGURATION DESCRIPTION
 (187009) MSFC 574(0A48) ORB 1398
 (F87022) MSFC 574(0A48) ORB 1398
 (F87106) DATA NOT AVAILABLE
 (F87107) DATA NOT AVAILABLE

BETA ELEVTR SPOBRK BOFLAP REFERENCE INFORMATION SC.FT.
 .000 .000 999.990 .000 SREF 2690.0000
 .000 -40.000 999.990 -14.250 LREF 474.8000
 .000 -40.000 999.990 -14.250 BREF 936.7000
 .000 -40.000 999.990 -14.250 XMRP 838.7000
 .000 .000 .000 .000 YMRP .0000
 .000 .000 .000 .000 ZMRP .0000
 .000 .000 .000 .000 SCALE :COAG

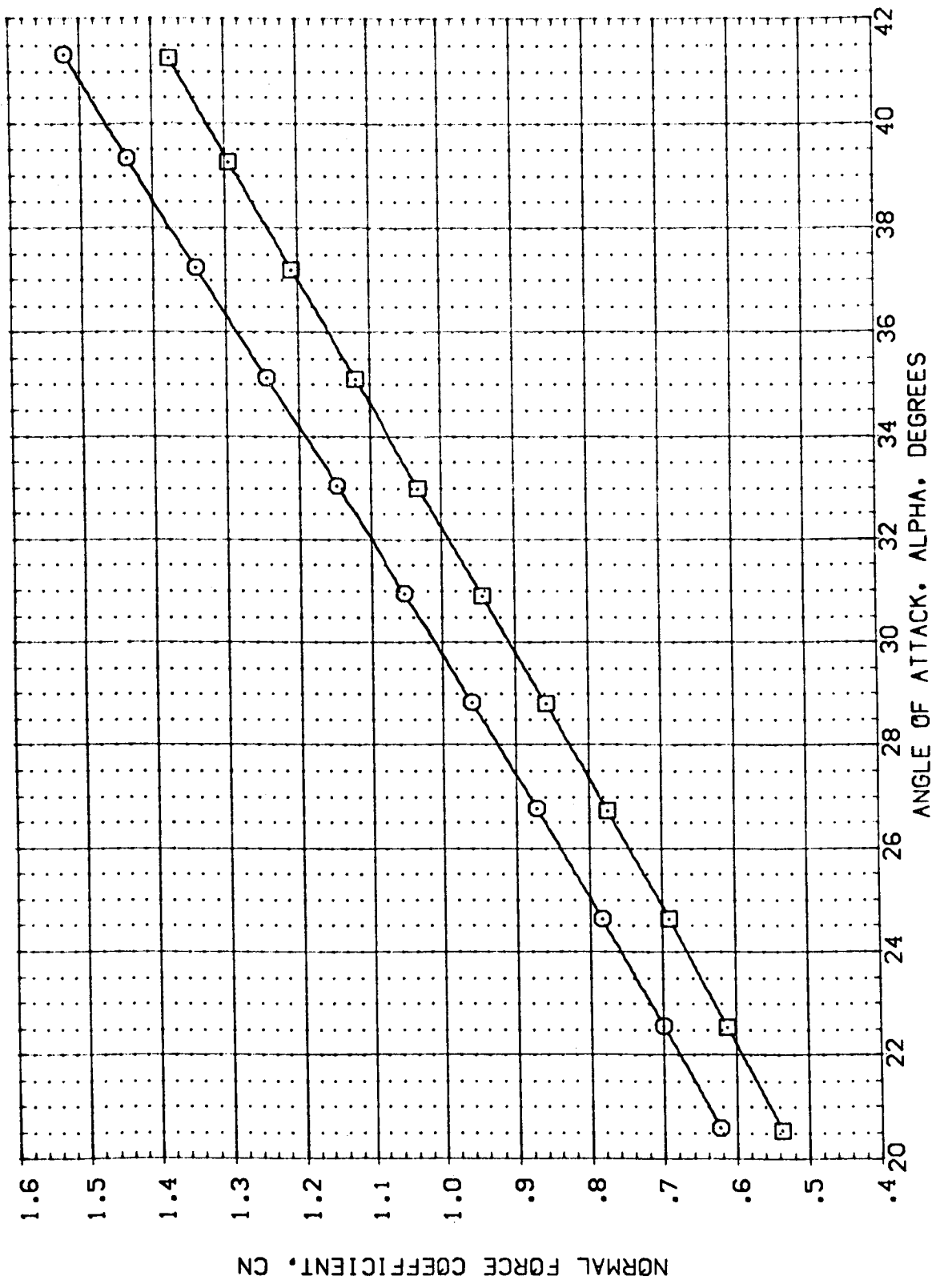


FIG. 18 EFFECT OF TRIMMER WITH CONTROL SURFACES DEFLECTED-1398

(M)MACH = 2.99

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(187009) MSFC 574(CA48) CR3 139B
 (F87222) MSFC 574(CA48) CR3 139B
 (F87106) MSFC 574(CA48) CR3 139B W/H19
 (F87107) MSFC 574(CA48) CR3 139B W/H20

BETA .000
 .000
 .000
 .000

ELEVTR .000
 -40.000
 -40.000
 -40.000

SPOBRK 999.990
 999.990
 999.990
 999.990

BOFLAP .000
 -14.250
 -14.250
 -14.250

REFERENCE INFORMATION

SREF 2690.0000
 LREF 474.8000
 BCF 936.7000
 XMRP 838.7000
 YMRP .0000
 ZMRP .0000
 SCALE .0010

SG.FT.
 IN.
 IN.
 IN.
 IN.
 IN.
 IN.

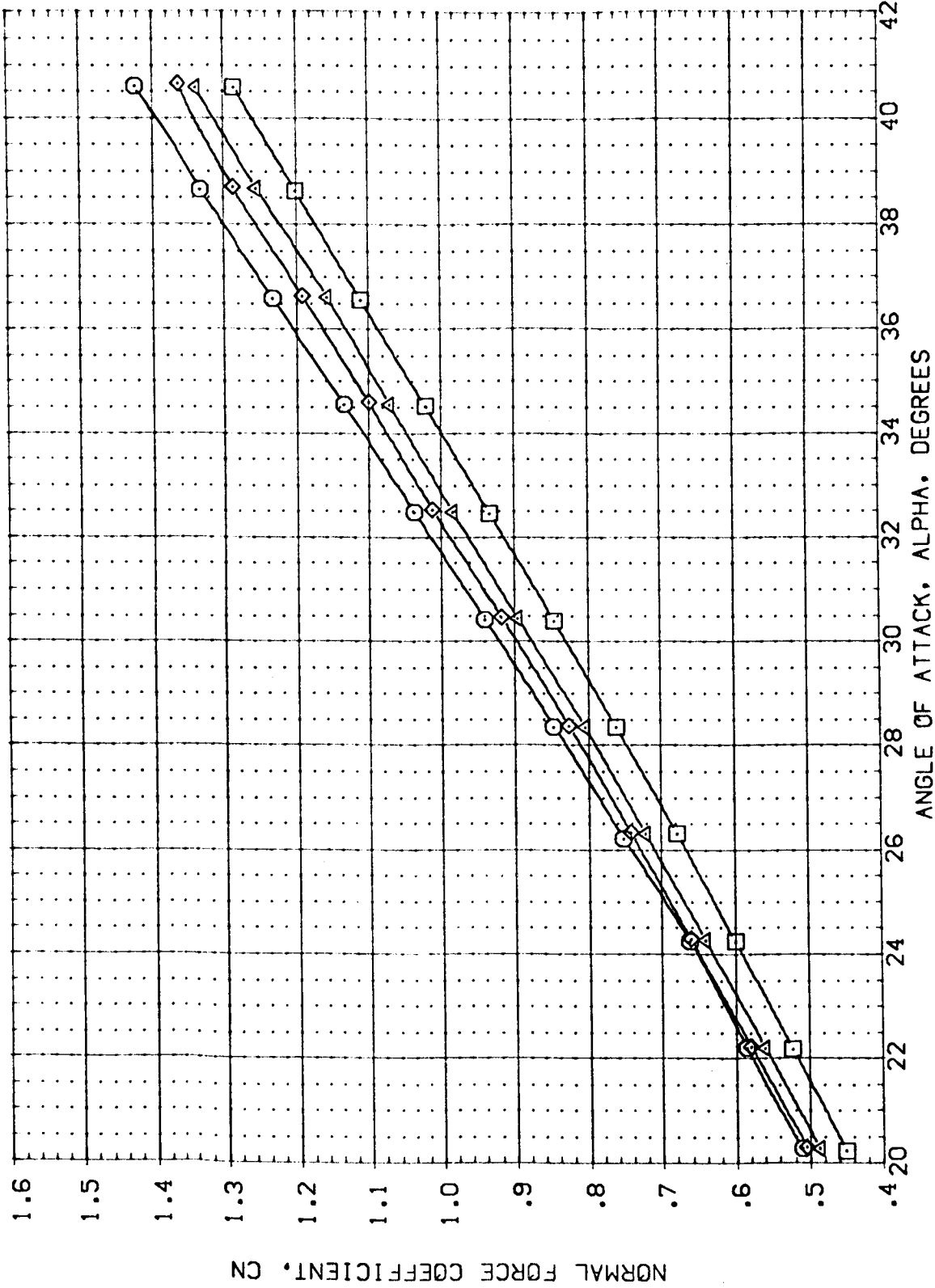


FIG. 18 EFFECT OF TRIMMER WITH CONTROL SURFACES DEFLECTED-139B

(B)MACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (187009) MSFC 574(OA18) CRB 1398
 (F87022) MSFC 574(OA18) CRB 1398
 (F87106) DATA NOT AVAILABLE
 (F87107) DATA NOT AVAILABLE

BETA .000
 .000
 .000
 .000
 .000

ELEVTR .000
 -40.000
 -40.000
 -40.000

SPOBRK 999.990
 999.990
 999.990
 999.990

BOFLAP .000
 -14.250
 -14.250
 -14.250

REFERENCE INFORMATION
 SREF 2690.0000 SO.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

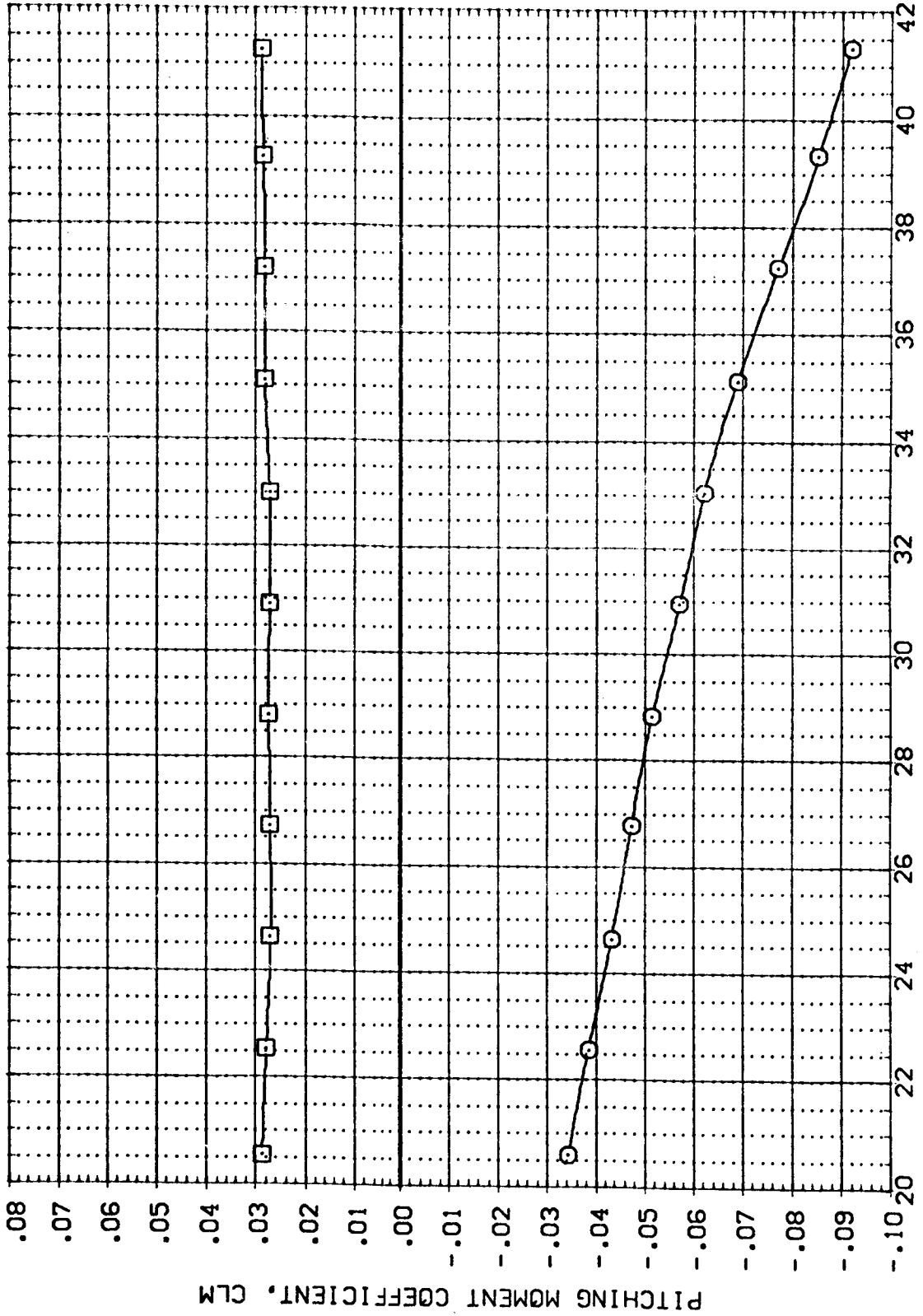


FIG. 18 EFFECT OF TRIMMER WITH CONTROL SURFACES DEFLECTED-1398

(A)MACH = 2.99

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (187009) MSFC 574(OA48) CRB 1398
 (187022) MSFC 574(OA48) CRB 1398
 (187105) MSFC 574(OA48) CRB 1398 V/H19
 (187107) MSFC 574(OA48) CRB 1398 V/H20

BETA .000
 ELEVTR .000
 SPOBRK 999.990
 BOFLAP .000
 REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0010

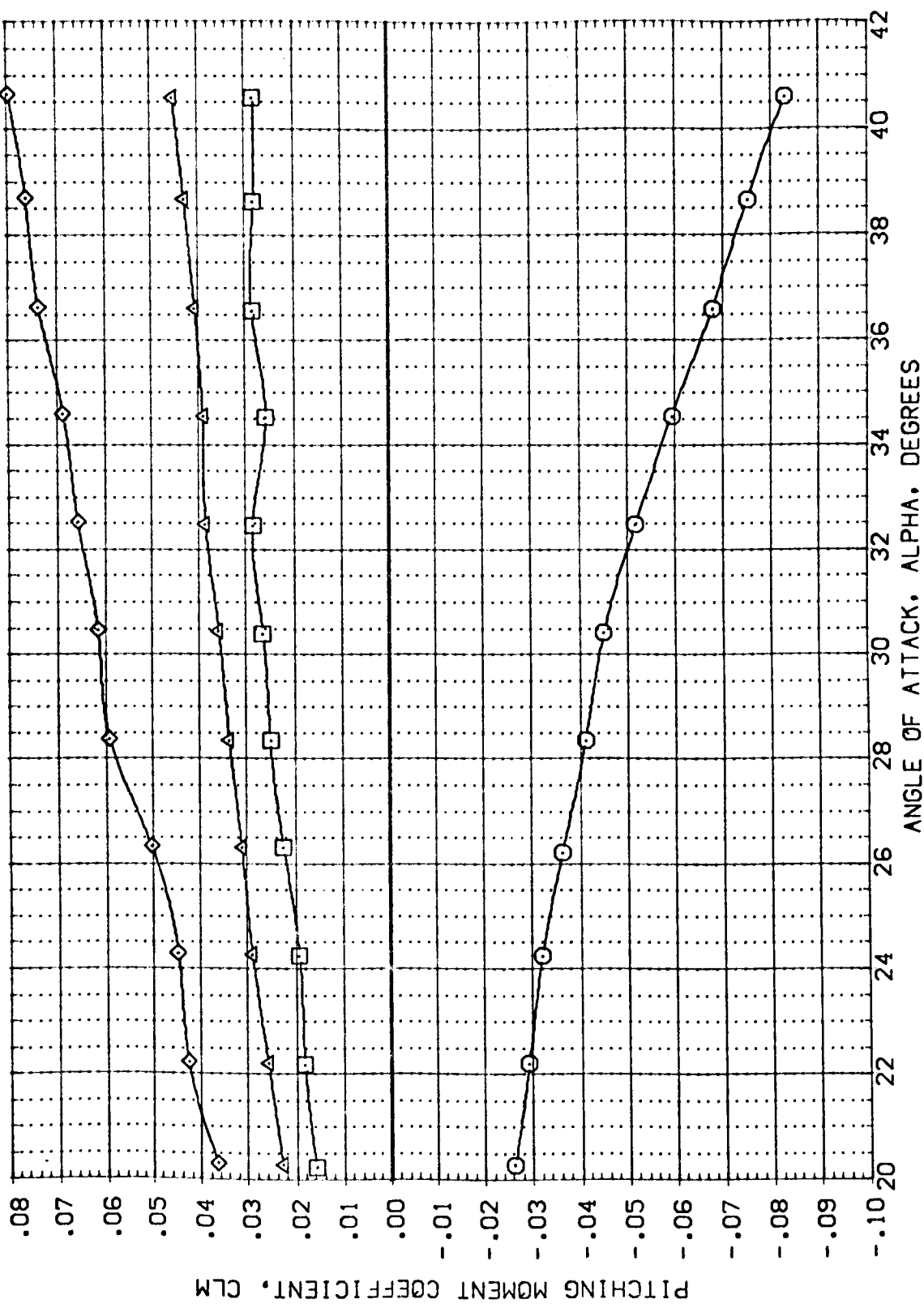


FIG. 18 EFFECT OF TRIMMER WITH CONTROL SURFACES DEFLECTED-1398

(B)MACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (187009) MSFC 574(CA48) OR8 1398
 (F87022) MSFC 574(CA48) OR8 1398
 (F87106) DATA NOT AVAILABLE
 (F87107) DATA NOT AVAILABLE

BETA ELEVTR SPOBRK BDFLAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SREF 2690.0000 SQ.FT.
 .000 -40.000 999.990 -14.250 LREF 474.8000 IN.
 .000 -40.000 999.990 -14.250 BREF 836.7000 IN.
 .000 -40.000 999.990 -14.250 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

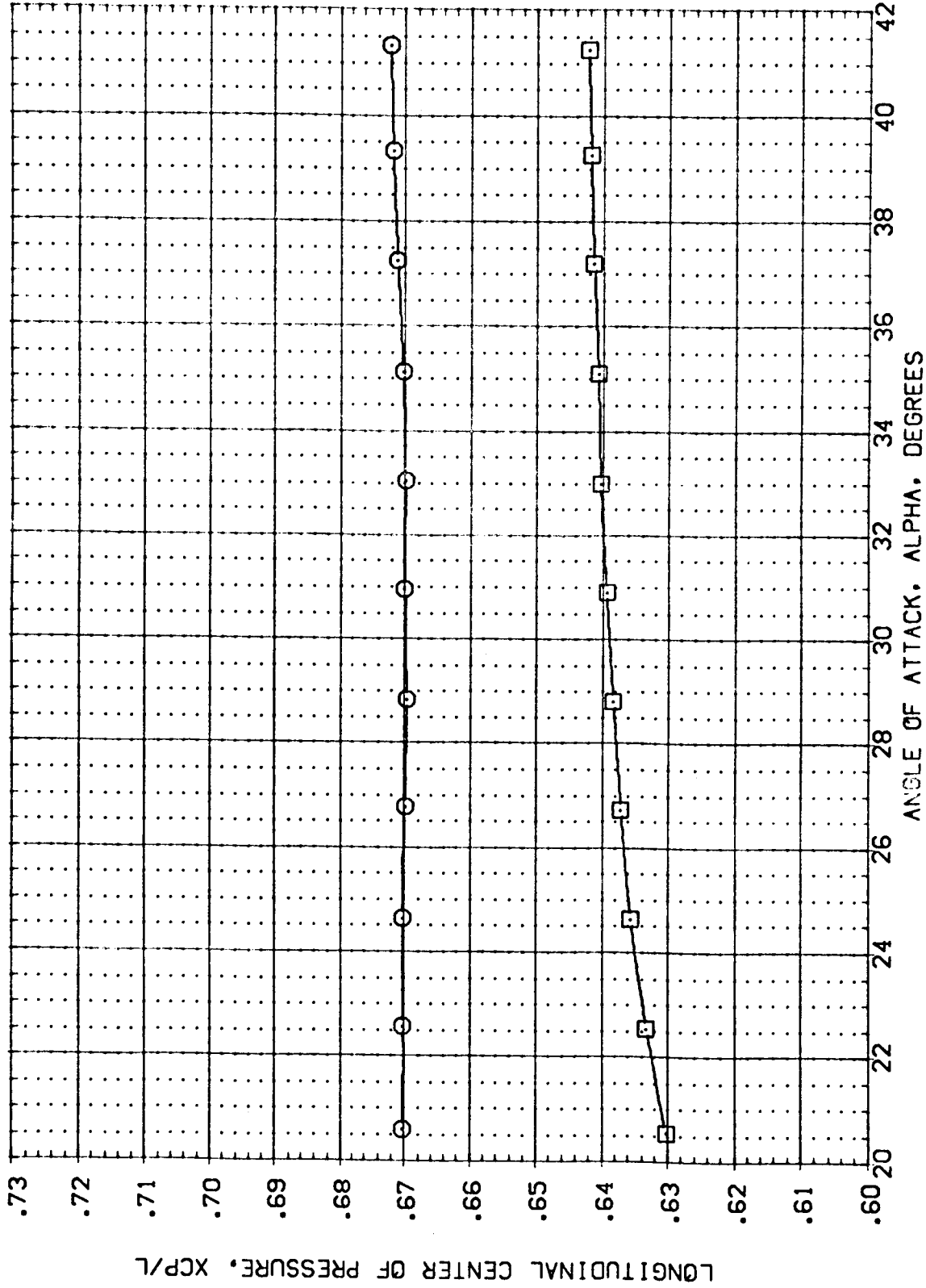


FIG. 18 EFFECT OF TRIMMER WITH CONTROL SURFACES DEFLECTED-139B

(A)MACH = 2.99

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (187009) MSFC 574(CA48) CRB 1398
 (187022) MSFC 574(CA48) CRB 1398
 (187156) MSFC 574(CA48) CRB 1398 V/H19
 (187107) MSFC 574(CA48) CRB 1398 V/H20

BETA
 .000
 .000
 .000
 .000
 .000

ELEVTR
 .000
 -40.000
 -40.000
 -40.000

SPOBRK
 999.990
 999.990
 999.990
 999.990

BDFLAP
 .000
 -14.250
 -14.250
 -14.250

REFERENCE INFORMATION
 SC.FT.
 2690.0000
 474.8000
 936.7000
 838.7000
 .0000
 .0000
 .0000
 .0000
 .0000
 .0000

SREF
 LREF
 BRFF
 XMRRP
 YMRP
 ZMRP
 SCALE

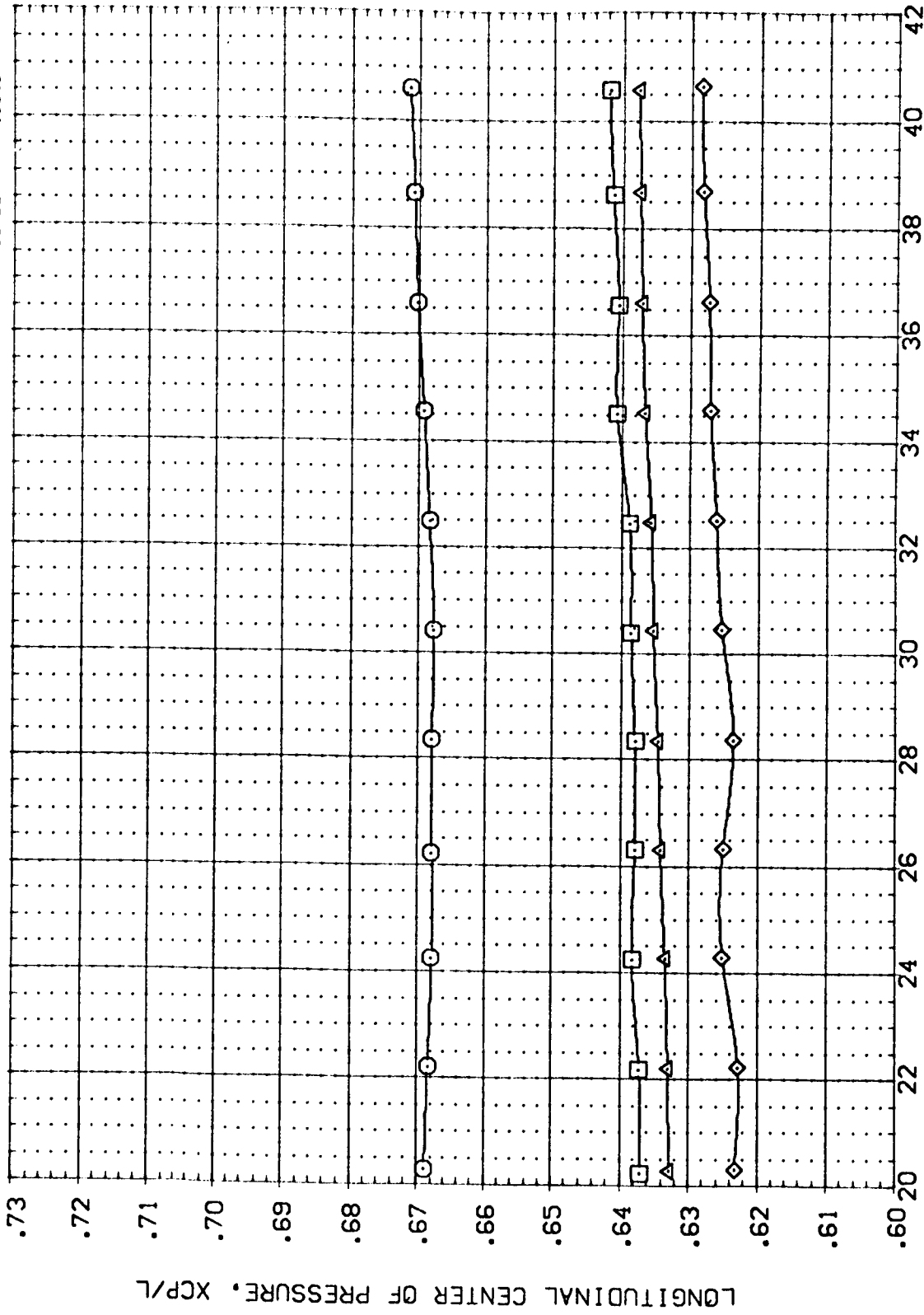


FIG. 18 EFFECT OF TRIMMER WITH CONTROL SURFACES DEFLECTED-139B
 ANGLE OF ATTACK, ALPHA, DEGREES

(B)MACH = 4.96



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(187009) MSFC 574(CA48) CRB 1398

(F87022) MSFC 574(CA48) CRB 1398

(F87106) DATA NOT AVAILABLE

(F87107) DATA NOT AVAILABLE

BETA ELEVTR SPOBRK BOFLAP

.000 .000 999.990 .000

.000 -40.000 999.990 -14.250

.000 -40.000 999.990 -14.250

.000 -40.000 999.990 -14.250

REFERENCE INFORMATION

SREF 2690.0000 SC.FT.

LREF 474.8000 IN.

BREF 936.7000 IN.

YMRP 838.7000 IN.

ZMRP .0000 IN.

SCALE .0040

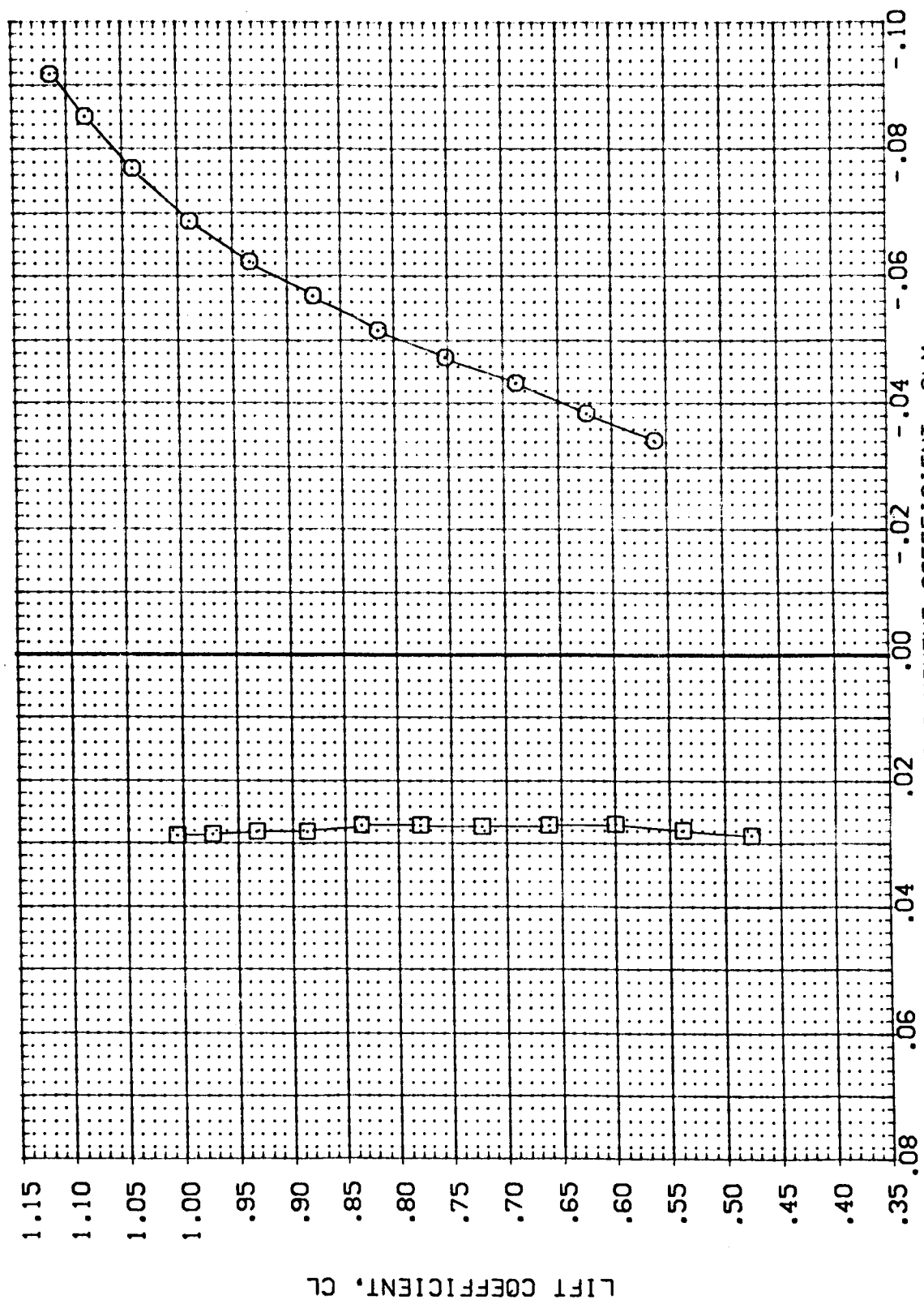


FIG. 18 EFFECT OF TRIMMER WITH CONTROL SURFACES DEFLECTED-139B

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (187C09) MSC 574(CA48) CRB 1398
 (F87C22) MSC 574(CA48) CRB 1398
 (F87C06) MSC 574(CA48) CRB 1398 W/H19
 (F87C7) MSC 574(CA48) CRB 1398 W/H20

BETA ELEVTR SPOBRK BOFLAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SREF 2690.0000 SQ.FT.
 .000 -40.000 999.990 -14.250 LREF 474.8000 IN.
 .000 -40.000 999.990 -14.250 BREF 936.7000 IN.
 .000 -40.000 999.990 -14.250 XMRP 838.7000 IN.
 .000 .0000 .0000 ZMRP .0000 IN.
 .0000 .0000 SCALE .0040

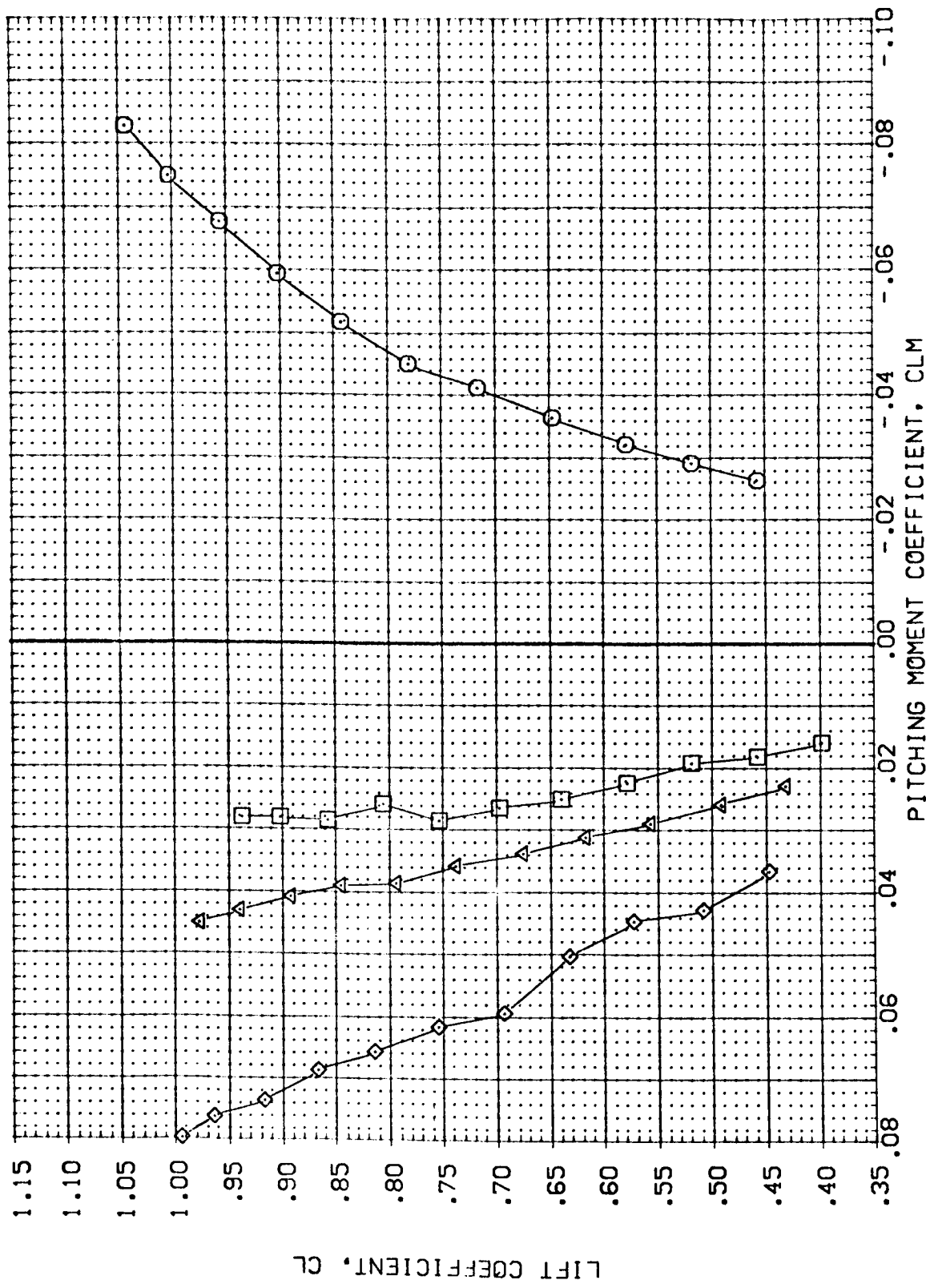


FIG. 18 EFFECT OF TRIMMER WITH CONTROL SURFACES DEFLECTED-1398
 (B)MACH = 4.96



DATA SET SYMBOL
 (187009)
 (F87022)
 (F87106)
 (F87107)

CONFIGURATION DESCRIPTION
 MSEC 574(0A48) ORB 1393
 MSEC 574(0A48) CRB 1393
 DATA NOT AVAILABLE
 DATA NOT AVAILABLE

BETA
 .000
 .000
 .000
 .000
 .000

ELEVTR SPOBRK BOFLAP
 .000 999.990 .000
 -40.000 999.990 -14.250
 -40.000 999.990 -14.250
 -40.000 999.990 -14.250

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

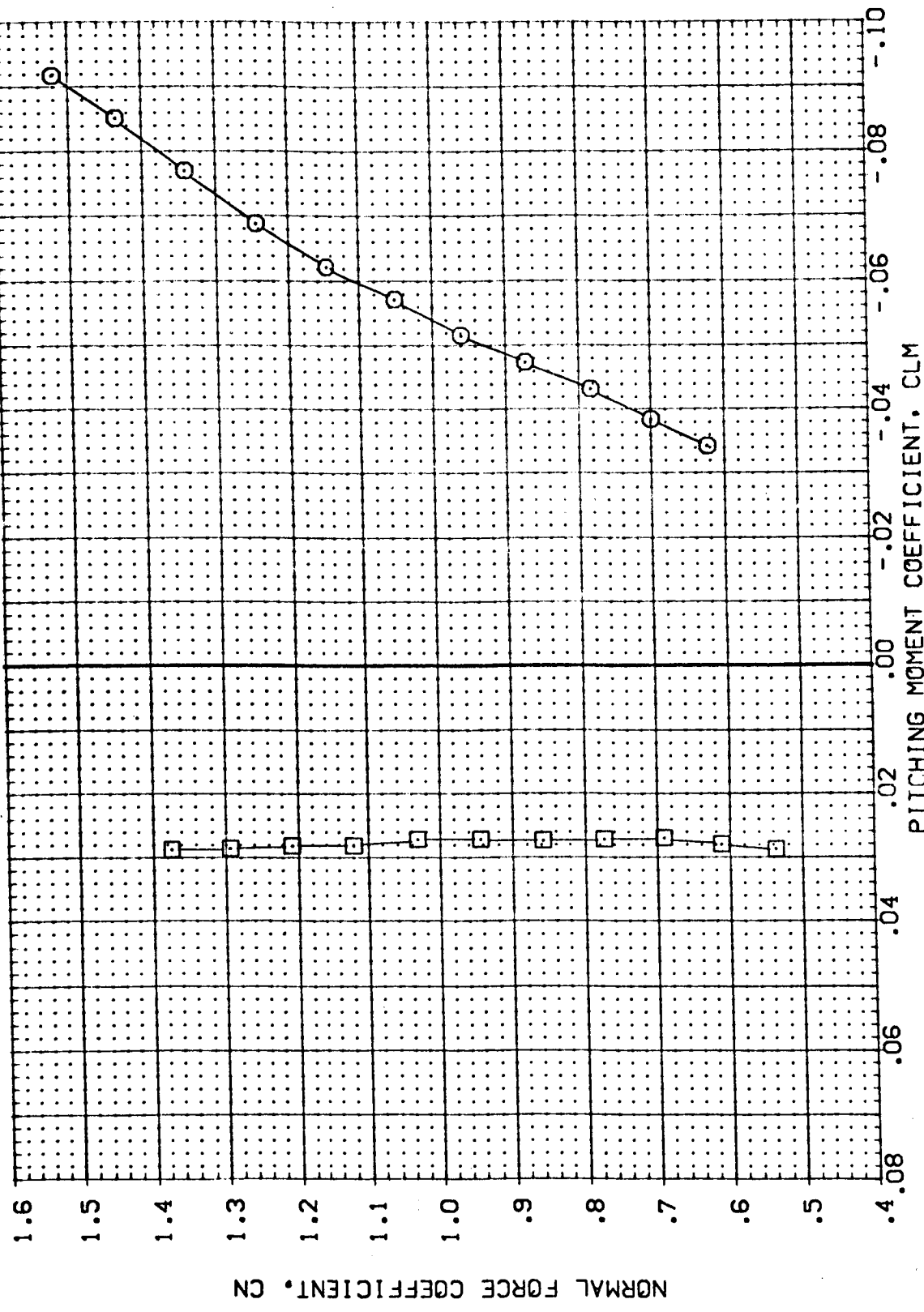


FIG. 18 EFFECT OF TRIMMER WITH CONTROL SURFACES DEFLECTED-139B

DATA SET SYMBOL: CONFIGURATION DESCRIPTION
 (187009) MSFC 574(DA48) CRB 139B
 (F87022) MSFC 574(DA48) CRB 139B
 (F87106) DATA NOT AVAILABLE
 (F87107) DATA NOT AVAILABLE

BETA: .000
 .000
 .000
 .000

ELEVTR: .000
 -40.000
 -40.000
 -40.000

SPOBRK: 999.990
 999.990
 999.990
 999.990

BOFLAP: .000
 -14.250
 -14.250
 -14.250

REFERENCE INFORMATION
 SREF: 2690.0000 SS.FT.
 LREF: 474.8000 IN.
 BREF: 936.7000 IN.
 XMRP: 838.7000 IN.
 YMRP: .0000
 ZMRP: .0000
 SCALE: .0040

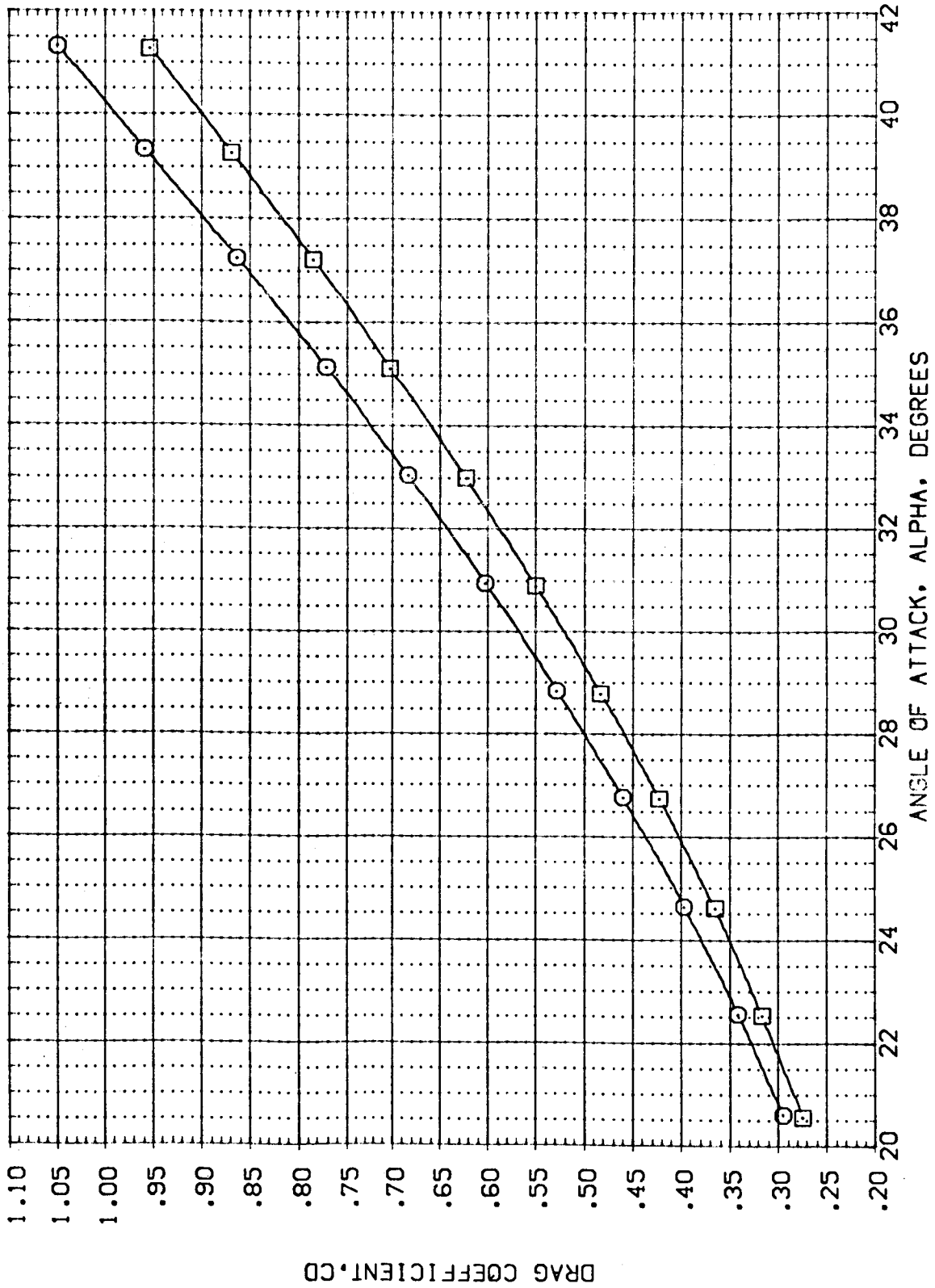


FIG. 18 EFFECT OF TRIMMER WITH CONTROL SURFACES DEFLECTED-139B

(A)MACH = 2.99

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(187009)	MSFC 574(OA48) CRB 398
(F87022)	MSFC 574(OA48) CRB 398 W/H19
(F87106)	MSFC 574(OA48) CRB 398 W/H20
(F87107)	MSFC 574(OA48) CRB 398 W/H20

BETA ELEVTR SPDBRK BOFLAP

.000	.000	999.990	.000
.000	-40.000	999.990	-14.250
.000	-40.000	999.990	-14.250
.000	-40.000	999.990	-14.250

REFERENCE INFORMATION SC.F.T.

SREF	2690.0000
LREF	474.8000
BREF	936.7000
XMRP	838.7000
YMRP	.0000
ZMRP	.0000
SCALE	.0040

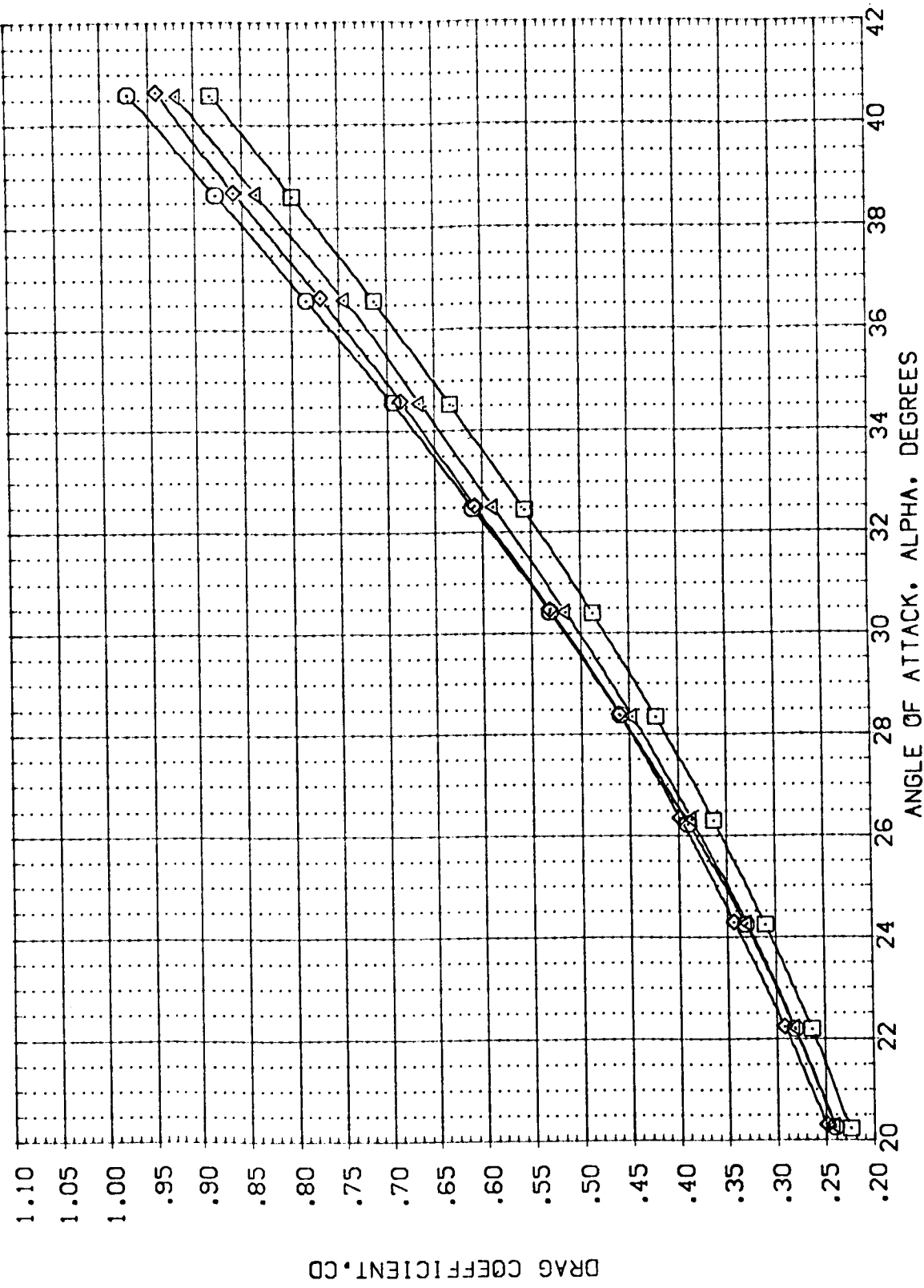


FIG. 18 EFFECT OF TRIMMER WITH CONTROL SURFACES DEFLECTED-139B

(B)MACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (187009) MSFC 574(OA48) CRB 1398
 (F87022) MSFC 574(OA48) CRB 1398
 (F87106) DATA NOT AVAILABLE
 (F87107) DATA NOT AVAILABLE

BETA ELEVTR SPOBRK BOFLAP
 .000 .000 999.990 .000
 .000 -40.000 999.990 -14.250
 .000 -40.000 999.990 -14.250
 .000 -40.000 999.990 -14.250

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

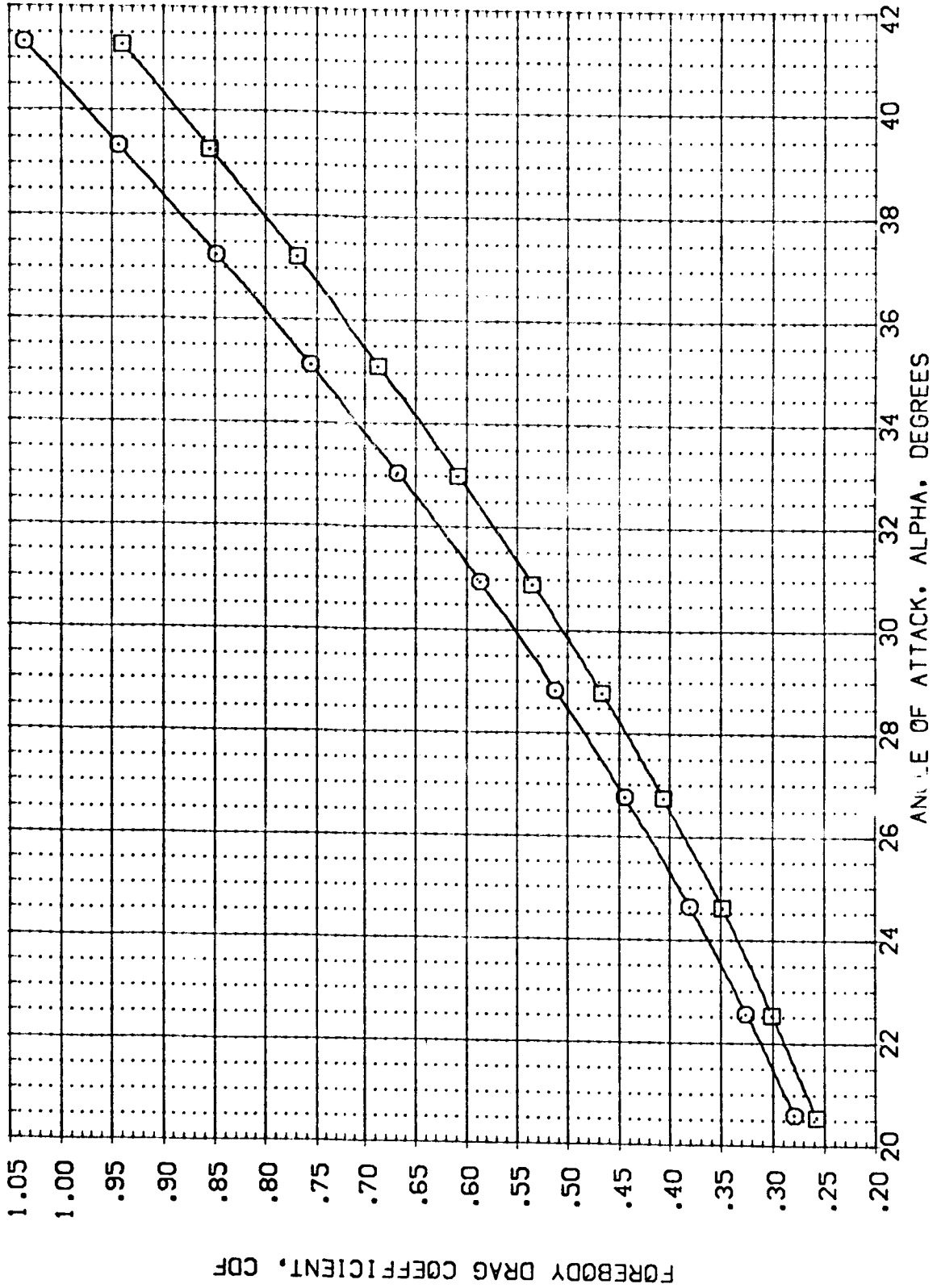


FIG. 18 EFFECT OF TRIMMER WITH CONTROL SURFACES DEFLECTED-139B

(M)MACH = 2.99

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(187009)	MSFC 574(OA48) CR8 398
(187022)	MSFC 574(OA48) CR8 398 W/H19
(F87106)	MSFC 574(OA48) CR8 398 W/H20
(F87107)	MSFC 574(OA48) CR8 398 W/H20

BETA ELEVTR SPOBRK BDFLAP REFERENCE INFORMATION SQ.FT.

.000	.000	999.990	.000	SREF	2690.0000	N.
.000	-40.000	999.990	-14.250	LREF	474.8000	N.
.000	-40.000	999.990	-14.250	BREF	936.7000	N.
.000	-40.000	999.990	-14.250	XMRP	836.7000	N.
.000	-40.000	999.990	-14.250	YMRP	.0000	N.
				ZMRP	.0000	N.
				SCALE	.0040	N.

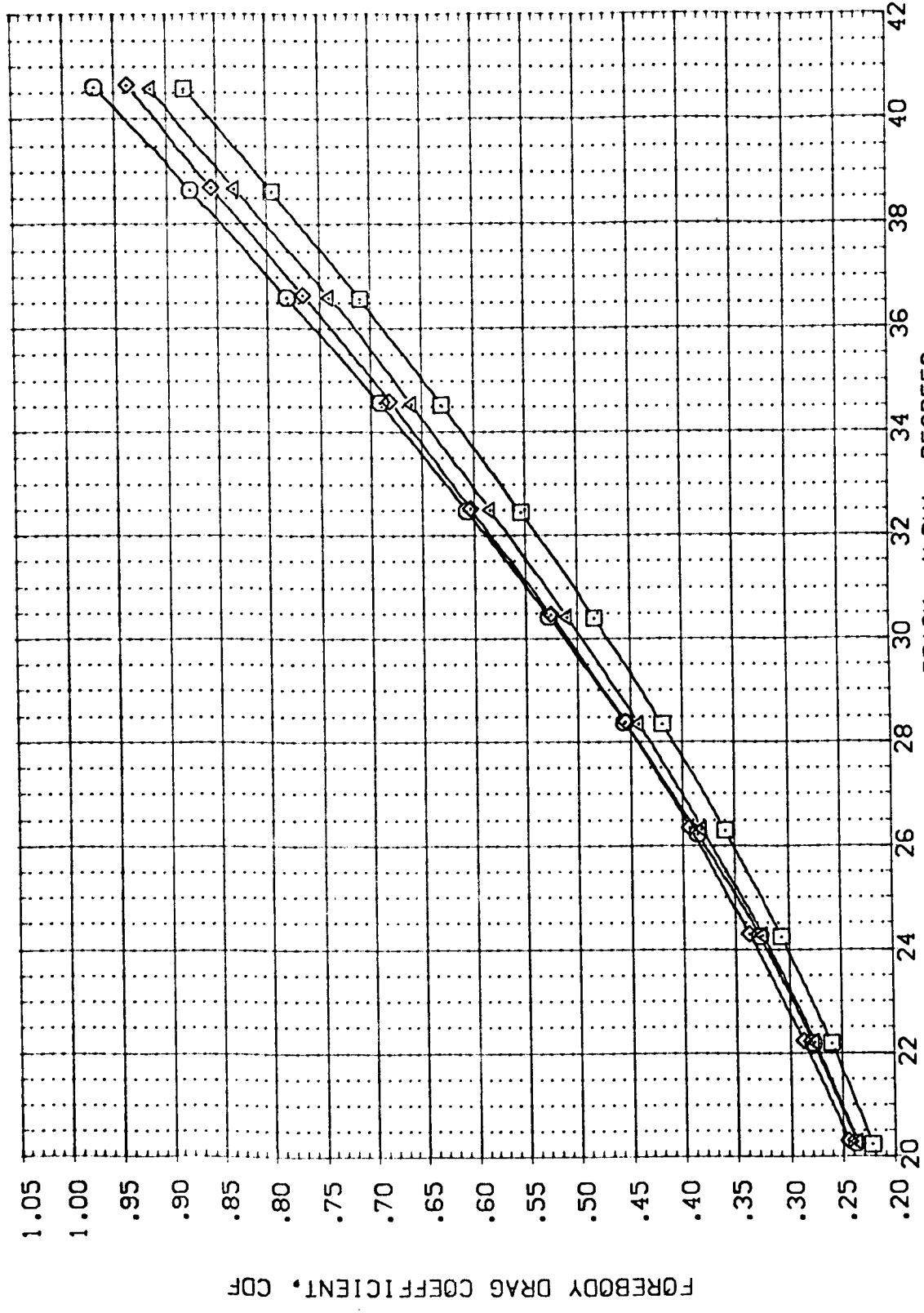


FIG. 18 EFFECT OF TRIMMER WITH CONTROL SURFACES DEFLECTED-139B

(B)MACH = 4.96

DATA SET SYMBOL (187009)
 (F87022)
 (F87106)
 (F87107)

CONFIGURATION DESCRIPTION
 MSFC 574(OA48) CR8 1398
 MSFC 574(OA48) CR8 1398
 DATA NOT AVAILABLE
 DATA NOT AVAILABLE

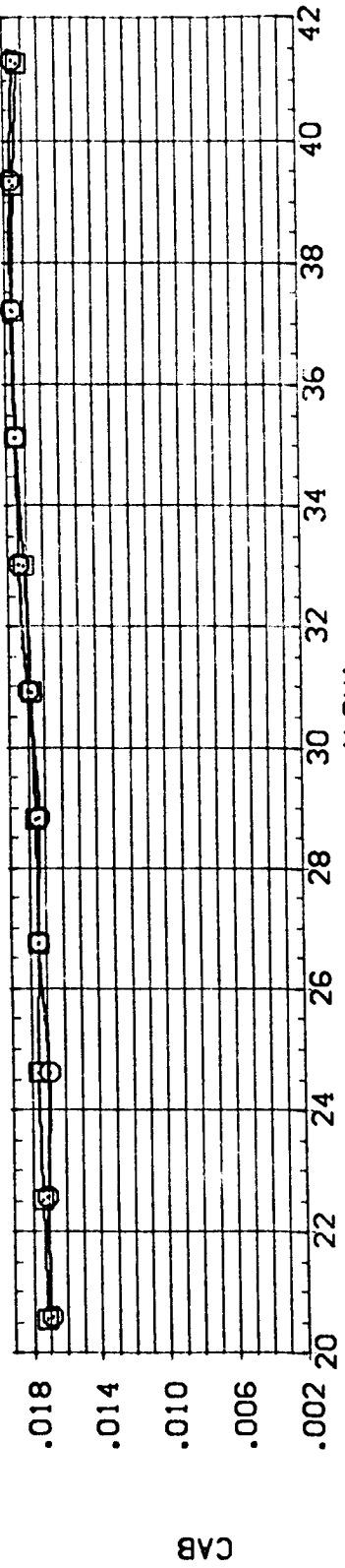
BETA .000
 .000
 .000
 .000

ELEVTR .000
 -40.000
 -40.000
 -40.000

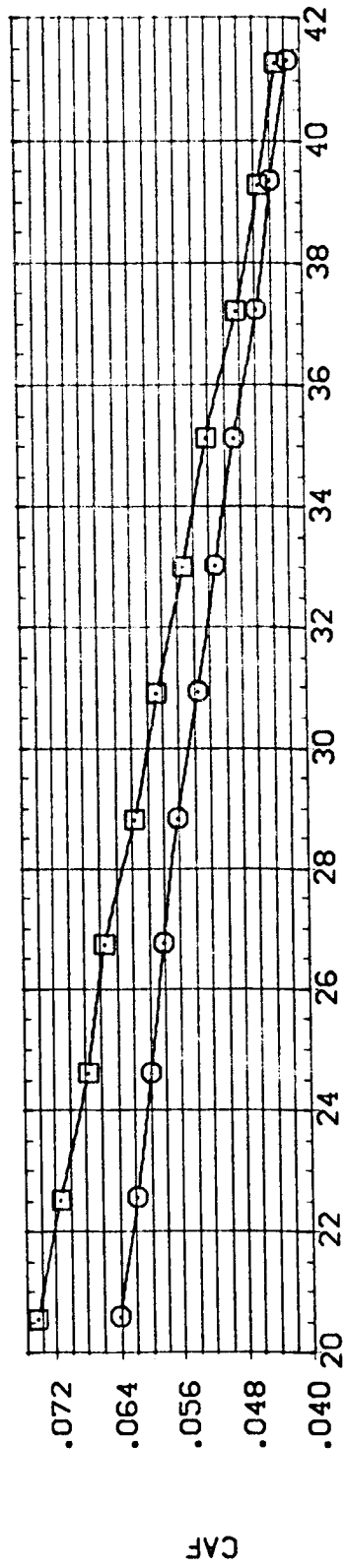
SPDBRK 999.990
 999.990
 999.990
 999.990

BOFLAP .000
 -14.250
 -14.250
 -14.250

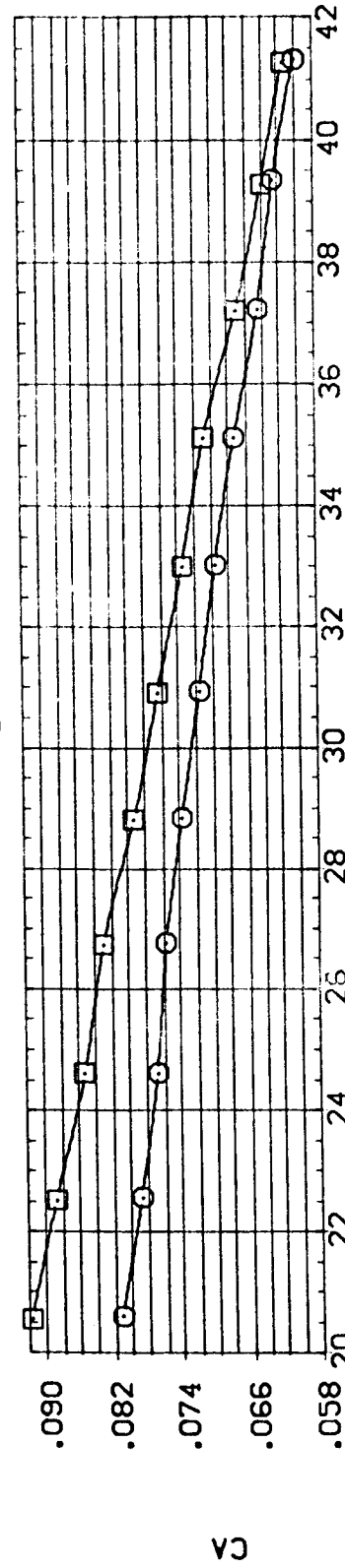
REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040



CAB



CAF



CA

FIG. 18 EFFECT OF TRIMMER WITH CONTROL SURFACES DEFLECTED-139B

(A)MACH = 2.99

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (187009) MSFC 574(CA48) CRB 139B
 (F87022) MSFC 574(CA48) CRB 139B
 (F87106) MSFC 574(CA48) CRB 39B V/H19
 (F87107) MSFC 574(CA48) CRB 39B V/H20

BETA ELEVTR SPOBRK BOFLAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SREF 2690.0000 SQ.FT.
 .000 -40.000 999.990 -14.250 LREF 474.8000 N.
 .000 -40.000 999.990 -14.250 BREF 936.7000 W.
 .000 -40.000 999.990 -14.250 XMRP 838.7000 Z.
 .000 .000 .0000 .0000 ZMRP .0000
 SCALE .0040

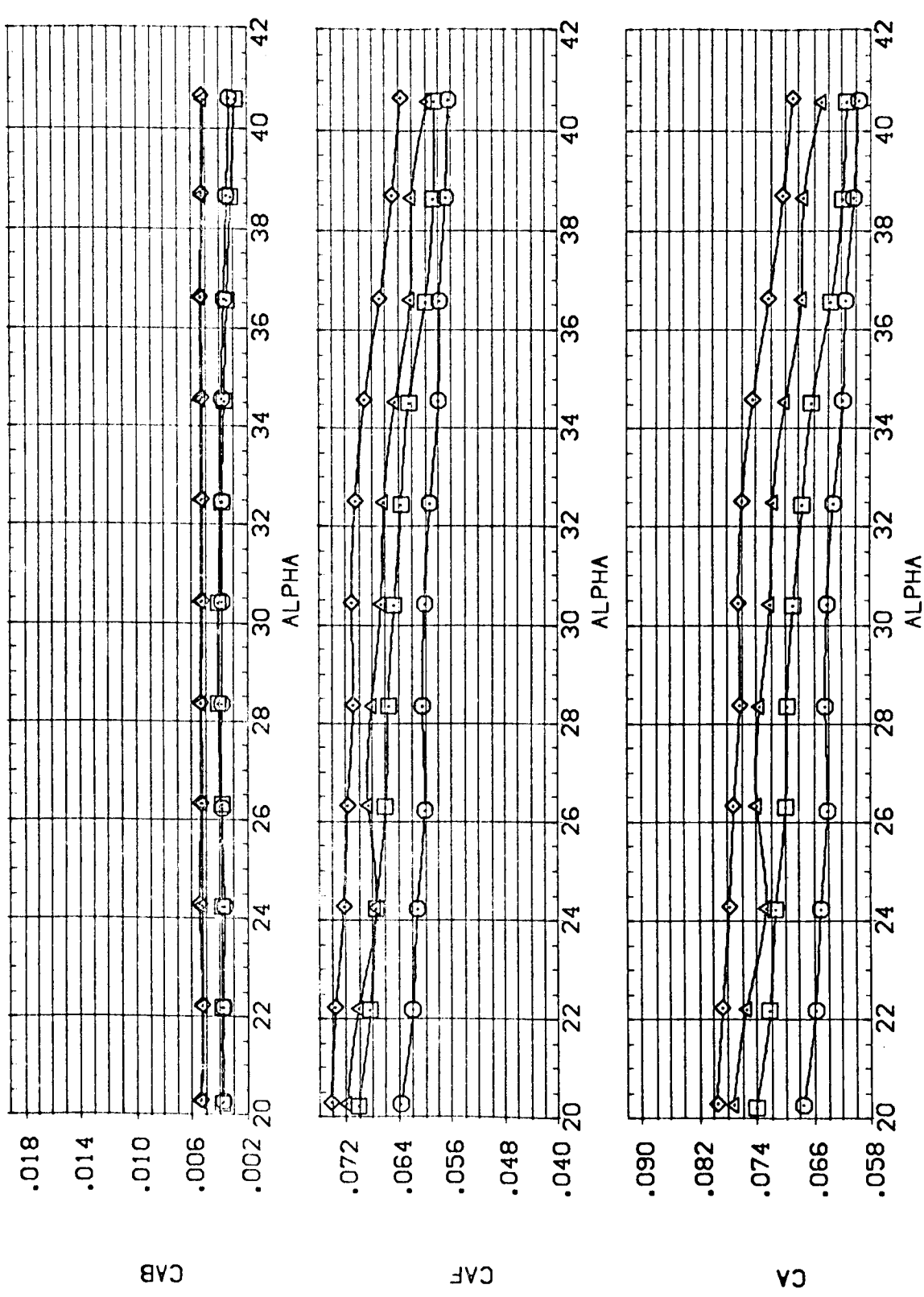


FIG. 18 EFFECT OF TRIMMER WITH CONTROL SURFACES DEFLECTED-139B

(B)MACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(187009) MSFC 574 (0A48) CRB 1398

(187022) MSFC 574 (0A48) CRB 1398

(187105) DATA NOT AVAILABLE

(187107) DATA NOT AVAILABLE

BETA ELEVTR SPOBRK BOFLAP REFERENCE INFORMATION SO.FT.

.000 .000 999.990 .000 SREF 2690.0000

.000 .000 999.990 -14.250 LREF 474.8000

.000 -40.000 999.990 -14.250 BREF 936.7000

.000 -40.000 999.990 -14.250 XMRP 836.7000

.000 -40.000 999.990 -14.250 YMRP .0000

.000 .0000 ZMRP .0000

.0000 .0000 SCALE .0040

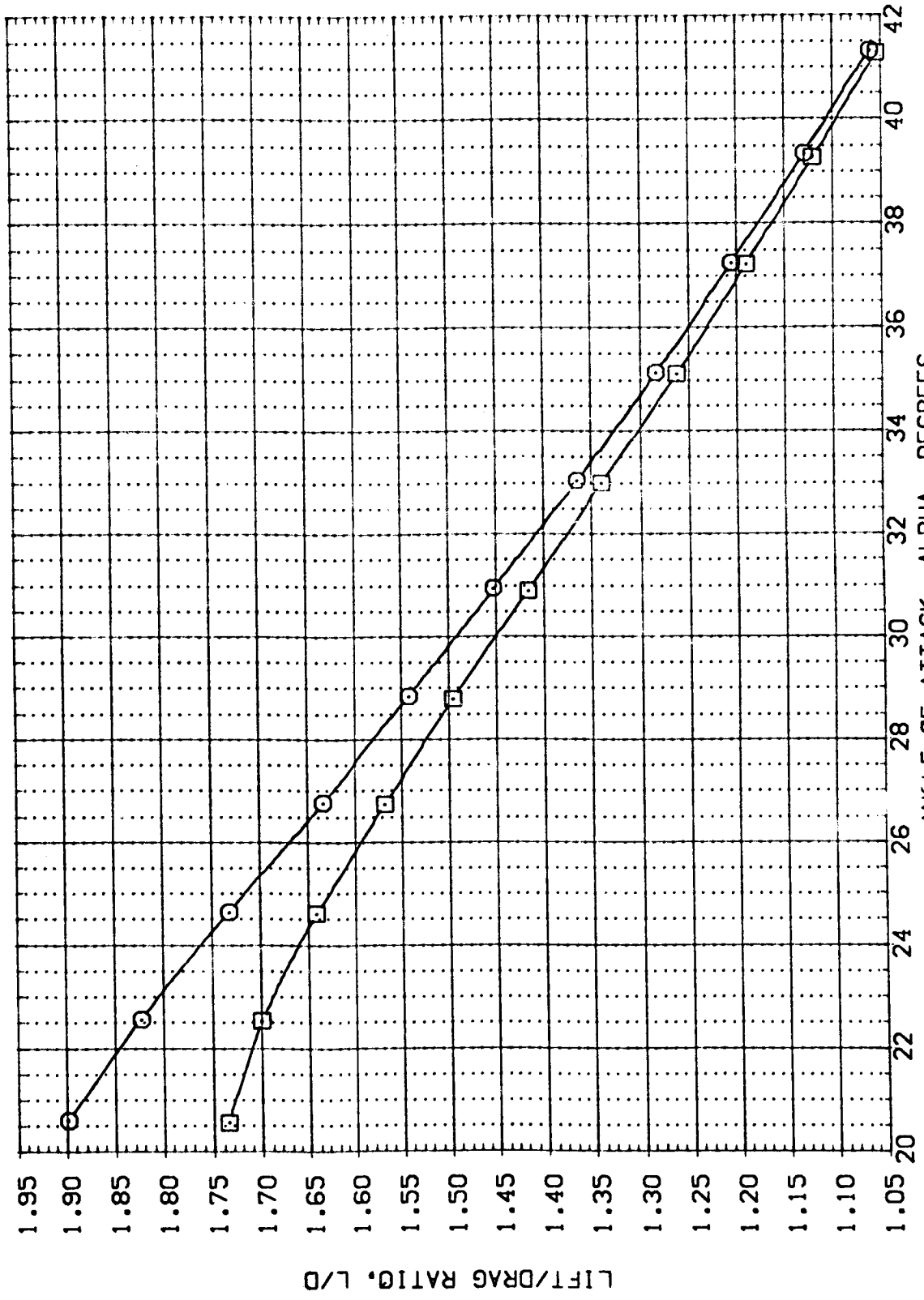


FIG. 18 EFFECT OF TRIMMER WITH CONTROL SURFACES DEFLECTED-1398

DATA SET SYMBOL
 (187009)
 (F87022)
 (F87107)

CONFIGURATION DESCRIPTION
 MSFC 574 (DA48) ORB 1398
 MSFC 574 (DA48) CRB 1398
 MSFC 574 (DA48) CRB 1398 V/H19
 MSFC 574 (DA48) ORB 1398 V/H20

BETA .000
 ELEVTR .000
 SPOBRK 999.99C
 BOFLAP .000
 REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

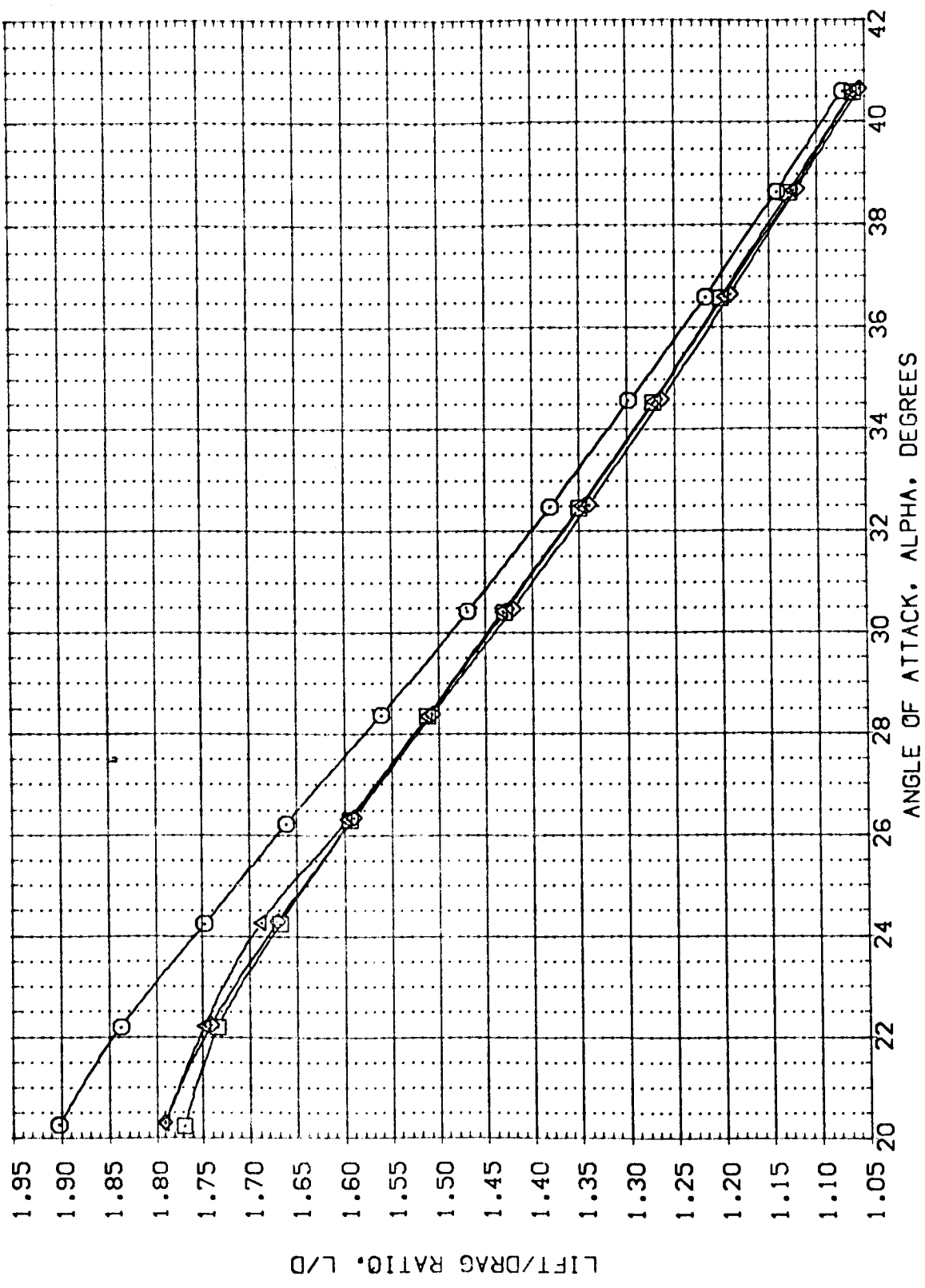


FIG. 18 EFFECT OF TRIMMER WITH CONTROL SURFACES DEFLECTED-1398

(B)MACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (187009) MSFC 574(CA48) CRB 139B
 (F87022) MSFC 574(CA48) CRB 139B
 (F87106) DATA NOT AVAILABLE
 (F87107) DATA NOT AVAILABLE

BETA ELEVTR SPOBRK BOFLAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SREF 2690.0000 SC.FT.
 .000 -40.000 999.990 -14.250 LREF 474.8000 IN.
 .000 -40.000 999.990 -14.250 BREF 936.7000 IN.
 .000 -40.000 999.990 -14.250 YMRP 838.7000 IN.
 .000 .0000 ZMRP .0000 IN.
 .0040 SCALE

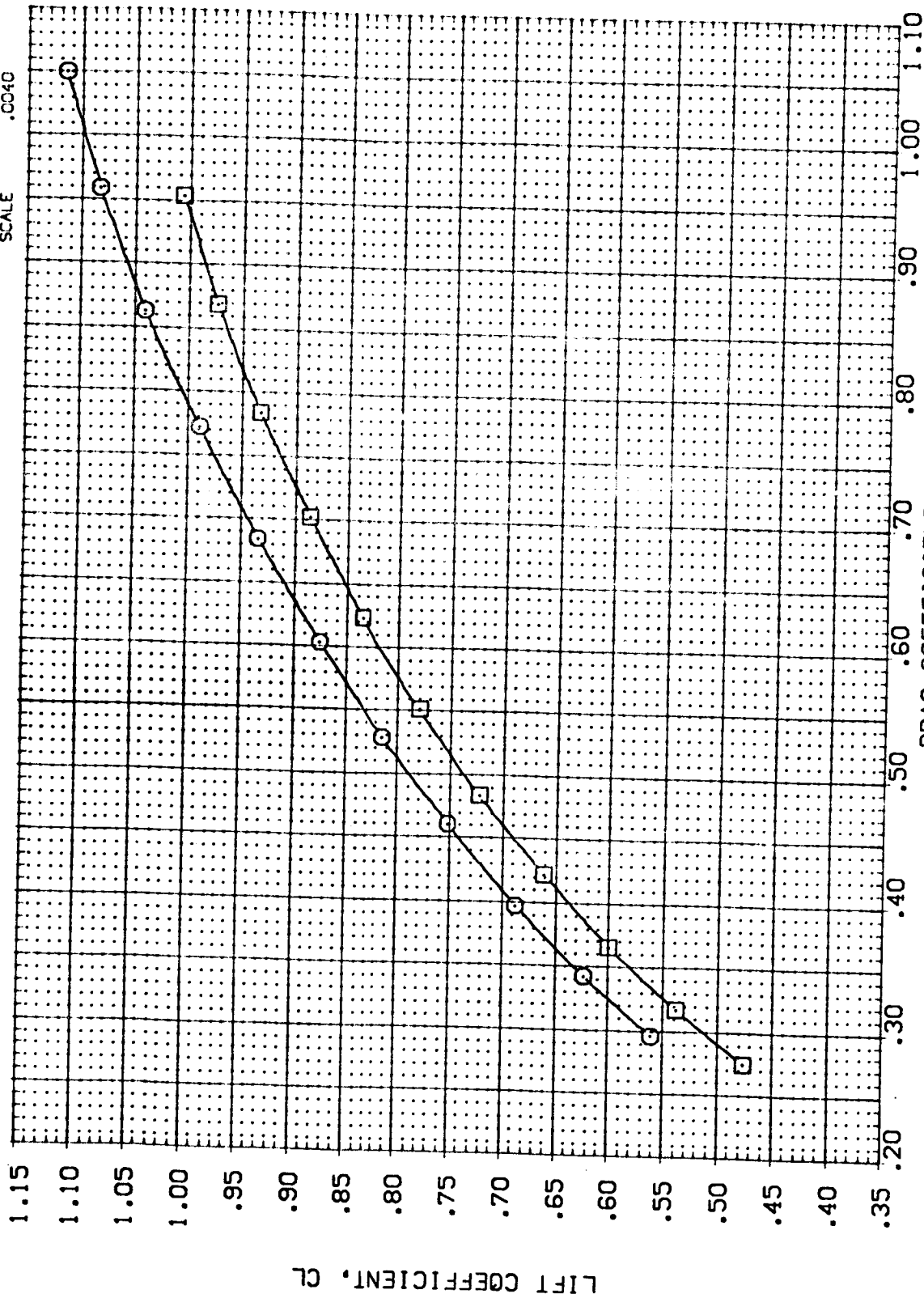


FIG. 18 EFFECT OF TRIMMER WITH CONTROL SURFACES DEFLECTED-139B

(A)MACH = 2.99

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(187009)	MSFC 574(CA48) CR3 398	.000	.000	999.990	.000	SREF 2690.0000
(F87022)	MSFC 574(CA48) CR3 398	.000	-40.000	999.990	-14.250	LRF 474.8000
(F87106)	MSFC 574(CA48) CR3 398 V/H19	.000	-40.000	999.990	-14.250	BREF 936.7000
(F87107)	MSFC 574(CA48) CR3 398 V/H20	.000	-40.000	999.990	-14.250	XMRP 838.7000
						YMRP .0000
						ZMRP .0000
						SCALE .0040

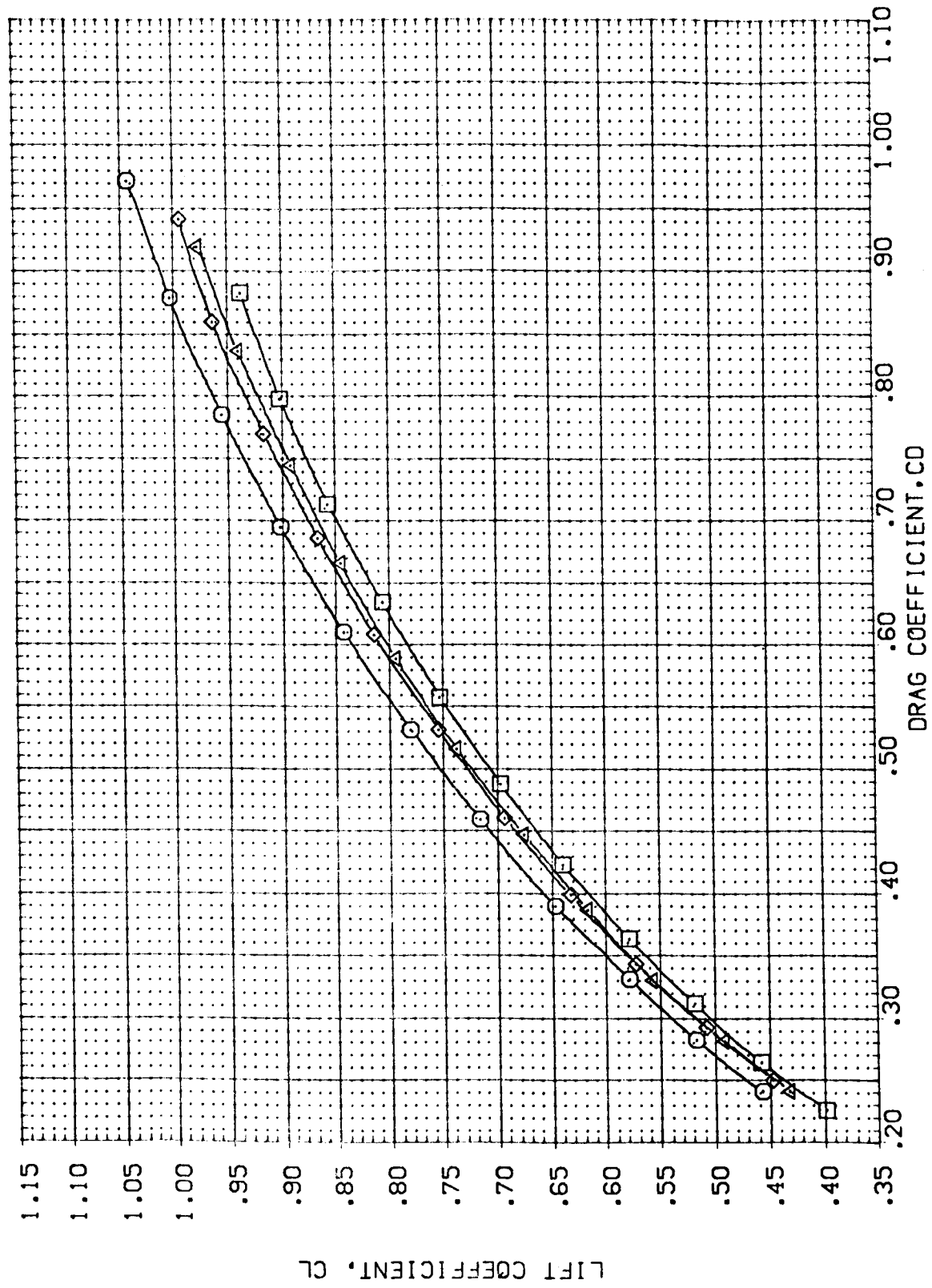


FIG. 18 EFFECT OF TRIMMER WITH CONTROL SURFACES DEFLECTED-139B

(B)MACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (187069) MSFC 574 (DA48) CRB 1398
 (G87022) MSFC 574 (DA48) CRB 1338
 (G87106) DATA NOT AVAILABLE
 (G87107) DATA NOT AVAILABLE

BETA ELEVTR SPOBRK BOFLAP REFERENCE INFORMATION
 .000 999.990 .000 SREF 2690.0000 SO.FT.
 .000 -40.000 999.990 LREF 474.8000 IN.
 .000 -40.000 999.990 BREF 936.7000 IN.
 .000 -40.000 999.990 XMRP 864.5000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

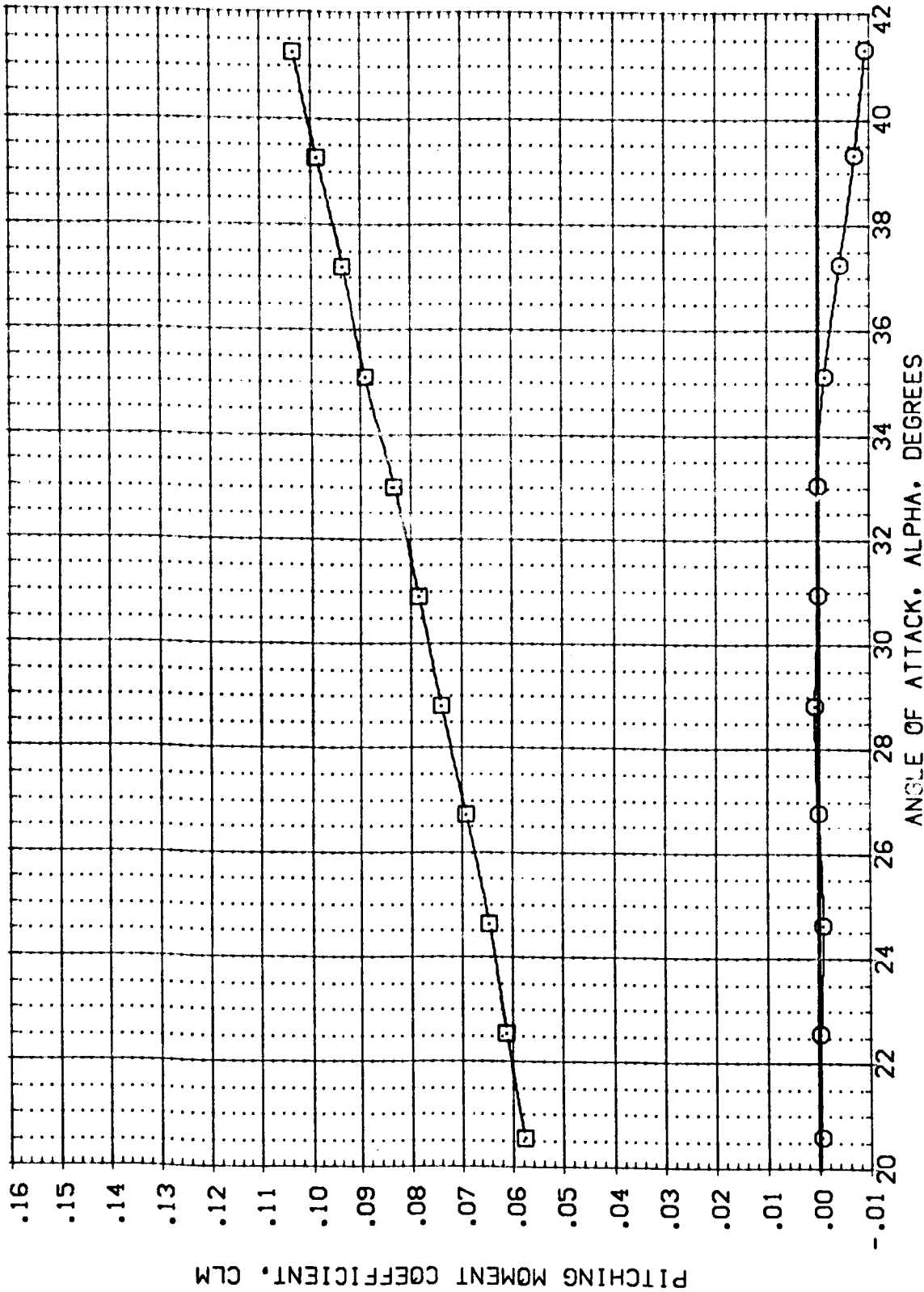


FIG. 18 EFFECT OF TRIMMER WITH CONTROL SURFACES DEFLECTED-139B (AFT C.G.)

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (187059) MSFC 574(CA48) CRB 398
 (587022) MSFC 574(CA48) CRB 398
 (587136) MSFC 574(CA48) CRB 398 V/H-19
 (587107) MSFC 574(CA48) CRB 398 V/H-20

BETA ELEVTR SPOBRK BOFLAP REFERENCE INFORMATION SQ.FT.
 .000 .000 999.990 .000 SREF 2690.0000
 .000 -40.000 999.990 -14.250 LREF 474.8000
 .000 -40.000 999.990 -14.250 BREF 936.7000
 .000 -40.000 999.990 -14.250 XMRP 864.5000
 .000 .000 .000 .000 YMRP .0000
 .000 .000 .000 .000 ZMRP .0000
 .000 .000 .000 .000 SCALE .0040

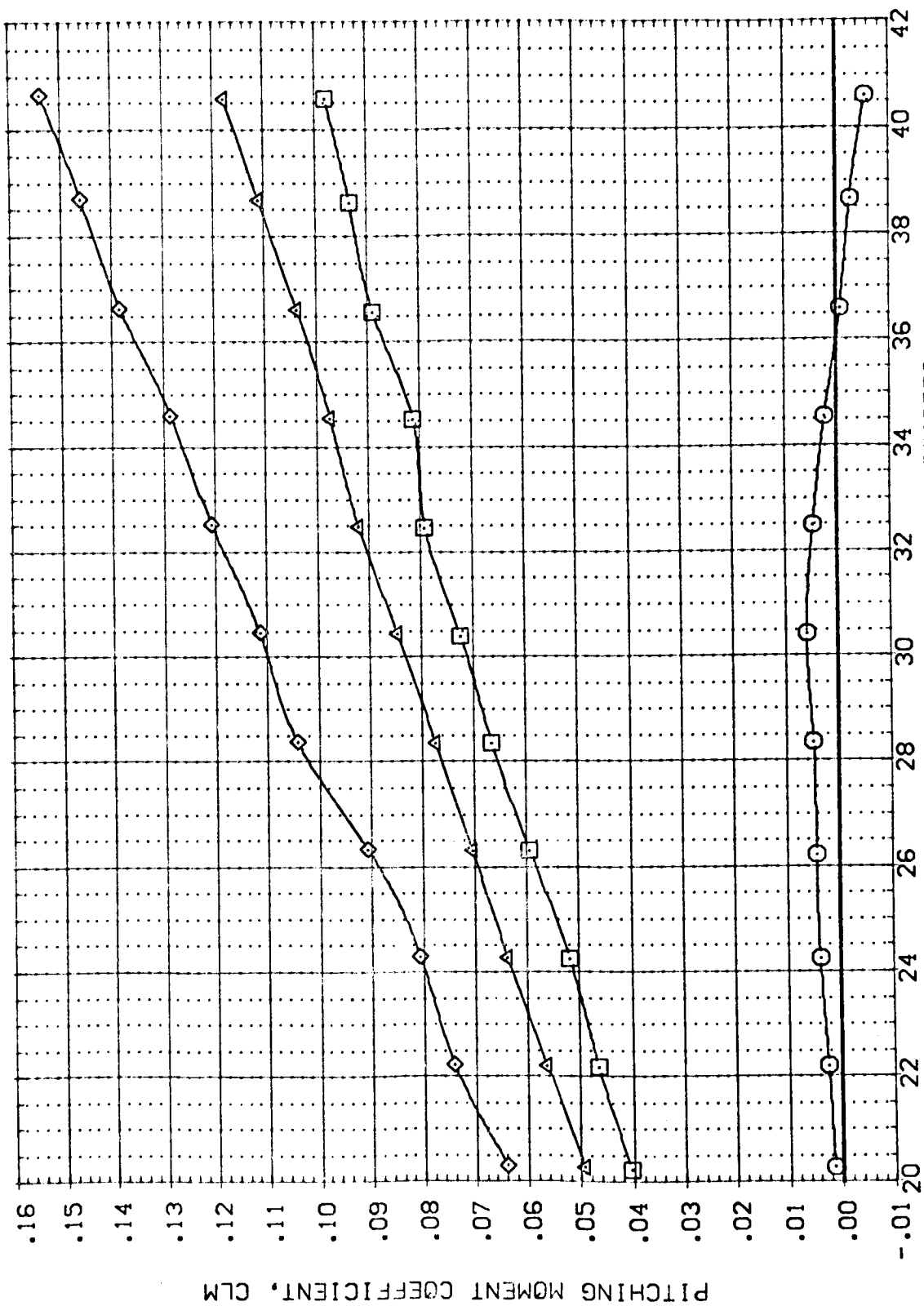


FIG. 18 EFFECT OF TRIMMER WITH CONTROL SURFACES DEFLECTED-139B (AFT C.G.)

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87085) MSFC 574(0A48) CRB 139
 (F87112) MSFC 574(0A48) CRB 139 Z1

BETA ELEVTR SPOBRK BOFLAP
 .000 -40.000 999.990 -14.250
 .000 -40.000 999.990 -14.250

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

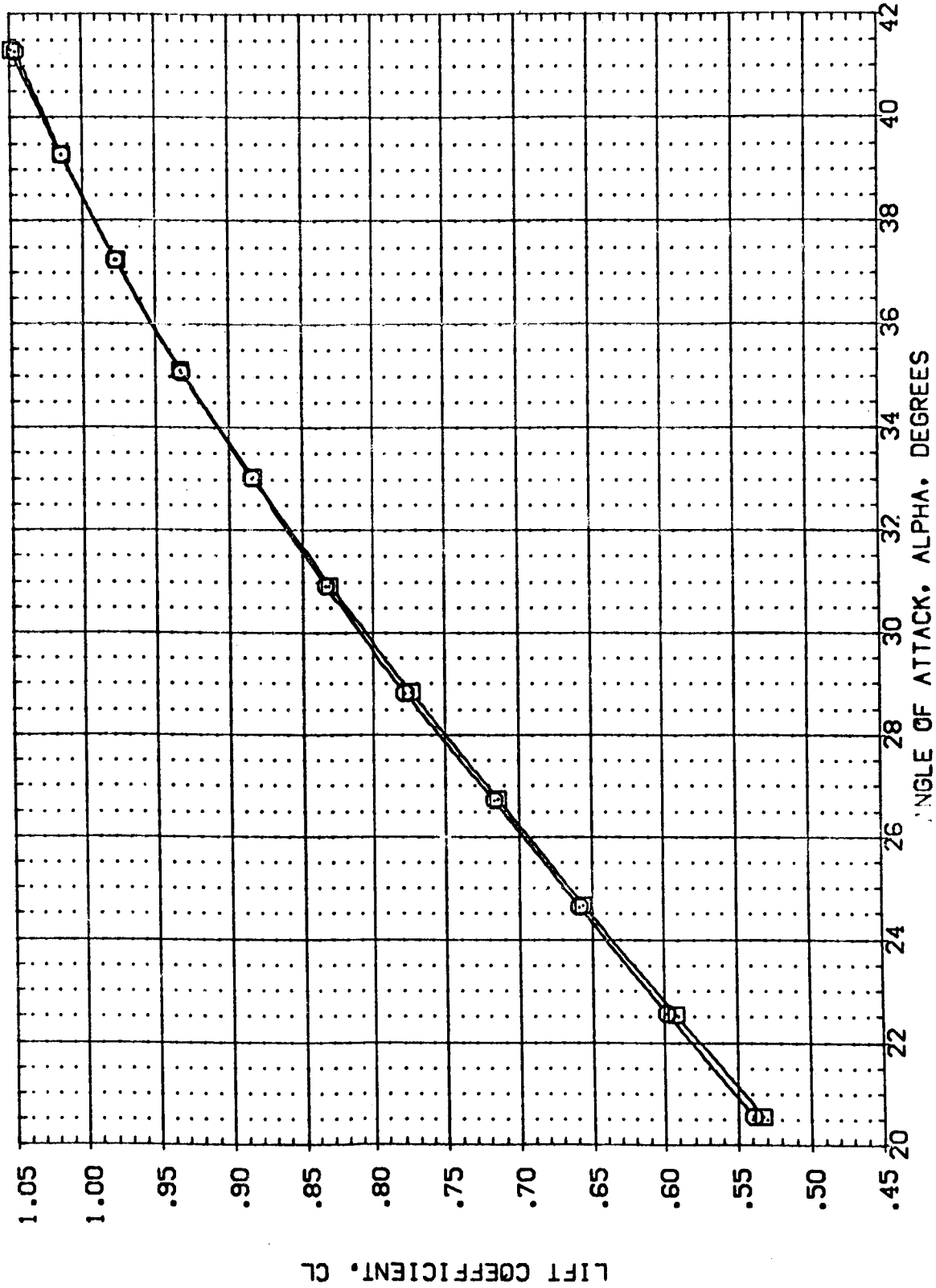


FIG. 19 EFFECT OF SPOILERS ON ORBITER 139

(M)MACH = 2.99

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87065) MSFC 574(0A48) ORB 138
 (F87112) MSFC 574(0A48) ORB 139 Z1

BETA .000
 ELEVTR -40.000
 SPOSRK 999.990
 BOFLAP -14.250

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 474.0000 IN.
 BREF 936.7000 IN.
 XMRP 833.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

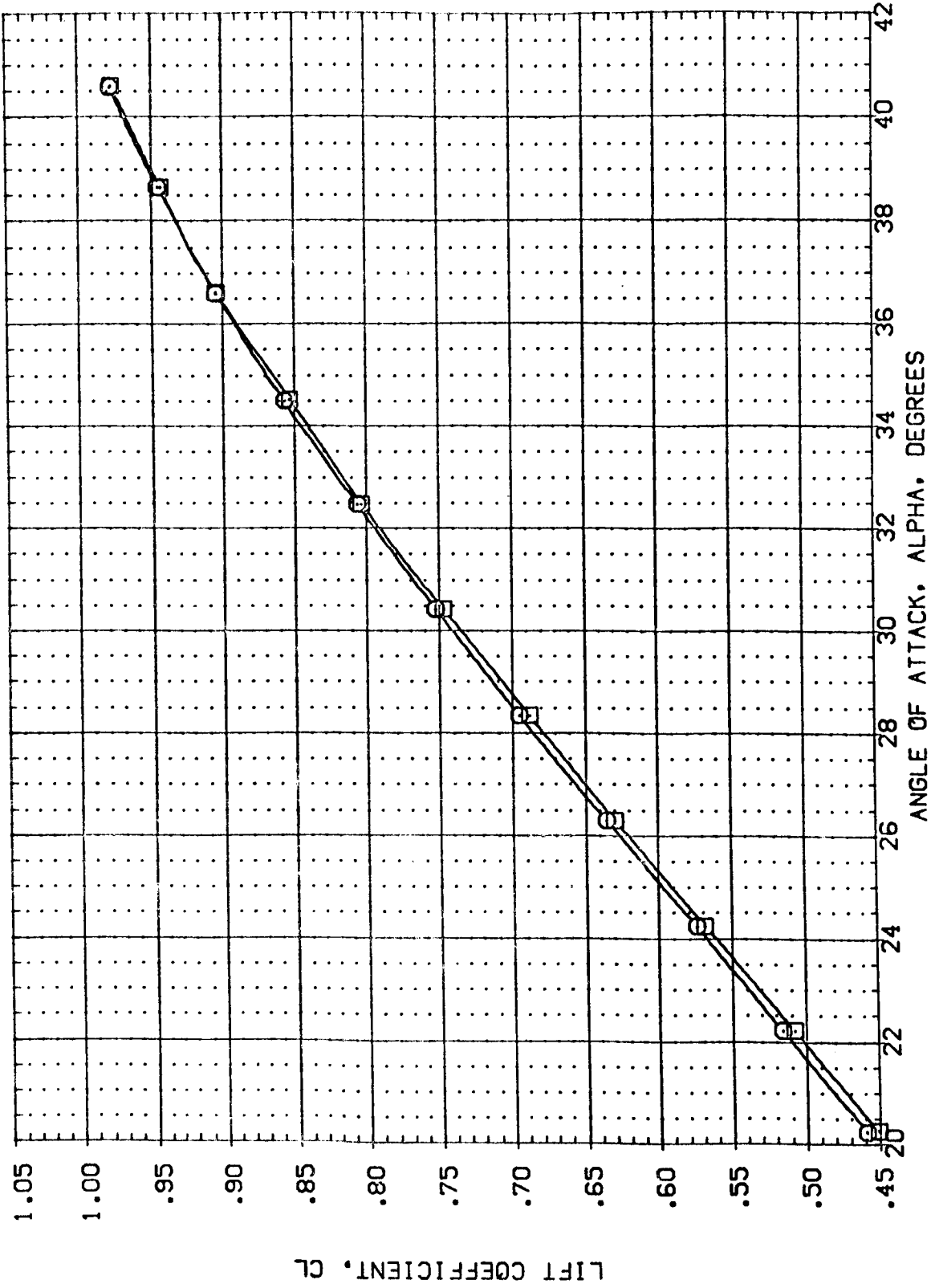


FIG. 19 EFFECT OF SPOILERS ON ORBITER 139

(B)MACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87065) MSFC 574(0A48) ORB 139
 (F87112) MSFC 574(0A48) ORB 139 Z1

BETA ELEVTR SPOBRK BOFLAP
 .000 -40.000 999.990 -14.250
 .000 -40.000 999.990 -14.250

REFERENCE INFORMATION
 SREF 2690.0000 50.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 838.7000 IN.
 ZMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

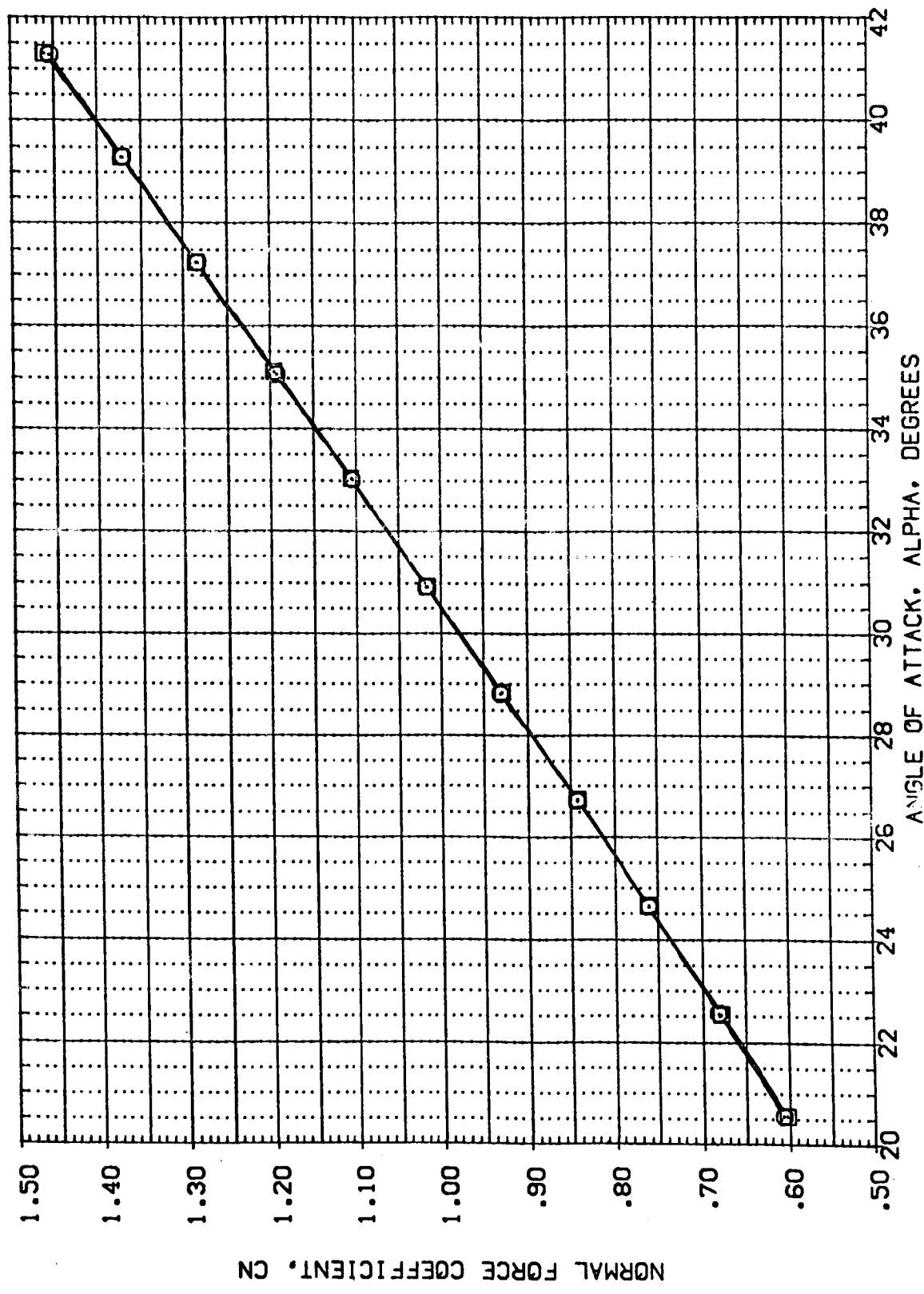


FIG. 19 EFFECT OF SPOILERS ON ORBITER 139

CAJ MACH = 2.99

DATA SET SYMBOL (F87065) (F87112)

CONFIGURATION DESCRIPTION
 MSFC 574(OA48) ORB 139
 MSFC 574(OA48) ORB 139 Z1

BETA .000
 ELEVTR -40.000
 SPOBRK 999.990
 BOFLAP -14.250

REFERENCE INFORMATION
 SREF 2690.0000
 LREF 474.8000
 BREF 938.7000
 XMRP 838.7000
 YMRP .0000
 ZMRP .0000
 SCALE .0040

SO, FT.
 IN.
 IN.
 IN.
 IN.
 IN.

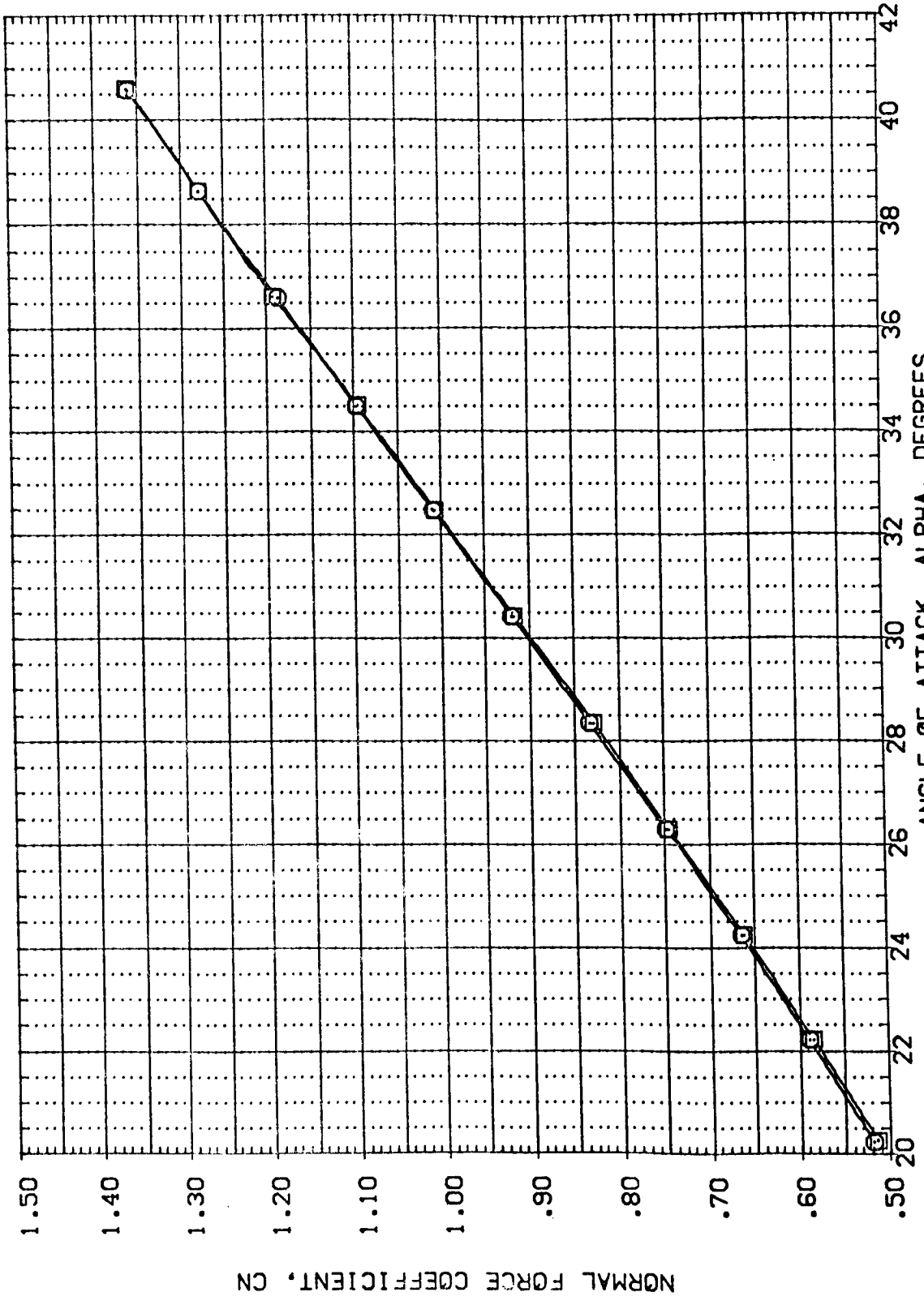


FIG. 19 EFFECT OF SPOILERS ON ORBITER 139

(B)MACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87065) MSFC 574(DA48) CR8 139
 (F87112) MSFC 574(DA48) CR8 139 Z1

BETA ELEVTR SPOBRK BOFLAP REFERENCE INFORMATION
 .000 -40.000 999.990 -14.250 SREF 2690.0000 SO.FT.
 .000 -40.000 999.990 -14.250 LREF 474.8000 IN.
 XMRP 838.7000 IN.
 YMRP 838.7000 IN.
 ZMRP .0000 IN.
 SCALE .0040

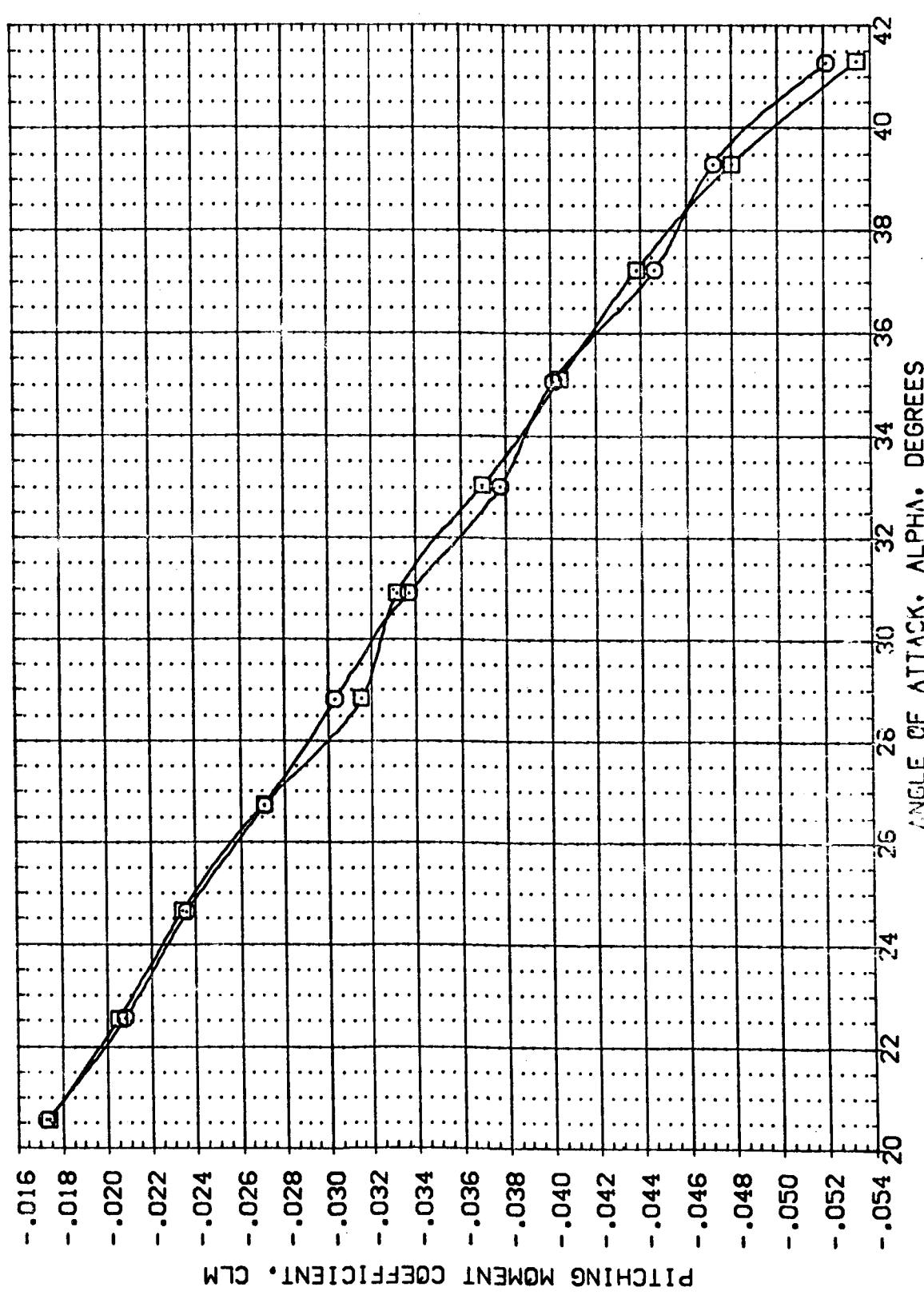


FIG. 19 EFFECT OF SPOILERS ON ORBITER 139

(A)MACH = 2.99

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87065) MSFC 574(0A48) ORB 139
 (F87112) MSFC 574(0A48) ORB 139 Z1

BETA ELEVTR SPOBRK ROFLAP
 .000 -40.000 999.990 -14.250
 .000 -40.000 999.990 -14.250

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 833.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

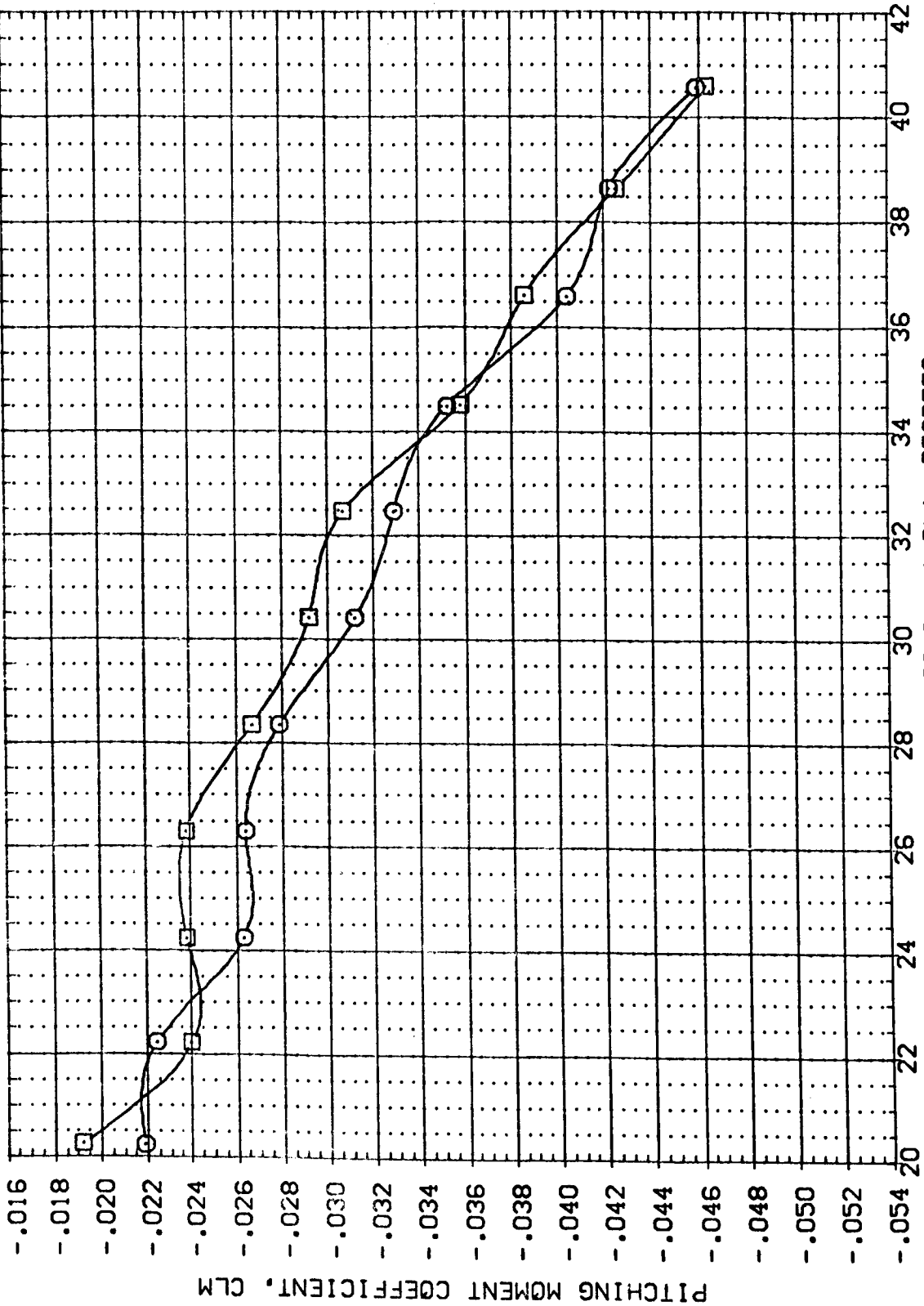


FIG. 19 EFFECT OF SPOILERS ON ORBITER 139

(B)MACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87065) MSFC 574(0A48) ORB 139
 (F87112) MSFC 574(0A48) ORB 139 Z1

BETA .000
 .000
 ELEVTR -40.000
 -40.000
 SPOBRK 999.990
 999.990
 BOFLAP -14.250
 -14.250
 REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

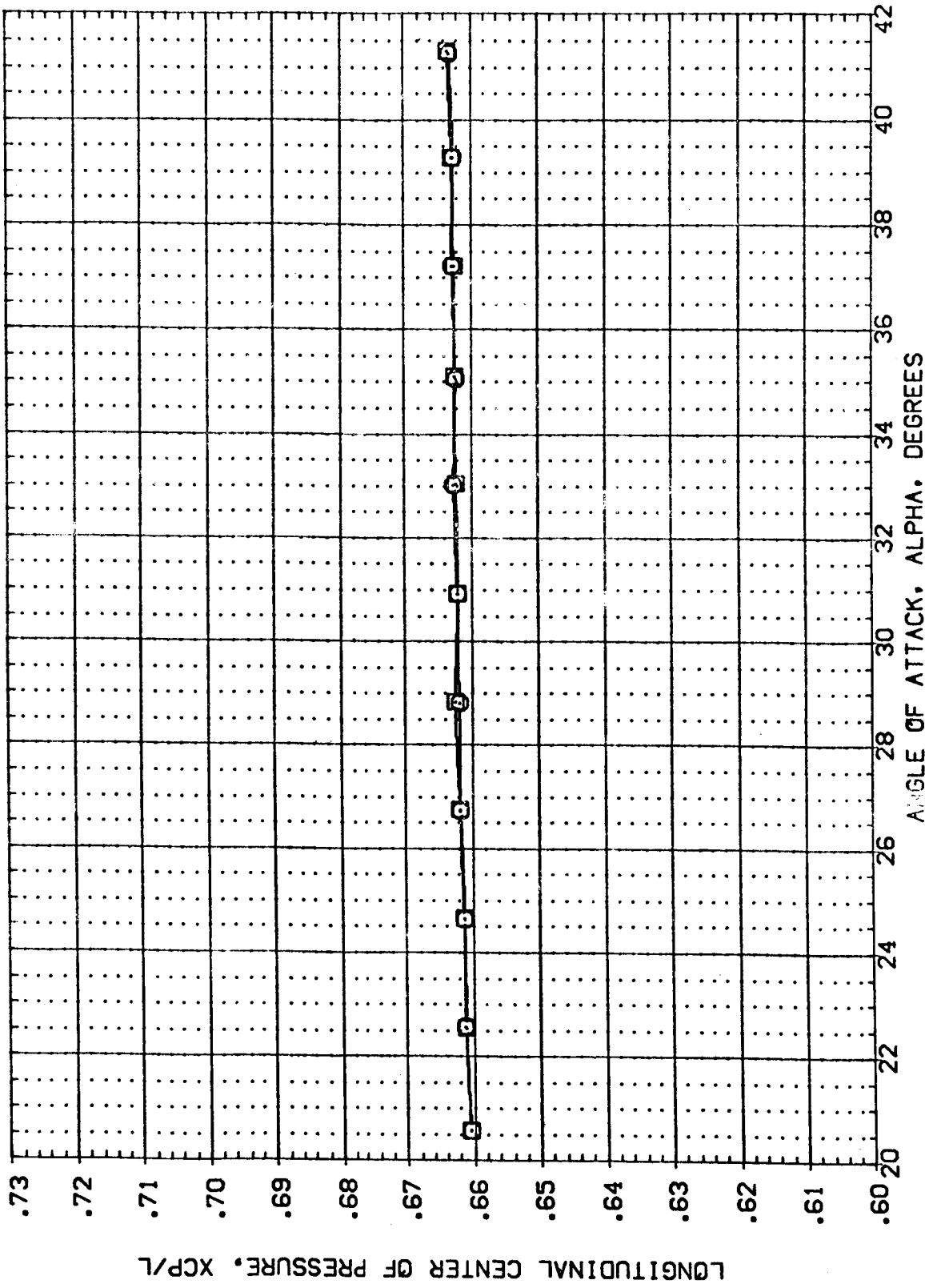


FIG. 19 EFFECT OF SPOILERS ON ORBITER 139

(M)MACH = 2.99

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87065) MSFC 574(0A48) ORB 139
 (F87112) MSFC 574(0A48) ORB 139 Z1

BETA ELEVTR SPOBRK BOFLAP
 .000 -40.000 999.990 -14.250
 .000 -40.000 999.990 -14.250

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 474.8000 IN.
 BREF 933.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

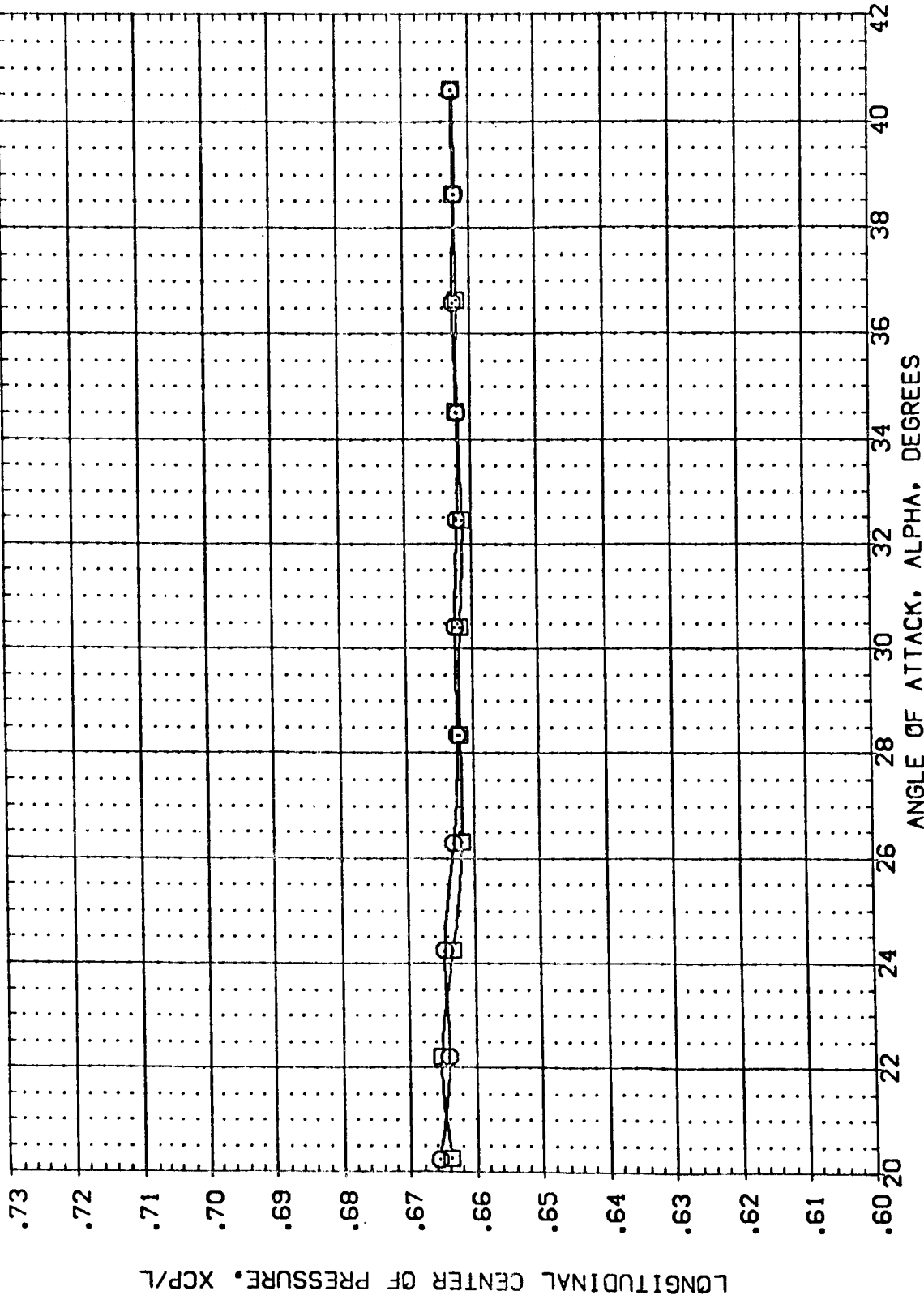


FIG. 19 EFFECT OF SPOILERS ON ORBITER 139

(B)MACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87065) MSFC 574(0A48) ORB 139
 (F87112) MSFC 574(0A48) ORB 139 Z1

BETA .000
 .000
 ELEVTR -40.000
 -40.000
 SPOBRK 999.990
 999.990
 BOFLAP -14.250
 -14.250
 REFERENCE INFORMATION
 SREF 2690.0000 90.FT.
 LREF 474.8000 IN.
 BRFP 936.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

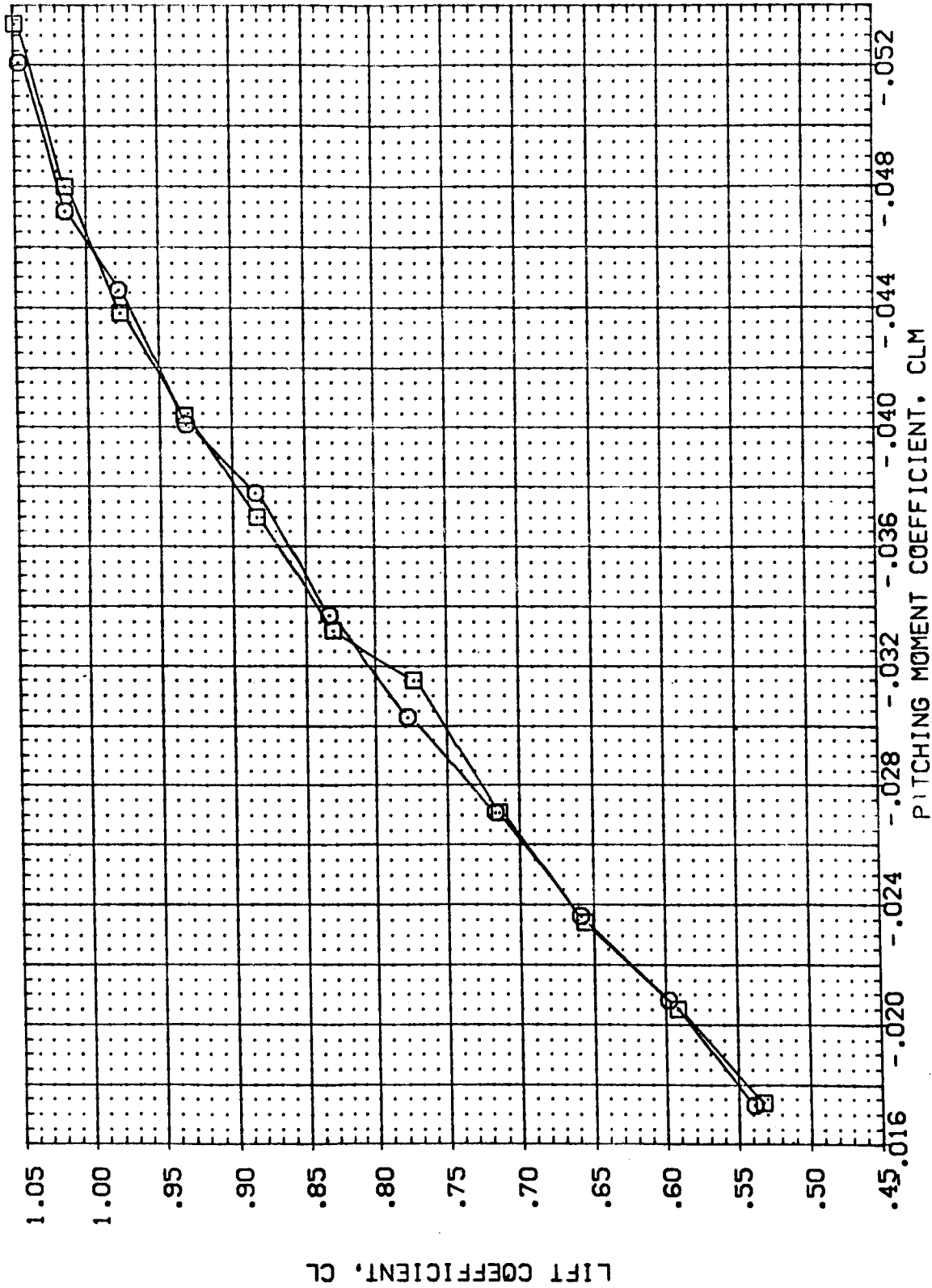


FIG. 19 EFFECT OF SPOILERS ON ORBITER 139

(A)MACH = 2.99

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87065) MSFC 574(0A48) OR8 139
 (F87112) MSFC 574(0A48) OR8 139 Z1

BETA ELEVTR SPOBRK BOELAP
 .000 -40.000 999.990 -14.250
 .000 -40.000 999.990 -14.250

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRRP 838.7000 IN.
 YMRRP .0000 IN.
 ZMRRP .0000 IN.
 SCALE .0040

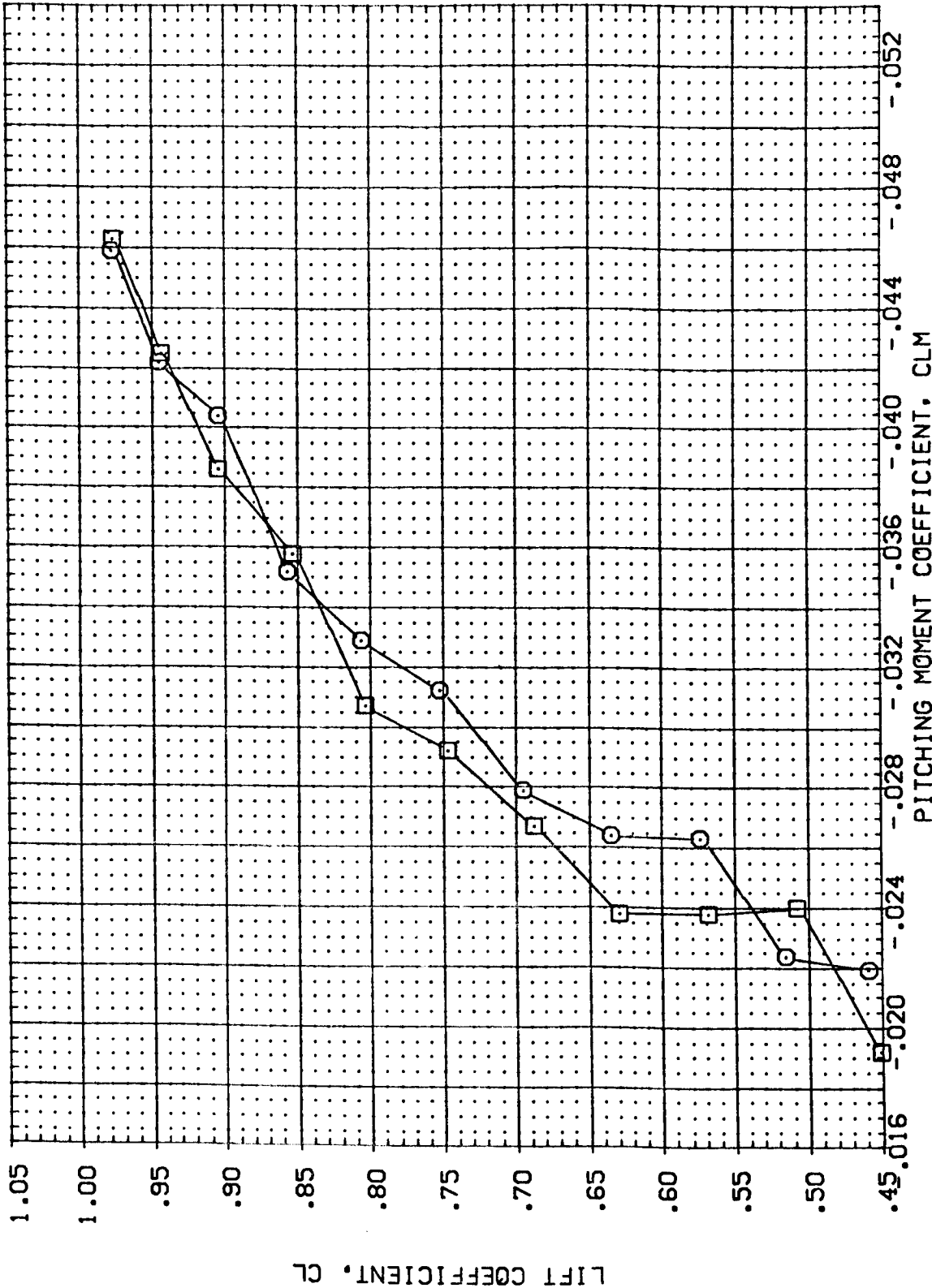


FIG. 19 EFFECT OF SPOILERS ON ORBITER 139

(B)MACH = 4.96

DATA SET SYMBOL (FB7065) (FB7112) CONFIGURATION DESCRIPTION MSFC 574(0A48) ORB 138 MSFC 574(0A46) ORB 139 Z1

BETA .000 .000 ELEVTR -40.000 -40.000 SPOBRK 999.990 999.990 BDFLAP -14.250 -14.250 REFERENCE INFORMATION SREF 2690.0000 SQ.FT. LREF 474.8000 IN. BREF 936.7000 IN. XMRP 838.7000 IN. YMRP .0000 IN. ZMRP .0000 IN. SCALE .0040

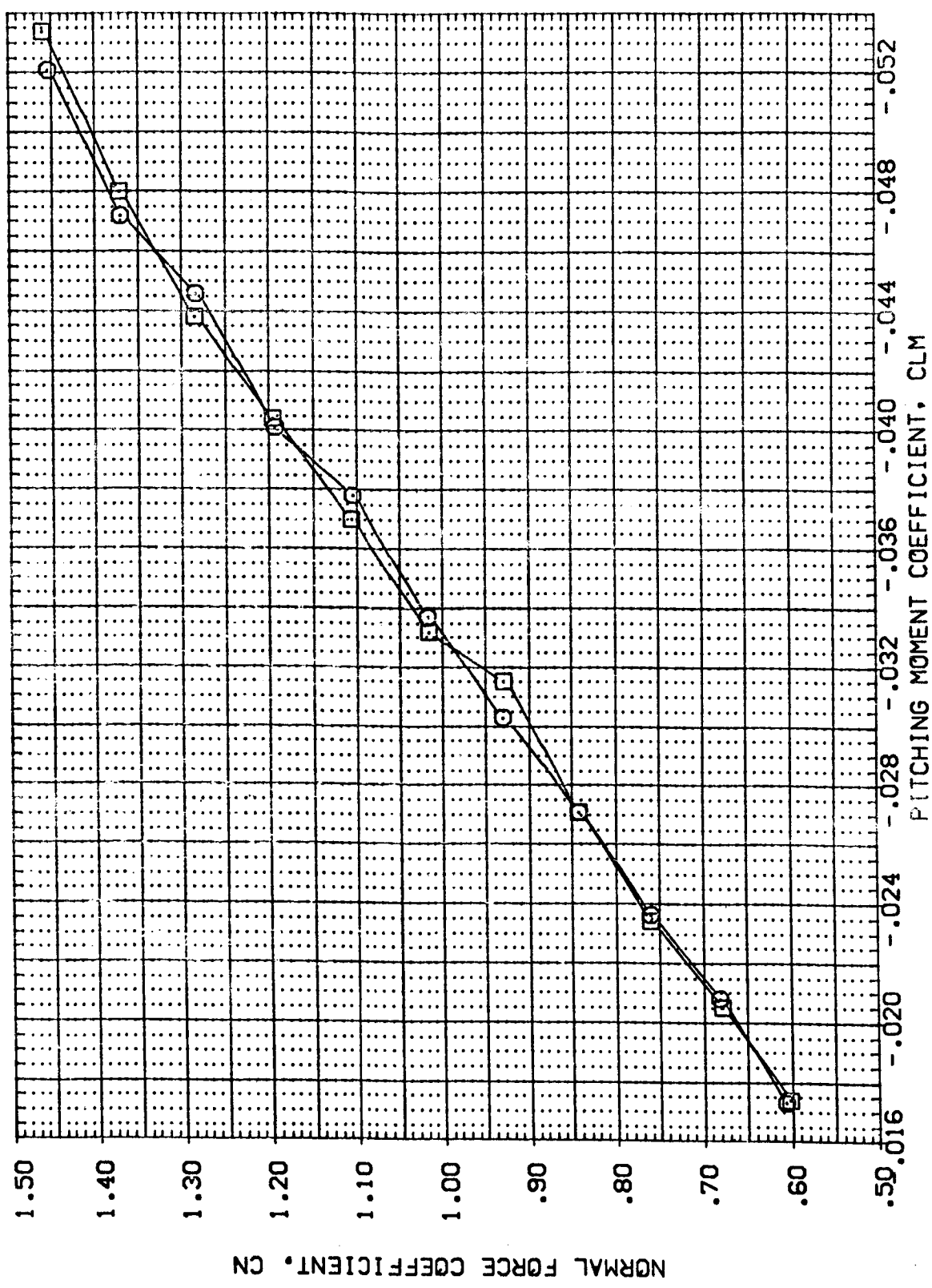


FIG. 19 EFFECT OF SPOILERS ON ORBITER 139

(A)MACH = 2.99

DATA SET SYMBOL (F87065) (F87112)

CONFIGURATION DESCRIPTION MSFC 574(OA48) ORB 139 MSFC 574(OA48) ORB 139 Z1

BETA .000 .000

ELEVTR -40.000 -40.000

SPOBRK SPOBRK

BOFLAP -14.250 -14.250

REFERENCE INFORMATION SREF 2690.0000 SQ.FT. LREF 474.8000 IN. BREF 936.7000 IN. XMRP 838.7000 IN. YMRP .0000 IN. ZMRP .0000 IN. SCALE .0040

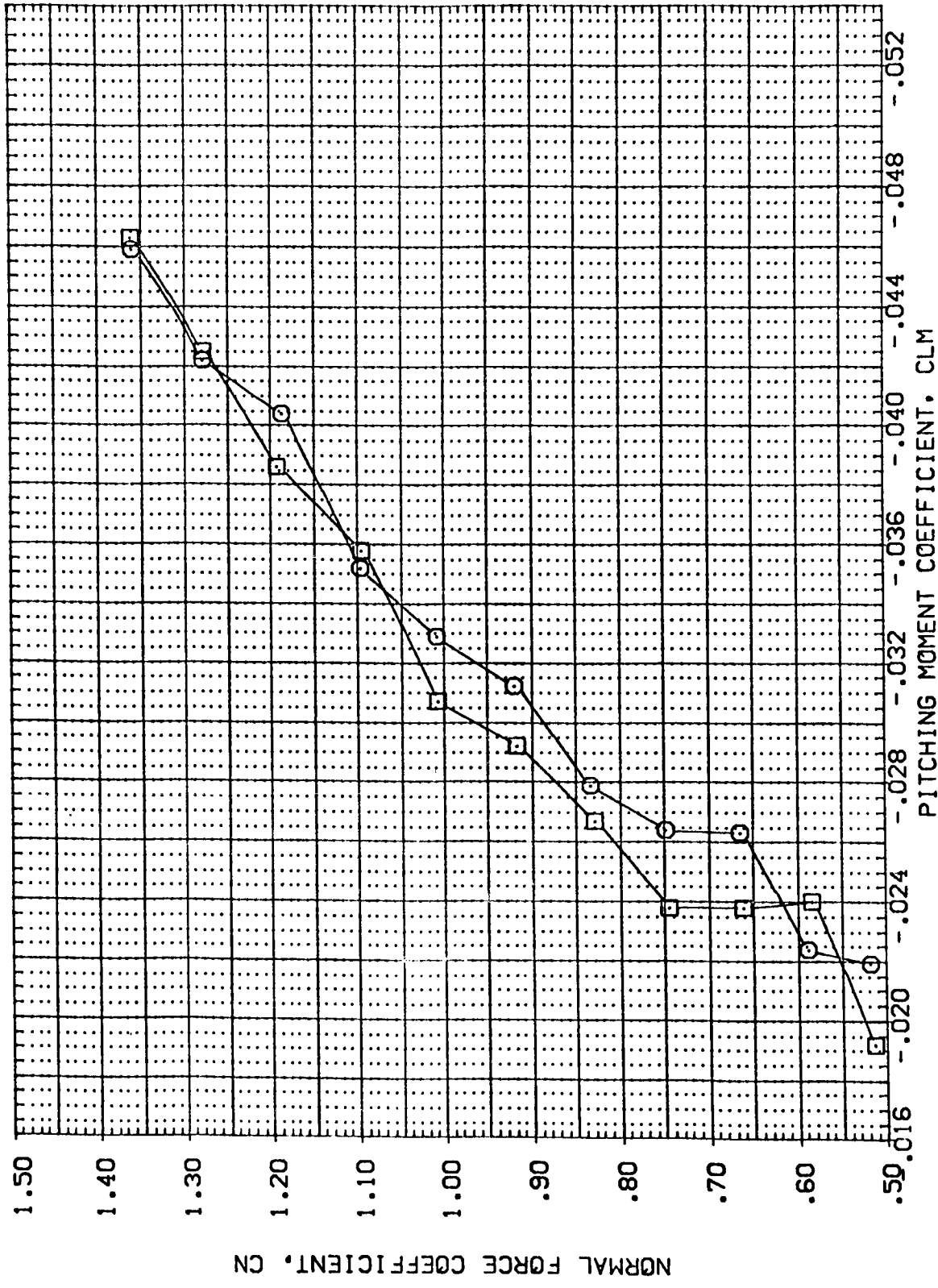


FIG. 19 EFFECT OF SPOILERS ON ORBITER 139

(B)MACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87065) MSFC 574(0A18) ORB 139
 (F87112) MSFC 574(0A18) ORB 139 Z1

BETA ELEVTR SPOSRK BOFLAP
 .000 -40.000 999.990 -14.250
 .000 -40.000 999.990 -14.250

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 474.8000 IN.
 BREF 935.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

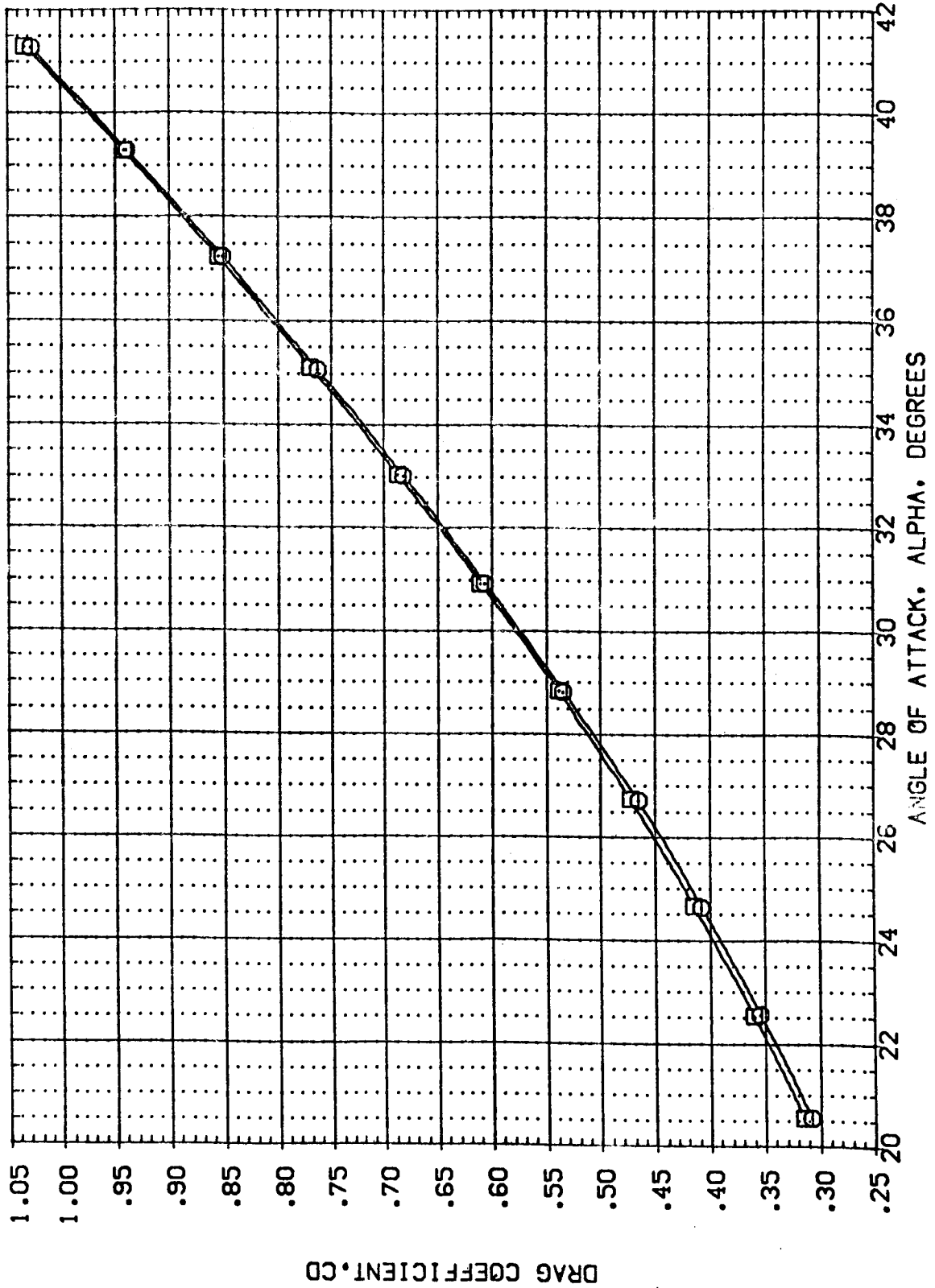


FIG. 19 EFFECT OF SPOILERS ON ORBITER 139

(A)MACH = 2.99

DATA SET SYMBOL (F87065) (F87112) CONFIGURATION DESCRIPTION MSFC 574(0A48) ORB 139 MSFC 574(0A48) ORB 139 Z1

BETA .000 ELEVTR -40.000 SPOBRK 999.990 BOFLAP -14.250
 .000 -40.000 999.990 -14.250

REFERENCE INFORMATION SREF 2690.0000 SQ.FT.
 LREF 474.8000 IN.
 XMRP 936.7000 IN.
 YMRP 838.7000 IN.
 ZMRP .0000 IN.
 SCALE .0040

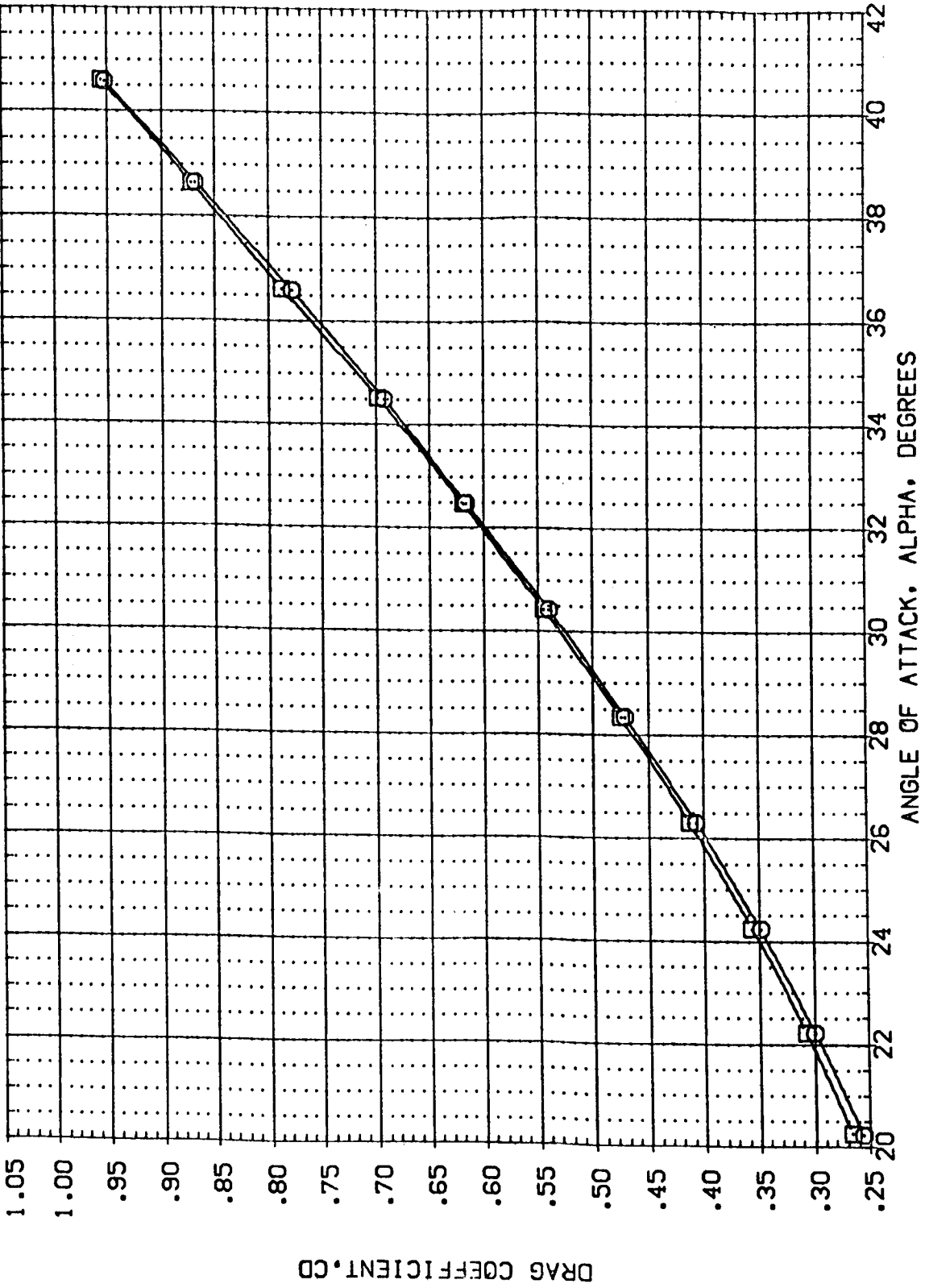


FIG. 19 EFFECT OF SPOILERS ON ORBITER 139

(B)MACH = 4.96

DATA SET SYMBOL
 (FB7065) □
 (-FB7112) □

BETA ELEVTR SPOBRK BOFLAP
 .000 -40.000 999.990 -14.250
 .000 -40.000 999.990 -14.250

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

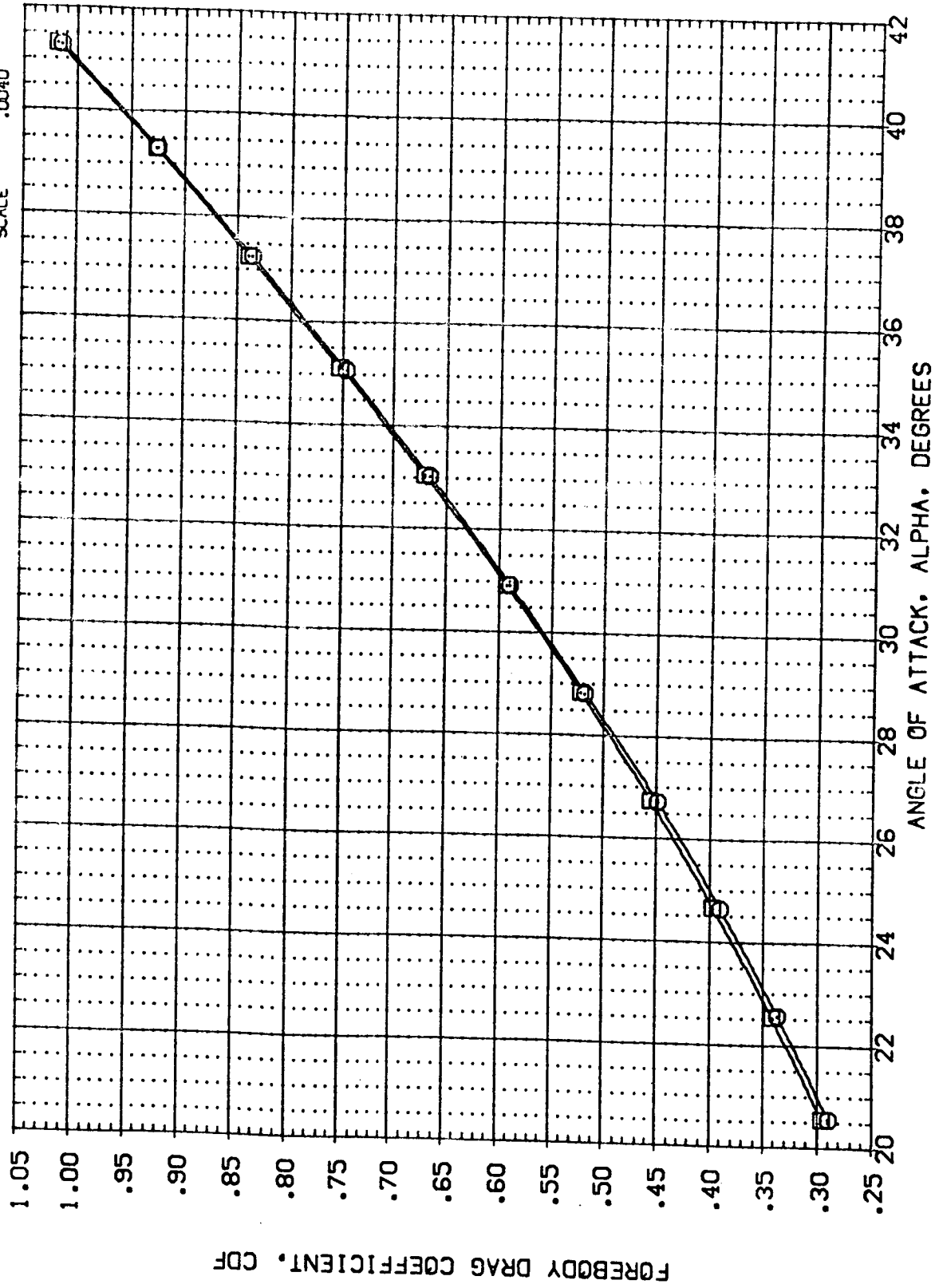


FIG. 19 EFFECT OF SPOILERS ON ORBITER 139

(A)MACH = 2.99

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87065) MSFC 574(0A18) ORB 139
 (F87112) MSFC 574(0A18) ORB 139 Z1

BETA
 .000
 .000
 .000

ELEVTR
 -40.000
 -40.000
 -40.000

SPOBRK
 999.990
 999.990
 999.990

BOFLAP
 -14.250
 -14.250
 -14.250

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

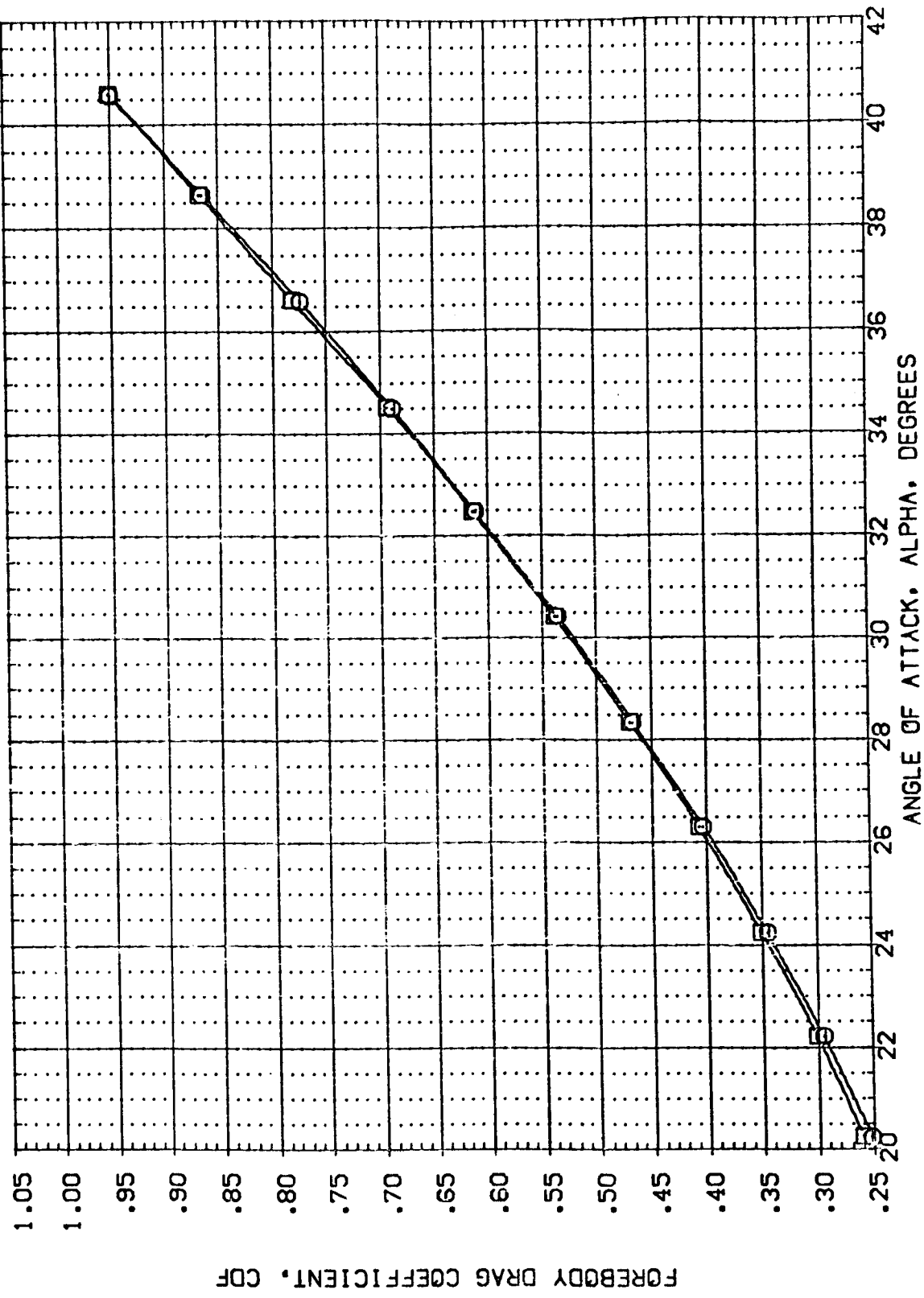


FIG. 19 EFFECT OF SPOILERS ON ORBITER 139

(B)MACH = 4.96

DATA SET SYMBOL: (F87065) (F87112)

CONFIGURATION DESCRIPTION: MSFC 574(OA48) ORB 139 MSFC 574(OA48) ORB 139 Z1

BETA: .000, .008

ELEVTR: -40.000, -40.000

SPOBRK: 999.990, 999.990

BOFLAP: -14.250, -14.250

REFERENCE INFORMATION:

SREF: 2690.0000 SQ.FT.

LREF: 474.8000 IN.

BREF: 936.7000 IN.

XMRP: 838.7000 IN.

YMRP: .0000 IN.

ZMRP: .0000 IN.

SCALE: .0040

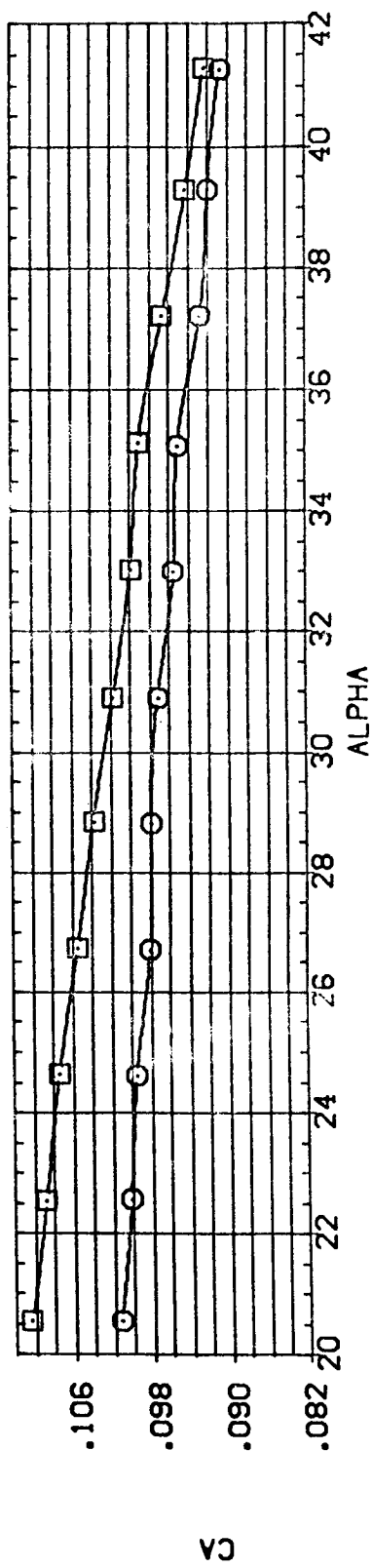
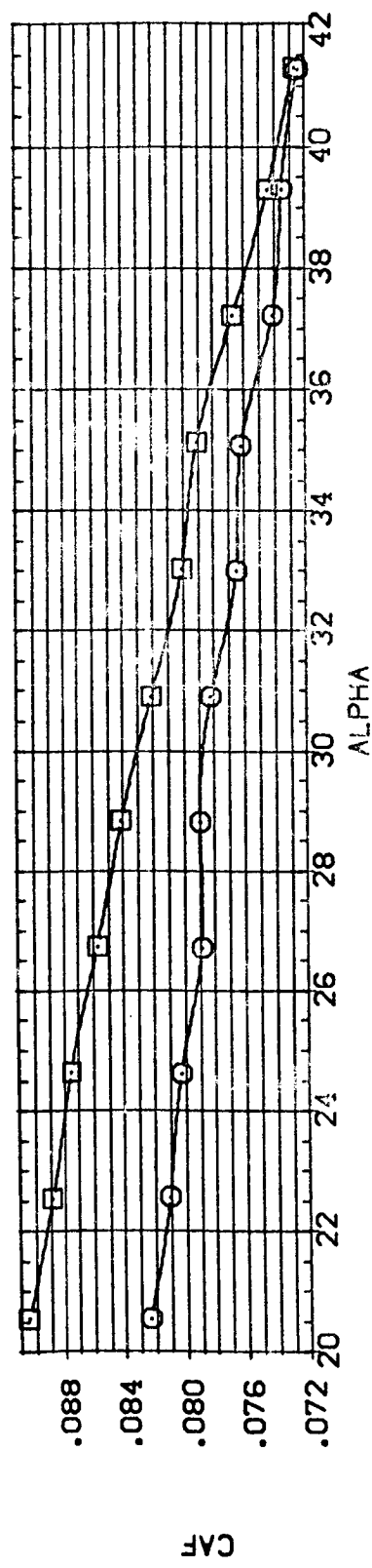
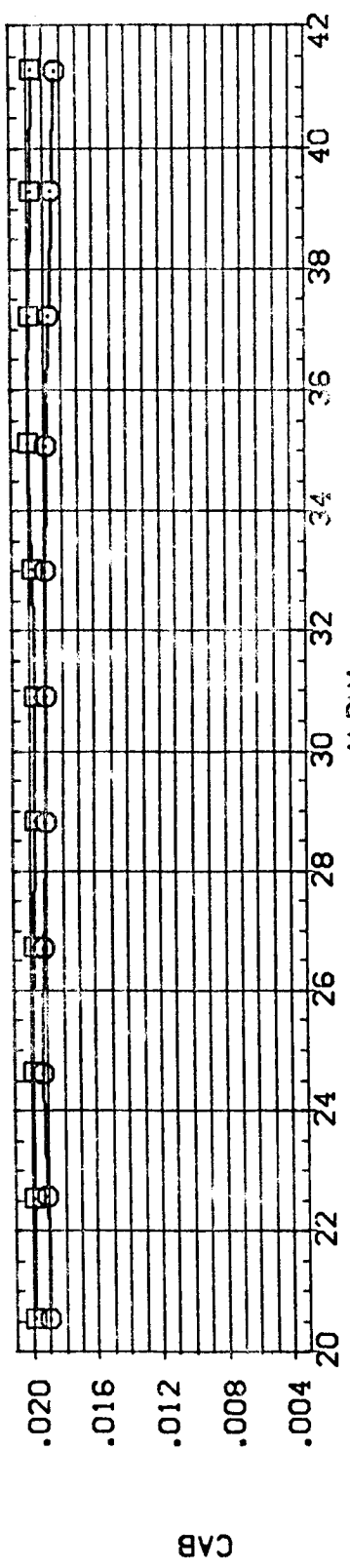


FIG. 19 EFFECT OF SPOILERS ON ORBITER 139

(A)MACH = 2.99

DATA SET SYMBOL (F87065) (F87112)

BETA .000 .000

REFERENCE INFORMATION SREF 2690.0000 LREF 474.8000 BREF 936.7000 YMRP 838.7000 ZMRP .0000 SCALE .0040

CONFIGURATION DESCRIPTION MSFC 574(0A48) ORB 139 MSFC 574(0A48) ORB 139 Z1

ELEVTR SPOBRK BDFLAP -40.000 999.990 -14.250 -40.000 999.990 -14.250

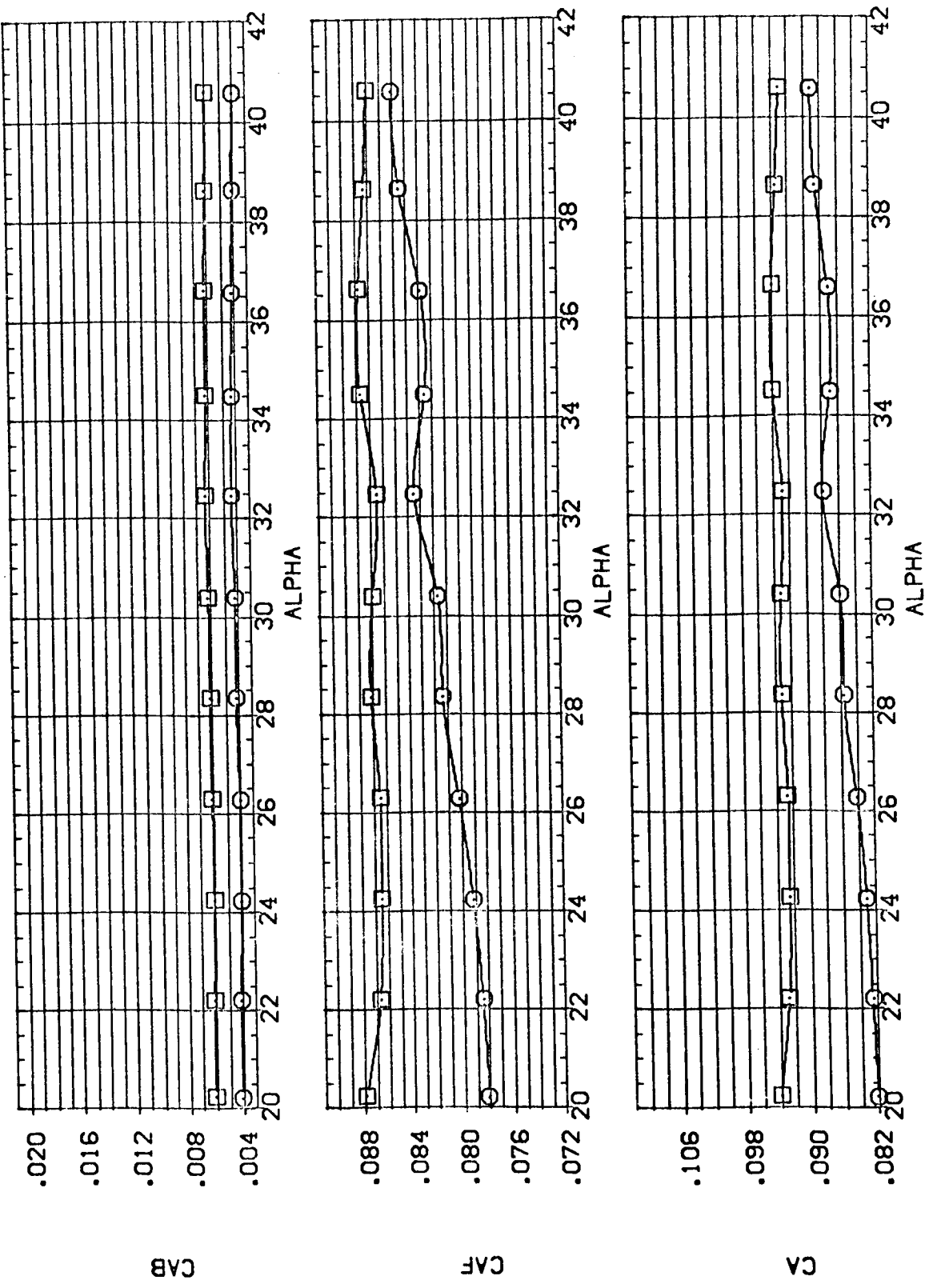


FIG. 19 EFFECT OF SPOILERS ON ORBITER 139

(B)MACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87065) MSFC 574(0A48) ORB 139
 (F87112) MSFC 574(0A48) ORB 139 Z1

BETA ELEVTR SPOBRK BDFLAP
 .000 -40.000 999.990 -14.250
 .000 -40.000 999.990 -14.250

REFERENCE INFORMATION SQ.FT.
 SREF 2690.0000
 LREF 474.6000 IN.
 BREF 536.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

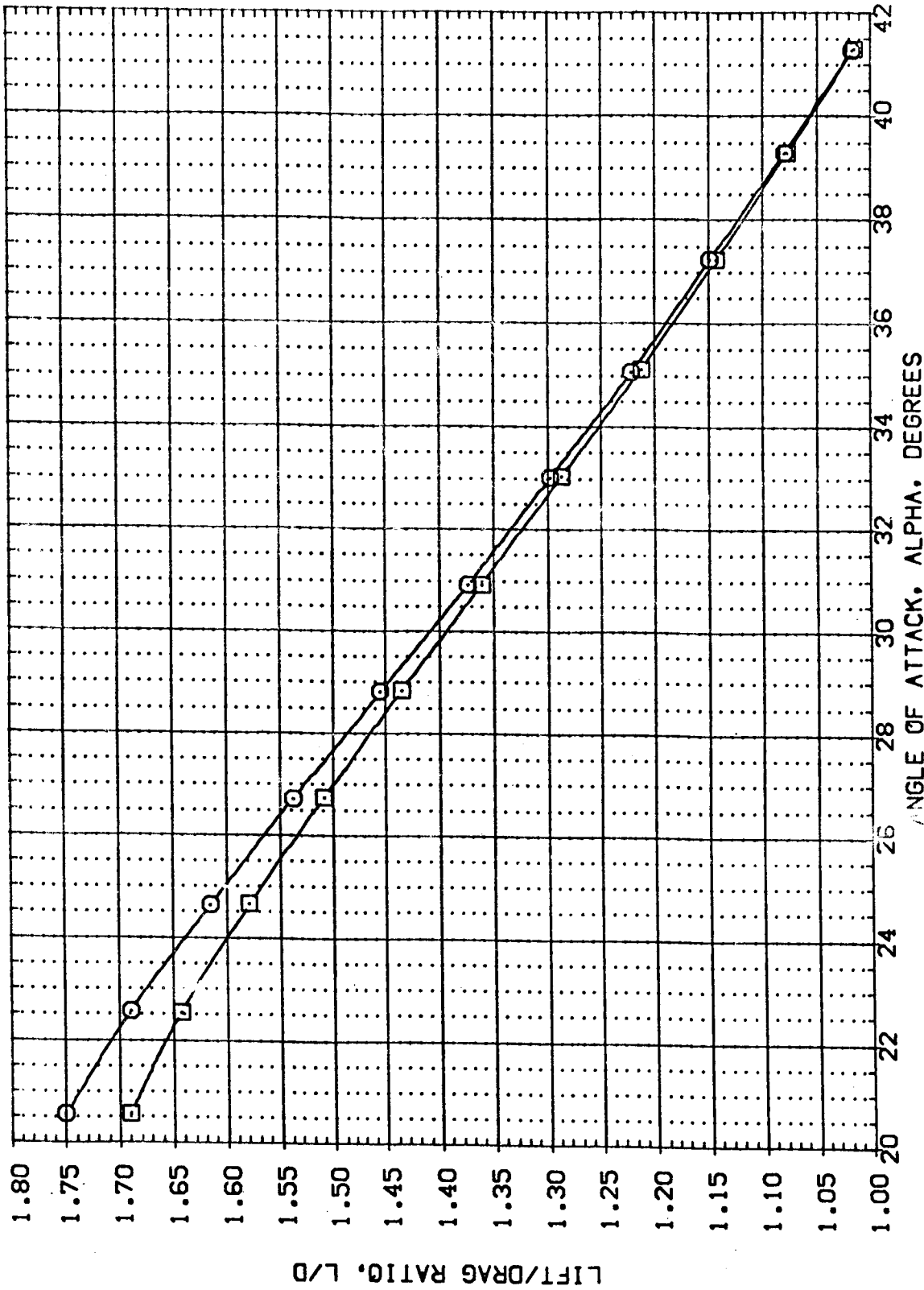


FIG. 19 EFFECT OF SPOILERS ON ORBITER 139

(A)MACH = 2.99

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87065) MSFC 574(0A48) ORB 139
 (F87112) MSFC 574(0A48) ORB 139 Z1

BETA ELEVTR SPOBRK BOFLAP
 .000 -40.000 999.990 -14.250
 .000 -40.000 999.990 -14.250

REFERENCE INFORMATION
 SREF 2690.0000 59.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

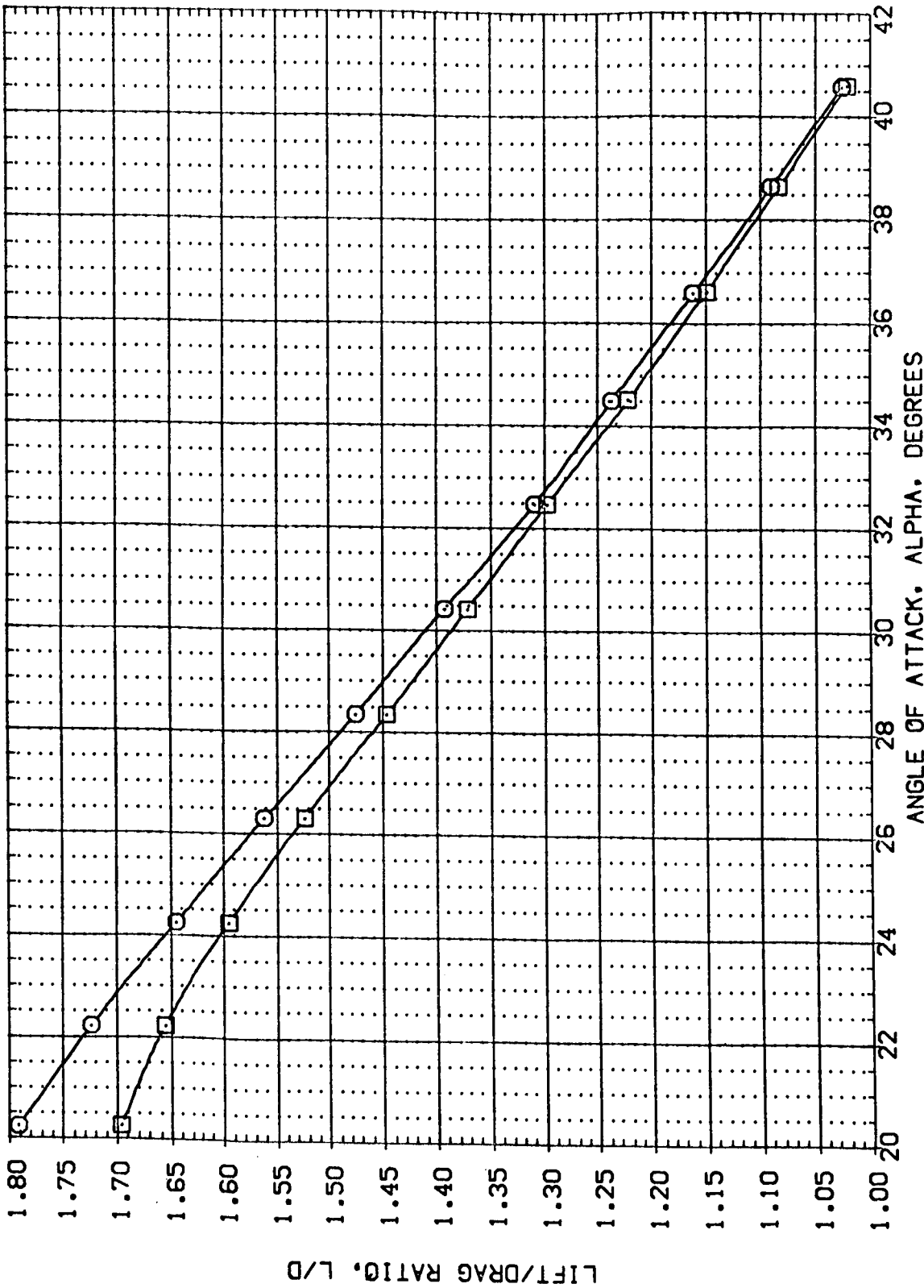


FIG. 19 EFFECT OF SPOILERS ON ORBITER 139

(B)MACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87065) MSFC 574(OA48) ORB 139
 (F87112) MSFC 574(OA48) ORB 139 Z1

BETA ELEVTR SPOBRK BOFLAP REFERENCE INFORMATION
 .000 -40.000 999.990 -14.250 SREF 2690.0000 SQ.FT.
 .000 -40.000 999.990 -14.250 LREF 474.8000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

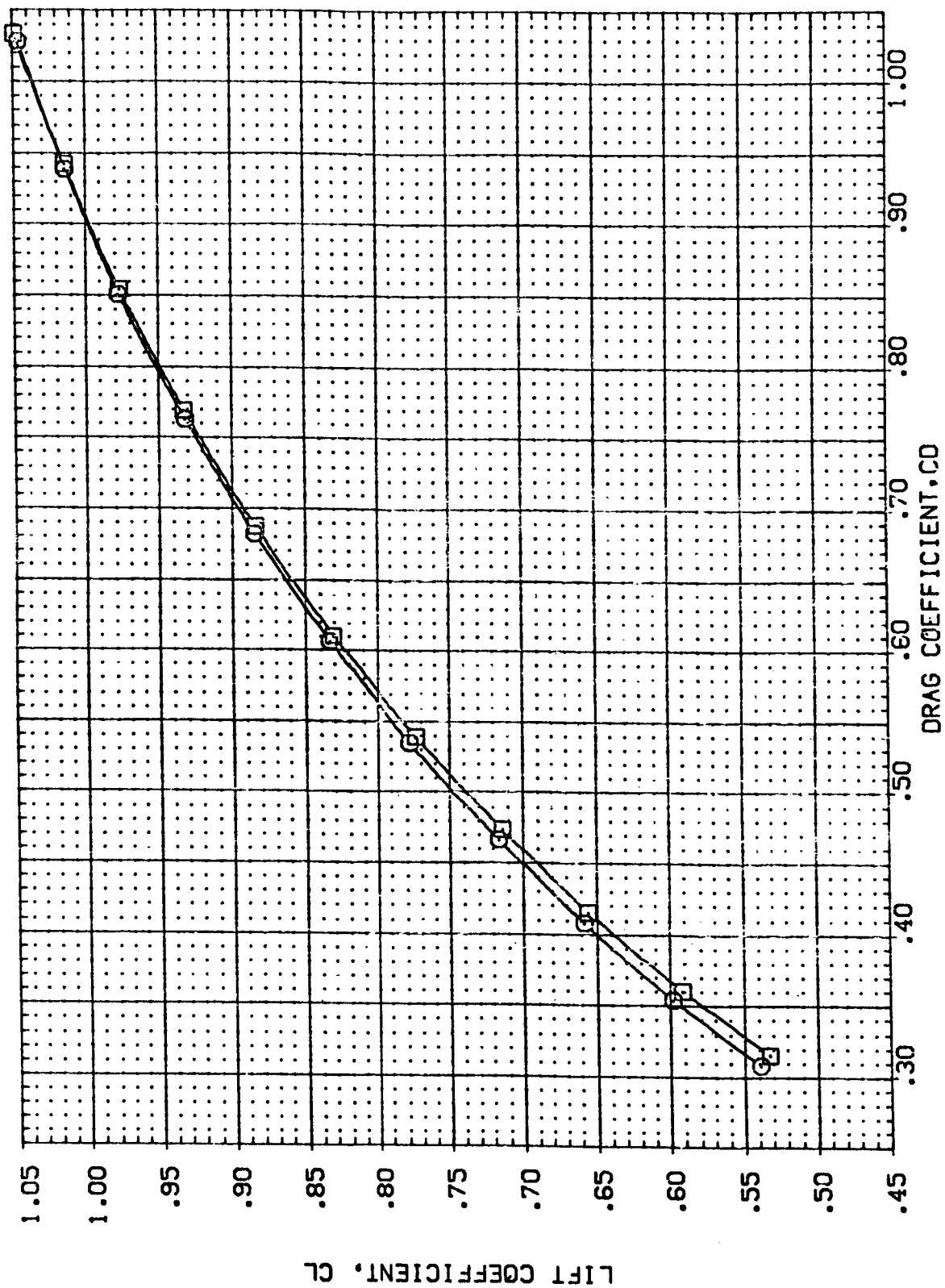


FIG. 19 EFFECT OF SPOILERS ON ORBITER 139

(A)MACH = 2.99

DATA SET SYMBOL (F87065) (F87112)
 CONFIGURATION DESCRIPTION (MSFC 574(OA48) ORB 139) (MSFC 574(OA48) ORB 139 Z1)

BETA .000 .000
 ELEVTR -40.000 -40.000
 SPOBRK 999.990 999.990
 BOFLAP -14.250 -14.250

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

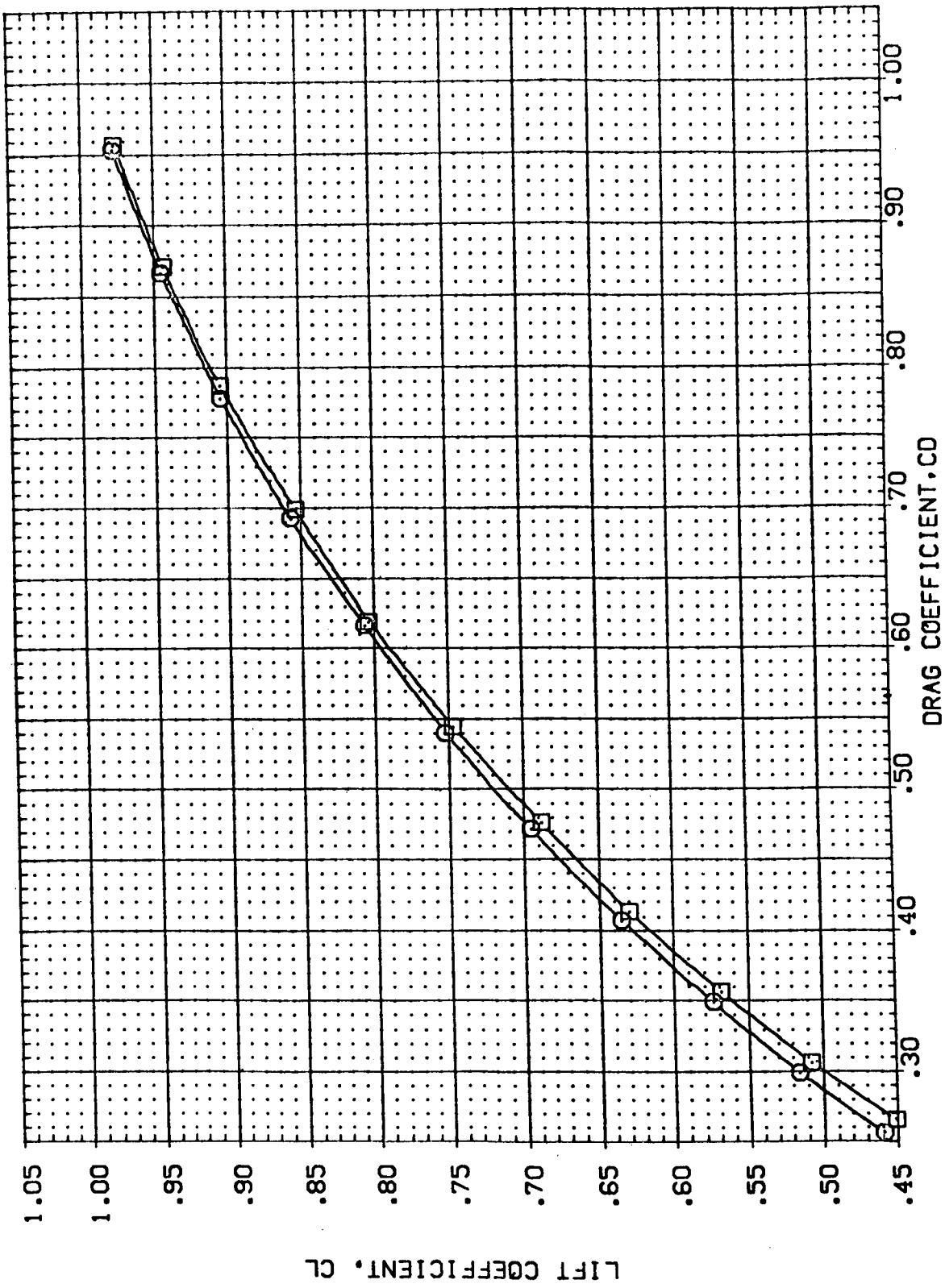


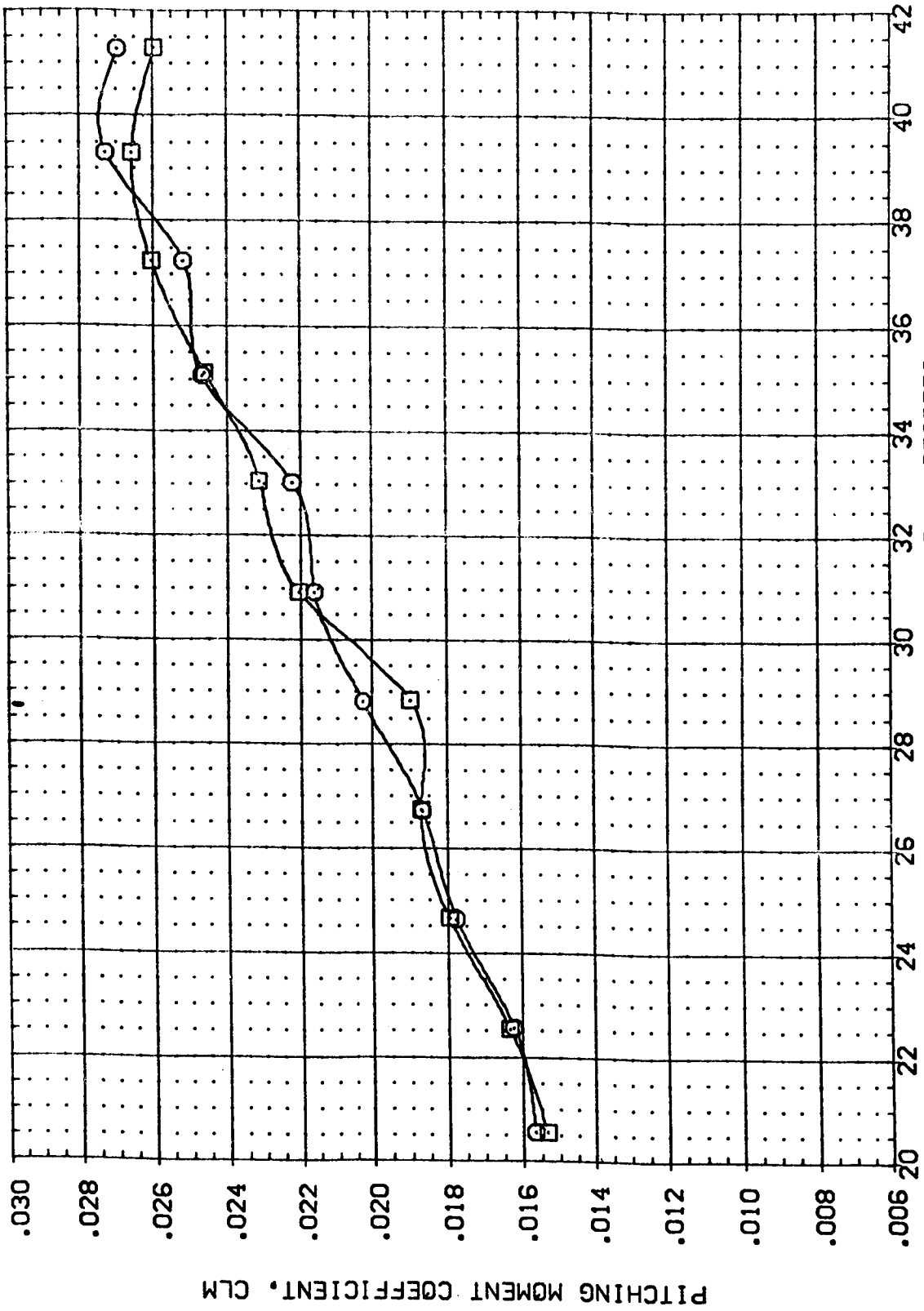
FIG. 19 EFFECT OF SPOILERS ON ORBITER 139

(B)MACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (G87065) □ MSFC 574(OA48) ORB 139
 (G87112) □ MSFC 574(OA48) ORB 139 Z1

BETA ELEVTR SPOBRK BOFLAP
 .000 -10.000 999.990 -14.250
 .000 -40.000 999.990 -14.250

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 854.5000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040



ANGLE OF ATTACK, ALPHA, DEGREES

FIG. 19 EFFECT OF SPOILERS ON ORBITER 139 (AFT C.G.)

(M)MACH = 2.99

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (G87065) MSFC 574(0A48) ORB 139
 (G87112) MSFC 574(0A48) ORB 139 Z1

BETA ELEVTR SPOBRK BOFLAP
 .000 -40.000 999.990 -14.250
 .000 -40.000 999.990 -14.250

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 864.5000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

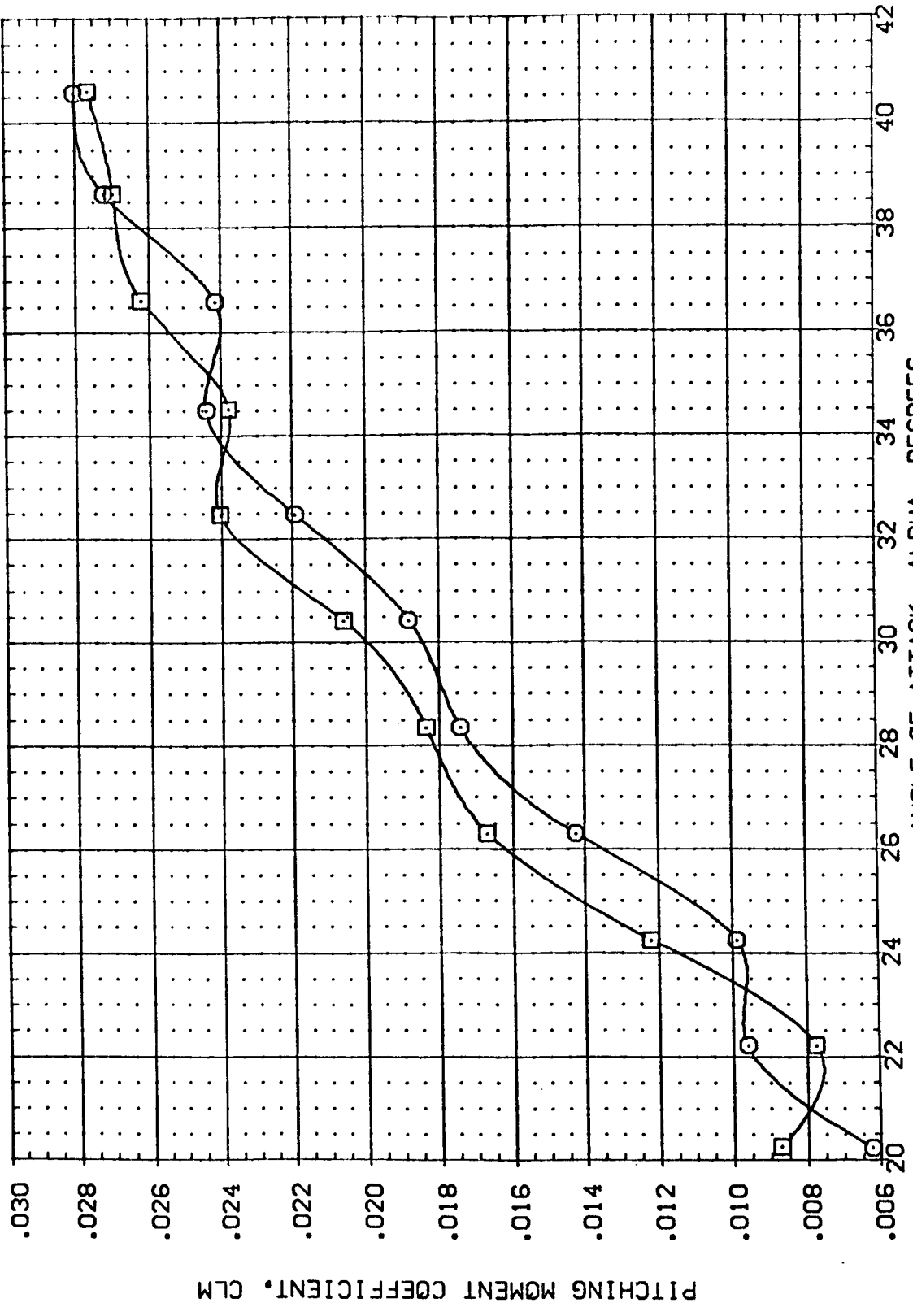


FIG. 19 EFFECT OF SPOILERS ON ORBITER 139 (AFT C.G.)

(B)MACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87001) MSFC 574(CA48) ORB 1398
 (F87002) MSFC 574(CA48) ORB 1398
 (F87006) MSFC 574(CA48) ORB 1398
 (F87007) MSFC 574(CA48) ORB 1398

BETA ELEVTR SPOBRK BLADPT
 .000 .000 999.990 2.000
 .000 .000 999.990 2.000
 .000 .000 999.990 113.000
 .000 .000 999.990 113.000

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

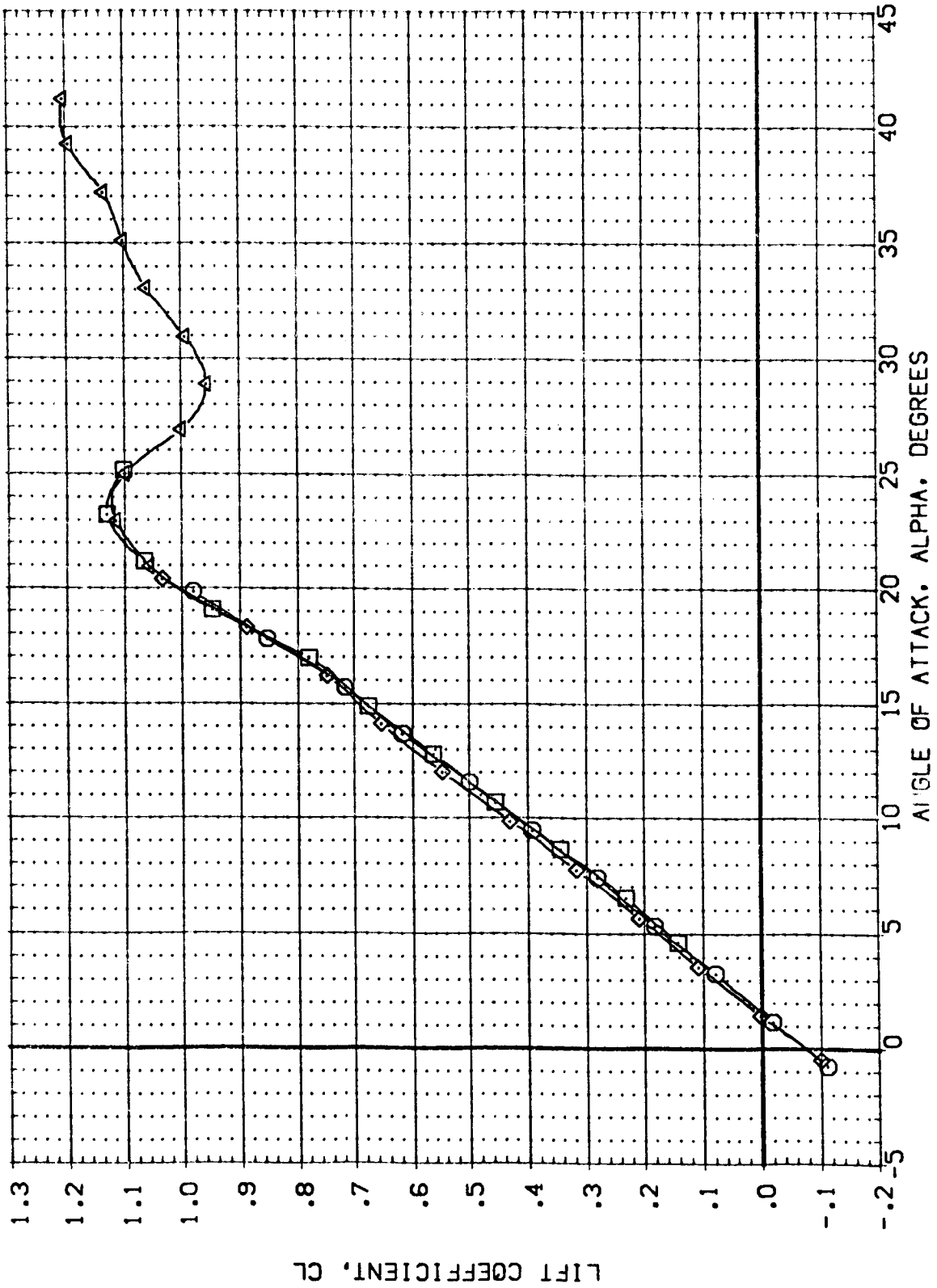


FIG. 20 EFFECT OF BALANCE ADAPTER AND OFFSET

(A)MACH = .60

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87001) MSFC 574(OA48) ORB 139B
 (F87002) MSFC 574(OA48) ORB 139B
 (F87006) MSFC 574(OA48) ORB 139B
 (F87007) MSFC 574(OA48) ORB 139B

BETA ELEVTR SPOBRK BLADPT
 .000 .000 999.990 2.000
 .000 .000 999.990 2.000
 .000 .000 999.990 113.000
 .000 .000 999.990 113.000

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

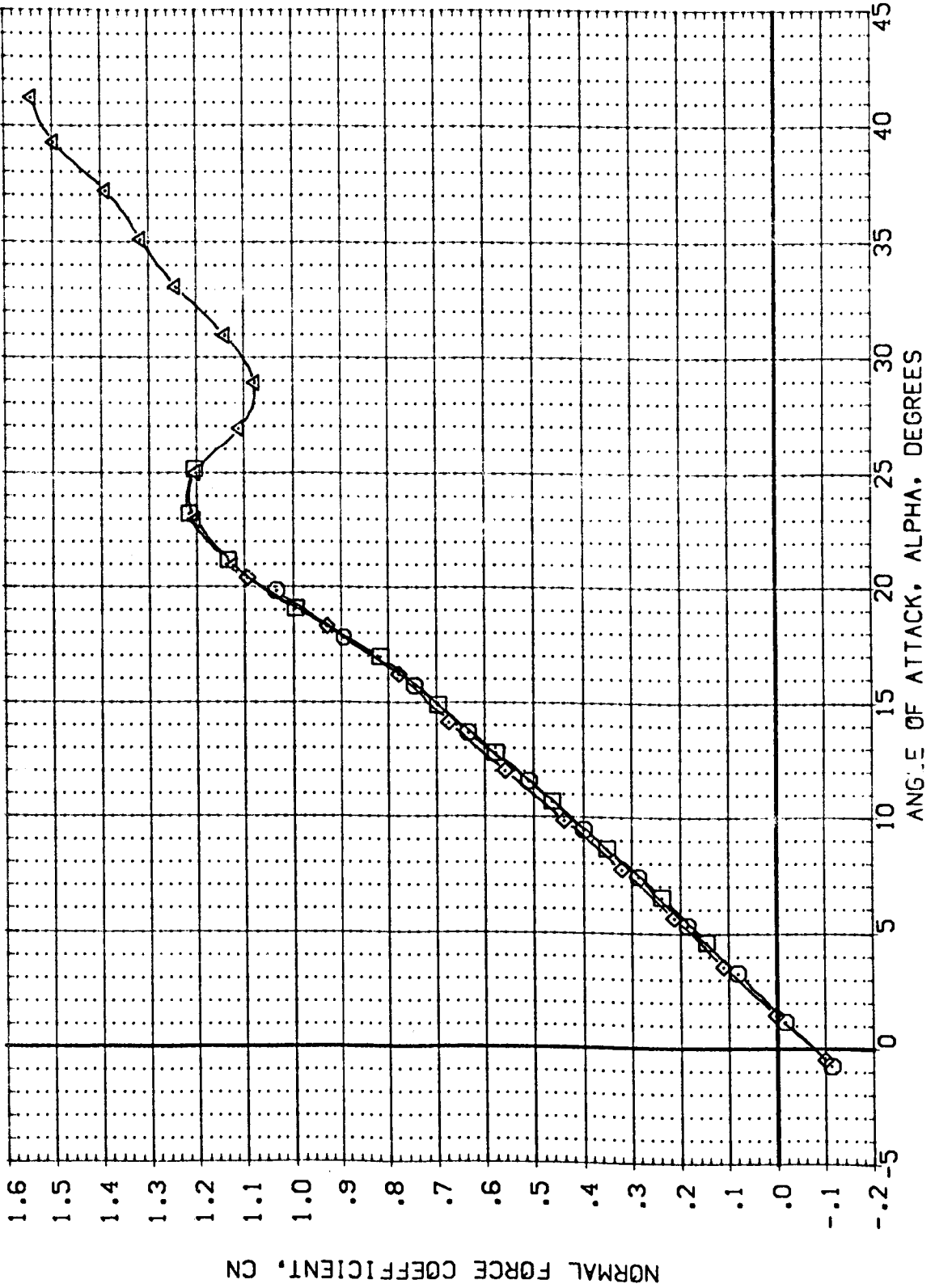


FIG. 20 EFFECT OF BALANCE ADAPTER AND OFFSET

(M)MACH = .60

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87001) MSFC 574(CA48) ORB 1398
 (F87002) MSFC 574(CA48) ORB 1399
 (F87003) MSFC 574(CA48) ORB 1398
 (F87007) MSFC 574(CA48) ORB 1399

BETA
 .000
 .000
 .000
 .000

ELEVTR SPOBRK BLADPT
 .000 999.990 2.000
 .000 999.990 2.000
 .000 999.990 113.000
 .000 999.990 113.000

REFERENCE INFORMATION
 SREF 2690.0000 50.F.
 LREF 474.8000
 BREF 936.7000
 XMRP 838.7000
 YMRP .0000
 ZMRP .0000
 SCALE .0010

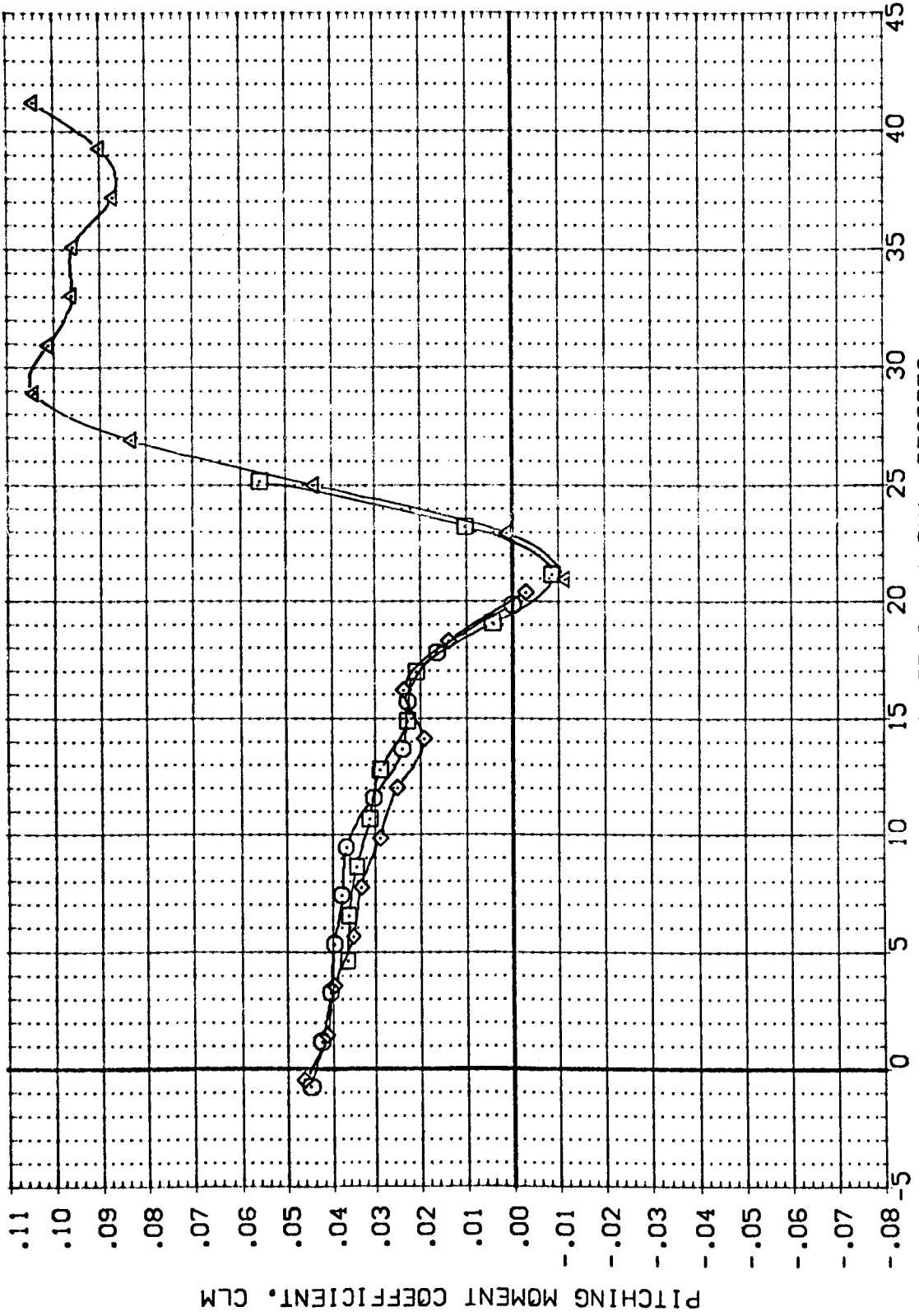


FIG. 20 EFFECT OF BALANCE ADAPTER AND OFFSET

CAJ MACH = .60

U
L
P

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BLADPT	REFERENCE INFORMATION
(F87001)	MSFC 574(OA48) CRB 1398	.000	.000	999.990	2.000	SREF 2690.0000
(F87002)	MSFC 574(OA48) CRB 1398	.000	.000	999.990	2.000	LREF 474.8000
(F87003)	MSFC 574(OA48) CRB 1398	.000	.000	999.980	113.000	BREF 936.7000
(F87007)	MSFC 574(OA48) CRB 1398	.000	.000	999.990	113.000	XMRP 838.7000
						YMRP .0000
						ZMRP .0000
						SCALE .0040

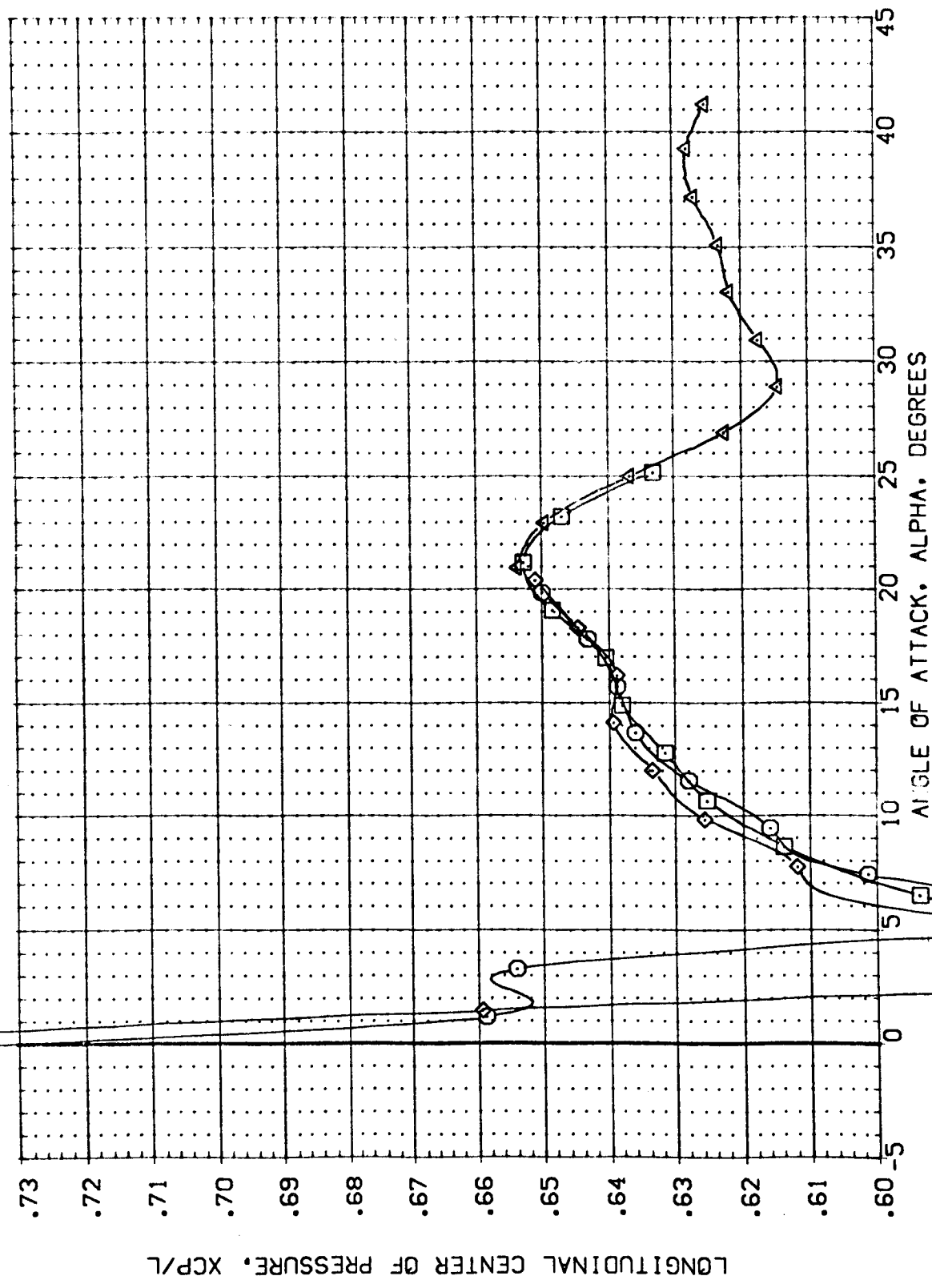


FIG. 20 EFFECT OF BALANCE ADAPTER AND OFFSET

(A)MACH = .60

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(F87001) MSFC 574(OA48) ORB 1398

(F87002) MSFC 574(OA48) ORB 1398

(F87006) MSFC 574(OA48) CRB 1398

(F87027) MSFC 574(OA48) CRB 1398

BETA .000

ELEVTR .000

SPOBRK 999.990

BLADPT 2.000

REFERENCE INFORMATION

SREF 2690.0000 SC.FT.

LREF 474.8000 IN.

BREF 936.7000 IN.

XMRP 838.7000 IN.

YMRP .0000 IN.

ZMRP .0000 IN.

SCALE .0040

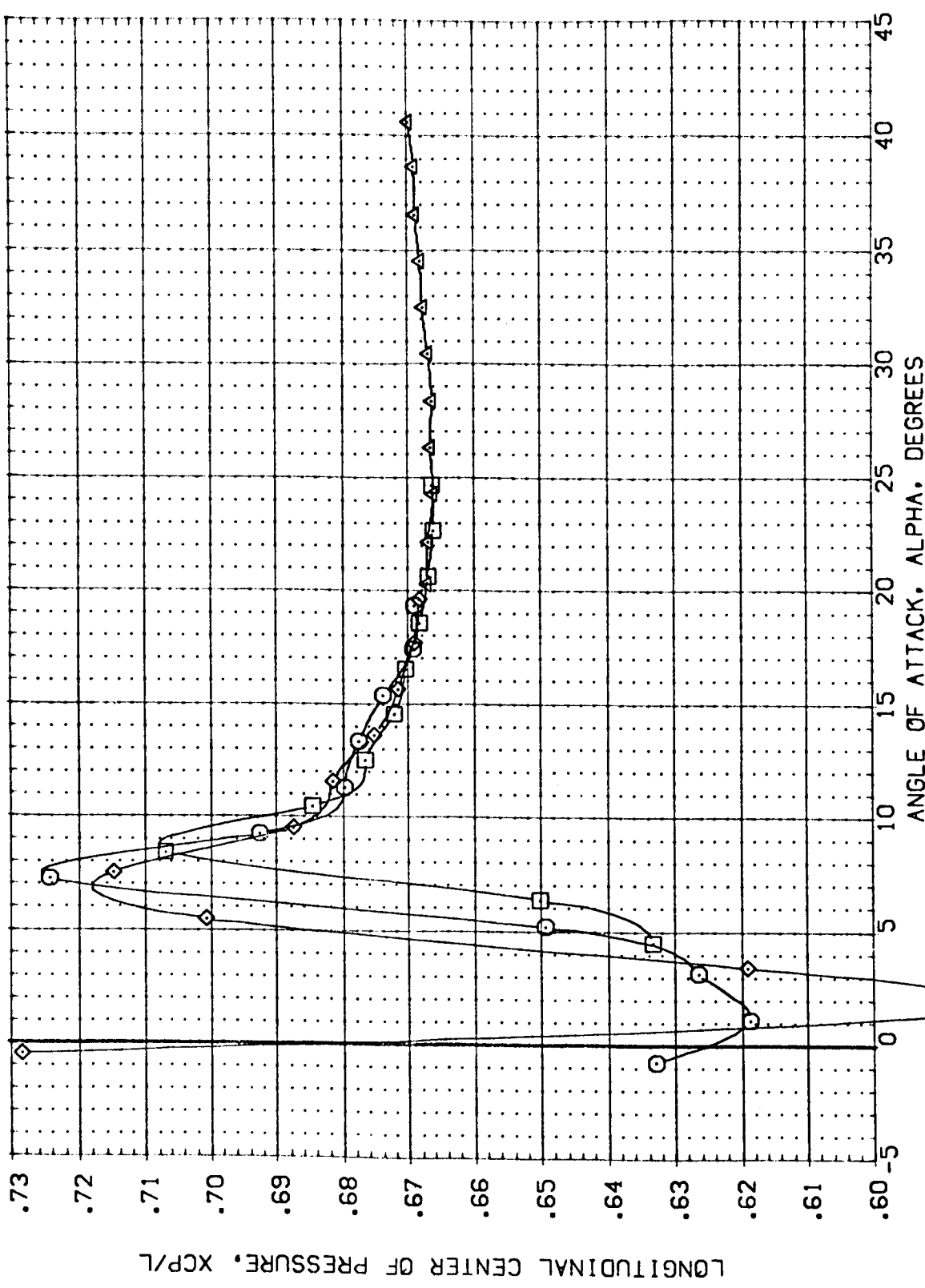


FIG. 20 EFFECT OF BALANCE ADAPTER AND OFFSET

(B)MACH = 4.96

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPDBRK	BLADPT	REFERENCE INFORMATION
(F87001)	MSFC 574(DA48) CRB 1398	.000	.000	999.990	2.000	SREF 2690.0000
(F87002)	MSFC 574(DA48) CRB 1398	.000	.000	999.990	2.000	LREF 474.8000
(F87006)	MSFC 574(DA48) CRB 1398	.000	.000	999.990	113.000	BREF 936.7000
(F87007)	MSFC 574(DA48) CRB 1398	.000	.000	999.990	113.000	XMRP 838.7000
						YMRP .0000
						ZMRP .0000
						SCALE .0040



FIG. 20 EFFECT OF BALANCE ADAPTER AND OFFSET

(A)MACH = .60

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BLADPT	REFERENCE INFORMATION
(F87001)	MSFC 574(CA48) CRB 1398	.000	.000	999.990	2.000	SREF 2690.0000 SQ.FT.
(F87002)	MSFC 574(CA48) CRB 1398	.000	.000	999.990	2.000	LREF 474.8000 IN.
(F87006)	MSFC 574(CA48) CRB 1398	.000	.000	999.990	113.000	BREF 936.7000
(F87007)	MSFC 574(CA48) CRB 1398	.000	.000	999.990	113.000	XMRP 838.7000
						YMRP .0000
						ZMRP .0000
						SCALE .0040

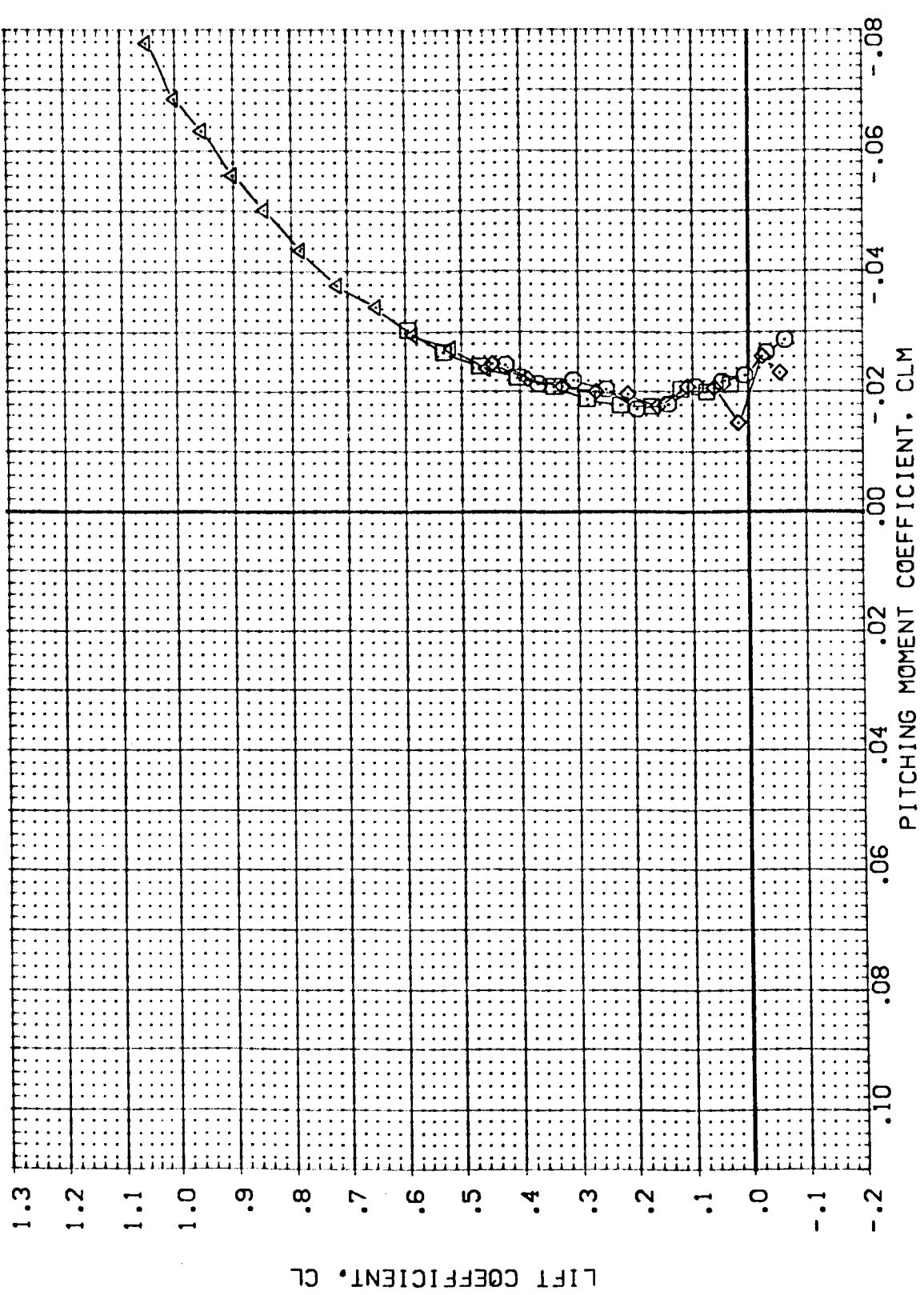


FIG. 20 EFFECT OF BALANCE ADAPTER AND OFFSET

(B)MACH = 4.96



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BLADPT	REFERENCE INFORMATION
(F87001)	MSEC 574(0A48) CRB 398	.000	.000	999.990	2.000	SREF 2690.0000
(F87002)	MSEC 574(0A48) CRB 398	.000	.000	999.990	2.000	LREF 474.8000
(F87006)	MSEC 574(0A48) CRB 399	.000	.000	999.990	113.000	BREF 936.7000
(F87007)	MSEC 574(0A48) CRB 399	.000	.000	999.990	113.000	XMRP 836.7000
						YMRP .0000
						ZMRP .0000
						SCALE .0040

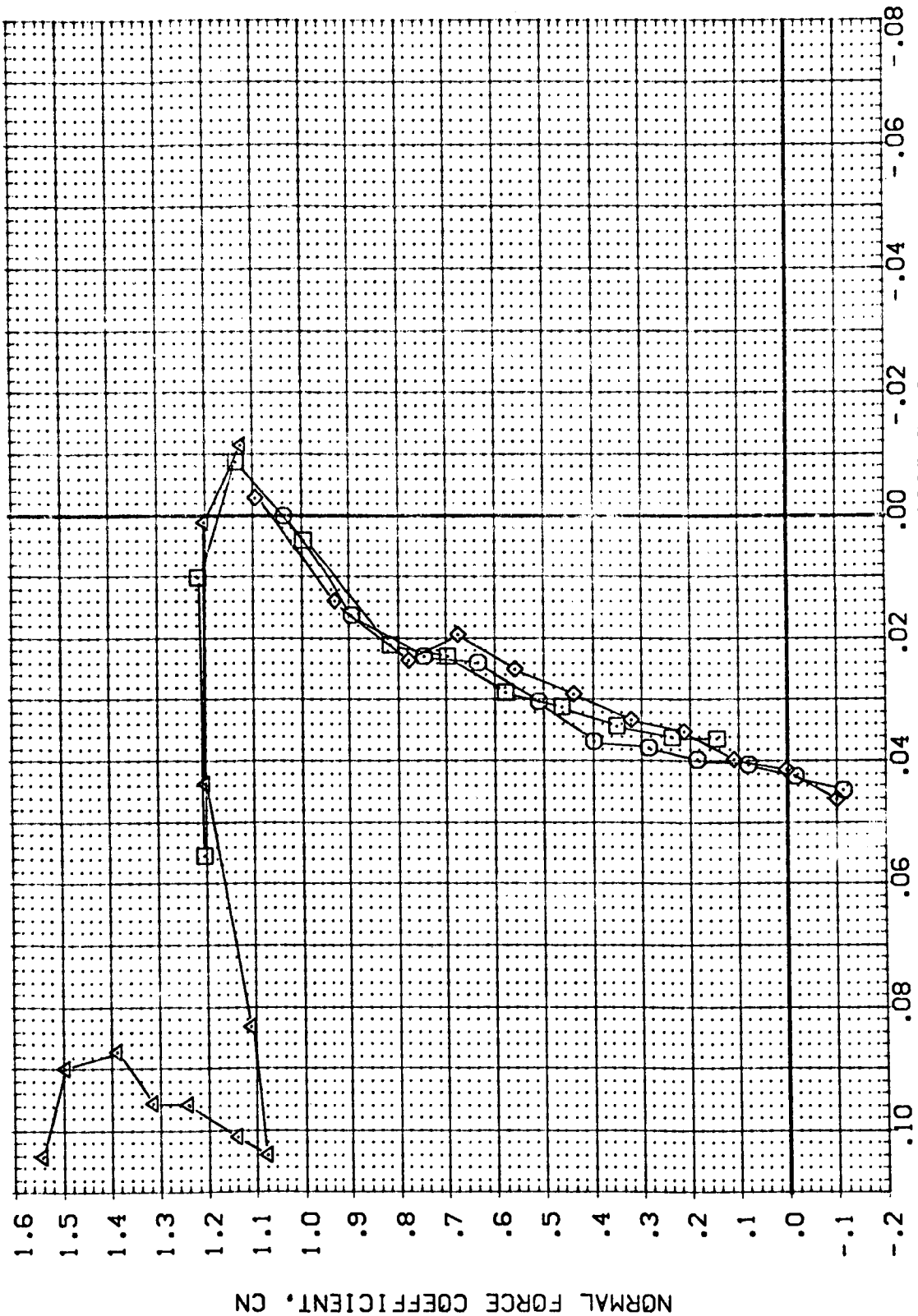


FIG. 20 EFFECT OF BALANCE ADAPTER AND OFFSET

(A)MACH = .60

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87001) MSFC 574(CA48) CRB 1398
 (F87002) MSFC 574(CA48) C+8 1398
 (F87006) MSFC 574(CA48) CRB 1398
 (F87007) MSFC 574(CA48) CRB 1398

BETA ELEVTR SPOBRK BLADPT
 .000 .000 999.990 2.000
 .000 .000 999.990 2.000
 .000 .000 999.990 113.000
 .000 .000 999.990 113.000

REFERENCE INFORMATION
 SREF 2690.0000 50.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

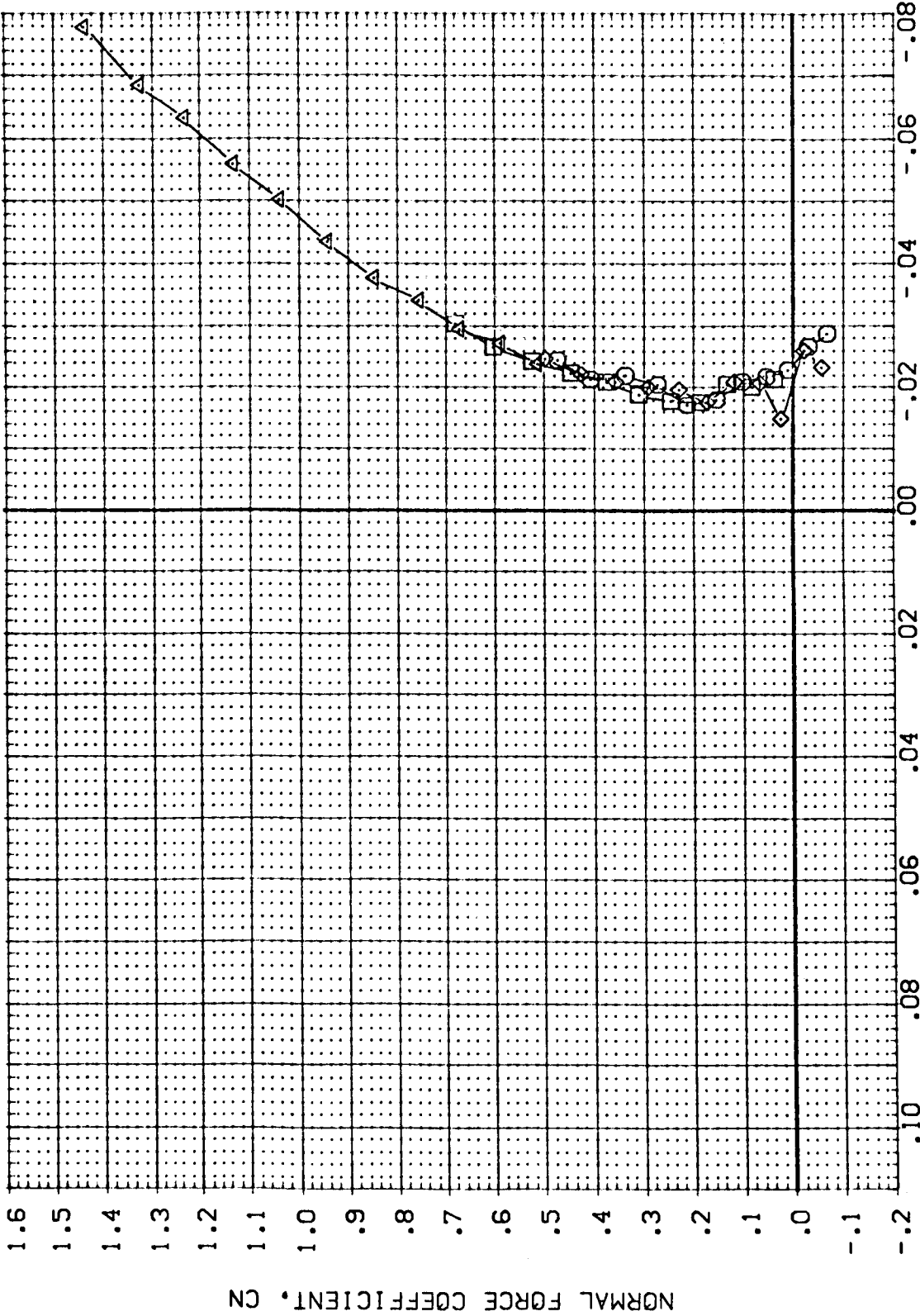


FIG. 20 EFFECT OF BALANCE ADAPTER AND OFFSET

(B)MACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(F87001)	MSFC 574(CA18)	CRB 1399
(F87002)	MSFC 574(CA18)	CRB 1399
(F87006)	MSFC 574(CA18)	CRB 1399
(F87007)	MSFC 574(CA18)	CRB 1399

BETA .000
 .000
 .000
 .000

ELEVTR .000
 .000
 .000
 .000

SPOBRK 999.990
 999.990
 999.990
 999.990

BLADPT 2.000
 2.000
 113.000
 113.000

REFERENCE INFORMATION SQ.FT.

SREF	2690.0000
LREF	474.8000
BREF	936.7000
XMRP	838.7000
ZMRP	.0000
SCALE	.0040

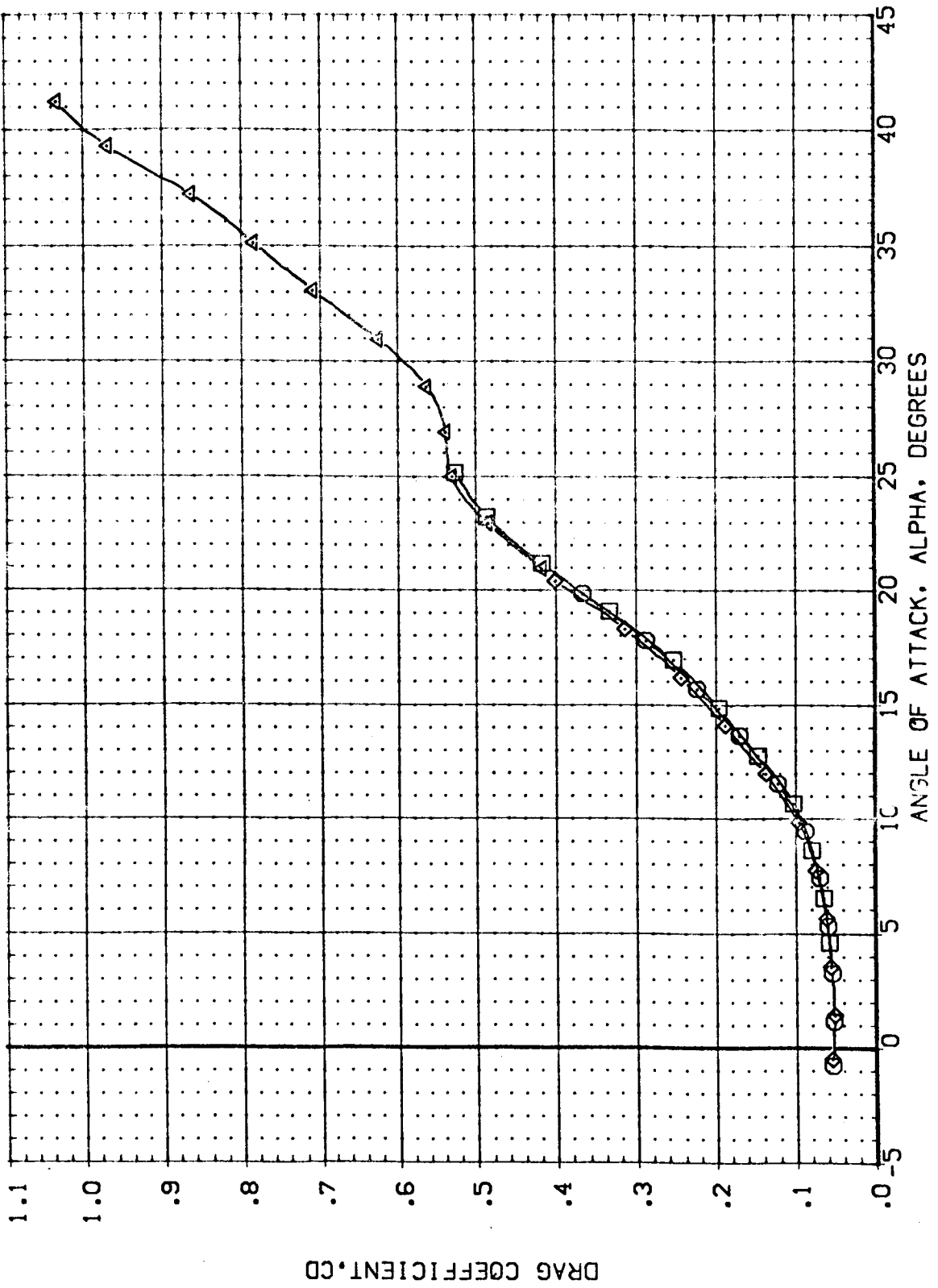


FIG. 20 EFFECT OF BALANCE ADAPTER AND OFFSET

(A)MACH = .60

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F87001) MSFC 574(CA48) CR8 1398
 (F87002) MSFC 574(CA48) CR8 1398
 (F87006) MSFC 574(CA48) CR8 1398
 (F87007) MSFC 574(CA48) CR8 1398

BETA .000
 ELEVTR .000
 SPOBRK 999.990
 BLADPT 2.000
 REFERENCE INFORMATION
 SREF 2690.0000
 LREF 474.8000
 BREF 936.7000
 XMRP 838.7000
 YMRP .0000
 ZMRP .0000
 SCALE .0040

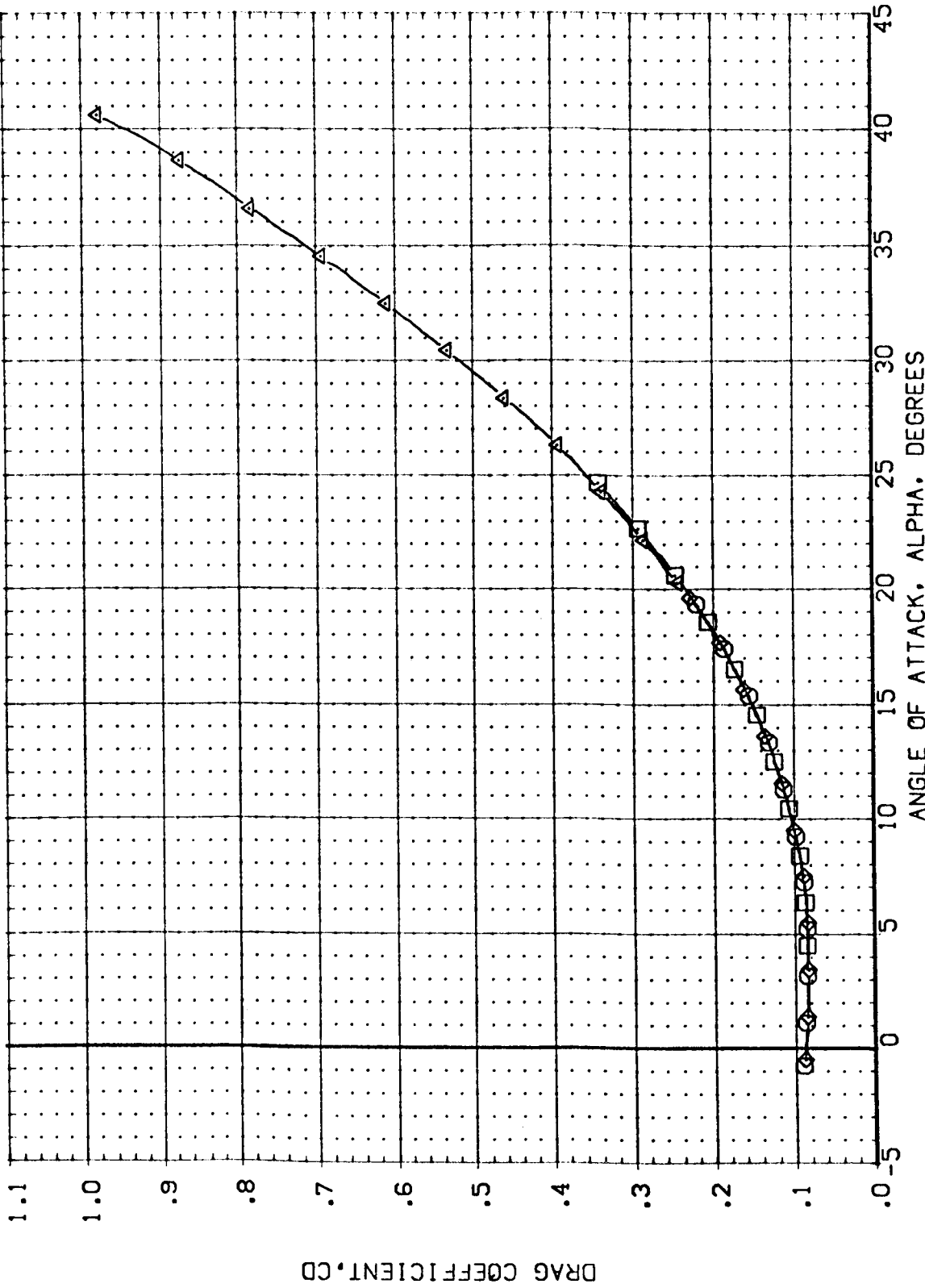


FIG. 20 EFFECT OF BALANCE ADAPTER AND OFFSET

(M)MACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(F87001) ○ MSFC 574(CA48) CRB 139B

(F87002) ○ MSFC 574(CA48) CRB 139B

(F87006) ○ MSFC 574(CA48) CRB 139B

(F87007) ○ MSFC 574(CA48) CRB 139B

BETA ELEVTR SPOSRK BLADPT REFERENCE INFORMATION

.000 .000 999.990 2.000 SREF 2690.0000 SQ.FT.

.000 .000 999.990 2.000 LREF 474.8000 IN.

.000 .000 999.990 113.000 BREF 936.7000 IN.

.000 .000 999.990 113.000 XMRP 838.7000 IN.

.000 .000 .000 .000 YMRP .0000 IN.

.000 .000 .000 .000 ZMRP .0000 IN.

SCALE .0040

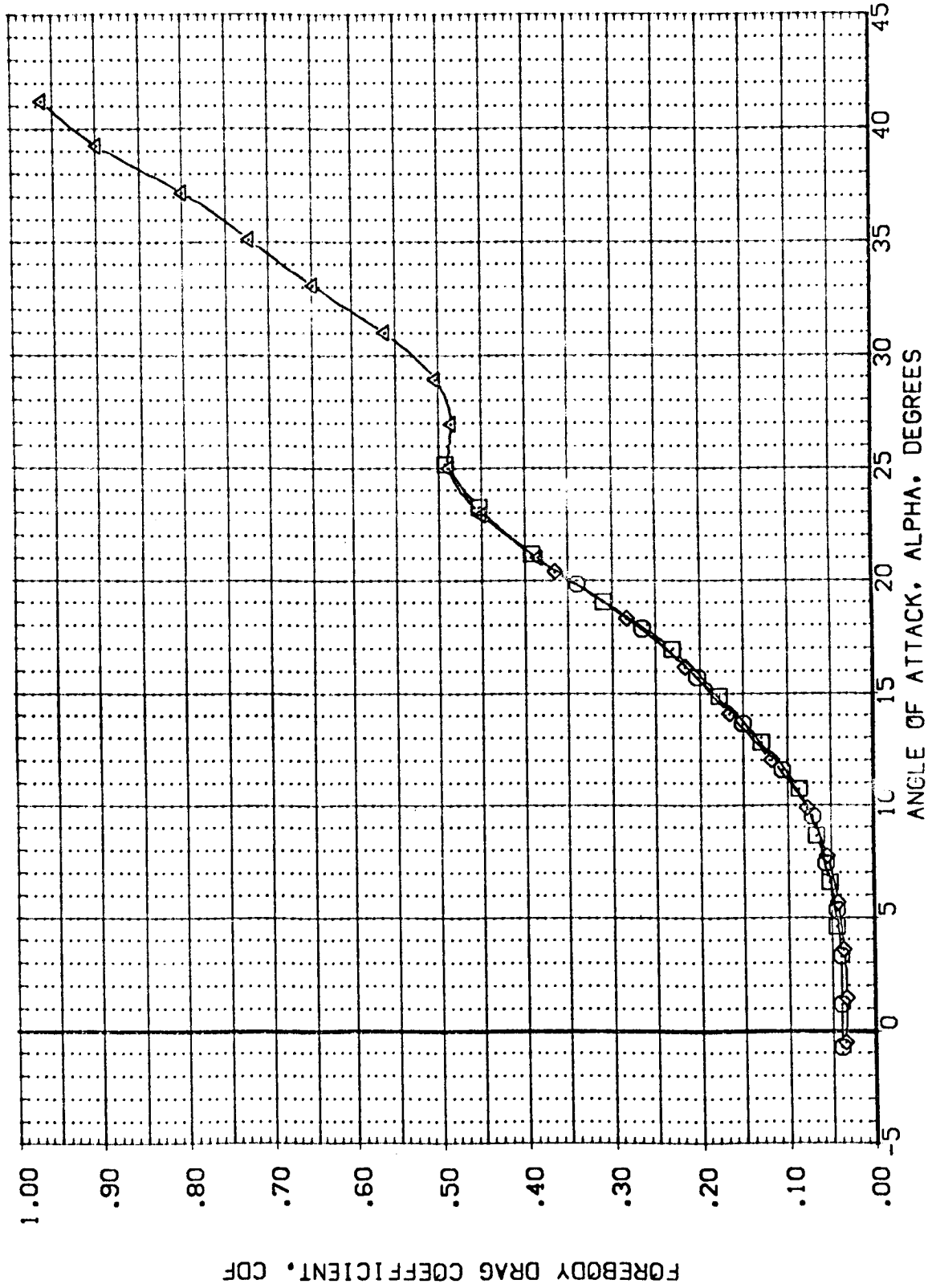


FIG. 20 EFFECT OF BALANCE ADAPTER AND OFFSET

(A)MACH = .60

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(F87001)	MSFC 574 (CA48) CR8 1398
(F87002)	MSFC 574 (CA48) CR8 1398
(F87006)	MSFC 574 (CA48) CR8 1398
(F87007)	MSFC 574 (CA48) CR8 1398

BETA ELEVTR SPOBRK BLADPT REFERENCE INFORMATION

.000	.000	999.990	2.000	SREF	2690.0000	50.F.T.
.000	.000	999.990	2.000	LREF	474.8000	
.000	.000	999.980	113.000	BREF	936.7000	
.000	.000	999.990	113.000	XMRP	838.7000	
				YMRP	.0000	
				ZMRP	.0000	
				SCALE	.0040	

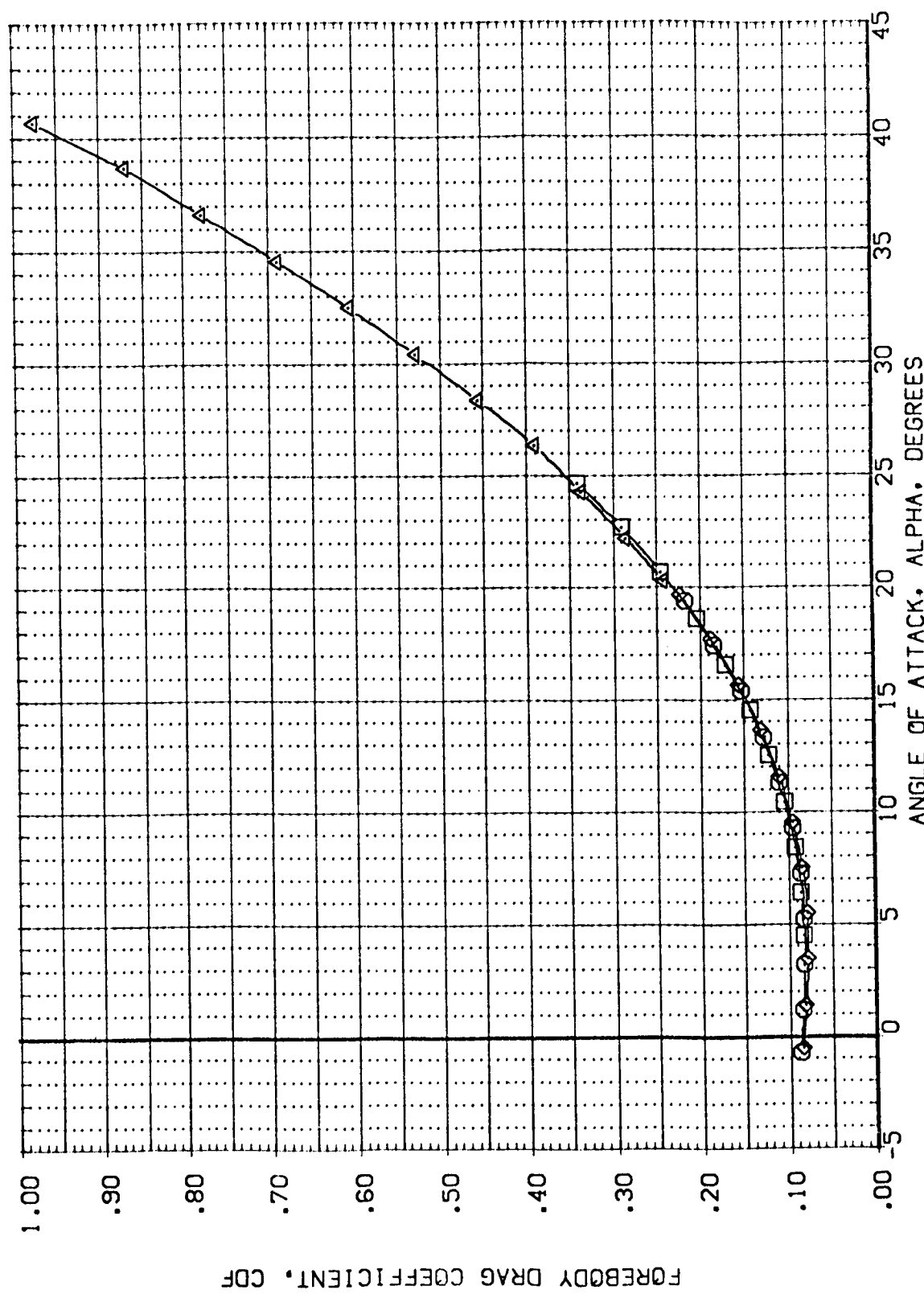


FIG. 20 EFFECT OF BALANCE ADAPTER AND OFFSET

(B)MACH = 4.96

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BLADPT	REFERENCE INFORMATION
(F87001)	MSFC 574(DA48) CRB 1398	.000	.000	999.990	2.000	SREF 2650.0000 SQ.FT.
(F87002)	MSFC 574(DA48) CRB 1398	.000	.000	999.990	2.000	LREF 474.8000 IN.
(F87006)	MSFC 574(DA48) CRB 1398	.000	.000	999.990	113.000	BREF 936.7000 IN.
(F87007)	MSFC 574(DA48) CRB 1398	.000	.000	999.990	113.000	XMRP 838.7000 IN.
						YMRP .0000 IN.
						ZMRP .0000 IN.
						SCALE .0040

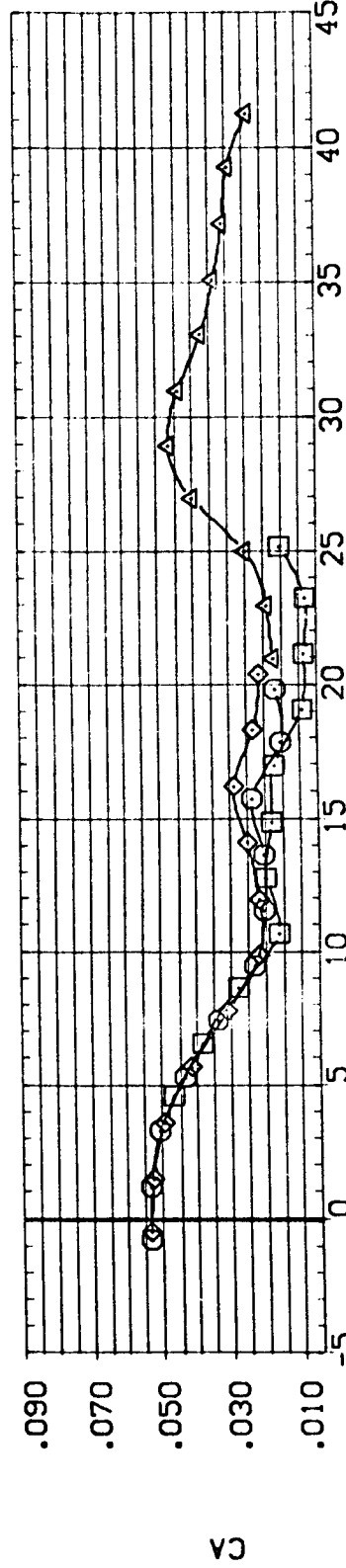
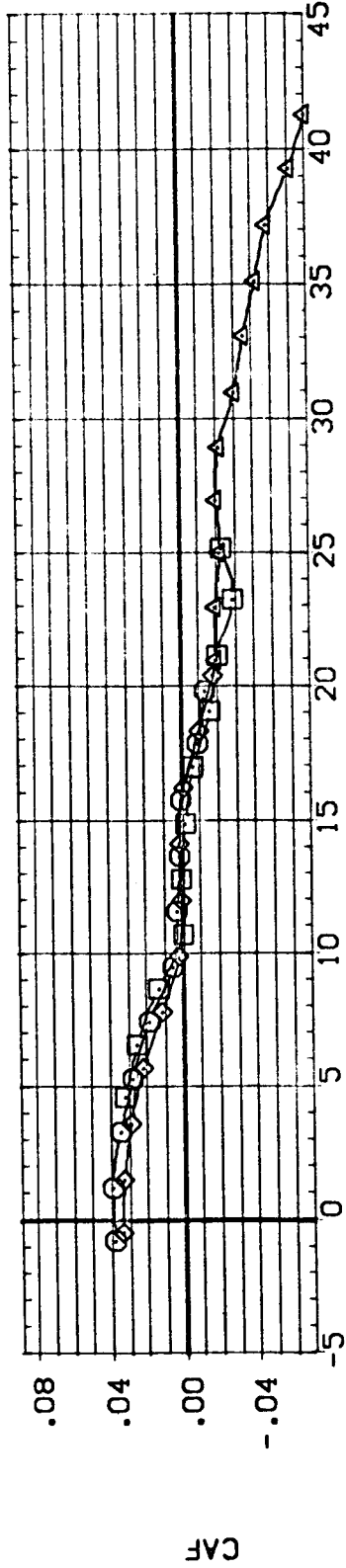
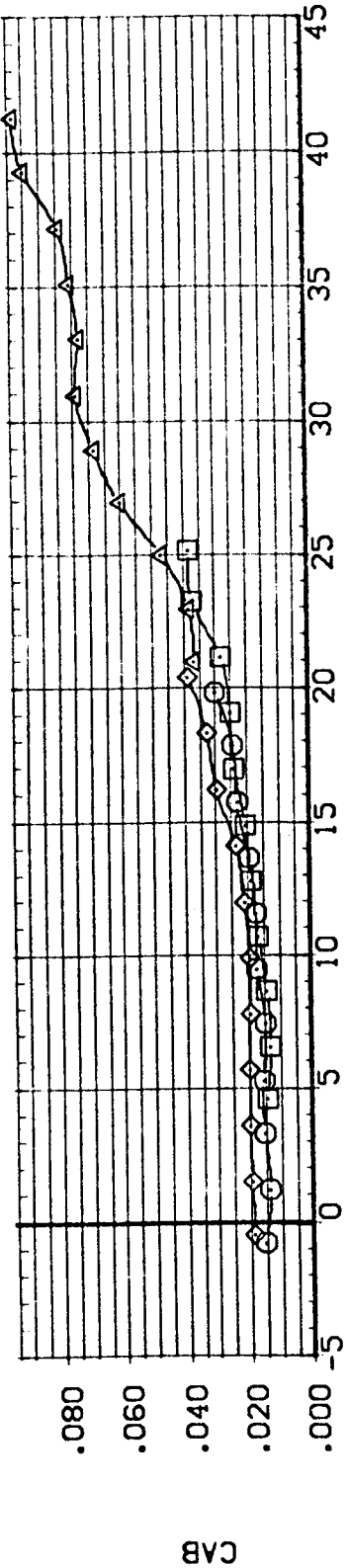


FIG. 20 EFFECT OF BALANCE ADAPTER AND OFFSET

(A)MACH = .60

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(F87001) MSFC 574(OA48) DRB 1399

(F87002) MSFC 574(OA48) DRB 1399

(F87005) MSFC 574(OA48) DRB 1399

(F87007) MSFC 574(OA48) DRB 1399

BETA .000

ELEVTR .000

SPOBRK 999.990

BLADPT 2.000

SREF 2690.0000

LREF 474.8000

BREF 936.7000

XMRP 838.7000

YMRP .0000

ZMRP .0000

SCALE .0010

REFERENCE INFORMATION

SGJFT.

IN.

IN.

IN.

IN.

IN.

IN.

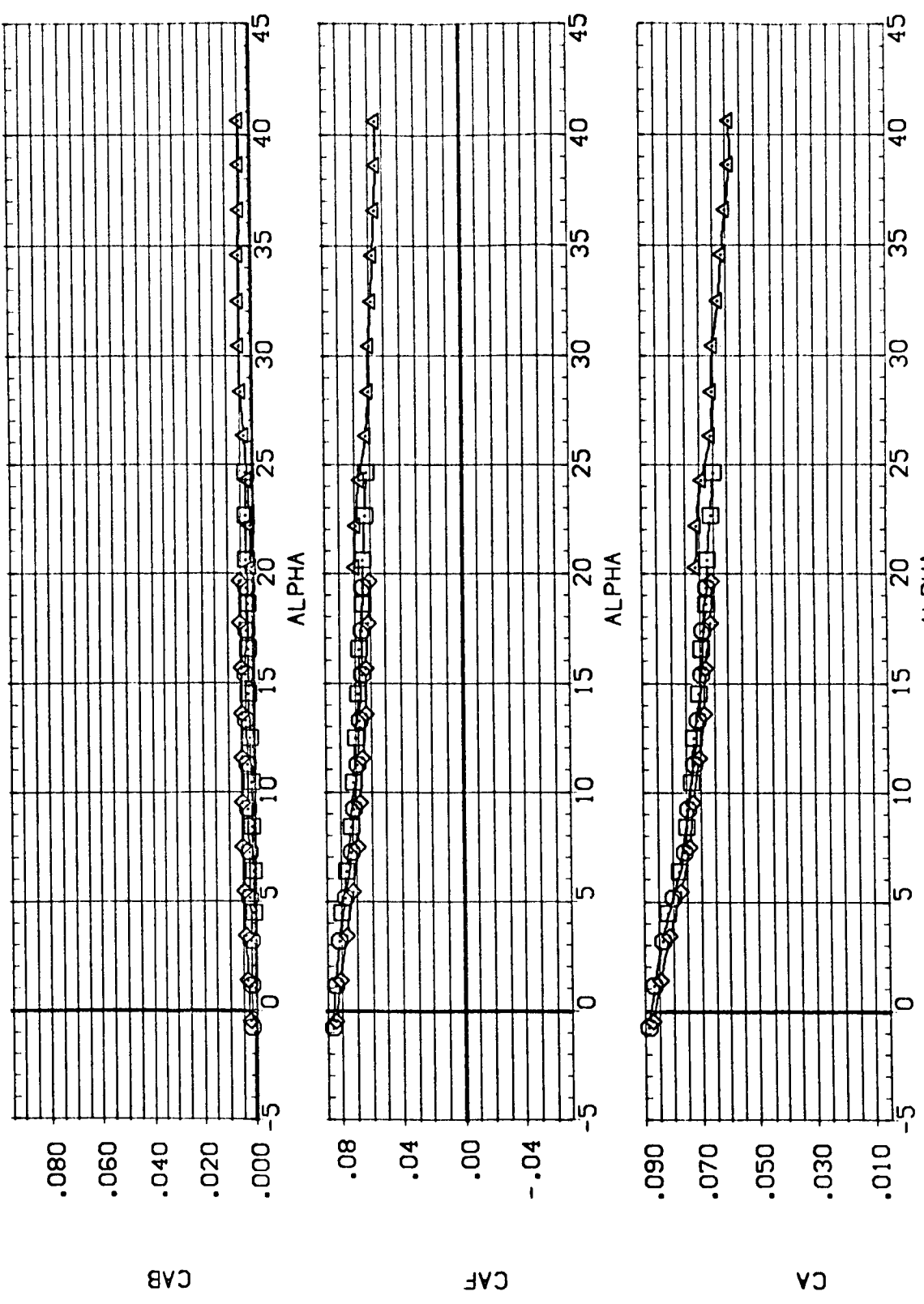


FIG. 20 EFFECT OF BALANCE ADAPTER AND OFFSET

(B)MACH = 4.96

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BLADPT	REFERENCE INFORMATION
(F87001)	MSFC 574(OA48) CRB 398	.000	.000	999.990	2.000	SREF 2690.0000 SQ.FT.
(F87002)	MSFC 574(OA48) CRB 398	.000	.000	999.990	2.000	LREF 474.8000 IN.
(F87006)	MSFC 574(OA48) CRB 398	.000	.000	999.990	113.000	BREF 936.7000 IN.
(F87007)	MSFC 574(OA48) CRB 398	.000	.000	999.990	113.000	XMRP 838.7000 IN.
						VMRP .0000 IN.
						ZMRP .0000 IN.
						SCALE .0040

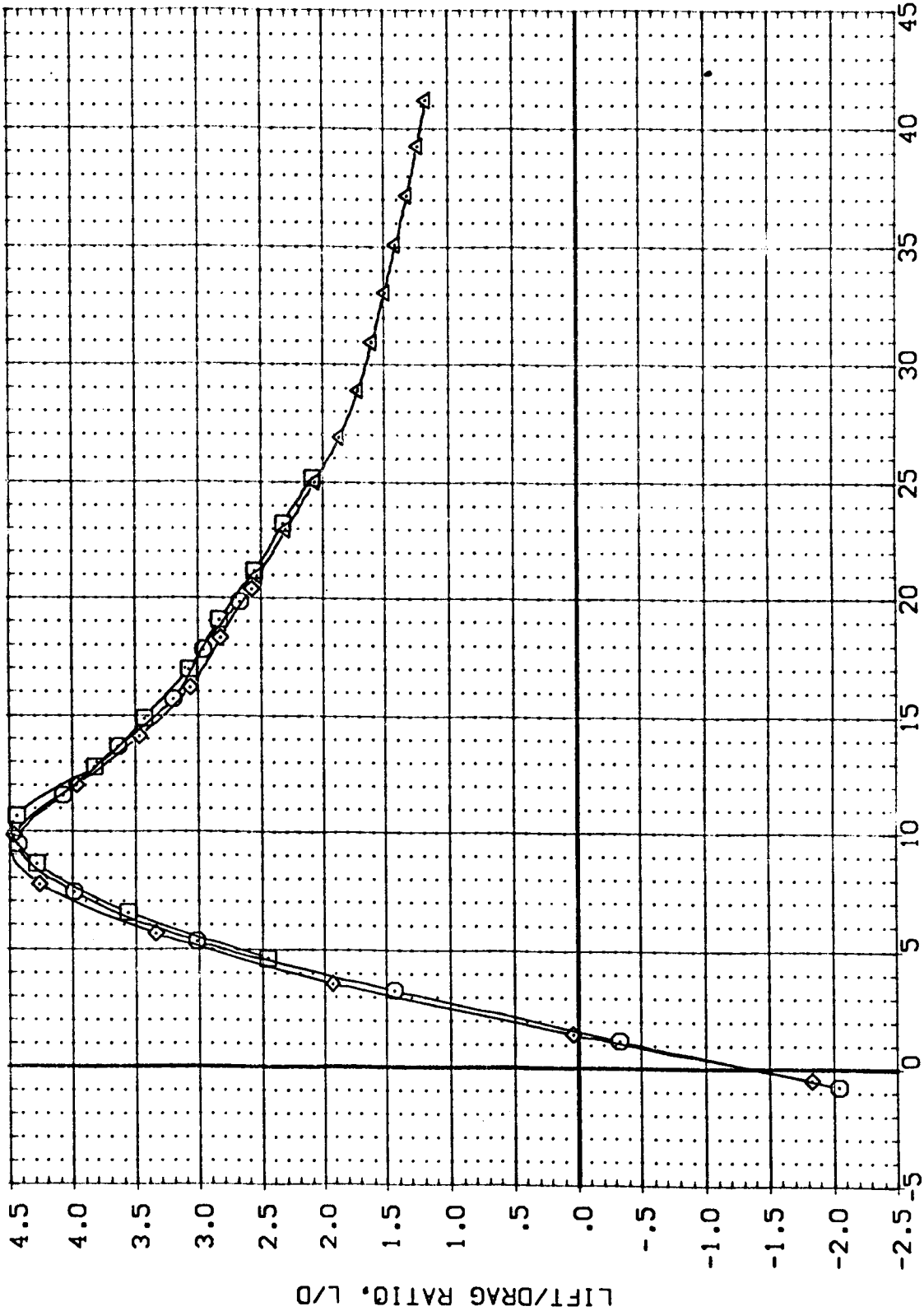


FIG. 20 EFFECT OF BALANCE ADAPTER AND OFFSET

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BLADPT	REFERENCE INFORMATION
(F87001)	MSFC 574(OA48) ORB 1398	.000	.000	999.990	2.000	SREF 2690.0000
(F87002)	MSFC 574(OA48) ORB 1398	.000	.000	999.990	2.000	LREF 474.8000
(F87006)	MSFC 574(OA48) ORB 1398	.000	.000	999.990	113.000	BREF 936.7000
(F87007)	MSFC 574(OA48) ORB 1398	.000	.000	999.990	113.000	XREF 838.0000
						VREF .0000
						ZMRP .0000
						SCALE .0000

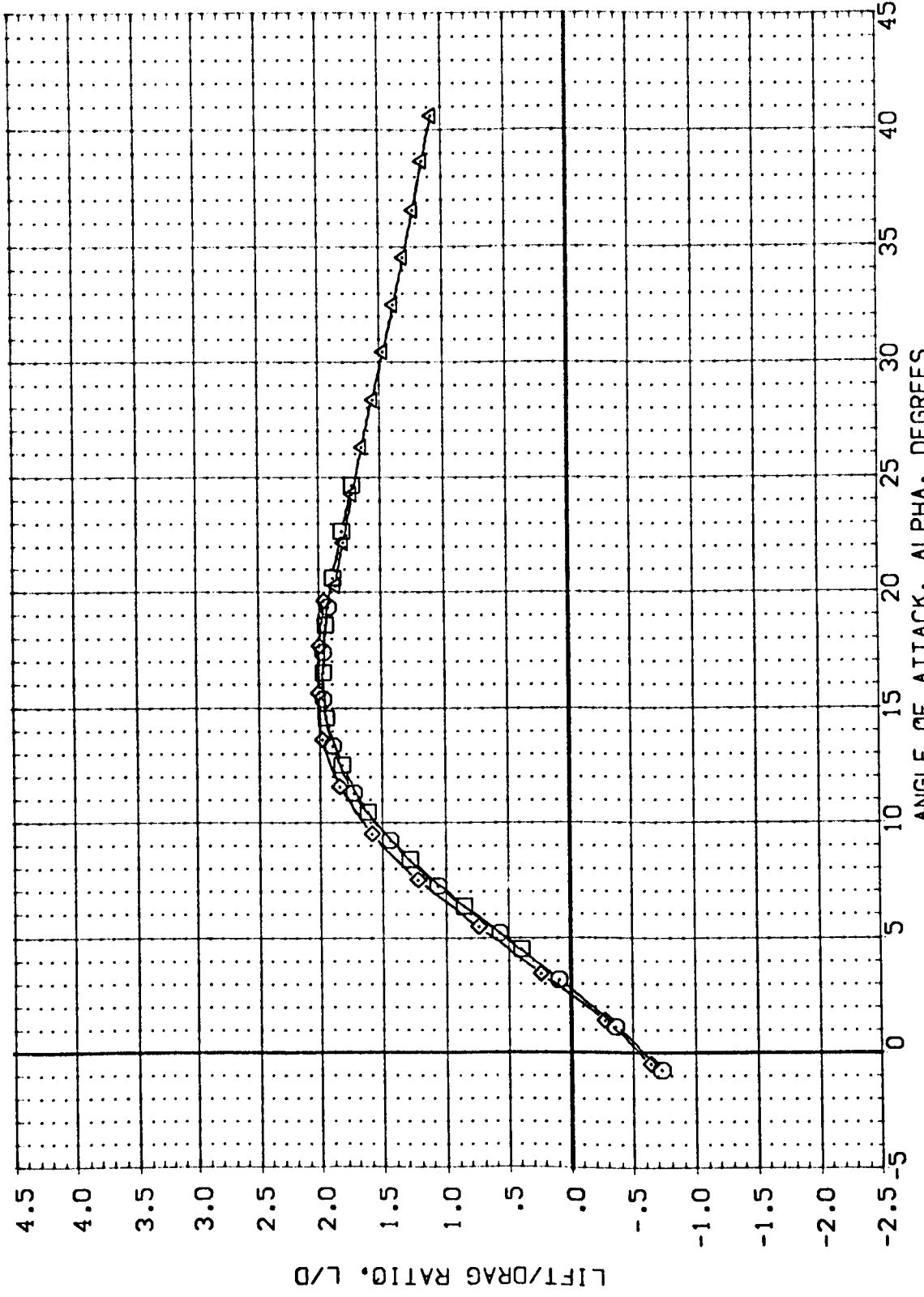


FIG. 20 EFFECT OF BALANCE ADAPTER AND OFFSET

(B) MACH = 4.96



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BLADPT	REFERENCE INFORMATION
(FB7001)	MSFC 574(CA48) CR8 1398	.000	.000	999.990	2.000	SREF 2690.0000 SQ.FT.
(FB7002)	MSFC 574(CA48) CR8 1398	.000	.000	999.990	2.000	LREF 474.8000 IN.
(FB7006)	MSFC 574(CA48) CR8 1398	.000	.000	999.990	113.000	BREF 936.7000 IN.
(FB7007)	MSFC 574(CA48) CR8 1398	.000	.000	999.990	113.000	XMRP 838.7000 IN.
						YMRP .0000 IN.
						ZMRP .0000 IN.
						SCALE .0040

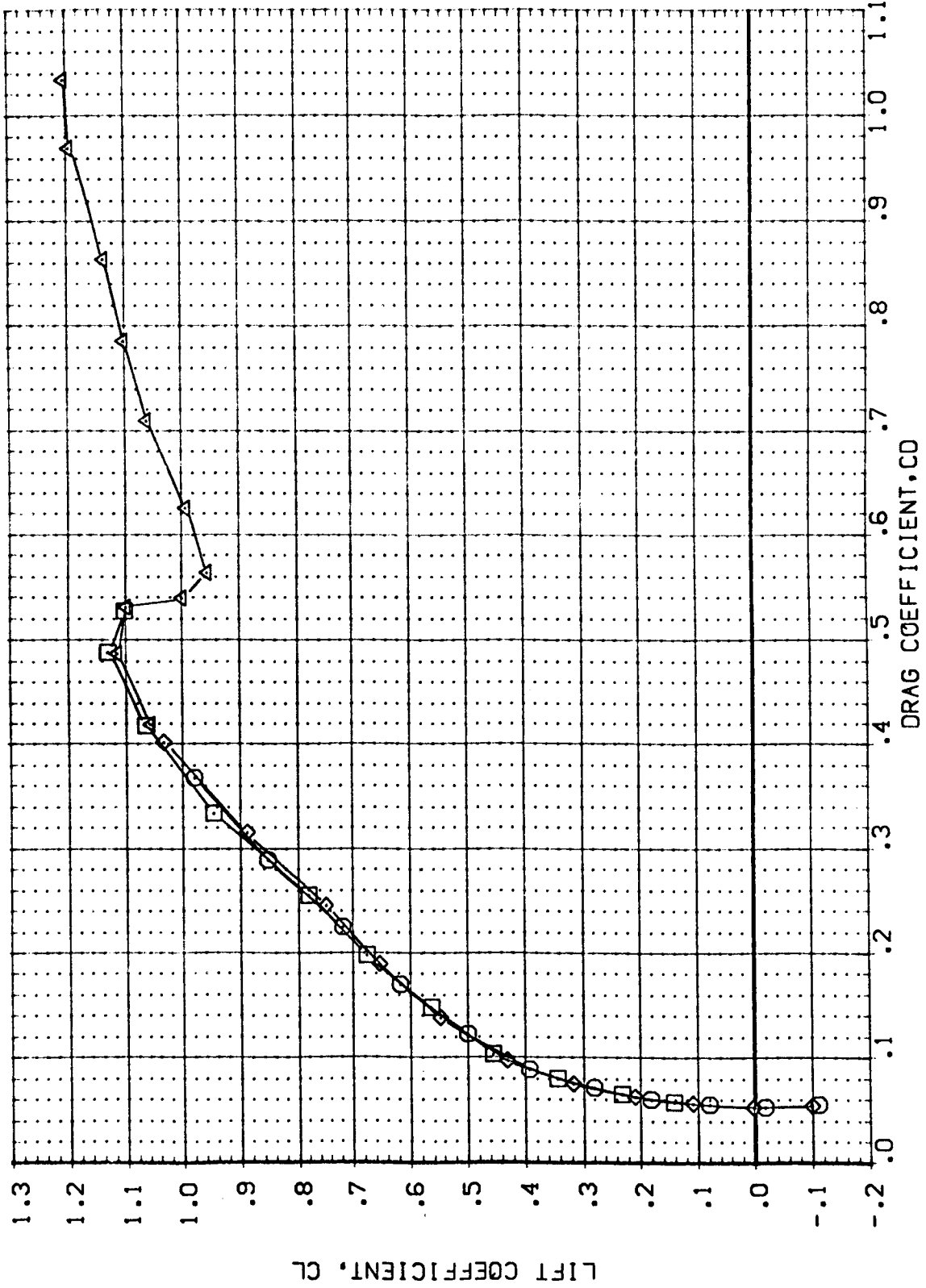


FIG. 20 EFFECT OF BALANCE ADAPTER AND OFFSET

(A)MACH = .60

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	SPOBRK	BLADPT	REFERENCE INFORMATION
(F87001)	MSFC 574(OA48) ORB 139B	.000	.000	999.990	2.000	SREF 2690.0000 SQ.FT.
(F87002)	MSFC 574(OA48) ORB 139B	.000	.000	999.990	2.000	LREF 474.8000
(F87006)	MSFC 574(OA48) ORB 139B	.000	.000	999.990	113.000	BREF 936.7000
(F87007)	MSFC 574(OA48) ORB 139B	.000	.000	999.990	113.000	XMRP 836.7000
						YMRP .0000
						ZMRP .0000
						SCALE .0040

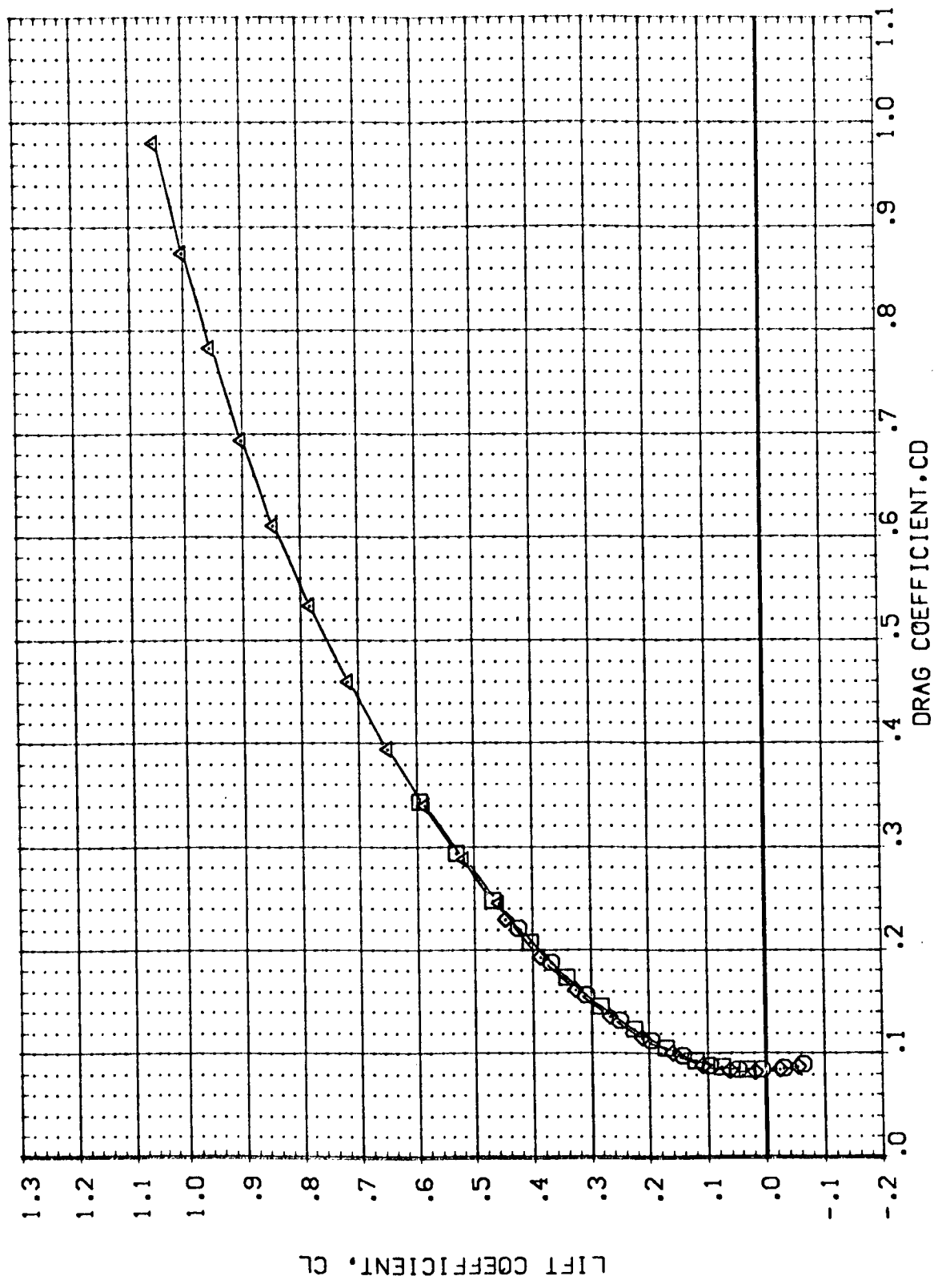


FIG. 20 EFFECT OF BALANCE ADAPTER AND OFFSET
 (B)MACH = 4.96



(F87097)

MSFC 574(0A48) ORB 139B

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8000	IN.
BREF	936.7000	IN.
XMRP	838.7000	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0040	

PARAMETRIC VALUES

BETA	.000	ELEVTR	.000
AIRCN	.000	BOFLAP	.000
SPDRK	999.990		

MACH

0.595
.899
1.199
1.950
2.990
4.959

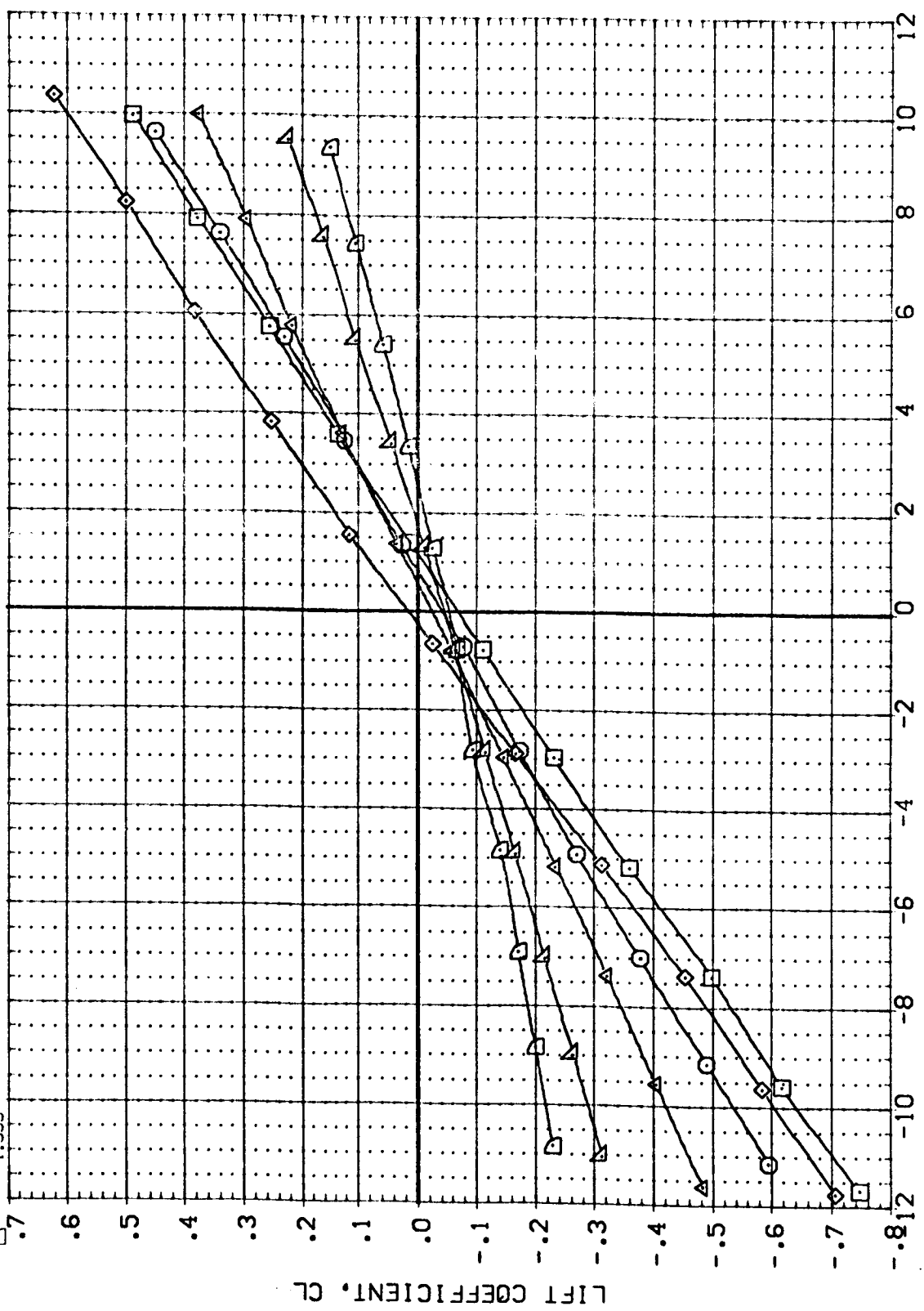


FIG. 21 EFFECT OF MACH NUMBER ON ORBITER 139B LONGITUDINAL CHARACTERISTICS

SYMBOL MACH

◇	.595
○	.699
□	1.199
△	1.950
▽	2.990
◇	4.959

PARAMETRIC VALUES

BETA	.000
A1LRON	.000
SPDBRK	999.990
ELEVTR	.000
BOFLAP	.000

REFERENCE INFORMATION

SREF	2690.0000
LREF	474.8000
BREF	936.7000
XMPP	838.7000
YMPP	.0000
ZMPP	.0000
SCALE	.0040

SQ.FT.
IN.
IN.
IN.
IN.
IN.

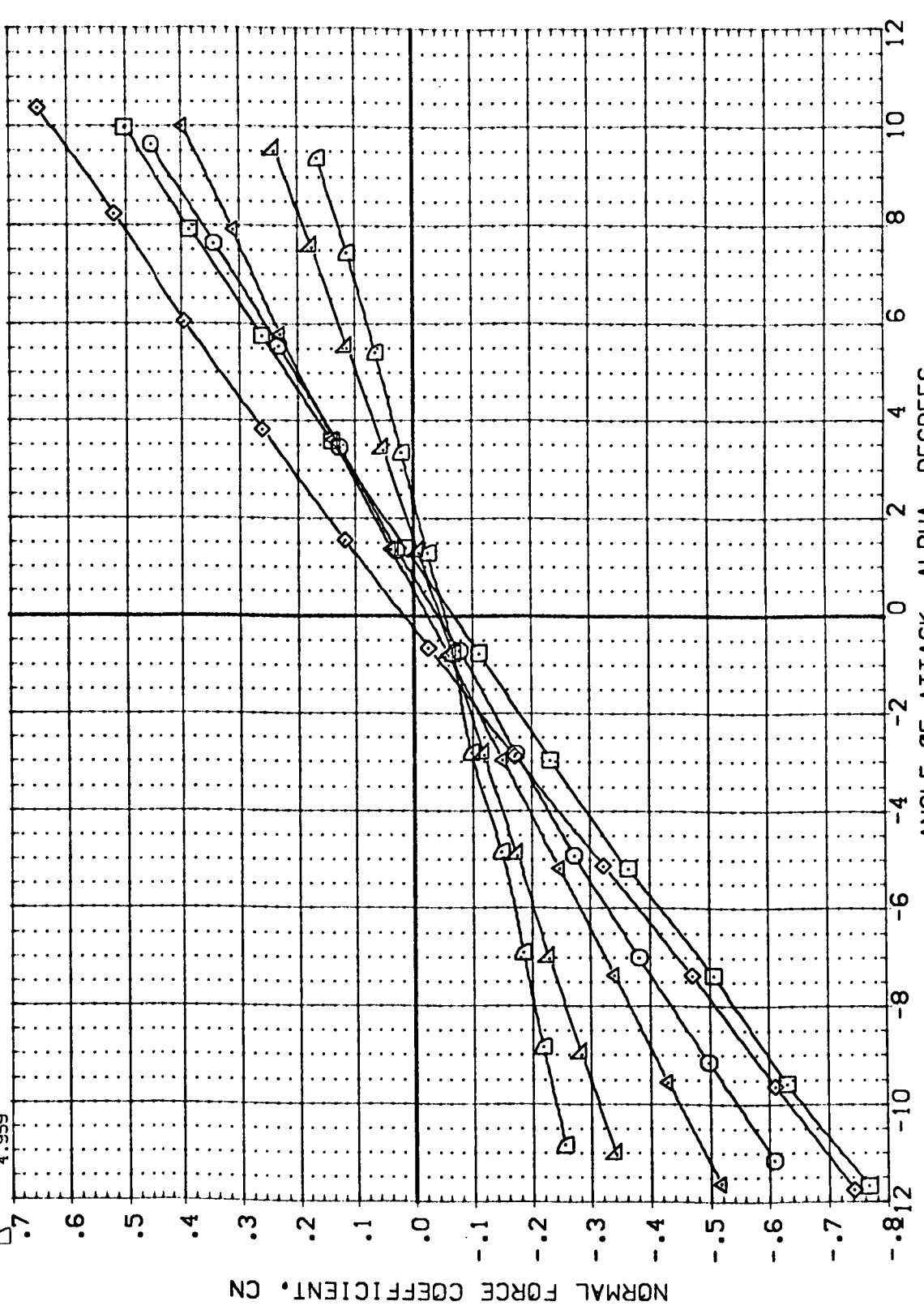


FIG. 21 EFFECT OF MACH NUMBER ON ORBITER 139B LONGITUDINAL CHARACTERISTICS



MSFC 574(0A48) ORB 139B

(F87097)

SYMBOL MACH PARAMETRIC VALUES
 ○ .595 BETA .000 ELEVTR .000
 □ .899 AILRON .000 BDFLAP .000
 ◇ 1.199 SPD3RK 999.990
 △ 1.950
 ▽ 2.990
 ▽ 4.959

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XWRP 838.7000 IN.
 YWRP .0000 IN.
 ZWRP .0000 IN.
 SCALE .0040

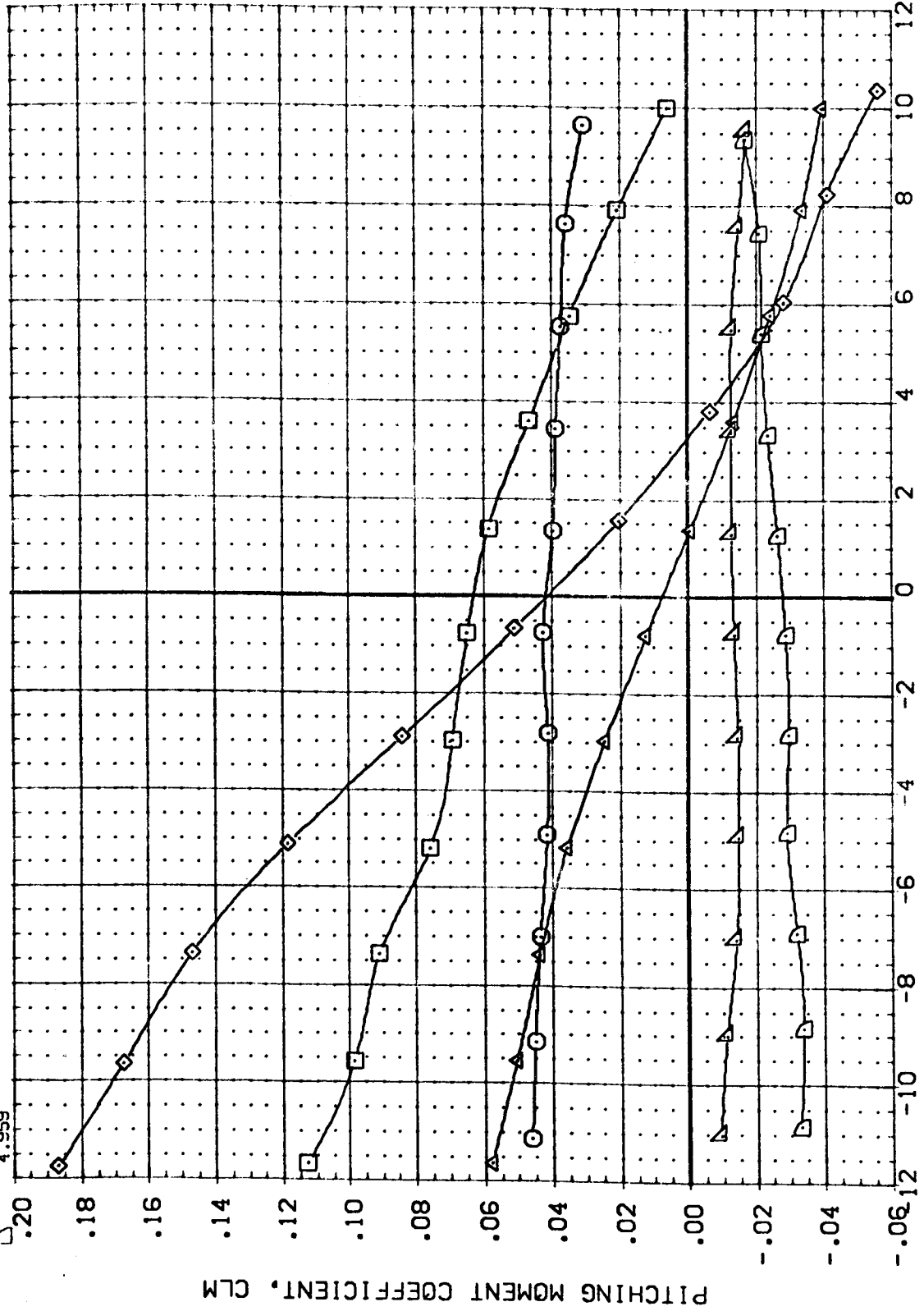


FIG. 21 EFFECT OF MACH NUMBER ON ORBITER 139B LONGITUDINAL CHARACTERISTICS

(F87097)

MSFC 574(OA48) ORB 139B

SYMBOL

○	MACH	.595	BETA	.000	ELEVTR	.000
□		.859	A1LRN	.000	BOFLAP	.000
△		1.199	SPOBRK	999.999		
◇		1.950				
▽		2.990				
◇		4.959				

REFERENCE INFORMATION

SREF	2690.0000	SC.FT.
LREF	474.8000	IN.
BREF	936.7000	IN.
XMRP	836.7000	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0040	

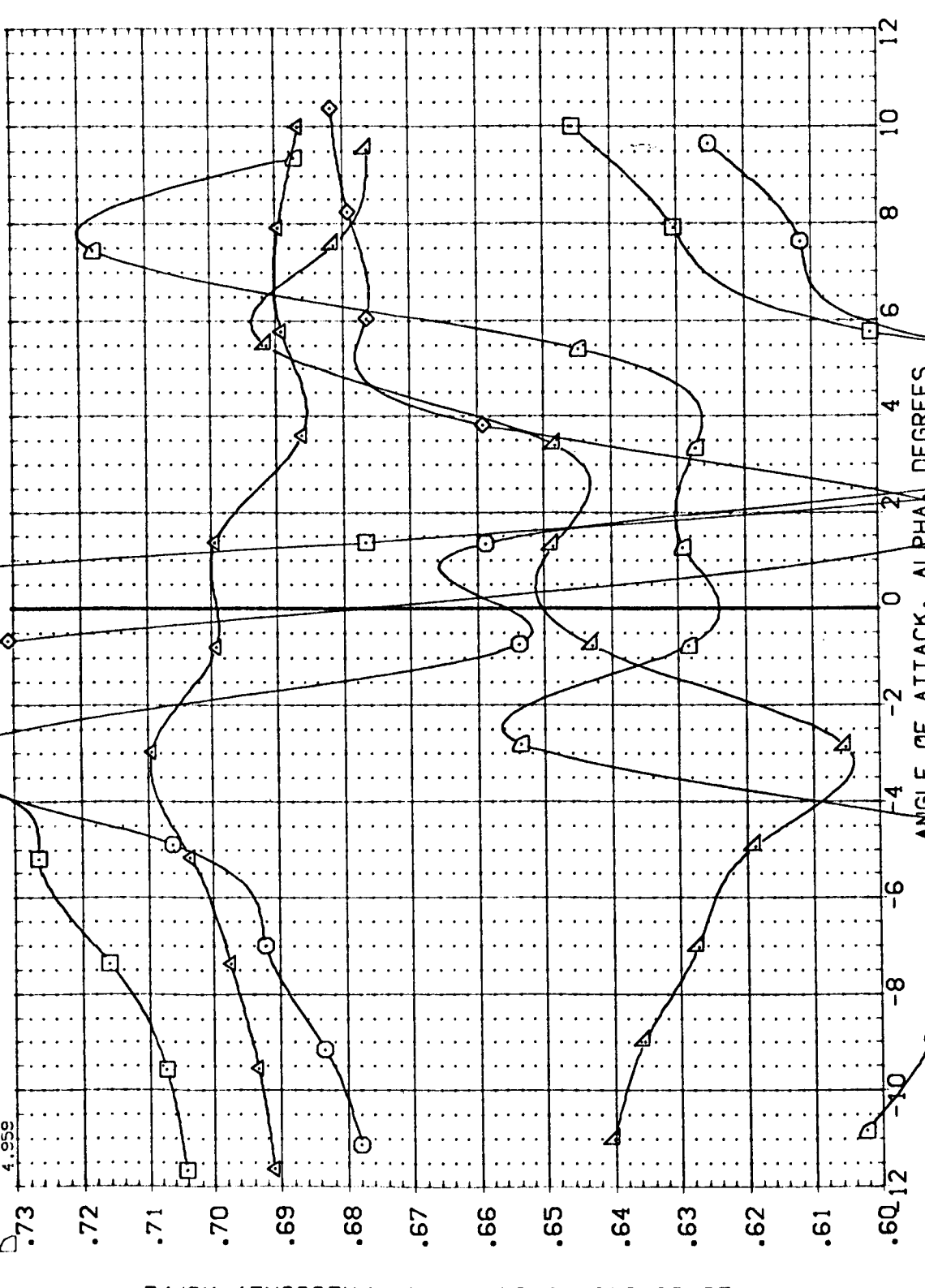


FIG. 21 EFFECT OF MACH NUMBER ON ORBITER 139B LONGITUDINAL CHARACTERISTICS



MSFC 574(0A48) ORB 139B

(F87097)

SYMBOL MACH BETA AILRON SPDGRK

PARAMETRIC VALUES .000 ELEVTR .000 BOFLAP .000

REFERENCE INFORMATION SQ.FT.

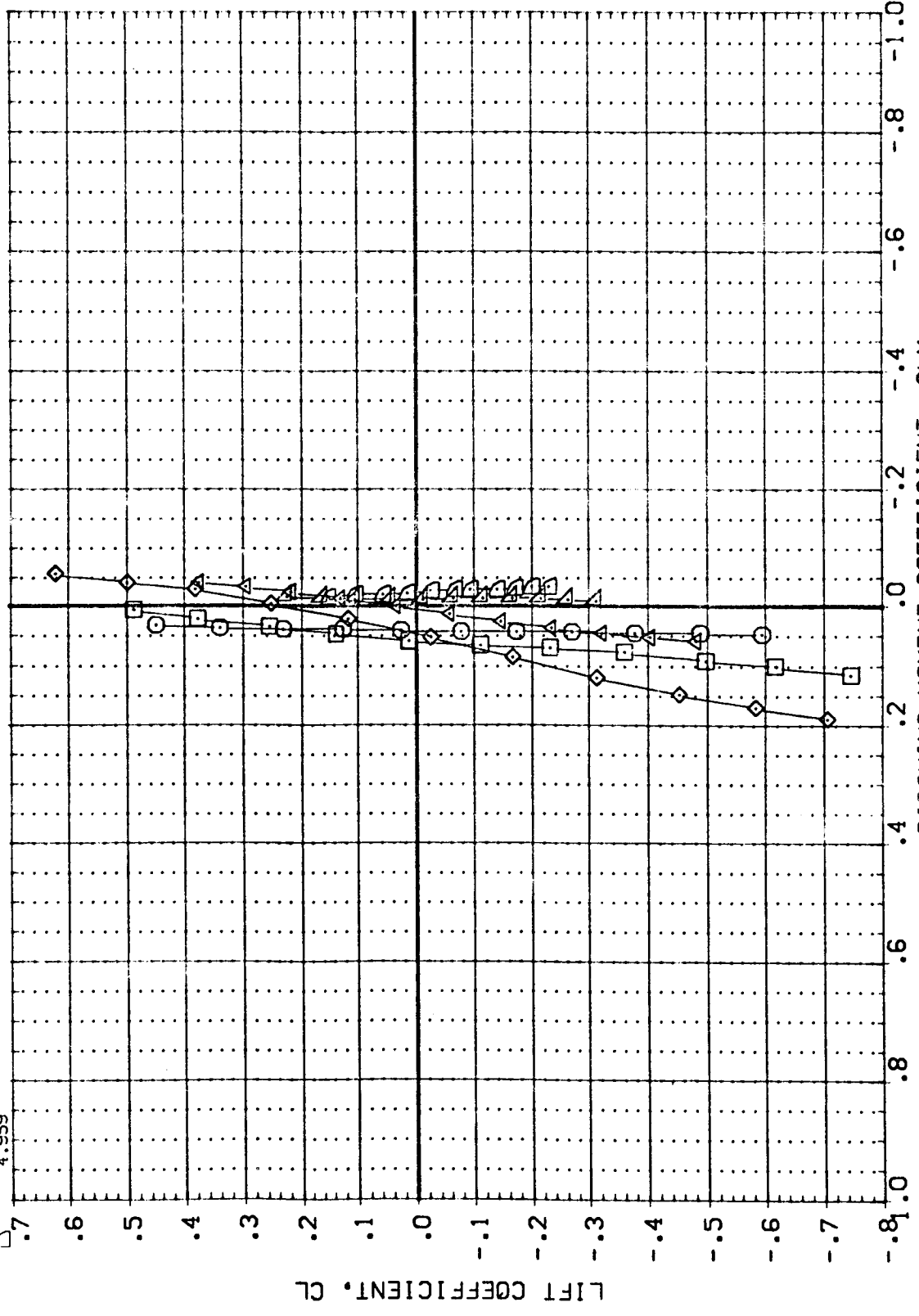
SREF 2690.0000
LREF 474.8000
BREF 936.7000
XMRP 838.7000
YMRP .0000
ZMRP .0000
SCALE .0040

0.595
.899
1.199
1.950
2.990
4.959

0.7
.6
.5
.4
.3
.2
.1
.0
-.1
-.2
-.3
-.4
-.5
-.6
-.7
-.8

0.0
.2
.4
.6
.8
1.0

-.8
-.6
-.4
-.2
0.0
.2
.4
.6
.8
1.0



PITCHING MOMENT COEFFICIENT, CLM

FIG. 21 EFFECT OF MACH NUMBER ON ORBITER 139B LONGITUDINAL CHARACTERISTICS

REFERENCE INFORMATION
 SQ.FT.
 SREF 2690.0000
 LREF 474.8000
 BREF 936.7000
 XMRP 838.7000
 YMRP .0000
 ZMRP .0000
 SCALE .0040

PARAMETRIC VALUES
 BETA .000 ELEVTR .000
 AILRON .000 BOFLAP .000
 SPOBRK 999.990

MACH
 .595
 .899
 1.199
 1.950
 2.990
 4.959

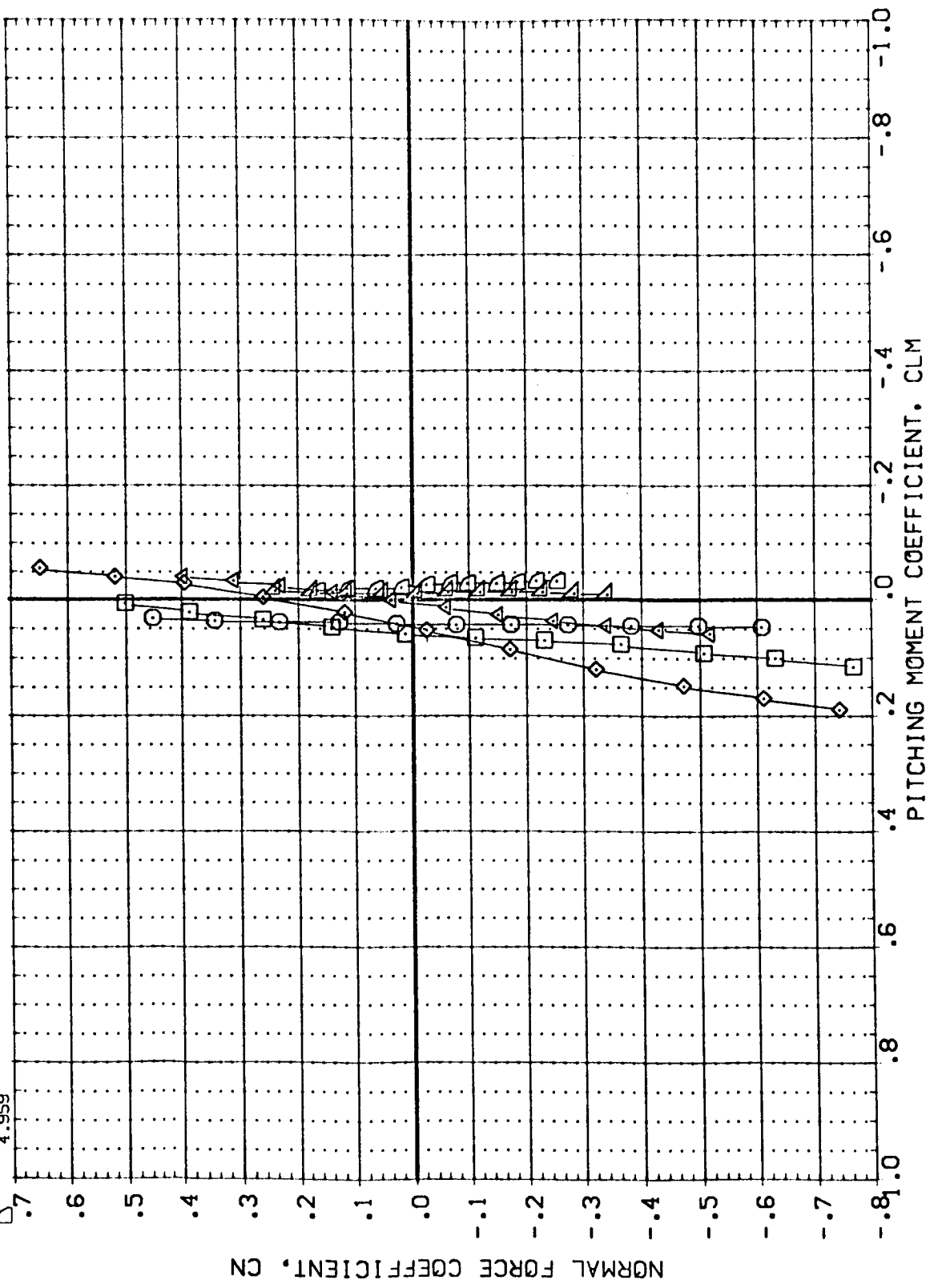


FIG. 21 EFFECT OF MACH NUMBER ON ORBITER 139B LONGITUDINAL CHARACTERISTICS

(F87097)

MSFC 574(0A48) ORB 139B

SYMBOL

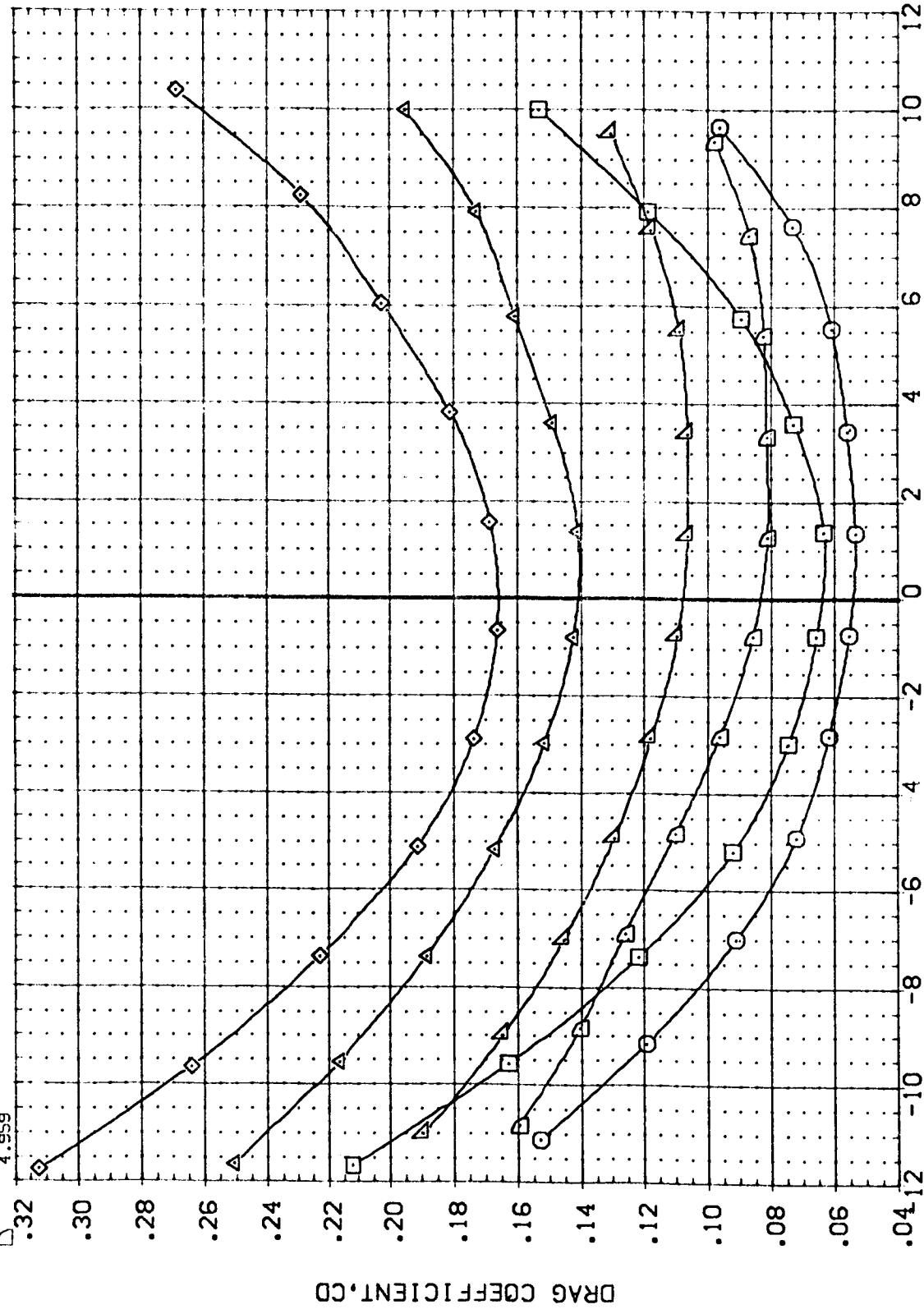
○	BETA	.595
□	AIRLON	.899
◇	SPOBRK	1.199
△		1.95C
▽		2.99C
◇		4.959

PARAMETRIC VALUES

.000	ELEVTR	.000
.000	BDFLAP	.000
999.990		

REFERENCE INFORMATION

2690.0000	SREF	26.90	SG.FT.
474.8000	LREF	47.48	IN.
936.7000	BREF	93.67	IN.
838.7000	XMRP	83.87	IN.
.0000	YMRP		IN.
.0000	ZMRP		IN.
.0040	SCALE		



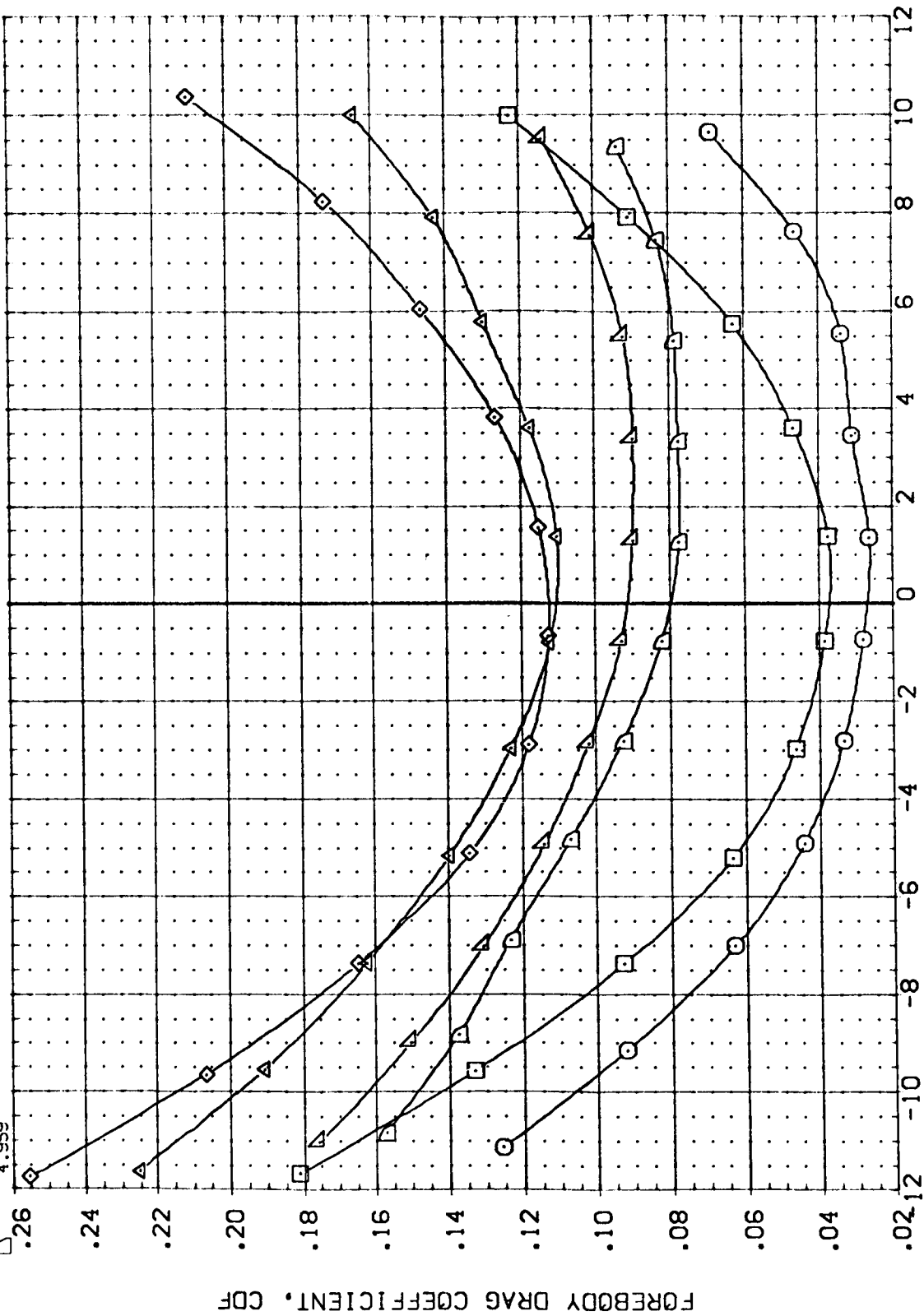
ANGLE OF ATTACK, ALPHA, DEGREES

FIG. 21 EFFECT OF MACH NUMBER ON ORBITER 139B LONGITUDINAL CHARACTERISTICS

REFERENCE INFORMATION
 SREF 2690.0000 SO.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

PARAMETRIC VALUES
 BETA .000 ELEVTR .000
 AILRCN .000 BDFLAP .000
 SPDGRK 999.990
 MACH .595
 .899
 1.199
 1.950
 2.890
 4.959

SYMBOL
 ○
 □
 ◇
 △
 ▽
 ▽



ANGLE OF ATTACK, ALPHA, DEGREES

FIG. 21 EFFECT OF MACH NUMBER ON ORBITER 139B LONGITUDINAL CHARACTERISTICS



MSFC 574(0A48) ORB 139B

(F87097)

SYMBOL

○	BETA
□	AILRON
◇	SPOBRK
△	
▽	

PARAMETRIC VALUES

.595	.000	ELEVTR	.000
.899	.000	BCFLAP	.000
1.199	999.999		
1.950			
2.990			
4.959			

REFERENCE INFORMATION

SREF	2690.0000	SC.FT.
LREF	474.8000	IN.
BREF	936.7000	IN.
XMRP	838.7000	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0040	

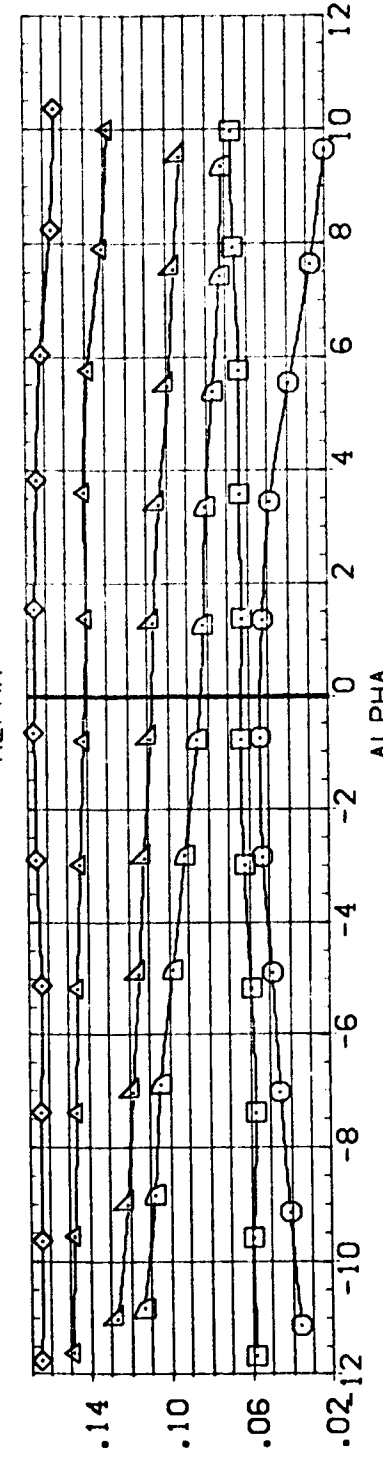
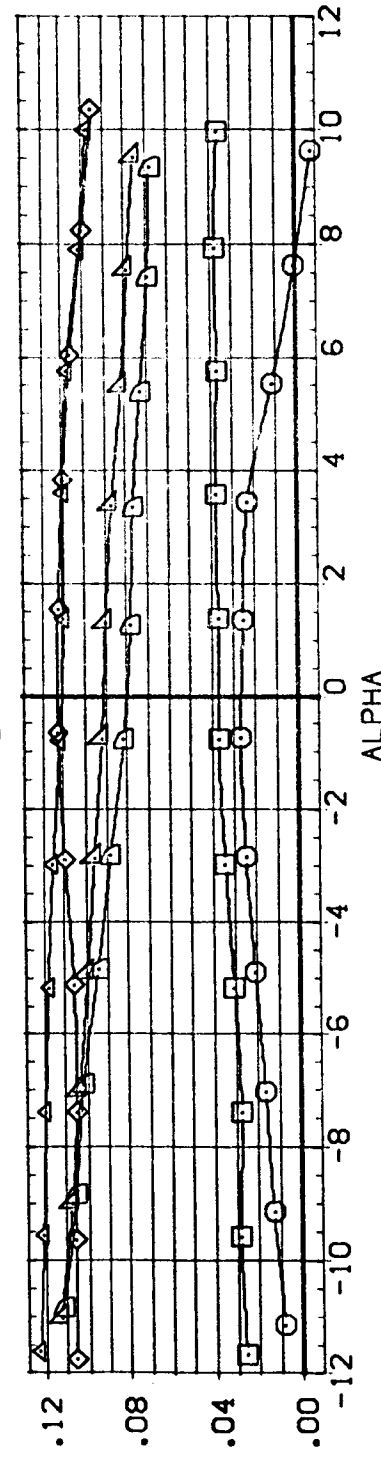
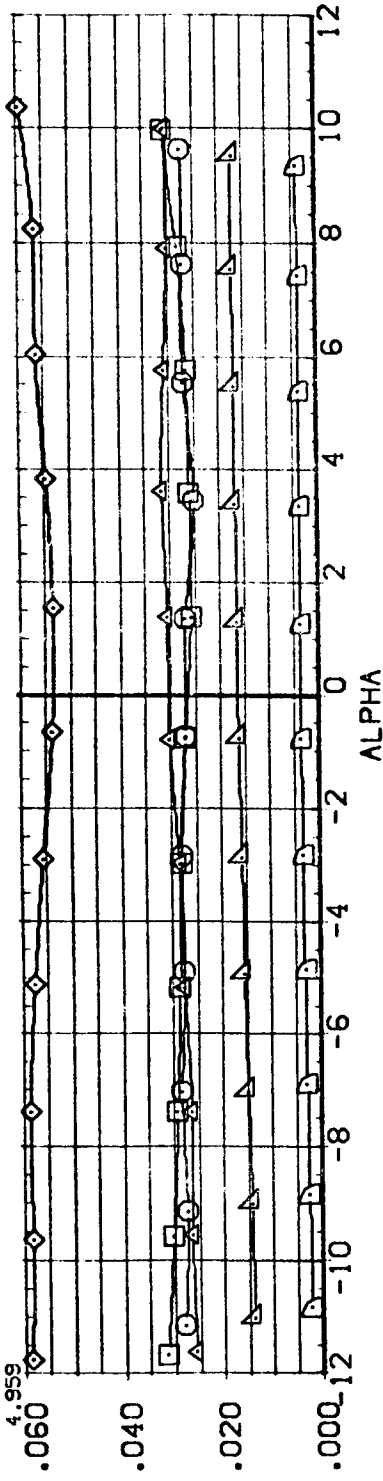


FIG. 21 EFFECT OF MACH NUMBER ON ORBITER 139B LONGITUDINAL CHARACTERISTICS PAGE 951

REFERENCE INFORMATION

SREF	2690.0000	SO.FT.
LREF	474.8000	IN.
BREF	936.7000	IN.
XMRP	838.7000	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0040	

MACH	PARAMETRIC VALUES	
.899	BETA .000	ELEVTR .000
1.199	A1LRON .000	BDFLAP .000
1.950	SPOBRK 999.999	
2.990		
4.959		

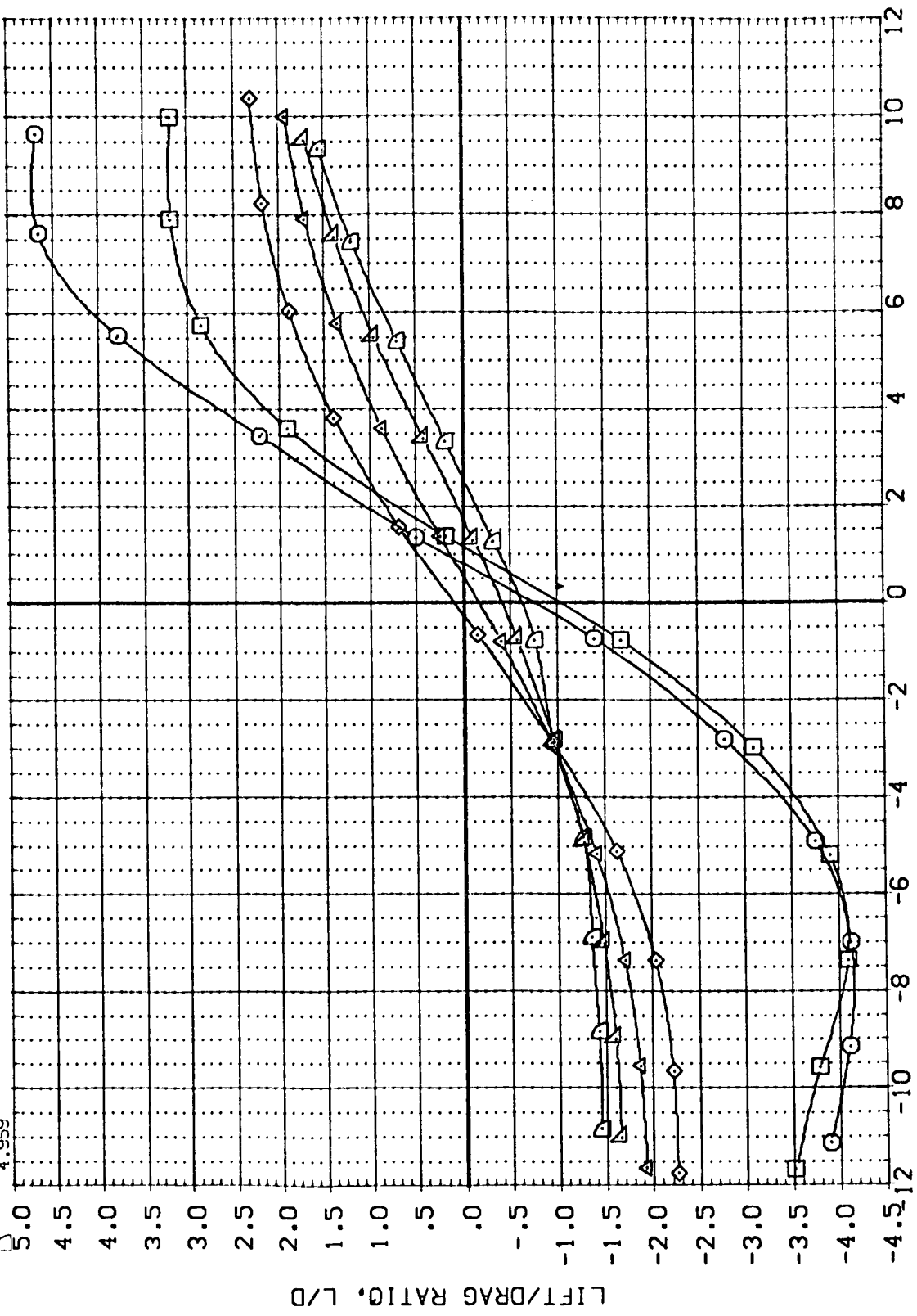


FIG. 21 EFFECT OF MACH NUMBER ON ORBITER 139B LONGITUDINAL CHARACTERISTICS

(F87097)

MSFC 574(OA48) ORB 139B

REFERENCE INFORMATION
SREF 2690.0000 SC.FT.
LREF 474.8000 IN.
BREF 936.7000 IN.
XMRP 838.7000 IN.
YMRP .0000 IN.
ZMRP .0000 IN.
SCALE .0040

PARAMETRIC VALUES
MACH .000
BETA .000 ELEVTR .000
AILRON .000 BCFLAP .000
SPDBRK 999.990

SYMBOL
○
□
◇
△
▽
◇

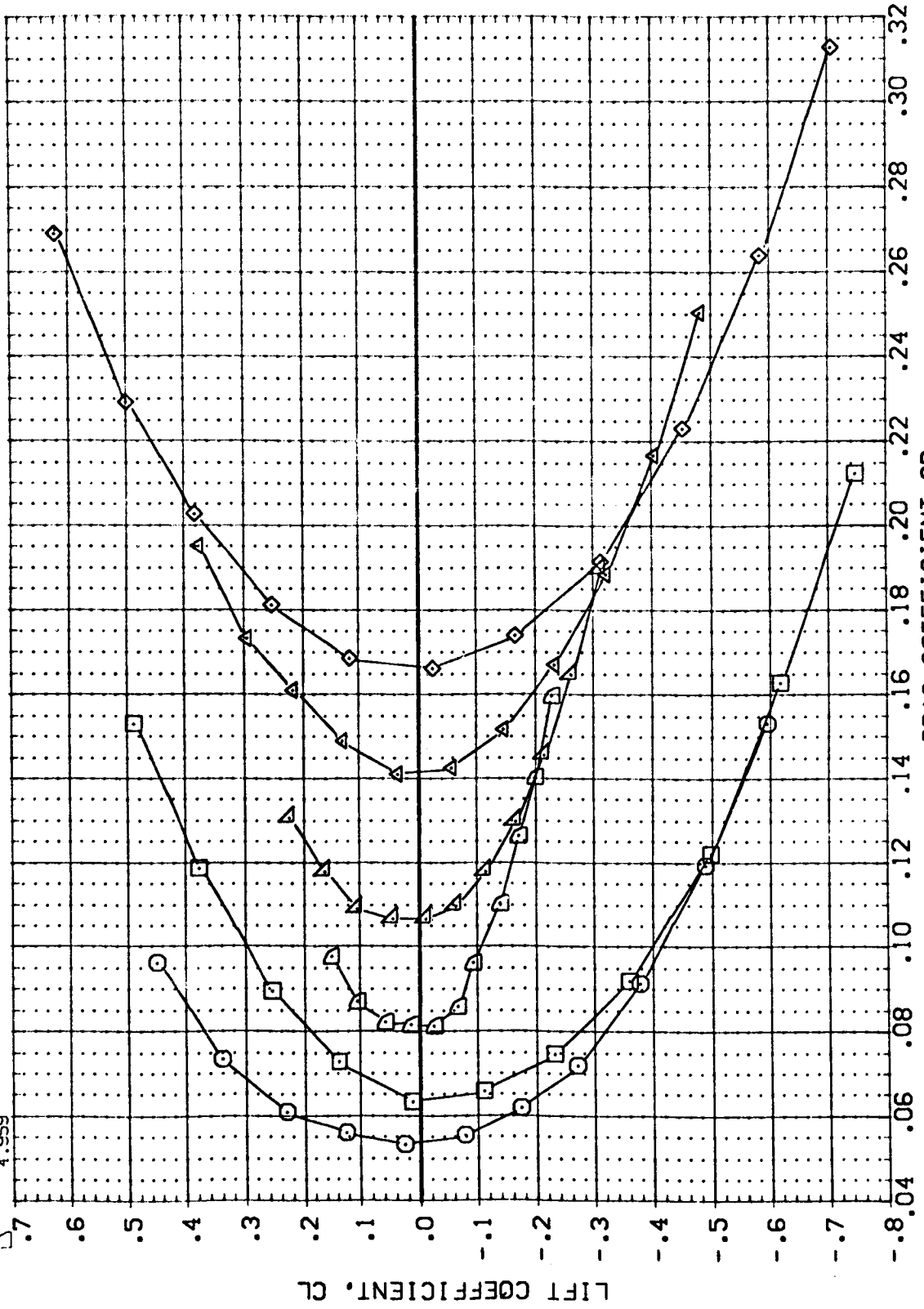


FIG. 21 EFFECT OF MACH NUMBER ON ORBITER 139B LONGITUDINAL CHARACTERISTICS

(687097)

MSFC 574(0A48) ORB 139B

SYMBOL

○	BETA	.595
□	AILRON	.899
◇	SPOBRK	1.199
△		1.950
▽		2.990
◇		4.959

PARAMETRIC VALUES

.000	ELEVTR	.000
.000	BOFLAP	.000
999.990		

REFERENCE INFORMATION

SREF	2690.0000	SG.FT.
LREF	474.8000	IN.
BREF	936.7000	IN.
XMRP	864.5000	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0040	

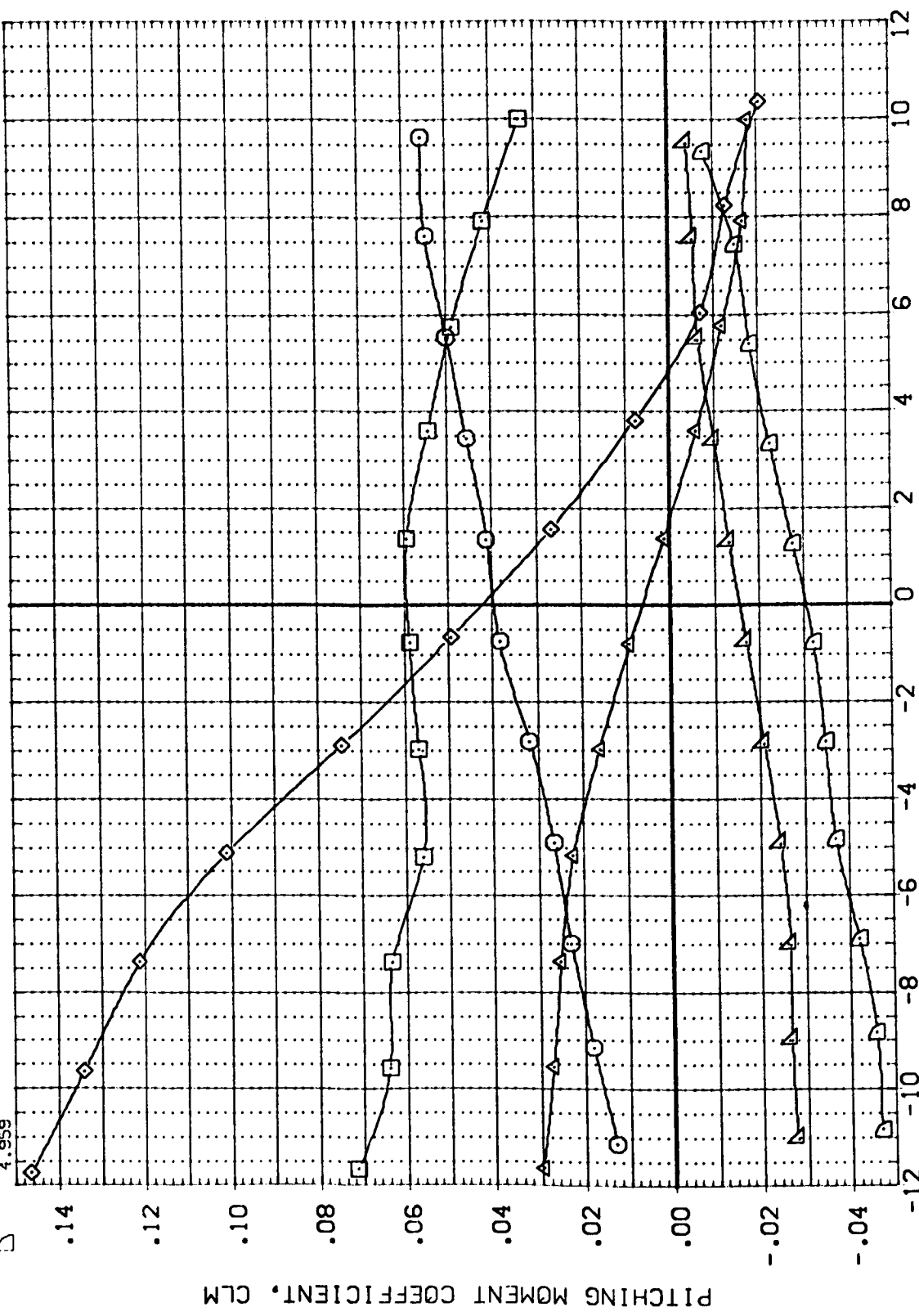


FIG. 21 EFFECT OF MACH NUMBER ON ORBITER 139B LONG. CHARACTERISTICS(AFT C.G.)

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (A87010) MSFC 574(OA48) ORB 139B
 (A87011) MSFC 574(OA48) ORB 139B
 (A87012) MSFC 574(OA48) ORB 139B
 (A87013) MSFC 574(OA48) ORB 139B
 (A87014) DATA NOT AVAILABLE

ALPHA
 .000
 10.000
 20.000
 30.000
 40.000

ELEVTR SPOBRK
 .000 999.990
 .000 999.990
 .000 999.990
 .000 999.990
 .000 999.990

BDFLAP
 .000
 .000
 .000
 .000
 .000

REFERENCE INFORMATION
 SREF 2690.0000 SC.F.T.
 LREF 474.8000
 BREF 936.7000
 XMRP 838.7000
 YMRP .0000
 ZMRP .0000
 SCALE .0040

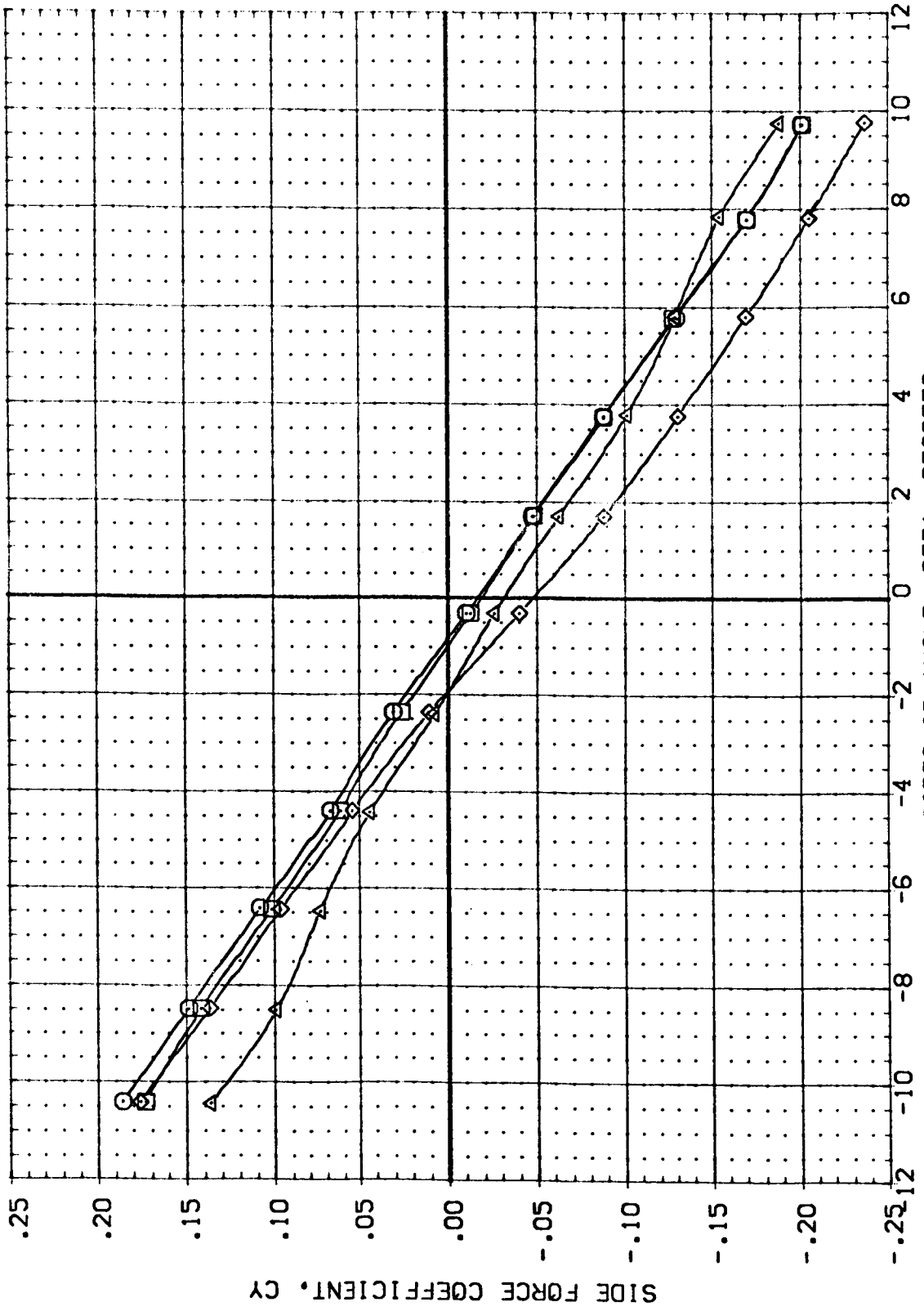


FIG. 22 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139B

(A)MACH = .60

DATA SET SYMBOL CONFIGURATION DESCRIPTION REFERENCE INFORMATION

(A87010)	MSFC 574(CA48) CRB 139B	SREF 2690.0000	SG.FT.
(A87011)	MSFC 574(CA48) CRB 139B	LREF 474.8000	IN.
(A87012)	MSFC 574(CA48) CRB 139B	BREF 936.7000	IN.
(A87013)	DATA NOT AVAILABLE	XMRP 838.7000	IN.
(A87014)	DATA NOT AVAILABLE	YMRP .0000	IN.
		ZMRP .0000	IN.
		SCALE .0040	

ALPHA ELEVTR SPDBRK BDFLAP

.000	.000	999.990	.000
10.000	.000	999.990	.000
20.000	.000	999.990	.000
30.000	.000	999.990	.000
40.000	.000	999.990	.000

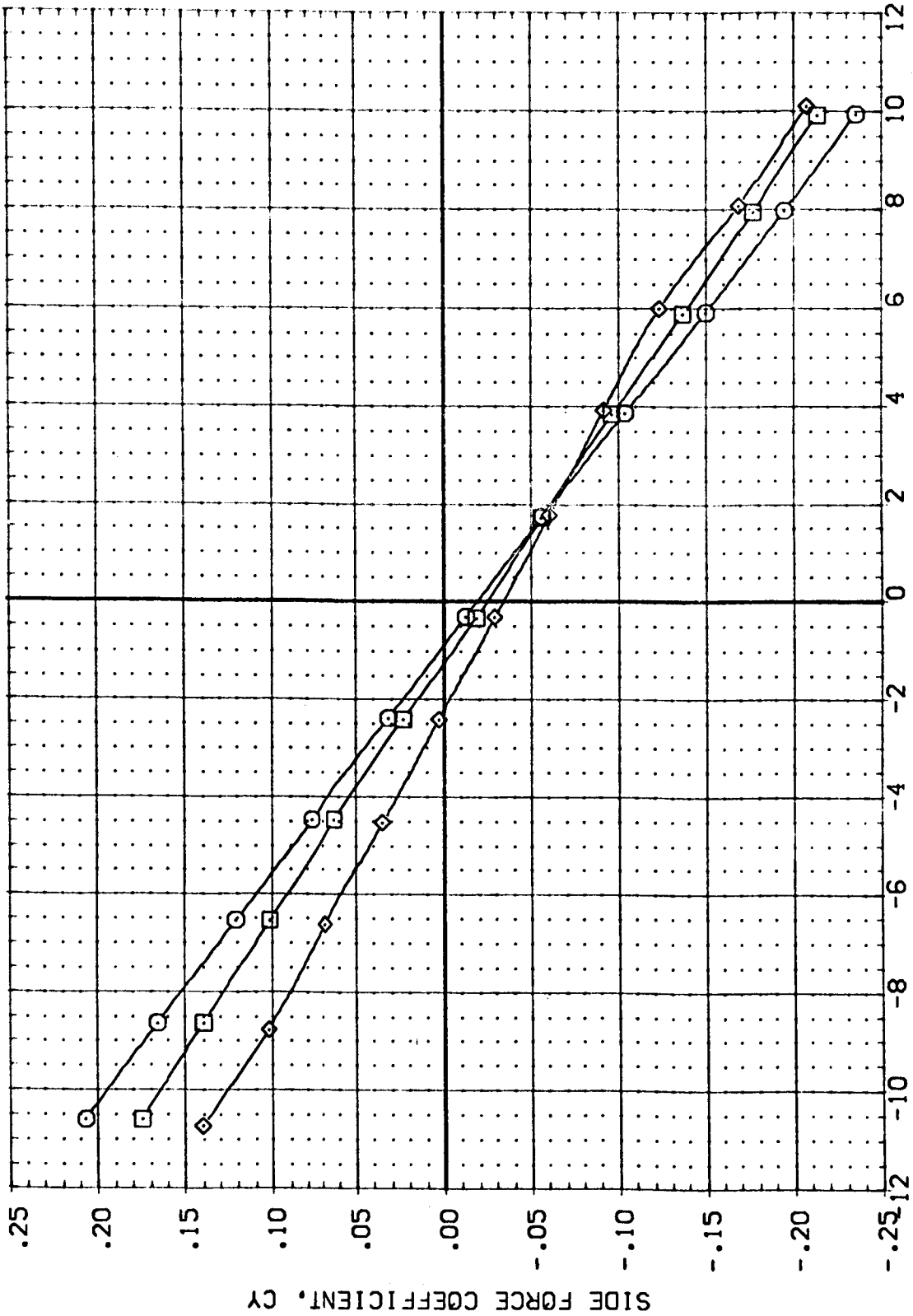


FIG. 22 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139B

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (A87010) MSFC 574(OA48) ORB 139B
 (A87011) MSFC 574(OA48) ORB 139B
 (A87012) MSFC 574(OA48) ORB 139B
 (A87013) DATA NOT AVAILABLE
 (A87014) DATA NOT AVAILABLE

ALPHA .000
 10.000
 20.000
 30.000
 40.000

ELEVTR .000
 .000
 .000
 .000
 .000

SPOBRK 999.990
 999.990
 999.990
 999.990
 999.990

BOFLAP .000
 .000
 .000
 .000
 .000

REFERENCE INFORMATION
 SREF 2690.0000 SC.F.T.
 LREF 474.8000 IN.
 BREF 536.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0010

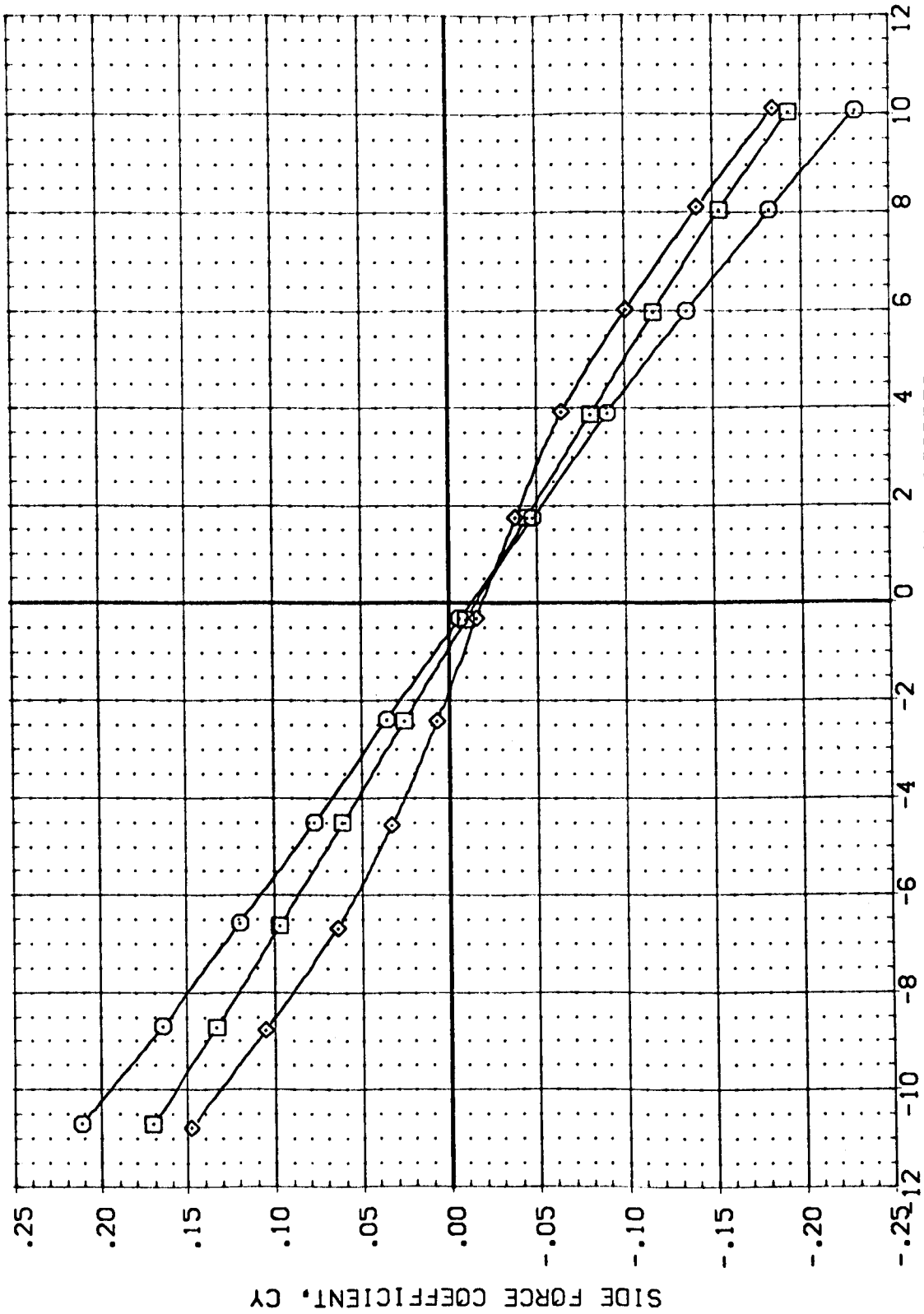


FIG. 22 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139B

(D)MACH = 1.95

DATA SET SYMBOL CONFIGURATION DESCRIPTION REFERENCE INFORMATION

(A87010)	MSFC 574(OA48) ORB 1398	SREF 2690.0000	SO.FT.
(A87011)	MSFC 574(OA48) CRB 1398	LREF 474.8000	IN.
(A87012)	MSFC 574(OA48) CRB 1398	BREF 936.7000	IN.
(A87013)	MSFC 574(OA48) ORB 1398	XMRP 838.7000	IN.
(A87014)	DATA NOT AVAILABLE	YMRP .0000	IN.
		ZMRP .0000	IN.
		SCALE .0040	

ALPHA ELEVTR SPOBRK BDFLAP

.000	.000	999.990	.000
10.000	.000	999.990	.000
20.000	.000	999.990	.000
30.000	.000	999.990	.000
40.000	.000	999.990	.000

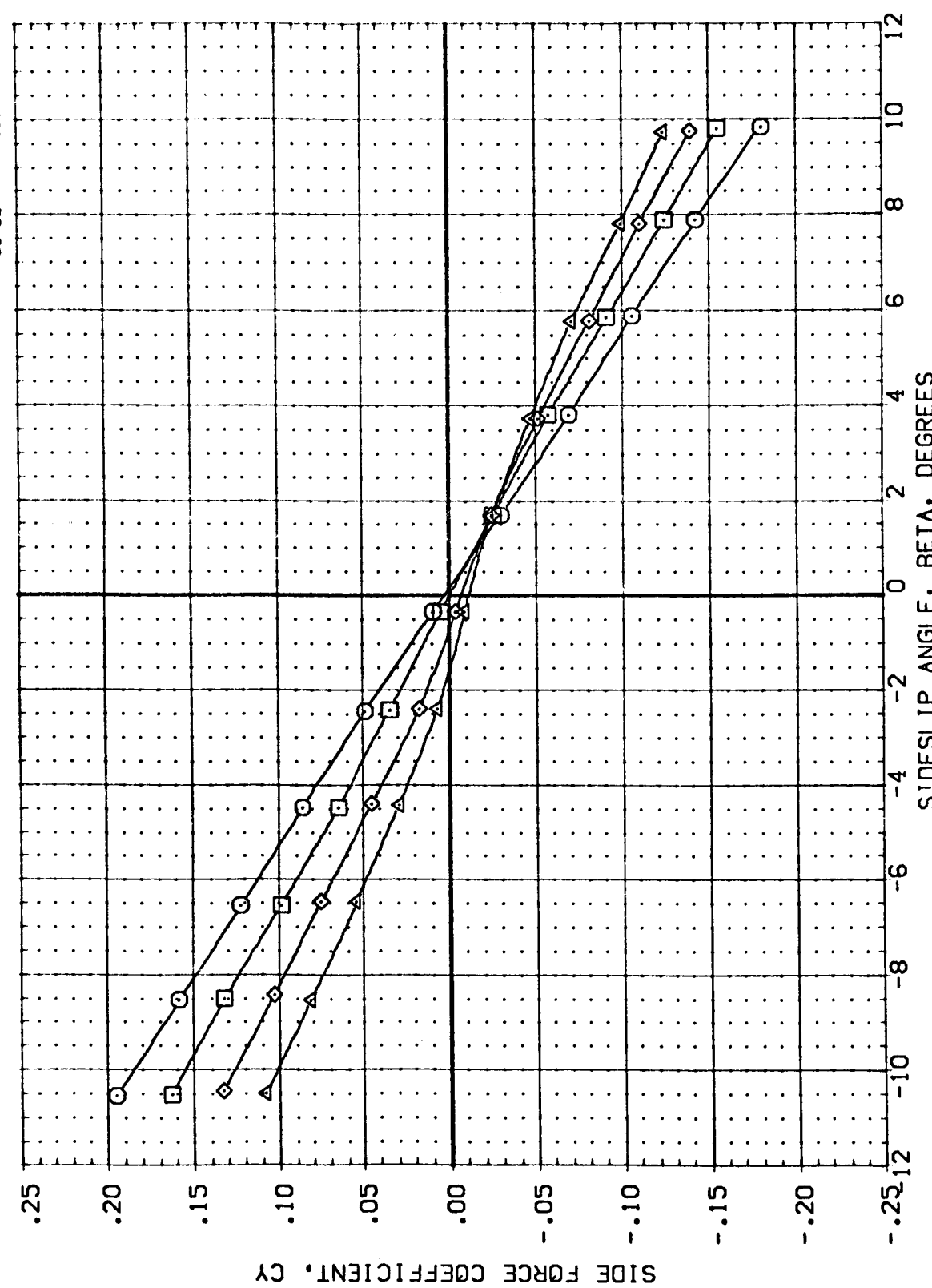


FIG. 22 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 1398

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (A870:0) MSFC 574(DA48) CRB 139B
 (A870:1) MSFC 574(DA48) CRB 139B
 (A870:2) MSFC 574(DA48) CRB 139B
 (A870:3) MSFC 574(DA48) CRB 139B
 (A870:4) MSFC 574(DA48) CRB 139B

ALPHA .000
 10.000
 20.000
 30.000
 40.000

ELEVTR .000
 .000
 .000
 .000
 .000

SPOBRK 999.990
 999.990
 999.990
 999.990
 999.990

BOFLAP .000
 .000
 .000
 .000
 .000

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

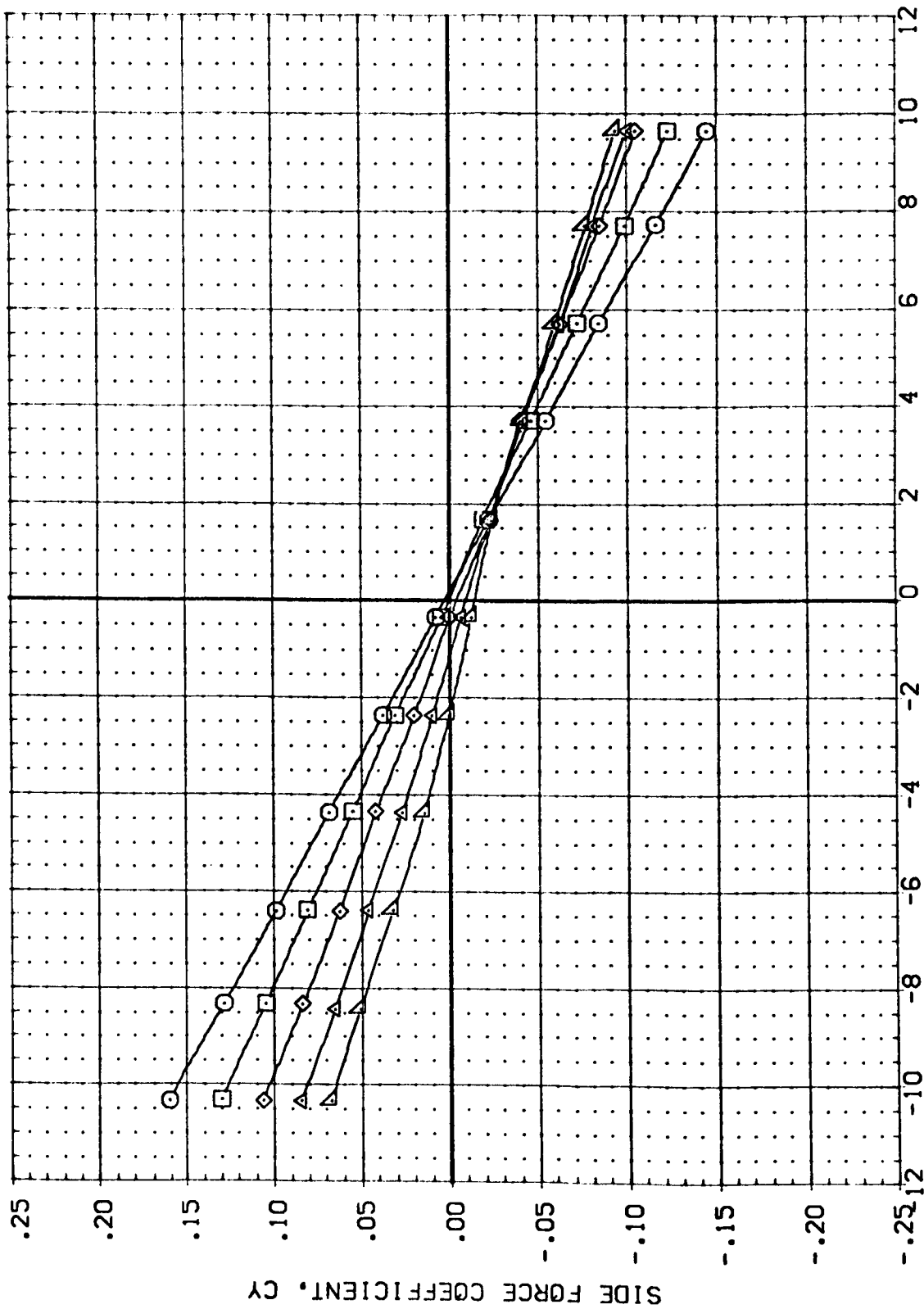


FIG. 22 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139B

(F)MACH = 4.96



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (A87010) MSFC 574(OA48) CR8 1393
 (A87011) MSFC 574(OA48) CR8 1393
 (A87012) MSFC 574(OA48) CR8 1393
 (A87013) MSFC 574(OA48) CR8 1393
 (A87014) DATA NOT AVAILABLE

ALPHA .000
 10.000
 20.000
 30.000
 40.000

ELEVTR .000
 .000
 .000
 .000
 .000

SPOBRK 999.990
 999.990
 999.990
 999.990
 999.990

BOFLAP .000
 .000
 .000
 .000
 .000

REFERENCE INFORMATION
 SREF 2690.0000 SO.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

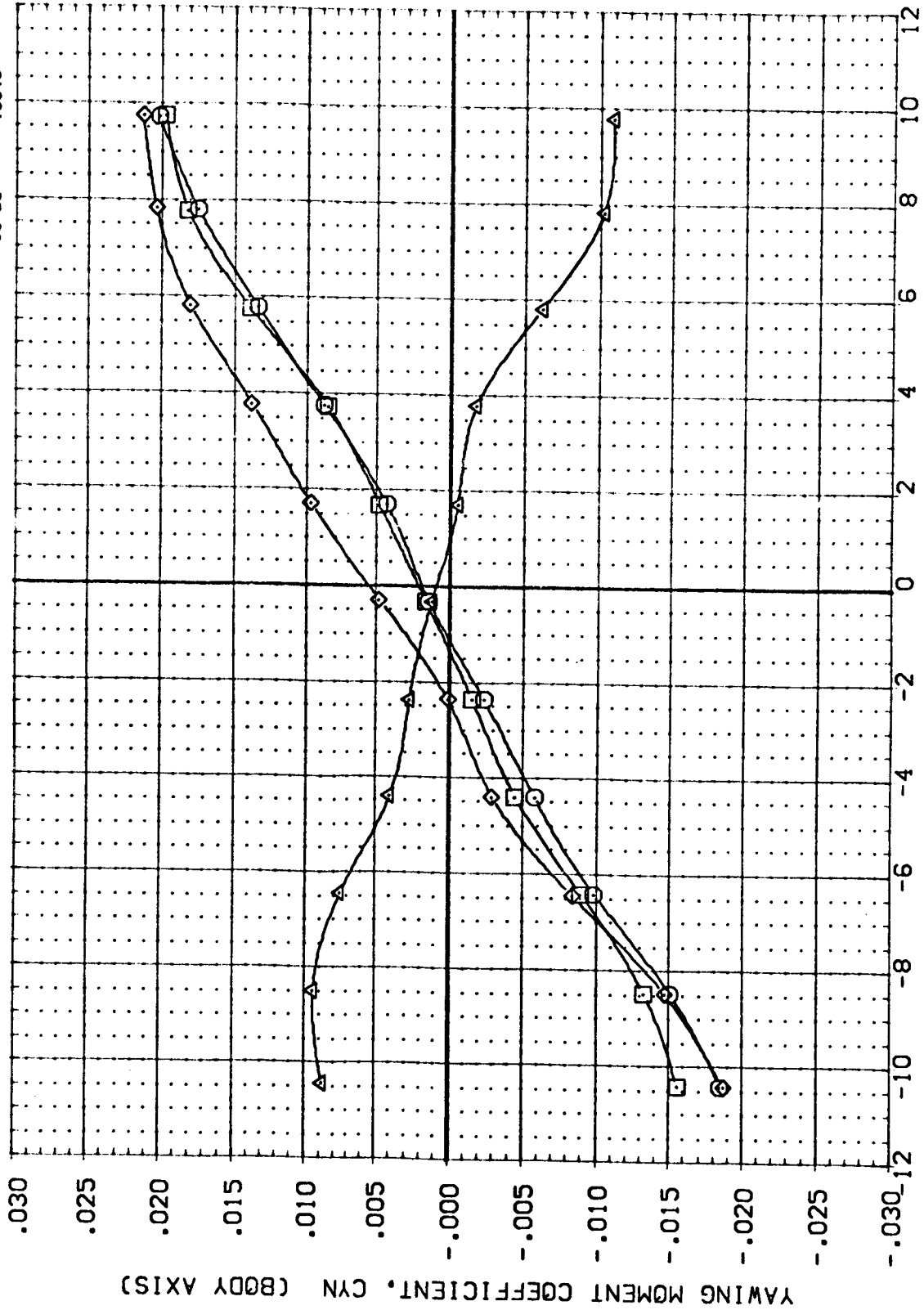


FIG. 22 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139B

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (A87010) MSFC 574(OA48) ORB 139B
 (A87011) MSFC 574(OA48) ORB 139B
 (A87012) MSFC 574(OA48) ORB 139B
 (A87013) DATA NOT AVAILABLE
 (A87014) DATA NOT AVAILABLE

ALPHA
 .000
 10.000
 20.000
 30.000
 40.000

ELEVTR
 .000
 .000
 .000
 .000
 .000

SPDBRK
 999.990
 999.990
 999.990
 999.990
 999.990

BOFLAP
 .000
 .000
 .000
 .000
 .000

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

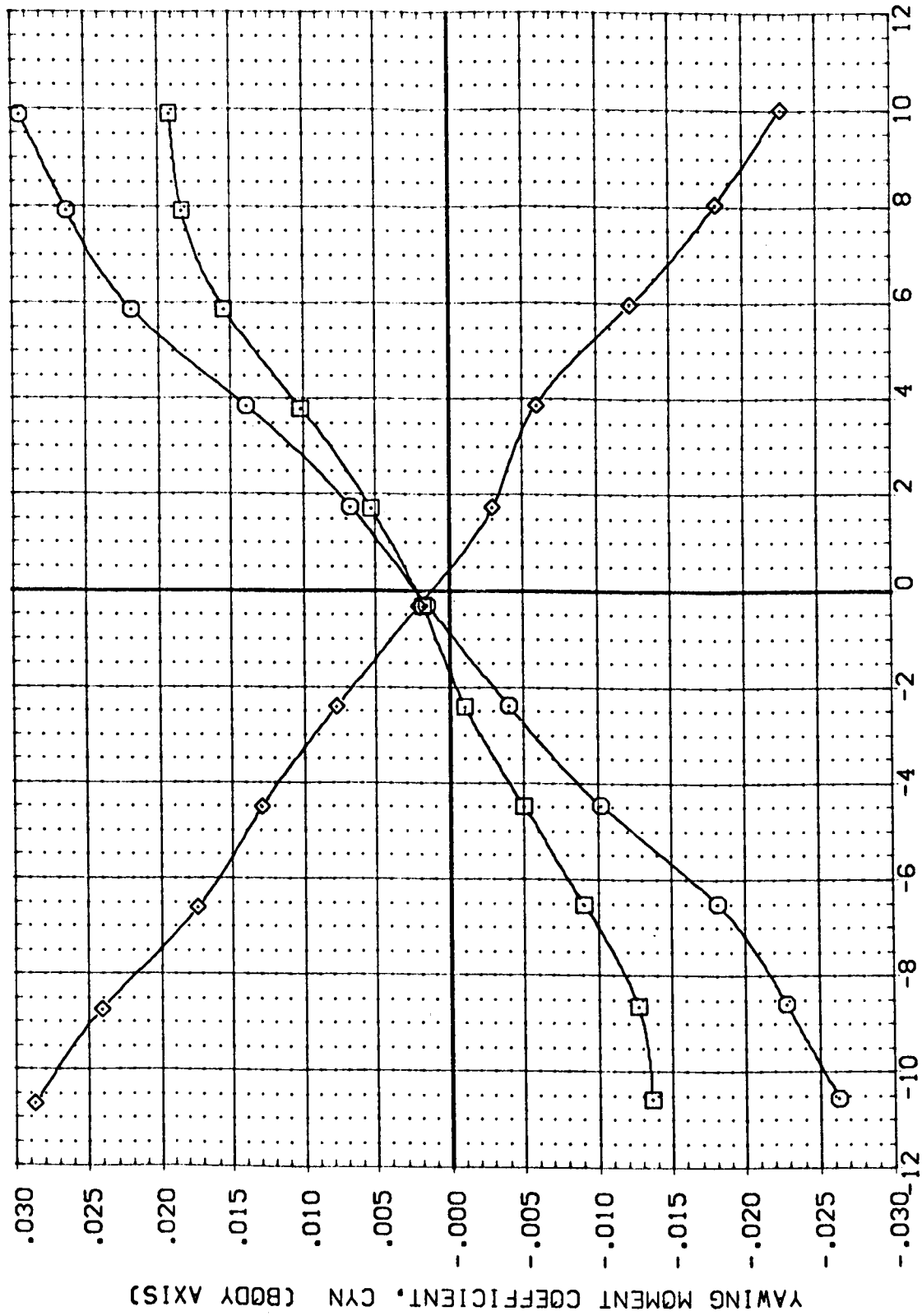


FIG. 22 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139B

(B)MACH = .90

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (A87010) MSFC 574(CA48) CR8 1398
 (A87011) MSFC 574(CA48) CR8 1393
 (A87012) MSFC 574(CA48) CR8 1393
 (A87013) DATA NOT AVAILABLE
 (A87014) DATA NOT AVAILABLE

ALPHA ELEVTR SPD8RY BOFLAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SREF 2690.0000 SC.FT.
 10.000 .000 999.990 .000 LREF 474.8000 IN.
 20.000 .000 999.990 .000 BREF 936.7000 IN.
 30.000 .000 999.990 .000 XMRP 838.7000 IN.
 40.000 .000 999.990 .000 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

REFERENCE INFORMATION
 SC.FT.
 IN.
 IN.
 IN.
 IN.
 IN.

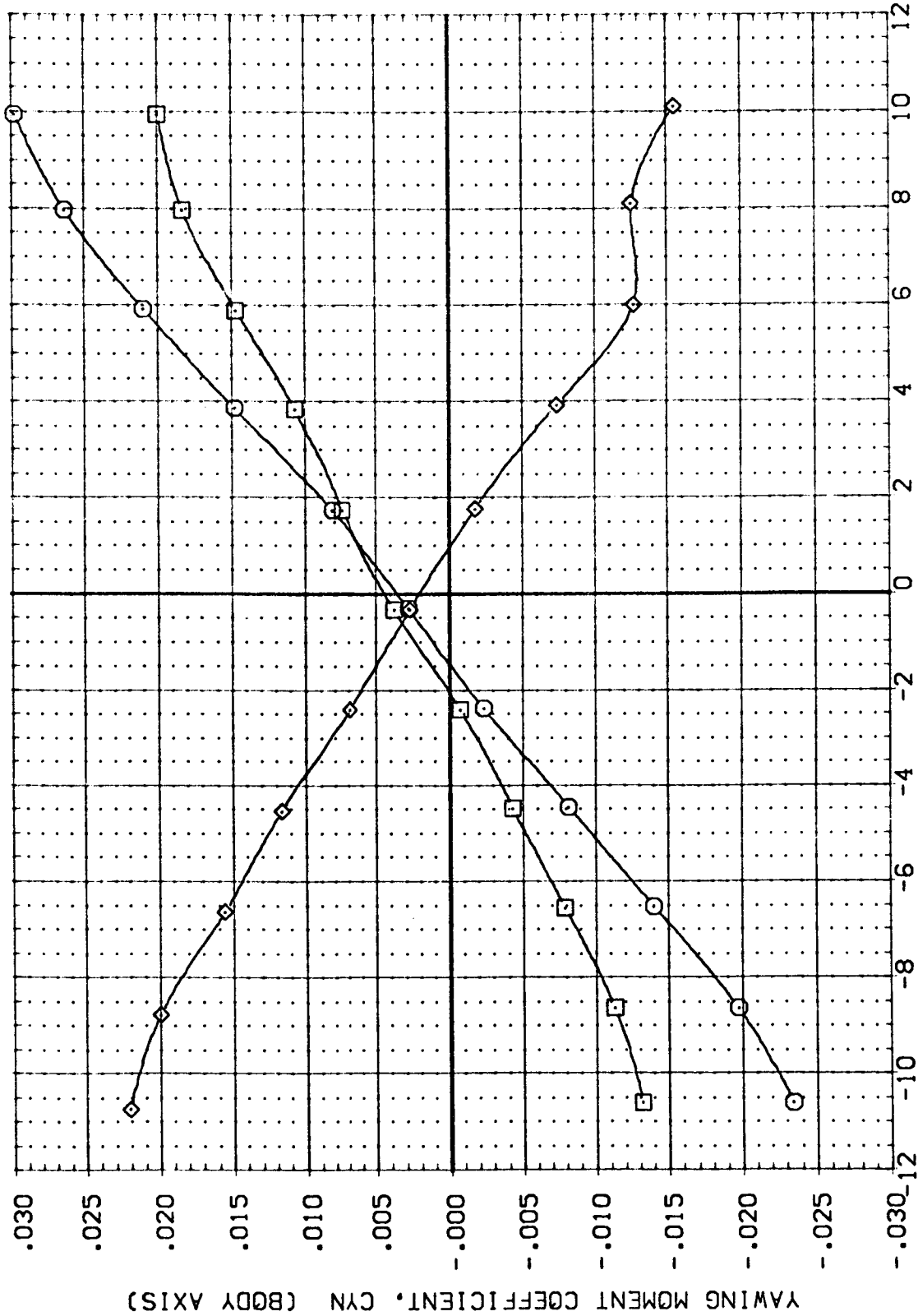


FIG. 22 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139B

(C)MACH = 1.20

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(A87C10) MSFC 574(OA48) CR8 139B
 (A87C11) MSFC 574(OA48) CR8 139B
 (A87C12) MSFC 574(OA48) CR8 139B
 (A87C13) DATA NOT AVAILABLE
 (A87C14) DATA NOT AVAILABLE

ALPHA ELEVTR SPOBRK BOFLAP REFERENCE INFORMATION

.000 .000 999.990 .000 SREF 2690.0000 SQ.FT.
 10.000 .000 999.990 .000 LREF 474.8000 IN.
 20.000 .000 999.990 .000 BRREF 936.7000 IN.
 30.000 .000 999.990 .000 XMRP 838.7000 IN.
 40.000 .000 999.990 .000 ZMRP .0000 IN.
 SCALE .0040

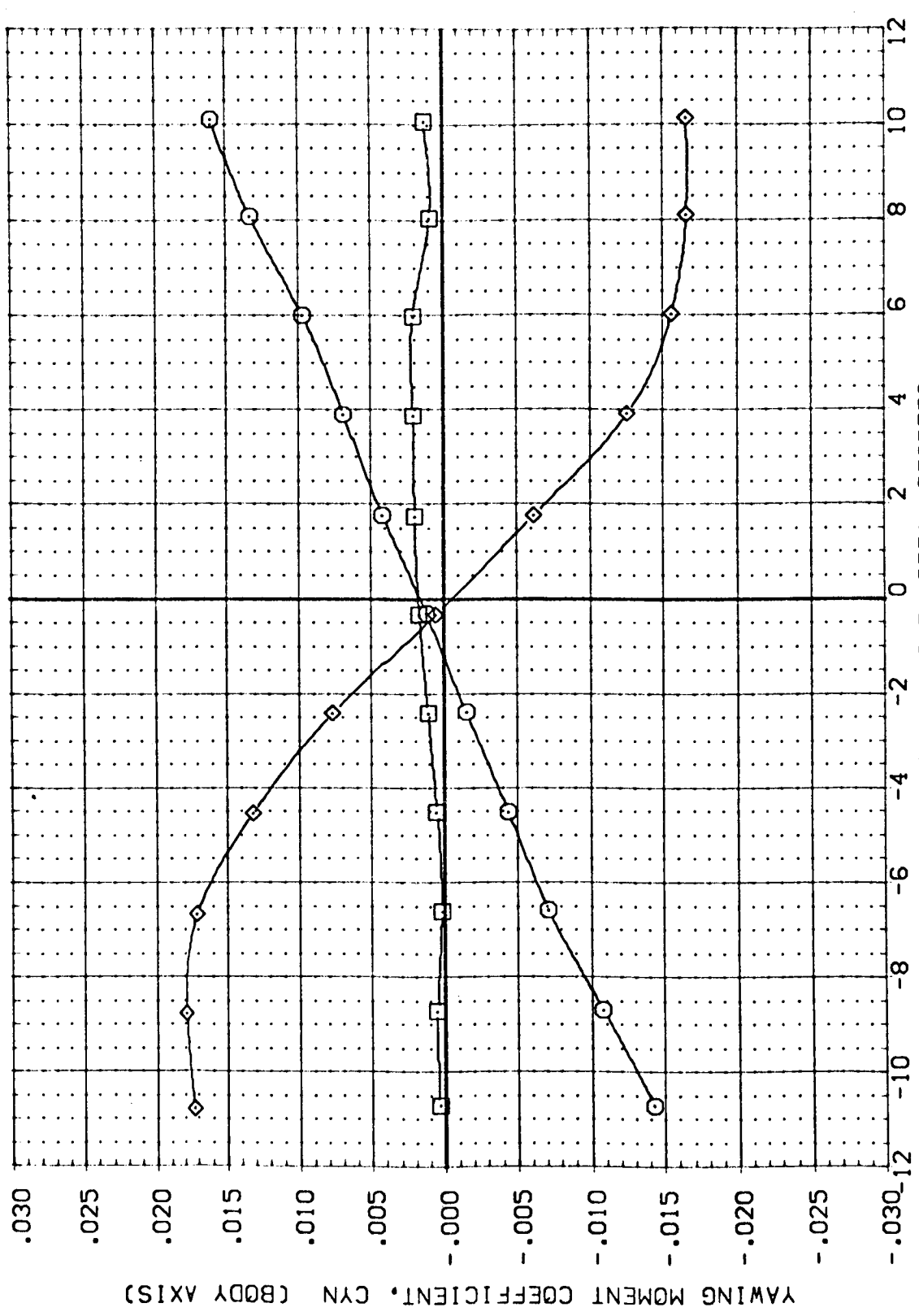


FIG. 22 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139B

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (A87010) MSFC 574(OA48) ORB 1399
 (A87011) MSFC 574(OA48) CRB 1399
 (A87012) MSFC 574(OA48) CRB 1399
 (A87013) MSFC 574(OA48) CRB 1399
 (A87014) DATA NOT AVAILABLE

ALPHA .000
 10.000
 20.000
 30.000
 40.000

ELEVTR .000
 .000
 .000
 .000
 .000

SPOBRK 999.990
 999.990
 999.990
 999.990
 999.990

BOFLAP .000
 .000
 .000
 .000
 .000

REFERENCE INFORMATION
 SREF 2690.0000 SC.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

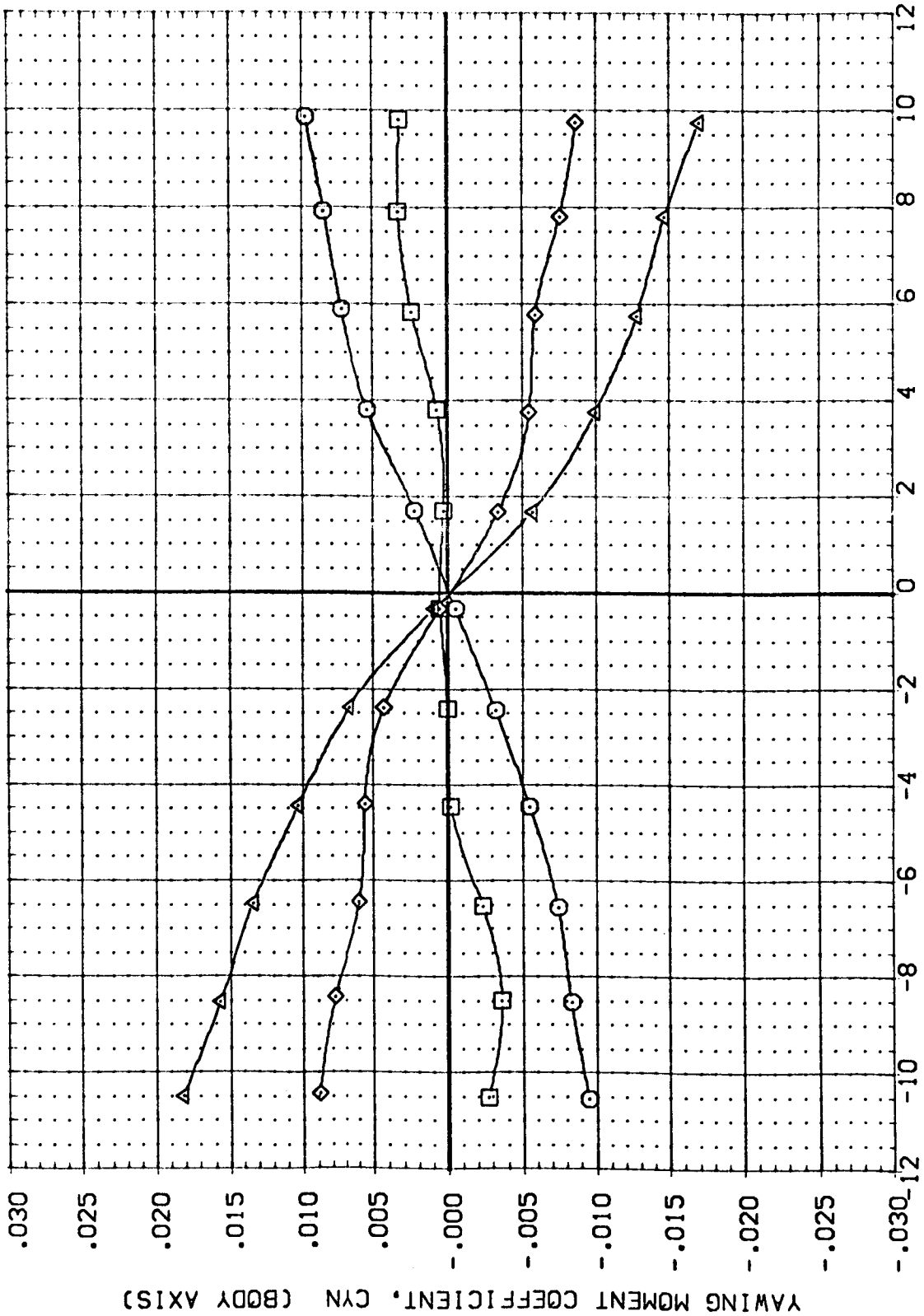


FIG. 22 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139B

(E)MACH = 2.99

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(A87010) MSFC 574(CA48) CRB 139B
 (A87011) MSFC 574(CA48) CRB 139B
 (A87012) MSFC 574(CA48) CRB 139B
 (A87013) MSFC 574(CA48) CRB 139B
 (A87014) MSFC 574(CA48) CRB 139B

ALPHA .000
 10.000
 20.000
 30.000
 40.000

ELEVTR .000
 .000
 .000
 .000
 .000

SPOBRK 999.990
 999.990
 999.990
 999.990
 999.990

BOFLAP .000
 .000
 .000
 .000
 .000

REFERENCE INFORMATION

SREF 2690.0000 SO.FT.
 LREF 474.8000 IN.
 BRFL 936.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

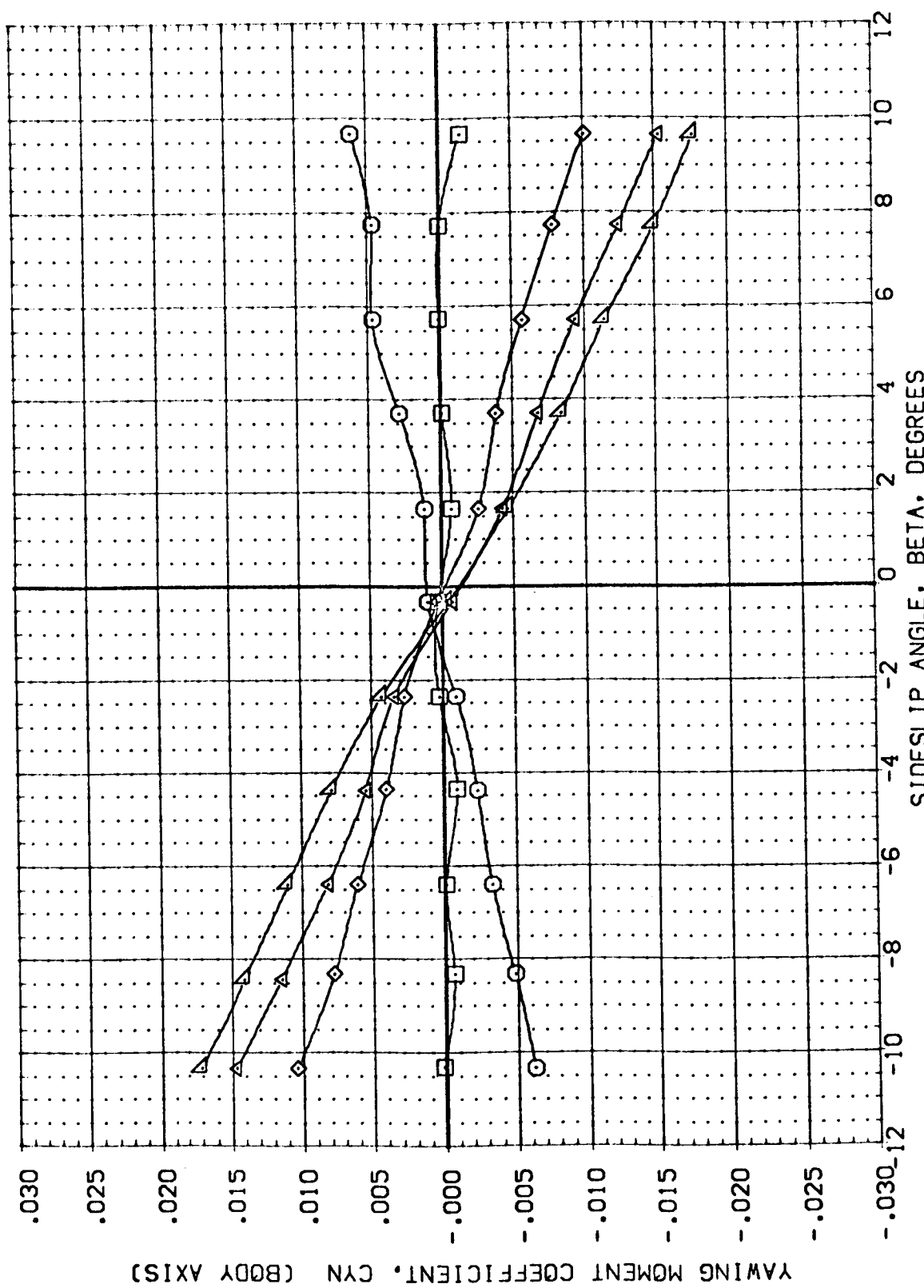


FIG. 22 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139B
 (F)MACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION

{A87010} MSFC 574(OA48) CRB 139B
 {A87011} MSFC 574(OA48) CRB 139B
 {A87012} MSFC 574(OA48) CRB 139B
 {A87013} DATA NOT AVAILABLE
 {A87014} DATA NOT AVAILABLE

ALPHA .000
 .000
 10.000
 20.000
 30.000
 40.000

ELEVTR .000
 .000
 .000
 .000
 .000
 .000

SPOBRK 999.990
 999.990
 999.990
 999.990
 999.990

BDFLAP .000
 .000
 .000
 .000
 .000

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

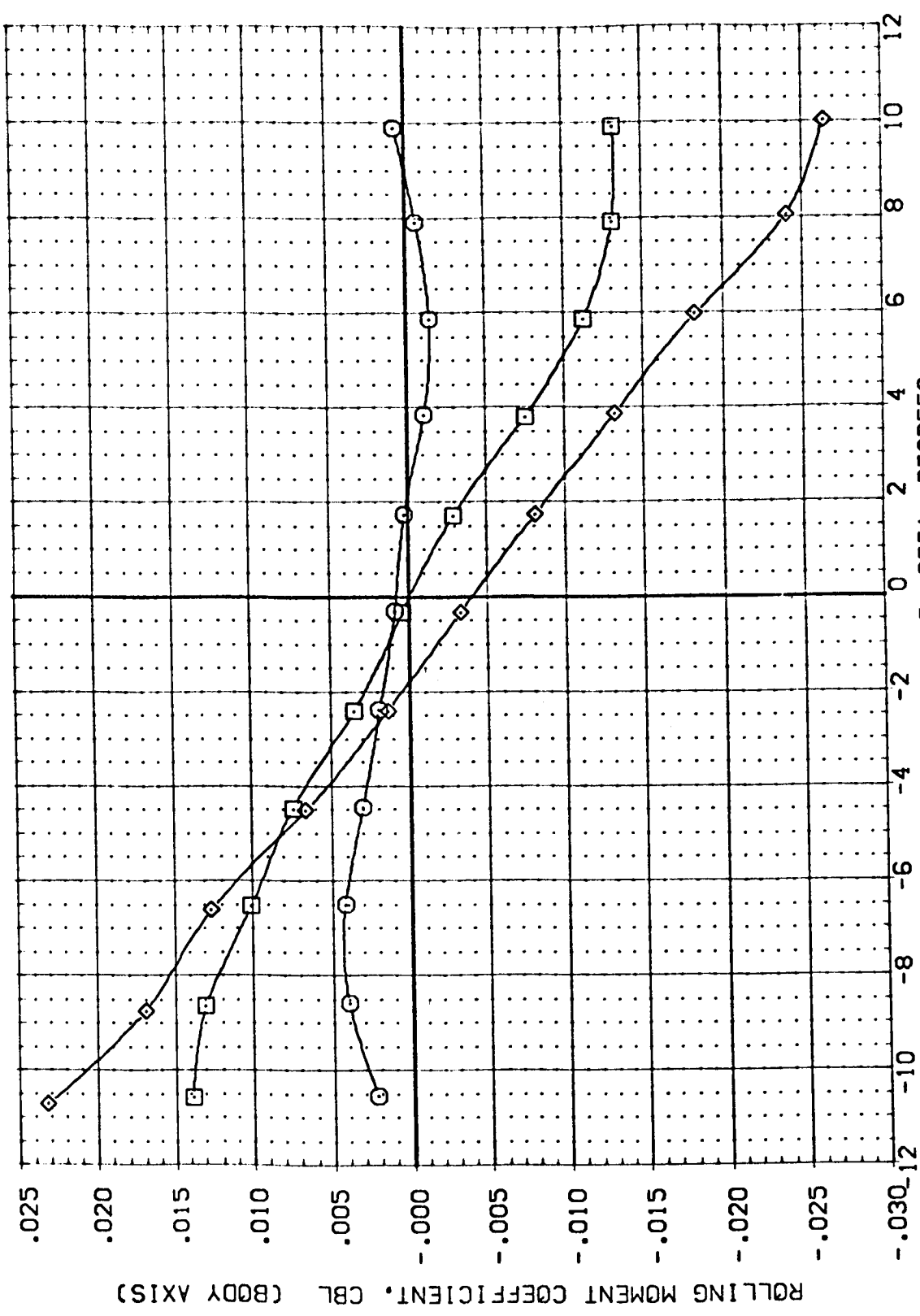


FIG. 22 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139B

(B)MACH = .90

DATA SET SYMBOL CONFIGURATION DESCRIPTION REFERENCE INFORMATION

(A87010)	MSFC 574(CA48) ORB 139B	SRFF	7690.000	SO.F.T.
(A87011)	MSFC 574(CA48) ORB 139B	LRF	474.8000	N.
(A87012)	MSFC 574(CA48) CRB 139B	BREF	936.7000	N.
(A87013)	DATA NOT AVAILABLE	XMRP	838.7000	N.
(A87014)	DATA NOT AVAILABLE	YMRP	.0000	N.
		ZMRP	.0000	N.
		SCALE	.0040	

ALPHA ELEVTR SFOBRK BDFLAP

.000	.000	999.990	.000
10.000	.000	999.990	.000
20.000	.000	999.990	.000
30.000	.000	999.990	.000
40.000	.000	999.990	.000

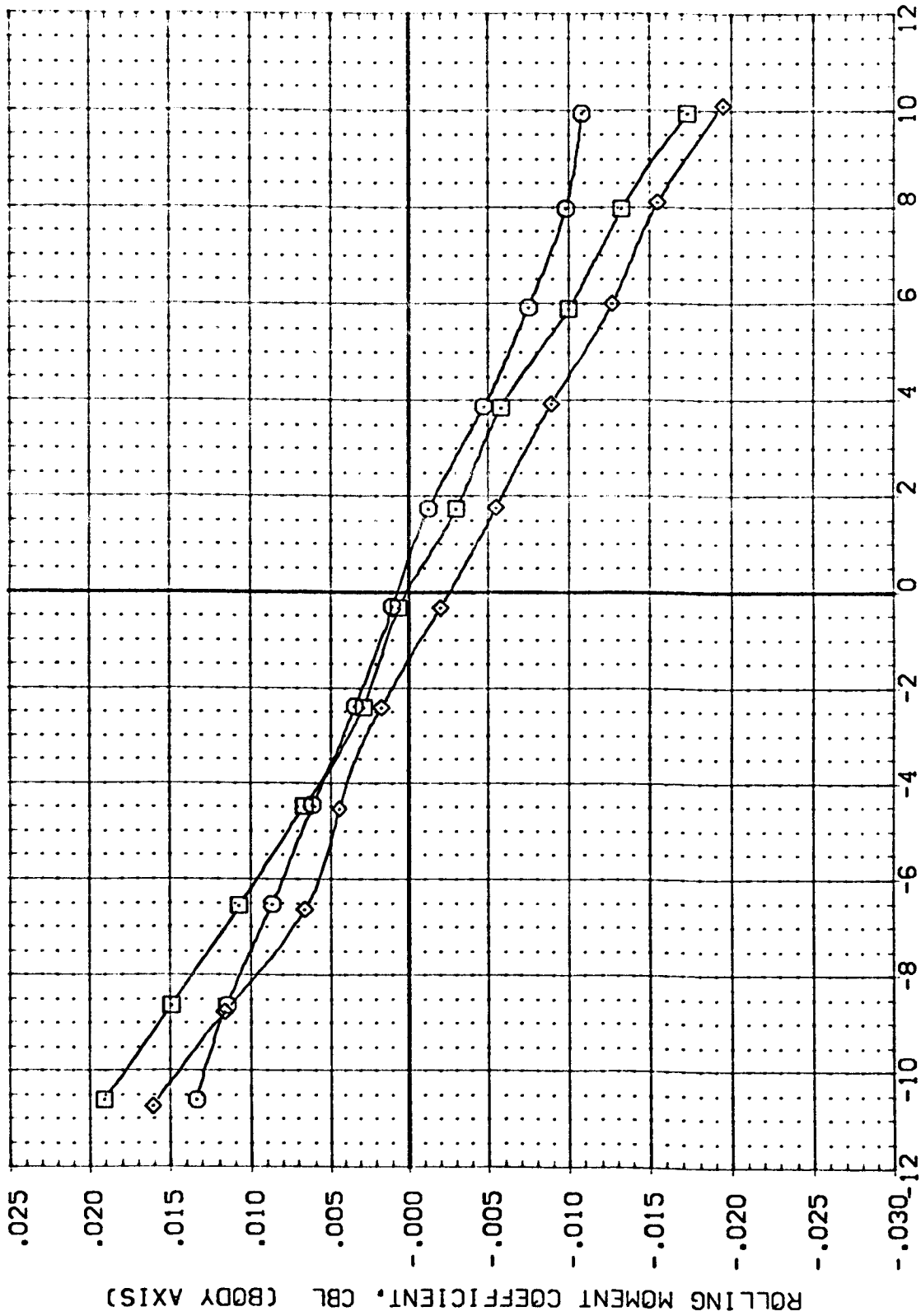


FIG. 22 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139B

DATA SET SYMBOL CONFIGURATION DESCRIPTION REFERENCE INFORMATION

(A870:0)	MSFC 574(CA48) CRB 139B	SREF 2690.0000
(A870:1)	MSFC 574(CA48) CRB 1393	LREF 474.8000
(A870:2)	MSFC 574(CA48) CRB 1398	BREF 936.7000
(A870:3)	DATA NOT AVAILABLE	XREF 838.7000
(A870:4)	DATA NOT AVAILABLE	YREF .0000
		ZREF .0000
		SCALE .0040

ALPHA	ELEVTR	SPOBRK	BOFLAP
.000	.000	999.990	.000
10.000	.000	999.990	.000
20.000	.000	999.990	.000
30.000	.000	999.990	.000
40.000	.000	999.990	.000

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(A870:0)	MSFC 574(CA48) CRB 139B
(A870:1)	MSFC 574(CA48) CRB 1393
(A870:2)	MSFC 574(CA48) CRB 1398
(A870:3)	DATA NOT AVAILABLE
(A870:4)	DATA NOT AVAILABLE

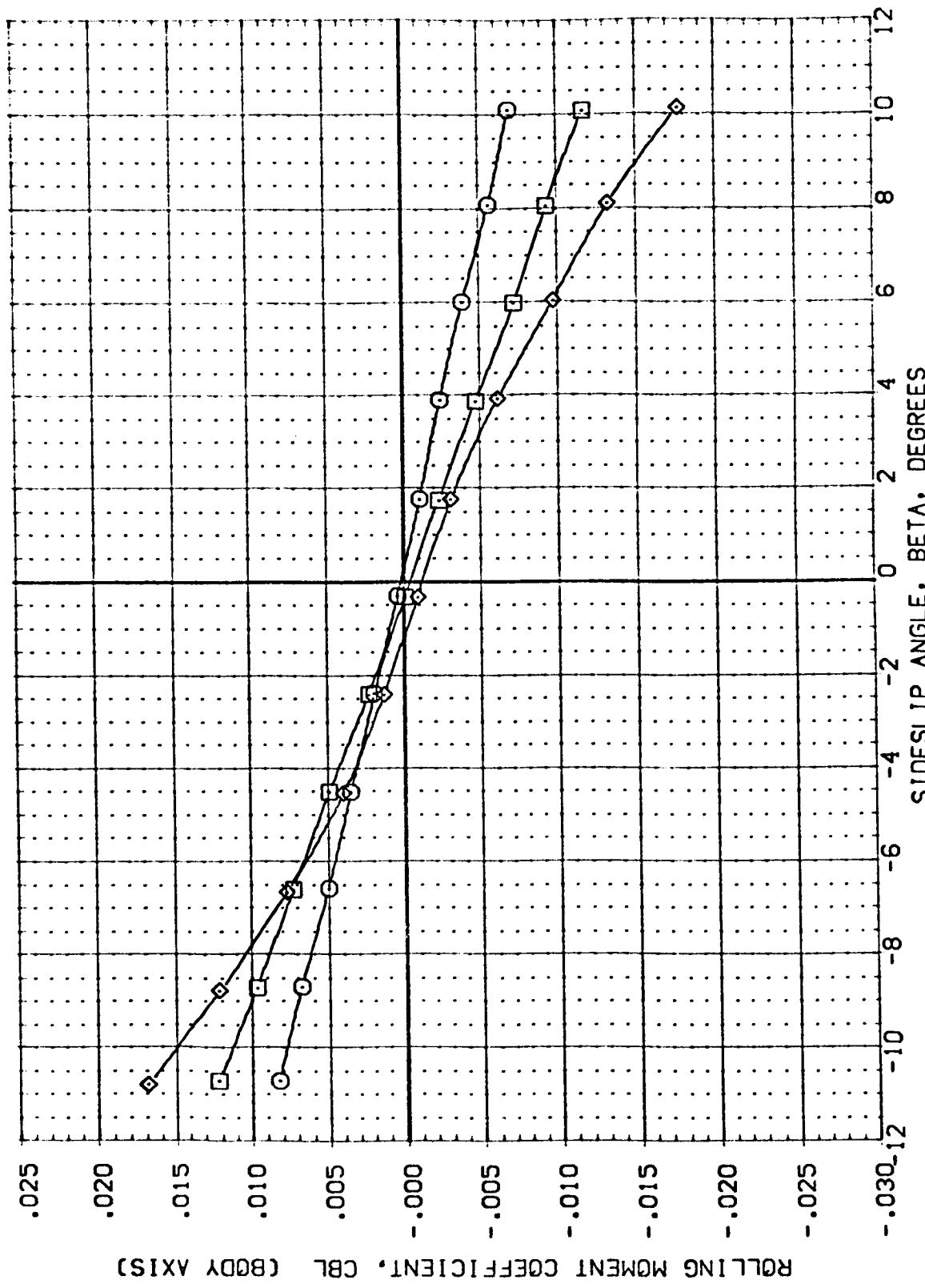


FIG. 22 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139B

(C)MACH = 1.95

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(A870:0) MSFC 574(CA48) ORB 139B
 (A870:1) MSFC 574(CA48) CRB 139B
 (A870:2) MSFC 574(CA48) CRB 139B
 (A870:3) MSFC 574(CA48) CRB 139B
 (A870:4) DATA NOT AVAILABLE

ALPHA ELEVTR SPDBRK BOFLAP REFERENCE INFORMATION

.000 .000 999.990 .000 SREF 7690.0000 SC.FT.
 10.000 .000 999.990 .000 LREF 474.8000 IN.
 20.000 .000 999.990 .000 BRFL 936.7000 IN.
 30.000 .000 999.990 .000 XMRP 836.7000 IN.
 40.000 .000 999.990 .000 YMRP .0000 IN.
 .0000 .0000 .0000 .0000 ZMRP .0000 IN.
 SCALE .0010

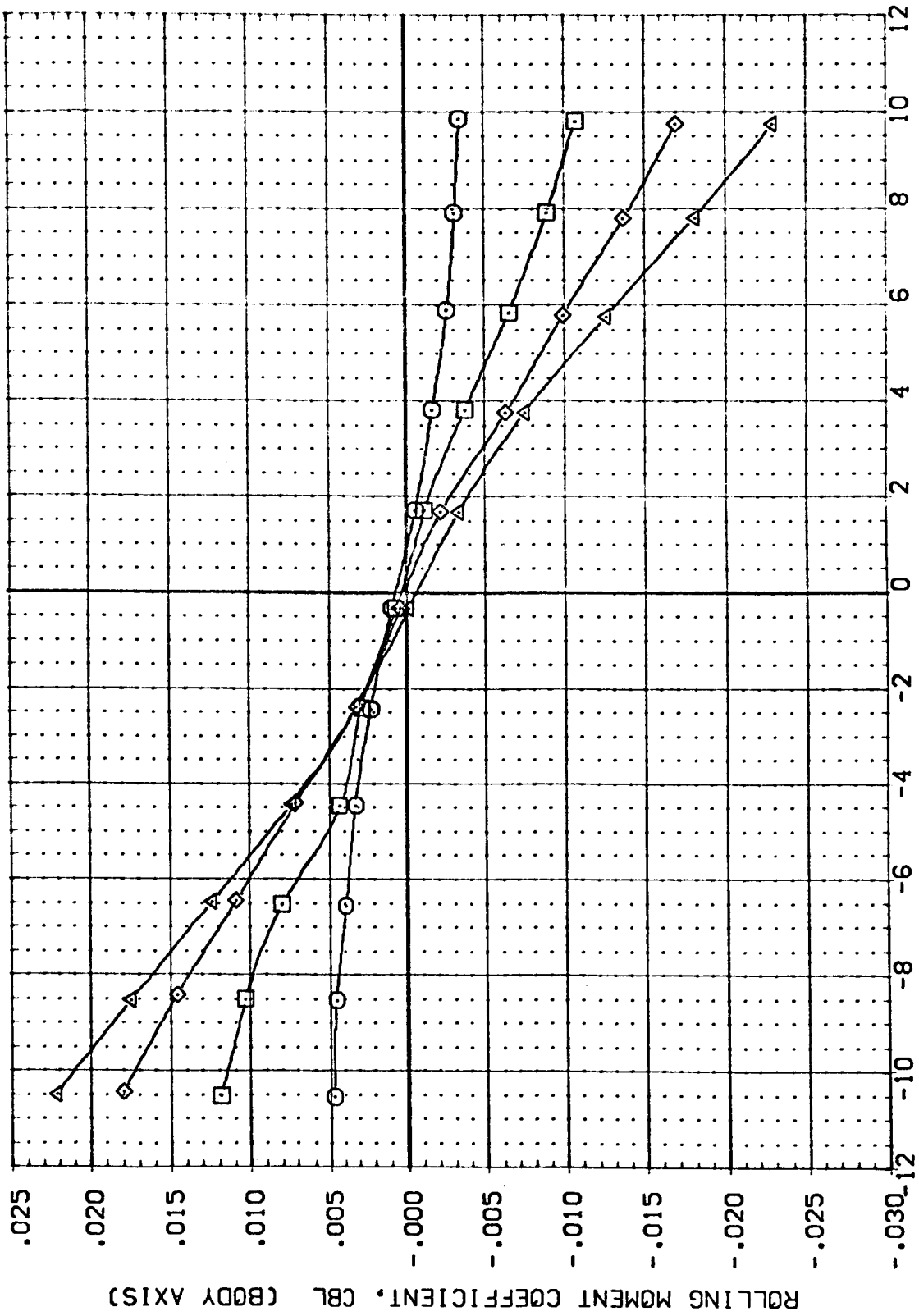


FIG. 22 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139B

(E)MACH = 2.99

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BDELAP	REFERENCE INFORMATION
(A87010)	MSFC 574(CA48) CRB 139B	.000	.000	999.990	.000	SREF 7690.0000
(A87011)	MSFC 574(CA48) CRB 139B	10.000	.000	999.990	.000	LREF 474.8000
(A87012)	MSFC 574(CA48) CRB 139B	20.000	.000	999.990	.000	BREF 936.7000
(A87013)	MSFC 574(CA48) CRB 139B	30.000	.000	999.990	.000	XMRP 838.7000
(A87014)	MSFC 574(CA48) CRB 139B	40.000	.000	999.990	.000	YMRP .0000
						ZMRP .0000
						SCALE .0040

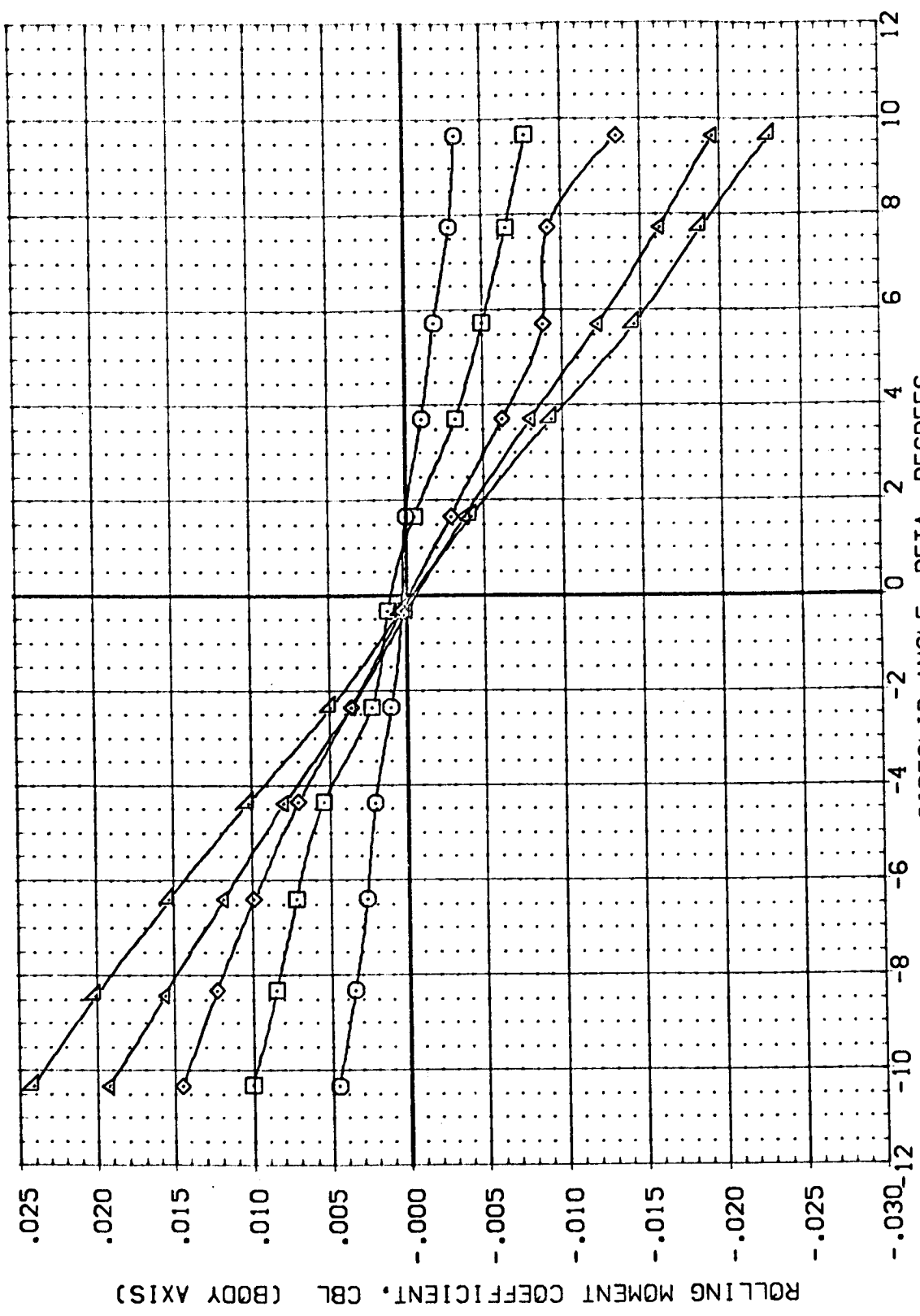


FIG. 22 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139B

(F)MACH = 4.96

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPDBRK	BDFLAP	REFERENCE INFORMATION
(A87033)	MSFC 574(CA48) CRB 139B W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SC.FT.
(A87034)	MSFC 574(CA48) CRB 139B W/ALT NOSE	10.000	.000	999.990	.000	LREF 474.8000 IN.
(A87035)	MSFC 574(CA48) CRB 139B W/ALT NOSE	20.000	.000	999.990	.000	BREF 936.7000 IN.
(A87036)	MSFC 574(CA48) CRB 139B W/ALT NOSE	30.000	.000	999.990	.000	XMRP 838.7000 IN.
(A87037)	DATA NOT AVAILABLE	40.000	.000	999.990	.000	YMRP .0000 IN.
						ZMRP .0000 IN.
						SCALE .0040

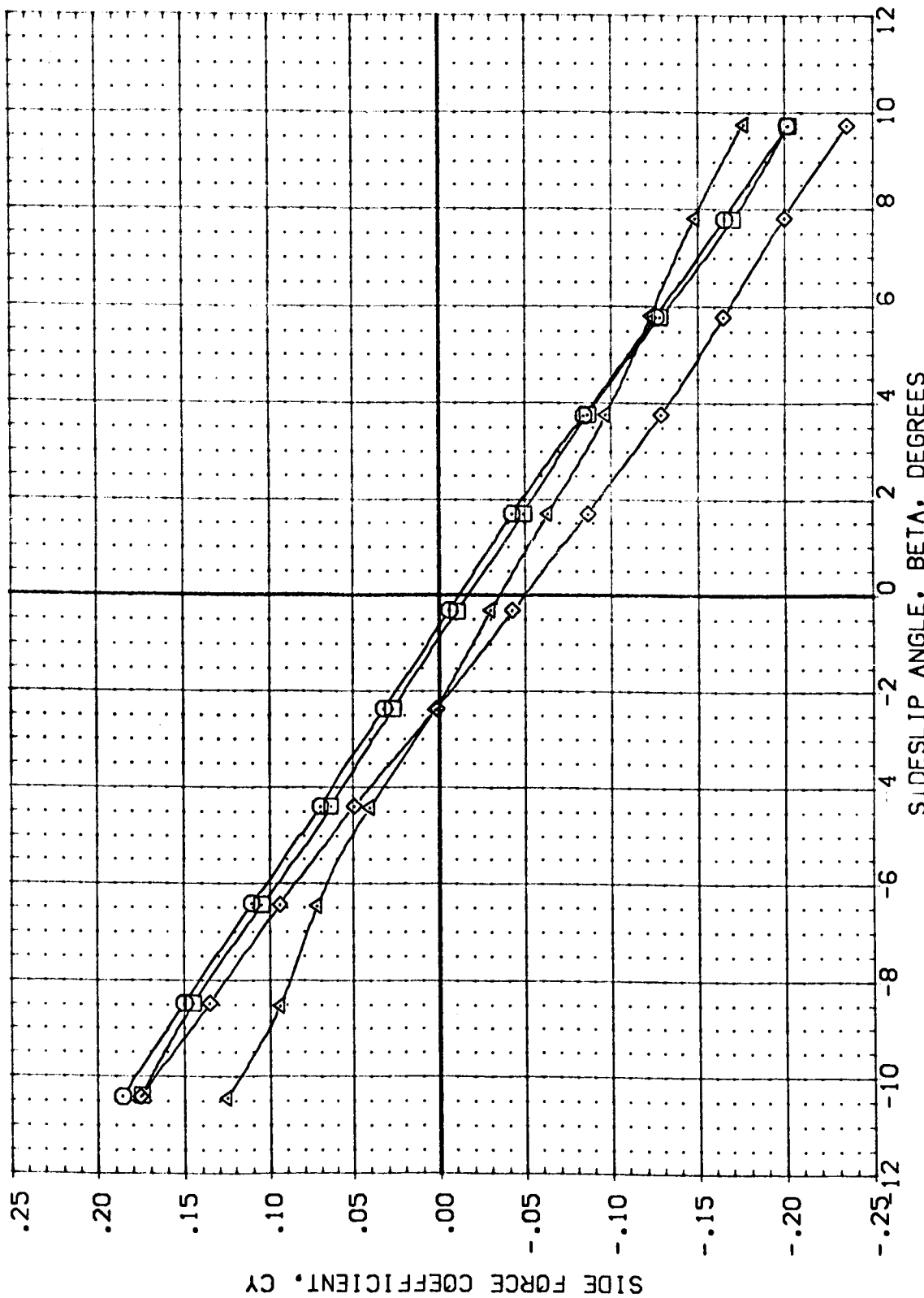


FIG. 23 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139B WITH ALT. NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(A87033)	MSFC 574(CA48) CRB 139B V/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000
(A87034)	MSFC 574(CA48) CRB 139B V/ALT NOSE	10.000	.000	999.990	.000	LREF 474.6000
(A87035)	MSFC 574(CA48) CRB 139B V/ALT NOSE	20.000	.000	999.990	.000	BREF 936.7000
(A87036)	DATA NOT AVAILABLE	30.000	.000	999.990	.000	XMRP 838.7000
(A87037)	DATA NOT AVAILABLE	40.000	.000	999.990	.000	YMRP .0000
						ZMRP .0000
						SCALE .0040

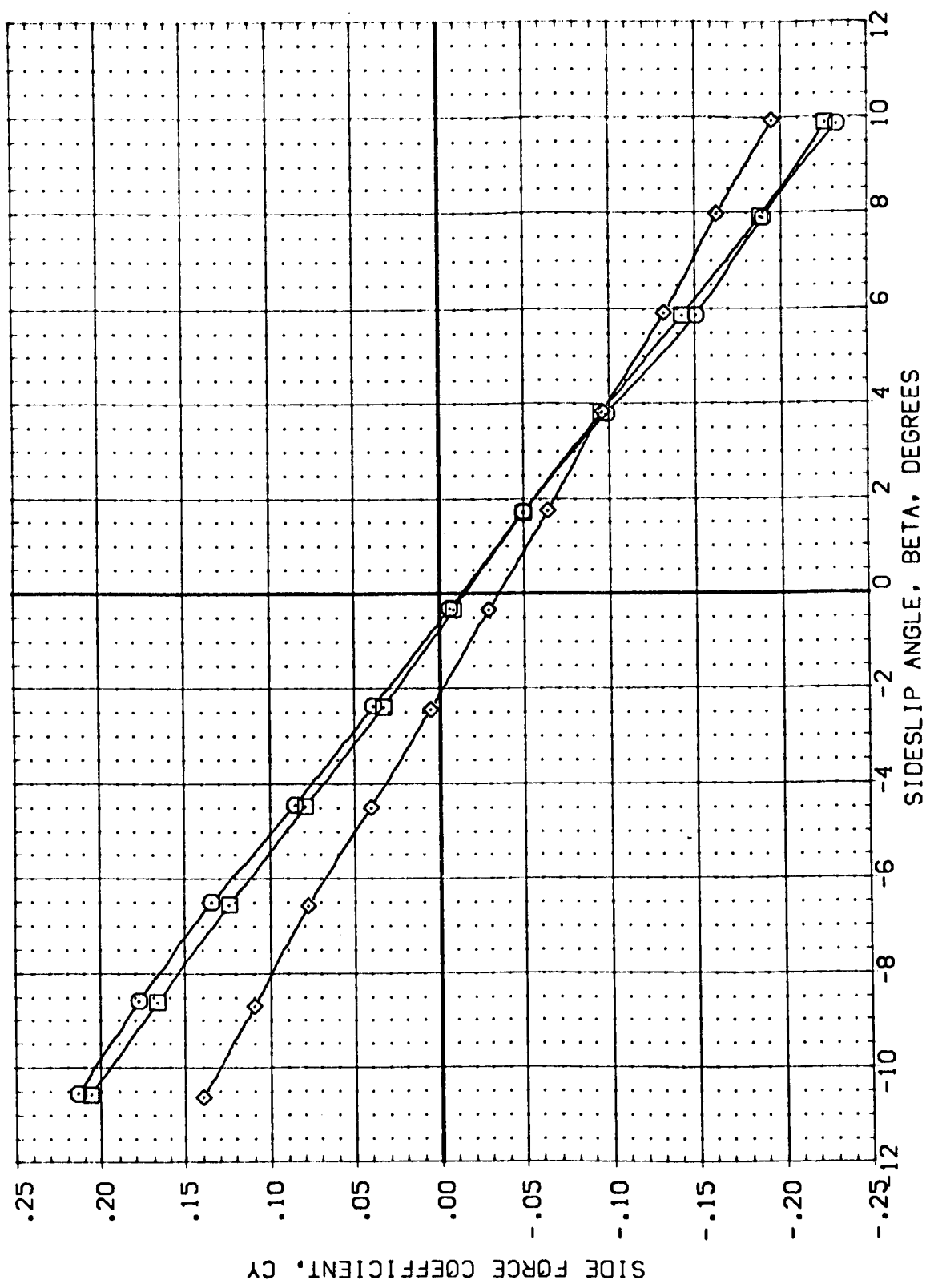


FIG. 23 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139B WITH ALT. NOSE
 (B)MACH = .90
 PAGE 974

DATA SET SYMBOL CONFIGURATION DESCRIPTION REFERENCE INFORMATION

{A87033}	MSEC 574(OA48) CRB 139B W/ALT NOSE	SREF 2690.0000	93. FT.
{A87034}	MSEC 574(OA48) CRB 139B W/ALT NOSE	LREF 474.8000	IN.
{A87035}	MSEC 574(OA48) CRB 139B W/ALT NOSE	BREF 935.7000	IN.
{A87036}	DATA NOT AVAILABLE	XMRP 838.7000	IN.
{A87037}	DATA NOT AVAILABLE	YMRP .0000	IN.
		ZMRP .0000	IN.
		SCALE .0040	

ALPHA ELEVTR SPOBRK BOFLAP

.000	.000	999.990	.000
10.000	.000	999.990	.000
20.000	.000	999.990	.000
30.000	.000	999.990	.000
40.000	.000	999.990	.000

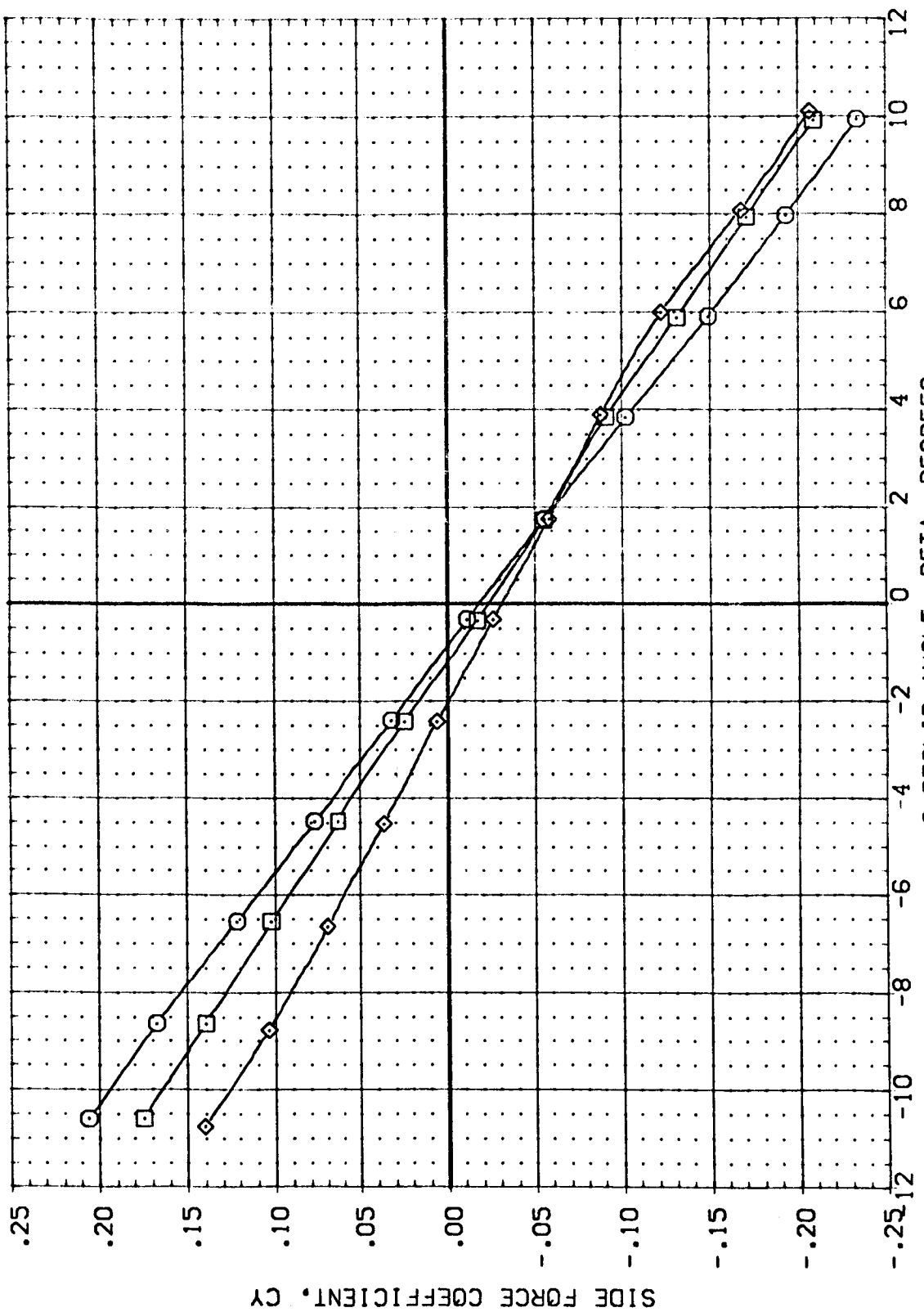


FIG. 23 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139B WITH ALT. NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	SPDBRK	ELEVTR	ALPHA	REFERENCE INFORMATION
(A87033)	MSFC 574(CA48) CRB 1398 W/ALT NOSE	.000	999.990	.000	.000	SREF 2690.0000
(A87034)	MSFC 574(CA48) CRB 1399 W/ALT NOSE	.000	999.990	.000	10.000	LREF 474.8000
(A87035)	MSFC 574(CA48) CRB 1398 W/ALT NOSE	.000	999.990	.000	20.000	BREF 936.7000
(A87036)	MSFC 574(CA48) CRB 1399 W/ALT NOSE	.000	999.990	.000	30.000	XMRP 838.7000
(A87037)	MSFC 574(CA48) CRB 1399 W/ALT NOSE	.000	999.990	.000	40.000	YMRP .0000
						ZMRP .0000
						SCALE .0040

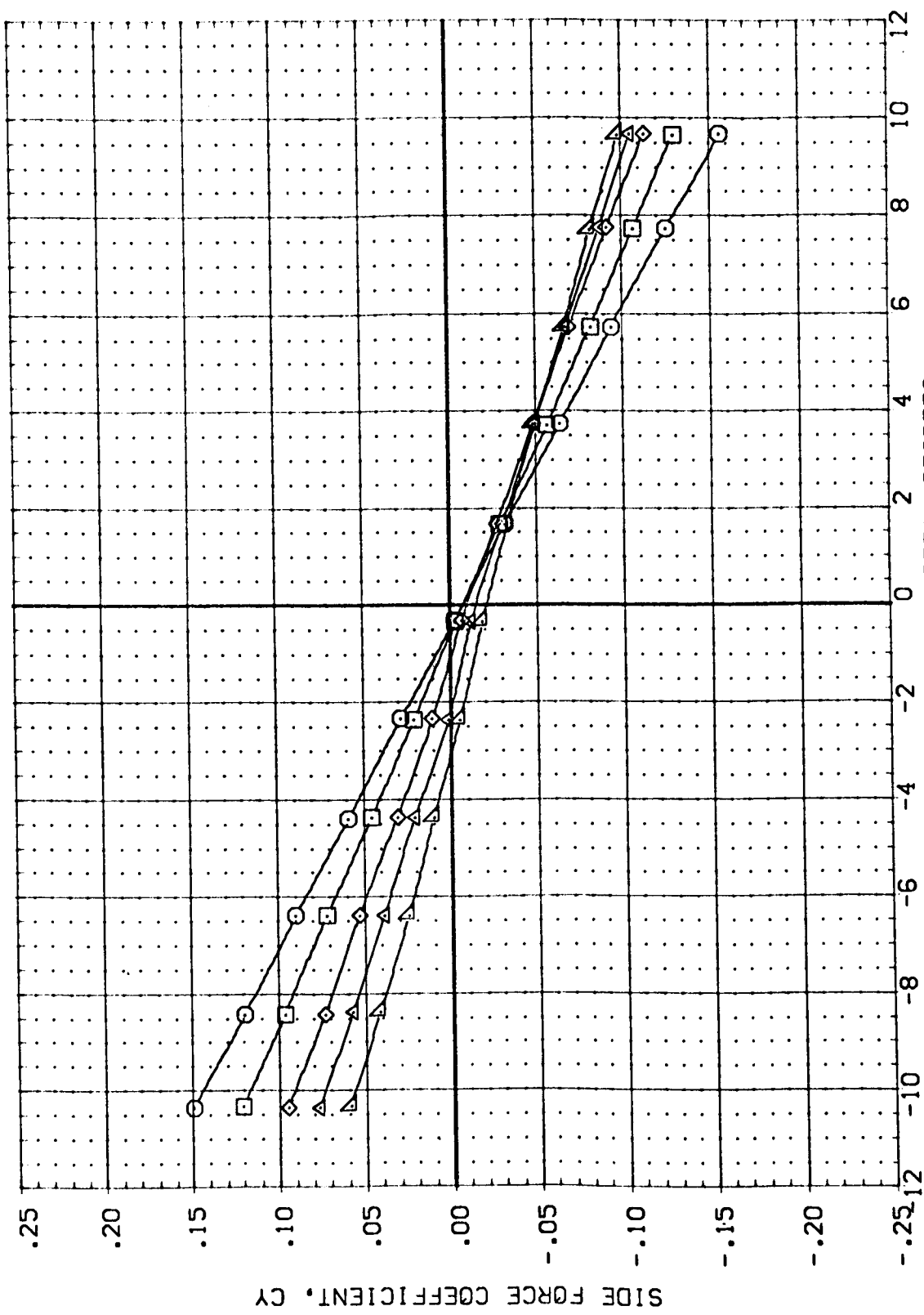


FIG. 23 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139B WITH ALT. NOSE
 (F)MACH = 4.96
 PAGE 978

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVATOR	SPOILER	BOFLAP	REFERENCE INFORMATION
(A87033)	MSFC 574(CA48); CRB 1398 W/ALT NCSE	.000	.000	999.990	.000	SPREF 2990 .0000
(A87034)	MSFC 574(CA48); CRB 1398 W/ALT NCSE	.10	.000	999.990	.000	SPREF 2990 .0000
(A87035)	MSFC 574(CA48); CRB 1398 W/ALT NCSE	.20	.000	999.990	.000	SPREF 2990 .0000
(A87036)	MSFC 574(CA48); CRB 1398 W/ALT NCSE	.30	.000	999.990	.000	SPREF 2990 .0000
(A87037)	DATA NOT AVAILABLE	.40	.000	999.990	.000	SPREF 2990 .0000

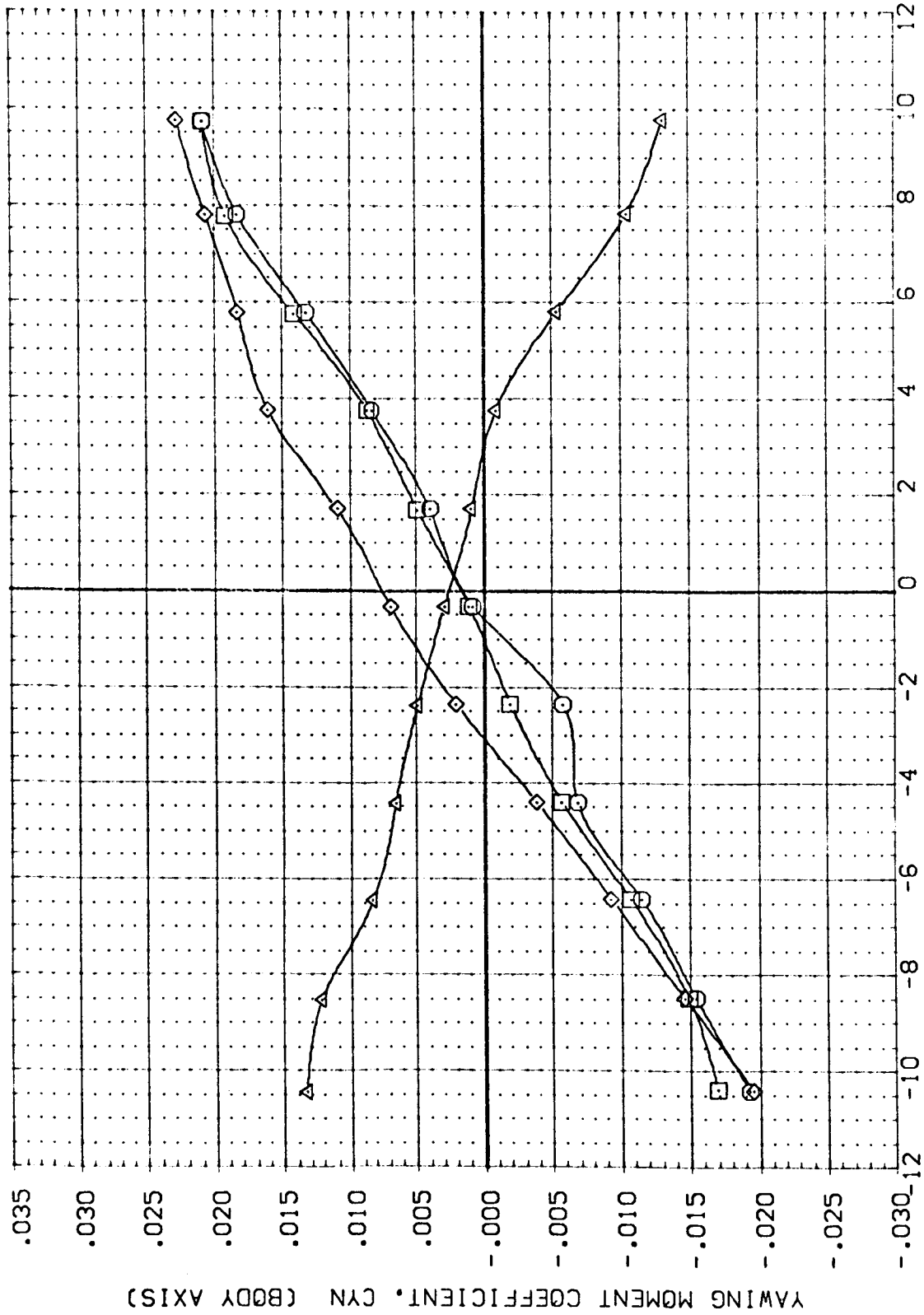


FIG. 23 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 1398 WITH ALT. NOSE

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(A87033) MSEC 574(CA48) CR8 139B W/ALT NOSE
 (A87034) MSEC 574(CA48) CR8 139B W/ALT NOSE
 (A87035) MSEC 574(CA48) CR8 139B W/ALT NOSE
 (A87036) DATA NOT AVAILABLE
 (A87037) DATA NOT AVAILABLE

ALPHA .000
 10.000
 20.000
 30.000
 40.000

ELEVTR .000
 .000
 .000
 .000
 .000

SPCRBK 999.990
 999.990
 999.990
 999.990
 999.990

BDFLAP .000
 .000
 .000
 .000
 .000

REFERENCE INFORMATION SQ.FT.
 SREF 2690.0000
 LREF 474.8000
 BREF 635.7000
 XMRP 839.7000
 YMRP .0000
 ZMRP .0000
 SCALE .0010

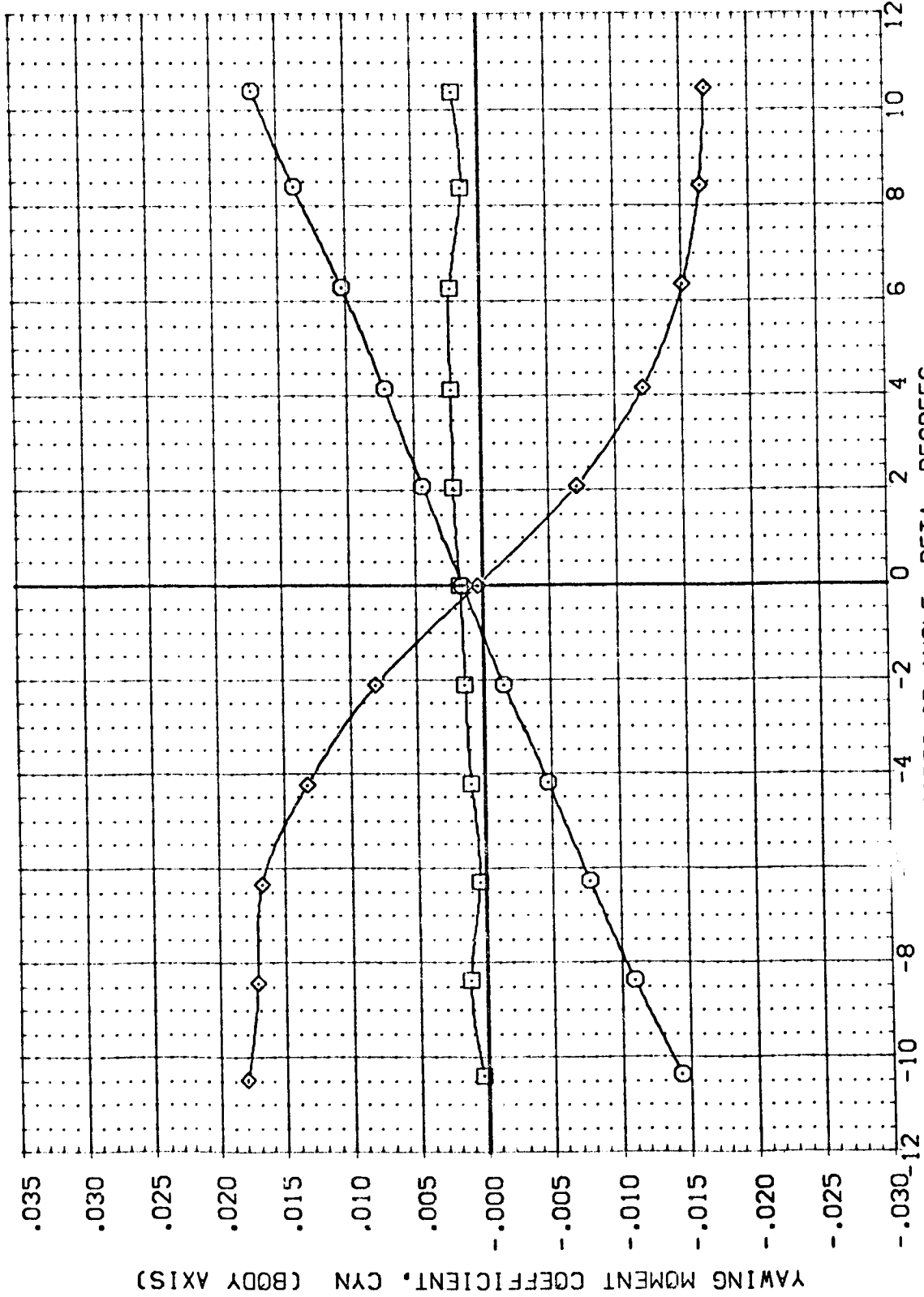


FIG. 23 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139B WITH ALT. NOSE
 () MACH = 1.95

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(A87033) MSFC 574(OA48) ORB | 398 V/ALT NOSE
 (A87034) MSFC 574(OA48) ORB | 398 V/ALT NOSE
 (A87035) MSFC 574(OA48) CRB | 398 V/ALT NOSE
 (A87036) MSFC 574(OA48) CRB | 398 V/ALT NOSE
 (A87037) DATA NOT AVAILABLE

ALPHA ELEVTR SPDRBK BDFLAP REFERENCE INFORMATION SC.F.T.

.000 .000 999.990 .000 SREF 2690.0000
 10.000 .000 999.990 .000 LREF 474.8000
 20.000 .000 999.990 .000 BREF 936.7000
 30.000 .000 999.990 .000 XMRP 838.7000
 40.000 .000 999.990 .000 YMRP .0000
 .000 .000 .000 .000 ZMRP .0000
 .000 .000 .000 .000 SCALE .0040

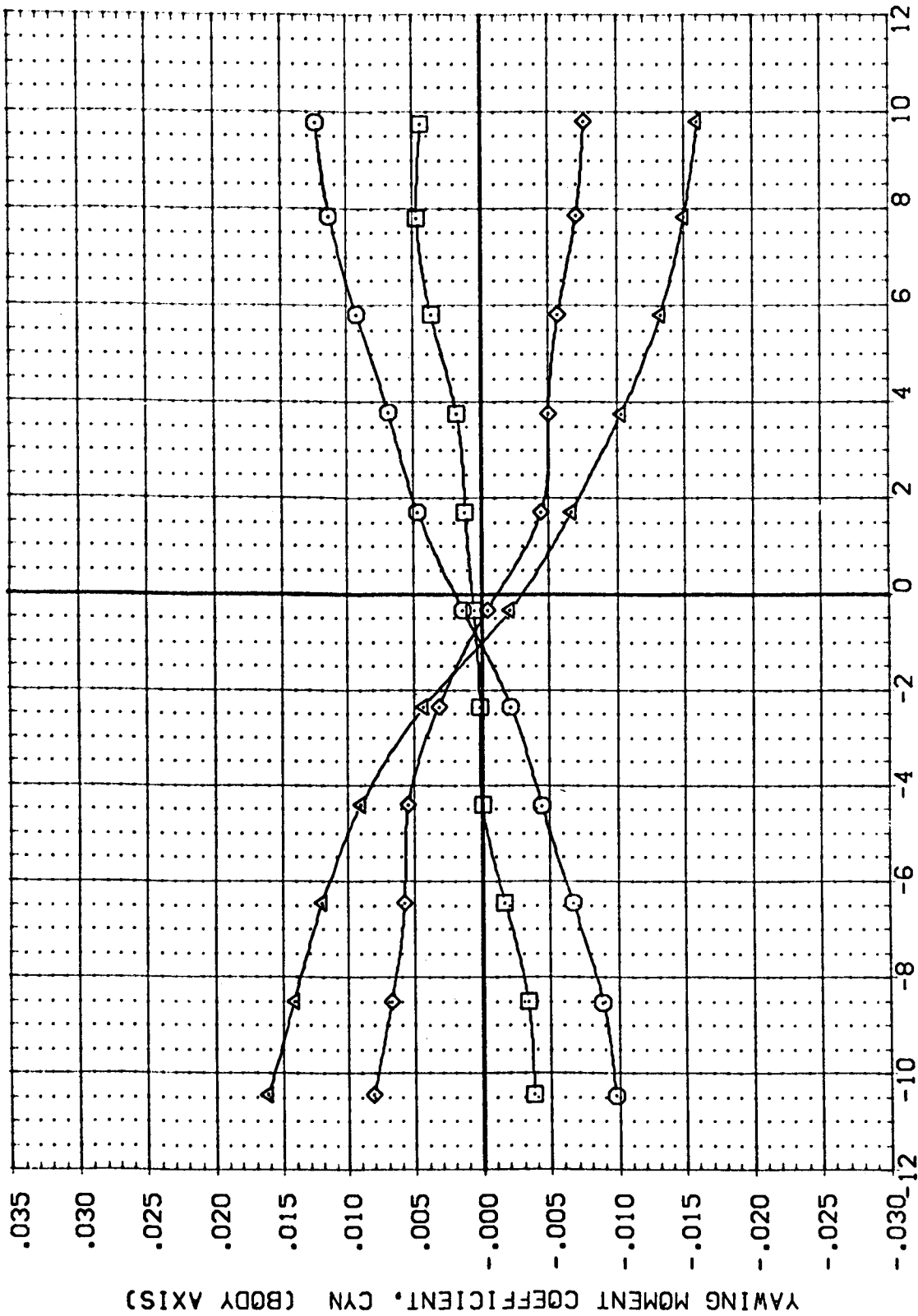


FIG. 23 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139B WITH ALT. NOSE
 (E)MACH = 2.99 PAGE 983

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(A87033)	MSFC 574(OA48) CRB 1398 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000
(A87034)	MSFC 574(OA48) CRB 1398 W/ALT NOSE	10.000	.000	999.990	.000	LREF 474.8000
(A87035)	MSFC 574(OA48) CRB 1398 W/ALT NOSE	20.000	.000	999.990	.000	BREF 936.7000
(A87036)	MSFC 574(OA48) CRB 1398 W/ALT NOSE	30.000	.000	999.990	.000	XMRP 838.7000
(A87037)	MSFC 574(OA48) CRB 1398 W/ALT NOSE	40.000	.000	999.990	.000	YMRP .0000
						ZMRP .0000
						SCALE .0040

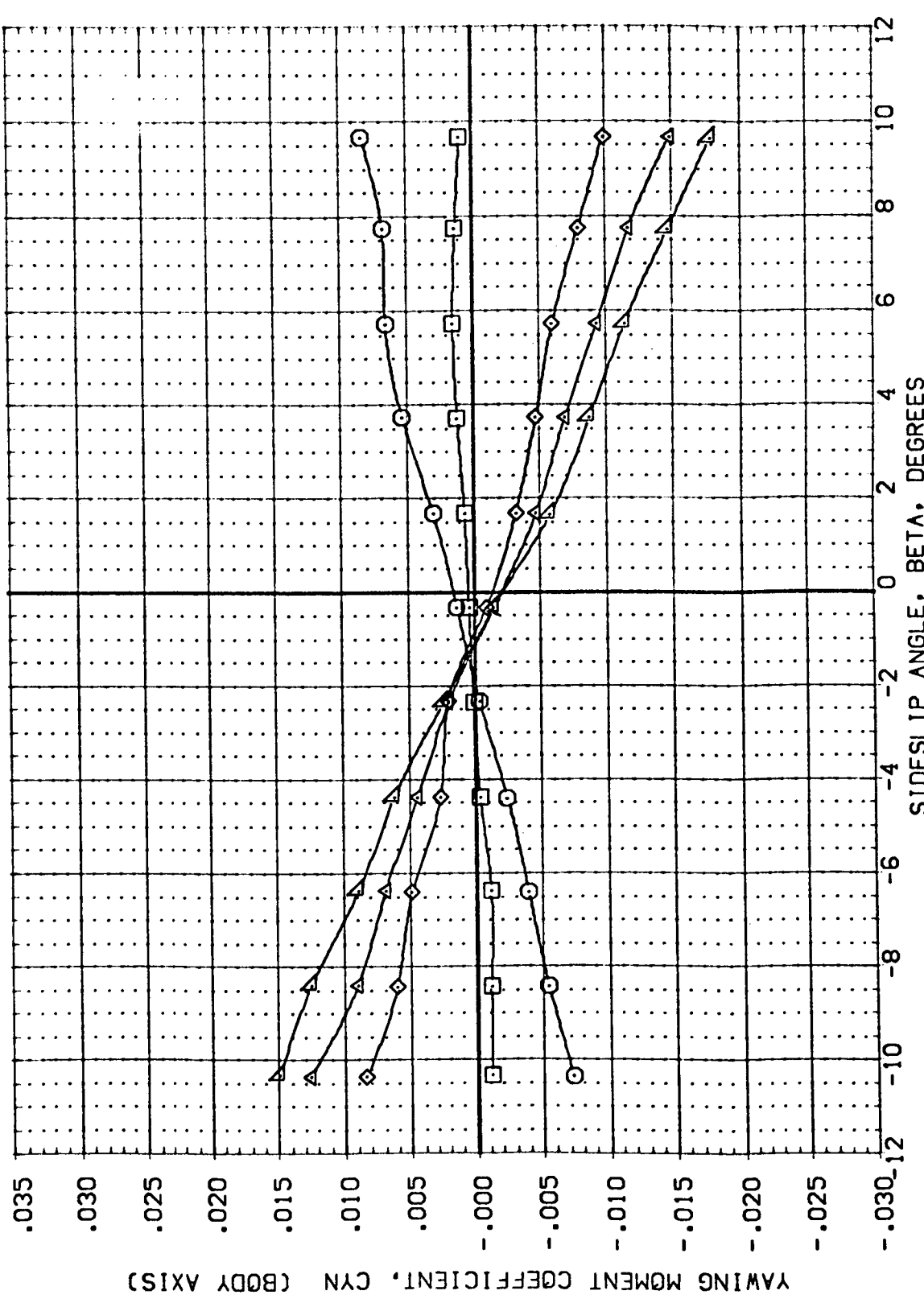


FIG. 23 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 1398 WITH ALT. NOSE
 (F)MACH = 4.96 PAGE 98

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(A87033)	MSFC 574(OA48) CRB 1398 V/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(A87034)	MSFC 574(OA48) CRB 1398 V/ALT NOSE	10.000	.000	999.990	.000	LREF 474.8000 IN.
(A87035)	MSFC 574(OA48) CRB 1398 V/ALT NOSE	20.000	.000	999.990	.000	BREF 936.7000 IN.
(A87036)	MSFC 574(OA48) CRB 1398 V/ALT NOSE	30.000	.000	999.990	.000	XMRP 838.7000 IN.
(A87037)	DATA NOT AVAILABLE	40.000	.000	999.990	.000	YMRP .0000 IN.
						ZMRP .0000 IN.
						SCALE .0010

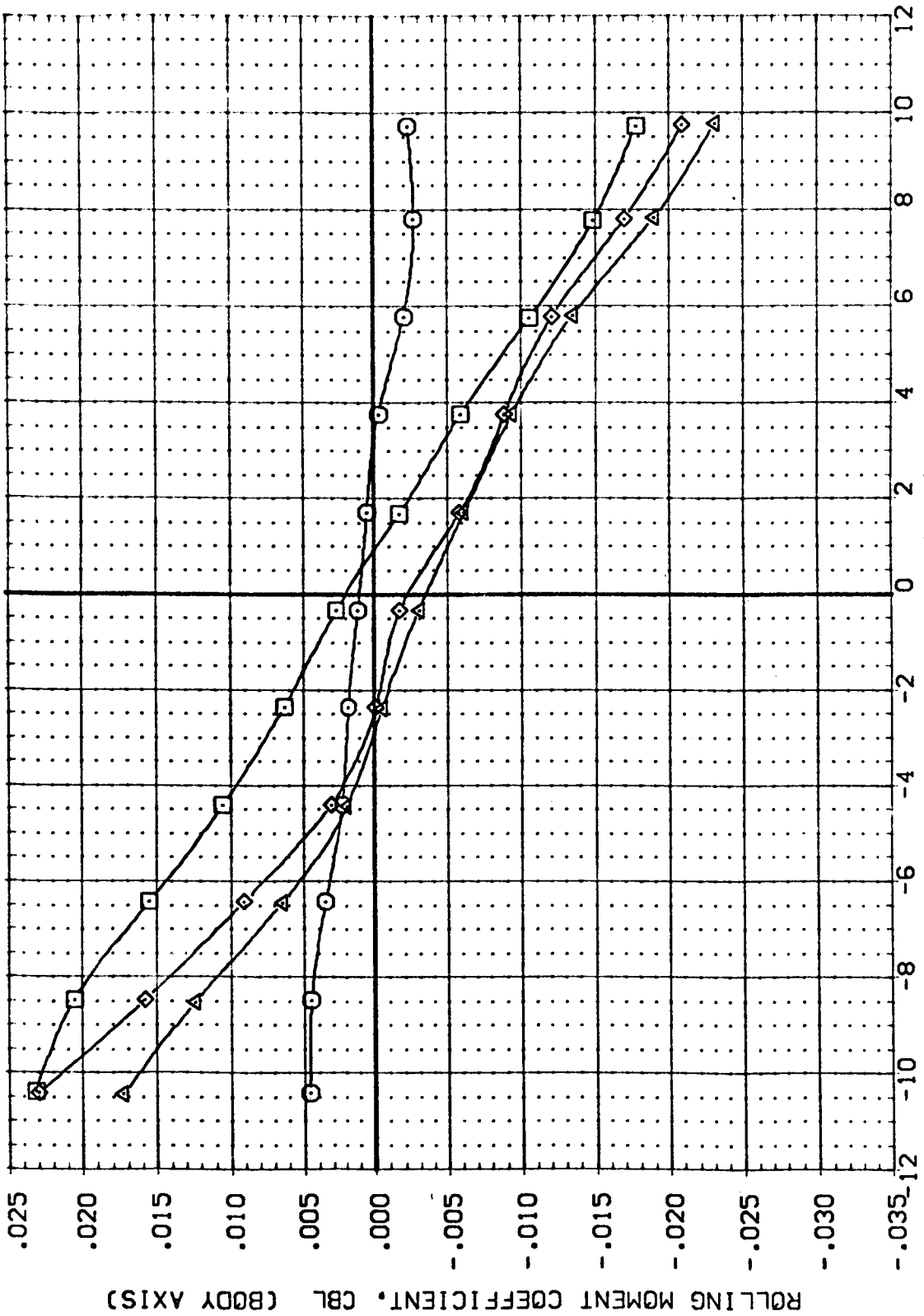


FIG. 23 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 1398 WITH ALT. NOSE

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (A87C33) MSFC 574(OA48) ORB 1398 W/ALT NOSE
 (A87C34) MSFC 574(OA48) ORB 1398 W/ALT NOSE
 (A87C35) MSFC 574(OA48) ORB 1398 W/ALT NOSE
 (A87C36) DATA NOT AVAILABLE
 (A87C37) DATA NOT AVAILABLE

ALPHA ELEVTR SPOBRK BOFLAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SREF 2690.0000 SQ.FT.
 10.000 .000 999.990 .000 LREF 474.8000 IN.
 20.000 .000 999.990 .000 BREF 936.7000 IN.
 30.000 .000 999.990 .000 XMRP 838.7000 IN.
 40.000 .000 999.990 .000 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

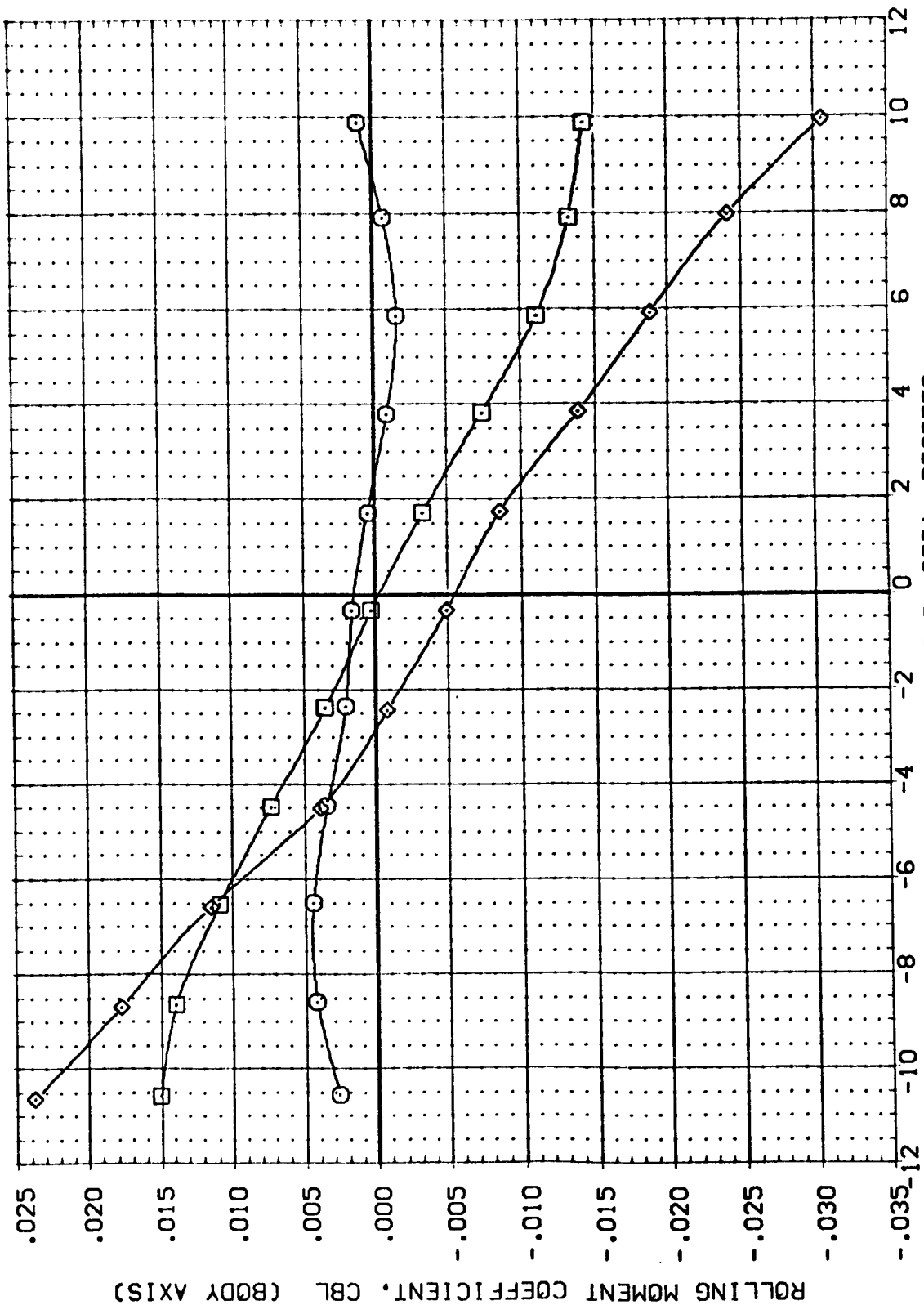


FIG. 23 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 1398 WITH ALT. NOSE
 (B)MACH = .90
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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPDBRK	BOFLAP	REFERENCE INFORMATION
(A87033)	MSEC 574(0A48) CRB 139B V/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000
(A87034)	MSEC 574(0A48) CRB 139B V/ALT NOSE	10.000	.000	999.990	.000	LREF 474.8000
(A87035)	MSEC 574(0A48) CRB 139B V/ALT NOSE	20.000	.000	999.990	.000	BREF 936.7000
(A87036)	DATA NOT AVAILABLE	30.000	.000	999.990	.000	XMRP 838.7000
(A87037)	DATA NOT AVAILABLE	40.000	.000	999.990	.000	YMRP .0000
						ZMRP .0000
						SCALE .0040

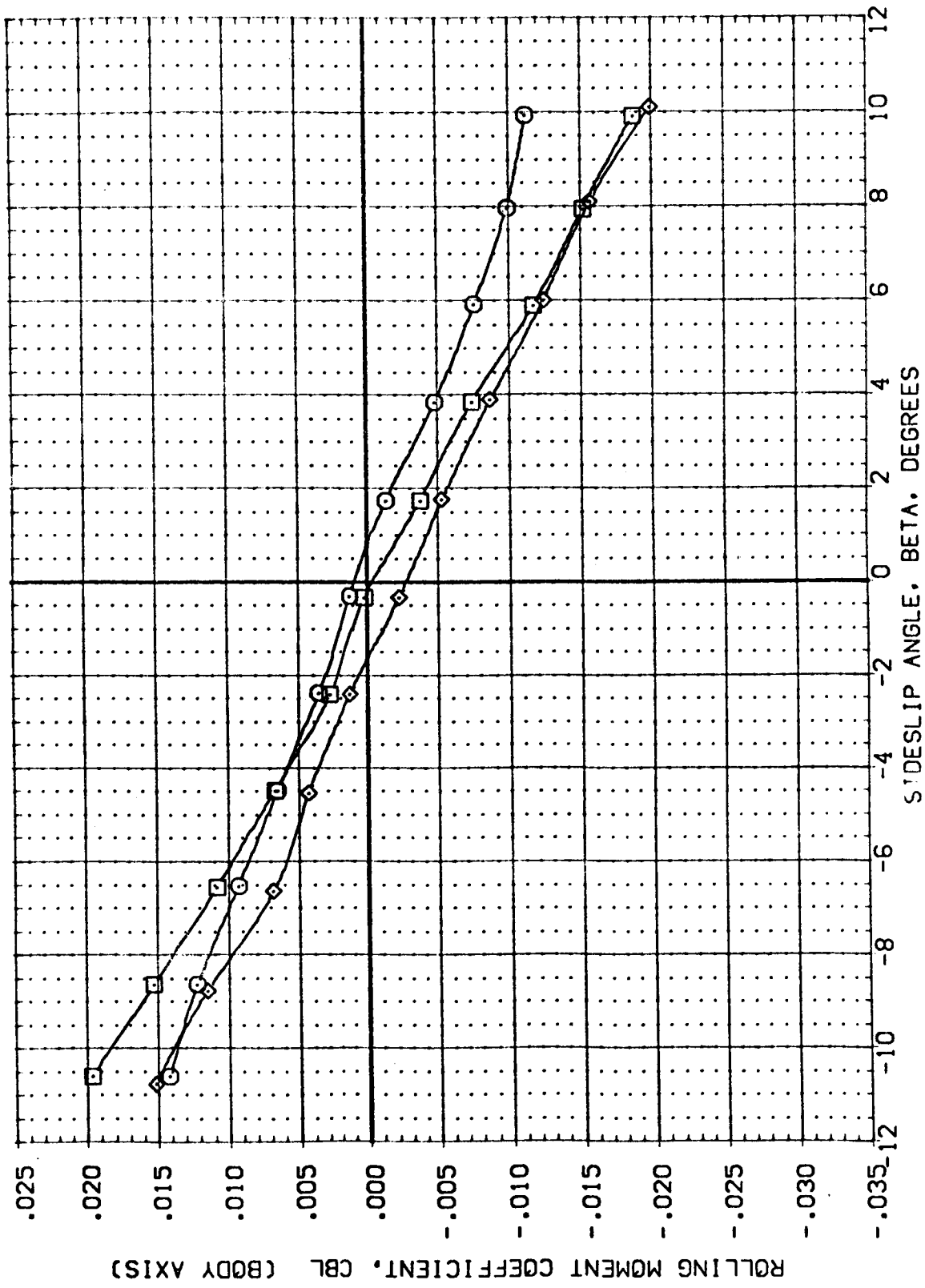


FIG. 23 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139B WITH ALT. NOSE

DATA SET SYMBOL: (A87033), (A87034), (A87035), (A87037)
 CONFIGURATION DESCRIPTION: MSFC 574 (OA48) CRB 139B V/ALT NOSE, MSFC 574 (OA48) CRB 139B V/ALT NOSE, MSFC 574 (OA48) CRB 139B V/ALT NOSE, DATA NOT AVAILABLE, DATA NOT AVAILABLE
 ALPHA: .000, 10.000, 20.000, 30.000, 40.000
 ELEVTR: .000, .000, .000, .000, .000
 SPOBRK: 999.990, 999.990, 999.990, 999.990, 999.990
 BDFLAP: .000, .000, .000, .000, .000
 REFERENCE INFORMATION: SREF 2690.0000 SQ.FT., LREF 474.8000 IN., BREF 936.7000 IN., XMRP 838.7000 IN., YMRP .0000 IN., ZMRP .0000 IN., SCALE .0040

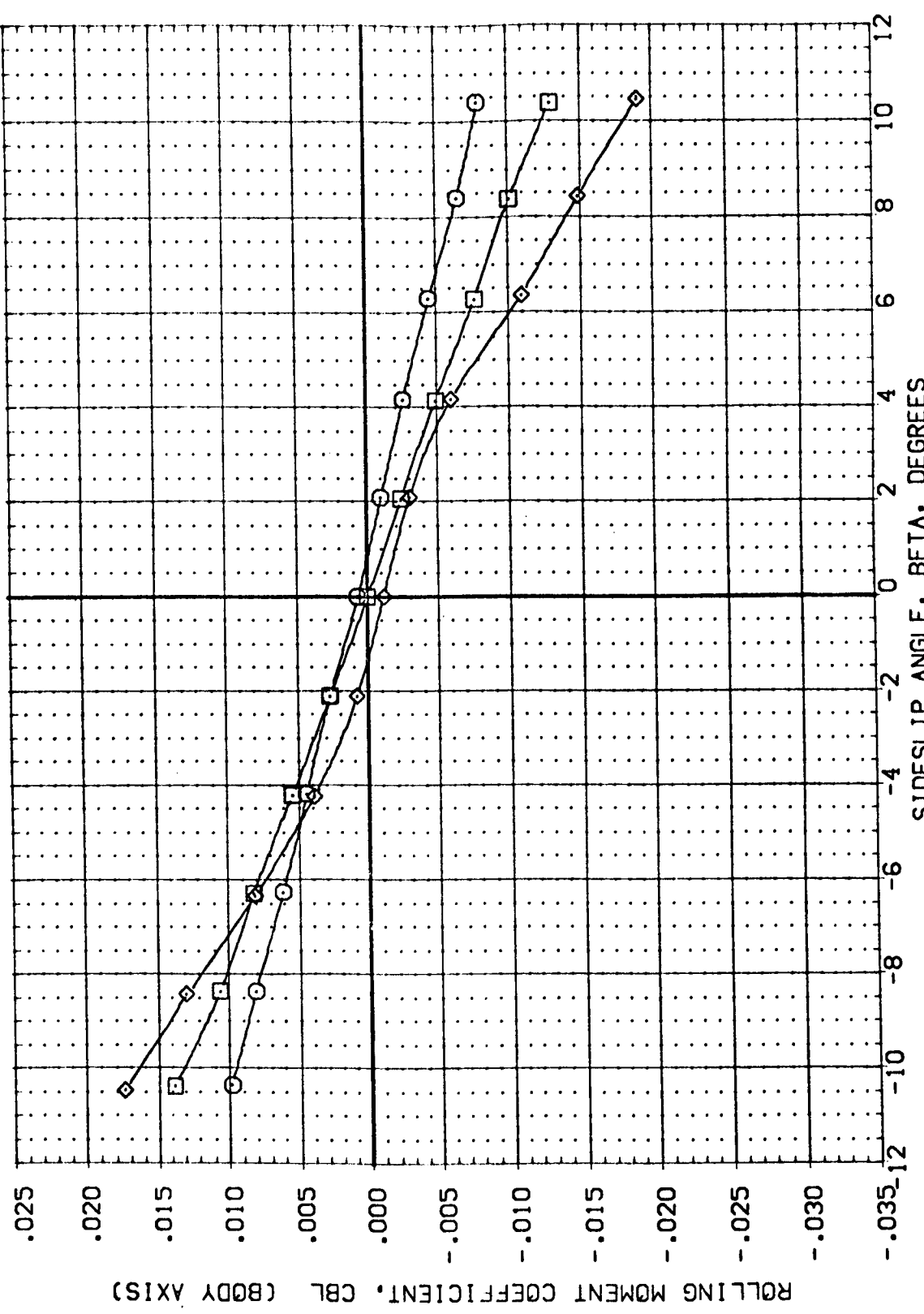


FIG. 23 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139B WITH ALT. NOSE
 (O) MACH = 1.95
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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPDRBK	BOFLAP	REFERENCE INFORMATION
(A87033)	MSEC 574(OA48) CRB 139B W/ALT NOISE	.000	.000	999.990	.000	SREF 2690.0000
(A87034)	MSEC 574(OA48) CRB 139B W/ALT NOISE	10.000	.000	999.990	.000	LREF 474.8000
(A87035)	MSEC 574(OA48) CRB 139B W/ALT NOISE	20.000	.000	999.990	.000	BREF 936.7000
(A87036)	MSEC 574(OA48) CRB 139B W/ALT NOISE	30.000	.000	999.990	.000	YMRP 838.7000
(A87037)	DATA NOT AVAILABLE	40.000	.000	999.990	.000	ZMRP .0000
						SCALE .0040

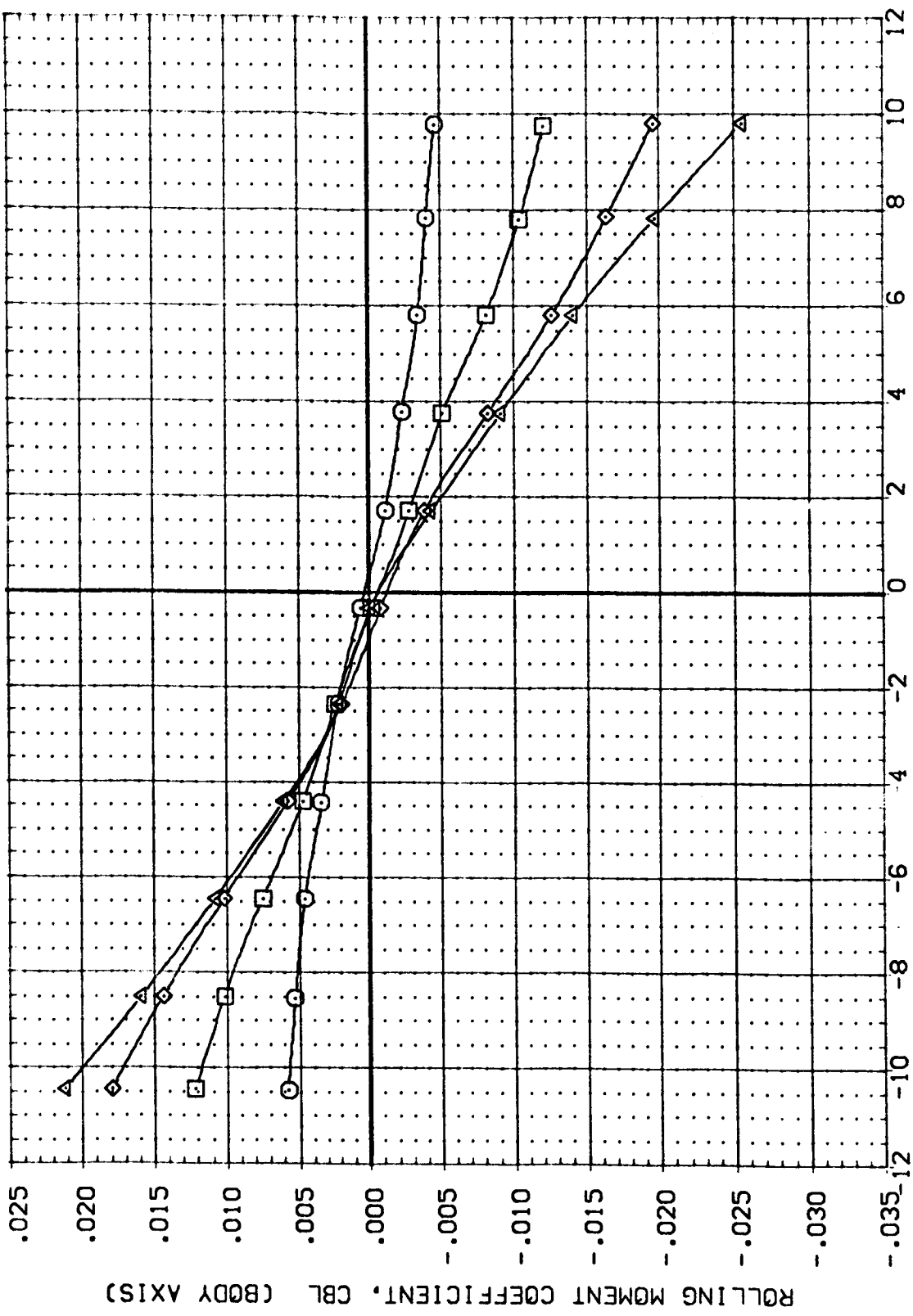


FIG. 23 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139B WITH ALT. NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION	SQ.F.T.
(A87033)	MSFC 574(OA48) ORB 1398 V/ALT NOSE	.000	.000	999.990	.000	SREF	2690.0000
(A87034)	MSFC 574(OA48) ORB 1398 V/ALT NOSE	10.000	.000	999.990	.000	LREF	474.8000
(A87035)	MSFC 574(OA48) ORB 1398 V/ALT NOSE	20.000	.000	999.990	.000	BREF	936.7000
(A87036)	MSFC 574(OA48) ORB 1398 V/ALT NOSE	30.000	.000	999.990	.000	XMRP	838.7000
(A87037)	MSFC 574(OA48) ORB 1398 V/ALT NOSE	40.000	.000	999.990	.000	YMRP	.0000
					.000	ZMRP	.0000
						SCALE	.0040

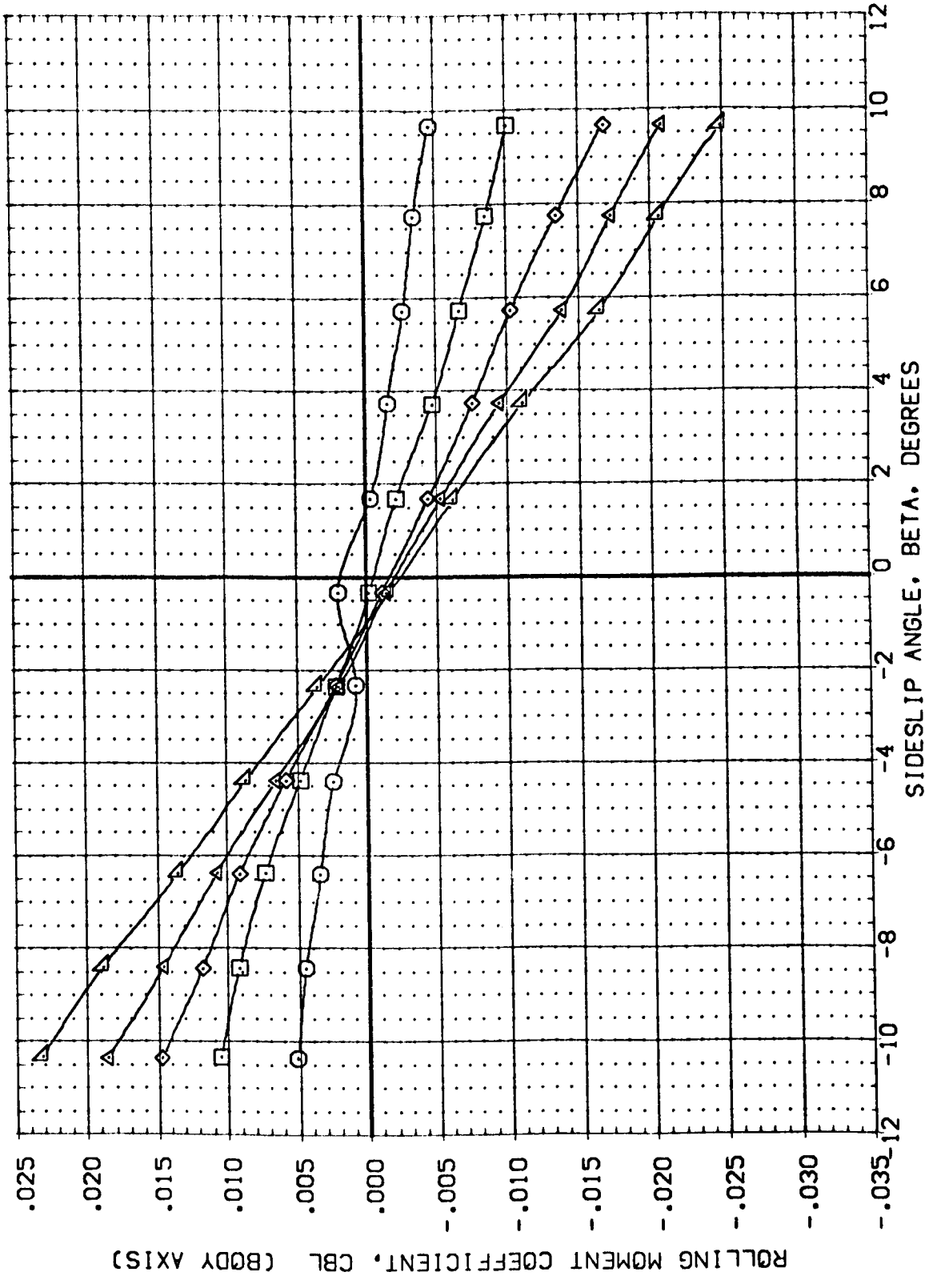


FIG. 23 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 1398 WITH ALT. NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(A87051)	MSFC 574 (0A48) CR8 139	.000	.000	999.990	.000	SREF 2690.0000 SG.F.T.
(A87052)	MSFC 574 (0A48) CR8 139	10.000	.000	999.990	.000	LREF 474.8000 IN.
(A87053)	DATA NOT AVAILABLE	20.000	.000	999.990	.000	BREF 936.7000 IN.
(A87054)	DATA NOT AVAILABLE	30.000	.000	999.990	.000	XMRP 838.7000 IN.
(A87055)	DATA NOT AVAILABLE	40.000	.000	999.990	.000	ZMRP .0000 IN.
						SCALE .0040

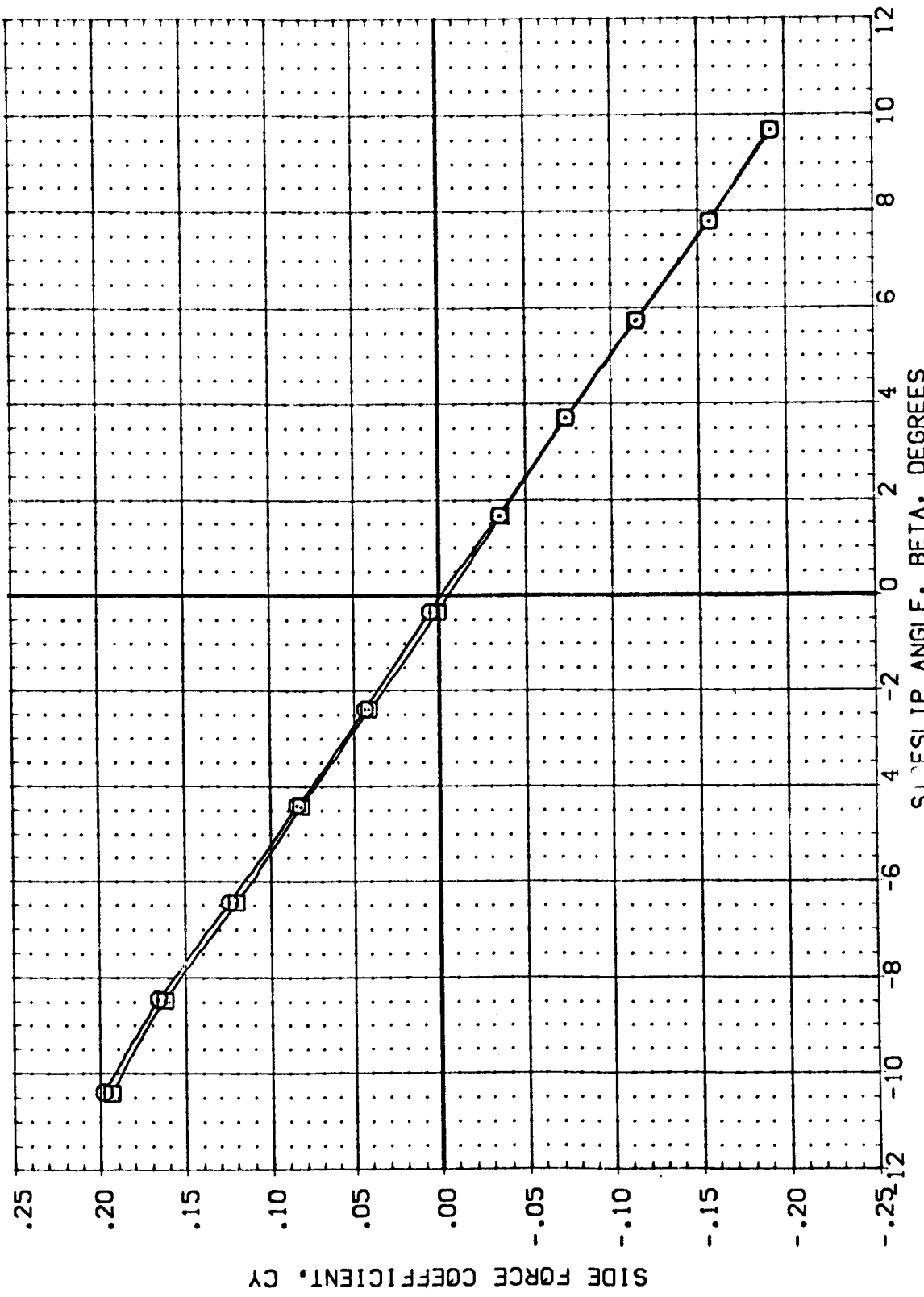


FIG. 24 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (A87051) MSC 574(OA48) ORB 139
 (A87052) MSC 574(OA48) ORB 139
 (A87053) DATA NOT AVAILABLE
 (A87054) DATA NOT AVAILABLE
 (A87055) DATA NOT AVAILABLE

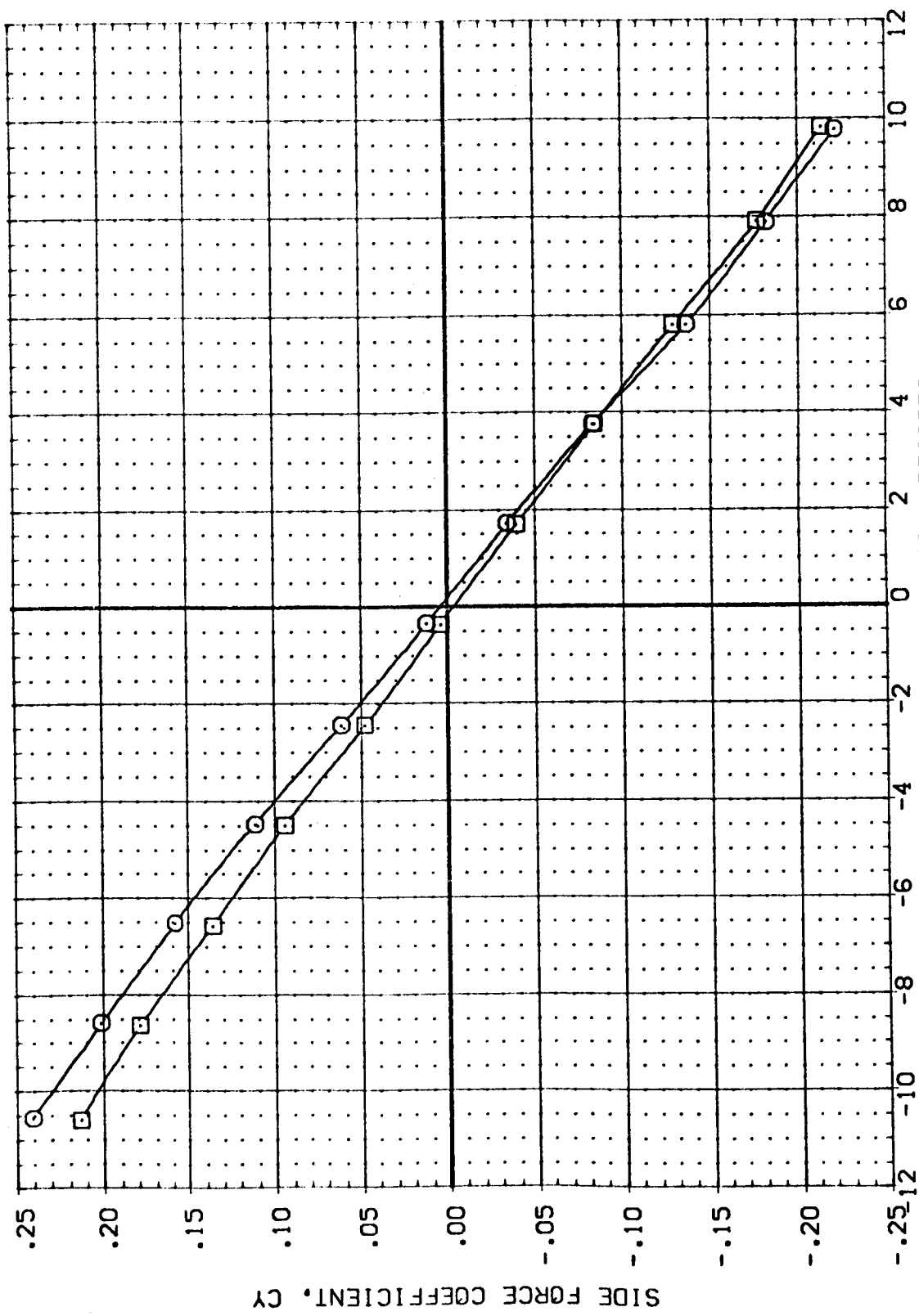
ALPHA .000
 10.000
 20.000
 30.000
 40.000

ELEVTR .000
 .000
 .000
 .000
 .000

SPOBRK 999.990
 999.990
 999.990
 999.990
 999.990

BOFLAP .000
 .000
 .000
 .000
 .000

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040



SIDESLIP ANGLE, BETA, DEGREES

FIG. 24 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139

(B)MACH = .90

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (A87051) MSFC 574(OA48) ORB 139
 (A87052) MSFC 574(OA48) ORB 139
 (A87053) MSFC 574(OA48) ORB 139
 (A87054) DATA NOT AVAILABLE
 (A87055) DATA NOT AVAILABLE

ALPHA .000
 10.000
 20.000
 30.000
 40.000

ELEVTR .000
 .000
 .000
 .000
 .000

SPOBRK 999.990
 999.990
 999.990
 999.990
 999.990

BDELAP .000
 .000
 .000
 .000
 .000

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

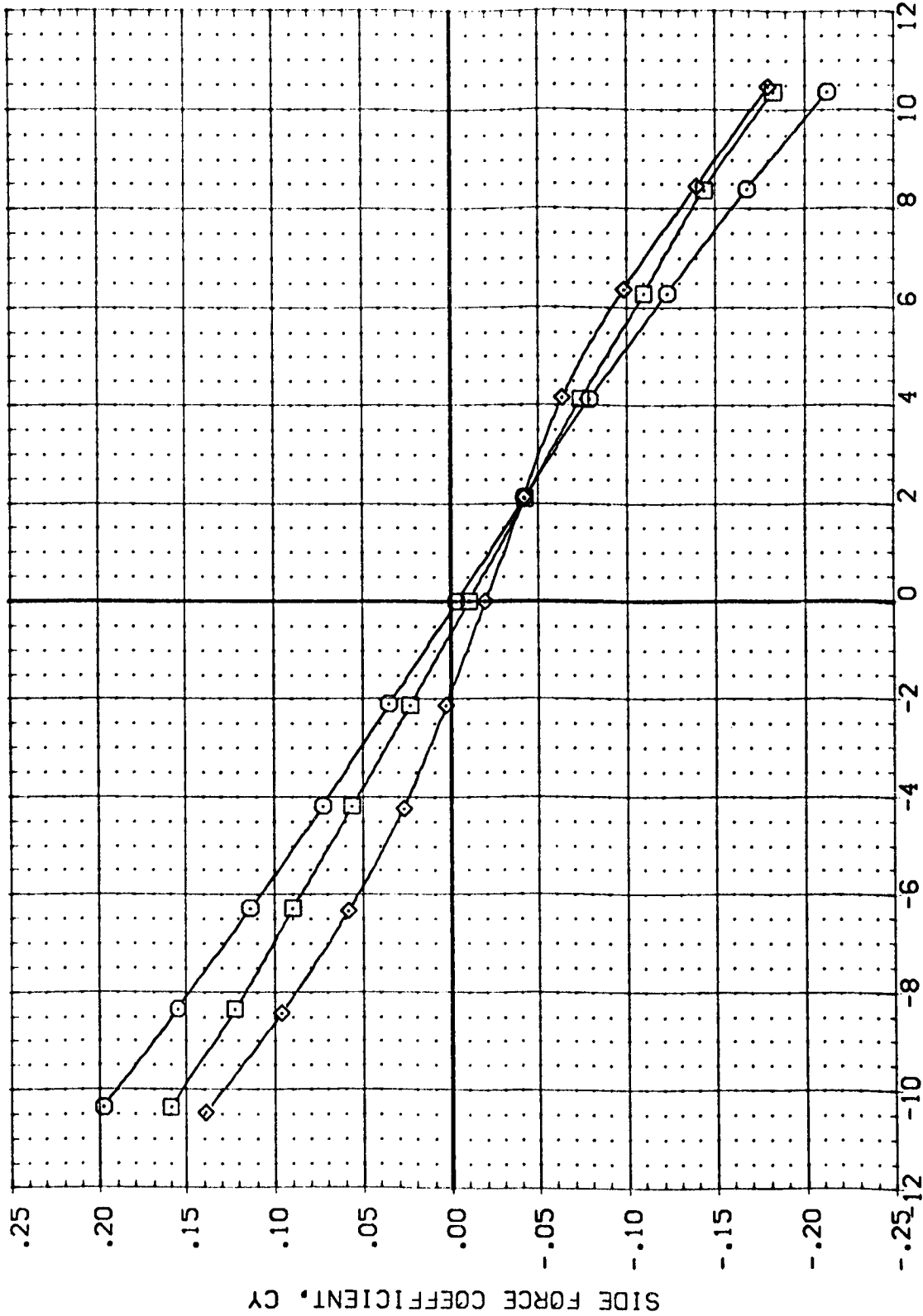


FIG. 24 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139

(D)MACH = 1.95

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(A87051)	MSFC 574(CA48) CRB 139
(A87052)	MSFC 574(CA48) CRB 139
(A87053)	MSFC 574(CA48) CRB 139
(A87054)	MSFC 574(CA48) CRB 139
(A87055)	MSFC 574(CA48) CRB 139

ALPHA ELEVTR SPOBRK BDFL/P

.000	.000	999.990	.000
10.500	.000	999.990	.000
20.000	.000	999.990	.000
30.000	.000	999.990	.000
40.000	.000	999.990	.000

REFERENCE INFORMATION SQ.FT.

SREF	2690.0000
LREF	474.8000
BREF	936.7000
XMRP	8.98
YMRP	.0000
ZMRP	.0000
SCALE	.0010

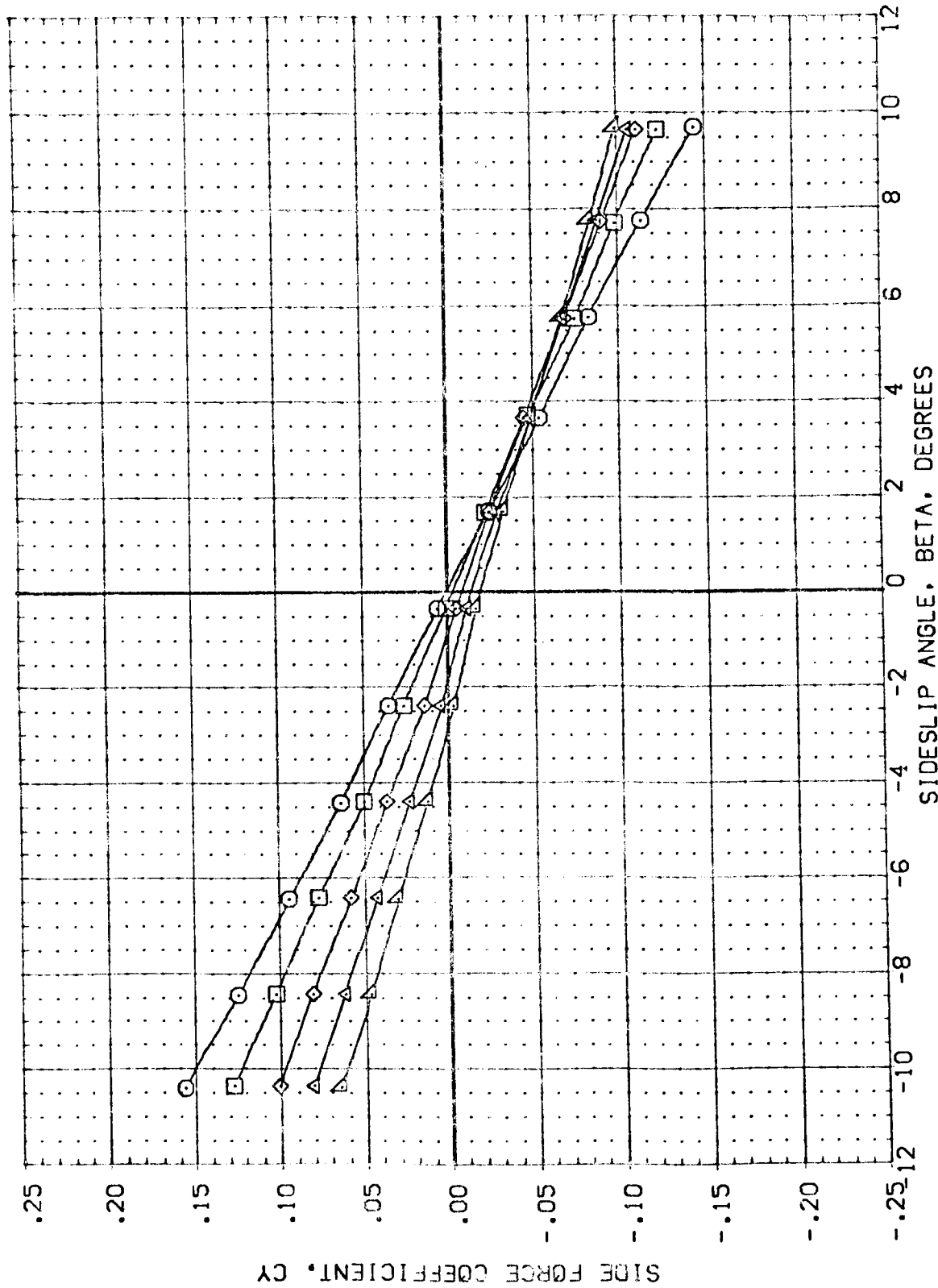


FIG. 24 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139

(F)MACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (A87051) MSFC 574(OA48) ORB 139
 (A87052) MSFC 574(OA48) ORB 139
 (A87053) DATA NOT AVAILABLE
 (A87054) DATA NOT AVAILABLE
 (A87055) DATA NOT AVAILABLE

ALPHA .000
 10.000
 20.000
 30.000
 45.000

ELEVTR .000
 .000
 .000
 .000
 .000

SPOBRK 999.990
 999.990
 999.990
 999.990
 999.990

BOCLAP .CCC
 .CCC
 .CCC
 .CCC
 .CCC

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 474.8000 IN.
 BM.F 936.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0010

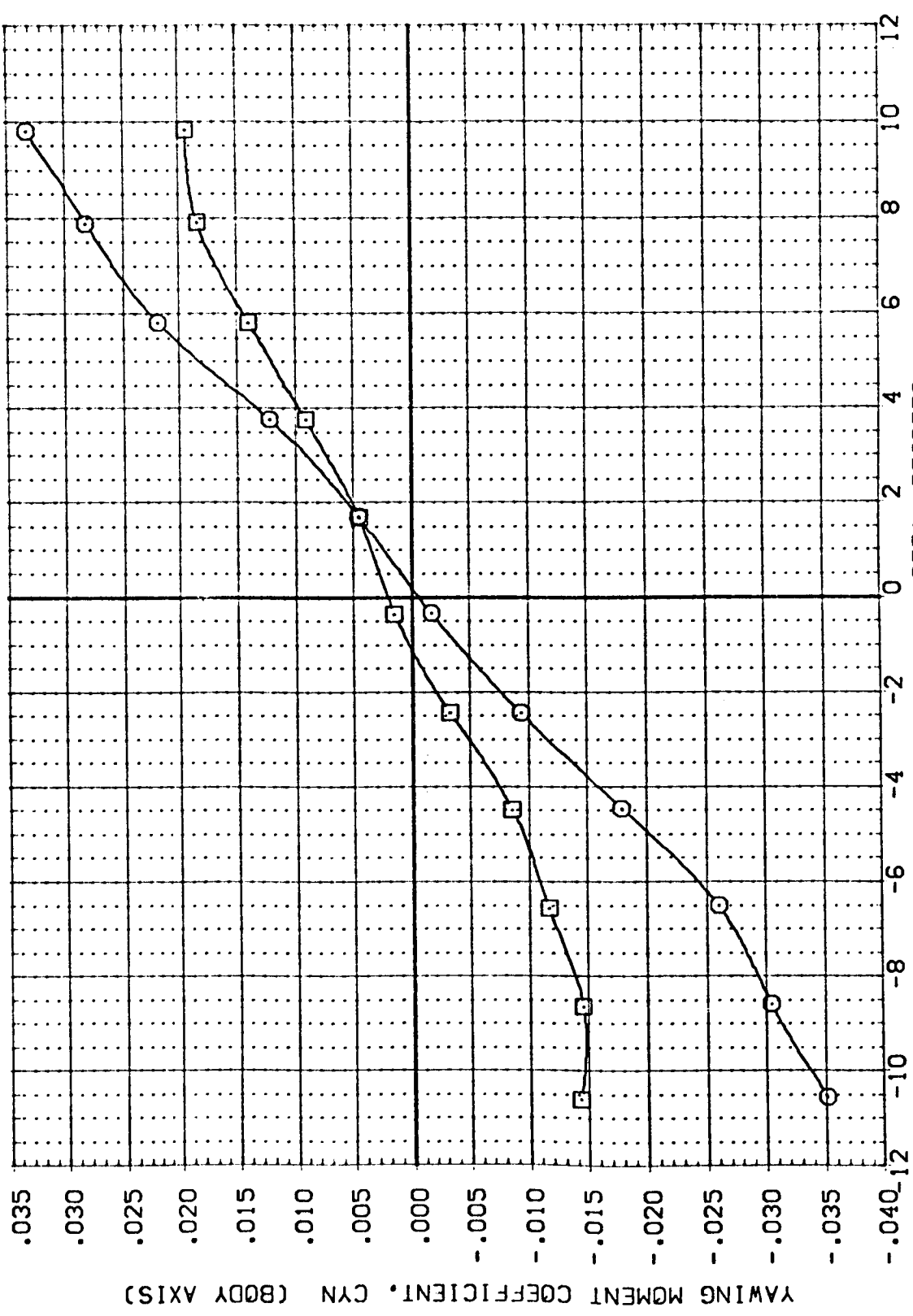


FIG. 24 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139

(B)MACH = .90

DATA SET SYMBOL CONFIGURATION DESCRIPTION REFERENCE INFORMATION

(A87051)	MSFC 574(CA48) ORB 139	SREF	2690.0000	SC.FT.
(A87052)	MSFC 574(CA48) ORB 139	LREF	474.8000	IN.
(A87053)	MSFC 574(CA48) ORB 139	BREF	936.7000	IN.
(A87054)	DATA NOT AVAILABLE	XMRP	838.7000	IN.
(A87055)	DATA NOT AVAILABLE	YMRP	.0000	IN.
		ZMRP	.0000	IN.
		SCALE	.0040	

ALPHA ELEVTR SPDBRK BDFLAP

.000	.000	999.990	.000
10.000	.000	999.990	.000
20.000	.000	999.990	.000
30.000	.000	999.990	.000
40.000	.000	999.990	.000

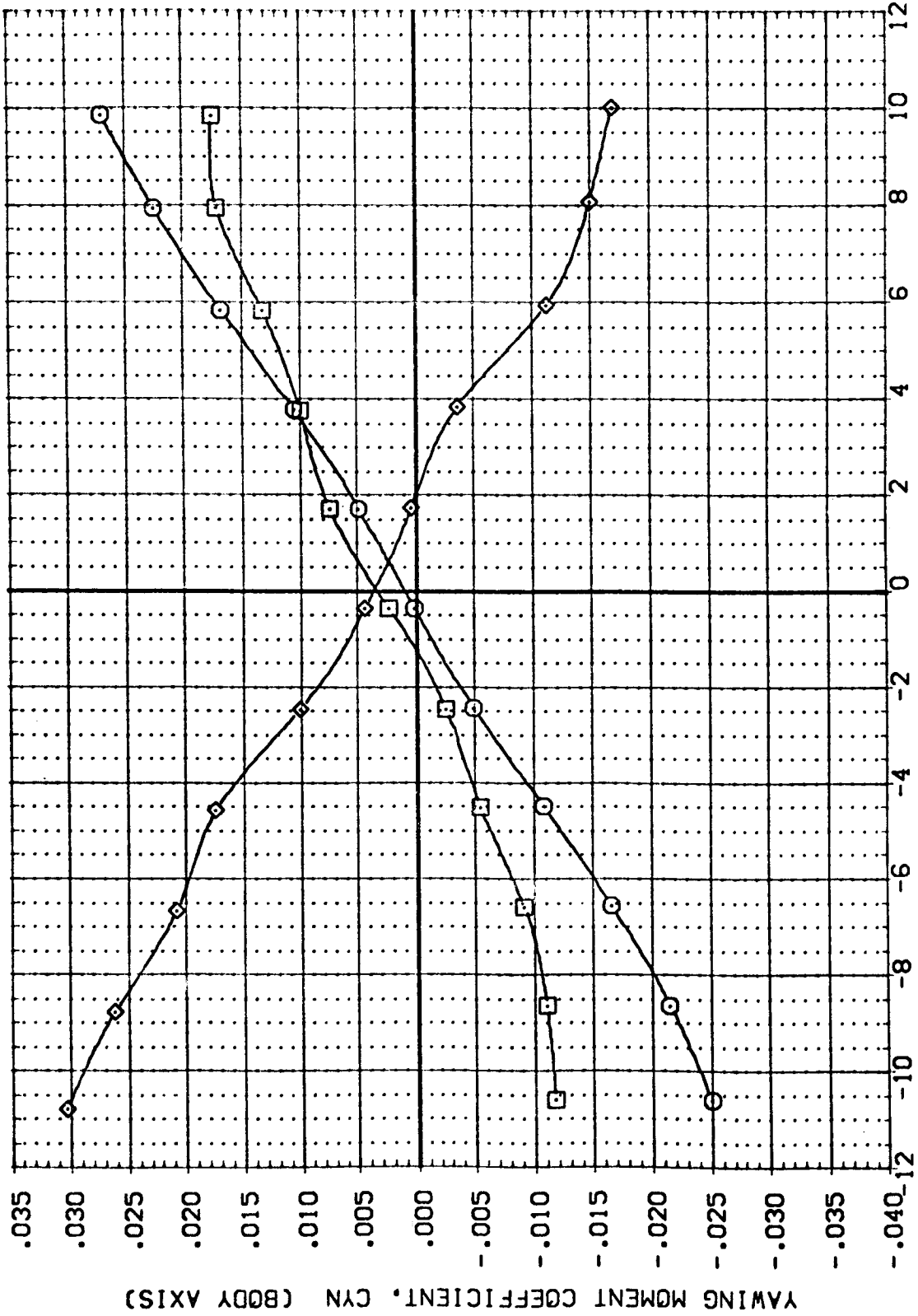


FIG. 24 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (A87051) MSFC 574(CA48) ORB 139
 (A87052) MSFC 574(CA48) ORB 139
 (A87053) MSFC 574(CA48) ORB 139
 (A87054) DATA NOT AVAILABLE
 (A87055) DATA NOT AVAILABLE

ALPHA .000
 10.000
 20.000
 30.000
 40.000

ELEVTR .000
 .000
 .000
 .000
 .000

SPOBRK 999.990
 999.990
 999.990
 999.990
 999.990

BOFLAP .000
 .000
 .000
 .000
 .000

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

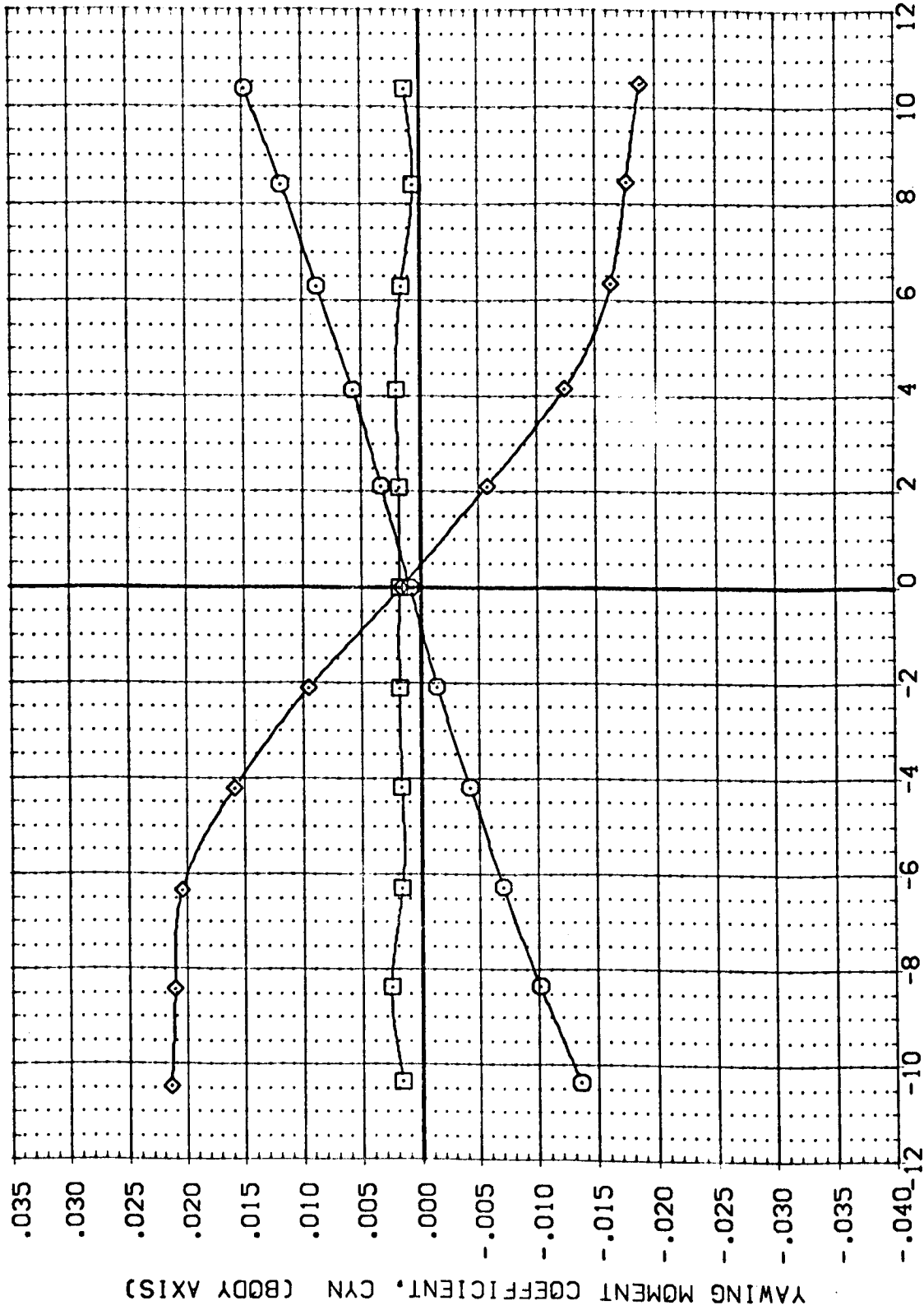


FIG. 24 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139

(D)MACH = 1.95

DATA SET SYMBOL CONFIGURATION DESCRIPTION REFERENCE INFORMATION

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BOFLAP	SREF	SO.FT.
(A87051)	MSFC 574(OA18) ORB 139	.000	.000	999.990	.000	2690.0000	IN.
(A87052)	MSFC 574(OA18) ORB 139	10.000	.000	999.990	.000	474.8000	IN.
(A87053)	MSFC 574(OA18) ORB 139	20.000	.000	999.990	.000	936.7000	IN.
(A87054)	MSFC 574(OA18) ORB 139	30.000	.000	999.990	.000	838.7000	IN.
(A87055)	DATA NOT AVAILABLE	40.000	.000	999.990	.000	.0000	IN.

ZMRP .0000
SCALE .0040

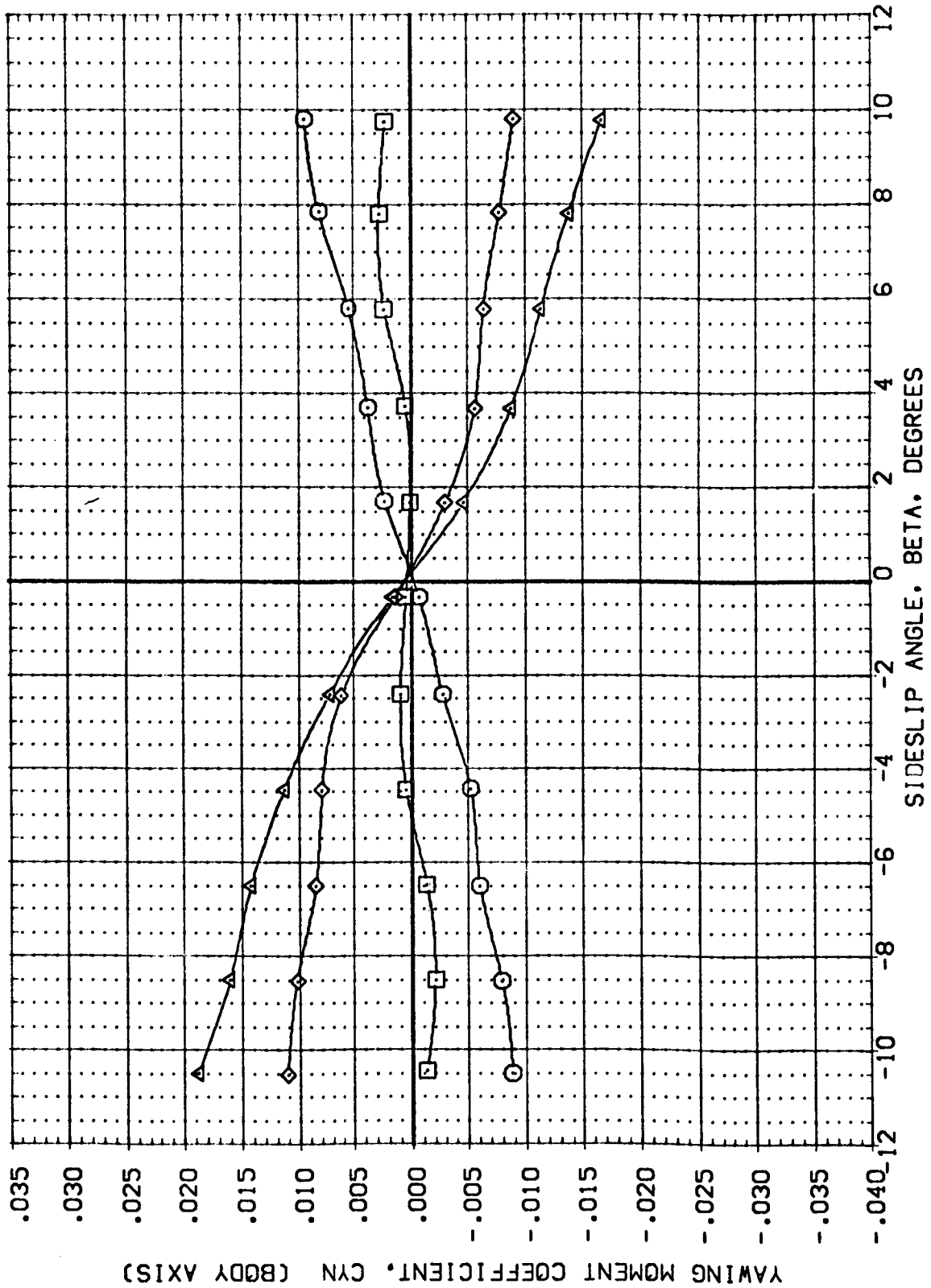


FIG. 24 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139

DATA SET SYMBOL CONFIGURATION DESCRIPTION

- (A87051) MSFC 574(OA48) ORB 139
- (A87052) MSFC 574(OA48) ORB 139
- (A87053) MSFC 574(OA48) ORB 139
- (A87054) MSFC 574(OA48) ORB 139
- (A87055) MSFC 574(OA48) ORB 139

ALPHA ELEVTR SPOBRK BOFLAP REFERENCE INFORMATION

.000 .000 999.990 .000
 10.000 .000 999.990 .000
 20.000 .000 999.990 .000
 30.000 .000 999.990 .000
 40.000 .000 999.990 .000

SREF 2690.0000 SQ.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

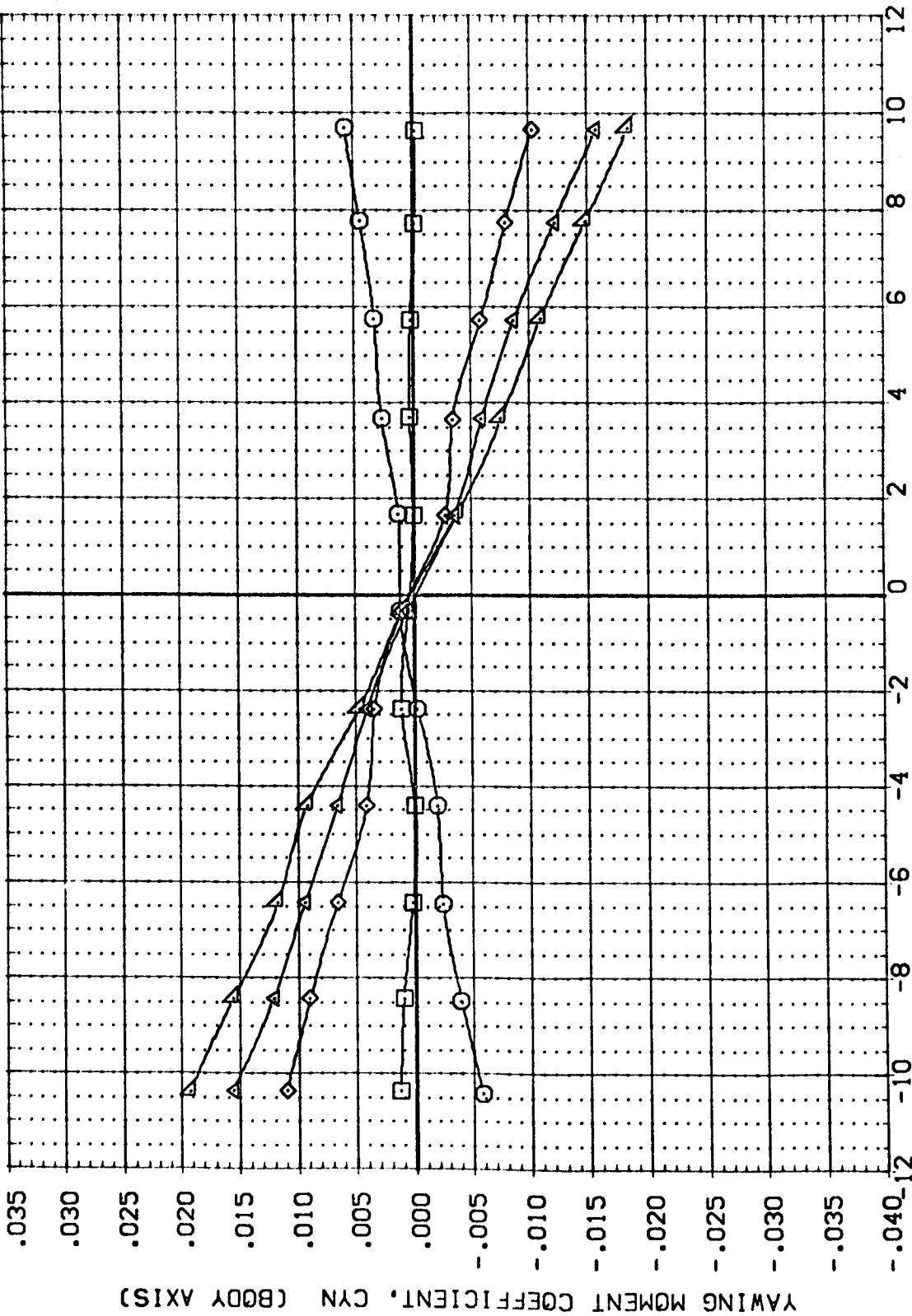


FIG. 24 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139

(M)MACH = 4.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION REFERENCE INFORMATION

(A87051)	MSFC 574(0A48) CRB 139	SREF 2690.0000	SO.FT. IN.
(A87052)	MSFC 574(0A48) CRB 139	LREF 474.8000	IN.
(A87053)	DATA NOT AVAILABLE	BREF 936.7000	IN.
(A87054)	DATA NOT AVAILABLE	X-VRP 838.7000	IN.
(A87055)	DATA NOT AVAILABLE	Y-VRP .0000	IN.
		Z-VRP .0000	IN.
		SCALE .0010	

ALPHA ELEVTR SPDGRK BOFLAP REFERENCE INFORMATION

.000	.000	999.990	.000	SREF 2690.0000
10.000	.000	999.990	.000	LREF 474.8000
20.000	.000	999.990	.000	BREF 936.7000
30.000	.000	999.990	.000	X-VRP 838.7000
40.000	.000	999.990	.000	Y-VRP .0000
				Z-VRP .0000
				SCALE .0010

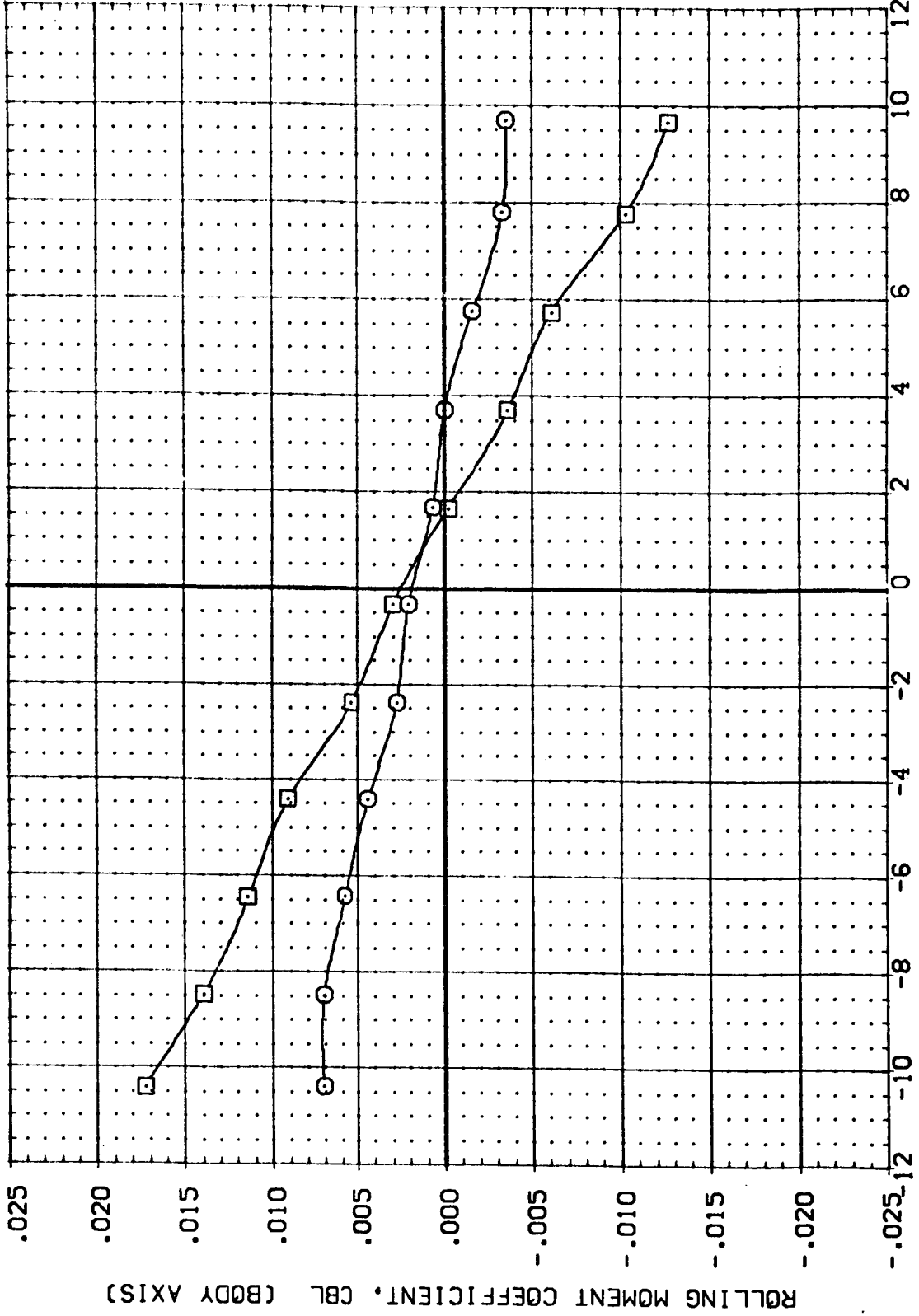


FIG. 24 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139

DATA SET SYMBOL: (A87051), (A87052), (A87053), (A87054), (A87055)

CONFIGURATION DESCRIPTION: MSFC 574(OA48) ORB 139, MSFC 574(OA48) ORB 139, DATA NOT AVAILABLE, DATA NOT AVAILABLE, DATA NOT AVAILABLE

ALPHA: .000, 10.000, 20.000, 30.000, 40.000

ELEVTR: .000, .000, .000, .000, .000

SPDBRK: 999.990, 999.990, 999.990, 999.990, 999.990

BOFLAP: .000, .000, .000, .000, .000

REFERENCE INFORMATION: SREF 2690.0000, LREF 474.8000, BREF 936.7000, XMRP 838.7000, YMRP .0000, ZMRP .0000, SCALE .0040

SQ.FT.: .N., .N., .N., .N., .N.

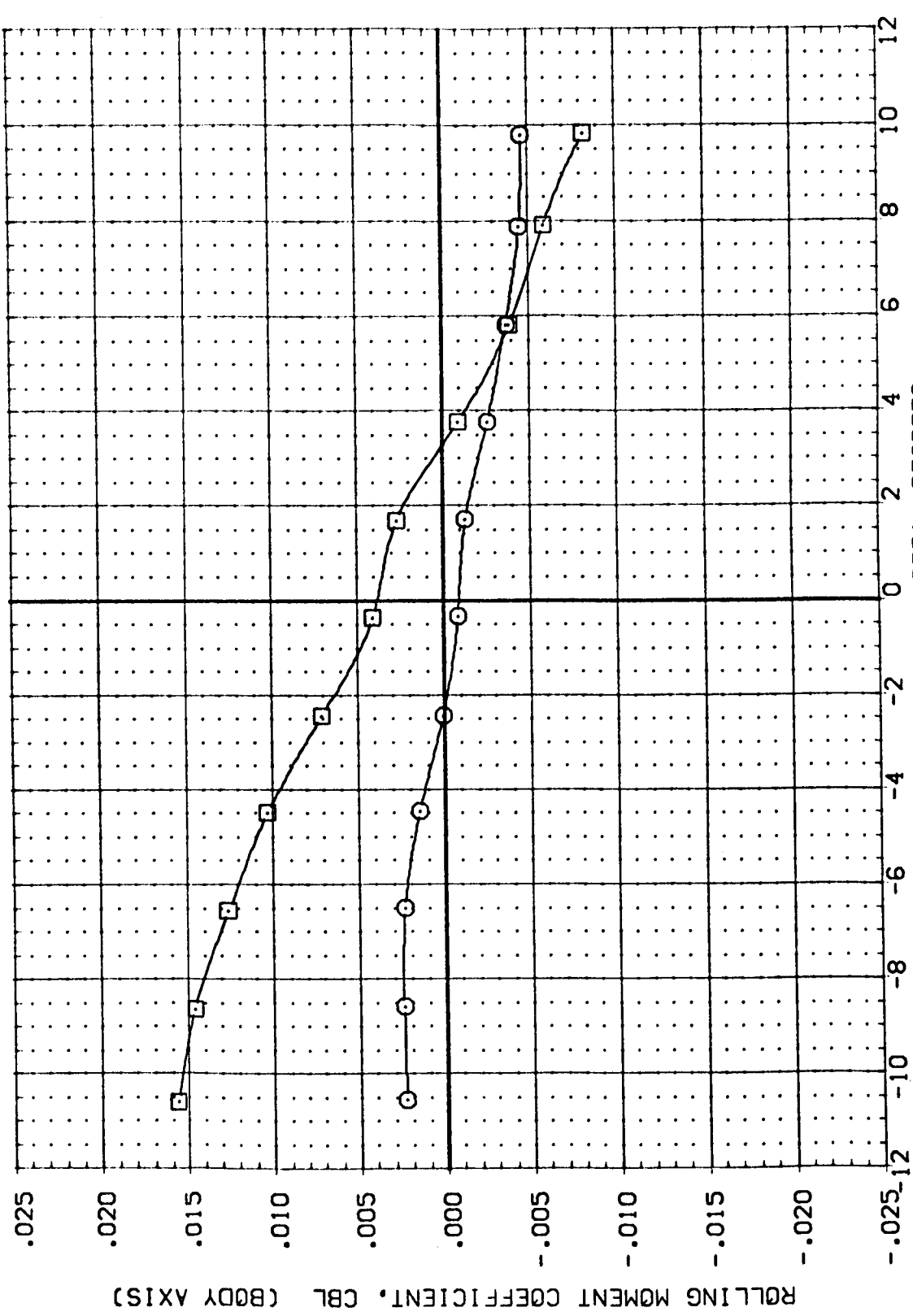


FIG. 24 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139

(B)MACH = .90

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(A87051) MSC 574(OA48) ORB 139

(A87052) MSC 574(OA48) ORB 139

(A87053) MSC 574(OA48) ORB 139

(A87054) DATA NOT AVAILABLE

(A87055) DATA NOT AVAILABLE

ALPHA .000

10.000

20.000

30.000

40.000

ELEVTR .000

.000

.000

.000

.000

SPDRK 999.990

999.990

999.990

999.990

999.990

BOFLAP .000

.000

.000

.000

.000

REFERENCE INFORMATION

SREF 2690.000 SQ.FT.

LREF 474.8000 IN.

BREF 936.7000 IN.

XMRP 838.7000 IN.

YMRP .0000 IN.

ZMRP .0000 IN.

SCALE .0040

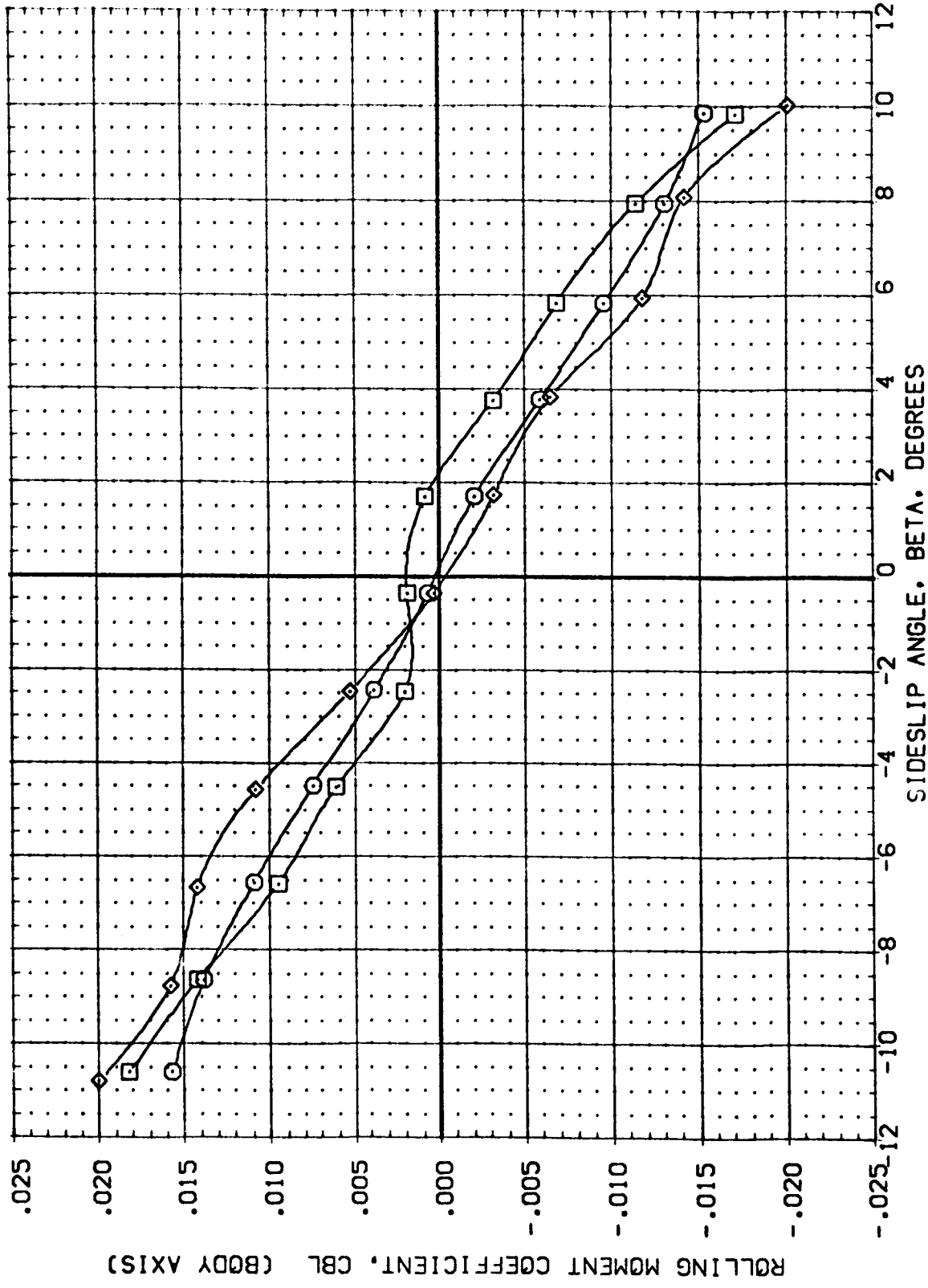


FIG. 24 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139

(C)MACH = 1.20

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(A87051) MSFC 574(OA48) CRB 139
 (A87052) MSFC 574(OA48) CRB 139
 (A87053) MSFC 574(OA48) CRB 139
 (A87054) DATA NOT AVAILABLE
 (A87055) DATA NOT AVAILABLE

ALPHA .000
 10.000
 20.000
 30.000
 40.000

ELEVTR .000
 .000
 .000
 .000
 .000

SPOBRK 999.990
 999.990
 999.990
 999.990
 999.990

BDFLAP .000
 .000
 .000
 .000
 .000

REFERENCE INFORMATION

SREF 2690.0000 SC.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

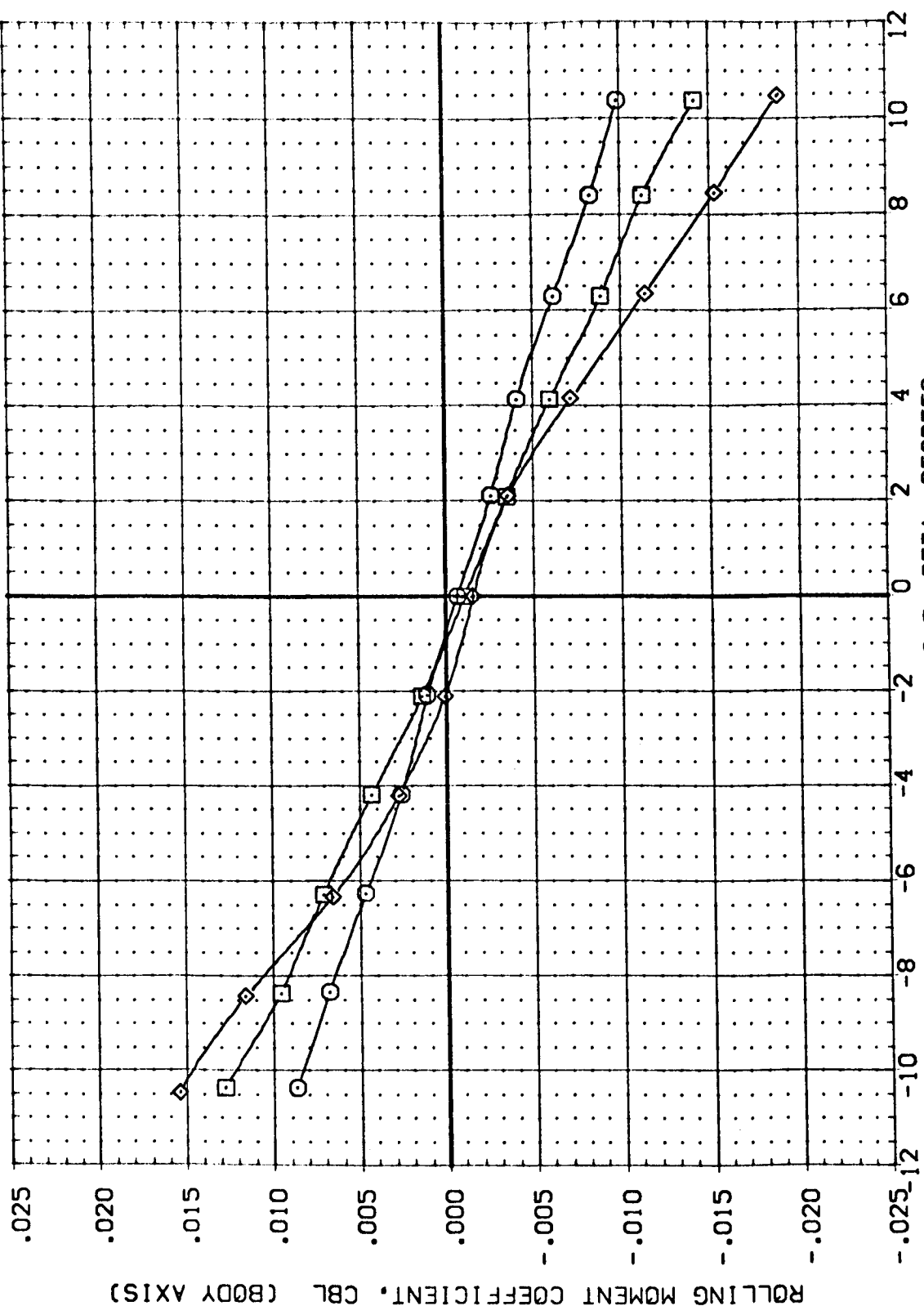


FIG. 24 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139

(M)MACH = 1.95

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(A87051)	MSFC 574(OA48) ORB 139	.000	.000	999.990	.000	SREF 2690.0000 SG.F.T.
(A87052)	MSFC 574(OA48) ORB 139	10.000	.000	999.990	.000	LREF 474.8000 N.Z.
(A87053)	MSFC 574(OA48) ORB 139	20.000	.000	999.990	.000	BREF 936.7000 N.Z.
(A87054)	MSFC 574(OA48) ORB 139	30.000	.000	999.990	.000	XMRP 838.7000 N.Z.
(A87055)	DATA NOT AVAILABLE	40.000	.000	999.990	.000	YMRP .0000 N.Z.
					ZMRP .0040	SCALE

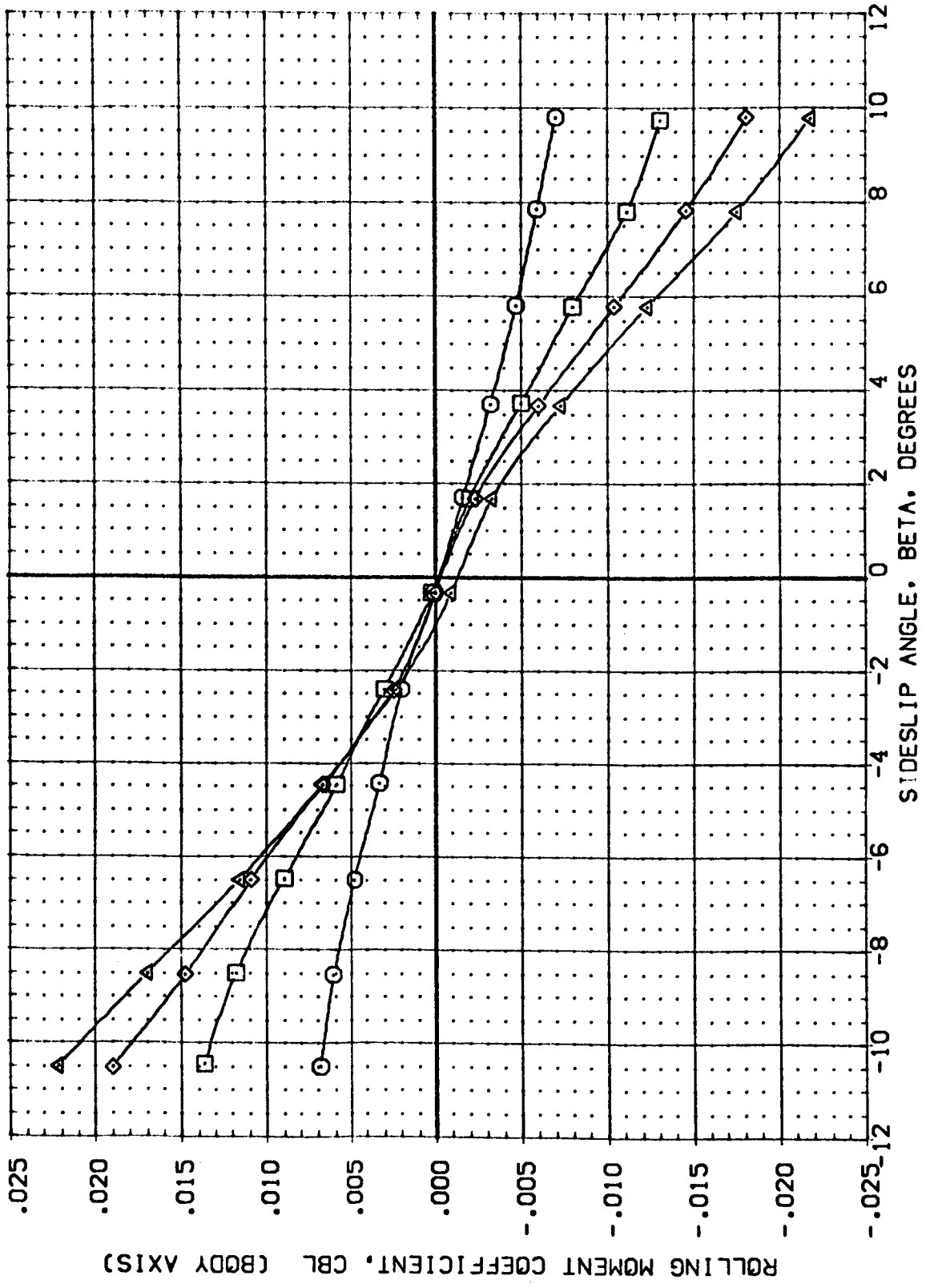


FIG. 24 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139

(E)MACH = 2.99

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (A87051) MSFC 574(CA48) CRB 139
 (A87052) MSFC 574(CA48) CRB 139
 (A87053) MSFC 574(CA48) CRB 139
 (A87054) MSFC 574(CA48) CRB 139
 (A87055) MSFC 574(CA48) CRB 139

ALPHA ELEVTR SPOBRK BOFLAP
 .000 .000 999.990 .000
 10.000 .000 999.990 .000
 20.000 .000 999.990 .000
 30.000 .000 999.990 .000
 40.000 .000 999.990 .000

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 938.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

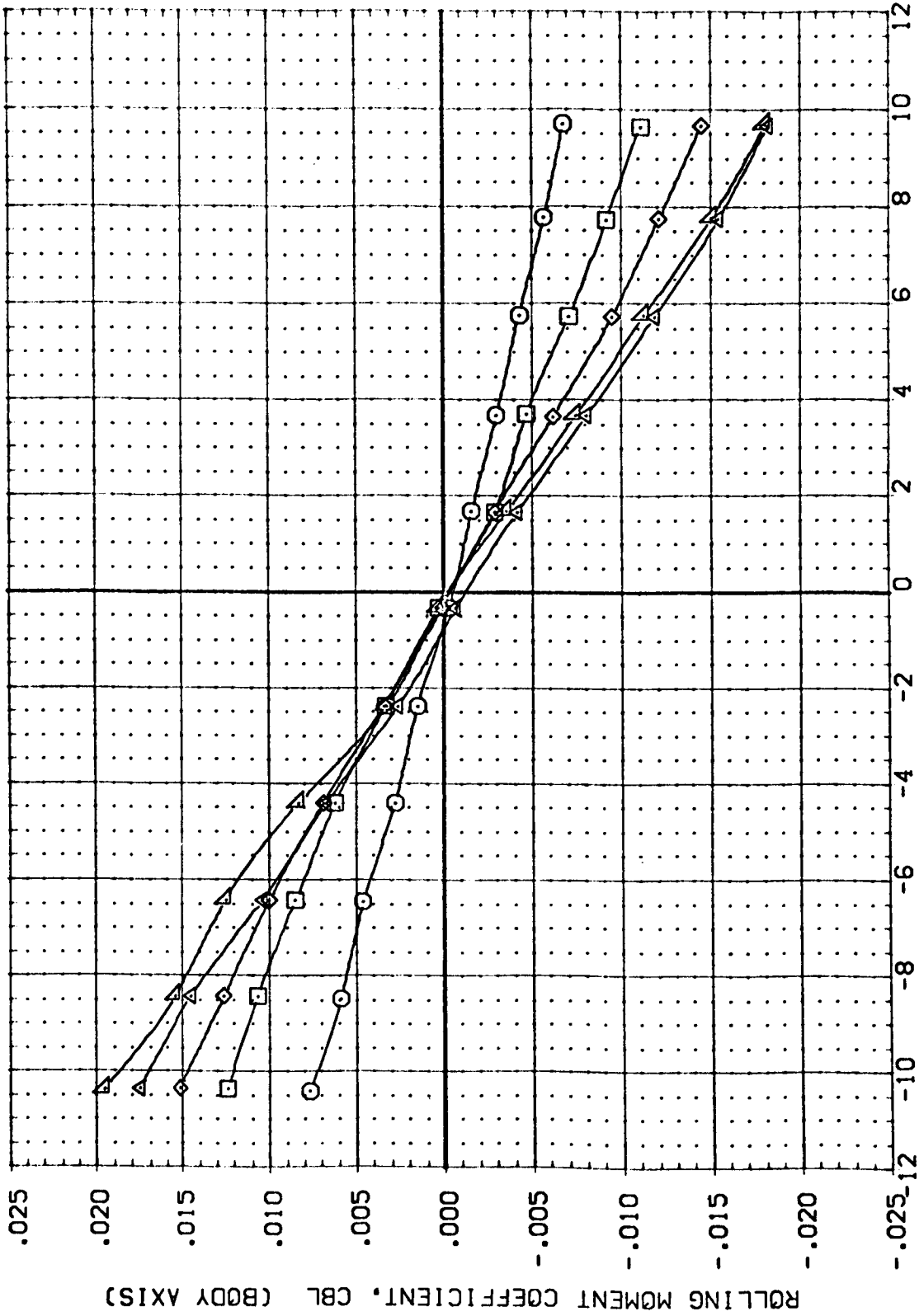


FIG. 24 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139

(F)MACH = 4.96

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(A87058)	MSFC 574(OA48) CRB 139 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000
(A87059)	MSFC 574(OA48) CRB 139 W/ALT NOSE	10.000	.000	999.990	.000	LREF 474.8000
(A87070)	MSFC 574(OA48) CRB 139 W/ALT NOSE	20.000	.000	999.990	.000	BREF 936.7000
(A87071)	MSFC 574(OA48) CRB 139 W/ALT NOSE	30.000	.000	999.990	.000	XMRP 838.7000
(A87072)	DATA NOT AVAILABLE	40.000	.000	999.990	.000	ZMRP .0000
						SCALE .0040

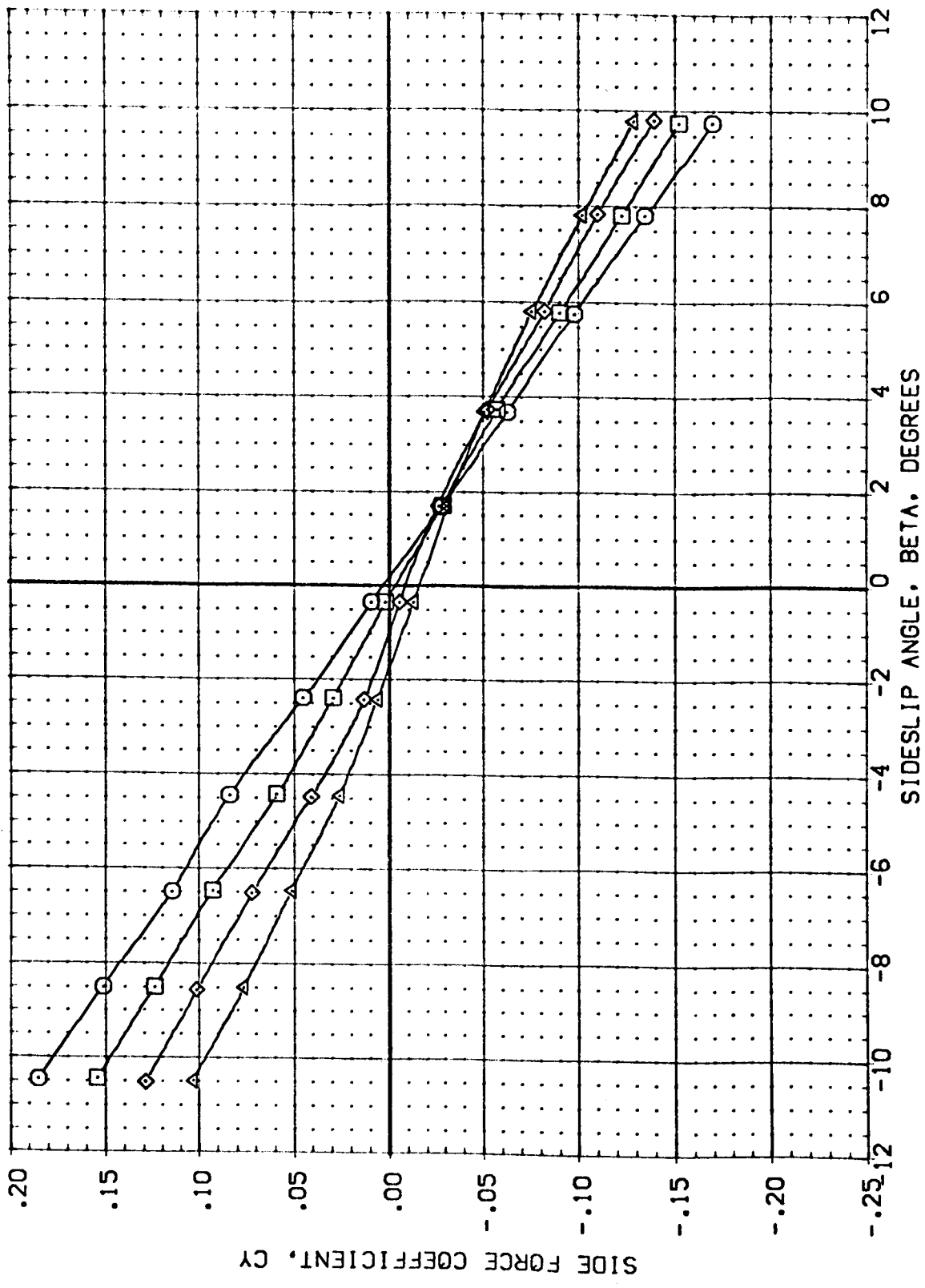


FIG. 25 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139 WITH ALT. NOSE

(B)MACH = 2.99



0.7

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(A87068)	MSFC 574(OA48) CRB 139 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SG.FT.
(A87069)	MSFC 574(OA48) CRB 139 W/ALT NOSE	10.000	.000	999.990	.000	LREF 474.8000 IN.
(A87070)	MSFC 574(OA48) CRB 139 W/ALT NOSE	20.000	.000	999.990	.000	BREF 936.7000 IN.
(A87071)	MSFC 574(OA48) CRB 139 W/ALT NOSE	30.000	.000	999.990	.000	X-PRP 838.7000 IN.
(A87072)	MSFC 574(OA48) CRB 139 W/ALT NOSE	40.000	.000	999.990	.000	Y-PRP .0000 IN.
						Z-PRP .0000 IN.
						SCALE .0040

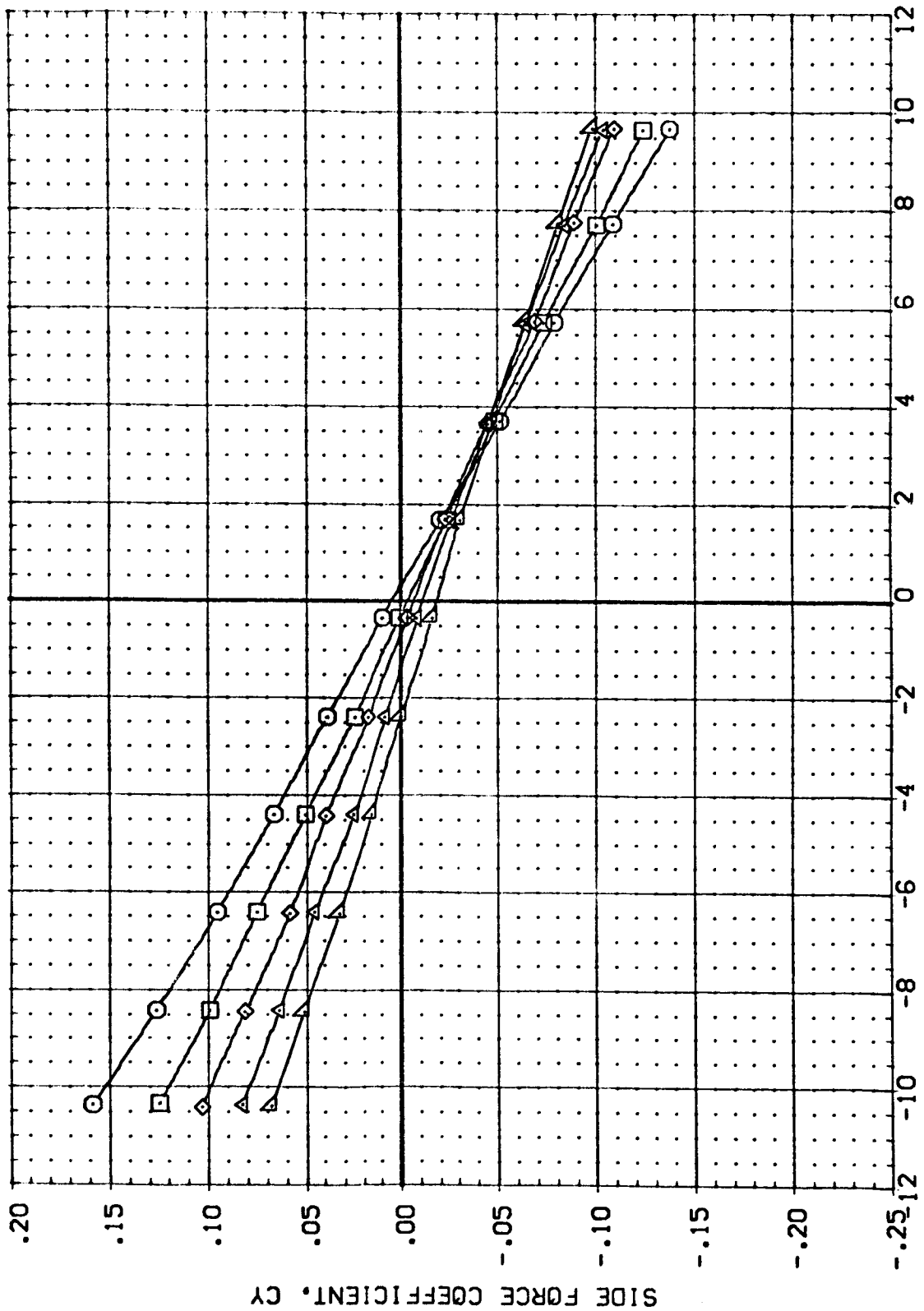


FIG. 25 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139 WITH ALT. NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(A87068)	MSFC 574(OA48) CRB 139 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(A87069)	MSFC 574(OA48) CRB 139 W/ALT NOSE	10.000	.000	999.990	.000	LREF 474.8000 IN.
(A87070)	MSFC 574(OA48) CRB 139 W/ALT NOSE	20.000	.000	999.990	.000	BREF 936.7000 IN.
(A87071)	MSFC 574(OA48) CRB 139 W/ALT NOSE	30.000	.000	999.990	.000	XMRP 838.7000 IN.
(A87072)	DATA NOT AVAILABLE	40.000	.000	999.990	.000	ZMRP .0000 IN.
						SCALE .0010

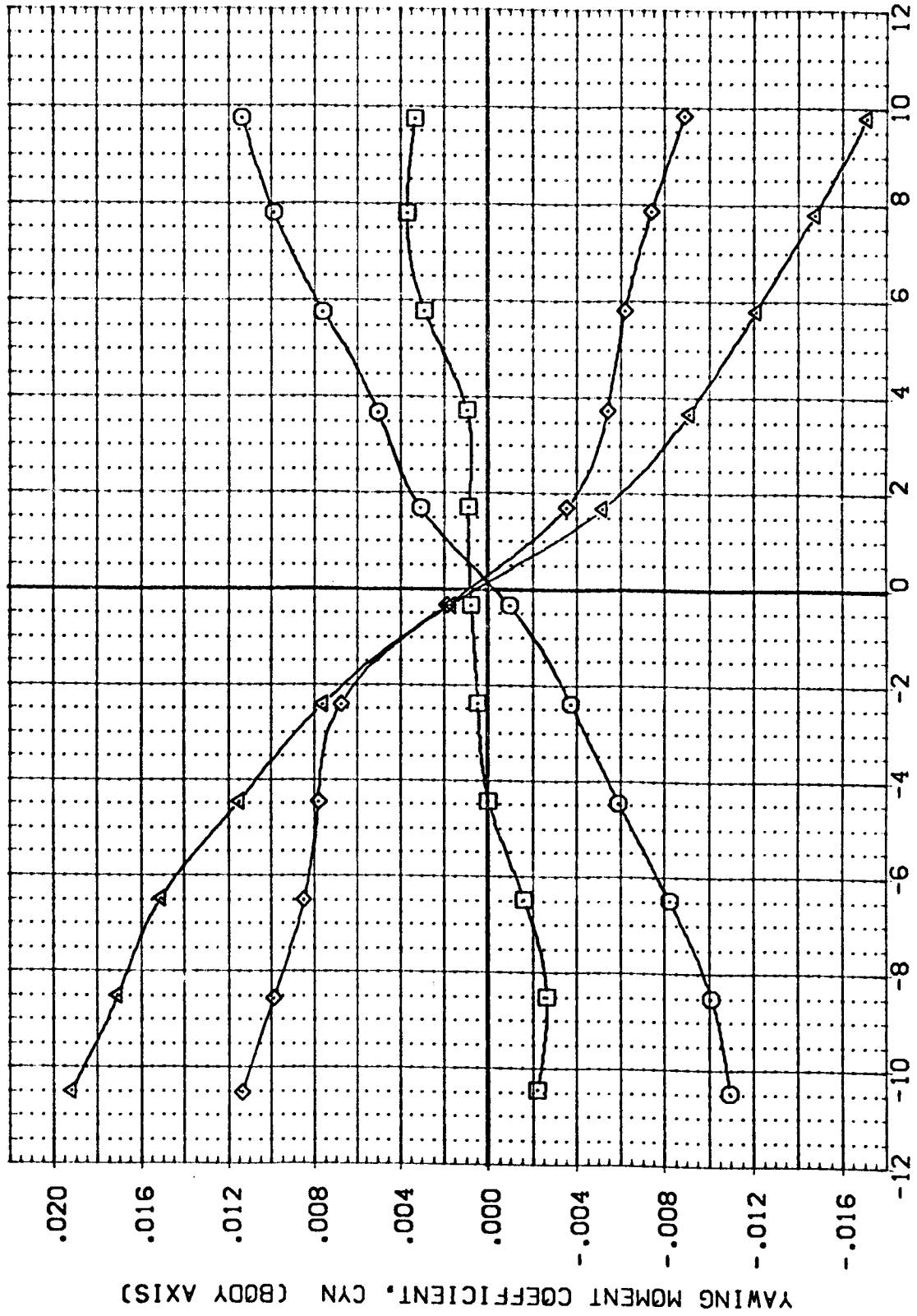


FIG. 25 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139 WITH ALT. NOSE

DATA SET SYMBOL
 (A87068)
 (A87069)
 (A87070)
 (A87071)
 (A87072)

CONFIGURATION DESCRIPTION
 MSFC 574(CA48) CRB 139 V/ALT NOSE
 MSFC 574(CA48) CRB 139 V/ALT NOSE
 MSFC 574(CA48) CRB 139 V/ALT NOSE
 MSFC 574(CA48) CRB 139 V/ALT NOSE
 MSFC 574(CA48) CRB 139 V/ALT NOSE

ALPHA .000
 10.000
 20.000
 30.000
 40.000

ELEVTR .000
 .000
 .000
 .000
 .000

SPOBRK 999.990
 999.990
 999.990
 999.990
 999.990

BOFLAP .000
 .000
 .000
 .000
 .000

REFERENCE INFORMATION
 SREF 2690.0000 SG.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

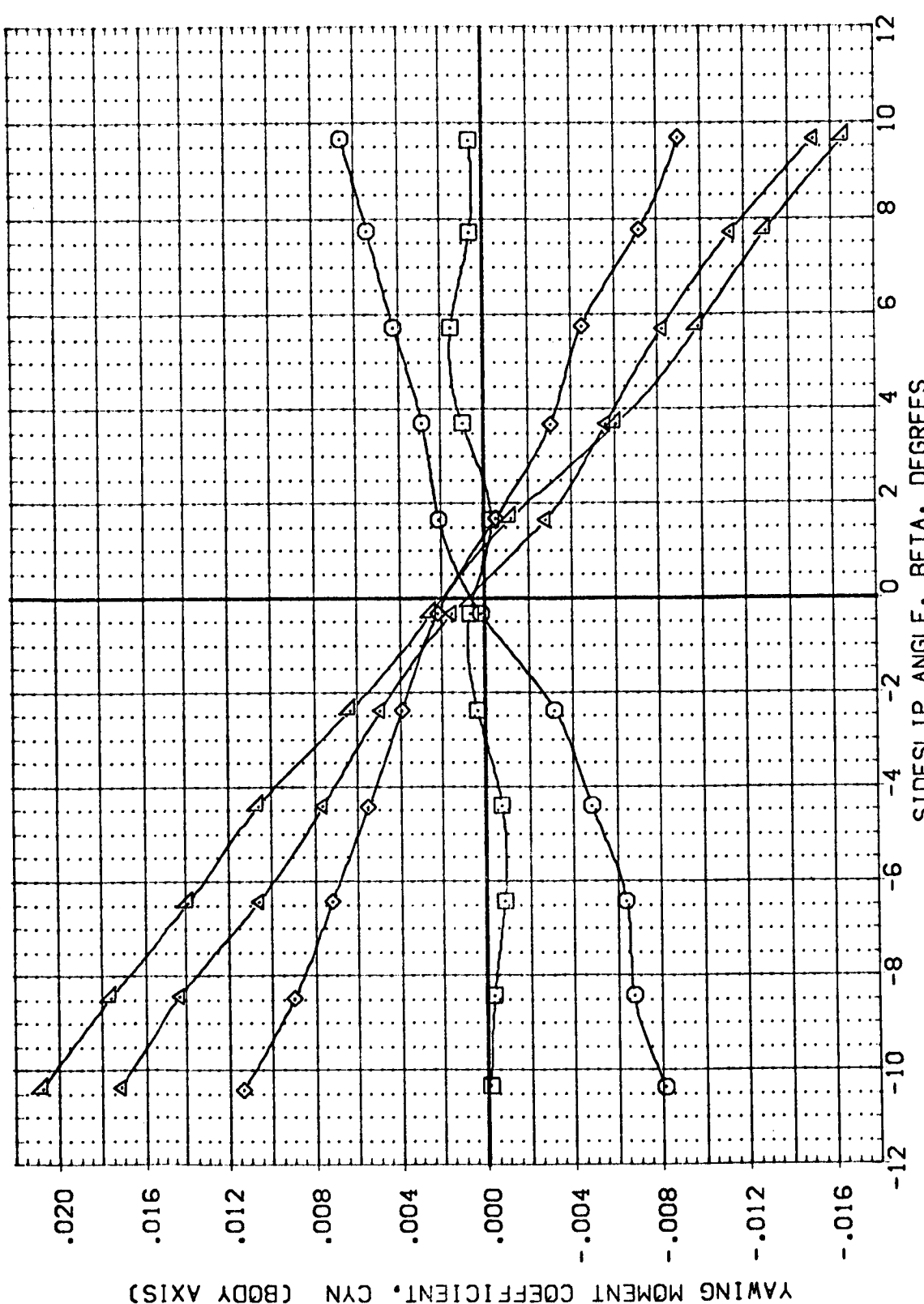


FIG. 25 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139 WITH ALT. NOSE
 (C)MACH = 4.96
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DATA SET SYMBOL CONFIGURATION DESCRIPTION

{A87068}	MSFC 574(CA48) CRB 139 V/ALT NOSE	ALPHA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
{A87069}	MSFC 574(CA48) CRB 139 V/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SC.FT.
{A87070}	MSFC 574(CA48) CRB 139 V/ALT NOSE	10.000	.000	999.990	.000	LREF 474.8000 IN.
{A87071}	DATA NOT AVAILABLE	20.000	.000	999.990	.000	BREF 936.7000 IN.
{A87072}	DATA NOT AVAILABLE	30.000	.000	999.990	.000	XMRP 838.7000 IN.
		40.000	.000	999.990	.000	YMRP .0000 IN.
						ZMRP .0000 IN.
						SCALE .0040

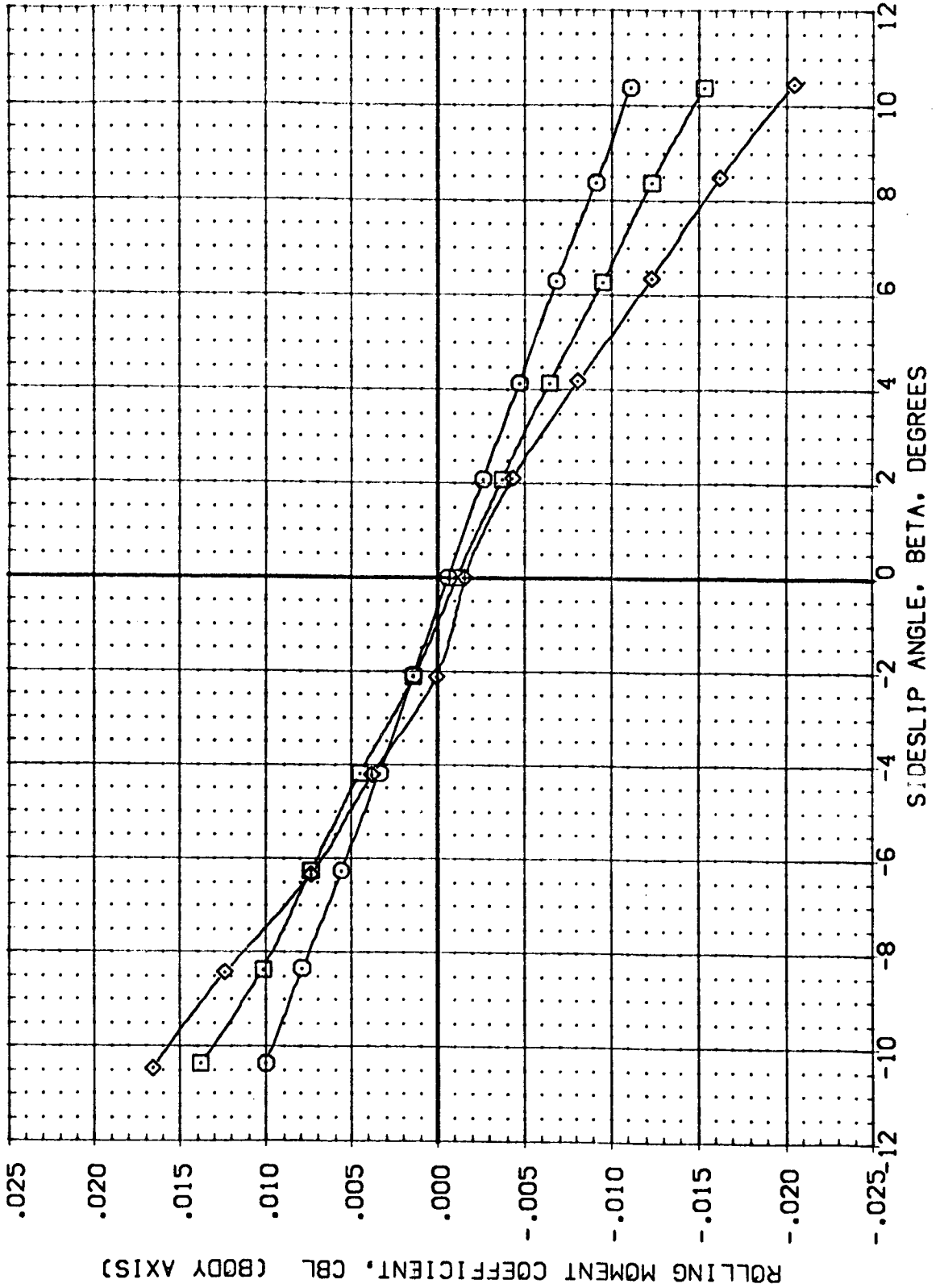


FIG. 25 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139 WITH ALT. NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
(A87068)	MSFC 574(OA48) ORB 139 V/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(A87069)	MSFC 574(OA48) ORB 139 V/ALT NOSE	10.000	.000	999.990	.000	LREF 474.8000 IN.
(A87070)	MSFC 574(OA48) ORB 139 V/ALT NOSE	20.000	.000	999.990	.000	BREF 936.7000 IN.
(A87071)	MSFC 574(OA48) ORB 139 V/ALT NOSE	30.000	.000	999.990	.000	XMRP 838.7000 IN.
(A87072)	DATA NOT AVAILABLE	40.000	.000	999.990	.000	YMRP .0000 IN.
						ZMRP .0000 IN.
						SCALE .0040

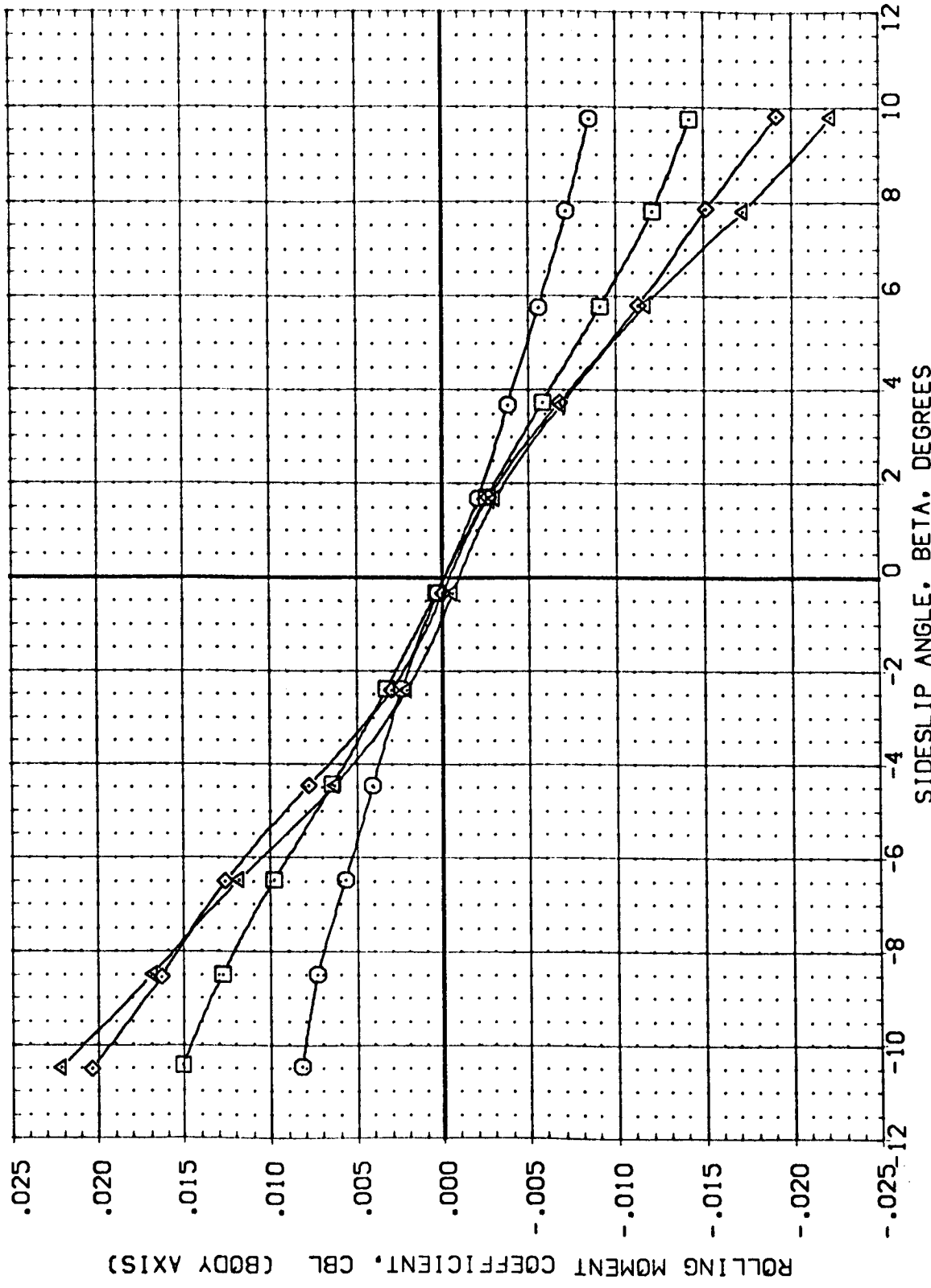


FIG. 25 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139 WITH ALT. NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(A87068)	MSFC 574(CA48) CR8 139 W/ALT NOSE	.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(A87069)	MSFC 574(CA48) CR8 139 W/ALT NOSE	10.000	.000	999.990	.000	LREF 474.8000 IN.
(A87070)	MSFC 574(CA48) CR8 139 W/ALT NOSE	20.000	.000	999.990	.000	BREF 936.7000 IN.
(A87071)	MSFC 574(CA48) CR8 139 W/ALT NOSE	30.000	.000	999.990	.000	XMRP 838.7000 IN.
(A87072)	MSFC 574(CA48) CR8 139 W/ALT NOSE	40.000	.000	999.990	.000	ZMRP .0000 IN.
						SCALE .0040

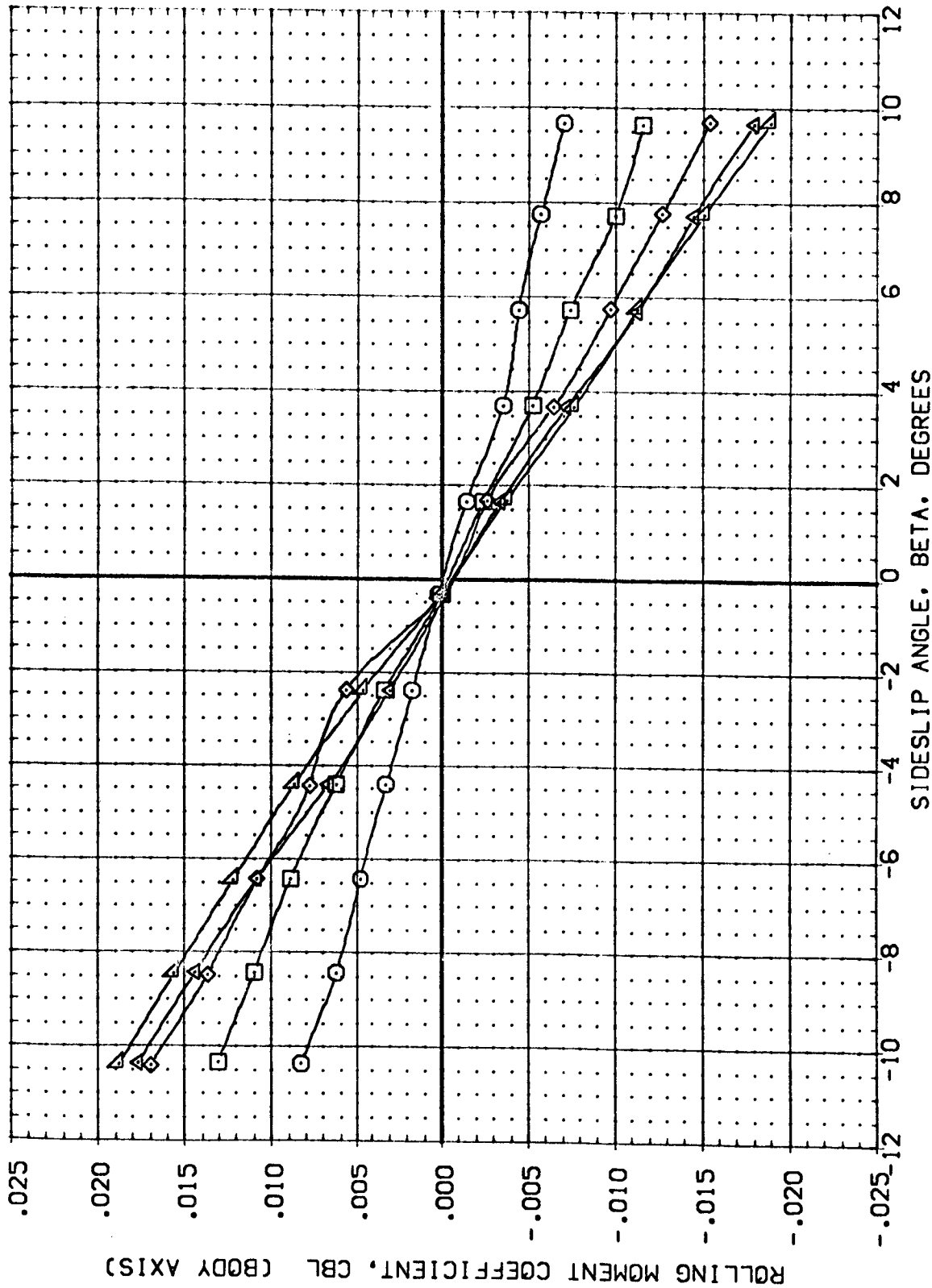


FIG. 25 LATERAL-DIRECTIONAL CHARACTERISTICS OF ORBITER 139 WITH ALT. NOSE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BOFLAP	REFERENCE INFORMATION
{ 187011 }	MSFC 574(OA48) CR8 1398	10.000	.000	999.990	.000	SREF 2690.0000
{ 187087 }	MSFC 574(OA48) CR8 1398	10.000	.000	999.990	.000	LREF 474.8000
{ 187090 }	MSFC 574(OA48) CR8 1398	10.000	.000	999.990	.000	BREF 936.7000
{ 187095 }	MSFC 574(OA48) CR8 1398	10.000	.000	999.990	.000	XMRR 838.7000
{ 187138 }	DATA NOT AVAILABLE	10.000	.000	999.990	.000	YMRR .0000
						ZMRR .0000
						SCALE .0040

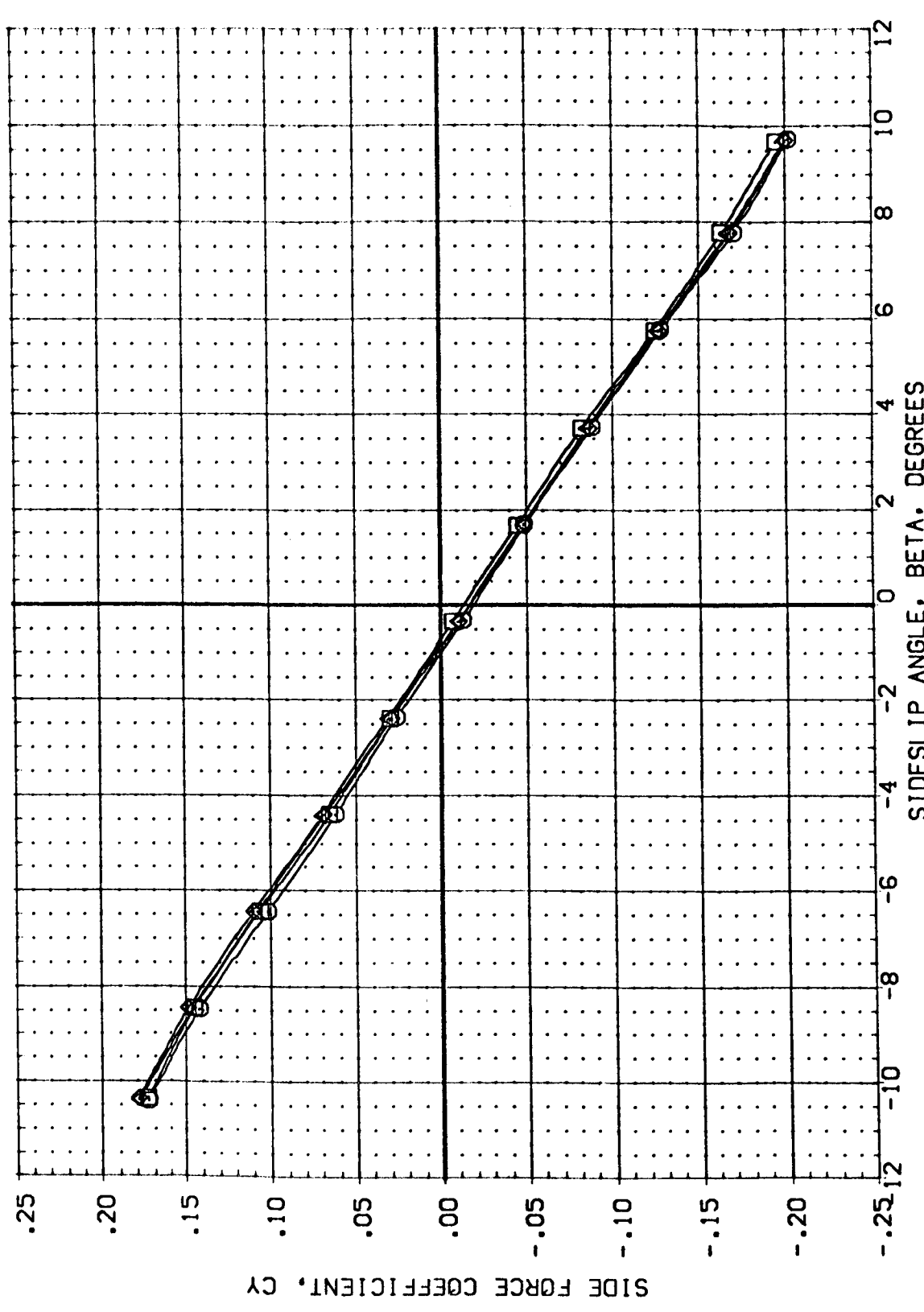


FIG. 26 LATERAL-DIRECTIONAL CHAR. OF ORBITER 1398 WITH TRIMMER - ALPHA=10
 (A)MACH = .59 PAGE 10:8

DATA SET SYMBOL CONFIGURATION DESCRIPTION REFERENCE INFORMATION

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BDFLAP	SREF	SC.FT.
:870111	MSFC 574(CA48) ORB 139B	10.000	.000	999.990	.000	2690.0000	50.000
:A87087	MSFC 574(CA48) ORB 139B V/H19	10.000	.000	999.990	.000	474.8000	10.000
:A87090	MSFC 574(CA48) ORB 139B V/H20	10.000	.000	999.990	.000	936.7000	10.000
:A87095	MSFC 574(CA48) ORB 139B V/H23	10.000	.000	999.990	.000	838.7000	10.000
:A87081	DATA NOT AVAILABLE	10.000	.000	999.990	.000	.0000	10.000
						ZMRP	.0000
						SCALE	.0040

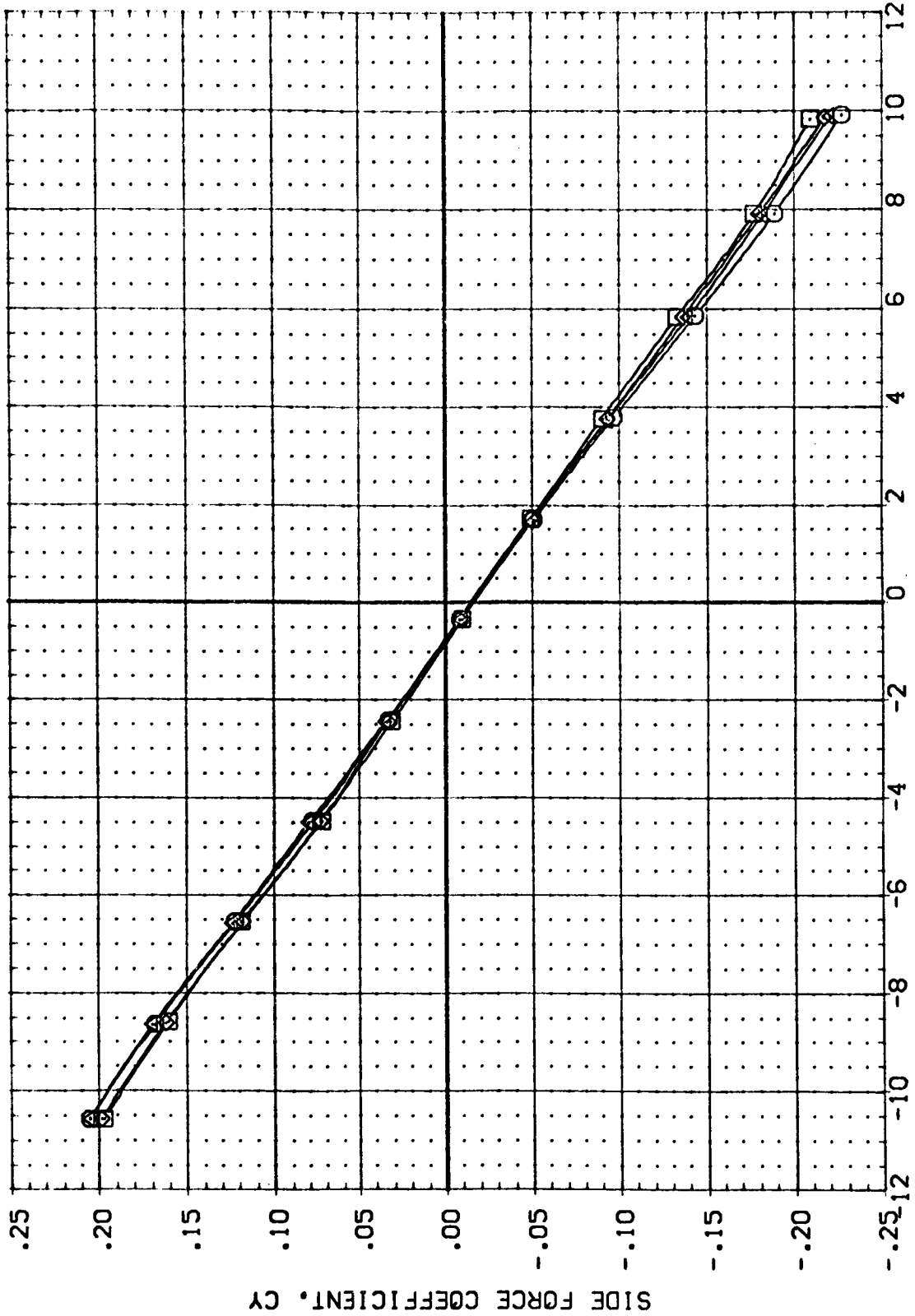


FIG. 26 LATERAL-DIRECTIONAL CHAR. OF ORBITER 139B WITH TRIMMER - ALPHA=10

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (187011) MSFC 574(CA48) CRB 1398
 (A87087) MSFC 574(CA48) CRB 1398 W/H19
 (A87090) MSFC 574(CA48) CRB 1398 W/H20
 (A87095) MSFC 574(CA48) CRB 1398 W/H23
 (A87108) DATA NOT AVAILABLE

ALPHA 10.000
 10.000
 10.000
 10.000

ELEVTR .000
 .000
 .000
 .000

SPOBRK 999.990
 999.990
 999.990
 999.990

BDFLAP .000
 .000
 .000
 .000

REFERENCE INFORMATION
 SREF 2690.0000 SC.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

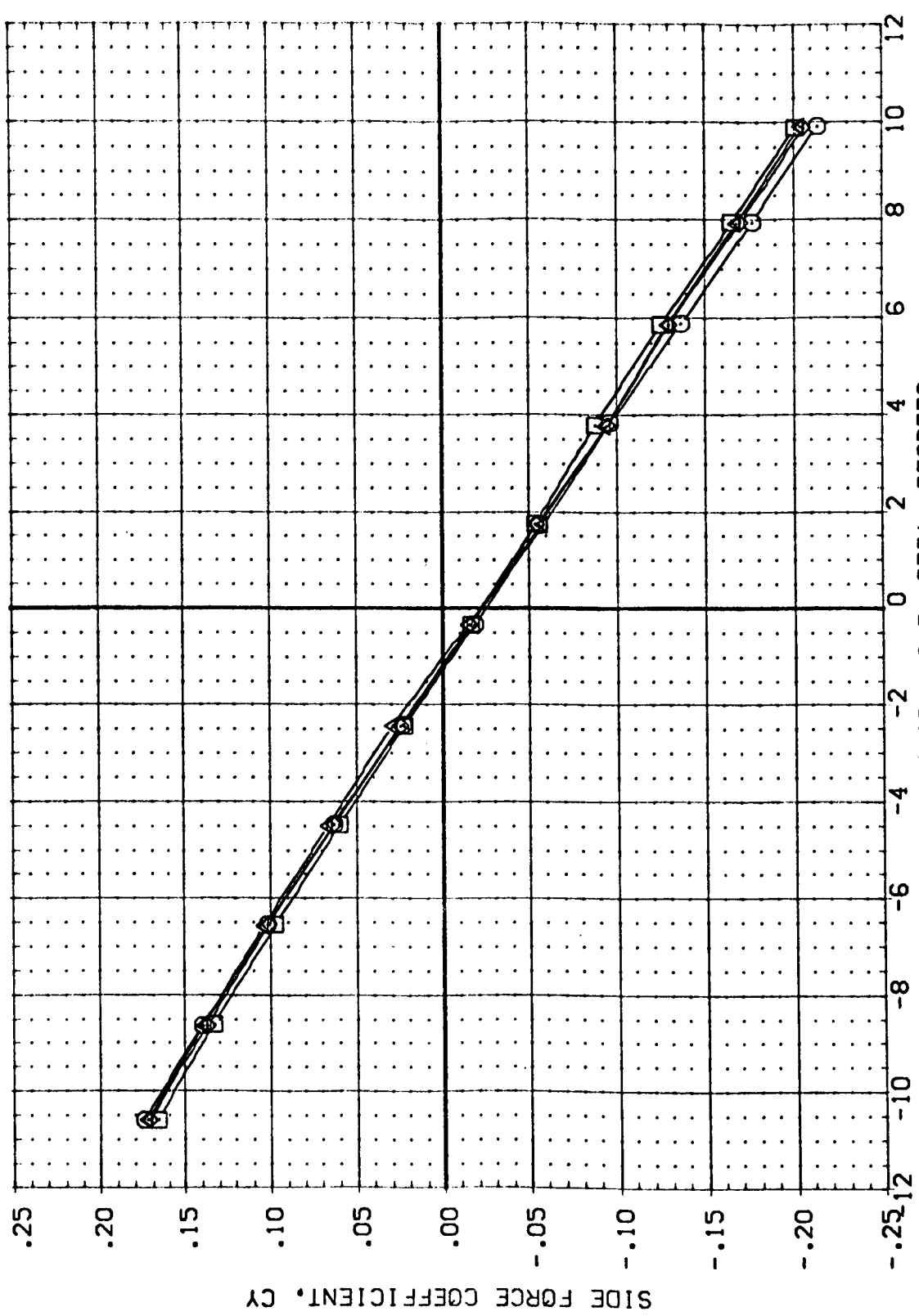


FIG. 26 LATERAL-DIRECTIONAL CHAR. OF ORBITER 139B WITH TRIMMER - ALPHA=10

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(187011) MSFC 574(OA48) ORB 1398 W/H19

(187087) MSFC 574(OA48) ORB 1398 W/H20

(187090) MSFC 574(OA48) ORB 1398 W/H20

(187095) MSFC 574(OA48) ORB 1398 W/H23

(187108) MSFC 574(OA48) ORB 1398 W/H22

ALPHA 10.000

ELEVTR .000

SPOBRK 999.990

BCFLAP .000

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.

LREF 474.8000 IN.

BREF 936.7000 IN.

XMRP 838.7000 IN.

YMRP .0000 IN.

ZMRP .0000 IN.

SCALE .0040

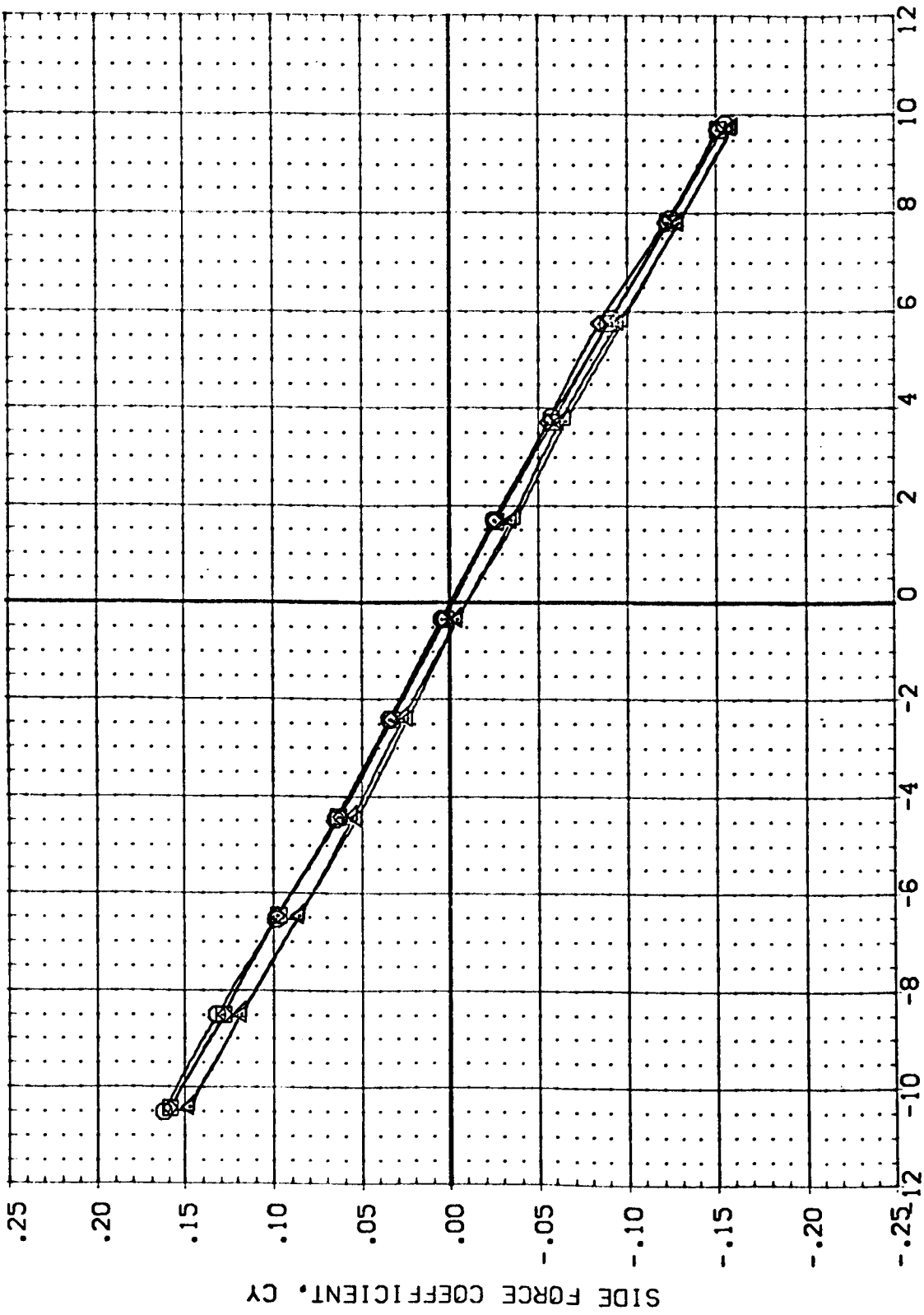


FIG. 26 LATERAL-DIRECTIONAL CHAR. OF ORBITER 139B WITH TRIMMER - ALPHA=10

(E)MACH = 2.99

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DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (187011) MSFC 574(OA48) ORB 1398
 (A87087) MSFC 574(OA48) ORB 1398 V/H19
 (A87090) MSFC 574(OA48) ORB 1398 V/H20
 (A87095) MSFC 574(OA48) ORB 1398 V/H23
 (A87108) DATA NOT AVAILABLE

ALPHA ELEVTR SPOBRK BCF LAP REFERENCE INFORMATION
 10.000 .000 999.990 .000 SREF 2690.0000 SQ.FT.
 10.000 .000 999.990 .000 LREF 474.8000 IN.
 10.000 .000 999.990 .000 BREF 936.7000 IN.
 10.000 .000 999.990 .000 XMRP 838.7000 IN.
 10.000 .000 999.990 .000 YMRP .0000 IN.
 SCALE .0040

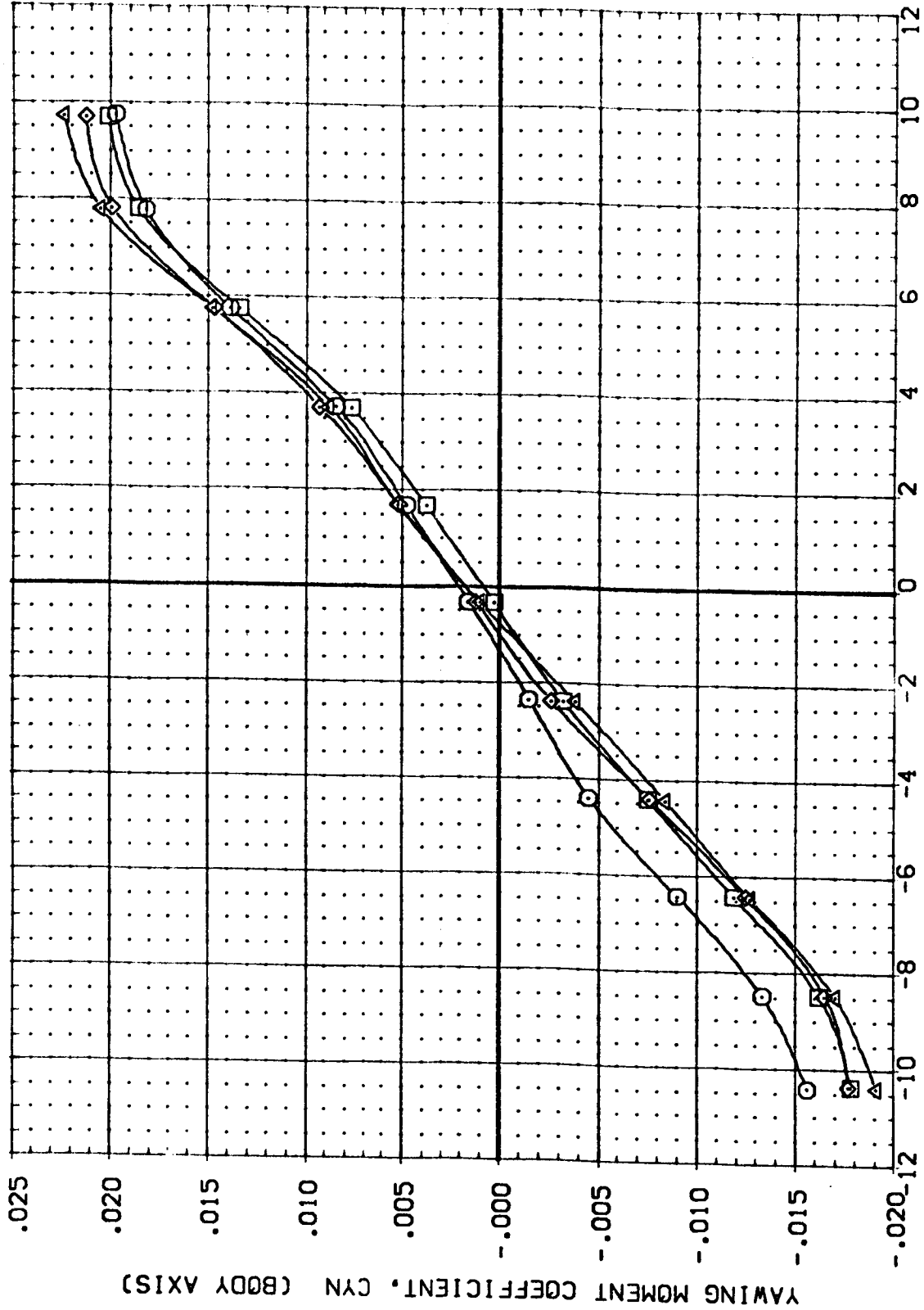


FIG. 26 LATERAL-DIRECTIONAL CHAR. OF ORBITER 139B WITH TRIMMER - ALPHA=10

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(187011)	MSFC 574(CA48) CR8 1398	10.000	.000	999.990	.000	SREF 2690.0000 SC.FT.
(A87087)	MSFC 574(CA48) CR8 1398 V/H19	10.000	.000	999.990	.000	LREF 474.8000 IN.
(A87090)	MSFC 574(CA48) CR8 1398 V/H20	10.000	.000	999.990	.000	BREF 936.7000 IN.
(A87095)	MSFC 574(CA48) CR8 1398 V/H23	10.000	.000	999.990	.000	XMRP 838.7000 IN.
(A87108)	DATA NOT AVAILABLE	10.000	.000	999.990	.000	ZMRP .0000 IN.
						SCALE .0040

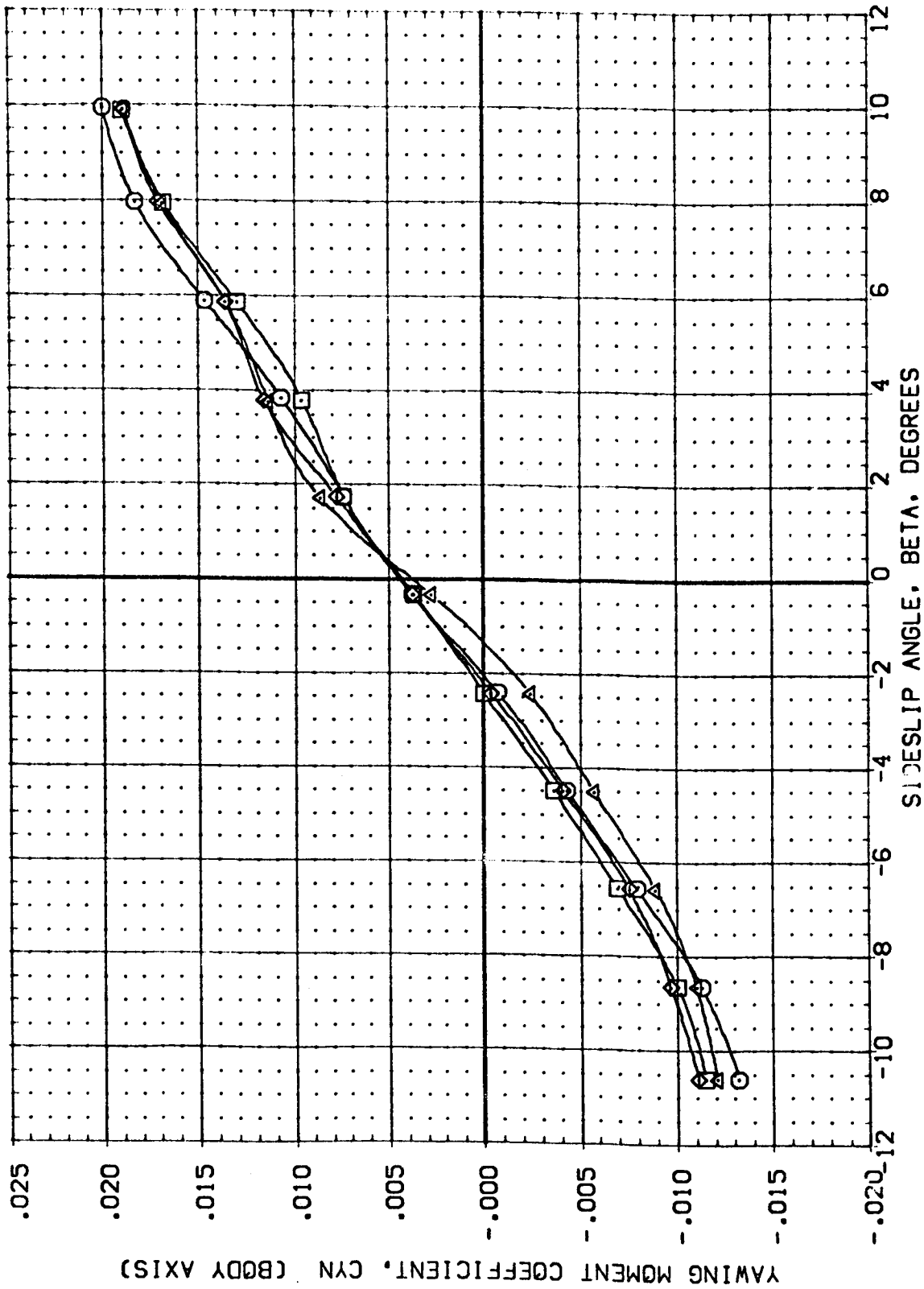


FIG. 26 LATERAL-DIRECTIONAL CHAR. OF ORBITER 139B WITH TRIMMER - ALPHA=10

DATA SET SYMBOL CONFIGURATION DESCRIPTION REFERENCE INFORMATION SQ.FT.

(A87011)	MSFC 574(OA48) ORB 139B	SREF	2690.0000	IN.
(A87087)	MSFC 574(OA48) ORB 139B V/H19	LREF	474.8000	IN.
(A87090)	MSFC 574(OA48) ORB 139B V/H20	BREF	936.7000	IN.
(A87095)	DATA NOT AVAILABLE	XMRP	838.7000	IN.
(A87108)	DATA NOT AVAILABLE	YMRP	.0000	IN.
		ZMRP	.0000	IN.
		SCALE	.0040	

ALPHA 10.000
ELEVTR .000
SPOBRK 999.990
BOFLAP .000
REF 2690.0000

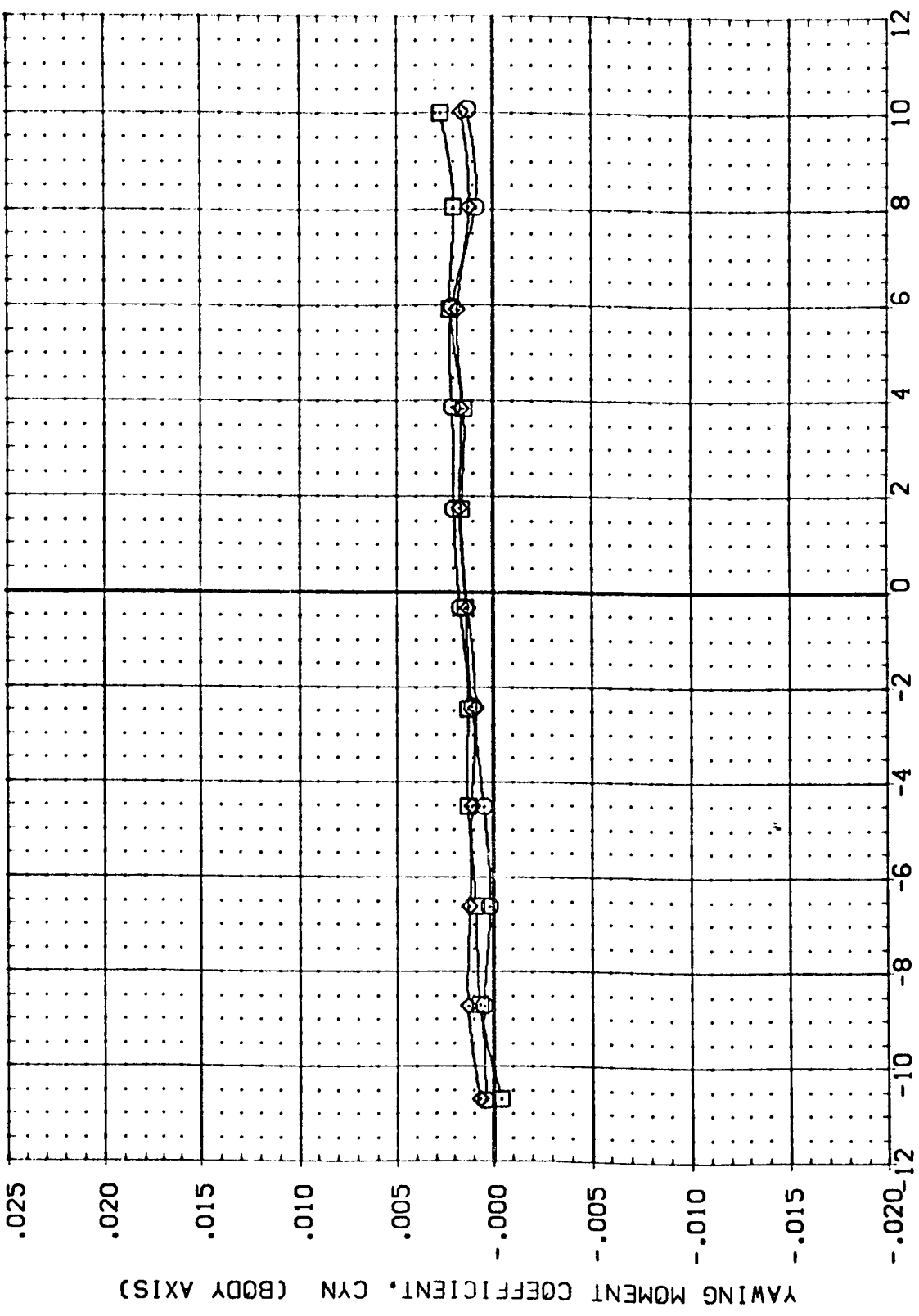


FIG. 26 LATERAL-DIRECTIONAL CHAR. OF ORBITER 139B WITH TRIMMER - ALPHA=10

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(187011)	MSFC 574(DA48) ORB 1398
(A87087)	MSFC 574(DA48) ORB 1398 V/H19
(A87090)	MSFC 574(DA48) ORB 1398 V/H20
(A87095)	MSFC 574(DA48) ORB 1398 V/H23
(A87108)	MSFC 574(DA48) ORB 1398 V/H22

ALPHA 10.000
 10.000
 10.000
 10.000
 10.000

ELEVTR .000
 .000
 .000
 .000
 .000

SPOBRK 999.990
 999.990
 999.990
 999.990
 999.990

BOFLAP .000
 .000
 .000
 .000
 .000

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

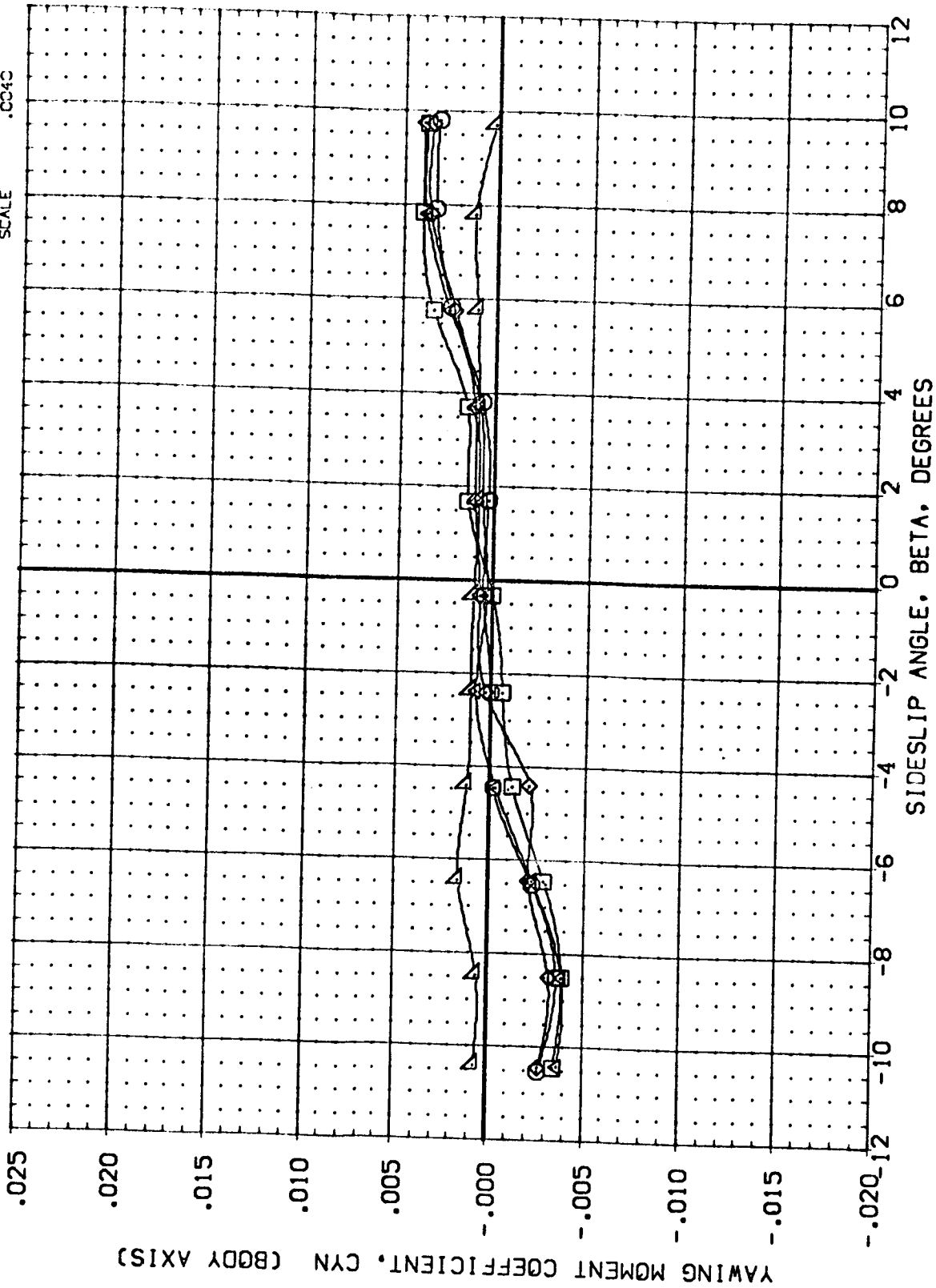


FIG. 26 LATERAL-DIRECTIONAL CHAR. OF ORBITER 1398 WITH IRIMMER - ALPHA=10

(E)MACH = 2.99

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(187011) MSFC 574(CA48) CRB 139B V/H19
 (187087) MSFC 574(CA48) CRB 139B V/H20
 (187092) MSFC 574(CA48) CRB 139B V/H20
 (187095) MSFC 574(CA48) CRB 139B V/H23
 (187108) DATA NOT AVAILABLE

ALPHA ELEVTR SPOBRK BDFLAP REFERENCE INFORMATION

10.000 .000 999.990 .000 SREF 2690.0000 SC.FT.
 10.000 .000 999.990 .000 LREF 474.8000 IN.
 10.000 .000 999.990 .000 BREF 936.7000 IN.
 10.000 .000 999.990 .000 XMRP 836.7000 IN.
 10.000 .000 999.990 .000 YMRP .0000 IN.
 10.000 .000 999.990 .000 ZMRP .0000 IN.
 SCALE .0010

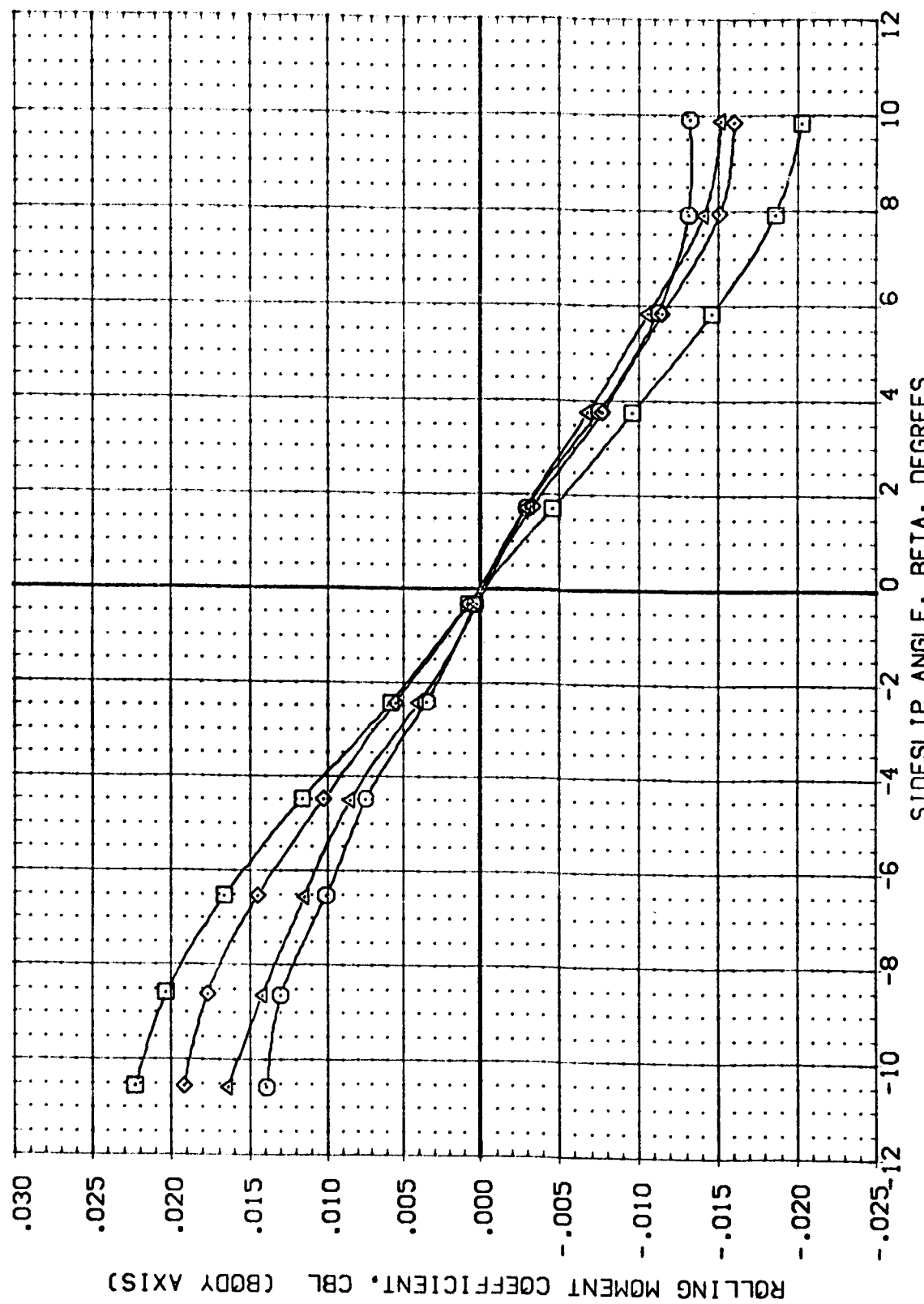


FIG. 26 LATERAL-DIRECTIONAL CHAR. OF ORBITER 139B WITH TRIMMER - ALPHA=10

DATA SET SYMBOL: (187011) (A87087) (A87090) (A87095) (A87108)

CONFIGURATION DESCRIPTION: MSFC 574(CA48) CRB 139B V/H19 MSFC 574(CA48) CRB 139B V/H20 MSFC 574(CA48) CRB 139B V/H23 DATA NOT AVAILABLE

ALPHA: 10.000 10.000 10.000 10.000

ELEVTR: .000 .000 .000 .000

SPOBRK: 999.990 999.990 999.990 999.990

BOFLAP: .000 .000 .000 .000

REFERENCE INFORMATION: SREF 2690.0000 SG.FT. 474.8000 SREF 936.7000 SREF 838.7000 XMRP .0000 YMRP .0000 ZMRP .0000 SCALE .0040

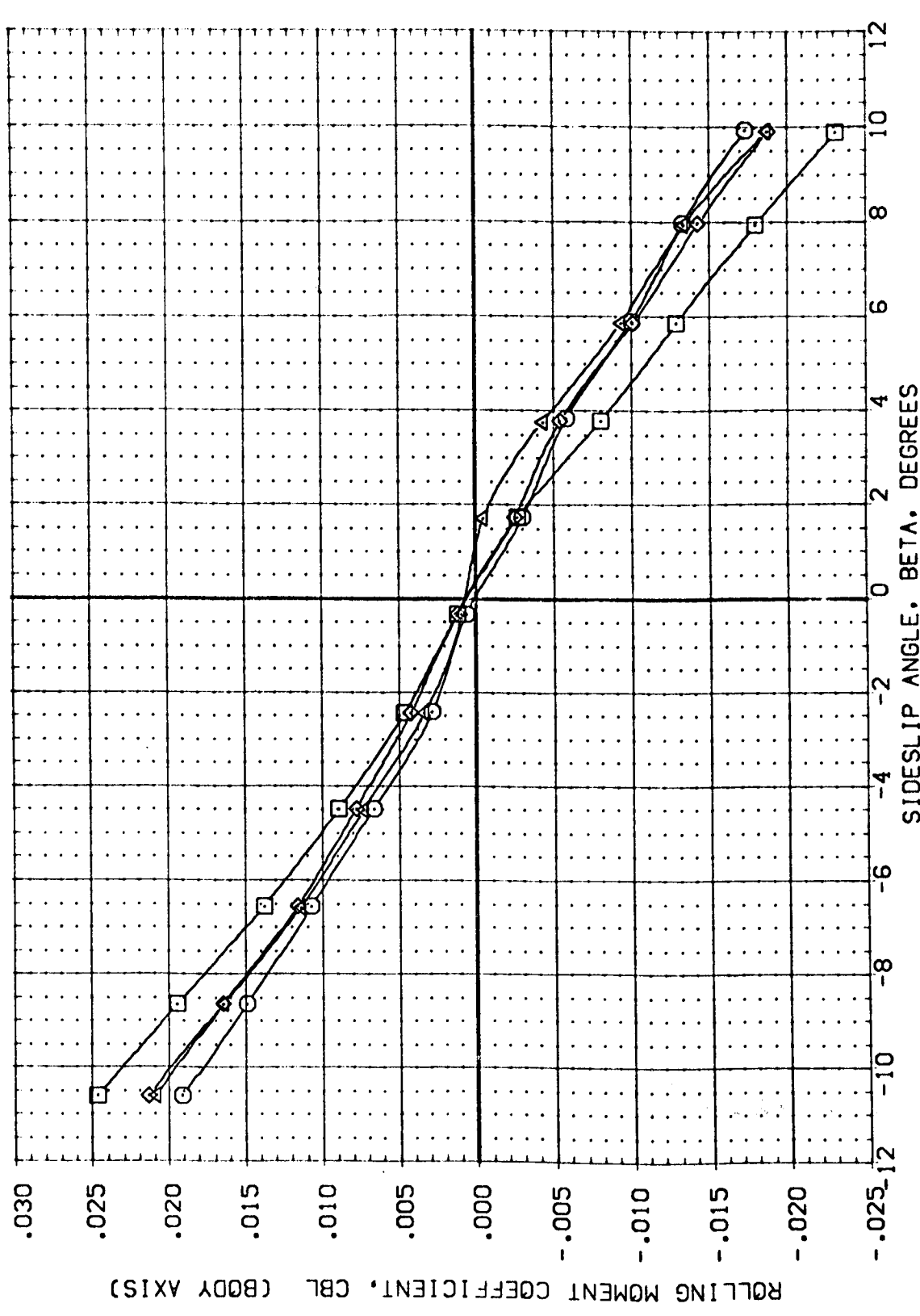


FIG. 26 LATERAL-DIRECTIONAL CHAR. OF ORBITER 139B WITH TRIMMER - ALPHA=10
 (C)MACH = 1.19 PAGE 1030

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
{ 187011 }	MSFC 574(DA48) CR8 1398	10.000	.000	999.990	.000	SREF 2690.0000
{ 187087 }	MSFC 574(DA48) CR8 1398	10.000	.000	999.990	.000	LREF 474.8000
{ 187090 }	MSFC 574(DA48) CR8 1398	10.000	.000	999.990	.000	BREF 936.7000
{ 187095 }	MSFC 574(DA48) CR8 1398	10.000	.000	999.990	.000	XMRP 838.7000
{ 187108 }	MSFC 574(DA48) CR8 1398	10.000	.000	999.990	.000	YMRP .0000
						ZMRP .0000
						SCALE .0040

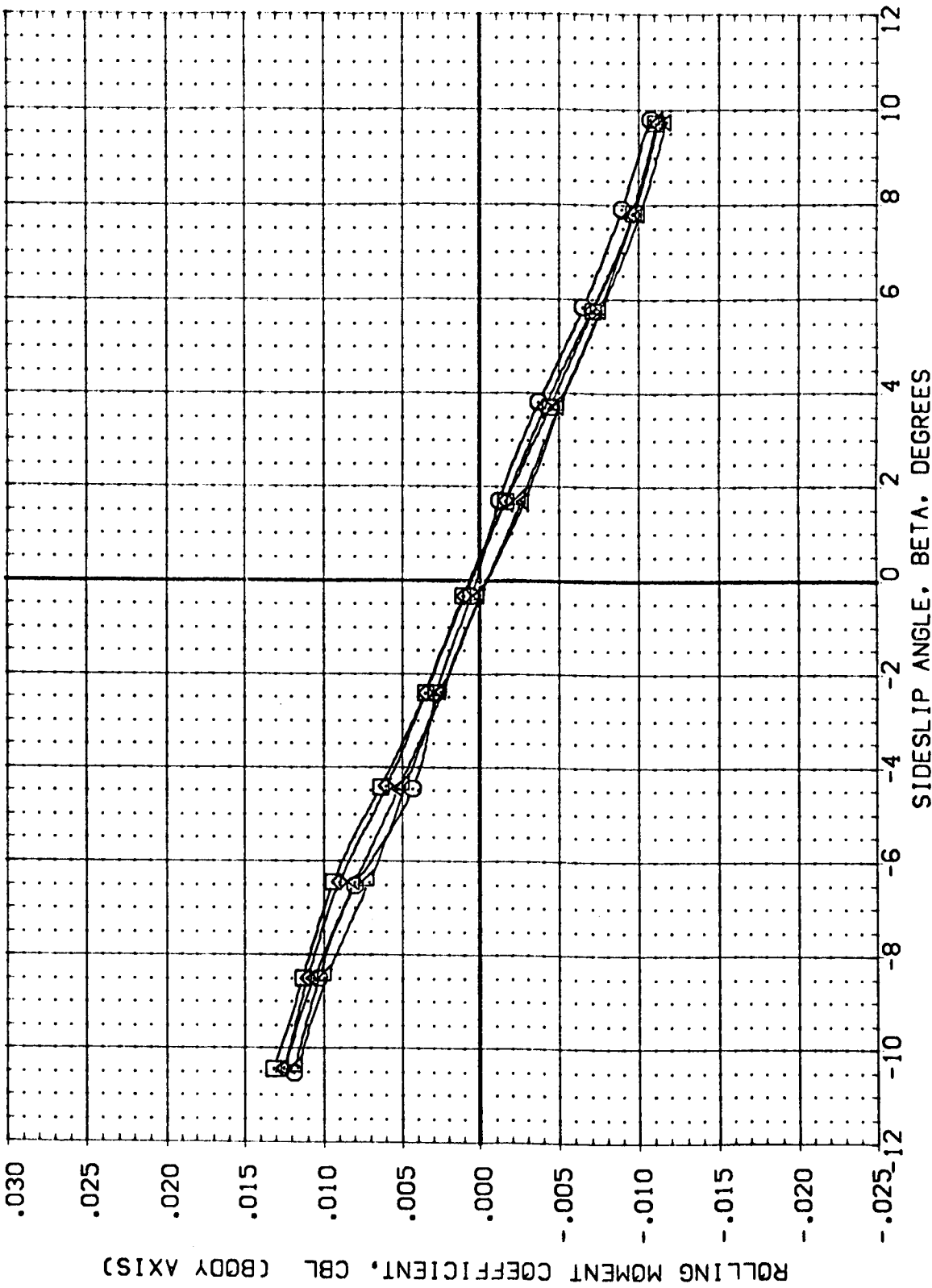


FIG. 26 LATERAL-DIRECTIONAL CHAR. OF ORBITER 139B WITH TRIMMER - ALPHA=10

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(187012)	MSFC 574(DA48) CR8 1398	20.000	.000	999.990	.000	SREF 2690.0000 SQ.FT.
(187088)	MSFC 574(DA48) CR8 1398 V/H19	20.000	.000	999.990	.000	LREF 474.8000 IN.
(187089)	MSFC 574(DA48) CR8 1398 V/H20	20.000	.000	999.990	.000	BREF 936.7000 IN.
(187096)	MSFC 574(DA48) CR8 1398 V/H23	20.000	.000	999.990	.000	XMRP 838.7000 IN.
(187109)	MSFC 574(DA48) CR8 1398 V/H22	20.000	.000	999.990	.000	YMRP .0000 IN.
						ZMRP .0000 IN.
						SCALE .0040

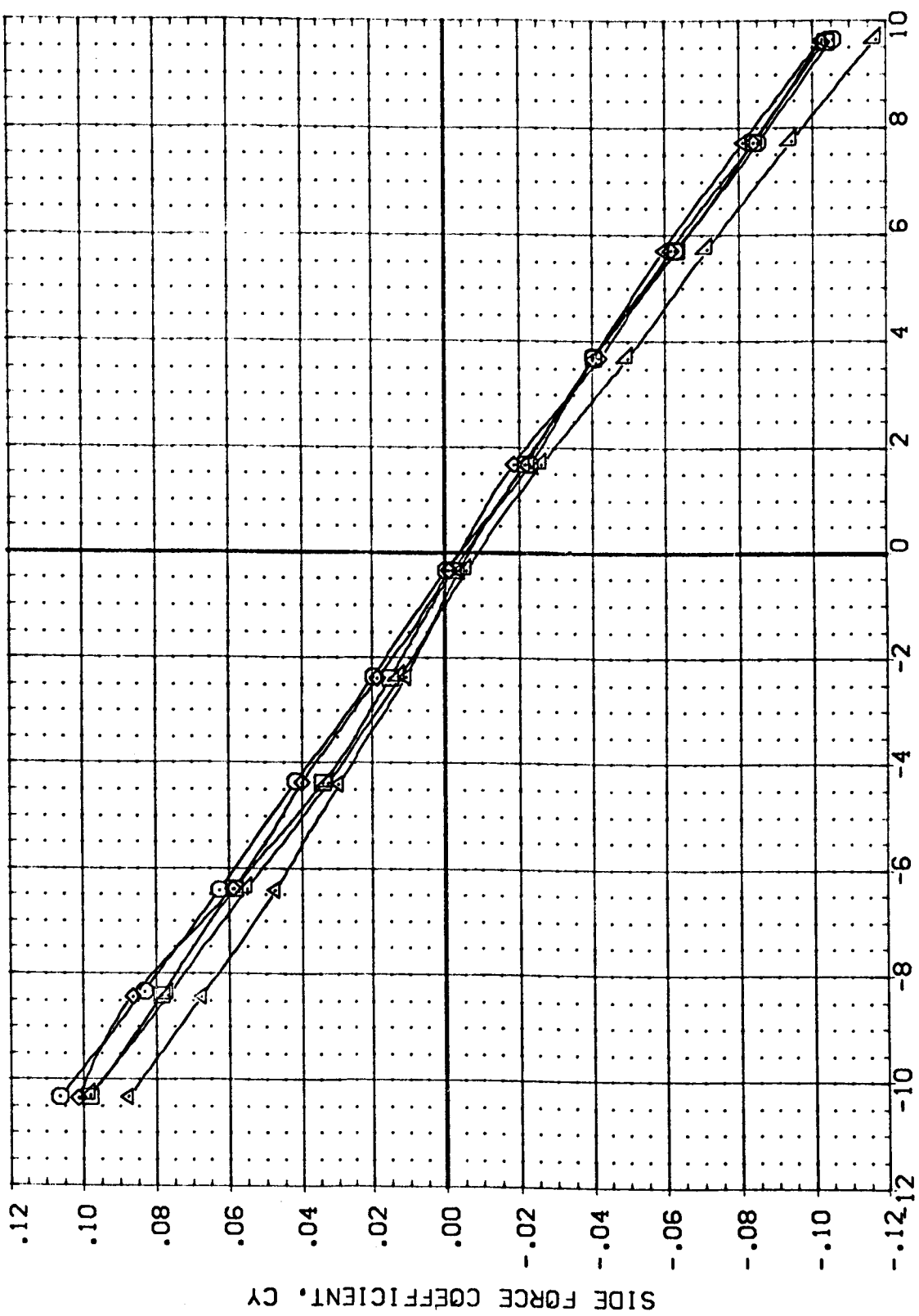


FIG. 27 LATERAL-DIRECTIONAL CHAR. OF ORBITER 139B WITH TRIMMER - ALPHA=20

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION	SCALE
(187012)	MSFC 574(CA48) CRB 139B V/H19	20.000	.000	999.990	.000	SREF 2690.0000	50.000
(187088)	MSFC 574(CA48) CRB 139B V/H20	20.000	.000	999.990	.000	LREF 474.8000	1.000
(187089)	MSFC 574(CA48) CRB 139B V/H20	20.000	.000	999.990	.000	BREF 936.7000	1.000
(187096)	MSFC 574(CA48) CRB 139B V/H23	20.000	.000	999.990	.000	XTRP 838.7000	1.000
(187099)	MSFC 574(CA48) CRB 139B V/H22	20.000	.000	999.990	.000	YTRP .0000	1.000
(187099)	MSFC 574(CA48) CRB 139B V/H22	20.000	.000	999.990	.000	ZTRP .0000	1.000
						SCALE	.0040

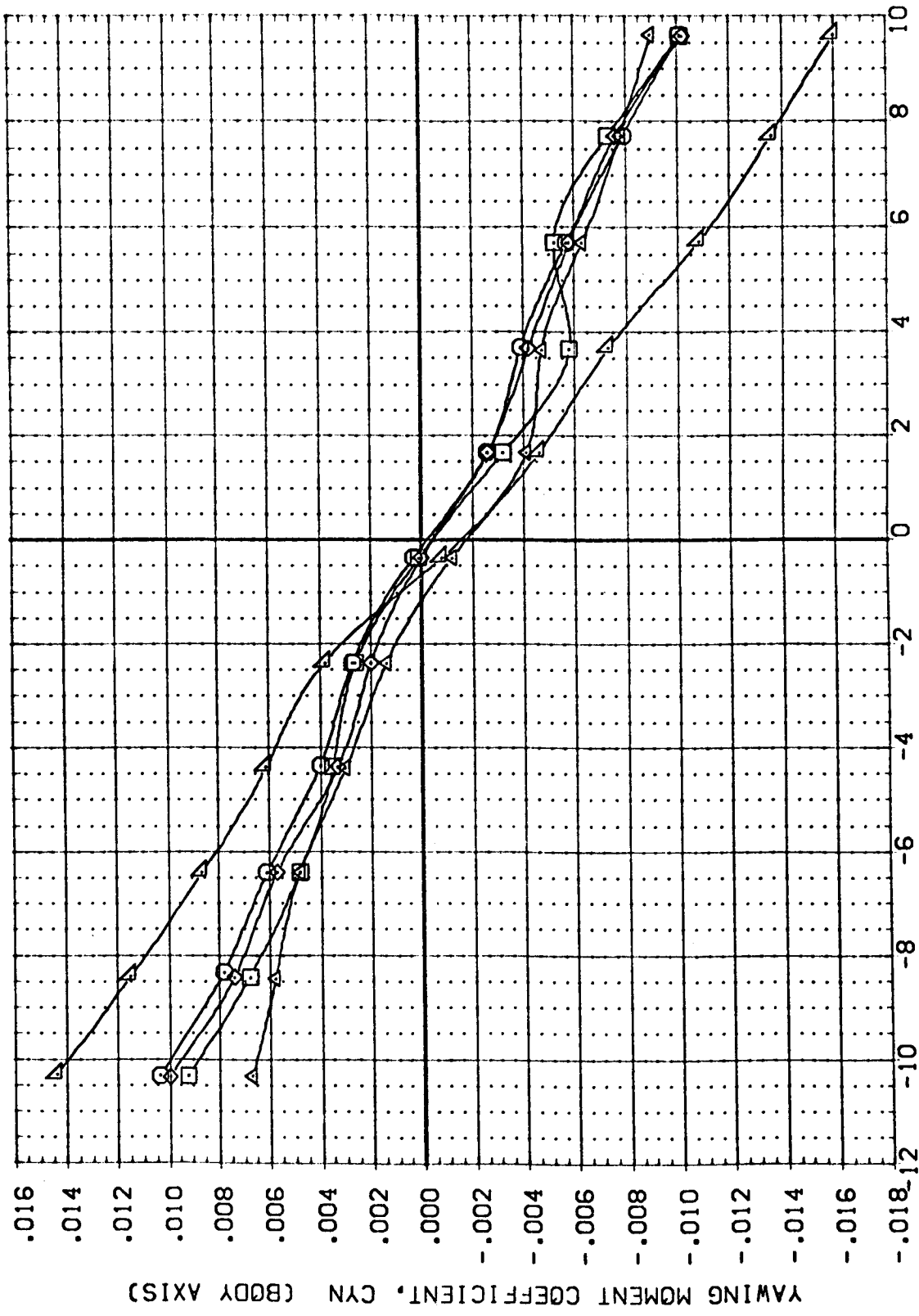


FIG. 27 LATERAL-DIRECTIONAL CHAR. OF ORBITER 139B WITH TRIMMER - ALPHA=20
 (A)MACH = 4.96
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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BDFLAP	REFERENCE INFORMATION
(187012)	MSFC 574(CA48) ORB 139B V/H19	20.000	.000	999.990	.000	SREF 2690.0000 SC.F.T.
(A87088)	MSFC 574(CA48) ORB 139B V/H20	20.000	.000	999.990	.000	LREF 474.8000 IN.
(A87089)	MSFC 574(CA48) ORB 139B V/H20	20.000	.000	999.990	.000	BREF 936.7000 IN.
(A87085)	MSFC 574(CA48) ORB 139B V/H23	20.000	.000	999.990	.000	XMRP 838.7000 IN.
(A87089)	MSFC 574(CA48) ORB 139B V/H22	20.000	.000	999.990	.000	YMRP .0000 IN.
						ZMRP .0000 IN.
						SCALE .0040

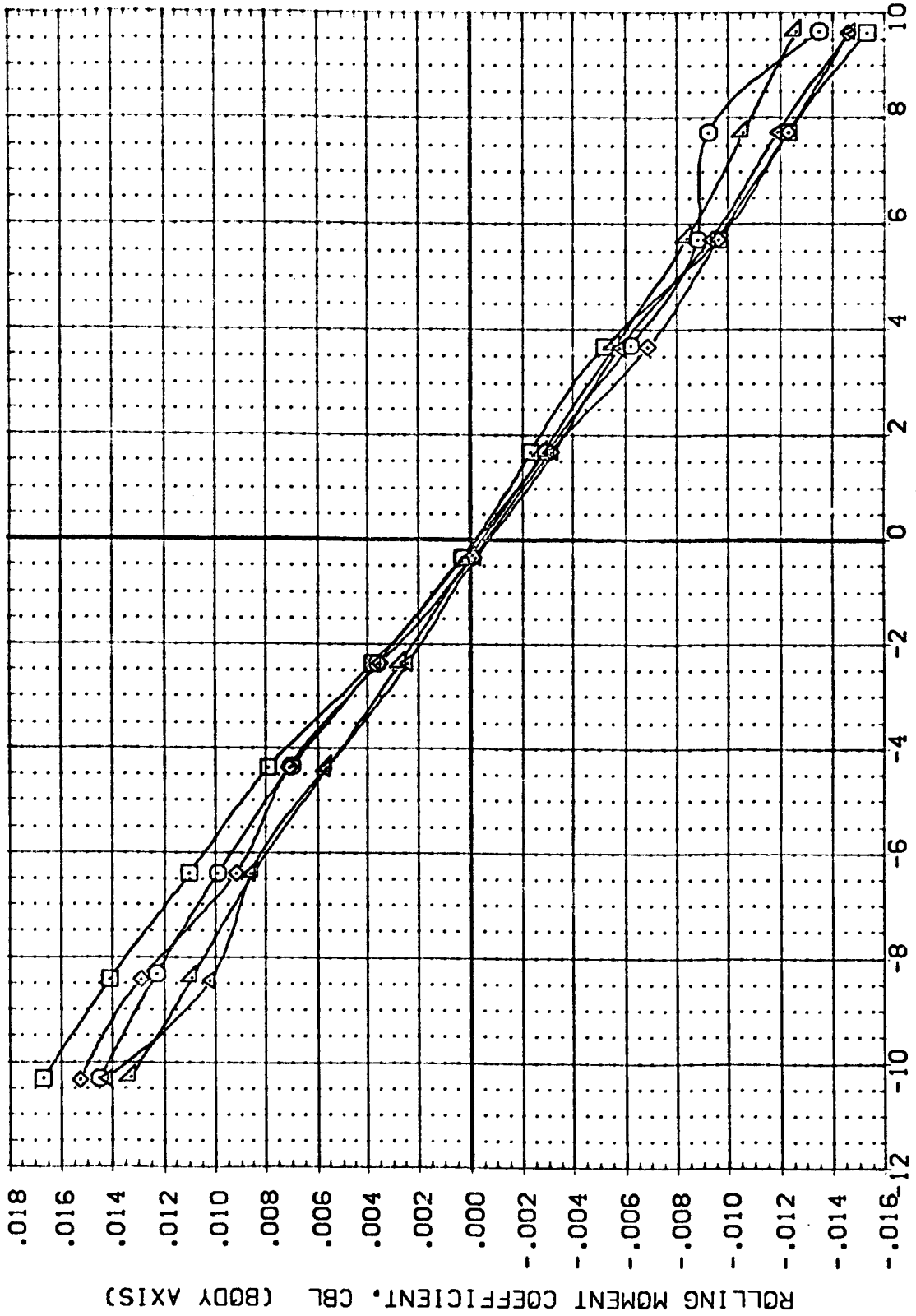


FIG. 27 LATERAL-DIRECTIONAL CHAR. OF ORBITER 139B WITH TRIMMER - ALPHA=20

MSFC 574(0A48) ORB 139B

(J87010)

REFERENCE INFORMATION

SREF	2690.0000	SG.F.T.
LREF	474.8000	IN.
BREF	936.7000	IN.
XMRP	838.7000	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0040	

DATA SOURCE

ALPHA	.000
J87010	20.000
J87012	40.000
J87013	
J87014	

PARAMETRIC VALUES

MACH	.600
ELEVTR	.000
BUFLAP	.000
AILRON	.000
SPOBRK	.000
.000	.999
J87010	
J87012	
J87014	

SYMBOL

○	.0030
□	.0025
◇	.0020
△	.0015
▽	.0010
◊	.0005
◊	-.0000
◊	-.0005
◊	-.0010
◊	-.0015
◊	-.0020
◊	-.0025
◊	-.0030
◊	-.0035

YAWING MOMENT COEFFICIENT DERIVATIVE WITH BETA, CYMBET, PER DEGREE

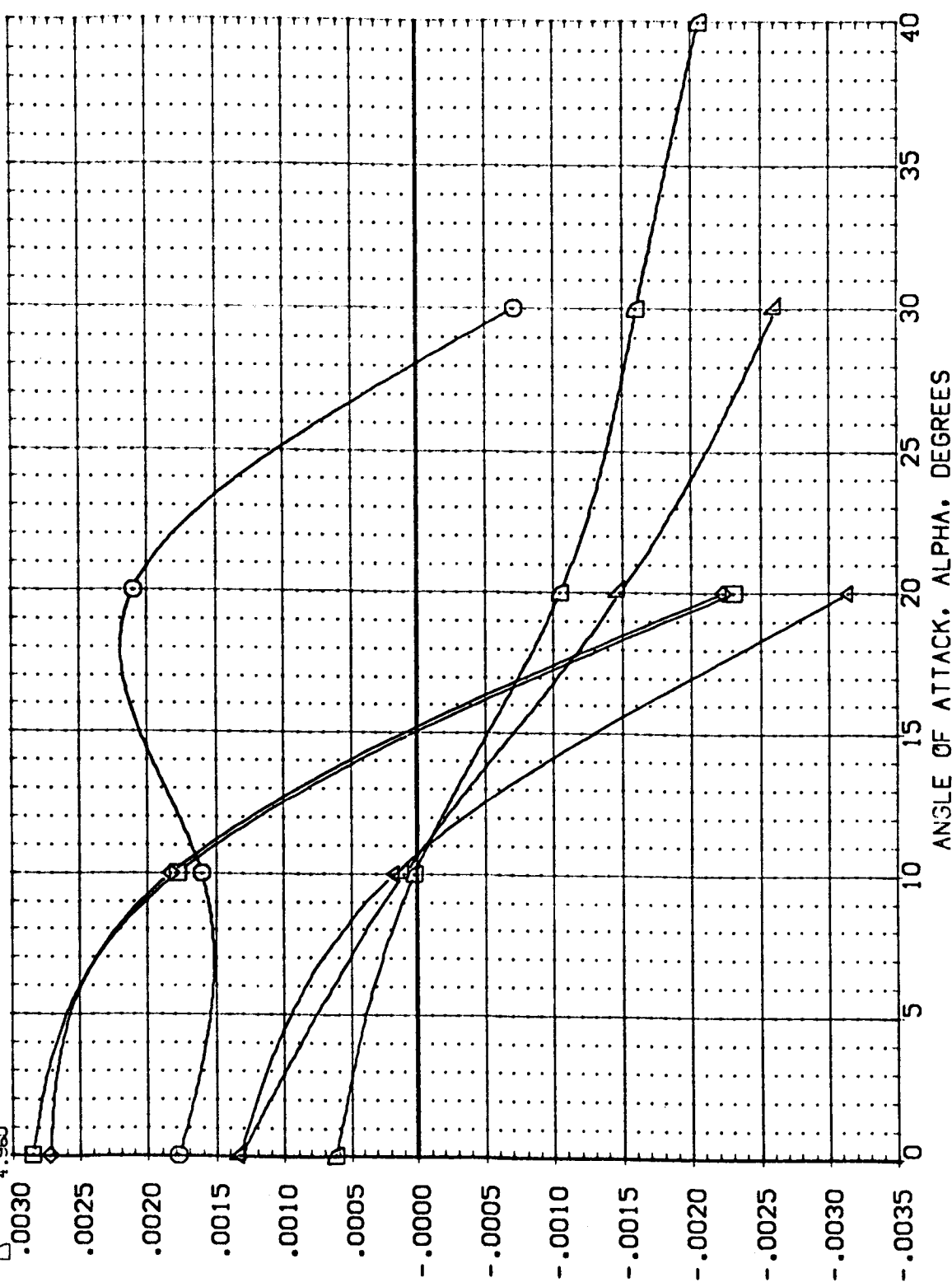


FIG. 28 LATERAL-DIRECTIONAL DERIVATIVES OF ORBITER 139B



DATA SET SYMBOL CONFIGURATION DESCRIPTION REFERENCE INFORMATION

{A87010}	MSFC 574(CA48) CRB 398	SREF 2690.0000
{A87011}	MSFC 574(CA48) CRB 398	LREF 474.8000
{A87012}	MSFC 574(CA48) CRB 398	BREF 936.7000
{A87013}	MSFC 574(CA48) CRB 398	XMRP 836.7000
{A87014}	MSFC 574(CA48) CRB 398	YMRP .0000
		ZMRP .0000
		SCALE .0010

ALPHA ELEVTR SPOBRK BOFLAP SQ.FT.

.000	.000	999.990	.000	2690.0000
10.000	.000	999.990	.000	474.8000
20.000	.000	999.990	.000	936.7000
30.000	.000	999.990	.000	836.7000
40.000	.000	999.990	.000	.0000

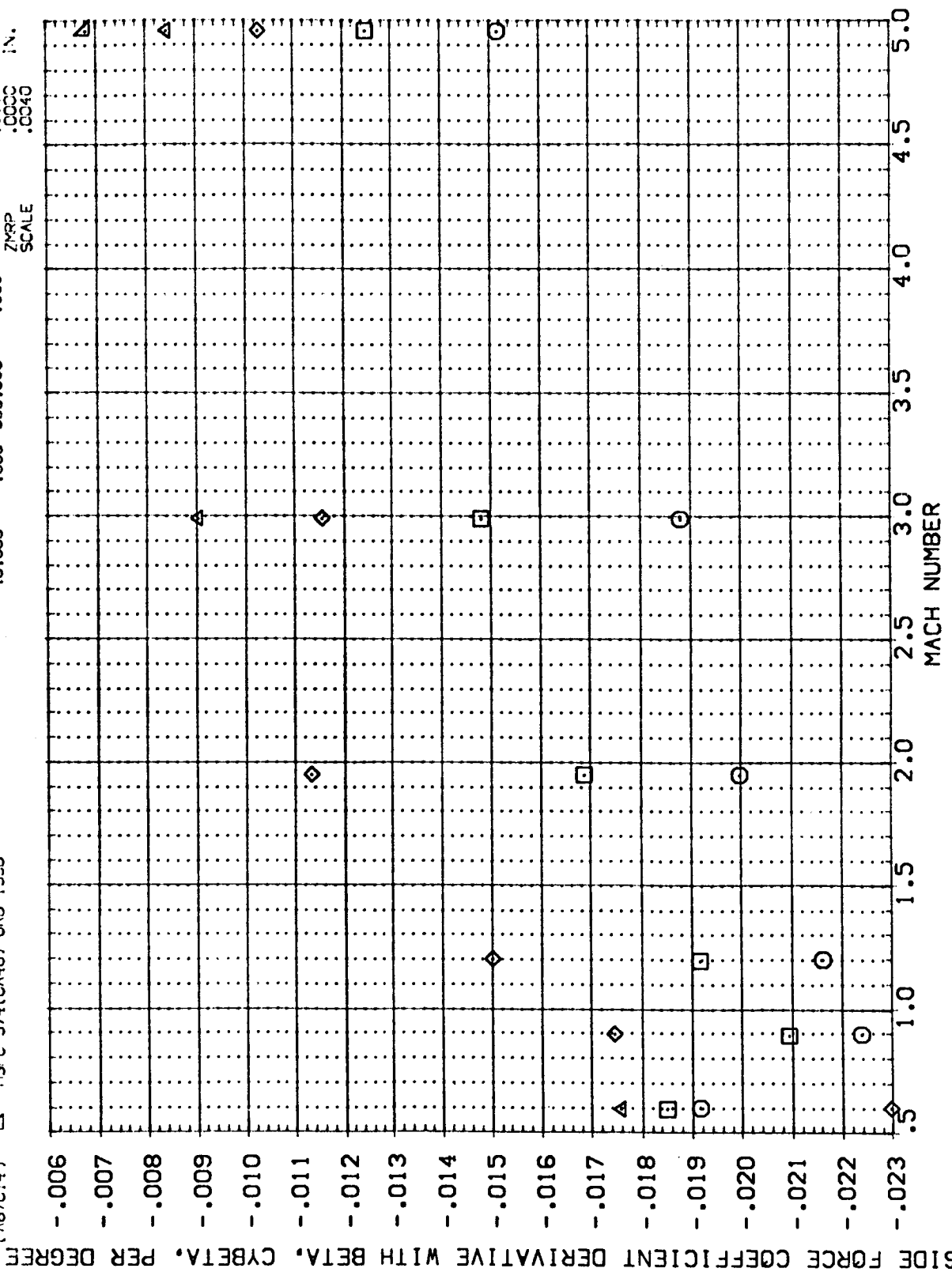


FIG. 28 LATERAL-DIRECTIONAL DERIVATIVES OF ORBITER 139B

DATA SET SYMBOL: (A87010), (A87011), (A87012), (A87013), (A87014)

CONFIGURATION DESCRIPTION: MSFC 574(CA48) CRB 139B, MSFC 574(CA48) CRB 139B, MSFC 574(CA48) CRB 139B, MSFC 574(CA48) CRB 139B, MSFC 574(CA48) CRB 139B

ALPHA: .000, 10.000, 20.000, 30.000, 40.000

ELEVTR: .000, .000, .000, .000, .000

SPOBRK: 999.990, 999.990, 999.990, 999.990, 999.990

BOFLAP: .000, .000, .000, .000, .000

REFERENCE INFORMATION: SREF 2690.0000, LREF 474.8000, BREF 936.7000, YMRP 838.7000, ZMRP .0000, SCALE .0040

SC.FT.: IN., IN., IN., IN., IN.

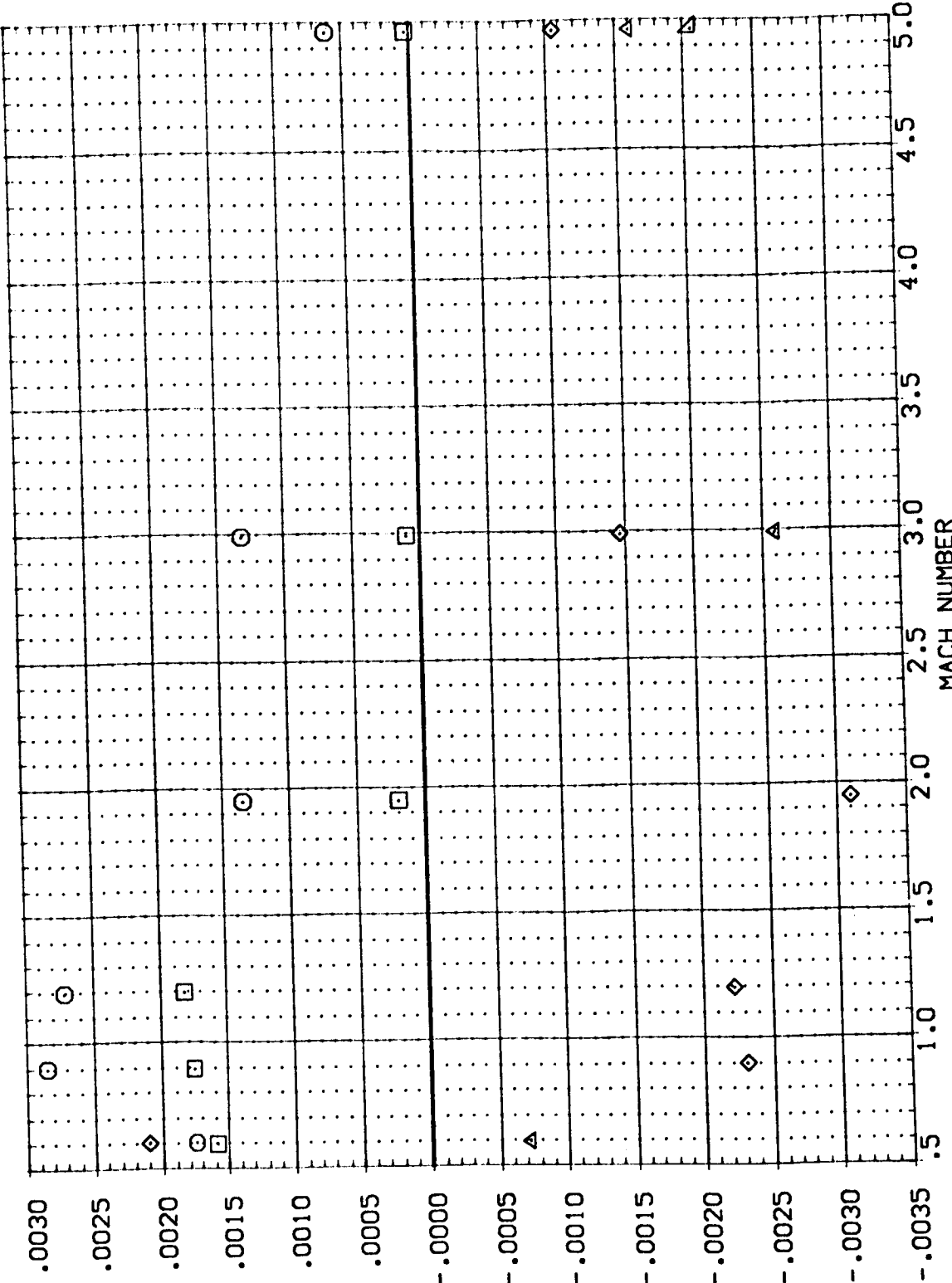


FIG. 28 LATERAL-DIRECTIONAL DERIVATIVES OF ORBITER 139B

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (A87G1) MSFC 574(DA48) CRB 139B
 (A87G1) MSFC 574(DA48) CRB 139B
 (A87G2) MSFC 574(DA48) CRB 139B
 (A87G3) MSFC 574(DA48) CRB 139B
 (A87G4) MSFC 574(DA48) CRB 139B

ALPHA ELEVTR SPOBRK BOELAP REFERENCE INFORMATION
 .000 .000 999.990 .000 SREF 2690.0000 SQ.F.T.
 10.000 .000 999.990 .000 LREF 474.8000
 20.000 .000 999.990 .000 BREF 936.7000
 30.000 .000 999.990 .000 XMRP 838.7000
 40.000 .000 999.990 .000 YMRP .0000
 .000 .000 999.990 .000 ZMRP .0000
 .000 .000 999.990 .000 SCALE .0040

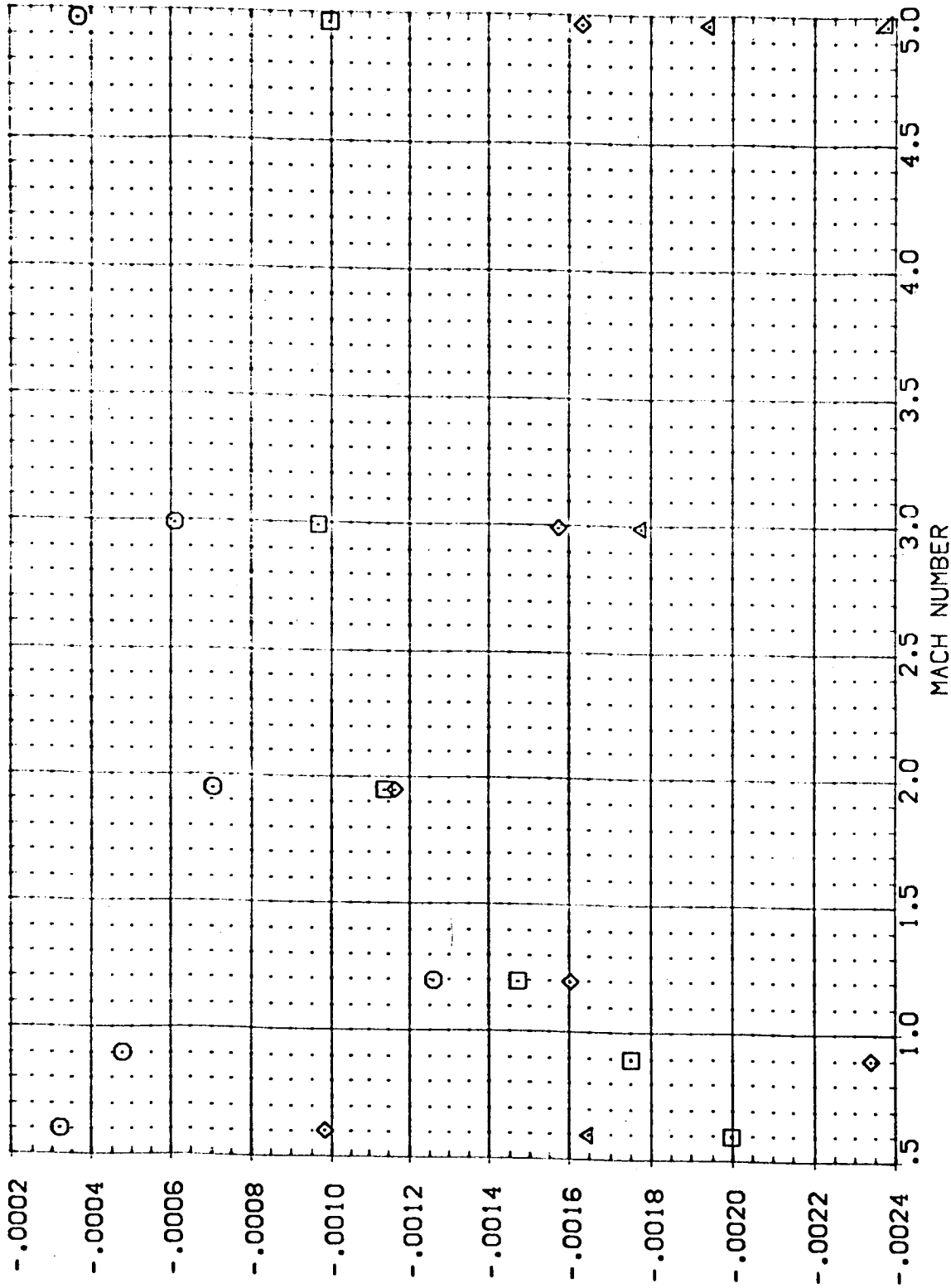


FIG. 28 LATERAL-DIRECTIONAL DERIVATIVES OF ORBITER 139B

(J87033)

MSFC 574(0A48) ORB 139B W/ALT NOSE

SYMBOL MACH

○	.600
□	.900
◇	1.200
▽	1.960
△	2.990
◇	4.960

PARAMETRIC VALUES

ELEVTR	.000
BCFLAP	.000
AILRCN	.000
SPCRK	999.990

DATA SOURCE

ALPHA	.000
ALPHA	20.000
ALPHA	40.000

REFERENCE INFORMATION

SREF	2690.0000
LREF	474.8000
BREF	996.7000
XMRP	838.7000
VMPP	.0000
VMPP	.0000
SCALE	.0040

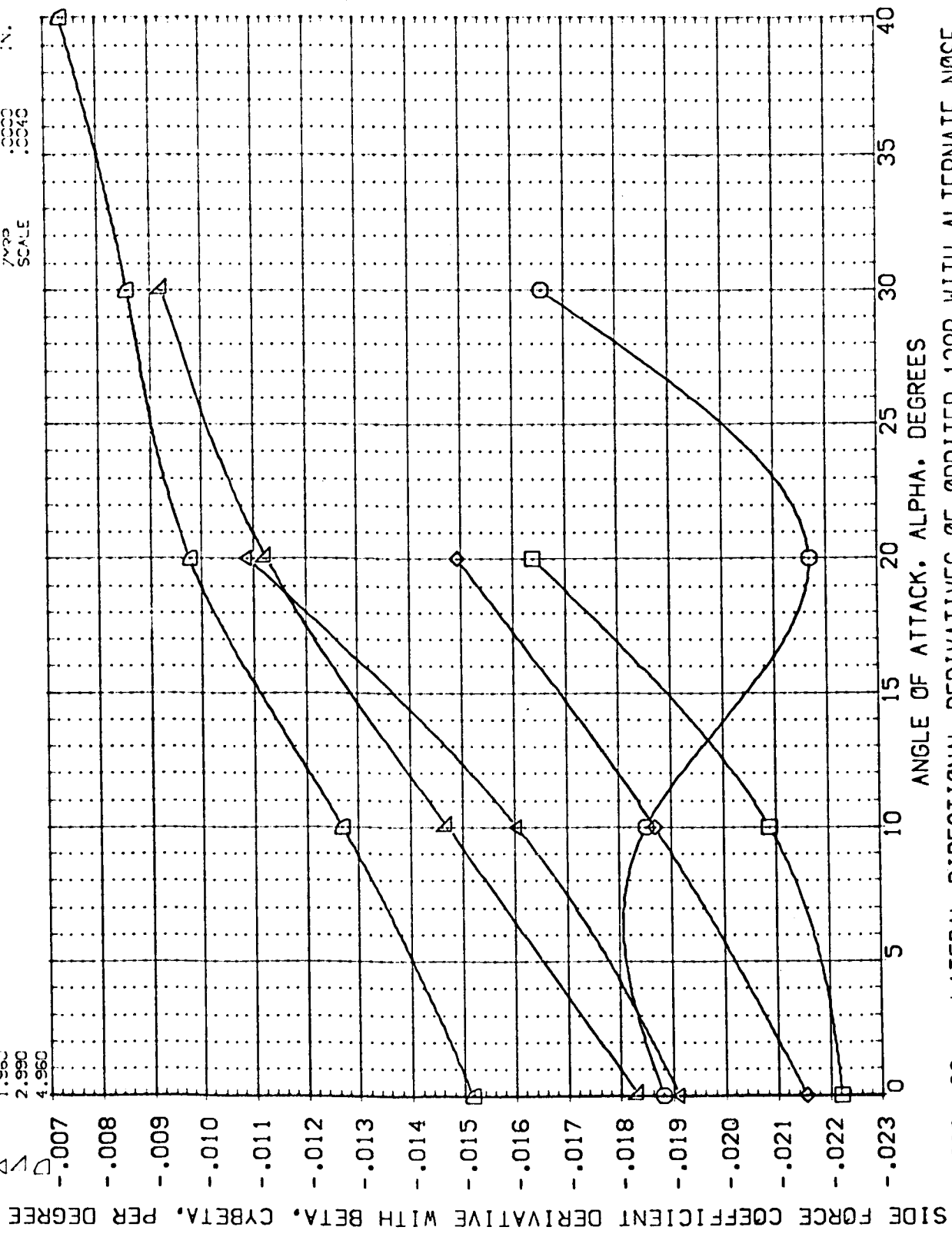


FIG. 29 LATERAL-DIRECTIONAL DERIVATIVES OF ORBITER 139B WITH ALTERNATE NOSE

SYMBOL		MACH		PARAMETRIC VALUES		DATA SOURCE		REFERENCE INFORMATION	
○	.600	ELEVTR	.000	AILRON	.000	ALPHA	269C	SC.FT.	SC.FT.
□	.900	BDFLAP	.000	SPDBRK	999.990	ALPHA	474.8000	IN:	IN:
◇	1.200					ALPHA	936.7000	IN:	IN:
△	1.960					ALPHA	838.7000	IN:	IN:
▽	2.990					ALPHA	.0000	IN:	IN:
◇	4.960					ALPHA	.0000	IN:	IN:
						ALPHA	ZMRP	.0000	.0040
						ALPHA	ZMRP	.0000	.0040
						ALPHA	SCALE	.0000	.0040

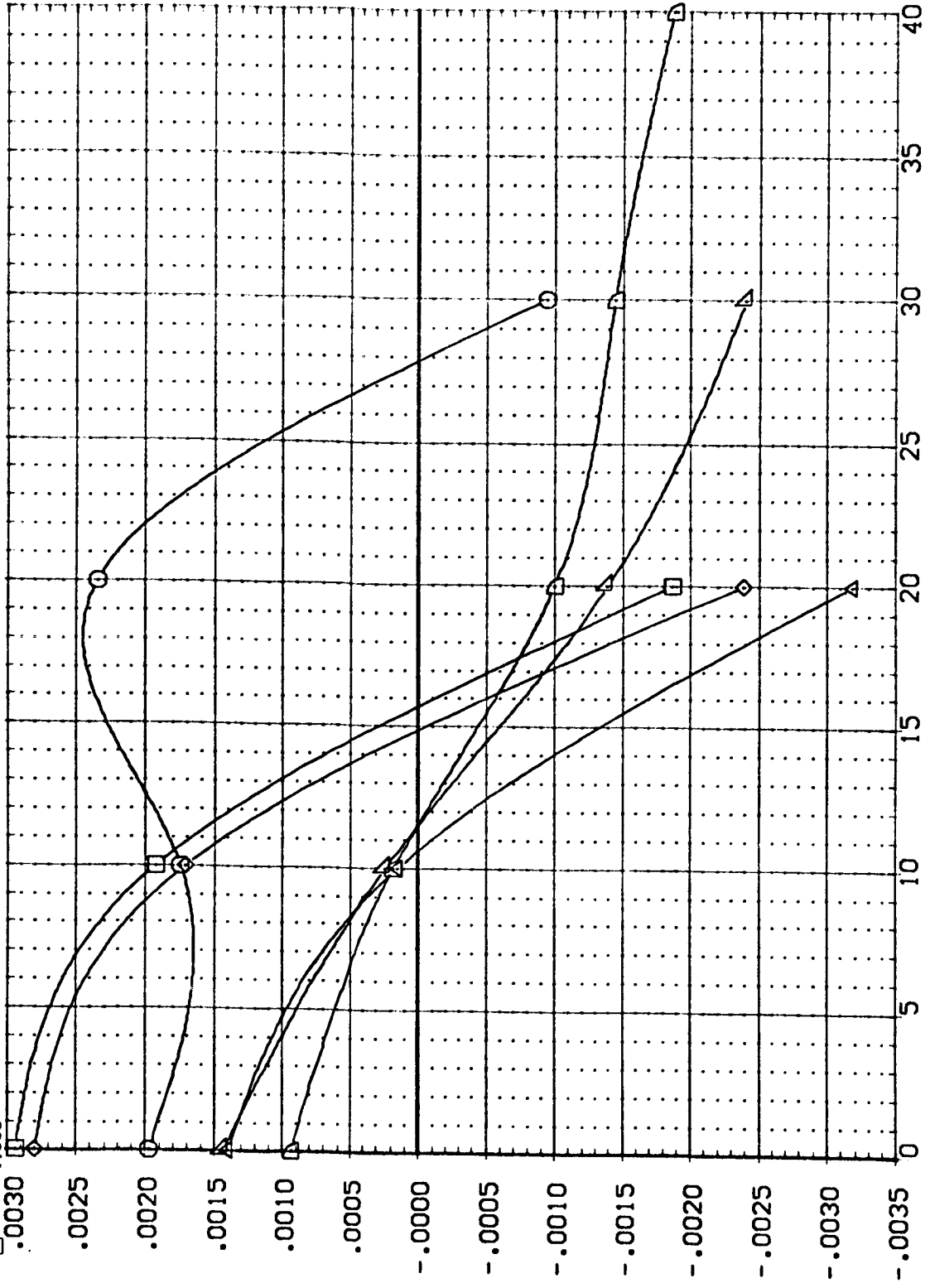


FIG. 29 LATERAL-DIRECTIONAL DERIVATIVES OF ORBITER 139B WITH ALTERNATE NOISE PAGE 1043

SYMBOL		MACH		PARAMETRIC VALUES		DATA SOURCE		REFERENCE INFORMATION	
○	.600	ELEVTR	.000	AILRON	.000	DATASET	ALPHA	SREF	2690.0000
□	.900	BOFLAP	.000	SPOBRK	999.990	J87033	10.000	LREF	474.8000
◇	1.200					J87035	30.000	BREF	936.7000
△	1.960					J87037		XMRP	838.7000
▽	2.990							YMRP	.0000
◁	4.960							ZMRP	.0000
								SCALE	.0040

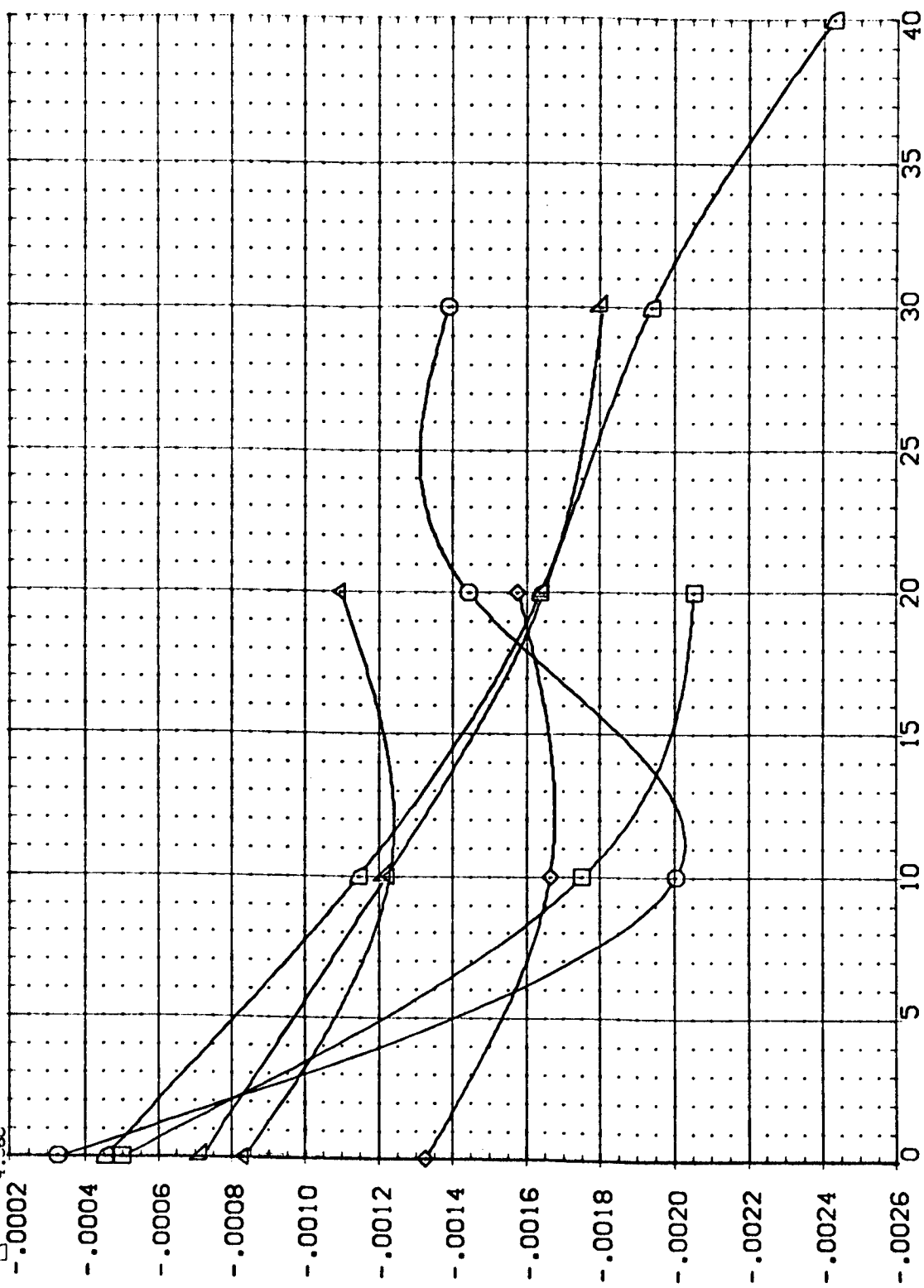


FIG. 29 LATERAL-DIRECTIONAL DERIVATIVES OF ORBITER 139B WITH ALTERNATE NOISE



DATA SET SYMBOL CONFIGURATION DESCRIPTION

(A87033) MSFC 574(OA48) CRB 139B V/ALT NOSE
 (A87034) MSFC 574(OA48) CRB 139B V/ALT NOSE
 (A87035) MSFC 574(OA48) CRB 139B V/ALT NOSE
 (A87036) MSFC 574(OA48) CRB 139B V/ALT NOSE
 (A87037) MSFC 574(OA48) CRB 139B V/ALT NOSE

ALPHA .000
 10.000
 20.000
 30.000
 40.000

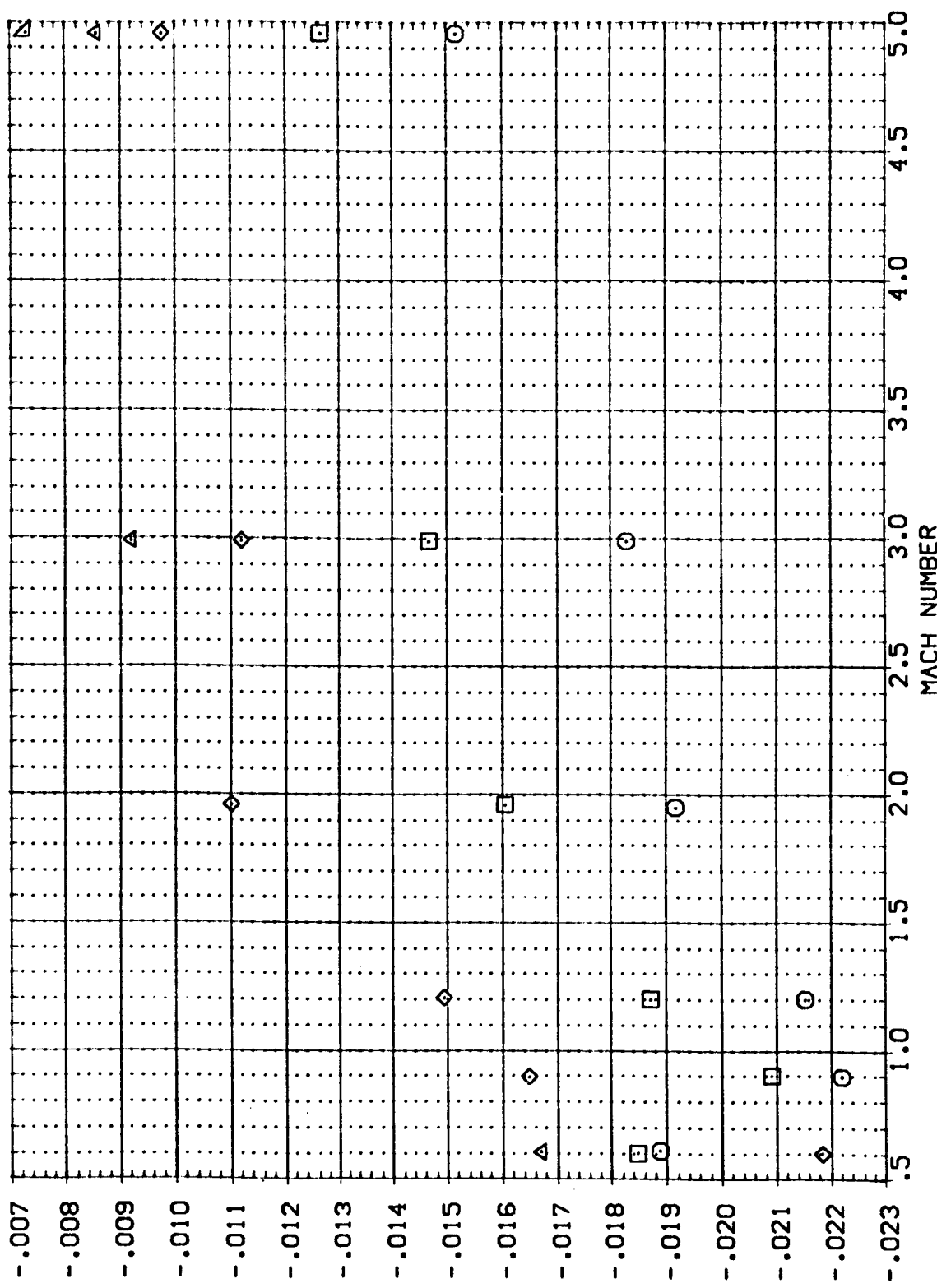
ELEVTR .000
 .000
 .000
 .000
 .000

SPOBRK 999.990
 999.990
 999.990
 999.990
 999.990

BOFLAP .000
 .000
 .000
 .000
 .000

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0010



SIDE FORCE COEFFICIENT DERIVATIVE WITH BETA, CYBETA, PER DEGREE

FIG. 29 LATERAL-DIRECTIONAL DERIVATIVES OF ORBITER 139B WITH ALTERNATE NOSE

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(A87033) MSFC 574(CA48) ORB 1398 W/ALT NOSE
 (A87034) MSFC 574(CA48) ORB 1398 W/ALT NOSE
 (A87035) MSFC 574(CA48) ORB 1398 W/ALT NOSE
 (A87036) MSFC 574(CA48) ORB 1398 W/ALT NOSE
 (A87037) MSFC 574(CA48) ORB 1398 W/ALT NOSE

ALPHA ELEVTR SPDGRK BOFLAP REFERENCE INFORMATION SQ.FT.

.000 999.990 .000 SREF 2690.0000
 10.000 .000 LREF 474.8000
 20.000 .000 BREF 936.7000
 30.000 .000 XMRP 838.7000
 40.000 .000 YMRP .0000
 .000 .000 ZMRP .0000
 SCALE .0040

REFERENCE INFORMATION

SREF 2690.0000
 LREF 474.8000
 BREF 936.7000
 XMRP 838.7000
 YMRP .0000
 ZMRP .0000
 SCALE .0040

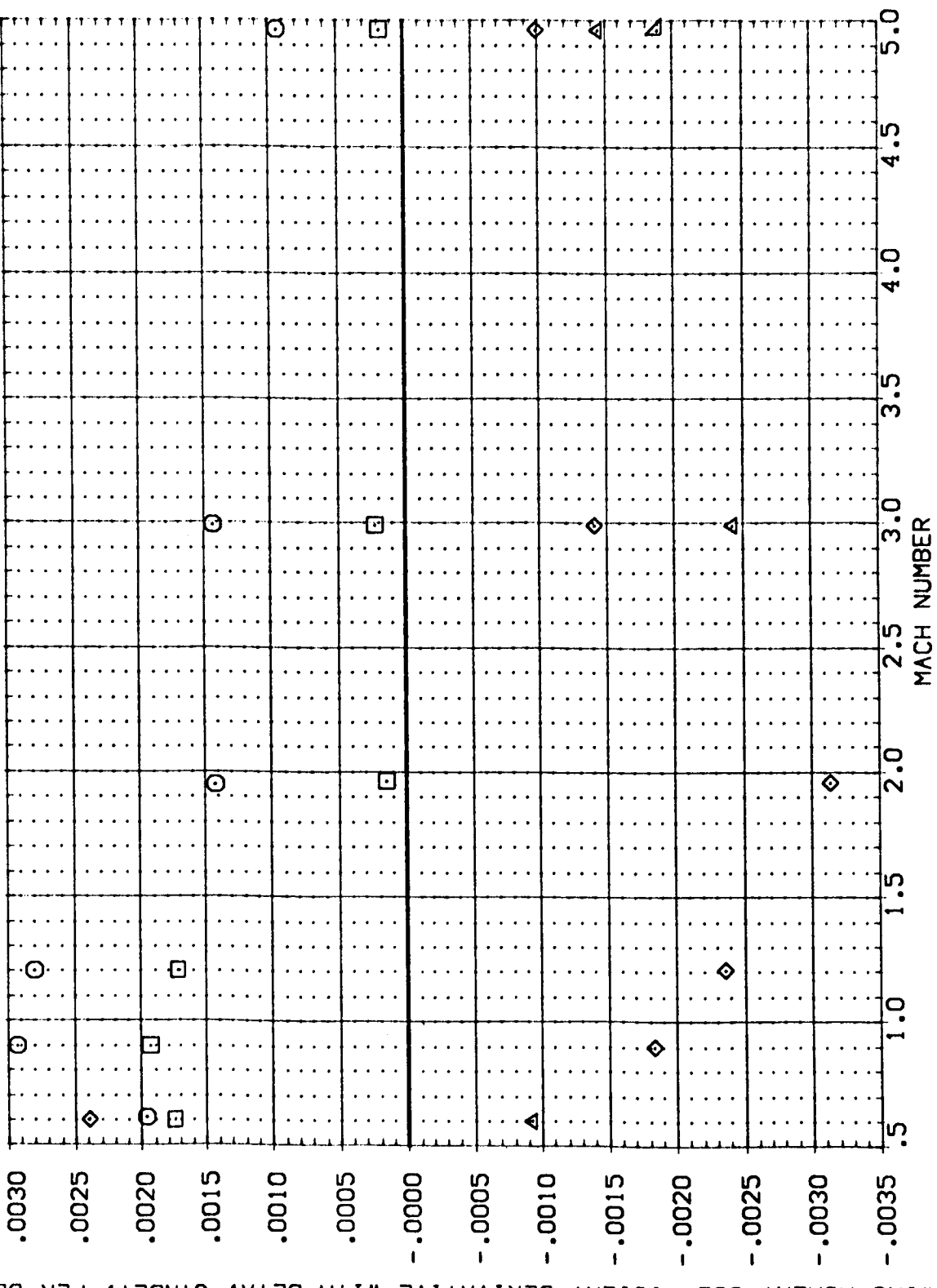


FIG. 29 LATERAL-DIRECTIONAL DERIVATIVES OF ORBITER 139B WITH ALTERNATE NOSE

PAGE 1046



DATA SET SYMBOL CONFIGURATION DESCRIPTION ALPHA ELEVTR SPOBRK BOFLAP REFERENCE INFORMATION

(A87033)	MSFC 574(OA48) CRB 1398 W/ALT NOSE	.000	.000	999.990	.000	SREF	2690.0000	SC.FT.
(A87034)	MSFC 574(OA48) CRB 1398 W/ALT NOSE	10.000	.000	999.990	.000	LREF	474.8000	IN.
(A87035)	MSFC 574(OA48) CRB 1398 W/ALT NOSE	20.000	.000	999.990	.000	BREF	936.7000	IN.
(A87036)	MSFC 574(OA48) CRB 1398 W/ALT NOSE	30.000	.000	999.990	.000	XMRP	838.7000	IN.
(A87037)	MSFC 574(OA48) CRB 1398 W/ALT NOSE	40.000	.000	999.990	.000	ZMRP	.0000	IN.
						SCALE	.0040	

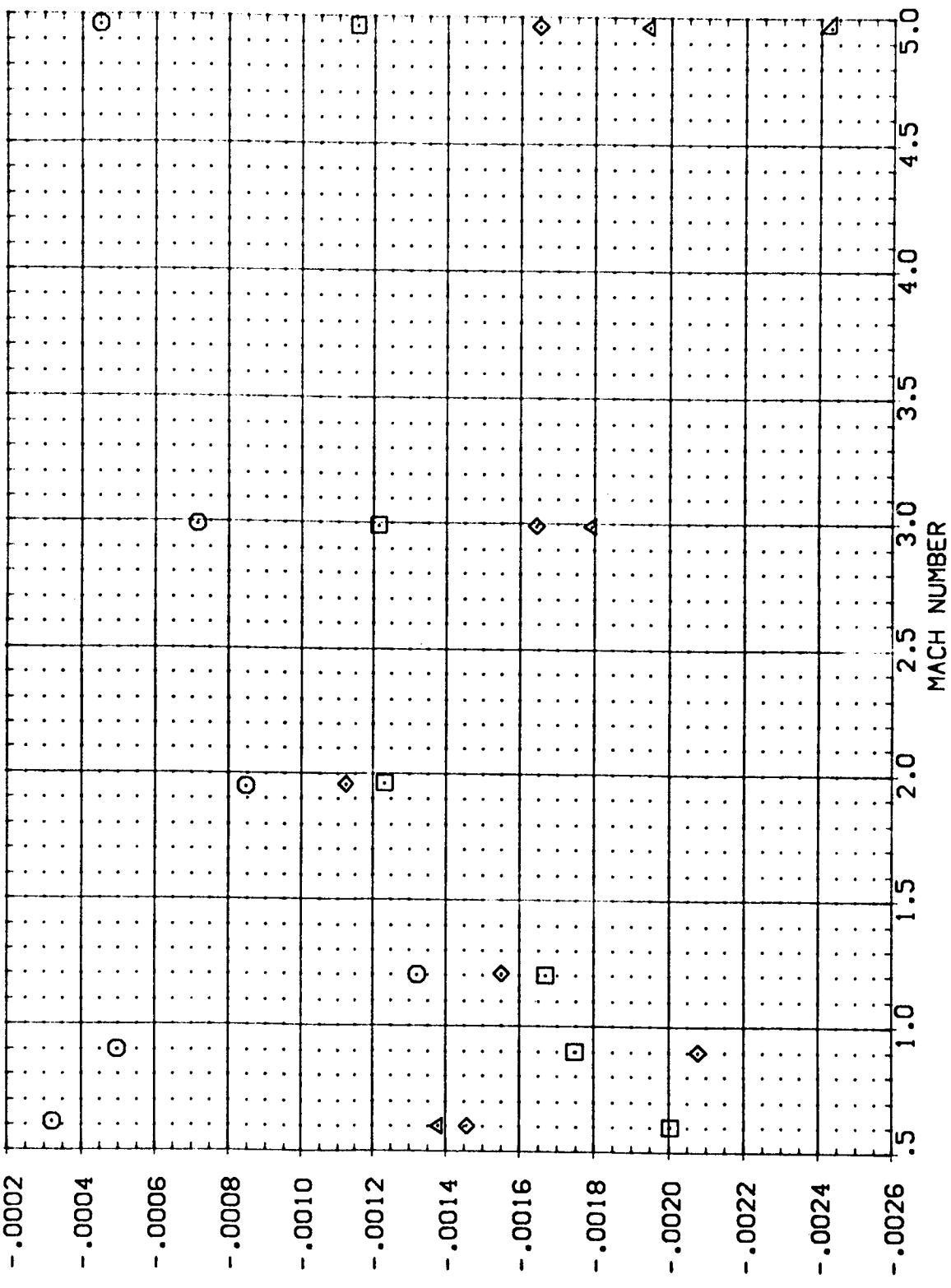


FIG. 29 LATERAL-DIRECTIONAL DERIVATIVES OF ORBITER 139B WITH ALTERNATE NOSE

MSFC 374(UA48) ORB 139

REFERENCE INFORMATION
 SREF 2690.0000 SC.FT.
 LREF 474.8000
 BREF 936.7000
 YMRP 838.7000
 ZMRP .0000
 SCALE .0040

DATA SOURCE
 ALPHA 10.000
 DATASET 487052
 ALPHA 30.000
 DATASET 487054

PARAMETRIC VALUES
 .000 AILRON
 .000 SPOBRK
 .000 DATASET 487051
 .000 DATASET 487053
 .000 DATASET 487055

MACH
 .600
 .900
 1.200
 1.950
 2.990
 4.960

SYMBOL
 ○
 □
 ◇
 △
 ▽

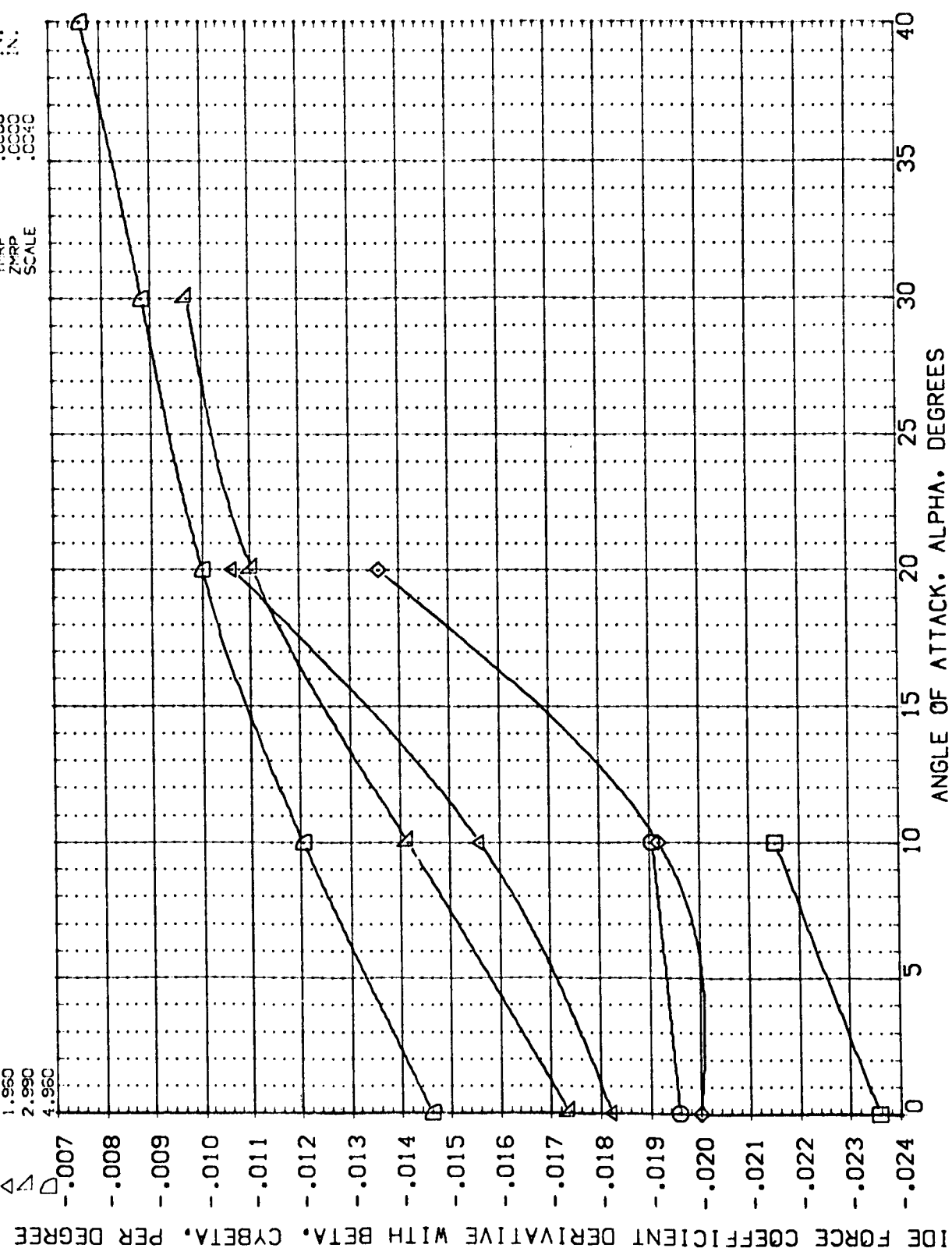


FIG. 30 LATERAL-DIRECTIONAL DERIVATIVES OF ORBITER 139

SYMBOL MACH PARAMETRIC VALUES DATA SOURCE REFERENCE INFORMATION

□	.600	ELEVTR	.000	AILRON	.000	DATASET	.87051	ALPHA	10.000	SREF	2690.0000	SC.FT.
○	.900	BOFLAP	.000	SPOBRK	999.990	.87053	.000	20.000	30.000	UREF	474.8000	IN.
◇	1.200					.87055	40.000			BREF	936.7000	IN.
▽	1.560									X-PRP	838.7000	IN.
△	2.990									Y-PRP	.0000	IN.
▽	4.960									Z-PRP	.0000	IN.
										SCALE	.0040	

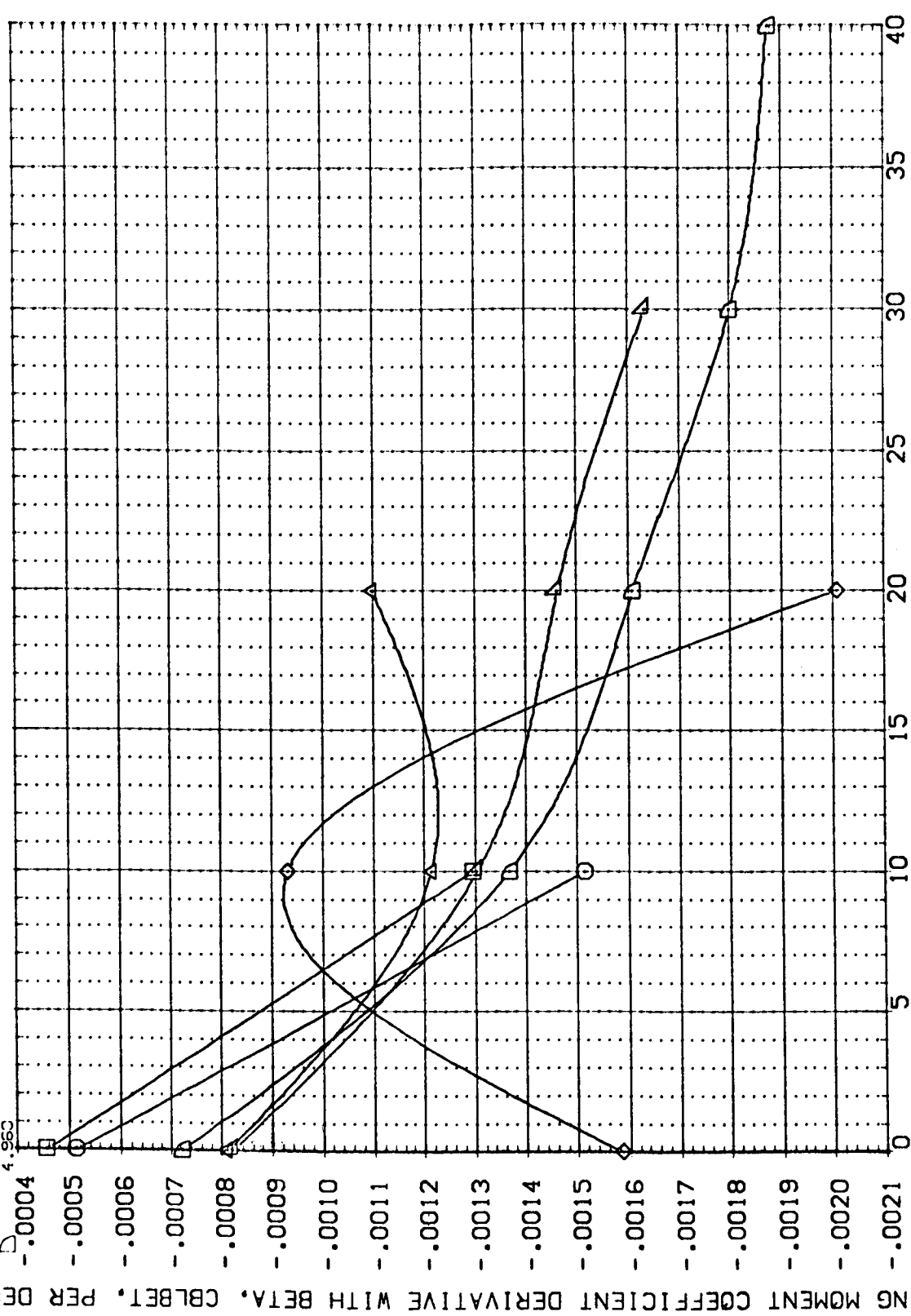


FIG. 30 LATERAL-DIRECTIONAL DERIVATIVES OF ORBITER 139

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(A87051) MSFC 574 (DA48) CRB 139
 (A87052) MSFC 574 (DA48) CRB 139
 (A87053) MSFC 574 (DA48) CRB 139
 (A87054) MSFC 574 (DA48) CRB 139
 (A87055) MSFC 574 (DA48) CRB 139

ALPHA .000
 10.000
 20.000
 30.000
 40.000

ELEVTR .000
 .000
 .000
 .000
 .000

SPOBRK 999.990
 999.990
 999.990
 999.990
 999.990

BOFLAP .000
 .000
 .000
 .000
 .000

REFERENCE INFORMATION
 SREF 2650.0000 53.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

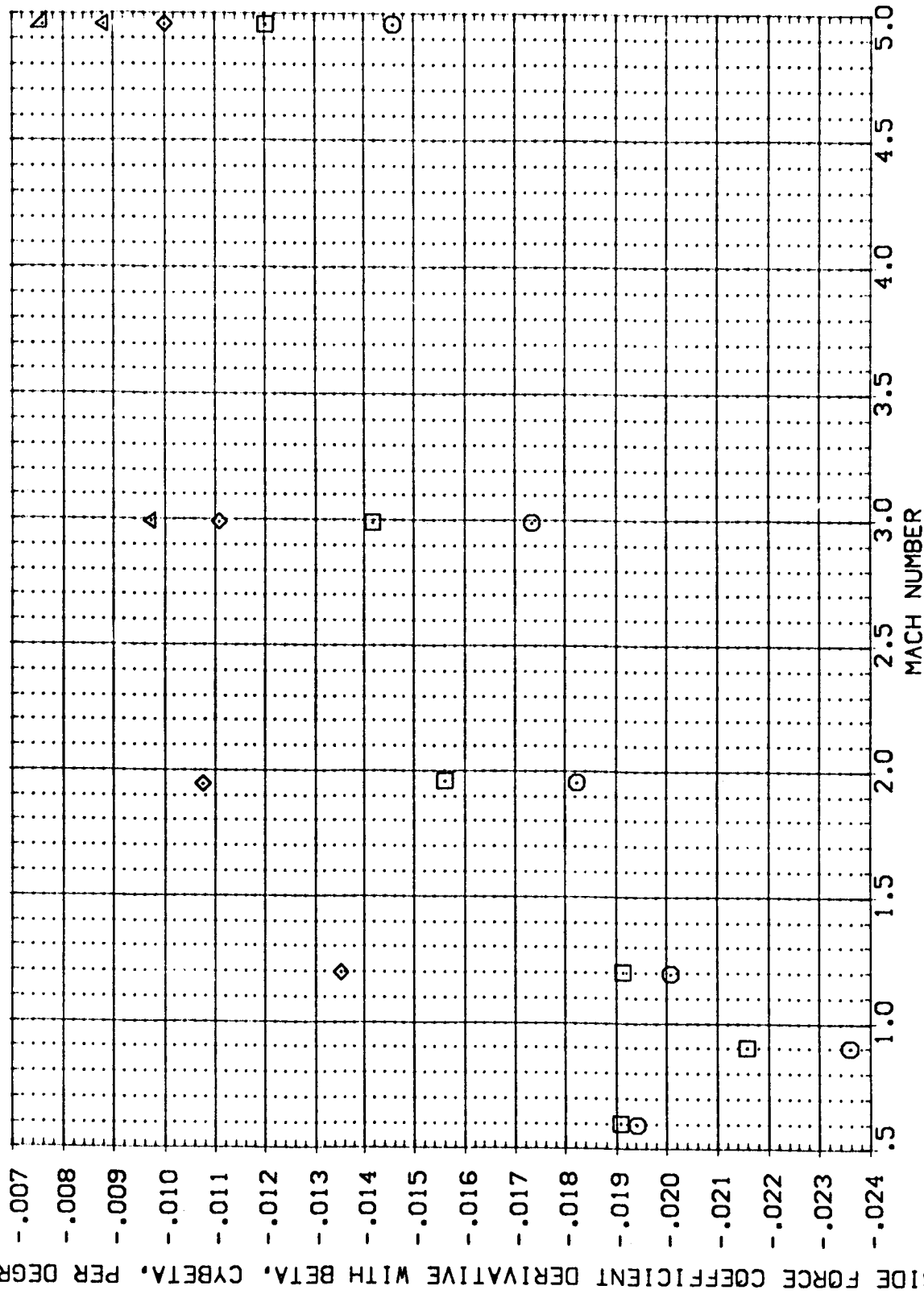


FIG. 30 LATERAL-DIRECTIONAL DERIVATIVES OF ORBITER 139

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(A87051) MSFC 574(DA48) CR8 139
 (A87052) MSFC 574(DA48) CR8 139
 (A87053) MSFC 574(DA48) CR8 139
 (A87054) MSFC 574(DA48) CR8 139
 (A87055) MSFC 574(DA48) CR8 139

ALPHA .000
 10.000
 20.000
 30.000
 40.000

ELEVTR .000
 .000
 .000
 .000
 .000

SPDBRK 999.990
 999.990
 999.990
 999.990
 999.990

BOFLAP .000
 .000
 .000
 .000
 .000

SCALE

REFERENCE INFORMATION

SREF 2690.0000 SO.F.T.
 LREF 474.8000
 BREF 936.7000
 XMRP 838.7000
 YMRP .0000
 ZMRP .0000
 .0040

YAWING MOMENT COEFFICIENT DERIVATIVE WITH BETA, CYMBET, PER DEGREE

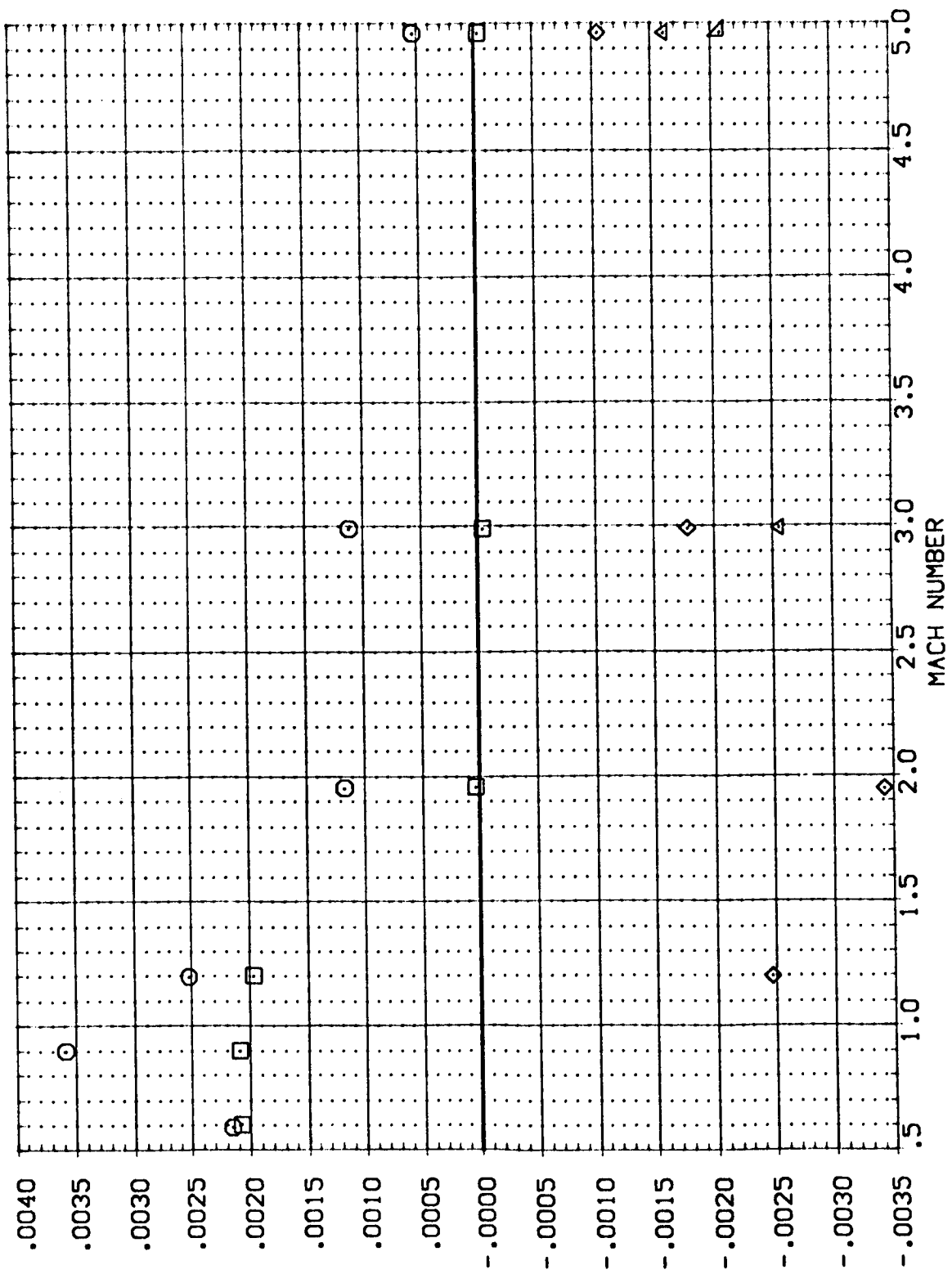


FIG. 30 LATERAL-DIRECTIONAL DERIVATIVES OF ORBITER 139

ROLLING MOMENT COEFFICIENT DERIVATIVE WITH BETA, CBLBET, PER DEGREE

DATA SET SYMBOL CONFIGURATION DESCRIPTION REFERENCE INFORMATION

(A87051) MSFC 574(OA48) ORB 139 SREF 2690.0000 SQ.FT.

(A87052) MSFC 574(OA48) ORB 139 LREF 474.8000 IN.

(A87053) MSFC 574(OA48) ORB 139 BREF 936.7000 IN.

(A87054) MSFC 574(OA48) ORB 139 XMRP 838.7000 IN.

(A87055) MSFC 574(OA48) ORB 139 YMRP .0000 IN.

ZMRP .0000 IN.

SCALE .004C

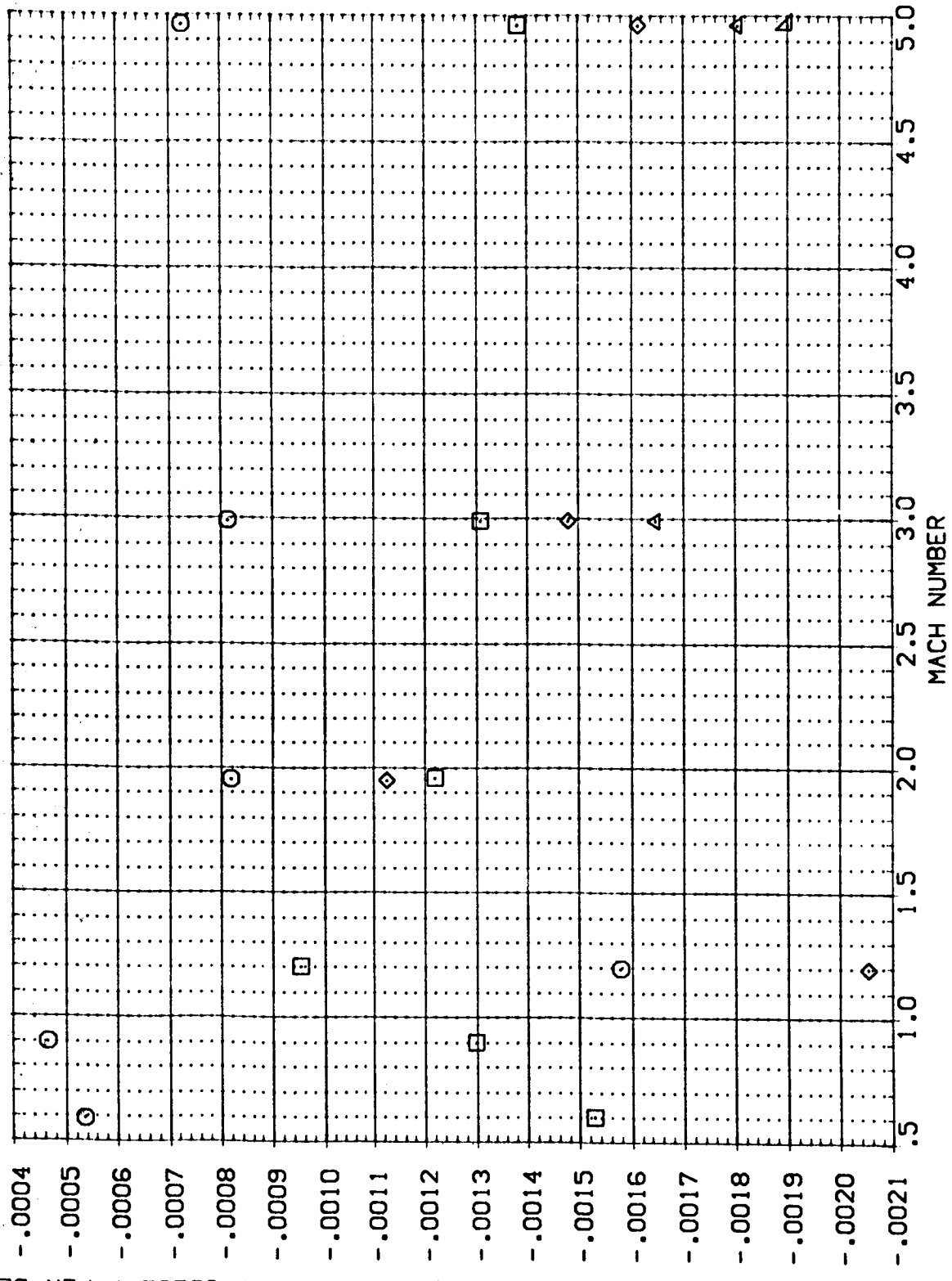


FIG. 30 LATERAL-DIRECTIONAL DERIVATIVES OF ORBITER 139

MSFC 574(0A48) ORB 139 W/ALT NOSE (J87068)

SYMBOL	MACH	PARAMETRIC VALUES	DATA SOURCE	DATA SOURCE	REFERENCE INFORMATION
□	1.960	.000 ELEVTR	.000 ALPHA	SREF	2690.0000
○	2.990	.000 AILRON	.000 DATASET	LREF	474.8000
◇	4.960	.000 SPOBRK	J87068	BREF	936.7000
			J87070	XMRP	838.7000
			J87072	YMRP	.0000
				ZMRP	.0000
				SCALE	.0010
					SC.FT.
					N.
					N.
					N.
					N.
					N.

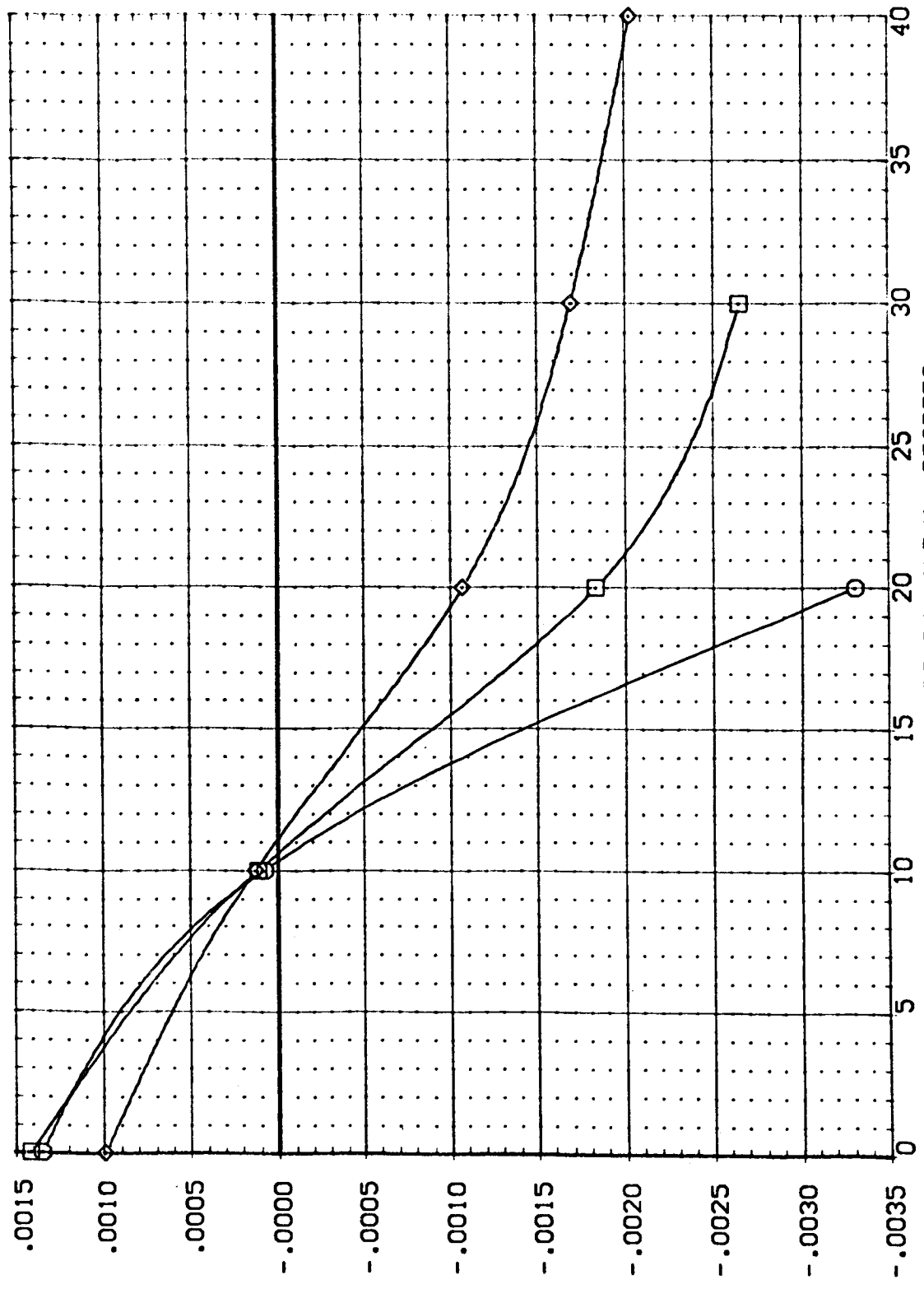


FIG. 31 LATERAL-DIRECTIONAL DERIVATIVES OF ORBITER 139 WITH ALTERNATE NOSE

SYMBOL MACH

○ 1.960

□ 2.990

◇ 4.960

PARAMETRIC VALUES

.000 AILRON

.000 SPOBRK

.000 ELEVTR

BOFLAP

.000 DATASET

.999.990

.000

.000

20.000

40.000

DATA SOURCE

ALPHA

J87069

J87071

REFERENCE INFORMATION

SREF 2690.0000

LREF 474.8000

BREF 936.7000

XMRP 838.7000

YMRP .0000

ZMRP .0000

SCALE .0040



FIG. 31 LATERAL-DIRECTIONAL DERIVATIVES OF ORBITER 139 WITH ALTERNATE NOSE

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(A87068)	MSFC 574(CA48)	ORB 139	W/ALT NOSE
(A87069)	MSFC 574(CA48)	ORB 139	W/ALT NOSE
(A87070)	MSFC 574(CA48)	ORB 139	W/ALT NOSE
(A87071)	MSFC 574(CA48)	ORB 139	W/ALT NOSE
(A87072)	MSFC 574(CA48)	ORB 139	W/ALT NOSE

ALPHA .000
 10.000
 20.000
 30.000
 40.000

ELEVTR .000
 .000
 .000
 .000
 .000

SPOBRK 999.990
 999.990
 999.990
 999.990
 999.990

BOFLAP .000
 .000
 .000
 .000
 .000

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XWRP 838.7000 IN.
 YWRP .0000 IN.
 ZWRP .0000 IN.
 SCALE .0010

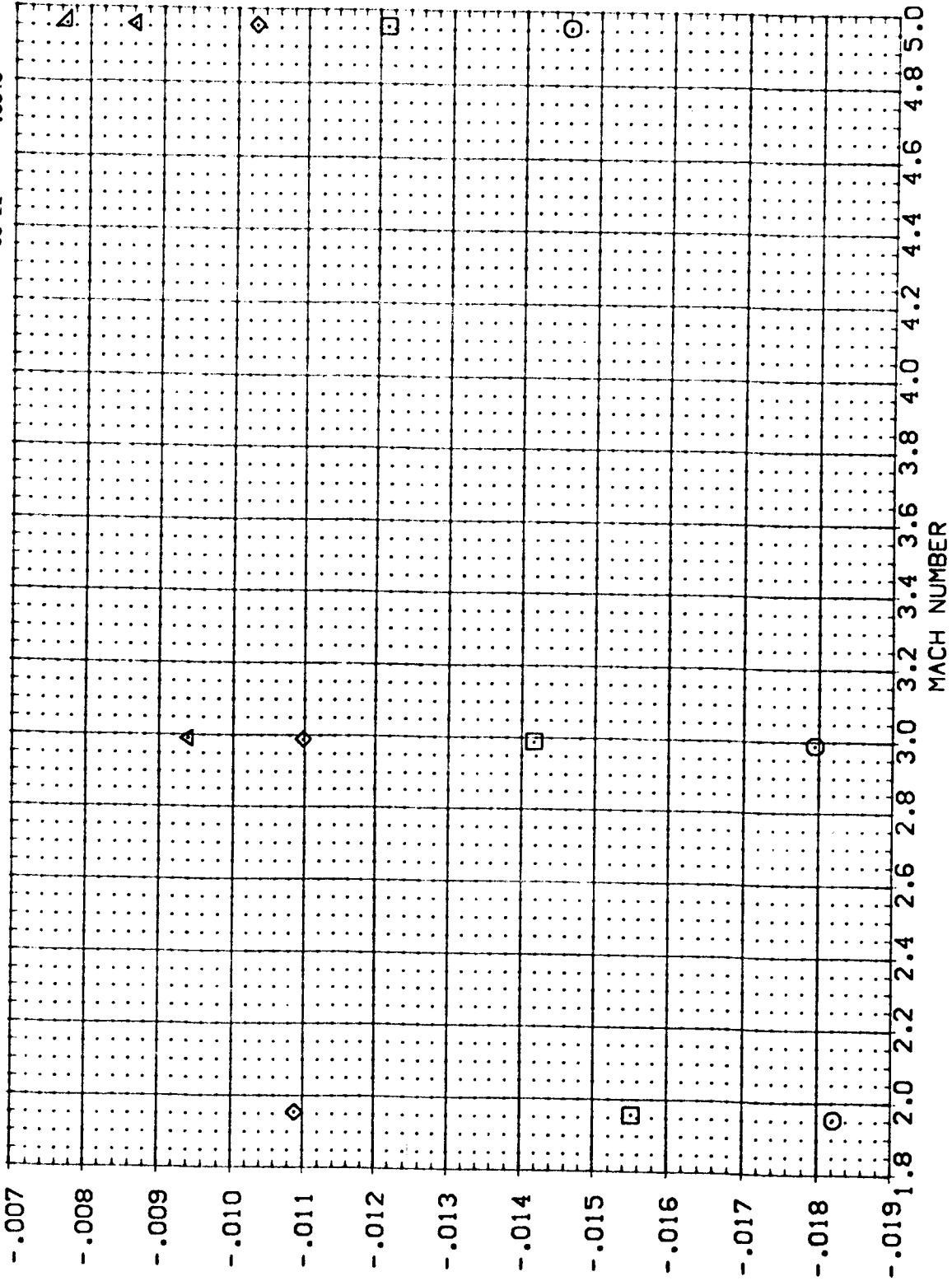


FIG. 31 LATERAL-DIRECTIONAL DERIVATIVES OF ORBITER 139 WITH ALTERNATE NOSE

DATA SET SYMBOL CONFIGURATION DESCRIPTION REFERENCE INFORMATION SQ. FT.

(A87068) MSFC 574(OA48) CRB 139 W/ALT NOISE SREF 2690 .0000

(A87069) MSFC 574(OA48) CRB 139 W/ALT NOISE LREF 474 .8000

(A87070) MSFC 574(OA48) CRB 139 W/ALT NOISE BRER 936 .7000

(A87071) MSFC 574(OA48) CRB 139 W/ALT NOISE XMRP 838 .7000

(A87072) MSFC 574(OA48) CRB 139 W/ALT NOISE YMRP .0000

ZMRP .0000

SCALE .0040

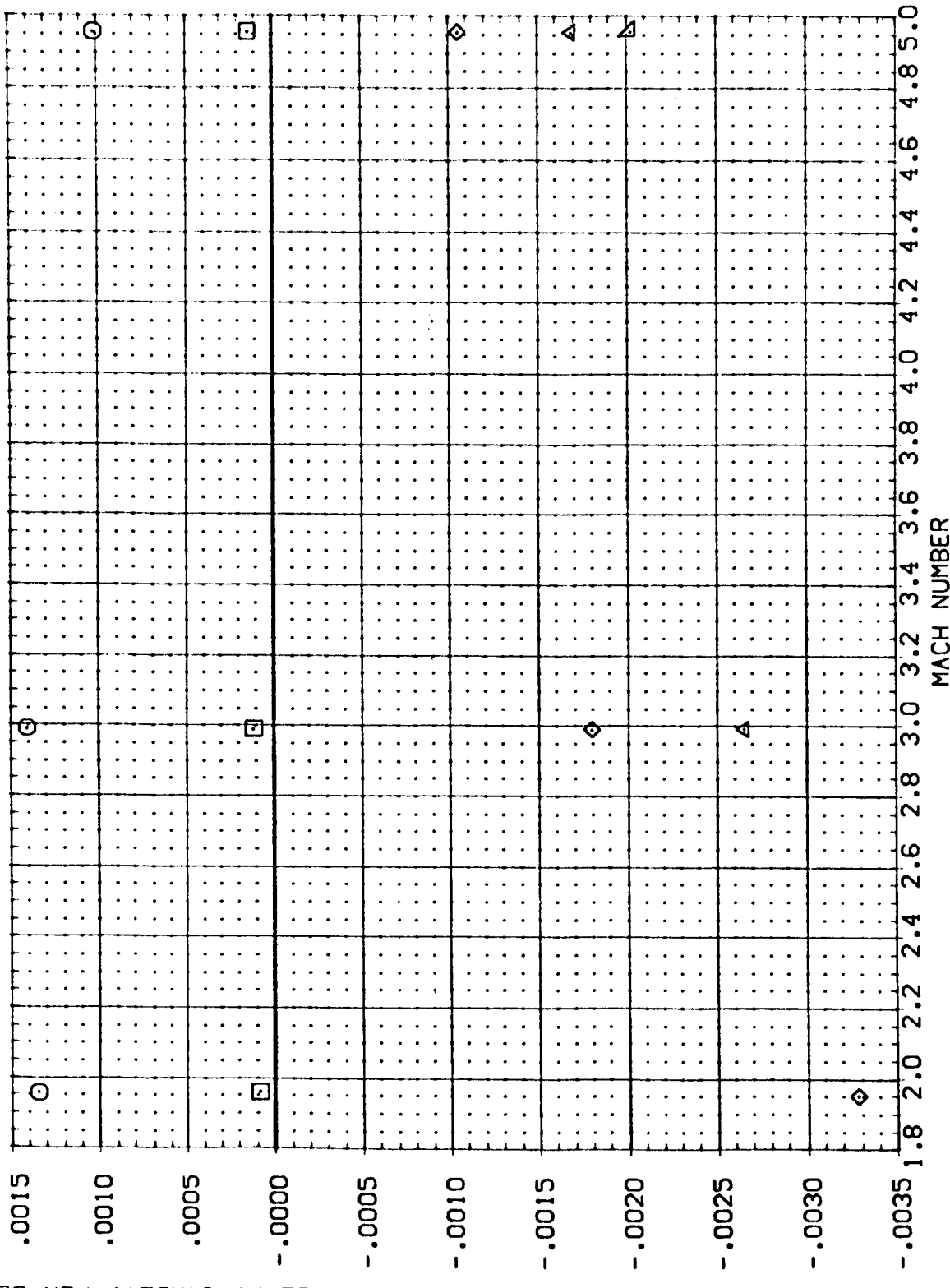


FIG. 31 LATERAL-DIRECTIONAL DERIVATIVES OF ORBITER 139 WITH ALTERNATE NOSE



DATA SET SYMBOL CONFIGURATION DESCRIPTION REFERENCE INFORMATION

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	SPOBRK	BOFLAP	SREF	LREF	BREF	YVRP	ZMRP	SCALE	SQ.FT.
(A87068)	MSFC 574(OA48) CRB 139 V/ALT NOSE	.000	.000	999.990	.000	2690.0000		474.8000			.0000	IN.
(A87069)	MSFC 574(OA48) CRB 139 V/ALT NOSE	10.000	.000	999.990	.000			936.7000			.0000	IN.
(A87070)	MSFC 574(OA48) CRB 139 V/ALT NOSE	20.000	.000	999.990	.000						.0000	IN.
(A87071)	MSFC 574(OA48) CRB 139 V/ALT NOSE	30.000	.000	999.990	.000						.0000	IN.
(A87072)	MSFC 574(OA48) CRB 139 V/ALT NOSE	40.000	.000	999.990	.000						.0000	IN.

ROLLING MOMENT COEFFICIENT DERIVATIVE WITH BETA, CBLBET, PER DEGREE

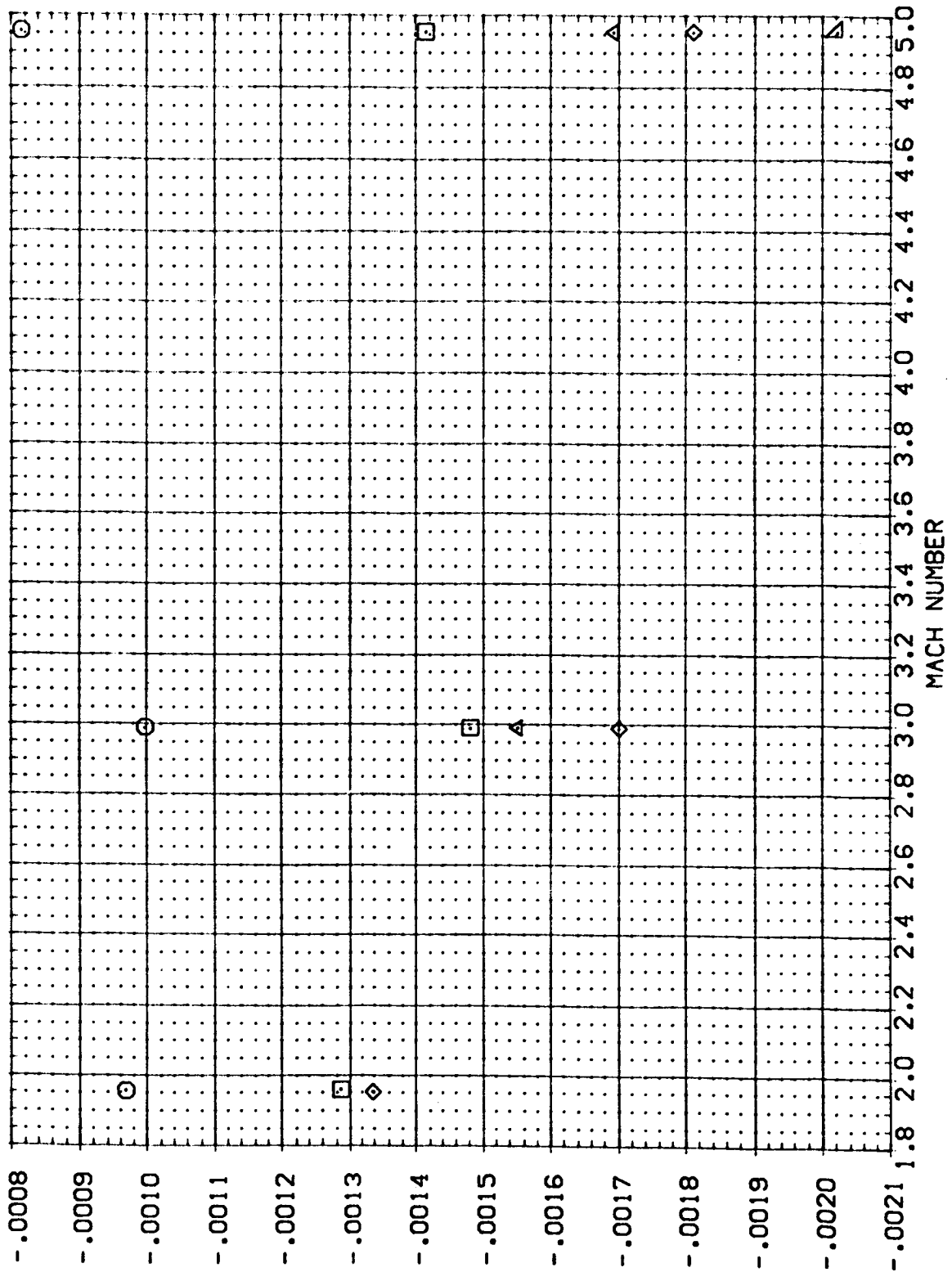


FIG. 31 LATERAL-DIRECTIONAL DERIVATIVES OF ORBITER 139 WITH ALTERNATE NOSE

DATA SET SYMBOL CONFIGURATION DESCRIPTION

{ A87011 } MSFC 574(CA48) CRB 1398 W/H19
 { A87087 } MSFC 574(CA48) CRB 1398 W/H20
 { A87090 } MSFC 574(CA48) CRB 1398 W/H23
 { A87095 } MSFC 574(CA48) CRB 1398 W/H22
 { A87138 }

ALPHA .000
 10.000
 10.000
 10.000
 10.000
 10.000

ELEVTR .000
 .000
 .000
 .000
 .000
 .000

SPOBRK 999.990
 999.990
 999.990
 999.990
 999.990
 999.990

BOFLAP .000
 .000
 .000
 .000
 .000
 .000

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

SIDE FORCE COEFFICIENT DERIVATIVE WITH BETA, CYBETA, PER DEGREE

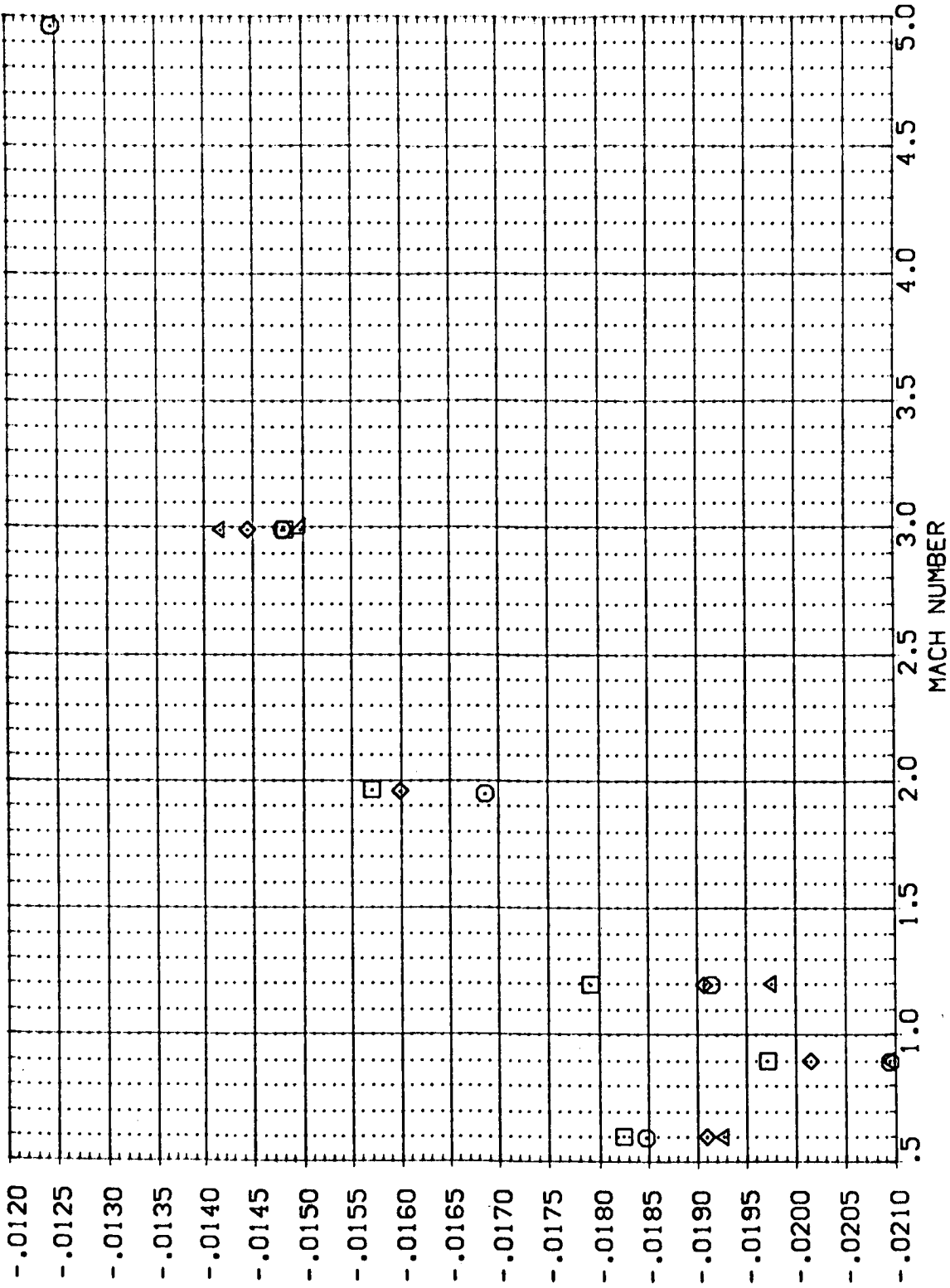


FIG. 32 LATERAL-DIRECTIONAL DERIVATIVES OF ORBITER 139B WITH TRIMMER

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(A87011) MSFC 574(DA48) CRB 1398
 (A87087) MSFC 574(DA48) CRB 1398 V/H19
 (A87090) MSFC 574(DA48) CRB 1398 V/H20
 (A87095) MSFC 574(DA48) CRB 1398 V/H23
 (A87108) MSFC 574(DA48) CRB 1398 V/H22

ALPHA 10.000
 ELEVTR .000
 SPOBRK 999.990
 BOFLAP .000
 REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 474.8000 IN.
 BREF 936.7000 IN.
 XMRP 838.7000 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0040

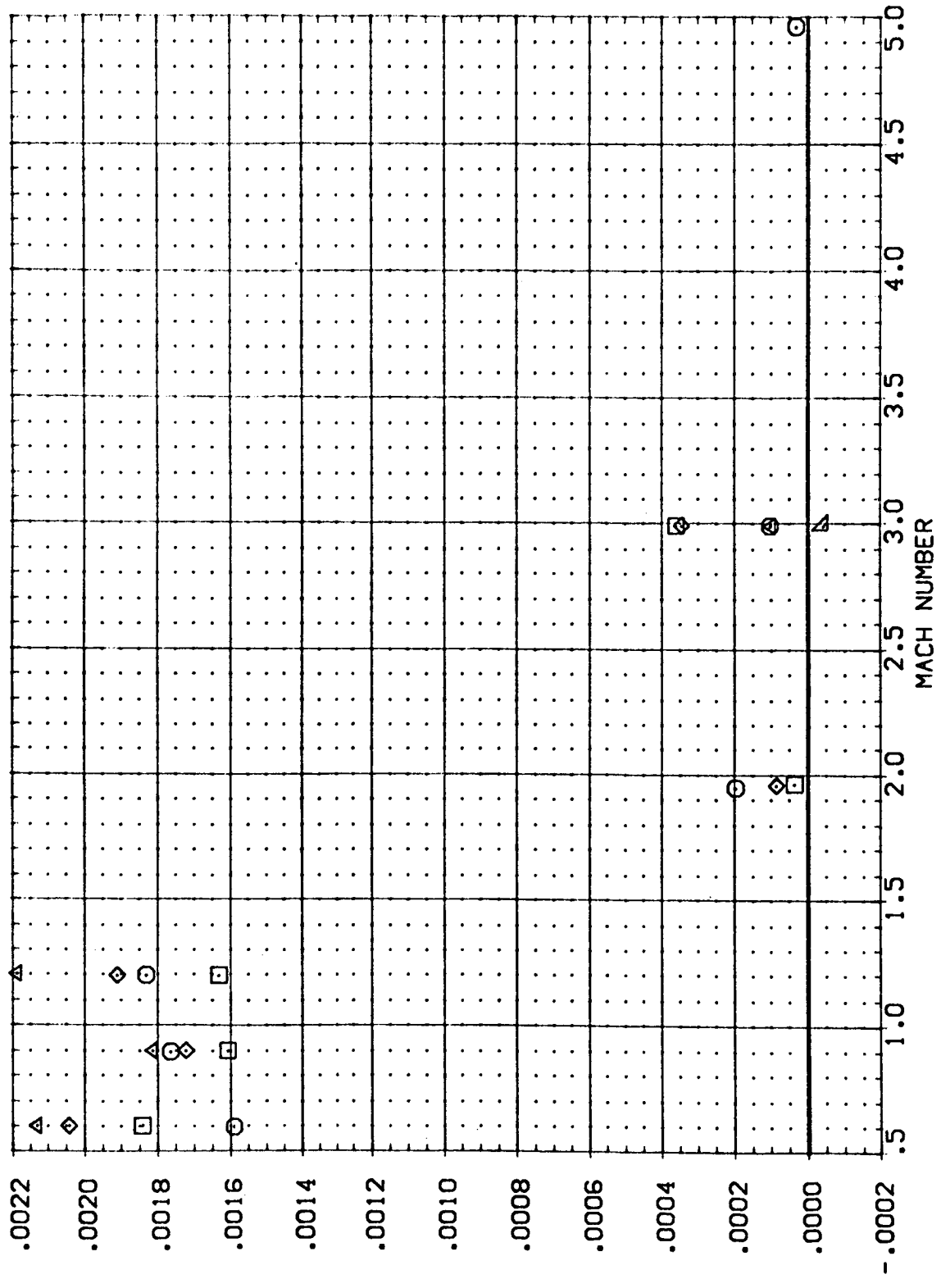


FIG. 32 LATERAL-DIRECTIONAL DERIVATIVES OF ORBITER 139B WITH TRIMMER

DATA SET SYMBOL CONFIGURATION DESCRIPTION REFERENCE INFORMATION

(A87011)	MSFC 574(OA48) CRB 1399	SREF	2690.0000	SG.FT.
(A87067)	MSFC 574(OA48) CRB 1399	LREF	474.8000	IN.
(A87090)	MSFC 574(OA48) CRB 1399	BREF	936.7000	IN.
(A87095)	MSFC 574(OA48) CRB 1399	XMRP	838.7000	IN.
(A87108)	MSFC 574(OA48) CRB 1399	YMRP	.0000	IN.
		ZMRP	.0000	IN.
		SCALE	.0040	

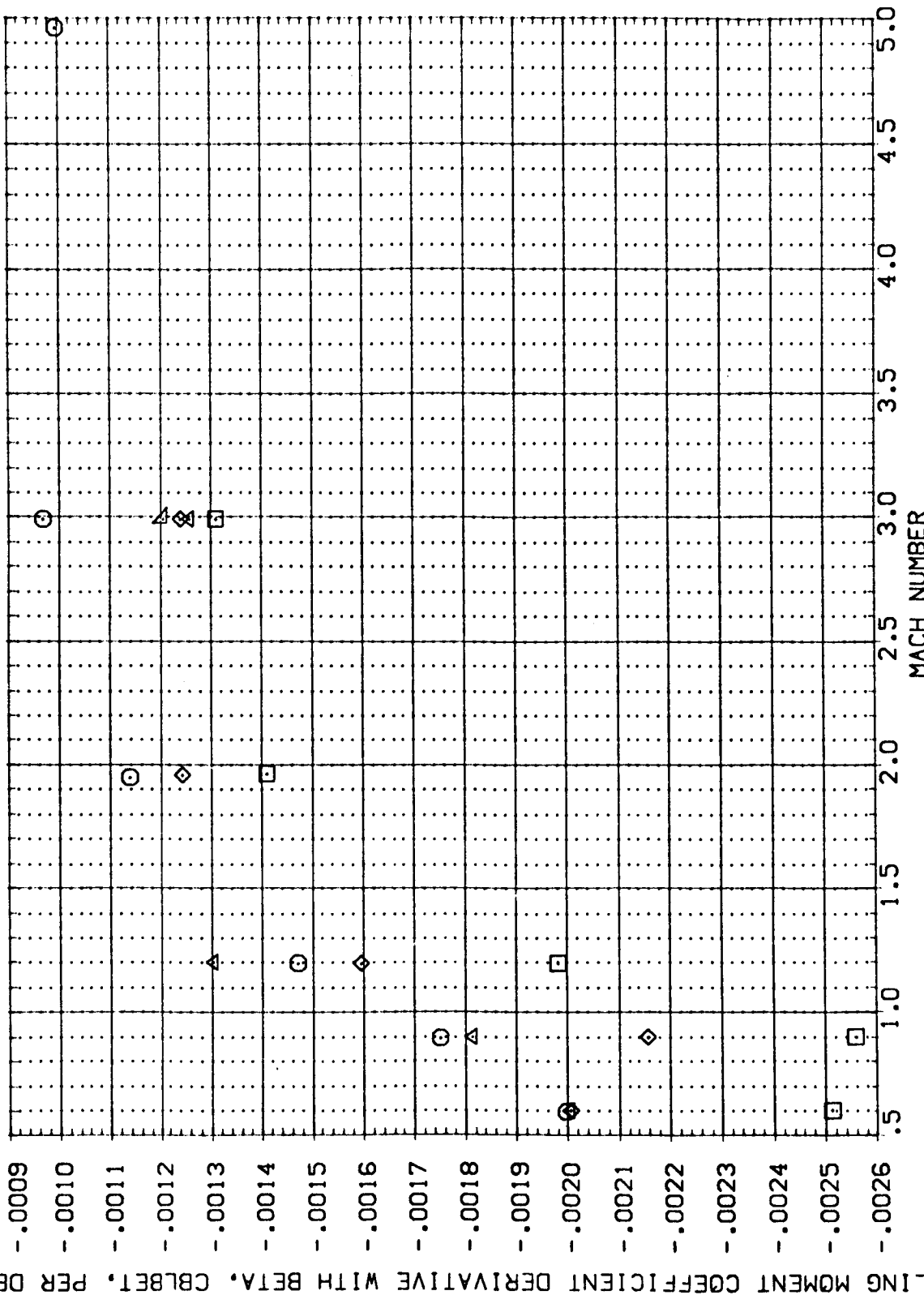


FIG. 32 LATERAL-DIRECTIONAL DERIVATIVES OF ORBITER 139B WITH TRIMMER