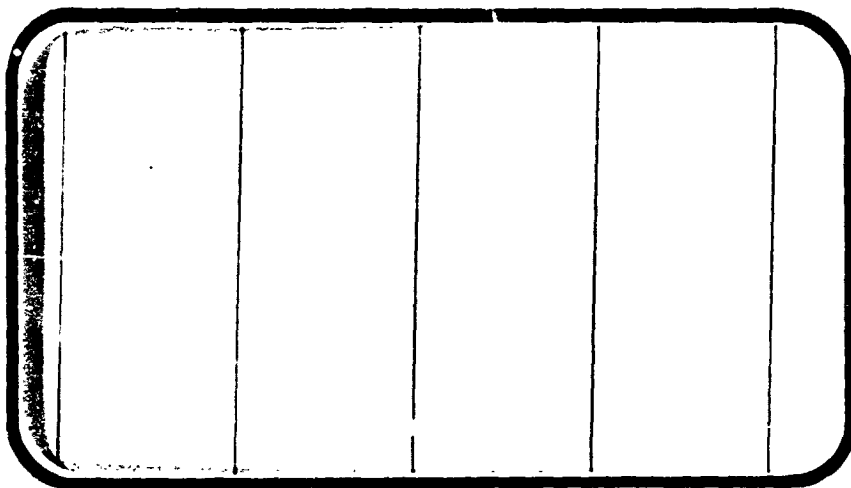




NATIONAL AERONAUTICS AND SPACE ADMINISTRATION



NASA-CR-134085) RESULTS OF INVESTIGATIONS
ON A 0.015-SCALE MODEL (49-0) OF THE
SPACE SHUTTLE ORBITER IN THE NASA/AMES
3.5-FOOT HYPERSONIC WIND TUNNEL (Chrysler
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SPACE SHUTTLE

AEROTHERMODYNAMIC DATA REPORT

JOHNSON SPACE CENTER

HOUSTON, TEXAS

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SPACE DIVISION



**CHRYSLER
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RESULTS OF INVESTIGATIONS ON
A 0.015-SCALE MODEL (49-0) OF THE
SPACE SHUTTLE ORBITER IN THE NASA/AMES
3.5-FOOT HYPERSONIC WIND TUNNEL
(OA87)

By

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Prepared under NASA Contract Number NAS9-13247

By

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

for

Engineering Analysis Division
Johnson Space Center
National Aeronautics and Space Administration
Houston, Texas

TEST SPECIFICS:

Test Number: ARC 3.5-176
Model Number: 49-0
NASA Series Number: OA87
Test dates: 16 through 23 October 1973

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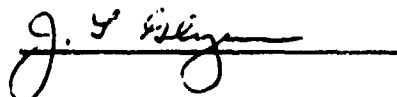


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This document has been reviewed and approved for release.

For N. D. Kemp
Data Management Services



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RESULTS OF INVESTIGATIONS ON A 0.015-SCALE MODEL (49-0)
OF THE SPACE SHUTTLE ORBITER IN THE
NASA/AMES 3.5-FOOT HYPERSONIC WIND TUNNEL (OA87)

By

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J. A. Mellerthin, NASA/Ames

ABSTRACT

Experimental aerodynamic investigations were conducted during the period of October 16 through October 23, 1973 in the NASA/Ames 3.5-Foot Hypersonic Wind Tunnel on a 0.015-scale model of the Space Shuttle Orbiter, Configuration 140A/B.

The objectives of this test were as follows: 1) verify supersonic stability and control characteristics, 2) analyze aerodynamic problem areas, 3) verify control surface effectiveness, and 4) investigate Reynolds number effects.

Six-component aerodynamic force and moment data were recorded over an angle of attack range from 22° to 46° at a constant sideslip angle of 0° .

The test Mach number was varied from 5.3 to 7.3 to 10.3. The Reynolds number per unit length was varied from 0.805×10^6 to 10×10^6 per foot.

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COEFFICIENT SCHEDULE:

- A: CL, CN, CD, CDF, CA, CAF, CAB, CLMFWD, CLMAFT, XCP/L, L/D VS. ALPHA
CL, CN VS. CLMFWD
CL VS. CD
- B: DCL, DCN, DCD, DCDF, DCA, DCAF, DCAB, DCMFWD, DCMAFT VS. ALPHA
- C: DCL, DCN, DCD, DCA, DCMFWD, DCMAFT VS. ELEVON
- D: DCL, DCN, DCD, DCA, DCMFWD, DCMAFT, VS. BDFLAP
- E: CY, CYN, CBL VS. ALPHA
- F: CL, CN, CD, CA, CLMFWD VS. ALPHA

NOMENCLATURE
General

<u>SYMBOL</u>	<u>SADSCAC 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
$\frac{l_{REF}}{c}$	LREF	reference length or wing mean aerodynamic chord; m, ft
S	SREF	wing area or reference area; m ² , ft ²
	MRP	moment reference point
	XMRP	moment reference point on X axis
	YMRP	moment reference point on Y axis
	ZMRP	moment reference point on Z axis

SUBSCRIPTS

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

NOMENCLATURE (Continued)

Body-Axis System

<u>SYMBOL</u>	<u>SADGAC SYMBOL</u>	<u>DEFINITION</u>
C_N	CN	normal-force coefficient; $\frac{\text{normal force}}{qS}$
C_A	CA	axial-force coefficient; $\frac{\text{axial force}}{qS}$
C_Y	CY	side-force coefficient; $\frac{\text{side force}}{qS}$
C_{A_b}	CAB	base-force coefficient; $\frac{\text{base force}}{qS}$ $-A_b(p_b - p_n)/qS$
C_{A_f}	CAF	forebody axial force coefficient; $C_A - C_{A_b}$
C_m	CLM	pitching-moment coefficient; $\frac{\text{pitching moment}}{qS l_{REF}}$
C_n	CYN	yawing-moment coefficient; $\frac{\text{yawing moment}}{qS b}$
C_l	CLL	rolling-moment coefficient; $\frac{\text{rolling moment}}{qS b}$

Stability-Axis System

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

NOMENCLATURE (Continued)

ADDITIONS TO NOMENCLATURE

<u>SYMBOL</u>	<u>SADSAC SYMBOL</u>	<u>DEFINITION</u>
C_{mFWD}	CLMFWD	pitching moment coefficient about forward center of gravity.
C_{mAFT}	CLMAFT	pitching moments coefficient about aft center of gravity.
ΔC_N	DCN	incremental normal force coefficient, algebraic difference of two runs.
ΔC_A	DCA	incremental axial force coefficient, algebraic difference of two runs.
ΔC_{AB}	DCAB	incremental base axial force coefficient, algebraic difference of two runs.
ΔC_{AF}	DCAF	incremental forebody axial force coefficient, algebraic difference of two runs.
ΔC_L	DCL	incremental lift coefficient, algebraic difference of two runs.
ΔC_D	DCD	incremental drag coefficient, algebraic difference of two runs.
ΔC_{DFWD}	DCDF	incremental forebody drag coefficient; algebraic difference of two runs.
ΔC_{mAFWT}	DCMFWD	incremental pitching moment coefficient about forward C.G., algebraic difference of two runs.
ΔC_m	DCMAFT	incremental pitching moment coefficient about aft C.G., algebraic difference of two runs.
δ_{eL}		left elevon surface deflection angle, positive deflection trailing edge down; degrees.

NOMENCLATURE (Concluded)

<u>SYMBOL</u>	<u>SADSAC SYMBOL</u>	<u>DEFINITION</u>
δ_{eR}		right elevon surface deflection angle, positive deflection trailing edge down; degrees.
δ_e	ELEVON	surface deflection angle, positive deflection trailing edge down; degrees $(\delta_{eL} + \delta_{eR})/2$.
δ_{SB}	SPDBRK	speed brake deflection angle, degrees.
δ_R	RUDDER	rudder deflection angle, degrees.
δ_{BF}	BDFLAP	body flap deflection angle, degrees.
δ_a	AILRON	aileron deflection angle, positive deflection trailing edge down; degrees $(\delta_{eL} - \delta_{eR})/2$.

CONFIGURATIONS INVESTIGATED

The test vehicle was a 1:015-scale model of the Space Shuttle Orbiter. It was sting mounted in the wind tunnel utilizing the Task Mark II 1.5-inch internal strain gage balance to measure six-component aerodynamic force and moment data.

A 30° sting adapter was utilized to obtain the high angles of attack which were required. Utilizing this adapter, angles of attack up to 46° were achieved.

Rudder and speedbrake positions were fixed at 0° and 55°, respectively, throughout the test. The elevon positions tested were -40°, -10°, 0° and +15°. Aileron settings of +5° were also tested. The vehicle body-flap deflection was varied at -11.7° and +16.3°.

The model configuration is summarized below:

$$O_{10} = B_{26} C_9 E_{26} F_7 M_7 N_{28} R_5 V_8 W_{116}$$

<u>Component</u>	<u>Definition</u>
B ₂₆	Fuselage per Rockwell Lines VL70-000140A and VL70-000140B (Model Drawings SS-A00147)
C ₉	Canopy per Rockwell Lines VL70-000140A and VL70-000143A (Model Drawings SS-A00147)
E ₂₆	Elevons per Rockwell Lines VL70-000200 (Model Drawing SS-A00148)
F ₇	Body flap per Rockwell Lines VL70-000200 (Model Drawing SS-A00147)
M ₇	OMS/RCS pods per Rockwell Lines VL70-000145 (Model Drawing SS-A00147)
N ₂₈	OMS engine nozzles per Rockwell Lines VL70-000145 (Model Drawing SS-A00147)

R₅

Rudder per Rockwell Lines VL70-000146A (Model Drawing SS-A00148)

V₈

Vertical tail per Rockwell Lines VL70-000146A (Model Drawing SS-A00148)

W₁₁₆

Wing per Rockwell Lines VL70-000200 (Model Drawing SS-A00148)

TEST FACILITY

The NASA-Ames 3.5-Foot Hypersonic Wind Tunnel is a closed-circuit, blowdown-type tunnel capable of operating at nominal Mach numbers of 5, 7, and 10 at pressures to 1800 psia and temperatures to 3400°R for run times to four minutes. The major components of the facility include a gas storage system where the test gas is stored at 3000 psi, a storage heater filled with aluminum-oxide pebbles capable of heating the test gas to 3400°R, axisymmetric contoured nozzles with exit diameters of 42 inches for generating the desired Mach number, and a 900,000 ft³ vacuum storage system which operates to pressures of 0.3 psia. The test section itself is an open-jet type enclosed within a chamber approximately 12-feet in diameter and 40-feet in length, arranged transversally to the flow direction.

A model support system is provided that can pitch models through an angle-of-attack range of -20 to +18 degrees, in a vertical plane, about a fixed point of rotation on the tunnel centerline. This rotation point is adjustable from 1 to 5 feet from the nozzle exit plane. The model normally is out of the test stream (strut centerline 27-inches from tunnel centerline) until the tunnel test conditions are established after which it is inserted. Insertion time is adjustable to as little as 1/2 second and models may be inserted at any strut angle.

A high-speed, analog-to-digital data acquisition system is used to record test data on magnetic tape. The present system is equipped to measure and record the outputs from 80 transducers in addition to 70 channels of tunnel parameters.

DATA REDUCTION

The aerodynamic forces and moments recorded by the internal strain gage balance were reduced to coefficient form in the body axis system utilizing the following reference dimensions:

Symbol	Definition	Model Scale	Full Scale
S_{ref}	wing planform area, ft^2	0.6053	2690.0
l_{ref}	model body length, in.	19.4	1290.3
b_{ref}	wing span, in.	14.05	936.68

Moments are referenced about model station 16.147 (fuselage station 1076.48), on the fuselage at water line 5.625 (WL375).

Model base and cavity pressures were measured during the test and have been used to correct the data for model base effects. Location and areas for these pressures were as shown in figure 2b.

TABLE I.

TEST : 0A87		DATE : Oct., 1973	
TEST CONDITIONS			
MACH NUMBER ^D	REYNOLDS NUMBER (per unit length)	DYNAMIC PRESSURE (pounds/sq. inch)	STAGNATION TEMPERATURE (degrees Fahrenheit)
5.3	3.0 x 10	4.00	1759°
5.3	1.3 x 10	1.74	1759°
7.3	10 x 10	7.70	1759°
7.3	3.0 x 10	4.50	2459°
7.3	1.3 x 10	1.95	2459°
7.3	0.805 x 10	1.21	2459°
10.3	3.0 x 10	2.46	2459°
BALANCE UTILIZED: <u>Mk II 400565R (1.5 inch)</u>			
	CAPACITY:	ACCURACY:	COEFFICIENT TOLERANCE:
NF	<u>1000 pounds</u>	<u>1/2%</u>	_____
SF	<u>500 pounds</u>	<u>1/2%</u>	_____
AF	<u>300 pounds</u>	<u>1/2%</u>	_____
PM	<u>3000 inch-pound</u>	<u>1/2%</u>	_____
RM	<u>800 inch-pound</u>	<u>1/2%</u>	_____
YM	<u>1100 inch-pound</u>	<u>1/2%</u>	_____
COMMENTS:			

TABLE II. (Concluded)

TEST: OA 87		DATA SET / RUN NUMBER COLLATION SUMMARY										DATE:			
DATA SET IDENTIFIER	CONFIGURATION	SCHD.		PARAMETERS/VALUES						NO. RUNS	MACH NUMBERS				
		A	B	See	See	See	See	See	See		See	See			
REF 019	140 A/B	B	0	10	0	-11.7	0	55			10	1	5.3	7.3	10.3
020		A		40	40	-11.7					3	1	020		
021				10	10	16.3					3	1	021		
022				0	0	0					3	1	022		
023				0	0	0					1.3	1	023		
024				0	0	0					1.3	1	024		
025		Y		0	0	0					.81	1	025		
026		B		0	0	0					3	1	026		
027				40	40	16.3					3	1	027		
028				10	10	16.3					3	1	028		
Y 029				40	40	-11.7					3	1	029		
REF 030		Y		0	0	0					3	1	030		

7 13 19 25 31 37 43 49 55 61 67 75 76

OR B SCHEDULES
 A = 22°, 46°, 42°, 38°, 34°, 30°, 26°, 22°, 18°, 14°, 10°, 22°
 B = 22°, 34°, 30°, 26°, 22°, 18°, 14°, 10°, 22°

IDVAR (1) IDVAR (2) NDV

TABLE III. - MODEL DIMENSIONAL DATA

MODEL COMPONENT: BODY - B₂₆

GENERAL DESCRIPTION: Orbiter Fuselage Configuration 140 A/B

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

Model Scale = 0.015 Model Drawing No. SS-620147

DRAWING NUMBER: VL70-000193
VL70-000140A

<u>DIMENSIONS:</u>	<u>FULL-SCALE</u>	<u>MODEL SCALE</u>
Length (Body Fwd Sta X ₀ = 235) - in.	<u>1293.3</u>	<u>19.400</u>
Max. Width (at X ₀ = 1520) - in.	<u>262.0</u>	<u>3.93</u>
Max. Depth (at X ₀ = 1464) - in.	<u>250.0</u>	<u>3.75</u>
Fineness Ratio	<u>0.26357</u>	<u>0.26357</u>
Area - ft ²		
Max. Cross-Sectional	<u>340.88462</u>	<u>0.07670</u>
Planform	<u> </u>	<u> </u>
Wetted	<u> </u>	<u> </u>
Base	<u> </u>	<u> </u>

REPRODUCIBILITY OF THE ORIGINAL PAGE IS POOR.

TABLE III. - Continued.

MODEL COMPONENT: CANOPY - C₉

GENERAL DESCRIPTION: Configuration 140 A/B Orbiter Fuselage

Model Scale = 0.015

Model Drawing No. SS-A00147

DRAWING NUMBER

VL70-000140A

VL70-000143A

DIMENSION:

FULL SCALE

MODEL SCALE

Length ($X_0=434.643$ to 670)

235.357

3.530

Max Width (@ $X_0=513.127$)

152.412

2.286

Max Depth (@ $X_0=485.0$)

25.000

0.375

Fineness Ratio

Area

Max Cross-Sectional

Planform

Wetted

Base

TABLE III. - Continued.

MODEL COMPONENT: ELEVON - E₂₆

GENERAL DESCRIPTION: Configuration 140 A/B Orbiter Elevon

NOTE: VL70-000200 data for (1) of (2) sides. Identical to E₂₅ except
airfoil thickness.

Model Scale: 0.015 Model Drawings No. 88-A00148

DRAWING NUMBER: VL70-000200
VL70-000140B

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

TABLE III. - Continued.

MODEL COMPONENT: Body Flap - F₇

GENERAL DESCRIPTION: Configuration 140A/B Orbiter Body Flap

NOTE: Hinge line located at X₀ = 1528.3

Model Scale = 0.015

DRAWING NUMBER

VL70-000140A, VL70-000145

DIMENSION:

FULL SCALE

MODEL SCALE

Length (X₀=1520 to X₀=1613) - IN.

93.000

1.395

Max Width - IN.

262.000

3.930

Max Depth (X₀ = 1520) - IN.

23.000

0.345

Fineness Ratio

Area - Ft²

Max Cross-Sectional

Planform

142.6

0.321

Wetted

Base

TABLE III. - Continued.

MODEL DIMENSIONAL DATA

MODEL COMPONENT : OMS POD (M₇)

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

Model Scale: 0.015 Model Drawing No. SS-A00147

DRAWING NUMBER : VL70-000140A
VL70-000145

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

TABLE III. - Continued.

MODEL COMPONENT: OMS NOZZLE (N₂₈)

GENERAL DESCRIPTION: Configuration 140 A/B Orbiter OMS Nozzle

MODEL SCALE: - 0.015

Model Drawing No. SS-A00147

DRAWING NO.: VL70-000140A

DIMENSIONS:	<u>FULL SCALE</u>	<u>MODEL SCALE</u>
Gimbal Point (Station) ~ in.		
X	1518.0	22.77
Y	+ 88.0	1.32
Z	294.0	7.38
Null Position ~ Deg.		
Pitch	15° 49'	15° 49'
Yaw (Outboard)	12° 17'	12° 17'

TABLE III. - Continued.

MODEL COMPONENT: Rudder - R₅

GENERAL DESCRIPTION: Configuration 140 A/^m Orbiter Rudder

MODEL SCALE: 0.015 MODEL DRAWING No. SS-A00148

DRAWING NUMBER: VL70-000095, VL70-000146A

<u>DIMENSIONS:</u>	<u>FULL-SCALE</u>	<u>MODEL SCALE</u>
Area - ft^2	<u>106.38</u>	<u>0.0239</u>
Span (equivalent) - in.	<u>201.0</u>	<u>3.015</u>
Inb'd equivalent chord	<u>91.585</u>	<u>1.374</u>
Outb'd equivalent chord	<u>50.833</u>	<u>0.762</u>
Ratio movable surface chord/ total surface chord		
At Inb'd equiv. chord	<u>0.400</u>	<u>0.400</u>
At Outb'd equiv. chord	<u>0.400</u>	<u>0.400</u>
Sweep Back Angles, degrees		
Leading Edge	<u>34.83</u>	<u>34.83</u>
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>0.00178</u>
Product of Area and Mean Chord		

TABLE III. - Continued

MODEL COMPONENT: VERTICAL - Vg

GENERAL DESCRIPTION: Configuration 140 A/B Vertical Tail

NOTE: Similar to V5 with radius on TE upper corner and LE lower corner
where vertical meets fuselage.

Model Scale = 0.015

Model Drawing No. JS-A00148

DRAWING NUMBER:

VL70-000140A
VL70-000146A

DIMENSIONS:

FULL-SCALE

MODEL SCALE

TOTAL DATA

Area (Theo) Ft ²	413.253	0.09298
Planform		
Span (Theo) In	315.720	4.73580
Aspect Ratio	1.675	1.675
Rate of Taper	0.507	0.507
Taper Ratio	0.40399	0.40399
Sweep Back Angles, degrees		
Leading Edge	45.00	45.00
Trailing Edge	25.947	25.947
0.25 Element Line	41.130	41.130
Chords:		
Root (Theo) WP	268.500	4.02750
Tip (Theo) WP	108.470	1.62705
MAC	199.80756	2.99711
Fus. Sta. of .25 MAC	1463.50	21.95250
W. P. of .25 MAC	635.522	
B. L. of .25 MAC	0.00	0.00
Airfoil Section		
Leading Wedge Angle Deg	10.00	10.00
Trailing Wedge Angle Deg	14.927	14.920
Leading Edge Radius (Min) - IN.	2.00	0.0300
Void Area	13.17	0.00296
Blanketed Area	0.00	0.00

TABLE III. - Concluded.

MODEL COMPONENT: WING-W₁₁₆GENERAL DESCRIPTION: Configuration 140 A/B Orbiter WingNOTE: Identical to W₁₁₄ except airfoil thickness. Dihedral angle is along trailing edge of wing.

Model Scale = 0.015

Model Drawing No. SS-A00148

TEST NO.VL70-000140B
DWG. NO. VL70-000 200DIMENSIONS:FULL-SCALEMODEL SCALETOTAL DATAArea (Theo.) Ft²

Planform

2690.00

0.6053

Span (Theo In.)

936.6816

14.050

Aspect Ratio

2.265

2.265

Rate of Taper

1.177

1.177

Taper Ratio

0.200

0.200

Dihedral Angle, degrees (at X₀=1506.623, Y₀=

3.500

3.500

Incidence Angle, degrees 105, Z₀= 282.75)

0.500

0.500

Aerodynamic Twist, degrees

+3.000

+3.000

Sweep Back Angles, degrees

45.00

45.00

Leading Edge

-10.056

-10.056

Trailing Edge

35.209

35.209

0.25 Element Line

Chords:

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

689.2429

10.339

Tip, (Theo) B.P.

137.8486

2.068

MAC

474.8117

7.222

Fus. Sta. of .25 MAC

1126.721

17.051

W.P. of .25 MAC

291.00

4.365

B.L. of .25 MAC

187.33491

2.810

EXPOSED DATAArea (Theo) Ft²

1812.2205

0.408

Span, (Theo) In. BP108

736.6816

11.050

Aspect Ratio

2.058

2.058

Taper Ratio

0.2451

0.2451

Chords

Root BP108

570.6230

8.559

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

137.8512

2.06

MAC

354.2376

5.314

Fus. Sta. of .25 MAC

1164.237

17.464

W.P. of .25 MAC

292.00

4.380

B.L. of .25 MAC

239.67786

3.595

Airfoil Section (Rockwell Mod NASA)
XXXX-64Root $\frac{b}{2}$ = 0.425

0.113

0.113

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

0.12

0.12

Data for (1) of (2) Sides

Leading Edge Cuff

Planform Area Ft²

118.333

0.0266

Leading Edge Intersects Fus M. L. @ Sta

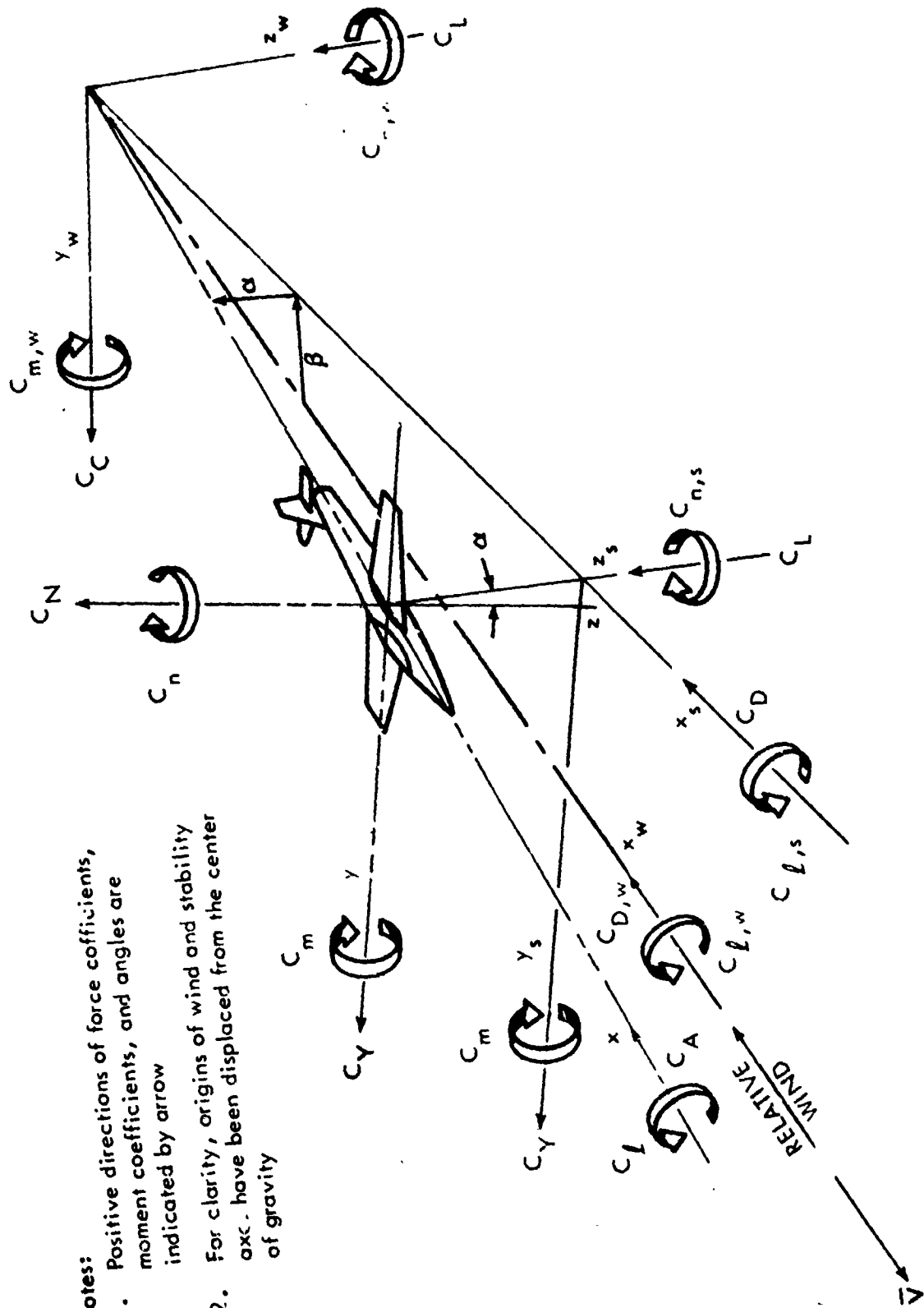
505.0

7.575

Leading Edge Intersects Wing @ Sta

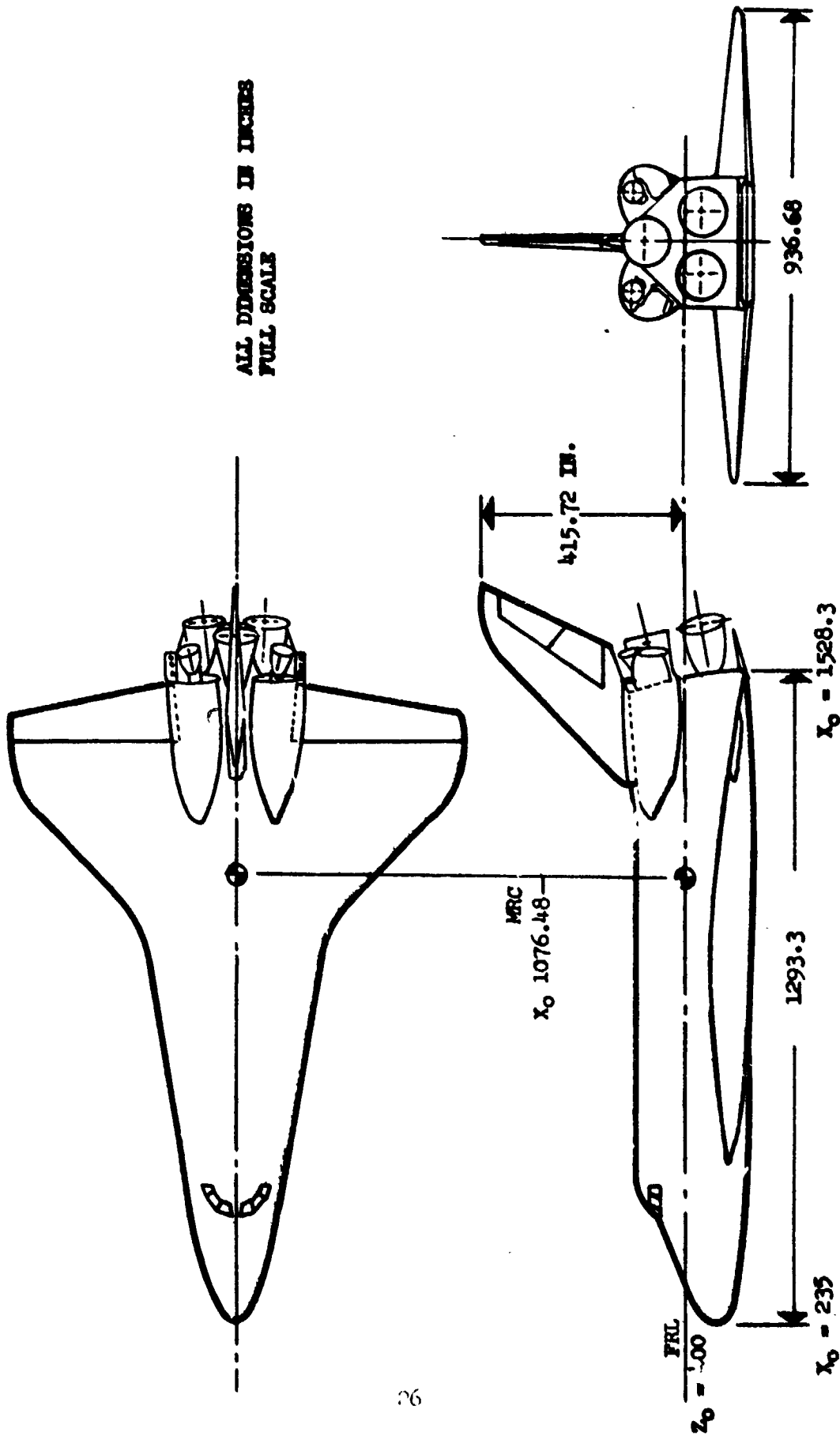
1003.5

15.053



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

Figure 1. - Axis systems.

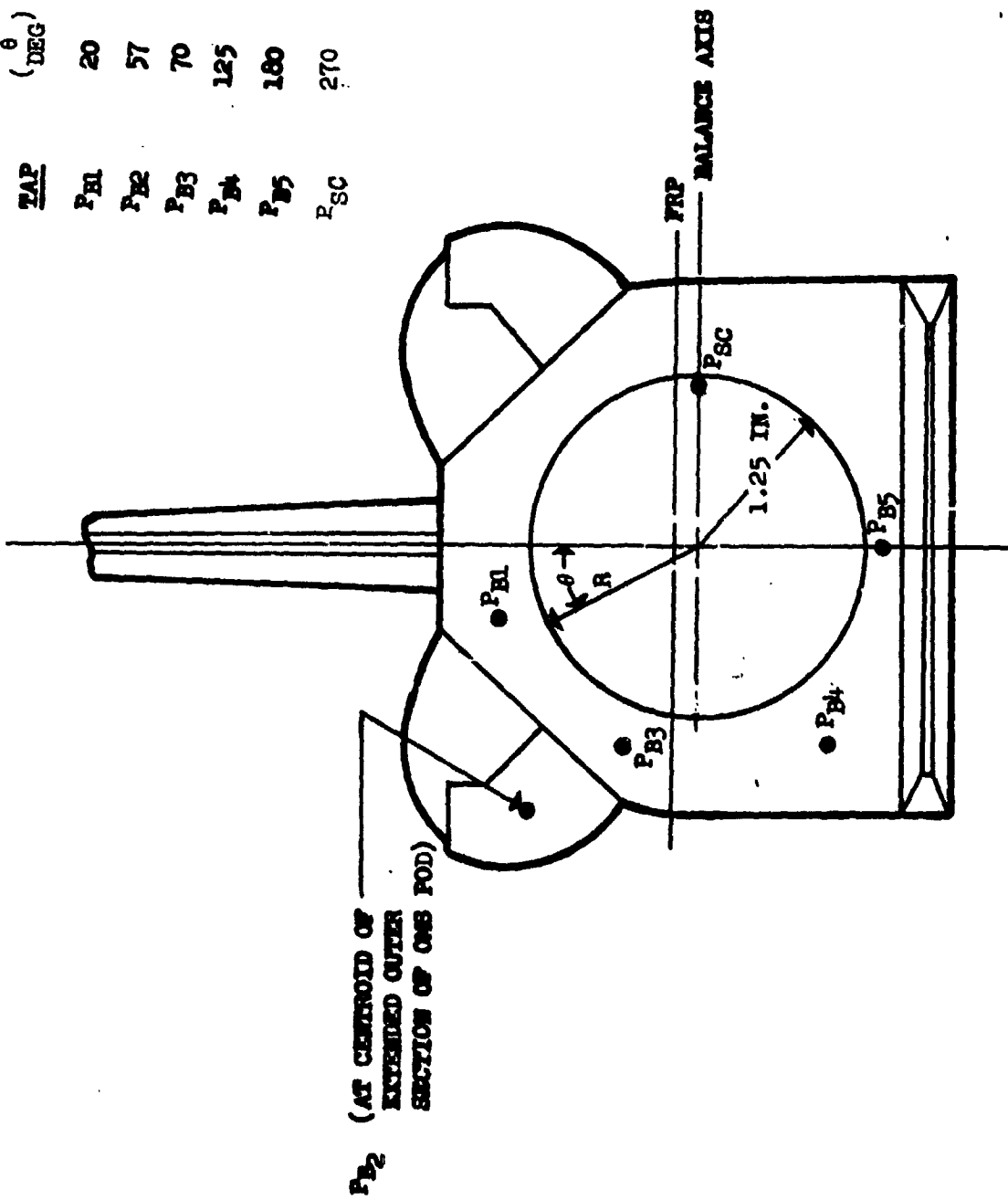


a. SSV Orbiter Configuration 140A/B for Test OA87

Figure 2. - Model sketches

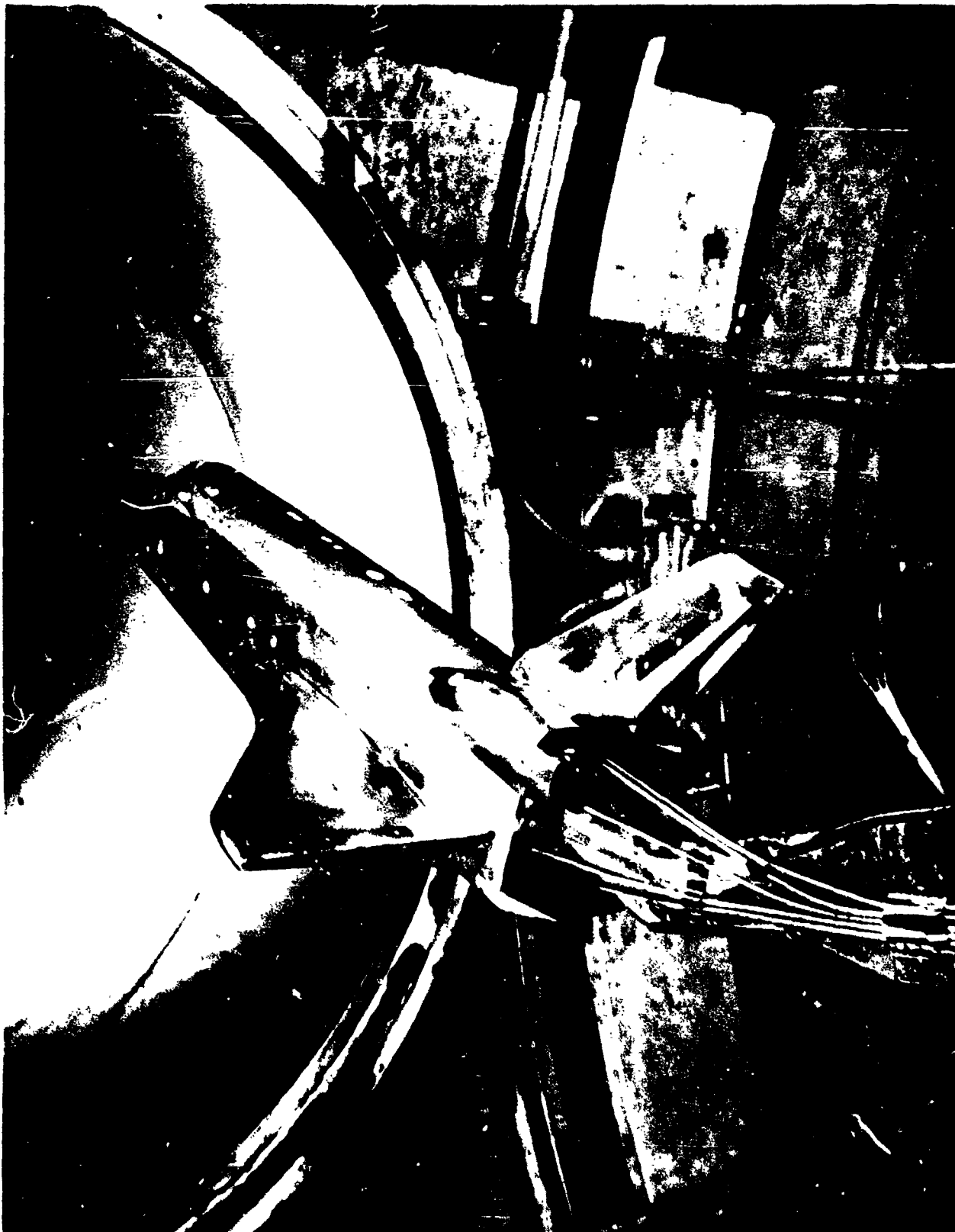


TAP	θ (DEG)	R (in.)	area (ft ²)
P _{B1}	20	1.60	0.0108
P _{B2}	57	2.10	0.0201
P _{B3}	70	1.50	0.0103
P _{B4}	125	1.76	0.0176
P _{B5}	180	1.33	0.0278
P _{SC}	270	1.25	0.0341



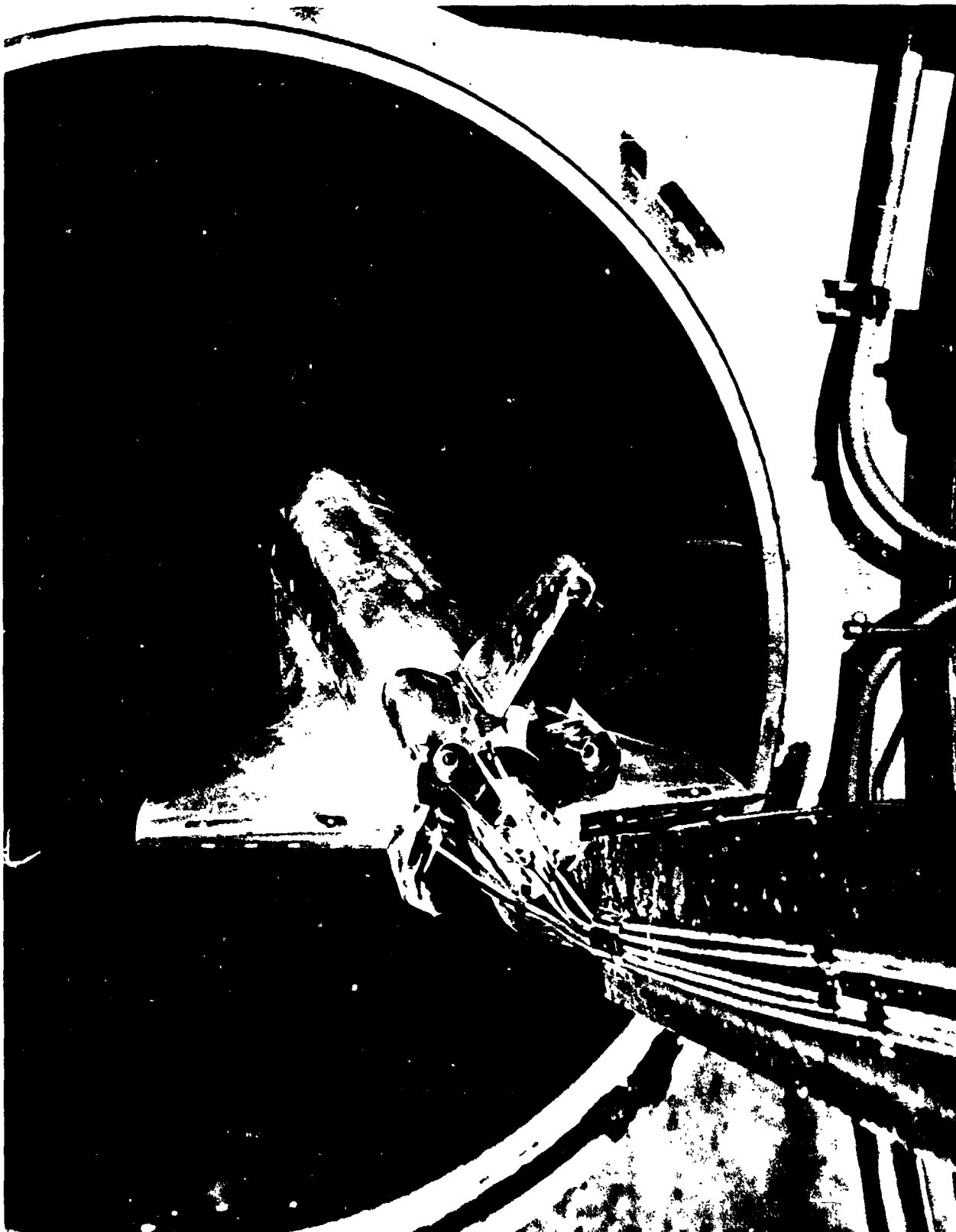
b. Base and Cavity Pressure Locations for Test OA87

Figure 2. - Concluded.



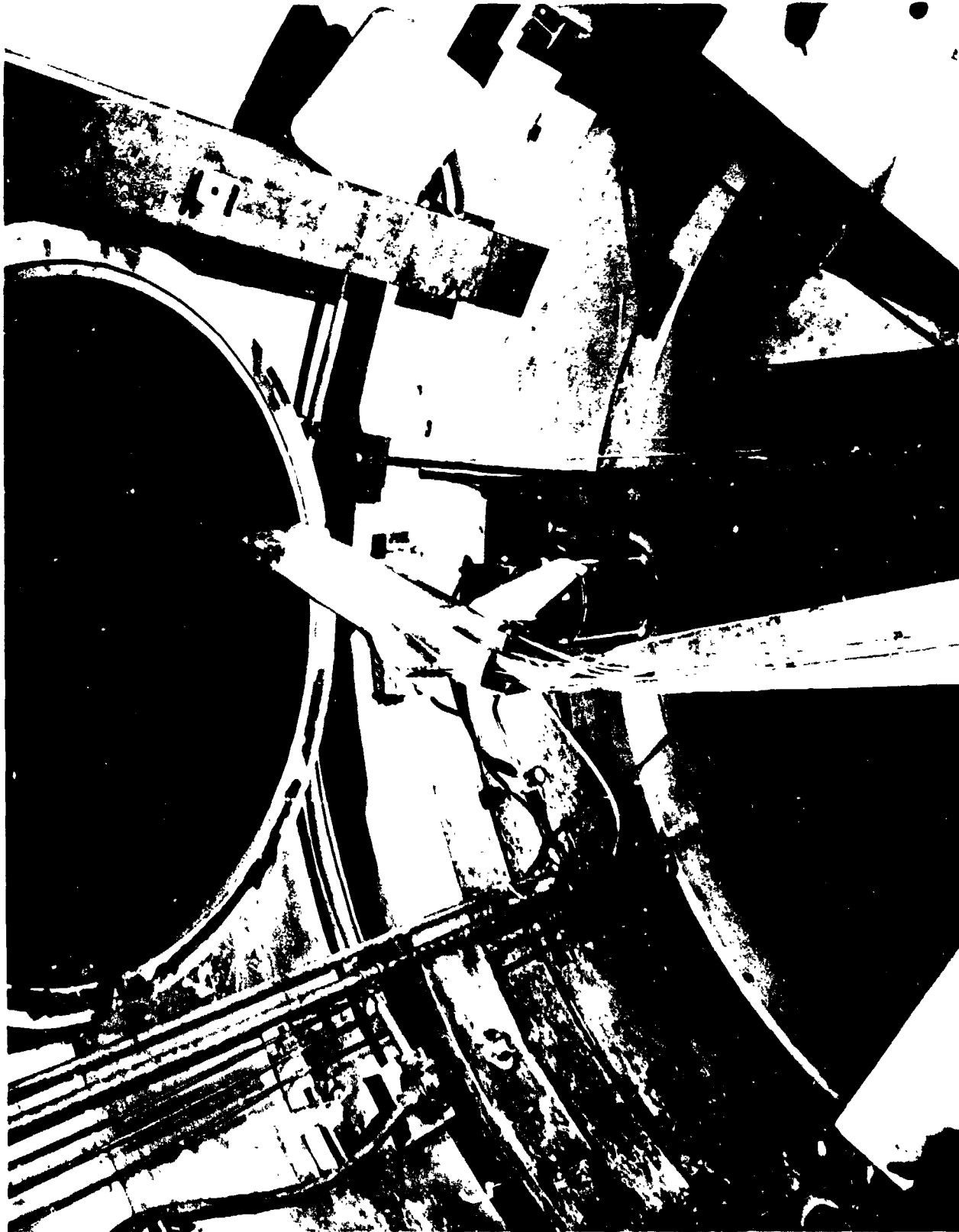
(a) Close-up 3/4 rear view of model 140 A/B

Figure 3. - Model photographs.



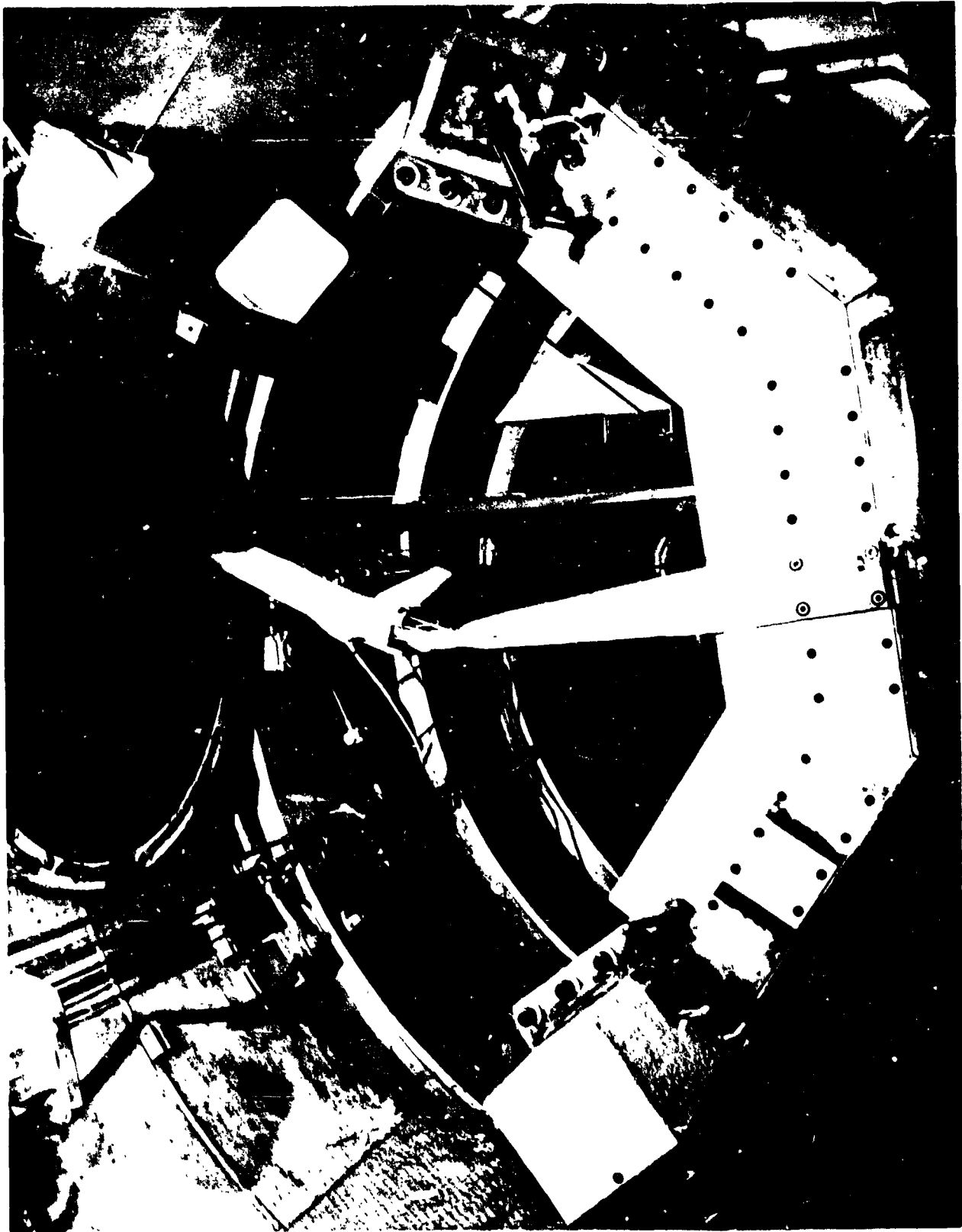
(b) Close-up rear view of model 140 A/B

Figure 3. - Continued.



(c) Side view of model 140 A/B

Figure 3. - Continued.



(d) side view of model 140 A B, sting, and strut

Figure 3. - Continued.

DATA FIGURES

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEFO04)	AVES 3.5-176 DAB7 140 A/B CRBITTER	-40.000	55.000	.000	10.000	SREF 2690.0000 SQ.FT.
(BEFO01)	AVES 3.5-176 DAB7 140 A/B CRBITTER	.000	55.000	.000	10.000	LREF 1290.3000 IN.
(BEFO03)	AVES 3.5-176 DAB7 140 A/B CRBITTER	10.000	55.000	.000	10.000	BREF 936.6800 IN.
						XMRP 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150

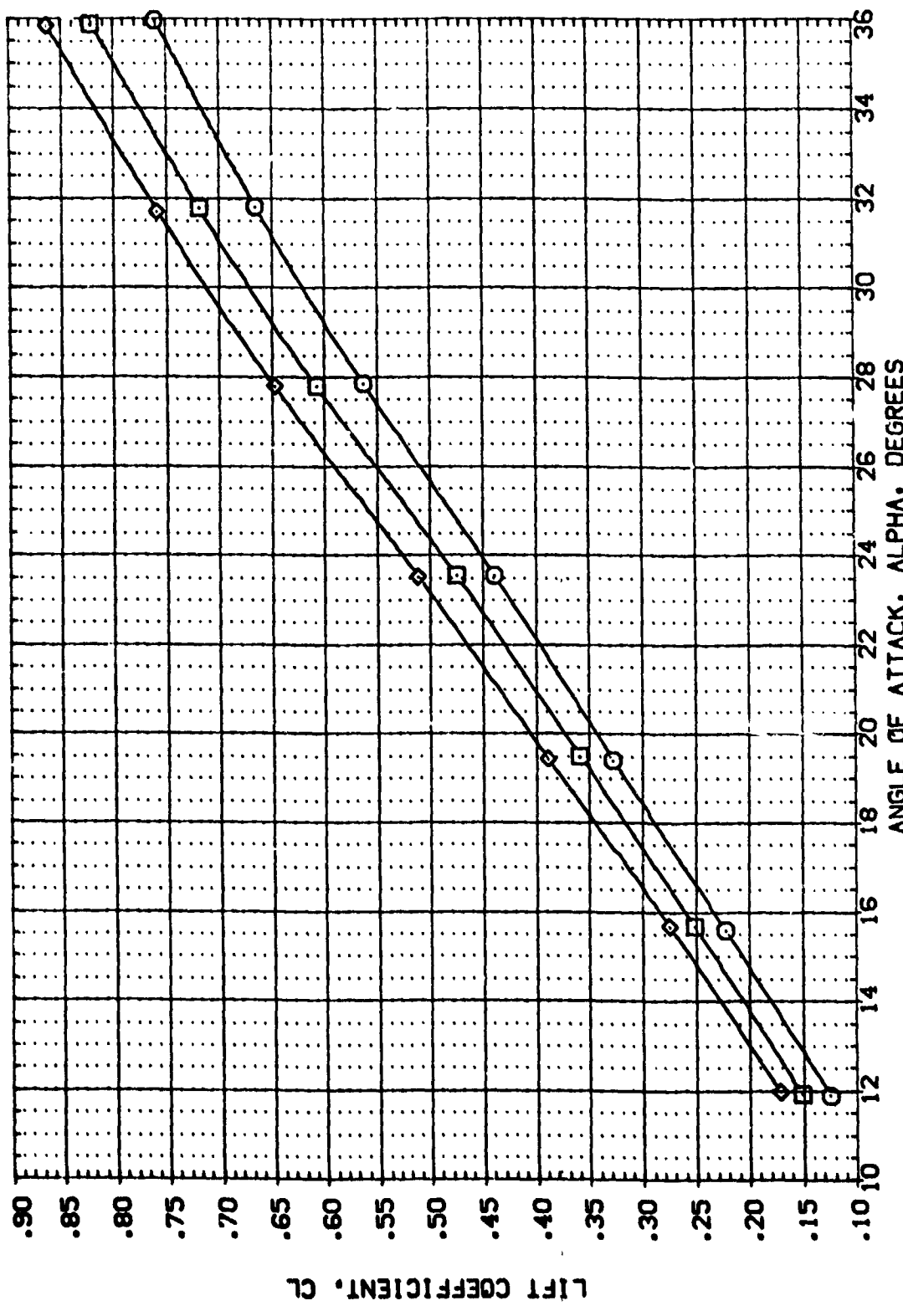


FIG. 4 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEFO0)	AMES 3.5-176 OAB7 140 A/B ORBITER	-40.000	55.000	.000	10.000	SREF 2690.0000 50.FT.
(BEFO1)	AMES 3.5-176 OAB7 140 A/B ORBITER	0.000	55.000	.000	10.000	LREF 1290.3000 IN.
(BEFO3)	AMES 3.5-176 OAB7 140 A/B ORBITER	10.000	55.000	.000	10.000	BREF 536.6800 IN.
						XTRP 1076.4800 IN.
						YTRP .0000 IN.
						ZTRP 375.0000 IN.
						SCALE .0150

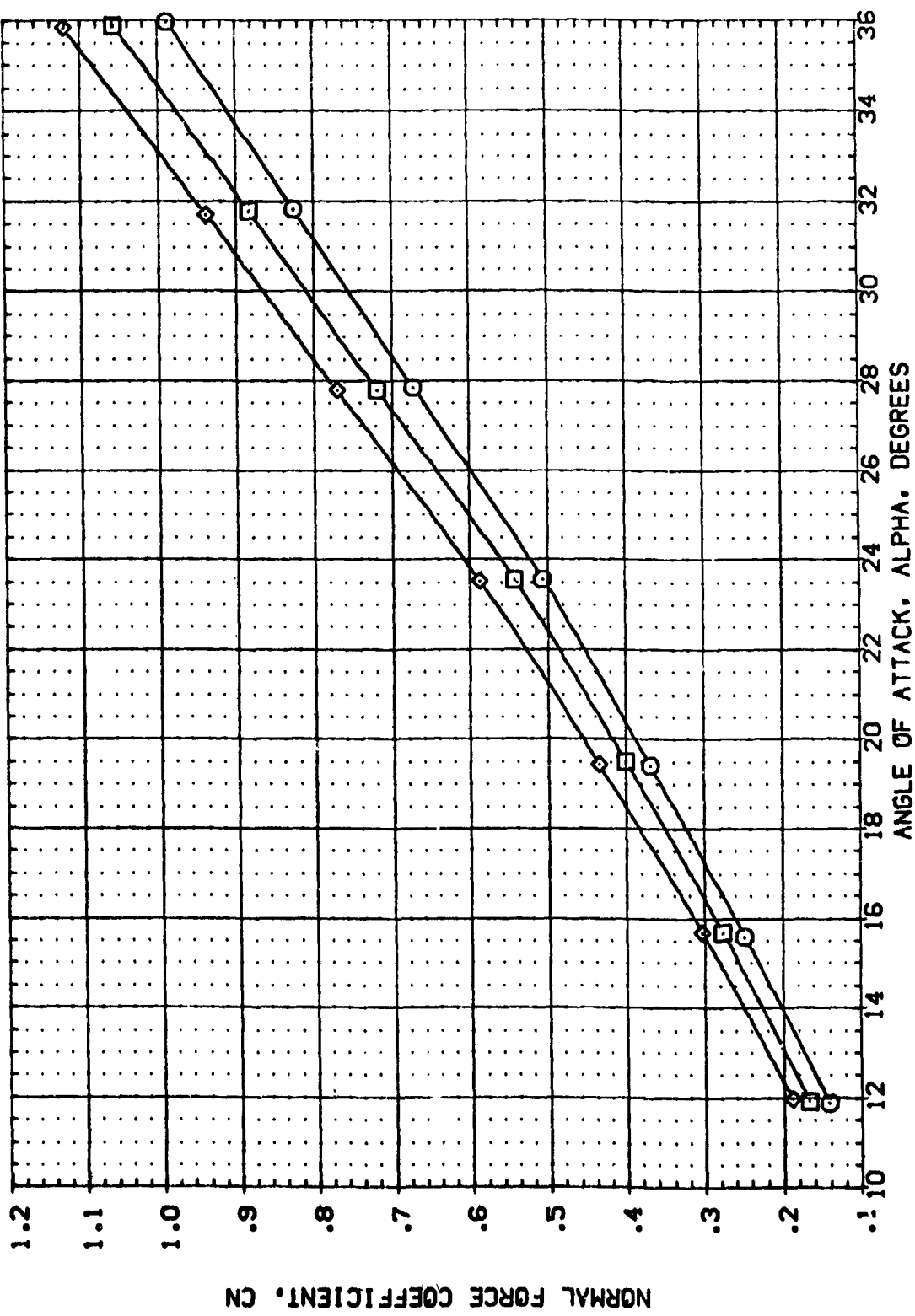


FIG. 4 ELEVON EFFECTIVENESS, RN/L=10., BOFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEFO04)	AMES 3.5-176 OAB7 140 A/B ORBITER	-40.000	55.000	.000	10.000	SREF 2690.0000 SQ.FT.
(BEFO01)	AMES 3.5-176 OAB7 140 A/B ORBITER	.000	55.000	.000	10.000	LREF 1790.3000 IN.
(BEFO03)	AMES 3.5-176 OAB7 140 A/B ORBITER	10.000	55.000	.000	10.000	BREF 536.6800 IN.
						XMRP 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150

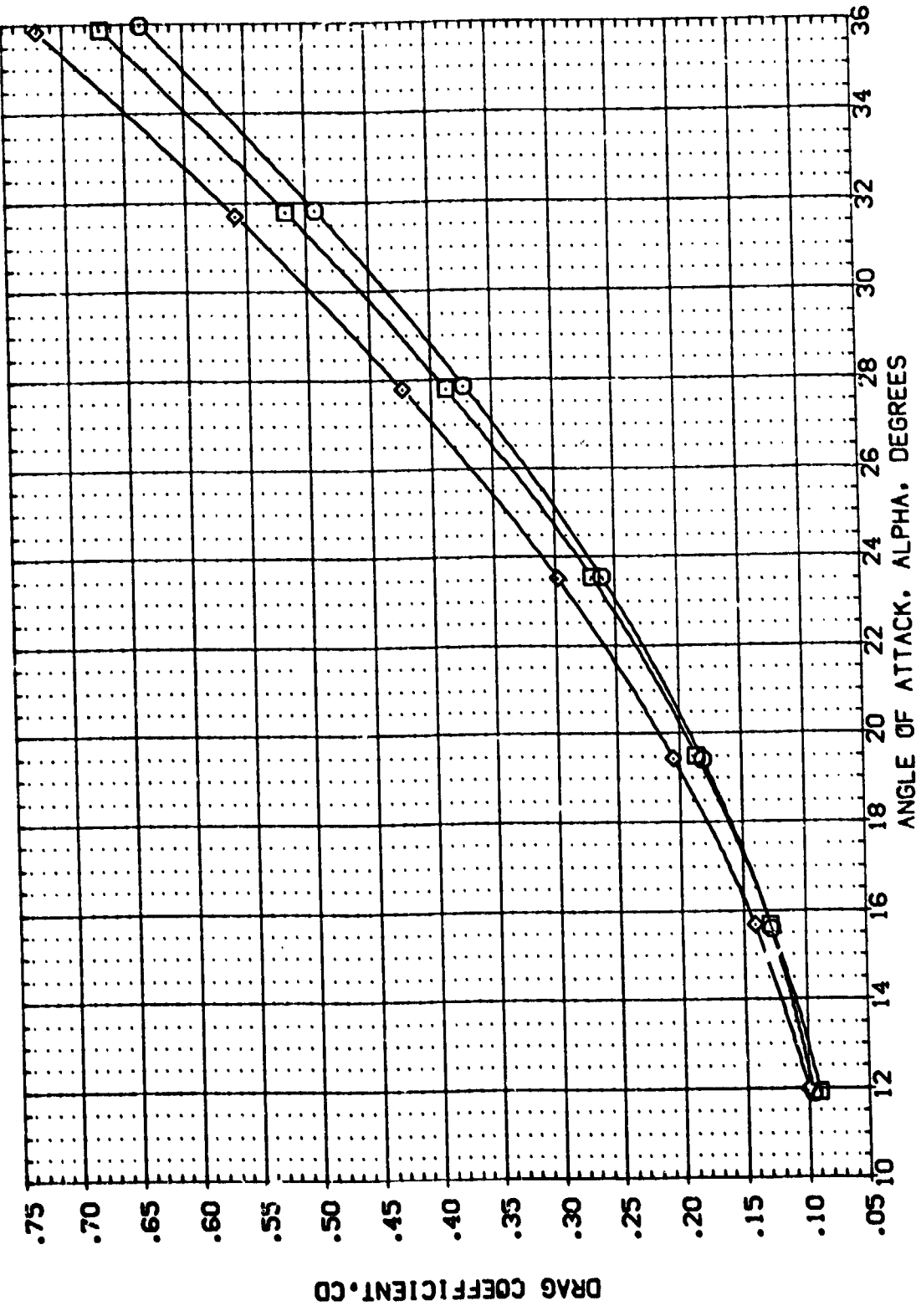


FIG. 4 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=0.0

(AJMACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPDRBK	B FLAP	RN/L	REFERENCE INFORMATION
(BEF004)	AVES 3-5-176 QAB7 140 A/B ORBITTER	-40.000	55.000	.000	10.000	SREF 2680.0000 SQ.FT.
(BEF001)	AVES 3-5-176 QAB7 140 A/B ORBITTER	.000	55.000	.000	10.000	LREF 1290.3000 IN.
(BEF003)	AVES 3-5-176 QAB7 140 A/B ORBITTER	10.000	55.000	.000	10.000	BREF 936.6800 IN.
						XMRP 1076.4800 IN.
						ZMRP .0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150

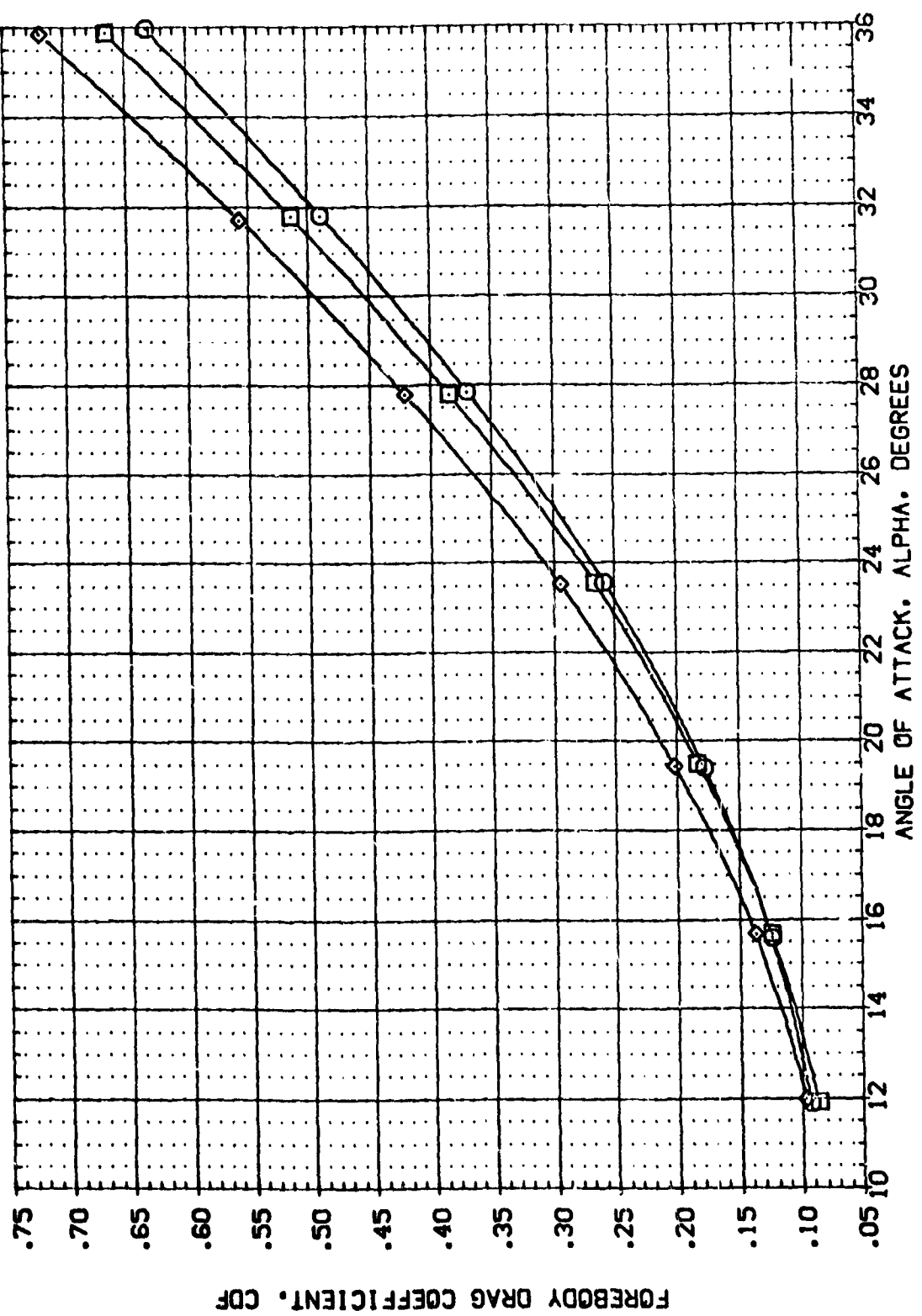


FIG. 4 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=0.0
 (A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPORR	BDFLAP	RN/L	REFERENCE INFORMATION
(BEFOO1)	AMES 3.5-176 OAG7 140 A/B ORBITER	-40.000	55.000	.000	10.000	SREF 2690.0000 SO.FT.
(BEFOO2)	AMES 3.5-176 OAG7 140 A/B ORBITER	0.000	55.000	.000	10.000	LREF 1290.3000 IN.
(BEFOO3)	AMES 3.5-176 OAG7 140 A/B ORBITER	10.000	55.000	.000	10.000	BREF 936.6600 IN.
						XREF 1076.4800 IN.
						YREF 0.0000 IN.
						ZREF 375.0000 IN.
						SCALE .0150 SCALE

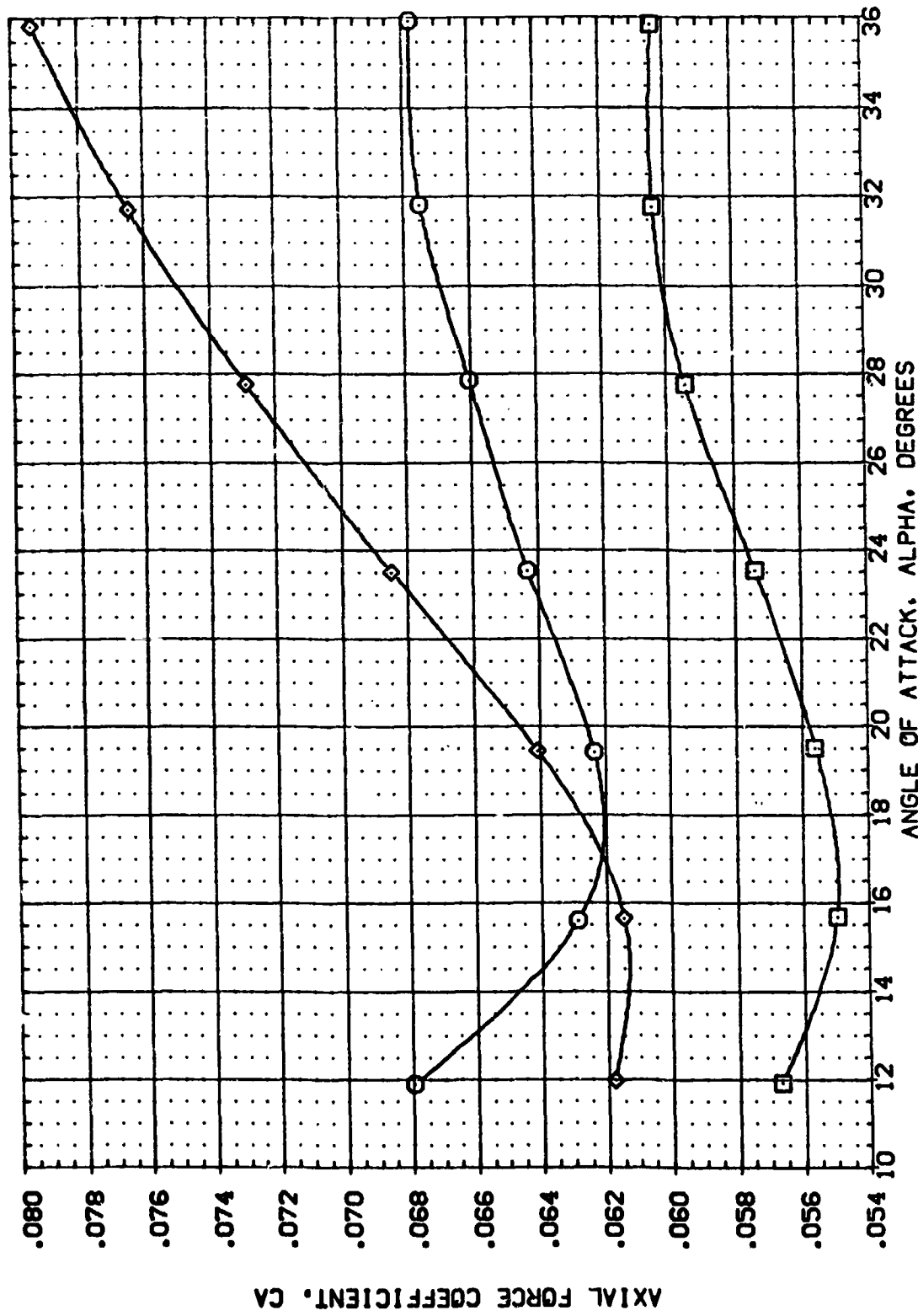


FIG. 4 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL
 (BEF004)
 (BEF001)
 (BEF003)

CONFIGURATION DESCRIPTION
 ARES 3.5-176 OAG7 140 A/B ORBITTER
 ARES 3.5-176 UAG7 140 A/B ORBITTER
 ARES 3.5-176 OAG7 140 A/B ORBITTER

ELEVON **SPOBRK** **BOFLAP** **RN/L**
 -40.000 55.000 .000 10.000
 .000 55.000 .002 10.000
 10.000 55.000 .000 10.000

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 1290.0000 IN.
 BREF 326.6800 IN.
 XPRP 1075.4800 IN.
 YPRP .0000 IN.
 ZPRP 375.0000 IN.
 SCALE .0150

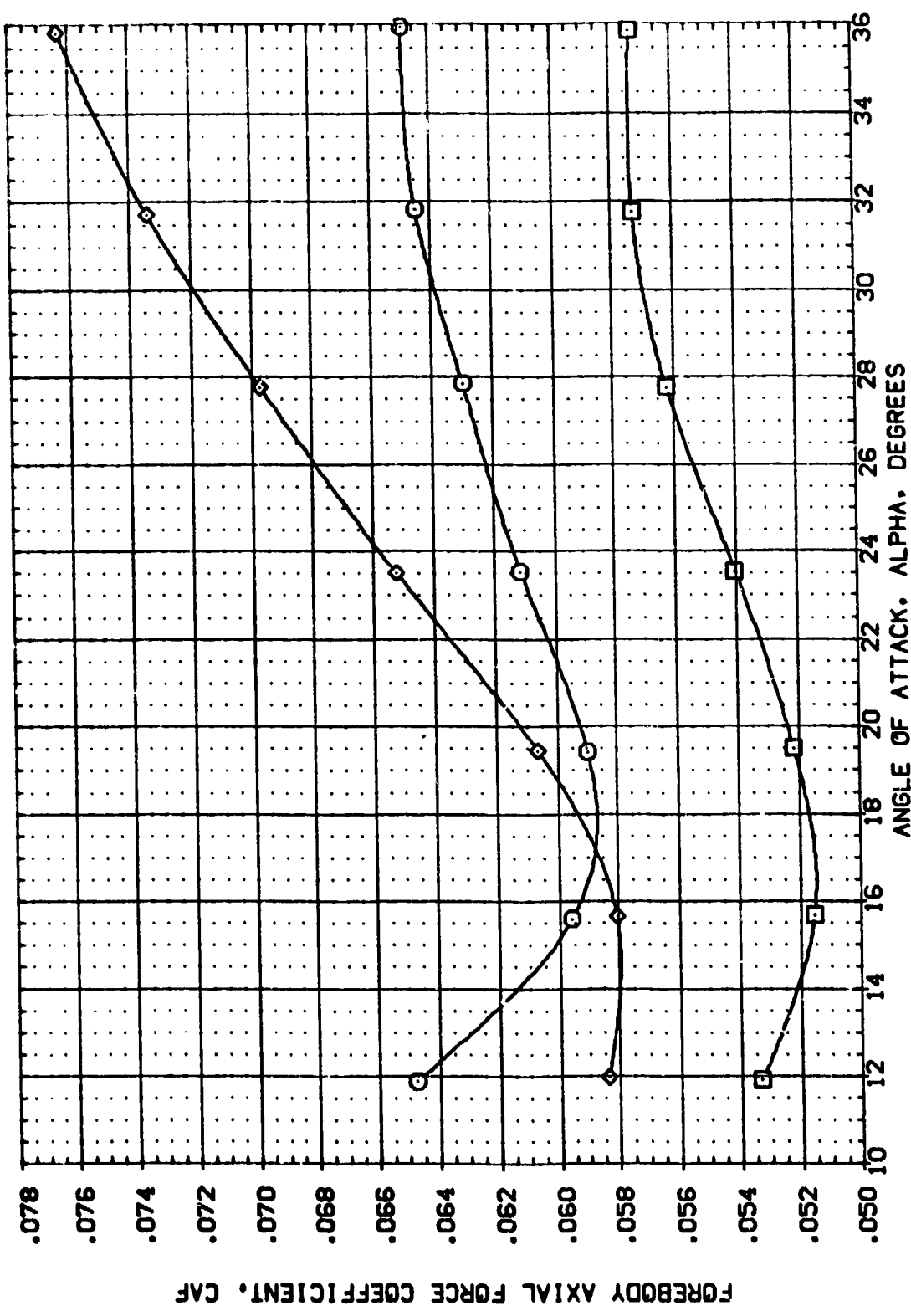


FIG. 4 ELEVON EFFECTIVENESS, RN/L=10., BOFLAP=0.0
 (A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPDRK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEFO04)	AVES 3.5-176 CAB7 140 A/B ORBITER	-40.000	55.000	.000	10.000	SREF 2690.0000 50.FT.
(BEFO01)	AVES 3.5-176 CAB7 140 A/B ORBITER	10.000	55.000	.000	10.000	UREF 1290.3000 IN.
(BEFO03)	AVES 3.5-176 CAB7 140 A/B ORBITER		55.000	.000	10.000	BRF 936.6600 IN.
						XTRP 1076.4800 IN.
						YTRP .0000 IN.
						ZTRP 375.0000 IN.
						SCALE .0150

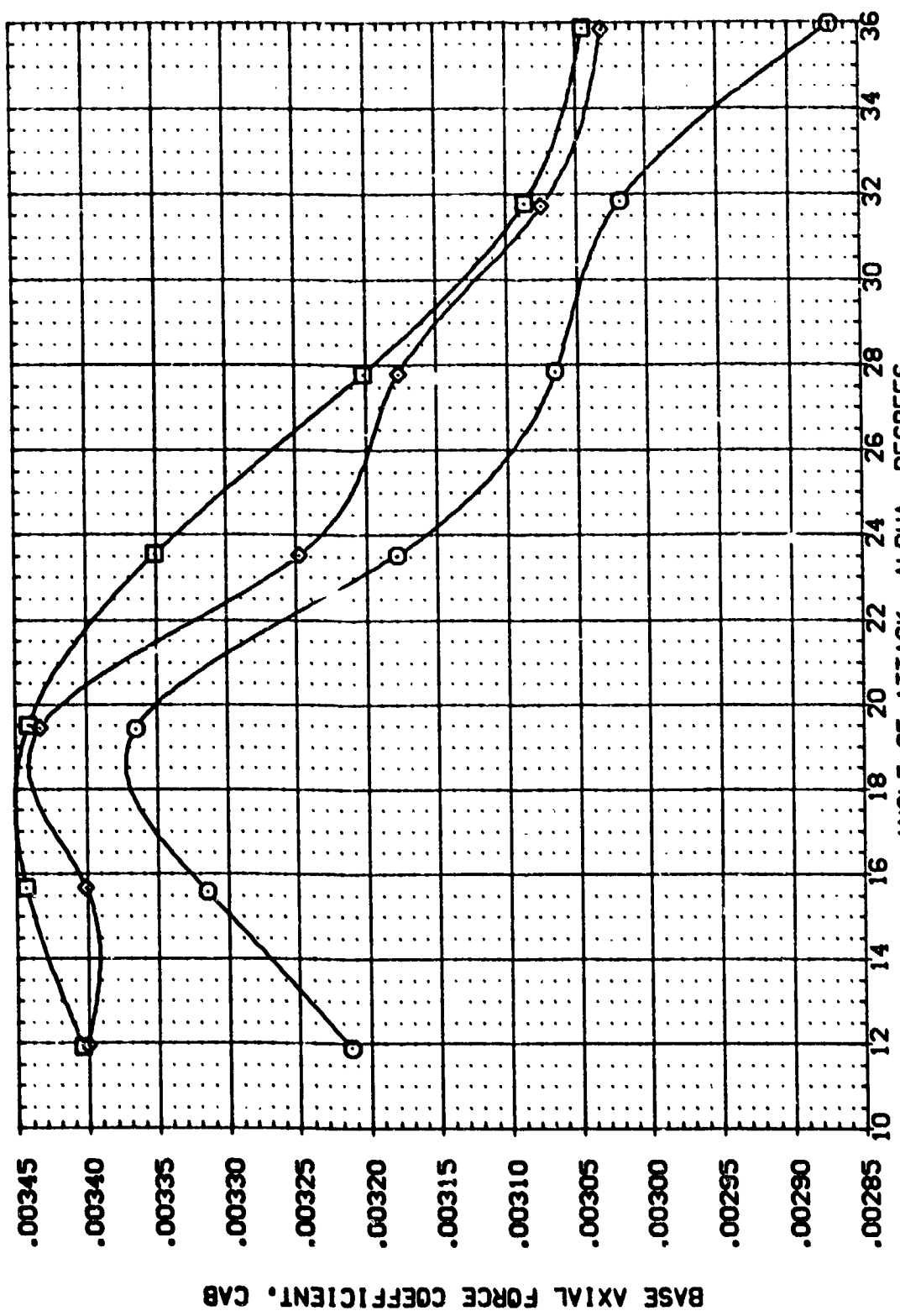


FIG. 4 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBO. CONFIGURATION DESCRIPTION

(BEFO04)	AVES 3.5-176	CA87	140	A/B	ORBITER
(BEFO01)	AVES 3.5-176	CA87	140	A/B	ORBITER
(BEFO03)	AVES 3.5-176	CA87	140	A/B	ORBITER

ELEVON SP05BK BDFLAP RN/L
 -40.000 99.000 .000 10.000
 .000 99.000 .000 10.000
 10.000 99.000 .000 10.000

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 1290.3000 IN.
 XREF 536.6800 IN.
 YREF 1076.4800 IN.
 ZMRP 375.0000 IN.
 SCALE .0150

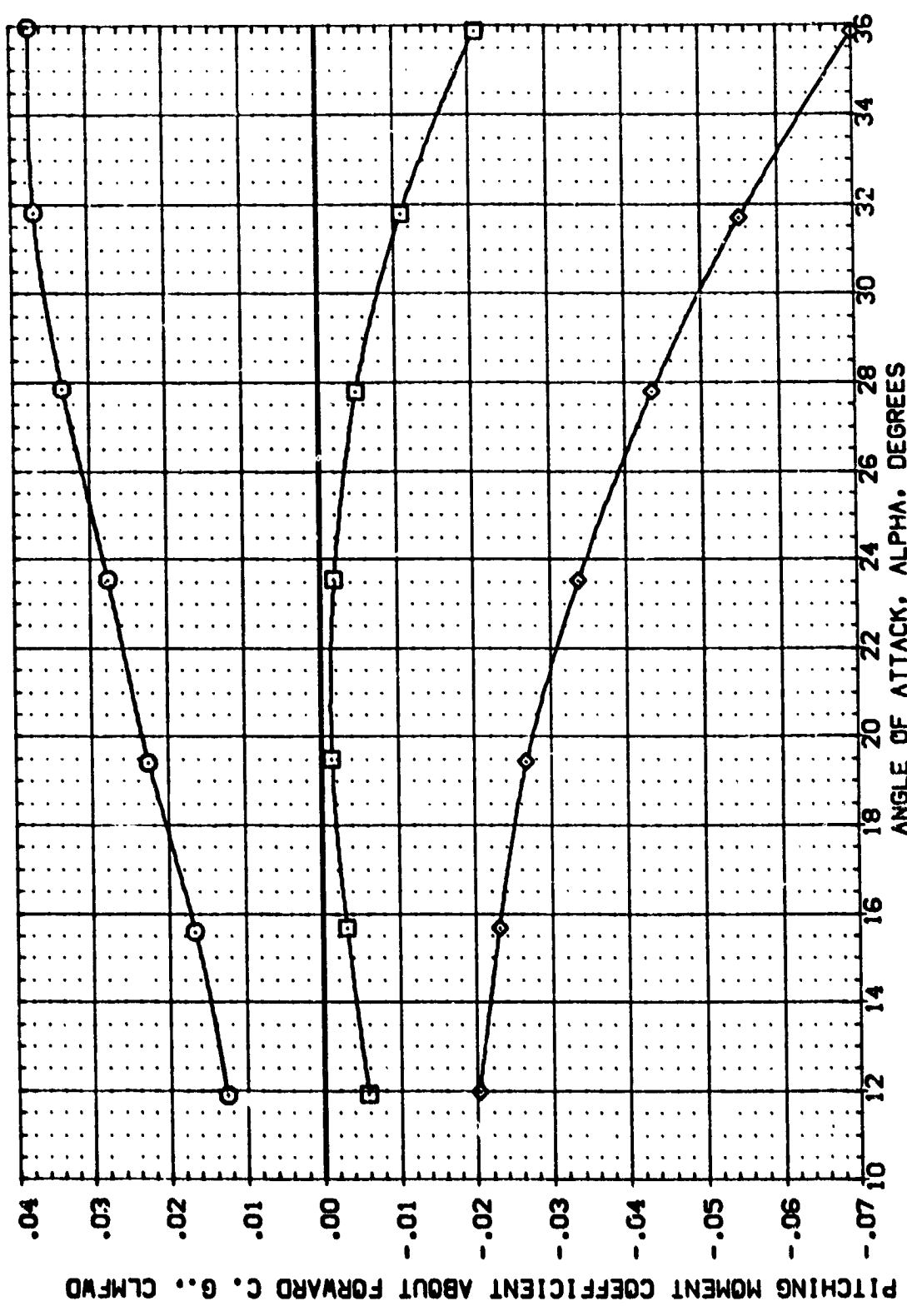


FIG. 4 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	F-ELEVON	SPDRK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEF004)	AMES 3.5-176 CM87 140 A/B CRBITER	-40.000	55.000	.000	10.000	SREF 2690.0000 SO.FT.
(BEF001)	AMES 3.5-176 CM87 140 A/B CRBITER	10.000	55.000	.000	10.000	LREF 1290.0000 IN.
(BEF003)	AMES 3.5-176 CM87 140 A/B CRBITER	10.000	55.000	.000	10.000	BREF 926.6800 IN.
						XTRP 1076.4800 IN.
						YTRP .0000 IN.
						ZTRP 375.0000 IN.
						SCALE .0150 SCALE

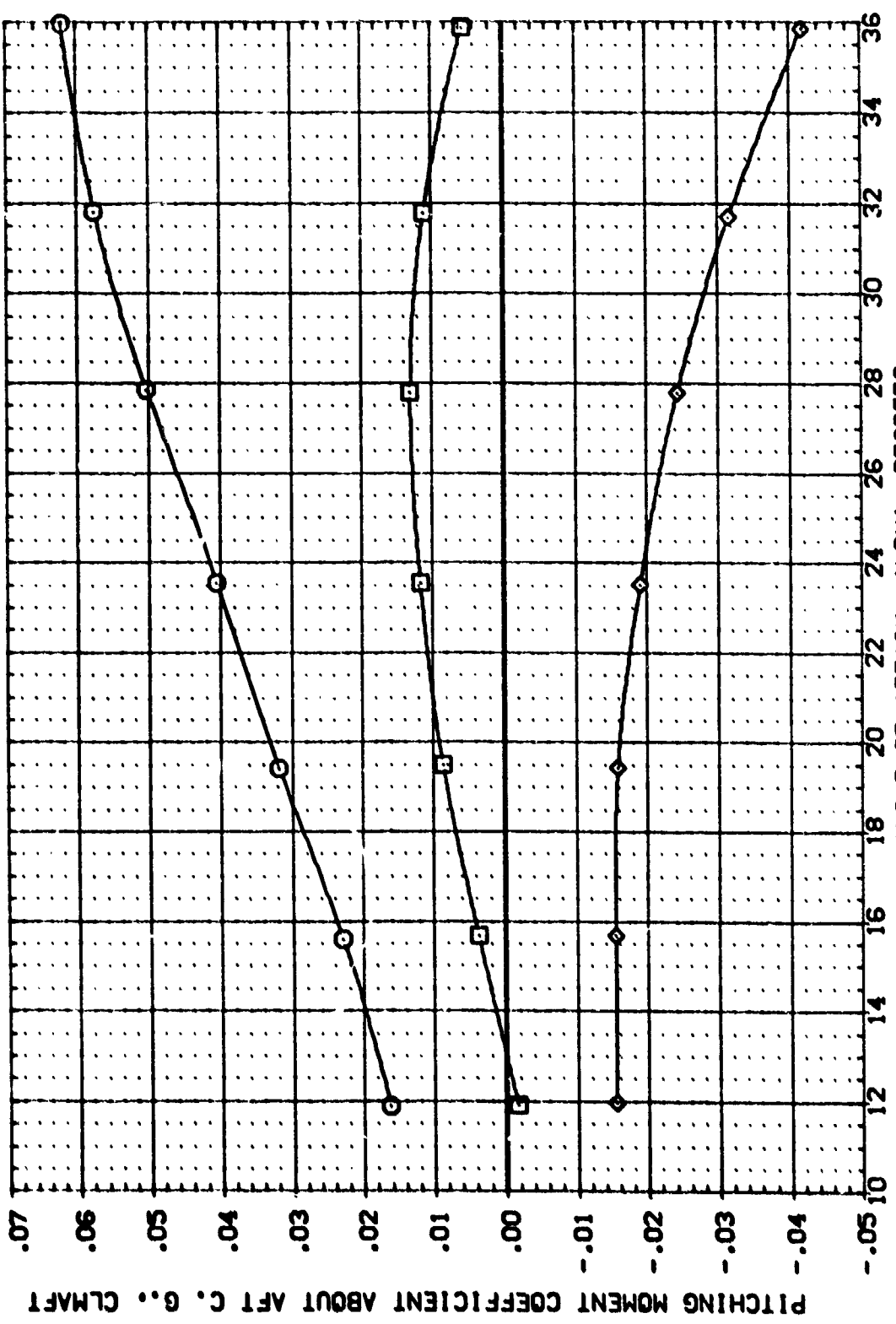


FIG. 4 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=0.0

(M)MACH = 7.32

DATA SET SYMBOL (BEFO01) (BEFO01) (BEFO03)

CONFIGURATION DESCRIPTION
 AMES 3.5-176 D467 140 A/B ORBITER
 AMES 3.5-176 D467 140 A/B ORBITER
 AMES 3.5-176 D467 140 A/B ORBITER

ELEVON SPOONK BOFLAP RN/L
 -40.000 55.000 10.000 10.000
 10.000 55.000 10.000 10.000

REFERENCE INFORMATION
 SREF 2850.0000 50.FT.
 LREF 1250.3000 IN.
 BREF 936.6800 IN.
 X-TRP 1076.4800 IN.
 Y-TRP 375.0000 IN.
 Z-TRP 0.0000 IN.
 SCALE .0150 SCALE

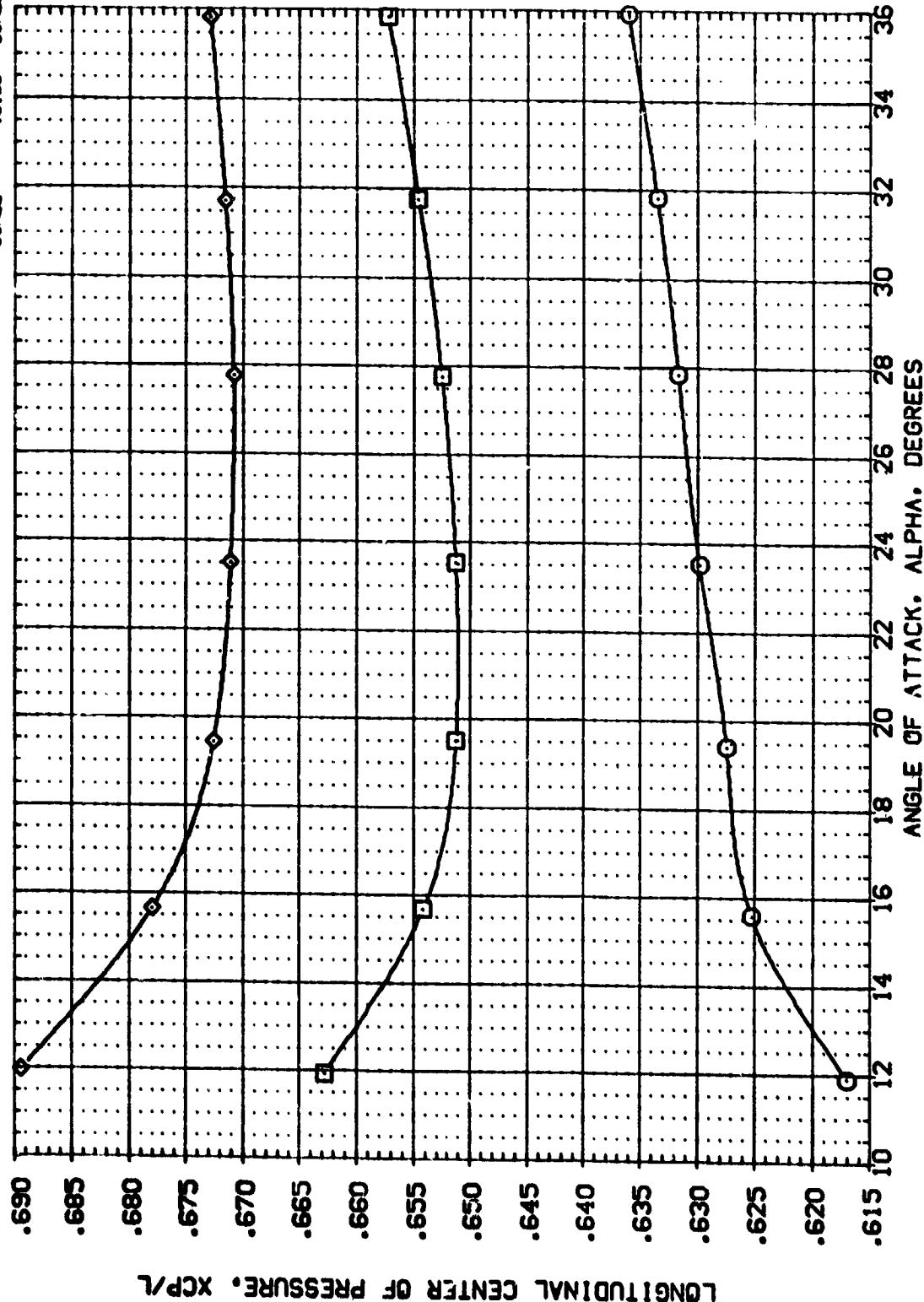


FIG. 4 ELEVON EFFECTIVENESS, RN/L=10., BOFLAP=0.0

[A]MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPORBK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEF004)	AMES 3-5-176 OAB7 140 A/B ORBITER	-40.000	55.000	.000	10.000	SREF 2650.0000 50.FT.
(BEF001)	AMES 3-5-176 OAB7 140 A/B ORBITER	10.000	55.000	.000	10.000	LREF 1250.3000 IN.
(BEF003)	AMES 3-5-176 OAB7 140 A/B ORBITER	10.000	55.000	.000	10.000	BREF 93.6800 IN.
						XPRP 1076.1800 IN.
						YPRP 0.0000 IN.
						ZPRP 375.0000 IN.
						SCALE .0150 SCALE

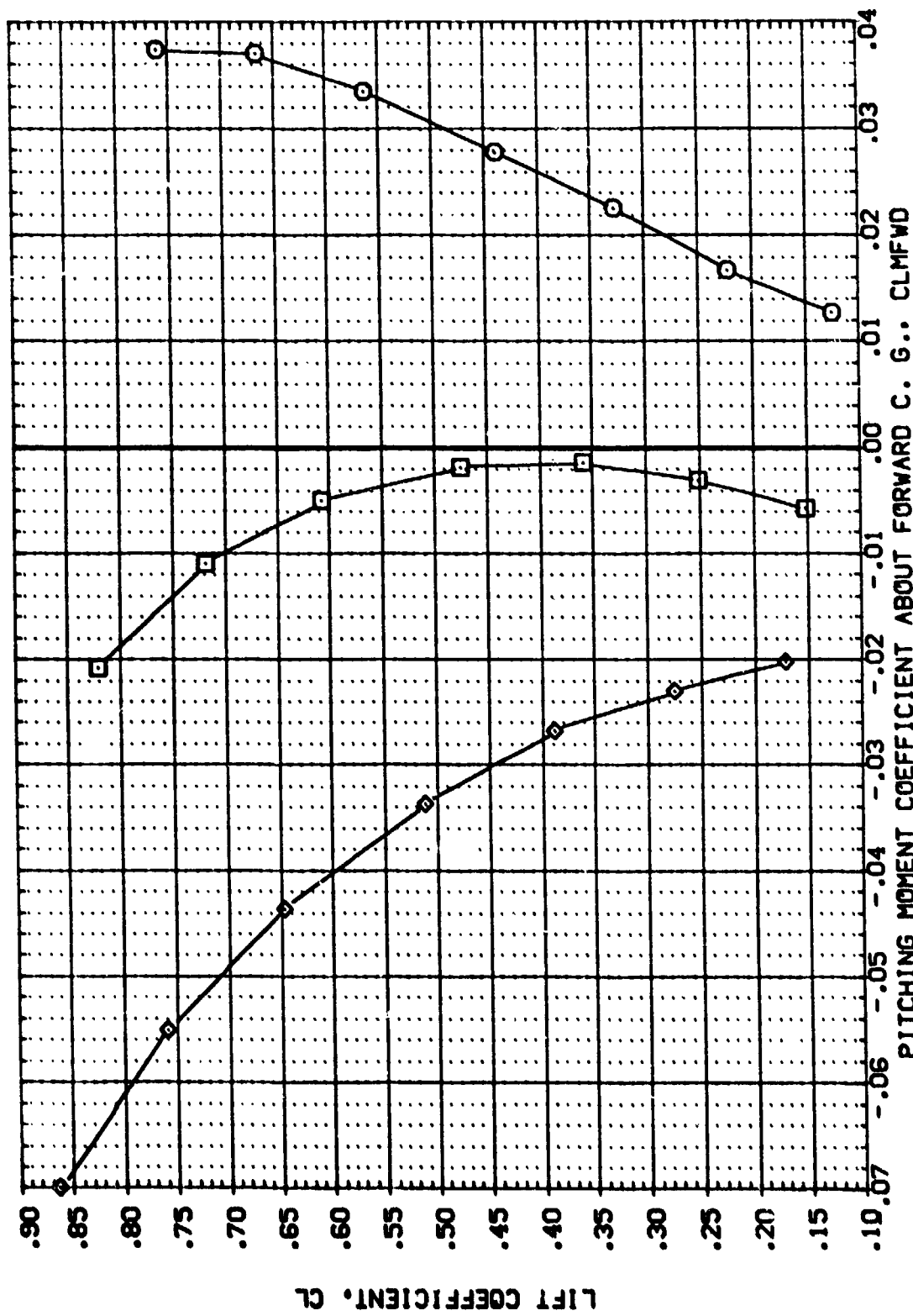


FIG. 4 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=0.0
(A)MACH = 7.32

DATA SET SYMBOL: (BEF004) (BEF001) (BEF003)

CONFIGURATION DESCRIPTION:
 ARES 3.5-176 DAG7 140 A/B ORBITER
 ARES 3.5-176 DAG7 140 A/B ORBITER
 ARES 3.5-176 DAG7 140 A/B ORBITER

ELEVON: -40.000, .000, 10.000
 SPDRK: 55.000, 55.000, 55.000
 BDFLAP: .000, .000, .000
 RN/L: 10.000, 10.000, 10.000

REFERENCE INFORMATION:
 SREF: 2680.0000 SQ.FT.
 LREF: 1250.3000 IN.
 BREF: 536.6800 IN.
 XMRP: 1076.4800 IN.
 YMRP: .0000 IN.
 ZMRP: 375.0000 IN.
 SCALE: .0150

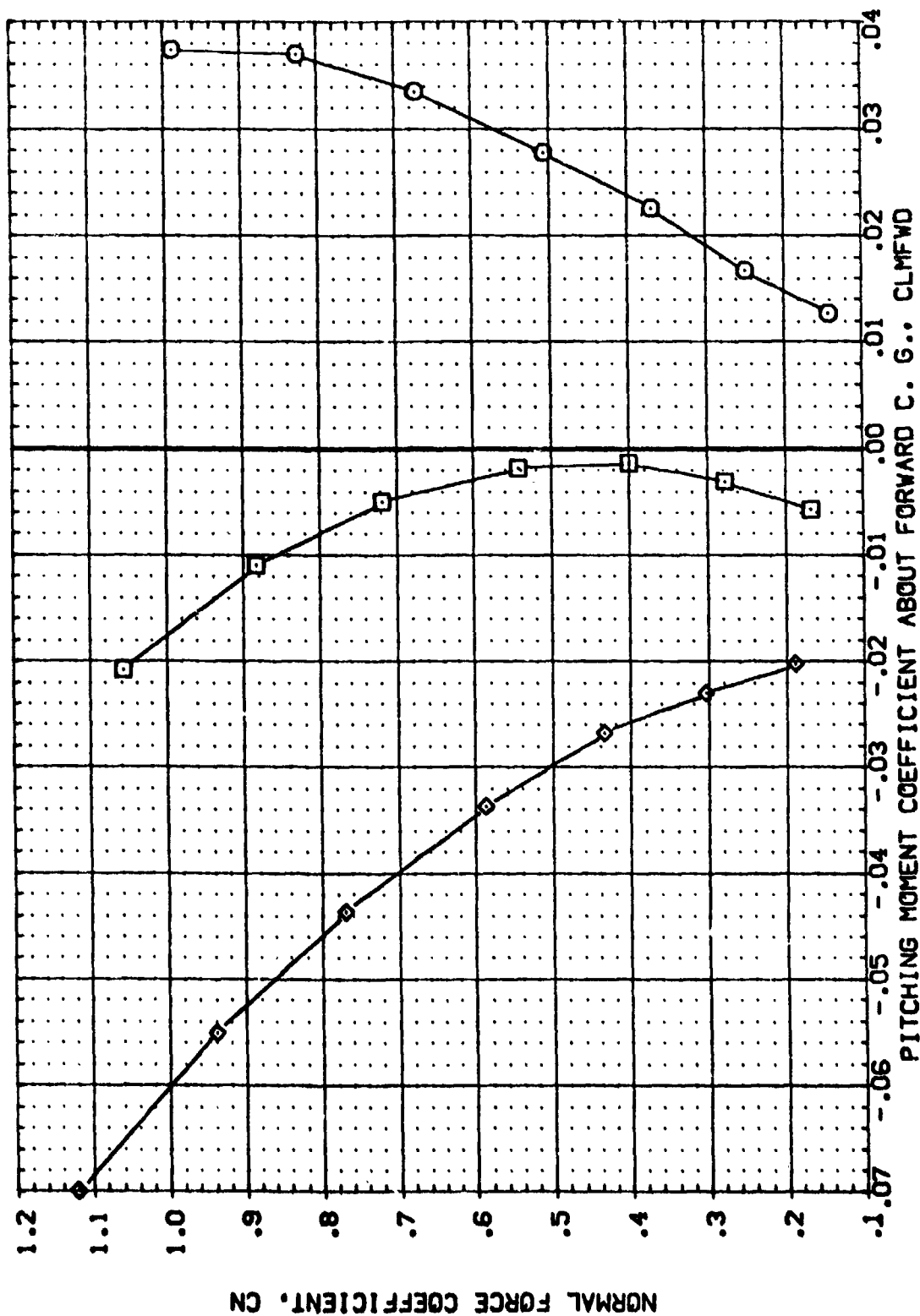


FIG. 4 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEFO04)	AVES 3.5-176 CAB7 140 A/B CRBITER	-40.000	55.000	.000	10.000	SREF 2690.0000 SO.FT.
(BEFO01)	AVES 3.5-176 CAB7 140 A/B CRBITER	.000	52.000	.000	10.000	LREF 1290.3000 IN.
(BEFO03)	AVES 3.5-176 CAB7 140 A/B CRBITER	10.000	55.000	.000	10.000	BREF 956.6800 IN.
						XMRP 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150 SCALE

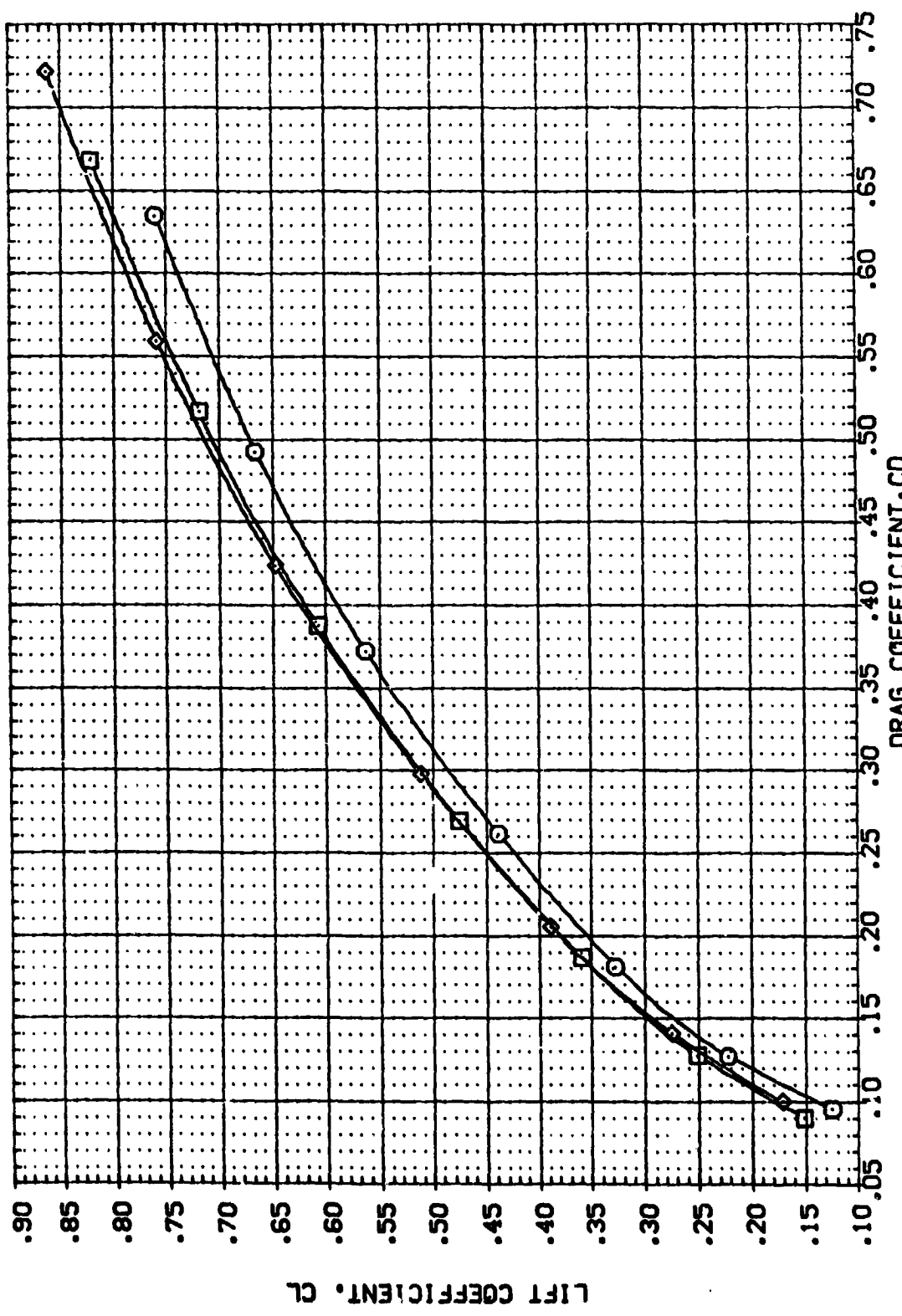
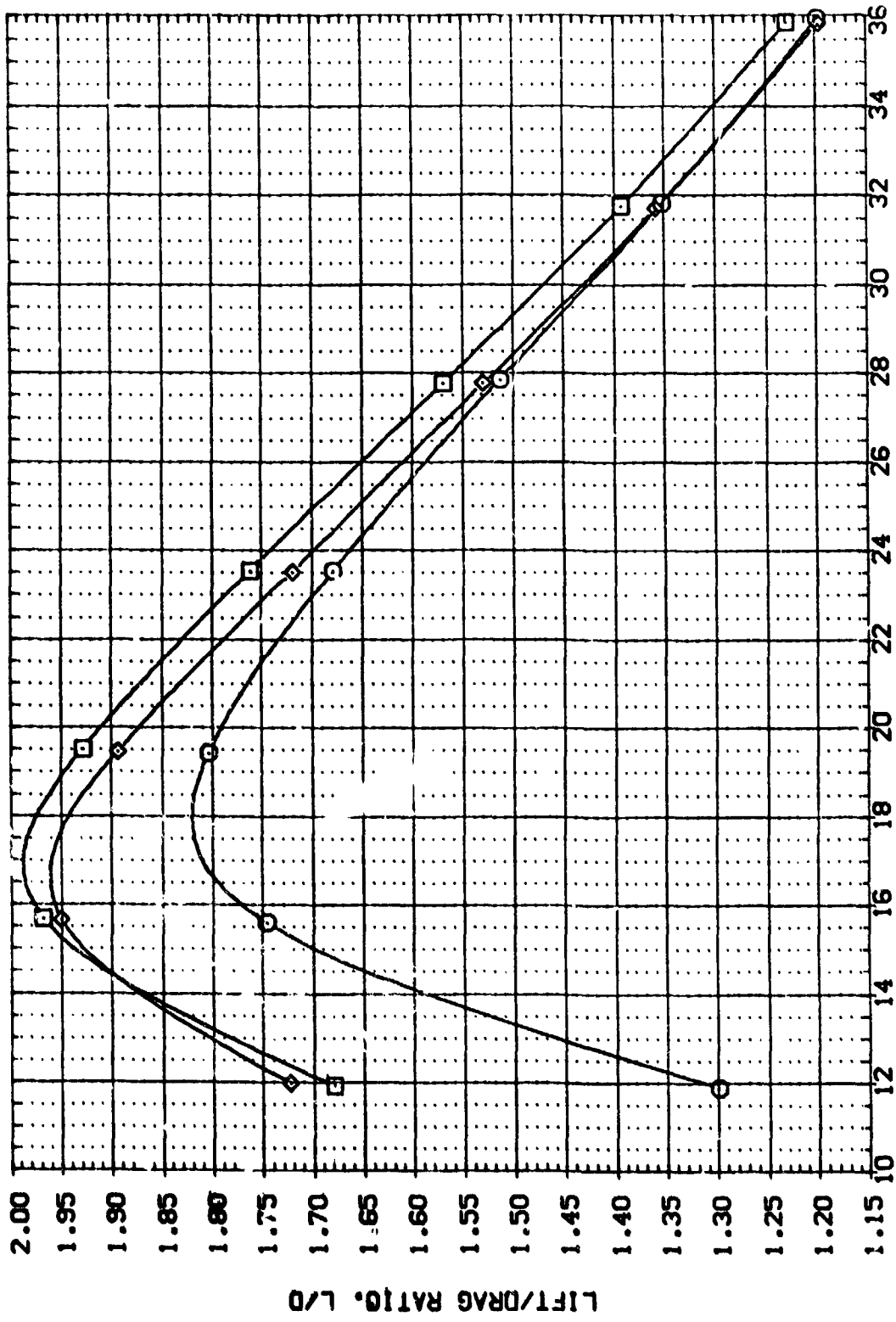


FIG. 4 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPDRK	BDFLAP	RN/L	REFERENCE INFORMATION
(AET004)	AVES 3.5-176 CAS7 140 A/B CASBITER	-40.000	55.000	.000	10.000	SREF 2650.0000 SO.FT.
(AET001)	AVES 3.5-176 CAS7 140 A/B CASBITER	.000	55.000	.000	10.000	LREF 1250.3000 IN.
(AET003)	AVES 3.5-176 CAS7 140 A/B CASBITER	10.000	55.000	.000	10.000	BREF 936.5800 IN.
						XREF 1076.4800 IN.
						YREF .0000 IN.
						ZREF 375.0000 IN.
						SCALE .0150 SCALE



ANGLE OF ATTACK, ALPHA, DEGREES

FIG. 4 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL		CONFIGURATION DESCRIPTION		REFERENCE INFORMATION		
(EEFD04)	□	AMES 3.5-176	DA87 140 A/B ORBITTER	SREF	2650.0000	SO.FT.
(EEFD03)	□	AMES 3.5-176	DA37 140 A/B ORBITTER	LREF	1250.3000	IN.
				BREF	936.6600	IN.
				XMRP	1076.4800	IN.
				YMRP	.0000	IN.
				ZMRP	375.0000	IN.
				SCALE	.0150	SCALE

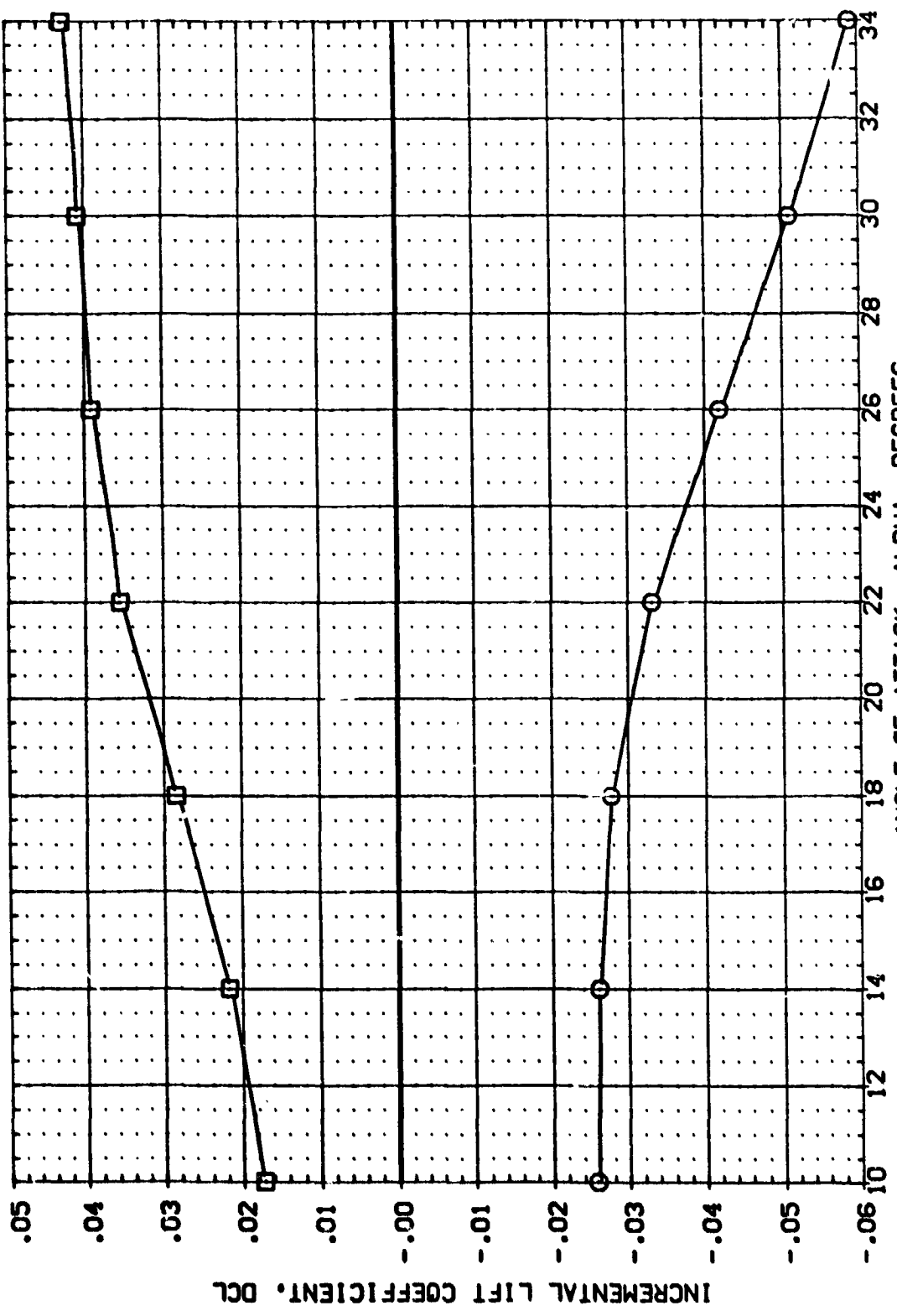


FIG. 4 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=0.0
(A)MACH = 7.32

DATA SET SYMBOL: (EF004) □ (EF003) □

CONFIGURATION DESCRIPTION:
 ASES 3.5-176 0A87 140 A/B DR8/ITER
 ASES 3.5-176 0A87 140 A/B DR8/ITER

DE: -10.000 10.000
 SPDRK: 55.000 55.000
 BOFLAP: .000 .000
 RN/L: 10.000 10.000

REFERENCE INFORMATION:
 SREF: 2690.0000 SO.FT.
 LREF: 1290.3000 IN.
 BREF: 936.6900 IN.
 YMRP: 1076.4800 IN.
 ZMRP: 375.0000 IN.
 SCALE: .0150

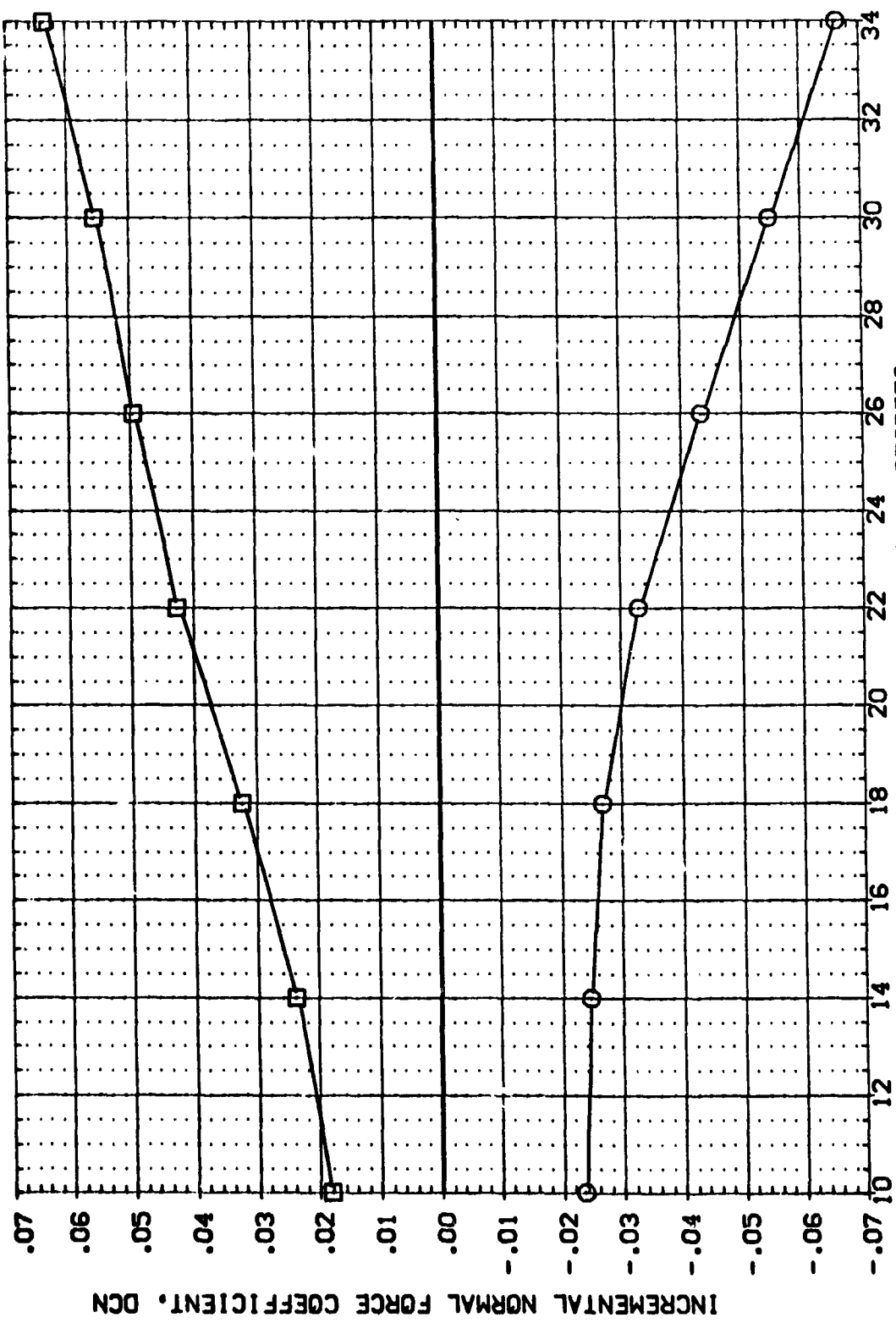


FIG. 4 ELEVON EFFECTIVENESS, RN/L=10., BOFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	DE	SPOBRK	BDFLAP	RN/L	REFERENCE INFORMATION
(EEF004)	AMES 3.5-176 DAG7 140 A/B ORBITER	-40.000	55.000	.000	10.000	SREF 2650.0000 SQ.FT.
(EEF003)	AMES 3.5-176 DAG7 140 A/B ORBITER	10.000	55.000	.000	10.000	LREF 1250.3000 IN.
						BREF 936.6800 IN.
						XMRP 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150

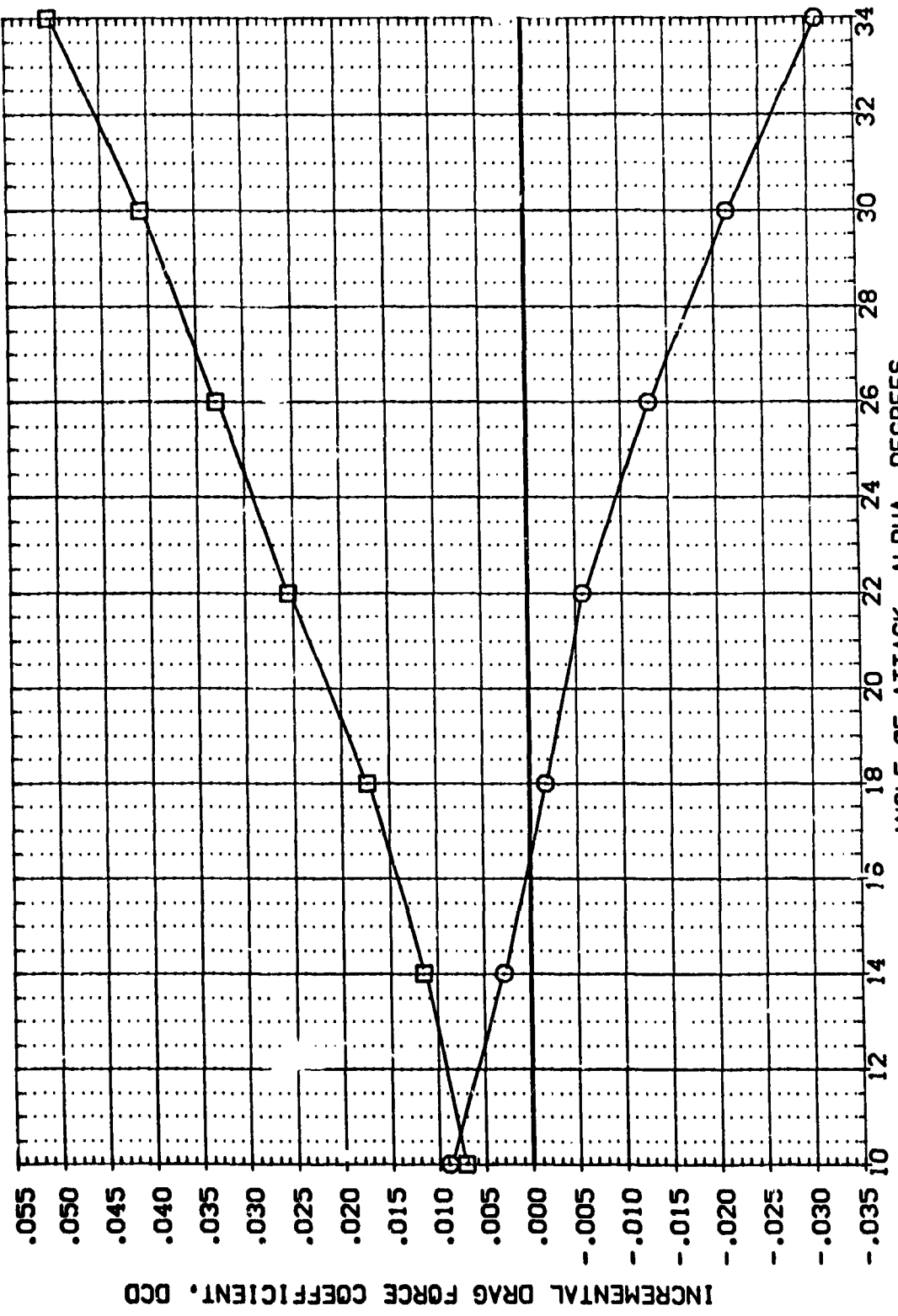


FIG. 4 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=0.0
 (A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	DE	SPOBRK	BDFLAP	RN/L	REFERENCE INFORMATION
(EEFO04)	AMES 3.5-176 OAB7 140 A/B ORBITER	-40.000	55.000	.000	10.000	SREF 2590.0000 SO.FT.
(EEFO03)	AMES 3.5-176 OAB7 140 A/B ORBITER	10.000	55.000	.000	10.000	LREF 1250.3000 IN.
						BREF 936.6800 IN.
						XMRP 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150

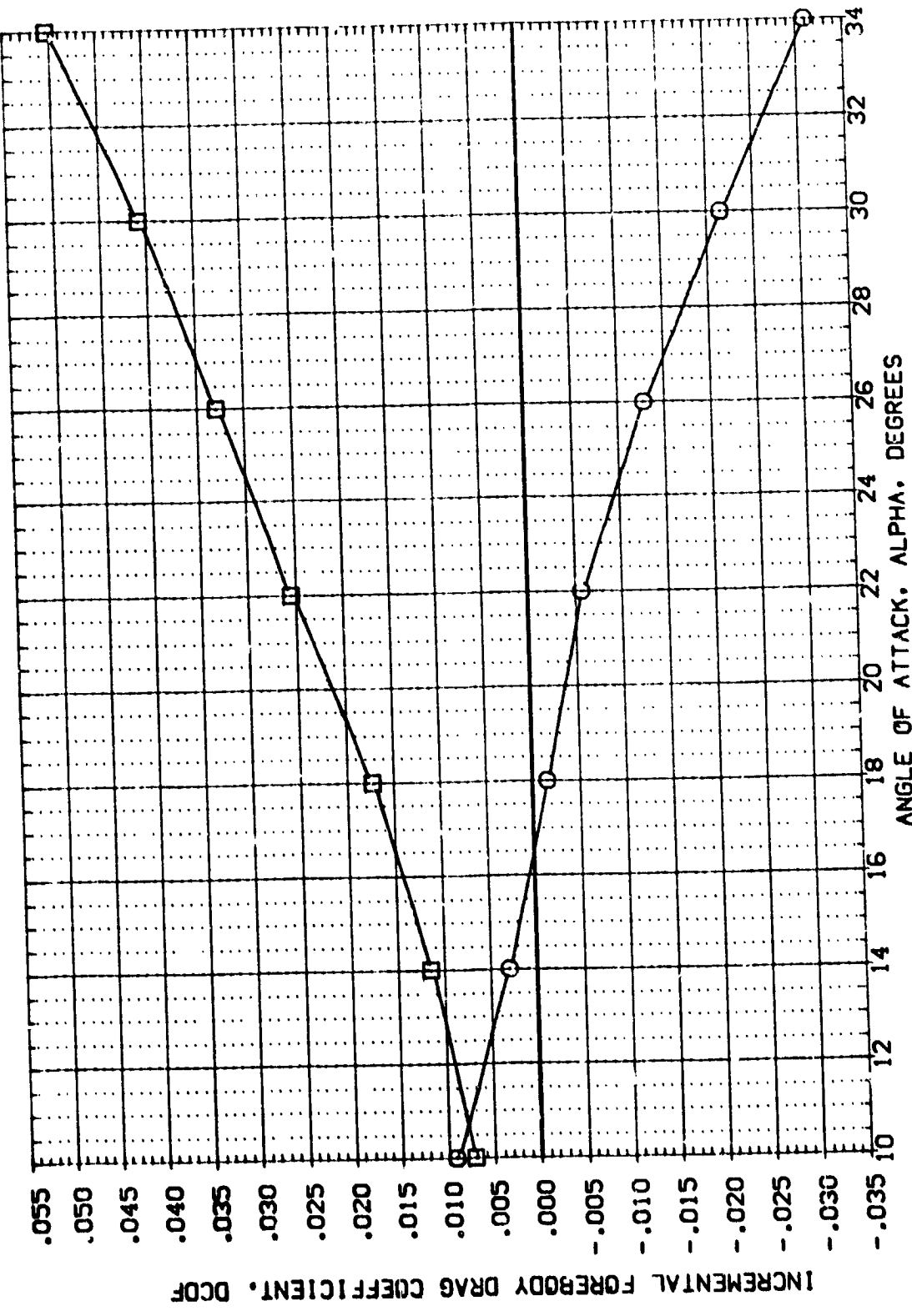
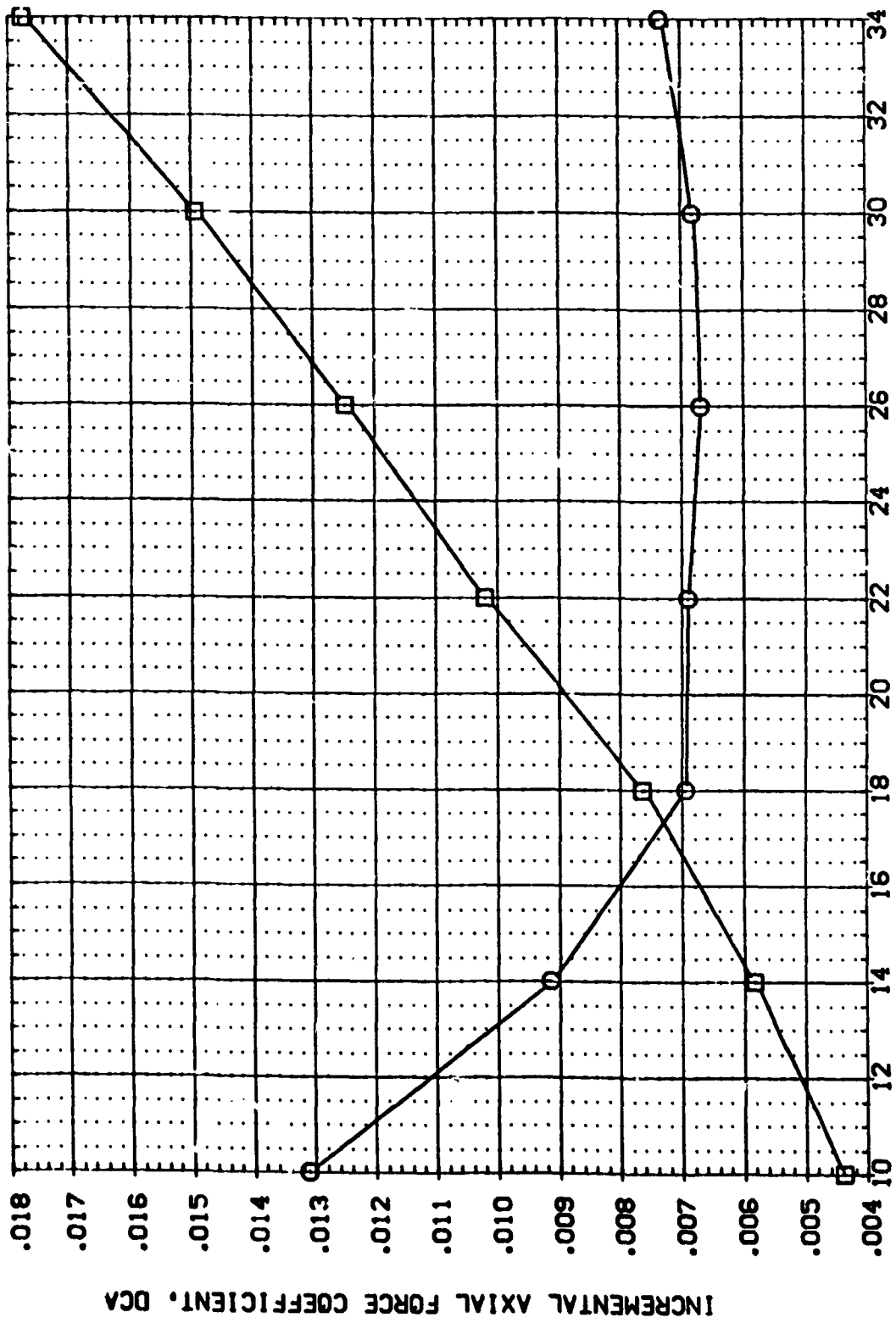


FIG. 4 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=0.0
 (A)MACH = 7.32

DATA SET SYMBOL: (EEFOO4) (EEFOO3)
 CONFIGURATION DESCRIPTION: ARES 3.5-176 OAG7 140 A/B ORBITER
 ARES 3.5-176 OAG7 140 A/B ORBITER
 DE: -10.000 10.000
 SPOBRK: 55.000 55.000
 BDFLAP: .000 .000
 RN/L: 10.000 10.000
 REFERENCE INFORMATION:
 SREF: 2690.0000 50. FT.
 LREF: 1290.5000 IN.
 BREF: 936.6900 IN.
 XPRP: 1076.4800 IN.
 YPRP: .0000 IN.
 ZPRP: 375.0000 IN.
 SCALE: .0150 SCALE



ANGLE OF ATTACK, ALPHA, DEGREES

FIG. 4 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL: (EF004) □
 CONFIGURATION DESCRIPTION: AMES 3.5-176 OMB7 140 A/B ORBITER
 REFERENCE INFORMATION: SREF 2650.0000 50. FT., LREF 1290.3000 IN., BREF 936.6800 IN., XREF 1076.4800 IN., YREF .0000 IN., ZREF .0000 IN., SCALE .0150

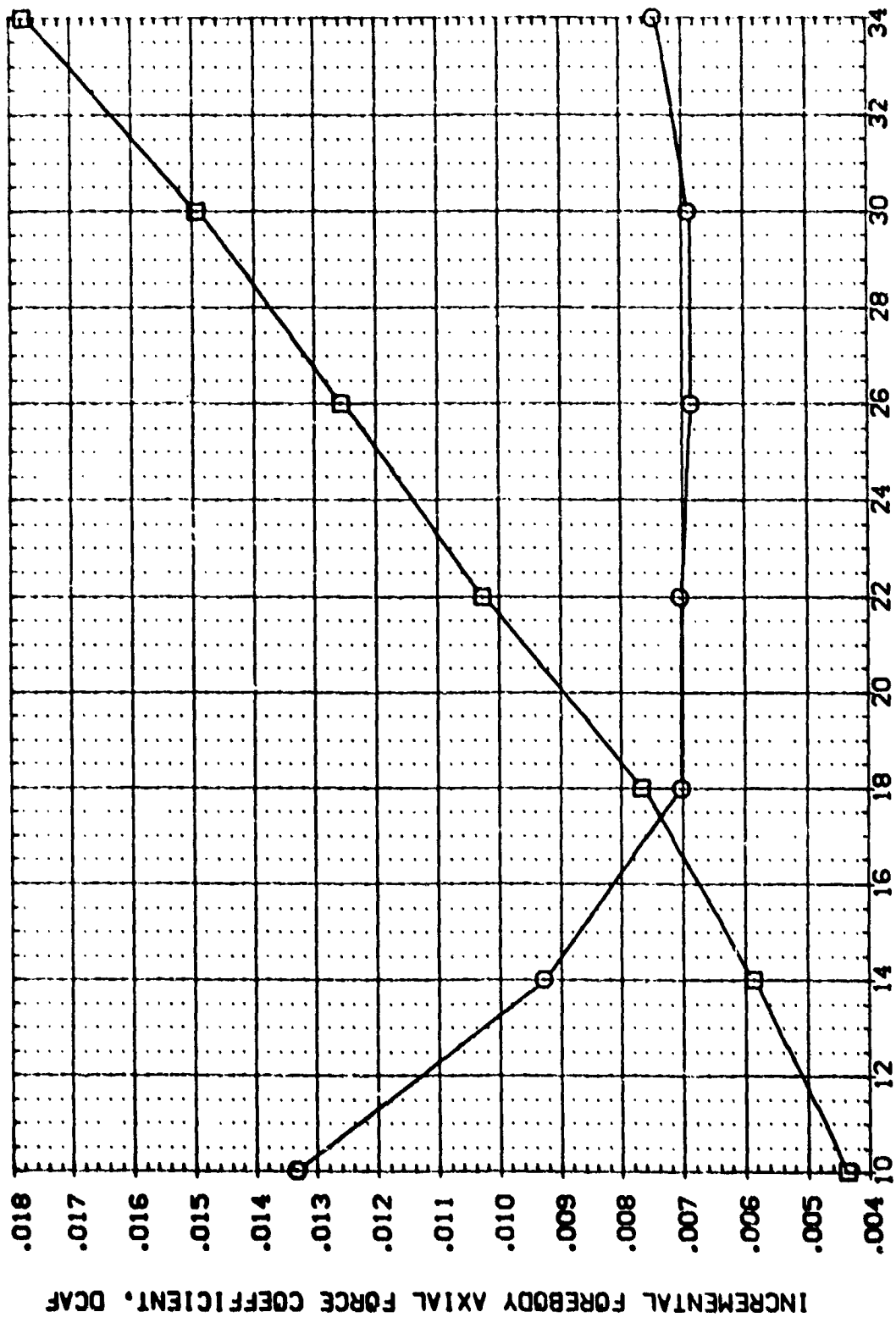


FIG. 4 ELEVON EFFECTIVENESS, RN/L=10., BOFLAP=0.0

(A)MACH = 7.32

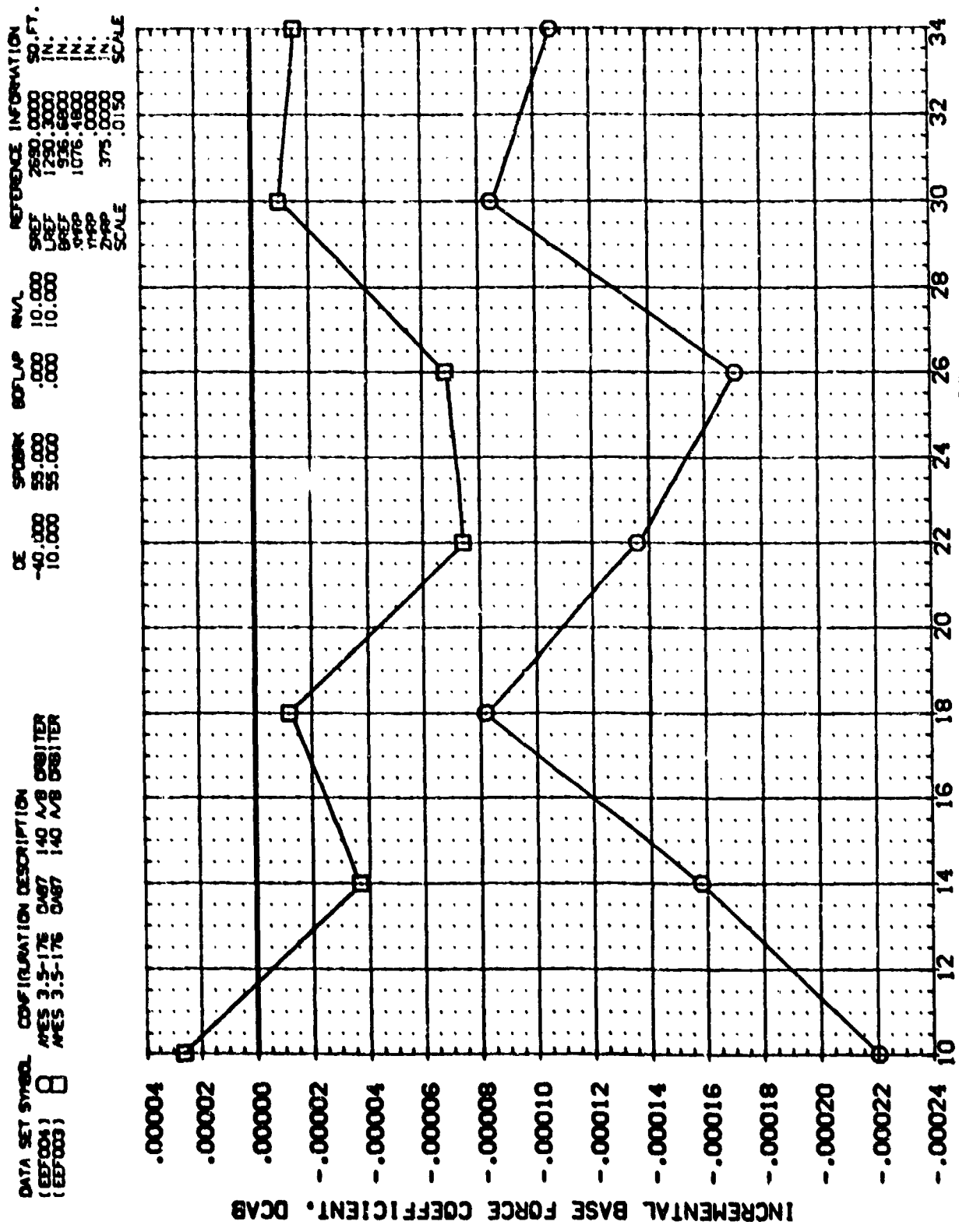


FIG. 4 ELEVON EFFECTIVENESS, RN/L=10., BOFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBL	CONFIGURATION DESCRIPTION	DE	SPOBK	BDFLAP	RN/L	REFERENCE INFORMATION
(EF004)	AMES 3.5-176 OMB7 140 A/B ORBITER	-10.000	55.000	.000	10.000	SREF 2690.0000 SO.FT.
(EF003)	AMES 3.5-176 OMB7 140 A/B ORBITER	10.000	55.000	.000	10.000	LREF 1290.3000 IN.
						BREF 536.6800 IN.
						XPRP 1076.4800 IN.
						YPRP .0000 IN.
						ZPRP 375.0000 IN.
						SCALE .0150

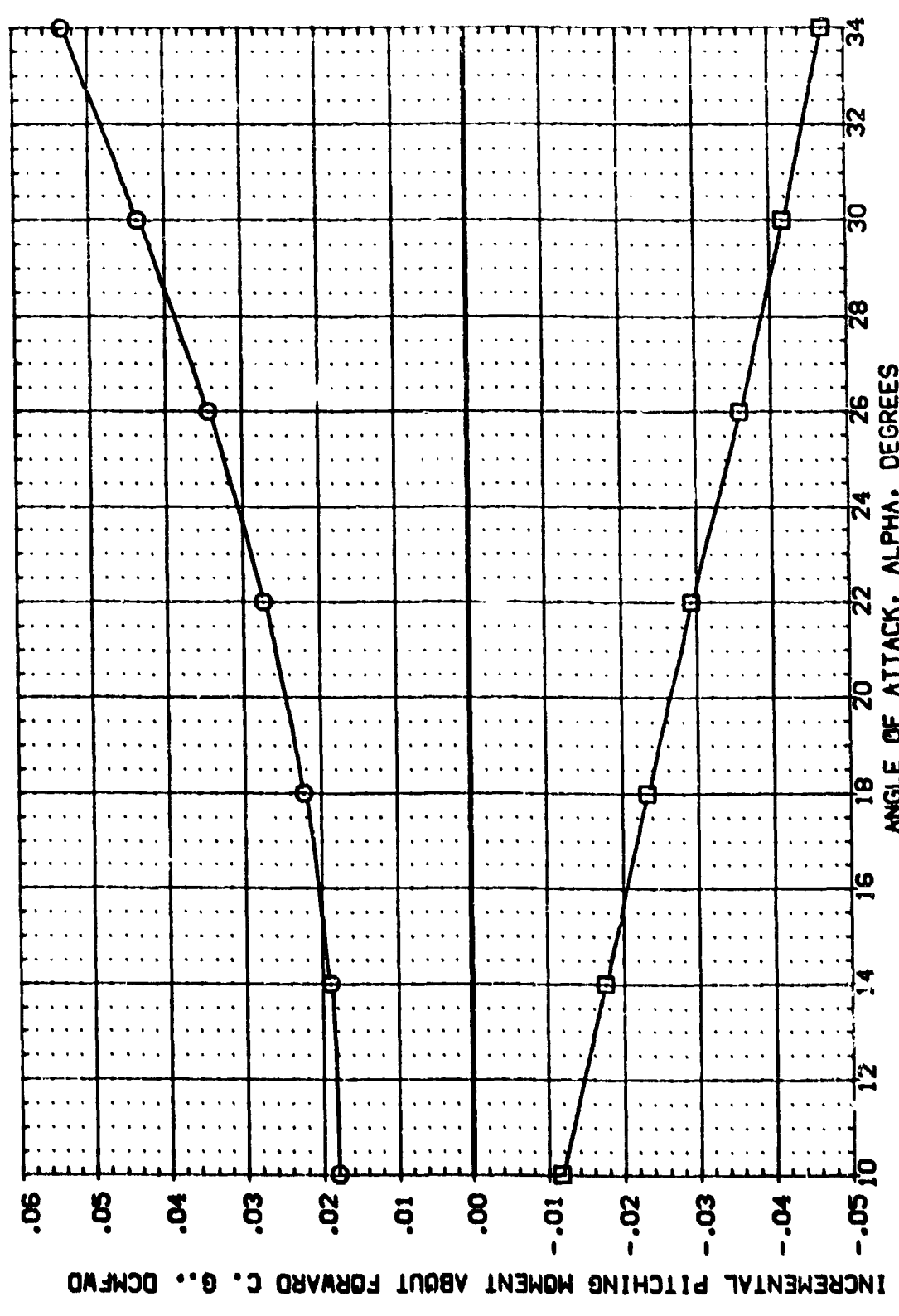


FIG. 4 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=0.0
 (A)MACH = 7.32

DATA SET SYMBOL (EDP001) □
 CONFIGURATION DESCRIPTION AMES 3.5-176 CMB7 140 A/B ORBITER
 DE SPDRX BOFLAP RN/L REFERENCE INFORMATION
 -40.000 55.000 .000 2690.0000 SQ.FT.
 10.000 55.000 .000 1250.3000 IN.
 1076.4800 IN.
 XTRP 1076.4800 IN.
 YTRP .0000 IN.
 ZTRP 375.0000 IN.
 SCALE .0150 SCALE

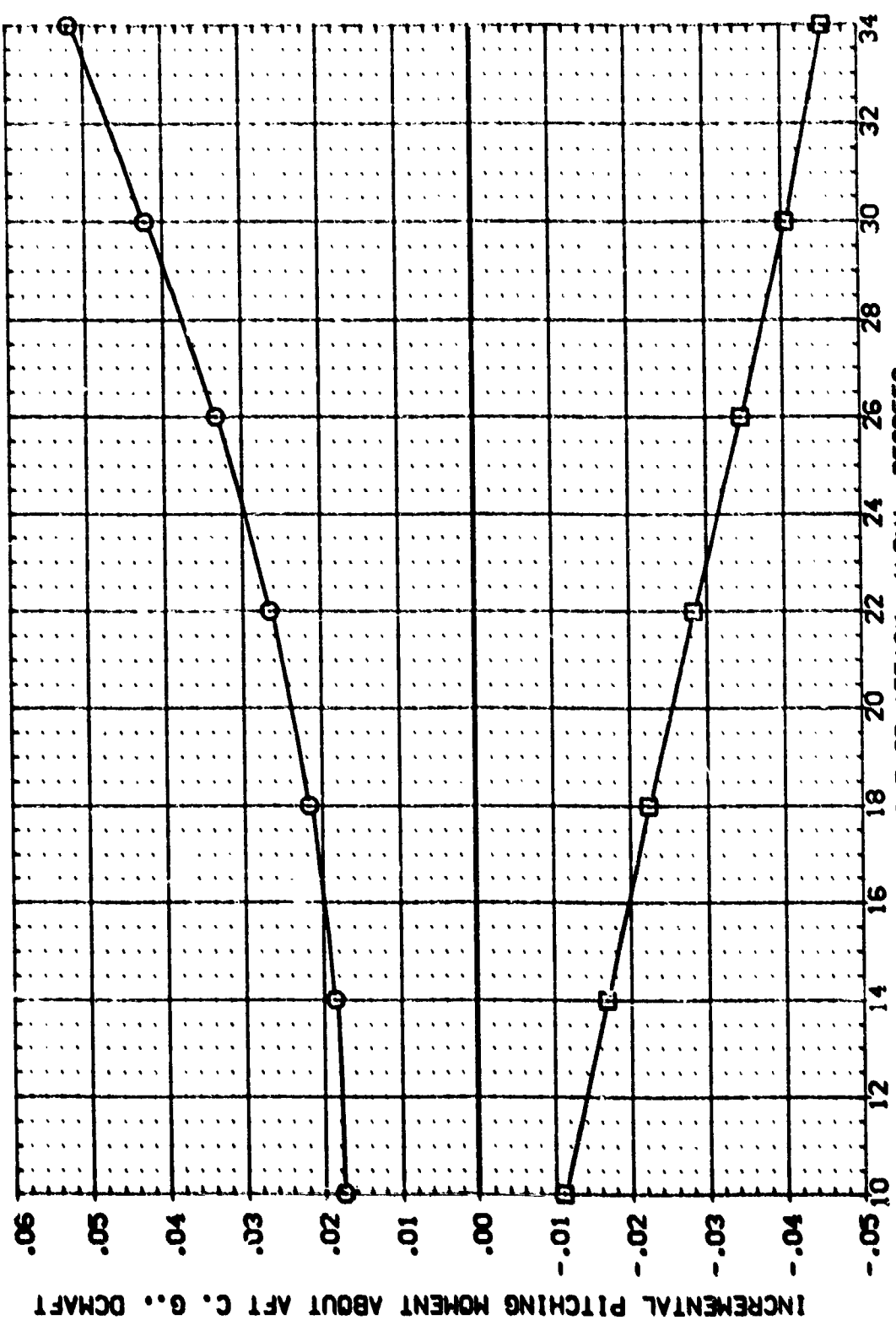


FIG. 4 ELEVON EFFECTIVENESS, RN/L=10., BOFLAP=0.0
 (A)MACH = 7.32

AMES 3.5-176 OA87 140 A/B ORBITER (FEF004)

SYMBL	ALPHA	MACH	PARAMETRIC VALUES		DATA SOURCE		ELEVON		REFERENCE INFORMATION	
○	10.000		7.300	BETA	.000	FEF001	.000	SREF	2690.0000	50.FT.
□	20.000	A1LAPN	.000	BOFLAP	.000	FEF004	.000	LREF	1290.3000	IN.
◇	30.000	RUDDER	.000	SPOBRK	95.000	FEF003	.000	XREF	936.6800	IN.
		RN/L	10.000					YREF	1076.4800	IN.
								ZREF	375.0000	IN.
								SCALE	.0150	SCALE

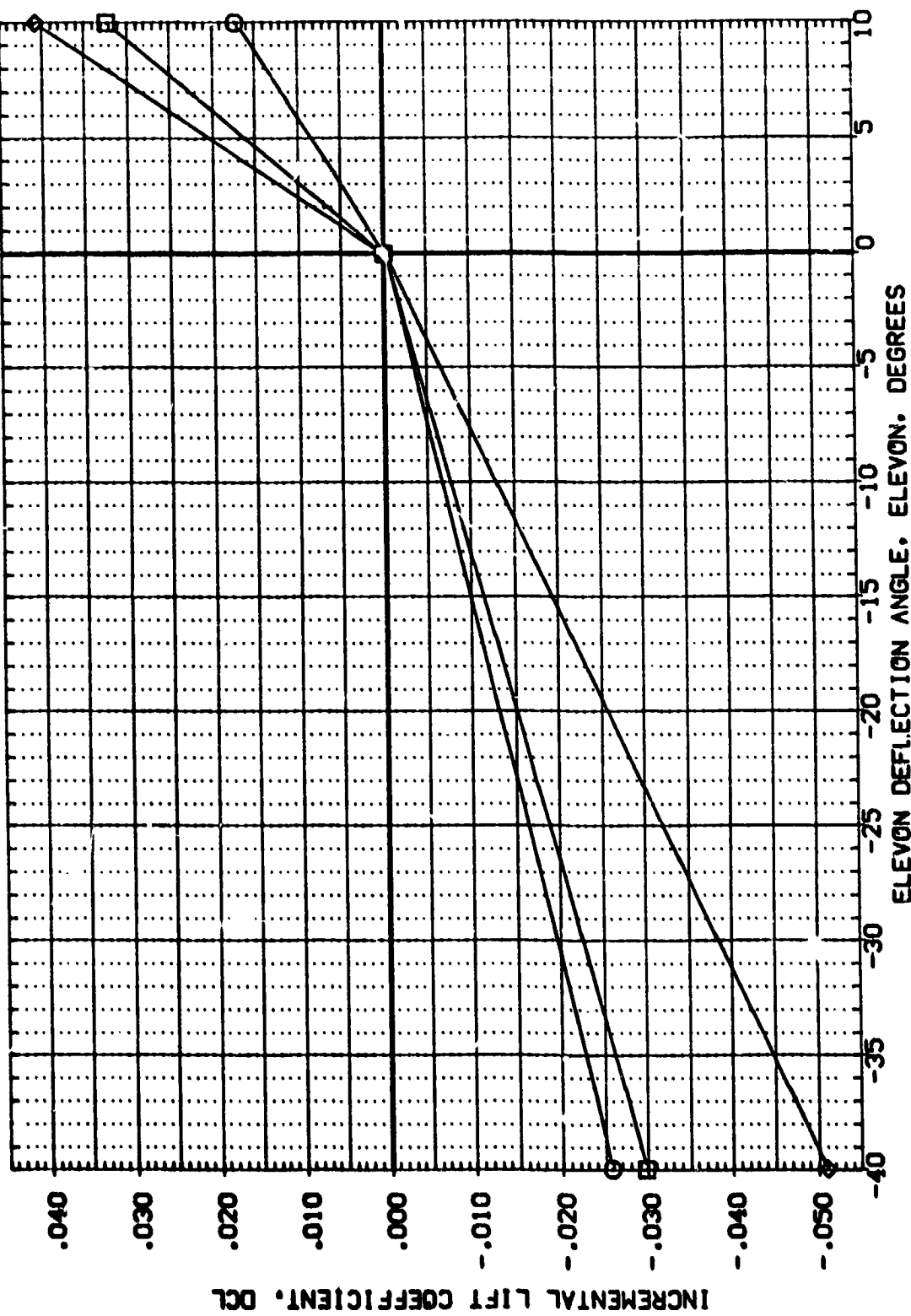


FIG. 4 ELEVON EFFECTIVENESS, RN/L=10., BOFLAP=0.0

AMES 3.5-176 OA87 140 A/B ORBITER (FEF004)

SYMBOL		ALPHA		MACH		AILLON		RUDDER		RN/L		PARAMETRIC VALUES		DATA SOURCE		ELEVON		DATASET		ELEVON		SREF		REFERENCE INFORMATION					
○	□	10.000	20.000	30.000	7.320	BETA	.000	BDFLAP	.000	SPOBRK	10.000	.000	FEF004	.000	FEF001	.000	FEF001	2650.0000	SO.FT.	1250.3000	IN.	926.6800	IN.	1076.4800	IN.	375.0000	IN.	.0150	SCALE

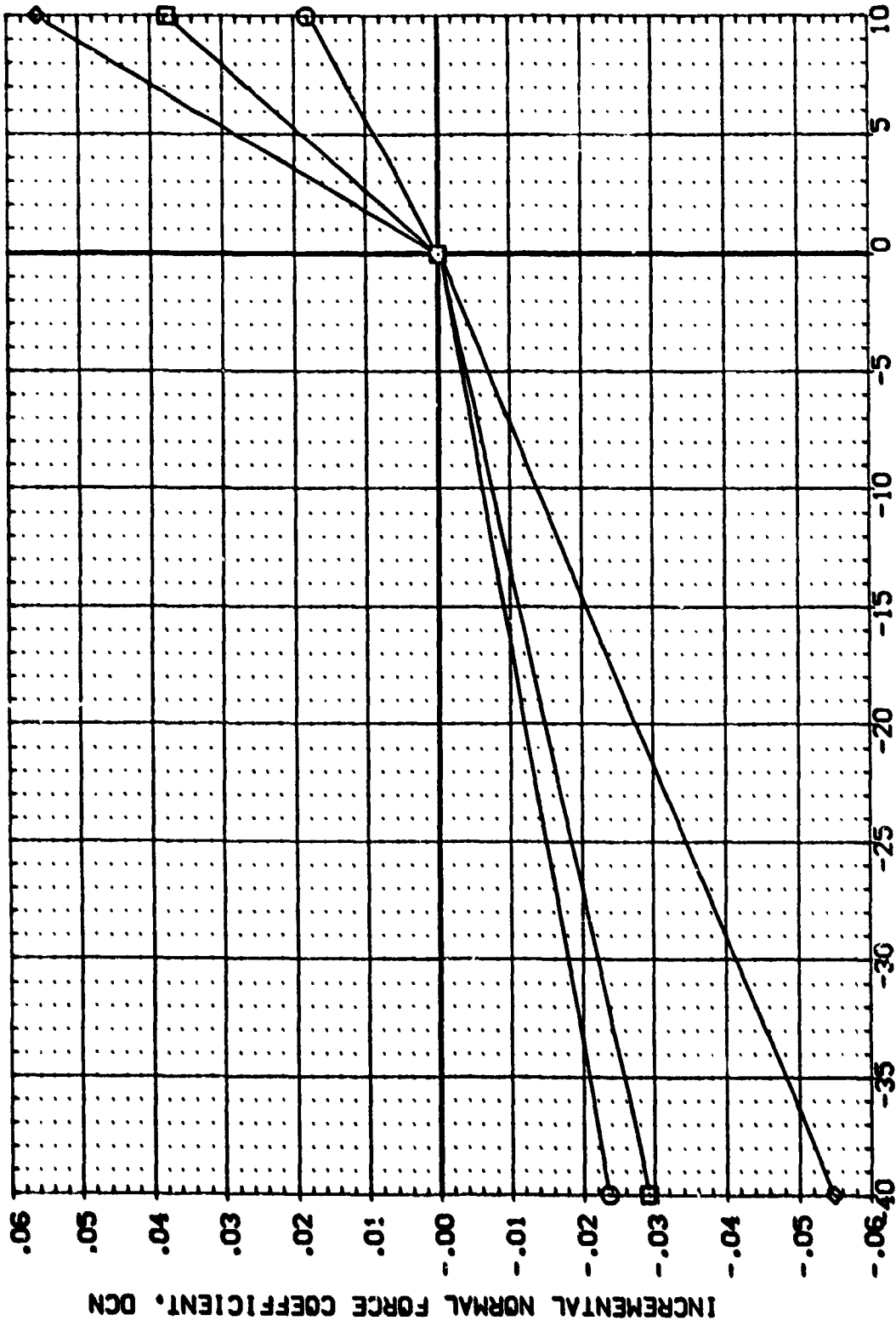


FIG. 4 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=0.0

AMES 3.5-176 0A87 140 A/B ORBITER (FEF004)

SYMBOL		ALPHA		MACH		PARAMETRIC VALUES		DATA SOURCE		REFERENCE INFORMATION	
											SO.FT.
○	10.000	7.320	BETA	.000	DATASET	ELEVON	SREF	2690.0000			IN.
□	20.000	.000	BDFLAP	.000	FEF004	-40.000	LREF	1290.3000			IN.
◇	30.000	.000	SFOBRK	\$5.000	FEF003	10.000	BREF	936.6800			IN.
		10.000					XMRP	1076.4800			IN.
							YMRP	.0000			IN.
							ZMRP	375.0000			SCALE
							SCALE	.0150			

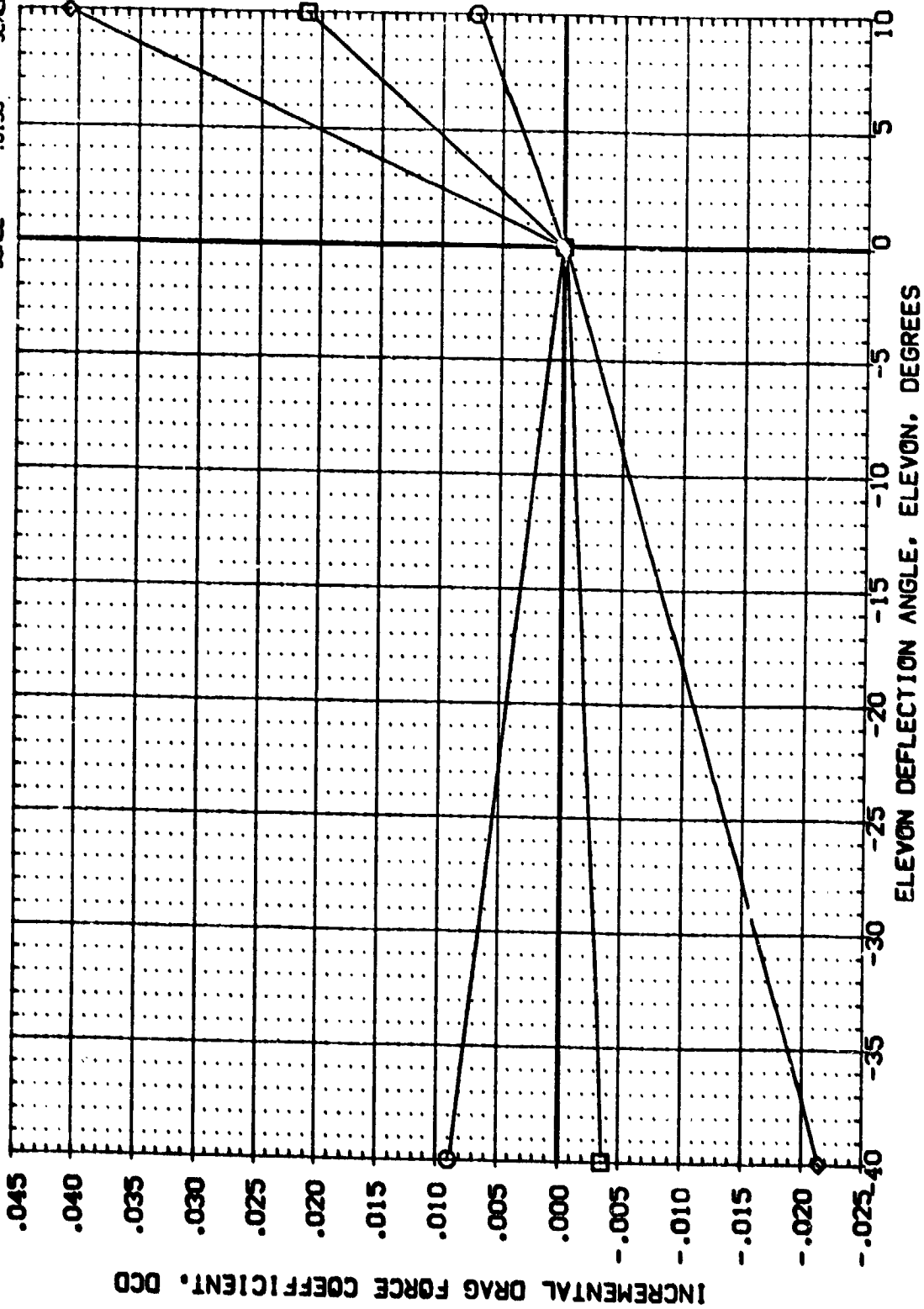


FIG. 4 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=0.0

AMES 3.5-176 OA87 140 A/B ORBITER (FEF004)

SYMBOL		PARAMETRIC VALUES		DATA SOURCE		ELEVON		REFERENCE INFORMATION	
○	ALPHA	10.000	7.320	.000	.000	SREF	2690.0000	SO.FT.	
□	MACH	20.000	.000	.000	.000	LREF	1290.3000	IN.	
◇	AILERON	30.000	.000	.000	.000	BREF	936.6000	IN.	
	RUDDER		.000	55.000	FEF003	YMRP	1076.4000	IN.	
	RN/L		10.000	10.000	FEF004	ZMRP	375.0000	IN.	
					FEF001	SCALE	.0150	SCALE	

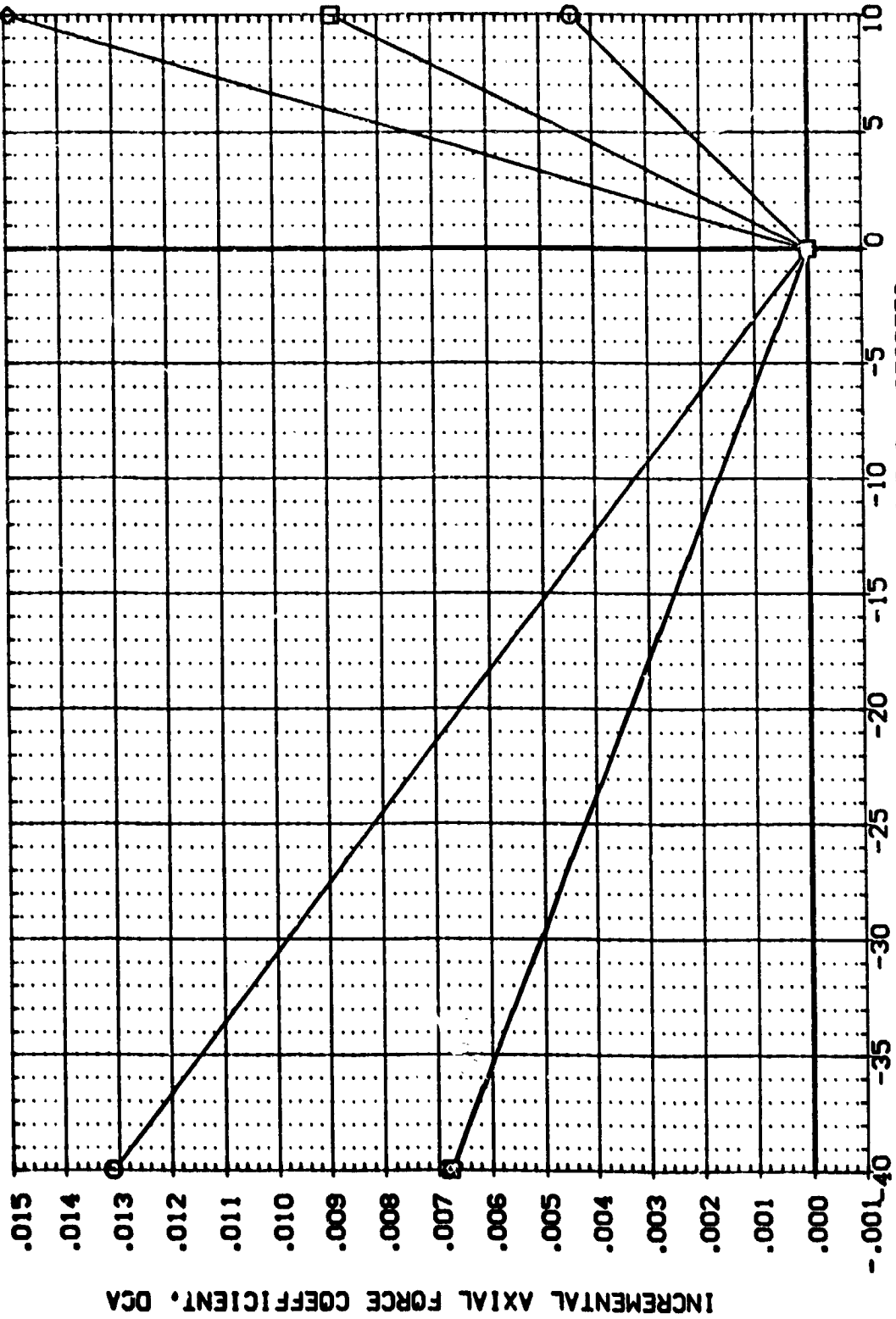
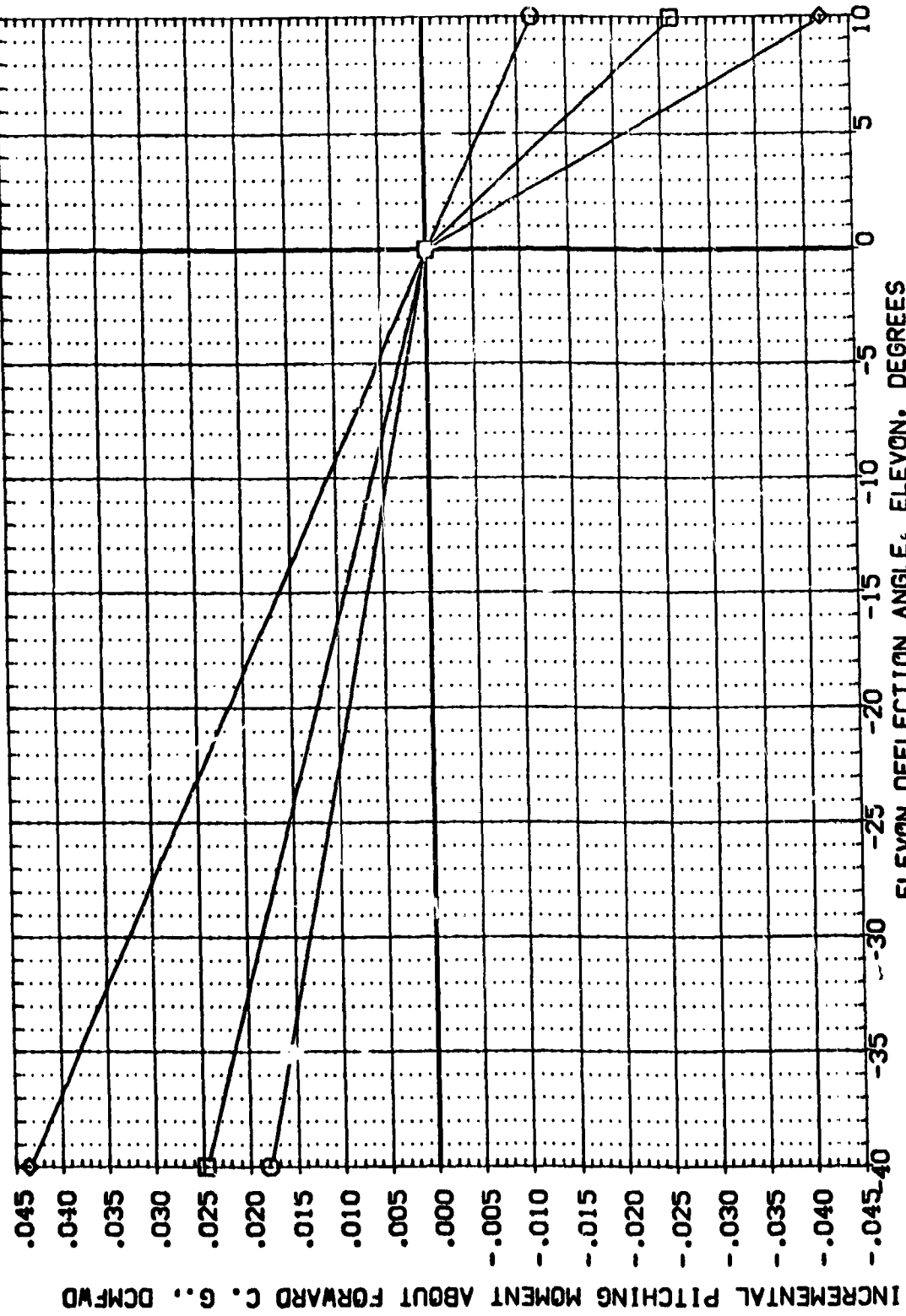


FIG. 4 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=C.0

(FEF004)

AMES 3.5-176 0A87 140 A/B ORBITER

SYMBOL	ALPHA	MACH	PARAMETRIC VALUES	DATA SOURCE	ELEVON	SREF	REFERENCE INFORMATION
○	10.000	7.320	BETA	ELEVON	.000	LREF	2690.0000 SQ.FT.
□	20.000	.000	BDFLAP	FEF004	.000	BREF	1290.3000 IN.
◇	30.000	.000	SPOBRK	FEF003	.000	MREF	936.6800 IN.
		10.000	RVL	55.000	.000	YREF	1076.4800 IN.
					.000	ZREF	375.0000 IN.
					SCALE	SCALE	.0150



ELEVON DEFLECTION ANGLE, ELEVON, DEGREES

FIG. 4 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=0.0

AMES 3.5-176 0A87 140 A/B ORBITER (FEF004)

SYMBOL	ALPHA	MACH	PARAMETRIC VALUES		DATA SOURCE	REFERENCE INFORMATION	
○	:0.000		7.320	BETA	.000	DATASET	SREF
□	20.000	ALJRON	.000	BOFLAP	.000	FEF001	LREF
◇	30.000	RUDDER	.000	SPOBRK	55.000	FEF003	BREF
		RN/L	10.000		10.000		XMRP
							YMRP
							ZMRP
							SCALE
							SO.FT.
							IN.
							IN.
							IN.
							IN.
							SCALE

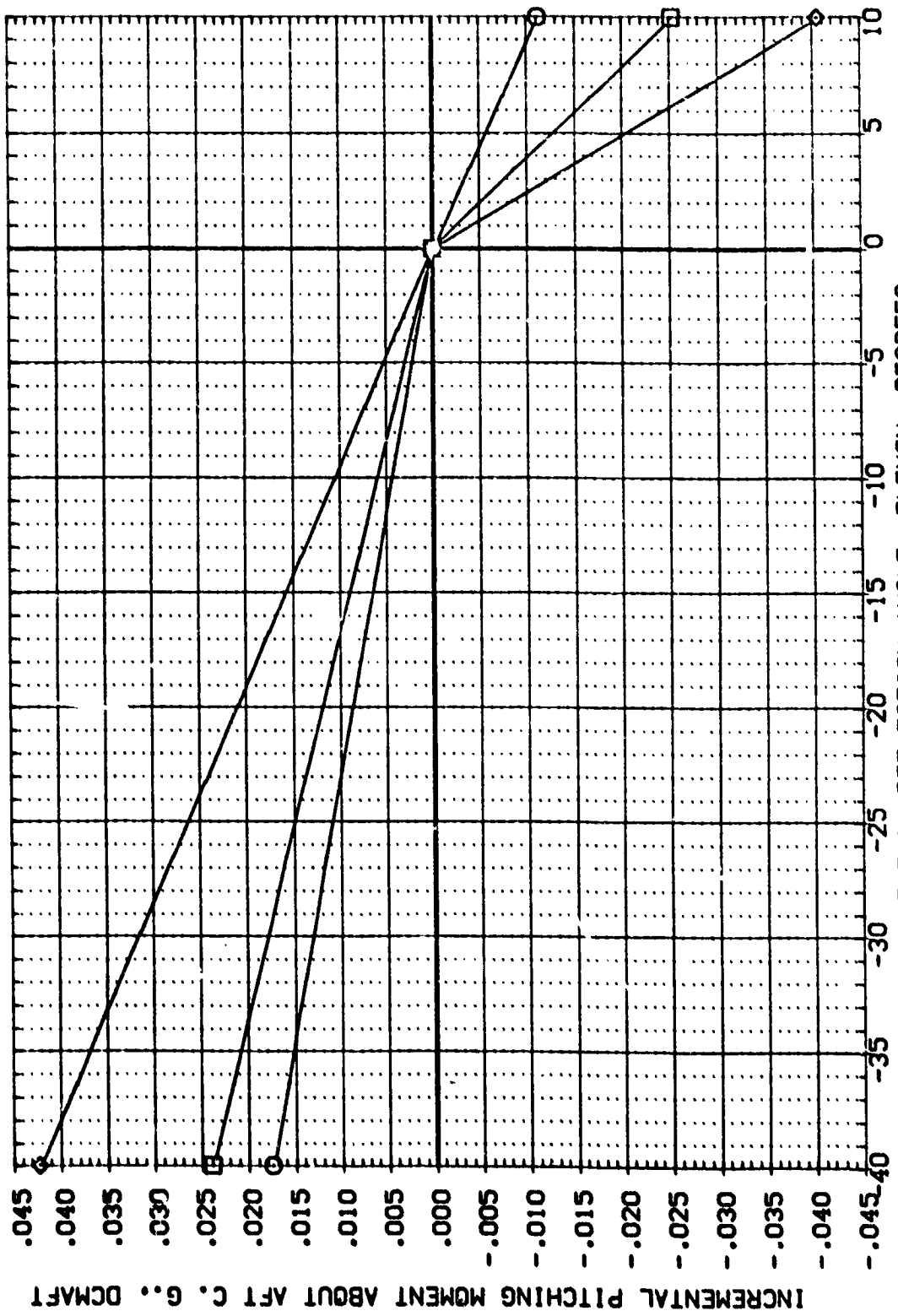


FIG. 4 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=0.0

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEFO14)	AMES 3.5-176 OAG7 140 A/B ORBITTER	-10.000	55.000	16.300	10.000	SREF 2650.0000 50.FT.
(BEFO15)	AMES 3.5-176 OAG7 140 A/B ORBITTER	10.000	55.000	16.300	10.000	LREF 1290.3000 IN.
(BEFO12)	AMES 3.5-176 OAG7 140 A/B ORBITTER	15.000	55.000	16.300	10.000	BREF 936.6800 IN.
(BEFO13)	AMES 3.5-176 OAG7 140 A/B ORBITTER					XREF 1076.4800 IN.
						YREF 375.0000 IN.
						ZREF .0150 SCALE

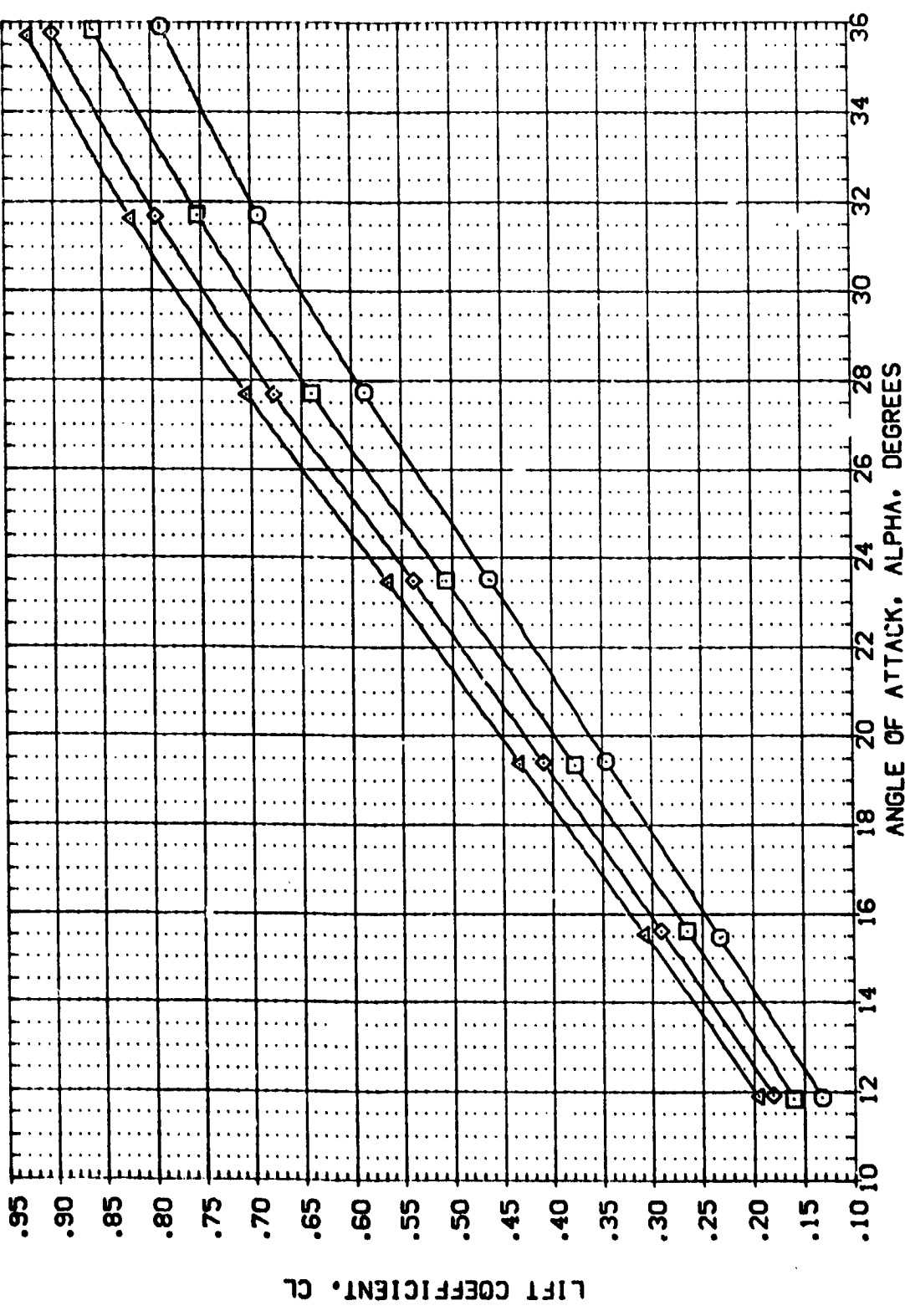


FIG. 5 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEFO14)	AMES 3.5-176 OAB7 140 A/B ORBITER	-40.000	55.000	16.300	10.000	SREF 2690.0000 50.FT.
(BEFO15)	AMES 3.5-176 OAB7 140 A/B ORBITER	0.000	55.000	16.300	10.000	LREF 1290.3000 IN.
(BEFO12)	AMES 3.5-176 OAB7 140 A/B ORBITER	10.000	55.000	16.300	10.000	RREF 936.6800 IN.
(BEFO13)	AMES 3.5-176 OAB7 140 A/B ORBITER	15.000	55.000	16.300	10.000	XAPP 1076.4500 IN.
						YAPP 0.0000 IN.
						ZAPP 375.0000 IN.
						SCALE .0150

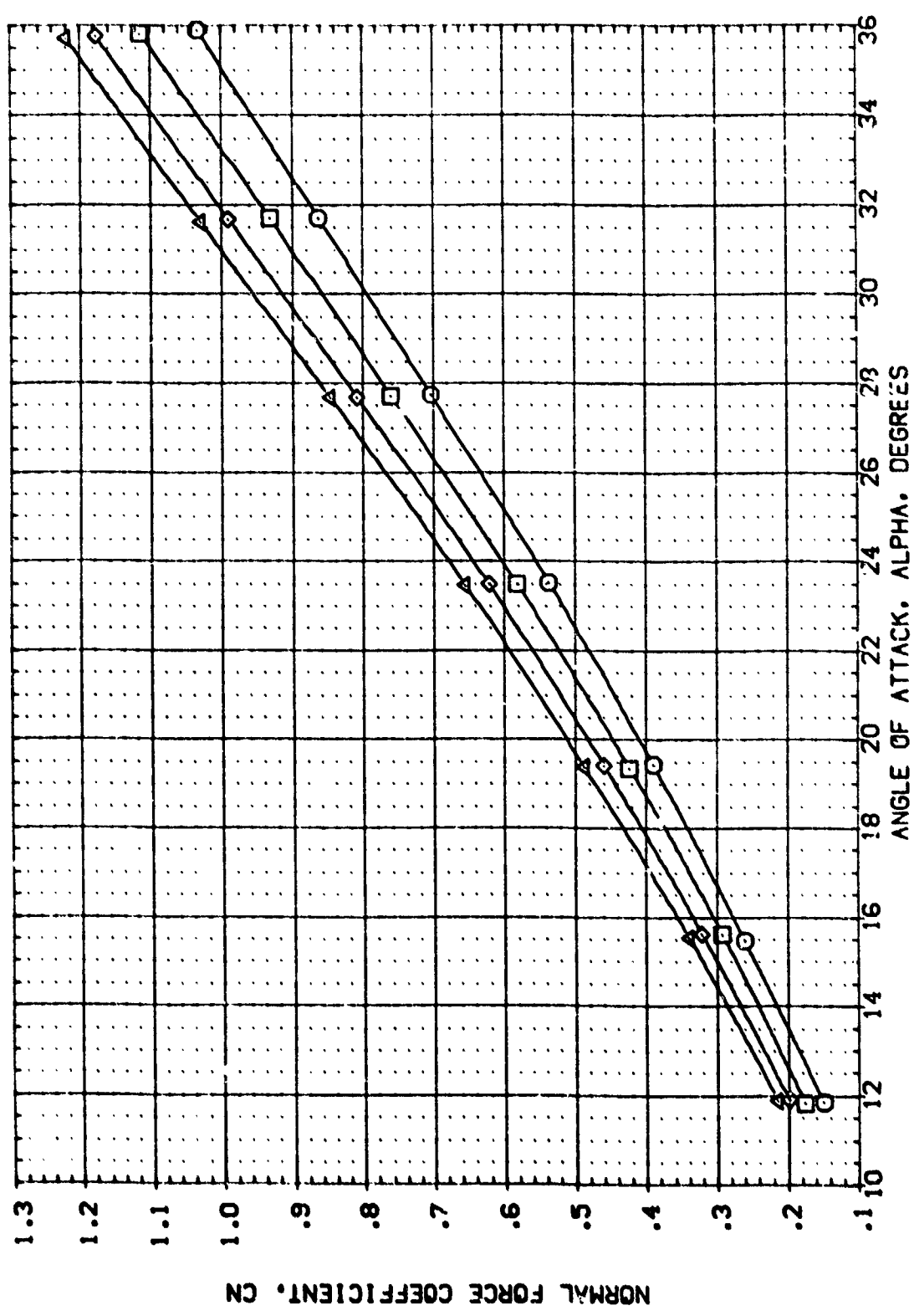


FIG. 5 ELEVON EFFECTIVENESS, RN/L=10., 90FLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEFO14)	AVES 3.5-176 OAB7 140 A/B ORBITER	-40.000	55.000	16.300	10.000	SREF 2690.0000 SQ.FT.
(BEFO15)	AVES 3.5-176 OAB7 140 A/B ORBITER	.000	55.000	16.300	10.000	LREF 1290.3000 IN.
(BEFO12)	AVES 3.5-176 OAB7 140 A/B ORBITER	10.000	55.000	16.300	10.000	BRFP 936.6600 IN.
(BEFO13)	AVES 3.5-176 OAB7 140 A/B ORBITER	15.000	55.000	16.300	10.000	XMRP 1076.4800 IN.
						ZMRP .0000 IN.
						SCALE .0150

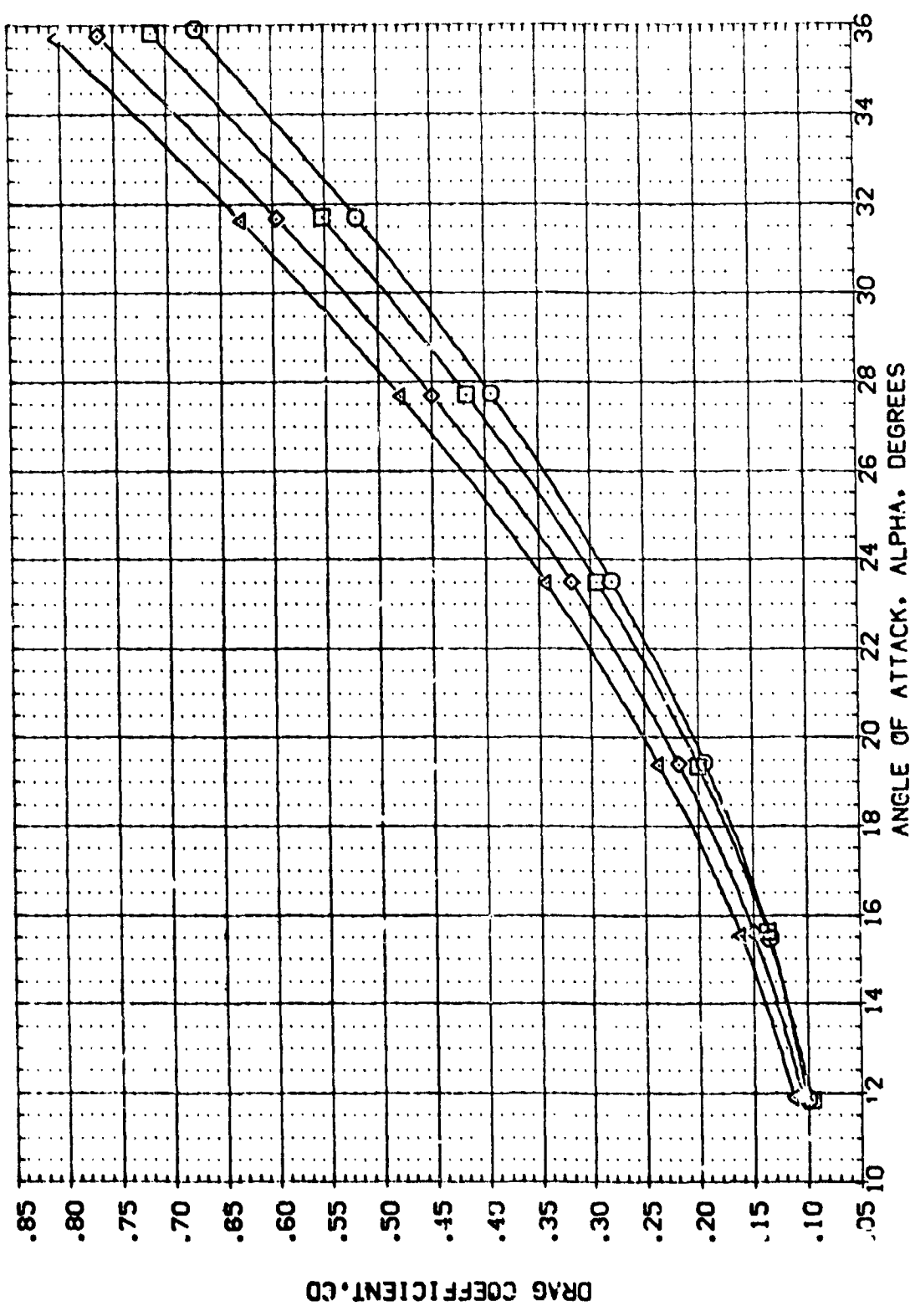


FIG. 5 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=16.3

(A)MACH = 7.32

DATA SET SYMB.	CONFIGURATION DESCRIPTION	ELEVON	SPDRBK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEFO14)	AVES 3-5-176 CA87 140 A/B ORBITER	-40.000	55.000	16.300	10.000	SREF 7690.0000 SQ.FT.
(BEFO15)	AVES 3-5-176 CA87 140 A/B ORBITER	0.000	55.000	16.300	10.000	L.F 1290.3000 IN.
(BEFO12)	AVES 3-5-176 CA87 140 A/B ORBITER	10.000	55.000	16.300	10.000	BREF 936.6800 IN.
(BEFO13)	AVES 3-5-176 CA87 140 A/B ORBITER	15.000	55.000	16.300	10.000	YMRP 1076.4800 IN.
						ZMRP 375.0000 IN.
						SCALE .0150

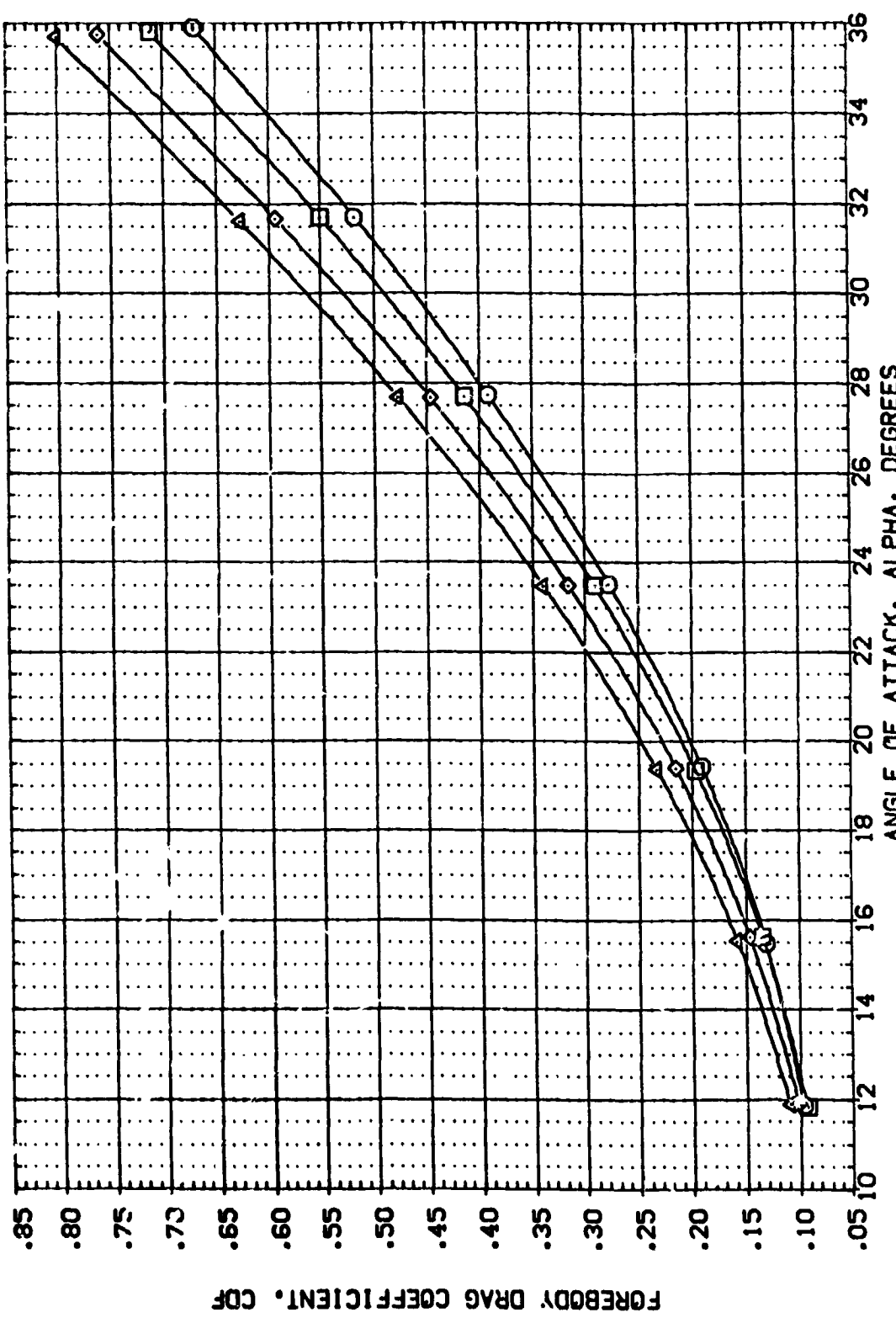


FIG. 5 ELEVON EFFECTIVENESS, RN/L=10., BOFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEFO14)	AMES 3-5-176 DAB7 140 A/B CRBITER	-40.000	55.000	16.300	10.000	SREF 2690.0000 SQ.FT.
(BEFO15)	AMES 3-5-176 DAB7 140 A/B CRBITER	.000	55.000	16.300	10.000	LREF 1290.3100 IN.
(BEFO12)	AMES 3-5-176 DAB7 140 A/B CRBITER	10.000	55.000	16.300	10.000	BREF 936.6600 IN.
(BEFO13)	AMES 3-5-176 DAB7 140 A/B CRBITER	15.000	55.000	16.300	10.000	XREF 1076.4800 IN.
						YREF .0000 IN.
						ZREF 375.0000 IN.
						SCALE .0150

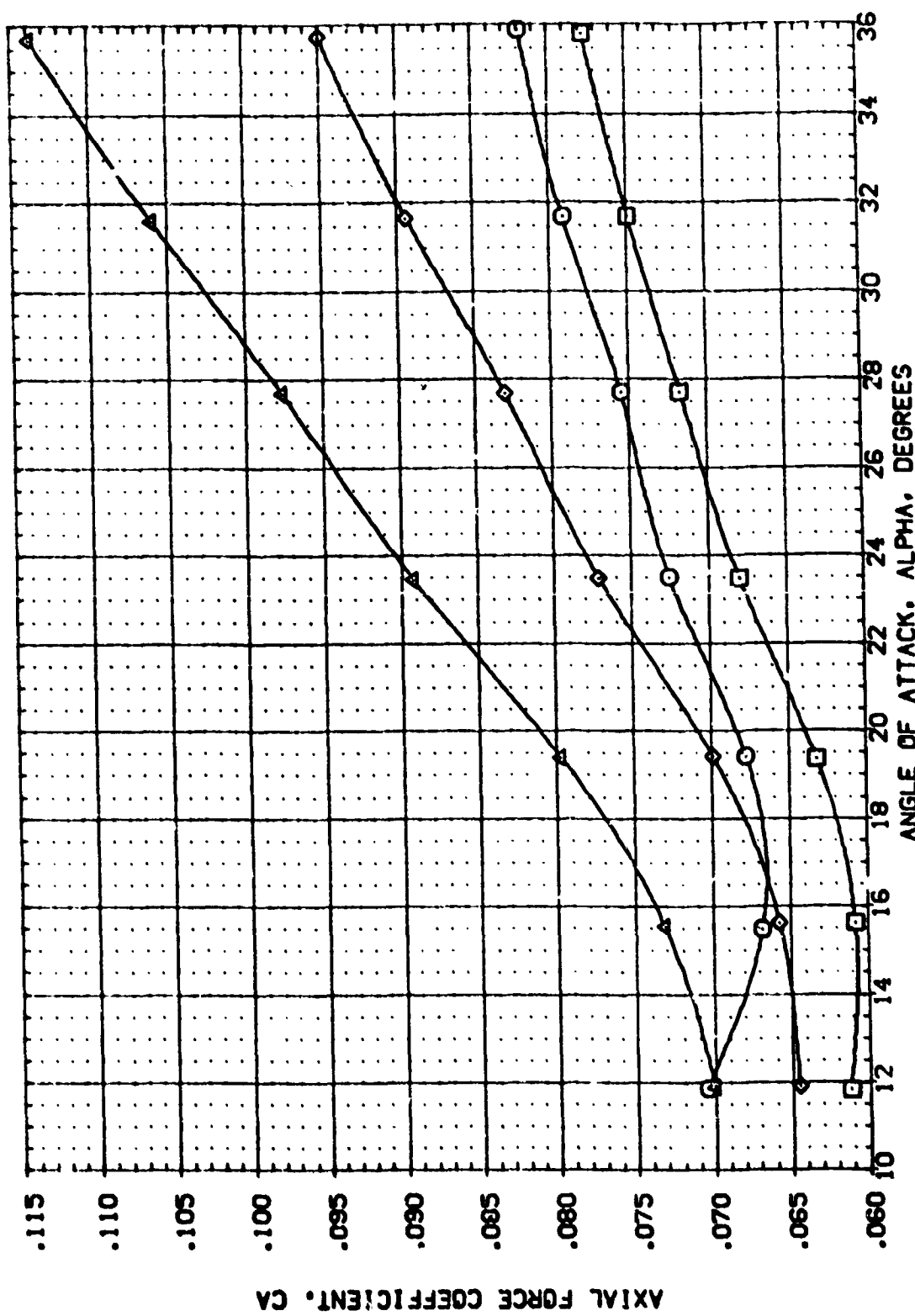


FIG. 5 ELEVON EFFECTIVENESS, RN/L=10., BOFLAP=16.3
(A)MACH = 7.32

DATA SET SYMBO	CONFIGURATION DESCRIPTION	ELEVON	SPOONK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEF01.4)	AVES 3.5-176 DAB7 140 A/B DBRITER	-40	25.000	16.300	10.000	SREF 2650.0000 SO.FT.
(BEF01.5)	AVES 3.5-176 DAB7 140 A/B DBRITER	0	25.000	16.300	10.000	LREF 1250.3000 IN.
(BEF01.2)	AVES 3.5-176 DAB7 140 A/B DBRITER	10.000	25.000	16.300	10.000	BREF 936.6800 IN.
(BEF01.3)	AVES 3.5-176 DAB7 140 A/B DBRITER	15.000	25.000	16.300	10.000	XREF 1076.4800 IN.
						YREF 0.0000 IN.
						ZREF 375.0000 IN.
						SCALE .0150

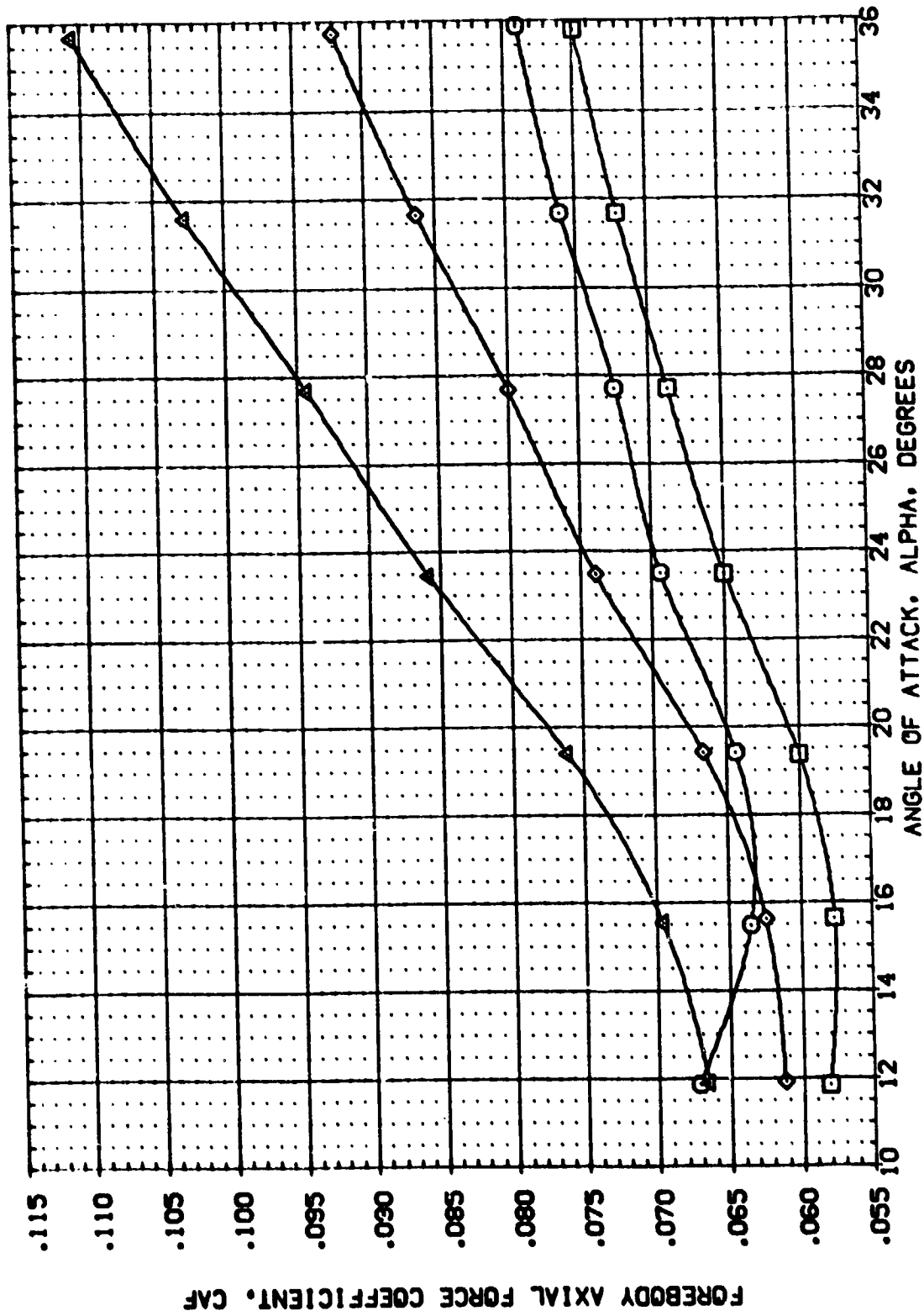


FIG. 5 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEFO14)	AVES 3.5-176 DAG7 140 A/B ORBITER	-10.000	55.000	16.300	10.000	SREF 2650.0000 SQ.FT.
(BEFO15)	AVES 3.5-176 DAG7 140 A/B ORBITER	0.000	55.000	16.300	10.000	LREF 1290.3000 IN.
(BEFO12)	AVES 3.5-176 DAG7 140 A/B ORBITER	10.000	55.000	16.300	10.000	BREF 936.6800 IN.
(BEFO13)	AVES 3.5-176 DAG7 140 A/B ORBITER	15.000	55.000	16.300	10.000	YTRP 1076.4800 IN.
						ZTRP 375.0000 IN.
						SCALE .0150

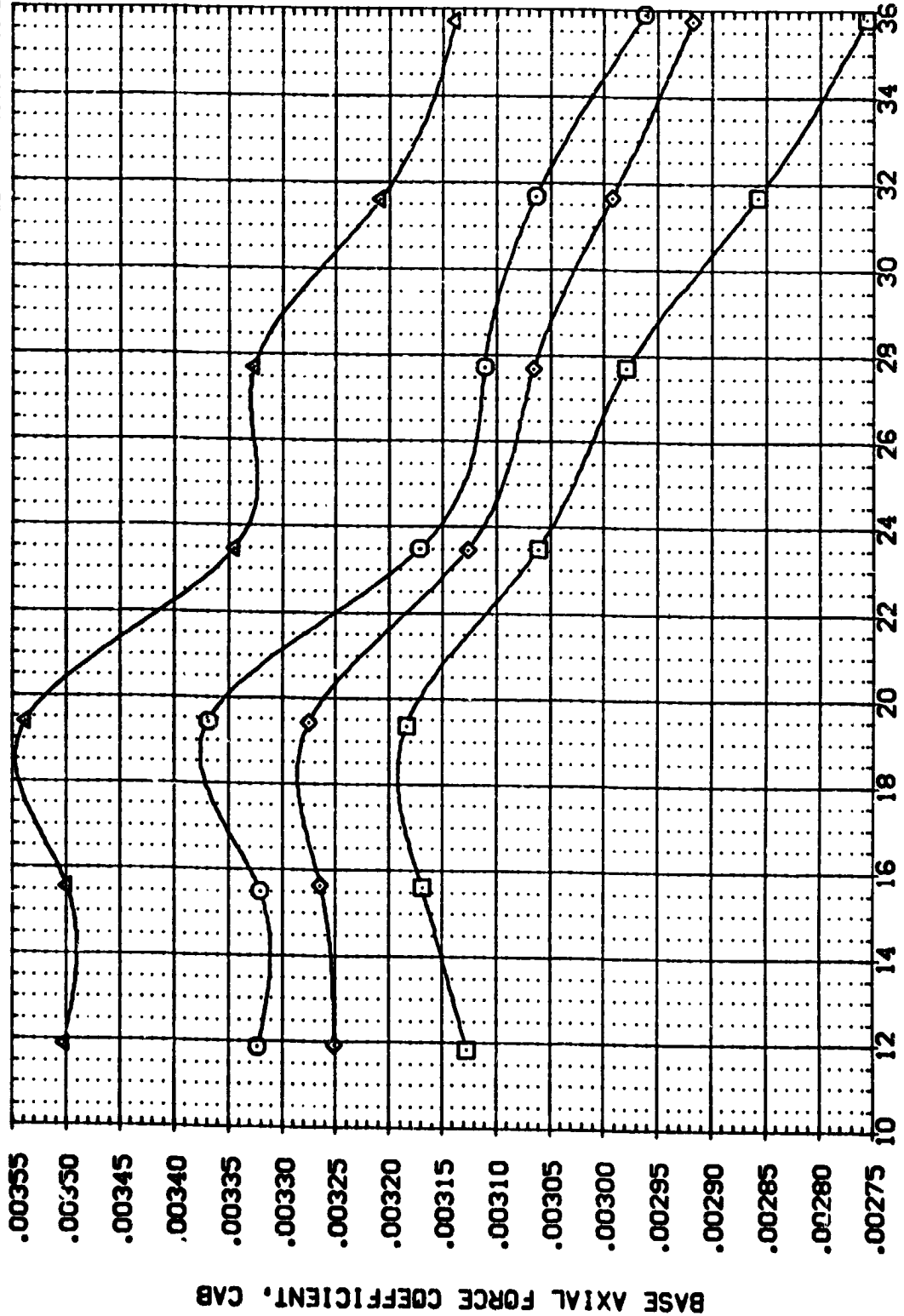


FIG. 5 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPDRBK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEF014)	AVES 3.5-176 CAB7 140 A/B DRB TER	-40.000	55.000	16.300	10.000	SREF 2690.0000 SQ.FT.
(CSF015)	AVES 3.5-176 CAB7 140 A/B DRB TER	10.000	55.000	16.300	10.000	LREF 1290.3000 IN.
(BEF012)	AVES 3.5-176 CAB7 140 A/B DRB TER	15.000	55.000	16.300	10.000	BREF 936.6800 IN.
(BEF013)	AVES 3.5-176 CAB7 140 A/B DRB TER					XMRP 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150 SCALE

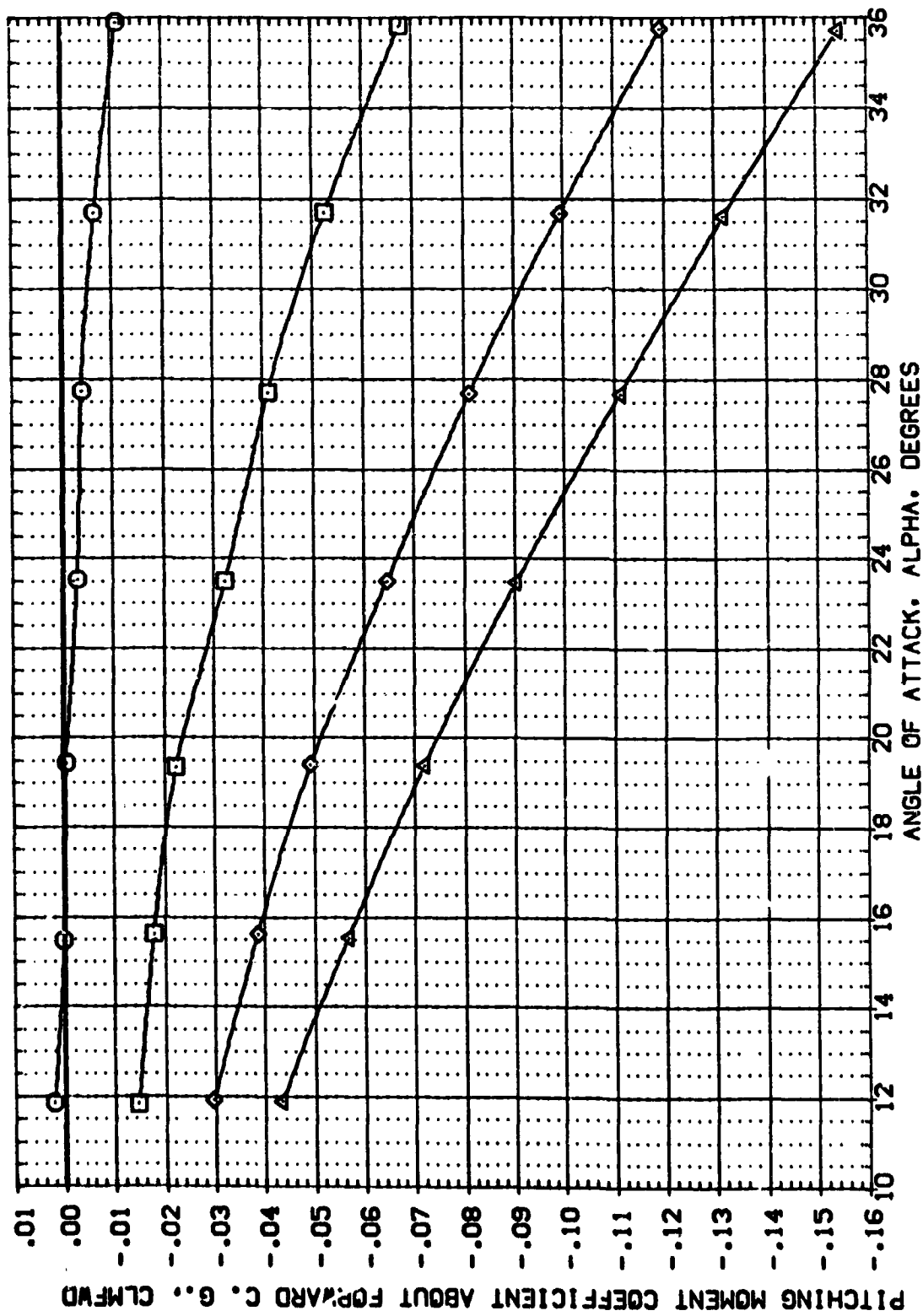


FIG. 5 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=16.3

(M)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPDRBY	BOFLAP	RN/L	REFERENCE INFORMATION
(BEF014)	AVES 3.5-176 OAB7 140 A/B DRBITER	-40.000	55.000	16.300	10.000	SREF 2687.0000 SQ. FT.
(BEF015)	AVES 3.5-176 OAB7 140 A/B DRBITER	17.000	55.000	16.300	10.000	LREF 1250.3000 IN.
(BEF012)	AVES 3.5-176 OAB7 140 A/B DRBITER	15.000	55.000	16.300	10.000	SREF 936.5800 IN.
(BEF013)	AVES 3.5-176 OAB7 140 A/B DRBITER					XPRP 1076.1800 IN.
						YPRP .0000 IN.
						ZPRP .0000 IN.
						SCALE .0150

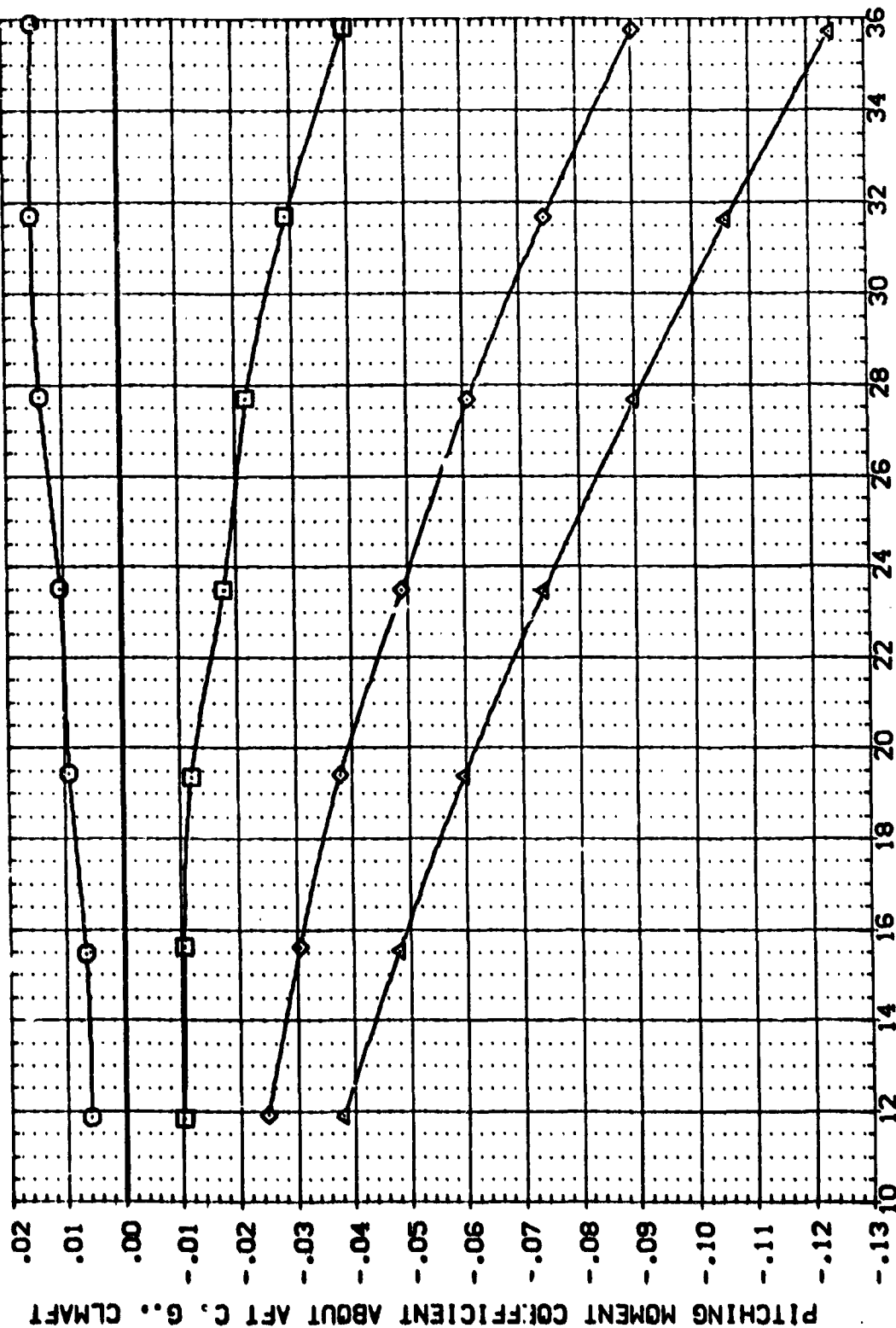


FIG. 5 ELEVON EFFECTIVENESS, RN/L=10., BOFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (BEFO14) MES 3.5-176 OAB7 140 A/B ORBITER
 (BEFO15) MES 3.5-176 OAB7 140 A/B ORBITER
 (BEFO12) MES 3.5-176 OAB7 140 A/B ORBITER
 (BEFO13) MES 3.5-176 OAB7 140 A/B ORBITER

ELEVON SPOBK BDFLAP RN/L
 -40.000 55.000 15.300 10.000
 10.000 55.000 16.300 10.000
 19.000 55.000 16.300 10.000
 19.000 55.000 16.300 10.000

REFERENCE INFORMATION SQ. FT.
 SREF 2680.0000 IN.
 LREF 1250.3000 IN.
 BREF 936.6800 IN.
 XPRP 1076.4800 IN.
 YPRP .0000 IN.
 ZPRP 375.0000 IN.
 SCALE .0150 SCALE

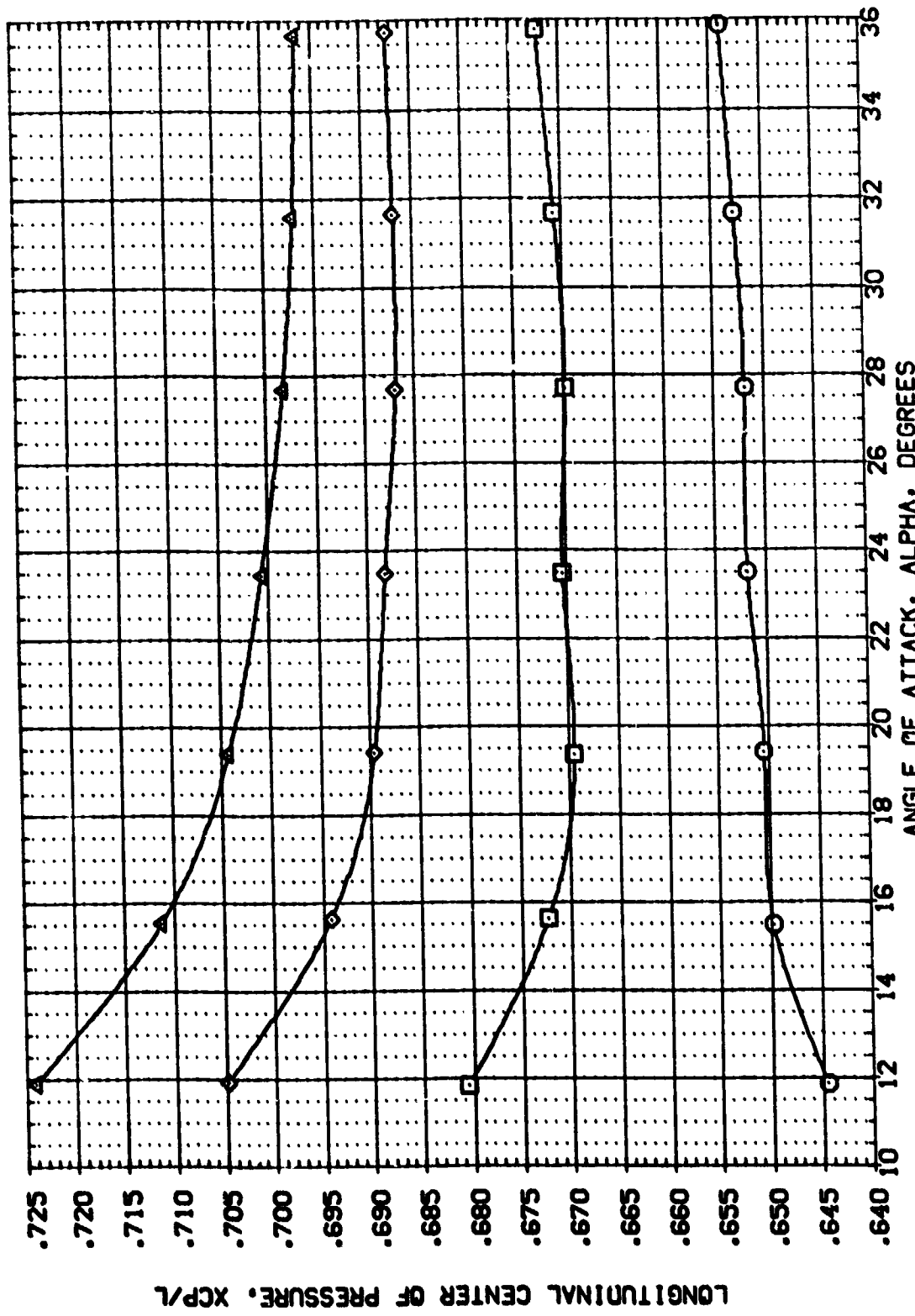


FIG. 5 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=16.3
 (A)MACH = 7.32

DATA SET SYMBO	CONFIGURATION DESCRIPTION	ELEVON	SPORWK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEFO14)	AVES 3.5-176 OMB7 140 A/B OMBITER	-40.000	95.000	16.300	10.000	SNES 2650.0000 SO.FT.
(BEFO15)	AVES 3.5-176 OMB7 140 A/B OMBITER	0.000	95.000	16.300	10.000	LREF 1250.3000 IN.
(BEFO12)	AVES 3.5-176 OMB7 140 A/B OMBITER	10.000	95.000	16.300	10.000	BREF 936.6800 IN.
(BEFO13)	AVES 3.5-176 OMB7 140 A/B OMBITER	15.000	95.000	16.300	10.000	XTRP 1076.4800 IN.
						YTRP 0.0000 IN.
						ZTRP 375.0000 IN.
						SCALE .0150

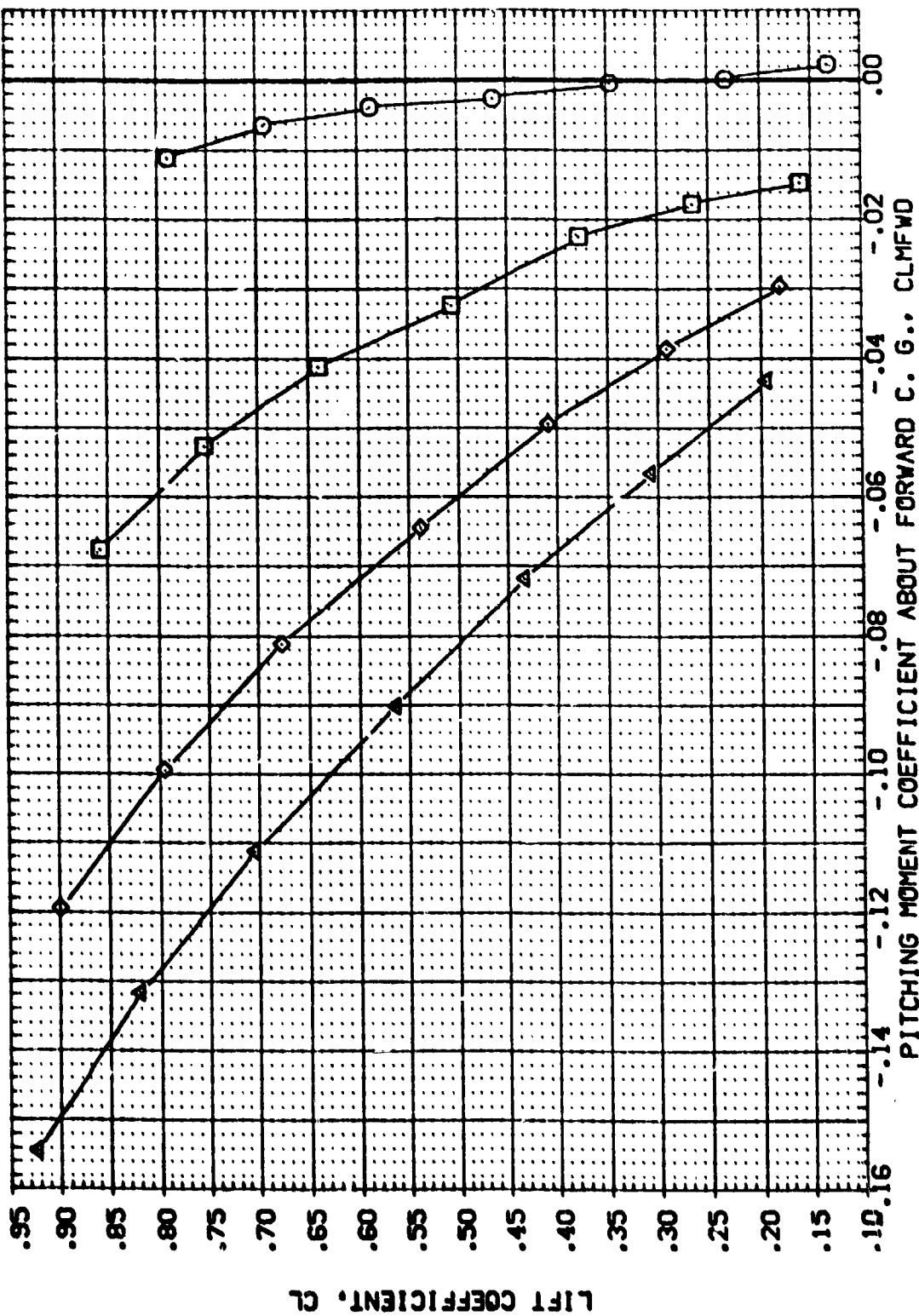


FIG. 5 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPDRK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEF014)	AVES 3.5-176 O487 140 A/B ORBITER	-40.000	55.000	16.300	10.000	SREF 2680 0000 50.FT.
(BEF015)	AVES 3.5-176 O487 140 A/B ORBITER	10.000	55.000	16.300	10.000	LREF 1752 3000 IN.
(BEF012)	AVES 3.5-176 O487 140 A/B ORBITER	15.000	55.000	16.300	10.000	BREF 937 6800 IN.
(BEF013)	AVES 3.5-176 O487 140 A/B ORBITER					XREF 1076 4800 IN.
						YREF 375 0000 IN.
						ZREF 0132 IN.
						SCALE

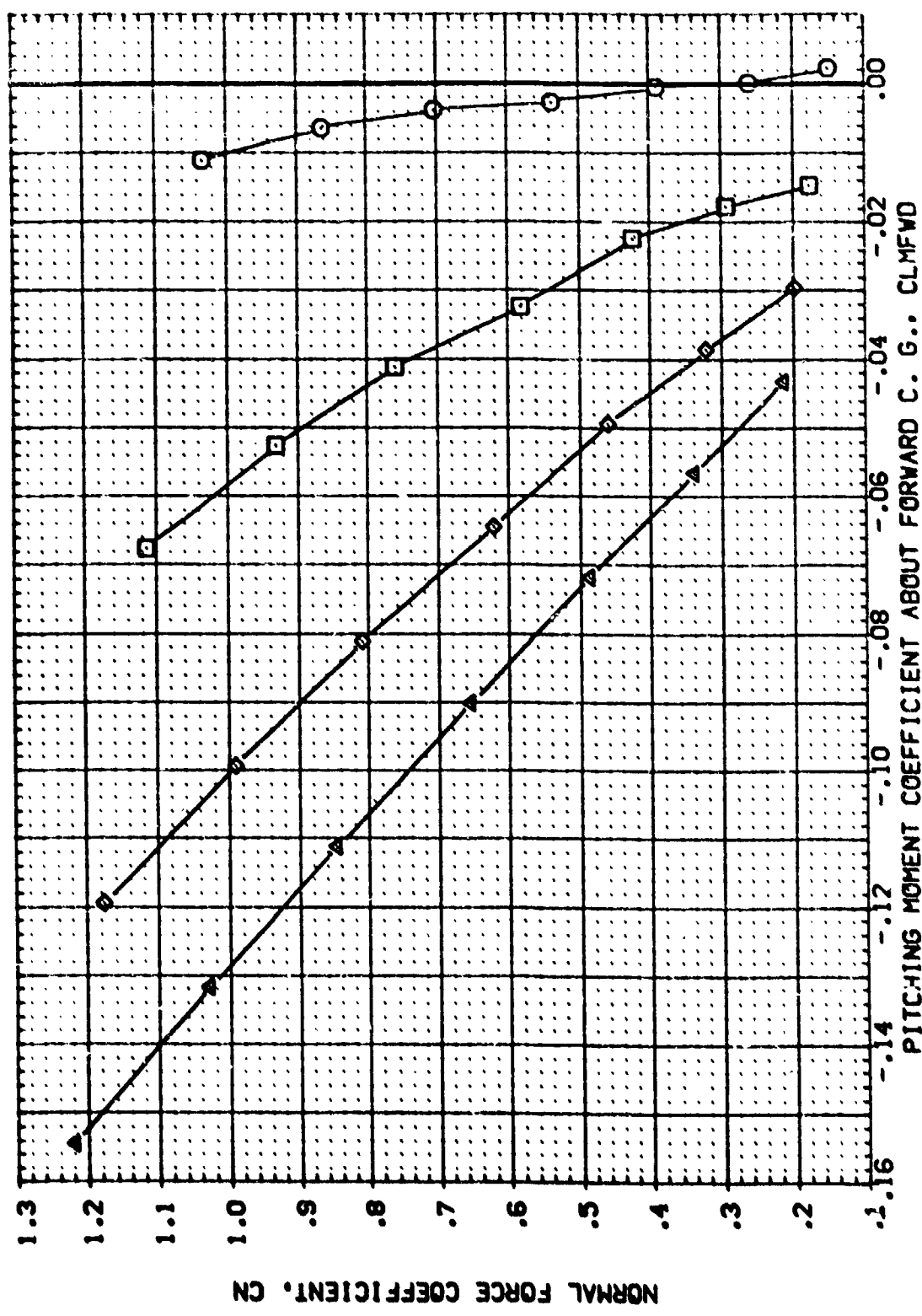


FIG. 5 ELEVON EFFECTIVENESS, RN/L=10., BOFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPDBK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEF014)	AMES 3.5-176 DAB7 140 A/B CRBITER	-40.000	55.000	16.300	10.000	SREF 2690.0000 SQ. FT.
(BEF015)	AMES 3.5-176 DAB7 140 A/B CRBITER	0.000	55.000	16.300	10.000	LREF 1290.3000 IN.
(BEF012)	AMES 3.5-176 DAB7 140 A/B CRBITER	10.000	55.000	16.300	10.000	BREF 936.6200 IN.
(BEF013)	AMES 3.5-176 DAB7 140 A/B CRBITER	15.000	55.000	16.300	10.000	ZTRP 1076.4800 IN.
						ZTRP 375.0000 IN.
						SCALE .0150

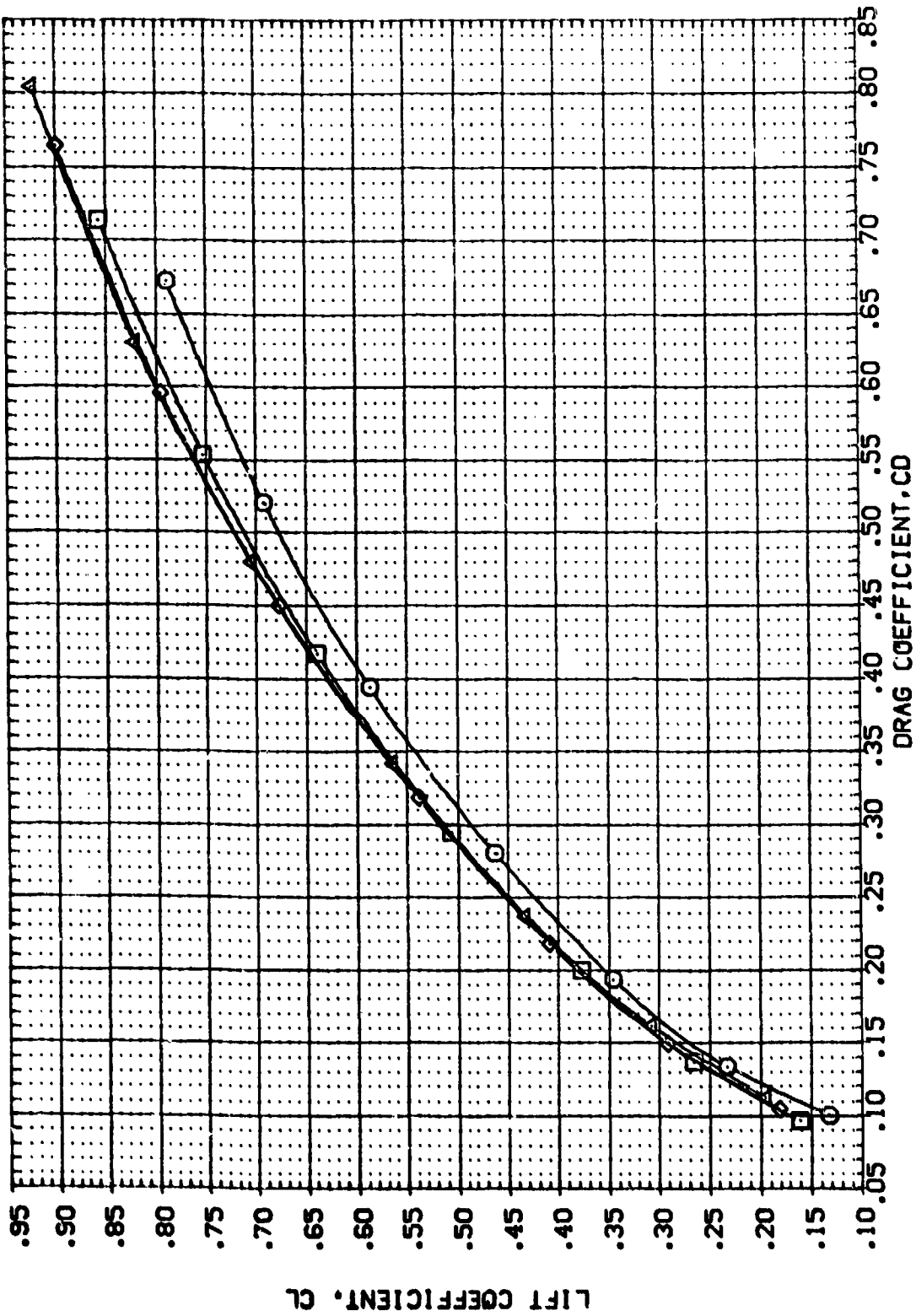


FIG. 5 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BDFLAP	RN/L	REFERENCE INFORMATION
(AEFO14)	AMES 3.5-176 OAB7 140 A/B CRBITER	-40.000	55.000	16.300	10.000	SREF 2690.0000 SQ.FT.
(AEFO15)	AMES 3.5-176 OAB7 140 A/B CRBITER	0.000	52.000	16.300	10.000	LREF 1290.3000 IN.
(AEFO12)	AMES 3.5-176 OAB7 140 A/B CRBITER	10.000	52.000	16.300	10.000	BREF 926.6800 IN.
(AEFO13)	AMES 3.5-176 OAB7 140 A/B CRBITER	15.000	55.000	16.300	10.000	XTRP 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP .0000 IN.
						SCALE .0150

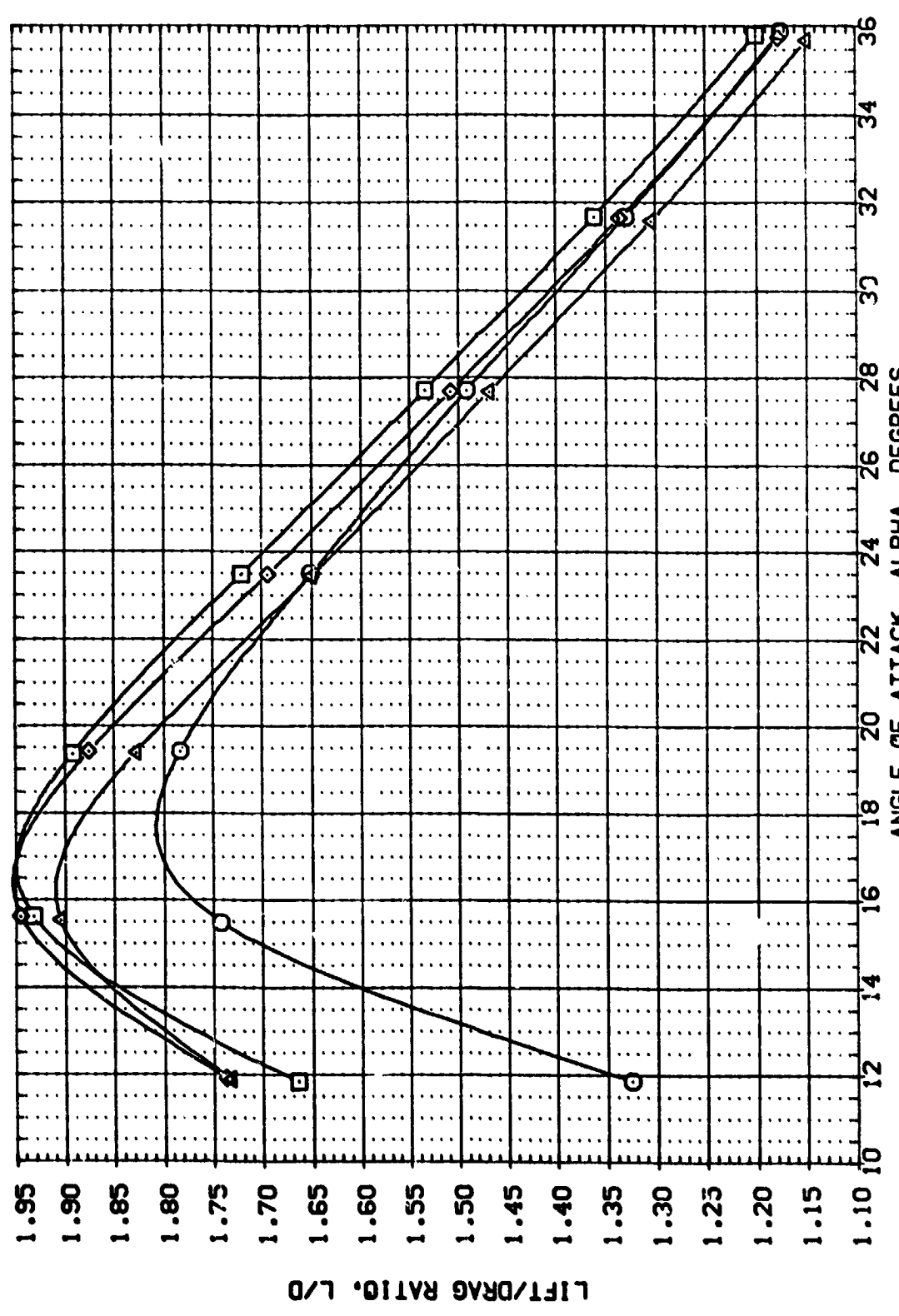


FIG. 5 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=16.3
 (A) MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	DE	SPOBRK	BDFLAP	RN/L	REFERENCE INFORMATION
(EF014)	AVES 3.5-176 CAB7 140 A/B ORBITER	-40.000	55.000	16.300	10.000	SREF 2690.0000 50.FT.
(EF012)	AVES 3.5-176 CAB7 140 A/B ORBITER	10.000	55.000	16.300	10.000	LREF 1290.3000 IN.
(EF013)	AVES 3.5-176 CAB7 140 A/B ORBITER	15.000	55.000	16.300	10.000	BREF 936.6300 IN.
						YARP 1076.4800 IN.
						ZARP 375.0000 IN.
						SCALE .0150

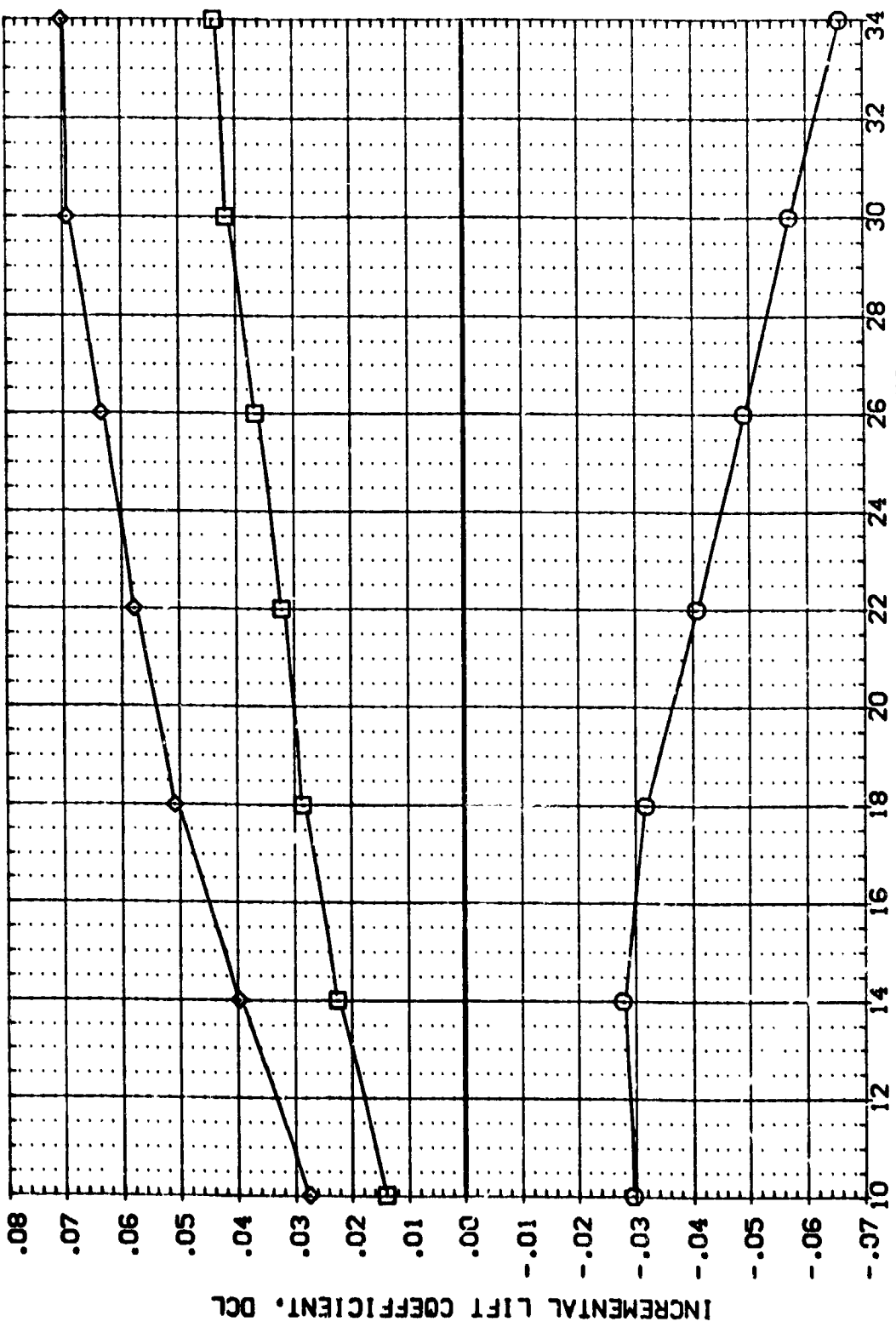


FIG. 5 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	DE	SPOBRK	BOFLAP	RN/L	REFERENCE INFORMATION
(EF014)	AVES 3.5-176 OA87 140 A/B DR81TER	-40.000	55.000	16.300	10.000	SREF 2690.0000 SQ.FT.
(EF012)	AVES 3.5-176 OA87 140 A/B DR81TER	10.000	55.000	16.300	10.000	LREF 1290.3000 IN.
(EF013)	AVES 3.5-176 OA87 140 A/B DR81TER	15.000	55.000	16.300	10.000	BREF 936.6800 IN.
						XREF 1076.4800 IN.
						YREF .0000 IN.
						ZREF 375.0000 IN.
						SCALE .0150

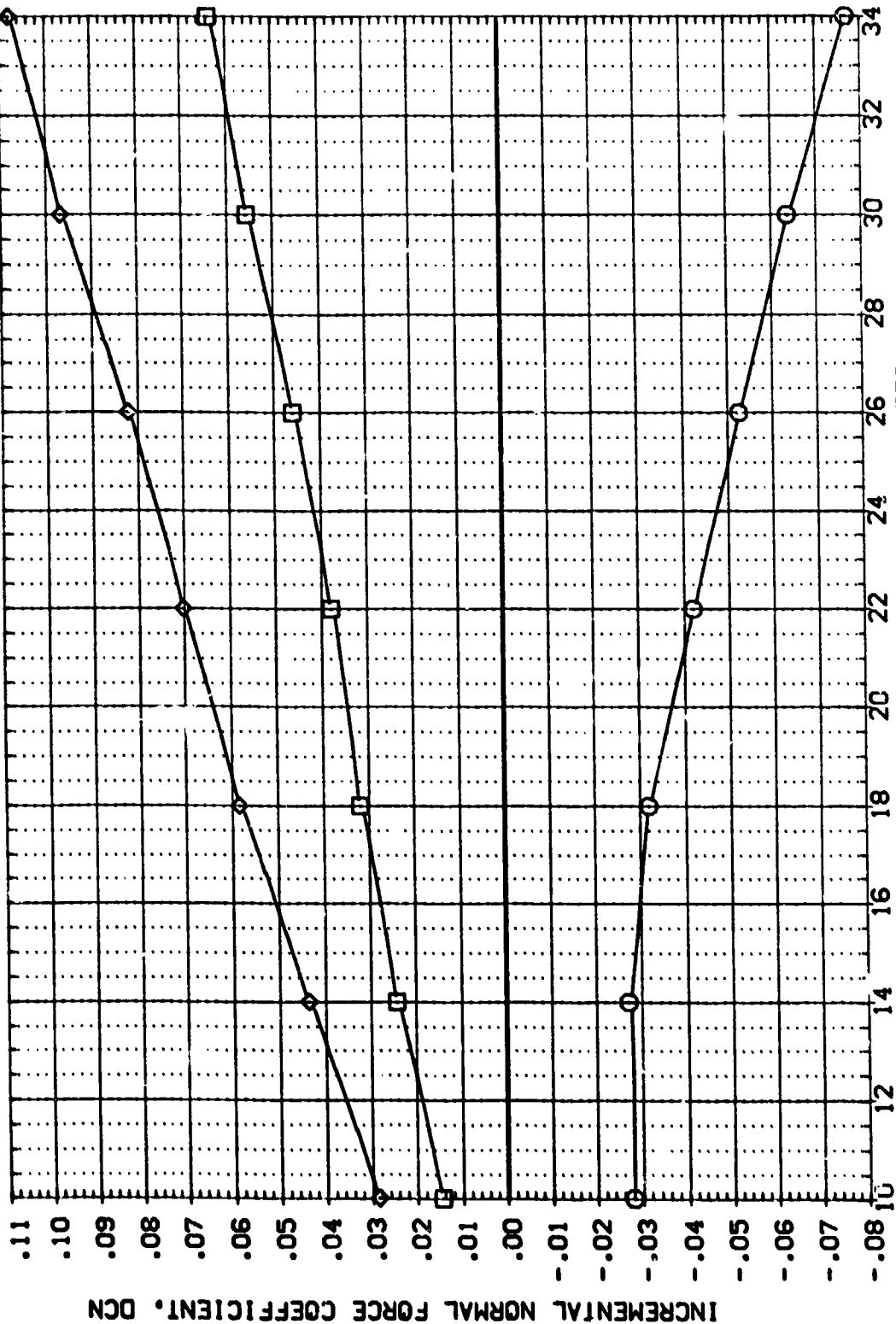


FIG. 5 ELEVON EFFECTIVENESS, RN/L=10., BOFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	DE	SPOBRK	BDFLAP	RN/L	REFERENCE INFORMATION
(EEF014)	AMES 3.5-176 CAB7 140 A/B ORBITER	-10.000	55.000	16.300	10.000	SREF 2680.0000 SO.FT.
(EEF012)	AMES 3.5-176 CAB7 140 A/B ORBITER	15.000	55.000	16.300	10.000	LREF 1200.3000 IN.
(EEF013)	AMES 3.5-176 CAB7 140 A/B ORBITER					BREF 936.6800 IN.
						XMPP 1076.4800 IN.
						YMPP .0000 IN.
						ZMPP 375.0000 IN.
						SCALE .0150

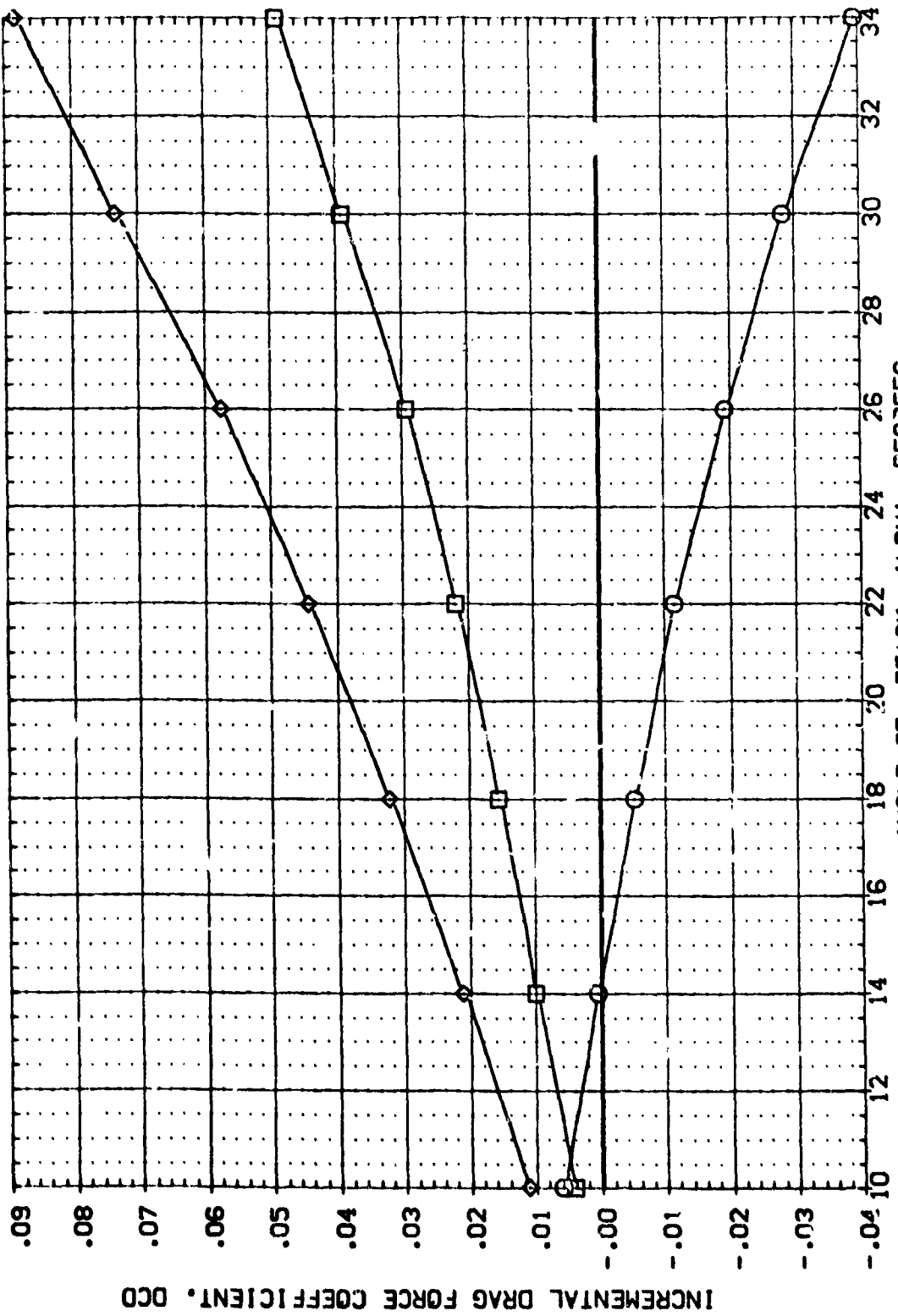


FIG. 5 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	DE	SPOBRK	BDFLAP	RN/L	REFERENCE INFORMATION
(EE'014)	AMES 3.5-176 DAB7 140 A/B CRBITER	-10.000	55.000	16.300	10.000	SREF 2690.0000 SQ. FT.
(EE'012)	AMES 3.5-176 DAB7 140 A/B CRBITER	13.000	55.000	16.300	10.000	LREF 1290.3000 IN.
(EE'013)	AMES 3.5-176 DAB7 140 A/B CRBITER	15.000	55.000	16.300	10.000	BREF 936.6800 IN.
						XTRP 1076.1800 IN.
						YTRP .0000 IN.
						ZTRP 375.0000 IN.
						SCALE .0150

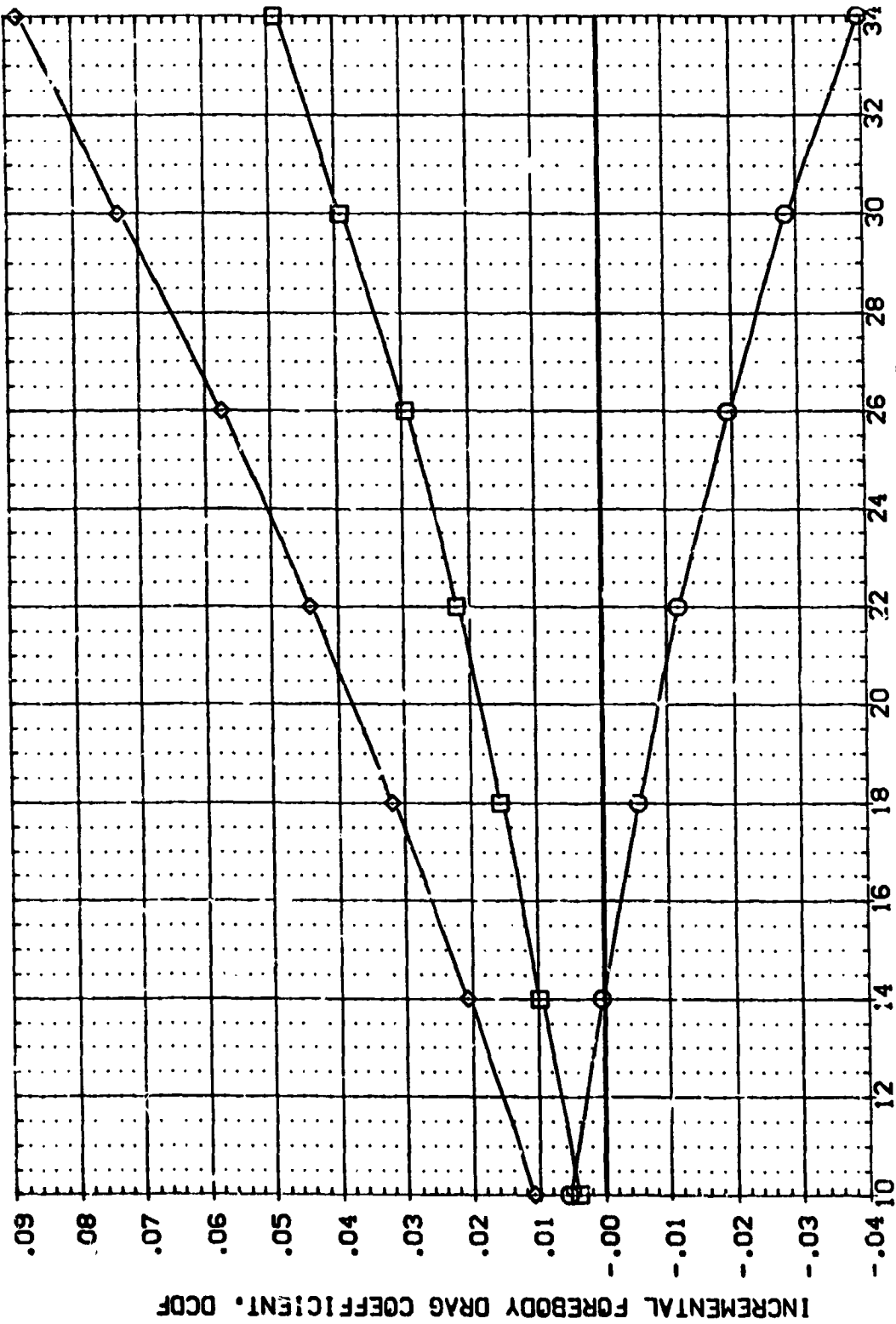


FIG. 5 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	DE	SPORBK	BOFLAP	RN/L	REFERENCE INFORMATION
(EEF014)	AMES 3.5-176 DAB7 140 A/B ORBITER	-40.000	55.000	16.300	10.000	SREF 2690.0000 SQ.FT.
(EEF012)	AMES 3.5-176 DAB7 140 A/B ORBITER	10.000	55.000	16.300	10.000	LREF 1230.3000 IN.
(EEF013)	AMES 3.5-176 DAB7 140 A/B ORBITER	15.000	55.000	16.300	10.000	BREF 936.6800 IN.
						XPRP 1076.4800 IN.
						YPRP .0000 IN.
						ZPRP 375.0000 IN.
						SCALE .0150 SCALE

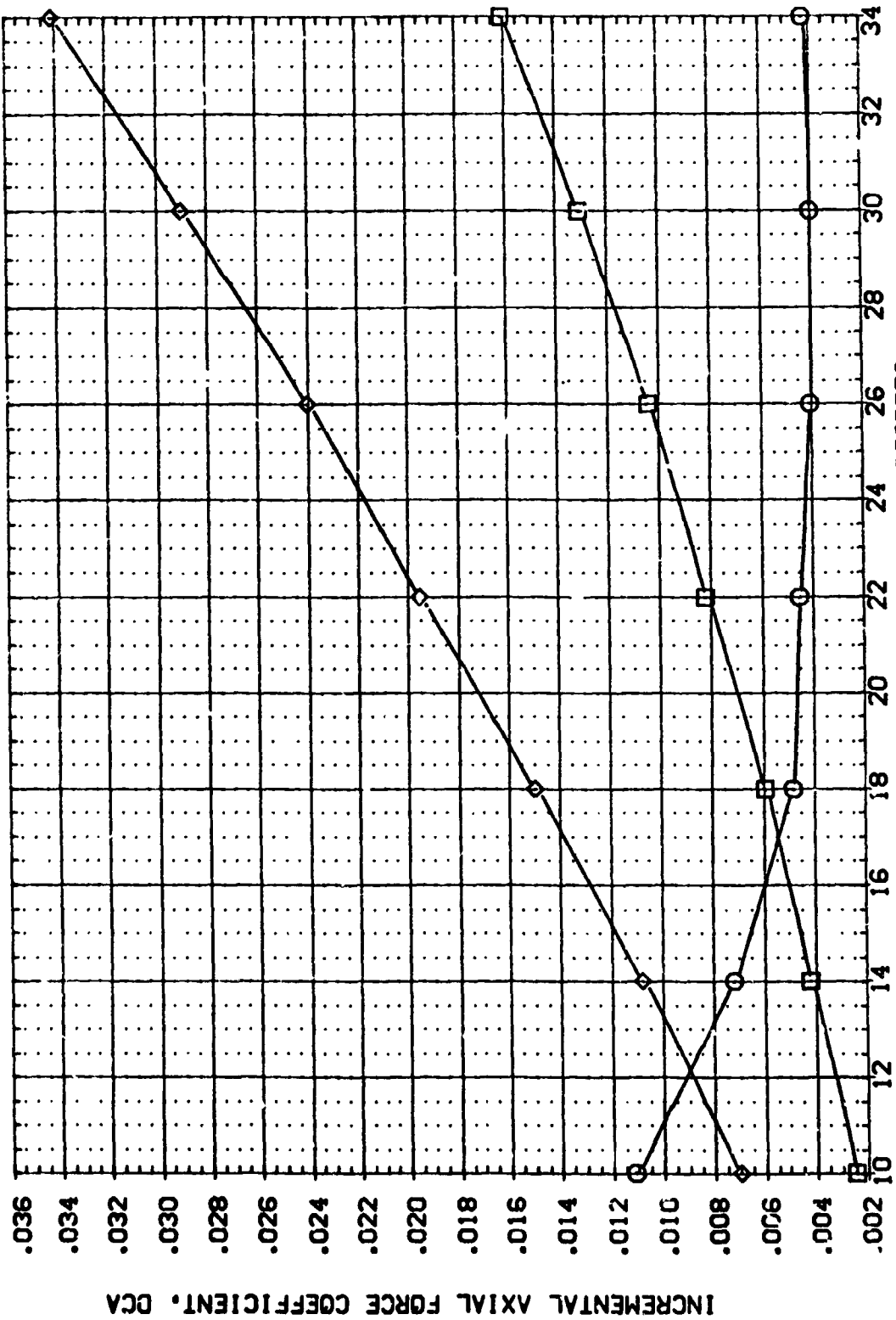
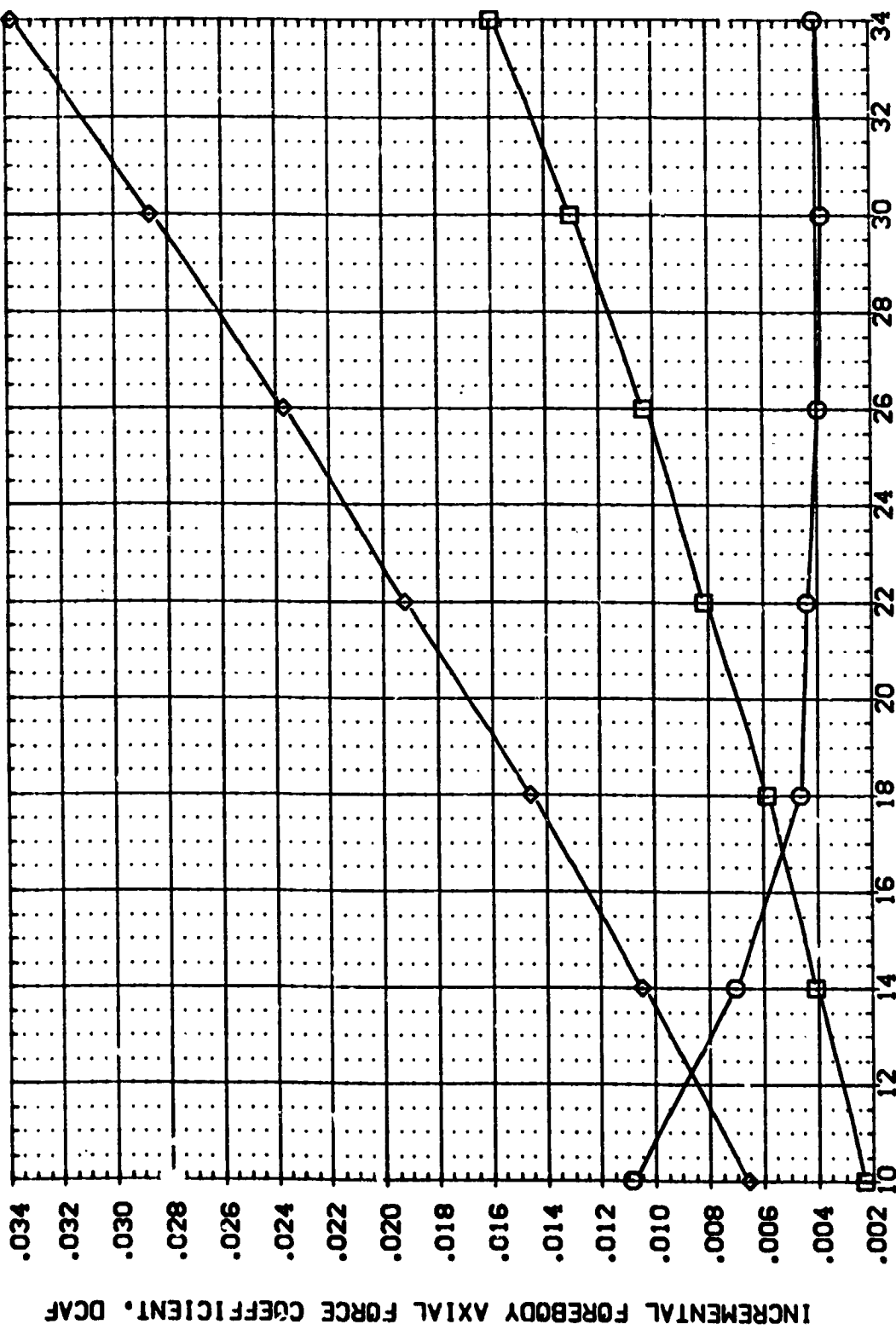


FIG. 5 ELEVON EFFECTIVENESS, RN/L=10., BOFLAP=16.3
 (M)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	DE	SPOBRK	BDFLAP	RN/L	REFERENCE INFORMATION
(EEFO14)	AMES 3.5-176 DAG7 140 A/B DRBITER	-10.000	55.000	16.300	10.000	SREF 2690.0000 SO.FT.
(EEFO12)	AMES 3.5-176 DAG7 140 A/B DRBITER	10.000	55.000	16.300	10.000	LREF 1290.3000 IN.
(EEFO13)	AMES 3.5-176 DAG7 140 A/B DRBITER	15.000	55.000	16.300	10.000	BREF 938.6800 IN.
						AHPP 1076.4800 IN.
						YHPP .0000 IN.
						ZHPP 375.0000 IN.
						SCALE .0150



ANGLE OF ATTACK, ALPHA, DEGREES

FIG. 5 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL: (EEFO14)
 (EEFO12)
 (EEFO13)

CONFIGURATION DESCRIPTION
 ES 3.5-176 CAB7 140 A/B DRBITER
 ES 3.5-176 CAB7 140 A/B DRBITER
 MES 3.5-176 CAB7 140 A/B DRBITER

DE -40.000
 10.000
 15.000

SPOBRK 55.000
 55.000
 55.000

BDFLAP 16.300
 16.300
 16.300

RNAL 10.000
 10.000
 10.000

REFERENCE INFORMATION
 SREF 2650.0000 SO.FT.
 LREF 1230.3000 IN.
 BREF 932.6800 IN.
 YMRP 1076.4800 IN.
 ZMRP 375.0000 IN.
 SCALE .0150

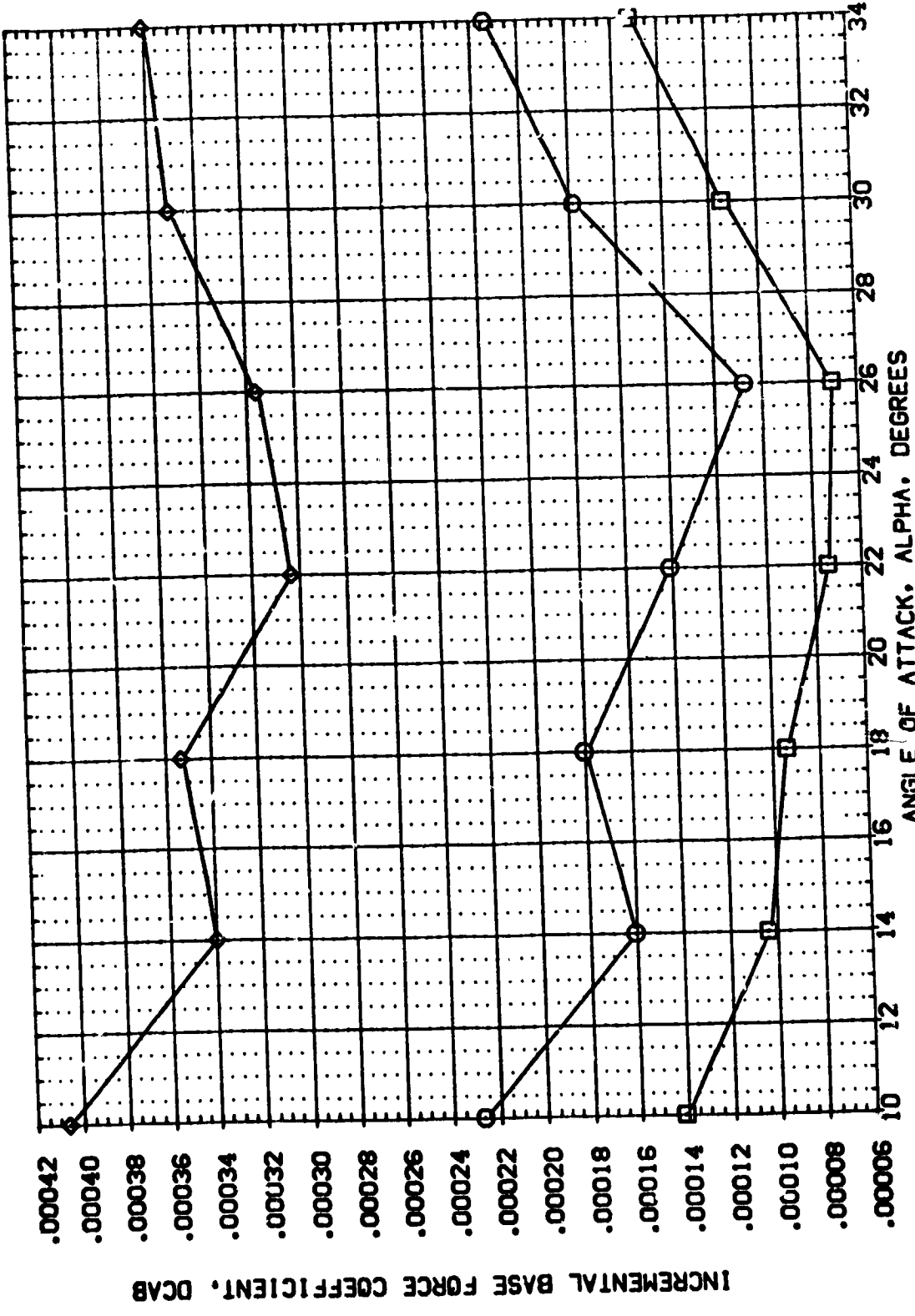
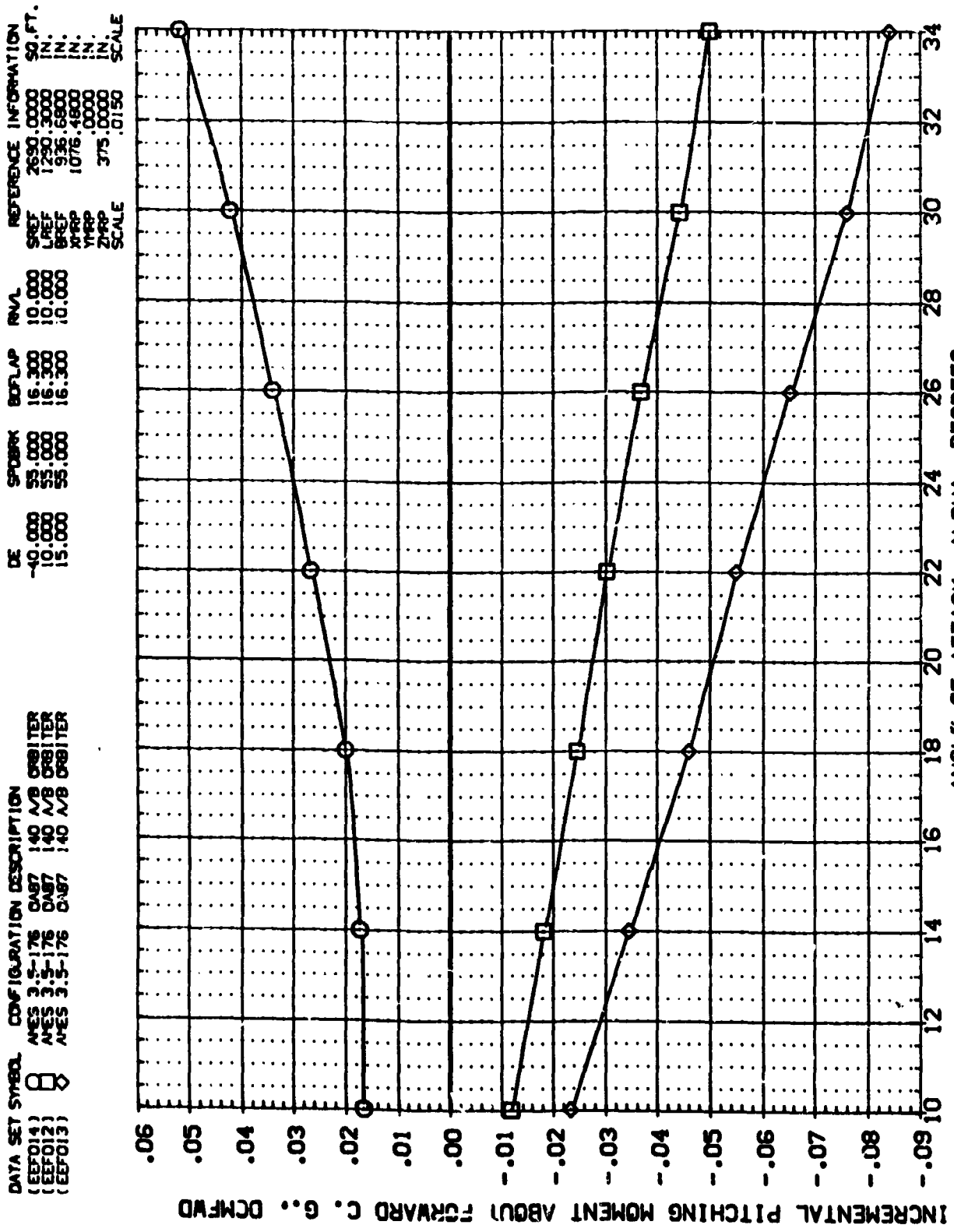


FIG. 5 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=16.3

(A)MACH = 7.32



DATA SET SYMBOL. CONFIGURATION DESCRIPTION
 (EEFO14) ASES 3.5-176 CAG7 140 A/B ORBITER
 (EEFO12) ASES 3.5-176 CAG7 140 A/B ORBITER
 (EEFO13) ASES 3.5-176 CAG7 140 A/B ORBITER

DE -10.000 55.000 55.000 55.000
 10.000 10.000 10.000 10.000
 15.000 15.000 15.000 15.000

SPDRK 55.000 55.000 55.000 55.000
 BOFLAP 16.300 16.300 16.300 16.300
 RN/L 10.000 10.000 10.000 10.000

REFERENCE INFORMATION
 SREF 2690.0000 50. FT.
 LREF 1250.3000 IN.
 GREF 936.6800 IN.
 XTRP 1076.4800 IN.
 YTRP .0000 IN.
 ZTRP 375.0000 IN.
 SCALE .0150

ANGLE OF ATTACK, ALPHA, DEGREES

FIG. 5 ELEVON EFFECTIVENESS, RN/L=10., BOFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	DE	SPOBRK	BDFLAP	RA/L	REFERENCE INFORMATION
(EEF014)	AMES 3.5-176 DAB7 140 A/B ORBITER	-40.000	53.000	16.300	10.000	SREF 2690.0000 SO.FT.
(EEF012)	AMES 3.5-176 DAB7 140 A/B ORBITER	10.000	53.000	16.300	10.000	LREF 1.200.3000 IN.
(EEF013)	AMES 3.5-176 DAB7 140 A/B ORBITER	15.000	53.000	16.300	10.000	BREF 936.6800 IN.
						XMRP 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150

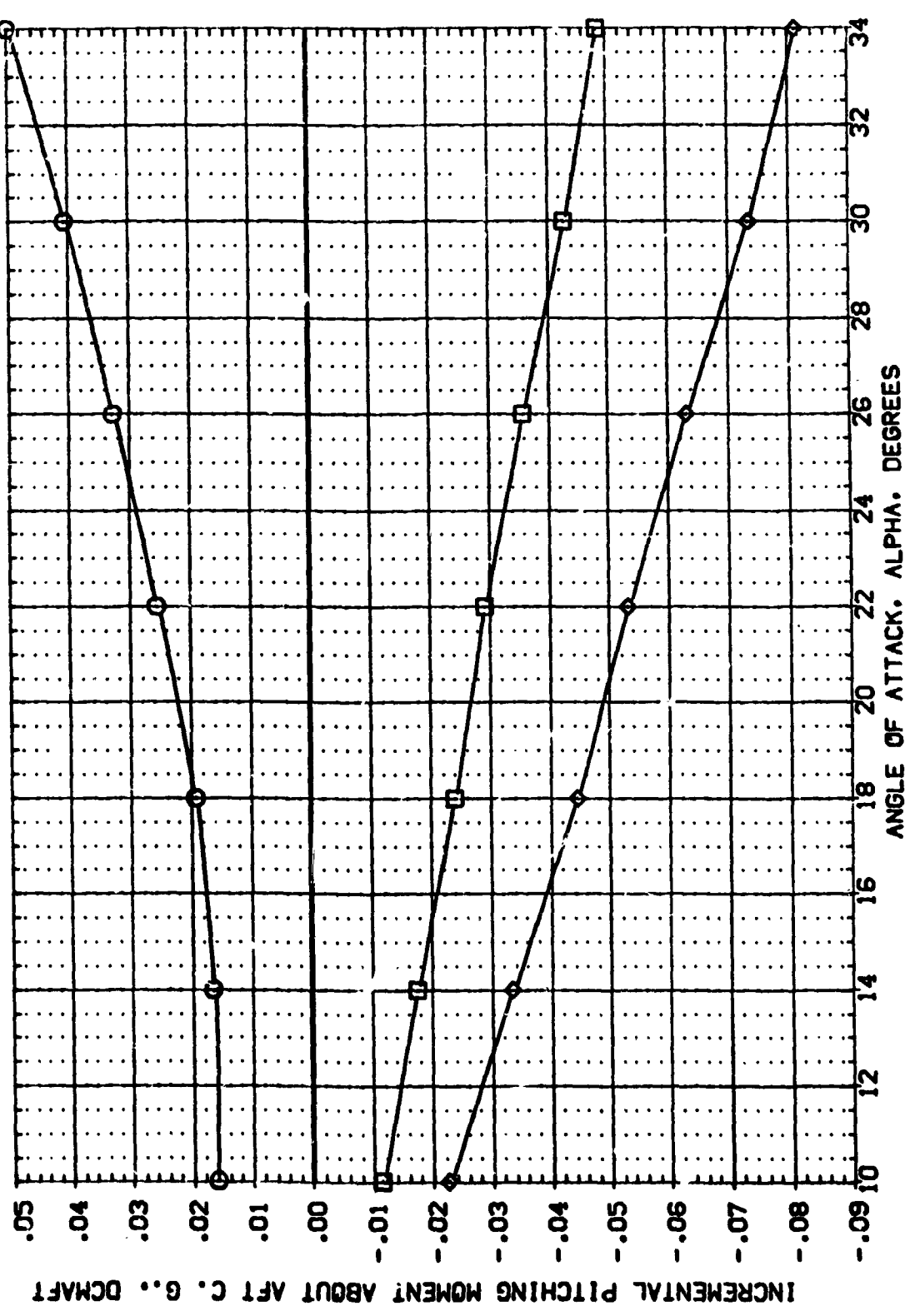


FIG. 5 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=16.3
 (AJMACH = 7.32)

AMES 3.5-176 OA87 140 A/B ORBITER (FEF014)

SYMBOL	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
○	MACH 10.000	ELEVON	SREF 2690.0000
□	BETA 7.320	ELEVON	LREF 1290.3000
◇	BOFLAP .000	FEF014	BREF 936.6800
	SPDBRK .000	FEF013	XREF 1076.4800
	RVL 10.000	FEF012	YREF .0000
			ZREF 375.0000
			SCALE .0150

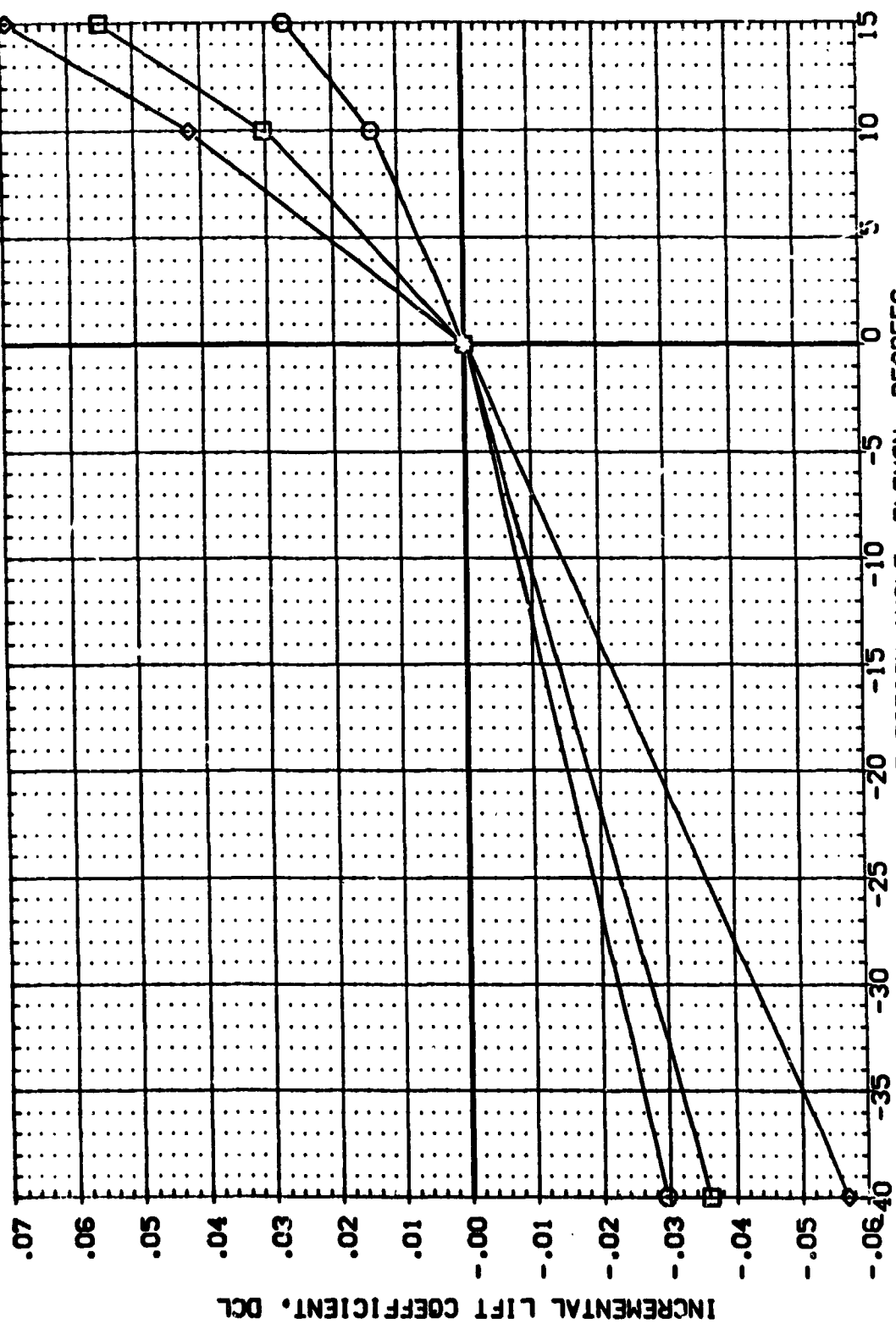


FIG. 5 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=16.3

AMES 3.5-176 0A87 140 A/B ORBITER (FEF014)

SYMBOL	ALPHA	MACH	PARAMETRIC VALUES		DATA SOURCE		ELEVON		REFERENCE INFORMATION	
○	10.000	7.320	BETA	.000	FEF014	FEF015	SREF	2690.0000	SQ.FT.	
□	20.000	.000	BOFLAP	16.300	FEF012	FEF013	LREF	1290.3000	IN.	
◇	30.000	.000	SPOBRK	55.000	FEF012	FEF013	BREF	936.6800	IN.	
		10.000	RVL	10.000			XMRP	1076.4800	IN.	
							YMRP	0.0000	IN.	
							ZMRP	375.0000	IN.	
							SCALE	.0150	SCALE	

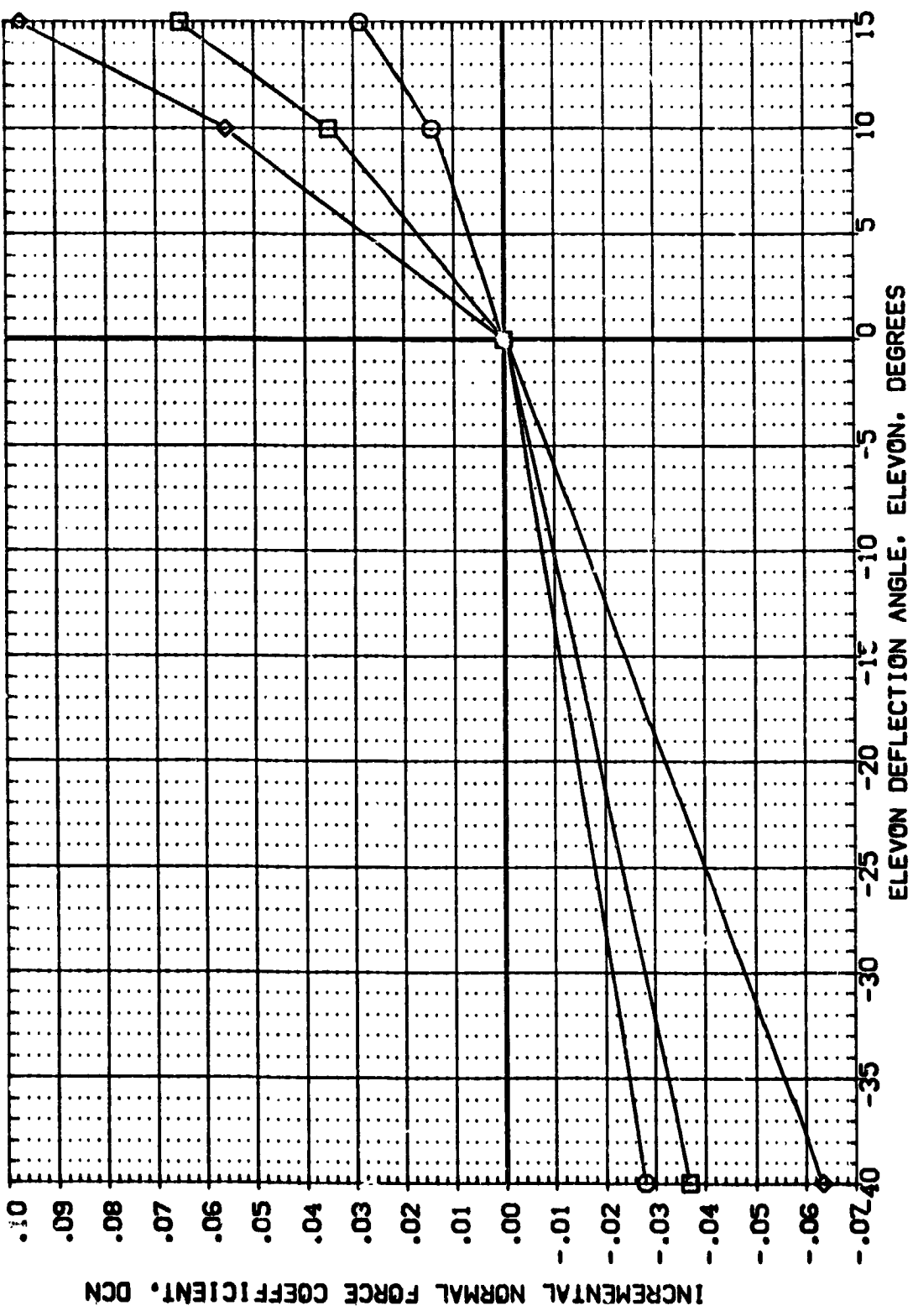


FIG. 5 ELEVON EFFECTIVENESS, RN/L=10., BOFLAP=16.3

AMES 3.5-176 0A87 140 A/B ORBITER (FEF014)

PARAMETRIC VALUES		DATA SOURCE		REFERENCE INFORMATION	
ALPHA	MACH	.000	ELEVON	SREF	50.FT.
10.000	1.000	16.300	FEF014	LREF	1230.3000
20.000	RUDDER	55.000	FEF012	BREF	976.6800
30.000	RN/L			XTRP	1076.4800
				YTRP	.0000
				ZTRP	.0000
				SCALE	.0150

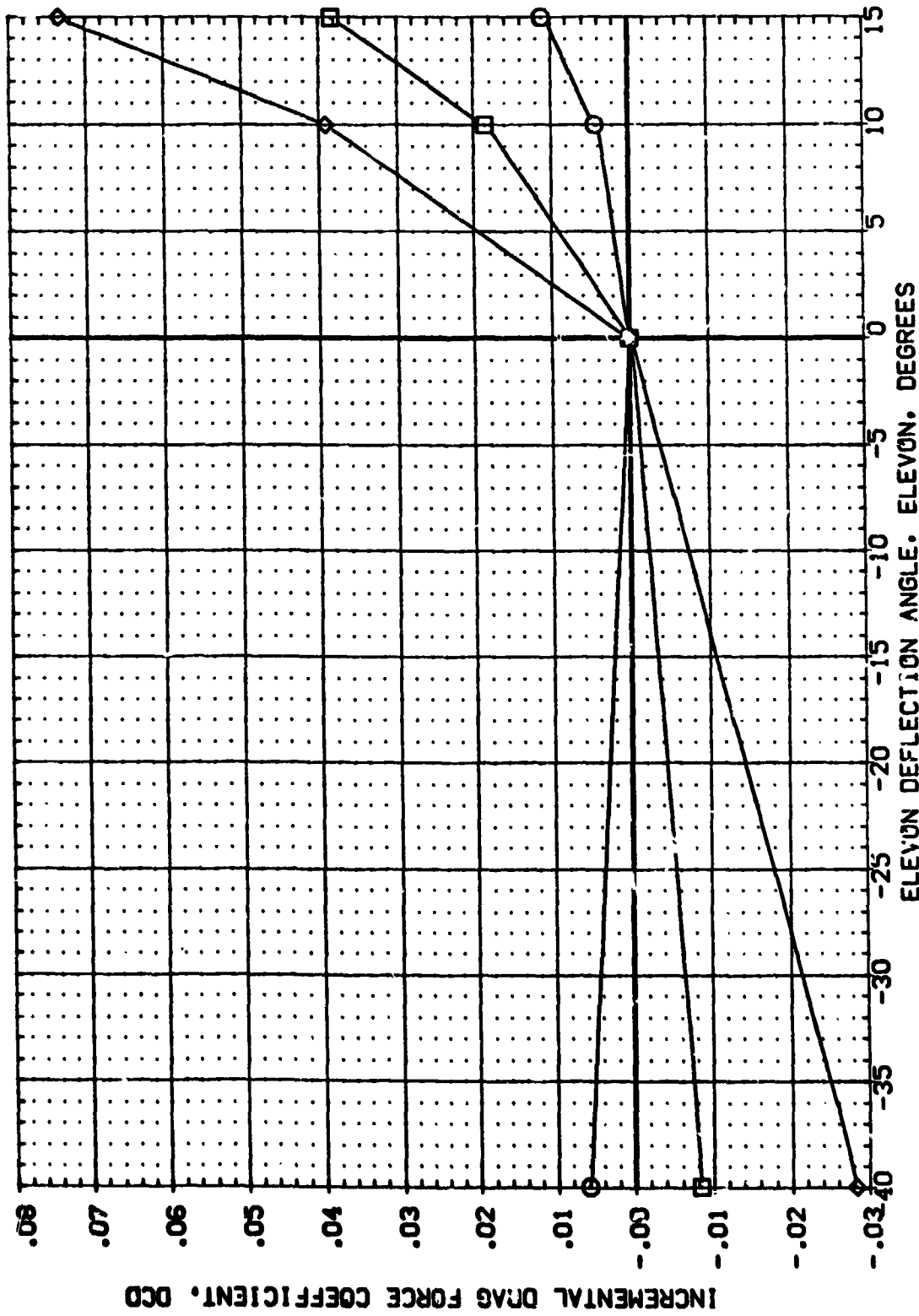


FIG. 5 ELEVON EFFECTIVENESS, RN/L=10., BOFLAP=16.3

AMES 3.5-176 0A87 140 A/B ORBITER (FEF014)

PARAMETRIC VALUES		DATA SOURCE		ELEVON		REFERENCE INFORMATION	
ALPHA	10.000	MACH	7.320	BETA	.000	SREF	26.50.0000
	20.000	AILRON	.000	BOFLAP	15.300	LREF	1290.2000
	30.000	RUDER	.000	FEF014	FEF015	BREF	936.6800
		RN/L	10.000	FEF012	FEF013	XTRP	1076.4800
						YTRP	.0000
						ZTRP	375.0000
						SCALE	.0150
							SO.FT.
							IN.
							IN.
							IN.
							IN.
							SCALE

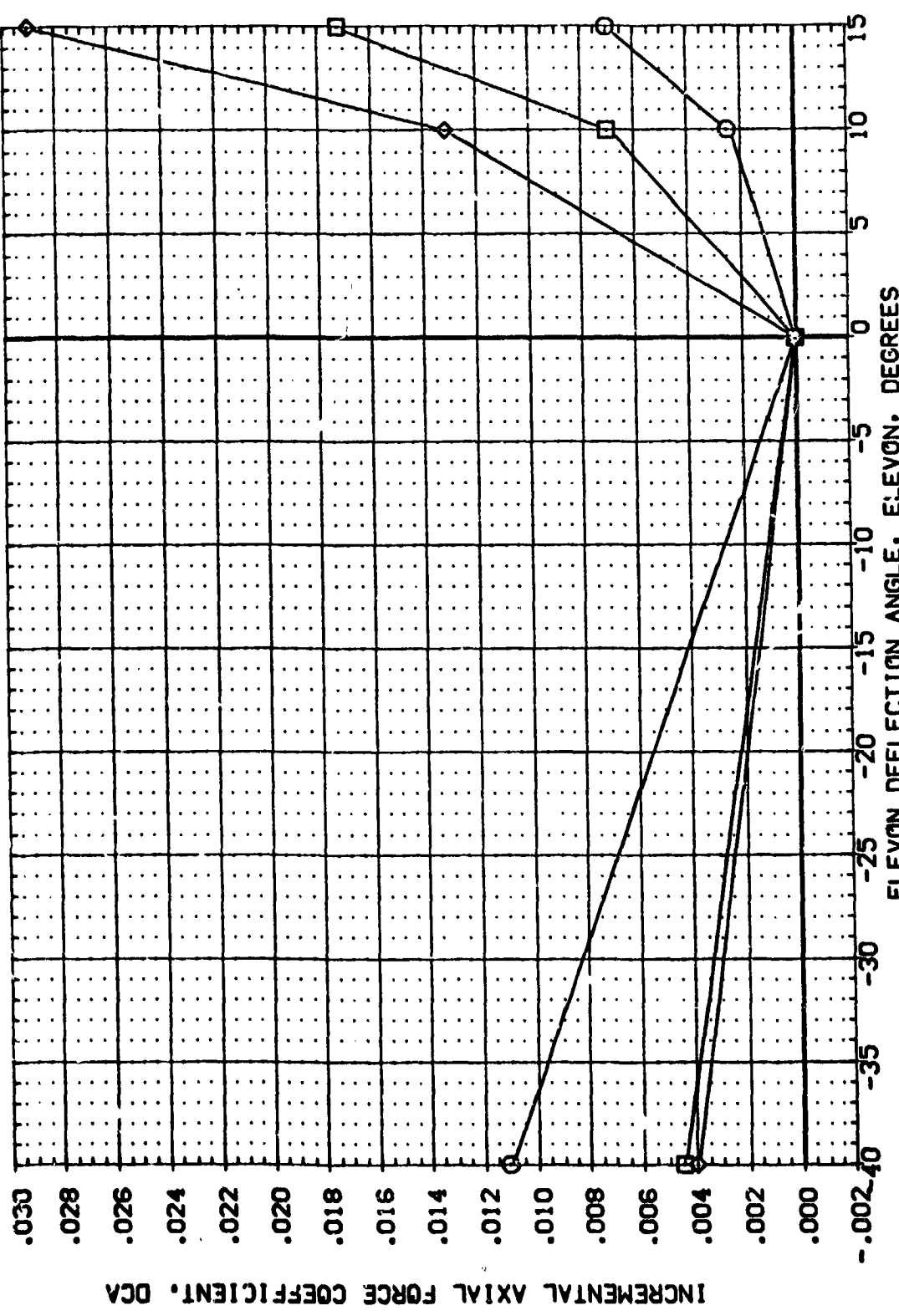


FIG. 5 ELEVON EFFECTIVENESS, RN/L=10., BOFLAP=16.3

AMES 3.5-176 0A87 140 A/B ORBITER (FEF014)

PARAMETRIC VALUES		DATA SOURCE		REFERENCE INFORMATION	
ALPHA	10.000	.000	FEF014	SREF	2690.0000
MACH	7.320	16.300	FEF014	LREF	1290.3000
AILERON	.000	55.000	FEF012	BREF	936.6800
RUDER	.000			XMRP	1076.4800
RV/L	10.000			YMRP	.0000
				ZMRP	375.0000
				SCALE	.0150

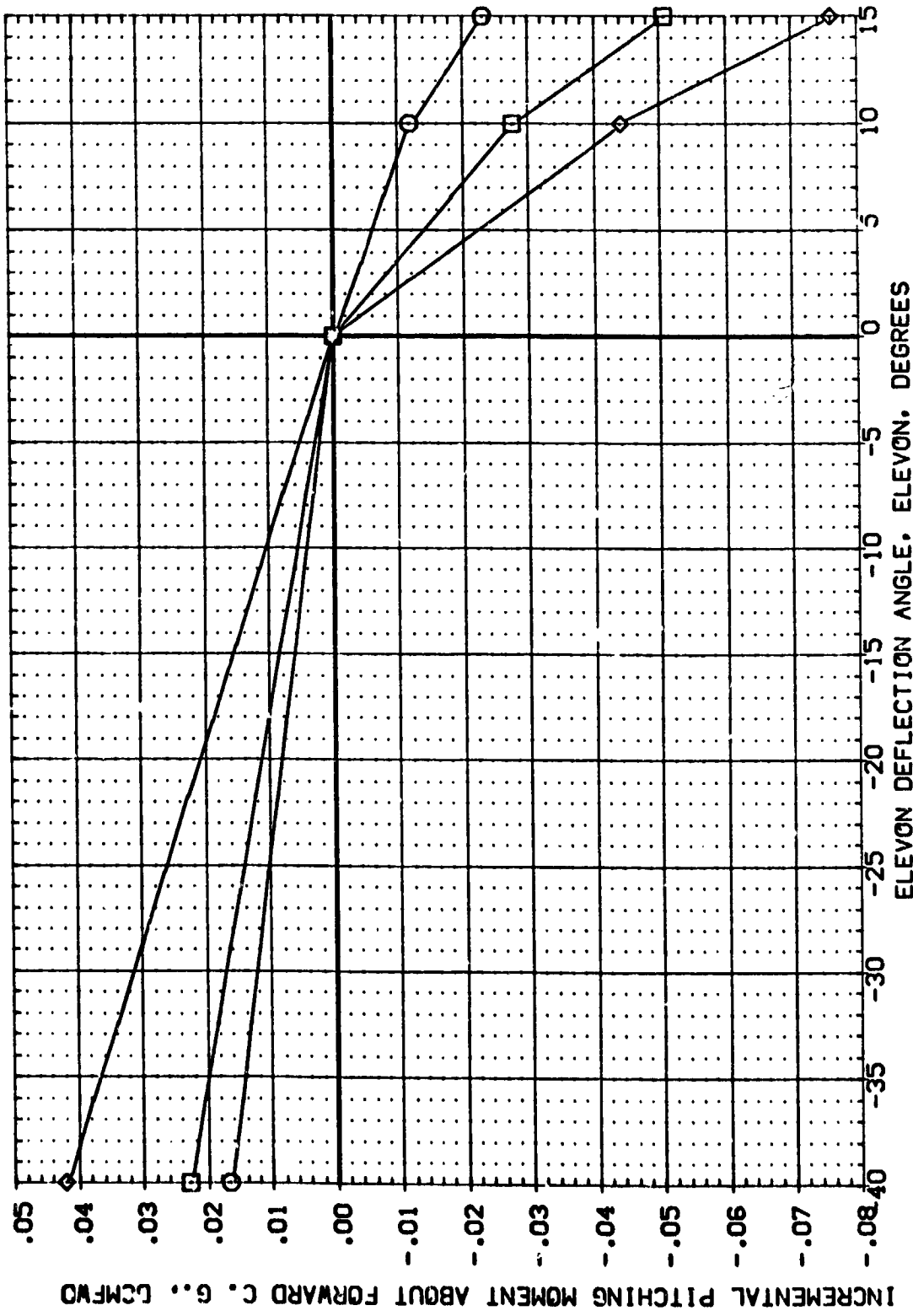


FIG. 5 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=16.3

AMES 3.5-176 0A87 140 A/B ORBITER (FEF014)

PARAMETRIC VALUES		DATA SOURCE		REFERENCE INFORMATION	
ALPHA	10.000	MACH	7.320	BETA	2650.0000
	20.000	AILRON	.000	BDFLAP	1250.3000
	30.000	RUDER	.000	SPDRN	936.6800
		RN/L	10.000		1076.4800
					375.0000
					.0150
					SCALE
					SCALE

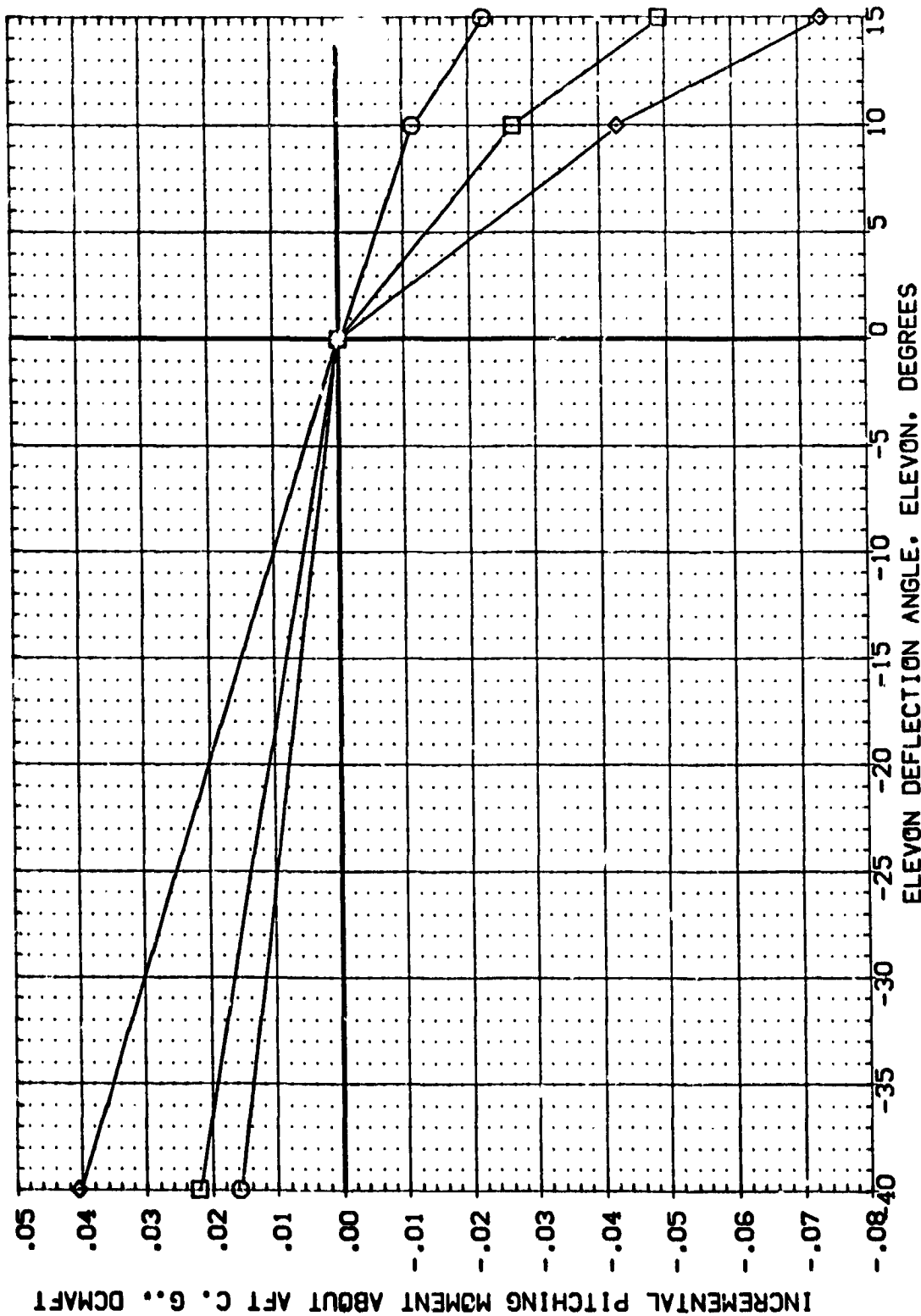


FIG. 5 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=16.3

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPODRK	BOFLAP	RN/L	REFERENCE INFORMATION
(REF 017)	AMES 3.5-176 OA87 140 A/B ORBITER	-40.000	55.000	-11.700	10.000	SREF 2690.0000 SQ.FT.
(REF 016)	AMES 3.5-176 OA87 140 A/B ORBITER	.000	55.000	-11.700	10.000	LREF 1290.3000 IN.
(REF 018)	AMES 3.5-176 OA87 140 A/B ORBITER	10.000	55.000	-11.700	10.000	BREF 936.6800 IN.
						YMPP 1076.4800 IN.
						ZMPP 375.0000 IN.
						SCALE .0150

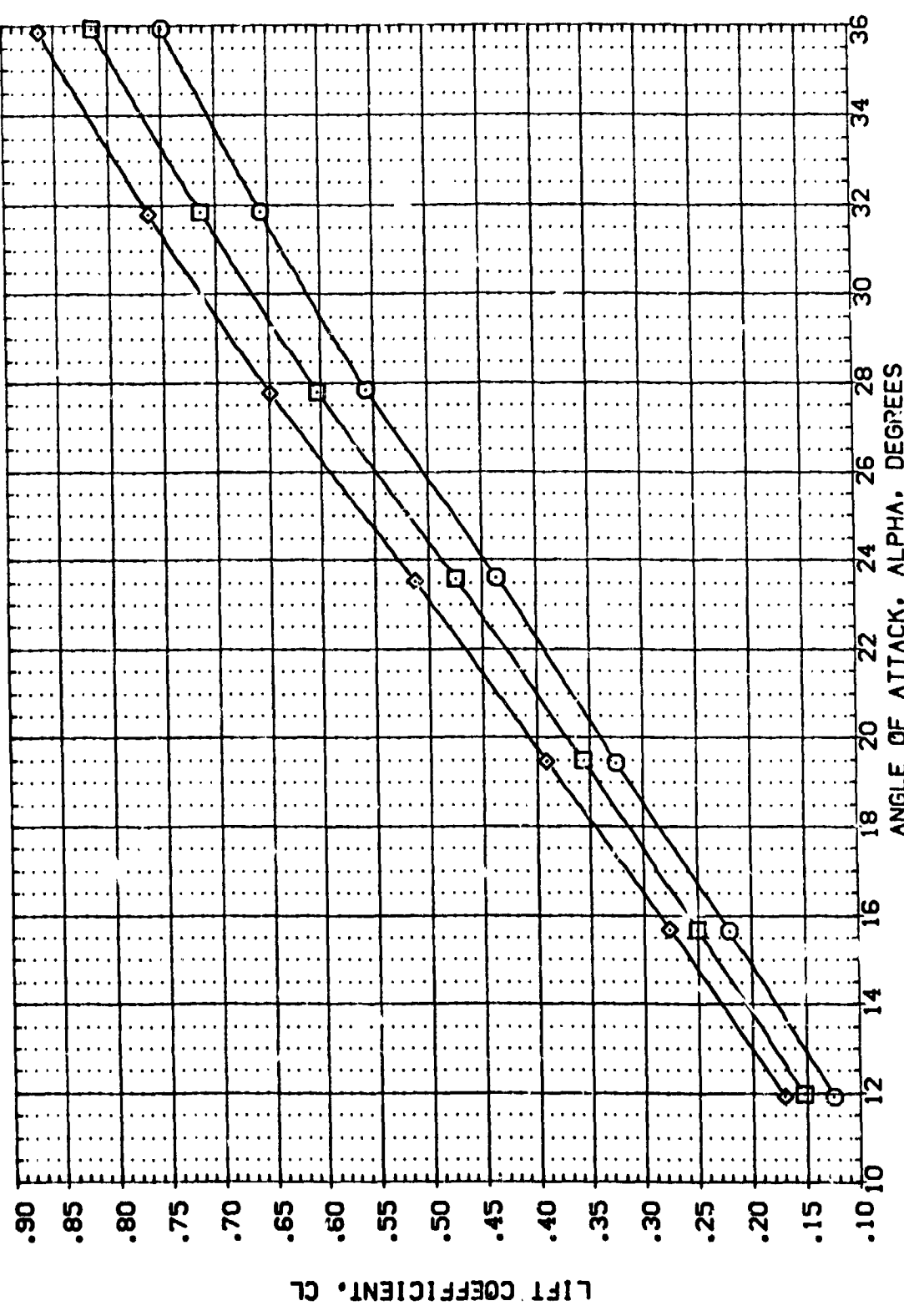


FIG. 6 ELEVON EFFECTIVENESS, RN/L=10., BOFLAP=-11.7

(AJMACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEFO17)	AVES 3.5-176 OAB7 140 A/B DRBITER	-0.000	55.000	-11.700	10.000	SREF 2690.0000 SQ.FT.
(BEFO16)	AVES 3.5-176 OAB7 140 A/B DRBITER	.000	55.000	-11.700	10.000	LREF 1290.3000 IN.
(BEFO18)	AVES 3.5-176 OAB7 140 A/B DRBITER	10.000	55.000	-11.700	10.000	BREF 936.6800 IN.
						XMRP 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150 SCALE

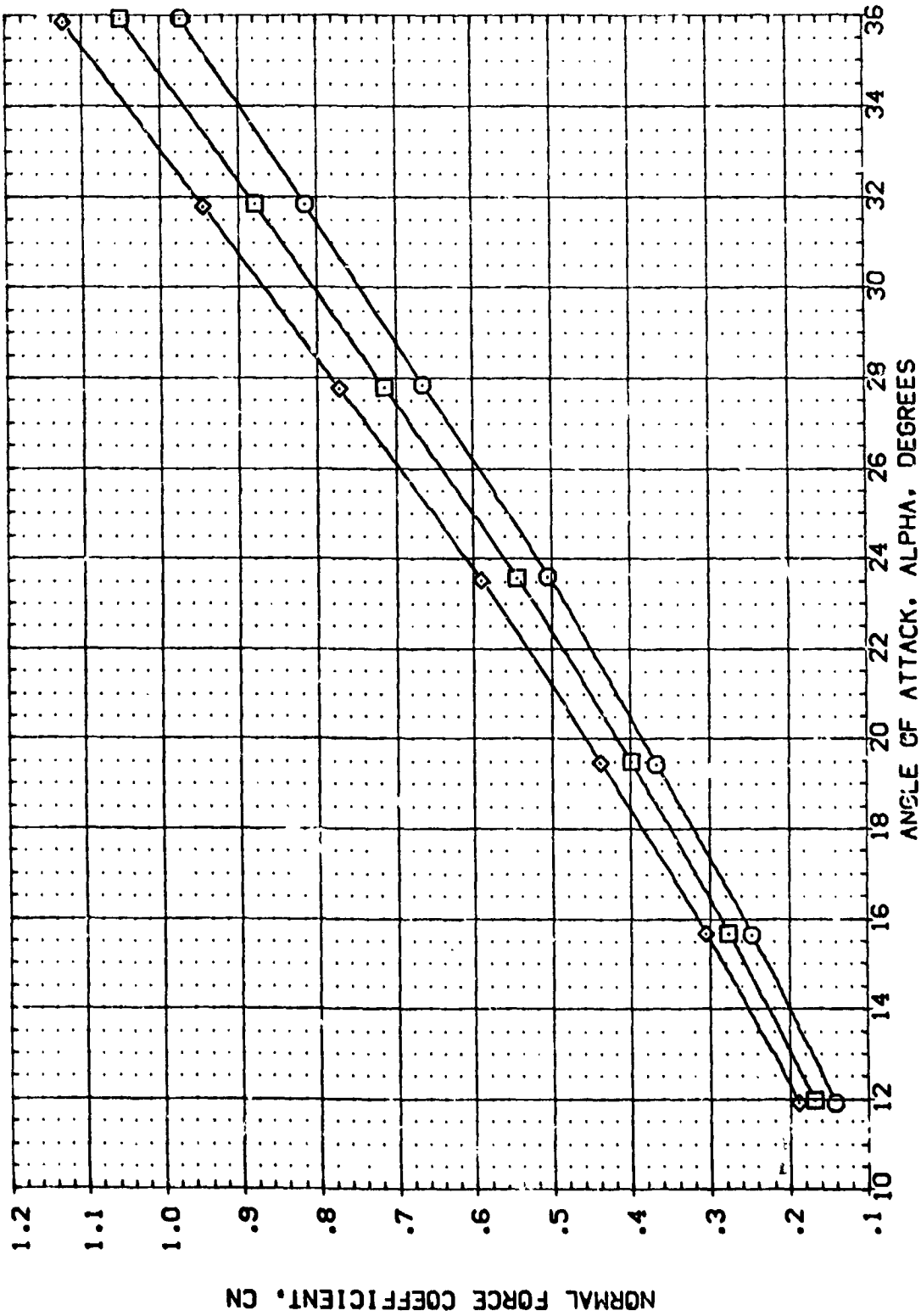


FIG. 6 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL: (BEFO17), (BEFO16), (BEFO18)

CONFIGURATION DESCRIPTION: AVES 3.5-176, AVES 3.5-176, AVES 3.5-176

ORBITER: 140 A/B, 140 A/B, 140 A/B

ELEVON: -40.000, 55.000, 10.000

SPDRBK: 55.000, 55.000, 55.000

BDFLAP: -11.700, -11.700, -11.700

RN/L: 10.000, 10.000, 10.000

REFERENCE INFORMATION: SREF 2600.0000, LREF 1250.5000, XREF 936.6800, YREF 1076.4800, ZREF 373.0000, SCALE .0150

90. FT. IN. IN. IN. IN.

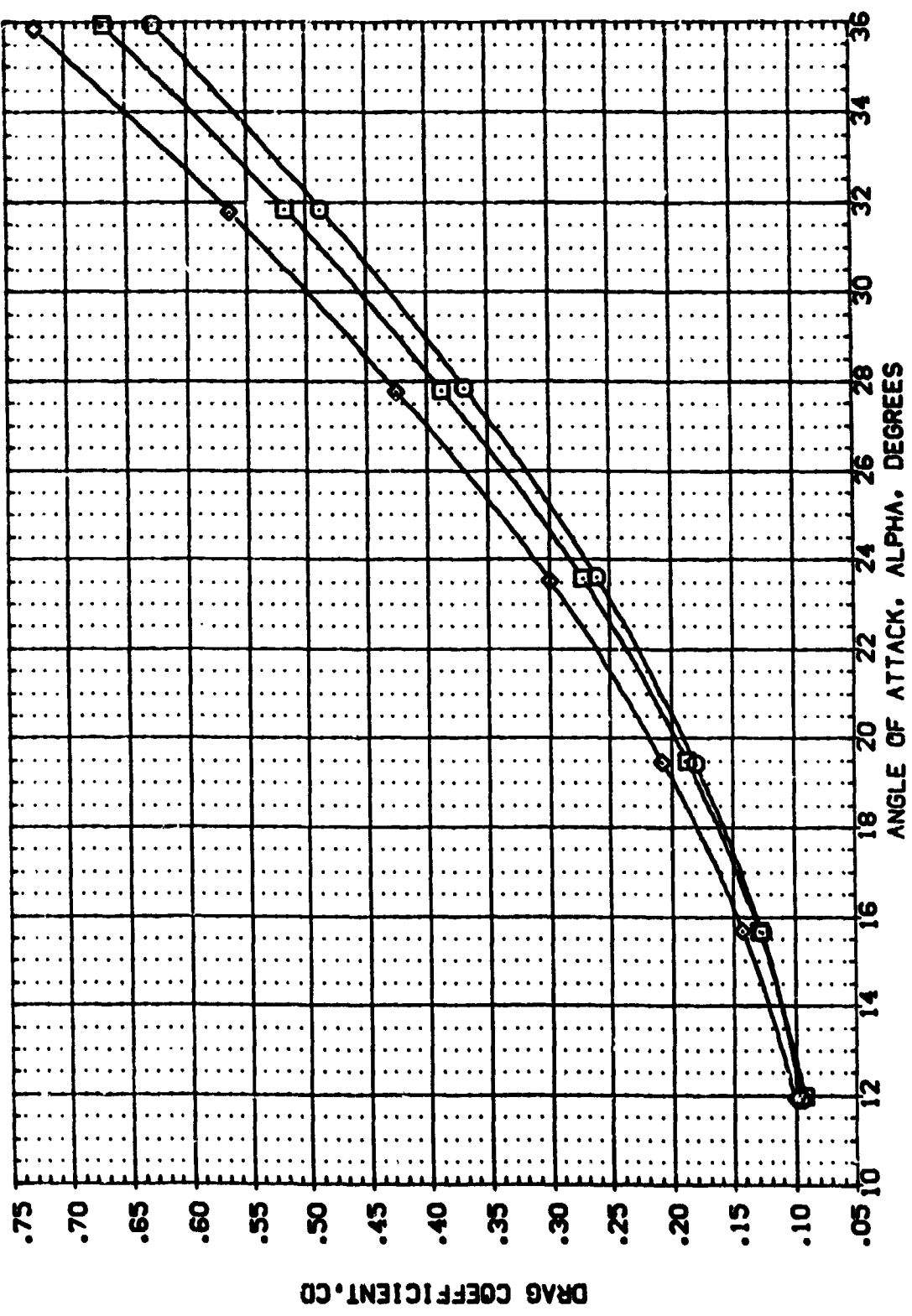


FIG. 6 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=-11.7
 (A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPDRK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEF017)	ANES 3.5-176 OAB7 140 A/B OAB/ITER	-40.000	55.000	-11.700	10.000	SHEET 2500.0000 SQ.FT.
(BEF016)	ANES 3.5-176 OAB7 140 A/B OAB/ITER	.000	55.000	-11.700	10.000	LINE 1200.2000 IN.
(BEF018)	ANES 3.5-176 OAB7 140 A/B OAB/ITER	10.000	55.000	-11.700	10.000	PROP 500.8000 IN.
						PROP 1078.4000 IN.
						PROP 375.0000 IN.
						SCALE .0150

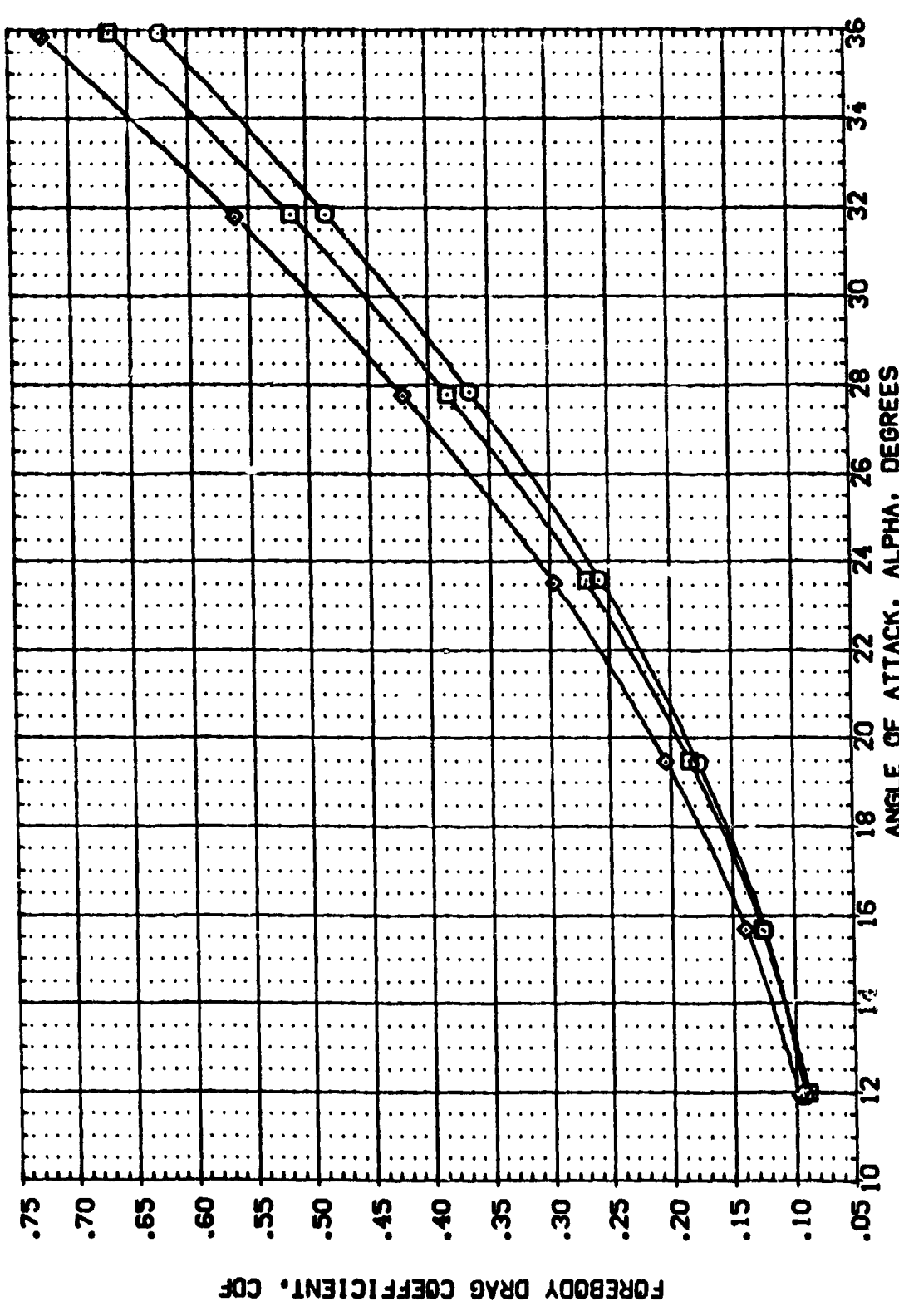


FIG. 6 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMB.	CONFIGURATION DESCRIPTION	ELEVON	SPORON	BDFLAP	RN/L	REFERENCE INFORMATION
(BEF017)	AMES 3.5-176 CAS7 140 A/B ORBITER	-40.000	55.000	-11.700	10.000	SN77 2650.0000 90-FT.
(BEF016)	AMES 3.5-176 CAS7 140 A/B ORBITER	10.000	55.000	-11.700	10.000	LAT7 1230.0000 IN.
(BEF018)	AMES 3.5-176 CAS7 140 A/B ORBITER		55.000	-11.700	10.000	SP77 5056.6800 IN.
						TR77 1076.4800 IN.
						TR77 375.0000 IN.
						SCALE .0150

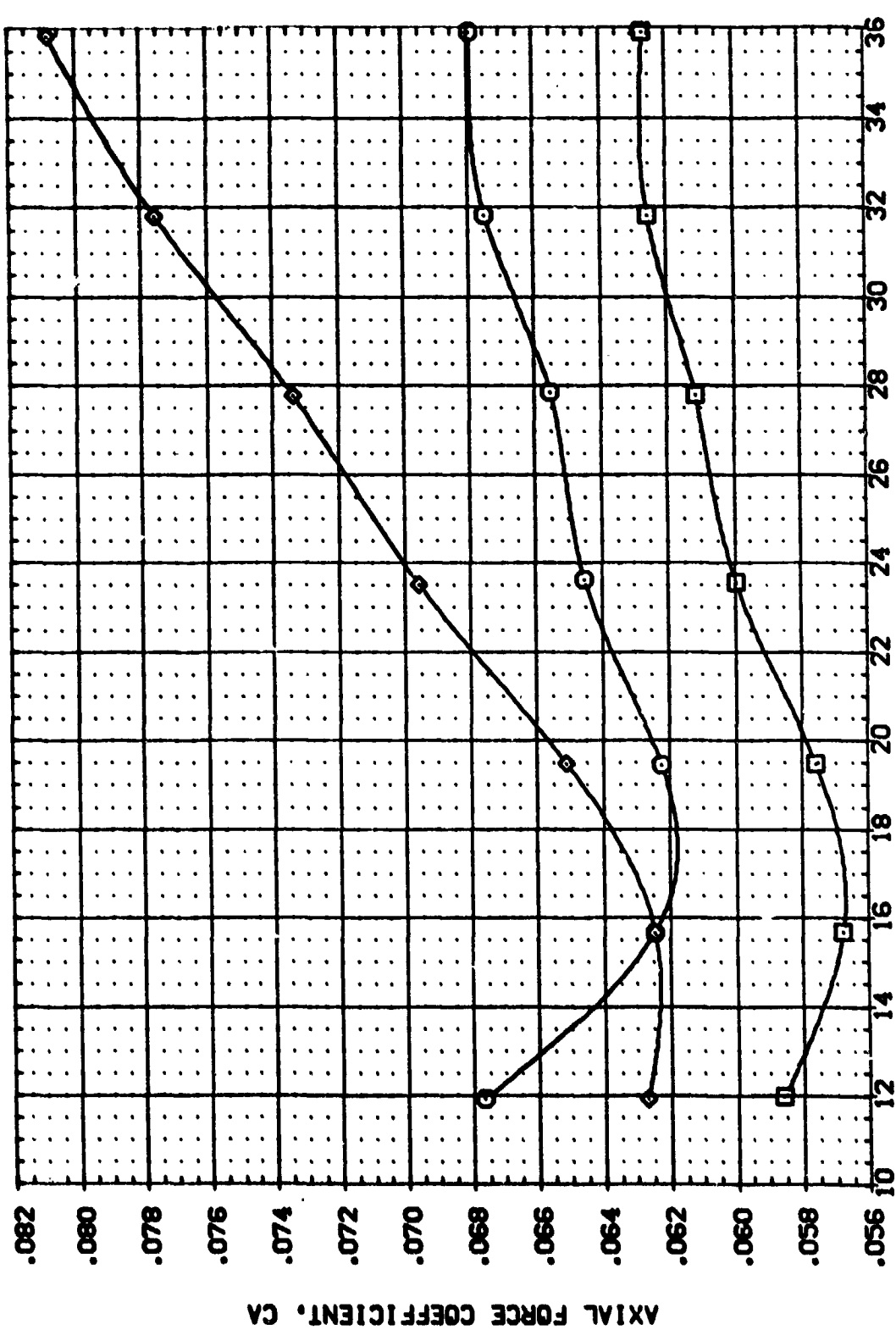


FIG. 6 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPURK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEF017)	AMES 3.5-176 DMB7 140 A/B ORBITER	-40.000	55.000	-11.700	10.000	DMB7 2680.0000 80.FT.
(BEF018)	AMES 3.5-176 DMB7 140 A/B ORBITER	10.000	55.000	-11.700	10.000	LRYT 1250.3000 IN.
	AMES 3.5-176 DMB7 140 A/B ORBITER	10.000	55.000	-11.700	10.000	DRFT 536.8800 IN.
						YARP 1076.4800 IN.
						ZARP 375.0000 IN.
						ZARP SCALE .0150

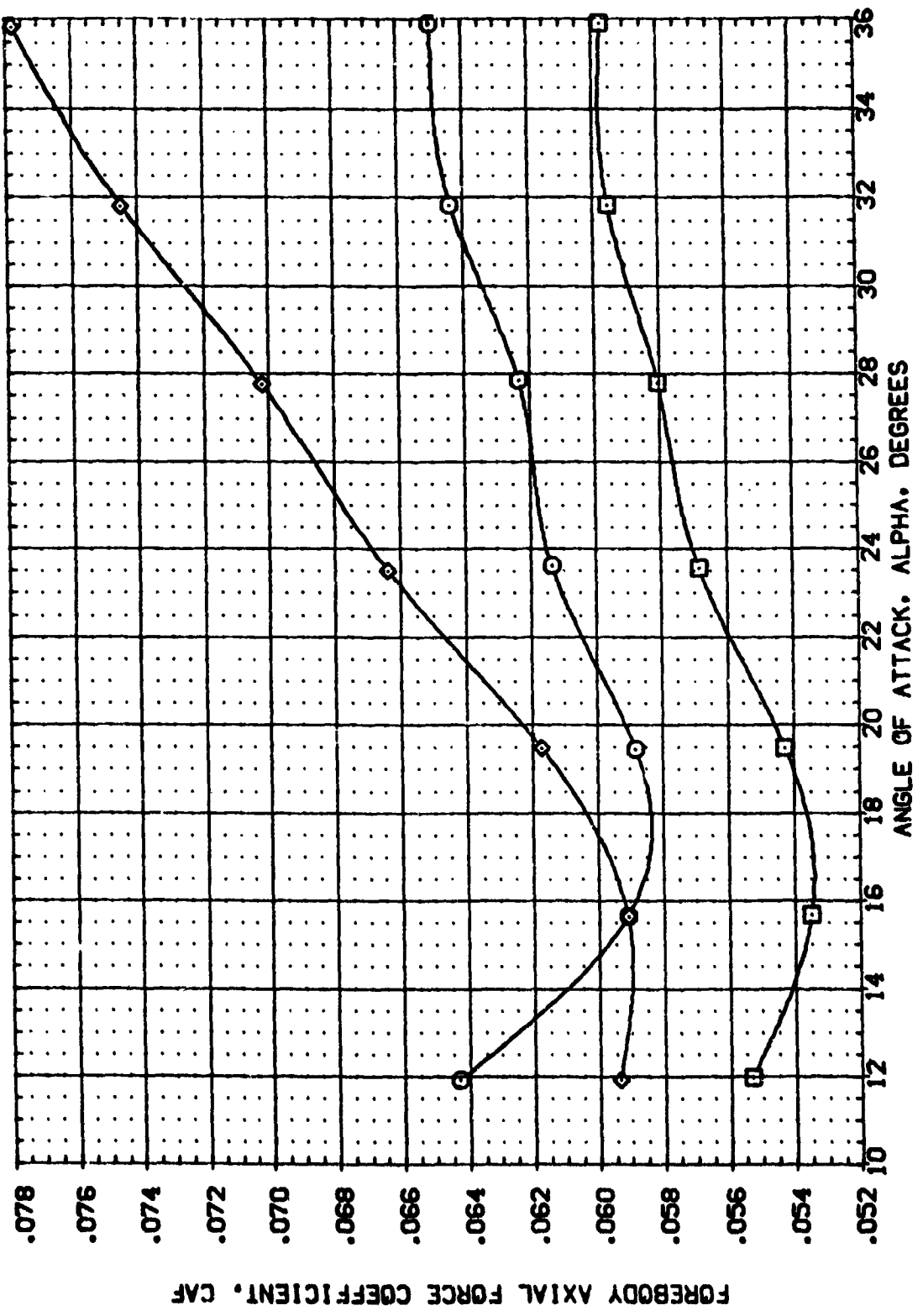


FIG. 6 ELEVON EFFECTIVENESS, RN/L=10., BOFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPORK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEP017)	AMES 3.5-176 CAB7 140 A/B ORBITER	-40.000	55.000	-11.700	10.000	SREF 2850.0000 SQ.FT.
(BEP016)	AMES 3.5-176 CAB7 140 A/B ORBITER	.000	55.000	-11.700	10.000	LREF 1250.3000 IN.
(BEP018)	AMES 3.5-176 CAB7 140 A/B ORBITER	10.000	55.000	-11.700	10.000	BREF 936.6800 IN.
						XREF 1076.4800 IN.
						YREF 0000 IN.
						ZREF 375.0000 IN.
						SCALE .0150

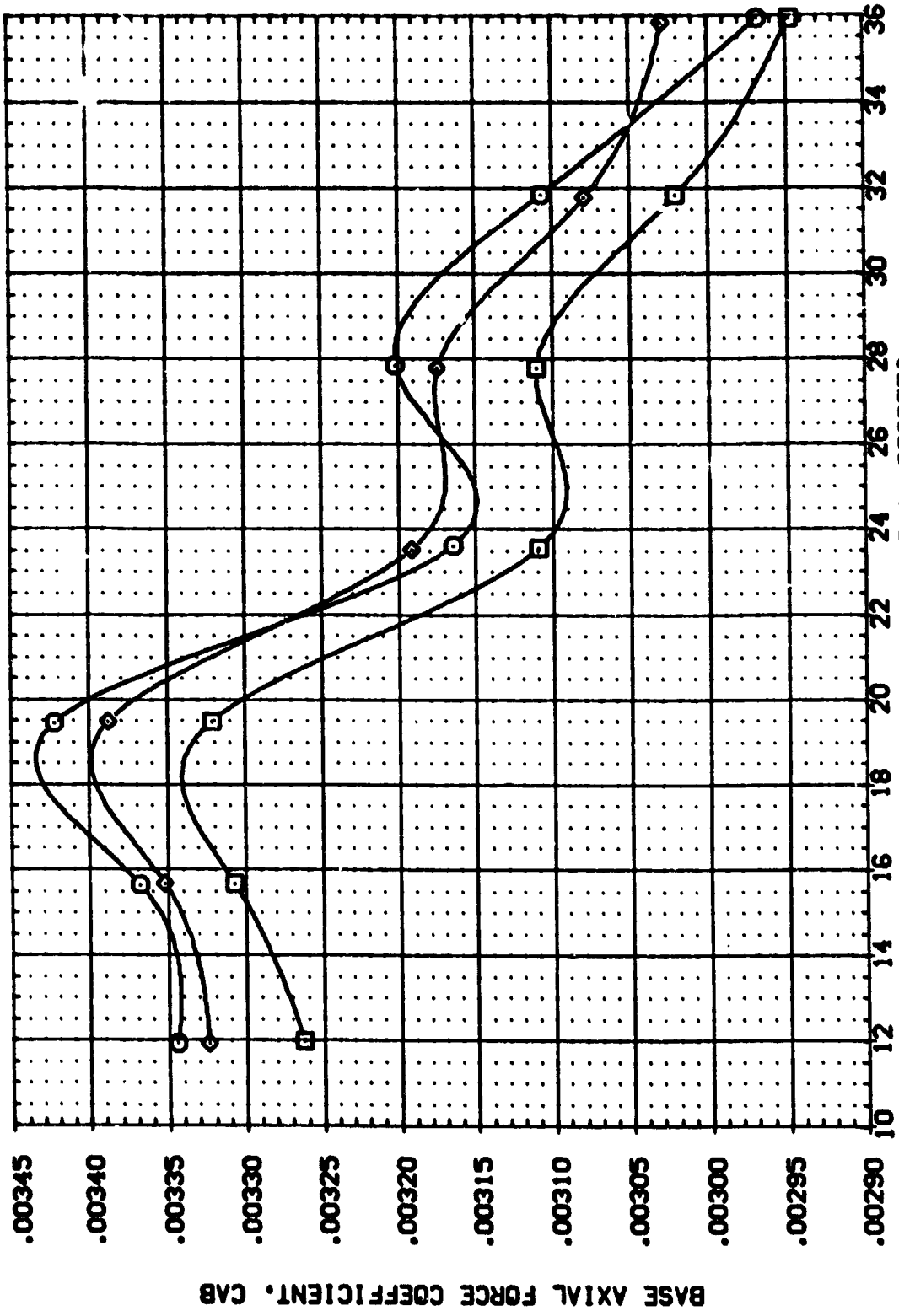


FIG. 6 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBO. CONFIGURATION DESCRIPTION REFERENCE INFORMATION

(BEF017)	AVES 3.5-176 CAB7 140 A/B CRBITER	SWEP	2800.0000	90.FT.
(BEF016)	AVES 3.5-176 CAB7 140 A/B CRBITER	LANF	1250.3000	IN.
(BEF018)	AVES 3.5-176 CAB7 140 A/B CRBITER	BRPF	928.6000	IN.
		YAMP	1076.4000	IN.
		ZAMP	0.0000	IN.
		SCALE	375.0000	IN.
			.0150	SCALE

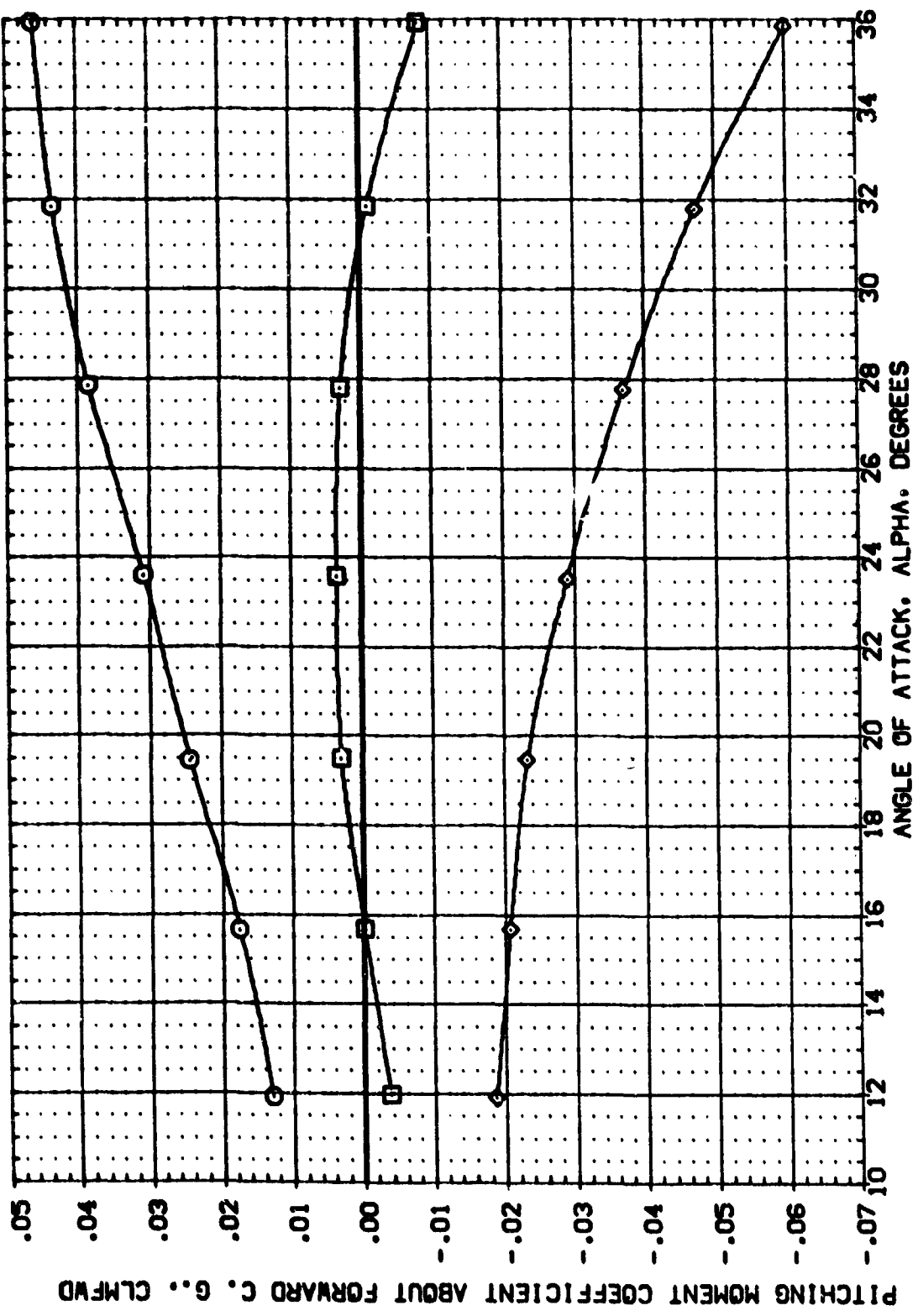


FIG. 6 ELEVON EFFECTIVENESS, RN/L=10., BD/FLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBO	CONFIGURATION DESCRIPTION	ELEVON	SPOONX	BDFLAP	RN/L	REFERENCE INFORMATION
(BEF017)	AVES 3.5-176 OAB7 140 A/B ORBITER	-40.000	55.000	-11.700	10.000	SHEET 2690.0000 SQ.FT.
(BEF016)	AVES 3.5-176 OAB7 140 A/B ORBITER	10.000	55.000	-11.700	10.000	REF 1290.7000 IN.
(BEF018)	AVES 3.5-176 OAB7 140 A/B ORBITER	10.000	55.000	-11.700	10.000	SHEET 506.8800 IN.
						PROP 1076.4800 IN.
						TRAP .0000 IN.
						SCALE 375.0000 IN.
						SCALE .0150

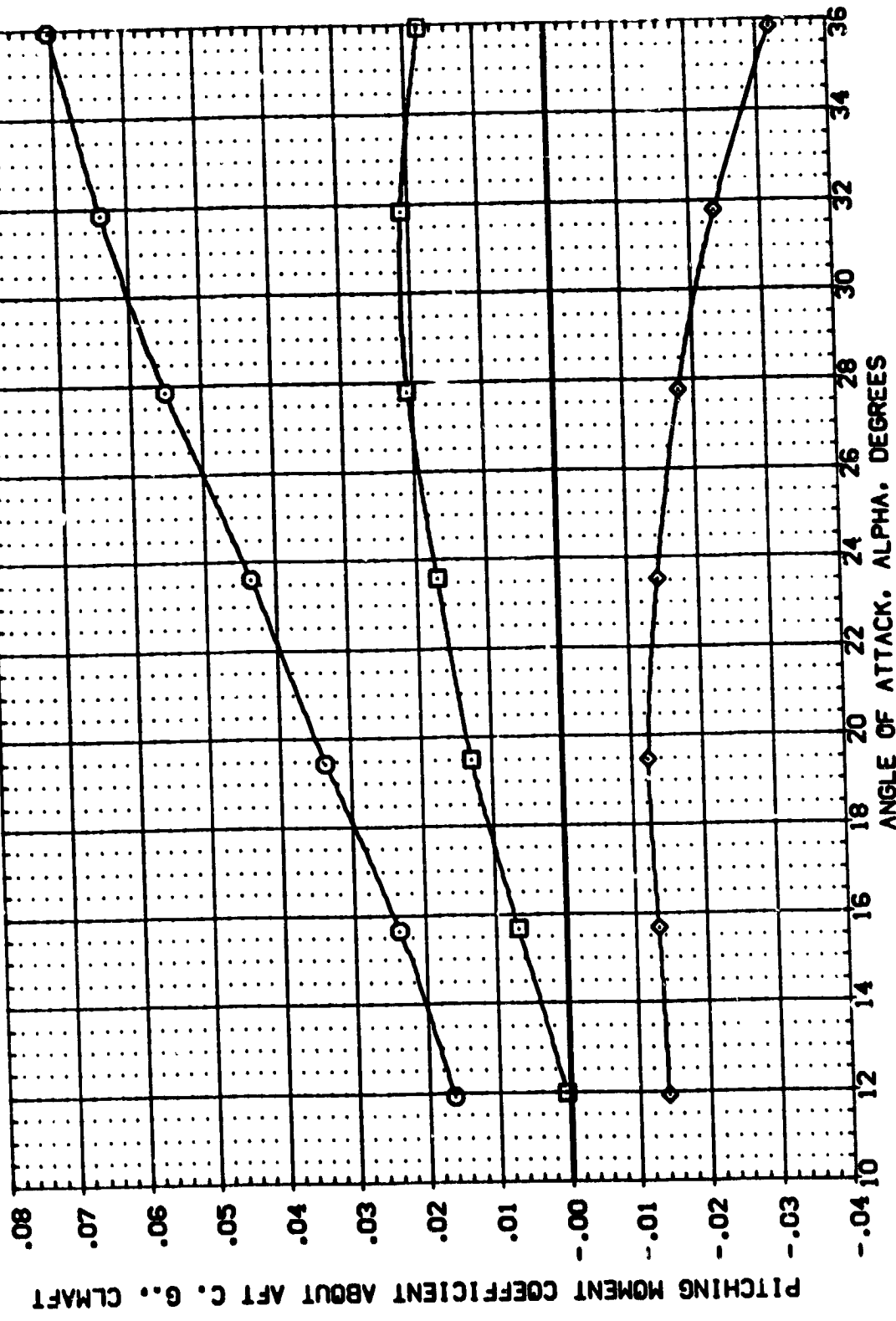


FIG. 6 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBO (BEFO17) (BEFO16) (BEFO18)

CONFIGURATION DESCRIPTION
 AWES 3.5-176 OAB7 140 A/B ORBITER
 AWES 3.5-176 OAB7 140 A/B ORBITER
 AWES 3.5-176 OAB7 140 A/B ORBITER

ELEVON SPOONK BOFLAP RN/L
 -40.000 99.000 -11.700 10.000
 10.000 99.000 -11.700 10.000
 10.000 99.000 -11.700 10.000

REFERENCE INFORMATION
 SREF 2680.0000 90.FT.
 LREF 1240.0000 IN.
 MREF 576.0000 IN.
 XREF 1076.0000 IN.
 YREF 4800.0000 IN.
 ZREF 375.0000 IN.
 SCALE .0150

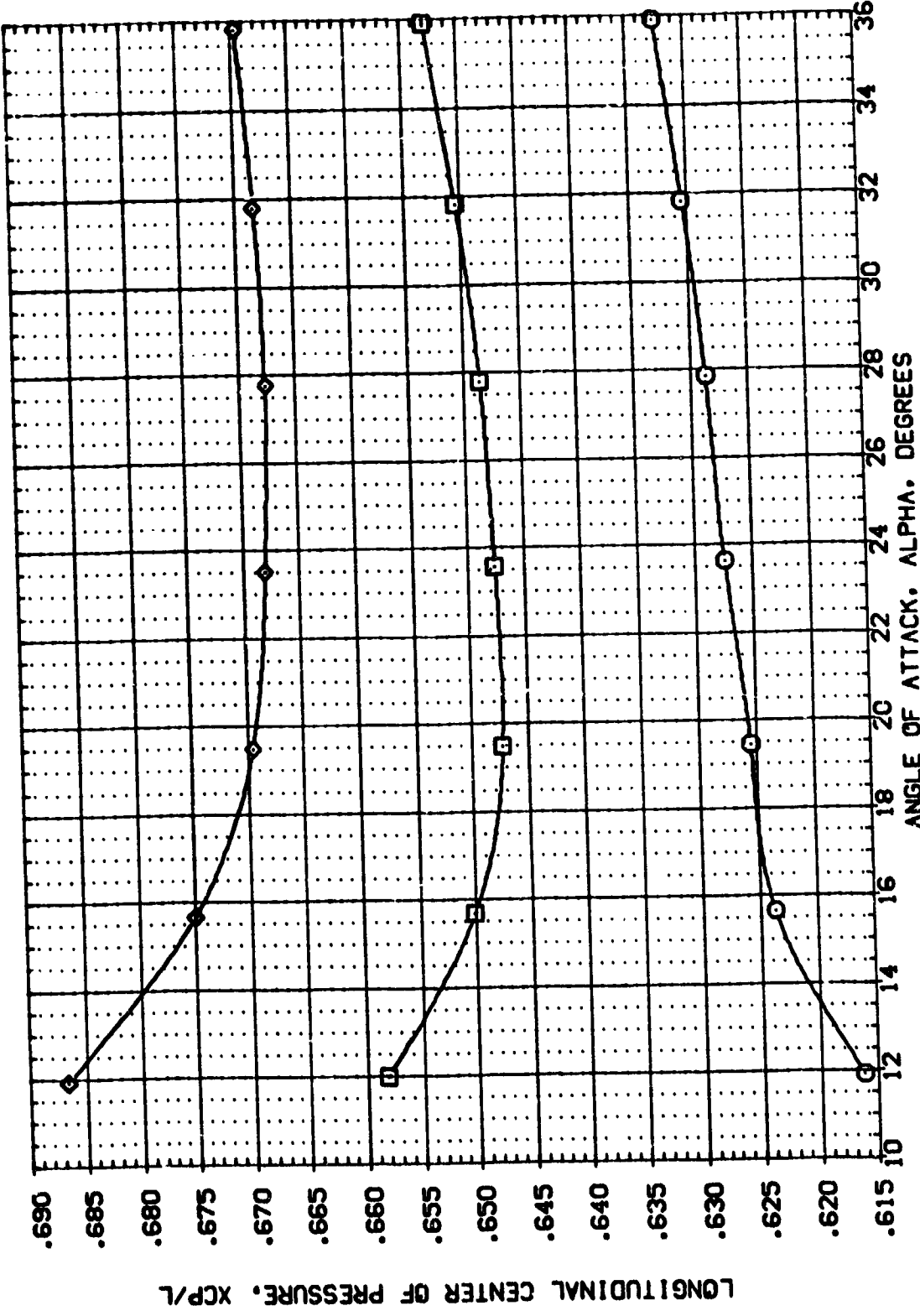


FIG. 6 ELEVON EFFECTIVENESS, RN/L=10., BOFLAP=-11.7
 (A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPORK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEF017)	AMES 3.5-176 OAS7 140 A/B DRB1TER	-40.000	55.000	-11.700	10.000	SREF 2690.0000 50.FT.
(BEF016)	AMES 3.5-176 OAS7 140 A/B DRB1TER	0.000	55.000	-11.700	10.000	LREF 1290.3000 IN.
(BEF018)	AMES 3.5-176 OAS7 140 A/B DRB1TER	10.000	55.000	-11.700	10.000	BREF 936.6000 IN.
						XREF 1076.4800 IN.
						YREF 375.0000 IN.
						ZREF 375.0000 IN.
						SCALE .0150

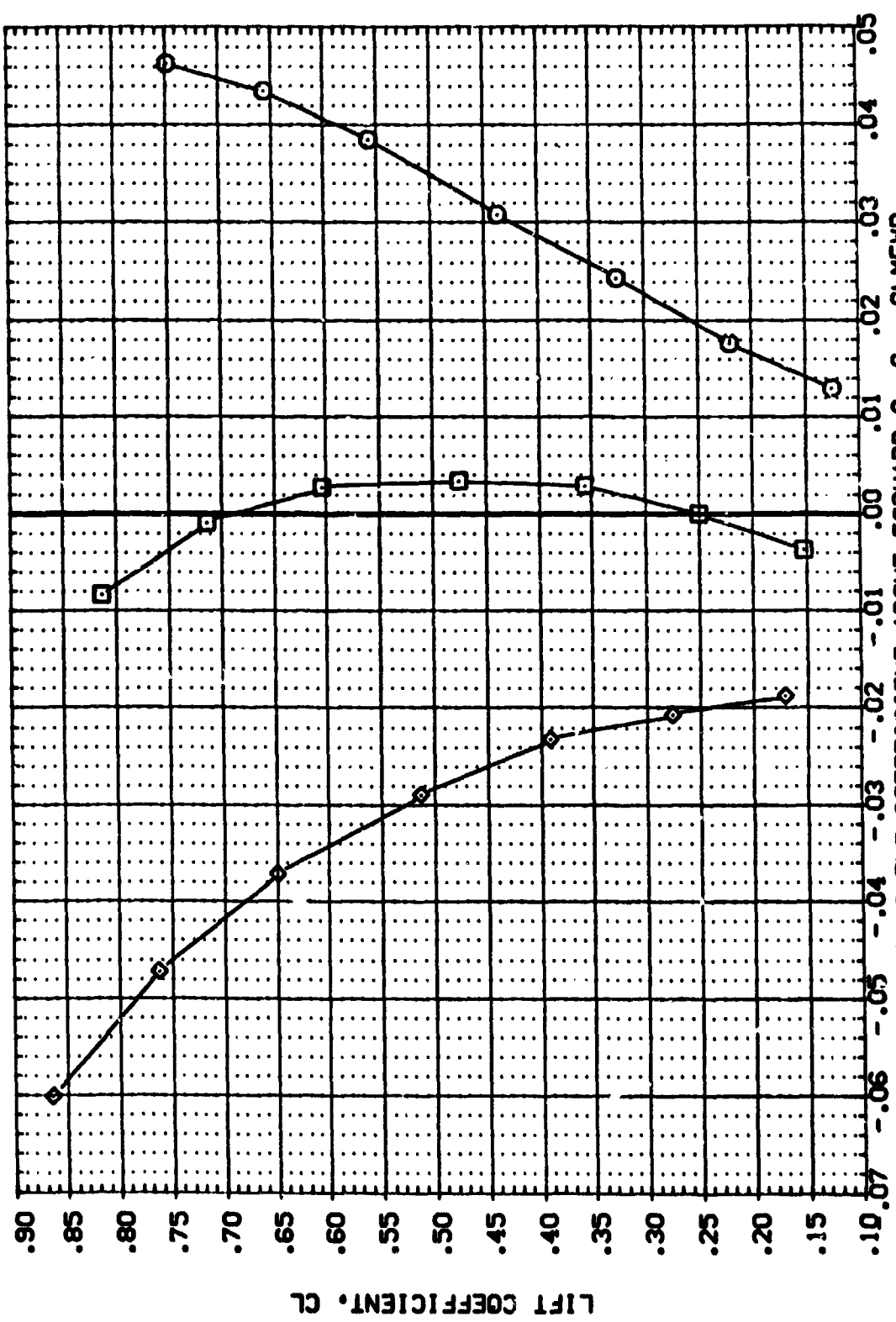
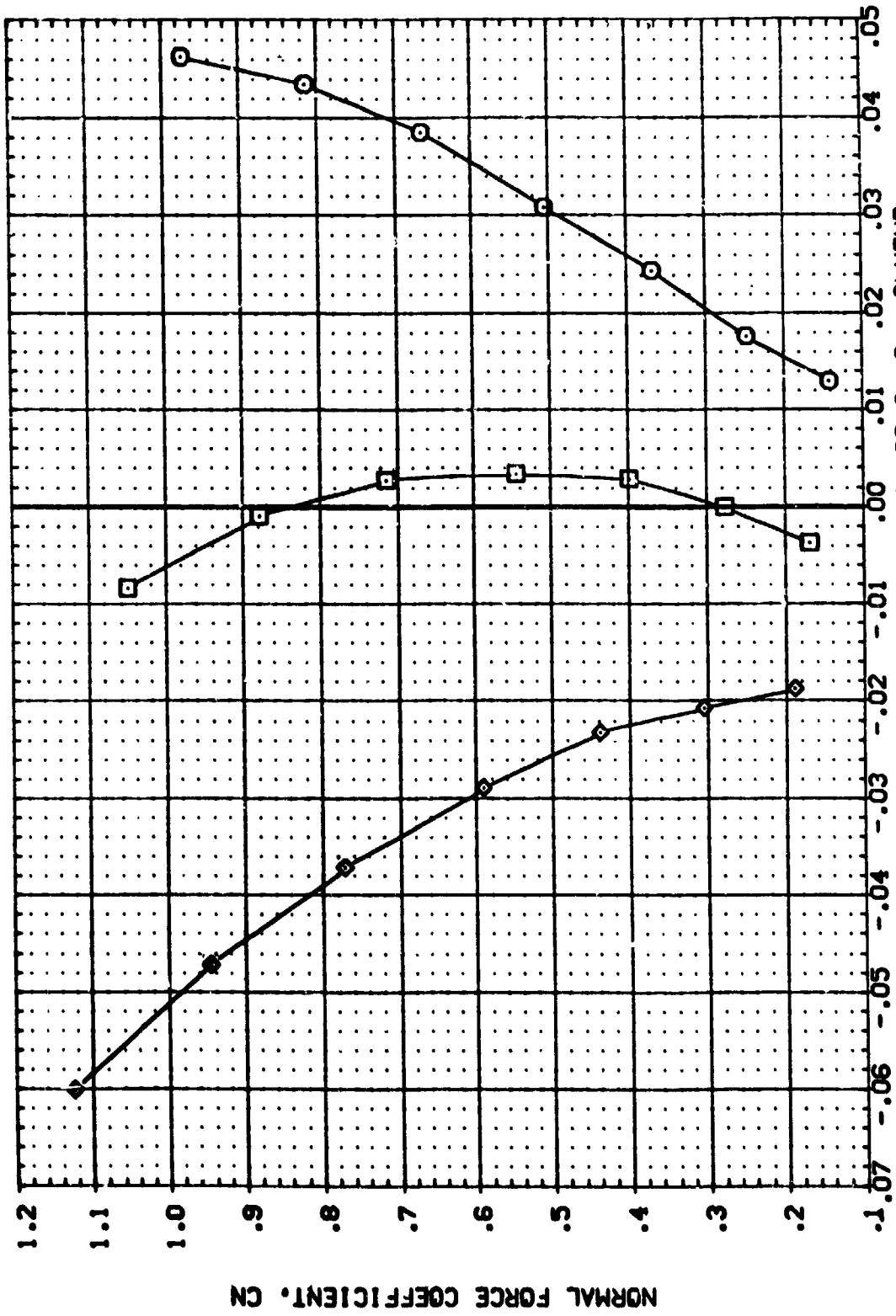


FIG. 6 ELEVON EFFECTIVENESS, RN/L=10., BOFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BOFLAP	RNAL	REFERENCE INFORMATION
(BEF017)	AVES 3.5-178 OAB7 140 A/B CRBITER	-40.000	55.000	-11.700	10.000	SREF 2880.0000 SQ.FT.
(BEF016)	AVES 3.5-178 OAB7 140 A/B CRBITER	.000	55.000	-11.700	10.000	LREF 1250.3000 IN.
(BEF018)	AVES 3.5-178 OAB7 140 A/B CRBITER	10.000	55.000	-11.700	10.000	BREF 936.8800 IN.
						XREF 1076.4800 IN.
						YREF .0000 IN.
						ZREF 375.0000 IN.
						SCALE .0150 SCALE



PITCHING MOMENT COEFFICIENT ABOUT FORWARD C. G.: CLMFW

FIG. 6 ELEVON EFFECTIVENESS, RN/L=10., BOFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPDRBK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEF017)	AVES 3.5-176 CAB7 140 A/B CRBITER	-40.000	55.000	-11.700	10.000	SREF 2650.0000 50.FT.
(BEF016)	AVES 3.5-176 CAB7 140 A/B CRBITER	10.000	55.000	-11.700	10.000	LREF 1250.3000 IN.
(BEF018)	AVES 3.5-176 CAB7 140 A/B CRBITER	10.000	55.000	-11.700	10.000	SREF 936.5600 IN.
						XREF 1076.4800 IN.
						YREF .0000 IN.
						ZREF 375.0000 IN.
						SCALE .0150

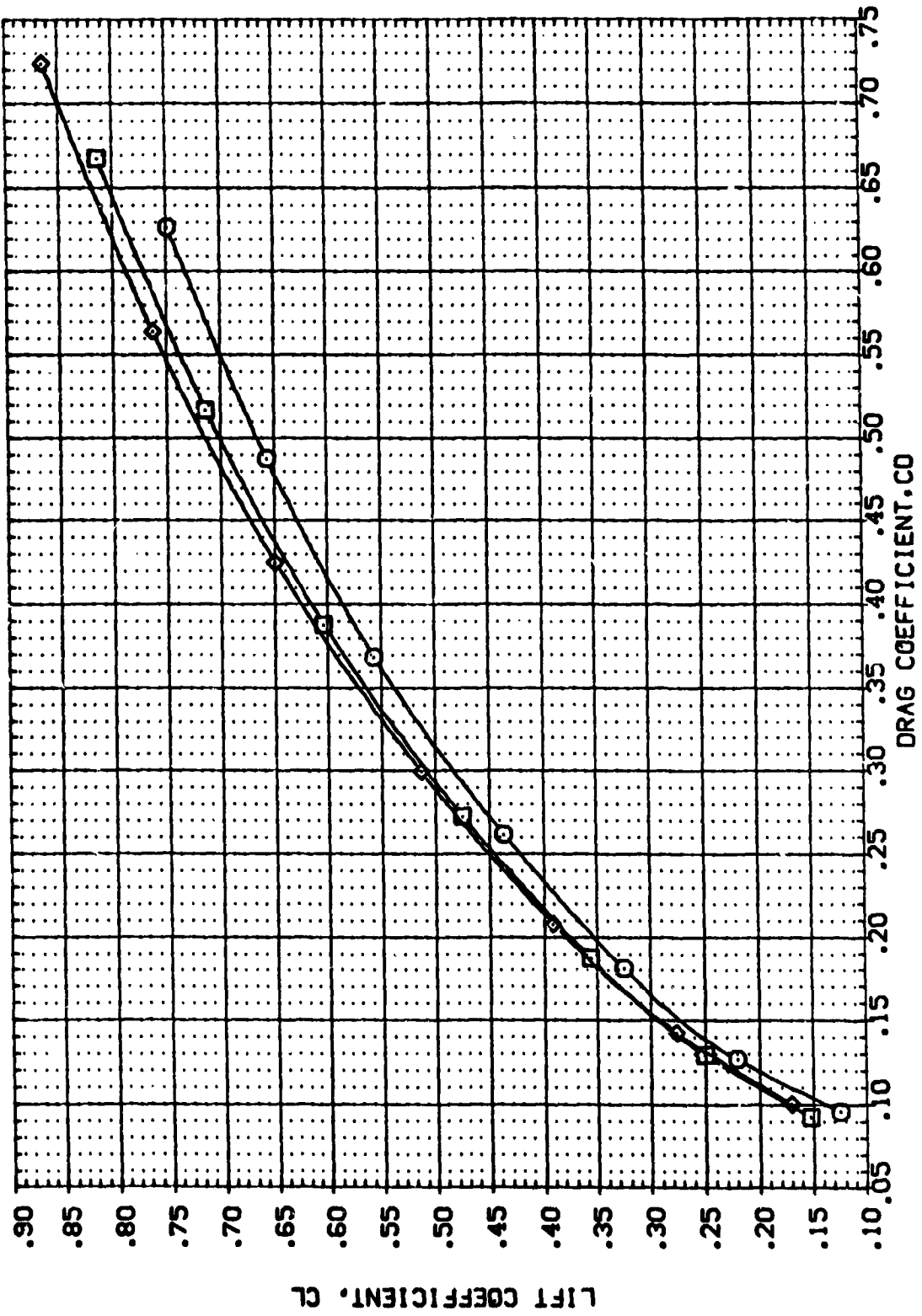


FIG. 6 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BOFLAP	RN/L	REFERENCE INFORMATION
(AEFO17)	AMES 3.5-176 OMB7 140 A/B ORBITER	-40.000	55.000	-11.700	10.000	SREF 2690.0000 SO.FT.
(AEFO16)	AMES 3.5-176 OMB7 140 A/B ORBITER	.000	55.000	-11.700	10.000	LREF 1290.3000 IN.
(AEFO18)	AMES 3.5-176 OMB7 140 A/S ORBITER	10.000	55.000	-11.700	10.000	BREF 936.6800 IN.
						YMRP .0000 IN.
						ZMRP .0000 IN.
						SCALE .0150

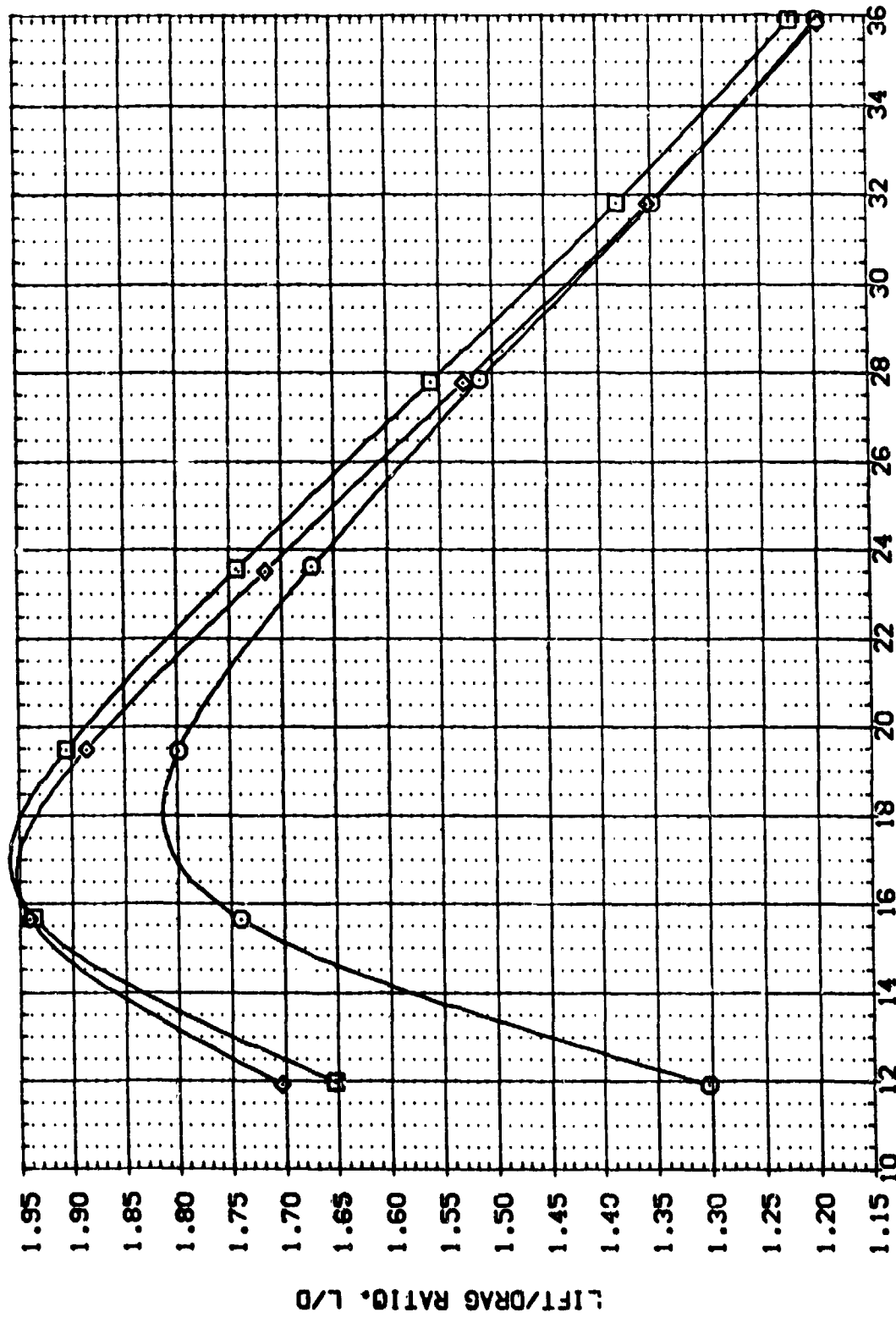


FIG. 6 ELEVON EFFECTIVENESS, RN/L=10., BOFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL (EF017) □ CONFIGURATION DESCRIPTION AMES 3.5-176 OAB7 140 A/B ORBITER
 (EF018) □ AMES 3.5-176 OAB7 140 A/B ORBITER

DE -40.000 55.000 55.000 55.000 SPOBRK 11.700 11.700 11.700 11.700 BOFLAP RN/L 10.000 10.000 10.000 10.000

REFERENCE INFORMATION SQ. FT. SREF 2690.0000 LREF 1230.3000 BREF 536.6600 XREF 1076.4800 YREF .0000 ZREF 375.0000 SCALE .0150

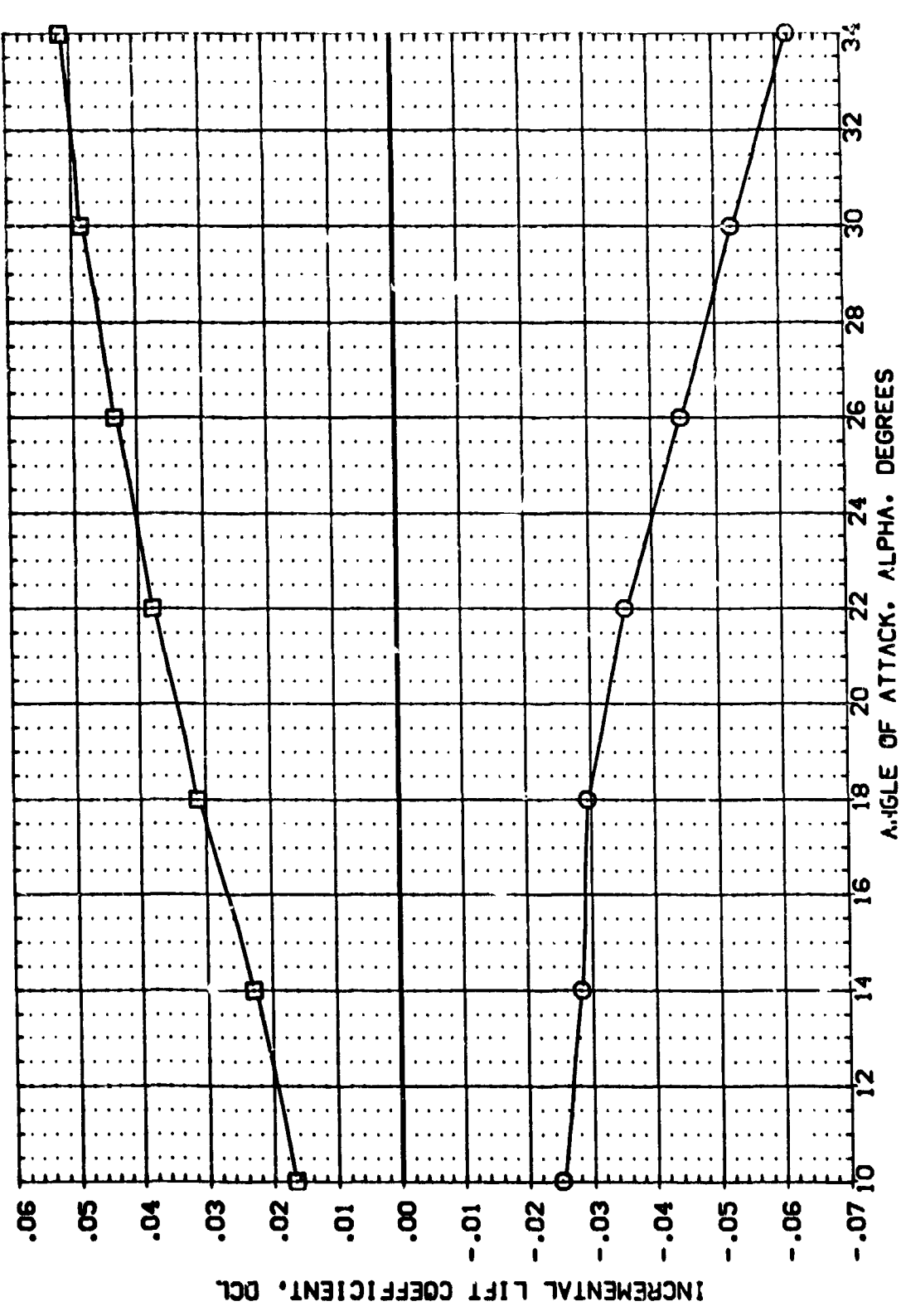


FIG. 6 ELEVON EFFECTIVENESS, RN/L=10., BOFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	DE	SPOBRK	BDFLAP	RN/L	REFERENCE INFORMATION
(EEF017)	ANES 3.5-176 CAB7 140 A/B ORBITER	-10.000	55.000	-11.700	10.000	SREF 2690.0000 SQ.FT.
(EEF018)	ANES 3.5-176 CAB7 140 A/B ORBITER	10.000	55.000	-11.700	10.000	LREF 1290.3000 IN.
						BREF 936.6800 IN.
						XMRP 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150

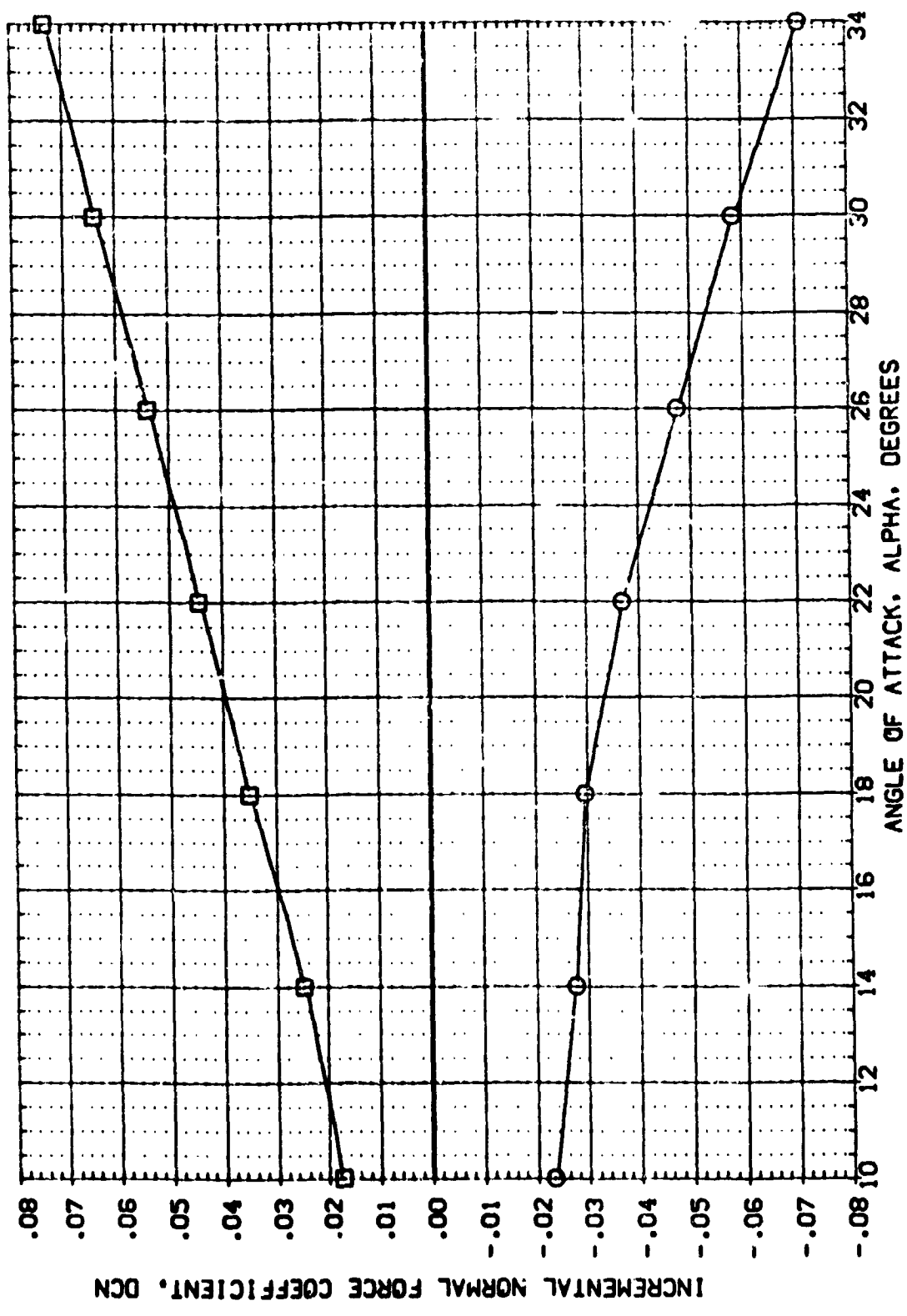


FIG. 6 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=-11.7
 (A)MACH = 7.32

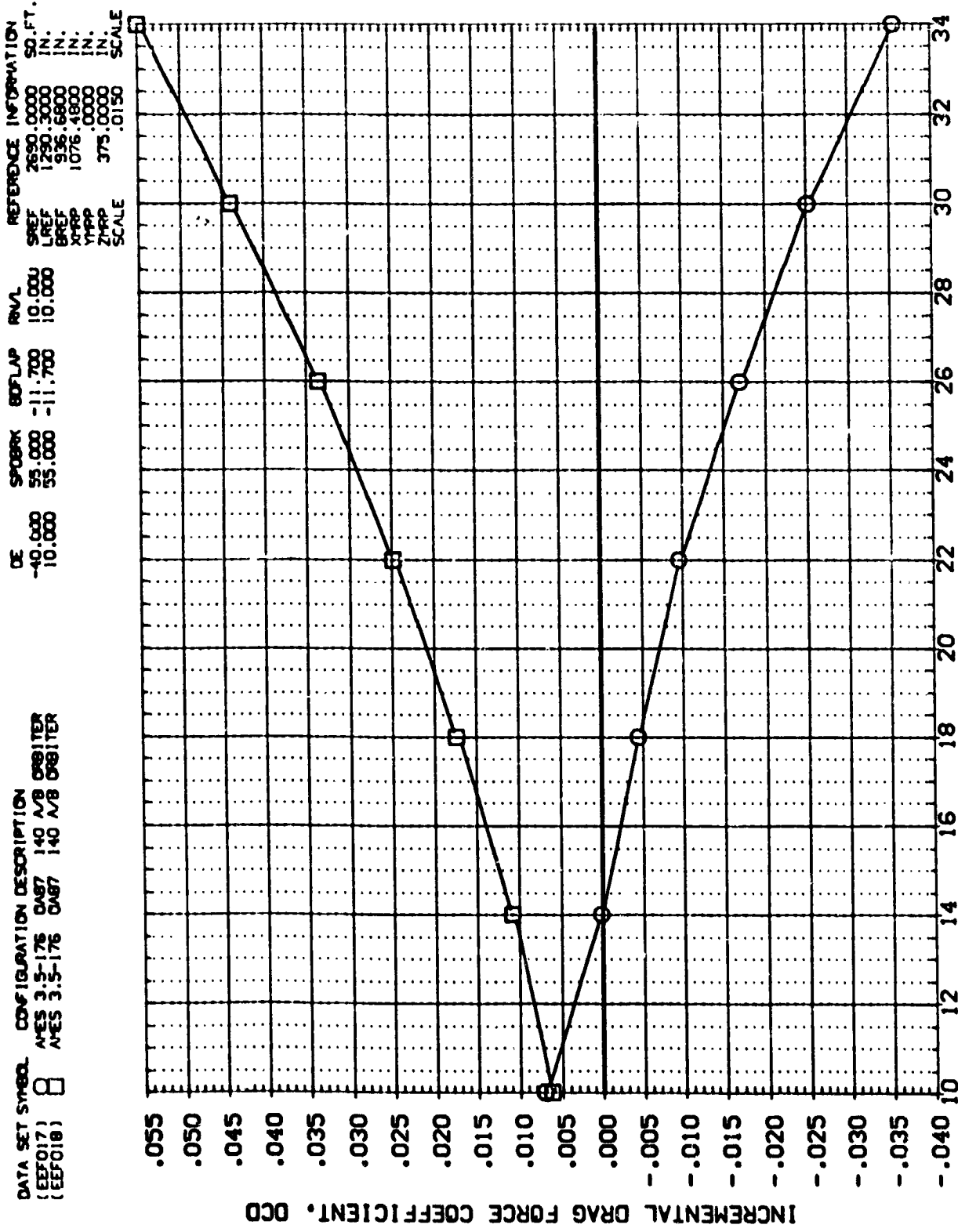


FIG. 6 ELEVON EFFECTIVENESS, RN/L=10., BOFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL (EF017) (EF018)

CONFIGURATION DESCRIPTION
 ARES 3.5-176 CAS7 140 A/B ORBITER
 ARES 3.5-176 CAS7 140 A/B ORBITER

DE -40.000
 10.000

SPOBRK 55.000
 55.000

BOFLAP -11.700
 -11.700

RVAL 10.000
 10.000

REFERENCE INFORMATION
 SREF 2690.0000 50.FT.
 LREF 1290.3000 IN.
 BREF 936.6800 IN.
 XTRP 1076.4800 IN.
 YTRP 0.0000 IN.
 ZTRP 375.0000 IN.
 SCALE .0150

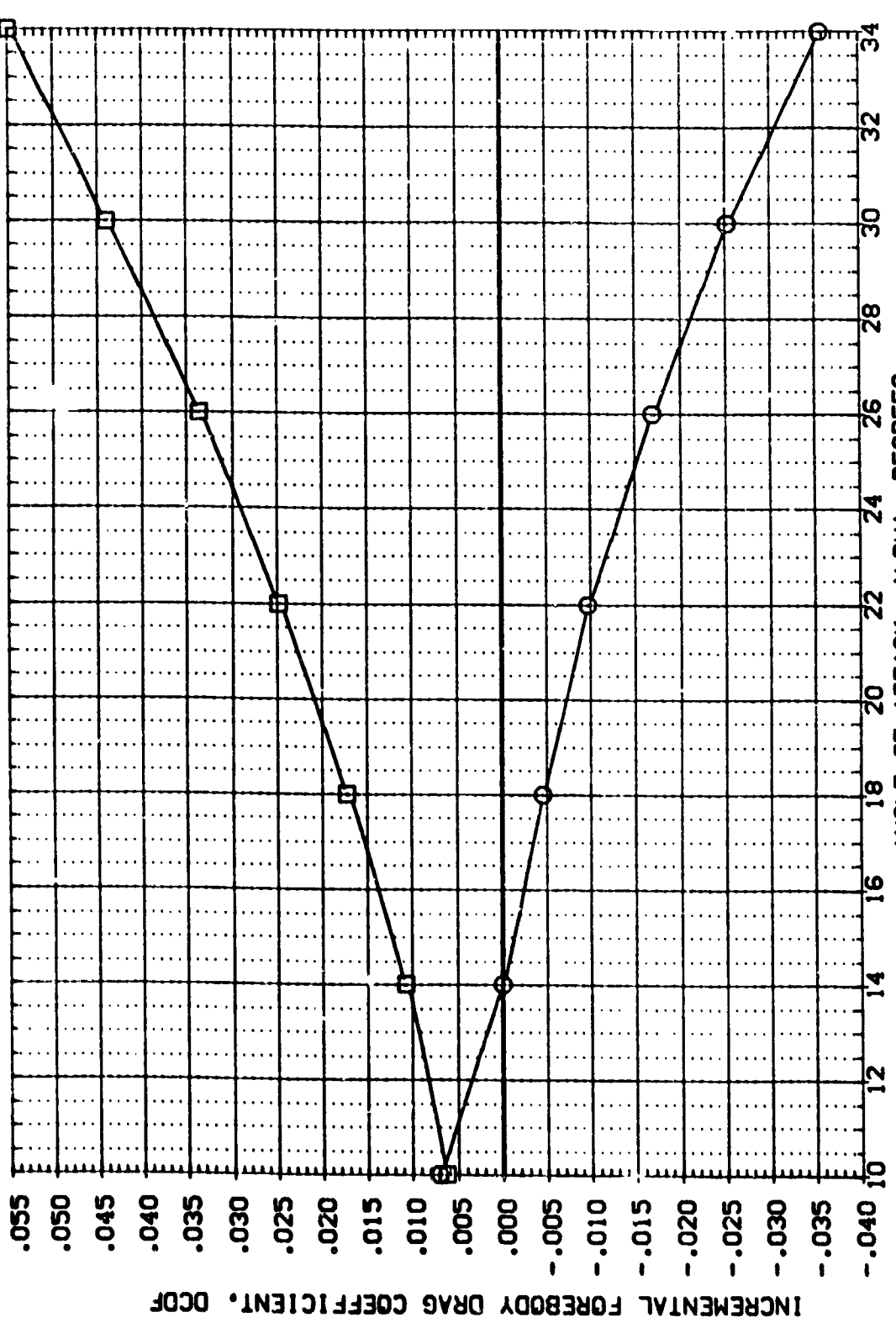
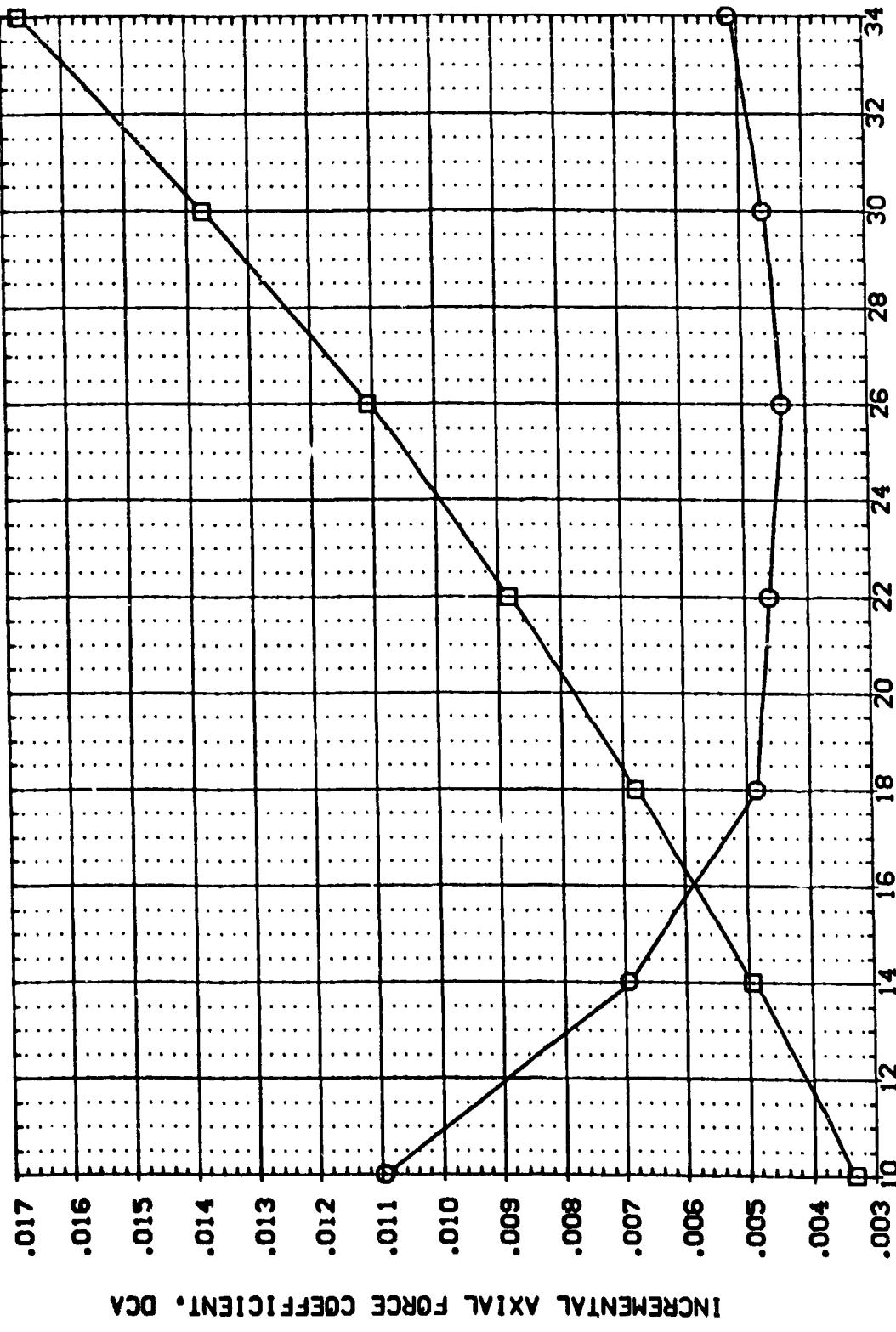


FIG. 6 ELEVON EFFECTIVENESS, RN/L=10., BOFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	DE	SPOBRK	BDFLAP	RN/L	REFERENCE INFORMATION
(EEF017)	AVES 3.5-176 OAB7 140 A/B ORBITER	-40.000	53.000	-11.700	10.000	SREF 2690.0000 SO.FT.
(EEF018)	AVES 3.5-176 OAB7 140 A/B ORBITER	10.000	53.000	-11.700	10.000	LREF 750.0000 IN.
						BREF 926.6800 IN.
						XPRP 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150



ANGLE OF ATTACK, ALPHA, DEGREES

FIG. 6 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	DE	SPOBRK	BDFLAP	RN/L	REFERENCE INFORMATION
(EEF017)	AMES 3.5-176 GA67 140 A/B ORBITER	-40.000	55.000	-11.700	10.000	SREF 2690.0000 SQ. FT.
(EEF016)	AMES 3.5-176 GA67 140 A/B ORBITER	10.000	55.000	-11.700	10.000	LREF 1750.3000 IN.
						BREF 536.6800 IN.
						XMRP 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150

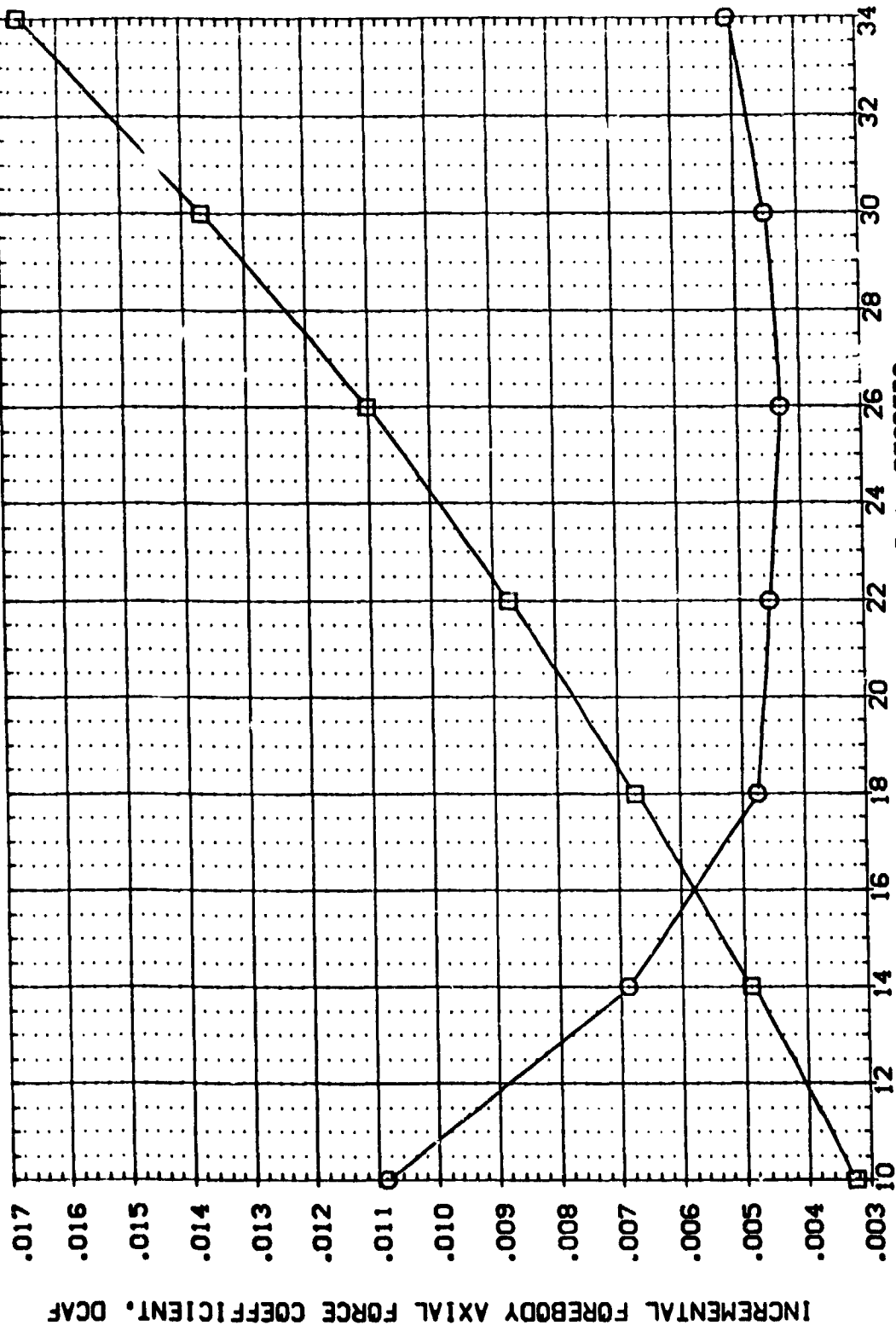


FIG. 6 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=-11.7
 (AJMACH = 7.32)

DATA SET SYMBOL (EEF017) □
 (EEF018) ○

CONFIGURATION DESCRIPTION
 AVES 3.5-176 OAB7 140 A/B ORBITER
 AVES 3.5-176 OAB7 140 A/B ORBITER

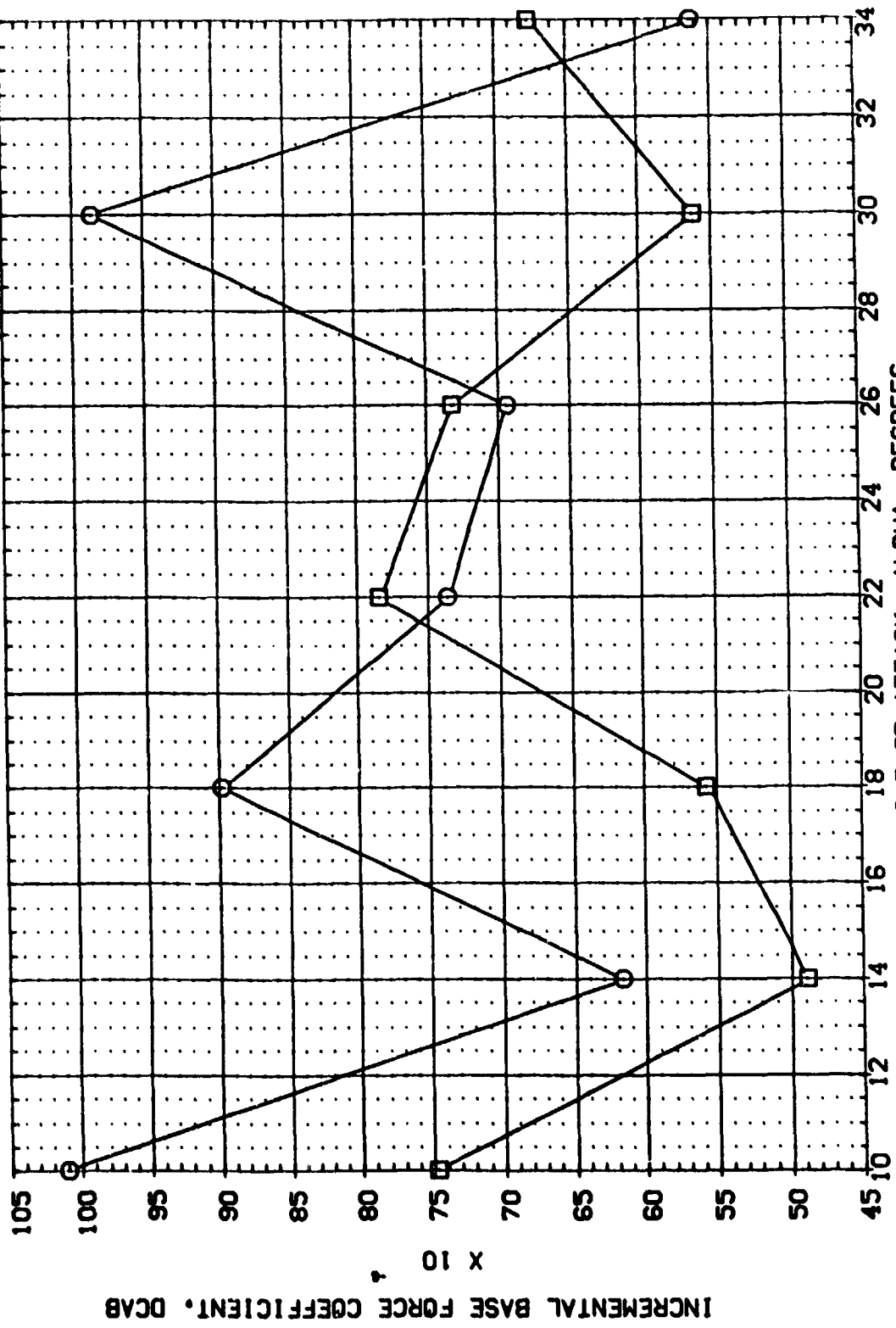
DE -40.000
 10.000

SPDRK 55.000
 55.000

BOFLAP -11.700
 -11.700

RN/L 10.000
 10.000

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 1290.3000 IN.
 BRREF 936.6800 IN.
 XMRP 1076.4800 IN.
 YMRP .0000 IN.
 ZMRP 375.0000 IN.
 SCALE .0150 SCALE



ANGLE OF ATTACK, ALPHA, DEGREES

FIG. 6 ELEVON EFFECTIVENESS, RN/L=10., BOFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL (EF017) \square (EF018) \square

CONFIGURATION DESCRIPTION
 AVES 3.5-176 OAB7 140 A/B ORBITER
 AVES 3.5-176 OAB7 140 A/B ORBITER

DE -40.000
 SPOBRK 55.000
 BOFLAP -11.700
 RN/L 10.000

REFERENCE INFORMATION
 SREF 2690.0000 SQ. FT.
 LREF 1290.3000 IN.
 BREF 936.6800 IN.
 XTRP 1076.4800 IN.
 YTRP .0000 IN.
 ZTRP 375.0000 IN.
 SCALE .0150

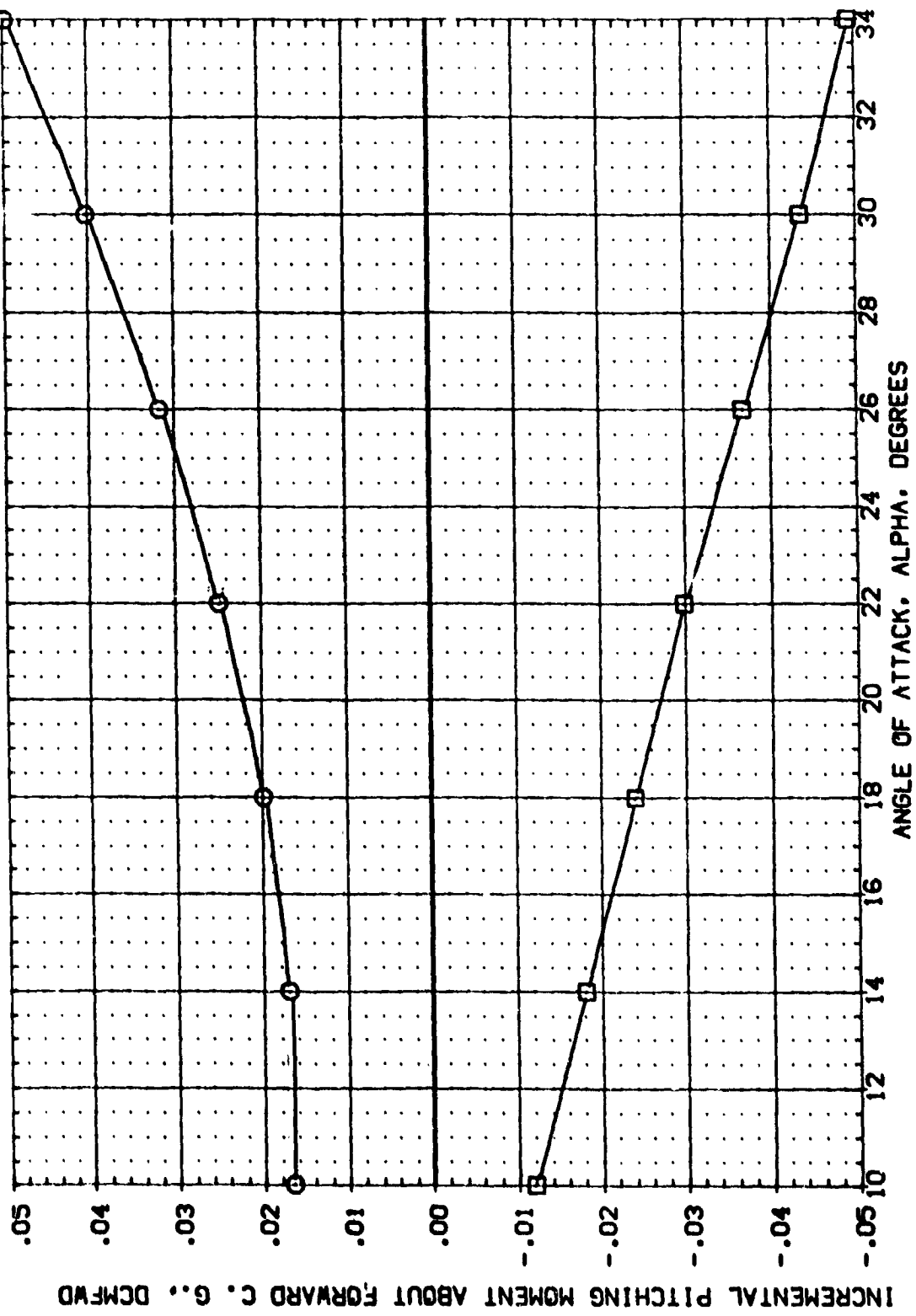


FIG. 6 ELEVON EFFECTIVENESS, RN/L=10., BOFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	DE	SPOBRK	BDFLAP	RN/L	REFERENCE INFORMATION
(EFP017)	AMES 3.5-176 CAB7 140 A/B ORBITER	-10.000	55.000	-11.700	10.000	SREF 2690.0000 50.FT.
(EFP018)	AMES 3.5-176 CAB7 140 A/B ORBITER	10.000	55.000	-11.700	10.000	LREF 1250.3000 IN.
						BREF 936.6800 IN.
						XTRP 1076.4800 IN.
						YTRP .0000 IN.
						ZTRP 375.0000 IN.
						SCALE .0150

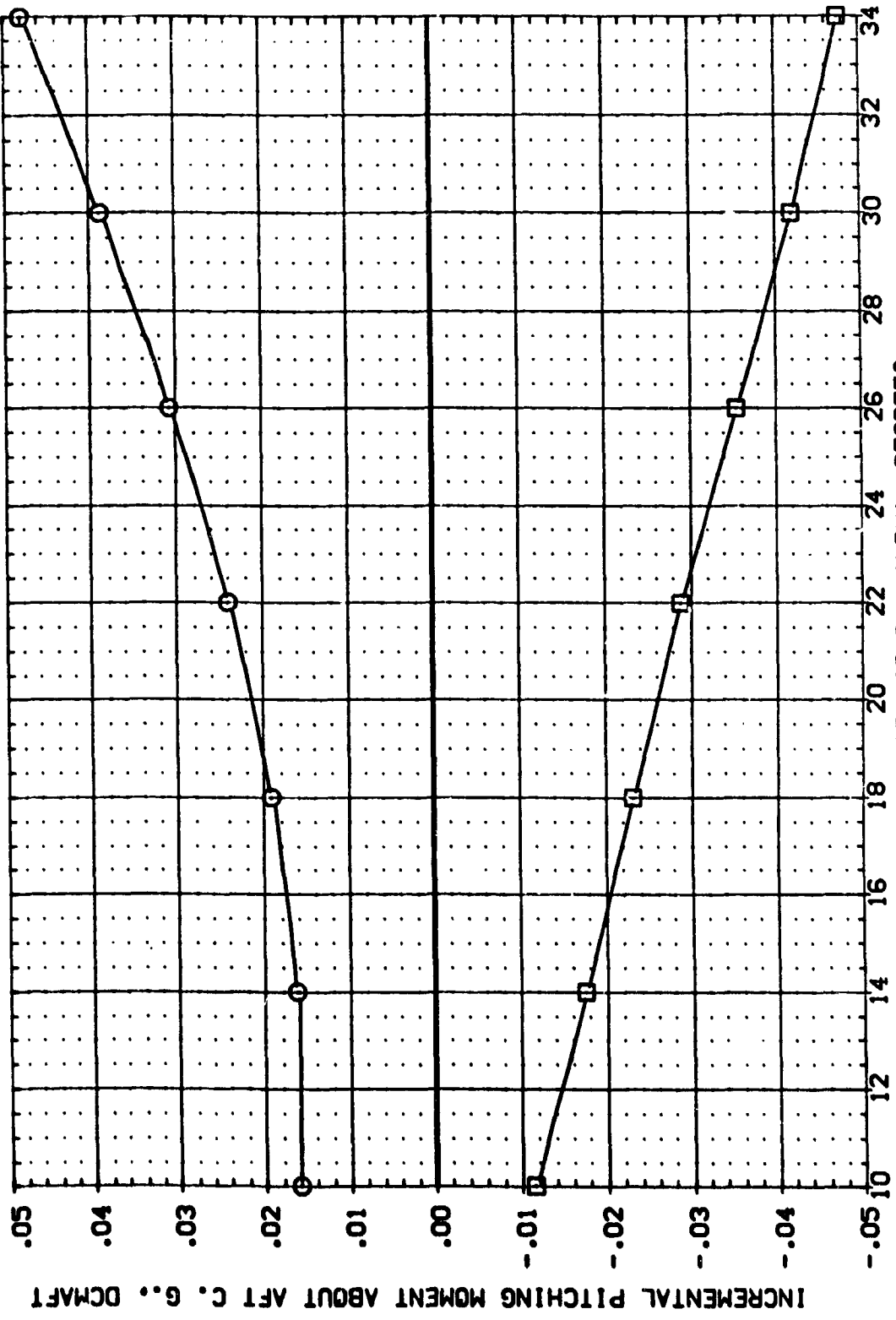


FIG. 6 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=-11.7

(A)MACH = 7.32

AMES 3.5-176 0A87 140 A/B ORBITER (FEF017)

SYMBOL		ALPHA		MACH		PARAMETRIC VALUES		DATA SOURCE		ELEVON		DATASET		ELEVON		SREF		REFERENCE INFORMATION							
○	○	10.000	7.320	.000	BETA	.000	FEF017	-40.000	ELEVON	.000	FEF016	.000	LREF	2690.0000	SO.FT.	1290.3000	IN.	936.6800	IN.	1076.4800	IN.	375.0000	IN.	.0150	SCALE
□	□	20.000	.000	-11.700	BOFLAP	55.000	FEF018	10.000	ELEVON				XTRP												
◇	◇	30.000	.000	55.000	SPOBRK	10.000							YTRP												
					RNVL								ZTRP												

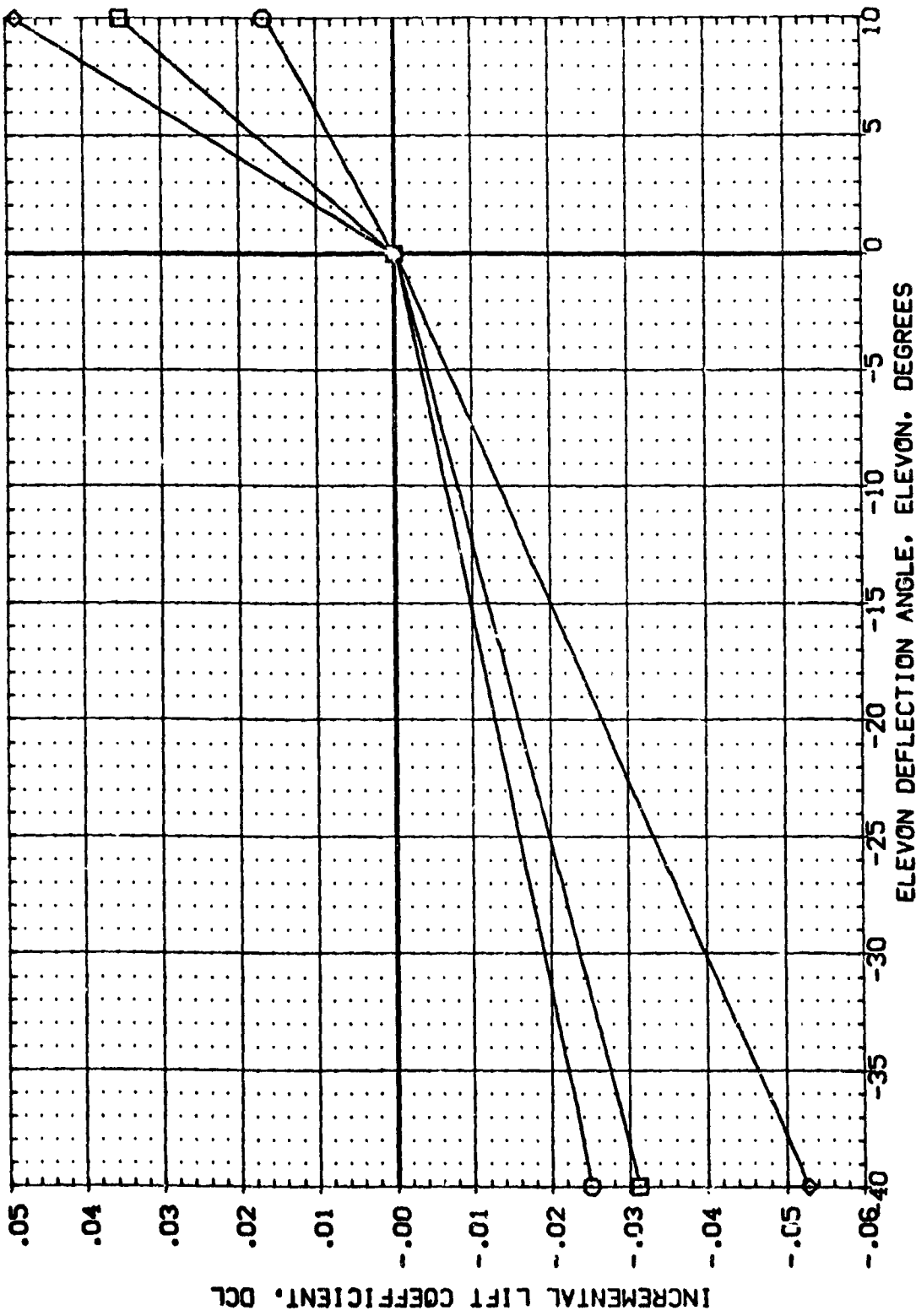


FIG. 6 ELEVON EFFECTIVENESS, RNVL=10., BDFLAP=-11.7

AMES 3.5-176 0A87 140 A/B ORBITER (FEF017)

SYMBOL	ALPHA	MACH	PARAMETRIC VALUES	DATA SOURCE	DATASET	ELEVON	SREF	REFERENCE INFORMATION
○	10.000		BETA	ELEVON	FEF016	.000	LREF	2690.0000
□	20.000	7.320	BOFLAP	-11.700	FEF017	.000	BREF	1290.3000
◇	30.000	.000	SPOBRK	55.000	FEF018	.000	XREF	936.6800
		.000					YREF	1076.4800
		10.000					ZREF	375.0000
							SCALE	.0150

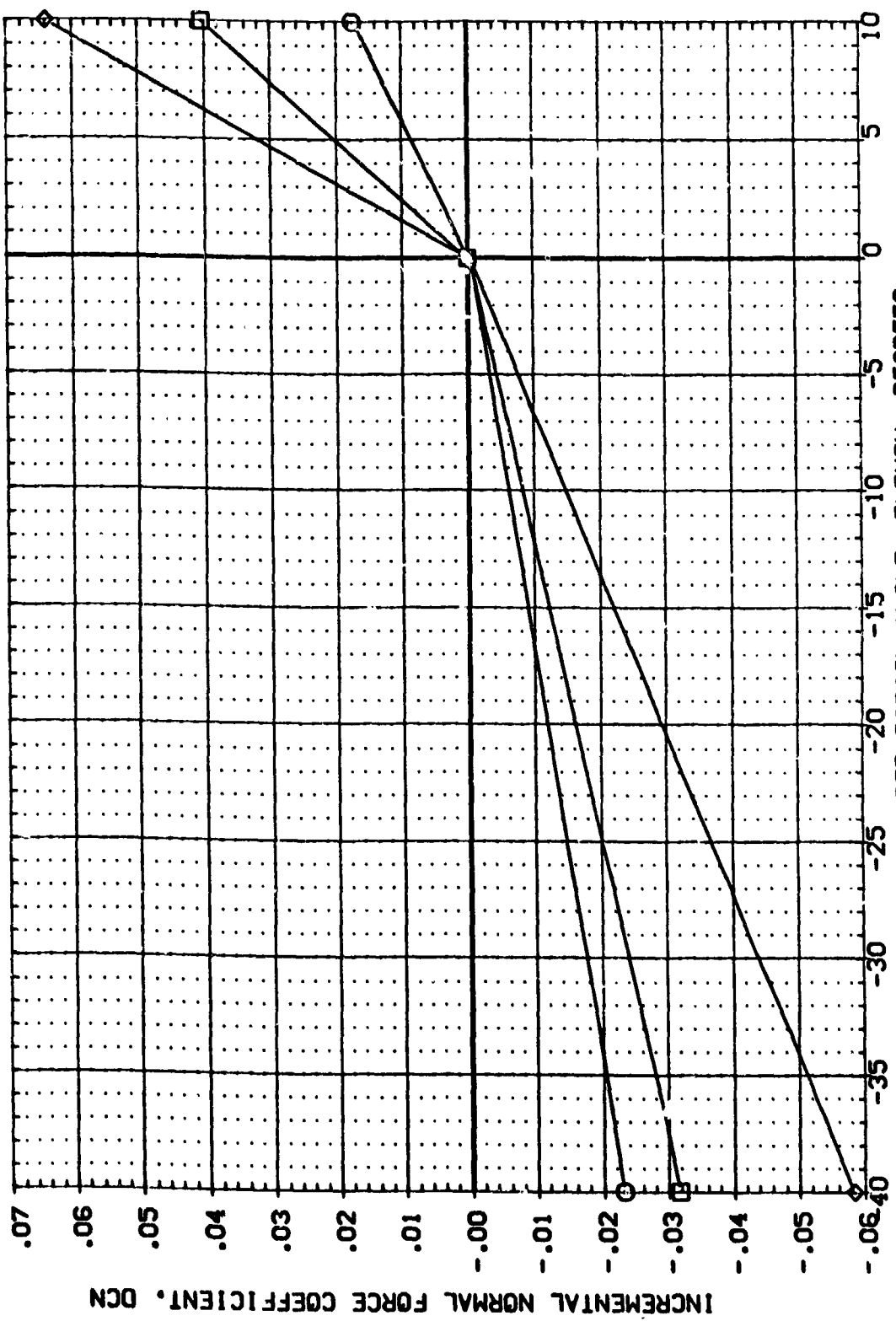


FIG. 6 ELEVON EFFECTIVENESS, RN/L=10., BOFLAP=-11.7

(FEF017)

AMES 3.5-176 0A87 140 A/B ORBITER

SYMBOL		ALPHA		MACH		AILERON		RUDDER		RNL		PARAMETRIC VALUES		DATA SOURCE		DATASET		ELEVON		SREF		REFERENCE INFORMATION	
○	□	10.000	20.000	30.000	7.320	BETA	.000	BDFLAP	-11.700	FEF017	.000	ELEVON	FEF016	2690.0000	SQ.FT.								
○	□	10.000	20.000	30.000	.000	BDFLAP	.000	SPOBRK	55.000	FEF018	.000	ELEVON	FEF016	1290.3000	IN.								
○	□	10.000	20.000	30.000	.000	BDFLAP	.000	SPOBRK	55.000	FEF018	.000	ELEVON	FEF016	936.6800	IN.								
○	□	10.000	20.000	30.000	10.000	RNL	.000	SPOBRK	55.000	FEF018	.000	ELEVON	FEF016	1076.4800	IN.								
○	□	10.000	20.000	30.000	10.000	RNL	.000	SPOBRK	55.000	FEF018	.000	ELEVON	FEF016	375.0000	IN.								
○	□	10.000	20.000	30.000	10.000	RNL	.000	SPOBRK	55.000	FEF018	.000	ELEVON	FEF016	SCALE	SCALE								
○	□	10.000	20.000	30.000	10.000	RNL	.000	SPOBRK	55.000	FEF018	.000	ELEVON	FEF016	.0150	SCALE								

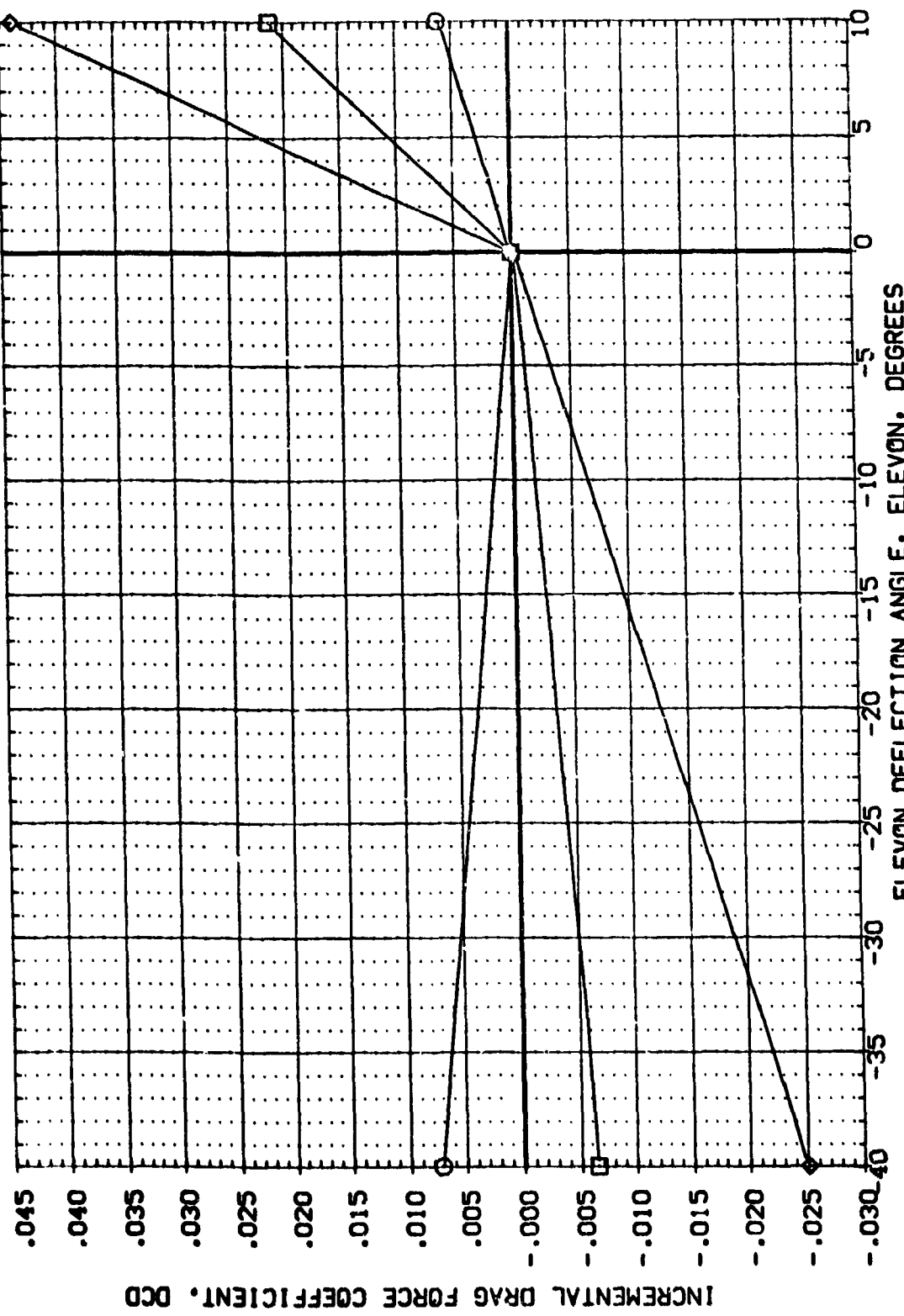


FIG. 6 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=-11.7

AMES 3.5-176 0A87 140 A/B ORBITER (FEF017)

SYMBOL		PARAMETRIC VALUES		DATA SOURCE		REFERENCE INFORMATION	
○	ALPHA	7.320	BETA	.000	FEF016	SREF	2690.0000
□	MACH	.000	BDFLAP	-11.700	FEF017	LREF	1290.3000
◇	AILERON	.000	SPOBRK	55.000	FEF018	BREF	936.6800
	RUDDER	.000				XMRP	1076.4800
	RN/L	10.000				YMRP	.0000
						ZMRP	.0000
						SCALE	.0150
							SG.FT.
							IN.
							IN.
							IN.
							IN.

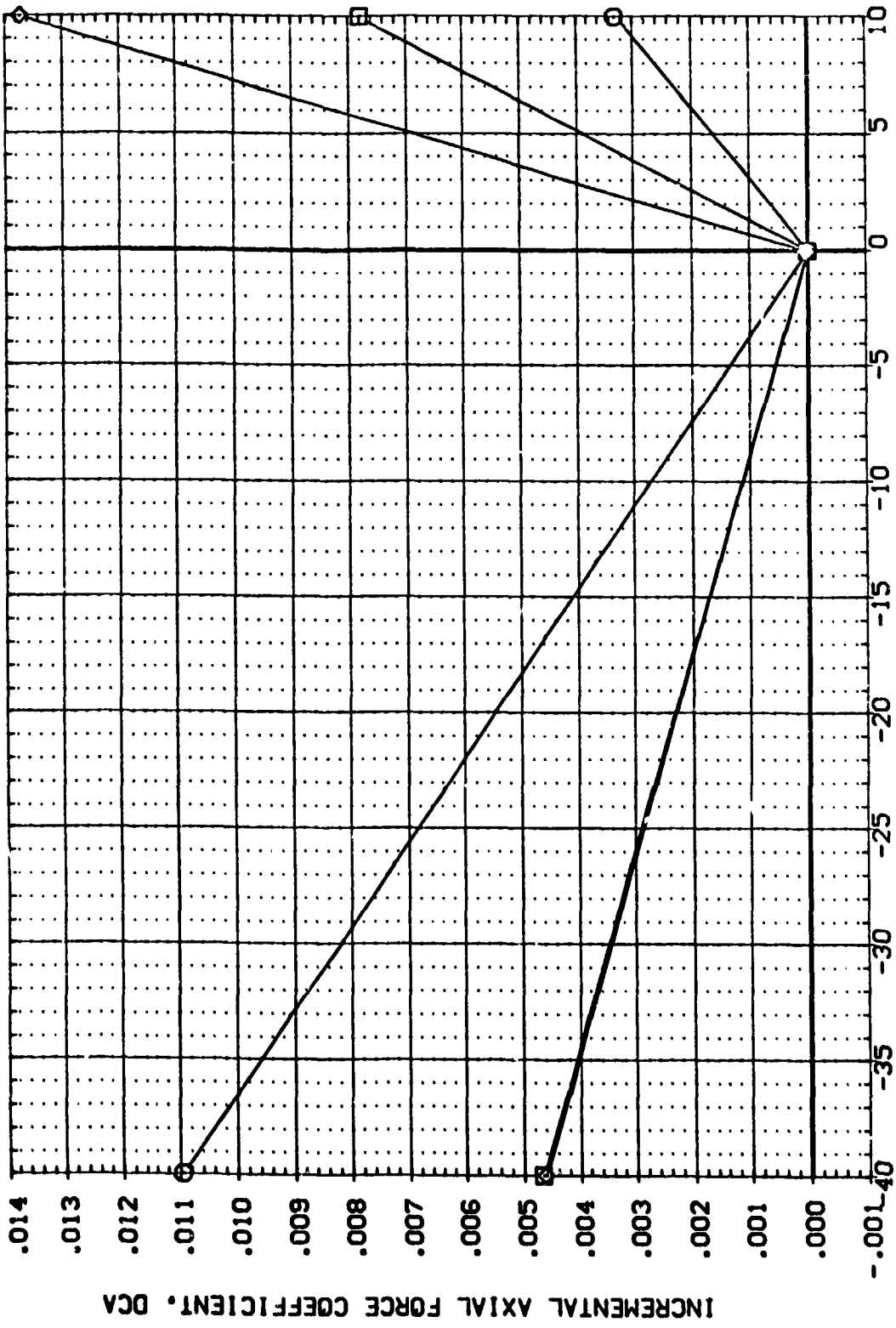


FIG. 6 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=-11.7

AMES 3.5-176 0A87 140 A/B ORBITER (FEF017)

SYMBOL	ALPHA	MACH	PARAMETRIC VALUES			DATA SOURCE			REFERENCE INFORMATION		
○	10.000	A11LRN	7.320	BETA	.000	FEF017	SREF	2690.0000	SO.FT.		
□	20.000	RUDDER	.030	BDFLAP	-11.700	FEF018	LREF	1290.3000	IN.		
◇	30.000	RV/L	.000	SPOBRK	55.000		BREF	936.6800	IN.		
			10.000	RV/L			XPRP	1076.4800	IN.		
							YPRP	.0000	IN.		
							ZPRP	375.0000	IN.		
							SCALE	.0150	SCALE		

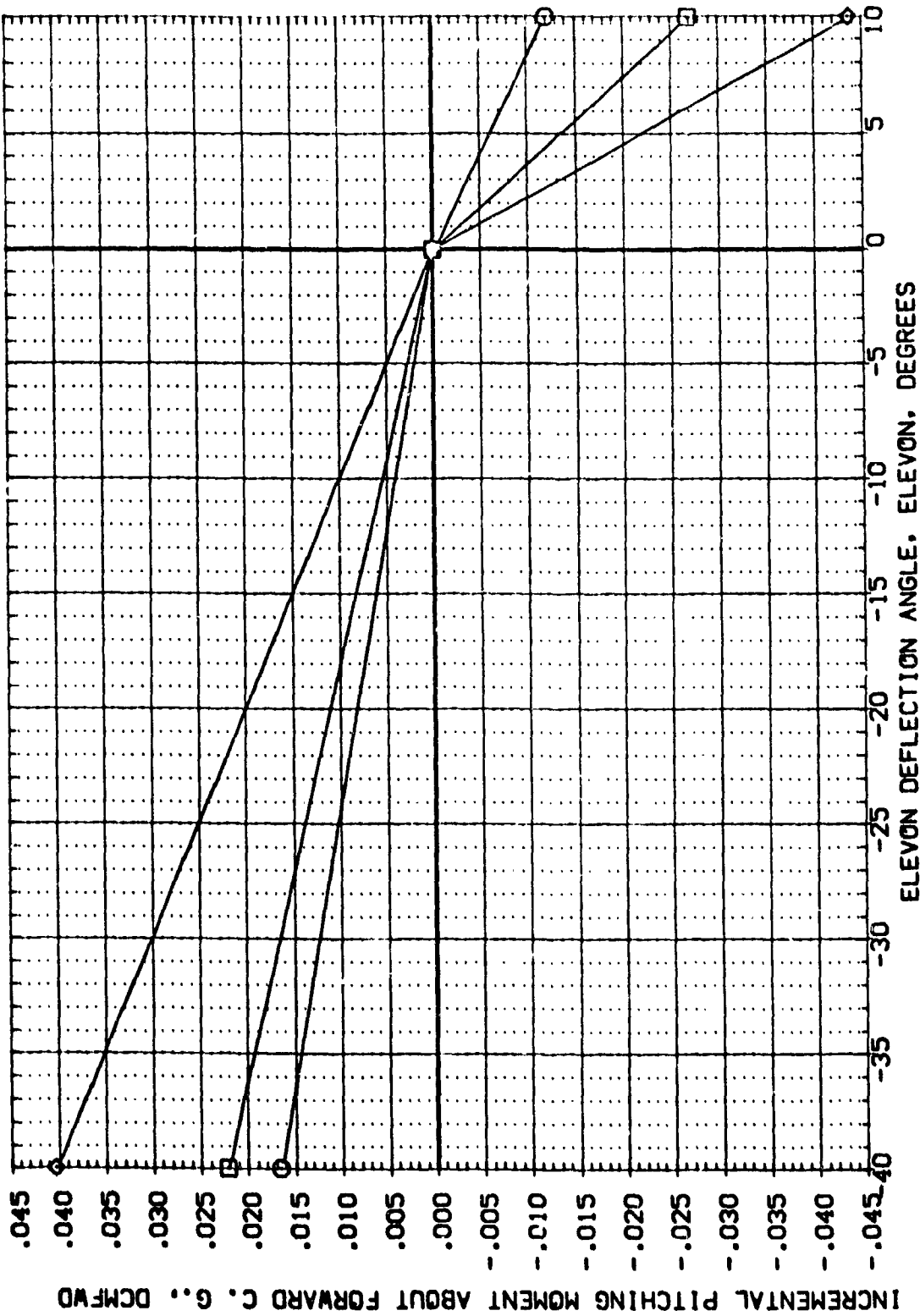


FIG. 6 ELEVON EFFECTIVENESS, RN/L=10., BDFLAP=-11.7

AMES 3.5-176 0A87 140 A/B ORBITER (FEF017)

SYMBOL		ALPHA		MACH		PARAMETRIC VALUES		DATA SOURCE		ELEVON		REFERENCE INFORMATION	
○	□	10.000	20.000	30.000	7.300	BETA	.000	BOFLAP	.000	FEF017	FEF016	SREF	2690.0000
◇					.000	BOFLAP	-11.700	FEF017	-40.000			LREF	1290.3070
					.000	SPOBRK	55.000	FEF018	10.000	.000		BREF	936.6800
					10.000	RVL						YMRP	1076.4800
												ZMRP	375.0000
												SCALE	.0150

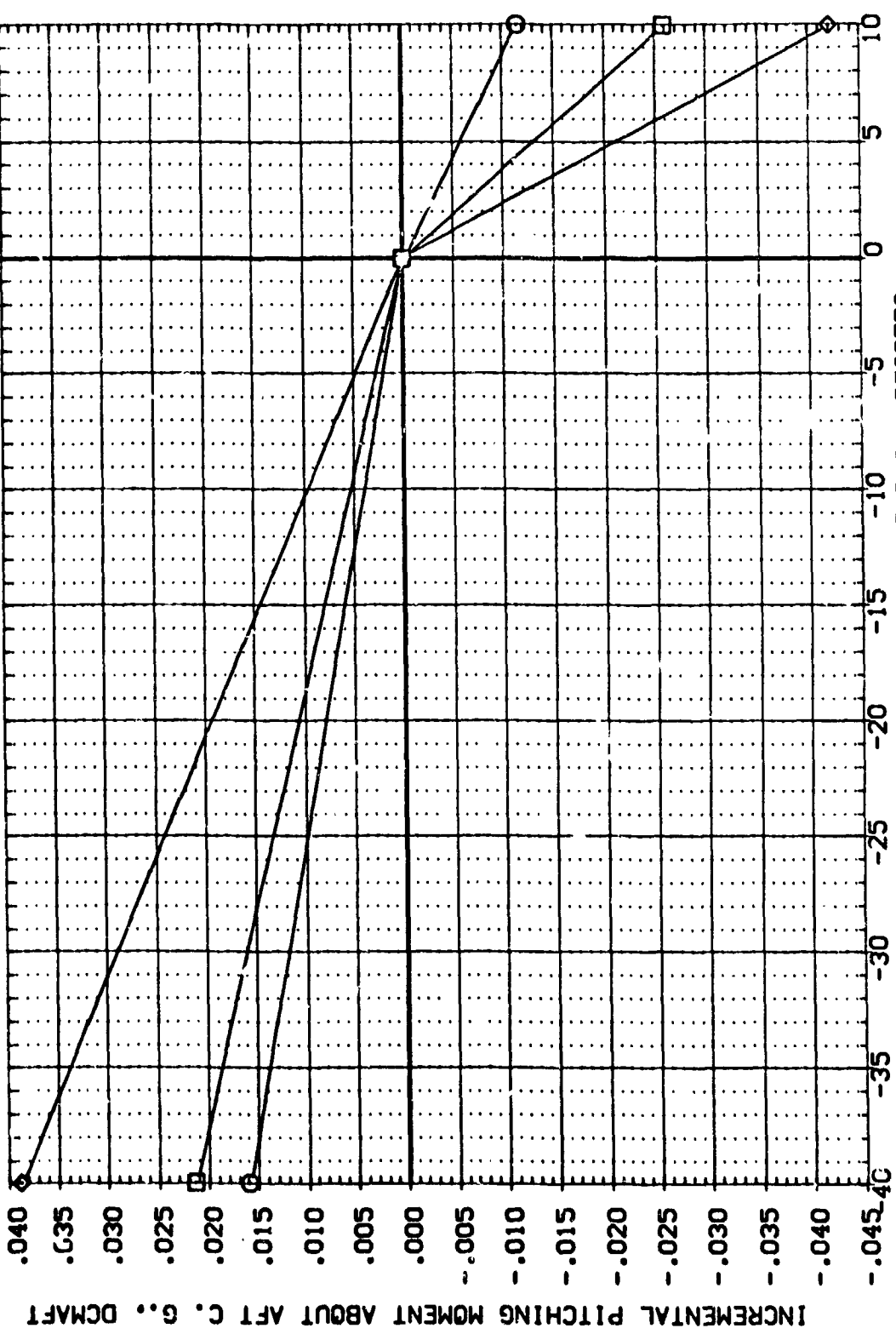


FIG. 6 ELEVON EFFECTIVENESS, RN/L=10., BOFLAP=-11.7

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEF005)	AVES 3.5-176 0A87 140 A/B 0A81TER	-40.000	55.000	.000	3.000	SREF 2690.0000 50.FT.
(BEF007)	AVES 3.5-176 0A87 140 A/B 0A81TER	.000	52.000	.000	3.000	LREF 1290.3000 IN.
(BEF006)	AVES 3.5-176 0A87 140 A/B 0A81TER	10.000	55.000	.000	3.000	BREF 936.5900 IN.
						XPRP 1076.4800 IN.
						YPRP .0000 IN.
						ZPRP .0000 IN.
						SCALE .0150

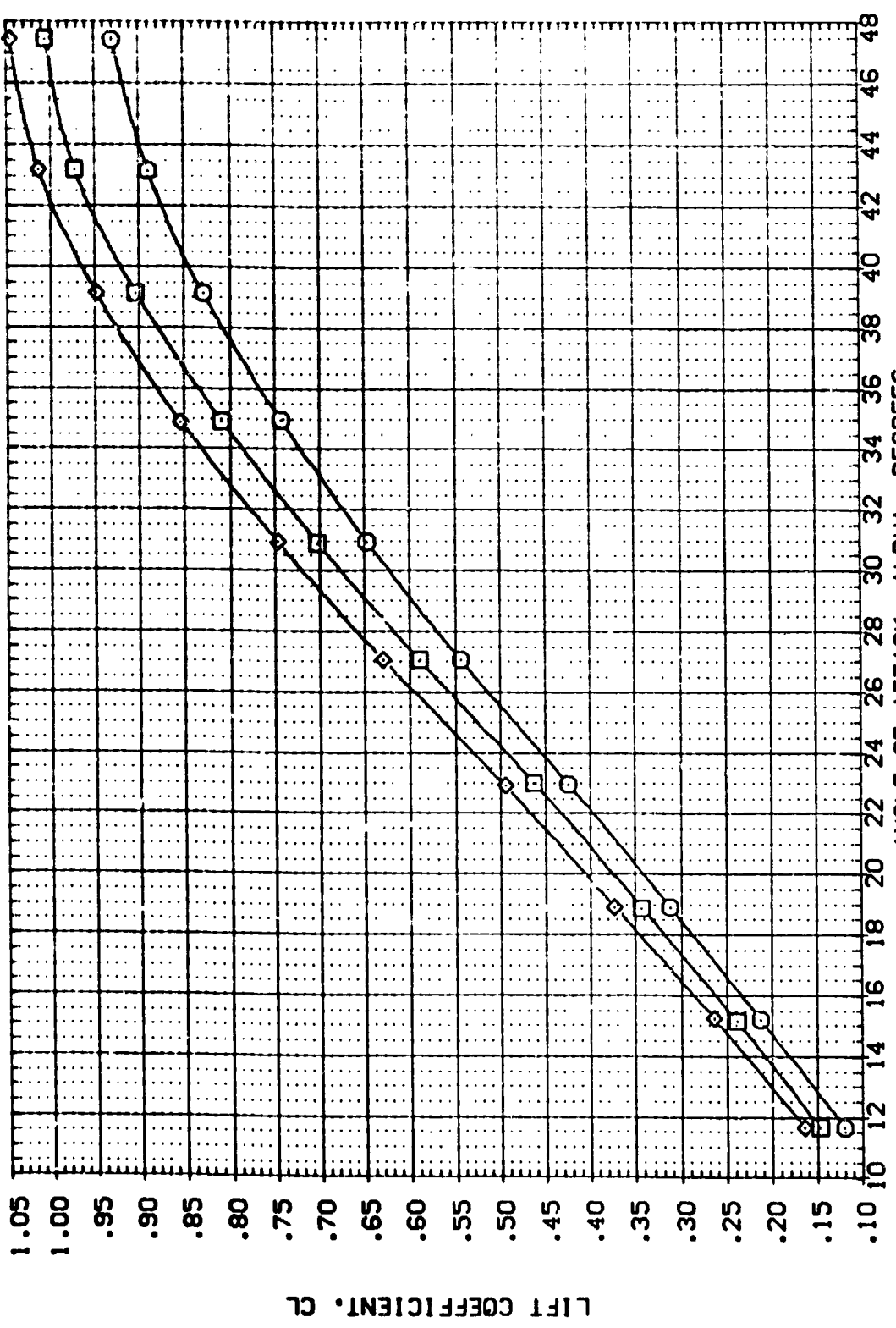


FIG. 7 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEF005)	AMES 3.5-176 CAB7 140 A/B CRBITER	-40.000	55.000	.000	3.000	SREF 2690.0000 SO.FT.
(BEF007)	AMES 3.5-176 CAB7 140 A/B CRBITER	.000	55.000	.000	3.000	LREF 1230.3000 IN.
(BEF008)	AMES 3.5-176 CAB7 140 A/B CRBITER	10.000	55.000	.000	3.000	BREF 936.6800 IN.
						XREF 1076.4800 IN.
						YREF .0000 IN.
						ZREF 375.0000 IN.
						SCALE .0150

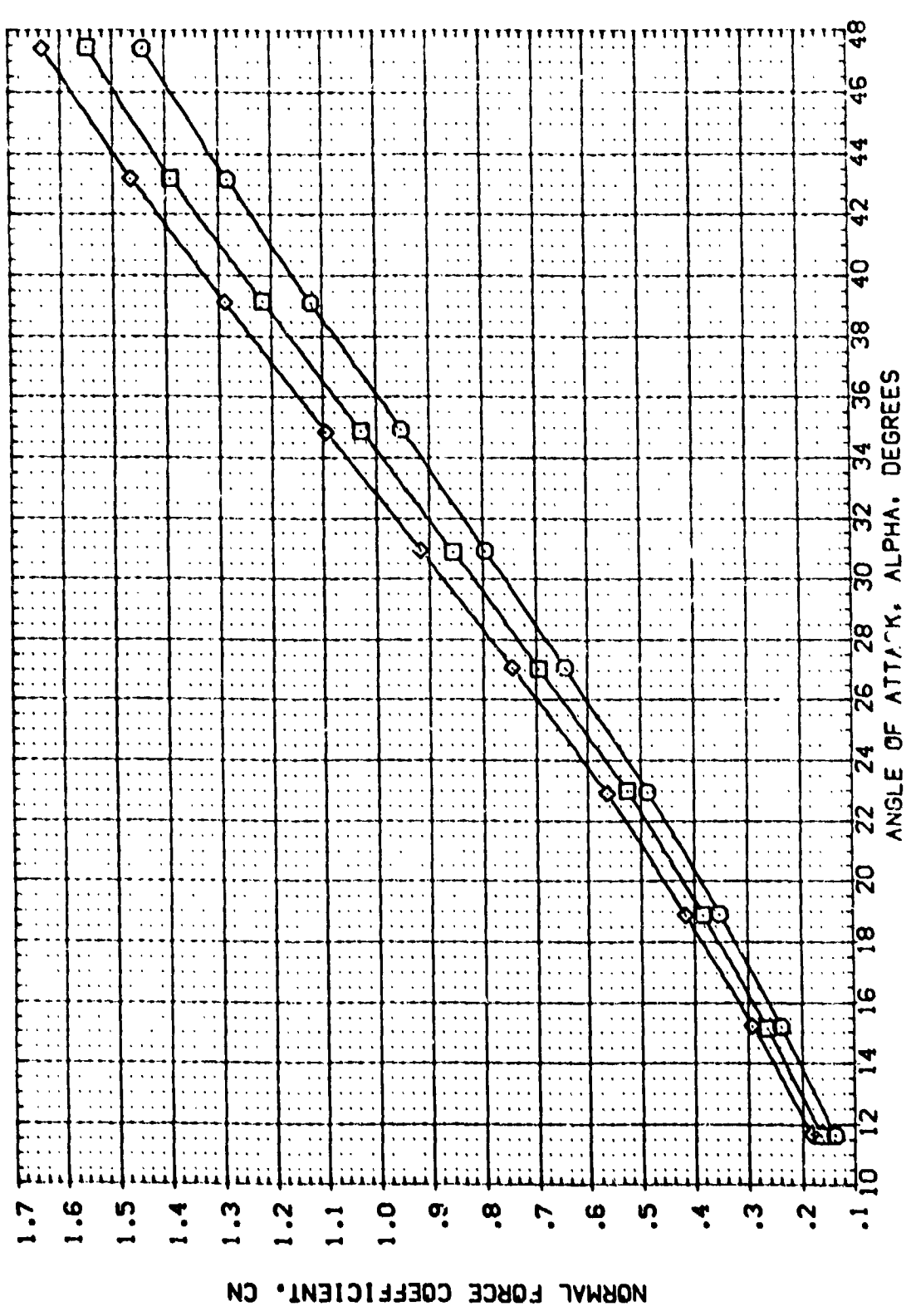


FIG. 7 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=0.0
 (A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	S ² DRK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEF005)	APES 3.5-176 CAB7 140 A/B ORBITER	-40.000	55.000	.000	3.000	SREF 2690.0000 50.FT.
(BEF007)	APES 3.5-176 CAB7 140 A/B ORBITER	10.000	55.000	.000	3.000	LREF 1290.3000 IN.
(BEF008)	APES 3.5-176 CAB7 140 A/B ORBITER		55.000	.000	3.000	BREF 936.6800 IN.
(BEF009)	APES 3.5-176 CAB7 140 A/B ORBITER					MREF 1076.4800 IN.
						ZMREF .0000 IN.
						ZMREF .0150 IN.
						SCALE

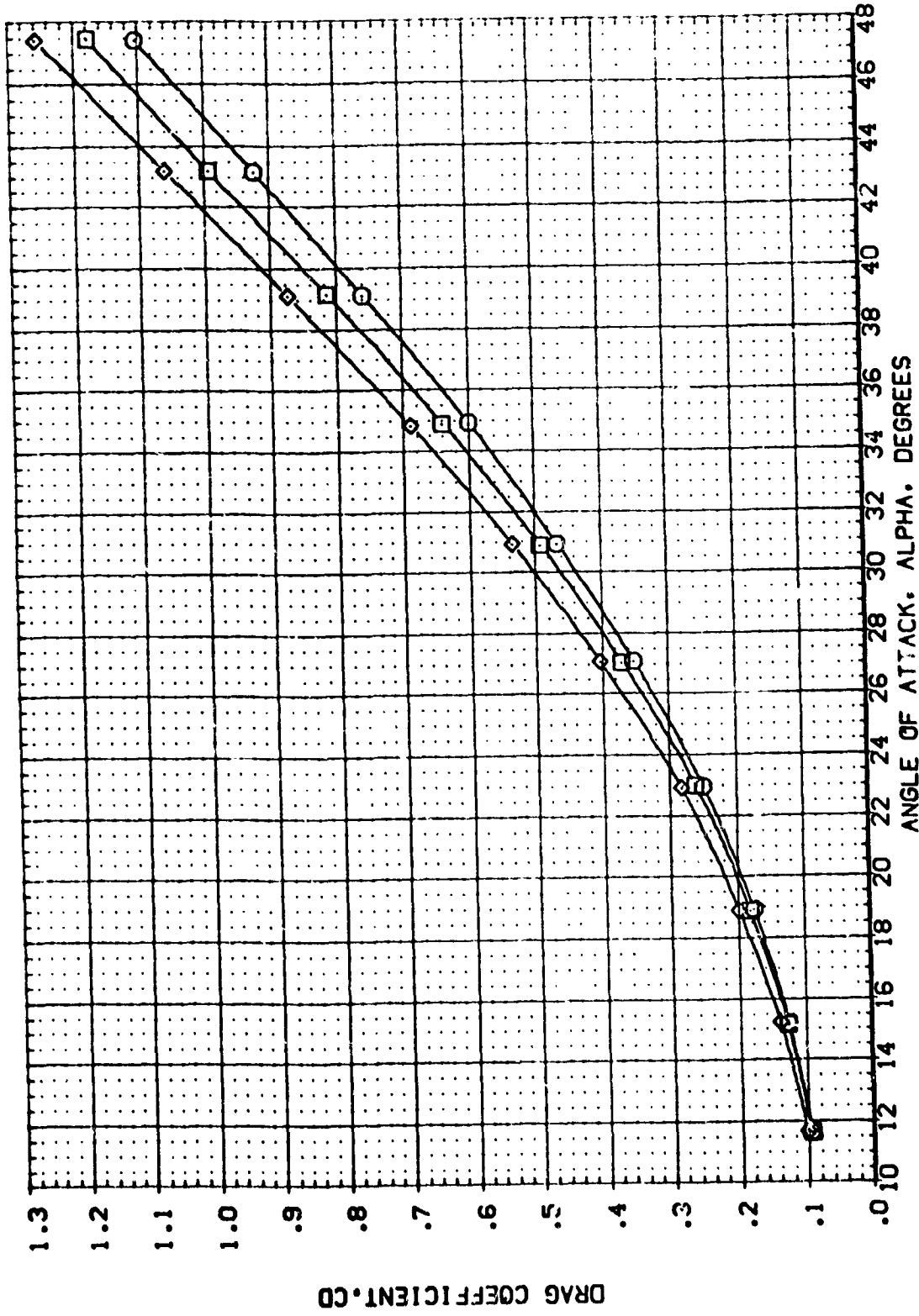


FIG. 7 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEFO05)	AMES 3.5-176 DAB7 140 A/B ORBITER	-40.000	55.000	.000	3.000	WREF 2690.0000 50.FT.
(BEFO07)	AMES 3.5-176 DAB7 140 A/B ORBITER	10.000	55.000	.000	3.000	LREF 1290.3000 IN.
(BEFO06)	AMES 3.5-176 DAB7 140 A/B ORBITER		55.000	.000	3.000	BREF 936.6800 IN.
						VREF 1076.4800 IN.
						ZREF 375.0000 IN.
						SCALE .0150 SCALE

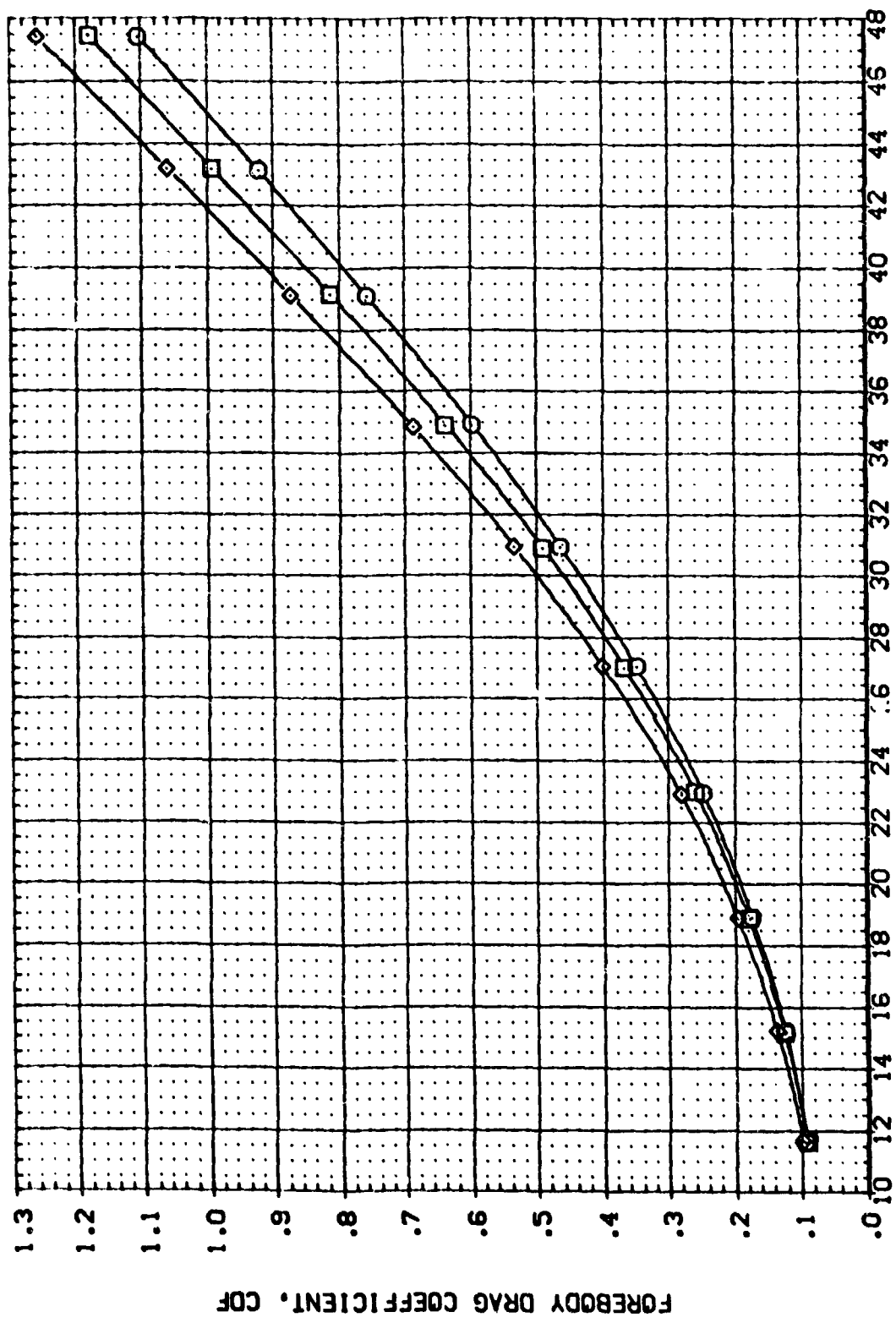


FIG. 7 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL CONFIGURATION DESCRIPTION REFERENCE INFORMATION

(BEF005)	AMES 3.5-176 C187 140 A/B C187ITER	SREF 7.50 0000 50. FT.
(BEF007)	AMES 3.5-176 C187 140 A/B C187ITER	LREF 1250 2000 IN.
(BEF008)	AMES 3.5-176 C187 140 A/B C187ITER	BREF 536 6600 IN.
		XREF 1076 4800 IN.
		YREF .0000 IN.
		ZREF .0000 IN.
		SCALE 375 .0150 IN.

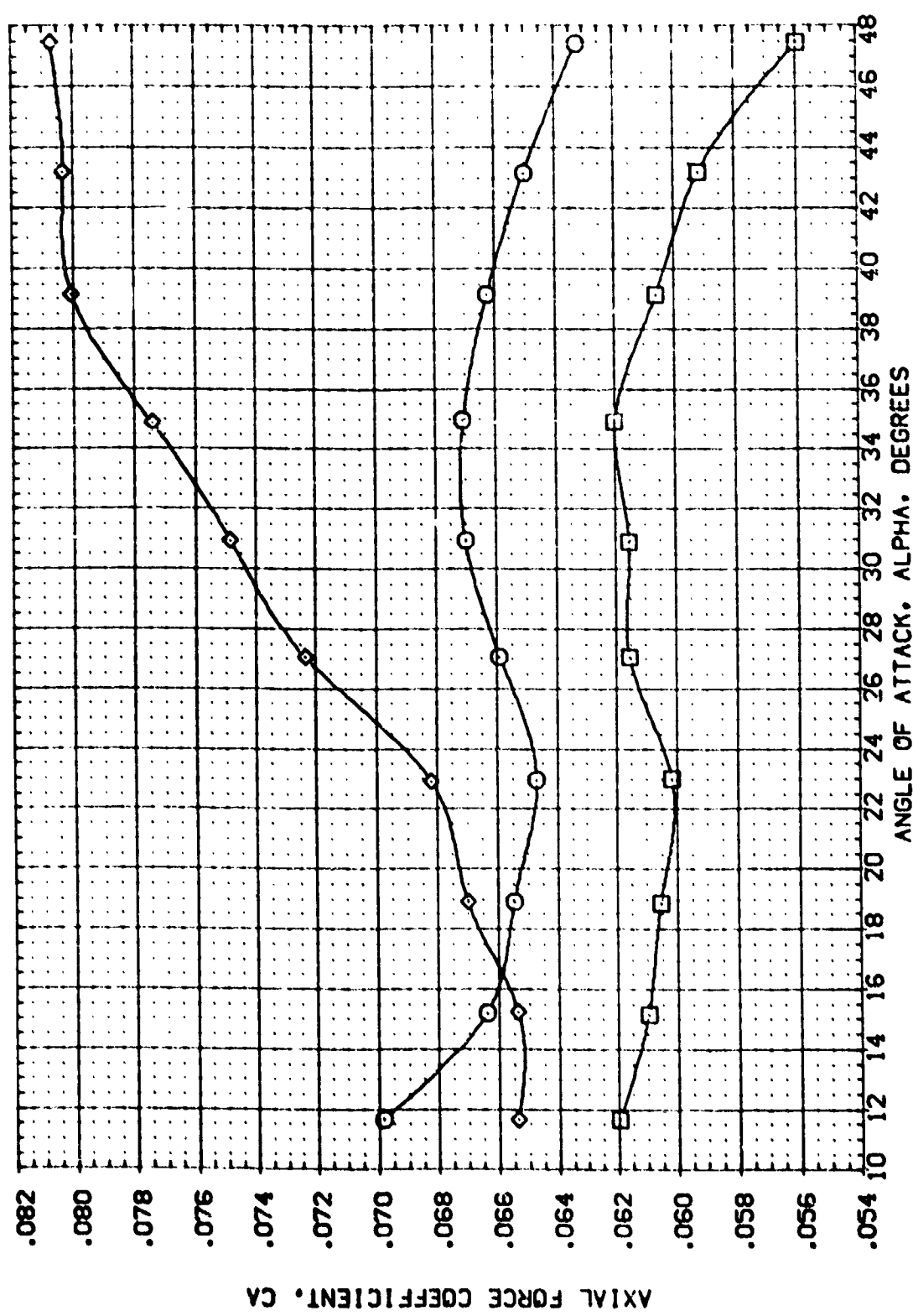
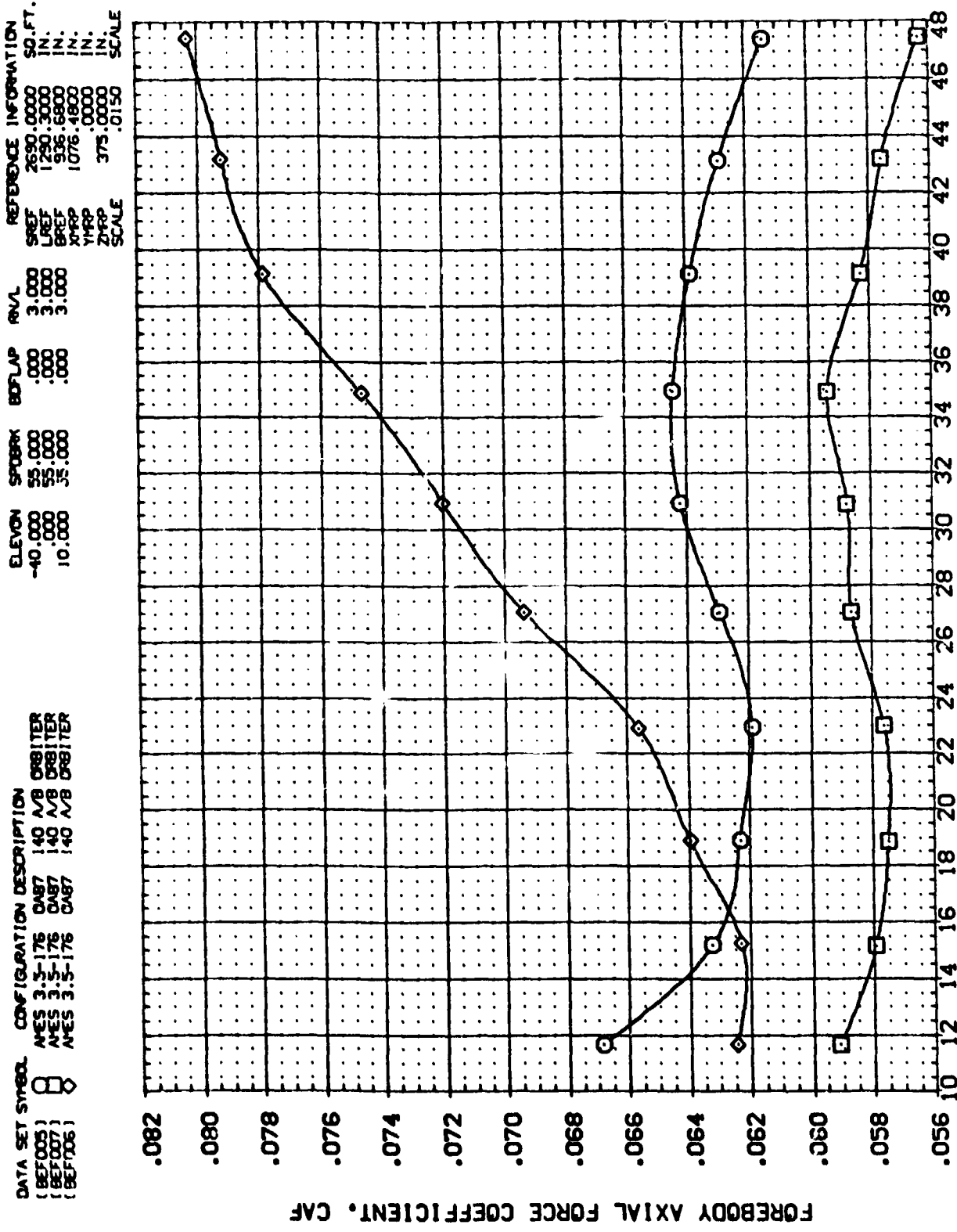


FIG. 7 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=0.0

(A)MACH = 7.32



ANGLE OF ATTACK, ALPHA, DEGREES

FIG. 7 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEF005)	APES 3.5-176 OA87 140 A/B ORBITER	-40.000	55.000	.000	3.000	SREF 2690.0000 SQ.FT.
(BEF007)	APES 3.5-176 OA87 140 A/B ORBITER	.000	55.000	.000	3.000	LREF 1290.3000 IN.
(BEF006)	APES 3.5-176 OA87 140 A/B ORBITER	10.000	55.000	.000	3.000	BREF 536.6800 IN.
						YREF 1076.4800 IN.
						ZREF .0000 IN.
						ZREF 375.0000 IN.
						SCALE .0150

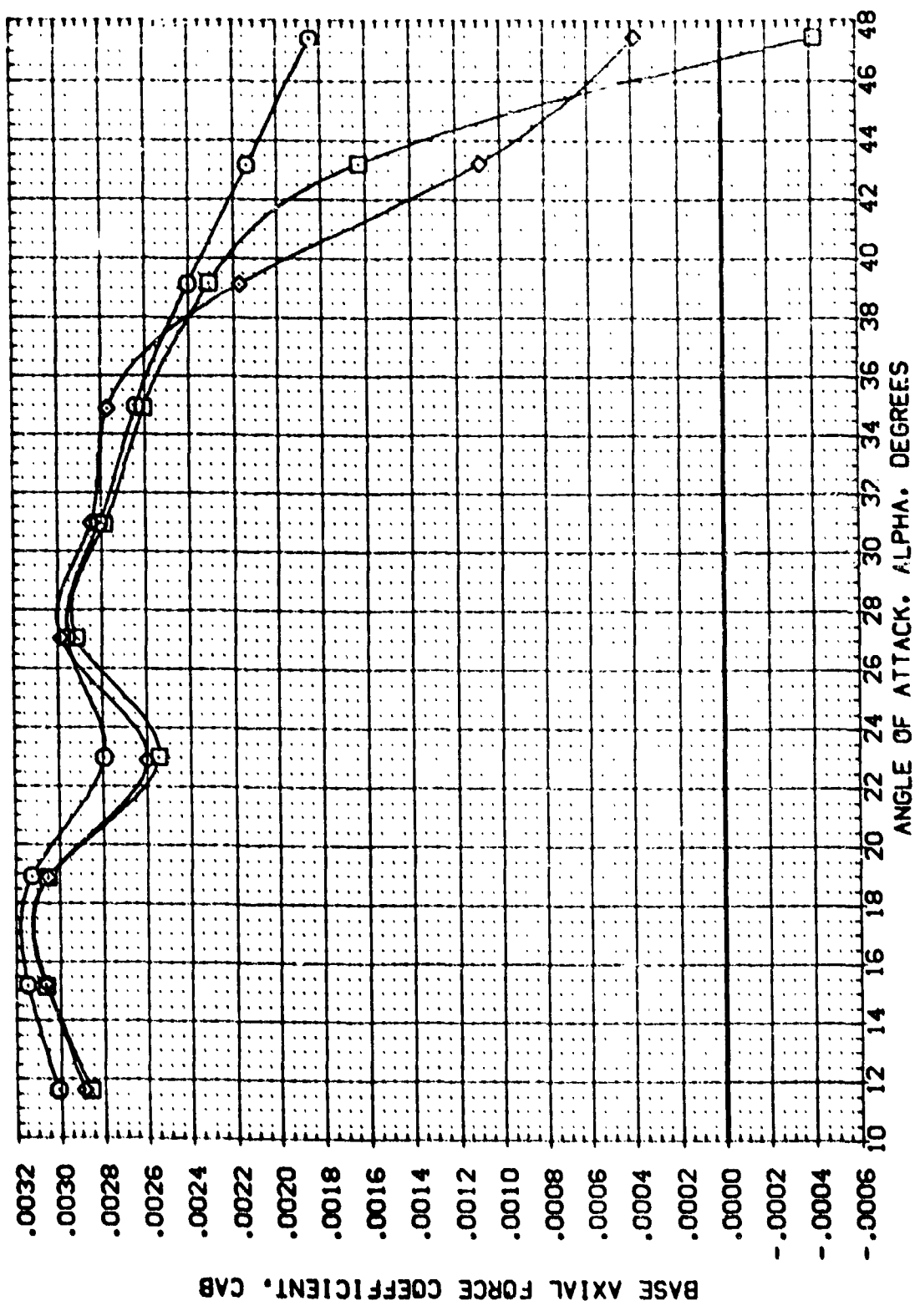


FIG. 7 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=0.0
(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEF005)	AMES 3.5-176 GA87 140 A/B ORBITER	-40.000	55.000	.000	3.000	SREF 2590.0000 SO. FT.
(BEF007)	AMES 3.5-176 GA87 140 A/B ORBITER	.000	55.000	.000	3.000	LREF 1290.3000 IN.
(BEF006)	AMES 3.5-176 GA87 140 A/B ORBITER	10.000	55.000	.000	3.000	XPREF 536.6800 IN.
						YMPP 1076.4800 IN.
						ZMPP .0000 IN.
						ZMPP SCALE 379.0000 IN.
						SCALE .0150

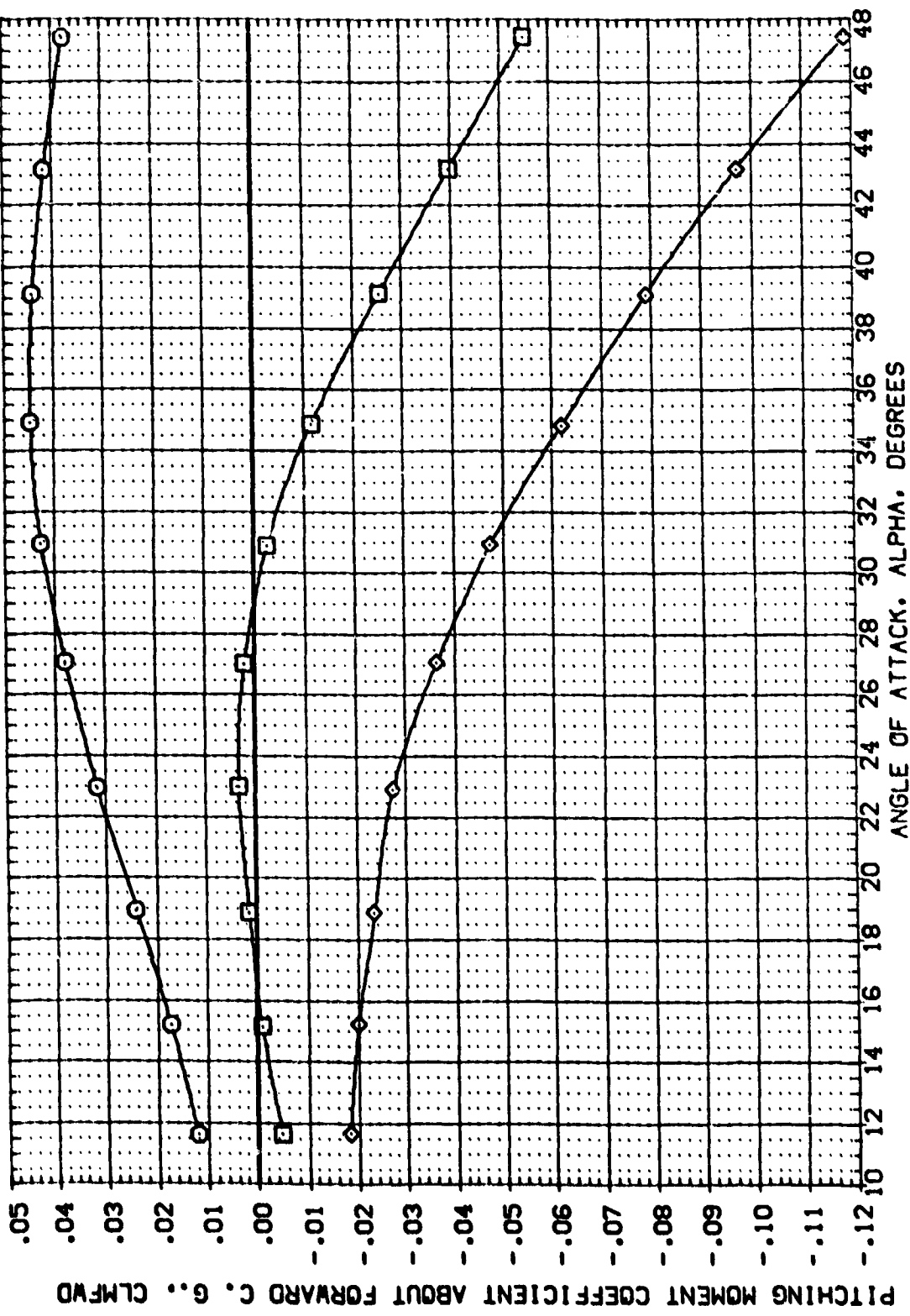


FIG. 7 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPDRBK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEF005)	AVES 3.5-176 CA87 140 A/B ORBITER	-40.000	55.000	.000	3.000	SREF 2650.0000 SO.FT.
(BEF007)	AVES 3.5-176 CA87 140 A/B ORBITER	10.000	55.000	.000	3.000	LREF 1250.3000 IN.
(BEF006)	AVES 3.5-176 CA87 140 A/B ORBITER	10.000	55.000	.000	3.000	BREF 936.6800 IN.
						XPRP 1076.4800 IN.
						ZPRP 375.0000 IN.
						SCALE .0150

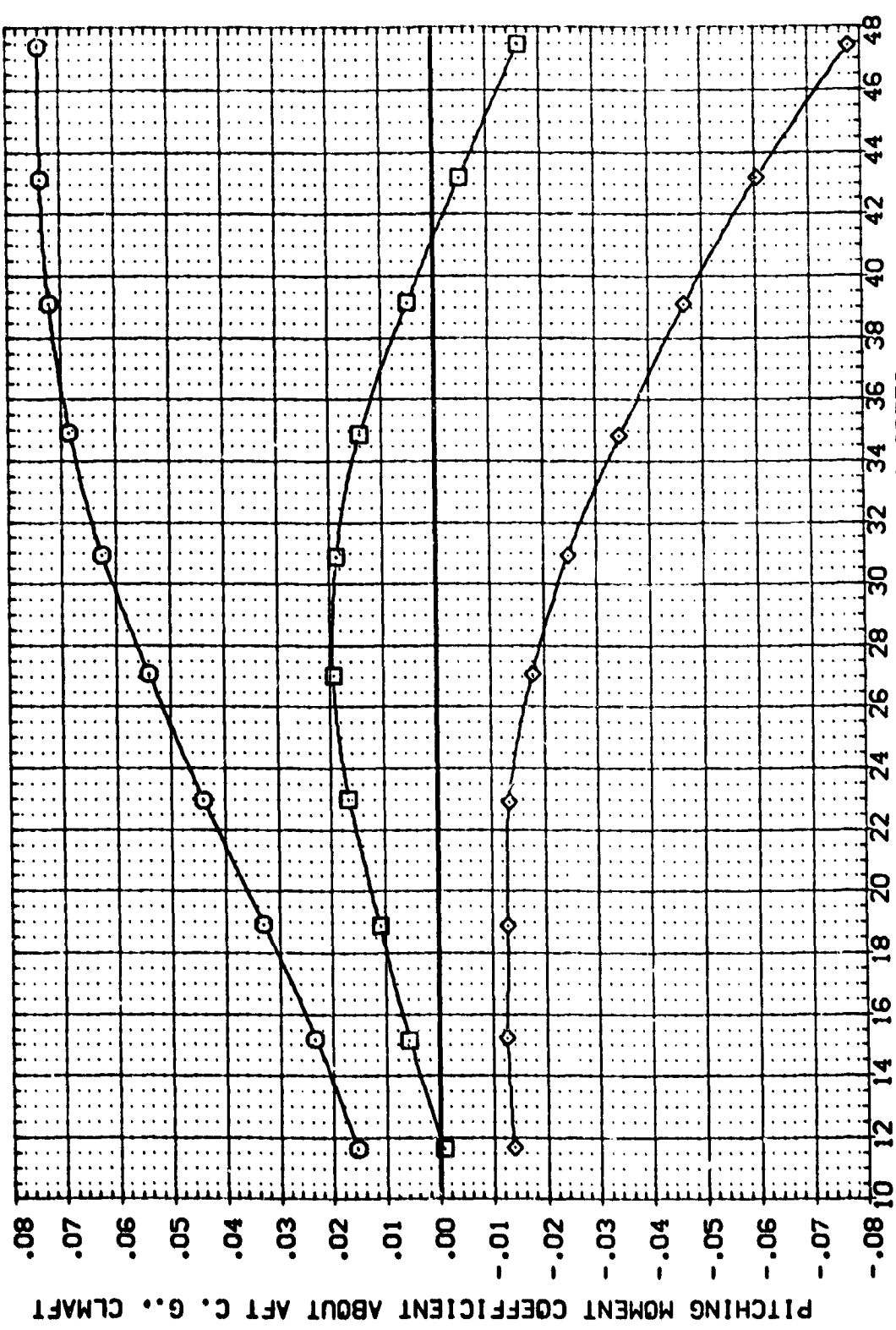
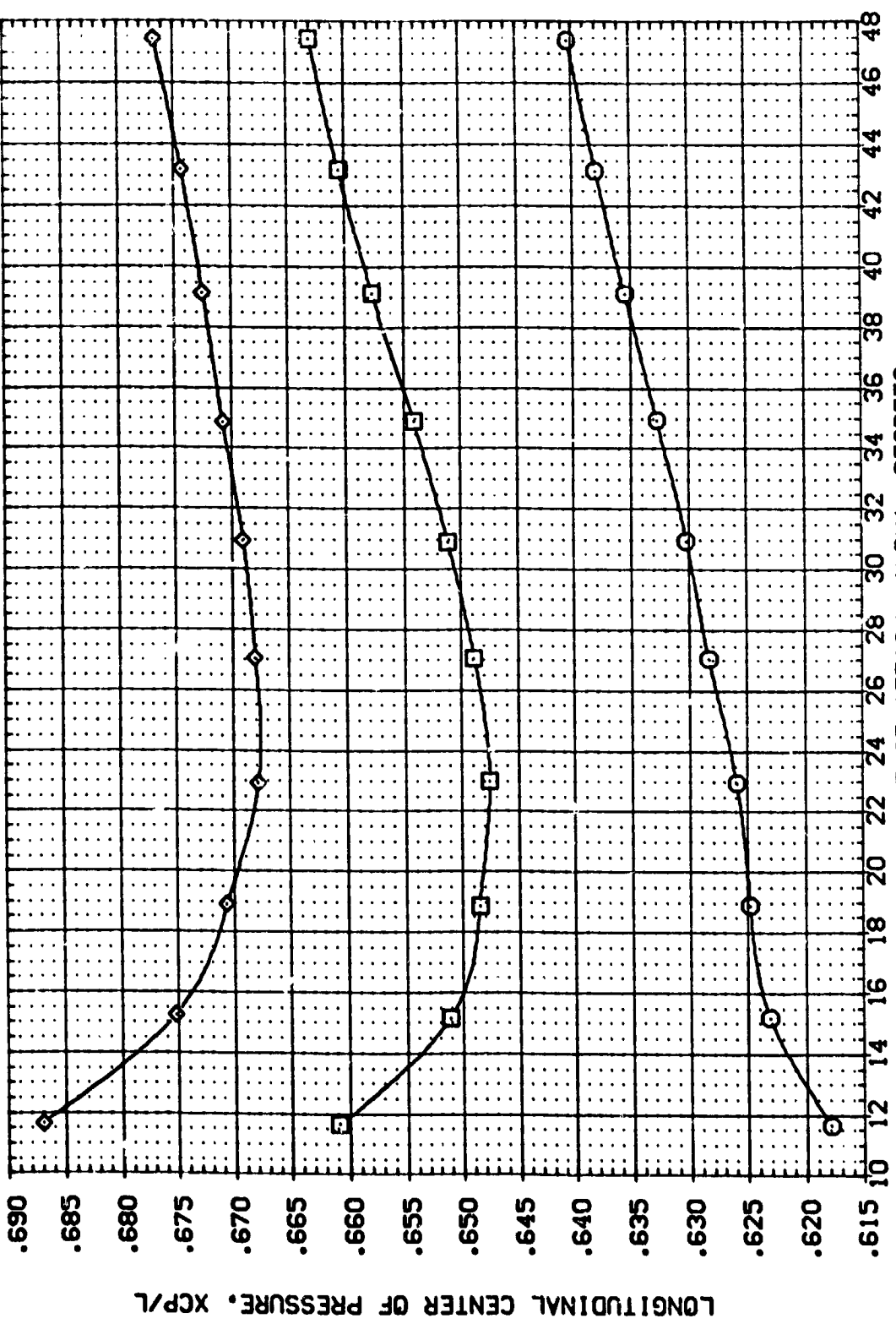


FIG. 7 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=0.0
 (A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEF005)	AMES 3.5-176 OAB7 140 A/B ORBITER	-40.000	55.000	.000	3.000	SREF 2690.0000 SQ.FT.
(BEF007)	AMES 3.5-176 OAB7 140 A/B ORBITER	0.000	55.000	.000	3.000	LREF 1290.3000 IN.
(BEF008)	AMES 3.5-176 OAB7 140 A/B ORBITER	10.000	55.000	.000	3.000	BREF 936.6800 IN.
						XMRP 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP .0000 IN.
						SCALE .0150



ANGLE OF ATTACK, ALPHA, DEGREES

FIG. 7 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPDWRK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEF005)	AVES 3.5-176 0A/17 140 A/B ORBITER	-40.000	55.000	.000	3.000	SREF 2690.0000 SQ.FT.
(BEF007)	AVES 3.5-176 0A/7 140 A/B ORBITER	.000	55.000	.000	3.000	LREF 1290.3000 IN.
(BEF006)	AVES 3.5-176 0A/87 140 A/B ORBITER	10.000	55.000	.000	3.000	BREF 976.6800 IN.
						XPRP 1076.4800 IN.
						YPRP .0000 IN.
						ZPRP 375.0000 IN.
						SCALE .0150 IN.

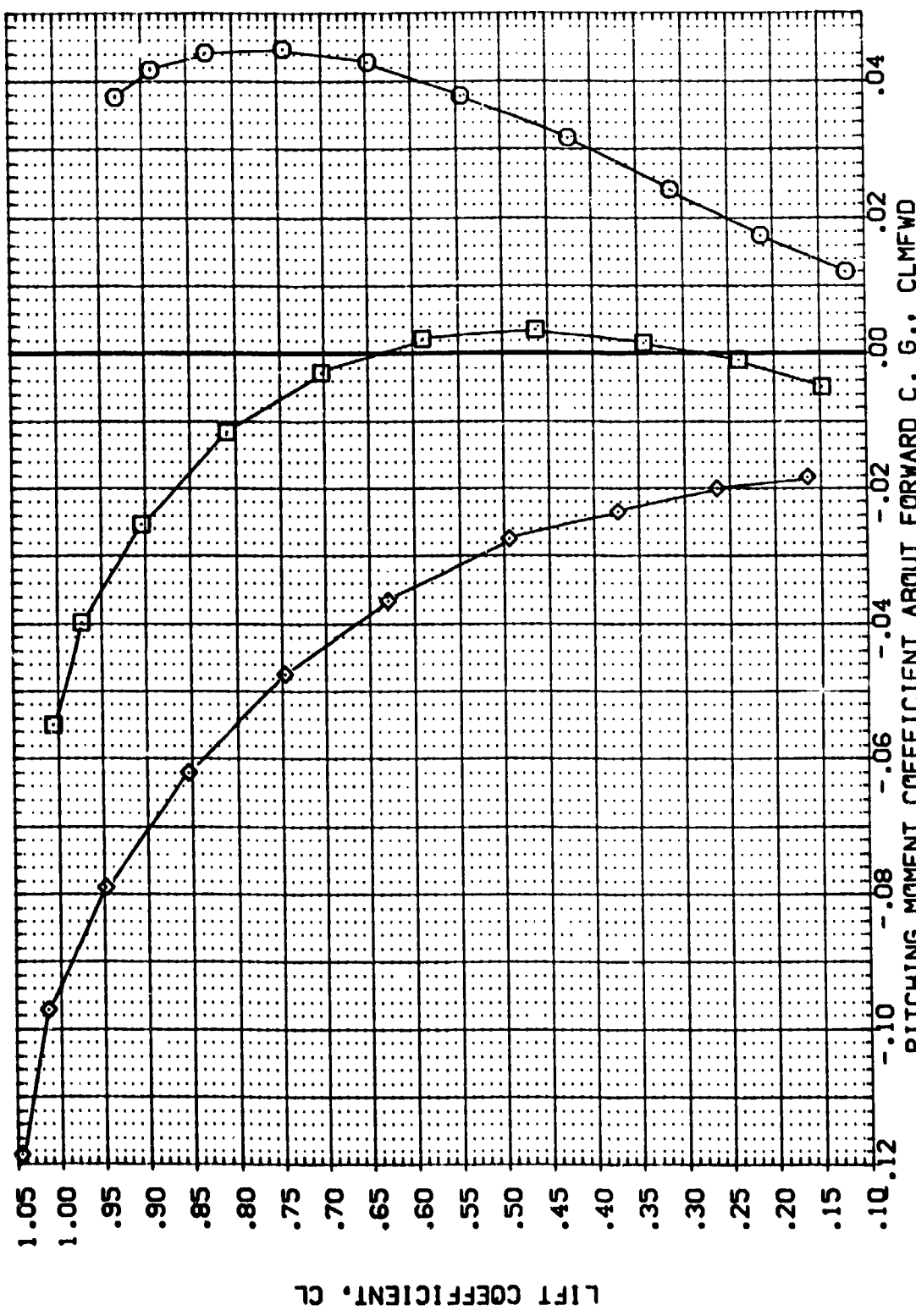
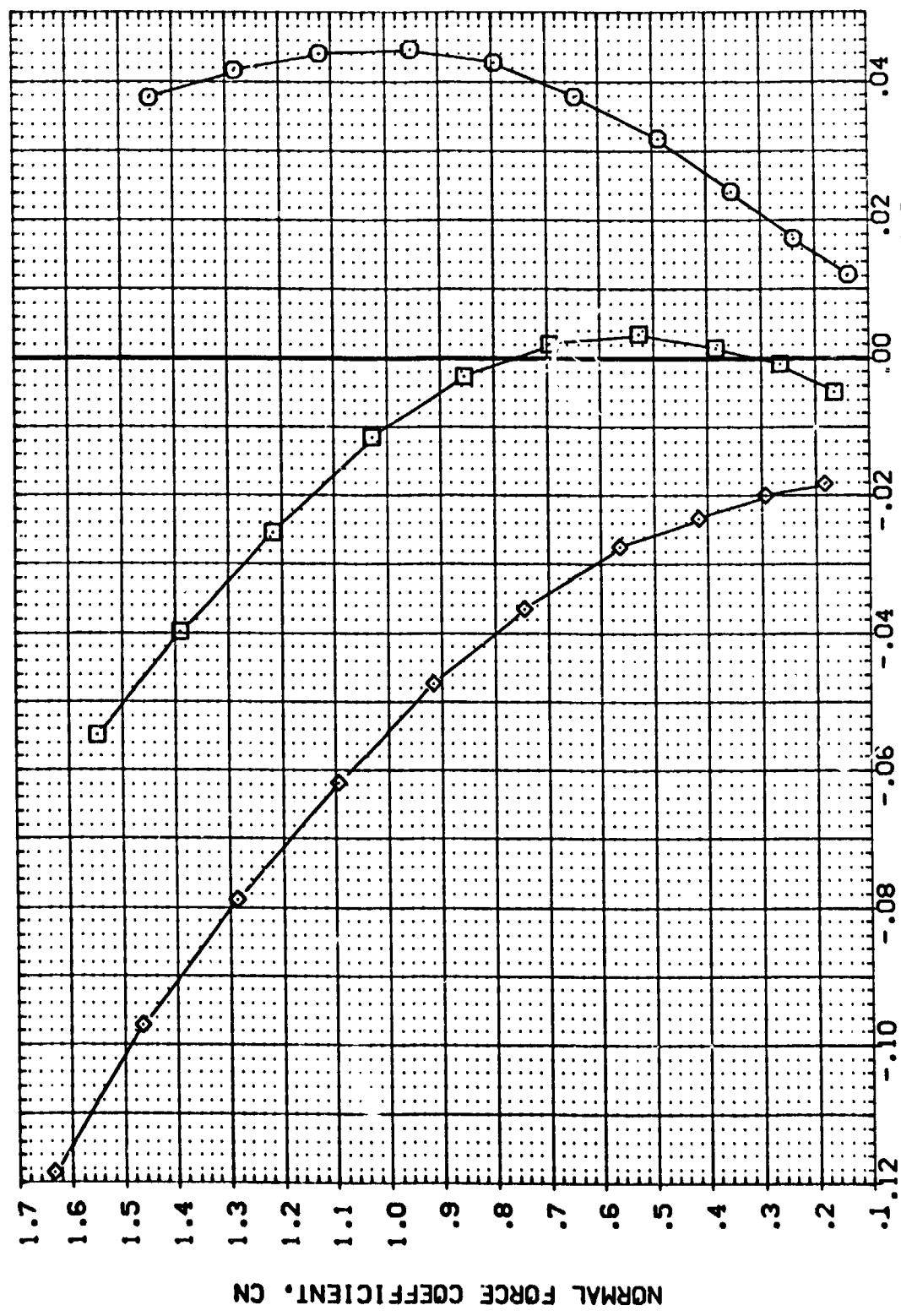


FIG. 7 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=0.0
 (A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEF005)	AMES 3.5-176 CAB7 140 A/B DRBITER	-40.000	55.000	.000	3.000	SREF 2690.0000 SO.FT.
(BEF007)	AMES 3.5-176 CAB7 140 A/B DRBITER	10.000	55.000	.000	3.000	LREF 1290.3000 IN.
(BEF006)	AMES 3.5-176 CAB7 140 A/B DRBITER		55.000	.000		BREF 936.6800 IN.
						XMRP 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150



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FIG. 7 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=0.0

CAJMACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPDRBK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEFL 05)	AMES 3.5-176 OAG7 140 A/B ORBITER	-40.000	55.000	.000	3.000	SREF 2690.0000 SO.FT.
(BEFL 77)	AMES 3.5-176 OAG7 140 A/B ORBITER	10.000	55.000	.000	3.000	LREF 1290.3000 IN.
(BEFL 5)	AMES 3.5-176 OAG7 140 A/B ORBITER	10.000	55.000	.000	3.000	BREF 936.6800 IN.
						XMRP 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150

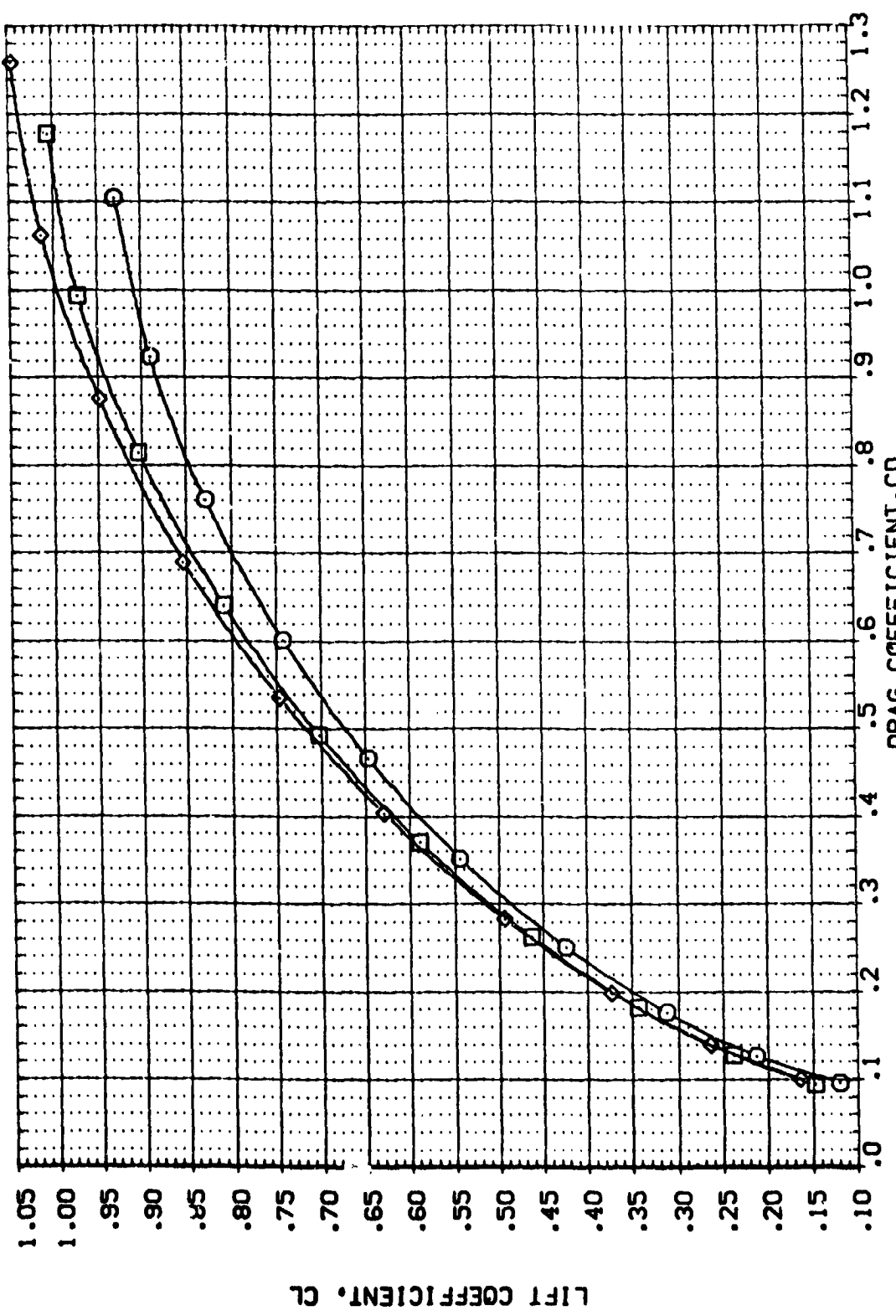
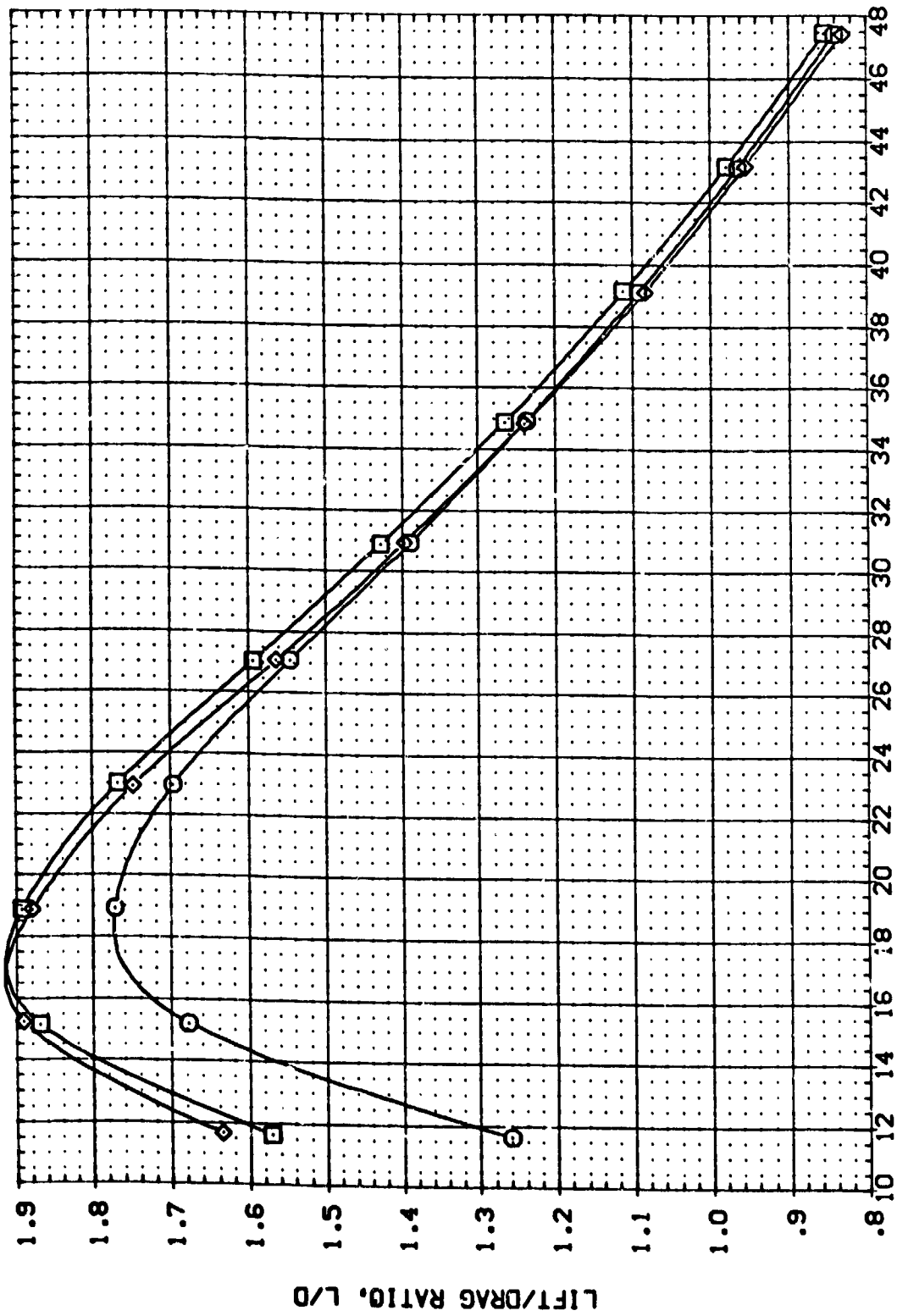


FIG. 7 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=0.0
(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BDFLAP	RN/L	REFERENCE INFORMATION
(AEF005)	AMES 3.5-176 OAB7 140 A/B ORBITER	-40.000	55.000	.000	3.000	SREF 2650.0000 SO.FT.
(AEF007)	AMES 3.5-176 OAB7 140 A/B ORBITER	.000	55.000	.000	3.000	LREF 1290.3000 IN.
(AEF006)	AMES 3.5-176 OAB7 140 A/B ORBITER	10.000	55.000	.000	3.000	BREF 936.6800 IN.
						XTRP 1076.4800 IN.
						YTRP .0000 IN.
						ZTRP 375.0000 IN.
						SCALE .0150



ANGLE OF ATTACK, ALPHA, DEGREES

FIG. 7 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL: (EEF005) □ (EEF006) ○
 CONFIGURATION DESCRIPTION: AYES 3.5-176 CAB7 140 A/B ORBITER; AYES 3.5-176 CAB7 140 A/B ORBITER
 DE: -10.000; 10.000
 SPOBRK: 55.000; 55.000
 BDFLAP: .000; .000
 RN/L: 3.000; 3.000
 REFERENCE INFORMATION:
 S REF: 2690.0000 SQ. FT.
 L REF: 1290.3000 IN.
 B REF: 536.6800 IN.
 X PRP: 1076.4800 IN.
 Y PRP: .0000 IN.
 Z PRP: 375.0000 IN.
 SCALE: .0150

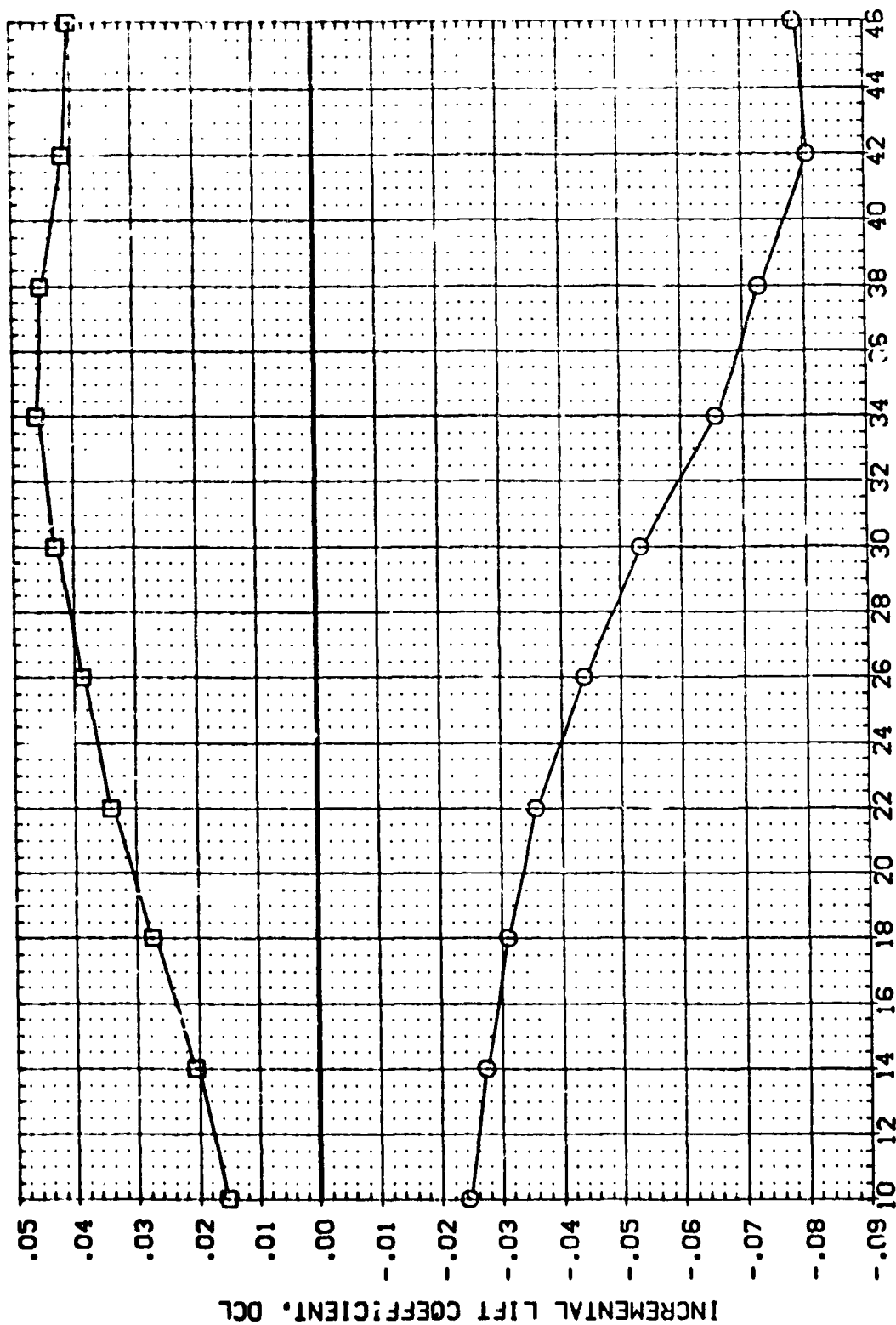


FIG. 7 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=0.0
 (A)MACH = 7.32

DATA SET SYMBOL (EEF005) (EEF006)

CONFIGURATION DESCRIPTION
 AVES 3.5-176 OAB7 140 A/B ORBITER
 AVES 3.5-176 OAB7 140 A/B ORBITER

DE -40.000
 -10.000

SPOBRK 55.000
 55.000

BDFLAP .000
 .000

RN/L 3.000
 3.000

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 1790.3000 IN.
 BREF 936.6800 IN.
 XREF 1076.4800 IN.
 YREF .0000 IN.
 ZREF 375.0000 IN.
 SCALE .0150

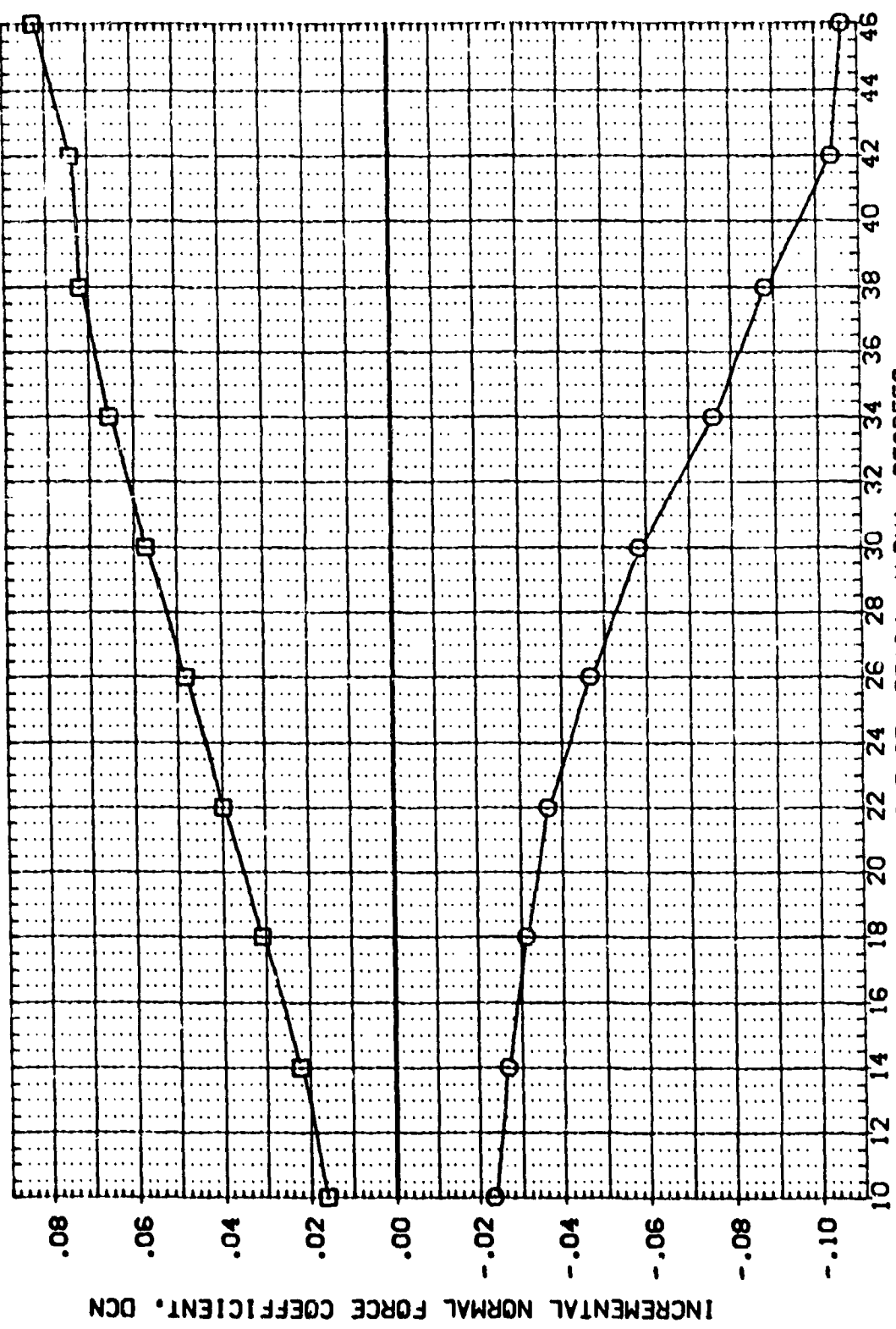


FIG. 7 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL (EF006) **G** CONFIGURATION DESCRIPTION AVES 3.5-176 CAB7 140 A/B ORBITER
 AVES 3.5-176 CAB7 140 A/B ORBITER
 DE -40.000 55.000 55.000 SPOBRK BDFLAP RN/L
 -10.000 10.000 10.000 3.000 3.000
 REFERENCE INFORMATION SREF 2690.0000 50.FT.
 LREF 1290.3000 IN.
 BREF 936.6600 IN.
 XTRP 1076.1800 IN.
 YTRP .0000 IN.
 ZTRP 375.0000 IN.
 SCALE .0150 SCALE

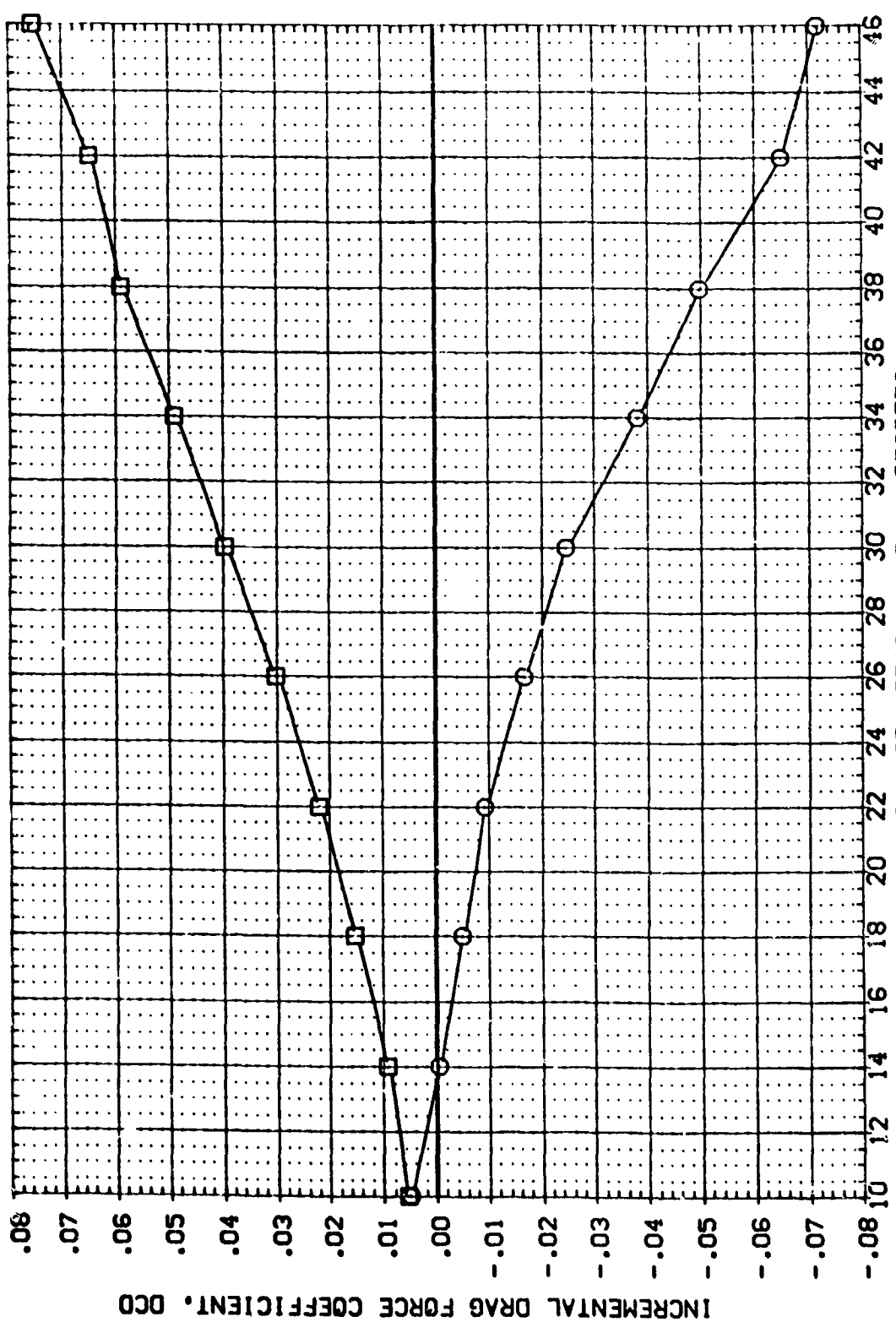
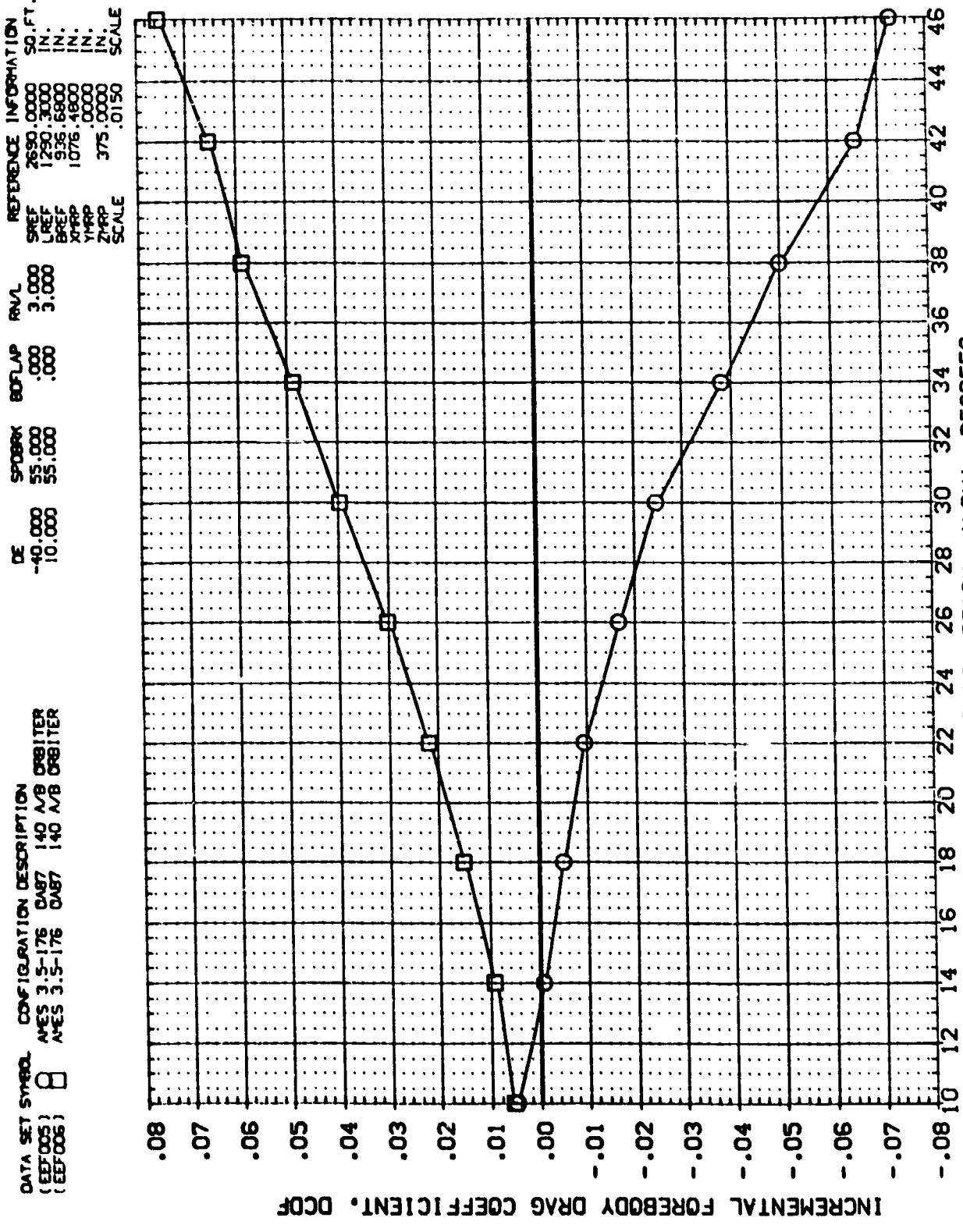


FIG. 7 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=0.0

(A)MACH = 7.32



DATA SET SYMBOL (EEF005) □

CONFIGURATION DESCRIPTION
 AYES 3.5-176 OAB7 140 A/B ORBITER
 AYES 3.5-176 OAB7 140 A/B ORBITER

DE -40.000
 10.000

SFOBRK 55.000
 55.000

BDFLAP .000
 .000

RN/L 3.000
 3.000

REFERENCE INFORMATION
 SPREF 2650.0000 SO.FT.
 LREF 1250.3000 IN.
 BRFP 936.6800 IN.
 XMRP 1076.4800 IN.
 YMRP .0000 IN.
 ZMRP 375.0000 IN.
 SCALE .0150

FIG. 7 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL (EF005) \square CONFIGURATION DESCRIPTION AMES 3.5-176 OAB7 140 A/B ORBITER
 (EF006) \circ AMES 3.5-176 OAB7 140 A/B ORBITER

DE -40.000
 10.000

SPEEDK 55.000
 55.000

BDFLAP .000
 .000

RN/L 3.000
 3.000

REFERENCE INFORMATION
 SREF 2630.0000 SO.FT.
 LREF 1290.3000 IN.
 BREF 936.6800 IN.
 XHRP 1076.4800 IN.
 YHRP .0000 IN.
 ZHRP 375.0000 IN.
 SCALE .0150

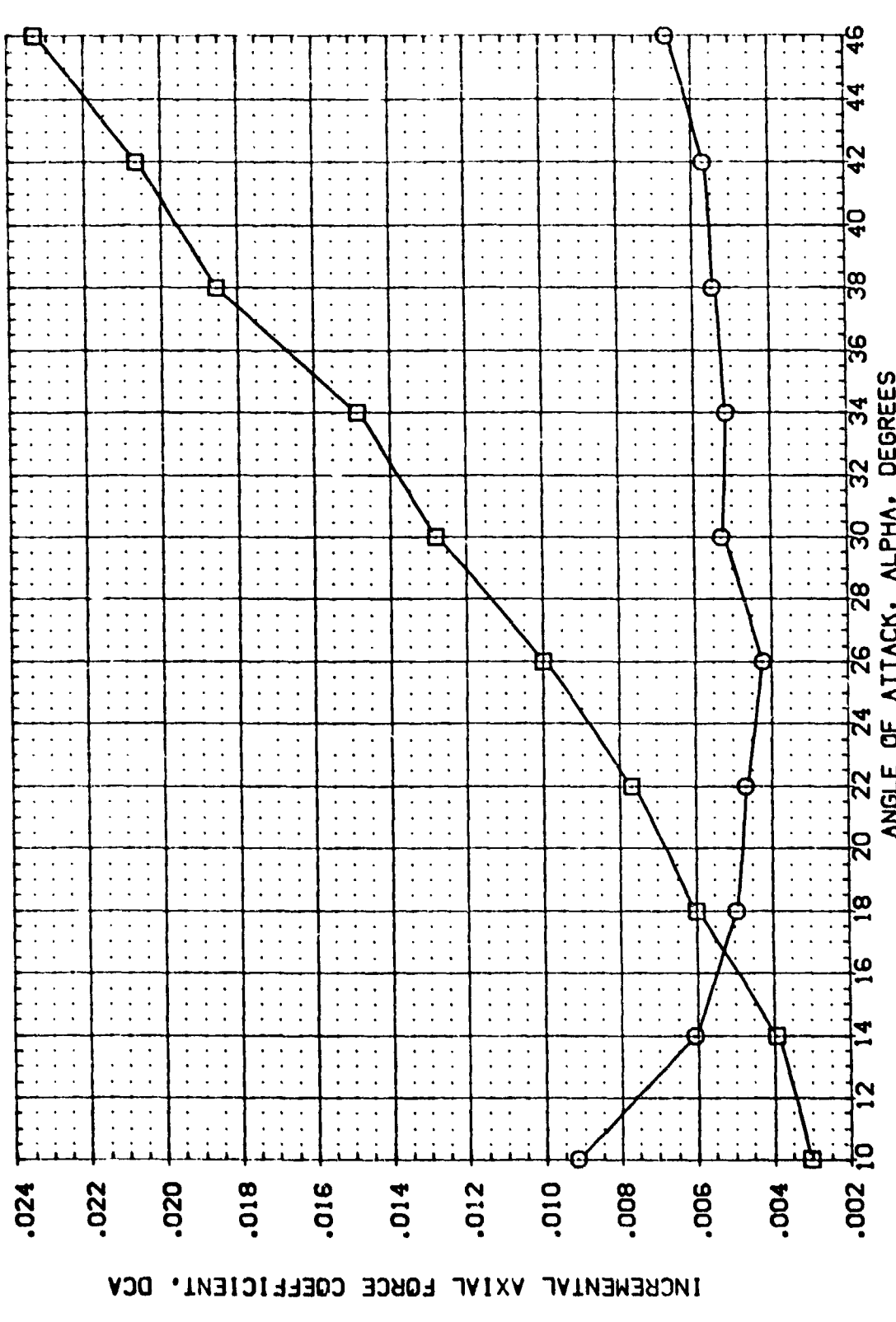


FIG. 7 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	DE	SPOBRK	BOFLAP	RN/L	REFERENCE INFORMATION
(EFP005)	AMES 3.5-176 OAB7 140 A/B ORBITER	-40.000	55.000	.000	3.000	SREF 2690.0000 SQ.FT.
(EFP006)	AMES 3.5-176 OAB7 140 A/B ORBITER	10.000	55.000	.000	3.000	LREF 1290.3000 IN.
						BREF 936.6800 IN.
						XMRP 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP .0000 IN.
						SCALE .0150

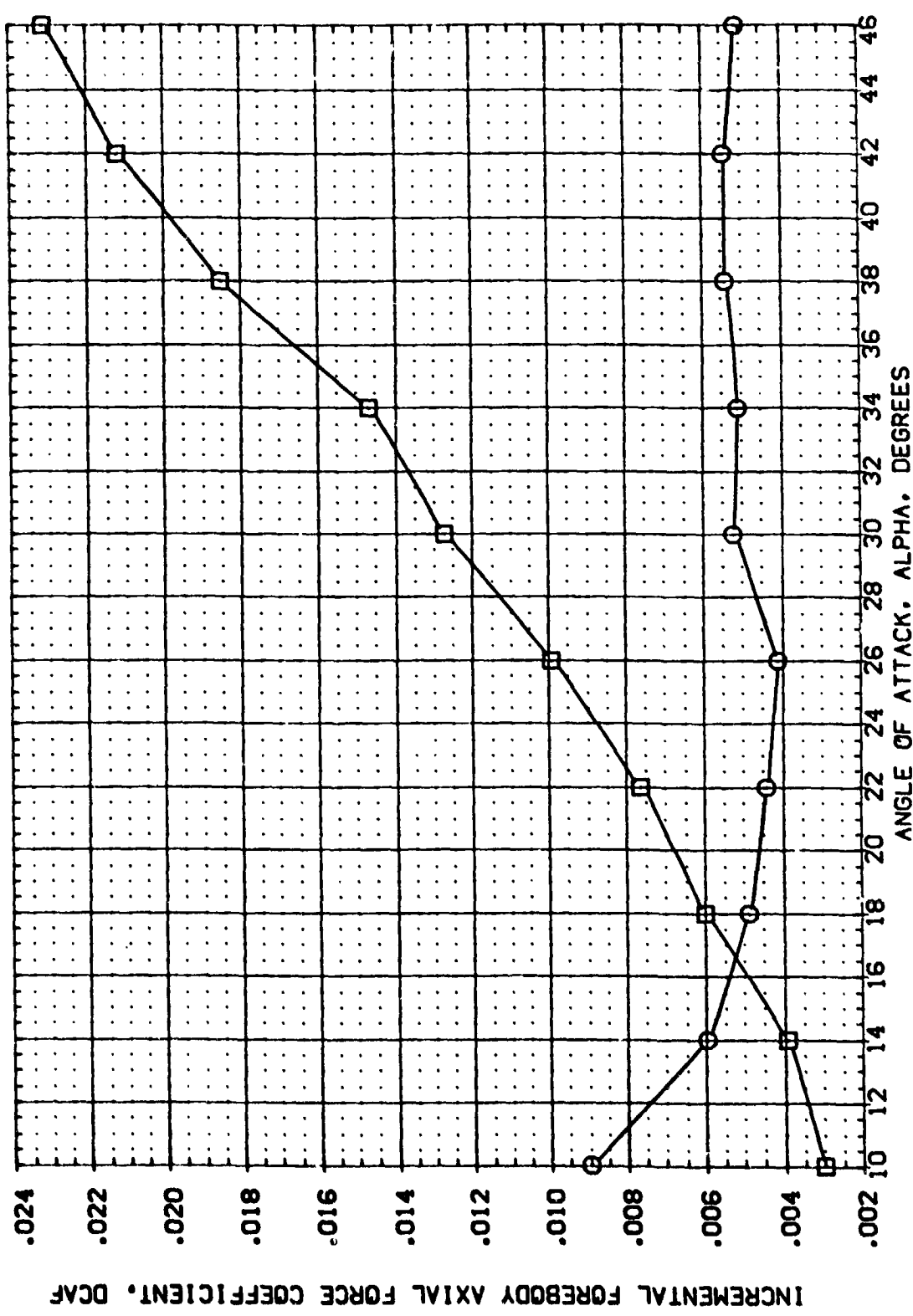


FIG. 7 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	DE	SPOBK	BDLAP	RN/L	REFERENCE INFORMATION
(EFP05)	APES 3.5-176 DAB7 140 A/B CRBITER	-40.000	55.000	.000	3.000	SREF 2650.0000 50. FT.
(EFP06)	APES 3.5-176 DAB7 140 A/B CRBITER	10.000	55.000	.000	3.000	LREF 1250.3000 IN.
						BREF 536.6600 IN.
						XPRP 1076.4800 IN.
						YPRP .0000 IN.
						ZPRP 375.0000 IN.
						SCALE .0150 SCALE

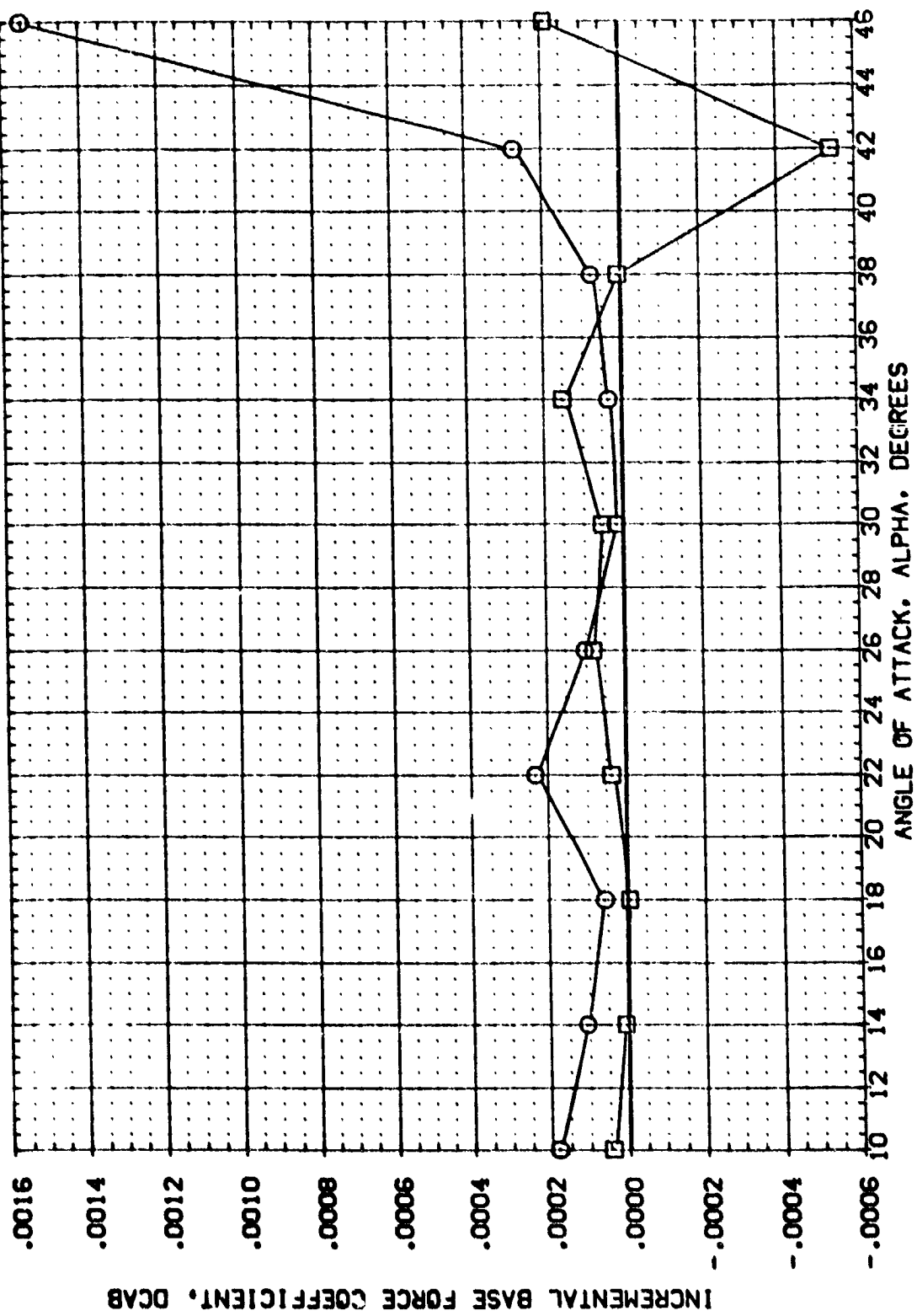


FIG. 7 ELEVON EFFECTIVENESS, RN/L=3.0, BDLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	DE	SPOBRK	BDFLAP	RN/L	REFERENCE INFORMATION
(EF005)	AMES 3.5-176 CAB7 140 A/B ORBITER	-40.000	55.000	.000	3.000	SREF 2690.0000 50.FT.
(EF006)	AMES 3.5-176 CAB7 140 A/B ORBITER	10.000	55.000	.000	3.000	LREF 1290.3000 "N.
						BREF 976.6800 "N.
						AAPP 1075.4800 "N.
						YAPP .0000 "N.
						ZAPP .0000 "N.
						SCALE 375.0000 "N.
						SCALE .0150

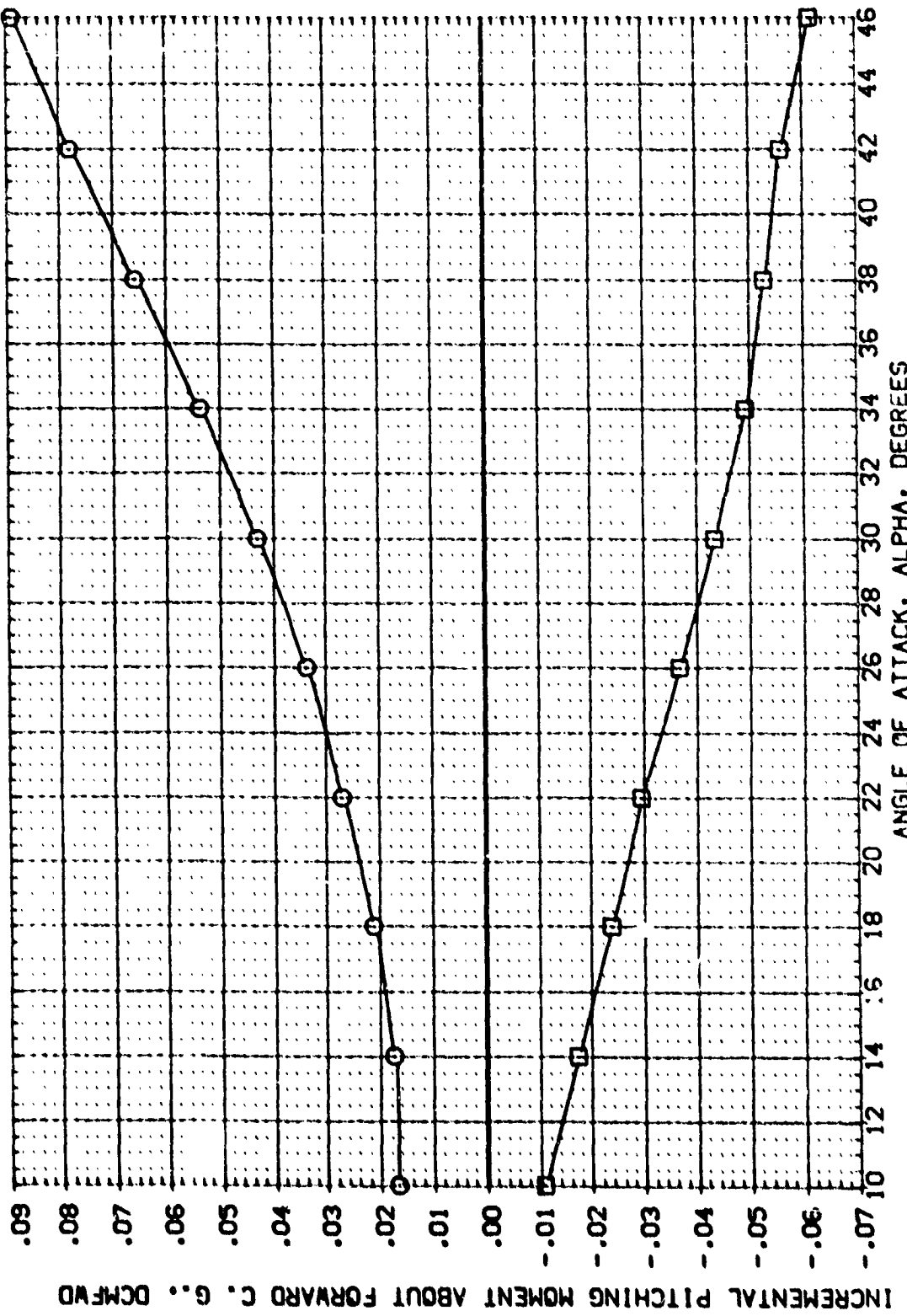


FIG. 7 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL (EFP005) \square CONFIGURATION DESCRIPTION AVES 3.5-176 CAB7 140 A/B ORBITER DE -10.000 SPOBRK 55.000 BDFLAP .000 RN/L 3.000 REFERENCE INFORMATION SQ. FT. SREF 2690.0000 IN. LREF 1290.3000 IN. BREF 936.6800 IN. XTRP 1076.4800 IN. YTRP .0000 IN. ZTRP .0000 IN. SCALE .0150

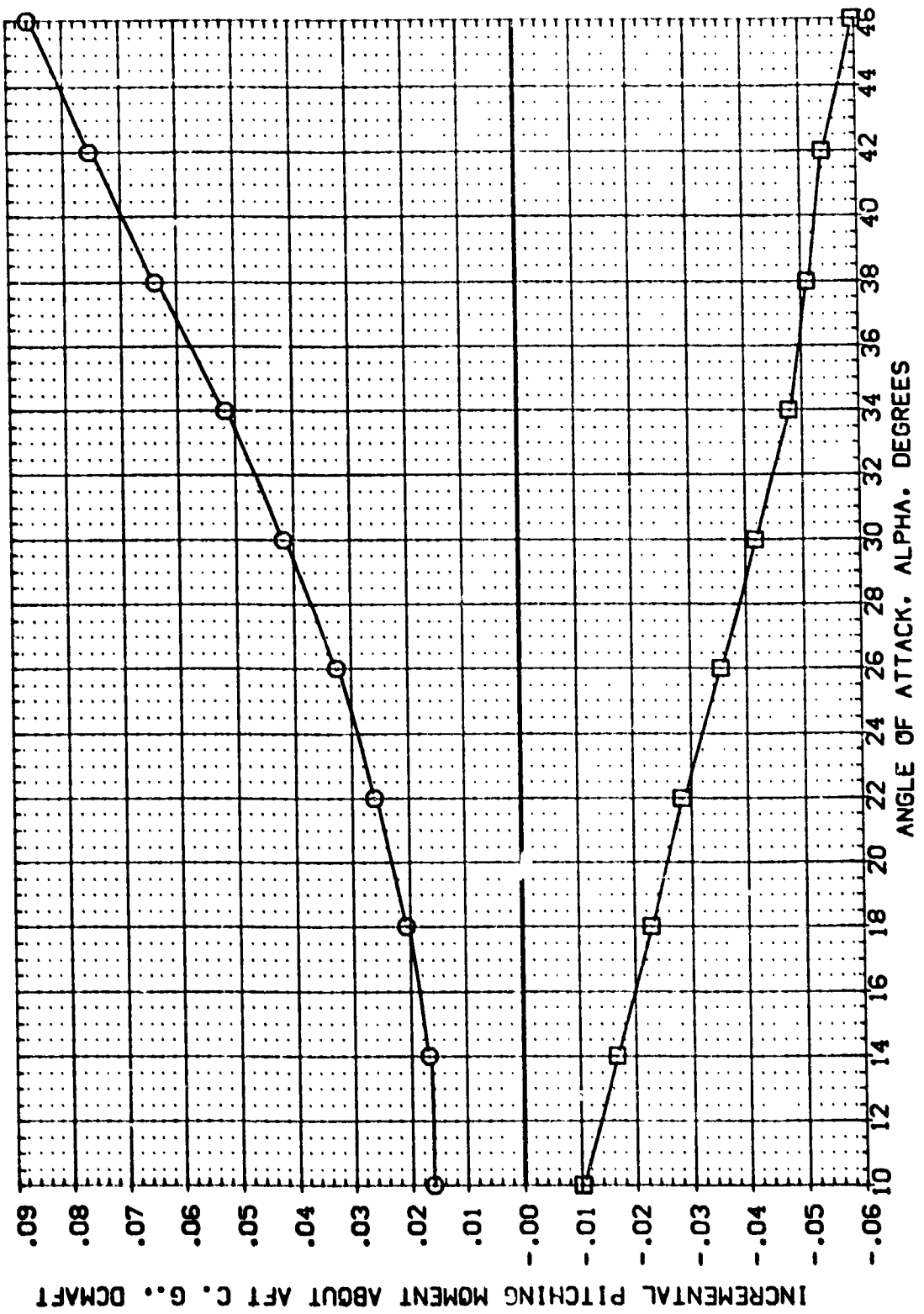


FIG. 7 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=0.0

(A)MACH = 7.32

AMES 3.5-176 0A87 140 A/B ORBITER (FEF005)

SYMBOL		ALPHA		MACH		PARAMETRIC VALUES		DATA SOURCE		REFERENCE INFORMATION	
						BETA	BDFLAP	ELEVON	SREF	SO.FT.	
○	10.000	7.320	.000	.000	.000	.000	.000	ELEVON	LREF	IN.	
□	20.000	.000	.000	.000	.000	.000	.000	FEF007	BREF	IN.	
◇	30.000	.000	.000	.000	.000	.000	.000	FEF006	XMRP	IN.	
△	40.000	3.000	.000	.000	.000	.000	.000	FEF006	YMRP	IN.	
									ZMRP	IN.	
									SCALE	SCALE	
											.0150

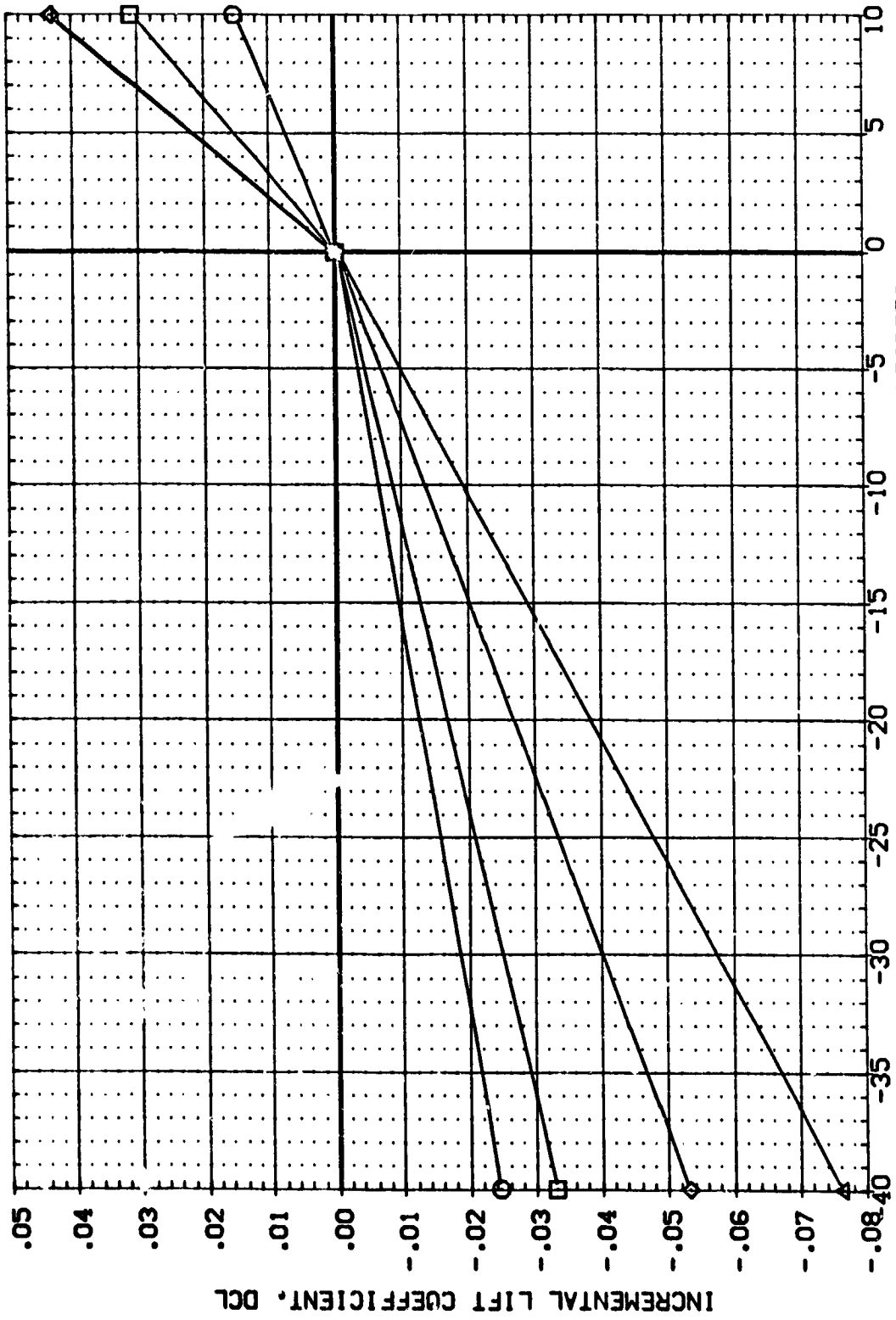


FIG. 7 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=0.0

(FEF005)

AMES 3.5-176 0A87 140 A/B ORBITER

PARAMETRIC VALUES		DATA SOURCE		REFERENCE INFORMATION	
ALPHA	MACH	.000	ELEVON	SREF	50. FT.
10.000	7.320	.000	FEF007	LREF	IN.
20.000	.000	.000	FEF005	BREF	IN.
30.000	.000	.000	FEF006	XTRP	IN.
40.000	3.700	.000	FEF007	YTRP	IN.
		.000	FEF006	ZTRP	IN.
		.000	FEF007	SCALE	SCALE

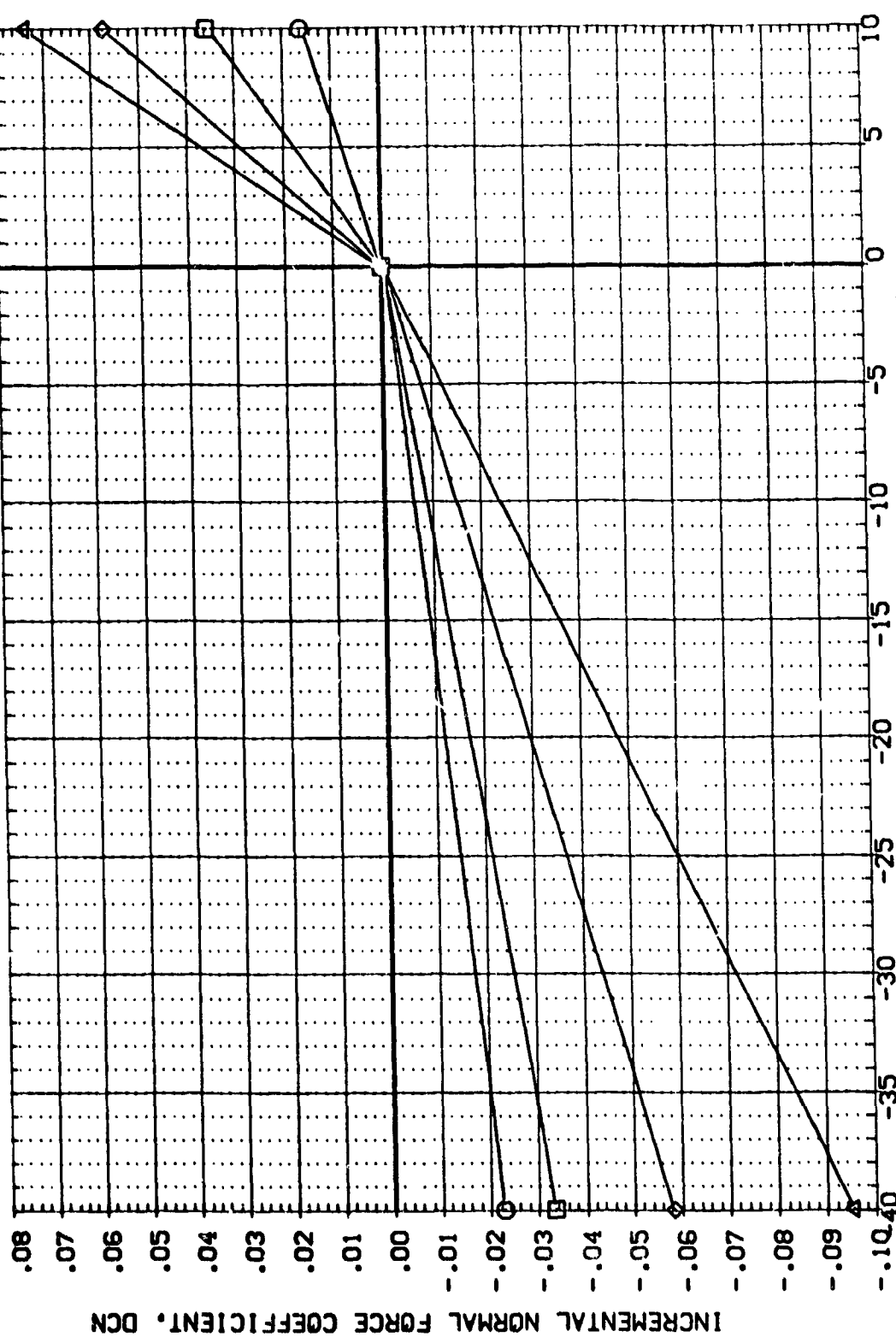


FIG. 7 ELEVON EFFECTIVENESS, RN/L=3.0, 80FLAP=0.0

AMES 3.5-176 0A87 140 A/B ORBITER (FEF005)

SYMBOL	ALPHA	MACH	PARAMETRIC VALUES	DATA SOURCE	ELFVON	ELFVON	REF	REF	REF	REF	REF	REF
○	10.000		BETA 7.320	.000 DATASET FEF005	-40.000	.000	SREF 2690.0000	IN. 1290.3000	IN. 536.6800	IN. 1076.4800	IN. .0000	IN. 375.0000
□	20.000		BOFLAP .000	.000 FEF005	10.000		LRFP					
◇	30.000		SPOBRK .000	95.000			YMRP					
△	40.000		RV/L 3.000				ZMRP					
							SCALE					.0150

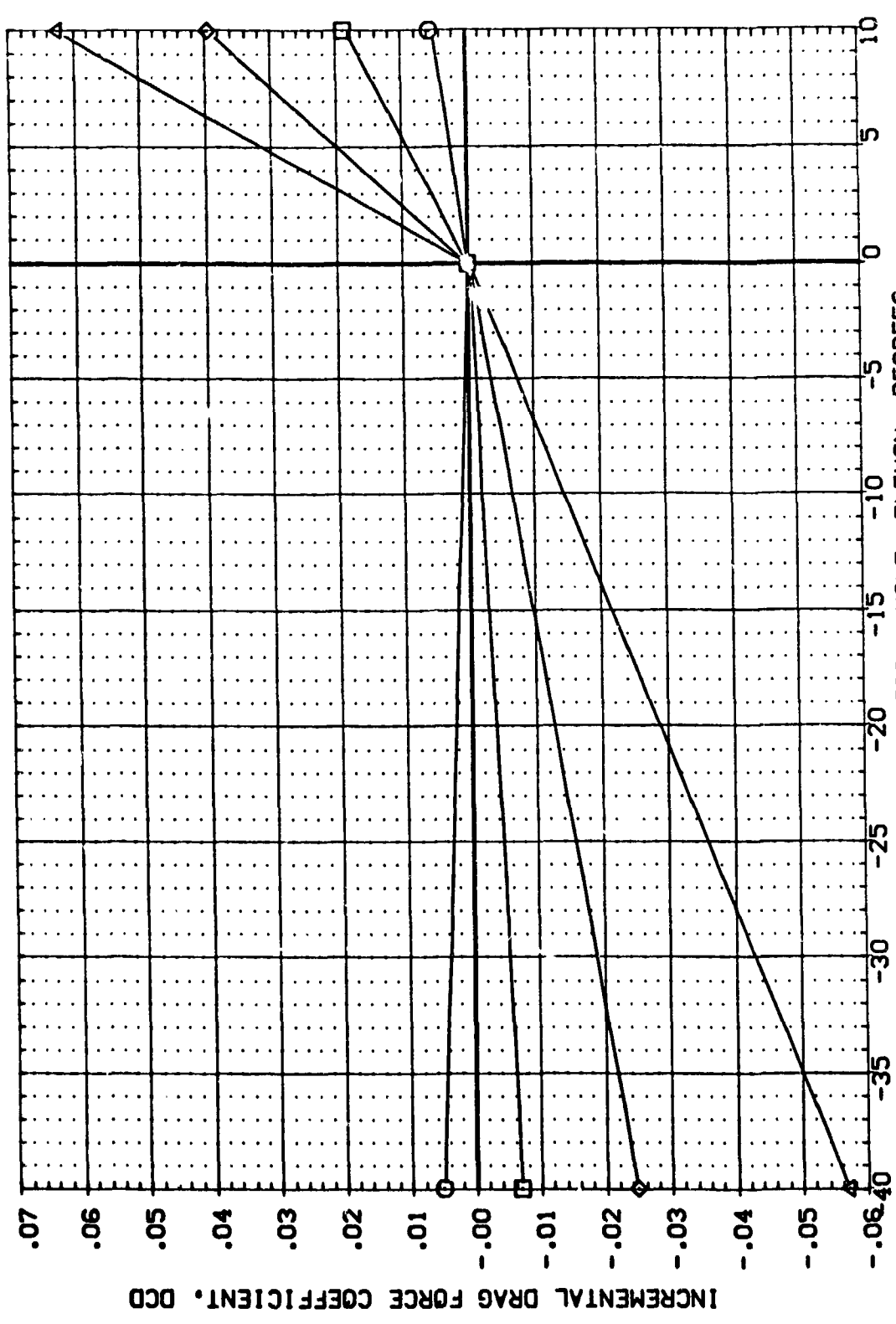


FIG. 7 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=0.0

AMES 3.5-176 OA87 140 A/B ORBITER (FEF005)

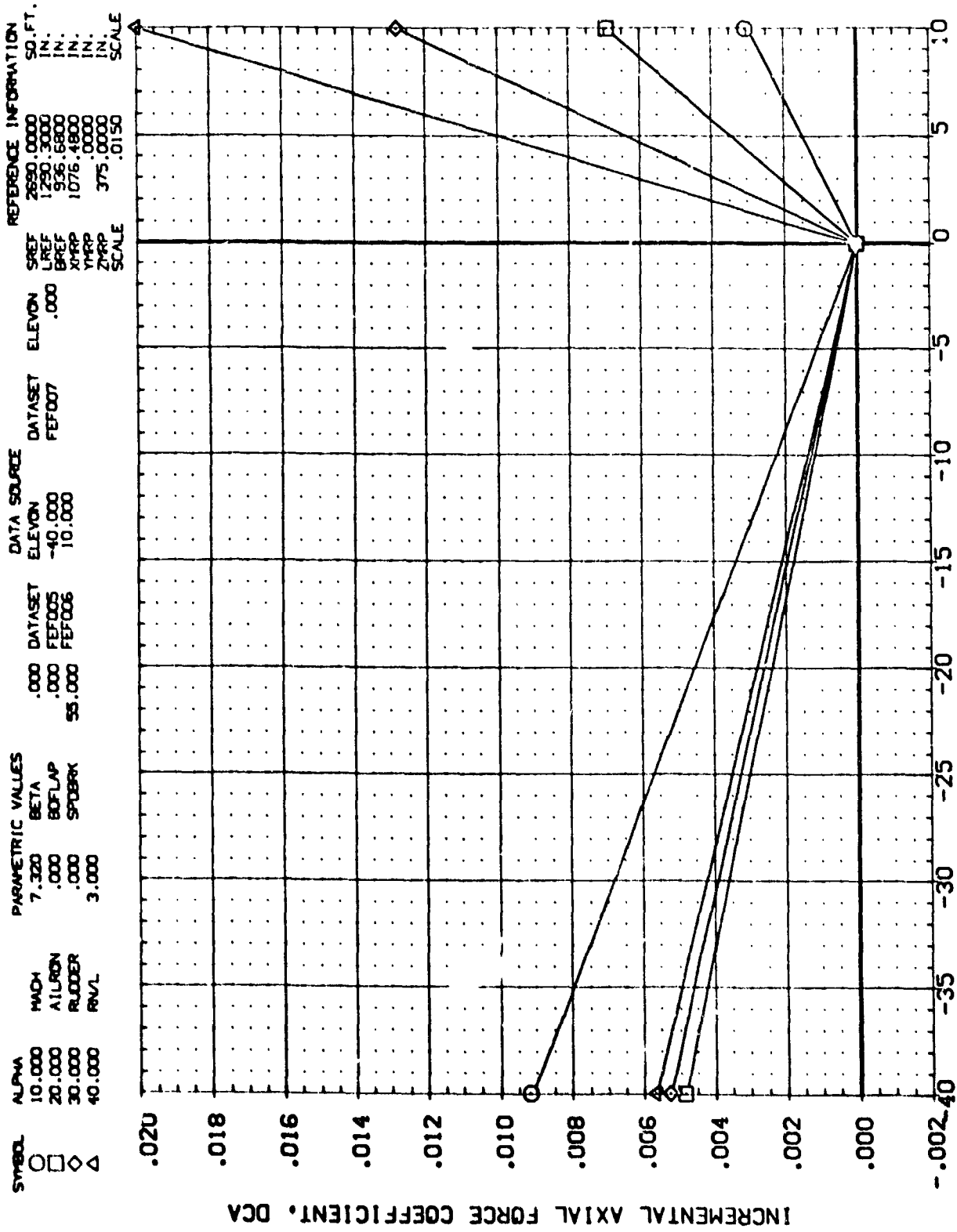


FIG. 7 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=0.0

AMES 3.5-176 0A87 140 A/B ORBITER (FEF005)

SYMBOL	ALPHA	MACH	PARAMETRIC VALUES	DATA SOURCE	ELEVON	DATASET	ELEVON	SREF	REFERENCE INFORMATION
○	10.000	7.320	BETA	.000	FEF005	.000	LREF	2690.0000	SO.FT.
□	20.000	.000	BOFLAP	.000	FEF006	.000	XMRP	1290.3000	IN.
◇	30.000	.000	SPOBRK	55.000	FEF006	.000	YMRP	936.6800	IN.
△	40.000	3.000	RV/L				ZMRP	1076.4800	IN.
							SCALE	375.0000	IN.
								.0150	SCALE

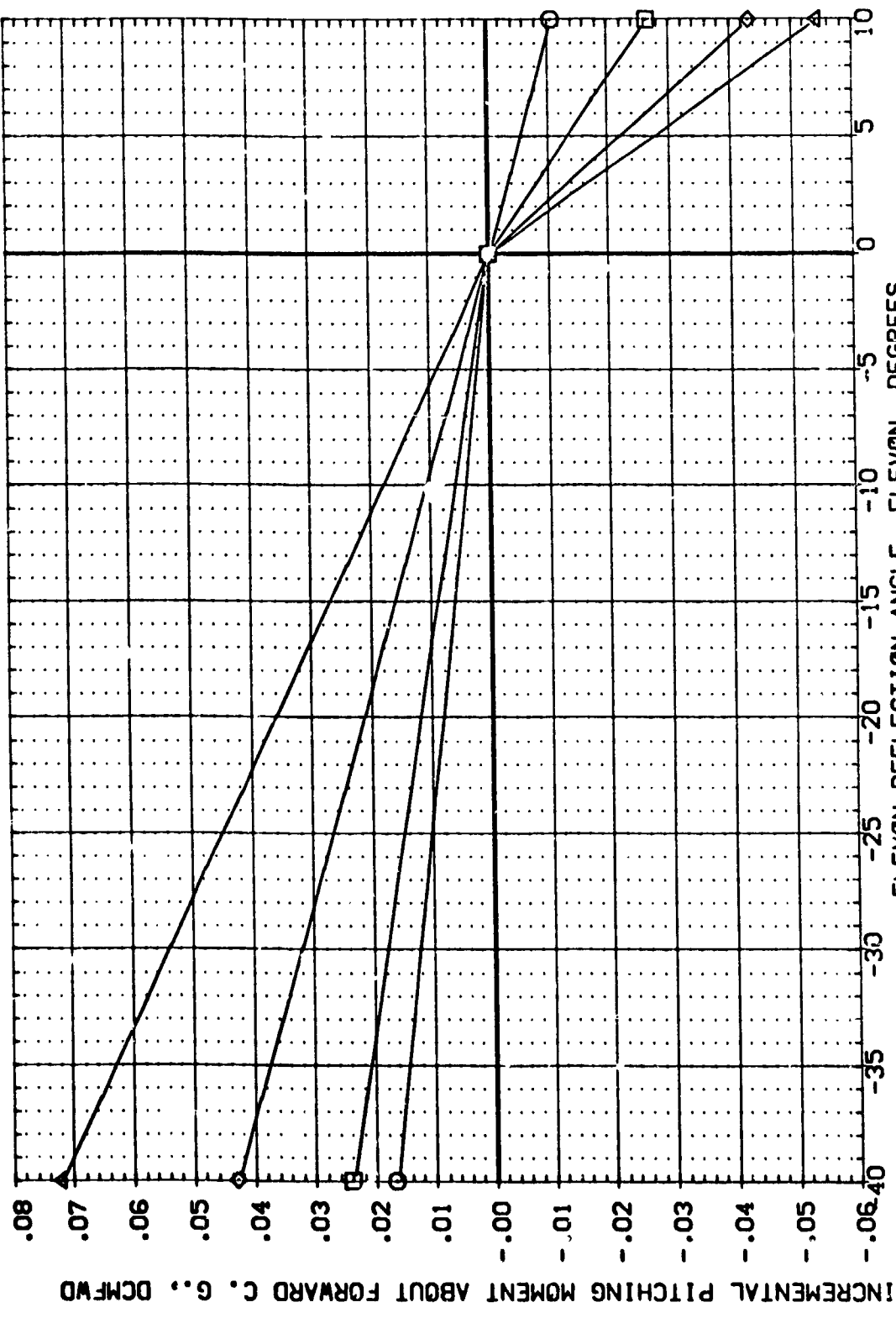


FIG. 7 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=0.0

AMES 3.5-176 0.37 140 A/B ORBITER (FEF005)

ALPHA	10.000	DATA SOURCE	ELEVON	ELEVON	SREF	2690.0000	SO.FT.
MACH	7.340	BETA	.000	.000	LREF	1290.3000	IN.
AILRON	.000	PFCLAP	.000	.000	SREF	926.6800	IN.
RUDER	.000	SDBRK	55.000	FEF006	XMRP	1076.4800	IN.
RV/L	3.000			FEF007	YMRP	3000	IN.
					ZMRP	375.0000	IN.
					SCALE	.0150	SCALE

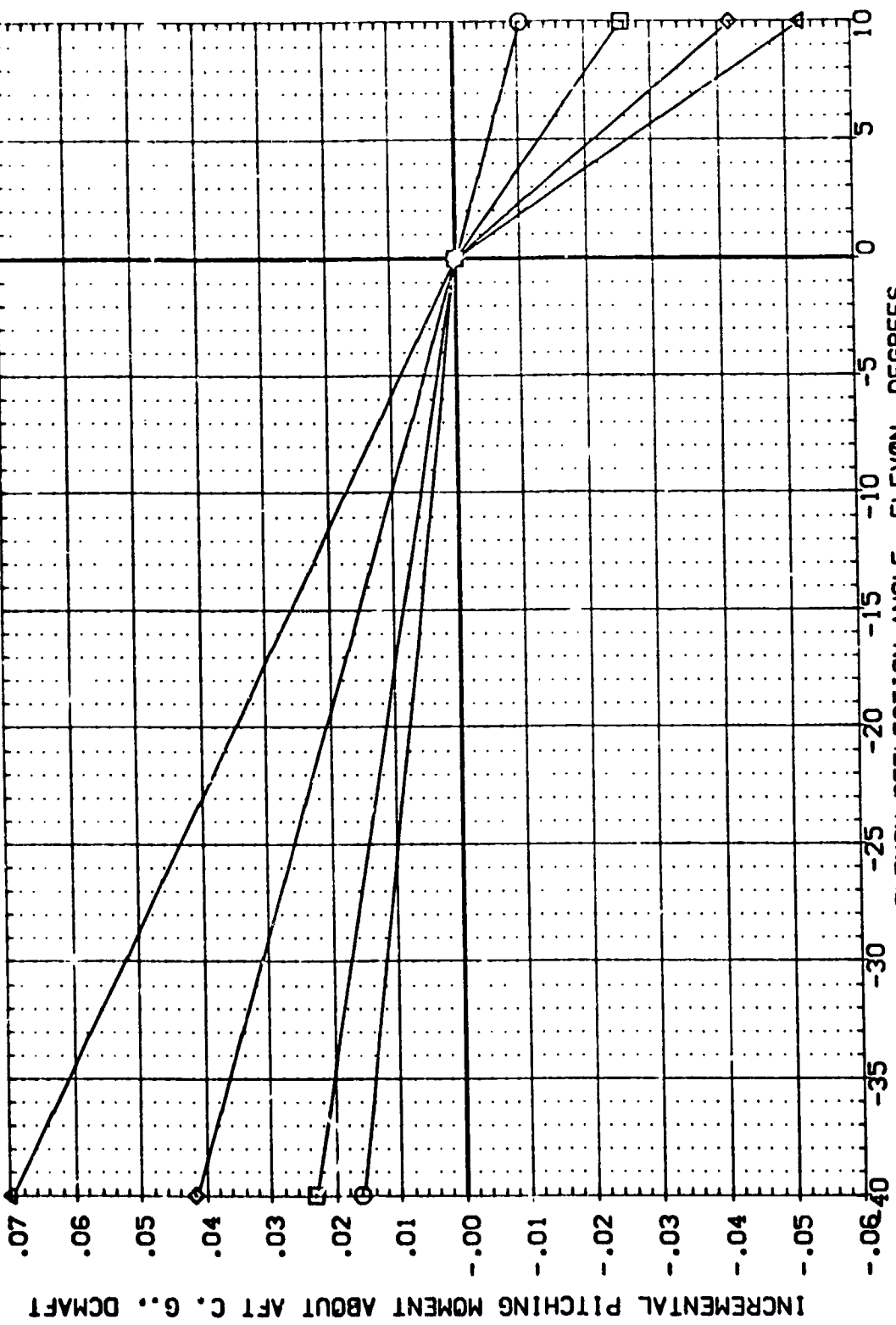


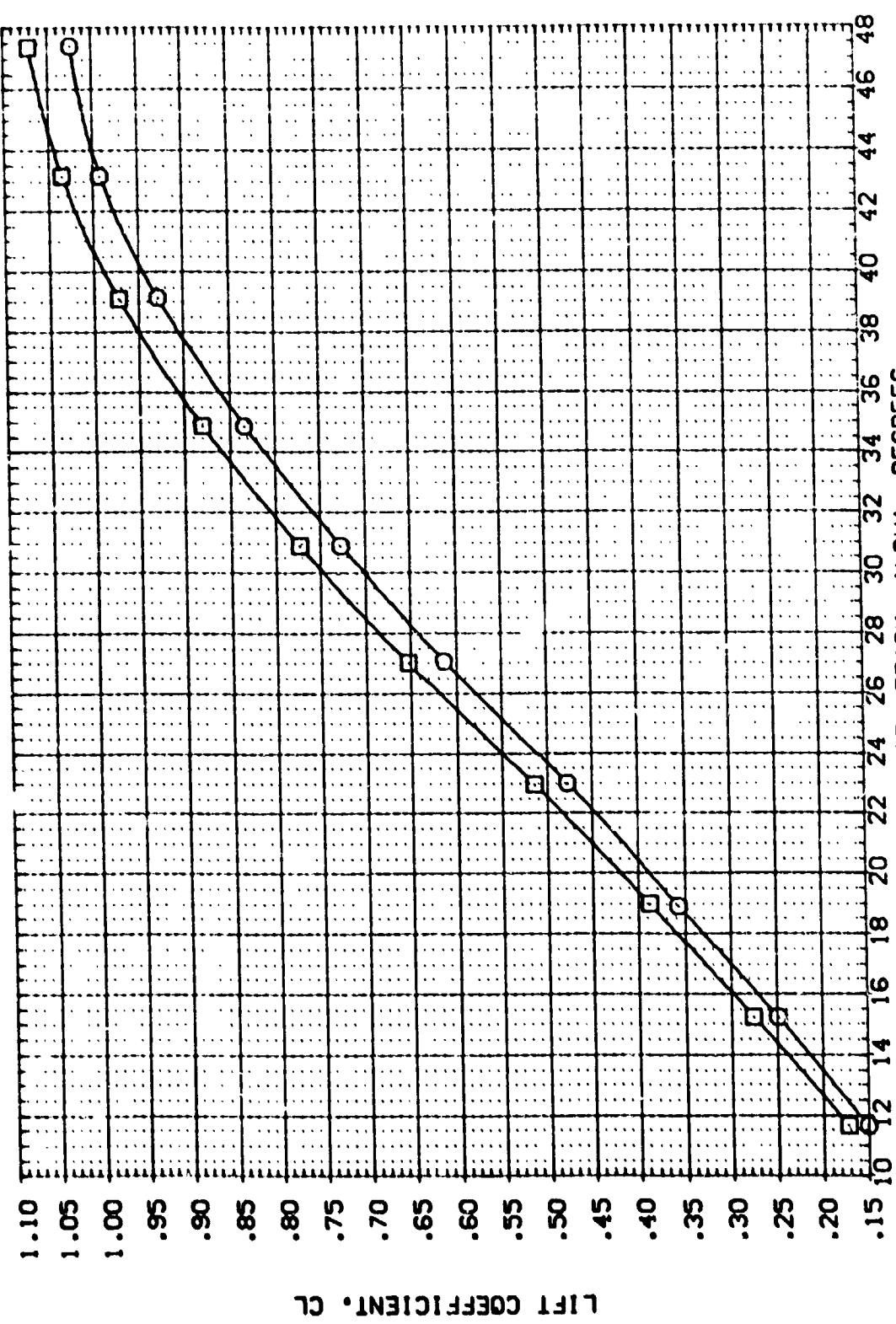
FIG. 7 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=0.0

DATA SET SYMBOL (BEFO10) (BEFO11) □

CONFIGURATION DESCRIPTION
 ARES 3.5-176 CAB7 140 A/B ORBITER
 ARES 3.5-176 CAB7 140 A/B ORBITER

ELEVON SPOBRK BDFLAP RN/L
 .000 55.000 15.300 3.000
 10.000 55.000 16.300 3.000

REFERENCE INFORMATION
 SREF 2690.0000 SQ. FT.
 LREF 1290.3000 IN.
 BREF 936.6870 IN.
 YAPP 1076.4870 IN.
 ZAPP 0000 IN.
 SCALE 375.0000 IN.
 .0150



ANGLE OF ATTACK, ALPHA, DEGREES

FIG. 8 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL (BEF010) (BEF011) □

CONFIGURATION DESCRIPTION
 ARES 3.5-176 DAB7 140 A/B CRBITTER
 ARES 3.5-176 DAB7 140 A/B CRBITTER

ELEVON SPOBRK BOFLAP RN/L

0.000 55.000 16.300 3.000
 10.000 55.000 16.300 3.000

REFERENCE INFORMATION
 SPREF 2690.0000 SQ.FT.
 LPREF 1290.0000 IN.
 BRPF 936.6800 IN.
 YMRP 1076.4800 IN.
 ZMRP .0000 IN.
 SCALE 375.0000 IN.
 .0150

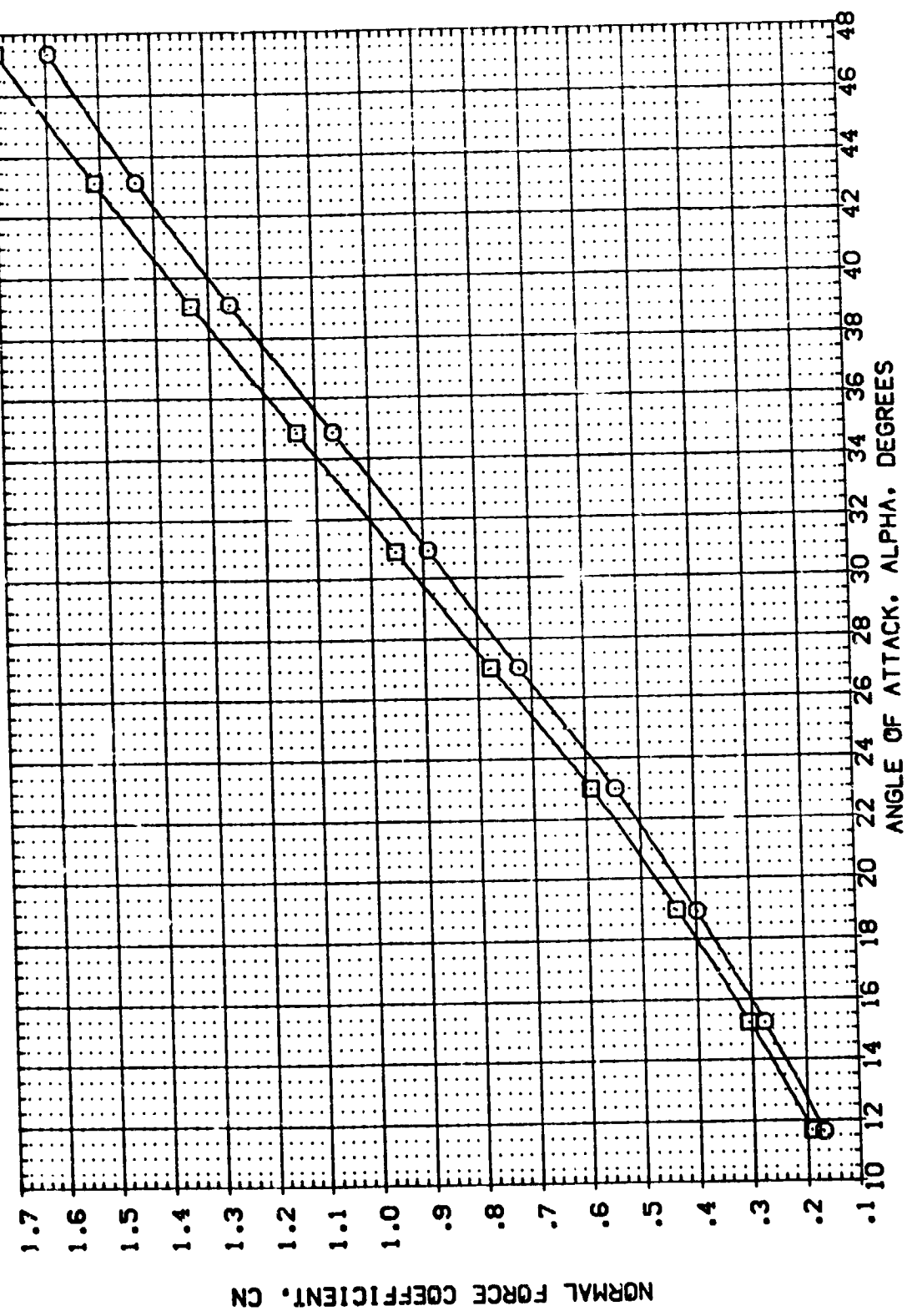


FIG. 8 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (BEFO10) \square AVES 3.5-176 OAB7 140 A/B CRBITER
 (BEFO11) \circ AVES 3.5-176 OAB7 140 A/B CRBITER

ELEVON SPOBRK BOFLAP RN/L
 .000 55.000 16.300 3.000
 10.000 55.000 16.300 3.000

REFERENCE INFORMATION
 SREF 2690.0000 SO.FT.
 LREF 1730.3000 IN.
 BREF 926.6800 IN.
 XPRP 1076.4800 IN.
 YMRP .0000 IN.
 ZMRP 375.0000 IN.
 SCALE .0150

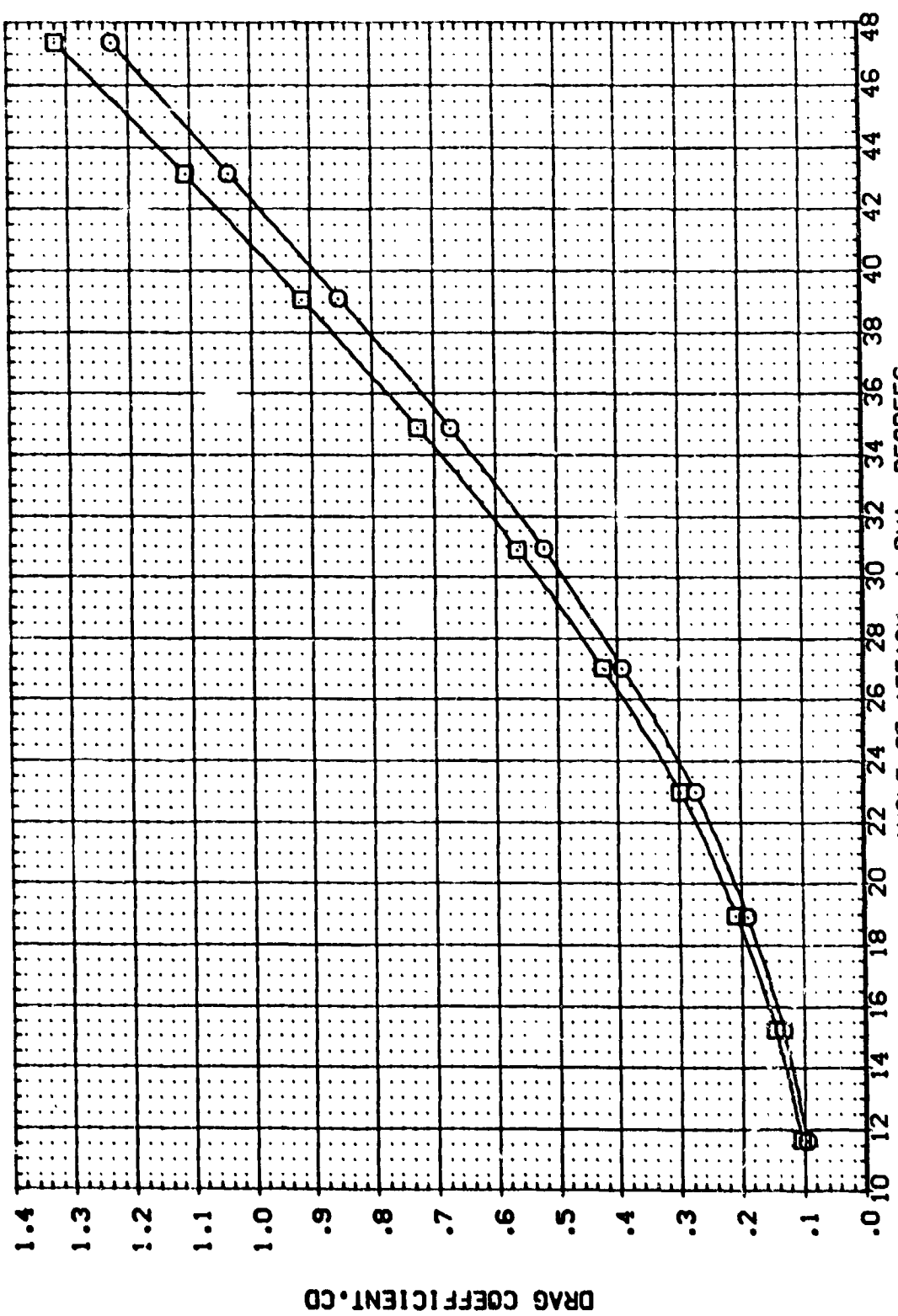


FIG. 8 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=16.3
 (A)MACH = 7.32

DATA SET: SMP/L
 (BEF010) MES 3.5-176 CAB7 140 A/B ORBITER
 (BEF011) MES 3.5-176 CAB7 140 A/B ORBITER

ELEVON SPOBRK BOFLAP RN/L
 1.000 95.000 16.300 3.000
 10.000 55.000 16.300 3.000

REFERENCE INFORMATION
 SREF 2650.0000 SO.FT.
 LREF 1250.3000 IN.
 BRFP 976.6800 IN.
 XREF 1076.4800 IN.
 YREF .0000 IN.
 ZREF 375.0000 IN.
 SCALE .0150

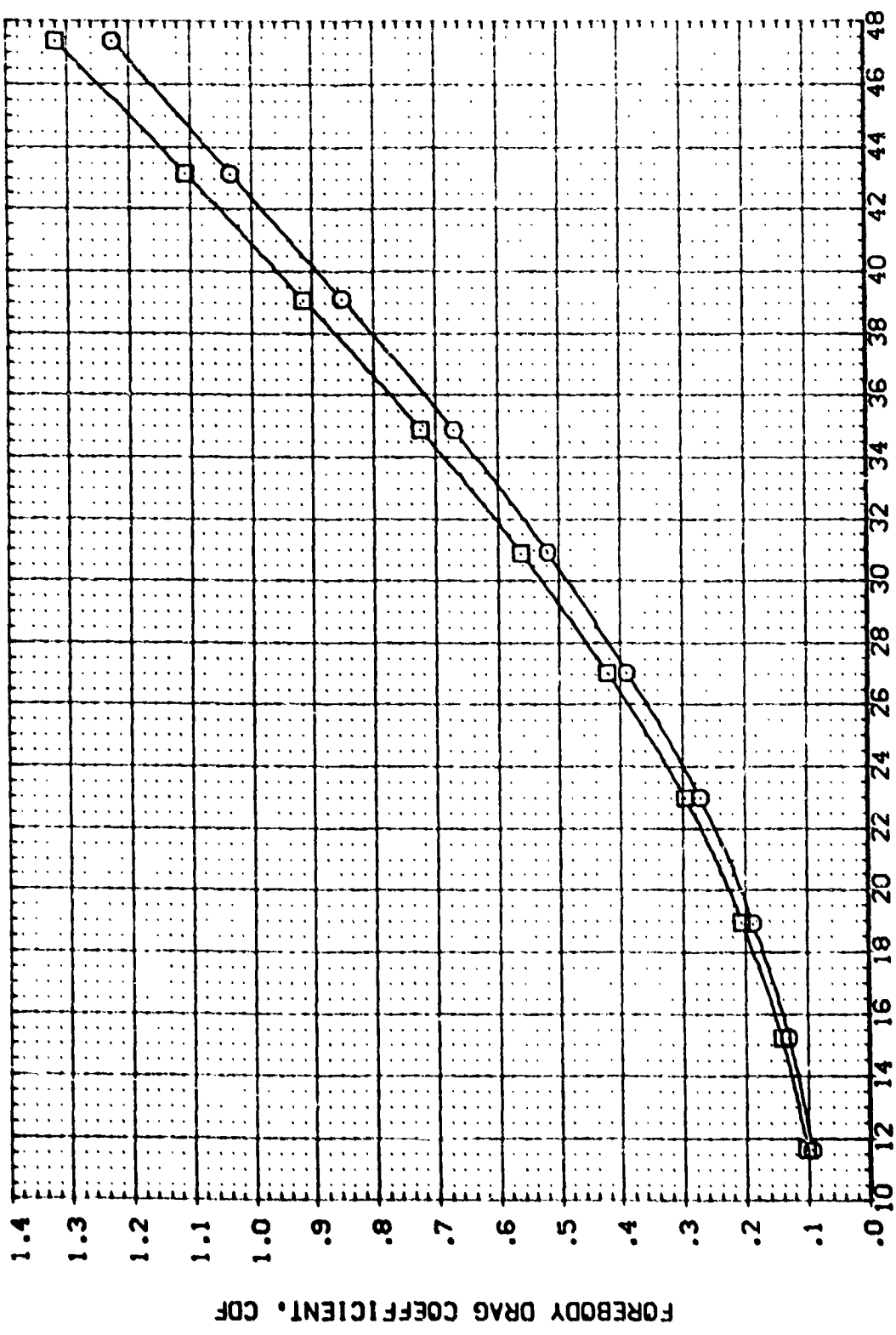


FIG. 8 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL: CONF (G)URATION DESCRIPTION: REFERENCE INFORMATION
 (BEF010) □ AXES 3.5-176 CAB7 140 A/B DRIBITER SREF 2690.0000 50.FT.
 (BEF011) □ AXES 3.5-176 CAB7 140 A/B DRIBITER LRREF 1290.3000 IN.
 BRREF 936.6800 IN.
 XMRP 1076.4800 IN.
 YMRP .0000 IN.
 ZMRP 375.0000 IN.
 SCALE .0150

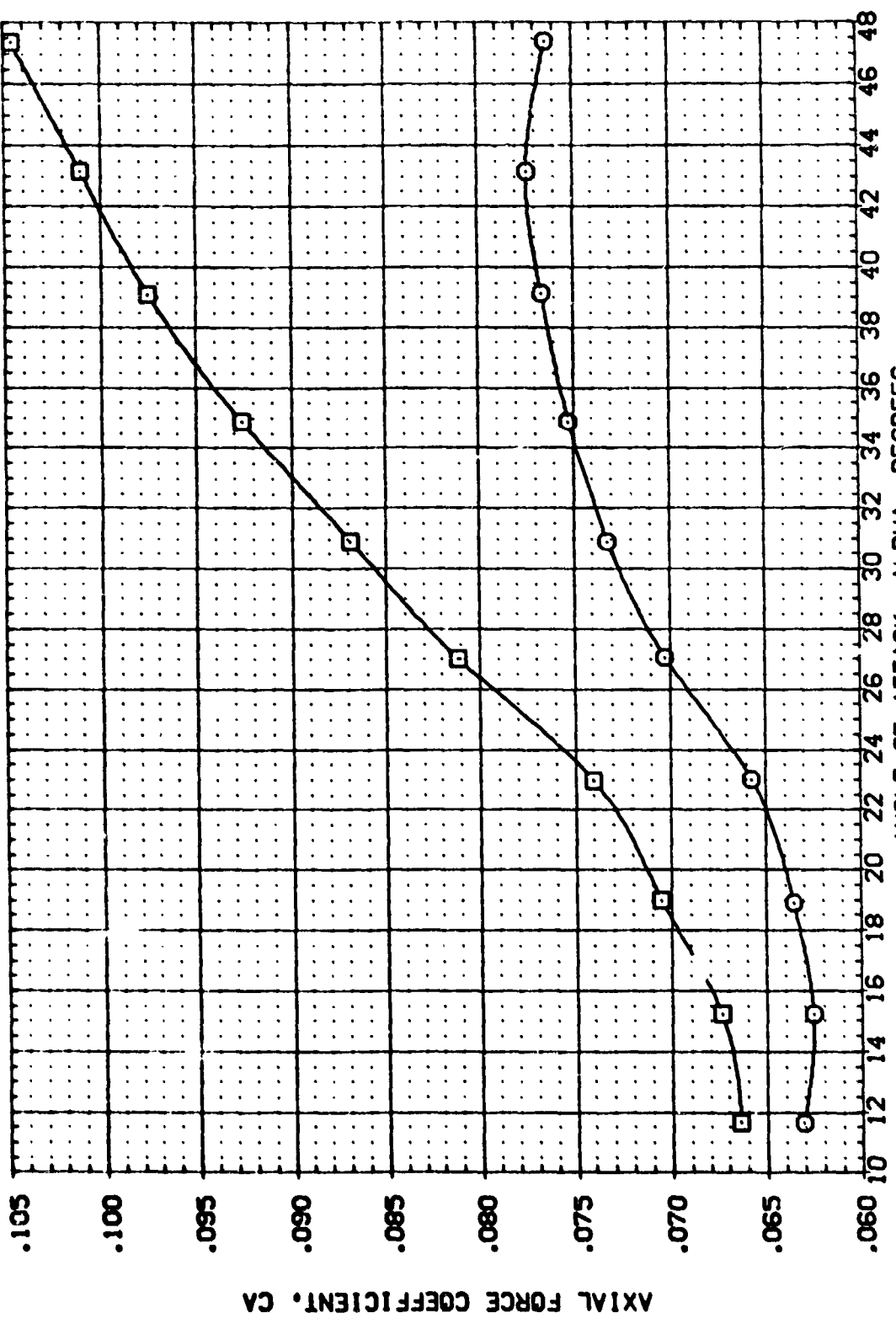


FIG. 8 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL (BE7010) (BE7011) □

CONFIGURATION DESCRIPTION AMES 3.5-176 DAB7 140 A/B DRBITER AMES 3.5-176 DAB7 140 A/B DRBITER

ELEVON SPDRBK BOFLAP RN/L

0.000 55.000 16.300 3.000

10.000 55.000 16.300 3.000

REFERENCE INFORMATION

SREF 2690.0000 SQ. FT.

LREF 1290.3000 IN.

BREF 936.6800 IN.

XPRP 1076.4800 IN.

YPRP .0000 IN.

ZPRP 375.0000 IN.

SCALE .0150

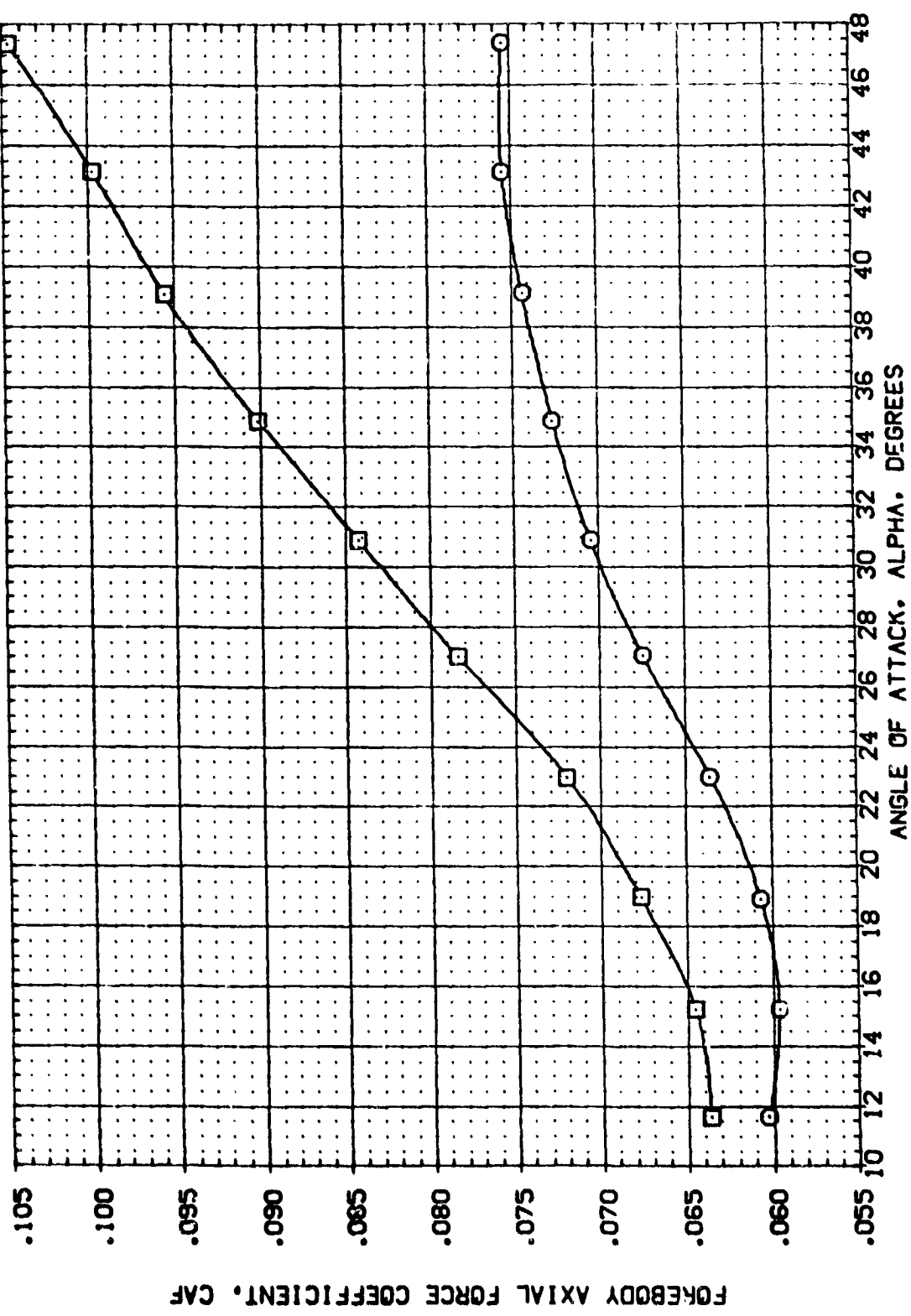


FIG. 8 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BDFLAP	PVAL	REFERENCE INFORMATION
(BEF010)	AMES 3.5-176 OAB7 140 A/B ORBITER	.000	55.000	16.300	3.000	SREF 2650.0000 SO.FT.
(BEF011)	AMES 3.5-176 OAB7 140 A/B ORBITER	10.000	55.000	16.300	3.000	LREF 1250.3000 IN.
						BREF 936.6800 IN.
						XREF 1076.4800 IN.
						YREF .0000 IN.
						ZREF 375.0000 IN.
						SCALE .0150

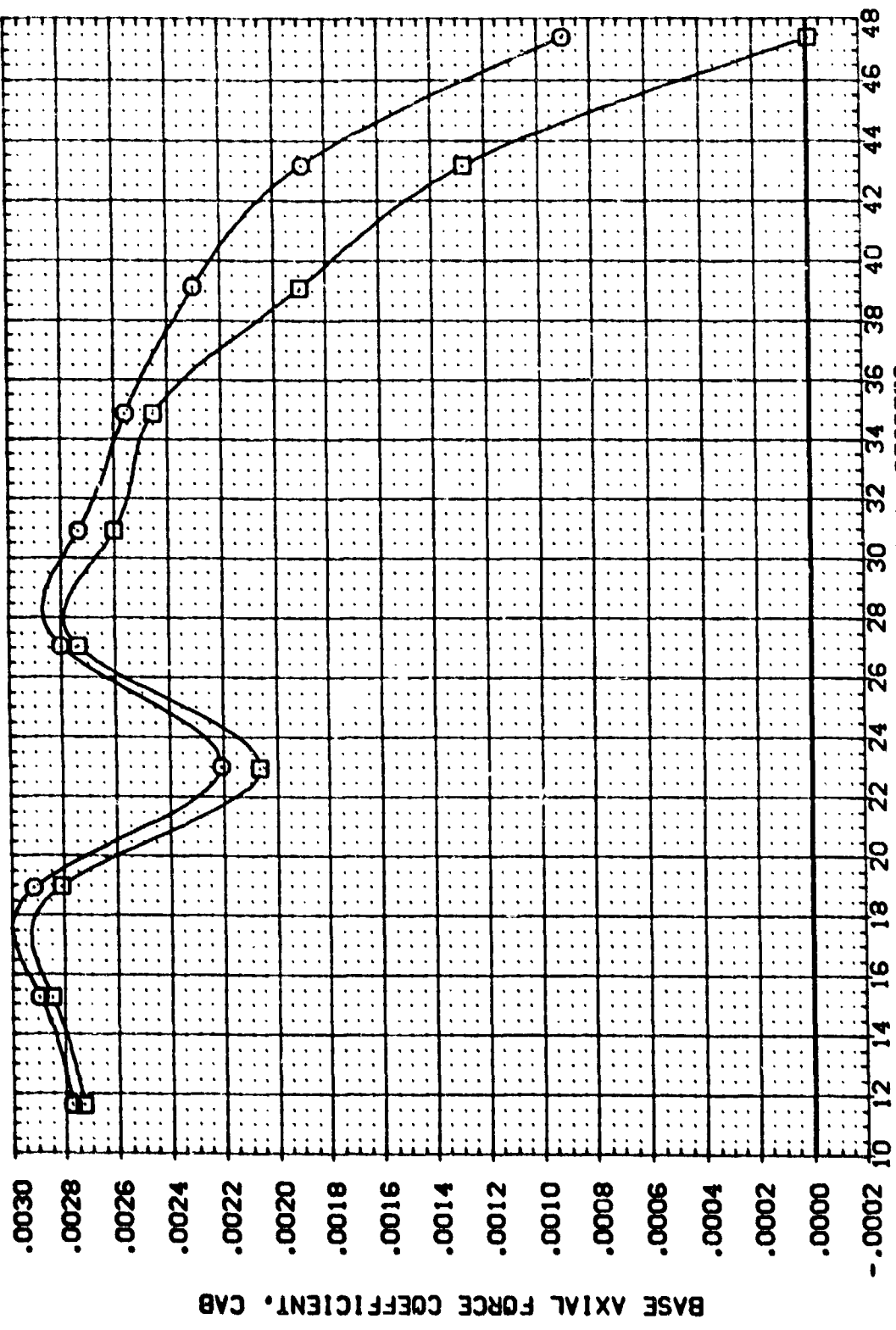


FIG. 8 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=16.3
 (A)MACH = 7.32

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (BEF010) ARES 3.5-176 OAG7 140 A/B ORBITER
 (BEF011) ARES 3.5-176 OAG7 140 A/B ORBITER

ELEVON SPOBRK BDFLAP RN/L
 .000 55.000 16.300 3.000
 10.000 55.000 16.300 3.000

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 1290.3000 IN.
 BREF 936.6800 IN.
 XMRP 1076.4800 IN.
 YMRP .0000 IN.
 ZMRP 375.0000 IN.
 SCALE .0150 SCALE

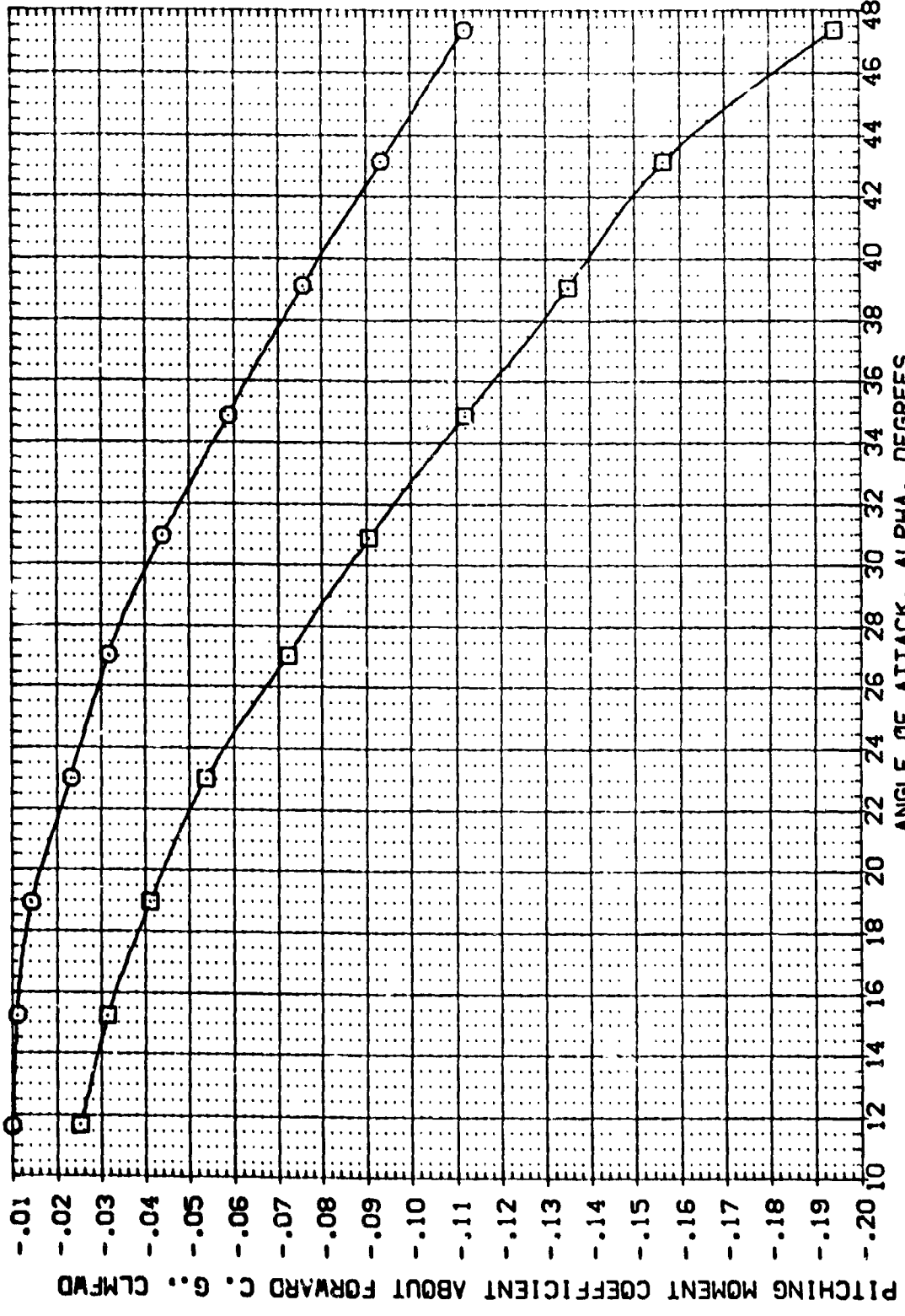


FIG. 8 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL (BEF010) (BEF011)

CONFIGURATION DESCRIPTION
 ARES 3.5-176 CAB7 140 A/B ORBITER
 ARES 3.5-176 CAB7 140 A/B ORBITER

ELEVON SPOBRK BOFLAP RN/L
 .000 55.000 16.300 3.000
 10.000 55.000 16.300 3.000

REFERENCE INFORMATION
 SREF 2690.0000 SQ. FT.
 LREF 1250.3000 IN.
 XMRP 936.6800 IN.
 YMRP 1076.4800 IN.
 ZMRP .0000 IN.
 SCALE 375.0000 IN.
 .0150 SCALE

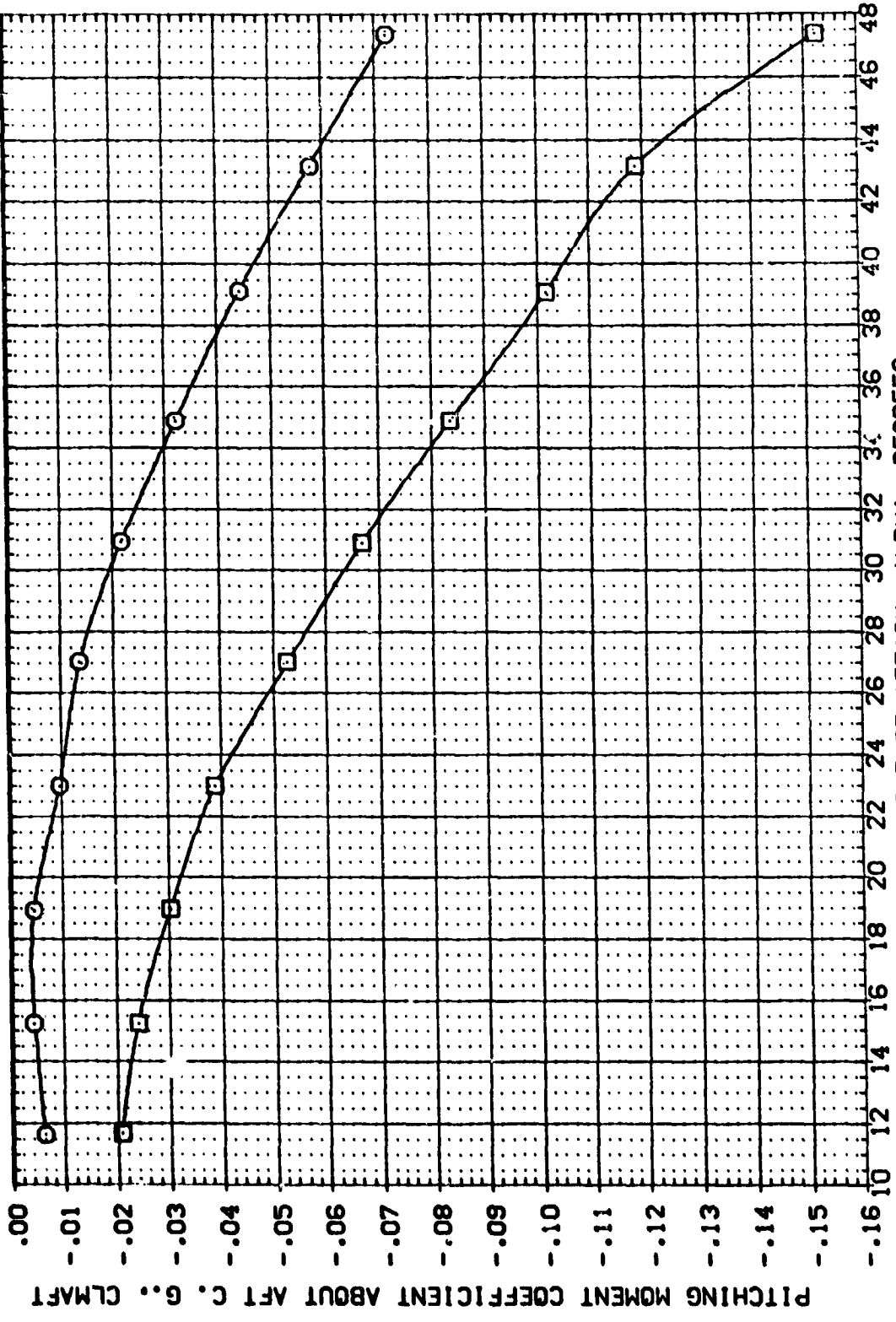


FIG. 8 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (BEF010) \square AMES 3.5-176 OAB7 140 A/B ORBITER
 (BEF011) \square AMES 3.5-176 OAB7 140 A/B ORBITER

ELEVON SPOBRK BDFLAP RN/L
 10.000 55.000 16.300 3.000
 10.000 55.000 16.300 3.000

REFERENCE INFORMATION SQ. FT.
 SREF 2690.0000 IN.
 LREF 1290.0000 IN.
 BREF 536.6800 IN.
 XTRP 1076.4800 IN.
 YTRP .0000 IN.
 ZTRP 373.0000 IN.
 SCALE .0150

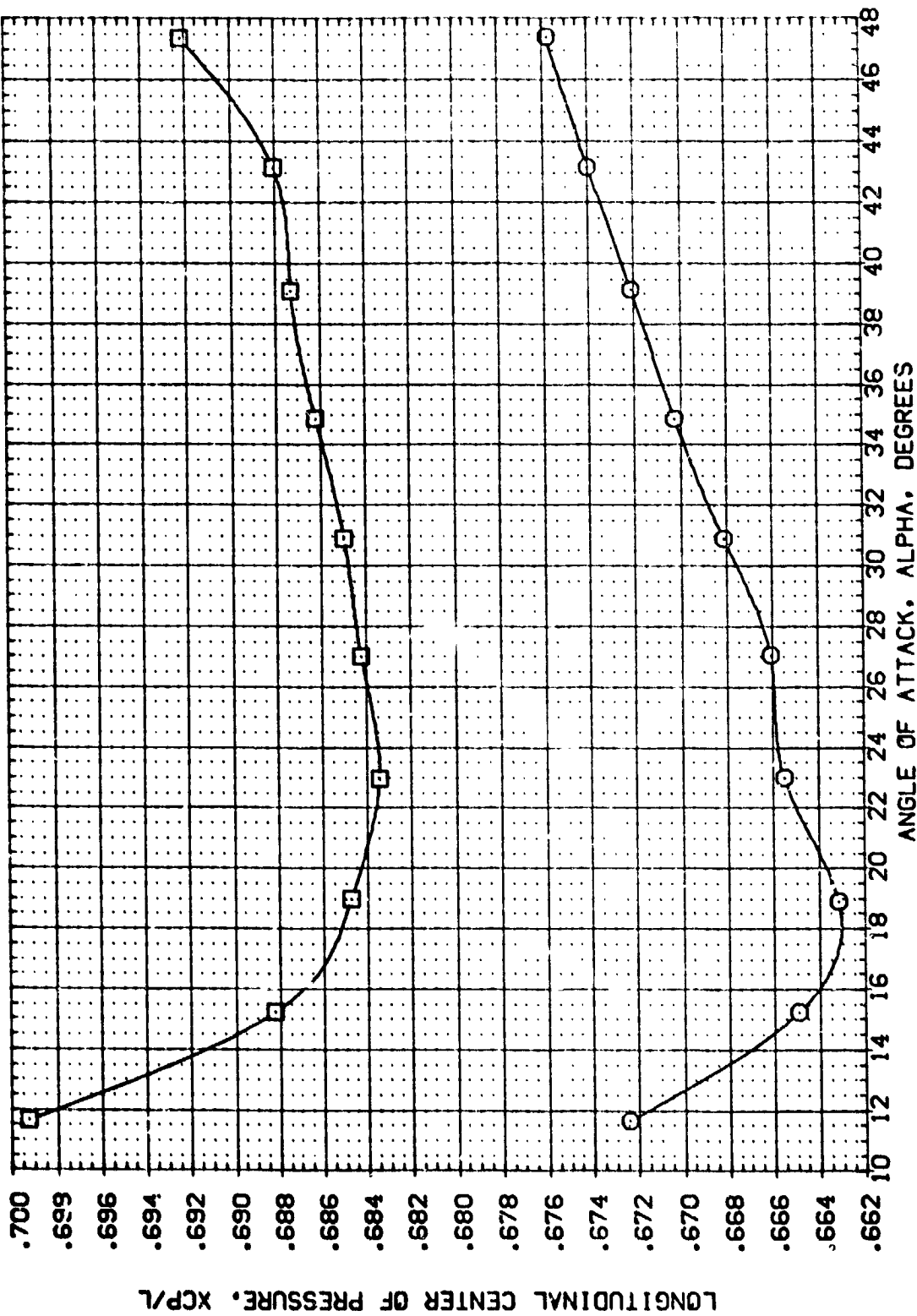


FIG. 8 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=16.3

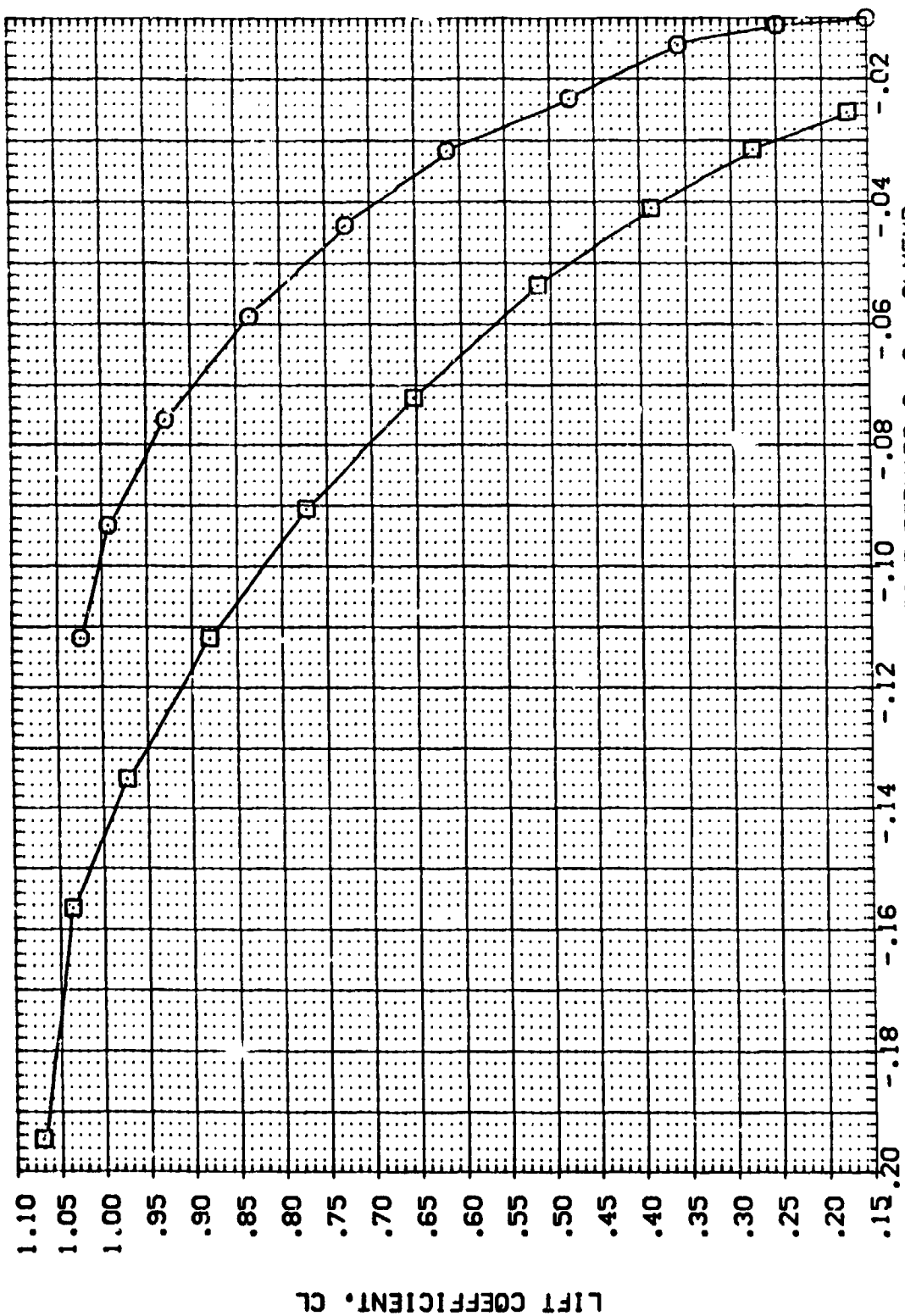
(A)MACH = 7.32

DATA SET SYMBOL: (BEF010) (BEF011)

CONFIGURATION DESCRIPTION:
 AWES 3.5-176 CW87 140 A/B DRBITER
 AWES 3.5-176 CW87 140 A/B DRBITER

ELEVON SPOBRK BDFLAP RN/L
 .000 55.000 16.300 3.000
 10.000 55.000 16.300 3.000

REFERENCE INFORMATION:
 SREF 2690.0000 50.FT.
 LREF 1290.3000 IN.
 BREF 936.6600 IN.
 XMRP 1076.4800 IN.
 YMRP .0000 IN.
 ZMRP 375.0000 IN.
 SCALE .0150



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FIG. 8 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEFD10)	AMES 3.5-176 DAG7 140 A/B ORBITER	.000	55.000	16.300	3.000	SREF 2690.0000 SO.FT.
(BEFD11)	AMES 3.5-176 DAG7 140 A/B ORBITER	10.000	55.000	16.300	3.000	LREF 1290.3000 IN.
						BREF 936.6800 IN.
						YMRP 1076.4800 IN.
						ZMRP .0000 IN.
						ZMRP SCALE 375.0000 IN.
						SCALE .0150

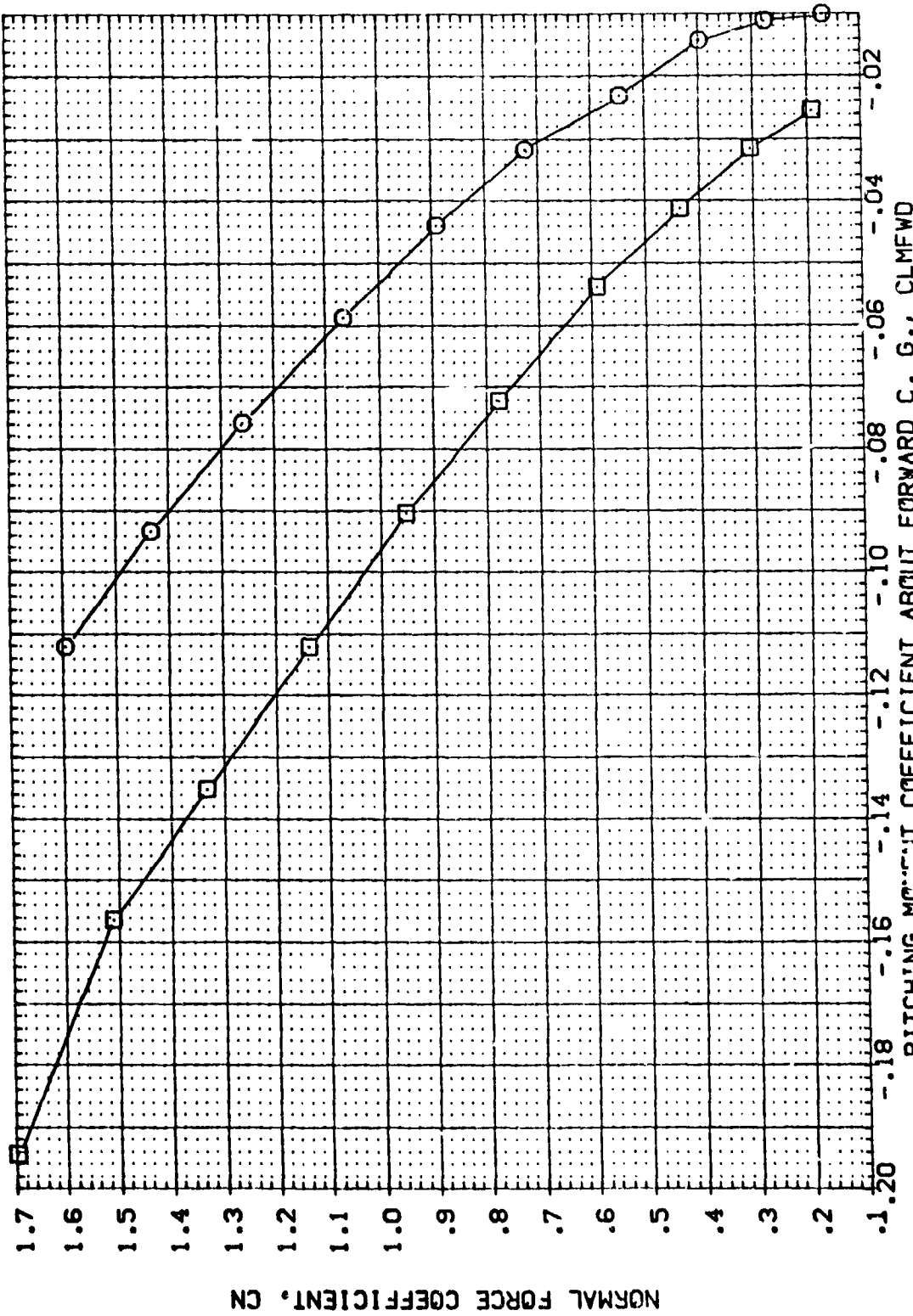


FIG. 8 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPODBK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEF010)	AMES 3.5-176 OAB7 140 A/B ORBITER	.000	55.000	16.300	3.000	SREF 2690.0000 SO.FT.
(BEF011)	AMES 3.5-176 OAB7 140 A/B ORBITER	10.000	55.000	16.300	3.000	LREF 1290.3000 IN.
						BREF 936.6800 IN.
						XPRP 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150

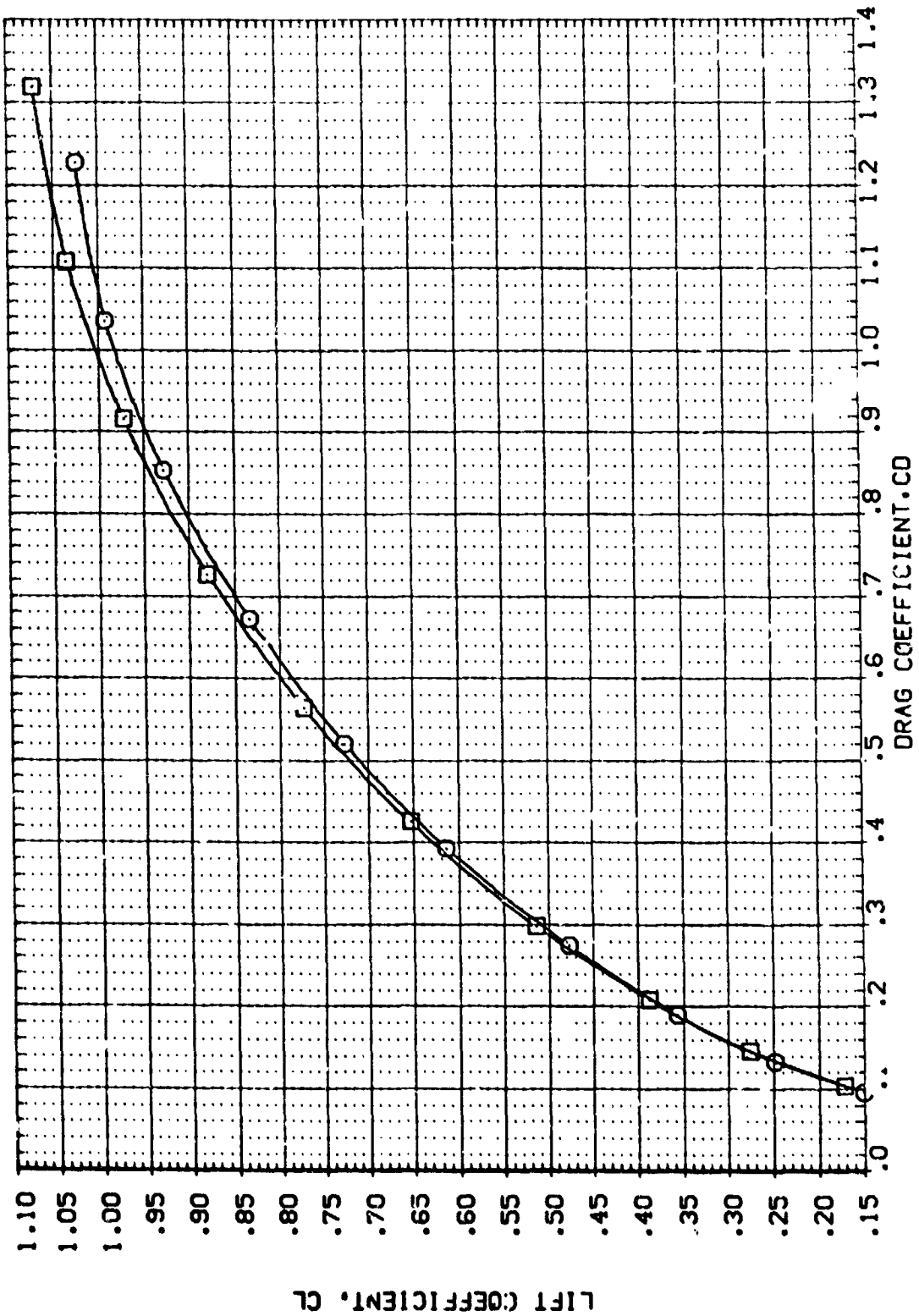


FIG. 8 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=16.3

(A) MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPDRBK	BDFLAP	RN/L	REFERENCE INFORMATION
(AEF01.)	AMES 3.5-176 OAB7 140 A/B ORBITER	.000	55.000	16.300	3.000	SREF 2690.0000 50.FT.
(AEF01.)	AMES 3.5-176 OAB7 140 A/B ORBITER	10.000	55.000	16.300	3.000	LREF 1290.3000 IN.
						XPREF 936.6300 IN.
						YMP 1076.4800 IN.
						ZMP 375.0300 IN.
						SCALE .0150 SCALE

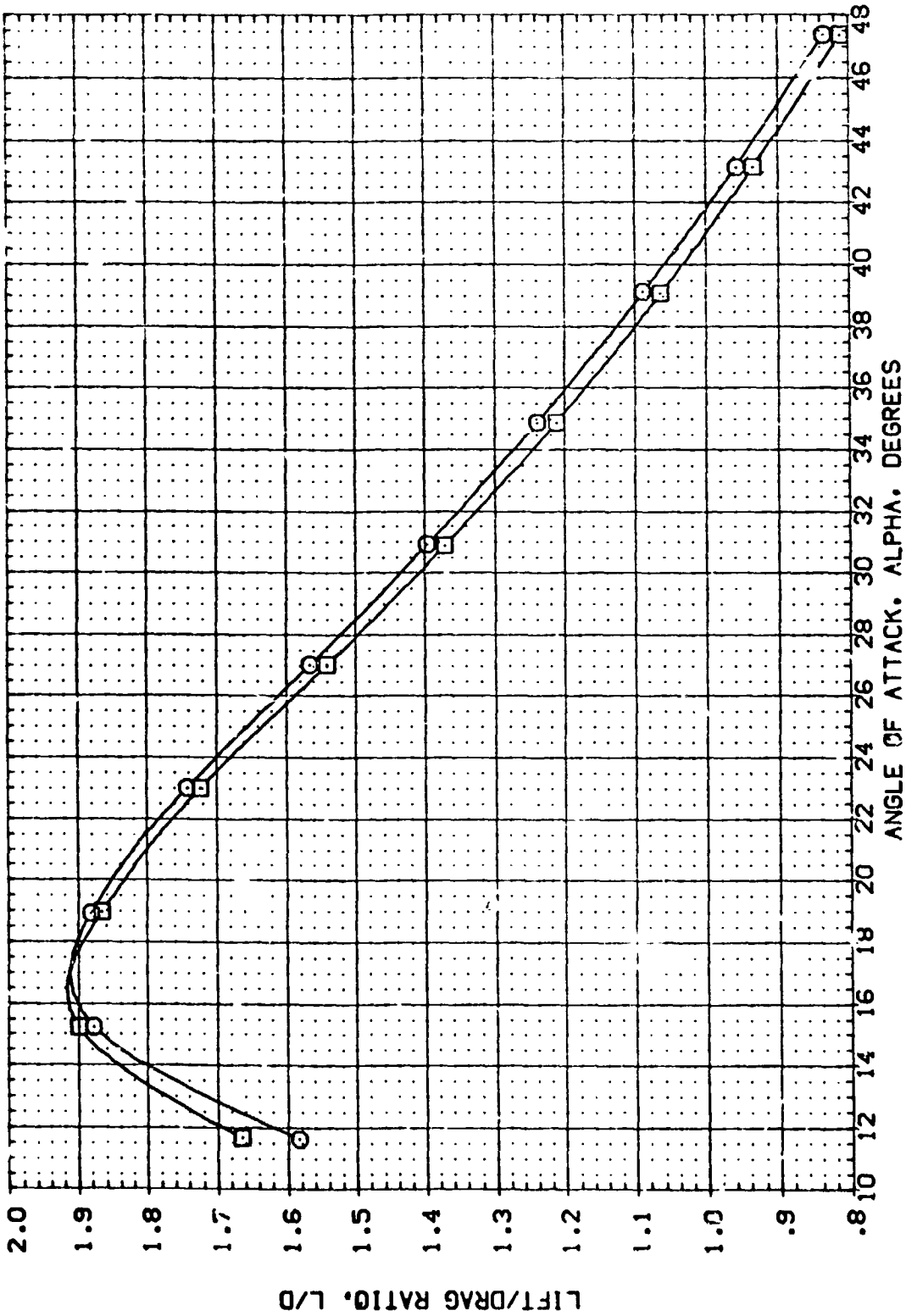


FIG. 8 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=16.3
 (A)MACH = 7.32

DATA SET SYMBOL: (EFP011) ○
 CONFIGURATION DESCRIPTION: AVES 3.5-176 OAS7 140 A/S ORBITER

DE: 10.000
 SPOBRK: 55.000
 BDFLAP: 16.300
 RN/L: 3.000

REFERENCE INFORMATION
 SREF: 2690.0000 SQ. FT.
 LREF: 1290.3000 IN.
 BREF: 536.6800 IN.
 XTRP: 1076.4800 IN.
 YTRP: .0000 IN.
 ZTRP: 375.0000 IN.
 SCALE: .0150

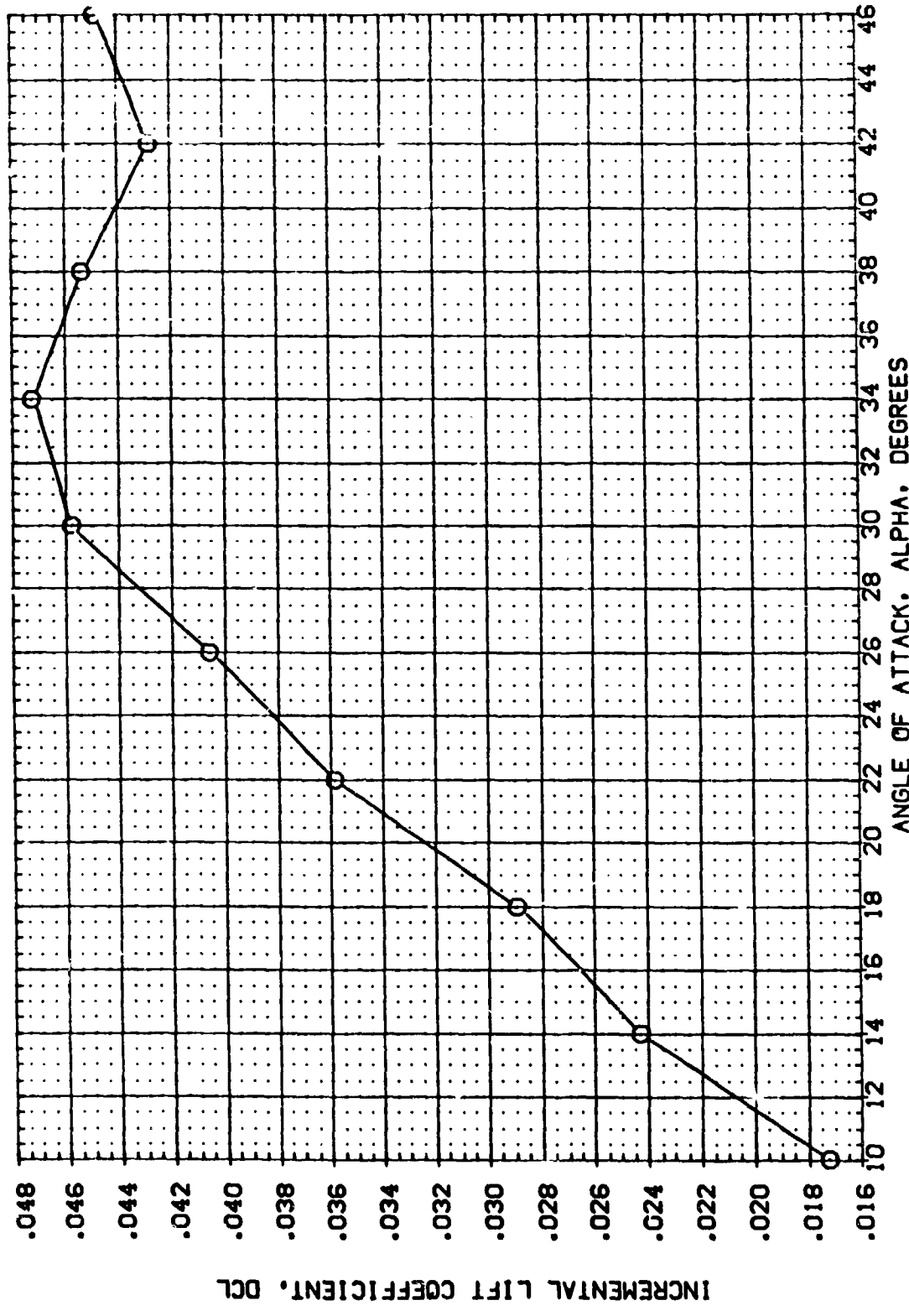


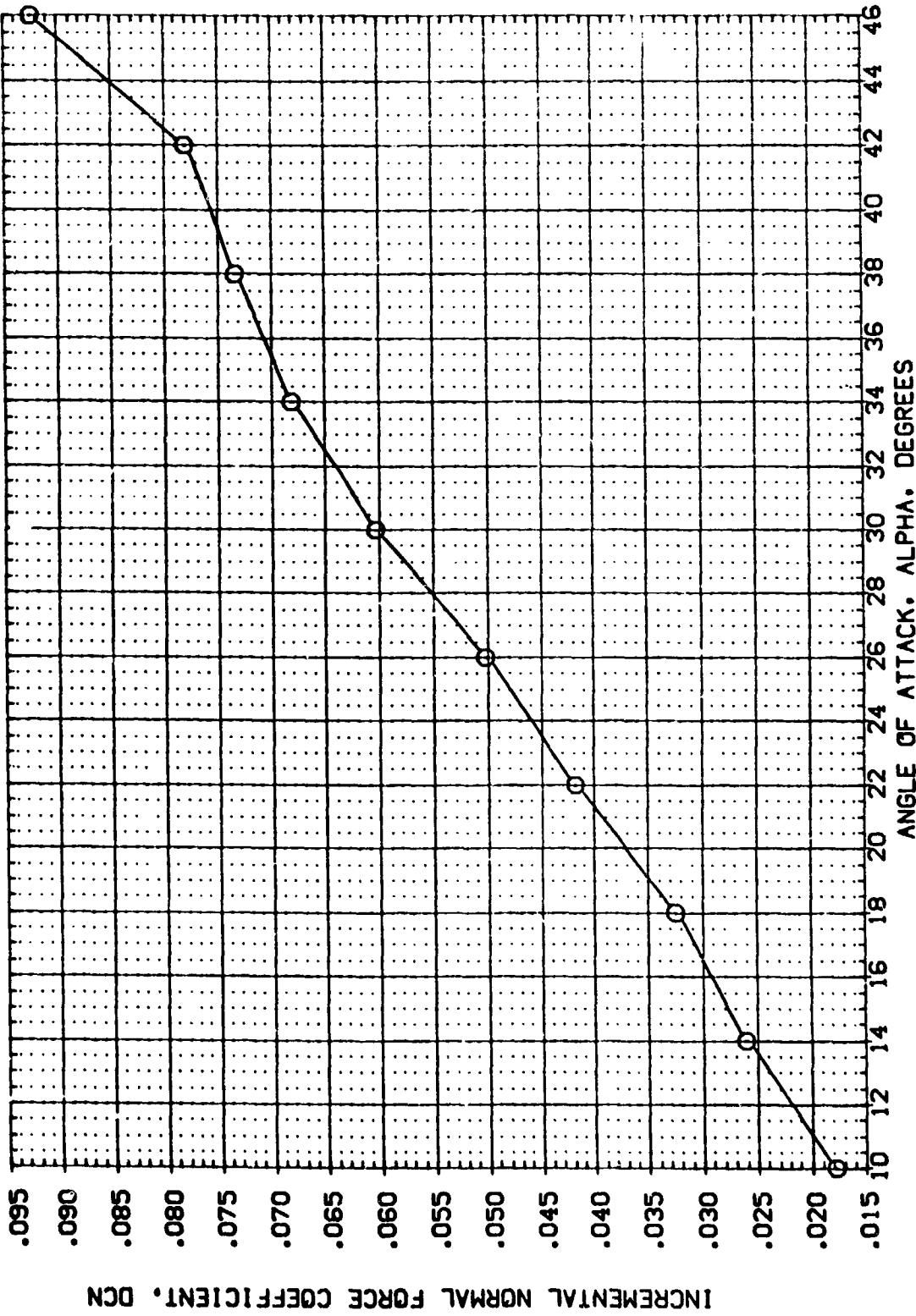
FIG. 8 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL: O
 CONFIGURATION DESCRIPTION: ARES 3.5-176 CAS7 140 A/B ORBITER

DE: 10.000
 SPOBRK: 55.000
 BDFLAP: 16.300
 RN/L: 3.000

REFERENCE INFORMATION
 SREF: 2690.0000 SQ. FT.
 LREF: 1290.5000 IN.
 BREF: 536.6800 IN.
 XPRP: 1076.4800 IN.
 YPRP: .0000 IN.
 ZPRP: 375.0000 IN.
 SCALE: .0150



ANGLE OF ATTACK, ALPHA, DEGREES

FIG. 8 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL: (EEF011) \circ CONFIGURATION DESCRIPTION: AMES 3.5-176 OAB7 140 A/B ORBITER

DE: 10.000 SPOBRK: 55.000 BDFLAP: 16.300 RN/L: 3.000

REFERENCE INFORMATION:
 SREF: 2690.0000 SO.FT.
 LREF: 1290.3000 IN.
 BREF: 936.6800 IN.
 XMRP: 1076.4800 IN.
 YMRP: .0000 IN.
 ZMRP: 375.0000 IN.
 SCALE: .0150

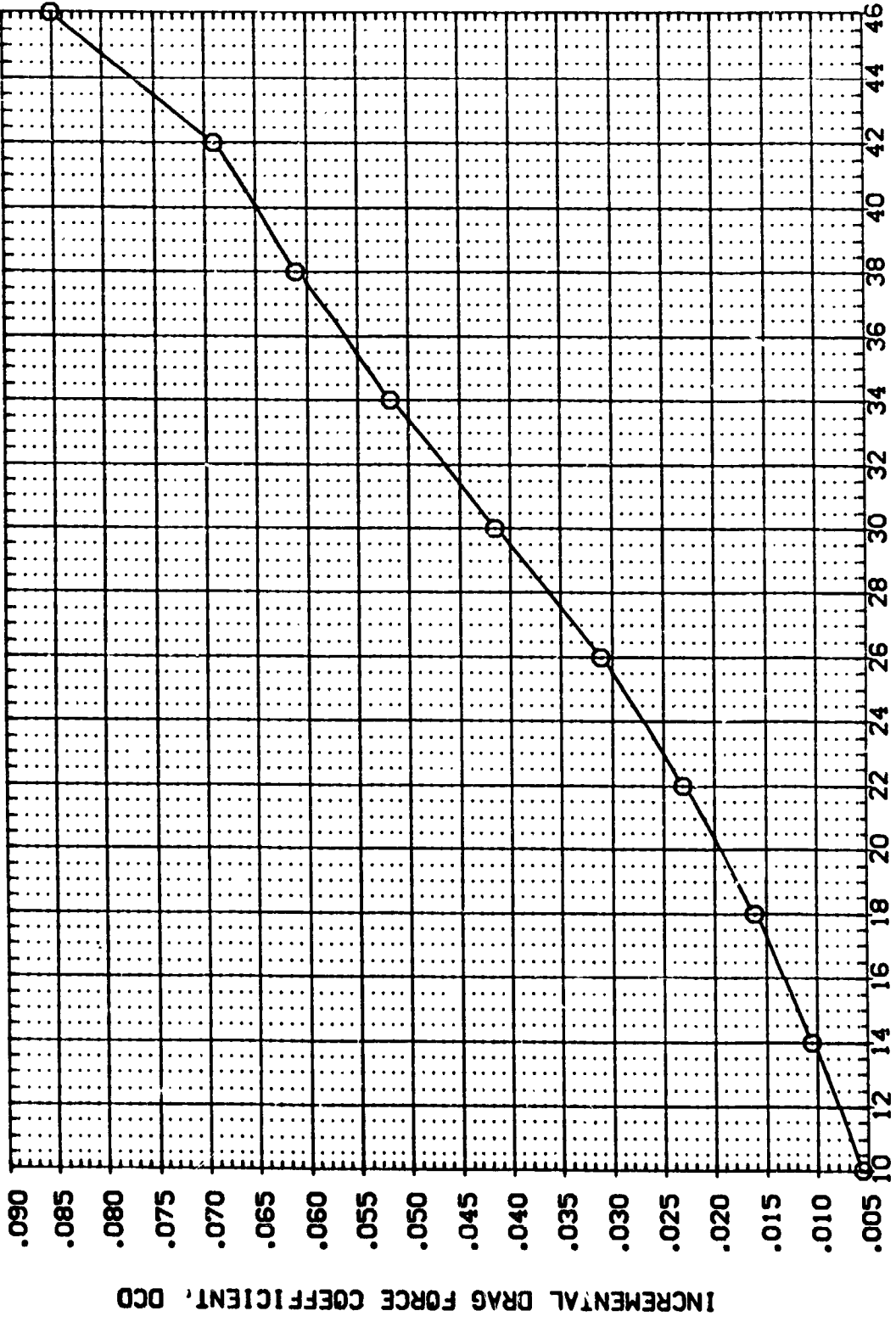


FIG. 8 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=16.3

(A) MACH = 7.32

DATA SET SYMBOL: (EEFO11) \circ AMES 3.5-176 CAB7 140 A/B ORBITER

CONFIGURATION DESCRIPTION: DE 10.000 SPOBRK 55.000 BOFLAP 16.300 RN/L 3.000

REFERENCE INFORMATION: SREF 2650.0000 SO.FT. 50.0000
 LREF 1250.3000 IN. 1250.3000
 BREF 936.6800 IN. 936.6800
 XMRP 1076.4800 IN. 1076.4800
 YMRP 0.0000 IN. 0.0000
 ZMRP 375.0000 IN. 375.0000
 SCALE .0150

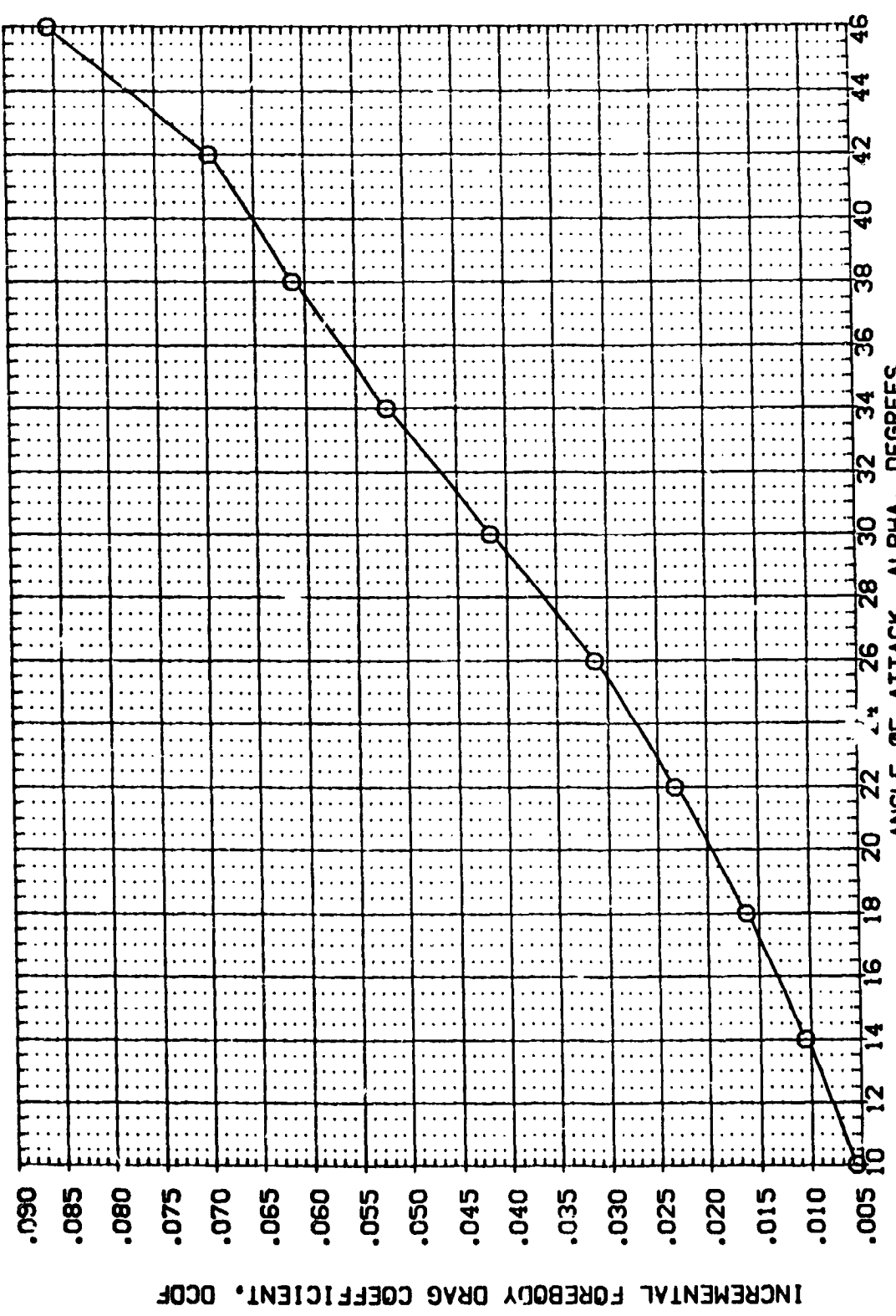


FIG. 8 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=16.3
 (A)MACH = 7.32

DATA SET SYMBOL (EEF011) ○ CONFIGURATION DESCRIPTION (AES 3.5-176 3A87 140 A/B ORBITER)

DE 10.000 SPDRY 55.000 BOFLAP 16.300 RN/L 3.000

REFERENCE INFORMATION
 SREF 2690.0000 SO.FT.
 LREF 1290.3000 IN.
 BRPREF 936.6800 IN.
 XMRP 1076.4800 IN.
 YMRP .0000 IN.
 ZMRP 373.0000 IN.
 SCALE .0150

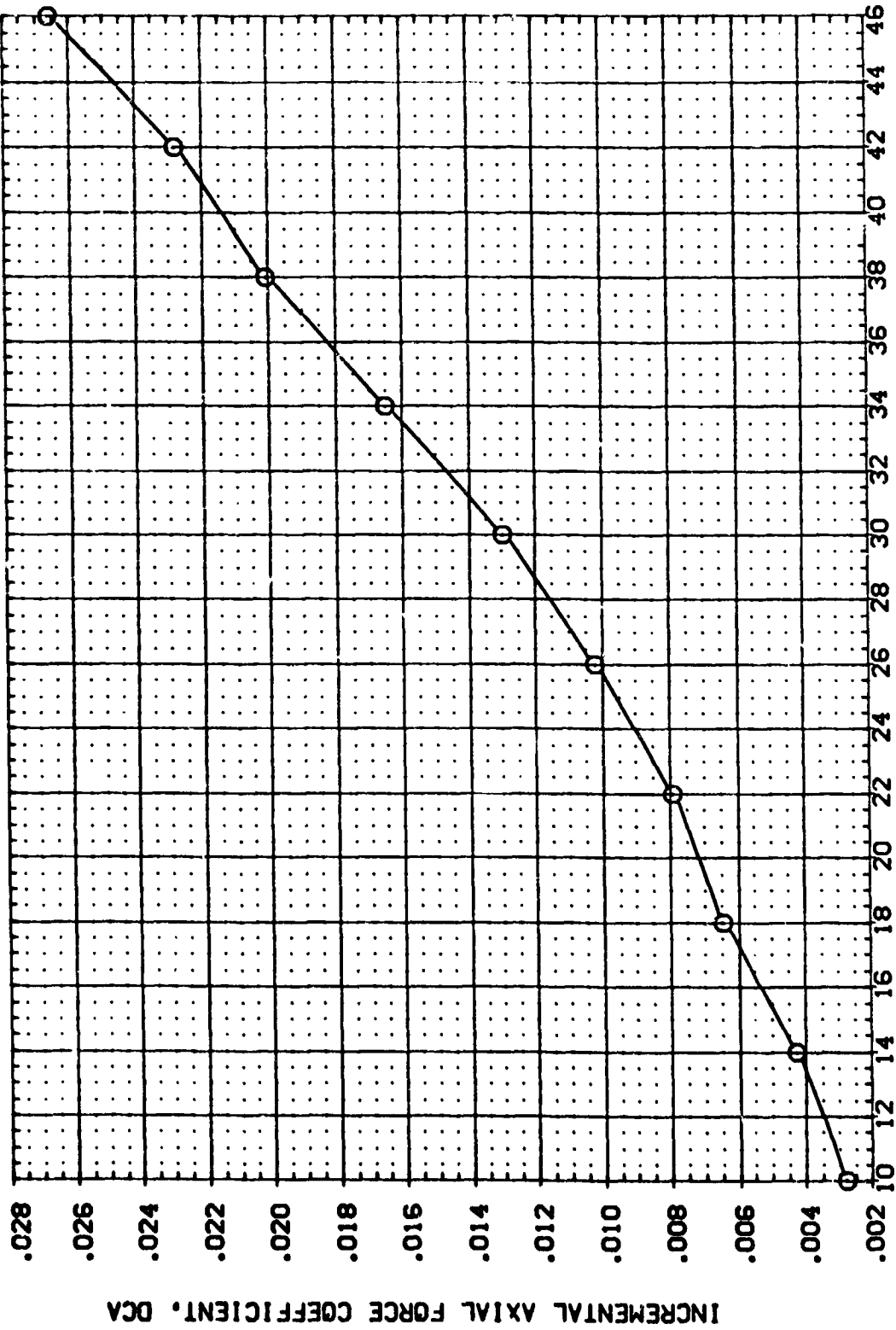


FIG. 8 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL (EFP011) ○ ARES 3.5-176 CAB7 140 A/B ORBITER

DE 10.000 SPOBRK 55.000 BDFLAP 16.300 RN/L 3.000

REFERENCE INFORMATION
 SREF 2690.0000 SO.FT.
 LREF 1290.3000 IN.
 BREF 936.6800 IN.
 X-PRP 1076.4800 IN.
 Y-PRP .0000 IN.
 Z-PRP 375.0000 IN.
 SCALE .0150

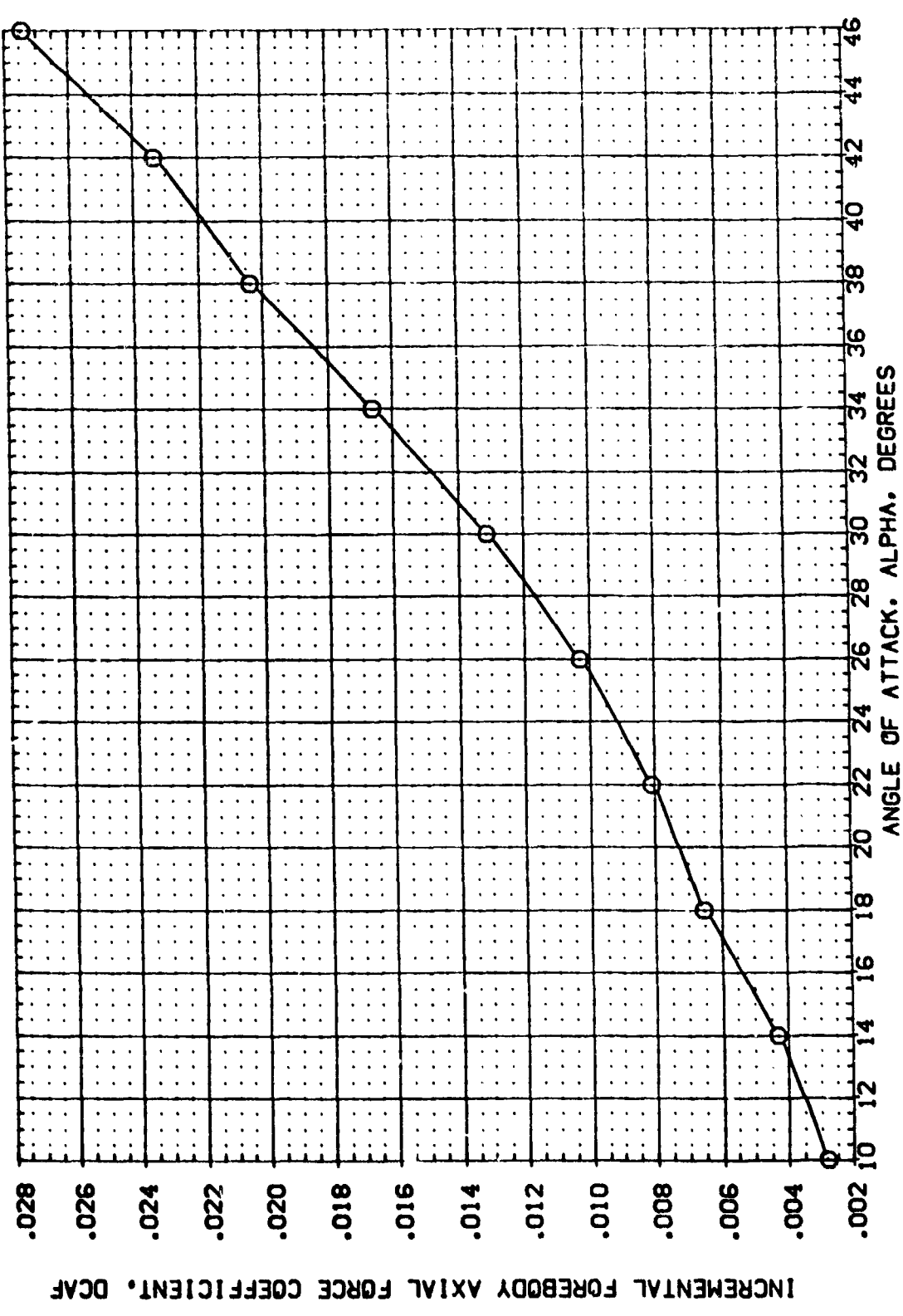


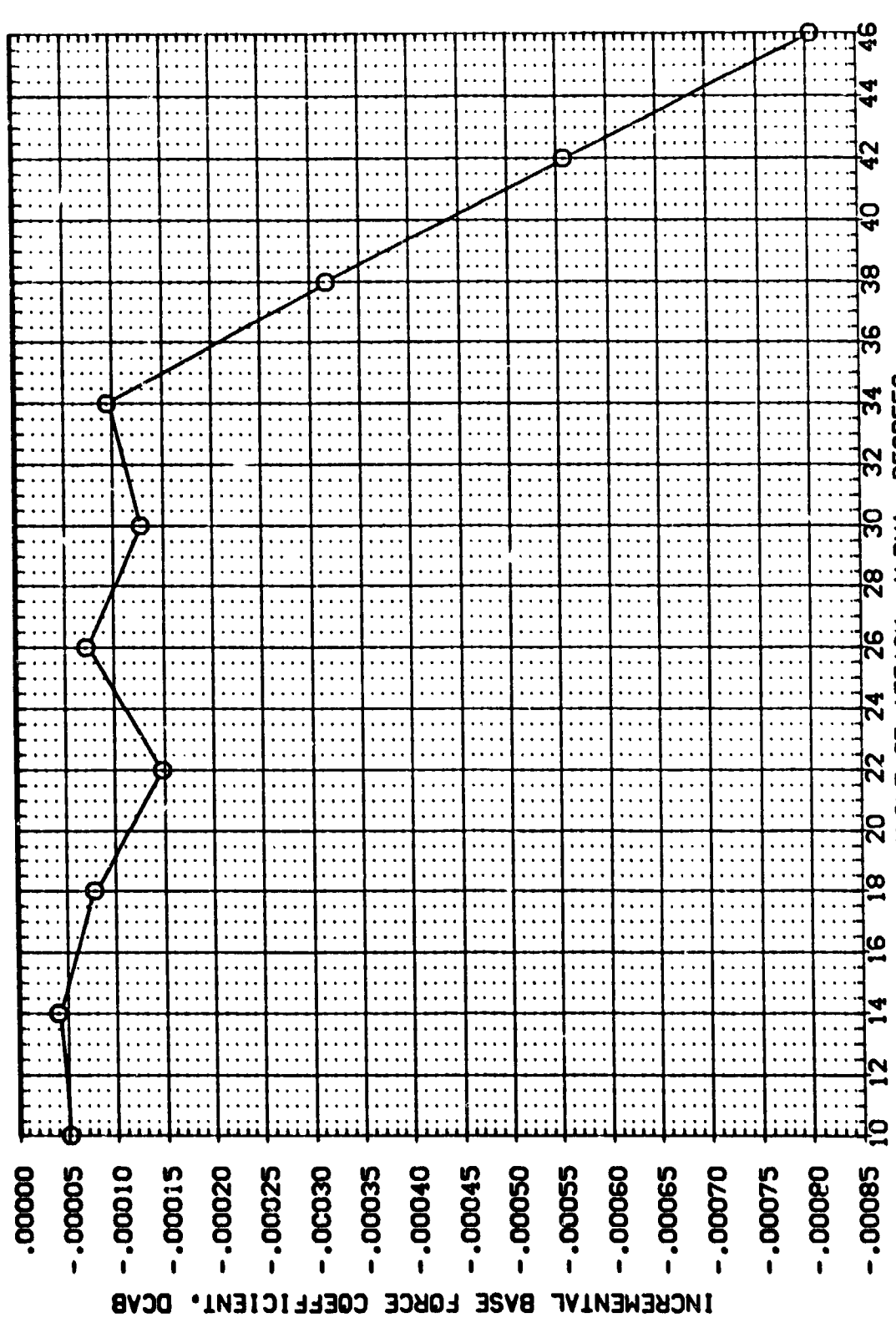
FIG. 8 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL: O
 CONFIGURATION DESCRIPTION: ARES 3.5-176 CAB7 140 A/B ORBITER

DE: 10.000
 SPOBRK: 55.000
 BOFLAP: 16.300
 RN/L: 3.000

REFERENCE INFORMATION
 SKREF: 2650.0000 SO.FT.
 LREF: 1250.3000 IN.
 BREF: 936.6800 IN.
 XMRP: 1076.4800 IN.
 YMRP: 00.00 IN.
 ZMRP: 375.0000 IN.
 SCALE: .0150 SCALE



ANGLE OF ATTACK, ALPHA, DEGREES

FIG. 8 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL: (EEF011) \circ CONFIGURATION DESCRIPTION: AHS 3.5-176 CW87 140 A/B ORBITER

DE: 10.000 SPOBRK: 55.000 BOFLAP: 16.300 RN/L: 3.000

REFERENCE INFORMATION:
 SREF: 2690.0100 SQ. FT.
 LREF: 1290.3000 IN.
 BREF: 936.6800 IN.
 XMRP: 1076.4800 IN.
 YMRP: .0000 IN.
 ZMRP: 375.0000 IN.
 SCALE: .0150

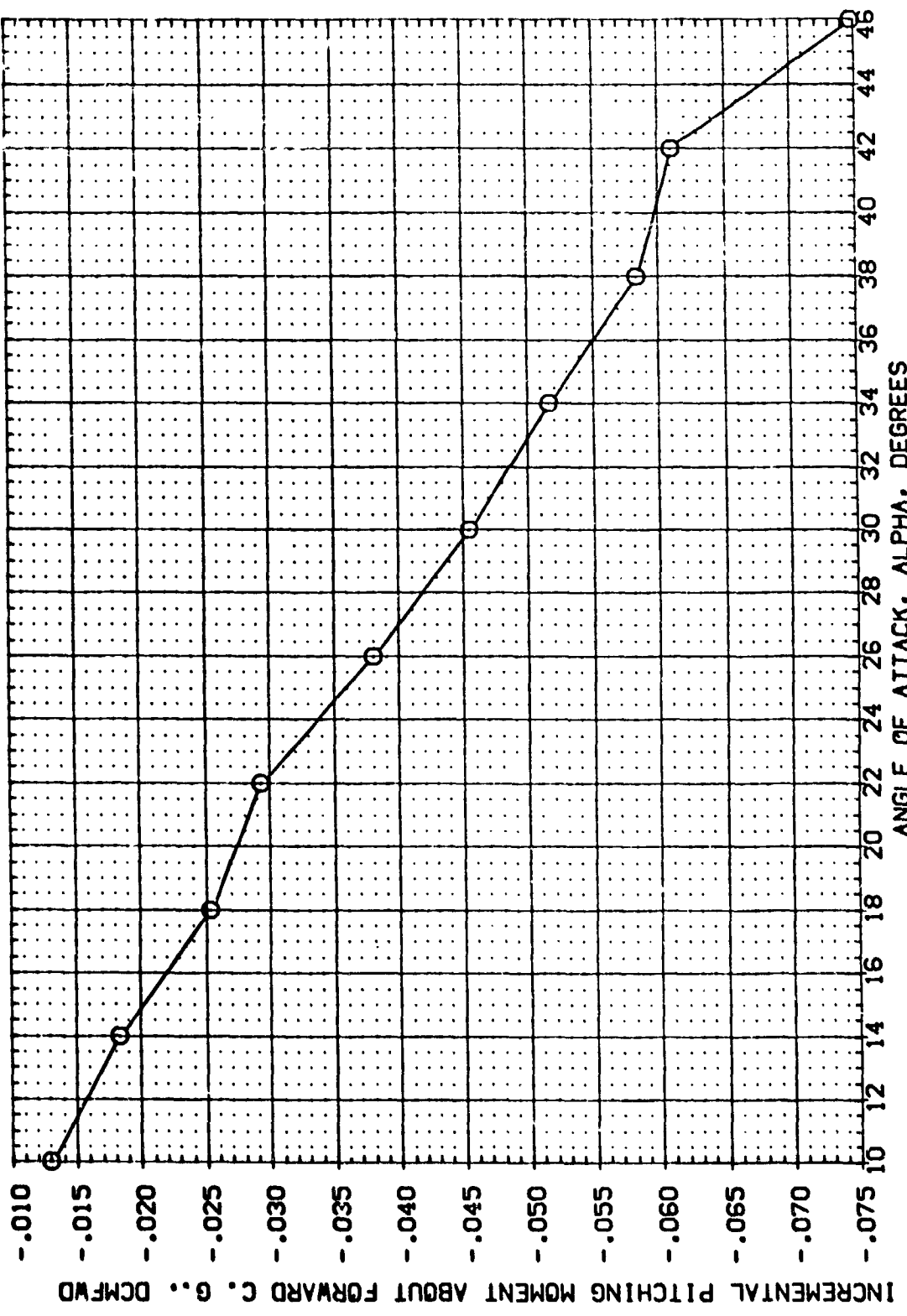


FIG. 8 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=16.3

(A) MACH = 7.32

DATA SET SYMBOL: O
 CONFIGURATION DESCRIPTION: ANES 3.5-176 0487 140 A/B ORBITER

DE: 10.000
 SPOBRK: 55.000
 BDFLAP: 16.300
 RN/L: 3.000

REFERENCE INFORMATION
 SREF: 2690.0000 SO.FT.
 LREF: 1290.3000 IN.
 BREF: 936.6800 IN.
 YMRP: 1076.4800 IN.
 ZMRP: 375.0000 IN.
 SCALE: .0150

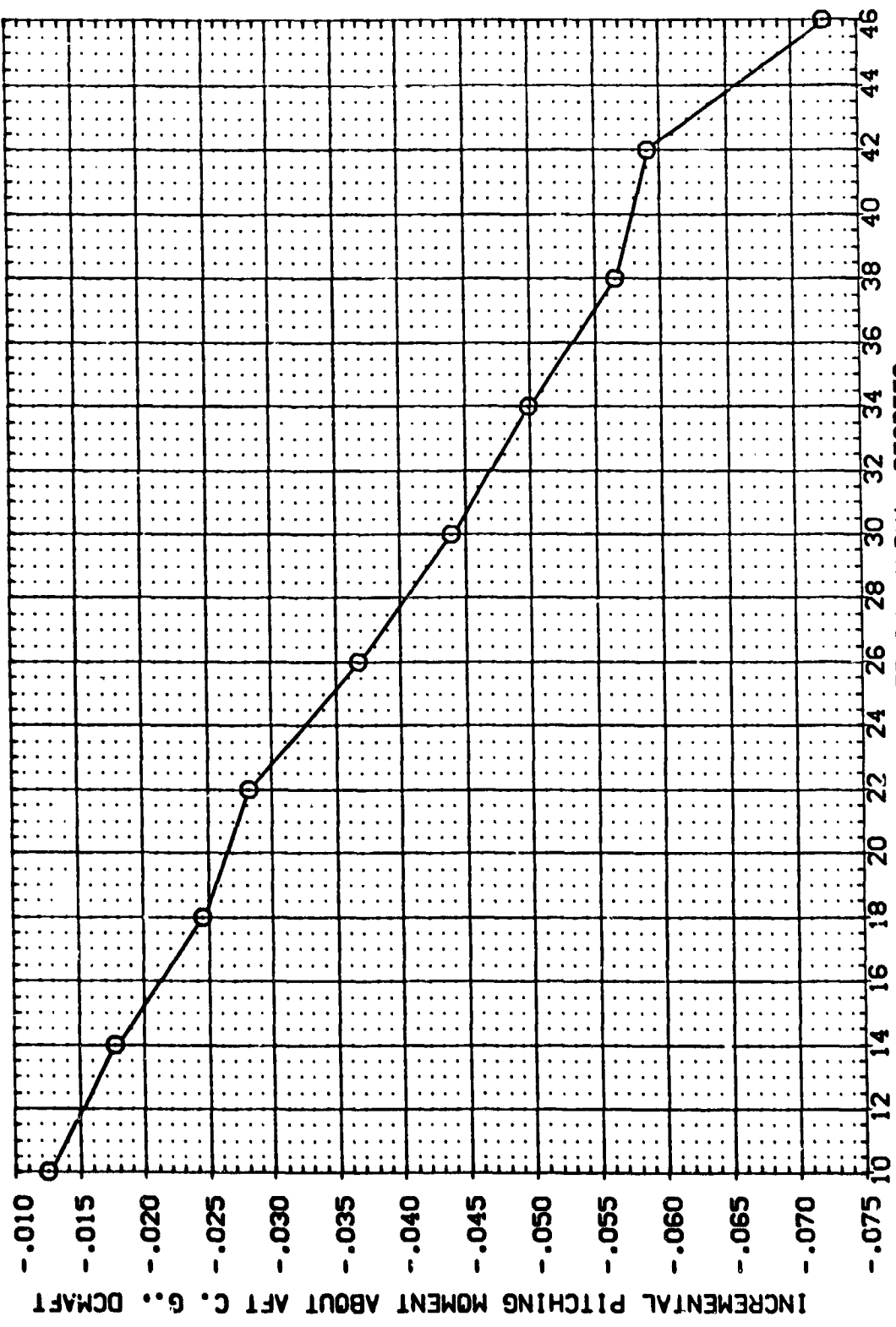


FIG. 8 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=16.3

(A)MACH = 7.32

AMES 3.5-176 OA87 140 A/B ORBITER (FEF010)

PARAMETRIC VALUES		DATA SOURCE		REFERENCE INFORMATION	
ALPHA	MACH	.000	ELEVON	SREF	SO.FT.
10.000	7.320	.000	.000	LREF	IN.
20.000	.000	.000	.000	BREF	IN.
30.000	.000	.000	.000	XREF	IN.
40.000	3.000	.000	.000	YREF	IN.
		16.300	10.000	ZREF	IN.
		55.000	FEF010	SCALE	SCALE

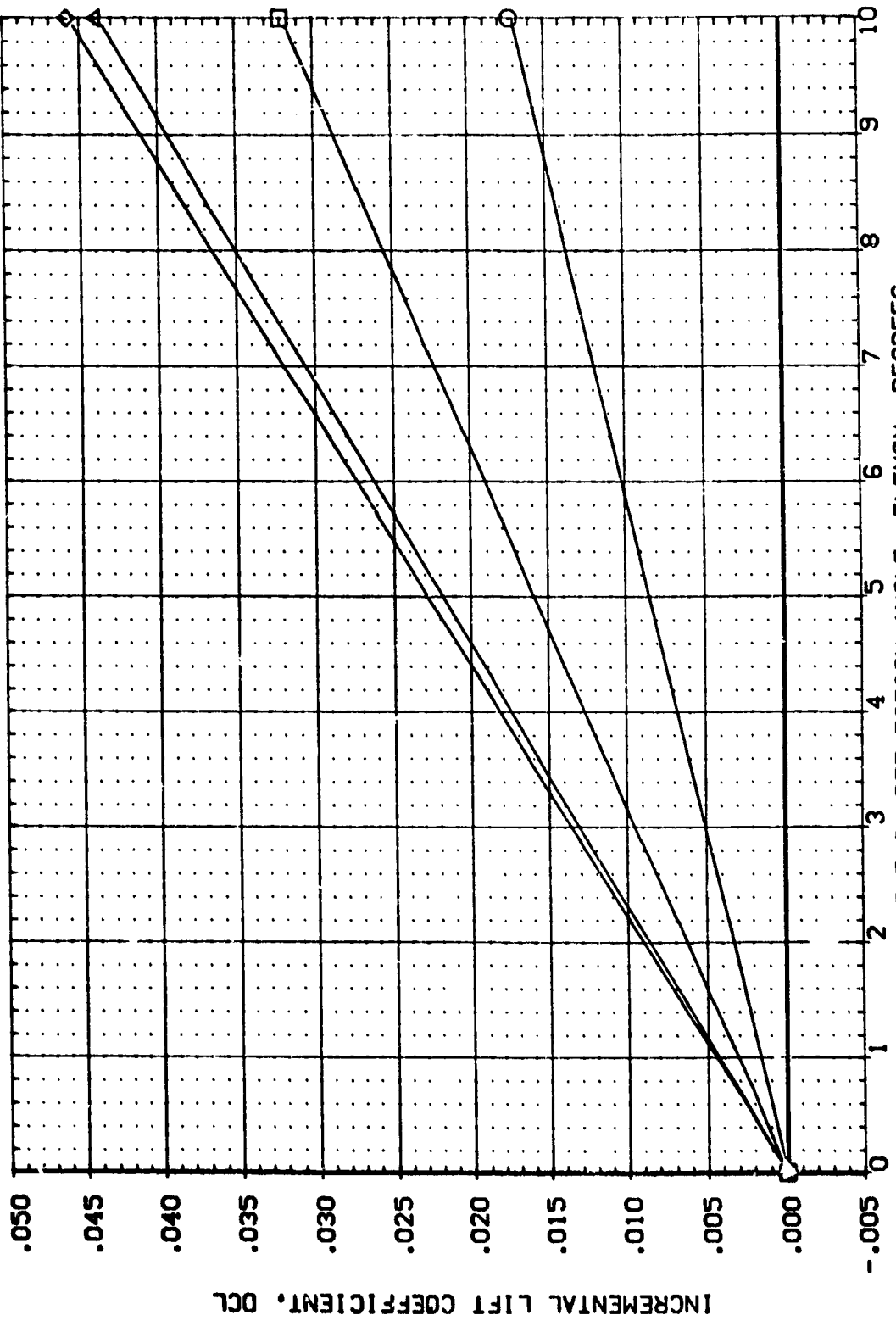
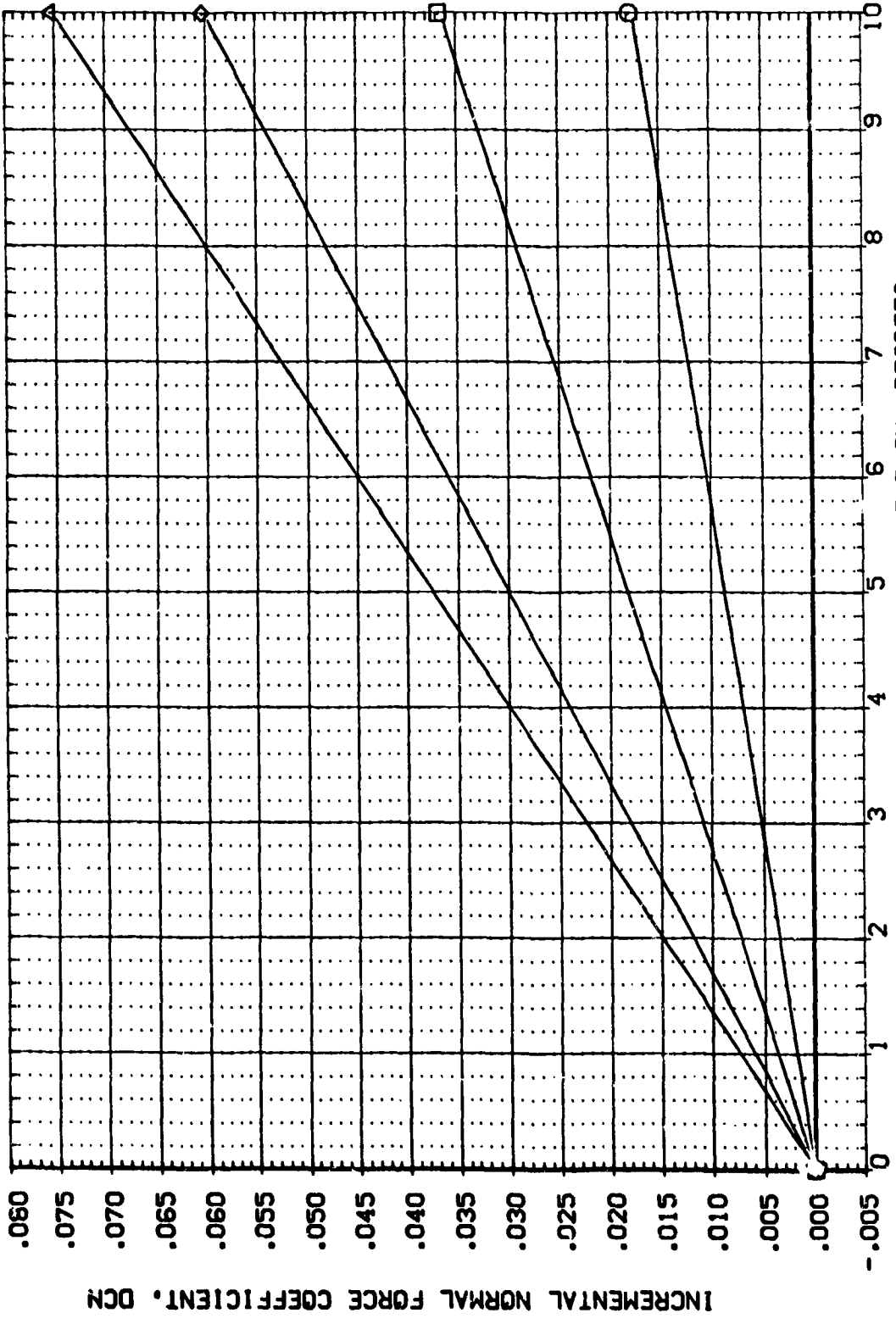


FIG. 8 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=16.3

AMES 3.5-176 OA87 140 A/B ORBITER (FEF010)

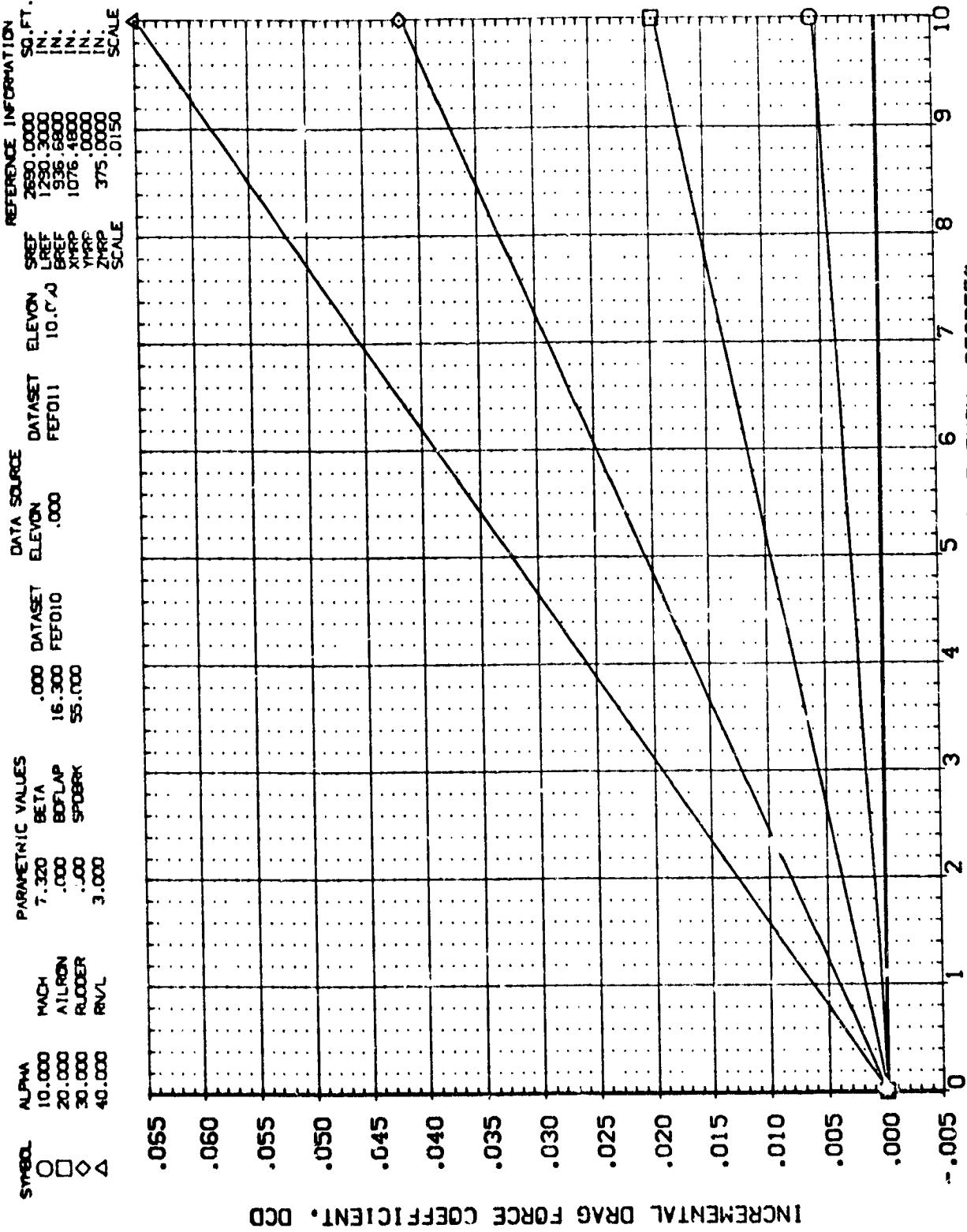
SYMBOL	ALPHA	MACH	PARAMETRIC VALUES		DATA SOURCE	REFERENCE INFORMATION	
○	10.000	A1LRON	7.320	BETA	ELEVON	SREF	2690.0000
□	20.000	RUDDER	.000	BOFLAP	FEF011	LREF	1290.3000
◇	30.000	RN/L	.000	SPDRBK	.000	EREF	926.6800
△	40.000		3.000			XMRP	1076.4800
						YMRP	.0000
						ZMRP	375.0000
						SCALE	.0150



ELEVON DEFLECTION ANGLE, ELEVON, DEGREES

FIG. 8 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=16.3

AMES 3.5-176 OA87 140 A/B ORBITER (FEF010)



SYMBOL	ALPHA	MACH	PARAMETRIC VALUES		DATA SOURCE	ELEVON	DATASET	ELEVON	SREF	REFERENCE INFORMATION	
○	10.000	A1LRON	7.320	BETA	.000	.000	FEF011	10.0°A	LREF	2690.0000	SQ.FT.
□	20.000	RLODER	.000	BDFLAP	16.300	.000	FEF010		BRF	1290.3000	IN.
◇	30.000	RVL	.000	SPOBRK	55.000				XMRP	936.6800	IN.
△	40.000		3.000						YMRP	1076.4800	IN.
									ZMRP	375.0000	IN.
									SCALE	.0150	SCALE

FIG. 8 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=16.3

AMES 3.5-176 0A87 140 A/B ORBITER (FEF010)

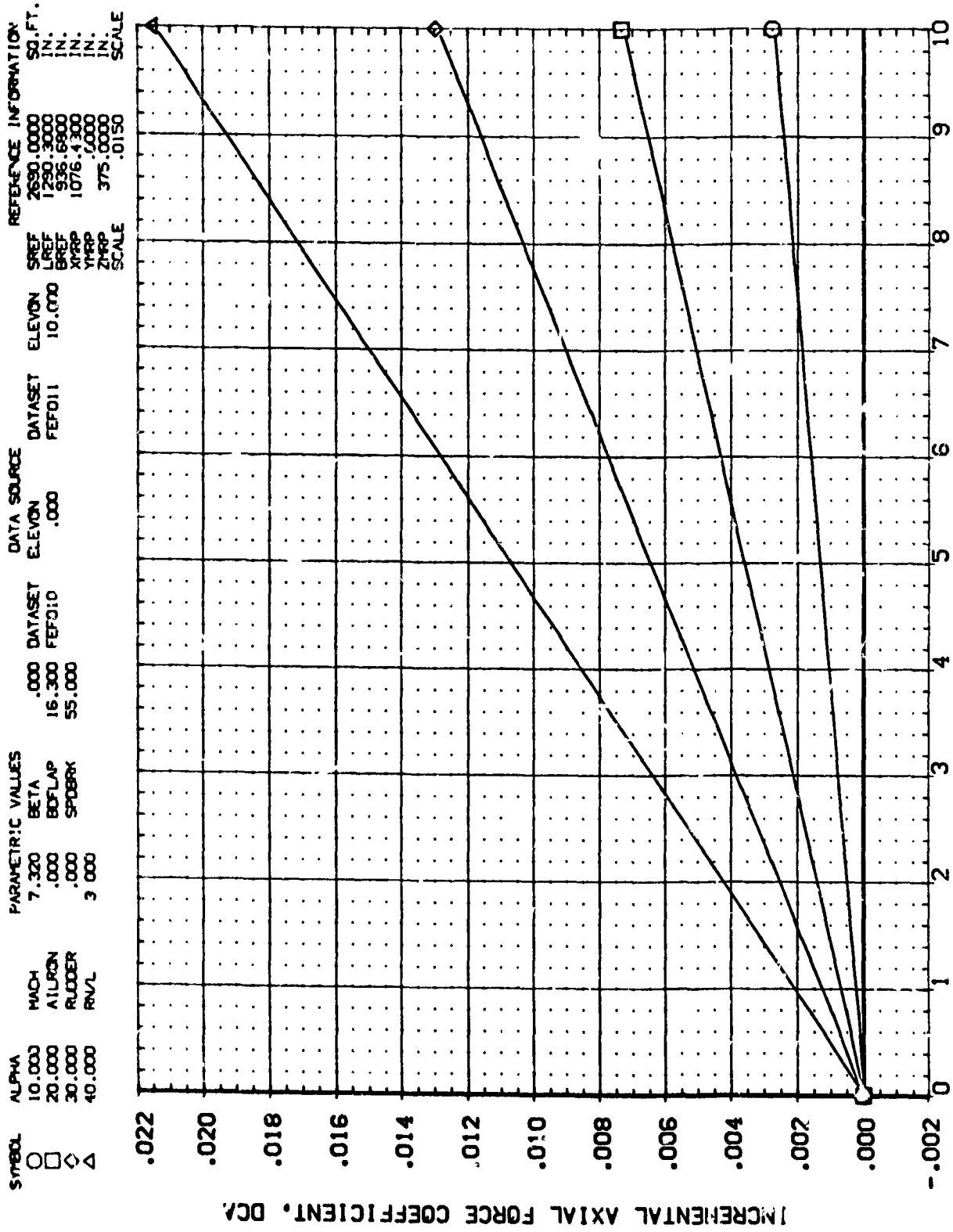


FIG. 8 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=16.3

(F.F.F.U.U)

AMES 3.5-176 C87 140 A/B ORBITER

SYMBOL	ALPHA	MACH	PARAMETRIC VALUES	DATA SOURCE	DATA SET	F. ELEVON	SREF	REFERENCE INFORMATION
○	10.000	7.320	BETA	.000	FEF011	10.000	LREF	2690.0700 SO.FT.
□	20.000	.000	BDFLAP	18.300	FEF010	.000	BRF	1290.3170 IN.
◇	.000	.000	SPOBRK	55.000			YMRP	936.6600 IN.
△	40.000	3.000	RV/L				ZMRP	1076.4800 IN.
							SCALE	375.0000 IN.
								.0150 SCALE

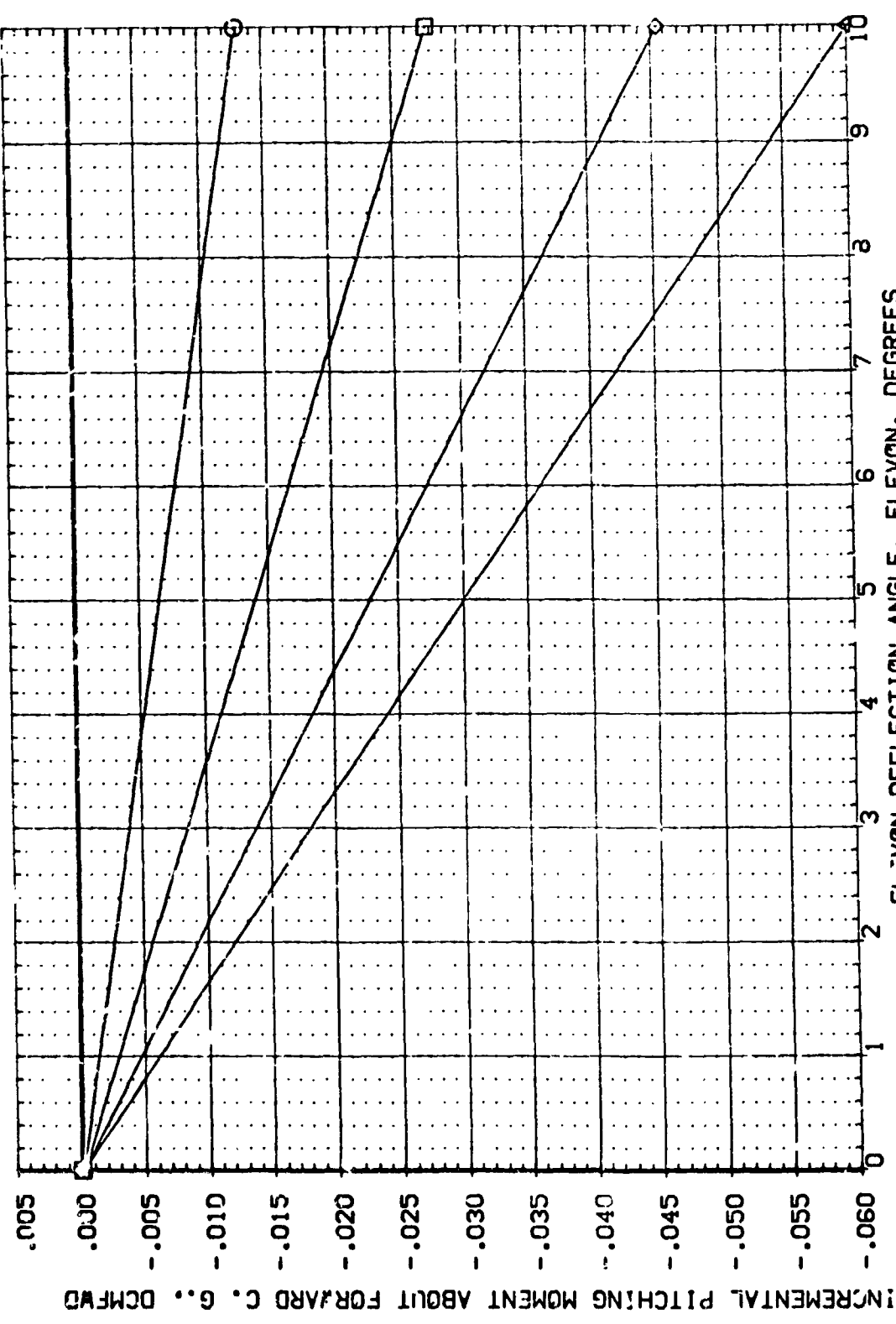


FIG. 8 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=16.3

AMES 3.5-176 0A87 140 A/B ORBITER (FEF010)

SYMBOL	ALPHA	MACH	PARAMETRIC VALUES		DATA SOURCE	DATA SET	ELEVON	SREF	REFERENCE INFORMATION
○	10.000	7.320	BETA	.000	ELEVON	FEF010	10.000	2690.0000	2690.0000
□	20.000	.000	BOFLAP	16.300	FEF010			1290.3000	IN.
◇	30.000	.000	SPDRBK	55.000				936.6800	IN.
△	40.000	3.000	RV/L					1076.4800	IN.
								375.0000	IN.
								.0150	SCALE

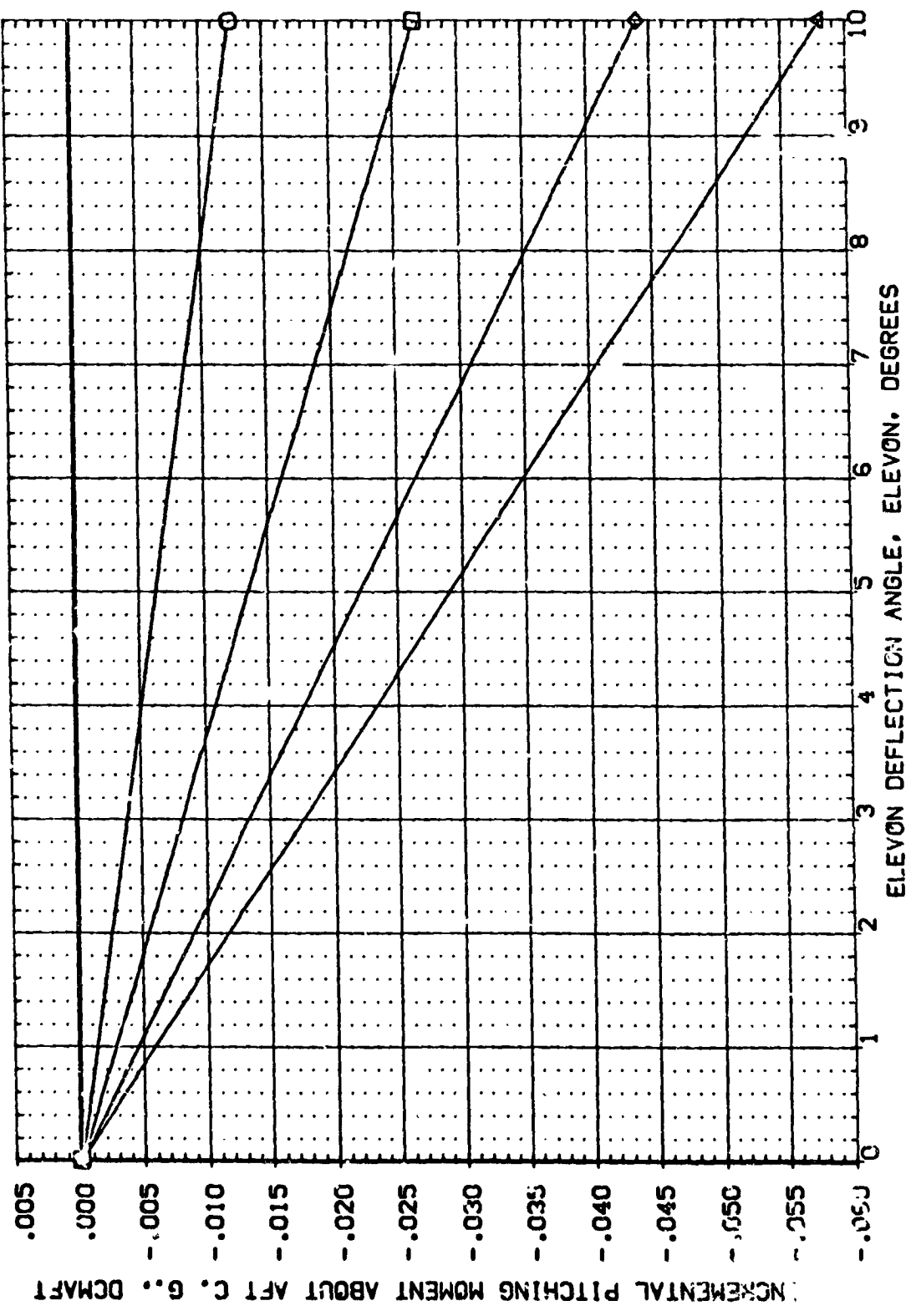


FIG. 8 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=16.3

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEF09)	AVES 3.5-176 OAS7 140 A/B DRBITER	-40.000	55.000	-11.700	3.000	SREF 2690.0000 SO.FT.
(BEF08)	AVES 3.5-176 OAS7 140 A/B DRBITER	.000	55.000	-11.700	3.000	LREF 1290.3000 IN.
						BREF 936.6800 IN.
						XMRP 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150

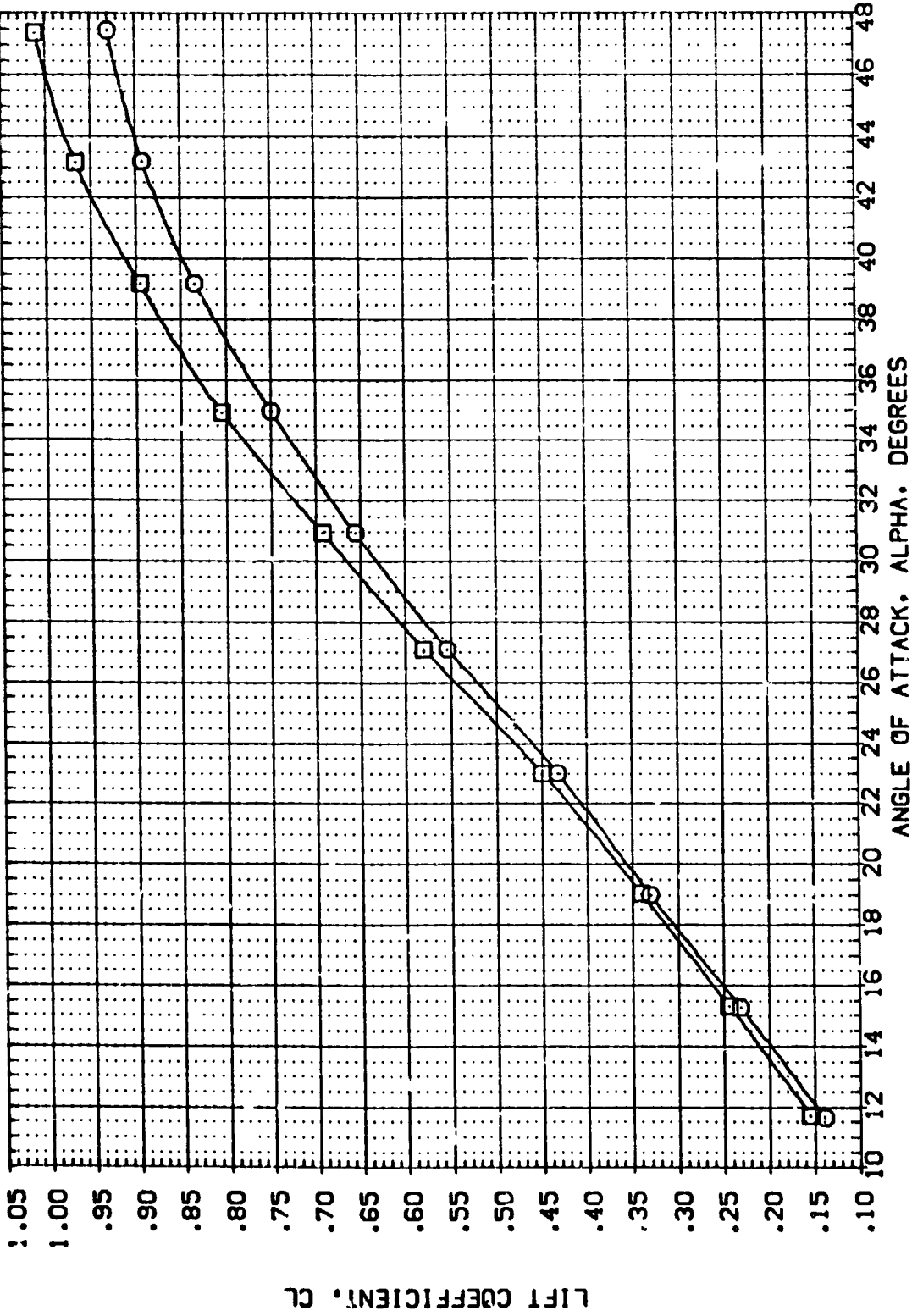


FIG. 9 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMB. (BEF009) (BEF308) \square \circ CONFIGURATION DESCRIPTION AMES 3.5-176 DAB7 140 A/B ORBITER AMES 3.5-176 DAB7 140 A/B ORBITER

ELEVON SPOBRK BOFLAP RN/L RVAL
 -40.000 55.000 -11.700 3.000
 .000 55.000 -11.700 3.070

REFERENCE INFORMATION
 SREF 2690.0000 SO.FT.
 LREF 1290.3000 IN.
 BRFP 936.6800 IN.
 XMRP 1076.4800 IN.
 YMRP .0000 IN.
 ZMRP 275.0000 IN.
 SCALE .0150 SCALE

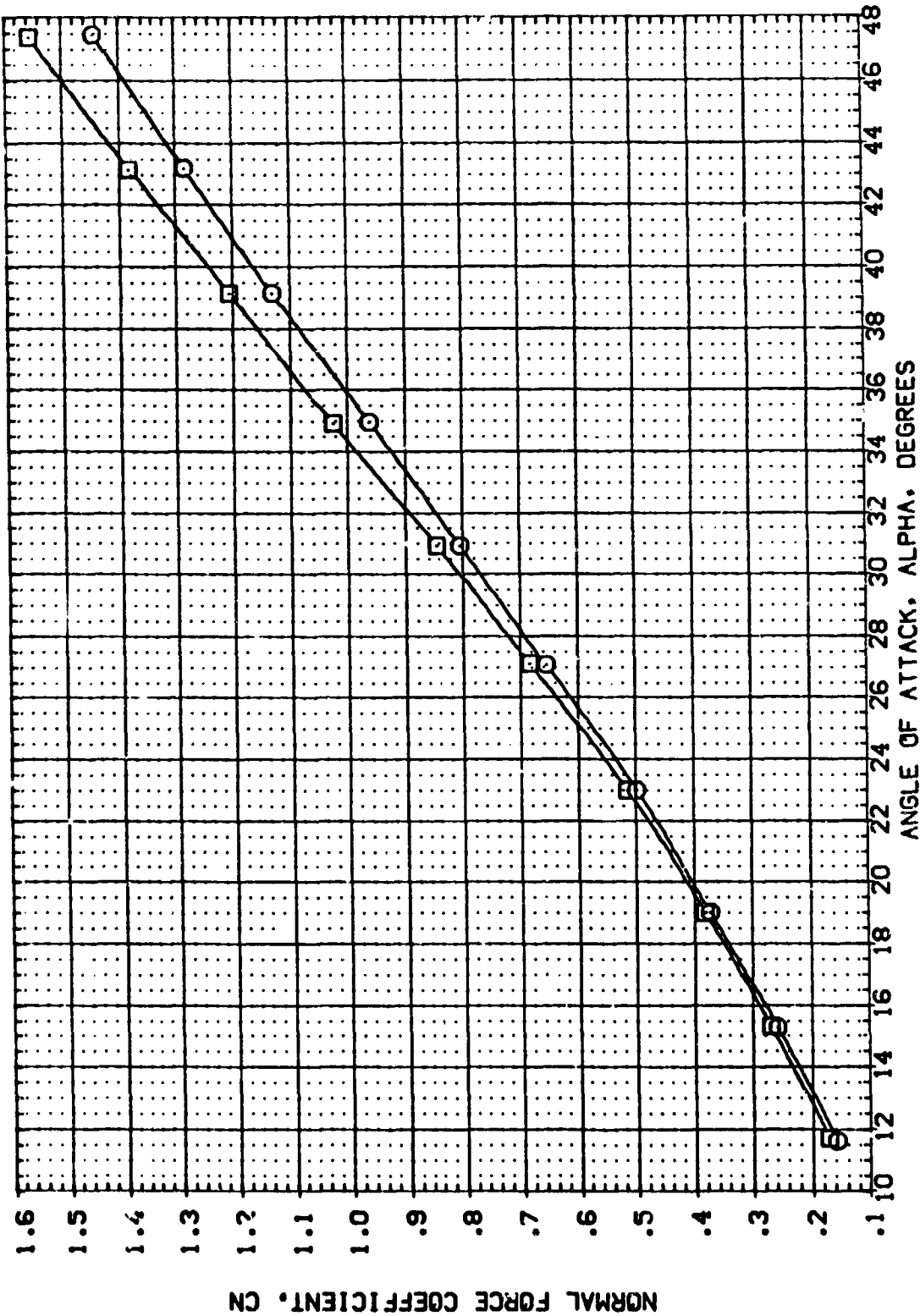


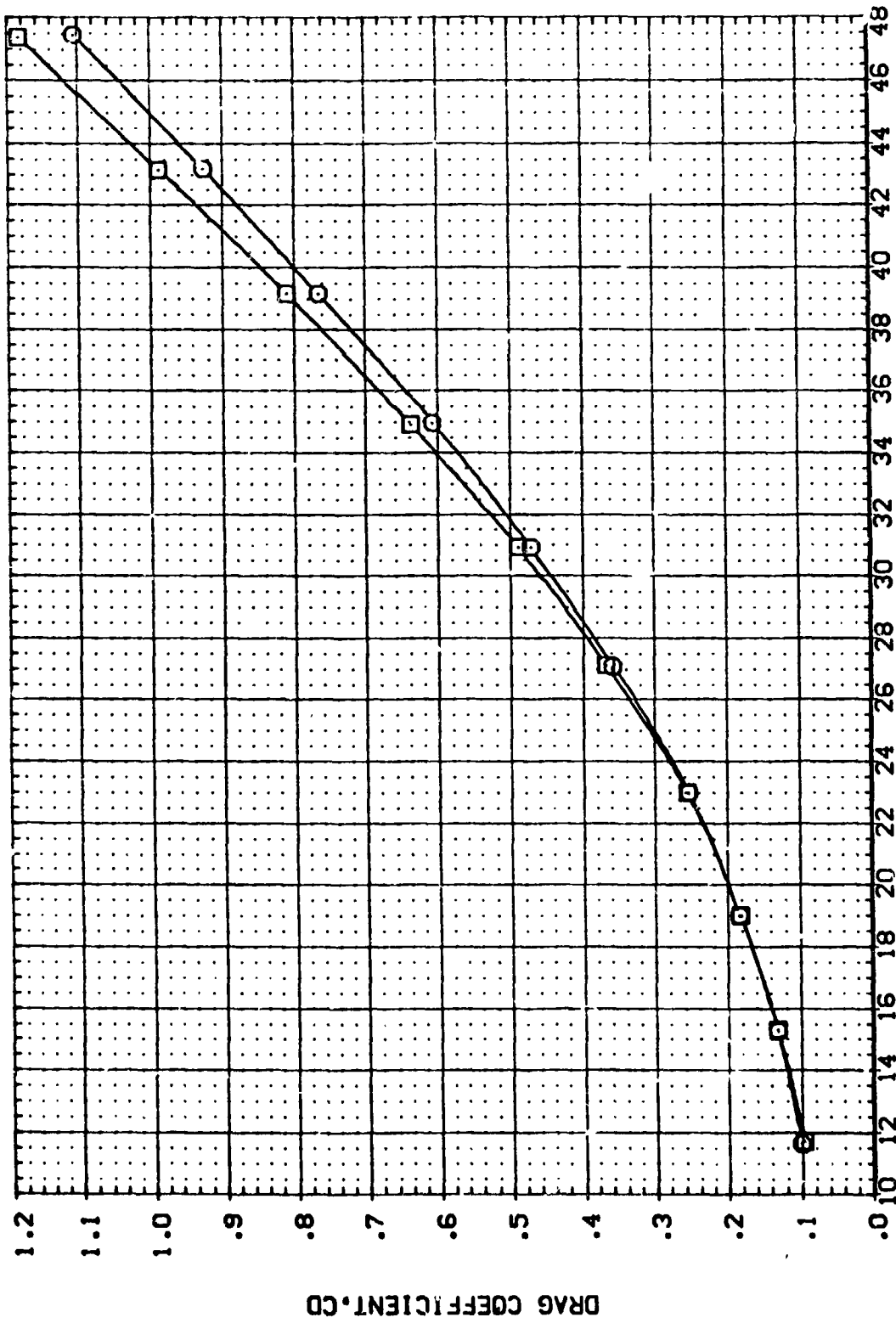
FIG. 9 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=-11.7

(M)MACH = 7.32

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (BEFO08) A MES 3.5-176 CAS7 140 A/B DRBITER
 (BEFO08) B MES 3.5-176 CAS7 140 A/B DRBITER

ELEVON SPOBRK BOFLAP RN/L
 -40.000 55.000 -11.700 3.000
 .000 55.000 -11.00 3.000

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 1290.3000 IN.
 BREF 936.6800 IN.
 XMRP 1076.4800 IN.
 YMRP .0000 IN.
 ZMRP 373.0000 IN.
 SCALE .0150



ANGLE OF ATTACK, ALPHA, DEGREES

FIG. 9 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=-11.7

CA/MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEFOOB)	MES 3.5-176 CAB7 140 A/B ORBITER	-40.000	55.000	-11.700	3.000	SREF 2690.0000 SO.FT.
(BEFOOB)	MES 3.5-176 CAB7 140 A/B ORBITER	.000	55.000	-11.700	3.000	LREF 1290.3000 IN.
						EREF 936.6800 IN.
						XMRP 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP .0000 IN.
						SCALE .0150

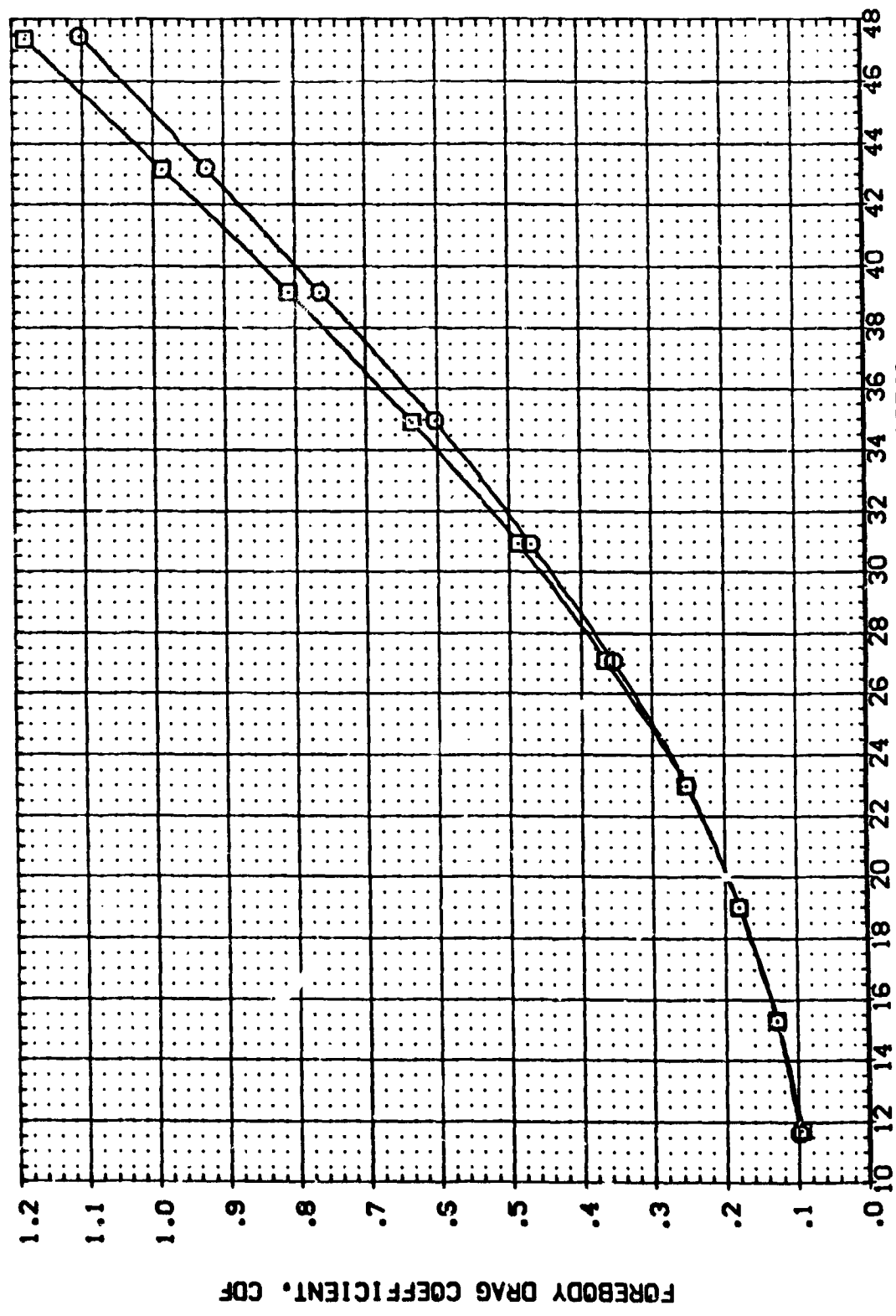


FIG. 9 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL (BEF008) □

CONFIGURATION DESCRIPTION
 AVES 3.5-176 CAB7 140 A/B ORBITER
 AVES 3.5-176 CAB7 140 A/B ORBITER

ELEVON SPOBRK BOFLAP RN/L
 -40.000 55.000 -11.700 3.000
 .000 55.000 -11.700 3.000

REFERENCE INFORMATION
 SREF 2690.0000 50.FT.
 LREF 1290.3000 IN.
 BREF 936.6800 IN.
 XMRP 1076.4800 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0150

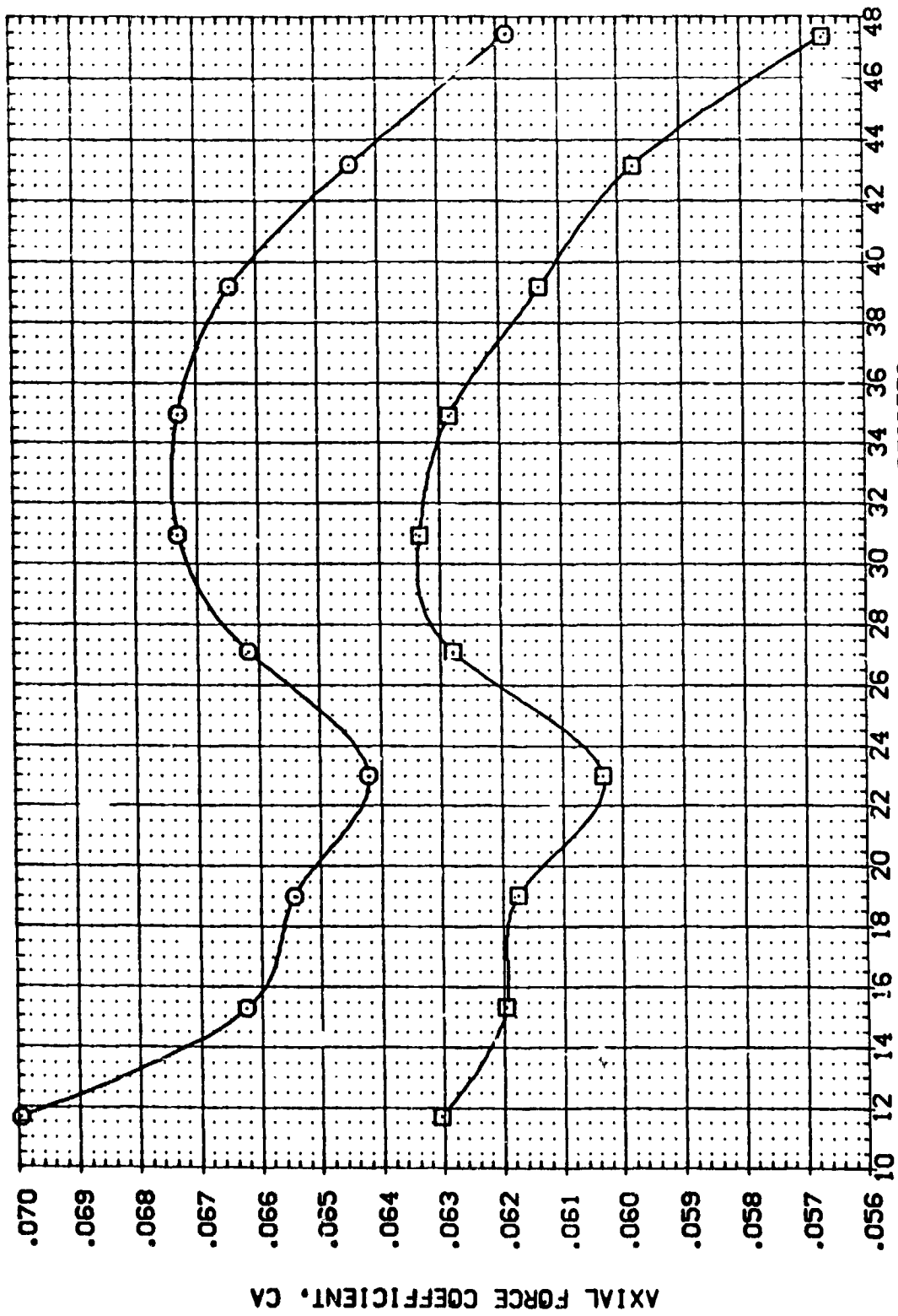


FIG. 9 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEF009)	AVES 3.5-176 OAB7 140 A/B ORBITER	-40.000	55.000	-11.700	3.000	SREF 2690.0000 SQ.FT.
(BEF008)	AVES 3.5-176 OAB7 140 A/B ORBITER	.000	55.000	-11.700	3.000	LREF 1290.3000 IN.
						BREF 936.6800 IN.
						XMRP 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150 SCALE

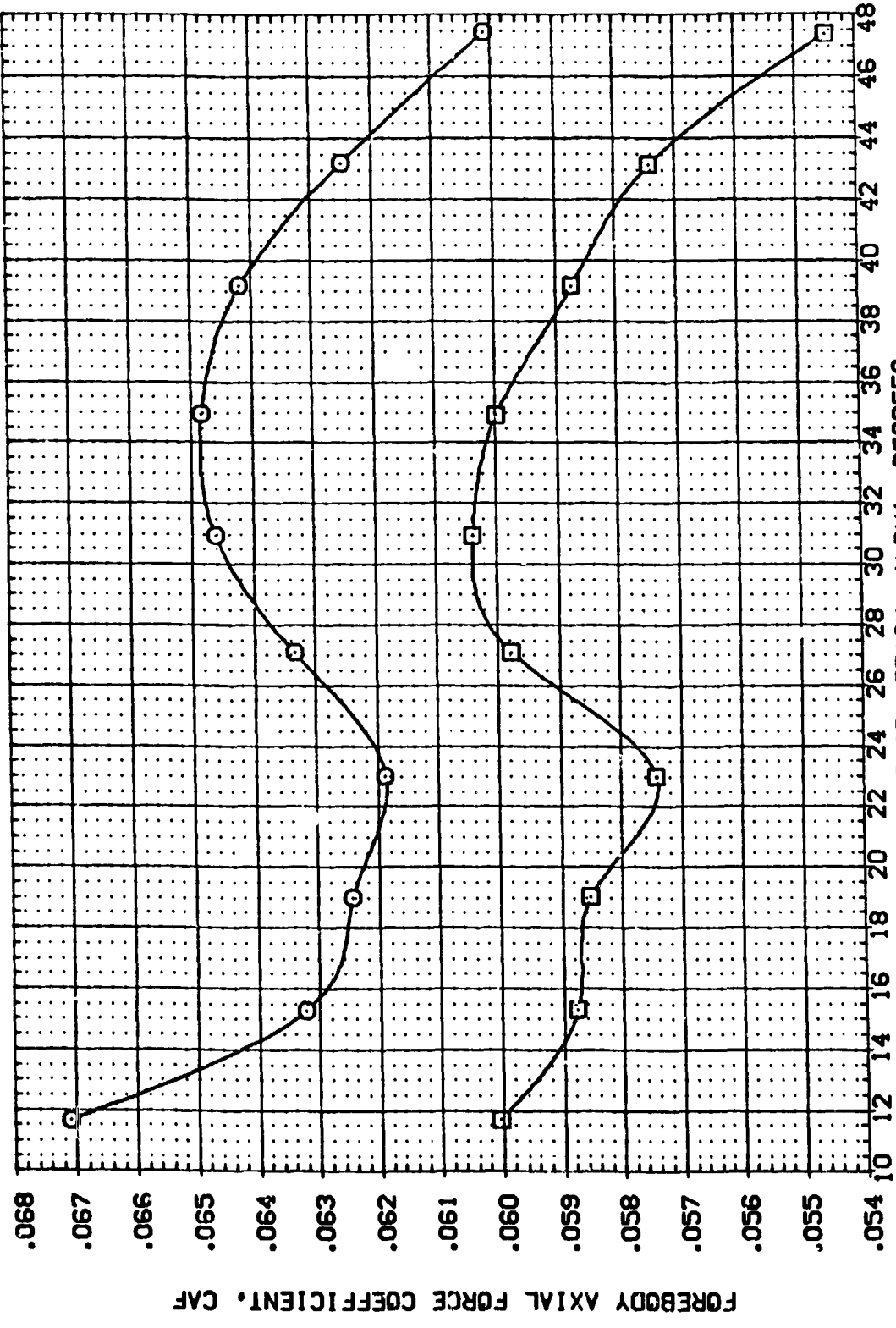



FIG. 9 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL (BEF009) (BEF008)  CONFIGURATION DESCRIPTION AVES 3.5-176 CAB7 140 A/B ORBITER AVES 3.5-176 CAB7 140 A/B ORBITER

ELEVON SPOBRK BDFLAP RN/L

-40.000 55.000 -11.700 3.000
 .000 55.000 -11.700 3.000

REFERENCE INFORMATION

SREF 2690.0000 SO.FT.
 LREF 1290.3000 IN.
 BREF 936.6800 IN.
 XMRP 1076.4800 IN.
 YMRP .0000 IN.
 ZMRP 375.0000 IN.
 SCALE .0150 SCALE

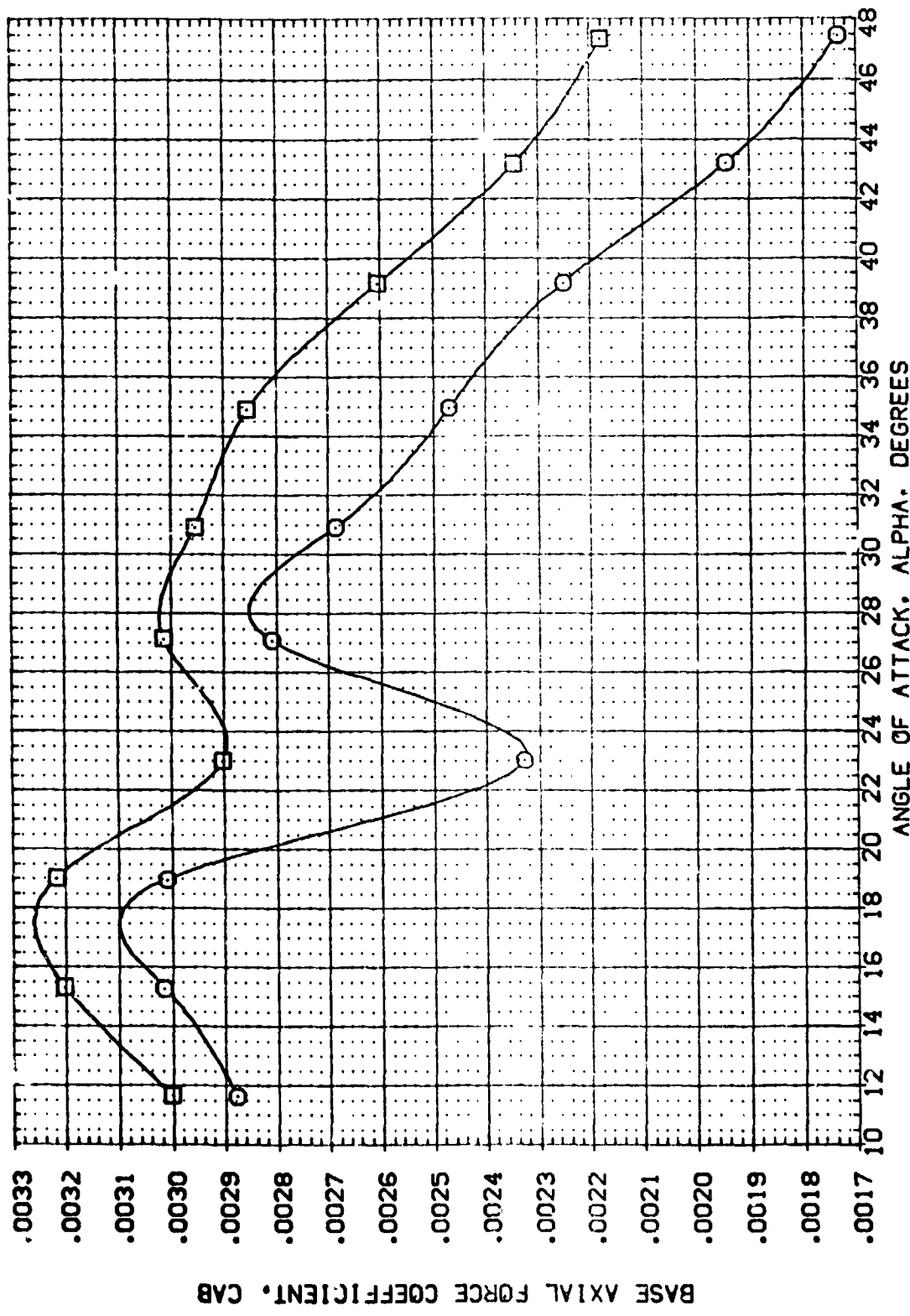


FIG. 9 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEFOOB)	AVES 3.5-176 OAB7 140 A/B ORBITER	-40.000	55.000	-11.700	3.000	SREF 2690.0000 SO.FT.
(BEFOOB)	AVES 3.5-176 OAB7 140 A/B ORBITER	.000	55.000	-11.700	3.000	LREF 1290.3070 IN.
						BREF 936.6600 IN.
						XMRP 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP 373.0000 IN.
						SCALE .0150

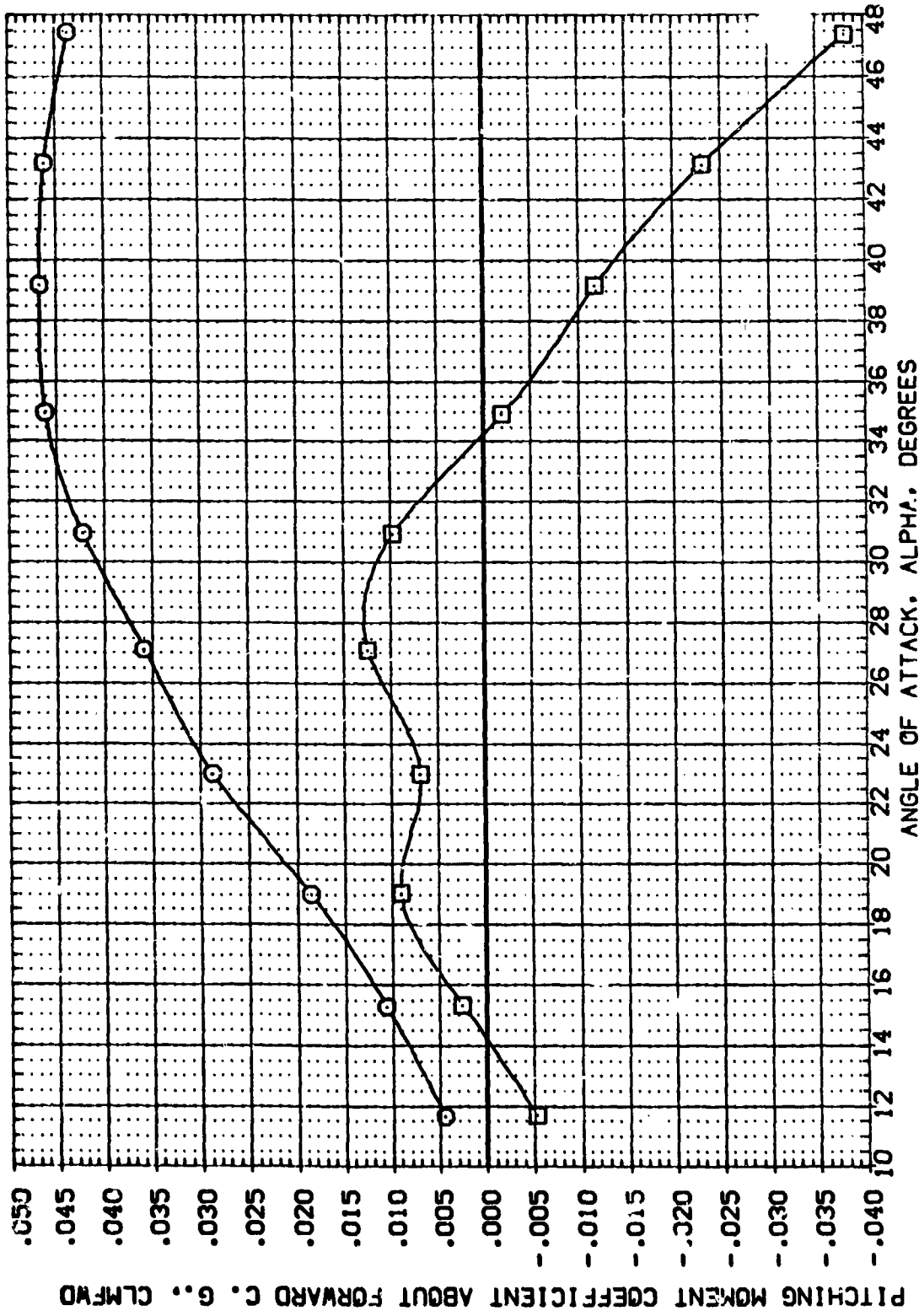


FIG. 9 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=-11.7

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (BEF009) \square AVES 3.5-176 OAB7 140 A/B ORBITER
 (BEF008) \square AVES 3.5-176 OAB7 140 A/B ORBITER

ELEVON SPOBRX BOFLAP RN/L
 -40.000 55.000 -11.700 3.000
 .000 55.000 -11.700 3.000

REFERENCE INFORMATION
 SREF 2690.0000 50.000
 LREF 1290.3000 IN.
 BREF 936.6800 IN.
 XTRP 1076.4800 IN.
 YTRP 375.0000 IN.
 ZTRP 375.0000 IN.
 SCALE .0150

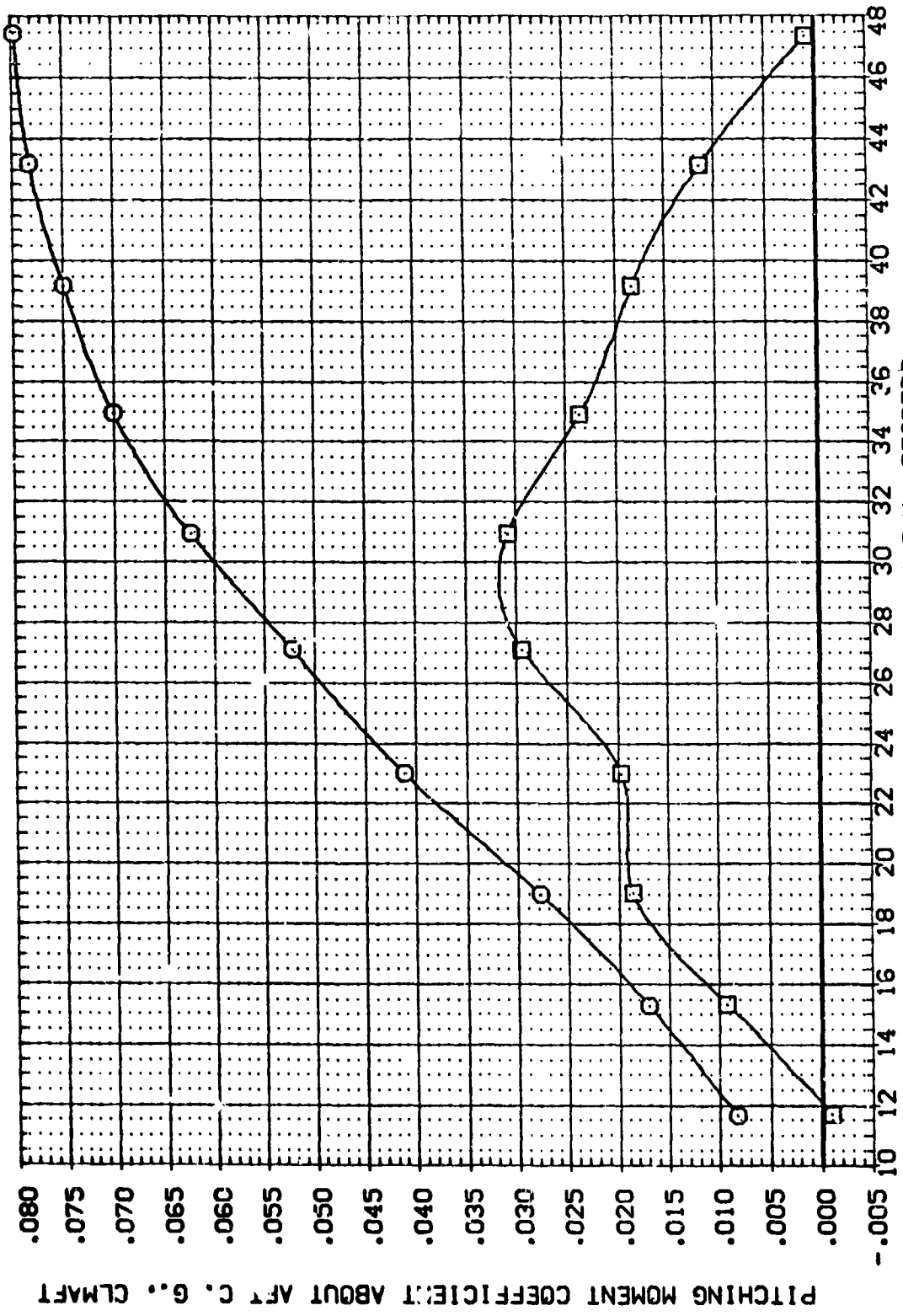
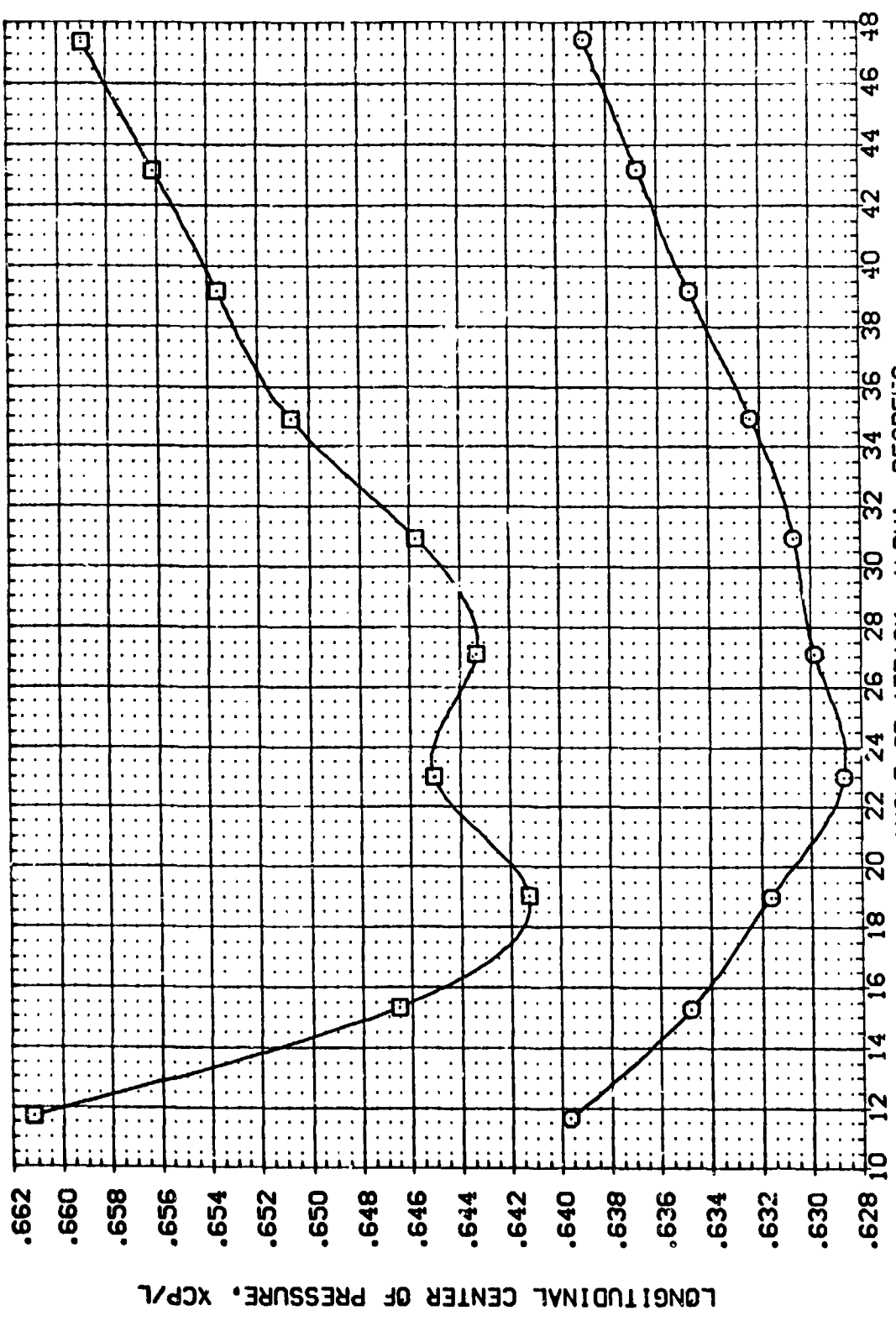


FIG. 9 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=-11.7

(AJMACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEFO09)	AMES 3.5-176 OAB7 140 A/B OAB11TER	-40.000	55.000	-11.700	3.000	SREF 2690.0000 SO.FT.
(BEFO08)	AMES 3.5-176 OAB7 140 A/B OAB11TER	.000	55.000	-11.700	3.000	LREF 1290.3000 IN.
						BREF 936.6800 IN.
						XMRP 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150



ANGLE OF ATTACK, ALPHA, DEGREES

FIG. 9 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL: (BEFORE) (AFTER)

CONFIGURATION DESCRIPTION: ASES 3.5-176 CAB7 140 A/B CRBITTER ASES 3.5-176 CAB7 140 A/B CRBITTER

REFERENCE INFORMATION: SREF 2690.0000 SQ.FT. LREF 1290.3000 IN. BREF 936.6800 IN. XMRP 1076.4800 IN. YMRP 0000 IN. ZMRP 375.0000 IN. SCALE .0150

ELEVON SPOBRK BDFLAP RN/L

-40.000 55.000 -11.700 3.000

.000 55.000 -11.700 3.000

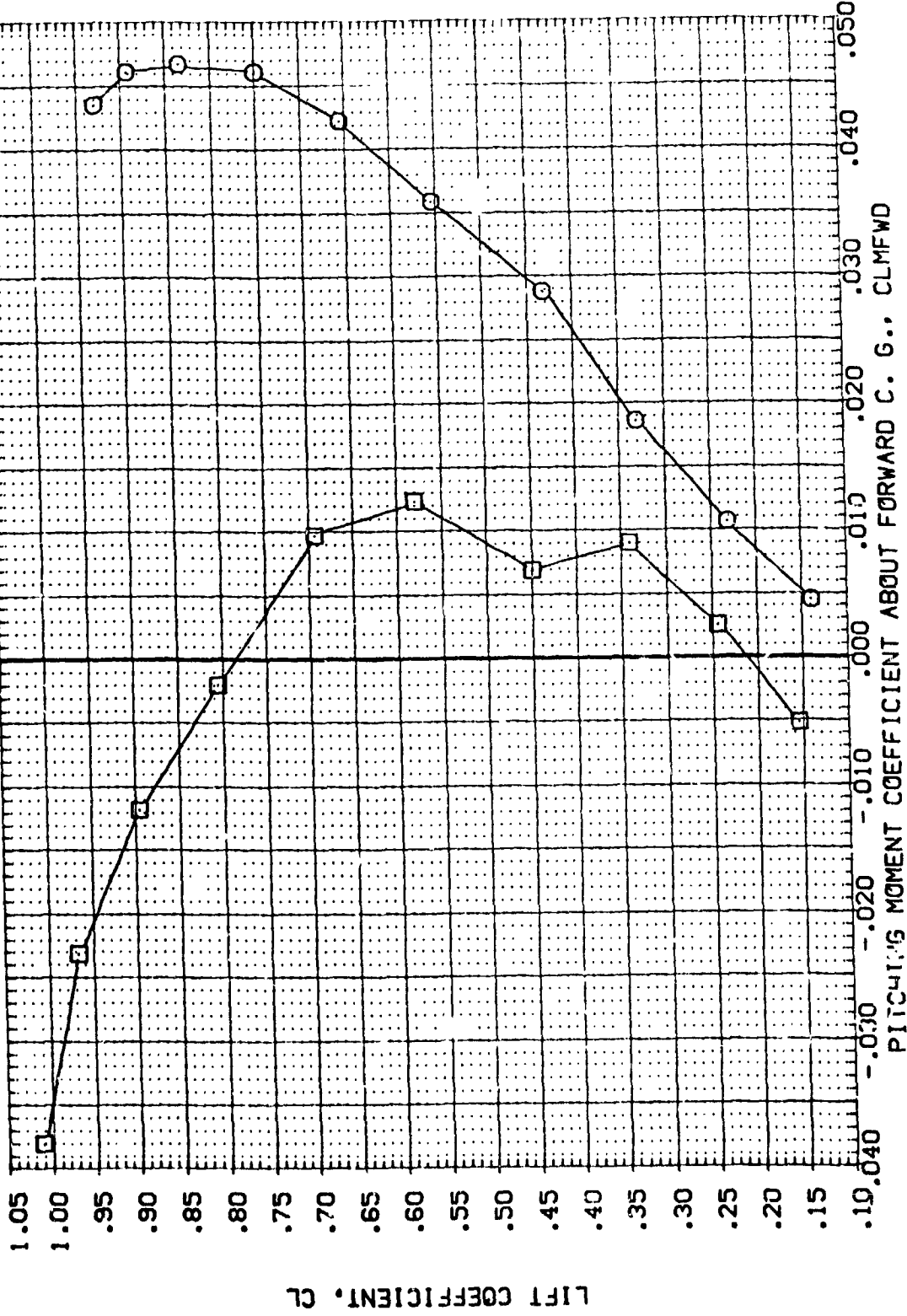


FIG. 9 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPDRBK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEFO09)	APES 3.5-176 CAB7 140 A/B ORBITER	-40.000	55.000	-11.7	3.000	SREF 2690.0000 SQ.FT.
(BEFO08)	APES 3.5-176 CAB7 140 A/B ORBITER	.000	55.000	-11.7	3.000	LREF 1290.3000 IN.
						BREF 936.6800 IN.
						XMRP 1076.4300 IN.
						YMRP .0000 IN.
						ZMRP .0000 IN.
						SCALE .0150

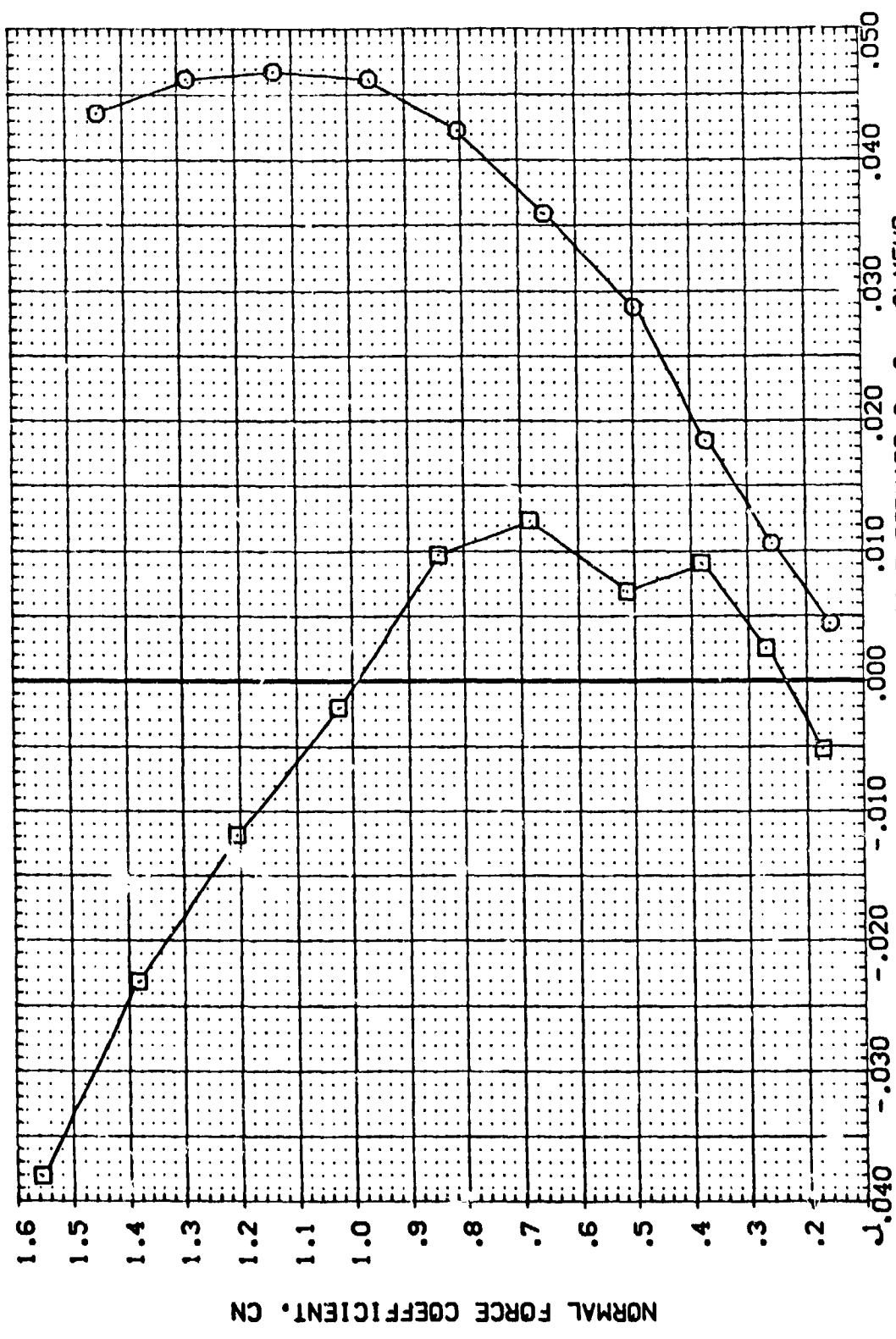


FIG. 9 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=-11.7

(A) MACH = 7.32

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (BEFO08) □ ASES 3.5-176 0A87 140 A/B ORBITER
 (BEFO08) □ ASES 3.5-176 0A87 140 A/B ORBITER

ELEVON SPOBRK BDFLAP RN/L
 -40.000 55.000 -11.700 3.000
 .000 55.000 -11.700 3.000

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 1290.3000 IN.
 BREF 936.6800 IN.
 YPRP 1076.4800 IN.
 ZPRP .0000 IN.
 SCALE 375.0000 IN.
 .0150

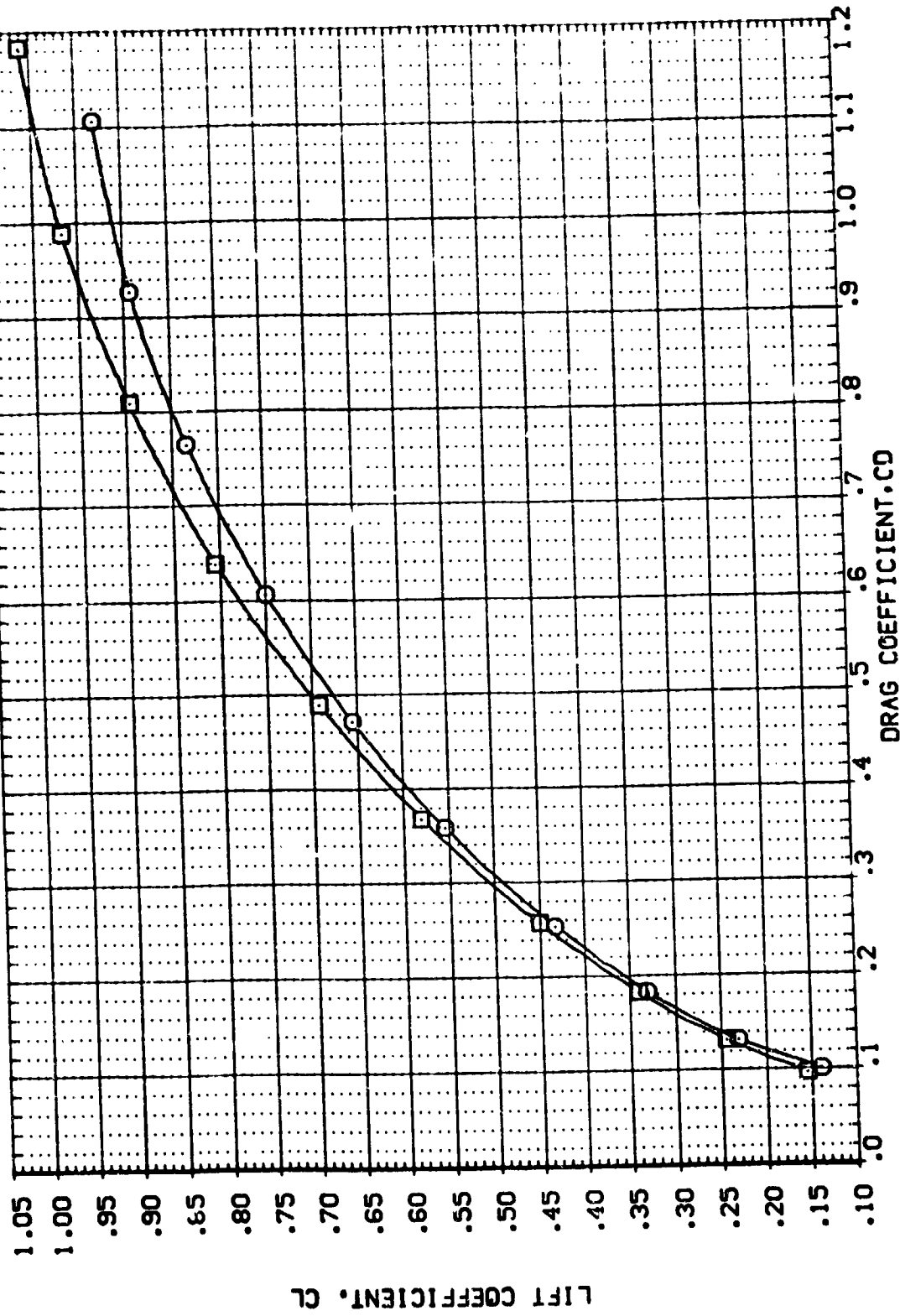


FIG. 9 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BOFLAP	RN/L	REFERENCE INFORMATION
(AEP008)	AMES 3.5-176 OAS7 140 A/B ORBITER	-40.000	55.000	-11.700	3.000	SREF 2690.0000 50. FT.
(AEP008)	AMES 3.5-176 OAS7 140 A/B ORBITER	.000	55.000	-11.700	3.000	LREF 1290.3000 IN.
						BREF 936.6900 IN.
						XTRP 1076.4800 IN.
						YTRP .0000 IN.
						ZTRP 375.0000 IN.
						SCALE .0150

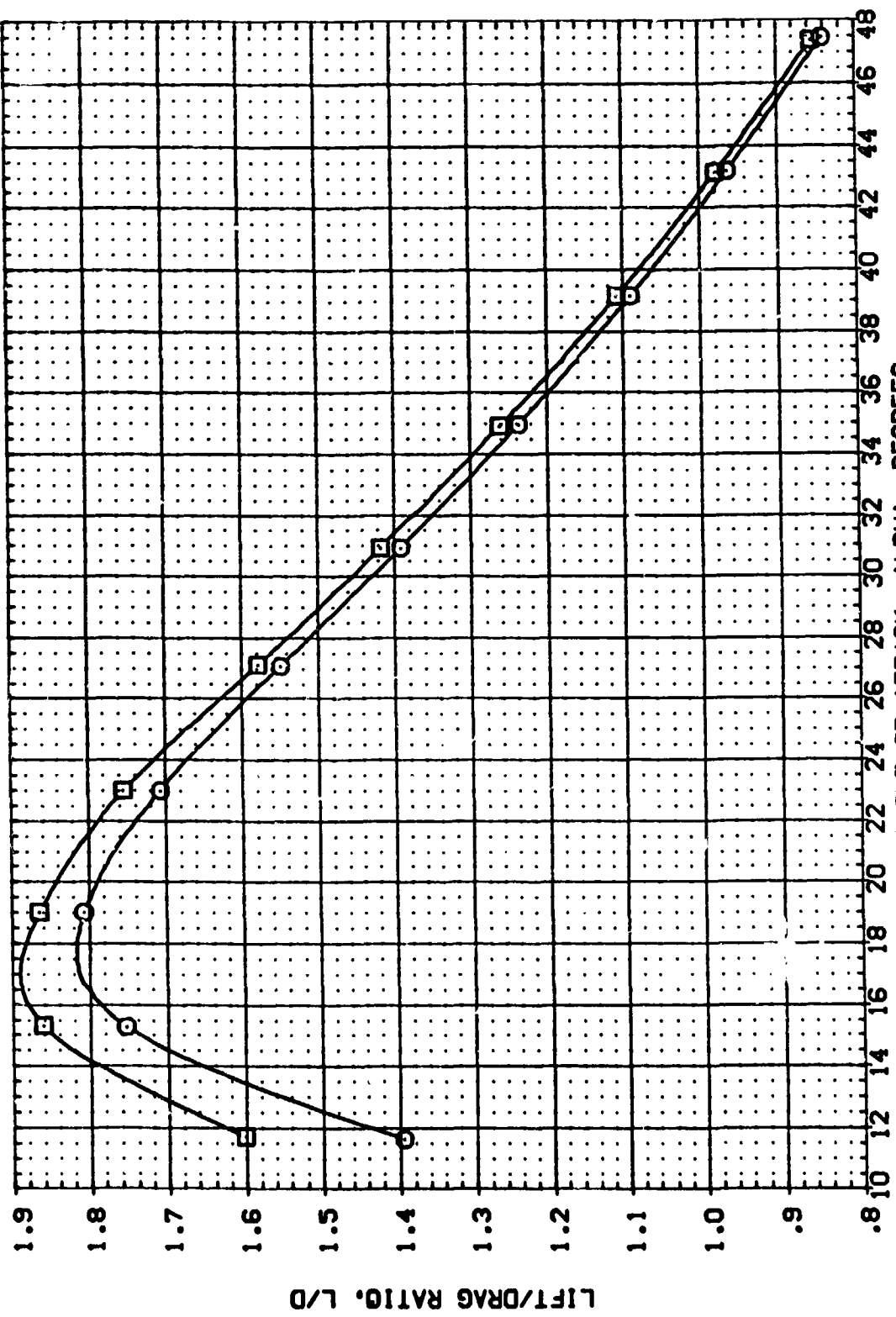


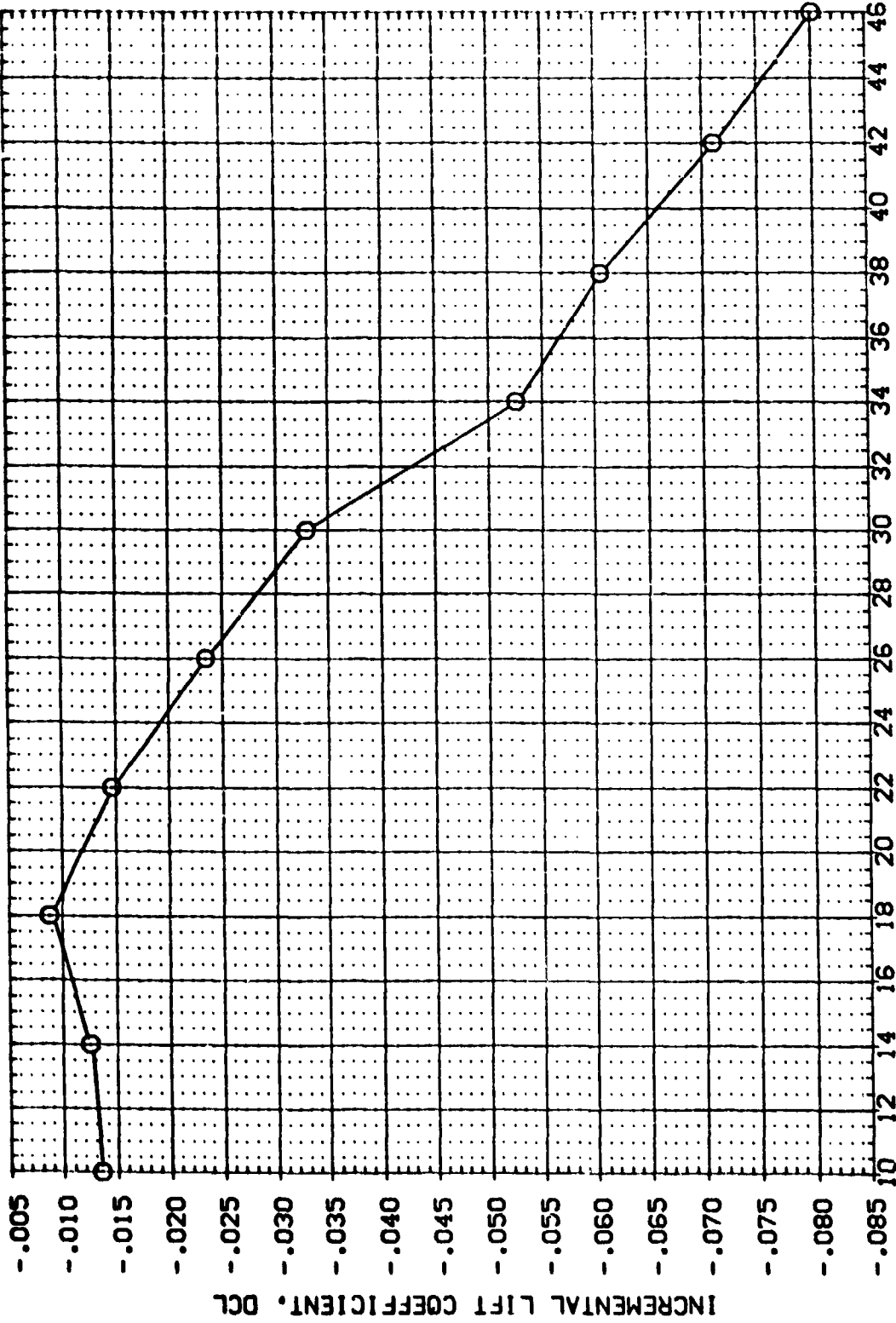
FIG. 9 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL: (EEFO08) ○
 CONFIGURATION DESCRIPTION: ANES 3.5-176 CAB7 140 A/B ORBITER

DE: -40.000
 SPOBRK: 59.000
 BDFLAP: -11.700
 RN/L: 3.000

REFERENCE INFORMATION:
 SREF: 2690.0000 SQ.FT.
 LREF: 1290.3000 IN.
 BREF: 536.6600 IN.
 XPRP: 1076.4800 IN.
 YPRP: 0000 IN.
 ZPRP: 375.0000 IN.
 SCALE: .0150



ANGLE OF ATTACK, ALPHA, DEGREES

FIG. 9 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL: (EEF003) ○
 CONFIGURATION DESCRIPTION: AVES 3.5-176 0.87 140 A/B CRBITER
 DE: -40.000
 SPOBRK: 55.000
 BOFLAP: -11.700
 RN/L: 3.000

REFERENCE INFORMATION
 SREF: 2690.0000 SQ.FT.
 LREF: 1290.0000 IN.
 BREF: 936.6800 IN.
 YREF: 1076.4800 IN.
 ZREF: 375.0000 IN.
 SCALE: .0150

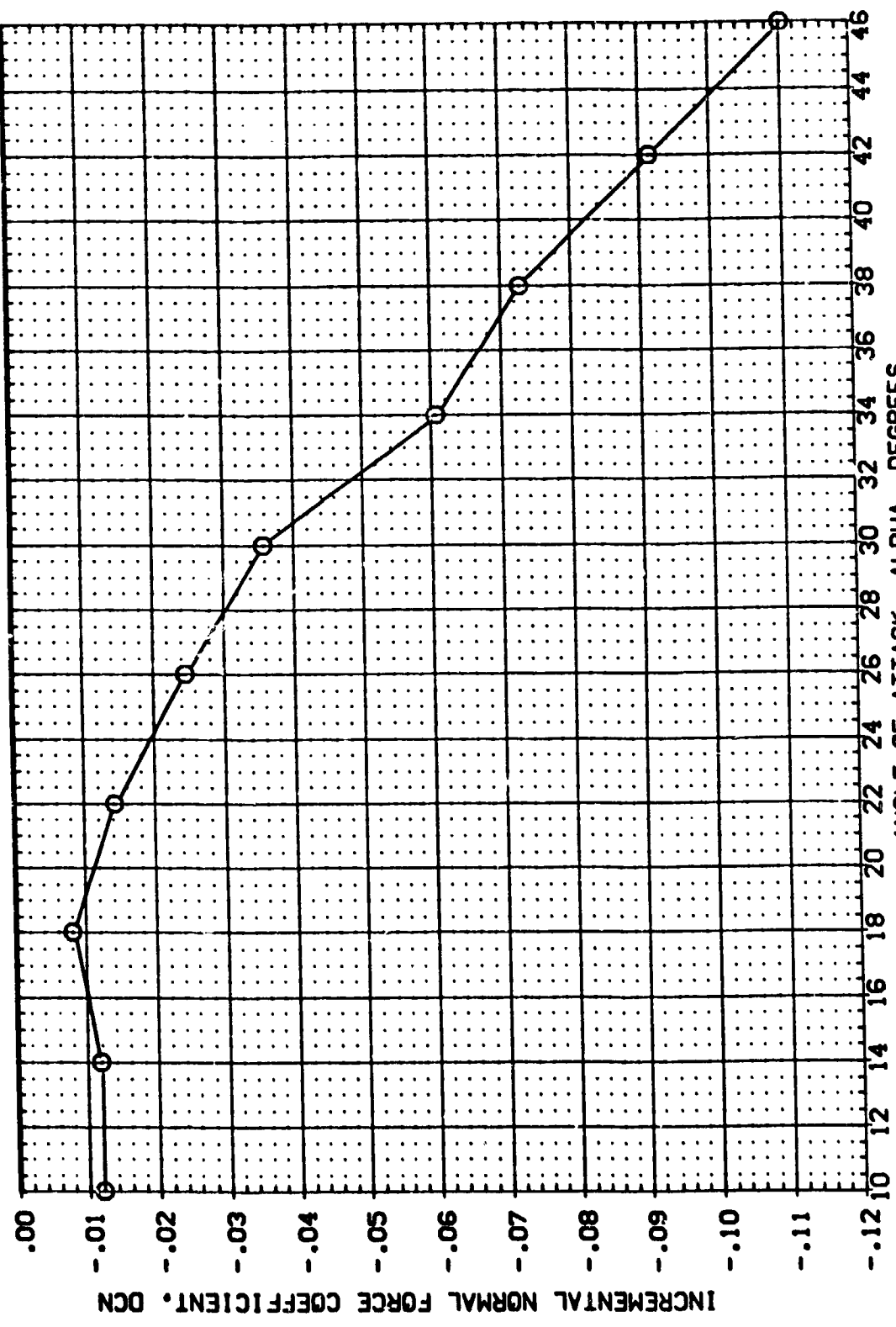


FIG. 9 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL (EFO09) ○ CONFIGURATION DESCRIPTION (NES 3.5-176 0467 140 A/B ORBITER) DE -40.000 SPDRK 55.000 BOFLAP -11.700 RN/L 3.000 REFERENCE INFORMATION SREF 2690.0000 SO.FT. LREF 1290.3000 IN. BREF 536.6800 IN. XMRP 1076.4800 IN. YMRP .0000 IN. ZMRP 375.0000 IN. SCALE .0150

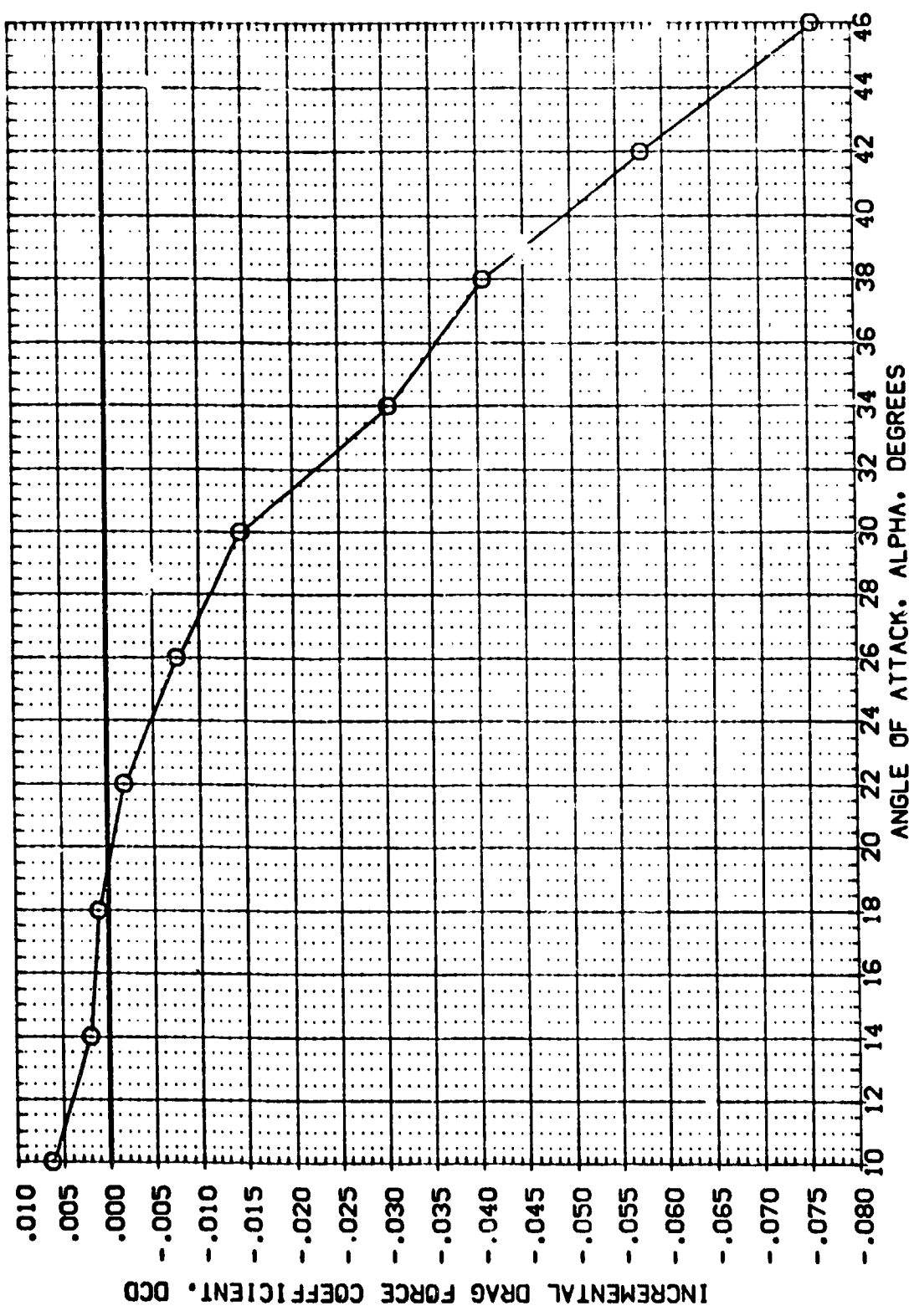


FIG. 9 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL: (E0009) ○

CONFIGURATION DESCRIPTION: ARES 3.5-176 SAB7 140 A/B ORBITER

DE: -40.000

SPORK: 55.000

BDFLAP: -11.700

RVAL: 3.000

REFERENCE INFORMATION:

SHEET	2880.0000	90.FT.
LINE	1250.0000	IN.
BRST	578.6800	IN.
TRAP	1076.4800	IN.
TRAP	375.0000	IN.
ZRPP	375.0000	IN.
SCALE	.0150	SCALE

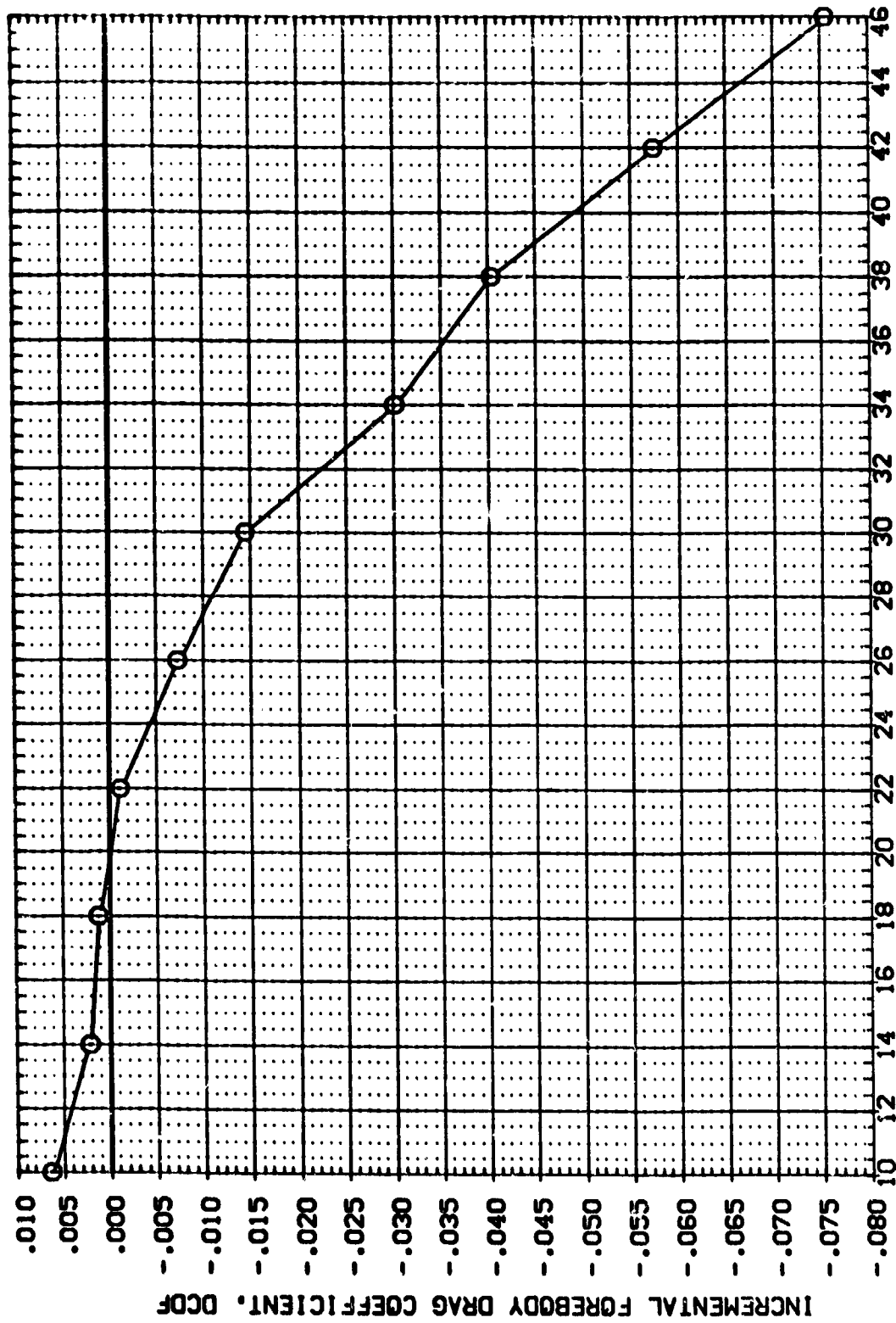


FIG. 9 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL (EFP009) ○
 CONFIGURATION DESCRIPTION AVES 3.5-176 CAB7 140 A/B CRIB11R
 DE -40.000 SPORK 59.000 BOFLAP -11.700 RN/L 3.000
 REFERENCE INFORMATION
 SREF 2630.0000 SQ.FT.
 LREF 1230.3000 IN.
 BREF 536.8600 IN.
 XREF 1076.4600 IN.
 YREF .0000 IN.
 ZREF 375.0000 IN.
 SCALE .0150

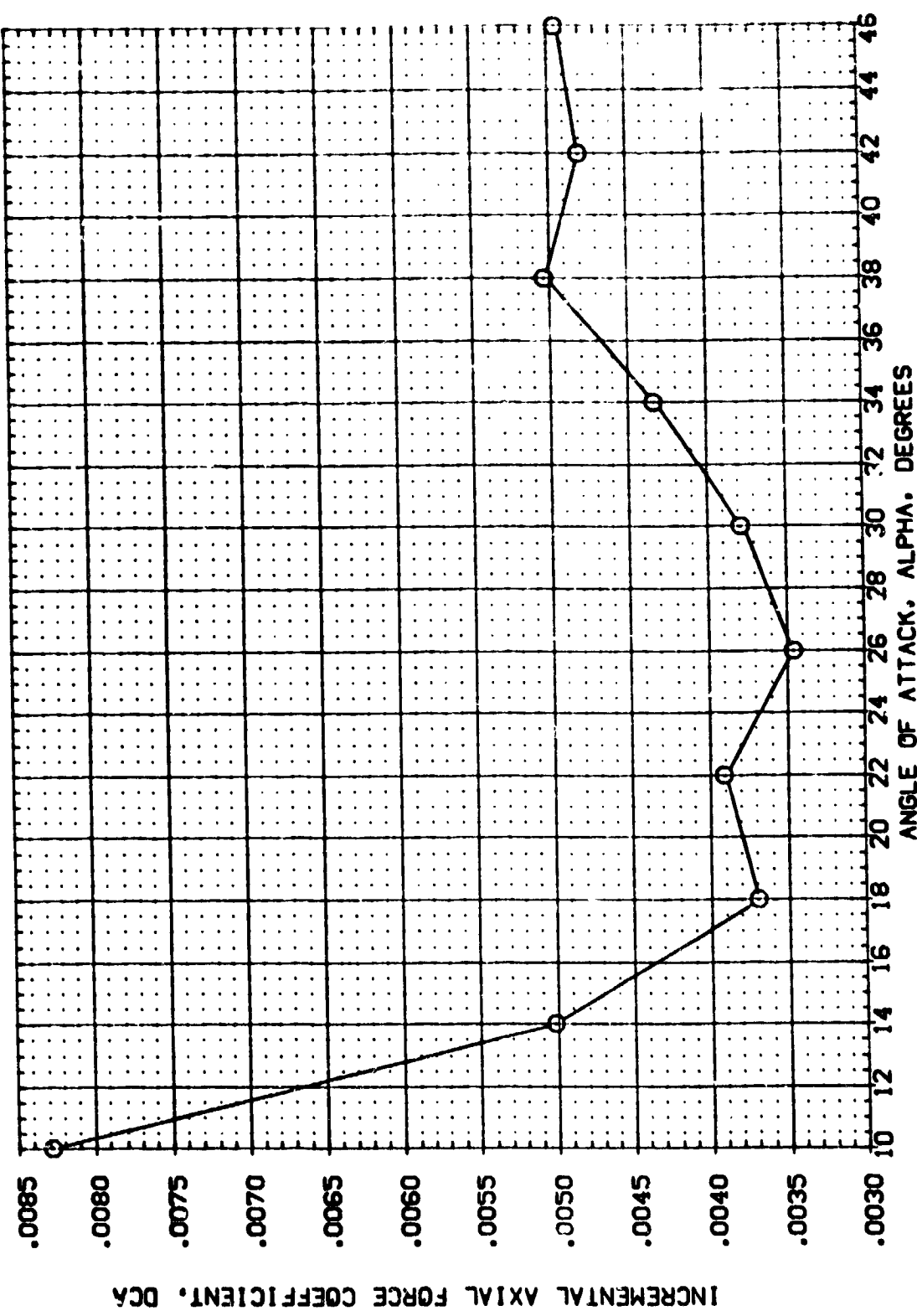


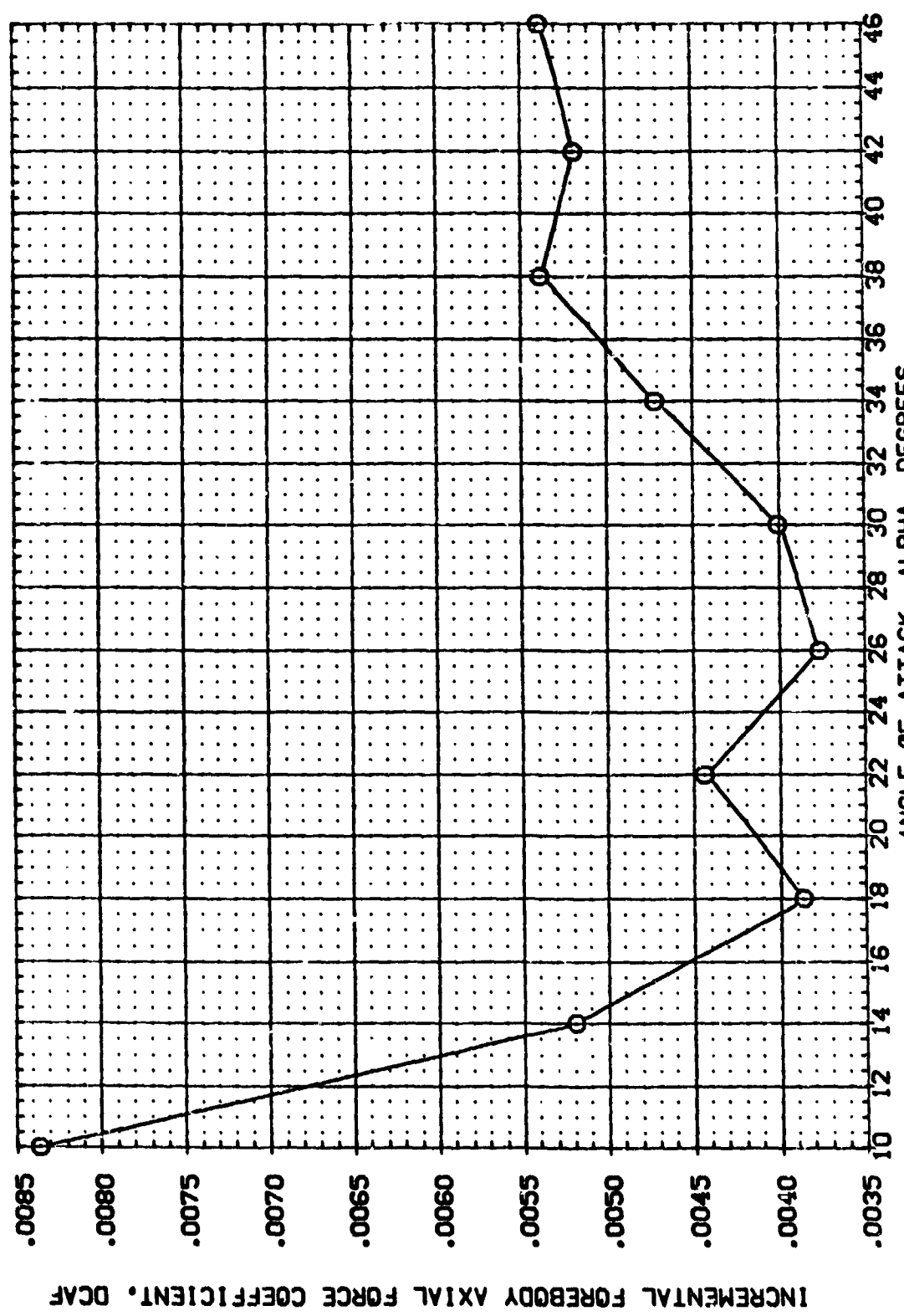
FIG. 9 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=-11.7
 (A)MACH = 7.32

DATA SET SYMBOL (EEF009) ○

CONFIGURATION DESCRIPTION
 ARES 3.5-176 0467 140 A/B ORBITER

DE -40.000 SPORNK 55.000 BDFLAP -11.700 RN/L 3.000

REFERENCE INFORMATION
 SREF 2630.0000 SQ. FT.
 LREF 1230.3000 IN.
 BREF 536.6600 IN.
 YREF 1076.4600 IN.
 ZREF .0000 IN.
 SCALE 375.0000 IN.
 SCALE .0150



ANGLE OF ATTACK, ALPHA, DEGREES

FIG. 9 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=-11.7

CA/MACH = 7.32

DATA SET SYMBOL: 0
 CONFIGURATION DESCRIPTION: AMES 3.5-176 CABT 140 A/B CABITER

DE: -49.000
 SPDRK: 55.000
 BDFLAP: -11.700
 RN/L: 3.000

REFERENCE INFORMATION:
 SREF: 2650.0000 50.FT.
 LREF: 1250.3000 IN.
 BREF: 936.6800 IN.
 XTRP: 1076.4800 IN.
 YTRP: .0000 IN.
 ZTRP: 375.0000 IN.
 SCALE: .0150

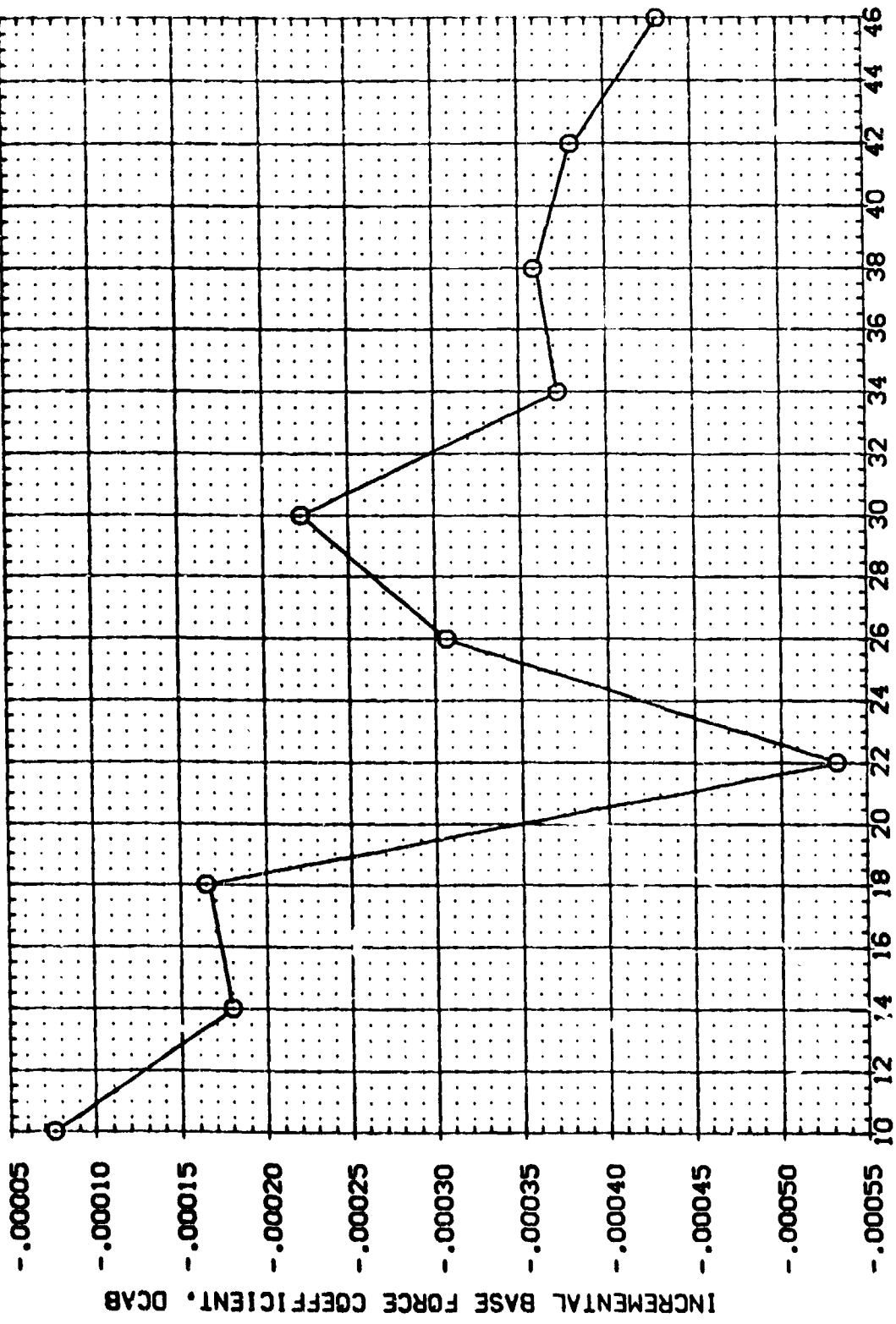


FIG. 9 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=-11.7

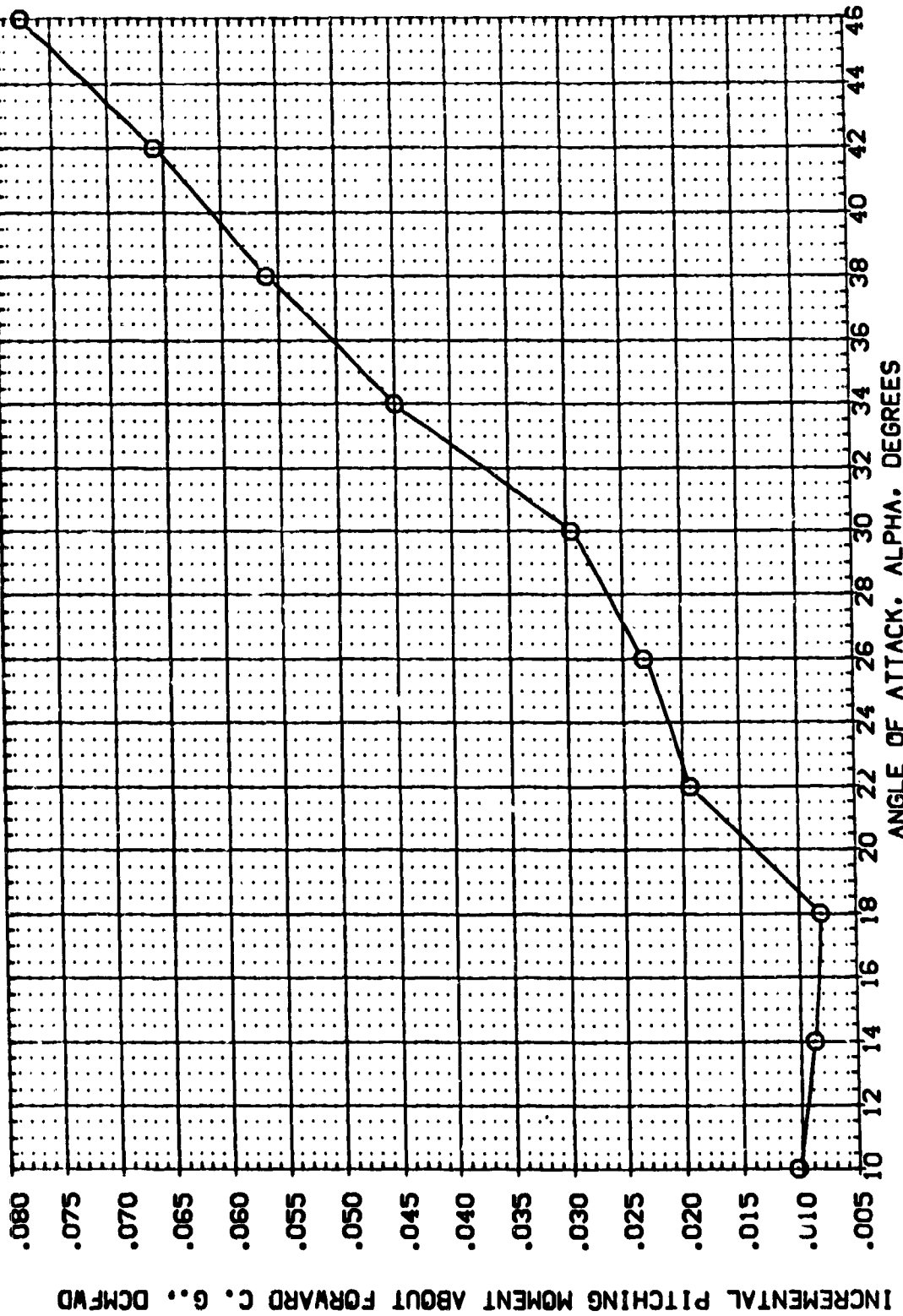
(A)MACH = 7.32

DATA SET SYMBOL (EF009) ○

CONFIGURATION DESCRIPTION
 ANES 3.5-176 OAGT 140 A/B ORBITER

DE -40.000
 SPOBK 25.000
 BOFLAP -11.700
 RN/L 3.000

REFERENCE INFORMATION
 SREF 2690.0000 50.FT.
 LREF 1290.3000 IN.
 BREF 936.6800 IN.
 XMRP 1076.4800 IN.
 YMRP 0.0000 IN.
 ZMRP 375.0000 IN.
 SCALE .0150 SCALE



ANGLE OF ATTACK, ALPHA, DEGREES

FIG. 9 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=-11.7

(A)MACH = 7.32

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 1290.3000 IN.
 BREF 936.6800 IN.
 YMRP 1076.4800 IN.
 ZMRP 375.0000 IN.
 SCALE .0150

DE -40.000
 SPOBRK 55.000
 BDFLAP -11.700
 RN/L 3.000

DATA: SET SYMBOL CONFIGURATION DESCRIPTION
 (EEFO09) O AVES 3-5-176 0487 140 A/B ORBITER

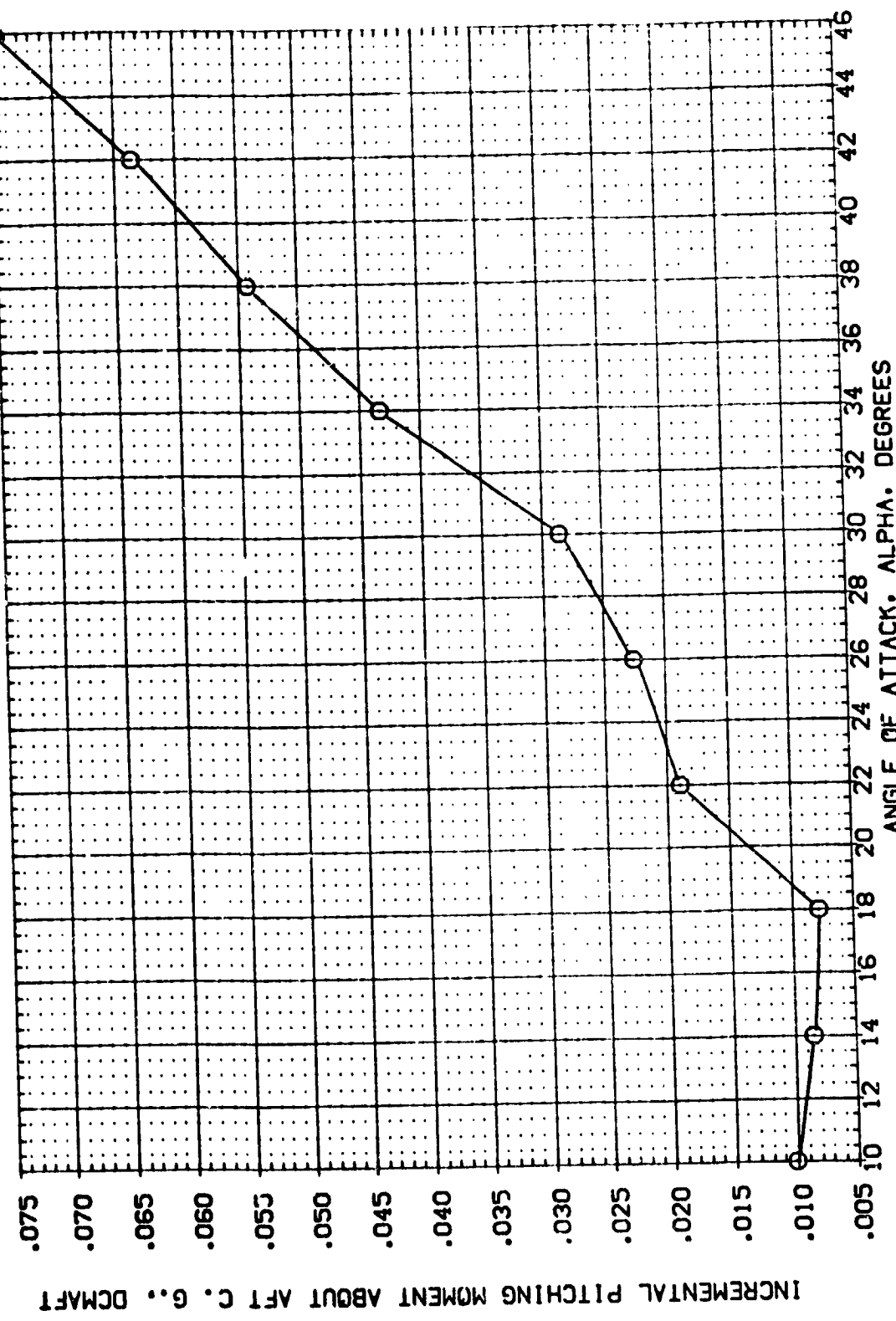


FIG. 9 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=-11.7

(AJMACH = 7.32

AMES 3.5-176 0A87 140 A/B ORBITER (FEF009)

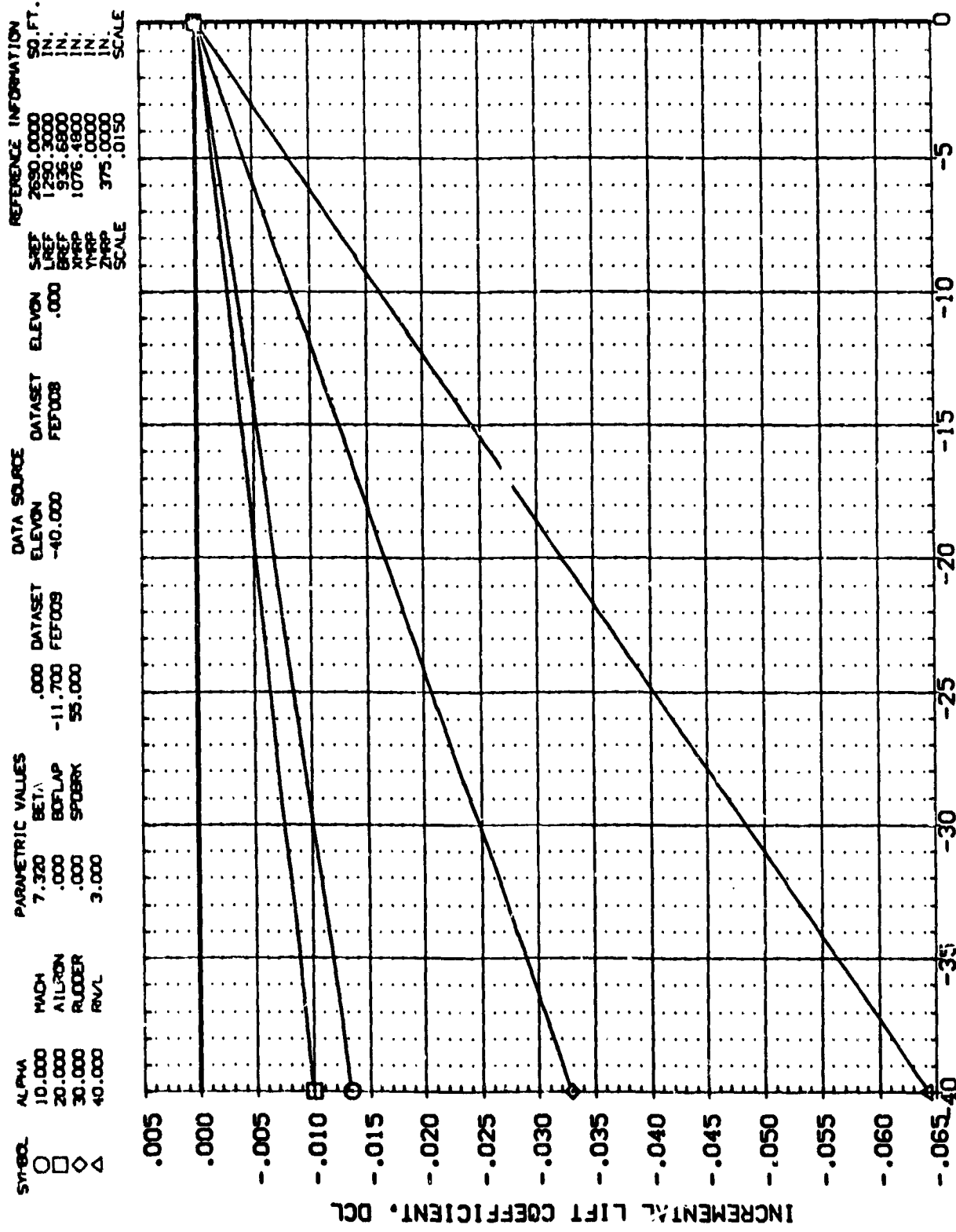


FIG. 9 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=-11.7

AMES 3.5-176 0A87 140 A/B ORBITER (FEF009)

SYMBOL	ALPHA	MACH	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
□	10.000	7.320	BETA	.000	SREF 2690.0000
◇	20.000	0.000	BDFLAP	-11.700	LREF 1290.3700
◇	30.000	.000	SPOBRK	55.000	BREF 936.6600
△	40.000	3.000	RN/L		XMRP 1076.4800
					YMRP .0000
					ZMRP .0000
					SCALE .0150

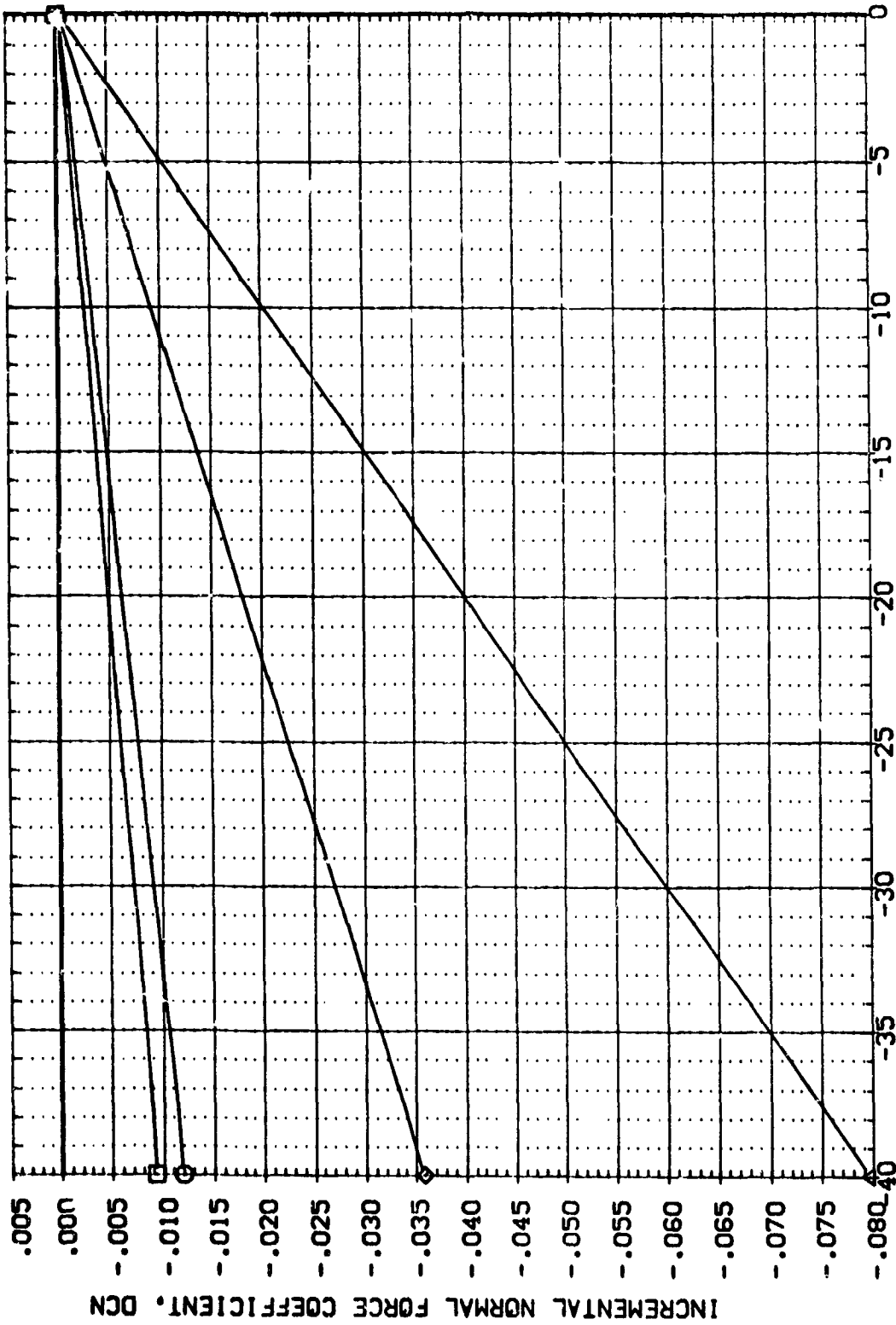


FIG. 9 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=-11.7

AMES 3.5-176 0A87 140 A/B ORBITER (FEF009)

SYMBOL	ALPHA	MACH	PARAMETRIC VALUES	DATA SOURCE	ELEVON	DATASET	ELEVON	SREF	REFERENCE INFORMATION
○	10.000		BETA 7.320	.000	.000	FEF009	.000	LREF	2690.0000 SO.FT.
□	20.000	AILRON	BDFLAP .000	-11.700	-40.000			BRF	1290.3000 IN.
◇	30.000	RUDER	SPOBRK .000	55.000				YMRP	936.6800 IN.
△	40.000	RN/L	3.000					ZMRP	1076.4800 IN.
								SCALE	375.0000 IN.
								SCALE	.0150

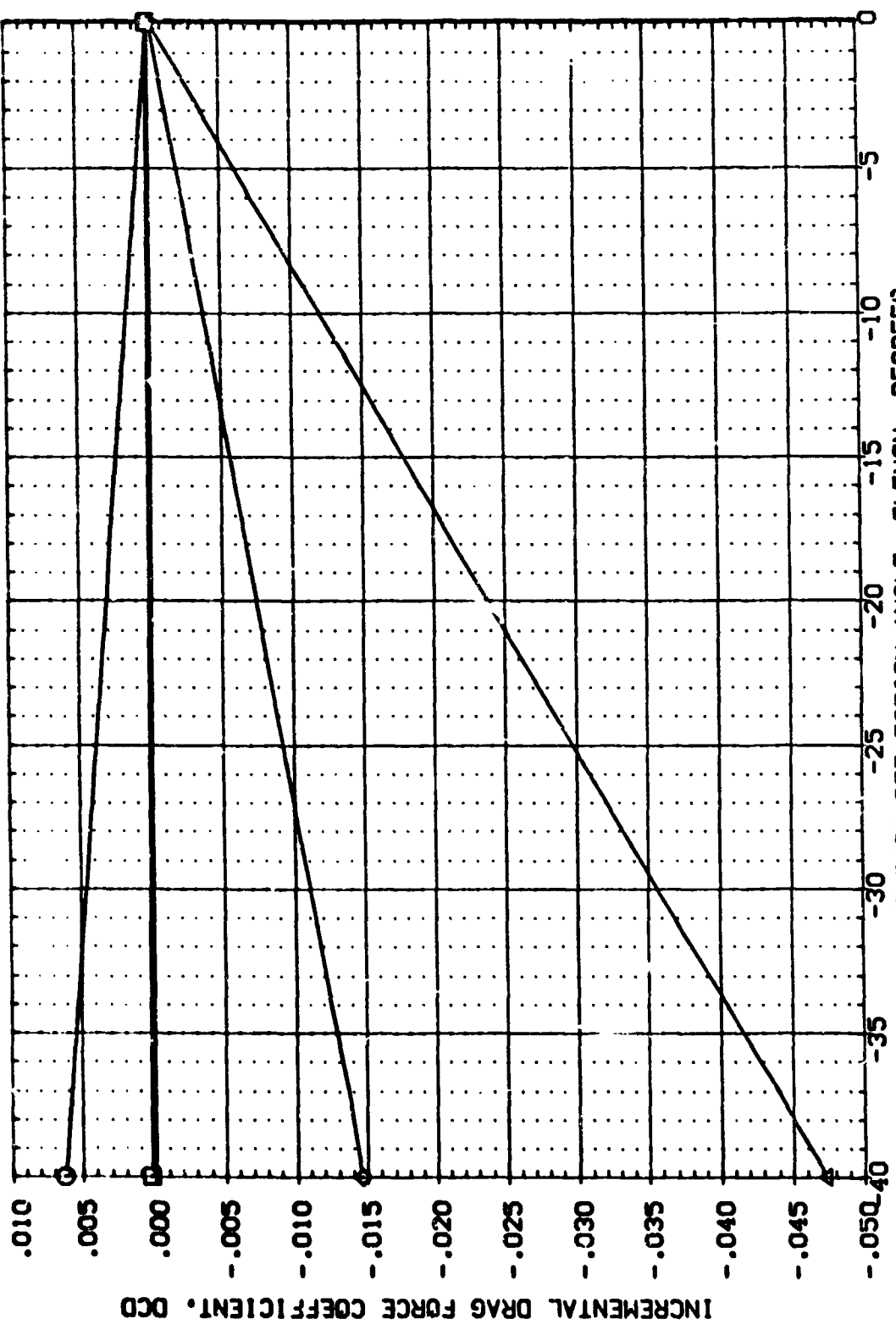


FIG. 9 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=-11.7

AMES 3.5-176 0A87 140 A/B ORBITER (FEF009)

SYMBOL	ALPHA	MACH	PARAMETRIC VALUES	DATA SOURCE	ELEVON	FEF008	FEF009	FEF009	FEF008	ELEVON	SREF	2690.0000	SC.FT.
○	10.000		BETA	.000	-40.000					.000	LREF	1290.3000	IN.
□	20.000	A1L/RON	BOFLAP	-11.700							BREF	936.6800	IN.
◇	30.000	R/UDDER	SPOERK	55.000							XTRP	1076.4800	IN.
△	40.000	R/VL									YTRP	.0000	IN.
											ZTRP	375.0000	IN.
											SCALE	.0150	SCALE

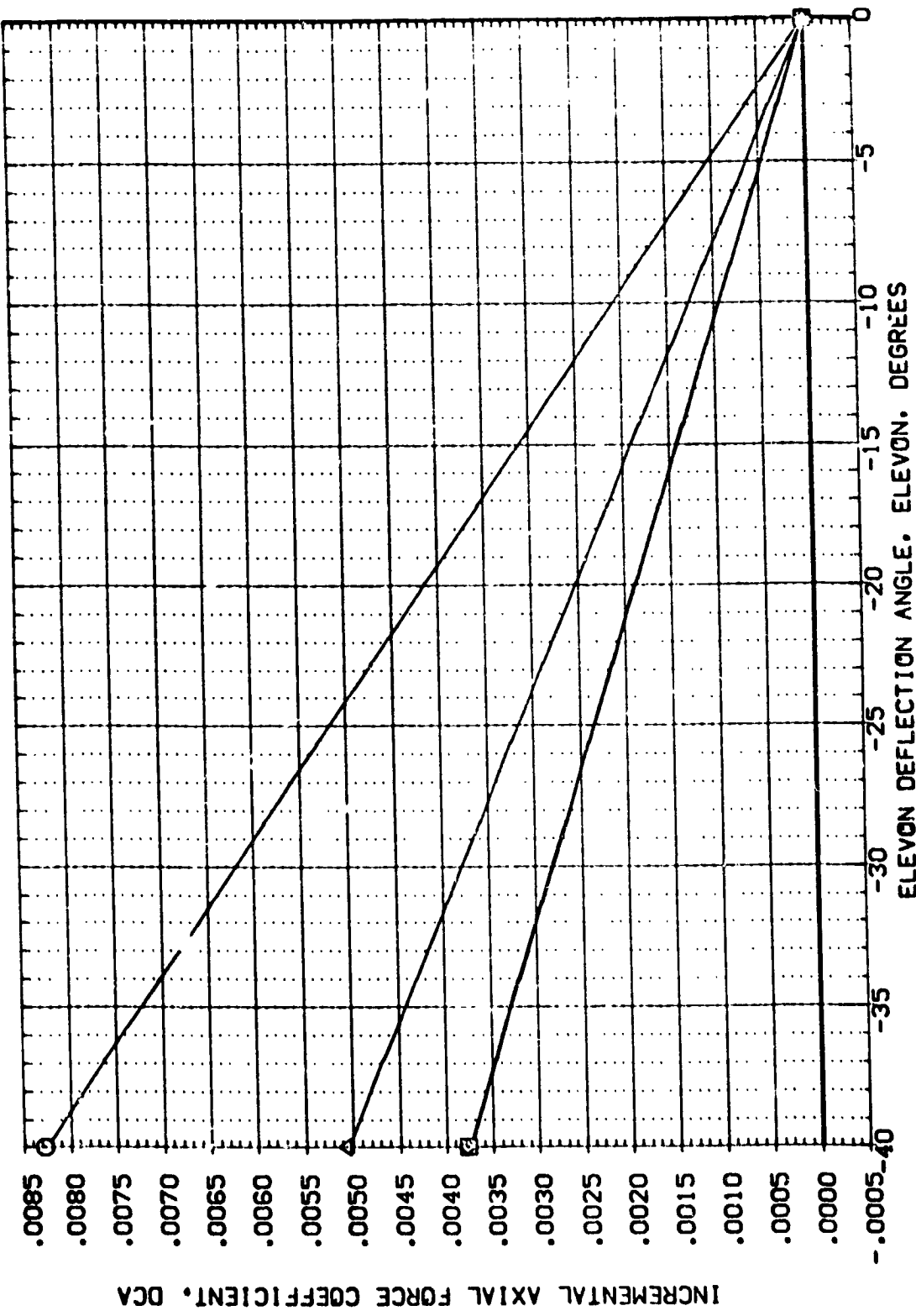


FIG. 9 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=-11.7

(FEF009)

AMES 3.5-176 0A87 140 A/B ORBITER

SYMBOL ALPHA MACH AIRLON RUDDER RN/L
 O 10.000
 □ 20.000
 ◇ 30.000
 △ 40.000

PARAMETRIC VALUES
 BETA 7.320
 BOFLAP .000
 SPOBRK .000
 55.000

DATA SOURCE
 ELEVON .000
 DATASET FEF009
 FEFC7

REFERENCE INFORMATION
 SREF 2690.0000
 LREF 1290.3000
 BREF 936.6900
 XREF 1076.4900
 YREF .0000
 ZREF 375.0000
 SCALE .0150

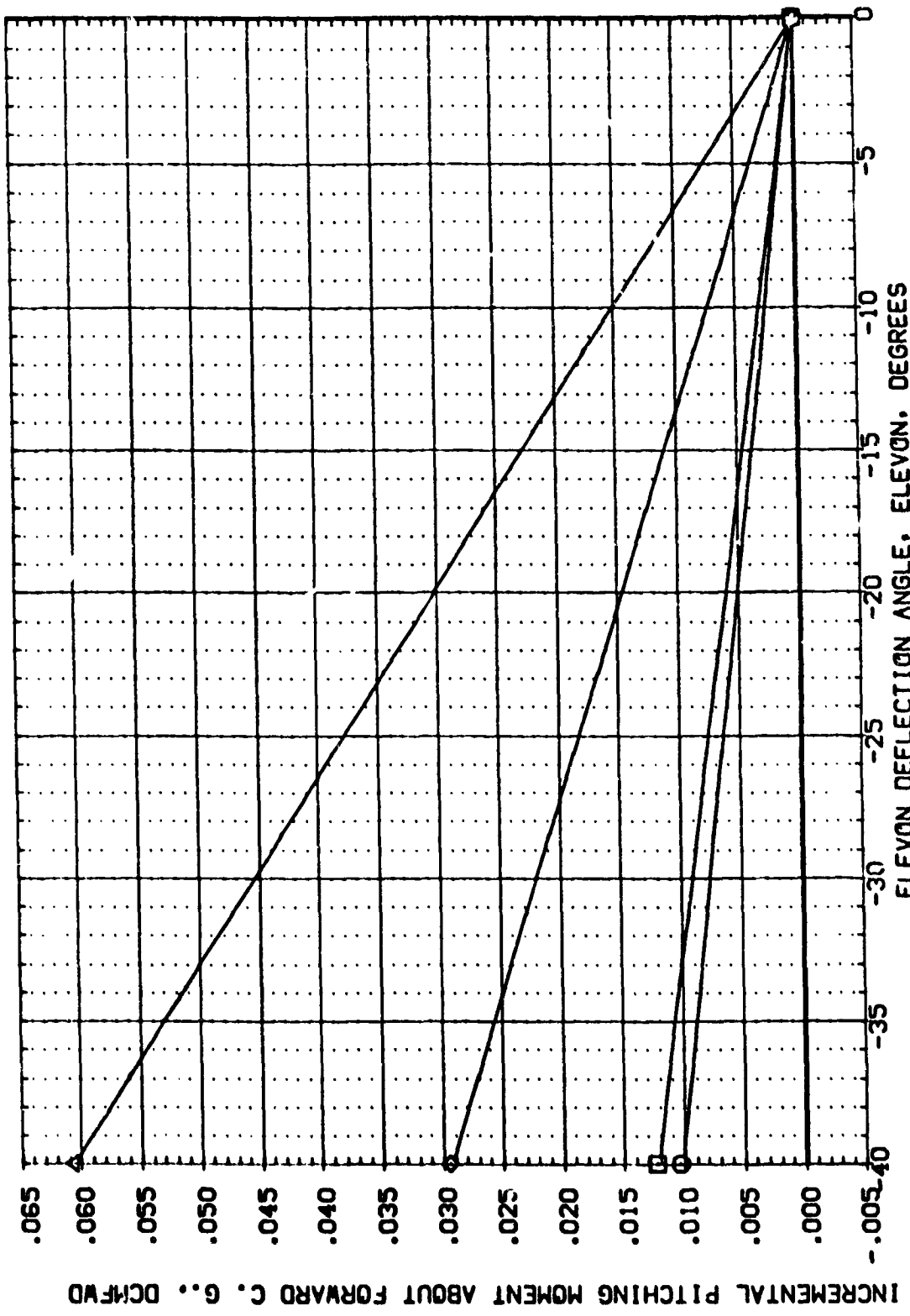


FIG. 9 ELEVON EFFECTIVENESS, RN/L=3.0, BOFLAP=-11.7

AMES 3.5-176 0A87 140 A/B ORBITER (FEF009)

SYMBOL		PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION				
○	ALPHA	MACH	BETA	.000	DATASET	ELEVON	SREF	2690.0000	SO. FT.				
□	AILERON	BDFLAP	SPDRK	-11.700	FEF009	-40.000	LRFP	1290.3000	IN.				
◇	RUDDER	RVL		55.000			BRFP	936.6800	IN.				
							YRFP	1076.4800	IN.				
							ZRFP	375.0000	IN.				
							SCALE	.0150	SCALE				

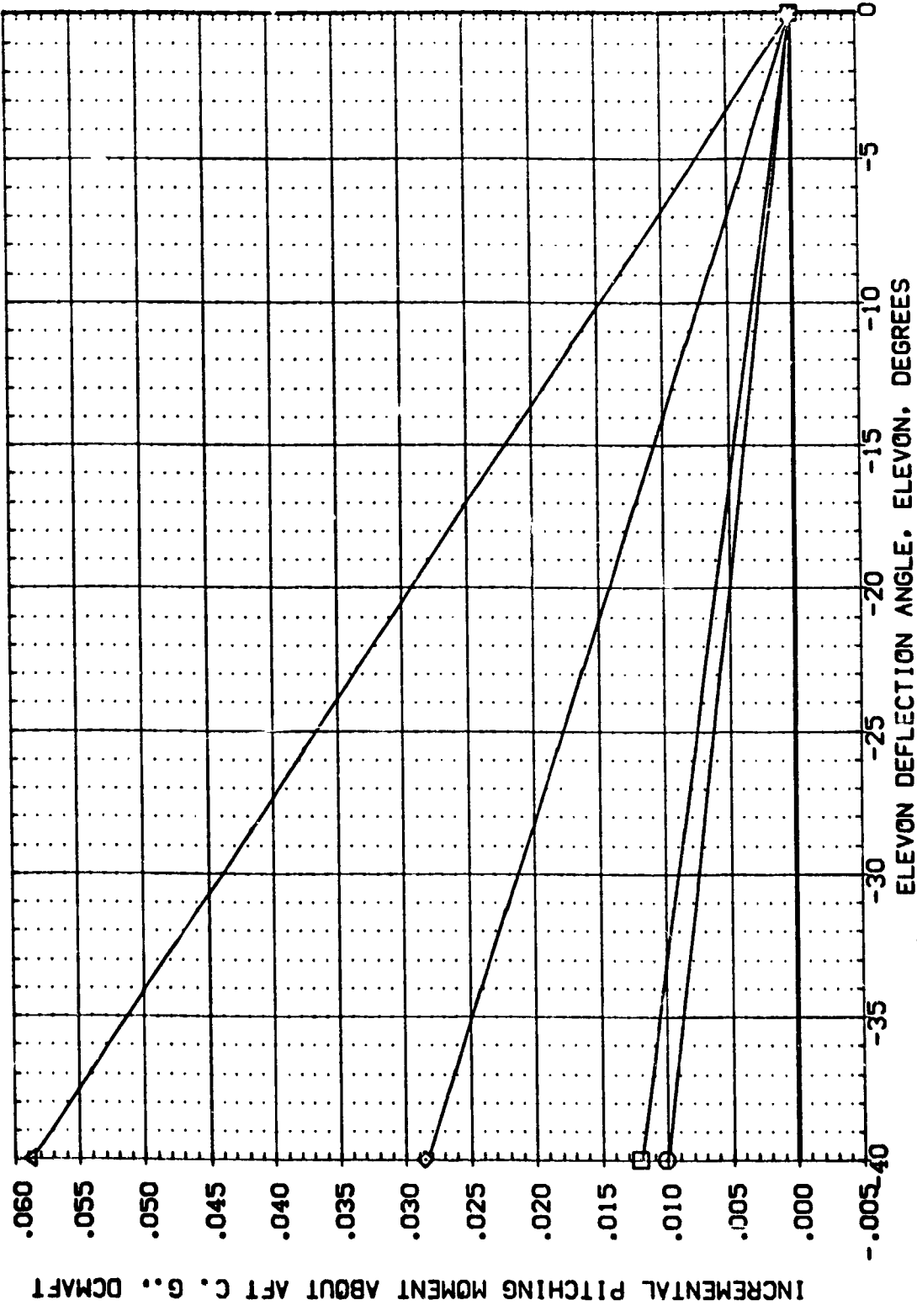


FIG. 9 ELEVON EFFECTIVENESS, RN/L=3.0, BDFLAP=-11.7

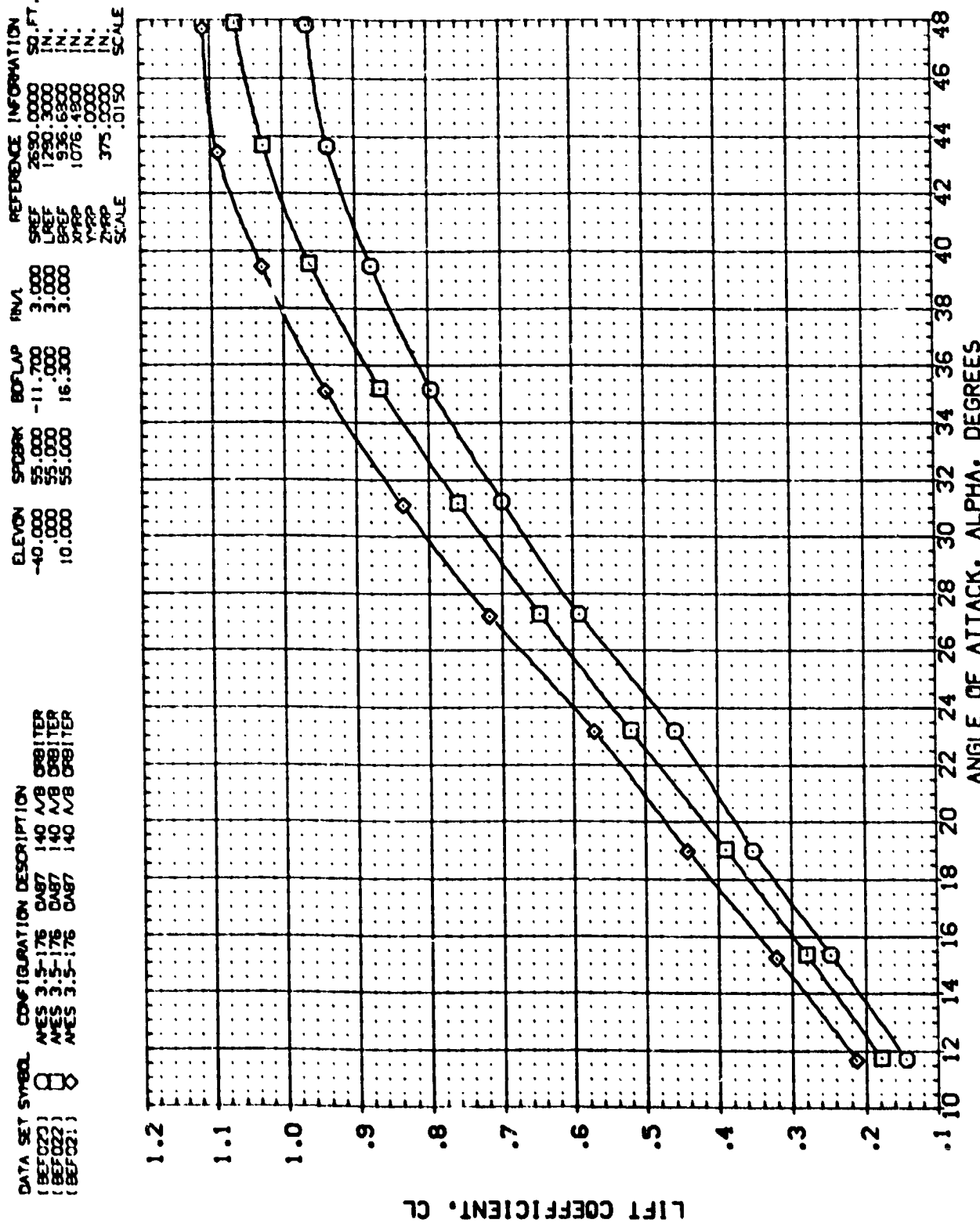


FIG. 10 EFFECT OF ELEVON AND BODYFLAP DEFLECTIONS, RN/L=3.0

(A)MACH = 5.26

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPORON	BODYFLAP	RN/L	REFERENCE INFORMATION
(BEFOZ0)	AVES 3.5-176 CAB7 140 A/B ORBITER	-40.000	55.000	-11.700	3.000	SREF 2650.0000 SO.FT.
(BEFOZ1)	AVES 3.5-176 CAB7 140 A/B ORBITER	10.000	55.000	16.300	3.000	LREF 1250.3000 IN.
	AVES 3.5-176 CAB7 140 A/B ORBITER					BREF 936.6800 IN.
						XMRP 1076.4800 IN.
						YMRP 0.0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150 SCALE

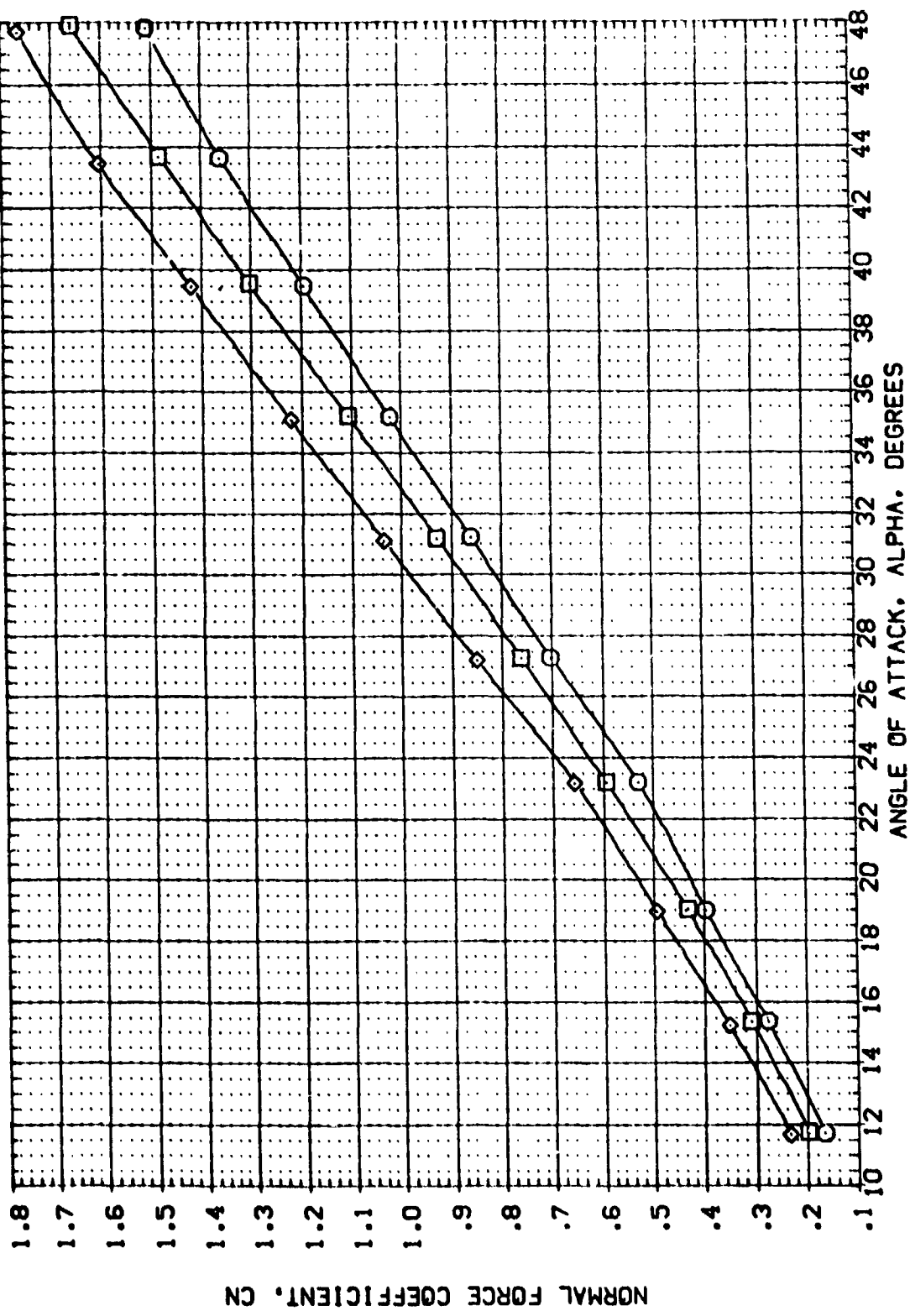


FIG. 10 EFFECT OF ELEVON AND BODYFLAP DEFLECTIONS, RN/L=3.0

(A)MACH = 5.26

DATA SET SYMBL	CONFIGURATION DESCRIPTION	ELEVON	SPDRBK	BDYFLAP	RN/L	REFERENCE INFORMATION
(BEF020)	AVES 3.5-176 DAG7 140 A/B ORBITER	-40.000	55.000	-11.700	3.000	SREF 2690.0000 SQ.FT.
(BEF022)	AVES 3.5-176 DAG7 140 A/B ORBITER	.000	55.000	16.300	3.000	LREF 1290.3000 IN.
(BEF021)	AVES 3.5-176 DAG7 140 A/B ORBITER	10.000	55.000	16.300	3.000	BREF 936.6800 IN.
						YREF 1076.4800 IN.
						ZREF .0000 IN.
						SCAL 375.0000 IN.
						SCALE .0150

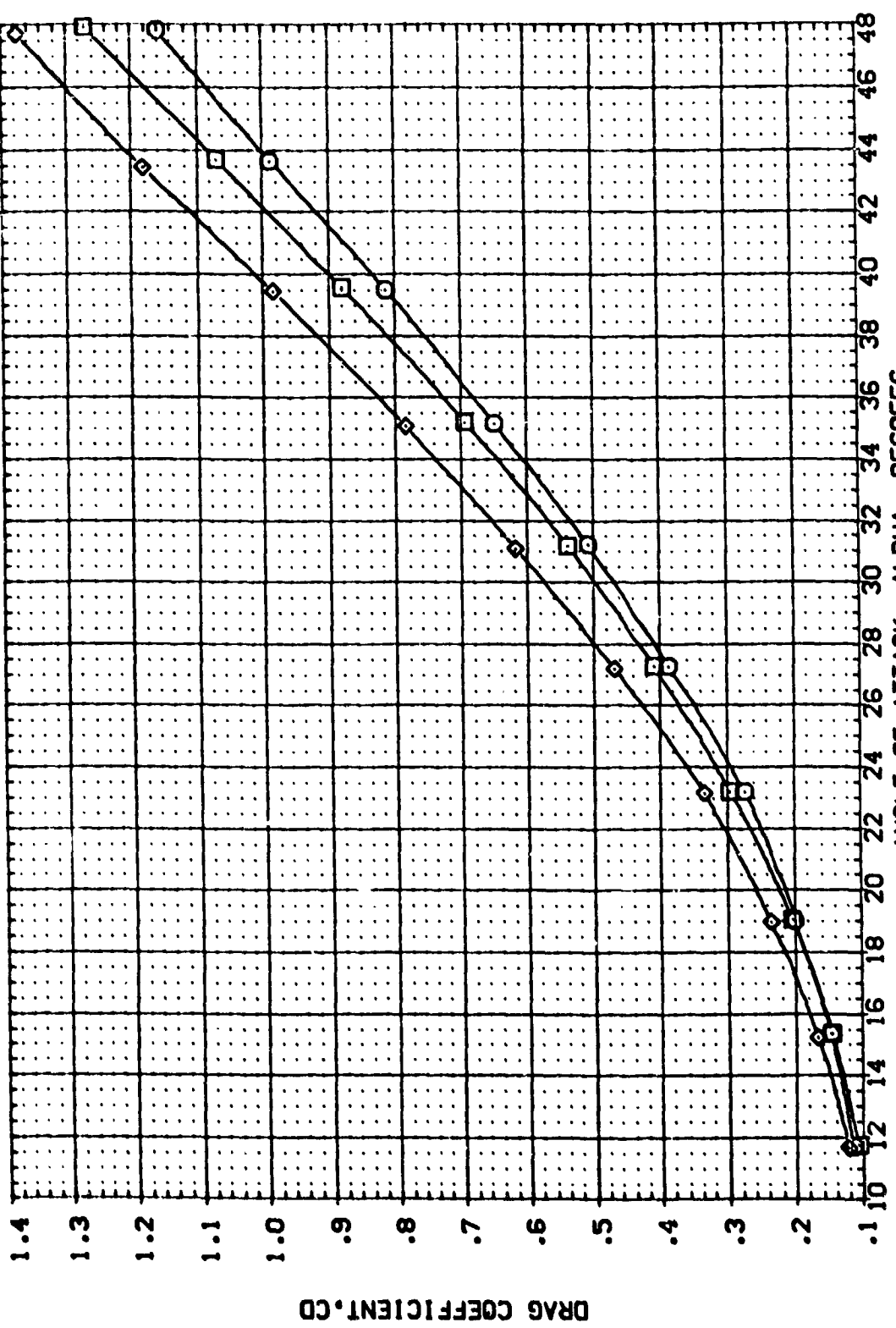


FIG. 10 EFFECT OF ELEVON AND BODYFLAP DEFLECTIONS, RN/L=3.0

(A)MACH = 5.26

DATA SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEF021)	AVES 3.5-176 DAG7 140 A/B ORBITER	-40.000	55.000	-11.700	3.000	SREF 2680.0000 SO.FT.
(BEF022)	AVES 3.5-176 CA87 140 A/B ORBITER	10.000	55.000	16.300	3.000	LREF 1250.3000 IN.
(BEF021)	AVES 3.5-176 CA87 140 A/B ORBITER					BREF 936.6200 IN.
						XMREF 1076.4800 IN.
						YMREF .0000 IN.
						ZMREF .0000 IN.
						SCALE .0150 SCALE

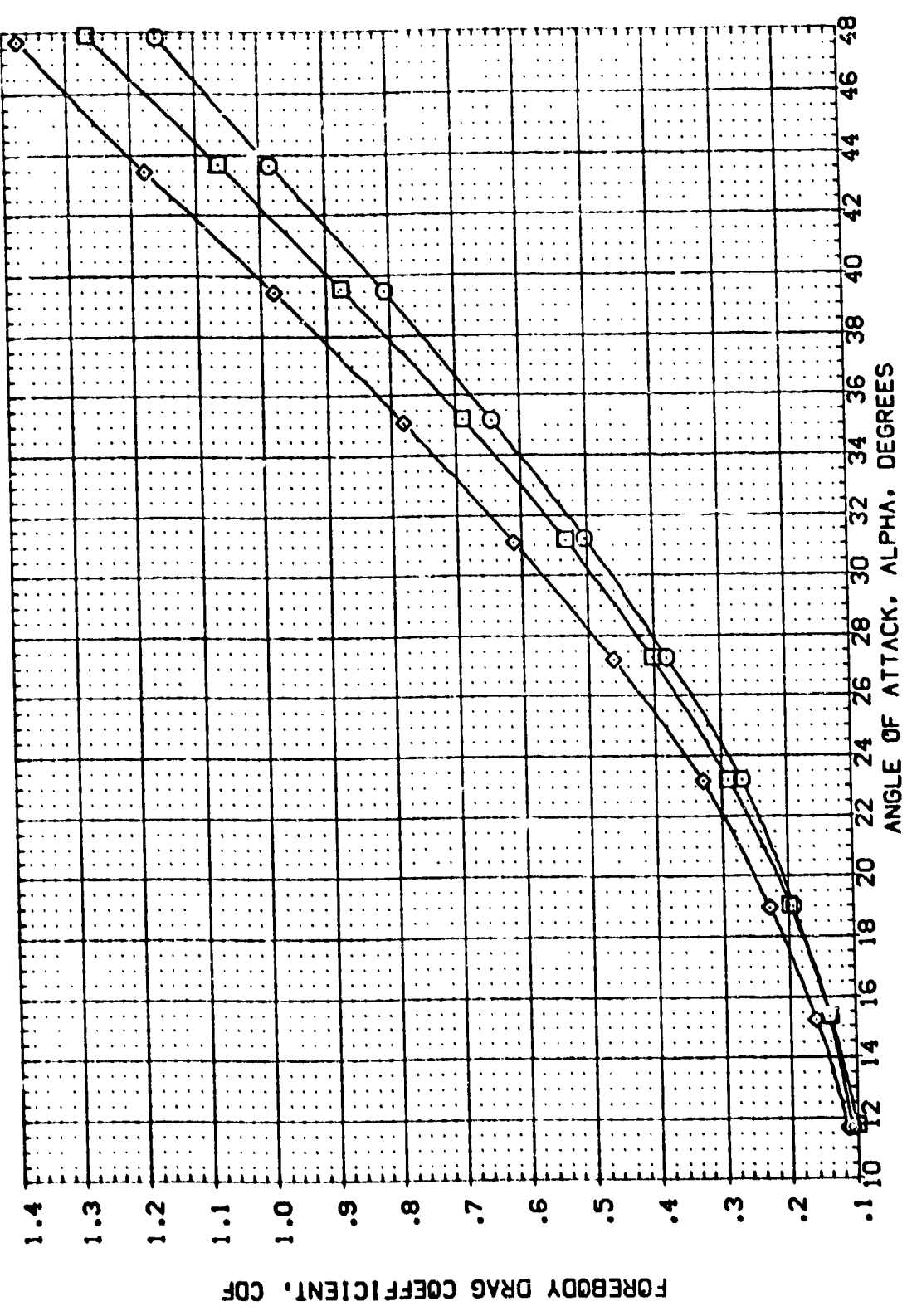


FIG. 10 EFFECT OF ELEVON AND BODYFLAP DEFLECTIONS, RN/L=3.0

(A)MACH = 5.26

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEFOZ1)	AMES 3.5-176 DAB7 140 A/B ORBITER	-40.000	55.000	-11.700	3.000	SREF 2650.0000 SQ.FT.
(BEFOZ2)	AMES 3.5-176 DAB7 140 A/B ORBITER	0.000	55.000	0.000	3.000	LREF 1250.3000 IN.
(BEFOZ1)	AMES 3.5-176 DAB7 140 A/B ORBITER	10.000	55.000	16.300	3.000	BREF 976.6800 IN.
						YREF 1076.4800 IN.
						ZREF 375.0000 IN.
						SCALE .0150

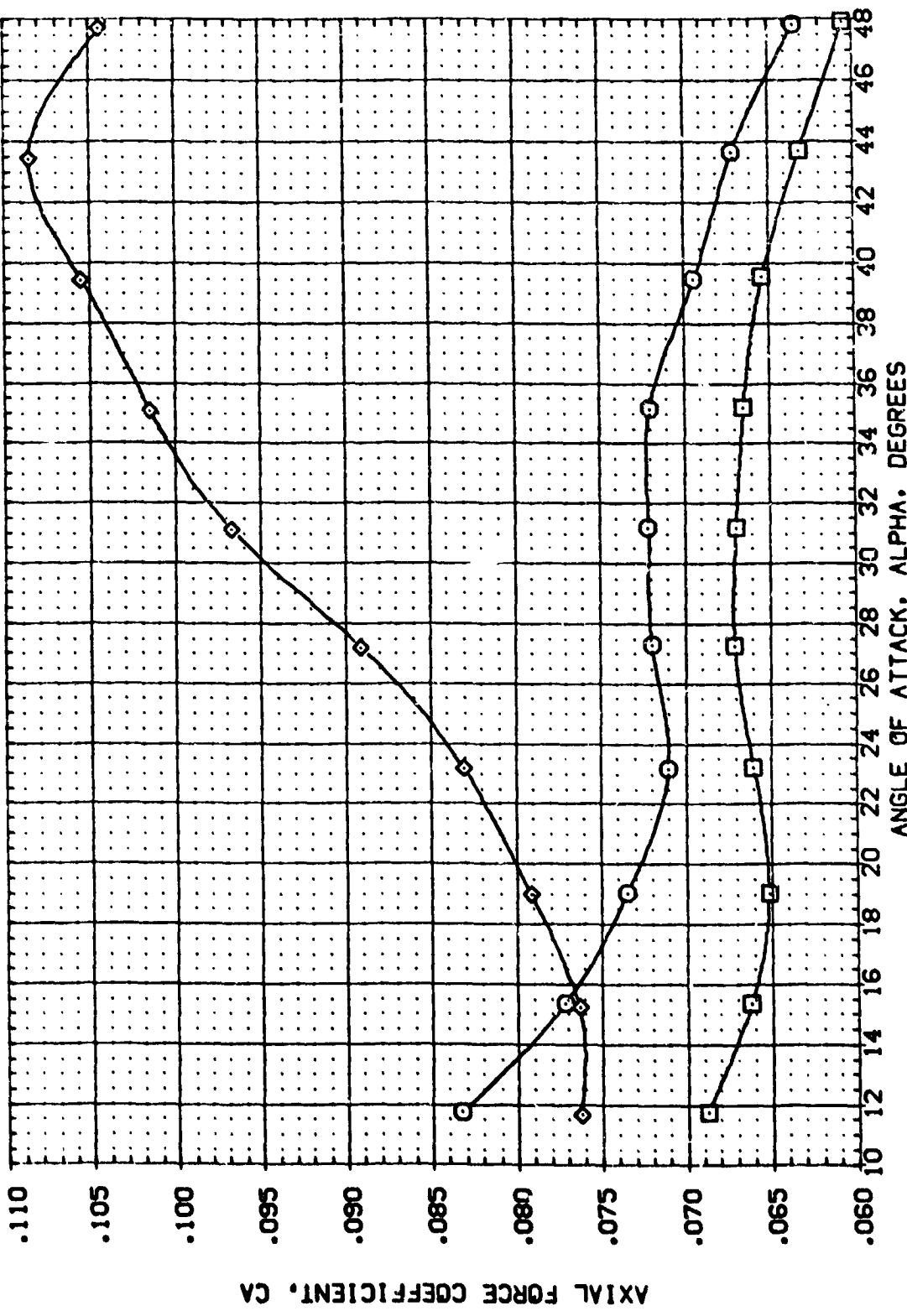


FIG. 10 EFFECT OF ELEVON AND BODYFLAP DEFLECTIONS, RN/L=3.0

(A)MACH = 5.26

DATA SET SYMBOL CONFIGURATION DESCRIPTION REFERENCE INFORMATION

(BEFD20)	AVES 3.5-176 CAB7 140 A/B DRB1TER	SREF 2690.0000	SG.FT.
(BEFD22)	AVES 3.5-176 CAB7 140 A/B DRB1TER	LREF 1290.3000	IN.
(BEFD21)	AVES 3.5-176 CAB7 140 A/B DRB1TER	SREF 936.6800	IN.
		XPRP 1076.4800	IN.
		YPRP .0000	IN.
		ZPRP 375.0000	IN.
		SCALE .0150	SCALE

ELEVON SPOBRK BODYFLAP RN/L

-40.000	55.000	-11.700	3.000
10.000	55.000	16.300	3.000

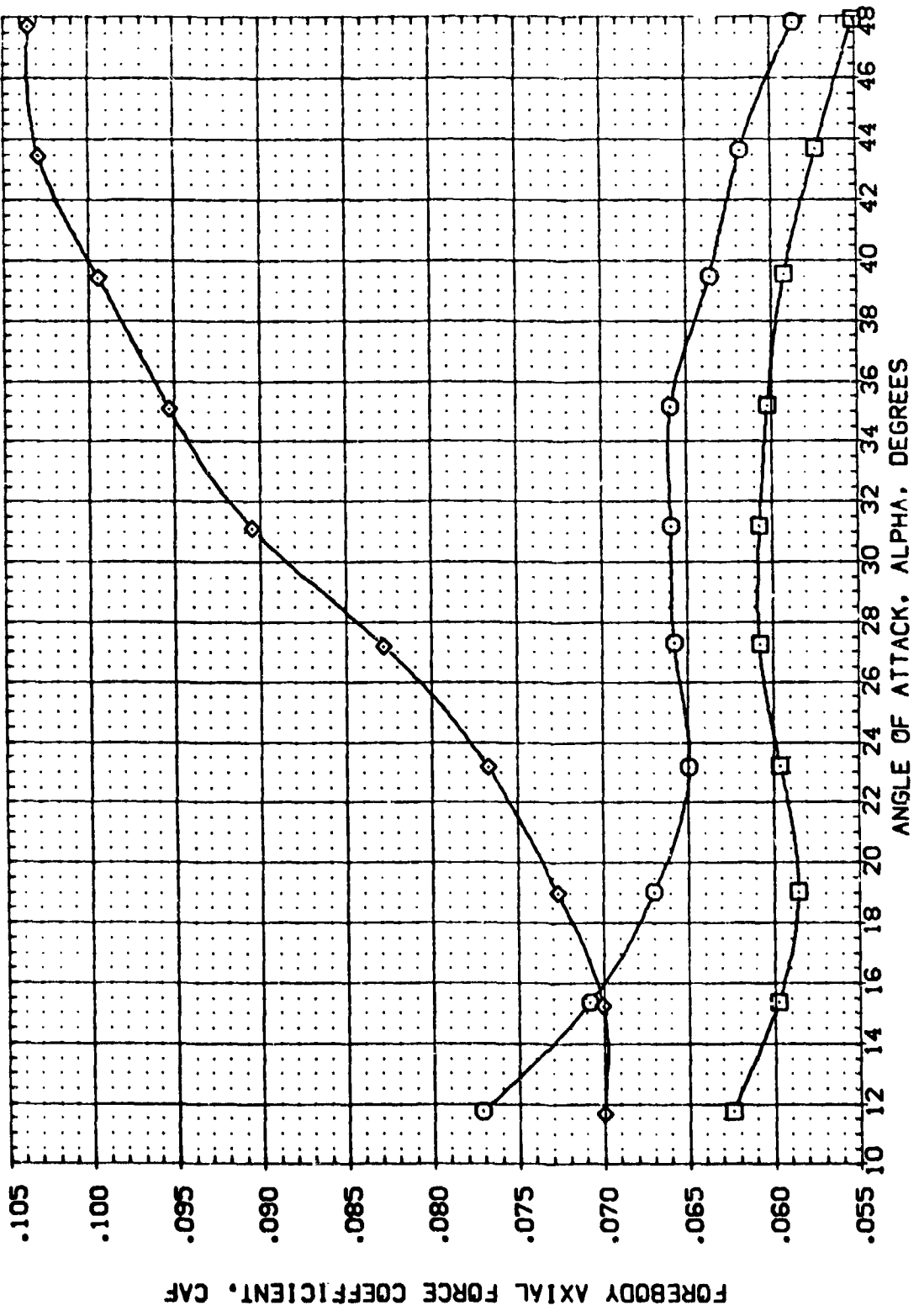


FIG. 10 EFFECT OF ELEVON AND BODYFLAP DEFLECTIONS, RN/L=3.0

(A)MACH = 5.26

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BDFLAP	RNVL	REFERENCE INFORMATION
(BEF020)	AVES 3.5-176 CAB7 140 A/B ORBITER	-40.000	55.000	-11.700	3.000	SREF 2690.0000 SO.FT.
(BEF022)	AVES 3.5-176 CAB7 140 A/B ORBITER	10.000	55.000	16.300	3.000	LREF 1290.3000 IN.
(BEF021)	AVES 3.5-176 CAB7 140 A/B ORBITER		55.000		3.000	BREF 936.6800 IN.
						YMRP 1076.4800 IN.
						ZMRP 375.0000 IN.
						SCALE .0150

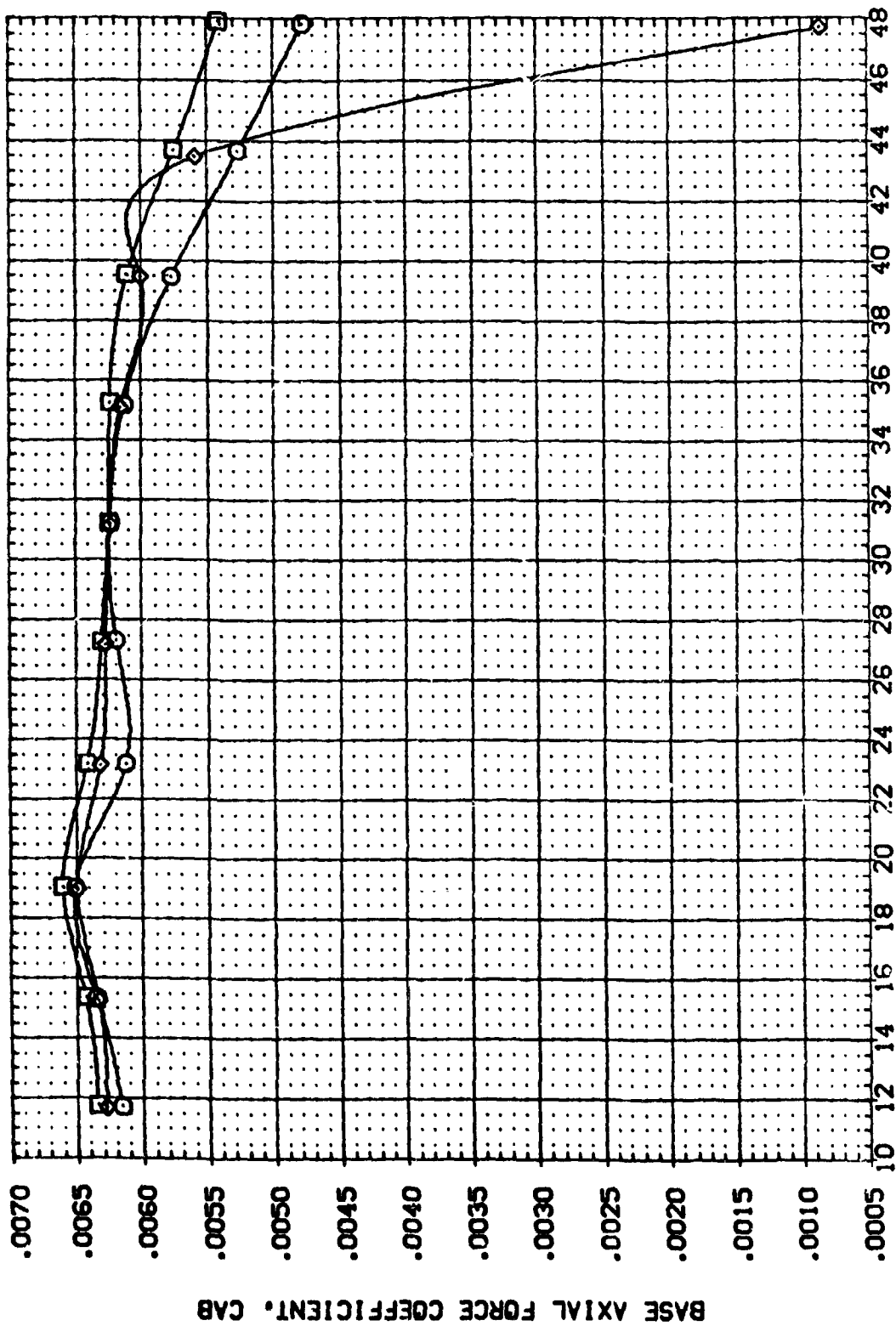


FIG. 10 EFFECT OF ELEVON AND BODYFLAP DEFLECTIONS, RNVL=3.0

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEF020)	AVES 3.5-176 CAB7 140 A/B CRBITER	-40.000	55.000	-11.700	3.000	SREF 2690.0000 SQ.FT.
(BEF022)	AVES 3.5-176 CAB7 140 A/B CRBITER	.000	55.000	.000	3.000	LREF 1290.3000 IN.
(BEF021)	AVES 3.5-176 CAB7 140 A/B CRBITER	10.000	55.000	16.300	3.000	BREF 936.6800 IN.
						XMRP 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150

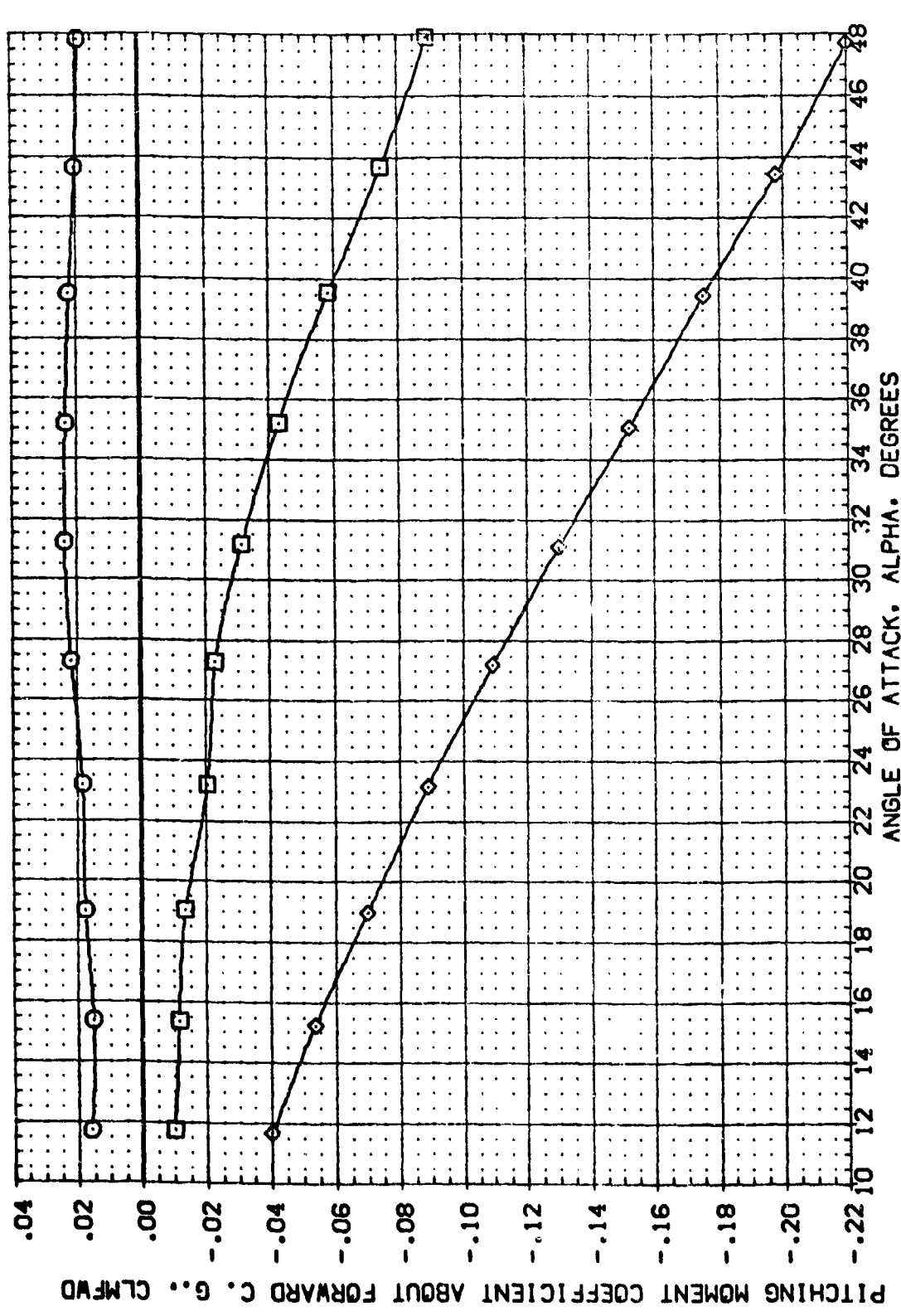


FIG. 10 EFFECT OF ELEVON AND BODYFLAP DEFLECTIONS, RN/L=3.0

(A)MACH = 5.26

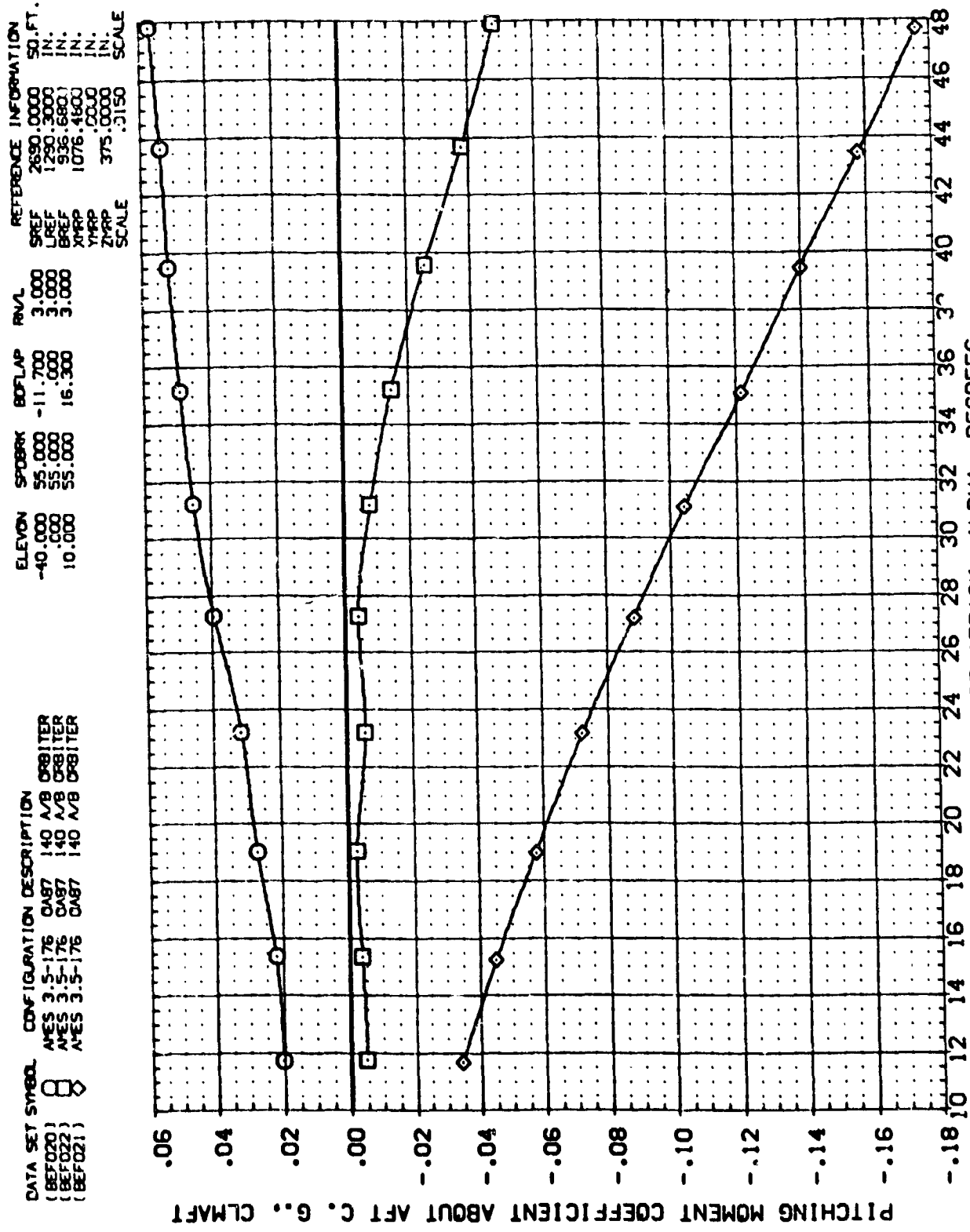


FIG. 10 EFFECT OF ELEVON AND BODYFLAP DEFLECTIONS, RN/L=3.0

(M)MACH = 5.26

DATA SET SYMBOL: (BEF020) (BEF022) (BEF021)

CONFIGURATION DESCRIPTION: AMES 3.5-176 OAB7 140 A/B ORBITER AMES 3.5-176 OAB7 140 A/B ORBITER AMES 3.5-176 OAB7 140 A/B ORBITER

ELEVON: -40.000 55.000 55.000 55.000
 SPOBRK: 55.000 55.000 55.000 55.000
 BOFLAP: -11.700 .000 16.300 16.300
 RN/L: 3.000 3.000 3.000 3.000

REFERENCE INFORMATION: SREF 2590.0000 SO.FT. LREF 1290.3000 IN. BREF 936.6800 IN. XMRP 1076.4800 IN. YMRP .0000 IN. ZMRP 375.0000 IN. SCALE .0150

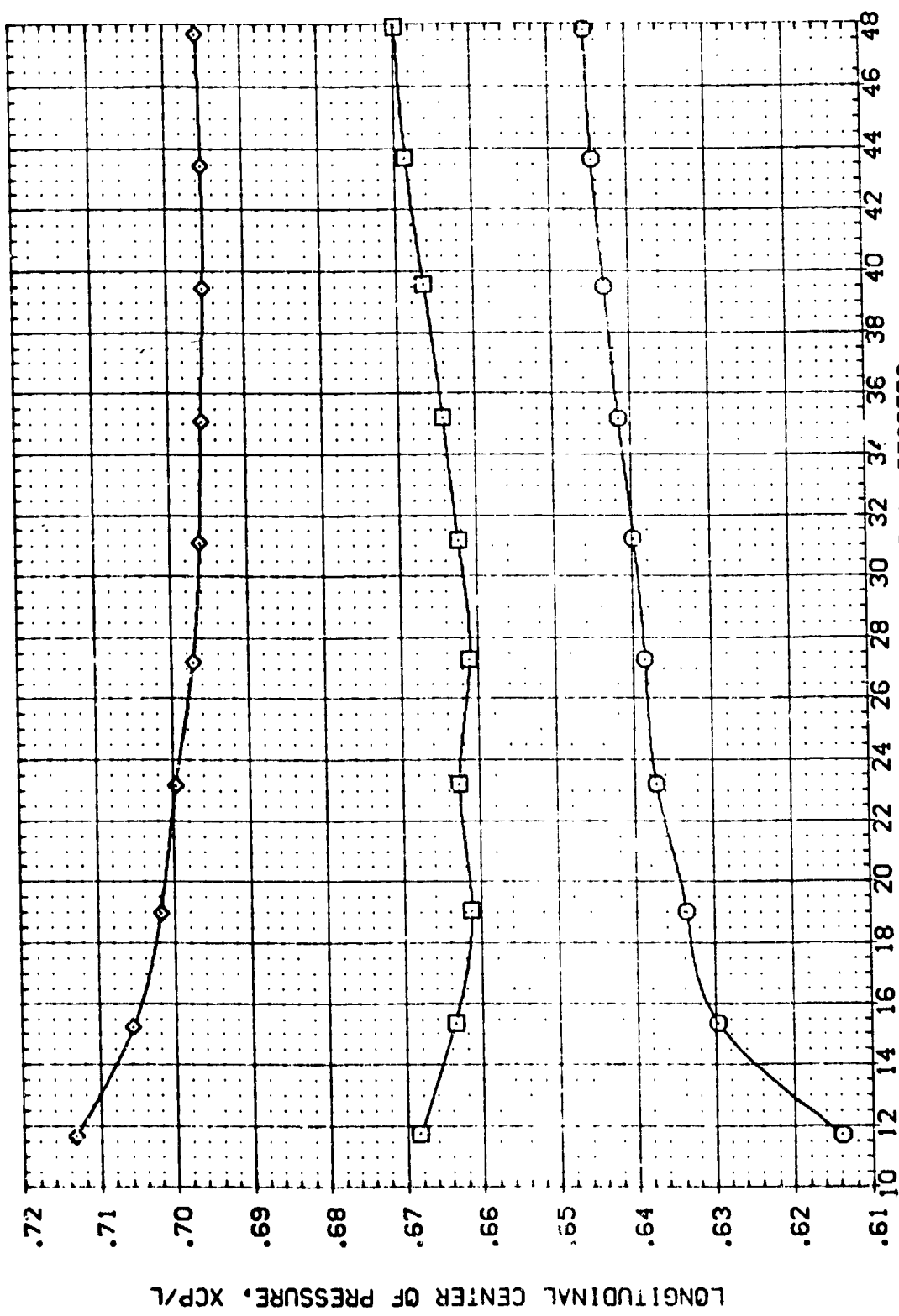


FIG. 10 EFFECT OF ELEVON AND BODYFLAP DEFLECTIONS, RN/L=3.0

(A)MACH = 5.26

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEF020)	A-ES 3.5-176 CAB7 140 A/B CRBITER	-40.000	55.000	-11.700	3.000	SREF 2690.0000 SQ.FT.
(BEF022)	A-ES 3.5-176 CAB7 140 A/B CRBITER	10.000	55.000	.000	3.000	LREF 1290.3000 IN.
(BEF021)	A-ES 3.5-176 CAB7 140 A/B CRBITER	10.000	55.000	16.300	3.000	BREF 936.6800 IN.
						XREF 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP .0150 IN.
						SCALE

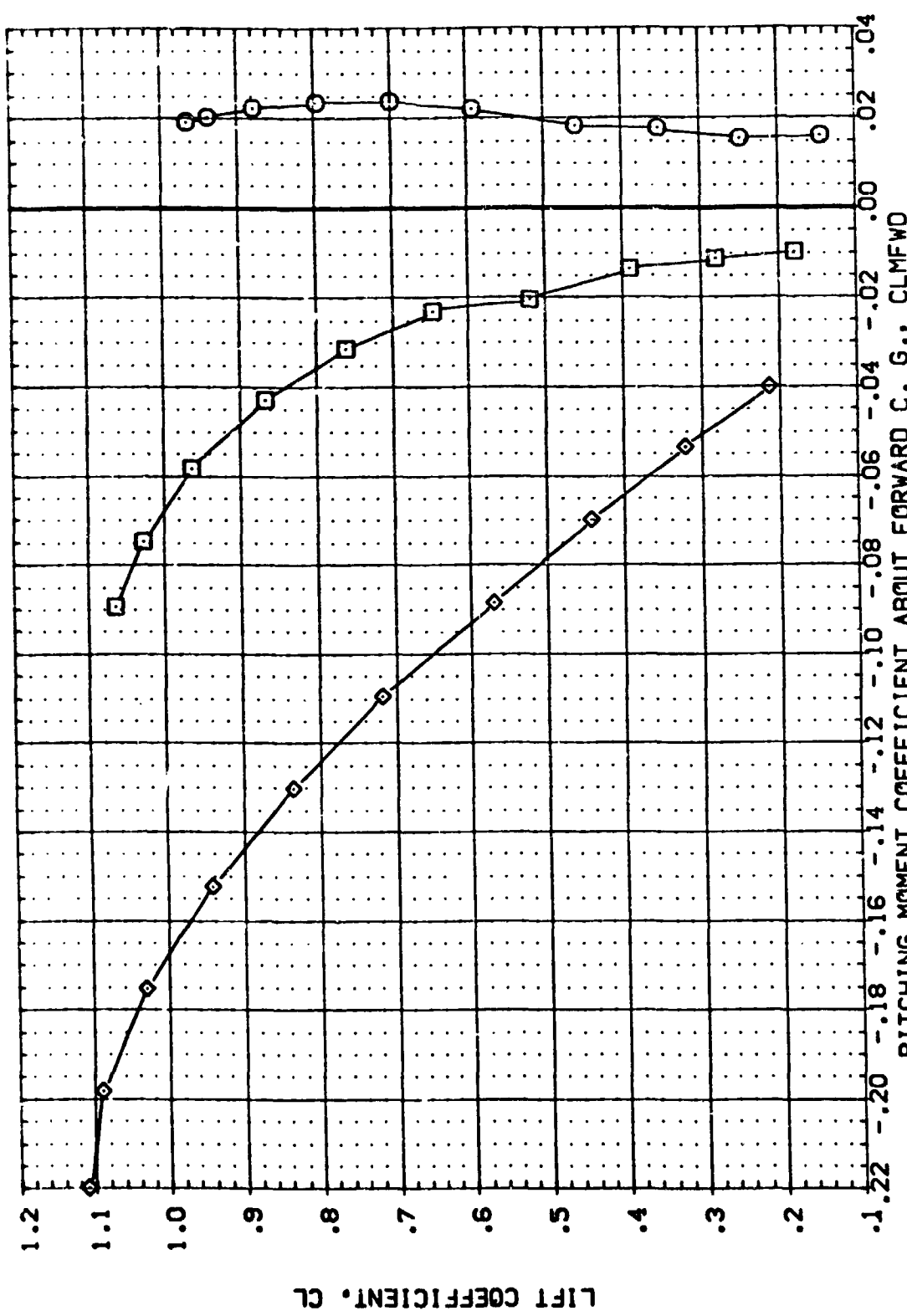
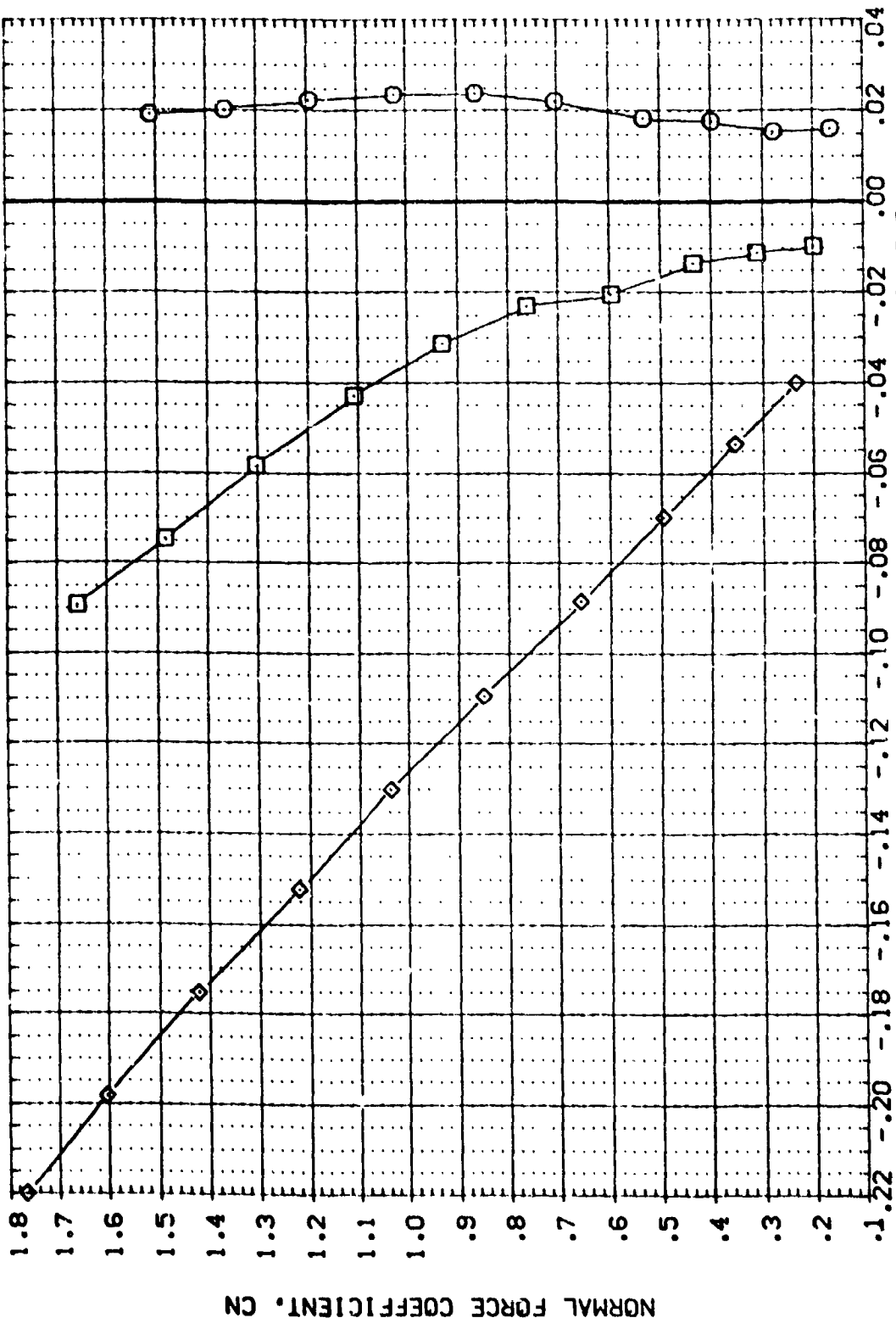


FIG. 10 EFFECT OF ELEVON AND BODYFLAP DEFLECTIONS, RN/L=3.0

(AJMACH = 5.26

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEFC20)	AMES 3.5-176 OAB7 140 A/B ORBITER	-40.000	55.000	-11.700	3.000	SREF 2690.0000 SQ.FT.
(BEFC22)	AMES 3.5-176 OAB7 140 A/B ORBITER	.000	55.000	.000	3.000	LREF 1290.3000 IN.
(BEFC21)	AMES 3.5-176 OAB7 140 A/B ORBITER	10.000	55.000	16.300	3.000	BREF 936.6800 IN.
						YMRP 1076.4600 IN.
						ZMRP .0000 IN.
						SCALE 375.0000 IN.
						SCALE .0150



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FIG. 10 EFFECT OF ELEVON AND BODYFLAP DEFLECTIONS, RN/L=3.0

(AJMACH = 5.26

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEFD21)	AMES 3.5-176 CAB7 140 A/B CRBITER	-40.000	55.000	-11.700	3.000	SREF 2690.0000 SO.FT.
(BEFD22)	AMES 3.5-176 CAB7 140 A/B CRBITER	10.000	55.000	16.300	3.000	LREF 1290.3000 IN.
(BEFD21)	AMES 3.5-176 CAB7 140 A/B CRBITER		55.000		3.000	BREF 925.6800 IN.
						XPRP 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150 SCALE

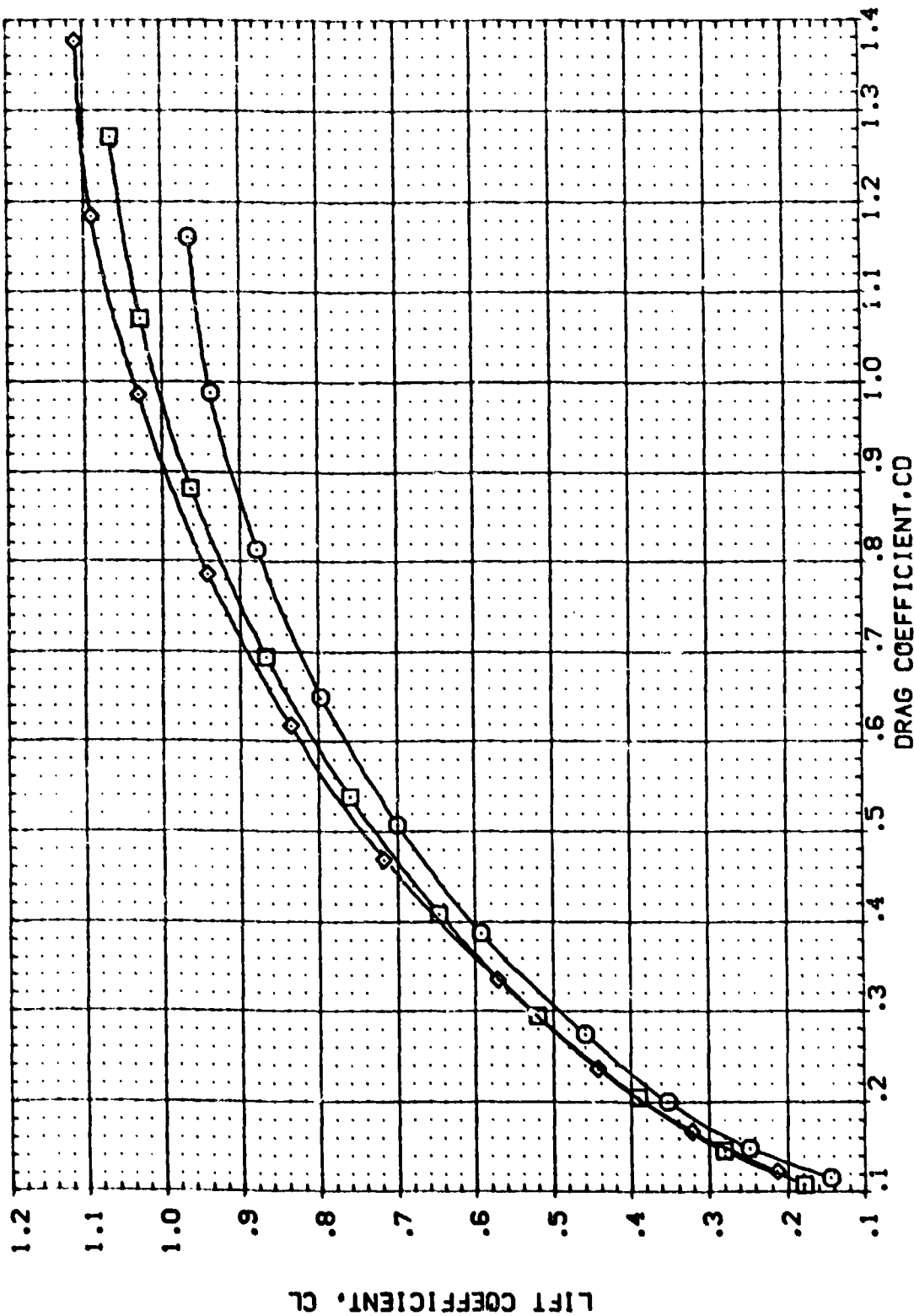


FIG. 10 EFFECT OF ELEVON AND BODYFLAP DEFLECTIONS, RN/L=3.0

(A)MACH = 5.26

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPCRK	BDFLAP	RN/L	REFERENCE INFORMATION
(AFC02)	AMES 3-5-176 DAB7 140 A/B DRBITER	-10.000	55.000	-11.700	3.000	2650.0000 SO.FT.
(AFC02)	AMES 3-5-176 DAB7 140 A/B DRBITER	0.000	55.000	0.000	3.000	1250.3070 IN.
(AFC02)	AMES 3-5-176 DAB7 140 A/B DRBITER	10.000	55.000	16.300	3.000	536.6800 IN.
						1076.4800 IN.
						375.0000 IN.
						375.0000 IN.
						SCALE .0150 SCALE

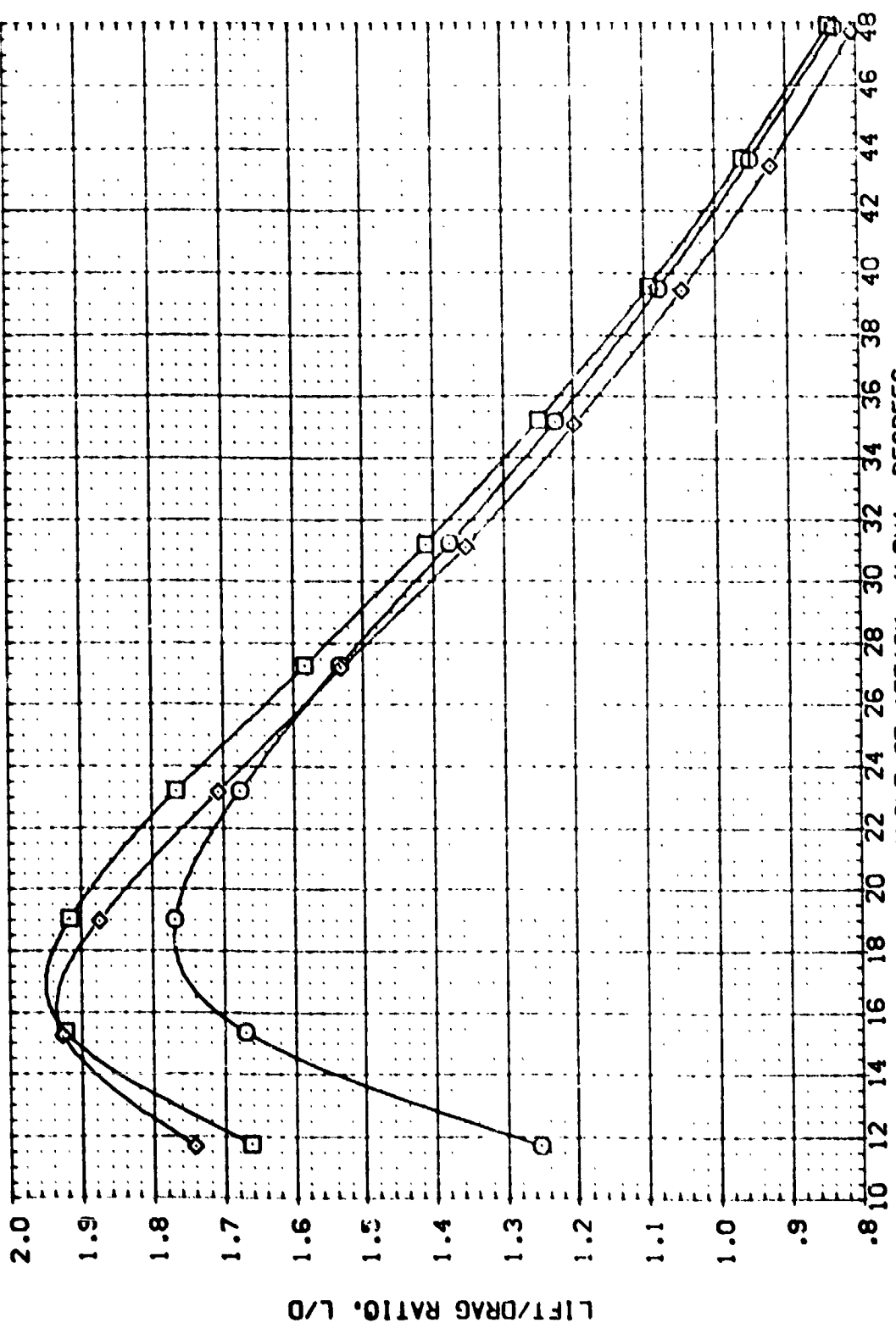


FIG. 10 EFFECT OF ELEVON AND BODYFLAP DEFLECTIONS, RN/L=3.0

(A)MACH = 5.26

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPDRBK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEF029)	□	AVES 3.5-176 CAB7 140 A/B CRBITER	-40.000	55.000	-11.700	3.000	SREF 2690.0000 SQ.FT.
(BEF027)	◇	AVES 3.5-176 CAB7 140 A/B CRBITER	-40.000	55.000	16.300	3.000	LREF 1290.3000 IN.
(BEF026)	○	AVES 3.5-176 CAB7 140 A/B CRBITER	10.000	55.000	16.300	3.000	BREF 936.6800 IN.
(BEF028)	△	AVES 3.5-176 CAB7 140 A/B CRBITER	10.000	55.000	16.300	3.000	YMP 1076.4800 IN.
							ZMP 375.0000 IN.
							SCALE .015C

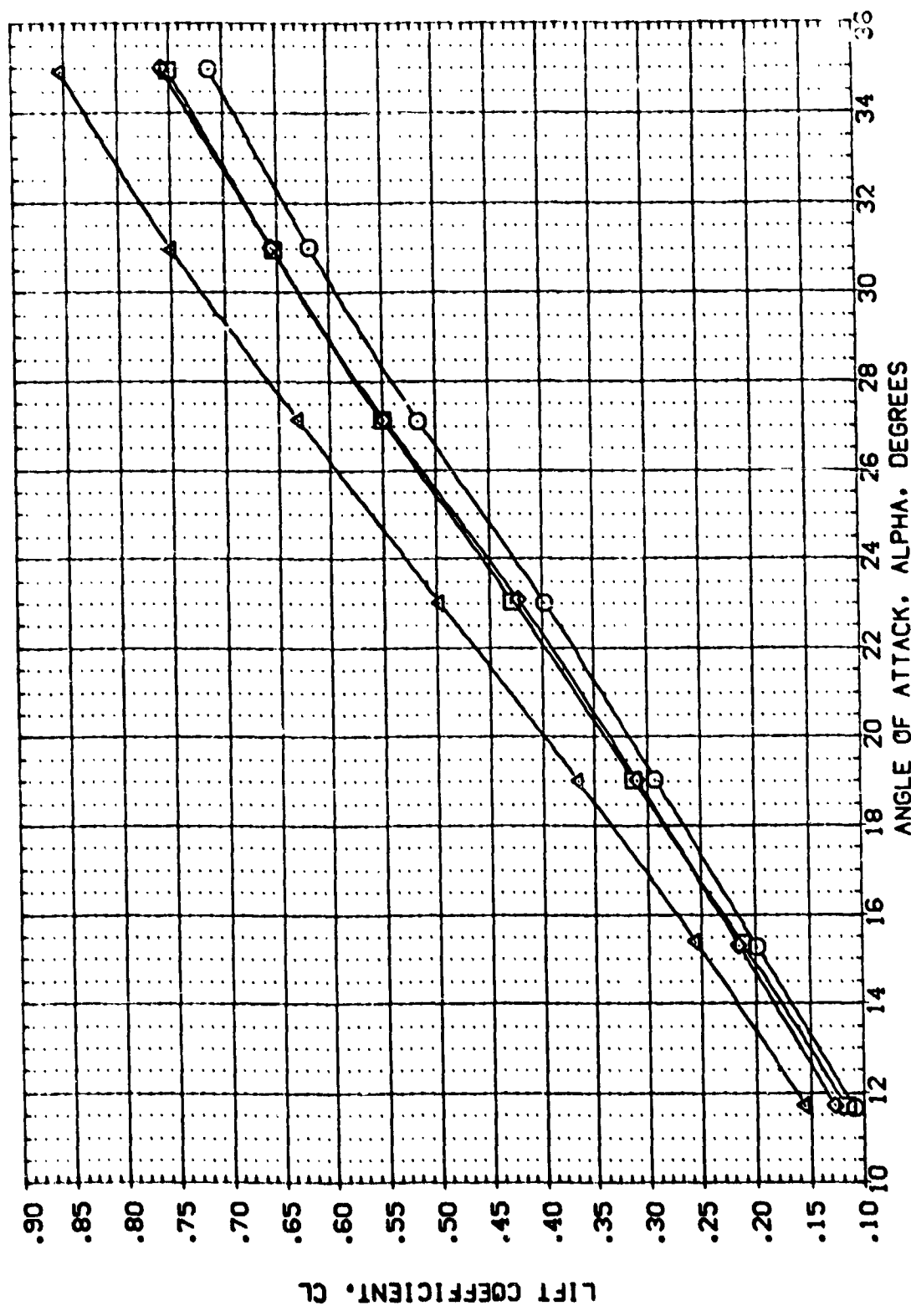


FIG. 10 EFFECT OF ELEVON AND BODYFLAP DEFLECTIONS, RN/L=3.0

(M)MACH = 10.27

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPDRK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEFC29)	AVES 3.5-176 CAB7 140 A/B CAB1TER	-40.000	55.000	-11.700	3.000	SREF 2690.0000 SO.FT.
(BEFC27)	AVES 3.5-176 CAB7 140 A/B CAB1TER	-40.000	55.000	16.300	3.000	LREF 1290.3000 IN.
(BEFC26)	AVES 3.5-176 CAB7 140 A/B CAB1TER	10.000	55.000	16.300	3.000	BREF 936.6800 IN.
(BEFC28)	AVES 3.5-176 CAB7 140 A/B CAB1TER	10.000	55.000	16.300	3.000	XMRP 1076.4800 IN.
						ZMRP 375.0000 IN.
						SCALE .0150

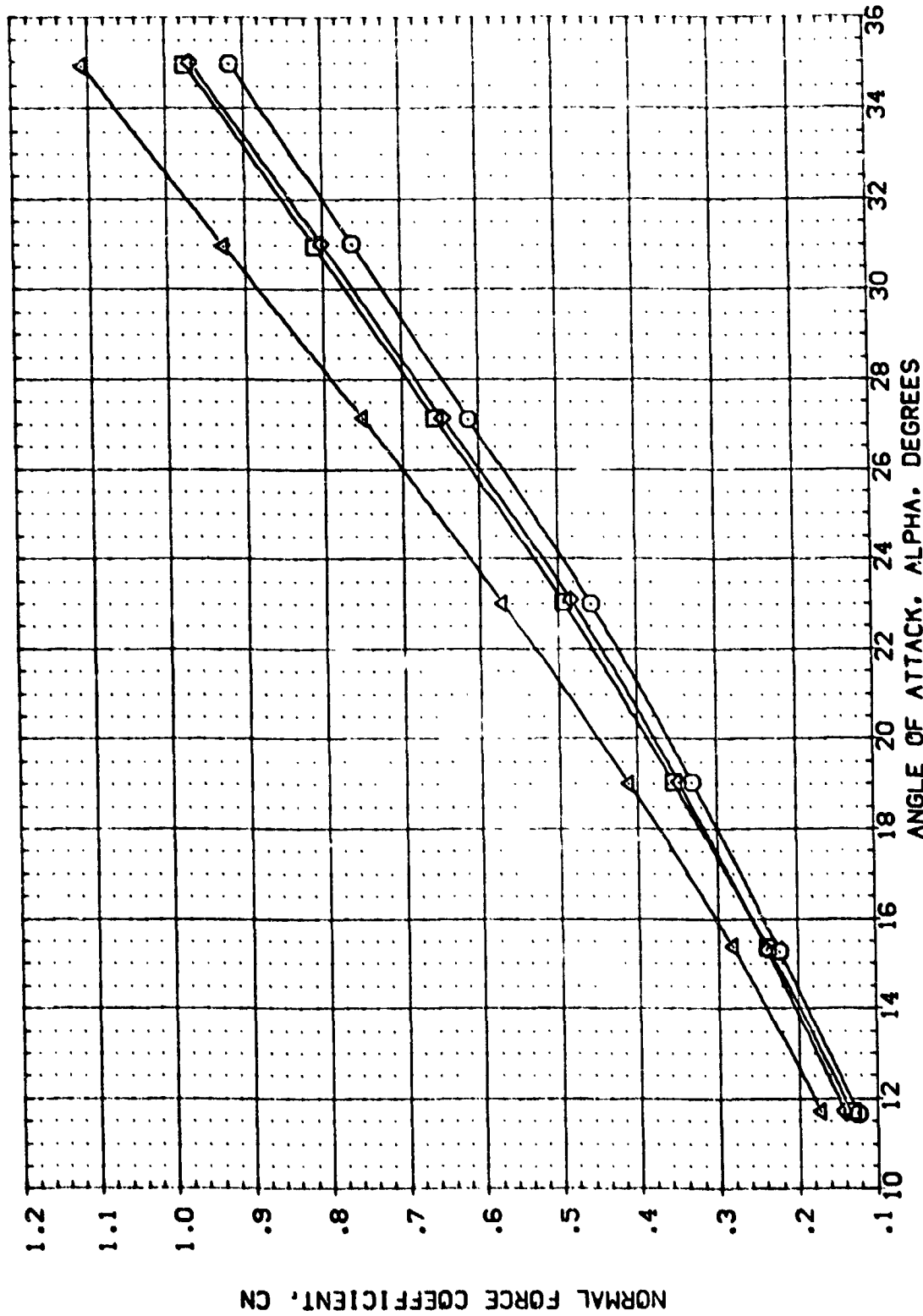


FIG. 10 EFFECT OF ELEVON AND BODYFLAP DEFLECTIONS, RN/L=3.0

(A)MACH = 10.27

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEF029)	AMES 3.5-176 C487 140 A/B ORBITER	-40.000	55.000	-11.700	3.000	SREF 2650.0000 SO.FT.
(BEF027)	AMES 3.5-176 C487 140 A/B ORBITER	-40.000	55.700	16.300	3.000	LREF 1750.3000 IN.
(BEF026)	AMES 3.5-176 C487 140 A/B ORBITER	10.000	55.700	16.300	3.000	BREF 936.6800 IN.
(BEF028)	AMES 3.5-176 C487 140 A/B ORBITER	10.000	55.000	16.300	3.000	XPRP 1076.4800 IN.
						YPRP 375.0000 IN.
						ZPRP 375.0000 IN.
						SCALE .0150

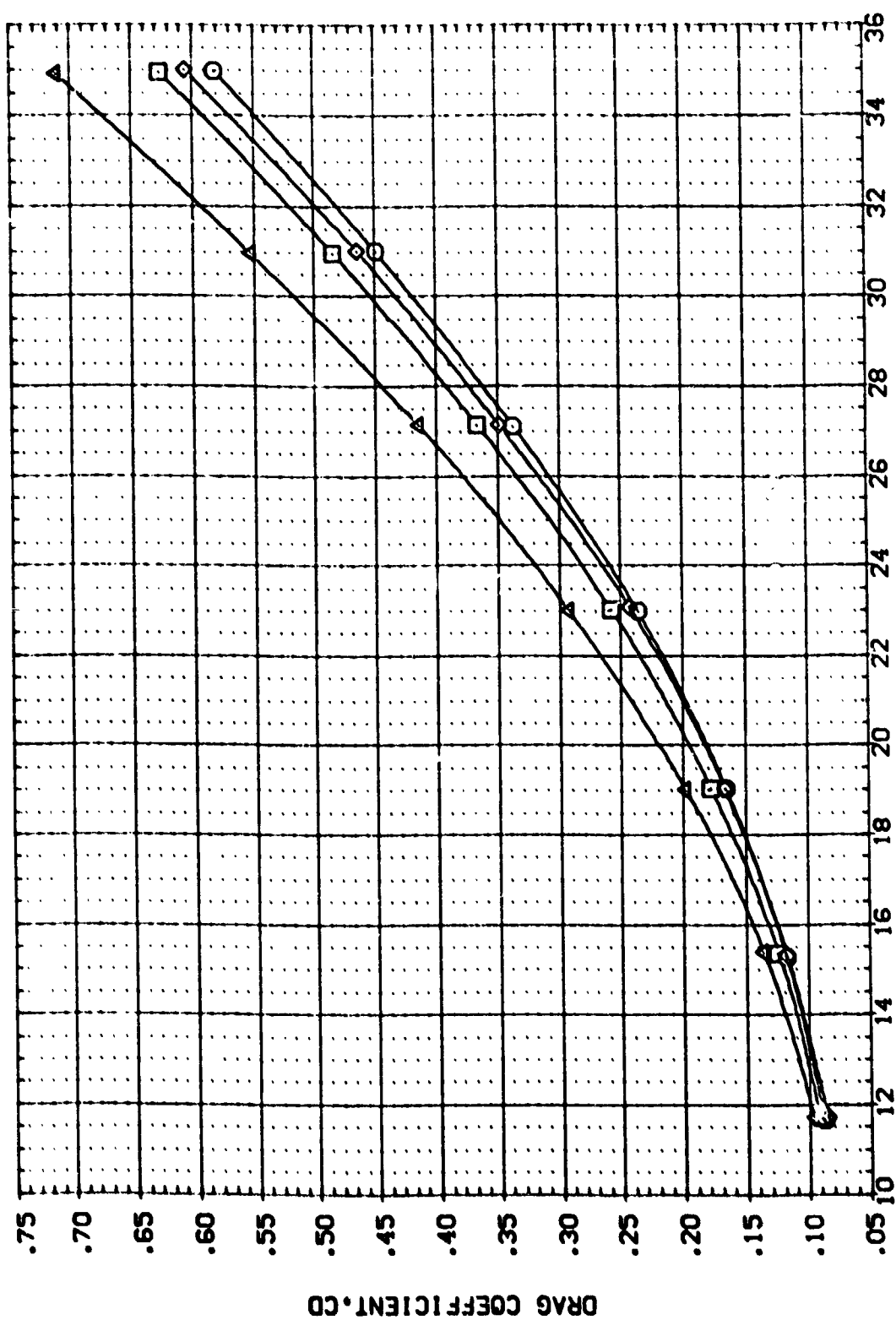


FIG. 10 EFFECT OF ELEVON AND BODYFLAP DEFLECTIONS, RN/L=3.0
(A)MACH = 10.27

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEF029)	AVES 3.5-176 CAB7 140 A/B CP81TER	-40.000	55.000	-11.700	3.000	SREF 2650.0000 IN. FT.
(BEF027)	AVES 3.5-176 CAB7 140 A/B CP81TER	-40.000	55.000	16.300	3.000	LREF 2750.3000 IN. FT.
(BEF026)	AVES 3.5-176 CAB7 140 A/B CP81TER	10.000	55.000	16.300	3.000	BREF 936.6800 IN. FT.
(BEF028)	AVES 3.5-176 CAB7 140 A/B CP81TER	10.000	55.000	16.300	3.000	MREF 1076.4800 IN. FT.
						ZREF 375.0000 IN. FT.
						SCALE .0150

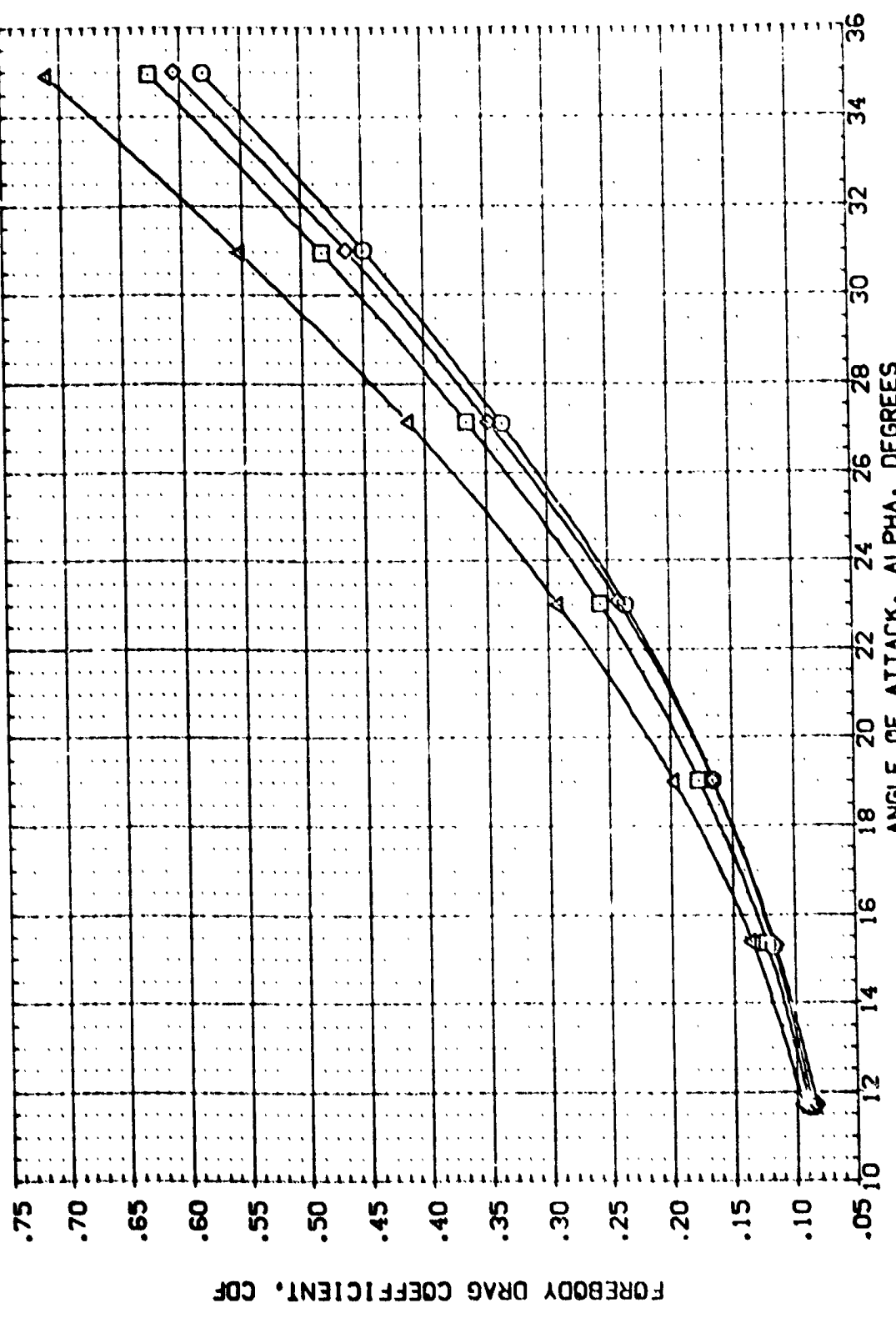


FIG. 10 EFFECT OF ELEVON AND BODYFLAP DEFLECTIONS, RN/L=3.0

(A)MACH = 10.27

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEFO29)	AMES 3.5-176 CAB7 140 A/B ORBITER	-40.000	55.000	-11.700	3.000	SREF 2690.0000 SO.FT.
(BEFO27)	AMES 3.5-176 CAB7 140 A/B ORBITER	-40.000	55.000	16.300	3.000	LREF 1290.3000 IN.
(BEFO26)	AMES 3.5-176 CAB7 140 A/B ORBITER	0.000	55.000	0.000	3.000	BREF 936.6800 IN.
(BEFO28)	AMES 3.5-176 CAB7 140 A/B ORBITER	10.000	55.000	16.300	3.000	XMRP 1076.4800 IN.
						ZMRP 0.0000 IN.
						SCALE 375.0000 IN.
						SCALE .0150

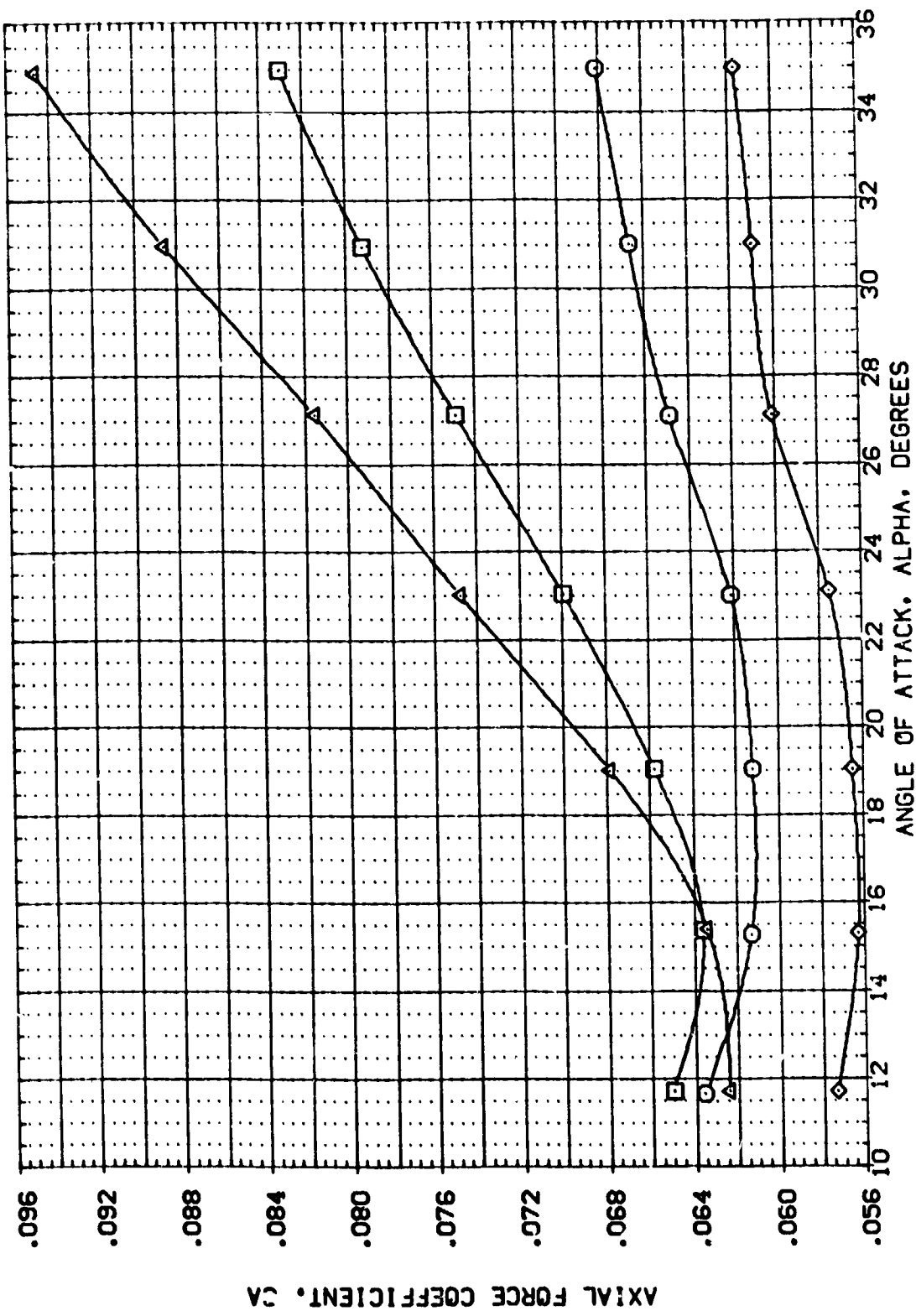


FIG. 10 EFFECT OF ELEVON AND BODYFLAP DEFLECTIONS, RN/L=3.0

(A)MACH = 10.27

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEFC29)	AVES 3.5-176 CAB7 140 A/B CRBITTER	-40.000	55.000	-11.700	3.000	SREF 2690.0000 50.FT.
(BEFC27)	AVES 3.5-176 CAB7 140 A/B CRBITTER	-40.000	55.000	16.300	3.000	LREF 1290.3000 N.
(BEFC26)	AVES 3.5-176 CAB7 140 A/B CRBITTER	10.000	55.000	16.300	3.000	SREF 936.6800 N.
(BEFC28)	AVES 3.5-176 CAB7 140 A/B CRBITTER	10.000	55.000	16.300	3.000	XREF 1076.4800 N.
						YREF 375.0000 N.
						ZREF 375.0000 N.
						SCALE .0150

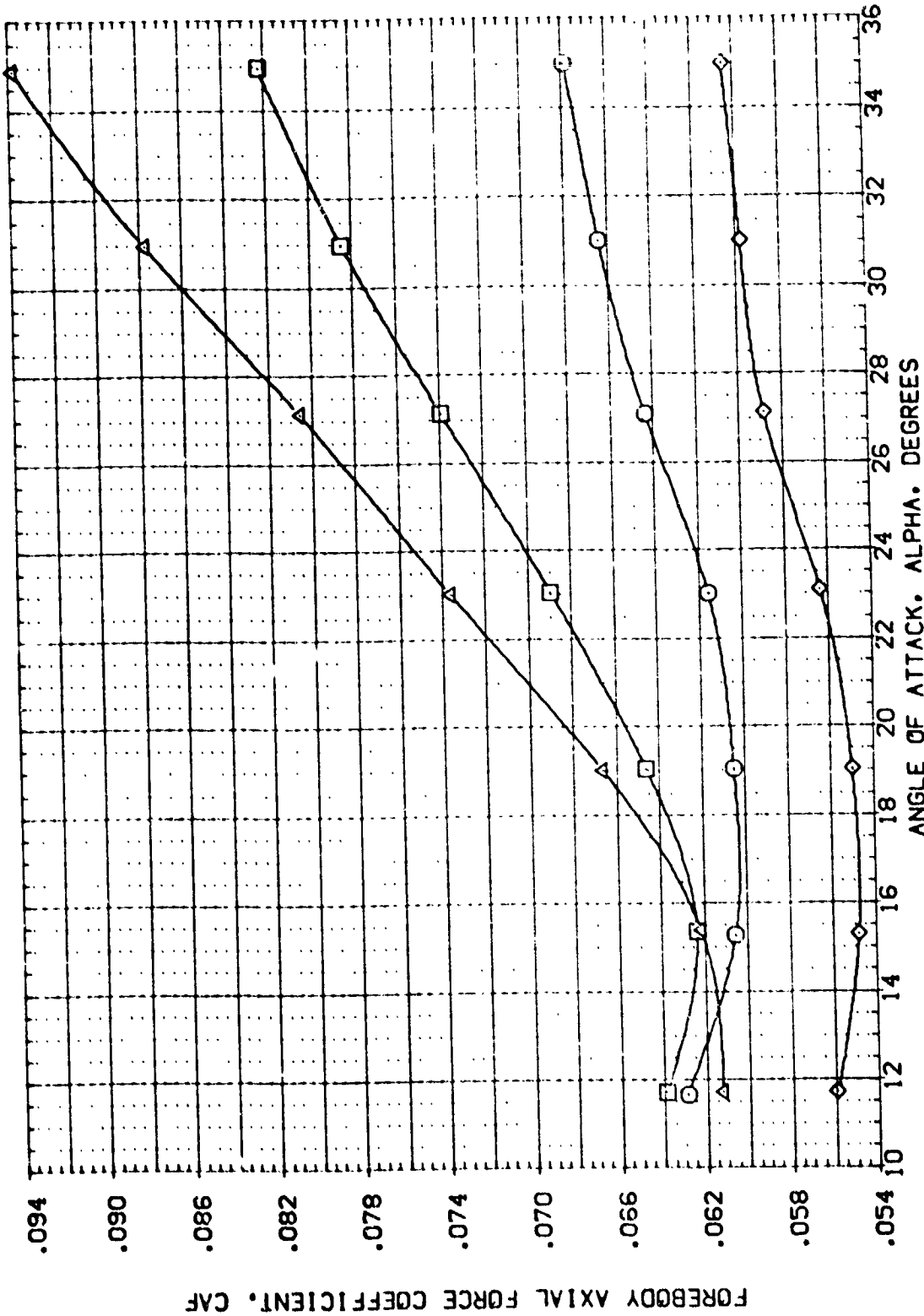


FIG. 10 EFFECT OF ELEVON AND BODYFLAP DEFLECTIONS, RN/L=3.0

(A) MACH = 10.27

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEFC29)	AVES 3.5-176 CAB7 140 A/B ORBITER	-40.000	55.000	-11.700	3.000	SREF 2690.0000 SO.FT.
(BEFC27)	AVES 3.5-176 CAB7 140 A/B ORBITER	-40.000	55.000	16.300	3.000	LREF 1250.3000 IN.
(BEFC26)	AVES 3.5-176 CAB7 140 A/B ORBITER	10.000	55.000	16.300	3.000	BREF 936.6800 IN.
(BEFC28)	AVES 3.5-176 CAB7 140 A/B ORBITER	10.000	55.000	16.300	3.000	XMRP 1076.4800 IN.
						ZMRP .0000 IN.
						SCALE 375.0000 IN.
						SCALE .0150

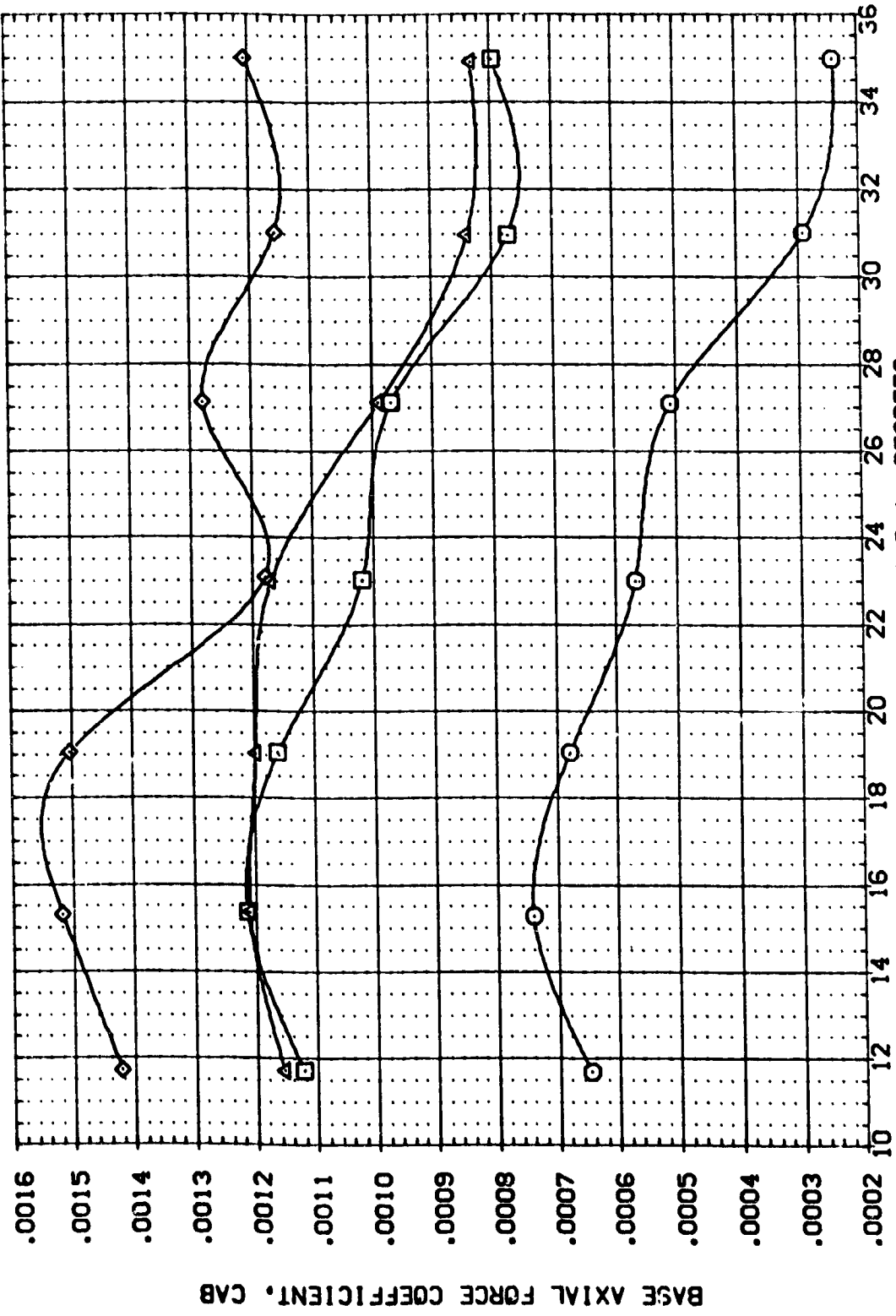


FIG. 10 EFFECT OF ELEVON AND BODYFLAP DEFLECTIONS, RN/L=3.0
 (A)MACH = 10.27

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPDRK	BDFLAP	RN/L	REFERENCE INFORMATION
(BEF029)	AVES 3.5-176 CAB7 140 A/B ORBITER	-40.000	55.000	-11.700	3.000	SREF 2690.0000 SQ.FT.
(BEF027)	AVES 3.5-176 CAB7 140 A/B ORBITER	-40.000	55.000	16.300	3.000	LREF 1290.3000 IN.
(BEF026)	AVES 3.5-176 CAB7 140 A/B ORBITER	10.000	55.000	16.300	3.000	BREF 936.6800 IN.
(BEF028)	AVES 3.5-176 CAB7 140 A/B ORBITER	10.000	55.000	16.300	3.000	XMRP 1076.4800 IN.
						YMRP 0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150 SCALE

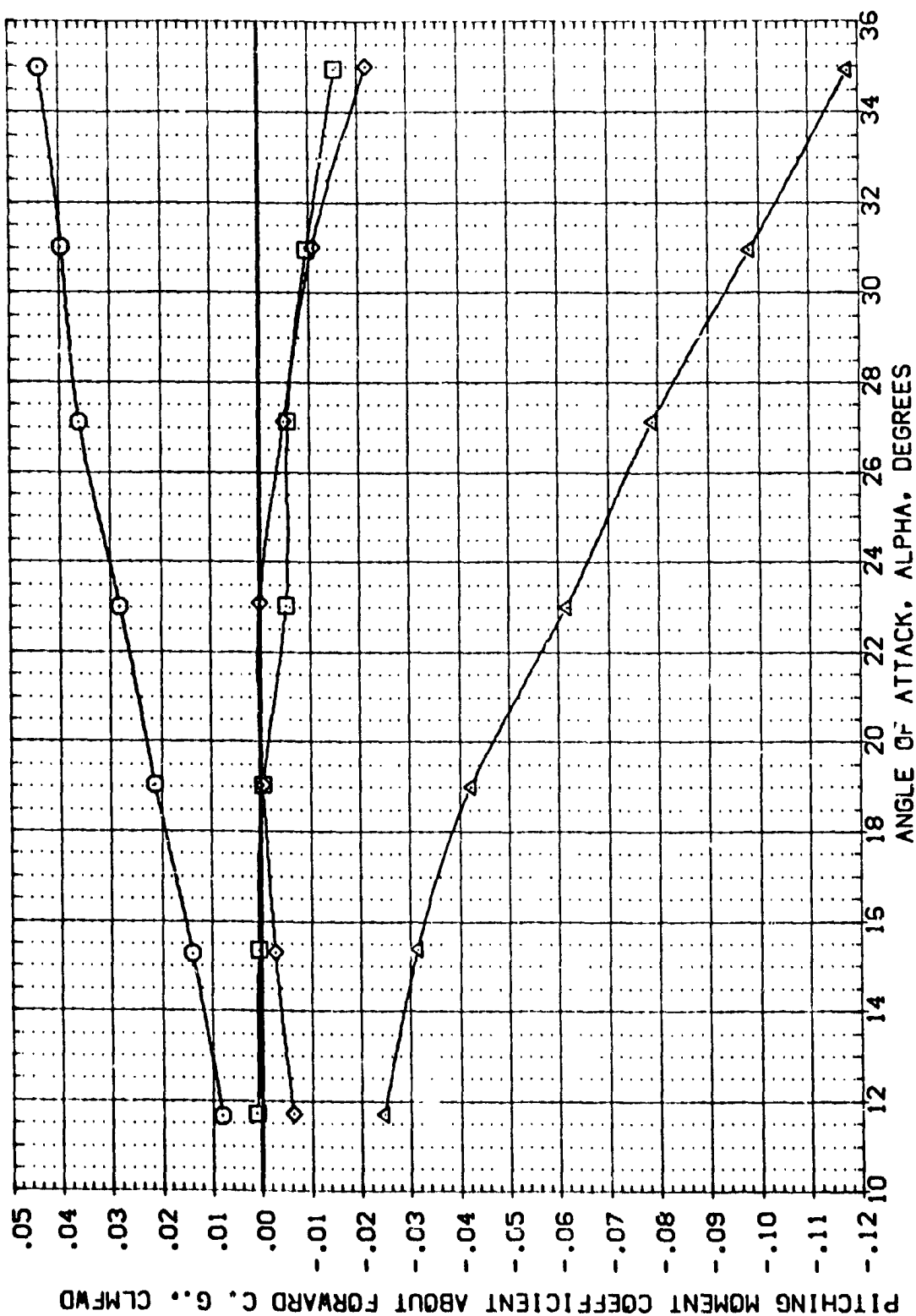


FIG. 10 EFFECT OF ELEVON AND BODYFLAP DEFLECTIONS, RN/L=3.0

(A)MACH = 10.27

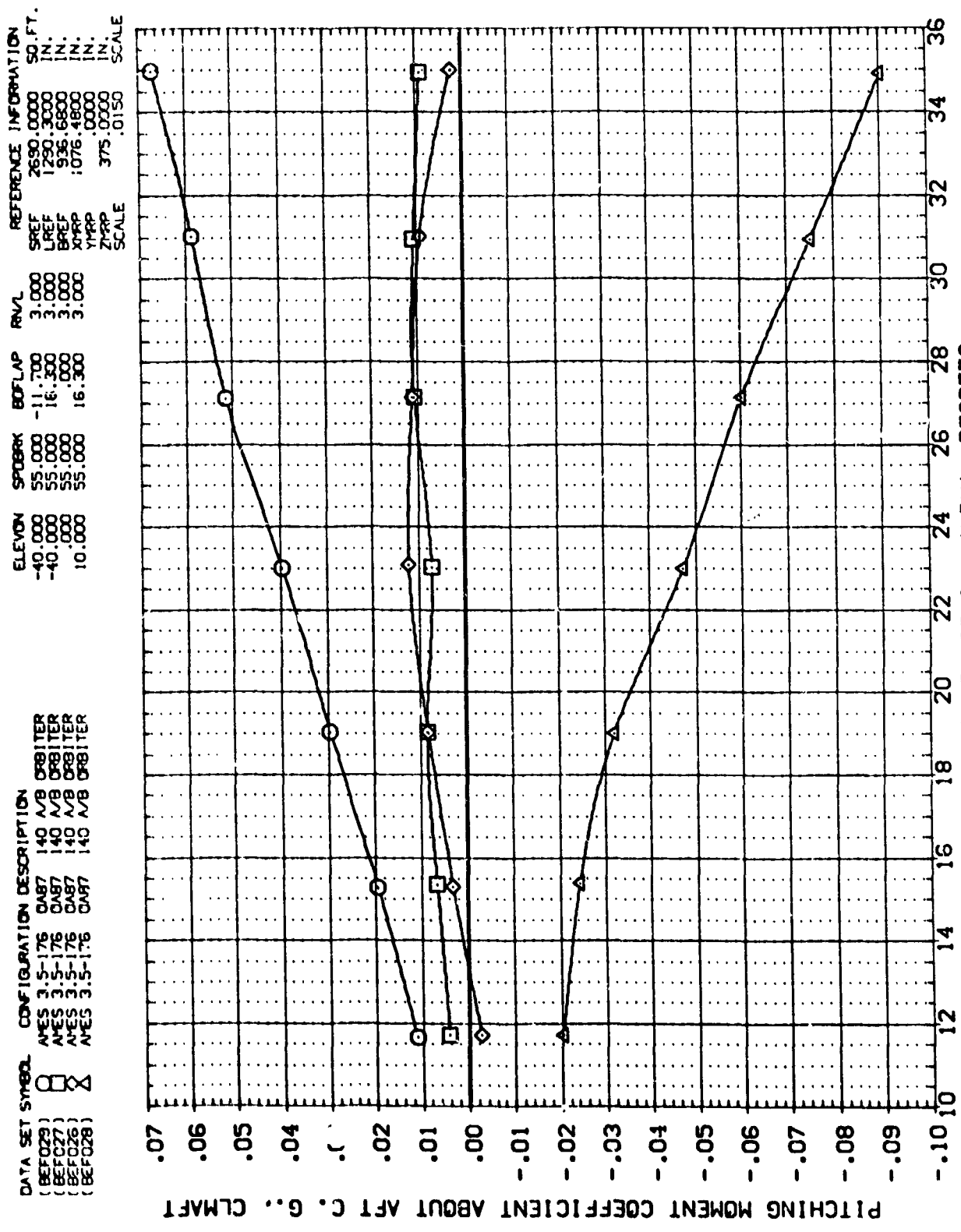


FIG. 10 EFFECT OF ELEVON AND BODYFLAP DEFLECTIONS, RN/L=3.0

CAJ MACH = 10.27

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEFO29)	AVES 3.5-176 OAB7 140 A/B ORBITER	-40.000	55.000	-11.700	3.000	SREF 2690.0000 SQ.FT.
(BEFO27)	AVES 3.5-176 OAB7 140 A/B ORBITER	-40.000	55.000	16.300	3.000	LREF 1280.3000 IN.
(BEFO26)	AVES 3.5-176 OAB7 140 A/B ORBITER	10.000	55.000	16.300	3.000	BREF 5336.6800 IN.
(BEFO28)	AVES 3.5-176 OAB7 140 A/B ORBITER	10.000	55.000	16.300	3.000	XMRP 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150

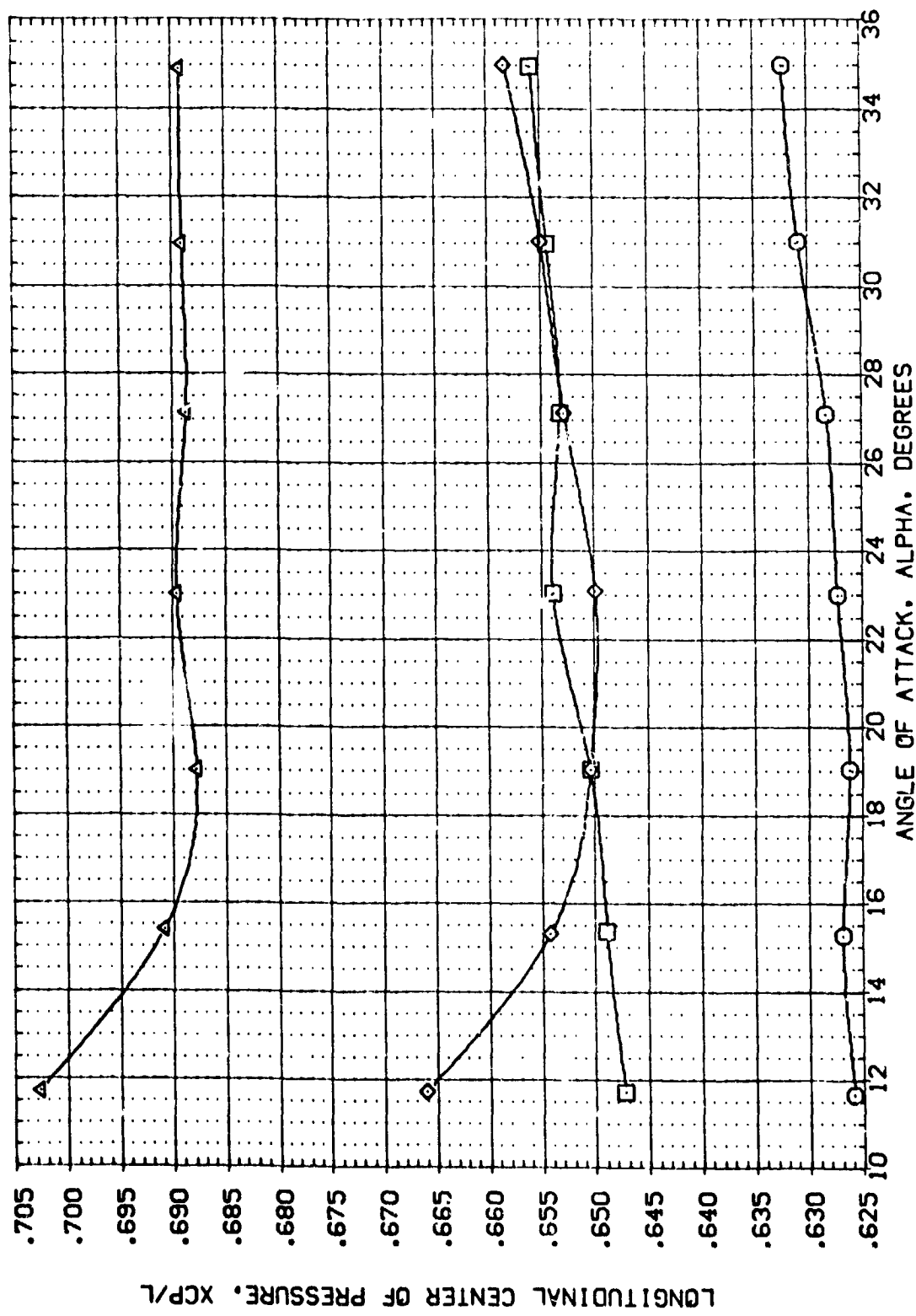
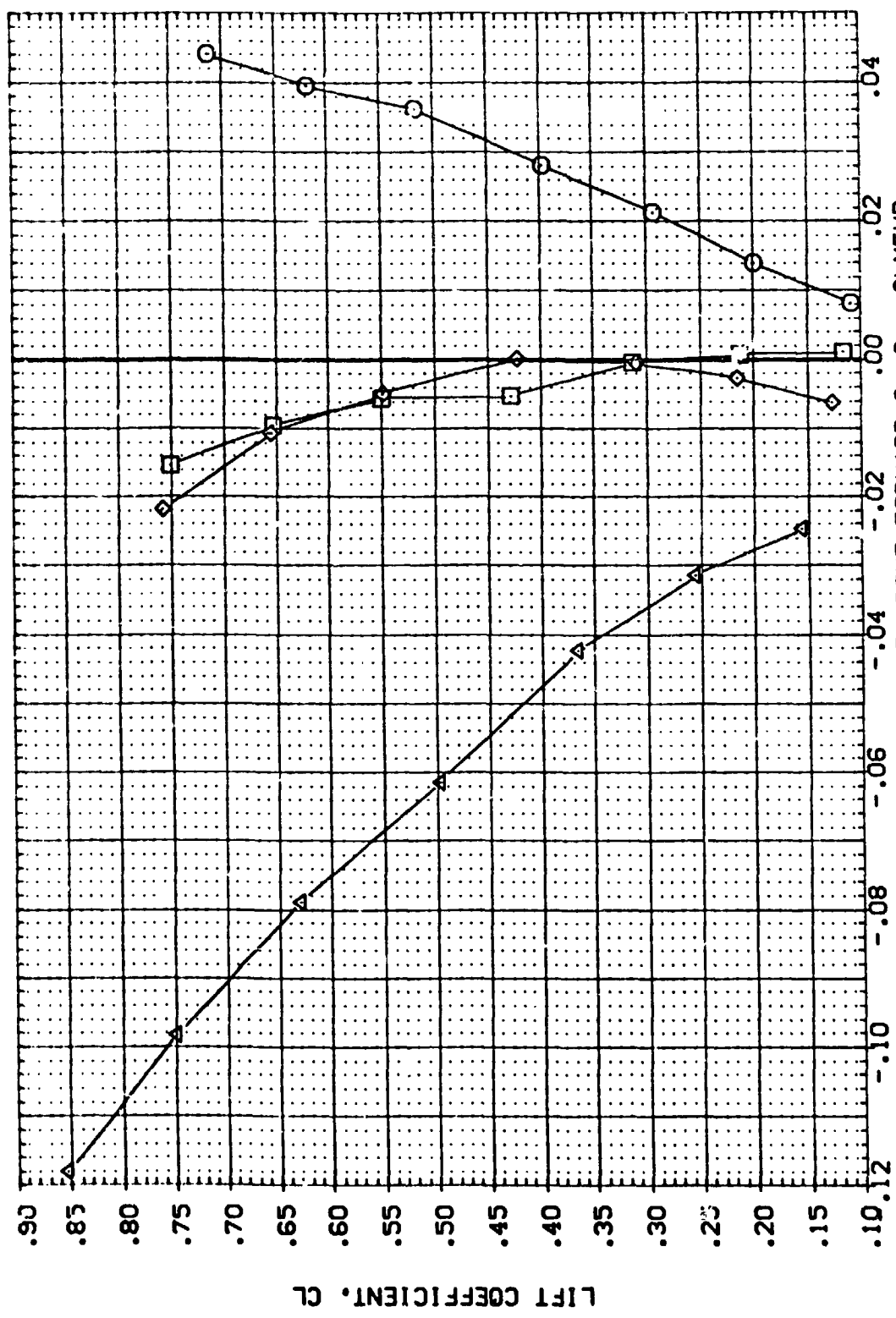


FIG. 10 EFFECT OF ELEVON AND BODYFLAP DEFLECTIONS, RN/L=3.0

(A)MACH = 10.27

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEFC29)	AVES 3-5-176 CAB7 140 A/B ORBITER	-40.000	55.000	-11.700	3.000	SREF 2650.0000 SO.FT.
(BEFC27)	AVES 3-5-176 CAB7 140 A/B ORBITER	-40.000	55.000	15.300	3.000	LREF 1290.3000 IN.
(BEFC28)	AVES 3-5-176 CAB7 140 A/B ORBITER	10.000	55.000	16.300	3.000	BREF 936.6000 IN.
(BEFC28)	AVES 3-5-176 CAB7 140 A/B ORBITER					XPRP 1076.4000 IN.
						YPRP 0.0000 IN.
						ZPRP 375.0000 IN.
						SCALE 0.150 SCALE



PITCHING MOMENT COEFFICIENT ABOUT FORWARD C. G., CLMFWD

FIG. 10 EFFECT OF ELEVON AND BODYFLAP DEFLECTIONS, RN/L=3.0

(A)MACH = 10.27

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEFC29)	AMES 3.5-176 CAB/ 140 A/ 3RB/ITER	-40.000	55.000	-11.700	3.000	SREF 2690.0000 SO.FT.
(BEFC27)	AMES 3.5-176 CAB/ 140 A/ 0PB/ITER	-40.000	55.000	16.300	3.000	LREF 1230.3000 IN.
(BEFC26)	AMES 3.5-176 CAB/ 140 A/B/ 0PB/ITER	13.000	55.000	16.300	3.000	BREF 935.8800 IN.
(BEFC28)	AMES 3.5-176 CAB/ 140 A/B/ 0PB/ITER	13.000	55.000	16.300	3.000	YREF 1076.4800 IN.
						ZREF 375.0000 IN.
						SCALE .0150 SCALE

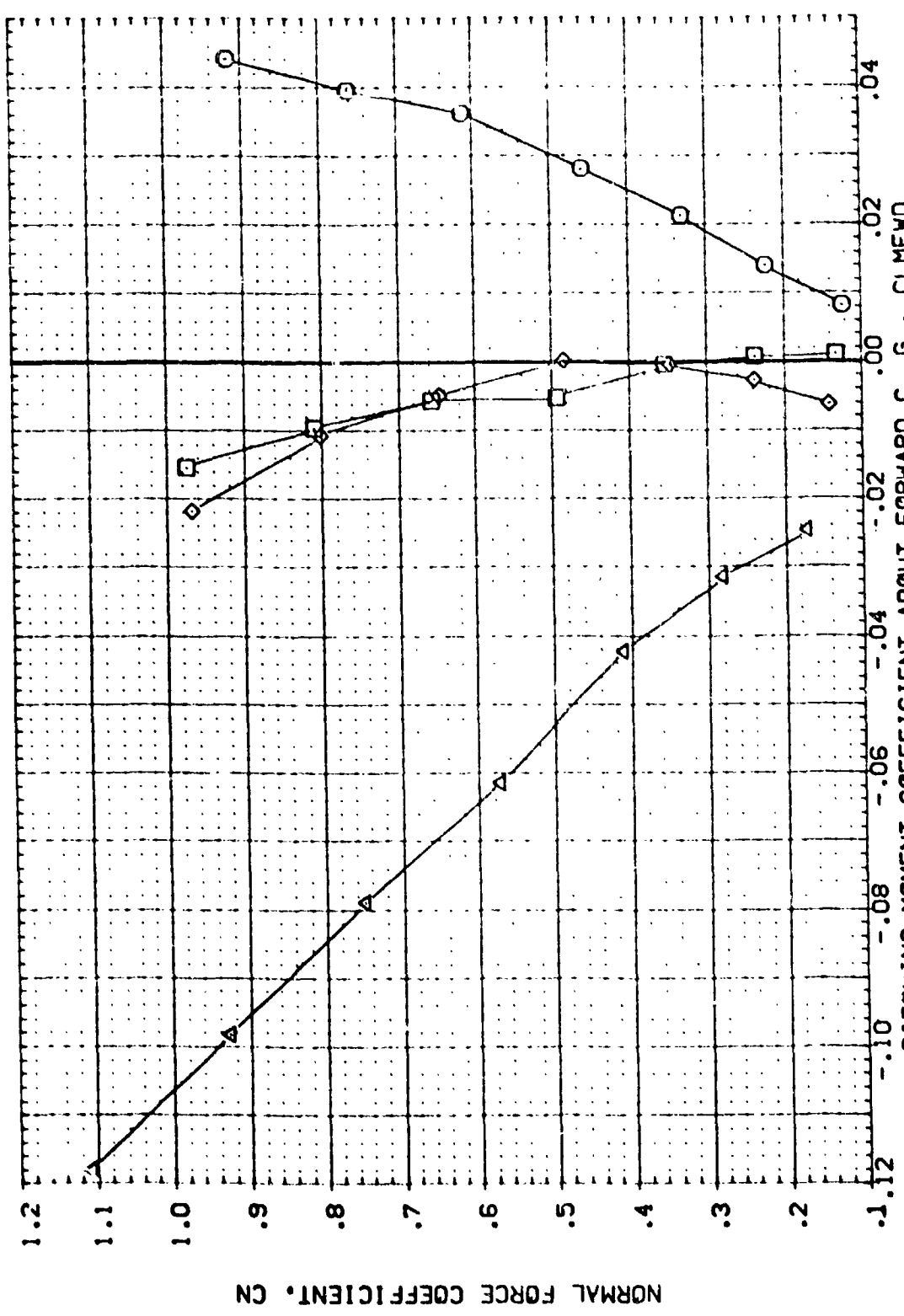


FIG. 10 EFFECT OF ELEVON AND BODYFLAP DEFLECTIONS, RN/L=3.0

(A)MACH = 10.27

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEF029)	AVES 3.5-176 CAB7 140 A/B ORBITER	-40.000	55.000	-11.700	3.000	SREF 2690.0000 SQ.FT. IN.
(BEF027)	AVES 3.5-176 CAB7 140 A/B ORBITER	-40.000	55.000	16.300	3.000	LREF 1290.3000 IN.
(BEF026)	AVES 3.5-176 CAB7 140 A/B ORBITER	10.000	55.000	16.300	3.000	BREF 936.6800 IN.
(BEF028)	AVES 3.5-176 CAB7 140 A/B ORBITER	10.000	55.000	16.300	3.000	XMRP 1076.4800 IN.
						ZMRP 375.0000 IN.
						SCALE .0150 SCALE

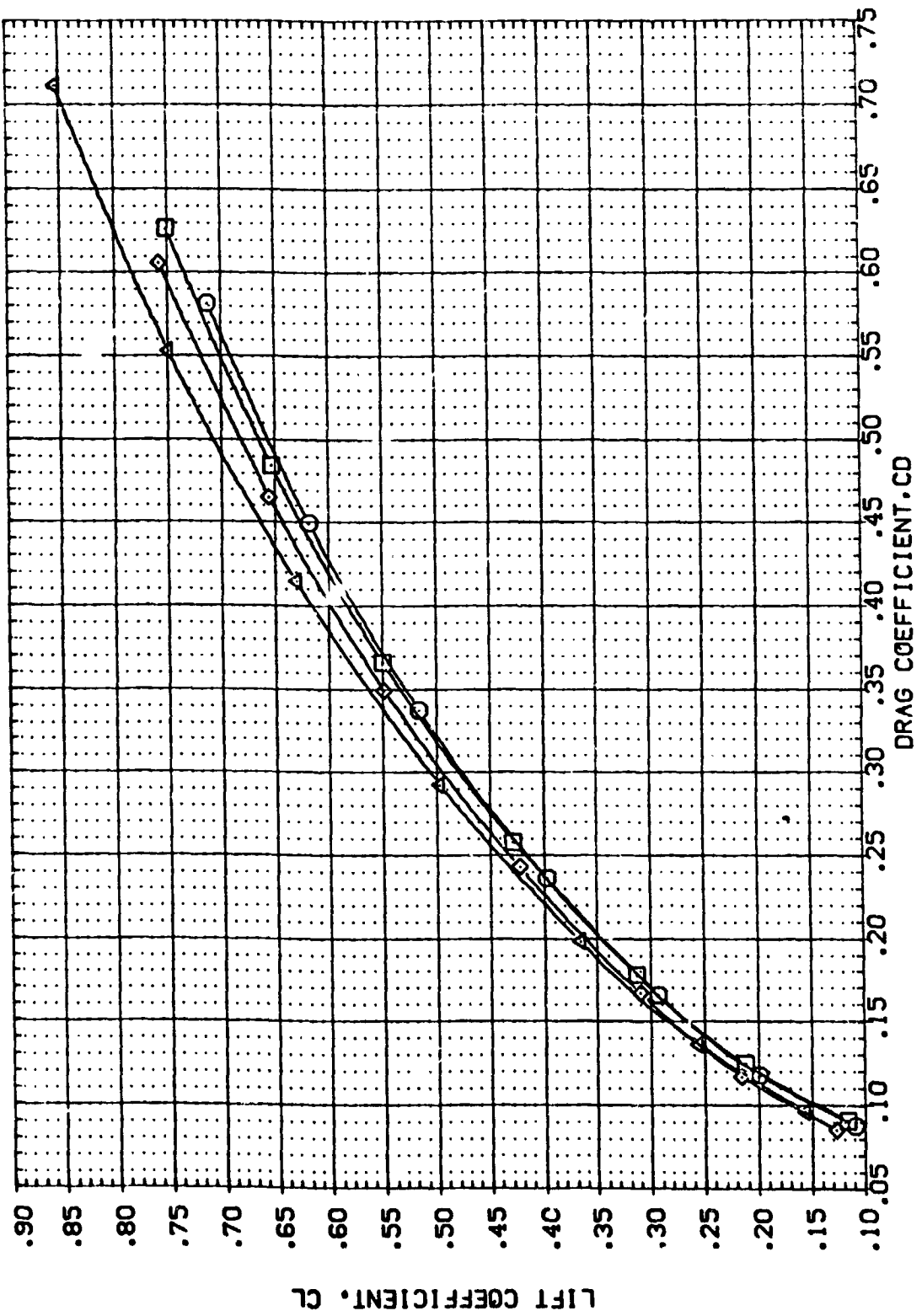


FIG. 10 EFFECT OF ELEVON AND BODYFLAP DEFLECTIONS, RN/L=3.0

(A)MACH = 10.27

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPDBRK	BDFLAP	RN/L	REFERENCE INFORMATION
(AEFC29)	APES 3.5-176 DAB7 140 A/B CRBITER	-40.000	55.000	-11.700	3.000	SREF 2650.0000 SO.FT.
(AEFC27)	APES 3.5-176 DAB7 140 A/B CRBITER	-40.000	55.000	16.300	3.000	LREF 1290.3000 IN.
(AEFC26)	APES 3.5-176 DAB7 140 A/B CRBITER	10.000	55.000	16.300	3.000	BREF 936.6800 IN.
(AEFC28)	APES 3.5-176 DAB7 140 A/B CRBITER	10.000	55.000	16.300	3.000	XPRP 1076.4800 IN.
						ZPRP 375.0000 IN.
						SCALE .0150

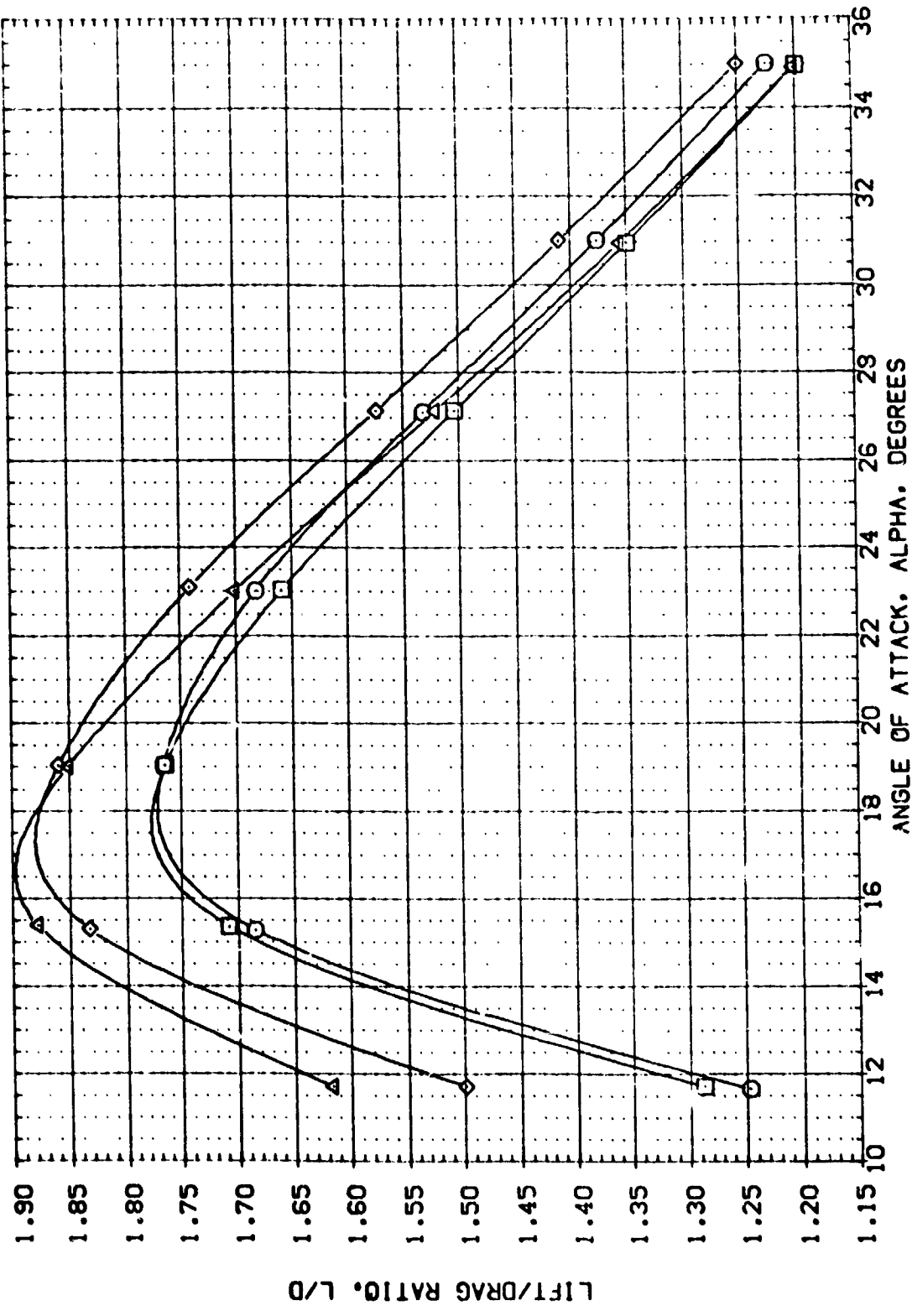


FIG. 10 EFFECT OF ELEVON AND BODYFLAP DEFLECTIONS, RN/L=3.0

(A)MACH = 10.27

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	ELEVON	R/V/L	SPDRBK	REFERENCE INFORMATION
(BEFO16)	AMES 3.5-76 C/87 140 A/B C/87 I/TER	-11.700	.000	10.000	55.000	SREF 2690.0000 SO.FT.
(BEFO17)	AMES 3.5-76 C/87 140 A/B C/87 I/TER	-11.700	.000	10.000	55.000	LREF 1290.3000 IN.
(BEFO18)	AMES 3.5-76 C/87 140 A/B C/87 I/TER	16.300	.000	10.000	55.000	BREF 536.6800 IN.
(BEFO19)	AMES 3.5-76 C/87 140 A/B C/87 I/TER	-11.700	.000	3.000	55.000	XAPP 1076.4800 IN.
(BEFO20)	AMES 3.5-76 C/87 140 A/B C/87 I/TER	-11.700	.000	3.000	55.000	YAPP 0000 IN.
(BEFO21)	AMES 3.5-76 C/87 140 A/B C/87 I/TER	16.300	.000	3.000	55.000	ZAPP 375.0000 IN.
						SCALE .0150

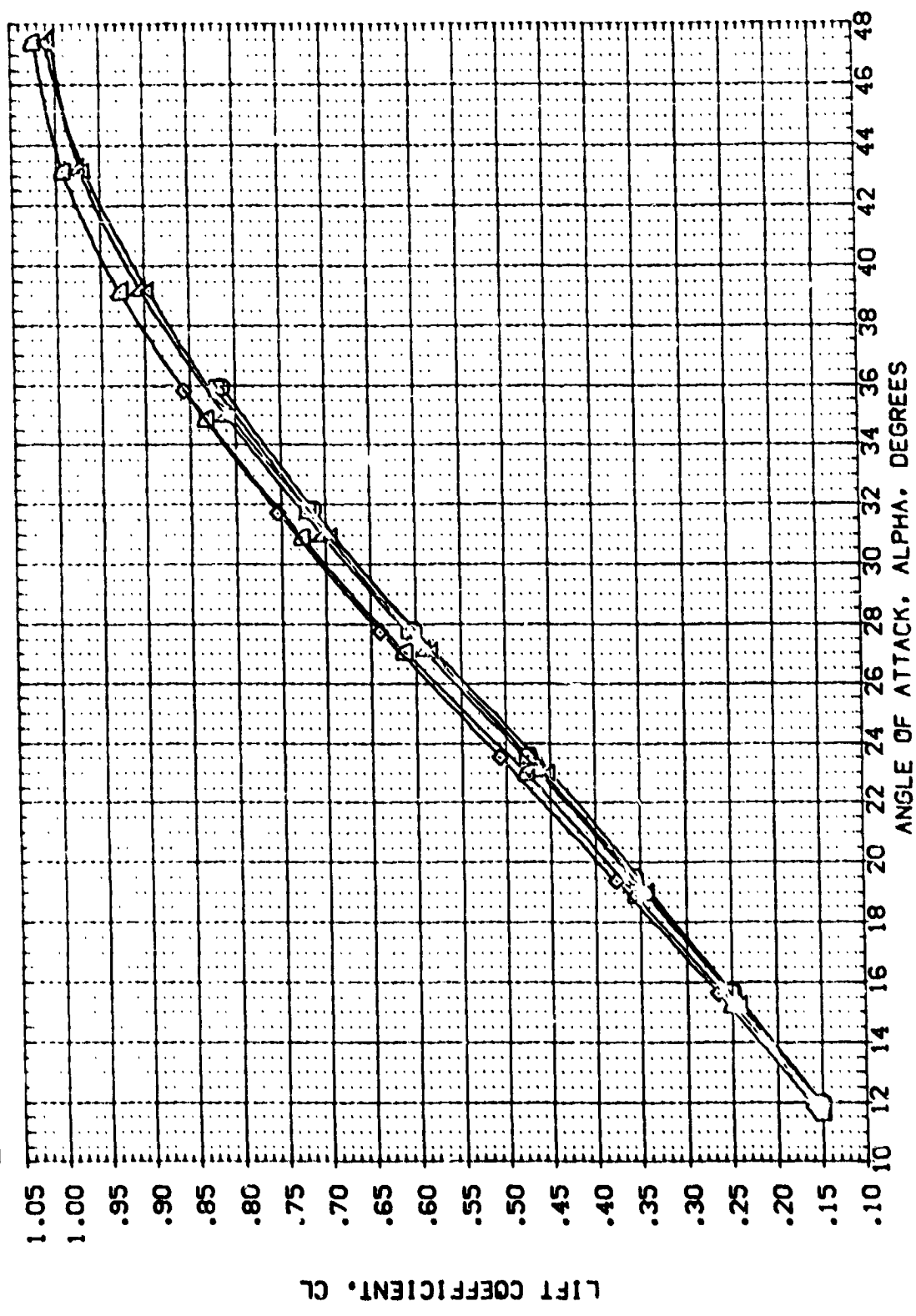


FIG. 11 BODYFLAP EFFECTIVENESS

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	ELEVON	%VAL	SPDRBK	REFERENCE INFORMATION
(BEFC:16)	AVES 3.5-176 CAB7 140 A/B DRG:ITER	-11.700	.000	10.000	55.000	SREF 2690.0000 SO.FT.
(BEFC:01)	AVES 3.5-176 CAB7 140 A/B DRG:ITER	16.300	.000	10.000	55.000	LREF 1290.3000 IN.
(BEFC:05)	AVES 3.5-176 CAB7 140 A/B DRG:ITER	-11.700	.000	3.000	55.000	BREF 936.6800 IN.
(BEFC:03)	AVES 3.5-176 CAB7 140 A/B DRG:ITER	16.300	.000	3.000	55.000	XMRP 1076.4800 IN.
(BEFC:07)	AVES 3.5-176 CAB7 140 A/B DRG:ITER	16.300	.000	3.000	55.000	YMRP .0000 IN.
(BEFC:10)	AVES 3.5-176 CAB7 140 A/B DRG:ITER	16.300	.000	3.000	55.000	ZMRP 375.0000 IN.
						SCALE .0150

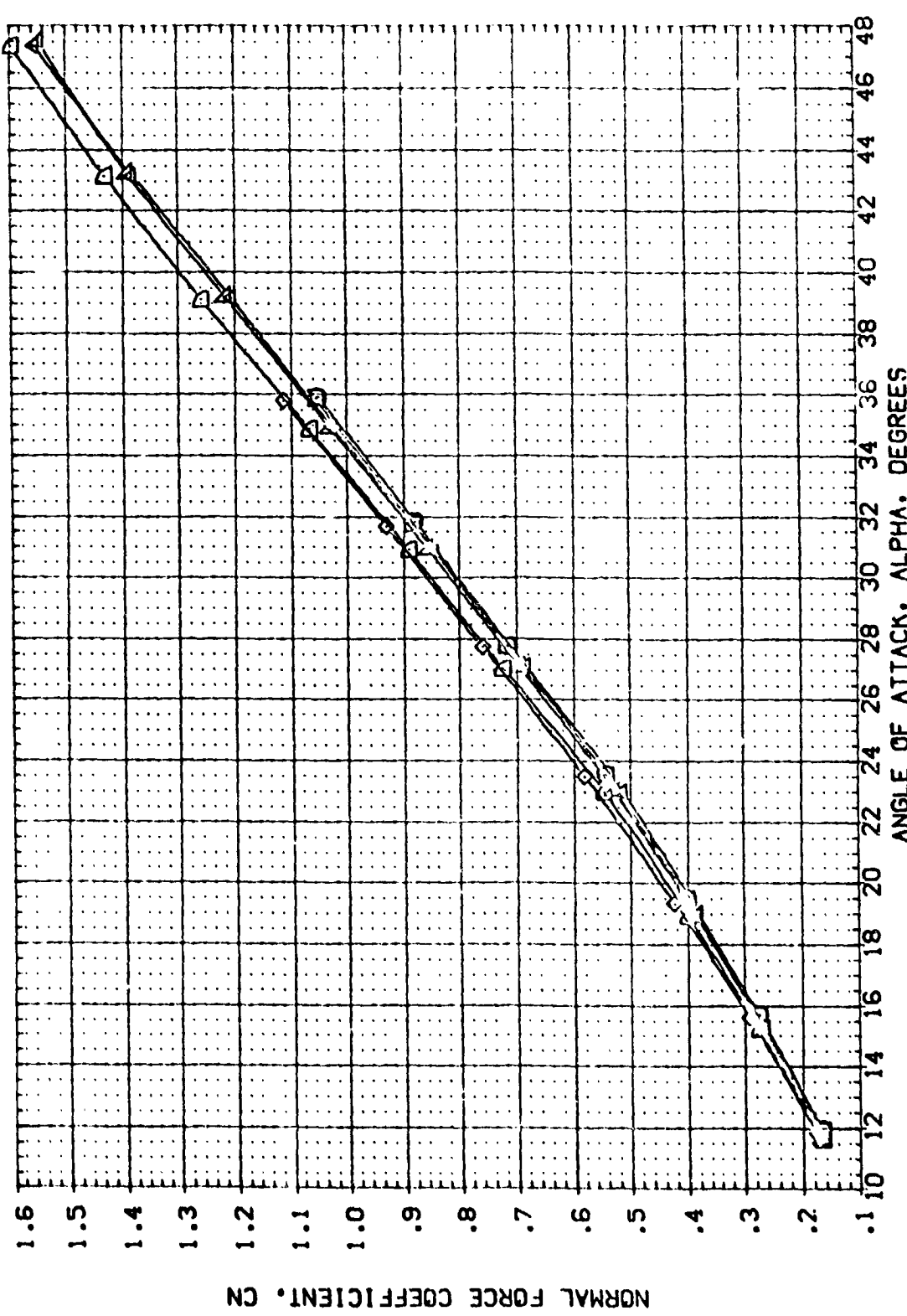


FIG. 11 BODYFLAP EFFECTIVENESS

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BDLAP	ELEVON	RVAL	SPOBRK	REFERENCE INFORMATION
(SEF016)	AVES 3.5-176 CAB7 140 A/B DRB1TER	-11.700	.000	10.000	55.000	SREF 2690.0000 SO.FT.
(BEF001)	AVES 3.5-176 CAB7 140 A/B DRB1TER	16.307	.000	10.000	55.000	LREF 1790.3000 IN.
(BEF015)	AVES 3.5-176 CAB7 140 A/B DRB1TER	-11.700	.000	10.000	55.000	BREF 536.6800 IN.
(BEF008)	AVES 3.5-176 CAB7 140 A/B DRB1TER	16.307	.000	3.000	55.000	YREF 1076.4900 IN.
(BEF007)	AVES 3.5-176 CAB7 140 A/B DRB1TER	-11.700	.000	3.000	55.000	ZREF 375.0000 IN.
(BEF010)	AVES 3.5-176 CAB7 140 A/B DRB1TER	16.307	.000	3.000	55.000	Z-PP .0150 SCALE

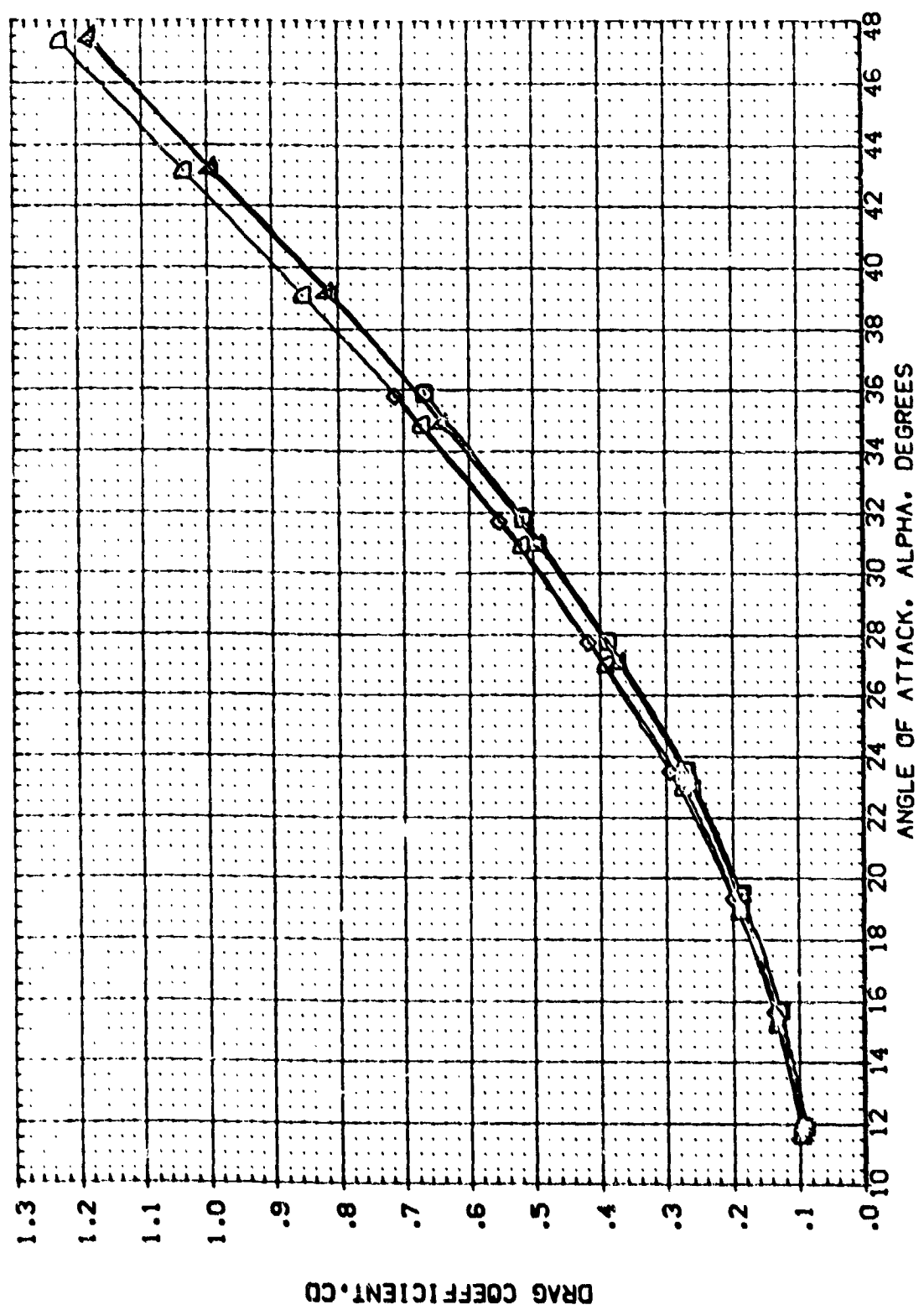


FIG. 11 BODYFLAP EFFECTIVENESS

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	ELEVON	RVAL	SFCURV	REFERENCE INFORMATION
(BEF016)	AVES 3.5-176 CAB7 14C A/B DR81TER	-11.700	.000	10.000	55.000	SREF 2690.0000 SQ.FT.
(BEF001)	AVES 3.5-176 CAB7 14C A/B DR81TER	.000	.000	10.000	55.000	LREF 1292.3000 IN.
(BEF015)	AVES 3.5-176 CAB7 14C A/B DR81TER	16.300	.000	10.000	55.000	BREF 936.6800 IN.
(BEF008)	AVES 3.5-176 CAB7 14C A/B DR81TER	-11.700	.000	3.000	55.000	ZAPP 1076.4800 IN.
(BEF007)	AVES 3.5-176 CAB7 14C A/B DR81TER	.000	.000	3.000	55.000	ZAPP .0000 IN.
(BEF010)	AVES 3.5-176 CAB7 14C A/B DR81TER	16.300	.000	3.000	55.000	ZAPP .0150 SCALE

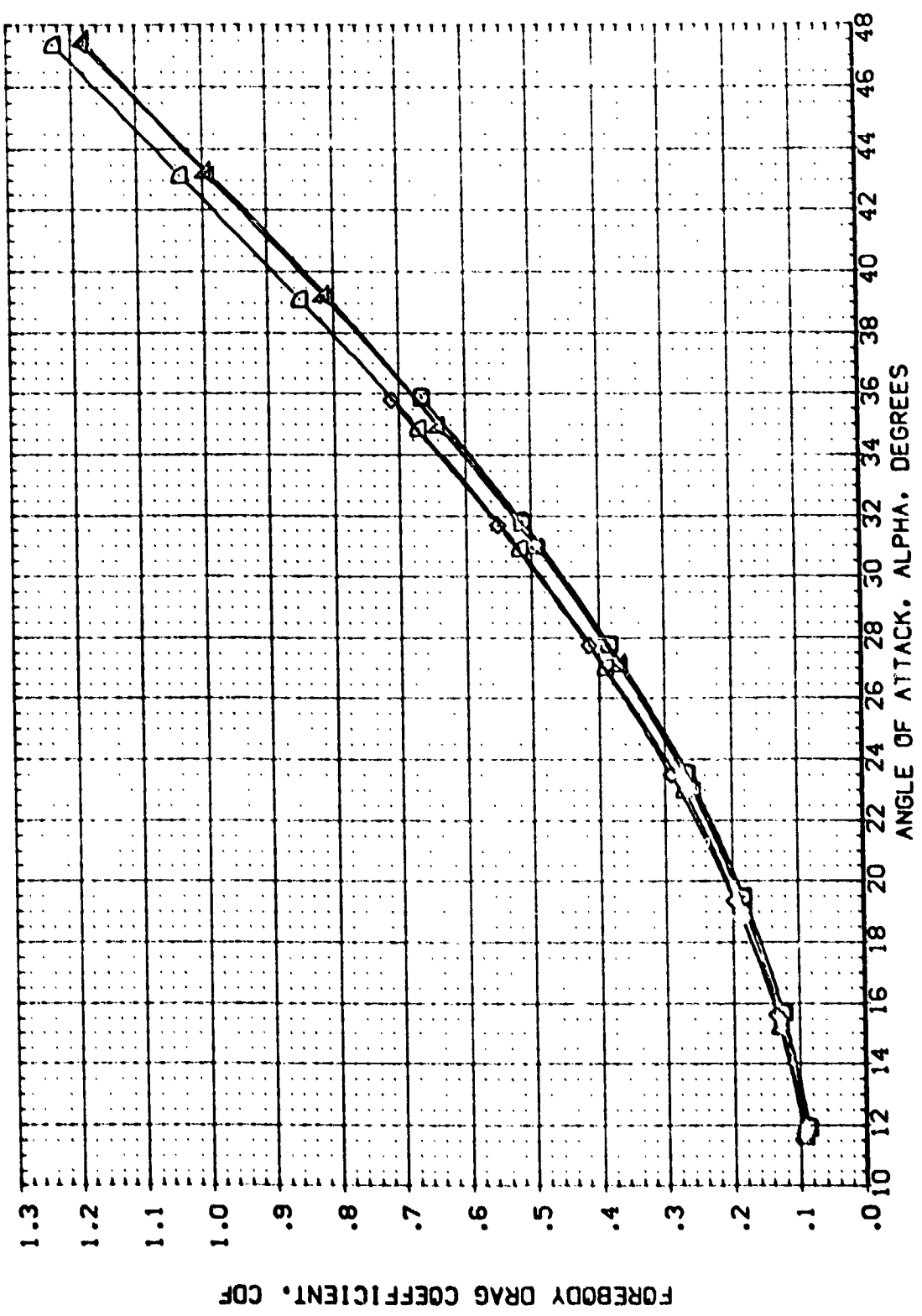


FIG. 11 BODYFLAP EFFECTIVENESS

(A)MACH = 7.32

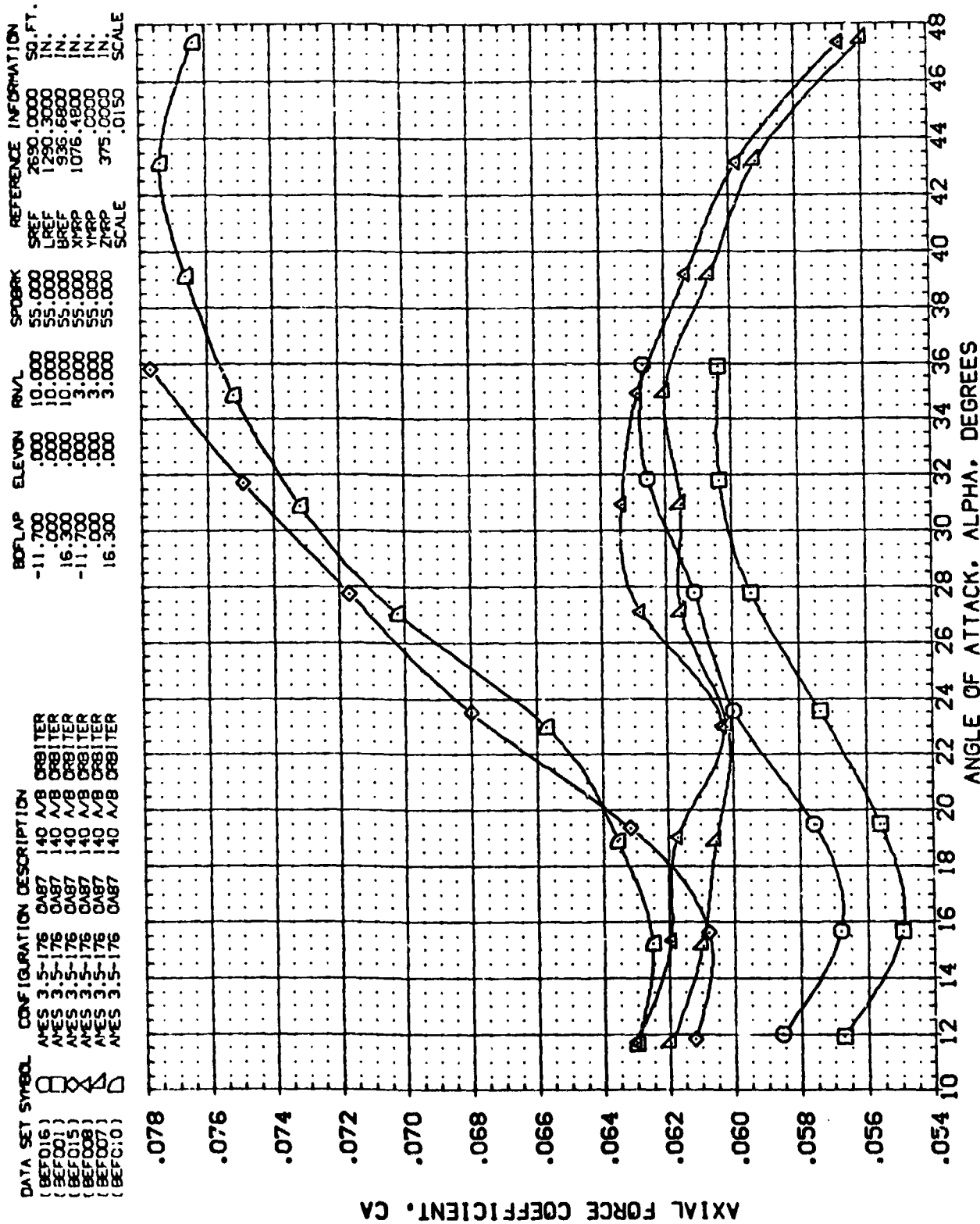


FIG. 11 BODYFLAP EFFECTIVENESS

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	ELEVON	RNVL	SPOBRK	REFERENCE INFORMATION
(BEF016)	AMES 3-5-176 DA87 140 A/B CRBITTER	-11.700	.000	10.000	55.000	SREF 2650.0000 SQ.FT.
(BEF017)	AMES 3-5-176 DA87 140 A/B CRBITTER	-11.700	.000	10.000	55.000	LREF 1250.3000 IN.
(BEF018)	AMES 3-5-176 DA87 140 A/B CRBITTER	-11.700	.000	10.000	55.000	BREF 936.6800 IN.
(BEF019)	AMES 3-5-176 DA87 140 A/B CRBITTER	-11.700	.000	3.000	55.000	XMRP 1076.4800 IN.
(BEF020)	AMES 3-5-176 DA87 140 A/B CRBITTER	16.300	.000	3.000	55.000	ZMRP .0000 IN.
(BEF021)	AMES 3-5-176 DA87 140 A/B CRBITTER	16.300	.000	3.000	55.000	SCALE .0150

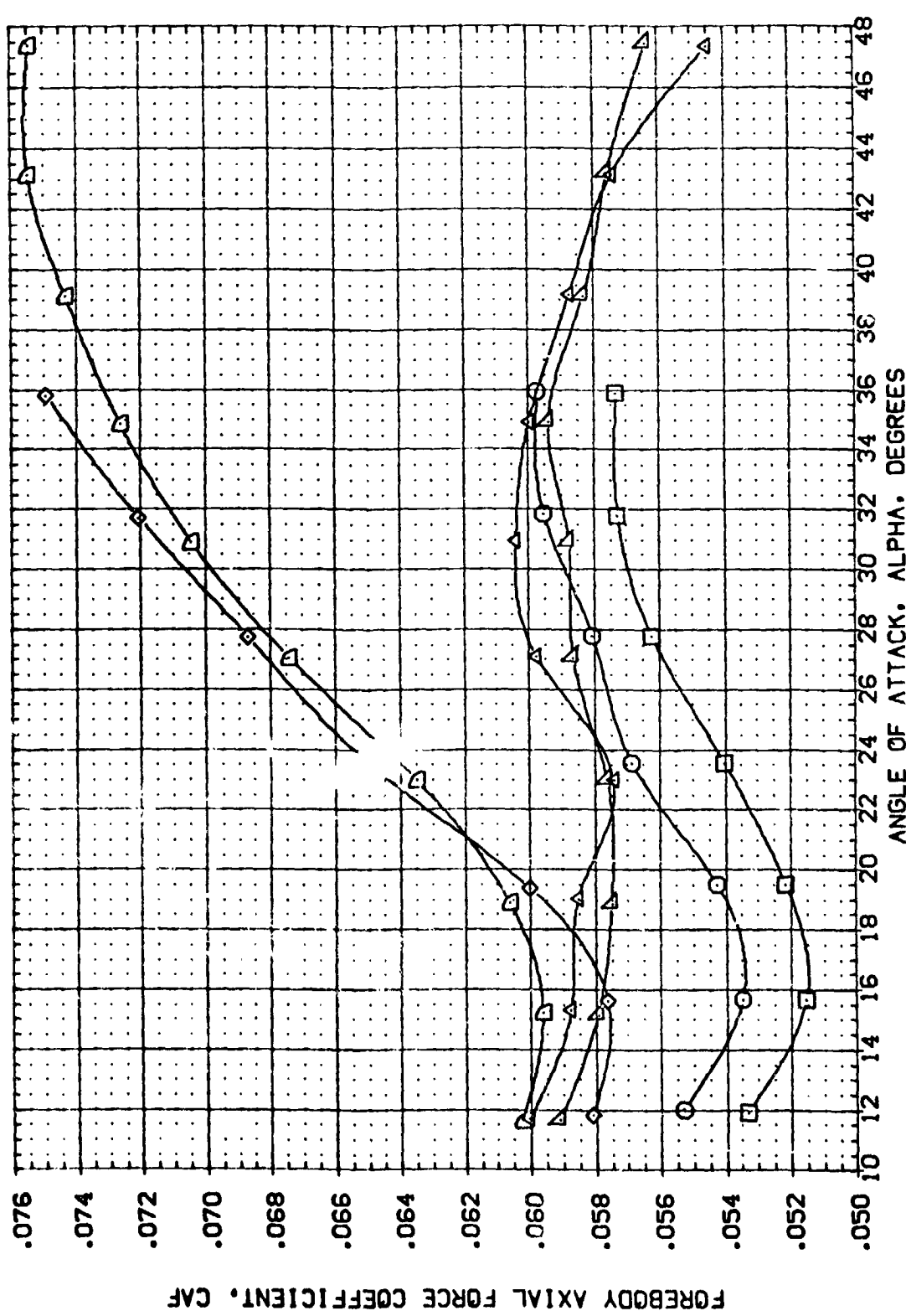


FIG. 11 BODYFLAP EFFECTIVENESS

(A)MACH = 7.32

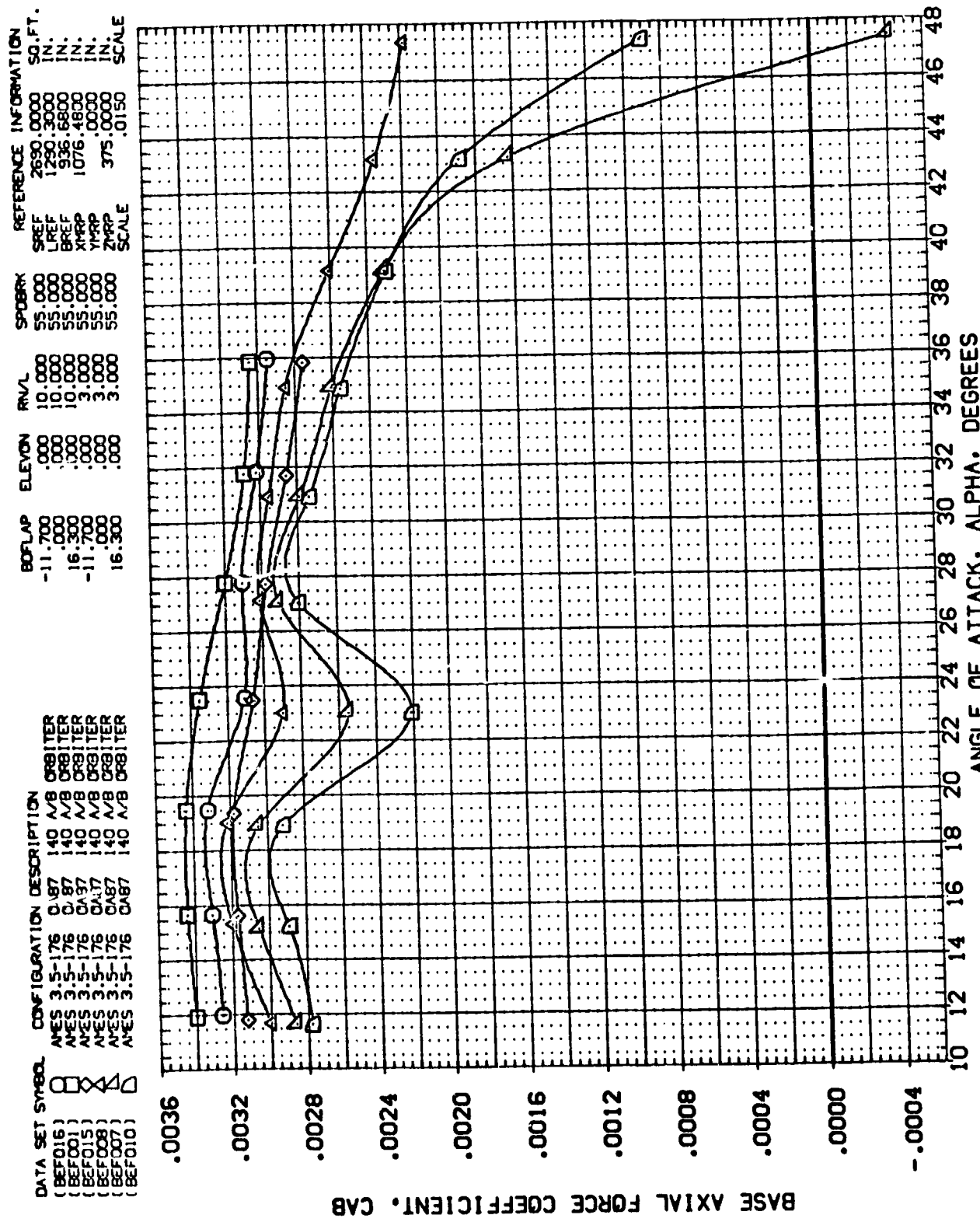


FIG. 11 BODYFLAP EFFECTIVENESS

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	ELEVON	RNVL	SFOBRK	REFERENCE INFORMATION
(BEF016)	AVES 3.5-176 OAB7 140 A/B CRBITER	-11.700	.000	10.000	55.000	SREF 2650.0000 SO.FT.
(BEF001)	AVES 3.5-176 OAB7 140 A/B CRBITER	.000	.000	10.000	55.000	LREF 1290.3000 IN.
(BEF015)	AVES 3.5-176 OAB7 140 A/B CRBITER	16.300	.000	10.000	55.000	BREF 936.6800 IN.
(BEFC08)	AVES 3.5-176 OAB7 140 A/B CRBITER	-11.700	.000	3.000	55.000	VMRP 1076.4800 IN.
(BEF007)	AVES 3.5-176 OAB7 140 A/B CRBITER	.000	.000	3.000	55.000	ZMRP .0000 IN.
(BEF010)	AVES 3.5-176 OAB7 140 A/B CRBITER	16.300	.000	3.000	55.000	SCALE .0150 SCALE

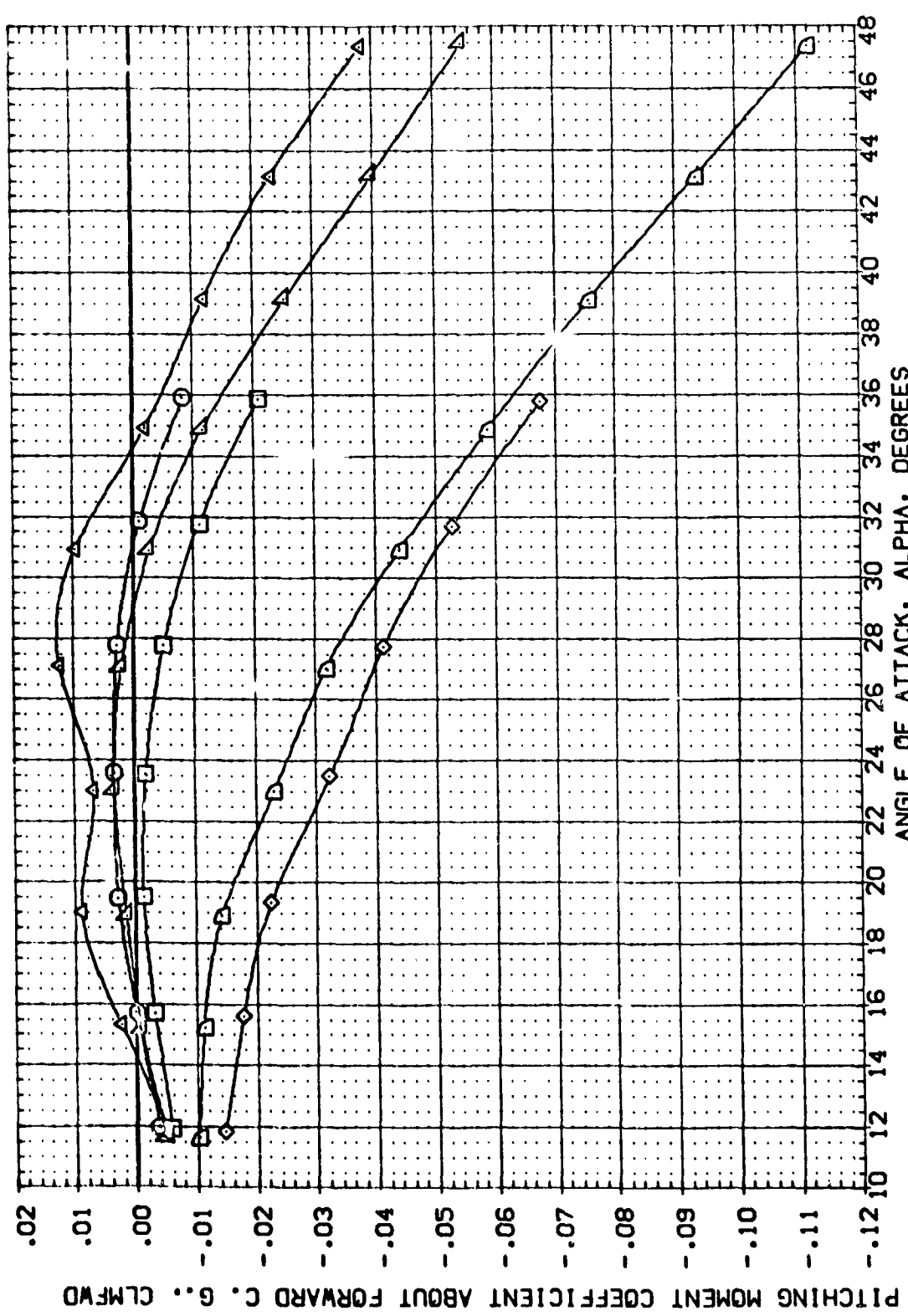


FIG. 11 BODYFLAP EFFECTIVENESS
(M)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	ELEVON	RVL	SPOBRK	REFERENCE INFORMATION
(BEF016)	AVES 3.5-176 CAB7 140 A/B CRB7ITER	-11.700	.000	10.000	55.000	SREF 2690.0000 SQ.FT.
(BEF021)	AVES 3.5-176 CAB7 140 A/B CRB7ITER	16.300	.000	10.000	55.000	LREF 1250.3070 IN.
(BEF015)	AVES 3.5-176 CAB7 140 A/B CRB7ITER	-11.700	.000	3.000	55.000	BREF 932.6872 IN.
(BEF008)	AVES 3.5-176 CAB7 140 A/B CRB7ITER	16.300	.000	3.000	55.000	XMRP 1076.4800 IN.
(BEF007)	AVES 3.5-176 CAB7 140 A/B CRB7ITER	16.300	.000	3.000	55.000	YMRP .0000 IN.
(BEF010)	AVES 3.5-176 CAB7 140 A/B CRB7ITER	16.300	.000	3.000	55.000	ZMRP .0150 IN.
						SCALE

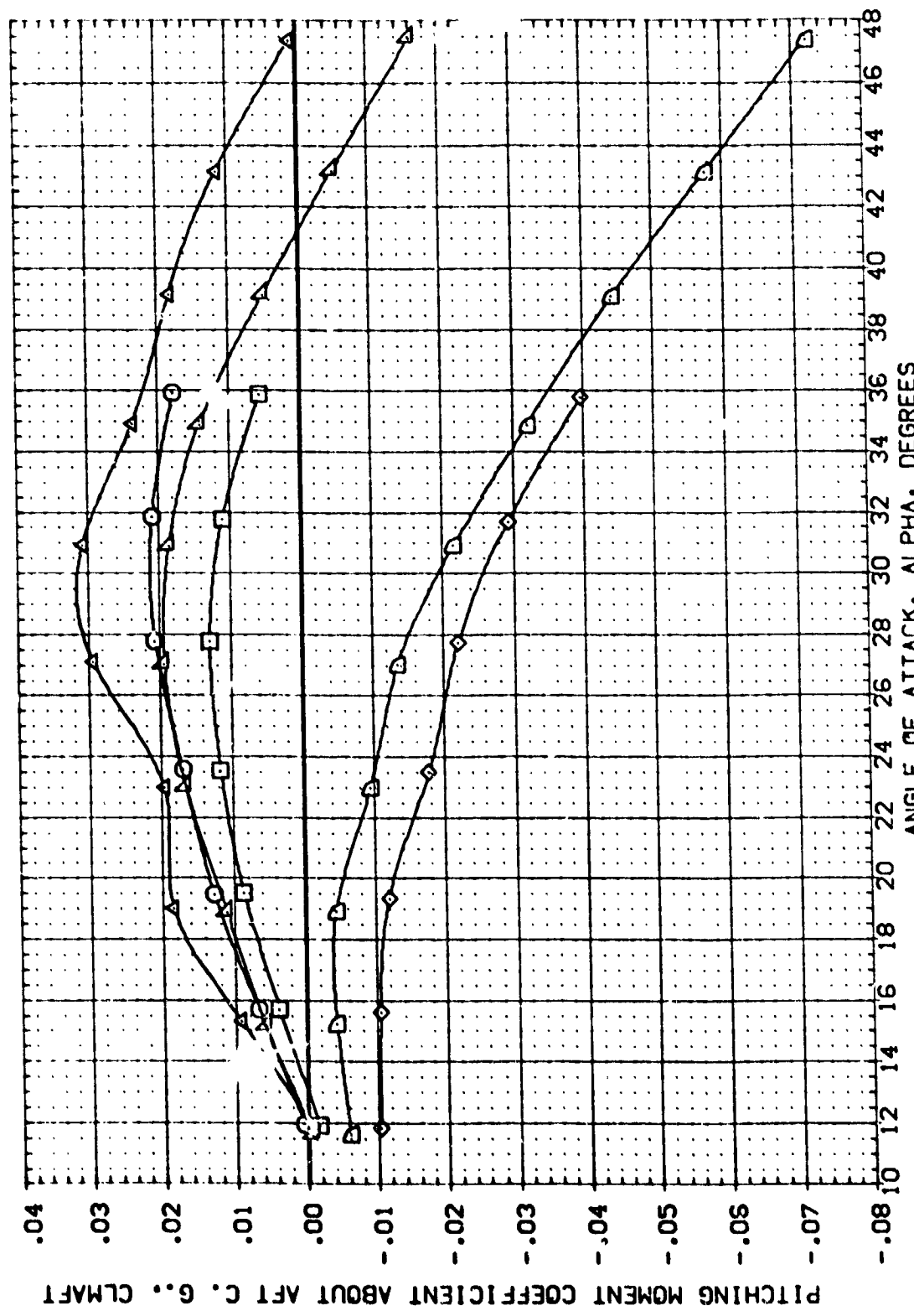


FIG. 11 BODYFLAP EFFECTIVENESS

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	ELEV. IN	M/VL	SFOBRK	REFERENCE INFORMATION
(BEF016)	AMES 3.5-176 CAB7 140 A/B CRB1TER	-11.700	.000	10.000	55.000	SREF 2690.0000 SQ.FT.
(BEF017)	AMES 3.5-176 CAB7 140 A/B CRB1TER	-11.700	.000	10.000	55.000	LREF 1290.3000 IN.
(BEF018)	AMES 3.5-176 CAB7 140 A/B CRB1TER	-11.700	.000	10.000	55.000	BREF 536.6800 IN.
(BEF019)	AMES 3.5-176 CAB7 140 A/B CRB1TER	-11.700	.000	10.000	55.000	XMRP 1076.4800 IN.
(BEF020)	AMES 3.5-176 CAB7 140 A/B CRB1TER	-11.700	.000	10.000	55.000	YMRP 375.0000 IN.
(BEF021)	AMES 3.5-176 CAB7 140 A/B CRB1TER	-11.700	.000	10.000	55.000	ZMRP 375.0000 IN.
(BEF022)	AMES 3.5-176 CAB7 140 A/B CRB1TER	-11.700	.000	10.000	55.000	SCALE .0150

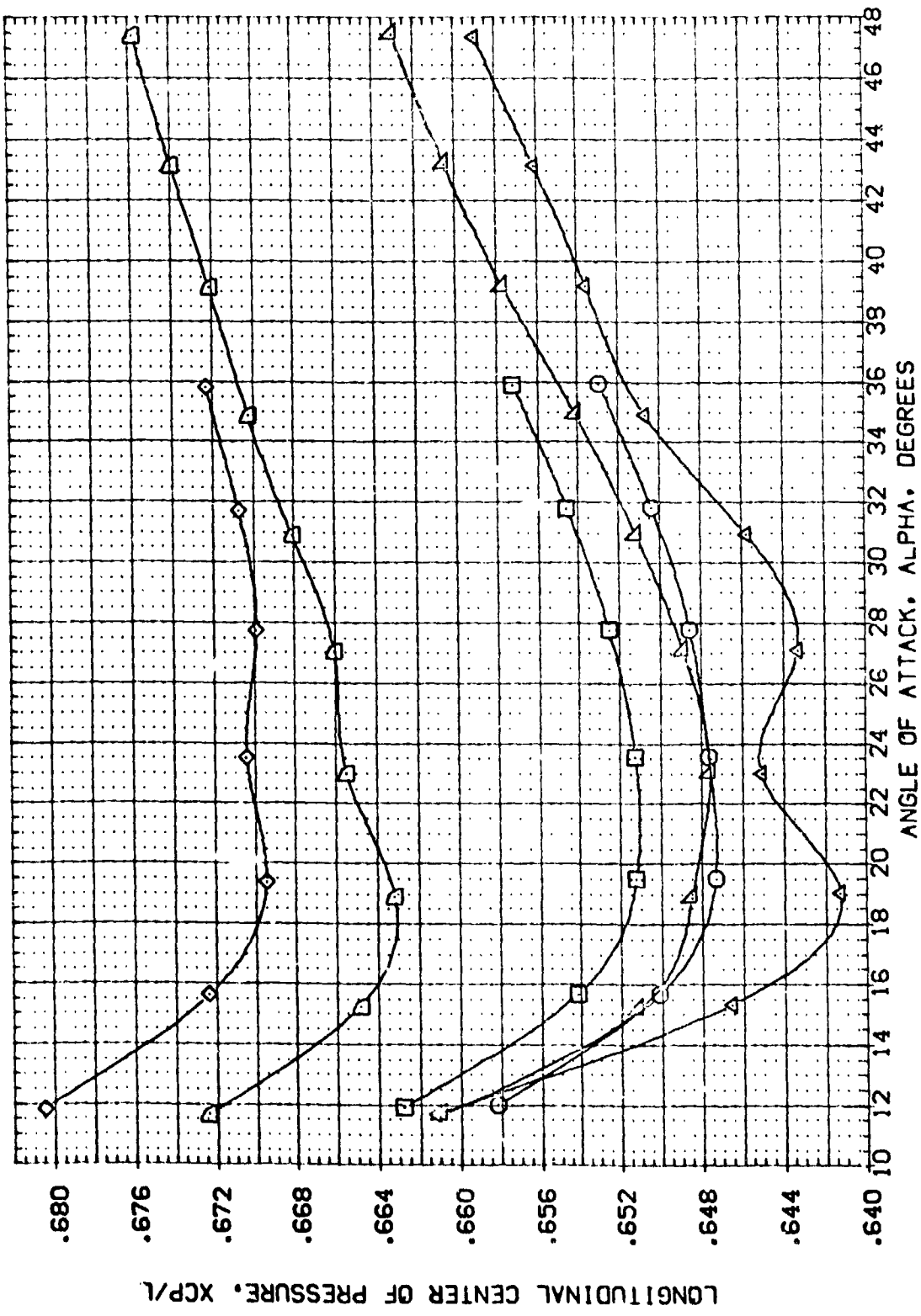
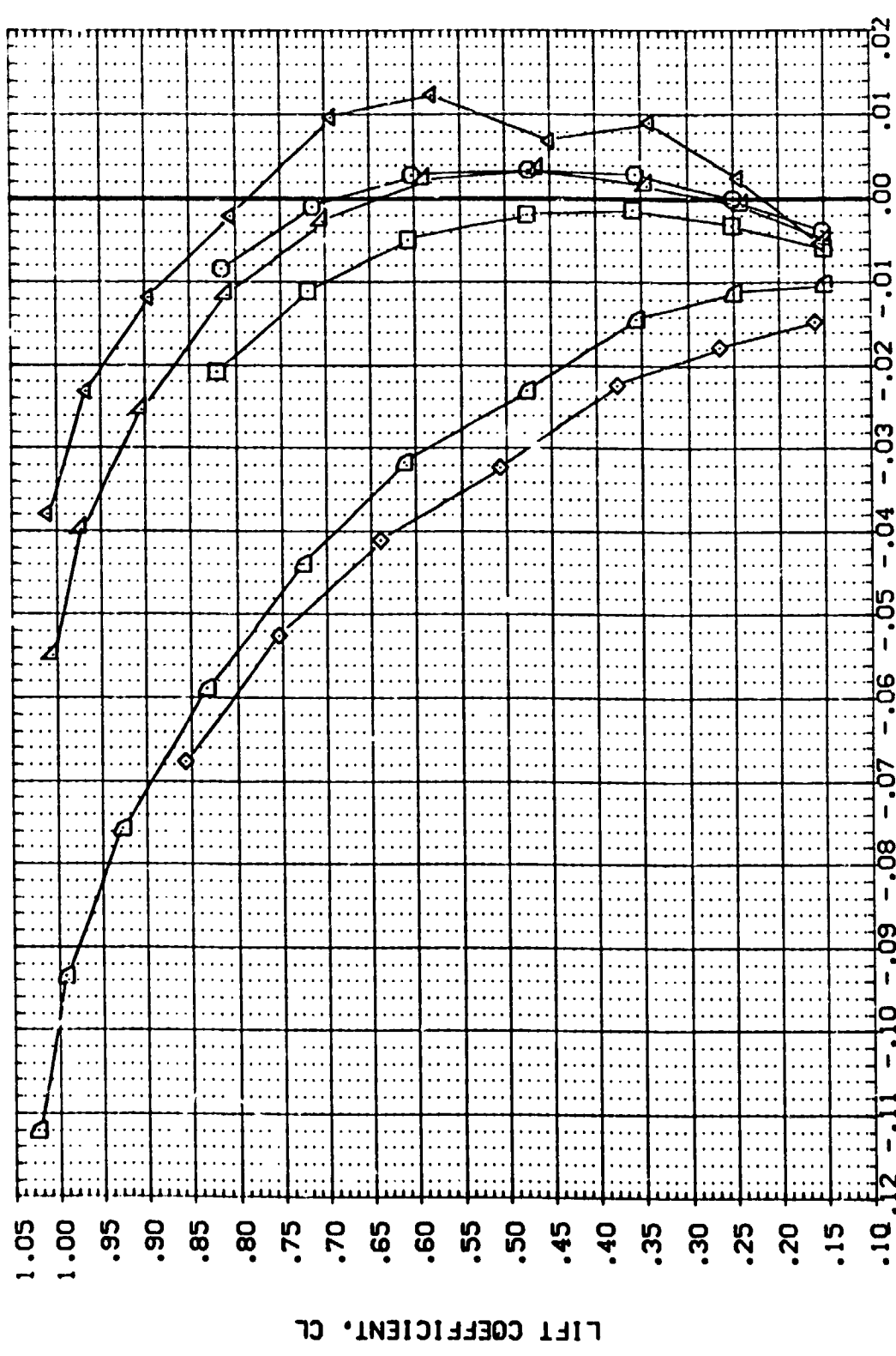


FIG. 11 BODYFLAP EFFECTIVENESS

(M)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	ELEVON	RNVL	SPOBRK	REFERENCE INFORMATION
(BEFO16)	APES 3.5-176 DAB7 140 A/B D8B11ER	-11.700	.000	10.000	15.000	SREF 2690.0000 SQ.FT.
(BEFO17)	APES 3.5-176 DAB7 140 A/B D8B11ER	-11.700	.000	10.000	15.000	LREF 1290.3000 IN.
(BEFO18)	APES 3.5-176 DAB7 140 A/B D8B11ER	16.300	.000	10.000	15.000	BREF 936.6800 IN.
(BEFO19)	APES 3.5-176 DAB7 140 A/B D8B11ER	-11.700	.000	3.000	55.000	XMRP 1076.4800 IN.
(BEFO20)	APES 3.5-176 DAB7 140 A/B D8B11ER	-11.700	.000	3.000	55.000	ZMRP 375.0000 IN.
(BEFO21)	APES 3.5-176 DAB7 140 A/B D8B11ER	16.300	.000	3.000	55.000	SCALE .01:0



PITCHING MOMENT COEFFICIENT ABOUT FORWARD C. G.: CLMFWD

FIG. 11 BODYFLAP EFFECTIVENESS

(AJMACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	ELEVON	RVAL	SPDRBK	REFERENCE INFORMATION	SO.FT.
(BEF016)	AMES 3.5-176 CAB7 140 A/B CRB1TER	-11.700	.000	10.000	55.000	SREF 2690.0000	IN.
(BEF001)	AMES 3.5-176 CAB7 140 A/B CRB1TER	16.300	.000	10.000	55.000	LREF 1290.3000	IN.
(BEF015)	AMES 3.5-176 CAB7 140 A/B CRB1TER	-11.700	.000	3.000	55.000	BREF 936.6600	IN.
(BEF008)	AMES 3.5-176 CAB7 140 A/B CRB1TER	-11.700	.000	3.000	55.000	XMRP 1076.4800	IN.
(BEF007)	AMES 3.5-176 CAB7 140 A/B CRB1TER	16.300	.000	3.000	55.000	YMRP 375.0000	IN.
(BEF010)	AMES 3.5-176 CAB7 140 A/B CRB1TER	16.300	.000	3.000	55.000	ZMRP 375.0150	SCALE

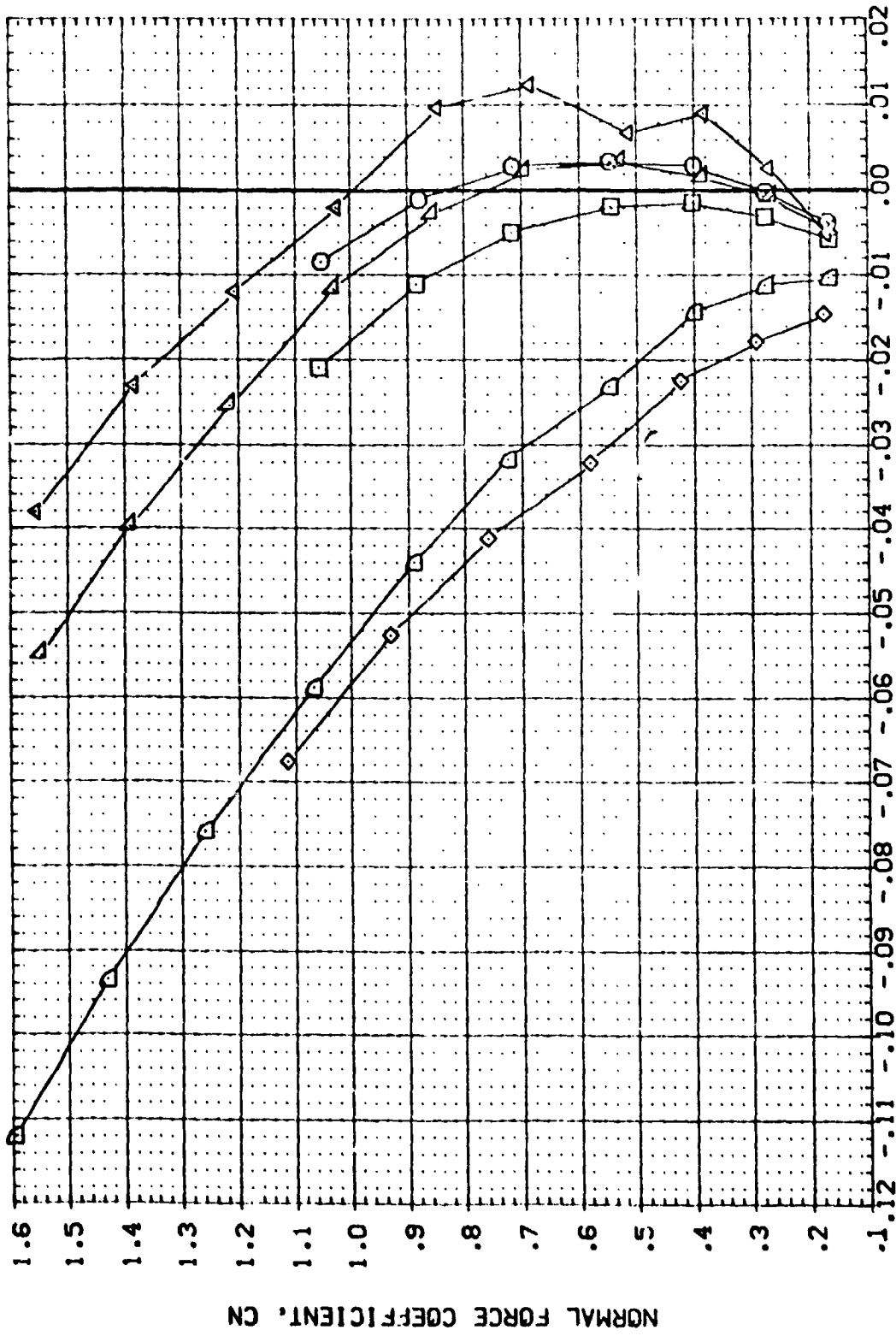


FIG. 11 BODYFLAP EFFECTIVENESS

(A)MACH = 7.32

DATA SET SYMBO.	CONFIGURATION DESCRIPTION	BOFLAP	ELEVON	RNVL	SPOBRK	REFERENCE INFORMATION
(BEFD06)	AVES 3.5-176 CAB7 140 A/B CR81TER	-11.700	.000	10.000	55.000	SREF 2690.0000 SQ.FT.
(BEFD07)	AVES 3.5-176 CAB7 140 A/B CR81TER	16.300	.000	10.000	55.000	LREF 1230.3000 IN.
(BEFD08)	AVES 3.5-176 CAB7 140 A/B CR81TER	-11.700	.000	10.000	55.000	BREF 936.6800 IN.
(BEFD09)	AVES 3.5-176 CAB7 140 A/B CR81TER	16.300	.000	3.000	55.000	XOPP 1076.4800 IN.
(BEFD10)	AVES 3.5-176 CAB7 140 A/B CR81TER	16.300	.000	3.000	55.000	YOPP .0000 IN.
						ZOPP .0000 IN.
						SCALE .0150

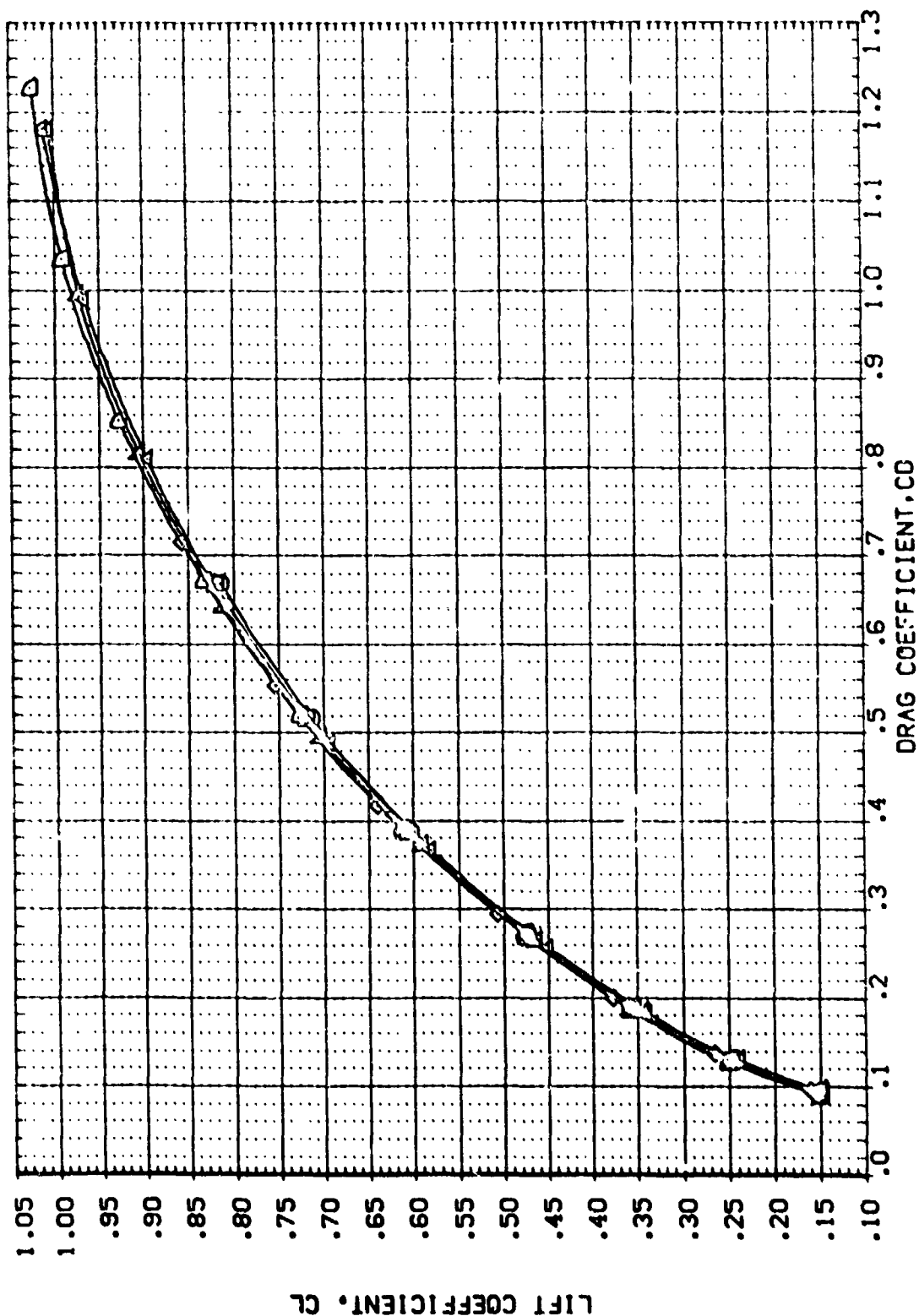


FIG. 11 BODYFLAP EFFECTIVENESS

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BOFLAP	ELEVON	R/V/L	SPOBRK	REFERENCE INFORMATION
(AEF016)	AVES 3.5-176 DAG7 140 A/B CRBITER	-11.700	.000	10.000	55.000	SREF 2690.0000 SO.FT.
(AEF017)	AVES 3.5-176 DAG7 140 A/B CRBITER	-11.700	.000	10.000	55.000	LREF 1290.3000 IN.
(AEF018)	AVES 3.5-176 DAG7 140 A/B CRBITER	16.300	.000	10.000	55.000	BREF 936.6800 IN.
(AEF019)	AVES 3.5-176 DAG7 140 A/B CRBITER	-11.700	.000	3.000	55.000	XTRP 1076.4800 IN.
(AEF020)	AVES 3.5-176 DAG7 140 A/B CRBITER	-11.700	.000	3.000	55.000	YTRP .0000 IN.
(AEF021)	AVES 3.5-176 DAG7 140 A/B CRBITER	16.300	.000	3.000	55.000	ZTRP 375.0000 IN.
(AEF022)	AVES 3.5-176 DAG7 140 A/B CRBITER	16.300	.000	3.000	55.000	SCALE .0150 SCALE

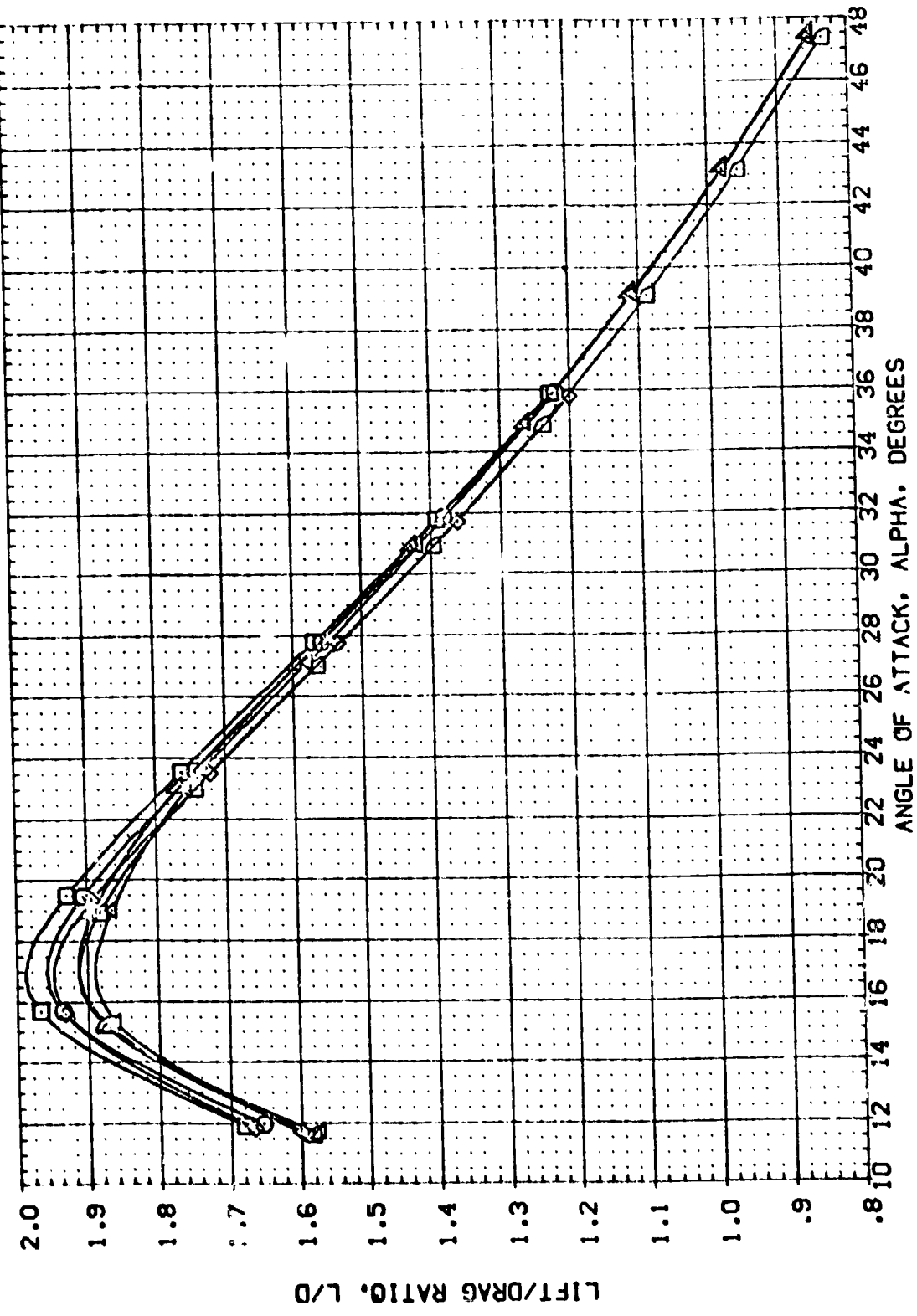


FIG. 11 BODYFLAP EFFECTIVENESS

(A)MACH = 7.32

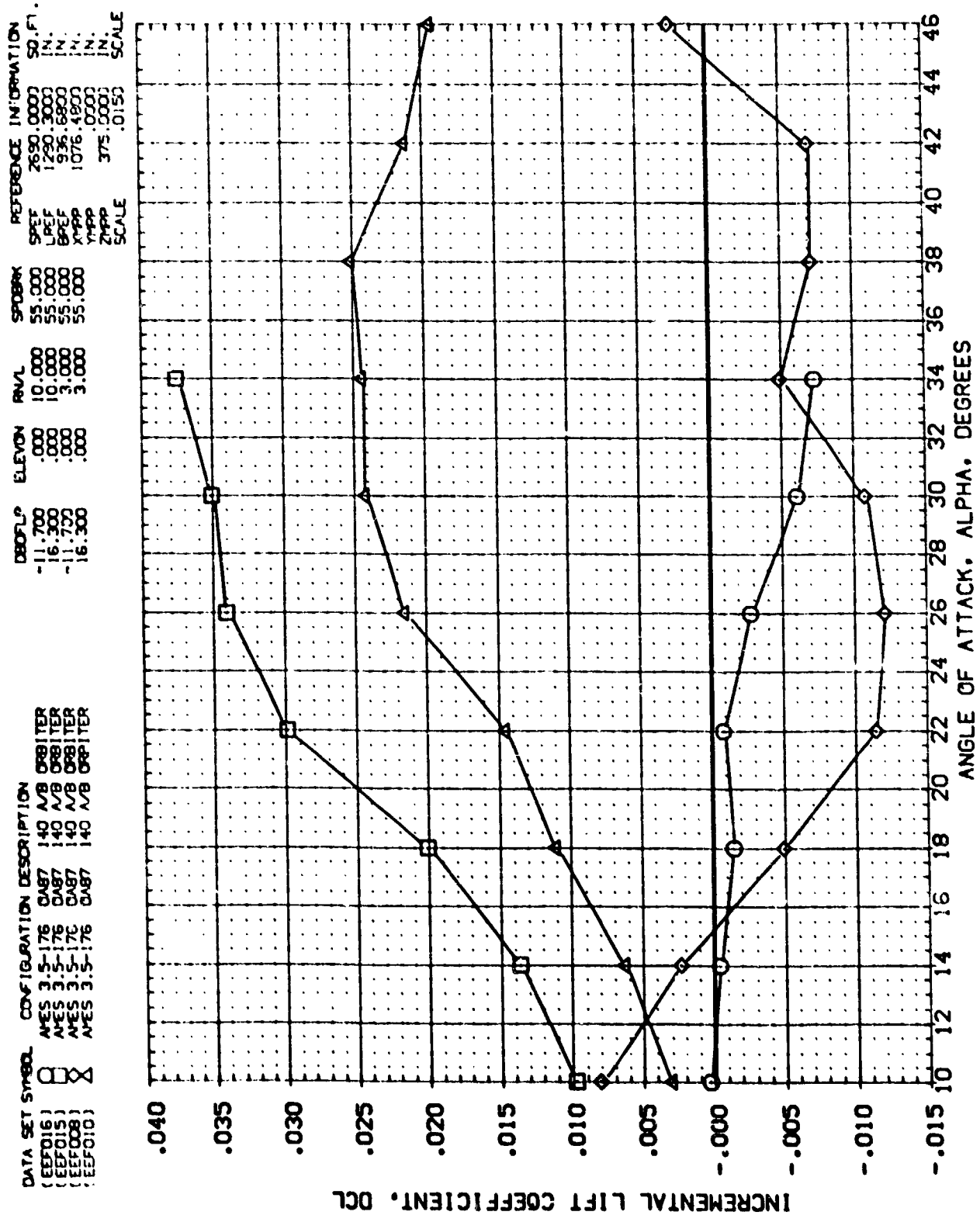


FIG. 11 BODYFLAP EFFECTIVENESS
(MACH = 7.32)

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	DRDFLP	ELEVON	RNVL	SPOBRK	REFERENCE INFORMATION
(EEF016)	AVES 3.5-176 C187 140 A/B CRBITER	-11.700	.000	10.000	55.000	SREF 2690.0000 SQ.FT.
(EEF015)	AVES 3.5-176 C187 140 A/B CRBITER	-16.300	.000	10.000	55.000	LREF 1290.3000 IN.
(EEF008)	AVES 3.5-176 C187 140 A/B CRBITER	-11.700	.000	3.000	55.000	BREF 936.6800 IN.
(EEF010)	AVES 3.5-176 C187 140 A/B CRBITER	16.300	.000	3.000	55.000	XMRP 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150

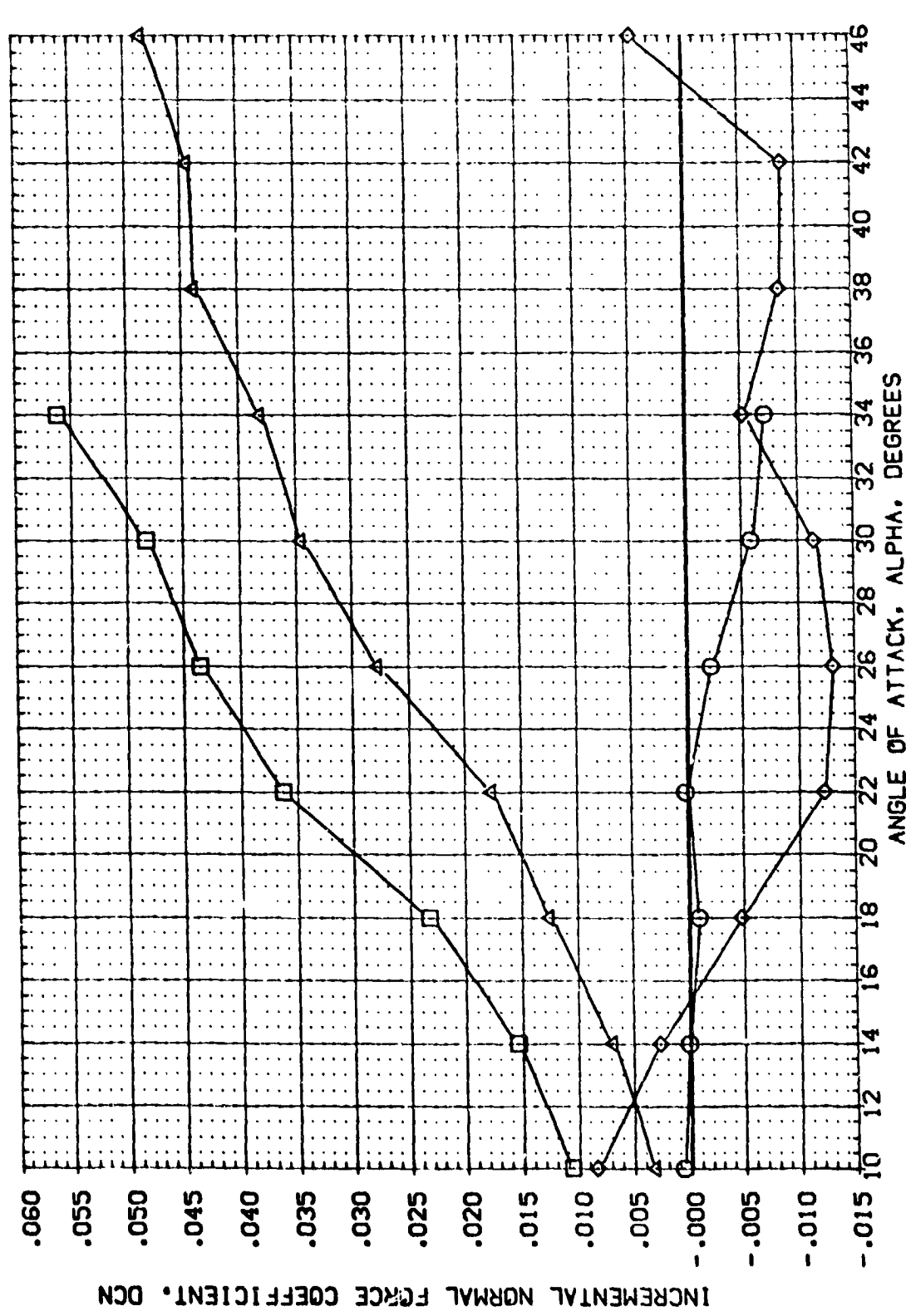


FIG. 11 BODYFLAP EFFECTIVENESS
(A)MACH = 7.32

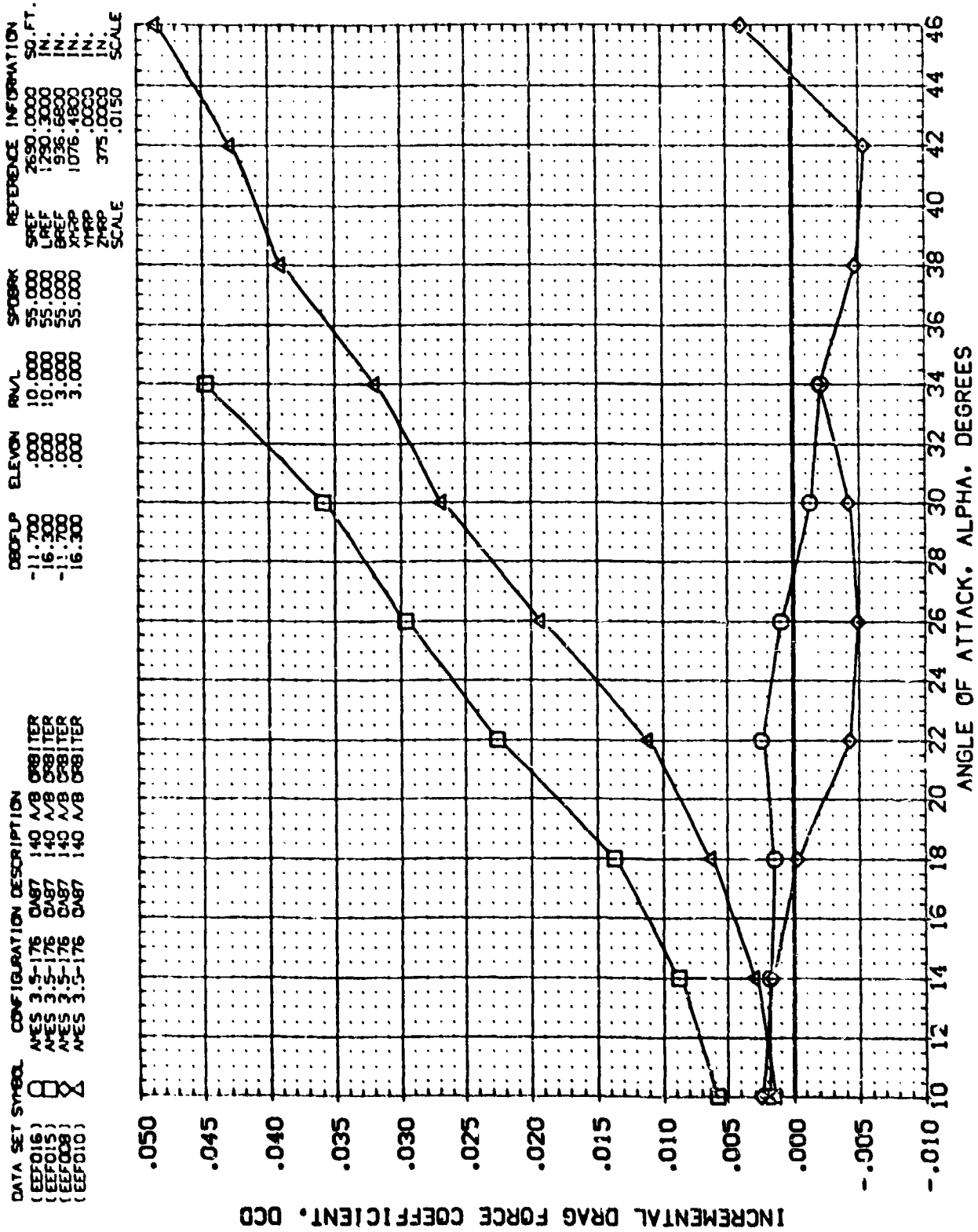


FIG. 11 BODYFLAP EFFECTIVENESS

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	OBDFLP	ELEVON	RV/L	SPOBRK	REFERENCE INFORMATION
(EF016)	AVES 3.5-176 CAB7 140 A/B CRB1TER	-11.700	.000	10.000	55.000	SREF 2650.0000 SO.FT.
(EF015)	AVES 3.5-176 CAB7 140 A/B CRB1TER	-16.300	.000	10.000	55.000	LREF 1250.3000 IN.
(EF008)	AVES 3.5-176 CAB7 140 A/B CRB1TER	-11.700	.000	3.000	55.000	BREF 936.6600 IN.
(EF010)	AVES 3.5-176 CAB7 140 A/B CRB1TER	-16.300	.000	3.000	55.000	XMRG 1076.4800 IN.
						YMRG .0000 IN.
						ZMRG 375.0000 IN.
						SCALE .0150

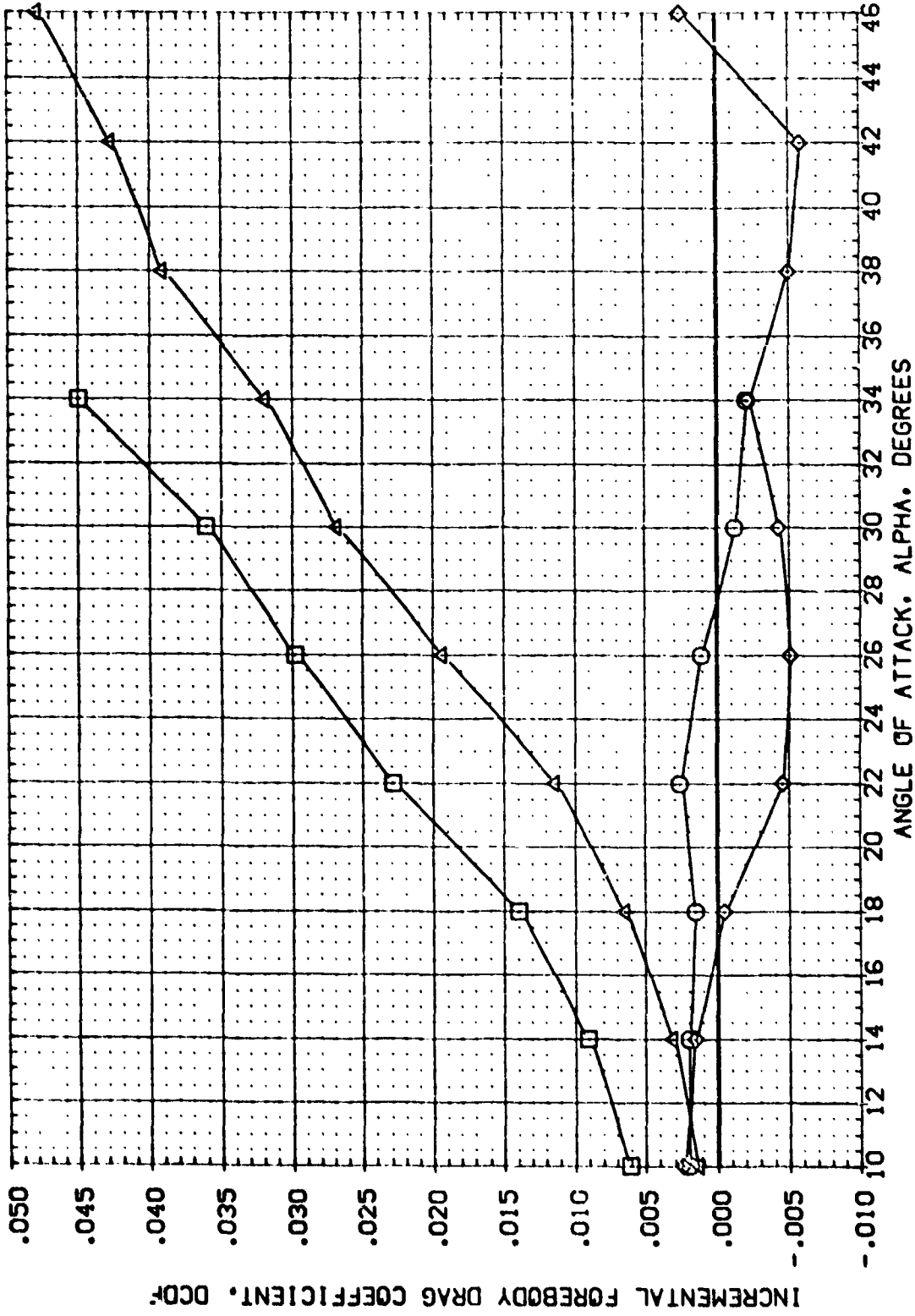


FIG. 11 BODYFLAP EFFECTIVENESS

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	DEFLP	ELEVON	RNVL	SPOBRK	REFERENCE INFORMATION
(EEF016)	AMES 3.5-176 DAB7 140 A/B DRBITTER	-11.700	.000	10.000	55.000	SREF 2690.0000 SO.FT.
(EEF015)	AMES 3.5-176 DAB7 140 A/B DRBITTER	-16.300	.000	10.000	55.000	LREF 1290.3000 IN.
(EEF008)	AMES 3.5-176 DAB7 140 A/B DRBITTER	-11.700	.000	3.000	55.000	BREF 936.6800 IN.
(EEF010)	AMES 3.5-176 DAB7 140 A/B DRBITTER	16.300	.000	3.000	55.000	XTRP 1076.4800 IN.
						ZTRP .0000 IN.
						SCALE 375.0000 IN.
						SCALE .0150

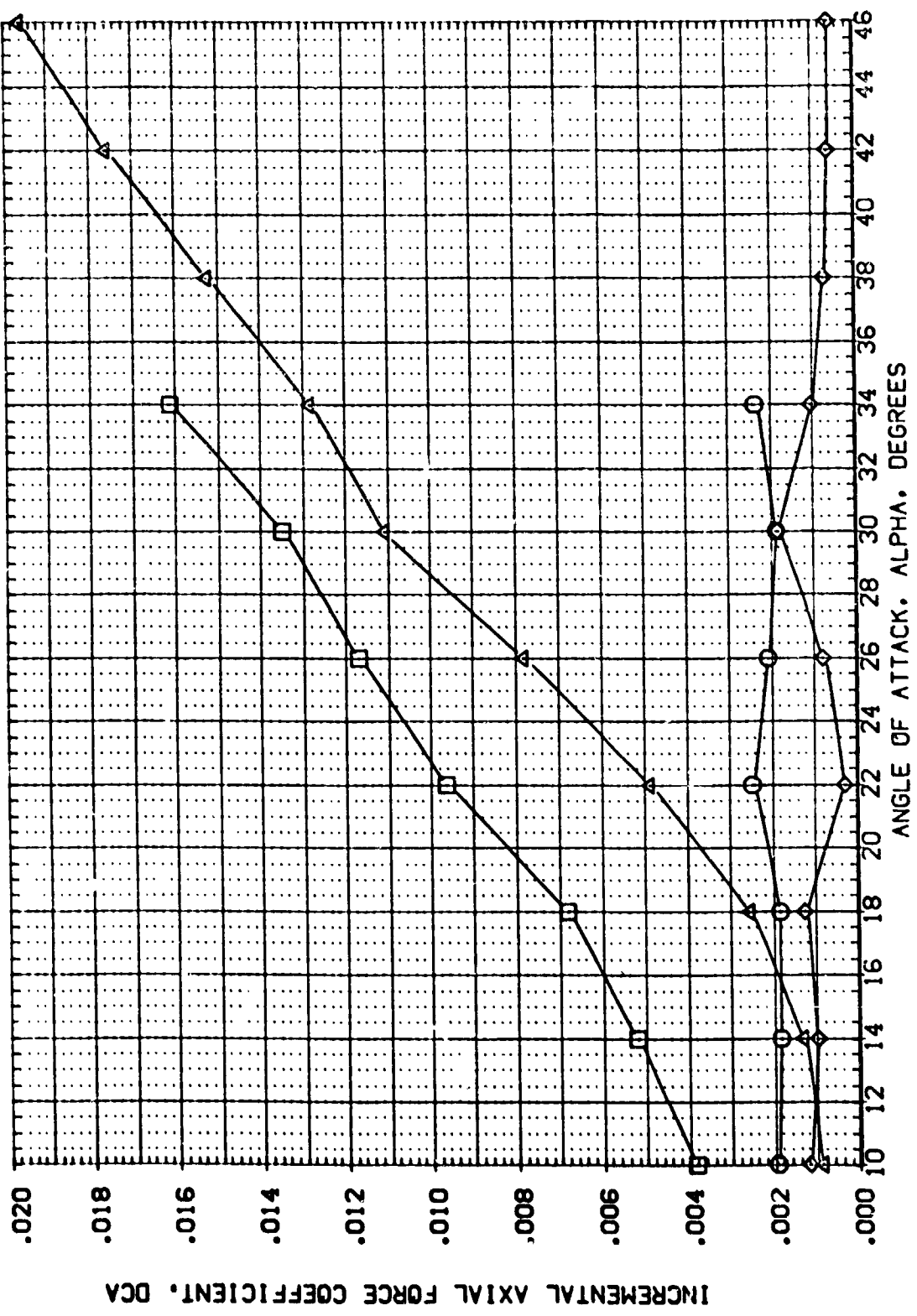


FIG. 11 BODYFLAP EFFECTIVENESS

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	DBDFLP	E. EVON	RVA	SPOBRK	REFERENCE INFORMATION
(EEF016)	AMES 3.5-176 CAB7 140 A/B DRB1TER	-11.700	.000	10.000	55.000	SREF 2690.0000 SO.FT.
(EEF015)	AMES 3.5-176 CAB7 140 A/B DRB1TER	-16.300	.000	10.000	55.000	LREF 1290.2000 IN.
(EEF008)	AMES 3.5-176 CAB7 140 A/B DRB1TER	-11.700	.000	3.000	55.000	BREF 9.36.6400 IN.
(EEF010)	AMES 3.5-176 CAB7 140 A/B DRB1TER	-16.300	.000	3.000	55.000	XMRP 1076.4600 IN.
						YMRP .0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150

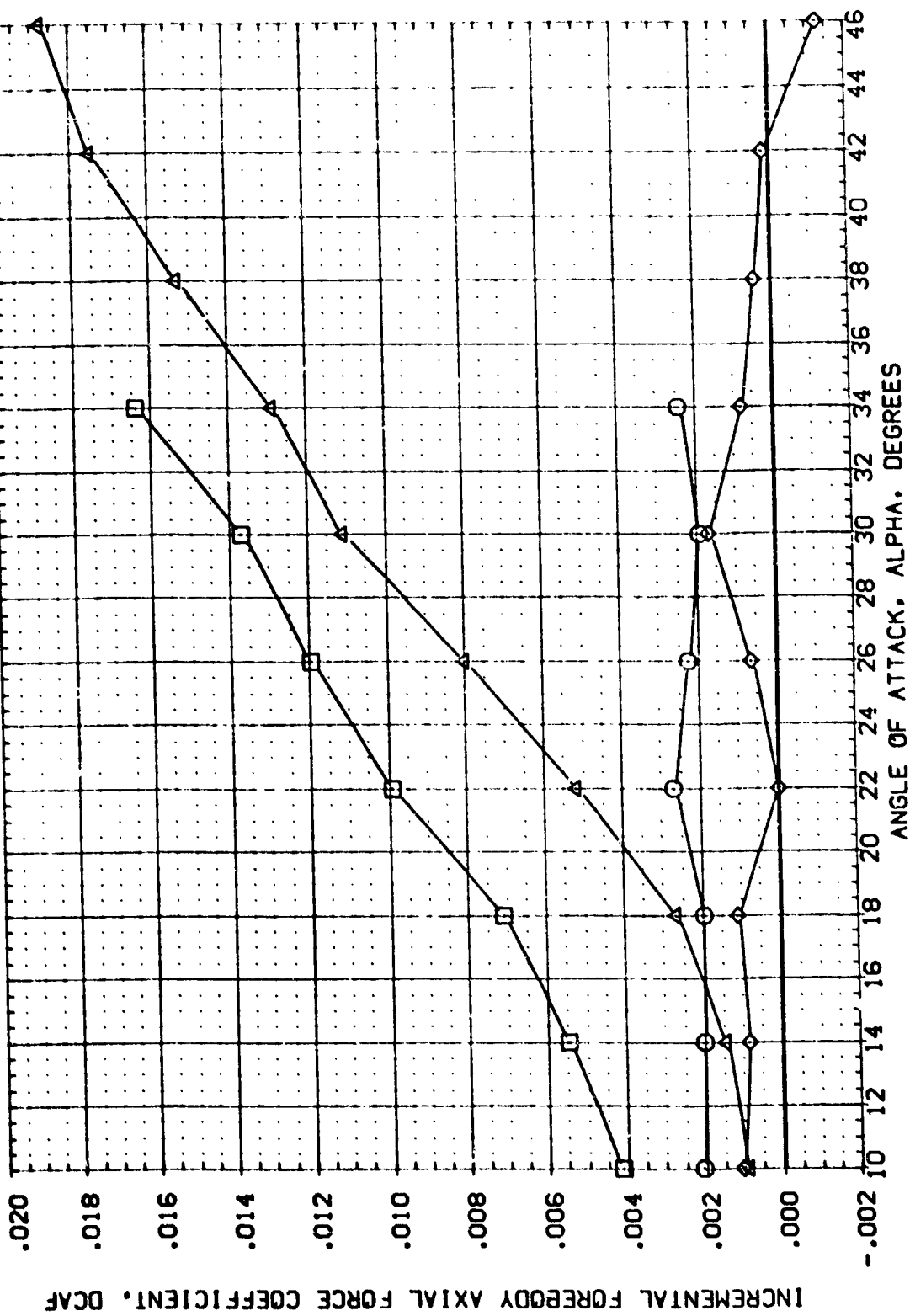


FIG. 11 BODYFLAP EFFECTIVENESS
(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	DBDFLP	ELEVON	RVA.	SPOBRK	REFERENCE INFORMATION
(EEFO16)	AVES 3.5-176 OAB7 140 A/B ORBITER	-11.700	.000	10.000	55.000	SREF 2690.0000 SQ.FT.
(EEFC15)	AVES 3.5-176 OAB7 140 A/B ORBITER	-16.300	.000	10.000	55.000	LREF 1290.3000 IN.
(EEFD08)	AVES 3.5-176 OAB7 140 A/B ORBITER	-11.700	.000	3.000	55.000	BREF 936.6800 IN.
(EEFO10)	AVES 3.5-176 OAB7 140 A/B ORBITER	-16.300	.000	3.000	55.000	XREF 1076.4800 IN.
						YREF 0.0000 IN.
						ZREF 375.0000 IN.
						SCALE .0150

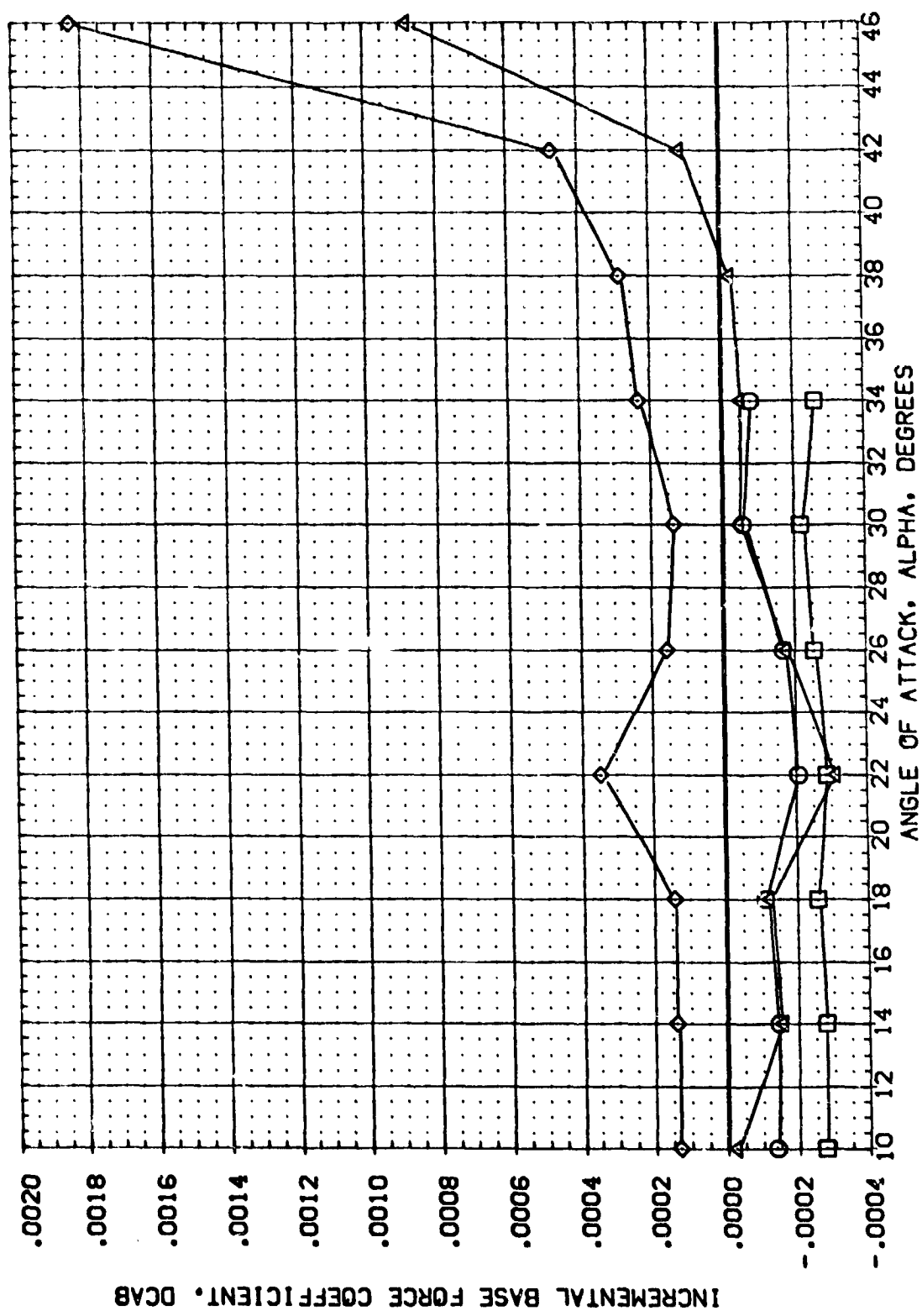


FIG. 11 BODYFLAP EFFECTIVENESS
(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	DBOFLP	ELEVON	RNVL	SPDBRK	REFERENCE INFORMATION
(EFO16)	AVES 3.5-176 OAB7 140 A/B OPB11TER	-11.700	.000	10.000	55.000	SREF 2690.0000 SQ.FT.
(EFO15)	AVES 3.5-176 OAB7 140 A/B OPB11TER	-16.300	.000	10.000	55.000	LREF 1290.3000 IN.
(EFO8)	AVES 3.5-176 OAB7 140 A/B OPB11TER	-11.700	.000	3.000	55.000	BREF 936.6800 IN.
(EFO10)	AVES 3.5-176 OAB7 140 A/B OPB11TER	-16.300	.000	3.000	55.000	XMRP 1076.4800 IN.
						ZMRP 375.0000 IN.
						SCALE .0150

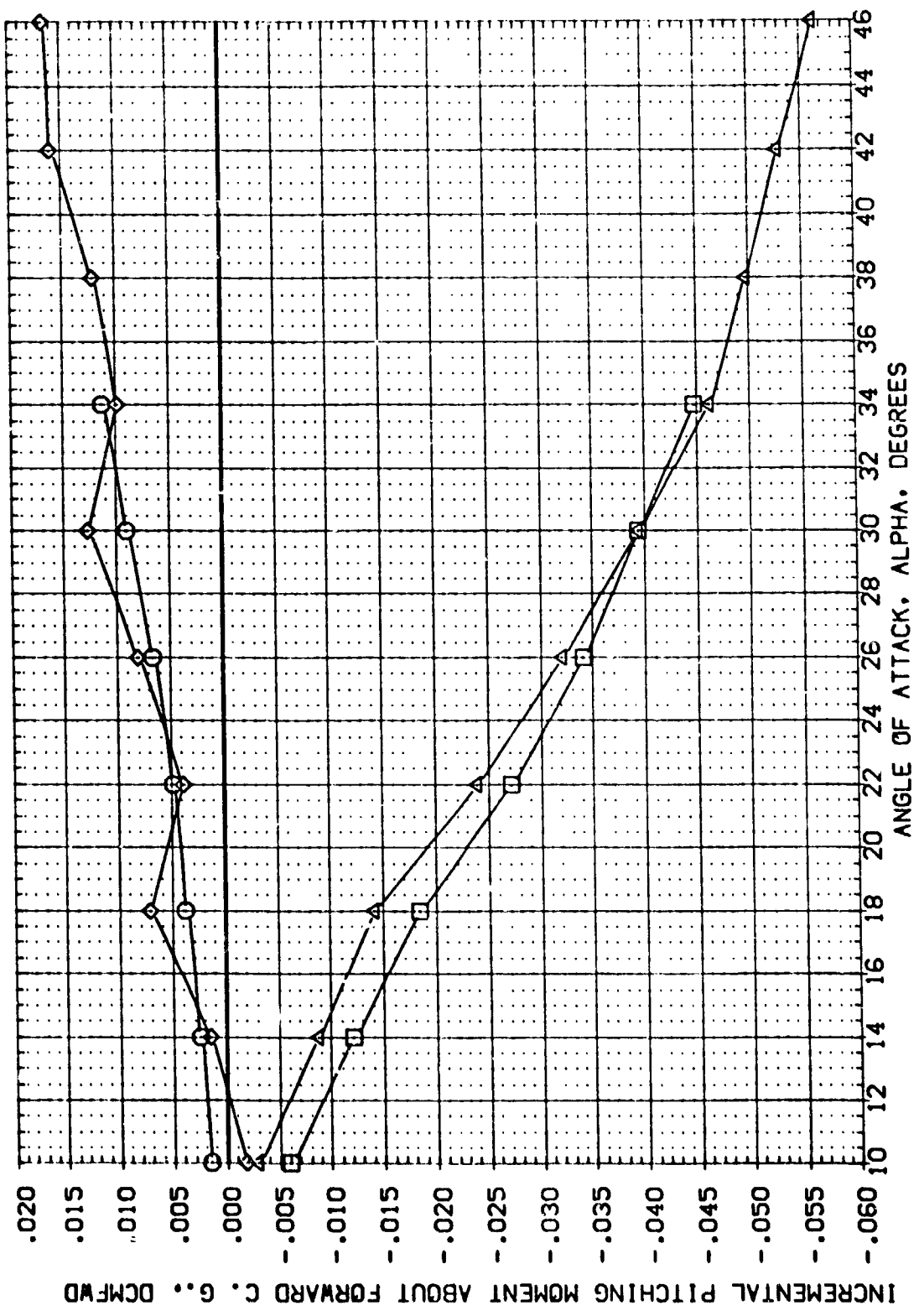


FIG. 11 BODYFLAP EFFECTIVENESS

(A)MACH = 7.32

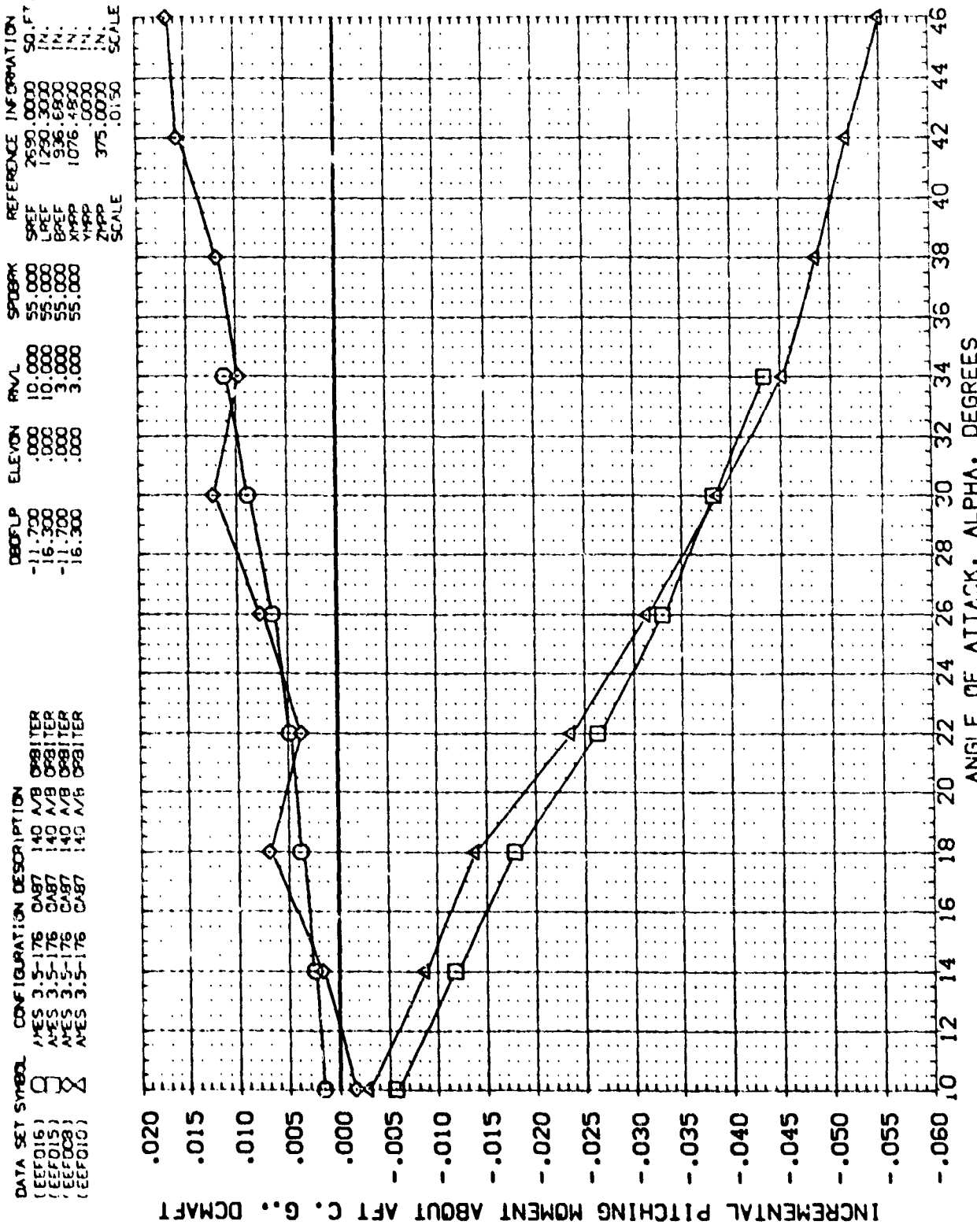


FIG. 11 BODYFLAP EFFECTIVENESS

(A) MACH = 7.32

AMES 3.5-176 0A87 140 A/B ORBITER (GEF016)

SYMBOL	ALPHA	MACH	PARAMETRIC VALUES	DATA SOURCE	DATA SET	BOFLAP	SREF	REFERENCE INFORMATION
○	10.000	7.320	BETA	BOFLAP	GEF001	.000	LREF	2690.0000
□	20.000	.000	ELEVON	-11.700	GEF015	.000	BRF	1290.3000
◇	30.000	.000	SPOBRK	16.300	GEF015	.000	XMRP	936.6800
		10.000	RV/L				ZMRP	1076.4800
							SCALE	.0000
								375.0000
								.0150
								SO.FT.
								IN.
								IN.
								IN.
								IN.
								IN.
								SCALE

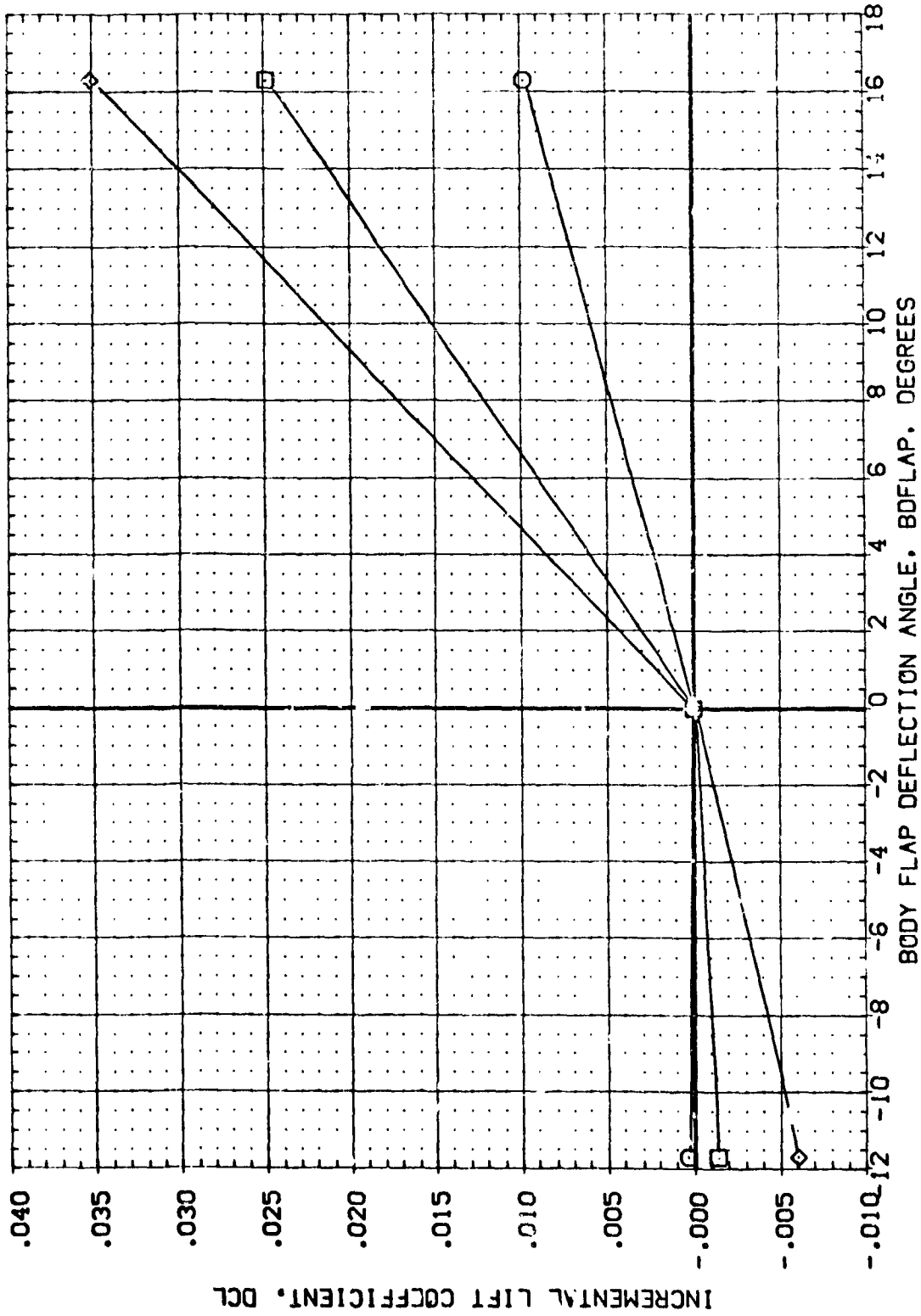


FIG. 11 BODYFLAP EFFECTIVENESS

AMES 3.5-176 0A87 140 A/B ORBITER (GEFO16)

SYMBOL	ALPHA	MACH	PARAMETRIC VALUES	.000	DATASET	BOFLAP	DATA SOURCE	DATASET	BOFLAP	SREF	REFERENCE INFORMATION	SO. FT.
○	10.000		7.320	BETA	.000	GEFO16	-11.700	GEFO01	.000	LREF	2890.0000	IN.
□	20.000	A1LRON	.000	ELEVON	.000	GEFO15	16.300			BREF	1250.3000	IN.
◇	30.000	RUDDER	.000	SPDRBK	\$5.000	GEFO15				XMRP	936.6800	IN.
		RV/L	10.000							ZMRP	1076.4000	IN.
										SCALE	375.0000	IN.
												SCALE

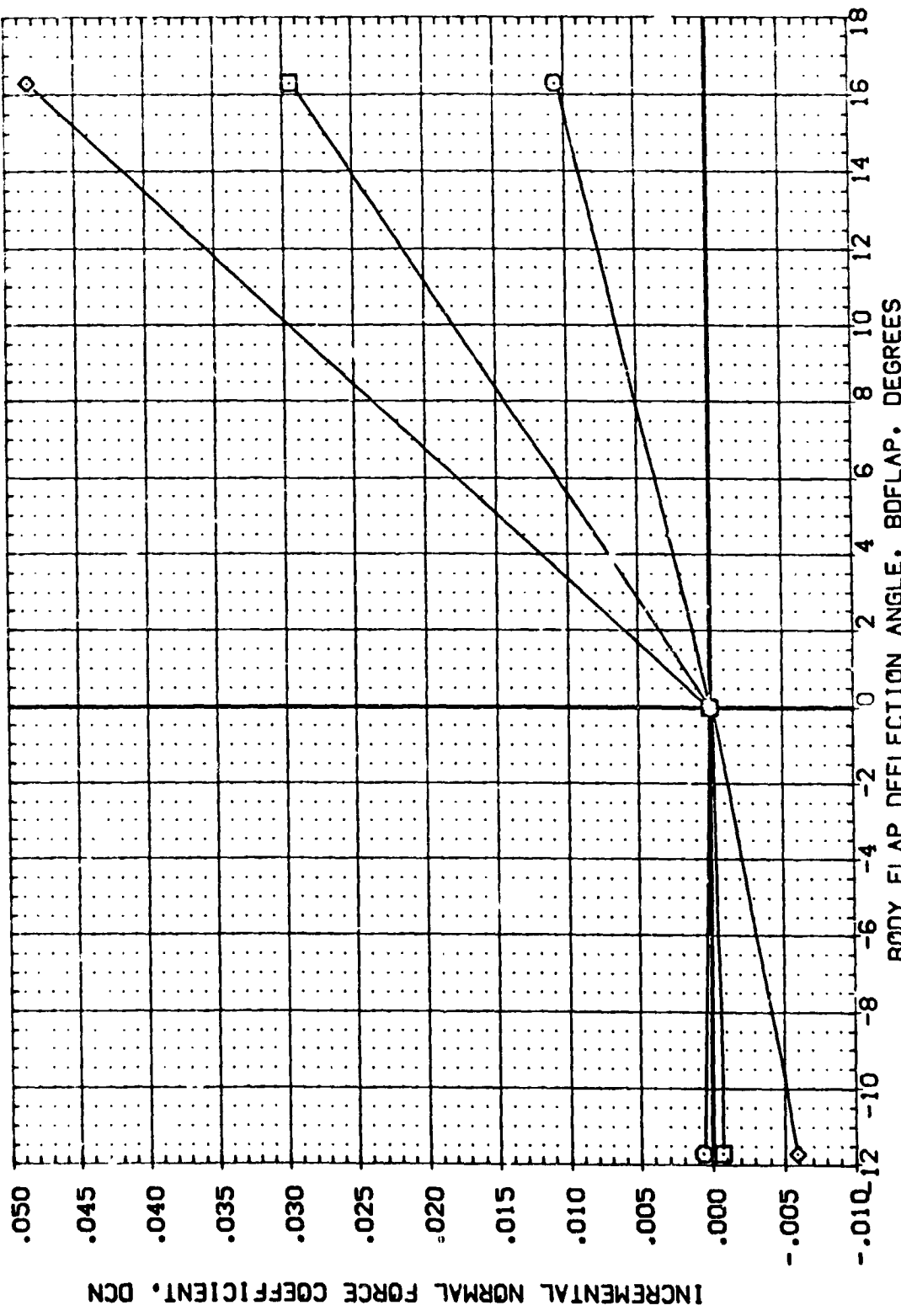


FIG. 11 BODYFLAP EFFECTIVENESS

AMES 3.5-176 0A87 140 A/B ORBITER (GEFO16)

PARAMETRIC VALUES
 MACH 7.320 BETA
 AILTRON .000 ELEVON
 RUDDER .000 SPOBRK
 RV/L 10.000

DATA SOURCE
 BOFLAP .000 DATASET
 GEFO16 -11.700
 GEFO15 16.300

BOFLAP .000 DATASET
 GEFO01

REFERENCE INFORMATION
 SREF 2690.000 3.FT.
 LREF 1290.3000 IN.
 BRREF 936.6800 IN.
 XMRP 1076.4900 IN.
 YMRP .0000 IN.
 ZMRP 375.0000 IN.
 SCALE .0150

SYMBOL
 ○
 □
 ◇

INCREMENTAL DRAG FORCE COEFFICIENT, CDD

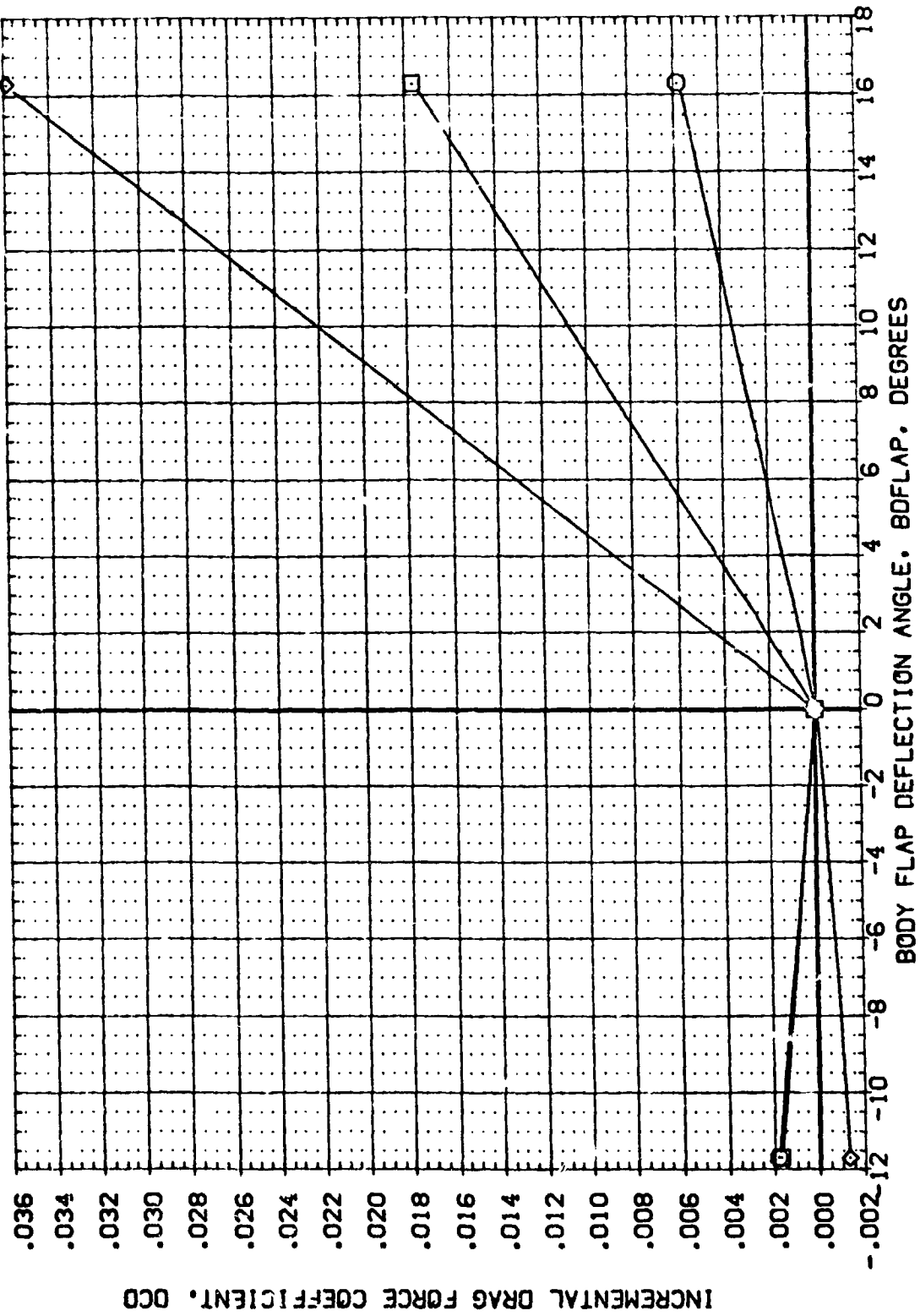


FIG. 11 BODYFLAP EFFECTIVENESS

AMES 3.5-176 0A87 140 A/B ORBITER (GEF016)

PARAMETRIC VALUES		DATA SOURCE		REFERENCE INFORMATION	
ALPHA	MACH	.000	BOFLAP	SREF	50.FT.
10.000	7.320	.000	.000	LREF	IN.
20.000	.000	.000	.000	BREF	IN.
30.000	.000	.000	.000	XTRP	IN.
	10.000	55.000		YTRP	IN.
				ZTRP	IN.
				SCALE	SCALE
					.0150

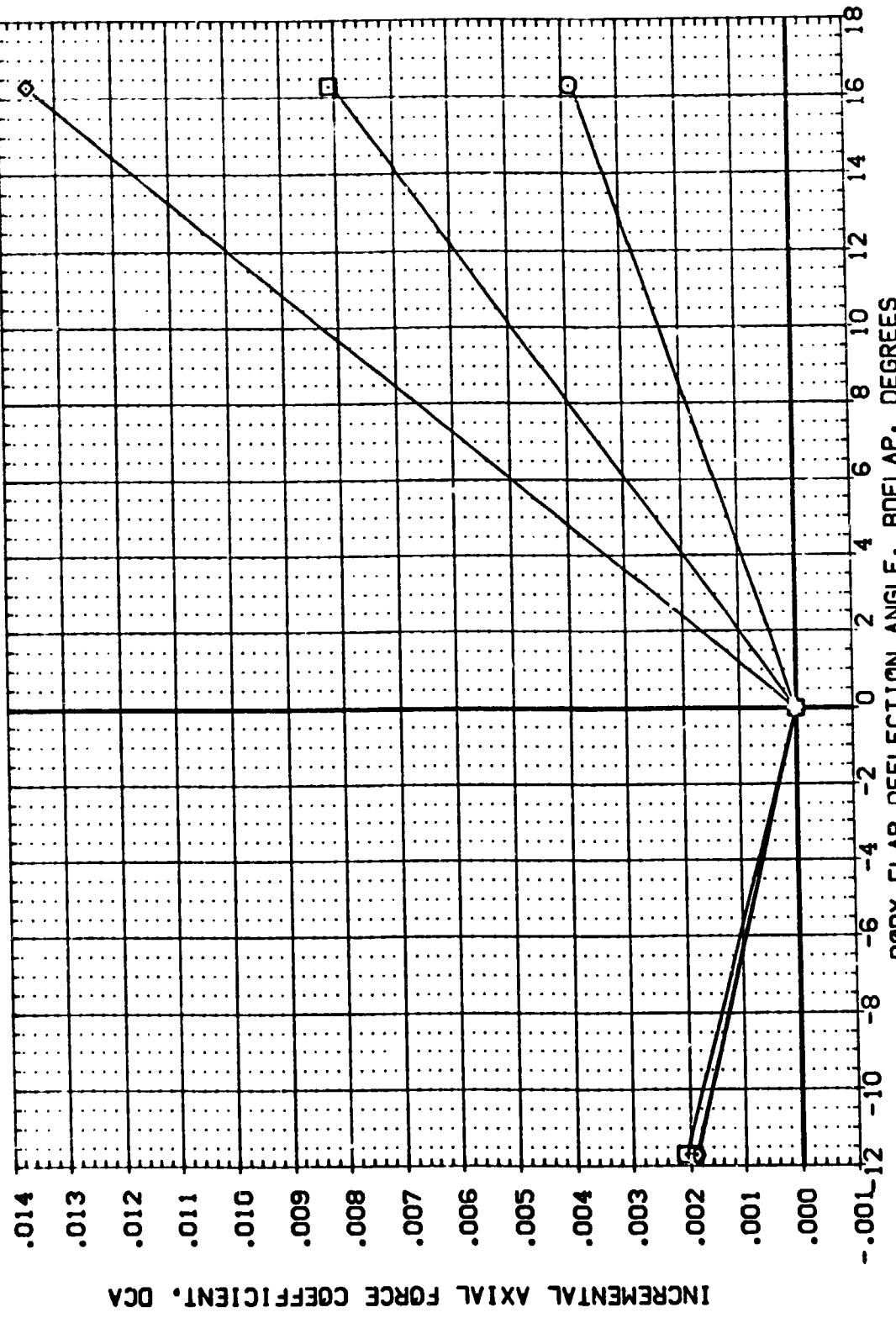


FIG. 11 BODYFLAP EFFECTIVENESS

AMES 3.5-176 0A87 14D A/B ORBITER (GEFO16)

SYMBOL	ALPHA	MACH	AIRION	RUDDER	RV/L	PARAMETRIC VALUES	DATA SOURCE	BOFLAP	DATASET	BOFLAP	SREF	REFERENCE INFORMATION
○	10.000	7.320	BETA	.000	.000	.000	BOFLAP	.000	GEFO15	.000	2690.0000	SO.FT.
□	20.000	.000	ELEVON	.000	55.000	.000	BOFLAP	-11.700	GEFO15	.000	1290.3000	IN.
◇	30.000	.000	SPOBRK	.000	10.000	55.000	BOFLAP	16.300	GEFO15	.000	936.6800	IN.
											1076.4800	IN.
											375.0000	IN.
											SCALE	SCALE
											.0150	.0150

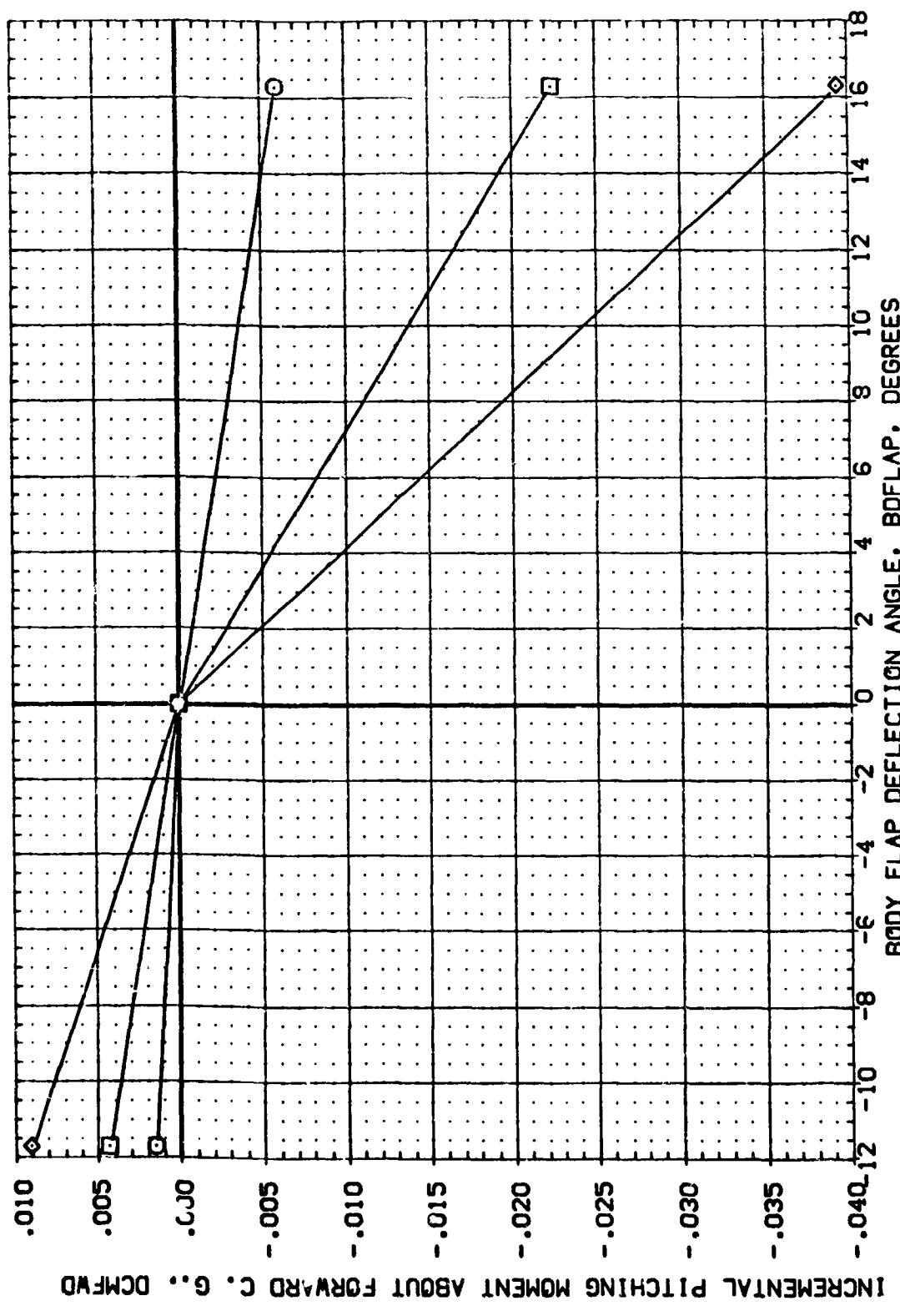


FIG. 11 BODYFLAP EFFECTIVENESS

AMES 3.5-176 OA87 140 A/B ORBITER (GEF016)

SYMBOL	ALPHA	MACH	PARAMETRIC VALUES	.000	DATA SOURCE	DATA SET	BOFLAP	BOFLAP	REFERENCE INFORMATION
○	10.000	AILRON	BETA	.000	BOFLAP	GEF001	.000	SREF	2690.0000
□	20.000	RUDDER	ELEVON	.000	CF016			LREF	1290.3000
◇	30.000	RV/L	SPDBRK	55.000	6.7 015			BREF	925.6800
								XMRP	1076.4800
								YMRP	.0000
								ZMRP	375.0000
								SCALE	.0150

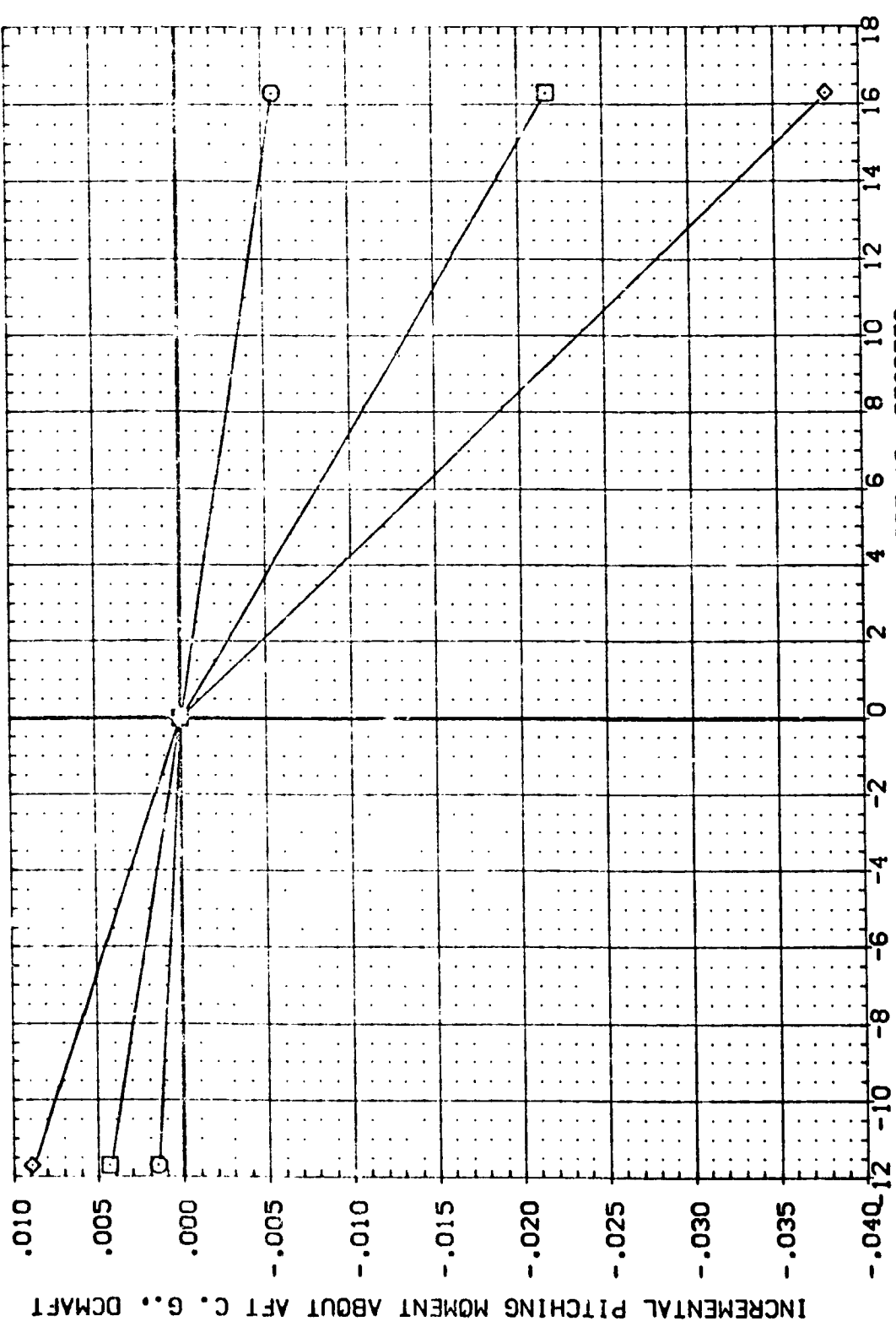


FIG. 11 BODYFLAP EFFECTIVENESS

AMES 3.5-176 0A87 140 A/B ORBITER (GEF008)

SYMBOL	ALPHA	MACH	PARAMETRIC VALUES	DATA SOURCE	DATASET	BDFLAP	SREF	REFERENCE INFORMATION
○	10.000		7.320 BETA	.000 BDFLAP	.000 GEF007	.000	2690.0000	SO. FT.
□	20.000		.000 ELEVON	.000 DATASET	.000 GEF008		1290.3000	IN.
◇	30.000		.000 SPOBRK	.000 GEF010			536.6800	IN.
△	40.000		3.000 RV/L	55.000			1076.4800	IN.
							375.0000	IN.
								SCALE

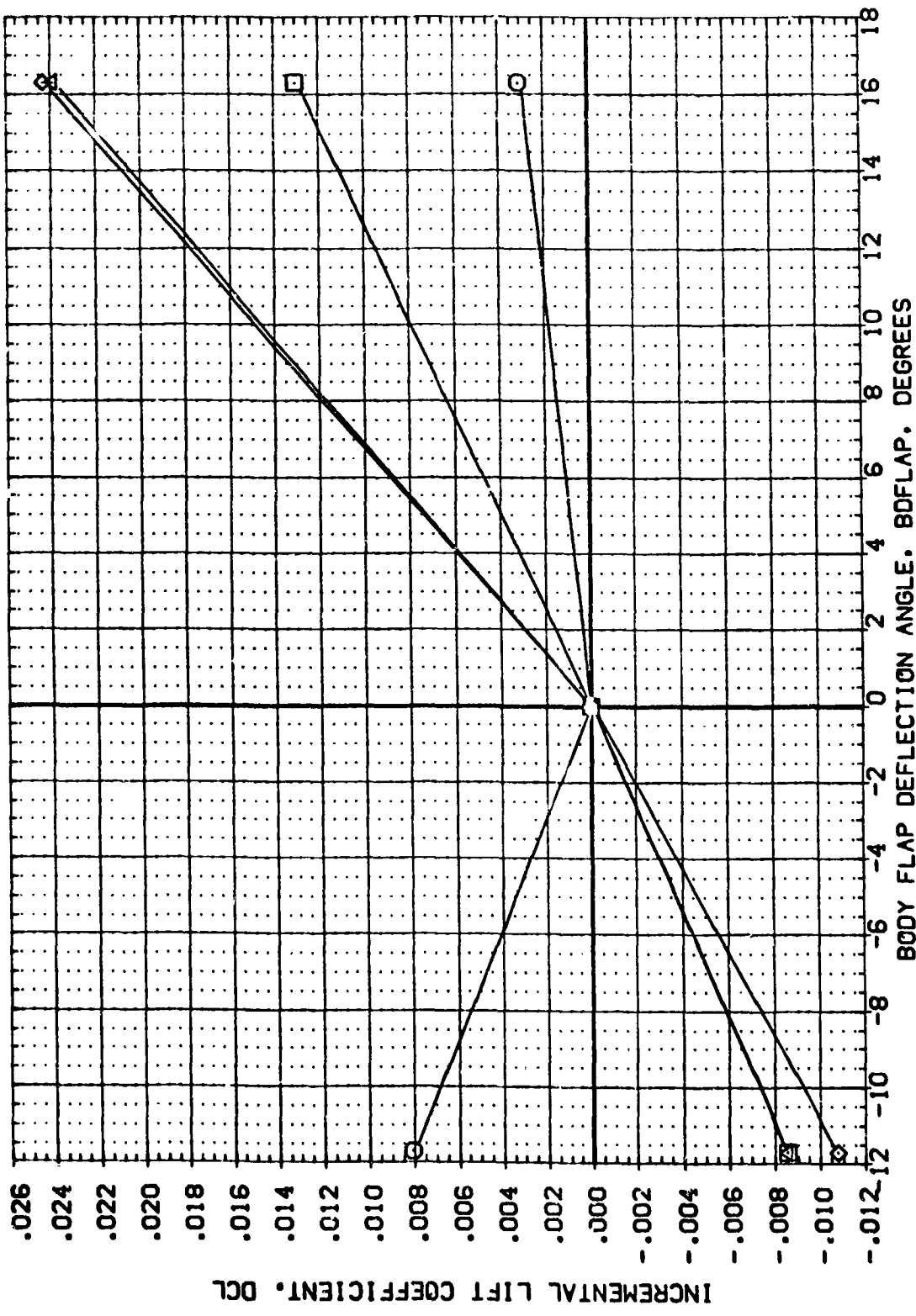


FIG. 11 BODYFLAP EFFECTIVENESS

AMES 3.5-176 OA87 140 A/B ORBITER (GEF008)

ALPHA	10.000	MACH	7.320	BETA	.000	DATASET	.000	BOFLAP	.000	SREF	2690.0000	SQ.FT.
20.000	AILRON	.000	ELEVON	.000	GEF008	-11.700	LREF	.000	BREF	1790.3000	IN.	
30.000	RUDDER	.000	SPOBRK	55.000	GEF010	16.300	XMRP	1076.4800	YMRP	375.0000	IN.	
40.000	RVL	3.000					ZMRP		SCALE	.0150	IN.	

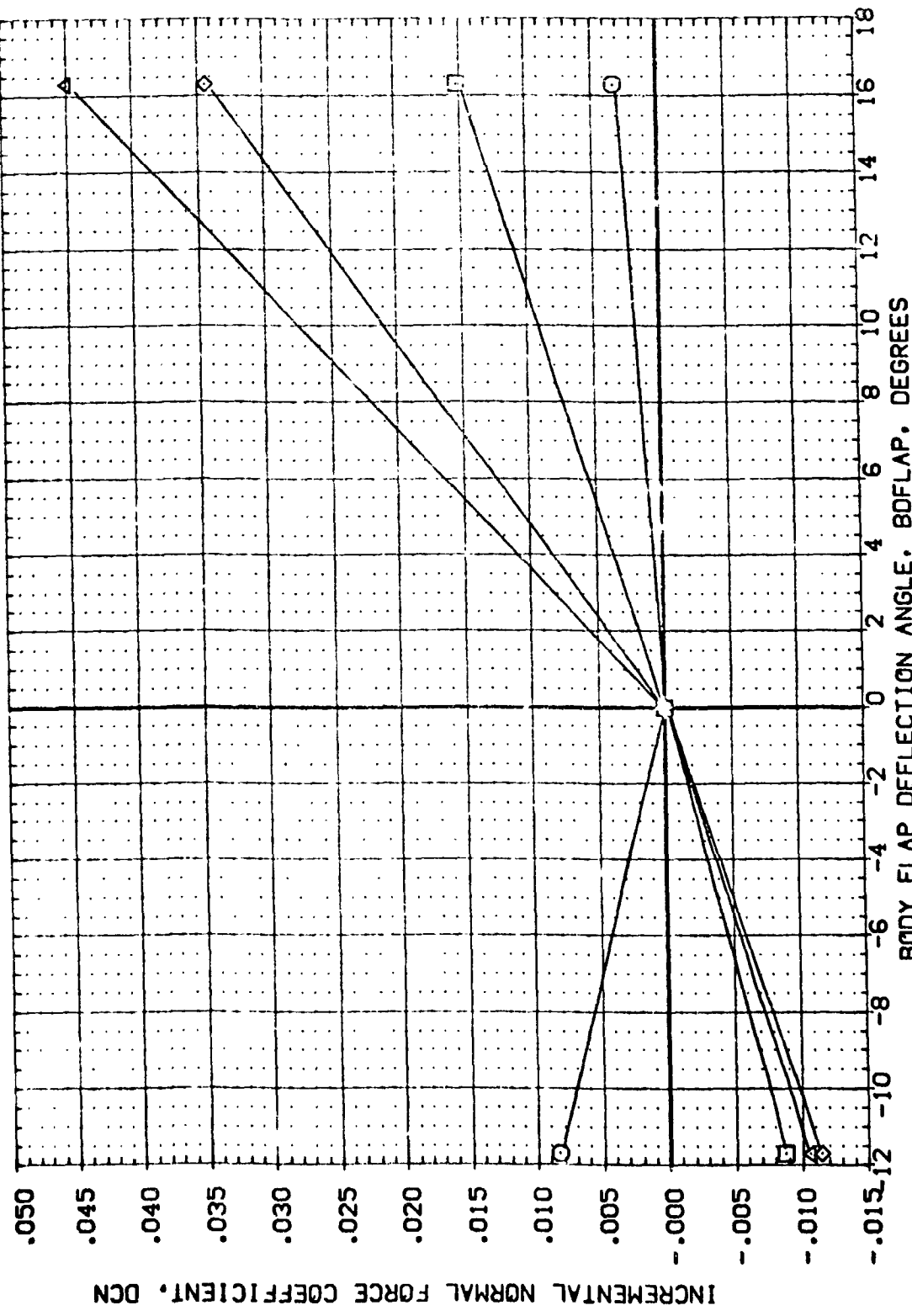


FIG. 11 BODYFLAP EFFECTIVENESS

AMES 3.5-176 0A87 140 A/B ORBITER (GEF008)

SYMBOL	ALPHA	MACH	PARAMETRIC VALUES	DATA SOURCE	BOFLAP	BOFLAP	SCALE	REFERENCE INFORMATION
○	10.000	7.320	BETA	.000	.000	SREF	2690.0000	SO.FT.
□	20.000	.000	ELEVON	.000	.000	LREF	1290.3000	IN.
◇	30.000	.000	SPOBRK	55.000	GEF008	BREF	936.6800	IN.
△	40.000	3.000	RVL	16.300	GEF010	XMRP	1076.4800	IN.
						YMRP	.0000	IN.
						ZMRP	375.0000	IN.
						SCALE	.0150	SCALE

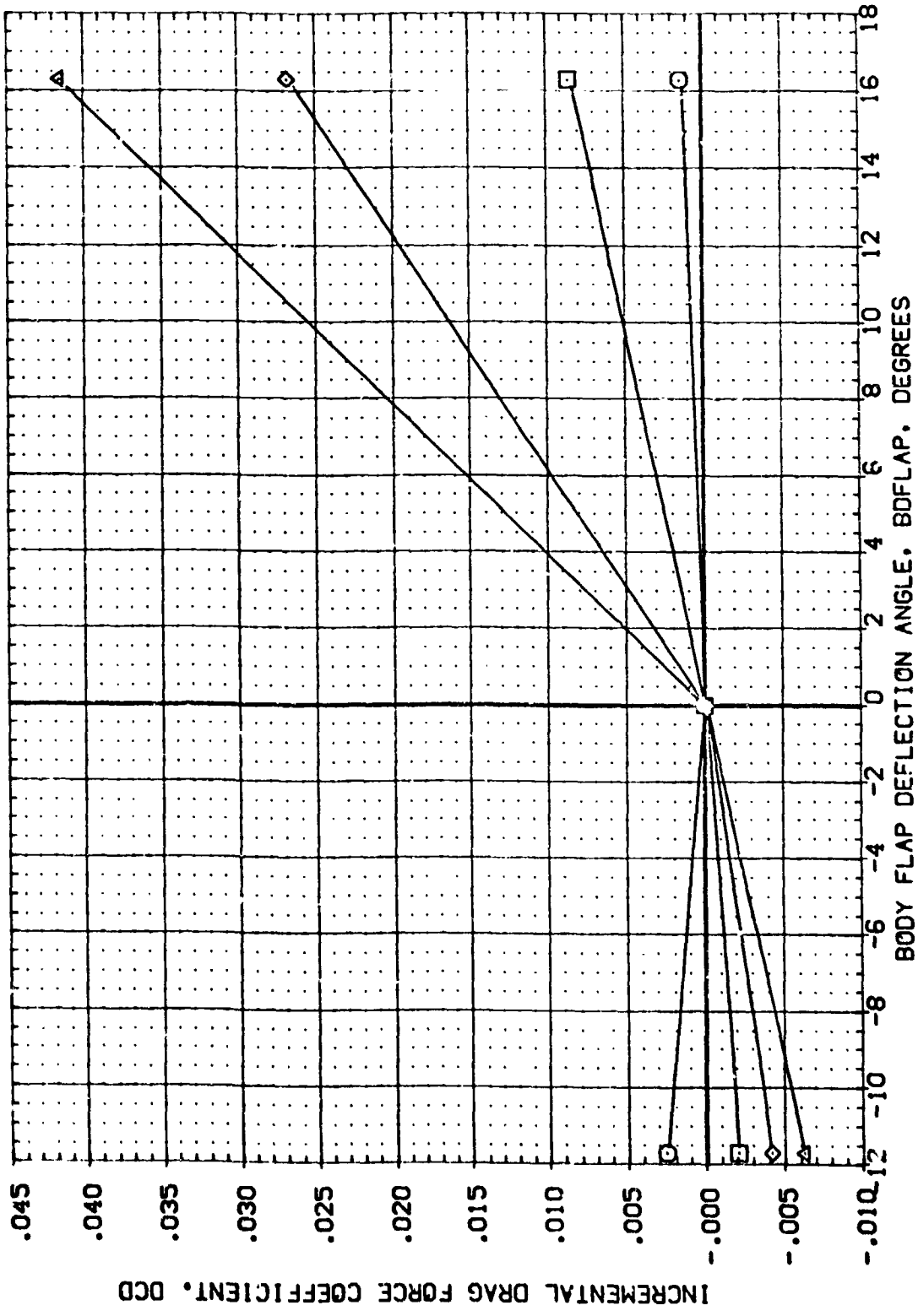


FIG. 11 BODYFLAP EFFECTIVENESS

AMES 3.5-176 OA87 140 A/B CRBITER (GEF008)

SYMBOL	ALPHA	MACH	AILLRON	RUDDER	RN/.	PARAMETRIC VALUES	.000	DATASET	BOFLAP	BOFLAP	DATASET	BOFLAP	SREF	SO.FT.
○	10.000					7.320	BETA	.000	GEF008	-11.700	GEF007	.000	LREF	1290.3000
□	20.000					.000	ELEVON	.000	GEF019	16.300			BREF	536.6800
◇	30.000					.000	SPOBRK	55.000					YMFP	1076.4800
△	40.000					3.000							ZMFP	375.0000
													ZMFP	.0150
													SCALE	

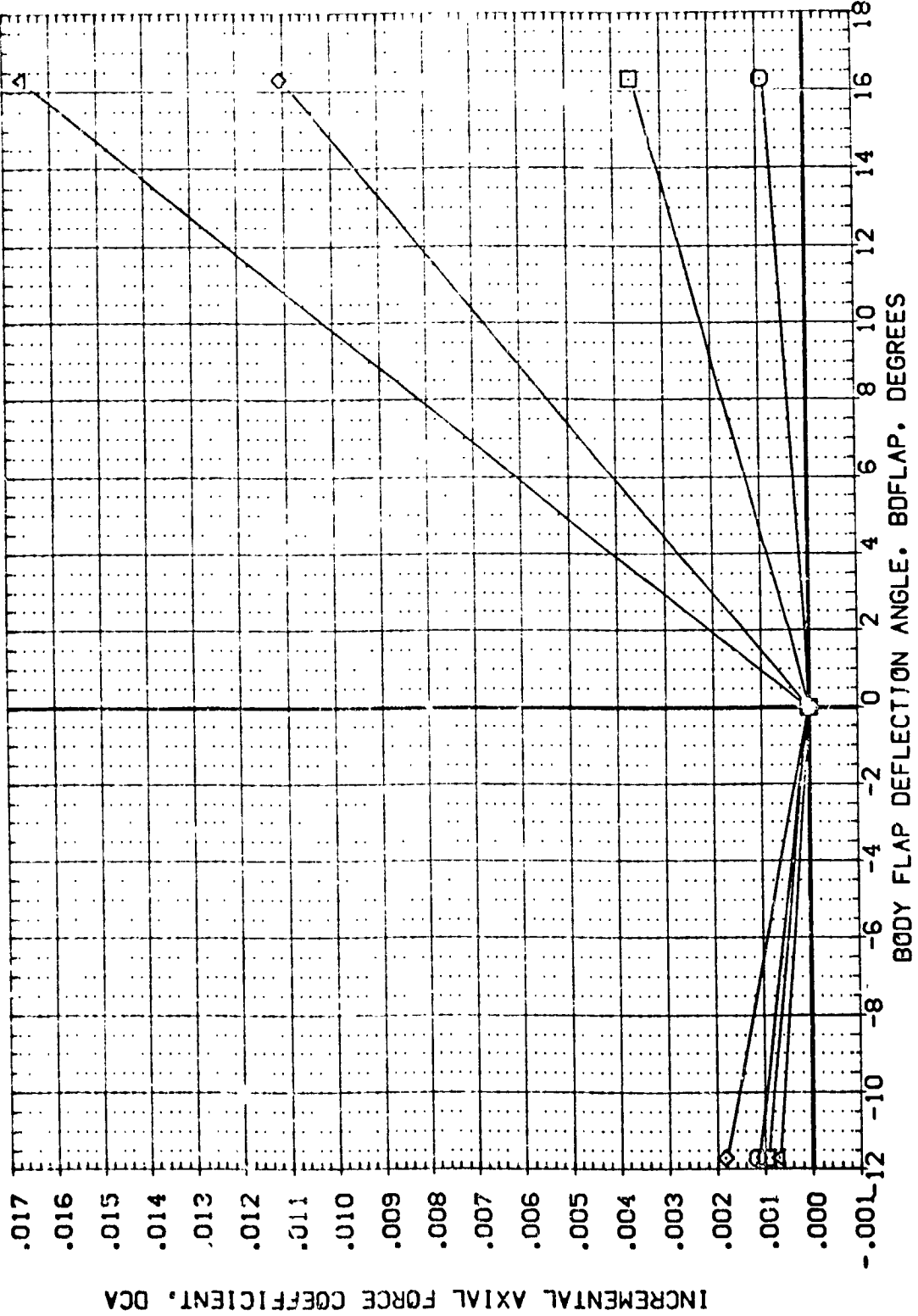


FIG. 11 BODYFLAP EFFECTIVENESS

AMES 3.5-176 0A87 140 A/B ORBITER (GEF008)

PARAMETRIC VALUES		DATA SOURCE		REFERENCE INFORMATION	
ALPHA	MACH	BOFLAP	DATASET	SREF	SG.FT.
10.000	7.320	BOFLAP	GEF008	2690.0000	IN.
20.000	.000	-11.700	GEF008	1290.3000	IN.
30.000	.000	16.300	GEF010	936.6800	IN.
40.000	.000			1076.4800	IN.
	3.000			375.0000	IN.
				SCALE	SCALE
					.0150

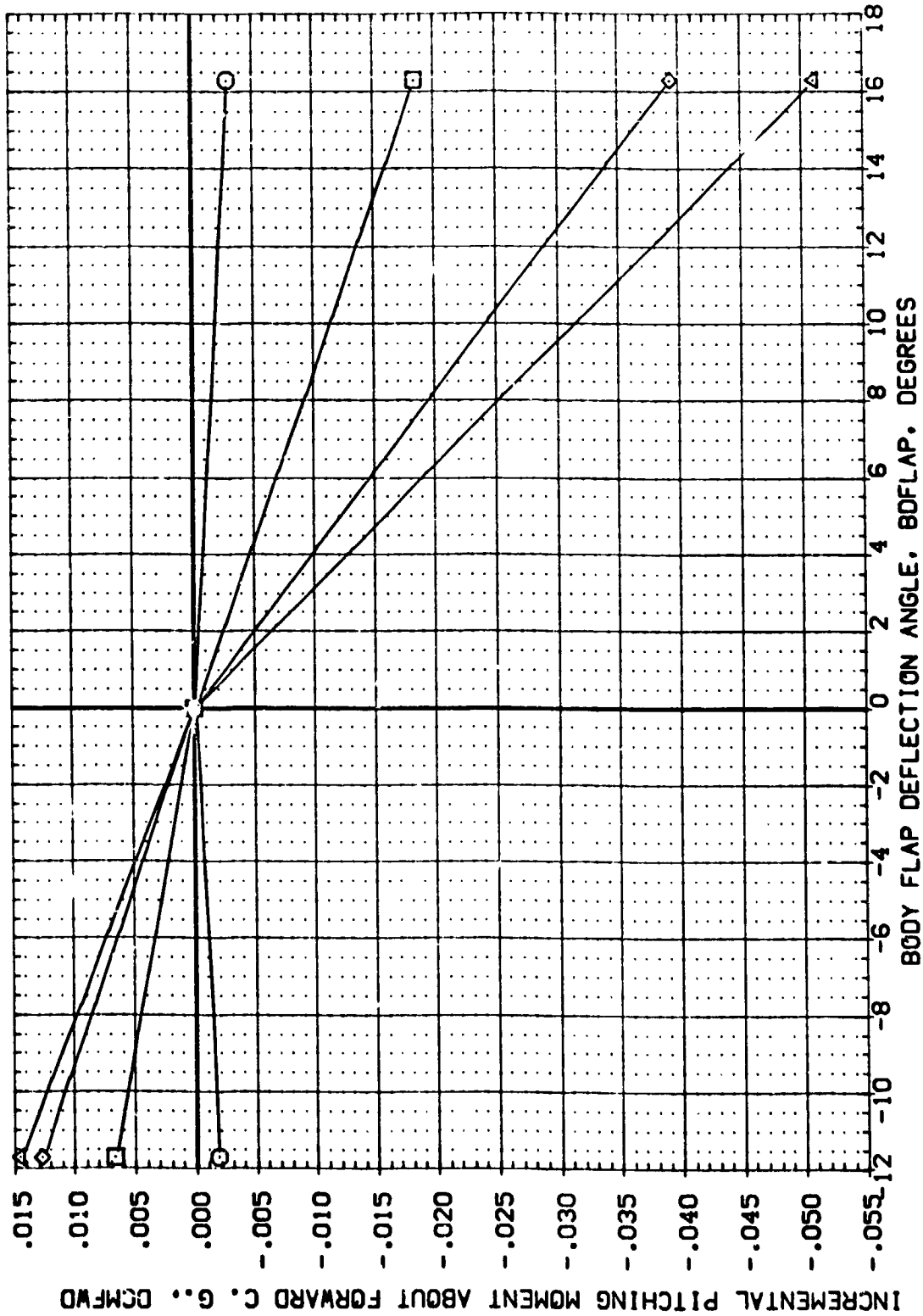


FIG. 11 BODYFLAP EFFECTIVENESS

AMES 3.5-176 OA87 140 A/B ORBITER (GEF008)

PARAMETRIC VALUES		DATA SOURCE		REFERENCE INFORMATION				
ALPHA	7.320	BETA	.000	GEF008	GEF010	SREF	2690.0000	SQ.FT.
MACH	.000	ELEVON	.000	BOFLAP	-11.700	LREF	1290.3000	IN.
AILERON	.000	SPOBRK	55.000	BOFLAP	.000	BREF	936.6800	IN.
RUDDER	.000					XMRP	1076.4800	IN.
RNVL	3.000					YMRP	1076.0000	IN.
						ZMRP	375.0000	IN.
						SCALE	.0150	SCALE

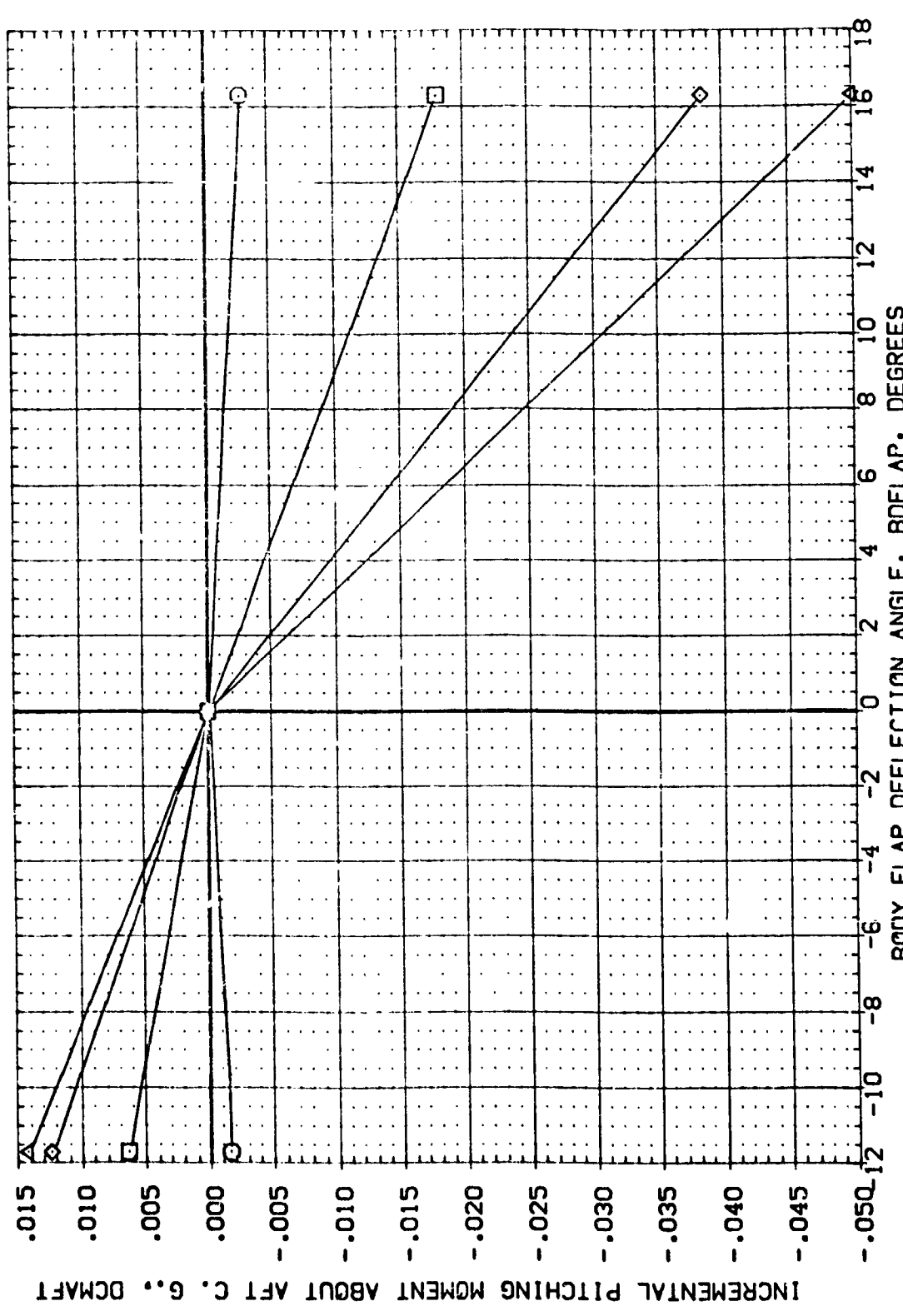


FIG. 11 BODYFLAP EFFECTIVENESS

DATA SET SYMBOL ○ CONFIGURATION DESCRIPTION
 (EEF019) ○ ARES 3.5-176 CAB7 140 A/B ORBITER

AILERON ELEVON BDFLAP RNVL
 5.000 -11.700 10.000

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 1790.3000 IN.
 BRFP 936.6800 IN.
 XMRP 1076.4800 IN.
 YMRP .0000 IN.
 ZMRP 375.0000 IN.
 SCALE .0150 SCALE

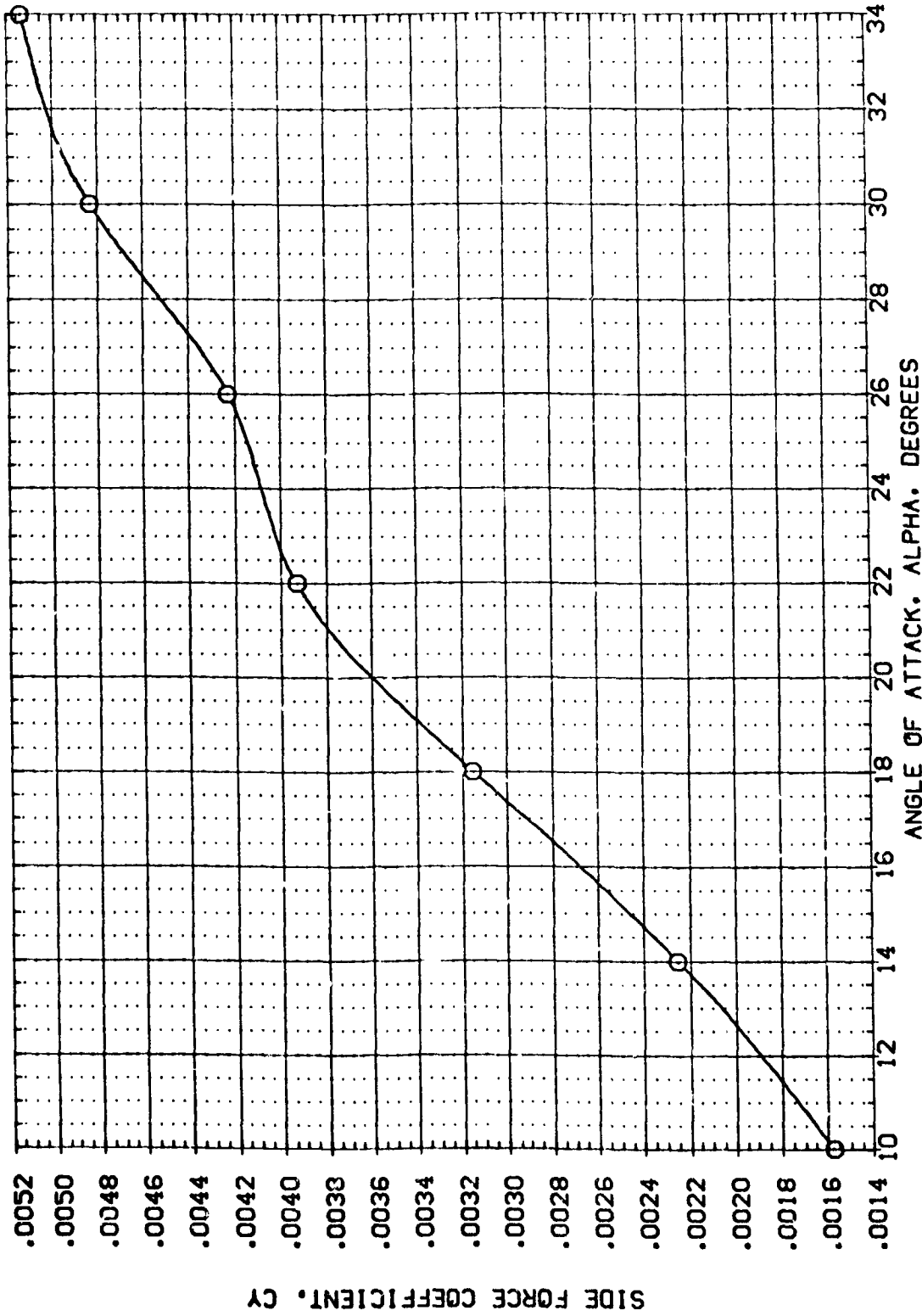


FIG. 12 AILERON EFFECTIVENESS

(A)MACH = 7.32

DATA SET SYMBOL: (EEF019) ○
 CONFIGURATION DESCRIPTION: AVES 3.5-176 CAB7 140 A/B ORBITER

AILERON ELEVON BOFLAP RN/L
 5.000 -11.700 10.000

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 1290.3003 IN.
 BREF 936.6803 IN.
 XMPP 1076.4803 IN.
 YMP 0.0003 IN.
 ZMP 375.0000 IN.
 SCALE .0150

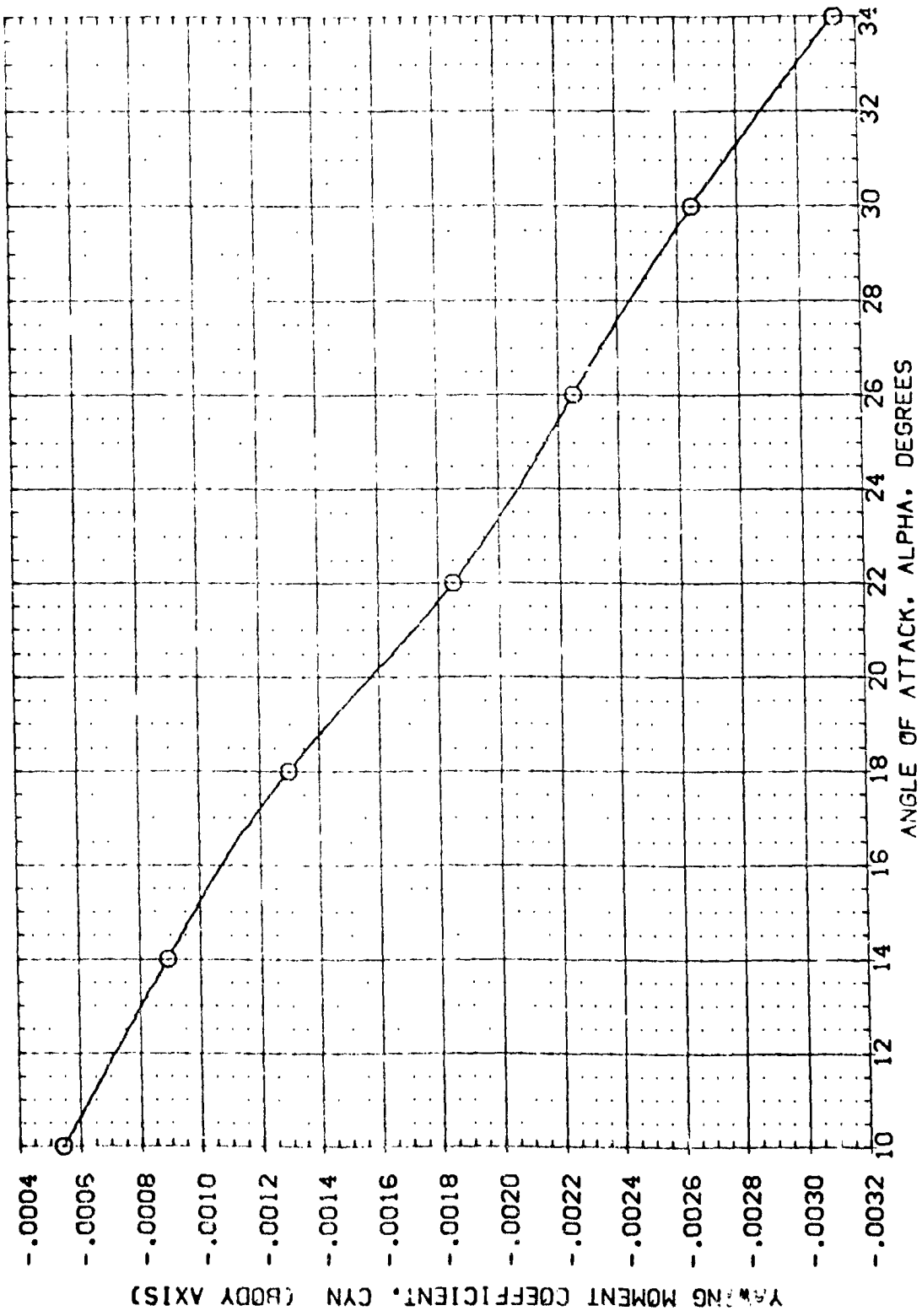


FIG. 12 AILERON EFFECTIVENESS

(A)MACH = 7.32

DATA SET SYMBOL (EEF019) ○ CONFIGURATION DESCRIPTION (AVES 3.5-176 CA87 140 A/B ORBITER)

AILERON ELEVON BOFLAP ANVL
 5 300 -11.70 10.000

REFERENCE INFORMATION
 SREF 2690.0000 SQ.FT.
 LREF 1290.3000 IN.
 BREF 936.6800 IN.
 XMRP 1075.4800 IN.
 YMRP .0000 IN.
 ZMRP 375.0000 IN.
 SCALE .0150 SCALE

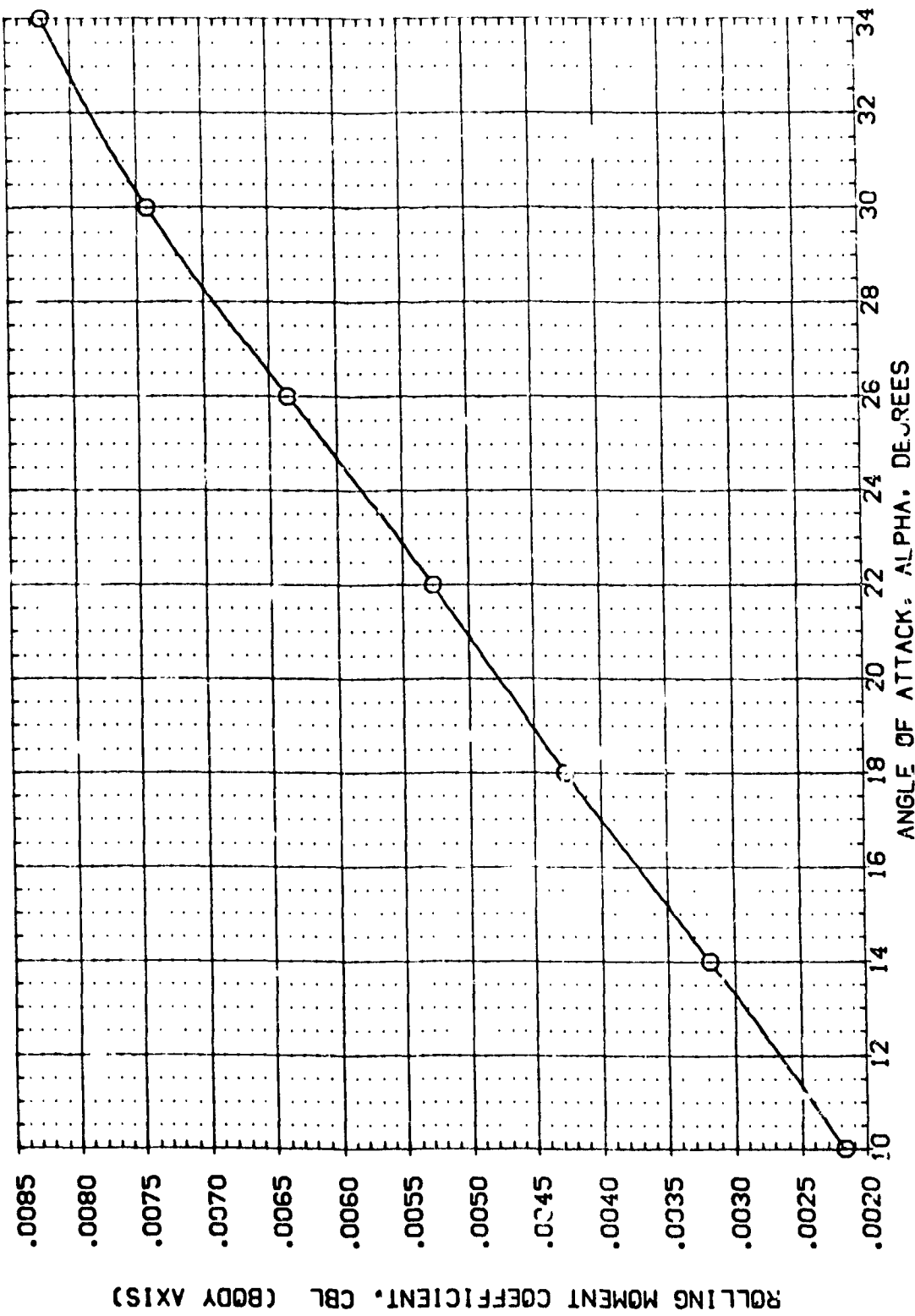


FIG. 12 AILERON EFFECTIVENESS
 (A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION	DESCRIPTION	ELEVON	SPOILER	BOFLAP	RNAL	REFERENCE INFORMATION
(BE022)	AMES 3.5-175	140 A/B	.000	55.000	.000	3.000	SREF 2690.0000
(BE023)	AMES 3.5-176	140 A/B	.000	55.000	.000	1.300	LREF 1290.3000
(BE024)	DATA NOT AVAILABLE		.000	55.000	.000	10.000	BREF 936.6800
(BE025)	DATA NOT AVAILABLE		.000	55.000	.000	3.000	YMP3 1076.4800
(BE026)	DATA NOT AVAILABLE		.000	55.000	.000	1.300	YMP4 .0000
(BE027)	DATA NOT AVAILABLE		.000	55.000	.000	.810	ZMP3 375.0000
(BE028)	DATA NOT AVAILABLE		.000	55.000	.000		ZMP4 .0150
							SCALE

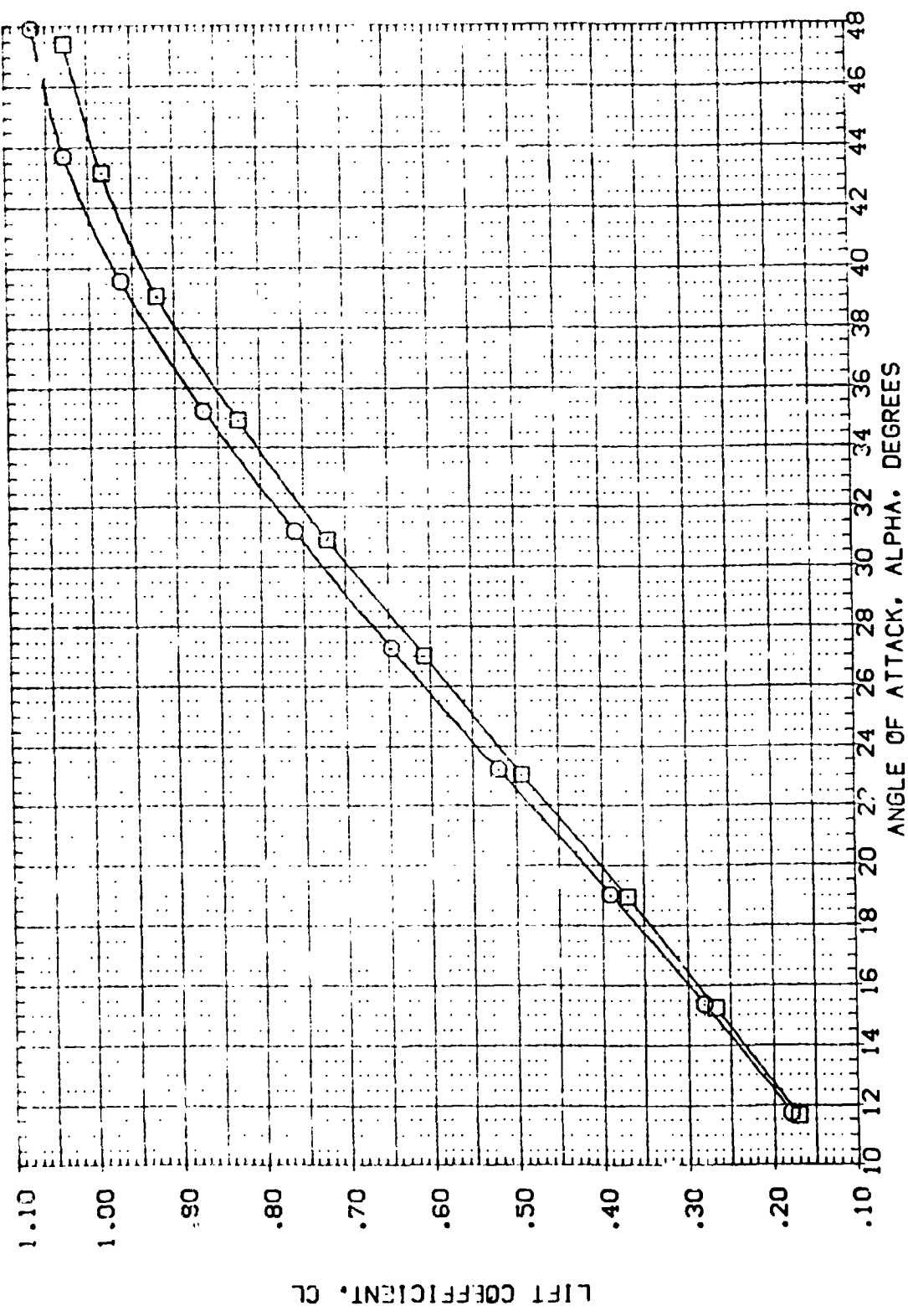


FIG. 13 REYNOLDS NUMBER EFFECTS - NO DEFLECTIONS

(A)MACH = 5.26

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BOFLAP	RNVL	REFERENCE INFORMATION
(BEFOZ2)	DATA NOT AVAILABLE	.000	55.000	.000	3.000	SREF 2690.0000 SQ.FT.
(BEFOZ3)	DATA NOT AVAILABLE	.000	55.000	.000	1.300	LREF 1290.3000 IN.
(BEFOO1)	AVES 3.5-176 OAB7 140 A/B ORBITER	.000	55.000	.000	10.000	BREF 936.6800 IN.
(BEFOO7)	AVES 3.5-176 OAB7 140 A/B ORBITER	.000	55.000	.000	13.000	XMRP 1076.4800 IN.
(BEFOZ4)	AVES 3.5-176 OAB7 140 A/B ORBITER	.000	55.000	.000	1.300	YMRP .0000 IN.
(BEFOZ5)	AVES 3.5-176 OAB7 140 A/B ORBITER	.000	55.000	.000	.810	ZMRP .0000 IN.
						SCALE .0150 SCALE

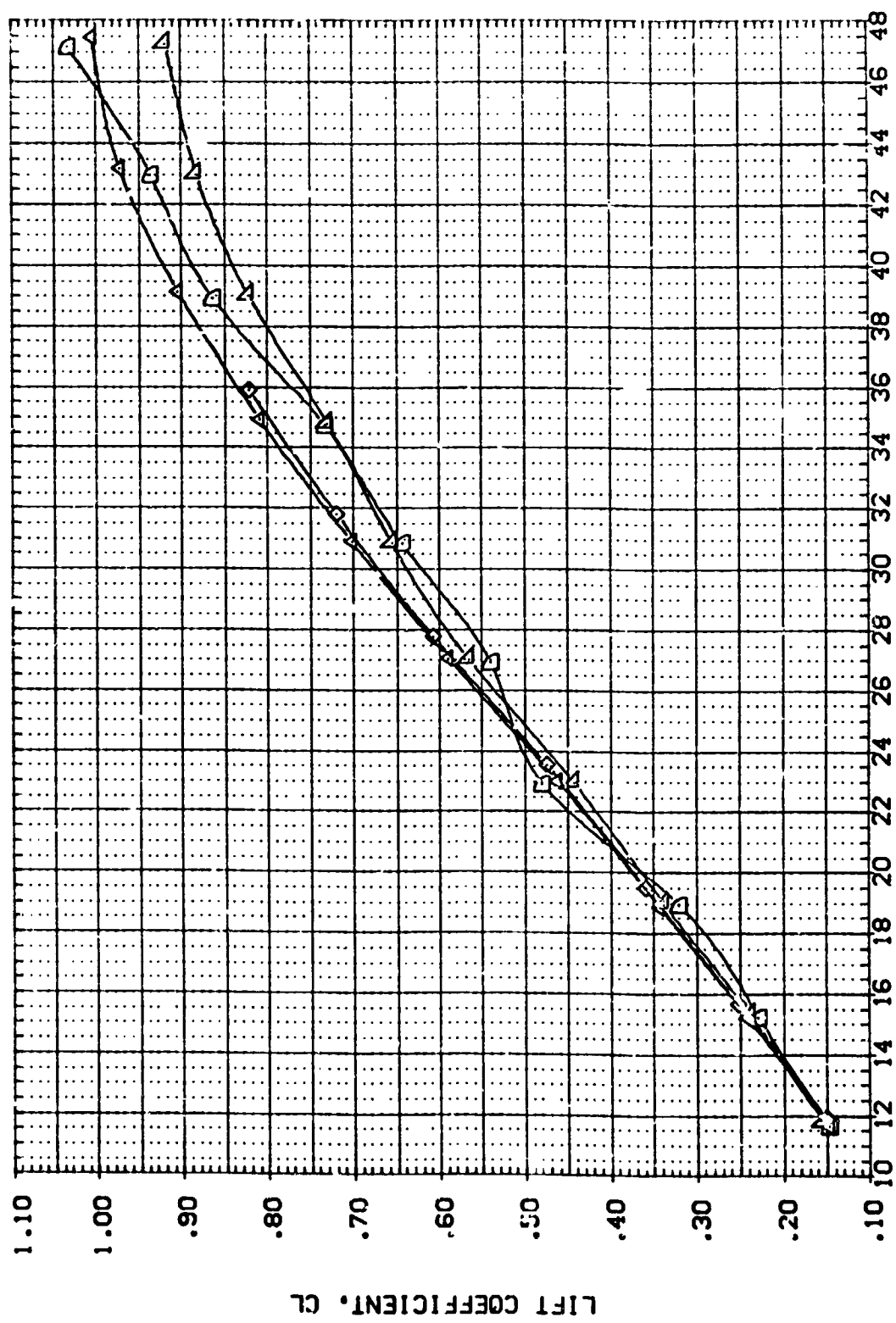


FIG. 13 REYNOLDS NUMBER EFFECTS - NO DEFLECTIONS

(B)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEF022)	AMES 3-S-176 CAB7 140 A/B ORBITER	.000	55.000	.000	3.000	SREF 2690.0000 SO.FT.
(BEF023)	AMES 3-S-176 CAB7 140 A/B ORBITER	.000	55.000	.000	1.300	LREF 1290.3000 IN.
(BEF001)	DATA NOT AVAILABLE	.000	55.000	.000	0.000	BRREF 936.6800 IN.
(BEF007)	DATA NOT AVAILABLE	.000	55.000	.000	3.000	XPRP 1076.4800 IN.
(BEF024)	DATA NOT AVAILABLE	.000	55.000	.000	1.300	YMRP .0000 IN.
(BEF025)	DATA NOT AVAILABLE	.000	55.000	.000	.810	ZMRP 375.0000 IN.
						SCALE .0150

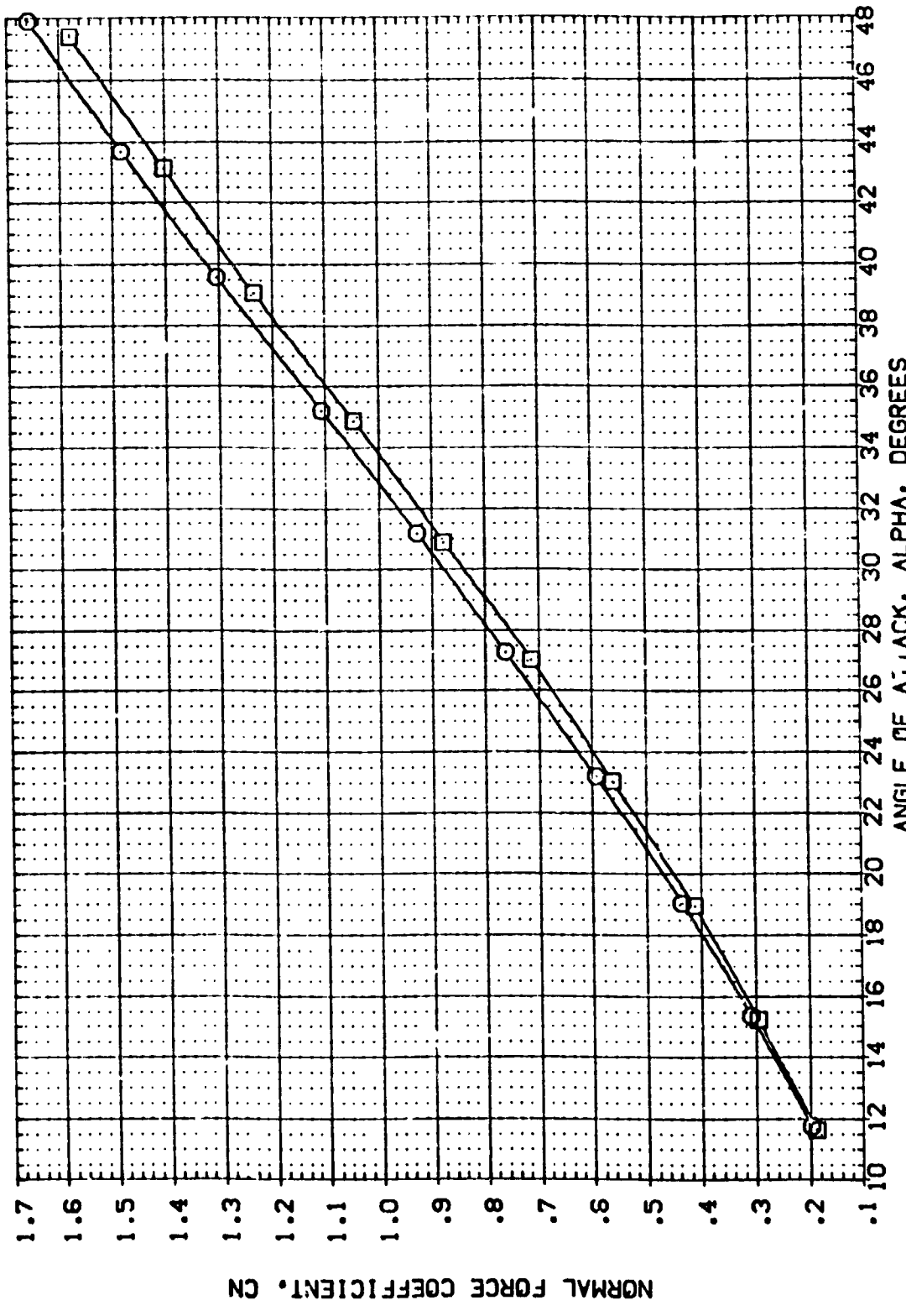


FIG. 13 REYNOLDS NUMBER EFFECTS - NO DEFLECTIONS

(A)MACH = 5.26

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVATION	SPORBK	BOFLAP	RV/L	REFERENCE INFORMATION
(BEF022)	DATA NOT AVAILABLE	.000	55.000	.000	3.000	SREF 2690.0000 SO.FT.
(BEF023)	DATA NOT AVAILABLE	.000	55.000	.000	1.300	LREF 1290.3000 IN.
(BEF007)	AMES 3.5-176 OAB7	.000	55.000	.000	10.000	BREF 936.6800 IN.
(BEF024)	AMES 3.5-176 OAB7	.000	55.000	.000	3.000	XMRP 1076.4800 IN.
(BEF025)	AMES 3.5-176 OAB7	.000	55.000	.000	1.300	YMRP 375.0000 IN.
					SCALE	ZMRP .0150 SCALE

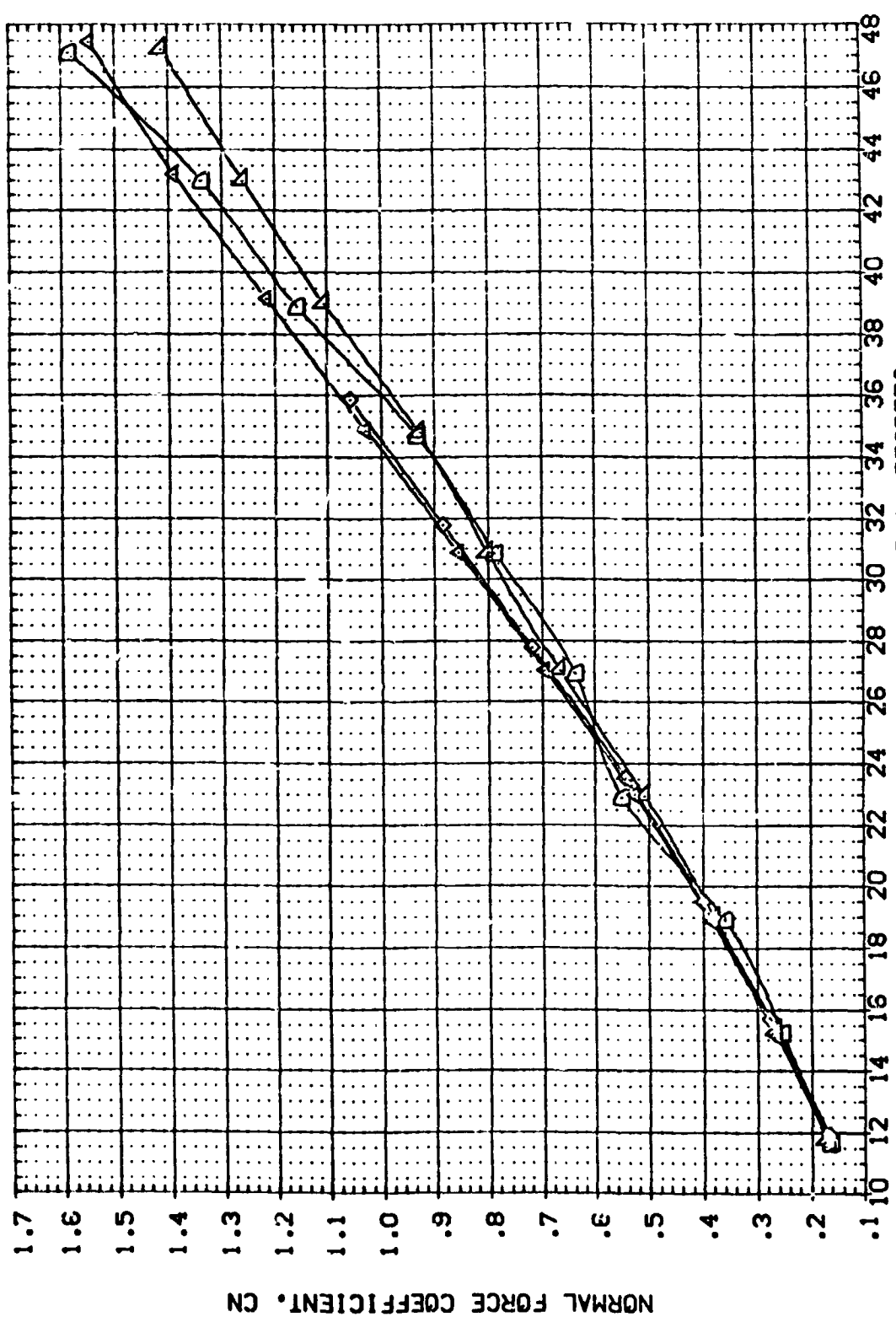


FIG. 13 REYNOLDS NUMBER EFFECTS - NO DEFLECTIONS

(B)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPORBRK	BOFLAP	RVAL	REFERENCE INFORMATION
(BEF022)	AVES 3.5-176 OAB7 140 A/B ORBITER	.070	55.000	.000	3.000	SREF 2690.0000 SQ.FT.
(BEF023)	AVES 3.5-176 OAB7 140 A/B ORBITER	.000	55.000	.000	1.300	LREF 1290.3000 IN.
(BEF001)	DATA NOT AVAILABLE	.000	55.000	.000	10.000	SREF 536.6800 IN.
(BEF007)	DATA NOT AVAILABLE	.000	55.000	.000	3.000	XMRP 1076.4800 IN.
(BEF024)	DATA NOT AVAILABLE	.000	55.000	.000	1.300	YMRP .0000 IN.
(BEF025)	DATA NOT AVAILABLE	.000	55.000	.000	.810	ZMRP 375.0000 IN.
						SCALE .0150 SCALE

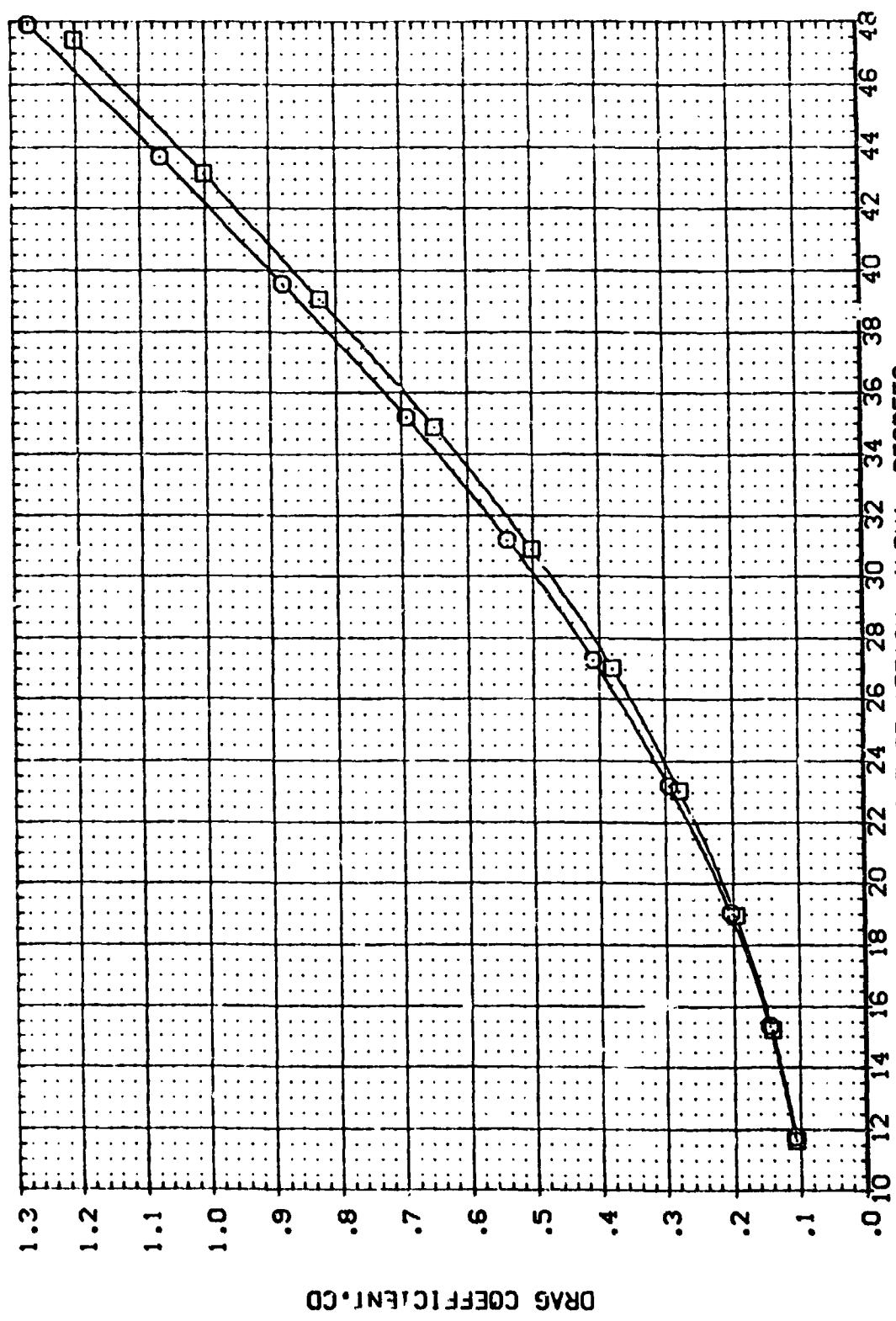


FIG. 13 REYNOLDS NUMBER EFFECTS - NO DEFLECTIONS

(A)MACH = 5.26

DATA SET SYMBL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BOFLAP	RNAL	REFERENCE INFORMATION
(BEF022)	DATA NOT AVAILABLE	.000	55.000	.000	3.000	SREF 2690.0000 SQ.FT.
(BEF023)	DATA NOT AVAILABLE	.000	55.000	.000	1.300	LREF 1290.3000 IN.
(BEF001)	AVES 3.5-176 CA87	.000	55.000	.000	10.000	BREF 936.6800 IN.
(BEF007)	AVES 3.5-176 CA87	.000	55.000	.000	3.000	XMRP 1076.4800 IN.
(BEF024)	AVES 3.5-176 CA87	.000	55.000	.007	1.300	VMRP .0000 IN.
(BEF025)	AVES 3.5-176 CA87	.000	55.000	.000	.810	ZMRP 375.0000 IN.
					SCALE	.0150 SCALE

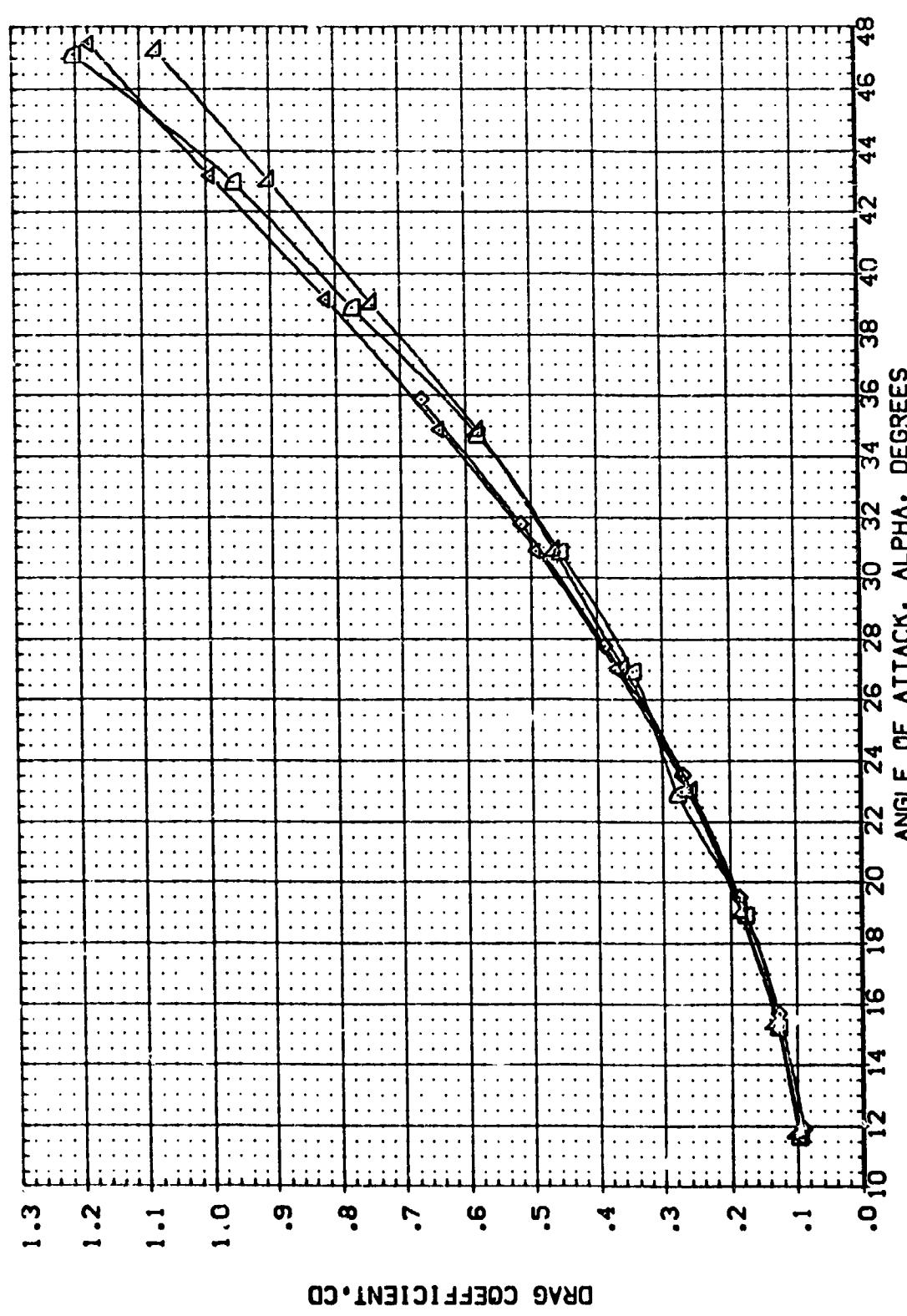


FIG. 13 REYNOLDS NUMBER EFFECTS - NO DEFLECTIONS

(B)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BOFLAP	RVAL	REFERENCE INFORMATION
(BEF022)	AMES 3.5-176 DAB7 140 A/B ORBITER	.000	55.000	.000	3.000	SREF 2690.0000 SO.FT.
(BEF023)	AMES 3.5-176 DAB7 140 A/B ORBITER	.000	55.000	.000	1.300	LREF 1290.3000 IN.
(BEF001)	DATA NOT AVAILABLE	.000	55.000	.000	10.000	BREF 536.6800 IN.
(BEF007)	DATA NOT AVAILABLE	.000	55.000	.000	3.000	XMRP 1076.4800 IN.
(BEF024)	DATA NOT AVAILABLE	.000	55.000	.000	1.300	YMRP .0000 IN.
(BEF025)	DATA NOT AVAILABLE	.000	55.000	.000	.810	ZMRP .0000 IN.
						SCALE .0150

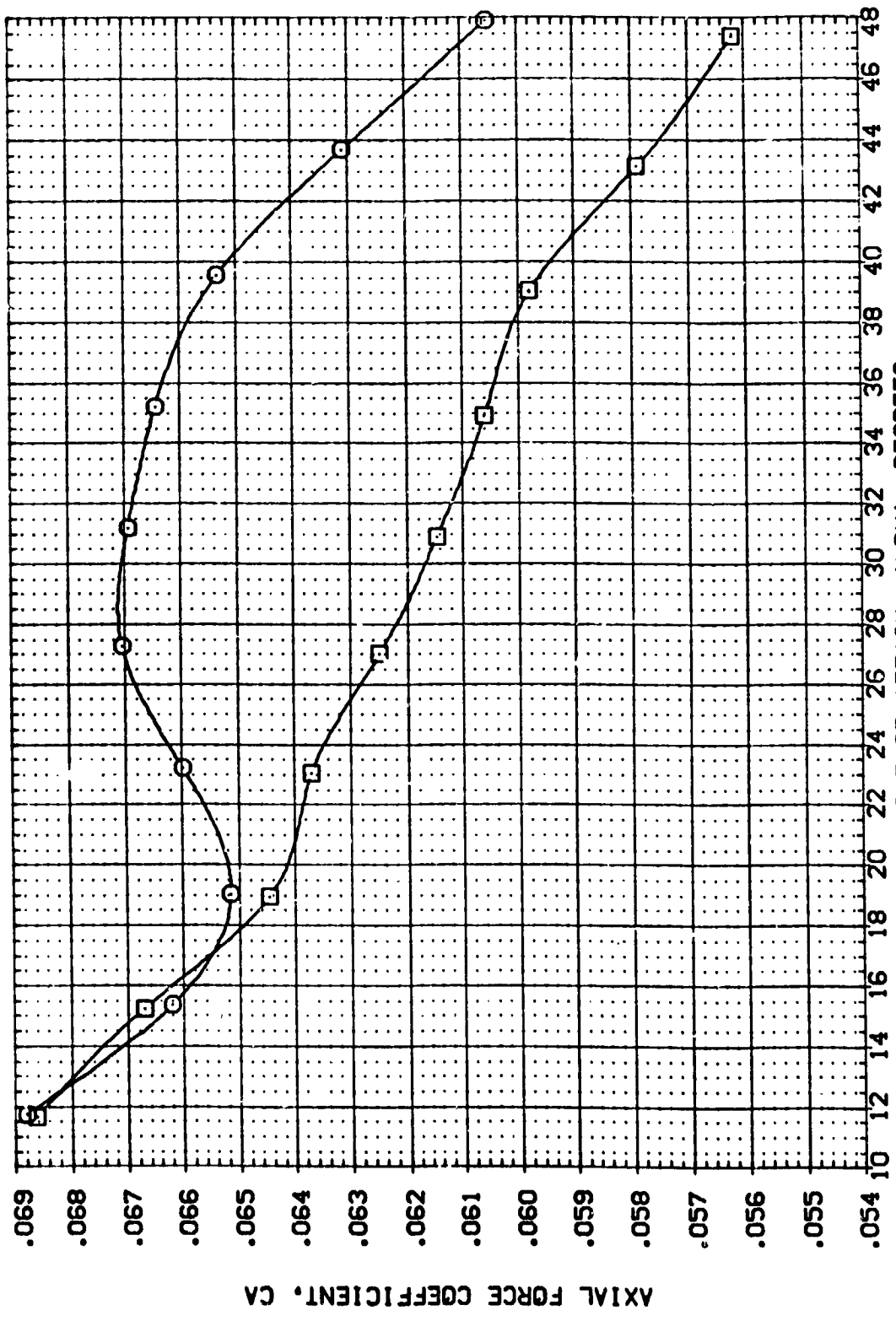


FIG. 13 REYNOLDS NUMBER EFFECTS - NO DEFLECTIONS

(A)MACH = 5.26

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPORBK	BOFLAP	RN/L	REFERENCE INFORMATION
(BEF022)	DATA NOT AVAILABLE	.000	55.000	.000	3.000	SREF 2690.0000
(BEF023)	DATA NOT AVAILABLE	.000	55.000	.000	1.300	LREF 1290.3000
(BEF001)	AVES 3.5-176 OAB7 140 A/B ORBITER	.000	55.000	.000	10.000	BREF 936.6800
(BEF007)	AVES 3.5-176 OAB7 140 A/B ORBITER	.000	55.000	.000	3.000	XMRP 1076.4800
(BEF024)	AVES 3.5-176 OAB7 140 A/B ORBITER	.000	55.000	.000	1.300	YMRP .0000
(BEF025)	AVES 3.5-176 OAB7 140 A/B ORBITER	.000	55.000	.000	.810	ZMRP 375.0000
						SCALE .0150

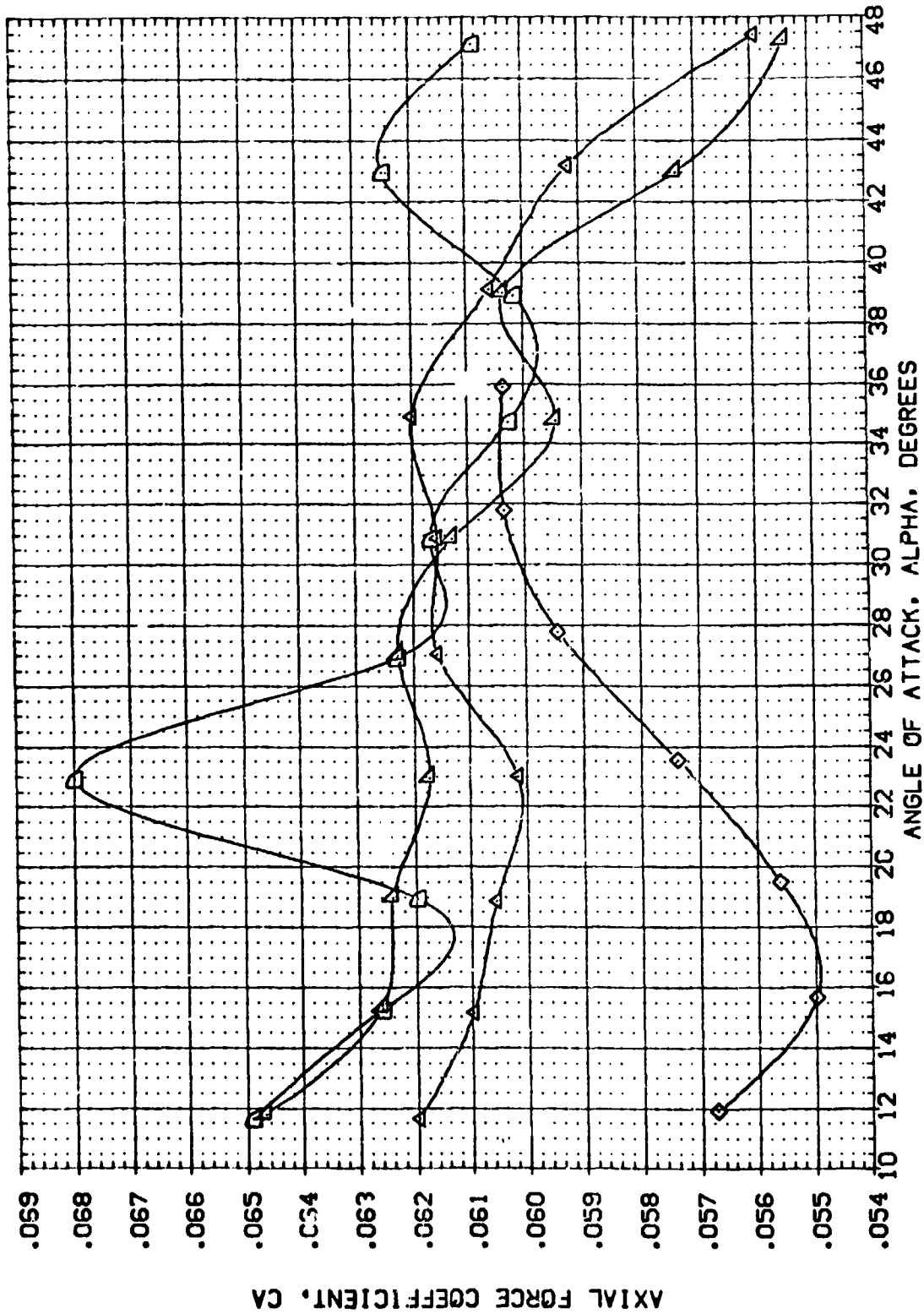


FIG. 13 REYNOLDS NUMBER EFFECTS - NO DEFLECTIONS

(8)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BOFLAP	RNVL	REFERENCE INFORMATION
(BEF022)	AMES 3.5-176 OAB7 140 A/B ORBITER	.000	55.000	.000	3.000	SREF 2680.0000 SO.FT.
(BEF023)	AMES 3.5-176 OAG7 140 A/B ORBITER	.000	55.000	.000	1.300	LREF 1290.3000 IN.
(BEF001)	DATA NOT AVAILABLE	.000	55.000	.000	10.000	BREF 936.6800 IN.
(BEF007)	DATA NOT AVAILABLE	.000	55.000	.000	13.000	AHRP 1076.4800 IN.
(BEF024)	DATA NOT AVAILABLE	.000	55.000	.000	1.300	ZMRP .0000 IN.
(BEF025)	DATA NOT AVAILABLE	.000	55.000	.000	.810	SCALE 375.0000 IN.
						SCALE .0150

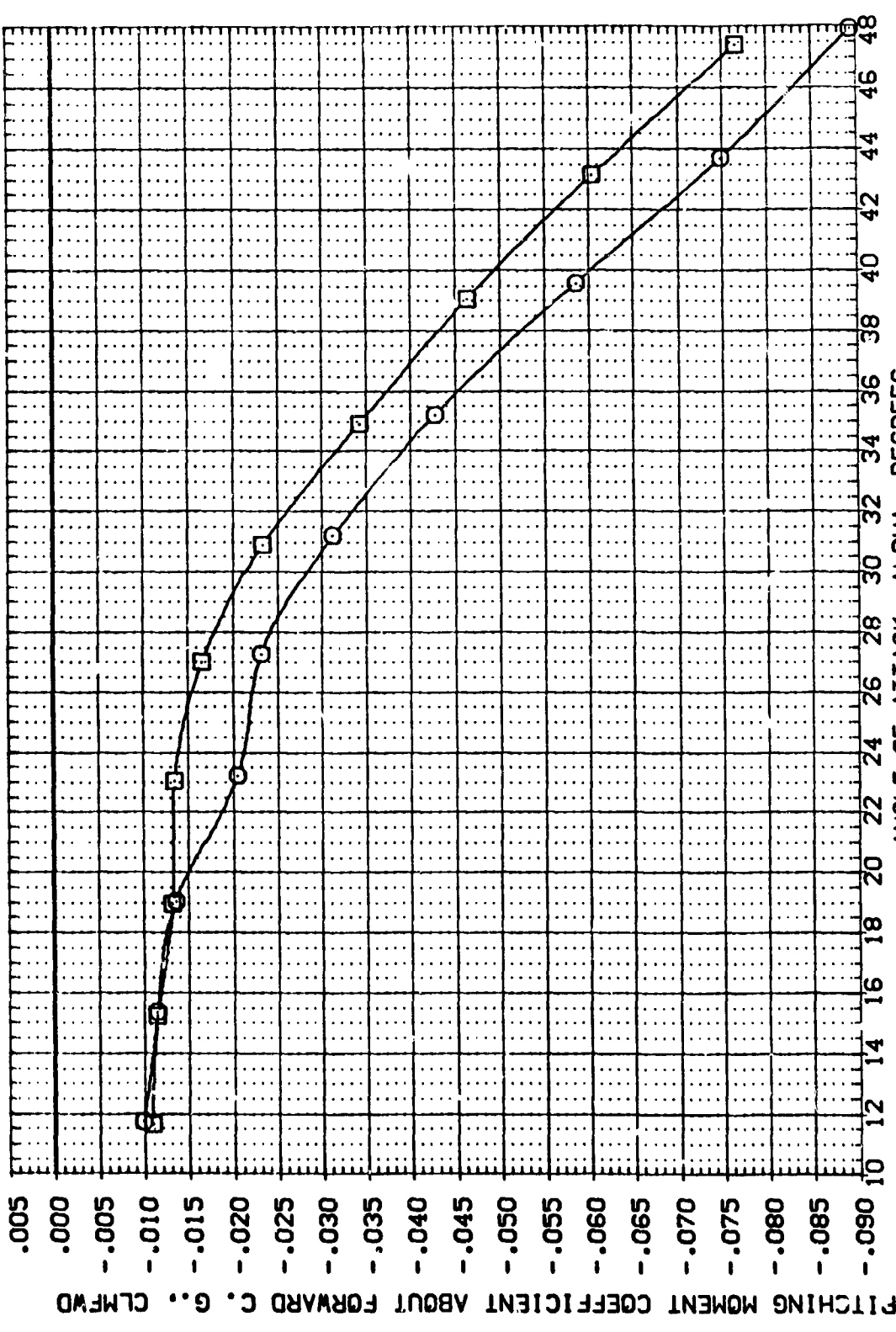


FIG. 13 REYNOLDS NUMBER EFFECTS - NO DEFLECTIONS

(A)MACH = 5.26

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BOFLAP	RVAL	REFERENCE INFORMATION
(BEFO22)	DATA NOT AVAILABLE	.000	55.000	.000	3.000	SREF 2690.0000 SO.FT.
(BEFO23)	DATA NOT AVAILABLE	.000	55.000	.000	1.300	LREF 1290.3000 IN.
(BEFO24)	DATA NOT AVAILABLE	.000	55.000	.000	10.000	BREF 536.6800 IN.
(BEFO25)	DATA NOT AVAILABLE	.000	55.000	.000	3.000	XMRP 1076.4800 IN.
(BEFO26)	140 A/B ORBITER	.000	55.000	.000	1.300	ZMRP .0000 IN.
(BEFO27)	140 A/B ORBITER	.000	55.000	.000	.810	SCALE .0150
(BEFO28)	140 A/B ORBITER	.000	55.000	.000		

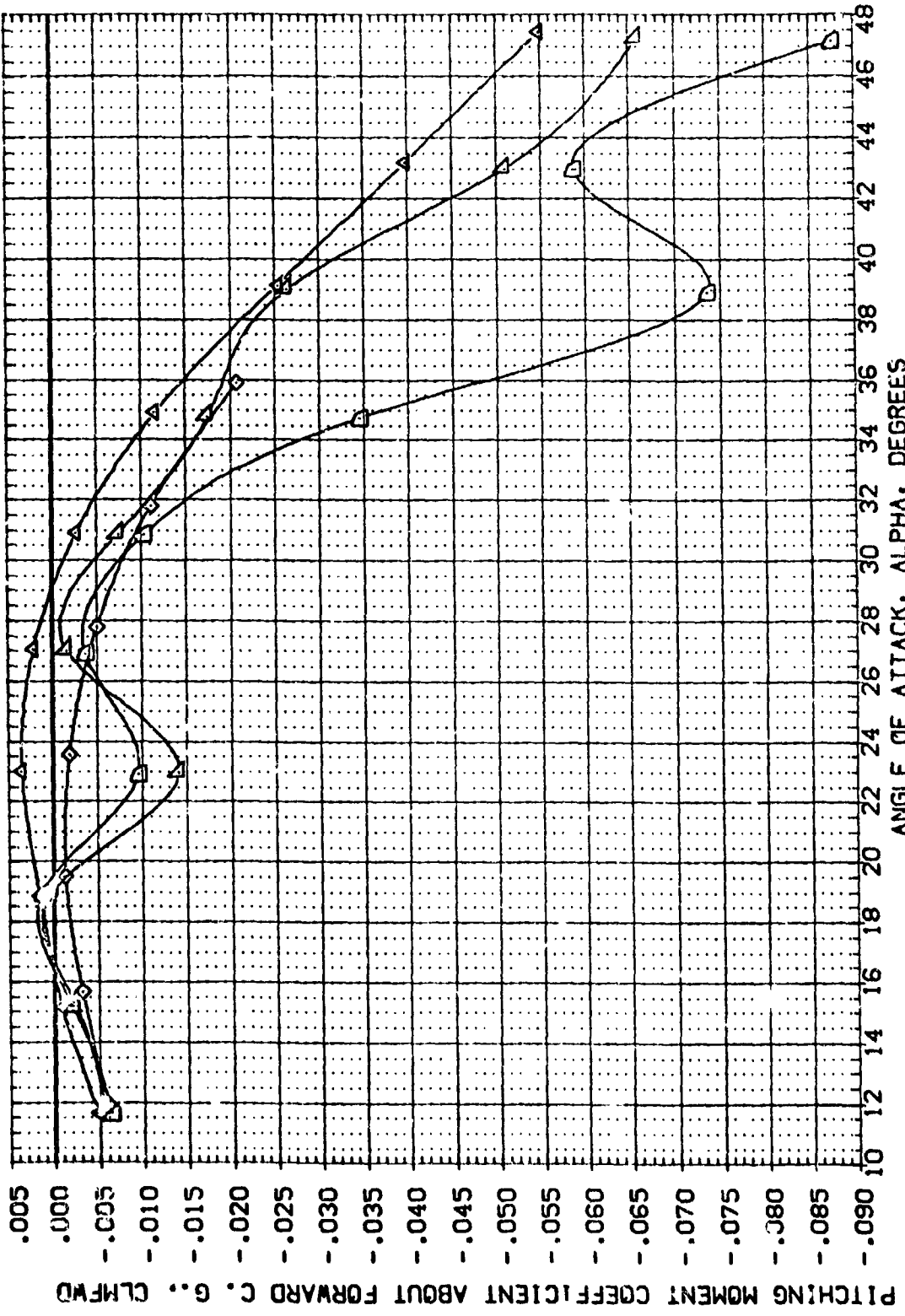


FIG. 13 REYNOLDS NUMBER EFFECTS - NO DEFLECTIONS

(8)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	ROFLAP	RVAL	REFERENCE INFORMATION
(BEF017)	AMES 3.5-176 DAB7 140 A/B ORBITTER	-10.000	55.000	-11.700	10.000	SREF 2690.0000 SQ.FT.
(BEF009)	AMES 3.5-176 DAB7 140 A/B ORBITTER	-40.000	55.000	-11.700	3.000	LREF 1290.3000 IN.
(BEF016)	AMES 3.5-176 DAB7 140 A/B ORBITTER	.000	55.000	-11.700	10.000	BREF 536.6800 IN.
(BEF008)	AMES 3.5-176 DAB7 140 A/B ORBITTER	.000	55.000	-11.700	3.000	XRRP 1076.4900 IN.
						YRRP .0000 IN.
						ZRRP 375.0000 IN.
						SCALE .0150

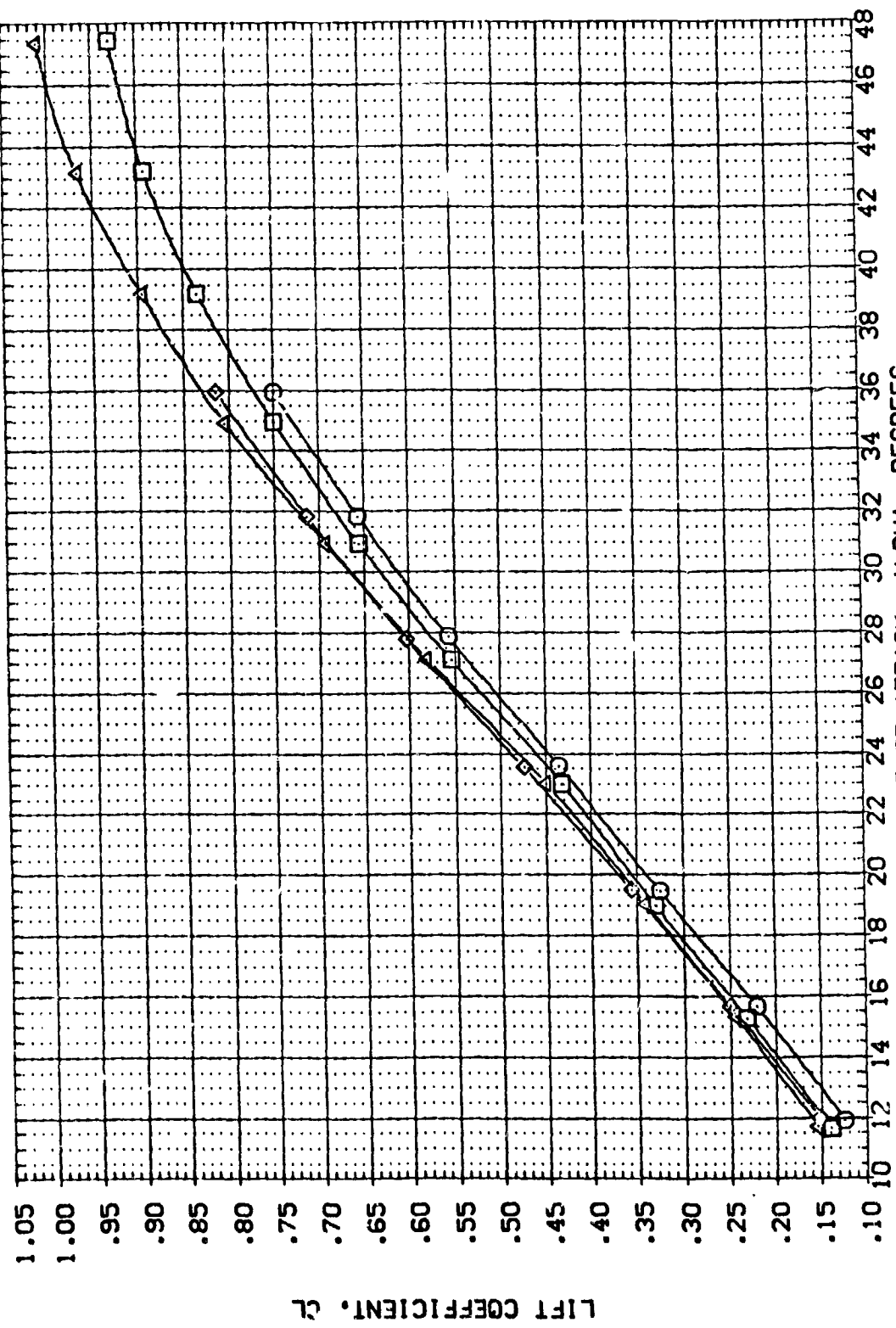


FIG. 14 REYNOLDS NUMBER EFFECTS, BOFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(BEF017)	AMES 3.5-176	0A87	140	A/B	ORBITTER
(BEF009)	AMES 3.5-176	0A87	140	A/B	ORBITTER
(BEF016)	AMES 3.5-176	0A87	140	A/B	ORBITTER
(BEF008)	AMES 3.5-176	0A87	140	A/B	ORBITTER

ELEVON SPOBRK BOFLAP RWAL

-40.000	55.000	-11.700	10.000
-40.000	55.000	-11.700	3.000
.000	55.000	-11.700	10.000
.000	55.000	-11.700	3.000

REFERENCE INFORMATION

SREF	2690.0000	SO.FT.
LREF	1290.3000	IN.
BREF	936.6800	IN.
MPRP	1076.0000	IN.
ZMRP	375.0000	IN.
SCALE	.0150	SCALE

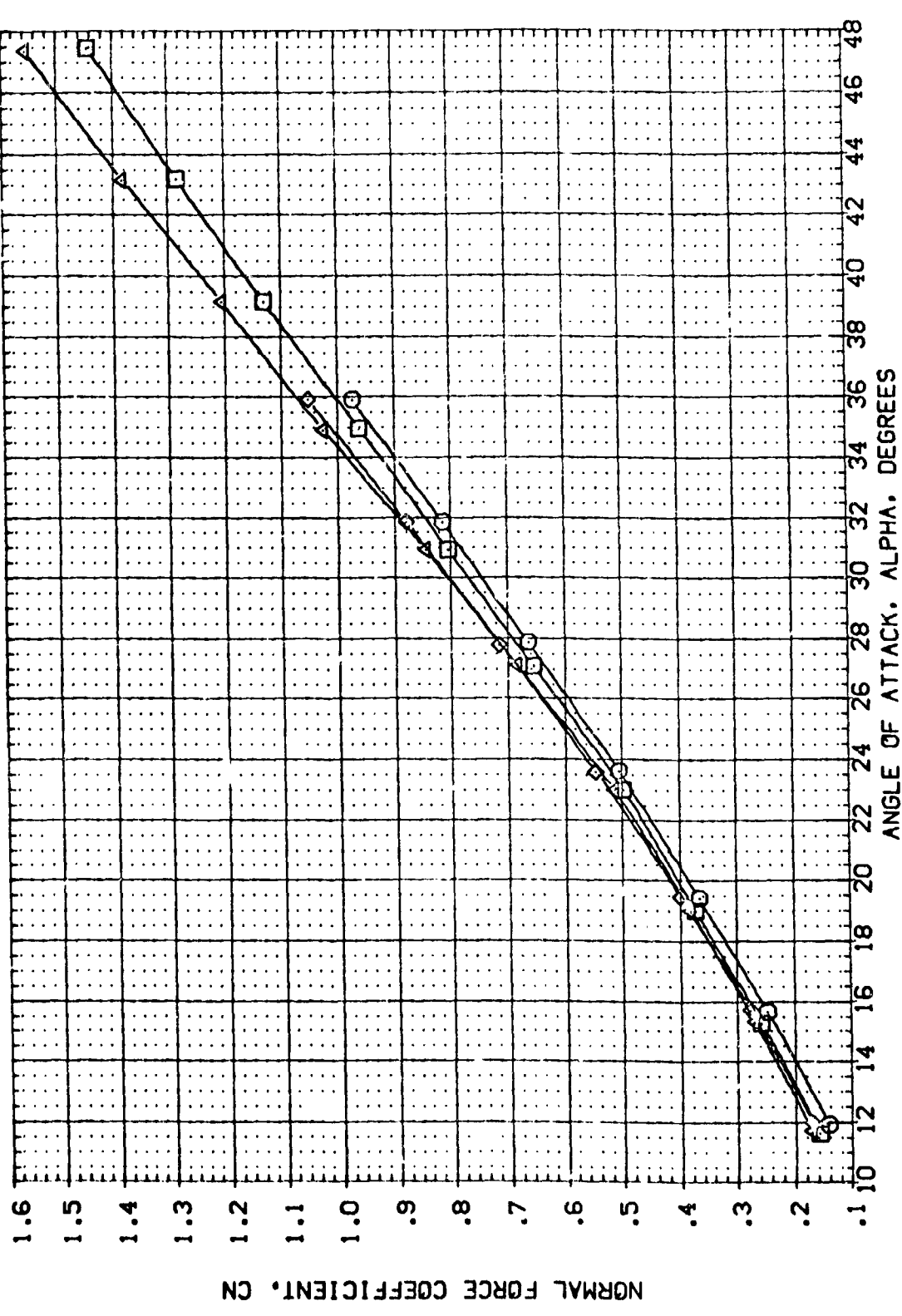


FIG. 14 REYNOLDS NUMBER EFFECTS, BOFLAP=-11.7
(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	S-DIBRK	BDFLAP	RNVL	REFERENCE INFORMATION
(REF017)	AMES 3.5-176 CAB7 140 A/B DRBITER	-40.000	55.000	-11.700	10.000	SREF 2690.0000 SQ.FT.
(BEF009)	AMES 3.5-176 CAB7 140 A/B DRBITER	-40.000	55.000	-11.700	3.000	LREF 1290.3000 IN.
(BEF016)	AMES 3.5-176 CAB7 140 A/B DRBITER	.000	55.000	-11.700	10.000	BREF 936.6800 IN.
(BEF003)	AMES 3.5-176 CAB7 140 A/B DRBITER	.000	55.000	-11.700	3.000	XMRP 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150

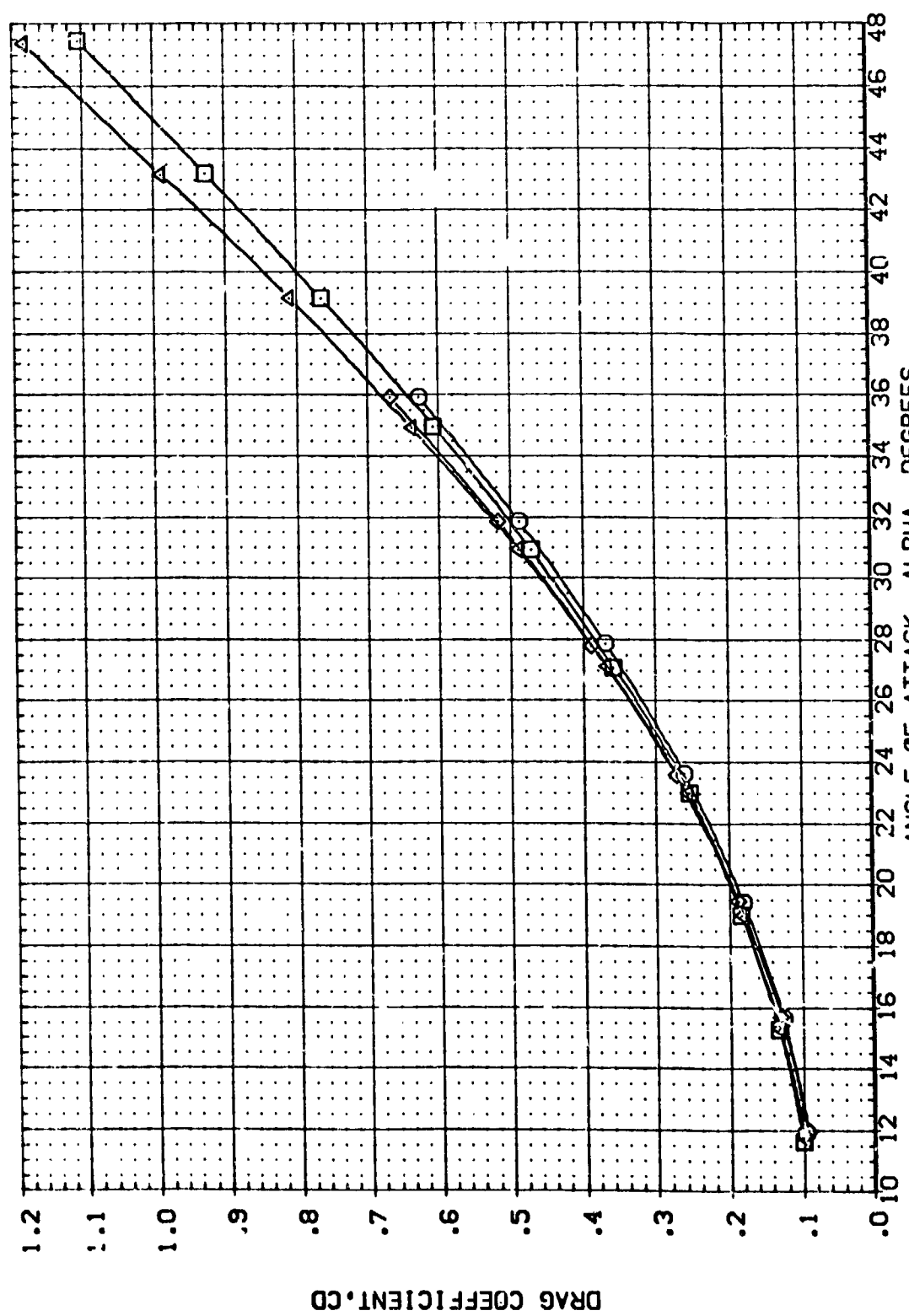


FIG. 14 REYNOLDS NUMBER EFFECTS, BDFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOBRK	BOFLAP	RVAL	REFERENCE INFORMATION
(BEF017)	AVES 3.5-176 GA87 140 A/B ORBITER	-40.000	55.000	-11.700	10.000	SREF 2690.0000 SQ.FT.
(BEF009)	AVES 3.5-176 GA87 140 A/B ORBITER	-40.000	55.000	-11.700	3.000	LREF 1290.3000 IN.
(BEF016)	AVES 3.5-176 GA87 140 A/B ORBITER	.000	55.000	-11.700	10.000	BREF 936.6800 IN.
(BEF008)	AVES 3.5-176 GA87 140 A/B ORBITER	.000	55.000	-11.700	3.000	XMRP 1076.4800 IN.
						ZMRP 375.0000 IN.
						SCALE .0150 SCALE

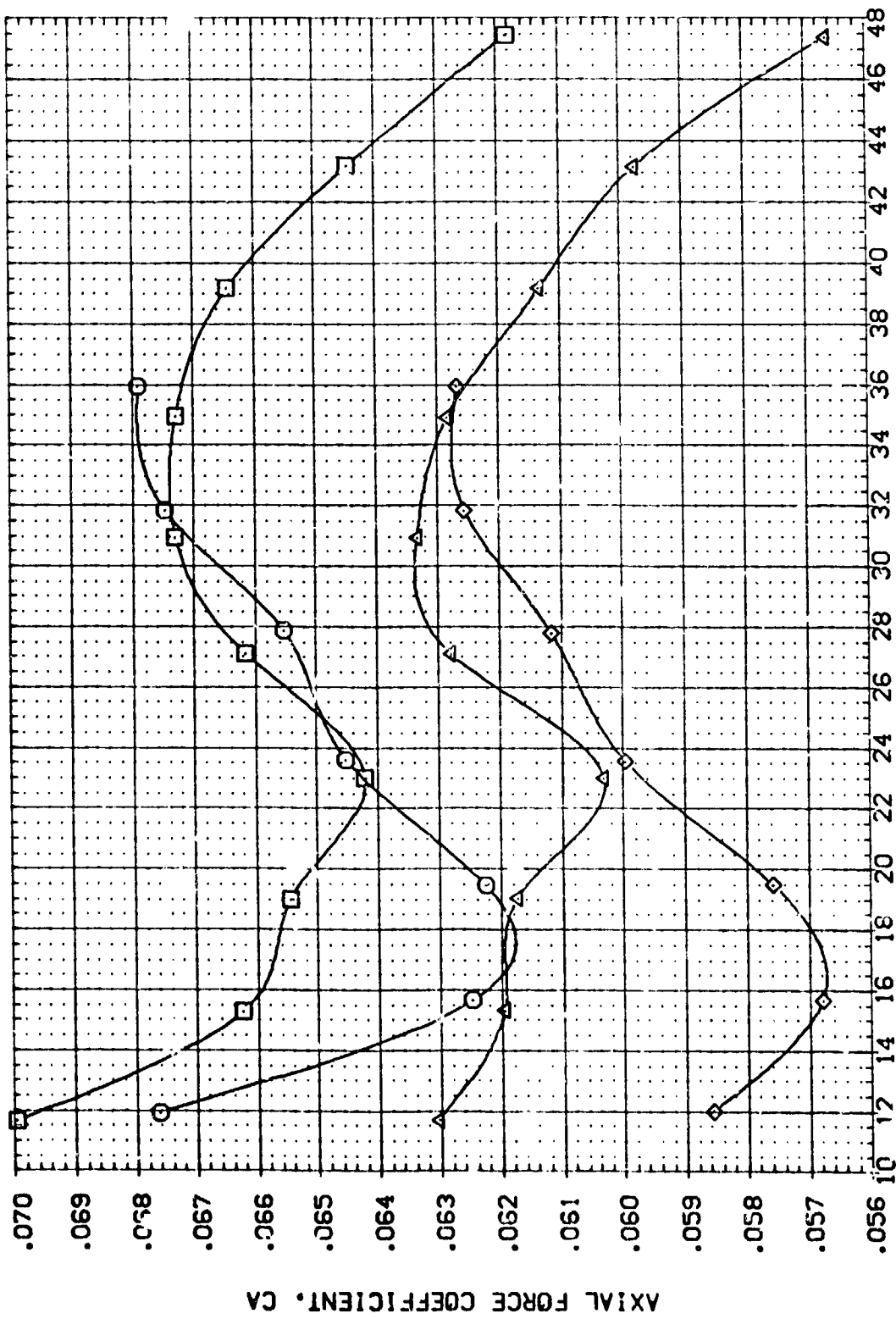


FIG. 14 REYNOLDS NUMBER EFFECTS, BOFLAP=-11.7
(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOONK	BOFLAP	RAVL	REFERENCE INFORMATION
(BEF017)	AMES 3.5-176 OAB7 140 A/B ORBITER	-40.000	55.000	-11.700	10.000	SREF 2630.0000 SO.FT.
(BEF009)	AMES 3.5-176 OAB7 140 A/B ORBITER	-40.000	55.000	-11.700	3.000	LREF 1250.3000 IN.
(BEF016)	AMES 3.5-176 OAB7 140 A/B ORBITER	.000	55.000	-11.700	10.000	BREF 936.6800 IN.
(BEF008)	AMES 3.5-176 OAB7 140 A/B ORBITER	.000	55.000	-11.700	3.000	XMRP 1076.4800 IN.
						YMRP .0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0150 SCALE

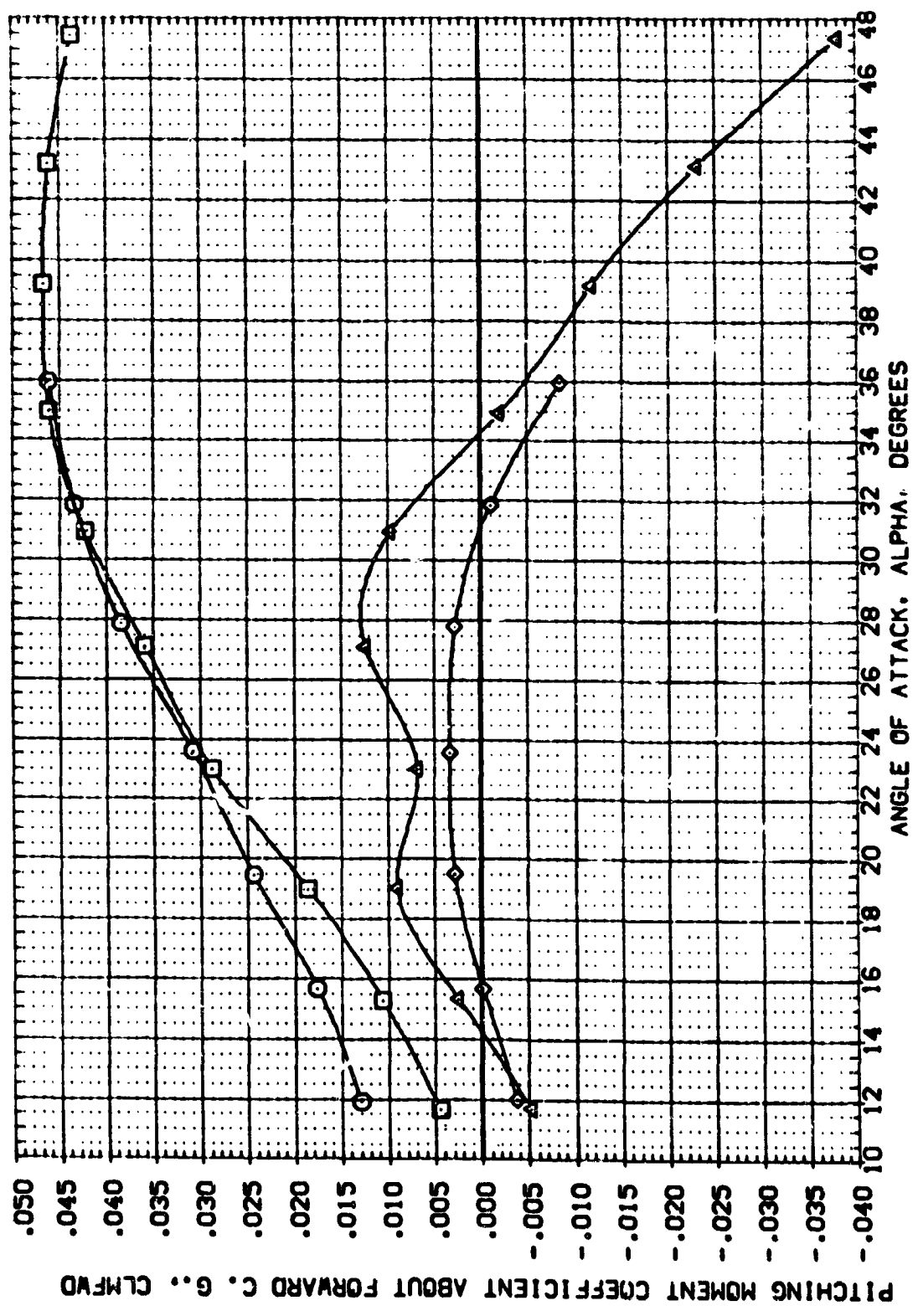


FIG. 14 REYNOLDS NUMBER EFFECTS, BOFLAP=-11.7

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPORON	BDFLAP	RVL	REFERENCE INFORMATION
(REF04)	AVS 3.5-178 CAB7 140 AVS ORBITER	-40.000	50.000	.000	10.000	SHEET 2650.0000 50.FT.
(REF05)	AVS 3.5-178 CAB7 140 AVS ORBITER	-40.000	50.000	.000	3.000	LINE 1750.3000 IN.
(REF06)	AVS 3.5-178 CAB7 140 AVS ORBITER	-10.000	50.000	.000	10.000	WORD 538.6600 IN.
(REF08)	AVS 3.5-178 CAB7 140 AVS ORBITER	10.000	50.000	.000	3.000	WORD 1078.4800 IN.
						WORD .0000 IN.
						WORD 375.0150 IN.
						SCALE

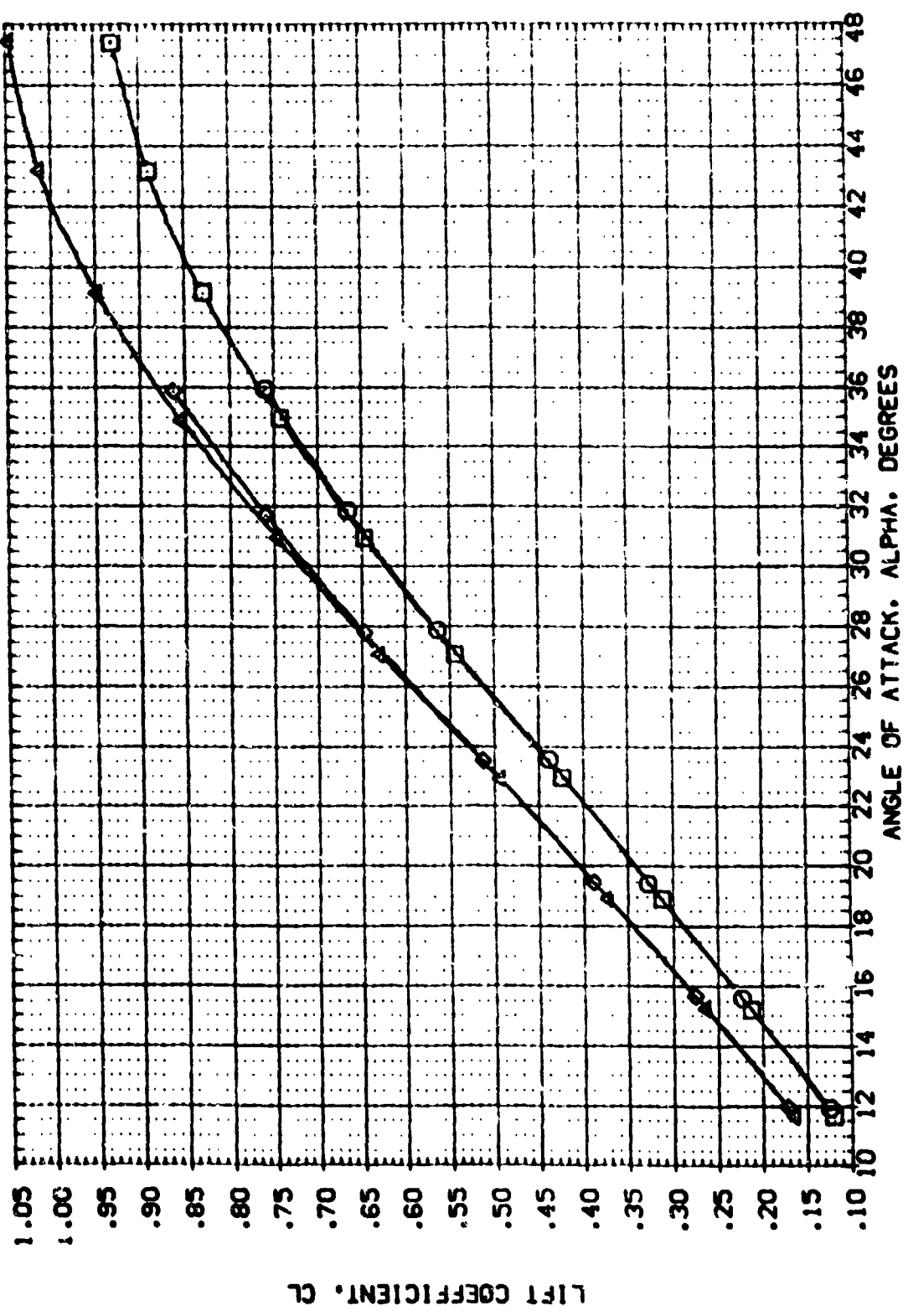


FIG. 15 REYNOLDS NUMBER EFFECTS. BDFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPDRNK	BOFLAP	RVAL	REFERENCE INFORMATION
(BEF004)	AVES 3.5-176 CAB7 140 A/B CRB1TER	-40.000	55.000	.000	10.000	SHEET 2650.0000
(BEF005)	AVES 3.5-176 CAB7 140 A/B CRB1TER	-40.000	55.000	.000	3.000	LINE 1230.3000
(BEF006)	AVES 3.5-176 CAB7 140 A/B CRB1TER	10.000	55.000	.000	10.000	IN. 325.6800
		10.000	55.000	.000	3.000	IN. 1076.4800
						IN. 375.0000
						IN. 375.0000
						SCALE .0150

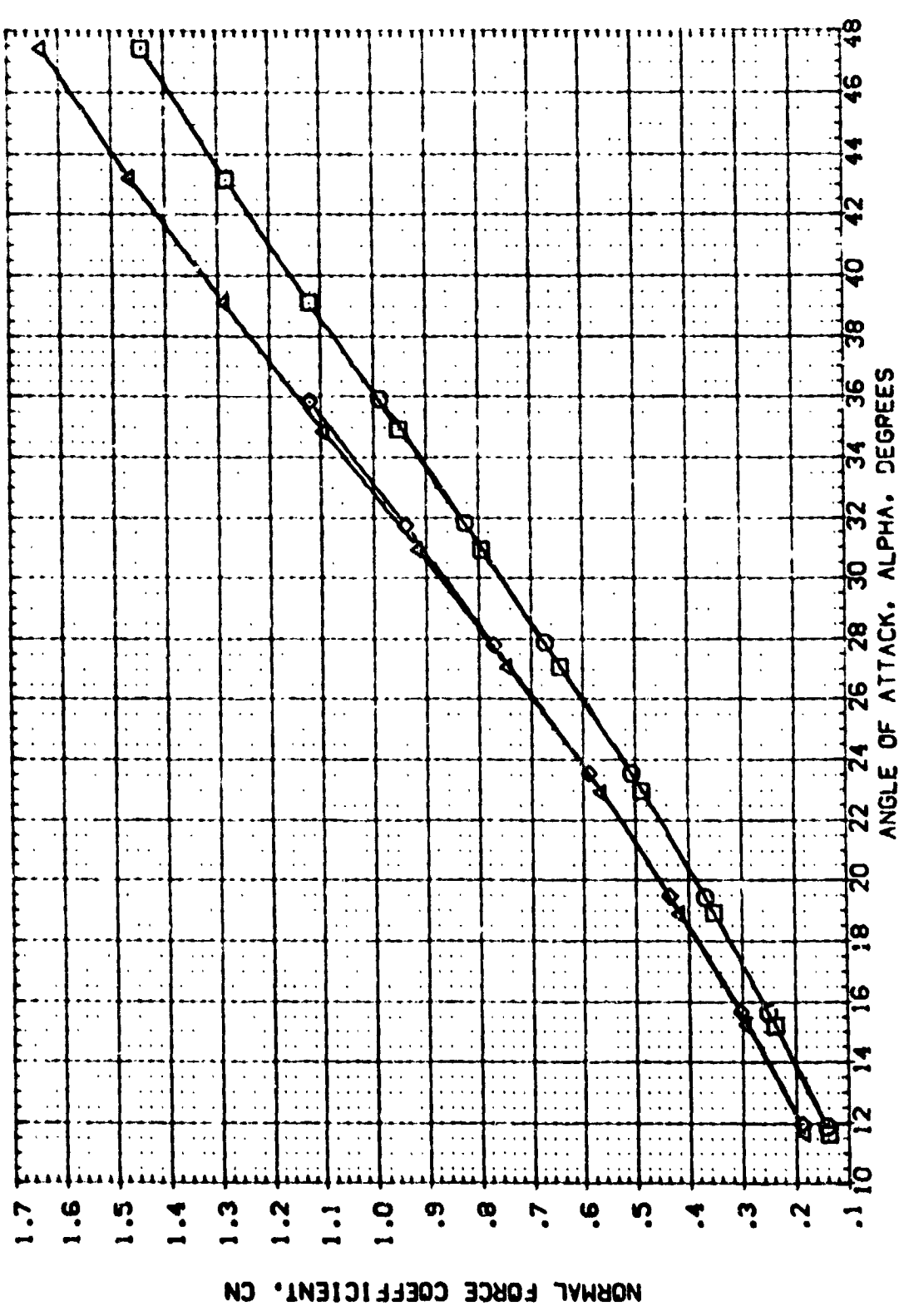


FIG. 15 REYNOLDS NUMBER EFFECTS, BOFLAP=0.0
 (A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPOONK	BOFLAP	RMAL	REFERENCE INFORMATION
(BEF004)	AVES 3-5-176 CAB7 140 A/B ORBITER	-10.000	55.000	.000	10.000	SREF 2690.0000 SQ. FT.
(BEF005)	AVES 3-5-176 CAB7 140 A/B ORBITER	-40.000	55.000	.000	3.000	LSREF 1230.3000 IN.
(BEF003)	AVES 3-5-176 CAB7 140 A/B ORBITER	10.000	55.000	.000	10.000	SPREF 936.6600 IN.
(BEF006)	AVES 3-5-176 CAB7 140 A/B ORBITER	10.000	55.000	.000	3.000	XPREF 1076.4600 IN.
						YHREF .0000 IN.
						ZHREF 375.0000 IN.
						SCALE .0150 SCALE

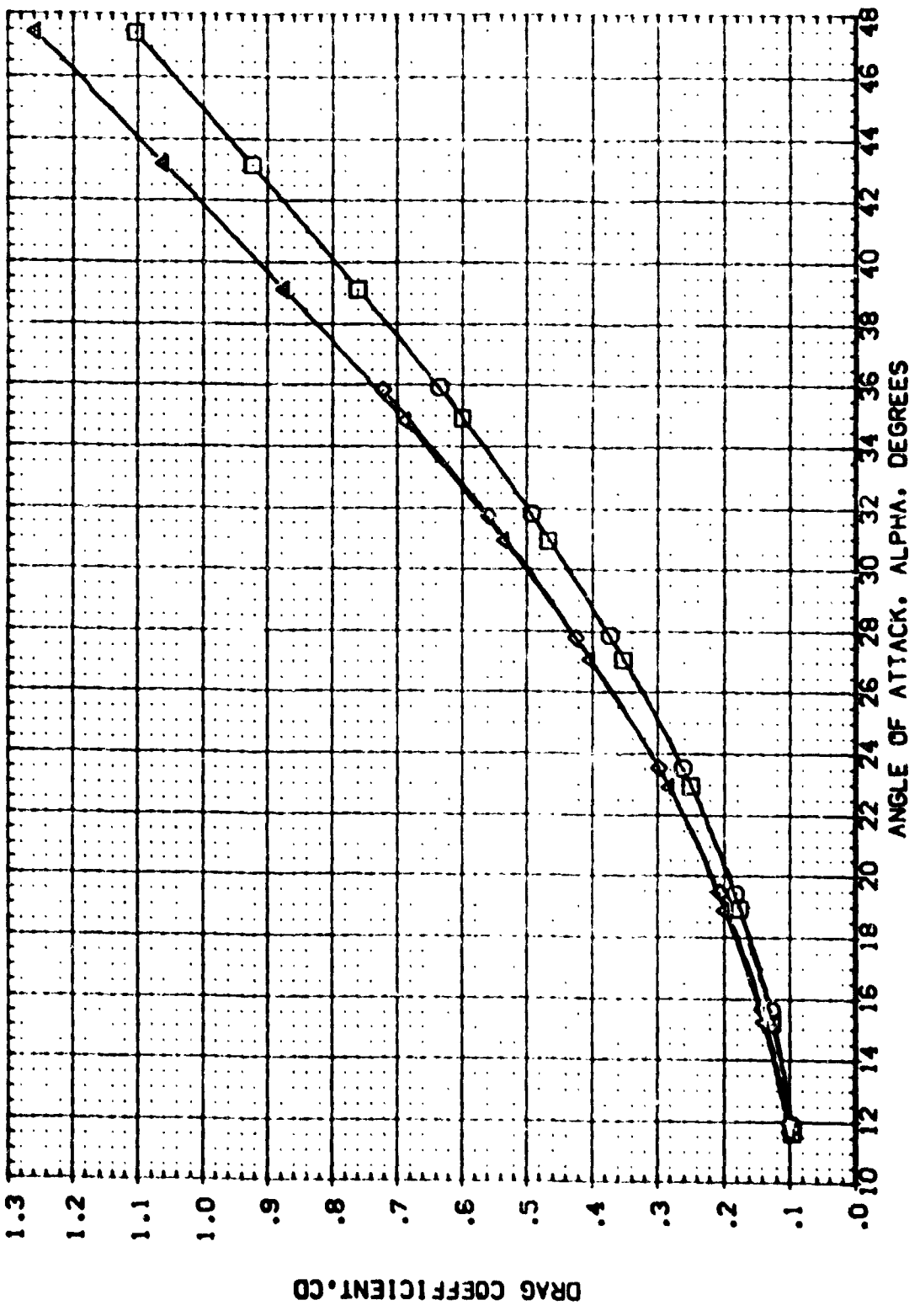


FIG. 15 REYNOLDS NUMBER EFFECTS, BOFLAP=0.0
 (A)MACH = 7.32

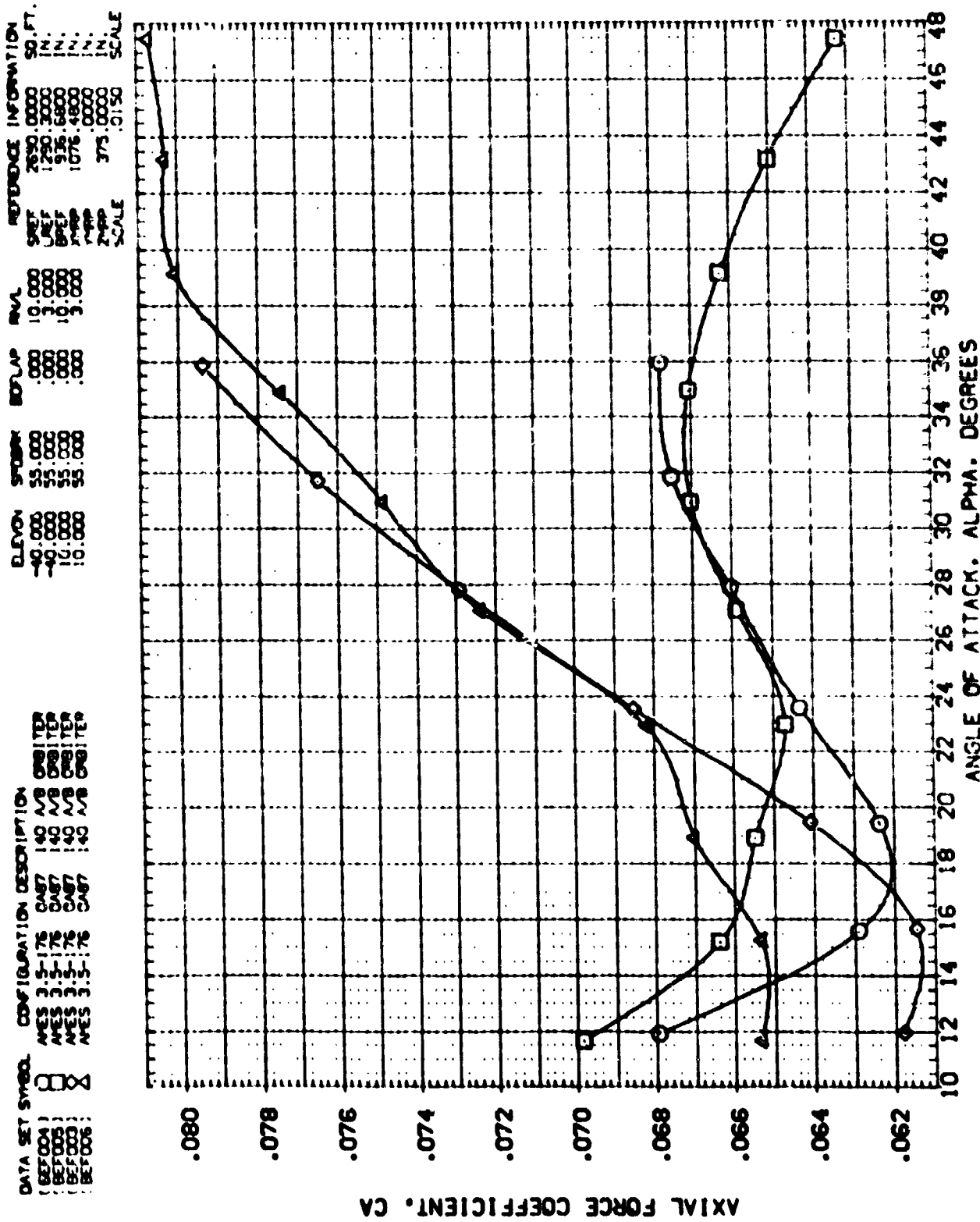


FIG. 15 REYNOLDS NUMBER EFFECTS, 80FLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVATION	SPURK	BDFLAP	SCALE	REFERENCE INFORMATION
(REF001)	AVS 3.5-176 0487 140 AVS 08BITP	10.000	50.000	.000	3.000	2000.0000 50.FT.
(REF002)	AVS 3.5-176 0487 140 AVS 08BITP	10.000	50.000	.000	3.000	1750.0000 40.FT.
(REF003)	AVS 3.5-176 0487 140 AVS 08BITP	10.000	50.000	.000	3.000	536.0000 10.FT.
(REF005)	AVS 3.5-176 0487 140 AVS 08BITP	10.000	50.000	.000	3.000	1076.0000 10.FT.
						375.0000 10.FT.
						SCALE .0150 SCALE

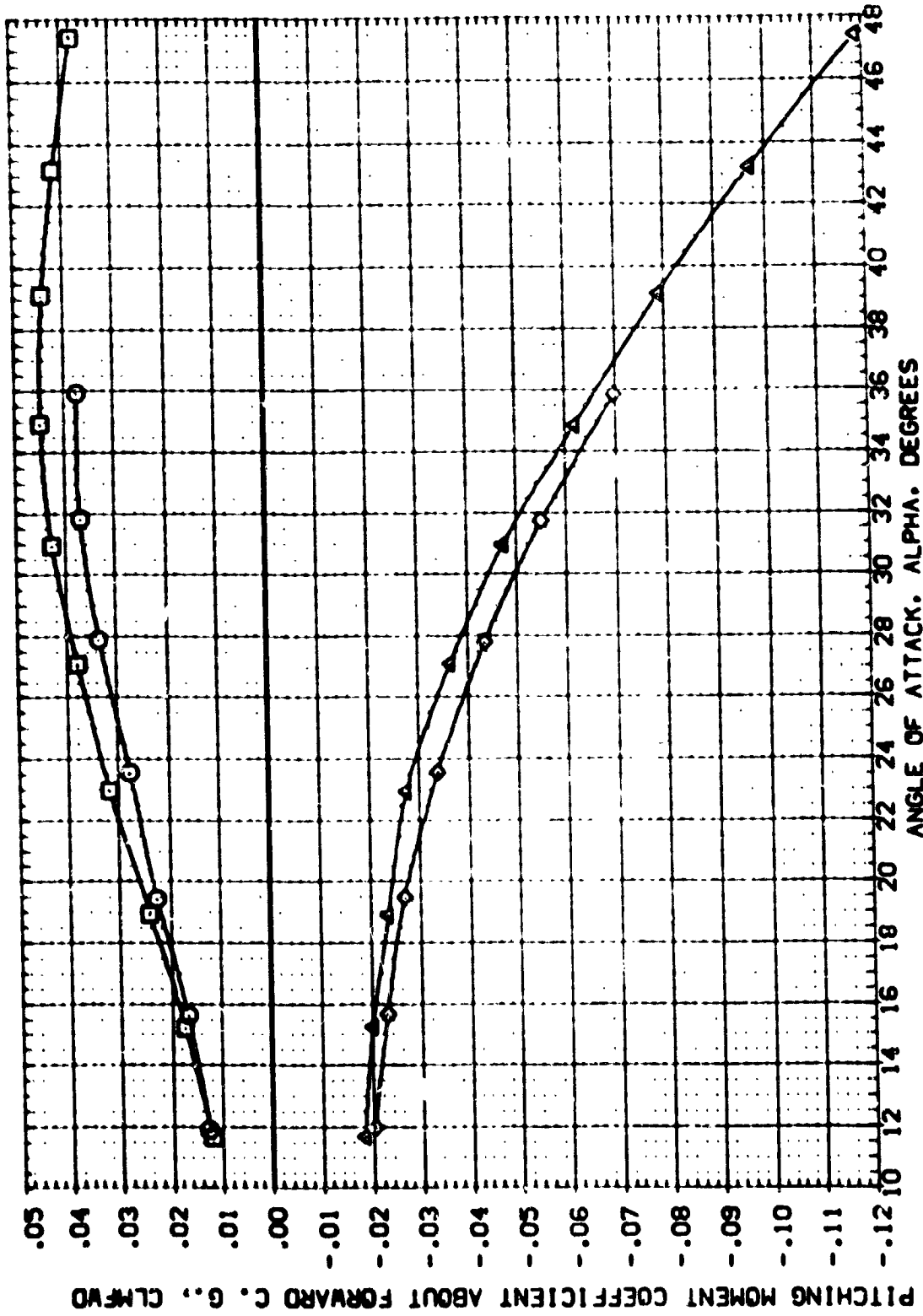


FIG. 15 REYNOLDS NUMBER EFFECTS, BDFLAP=0.0

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPORON	BOFLAP	RVAL	REFERENCE INFORMATION
(BEP015)	AVES 3-5-176 CAB7 140 A/B ORBITER	.000	55.000	16.300	10.000	REF 2650.0000 50.17
(BEP010)	AVES 3-5-176 CAB7 140 A/B ORBITER	.000	55.000	16.300	10.000	LINEF 1250.3000 IN.
(BEP012)	AVES 3-5-176 CAB7 140 A/B ORBITER	10.000	55.000	16.300	10.000	BNCF 936.8800 IN.
(BEP011)	AVES 3-5-176 CAB7 140 A/B ORBITER	10.000	55.000	16.300	10.000	TRPP 1076.4800 IN.
						TRPP SCALE 375.0000 SCALE

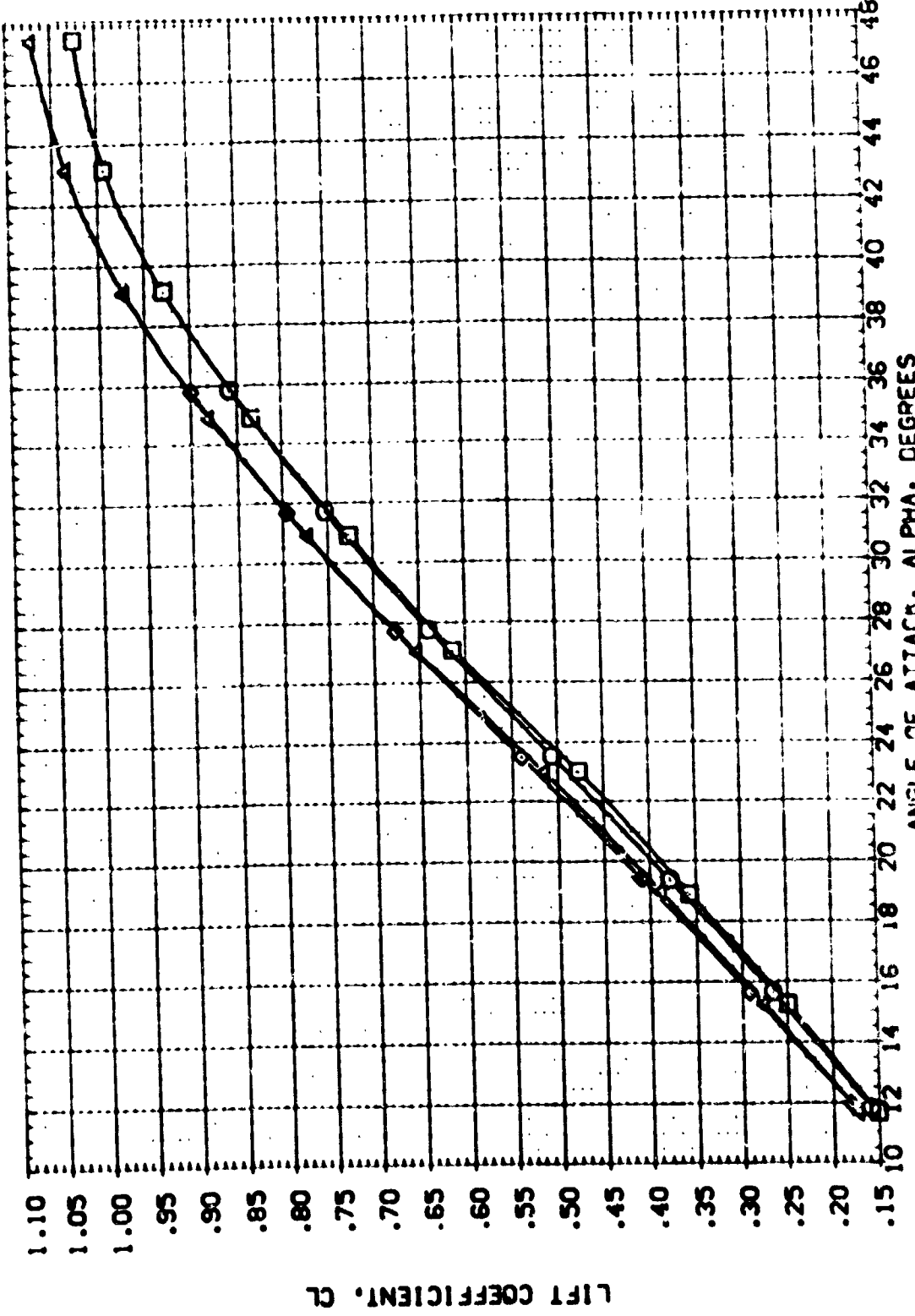


FIG. 16 REYNOLDS NUMBER EFFECTS, BOFLAP=16.3

(A)MACH = 7.32

DATA SET SYMB.	CONFIGURATION DESCRIPTION	ELEVON	SPURK	BOFLAP	RAVL	REFERENCE INFORMATION
(BEFO15)	AVES 3-3-176 CAB7 140 A/B CRIBITER	.000	99.000	16.300	10.000	SREF 2630.0000 50.FT.
(BEFO10)	AVES 3-3-176 CAB7 140 A/B CRIBITER	.000	99.000	16.300	3.000	LREF 1290.3000 IN.
(BEFO12)	AVES 3-3-176 CAB7 140 A/B CRIBITER	10.000	99.000	16.300	10.000	BREF 975.6800 IN.
(BEFO11)	AVES 3-3-176 CAB7 140 A/B CRIBITER	10.000	99.000	16.300	3.000	YREF 1076.4800 IN.
						ZREF 375.0000 IN.
						SCALE .0150

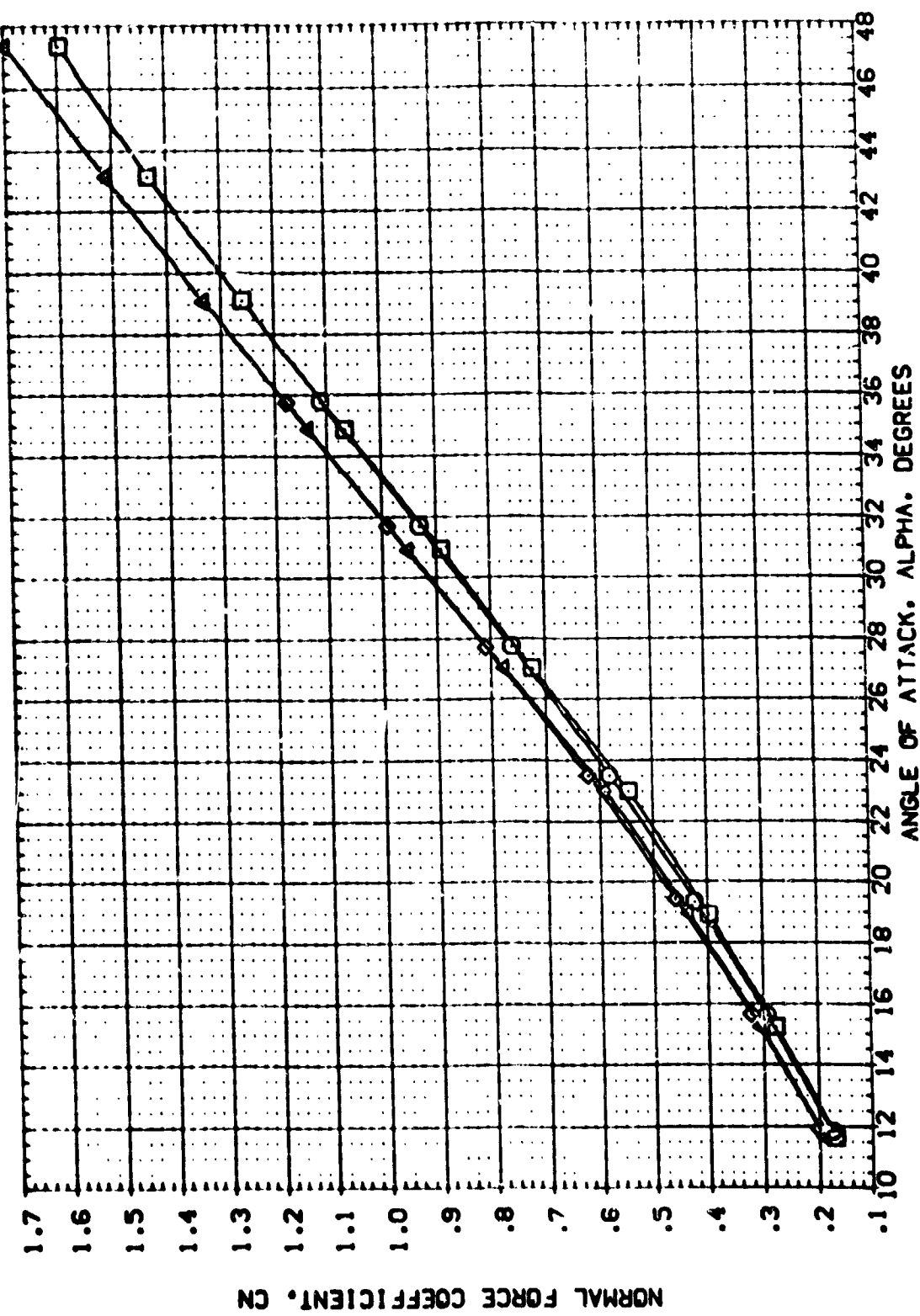


FIG. 16 REYNOLDS NUMBER EFFECTS. BOFLAP=16.3
(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	WING AREA (SQ. FT.)	WING SPAN (IN.)	WING CHORD (IN.)	WING AREA (SQ. FT.)	WING SPAN (IN.)	WING CHORD (IN.)
(BEP012)	MES 3-5-176 OAB7 140 A/B OABITER	2890.0000	10.000	18.300	2890.0000	10.000	18.300
(BEP013)	MES 3-5-176 OAB7 140 A/B OABITER	1790.3000	3.000	18.300	1790.3000	3.000	18.300
(BEP014)	MES 3-5-176 OAB7 140 A/B OABITER	536.6800	10.000	18.300	536.6800	10.000	18.300
(BEP015)	MES 3-5-176 OAB7 140 A/B OABITER	1076.4800	3.000	18.300	1076.4800	3.000	18.300

REFERENCE INFORMATION	SCALE
SNET	375.0000
LINEF	10.50
SNRFP	
YRFP	
ZRFP	
SCALE	

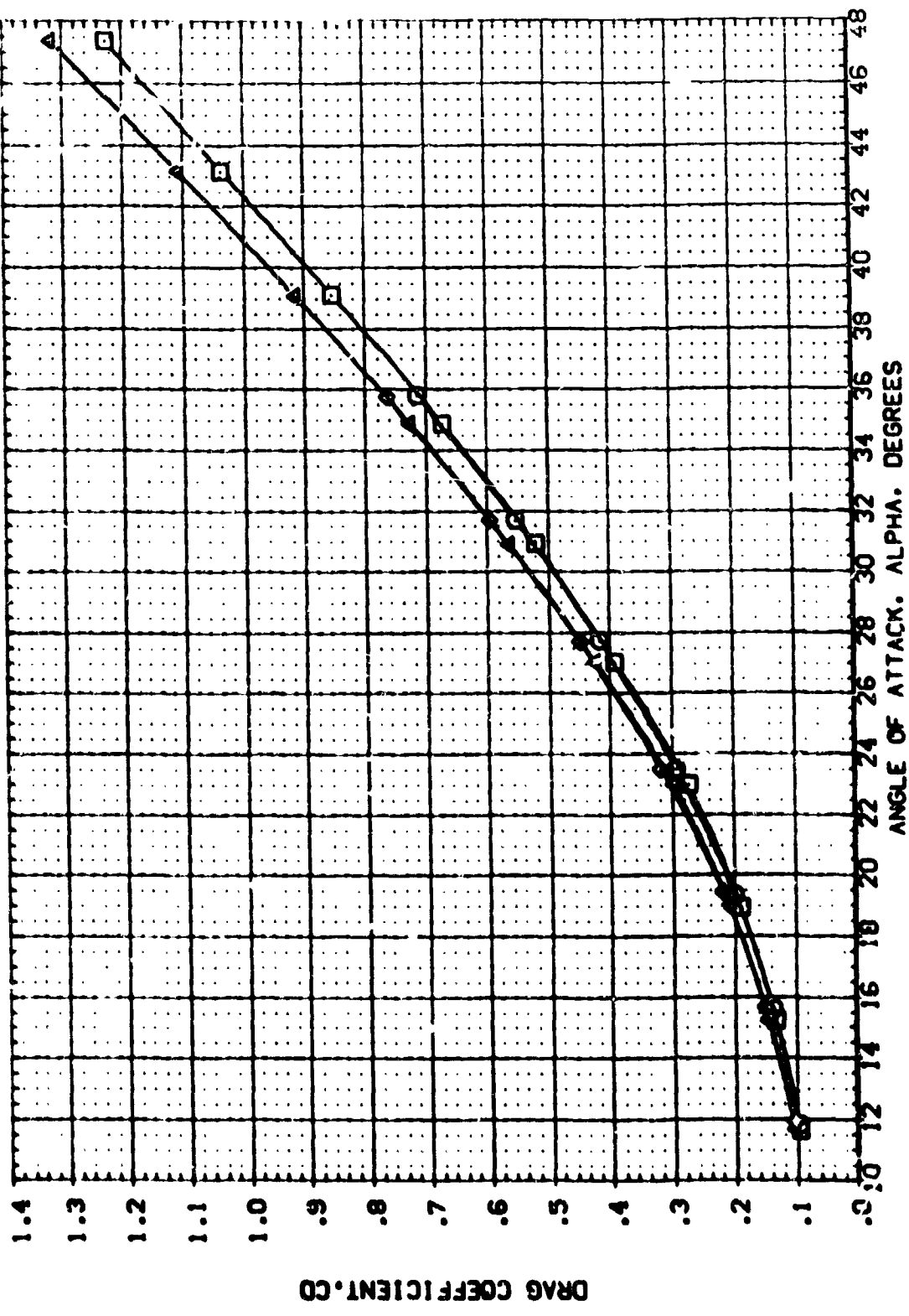


FIG. 16 REYNOLDS NUMBER EFFECTS, BOFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	REF. INFO	REF. INFO
(REF015)	WES 3-5-176 CW87 140 A/B CW87ITER	REF 2690.0000	SO. FT.
(REF010)	WES 3-5-176 CW87 140 A/B CW87ITER	LREF 1290.3000	IN.
(REF012)	WES 3-5-176 CW87 140 A/B CW87ITER	REF 928.6800	IN.
(REF011)	WES 3-5-176 CW87 140 A/B CW87ITER	AREP 1076.4800	IN.
		YPROP .0000	IN.
		ZPROP 375.0000	IN.
		SCALE .C.S.A.	SCALE

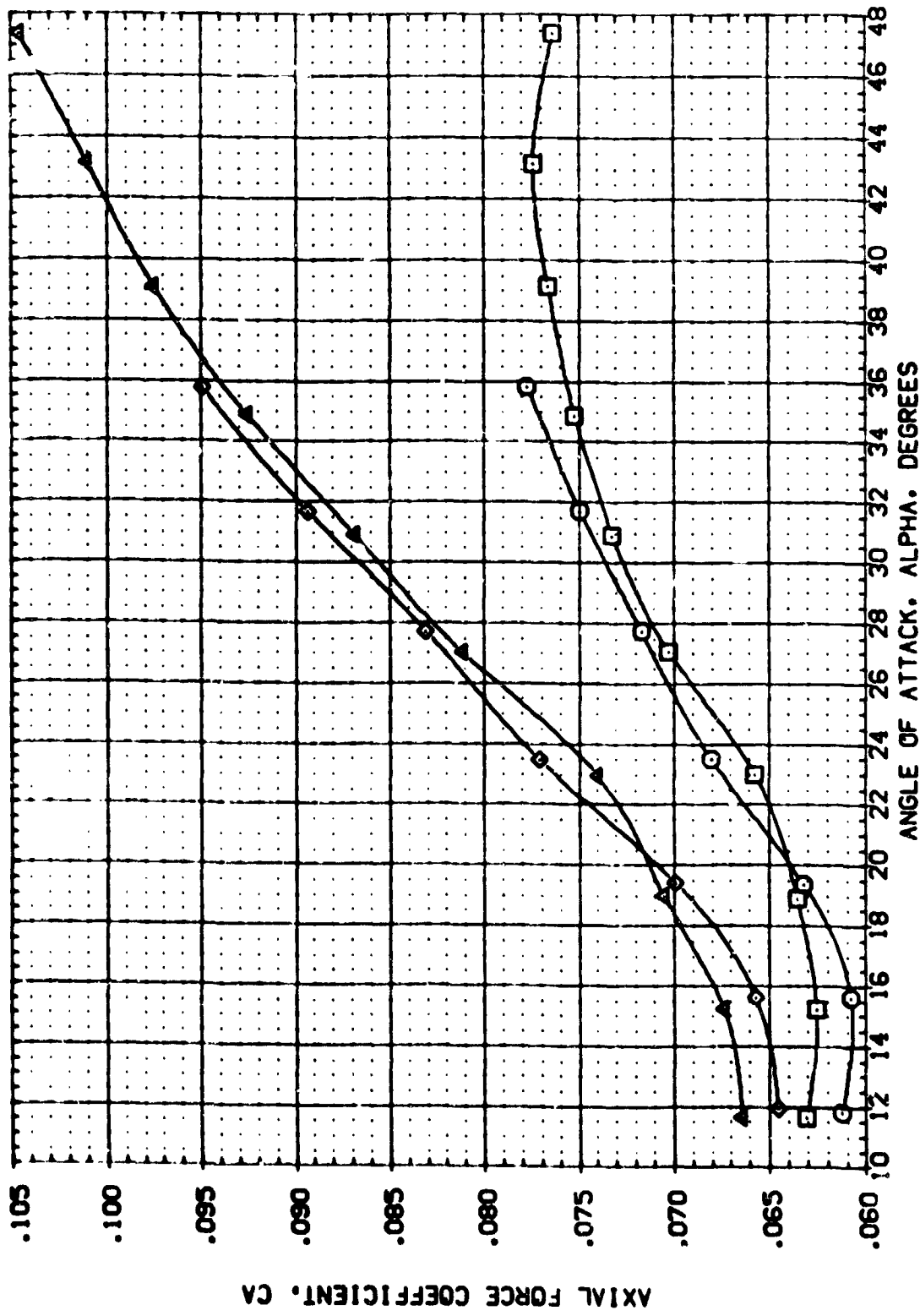


FIG. 16 REYNOLDS NUMBER EFFECTS; BDFLAP=16.3

(A)MACH = 7.32

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	SPORBN	BOFLAP	RM/L	REFERENCE INFORMATION
(BEF015)	AMES 3.5-176 CAB7 140 A/B ORBITER	.000	55.000	16.300	10.000	SREF 2690.0000 50 FT.
(BEF010)	AMES 3.5-176 CAB7 140 A/B ORBITER	.000	55.000	16.300	3.000	LREF 1290.3000 IN.
(BEF012)	AMES 3.5-176 CAB7 140 A/B ORBITER	10.000	55.000	16.300	10.000	BREF 936.6800 IN.
(BEF011)	AMES 3.5-176 CAB7 140 A/B ORBITER	10.000	55.000	16.300	3.000	XREF 1076.4800 IN.
						ZREF .0000 IN.
						SCALE 375.0000 IN.
						SCALE .0150

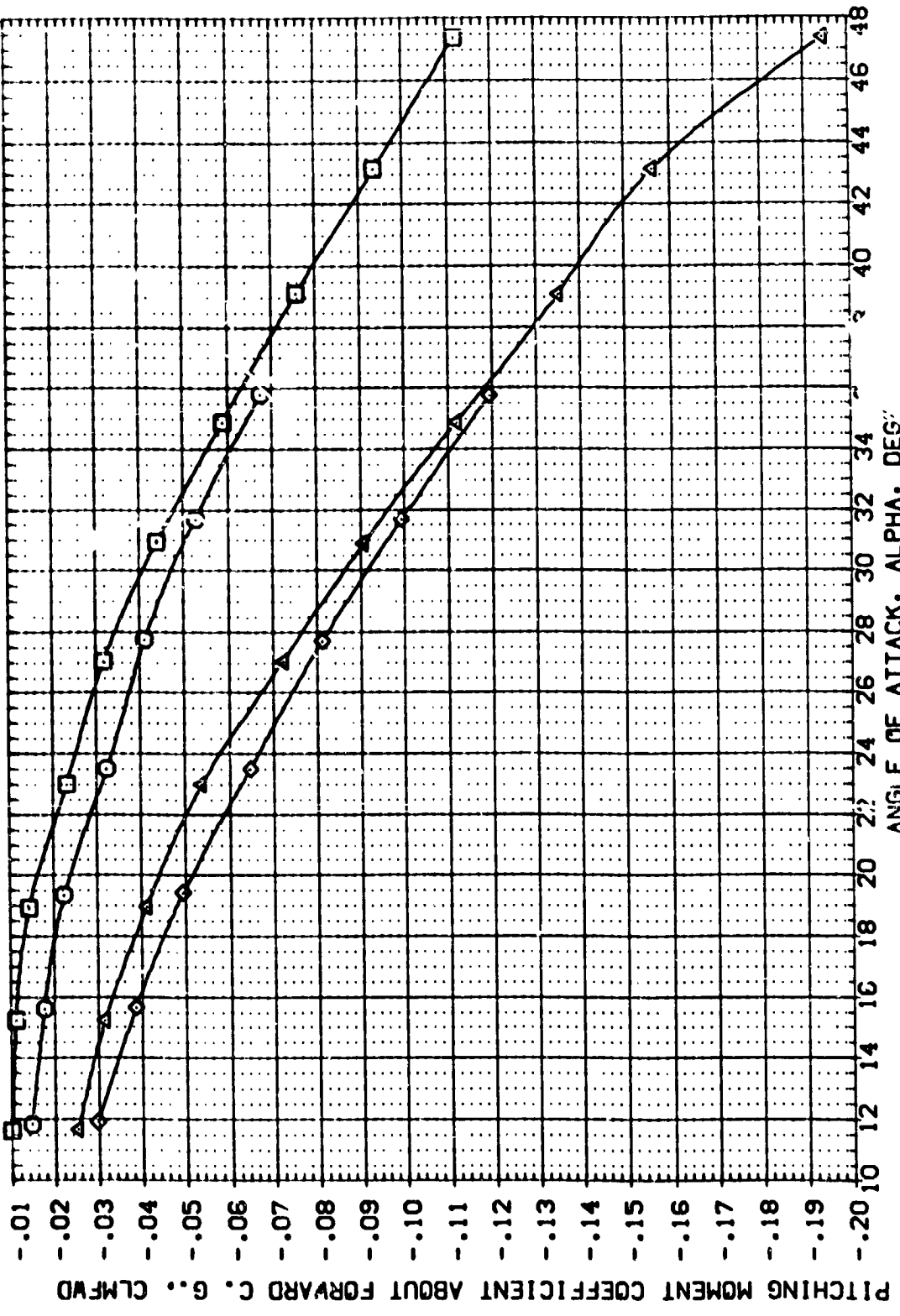


FIG. 16 REYNOLDS NUMBER EFFECTS, BOFLAP=16.3

(M)MACH = 7.32

APPENDIX
TABULATED SOURCE DATA

Plotted data tabulations are
available from DMS on request.

REFERENCE DATA

SREF = 285.0000 50.FT. XMRP = 1076.4800 IN.
 LRFP = 1290.3000 IN. YMRP = .0000 IN.
 BRFP = 936.6800 IN. ZMRP = 375.0000 IN.
 SCALE = .0150 SCALE

RUN NO. 1/0 RN/L = 6.95 GRADIENT INTERVAL = -5.00/ 5.00

PARAMETRIC DATA

BETA = .000 AILRON = .000
 ELEVON = .000 BOFLAP = .000
 RUDDER = .000 SPOBRK = 55.000
 RN/L = 10.000

MACH	ALPHA	XCP/L	CN	CA	CLMFD	CP1	CP2	CP3	CP4	CP5	CP6
7.320	11.914	.66283	.16610	.05871	-.00580	-.02099	-.02228	-.02196	-.02174	-.02093	-.02110
7.320	15.676	.65415	.27631	.05497	-.00314	-.02150	-.02215	-.02215	-.02219	-.02149	-.02123
7.320	19.508	.65124	.40074	.05560	-.00138	-.02153	-.02236	-.02212	-.02237	-.02163	-.02110
7.320	23.345	.65126	.54311	.05737	-.00190	-.02096	-.02156	-.02125	-.02196	-.02173	-.02061
7.320	27.768	.65233	.71850	.05943	-.00499	-.02011	-.02076	-.02036	-.02067	-.02063	-.01961
7.320	31.791	.65437	.88369	.06036	-.01105	-.01337	-.01997	-.01956	-.02034	-.02034	-.01862
7.320	35.679	.65723	1.05714	.06035	-.02084	-.01909	-.01966	-.01929	-.02025	-.02044	-.01846
	GRADIENT	-.00012	.03746	.00023	-.00038	.00010	.00013	.00013	.00009	.00004	.00013

AMES 3.5-176 OM87 140 A/B ORBITER

(REF002) (04 DEC 75)

REFERENCE DATA

SREF = 2890.0000 50.FT. XMRP = 1076.4800 IN.
 LRFP = 1290.3000 IN. YMRP = .0000 IN.
 BRFP = 936.6800 IN. ZMRP = 375.0000 IN.
 SCALE = .0150 SCALE

RUN NO. 2/0 RN/L = 5.71 GRADIENT INTERVAL = -5.00/ 5.00

PARAMETRIC DATA

BETA = .000 AILRON = .000
 ELEVON = 10.000 BOFLAP = .000
 RUDDER = .000 SPOBRK = 55.000
 RN/L = 10.000

MACH	ALPHA	XCP/L	CN	CA	CLMFD	CP1	CP2	CP3	CP4	CP5	CP6
7.320	23.520	.67134	.96196	.06802	-.03389	-.02161	-.01923	-.02010	-.02085	-.02100	-.02008
7.320	27.765	.67101	.76168	.07244	-.04359	-.02200	-.01946	-.02025	-.02100	-.02080	-.02119
7.320	31.714	.67173	.93159	.07607	-.05512	-.02115	-.01858	-.01933	-.02032	-.02062	-.01945
7.320	35.798	.67297	1.11368	.07570	-.06940	-.02089	-.01834	-.01909	-.02014	-.02078	-.01931
	GRADIENT	.00014	.04191	.00050	-.00289	.00007	.00009	.00010	.00007	.00002	.00007

TABULATED SOURCE DATA FOR OAB7 (ARC 3.5-176)
 AMES 3.5-176 OAB7 140 A/B ORBITER

REFERENCE DATA
 SREF = 2090.0000 50.FT. YREF = 1076.4800 IN.
 LREF = 1290.3000 IN. XREF = .7570 IN.
 BREF = 936.8000 IN. ZREF = 375.0000 IN.
 SCALE = .0150 SCALE

RUN NO. 3 / 0 RM/L = 6.01 GRADIENT INTERVAL = -3.00/ 5.00

MACH	ALPHA	KCP/L	ON	CA	CLM/LC	CP1	CP2	CP3	CP4	CP5	CP6
7.320	11.942	.68949	.18846	.76179	-.02725	-.02105	-.02182	-.02190	-.02189	-.02145	-.02110
7.320	15.661	.67794	.17809	.68147	-.02570	-.02189	-.02266	-.02192	-.02185	-.02095	-.02115
7.320	19.431	.67280	.16799	.64009	-.02874	-.02272	-.02183	-.02201	-.02214	-.02143	-.02120
7.320	23.264	.67111	.15857	.60632	-.03376	-.02374	-.02056	-.02169	-.02211	-.02115	-.02036
7.320	27.164	.67102	.15045	.57691	-.04063	-.02516	-.02029	-.02124	-.02279	-.02034	-.01912
7.320	31.110	.67150	.14361	.55316	-.04916	-.02684	-.01955	-.02140	-.02317	-.02076	-.01865
7.320	35.140	.67209	.13785	.53441	-.05989	-.02884	-.01912	-.02197	-.02495	-.02090	-.01871
GRADIENT		-.00796	.03941	.03782	-.00004	.00010	.00012	.00014	.00009	.00004	.00012

REFERENCE DATA
 SREF = 2090.0000 50.FT. YREF = 1076.4800 IN.
 LREF = 1290.3000 IN. XREF = .7570 IN.
 BREF = 936.8000 IN. ZREF = 375.0000 IN.
 SCALE = .0150 SCALE

RUN NO. 6 / 0 RM/L = 6.04 GRADIENT INTERVAL = -3.00/ 5.00

MACH	ALPHA	KCP/L	ON	CA	CLM/LC	CP1	CP2	CP3	CP4	CP5	CP6
7.320	11.942	.61092	.14117	.67396	.01268	-.02076	-.02075	-.02092	-.02030	-.01999	-.01962
7.320	15.597	.62327	.14444	.62004	.01664	-.02126	-.02124	-.02104	-.02128	-.02032	-.02056
7.320	19.411	.62745	.14934	.56235	.02060	-.02169	-.02169	-.02131	-.02166	-.02034	-.02061
7.320	23.243	.62979	.15681	.50452	.02476	-.02224	-.02224	-.02182	-.02207	-.02076	-.02060
7.320	27.055	.63161	.16629	.44803	.02920	-.02295	-.02295	-.02249	-.02274	-.02069	-.02060
7.320	31.035	.63348	.17747	.39349	.03400	-.02386	-.02386	-.02328	-.02364	-.02064	-.02072
7.320	35.140	.63674	.19011	.34076	.03927	-.02492	-.02492	-.02421	-.02516	-.02076	-.02074
GRADIENT		.00769	-.03534	.03711	.00111	.00011	.00012	.00014	.00010	.00005	.00011

PARAMETRIC DATA
 BETA = .000 AILRON = .000
 ELEVON = 10.000 BOFLAP = .000
 RUDDER = .000 SPOBRK = 55.000
 RM/L = 10.000

PARAMETRIC DATA
 BETA = .000 AILRON = .000
 ELEVON = 10.000 BOFLAP = .000
 RUDDER = .000 SPOBRK = 55.000
 RM/L = 10.000

AMES 3.5-176 ORBIT 140 A/B ORBITER

(REPTONS) (14 DEC 75)

REFERENCE DATA

STEP = 2000.0000 SQ.FT. XAMP = 1076.4000 IN.
 LAMP = 1200.3000 IN. YAMP = .0000 IN.
 SAMP = 936.6000 IN. ZAMP = 375.0000 IN.
 SCALE = .0197 SCALE

PARAMETRIC DATA

BETA = .000 AILRON = .000
 ELEVON = -40.000 BSLAP = .000
 RUDDER = .000 SPOBRK = 55.000
 RWL = 3.000

RUN NO. 9/0 RWL = 1.76 GRADIENT INTERVAL = -5.00/ 5.00

WICH	ALPHA	ICP/L	ON	CA	CLMND	CP1	CP2	CP3	CP4	CP5	CP6
7.307	11.627	.61703	.13615	.06906	.01279	-.01967	-.01660	-.02013	-.01663	-.01797	-.01669
7.327	15.276	.62312	.23014	.06639	.01736	-.02701	-.01964	-.02792	-.02773	-.01656	-.01957
7.327	16.976	.62481	.35232	.06546	.02479	-.02707	-.01346	-.02050	-.01996	-.01906	-.01992
7.327	22.971	.62596	.48004	.06469	.03164	-.01763	-.01734	-.01977	-.01876	-.01959	-.01770
7.327	27.763	.62833	.64467	.06369	.03792	-.01935	-.01634	-.01977	-.01977	-.01793	-.01645
7.327	31.997	.63016	.79511	.06301	.04276	-.01864	-.01751	-.01768	-.01622	-.01710	-.01739
7.327	34.041	.63269	.95223	.06276	.04472	-.01795	-.01636	-.01656	-.01740	-.01726	-.01623
7.327	39.121	.63597	1.12297	.06223	.04417	-.01626	-.01490	-.01663	-.01614	-.01568	-.01462
7.327	43.167	.63871	1.26151	.06159	.04165	-.01443	-.01315	-.01295	-.01466	-.01495	-.01273
7.327	47.423	.64134	1.44265	.06125	.03775	-.01255	-.01135	-.01150	-.01342	-.01364	-.01072
GRADIENT	.00159	.00159	.00159	.00159	.00162	.00159	.00162	.00162	.00161	.00165	.00163

REFERENCE DATA

STEP = 2000.0000 SQ.FT. XAMP = 1076.4000 IN.
 LAMP = 1200.3000 IN. YAMP = .0000 IN.
 SAMP = 936.6000 IN. ZAMP = 375.0000 IN.
 SCALE = .0197 SCALE

PARAMETRIC DATA

BETA = .000 AILRON = .000
 ELEVON = 10.000 BSLAP = .000
 RUDDER = .000 SPOBRK = 55.000
 RWL = 3.000

AMES 3.5-176 ORBIT 140 A/B ORBITER

(REPTONS) (14 DEC 75)

RUN NO. 6/0 RWL = 1.74 GRADIENT INTERVAL = -5.00/ 5.00

WICH	ALPHA	ICP/L	ON	CA	CLMND	CP1	CP2	CP3	CP4	CP5	CP6
7.307	11.630	.60707	.16152	.06936	-.01671	-.01854	-.01819	-.01657	-.01696	-.01647	-.01760
7.327	15.268	.61324	.29109	.06536	-.02774	-.01956	-.01970	-.01957	-.02724	-.01950	-.01663
7.327	16.976	.61763	.41316	.06371	-.02342	-.01962	-.01927	-.01934	-.02713	-.01963	-.01670
7.327	22.977	.62092	.56744	.06272	-.02742	-.01631	-.01617	-.01564	-.01763	-.01932	-.01608
7.327	27.008	.62404	.74404	.06236	-.02356	-.01934	-.01674	-.01673	-.01966	-.01932	-.01633
7.327	30.934	.62675	.91577	.06206	-.02476	-.01660	-.01711	-.01757	-.01976	-.01937	-.01730
7.327	34.853	.62979	1.09579	.06193	-.02453	-.01675	-.01739	-.01716	-.01677	-.01990	-.01676
7.327	39.136	.63233	1.26016	.06176	-.02435	-.01476	-.01536	-.01297	-.01554	-.01670	-.01277
7.327	43.272	.63469	1.46369	.06153	-.02371	-.01491	-.01431	-.01645	-.02743	-.01674	-.01539
7.327	47.469	.63664	1.64472	.06127	-.02169	-.01289	-.01222	-.01627	-.01647	-.01645	-.01247
GRADIENT	.00151	.00151	.00151	.00151	.00160	.00159	.00159	.00159	.00163	.00166	.00163

TABULATED SOURCE DATA FOR ORBIT (ARC 3.5-176)

DATE 24 JAN 74

(REF000) (04 DEC 73)

AMES 3.5-176 ORBIT 140 A/B ORBITER

PARAMETRIC DATA

BETA = .000 AILRON = .000
 ELEVON = -40.000 SOFLAP = -11.700
 RUDDER = .000 SPOBRK = 55.000
 RM/L = 3.000

REFERENCE DATA

WASP = 2070.0000 80.FT. WASP = 1076.4800 IN.
 LWSP = 1291.3000 IN. LWSP = .0000 IN.
 SWSP = 936.8000 IN. SWSP = 375.0000 IN.
 SCALE = .0190 SCALE

RUN NO. 9/ 0 RM/L = 1.91 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	KCP/L	ON	CA	CLAMPD	CP1	CP2	CP3	CP4	CP5	CP6
7.350	11.835	.63964	.19706	.06997	.00441	-.01660	-.01802	-.01968	-.01955	-.01771	-.01773
7.350	13.272	.63463	.25779	.06624	-.01061	-.01945	-.01896	-.02005	-.01966	-.01827	-.01831
7.350	16.908	.63164	.37234	.06545	.01855	-.01953	-.01892	-.01979	-.01965	-.01871	-.01846
7.350	22.997	.62887	.49721	.06421	.02879	-.01483	-.01481	-.01437	-.01550	-.01575	-.01439
7.350	27.068	.62704	.62596	.06616	.03589	-.01645	-.01782	-.01600	-.01634	-.01754	-.01731
7.350	30.929	.62784	.67336	.06730	.04230	-.01773	-.01870	-.01704	-.01768	-.01753	-.01632
7.350	34.956	.63232	.96195	.06729	.04614	-.01544	-.01544	-.01536	-.01643	-.01563	-.01505
7.350	36.175	.63476	1.13063	.06642	.04675	-.01502	-.01412	-.01406	-.01555	-.01527	-.01336
7.350	43.199	.63676	1.26334	.06443	.04614	-.01316	-.01133	-.01213	-.01404	-.01359	-.01103
7.350	47.483	.63607	1.44360	.06163	.04355	-.01162	-.01119	-.01077	-.01330	-.01299	-.00940
GRADIENT		.00026	.03064	-.02011	.00121	.00019	.00020	.00024	.00016	.00015	.00023

(REF010) (24 DEC 73)

AMES 3.5-176 ORBIT 140 A/B ORBITER

PARAMETRIC DATA

BETA = .000 AILRON = .000
 ELEVON = .000 SOFLAP = 16.300
 RUDDER = .000 SPOBRK = 55.000
 RM/L = 3.000

REFERENCE DATA

WASP = 2080.0000 80.FT. WASP = 1076.4800 IN.
 LWSP = 1290.3000 IN. LWSP = .0000 IN.
 SWSP = 936.8000 IN. SWSP = 375.0000 IN.
 SCALE = .0190 SCALE

RUN NO. 10/ 0 RM/L = 1.92 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	KCP/L	ON	CA	CLAMPD	CP1	CP2	CP3	CP4	CP5	CP6
7.350	11.822	.67241	.16724	.06303	-.01020	-.02070	-.01425	-.01946	-.01636	-.01563	-.01773
7.350	15.235	.66492	.27236	.06253	-.01116	-.02152	-.01505	-.01996	-.01922	-.01614	-.01643
7.350	18.908	.66316	.39609	.06355	-.01430	-.02195	-.01520	-.01996	-.01926	-.01636	-.01655
7.350	22.990	.66551	.54671	.06575	-.02306	-.01693	-.01067	-.01397	-.01494	-.01536	-.01436
7.350	27.047	.66808	.72414	.07264	-.03170	-.02152	-.01434	-.01661	-.01906	-.01703	-.01789
7.350	30.920	.66912	.89105	.07319	-.04394	-.02116	-.01369	-.01795	-.01666	-.01664	-.01716
7.350	34.864	.67026	1.06626	.07521	-.05667	-.02011	-.01276	-.01656	-.01811	-.01560	-.01564
7.350	39.127	.67212	1.25939	.07665	-.07376	-.01817	-.01111	-.01462	-.01665	-.01529	-.01412
7.350	43.147	.67399	1.43239	.07659	-.09347	-.01522	-.00972	-.01197	-.01665	-.01333	-.01133
7.350	47.403	.67560	1.59663	.07637	-.11204	-.01269	-.00796	-.00966	-.00647	-.00916	-.00464
GRADIENT		.00024	.04107	-.02049	.00123	.00023	.00024	.00024	.00019	.00013	.00029

TABULATED SOURCE DATA FOR ORBIT (ARC 3.5-176)
AMES 3.5-176 ORBIT 140 A/B ORBITER

REFERENCE DATA

STEP = 2000.0000 50.FT. YAMP = 1076.4000 IN.
LREF = 1200.0000 IN. YAMP = .0000 IN.
BREF = 936.0000 IN. ZAMP = 375.0000 IN.
SCALE = .0197 SCALE

BETA = .000 AILRON = .000
ELEVON = 10.000 BOFLAP = 16.300
RUDDER = .000 SPODRK = 55.000
RWAL = 3.000

PARAMETRIC DATA

RUN NO. 11/ 0 RWAL = 1.95 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	POP/L	ON	CA	CLAMP/D	CP1	CP2	CP3	CP4	CP5	CP6
7.320	11.044	.09880	.18915	.06660	-.02333	-.02100	-.01233	-.01970	-.01850	-.01878	-.01774
7.320	15.235	.08019	.30363	.06736	-.03152	-.02190	-.01379	-.02030	-.01931	-.01792	-.01839
7.320	18.971	.06475	.43492	.07050	-.04110	-.02250	-.01286	-.01901	-.01906	-.01726	-.01815
7.320	22.979	.05345	.59033	.07404	-.05371	-.01856	-.00816	-.01349	-.01456	-.01531	-.01374
7.320	27.028	.04425	.77369	.07119	-.07223	-.02175	-.01239	-.01098	-.01076	-.01164	-.01161
7.320	30.899	.04496	.95285	.06666	-.09056	-.02103	-.01134	-.01794	-.01791	-.01663	-.01667
7.320	34.003	.04822	1.13781	.06297	-.11204	-.01992	-.01061	-.01654	-.01720	-.01635	-.01673
7.320	39.094	.06729	1.53275	.09755	-.13514	-.01612	-.00716	-.01281	-.01415	-.01484	-.01196
7.320	43.148	.06004	1.91316	.10177	-.15950	-.01272	-.00353	-.00693	-.01030	-.01059	-.00776
7.320	47.399	.06219	1.09818	.10466	-.18454	-.00328	-.00369	-.00112	-.00349	-.00369	-.00176
7.320	GRADIENT	-.00078	.04314	.02118	-.00467	.00036	.00036	.00042	.00033	.00025	.00042

AMES 3.5-176 ORBIT 140 A/B ORBITER

REFERENCE DATA

STEP = 2000.0000 50.FT. YAMP = 1076.4 TO IN.
LREF = 1200.0000 IN. YAMP = .0000 IN.
BREF = 936.0000 IN. ZAMP = 375.0000 IN.
SCALE = .0197 SCALE

BETA = .000 AILRON = .000
ELEVON = 10.000 BOFLAP = 16.300
RUDDER = .000 SPODRK = 55.000
RWAL = 3.000

PARAMETRIC DATA

RUN NO. 12/ 0 RWAL = 6.45 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	POP/L	ON	CA	CLAMP/D	CP1	CP2	CP3	CP4	CP5	CP6
7.320	11.969	.09409	.19845	.06432	-.02981	-.02781	-.02077	-.02144	-.02064	-.02026	-.02010
7.320	15.627	.08424	.30056	.06589	-.04057	-.02785	-.02077	-.02119	-.02114	-.02026	-.02014
7.320	19.414	.06955	.45910	.06997	-.04937	-.02108	-.02093	-.02118	-.02122	-.02037	-.02011
7.320	23.403	.06019	.62375	.07711	-.06456	-.01999	-.01992	-.01972	-.02055	-.02082	-.01916
7.320	27.093	.04660	.87924	.08008	-.08115	-.01903	-.01958	-.01956	-.01999	-.01967	-.01876
7.320	31.675	.04091	.99009	.06936	-.09535	-.01944	-.01979	-.01096	-.01943	-.01932	-.01836
7.320	35.749	.04734	1.17748	.06497	-.11954	-.01682	-.01685	-.01642	-.01902	-.01935	-.01769
7.320	GRADIENT	-.00062	.04140	.00136	-.00379	.00010	.00010	.00014	.00009	.00005	.00010

AVES 3.5-176 OAS7 140 A/B ORBITER

REFERENCE DATA

MACH = 2890.0000 98.FT. XGRP = 1076.4800 IN.
 LREF = 1290.3000 IN. YGRP = .0000 IN.
 BREF = 936.8000 IN. ZGRP = 375.0000 IN.
 SCALE = .0190 SCALE

RUN NO. 13/ 0 RN/L = 6.50 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	XCP/L	CN	CA	CLPND	CP1	CP2	CP3	CP4	CP5	CP6
7.320	11.895	.72422	.21426	.07002	-.04322	-.02245	-.02235	-.02270	-.02234	-.02184	-.02174
7.320	15.544	.71126	.33970	.07312	-.05658	-.02244	-.02225	-.02237	-.02249	-.02177	-.02171
7.320	19.306	.70430	.48706	.07374	-.07189	-.02276	-.02252	-.02274	-.02278	-.02250	-.02190
7.320	23.464	.70073	.65462	.06921	-.09027	-.02141	-.02129	-.02101	-.02184	-.02188	-.02085
7.320	27.687	.69828	.84746	.07666	-.11122	-.02121	-.02106	-.02120	-.02161	-.02120	-.02145
7.320	31.616	.69705	1.02994	.10874	-.13173	-.02164	-.02140	-.02114	-.02183	-.02169	-.01990
7.320	35.770	.69656	1.22120	.11378	-.15446	-.02132	-.01990	-.02114	-.02036	-.02103	-.01942
7.320	GRADIENT	-.00104	.04256	.07193	-.00468	.00010	.00011	.00014	.00010	.00005	.00011

PARAMETRIC DATA

BETA = .000 AILRON = .300
 ELEVON = 19.000 BOFLAP = 18.300
 RUDDER = .000 SPOBRK = 55.000
 RN/L = 10.000

REFERENCE DATA

MACH = 2890.0000 98.FT. XGRP = 1076.4800 IN.
 LREF = 1290.3000 IN. YGRP = .0000 IN.
 BREF = 936.8000 IN. ZGRP = 375.0000 IN.
 SCALE = .0190 SCALE

RUN NO. 14/ 0 RN/L = 7.02 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	XCP/L	CN	CA	CLPND	CP1	CP2	CP3	CP4	CP5	CP6
7.320	11.895	.64456	.13000	.07051	.00221	-.02150	-.02119	-.02127	-.02122	-.02082	-.02086
7.320	15.489	.64975	.26782	.06679	.00016	-.02142	-.02111	-.02116	-.02141	-.02082	-.02080
7.320	19.431	.65046	.39016	.06777	-.00051	-.02179	-.02149	-.02145	-.02177	-.02090	-.02082
7.320	23.307	.65186	.53596	.07254	-.00275	-.02085	-.02076	-.01979	-.02088	-.02060	-.01945
7.320	27.731	.65193	.70387	.07552	-.00374	-.02005	-.01967	-.01950	-.02039	-.02029	-.01921
7.320	31.897	.65274	.86587	.07911	-.00649	-.01907	-.01932	-.01926	-.02114	-.01962	-.01868
7.320	35.809	.65394	1.03369	.08192	-.01114	-.01913	-.01874	-.01926	-.02159	-.01951	-.01816
7.320	GRADIENT	.00731	.03700	.00080	-.00750	.00011	.00011	.00012	.00006	.00005	.00011

PARAMETRIC DATA

BETA = .000 AILRON = .000
 ELEVON = -40.000 BOFLAP = 18.300
 RUDDER = .000 SPOBRK = 55.000
 RN/L = 10.000

DATE 24 JUN 74 TABULATED SOURCE DATA FOR QM87 (ARC 3.5-176) AMES 3.5-176 QM87 140 A/B ORBITER (REF015) (04 DEC 73)

REFERENCE DATA
SPEED = 2890.0000 56-FT. WEEP = 1076.4000 IN.
LEOP = 1890.3000 IN. WEEP = .0000 IN.
SPOF = 936.6000 IN. ZWEP = 375.0000 IN.
SCALE = .0190 SCALE

PARAMETRIC DATA
BETA = .000 AILRON = .000
ELEVON = .000 BOPLAP = 16.0
RUDDER = .000 SPOBRK = 55.000
RN/L = 10.000

RUN NO. 15/ 0 RN/L = 6.11 GRADIENT INTERVAL = -5.00/ 5.00

WACH	ALPHA	KOP/L	ON	CA	CLMP/D	CP1	CP2	CP3	CP4	CP5	CP6
7.320	11.680	.68055	.17612	.08123	-.01463	-.08036	-.08004	-.02045	-.01978	-.01873	-.01933
7.320	15.613	.67234	.29236	.06079	-.01777	-.08051	-.08082	-.08035	-.08032	-.01917	-.01965
7.320	19.356	.66849	.42290	.06317	-.02242	-.08063	-.08084	-.02021	-.02076	-.01996	-.01964
7.320	23.493	.67041	.56153	.06602	-.03228	-.01944	-.01933	-.01890	-.02009	-.02017	-.01900
7.320	27.720	.66969	.70056	.07170	-.04115	-.01947	-.01899	-.01862	-.01911	-.01854	-.01846
7.320	31.702	.67076	.83168	.07494	-.05262	-.01873	-.01827	-.01794	-.01916	-.01801	-.01729
7.320	35.675	.67253	1.11267	.07772	-.06764	-.01779	-.01732	-.01714	-.01890	-.01800	-.01666
GRADIENT		-.07024	.03941	.07077	-.02221	.07011	.07012	.00114	.07006	.00005	.00012

AMEX 3.5-176 QM87 140 A/B ORBITER (REF016) (04 DEC 73)

REFERENCE DATA
SPEED = 2890.0000 56-FT. WEEP = 1076.4000 IN.
LEOP = 1890.3000 IN. WEEP = .0000 IN.
SPOF = 936.6000 IN. ZWEP = 375.0000 IN.
SCALE = .0190 SCALE

PARAMETRIC DATA
BETA = .000 AILRON = .000
ELEVON = .000 BOPLAP = -11.700
RUDDER = .000 SPOBRK = 55.000
RN/L = 10.000

RUN NO. 16/ 0 RN/L = 6.53 GRADIENT INTERVAL = -5.00/ 5.00

WACH	ALPHA	KOP/L	ON	CA	CLMP/D	CP1	CP2	CP3	CP4	CP5	CP6
7.320	11.671	.69621	.16810	.09667	-.03376	-.02190	-.02011	-.02105	-.02073	-.02043	-.02053
7.320	15.676	.69012	.27399	.07679	-.03011	-.02172	-.02034	-.02129	-.02116	-.02083	-.02080
7.320	19.469	.64733	.39926	.05156	.02287	-.02169	-.02043	-.02136	-.02135	-.02116	-.02079
7.320	23.566	.64763	.54413	.05992	.03344	-.02059	-.01977	-.01978	-.02009	-.02043	-.01949
7.320	27.603	.64854	.71478	.06116	.04786	-.02066	-.01916	-.01968	-.02001	-.02072	-.01940
7.320	31.637	.63041	.87903	.06255	-.05104	-.02011	-.01933	-.01915	-.01959	-.01969	-.01862
7.320	35.930	.63293	1.09199	.06287	-.06043	-.01937	-.01796	-.01866	-.01916	-.01943	-.01841
GRADIENT		-.00012	.03713	.07385	-.00015	.07309	.00010	.00012	.00006	.00006	.00010

LABORATORY SOURCE DATA FOR CASE (APR 3, 1970)

(REF017) (04 DEC 75)

AMES 3.5-176 OMB7 140 A/B ORBITER

PARAMETRIC DATA

BETA = .000 AILRON = .000
ELEVON = 10.000 BOFLAP = -11.700
RUDDER = .000 STORR = 55.000
RM/L = 10.000

REFERENCE DATA

WOP = 2000.0000 50.0 FT. WOP = 1076.4000 IN.
LWP = 1200.0000 IN. WWP = .0000 IN.
RWP = 996.0000 IN. ZWP = 375.0000 IN.
SCALE = .0150 SCALE

RUN NO. 177 G RM/L = 6.62 GRADIENT INTERVAL = -3.00/ 5.00

WOP	ALPHA	XOP/L	ON	CA	CLAMPD	CP1	CP2	CP3	CP4	CP5	CP6
7.380	11.913	.01010	.14120	.08783	.01296	-.02109	-.02087	-.02176	-.02133	-.02044	-.02099
7.380	15.803	.02374	.24487	.04247	.01750	-.02252	-.02074	-.02193	-.02168	-.02081	-.02113
7.380	19.439	.02931	.36878	.02224	.02430	-.02293	-.02115	-.02211	-.02274	-.02119	-.02137
7.380	23.016	.02744	.50463	.04453	.03790	-.02766	-.01931	-.02013	-.02358	-.02083	-.01970
7.380	27.095	.02068	.66474	.06554	.03050	-.02100	-.01957	-.02042	-.02079	-.02017	-.02014
7.380	31.843	.03037	.81313	.08748	.04341	-.02042	-.01897	-.01977	-.02074	-.01994	-.01958
7.380	35.920	.03254	.97423	.06792	.04616	-.01946	-.01804	-.01804	-.01933	-.01931	-.01866
	GRADIENT	.00098	.00489	.00013	.00146	.00011	.00012	.00013	.00009	.00005	.00010

(REF018) (04 DEC 75)

AMES 3.5-176 OMB7 140 A/B ORBITER

PARAMETRIC DATA

BETA = .000 AILRON = .000
ELEVON = 10.000 BOFLAP = -11.700
RUDDER = .000 STORR = 55.000
RM/L = 10.000

REFERENCE DATA

WOP = 2000.0000 50.0 FT. WOP = 1076.4000 IN.
LWP = 1200.0000 IN. WWP = .0000 IN.
RWP = 996.0000 IN. ZWP = 375.0000 IN.
SCALE = .0150 SCALE

RUN NO. 187 D RM/L = 6.96 GRADIENT INTERVAL = -3.00/ 5.00

WOP	ALPHA	XOP/L	ON	CA	CLAMPD	CP1	CP2	CP3	CP4	CP5	CP6
7.380	11.878	.00872	.18750	.08289	-.01870	-.02070	-.02110	-.02168	-.02129	-.02089	-.02078
7.380	15.860	.03908	.30418	.08246	-.02074	-.02283	-.02126	-.02183	-.02164	-.02090	-.02091
7.380	19.488	.00957	.43773	.06511	-.02330	-.02113	-.02144	-.02277	-.02271	-.02148	-.02103
7.380	23.323	.00004	.59287	.06958	-.02897	-.02007	-.02142	-.02155	-.02107	-.02112	-.01946
7.380	27.778	.00769	.77243	.07339	-.03117	-.01994	-.02022	-.02052	-.02094	-.02092	-.01939
7.380	31.793	.00837	.94561	.07758	-.04725	-.01924	-.01931	-.01942	-.02033	-.02033	-.01891
7.380	35.836	.00964	1.12503	.08083	-.06010	-.01849	-.01913	-.01926	-.02012	-.02037	-.01861
	GRADIENT	-.00056	.00947	.00003	-.00171	.00009	.00011	.00011	.00016	.00002	.00011

TABULATED SOURCE DATA FOR ORBIT (ARC 3.5-176)
 AMES 3.5-176 ORBIT 140 A/B ORBITER

(IN07019) (04 DEC 73)

REFERENCE DATA
 XPRP = 2890.0000 98.0 FT. YPRP = 1070.4000 IN.
 ZPRP = 1290.3000 IN. XPRP = .0000 IN.
 YPRP = 936.6000 IN. ZPRP = 375.0000 IN.
 SCALE = .0150 SCALE

PARAMETRIC DATA
 BETA = .0000 ATLORN = 9.0000
 ELEVON = 1.0000 BOFLAP = -11.7000
 RUDDER = .0000 SPOBRK = 95.0000
 RW/L = 10.0000

RUN NO. 19/ 0 RW/L = 6.85 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	XCP/L	ON	CA	CLMFLD	CP1	CP2	CP3	CP4	CP5	CP6
7.320	11.841	.87286	.17330	.08088	-.01050	-.02136	-.02123	-.02167	-.02121	-.02096	-.02109
7.320	13.845	.86302	.28869	.05980	-.01024	-.02137	-.02144	-.02188	-.02173	-.02078	-.02121
7.320	19.417	.84683	.41633	.04128	-.00979	-.02190	-.02170	-.02200	-.02194	-.02132	-.02123
7.320	23.533	.83786	.56501	.04676	-.01211	-.02051	-.02007	-.01990	-.02044	-.02033	-.01990
7.320	27.774	.83642	.74403	.06736	-.01708	-.02051	-.02026	-.02042	-.02069	-.02036	-.01942
7.320	31.825	.83973	.91458	.07034	-.02428	-.01992	-.01966	-.01982	-.02022	-.02001	-.01917
7.320	35.877	.84153	1.06920	.07189	-.03426	-.01963	-.01949	-.01954	-.02011	-.02036	-.01909
GRADIENT	-.00035	.00033	.00034	-.00094	.00009	.00011	.00019	.00011	.00007	.00003	.00010

(REF020) (04 DEC 73)

REFERENCE DATA
 XPRP = 2890.0000 98.0 FT. YPRP = 1070.4000 IN.
 ZPRP = 1290.3000 IN. XPRP = .0000 IN.
 YPRP = 936.6000 IN. ZPRP = 375.0000 IN.
 SCALE = .0150 SCALE

PARAMETRIC DATA
 BETA = .0000 ATLORN = .0000
 ELEVON = -40.0000 BOFLAP = -11.7000
 RUDDER = .0000 SPOBRK = 95.0000
 RW/L = 3.0000

RUN NO. 20/ 0 RW/L = 1.78 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	XCP/L	ON	CA	CLMFLD	CP1	CP2	CP3	CP4	CP5	CP6
9.255	11.718	.81382	.16440	.06330	-.01615	-.03984	-.03943	-.04093	-.03868	-.03731	-.03802
9.255	13.340	.82982	.27710	.07718	-.01532	-.04045	-.04022	-.04111	-.04077	-.03787	-.03968
9.255	19.023	.83382	.39796	.07347	-.01768	-.04182	-.04137	-.04221	-.04199	-.03963	-.04041
9.255	23.185	.83720	.53022	.07101	-.01841	-.03878	-.03893	-.03800	-.04000	-.03981	-.03811
9.255	27.299	.83893	.70464	.07195	-.02197	-.03984	-.03925	-.03966	-.03980	-.03743	-.03870
9.255	31.216	.83977	.86082	.07211	-.02387	-.04014	-.03928	-.03955	-.04014	-.03875	-.03907
9.254	35.170	.84151	1.02435	.07291	-.02356	-.03947	-.03859	-.03884	-.03974	-.03878	-.03830
9.255	39.485	.84311	1.19498	.06934	-.02227	-.03741	-.03662	-.03639	-.03802	-.03682	-.03539
9.255	43.861	.84431	1.36123	.06703	-.02019	-.03447	-.03378	-.03330	-.03553	-.03424	-.03143
9.255	47.942	.84528	1.50852	.06342	-.01926	-.03181	-.03081	-.03027	-.03315	-.03199	-.02790
GRADIENT	.00087	.00087	.00075	-.00240	.00015	.00020	.00022	.00027	.00017	.00014	.00026

AMES 3.5-176 OM87 140 A/B ORBITER

(REF021) (04 DEC 73)

REFERENCE DATA

MACH = 2890.0000 98.FT. XMRP = 1076.4800 IN.
LMCP = 1290.5000 IN. YMRP = .0000 IN.
BRCP = 936.6000 IN. ZMRP = 375.0000 IN.
SCALE = .0190 SCALE

BETA = .000 ALLROM = .000
ELEVON = 10.000 BOFLAP = 16.300
RUDDER = .000 SPOBRK = 55.000
RNVL = 3.000

RUN NO. 21/ 0 RNVL = 1.74 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	XCP/L	ON	CA	CLMFO	CP1	CP2	CP3	CP4	CP5	CP6
9.255	11.061	.71333	.23225	.07628	-.05996	-.04064	-.04011	-.04420	-.03896	-.07404	-.03855
9.255	15.232	.70370	.33324	.07636	-.05348	-.04047	-.04006	-.04347	-.04001	-.03699	-.03927
9.255	18.964	.70166	.49521	.07920	-.06964	-.04167	-.04108	-.04471	-.04140	-.03761	-.04006
9.255	23.152	.69968	.65676	.08305	-.08670	-.04050	-.04000	-.03965	-.04075	-.04003	-.03946
9.255	27.191	.69750	.83142	.08910	-.10947	-.04087	-.03976	-.04196	-.04002	-.03647	-.03875
9.255	31.114	.69621	1.03555	.09674	-.13006	-.04000	-.03953	-.04105	-.03957	-.03646	-.03861
9.255	35.063	.69502	1.22264	.10151	-.15233	-.04031	-.03896	-.04017	-.03895	-.03674	-.03836
9.255	39.448	.69337	1.42254	.10552	-.17544	-.03958	-.03837	-.03951	-.03606	-.03665	-.03714
9.255	43.461	.69339	1.67655	.10854	-.19623	-.03666	-.03564	-.03590	-.03595	-.03461	-.03437
9.255	47.722	.69303	1.76496	.10441	-.21991	.00043	-.00661	-.01036	-.01012	.00007	-.00305
GRADIENT	-.00041	.04382	.00101	-.00906	.00082	.00053	.00059	.00047	.00054	.00057	.00057

PARAMETRIC DATA

AMES 3.5-176 OM87 140 A/B ORBITER

(REF022) (04 DEC 73)

REFERENCE DATA

MACH = 2890.0000 98.FT. XMRP = 1076.4800 IN.
LMCP = 1290.5000 IN. YMRP = .0000 IN.
BRCP = 936.6000 IN. ZMRP = 375.0000 IN.
SCALE = .0190 SCALE

BETA = .000 ALLROM = .000
ELEVON = .000 BOFLAP = .000
RUDDER = .000 SPOBRK = 55.000
RNVL = 3.000

RUN NO. 22/ 0 RNVL = 2.00 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	XCP/L	ON	CA	CLMFO	CP1	CP2	CP3	CP4	CP5	CP6
9.255	11.749	.68840	.19879	.06680	-.07965	-.04077	-.04037	-.04305	-.04040	-.03641	-.03699
9.255	15.352	.68399	.30362	.06621	-.08142	-.04085	-.04066	-.04302	-.04140	-.03976	-.03972
9.255	19.043	.68137	.43516	.06515	-.08347	-.04210	-.04178	-.04401	-.04282	-.04054	-.04056
9.255	23.196	.68283	.59496	.06599	-.08546	-.04081	-.04074	-.04080	-.04195	-.04123	-.03961
9.255	27.259	.68114	.76216	.06705	-.08705	-.04046	-.03962	-.04194	-.04067	-.03933	-.03863
9.255	31.199	.68239	.92879	.06693	-.08833	-.04001	-.03946	-.04097	-.04075	-.03917	-.03831
9.255	35.233	.68420	1.10428	.06644	-.04283	-.04005	-.03932	-.04071	-.04097	-.03960	-.03822
9.255	39.564	.68648	1.37424	.06533	-.05649	-.03951	-.03966	-.04093	-.04093	-.03971	-.03868
9.255	43.694	.68855	1.62273	.06379	-.07465	-.03706	-.03667	-.03758	-.03866	-.03722	-.03631
9.255	47.926	.68879	1.65629	.06054	-.08930	-.03504	-.03391	-.03479	-.03671	-.03647	-.03626
GRADIENT	.00012	.00017	-.00014	-.00220	.00016	.00016	.00016	.00020	.00019	.00026	.00018

PARAMETRIC DATA

REFERENCE DATA

SREF = 2090.0000 50.FT. XREF = 1076.4800 IN.
 LREF = 1290.3000 IN. YREF = .0000 IN.
 BREF = 936.6000 IN. ZREF = 375.0000 IN.
 SCALE = .0190 SCALE

PARAMETRIC DATA

BETA = .000 AILRON = .000
 ELEVON = .000 BOFLAP = .000
 RUDDER = .000 SPOBRK = 55.000
 RNVL = 1.300

RUN NO. 23/ 0 RNVL = 1.04 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	XCP/L	ON	CA	CLAMPD	CP1	CP2	CP3	CP4	CP5	CP6
5.207	11.633	.67115	.16763	.06663	-.01079	-.03957	-.03970	-.03674	-.03691	-.03696	-.03765
5.207	15.217	.68423	.29903	.06671	-.01142	-.04071	-.03962	-.04015	-.04108	-.03968	-.03953
5.207	18.937	.68170	.41324	.06446	-.01316	-.04139	-.04076	-.04076	-.04157	-.04005	-.03987
5.170	22.764	-.195.54600	-.00200	-.07119	-.00032	.90407	.51280	.52237	.51074	.51229	.51160
5.207	23.049	.65873	.56332	.06310	-.01339	-.04108	-.04010	-.04017	-.04130	-.04017	-.03955
5.207	27.020	.65051	.71334	.06248	-.01655	-.04069	-.03976	-.03946	-.04065	-.03980	-.03916
5.207	30.898	.65978	.87750	.08147	-.02337	-.04076	-.03866	-.03823	-.04021	-.03932	-.03844
5.207	34.899	.66199	1.04864	.09060	-.03424	-.03954	-.03830	-.03763	-.04021	-.03993	-.03813
5.207	39.099	.66382	1.23434	.09979	-.04643	-.03660	-.03752	-.03691	-.03988	-.04019	-.03864
5.207	43.137	.66581	1.40317	.09788	-.06736	-.03721	-.03612	-.03543	-.03905	-.03895	-.03800
5.207	47.423	.66781	1.57992	.09621	-.07654	-.03592	-.03471	-.03421	-.03810	-.03789	-.03690
GRADIENT	.64286	.04209	-.00303	-.00167	-.00222	-.00222	-.00224	-.00225	-.00231	-.00237	-.00223

AMES 3.5-176 OAS7 140 A/B ORBITER

(REF024) (04 DEC 73)

REFERENCE DATA

SREF = 2090.0000 50.FT. XREF = 1076.4800 IN.
 LREF = 1290.3000 IN. YREF = .0000 IN.
 BREF = 936.6000 IN. ZREF = 375.0000 IN.
 SCALE = .0190 SCALE

PARAMETRIC DATA

BETA = .000 AILRON = .000
 ELEVON = .000 BOFLAP = .000
 RUDDER = .000 SPOBRK = 35.000
 RNVL = 1.300

RUN NO. 24/ 0 RNVL = .76 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	XCP/L	ON	CA	CLAMPD	CP1	CP2	CP3	CP4	CP5	CP6
7.320	11.732	.66197	.17085	.06466	-.00556	-.01769	-.01319	-.01763	-.01585	-.01097	-.01373
7.320	15.332	.65302	.26461	.06261	-.00219	-.01699	-.01679	-.01679	-.01760	-.01236	-.01585
7.320	18.979	.64909	.37677	.06240	.00009	-.01980	-.01969	-.01913	-.01801	-.01356	-.01667
7.320	22.970	.66015	.50799	.06172	-.01405	-.01230	-.01234	-.00948	-.01250	-.01243	-.01043
7.320	27.016	.65069	.66654	.06226	-.00165	-.01927	-.01507	-.01774	-.01742	-.01341	-.01621
7.320	30.967	.65337	.80083	.06128	-.00736	-.01920	-.01872	-.01704	-.01716	-.01341	-.01587
7.320	34.795	.65693	.95960	.05944	-.01737	-.01781	-.01714	-.01507	-.01616	-.01270	-.01462
7.320	38.995	.65878	1.10617	.06734	-.02647	-.01639	-.01359	-.01359	-.01536	-.01327	-.01350
7.320	43.503	.66487	1.25976	.05731	-.05099	-.01343	-.01313	-.01096	-.01367	-.01209	-.01125
7.320	47.232	.66718	1.41159	.05540	-.06596	-.01133	-.01066	-.00852	-.01241	-.01114	-.00984
GRADIENT	.00026	.00026	.00026	-.00021	-.00160	.00015	.00018	.00023	.00009	.00000	.00011

DATE 24 JAN 74 TABULATED SOURCE DATA FOR OAB7 (ARC 3.5-176)

(REF029) (04 DEC 73)

AMES 3.5-176 OAB7 140 A/B ORBITER

PARAMETRIC DATA

BETA = .000 AILRON = .000 CP6
ELEVON = .000 BOFLAP = .000
RUDDER = .000 SPDBRK = 55.000
RN/L = .610

REFERENCE DATA

MACH = 2890.0000 50.FT. XMRP = 1076.4800 IN.
LREF = 1290.3000 IN. YMRP = .0000 IN.
ORCF = 936.6800 IN. ZMRP = 375.0000 IN.
SCALE = .0150 SCALE

RUN NO. 25/ 0 RN/L = .53 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	XCP/L	ON	CA	CLMP/D	CP1	CP2	CP3	CP4	CP5	CP6
7.320	11.646	.66418	.16319	.06491	-.00630	-.02021	-.02029	-.02066	-.01677	-.01323	-.01702
7.320	15.245	.65281	.25418	.06281	-.00196	-.02182	-.02175	-.02240	-.01896	-.01560	-.01899
7.320	18.925	.64874	.35955	.06197	.00121	-.02208	-.02190	-.02225	-.01870	-.01529	-.01937
7.320	22.910	.65633	.50000	.06799	-.00949	-.00191	-.00695	-.00498	-.00546	-.00528	-.00447
7.320	26.941	.65210	.63784	.06229	-.00369	-.02180	-.02163	-.02151	-.01863	-.01570	-.01900
7.320	30.840	.65478	.78667	.06168	-.01027	-.02106	-.02088	-.02035	-.01799	-.01655	-.01857
7.320	34.729	.66361	.93329	.06026	-.03457	-.01837	-.01906	-.01817	-.01666	-.01642	-.01855
7.320	38.929	.67335	1.15936	.06015	-.07362	-.01612	-.01657	-.01534	-.01483	-.01463	-.01407
7.320	42.969	.66614	1.33776	.06247	-.05875	-.01487	-.01551	-.01439	-.01404	-.01396	-.01299
7.320	47.153	.67027	1.58632	.06086	-.08747	-.01427	-.01493	-.01371	-.01368	-.01466	-.01235
7.320	GRADIENT	.00046	.03941	-.00011	-.00244	-.00014	.00013	.00018	.00008	-.00007	.00011

AMES 3.5-176 OAB7 140 A/B ORBITER

(REF026) (04 DEC 73)

PARAMETRIC DATA

BETA = .000 AILRON = .000 CP6
ELEVON = .000 BOFLAP = .000
RUDDER = .000 SPDBRK = 55.000
RN/L = 3.000

REFERENCE DATA

MACH = 2890.0000 50.FT. XMRP = 1076.4800 IN.
LREF = 1290.3000 IN. YMRP = .0000 IN.
ORCF = 936.6800 IN. ZMRP = 375.0000 IN.
SCALE = .0150 SCALE

RUN NO. 26/ 0 RN/L = 1.50 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	XCP/L	ON	CA	CLMP/D	CP1	CP2	CP3	CP4	CP5	CP6
10.270	11.711	.66609	.14196	.05734	-.00822	-.00944	-.01036	-.01027	-.00864	-.00822	-.00799
10.270	15.300	.65423	.25815	.05632	-.00275	-.00990	-.01091	-.01076	-.00938	-.00731	-.00872
10.270	19.035	.65043	.34781	.05692	-.00043	-.00981	-.01079	-.01048	-.00933	-.00731	-.00866
10.270	22.871	.64831	-.06677	.00343	-.00030	13.98680	14.13460	14.21670	14.18080	14.17230	14.04780
10.270	26.093	.64992	.44415	.05754	.00008	-.00732	-.00835	-.00790	-.00721	-.00653	-.00706
10.270	27.133	.65281	.64717	.06012	-.00439	-.00854	-.00918	-.00869	-.00791	-.00714	-.00728
10.270	31.010	.65494	.80096	.06094	-.01081	-.00770	-.00831	-.00811	-.00722	-.00685	-.00651
10.270	35.000	.65828	.96832	.06172	-.02184	-.00816	-.00874	-.00839	-.00766	-.00702	-.00662
10.270	GRADIENT	-.00016	.03610	.00027	-.00063	-.00884	-.00895	-.00896	-.00897	-.00906	-.00868

DATE 24 JAN 74 TABULATED SOURCE DATA FOR OMB7 (ARC 3.5-176)

(REF027) (04 DEC 75)

AMES 3.5-176 OMB7 14D A/B ORBITER

REFERENCE DATA

SREF = 2090.0000 90.0 FT. XMRP = 1076.4800 IN.
LREF = 1290.3000 IN. YMRP = .0000 IN.
BREF = 936.6900 IN. ZMRP = 375.0000 IN.
SCALE = .0150 SCALE

RUN NO. 27/ 0 RN/L = 1.80 GRADIENT INTERVAL = -5.00/ 5.00

Table with columns: MACH, ALPHA, XCP/L, ON, CA, CLMFD, CP1, CP2, CP3, CP4, CP5, CP6. Rows include values for MACH 10.270 and ALPHA 11.097 to 34.962.

PARAMETRIC DATA

BETA = .000 AILRON = .000
ELEVON = -40.000 BOFLAP = 16.300
RUDDER = .000 SPDRBK = 95.000
RN/L = 3.000

TABULATED SOURCE DATA FOR OMB7 (ARC 3.5-176)

(REF028) (04 DEC 75)

AMES 3.5-176 OMB7 14D A/B ORBITER

REFERENCE DATA

SREF = 2090.0000 90.0 FT. XMRP = 1076.4800 IN.
LREF = 1290.3000 IN. YMRP = .0000 IN.
BREF = 936.6900 IN. ZMRP = 375.0000 IN.
SCALE = .0150 SCALE

RUN NO. 28/ 0 RN/L = 1.79 GRADIENT INTERVAL = -5.00/ 5.00

Table with columns: MACH, ALPHA, XCP/L, ON, CA, CLMFD, CP1, CP2, CP3, CP4, CP5, CP6. Rows include values for MACH 10.270 and ALPHA 11.715 to 34.915.

PARAMETRIC DATA

BETA = .000 AILRON = .000
ELEVON = 10.000 BOFLAP = 16.300
RUDDER = .000 SPDRBK = 99.000
RN/L = 3.000

AMES 3.5-176 OMB7 14D A/B ORBITER

(REF028) (04 DEC 75)

REFERENCE DATA

SREF = 2090.0000 90.0 FT. XMRP = 1076.4800 IN.
LREF = 1290.3000 IN. YMRP = .0000 IN.
BREF = 936.6900 IN. ZMRP = 375.0000 IN.
SCALE = .0150 SCALE

RUN NO. 28/ 0 RN/L = 1.79 GRADIENT INTERVAL = -5.00/ 5.00

Table with columns: MACH, ALPHA, XCP/L, ON, CA, CLMFD, CP1, CP2, CP3, CP4, CP5, CP6. Rows include values for MACH 10.270 and ALPHA 11.715 to 34.915.

(REV 029) (04 DEC 73)

AMES 3.5-176 OA87 140 A/B ORBITER

PARAMETRIC DATA

BETA = .000 AILRON = .000
 ELEVEN = -40.000 BDFLAP = -11.700
 RUDDER = .000 SPDBRK = 55.000
 RN/L = 3.000

REFERENCE DATA

SREF = 2090.0000 SQ.FT. XMRP = 1076.4800 IN.
 LREF = 1290.3000 IN. YMRP = .0000 IN.
 BREF = 936.6000 IN. ZMRP = 375.0000 IN.
 SCALE = .0150 SCALE

RUN NO. 29/ 0 RN/L = 1.79 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	XCP/L	ON	CA	CLMFLD	CP1	CP2	CP3	CP4	CP5	CP6
10.270	11.664	.62584	.12431	.06354	.00815	-.00564	-.00474	-.00479	-.00480	-.00356	-.00267
10.270	15.284	.62685	.22242	.06129	.01397	-.00599	-.00515	-.00526	-.00532	-.00485	-.00349
10.270	19.046	.62622	.33097	.06118	.02136	-.00553	-.00469	-.00479	-.00503	-.00431	-.00310
10.270	23.003	.62734	.45806	.06213	.02817	-.00428	-.00359	-.00331	-.00424	-.00347	-.00296
10.270	27.099	.62828	.61310	.06490	.03614	-.00453	-.00346	-.00333	-.00406	-.00346	-.00210
10.270	31.010	.63084	.76160	.06669	.03959	-.00325	-.00241	-.00183	-.00268	-.00326	-.00170
10.270	34.963	.63227	.91721	.06812	.04472	-.00283	-.00160	-.00146	-.00238	-.00369	-.00145
10.270	GRADIENT	.00027	.03420	.00726	.00159	.00014	.00015	.00017	.00012	.00003	.00012

(REV 030) (04 DEC 73)

AMES 3.5-176 OA87 140 A/B ORBITER

PARAMETRIC DATA

BETA = .000 AILRON = .000
 ELEVEN = .000 BDFLAP = .000
 RUDDER = .000 SF JRK = 55.000
 RN/L = 3.000

REFERENCE DATA

SREF = 2090.0000 SQ.FT. XMRP = 1076.4800 IN.
 LREF = 1290.3000 IN. YMRP = .0000 IN.
 BREF = 936.6000 IN. ZMRP = 375.0000 IN.
 SCALE = .0150 SCALE

RUN NO. 30/ 0 RN/L = 1.79 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	XCP/L	ON	CA	CLMFLD	CP1	CP2	CP3	CP4	CP5	CP6
10.270	11.655	.66746	.14370	.05825	-.00683	-.00625	-.00739	-.00687	-.00781	-.00650	-.00564
10.270	15.303	.65556	.24311	.05700	-.00370	-.00857	-.00786	-.00723	-.00820	-.00726	-.00632
10.270	19.012	.65175	.35692	.05787	-.00173	-.00830	-.00747	-.00687	-.00796	-.00688	-.00608
10.270	22.966	.65447	.49455	.05043	-.00804	-.00712	-.00644	-.00573	-.00745	-.00769	-.00617
10.270	27.107	.65334	.66506	.06160	-.00608	-.00721	-.00640	-.00570	-.00689	-.00726	-.00501
10.270	31.021	.65537	.82666	.06301	-.01256	-.00573	-.00474	-.00408	-.00585	-.00703	-.00344
10.270	35.005	.65850	1.00643	.06447	-.02331	-.00604	-.00511	-.00435	-.00633	-.00675	-.00383
10.270	GRADIENT	-.00022	.03713	.00032	-.00066	.00012	.00013	.00014	.00009	.00001	.00011

AMES 3.5-176 OMB7 140 A/B ORBITER

(AEP701) (04 DEC 73)

REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.4600 IN.
 LREF = 1290.3000 IN. YMRP = .0000 IN.
 BREF = 936.6000 IN. ZMRP = 379.0000 IN.
 SCALE = .0150 SCALE

RUN NO. 1/ 0 RN/L = 6.95 GRADIENT INTERVAL = -5.00/ 9.00

MACH	ALPHA	CY	CYN	CBL	CL	CC	L/C
7.320	11.914	-.00010	-.00057	-.00055	.19001	.06976	1.67973
7.320	15.676	-.00030	-.00080	-.00057	.25116	.12758	1.96480
7.320	19.509	-.00072	-.00129	-.00066	.35916	.16625	1.92655
7.320	23.545	-.00036	-.00154	-.00091	.47498	.26935	1.76210
7.320	27.766	-.00046	-.00145	-.00073	.60393	.36755	1.56665
7.320	31.791	-.00046	-.00141	-.00091	.71932	.51645	1.39173
7.320	35.673	-.00026	-.00172	-.00072	.82118	.66846	1.22644
	GRADIENT	-.00010	-.00034	-.00031	.02844	.02423	-.02581

PARAMETRIC DATA

BETA = .000 AILRON = .000
 ELEWIN = .000 BOFLAP = .000
 RUDDER = .000 SPODER = 99.000
 RN/L = 10.000

REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.4600 IN.
 LREF = 1290.3000 IN. YMRP = .0000 IN.
 BREF = 936.6000 IN. ZMRP = 379.0000 IN.
 SCALE = .0150 SCALE

RUN NO. 2/ 0 RN/L = 5.71 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CY	CYN	CBL	CL	CC	L/C
7.320	23.520	-.00064	-.00130	-.00065	.50829	.29541	1.72061
7.320	27.765	-.00071	-.00132	-.00087	.64112	.41939	1.52668
7.320	31.714	-.00032	-.00131	-.00111	.75335	.55495	1.35751
7.320	35.798	-.00082	-.00159	-.00087	.85464	.71374	1.19742
	GRADIENT	-.00010	-.00030	-.00030	.02824	.03408	-.04269

PARAMETRIC DATA

BETA = .000 AILRON = .000
 ELEWIN = 10.000 BOFLAP = .000
 RUDDER = .000 SPODER = 99.000
 RN/L = 10.000

AMES 3.5-176 OMB7 140 A/B ORBITER

(AEP702) (04 DEC 73)



TABULATED SOURCE DATA FOR GM87 (ARC 3.5-178)

(AEF003) (24 DEC 73)

AMES 3.5-178 GM87 145 A/B ORBITER

REFERENCE DATA

SRCP = 2000.0000 50.FT. XMRP = 1076.4000 IN.
LREF = 1790.3000 IN. YMRP = .0000 IN.
BRCP = 936.0000 IN. ZMRP = 375.0000 IN.
SCALE = .0190 SCALE

PARAMETRIC DATA

BETA = .000 AILRON = .000
ELEVON = 10.000 BOFLAP = .000
RUDDER = .000 SPODBK = 55.000
PWL = 10.000

RUN NO. 4/0 PWL = 6.61 GRADIENT INTERVAL = -5.00/ 5.00

MAOH	ALPHA	CY	CYN	YBL	CL	CD	L/D
7.320	11.962	-0.00886	-0.00047	-0.00078	.17136	.00093	1.72407
7.320	15.661	-0.00870	-0.00078	-0.00092	.27406	.00092	1.95077
7.320	19.451	-0.00849	-0.00122	-0.00092	.36831	.00091	1.99424
7.320	23.224	-0.00828	-0.00143	-0.00077	.45105	.00093	1.72025
7.320	27.004	-0.00806	-0.00139	-0.00097	.64764	.00093	1.52079
7.320	31.718	-0.00849	-0.00136	-0.00120	.79975	.00093	1.55771
7.320	35.635	-0.00841	-0.00174	-0.00110	.88265	.00093	1.19679
GRADIENT					.02948	.02815	-0.02925

AMES 3.5-178 GM87 145 A/B ORBITER

(AEF004) (24 DEC 73)

REFERENCE DATA

SRCP = 2000.0000 50.FT. XMRP = 1076.4000 IN.
LREF = 1790.3000 IN. YMRP = .0000 IN.
BRCP = 936.0000 IN. ZMRP = 375.0000 IN.
SCALE = .0190 SCALE

PARAMETRIC DATA

BETA = .000 AILRON = .000
ELEVON = -40.000 BOFLAP = .000
RUDDER = .000 SPODBK = 55.000
PWL = 10.000

RUN NO. 4/0 PWL = 6.06 GRADIENT INTERVAL = -5.00/ 5.00

MAOH	ALPHA	CY	CYN	YBL	CL	CD	L/D
7.320	11.962	-0.00886	-0.00047	-0.00078	.17136	.00093	1.72407
7.320	15.661	-0.00870	-0.00078	-0.00092	.27406	.00092	1.74670
7.320	19.451	-0.00849	-0.00122	-0.00092	.36831	.00091	1.80404
7.320	23.224	-0.00828	-0.00143	-0.00077	.45105	.00093	1.87693
7.320	27.004	-0.00806	-0.00139	-0.00097	.64764	.00093	1.51902
7.320	31.718	-0.00849	-0.00136	-0.00120	.79975	.00093	1.35176
7.320	35.635	-0.00841	-0.00174	-0.00110	.88265	.00093	1.19722
GRADIENT					.02879	.02893	-0.01274

AMES 3.5-178 ORBIT 140 A/B ORBITER

(AEPP003) (04 DEC 73)

REFERENCE DATA

SEEP = 2070.0000 50-FT. XMEF = 1076.4000 IN.
LEEF = 1290.3000 IN. YMEF = .0000 IN.
BEEF = 936.8000 IN. ZMEF = 375.0000 IN.
SCALE = .0150 SCALE

PARAMETRIC DATA

BETA = .000 AILSON = .000
ELEVON = -80.000 BOFLAP = .000
RUCCER = .000 SPOBRK = 55.000
RM/L = 3.000

RUN NO. 67 0 RM/L = 1.70 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CT	CYN	CEB	CL	CC	L/D
7.320	11.627	-.00862	-.00067	.00010	.12123	.06427	1.89037
7.320	15.256	-.00732	-.00077	-.00071	.21239	.12653	1.67863
7.320	18.976	-.00666	-.00119	-.00070	.31210	.17608	1.47847
7.320	22.971	-.00529	-.00163	-.00033	.42499	.23703	1.09820
7.320	27.083	-.00374	-.00219	.00047	.54411	.31199	1.54300
7.320	30.950	-.00268	-.00287	-.00002	.64744	.40636	1.50821
7.320	34.941	-.00064	-.00355	.00076	.74217	.47033	1.23423
7.320	39.121	-.00062	-.00394	.00236	.82931	.51988	1.09146
7.320	43.180	-.00032	-.00216	.00070	.89032	.56402	.96572
7.320	47.423	-.00056	-.00234	.00016	.92990	.61011	.84110
GRADIENT		-.00007	-.00004	.00001	.08374	.08034	-.02110

AMES 3.5-178 ORBIT 140 A/B ORBITER

(AEPP003) (04 DEC 73)

REFERENCE DATA

SEEP = 2060.0000 50-FT. XMEF = 1076.4000 IN.
LEEF = 1290.3000 IN. YMEF = .0000 IN.
BEEF = 936.8000 IN. ZMEF = 375.0000 IN.
SCALE = .0150 SCALE

PARAMETRIC DATA

BETA = .000 AILSON = .000
ELEVON = 10.000 BOFLAP = .000
RUCCER = .000 SPOBRK = 55.000
RM/L = 3.000

RUN NO. 67 0 RM/L = 1.74 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CT	CYN	CEB	CL	CC	L/D
7.320	11.639	-.00863	-.00063	-.00019	.16460	.10783	1.63143
7.320	15.248	-.00854	-.00110	-.00016	.26442	.17903	1.69117
7.320	18.994	-.00636	-.00139	-.00019	.37278	.26046	1.67913
7.320	22.997	-.00507	-.00177	-.00001	.49433	.34883	1.46789
7.320	27.062	-.00373	-.00216	.00011	.63037	.47331	1.46300
7.320	30.934	-.00264	-.00254	-.00007	.74793	.53697	1.39647
7.320	34.933	-.00064	-.00315	.00005	.82432	.60931	1.27930
7.320	39.134	-.00051	-.00313	.00002	.84679	.64431	1.14044
7.320	43.272	-.00072	-.00229	.00009	.91830	.67693	.93481
7.320	47.449	-.00055	-.00220	-.00001	1.04966	.71947	.83089
GRADIENT		-.00009	-.00003	.00000	.08612	.07292	-.01887



DATE 10 MAR 74 T-BULAT-U SOURCE DATA FOR QAS7 (ARC 3.9-176) (AEPT007) (04 DEC 73)

APES 3.9-176 QAS7 140 A/B ORBITER
REFERENCE DATA
SCALE = .0193 SCALE
MAGN = 2000.0000 50.FT. WARP = 1070.4000 IN.
LAPZ = 1200.3000 IN. WARP = .0000 IN.
BAPZ = 930.6000 IN. WARP = 375.0000 IN.
PARAMETRIC DATA
BETA = .000 AILACH = .000
ELEVON = .000 BOFLAP = .000
RUDDER = .000 SPOBRK = 95.000
BN/L = 3.000

RUN NO. 770 BN/L = 1.04 GRADIENT INTERVAL = -9.00/ 9.00

Table with columns: MAGN, ALPHA, CY, CYN, CBL, CL, CE, L/O. Rows 7.3E0 to 7.3E3.

APES 3.9-176 QAS7 140 A/B ORBITER

REFERENCE DATA
SCALE = .0193 SCALE
MAGN = 2000.0000 50.FT. WARP = 1070.4000 IN.
LAPZ = 1200.3000 IN. WARP = .0000 IN.
BAPZ = 930.6000 IN. WARP = 375.0000 IN.
PARAMETRIC DATA
BETA = .000 AILACH = .000
ELEVON = .000 BOFLAP = -11.000
RUDDER = .000 SPOBRK = 95.000
BN/L = 3.000

RUN NO. 670 BN/L = 1.97 GRADIENT INTERVAL = -9.00/ 9.00

Table with columns: MAGN, ALPHA, CY, CYN, CBL, CL, CE, L/O. Rows 7.3E0 to 7.3E3.

AMES 3.0-178 CASE 1887 1st A/B 06:178

(REF 000) 174 DEC 73

REFERENCE DATA

SDY = 2000.0000 GAU. FT. WMS = 178.6871 IN.
LWD = 1890.3100 IN. WMS = 178.6871 IN.
BWD = 936.8100 IN. WMS = 375.0000 IN.
SCALE = 1.0000 SCALE

RUN NO. 37 / BML = 1.92 GRADIENT INTERVAL = -5.00 / 5.00

WACH	ALPHA	C	CVN	CBL	CL	CC	LFC
7.320	11.633	-0.7750	-0.0000	0.0000	1.3372	-0.0721	1.3342
7.320	15.272	-0.7739	-0.7747	0.0000	-23.124	1.3101	1.7544
7.320	18.906	-0.7770	-0.7722	0.0004	33.279	-18.373	1.8773
7.320	22.537	-0.7843	-0.7721	0.0023	43.261	-23.336	1.7751
7.320	27.166	-0.7823	-0.7725	0.0023	52.144	-23.707	1.3409
7.320	31.792	-0.7899	-0.7752	0.0015	60.427	-47.187	1.3119
7.320	34.926	-0.7845	-0.7779	0.0011	74.746	-67.829	1.2779
7.320	39.175	-0.7856	-0.7799	0.0026	87.464	-78.304	1.7409
7.320	43.199	-0.7877	-0.7824	0.0010	97.047	-37.744	0.6326
7.320	47.453	-0.7844	-0.7836	0.0014	97.155	1.1115	0.6163
7.320	GRADIENT	0.0012	0.0014	0.0011	0.2229	0.2449	0.2412

PARAMETRIC DATA

BETA = 0.770 AILWON = 0.000
ELEVON = -60.000 BOFLAP = -11.000
SPODE = 0.000 SPODEK = 99.000
BML = 3.000

REFERENCE DATA

SDY = 2000.0000 GAU. FT. WMS = 178.6871 IN.
LWD = 1890.3100 IN. WMS = 178.6871 IN.
BWD = 936.8100 IN. WMS = 375.0000 IN.
SCALE = 1.0000 SCALE

RUN NO. 38 / BML = 1.92 GRADIENT INTERVAL = -5.00 / 5.00

WACH	ALPHA	C	CVN	CBL	CL	CC	LFC
7.320	11.622	-0.7752	-0.7721	0.0000	11.111	0.000	1.5434
7.320	15.255	-0.7769	-0.7797	0.0046	24.925	-13.269	1.8789
7.320	18.904	-0.7839	-0.7825	0.0050	35.630	-18.927	1.8429
7.320	22.537	-0.7871	-0.7812	0.0012	47.761	-27.111	1.8420
7.320	27.167	-0.7855	-0.7830	0.0014	59.111	-33.104	1.5644
7.320	31.792	-0.7820	-0.7824	0.0011	72.662	-37.644	1.1111
7.320	34.904	-0.7839	-0.7843	0.0014	88.000	-67.769	1.2111
7.320	39.112	-0.7835	-0.7845	0.0014	97.000	0.000	0.000
7.320	43.149	-0.7840	-0.7846	0.0014	97.000	1.1111	1.5644
7.320	47.443	-0.7826	-0.7835	0.0014	97.000	1.0279	0.6326
7.320	GRADIENT	0.0011	0.0011	0.0011	0.2224	0.2224	0.2224

PARAMETRIC DATA

BETA = 0.770 AILWON = 0.000
ELEVON = 0.000 BOFLAP = 18.000
SPODE = 0.000 SPODEK = 99.000
BML = 3.000

AMES 3.0-178 CASE 1887 1st A/B 06:178

(REF 000) 174 DEC 73

(AEP011) (04 DEC 73)

REFERENCE DATA

SMCF = 209.0000 SQ.FT. XMRP = 1076.4870 IN.
 LREF = 1290.3000 IN. YMRP = .0000 IN.
 BRCP = 936.6870 IN. ZMRP = 375.0000 IN.
 SCALE = .0150 SCALE

PARAMETRIC DATA

BETA = .000 AILRON = .000
 ELEVON = 10.000 BDFLAP = 16.300
 RUDDER = .000 SPOBRK = 55.000
 RN/L = 3.000

RUN NO. 11/ 0 RN/L = 1.95 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CY	CYN	CBL	CL	CD	L/D
7.320	11.644	-.00066	-.00054	-.00028	.17185	.10321	1.66515
7.320	15.235	-.000783	-.00069	-.00016	.27526	.14400	1.90102
7.320	18.971	-.000959	-.00105	-.00017	.36036	.20006	1.86665
7.320	22.979	-.000833	-.00159	-.00000	.51476	.29071	1.72331
7.320	27.026	-.000930	-.00126	-.00003	.63406	.42461	1.53970
7.320	30.899	-.000913	-.00109	.00000	.77301	.56365	1.37096
7.320	34.663	-.001016	-.00103	-.00042	.86025	.72656	1.21133
7.320	39.094	-.000941	-.00146	.00000	.97285	.91613	1.06192
7.320	43.146	-.001013	-.00166	.00000	1.04427	1.10057	.93331
7.320	47.399	-.00082	-.00170	.00027	1.07109	1.31936	.81161
GRADIENT		-.00000	-.00002	.00001	.02664	.03456	-.00005

(AL012) (04 DEC 73)

REFERENCE DATA

SMCF = 209.0000 SQ.FT. XMRP = 1076.4870 IN.
 LREF = 1290.3000 IN. YMRP = .0000 IN.
 BRCP = 936.6870 IN. ZMRP = 375.0000 IN.
 SCALE = .0150 SCALE

PARAMETRIC DATA

BETA = .000 AILRON = .000
 ELEVON = 10.000 BDFLAP = 16.300
 RUDDER = .000 SPOBRK = 55.000
 RN/L = 3.000

RUN NO. 12/ 0 RN/L = 6.45 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CY	CYN	CBL	CL	CD	L/D
7.320	11.925	-.00019	-.00040	-.00001	.16264	.10413	1.73664
7.320	15.627	-.00078	-.00066	-.00003	.29111	.14964	1.94539
7.320	19.414	-.00090	-.00113	-.00004	.40976	.21052	1.87516
7.320	23.463	-.000930	-.00146	-.00049	.53933	.31646	1.69409
7.320	27.693	-.000945	-.00131	-.00065	.67793	.46064	1.57772
7.320	31.675	-.000903	-.00135	-.00061	.79566	.59595	1.33515
7.320	35.749	-.000949	-.00169	-.00057	.90014	.76501	1.17684
GRADIENT		-.00003	-.00005	.00000	.03171	.02765	-.00004

AMES 3.5-176 ORBIT 140 A/B ORBITER

(AEP013) (14 DEC 73)

REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.4000 IN.
 LREF = 1790.3000 IN. YMRP = .0000 IN.
 BREF = 936.6000 IN. ZMRP = 375.0000 IN.
 SCALE = .0150 SCALE

RUN NO. 13/ 0 RML = 6.50 GRADIENT INTERVAL = -5.00/ 5.00

PARAMETRIC DATA

BETA = .000 AILSON = .000
 ELEVON = 15.000 BOFLAP = 16.300
 RUDDER = .000 SPODRK = 55.000
 RNL = 10.000

MACH	ALPHA	CT	CYN	CBL	CL	CD	L/C
7.320	11.895	-.00060	-.00049	-.00055	.19523	.11266	1.75267
7.320	15.524	-.00045	-.00079	-.00091	.30768	.16148	1.97541
7.320	19.306	-.00076	-.00125	-.00044	.43296	.25649	1.62778
7.320	23.484	-.00154	-.00160	-.00121	.56497	.34248	1.64064
7.320	27.667	-.00254	-.00163	-.00022	.70974	.46725	1.46677
7.320	31.616	-.00352	-.00176	-.00031	.82149	.63721	1.30351
7.320	35.700	-.00600	-.00209	-.00013	.92451	.87443	1.14927
GRADIENT	.00002	.00002	.00006	.00002	.03117	.00010	-.02306

AMES 3.5-176 ORBIT 140 A/B ORBITER

(AEP114) (14 DEC 73)

REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.4000 IN.
 LREF = 1790.3000 IN. YMRP = .0000 IN.
 BREF = 936.6000 IN. ZMRP = 375.0000 IN.
 SCALE = .0150 SCALE

RUN NO. 14/ 0 RML = 7.00 GRADIENT INTERVAL = -5.00/ 5.00

PARAMETRIC DATA

BETA = .000 AILSON = .000
 ELEVON = -40.000 BOFLAP = 16.300
 RUDDER = .000 SPODRK = 55.000
 RNL = 10.000

MACH	ALPHA	CT	CYN	CBL	CL	CD	L/C
7.320	11.965	-.00045	-.00036	-.00028	.13235	.09965	1.32543
7.320	15.465	-.00042	-.00072	-.00046	.23333	.13395	1.74163
7.320	19.451	-.00043	-.00122	-.00059	.34539	.19291	1.76313
7.320	23.507	-.00031	-.00166	-.00035	.46255	.28329	1.65124
7.320	27.751	-.00056	-.00144	-.00065	.56766	.33437	1.49429
7.320	31.637	-.00091	-.00158	-.00040	.69241	.52462	1.32997
7.320	35.685	-.00163	-.00180	-.00061	.78951	.67239	1.17436
GRADIENT	.00006	.00006	.00005	.00002	.02777	.02394	-.01435

AMES 3.5-178 ORBIT 145 A/B ORBITER

(AEFD18) (04 DEC 73)

REFERENCE DATA

PARAMETRIC DATA

STEP = 2000.0000 50.0 FT. YMRP = 1076.4000 IN.
 LREF = 1890.0000 IN. YMRP = .0000 IN.
 BREF = 906.0000 IN. ZMRP = 375.0000 IN.
 SCALE = .0150 SCALE

DETA = .000 AILCON = .000
 ELEVCON = .000 BDFLAP = 16.500
 RUDDER = .000 SPODRF = 55.000
 RNAL = 10.000

RUN NO. 15/ 0 RN/L = 6.11 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CY	CYN	CBL	CL	CD	L/D
7.320	11.820	-.00926	-.00285	-.00036	.15984	.00801	1.66490
7.320	15.815	-.00379	-.00102	-.00062	.26523	.13724	1.93259
7.320	19.556	-.00616	-.00149	-.00071	.37606	.19377	1.83251
7.320	23.493	-.00887	-.00169	-.00032	.50621	.29421	1.72400
7.320	27.720	-.00811	-.00177	-.00049	.63392	.41725	1.53166
7.320	31.702	-.00790	-.00166	-.00001	.75329	.55315	1.36132
7.320	35.805	-.00714	-.00230	-.00073	.85773	.71457	1.20135
GRADIENT	.00003	-.00006	-.00001	.00001	.00262	.02590	-.02602

AMES 3.5-178 ORBIT 145 A/B ORBITER

(AEFD18) (04 DEC 73)

REFERENCE DATA

PARAMETRIC DATA

STEP = 2000.0000 50.0 FT. YMRP = 1076.4000 IN.
 LREF = 1890.0000 IN. YMRP = .0000 IN.
 BREF = 906.0000 IN. ZMRP = 375.0000 IN.
 SCALE = .0150 SCALE

DETA = .000 AILCON = .000
 ELEVCON = .000 BDFLAP = -11.000
 RUDDER = .000 SPODRF = 55.000
 RNAL = 10.000

RUN NO. 16/ 0 RN/L = 6.53 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CY	CYN	CBL	CL	CD	L/D
7.320	11.971	-.00817	-.00062	-.00019	.19229	.09216	1.65240
7.320	15.670	-.00611	-.00092	-.00061	.29037	.12926	1.93706
7.320	19.465	-.00782	-.00139	-.00063	.39770	.18740	1.91905
7.320	23.566	-.00826	-.00161	-.00045	.47472	.27290	1.74227
7.320	27.803	-.00956	-.00190	-.00077	.60374	.38790	1.55006
7.320	31.637	-.01024	-.00150	-.00092	.71379	.51604	1.36107
7.320	35.930	-.00966	-.00182	-.00041	.81473	.66782	1.22107
GRADIENT	-.00009	-.00004	-.00001	-.00001	.02410	.02410	-.02404

(AEFD17) (04 DEC 73)

AMES 3.5-176 OAB7 141 A/B ORBITER

REFERENCE DATA

SREF = 2690.7 IN SQ.FT. AMSE = 1076.4870 IN.
LREF = 1295.3770 IN. AMSE = 1076.4870 IN.
BREF = 936.64 IN. ZREF = 375.0000 IN.
SCALE = .0150 SCALE

PARAMETRIC DATA

BETA = .000 AILBOM = .000
ELEVON = -40.000 BDFLAP = -11.000
RUDDER = .000 SPODBK = 95.000
RW/L = 10.000

RUN NO. 177 N RW/L = 6.62 GRADIENT INTERVAL = -5.00/ 5.00

WACH	ALPHA	CY	CYN	CC	CL	CC	L/C
7.320	11.913	-1.00330	-1.00037	-1.00022	1.2470	1.09532	1.31295
7.320	15.655	-1.00333	-1.00072	-1.00033	1.22765	1.12671	1.74154
7.320	19.463	-1.00010	-1.00126	-1.00041	1.32516	1.10076	1.75079
7.320	23.616	-1.00054	-1.00169	-1.00010	1.47652	1.06128	1.67071
7.320	27.955	-1.00337	-1.00141	-1.00053	1.53710	1.30453	1.51167
7.320	31.943	-1.00111	-1.00157	-1.00036	1.62605	1.46736	1.34772
7.320	35.930	-1.00114	-1.00172	-1.00041	1.74002	1.62667	1.19223
GRADIENT	-1.00004	-1.00005	-1.00001	1.07633	1.02225	1.01262	

(AEFD18) (04 DEC 73)

AMES 3.5-176 OAB7 141 A/B ORBITER

REFERENCE DATA

SREF = 2690.7 IN SQ.FT. AMSE = 1076.4870 IN.
LREF = 1295.3770 IN. AMSE = 1076.4870 IN.
BREF = 936.64 IN. ZREF = 375.0000 IN.
SCALE = .0150 SCALE

PARAMETRIC DATA

BETA = .000 AILBOM = .000
ELEVON = 10.000 BDFLAP = -11.000
RUDDER = .000 SPODBK = 95.000
RW/L = 10.000

RUN NO. 187 N RW/L = 6.96 GRADIENT INTERVAL = -5.00/ 5.00

WACH	ALPHA	CY	CYN	CC	CL	CC	L/C
7.320	11.913	-1.00063	-1.00052	-1.00076	1.1701	1.00770	1.07335
7.320	15.66	-1.00021	-1.00075	-1.00076	1.2760	1.4225	1.94052
7.320	19.463	-1.00025	-1.00121	-1.00076	1.3701	1.20729	1.80625
7.320	23.616	-1.00027	-1.00153	-1.00051	1.51015	1.09339	1.71497
7.320	27.772	-1.00003	-1.00150	-1.00077	1.6401	1.42432	1.52703
7.320	31.793	-1.00071	-1.00149	-1.00045	1.76215	1.56415	1.35222
7.320	35.816	-1.00011	-1.00145	-1.00045	1.86470	1.72420	1.19408
GRADIENT	-1.00004	-1.00005	-1.00001	1.07633	1.02225	1.01262	

(AEFD19) (04 DEC 75)

AMES 3.5-176 OM67 140 A/B ORBITER

REFERENCE DATA

SREF = 2000.0000 SQ.FT. XMRP = 1076.4000 IN.
 LREF = 1290.3000 IN. YMRP = .0000 IN.
 ZREF = 936.6000 IN. ZMRP = 375.0000 IN.
 SCALE = .0150 SCALE

RUN NO. 19/ 0 RN/L = 0.85 GRADIENT INTERV AL = -5.00/ 5.00

MACH	ALPHA	CY	CYN	CBL	CL	CD	L/D
7.320	11.041	-.00651	-.00126	.00202	.15976	.09555	1.66479
7.320	15.645	-.00588	-.00186	.00293	.26206	.13549	1.93416
7.320	19.417	-.00535	-.00277	.00394	.37247	.19627	1.69777
7.320	23.533	-.00423	-.00361	.00516	.49216	.26496	1.72711
7.320	27.774	-.00491	-.00384	.00610	.62662	.40651	1.54196
7.320	31.025	-.00466	-.00436	.00694	.75999	.54205	1.36517
7.320	35.077	-.00451	-.00515	.00762	.84541	.60658	1.20649
GRADIENT		.00007	-.00016	.00024	.02665	.02512	-.02571

PARAMETRIC DATA

BETA = .0000 AILRON = 5.0000
 ELEVN = 5.0000 BOFLAP = -11.0000
 RUDDER = .0000 SFDGRK = 99.0000
 RN/L = 10.0000

(AEFD20) (04 DEC 75)

AMES 3.5-176 OM67 140 A/B ORBITER

REFERENCE DATA

SREF = 2000.0000 SQ.FT. XMRP = 1076.4000 IN.
 LREF = 1290.3000 IN. YMRP = .0000 IN.
 ZREF = 936.6000 IN. ZMRP = 375.0000 IN.
 SCALE = .0150 SCALE

RUN NO. 20/ 0 RN/L = 1.76 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CY	CYN	CBL	CL	CD	L/D
5.255	11.716	-.01157	.00010	-.00000	.14405	.11495	1.25321
5.255	15.340	-.01195	.00002	-.00046	.24680	.14773	1.67199
5.255	19.023	-.01113	-.00060	-.00042	.35227	.19216	1.76663
5.255	23.185	-.00930	-.00112	-.00102	.45944	.27452	1.67664
5.255	27.299	-.01165	-.00101	-.00100	.59316	.36710	1.53233
5.255	31.216	-.01176	-.00126	-.00105	.69880	.50763	1.37604
5.255	35.170	-.01214	-.00116	-.00106	.79367	.64689	1.22650
5.255	39.465	-.01174	-.00114	-.00125	.87818	.61336	1.07367
5.255	43.661	-.01139	-.01162	-.00122	.93648	.56827	.94062
5.255	47.842	-.01155	-.00201	-.00120	.96547	1.16084	.83171
GRADIENT		-.00001	-.00005	-.00002	.02306	.02957	-.02101

PARAMETRIC DATA

BETA = .0000 AILRON = .0000
 ELEVN = -40.0000 BOFLAP = -11.0000
 RUDDER = .0000 SFDGRK = 99.0000
 RN/L = 3.0000

REFERENCE DATA

SREF = 2600.0000 SQ.FT. XMRP = 1076.4800 IN.
LREF = 1290.3000 IN. YMRP = .0000 IN.
ORF = 936.6800 IN. ZMRP = 375.0000 IN.
SCALE = .0150 SCALE

PARAMETRIC DATA

BETA = .000 AILRON = .000
ELEWON = 10.000 OSFLAP = 16.000
RUDDER = .000 SPOBRK = 55.000
RN/L = 3.000

RUN NO. 21/ 0 RN/L = 1.74 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CY	CYN	CBL	CL	CD	L/D
5.255	11.661	-0.0262	.0003	-0.0007	.21204	.12165	1.74306
5.255	15.232	-0.0132	.00015	-0.0018	.32076	.16648	1.92672
5.255	16.984	-0.0155	-0.00027	-0.0010	.44252	.23999	1.87516
5.255	23.192	-0.00983	-0.00119	-0.00160	.57121	.33458	1.70723
5.255	27.191	-0.0195	-0.00067	-0.00157	.71661	.46832	1.53017
5.255	31.114	-0.0151	-0.00121	-0.00153	.83659	.61794	1.35183
5.255	35.083	-0.0136	-0.00123	-0.00194	.94233	.78991	1.19903
5.255	39.448	-0.01149	-0.00129	-0.00229	1.03143	.98334	1.04678
5.255	43.461	-0.00969	-0.00196	-0.00181	1.09144	1.18367	.92193
5.255	47.722	-0.00827	-0.0010	-0.00207	1.11009	1.27611	.80669
GRADIENT		.00008	-0.00006	-0.00004	.00652	.03573	-0.03220

AMES 3.5-176 OMB7 140 A/B ORBITER

REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.4800 IN.
LREF = 1290.3000 IN. YMRP = .0000 IN.
ORF = 936.6800 IN. ZMRP = 375.0000 IN.
SCALE = .0150 SCALE

PARAMETRIC DATA

BETA = .000 AILRON = .000
ELEWON = .000 OSFLAP = .000
RUDDER = .000 SPOBRK = 55.000
RN/L = 3.000

RUN NO. 22/ 0 RN/L = 2.00 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CY	CYN	CBL	CL	CD	L/D
5.255	11.745	-0.01623	-0.00042	-0.00129	.17867	.10742	1.66321
5.255	15.352	-0.00839	-0.00063	-0.00123	.28008	.14555	1.92432
5.255	19.043	-0.00817	-0.00127	-0.00099	.39011	.20358	1.91624
5.255	23.196	-0.00717	-0.00183	-0.00045	.52089	.29501	1.76570
5.255	27.259	-0.00935	-0.00186	-0.00007	.64683	.40069	1.58269
5.255	31.195	-0.00940	-0.00206	-0.00038	.75982	.53832	1.41146
5.255	35.233	-0.00955	-0.00220	-0.00043	.86603	.69365	1.24981
5.255	39.564	-0.00922	-0.00242	-0.00014	.96295	.88100	1.00003
5.255	43.604	-0.00870	-0.00250	-0.00003	1.02849	1.06920	.96129
5.255	47.926	-0.00846	-0.00295	-0.00027	1.06628	1.27147	.83862
GRADIENT		-0.00002	-0.00006	-0.00001	.00582	.03261	-0.03018

TABULATED SOURCE DATA FOR OA87 (ARC 3.5-176)

(AEFR23) (04 DEC 73)

AMES 3.5-176 OA87 140 A/B ORBITER

REFERENCE DATA

SREF = 2690.0000 SQ.FT. XREF = 1076.4800 IN.
 LREF = 1290.3000 IN. YREF = .0000 IN.
 BREF = 936.6000 IN. ZREF = 375.0000 IN.
 SCALE = .0150 SCALE

PARAMETRIC DATA

BETA = .000 AILRON = .000
 ELEVON = .000 BDFLAP = .000
 RUDDER = .000 SPDBRK = 99.000
 RN/L = 1.300

RUN NO. 23/ 0 RN/L = 1.04 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CY	CYN	CBL	CL	CD	L/D
5.207	11.633	-.00363	-.00098	-.00027	.16993	.05506	1.61753
5.207	15.217	-.00463	-.00113	-.00039	.26718	.14181	1.88437
5.207	18.957	-.00436	-.00173	-.00031	.36988	.19520	1.89486
5.170	22.764	-.00086	.00019	.00005	.00246	-.00110	-.41903
5.207	23.049	-.00547	-.00200	-.00016	.49341	.27916	1.76750
5.207	27.020	-.00601	-.00207	-.00027	.60710	.37973	1.59878
5.207	30.898	-.00460	-.00271	-.00012	.72123	.50325	1.43315
5.207	34.899	-.00721	-.00232	-.00076	.82555	.64977	1.27053
5.7	39.059	-.00848	-.00237	-.00073	.92094	.82434	1.11719
5.207	43.137	-.00783	-.00286	-.00012	.98434	1.00165	.98272
5.207	47.425	-.00759	-.00342	.00012	1.02751	1.20148	.85520
	GRADIENT	-.00014	-.00007	.00000	.02726	.03236	-.01987

(AEFR24) (04 DEC 73)

AMES 3.5-176 OA87 140 A/B ORBITER

REFERENCE DATA

SREF = 2690.0000 SQ.FT. XREF = 1076.4800 IN.
 LREF = 1290.3000 IN. YREF = .0000 IN.
 BREF = 936.6000 IN. ZREF = 375.0000 IN.
 SCALE = .0150 SCALE

PARAMETRIC DATA

BETA = .000 AILRON = .000
 ELEVON = .000 BDFLAP = .000
 RUDDER = .000 SPDBRK = 99.000
 RN/L = 1.300

RUN NO. 24/ 0 RN/L = .76 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CY	CYN	CBL	CL	CD	L/D
7.320	11.752	-.01547	.00009	-.00045	.15390	.09808	1.56906
7.320	15.332	-.01578	.00010	-.00072	.23864	.13035	1.85079
7.320	18.979	-.01557	-.00030	-.00117	.33788	.18218	1.85462
7.320	22.970	-.01101	-.00091	.00010	.44362	.25508	1.75919
7.320	27.016	-.01595	-.00090	-.00154	.56553	.35823	1.57865
7.320	30.667	-.01702	-.00074	-.00222	.65379	.46336	1.41531
7.320	34.795	-.01454	-.00083	-.00193	.72963	.57939	1.25932
7.320	38.995	-.01431	-.00128	.00020	.82175	.74295	1.10677
7.320	43.003	-.01520	-.00138	-.00161	.88219	.90112	.97900
7.320	47.232	-.01135	-.00157	.00073	.91784	1.07388	.85470
	GRADIENT	.00006	-.00005	.00005	.02256	.02778	-.02739

(AEF025) (04 DEC 73)

REFE P/N/E DATA

SREF = 2690.0000 53.0 FT. XREF = 1076.4800 IN.
LREF = 1290.3000 IN. YREF = .0000 IN.
BREF = 936.6800 IN. ZREF = 375.0000 IN.
SCALE = .0150 SCALE

RUN NO. 25/ 0 RN/L = .53 GRADIENT INTERVAL = -5.00/ 5.00

PARAMETRIC DATA

DELTA = .000 AILRON = .000
ELEVON = .000 BDFLAP = .000
RUDDER = .000 SFDRK = 95.000
RN/L = .810

MACH	ALPHA	CY	CYN	CBL	CL	CD	L/D
7.320	11.646	-.01182	-.00019	-.00035	.14673	.10952	1.52019
7.320	15.245	-.01054	-.00038	-.00035	.22878	.12724	1.79802
7.320	18.925	-.01175	-.00041	-.00039	.32002	.17523	1.82623
7.320	22.671	-.01310	-.00020	-.00047	.42015	.27673	1.73506
7.320	26.941	-.01112	-.00033	-.00063	.54039	.34452	1.56252
7.320	30.840	-.01036	-.00047	-.00048	.64382	.45624	1.41114
7.320	34.729	-.01003	-.00097	-.00016	.73270	.58122	1.26361
7.320	38.929	-.00908	-.00142	.00012	.86410	.77529	1.11454
7.320	42.969	-.00946	-.00096	-.00034	.93628	.95754	.97781
7.320	47.153	-.01162	-.00106	-.00047	1.02394	1.20421	.85760
GRADIENT	.00003	-.00003	-.00003	-.00003	.02570	.03046	-.00598

REFERENCE DATA

SREF = 2690.0000 53.0 FT. XREF = 1076.4800 IN.
LREF = 1290.3000 IN. YREF = .0000 IN.
BREF = 936.6800 IN. ZREF = 375.0000 IN.
SCALE = .0150 SCALE

RUN NO. 26/ 0 RN/L = .50 GRADIENT INTERVAL = -5.00/ 5.00

PARAMETRIC DATA

BETA = .000 AILRON = .000
ELEVON = .000 BDFLAP = .000
RUDDER = .000 SFDRK = 95.000
RN/L = 3.000

MACH	ALPHA	CY	CYN	CBL	CL	CD	L/D
10.270	11.711	-.00929	-.00048	-.00025	.12736	.08496	1.49304
10.270	15.300	-.00759	-.00081	-.00025	.21484	.11717	1.83368
10.270	19.035	-.00706	-.00085	-.00032	.31736	.16606	1.89997
10.270	22.871	-.01174	.00171	-.00018	-.06285	-.02279	2.75733
10.270	23.093	-.00725	-.00133	-.00018	.42278	.24282	1.74113
10.270	27.133	-.00978	-.00102	-.00044	.54352	.34265	1.57327
10.270	31.010	-.01021	-.00111	-.00065	.65570	.46487	1.41114
10.270	35.000	-.01139	-.00123	-.00068	.75700	.60596	1.25158
GRADIENT	.00003	-.00003	-.00003	-.00003	.02724	.02257	-.00420

REFERENCE DATA

SREF = 2697.0000 SQ.FT. XMRP = 1076.4800 IN.
 LREF = 1290.3000 IN. YMRP = .0000 IN.
 BREF = 936.6800 IN. ZMRP = 375.0000 IN.
 SCALE = .0190 SCALE

RUN NO. 27/ 0 RN/L = 1.80 GRADIENT INTERVAL = -5.00/ 5.00

PARAMETRIC DATA

BETA = .0000 AILRON = .0000
 ELEVON = -40.0000 9DFLAP = 16.3000
 RUDDER = .0000 SFDBRK = 55.0000
 RN/L = 3.0000

MACH	ALPHA	CY	CYN	CBL	CL	CC	L/D
10.270	11.697	-.00925	-.00040	-.00014	.11657	.09054	1.28749
10.270	15.367	-.00867	-.00066	-.00036	.21237	.12429	1.70865
10.270	19.038	-.00807	-.00096	-.00025	.31397	.17794	1.76451
10.270	23.042	-.00725	-.00121	-.00095	.42769	.25796	1.63797
10.270	27.126	-.00785	-.00130	-.00043	.55069	.36634	1.50323
10.270	30.950	-.00823	-.00117	-.00094	.65348	.48426	1.34245
10.270	34.962	-.00843	-.00140	-.00089	.75131	.62669	1.12885
GRADIENT		-.00006	-.00004	-.00002	.02773	.02314	-.01180

REFERENCE DATA

SREF = 2697.0000 SQ.FT. XMRP = 1076.4800 IN.
 LREF = 1290.3000 IN. YMRP = .0000 IN.
 BREF = 936.6800 IN. ZMRP = 375.0000 IN.
 SCALE = .0190 SCALE

RUN NO. 28/ 0 RN/L = 1.79 GRADIENT INTERVAL = -5.00/ 5.00

PARAMETRIC DATA

BETA = .0000 AILRON = .0000
 ELEVON = 10.0000 9DFLAP = 16.3000
 RUDDER = .0000 SFDBRK = 55.0000
 RN/L = 3.0000

MACH	ALPHA	CY	CYN	CBL	CL	CC	L/D
10.270	11.715	-.00663	-.00034	-.00036	.15502	-.09569	1.61659
10.270	15.376	-.00548	-.00068	-.00038	.25558	.13611	1.87916
10.270	19.004	-.00515	-.00081	-.00019	.36665	.19804	1.85135
10.270	23.005	-.00607	-.00090	-.00138	.49720	.29238	1.70053
10.270	27.127	-.00657	-.00099	-.00041	.63074	.41481	1.52056
10.270	30.951	-.00719	-.00082	-.00082	.74971	.55291	1.35594
10.270	34.913	-.00786	-.00110	-.00010	.85451	.71162	1.20045
GRADIENT		-.00007	-.00002	.00000	.03079	.02670	-.02441

REFERENCE DATA
 SREF = 2090.0000 30.FT. YREF = 1076.4000 IN.
 LREF = 1290.3000 IN. ZREF = 375.0000 IN.
 RREF = 936.6000 IN. SCALE = .0150 SCALE

PARAMETRIC DATA

BETA = .0000 AILRON = .0000
 ELEVON = .0000 DOFLAP = .0000
 RUDDER = .0000 SPODBK = 95.0000
 RN/L = 3.0000

RUN NO. 29/ 0 RN/L = 1.70 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CY	CYN	CEL	CL	CD	L/D
10.270	11.684	-.007794	-.000070	-.000112	.114091	-.00736	1.27690
10.270	15.264	-.007951	-.000071	-.000015	.196471	-.11775	1.68491
10.270	19.046	-.00782	-.000094	-.000114	.27229	-.16544	1.76614
10.270	23.003	-.00602	-.000119	-.000046	.31736	-.25619	1.50230
10.270	27.099	-.00437	-.000136	-.000037	.31623	-.33706	1.13159
10.270	31.010	-.00312	-.000131	-.000044	.61839	-.46993	1.37563
10.270	34.983	-.00140	-.000132	-.000011	.71244	-.50167	1.22482
GRADIENT	-.000110	-.000034	-.000014	-.000026	.02124	-.004601	

REFERENCE DATA
 SREF = 2090.0000 30.FT. YREF = 1076.4000 IN.
 LREF = 1290.3000 IN. ZREF = 375.0000 IN.
 RREF = 936.6000 IN. SCALE = .0150 SCALE

PARAMETRIC DATA

BETA = .0000 AILRON = .0000
 ELEVON = .0000 DOFLAP = .0000
 RUDDER = .0000 SPODBK = 95.0000
 RN/L = 3.0000

RUN NO. 30/ 0 RN/L = 1.70 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CY	CYN	CEL	CL	CD	L/D
10.270	11.683	-.007713	-.000072	-.000026	.12897	-.00678	1.49635
10.270	15.303	-.00768	-.000076	-.000021	.21945	-.11014	1.64194
10.270	19.012	-.00767	-.000096	-.000052	.31607	-.17190	1.66332
10.270	22.966	-.00700	-.000119	-.000069	.43247	-.24692	1.75144
10.270	27.107	-.00608	-.000112	-.000054	.56396	-.35788	1.57563
10.270	31.021	-.00479	-.000130	-.000033	.67596	-.48002	1.40816
10.270	35.005	-.00113	-.000130	-.000015	.78736	-.63115	1.24992
GRADIENT	-.000111	-.000033	-.000015	-.000026	.02461	-.00326	