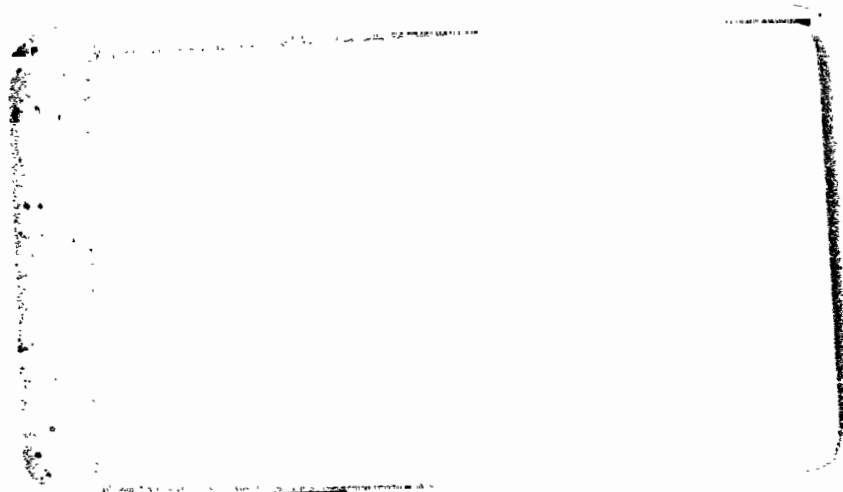




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SPACE SHUTTLE

AEROTHERMODYNAMIC DATA REPORT



JOHNSON SPACE CENTER

HOUSTON, TEXAS

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STABILITY AND CONTROL CHARACTERISTICS
FOR THE INNER MOLD LINE CONFIGURATION
OF THE SPACE SHUTTLE ORBITER (OA110)

By

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Rockwell International Space Division

Prepared under NASA Contract Number NAS9-13247

By

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New Orleans, La. 70189

for

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

WIND TUNNEL TEST SPECIFICS:

Test Number NAAL 721
NASA Series Number: OA110
Model Number: 16-0
Test Dates: 18 through 20 March 1974
Occupancy Hours: 48

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STABILITY AND CONTROL CHARACTERISTICS FOR THE
INNER MOLD LINE CONFIGURATION OF THE
SPACE SHUTTLE ORBITER (OA110)

By

Terrance Hughes and Robert Rogge, Rockwell International Space Division

ABSTRACT

Experimental aerodynamic investigations were conducted on a sting mounted 0.0405-scale representation of the -140A/B Inner Mold Line (IML) Space Shuttle Orbiter in the Rockwell International 7.75 x 11 Foot Low Speed Wind Tunnel. These tests were conducted during the time period from 18 March 1974 to 20 March 1974.

The primary test objectives were to establish basic longitudinal and lateral-directional stability and control characteristics for the IML Orbiter.

Additional configurations investigated were sealed elevon hingeline gaps, sealed rudder split line and hingeline gaps, larger radius leading edge on the vertical tail and sealed speedbrake base.

Aerodynamic force and moment data for the Orbiter were measured in the body-axis system by an internally mounted, six-component strain gage balance (2.5-inch task MK IX). The model was sting mounted with the center of rotation located at approximately the wing trailing edge (F. S. 60.272). The nominal angle of attack (α) range was from -4 to +30 degrees. Yaw polars were recorded over a nominal yaw angle (ψ) range from -14 to +14 degrees at constant α 's of 0, ± 5 , 10, 15 and 20 degrees.

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Note: Schedule of Coefficients Plotted on next page.

INDEX OF DATA FIGURES (Concluded)

SCHEDULE OF COEFFICIENTS PLOTTED:

- (A) CL, CN, CAF, CAB, CDF, CLM, XCP/L, L/DF Versus Alpha
CL Versus CDF
CL Versus CLM
- (B) CY, CYN, CBL Versus Beta
CYBETA, CYNBET, CBLBET Versus Alpha
- (C) CL, CN, CAF, CAB, CDF, CLM, XCP/L, L/DF Versus Alpha
CL Versus CDF
CL Versus CLM
DCLF, DCDF, DCLM Versus ELEVON
- (D) CY, CYN, CBL Versus Beta
DCY, DCYN, DCBL Versus Rudder
- (E) CY, CYN, CBL Versus Beta
CYBETA, CYNBET, CBLBET Versus Alpha
DCY, DCYN, DCBL Versus SPDBRK
- (F) CY, CYN, CBL Versus Beta
CYBETA, CYNBET, CBLBET Versus Alpha
DCY, DCYN, DCBL Versus Rudder
- (G) CY, CYN, CBL Versus Beta

NOMENCLATURE
General

<u>SYMBOL</u>	<u>PLOT 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
X _{MRP}	XMRP	moment reference point on X axis
Y _{MRP}	YMRP	moment reference point on Y axis
Z _{MRP}	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>PLOT 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; $\frac{\text{base force}}{qS}$ $-A_b(p_b - p_\infty)/qS$
C_{A_f}	CAF	forebody axial force coefficient, $C_A - C_{A_b}$
C_m	CLM	pitching-moment coefficient; $\frac{\text{pitching moment}}{qS l_{REF}}$
C_n	CYN	yawing-moment coefficient; $\frac{\text{yawing moment}}{qS b}$
C_l	CBL	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 Standard List)

<u>Symbol</u>	<u>Plot Symbol</u>	<u>Definition</u>
A_{BC}	ABC	balance cavity area, ft ²
$C_{A_{BC}}$	CABC	balance cavity axial-force coefficient
C_{A_T}	CAT	model axial-force weight tare coefficient
HFT		horizontal flight test
L_B	LB	Orbiter fuselage length, ft
$P_{B1}, P_{B2}, P_{B3},$ P_{B4}, P_{B5}		model base pressures at orifice numbers 1-5, respectively, psia
P_{BC}		model balance chamber pressure, psia
X_{CP}/L_B	XCP/L	longitudinal center of pressure location, fraction of body length
X_{MRP}		moment reference point longitudinal location, inches aft of nose
δ_a	AILRON	aileron deflection angle, degrees
δ_e	ELEVON	elevon deflection angle, degrees
δ_r	RUDDER	rudder deflection angle, positive deflection trailing edge left, degrees
δ_{SB}	SPDBRK	speed brake deflection angle, degrees
δ_F	BDFLAP	bodyflap surface deflection angle, positive deflection trailing edge down, degrees

NOMENCLATURE (Concluded)

<u>Symbol</u>	<u>Plot Symbol</u>	<u>Definition</u>
$C_{y\beta}$	CYBETA	side force coefficient derivative with Beta, per degree
$C_{n\beta}$	CYNBET	yawing moment coefficient derivative with Beta, per degree
$C_{l\beta}$	CBLBET	rolling moment coefficient derivative with Beta, per degree.
ΔC_{Df}	DCDF	incremental forebody drag coefficient
ΔC_{Lf}	DCLF	incremental forebody lift coefficient
ΔC_m	DCLM	incremental pitching moment coefficient
	V-GRIT	vertical tail transition grit (.000 equivalent to X31 - no grit on vertical tail, .008 equivalent to X29 - .0076 diameter grit on vertical tail).
ΔC_y	DCY	incremental side force coefficient
ΔC_n	DCYN	incremental yawing moment coefficient
ΔC_l	DCBL	incremental rolling moment coefficient

CONFIGURATIONS INVESTIGATED

The model utilized for this test period was an 0.0405-scale model of the -140A/B Orbiter Inner Mold Line Horizontal Flight Test Vehicle designated 16-0. The basic model is of the blended wing-body concept utilizing a double delta wing ($75^\circ/45^\circ \Lambda_{L.E.}$), full span elevons (unswept hingeline), a centerline vertical tail with rudder and/or speedbrake capability, a canopy, and orbital maneuvering system (OMS) pods mounted on the aft fuselage sidewalls. This configuration represents the Orbiter with all thermal protection system (TPS) removed.

For this test period the following nomenclature was used to designate the various model components:

Component

B ₆₁	-140A/B HFT Orbiter fuselage, simulates inner mold line
C ₁₁	-140A/B HFT inner mold line Orbiter canopy
E ₄₀	-140A/B Orbiter HFT elevons used on wing W ₁₂₄ , simulates inner mold line
E ₄₁	E ₄₀ with upper surface seals removed
E ₄₂	E ₄₀ with both upper and lower seals removed
F ₁₂	-140A/B HFT Orbiter bodyflap
M ₅₁	-140A/B orbital maneuvering system (OMS), simulates inner mold line
R ₁₅	-140A/B Orbiter HFT rudder used with vertical tail V ₁₉ . All hingelines sealed
R ₁₆	R ₁₅ with hingeline seals removed

CONFIGURATIONS INVESTIGATED (Continued)

R ₁₇	R ₁₅ with seal between upper and lower rudder segment removed
V ₁₉	-140A/B Orbiter HFT vertical tail, simulates inner mold line
V ₂₀	V ₁₉ with leading edge contour modification
V ₂₁	V ₂₀ with vertical tail base plugged between speedbrake panels
W ₁₂₄	-140A/B inner mold line double delta Orbiter HFT wing (75°/45° $\Lambda_{L.E.}$)
W ₁₂₅	W ₁₂₄ with squared off wing tips aft of 20% element line upper wing surface only
X ₂₉	transition grit composed of glass beads located aft of all swept surfaces and the model nose
X ₃₁	same as X ₂₉ except vertical tail not gritted

CONFIGURATIONS INVESTIGATED (Concluded)

Configurations Tested

B₆₁ C₁₁ F₁₂ M₅₁ W₁₂₄ E₄₀ X₂₉
B₆₁ C₁₁ F₁₂ M₅₁ W₁₂₄ E₄₀ V₁₉ R₁₇ X₃₁
B₆₁ C₁₁ F₁₂ M₅₁ W₁₂₄ E₄₀ V₁₉ R₁₅ X₂₉
B₆₁ C₁₁ F₁₂ M₅₁ W₁₂₄ E₄₁ V₁₉ R₁₅ X₂₉
B₆₁ C₁₁ F₁₂ M₅₁ W₁₂₄ E₄₂ V₁₉ R₁₅ X₂₉
B₆₁ C₁₁ F₁₂ M₅₁ W₁₂₄ E₄₀ V₁₉ R₁₆ X₂₉
B₆₁ C₁₁ F₁₂ M₅₁ W₁₂₄ E₄₀ V₁₉ R₁₇ X₂₉
B₆₁ C₁₁ F₁₂ M₅₁ W₁₂₄ E₄₀ V₂₀ R₁₅ X₂₉
B₆₁ C₁₁ F₁₂ M₅₁ W₁₂₄ E₄₀ V₂₁ R₁₅ X₂₉
B₆₁ C₁₁ F₁₂ M₅₁ W₁₂₅ E₄₀ V₂₁ R₁₅ X₂₉

TEST FACILITY DESCRIPTION

The North American Aerodynamics Laboratory (NAAL) 7.75 x 11-Foot Wind Tunnel is a continuous flow, closed circuit, single return type tunnel capable of speeds up to 200 miles per hour. The test section is vented to atmospheric pressure and is 7.75 x 11 feet wide by 12 feet in length. Power is supplied by a 1250 horsepower nacelle mounted synchronous motor driving a 15 foot, seven blade, laminated birch propeller. The airspeed is controlled by varying the degree of coupling between the motor and propeller by means of a magnetic clutch. A damping screen and honeycomb section in the settling chamber upstream from the contraction cone (ratio 7.53 to 1) minimizes turbulence in the test section. The NAAL Wind Tunnel has been in operation since June 1943 and calibrations are available over a wide range of test conditions.

Tests may be conducted using a variety of mounting systems, e.g.; a single strut, double strut, sting strut, reflection plane, cable suspension, and two dimensional wall. Aerodynamic data may be measured by a planar type external balance system or sting mounted internal balances. An Astrodata Automatic Data Acquisition System is used to collect, multiplex, digitize, and record 50 channels of force and/or pressure data on magnetic tape. This data is then rapidly reduced and plotted using automatic data processing equipment and an automatic digital plotter.

DATA REDUCTION

The aerodynamic force and moment data presented were measured by the Task Corporation 2.5-inch MK IX strain gage balance. The data have been corrected for model base and balance chamber pressure effects, model blockage influence on tunnel dynamic pressure, wall interference effects, sting and balance deflections, and model weight tare.

Corrections made to axial force were accomplished in the following manner:

$$C_{A_f} = C_A - C_{A_{BC}} - C_{A_b} - C_{A_T}$$

where:

C_A = axial-force coefficient

$$\begin{aligned} C_{A_{BC}} &= \text{balance chamber correction} \\ &= - \left(\frac{P_{BC} - P_0}{q} \right) \left(\frac{A_{BC}}{S} \right) \end{aligned}$$

$$\begin{aligned} C_{A_b} &= \text{base end correction} \\ &= - \left(\frac{P_b - P_0}{q} \right) \left(\frac{A_b}{S} \right), \quad P_b = 1/5 (P_{B1} + \dots + P_{B5}) \end{aligned}$$

C_{A_T} = axial force weight tare correction

The model center of pressure location was computed in percent of body length:

$$X_{CP}/L_B = [X_{MRP} - \left(\frac{C_m \bar{c}}{C_N} \right)]/L_B$$

DATA REDUCTION (Concluded)

where:

X_{MRP} = moment reference point on x-axis, inches aft of nose

L_B = body length, in.

The following reference dimensions were used for reducing all aerodynamic data to coefficient form:

<u>Symbol</u>	<u>Definition</u>	<u>Value</u>
A_b	Area of base (OMS on), ft ²	0.5855
A_{BC}	Area of balance cavity, ft ²	0.0985
S	Wing area, ft ²	4.412
X_{MRP}	moment reference point on x-axis, fus. sta., in	43.5974
Z_{MRP}	moment reference point on z-axis, water plane, in.	15.1875
L_B	length of orbiter body, in.	52.257
\bar{c} (LREF)	wing M.A.C., in.	19.230
b (BREF)	wing span, in.	37.936

TABLE II.

TEST: 3A 110		DATE: 3-1-71		DATA SET/RUN NUMBER COLLATION SUMMARY														
DATA SET IDENTIFIER	CONFIGURATION	SCHD.		PARAMETERS/VALUES										NO. OF RUNS	MACH NUMBERS			
		α	β	3F	3G	3H	3I	3J	3K	3L	3M	3N	3O		3P	3Q	3R	
RF5001	B ₀₁ C ₁₁ F ₁₂ M ₁₅₁ W ₁₂₄ E ₄₀ X ₂₀₀	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
002		0	C															2
003		5																3
004		10																4
005		15																5
006		20	↓															6
007	B ₀₁ C ₁₁ F ₁₂ M ₁₅₁ W ₁₂₄ E ₄₀ X ₂₀₀	A	0													25		7
008		0	C															8
009		5	↓															9
010		10	↓															10
011	R ₁₅ X ₂₀₀	A	0															11
012		-5	C															12
013		0																13
014		5																14
015		10																15
016		15																16
017		20	↓															17
018		A	0	↓										5				18

7576
 67 61 55 49 43 37 31 25 19 13 7
 ALPHA
 BETA
 GAMMA
 DELTA
 EPSILON
 ZETA
 ETA
 THETA
 IOTA
 KAPPA
 LAMDA
 MU
 NU
 XI
 OMEGA
 COEFFICIENTS
 $\beta(0) = 12.7$
 SCHEDULES

TABLE II. - Continued.

TEST: 0A110 NAAL 721		DATA SET/RUN NUMBER COLLATION SUMMARY										DATE: 3-22-74		
DATA SET IDENTIFIER	CONFIGURATION	SCHD.		PARAMETERS/VALUES						NO. OF RUNS	MACH NUMBERS			
		α	β	$\delta\alpha$	$\delta\phi$	$\delta\theta$	δR	δSB						
RF5019	$B_{11}, C_{11}, F_{12}, M_{15}, W_{124}, E_{10}, V_{10}, R_{10}, X_{29}$	A	O	0	-11.7	0	0	0	0	0	25	1	19	20
020		A	O								25	1	20	21
021		10	C								0	1	21	22
022											-10	1	22	23
023											-20	1	23	24
024											-25	1	24	25
025											-25	1	25	26
026											-20	1	26	27
027											-10	1	27	28
028											0	1	28	29
029	E_{41}											1	29	30
030		A	O									1	30	31
031											+15	1	31	32
032											-20	1	32	33
033	E_{42}										-20	1	33	34
034											+15	1	34	35
035											0	1	35	36
036		10	C								0	1	36	37

TEST RUN NUMBERS

1 7 13 19 25 31 37 43 49 55 61 67 75.76

C, 4, 1, 1, C, D, F, 1, 1, S, L, M, 1, 1, C, N, 1, 1, G, A, E, 1, 1, C, Y, M, 1, 1, C, B, 1, 1, X, C, P, 1, 1, C, A, B, 1, 1, M, A, C, H, 1, 1, A, L, P, H, 1, 1, I, B, E, T, A, 1, 1

α OR β SCHEDULES

$\alpha(A) = -4, -2, -1, 0, +1, +2 \rightarrow 30, A\alpha - 2^\circ$

$\beta(C) = -14 \rightarrow +14, A\beta = 2^\circ$

IDVAR III 10' AF (21) NDV

TABLE II. - Continued.

TEST: OA 110		NAAL 721		DATA SET/RUN NUMBER COLLATION SUMMARY												DATE: 3-22-74	
DATA SET IDENTIFIER	CONFIGURATION	SCHD.		PARAMETERS/VALUES								NO. OF RUNS	MACH NUMBERS				
		α	β	ϕ	δ_F	δ_a	δ_e	δ_r	δ_{SB}	δ_{SR}							
RF5055	$B_0, C_{11}, F_{12}, M_{11}, M_{12}, E_{10}, V_{10}, R_{15}, X_{19}$	10	C	0	-11.7	0	0	-20	25					20	55		
056		10	C					0						56	57		
057		A	O											57	58		
058	M ₁₅	A	O											58	59		
059		10	C											59	60		
060	$B_0, C_{11}, F_{12}, M_{11}, M_{12}, E_{10}, V_{10}, R_{15}, X_{19}$													60	61		
061								-10						61	62		
062								-20						62	63		
063								-25						63	64		
064								-25	0					64	65		
065								-20						65	66		
066								-10						66	67		
067								-10						67	68		
068								0						68	69		
069														69	70		
070	V_{10}, R_{15}, X_{19}	O	E						25					70	71		
071		20												71	72		
072		25												72			

$\alpha(A) = -4, -2, -1, 0, +1, +2 \rightarrow 30, \Delta \alpha = 2^\circ$
 $\beta(C) = -14 \rightarrow +14, \Delta \beta = 2^\circ$
 $\beta(E) = 0 \rightarrow +20, \Delta \beta = 2^\circ$

* DATASETS RF5070 THROUGH RF5075 WERE NOT AVAILABLE TO DMS FOR PROCESSING.

TABLE II. - Concluded.

TEST: OA110 NAAL 721		DATA SET RUN NUMBER COLLATION SUMMARY										DATE 3-22-74			
DATA SET IDENTIFIER	CONFIGURATION	PARAMETERS/VALUES										NO. OF RUNS	MACH NUMBERS		TEST RUN NUMBERS
		α	β	δ	δF	δa	δe	δr	δ_{SB}	δ_{20}	δ_{73}				
RF5073	B ₀ , C ₁₁ , F ₂ , M ₅ , W ₁₀ , E ₀ , V ₁₀ , R ₀ , X ₀	D	E	O	-1.7	O	O	O	0	25		1	73		
074		O	E	+90									74		
075		H	O										75		
076		G	O										76		
077		30	F										77		
078		35											78		
079		40											79		
080		50											80		
081		60											81		
082		70											82		
083		80											83		
084		A	O										84		
085		10	C										85		

α OR β SCHEDULES: $\alpha(A) = -4, -2, -1, 0, +1, +2 \rightarrow 30, \Delta\alpha = 2^\circ$
 $\alpha(H) = -4, 0, 5, 10, 15, 20, 26 \rightarrow 40, \Delta\alpha = 2^\circ, 45, 50$
 $\alpha(G) = 4, 0, 5, 10, 15, 20, 26 \rightarrow 90, \Delta\alpha = 5^\circ$
 $\beta(C) = -14, -11, -8, -5, -2, 0 \rightarrow +20, \Delta\beta = 5^\circ$
 $\beta(F) = 0 \rightarrow +20, \Delta\beta = 5^\circ$

* DATASETS RF5070 THROUGH RF5075 WERE NOT AVAILABLE TO DMS FOR PROCESSING

TABLE III. - MODEL DIMENSIONAL DATA

MODEL COMPONENT : BODY - B₀₁

GENERAL DESCRIPTION : -140A/B inner mold line orbiter fuselage

MODEL SCALE: 0.0405

DRAWING NUMBER VI.70-000233, SS-A01185

DIMENSIONS	FULL SCALE	MODEL SCALE
Length (Nose @ $X_0 = 238.0$) - In.	<u>1291.30</u>	<u>52.257</u>
Max Width ($X_0 = 1516.8$) - In.	<u>260.69</u>	<u>10.558</u>
Max Depth ($X_0 = 1464.8$) - In.	<u>246.91</u>	<u>10.000</u>
Fineness Ratio	<u>4.95</u>	<u>4.95</u>
Area	<u> </u>	<u> </u>
Max. Cross-Sectional-Ft ²	<u>338.67</u>	<u>0.556</u>
Planform	<u> </u>	<u> </u>
Wetted	<u> </u>	<u> </u>
Base - Ft ²	<u>338.67</u>	<u>0.556</u>

TABLE III. - MODEL DIMENSIONAL DATA - Continued.

MODEL COMPONENT : CANOPY C₁₁
 GENERAL DESCRIPTION -140A/B inner mold line orbiter canopy used
with B_{C1}. Has six window panels, three per side

 MODEL SCALE: 0:0405
 DRAWING NUMBER VL70-000233; SS-A01185

DIMENSIONS .	FULL SCALE	MODEL SCALE
Length (To fwd bulkhead)	<u>206.67</u>	<u>8.37</u>
Max Width (at fwd bulkhead)	<u>210.86</u>	<u>8.54</u>
Max Depth	_____	_____
Fineness Ratio	_____	_____
Area	_____	_____
Max. Cross-Sectional	_____	_____
Planform	_____	_____
Wetted	_____	_____
Base	_____	_____

TABLE III. - MODEL DIMENSIONAL DATA - Continued.

MODEL COMPONENT: ELEVON - E₄₀

GENERAL DESCRIPTION: -140A/B inner mold line orbiter elevon used on
Wing₁₂₄. Includes baseline "Grumman" gaps. Hingeline is sealed on
upper and lower surface.

MODEL SCALE: 0.0405

DRAWING NUMBER: VL70-000233, SS-A01186

<u>DIMENSIONS:</u> (Data for 1 of 2 sides)	<u>FULL-SCALE</u>	<u>MODEL SCALE</u>
Area - Ft ²	<u>205.98</u>	<u>0.338</u>
Span (equivalent) In.	<u>344.20</u>	<u>13.940</u>
Inb'd equivalent chord - In.	<u>116.79</u>	<u>4.730</u>
Outb'd equivalent chord - In.	<u>55.56</u>	<u>2.250</u>
Hingeline @ F.S. - In.	<u>1387.00</u>	<u>56.174</u>
Ratio movable surface chord/ total surface chord		
At Inb'd equiv. chord ($Y_o=120.84$)	<u>0.214</u>	<u>0.214</u>
At Outb'd equiv. chord ($Y_o=468.34$)	<u>0.400</u>	<u>0.400</u>
Sweep Back Angles, degrees		
Leading Edge	<u>0.000</u>	<u>0.000</u>
Trailing Edge	<u>-10.056</u>	<u>-10.056</u>
Hingeline	<u>0.000</u>	<u>0.000</u>
Area Moment (Normal to hinge line)	<u> </u>	<u> </u>

TABLE III. - MODEL DIMENSIONAL DATA - Continued.

MODEL COMPONENT: ELEVON - E₁

GENERAL DESCRIPTION: -140A/B inner mold line orbiter elevon used on
Wing 124, includes baseline "Grumman" gaps. Hingeline is sealed on lower
surface only.

MODEL SCALE: 0.0405

DRAWING NUMBER: VL70-000233; SS-A01186

<u>DIMENSIONS:</u> (Data for 1 of 2 sides)	<u>FULL-SCALE</u>	<u>MODEL SCALE</u>
Area - Ft ²	<u>205.98</u>	<u>0.338</u>
Span (equivalent) In.	<u>344.20</u>	<u>13.940</u>
Inb'd equivalent chord - In.	<u>116.79</u>	<u>4.730</u>
Outb'd equivalent chord - In.	<u>55.56</u>	<u>2.250</u>
Hingeline @ F.S. - In.	<u>1387.00</u>	<u>56.174</u>
Ratio movable surface chord/ total surface chord		
At Inb'd equiv. chord ($\gamma_o = 120.84$)	<u>0.214</u>	<u>0.214</u>
At Outb'd equiv. chord ($\gamma_o = 468.34$)	<u>0.400</u>	<u>0.400</u>
Sweep Back Angles, degrees		
Leading Edge	<u>0.000</u>	<u>0.000</u>
Trailing Edge	<u>- 10.056</u>	<u>- 10.056</u>
Hingeline	<u>0.000</u>	<u>0.000</u>
Area Moment (Normal to hinge line)	<u> </u>	<u> </u>

TABLE III. - MODEL DIMENSIONAL DATA - Continued.

MODEL COMPONENT: ELEVON - E₄₂

GENERAL DESCRIPTION: -140 A/B inner mold line orbiter elevon used on
Wing-24. Includes baseline "Grumman" gaps. Lower and upper surface
hingeline seals are removed.

MODEL SCALE: 0.0405

DRAWING NUMBER: VL70-000233; SS-A00186.

<u>DIMENSIONS:</u> (Data for 1 of 2 sides)	<u>FULL-SCALE</u>	<u>MODEL SCALE</u>
Area Ft ²	<u>205.98</u>	<u>0.338</u>
Span (equivalent) - In.	<u>344.20</u>	<u>13.940</u>
Inb'd equivalent chord - In.	<u>116.79</u>	<u>4.730</u>
Outb'd equivalent chord - In.	<u>55.56</u>	<u>2.250</u>
Hingeline @ F.S. - In.	<u>1387.00</u>	<u>56.174</u>
Ratio movable surface chord/ total surface chord		
At Inb'd equiv. chord ($\gamma_0 = 120.84$)	<u>0.214</u>	<u>0.214</u>
At Outb'd equiv. chord ($\gamma_0 = 468.34$)	<u>0.400</u>	<u>0.400</u>
Sweep Back Angles, degrees		
Leading Edge	<u>0.000</u>	<u>0.000</u>
Trailing Edge	<u>-10.056</u>	<u>-10.056</u>
Hingeline	<u>0.000</u>	<u>0.000</u>
Area Moment (Normal to hinge line)	<u> </u>	<u> </u>

TABLE III. - MODEL DIMENSIONAL DATA - Continued.

MODEL COMPONENT BODY FLAP - F₁₂
 GENERAL DESCRIPTION -140A/B inner mold line orbiter body flap
used with Body B₆₁. Dimensions are for outer mold line.

 MODEL SCALE: 0.0405
 DRAWING NUMBER VL70-000233; SS-A01185

DIMENSIONS	FULL SCALE	MODEL SCALE
Length (Chord) - In.	<u>81.00</u>	<u>3.280</u>
Max Width (Span) - In.	<u>260.00</u>	<u>10.530</u>
Max Depth - In.	<u>21.20</u>	<u>0.859</u>
Hingeline @ F.S. - In.	<u>1532.00</u>	<u>62.046</u>
Fineness Ratio	<u> </u>	<u> </u>
Area - Ft ²	<u> </u>	<u> </u>
Max. Cross-Sectional	<u> </u>	<u> </u>
Planform	<u>135.00</u>	<u>0.2214</u>
Wetted	<u> </u>	<u> </u>
Base	<u> </u>	<u> </u>

TABLE III. - MODEL DIMENSIONAL DATA - Continued.

MODEL COMPONENT : ORBITAL MANEUVERING SYSTEM PODS - M₅₁
 GENERAL DESCRIPTION -140A/B inner M.L. orbiter OMS pods used
with Body B₆₁ Dimensions are based on outer moldline

 MODEL SCALE: 0.0405
 DRAWING NUMBER VL70-000233; SS-A01185

DIMENSIONS	FULL SCALE	MODEL SCALE
Length (Fwd. Sta. @ X ₀ = 1207) -In.	<u>304.00</u>	<u>12.312</u>
Max Width	<u> </u>	<u> </u>
Max Depth	<u> </u>	<u> </u>
Fineness Ratio	<u> </u>	<u> </u>
Area	<u> </u>	<u> </u>
Max. Cross-Sectional	<u> </u>	<u> </u>
Planform	<u> </u>	<u> </u>
Wetted	<u> </u>	<u> </u>
Base (per pod)	<u>19.48</u>	<u>0.032</u>

TABLE III. - MODEL DIMENSIONAL DATA - Continued.

MODEL COMPONENT: RUDDER R₁₅

GENERAL DESCRIPTION: Inner moldline orbiter rudder used with Vertical
~~Tail V₁₉ Capability also includes use as a speedbrake. Consists of an~~
upper and lower panel. Rudder hingeline is sealed.

MODEL SCALE: 0.0405 Dimensions are for outer moldline.

DRAWING NUMBER: VL70-000233; SS-A01187

<u>DIMENSIONS:</u>	<u>FULL-SCALE</u>	<u>MODEL SCALE</u>
Area , ft ²	<u>100.15</u>	<u>0.164</u>
Span (equivalent), in	<u>201.00</u>	<u>8.140</u>
Inb'd equivalent chord, in	<u>91.585</u>	<u>3.709</u>
Outb'd equivalent chord, in	<u>50.833</u>	<u>2.059</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>34.830</u>	<u>34.830</u>
Tailing Edge	<u>26.250</u>	<u>26.250</u>
Hingeline	<u>34.830</u>	<u>34.830</u>
Area Moment (Normal to hinge line)	<u> </u>	<u> </u>

TABLE III. - MODEL DIMENSIONAL DATA- Continued.

MODEL COMPONENT: RUDDER - R₁₆

GENERAL DESCRIPTION: Inner moldline orbiter rudder used with Vertical Tail V₁₉. Capability also includes use as a speedbrake. Upper and lower hingeline seals are removed. Dimensions are for outer moldline.

MODEL SCALE: 0.0405

DRAWING NUMBER: VL70-000233; SS-A01187

<u>DIMENSIONS:</u>	<u>FULL-SCALE</u>	<u>MODEL SCALE</u>
Area, ft ²	<u>100.15</u>	<u>0.164</u>
Span (equivalent), in	<u>201.00</u>	<u>8.140</u>
Inb'd equivalent chord, in	<u>91.585</u>	<u>3.709</u>
Outb'd equivalent chord, in	<u>50.833</u>	<u>2.059</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>34.830</u>	<u>34.830</u>
Tailing Edge	<u>26.250</u>	<u>26.250</u>
Hingeline	<u>34.830</u>	<u>34.830</u>
Area Moment (Normal to hinge line)	<u> </u>	<u> </u>

TABLE III. - MODEL DIMENSIONAL DATA - Continued.

MODEL COMPONENT: RUDDER - R₂₇

GENERAL DESCRIPTION: inner moldline orbiter rudder used with Vertical Tail
V₁₉. Capability also includes use as a speedbrake. Seals between upper and
lower rudder segments removed. Dimensions are for outer moldline.

MODEL SCALE: 0.0405

DRAWING NUMBER: VL70-000233; SS-A01187.

<u>DIMENSIONS:</u>	<u>FULL-SCALE</u>	<u>MODEL SCALE</u>
Area, ft ²	<u>100.15</u>	<u>0.164</u>
Span (equivalent), in	<u>201.00</u>	<u>8.140</u>
Inb'd equivalent chord, in	<u>91.585</u>	<u>3.709</u>
Outb'd equivalent chord, in	<u>50.833</u>	<u>2.059</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>34.830</u>	<u>34.830</u>
Tailing Edge	<u>26.250</u>	<u>26.250</u>
Hingeline	<u>34.830</u>	<u>34.830</u>
Area Moment (Normal to hinge line)	<u> </u>	<u> </u>

TABLE III. - MODEL DIMENSIONAL DATA - Continued.

MODEL COMPONENT: VERTICAL - V₁₉

GENERAL DESCRIPTION: Inner moldline orbiter vertical tail with rudder and speedbrake capability. Dimensions are for outer moldline.

MODEL SCALE: 0.0405

DRAWING NUMBER: VL70-000233; SS-A01187

DIMENSIONS:	<u>FULL SCALE</u>	<u>MODEL SCALE</u>
TOTAL DATA		
Area (Theo) - Ft ²		
Planform	<u>413.25</u>	<u>0.678</u>
Span (Theo) - In.	<u>315.72</u>	<u>12.787</u>
Aspect Ratio	<u>1.675</u>	<u>1.675</u>
Rate of Taper	<u>0.507</u>	<u>0.507</u>
Taper Ratio	<u>0.404</u>	<u>0.404</u>
Sweep-Back Angles, Degrees.		
Leading Edge	<u>45.000</u>	<u>45.000</u>
Trailing Edge	<u>25.947</u>	<u>25.947</u>
0.25 Element Line	<u>41.130</u>	<u>41.130</u>
Chords:		
Root-(Theo) WP (Z ₀ = 500 In.)	<u>268.50</u>	<u>10.874</u>
Tip (Theo) WP (Z ₀ = 815.72) In.	<u>108.47</u>	<u>4.393</u>
MAC	<u>199.81</u>	<u>8.092</u>
Fus. Sta. of .25 MAC	<u>1463.35</u>	<u>59.266</u>
W.P. of .25 MAC	<u>635.52</u>	<u>25.739</u>
B.L. of .25 MAC	<u>0.00</u>	<u>0.00</u>
Airfoil Section		
Leading-Wedge angle - Deg.	<u>10° Sym. 60-40 Wedge</u>	
Trailing Wedge-Angle - Deg.	<u>NR Modif.</u>	
Leading-Edge Radius		
Void Area		
Blanketed Area		

TABLE III. - MODEL DIMENSIONAL DATA - Continued.

MODEL COMPONENT: VERTICAL - V 20

GENERAL DESCRIPTION: Inner moldline orbiter vertical tail with rudder and speedbrake capability, except for leading edge modification. Dimensions are for outer moldline.

MODEL SCALE: 0.0405

DRAWING NUMBER: VL70-000233; SS-A01187

DIMENSIONS: FULL SCALE MODEL SCALE

TOTAL DATA

Area (Theo) - Ft ²		
Planform	<u>413.25</u>	<u>0.678</u>
Span (Theo) - In.	<u>315.72</u>	<u>12.787</u>
Aspect Ratio	<u>1.675</u>	<u>1.675</u>
Rate of Taper	<u>0.507</u>	<u>0.507</u>
Taper Ratio	<u>0.404</u>	<u>0.404</u>
Sweep-Back Angles, Degrees.		
Leading Edge	<u>45.000</u>	<u>45.000</u>
Trailing Edge	<u>25.947</u>	<u>25.947</u>
0.25 Element Line	<u>41.130</u>	<u>41.130</u>
Chords: - In.		
Root (Theo) WP (Z ₀ = 500 In.)	<u>268.50</u>	<u>10.874</u>
Tip (Theo) WP (Z = 815.72) In.	<u>108.47</u>	<u>4.393</u>
MAC	<u>199.81</u>	<u>8.092</u>
Fus. Sta. of .25 MAC	<u>1463.35</u>	<u>59.266</u>
W.P. of .25 MAC	<u>635.52</u>	<u>25.739</u>
B.L. of .25 MAC	<u>0.0</u>	<u>0.0</u>
Airfoil Section		
Leading Wedge Angle - Deg.	<u>10° Sym. 60-40 Wedge</u>	
Trailing Wedge Angle - Deg.	<u>NR Mod.</u>	
Leading Edge Radius		
Void Area		
Blanketed Area		

TABLE III. - MODEL DIMENSIONAL DATA - Continued.

MODEL COMPONENT: VERTICAL - V 21

GENERAL DESCRIPTION: Inner moldline orbiter vertical tail with rudder and speedbrake capability, except vertical tail base is plugged between speedbrake panels. Dimensions are for outer moldline.

MODEL SCALE: 0.0405

DRAWING NUMBER: VL70-000233; SS-A01187

DIMENSIONS:	<u>FULL SCALE</u>	<u>MODEL SCALE</u>
TOTAL DATA		
Area (Theo) - Ft ²		
Planform	<u>413.25</u>	<u>0.678</u>
Span (Theo) - In.	<u>315.72</u>	<u>12.787</u>
Aspect Ratio	<u>1.675</u>	<u>1.675</u>
Rate of Taper	<u>0.507</u>	<u>0.507</u>
Taper Ratio	<u>0.404</u>	<u>0.404</u>
Sweep-Back Angles, Degrees.		
Leading Edge	<u>45.000</u>	<u>45.000</u>
Trailing Edge	<u>25.947</u>	<u>25.947</u>
0.25 Element Line	<u>41.130</u>	<u>41.130</u>
Chords:		
Root (Theo) WP (Z ₀ = 500 In.)	<u>268.50</u>	<u>10.874</u>
Tip (Theo) WP (Z ₀ = 815.72 In.)	<u>108.47</u>	<u>4.393</u>
MAC	<u>199.81</u>	<u>8.092</u>
Fus. Sta. of .25 MAC	<u>1463.35</u>	<u>59.266</u>
W.P. of .25 MAC	<u>635.52</u>	<u>25.739</u>
B.L. of .25 MAC	<u>0.00</u>	<u>0.00</u>
Airfoil Section		
Leading Wedge Angle - Deg.	<u>10° Sym.; 60-40 Wedge</u>	
Trailing Edge Angle - Deg.	<u>NR Mod.</u>	
Leading Edge Radius		
Void Area		
Blanketed Area		

TABLE III. - MODEL DIMENSIONAL DATA - Continued.

MODEL COMPONENT: WING-W
 GENERAL DESCRIPTION: -140A/B inner moldline double delta orbiter wing used on
Body B₆₁. Dimensions are for outer moldline.

MODEL SCALE: 0.0405

TEST NO. _____ DWG. NO. SS-A01186
VT70-000233

DIMENSIONS: FULL-SCALE MODEL SCALE

TOTAL DATA

Area (Theo.) Ft ²		
Planform	2690.00	4.412
Span (Theo) In.	936.68	37.936
Aspect Ratio	2.265	2.265
Rate of Taper		
Taper Ratio	0.200	0.200
Dihedral Angle, degrees	3.500	3.500
Incidence Angle, degrees	0.500	0.500
Aerodynamic Twist, degrees	3.000	3.000
Sweep Back Angles, degrees		
Leading Edge	45.000	45.000
Trailing Edge	10.056	10.056
0.25 Element Line	35.209	35.209
Chords:		
Root (Theo) B.P.O.O.	689.24	27.914
Tip, (Theo) B.P.	137.85	5.583
MAC	474.80	19.230
Fus. Sta. of .25 MAC	1136.84	46.042
W.P. of .25 MAC		
B.L. of .25 MAC	182.13	7.376

EXPOSED DATA

Area (Theo) Ft ²		
Span, (Theo) In. BP108		
Aspect Ratio		
Taper Ratio		
Chords		
Root BP108		
Tip $1.00 \frac{b}{2}$		
MAC		
Fus. Sta. of .25 MAC		
W.P. of .25 MAC		
B.L. of .25 MAC		
Airfoil Section (Rociwell Mod NASA)		
XXX-64		
Root $\frac{b}{2} = Y_0 = 199$	0010 Modif.	
Tip $\frac{b}{2} =$	0012-64 Modif.	

Data for (1) of (2) Sides

Leading Edge Cuff		
Planform Area Ft ²		
Leading Edge Intersects Fus M. L. @ Sta		
Leading Edge Intersects Wing @ Sta		

TABLE III. - MODEL DIMENSIONAL DATA - Continued.

MODEL COMPONENT: WING-W
 GENERAL DESCRIPTION: -140A/B inner moldline double delta orbiter wing used on
Body B₁, except for squared off wing tips aft of 20% element line on
upper wing surface. Dimensions are for outer moldline.

MODEL SCALE: 0.0405

TEST NO. _____ DWG. NO. SS-A01186

DIMENSIONS: _____ FULL-SCALE _____ MODEL SCALE _____

TOTAL DATA

	FULL-SCALE	MODEL SCALE
Area (Theo.) Ft ²		
Planform	<u>2690.00</u>	<u>4.412</u>
Span (Theo) In.	<u>936.68</u>	<u>37.936</u>
Aspect Ratio	<u>2.265</u>	<u>2.265</u>
Rate of Taper		
Taper Ratio	<u>0.200</u>	<u>0.200</u>
Dihedral Angle, degrees	<u>3.500</u>	<u>3.500</u>
Incidence Angle, degrees	<u>0.500</u>	<u>0.500</u>
Aerodynamic Twist, degrees	<u>3.000</u>	<u>3.000</u>
Sweep Back Angles, degrees		
Leading Edge	<u>45.000</u>	<u>45.000</u>
Trailing Edge	<u>10.056</u>	<u>10.056</u>
0.25 Element Line	<u>35.209</u>	<u>35.209</u>
Chords:		
Root (Theo) B.P.O.O.	<u>689.24</u>	<u>27.914</u>
Tip, (Theo) B.P.	<u>137.85</u>	<u>5.583</u>
MAC	<u>474.81</u>	<u>19.230</u>
Fus. Sta. of .25 MAC	<u>1136.84</u>	<u>46.042</u>
W.P. of .25 MAC		
B.L. of .25 MAC	<u>182.13</u>	<u>7.376</u>

EXPOSED DATA

	FULL-SCALE	MODEL SCALE
Area (Theo) Ft ²		
Span, (Theo) In. BP108		
Aspect Ratio		
Taper Ratio		
Chords		
Root BP108		
Tip $1.00 \frac{b}{2}$		
MAC		
Fus. Sta. of .25 MAC		
W.P. of .25 MAC		
B.L. of .25 MAC		
Airfoil Section (Rockwell Mod NASA)		
XXXX-64		
Root $\frac{b}{2} = Y_0 = 199$	<u>0010 Modif.</u>	
Tip $\frac{b}{2}$	<u>0012-64 Modif.</u>	

Data for (1) of (2) Sides
 Leading Edge Cuff
 Planform Area Ft²
 Leading Edge Intersects Fus M. L. @ Sta
 Leading Edge Intersects Wing @ Sta

TABLE III. - MODEL DIMENSIONAL DATA - Continued.

MODEL COMPONENT: TRANSITION GRIT - X₂₉

GENERAL DESCRIPTION: Grit composed of glass beads located aft of model nose wing and vertical tail to provide forced boundary layer transition.

Dimensions are in the streamwise direction aft of the local leading edge.

MODEL SCALE: 0.0405

DRAWING NUMBER: NONE

DIMENSIONS:

Grit Diameter - In.

Fuselage	0.0054
Swept surfaces	0.0076
Strip width In.	0.10
Location aft of Leading edge - In.	1.00

TABLE III. - MODEL DIMENSIONAL DATA - Concluded.

MODEL COMPONENT: TRANSITION GRIT - X₃₁

GENERAL DESCRIPTION: Grit composed of glass beads located aft of model nose and wing to provide forced boundary layer transition. Dimensions are in the streamwise direction aft of the local leading edge. Same as X₂₉ except vertical tail not gritted.

MODEL SCALE: 0.0405

DRAWING NUMBER: NONE

DIMENSIONS:

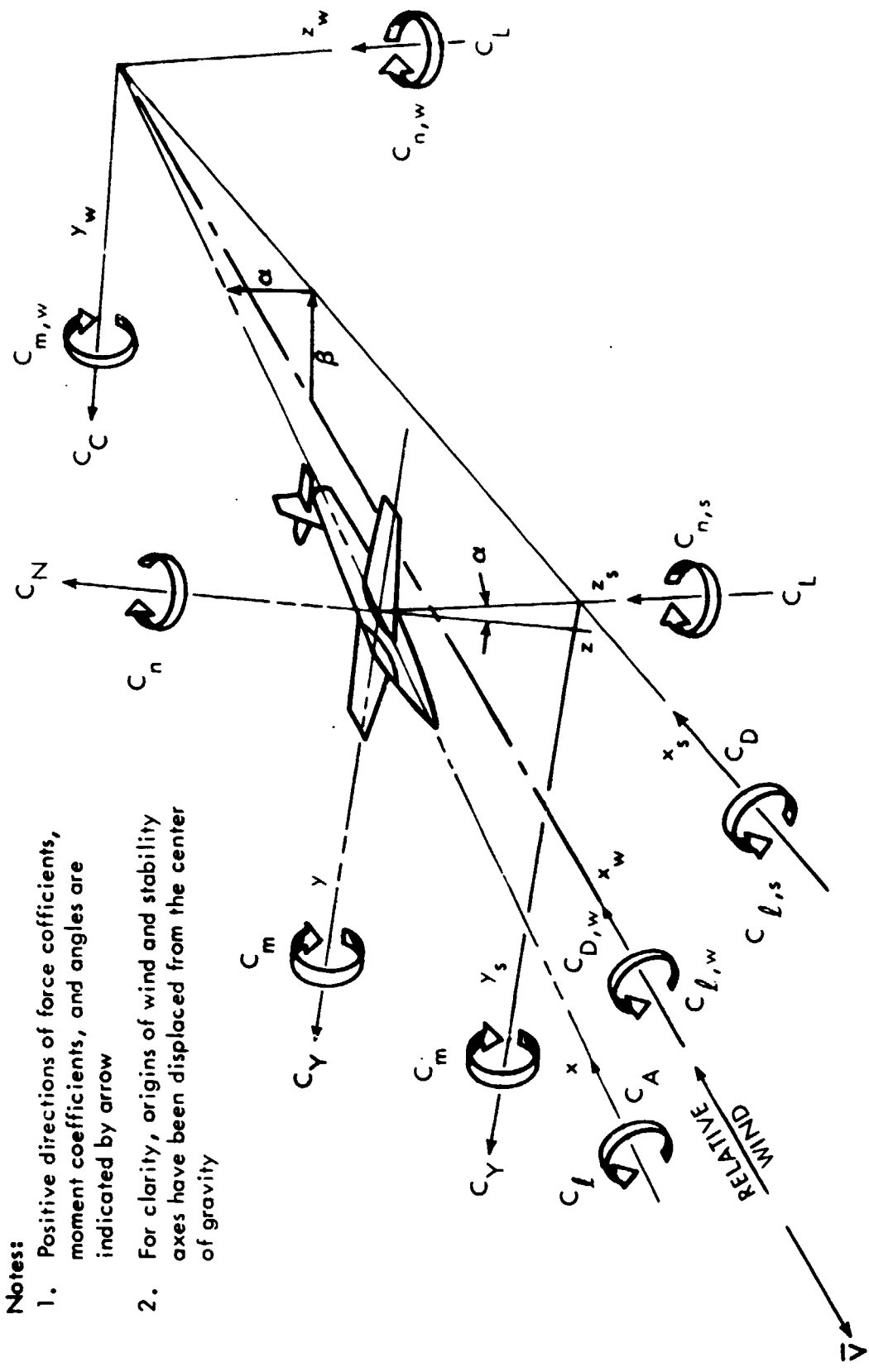
Grit diameter - In.

Fuselage 0.0054

Swept surfaces 0.0076

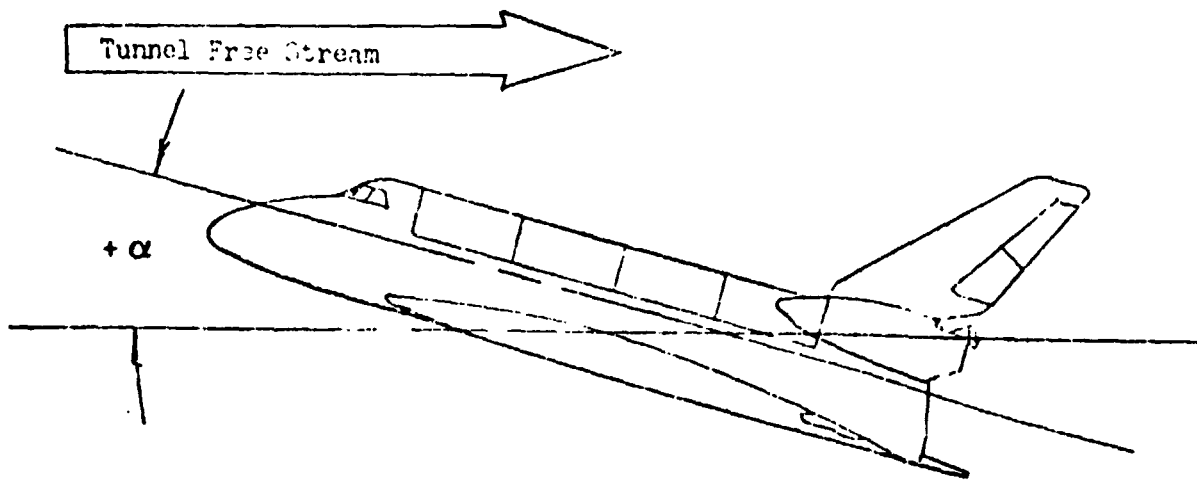
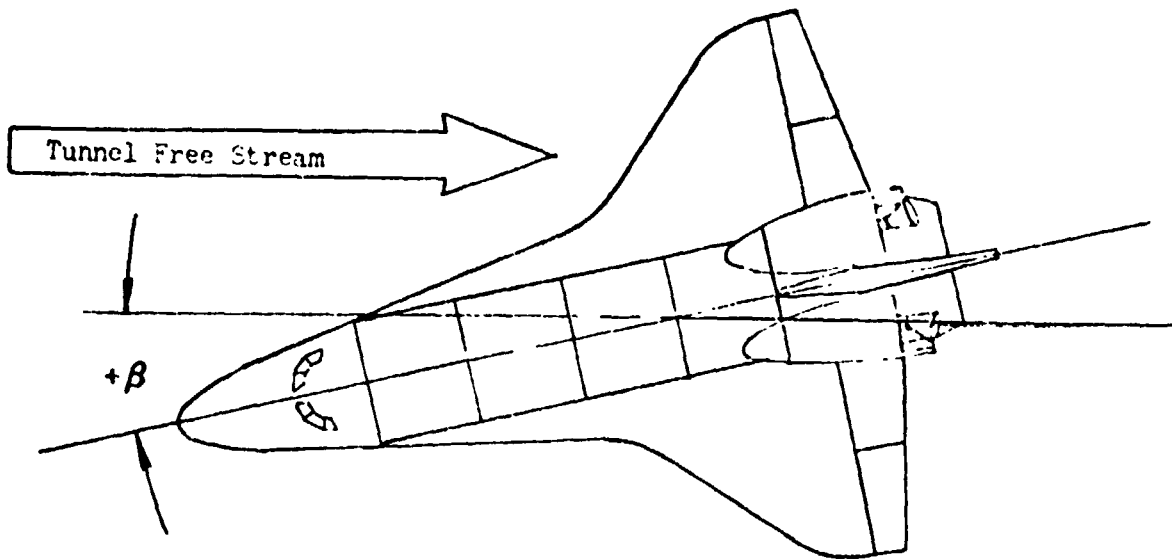
Strip width - In. 0.10

Location aft of leading edge - Inc. 1.00



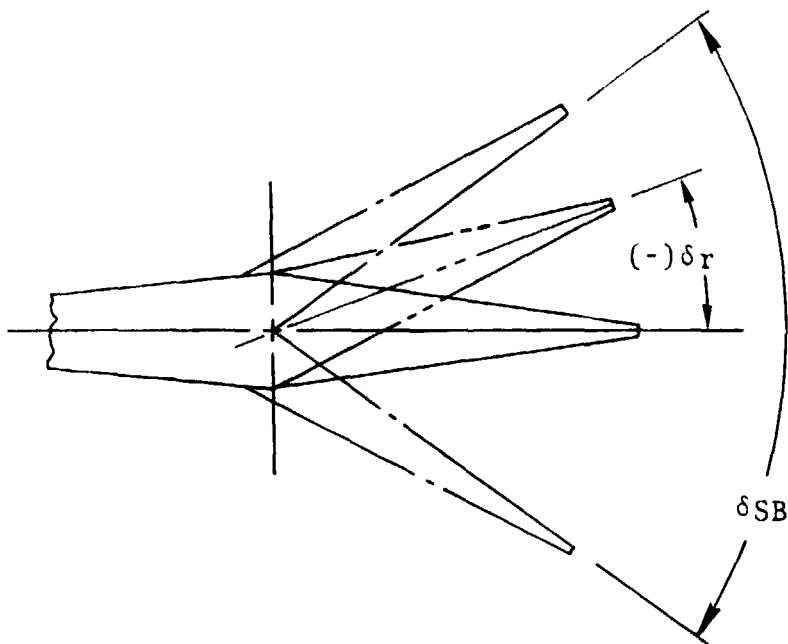
- Notes:**
1. Positive directions of force coefficients, moment coefficients, and angles are indicated by arrow
 2. For clarity, origins of wind and stability axes have been displaced from the center of gravity

a. Body and stability axis
Figure 1. - Axis systems.

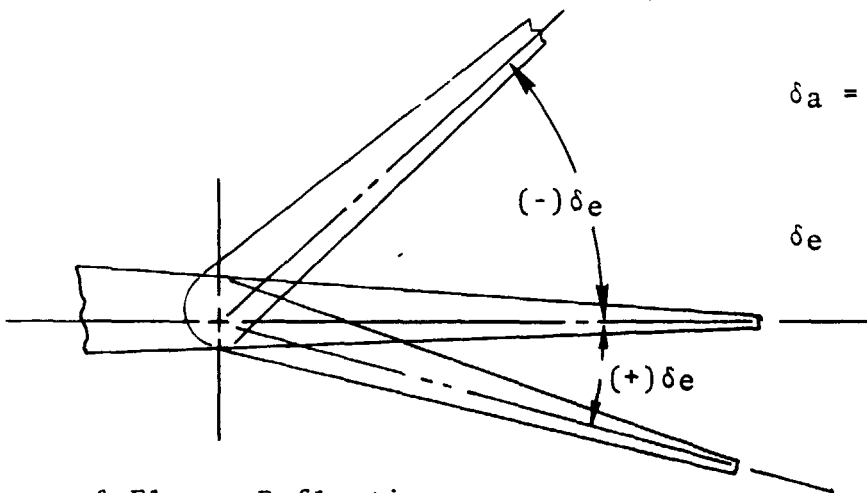


b. MODEL ATTITUDE DEFINITION

Figure 1. - Continued.



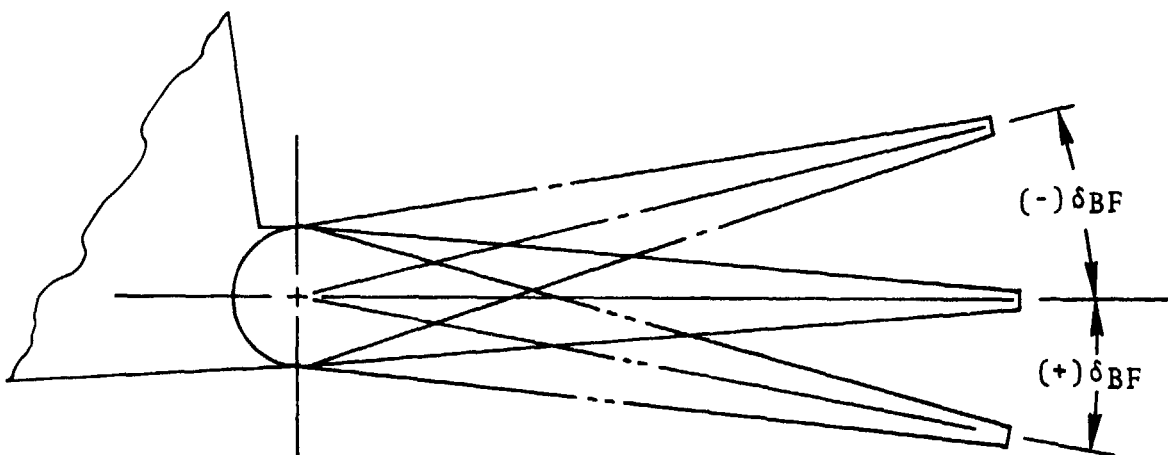
Rudder and
Speed Brake
Deflections



$$\delta_a = \frac{\delta e_L - \delta e_R}{2}$$

$$\delta_e = \frac{\delta e_L + \delta e_R}{2}$$

Aileron & Elevon Deflections

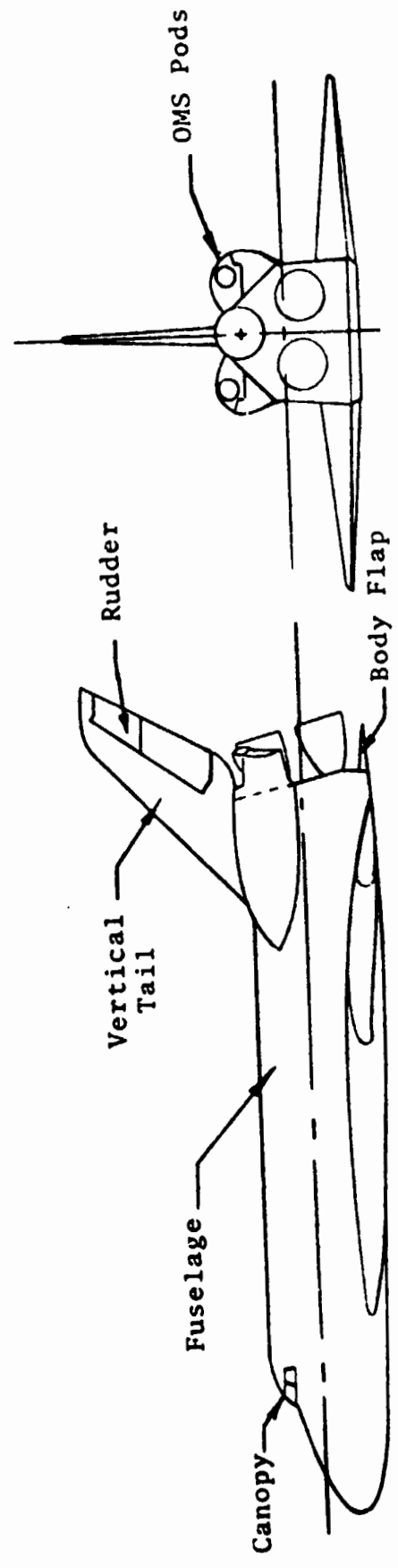
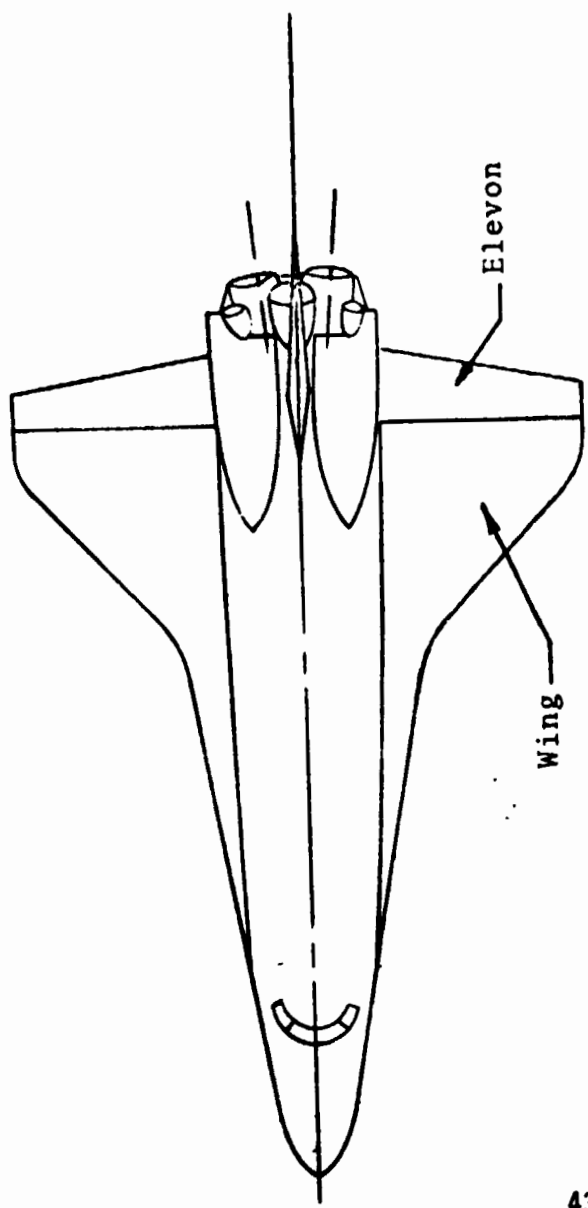


Body Flap Deflections

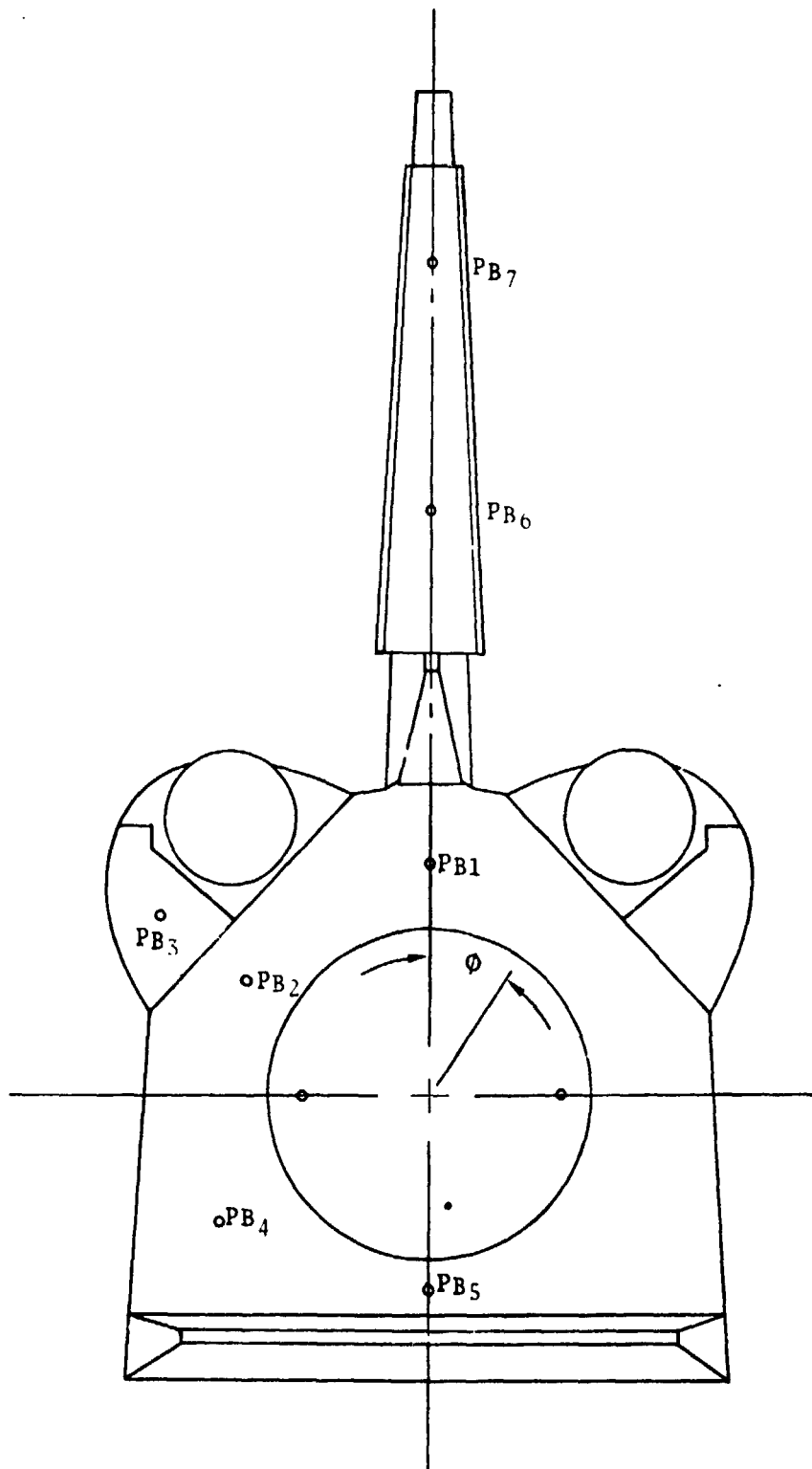
c . Sign Convention for Control Surfaces

Figure 1. - Concluded.

Reference	Dimension
Area	Sw = 2690 ft ²
MAC	$\bar{c}_w = 474.81$ in
C.G.	X = 1076.70 in
	Z = 375.0 in
Span	bw = 936.68 in
Length	L = 1290.3 in

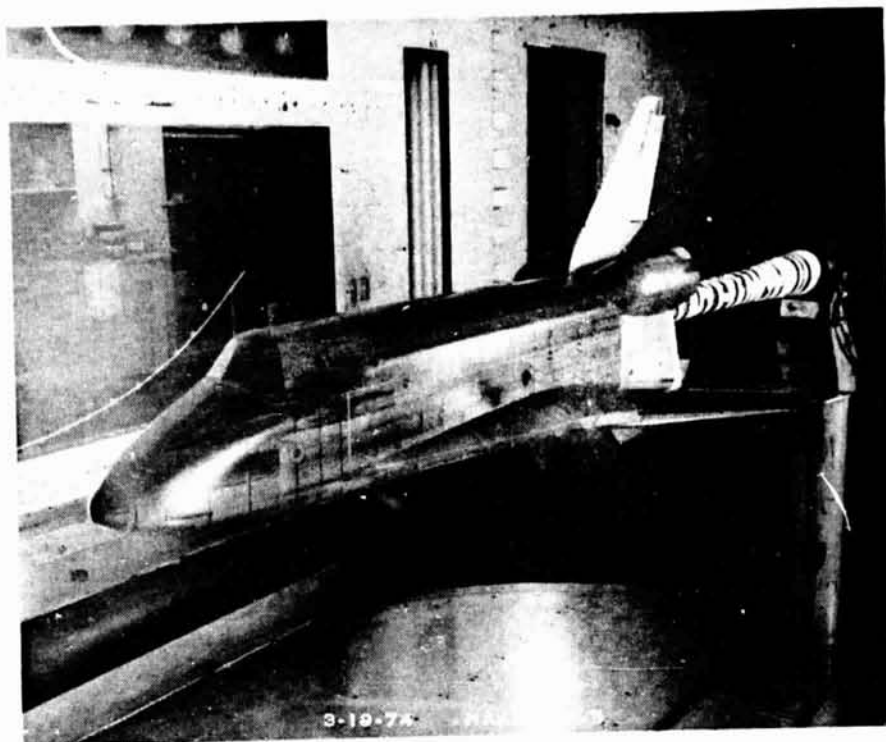


a. GENERAL ARRANGEMENT - 140A/B ORBITER
Figure 2. - Model sketches.



b. BASE PRESSURE ORIFICE LOCATIONS

Figure 2. - Concluded.



**REPRODUCIBILITY OF THE
ORIGINAL PAGE IS POOR**

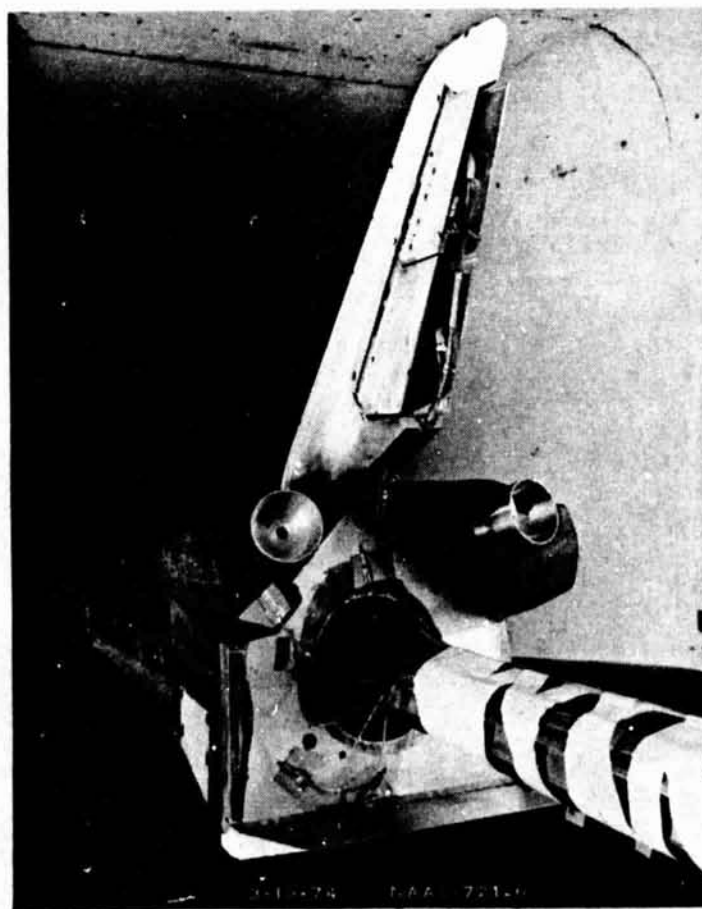
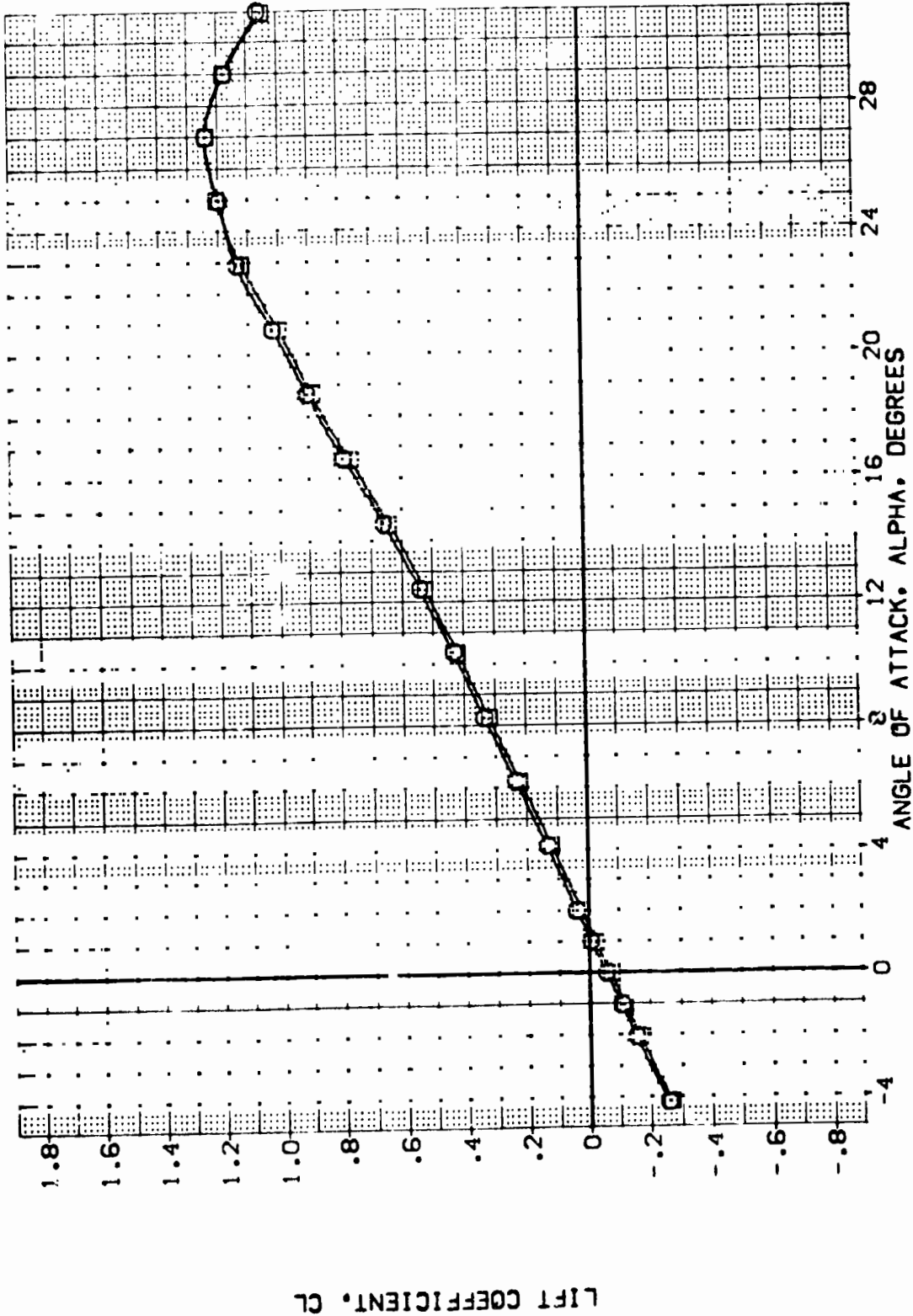


FIGURE 3. - MODEL INSTALLATION PHOTOGRAPHS.

DATA FIGURES

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 {EF3001} 0A110 BS1C11F12P51V124E40 X29
 {EF5011} 0A110 BS1C11F12P51V124E40V19R15C29

ELEVON AILERON RUDDER SPOILER REFERENCE INFORMATION
 SREF 4.4119 SQ.FT.
 LREF 19.2299 INCHES
 BREF 37.9359 INCHES
 XMRP 43.5974 INCHES
 YMRP 15.1875 INCHES
 ZMRP SCALE
 SCALE .0405



LIFT COEFFICIENT, CL

FIG 4 LONGITUDINAL STABILITY, BDFLAP = -11.7 DEG

CAJMACH = .20

DATA SET SYMBOL: 0110 BS1C1F127S1V124E40 X28
 (EP5001) 0110 BS1C1F127S1V124E40V18R15X28
 (EP5011)

ELEVON ALLIRON RUDDER SPOBRK REFERENCE INFORMATION
 SREF 4.4119 SQ.FT. SO.FT.
 LREF 19.2299 INCHES INCHES
 BRFL 37.9359 INCHES INCHES
 YMRP 43.5874 INCHES INCHES
 ZMRP .0000 INCHES INCHES
 SCALE 15.1875 INCHES INCHES
 .0405 SCALE

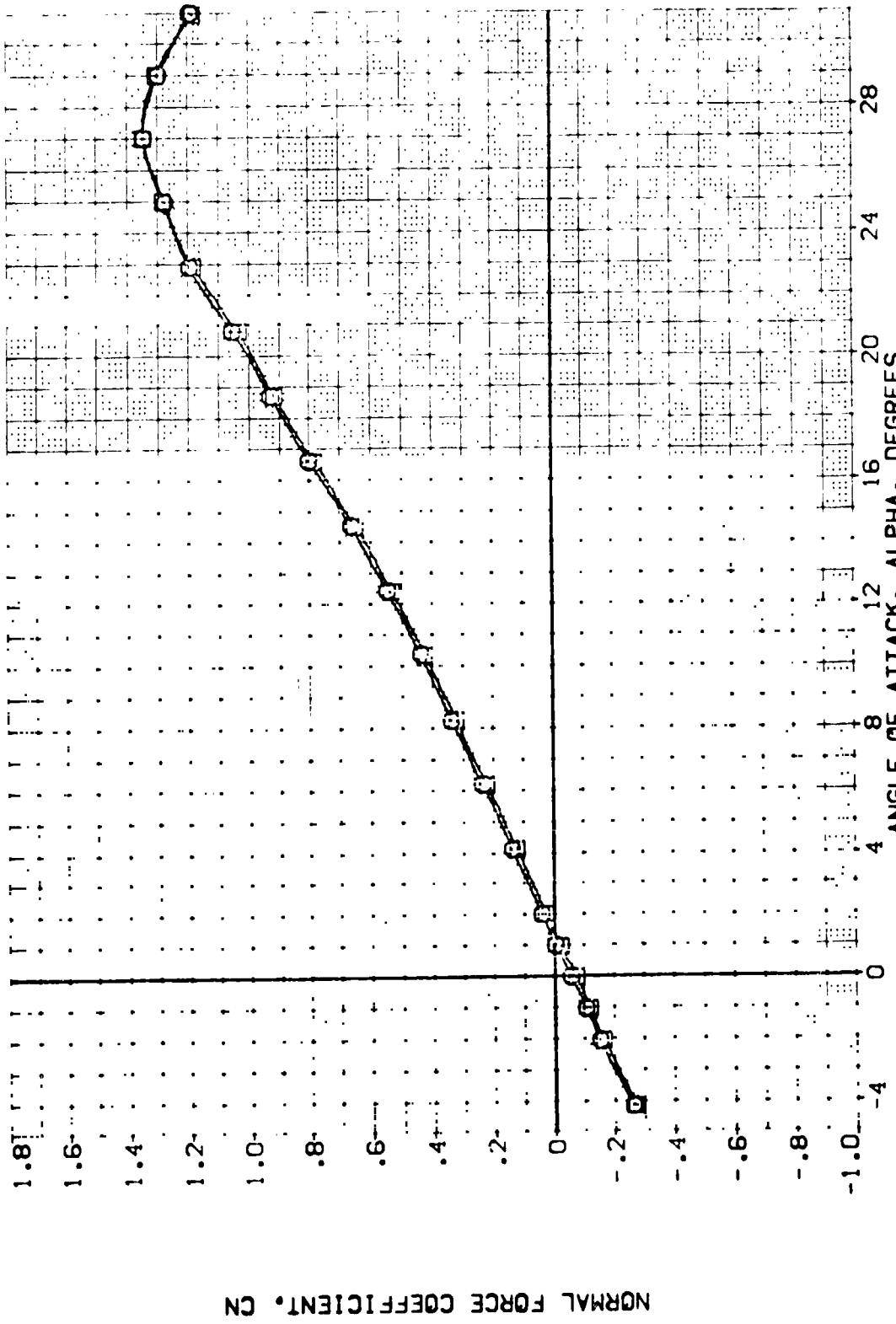


FIG 4 LONGITUDINAL STABILITY, BDFLAP = -11.7 DEG
 (A)MACH = .20



DATA SET SYMBOL: (EF5001) (EF5011) □

CONFIGURATION DESCRIPTION: 0A110 861C11F12V51V124E40 1X28

0A110 861C11F12V51V124E40V19R15X29

ELEVON AIRLON RUDDER SPOBRK
 .000 .000 .000 25.000
 .000 .000 .000

REFERENCE INFORMATION
 SREF 4.4119 SO.FT.
 LREF 19.2299 IND-ES
 BREF 37.9359 IND-ES
 XMPRP 43.5874 IND-ES
 YMPRP .0000 IND-ES
 ZMPRP 15.1875 IND-ES
 SCALE .0405 SCALE

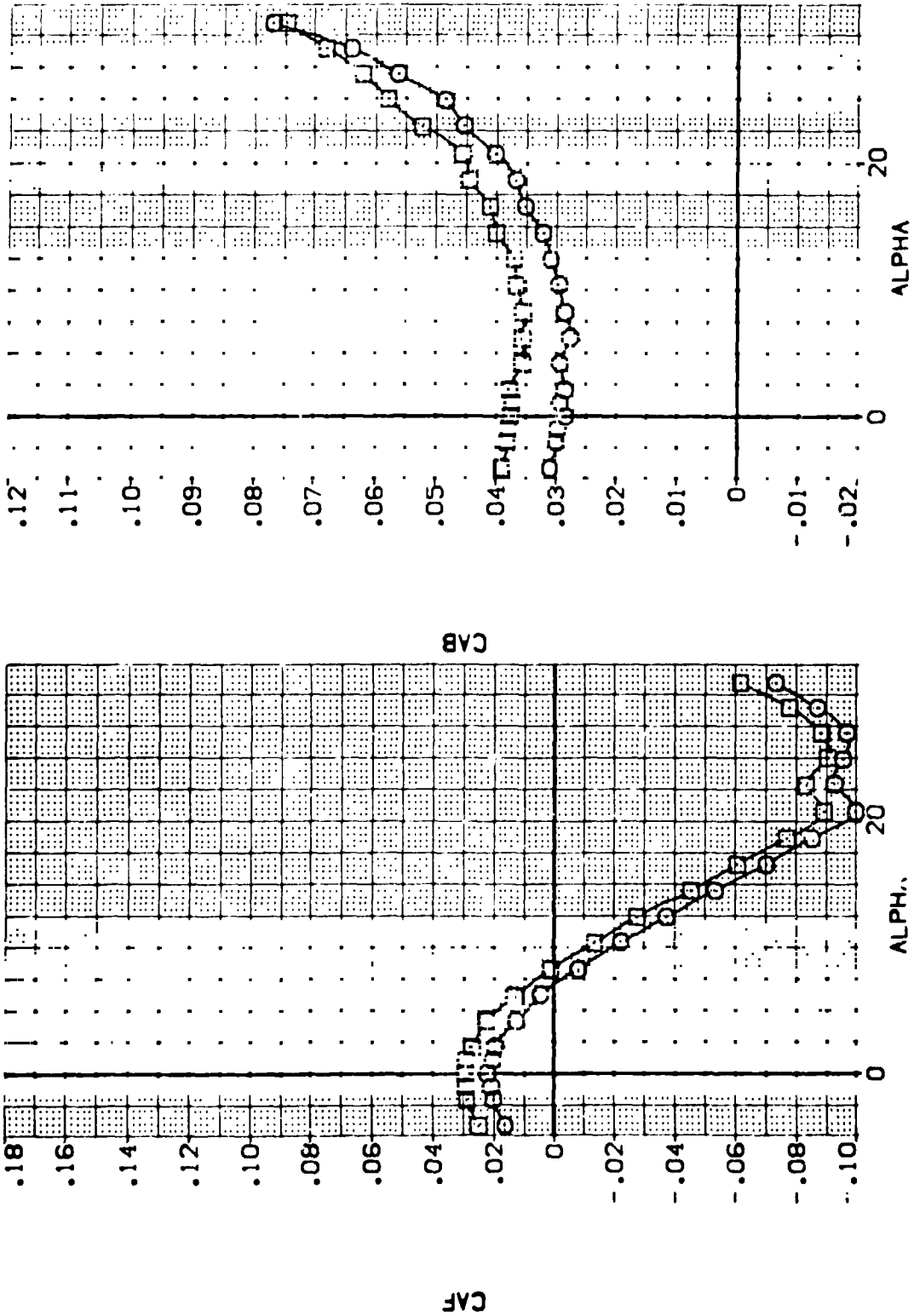


FIG 4 LONGITUDINAL STABILITY, BOFLAP = -11.7 DEG

(A)MACH = .20

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (EF5001) 0110 BASIC11F12M51V124E40 X29
 (EF5011) 0110 BASIC11F12M51V124E40V1SR15X29

ELEVON AIRLON RUDDER SPOILER
 .000 .000 .000 25.000
 .000 .000 .000 .000

REFERENCE INFORMATION
 SREF 4.4119 50.FT. INCHES
 LREF 19.2299 INCHES
 BREF 37.9359 INCHES
 YMRP 43.5974 INCHES
 ZMRP .0000 INCHES
 SCALE 15.1875 INCHES
 .0405 SCALE

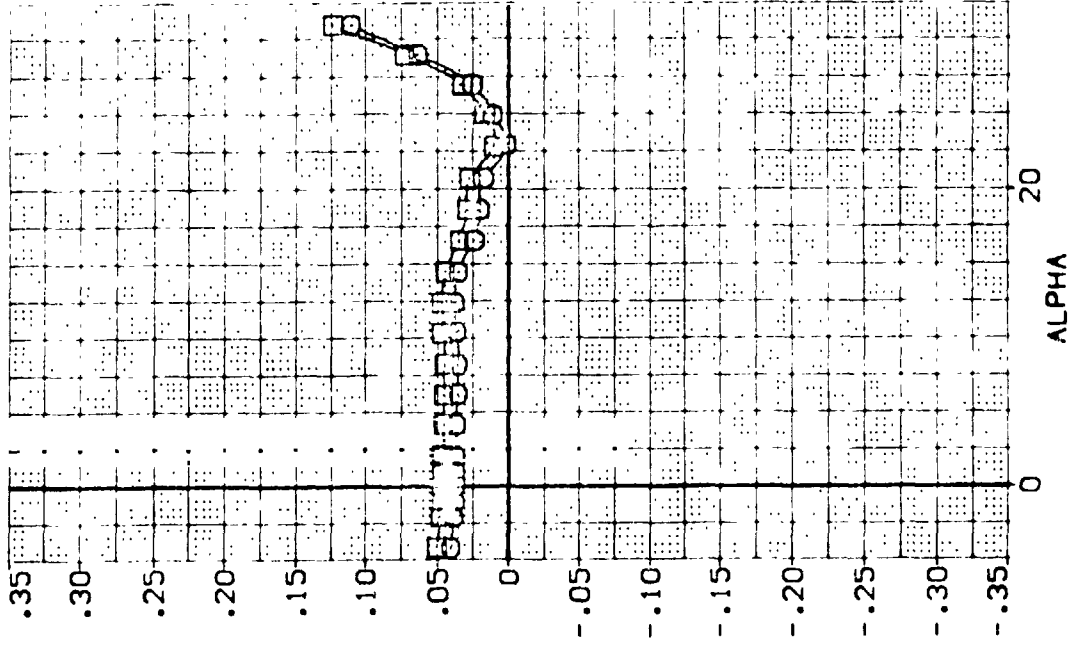
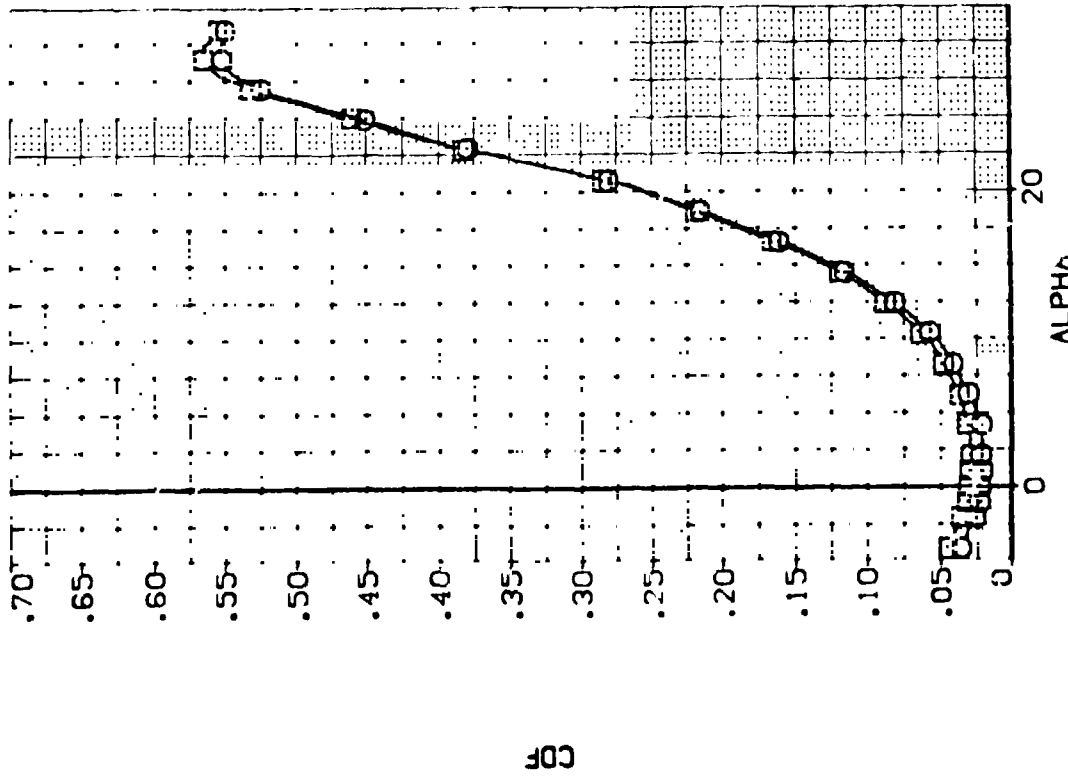


FIG 4 LONGITUDINAL STABILITY, BOFLAP = -11.7 DEG
 (M)MACH = .20



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (EP5001) 8 BA110 BS1C11F12G51V124E40 X29
 (EP5011) 8 BA110 BS1C11F12G51V124E40V19R15X29

ELEVON AILRON FLUDER SPOBRK
 .000 .000 .000 25.000
 .000 .000 .000 .000

REFERENCE INFORMATION
 SREF 4.4119 SQ.FT.
 LREF 19.2289 INCHES
 BREF 37.3569 INCHES
 XMRP 43.5874 INCHES
 YMRP .0000 INCHES
 ZMRP 15.1875 INCHES
 SCALE .0405 SCALE

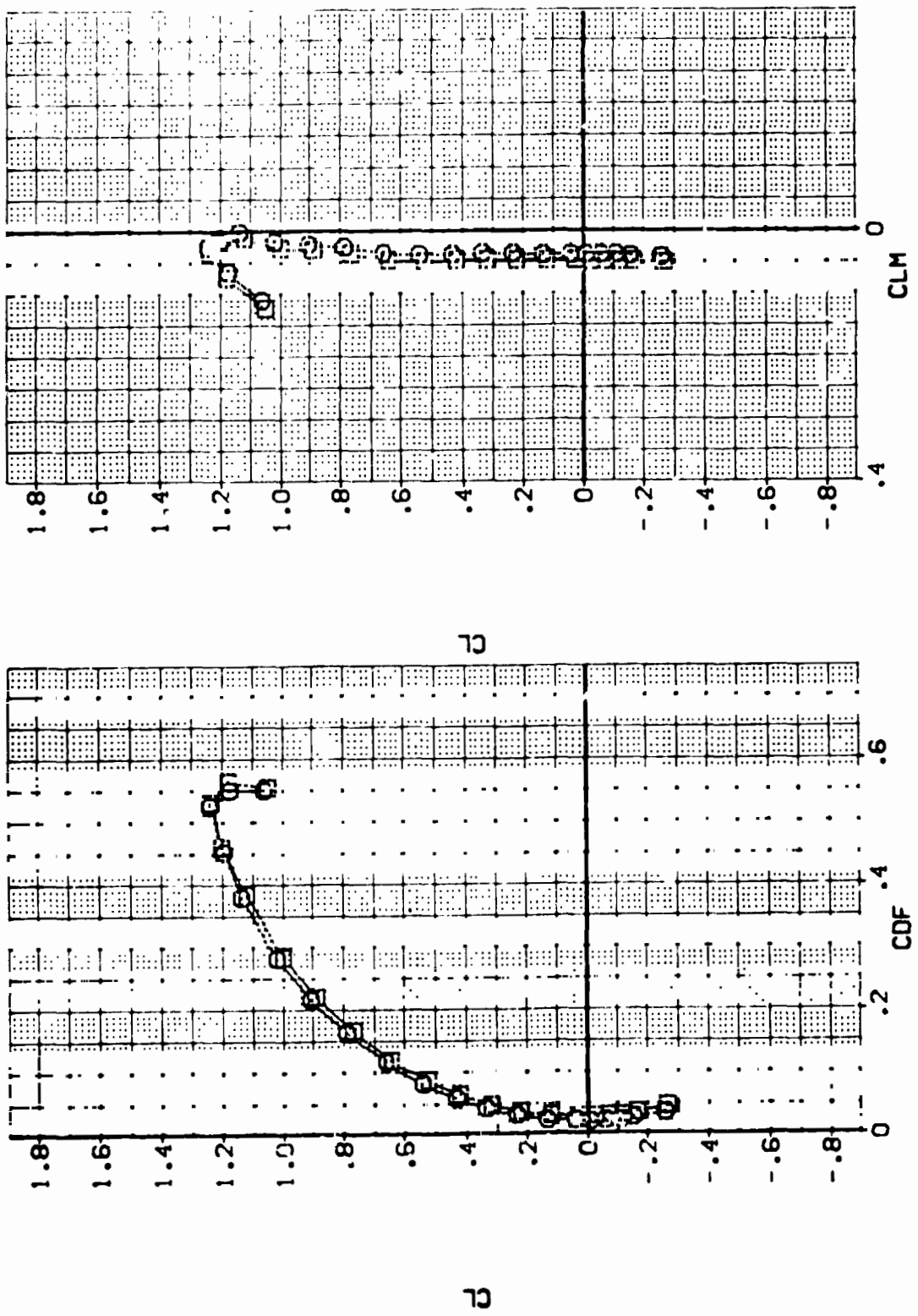


FIG 4 LONGITUDINAL STABILITY. BOFLAP = -11.7 DEG

(AJMACH = .20

DATA SET SYMBOL: (EF5001) (EF5011)
 CONFIGURATION DESCRIPTION: BASIC1124E40 X28
 BASIC1124E40V19R15X28

ELEVON: .000 .000 .000
 AIRLON: .000 .000 .000
 RUDDER: .000 .000 .000
 SPOBRK: 25.000
 REFERENCE INFORMATION:
 SREF: 4.4119 SQ.FT.
 LREF: 19.2298 INCHES
 BREF: 37.9359 INCHES
 XMRP: 43.5574 INCHES
 YMRP: .0000 INCHES
 ZMRP: 15.1875 INCHES
 SCALE: .0405 SCALE

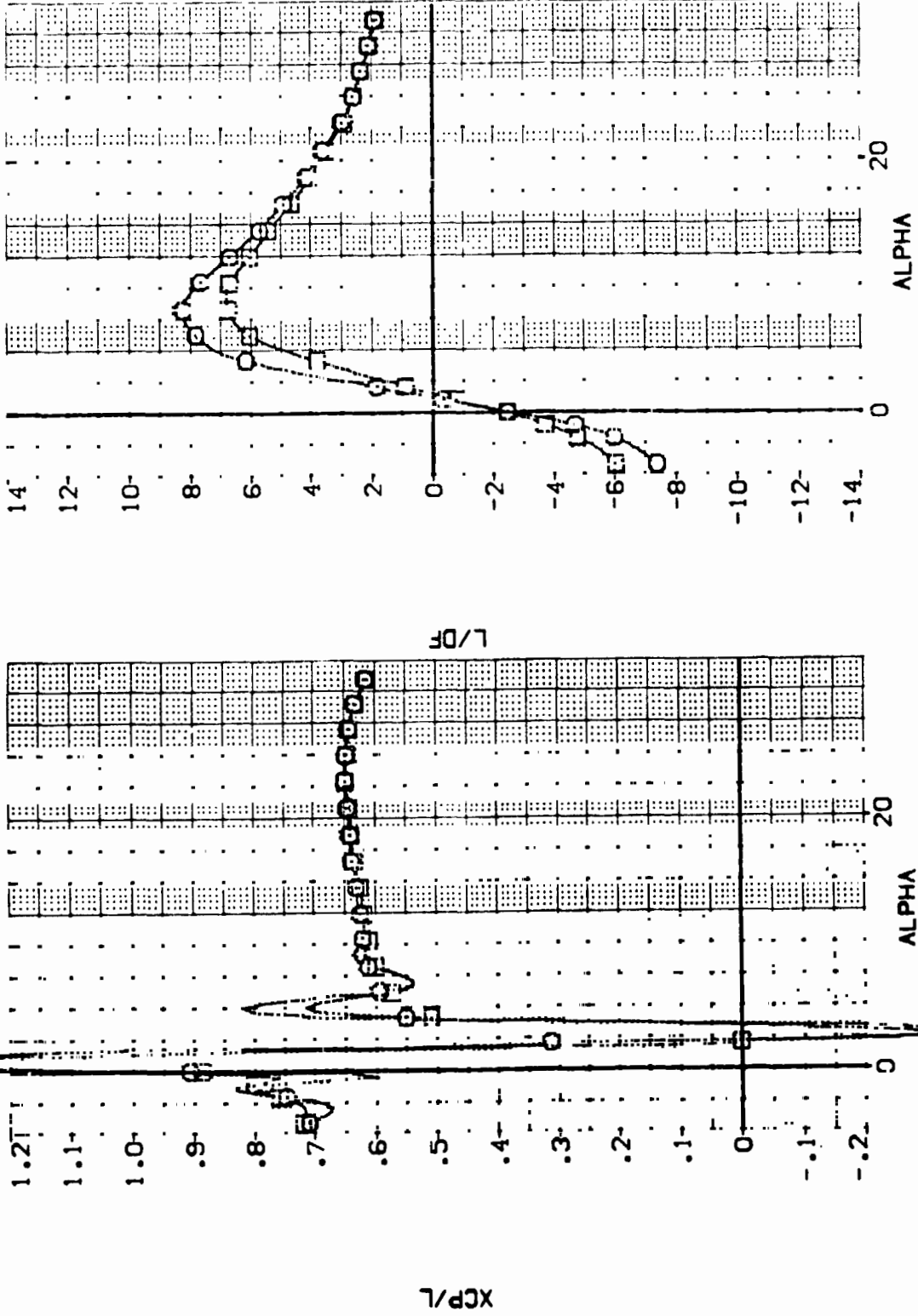


FIG 4 LONGITUDINAL STABILITY, BOFLAP = -11.7 DEG

CA/MACH = .20

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDDER	SPOBRK	AIRLON	REFERENCE INFORMATION
(# 5002)	0A110 B61C11F1276S1V124E40	.000			.000	SREF 4.4119 SQ.FT.
(# 5003)	0A110 B61C11F1276S1V124E40	5.000			.000	LREF 19.2299 INCHES
(# 5004)	0A110 B61C11F1276S1V124E40	10.000			.000	BREF 37.9359 INCHES
(# 5005)	0A110 B61C11F1276S1V124E40	15.000			.000	XMRP 43.5974 INCHES
(# 5006)	0A110 B61C11F1276S1V124E40	20.000			.000	ZMRP .0000 INCHES
						SCALE 15.1875 INCHES
						SCALE .0405

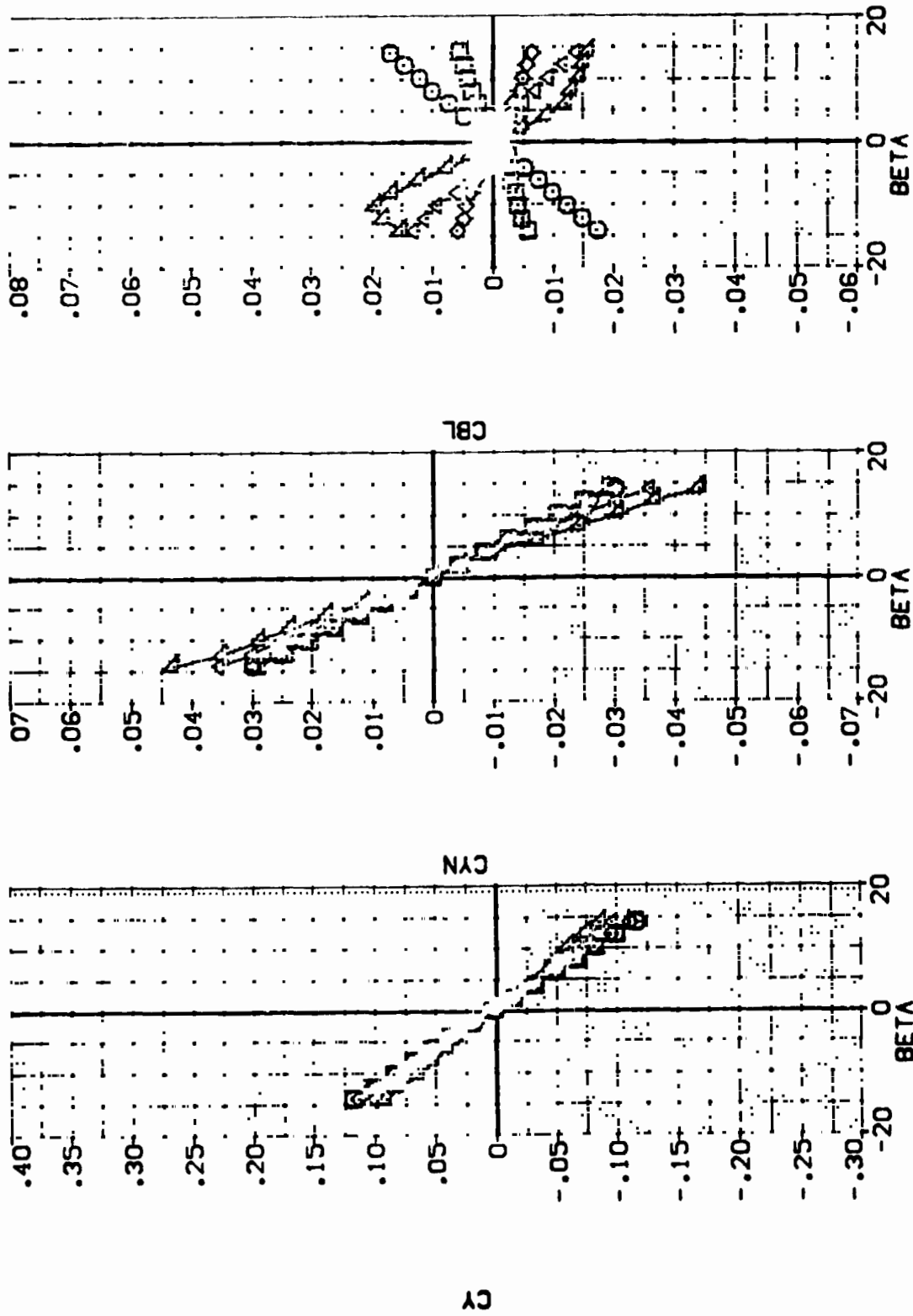


FIG 5 LATERAL-DIRECTIONAL STABILITY, VERTICAL TAIL OFF, BDFLAP = -11.7DEG
 (A)MACH = .20 PAGE 7

(AF5002)

X29

0A110 B61C11F12MS1W124E40

SYMBOL ○

BOFLAP -12.000

MACH AIRSON

PARAMETRIC VALUES
.200 ELEVON .000
.000

REFERENCE INFORMATION

SREF	4.4119	SCALE
LREF	19.2299	SCALE
BREF	37.9359	SCALE
XMRP	43.5874	SCALE
YMRP	.0000	SCALE
ZMRP	15.1875	SCALE
SCALE	.0405	SCALE

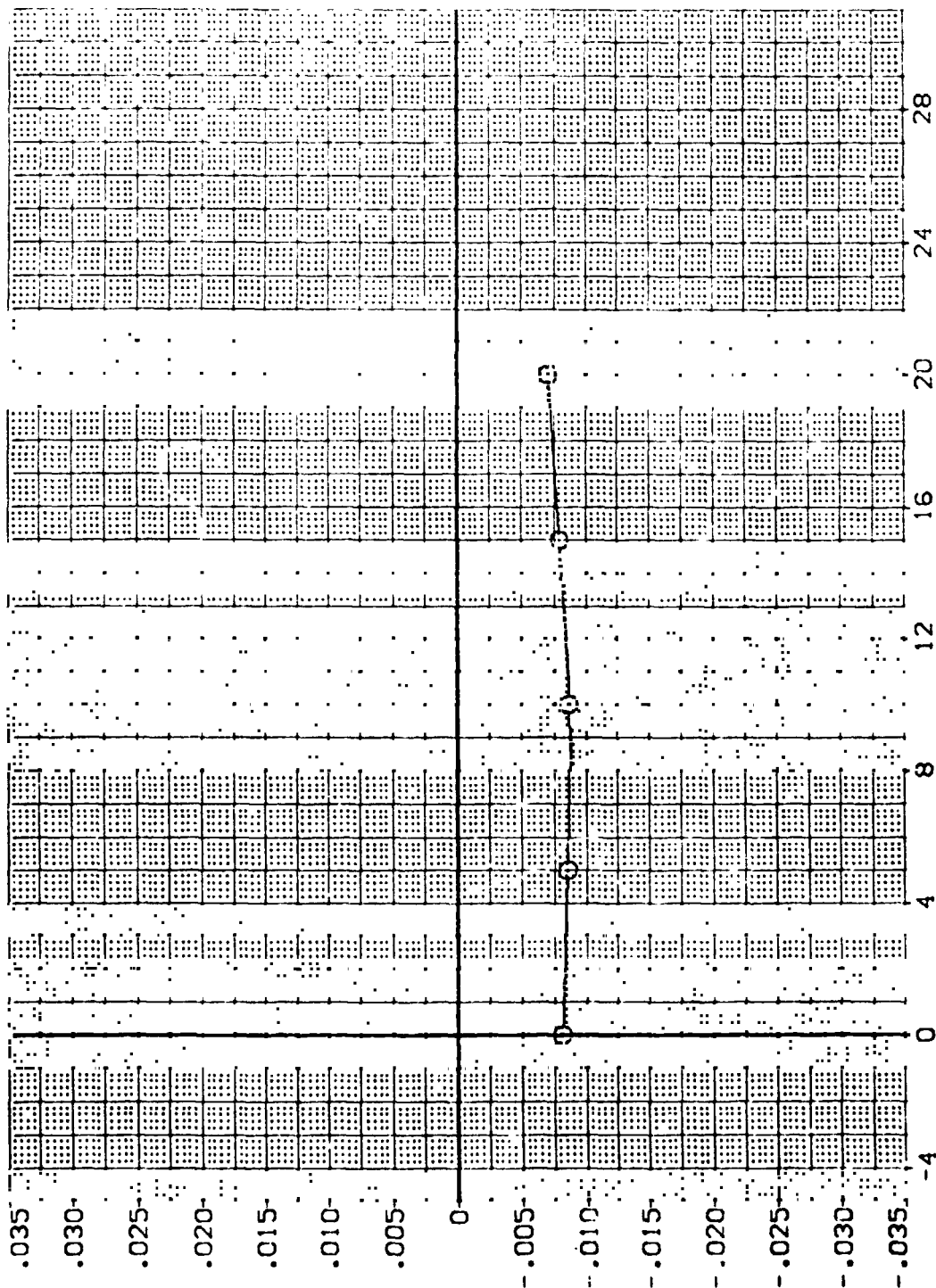


FIG 5 LATERAL-DIRECTIONAL STABILITY, VERTICAL TAIL OFF, BOFLAP = -11.70DEG

(AF5002)

X29

0A110 B61C11F12M51W124E40

SYMBOL: ○

PARAMETRIC VALUES: MACH .200, ELEVON .000, AILRON .000

REFERENCE INFORMATION: SREF 4.4119, LREF 19.2289, BRFL 37.9359, YMRP 43.9574, ZMRP .0000, SCALE 15.1875

YAWING MOMENT COEFFICIENT DERIVATIVE WITH BETA, CYNBET, PER DEGREE

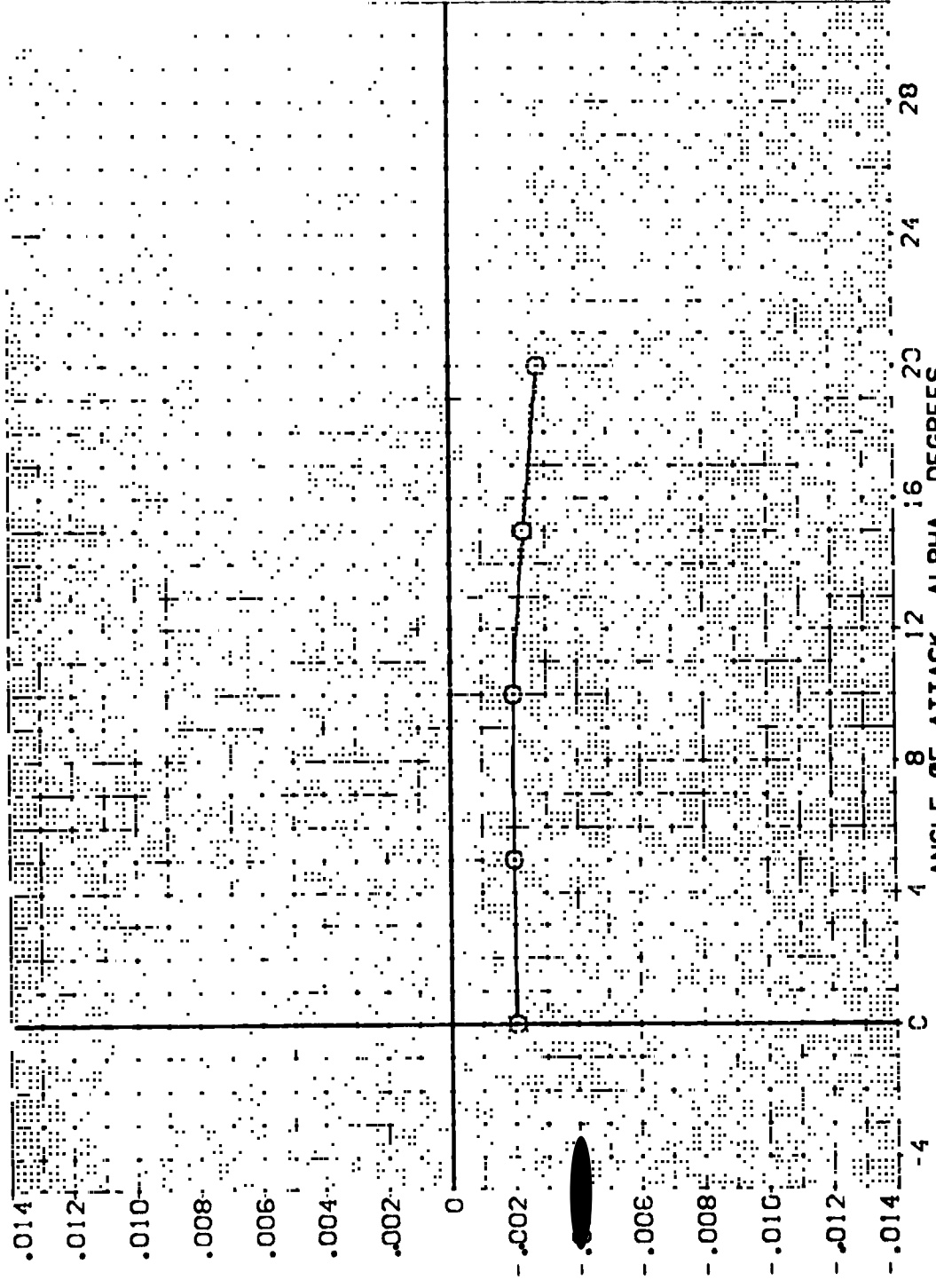


FIG 5 LATERAL-DIRECTIONAL STABILITY, VERTICAL TAIL OFF, BDFLAP = -11.7DEG

(AF5002)

X29

0A110 861C11F12M51W124E40

SYMBOL: O
BOFLAP: -12.000
MACH: ALLRON
PARAMETRIC VALUES: .200 ELEVON .000
SCALE: .000

REFERENCE INFORMATION:
SREF: 4.4119
LREF: 19.2799
BREF: 37.9359
XMRP: 43.5974
YMRP: .0000
ZMRP: 15.1875
SCALE: .0405

ROLLING MOMENT COEFFICIENT DERIVATIVE WITH BETA, CBLBET, PER DEGREE

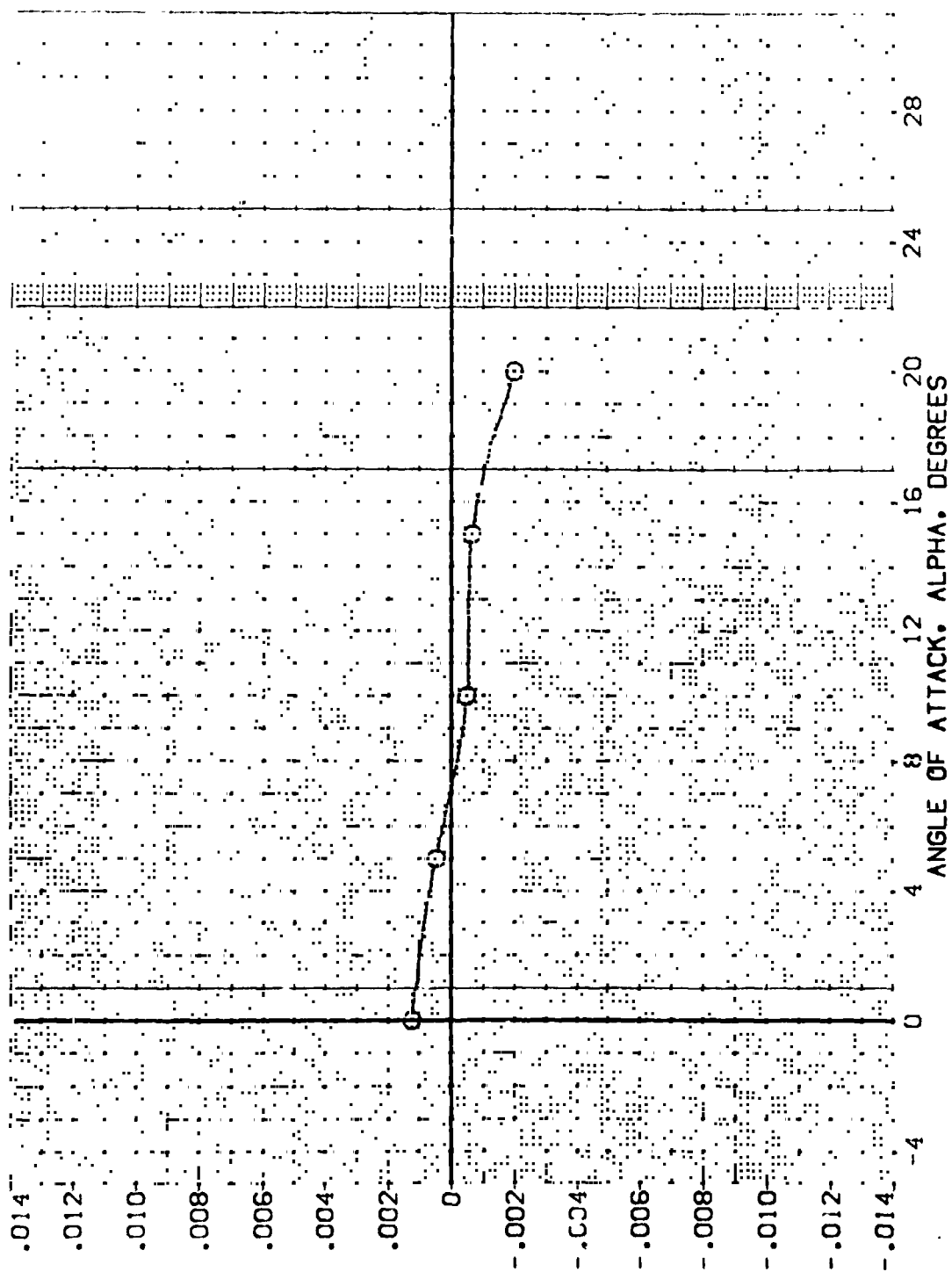


FIG 5 LATERAL-DIRECTIONAL STABILITY, VERTICAL TAIL OFF, BOFLAP = -11.70DEG

DATA SET SYMBL.	CONFIGURATION DESCRIPTION	ALPHA	RUDDER	SPOILER	AILERON	REFERENCE INFORMATION
[R-5012]	0A110 BSIC1 F12S1 V124E40V1SR1S028	-5.000	.000	25.000	.000	4.4119 80. FT
[R-5013]	0A110 BSIC1 F12S1 V124E40V1SR1S028	5.000	.000	25.000	.000	19.2259 INO-ES
[R-5014]	0A110 BSIC1 F12S1 V124E40V1SR1S028	10.000	.000	25.000	.000	37.9359 INO-ES
[R-5015]	0A110 BSIC1 F12S1 V124E40V1SR1S028	15.000	.000	25.000	.000	43.5974 INO-ES
[R-5016]	0A110 BSIC1 F12S1 V124E40V1SR1S028	20.000	.000	25.000	.000	.0000 INO-ES
[R-5017]	0A110 BSIC1 F12S1 V124E40V1SR1S028	20.000	.000	25.000	.000	15.1873 INO-ES
						.0405 SCALE

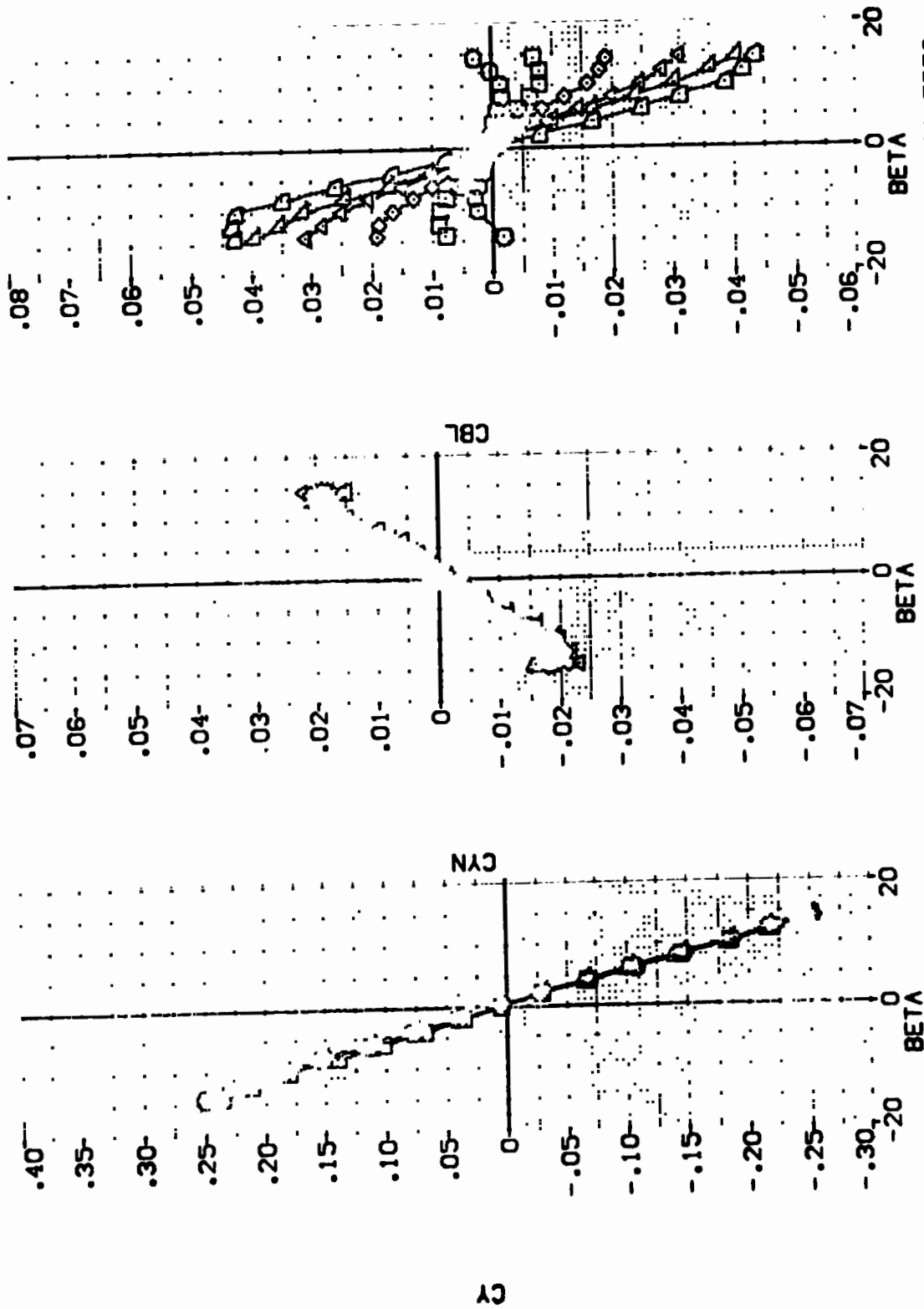


FIG 6 LATERAL-DIRECTIONAL STABILITY, VERTICAL TAIL ON, BOFLAP = -11.7DEG
 CAJMACH = .20 PAGE 11

(AF5012)

0A110 B61C11F12M51M124E40V19R15X29

SYMBL
O

BDFLAP
-12.000

MACH
A11R0N
SPDRK

PARAMETRIC VALUES
.200
.000
25.000

ELEVON
RUDDER
.000
.000

REFERENCE INFORMATION
SREF 4.4119 50.FT.
LREF 19.2239 INCHES
BREF 37.5959 INCHES
XPRP 43.5974 INCHES
YPRP .0000 INCHES
ZPRP 15.1875 INCHES
SCALE .0405 SCALE

SIDE FORCE COEFFICIENT DERIVATIVE WITH BETA, CYBETA, PER DEGREE

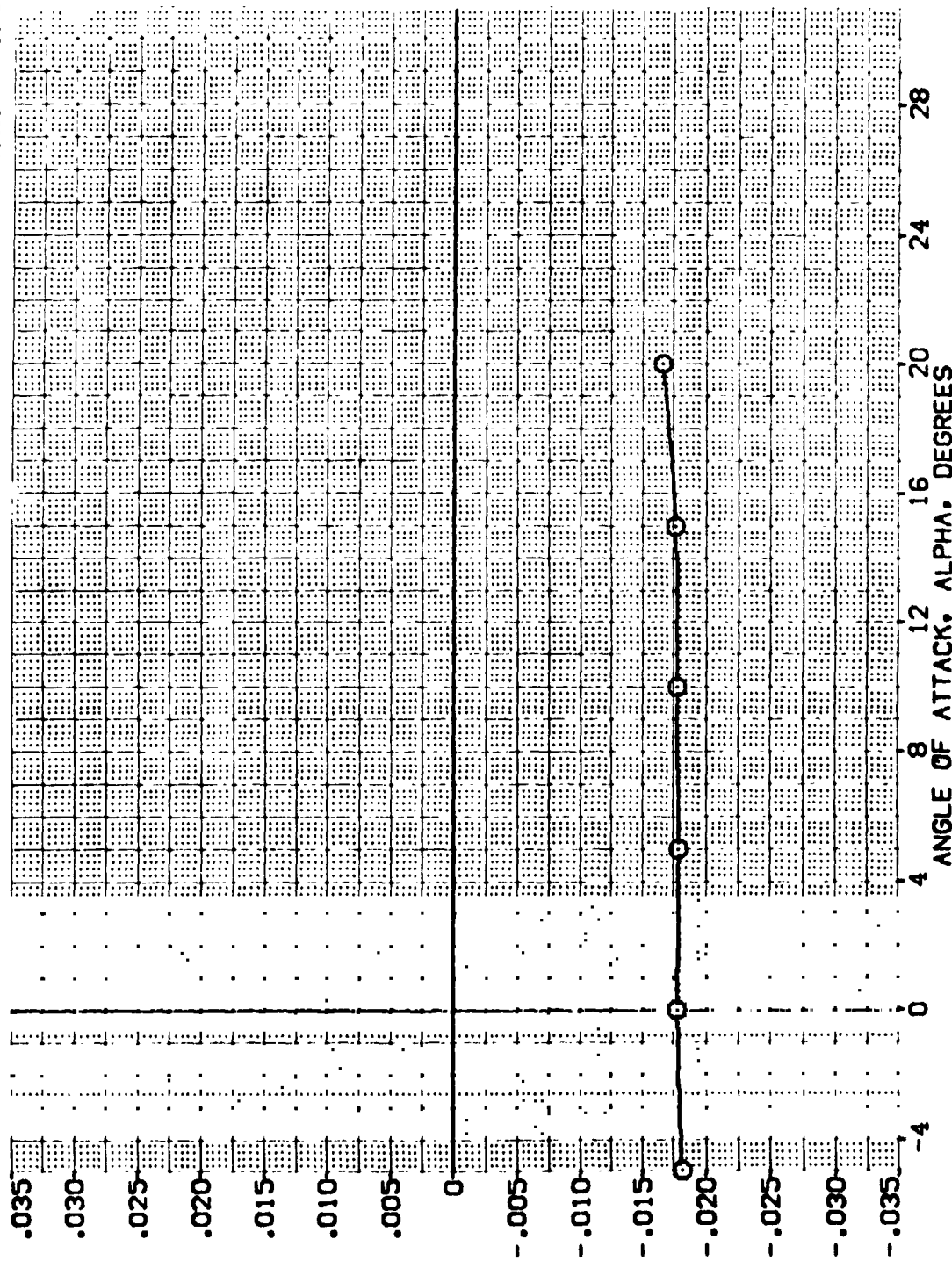


FIG 6 LATERAL-DIRECTIONAL STABILITY, VERTICAL TAIL ON, BDFLAP = -11.7DEG



(AF5012)

0A110 861C11F12M51W124E40V19R15X29

SYMBL BDFLAP
 O -12.000

PARAMETRIC VALUES
 MACH .200 ELEVON .000
 AIRSON .000 RUDDER .000
 SPDRBK 25.000

REFERENCE INFORMATION
 SREF 4.4119 SQ.FT.
 LREF 19.2258 IN.-ES
 BREF 37.9258 IN.-ES
 YPRP 43.5574 IN.-ES
 ZPRP .0000 IN.-ES
 SCALE 15.1875 IN.-ES
 .0405 SCALE

YAWING MOMENT COEFFICIENT DERIVATIVE WITH BETA, CYNBET, PER DEGREE

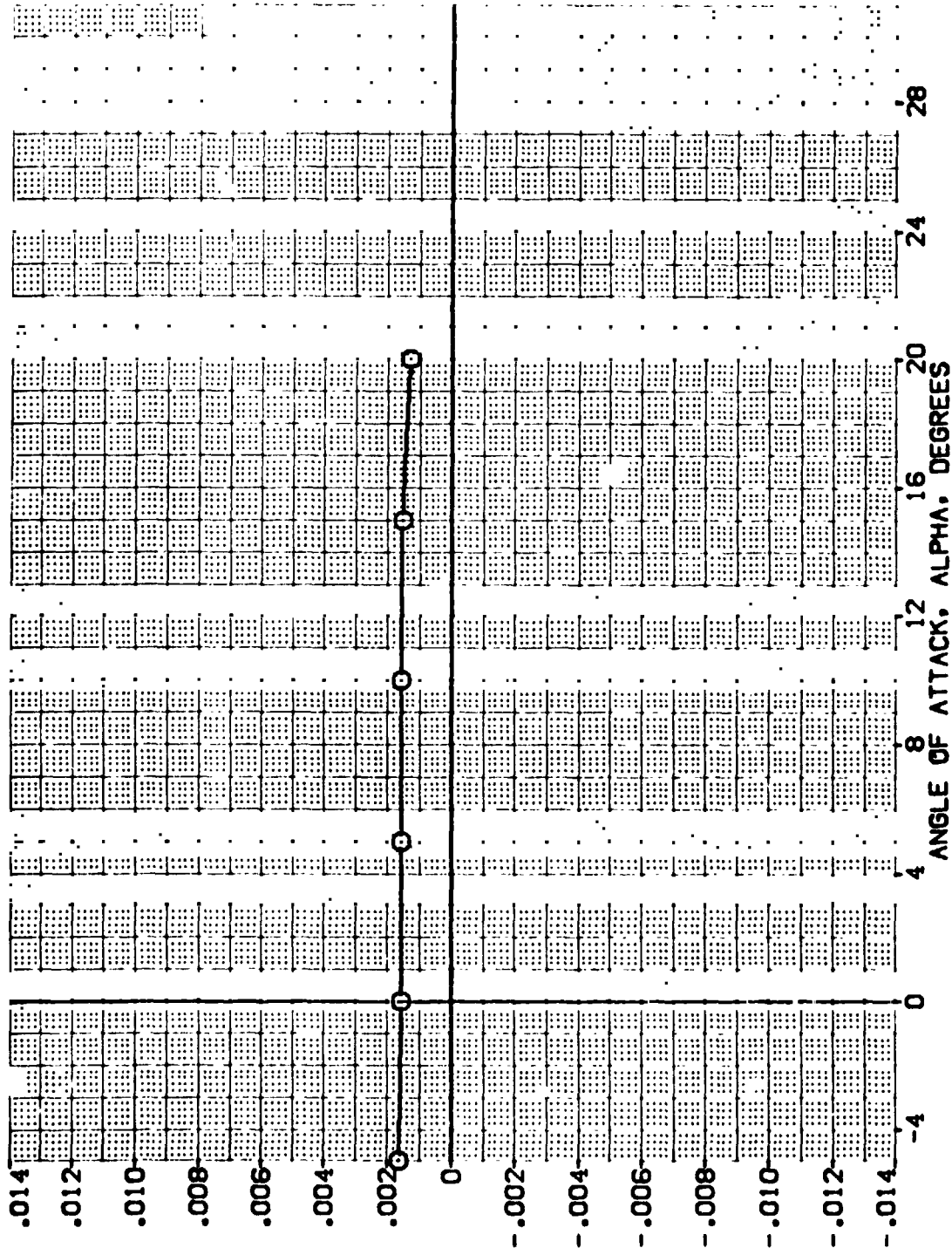


FIG 6 LATERAL-DIRECTIONAL STABILITY, VERTICAL TAIL ON, BDFLAP = -11.7DEG

(AF5012)

0A110 B61C11F12M51W124E40V19R15X29

SYMBOL ○

BDFLAP -12.000

MACH

A11RGN

SPDRK 25.000

PARAMETRIC VALUES

.200 ELEVON

.000 RUDDER

.000

.000

REFERENCE INFORMATION

SQ.FT. 4.4119

INCHES 19.2299

INCHES 37.5959

INCHES 43.5974

INCHES .0000

INCHES 15.1875

SCALE .0405

ROLLING MOMENT COEFFICIENT DERIVATIVE WITH BETA, CBLBET, PER DEGREE

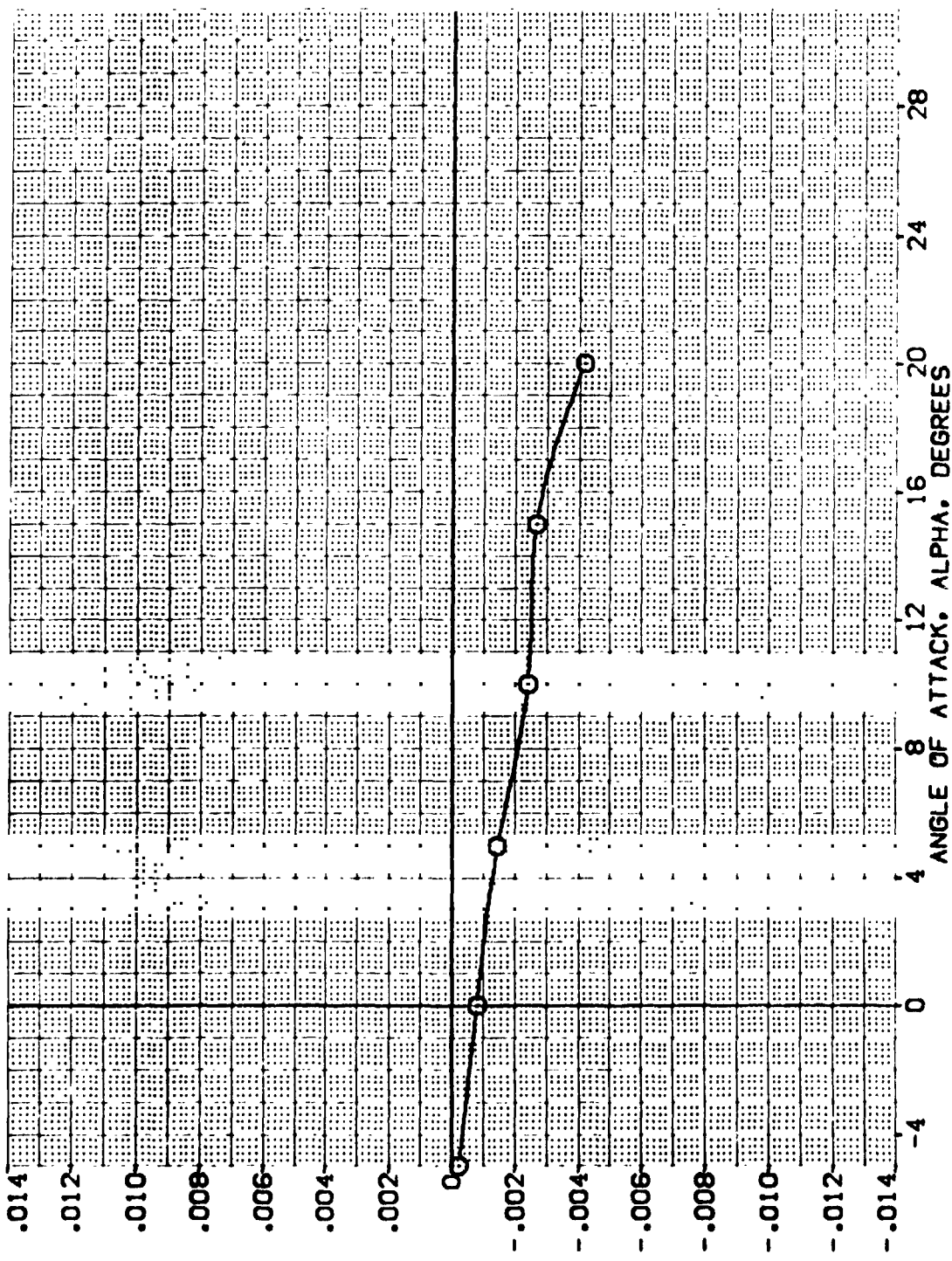


FIG 6 LATERAL-DIRECTIONAL STABILITY, VERTICAL TAIL ON, BDFLAP = -11.7DEG



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 {EF5007} □ CA110 BSIC11F1251V124E40V1SR17C1
 {EF5011} □ CA110 BSIC11F1251V124E40V1SR15C2

ELEVON ATTORN RUDDER SPOSRK
 .000 .000 .000
 .000 .000 .000

REFERENCE INFORMATION
 SREF 4.4119 SQ-FT
 LREF 19.2259 IN-ES
 BREF 37.9359 IN-ES
 XPRP 43.5974 IN-ES
 YPRP 0.0000 IN-ES
 ZPRP 15.1875 IN-ES
 SCALE .0405 SCALE

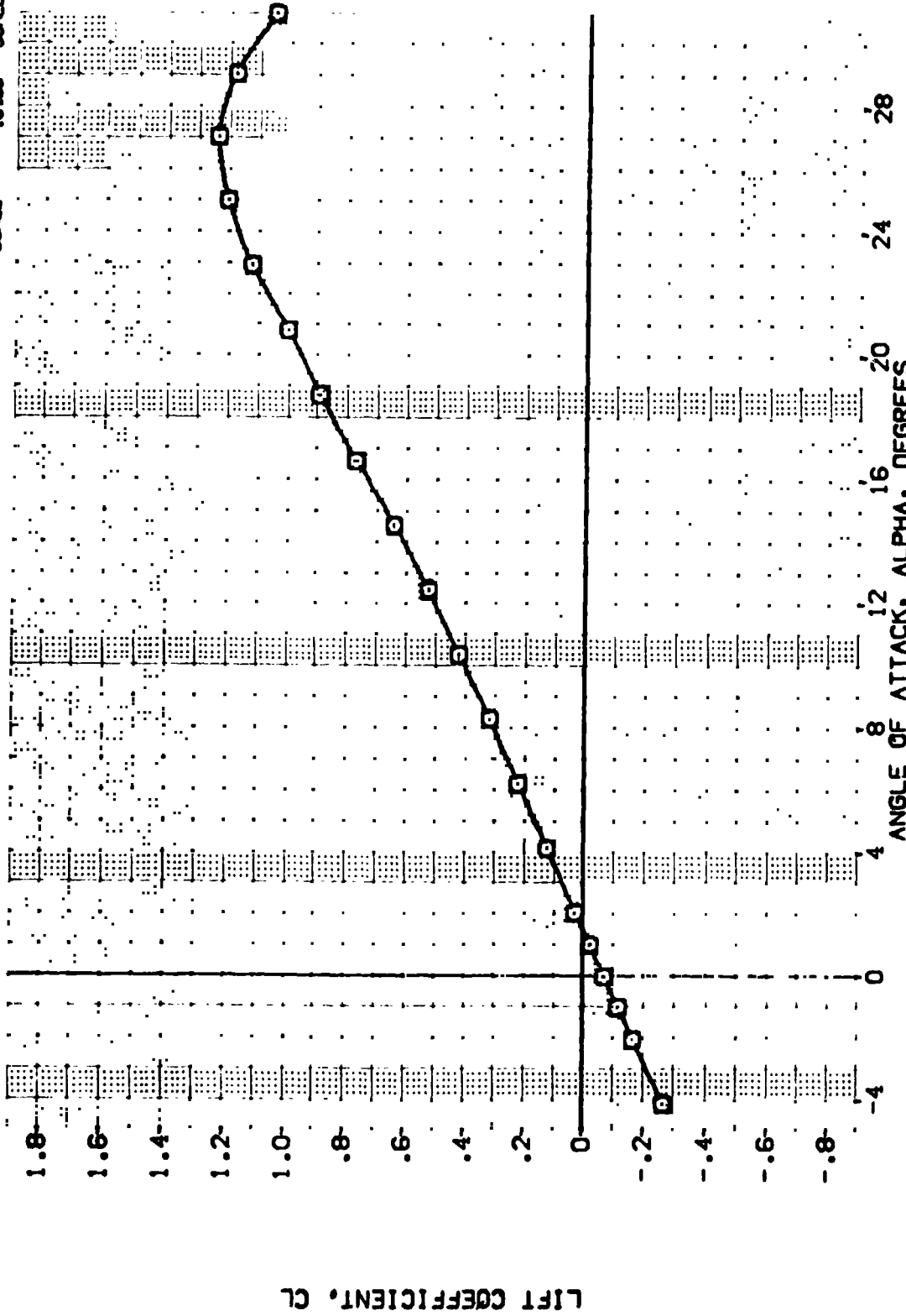


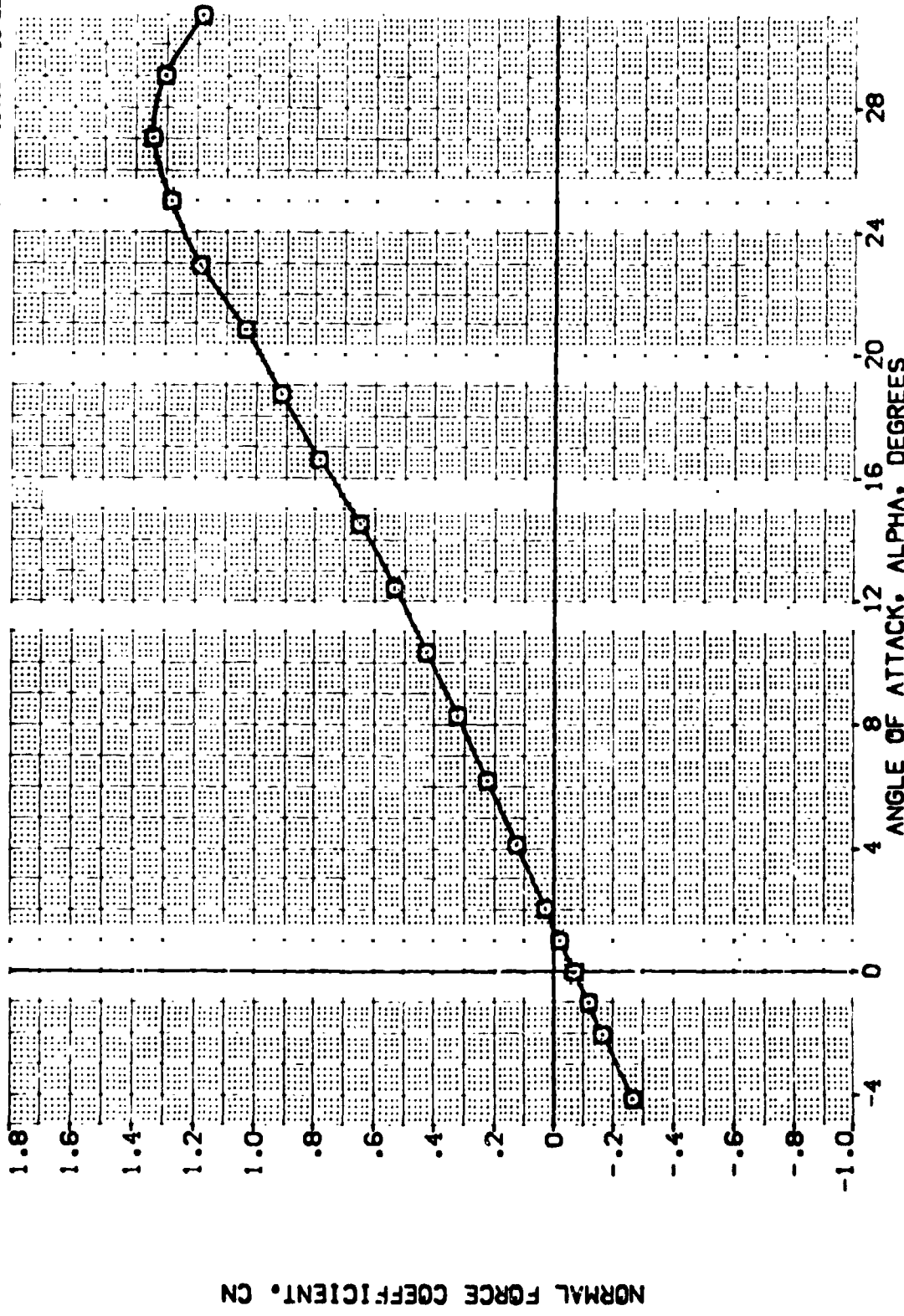
FIG 7 EFFECT OF VERTICAL TAIL GRIT, BDFLAP = -11.7 DEG.

(A)MACH = .20

DATA SET SYMB. CONFIGURATION DESCRIPTION
 {EP3007} 0 BA110 861C1F1251V124E40V18R17C1
 {EP5011} 0 BA110 861C1F1251V124E40V18R15C2

ELEVON AILRON RUDDER SPODBRK
 .000 .000 .000 25.000
 .000 .000 .000 25.000

REFERENCE INFORMATION
 4.4119 50.FT.
 19.2299 IN-ES
 37.9659 IN-ES
 43.5974 IN-ES
 .0000 IN-ES
 15.1875 IN-ES
 .0405 SCALE



NORMAL FORCE COEFFICIENT, CN

FIG 7 EFFECT OF VERTICAL TAIL GRIT, BDFLAP = -11.7 DEG.

(M)MACH = .20



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (EFS007) 0 01110 861C11F12*51V12NE40V18R17C01
 (EFS011) 0 01110 861C11F12*51V12NE40V18R15C02

ELEVON ALIGNM RUDDER SPDRBK
 .000 .000 25.000
 .000 .000 25.000

REFERENCE INFORMATION
 SREF 4.4118 90. FT
 LREF 19.2259 INCHES
 XREF 37.5356 INCHES
 YREF 43.5974 INCHES
 ZREF .0000 INCHES
 SCALE 15.1875 INCHES
 .0405 SCALE

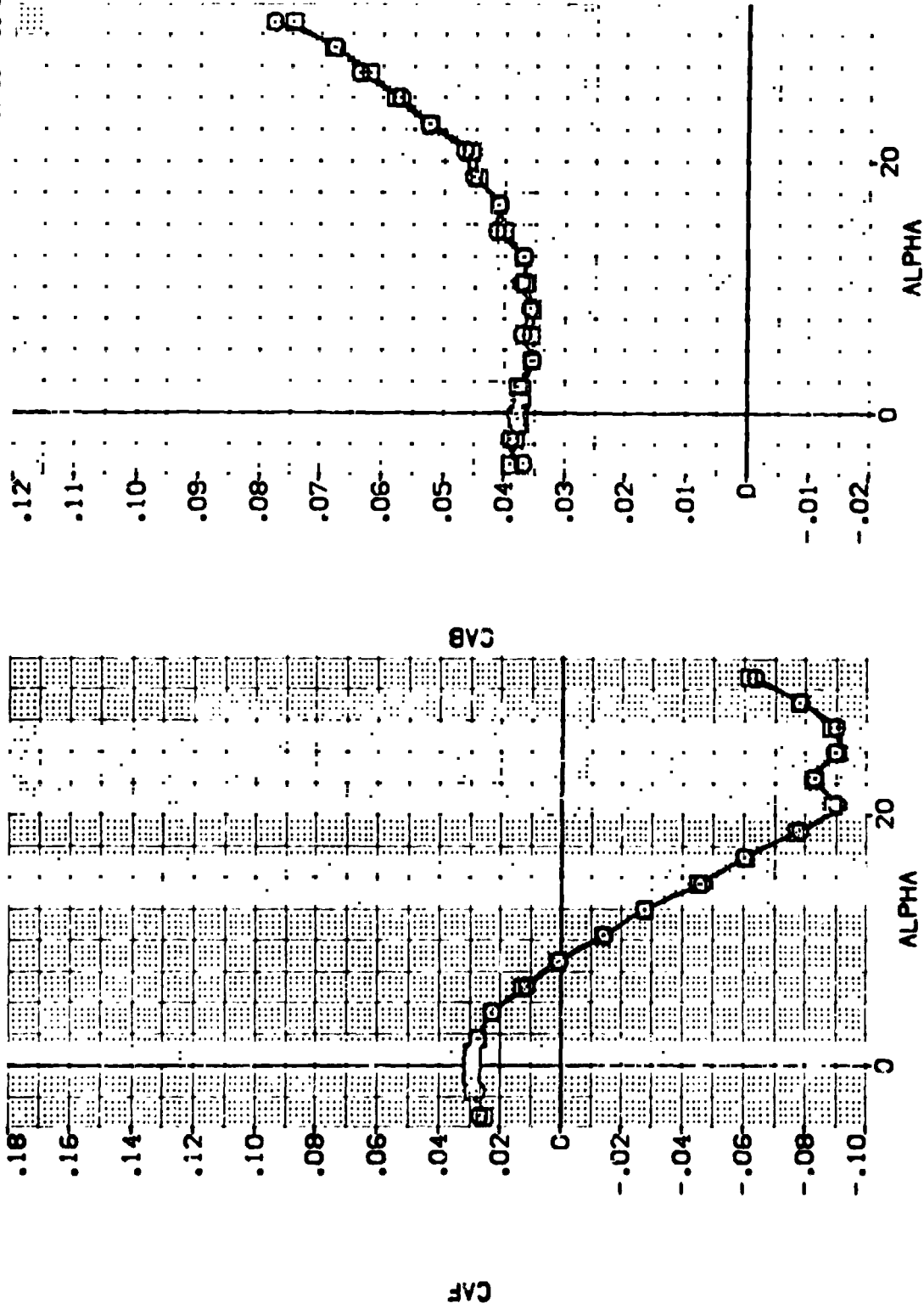


FIG 7 EFFECT OF VERTICAL TAIL GRIT. BOFLAP = -11.7 DEG.

CA/MACH = .20

DATA SET SYMB. CONFIGURATION DESCRIPTION
 (E3007) 8 BA110 881E11F12S1V124E40V19R17C01
 (E3011) 8 BA110 881E11F12S1V124E40V19R15C02

ELEVON AILRON RUDDER SPEEDK
 .000 .000 .000 25.000
 .000 .000 .000 25.000

REFERENCE INFORMATION
 SREF 4.4119 SO.FT.
 LREF 19.2299 IN.OES
 BREF 37.9359 IN.OES
 XMRP 43.5974 IN.OES
 YMRP .0000 IN.OES
 ZMRP 15.1875 IN.OES
 SCALE .0405 SCALE

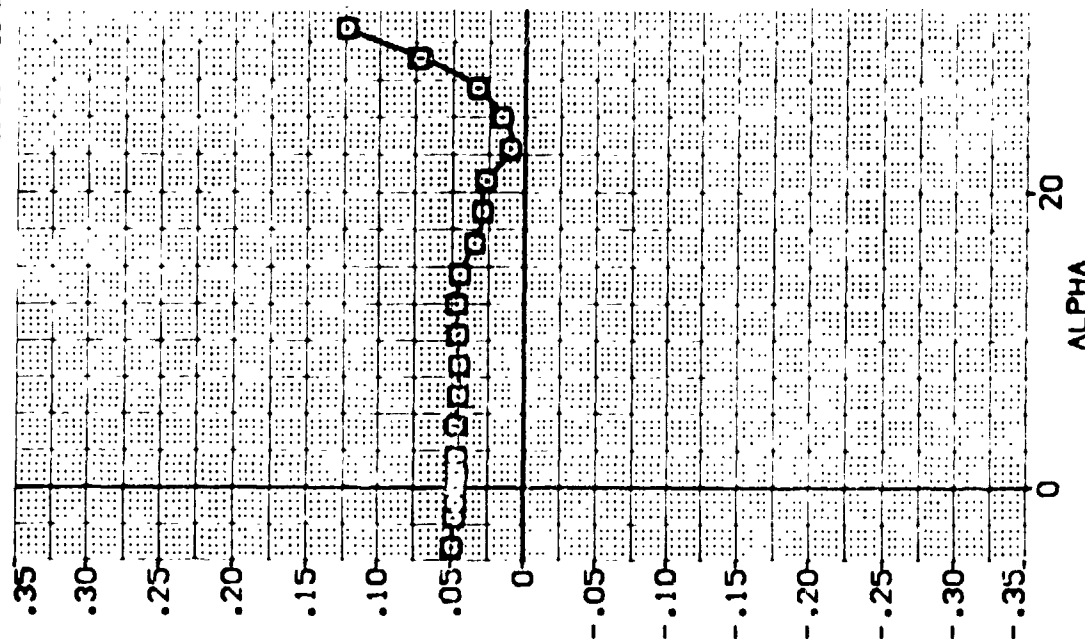
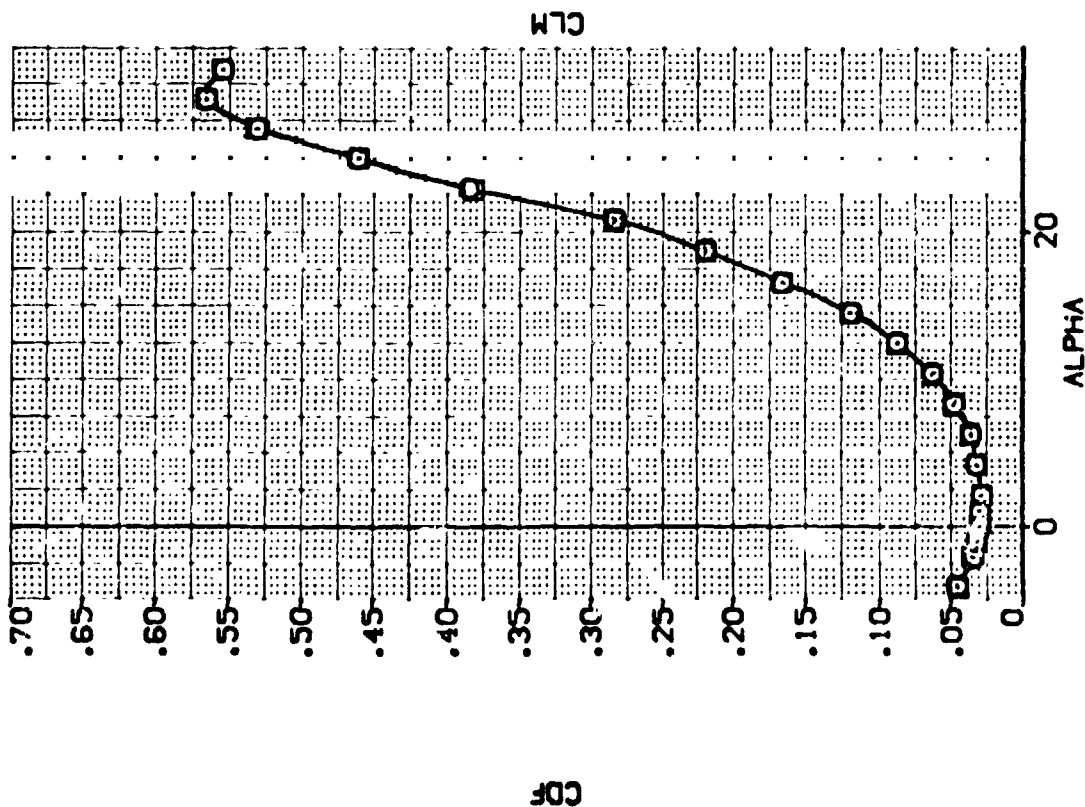


FIG 7 EFFECT OF VERTICAL TAIL GRIT, BOFLAP = -11.7 DEG.

CAJMACH = .20



DATA SET SYMBOL: COF: (QUALIFICATION DESCRIPTION)
 {EFS007} 0A110 BSIC11F12PS1V12NE40V19R17C01
 {EFS011} 0A110 BSIC11F12PS1V12NE40V19R15C08

ELEVON .000 .000 .000
 ATLRON .000 .000 .000
 RUDDER .000 .000 .000
 SPOBRK 25.000 25.000 25.000

REFERENCE INFORMATION
 SREF 4.4119 50. FT.
 LREF 19.2288 1 INCHES
 BREF 37.5559 1 INCHES
 XTRP 43.5974 1 INCHES
 YTRP .0000 1 INCHES
 ZTRP 15.1875 1 INCHES
 SCALE .0405 SCALE

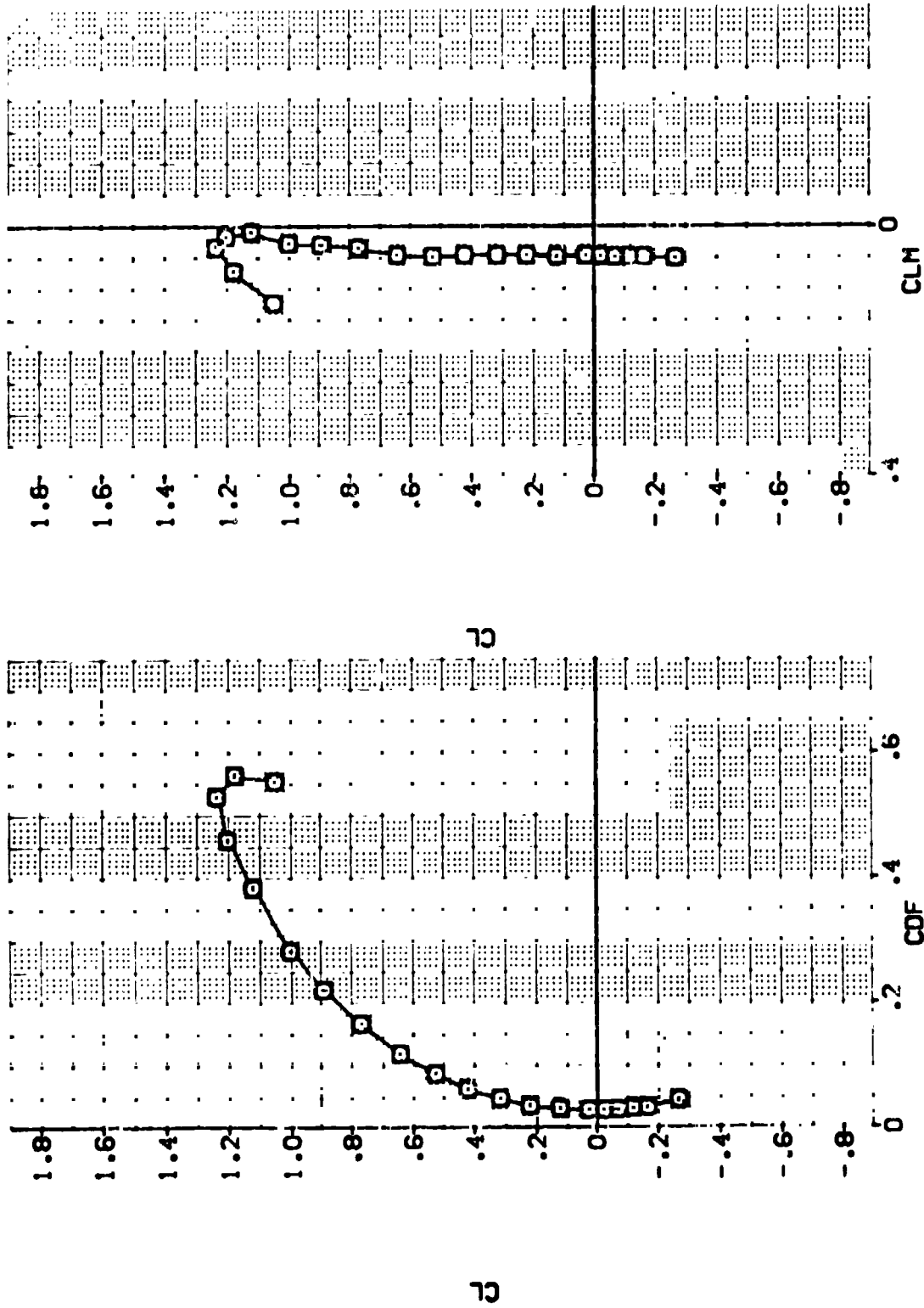


FIG 7 EFFECT OF VERTICAL TAIL GRIT. BOFLAP = -11.7 DEG.

(A)MACH = .20

DATA SET SYMBOL: (EF5007) (EF5011) (EF5011)
 CONFIGURATION DESCRIPTION: SA110 (CIC) (F12) (S1V) (24F) (40V) (SR) (7X) (1)
 SA110 (CIC) (F12) (S1V) (24F) (40V) (SR) (7X) (1)

ELEVON .000 .000 .000
 AILERON .000 .000 .000
 RUDDER .000 .000 .000
 SPOBRK 25.000 25.000 25.000
 REFERENCE INFORMATION
 SREF 4.4119 SQ.FT.
 LREF 19.2299 INCHES
 BREF 37.9359 INCHES
 XMRP 43.5974 INCHES
 YMRP .0000 INCHES
 ZMRP 15.1875 INCHES
 SCALE .0405

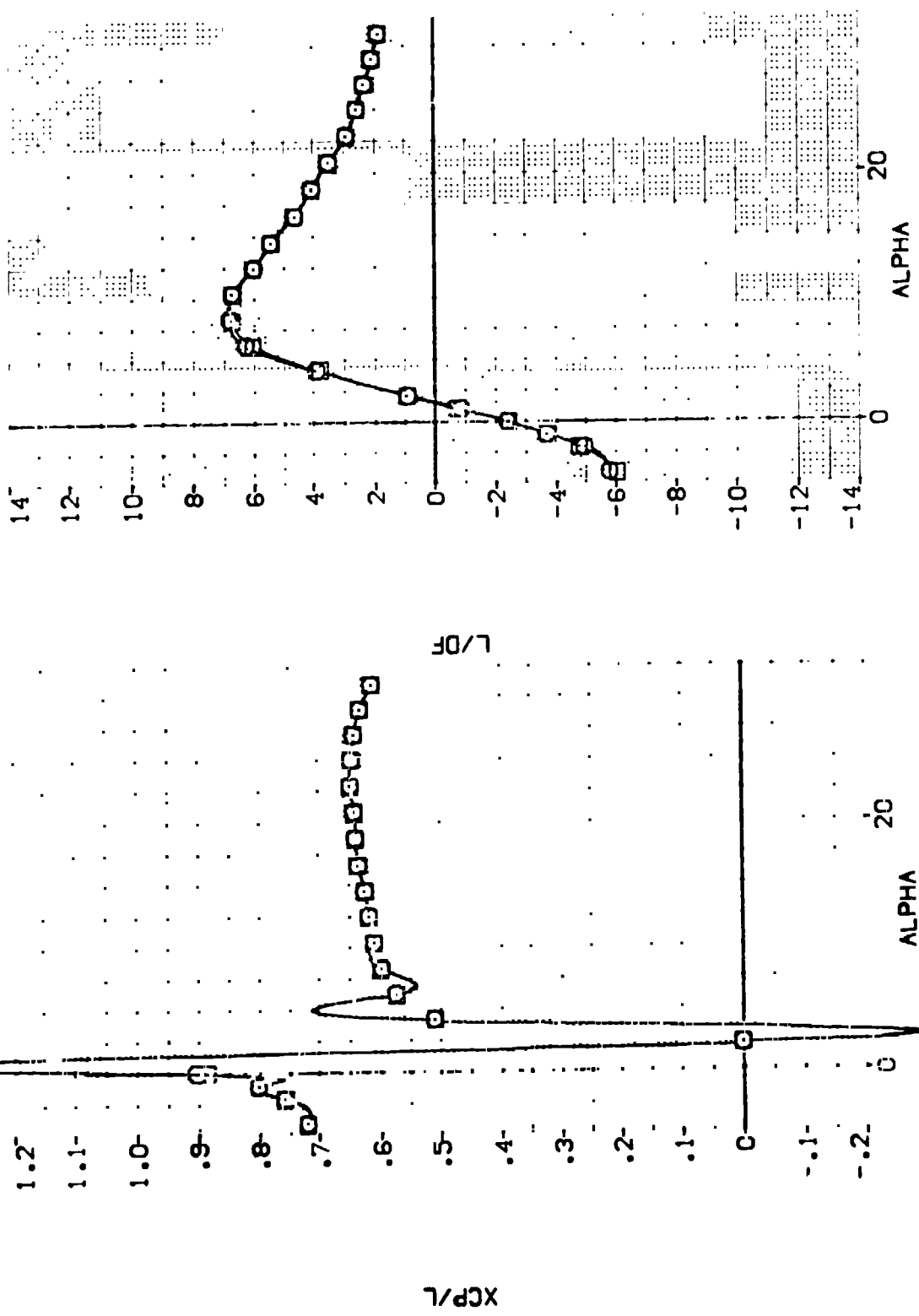


FIG 7 EFFECT OF VERTICAL TAIL GRIT, BDFLAP = -11.7 DEG.

(A)MACH = .20

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDDER	SPDRBK	AILERON	REFERENCE INFORMATION
{R-5008}	DA110 B61C1F12S1V124E40V19R17G1	.000	.000	25.000	.000	4.4119 50. FT.
{R-5013}	DA110 B61C1F12S1V124E40V19R15G1	.000	.000	25.000	.000	19.2259 INO-ES
{R-5009}	DA110 B61C1F12S1V124E40V19R15G1	5.000	.000	25.000	.000	37.9359 INO-ES
{R-5014}	DA110 B61C1F12S1V124E40V19R15G1	10.000	.000	25.000	.000	43.5874 INO-ES
{R-5010}	DA110 B61C1F12S1V124E40V19R17G1	.000	.000	25.000	.000	.0000 INO-ES
{R-5015}	DA110 B61C1F12S1V124E40V19R15G1	.000	.000	25.000	.000	15.1875 INO-ES
						.0465 SCALE

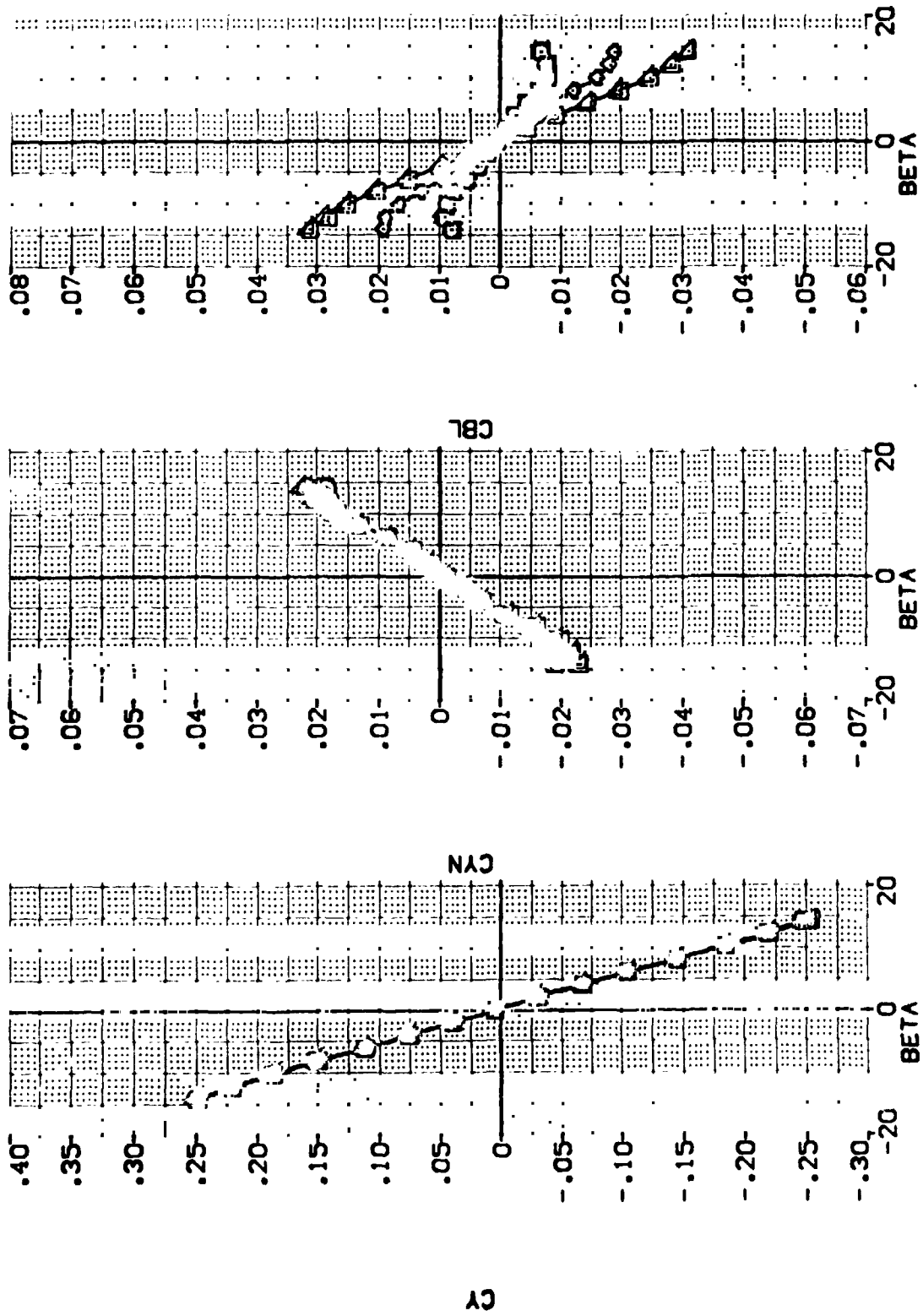


FIG 8 EFFECT OF VERTICAL TAIL GRIT, ALPHA = 0, 5, AND 10 DEG.

(AJMACH = .20

(FF5008)

0A110 B61C11F12M51W124E40V19R17X31

REF. INFO

SREF	4.4119	SO. FT.
LREF	19.2295	INCHES
BREF	37.5359	INCHES
XPRP	43.5974	INCHES
YPRP	.0000	INCHES
ZPRP	15.1875	INCHES
SCALE	.0405	SCALE

PARAMETRIC VALUES

.200	90FLAP	-12.000
.000	AILERON	.000
.000	SPDRK	25.000

MACH
ELEVON
RUDDER

V-GRIT
.000
.008

SIDE FORCE COEFFICIENT DERIVATIVE WITH BETA, CYBETA, PER DEGREE

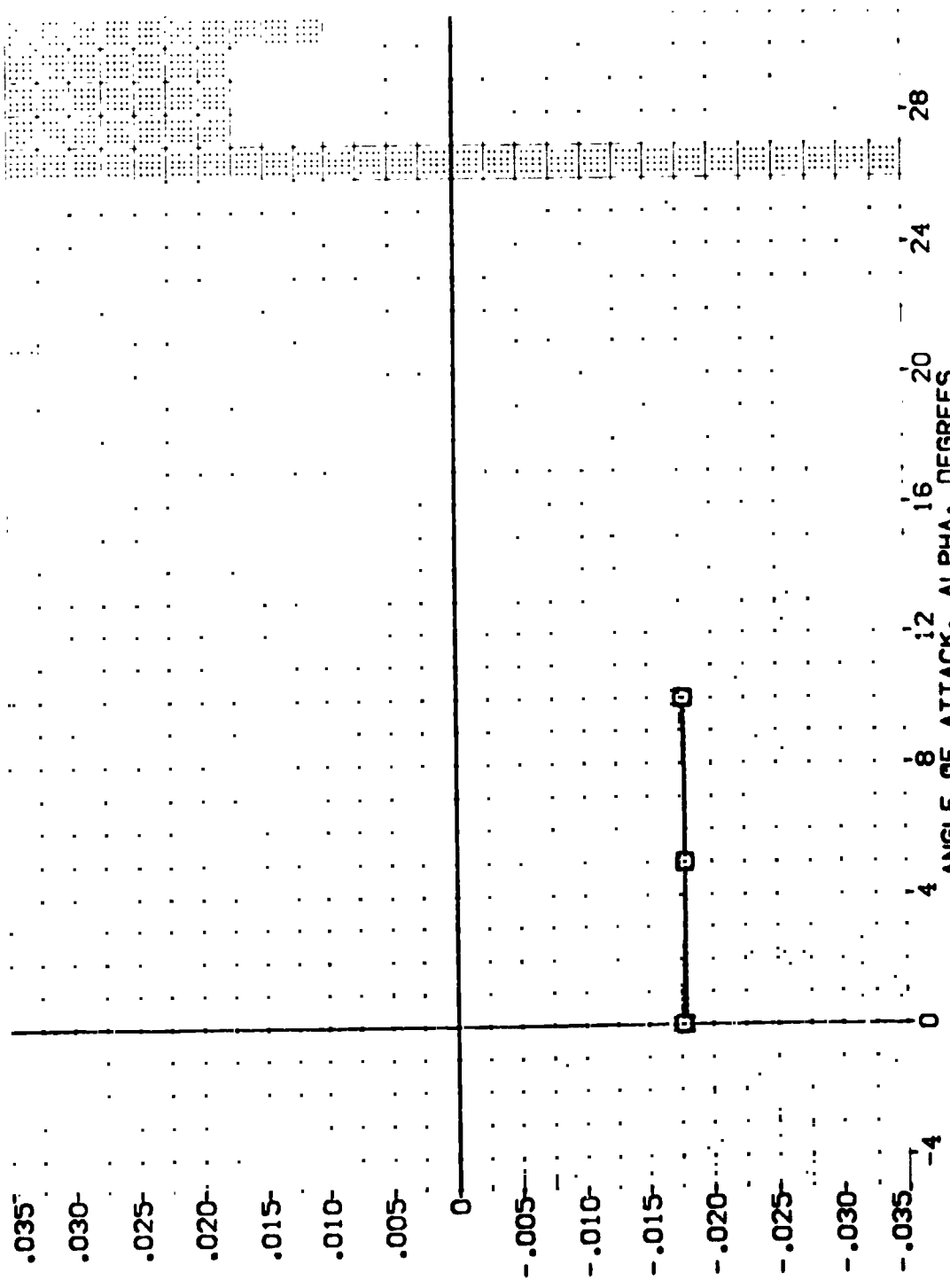


FIG 8 EFFECT OF VERTICAL TAIL GRIT, ALPHA = 0, 5, AND 10 DEG.



(FF5008)

0A110 861C11F12M51W124E40V19R17X31

REFERENCE INFORMATION
 SQ.FT. 4.4119
 INCHES 19.2299
 INCHES 37.9359
 INCHES 43.5974
 INCHES .0000
 INCHES 15.1875
 INCHES .0405
 SREF
 LREF
 BREF
 XTRP
 YTRP
 ZTRP
 SCALE

PARAMETRIC VALUES
 .200 BOFLAP -12.000
 .000 AILRON .000
 .000 SPOBRK 25.000

MACH
 ELEVON
 RUDDER

V-GRIT
 .000
 .008

SYMBOL
 ○
 □

YAWING MOMENT COEFFICIENT DERIVATIVE WITH BETA, CYNBET, PER DEGREE

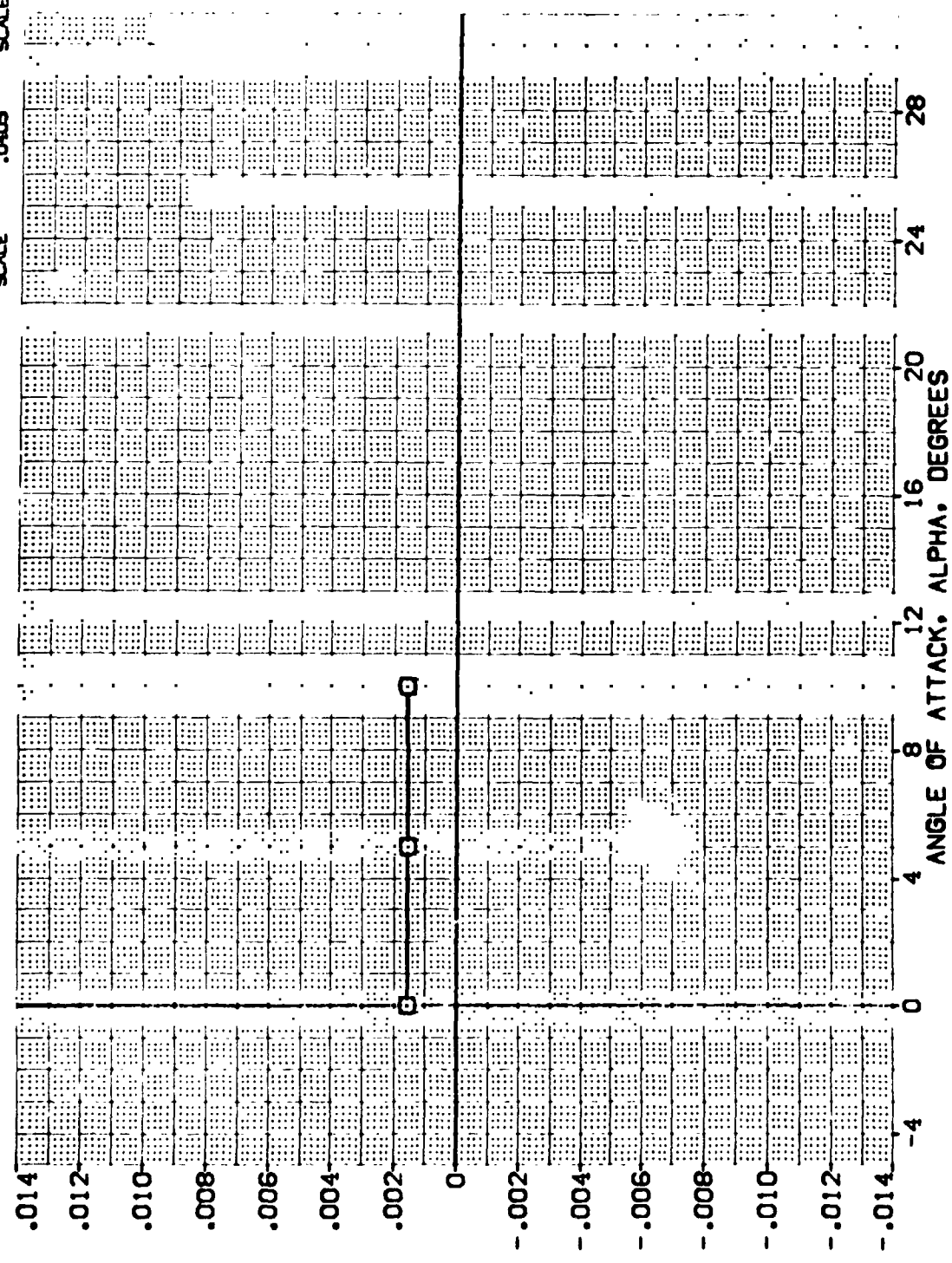


FIG 8 EFFECT OF VERTICAL TAIL GRIT, ALPHA = 0, 5, AND 10 DEG.

0A110 B61C11F12M51W124E40V19R17X31

(FF5008)

REFERENCE INFORMATION
 SREF 4.4119 SO.FT.
 LREF 19.2239 INCHES
 BRPF 27.9659 INCHES
 YMRP 43.5974 INCHES
 ZMRP .0000 INCHES
 SCALE 15.1875 INCHES
 SCALE .0405

PARAMETRIC VALUES
 MACH .200 BOFLAP -12.000
 ELEVON .000 AILRON .000
 RUDDER .000 SPOBRK 25.000

SYMBOL V-GRIT
 □ .000
 □ .008

ROLLING MOMENT COEFFICIENT DERIVATIVE WITH BETA, CBLBET, PER DEGREE

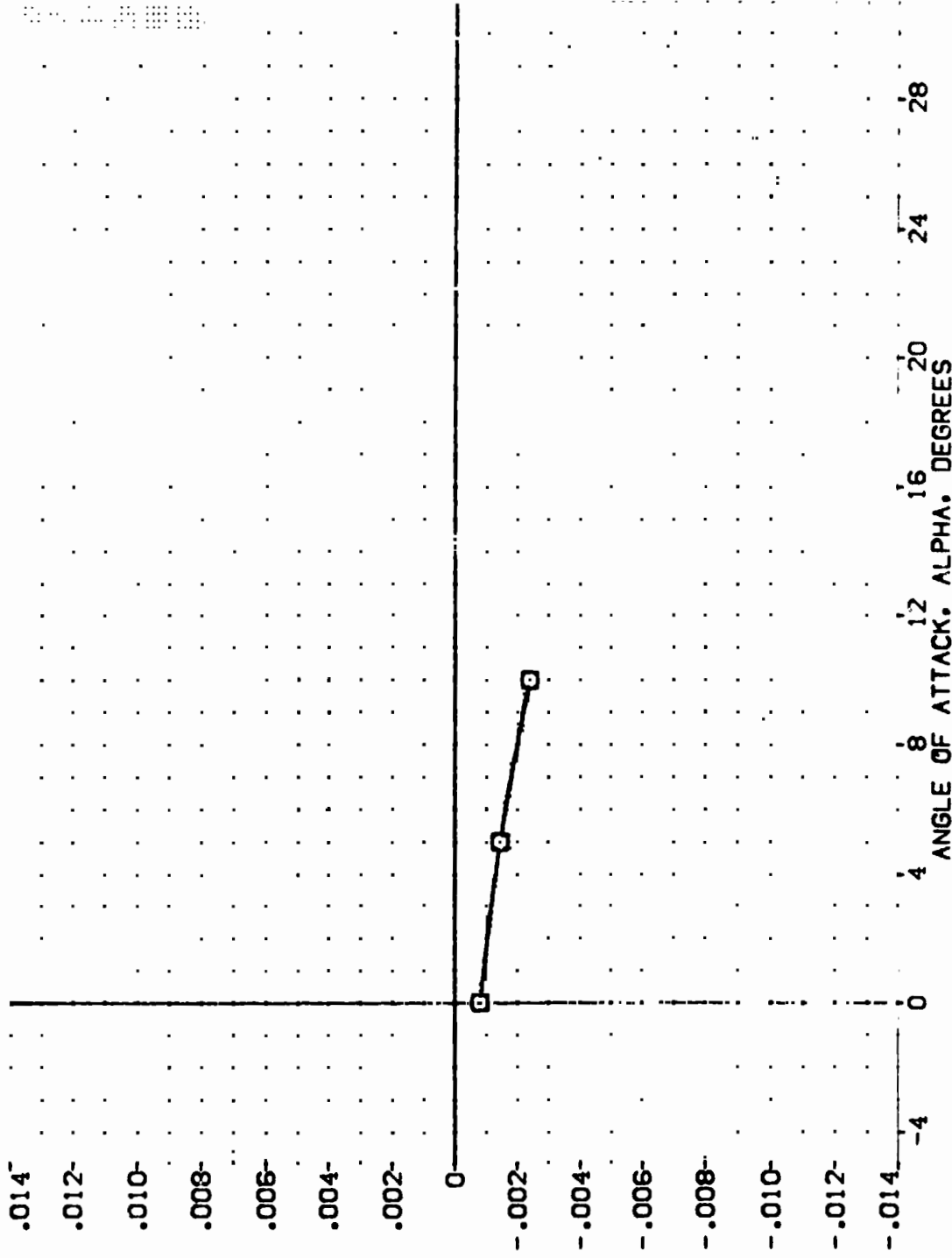


FIG 8 EFFECT OF VERTICAL TAIL GRIT, ALPHA = 0, 5, AND 10 DEG.



DATA SET SYMBO. CONFIGURATION DESCRIPTION
 (EF5000) □ 251V124E40V1SR15X29
 (EF5011) □ 251V124E40V1SR15X29
 (EF5018) □ 251V124E40V1SR15X29
 (EF5019) □ 251V124E40V1SR15X29

ELEVON AIRLON FLUDER SPDRK REFERENCE INFORMATION
 -20.000 .000 .000 SREF 4.4119 50.FT.
 5.000 .000 .000 LREF 19.2299 INCHES
 15.000 .000 .000 XMRP 37.9359 INCHES
 YMRP .0000 INCHES
 ZMRP 15.1875 INCHES
 SCALE .0405 SCALE

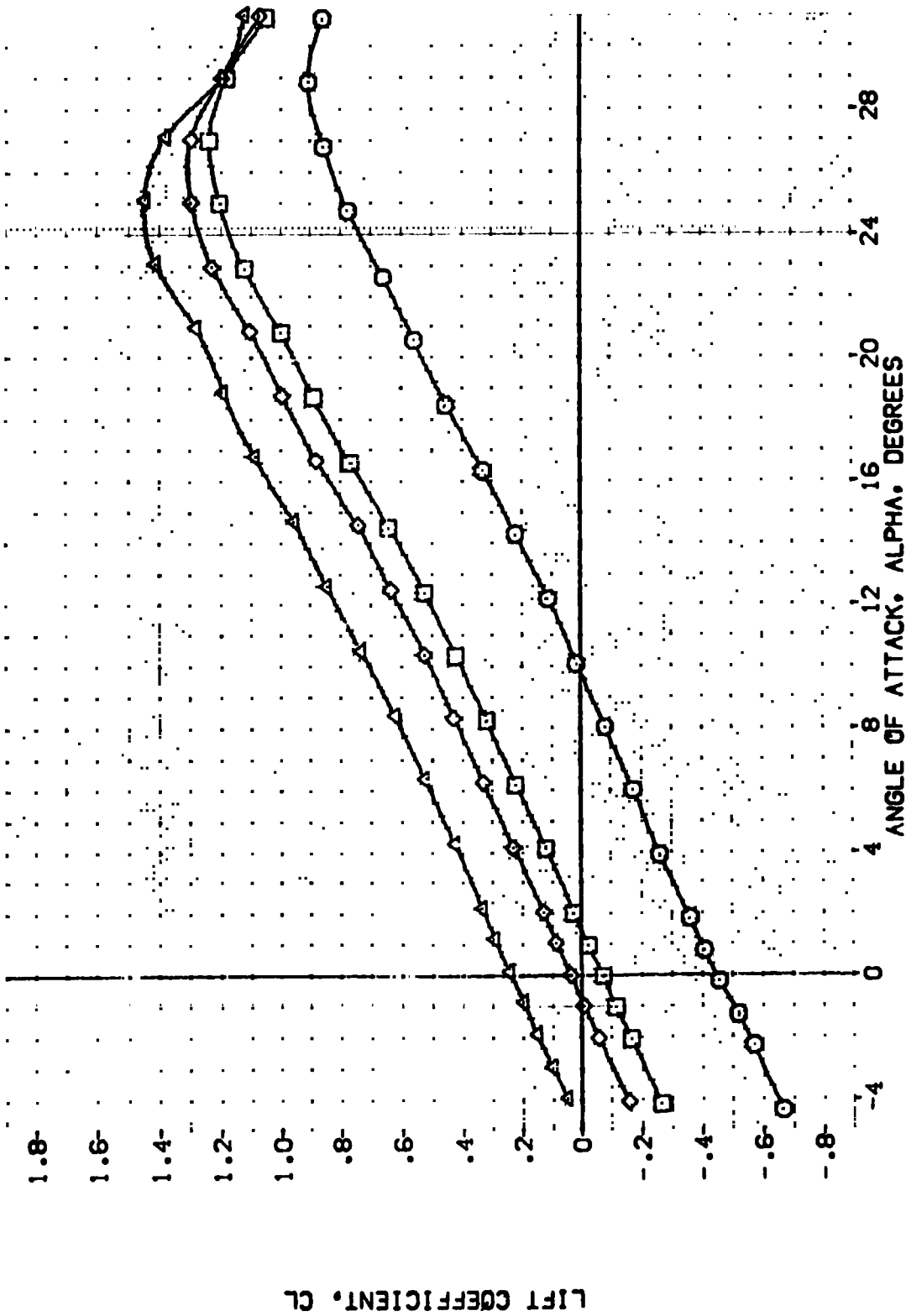


FIG 9 BASELINE ELEVON EFFECTIVENESS, BDFLAP = -11.7 DEG.

CAJMACH = .20

DATA SET SYMBO. CONFIGURATION DESCRIPTION
 (EF5020) OAI10 BSIC1IF1251V124E40V1SR15C3
 (EF5011) OAI10 BSIC1IF1251V124E40V1SR15C3
 (EF5018) OAI10 BSIC1IF1251V124E40V1SR15C3
 (EF5019) OAI10 BSIC1IF1251V124E40V1SR15C3

ELEVON AILERON RUDDER SPOILER
 -20.000 .000 .000 25.000
 5.000 .000 .000 23.000
 15.000 .000 .000 25.000

REFERENCE INFORMATION
 SREF 4.4119 SO.FT.
 LREF 19.2259 IN.-ES
 BREF 37.9559 IN.-ES
 XMRP 43.5574 IN.-ES
 YMRP .0000 IN.-ES
 ZMRP 15.1875 IN.-ES
 SCALE .0405 SCALE

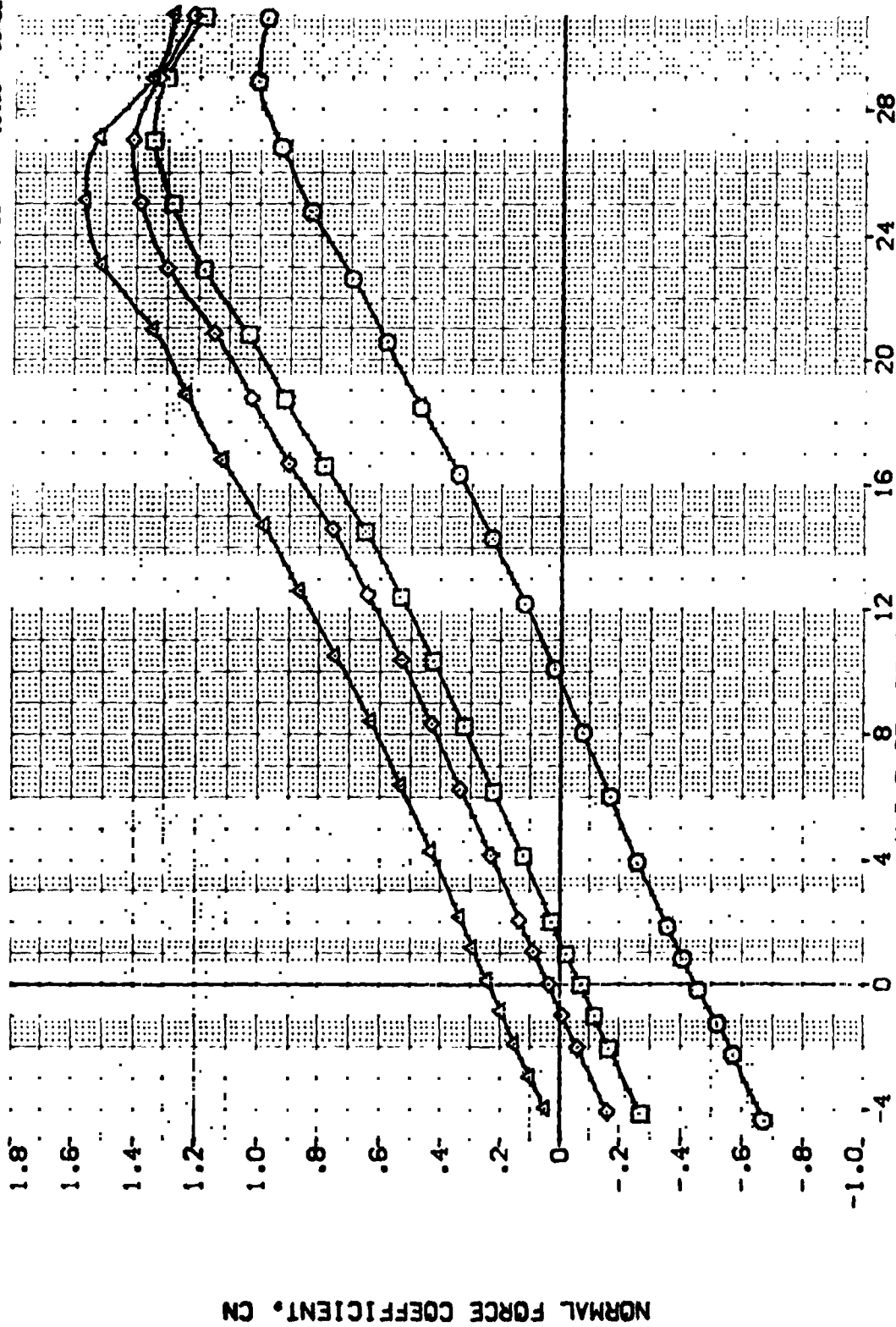


FIG 9 BASELINE ELEVON EFFECTIVENESS, BOFLAP = -11.7 DEG.

(AJMACH = .20

DATA SET SYMBO. CONFIGURATION DESCRIPTION:
 (EF5020) □ BS1C11F12S1V124E40V1S1DC2S
 (EF5011) △ BS1C11F12S1V124E40V1SR15C2S
 (EF5018) ○ BS1C11F12S1V124E40V1SR15C2S
 (EF5019) × BS1C11F12S1V124E40V1SR15C2S

ELEVON ATTUERN FLUDER SPDSBK REFERENCE INFORMATION
 -20.000 .000 .000 4.4119 90.FT.
 5.000 .000 .000 19.2288 IN-OES
 15.000 .000 .000 37.5529 IN-OES
 .000 .000 .000 43.5574 IN-OES
 .000 .000 .000 .0000 IN-OES
 .000 .000 .000 15.1875 IN-OES
 .000 .000 .000 .0405 SCALE

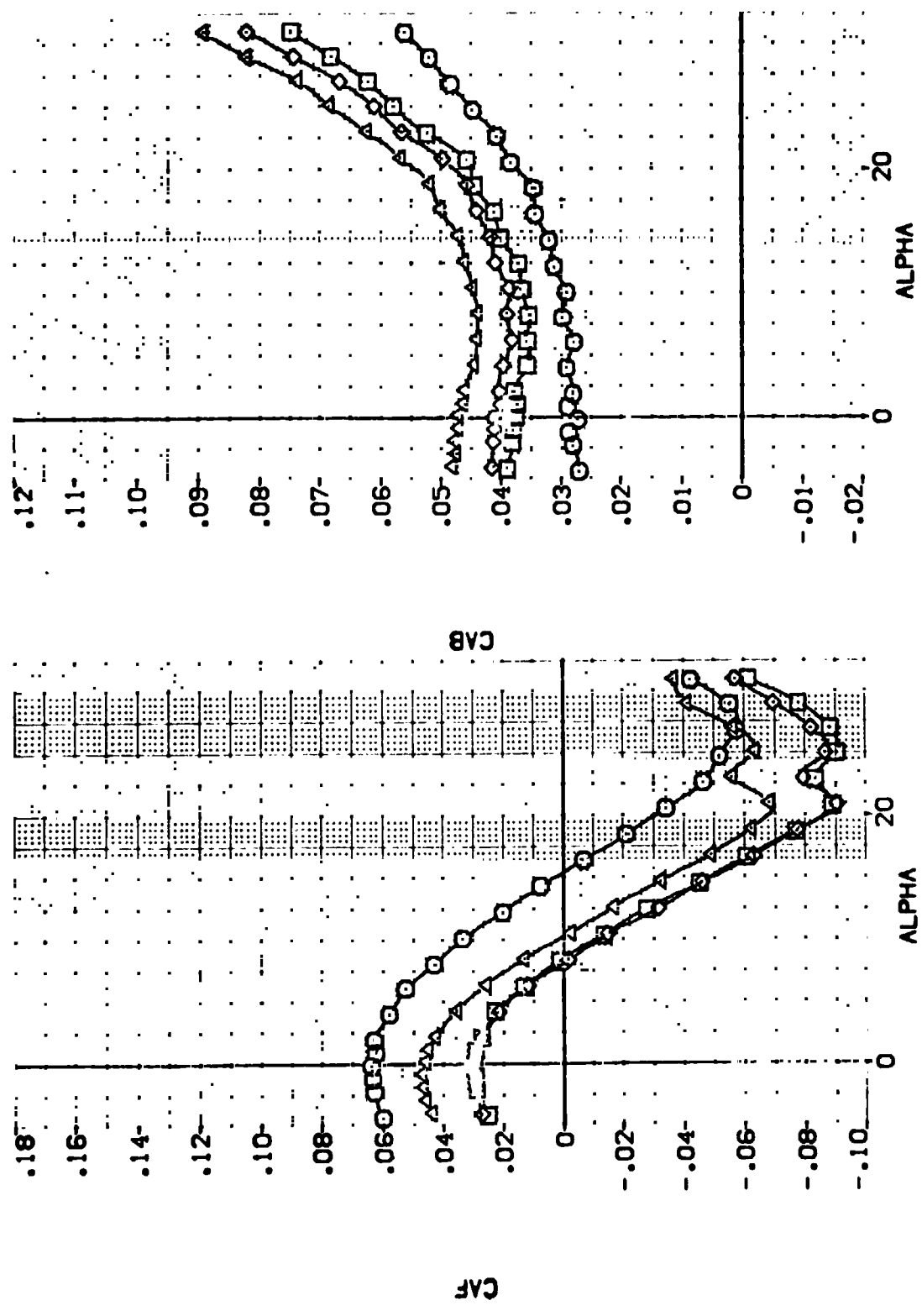


FIG 3 BASELINE ELEVON EFFECTIVENESS, BOFLAP = -11.7 DEG.

(A) MACH = .20

DATA SET SYMB. CONFIGURATION DESCRIPTION
 (E5020) G110 861C1F12S1V124E40V18R15C28
 (E5011) G110 861C1F12S1V124E40V18R15C28
 (E5018) G110 861C1F12S1V124E40V18R15C28
 (E5019) G110 861C1F12S1V124E40V18R15C28

ELEVON ALLRON RUDDER SPOBRK REFERENCE INFORMATION
 -20.000 .000 .000 25.000 4.4119 50.FT.
 .000 .000 .000 25.000 19.2259 INCH-ES
 5.000 .000 .000 25.000 37.5359 INCH-ES
 15.000 .000 .000 25.000 43.5974 INCH-ES
 .000 .000 .000 25.000 15.1875 INCH-ES
 SCALE .0405 SCALE

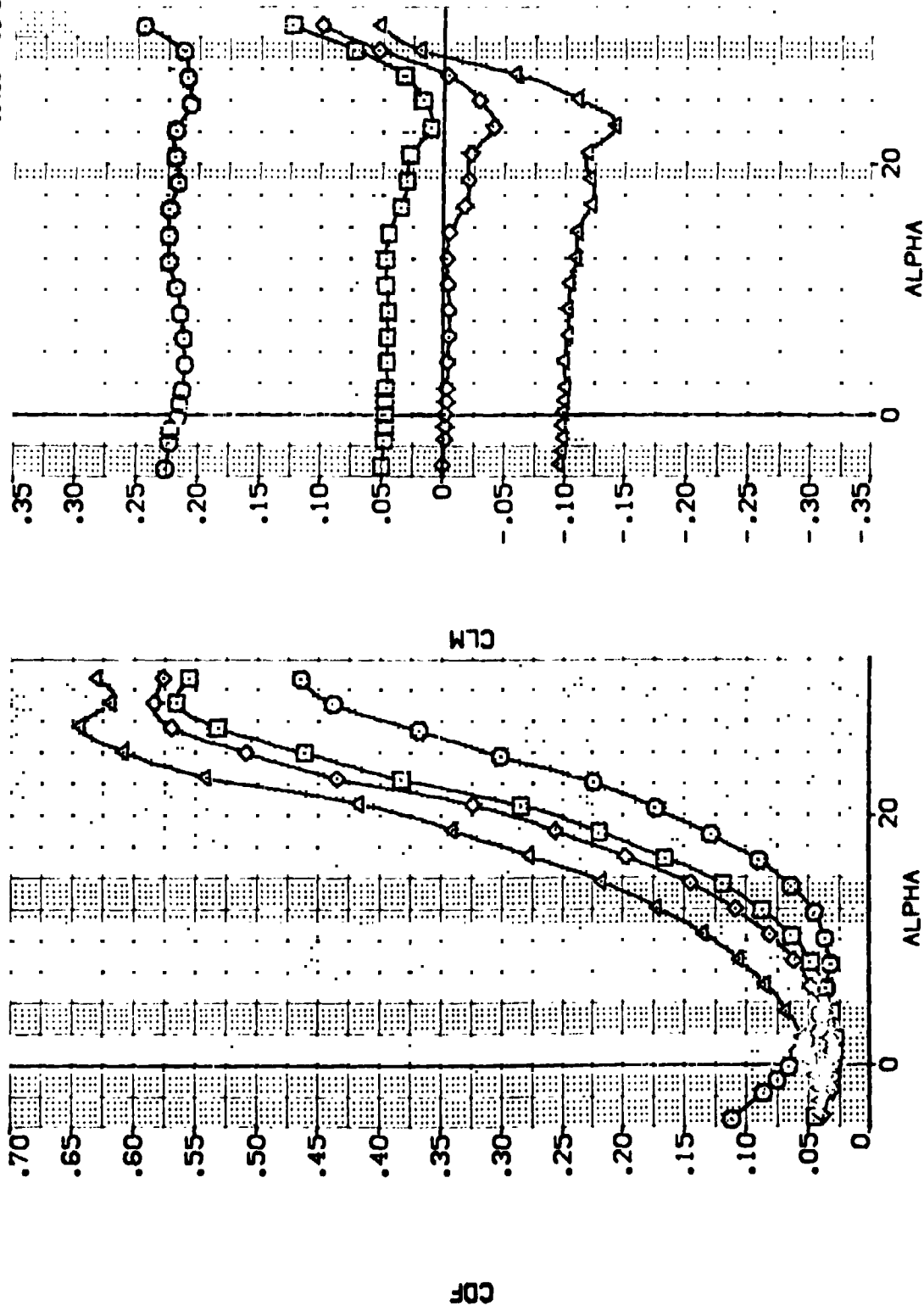


FIG 9 BASELINE ELEVON EFFECTIVENESS, BOFLAP = -11.7 DEG.

(A)MACH = .20



DATA SET SYMBO. CONFIGURATION DESCRIPTION
 (EFS020) □ BASIC1F12F5I124E40V1SR15X29
 (EFS011) ○ BASIC1F12F5I124E40V1SR15X29
 (EFS018) △ BASIC1F12F5I124E40V1SR15X29
 (EFS019) ◇ BASIC1F12F5I124E40V1SR15X29

ELEVON AILRON RUDDER SPDRBK REFERENCE INFORMATION
 -20.000 .000 .000 25.000 SREF 4.4119 SQ.FT.
 .000 .000 .000 25.000 LREF 19.2259 INO-ES
 15.000 .000 .000 25.000 YPRP 37.9359 INO-ES
 .000 .000 .000 25.000 ZPRP 43.5974 INO-ES
 .000 .000 .000 .000 YPRP 19.1875 INO-ES
 .000 .000 .000 .000 ZPRP 15.0405 INO-ES
 .000 .000 .000 .000 SCALE

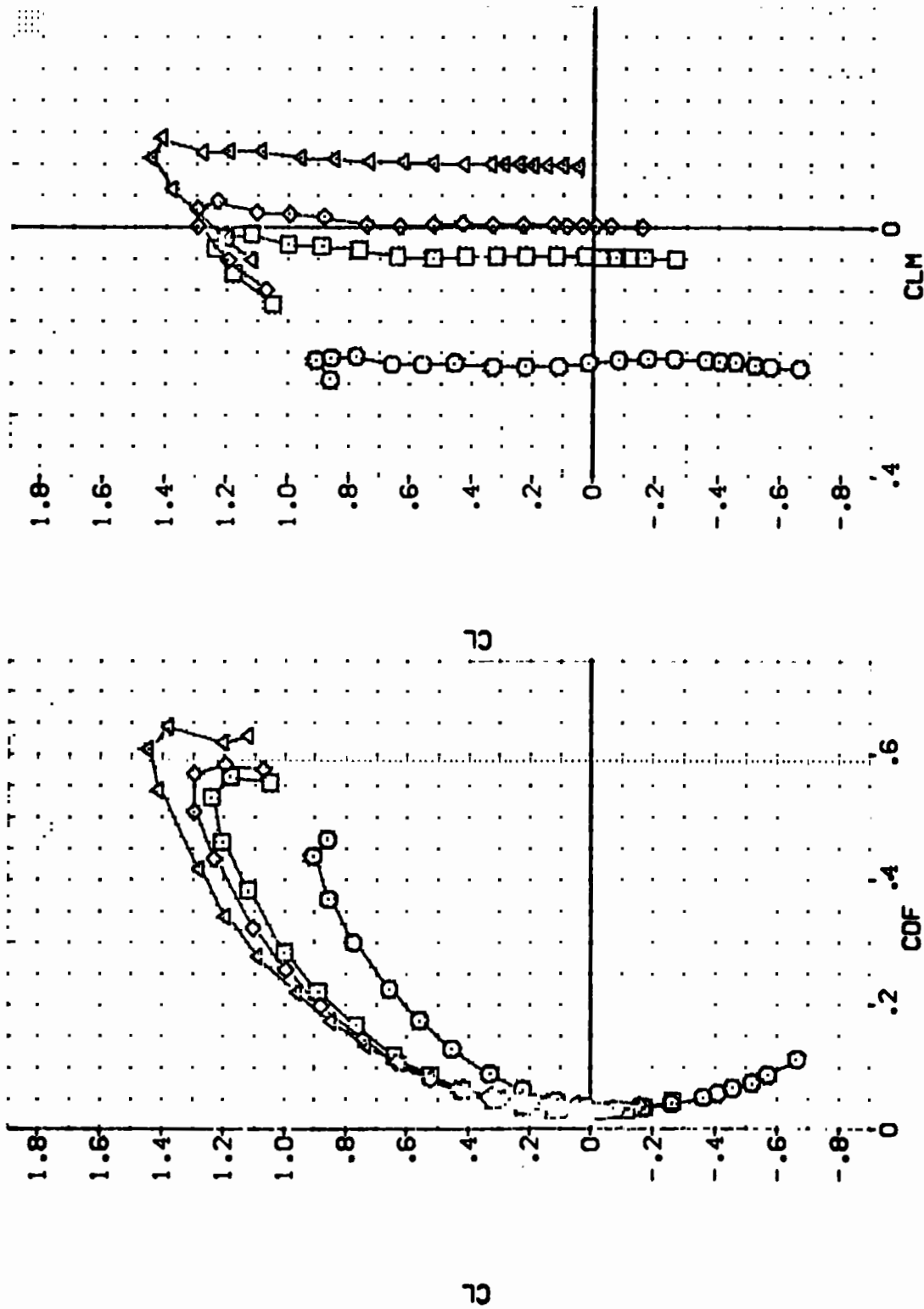


FIG 9 BASELINE ELEVON EFFECTIVENESS. BDFLAP = -11.7 DEG.

(A)MACH = .20

DATA SET SYMBOL A CONFURATION DESCRIPTION
 {EF3020} 0A110 {F125}V124E40V18R15X2S
 {EF3011} 0A110 {F125}V124E40V18R15X2S
 {EF3018} 0A110 {F125}V124E40V18R15X2S
 {EF3019} 0A110 {F125}V124E40V18R15X2S

ELEVON
 -20.000
 .000
 .000
 5.000
 15.000

AILERON
 .000
 .000
 .000
 .000
 .000

RUDDER
 .000
 .000
 .000
 .000
 .000

SPOBRK
 25.000
 22.000
 23.000
 23.000
 23.000

REFERENCE INFORMATION
 SREF 4.4119 50.FT.
 LREF 19.2298 INCHES
 BRPF 37.9359 INCHES
 XPRP 43.5974 INCHES
 YPRP .0000 INCHES
 ZPRP 15.1673 INCHES
 SCALE .0405 SCALE

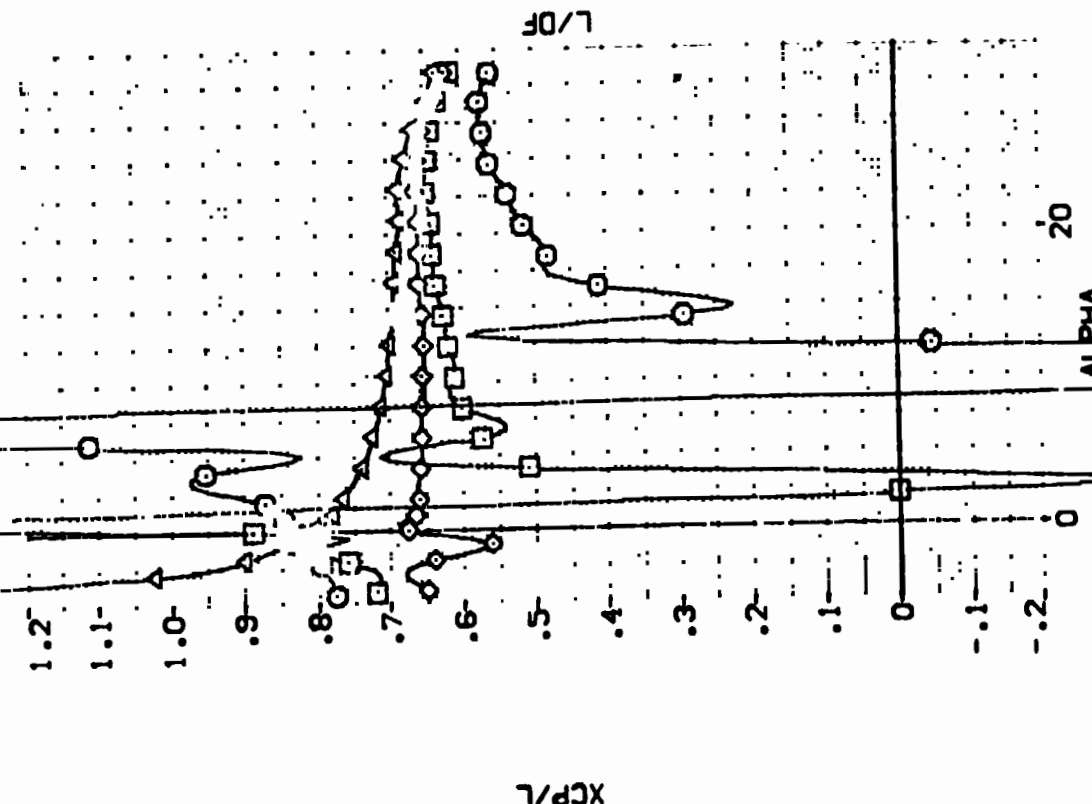
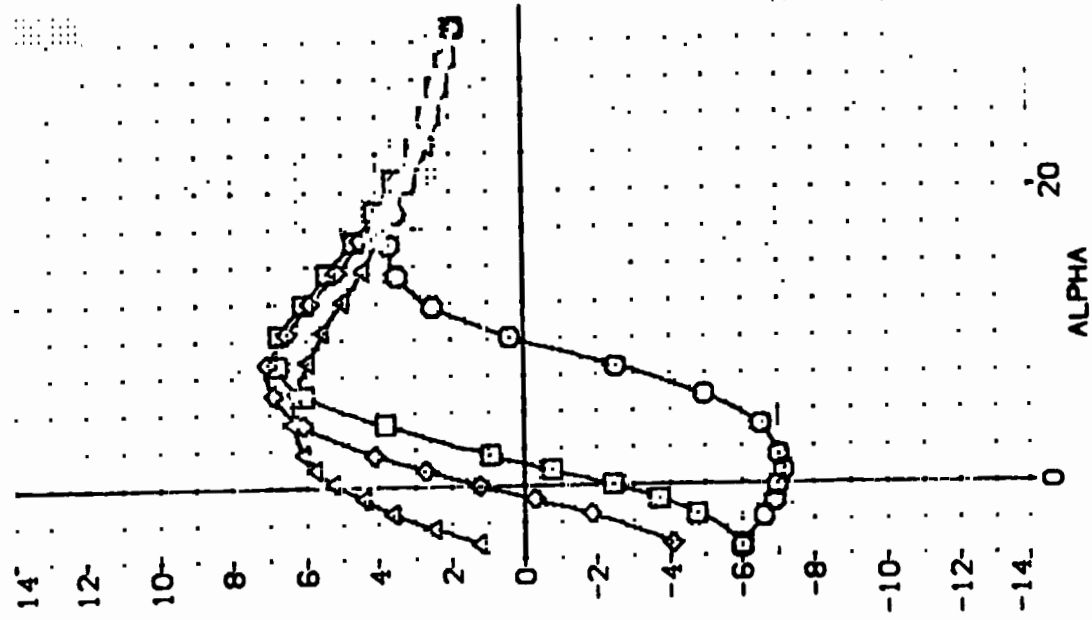


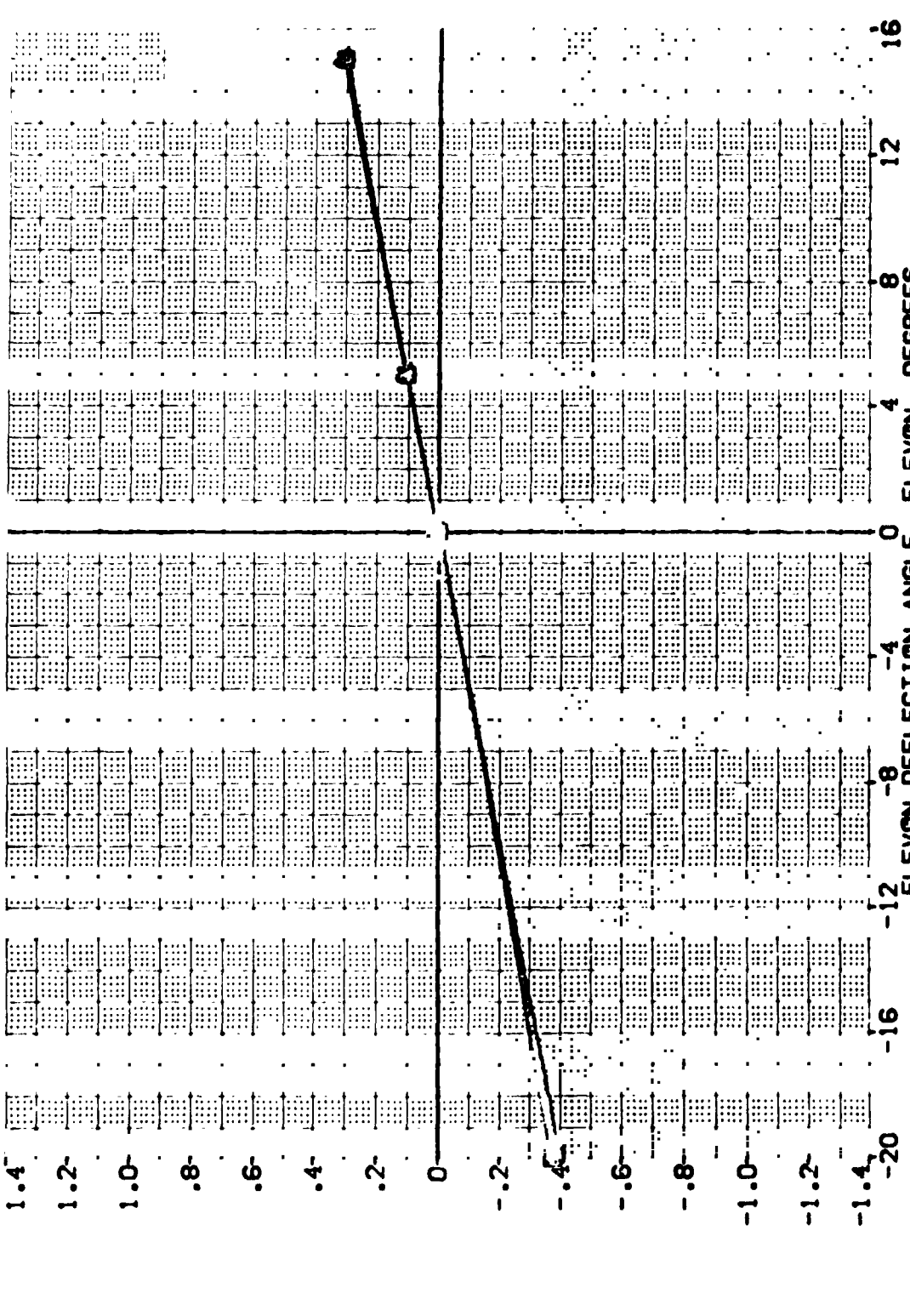
FIG 9 BASELINE ELEVON EFFECTIVENESS, BOFLAP = -11.7 DEG.

CA3MACH = .20



0A110 861C11F12M51W124E40V19R15X29 (KF5020)

SYMBL	ALPHA	MACH	BOFLAP	RUDDER	PARAMETRIC VALUES	DATA SOURCE	ELEVON	DATASET	ELEVON	SREF	REFERENCE INFORMATION
○ □ ◇ △	-1.000 .000 4.000 8.000 12.000				.000 AILRON -12.000 SPDRK .000 BETA	ELEVON -20.000 5.000	KF5011 KF5019	15.000	.000 15.000	LREF XTRP ZTRP SCALE	50.FT. IN.OES IN.OES IN.OES IN.OES IN.OES SCALE
											4.4119 19.2259 37.5359 43.5874 .0000 19.1875 .0405



INCREMENTAL FOREBODY LIFT COEFFICIENT, DCLF

FIG 9 BASELINE ELEVON EFFECTIVENESS, BOFLAP = -11.7 DEG.

(KF5020)

0A110 B61C11F12M51W124E40V19R15X29

SYMBOL		ALPHA		MACH		PARAMETRIC VALUES		DATA SOURCE		REFERENCE INFORMATION	
□	◇	16.000	20.000	24.000	28.000	.200	.000	.000	.000	SO.FT.	INDEES
□	◇	16.000	20.000	24.000	28.000	.200	.000	.000	.000	4.4119	INDEES
◇	◇	20.000	24.000	-12.000	.000	ATLRON	25.000	20.000	0.000	19.2799	INDEES
◇	◇	24.000	28.000	.000	.000	SPOBRK	.000	5.000	15.000	37.9359	INDEES
◇	◇	28.000		.000	.000	BETA				43.5874	INDEES
										0.000	INDEES
										15.1875	INDEES
										.0465	SCALE

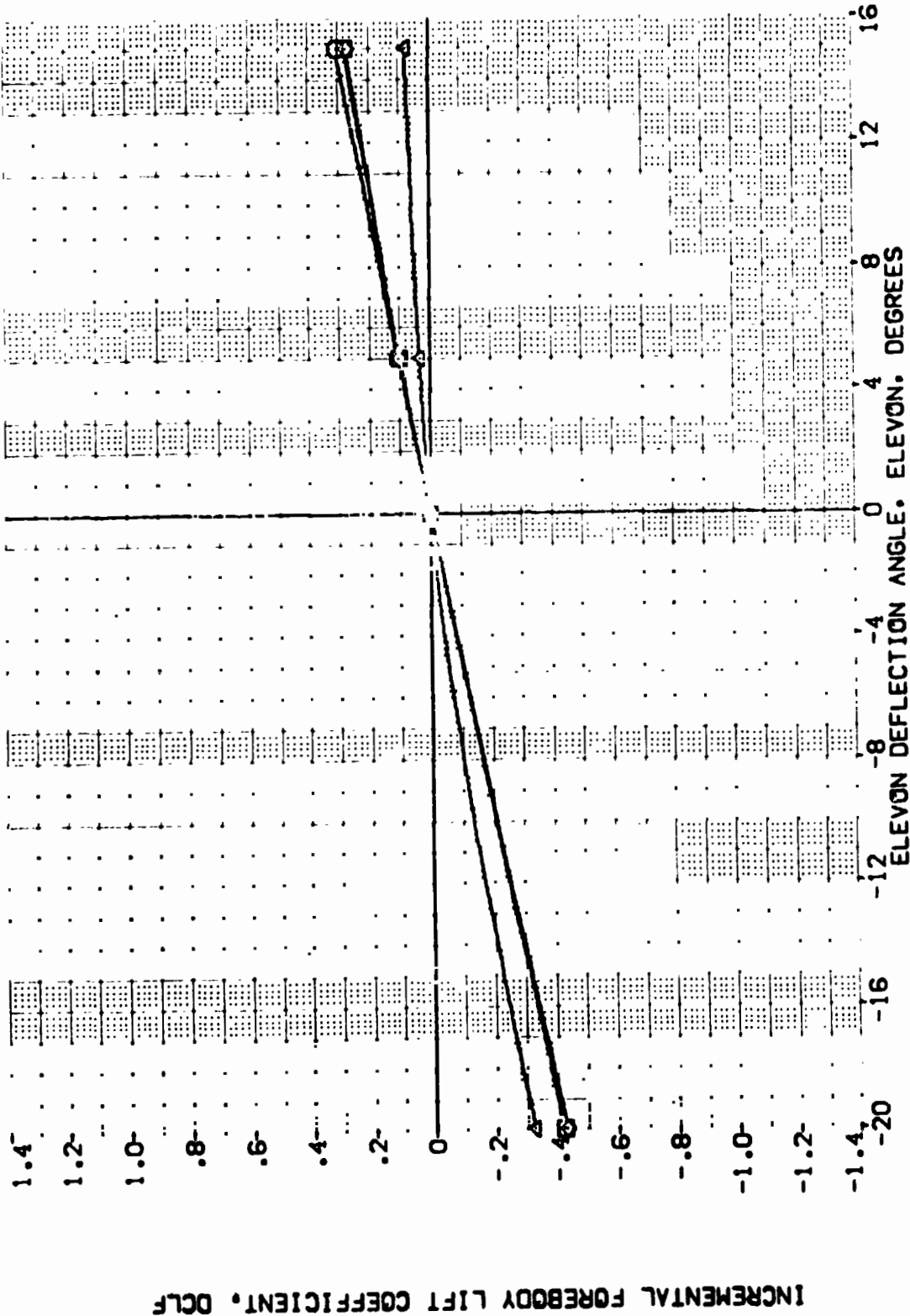


FIG 9 BASELINE ELEVON EFFECTIVENESS, BOFLAP = -11.7 DEG.



0A110 861C11F12M51W124E40V19R15X29 (KF5020)

SYMBL	ALPHA	MACH	BDFLAP	RUDDER	PARAMETRIC VALUES				DATA SOURCE				REFERENCE INFORMATION			
▽	-1.000				.200	AILINON	.000	DATASET	ELEVON	SREF	4.4119	SD.FT.				
◇	.000				-12.000	SPOBRK	25.000	KF5020	.000	LEET	19.2259	INDEES				
□	4.000				.000	BETA	.000	KF5019	15.000	BRBT	37.5059	INDEES				
○	8.000									XTRP	43.5574	INDEES				
	12.000									ZTRP	.0000	INDEES				
										SCALE	15.1875	INDEES				
											.0405	SCALE				

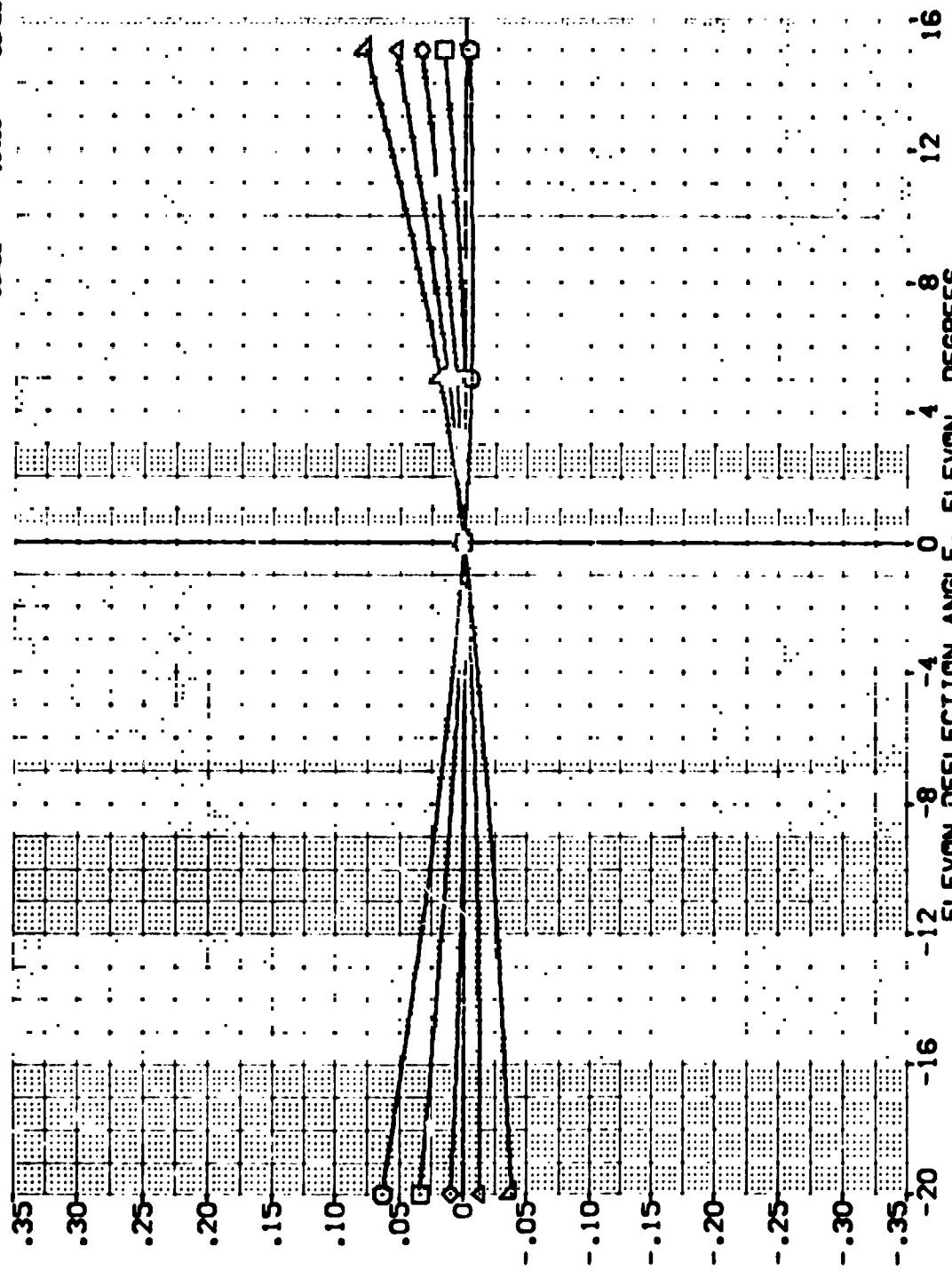
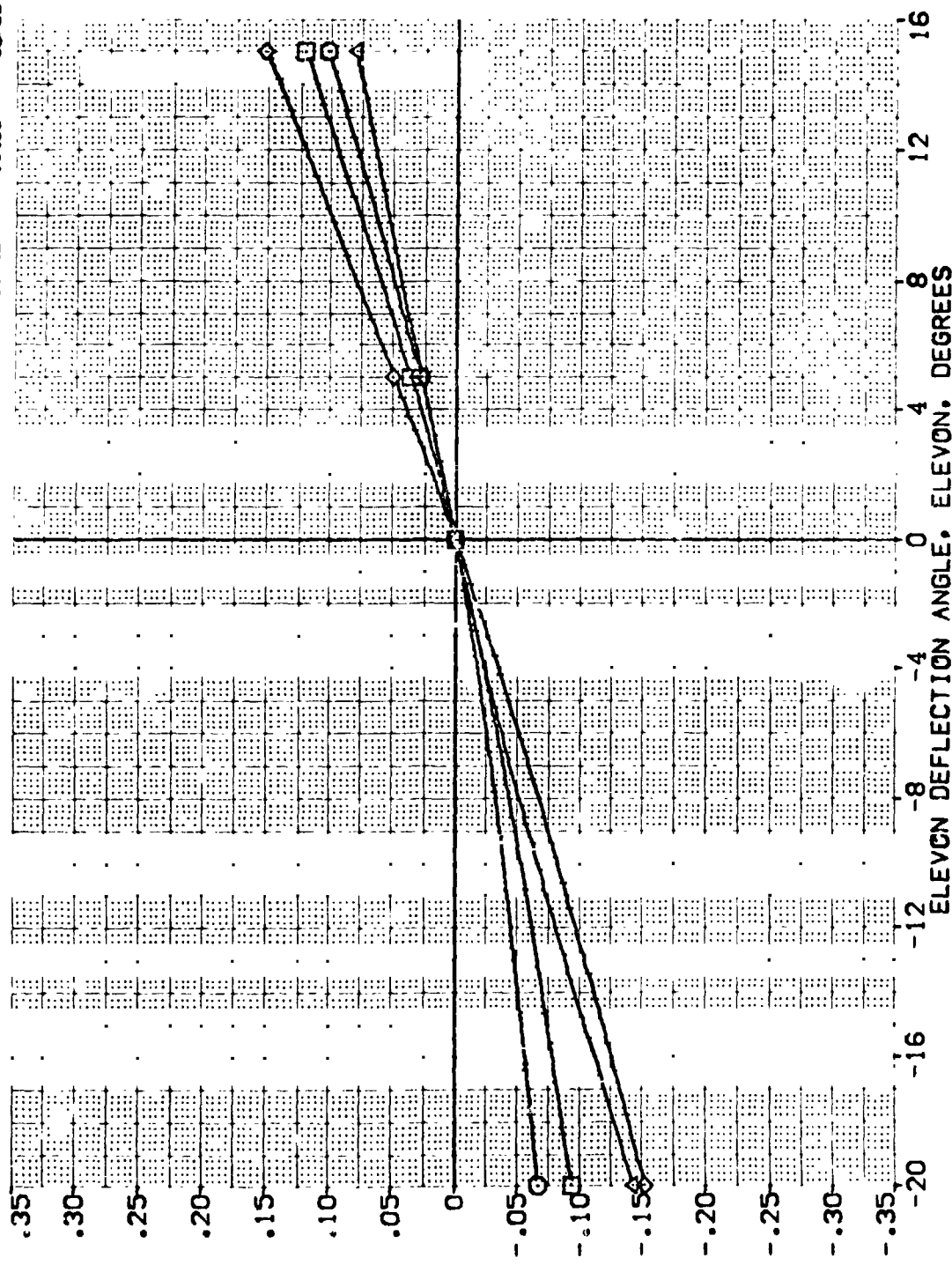


FIG 9 BASELINE ELEVON EFFECTIVENESS, BDFLAP = -11.7 DEG.

0A110 861C11F12M51W124E40V19R15X29 (KF5020)

ALPHA	WCH	PARAMETRIC VALUES		DATA SOURCE		REFERENCE INFORMATION	
16.000	BDFLAP	.200	AILRON	.000	DATASET	ELEVON	SREF
20.000	RUDDER	-12.000	SPODR	25.000	KF5020	.000	LREF
24.000		.000	BETA	.000	KF5018	15.000	BREF
28.000							XREF
							YREF
							ZREF
							SCALE
							SO.FT.
							INCHES
							INCHES
							INCHES
							INCHES
							SCALE



INCREMENTAL FOREBODY DRAG COEFFICIENT, DCDP

FIG 9 BASELINE ELEVON EFFECTIVENESS, BDFLAP = -11.7 DEG.



(KF5020)

0A110 B61C11F12M51W124E40V19R15X2S

ALPHA	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
-4.000	MACH .200	.000 DATASET	REF 4.4119
.000	AIRLEN -12.000	ELEVON KF5011	REF 19.2299
4.000	SPOBRK .000	25.000 KF5020	REF 37.9359
8.000	BETA .000	.000 KF5018	REF 43.5874
12.000			REF .0000
			REF 15.1875
			SCALE .0405

INCREMENTAL FOREBODY PITCHING MOMENT COEFFICIENT, DCLM

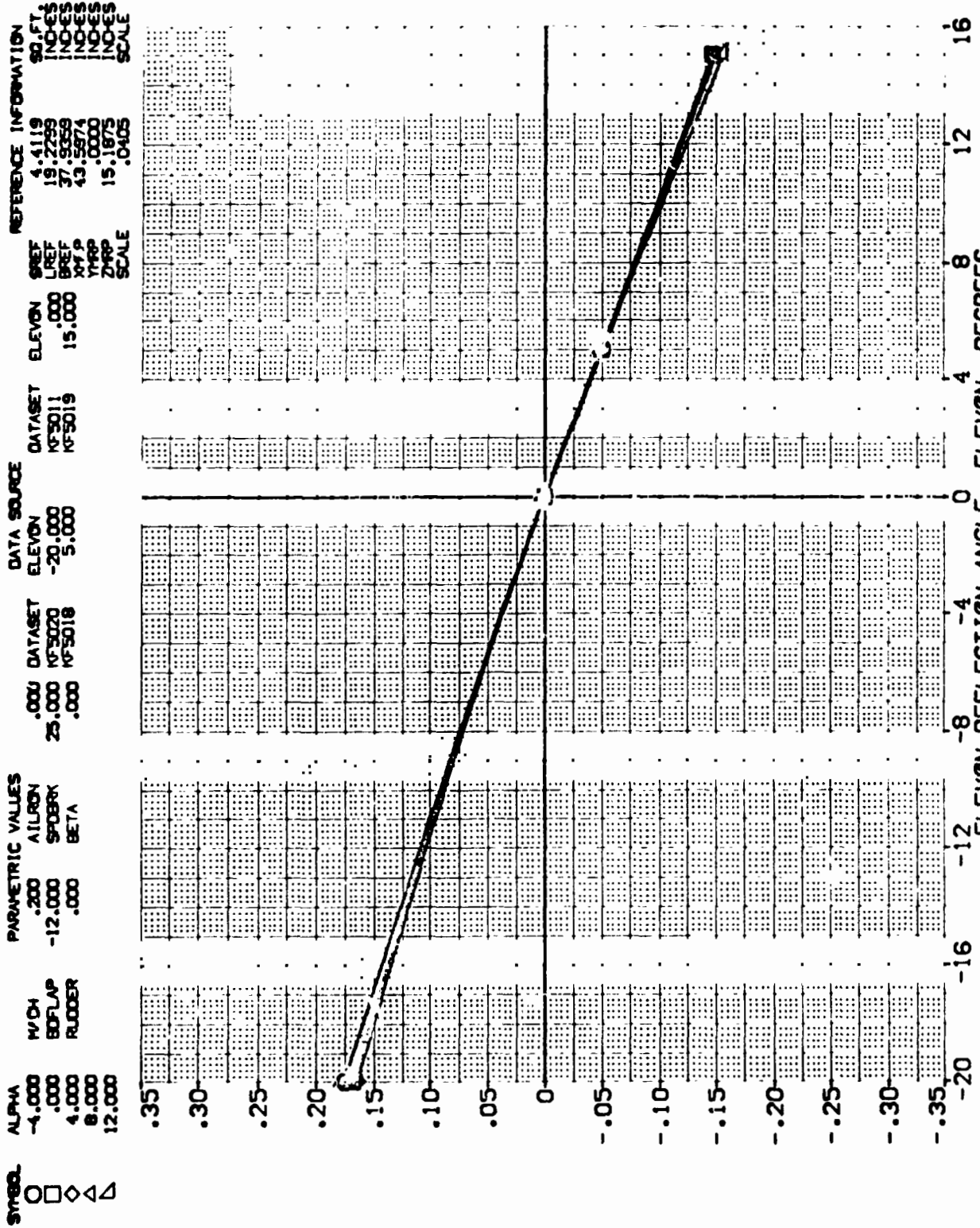


FIG 9 BASELINE ELEVON EFFECTIVENESS, BOFLAP = -11.7 DEG.

0A110 B61C11F12M51W124E40V19R15X29 (KF5020)

SYMBOL	ALPHA	MACH	BOFLAP	RUDDER	PARAMETRIC VALUES	.000	DATASET	.000	KF5020	C:TA SOURCE	ELEVON	-20.000	5.000	DATASET	KF5011	KF5019	ELEVON	.000	15.000	SREF	4.4119	SO.FT.	
□	16.000				.200	AILRON	25.000		KF5020		LREF	19.2299					LREF	.000					INCHES
◇	20.000				-12.000	SPOBRK	.000		KF5018		XTRP	37.9359					XTRP	15.000					INCHES
△	24.000				.000	BETA					YTRP	43.5974					YTRP	.000					INCHES
	28.000										ZTRP	15.1873					ZTRP	15.1873					INCHES
											SCALE	.0405					SCALE	.0405					SCALE

INCREMENTAL FOREBODY PITCHING MOMENT COEFFICIENT, DCLM

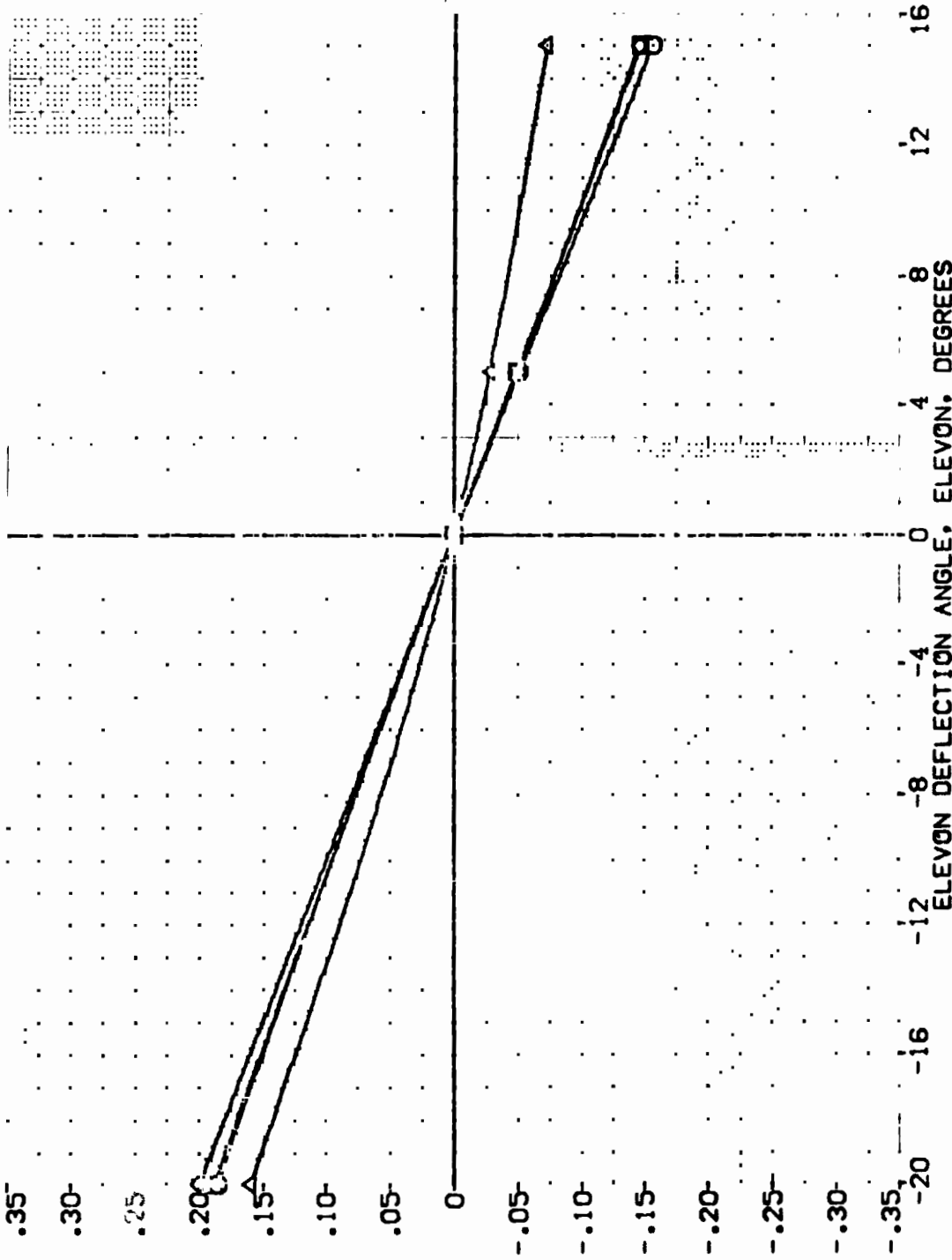


FIG 9 BASELINE ELEVON EFFECTIVENESS, BOFLAP = -11.7 DEG.



DATA SET SYMBO. CONFIGURATION DESCRIPTION

(R-5024)	CA110	B61C11F12S1V124E40V1SR15C28
(R-5023)	CA110	B61C11F12S1V124E40V1SR15C28
(R-5022)	CA110	B61C11F12S1V124E40V1SR15C28
(R-5021)	CA110	B61C11F12S1V124E40V1SR15C28

ALPHN .000 SPOBRK .000 RUDDER ALPHA .000

SREF 4.4119 SO.FT. INO-ES

LREF 19.2299 INO-ES

BREF 37.9559 INO-ES

XMRP 43.5974 INO-ES

YMRP .0000 INO-ES

ZMRP 15.1875 INO-ES

SCALE .0405 SCALE

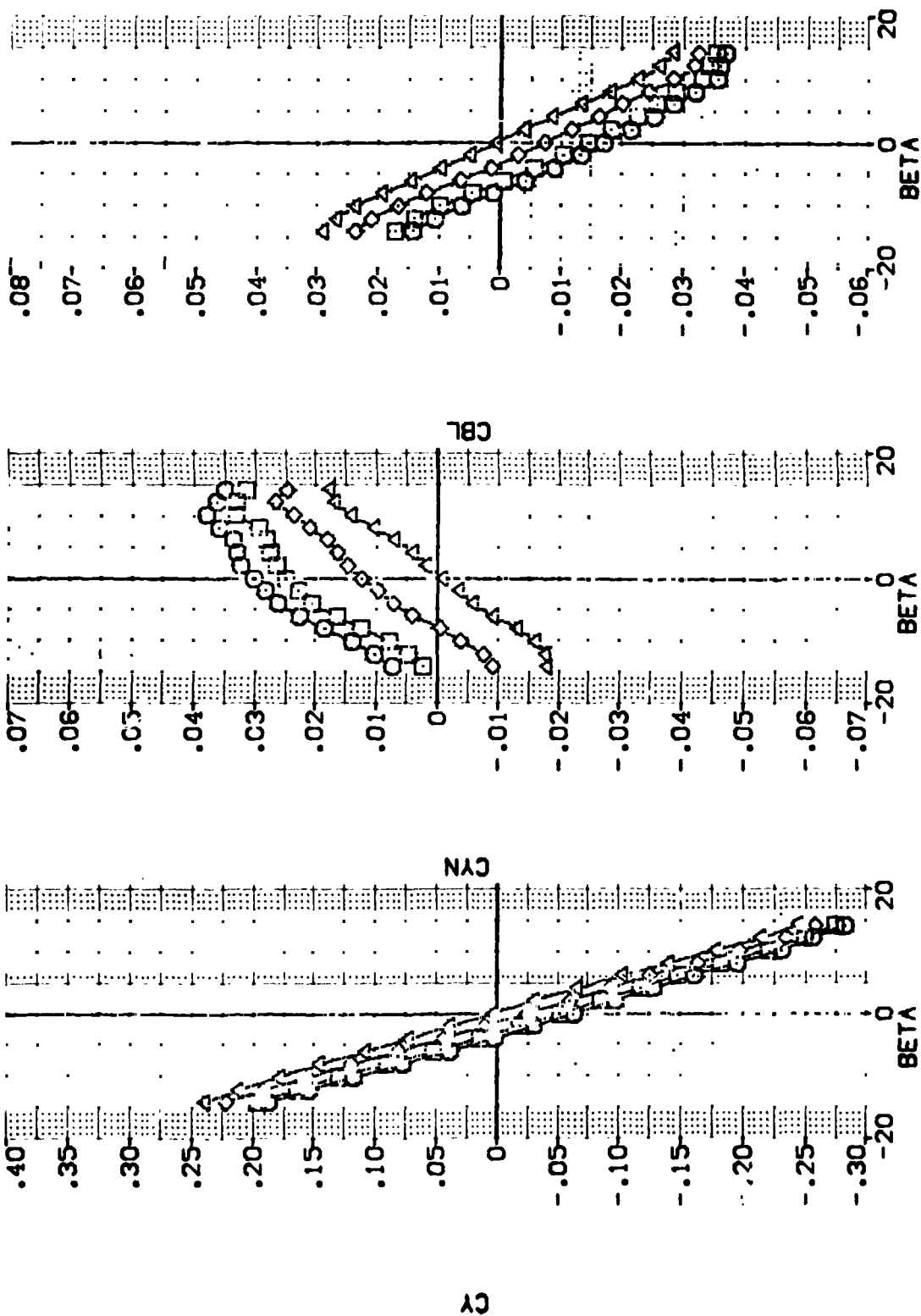


FIG 10 RUDDER EFFECTIVENESS, SPOBRK = 0 DEG., ALPHA = 10 DEG.

CAJMACH = .20

(DF5024)

0A110 B61C11F12M51W124E40V19R15X29

SYMBOL

○	□	◇	△	▽
---	---	---	---	---

BETA
-14.000
-12.000
-10.000
-8.000
-6.000

PARAMETRIC VALUES

MACH	.200
ALPHA	.000
AILRON	.000
BDFLAP	-12.000

DATA SOURCE

RUDDER	10.000
DATASET	DF5024
RUDDER	-25.000
DATASET	DF5022

RUDDER

SREF	4.4119
LREF	19.2268
BREF	37.9359
XPRP	43.5974
YPRP	.0000
ZPRP	15.1875
SCALE	.0405

REFERENCE INFORMATION

SO.FT.	4.4119
INCHES	19.2268
INCHES	37.9359
INCHES	43.5974
INCHES	.0000
INCHES	15.1875
SCALE	.0405

INCREMENTAL SIDE FORCE COEFFICIENT, DCY

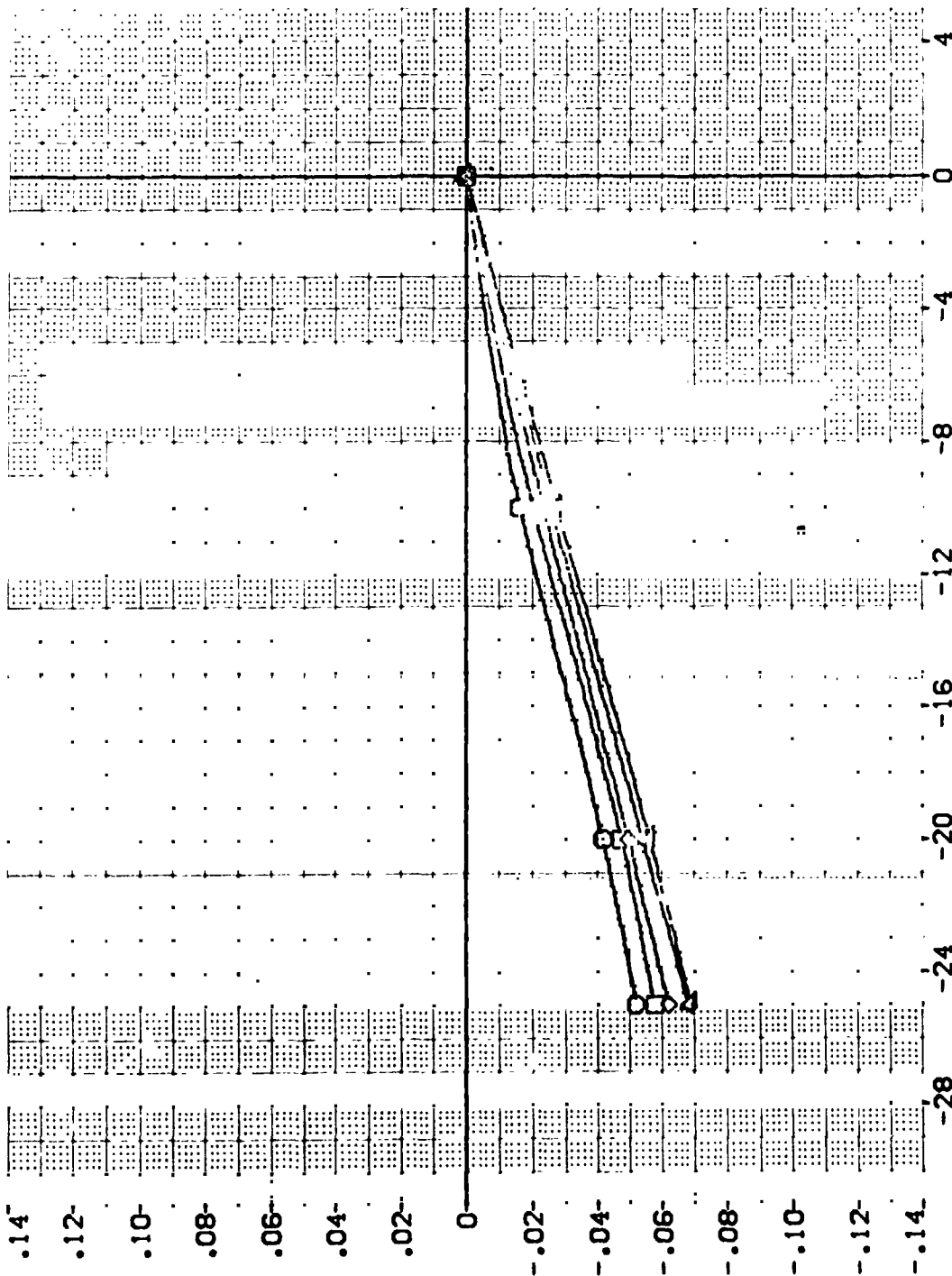


FIG 10 RUDDER EFFECTIVENESS, SPOBRK = 0 DEG., ALPHA = 10 DEG.

0A110 B61C11F12M51W124E40V19R15X29 (DF5024)

SYMBOL		PARAMETRIC VALUES				DATA SOURCE		RUDDER		REFERENCE INFORMATION	
BETA	MACH	ALPHA	AILRON	BDFLAP	10.000	DF5024	DF5023	DF5021	SREF	LREF	NO-ES
-4.000	.200	.000	.000	.000	.000	DF5024	DF5023	DF5021	4.4119	19.2299	NO-ES
-2.000	ELEVON	.000	.000	.000	-12.000	DF5022			37.9359	43.5974	NO-ES
.000	SPDBRK	.000	.000	.000					0.000	15.1075	NO-ES
2.000									ZMRP	SCALE	NO-ES
4.000											SCALE

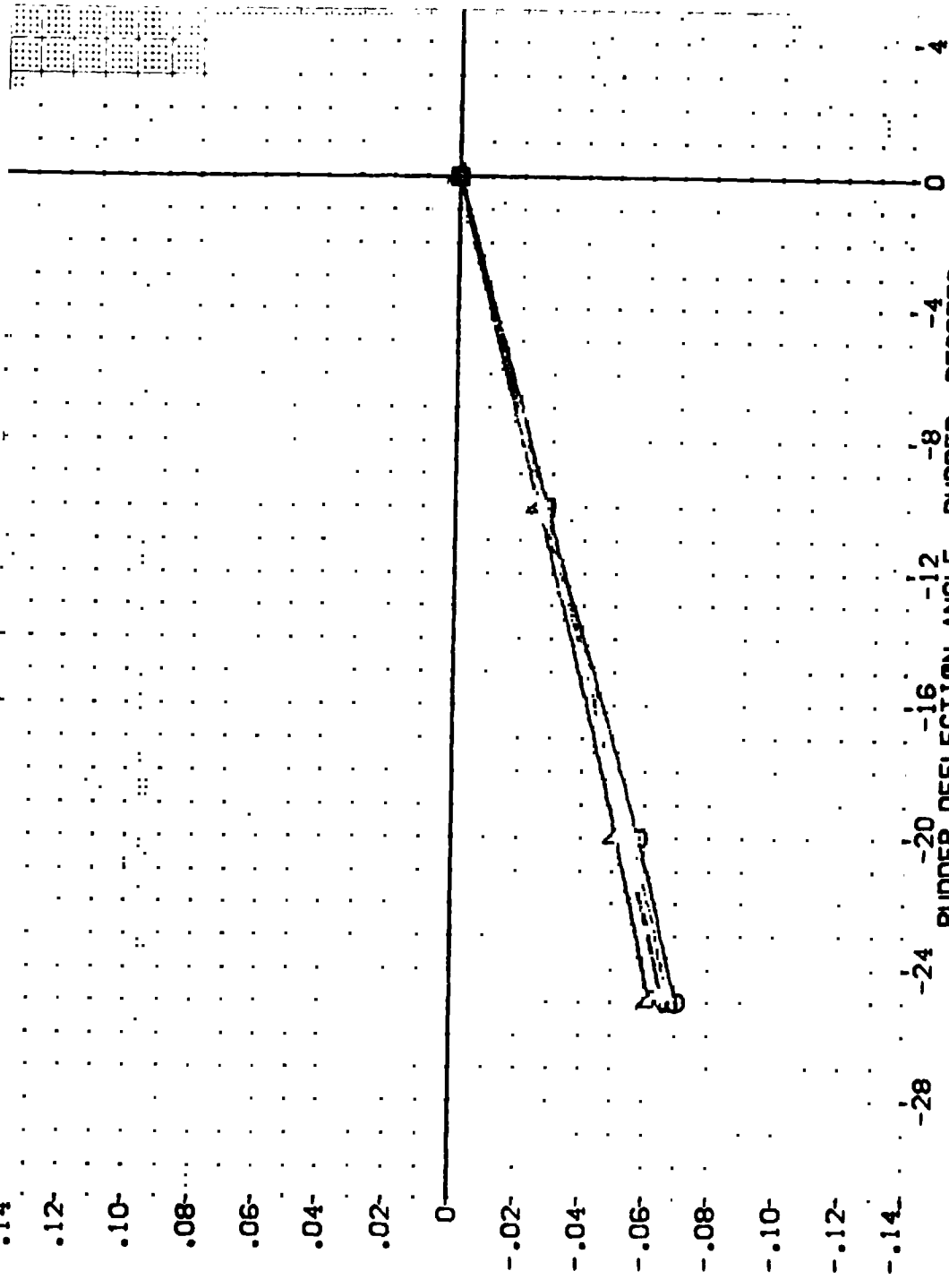
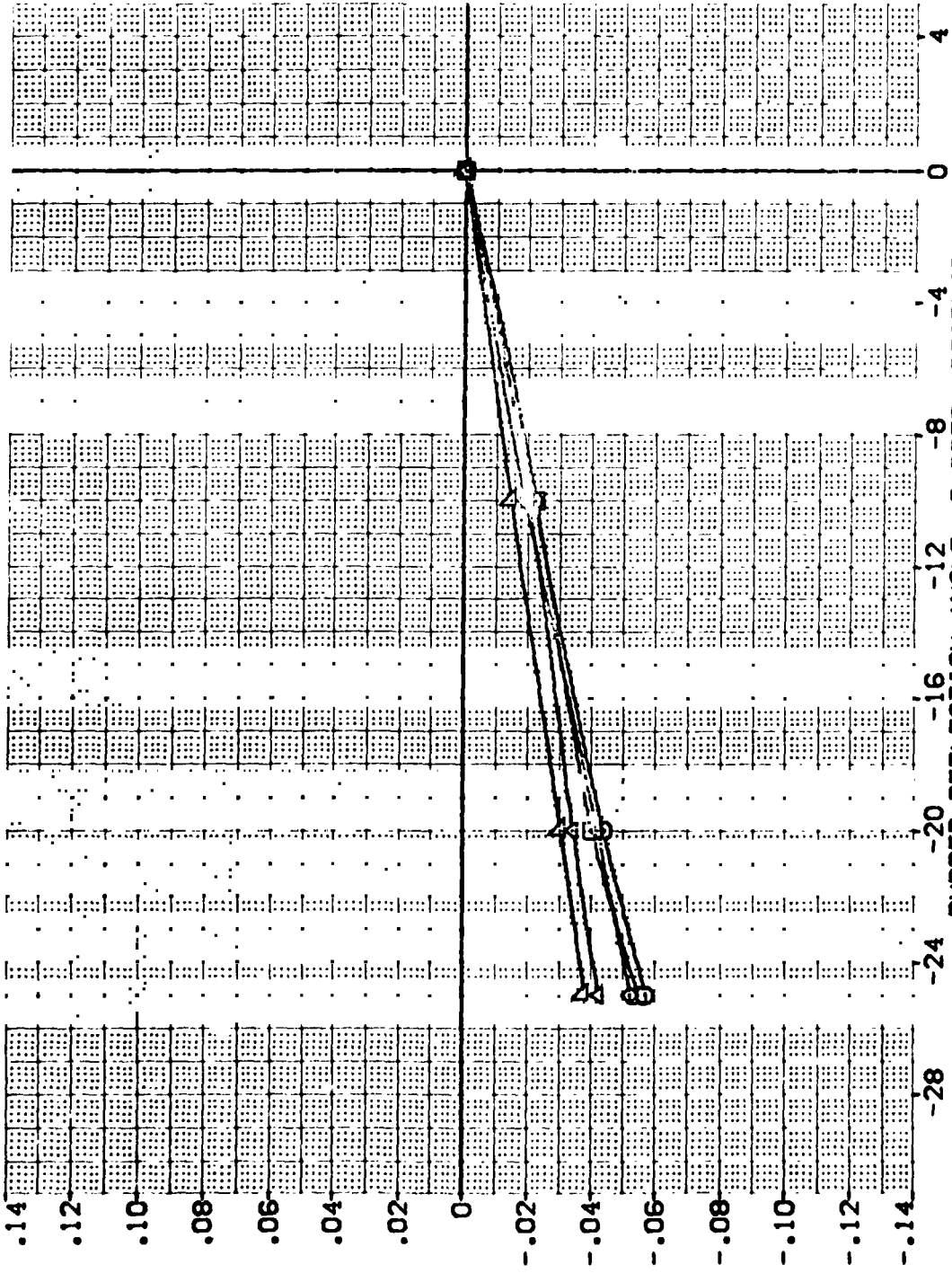


FIG 10 RUDDER EFFECTIVENESS, SPDBRK = 0 DEG., ALPHA = 10 DEG.

(DF-5024)

0A110 B61C11F12M51W124E40V19R15X29

SYMBOL	BETA	MACH	PARAMETRIC VALUES	DATA SOURCE	DATASET	RUDDER	RUDDER	SREF	REFERENCE INFORMATION
○	8.000	ELEVON	.200 ALPHA	10.000	DF-5024	-25.000	-20.000	L-REF	4.4119
□	8.000	SPOBRK	.000 AILRON	.000	DF-5024	-10.000	.000	B-REF	19.7298
◇	10.000		.000 EDFLAP	-12.000	DF-5022			X-REF	37.5668
▽	12.000							Y-REF	43.5674
△	14.000							Z-REF	.0000
								SCALE	15.1875
								SCALE	.0405



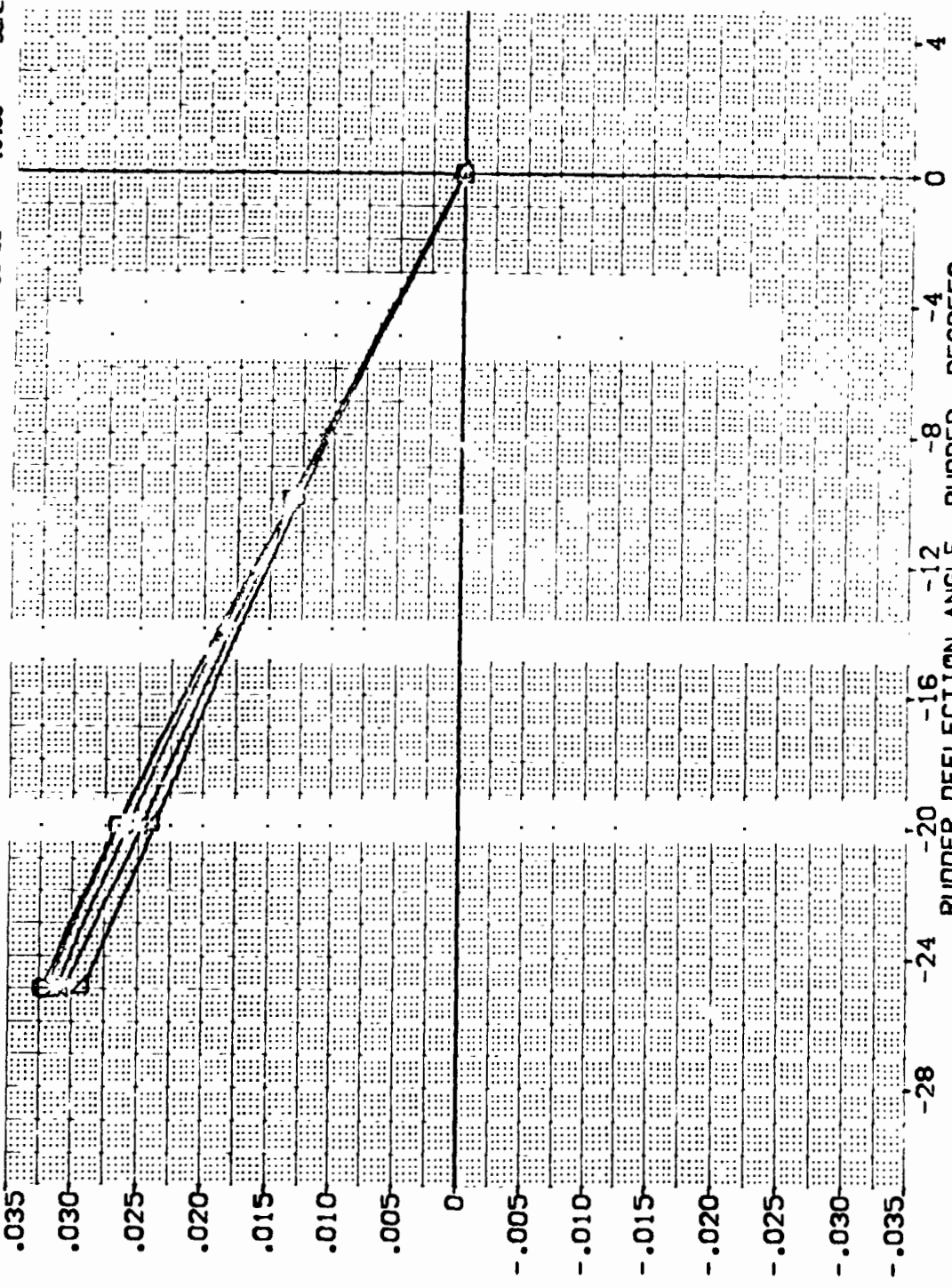
INCREMENTAL SIDE FORCE COEFFICIENT, C_Y

FIG 10 RUDDER EFFECTIVENESS, SPOBRK = 0 DEG., ALPHA = 10 DEG.



0A110 861C11F12M5I124E40V19R15X29 (DF5024)

SYMBOL	BETA	MACH	PARAMETRIC VALUES			DATA SOURCE			REFERENCE INFORMATION		
○	-1.000	ELEVON	.200	ALPHA	10.000	DATASET	RUDDER	DF5023	SREF	4.4119	SO.FT.
□	-2.000	SPOBRK	.000	ALURON	.000	DF5024	-25.000	DF5021	LREF	19.2259	INCHES
◇	.000		.000	BDFLAP	-12.000	DF5022	-10.000		BREF	37.9359	INCHES
△	2.000								XMRP	43.5974	INCHES
	4.000								YMRP	.0000	INCHES
									ZMRP	15.1873	INCHES
									SCALE	.0405	SCALE



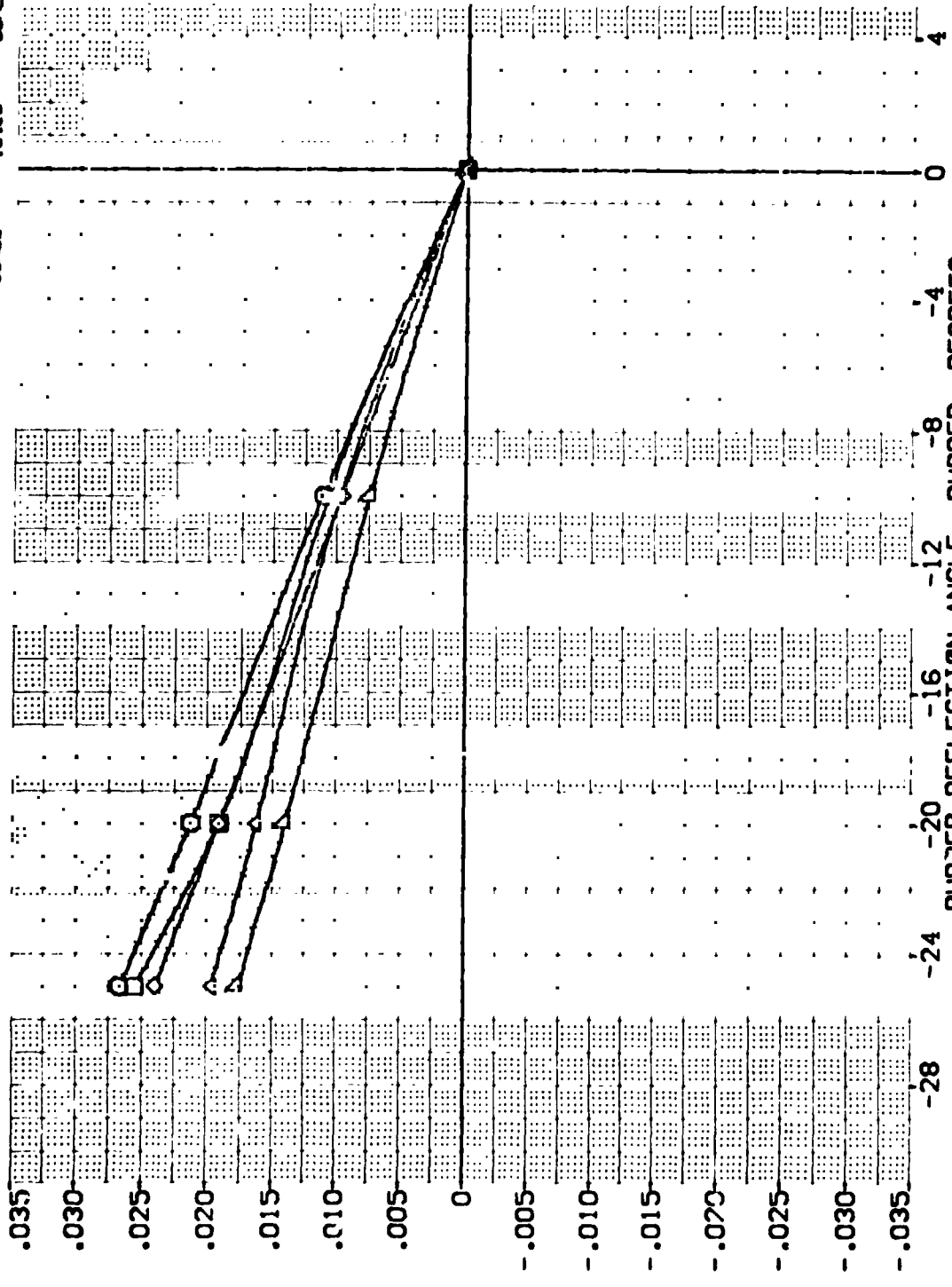
INCREMENTAL YAWING MOMENT COEFFICIENT, DCYN

FIG 10 RUDDER EFFECTIVENESS, SPDBRK = 0 DEG., ALPHA = 10 DEG.



0A110 861C11F12M51W124E40V19R15X29 (DF5024)

BETA	MACH	PARAMETRIC VALUES		DATA SOURCE		RUDDER		REFERENCE INFORMATION	
6.000	.200	ALPHA	10.000	DATASET	DF5023	SREF	4.4119	SO.FT.	19.2289
8.000	.000	ALLRON	.000	DF5024	DF5021	LREF	37.5059	INCHES	43.5574
10.000	.000	BOFLAP	-12.0750	DF5022		BRF	.0000	INCHES	15.1875
12.000						XPRP	.0405	SCALE	
14.000						ZPRP			
						SCALE			

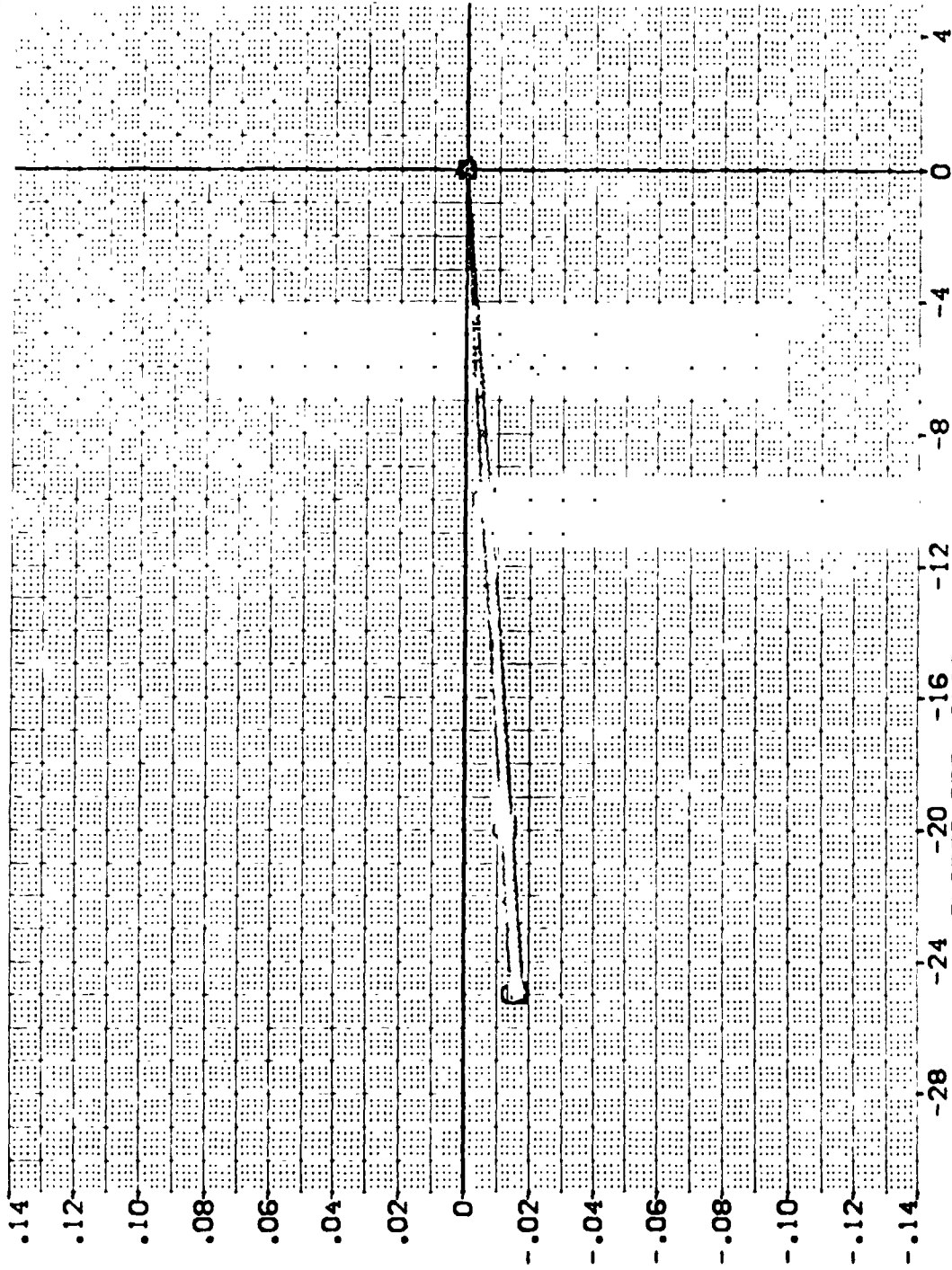


INCREMENTAL YAWING MOMENT COEFFICIENT, DCYN

FIG 10 RUDDER EFFECTIVENESS, SPOBRK = 0 DEG., ALPHA = 10 DEG.

0A110 B61C11F12M51W124E40V19R15X29 (DF5024)

SYMB.	BETA	MACH	ELEVON	SPOBRK	PARAMETRIC VALUES	DATA SOURCE	RUDDER	RUDDER	RUDDER	SREF	REFERENCE INFORMATION
○	-14.000	.200	ALPHA	10.000	DF5024	-25.000	DF5023	-20.000	LREF	4.4119	SO.FT.
□	-12.000	.000	A1LRON	.000	DF5024	-10.000	DF5021	.000	BREF	19.2299	INDEES
◇	-10.000	.000	BDFLAP	-12.000	DF5022				XPRP	37.9359	INDEES
△	-8.000								YPRP	43.5974	INDEES
▽	-6.000								ZPRP	.0000	INDEES
									SCALE	15.1875	INDEES
										.0405	SCALE



INCREMENTAL ROLLING MOMENT COEFFICIENT, DCBL

FIG 10 RUDDER EFFECTIVENESS, SPOBRK = 0 DEG., ALPHA = 10 DEG.



0A110 B61C11F12M51W124E40V19R15X29 (OF5024)

SYMBL	BETA	MACH	PARMETRIC VALUES	DATA SOURCE	RUDDER	RUDDER	SCALE	REFERENCE INFORMATION
○	-4.000	ELEVON	.200 ALPHA	10.000 DATASET	REF	REF	SO. FT.	4.4119
□	-2.000	SPOBRK	.000 AILRON	.000 DF5024	-25.000	REF	INO-ES	19.2299
◇	.000		.000 DF5022	-12.000	.000	X-PP	INO-ES	37.5359
△	2.000					Y-PP	INO-ES	43.5974
▽	4.000					Z-PP	INO-ES	15.1875
						SCALE	SCALE	.0405

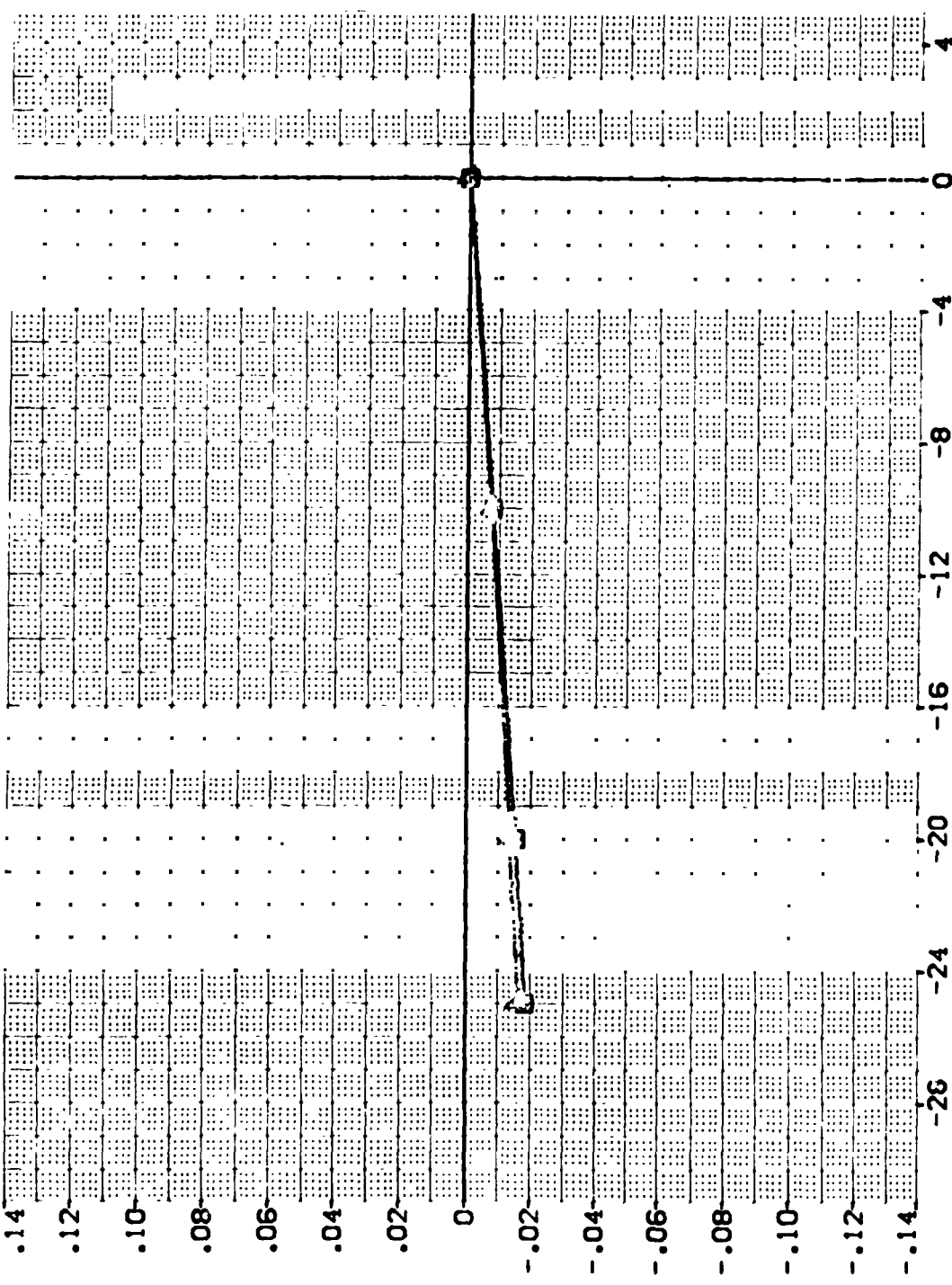


FIG 10 RUDDER EFFECTIVENESS, SPOBRK = 0 DEG., ALPHA = 10 DEG.

0A110 B61C11F12M51W124E40V19R15X29 (DF5024)

SYMBOL	BETA	MACH	PARAMETRIC VALUES	DATA SOURCE	RUDDER	RUDDER	SCALE	REFERENCE INFORMATION
○	6.000	ELEVON	.200 ALPHA	10.000 DATASET	DF-5024	-20.000	4.4119	SO.FT.
□	8.000	SPOBRK	.000 AILRON	.000 DF-5024	DF-5023	.000	19.2299	INO-ES
◇	10.000		.000 BOFLAP	-12.000 DF-5022	DF-5021		37.9359	INO-ES
△	12.000						43.5974	INO-ES
	14.000						.0000	INO-ES
							15.1875	INO-ES
							.0405	SCALE

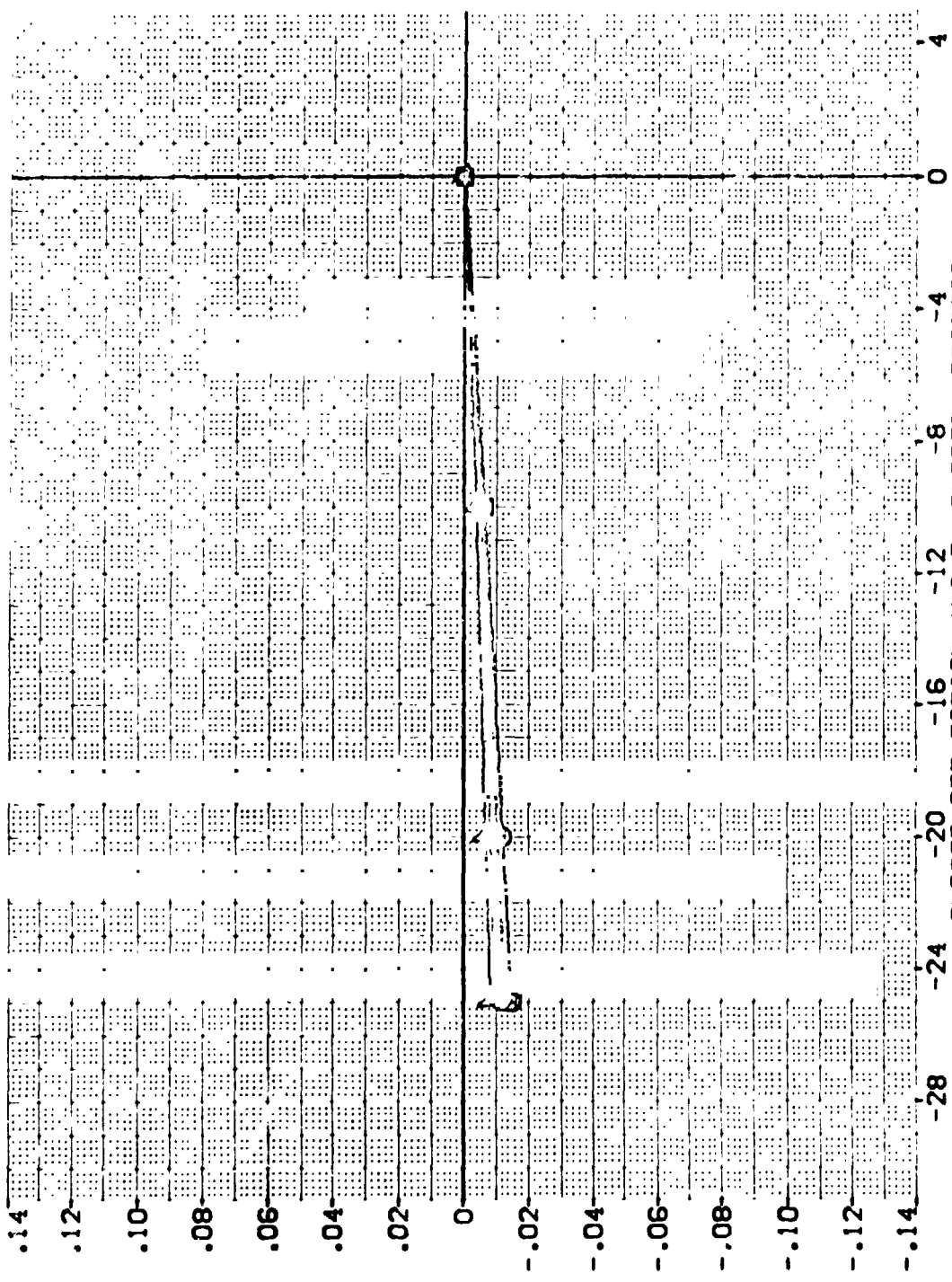


FIG 10 RUDDER EFFECTIVENESS. SPOBRK = 0 DEG., ALPHA = 10 DEG.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDDER	SPDRBK	AILDRN	REFERENCE INFORMATION
(R-5028)	0A110 B61C11F12P51V124E40V18R15X28	10.000	25.000	25.000	.000	SREF 4.4119 SO.FT.
(R-5029)	0A110 B61C11F12P51V124E40V18R15X28	10.000	-20.000	25.000	.000	LREF 19.2289 INO-ES
(R-5027)	0A110 B61C11F12P51V124E40V18R15X28	10.000	-10.000	25.000	.000	BREF 37.9358 INO-ES
(R-5026)	0A110 B61C11F12P51V124E40V18R15X28	10.000	.000	25.000	.000	XREF 43.5874 INO-ES
						YREF .0000 INO-ES
						ZREF 15.1875 INO-ES
						SCALE .0405 SCALE

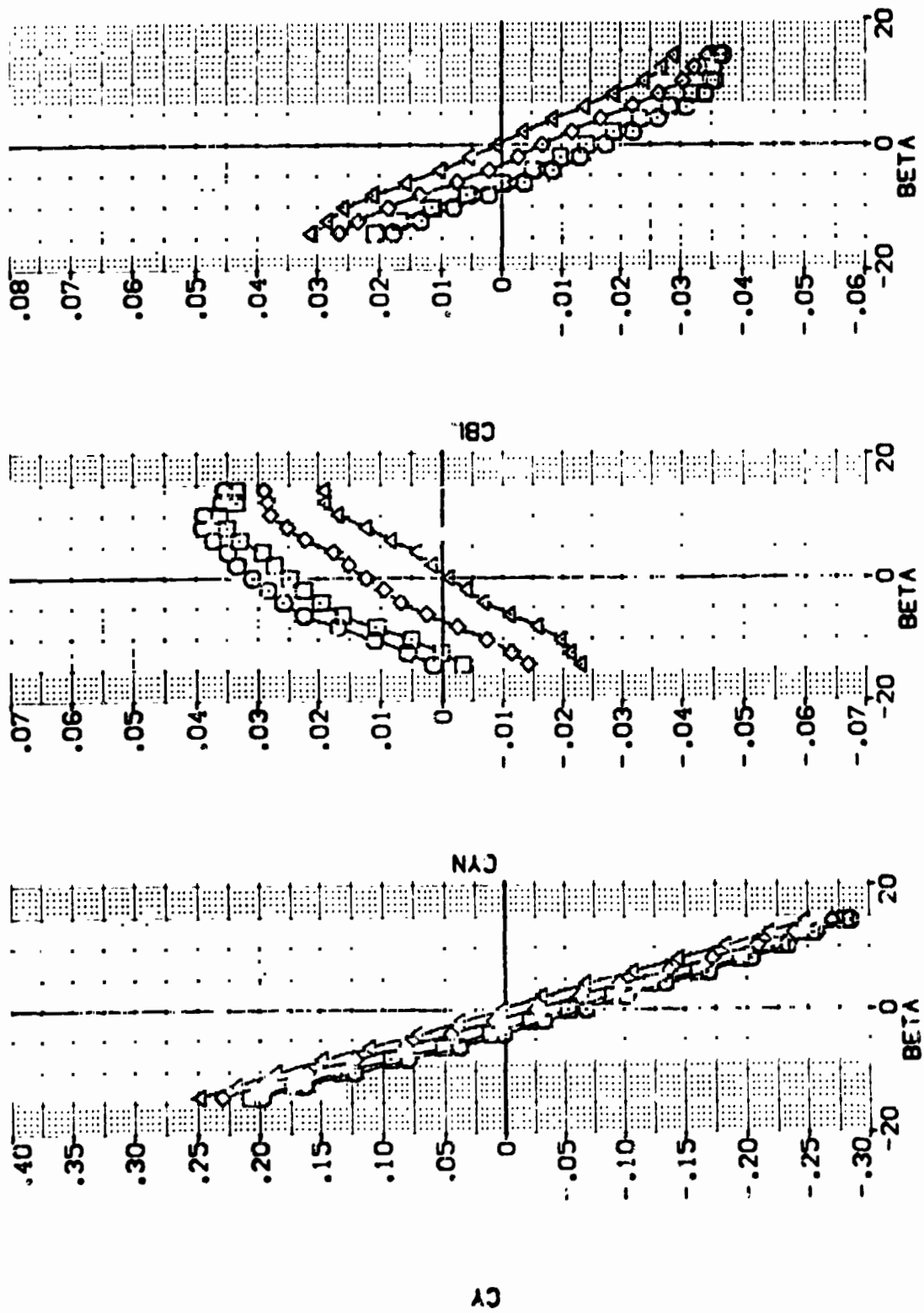
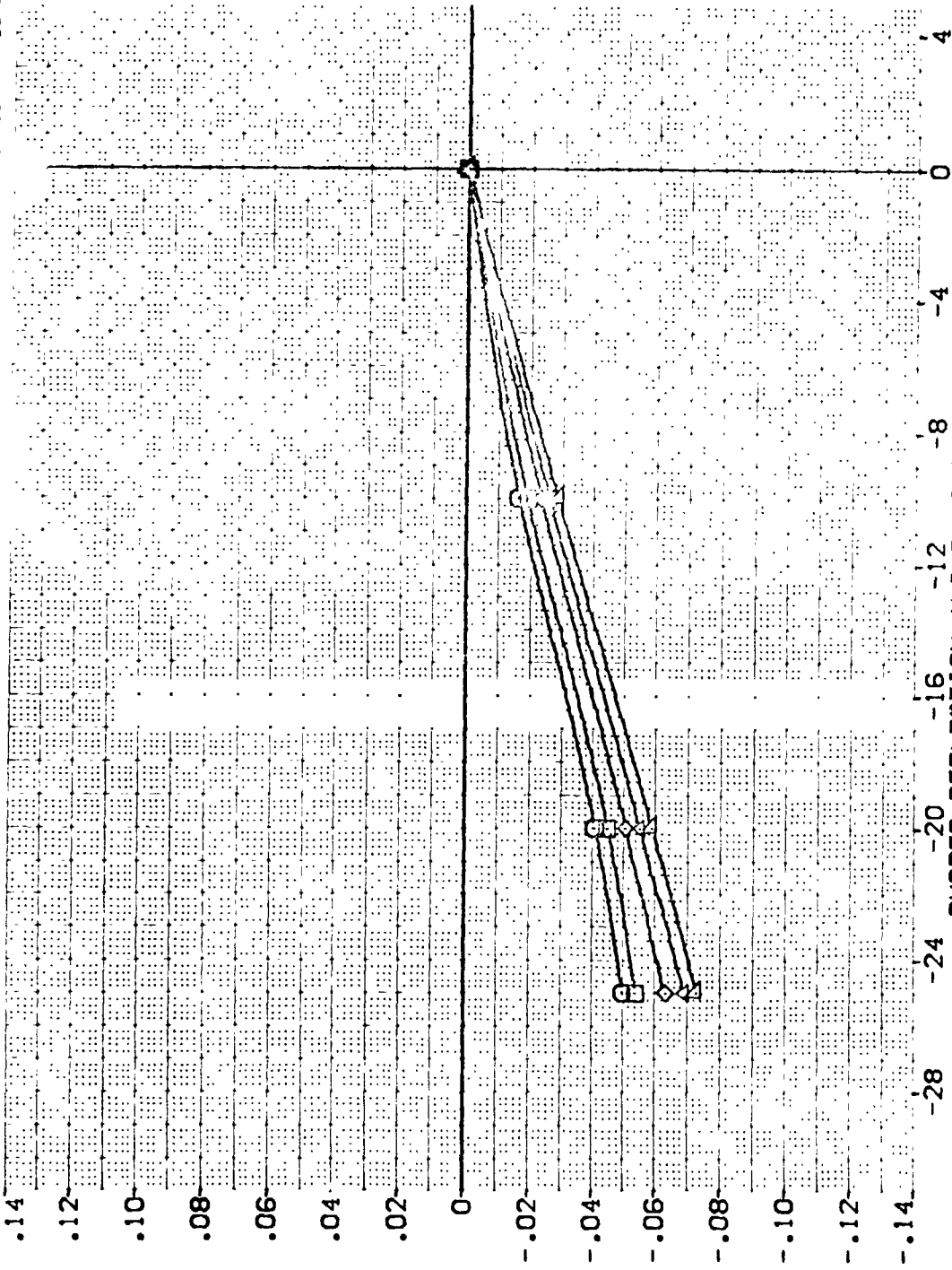


FIG 11 RUDDER EFFECTIVENESS, SPDRBK = 25 DEG., ALPHA = 10 DEG.
 (A)MACH = .20

0A110 B61C11F12M51W124E40V19R15X29 (DF 5025)

BETA	MACH	PARAMETRIC VALUES	DATA SOURCE	REF. T. C. INFORMATION
-14.000	ELEVON	.200 ALPHA	RUDDER	4.4119
-12.000	SPDBRK	.000 AILRON	10.000 DATASET	19.2299
-10.000		25.000 BOFLAP	DF5026	37.9359
-8.000			DF5027	43.5974
-6.000			DF5028	.0000
				15.1875
				.0405
				SCALE



INCREMENTAL SIDE FORCE COEFFICIENT, DCY

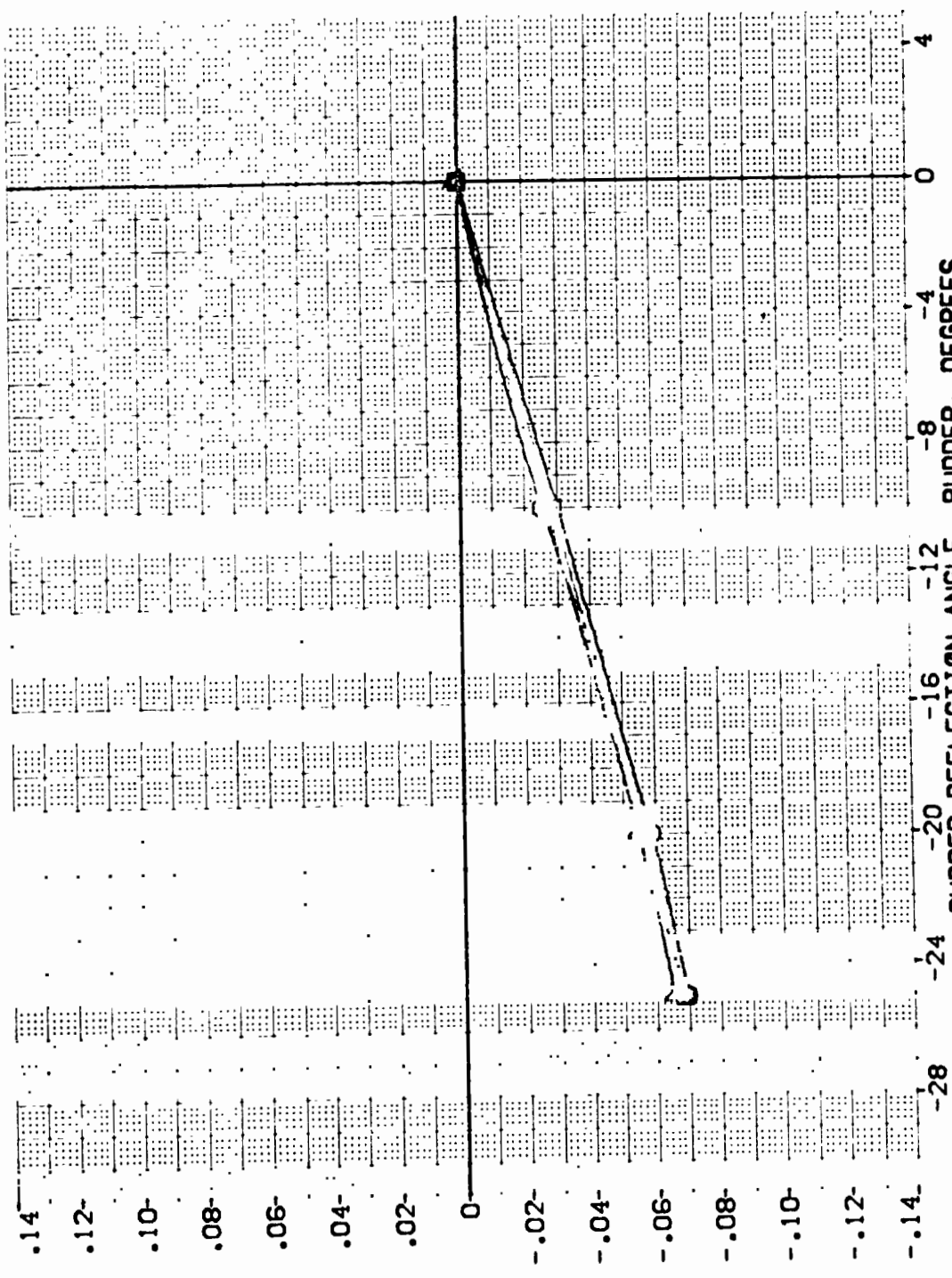
FIG 11 RUDDER EFFECTIVENESS, SPDBRK = 25 DEG., ALPHA = 10 DEG.



(DF5025)

0A110 861C11F12M51W124E40V19R15X29

SYMBOL		PARAMETRIC VALUES		DATA SOURCE		REFERENCE INFORMATION	
○	BETA	.200	ALPHA	10.000	DATASET	SREF	50.FT.
□	MACH	.000	AILRON	.000	DF5026	LREF	19.7259
◇	ELEVON	25.000	BOFLAP	-12.000	DF5027	BREF	37.9359
▽	SPOBRK	.000		-10.000		XMRP	43.5974
		2.000				YMRP	.0000
		4.000				ZMRP	15.1875
						SCALE	.0405

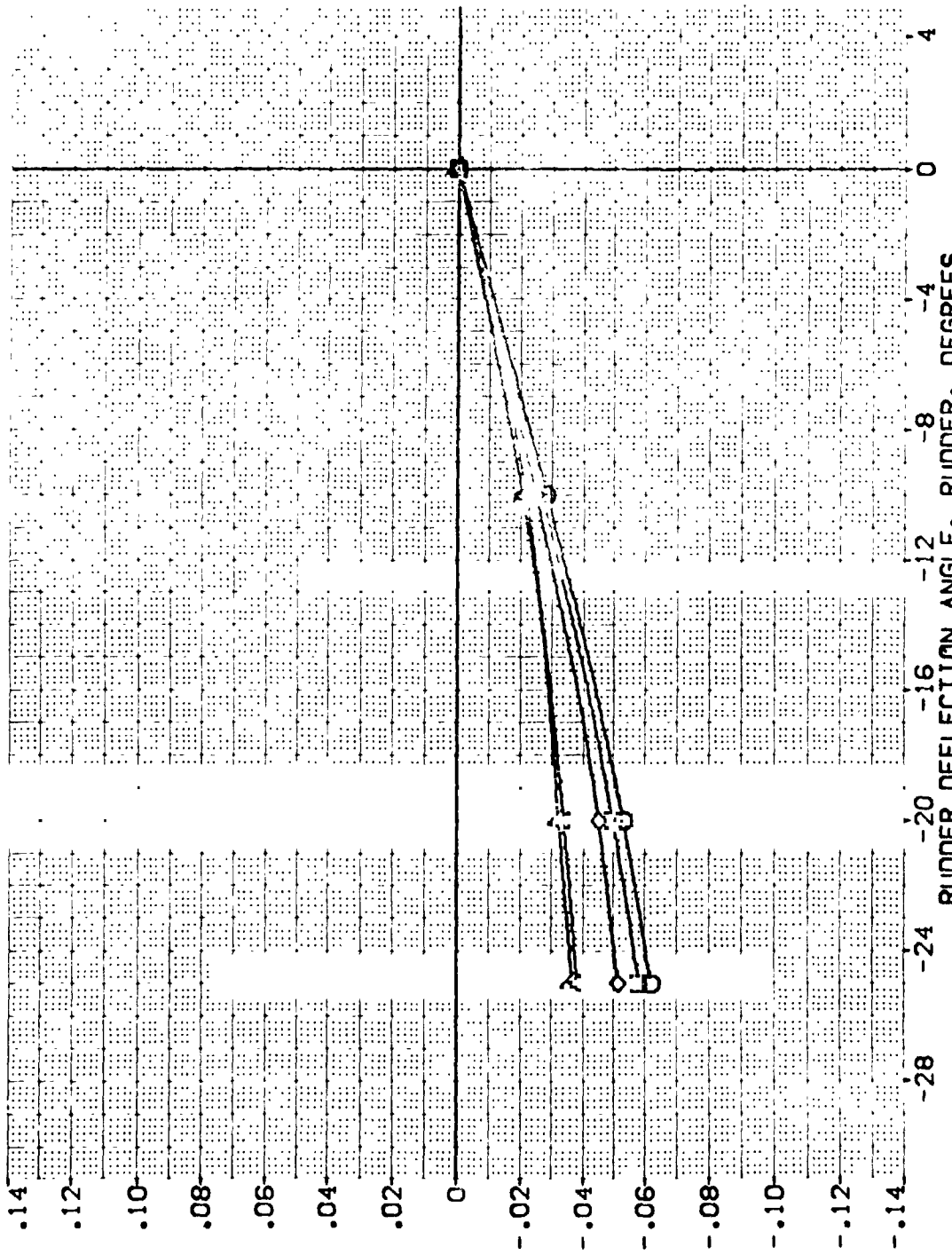


INCREMENTAL SIDE FORCE COEFFICIENT, CY

FIG 11 RUDDER EFFECTIVENESS, SPOBRK = 25 DEG., ALPHA = 10 DEG.

0A110 861C11F12M51W124E40V19R15X29 (DF5025)

SYMBOL	BETA	MACH	ELEVON	SPOBRK	PARAMETRIC VALUES	DATA SOURCE	RUDDER	RUDDER	SREF	REFERENCE INFORMATION
○	6.000	.200	.000	25.000	ALPHA	10.000	DF5025	DF5026	4.4119	50 FT
□	8.000	.000	.000	25.000	AILRON	.000	DF5025	DF5026	19.7299	INCHES
◇	10.000	.000	.000	25.000	BDFLAP	-12.000	DF5027	DF5028	37.5359	INCHES
△	12.000	.000	.000	25.000					43.5974	INCHES
▽	14.000	.000	.000	25.000					.0000	INCHES
									15.1875	INCHES
									.0405	SCALE



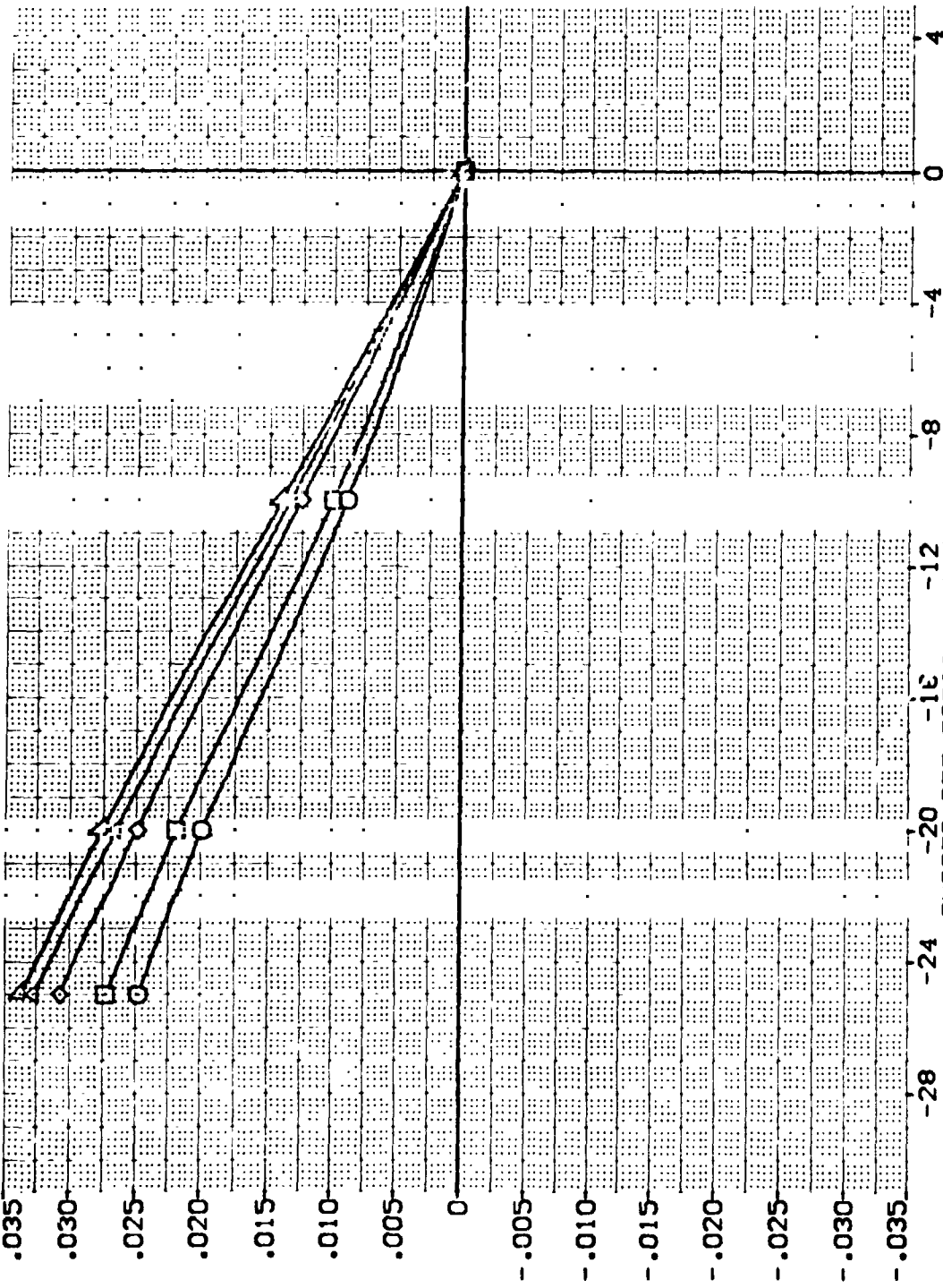
INCREMENTAL SIDE FORCE COEFFICIENT, DCY

FIG 11 RUDDER EFFECTIVENESS, SPDBRK = 25 DEG., ALPHA = 10 DEG.



0A110 B61C11F12M51W124E40V19R15X29 (DF5025)

BETA		PARAMETRIC VALUES		DATA SOURCE		REFERENCE INFORMATION		
SYMBOL	VALUE	MACH	ALPHA	10.000	DATASET	RUDDER	SREF	SO.FT.
○	-14.000	.200	.000	.000	DF5026	-20.000	19.2799	INO-ES
□	-12.000	.000	.000	-25.000	DF5025	.000	37.9359	INO-ES
◇	-10.000	25.000	BDFLAP	-10.000	DF5027		43.5974	INO-ES
△	-8.000						15.0000	INO-ES
	-6.000						15.1675	SCALE
							.0405	SCALE

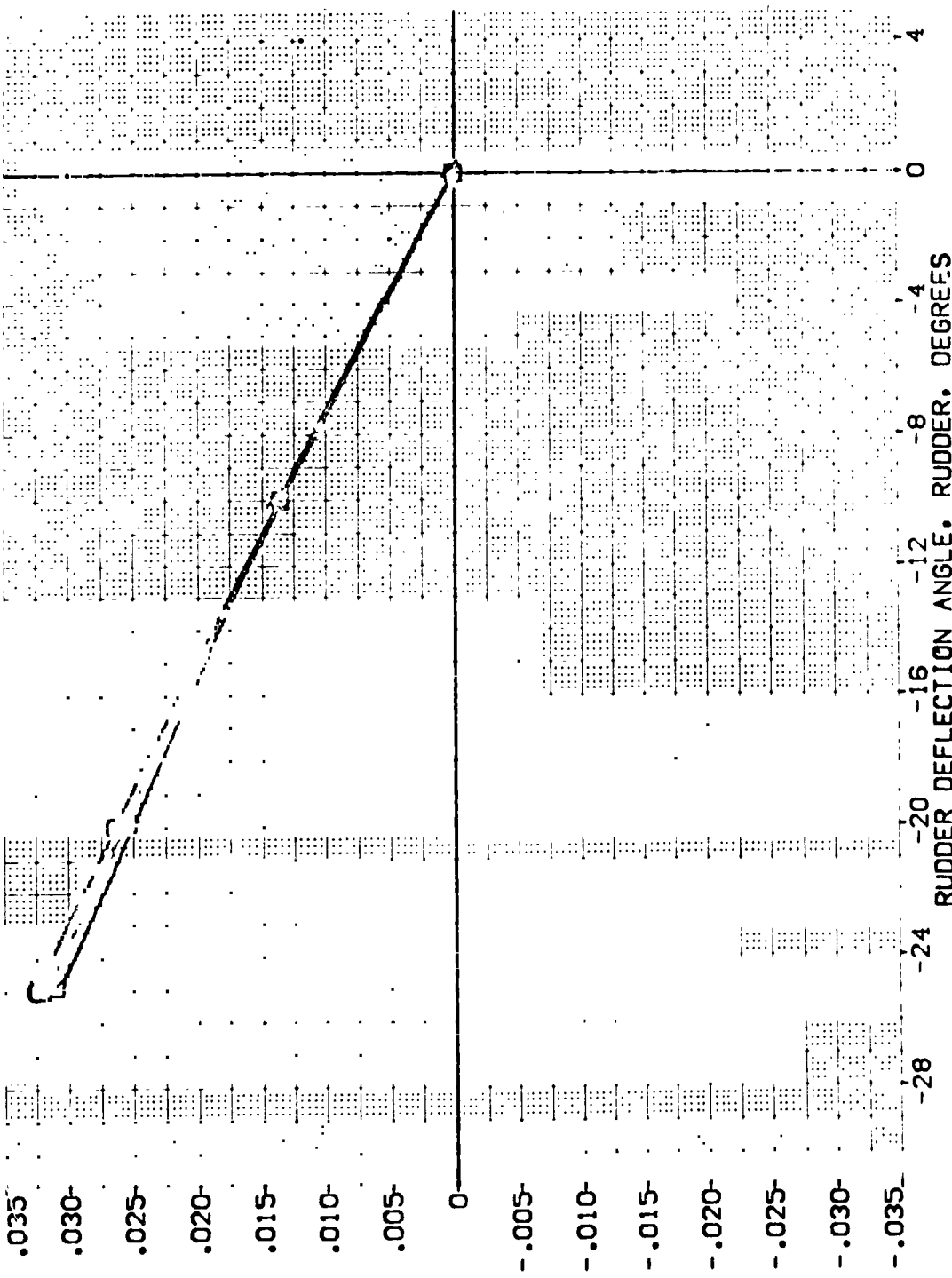


INCREMENTAL YAWING MOMENT COEFFICIENT, DCYN

FIG 11 RUDDER EFFECTIVENESS, SPOBRK = 25 DEG., ALPHA = 10 DEG.

0A110 B61C11F12M51W124E40V19R15X29 (DF5025)

SYMBOL	BETA	MACH	PARAMETRIC VALUES	DATA SOURCE	RUDDER	RUDDER	REFERENCE INFORMATION
○	-4.000	ELEVON	.200 ALPHA	10.000 DATASET	RUDDER	SREF	4.4119
□	-2.000	SPDBRK	.000 AILRON	.000 DF5025	-25.000	LREF	19.2299
◇	.000		25.000 BOFLAP	-12.000 DF5027	.000	XPRP	37.9369
△	2.000				.000	YPRP	43.5874
	4.000				.000	ZPRP	.0000
					.0405	SCALE	15.1875
							SCALE



INCREMENTAL YAWING MOMENT COEFFICIENT, DCYN

FIG 11 RUDDER EFFECTIVENESS, SPDBRK = 25 DEG., ALPHA = 10 DEG.



0A110 B61C11F12M51W124E40V19R15X29 (DF5025)

PARAMETRIC VALUES		DATA SOURCE		REFERENCE INFORMATION	
BETA	MACH	10.000	DF5025	SO.FT.	4.4119
6.000	ELEVON	.000	DF5025	INCHES	19.2799
8.000	SPOBRK	25.000	DF5027	INCHES	37.5559
10.000		12.000		INCHES	43.5574
12.000				INCHES	.0000
14.000				INCHES	15.1875
				SCALE	.0405

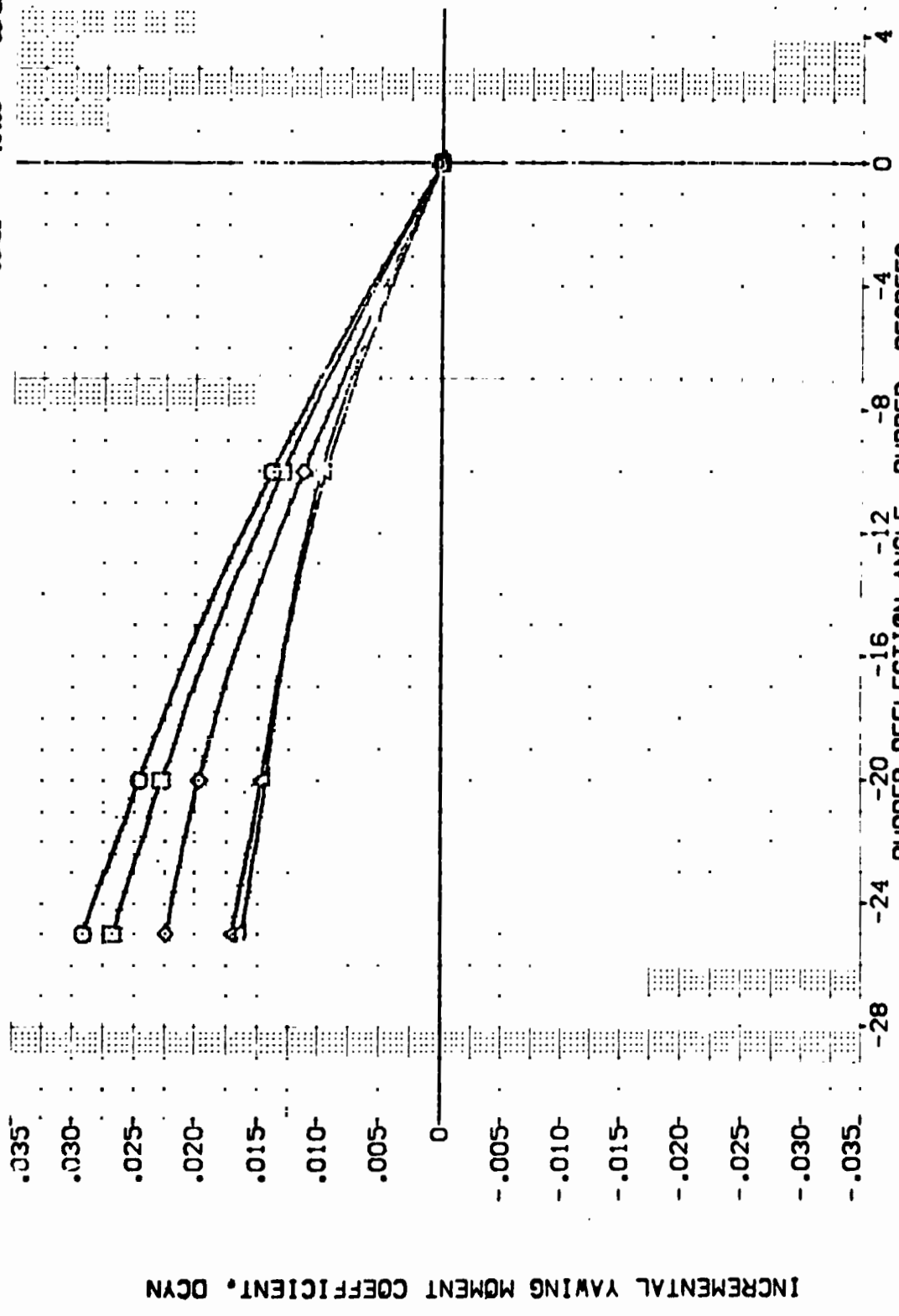
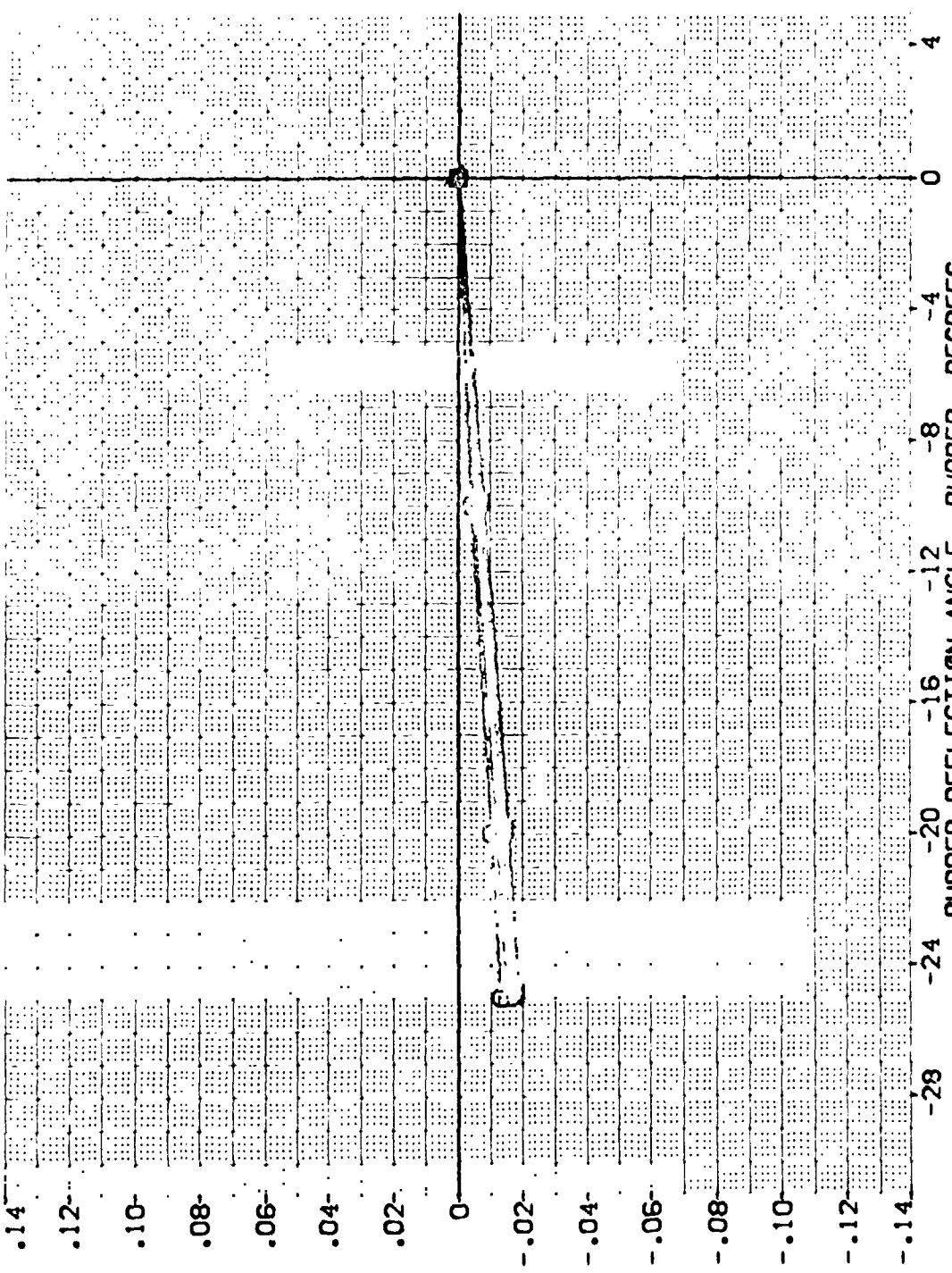


FIG 11 RUDDER EFFECTIVENESS, SPOBRK = 25 DEG., ALPHA = 10 DEG.

0A110 B61C11F12M51W124E40V19R15X29 (DF5025)

SYMBL		PARAMETRIC VALUES			DATA SOURCE			REFERENCE INFORMATION		
○	BETA	.200	ALPHA	10.000	RUDDER	DF5026	SREF	4.4119	50.FT.	
□	-14.000	.000	A1LRN	.000	DF5025	DF5026	LREF	19.2299	INCHES	
◇	-12.000	25.000	80FLAP	-12.000	DF5027	DF5028	BREF	37.9369	INCHES	
△	-10.000						XMRP	43.5974	INCHES	
	-8.000						YMRP	.0000	INCHES	
	-6.000						ZMRP	15.1875	INCHES	
							SCALE	.0405	SCALE	



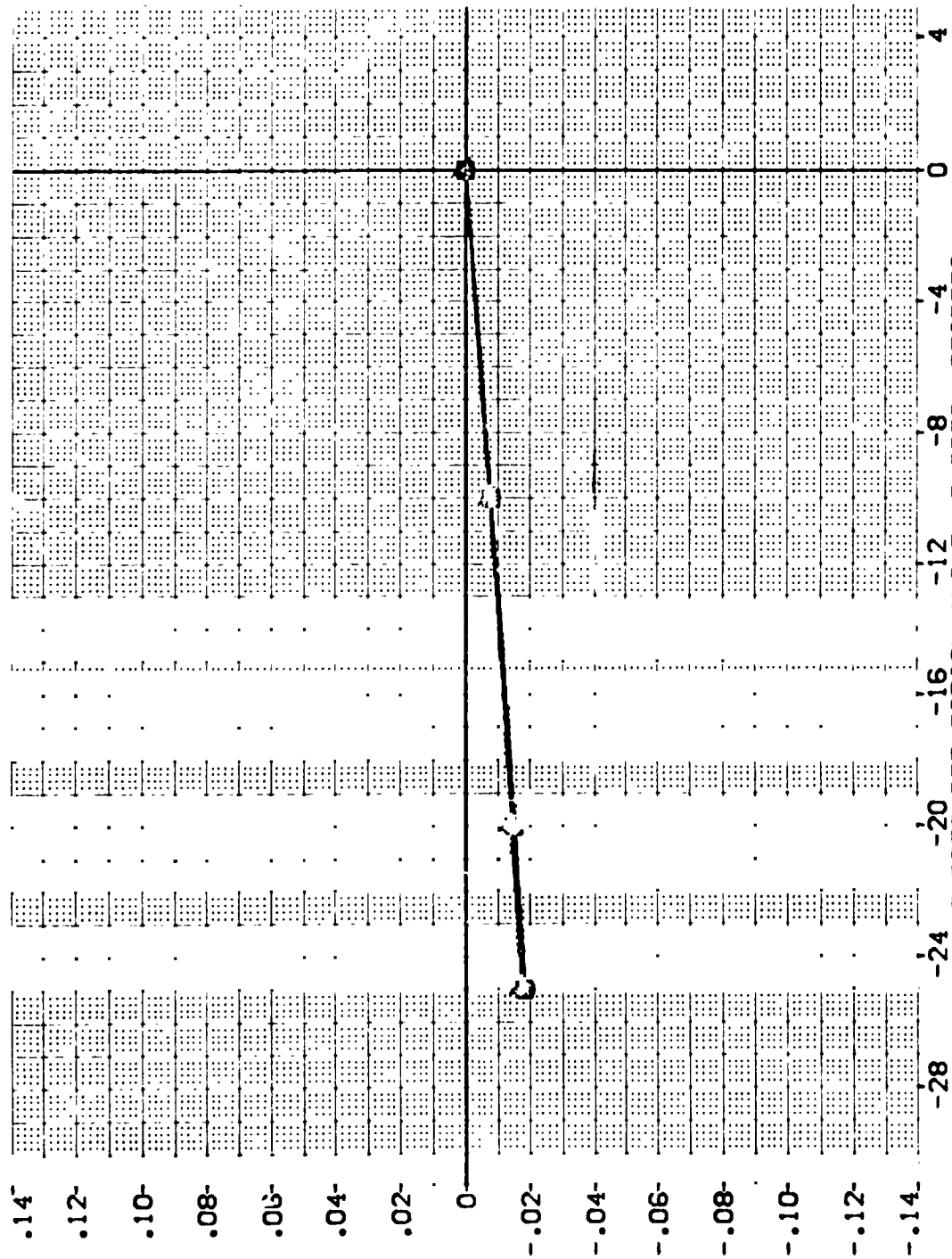
INCREMENTAL ROLLING MOMENT COEFFICIENT, DCBL

FIG 11 RUDDER EFFECTIVENESS, SPDBRK = 25 DEG., ALPHA = 10 DEG.



0A110 861C11F12M51W124E40V19R15X29 (DF5025)

SYMBOL		PARAMETRIC VALUES				DATA SOURCE				REFERENCE INFORMATION			
○	BETA	MACH	ALPHA	10.000	DATASET	RUDDER	DF5026	SREF	4.4119	SO.FT.			
□	ELEVON	ELEVON	A1LRON	.000	DF5025	-75.000	DF5028	LREF	19.7259	INDEES			
◇	SPOBRK	SPOBRK	BOFLAP	-12.000	DF5027	-10.000		BREF	37.9359	INDEES			
△								XTRP	43.5874	INDEES			
								YTRP	.0000	INDEES			
								ZTRP	15.1673	INDEES			
								SCALE	.0405	SCALE			



INCREMENTAL ROLLING MOMENT COEFFICIENT, OCBL

FIG 11 RUDDER EFFECTIVENESS, SPOBRK = 25 DEG., ALPHA = 10 DEG.

0A110 B61C11F12M51W124E40V19R15X29 (DF5025)

BETA	6.000	MACH	10.000	DATASET	10.000	DATASET	DF5026	RUDDER	-20.000	SREF	4.4119
	8.000	ELEVON	.000	DF5025	.000	DF5027	-25.000	LREF	19.7299	LREF	19.7299
	10.000	SPDBRK	-12.000	DF5027	-12.000		-10.000	BREF	37.9359	BREF	37.9359
	12.000							XTRP	43.5874	XTRP	43.5874
	14.000							ZTRP	.0000	ZTRP	.0000
								SCALE	15.1875	SCALE	15.1875
									.0405		.0405

SYMBOL
 ○ □ ◇ △

INCREMENTAL ROLLING MOMENT COEFFICIENT, DCBL

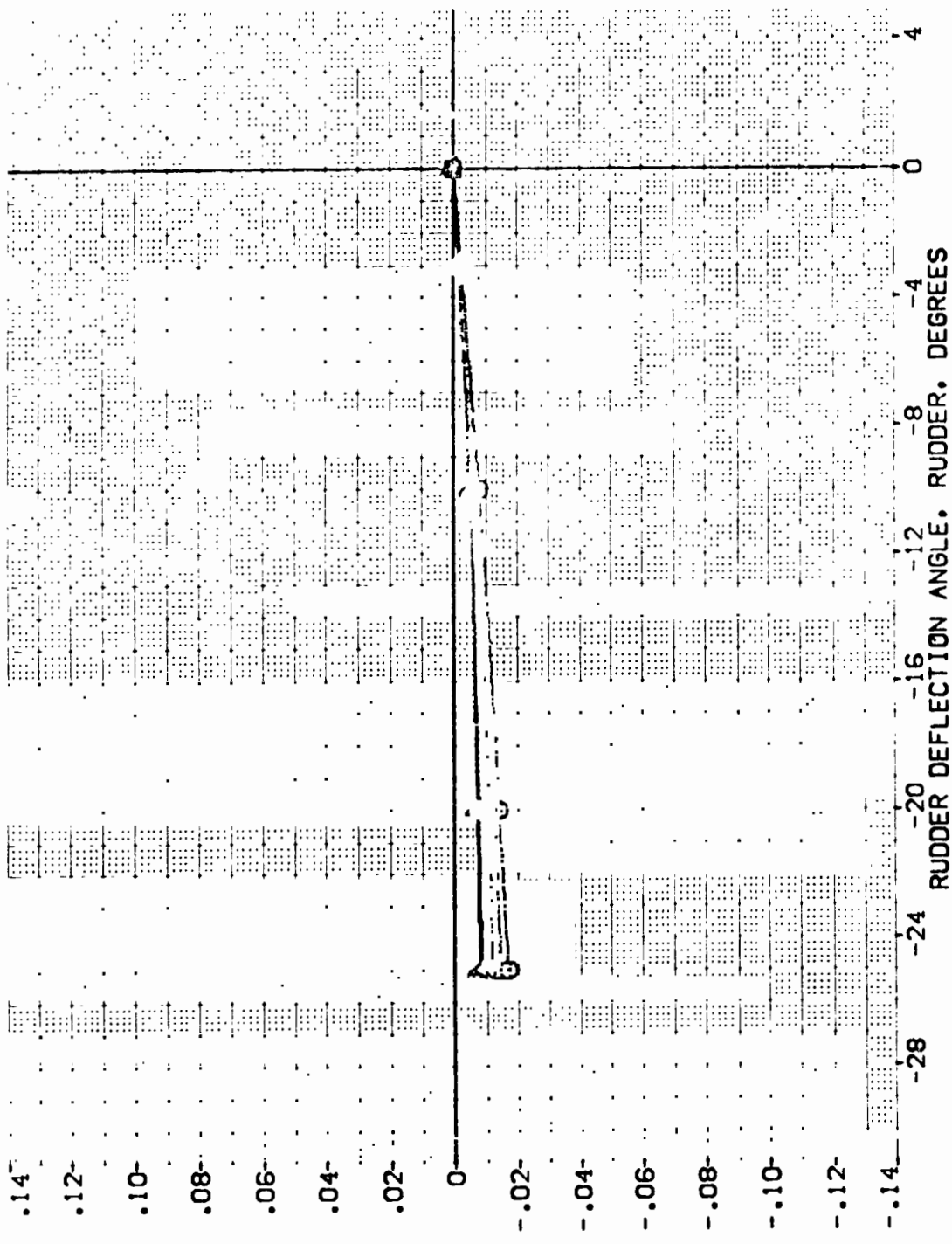


FIG 11 RUDDER EFFECTIVENESS, SPDBRK = 25 DEG., ALPHA = 10 DEG.



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 { R-5028 } 0A110 BSIC11F12P51V12AE40V18R15C8
 { R-5029 } 0A110 BSIC11F12P51V12AE41V18R15C8
 { R-5036 } 0A110 BSIC11F12P51V12AE42V18R15C8

ALPHA RUDDER SPDBRK
 10.000 .000 25.000
 10.000 .000 25.000
 10.000 .000 25.000

AILBRK REFERENCE INFORMATION
 .000 4.4118 SQ.FT.
 .000 19.2259 INCHES
 .000 37.5359 INCHES
 .000 43.5974 INCHES
 .000 .0000 INCHES
 .000 .0000 INCHES
 .000 15.1875 INCHES
 .000 .0405 SCALE

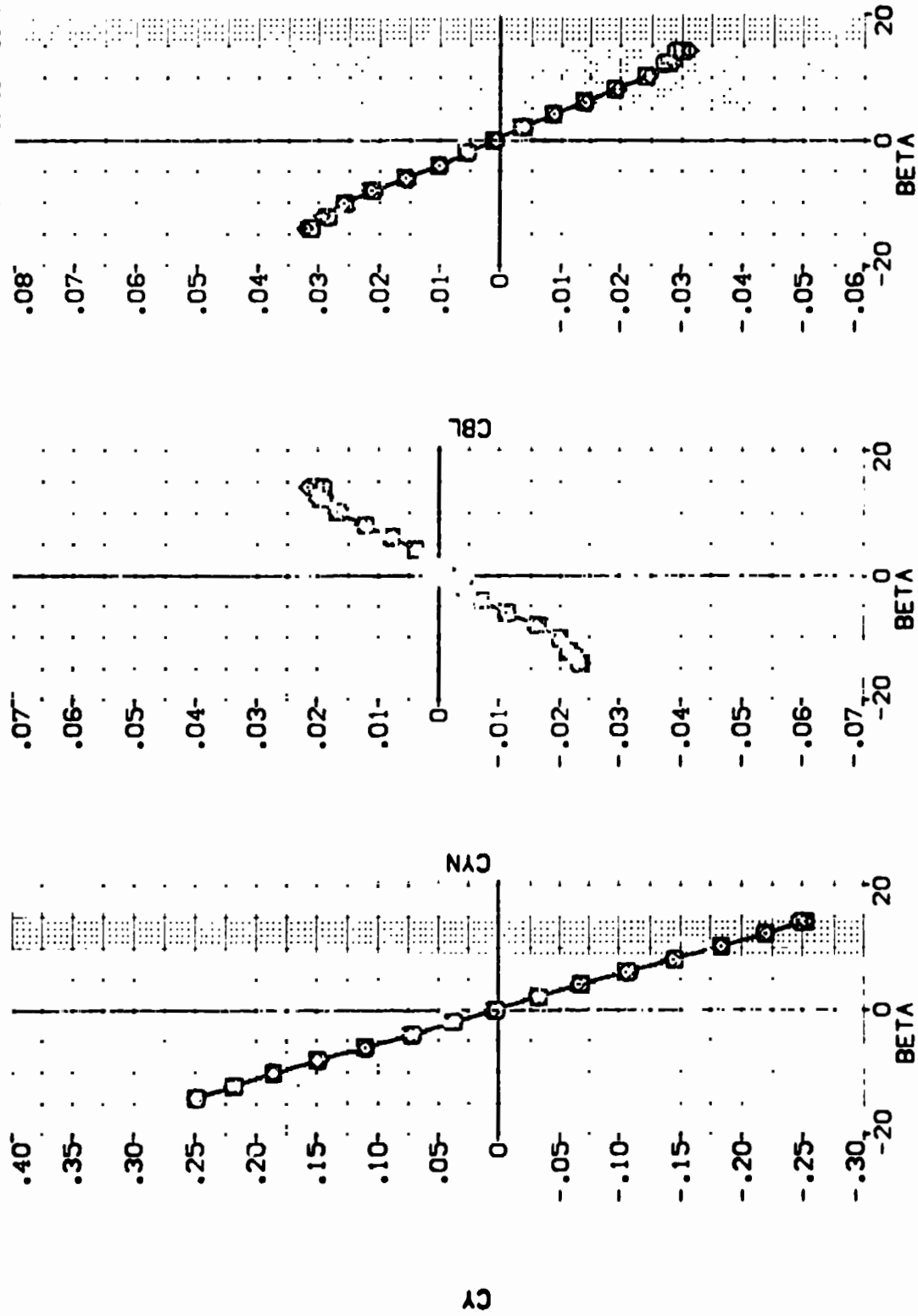


FIG 12 EFFECT OF ELEVON SEALS, ELEVON = 0 DEG., SPDBRK = 25 DEG.

(AJMACH = .20

DATA SET SYMB. CONFIGURATION DESCRIPTION
 (M-3028) 0A110 861C11F12S1V124E40V18R15C28
 (M-3029) 0A110 861C11F12S1V124E41V18R15C28
 (M-3036) 0A110 861C11F12S1V124E42V18R15C28

MACH ELEVON AIRLON BDFLAP REFERENCE INFORMATION
 .200 .000 .070 -12.000 4.4119 50.FT.
 .200 .000 .000 -12.000 19.2299 100-ES
 .200 .000 .000 -12.000 37.9359 100-ES
 XMRP 43.5974 100-ES
 YMRP .0000 100-ES
 ZMRP 15.1875 100-ES
 SCALE .0405 100-ES

SIDE FORCE COEFFICIENT DERIVATIVE WITH BETA, CYBETA, PER DEGREE

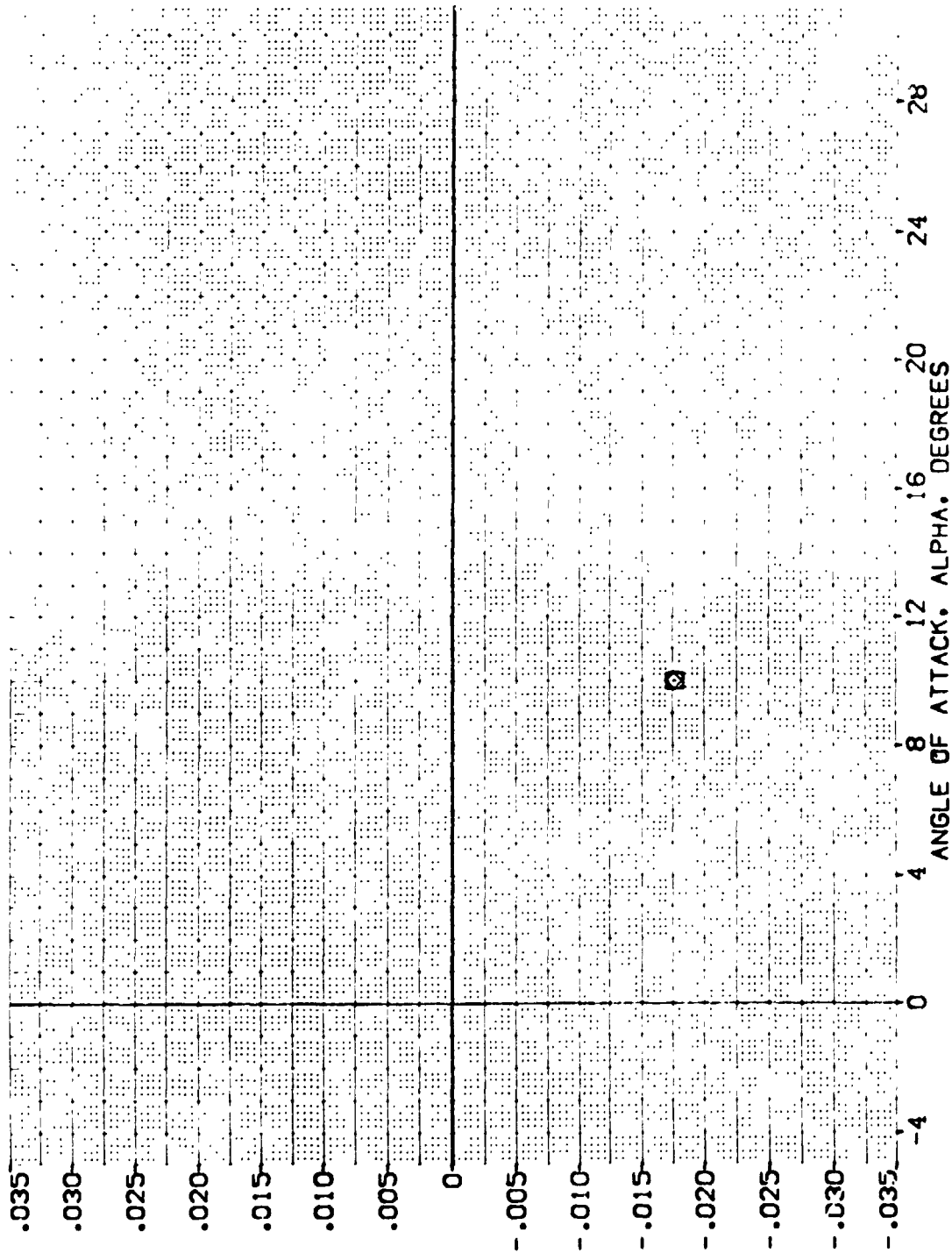


FIG 12 EFFECT OF ELEVON SEALS, ELEVON = 0 DEG., SPOBRK = 25 DEG.

DATA SET SYMBOL CONFIGURATION DESCRIPTION REFERENCE INFORMATION

(MF5028)	0A110 BSIC11F12/S1V124E40V1SR15C28	SREF 4.4118	50.FT.
(MF5029)	0A110 BSIC11F12/S1V124E41V1SR15C28	LREF 19.2259	INCHES
(MF5036)	0A110 BSIC11F12/S1V124E42V1SR15C28	BREF 37.5369	INCHES
		XREF 43.5974	INCHES
		YREF .0000	INCHES
		ZREF 15.1875	INCHES
		SCALE .0405	SCALE

MACH .200 ELEVON .000 AILRON .000 BOFLAP -12.000

 .200 .000 .000 -12.000

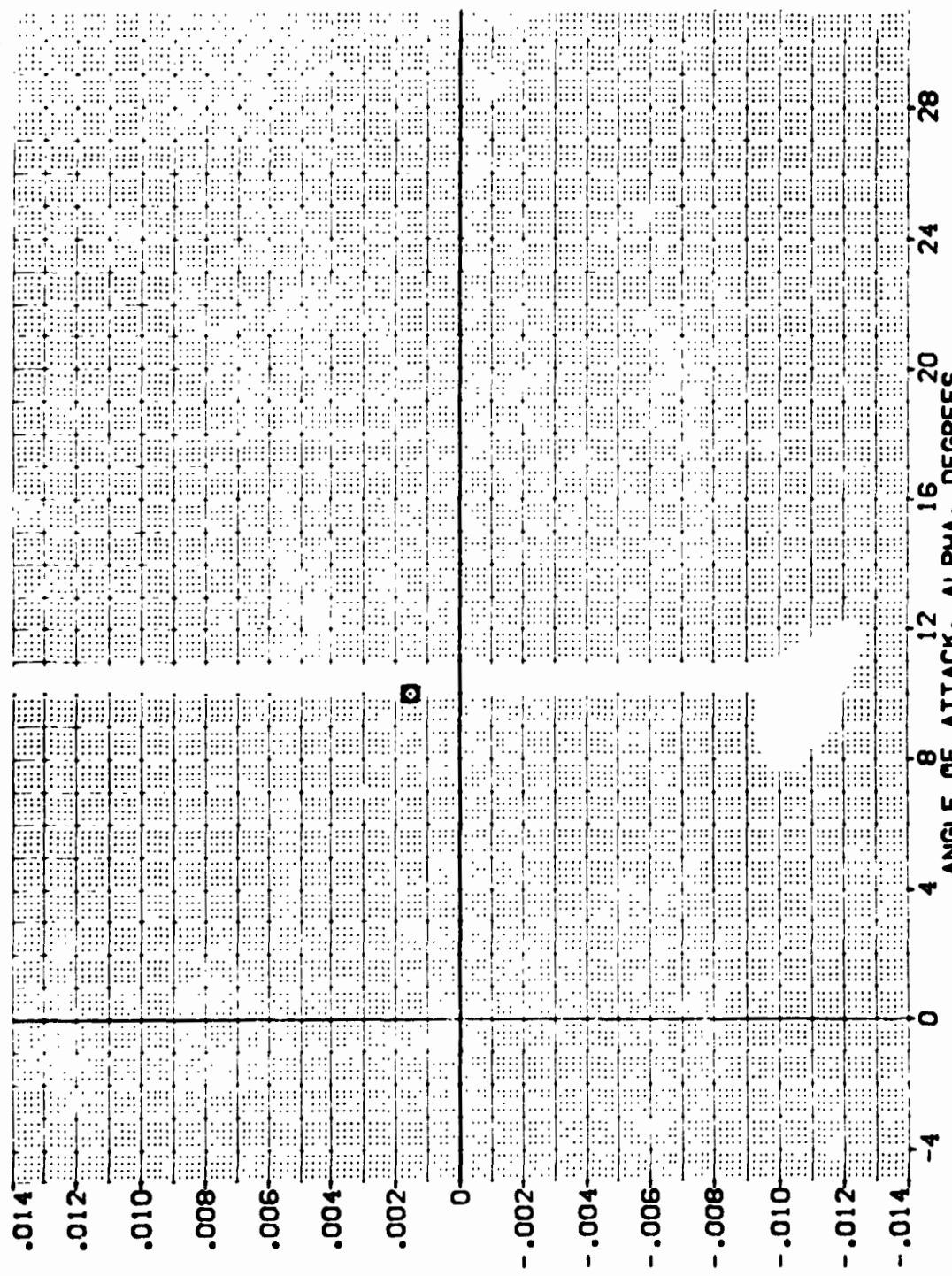


FIG 12 EFFECT OF ELEVON SEALS, ELEVON = 0 DEG., SPDBRK = 25 DEG.

ROLLING MOMENT COEFFICIENT DERIVATIVE WITH BETA, CBLBET, PER DEGREE

DATA SET SYMBO. CONFIGURATION DESCRIPTION
 (MF5028) 8110 861C11F12P61V124E40V1SR15X25
 (MF5029) 8110 861C11F12P61V124E41V1SR15X25
 (MF5030) 8110 861C11F12P61V124E42V1SR15X25

MACH ELEVON AILRON BOFLAP REFERENCE INFORMATION
 .200 .000 .000 -12.000 4.4119 SO.FT.
 .200 .000 .000 -12.000 19.2299 INCHES
 .200 .000 .000 -12.000 37.9369 INCHES
 .200 .000 .000 -12.000 43.5974 INCHES
 .200 .000 .000 -12.000 15.1875 INCHES
 .200 .000 .000 -12.000 .0405 SCALE

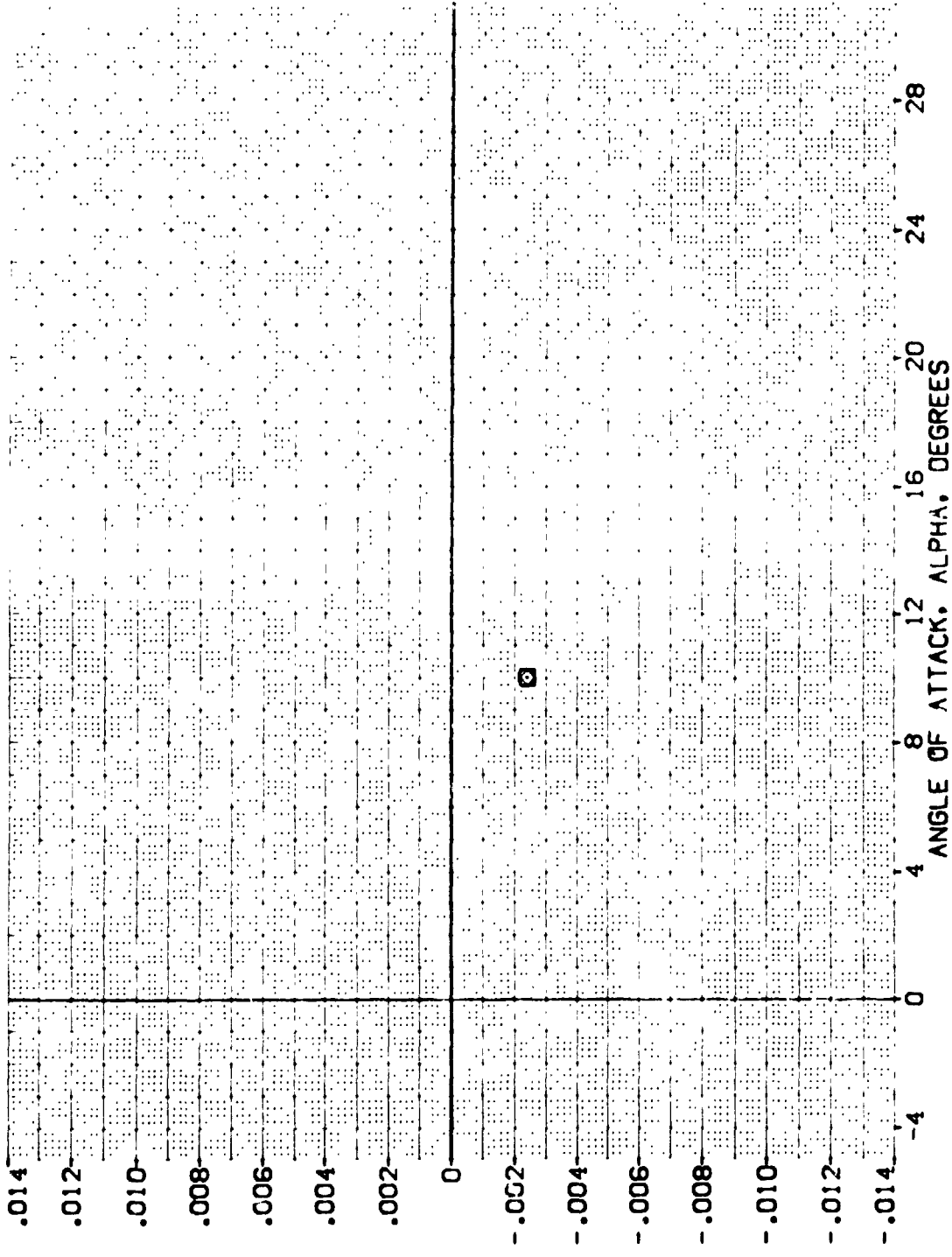


FIG 12 EFFECT OF ELEVON SEALS, ELEVON = 0 DEG., SPDBRK = 25 DEG.



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (EF5030) 0A110 BSIC1F127S1V124E41V1SR15X2S
 (EF5030) 0A110 BSIC1F127S1V124E41V1SR15X2S
 (EF5031) 0A110 BSIC1F127S1V124E41V1SR15X2S

ELEVON AILRON RUDDER SPDRBK
 -20.000 .000 .000 25.000
 .000 .000 .000 25.000
 15.000 .000 .000 25.000

REFERENCE INFORMATION
 SREF 4.4119 50.FT.
 LREF 19.2258 INCHES
 BREF 37.5359 INCHES
 YPRP 43.5574 INCHES
 ZPRP .0000 INCHES
 SCALE 15.1875 INCHES

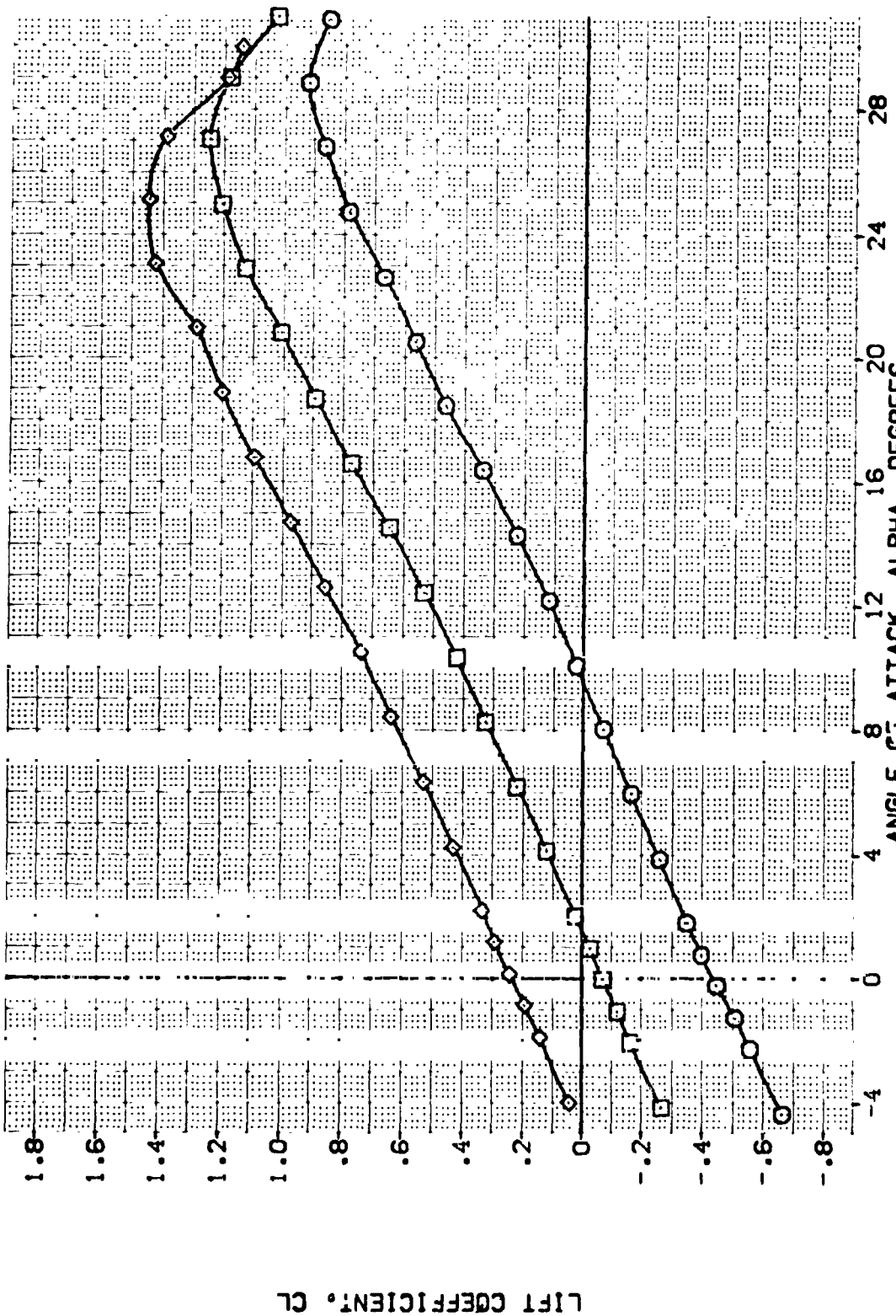


FIG 13 ELEVON EFFECTIVENESS, UPPER SEAL REMOVED, BDFLAP = -11.7 DEG.

CAJMACH = .20

DATA SET SYMBOL. CONFIGURATION DESCRIPTION
 (EF3032) 0A110 861C1I1F12P51V124E41V1SR1S29
 (EF3030) 0A110 861C1I1F12P51V124E41V1SR1S29
 (EF3031) 0A110 861C1I1F12P51V124E41V1SR1S29

ELEVON AILRON RUDDER SPOBRK
 -20.000 .000 .000 25.000
 .000 .000 .000 25.000
 15.000 .000 .000 25.000

REFERENCE INFORMATION
 SREF 4.4119 SQ.FT.
 LREF 19.2299 INCHES
 BREF 37.9359 INCHES
 XMRP 43.5974 INCHES
 YMRP .0000 INCHES
 ZMRP 15.1875 INCHES
 SCALE .0405 SCALE

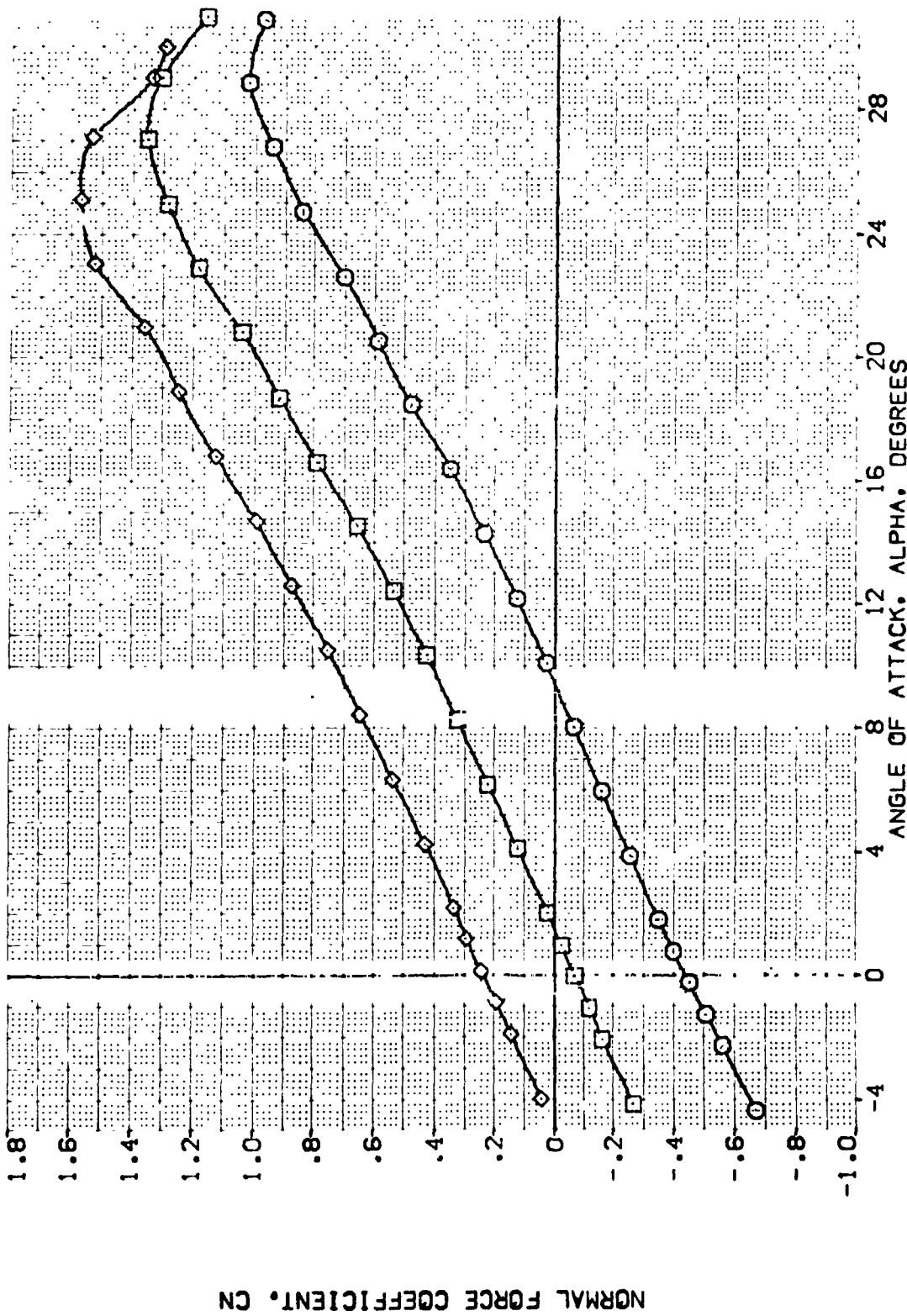


FIG 13 ELEVON EFFECTIVENESS, UPPER SEAL REMOVED, BOFLAP = -11.7 DEG.

CAJ MACH = .20

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DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (EF5032) [] BA110 BS1C1|F|2|5|V|24E4|V|SR|S|C29
 (EF5033) [] BA110 BS1C1|F|2|5|V|24E4|V|SR|S|C29
 (EF5031) [] BA110 BS1C1|F|2|5|V|24E4|V|SR|S|C29

ELEVON AIRLON RUDDER SPOSBK REFERENCE INFORMATION
 -20.000 .000 .000 25.000 SREF 4.4119 SQ.FT.
 .000 .000 .000 25.000 LREF 19.2299 INCHES
 15.000 .000 .000 25.000 BREF 37.9359 INCHES
 YMRP 43.5974 INCHES
 ZMRP .0000 INCHES
 SCALE 15.1875 INCHES
 .0405 SCALE

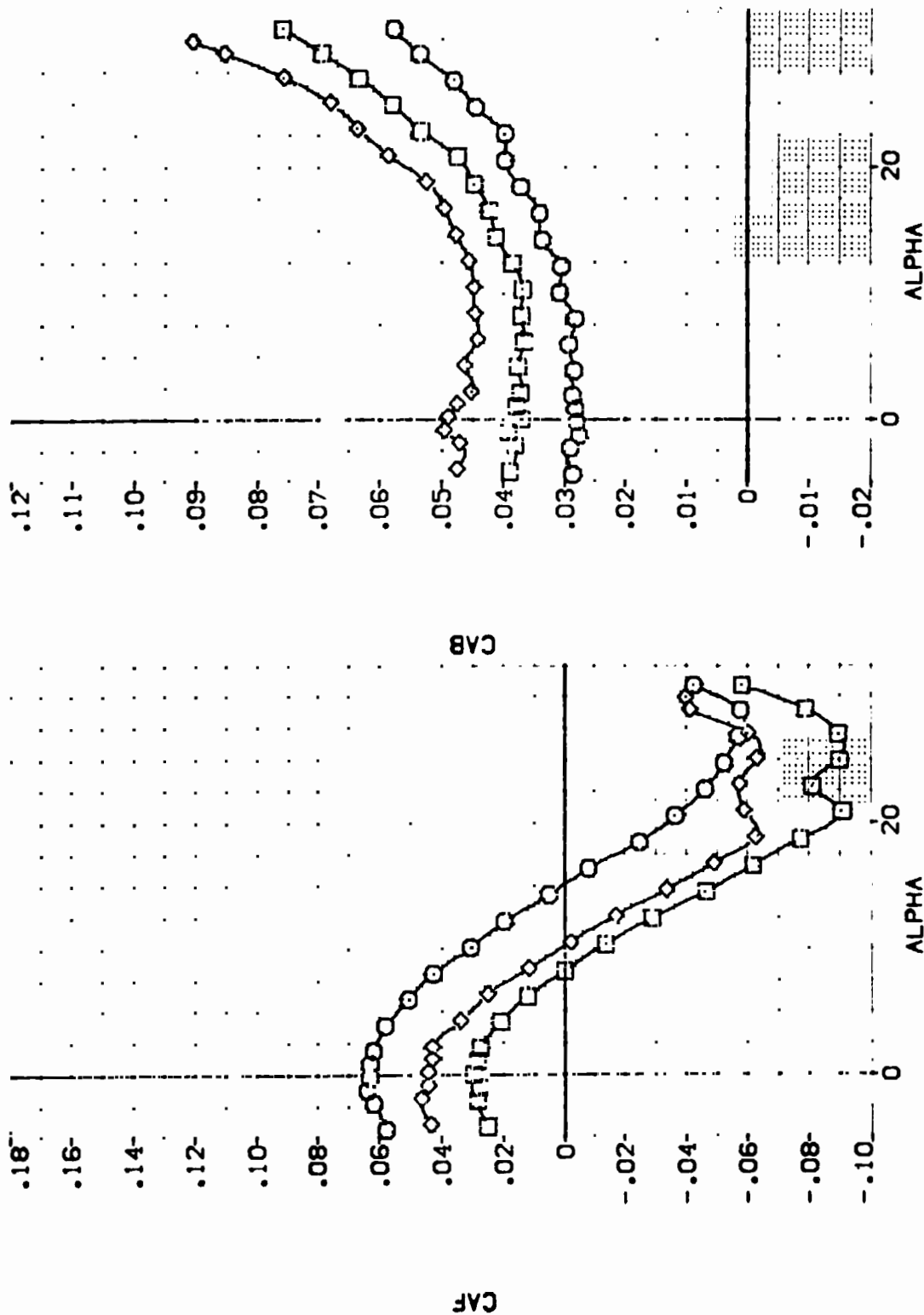


FIG 13 ELEVON EFFECTIVENESS, UPPER SEAL REMOVED, BOFLAP = -11.7 DEG.

(A)MACH = .20

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (EFS022) 0A110 861C1F1261V124E1V19R1S1C8
 (EFS030) 0A110 861C1F1261V124E1V19R1S1C8
 (EFS031) 0A110 861C1F1261V124E1V19R1S1C8

ELEVON AIRLIFT ROLLER SPEEDK REFERENCE INFORMATION SQ.FT. INCHES
 -20.000 .000 .000 25.000 SREF 4.4119
 15.000 .000 .000 25.000 LREF 19.2299
 .000 .000 .000 25.000 XREF 37.9359
 .000 .000 .000 25.000 YMRP 43.5974
 .000 .000 .000 25.000 ZMRP .0000
 .000 .000 .000 25.000 SCALE 15.1675
 .000 .000 .000 25.000 SCALE .0405

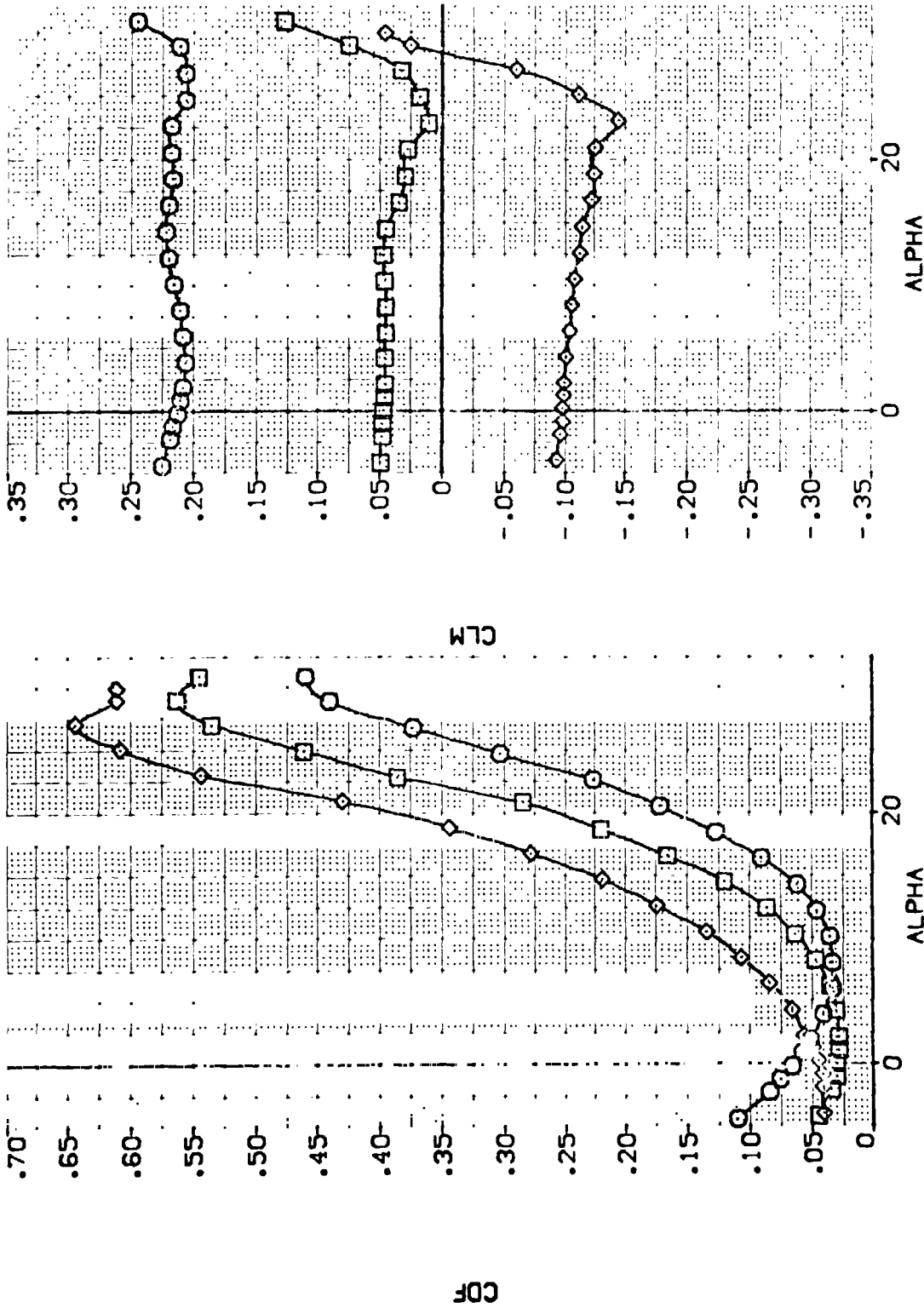


FIG 13 ELEVON EFFECTIVENESS, UPPER SEAL REMOVED, BDFLAP = -11.7 DEG.

(A)MACH = .20



DATA SET 3180L CONFIGURATION DESCRIPTION REFERENCE INFORMATION

{EF5002}	0A110	861C11F1	51V124E41V1SR15C28	SREF	4.4119	SG.FT.
{EF5030}	0A110	861C11F125	51V124E41V1SR15C28	LREF	19.2299	INCHES
{EF5031}	0A110	861C11F125	51V124E41V1SR15C28	BREF	37.5369	INCHES
				XMRP	43.5974	INCHES
				YMRP	.0000	INCHES
				ZMRP	15.1875	INCHES
				SCALE	.0400	SCALE

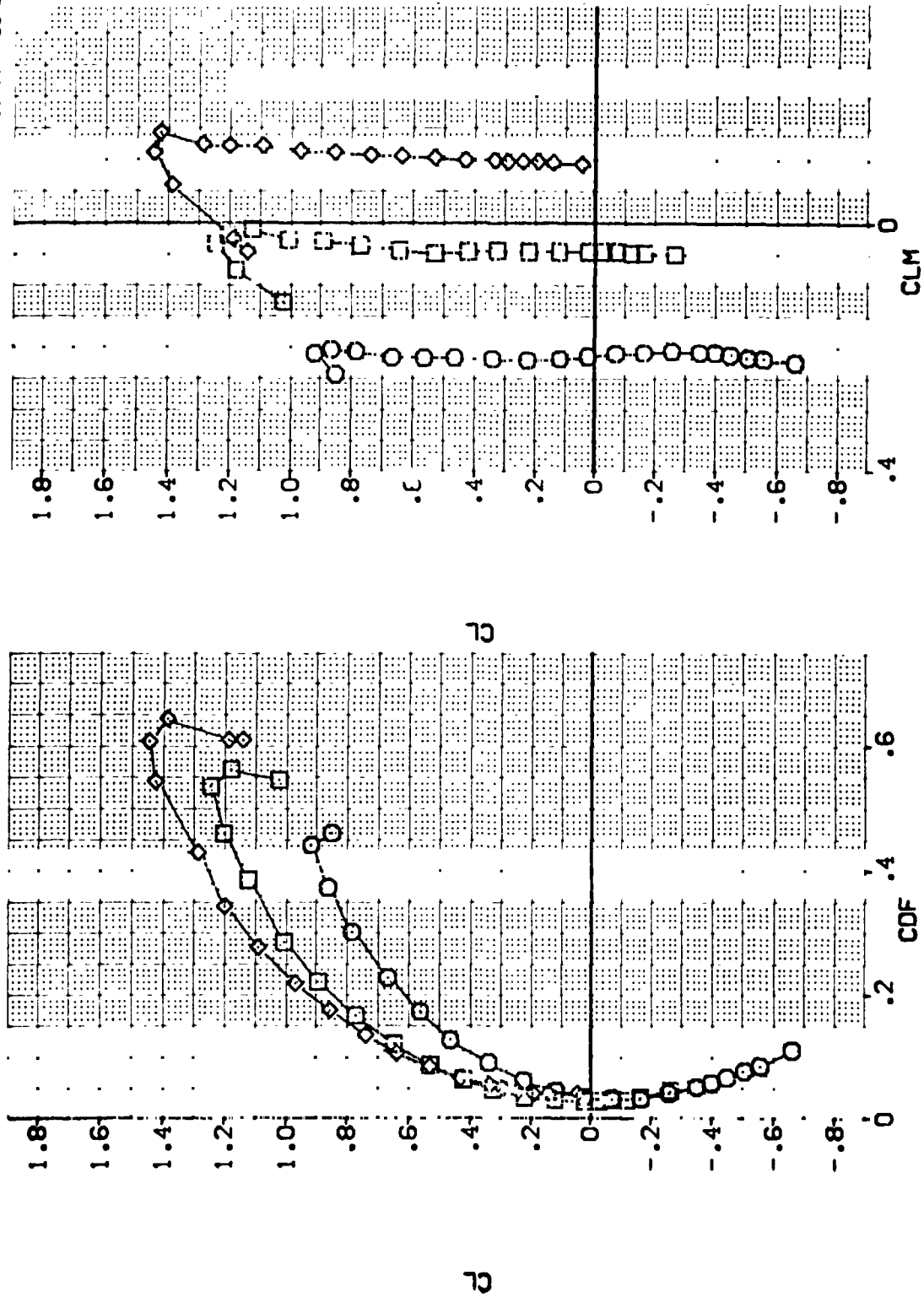


FIG 13 ELEVON EFFECTIVENESS, UPPER SEAL REMOVED, BDFLAP = -11.7 DEG.

(AJMACH = .20

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DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (EF5002) 0A110 BASIC I: 2A110 V: 1S15X23
 (EF5000) 0A110 BASIC I: 2A110 V: 1S15X23
 (EF5001) 0A110 BASIC I: 2A110 V: 1S15X23

ELEVON AIRLON RUDDER SPEEDYK REFERENCE INFORMATION
 -20.000 .000 .000 25.000 4.4119 SQ.FT.
 15.000 .000 .000 25.000 19.2289 INCHES
 .000 .000 .000 25.000 37.5359 INCHES
 .000 .000 .000 25.000 43.5574 INCHES
 .000 .000 .000 25.000 15.1875 INCHES
 .000 .000 .000 25.000 .0405 SCALE

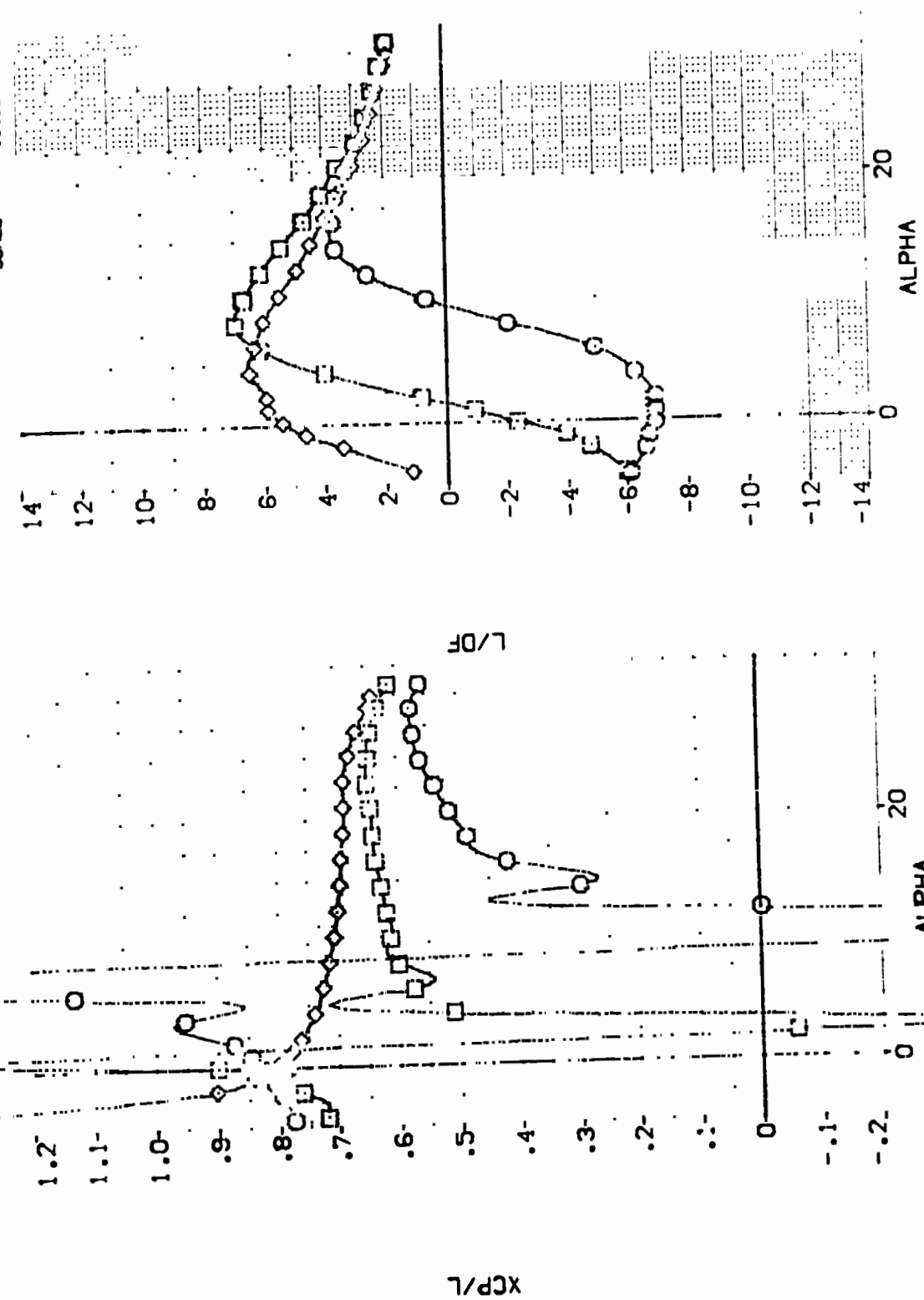
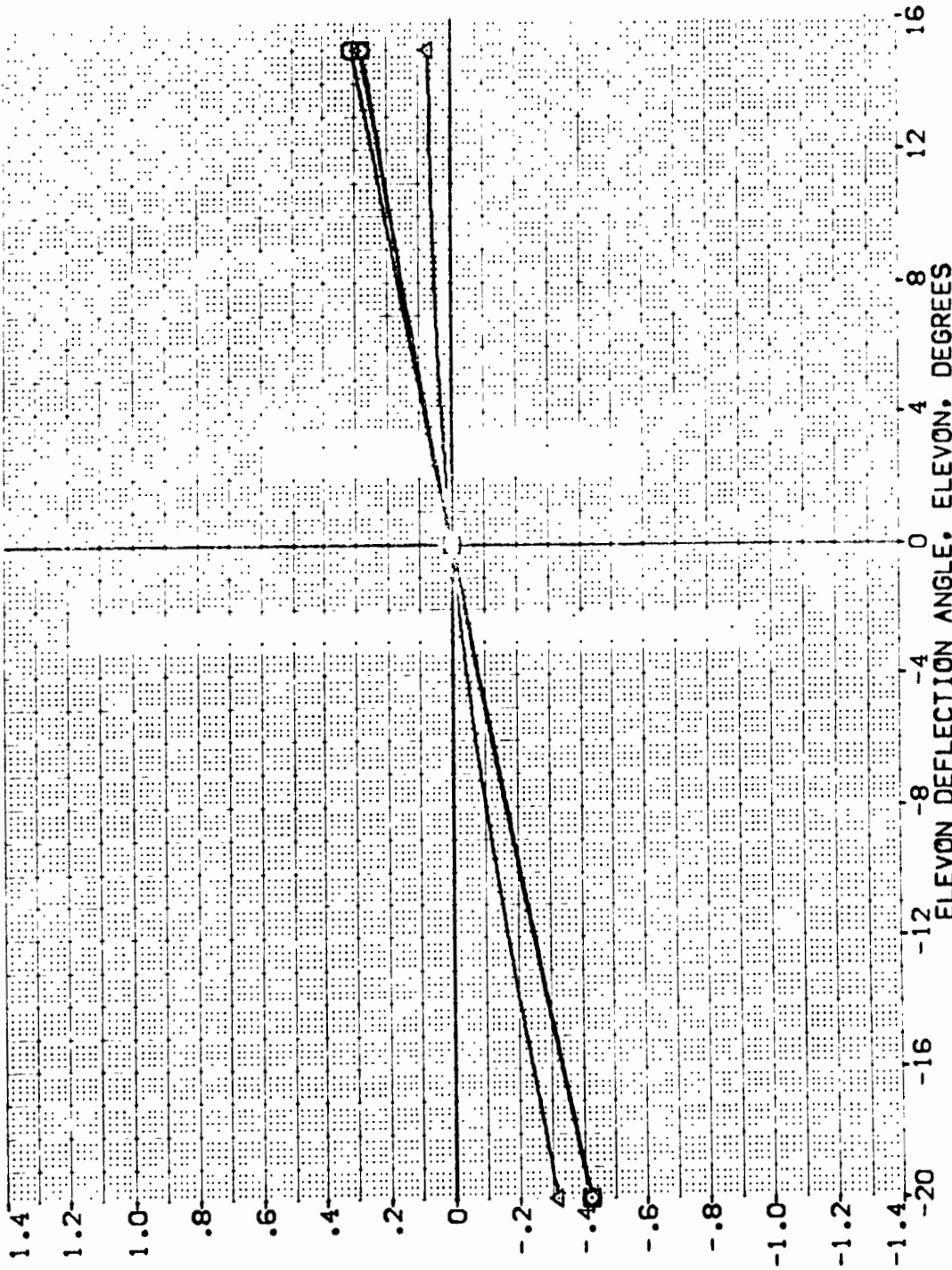


FIG 13 ELEVON EFFECTIVENESS, UPPER SEAL REMOVED, BDFLAP = -11.7 DEG.

(A)MACH = .20

0A110 B61C11F12M51W124E41V19R15X29 (KF5032)

ALPHA	16.000	MACH	.200	ATLRON	.000	DATASET	ELEVON	DATA SOURCE	DATASET	ELEVON	SREF	REFERENCE INFORMATION
	20.000	BDFLAP	-12.000	SPOBRK	25.000	KF5032	-20.000		KF5030	.000	19.2299	SO.FT.
	24.000	RUDDER	.000	BETA	.000	KF5031	15.000				37.9359	INCHES
	28.000										43.5674	INCHES
											.0000	INCHES
											15.1873	INCHES
											.0405	SCALE



INCREMENTAL FOREBODY LIFT COEFFICIENT, CLF

FIG 13 ELEVON EFFECTIVENESS, UPPER SEAL REMOVED, BDFLAP = -11.7 DEG.

(KF5032)

0A110 B61C11F12MS1W124E41V19R15X29

PARAMETRIC VALUES		DATA SOURCE		REFERENCE INFORMATION	
ALPHA	MACH	ELEVON	DATASET	SREF	SO.FT.
-4.000	.200	.000	KF5030	LREF	19.2288
.000	AIRLEN	.000		BREF	37.9259
4.000	-12.000	-20.000		XPRP	43.5574
8.000	SPOBRK	15.000		YPRP	.0000
12.000	BETA			ZPRP	15.1875
				SCALE	.0405

INCREMENTAL FOREBODY DRAG COEFFICIENT, DCDP

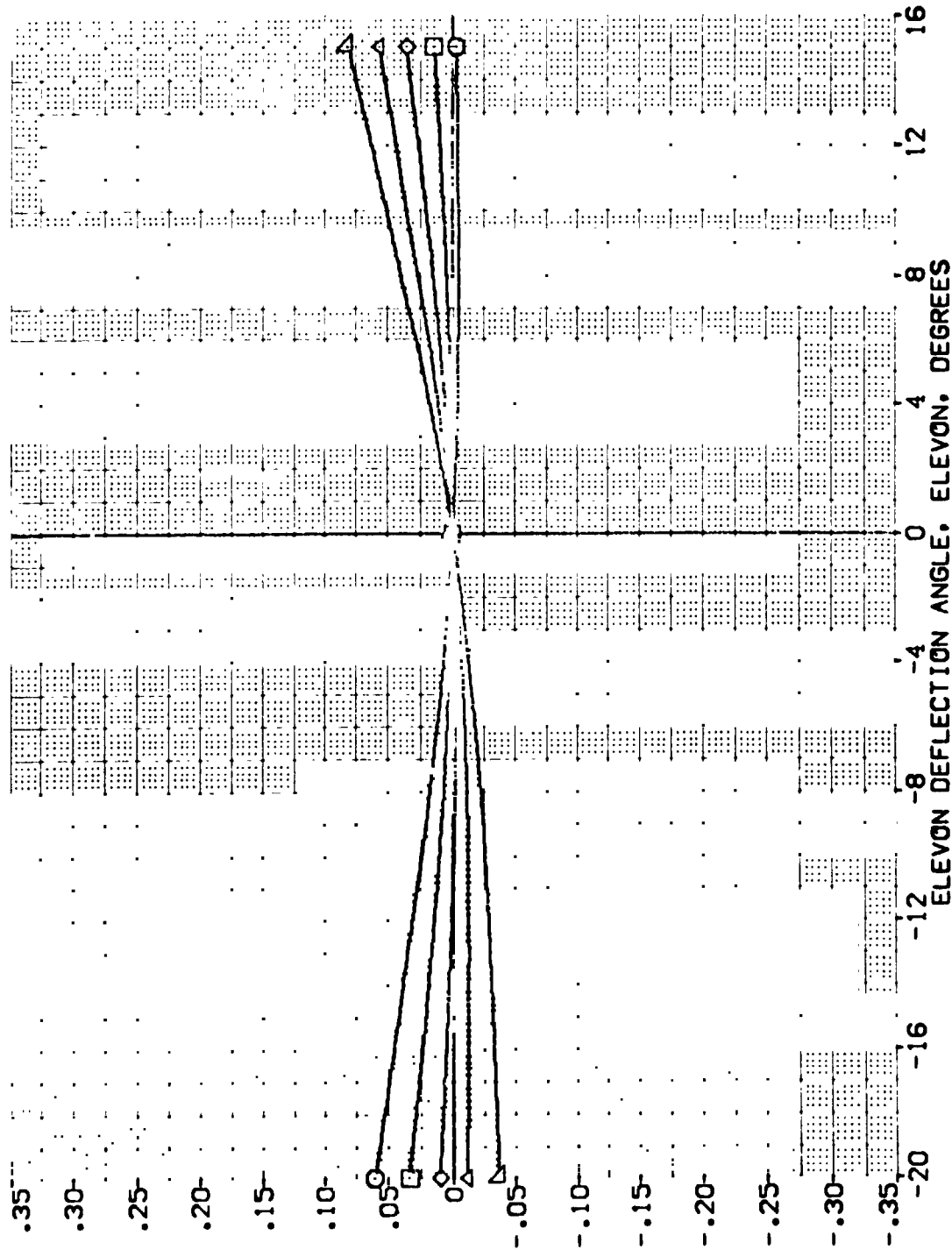
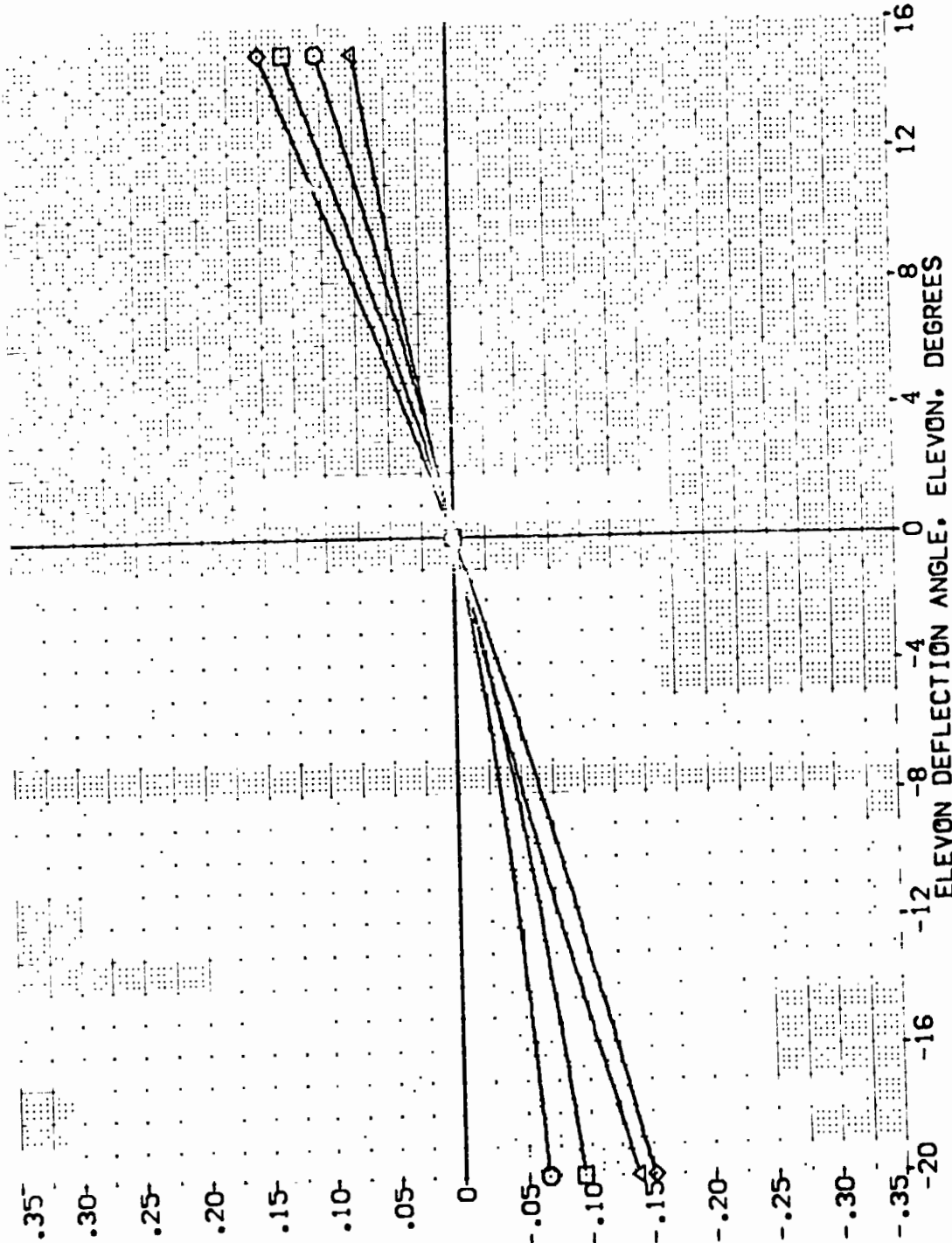


FIG 13 ELEVON EFFECTIVENESS, UPPER SEAL REMOVED, BDFLAP = -11.7 DEG.

(KF5032)

0A110 B61C11F12M51W124E41V19R15X29

ALPHA	MACH	PARAMETRIC VALUES		DATA SOURCE		REFERENCE INFORMATION	
16.000	.200	ALURON	.000	DATASET	ELEVON	SREF	SO.FT.
20.000	-12.000	SPOBRK	25.000	KF5032	.000	LREF	19.2299
24.000	.000	BETA	.000	KF5031		XMRP	37.9359
28.000						YMRP	43.5874
						ZMRP	.0000
						SCALE	15.1875
						SCALE	.0405



INCREMENTAL FOREBODY DRAG COEFFICIENT, DCF

FIG 13 ELEVON EFFECTIVENESS, UPPER SEAL REMOVED, BDFLAP = -11.7 DEG.



(KF5032)

0A110 B61C11F12M51W124E41V19R15X29

ALPHA	MACH	PARAMETRIC VALUES		DATA SOURCE		REFERENCE INFORMATION	
-4.000	.200	AILERON	.000	DATASET	ELEVON	SREF	SO.FT.
.000	-12.000	SPDRBK	25.000	KF5032	.000	LREF	INCHES
4.000	.000	BETA	.000	KF5031	.000	BREF	INCHES
8.000						XPRP	INCHES
12.000						YPRP	INCHES
						ZPRP	INCHES
						SCALE	SCALE

SYMBOL
 ▽ □ ◇ ▲

INCREMENTAL FOREBODY PITCHING MOMENT COEFFICIENT, DCLM

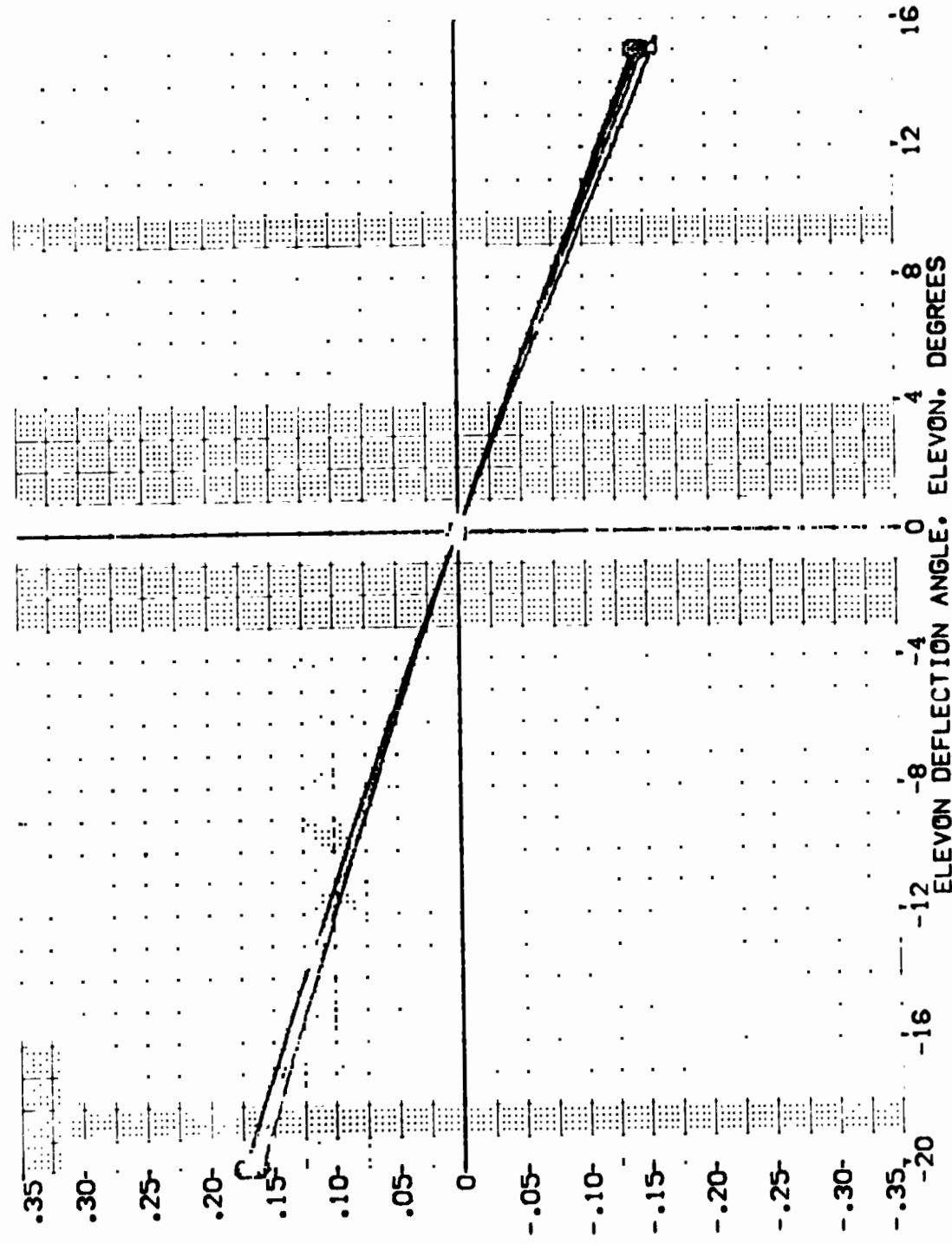


FIG 13 ELEVON EFFECTIVENESS, UPPER SEAL REMOVED, BDFLAP = -11.7 DEG.



0A110 B61C11F12MS1W124E41V1915X29 (KF5032)

ALPHA	16.000	MACH	.200	AIURON	.000	DATASET	25.000	KF5032	ELEVON	-20.000	DATA SOURCE	KF5030	ELEVON	.000	SREF	4.4119	REFERENCE INFORMATION	50.475
20.000	BOFLAP	-12.000	SPOBRK	.000	KF5031	15.000			LREF	19.2000					INC-45		INC-45	
24.000	RUDDER	.000	BETA						BREF	37.9359					INC-45		INC-45	
28.000									XTRP	43.2511					INC-45		INC-45	
									ZTRP	.0000					INC-45		INC-45	
									SCALE	15.1875					SCALE		SCALE	

INCREMENTAL FOREBODY PITCHING MOMENT COEFFICIENT, DCLM

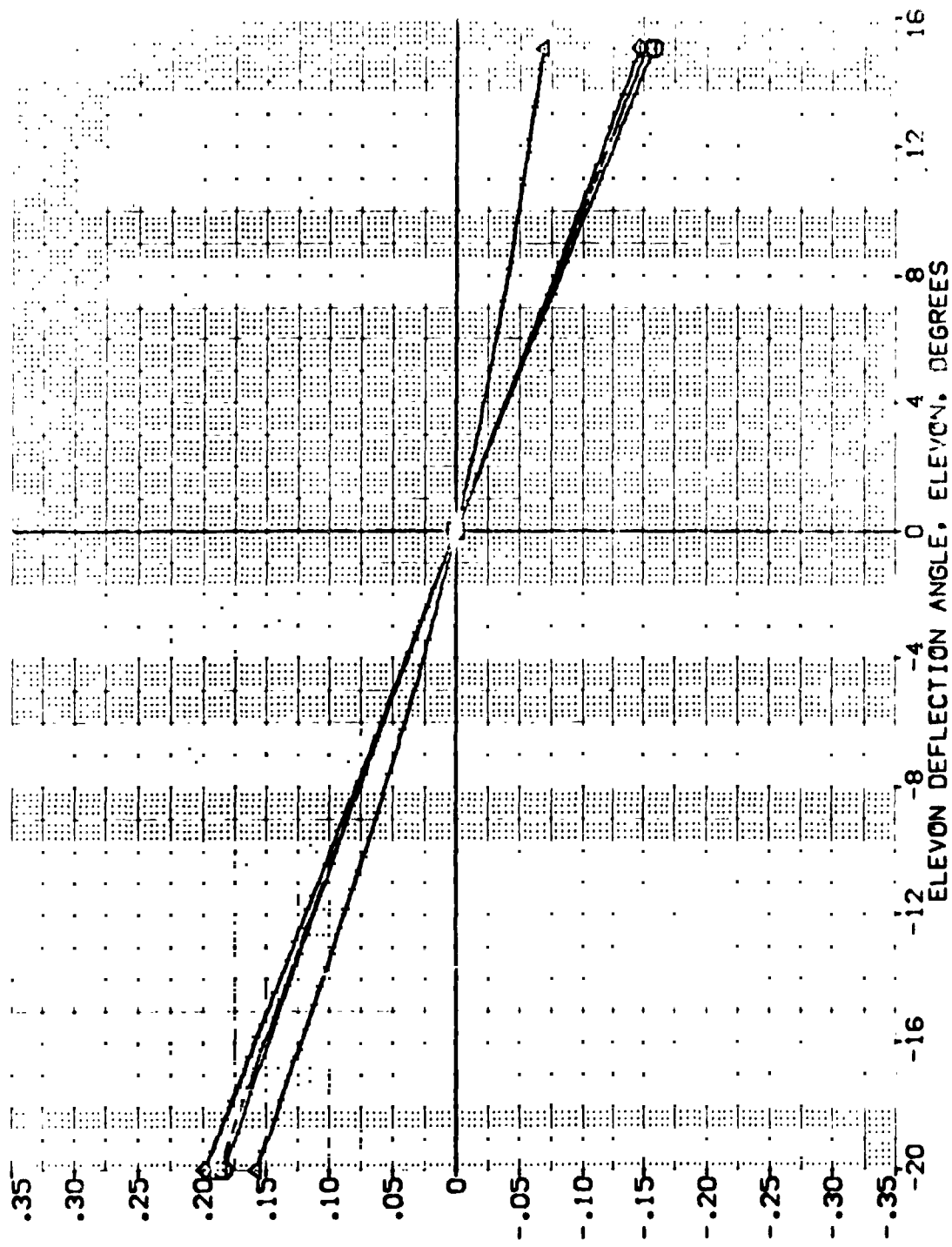


FIG 13 ELEVON EFFECTIVENESS, UPPER SEAL REMOVED. BOFLAP = -11.7 DEG.



DATA SET SYMB.	CONFIGURATION DESCRIPTION	ELEVON	AILERON	RUDDER	SPOILER	REFERENCE INFORMATION
{EP5000}	0A110 881C11F12S1V12A42V18R151C3	-20.000	.000	.000	25.000	SREF 4.4119 80. FT
{EP5005}	0A110 881C11F12S1V12A42V18R151C3	.000	.000	.000	25.000	LREF 19.2238 IN-OES
{EP5008}	0A110 881C11F12S1V12A42V18R151C3	15.000	.000	.000	25.000	BREF 37.5338 IN-OES
						XPRP 43.5674 IN-OES
						YPRP .0000 IN-OES
						ZPRP 15.1875 IN-OES
						SCALE .0405 SCALE

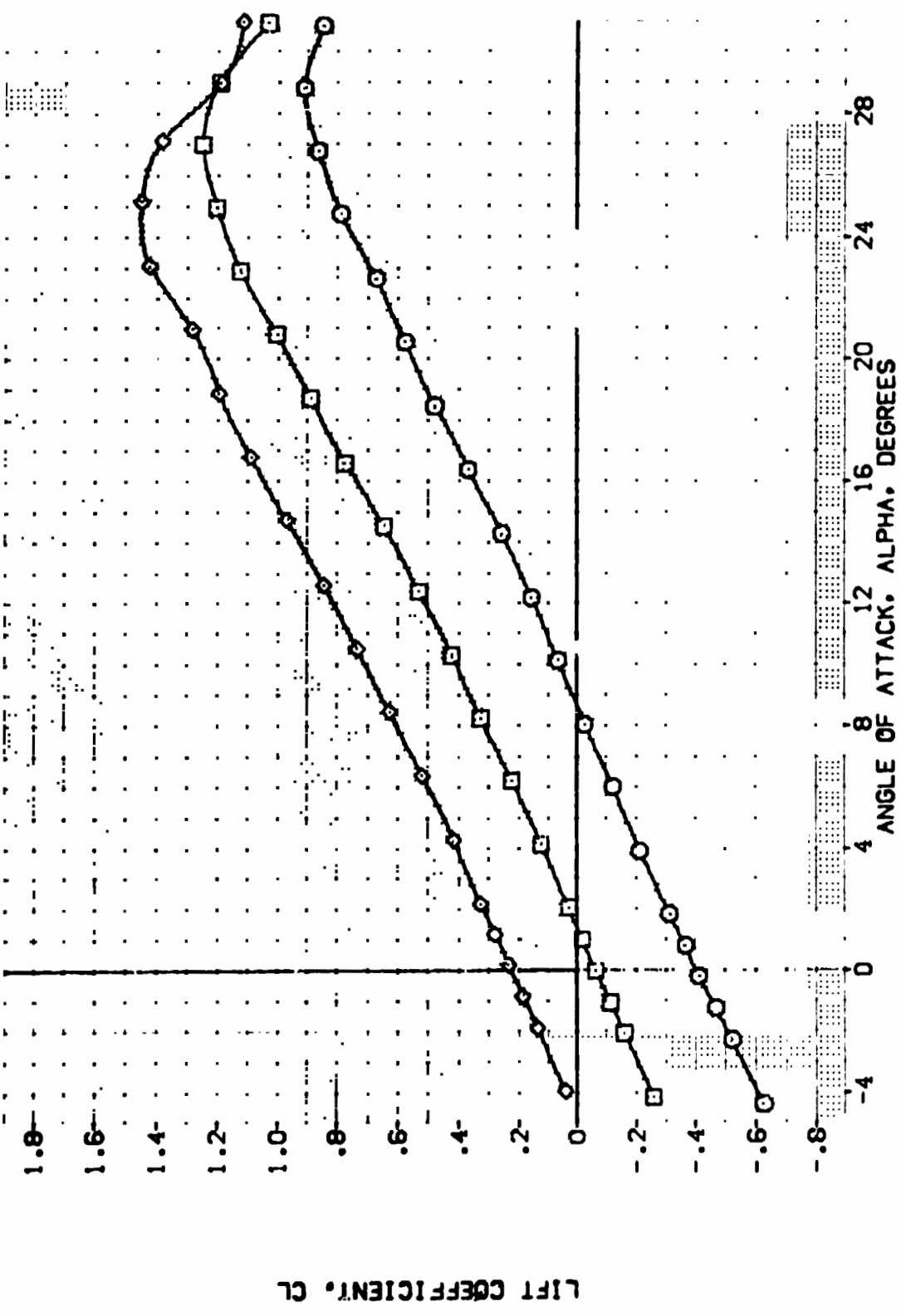


FIG 14 ELEVON EFFECTIVENESS, ELEVON SEALS REMOVED, BDFLAP = -11.7 DEG.

(A)MACH = .20

DATA SET SYMBOL CONFIGURATION DESCRIPTION

{EF5003}	Q	0A110	861C1F12S1V124E2V19R15X28
{EF5005}	Q	0A113	861C1F12S1V124E2V19R15X28
{EF500A}	Q	0A110	861C1F12S1V124E2V19R15X28

ELEVON AILERON RUDDER SPEED OF SOUND REFERENCE INFORMATION

ELEVON	AILERON	RUDDER	SPEED OF SOUND	REFERENCE INFORMATION
-20.000	.000	.000	25.000	SREF 4.4119
.000	.000	.000	25.000	LREF 19.2299
15.000	.000	.000	25.000	BREF 37.9359
				XREF 43.5974
				YREF .0000
				ZREF 15.1875
				SCALE .0405

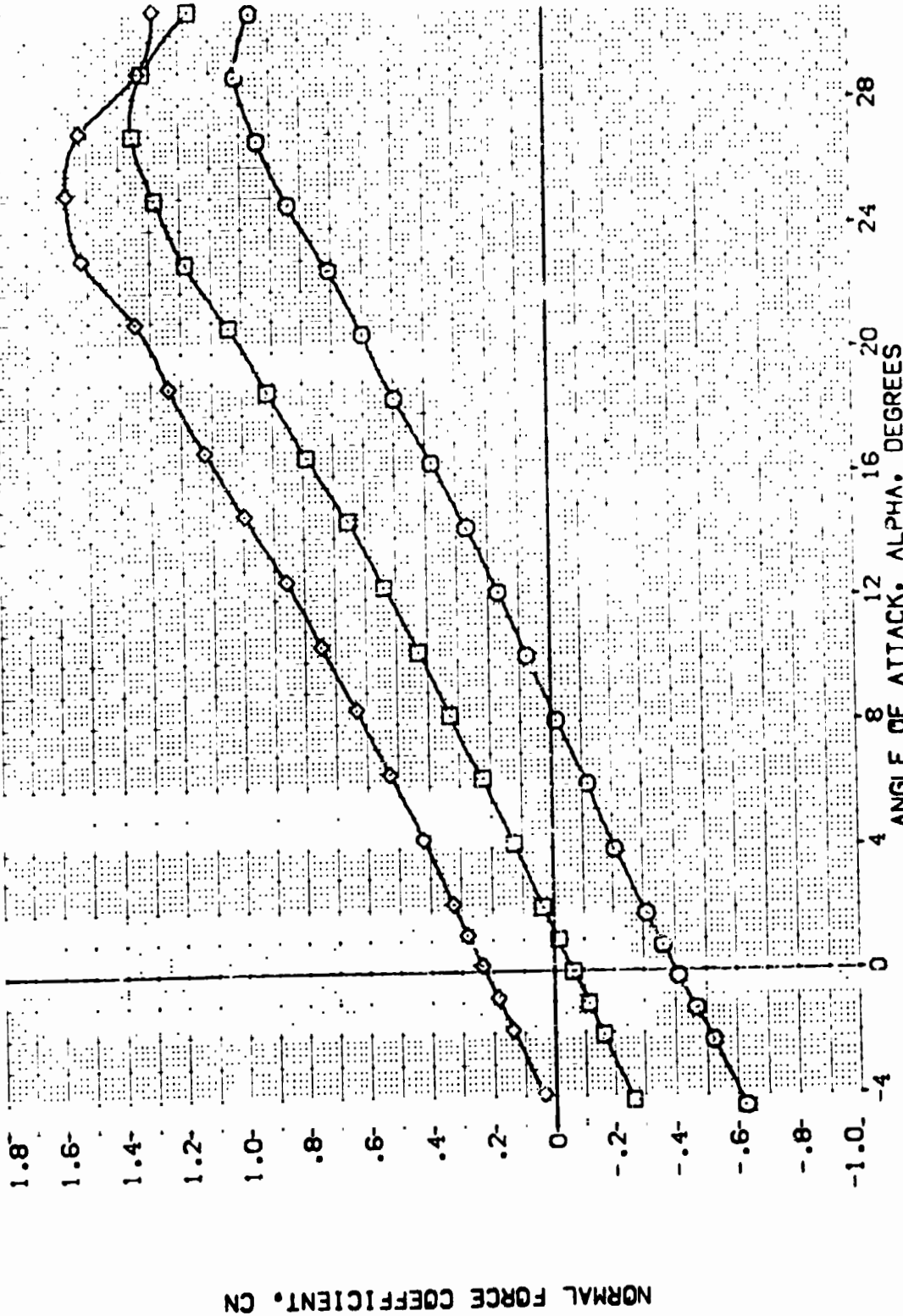


FIG 14 ELEVON EFFECTIVENESS, ELEVON SEALS REMOVED, BDFLAP = -11.7 DEG



DATA SET SYMBOL CONF IGURATION DESCRIPTION

(EF5033) CA110 861C11F12V61V124E42V18R15V23

(EF5035) CA110 861C11F12V61V124E42V18R15V23

(EF5034) CA110 861C11F12V61V124E42V18R15V23

ELEVON AILERON RUDDER SPOBRK

-20.000 .000 .000 25.000

.000 .000 .000 25.000

15.000 .000 .000 25.000

REFERENCE INFORMATION

SREF 4.4119 50.FT.

LREF 19.2299 INDES

BREF 37.9359 INDES

XPRP 43.5974 INDES

YPRP 15.0000 INDES

ZPRP 15.1875 INDES

SCALE .0405 SCALE

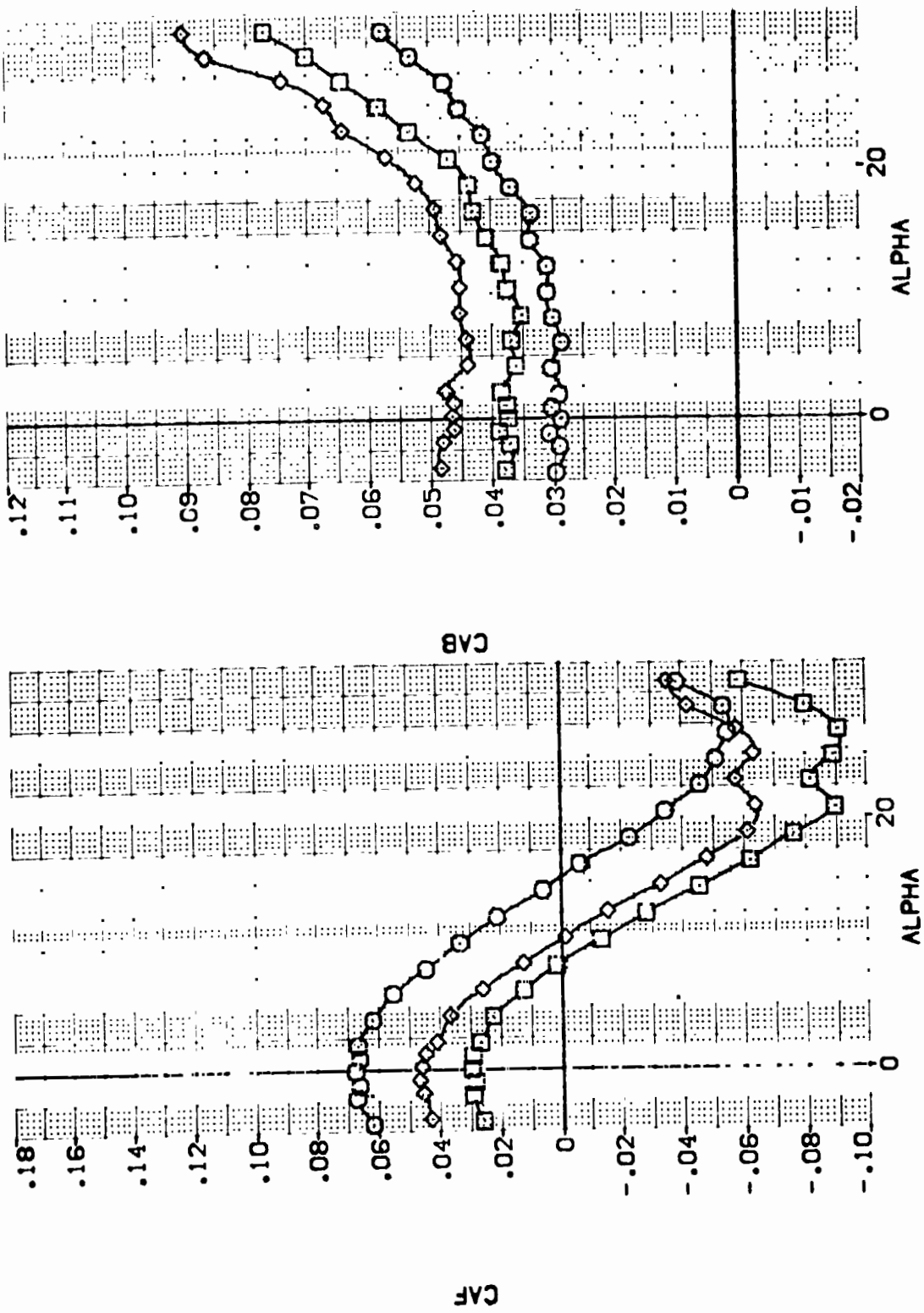


FIG 14 ELEVON EFFECTIVENESS, ELEVON SEALS REMOVED, BDFLAP = -11.7 DEG.
 CAJMACH = .20 PAGE 75

DATA SET SYMBOL: (EF5033) (EF5035) (EF503A)

CONFIGURATION DESCRIPTION: 0A110 B61C1F12G51V124E42V1SR1SVC8
 0A110 B61C1F12G51V124E42V1SR1SVC8
 0A110 B61C1F12G51V124E42V1SR1SVC8

ELEVON AIRLON RUDDER SPDBRK SREF INO-ES
 -20.000 .000 .000 .000 19.2798 INO-ES
 .000 .000 .000 .000 37.9559 INO-ES
 15.000 .000 .000 .000 43.9574 INO-ES
 .000 .000 .000 .000 15.1875 INO-ES
 .000 .000 .000 .000 15.1875 INO-ES
 .000 .000 .000 .000 .0405 SCALE

REFERENCE INFORMATION: 4.4119 SQ.FT.
 19.2798 INO-ES
 37.9559 INO-ES
 43.9574 INO-ES
 15.1875 INO-ES
 15.1875 INO-ES
 .0405 SCALE

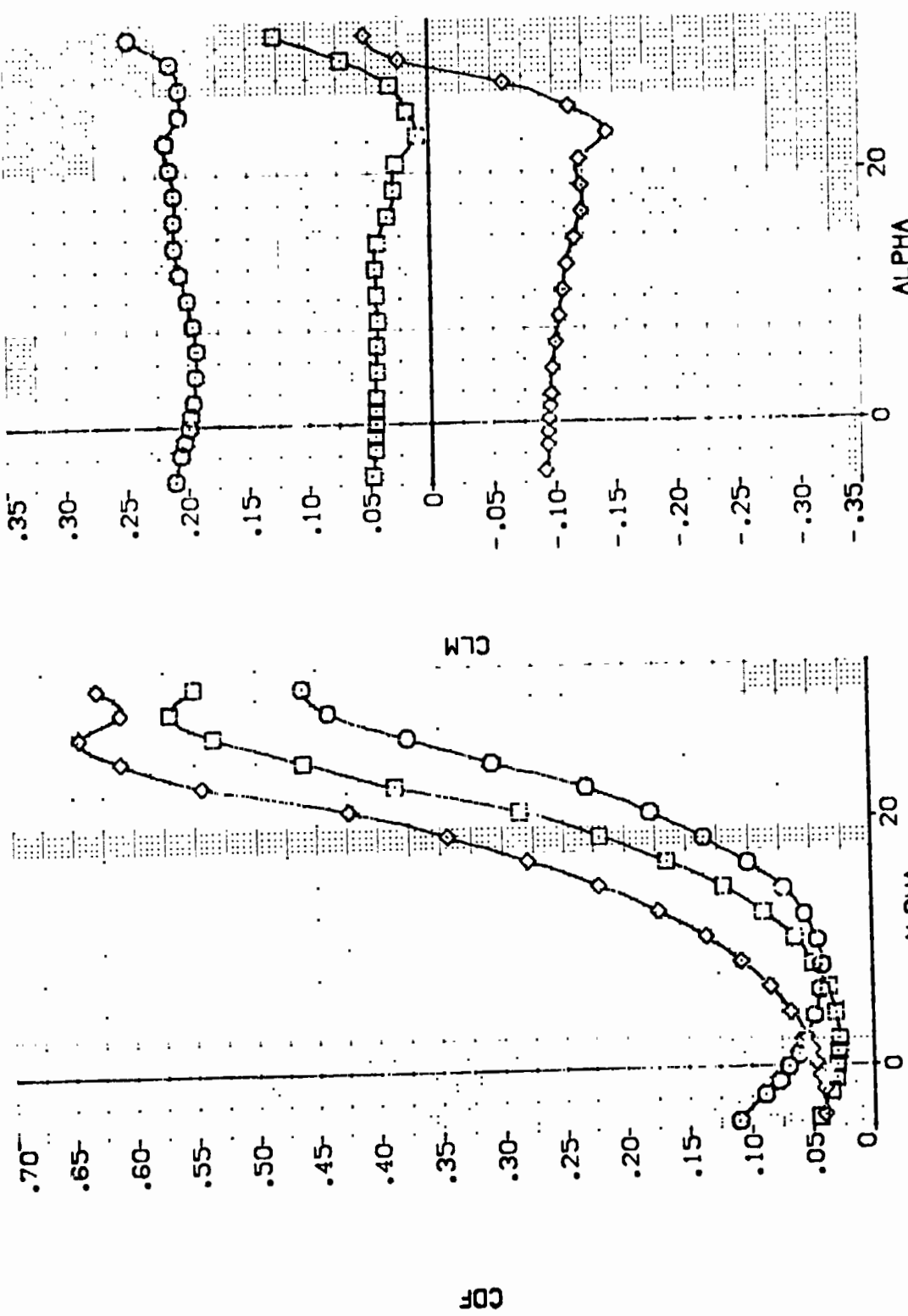


FIG 14 ELEVON EFFECTIVENESS, ELEVON SEALS REMOVED, BDFLAP = -11.7 DEG.
 (A)MACH = .20 PAGE 76



DATA SET SYMBOL CONFIGURATION DESCRIPTION

{ EF5033 } 0A110 BS1C11F12V51V124E42V18R15X2B
 { EF5035 } 0A110 BS1C11F12V51V124E42V18R15X2B
 { EF5034 } 0A110 BS1C11F12V51V124E42V18R15X2B

ELEVON AILERON RUDDER SPODBK REFERENCE INFORMATION

-20.000 .000 .000 25.000 SREF 4.4119 SQ.FT.
 .000 .000 .000 25.000 LREF 19.2299 IN.-ES
 15.000 .000 .000 25.000 XTRP 37.9359 IN.-ES
 YTRP .0000 IN.-ES
 ZTRP 15.1873 IN.-ES
 SCALE .0405 SCALE

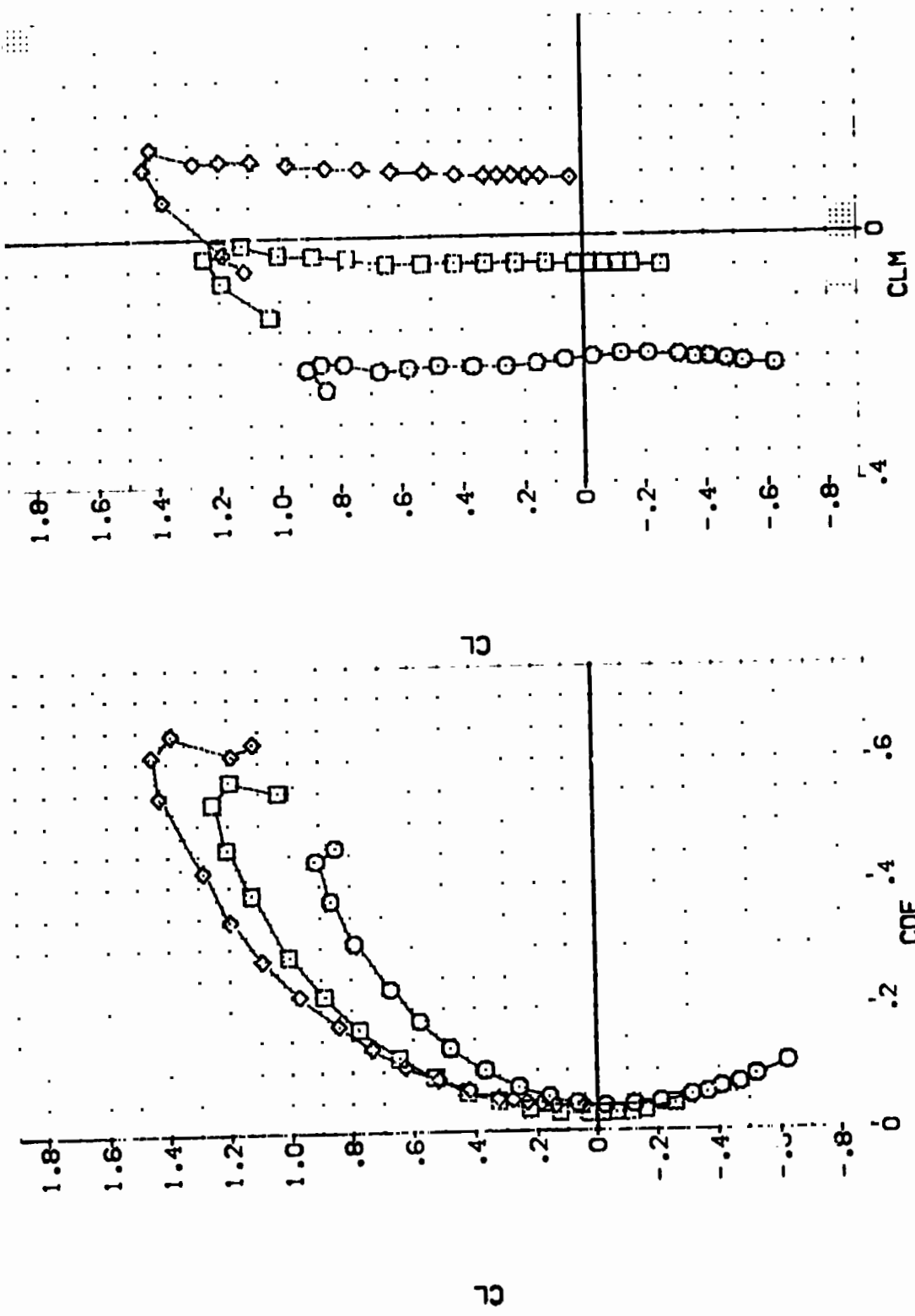


FIG 14 ELEVON EFFECTIVENESS, ELEVON SEALS REMOVED, BOFLAP = -11.7 DEG.
 (A)MACH = .20 PAGE 77

ELEVON AILRON RUDDER SPOBRK REFERENCE INFORMATION

ELEVON	AILRON	RUDDER	SPOBRK	SREF	SO.FT.
-20.000	.000	.000	25.000	19.2239	INCHES
.000	.000	.000	25.000	37.9399	INCHES
15.000	.000	.000		43.5974	INCHES
				.0000	INCHES
				15.1875	INCHES
				.0405	SCALE

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(EF5033)	0A110	125	124E42V19R15X28
(EF5035)	0A110	125	124E42V19R15X28
(EF5034)	0A110	125	124E42V19R15X28

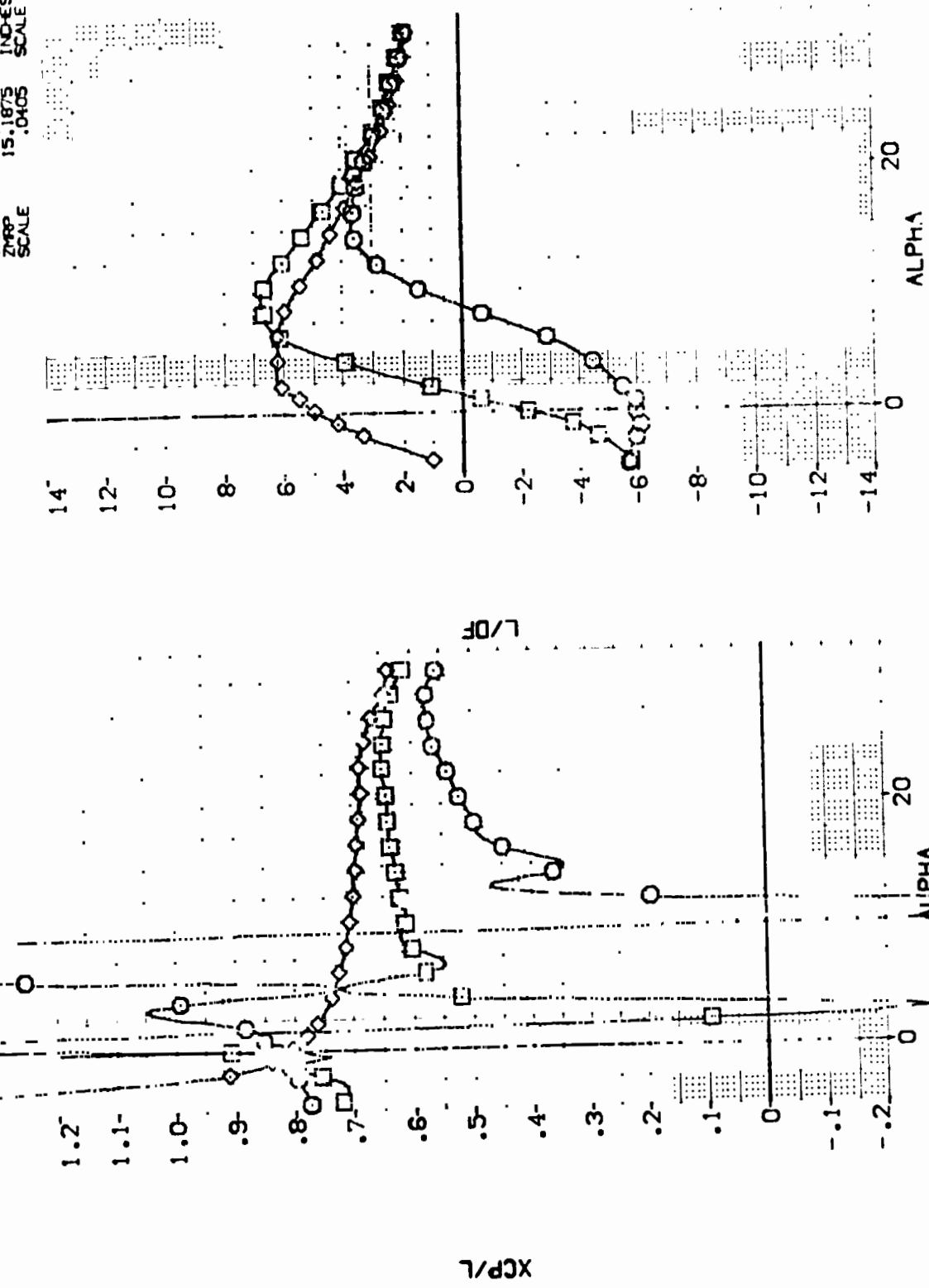


FIG 14 ELEVON EFFECTIVENESS, ELEVON SEALS REMOVED, BOFLAP = -11.7 DEG.
 CAJMACH = .20



(KF5033)

0A110 861C11F12M51W124E42V19R15X29

SYMBOL	ALPHA	MACH	PARAMETRIC VALUES		DATA SOURCE		REFERENCE INFORMATION	
○	-1.000	BDFLAP	.200	A11LRON	.000	DATASET	ELEVON	SREF
□	.000	RUDDER	-12.000	SPOBRK	25.000	KF5033	.000	LREF
◇	4.000		.000	BETA	.000	KF5034	.000	XMRP
△	8.000						.0000	YMRP
	12.000						15.1675	ZMRP
							.0405	SCALE

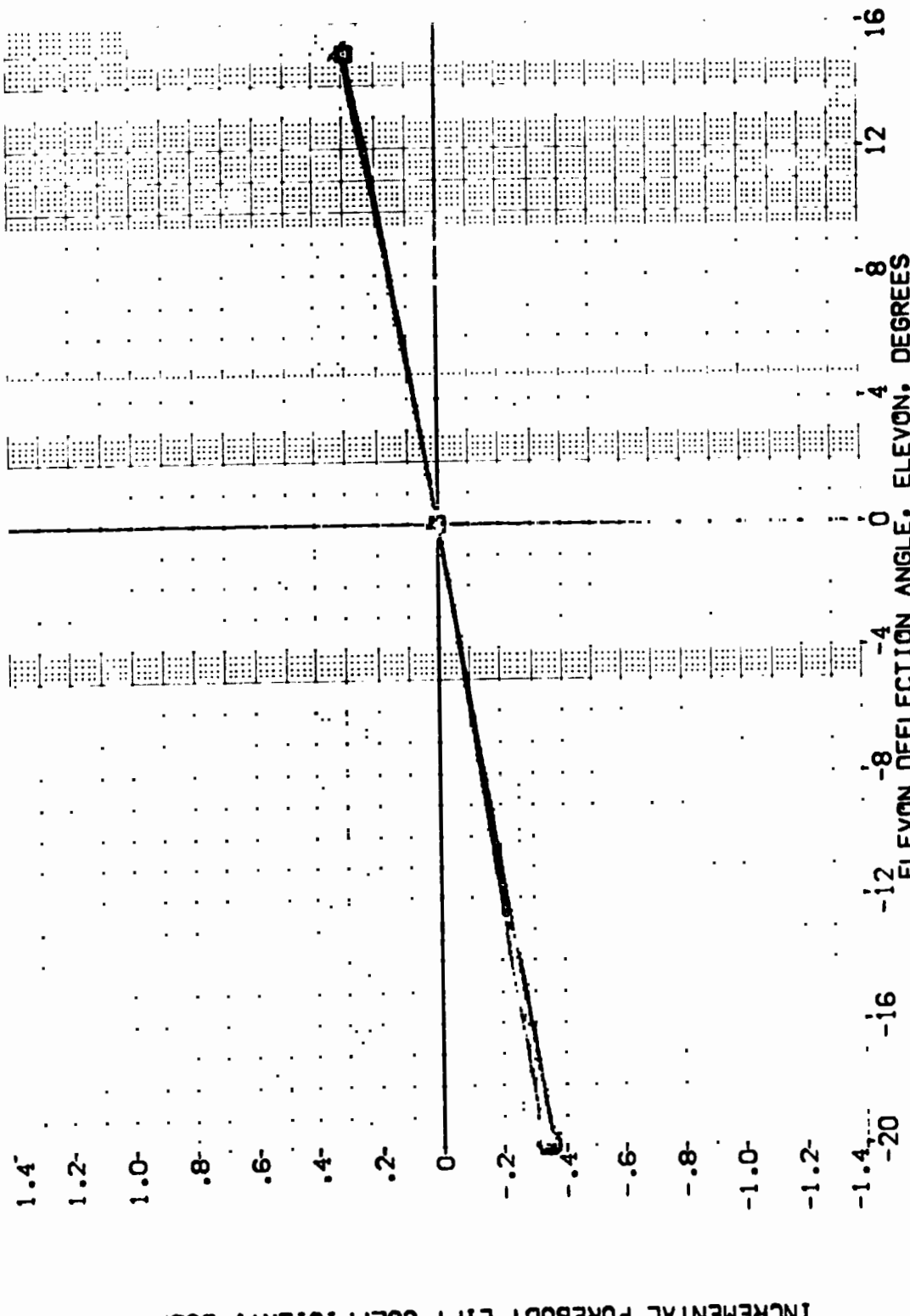


FIG 14 ELEVON EFFECTIVENESS, ELEVON SEALS REMOVED, BDFLAP = -11.7 DEG.

(KF5033)

0A110 B61C11F12M51W124E42V19R15X29

SYMBOL		PARAMETRIC VALUES		DATA SOURCE		REFERENCE INFORMATION	
○	ALPHA	16.000	MACH	.000	DATASET	SREF	SQ.FT.
□	20.000	.200	BDFLAP	25.000	KF5033	LREF	INCHES
◇	24.000	-12.000	RUDDER	.000	KF5034	BREF	INCHES
△	28.000	.000	BETA	15.000		XMRP	INCHES
						YMRP	INCHES
						ZMRP	INCHES
						SCALE	SCALE

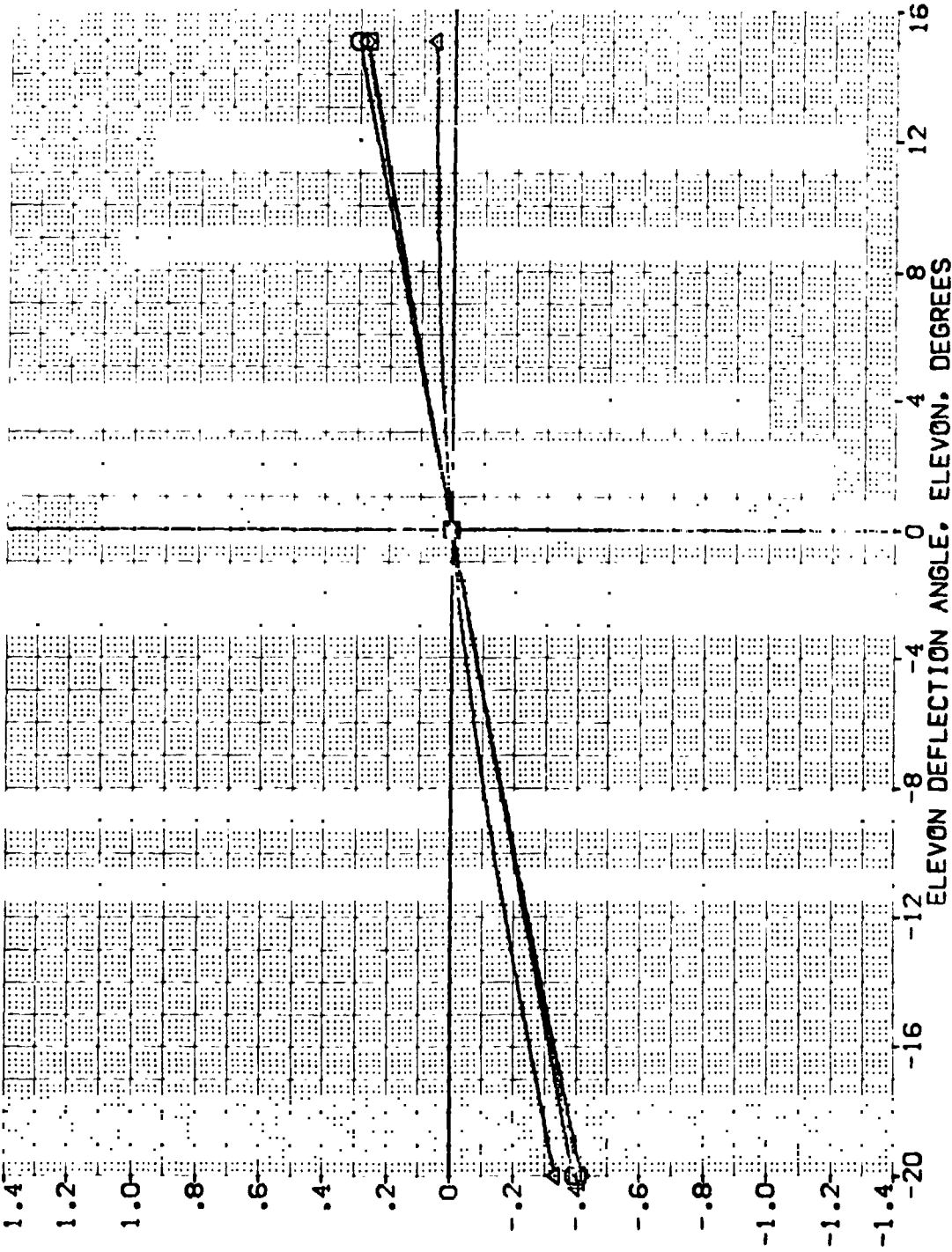


FIG 14 ELEVON EFFECTIVENESS, ELEVON SEALS REMOVED, BOFLAP = -11.7 DEG.



(KF5033)

0A110 B61C11F12M51W124E42V19R15X29

SYMBL	ALPHA	MACH	BDFLAP	RUDDER	PARAMETRIC VALUES	.000	DATASET	ELEVON	DATASET	ELEVON	SREF	REFERENCE INFORMATION
○	-4.000	.200	AIURON	.000	KF5033	25.000	KF5033	.000	KF5035	.000	4.4119	50. FT.
□	.000	-12.000	SPOBRK	.000	KF5034	.000	KF5034	.000			19.2289	INCHES
◇	4.000	.000	BETA								37.5659	INCHES
△	8.000										43.5674	INCHES
▽	12.000										.0000	INCHES
											15.1875	INCHES
											.0405	SCALE

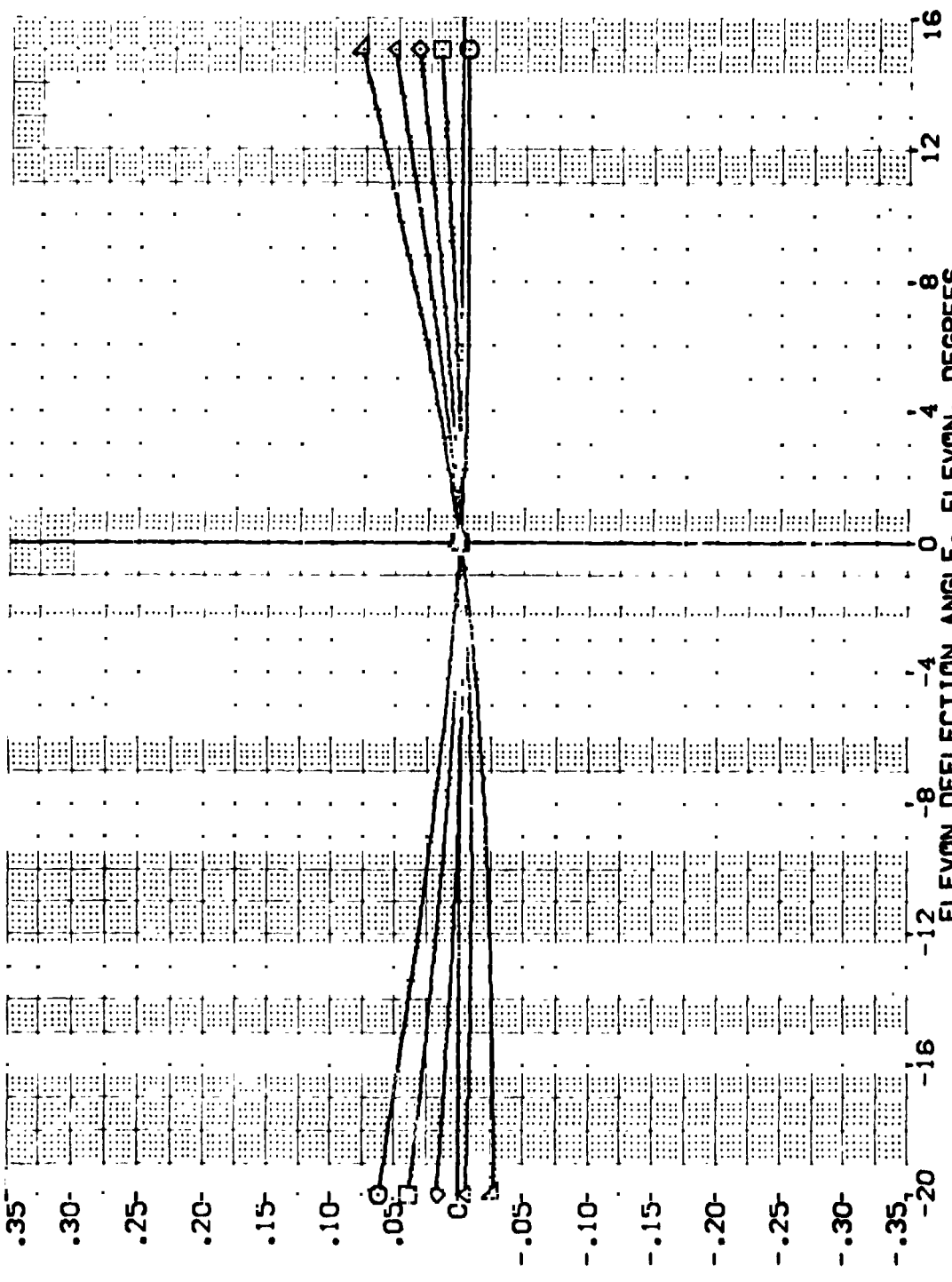


FIG 14 ELEVON EFFECTIVENESS, ELEVON SEALS REMOVED, BDFLAP = -11.7 DEG.

0A110 861C11F12M51W124E42V19R15X29 (KF5033)

ALPHA	MACH	PARAMETRIC VALUES		DATA SOURCE		REFERENCE INFORMATION	
16.000	BDFLAP	.200	A1LRBN	.000	DATASET	SREF	SO.FT.
20.000	RUDDER	-12.000	SPDRK	25.000	KF5033	LREF	INCHES
24.000		.000	BETA	.000	KF5034	XTRP	INCHES
28.000						YTRP	INCHES
						ZTRP	INCHES
						SCALE	SCALE

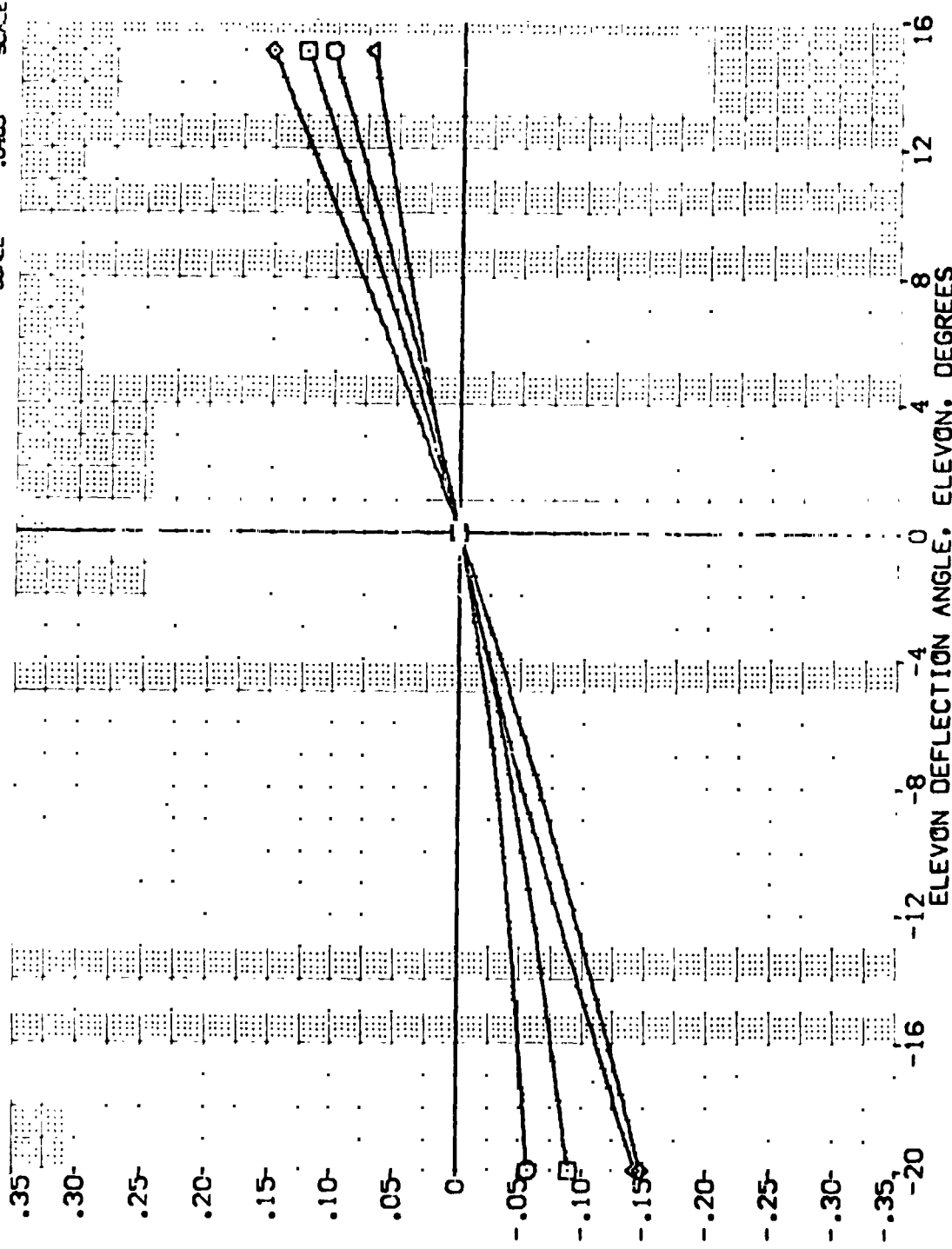


FIG 14 ELEVON EFFECTIVENESS, ELEVON SEALS REMOVED, BDFLAP = -11.7 DEG.



0A110 861C11F12M51W124E42V19R15X29 (KF5033)

ALPHA	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
-4.000	MACH .200	ELEVON	SQ.FT.
.000	BOFLAP -12.000	DATASET KF5035	INCHES
4.000	RUDDER .000	ELEVON .000	INCHES
8.000	SPDRBK 25.000	LREF	INCHES
12.000	BETA .000	XPRP	INCHES
		YPRP	INCHES
		ZPRP	INCHES
		SCALE	SCALE
			4.4119
			19.2259
			37.9359
			43.5974
			.0000
			15.1875
			.0405

INCREMENTAL FOREBODY PITCHING MOMENT COEFFICIENT, DCLM

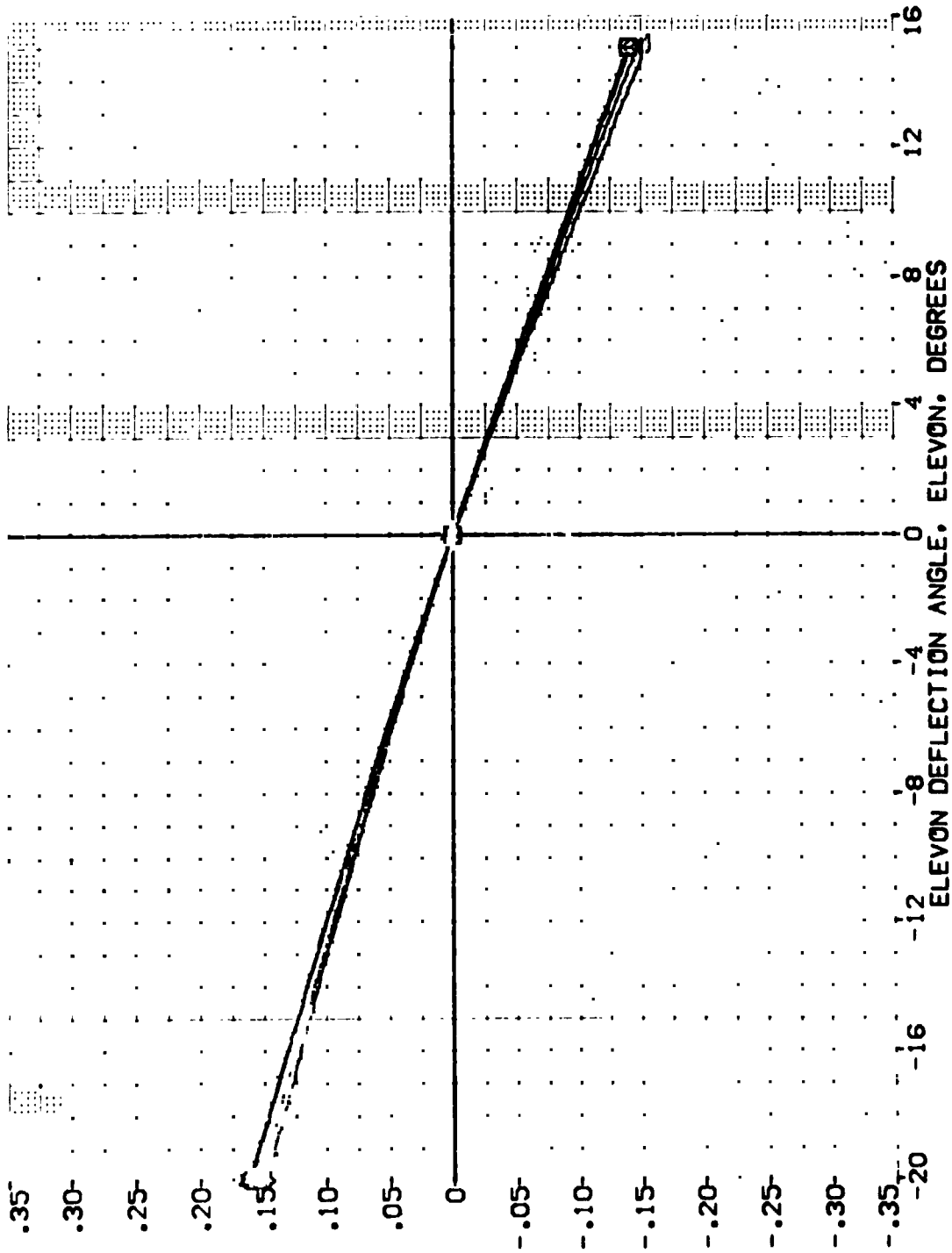


FIG 14 ELEVON EFFECTIVENESS, ELEVON SEALS REMOVED, BOFLAP = -11.7 DEG.

0A110 B61C11F12M51W124E42V19R15X29 (KF5033)

ALPHA	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
16.000	.200	ELEVON	4.4118
20.000	AILRON	ELEVON	19.2259
24.000	-12.000	REF	37.9359
28.000	SPOPRK	X-PRP	43.5974
	BETA	Y-PRP	.0000
		Z-PRP	15.1875
		SCALE	.0405

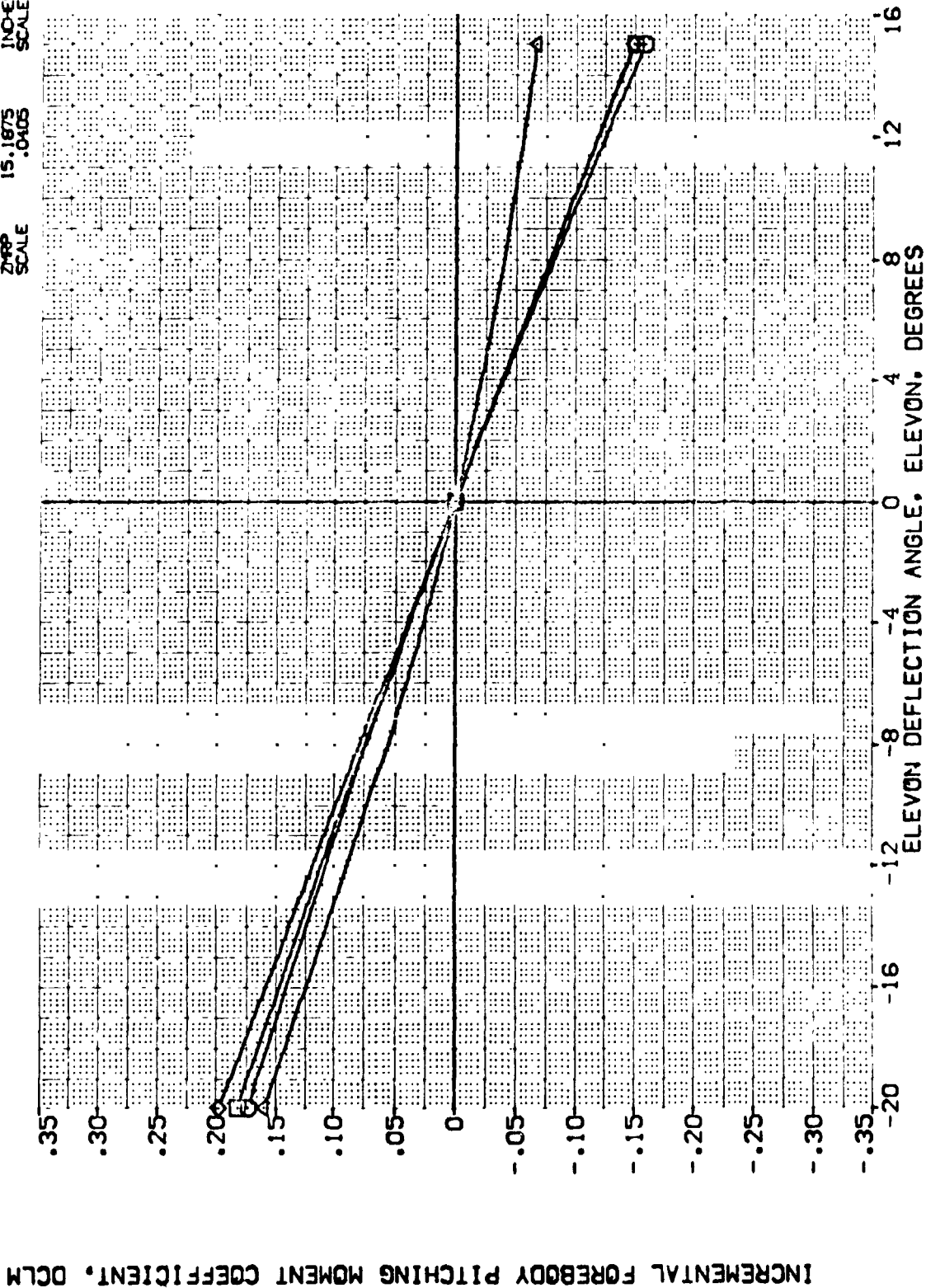


FIG 14 ELEVON EFFECTIVENESS, ELEVON SEALS REMOVED, BOFLAP = -11.7 DEG.



DATA SET SYMBO. CONFIGURATION DESCRIPTION

(R-3028)	GA110	BSIC11F1261V124E40V1SR1928
(R-3038)	GA110	BSIC11F1261V124E40V1SR1928
(R-3040)	GA110	BSIC11F1261V124E40V1SR1728
(R-3056)	GA110	BSIC11F1261V124E40V21R1928

ALTRON .000
LREF 19.2299
XMRP 43.5874
ZMRP .0000
SCALE 15.1875

SPDRBK 25.000
RUDER .000
ALPHA 10.000
10.000
10.000
10.000

REFERENCE INFORMATION

SREF	4.4119	SO, FT.
LREF	19.2299	INO-ES
XMRP	43.5874	INO-ES
ZMRP	.0000	INO-ES
SCALE	15.1875	INO-ES
	.0405	SCALE

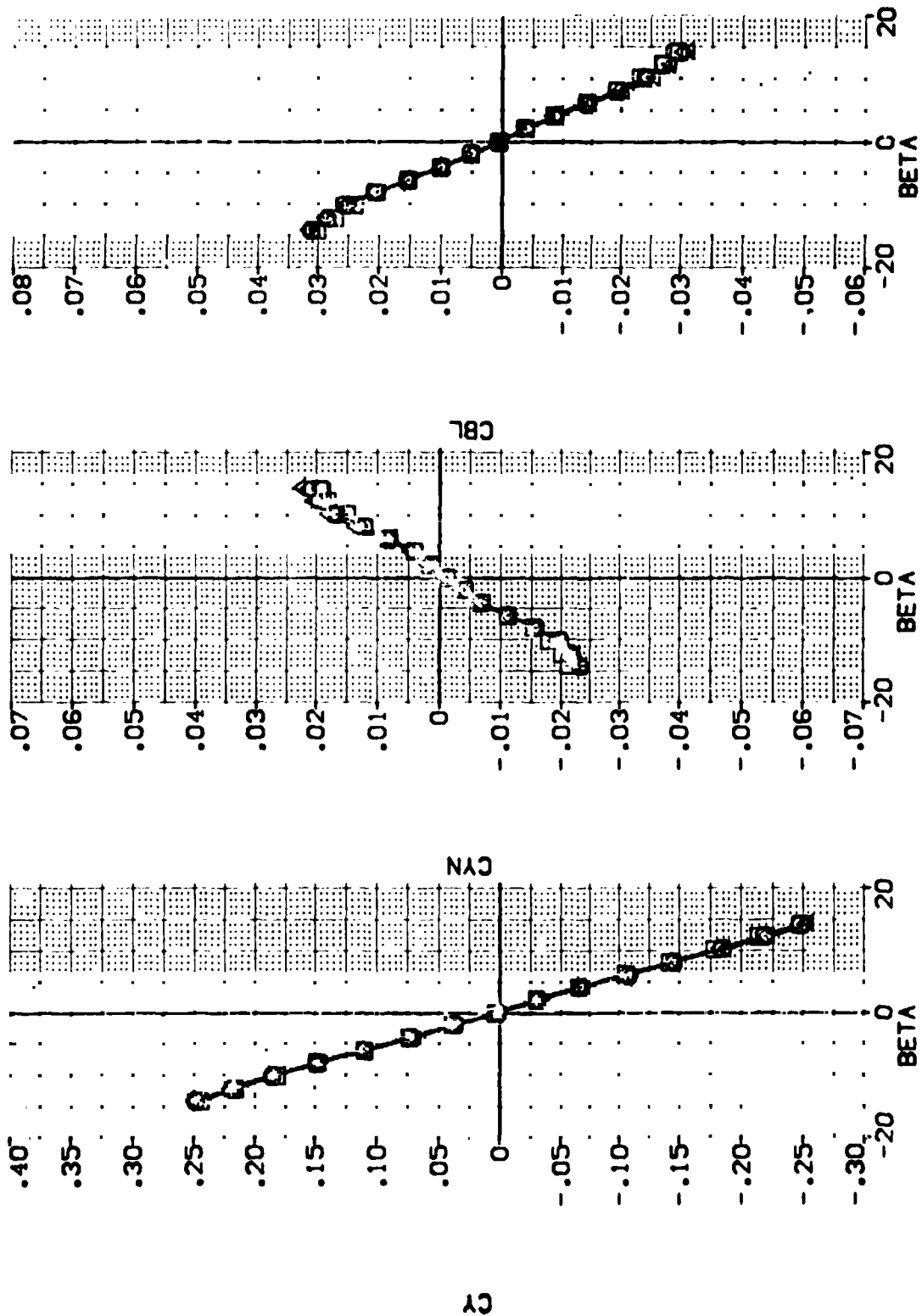


FIG 15 EFFECT OF RUDDER SEALS. SPDRBK = 25 DEG., ALPHA = 10 DEG.

(A)MACH = .20

DATA SET SYMBL. CONFIGURATION DESCRIPTION
 {MFS020} GA110 BS1C1I12G5I124E40V1SR15X29
 {MFS023} GA110 BS1C1I12G5I124E40V1SR16X29
 {MFS010} GA110 BS1C1I12G5I124E40V1SR17X29
 {MFS056} GA110 BS1C1I12G5I124E40V21R15X29

MACH .200
 .200
 .200
 ELEVON .000
 .000
 .000
 AIRLON .000
 .000
 .000
 BOFLAP -12.000
 -12.000
 -12.000
 REFERENCE INFORMATION
 SREF 4.4119 SQ.FT.
 LREF 19.2299 INCHES
 BREF 37.9359 INCHES
 XPRP 43.5974 INCHES
 YPRP .0000 INCHES
 ZPRP 15.1875 INCHES
 SCALE .0405 INCHES

SIDE FORCE COEFFICIENT DERIVATIVE WITH BETA, CYBETA, PER DEGREE

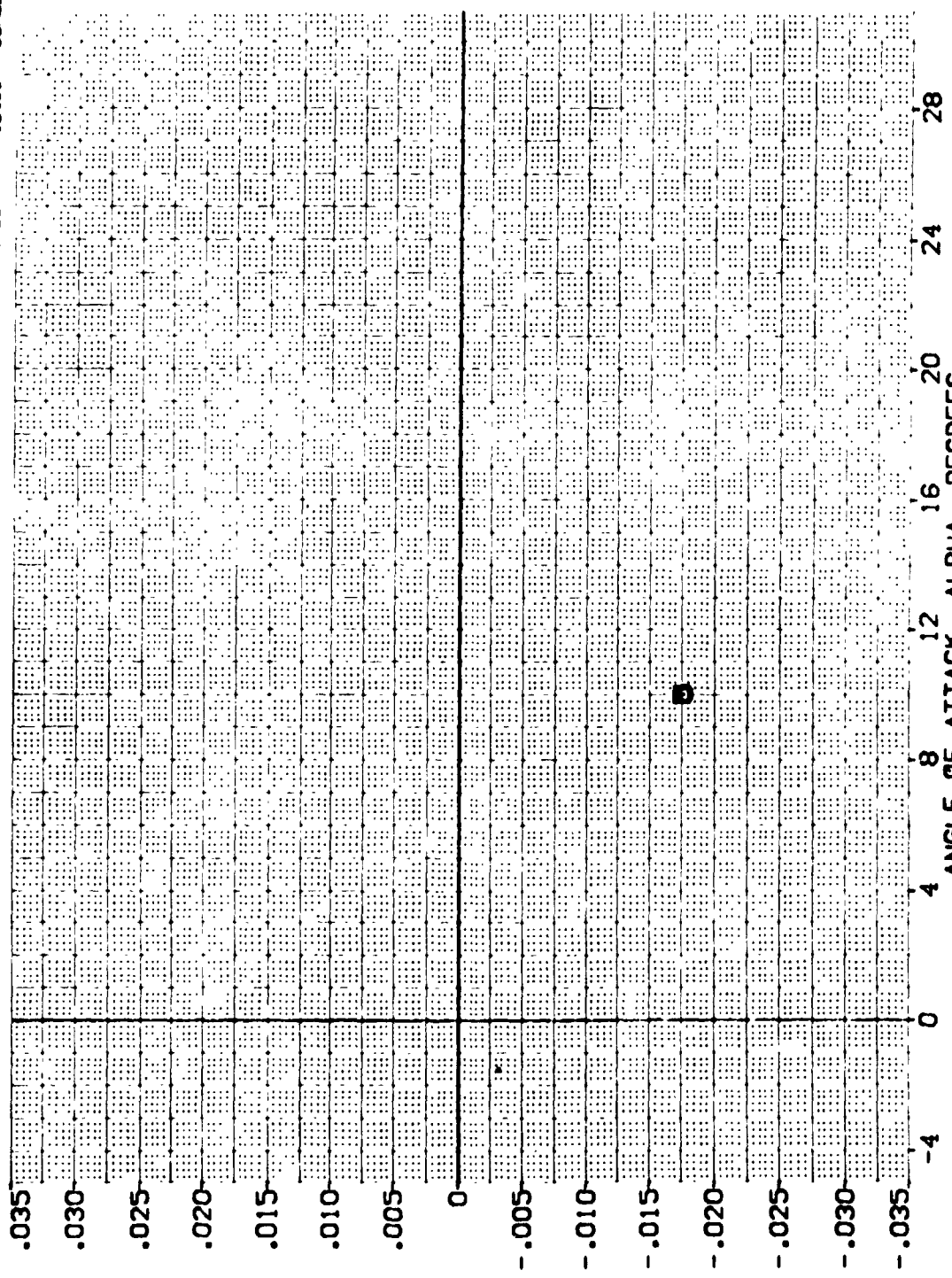


FIG 15 EFFECT OF RUDDER SEALS, SPDBRK = 25 DEG., ALPHA = 10 DEG.

DATA SET SYMBOL CONFIGURATION DESCRIPTION REFERENCE INFORMATION

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	MACH	ELEVON	AILRON	BOFLAP	REFERENCE INFORMATION
(MF5028)	0A110 BSIC11F12G51V124E40V1SR15C28	.200	.000	.000	-12.000	SREF 4.4119 SQ.FT.
(MF5029)	0A110 BSIC11F12G51V124E40V1SR16C29	.200	.000	.000	-12.000	LREF 19.2259 INCHES
(MF5030)	0A110 BSIC11F12G51V124E40V1SR17C30	.200	.000	.000	-12.000	BREF 37.5359 INCHES
(MF5035)	0A110 BSIC11F12G51V124E40V21R15C35	.200	.000	.000	-12.000	XPRP 43.5974 INCHES
						YPRP .0000 INCHES
						ZPRP 15.1875 INCHES
						SCALE .0465 SCALE

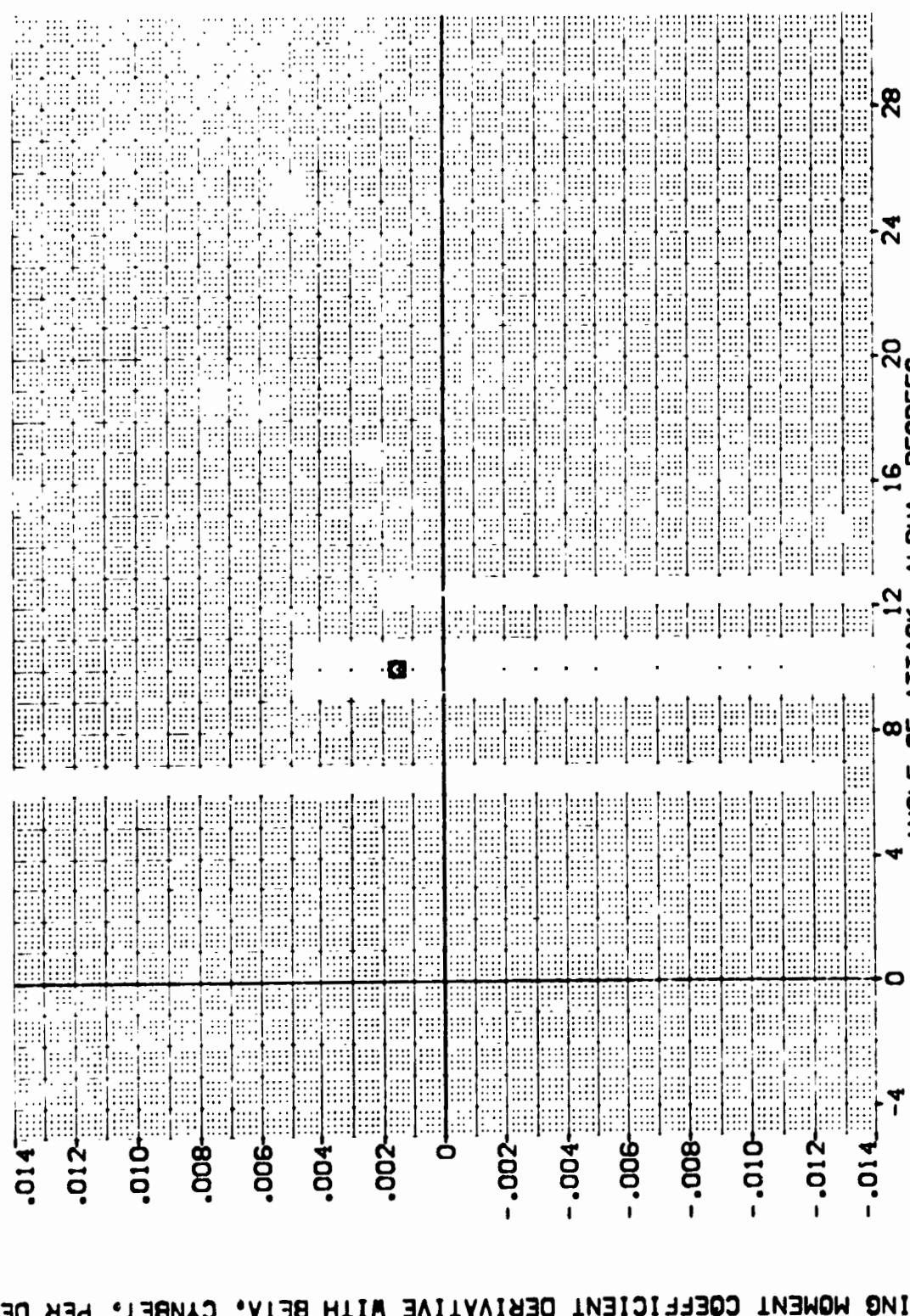


FIG 15 EFFECT OF RUDDER SEALS, SPOBRK = 25 DEG., ALPHA = 10 DEG.

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (M33028) Q110 B51C11F12751V124E40V18R15X28
 (M33038) Q110 B31C11F12751V124E40V18R15X28
 (M33040) Q110 B31C11F12751V124E40V18R17X28
 (M33056) Q110 B51C11F12751V124E40V21R15X28

MACH ELEVON AIRRON BDFLAP REFERENCE INFORMATION
 .200 .000 .000 -12.000 SREF 4.4118 50.FT
 .200 .000 .000 -12.000 LREF 19.2298 INCHES
 .200 .000 .000 -12.000 BREF 37.9359 INCHES
 .200 .000 .000 -12.000 XPRP 43.5974 INCHES
 YMRP .0000 INCHES
 ZMRP 15.1875 INCHES
 SCALE .0405 SCALE

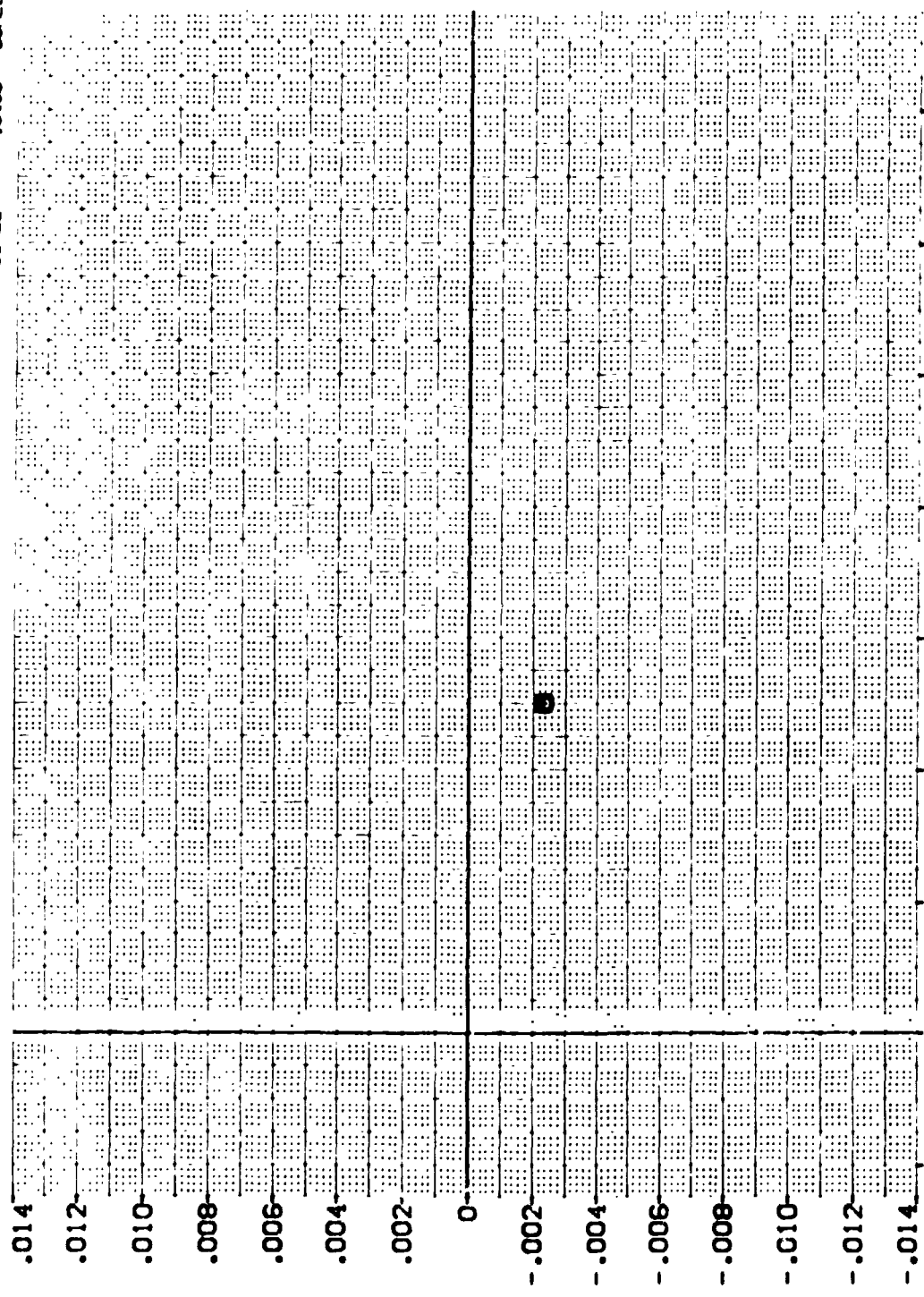


FIG 15 EFFECT OF RUNNER SEALS, SPOBRK = 25 DEG., ALPHA = 10 DEG.

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(R-5021)	BSIC11F12-S1V124E40V1SR15X28
(R-5023)	BSIC11F12-S1V124E40V1SR15X28
(R-5044)	BSIC11F12-S1V124E40V1SR15X28

ALPHA RUDDER SPEEDBRAK AIRLON REFERENCE INFORMATION

ALPHA	RUDDER	SPEEDBRAK	AIRLON	SREF	4.4119	SO.FT
10.000	.000	.000	.000	LREF	19.2299	INCHES
10.000	.000	25.000	.000	BREF	37.5359	INCHES
10.000	.000	65.000	.000	XPRP	43.5974	INCHES
				YPRP	.0000	INCHES
				ZPRP	15.1875	INCHES
				SCALE	.0405	SCALE

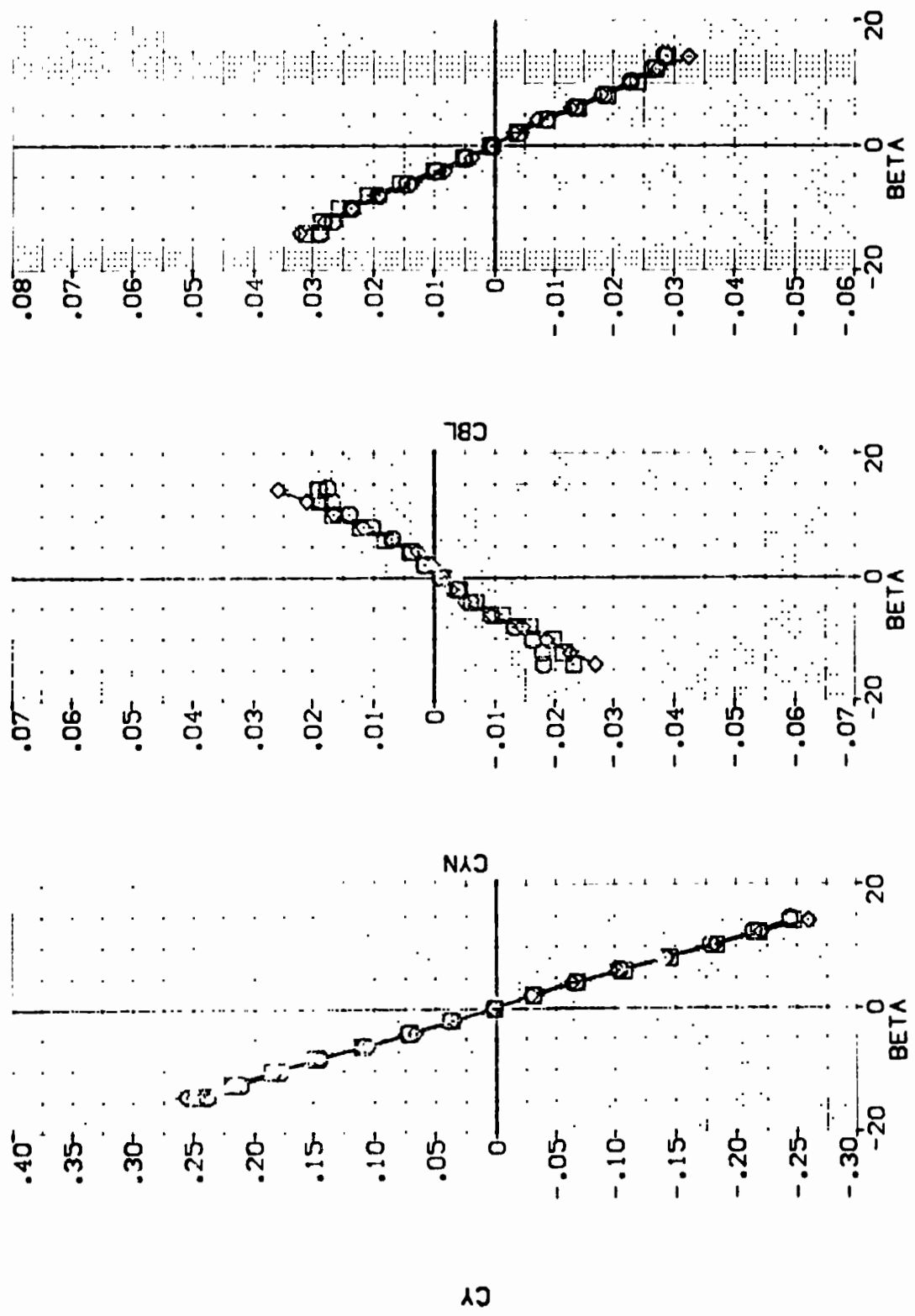


FIG 16 SPEEDBRAKE EFFECTIVENESS, RUDDER = 0 DEG., ALPHA = 10 DEG.

(A)MACH = .20

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(MF5021)	0A110	B61C11F12N51V124E40V19R15X29
(MF5028)	0A110	B61C11F12N51V124E40V19R15X29
(MF5044)	0A110	B61C11F12N51V124E40V19R15X29

MACH ELEVON AIRLON BETA

.200	.000	.000	.000
.200	.000	.000	.000
.200	.000	.000	.000

REFERENCE INFORMATION

SREF	4.4119	SO.FT.
LREF	19.2299	INCHES
BREF	37.9359	INCHES
XMRP	43.5974	INCHES
YMRP	.0000	INCHES
ZMRP	15.1875	INCHES
SCALE	.0405	SCALE

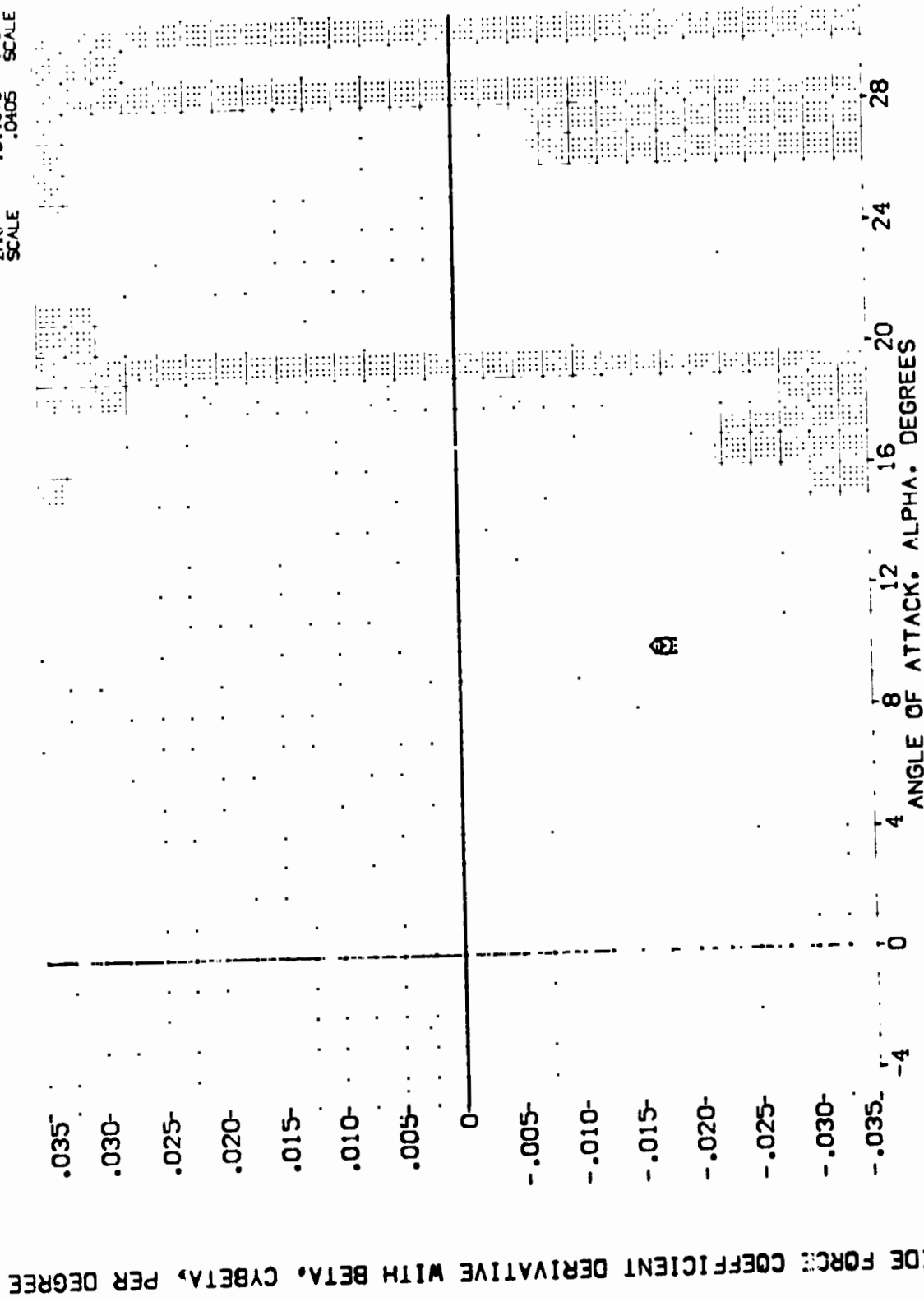


FIG 16 SPEEDBRAKE EFFECTIVENESS, RUDDER = 0 DEG., ALPHA = 10 DEG.

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(#5021)	0A110	861C11F12S1V124E40V1SR1SX28
(#5028)	0A110	861C11F12S1V124E40V1SR1SX28
(#5044)	0A110	861C11F12S1V124E40V1SR1SX28

MACH ELEVON AILRON BETA

.200	.000	.000
.200	.000	.000
.200	.000	.000

REFERENCE INFORMATION

SREF	4.4119	SO.FT
LREF	19.2299	INCHES
BREF	37.9359	INCHES
XMRP	43.5574	INCHES
YMRP	.0000	INCHES
ZMRP	15.1875	INCHES
SCALE	.0405	SCALE

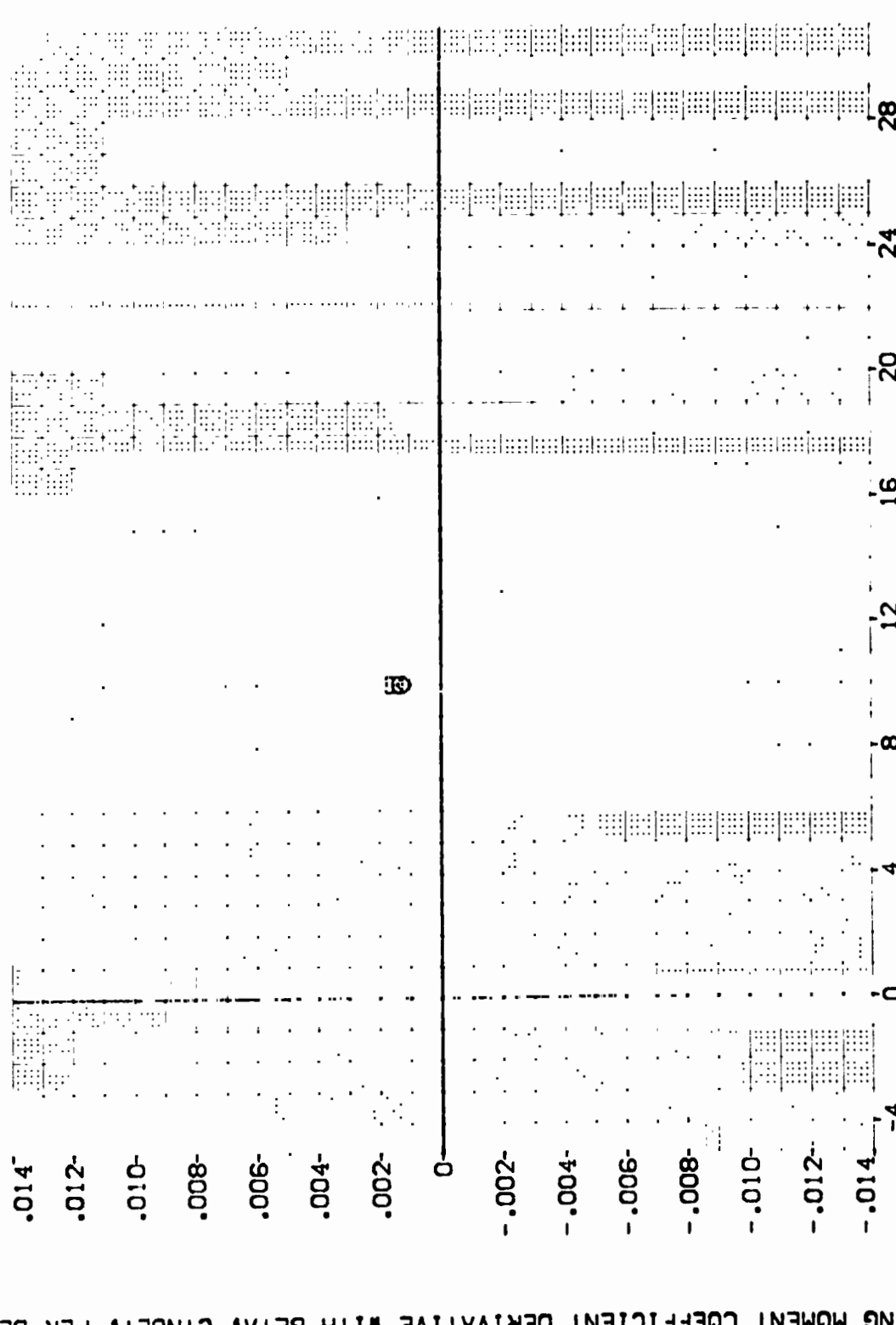


FIG 16 SPEEDBRAKE EFFECTIVENESS, RUDDER = 0 DEG., ALPHA = 10 DEG.

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (F5021) 0A110 BSIC11F12P51V124E40V18R15X28
 (F5028) 0A110 BSIC11F12P51V124E40V18R15X28
 (F5044) 0A110 BSIC11F12P51V124E40V18R15X28

MACH ELEVON AILRON BETA REFERENCE INFORMATION
 .200 .000 .000 4.4119 SO.FT.
 .200 .000 .000 19.2298 INCHES
 .200 .000 .000 37.9359 INCHES
 .200 .000 .000 43.5574 INCHES
 .200 .000 .000 15.1875 INCHES
 .200 .000 .000 .0405 SCALE

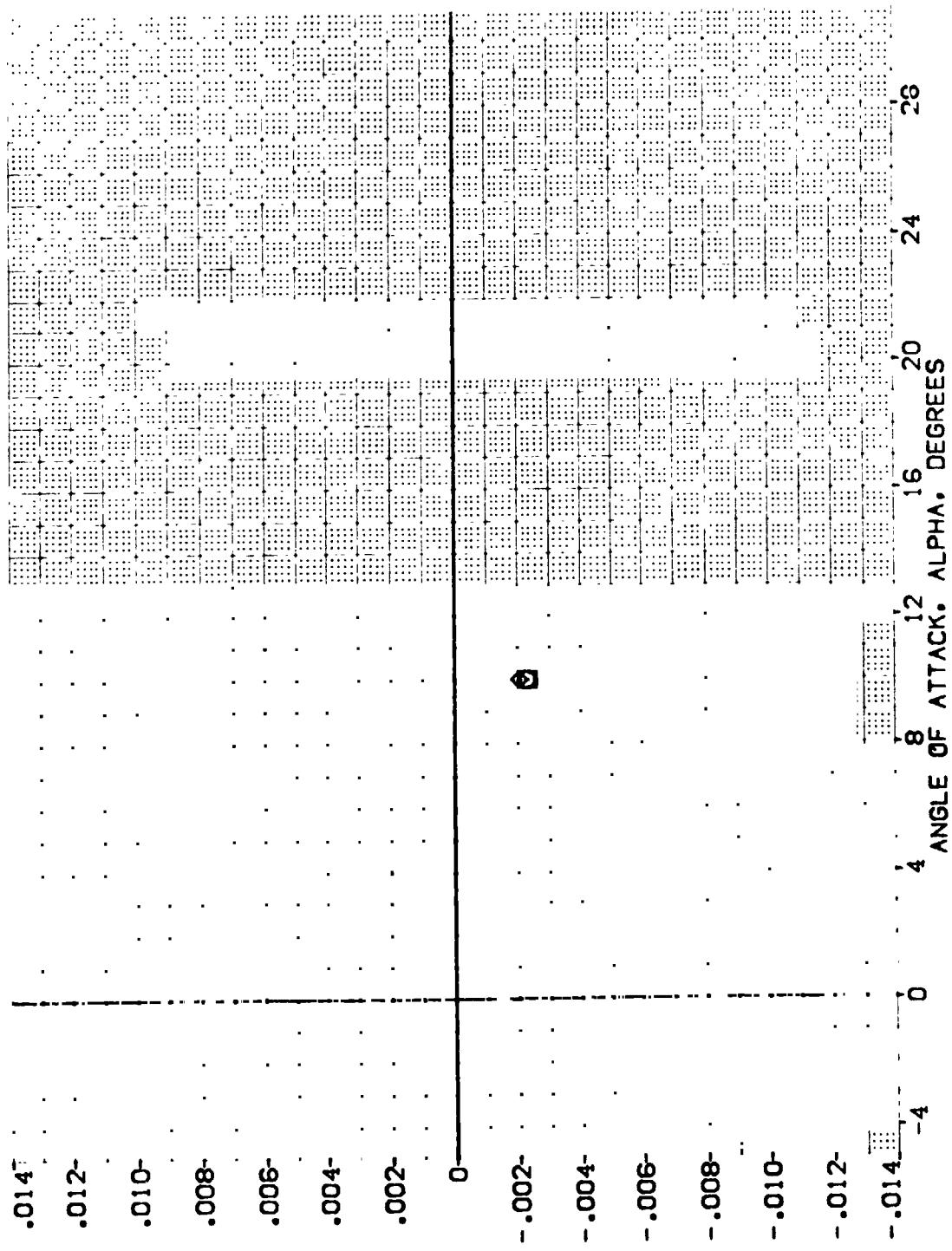
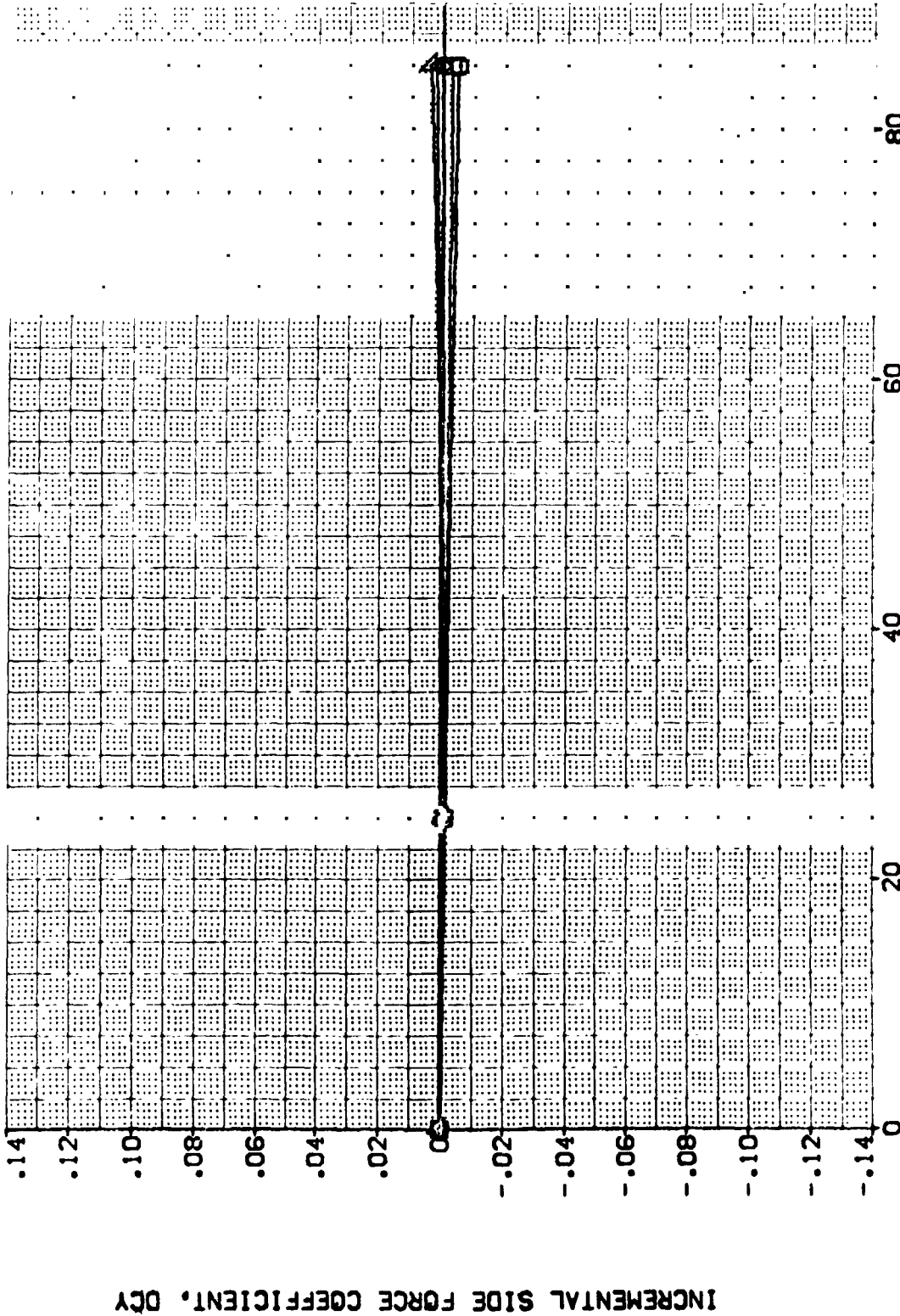


FIG 16 SPEEDBRAKE EFFECTIVENESS, RUDDER = 0 DEG., ALPHA = 10 DEG.



0A110 861C11F12M51W124E40V19R15X29 (CF5021)

SYMBOL	BETA	MACH	RUDDER	ELEVON	PARAMETRIC VALUES	DATA SOURCE	DATA SET	SPOBRK	SREF	REFERENCE INFORMATION
○	-4.000	.200	.000	.000	ALPHA	SPOBRK	CF5028	SREF	4.4119	SQ.FT.
□	-2.000	.000	.000	.000	BDFLAP	CF5021	CF5028	LREF	19.2299	INCHES
◇	-2.000	.000	.000	.000	AILRON	CF5044	CF5028	XMRP	37.9359	INCHES
△	2.000	.000	.000	.000				YMRP	43.5974	INCHES
▽	4.000	.000	.000	.000				ZMRP	.0000	INCHES
								SCALE	15.1875	INCHES
									.0405	SCALE



SPEEDBRAKE DEFLECTION ANGLE, DEGREES

FIG 16 SPEEDBRAKE EFFECTIVENESS, RUDDER = 0 DEG., ALPHA = 10 DEG.

0A110 B61C11F12M51W124E40V19R15X29 (CF5021)

SYMBOL	BETA	MACH	RUDDER	ELEVON	PARAMETRIC VALUES	DATA SOURCE	DATASET	SPOBRK	SPOBRK	REFERENCE INFORMATION
○	6.000				.200 ALPHA	SPOBRK	CF5028	25.000	SREF	4.4119 SQ.FT.
□	8.000				.000 BOFLAP	.000	CF5021		LREF	19.2299 INCHES
◇	10.000				.000 AILRON	65.000	CF5044		BREF	37.5359 INCHES
△	12.000								X-REF	43.5974 INCHES
	14.000								Y-REF	.0000 INCHES
									Z-REF	15.1875 INCHES
									SCALE	.0405 SCALE

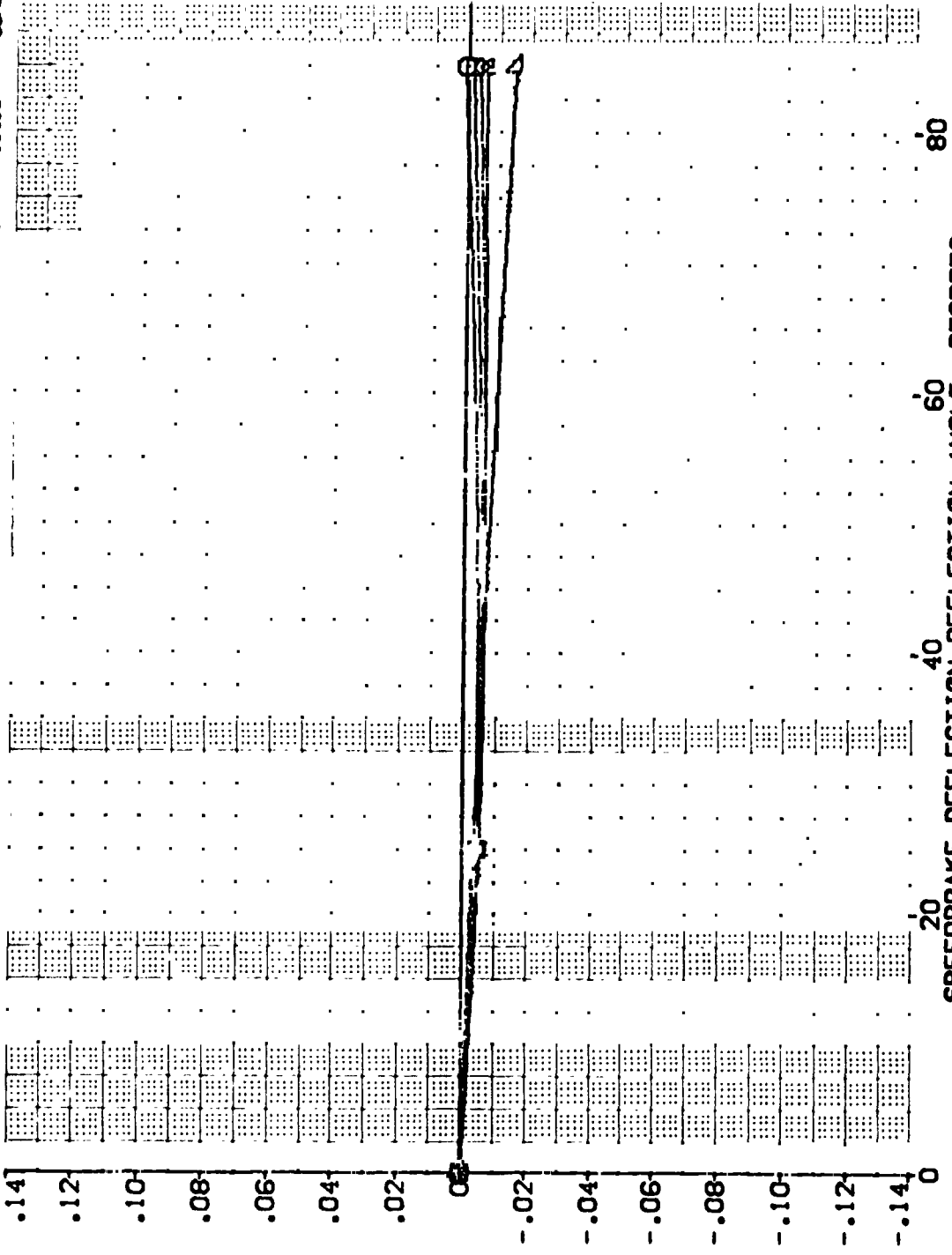
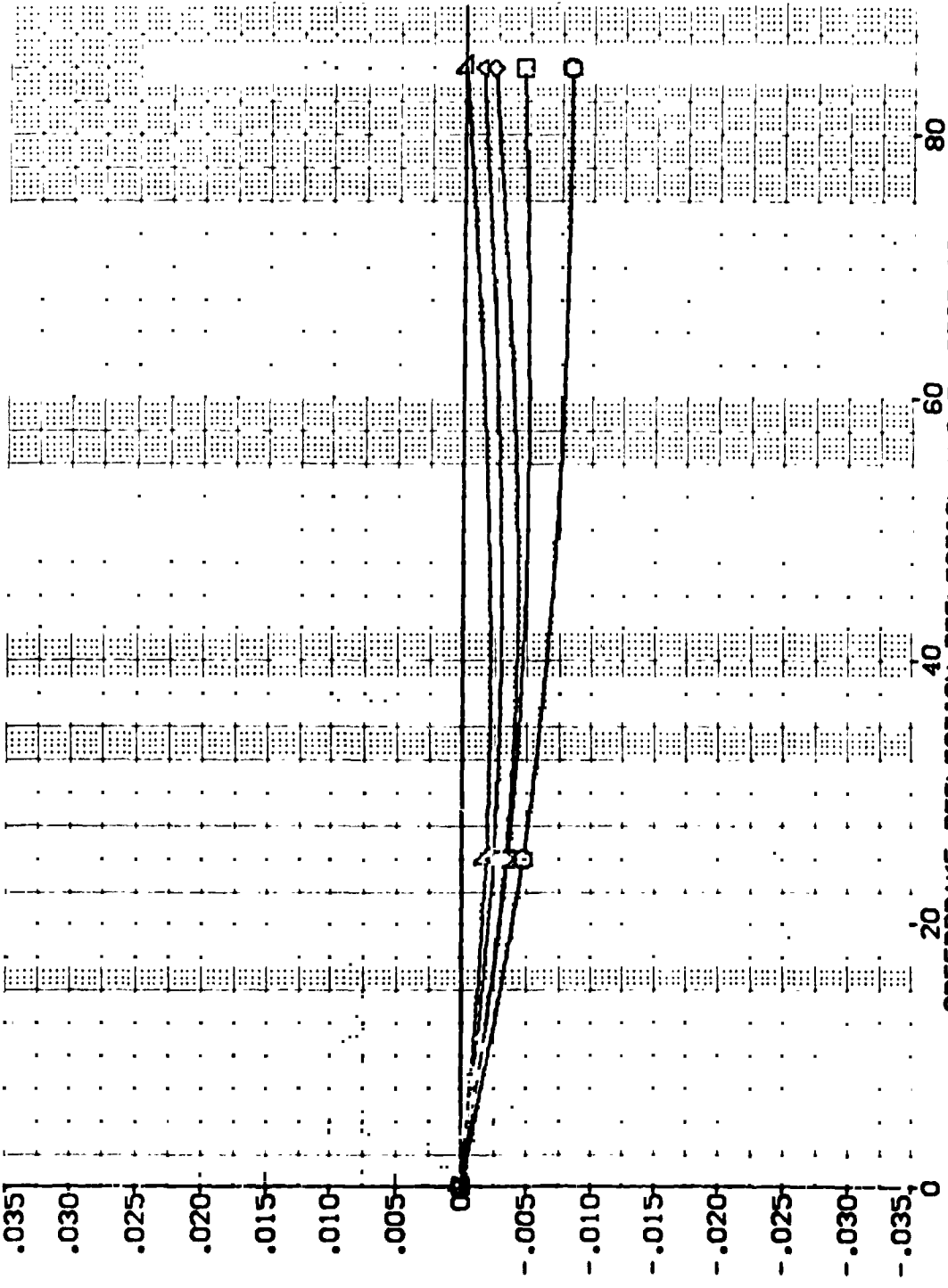


FIG 16 SPEEDBRAKE EFFECTIVENESS, RUDDER = 0 DEG., ALPHA = 10 DEG.

0A110 B61C11F12M51W124E40V19R15X29 (CF5021)

SYMBOL	BETA	MACH	PARAMETRIC VALUES	DATA SOURCE	SPOBRK	SPORBK	REFERENCE INFORMATION
○	-14.000		.200 ALPHA	SPOBRK	25.000	4.4119 SQ.FT.	
□	-12.000		.000 BDFLAP	CF5028	25.000	19.2259 INCHES	
◇	-10.000		.000 AILRON	CF5021	25.000	37.9359 INCHES	
△	-8.000			CF5044	25.000	43.5974 INCHES	
	-6.000				25.000	15.1873 INCHES	
						.0405 SCALE	



SPEEDBRAKE DEFLECTION, DEFLECTION ANGLE, DEGREES

FIG 16 SPEEDBRAKE EFFECTIVENESS, RUDDER = 0 DEG., ALPHA = 10 DEG.



0A110 B61C11F12M51W124E40V19R15X29 (CF5021)

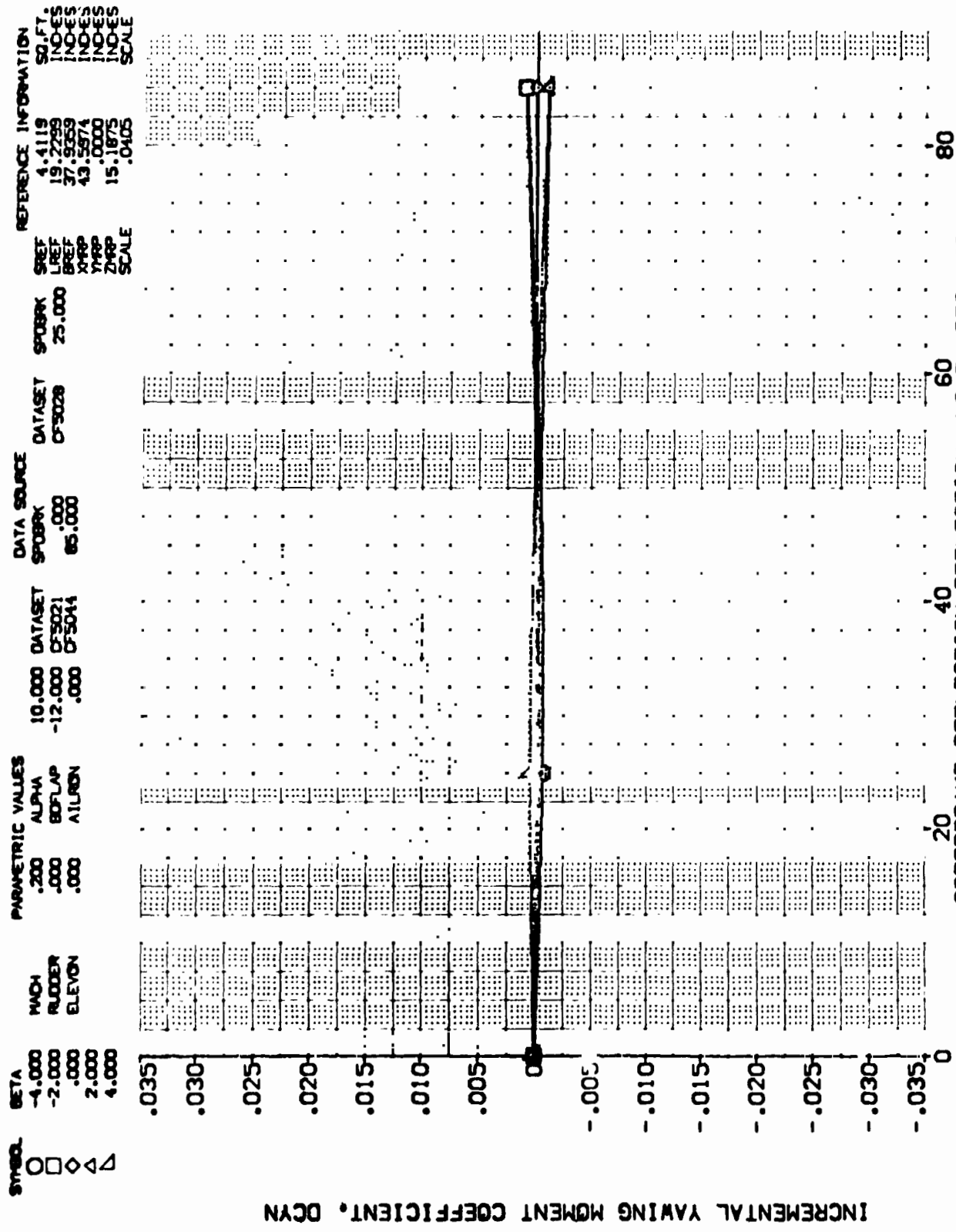


FIG 16 SPEEDBRAKE EFFECTIVENESS, RUDDER = 0 DEG., ALPHA = 10 DEG.

0A1:0 861C11F12M51W124E40V19R15X29 (CF5021)

SYMBOL	BETA	MACH	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
○	6.000	RUDDER	.200 ALPHA	SPOBRK	4.4119 SO.FT.
□	8.000	ELEVON	.000 BOFLAP	SREF	19.2289 INO-ES
◇	10.000		.000 AILRON	LREF	37.9369 INO-ES
△	12.000		.000 DATASET	XTRP	43.5974 INO-ES
	14.000		-12.000 CF5021	YTRP	0.0000 INO-ES
			.000 CF5044	ZTRP	15.1875 INO-ES
			85.1570	SCALE	.0405 SCALE

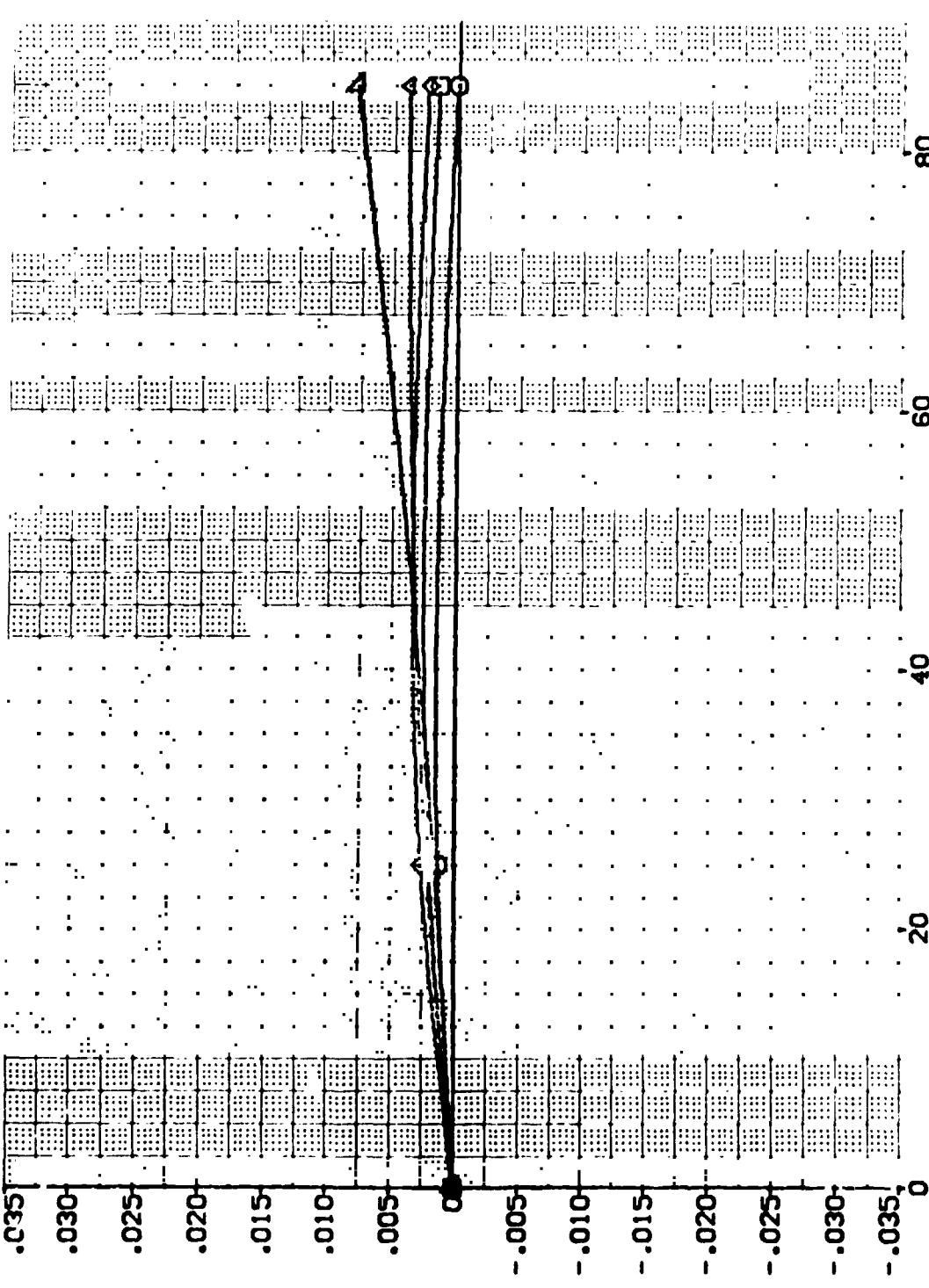


FIG 16 SPEEDBRAKE EFFECTIVENESS, RUDDER = 0 DEG., ALPHA = 10 DEG.

0A110 861C11F12M51W124E40V19R15X29 (CF5021)

SYMBL	BETA	MACH	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
□	-14.000	RUDDER	.200 ALPHA	SPOBRK	4.4119 SQ.FT.
◇	-12.000	ELEVON	.000 BDFLAP	25.000	19.2288 INO-ES
△	-10.000		.000 AILRON	CF9028	37.5659 INO-ES
	-8.000			CF5021	43.5574 INO-ES
	-6.000			CF5044	.0000 INO-ES
				65.000	15.1875 INO-ES
					.0405 SCALE

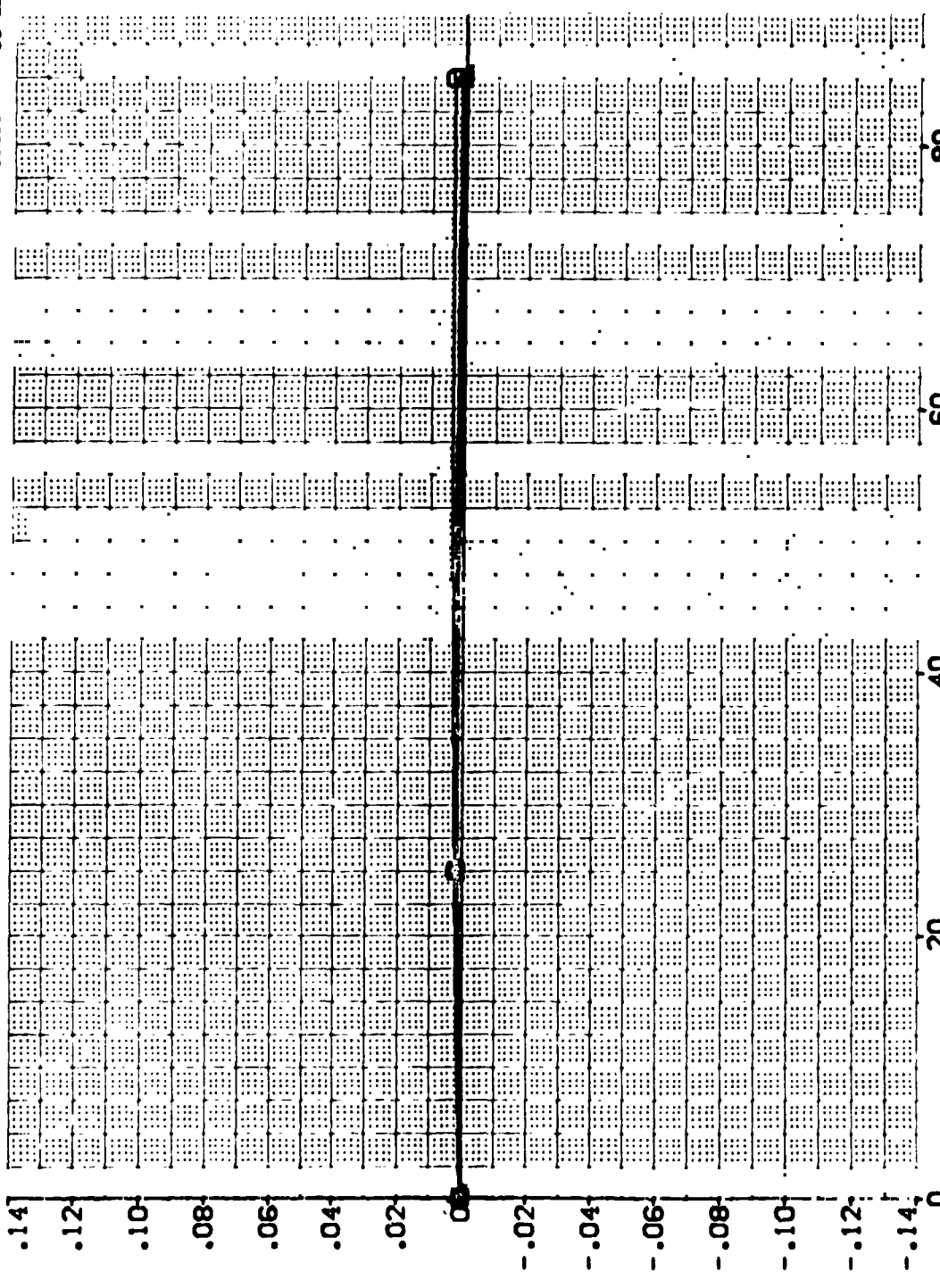


FIG 16 SPEEDBRAKE DEFLECTION DEFLECTION ANGLE, DEGREES
 SPEEDBRAKE EFFECTIVENESS, RUDDER = 0 DEG., ALPHA = 10 DEG.

(CF5021)

0A110 861C11F12M51W124E40V19R15X29

SYMBL
 O □ ◇ △ ▽

BETA
 -4.000
 -2.000
 .000
 2.000
 4.000

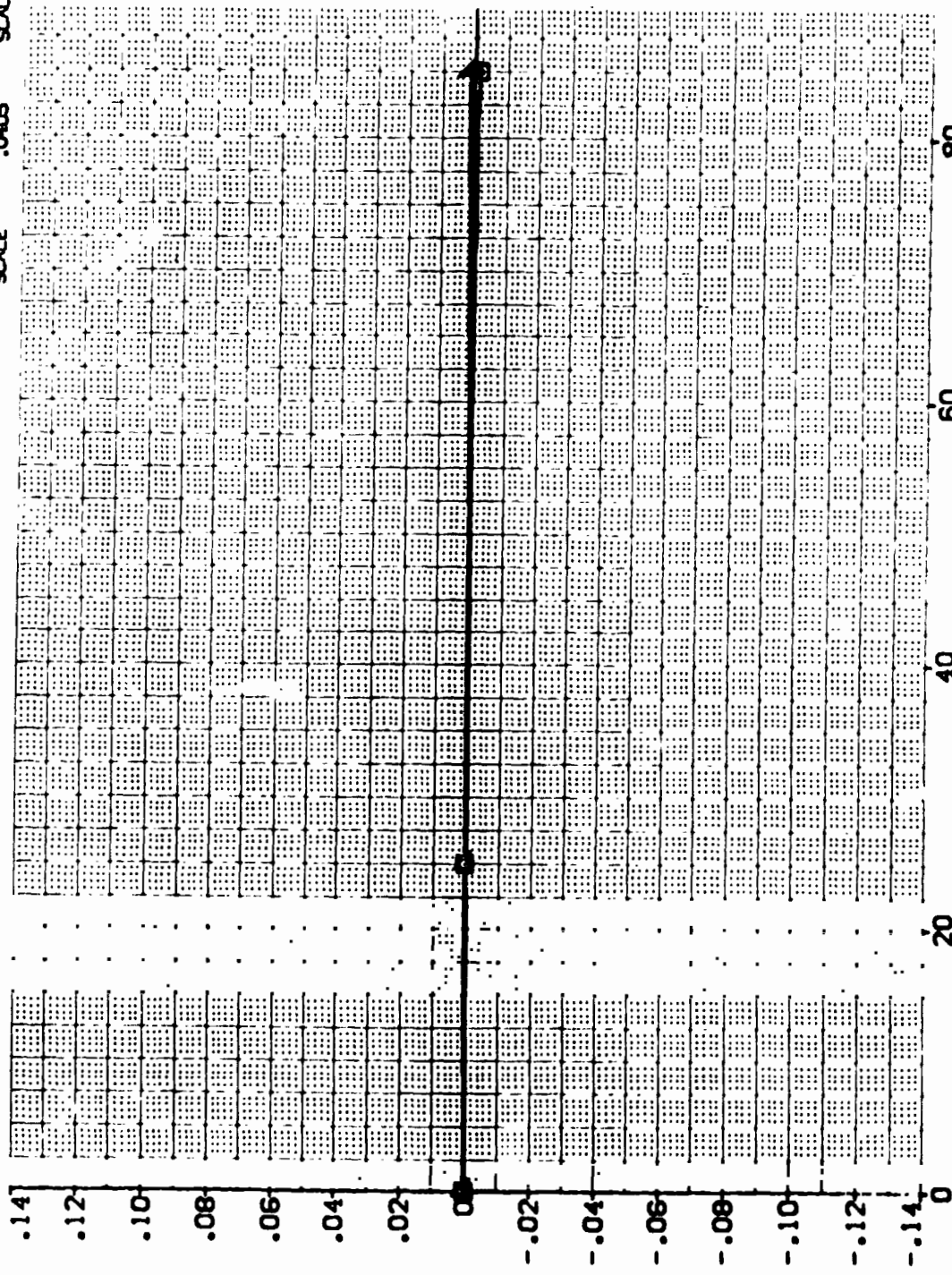
MACH
 RUDER
 ELEVON

PARAMETRIC VALUES
 .200 ALPHA
 .000 BDFLAP
 .000 AILURON

DATA SOURCE
 SPDBRK 10.000 DATASET D'5021
 SPDBRK -12.000 DATASET D'5044
 SPDBRK 85.000

DATASET D'5028
 SPDBRK 25.000

REFERENCE INFORMATION
 SREF 4.4119 SO.FT.
 LREF 19.2259 INC-ES
 XMRP 37.9268 INC-ES
 YMRP 43.5874 INC-ES
 ZMRP .0000 INC-ES
 SCALE 15.1875 INC-ES
 .0405 SCALE



INCREMENTAL ROLLING MOMENT COEFFICIENT, DCRL

SPEEDBRAKE DEFLECTION ANGLE, DEGREES

FIG 16 SPEEDBRAKE EFFECTIVENESS, RUDDER = 0 DEG., ALPHA = 10 DEG.



(CF5021)

0A110 B61C11F12M51W124E40V19R15X29

SYMBOL	BETA	MACH	RUDDER	ELEVON	PARAMETRIC VALUES	DATA SOURCE	DATASET	SPOBRK	SPOBRK	REFERENCE INFORMATION
○	6.000	.200	ALPHA	10.000	DATASET	CF5021	CF5028	25.000	SREF	4.4119
□	8.000	.000	BOFLAP	-12.000	CF5021	.000			LREF	19.2759
◇	10.000	.000	AILRON	.000	CF5044	65.000			BREF	37.5356
△	12.000								XPRP	43.5974
▽	14.000								ZPRP	.0000
									SCALE	15.1875
										SCALE

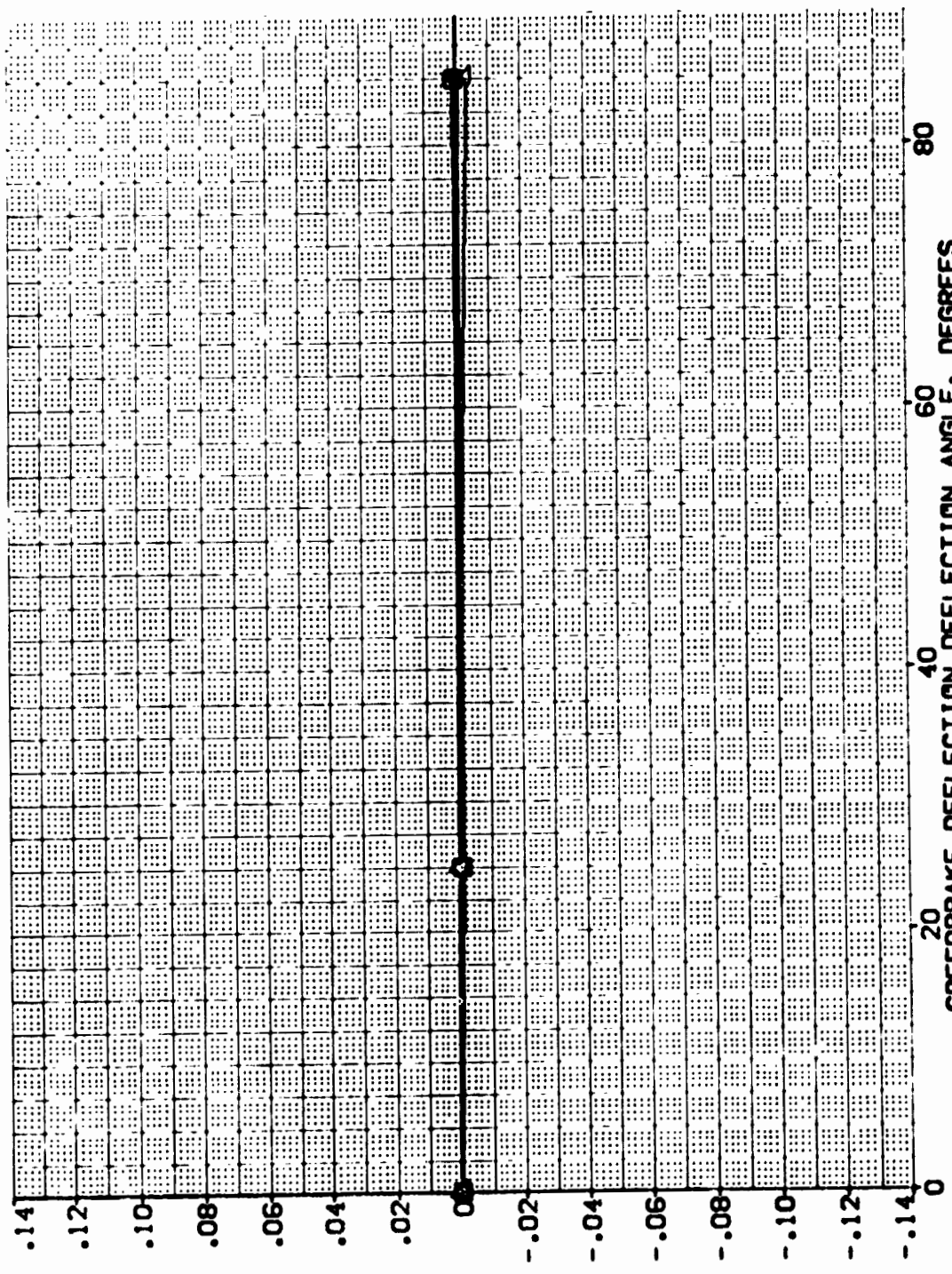


FIG 16 SPEEDBRAKE DEFLECTION ANGLE, DEGREES
 SPEEDBRAKE EFFECTIVENESS, RUDDER = 0 DEG., ALPHA = 10 DEG.

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (AF-5023) 0 0A110 BSIC1F12S1V12AE40V18R15X28
 (AF-5026) 0 0A110 BSIC1F12S1V12AE40V18R15X28
 (AF-5051) 0 0A110 BSIC1F12S1V12AE40V18R15X28

ALPHA RUDDER ALPHA RUDER
 10.000 -20.000 10.000 -20.000
 10.000 -20.000 10.000 -20.000
 10.000 -20.000 10.000 -20.000

REFERENCE INFORMATION
 SREF 4.4119 SO.FT.
 LREF 19.2288 INO-ES
 BREF 37.9359 INO-ES
 XTRP 43.5674 INO-ES
 YTRP .0000 INO-ES
 ZTRP 15.1875 INO-ES
 SCALE .0405 INO-ES

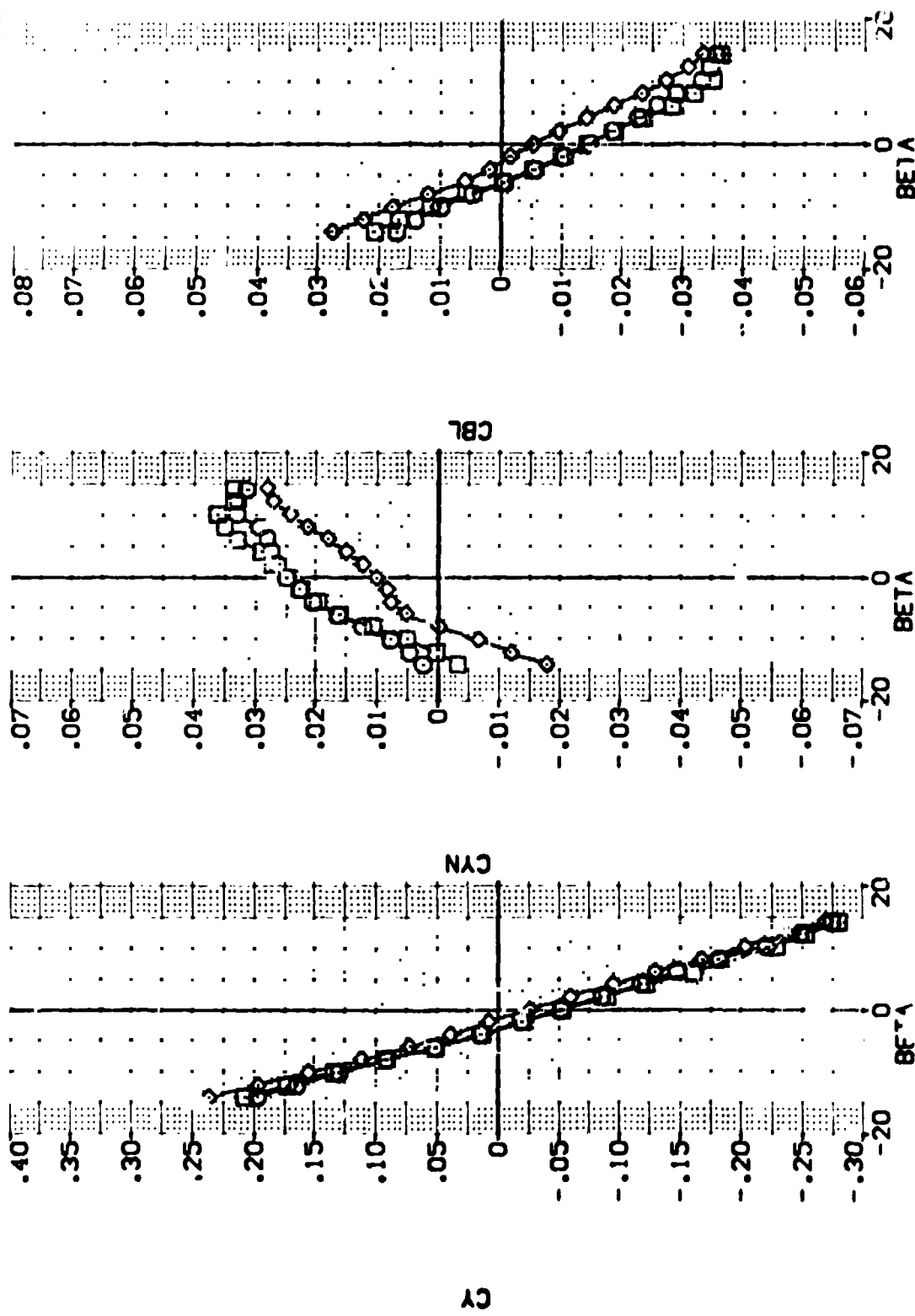


FIG 17 SPEEDBRAKE EFFECTIVENESS, RUDDER = -20 DEG., /' PHA = 10 DEG.

(A)MACH = .20

DATA SET SYMBL. CONFIGURATION DESCRIPTION

{M3023}	0A110	861C11F12-51V124E40V18R15C3
{M3026}	0A110	861C11F12-51V124E40V18R15C3
{M3031}	0A110	861C11F12-51V124E40V18R15C3

MACH: .200
 ELEVON: .000
 SPDBRK: .000
 BOFLAP: -12.000

REFERENCE INFORMATION
 SREF: 4.4119 SQ.FT.
 LREF: 19.2259 IN-OES
 BREF: 37.9359 IN-OES
 XPRP: 43.5874 IN-OES
 YPRP: .0000 IN-OES
 ZPRP: 15.1873 IN-OES
 SCALE: .0405

SIDE FORCE COEFFICIENT DERIVATIVE WITH BETA, CYBETA, PER DEGREE

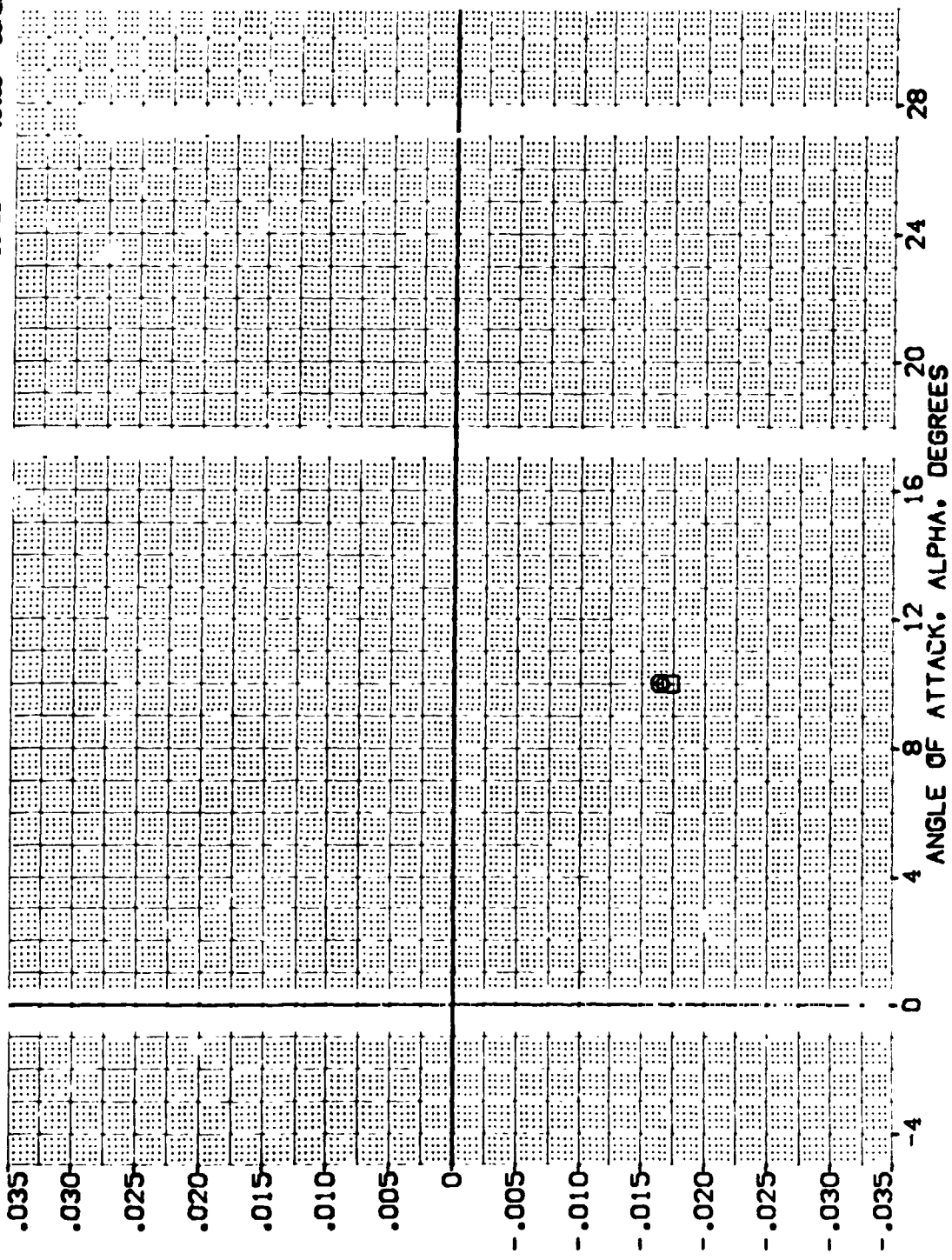


FIG 17 SPEEDBRAKE EFFECTIVENESS, RUDDER = -20 DEG., ALPHA = 10 DEG.

DATA SET SYMBOL CONFIGURATION DESCRIPTION REFERENCE INFORMATION

{MF5023}	0A110	BSIC1F12SIV124E40V1SR15C28	SREF	4.4119	SO.FT.
{MF5026}	0A110	BSIC1F12SIV124E40V1SR15C28	LREF	19.2259	INCHES
{MF5051}	0A110	BSIC1F12SIV124E40V1SR15C28	BREF	37.9359	INCHES
			XPRP	43.5974	INCHES
			YPRP	.0000	INCHES
			ZPRP	15.1875	INCHES
			SCALE	.0405	SCALE

MACH ELEVON SPOBRK BOFLAP

.200	.000	.000	-12.000
.200	.000	25.000	-12.000
.200	.000	65.000	-12.000

YAWING MOMENT COEFFICIENT DERIVATIVE WITH BETA, CYNBET, PER DEGREE

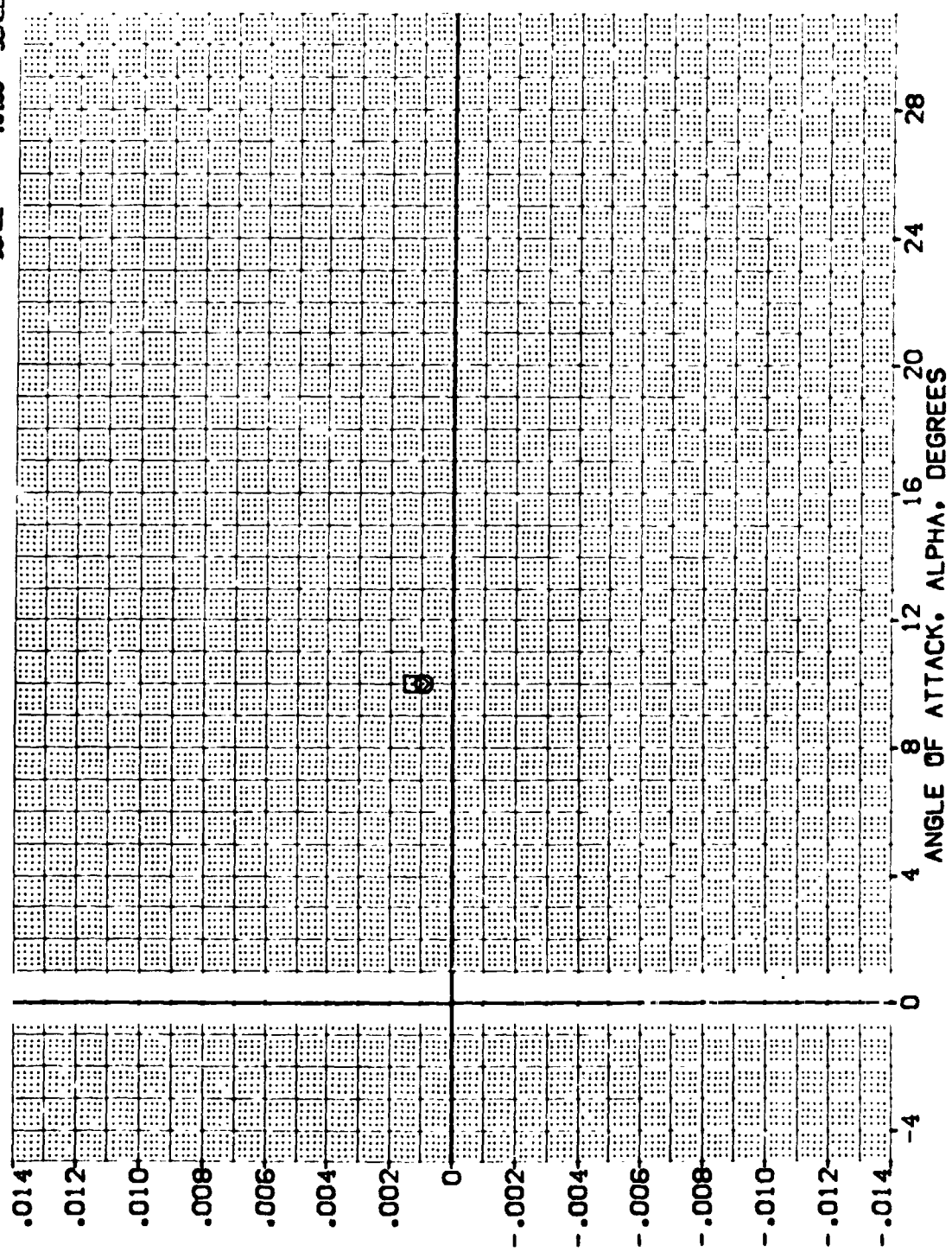


FIG 17 SPEEDBRAKE EFFECTIVENESS, RUDDER = -20 DEF., ALPHA = 10 DEG.

DATA SET SYMBOL: \emptyset CONFIGURATION DESCRIPTION: \emptyset

{MF3023}	CA110	BS1C1	FI2	SV1	24E	40V1	SR1	5X23
{MF3026}	CA110	BS1C1	FI2	SV1	24E	40V1	SR1	5X23
{MF3051}	CA110	BS1C1	FI2	SV1	24E	40V1	SR1	5X23

REFERENCE INFORMATION:

SREF	4.4119	SO.FT.
LREF	19.2236	IN.OES
BREF	37.9353	IN.OES
XTRP	43.5574	IN.OES
YTRP	.0000	IN.OES
ZTRP	15.1875	IN.OES
SCALE	.0405	SCALE

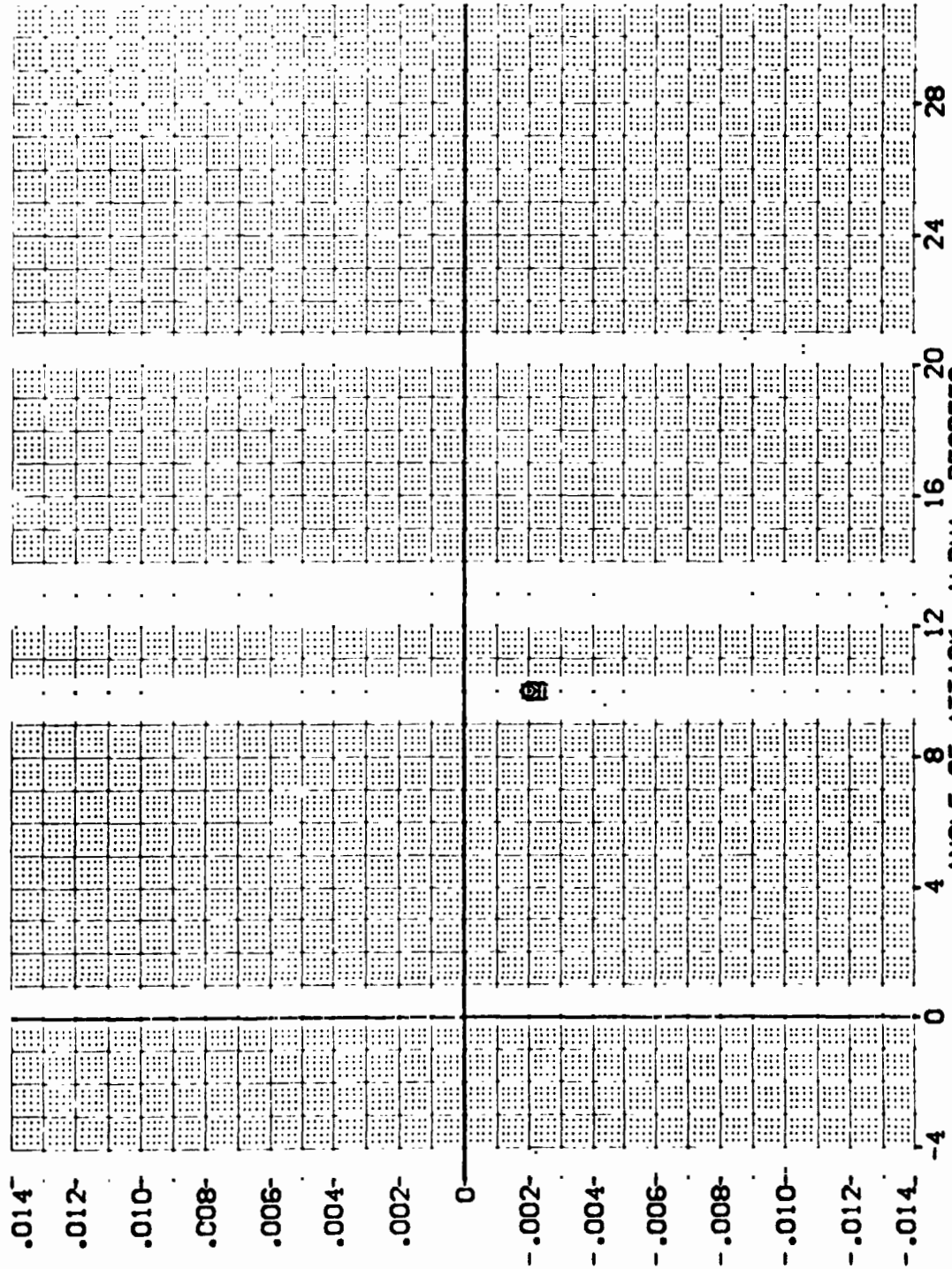


FIG 17 SPEEDBRAKE EFFECTIVENESS, RUDDER = -20 DEG., ALPHA = 10 DEG.

0A110 B61C11F12M51W124E40V19R15X29 (CF5023)

SYMBL	BETA	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
○	MACH	.200 ALPHA	SPOBRK	SREF
□	RUDDER	-20.000 BDFLAP	10.000 DATASET	LREF
◇	ELEVON	.000 ATURON	-12.000 CF5023	BREF
△			.000 CF5051	XREF
			85.000	YREF
				ZREF
				SCALE

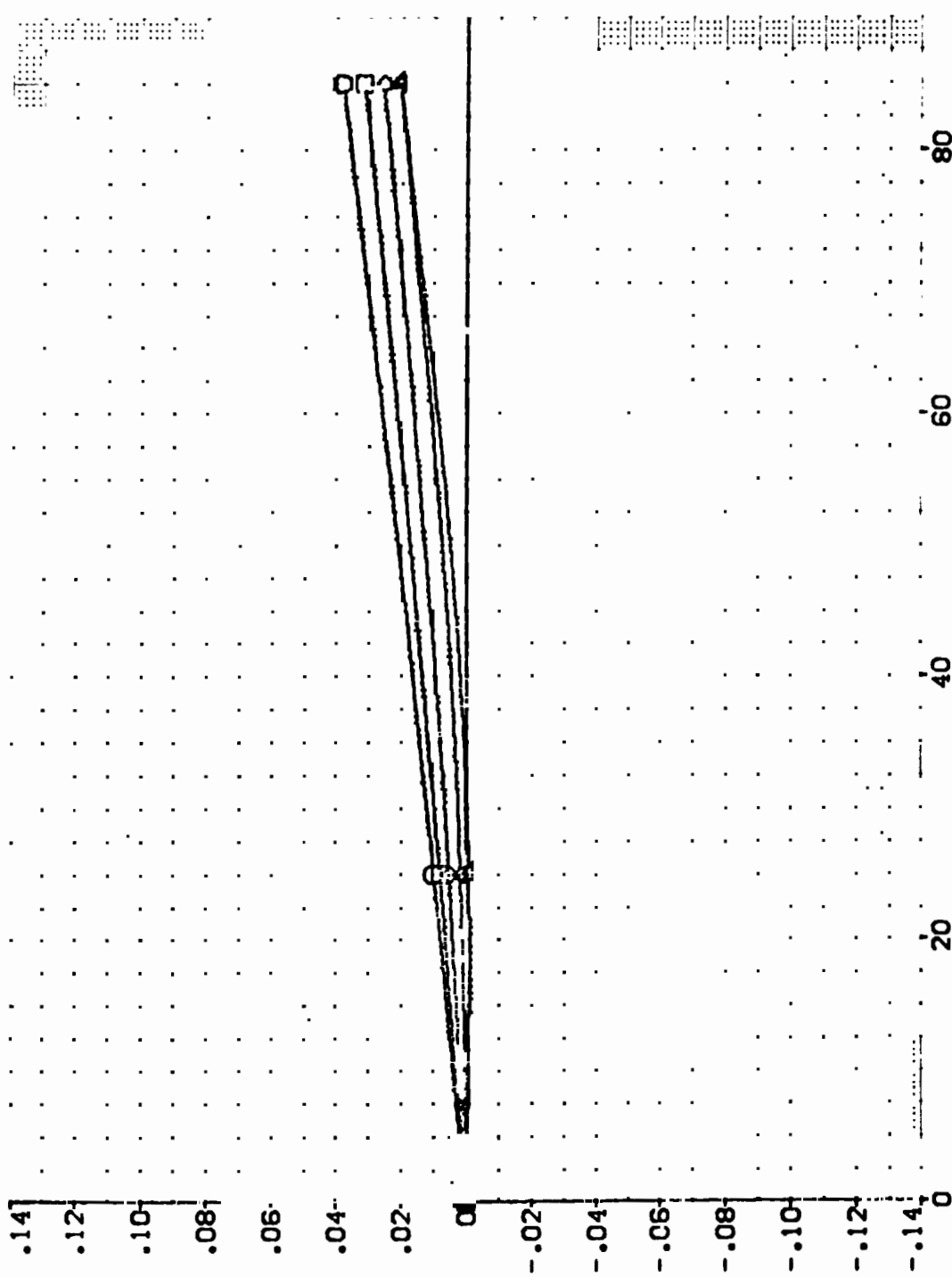
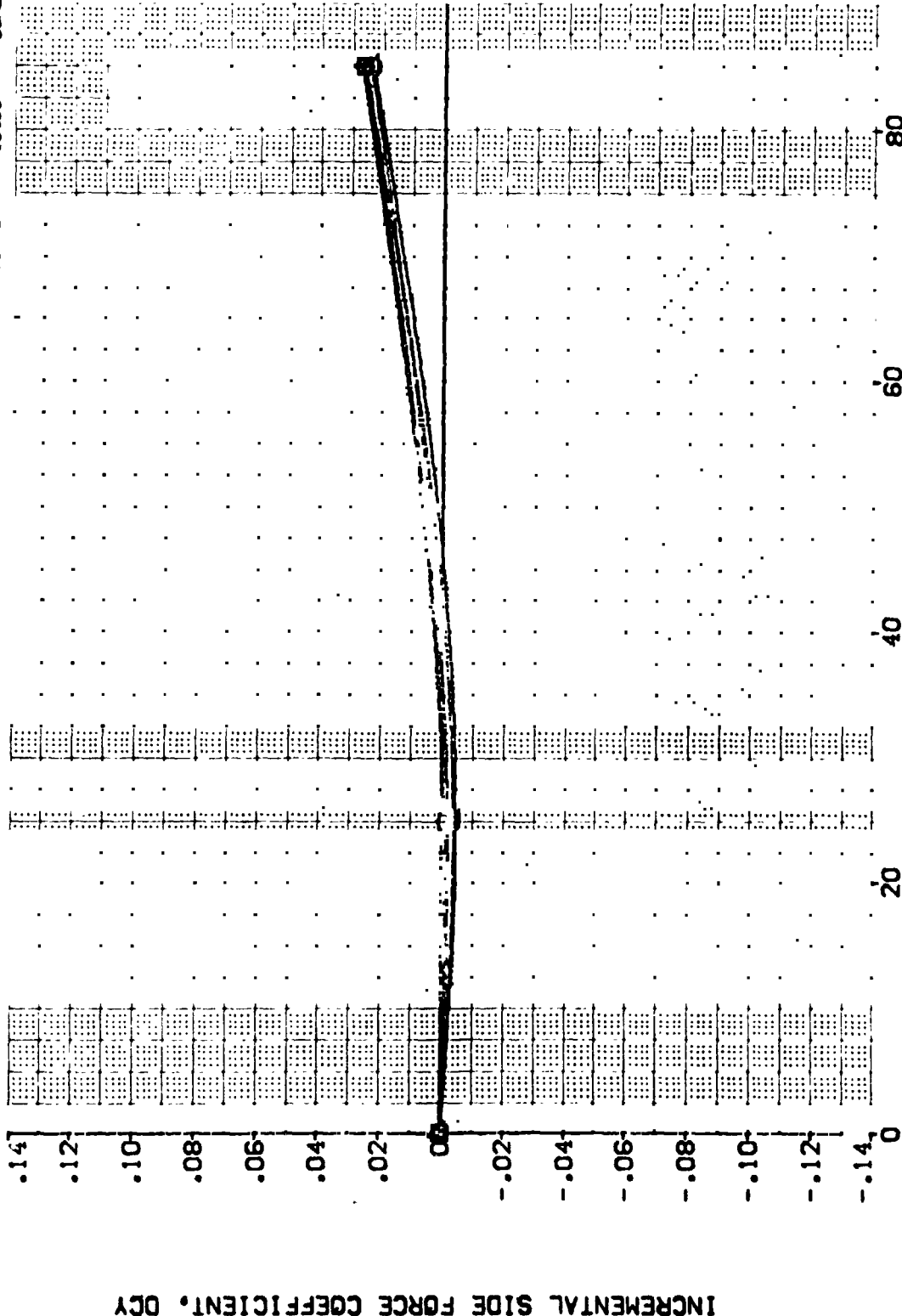


FIG 17 SPEEDBRAKE EFFECTIVENESS, RUDDER = -20 DEG., ALPHA = 10 DEG.

0A110 B61C11F12M51W124E40V19R15X29 (CF5023)

SYMBL	BETA	MACH	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
○	-4.000	RUDDER	.200 ALPHA	SPOBRK	90.FT.
◇	-2.000	ELEVON	-20.000 BEFLAP	SPOBRK	INCHES
△	2.000		.000 AILRON	25.000	INCHES
L	4.000		10.000 DATASET	25.000	INCHES
			-12.000 CF5023	65.000	INCHES
			.000 CF5051	19.2299	SCALE
				4.4119	
				37.5059	
				43.5974	
				15.1875	
				.0405	



SPEEDBRAKE DEFLECTION DEFLECTION ANGLE, DEGREES

FIG 17 SPEEDBRAKE EFFECTIVENESS, RUDDER = -20 DEG., ALPHA = 10 DEG.

0A110 B61C11F12M51W124E40V19R15X29 (CF5023)

SYMBOL		BETA		MACH		PARAMETRIC VALUES		DATA SOURCE		REFERENCE INFORMATION	
○	□	6.000	.200	6.000	10.000	SPDRK	CF5026	SREF	4.4119	SO.FT.	4.4119
◇	△	8.000	-20.000	80FLAP	-12.000	CF5023	CF5023	LREF	19.7259	INCHES	19.7259
		10.000	.000	AILERON	.000	CF5051	CF5051	BRF	37.9359	INCHES	37.9359
		12.000						XPRP	43.5974	INCHES	43.5974
		14.000						YPRP	.0000	INCHES	.0000
								ZPRP	15.1875	INCHES	15.1875
								SCALE	.0405	SCALE	.0405

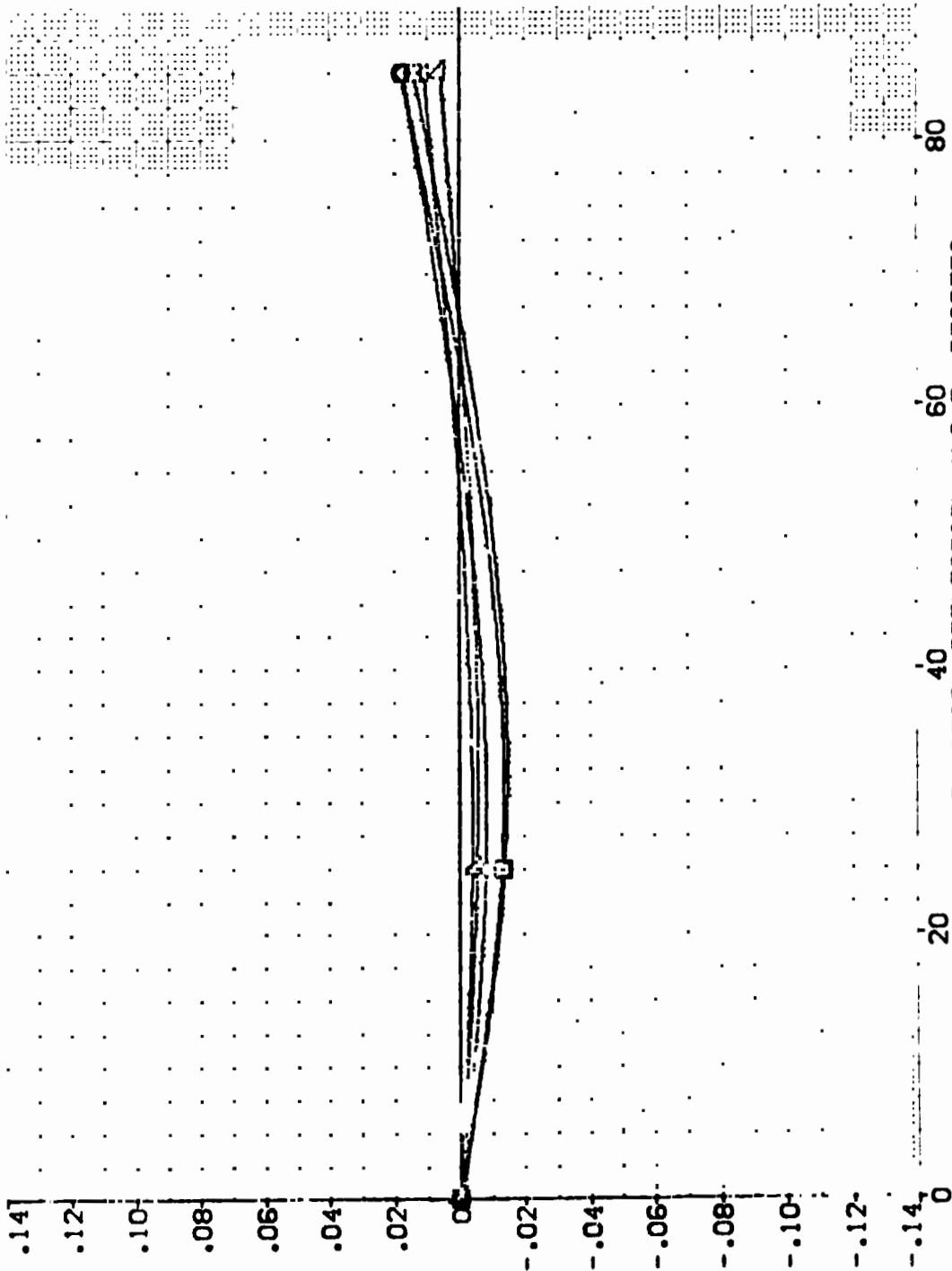
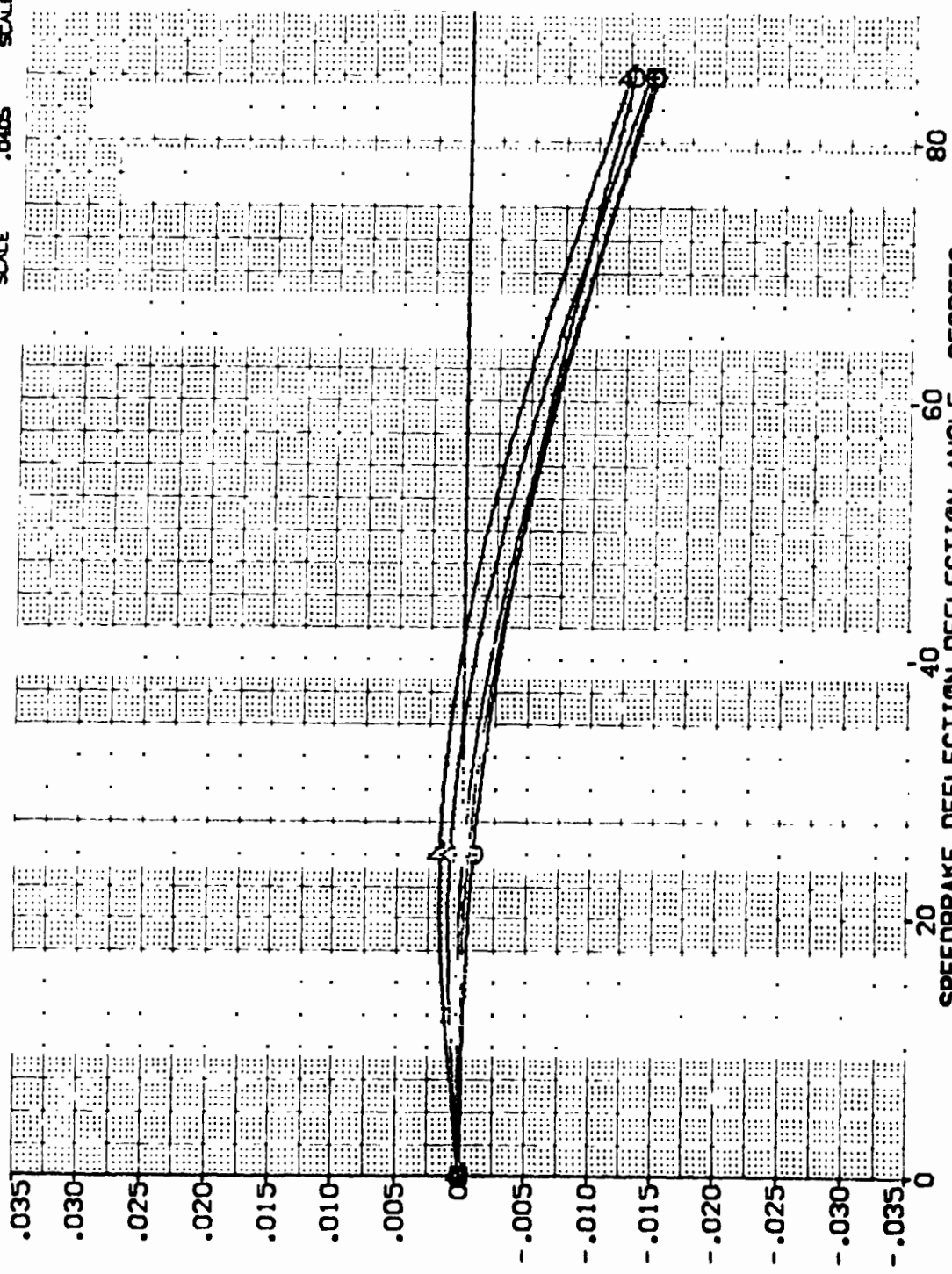


FIG 17 SPEEDBRAKE DEFLECTION ANGLE. DEGREES
SPEEDBRAKE EFFECTIVENESS. RUDDER = -20 DEG., ALPHA = 10 DEG.



0A110 861C11F12M51W124E40V19R15XZ9 (CF5023)

SYMBOL	BETA	MACH	RUDER	ELEVON	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
○	-4.000	.200	ALPHA	10.000	DATASET	SPOBRK	SO.FT.
□	-2.000	-20.000	BOFLAP	-12.000	DATASET	SPOBRK	INCHES
◇	.000	.000	ATLRON	.000	DATASET	SPOBRK	INCHES
△	2.000	.000		.000	DATASET	SPOBRK	INCHES
▽	4.000			.000	DATASET	SPOBRK	INCHES
					DATASET	SPOBRK	SCALE
					DATASET	SPOBRK	



INCREMENTAL YAWING MOMENT COEFFICIENT, DCYN

SPEEDBRAKE DEFLECTION ANGLE, DEGREES

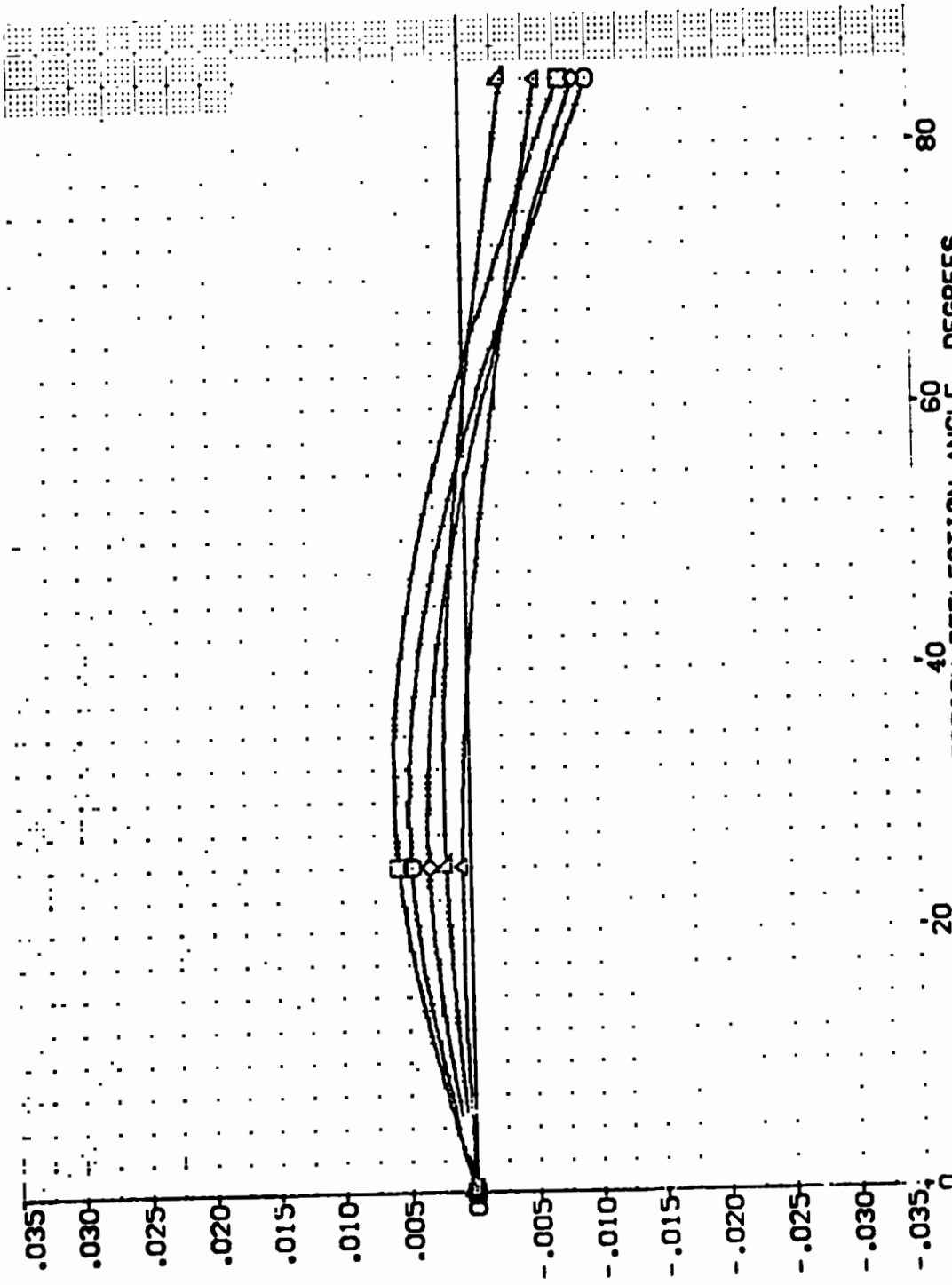
FIG 17 SPEEDBRAKE EFFECTIVENESS, RUDDER = -20 DEG., ALPHA = 10 DEG.



(CF5023)

0A110 B61C11F12M51W124E40V19R15X29

PARAMETRIC VALUES		DATA SOURCE		REFERENCE INFORMATION	
MACH	.200	SPDRK	25.000	SREF	4.4119
RUDDER	-20.000	CF5023	25.000	LINEF	19.2259
ELEVON	.000	CF5051	65.000	REF	37.9359
				YPRP	43.5974
				ZPRP	.0000
				SCALE	15.1673
				SCALE	.0405



INCREMENTAL YAWING MOMENT COEFFICIENT, DCYN

0 20 40 60 80

SPEEDBRAKE DEFLECTION ANGLE, DEGREES

FIG 17 SPEEDBRAKE EFFECTIVENESS, RUDDER = -20 DEG., ALPHA = 10 DEG.

0A110 B61C11F12M51W124E40V19R15X29 (CF5023)

SYMBOL	BETA	MACH	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
○	-14.000	RUDDER	.200 ALPHA	SPOBRK	4.4119 90.FT.
□	-12.000	ELEVON	-20.000 BFLAP	CF5026	19.2299 INCHES
◇	-10.000		.000 AILRON	CF5023	37.9359 INCHES
△	-8.000		.000	CF5051	43.5974 INCHES
▽	-6.000			SCALE	15.1873 INCHES
					.0405 SCALE

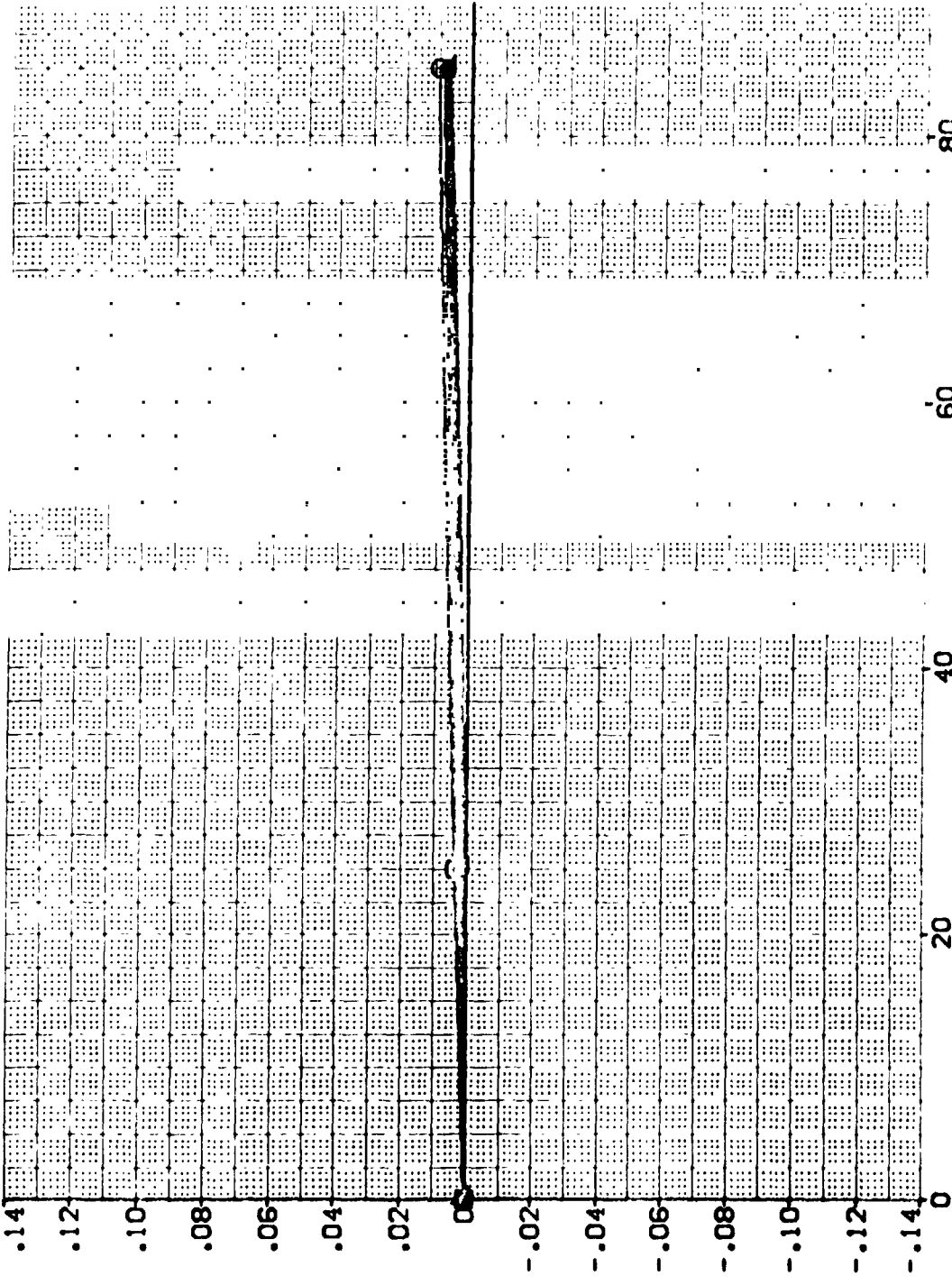


FIG 17 SPEEDBRAKE EFFECTIVENESS, RUDDER = -20 DEG., ALPHA = 10 DEG.



0A110 B61C11F12M51W124E40V19R15X29 (CF5023)

BETA	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
-1.000	.200 ALPHA	SPOBRK	4.4119 SO.FT
-2.000	-20.000 BDFLAP	SPOBRK 25.000	19.2299 INO-ES
.000	.000 AILRBN	CF5026	37.5659 INO-ES
2.000		CF5023	43.9674 INO-ES
4.000		CF5051	.0000 INO-ES
			15.1875 INO-ES
			.0405 SCALE

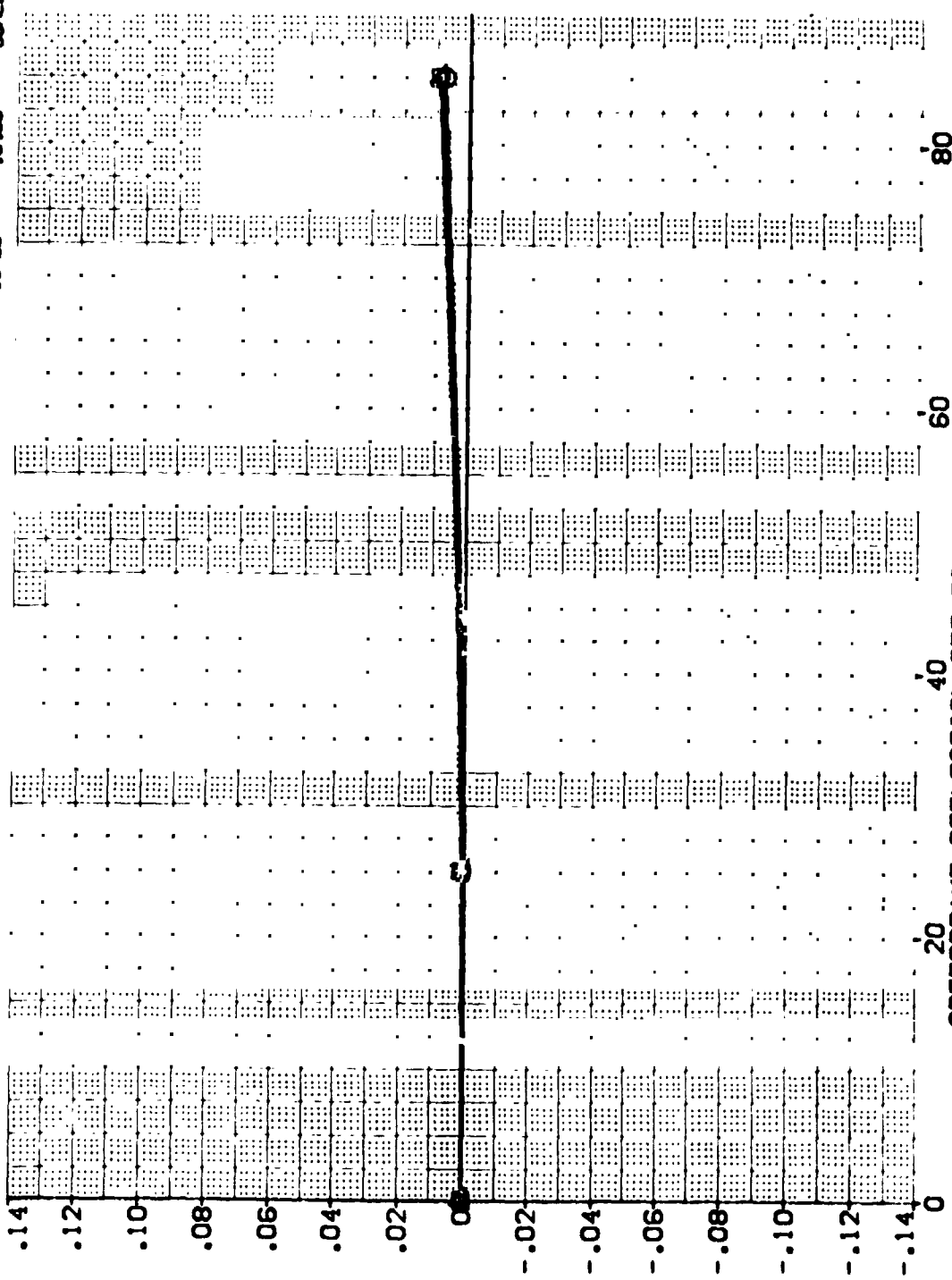
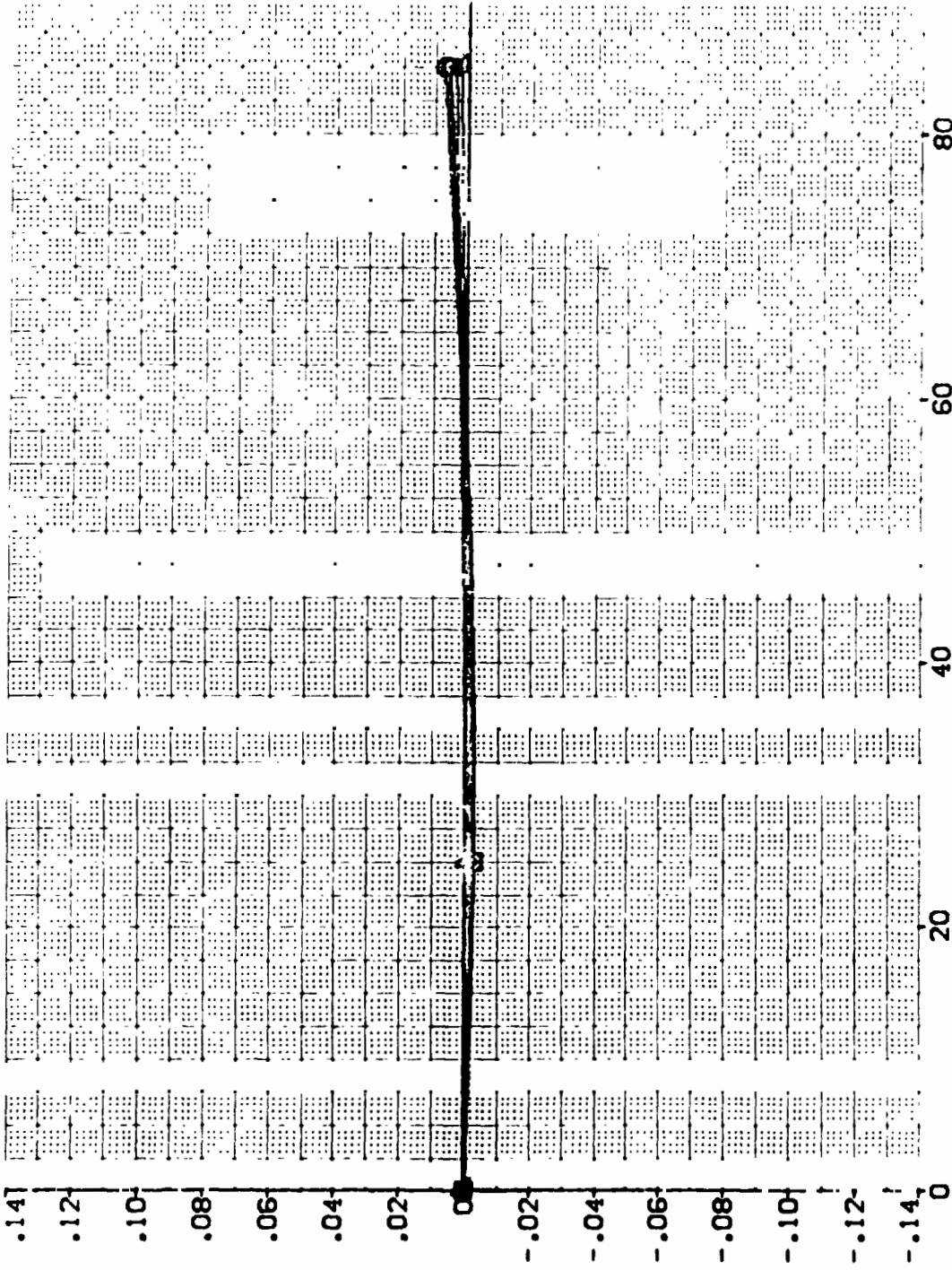


FIG 17 SPEEDBRAKE EFFECTIVENESS, RUDDER = -20 DEG., ALPHA = 10 DGS.

0A110 B61C11F12M51W124E40V19R15X29 (CF5023)

SYMBOL	BETA	MACH	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
○	8.000	RUDDER	.200 ALPHA	SPOBRK	4.4119 SO.FT.
□	8.000	ELEVON	-20.000 BDFLAP	.000	19.2259 IND-ES
◇	10.000		.000 AILRON	85.000	37.9359 IND-ES
△	12.000				43.5974 IND-ES
▽	14.000				.0000 IND-ES
					15.1875 IND-ES
					.0405 SCALE

INCREMENTAL ROLLING MOMENT COEFFICIENT, DCBL



0 20 40 60 80
SPEEDBRAKE DEFLECTION ANGLE, DEGREES

FIG 17 SPEEDBRAKE EFFECTIVENESS, RUDDER = -20 DEG., ALPHA = 10 DEG.



DATA SET SYMB. CONFIGURATION DESCRIPTION
 (P3051) 0110 081C11F1251V124E40V19R15C25
 (P3044) 0110 081C11F1251V124E40V19R15C25

ALPHA RUDDER SPOBRK AILDRN REFERENCE INFORMATION
 10.000 -20.000 65.000 .000 4.4119 SQ.FT.
 10.000 10.000 65.000 .000 19.2259 INCHES
 37.5074 INCHES
 43.5074 INCHES
 15.1875 INCHES
 .0405 SCALE

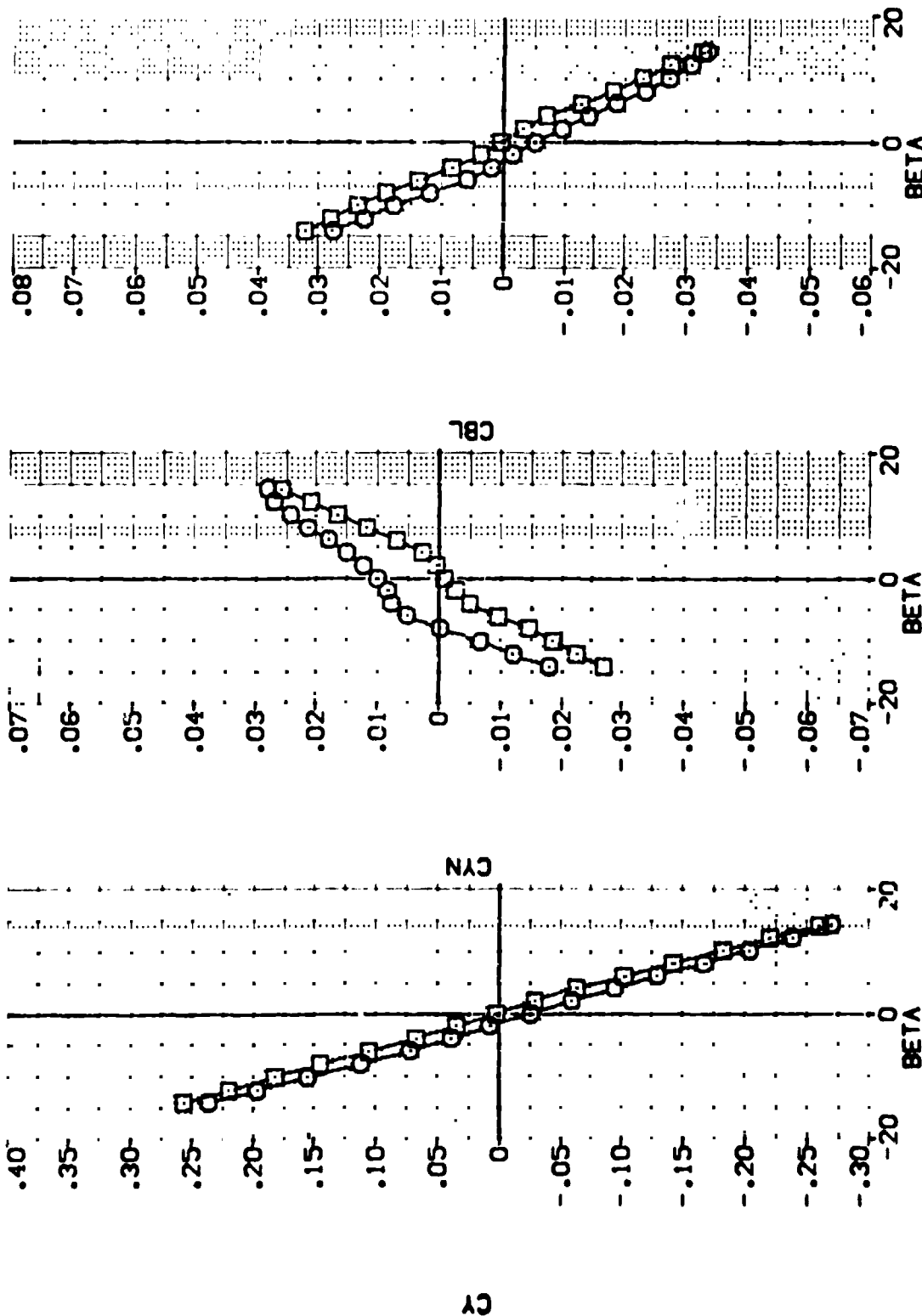


FIG 18 RUDDER EFFECTIVENESS. SPOBRK = 85 DEG. ALPHA = 10 DEG.

(A)MACH = .20

DATA SET SYMBOL: (MF5044) (MF5041)
 CONFIGURATION DESCRIPTION: BA110 BSIC11F12P61V124E40V1SR15X2S
 BA110 BSIC11F12P61V124E40V1SR15X2S

MACH: .200
 ELEVON: .000
 AILRON: .000
 BETA: .000

REFERENCE INFORMATION:
 SREF: 4.4119 SO.FT.
 LREF: 19.2259 IN.-ES
 BREF: 37.9359 IN.-ES
 XPRP: 43.5974 IN.-ES
 YPRP: .0000 IN.-ES
 ZPRP: 15.1873 IN.-ES
 SCALE: .0405 SCALE

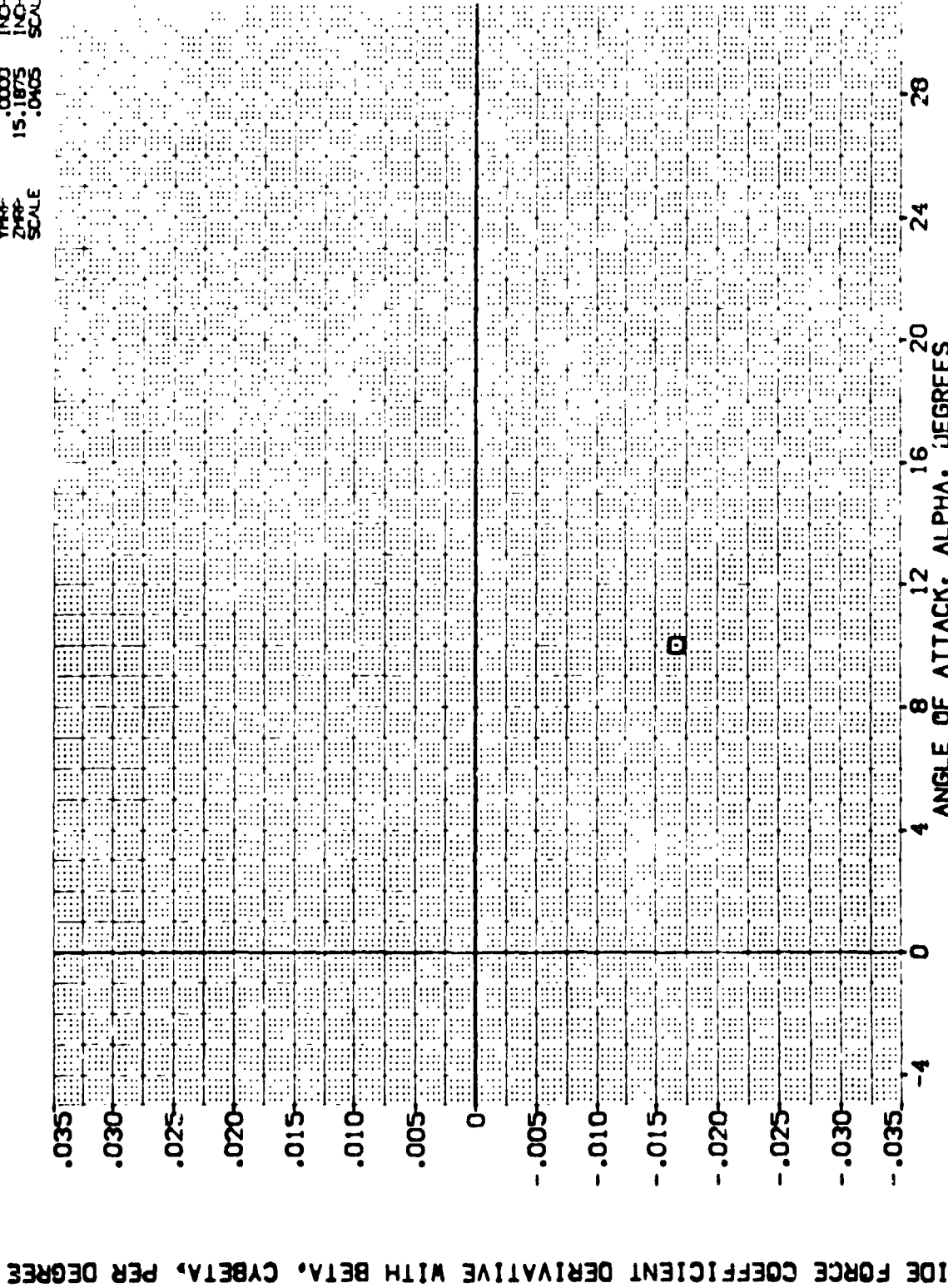


FIG 18 RUDDER EFFECTIVENESS, SPDBRK = 85 DEG., ALPHA = 10 DEG.

DATA SET SYMBL. CONFIGURATION DESCRIPTION

{M5041}	0A110	BSIC11F12S1V124E40V1SR1523	MACH	ELEVON	A1URON	BETA	REFERENCE INFORMATION
{M5044}	0A110	BSIC11F12S1V124E40V1SR1523	.200	.000	.000	.000	SREF 4.4119 50.FT.
			.200	.000	.000	.000	LREF 19.2298 100.FT.
							BREF 37.9059 100.FT.
							XPRP 43.5974 100.FT.
							YPRP .0000 100.FT.
							ZPRP 15.1875 100.FT.
							SCALE .0405

YAWING MOMENT COEFFICIENT DERIVATIVE WITH BETA, CYNBET, PER DEGREE

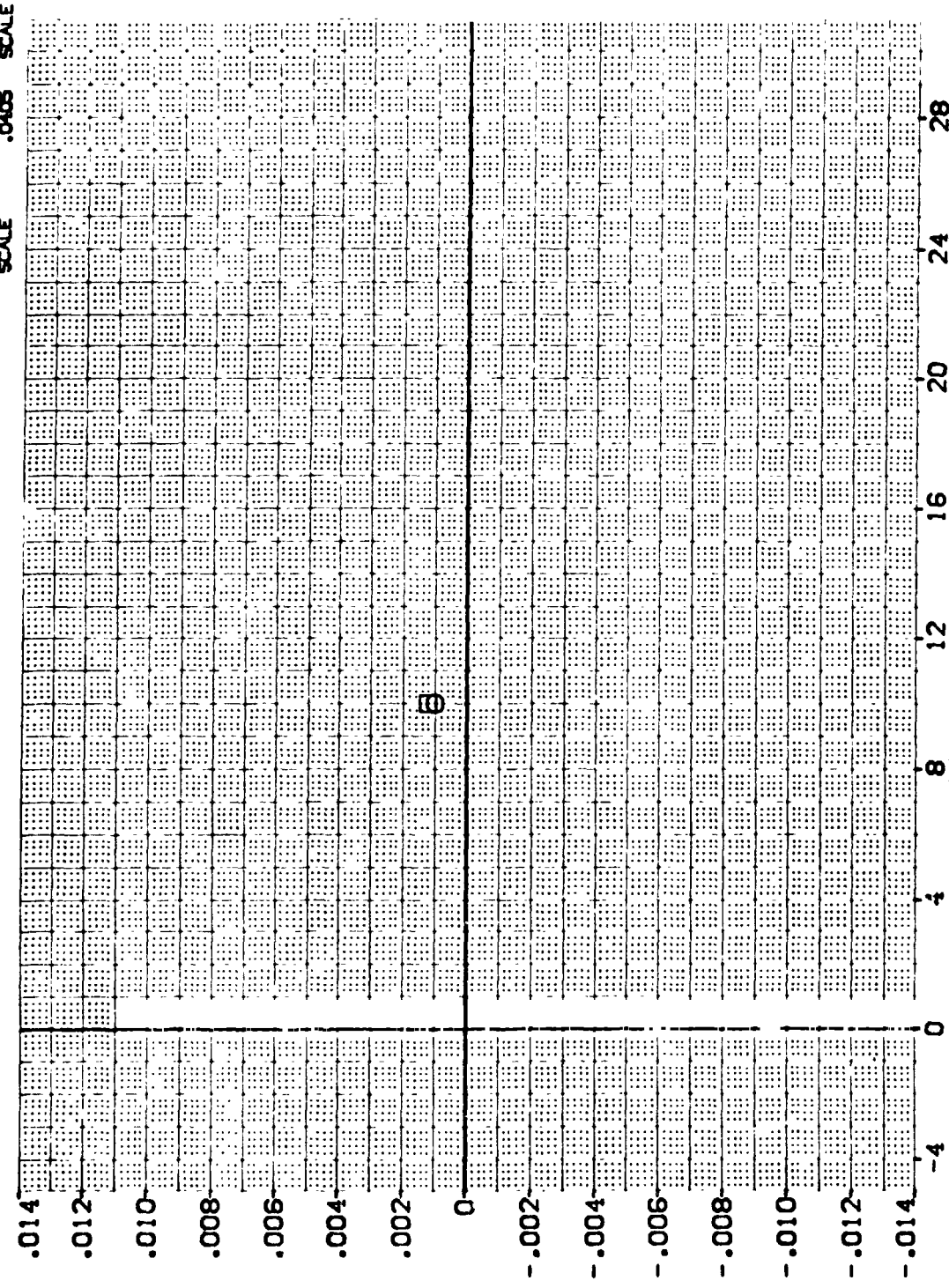


FIG 18 RUDDER EFFECTIVENESS, SPDBRK = 85 DEG., ALPHA = 10 DEG.

DATA SET SYMBO. CONFIGURATION DESCRIPTION.
 (HF5051) 0 CA110 BS1C11F12S1V124E40V18R15X28
 (HF5044) 0 CA110 BS1C11F12S1V124E40V18R15X28

MACH ELEVON AIRRON BETA
 .200 .000 .000
 .200 .000 .000

REFERENCE INFORMATION
 SREF 4.4119 SO.FT.
 LREF 19.2298 INCHES
 BREF 37.9353 INCHES
 XTRP 43.9974 INCHES
 YTRP .0000 INCHES
 ZTRP 15.1875 INCHES
 SCALE .0405 SCALE

ROLLING MOMENT COEFFICIENT DERIVATIVE WITH BETA, CBLBET, PER DEGREE

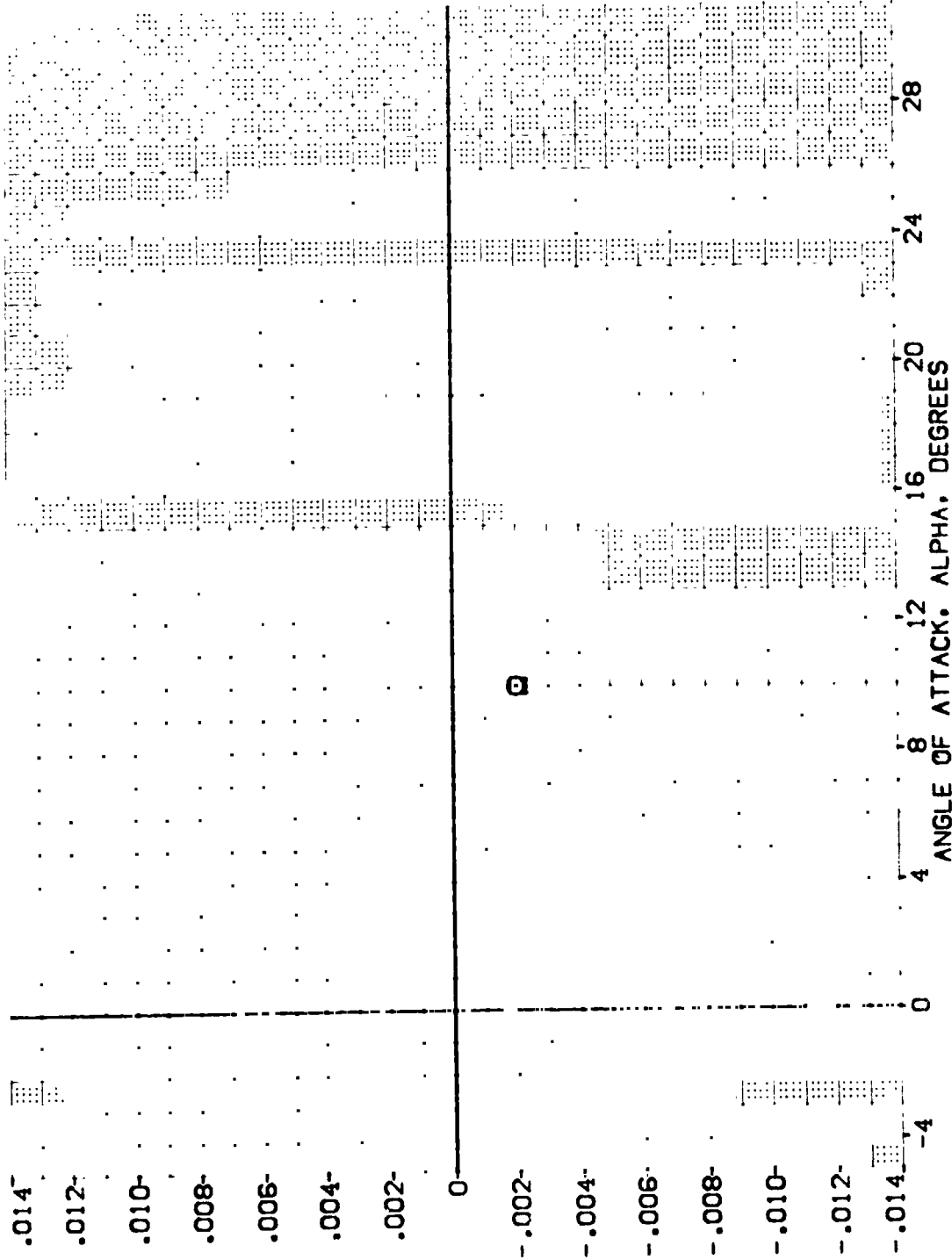


FIG 18 RUDDER EFFECTIVENESS, SPDBRK = 85 DEG., ALPHA = 10 DEG.

0A110 B61C11F12M51W124E40V19R15X29 (DF5051)

BY SGL	BETA	MACH	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
○	-4.000	.200	ALPHA	RUDDER	4.4119
□	-2.000	.000	AILRON	RUDDER	19.2259
◇	.000	85.000	BOFLAP	RUDDER	37.9359
△	2.000			RUDDER	43.5974
▽	4.000			RUDDER	.0000
				RUDDER	7.1875
				RUDDER	.0405
				RUDDER	SCALE

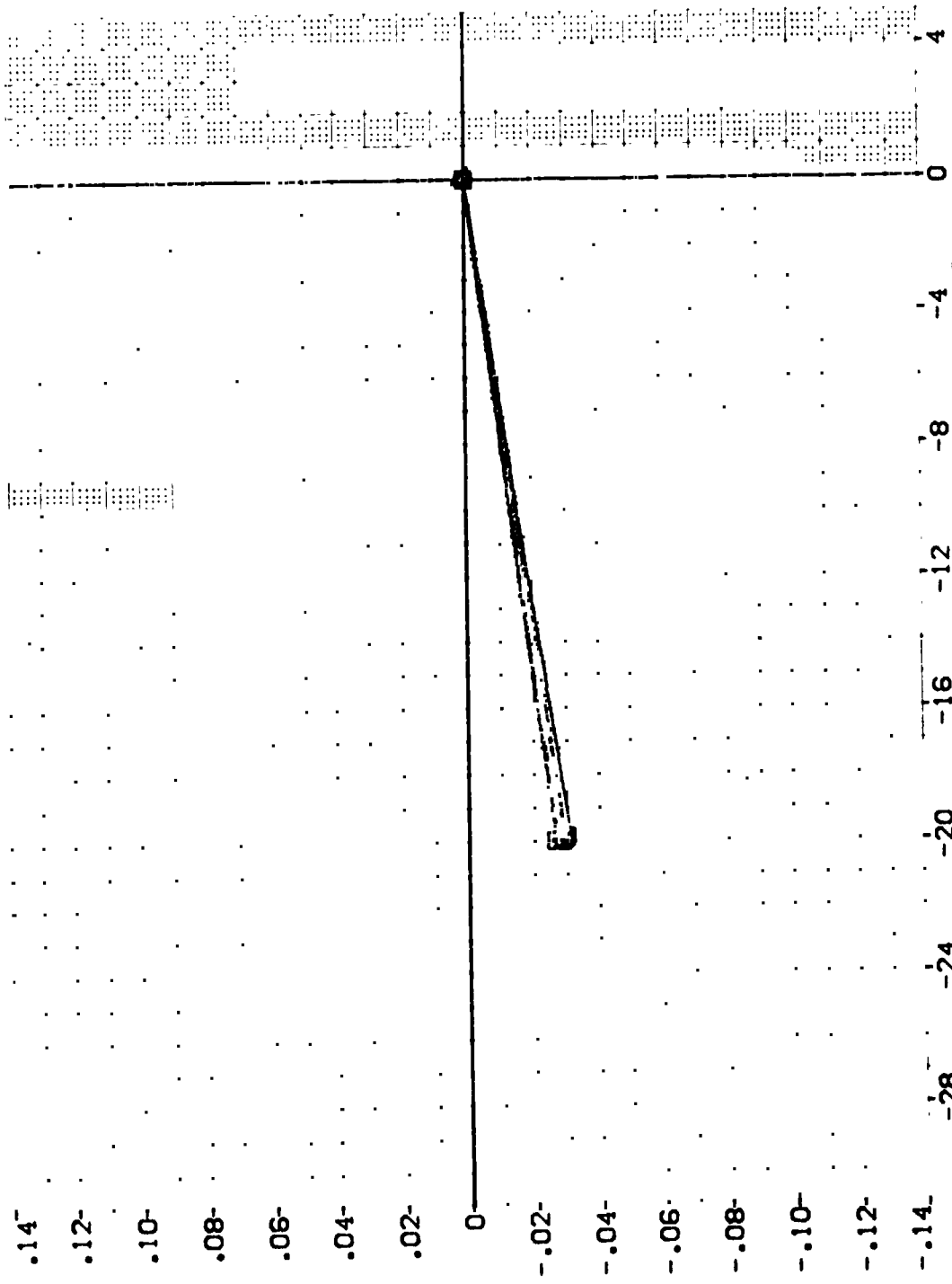


FIG 18 RUDDER EFFECTIVENESS, SPDBRK = 85 DEG., ALPHA = 10 DEG.



(DF5051)

0A110 B61C11F12M51W124E40V19R15X29

SYMBOL

◇	BETA
□	6.000
◇	8.000
△	10.000
▽	12.000
▽	14.000

PARAMETRIC VALUES	
.200	ALPHA
.000	ALTRON
85.000	BOFLAP
DATA SOURCE	
RUDDER	-20.000
DF5051	10.000
DF5044	.000
RUDDER	.000
REFERENCE INFORMATION	
SREF	4.4119
LREF	19.2299
BREF	37.5359
XPRP	43.5974
YPRP	.0000
ZPRP	15.1875
SCALE	.0405

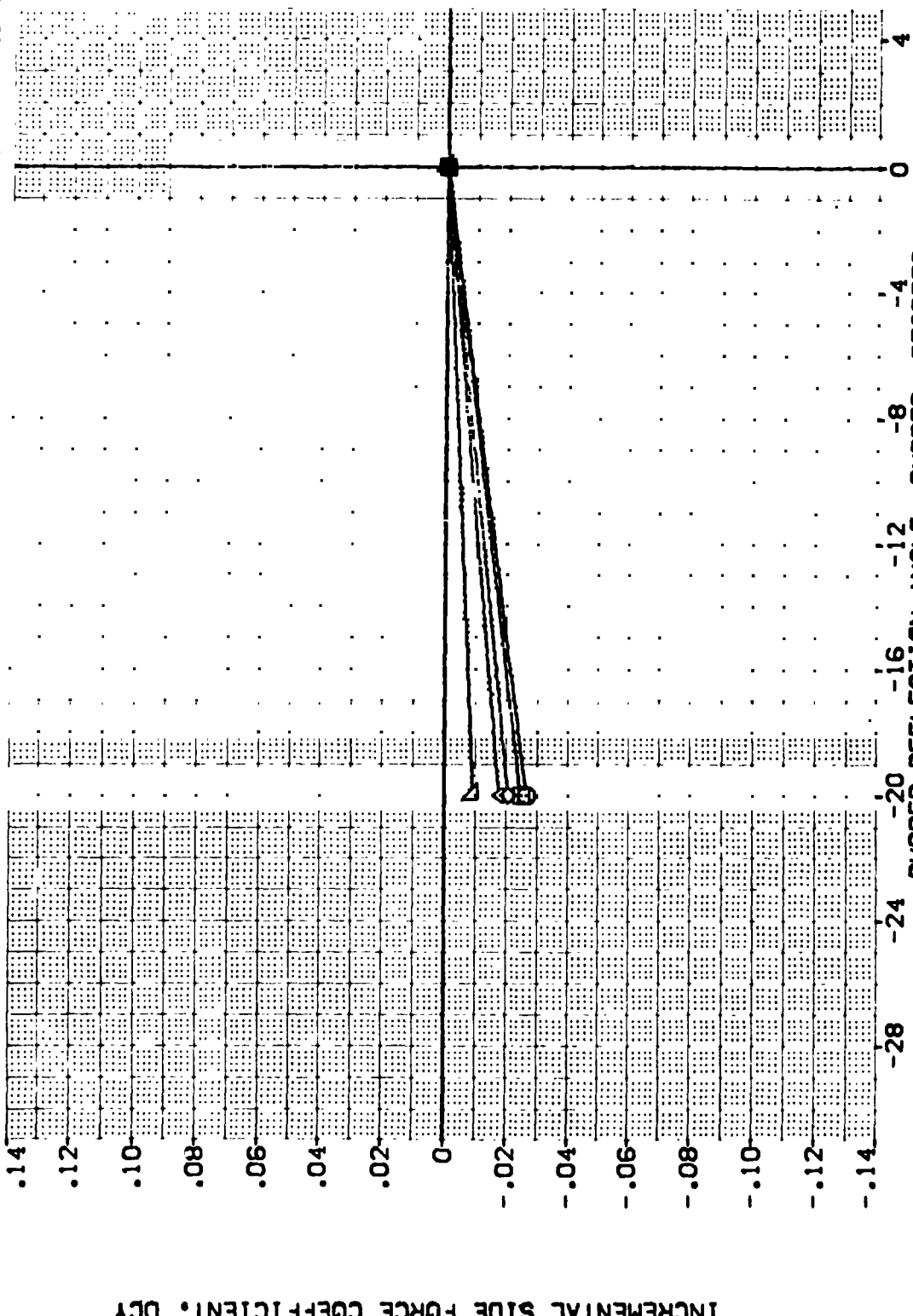
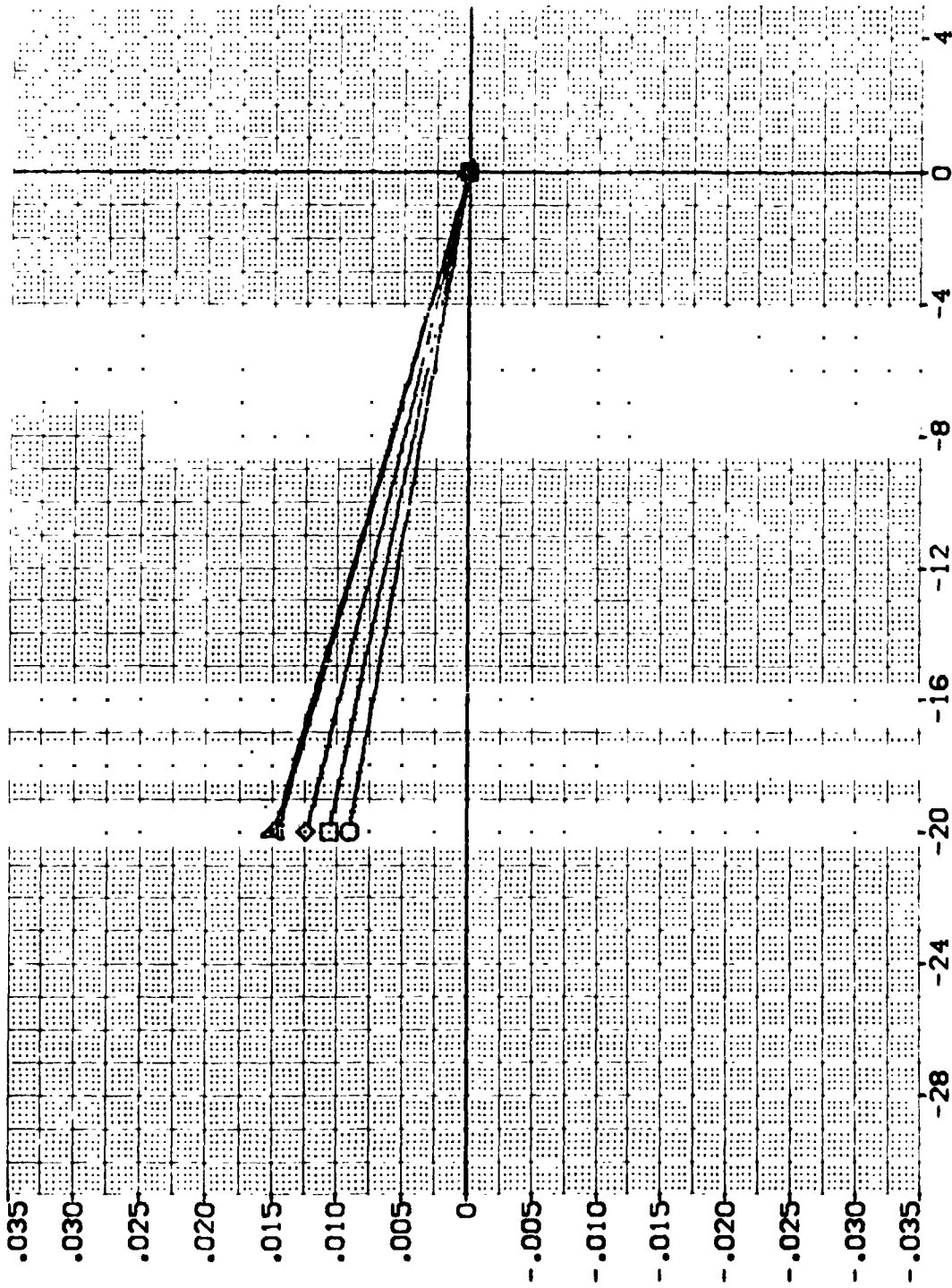


FIG 18 RUDDER EFFECTIVENESS, SPOBRK = 85 DEG., ALPHA = 10 DEG.

0A110 B61C11F12M51W124E40V19R15X29 (0F5051)

SYMBOL	BETA	MACH	PARAMETRIC VALUES	DATA SOURCE	RUDDER	DATASET	RUDDER	SCALE	REFERENCE INFORMATION
○	-14.000	.200	ALPHA	10.000	RUDDER	DF5044	.000	SO.FT.	4.4119
□	-12.000	.000	ALTRON	.000	DF5051	DF5044	.000	INCHES	19.7299
◇	-10.000	85.000	80FLAP	-12.000				INCHES	37.9359
△	-8.000							INCHES	43.5974
	-6.000							INCHES	15.1875
								SCALE	.0405

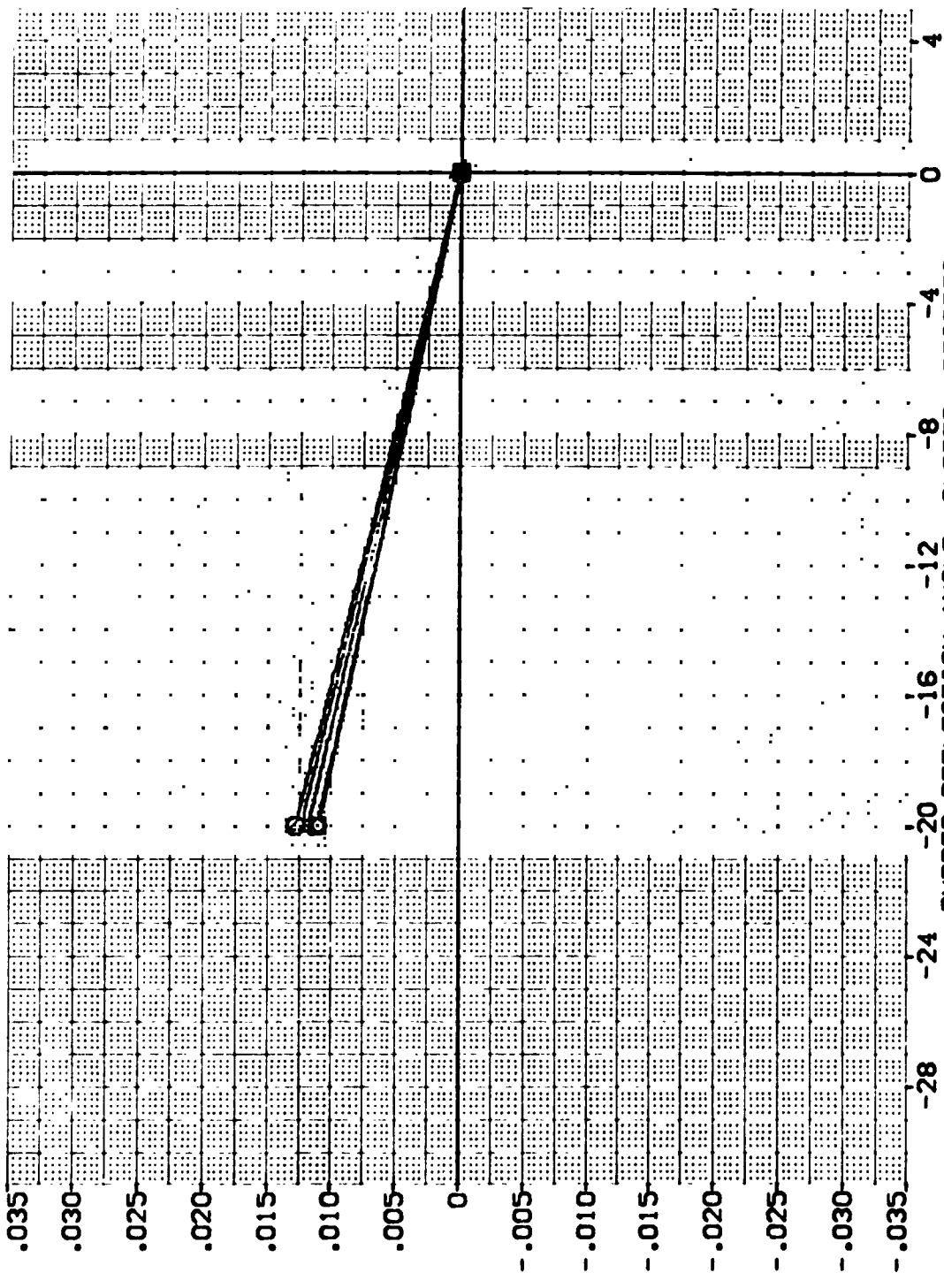


INCREMENTAL YAWING MOMENT COEFFICIENT, DCYN

FIG 18 RUDDER EFFECTIVENESS, SPDBRK = 85 DEG., ALPHA = 10 DEG.

0A110 B61C11F12M51W124E40V19R15X29 (DF5051)

BETA	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
-4.000	MACH .200	RUDDER	SO.FT. 4.4115
-2.000	ALPHA .000	DATASET DF5044	IN-OES 19.2259
.000	AILRON .000	RUDDER .000	IN-OES 37.9359
2.000	BDFLAP 85.000	SCALE	IN-OES 43.5974
4.000			IN-OES .0000
			IN-OES 15.1875
			SCALE .0405



INCREMENTAL YAWING MOMENT COEFFICIENT, C_Y

FIG 18 RUDDER EFFECTIVENESS, SPDBRK = 85 DEG., ALPHA = 10 DEG.

(DF5051)

0A110 B61C11F12M51W124E4CV19R15X29

SYMBOL	BETA	MACH	PARAMETRIC VALUES	DATA SOURCE	RUDDER	RUDDER	REFERENCE INFORMATION
○	6.000		.200 ALPHA	10.000 DATASET	.000	.000	4.4119 SO.FT.
□	8.000	ELEVON	.000 AILRON	.000 DF5051			19.2298 INO-ES
◇	10.000	SPDBRK	85.000 BOFLAP	-12.000	DF5044		37.9339 INO-ES
△	12.000						43.9374 INO-ES
	14.000						.0000 INO-ES
							15.1875 INO-ES
							.0405 SCALE

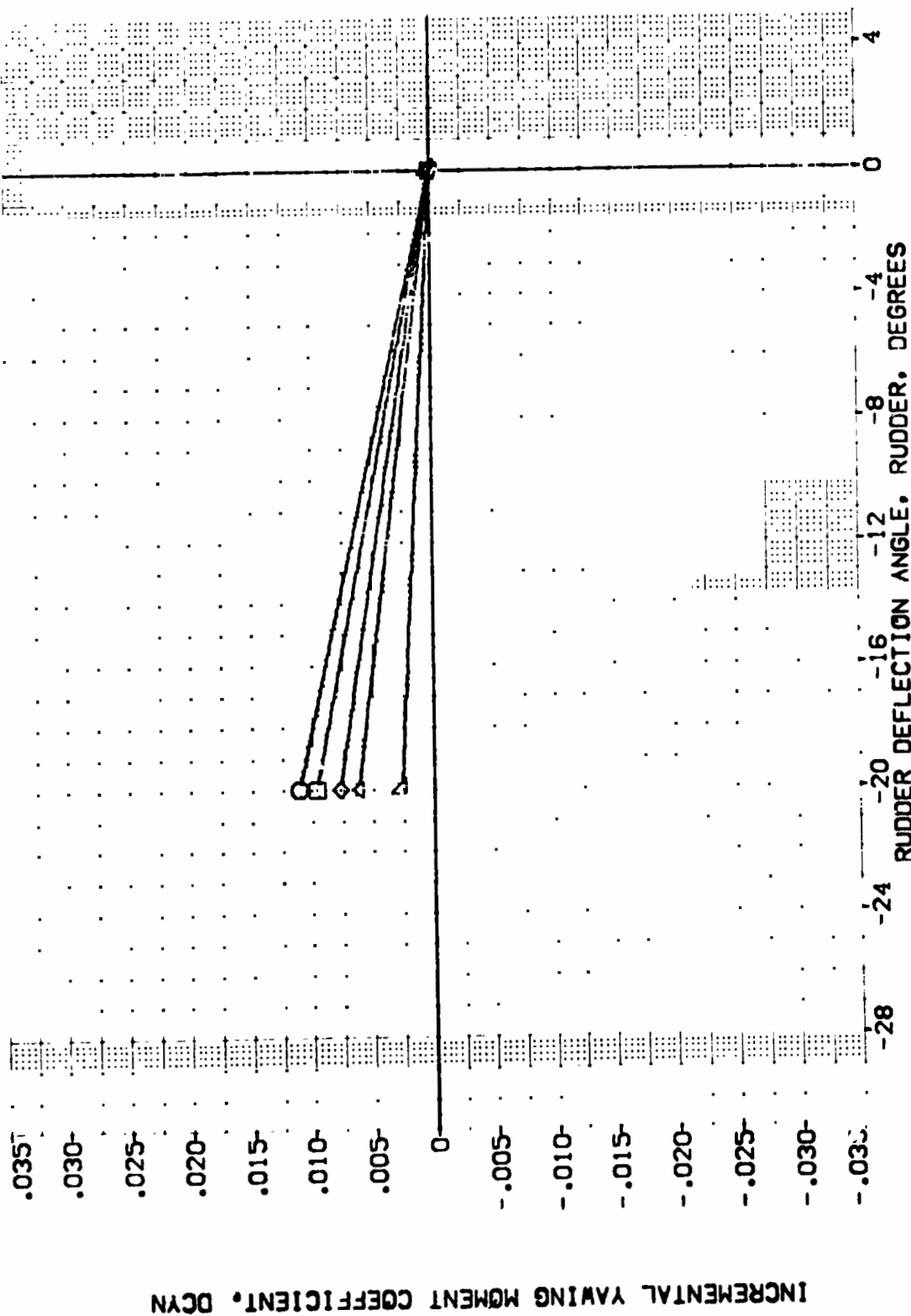


FIG 18 RUDDER EFFECTIVENESS, SPDBRK = 85 DEG., ALPHA = 10 DEG.



0A110 B61C11F12M51W124E40V19R15X29 (OF5051)

SYMBOL	BETA	MACH	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
○	-14.000	.200	ALPHA	RUDDER	SO.FT.
□	-12.000	.000	AILRON	DATASET	INCHES
◇	-10.000	85.000	BDFLAP	DF5044	INCHES
△	-8.000			DF5044	INCHES
	-6.000			DF5044	INCHES
				DF5044	SCALE
				DF5044	SCALE

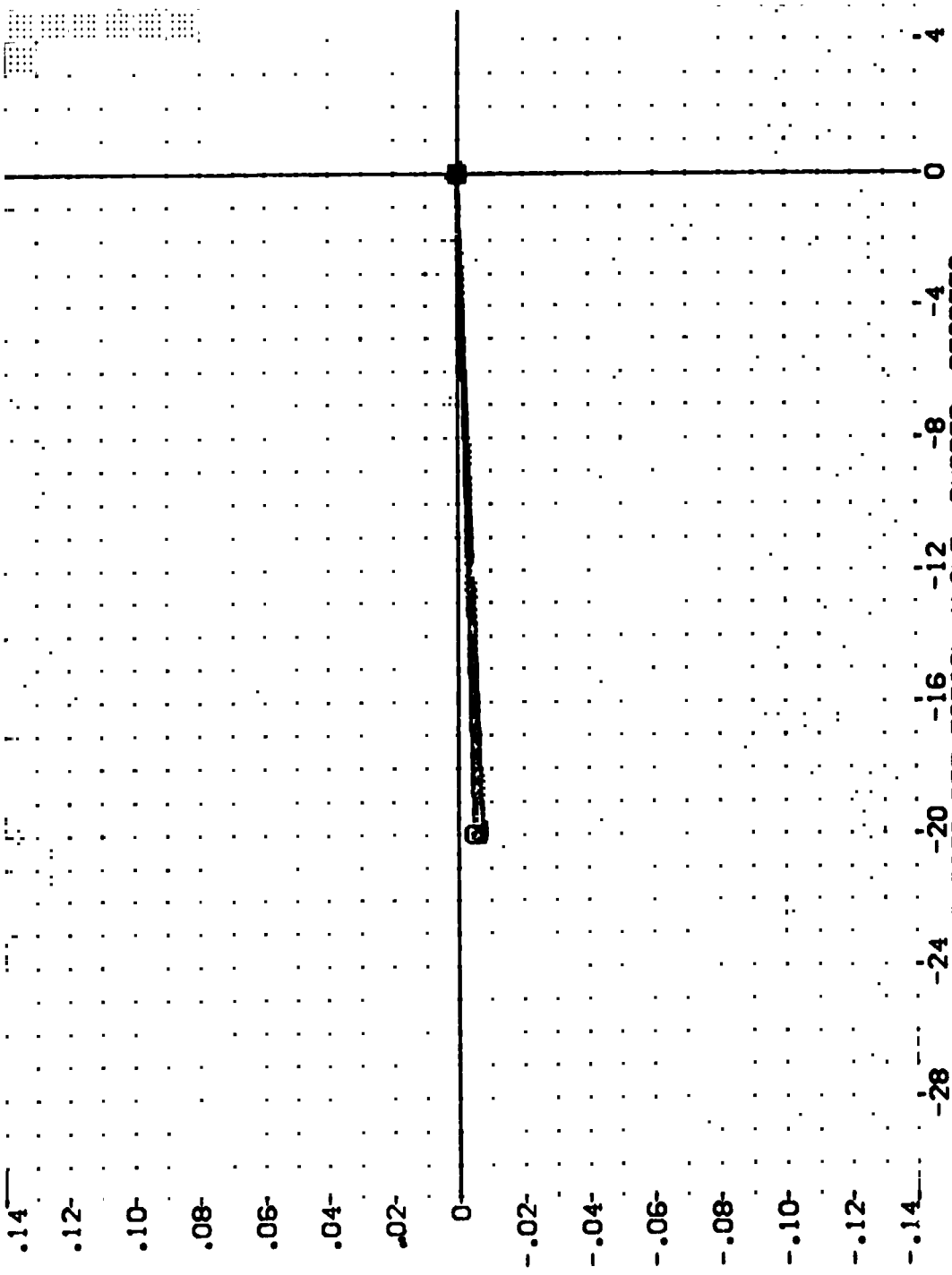


FIG 18 RUDDER EFFECTIVENESS, SPOBRK = 85 DEG., ALPHA = 10 DEG.

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 {EF3043} 0110 BSIC11F12G1V124E40V1SR15029
 {EF3045} 0110 BSIC11F12G1V124E40V1SR17029
 {EF3047} 0110 BSIC11F12G1V124E40V1SR16029

ELEVON AIRLON RUDDER SPDBRK
 .000 .000 .000 85.000
 .000 .000 .000 85.000
 .000 .000 .000 85.000

REFERENCE INFORMATION
 SREF 4.4119 SQ.FT.
 LREF 19.2289 INCHES
 BREF 37.5359 INCHES
 XREF 43.5574 INCHES
 YREF .0000 INCHES
 ZREF 15.1875 INCHES
 SCALE .0405

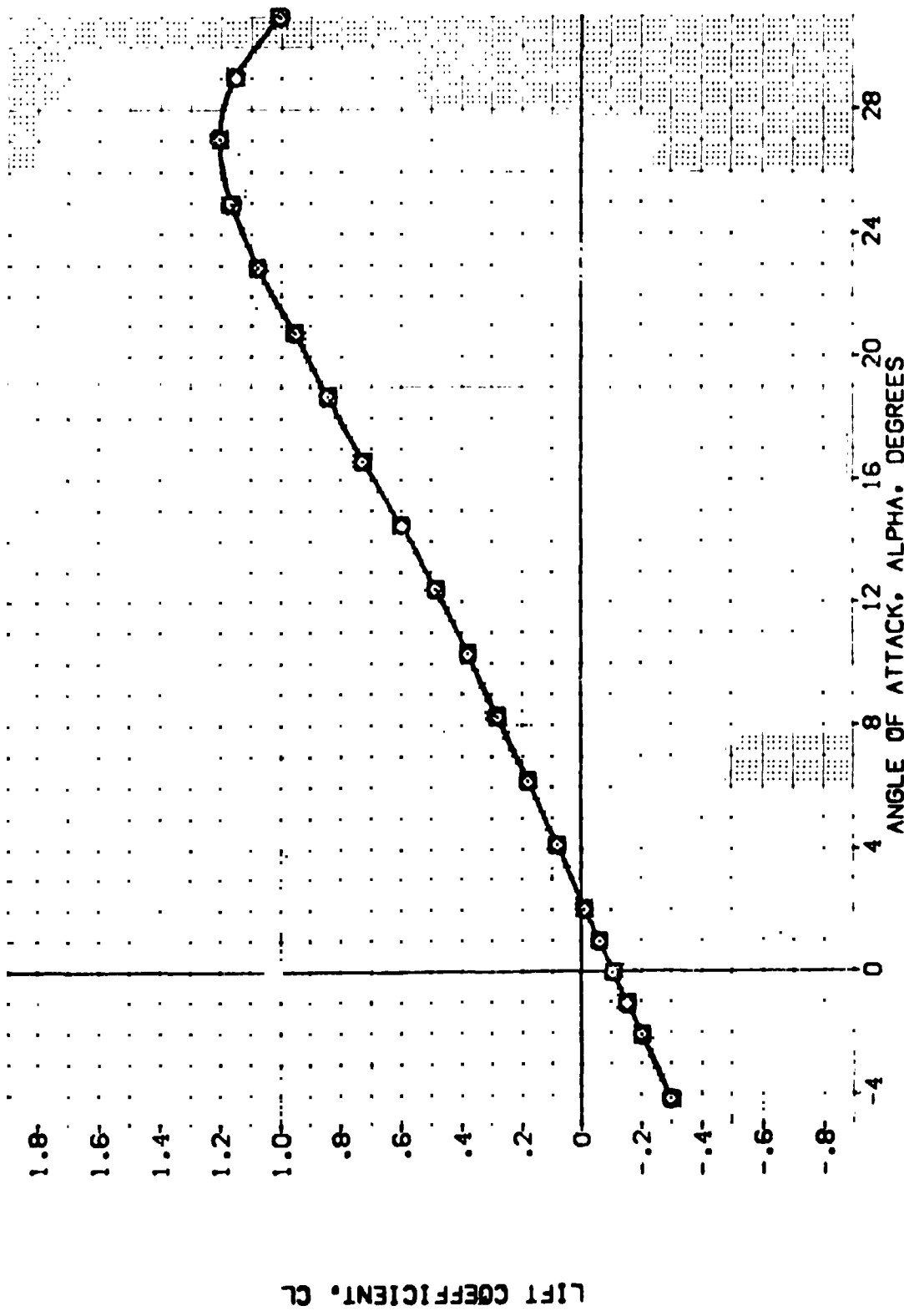


FIG 19 EFFECT OF RUDDER SEALS, SPDBRK = 85 DEG., RUDDER = 0 DEG.-LONGITUDINAL
 (A)MACH = .20



DATA SET SYMBOL CONFIGURATION DESCRIPTION

{E-5043} 0A110 BSIC1IF27S1V124E40V1SR15DCB

{E-5045} 0A110 BSIC1IF27S1V124E40V1SR17DCB

{E-5047} 0A110 BSIC1IF27S1V124E40V1SR16DCB

ELEVON AILRON RUDDER SPDBRK REFERENCE INFORMATION

.000 .000 .000 85.000 4.4118 SQ.FT

.000 .000 .000 85.000 19.2259 INCHES

.000 .000 .000 85.000 37.9359 INCHES

.000 .000 .000 85.000 43.5674 INCHES

.000 .000 .000 85.000 15.1875 INCHES

.000 .000 .000 85.000 .0405 SCALE

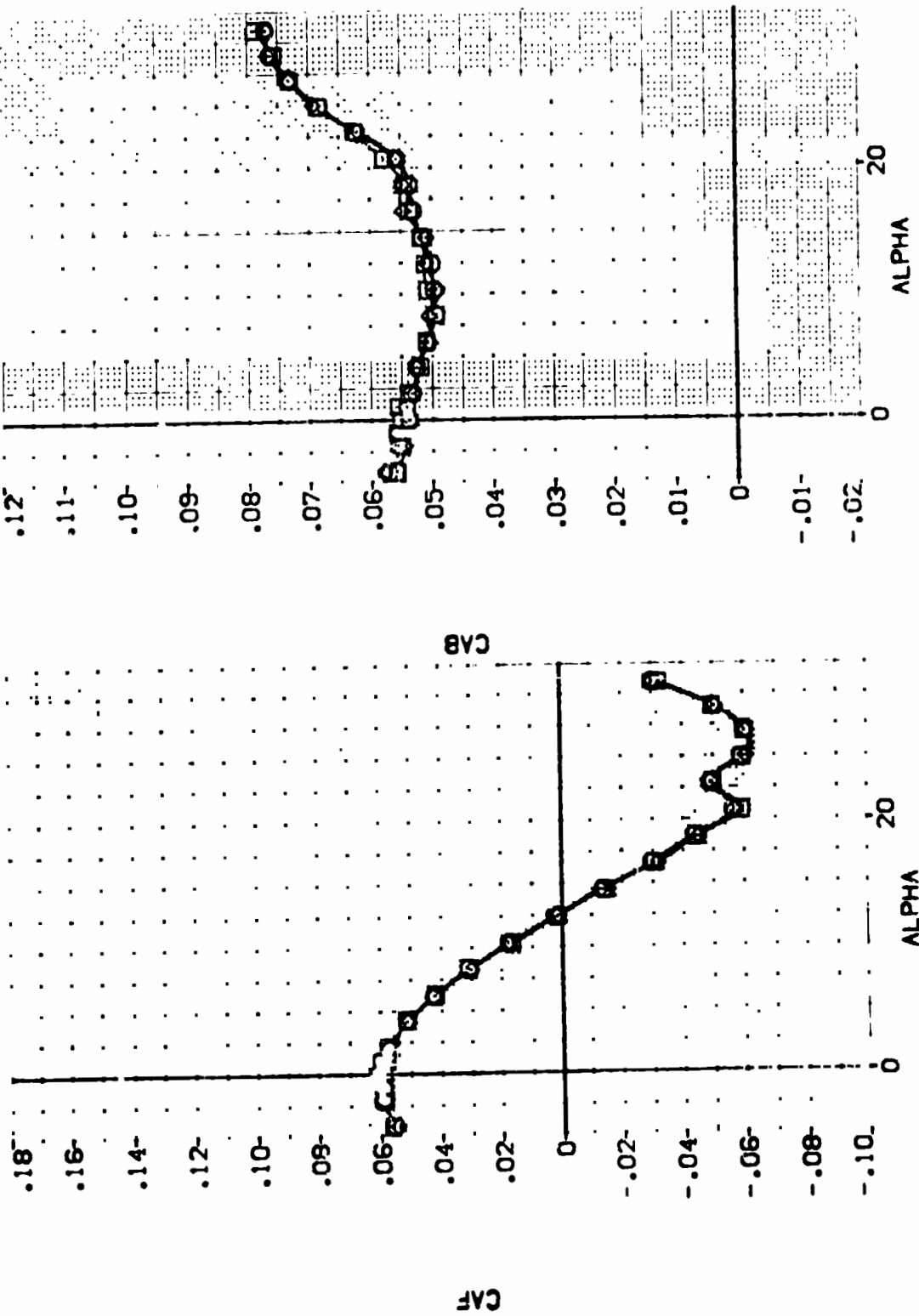


FIG 19 EFFECT OF RUDDER SEALS, SPDBRK = 85 DEG., RUDDER = 0 DEG.,-LONGITUDINAL
 (A)MACH = .20 PAGE 130



DATA SET SYMBO. CONFIGURATION DESCRIPTION

(EF5043)	0A110	861C11F124E40V1SR15C28
(EF5045)	0A110	861C11F124E40V1SR17C28
(EF5047)	0A110	861C11F124E40V1SR16C28

ELEVON AIRLON RUDDER SPDBRK REFERENCE INFORMATION

0.000	0.000	0.000	85.000	BREF	4.4118	50. FT.
0.000	0.000	0.000	85.000	LREF	19.2239	INCHES
0.000	0.000	0.000	85.000	BREF	37.5358	INCHES
				XTRP	43.5974	INCHES
				YTRP	0.0000	INCHES
				ZTRP	15.1875	INCHES
				SCALE	0.0405	SCALE

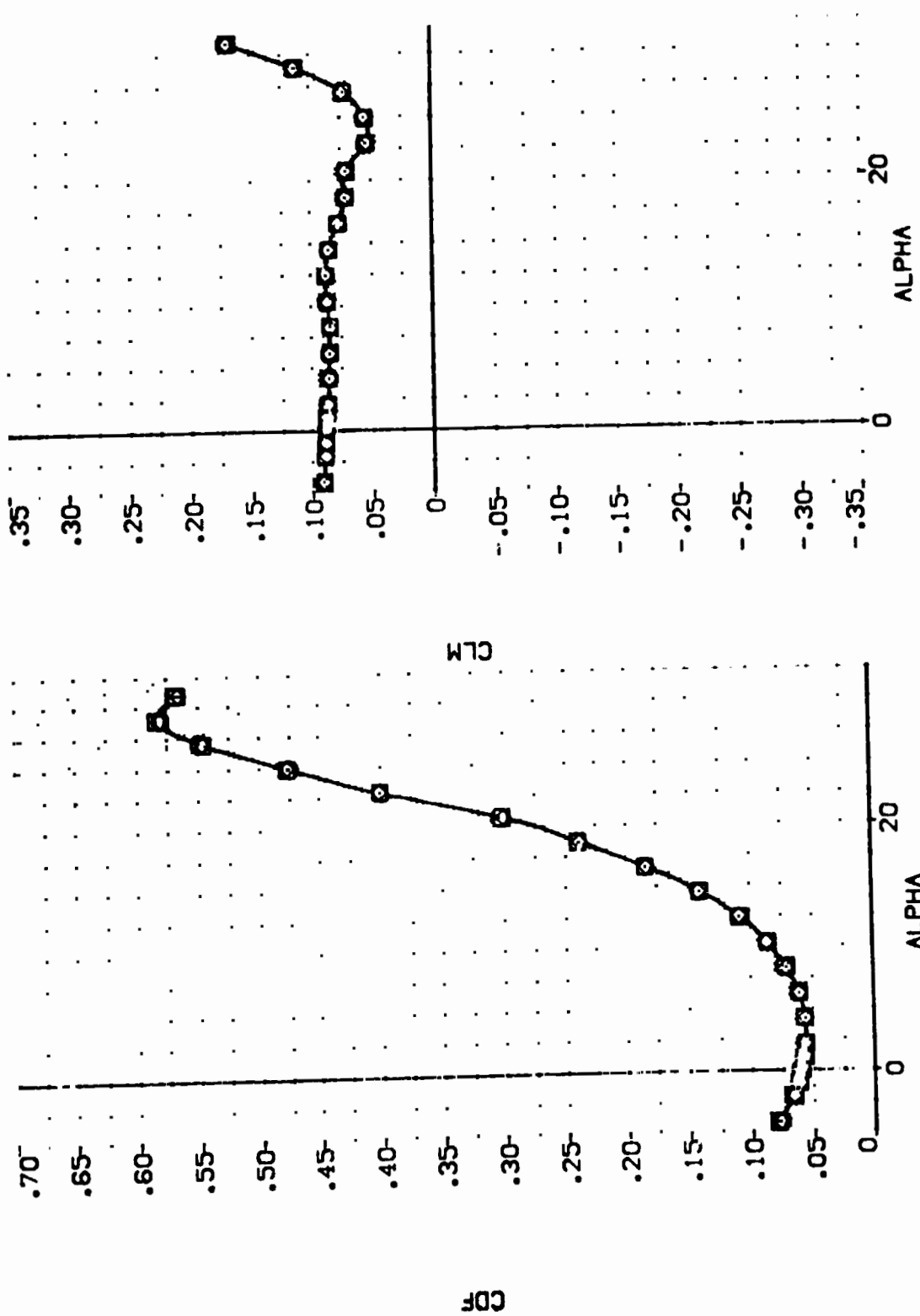


FIG 19 EFFECT OF RUDDER SEALS, SPDBRK = 85 DEG., RUDDER = 0 DEG.-LONGITUDINAL
 (A)MACH = .20

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (E-5043) DA110 861C11F1251V124E40 19R15X29
 (E-5045) DA110 861C11F1251V124E41 19R17X29
 (E-5047) DA110 861C11F1251V124E4C 19R16X29

ELEVON AILRON RUDDER SPDBRK REFERENCE INFORMATION
 .000 .000 .007 85.000 4.4119 SQ.FT.
 .000 .000 .003 85.000 19.2299 IN.-ES
 .000 .000 .000 86.130 37.9359 IN.-ES
 XPRP 43.5974 IN.-ES
 YPRP .0000 IN.-ES
 ZPRP 15.1673 IN.-ES
 SCALE .0405

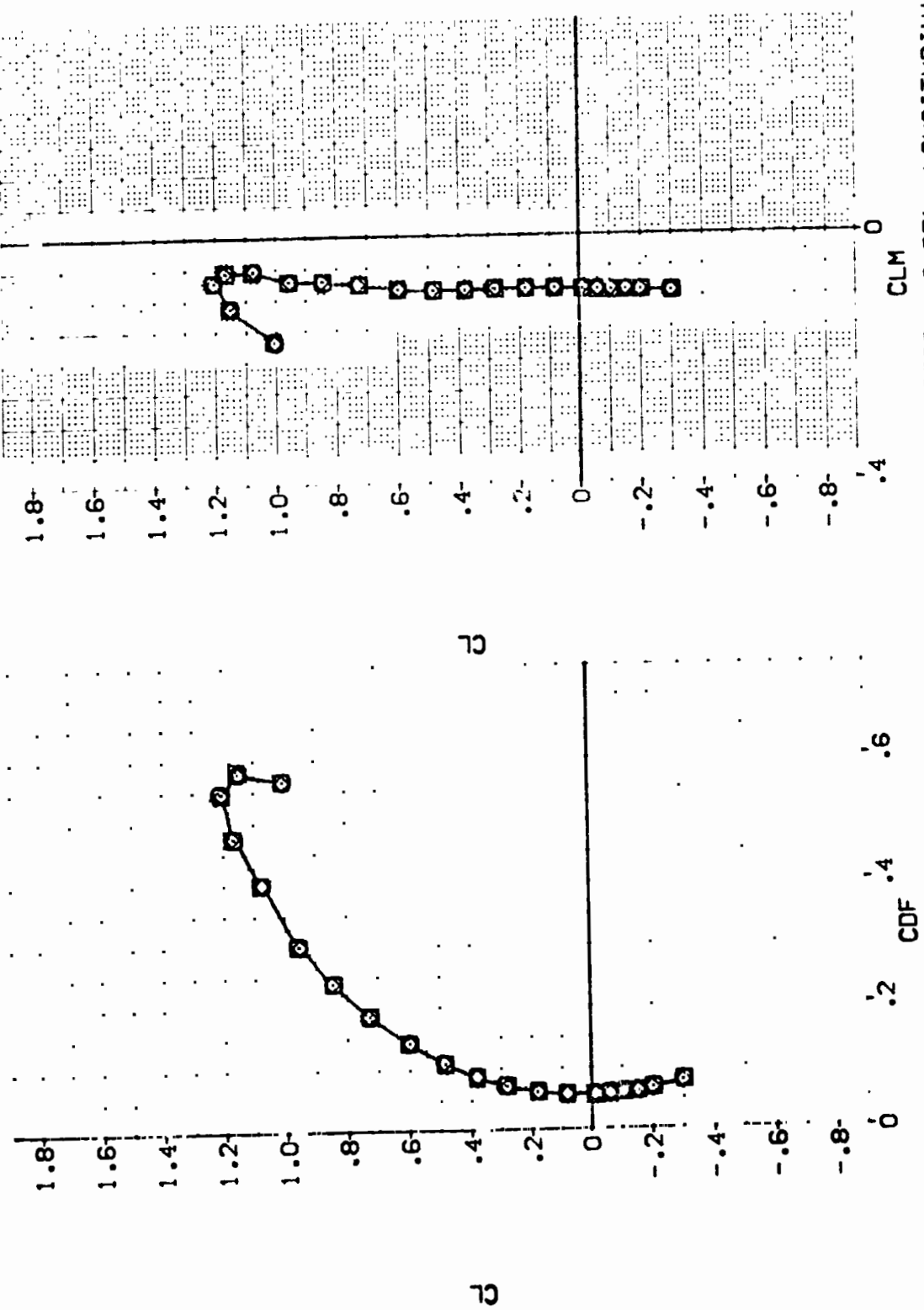


FIG 19 EFFECT OF RUDDER SEALS, SPDBRK = 85 DEG., RUDDER = 0 DEG., LONGITUDINAL
 (A)MACH = .20 PAGE 132



DATA SET SYMBOL: (EF5043) (EF5045) (EF5047)
 CONF: CA110 CA110 CA110
 QUANTITY DESCRIPTION: B6 C11F12S1V124E40V18R17VCS B6 C11F12S1V124E40V18R17VCS B6 C11F12S1V124E40V18R17VCS
 ELEVON: .000 .000 .000
 AIRLON: .000 .000 .000
 RUDDER: .000 .000 .000
 SPDBRK: 85.000 85.000 85.000
 REFERENCE INFORMATION:
 SREF: 4.4118 SQ.FT.
 LREF: 19.2239 INCHES
 BREF: 37.5358 INCHES
 XPRP: 43.5974 INCHES
 YPRP: .0000 INCHES
 ZPRP: 15.1875 INCHES
 SCALE: .0 25

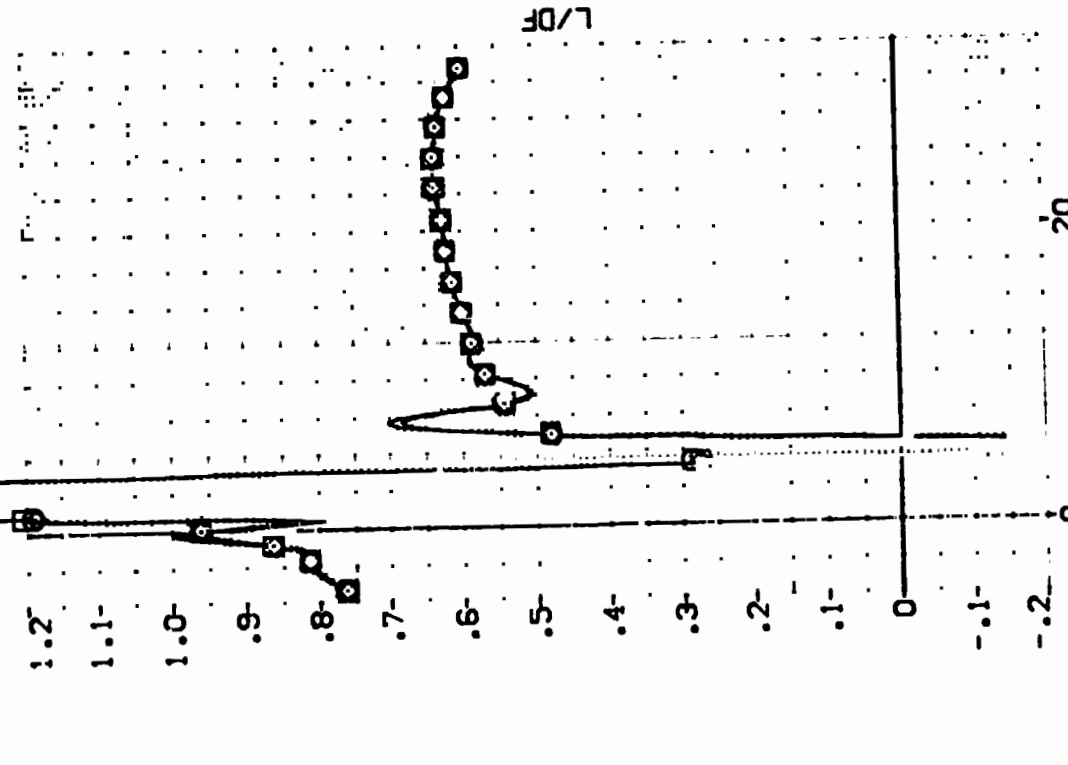
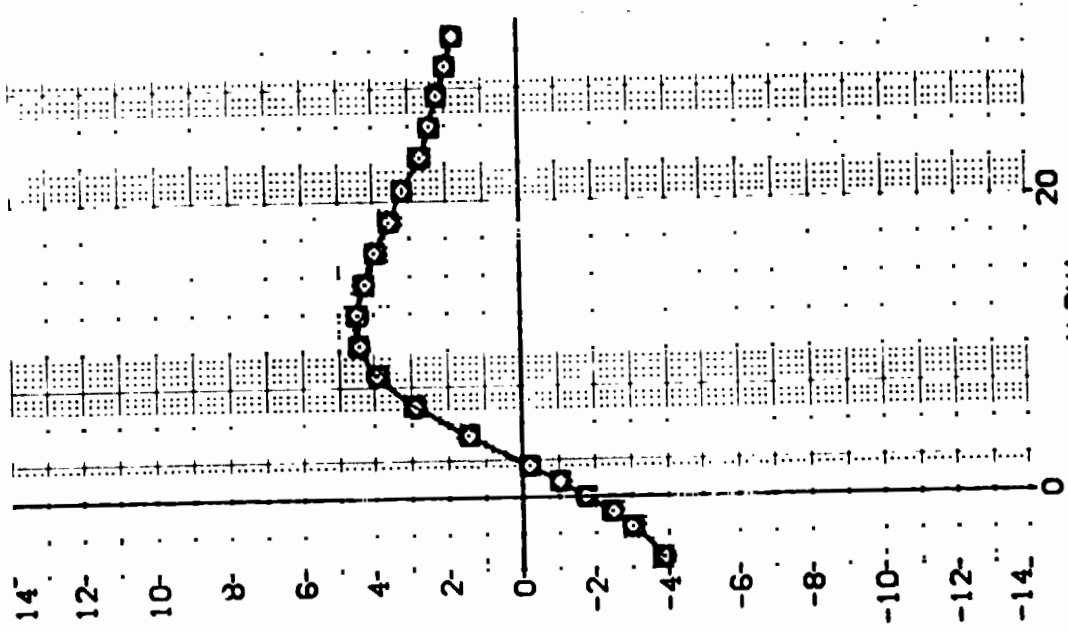


FIG 19 EFFECT OF RUDDER SEALS, SPDBRK = 85 DEG., RUDDER = 0 DEG.-LONGITUDINAL
 (A)MACH = .20
 PAGE 133

DATA SET SYMBOL: (RFS04) (RFS04S) (RFS04B)

CONFIGURATION DESCRIPTION: CA110 BS1C11F12S1V12AE40V1SR15V2S CA110 BS1C11F12S1V12AE40V1SR17V2S CA110 BS1C11F12S1V12AE40V1SR16V2S

ALPHA: 10.000, 10.000, 10.000

RUDDER: .000, .000, .000

SPOBRK: 85.000, 85.000, 85.000

AILTRON: .000, .000, .000

REFERENCE INFORMATION:

SREF: 4.4119 SQ.FT.

LREF: 19.2259 INCHES

BREF: 37.9359 INCHES

XMRP: 43.5974 INCHES

YMRP: .0000 INCHES

ZMRP: 15.1875 INCHES

SCALE: .0405 INCHES

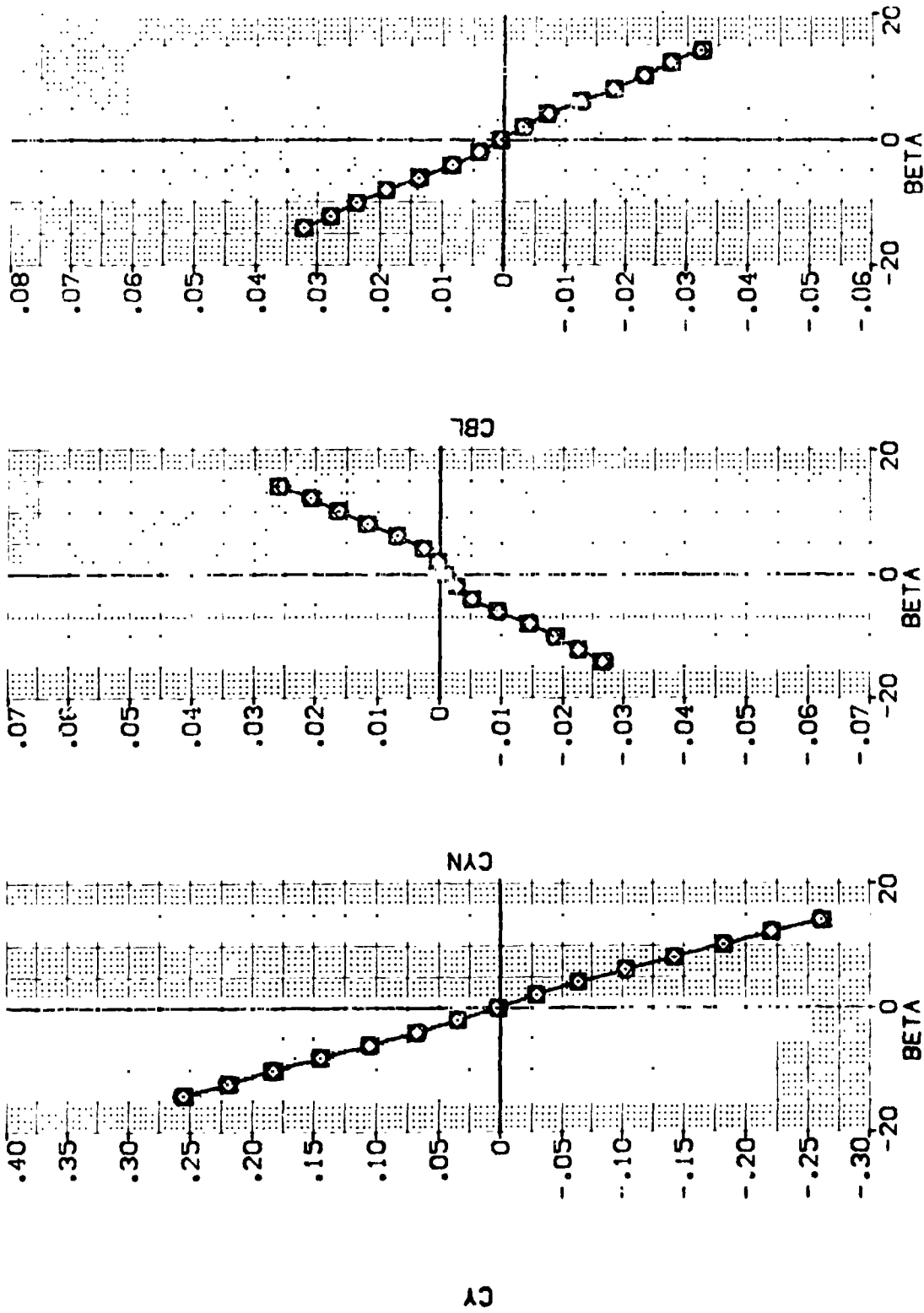


FIG 20 EFFECT OF RUDDER SEALS, SPOBRK = 85 DEG., RUDDER = 0 DEG.

(M)MACH = .20

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 { RF5049 } 0A110 861C11F12151V124E40V19R16C28
 { RF5048 } 0A110 861C11F12151V124E40V19R16C28

ALPHA RUDDER SPOBRK AIRLON REFERENCE INFORMATION
 10.000 -20.000 85.000 .000 4.4119 SQ.FT.
 10.000 .000 85.000 .000 19.2259 INO-ES
 XTRP 43.5874 INO-ES
 YTRP .0000 INO-ES
 ZTRP 15.1875 INO-ES
 SCALE .0405 SCALE

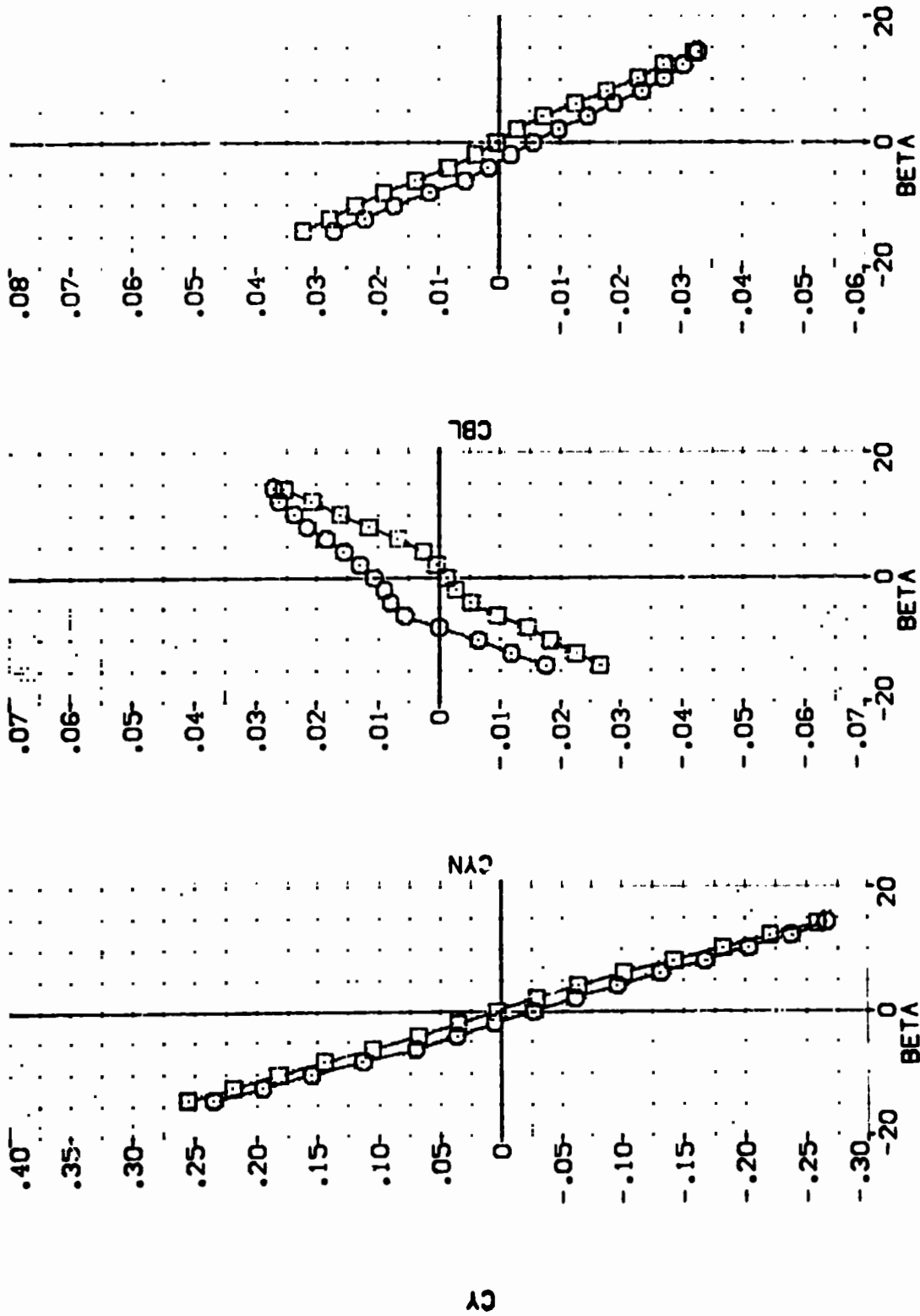


FIG 21 RUDDER EFFECTIVENESS, HINGELINE SEAL OFF, ALPHA = 10 DEG.

(A)MACH = .20



SIDE FORCE COEFFICIENT DERIVATIVE WITH BETA, CYBETA, PER DEGREE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	MACH	ELEVON	SPOBRK	BETA	REFERENCE INFORMATION
{HF5049}	0A110 861C11F12S1V12AE40V19R1B2C8	.200	.000	85.000		4.4119 SQ.FT.
{HF5048}	0A110 861C11F12S1V12AE40V19R1B2C8	.200	.000	85.000		19.2299 INCHES
						37.9359 INCHES
						43.5674 INCHES
						.0000 INCHES
						15.1875 INCHES
						.0405 SCALE

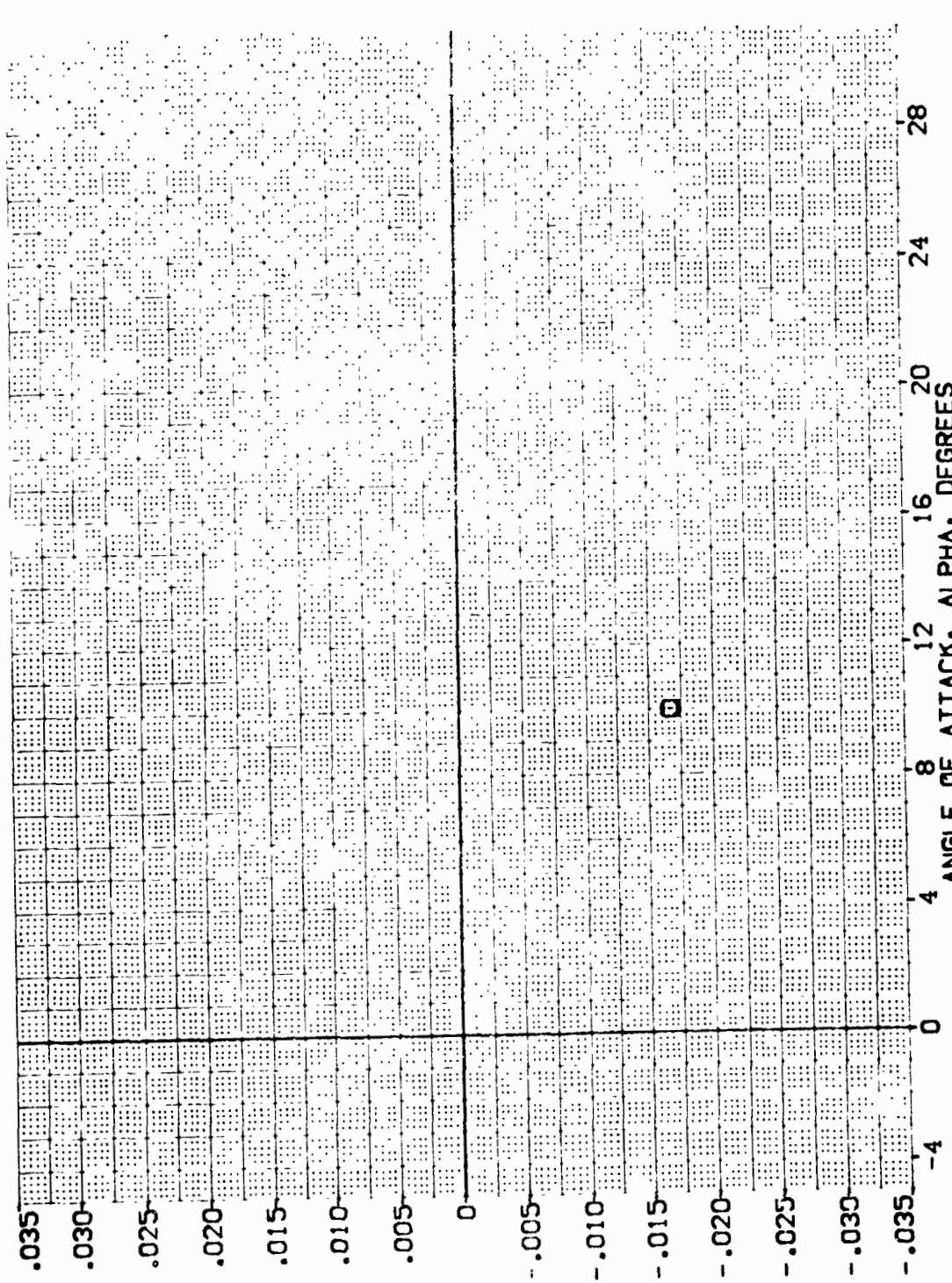


FIG 21 RUDDER EFFECTIVENESS, HINGELINE SEAL OFF, ALPHA = 10 DEG.

DATA SET SYMBL. CONFIGURATION DESCRIPTION

(M3049)	0A110	861C11F12151V124E40V1818C28
(M3048)	0A110	861C11F12151V124E40V1818C28

MACH ELEVON SPODBRK BETA

.200	.000	65.000
.200	.000	65.000

REFERENCE INFORMATION

SREF	4.4119	SQ.FT.
LREF	19.2298	INCHES
BREF	37.9559	INCHES
X-RRP	43.5974	INCHES
Y-RRP	.0000	INCHES
Z-RRP	15.1875	INCHES
SCALE	.0405	SCALE

YAWING MOMENT COEFFICIENT DERIVATIVE WITH BETA, CYNBET, PER DEGREE

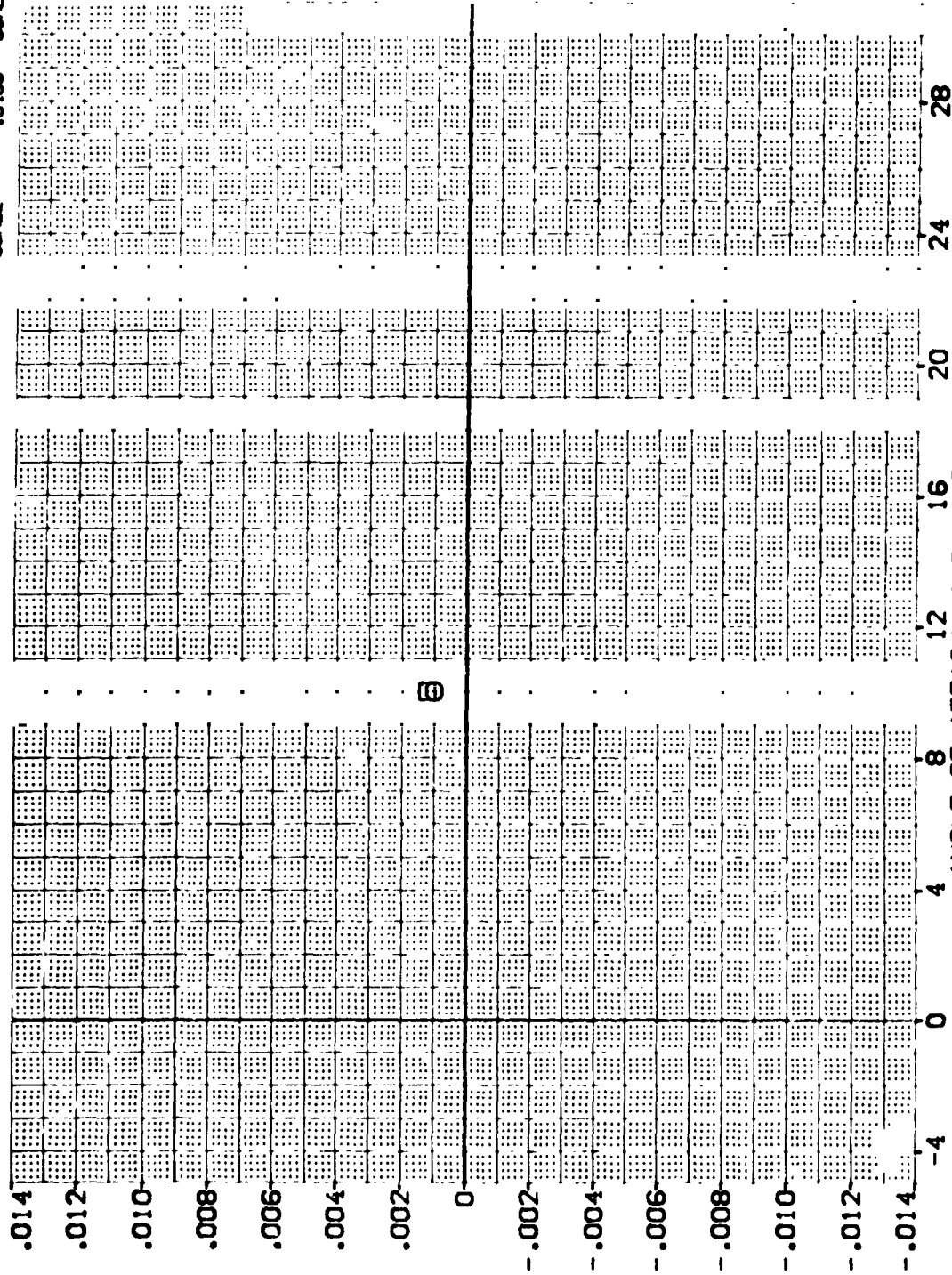


FIG 2i RUDDER EFFECTIVENESS, HINGELINE SEAL OFF, ALPHA = 10 DEG.

DATA SET SYMBOL CONFIGURATION DESCRIPTION

{MF3049}	0A110	BS1C11F12761V124E40V1SR16X29
{MF3048}	0A110	BS1C11F12761V124E40V1SR16X29

MACH ELEVON SPOBRK BETA

.200	.000	85.000	
.200	.000	85.000	

REFERENCE INFORMATION

SREF	4.4119	50.FT.
LREF	19.2299	INCHES
BREF	37.9359	INCHES
XMRP	43.5974	INCHES
YMRP	.0000	INCHES
ZMRP	15.1875	INCHES
SCALE	.0405	SCALE

ROLLING MOMENT COEFFICIENT DERIVATIVE WITH BETA, CBLBET, PER DEGREE

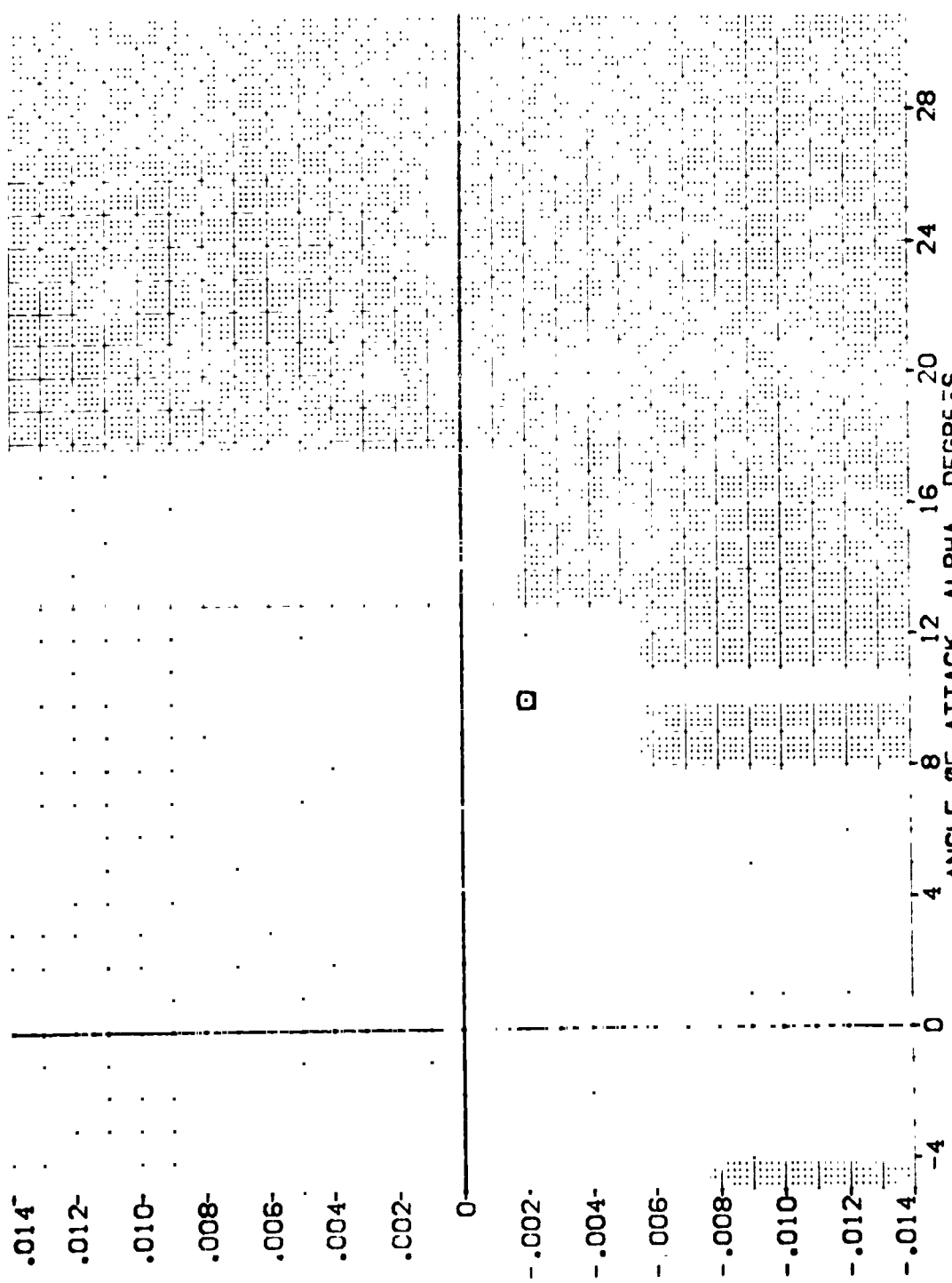


FIG 21 RUDDER EFFECTIVENESS, HINGELINE SEAL OFF, ALPHA = 10 DEG.

0A110 B61C11F12M51W124E40V19R16X29 (DF5049)

SYMBOL		PARAMETRIC VALUES			DATA SOURCE		REFERENCE INFORMATION	
○	BETA	MACH	ALPHA	10.000	DATASET	RUDER	SREF	50.FT.
□		ELEVON	AIRLON	.000	DF5049	.000	LREF	19.2799
◇		SPOBRK	BOFLAP	-12.000			BREF	37.5359
▽							XPRP	43.5874
							YPRP	.0000
							ZPRP	15.1875
							SCALE	.0405

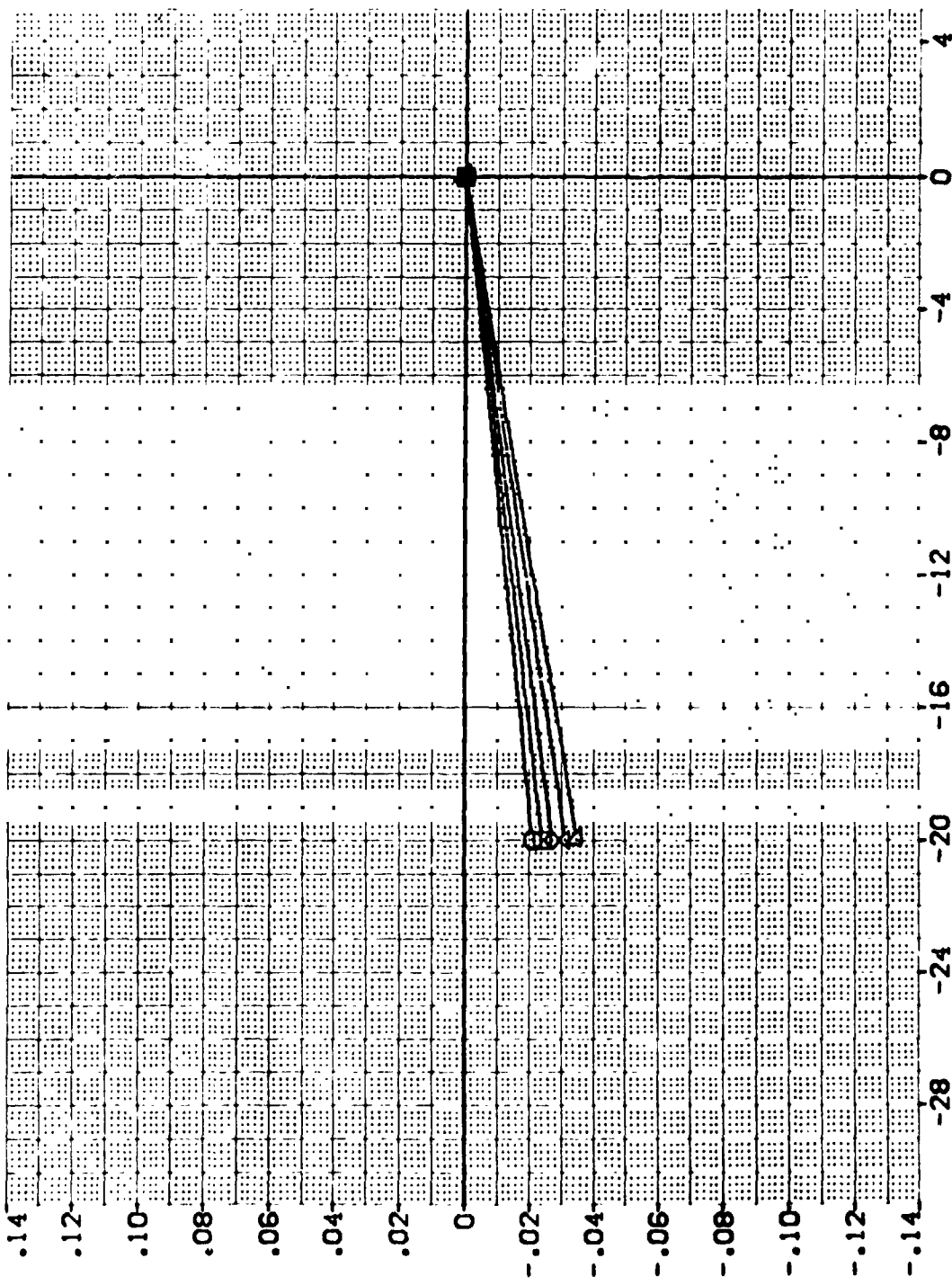
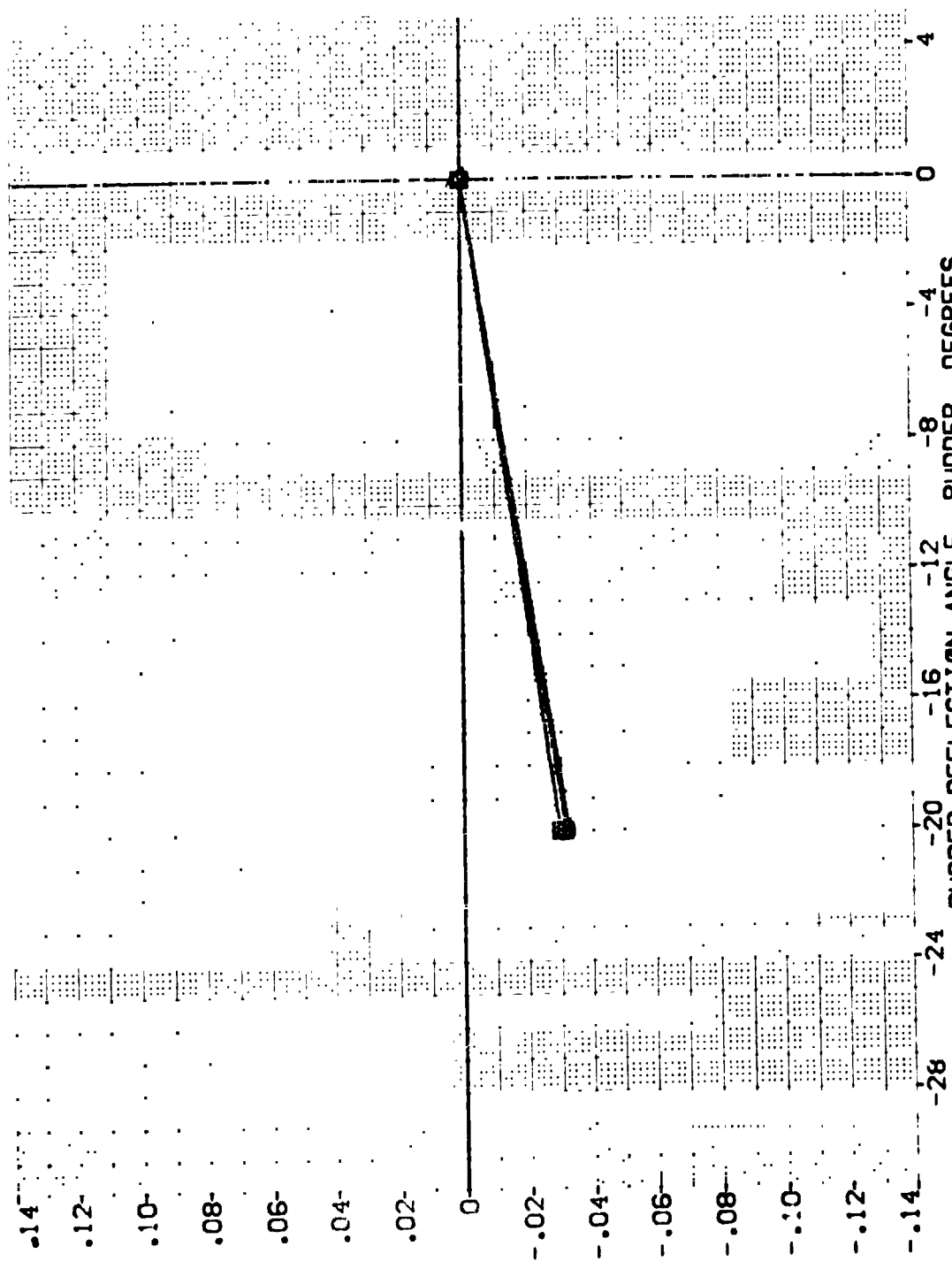


FIG 21 RUDDER EFFECTIVENESS, HINGELINE SEAL OFF, ALPHA = 10 DEG.

0A110 861C11F12M51W124E40V19R16X29 (DF5049)

SYMBOL	BETA	MACH	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
○	-4.000	.200	ALPHA	RUDDER	4.4119
□	-2.000	.000	ALLRON	RUDDER	19.2299
◇	.000	.000	BDFLAP	DF5048	37.9359
△	2.000	85.000		DF5049	43.5974
▽	4.000			DF5048	15.1875
				DF5049	.0405
				SCALE	SCALE



INCREMENTAL SIDE FORCE COEFFICIENT, CY

RUDDER DEFLECTION ANGLE, RUDDER, DEGREES

FIG 21 RUDDER EFFECTIVENESS, HINGELINE SEAL OFF, ALPHA = 10 DEG.



0A110 B61C11F12M51W124E40V19R16X25 (DF5049)

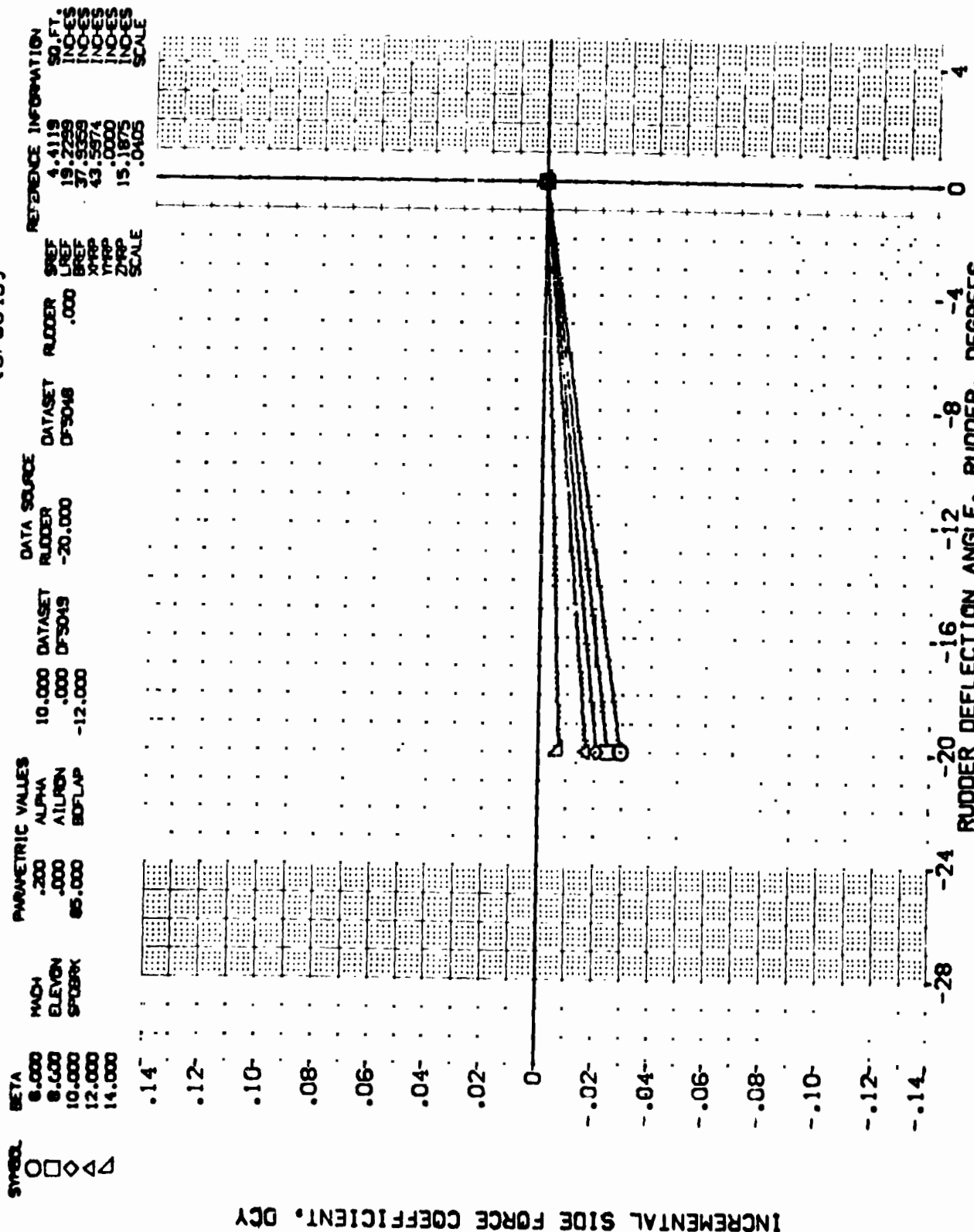
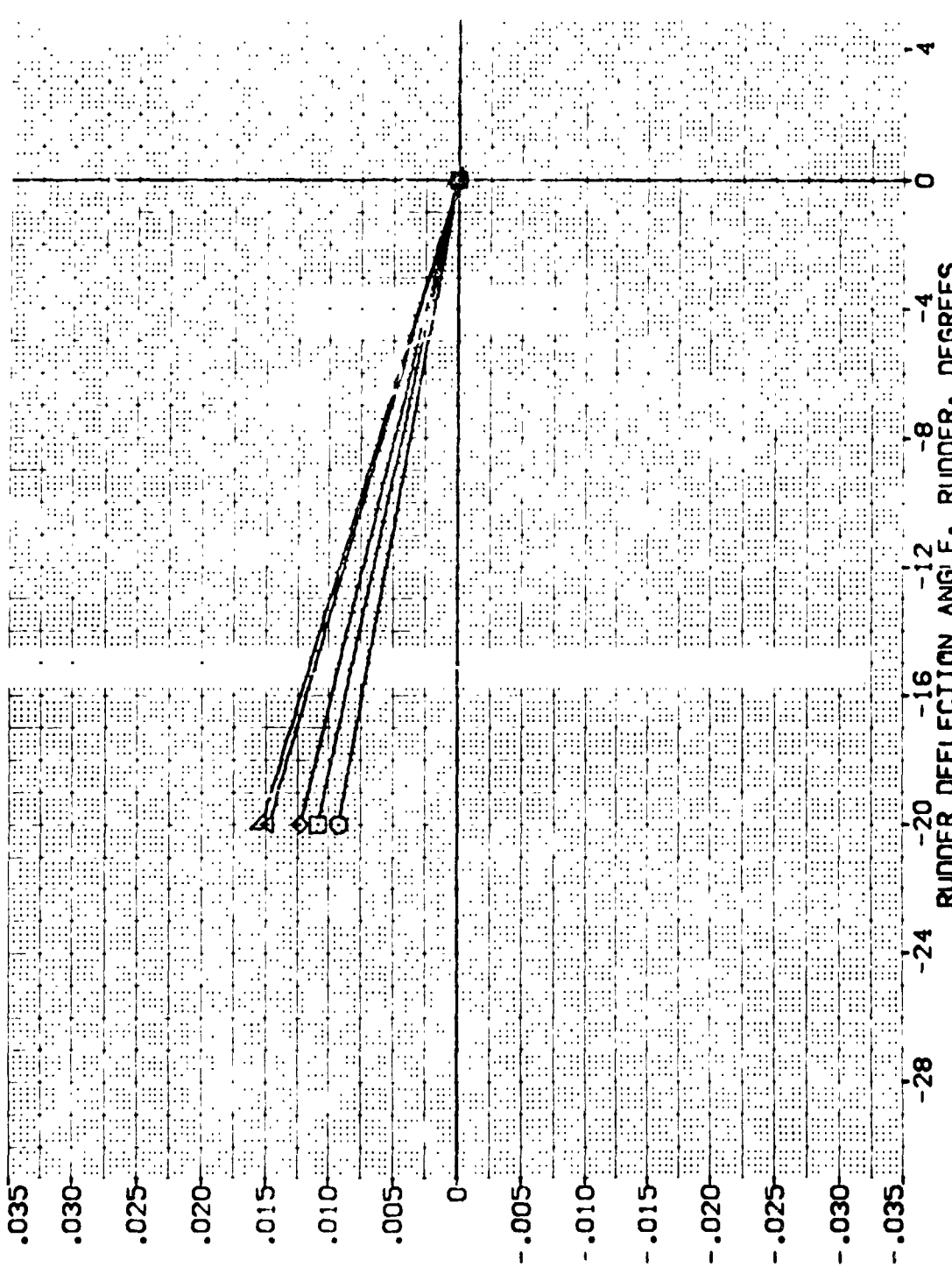


FIG 21 RUDDER EFFECTIVENESS, HINGELINE SEAL OFF, ALPHA = 10 DEG.

0A110 B61C11F12M51W124E40V19R16X29 (DF5049)

SYMBOL	BETA	MACH	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
○	-14.000	.200	ALPHA	RUDDER	SO.FT.
□	-12.000	.000	AILRON	D-5048	INC-ES
◇	-10.000	65.000	BDFLAP	D-5049	INC-ES
△	-8.000			D-5049	INC-ES
▽	-6.000			D-5048	INC-ES
				SCALE	SCALE
				YTRP	15.1875
				ZTRP	.0405
				YREF	43.5674
				XREF	37.9659
				LREF	19.2259
				SREF	4.4119



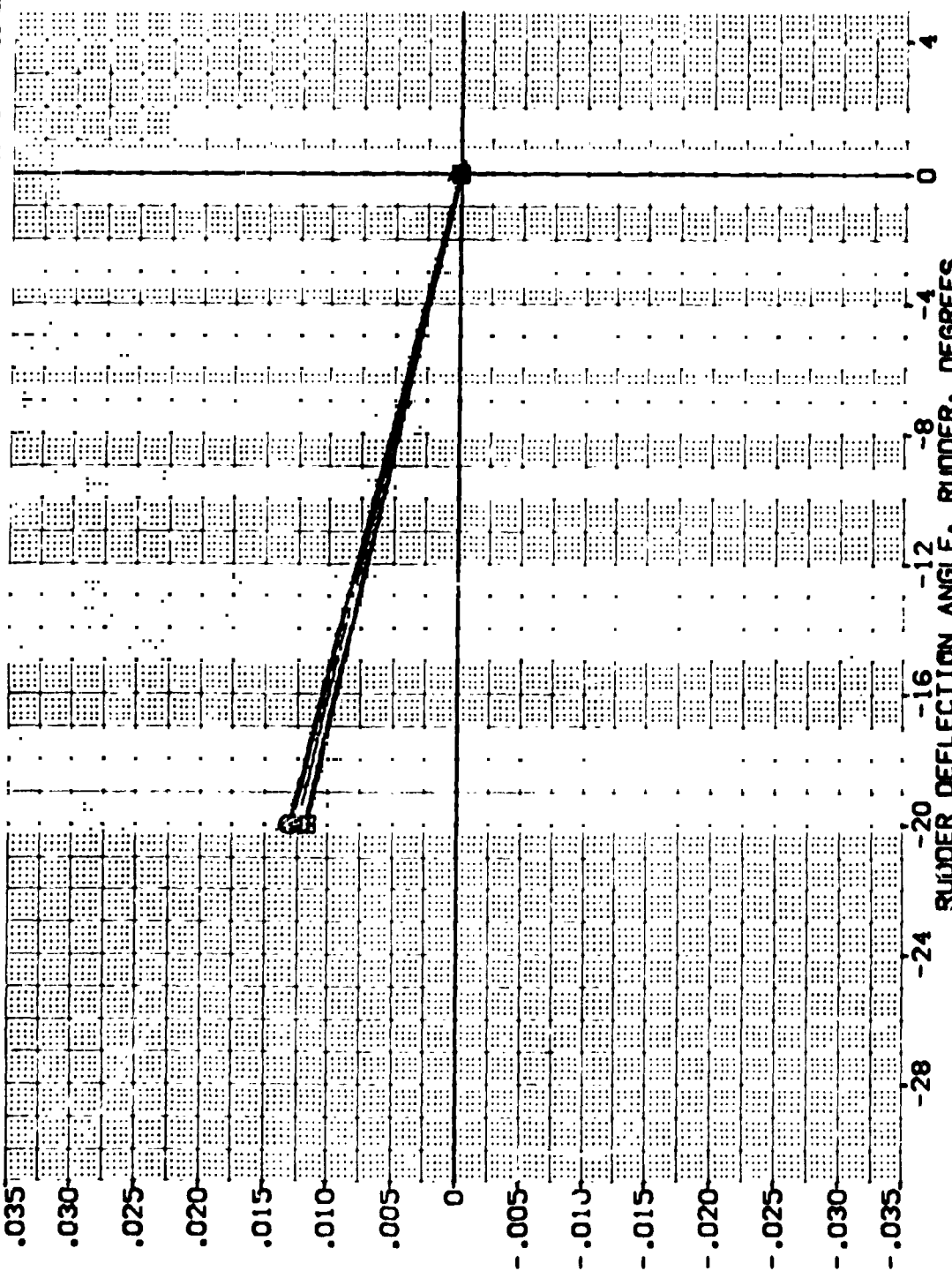
INCREMENTAL YAWING MOMENT COEFFICIENT, DCYN

FIG 21 RUDDER EFFECTIVENESS, HINGELINE SEAL OFF, ALPHA = 10 DEG.



0A110 B61C11F12M51W124E40V19R16X29 (DF5049)

BETA	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
-4.000	MACH .200	RUDDER	4.4119 SQ.FT.
-2.000	ALPHA .000	DF5049	19.2289 INCHES
.000	AIRRN .000	REF	37.5365 INCHES
2.000	BDFLAP 65.000	REF	43.5574 INCHES
4.000		XREF	.0000 INCHES
		YREF	15.1875 INCHES
		ZREF	.0405 SCALE

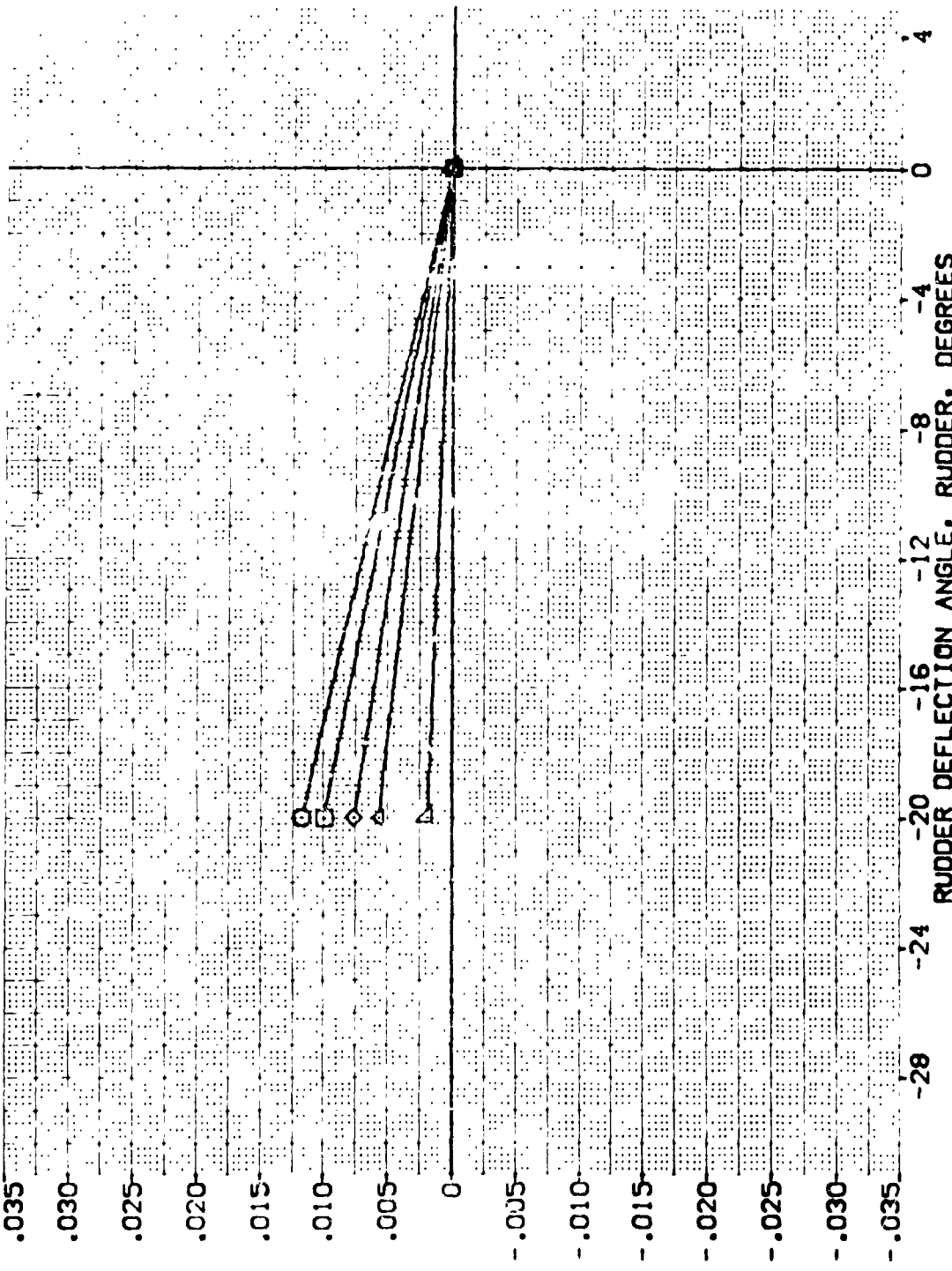


INCREMENTAL YAWING MOMENT COEFFICIENT, DCYN

FIG 21 RUDDER EFFECTIVENESS, HINGELINE SEAL OFF, ALPHA = 10 DEG.

0A110 861C11F12M51W124E40V19R16X29 (DF5049)

PARAMETRIC VALUES		DATA SOURCE		REFERENCE INFORMATION	
BETA	MAY	ALPHA	RUDDER	SREF	SO.FT.
6.000	.200	10.000	DF5048	.000	19.2239
8.000	.000	.000	DF5049	REF	37.9558
10.000	SPORX	BDLAP		YMRP	43.9574
12.000	95.000	-12.000		ZMRP	.0000
14.000				SCALE	15.1875
					.0405



INCREMENTAL YAWING MOMENT COEFFICIENT, DCYN

FIG 21 RUDDER EFFECTIVENESS, HINGELINE SEAL OFF, ALPHA = 10 DEG.

P. W

0A110 B61C11F12M51W124E40V19R16X29

(DF5049)

SYMBOL
 O
 □
 ◇
 △

BETA
 -14.000
 -12.000
 -10.000
 -8.000
 -6.000

MACH
 ELEVON
 SPOBRK

PARAMETRIC VALUES
 .200 ALPHA
 .000 AILRON
 85.000 BOFLAP

DATA SOURCE
 RUDDER
 -20.000

DATASET
 DF5049

RUDDER
 .000

REFERENCE INFORMATION
 SQ.FT. 1.4119
 INCHES 5.2295
 INCHES 47.5333
 INCHES 43.5974
 INCHES .0000
 INCHES 15.1875
 SCALE .0405

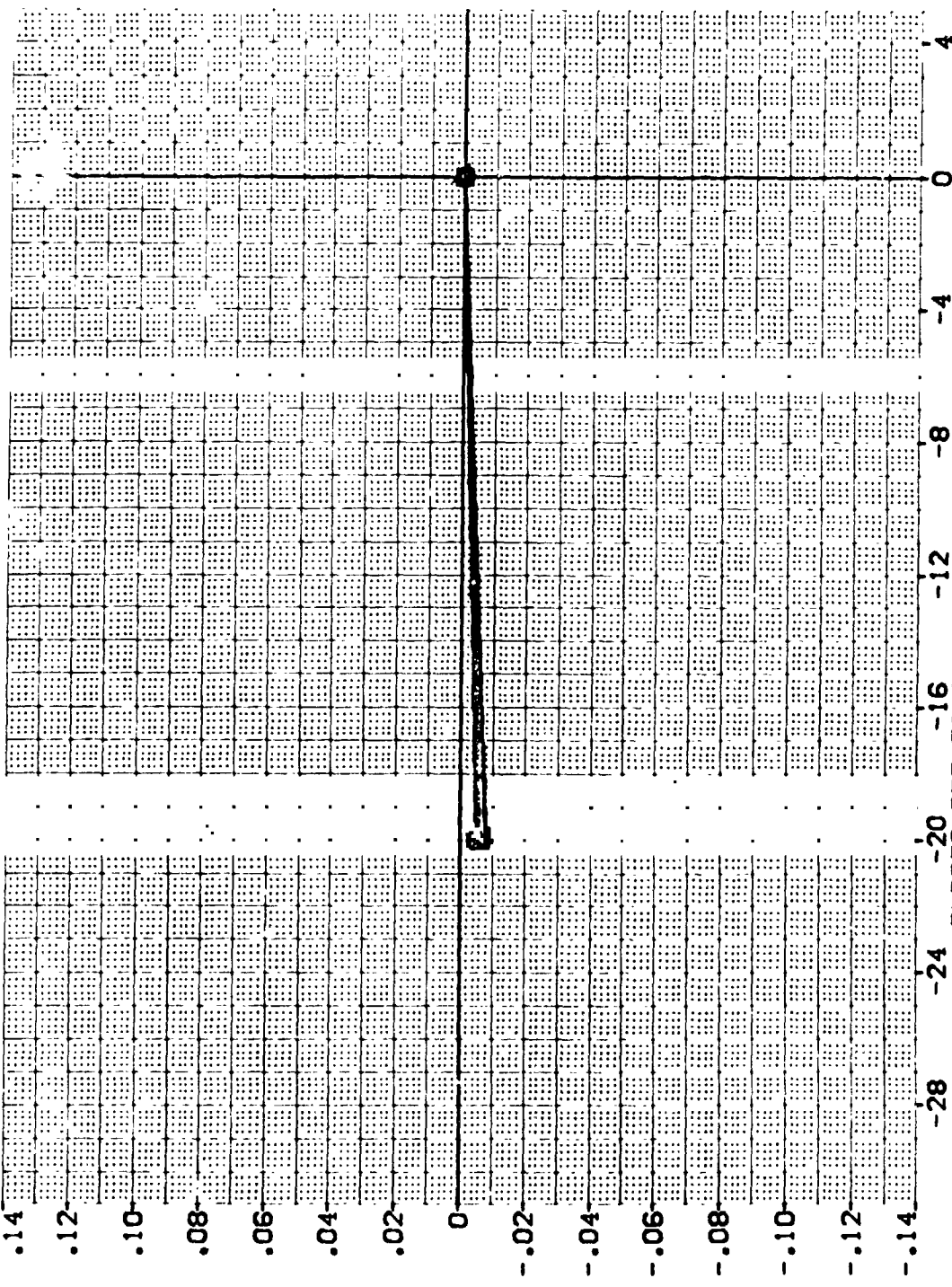
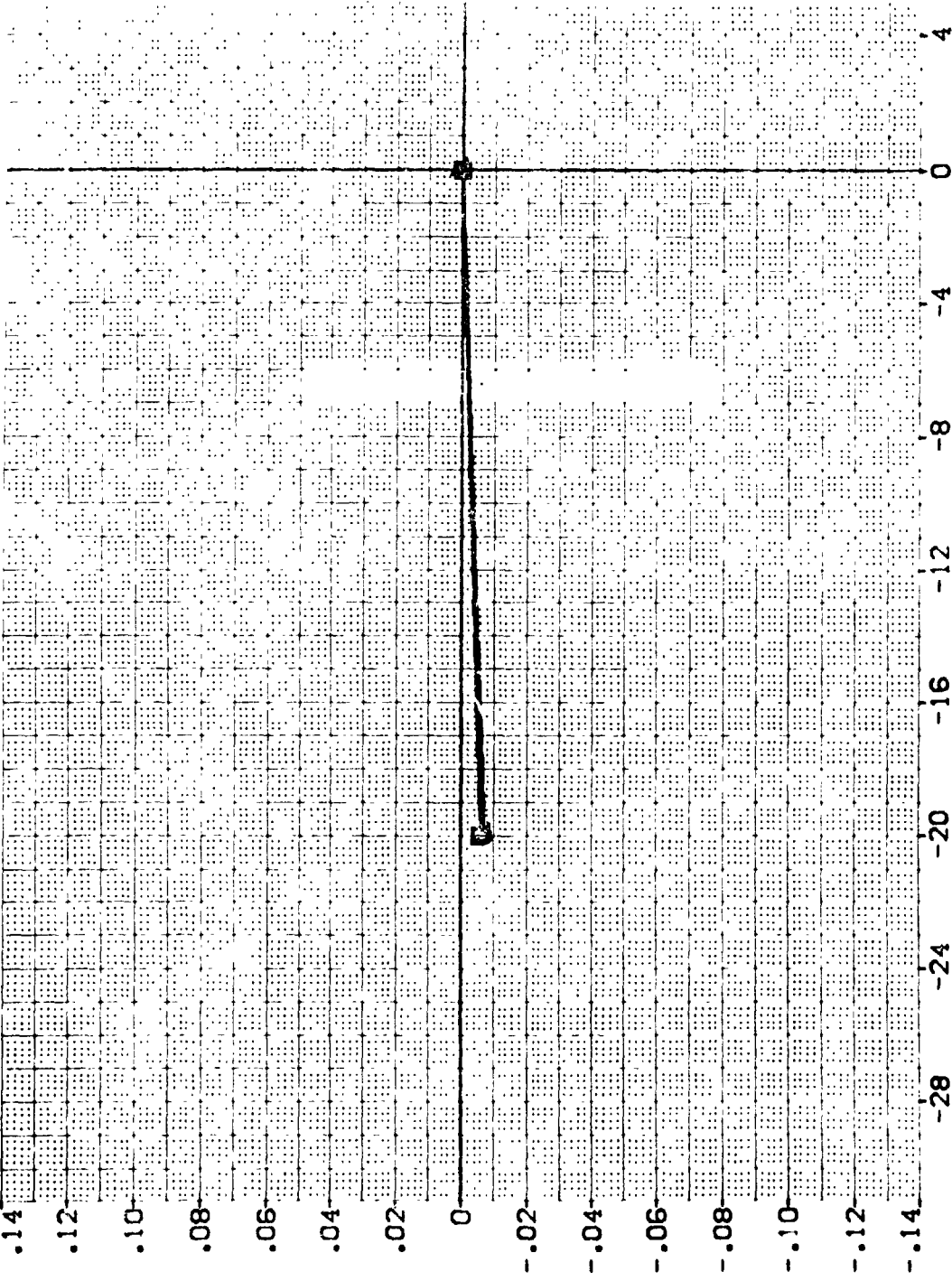


FIG 21 RUDDER EFFECTIVENESS, HINGELINE SEAL OFF, ALPHA = 10 DEG.

0A110 B61C11F12M51W124E40V19R16X29 (DF5049)

SYMBOL	BETA	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
○	-4.000	MACH .200	RUDDER 10.000	SO.PT. 4.4119
□	-2.000	ALPHA .000	DATASET DF5048	IND-ES 19.2258
◇	.000	A1LRON .000	RUDDER -20.000	IND-ES 37.9359
△	2.000	BDFLAP 85.000	DF5049	IND-ES 43.5874
▽	4.000		-12.000	IND-ES .0000
				IND-ES 15.1675
				SCALE .0405



INCREMENTAL ROLLING MOMENT COEFFICIENT, OCBL

FIG 21 RUDDER EFFECTIVENESS, HINGELINE SEAL OFF, ALPHA = 10 DEG.



0A110 B61C11F12M51W124E40V19R16X29 (DF5049)

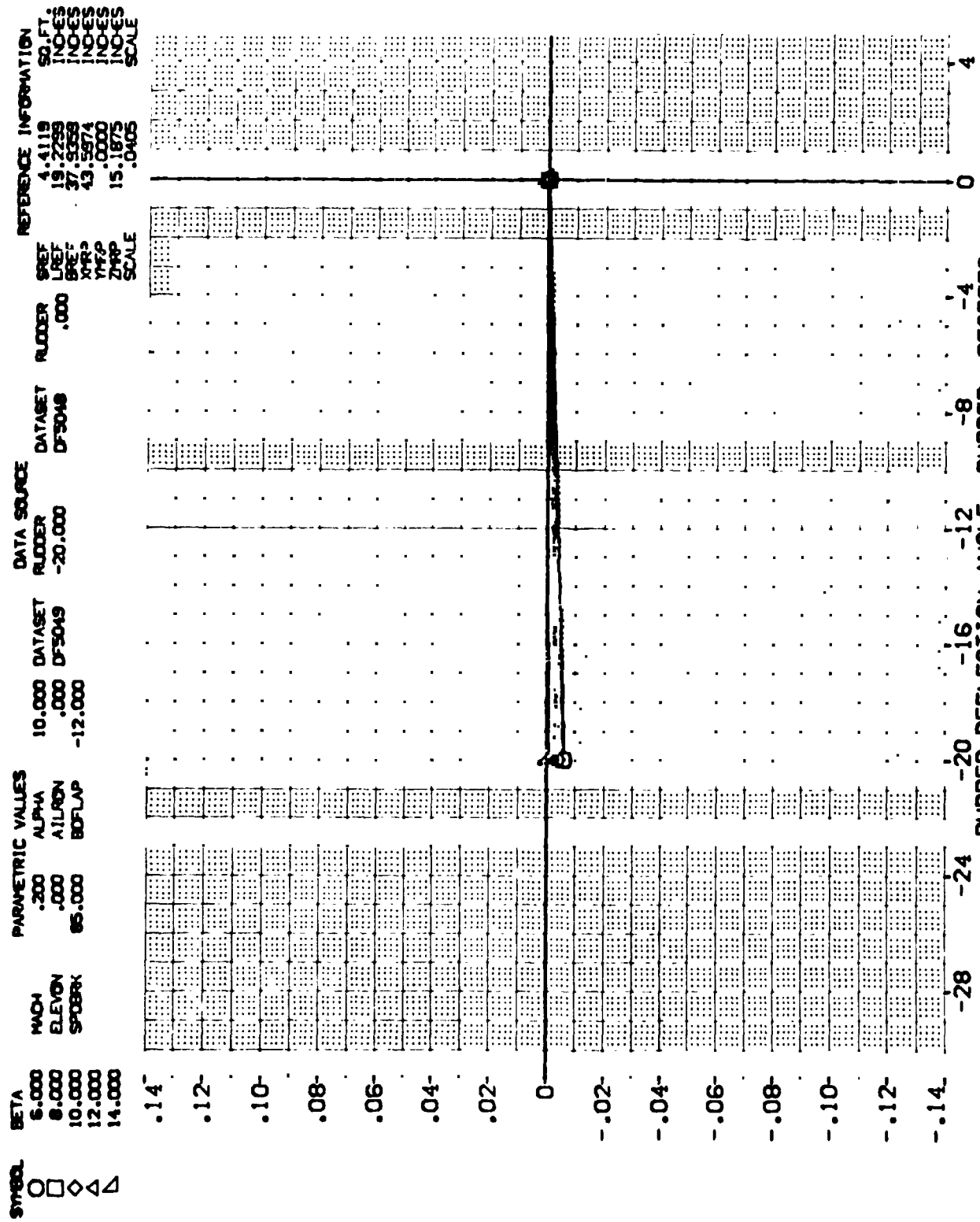


FIG 21 RUDDER EFFECTIVENESS, HINGELINE SEAL OFF, ALPHA = 10 DEG.

INCREMENTAL ROLLING MOMENT COEFFICIENT, CGRL

DATA SET SYMBOL: 8
 CONFIGURATION DESCRIPTION: 0110 BSIC11F12G1V124E40V18R15X28
 {EP3043} 0110 BSIC11F12G1V124E40V21R15X28
 {EP3054}

ELEVON .000
 AIRLON .000
 RUDDER .000
 SPEEDBRK 85.000
 REFERENCE INFORMATION
 SREF 4.4119 80.FT.
 LREF 19.2289 IN-OES
 BREF 37.9359 IN-OES
 XMRP 43.5974 IN-OES
 YMRP .0000 IN-OES
 ZMRP 15.1873 IN-OES
 SCALE .0405 SCALE

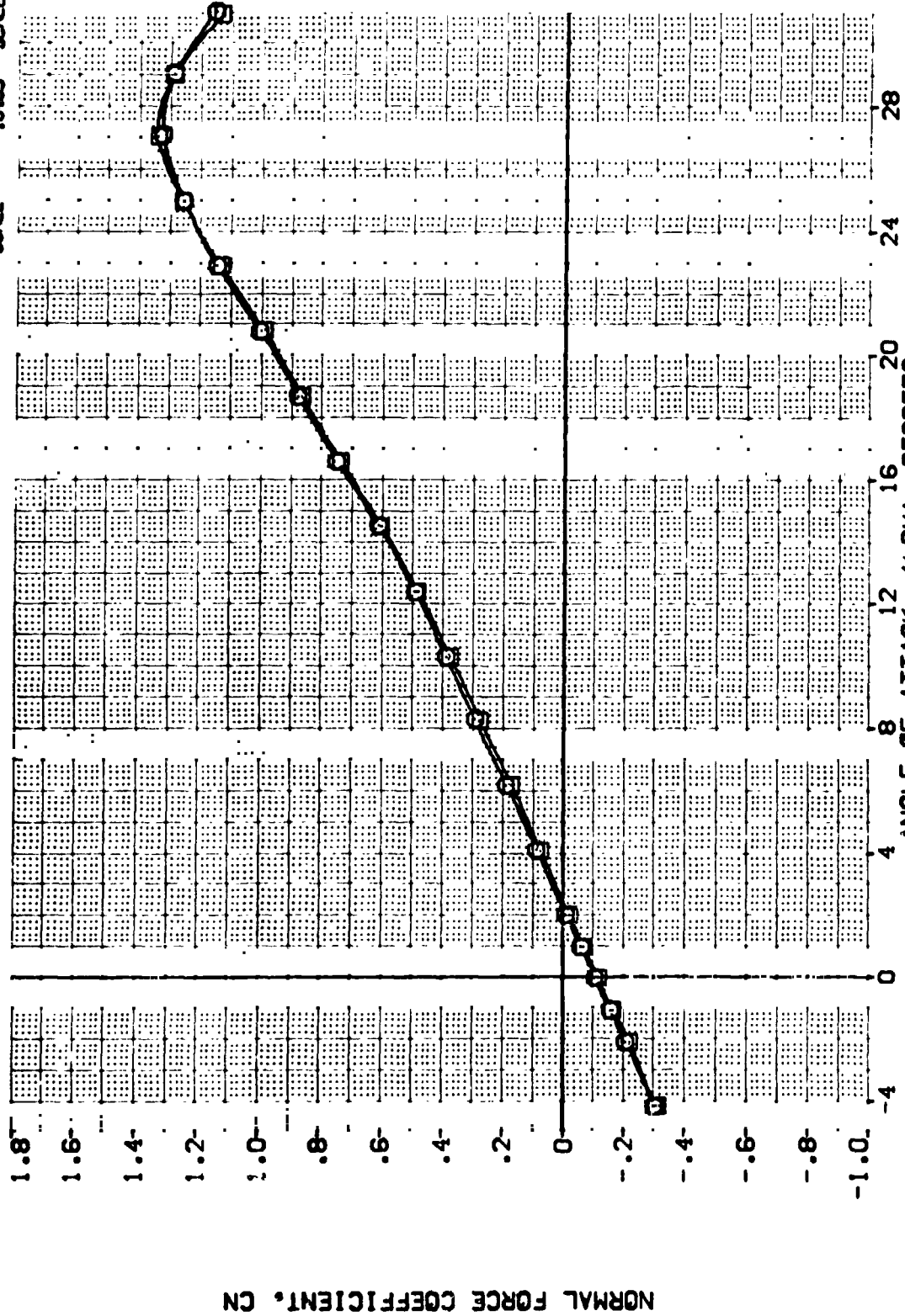


FIG 22 EFFECT OF SPEEDBRAKE BASE, SPEEDBRK = 85, RUDDER = 0 - LONGITUDINAL

(A)MACH = .20

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 {EF3043} BA110 BS1C11F12P51V124E40V19R15C28
 {EF3054} BA110 BS1C11F12P51V124E40V21R15C28

ELEVON AILTRON RUDDER SPEEDBRK REFERENCE INFORMATION
 .000 .000 .000 SREF 4.4119 SQ.FT.
 .000 .000 .000 LREF 19.2288 IN.-ES
 .000 .000 .000 BREF 37.9369 IN.-ES
 .000 .000 .000 YMRP 43.9874 IN.-ES
 .000 .000 .000 ZMRP .0000 IN.-ES
 .000 .000 .000 SCALE 15.1875 IN.-ES
 .000 .000 .000 .0405 SCALE

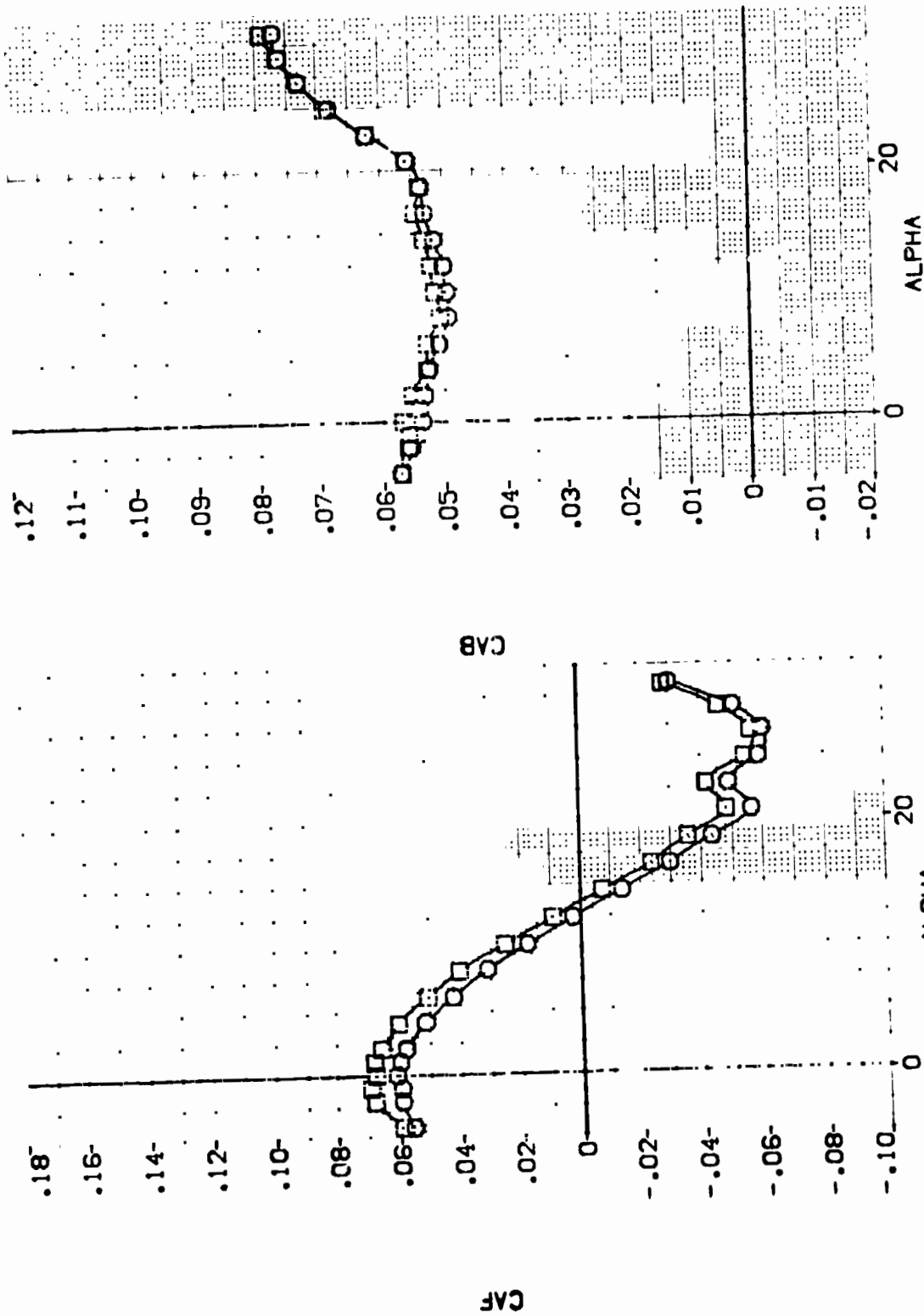


FIG 22 EFFECT OF SPEEDBRAKE BASE, SPD8RK = 85, RUDDER = 0 - LONGITUDINAL
 (A)MACH = .20 PAGE 150



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (EP3043) 0A110 BSIC11F1251V124E40V18R151C28
 (EP5064) 0A110 BSIC11F1251V124E40V21R151C28

ELEVATION AIRLIFT RUDDER SPEED OF TURN REFERENCE INFORMATION
 .000 .000 .000 .000 4.4119 SO.FT.
 .000 .000 .000 .000 19.2299 IN.-ES
 .000 .000 .000 .000 37.9359 IN.-ES
 .000 .000 .000 .000 43.5974 IN.-ES
 .000 .000 .000 .000 .0000 IN.-ES
 .000 .000 .000 .000 15.1875 IN.-ES
 .000 .000 .000 .000 .0465 SCALE

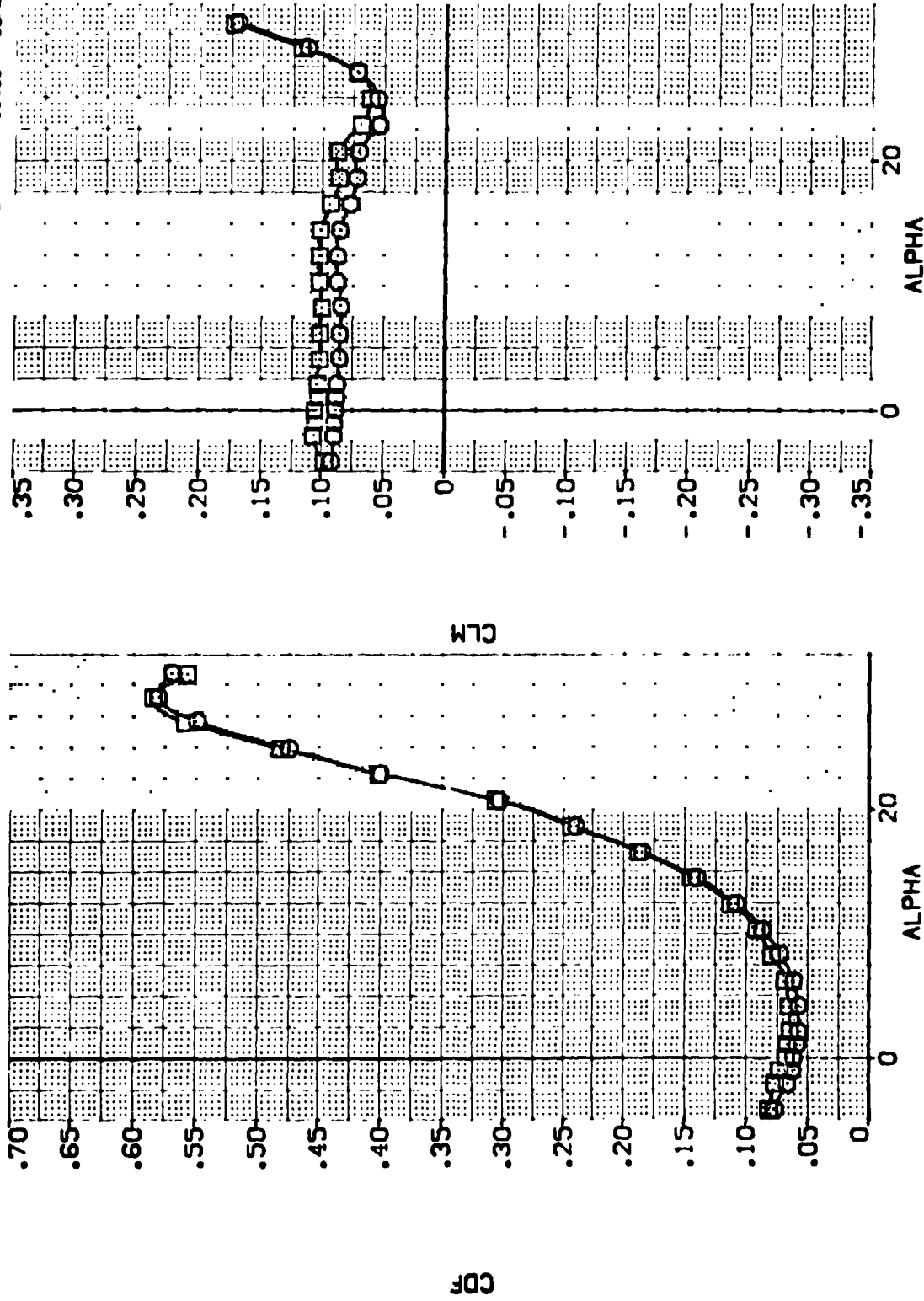


FIG 22 EFFECT OF SPEEDBRAKE BASE, SPDBRK = 85, RUDDER = 0 - LONGITUDINAL
 (A)MACH = .20

DATA SET SYMBOL: (EF3043) (EF3054) □

CONFIGURATION DESCRIPTION

CA110 BS1C1F12S1V124E40V1SR15X2S
 CA110 BS1C1F12S1V124E40V21R15X2S

ELEVON .000 AILRON .000 RUDDER .000 SPOBRK 85.000

REFERENCE INFORMATION
 SREF 4.4119 SO.FT. INO-ES
 LREF 19.2299 INO-ES
 BREF 37.9559 INO-ES
 XMRP 43.5874 INO-ES
 YMRP 15.0000 INO-ES
 ZMRP 15.1875 INO-ES
 SCALE .0405

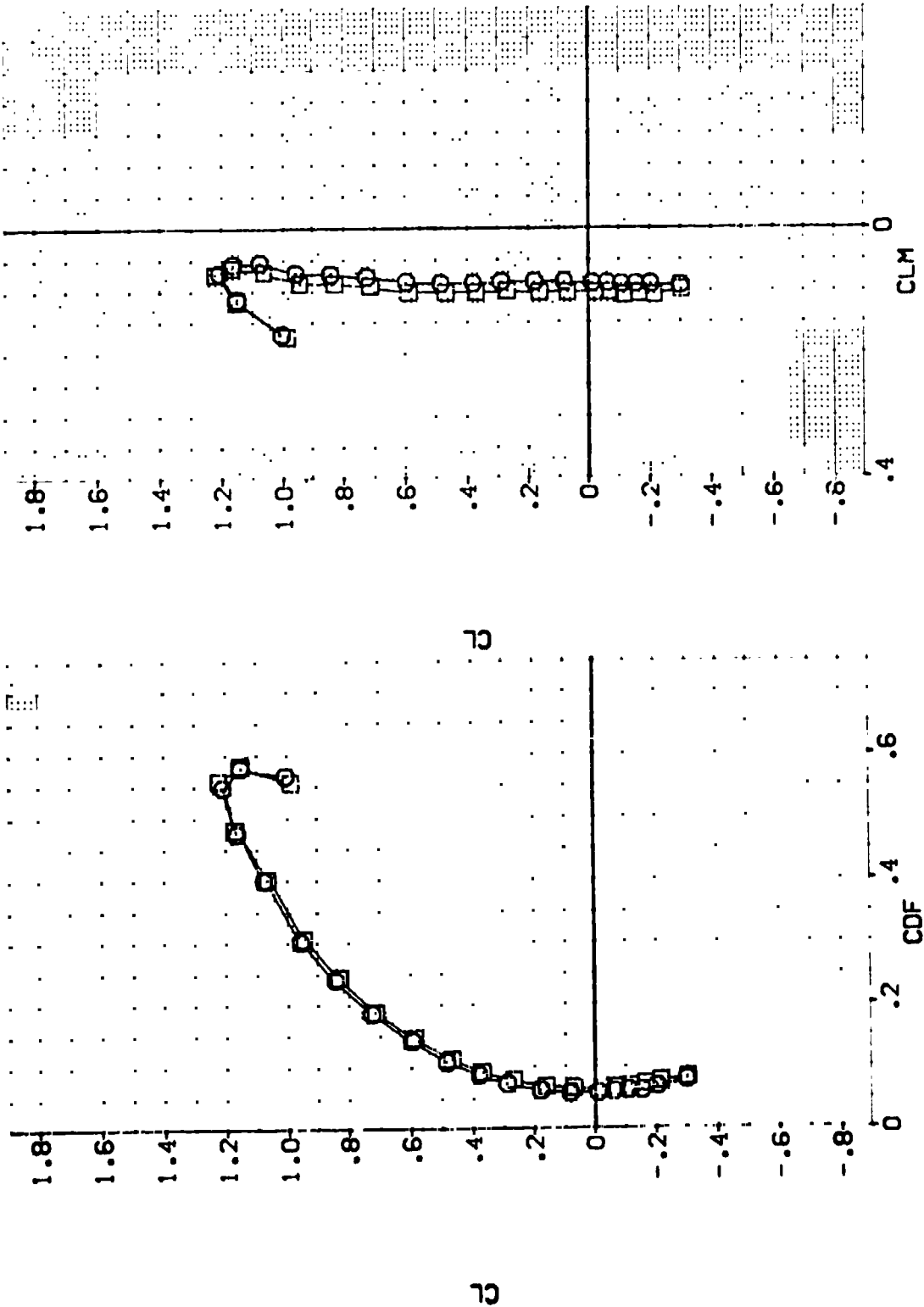


FIG 22 EFFECT OF SPEEDBRAKE BASE, SPOBRK = 85, RUDDER = 0 - LONGITUDINAL

(A)MACH = .20



DATA SET SYMBOL CONF QUANTIFICATION DESCRIPTION
 (EFS043) 0A110 BS1C11F1251V124E40V19R1S2S
 (EFS054) 0A110 BS1C11F1251V124E40V21R1S2S

ELEVON .000
 .000
 AILRON .000
 .000
 RUDDER .000
 .000
 SPDBRK 85.000
 85.000

REFERENCE INFORMATION
 SREF 4.4119 SQ.FT.
 LREF 19.2299 IN-OS
 BREF 37.9359 IN-OS
 XPRP 43.5874 IN-OS
 YPRP .0000 IN-OS
 ZPRP 15.1875 IN-OS
 SCALE .0405 SCALE

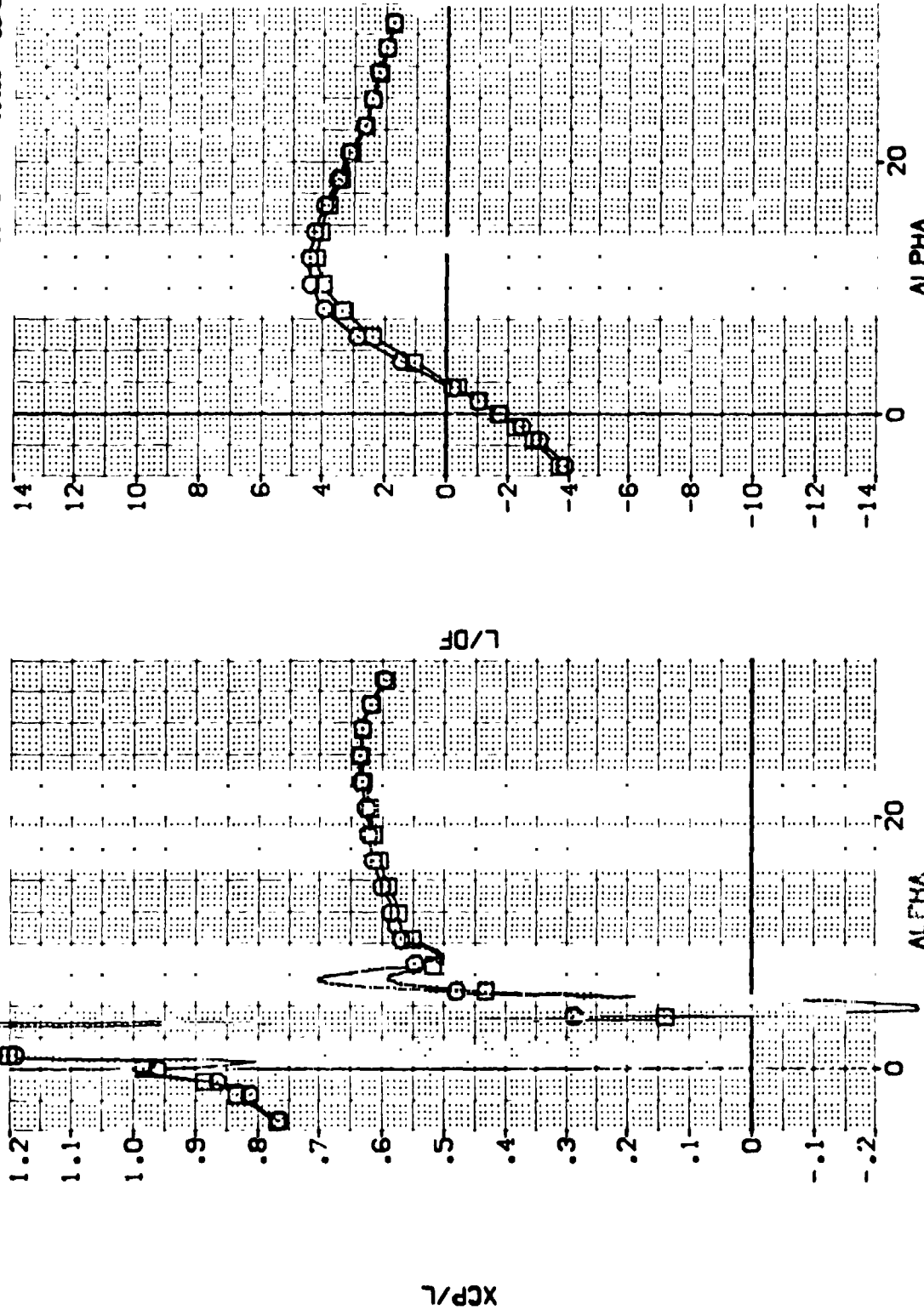


FIG 22 EFFECT OF SPEEDBRAKE BASE, SPDBRK = 85, RUDDER = 0 - LONGITUDINAL

(AJMACH = .20

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (R3044) 0110 861C11F12761V124E40V19R15C28
 (R3053) 0110 861C11F12761V124E40V21R15C28

ALPHA 10.000
 10.000
 RUDDER .000
 .000
 SPD BRK 85.000
 85.000
 ALLIGN .000
 .000

REFERENCE INFORMATION
 SREF 4.4119 60.FT.
 LREF 19.2299 INCHES
 BREF 37.9359 INCHES
 X-PRP 43.5974 INCHES
 Y-PRP .0000 INCHES
 Z-PRP 15.1875 INCHES
 SCALE .0405 SCALE

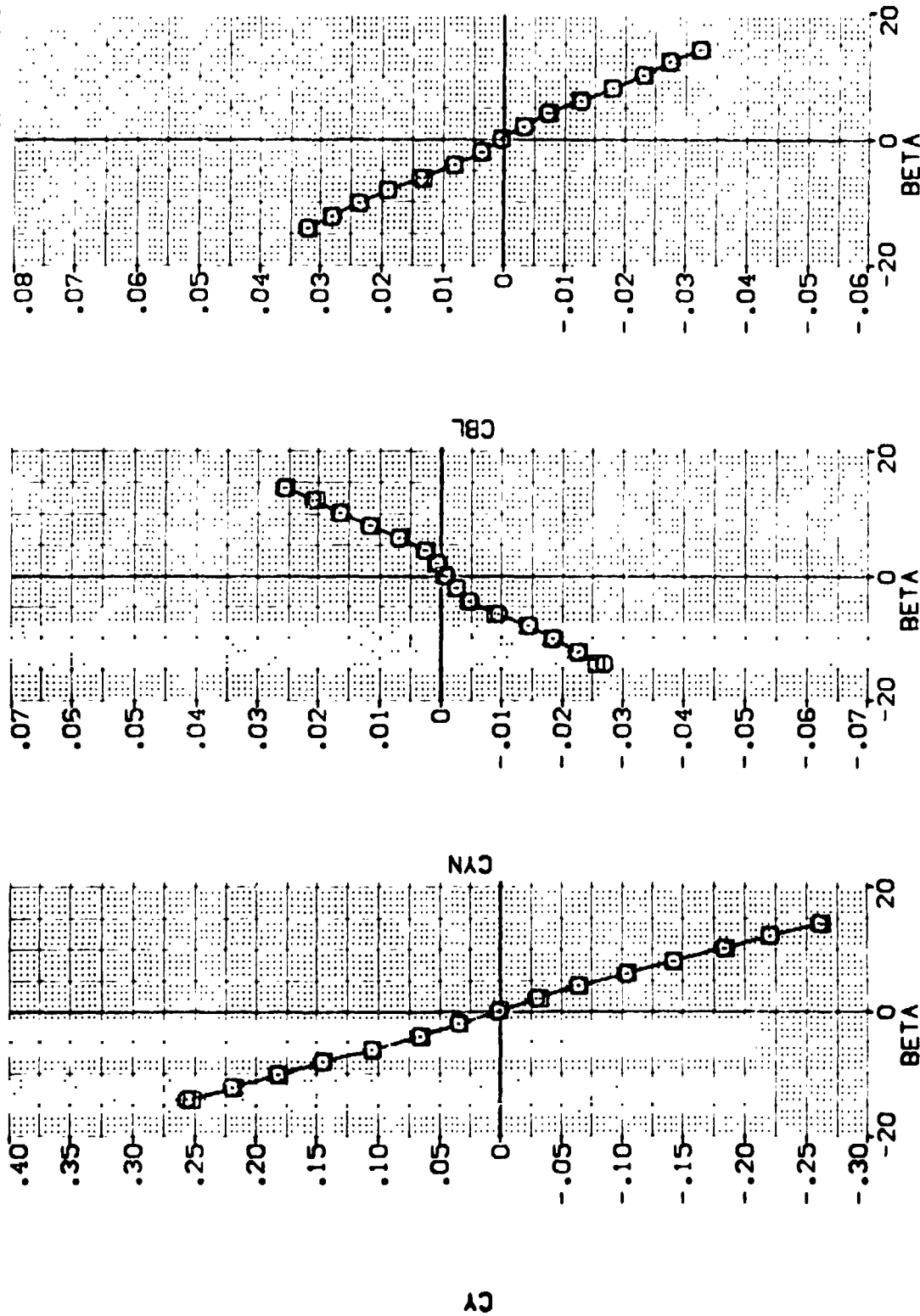


FIG 23 EFFECT OF SPEEDBRAKE BASE, SPD BRK = 85, ALPHA = 10

(A)MACH = .20



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 { RF3052 } 0 BA110 881C11F1261V12NE40V21R15C28
 { RF3053 } 0 BA110 881C11F1261V12NE40V21R15C28

ALPHA 10.000 10.000
 RUDDER -20.000 .000
 SPD BRK 85.000 85.1720
 ALIGN .000 .000

REFERENCE INFORMATION
 4.4119 80.FT.
 19.2258 INCHES
 37.5359 INCHES
 43.5974 INCHES
 XPRP .0000 INCHES
 ZPRP 15.1875 INCHES
 SCALE .0403

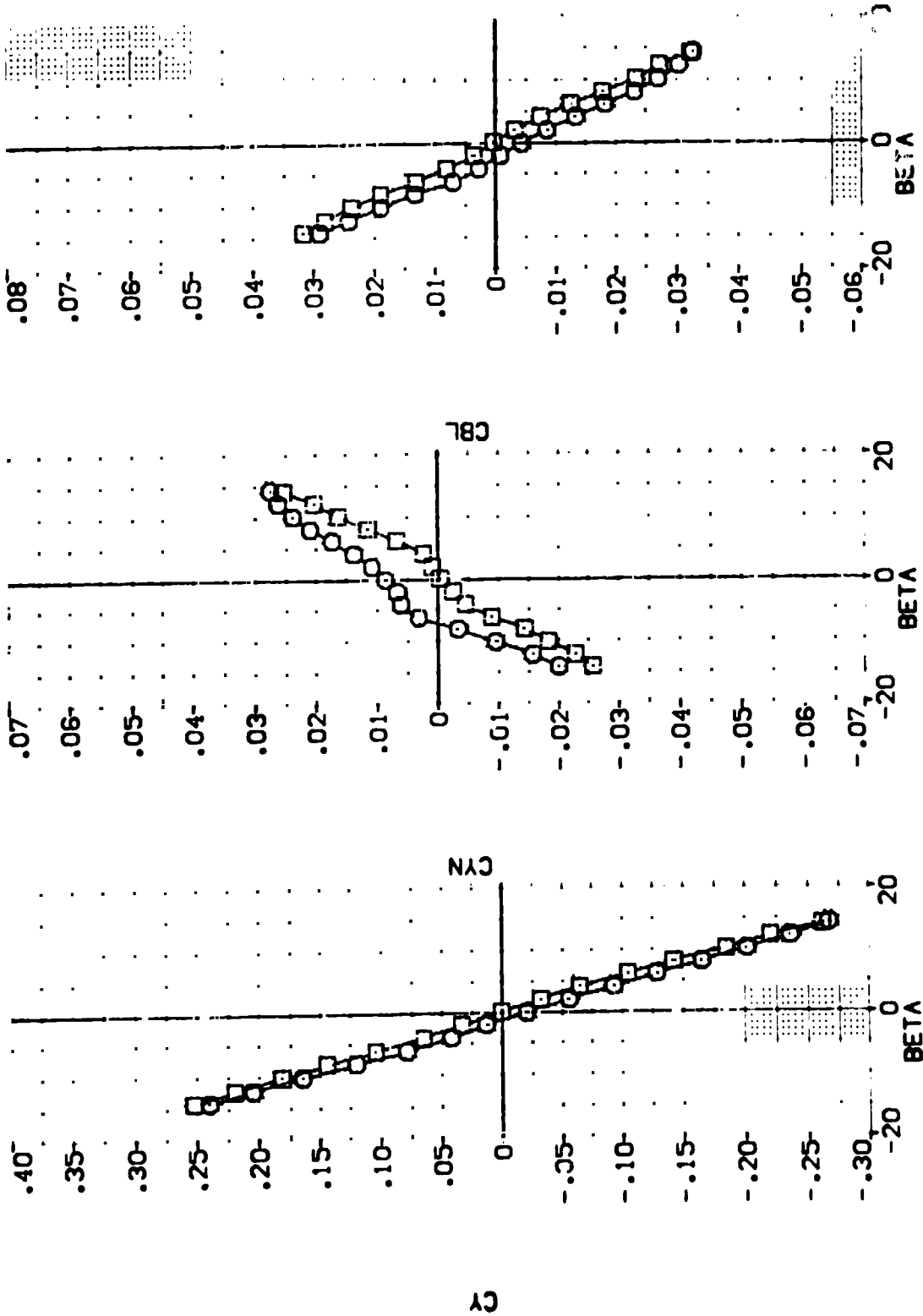


FIG 24 RUDDER EFFECTIVENESS, SPEEDBRAKE BASE SEALED, SPD BRK = 85 DEG.

(A) MACH = .20

(DF5052)

0A110 B61C11F12M51W124E40V21R15X29

REFERENCE INFORMATION
 SQ.FT. 4.4119
 INCHES 19.2299
 INCHES 37.9359
 INCHES 43.5974
 INCHES .0000
 INCHES 15.1875
 SCALE .0400

DATA SOURCE
 RUDDER -20.000
 DATASET DF5053
 RUDDER .000

PARAMETRIC VALUES
 ALPHA 10.000
 DATASET DF5052
 BOFLAP -12.000

MACH .200
 ELEVON .000
 SPOBRK 65.000

BETA
 -14.000
 -12.000
 -10.000
 -8.000
 -6.000

SYMBOL
 □
 ◇
 △

INCREMENTAL SIDE FORCE COEFFICIENT, C_Y

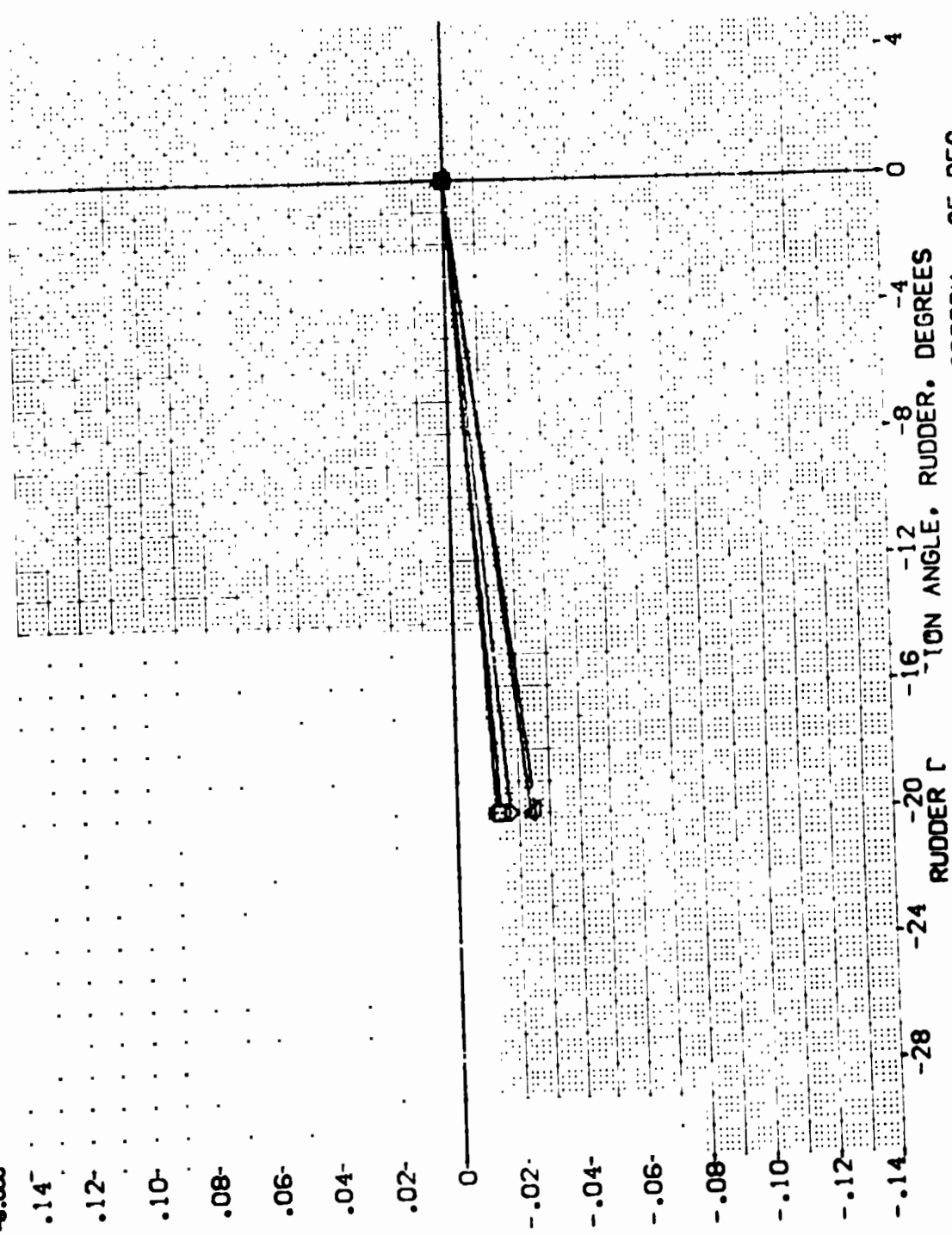


FIG 24 RUDDER EFFECTIVENESS, C_Y WAKE BASE SEALED, SPOBRK = 85 DEG.



(DF5052)

0A110 B61C11F12M51W124E40V21R15X29

SYMBL	BETA	MACH	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
○	-1.000	.200	ALPHA	RUDER	89.FT.
□	-2.000	.000	ALTRON	DF5052	19.2299
◇	.000	85.000	BDFLAP	DF5053	37.5359
△	2.000				43.5974
	4.000				.0000
					15.1875
					.0405
					SCALE

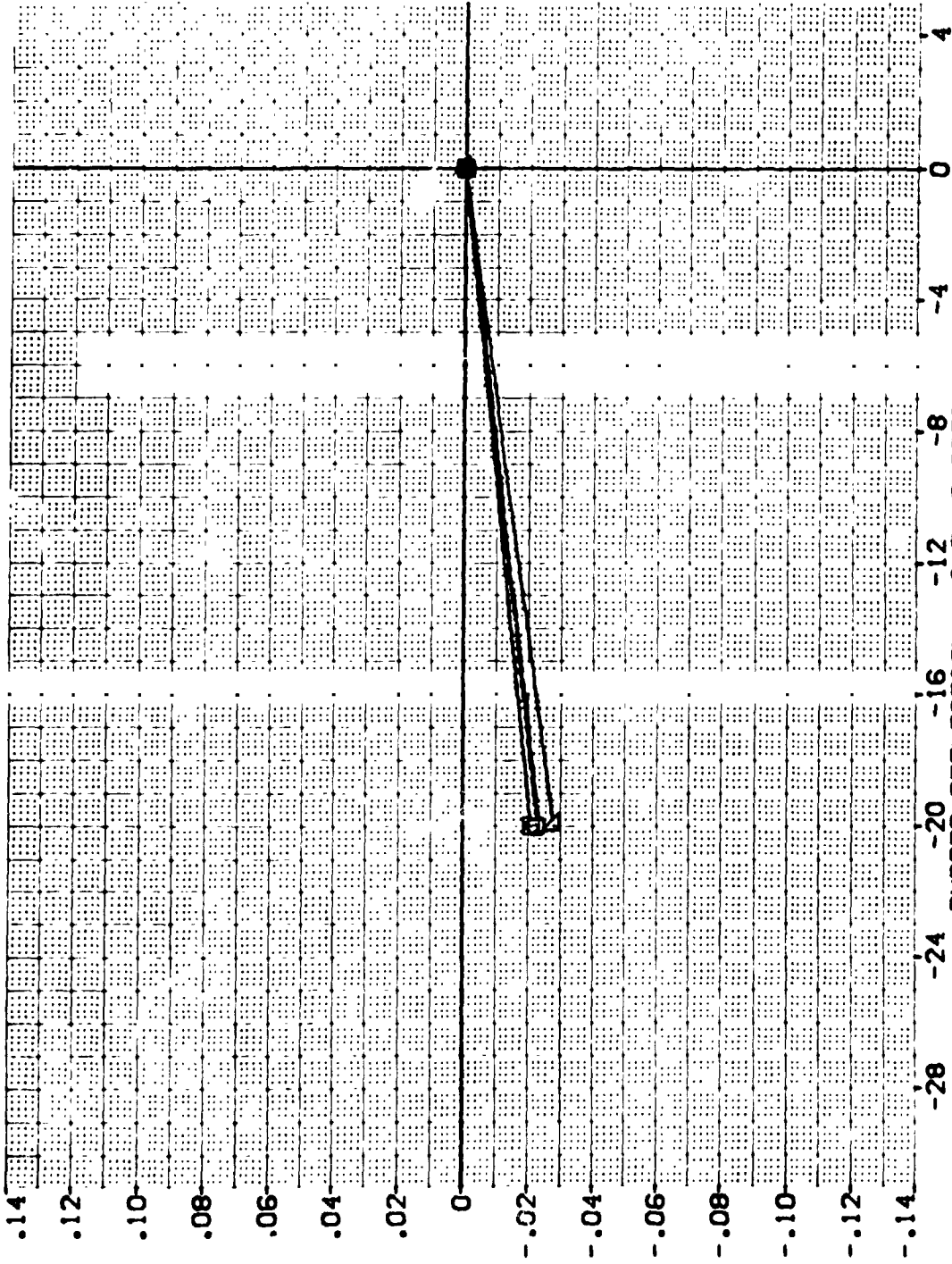


FIG 24 RUDDER EFFECTIVENESS, SPEEDBRAKE BASE SEALED, SPDBRK = 85 DEG.

0A110 B61C11F12M51W124E40V21R15X29 (DF5052)

SYMBOL	BETA	MACH	PARAMETRIC VALUES	DATA SOURCE	RUDDER	RUDDER	REFERENCE INFORMATION
○	6.000	ELEVON	.200 ALPHA	10.000 DATASET	RUDDER	SREF	SO.FT.
□	8.000	SPOBRK	.000 AILRON	DF5052	-20.000	LREF	19.7299
◇	10.000		85.000 BOFLAP	DF5053	.000	BREF	37.9359
△	12.000		-12.000			YMRP	43.5874
▽	14.000					ZMRP	15.1875
						SCALE	.0405

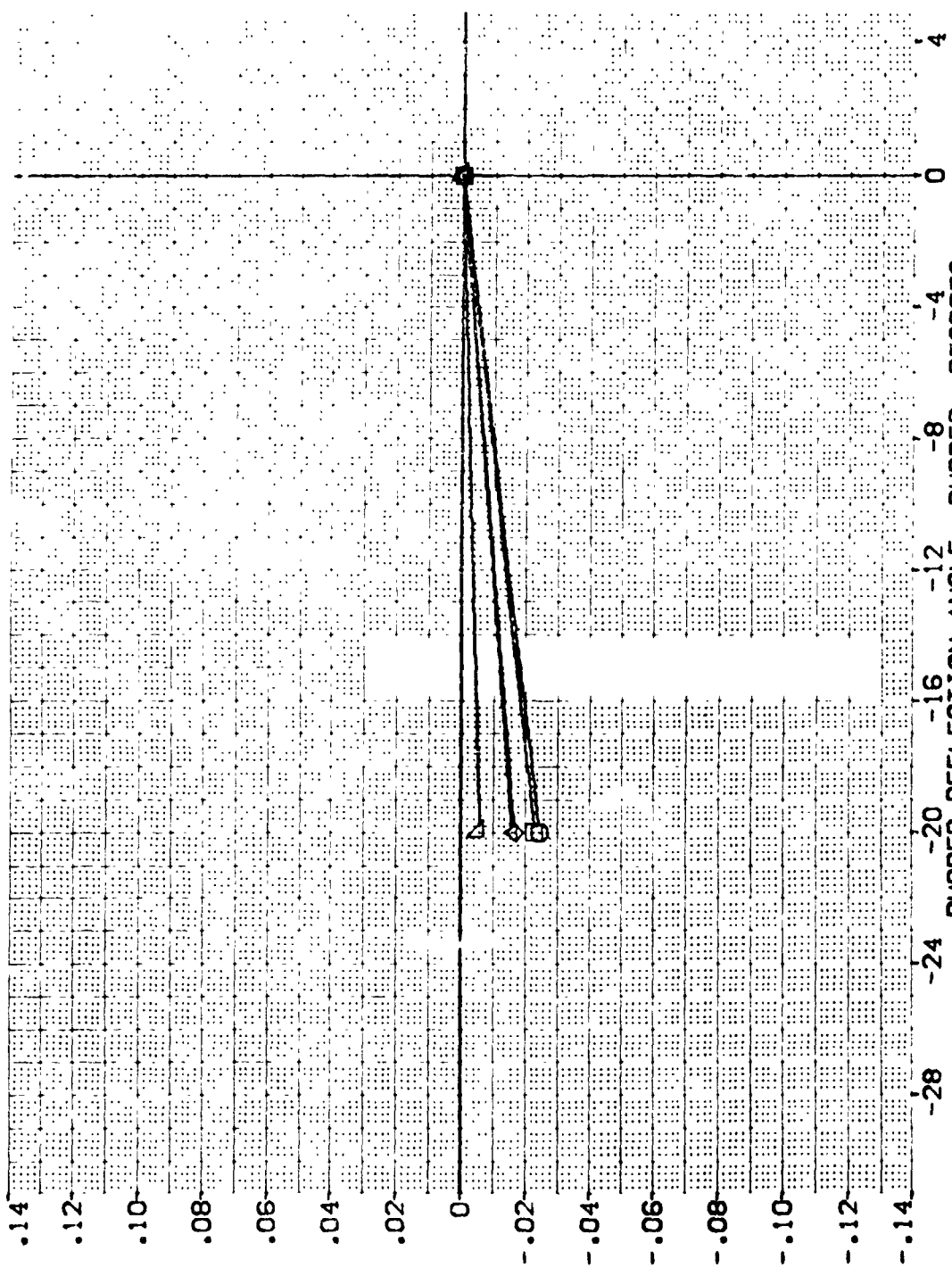


FIG 24 RUDDER EFFECTIVENESS, SPEEDBRAKE BASE SEALED, SPOBRK = 85 DEG.



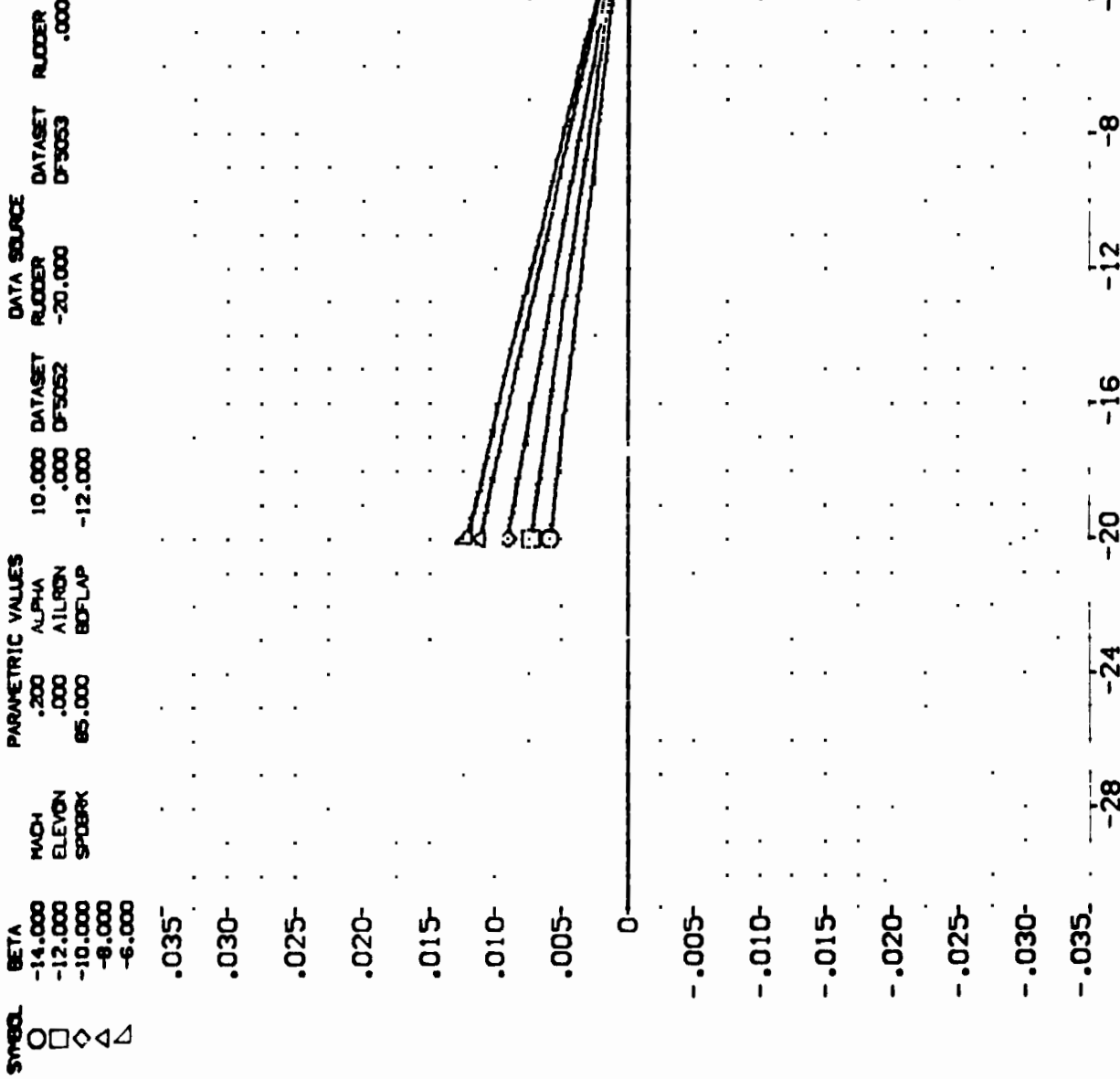
0A110 B61C11F12M51W124E40V21R15X29 (DF5052)

PARAMETRIC VALUES
 MACH .200
 ALPHA 10.000
 AILRON .000
 BDFLAP -12.000
 SPOBRK 85.000

DATA SOURCE
 RUDDER -20.000
 DATASET DF5052

RUDDER .000
 DATASET DF5053

REFERENCE INFORMATION
 SREF 4.4119 SO.FT.
 LREF 19.2259 IN-ES
 XTRP 37.9359 IN-ES
 YTRP 43.5374 IN-ES
 ZTRP .0000 IN-ES
 SCALE 15.1875 IN-ES
 .0405 SCALE



INCREMENTAL YAWING MOMENT COEFFICIENT, DCYN

FIG 24 RUDDER EFFECTIVENESS, SPEEDBRAKE BASE SEALED, SPOBRK = 85 DEG.

0A110 B61C11F12M51W124E40V21R15X29 (DF5052)

SYMBOL		PARAMETRIC VALUES		DATA SOURCE		REFERENCE INFORMATION	
○	BETA	MACH	ALPHA	RUDDER	RUDDER	SREF	SO.FT
□	-4.000	.200	.000	-20.000	.000	19.7286	INCHES
◇	-2.000	.000	.000	DF5052	DF5053	37.5359	INCHES
△	.000	85.000	80FLAP	-12.000		43.5974	INCHES
▽	2.000					.0000	INCHES
	4.000					15.1875	INCHES
						.0405	SCALE

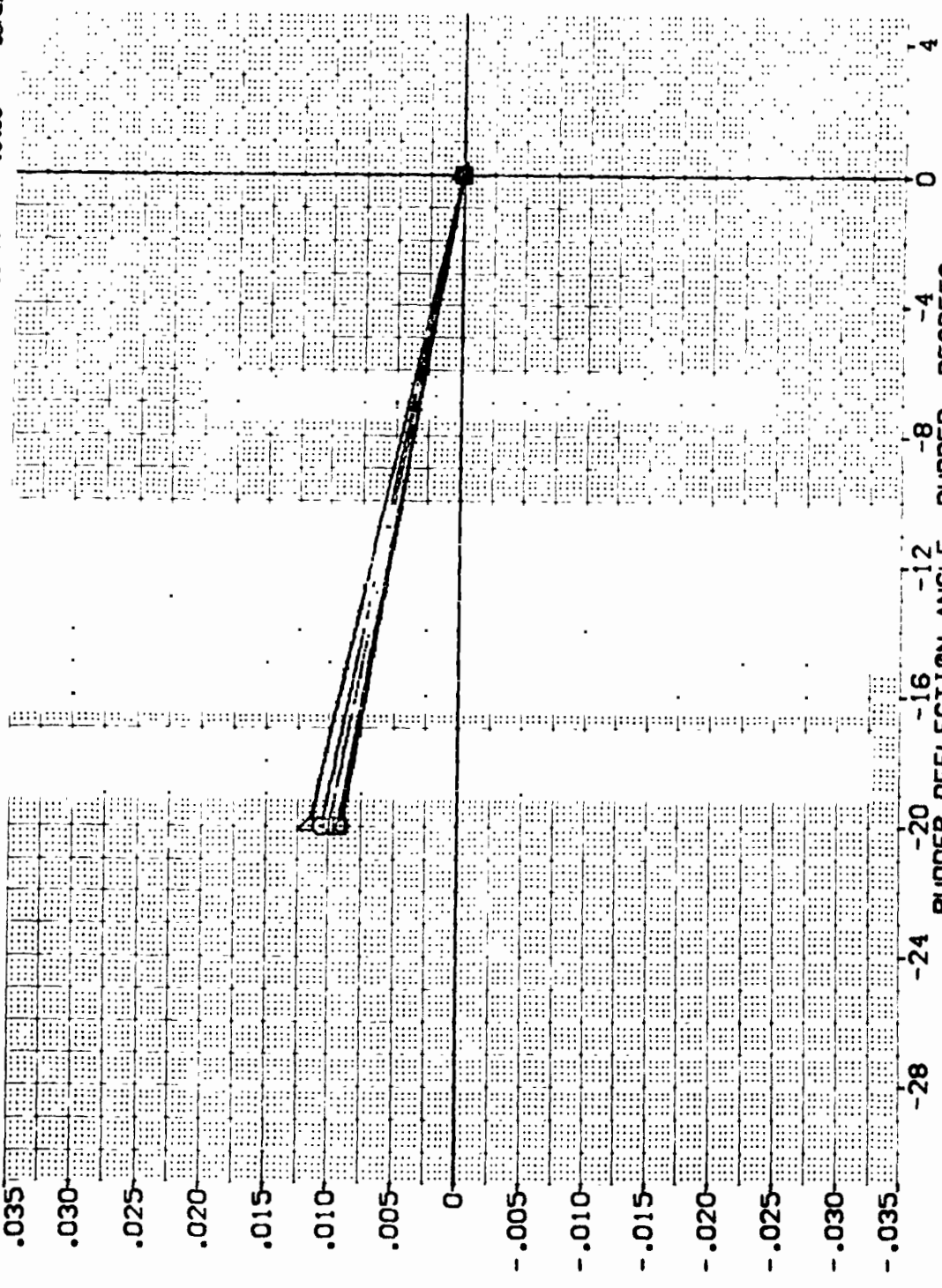
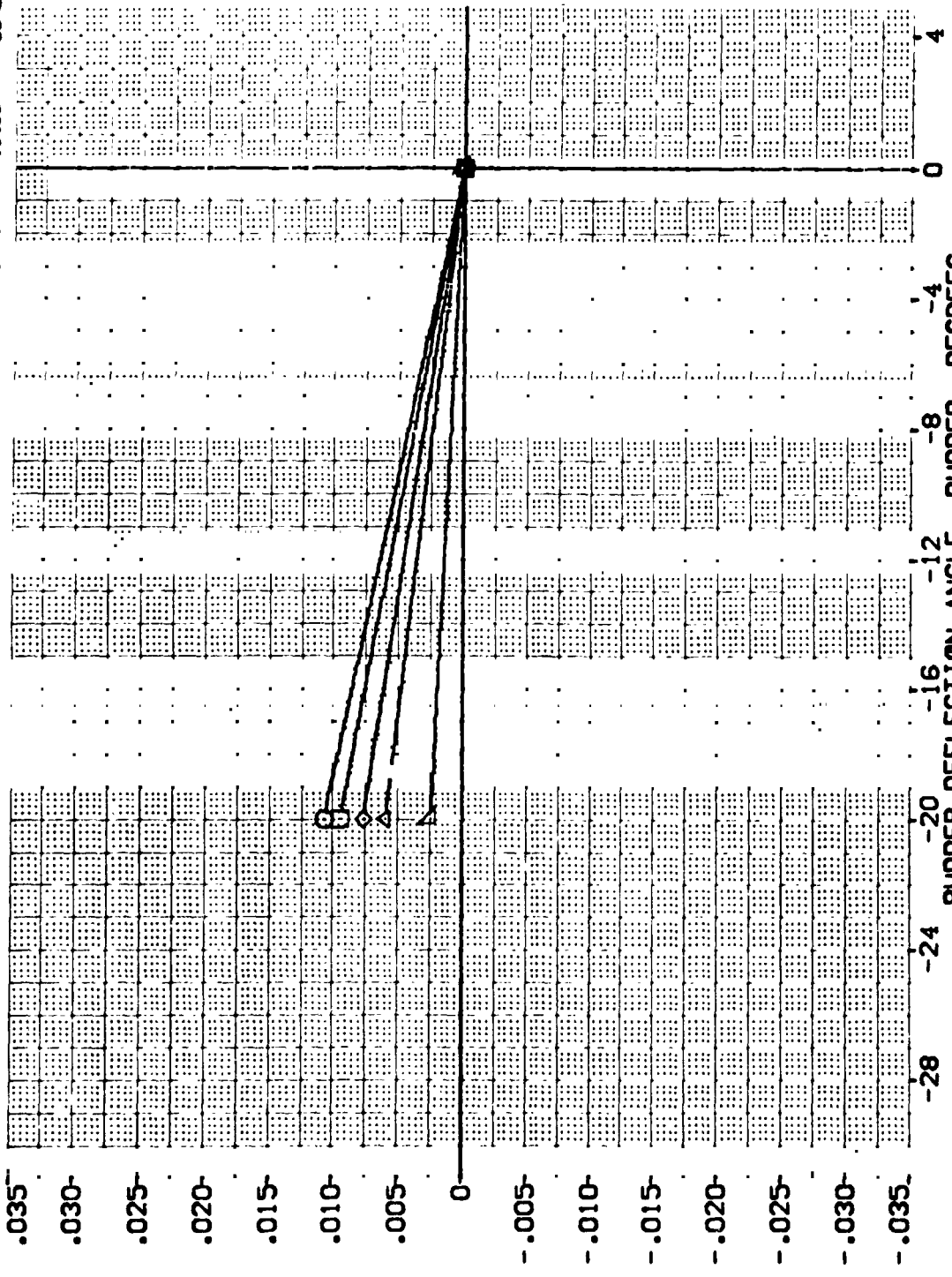


FIG 24 RUDDER EFFECTIVENESS, SPEEDBRAKE BASE SEALED, SPOBRK = 85 DEG.



0A110 861C11F12M51W124E40V21R15X29 (DF5052)

BETA	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
6.000	MACH .200	RUDDER 10.000	SREF 4.4119
8.000	ALPHA .000	DATASET DF5052	LREF 19.2268
10.000	A1LRON .000	RUDDER DF5053	BREF 37.9568
12.000	BDFLAP -12.000		XPRP 43.9574
14.000			YPRP .0000
			ZPRP 15.1875
			SCALE .0405



INCREMENTAL YAWING MOMENT COEFFICIENT, DCYN

FIG 24 RUDDER EFFECTIVENESS, SPEEDBRAKE BASE SEALED, SPDBRK = 85 DEG.

(DF5052)

0A110 861C11F12M51W124E40V21R15X29

SYMBOL	BETA	MACH	ELEVON	PROBRK	PARAMETRIC VALUES	DATA SOURCE	DATASET	RUDDER	RUDDER	SREF	REFERENCE INFORMATION
○	-14.000				.200 ALPHA	RUDDER	DF5053	.000		19.4119	59. FT.
□	-12.000				.000 AILRON	-20.000	DF5053	.000		19.4119	INCHES
◇	-10.000				85.000 BOFLAP					37.9359	INCHES
△	-8.000									43.4571	INCHES
▽	-6.000									0.000	INCHES
										15.1875	SCALE
										.0400	SCALE

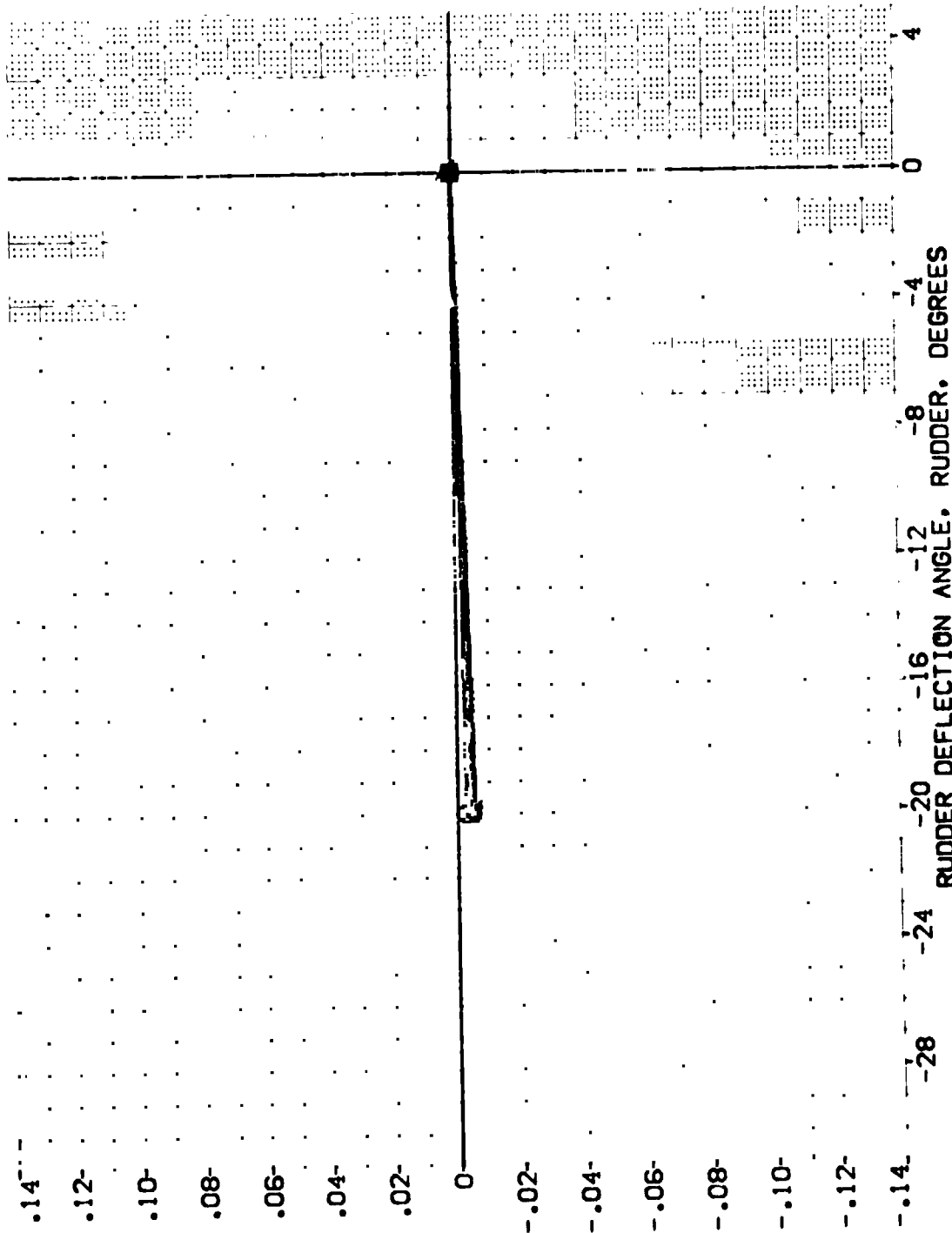


FIG 24 RUDDER EFFECTIVENESS, SPEEDBRAKE BASE SEALED, SPD BRK = 85 DEG.

INCREMENTAL ROLLING MOMENT COEFFICIENT, DCBL



0A110 B61C11F12M51W124E40V21R15X29 (DF5052)

SYMBOL	BETA	MACH	PARAMETRIC VALUES	DATA SOURCE	DATASET	RUDDER	SREF	REFERENCE INFORMATION
○	-4.000	ELEVON	.200 ALPHA	RUDDER	DF5053	.000	4.4119	SO.FT.
□	-2.000	SPOBRK	.000 AILRON	-20.000			19.2299	INCHES
◇	.000		85.000 BOFLAP	.000 DF5052			37.9259	INCHES
△	2.000		-12.000				43.5974	INCHES
▽	4.000						.0000	INCHES
							15.1675	INCHES
							.0405	SCALE

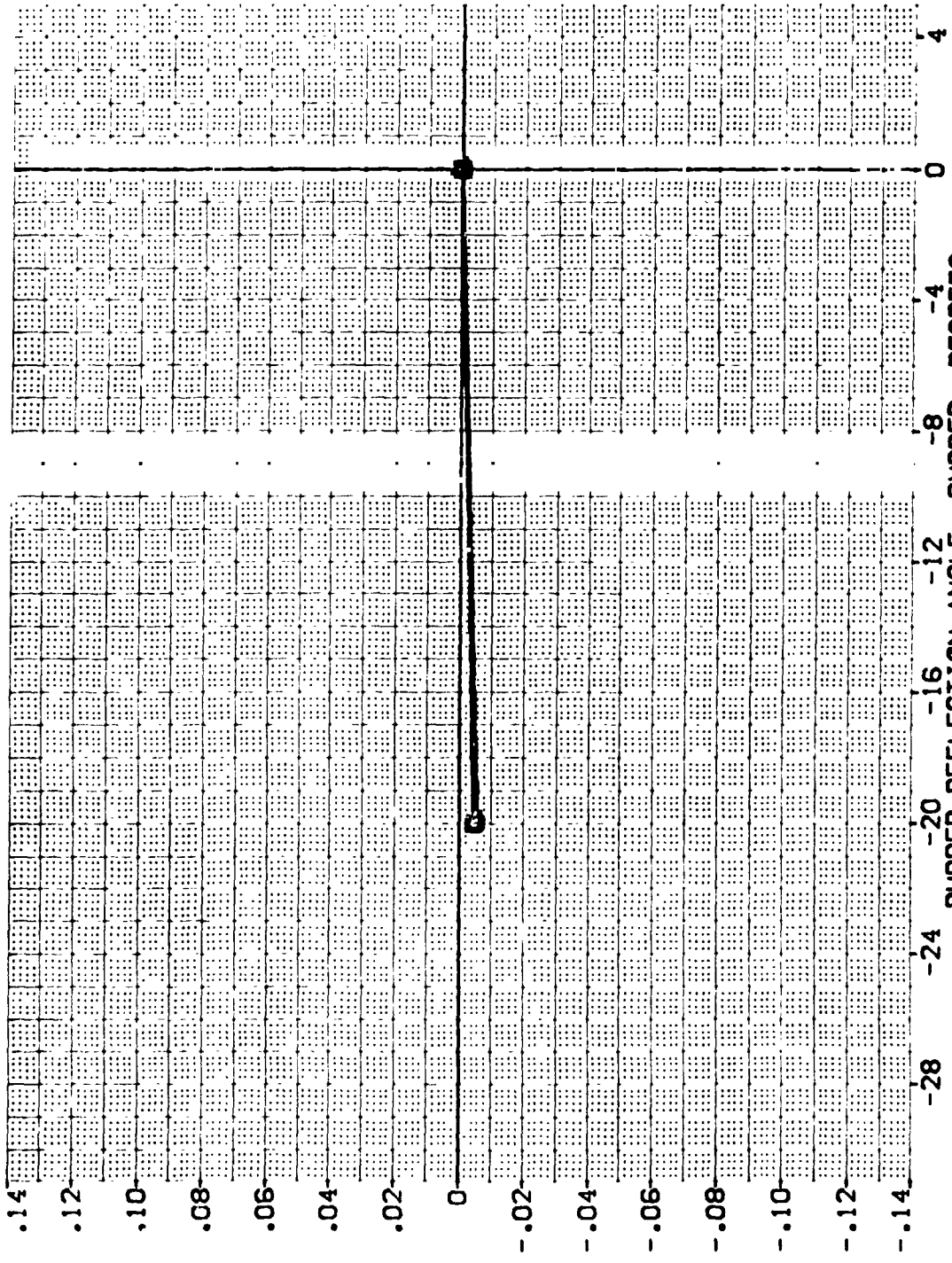


FIG 24 RUDDER EFFECTIVENESS, SPEEDBRAKE BASE SEALED, SPOBRK = 85 DEG.

(DF5052)

0A110 861C11F12M51W124E40V21R15X29

SYMBOL
○ □ ◇ △

BETA
6.000
8.000
10.000
12.000
14.000

MACH
ELEVON
SPOBRK

PARAMETRIC VALUES
.200 ALPHA
.000 AILTRN
85.000 BDFLAP

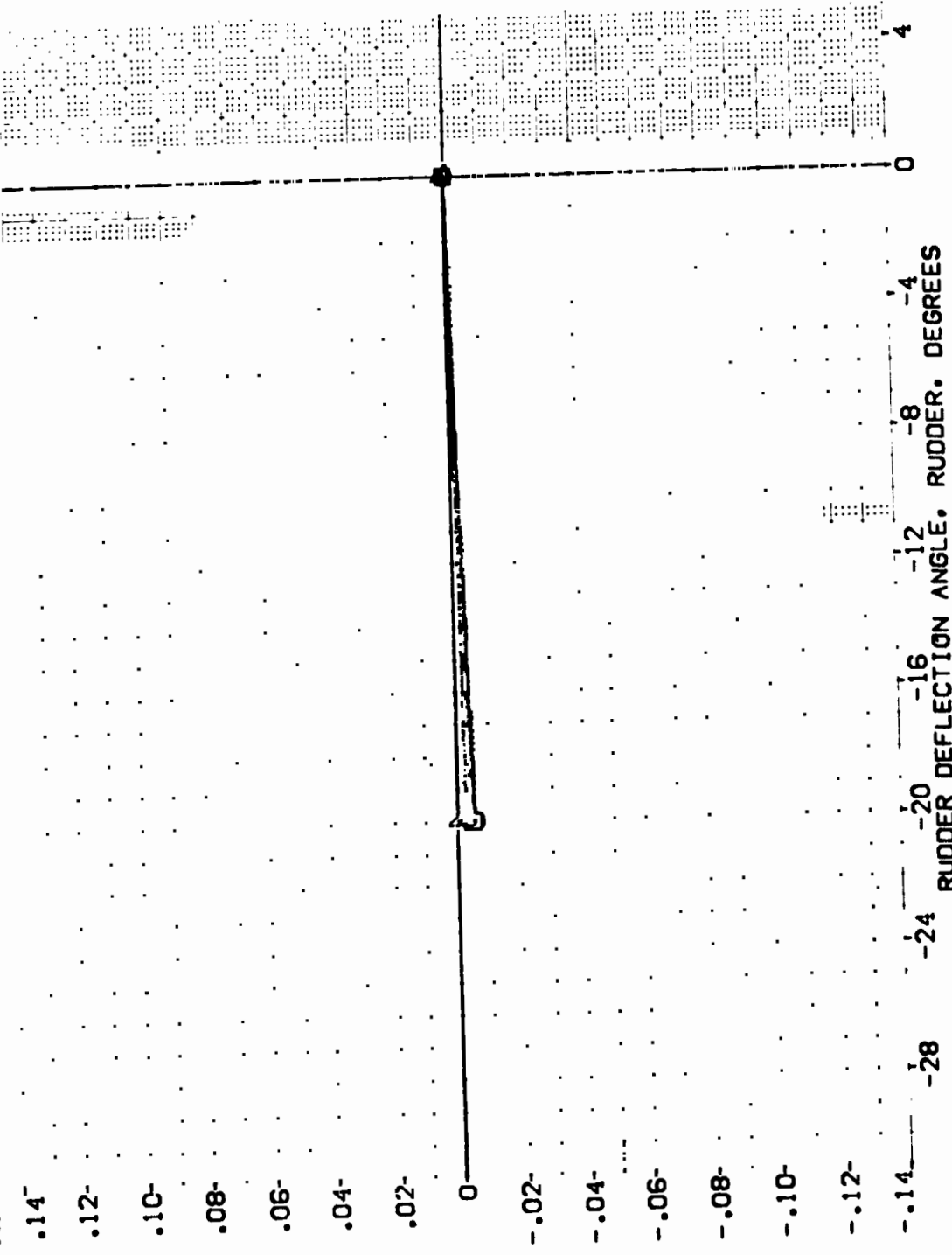
10.000 DATASET
.000 DF5052
-12.000

DATA SOURCE
RUDDER
-20.000

RUDDER
.000

SREF
LREF
BREF
XMRP
YMRP
ZMRP
SCALE

REFERENCE INFORMATION
4.4119 SQ.FT.
19.2298 IN-OES
37.9658 IN-OES
43.5574 IN-OES
.0000 IN-OES
15.1675 IN-OES
.0405 SCALE



INCREMENTAL ROLLING MOMENT COEFFICIENT, DCRL

FIG 24 RUDDER EFFECTIVENESS, SPEEDBRAKE BASE SEALED, SPOBRK = 85 DEG.



DATA SET SYMB. CONFIGURATION DESCRIPTION

(E3011)	0A110	861C11F12-51V124E40V19815028
(E3057)	0A110	861C11F12-51V124E40V21R15028

ELEVON AILRON RUDDER SPD BRK

.000	.000	.000	25.000
.000	.000	.000	25.000

REFERENCE INFORMATION

SREF	4.4119	50. FT.
LREF	19.2299	INCHES
BREF	37.5359	INCHES
XPRP	43.5974	INCHES
YPRP	.0000	INCHES
ZPRP	15.1875	INCHES
SCALE	.0405	SCALE

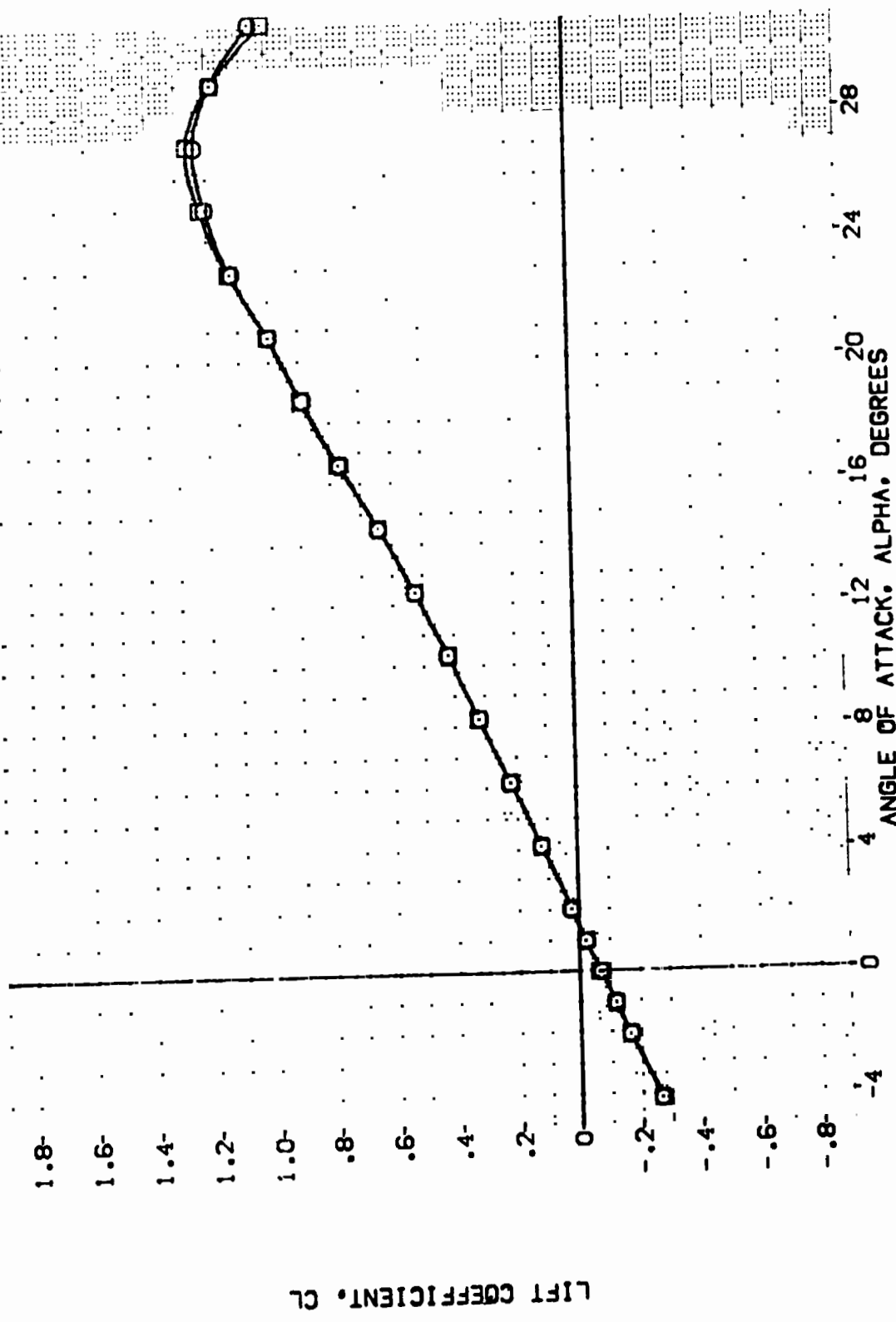


FIG 25 EFFECT OF SPEEDBRAKE BASE, SPD BRK = 25 DEG., RUDDER = 0 - LONGITUDINAL
 (A) MACH = .20

DATA SET 9760. CONFIGURATION DESCRIPTION
 {EP3011} 0A110 BS1C1F126S1V124E40V19R15X25
 {EP3057} 0A110 BS1C1F126S1V124E40V21R15X25

ELEVON .000 AILRON .000 RUDDER .000 SPOBRK 25.000
 .000 .000 .000 25.000
 REFERENCE INFORMATION
 GREF 4.4119 SQ.FT.
 LREF 19.2258 IN-OES
 BREF 37.8758 IN-OES
 YARP 43.5574 IN-OES
 YARP .0000 IN-OES
 ZARP 15.1875 IN-OES
 SCALE .0405 SCALE

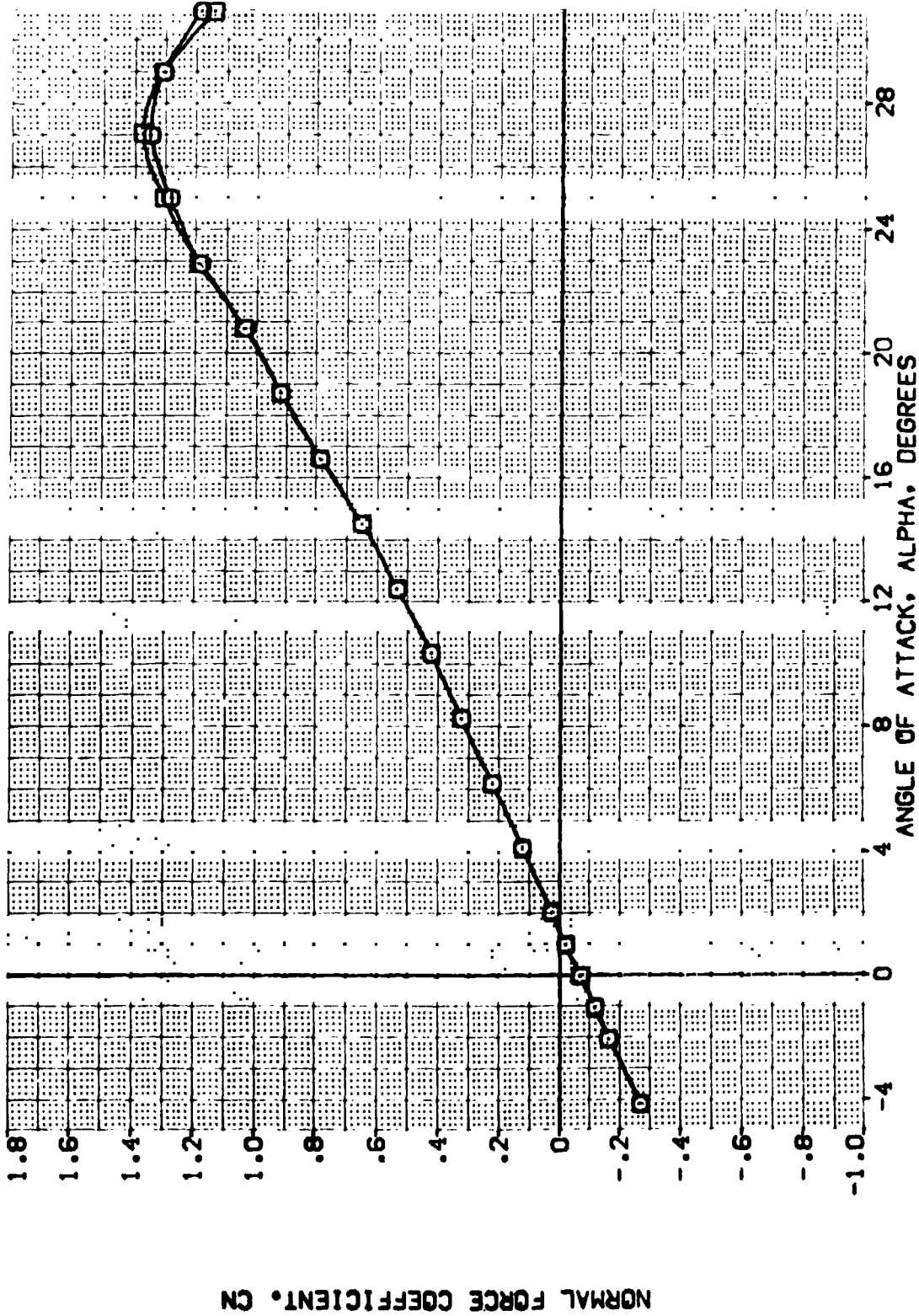


FIG 25 EFFECT OF SPEEDBRAKE BASE, SPOBRK = 25 DEG., RUDDER = 0 - LONGITUDINAL
 (A)MACH = .20



DATA SET SYMOL CONFIGURATION DESCRIPTION
 {E73011} 0 0A110 001C11F12V161V124E40V18R15C20
 {E73057} 0 0A110 001C11F12V161V124E40V21R15C20

ELEVON AILRON RUDDER SPOBRK
 .000 .000 .000 .000
 .000 .000 .000 .000

REFERENCE INFORMATION
 SREF 4.4118 90.FT.
 LREF 19.2259 INCHES
 BREF 37.9359 INCHES
 XMRP 43.5974 INCHES
 YMRP 10.0000 INCHES
 ZMRP 15.1873 INCHES
 SCALE .0405 SCALE

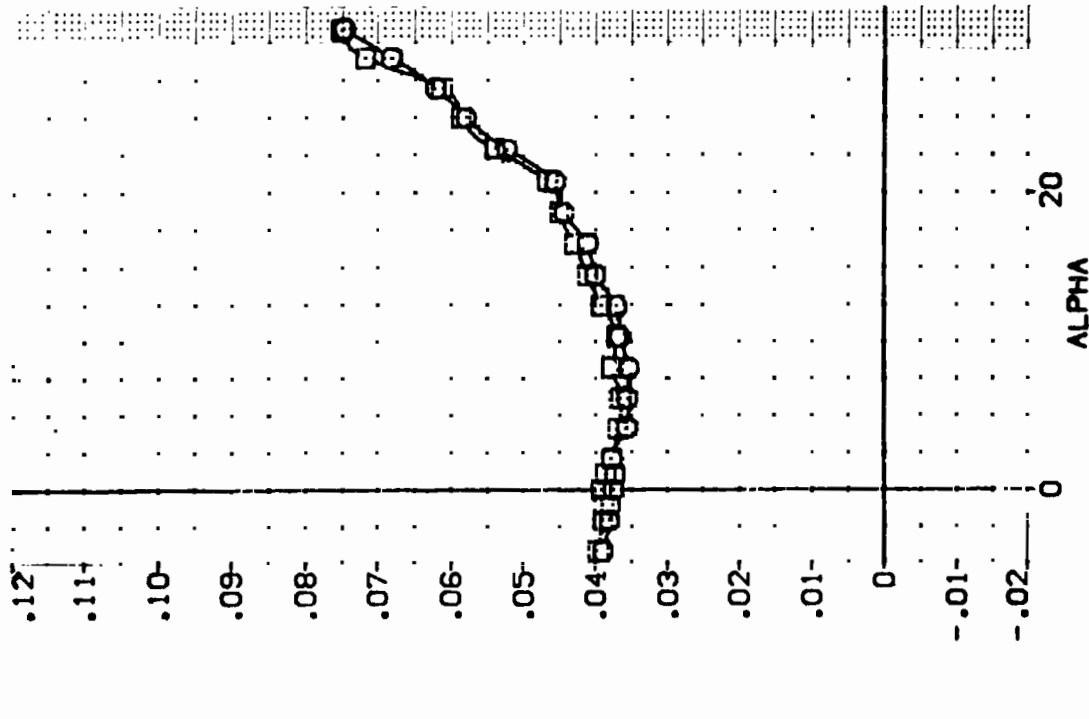
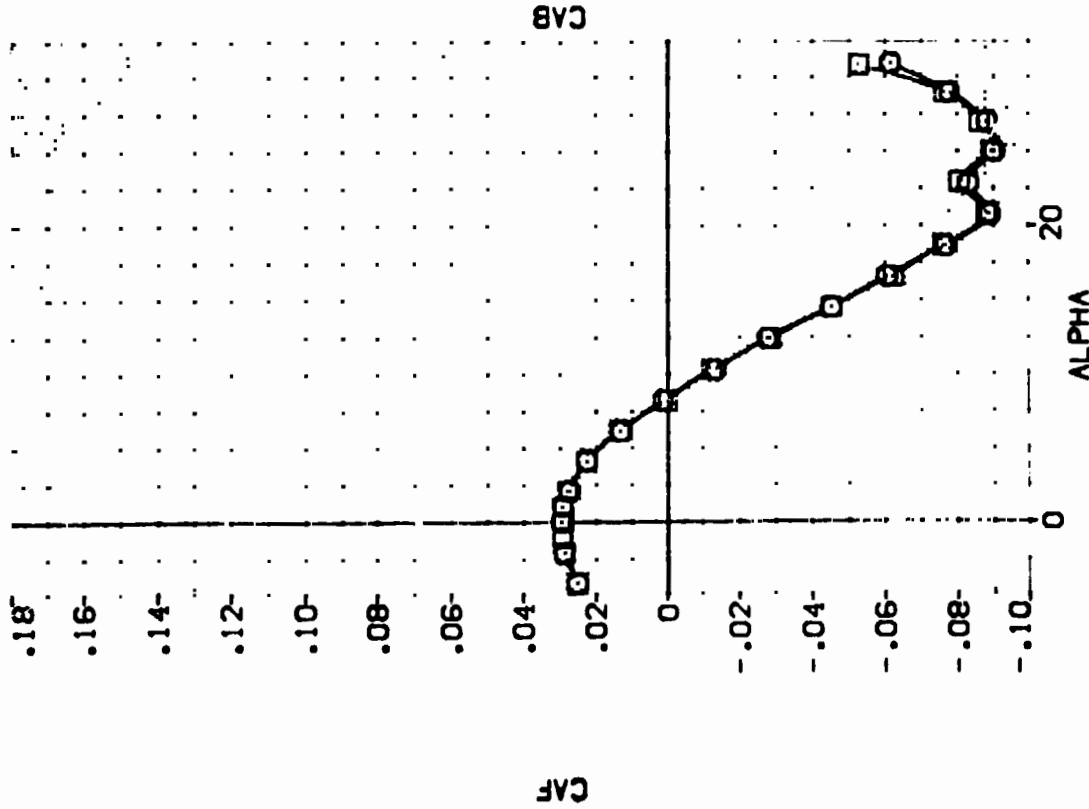


FIG 25 EFFECT OF SPEEDBRAKE BASE, SPOBRK = 25 DEG., RUDDER = 0 - LONGITUDINAL
 (A)MACH = .20

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 {E5011} 0A110 0S1C11F12S1V12AE40V1R1S1C2S
 {E5057} 0A110 0S1C11F12S1V12AE40V21R1S1C2S

ELEVON AILRON RUDDER SPOBRK
 .000 .000 .000 25.000
 .000 .000 .000 25.000

REFERENCE INFORMATION
 SREF 4.4119 SQ.FT
 LREF 19.2299 IN.-ES
 BRFP 37.9359 IN.-ES
 YPRP 43.5974 IN.-ES
 ZPRP .0000 IN.-ES
 SCALE 15.1875 IN.-ES
 .0405 SCALE

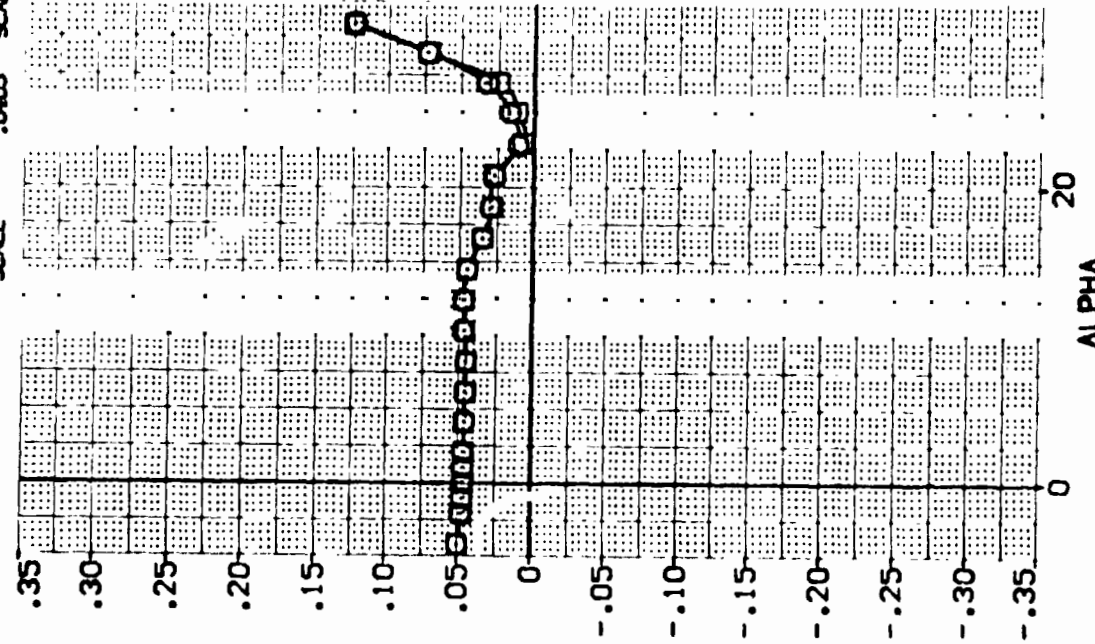
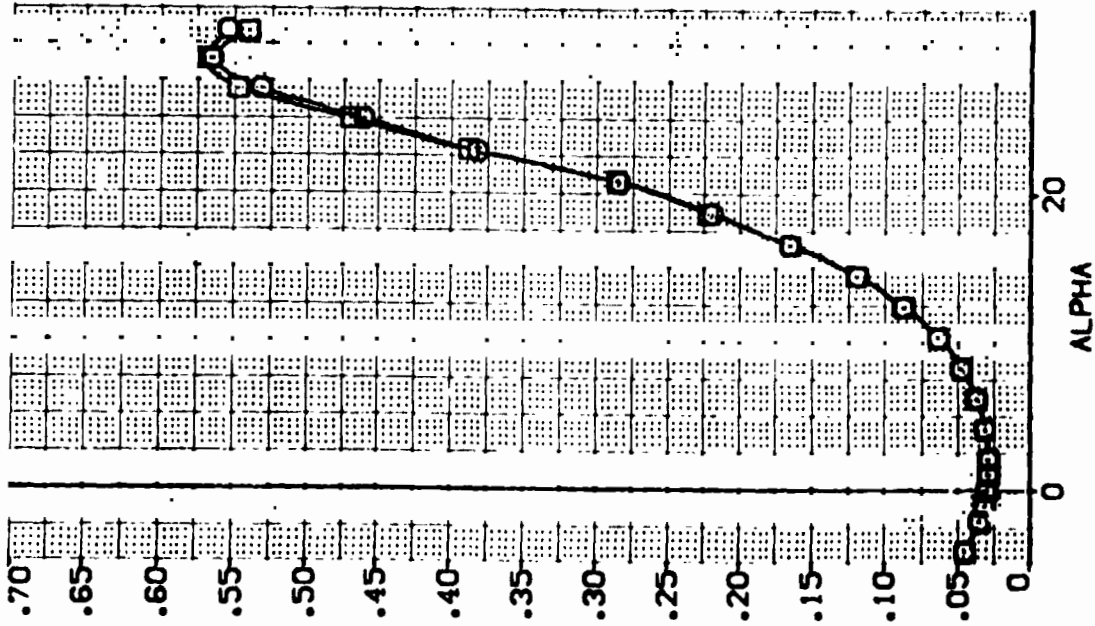


FIG 25 EFFECT OF SPEEDBRAKE BASE, SPOBRK = 25 DEG., RUDDER = 0 - LONGITUDINAL
 (A)MACH = .20



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (E73011) 0110 861C11F1261V124E40V18R1S28
 (E75057) 0110 861C11F1261V124E40V21R1S28

ELEVON ALLORN RUDDER SPOBRK
 .000 .000 .000 25.000
 .000 .000 .000 25.000

REFERENCE INFORMATION
 SREF 4.4119 SO.FT.
 LREF 19.2299 INO-ES
 BREF 37.9359 INO-ES
 XPRP 43.5974 INO-ES
 YPRP .0000 INO-ES
 ZPRP 15.1875 INO-ES
 SCALE .0400 SCALE

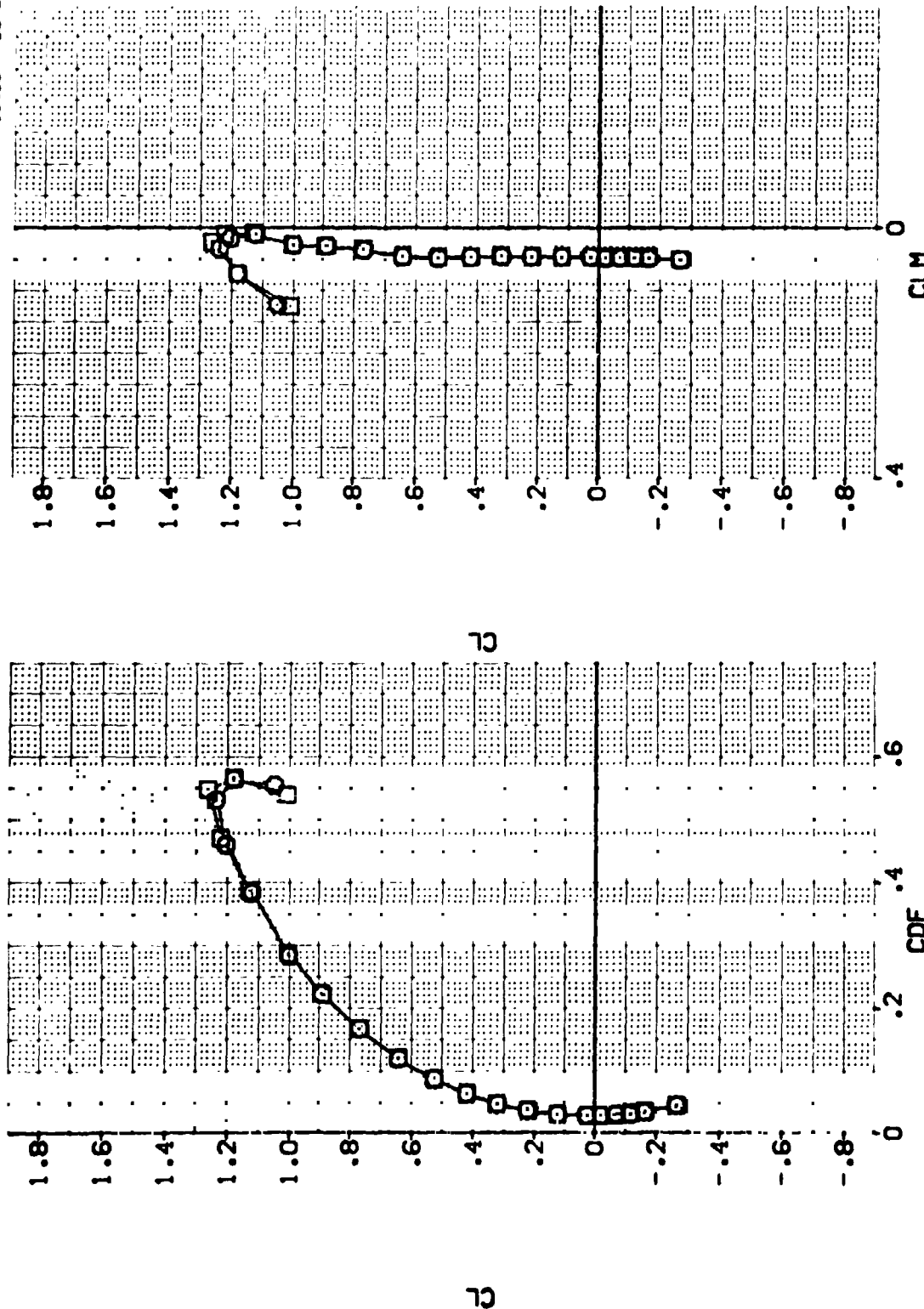


FIG 25 EFFECT OF SPEEDBRAKE BASE. SPOBRK = 25 DEG., RUDDER = 0 - LONGITUDINAL.
 (AJMACH = .20) PAGE 169

DATA SET SYMB. COMPUTATION DESCRIPTION
 {B3011} 0110 BASIC1F12P51V12E40V18R15C8
 {B3057} 0110 BASIC1F12P51V12E40V21R15C8

ELEVON .000
 .000
 .000
 AILERON .000
 .000
 .000
 RUDDER .000
 .000
 .000
 SPOBRK 25.000
 25.000
 25.000
 REFERENCE INFORMATION
 SREF 4.4118 SQ.FT.
 LREF 19.2259 IN.-ES
 XREF 37.9559 IN.-ES
 YREF 43.5674 IN.-ES
 ZREF .0000 IN.-ES
 SCALE 15.1875 IN.-ES
 .0405 SCALE

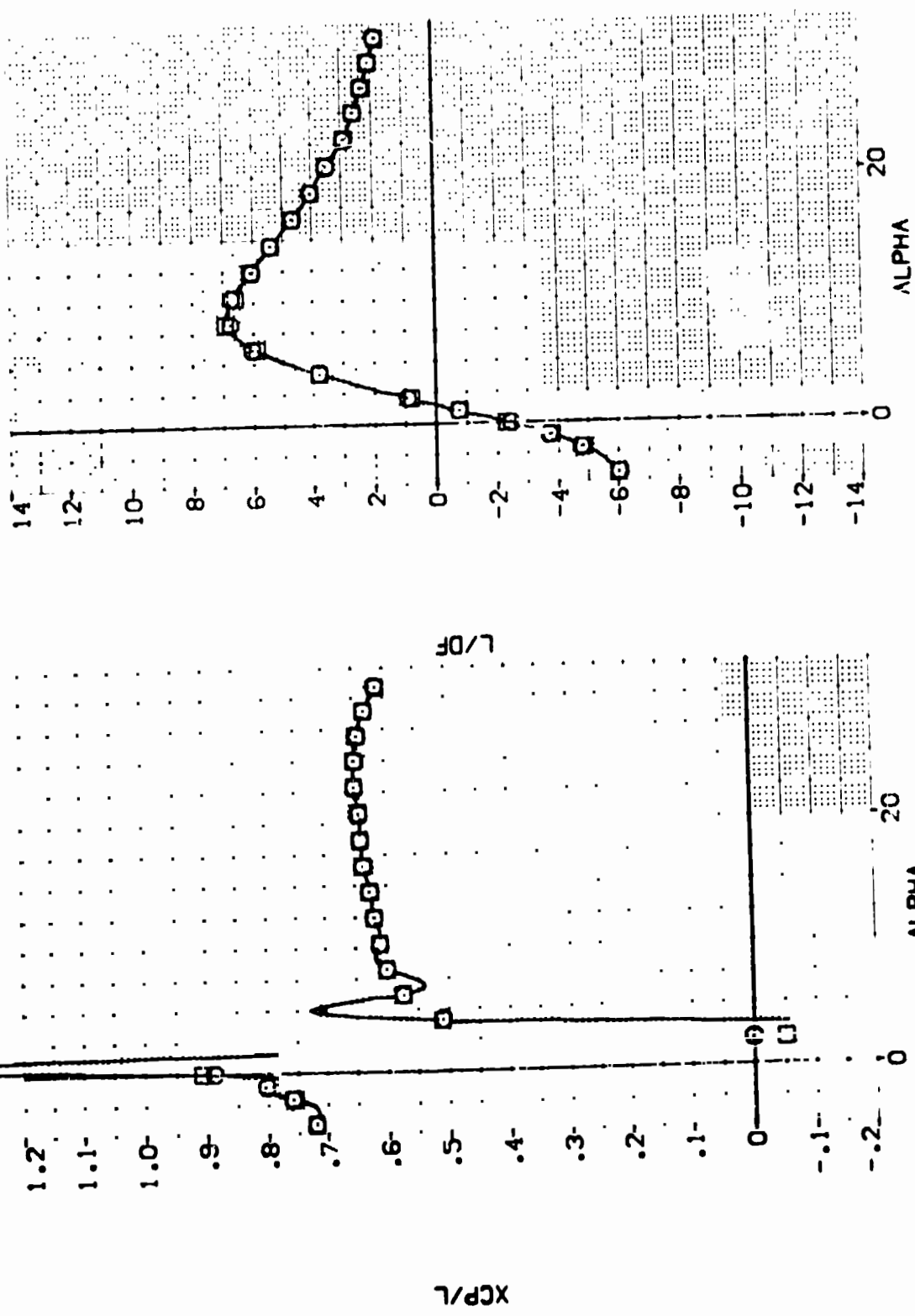


FIG 25 EFFECT OF SPEEDBRAKE BASE, SPOBRK = 25 DEG., RUDDER = 0 - LONGITUDINAL
 (A)MACH = .20 PAGE 170



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 {#5015} 01110 081C11F1261V124E40V18R15C28
 {#5006} 01110 081C11F1261V124E40V21R15C28

ALPHA 10.000
 10.000
 SPOBRK .000
 .000
 AILDRN .000
 .000
 REFERENCE INFORMATION
 SREF 4.4119 90.FT.
 LREF 19.2289 INCHES
 BREF 37.5350 INCHES
 YPRP 43.5574 INCHES
 ZPRP .0000 INCHES
 SCALE 15.1875 INCHES
 SCALE .0405

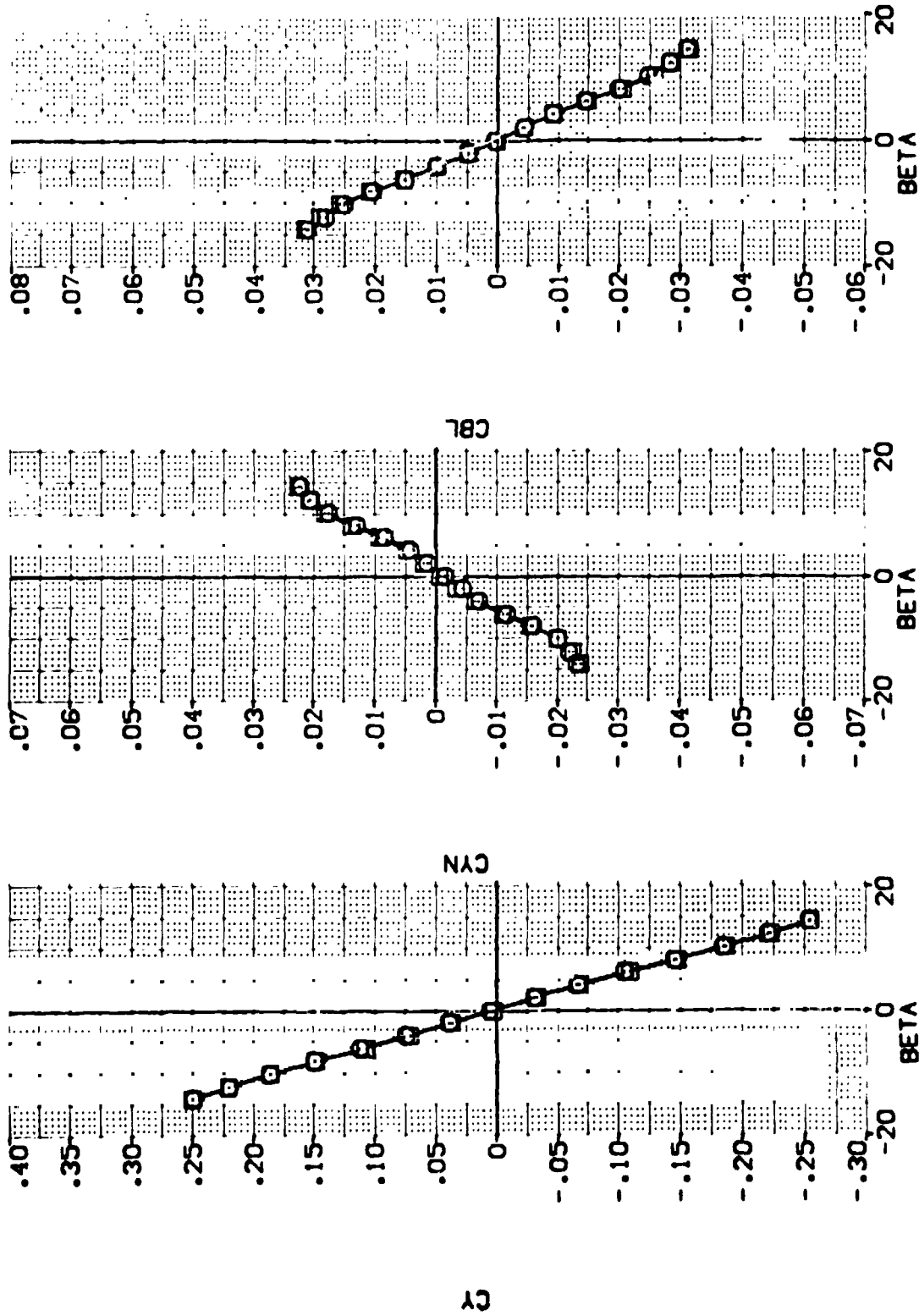


FIG 26 EFFECT OF SPEEDBRAKE BASE, SPOBRK = 25 DEG., ALPHA = 10 DEG.

(A)MACH = .20

DATA SET SYMBOL: CONF1CATION DESCRIPTION
 {#9055} 0A110 B61C11F1231V124E40V21R15X28
 {#9056} 0A110 B61C11F1231V124E40V21R15X28

ALPHA 10.000
 RUDDER -20.000
 SPEEDBRK 25.000

AILRON .000
 SPOBRK 25.000
 REFERENCE INFORMATION
 SREF 4.4119 50. FT.
 LREF 19.2299 INCHES
 BREF 37.9359 INCHES
 XMRP 43.5974 INCHES
 YMRP .0000 INCHES
 ZMRP 15.1875 INCHES
 SCALE .0405 SCALE

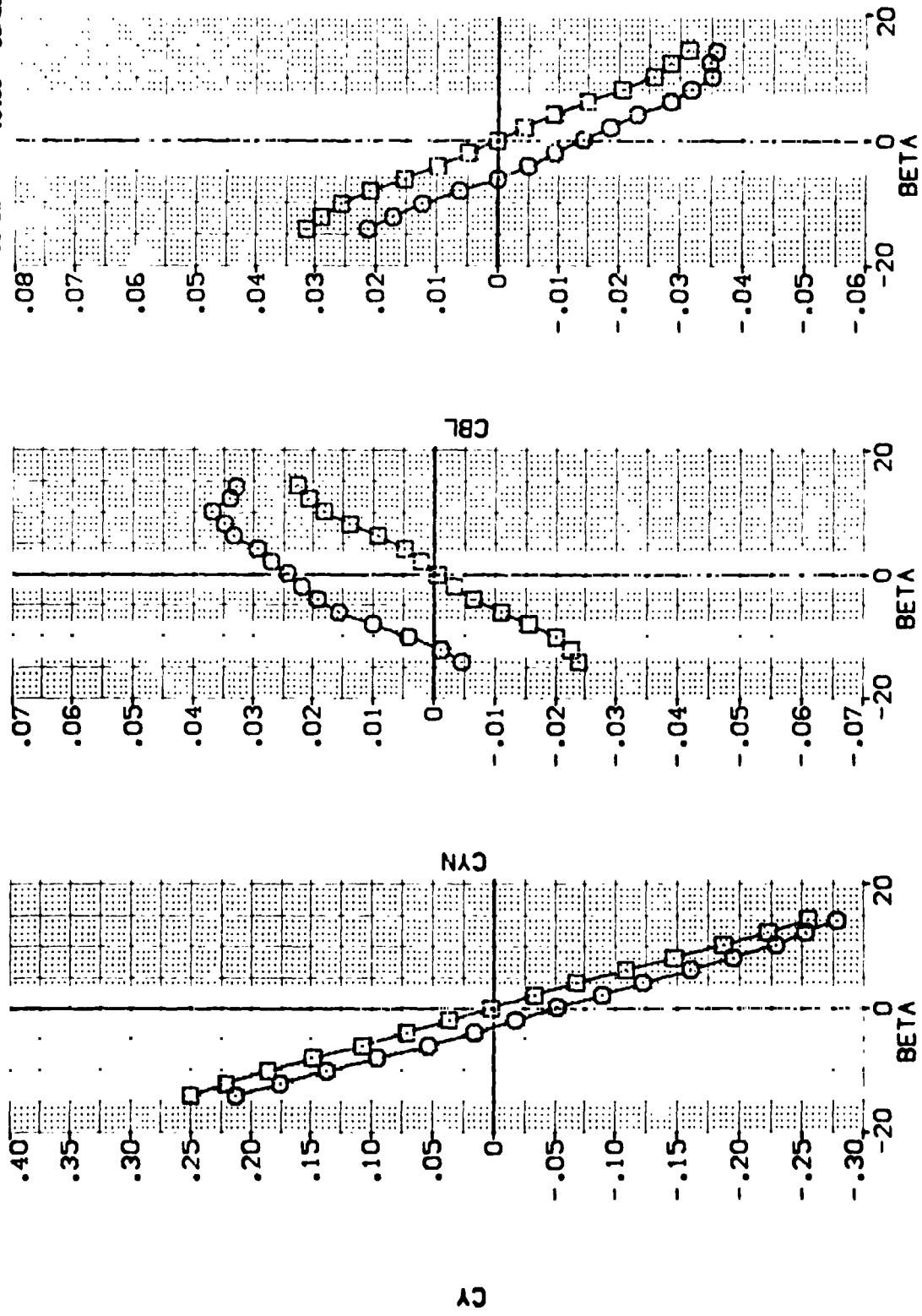


FIG 27 RUDDER EFFECTIVENESS, SPEEDBRAKE BASE SEALED, SPOBRK = 25 DEG.
 (A)MACH = .20



(DF5055)

0A110 B61C11F12M51W124E40V21R15X29

SYMBOL	BETA	MACH	PARAMETRIC VALUES	DATA SOURCE	RUDDER	DATASET	RUDDER	SREF	REFERENCE INFORMATION
○	-14.000	.200	ALPHA	RUDDER	.000	DF5056	.000	4.4119	SO.FT.
□	-12.000	.000	A1LRON	-20.000				19.2299	IND-ES
◇	-10.000	25.000	BOFLAP					37.9359	IND-ES
△	-8.000							43.5974	IND-ES
▽	-6.000							.0000	IND-ES
								15.1673	IND-ES
								.0405	SCALE

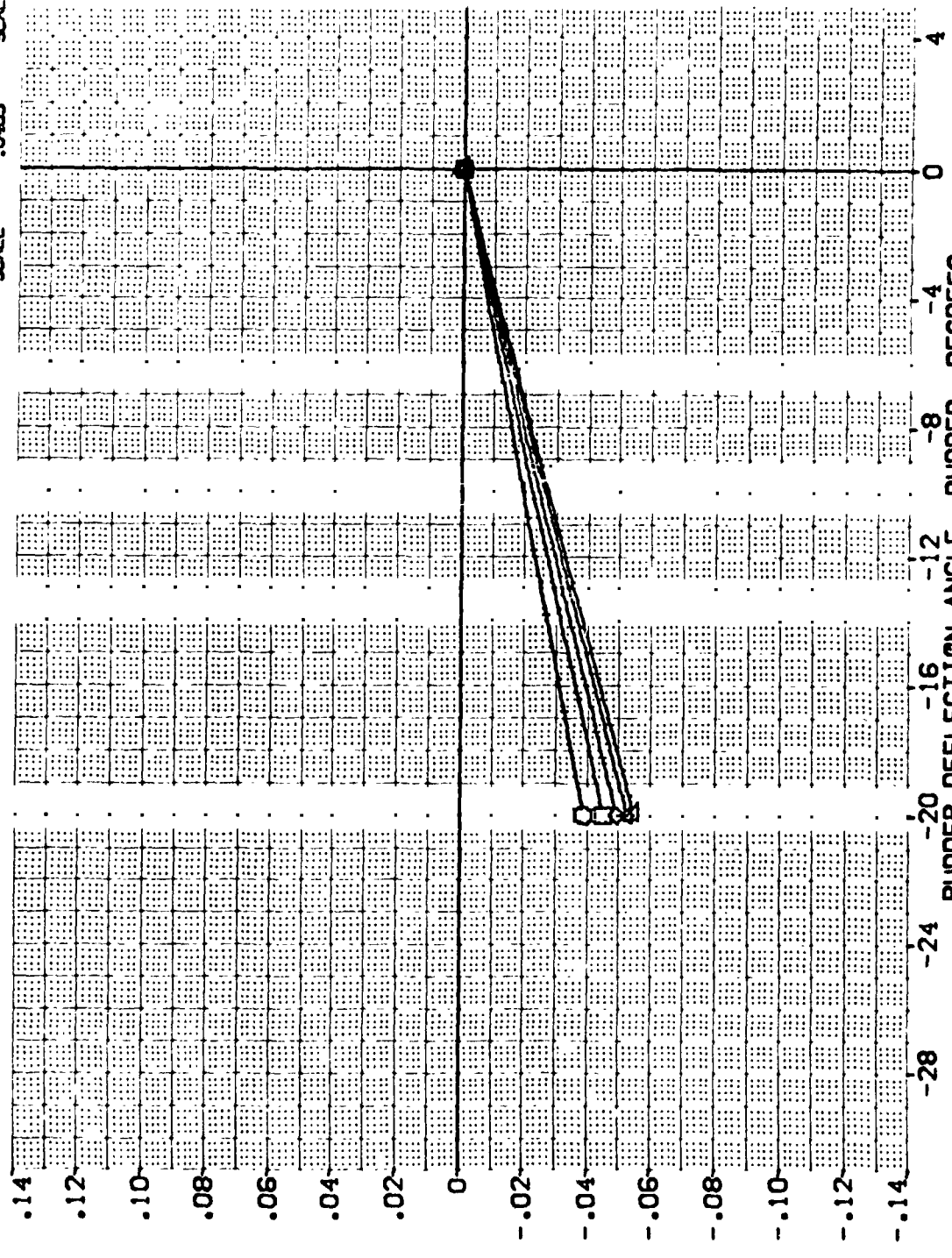
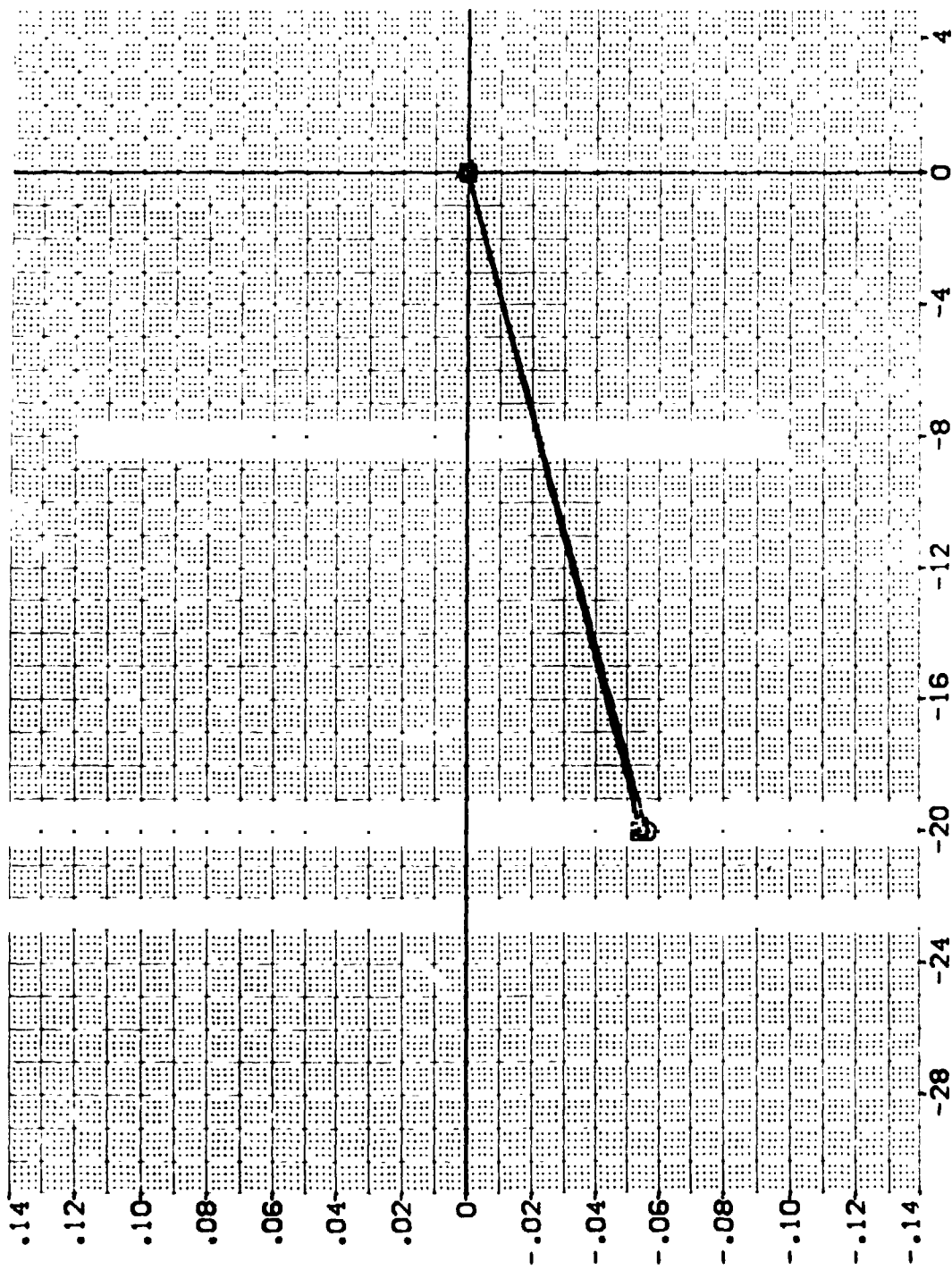


FIG 27 RUDDER EFFECTIVENESS, SPEEDBRAKE BASE SEALED, SPDBRK = 25 DEG.

0A110 861C11F12M51W124E40V21R15X29 (DF5055)

SYMBOL	BETA	MACH	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
○	-1.000	.200	ALPHA	RUDDER	SREF
□	-2.000	.000	AILRON	DATASET	LREF
◇	.000	25.000	BDL/P	DF5055	BREF
△	2.000			-20.000	XRRP
△	4.000			-17.000	ZRRP
					SCALE
					4.4119
					19.2299
					37.5359
					43.5974
					.0000
					15.1875
					.0405
					SCALE



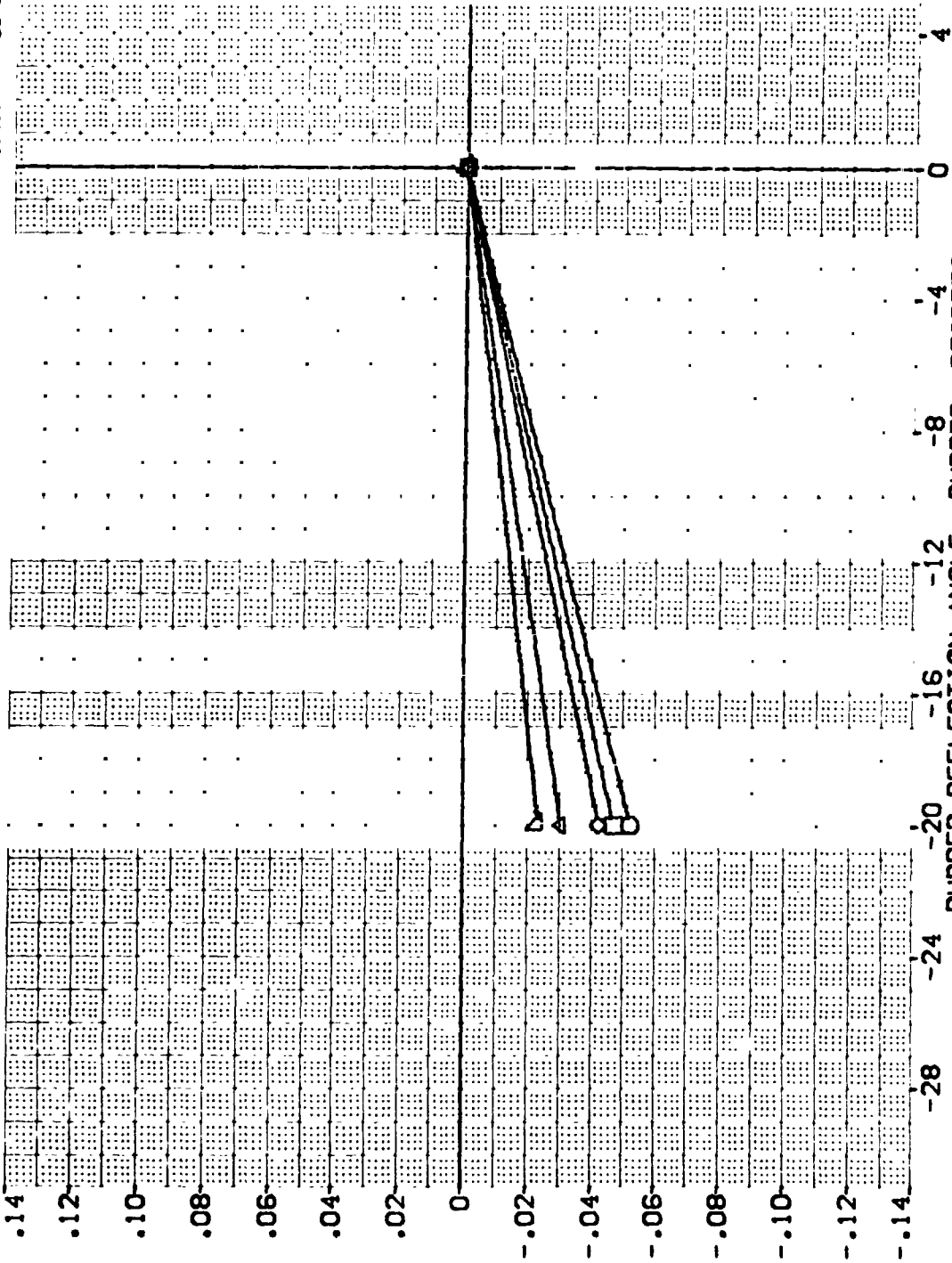
INCREMENTAL SIDE FORCE COEFFICIENT, DCY

FIG 27 RUDDER EFFECTIVENESS, SPEEDBRAKE BASE SEALED, SPDBRK = 25 DEG.



0A110 B61C11F12M51W124E40V21R15X29 (DF50F5)

BETA	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
6.000	.200 ALPHA	RUDDER	50.FT
8.000	.000 AILRON	DATASET DF5056	INCHES
10.000	25.000 BOFLAP	RUDDER .000	INCHES
12.000		DATASET DF5055	INCHES
14.000		RUDDER -20.000	INCHES
		DATASET DF5056	SCALE
			4.4119
			19.2289
			37.9359
			43.5974
			.0000
			15.1875
			.0405



INCREMENTAL SIDE FORCE COEFFICIENT, DCY

FIG 27 RUDDER EFFECTIVENESS, SPEEDBRAKE BASE SEALED, SPD3RK = 25 DEG.

0A110 B61C11F12M51W124E40V21R15X29 (DF5055)

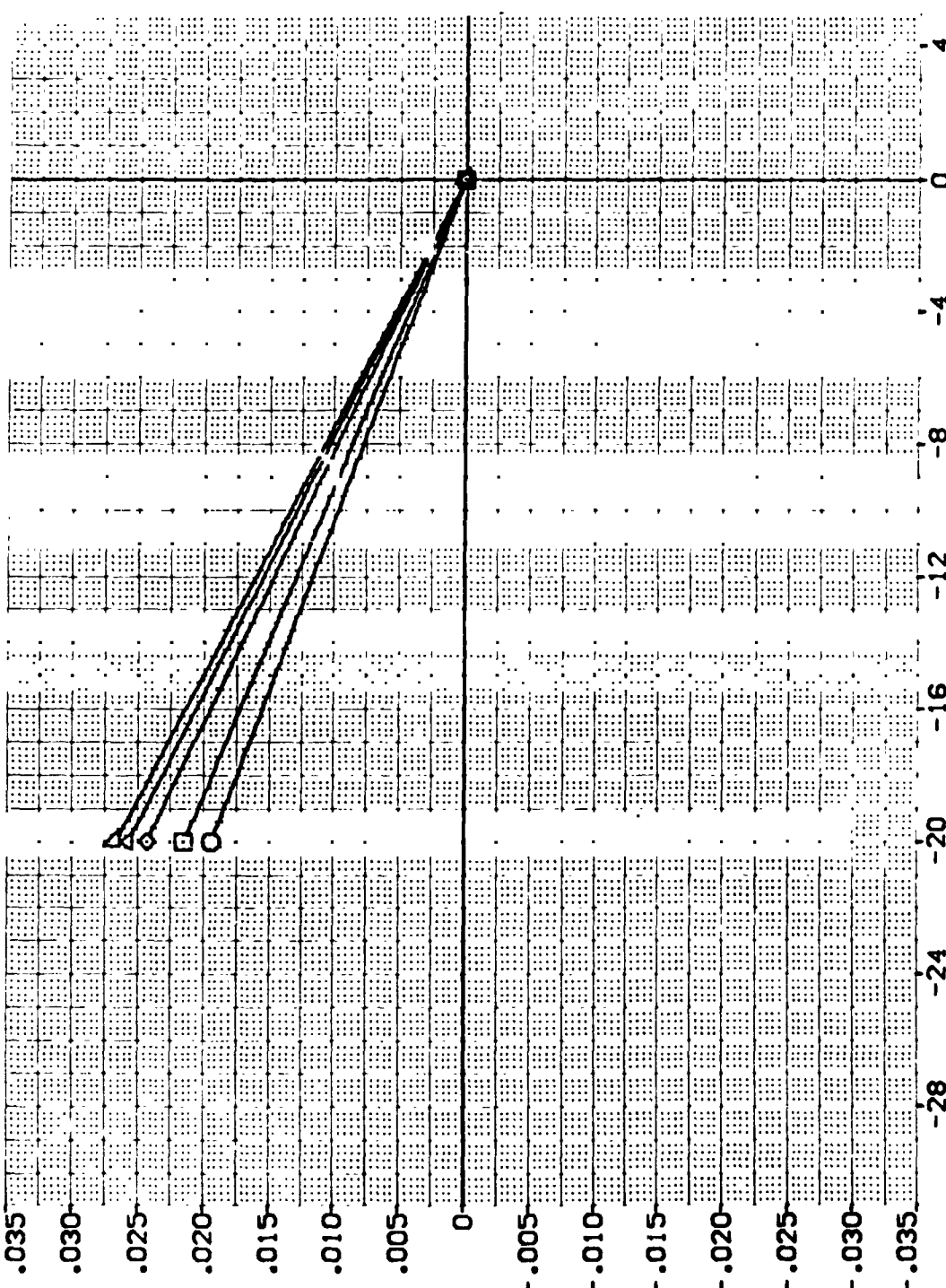
REFERENCE INFORMATION
 SO. FT. 4.4119
 INCHES 19.2253
 INCHES 37.9359
 INCHES 43.5974
 INCHES .0000
 INCHES 15.1875
 INCHES .0405
 SCALE

DATA SOURCE
 DATASET DF5055
 RUDDER -20.000
 RUDDER .000

PARAMETRIC VALUES
 MACH .200
 ALPHA .000
 AILRON 25.000
 ELEVON .000
 SPD BRK -12.000
 SPD BRK -12.000

BETA -14.000
 ELEVON -12.000
 SPD BRK -10.000
 SPD BRK -8.000
 SPD BRK -6.000

SYMBOL
 □
 ◇
 △



INCREMENTAL YAWING MOMENT COEFFICIENT, DCYN

FIG 27 RUDDER EFFECTIVENESS, SPEEDBRAKE BASE SEALED, SPD BRK = 2 DEG.



(DF5055)

0A110 B61C11F12M51W124E40V21R15X29

SYMBOL	BETA	MACH	ELEVON	SPOBRK	PARAMETRIC VALUES	10.000	DATASET	DF5055	RUDDER	-20.000	DATA SOURCE	DATASET	DF5055	RUDDER	.000	SREF	4.4119	SO.FT.
○	-4.000	.200	.000	25.000	ALPHA	.000	DF5055	.000	-20.000	RUDDER	DF5055	REF	19.2298	REF	.000	19.2298	INCHES	
□	-2.000	.000	.000	25.000	AIRLN	.000	DF5055	.000	-20.000	RUDDER	DF5055	REF	37.5359	REF	.000	37.5359	INCHES	
◇	.000	.000	.000	25.000	BDFLAP	-12.000	DF5055	.000	-20.000	RUDDER	DF5055	REF	43.5874	REF	.000	43.5874	INCHES	
△	2.000	.000	.000	25.000	BDFLAP	-12.000	DF5055	.000	-20.000	RUDDER	DF5055	REF	.0000	REF	.0000	.0000	INCHES	
△	4.000	.000	.000	25.000	BDFLAP	-12.000	DF5055	.000	-20.000	RUDDER	DF5055	REF	15.1875	REF	.0000	15.1875	INCHES	
																.0405	SCALE	

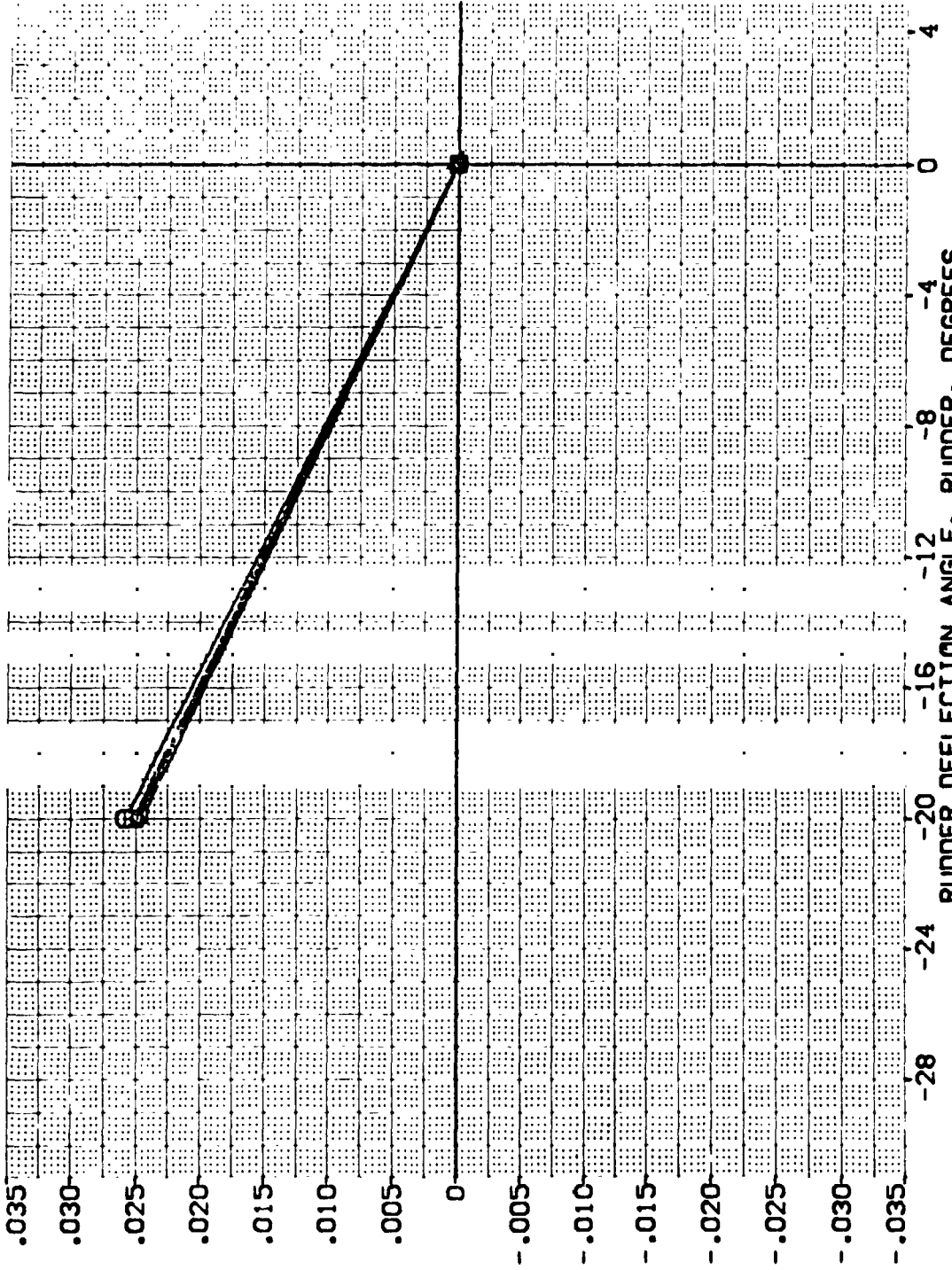
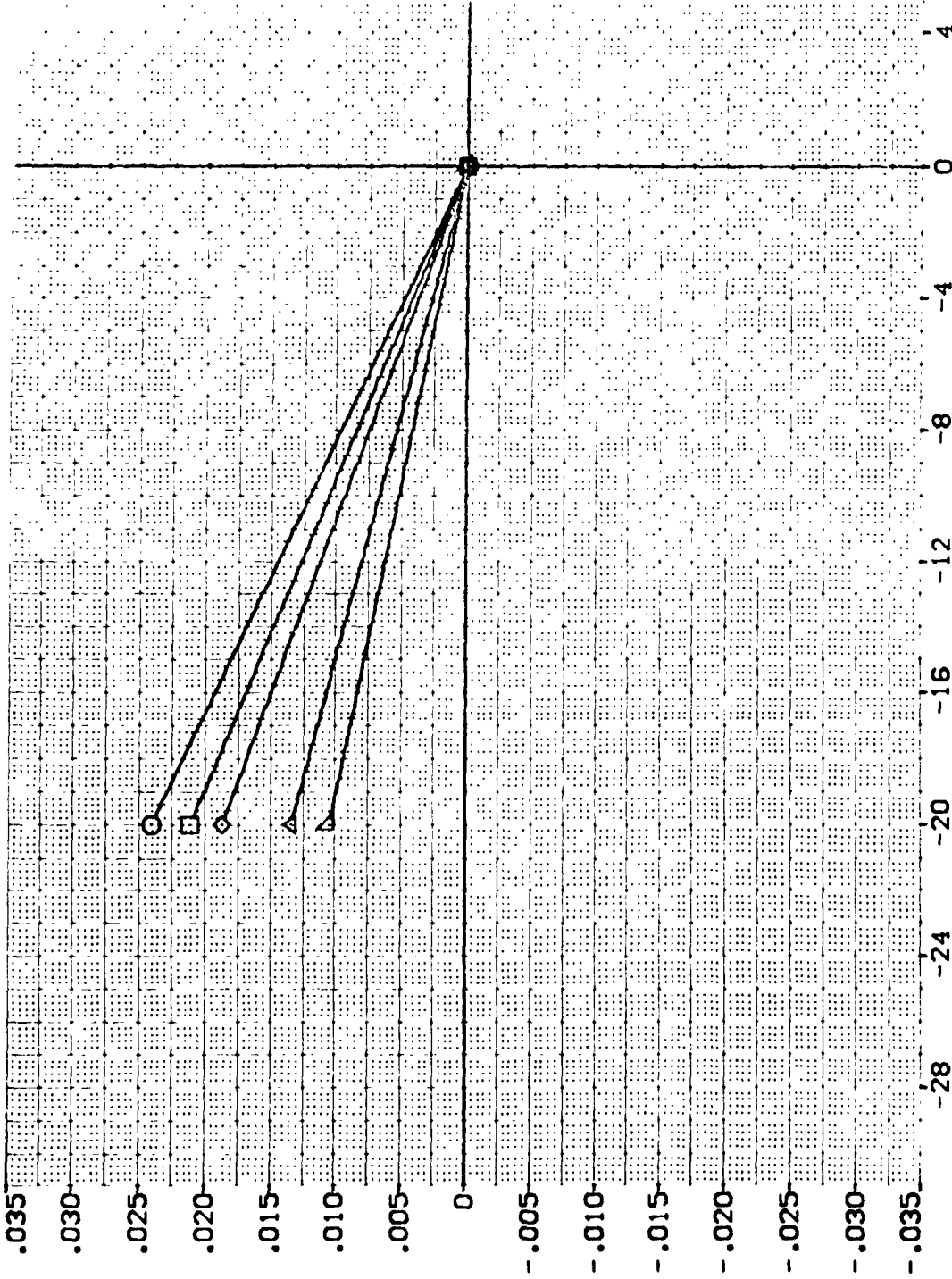


FIG 27 RUDDER EFFECTIVENESS, SPEEDBRAKE BASE SEALED, SPOBRK = 25 DEG.

(DF5055)

0A110 B61C11F12M51W124E40V21R15X29

SYMBOL		BETA		MACH		ELEVON		SPOBRK		PARAMETRIC VALUES		DATA SOURCE		RUDDER		DATASET		RUDDER		SREF		REFERENCE INFORMATION							
○	□	6.000	8.000	0.200	0.000	0.000	0.000	25.000	0.000	ALPHA	10.000	0.000	DF5055	-20.000	0.000	DF5055	4.4119	19.2289	37.9359	43.5574	15.0000	15.1875	SO.FT. INCHES	INCHES	INCHES	INCHES	INCHES	INCHES	SCALE
◇	△	10.000	12.000	0.000	0.000	0.000	0.000	0.000	0.000	AIRLON	0.000	DF5055	-20.000	0.000	DF5055	19.2289	37.9359	43.5574	15.0000	15.1875	SO.FT. INCHES	INCHES	INCHES	INCHES	INCHES	INCHES	SCALE		
◇	△	12.000	14.000	0.000	0.000	0.000	0.000	0.000	0.000	BDFLAP	-12.000	DF5055	-20.000	0.000	DF5055	37.9359	43.5574	15.0000	15.1875	SO.FT. INCHES	INCHES	INCHES	INCHES	INCHES	INCHES	SCALE			



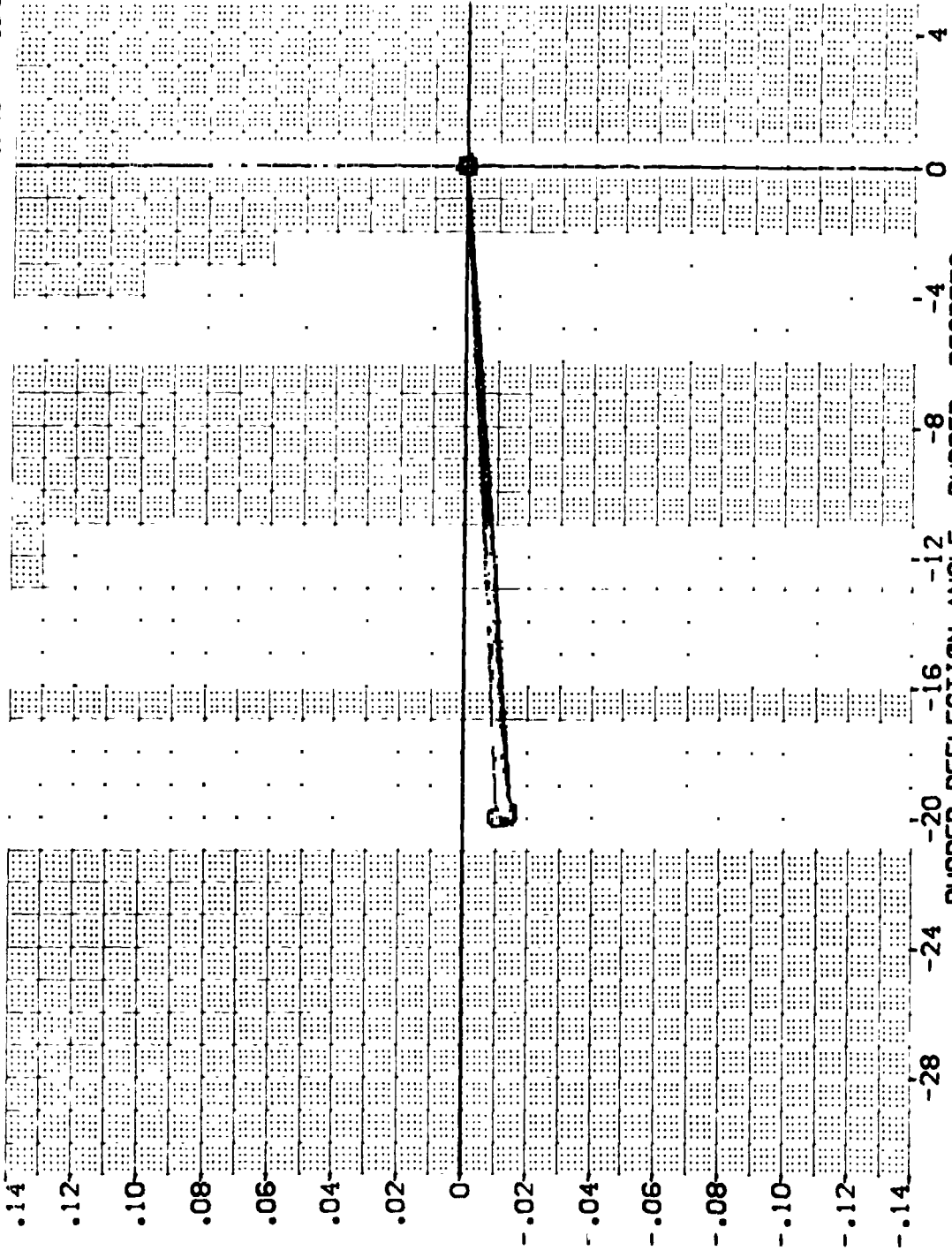
INCREMENTAL YAWING MOMENT COEFFICIENT, DCYN

FIG 27 RUDDER EFFECTIVENESS, SPEEDBRAKE BASE SEALED, SPOBRK = 25 DEG.



0A110 861C11F12M51W124E40V21R15X29 (DF5055)

SYMBOL	BETA	MACH	ELEVON	SPDBRK	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
○	-14.000	.200	ALPHA	10.000	DATASET	RUDDER	SREF
□	-12.000	.000	AILRON	.000	DF5055	.000	LREF
◇	-10.000	25.000	BOFLAP	-12.000			XREF
△	-8.000						YREF
▽	-6.000						ZREF
							SCALE
							4.4118
							19.2299
							37.5359
							43.5974
							.0000
							15.1875
							.0400
							SCALE



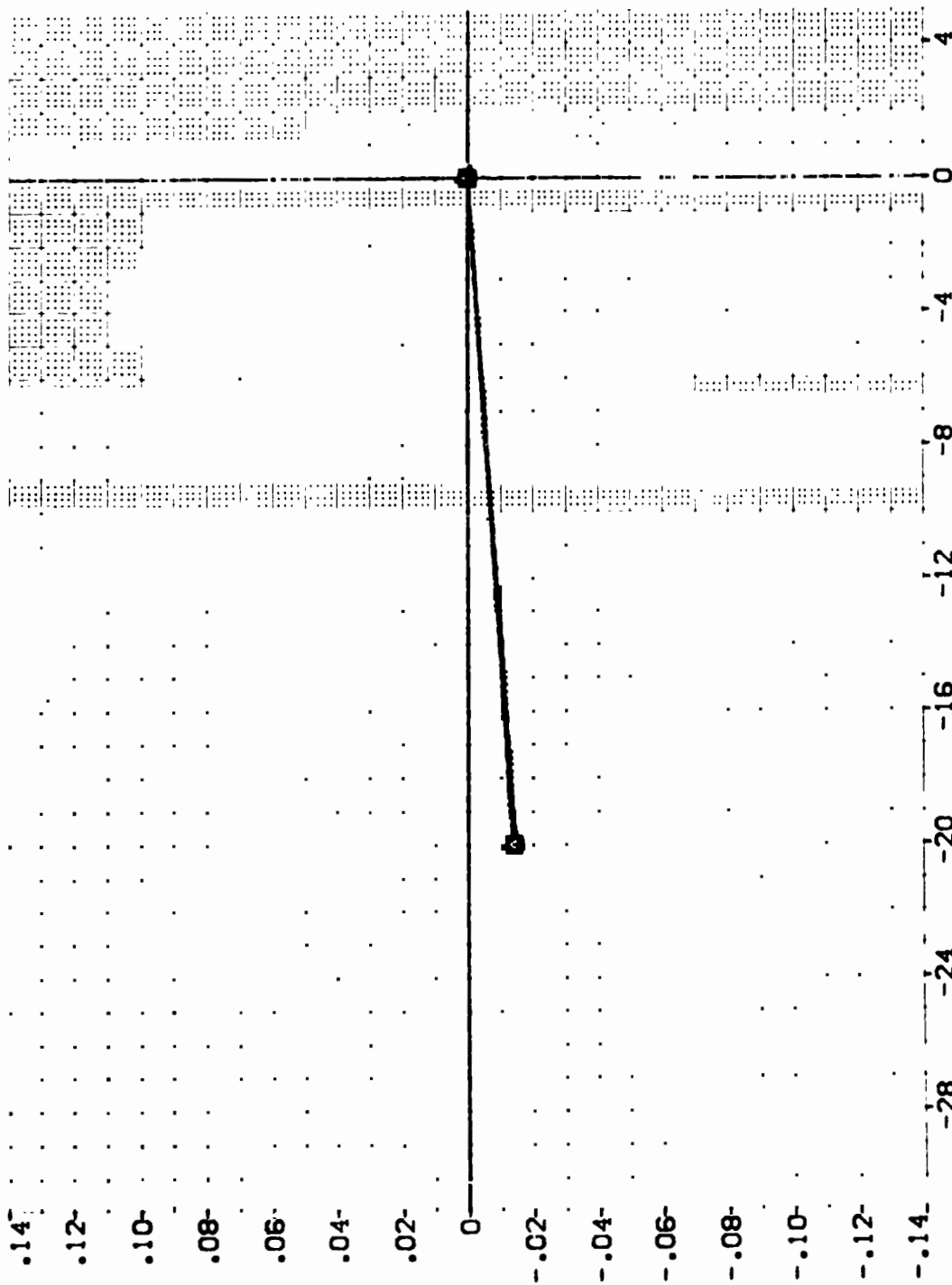
INCREMENTAL ROLLING MOMENT COEFFICIENT, CRL

FIG 27 RUDDER EFFECTIVENESS, SPEEDBRAKE BASE SEALED, SPDBRK = 25 DEG.

(DF5055)

CA110 B61C11F12MS1W124E40V21R15X29

SYMBOL	BETA	MCH	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
○	-4.000	ELEVON	.200 ALPHA	RUDDER	4.4119 SQ.FT
□	-2.000	ELEVON	.000 AILRON	RUDDER	19.2258 INCHES
◇	.000	SPOBRK	25.000 BOFLAP	RUDDER	37.5359 INCHES
△	2.000		-12.000	RUDDER	43.5974 INCHES
	4.000			RUDDER	.0000 INCHES
				RUDDER	15.1875 INCHES
				RUDDER	.0405 SCALE



INCREMENTAL ROLLING MOMENT COEFFICIENT, CQR

FIG 27 RUDDER EFFECTIVENESS, SPEEDBRAKE BASE SEALED, SPOBRK = 25 DEG.



DATA SET SYMBOL CONFIGURATION DESCRIPTION
 {P7011} 0 0A110 0B1C1F12-01V1Z1E40V10R1S0C0
 {P7000} 0 0A110 0B1C1F12-01V1Z1E40V10R1S0C0

ELEVON	A110N	RUDDER	SPOILER	REFERENCE INFORMATION
.000	.000	.000	25.000	0REF 4.4119 90.FT
.000	.000	.000	25.000	L1REF 19.2299 INO-E3
				L2REF 37.9099 INO-E3
				XTRP 43.5974 INO-E3
				YTRP .0000 INO-E3
				ZTRP 15.1875 INO-E3
				SCALE .0405 SCALE

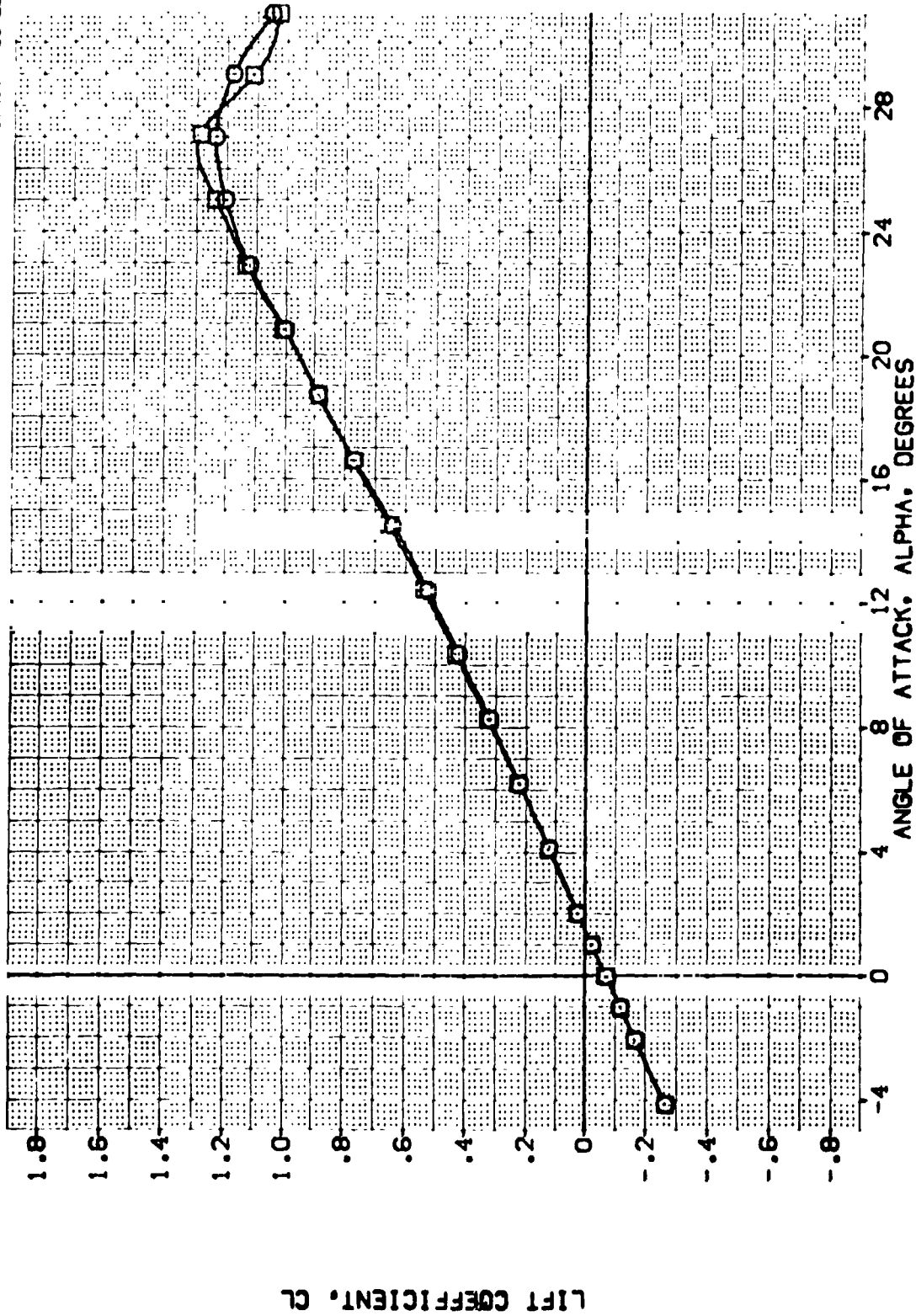


FIG 28 LONGITUDINAL EFFECT OF WING TIP CONFIGURATION, BOFLAP = -11.7 DEG.

(A)MACH = .20



DATA SET SYMBOL: 0110 BASIC11F1251V125E40V18R15K28
 {E73011} 0110 BASIC11F1251V125E40V18R15K28
 {E73058} 0110 BASIC11F1251V125E40V18R15K28

ELEVON AILRON FLUDER SPDRBK REFERENCE INFORMATION

ELEVON	AILRON	FLUDER	SPDRBK	SREF	1-A119	50-FT
.000	.000	.000	25.000	LREF	19.2288	INCHES
.000	.000	.000	25.000	BREF	37.8568	INCHES
				XMRP	43.9574	INCHES
				YMRP	.0000	INCHES
				ZMRP	15.1675	INCHES
				SCALE	.0405	SCALE

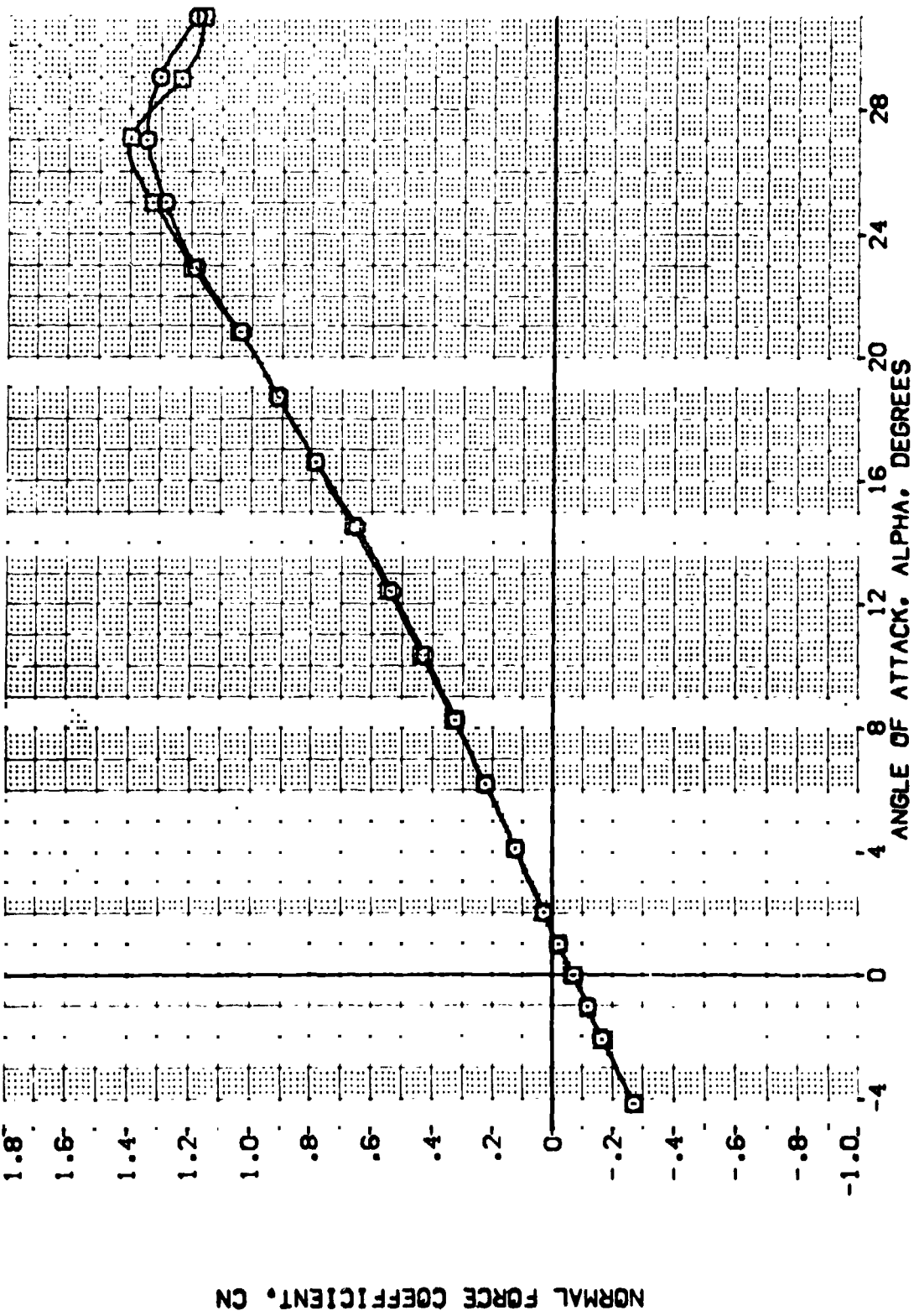


FIG 28 LONGITUDINAL EFFECT OF WING TIP CONFIGURATION, BDFLAP = -11.7 DEG.

DATA SET SYMBL. CONFIGURATION DESCRIPTION
 {E-3011} B 0A110 BSIC11F12S1V12AE40V18R15C28
 {E-3058} B 0A110 BSIC11F12S1V12E40V18R15C28

ELEVON ALUDON FLUDER SPOBRK
 .000 .000 .000 25.000
 .000 .000 .000 25.000

REFERENCE INFORMATION
 SREF 4.4119 59. FT. INCHES
 LREF 19.2288 INCHES
 BREF 37.5258 INCHES
 XPRP 43.5974 INCHES
 YPRP .0000 INCHES
 ZPRP 15.1875 INCHES
 SCALE .0405 SCALE

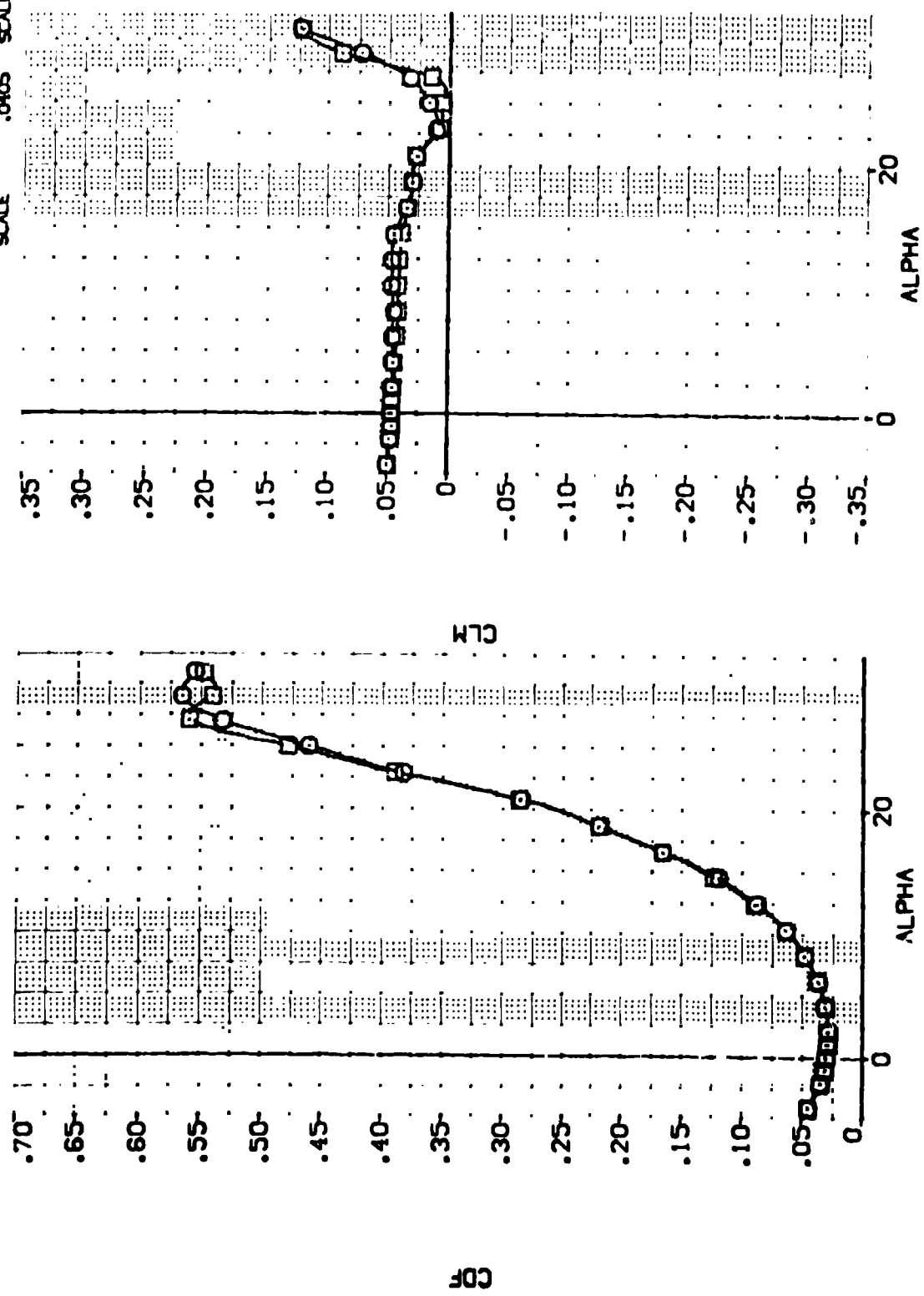


FIG 28 LONGITUDINAL EFFECT OF WING TIP CONFIGURATION, BDFLAP = -11.7 DEG.
 (A)MACH = .20

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 {E75011} □ 0110 661C11F1261V124E40V18R15C28
 {E75056} □ 0110 661C11F1261V125E40V18R15C28

ELEVON AILRON RUDDER SPOBRK
 .000 .000 .000 25.000
 .000 .000 .000 25.000

REFERENCE INFORMATION
 SREF 4.4119 SQ.FT. INCHES
 LREF 18.2259 INCHES
 BREF 37.9359 INCHES
 XMRP 43.5974 INCHES
 YMRP .0000 INCHES
 ZMRP 15.1875 INCHES
 SCALE .0465 SCALE

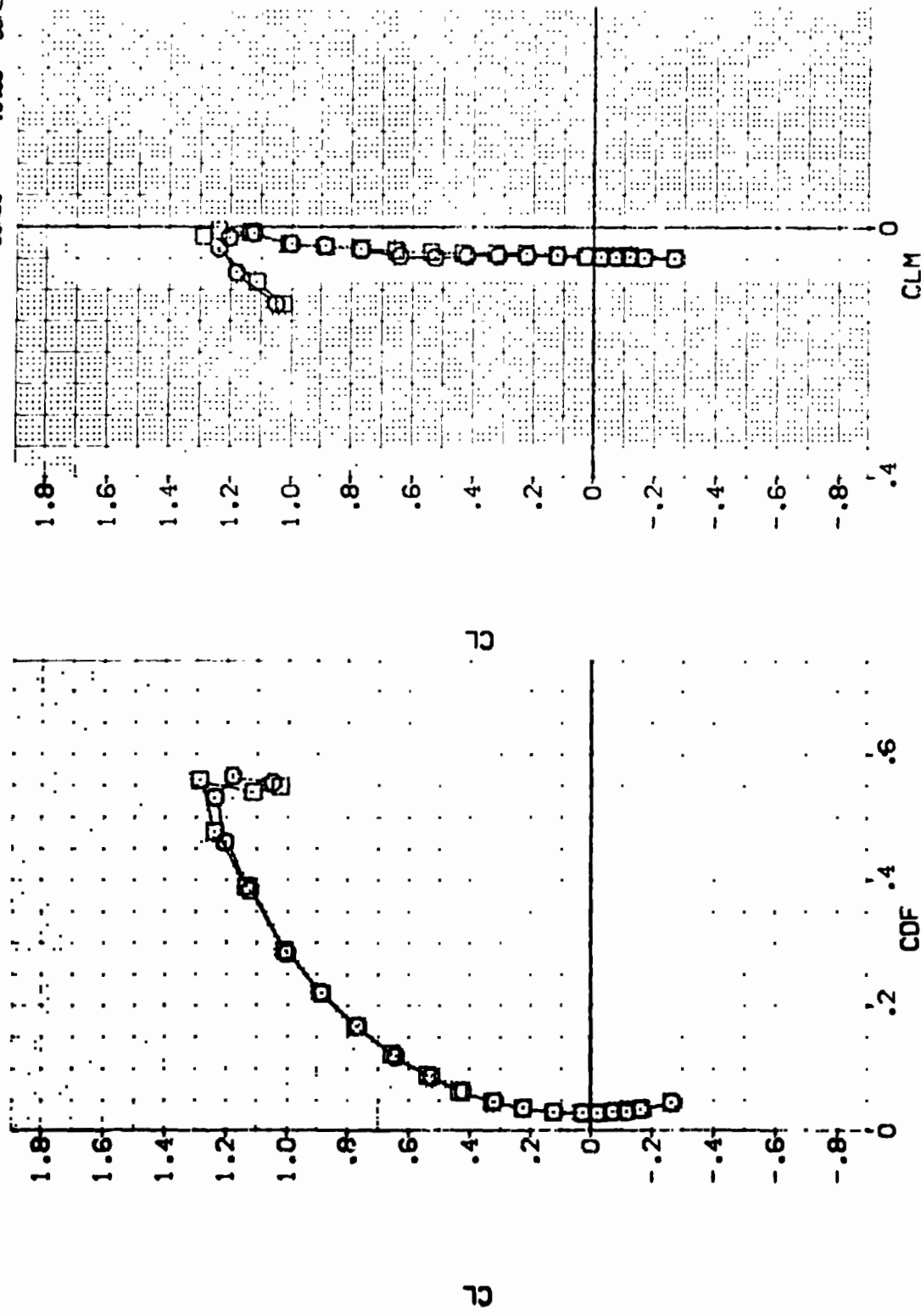


FIG 28 LONGITUDINAL EFFECT OF WING TIP CONFIGURATION, BDFLAP = -11.7 DEG.

(A)MACH = .20

DATA SET SYMB. CONFIGURATION DESCRIPTION

{E3011}	0A110	DSIC11F12S1V12AE40V1SR15028
{E3058}	0A110	BS11F12S1V12SE40V1SR15028

ELEVON .000 .000

AILRON .000 .000

RUDDER .000 .000

SPDRK 25.000 25.000

REFERENCE INFORMATION

SREF	4.4119	50.FT.
LREF	19.2289	INCHES
BREF	37.9359	INCHES
XTRP	43.5674	INCHES
YTRP	.0000	INCHES
ZTRP	15.1875	INCHES
SCALE	.0405	SCALE

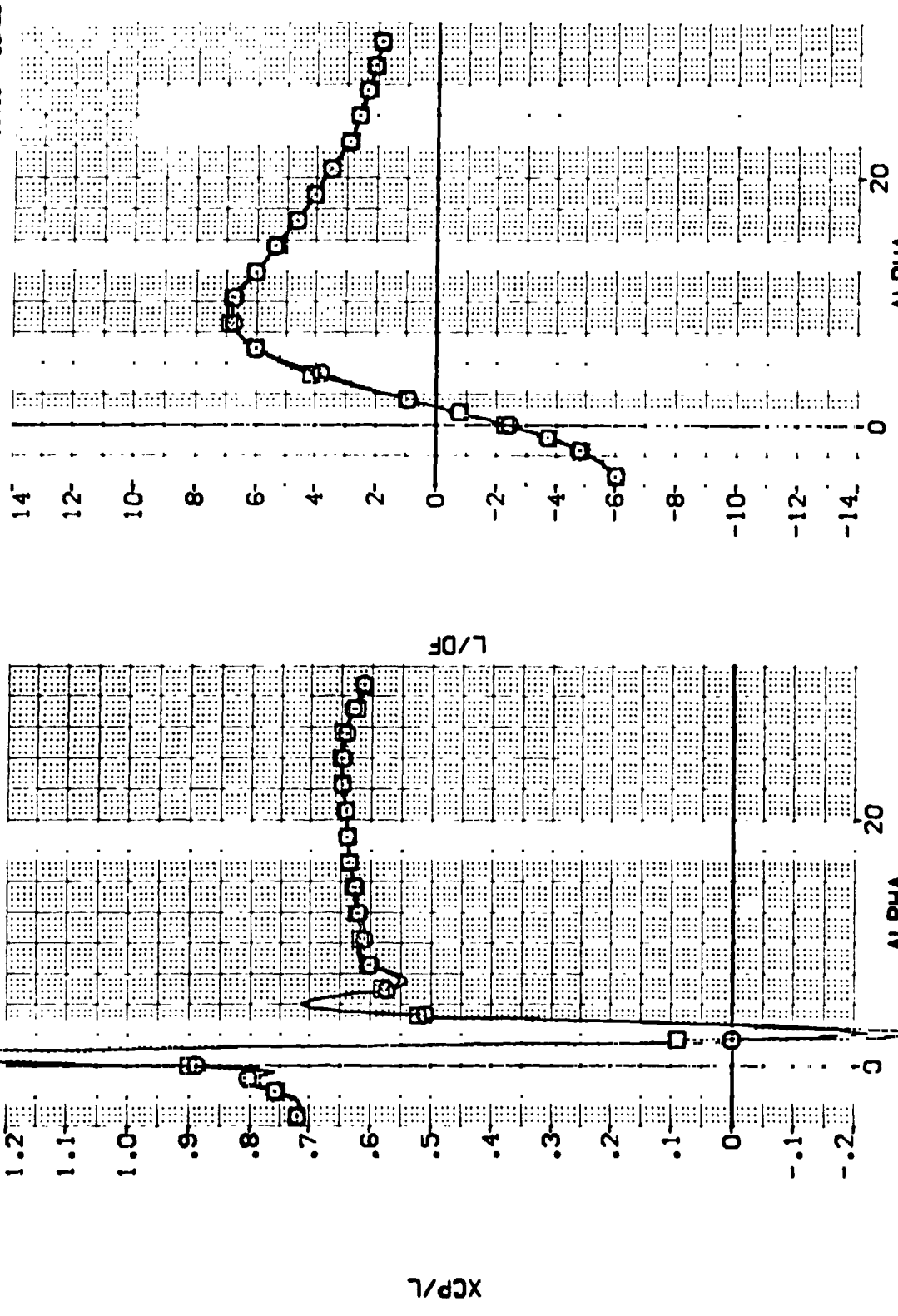


FIG 28 LONGITUDINAL EFFECT OF WING TIP CONFIGURATION, BDFLAP = -11.7 DEG.
 CAJ MACH = .20

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (R5028) 0A110 BS1C1F12P51V124E40V1SR15X28
 (R5059) 0A110 BS1C1F12P51V125E40V1SR15X29

ALPHA RUDDER SPEEDK
 10.000 .000 25.000
 10.000 .000 25.000

AILRON REFERENCE INFORMATION
 .000 SREF 4.4119 SQ.FT.
 .000 LREF 19.2299 IN.-ES
 .000 XREF 37.9359 IN.-ES
 .000 YREF 43.5974 IN.-ES
 .000 ZREF 0.0000 IN.-ES
 .000 SCALE 15.1875 IN.-ES
 .0405 SCALE

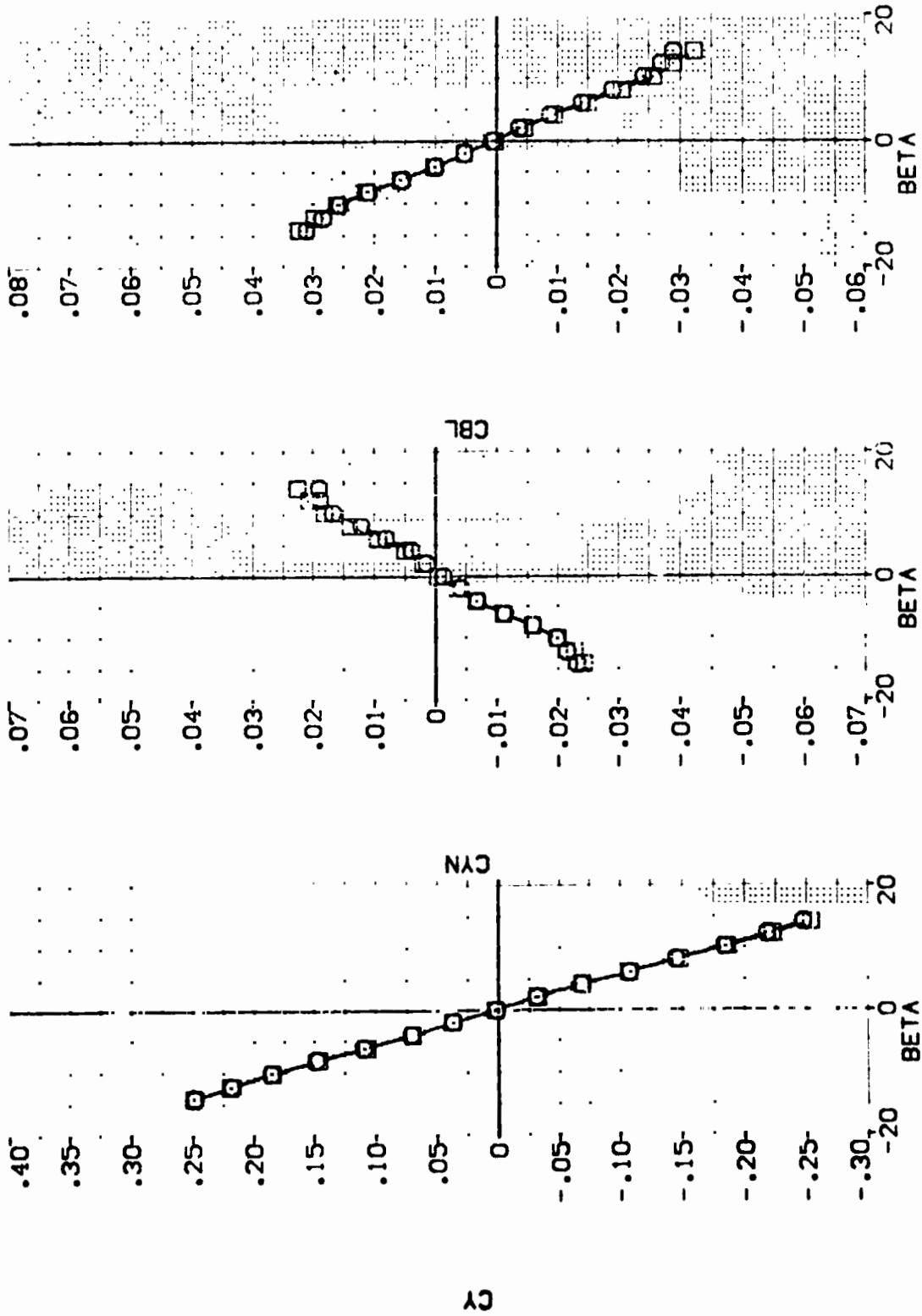


FIG 29 LATERAL/DIRL EFFECT OF WING TIP CONFIGURATION, BDFLAP = - 11.7 DEG.
 (A)MACH = .20



DATA SET SYMBO. CONFIGURATION DESCRIPTION
 (R-5063) O CA110 BS1C1F12S1V124E40V20R1S1C8
 (R-5062) X CA110 BS1C1F12S1V124E40V20R1S1C8
 (R-5061) O CA110 BS1C1F12S1V124E40V20R1S1C8
 (R-5060) X CA110 BS1C1F12S1V124E40V20R1S1C8

ALPHA 10.000 10.000 10.000 10.000
 RUDDER -25.000 -20.000 -10.000 -10.000
 SPOBRK 25.000 25.000 25.000 25.000
 AIRLN 0.000 0.000 0.000 0.000
 REFERENCE INFORMATION
 SREF 4.4119 SO.FT.
 LREF 19.2288 INCHES
 BREF 37.6359 INCHES
 XPRP 43.5974 INCHES
 YPRP 0.0000 INCHES
 ZPRP 15.1875 INCHES
 SCALE .0405 SCALE

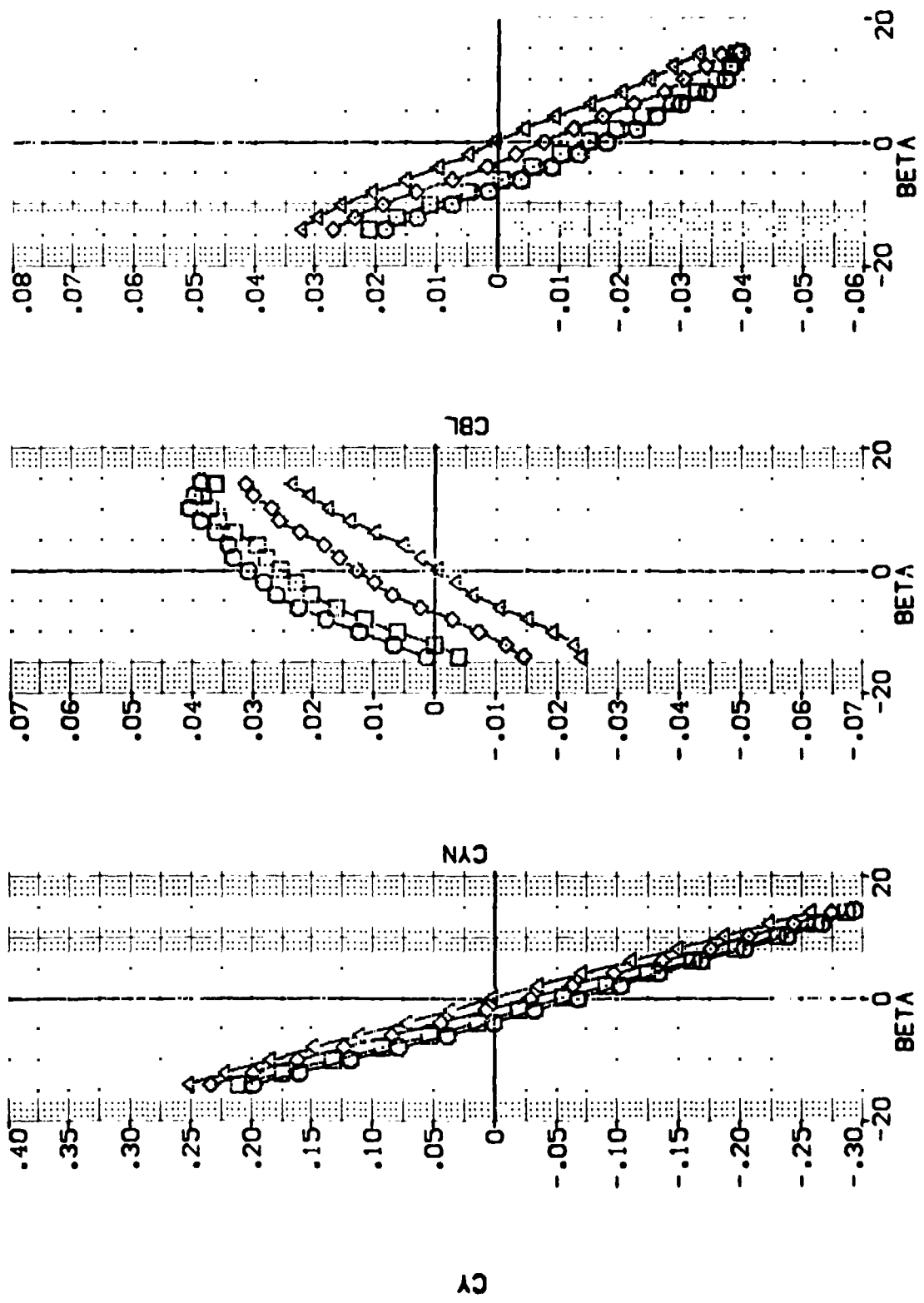


FIG 30 RUDDER EFFECTIVENESS, MODIFIED VERTICAL LE. SPOBRK = 25 DEG.

(MACH = .20

0A110 861C11F12M51W124E40V20R15X29

(DF5063)

SYMBOL		PARAMETRIC VALUES				DATA SOURCE				REFERENCE INFORMATION				
□	BETA	-14.000	MACH	.200	ALPHA	10.000	DATASET	DF5062	RUDDER	-20.000	SREF	4.4119	SO.FT.	15.2299
◇	ELEVON	-10.000	SPDBRK	25.000	AIRLON	.000	DF5063	-25.000	REF	.000	LREF	37.5359	INCHES	37.5359
△		-8.000			BDFLAP	-12.000	DF5061	-10.000	REF	.000	YPRP	43.5574	INCHES	43.5574
▽		-6.000							REF	.000	ZPRP	15.1875	INCHES	15.1875
									SCALE	.0405	SCALE		SCALE	.0405

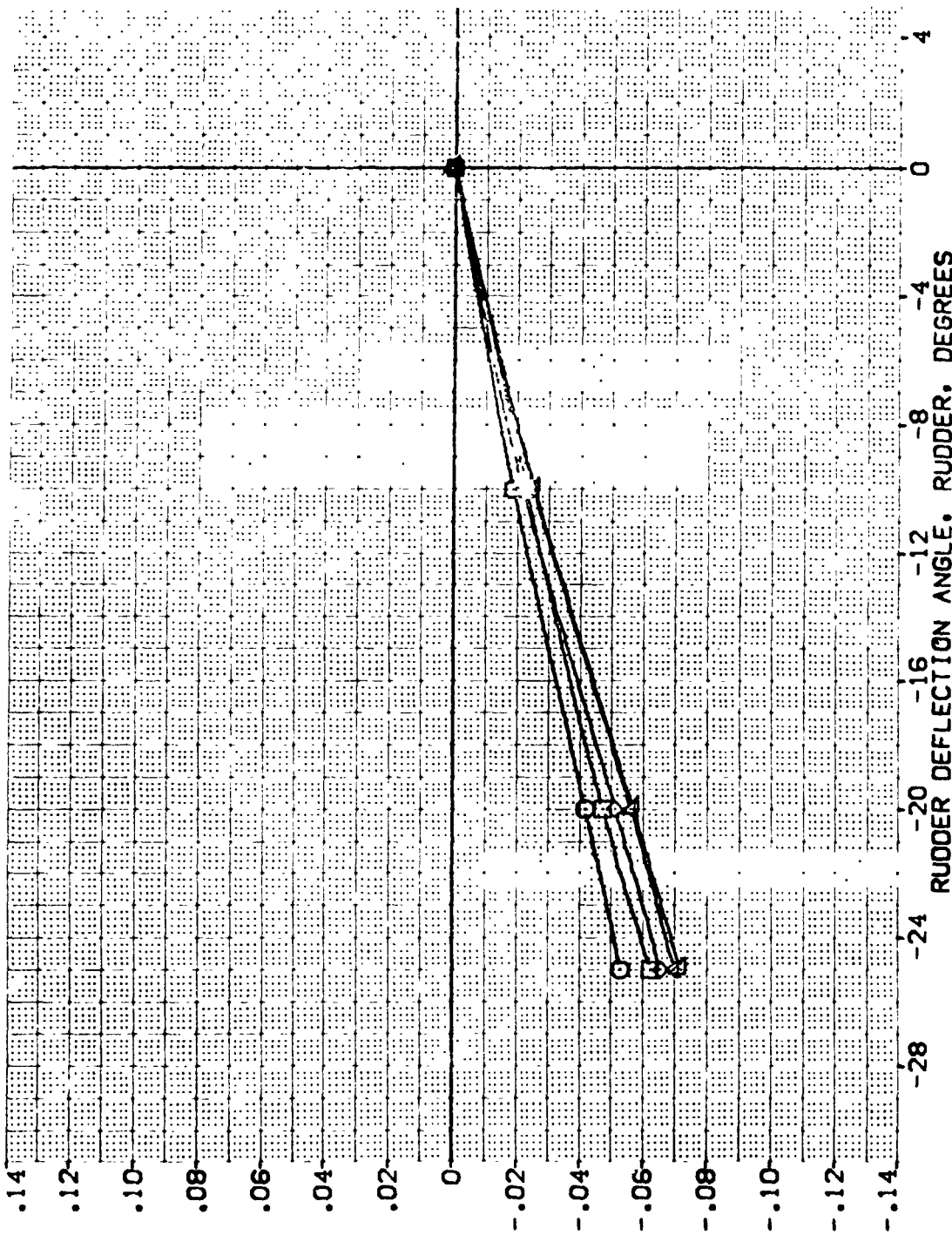


FIG 30 RUDDER EFFECTIVNESS, MODIFIED VERTICAL LE, SPDBRK = 25 DEG.



0A110 861C11F12M51W124E40V20R15X29 (DF5063)

PARAMETRIC VALUES		DATA SOURCE		REFERENCE INFORMATION	
BETA	MACH	ALPHA	RUDDER	SREF	SO.FT.
-4.000	.200	10.000	10.000	4.4119	INCHES
-2.000	.000	.000	-25.000	19.2299	INCHES
.000	AILRON	DF5063	-10.000	37.9359	INCHES
2.000	EDFLAP	-12.000	DF5062	43.5974	INCHES
4.000	SPDBRK	DF5061	DF5060	.0000	INCHES
				15.1875	SCALE
				.0405	SCALE

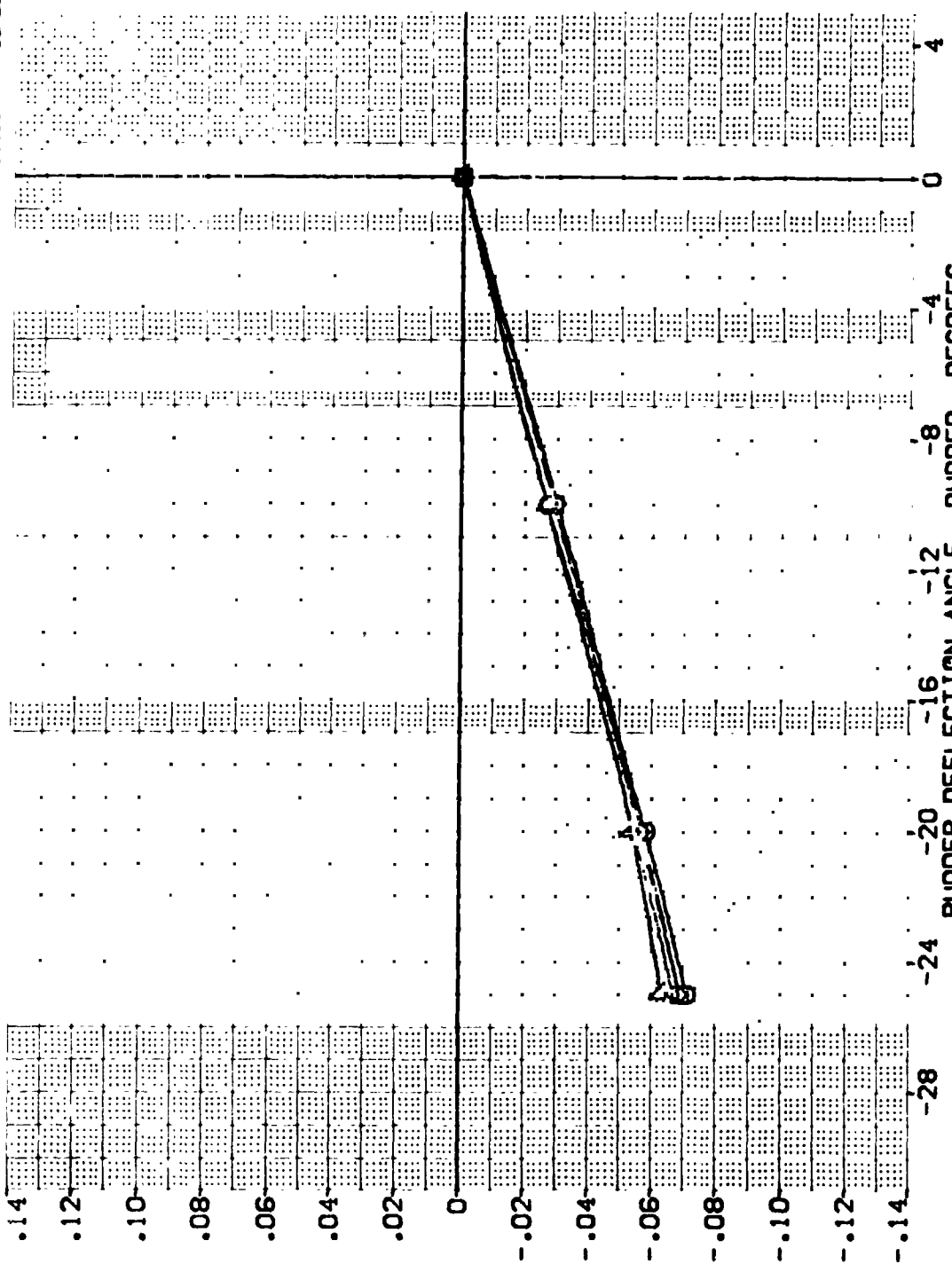
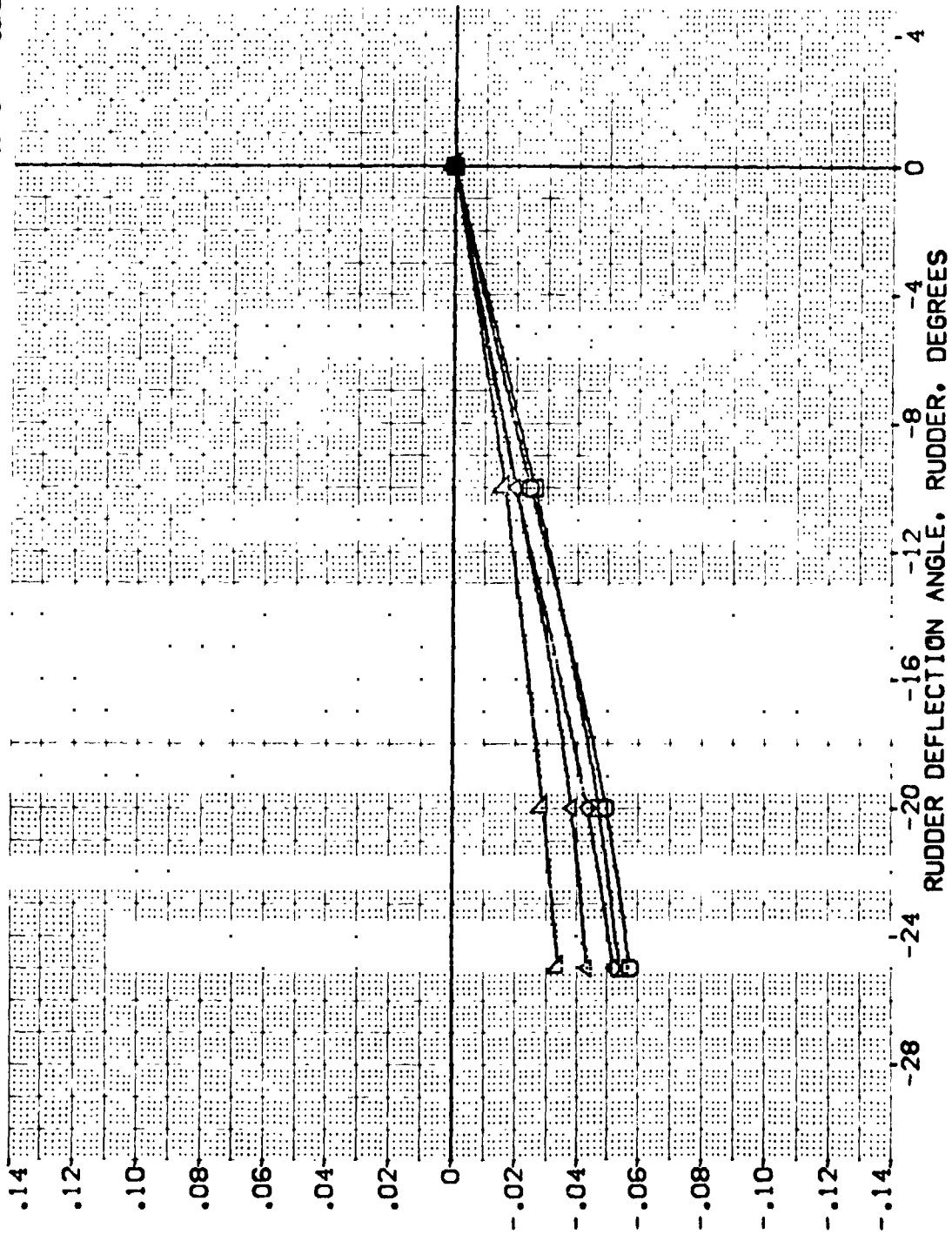


FIG 30 RUDDER EFFECTIVENESS, MODIFIED VERTICAL LE, SPDBRK = 25 DEG.

0A110 B61C11F12M51W124E40V20R15X29 (DF5063)

SYMBOL	BETA	MACH	PARAMETRIC VALUES	DATA SOURCE	RUDDER	DATASET	RUDDER	SREF	REFERENCE INFORMATION
○	8.000	ELEVON	.200 ALPHA	RUDDER	-25.000	DF5062	-20.000	LREF	4.4119 SQ.FT.
◇	10.000	SPDBRK	.000 AILRON	-10.000	-10.000	DF5063	.000	RREF	19.2298 INCHES
△	12.000		25.000 BOFLAP			DF5061		XTRP	37.9335 INCHES
▽	14.000							ZTRP	43.5974 INCHES
								SCALE	.0000 INCHES
									15.1875 INCHES
									.0405 SCALE



INCREMENTAL SIDE FORCE COEFFICIENT, C_y

FIG 30 RUDDER EFFECTIVENESS, MODIFIED VERTICAL LE, SPDBRK = 25 DEG.



0A110 B61C11F12M51W124E40V20R15X23

(DF5063)

SYMBOL
 □
 ◇
 △

BETA
 -4.000
 -2.000
 .000
 2.000
 4.000

MACH
 ELEVON
 SPDRBK

PARAMETRIC VALUES
 .200 ALPHA
 .000 AILRON
 25.000 BOFLAP

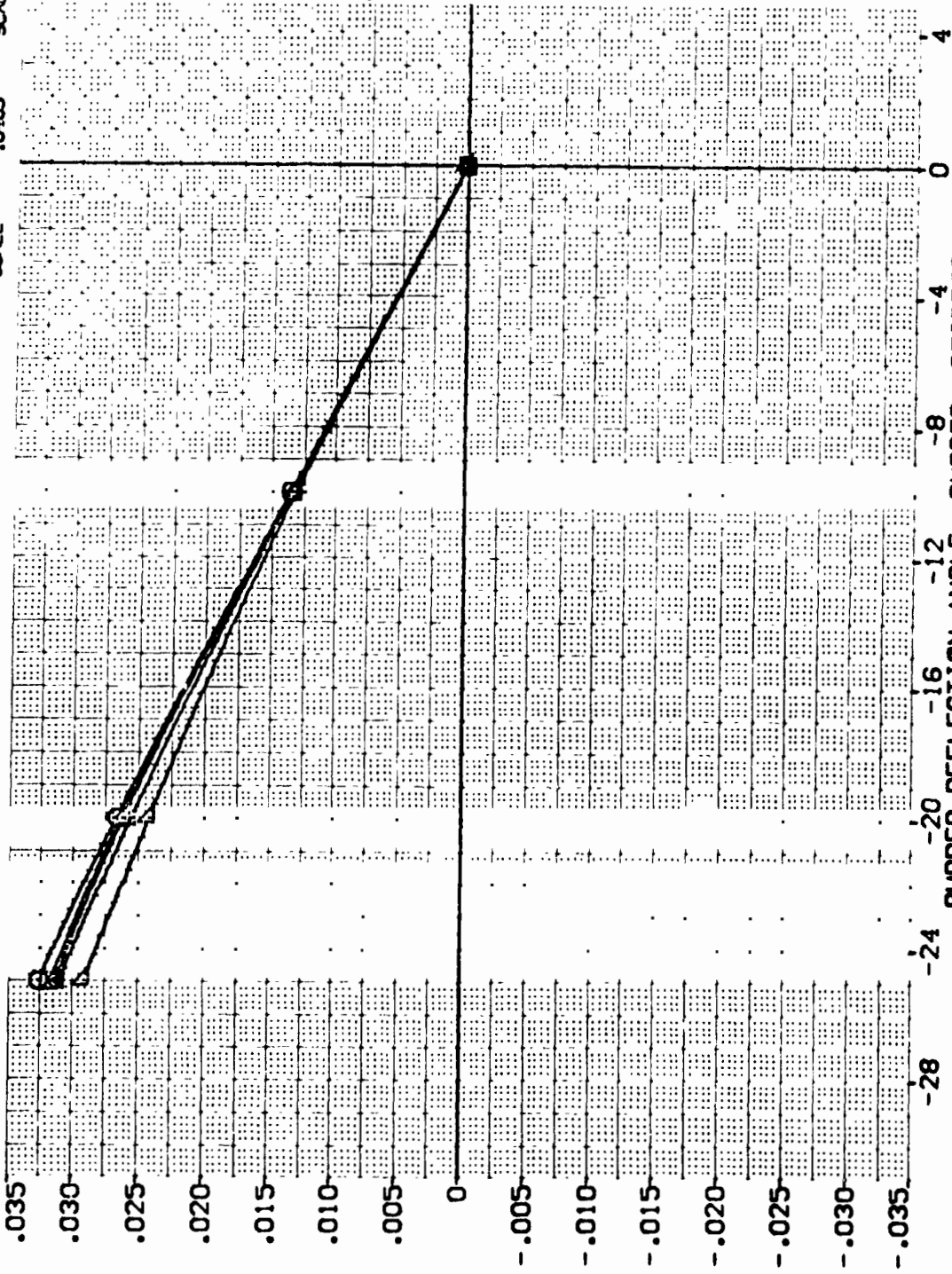
10.000 DATASET
 .10 DF5063
 -12.140 DF5061

DATA SOURCE
 RUDDER
 -25.000
 -10.000

DATASET
 DF5062
 DF5060

RUDDER
 -20.000
 .000

REF. INFORMATION
 4.4119 SQ.FT.
 19.2299 INCHES
 37.5359 INCHES
 43.5974 INCHES
 .0000 INCHES
 15.1875 INCHES
 .0405 SCALE



INCREMENTAL YAWING MOMENT COEFFICIENT, DCYN

RUDDER DEFLECTION ANGLE, RUDDER, DEGREES

FIG 30 RUDDER EFFECTIVENESS, MODIFIED VERTICAL LE, SPDRBK = 25 DEG.

0A110 B61C11F12M51W124E40V20R15X29 (DF5063)

PARAMETRIC VALUES		DATA SOURCE		REFERENCE INFORMATION									
BETA	6.000	MACH	.200	ALPHA	10.000	DATASET	DF5062	RUDDER	-20.000	SREF	4.4119	SO.FT.	19.2299
	8.000	ELEVON	.000	AILRON	.000	DF5063	-25.000		.000	LREF	19.2299	INCHES	37.5359
	10.000	SPDBRK	25.000	BDFLAP	-12.000	DF5061	-10.000		.000	BREF	43.5974	INCHES	.0000
	12.000								.0000	YPRP	15.1875	INCHES	.0000
	14.000								.0405	ZPRP	.0405	INCHES	.0405
										SCALE		SCALE	

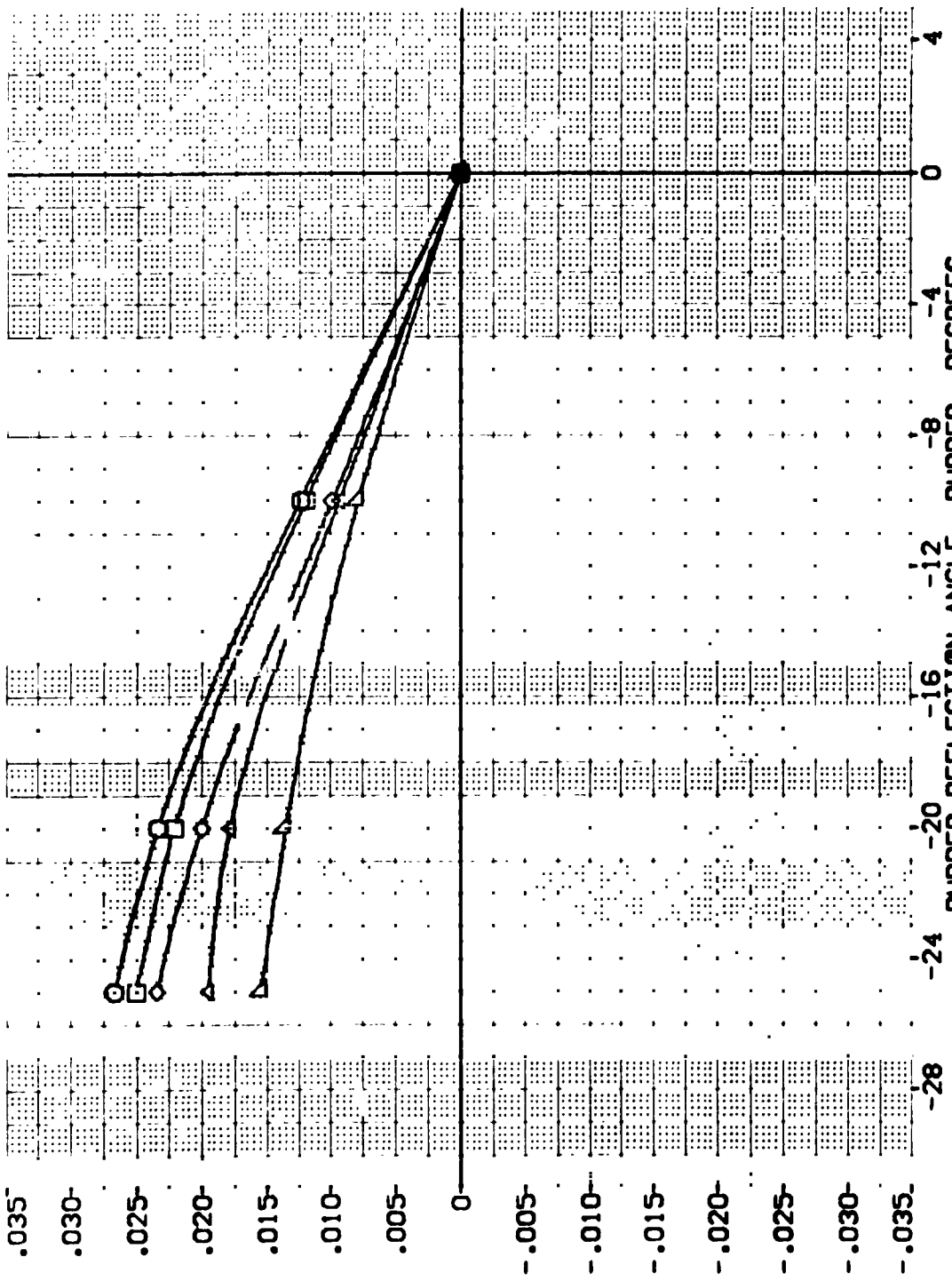


FIG 30 RUDDER EFFECTIVENESS, MODIFIED VERTICAL LE, SPDBRK = 25 DEG.

0A110 B61C11F12M51W124E40V20R15X29 (DF5063)

SYMBOL	BETA	MACH	PARAMETRIC VALUES	DATA SOURCE	DATASET	RUDDER	RUDDER	SHEET	REFERENCE INFORMATION
○	-4.000	.200	ALPHA	10.000	D-5062	-25.000	-20.000	19.2259	SO. FT.
□	-2.000	.000	AIRLON	.000	D-5063	-10.000	.000	37.5359	INO-ES
◇	.000	25.000	BDPLAP	-12.000	D-5061			43.5674	INO-ES
△	2.000							.0000	INO-ES
▽	4.000							15.1875	INO-ES
								.0405	SCALE

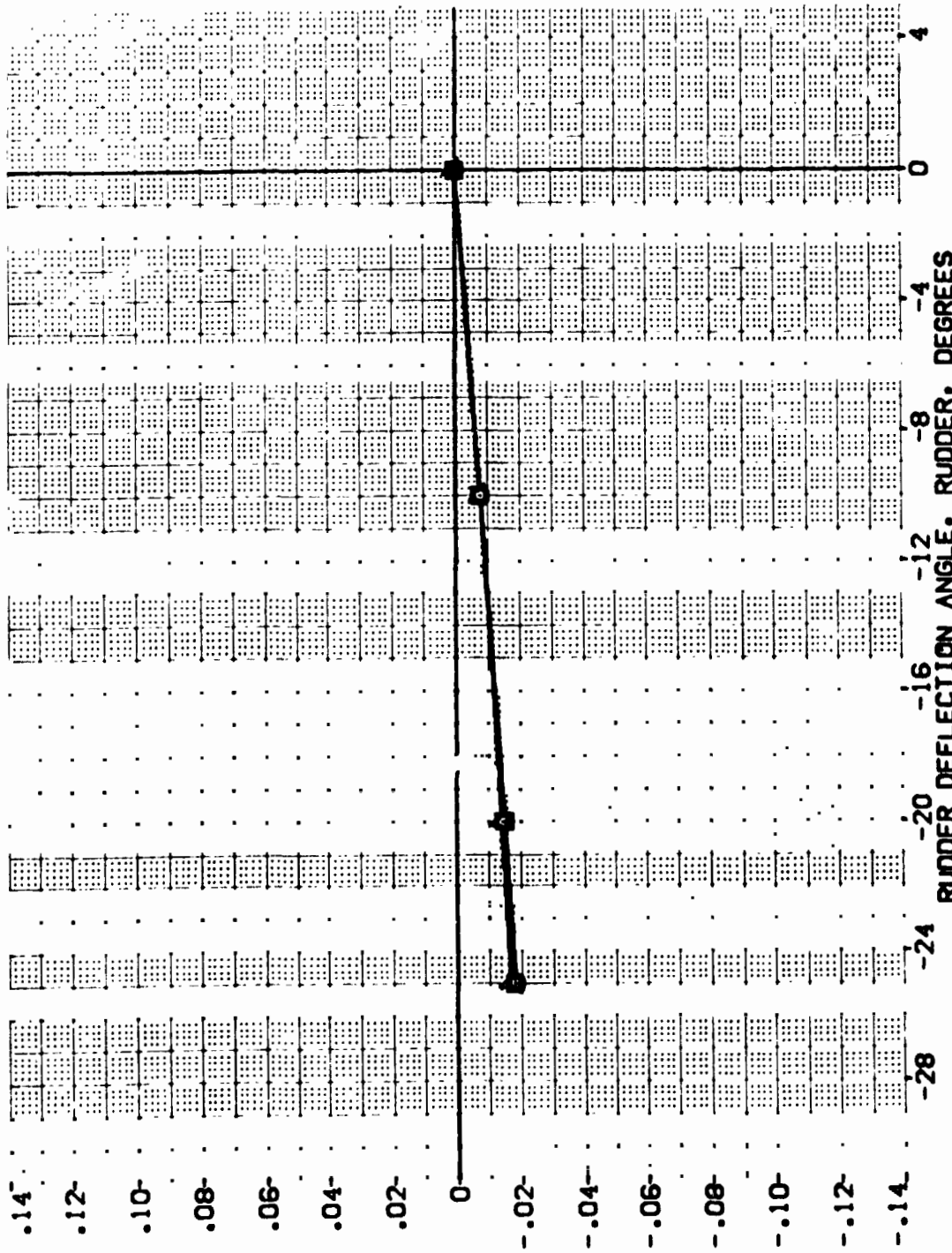


FIG 30 RUDDER EFFECTIVENESS, MODIFIED VERTICAL LE. SPDBRK = 25 DEG.

0A110 B61C11F12M51W124E40V2CR15X29

(DF5063)

SYMBOL
○
□
◇
△

BETA
6.000
8.000
10.000
12.000
14.000

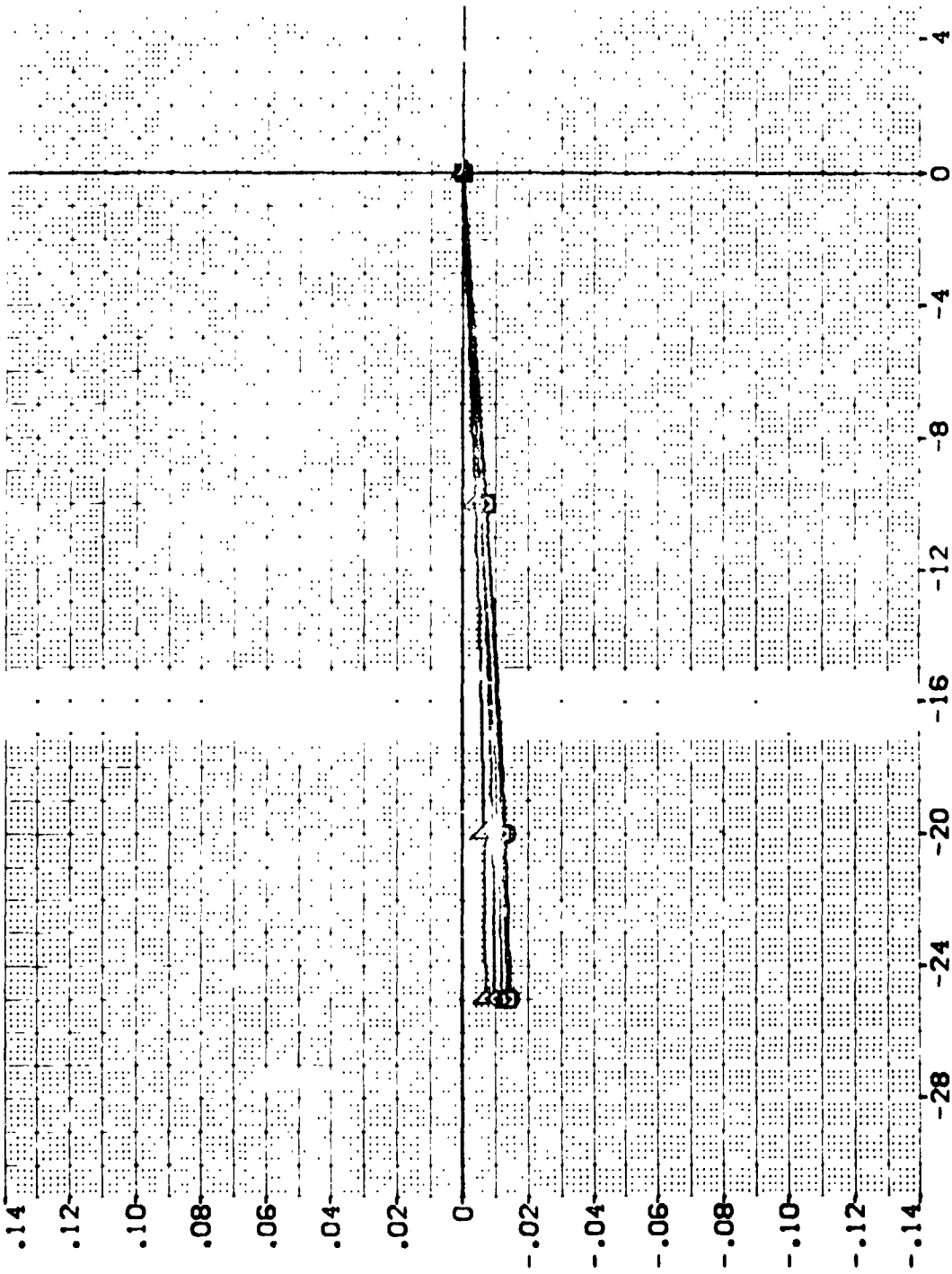
MACH
ELEVON
SPDBRK
25.000
0.000
0.000

PARAMETRIC VALUES
.200 ALPHA
.000 AILRON
25.000 BOFLAP

DATA SOURCE
10.000 DATASET
.000 DF5063
-12.000 DF5061

RUDDER
-20.000
.000
-10.000

REFERENCE INFORMATION
4.4119 SO.FT
19.2299 INCHES
37.5359 INCHES
43.5974 INCHES
.0000 INCHES
15.1875 INCHES
.0405 SCALE



INCREMENTAL ROLLING MOMENT COEFFICIENT, OCRL

RUDDER DEFLECTION ANGLE, RUDDER, DEGREES

FIG 30 RUDDER EFFECTIVENESS, MODIFIED VERTICAL LE, SPDBRK = 25 DEG.

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDDER	SPDRBK	ALIGN	REFERENCE INFORMATION
(R-3064)	0A110 BSICIF12S1V124E40V20R1S2CS	10.000	-25.000	.000	.000	SREF 4.4119 SQ.FT.
(R-3065)	0A110 BSICIF12S1V124E40V20R1S2CS	10.000	-20.000	.000	.000	LREF 19.2259 INCHES
(R-3067)	0A110 BSICIF12S1V124E40V20R1S2CS	10.000	-10.000	.000	.000	BREF 37.5359 INCHES
(R-3069)	0A110 BSICIF12S1V124E40V20R1S2CS	10.000	0.000	.000	.000	XPRP 43.5974 INCHES
						ZPRP .0000 INCHES
						SCALE 15.1875 INCHES
						SCALE .0405

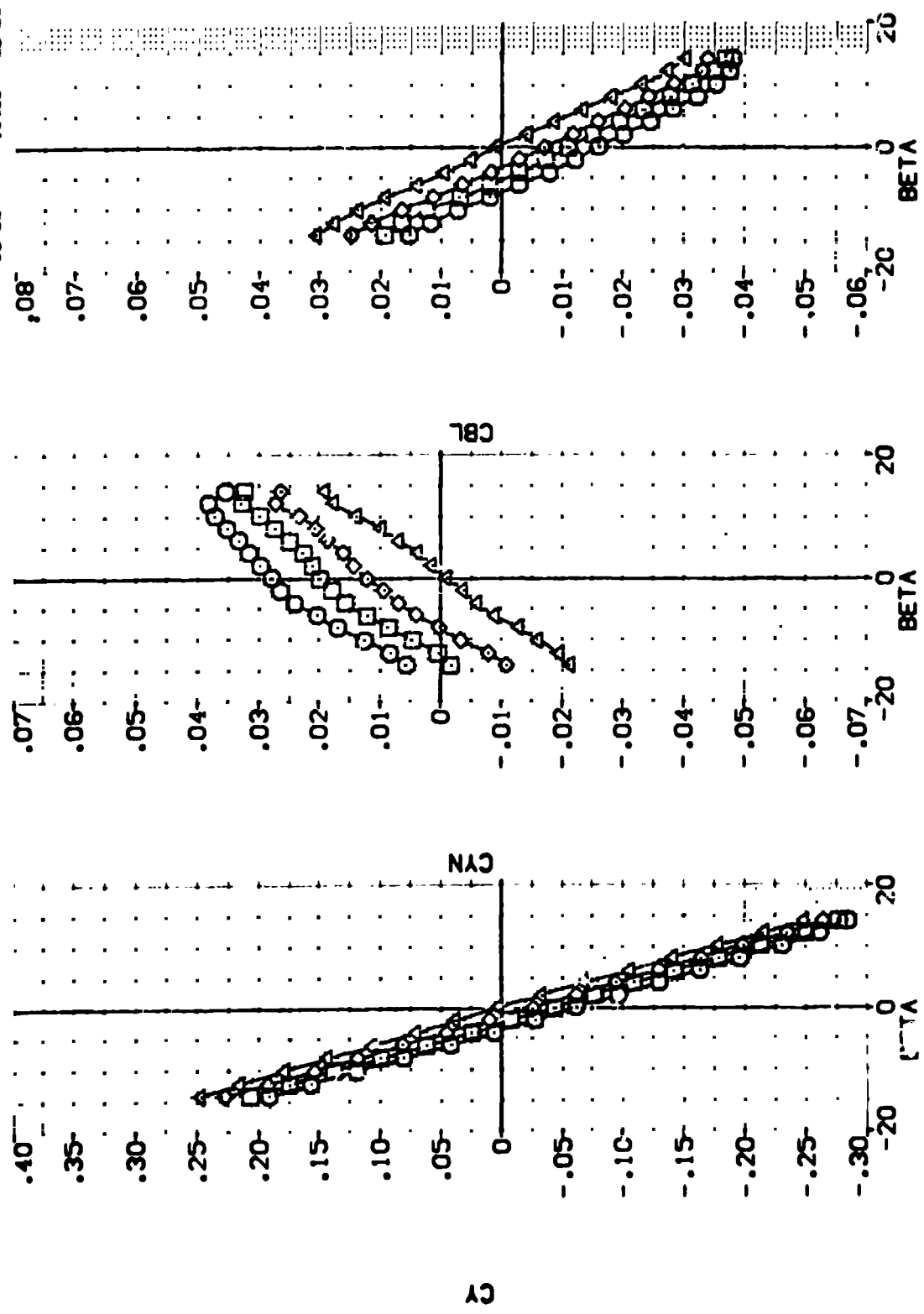


FIG 31 RUDDER EFFECTIVENESS, MODIFIED VERTICAL LE. $C_{DBRK} = 0 \text{ DEG.}$

(MACH = .20

0A110 B61C11F12M51W124E40V20R15X29 (DF5064)

SYMBOL		BETA		MACH		ELEVON		SPOBRK		PARAMETRIC VALUES		DATA SOURCE		DATASET		RUDDER		SREF		REFERENCE INFORMATION	
□	○	-14.000	.200	.000	.000	.000	.000	.000	.000	ALPHA	10.000	DF5063	-20.000	4.4112	SO.FT.						
◇	△	-12.000	.000	.000	.000	.000	.000	.000	.000	AILERON	.000	DF5064	-25.000	19.2298	INO-ES						
		-10.000	.000	.000	.000	.000	.000	.000	.000	80FLAP	-12.000	DF5067	-10.000	37.9359	INO-ES						
		-8.000												43.5874	INO-ES						
		-6.000												.0000	INO-ES						
														15.1875	INO-ES						
														.0405	SCALE						

INCREMENTAL SIDE FORCE COEFFICIENT, DCY

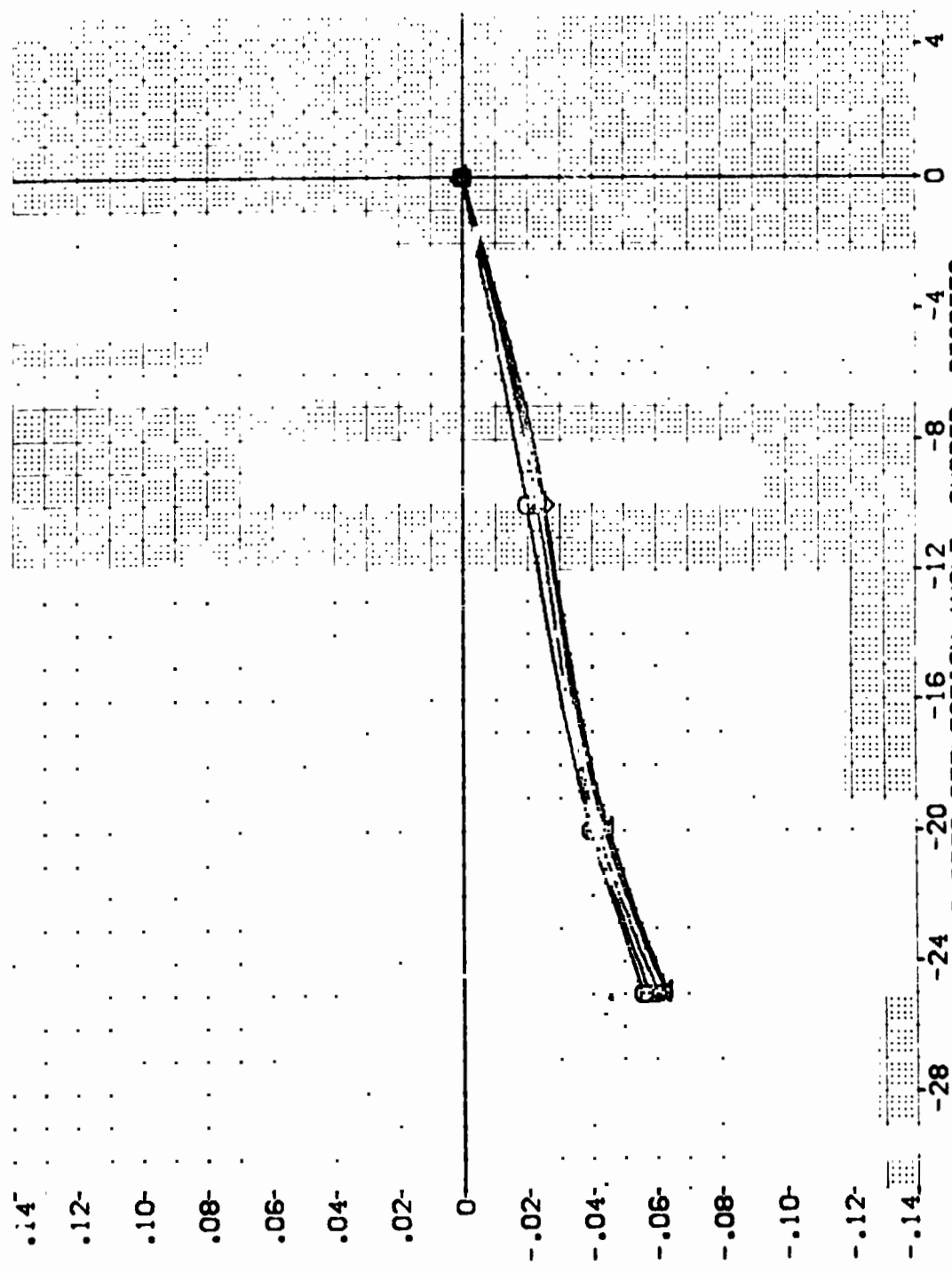


FIG 31 RUDDER EFFECTIVENESS, MODIFIED VERTICAL LE, SPOBRK = 0 DEG.

0A110 B61C11F12M51W124E40V20R15X29 (DF5064)

PARAMETRIC VALUES		DATA SOURCE		REFERENCE INFORMATION	
MACH	.200	RUDDER	10.000	RUDDER	SREF
ELEVON	.000	ALPHA	.000	LREF	19.2759
SPDBRK	.000	AIRLON	-12.000	BREF	37.9359
	4.000	BDFLAP	-10.000	XTRP	43.5074
				YTRP	.0000
				ZTRP	15.1675
				SCALE	.0405

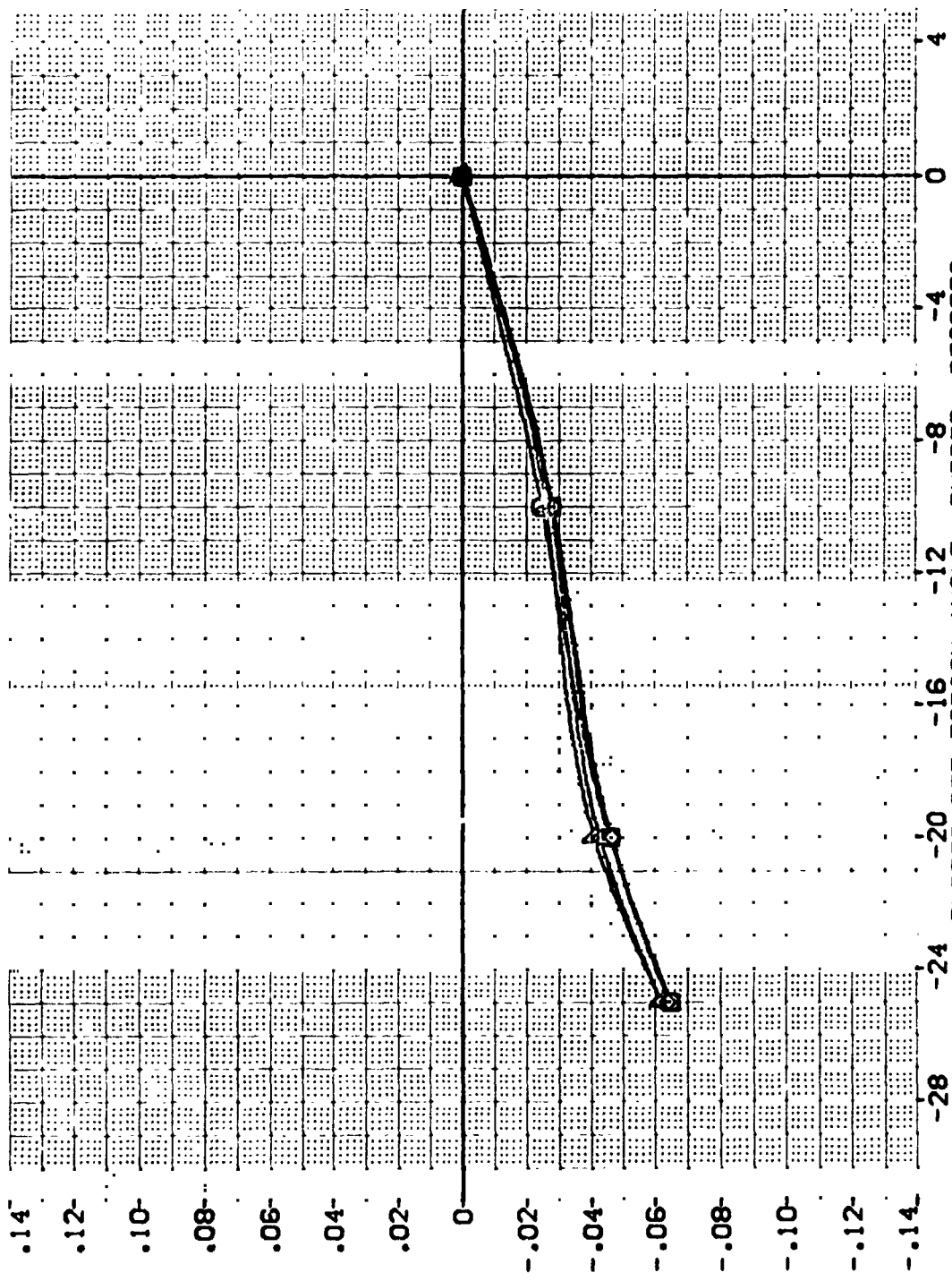
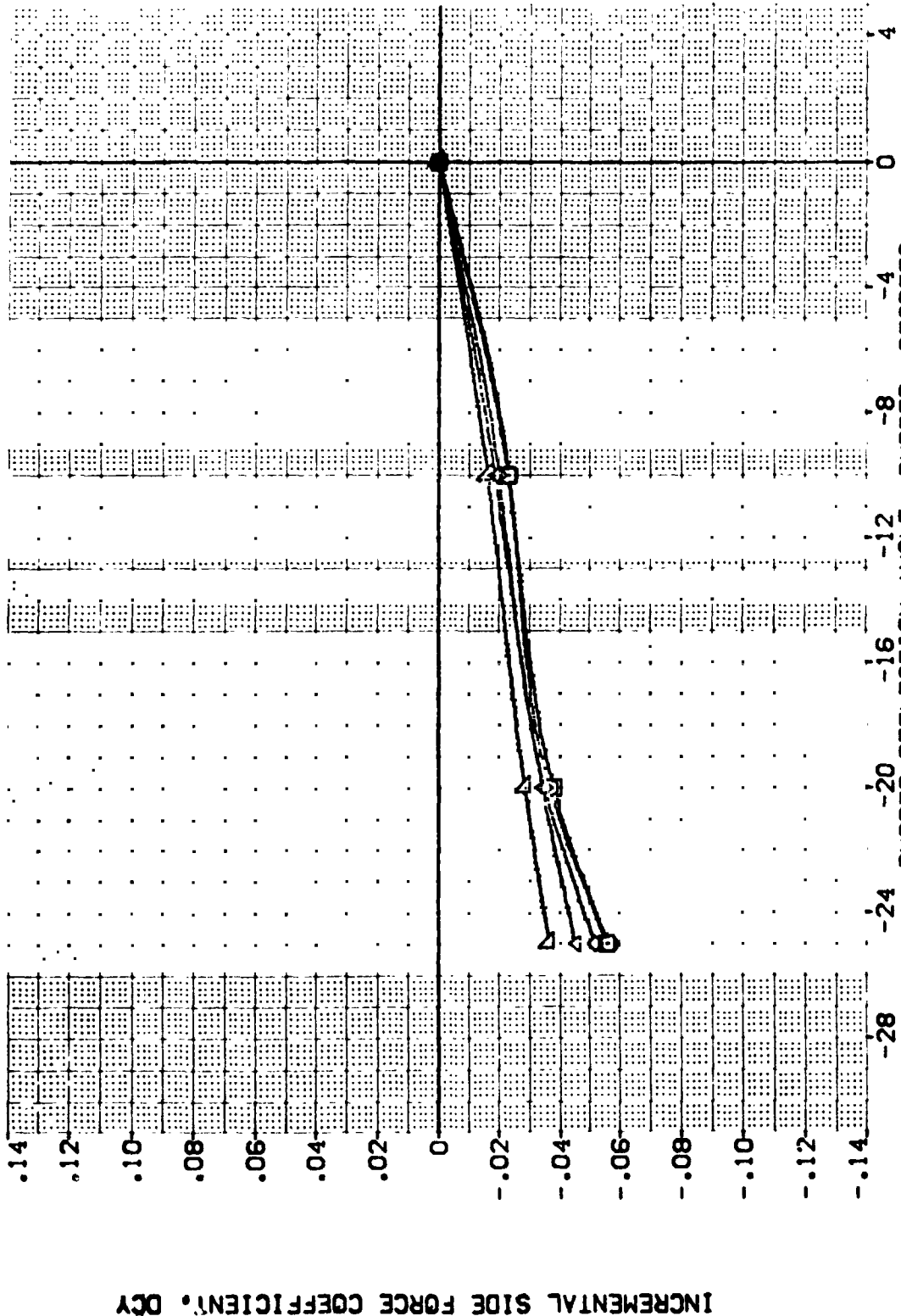


FIG 31 RUDDER EFFECTIVENESS, MODIFIED VERTICAL LE, SPDBRK = 0 DEG.

0A110 8C.C11F12M51W124E40V20R15X29 (DF5064)

SYMBL	BETA	MACH	PARAMETRIC VALUES	DATA SOURCE	RUDDER	DATASET	RUDDER	SREF	REFERENCE INFORMATION
○	6.000		.200 ALPHA	RUDDER	-25.000	DF5065	-20.000	LREF	4.4119
◇	8.000		.000 AILRON	-10.000	-12.000	DF5064	.000	SREF	19.27268
△	10.000		.000 BDFLAP			DF5067		XPRP	37.53558
▽	12.000							YPRP	43.59774
	14.000							ZPRP	.0000
								SCALE	15.1875
									.0405
									SO.FT.
									INDEES
									INDEES
									INDEES
									INDEES
									SCALE



INCREMENTAL SIDE FORCE COEFFICIENT, DCY

FIG 31 RUDDER EFFECTIVENESS, MODIFIED VERTICAL LE, SPDBRK = 0 DEG.



0A110 B61C11F12M51W124E40V20R15X29 (DF5064)

SYMBOL		PARAMETRIC VALUES				DATA SOURCE				REFERENCE INFORMATION			
○	BETA	.200	ALPHA	10.000	DATASET	RUDDER	RUDDER	REF	4.4119	50.FT			
□	MACH	.000	AIRLN	.000	DF5064	-25.000	-20.000	REF	19.2299	INCHES			
◇	ELEVON	.000	BOFLAP	-12.000	DF5067	-10.000	.000	REF	37.5359	INCHES			
△	SPDRK	.000						XREF	43.5974	INCHES			
								YREF	.0000	INCHES			
								ZREF	15.1875	INCHES			
								SCALE	.0405	SCALE			

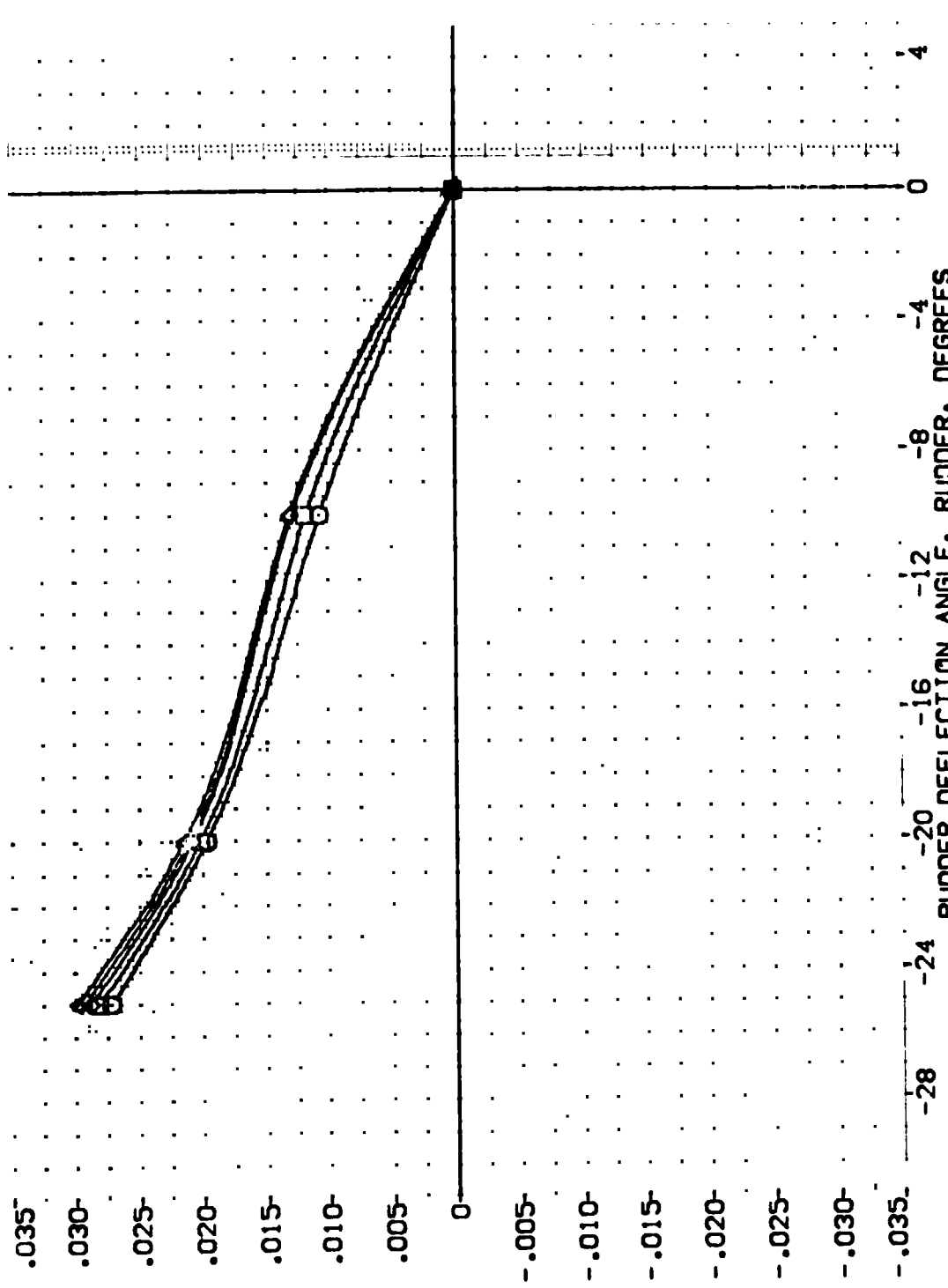


FIG 31 RUDDER EFFECTIVENESS, MODIFIED VERTICAL LE, SPDRK = 0 DEG.

0A110 B61C11F12M51W124E40V20R15X29 (DF5064)

SYMBOL	BETA	MACH	ELEVON	SPDBRK	PARAMETRIC VALUES	DATA SOURCE	DATASET	RUDDER	RUDDER	SREF	REFERENCE INFORMATION
○	-4.000				.200 ALPHA	RUDDER	DF5065	-20.000		4.4119	SO.FT.
□	-2.000				.000 AILRON	10.000 DATASET	DF5064	-25.000		19.2259	INCHES
◇	.000				.000 BOFLAP	.000 DF5067	DF5068	-10.000		37.9359	INCHES
△	2.000									43.5974	INCHES
	4.000									.0000	INCHES
										15.1673	INCHES
										.0405	SCALE

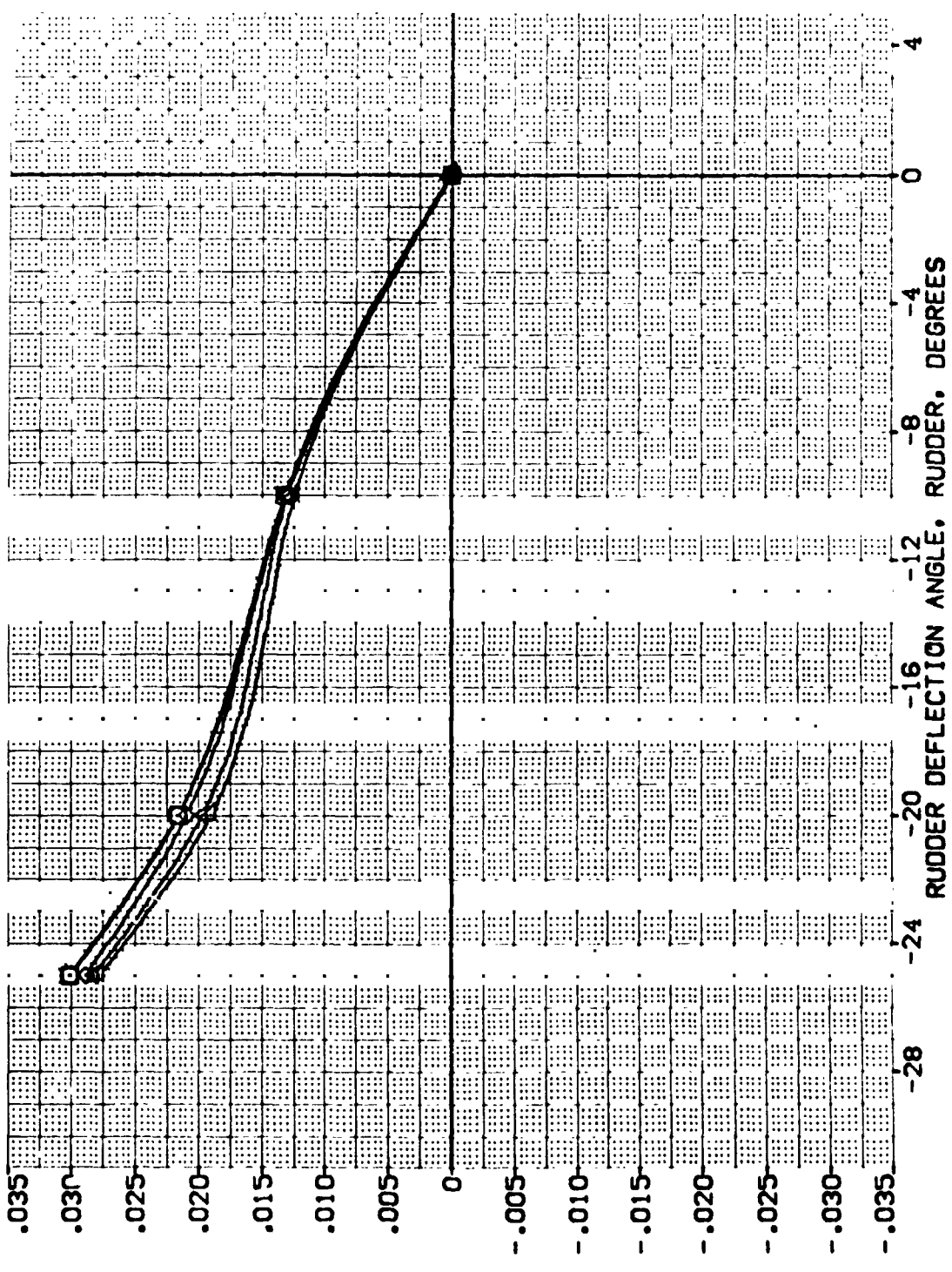


FIG 31 RUDDER EFFECTIVENESS, MODIFIED VERTICAL LE, SPDBRK = 0 DEG.



0A110 B61C11F12M51W124E40V20R15X29 (DF5064)

SYMBOL		BETA		MACH		ELEVON		SPDBRK		PARAMETRIC VALUES		DATA SOURCE		DATASET		RUDDER		SREF		REFERENCE INFORMATION	
○	□	8.000	.200	.000	.000	.000	.000	.000	.000	ALPHA	10.000	RUDDER	DF5063	DF5063	DF5063	DF5063	DF5063	DF5063	4.4119	50.FT.	
◇	△	8.000	.000	.000	.000	.000	.000	.000	.000	A1LRON	.000	-25.000	DF5064	DF5064	DF5064	DF5064	DF5064	DF5064	19.2299	INCHES	
◇	△	10.000	.000	.000	.000	.000	.000	.000	.000	BOFLAP	-12.000	-10.000	DF5067	DF5067	DF5067	DF5067	DF5067	DF5067	37.9359	INCHES	
◇	△	12.000	.000	.000	.000	.000	.000	.000	.000										43.5974	INCHES	
◇	△	14.000	.000	.000	.000	.000	.000	.000	.000										.0000	INCHES	
																			15.1875	INCHES	
																			.0405	SCALE	

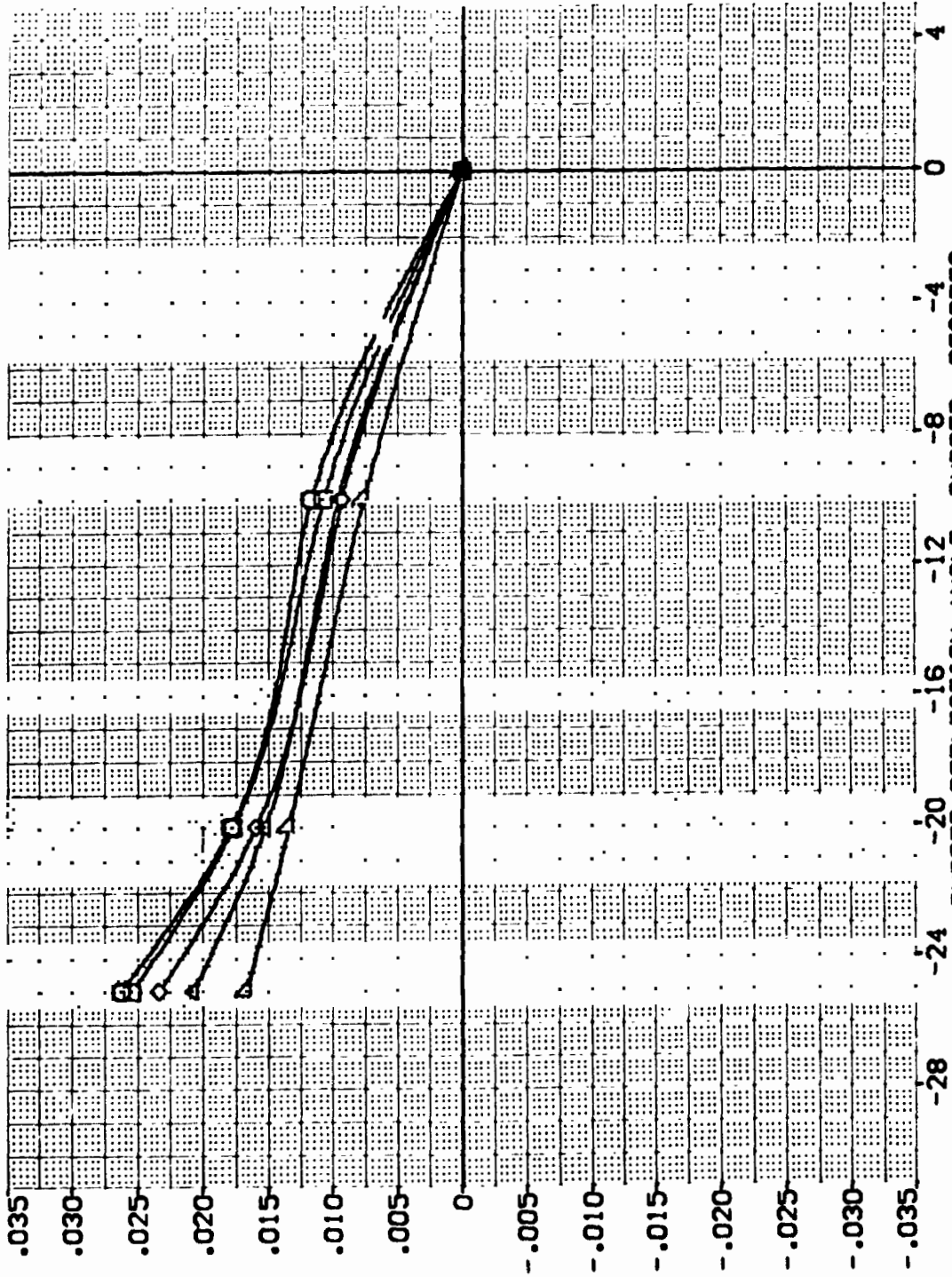


FIG 31 RUDDER EFFECTIVENESS, MODIFIED VERTICAL LE, SPDBRK = 0 DEG.

0A110 B61C11F12M51W124E40V20R15X29 (DF5064)

SYMBOL		BETA		MACH		ELEVON		SPDBRK		PARAMETRIC VALUES		DATA SOURCE		DATASET		RUDDER		SREF		REFERENCE INFORMATION	
○		-14.000		.200		.000		.000		ALPHA	10.000	DF5064	10.000	DF5064	REF	4.4119	90.FT.	19.2299	INCHES		
□		-12.000		.000		.000		.000		AIRLON	.000	DF5064	-25.000	DF5065	REF	37.9359	INCHES	43.5974	INCHES		
◇		-10.000		.000		.000		.000		BDFLAP	-12.000	DF5067	-10.000	DF5069	TRIP	15.1875	INCHES				
△		-8.000													ZTRIP	.0000	INCHES				
		-6.000													SCALE	.0405	SCALE				

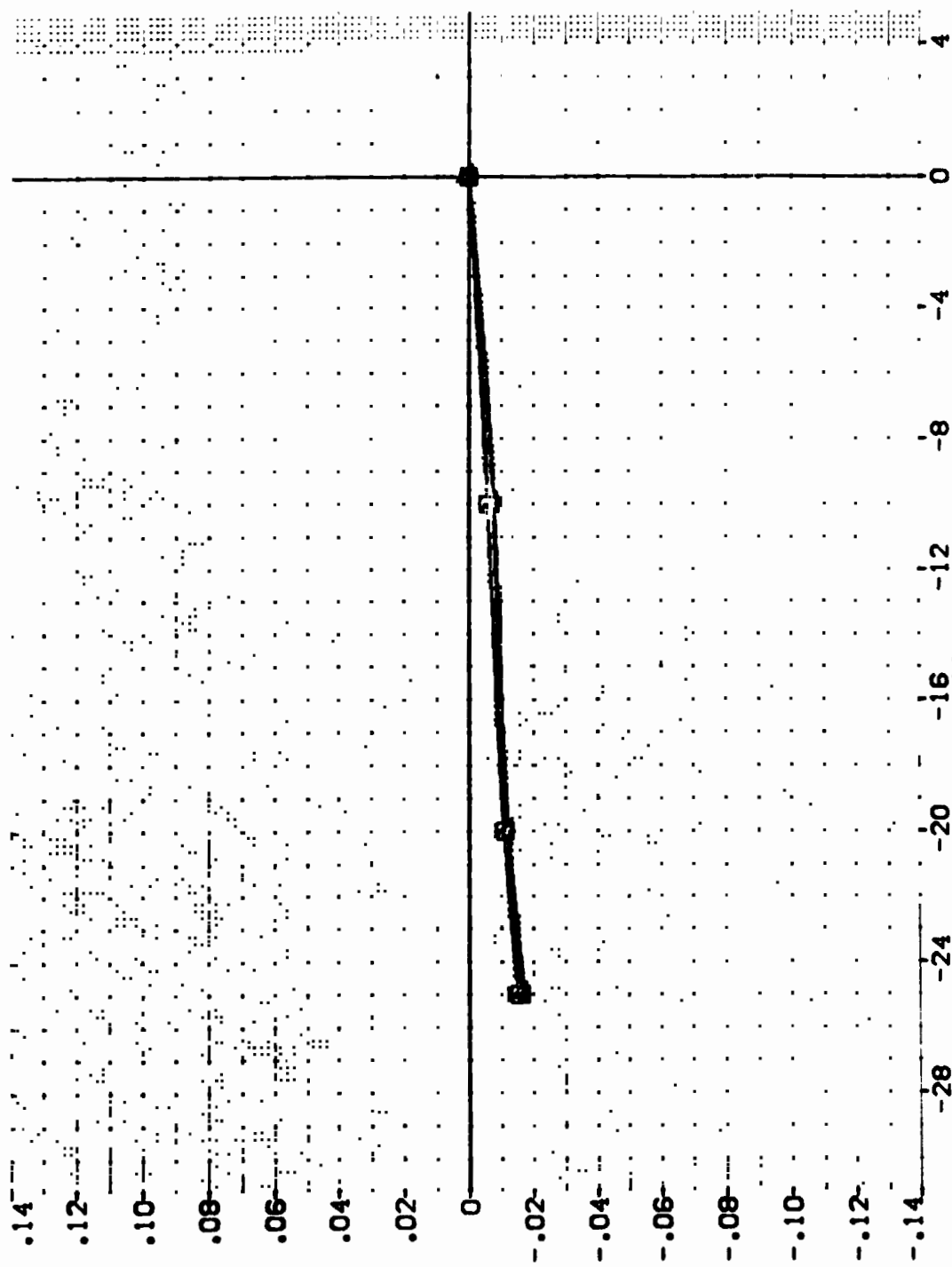
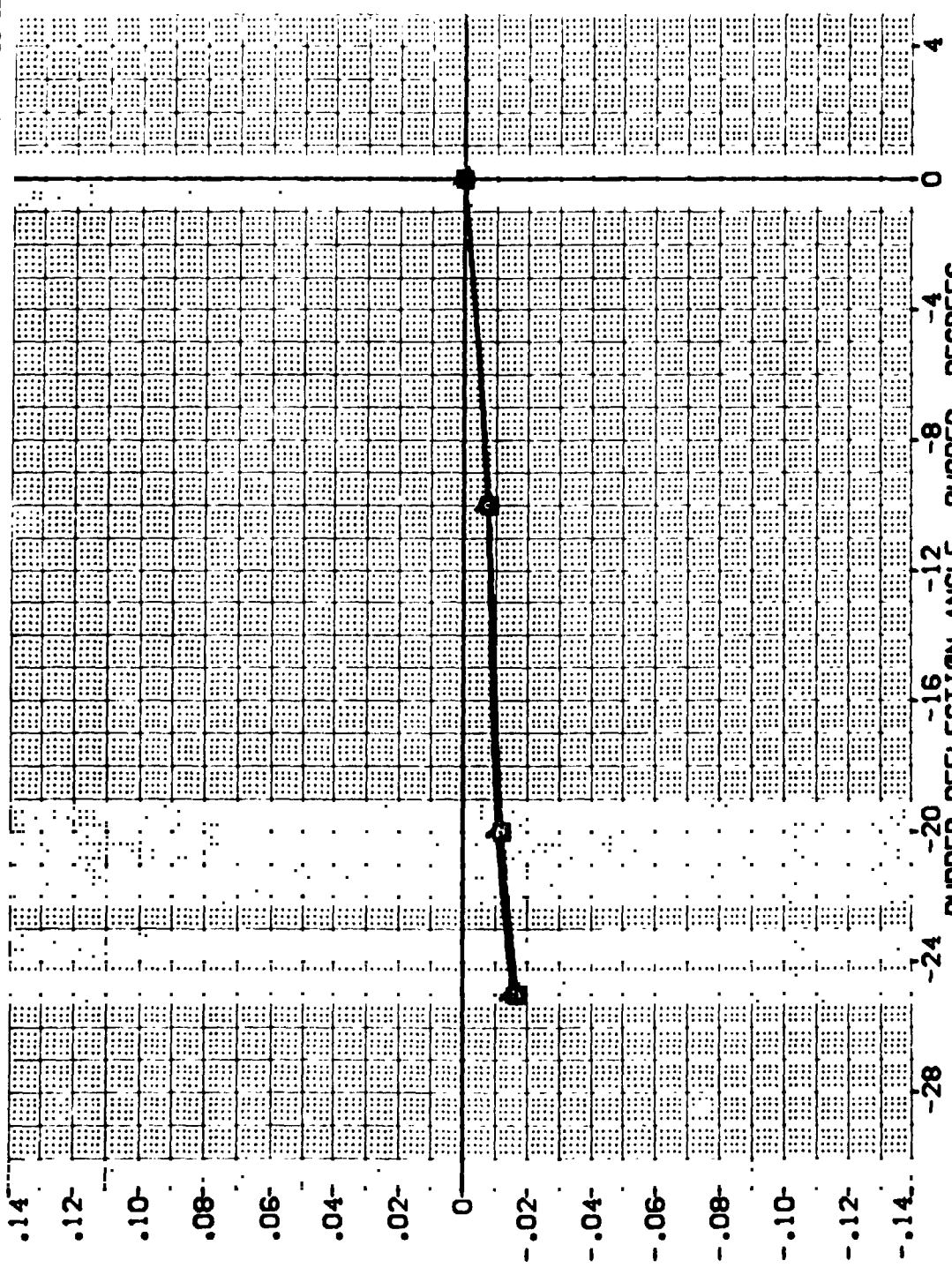


FIG 31 RUDDER EFFECTIVENESS, MODIFIED VERTICAL LE, SPDBRK = 0 DEG.



0A110 B61C11F12M51W124E40V20R15X29 (DF5064)

SYMBL	BETA	MACH	PARAMETRIC VALUES	DATA SOURCE	DATASET	RUDDER	REF	REFERENCE INFORMATION
○	-4.000	ELEVON	.200 ALPHA	RUDDER	DF5065	-20.000	4.4119	50.FT
□	-2.000	SPOBRK	.000 AILRON	-25.000	DF5064	.000	19.2289	INCHES
◇	.000		.000 BOFLAP	-10.000	DF5069		37.9369	INCHES
△	2.000						43.5674	INCHES
	4.000						.0000	INCHES
							15.1675	INCHES
							.0405	SCALE



INCREMENTAL ROLLING MOMENT COEFFICIENT, DCBL

FIG 31 RUDDER EFFECTIVENESS, MODIFIED VERTICAL LE, SPDBRK = 0 DEG.

0A110 861C11F12M51W124E40V20R15X29 (DF5064)

SYMBOL		BETA		MACH		PARAMETRIC VALUES		DATA SOURCE		RUDDER		REFERENCE INFORMATION	
○	□	6.000	8.000	.200	.000	ALPHA	10.000	DF5064	DF5065	SREF	4.4119	SO.FT.	
◇	△	10.000	12.000	.000	.000	AIRLN	.000	DF5067	DF5068	LREF	19.2259	INC-ES	
		14.000		.000	.000	BOFLAP	-12.000			BREF	37.9359	INC-ES	
										XPRP	43.5974	INC-ES	
										ZPRP	15.1875	INC-ES	
										SCALE	.0405	SCALE	

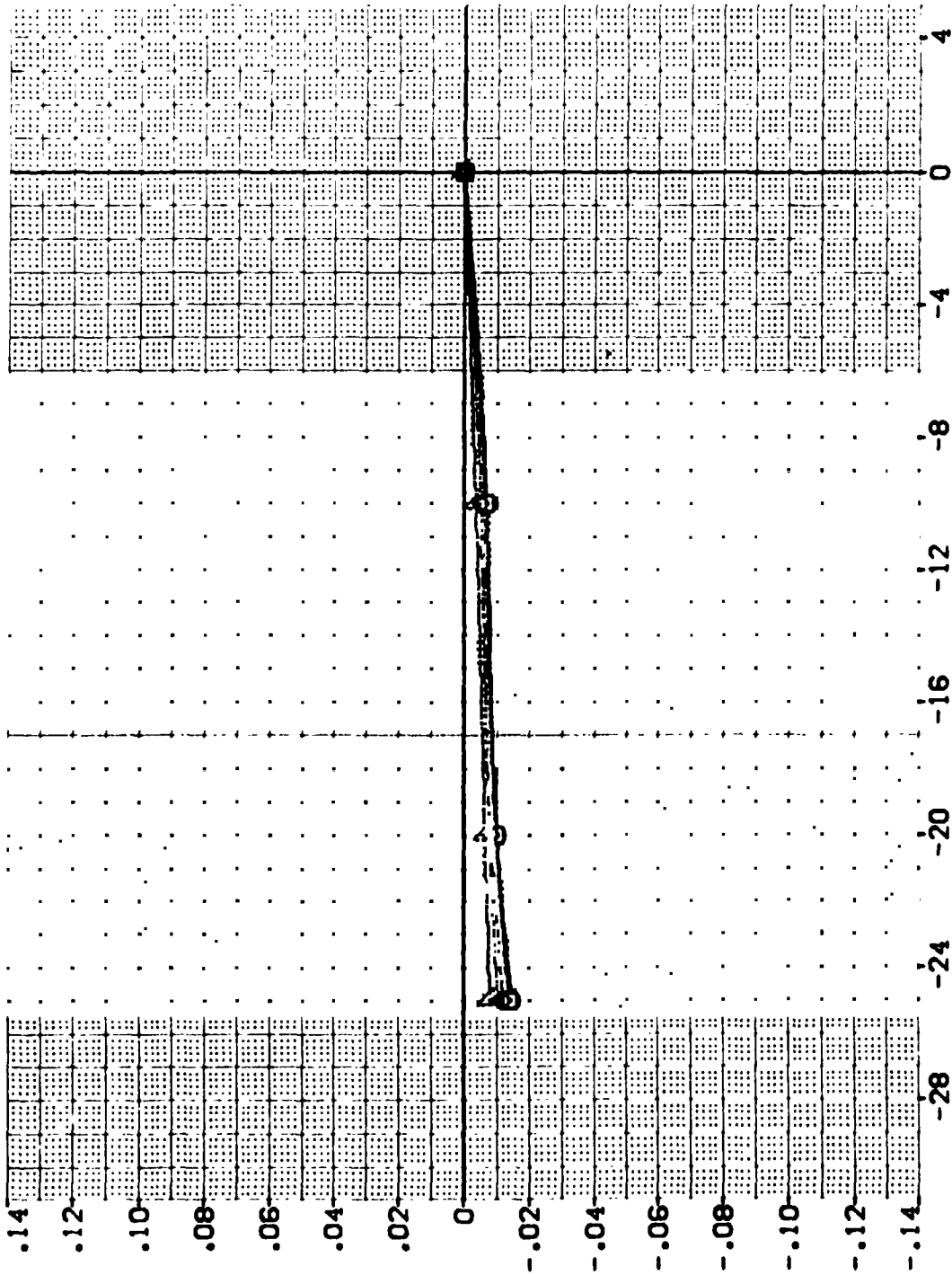


FIG 31 RUDDER EFFECTIVENESS, MODIFIED VERTICAL LE, SPDBRK = 0 DEG.



APPENDIX
TABULATED SOURCE DATA

Tabulations of plotted data are available on request from
Data Management Services

CA110 B61C11F12M81M24E40 129

(RF5001) (08 MAY 74)

REFERENCE DATA

SREF = 4.4119 SQ.FT. WARP = 43.5974 INCHES
 LREF = 19.2299 INCHES YWAP = .0000 INCHES
 BREF = 37.9359 INCHES ZWAP = 15.1875 INCHES
 SCALE = .0455 SCALE

PARAMETRIC DATA

BETA = .000 BCFAPLAP = -12.000
 ELEVON = .000 AILRON = .000

RUN NO. 1/ 0 RML = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

WACH	ALPHA	CL	COF	CLM	CN	CAF	CYN	CBL	CY	XCP/L	CAB
.200	-4.170	-25750	.03490	.04080	-25930	.01614	.00000	-.00020	.00100	.71000	.03090
.200	-2.090	-15270	.02560	.03910	-15360	.02006	.00000	-.00020	.00100	.74600	.02990
.200	-1.060	-10570	.02260	.03780	-10615	.02069	.00010	-.00020	.00000	.78300	.02972
.200	-.510	-.05470	.02210	.03770	-.05470	.02217	.00000	-.00020	.00100	.90600	.02843
.200	1.000	-.00710	.02010	.03770	-.00670	.02023	.00010	-.00030	.00100	2.70900	.02921
.200	2.000	.03950	.02100	.03720	.04020	.01958	.00010	-.00010	.00000	.31100	.02846
.200	4.100	.13370	.02180	.03680	.13500	.01223	.00020	-.00030	.00000	.55100	.02766
.200	6.100	.23210	.02970	.03600	.23400	.00452	.00010	-.00040	.00100	.59500	.02766
.200	8.200	.33450	.04050	.03510	.33600	-.00800	.00010	-.00040	.00100	.61300	.02838
.200	10.300	.43490	.05670	.03700	.43800	-.02250	.00000	-.00020	.00100	.62100	.02954
.200	12.420	.54310	.08120	.03770	.54790	-.03752	.00000	-.00090	.00100	.62600	.03090
.200	14.530	.65730	.11520	.03530	.66520	-.05348	-.00010	-.00110	.00100	.63200	.03226
.200	16.610	.78670	.16100	.02440	.80000	-.07059	-.00030	-.00070	.00000	.64000	.03320
.200	18.700	.90420	.21580	.02050	.92570	-.08548	-.00060	-.00070	.00200	.64300	.03670
.200	20.800	1.01830	.28020	.01730	1.05140	-.09973	.00045	-.00100	.00000	.64600	.04013
.200	22.890	1.13790	.37980	.00130	1.19600	-.09286	.00140	-.00140	-.00200	.65100	.04547
.200	24.970	1.19600	.45160	.01190	1.27490	-.09567	.00130	.00260	-.00600	.64800	.04863
.200	27.050	1.24140	.52440	.02510	1.34420	-.09694	-.00070	.00740	-.00800	.64500	.05632
.200	29.000	1.17500	.55150	.06400	1.29510	-.08739	-.00180	.0240	.00300	.63300	.06397
.200	30.970	1.05900	.54980	.11060	1.19090	-.07555	-.00360	.00240	.00600	.61700	.07676
	GRADIENT	.04721	-.00148	-.00046	.04759	-.00039	.00002	-.00001	-.00012	.00965	-.00023

(RF5052) (08 MAY 74)

REFERENCE DATA

XREF = 4.4119 94.FT. XMRP = 43.5974 INCHES
 LREF = 19.2299 INCHES YMRP = .0000 INCHES
 BREF = 37.9359 INCHES ZMRP = 15.1075 INCHES
 SCALE = .0405 SCALE

PARAMETRIC DATA

ALPHA = .000 BDFLAP = -12.000
 ELEVON = .000 AIRRON = .000

RUN NO. 2/ 0 RVL = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

WACH	BETA	CL	CLF	CL1	CN	CAF	CYN	CBL	CY	KCP/L	CAB
.200	-14.120	-.02790	.00580	.01920	-.02790	.00587	.03000	-.01750	.11800	.90500	.04201
.200	-12.100	-.03330	.00940	.02340	-.03330	.00938	.02560	-.01480	.10000	.90800	.03926
.200	-10.090	-.04090	.01350	.02700	-.04090	.01352	.02110	-.01230	.08400	.90500	.03589
.200	-8.070	-.04390	.01660	.03030	-.04390	.01659	.01880	-.00980	.06800	.85600	.03359
.200	-6.020	-.04860	.01750	.03380	-.04860	.01755	.01260	-.00750	.05100	.90800	.03264
.200	-4.050	-.05380	.02030	.03770	-.05380	.02034	.00830	-.00520	.03500	.89600	.02999
.200	-2.020	-.05430	.02180	.03750	-.05430	.02181	.00420	-.00260	.01900	.90300	.02843
.200	.020	-.05690	.02160	.03310	-.05690	.02158	.00000	-.00040	.00100	.89900	.02959
.200	2.050	-.05590	.02170	.03800	-.05590	.02168	-.00410	.00220	-.01400	.90200	.02933
.200	4.020	-.05220	.01990	.03850	-.05220	.01991	-.00850	.00470	-.03100	.90900	.03106
.200	6.050	-.04780	.01790	.03420	-.04780	.01793	-.01290	.00720	-.04800	.91500	.03257
.200	8.080	-.04290	.01380	.03180	-.04290	.01387	-.01720	.00990	-.06500	.92400	.03656
.200	10.100	-.03890	.01250	.02820	-.03890	.01250	-.02140	.01210	-.08200	.91800	.03699
.200	12.120	-.03410	.00940	.02430	-.03410	.00939	-.02580	.01460	-.09900	.91500	.03926
.200	14.150	-.02620	.00520	.02090	-.02620	.00522	-.03020	.01700	-.11600	.94500	.04201
.200	GRADIENT	.00009	-.00004	.00012	.00008	-.00005	-.00007	.00122	-.00016	.00123	.00015

REFERENCE DATA

SREF = 4.4119 SQ.FT. XMRP = 43.5974 INCHES
 LREF = 19.2299 INCHES YMRP = .0000 INCHES
 BREF = 37.9359 INCHES ZMRP = 15.1875 INCHES
 SCALE = .0405 SCALE

PARAMETRIC DATA

ALPHA = 9.000 BCFAP = -12.000
 ELEVON = .900 AIRLON = .050

RUN NO. 3/ 0 RWL = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

MMCH	BETA	CL	CLM	CLN	CAF	CYN	CDL	CY	KCP/L	CAB
.200	-14.110	.20750	.01440	.01970	-.00422	.02910	-.00600	.11800	.61750	-.54498
.200	-12.170	.20560	.01810	.02330	-.00041	.02470	-.00480	.10100	.61050	-.54164
.200	-10.080	.19870	.01930	.02730	.00144	.02060	-.00430	.03300	.61150	.03731
.200	-8.030	.19270	.02130	.03020	.00416	.01640	-.00380	.06950	.59470	.03425
.200	-6.050	.18970	.02350	.03300	.00642	.01220	-.00300	.05300	.58650	.03202
.200	-4.040	.18490	.02580	.03510	.00823	.00800	-.00230	.03700	.58200	.02878
.200	-2.000	.18790	.02330	.03670	.00836	.00390	-.00130	.02000	.58000	.02979
.200	.010	.18300	.02600	.03720	.00956	.00000	-.00050	.00300	.57700	.02816
.200	2.050	.18160	.02460	.03730	.00829	-.00400	.00070	-.01500	.57700	.03059
.200	4.030	.18310	.02370	.03820	.00723	-.00810	.00170	-.03300	.58100	.03154
.200	6.080	.18780	.02330	.03340	.00646	-.01240	.00290	-.05000	.58700	.03225
.200	8.110	.19380	.02080	.03120	.00335	-.01670	.00330	-.06700	.59300	.03571
.200	10.100	.19600	.01840	.02800	.00064	-.02070	.00410	-.08200	.59900	.03629
.200	12.140	.19950	.01590	.02510	-.00235	-.02480	.00480	-.10000	.60500	.04223
.200	14.170	.20450	.01410	.02100	-.00425	-.02920	.00550	-.11500	.61400	.04435
GRADIENT	-.00749	-.00064	-.00024	.00064	-.00020	-.00199	.00050	-.00867	-.00025	.00029

0A110 061C11F12M51M24E40 X29

(RF5004) (08 MAY 74)

REFERENCE DATA

XREF = 4.119 94.FT. XMRP = 43.9974 INCHES
 LREF = 19.8299 INCHES YMRP = .9000 INCHES
 BREF = 37.9339 INCHES ZMRP = 15.1875 INCHES
 SCALE = .0425 SCALE

PARAMETRIC DATA

ALPHA = 10.000 BCFLAP = -12.000
 ELEVON = .000 AILRON = .000

RUN NO. 4/ 0 RVL = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

MACH	BETA	CL	CPF	CLM	CN	CAF	CTN	CBL	CY	MCP/L	CAB
.200	-14.110	.46680	.03320	.01710	.46880	-.02150	.03000	.00590	.11400	.63800	.04830
.200	-12.100	.46060	.03440	.02050	.46290	-.02920	.02370	.00480	.11000	.63300	.04390
.200	-10.080	.45390	.03490	.02450	.45640	-.02754	.02140	.00430	.08300	.63200	.04030
.200	-8.060	.44770	.03700	.02790	.45060	-.02434	.01660	.00370	.07000	.62900	.03634
.200	-6.030	.44800	.03700	.03190	.45090	-.02432	.01230	.00260	.05500	.62600	.03483
.200	-4.040	.44220	.03700	.03490	.44330	-.02329	.00790	.00180	.03800	.62300	.03199
.200	-2.010	.44190	.05990	.03690	.44900	-.02333	.00390	.00040	.02100	.62100	.03040
.200	.000	.43780	.05620	.03700	.43990	-.02122	.00000	-.00020	.00200	.62100	.02890
.200	2.040	.43780	.05610	.03700	.44080	-.02330	-.00390	-.00130	-.01600	.62100	.03103
.200	4.030	.43940	.05610	.03570	.44230	-.02366	-.00820	-.00230	-.03300	.62200	.03194
.200	6.090	.44270	.05540	.03320	.44350	-.02500	-.01240	-.00460	-.04900	.62400	.03581
.200	8.100	.44610	.05470	.02950	.44060	-.02627	-.01680	-.00640	-.06400	.62700	.03833
.200	10.130	.45230	.05310	.02500	.45470	-.02897	-.02170	-.00510	-.08100	.63100	.04173
.200	12.140	.45700	.05250	.02110	.45900	-.03042	-.02610	-.00570	-.09500	.63500	.04374
.200	14.140	.46620	.05050	.01690	.46770	-.03411	-.03030	-.00650	-.11100	.63800	.04924
	GRADIENT	-.00048	-.00012	.00010	-.00031	-.00004	-.00198	-.00051	-.00887	-.00010	.00003



REFERENCE DATA

SREF = 4.4119 SQ.FT. XMRP = 43.5974 INCHES
 YREF = 19.2299 INCHES YMRP = .0000 INCHES
 ZREF = 37.9359 INCHES ZMRP = 15.1875 INCHES
 SCALE = .0405 SCALE

PARAMETRIC DATA

ALPHA = 15.000 BDFLAP = -12.000
 ELEVON = .000 AILRON = .000

RUN NO. 5/ 0 RIVL = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

INCH	DELTA	CL	CDF	CLM	CN	CAF	CYN	CBL	CY	XCP/L	CAB
.250	-14.110	.74470	.13840	.00510	.75450	-.06636	.03560	.01320	.10100	.64900	.05206
.250	-12.100	.73760	.13660	.01160	.74730	-.06617	.03010	.01130	.08900	.64600	.05063
.250	-10.075	.72900	.13710	.01800	.73900	-.06334	.02510	.00910	.07500	.64300	.04595
.250	-8.070	.73170	.13710	.02180	.74170	-.06420	.01980	.00610	.06400	.64100	.04379
.250	-6.010	.72550	.13750	.02630	.73580	-.06208	.01410	.00350	.05000	.63800	.03801
.250	-4.020	.71930	.13530	.03150	.72920	-.06248	.00870	.00170	.03600	.63600	.03528
.250	-2.010	.71260	.13560	.03220	.72280	-.06034	.00400	.00010	.02000	.63500	.03228
.250	.000	.71560	.13570	.03170	.72580	-.06101	-.00040	-.00040	.00300	.63600	.03325
.250	2.040	.71940	.13660	.03060	.72970	-.06122	-.00500	-.00160	-.01300	.63600	.03375
.250	4.030	.72420	.13790	.02970	.73410	-.06323	-.00980	-.00310	-.03100	.63700	.03615
.250	6.080	.72810	.13680	.02820	.73820	-.06286	-.01500	-.00520	-.04400	.63900	.03878
.250	8.100	.73080	.13570	.02170	.74050	-.06524	-.01980	-.00710	-.06000	.64100	.04500
.250	10.100	.73390	.13710	.01630	.74380	-.06473	-.02500	-.00930	-.07400	.64400	.04754
.250	12.110	.73750	.13680	.01100	.74720	-.06601	-.03040	-.01170	-.08400	.64600	.04924
.250	14.160	.74490	.13480	.00600	.75380	-.06991	-.03570	-.01380	-.09700	.64900	.05449
.250	GRADIENT	.00082	.00011	-.00026	.00085	-.00012	-.00228	-.00056	-.00829	.00015	.00016

OA110 861C11F12M51M24E40 X29

(RF5556) (08 MAY 74)

REFERENCE DATA

SREF = 4.4119 SQ.FT. XMRP = 43.5974 INCHES
 LREF = 19.2299 INCHES YMRP = .0000 INCHES
 BREF = 37.9359 INCHES ZMRP = 15.1875 INCHES
 SCALE = .0405 S/ E

PARAMETRIC DATA

ALPHA = 20.000 BDFLAP = -12.000
 ELEVON = .000 AIRRON = .000

RUN NO. 6/ 0 RNVL = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

MACH	BETA	CL	CDF	CLM	CN	CAF	CYN	CBL	CY	XCP/L	CAB
.200	-14.130	1.06410	.30300	-.02050	1.10230	-.09528	.04320	.01510	.09100	.65900	.06102
.200	-12.130	1.04120	.29120	-.00370	1.07670	-.09788	.03490	.01790	.08000	.65300	.05803
.200	-10.080	1.01800	.28610	.00600	1.05320	-.09419	.02870	.01930	.06400	.65000	.05324
.200	-8.070	1.02300	.28690	.01120	1.05820	-.09531	.02350	.01650	.05100	.64800	.05067
.200	-6.030	1.01390	.28410	.01460	1.04870	-.09457	.01740	.01210	.04000	.64700	.04497
.200	-4.050	1.01610	.28430	.01750	1.05080	-.09526	.01130	.00730	.03100	.64600	.04016
.200	-2.030	1.01810	.28240	.01760	1.05210	-.09774	.00340	.00340	.01700	.64500	.04052
.200	.000	1.01900	.28050	.01850	1.04840	-.09835	.00010	-.00080	.00100	.64500	.03927
.200	2.030	1.01600	.28050	.01780	1.04940	-.09879	-.00480	-.00490	-.01500	.64500	.04029
.200	4.010	1.01510	.27980	.01860	1.04830	-.09904	-.01000	-.00900	-.03100	.64500	.04101
.200	6.040	1.03270	.28430	.01370	1.06640	-.10133	-.01750	-.01230	-.04100	.64700	.04758
.200	8.080	1.03510	.29140	.00390	1.07110	-.09551	-.02450	-.01330	-.04900	.65000	.05027
.200	10.090	1.04710	.29670	-.00310	1.08420	-.09493	-.03080	-.01460	-.06100	.65300	.05467
.200	12.130	1.05350	.29570	-.00930	1.08990	-.09821	-.03690	-.01520	-.07500	.65500	.05916
.200	14.160	1.07570	.30140	-.01960	1.11250	-.10098	-.04400	-.01600	-.08700	.65800	.06437
GRADIENT		-.00020	-.00054	.00012	-.00038	-.00043	-.00260	-.00203	-.00773	-.00010	.00007

0A110 861C11F12H51M24E40V19R17X31

(RF5007) (08 MAY 74)

REFERENCE DATA

BREF = 4.4119 96.FT. YMRP = 43.9974 INCHES
 LREF = 19.2299 INCHES YMRP = .0000 INCHES
 BRP = 37.9339 INCHES ZMRP = 15.1875 INCHES
 SCALE = .0405 SCALE

BETA = .000 8DFLAP = -12.000
 ELECON = .000 AILRON = .000
 RUDDER = .000 SPD8RK = 25.000

RUN NO. 7/ 0 RIVL = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

PARAMETRIC DATA

MACH	ALPHA	CL	CDP	CLM	CN	CAF	CYN	CBL	CY	XCP/L	CAB
.200	-4.150	-.26400	.04570	.04950	-.26660	.02633	-.00080	.00040	.00300	.72000	.03689
.200	-2.080	-.16560	.03340	.04820	-.16670	.02739	-.00090	.00540	.00300	.75000	.03689
.200	-1.040	-.11640	.03170	.04760	-.11690	.02937	-.00110	.00030	.00400	.80100	.03739
.200	-.020	-.06870	.02890	.04710	-.06870	.02888	-.00100	.00540	.00400	.95400	.03614
.200	1.010	-.02440	.02840	.04640	-.02390	.02884	-.00100	.00010	.00200	1.36600	.03708
.200	2.050	.02530	.02810	.04660	.02630	.02725	-.00110	.00540	.00300	.00000	.03702
.200	4.100	.12320	.03140	.04770	.12320	.02250	-.00110	.00020	.00300	.51100	.03530
.200	6.190	.21980	.03500	.04560	.22230	.01110	-.00120	.00010	.00400	.57600	.03708
.200	8.270	.31540	.04620	.04510	.31870	.00035	-.00100	.00010	.00300	.59900	.03585
.200	10.360	.41990	.06220	.04650	.42420	-.01431	-.00110	.00020	.00300	.61100	.03728
.200	12.460	.52580	.08760	.04700	.53230	-.02799	-.00120	-.00010	.00300	.61900	.03673
.200	14.530	.64040	.11790	.04510	.64950	-.04658	-.00140	-.00050	.00400	.62600	.04128
.200	16.600	.77000	.16650	.03440	.78340	-.06032	-.00170	.00010	.00400	.63600	.04569
.200	18.720	.92000	.21960	.02930	.91530	-.07836	-.00190	.00020	.00400	.64000	.04524
.200	20.810	1.00060	.28350	.02700	1.03610	-.09037	-.00120	-.00040	.00300	.64200	.04670
.200	22.930	1.12370	.36530	.00900	1.18510	-.08302	-.00110	-.00050	.00300	.64900	.05250
.200	25.010	1.20250	.46190	.01570	1.28500	-.08987	-.00060	.00430	-.00800	.64700	.05706
.200	27.050	1.23550	.52980	.03340	1.34130	-.09016	-.00190	.00890	-.00600	.64200	.06380
.200	29.050	1.17990	.56560	.07130	1.30610	-.07849	-.00590	.00540	.01100	.63200	.06770
.200	30.970	1.04630	.55380	.12340	1.18210	-.06369	-.00610	-.00020	.02200	.61300	.07787
.200	GRADIENT	.04670	-.00164	-.00027	.04725	-.00039	-.00003	-.00052	-.00005	-.04136	-.00024

CA110 861C11F12M51M24EADV19R17X31

(RF5008) (08 MAY 74)

REFERENCE DATA

SREF = 4.4119 SQ.FT. XMRP = 43.5974 INCHES
 LREF = 19.2299 INCHES YMRP = .0000 INCHES
 BREF = 37.9359 INCHES ZMRP = 15.1875 INCHES
 SCALE = .0405 SCALE

PARAMETRIC DATA

ALPHA = .000 BDFLAP = -12.000
 ELEVON = .000 AILRON = .000
 RUDDER = .000 SPOBRK = 25.000

RUN NO. 8/ 0 RV/L = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

MACH	BETA	CL	CLM	CN	CAF	CYN	CBL	CY	XCF/L	CAB
.200	-14.150	-.03910	.02750	-.03910	.02707	-.01940	.02810	.25000	.91000	.04695
.200	-12.140	-.04080	.03010	-.04080	.01176	-.01940	.00930	.22100	.92300	.04382
.200	-10.120	-.04540	.03300	-.04540	.01591	-.01750	.00870	.18800	.91900	.04223
.200	-8.100	-.05110	.03610	-.05110	.02097	-.01440	.00770	.15100	.91200	.03970
.200	-6.070	-.05960	.04010	-.05960	.02428	-.01040	.00560	.11100	.89900	.03902
.200	-4.060	-.06410	.04290	-.06410	.02719	-.00670	.00370	.07400	.89800	.03779
.200	-2.030	-.06800	.04610	-.06800	.02797	-.00390	.00190	.04100	.90100	.03826
.200	.000	-.06900	.04700	-.06900	.02886	-.00100	.00040	.01400	.90200	.03731
.200	2.030	-.06930	.04600	-.06930	.02824	.00170	-.00090	-.03000	.89600	.03902
.200	4.030	-.06750	.04320	-.06750	.02775	.00510	-.00260	-.06800	.88800	.03907
.200	6.060	-.06240	.04040	-.06240	.02359	.00890	-.00470	-.10500	.89000	.04161
.200	8.080	-.05640	.03630	-.05640	.01946	.01330	-.00660	-.14500	.88800	.04218
.200	10.090	-.05150	.03290	-.05150	.01551	.01700	-.00790	-.18400	.88700	.04277
.200	12.110	-.04690	.03070	-.04690	.01131	.01810	-.00750	-.21700	.89300	.04441
.200	14.160	-.04230	.02880	-.04230	.00860	.01850	-.00670	-.24600	.90200	.04522
. .)	GRADIENT	-.00038	.00007	-.00038	.00007	.00144	-.00076	-.01754	-.00123	.00016



CM110 B61C11F12M51A24E40V19R15X01

REFERENCE DATA
 WREF = 4.4119 SQ.FT. XMRP = 43.5974 INCHES ALPHA = 5.000 8DFLAP = -12.000
 LREF = 19.2299 INCHES YMRP = .0000 INCHES ELEVON = .000 AILRON = .000
 BRP = 37.9359 INCHES ZMRP = 15.1875 INCHES RUDDER = .000 SPOBRK = 25.000
 SCALE = .0403 SCALE

PARAMETRIC DATA

RUN NO. 9/ 0 RM/L = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

MACH	BETA	CL	CLM	CN	CAF	CYN	CBL	CY	XCP/L	CAB
.200	-14.160	.19760	.02980	.19620	-.00415	-.02150	.01950	.25200	.59600	.04794
.200	-12.120	.19170	.03160	.19260	.05164	-.02140	.01690	.22300	.59100	.04242
.200	-10.110	.18700	.03430	.19810	.00447	-.01890	.01660	.18800	.58500	.04167
.200	-8.080	.18450	.03630	.18590	.00787	-.01490	.01320	.15100	.58000	.04082
.200	-6.060	.17820	.03960	.17810	.01275	-.01090	.00970	.11400	.57000	.03745
.200	-4.060	.17290	.04290	.17500	.01378	-.00700	.00620	.07600	.56100	.03623
.200	-2.030	.16880	.04530	.17090	.01616	-.00400	.00310	.03900	.55400	.03690
.200	.000	.16730	.04570	.16970	.01646	-.00100	.00040	.00400	.55200	.03512
.200	2.030	.16920	.04510	.17130	.01636	.00160	-.00220	-.03000	.55500	.03792
.200	4.020	.17060	.04280	.17270	.01572	.00490	-.00530	-.06700	.56000	.03795
.200	6.060	.17480	.04000	.17670	.01229	.00830	-.00870	-.10600	.56800	.04073
.200	8.090	.17630	.03590	.17790	.00976	.01300	-.01220	-.14500	.57700	.04058
.200	10.120	.18290	.03280	.18400	.00435	.01750	-.01590	-.18700	.58600	.04287
.200	12.110	.18650	.03200	.18740	.00232	.02010	-.01810	-.22100	.58900	.04248
.200	14.140	.19000	.02970	.19050	-.00274	.02090	-.01880	-.23300	.59400	.04627
GRADIENT		-.00021	-.00002	-.00021	.00000	.00145	-.00140	-.01756	-.00005	.00022

OA1110 861C11F12H51A24E40V19R17X31

(RF5010) (08 MAY 74)

REFERENCE DATA

SREF = 4.4119 50.FT. XMRP = 43.5974 INCHES
 LREF = 19.2299 INCHES YMRP = .0000 INCHES
 BREF = 37.9359 INCHES ZMRP = 15.1875 INCHES
 SCALE = .0495 SCALE

PARAMETRIC DATA

ALPHA = 10.000 BDFLAP = -12.000
 ELEVON = .000 AILRON = .000
 RUDDER = .000 SPDBRK = 25.000

RUN NO. 10/ 0 RN/L = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

MACH	BETA	CL	CLM	CN	CAF	CYN	CBL	CY	XCP/L	CAB
.200	-14.150	.45090	.05120	.45280	-.03052	-.02350	.03130	.25000	.62900	.04710
.200	-12.150	.44710	.05440	.44960	-.02673	-.02210	.02880	.21900	.62800	.04412
.200	-10.100	.44620	.05620	.44900	-.02473	-.01960	.02530	.18500	.62600	.04267
.200	-8.060	.43540	.05920	.43900	-.01984	-.01590	.02060	.15000	.62200	.03888
.200	-6.060	.43110	.06000	.43490	-.01822	-.01160	.01540	.11200	.61900	.03769
.200	-4.070	.42470	.06200	.42890	-.01513	-.00720	.01000	.07300	.61400	.03556
.200	-2.040	.42270	.06210	.42700	-.01459	-.00410	.00530	.03900	.61200	.03687
.200	-.010	.42100	.06350	.42590	-.01295	-.00110	.00020	.00300	.61100	.03593
.200	2.020	.41860	.06190	.42290	-.01409	.00160	-.00410	-.03100	.61200	.03774
.200	4.010	.42510	.06210	.42930	-.01504	.00450	-.00910	-.06700	.61500	.03795
.200	6.040	.42730	.05820	.43080	-.01932	.00870	-.01450	-.10700	.61900	.04097
.200	8.090	.43220	.03440	.43560	-.02049	.01320	-.01960	-.14600	.62300	.04129
.200	10.090	.43910	.03030	.44180	-.02489	.01770	-.02480	-.18500	.62600	.04470
.200	12.110	.44280	.02860	.44520	-.02725	.02070	-.02840	-.22100	.62800	.04519
.200	14.160	.44710	.02730	.44880	-.03114	.02260	-.03120	-.25500	.62900	.04776
.200		.00017	-.00009	-.00017	.00003	.00144	-.00235	-.01731	.00010	.00028



0A110 861C11F12M51M24E40V19R15X29

(RF5011) (00 MAY 74)

REFERENCE DATA

SREF = 4.4119 SQ.FT. XMRP = 43.5974 INCHES
 LREF = 19.2299 INCHES YMRP = .0000 INCHES
 BREF = 37.9359 INCHES ZMRP = 15.1875 INCHES
 SCALE = .0405 SCALE

BETA = .000 BDFLAP = -12.000
 ELEVON = .000 AILRON = .000
 RUDDER = .000 SPOBRK = 25.000

RUN NO. 11/ 0 RVAL = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

PARAMETRIC DATA

MACH	ALPHA	CL	CLM	CN	CAF	CYN	CBL	CY	XCP/L	CAB
.200	-4.180	-.26690	.04430	-.26950	.02478	-.00120	.00060	.00500	.72000	.03888
.200	-2.110	-.16580	.04820	-.16700	.02851	-.00100	.00050	.00300	.75800	.03802
.250	-1.060	-.11660	.03120	-.11720	.02906	-.00130	.00020	.00500	.80100	.03787
.250	-.050	-.07310	.02970	-.07310	.02967	-.00130	.00040	.00400	.88800	.03755
.200	.980	-.02210	.02870	-.02160	.02908	-.00120	.00050	.00400	1.45200	.03720
.200	2.020	.02530	.02780	.02650	.02694	-.00130	.00040	.00300	.00000	.03762
.200	4.090	.11740	.03090	.11930	.02248	-.00110	.00040	.00200	.50900	.03563
.200	6.160	.21760	.03620	.22030	.01261	-.00110	.00040	.00200	.57400	.03537
.200	8.240	.31770	.04720	.32120	.00121	-.00120	.00030	.00300	.60000	.03525
.200	10.340	.41930	.06880	.42380	-.01347	-.00120	.00030	.00300	.61100	.03654
.200	12.410	.52620	.08750	.53280	-.02765	-.00140	.00000	.00400	.61900	.03703
.200	14.500	.64030	.11690	.64960	-.04525	-.00130	-.00040	.00200	.62600	.03997
.200	16.600	.76960	.16590	.78490	-.06097	-.00180	.00020	.00200	.63500	.04156
.200	18.700	.89040	.21970	.91390	-.07737	-.00190	-.00010	.00300	.64000	.04443
.200	20.790	.99840	.28360	1.03400	-.08931	-.00130	-.00040	.00200	.64200	.04555
.200	22.880	1.12130	.36270	1.18190	-.08339	-.00100	-.00040	.00200	.64800	.05224
.200	24.980	1.20210	.46040	1.28410	-.09038	.00020	.00370	-.00700	.64700	.05789
.200	27.020	1.23740	.53190	1.34400	-.08837	-.00170	.00830	-.00500	.64300	.06215
.200	29.030	1.17930	.56550	1.30560	-.07797	-.00330	-.00050	.01700	.63100	.06617
.200	30.940	1.04640	.55520	1.18290	-.06182	-.00330	-.00320	.02600	.61300	.07476
.200	GRADIENT	.04643	-.00161	.04697	-.00028	-.00000	-.00002	-.00000	-.03952	-.00033

OM110 B61C11, 2M31M24E40V19R15X29

(RFS012) (08 MAY 74)

REFERENCE DATA

SREF = 4.4119 SQ.FT. YMRP = 43.5974 INCHES
 LREF = 19.2299 INCHES YMRP = .0000 INCHES
 BREF = 37.9359 INCHES ZMRP = 15.1875 INCHES
 SCALE = .0465 SCALE

PARAMETRIC DATA

ALPHA = -5.000 BDFLAP = -12.000
 ELEVON = .000 AILRON = .000
 RUDDER = .000 SPOBRK = 25.000

RUN NO. 12/ 0 RNL = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

WACH	BETA	CL	CLM	CN	CAF	CYN	CBL	CY	XCF/L	CAB
.200	-14.170	-2.7640	.03020	-2.7790	.00991	-.01830	-.00200	.25000	.69200	.04523
.200	-10.120	-2.8990	.03600	-.29200	.01024	-.01750	.00240	.18900	.69700	.04381
.200	-8.100	-2.9950	.04000	-.30190	.01304	-.01470	.00290	.15300	.75100	.04290
.200	-6.070	-3.0710	.04370	-.30990	.01675	-.01090	.00220	.11400	.75400	.04151
.200	-4.060	-3.1130	.04860	-.31440	.02019	-.00750	.00150	.07700	.70700	.03951
.200	-2.040	-3.1340	.05120	-.31680	.02252	-.00410	.00090	.04000	.71000	.03865
.200	-.010	-3.1660	.05160	-.32000	.02267	-.00100	.00070	.04400	.71000	.03875
.200	2.020	-3.1560	.05130	-.31900	.02243	.00180	.00010	-.03000	.71000	.03959
.200	4.010	-3.1300	.04890	-.31620	.02027	.00350	-.00030	-.06900	.70700	.04031
.200	6.040	-3.0320	.04440	-.30600	.01674	.00940	-.00090	-.10800	.70400	.04262
.200	8.090	-2.9690	.04080	-.29940	.01374	.01340	-.00170	-.14700	.70100	.04259
.200	10.100	-2.9100	.03720	-.29310	.01068	.01680	-.00160	-.18500	.69800	.04255
.200	12.150	-2.8370	.03320	-.28550	.00735	.01790	-.00020	-.21800	.69500	.04326
.200	14.170	-2.7660	.02840	-.27810	.00326	.01790	.00290	-.24800	.69400	.04544
	GRADIENT	-.00028	.00004	-.00029	.00000	.00158	-.00022	-.01792	.00000	.00010



OA110 861C11F12M51M24E40V19R15X29

(RF5013) (08 MAY 74)

REFERENCE DATA

SREF = 4.4119 90.FT. XMRP = 43.5974 INCHES
 LREF = 19.2299 INCHES YMRP = .0900 INCHES
 BRFP = 37.9359 INCHES ZMRP = 15.1875 INCHES
 SCALE = .5405 SCALE

PARAMETRIC DATA

ALPHA = .005 BCFLAP = -12.000
 ELEVON = .000 AILRON = .000
 RUDDER = .000 SPDBRK = 25.000

RUN NO. 13/ 0 RNL = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

MACH	BETA	CL	CLM	CN	CAF	CYN	CBL	CY	KCP/L	CAB
.200	-14.150	-.03940	.00800	-.03940	.00602	-.01880	.00770	.24800	.91300	.04665
.200	-12.140	-.04310	.02970	-.04310	.01167	-.01930	.00890	.22100	.90500	.04366
.200	-10.130	-.04810	.03320	-.04810	.01632	-.01740	.00870	.18700	.90600	.04205
.200	-8.090	-.05550	.03600	-.05550	.02027	-.01470	.00770	.15100	.89000	.04056
.200	-6.060	-.06180	.03980	-.06180	.02396	-.01050	.00570	.11200	.88900	.03983
.200	-4.080	-.06330	.04350	-.06330	.02698	-.00710	.00370	.07600	.90500	.03842
.200	-2.040	-.07010	.04630	-.07010	.02955	-.00410	.00210	.04000	.89400	.03689
.200	.000	-.07050	.04700	-.07050	.02988	-.00120	.00080	.00400	.89700	.03721
.200	2.020	-.07050	.04590	-.07050	.02861	.00160	-.00100	-.03000	.89200	.03878
.200	4.010	-.06840	.04350	-.06840	.02757	.00490	-.00260	-.06800	.88600	.03950
.200	6.050	-.06230	.04020	-.06230	.02408	.00880	-.00450	-.10500	.88900	.04109
.200	8.080	-.05880	.03590	-.05880	.02022	.01320	-.00640	-.14600	.87700	.04139
.200	10.110	-.05370	.03320	-.05370	.01609	.01680	-.00800	-.18500	.88000	.04234
.200	12.130	-.04840	.03130	-.04840	.01127	.01870	-.00790	-.22000	.89000	.04451
.200	14.170	-.04310	.02910	-.04310	.00797	.01870	-.00690	-.24800	.90100	.04593
	GRADIENT	-.00052	-.00002	-.00052	.00001	.00147	-.00078	-.01769	-.00198	.00020

0A110 861C11F12M51M24E4DV19R15X29

(RF5014) (08 MAY 74)

REFERENCE DATA

SREF = 4.4119 SQ.FT. YMRP = 43.5974 INCHES
 LREF = 19.2299 INCHES YMRP = .0000 INCHES
 BRP = 37.9359 INCHES ZMRP = 15.1875 INCHES
 SCALE = .0405 SCALE

PARAMETRIC DATA

ALPHA = 5.000 BCFLAP = -12.000
 ELEVON = .000 AILRON = .000
 RUDDER = .000 SFD8RK = 25.000

RUN NO. 14/ 0 RNVL = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

MACH	BETA	CL	CD	CLM	CN	CAF	CYN	CBL	CY	XCP/L	CAB
.200	-14.160	.19670	.01510	.02980	.19720	-.00250	-.02130	.01920	.23100	.59600	.04700
.200	-12.130	.19360	.01920	.03120	.19450	.00180	-.02110	.01870	.22100	.59200	.04300
.200	-10.110	.18720	.02220	.03470	.18840	.00543	-.01900	.01650	.18000	.58400	.04169
.200	-8.090	.18290	.02490	.03670	.18440	.00847	-.01490	.01310	.15100	.57800	.04086
.200	-6.050	.17760	.02900	.03990	.17950	.01304	-.01080	.01000	.11200	.57000	.03773
.200	-4.090	.17180	.02970	.04290	.17380	.01432	-.00720	.00630	.07600	.56100	.03604
.200	-2.040	.16950	.03200	.04490	.17170	.01679	-.00420	.00320	.04000	.55500	.03678
.200	.050	.16400	.03290	.04690	.16630	.01818	-.00120	.00030	.00300	.54800	.03595
.200	2.010	.16830	.03140	.04320	.17040	.01631	.00150	-.00220	-.03100	.55400	.03825
.200	4.010	.16790	.02990	.04320	.16990	.01481	.00480	-.00530	-.06900	.55800	.03923
.200	6.070	.17170	.02920	.03960	.17360	.01364	.00840	-.00840	-.10600	.56800	.03958
.200	8.070	.17860	.02620	.03590	.18020	.01019	.01280	-.01220	-.14500	.57900	.04560
.200	10.100	.18210	.02230	.03360	.18340	.00603	.01760	-.01590	-.18700	.58400	.04147
.200	12.140	.18690	.01790	.03210	.18770	.00116	.01990	-.01780	-.22300	.58900	.04403
.200	14.160	.19000	.01420	.02950	.19050	-.00280	.02090	-.01890	-.25500	.59500	.04644
GRADIENT	-.00045	-.00001	-.00001	.00005	-.00045	.00003	.00147	-.00141	-.01783	-.00035	.00019

OAL110 861C11F12M51M424E40V19R15X29

(MF5015) (06 MAY 74)

REFERENCE DATA

BREF = 4.4119 84.FT. YMRP = 43.9974 INCHES
 LREF = 19.2299 INCHES YMRP = .0000 INCHES
 BREF = 37.9399 INCHES ZMRP = 15.1075 INCHES
 SCALE = .5455 SCALE

PARAMETRIC DATA

ALPHA = 10.000 BDFLAP = -12.000
 ELEVOM = .000 AILRON = .000
 RUDDER = .000 SPOBRK = 25.000

RUN NO. 15/ 0 RNL = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

MACH	BETA	CL	CLF	CLM	CN	CAF	CYN	CBL	CY	XCP/L	CAB
.200	-14.150	.44840	.04960	.02810	.45000	-.03152	-.02320	.03110	.24900	.62900	.04830
.200	-12.140	.44320	.05290	.02960	.44750	-.02778	-.02200	.02830	.21900	.62700	.04566
.200	-10.110	.43990	.05630	.03200	.44290	-.02336	-.02000	.02510	.18600	.62500	.04174
.200	-8.100	.43690	.05910	.03500	.44020	-.02111	-.01610	.02090	.14900	.62200	.04008
.200	-6.060	.42960	.06000	.03770	.43340	-.01785	-.01180	.01510	.11200	.62000	.03764
.200	-4.050	.42560	.06200	.04310	.42980	-.01516	-.00720	.01000	.07400	.61500	.03628
.200	-2.030	.42230	.06320	.04590	.42680	-.01345	-.00430	.00480	.03900	.61200	.03581
.200	-.010	.41940	.06380	.04660	.42400	-.01228	-.00140	.00030	.00500	.61100	.03196
.200	2.020	.42070	.06260	.04510	.42510	-.01373	.00150	-.00445	-.03200	.61300	.03717
.200	4.010	.42220	.06160	.04310	.42650	-.01494	.00410	-.00930	-.06700	.61400	.03784
.200	6.070	.42820	.05990	.03730	.43200	-.01776	.00830	-.01450	-.10500	.62000	.03976
.200	8.090	.43360	.05680	.03410	.43670	-.02176	.01300	-.02000	-.14600	.62300	.04251
.200	10.100	.43640	.05530	.03040	.43930	-.02375	.01750	-.02470	-.18500	.62600	.04369
.200	12.120	.44200	.05240	.02810	.44430	-.02760	.02060	-.02830	-.22100	.62800	.04592
.200	14.180	.44800	.05000	.02690	.44970	-.03102	.02220	-.03110	-.25400	.63000	.04792
GRADIENT		-.00042	-.00007	-.00004	-.00041	.00001	.00141	-.00237	-.01750	-.00005	.00023

OAI10 861C11F12M51M24E40V19R15X29

(RF5016) (08 MAY 74)

REFERENCE DATA

BREF = 4.4119 SQ.FT. YMRP = 43.5974 INCHES
 LRREF = 19.2299 INCHES YMRP = .0550 INCHES
 BRREF = 37.9359 INCHES ZMRP = 15.1675 INCHES
 SCALE = .0495 SCALE

PARAMETRIC DATA

ALPHA = 15.000 BDFLAP = -12.000
 ELEVON = .000 AIRCON = .000
 RUDDER = .000 SPOBRK = 25.000

RUN NO. 16/ 0 RML = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

MACH	BETA	CL	CLM	CN	CAF	CYN	CBL	CY	XCF/L	CAB
.200	-14.150	.73300	.01400	.74180	-.06870	-.01980	.03930	.23800	.64500	.05440
.200	-12.160	.75240	.01640	.74190	-.06574	-.01860	.03510	.20800	.64500	.05047
.200	-10.120	.72790	.02140	.73790	-.06344	-.01930	.03110	.18300	.64100	.04455
.200	-8.110	.72420	.02700	.73460	-.06134	-.01640	.02420	.15000	.63800	.04364
.200	-6.070	.71340	.03430	.72480	-.05653	-.01170	.01690	.11100	.63400	.03865
.200	-4.080	.70580	.03970	.71550	-.05428	-.00770	.01040	.07500	.63100	.03799
.200	-2.040	.70420	.04200	.71610	-.05312	-.00450	.00450	.04000	.63000	.03891
.200	-.010	.70190	.04230	.71390	-.05258	-.00170	.00010	.00400	.63000	.04032
.200	2.020	.70450	.04020	.71650	-.05301	.00090	-.00450	-.03100	.63100	.04036
.200	4.020	.70850	.03790	.72030	-.05426	.00390	-.01030	-.06700	.63500	.04032
.200	6.030	.71460	.03260	.72600	-.05669	.00750	-.01680	-.10400	.63900	.04292
.200	8.100	.72510	.02550	.73570	-.06087	.01320	-.02400	-.14700	.63900	.04473
.200	10.100	.72560	.02010	.73580	-.06239	.01670	-.03030	-.18500	.64200	.04497
.200	12.120	.73600	.01550	.74520	-.06738	.01880	-.03620	-.21700	.64400	.05049
.200	14.160	.73840	.01250	.74710	-.06975	.01950	-.04060	-.24600	.64500	.05484
.200	GRADIENT	.05046	-.00014	.05049	.00001	.00141	-.00249	-.01752	.00025	.00032



SREF = 4.4119 66.FT. WRP = 43.5974 INCHES
 LREF = 19.2299 INCHES YWRP = .0000 INCHES
 BREF = 37.9359 INCHES ZWRP = 15.1875 INCHES
 SCALE = .0405 SCALE

ALPHA = 20.000 BOFLAP = -12.000
 ELEVON = .000 AILRON = .000
 RUDDER = .000 SPOBRK = 25.000

REFERENCE DATA

PARAMETRIC DATA

RUN NO. 17/0 RWVL = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

WCM	BETA	QL	CLM	CN	CAF	CVM	CBL	CY	XCP/L	CAB
.200	-14.140	1.05190	-.01290	1.06840	-.09712	-.01370	.04290	.23600	.65600	.05908
.200	-12.120	1.03820	.00260	1.06790	-.09577	-.01850	.04320	.21100	.65100	.05140
.200	-10.040	1.01770	.01030	1.05300	-.09365	-.01950	.04270	.18000	.64800	.04914
.200	-8.090	1.01750	.01540	1.05370	-.09138	-.01390	.03490	.13900	.64600	.04890
.200	-6.040	1.00750	.02240	1.04420	-.08747	-.00970	.02620	.10250	.64400	.04337
.200	-4.070	1.00300	.02700	1.03930	-.08794	-.00670	.01660	.06600	.64200	.04219
.200	-2.020	1.00470	.02710	1.04130	-.08796	-.00400	.00790	.03500	.64200	.04431
.200	0.010	1.00120	.02760	1.03710	-.08905	-.00130	-.00220	.00400	.64200	.04558
.200	2.020	1.00110	.02750	1.03630	-.09117	.00110	-.00810	-.03000	.64200	.04758
.200	4.030	.99730	.02760	1.03180	-.09190	.00350	-.01660	-.06500	.64200	.04577
.200	6.060	.99330	.01850	1.04920	-.09146	.00610	-.02400	-.10100	.64500	.04820
.200	8.090	1.03340	.00720	1.07050	-.09248	.01010	-.03150	-.14000	.64900	.05078
.200	10.130	1.03810	.00420	1.07470	-.09425	.01320	-.03850	-.18000	.65000	.05583
.200	12.140	1.05070	-.00300	1.06670	-.09645	.01630	-.04150	-.21700	.65300	.05265
.200	14.190	1.06030	-.01330	1.05670	-.09903	.01540	-.04330	-.24600	.65700	.05855
	GRADIENT	-.00074	.00007	-.00101	-.00555	.00126	-.00409	-.01635	-.00000	-.00549

04110 061C11F12M51M24E40V19R15X29

(RF5010) (08 MAY 74)

REFERENCE DATA

BDEF = 4.4119 54.FT. XMRP = 43.5974 INCHES
 LDEF = 19.2299 INCHES XMRP = .0000 INCHES
 RDEF = 37.9359 INCHES XMRP = 15.1875 INCHES
 SCALE = .5405 SCALE

PARAMETRIC DATA

BETA = .000 BDFLAP = -12.500
 ELEVON = 5.000 AIRLON = .000
 RUDDER = .000 SFBRK = 25.000

RUN NO. 10/ 0 RIN/L = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

WACH	ALPHA	CL	CDP	CLM	CN	CAP	CYN	CBL	CY	XCP/L	CAB
.200	-4.110	-.15690	.03830	-.00050	-.15920	.02700	-.00120	.00080	.00300	.63000	.04149
.200	-2.050	-.05870	.03130	-.00180	-.05980	.02920	-.00120	.00060	.00500	.64000	.04115
.200	-.990	-.05840	.03010	-.00210	-.00890	.02999	-.00120	.00060	.00400	.56100	.04097
.200	.010	.03610	.02940	-.00230	.03610	.02944	-.00100	.00050	.00300	.67800	.04119
.200	1.040	.06430	.03090	-.00290	.06490	.02943	-.00120	.00070	.00400	.66500	.03990
.200	2.070	.12930	.03160	-.00340	.13030	.02996	-.00120	.00030	.00300	.66100	.04523
.200	4.160	.22770	.03760	-.00410	.22980	.02101	-.00130	.00010	.00400	.65800	.03945
.200	6.240	.32770	.04760	-.00500	.33100	.01171	-.00140	.00000	.00500	.63700	.03815
.200	8.340	.42700	.06070	-.00530	.43130	-.00186	-.00140	.00000	.00500	.65600	.03892
.200	10.390	.52460	.08090	-.00370	.53060	-.01900	-.00130	.00000	.00300	.63400	.03859
.200	12.490	.63590	.10830	-.00280	.64430	-.03174	-.00140	-.00020	.00400	.63300	.04084
.200	14.550	.74380	.14530	-.00520	.75630	-.04634	-.00160	-.00050	.00400	.63400	.04163
.200	16.670	.86060	.19750	-.01730	.90030	-.06335	-.00190	-.00040	.00500	.63900	.04401
.200	18.770	.99440	.25590	-.02080	1.02390	-.07764	-.00210	-.00090	.00500	.63900	.04561
.200	20.850	1.10340	.32340	-.02260	1.14630	-.09047	-.00120	-.00070	.00200	.63900	.04960
.200	22.960	1.22900	.43430	-.02900	1.30110	-.07966	-.00120	-.00190	.00300	.66400	.05655
.200	25.040	1.29460	.50870	-.02900	1.38820	-.06698	.00000	.00230	-.00500	.63900	.06118
.200	27.060	1.29640	.57020	-.00320	1.41420	-.06233	-.00260	-.01020	-.00600	.63300	.06677
.200	29.030	1.19490	.58520	.00300	1.32800	-.06981	-.00600	-.00270	.02100	.63700	.07437
.200	30.970	1.07110	.57620	.09960	1.21490	-.05717	-.00610	-.00090	.02100	.62100	.08192
.200	GRADIENT	.04630	-.00003	-.00042	.04663	-.00067	-.00001	-.00004	-.00018	.05403	-.00026

TABLATED SOURCE DATA - OA1110

DATE 55 AUG 74

(RF5019) (0A MAY 74)

OA110 B61C11F12M51W24E40V19R15X29

PARAMETRIC DATA

BETA = .050 BCFLAP = -12.500
 ELEVON = 15.070 AILRON = .000
 RUDDER = .050 SPOBRK = 25.000

REFERENCE DATA

SREF = 4.4119 SQ.FT. YMRP = 43.3974 INCHES
 LREF = 19.2299 INCHES YMRP = .0000 INCHES
 BREF = 37.9359 INCHES ZMRP = 15.1675 INCHES
 SCALE = .0405 SCALE

RUN NO. 19/ 0 RNL = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

MACH	ALPHA	CL	CLM	CLN	CAF	CYN	CBL	CY	MCP/L	CAB
.200	-3.990	.04950	-.09670	.04660	.04376	-.00090	.00090	.00300	1.41600	.04811
.200	-2.960	.09960	-.02310	.09750	.04575	-.00080	.00100	.00300	1.02300	.04758
.200	-1.930	.15030	-.09910	.14680	.04686	-.00100	.00130	.00500	.89750	.04767
.200	-.980	.19410	-.09880	.19340	.04721	-.00090	.00120	.00300	.84000	.04713
.200	.130	.24240	-.09870	.24250	.04604	-.00110	.00100	.00300	.80300	.04707
.200	1.160	.28900	-.10030	.29000	.04504	-.00110	.00100	.00400	.77900	.04617
.200	2.200	.33290	-.10120	.33480	.04239	-.00130	.00070	.00500	.76300	.04596
.200	4.260	.42510	-.10340	.42920	.03547	-.00110	.00080	.00400	.73800	.04437
.200	6.360	.52550	-.10370	.53160	.02529	-.00120	.00070	.00500	.72300	.04391
.200	8.410	.62290	-.10510	.63160	.01297	-.00130	.00050	.00400	.71200	.04363
.200	10.530	.75580	-.10990	.74790	-.00249	-.00130	.00070	.00400	.70300	.04466
.200	12.600	.84650	-.11090	.86360	-.01697	-.00140	.00050	.00400	.69800	.04593
.200	14.680	.93760	-.12210	.98140	-.03252	-.00160	.00070	.00400	.69300	.04715
.200	16.780	1.08650	-.12130	1.12010	-.04894	-.00170	-.00080	.00300	.69200	.05009
.200	18.870	1.18970	-.11970	1.23600	-.06235	-.00110	-.00080	.00300	.68800	.05188
.200	20.960	1.28040	-.11970	1.34490	-.06853	-.00080	.00070	.00100	.68400	.05663
.200	23.070	1.41430	-.11130	1.51330	-.05644	-.00220	-.00450	.00500	.68600	.06234
.200	25.120	1.44720	-.05980	1.56860	-.06372	.00140	.00670	-.01500	.67800	.06842
.200	27.130	1.38070	-.01840	1.52270	-.05632	-.00400	.01890	-.01800	.66600	.07371
.200	29.020	1.20020	.01860	1.34960	-.04136	-.00850	-.00460	.03400	.64700	.06212
.200	31.020	1.11950	.05220	1.28440	-.03645	-.00540	-.00120	.02000	.63700	.08909
.200		.54538	-.00048	.04619	-.00096	-.00004	-.00004	.00014	-.06589	-.00042

0A110 B61C11F12M51A24E40V19R15X29

(RF5020) (08 MAY 74)

REFERENCE DATA

SREF = 4.4119 SC.FT. XMRP = 43.5974 INCHES
 LREF = 19.2299 INCHES YMRP = .0000 INCHES
 BREF = 37.9359 INCHES ZMRP = 15.1875 INCHES
 SCALE = .0405 SCALE

PARAMETRIC DATA

BETA = .000 E-FLAP = -12.000
 ELEVON = -20.000 AILERON = .000
 RUDDER = .000 SPOBRK = 25.000

RUN NO. 20/ 0 RIN/L = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

MACH	ALPHA	CL	CLM	CLN	CAF	CYN	CBL	CY	XCP/L	CAB
.200	-4.380	-.66680	.11150	.22580	-.67340	-.00100	.00090	.00300	.77500	.02699
.200	-2.320	-.56990	.08600	.22270	-.57290	-.00100	.00050	.00400	.79500	.02811
.200	-1.290	-.52030	.07320	.22130	-.52190	-.00070	.00060	.00100	.80800	.02868
.200	-.220	-.45880	.06550	.21990	-.45900	-.00070	.00080	.00200	.82500	.02728
.200	.780	-.40940	.05710	.21410	-.40850	-.00090	.00040	.00200	.84500	.02890
.200	1.850	-.35080	.05140	.21250	-.35900	-.00090	.00040	.00200	.87000	.02797
.200	3.900	-.28250	.04030	.21060	-.25910	-.00090	.00080	.00200	.95100	.02912
.200	5.970	-.17390	.03480	.21160	-.16880	-.00080	.00070	.00200	1.11300	.02788
.200	8.040	-.08080	.03180	.21400	-.07560	-.00070	.00060	.00100	1.69300	.02966
.200	10.100	.01350	.03610	.21800	.01970	-.00090	.00050	.00200	-3.41900	.02915
.200	12.200	.11090	.04450	.22380	.11790	-.00080	.00020	.00100	-.04600	.03127
.200	14.260	.21960	.06350	.22360	.22850	-.00100	.00010	.00300	.29200	.03192
.200	16.330	.32800	.08900	.22300	.33980	-.00120	.00020	.00300	.41000	.03426
.200	18.470	.43240	.12860	.21700	.46980	-.00687	.00160	.00300	.48200	.03455
.200	20.560	.56000	.17350	.21880	.58530	-.03421	.00060	.00300	.51400	.03823
.200	22.620	.66020	.22480	.21910	.69590	-.04648	.00090	.00200	.53600	.04051
.200	24.750	.77610	.30050	.20700	.83060	-.03219	.00070	-.00900	.56000	.04449
.200	26.800	.85670	.36830	.20880	.93080	-.05761	.00070	-.00200	.56900	.04824
.200	28.880	.90780	.43750	.21290	1.00620	-.05547	.00180	.00300	.57400	.05190
.200	30.880	.85930	.46430	.24440	.97580	-.04264	.00560	.01300	.55900	.05610
GRADIENT	.04826	-.00729	-.00158	.04931	-.00077	-.00001	-.00001	-.00025	.03065	.00009

CA110 B61C11F12M51M24E40V19R15X29

(RF5021) (08 MAY 74)

REFERENCE DATA

SREF = 4.4119 SQ.FT. YMRP = 43.9974 INCHES
 LREF = 19.2297 INCHES YMRP = .0000 INCHES
 BREF = 37.9359 INCHES YMRP = 15.1075 INCHES
 SCALE = .0465 SCALE

PARAMETRIC DATA

ALPHA = 10.000 BDFLAP = -12.000
 ELEVON = .000 AILRON = .000
 RUDDER = .000 SPOBRK = .000

RUN NO. 21/ 0 RVL = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

MACH	BETA	CL	CLM	CN	CAF	CYN	CBL	CY	XCF/L	CAB
.200	-14.120	.45140	.02460	.45260	-.03434	-.01030	.02880	.23800	.63200	.04395
.200	-12.110	.44940	.02550	.45110	-.03135	-.01790	.02680	.21100	.63100	.04155
.200	-10.080	.44510	.02780	.44740	-.02757	-.01640	.02350	.17800	.62900	.03851
.200	-8.090	.44080	.02980	.44370	-.02416	-.01330	.01930	.14500	.62700	.03572
.200	-6.060	.43720	.03380	.44020	-.02321	-.00950	.01430	.10800	.62300	.03485
.200	-4.050	.43110	.03800	.43460	-.02027	-.00610	.00960	.07200	.61900	.03360
.200	-2.020	.42820	.04050	.43190	-.01857	-.00370	.00480	.03700	.61700	.03341
.200	-.010	.42600	.04110	.42980	-.01740	-.00100	.00540	.00200	.61600	.03304
.200	2.020	.42420	.04080	.42790	-.01816	.00160	-.00420	-.03200	.61700	.03350
.200	4.020	.42720	.03820	.43060	-.01977	.00370	-.00890	-.06700	.61900	.03379
.200	6.050	.43030	.03400	.43330	-.02236	.00690	-.01370	-.10400	.62300	.03514
.200	8.060	.43580	.03000	.43850	-.02424	.01020	-.01840	-.14100	.62600	.03681
.200	10.100	.44320	.02650	.44530	-.02815	.01410	-.02290	-.17900	.63000	.04054
.200	12.120	.44530	.02520	.44710	-.03044	.01680	-.02640	-.21500	.63100	.04132
.200	14.170	.44870	.02420	.45000	-.03362	.01750	-.02860	-.24500	.63200	.04342
GRADIENT		-.00059	.00064	-.00060	.00007	.00123	-.00223	-.01720	-.00000	.00002

OA110 861C11F12M51M24E40V19R15X29

(RF5022) (08 MAY 74)

REFERENCE DATA

SREF = 4.4119 SQ.FT. XMRP = 43.5974 INCHES
 LREF = 19.2299 INCHES YMRP = .0000 INCHES
 BRP = 37.9359 INCHES ZMRP = 15.1875 INCHES
 SCALE = .0495 SCALE

PARAMETRIC DATA

ALPHA = 10.000 BDFLAP = -12.000
 ELEVON = .000 AILRON = .000
 RUDDER = -10.000 SPDERK = .000

RUN NO. 22/ 0 RN/L = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

MACH	BETA	CL	CDF	CLM	CN	CAF	CYN	CBL	CY	XCP/L	CAB
.200	-14.130	.45220	.04730	.02370	.45340	-.03479	-.00920	.02360	.22200	.63200	.04203
.200	-12.120	.44891	.05100	.02520	.45080	-.03057	-.00770	.02110	.19100	.63100	.03938
.200	-10.100	.44370	.05340	.02770	.44800	-.02756	-.00400	.01670	.15500	.62900	.03831
.200	-8.080	.43660	.05670	.03150	.43970	-.02289	-.00060	.01200	.11900	.62500	.03560
.200	-6.040	.43500	.05890	.03570	.43850	-.02017	.00390	.00650	.08000	.62200	.03438
.200	-4.050	.42820	.06110	.03940	.43320	-.01698	.00710	.00150	.04400	.61800	.03311
.200	-2.020	.42820	.06280	.04040	.43250	-.01506	.00960	-.00500	.00900	.61700	.03313
.200	.000	.42290	.06230	.04260	.42750	-.01467	.01230	-.00740	-.02500	.61500	.03388
.200	2.040	.42500	.06200	.04030	.42930	-.01529	.01470	-.01200	-.06100	.61700	.03475
.200	4.030	.42900	.06080	.03730	.43300	-.01722	.01640	-.01640	-.09300	.62000	.03566
.200	6.060	.43180	.05830	.03380	.43530	-.02014	.01800	-.02010	-.12600	.62300	.03745
.200	8.080	.43820	.05570	.03080	.44110	-.02395	.02090	-.02460	-.16400	.62600	.04089
.200	10.090	.44560	.05240	.02840	.44840	-.02531	.02370	-.02860	-.19800	.62800	.04294
.200	12.100	.44630	.05240	.02680	.44850	-.02661	.02650	-.03180	-.23500	.63000	.04447
.200	14.150	.44650	.05090	.02750	.44840	-.03020	.02470	-.03240	-.25900	.62900	.04748
GRADIENT	-.00018	-.00007	-.00021	-.00018	-.00018	-.00013	.00117	-.00222	-.01701	.00020	.00033

CA110 B01C11F12M31M24E40V19R19X29

(RF5023) (08 MAY 74)

REFERENCE DATA

SREF = 4.4119 96.FT. YMRP = 43.5974 INCHES
 LREF = 19.2299 INCHES YMRP = .1000 INCHES
 BREF = 37.9359 INCHES ZMRP = 15.1975 INCHES
 SCALE = .0405 SCALE

PARAMETRIC DATA

ALPHA = 10.000 BDFLAP = -12.000
 ELEVON = .000 AILRON = .000
 RUDDER = -20.000 SPCBRK = .000

RUN NO. 23/ 0 RM/L = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

MACH	BETA	CL	CLM	CLN	CAF	CYN	CBL	CY	XCP/L	CAB
.200	-14.140	.45060	.05090	.45240	-.03091	.00230	.01720	.19700	.63000	.04282
.200	-12.120	.44630	.05350	.44870	-.02757	.00470	.01390	.16400	.62800	.04236
.200	-10.100	.43930	.05680	.44240	-.02299	.00780	.00970	.12900	.62500	.04065
.200	-8.080	.43360	.06140	.43760	-.01743	.01230	.00455	.09100	.62100	.03948
.200	-6.060	.42740	.06310	.43180	-.01455	.01640	-.00070	.05200	.61700	.03836
.200	-4.050	.42560	.06580	.43050	-.01167	.02050	-.00570	.01400	.61300	.03773
.200	-2.030	.41910	.06830	.42460	-.00798	.02280	-.01050	-.01900	.61000	.03631
.200	.000	.41640	.06860	.42200	-.00717	.02480	-.01460	-.05350	.61000	.03608
.200	2.020	.41570	.06760	.42110	-.00800	.02630	-.01840	-.09600	.61100	.03654
.200	4.010	.42390	.06450	.42860	-.01254	.02740	-.02270	-.11800	.61400	.03889
.200	6.060	.42610	.06340	.43060	-.01405	.02810	-.02580	-.14800	.61700	.03920
.200	8.080	.43110	.05990	.43490	-.01810	.02930	-.02890	-.19200	.62100	.04314
.200	10.100	.43720	.05750	.44040	-.02188	.03310	-.03320	-.22100	.62400	.04665
.200	12.120	.44080	.05830	.44410	-.02177	.03280	-.03430	-.24900	.62500	.04698
.200	14.140	.44280	.05650	.44580	-.02395	.03130	-.03540	-.27500	.62500	.04964
.200	GRADIENT	-.00034	-.00016	-.00037	-.00008	.00086	-.00208	-.01641	.00015	.00013

0A110 861C11F12M51W124E40V19R15X29

(RF5024) (08 MAY 74)

REFERENCE DATA

SREF = 4.4119 SQ.FT. XMRP = 43.5974 INCHES
 LREF = 19.2299 INCHES YMRP = .0000 INCHES
 BREF = 37.9359 INCHES ZMRP = 15.1875 INCHES
 SCALE = .0405 SCALE

PARAMETRIC DATA

ALPHA = 10.000 BDFLAP = -12.000
 ELEVON = .000 AILRON = .000
 RUDDER = -25.000 SPOBRK = .000

RUN NO. 24/ 0 RIN/ = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

MACH	BETA	CL	CLM	CN	CAF	CYN	CBL	CY	XCP/L	CAB
.200	-14.130	.44780	.05390	.45020	-.02743	.00740	.01410	.18700	.02700	.04444
.200	-12.130	.44560	.05800	.44880	-.02300	.01020	.01070	.15400	.02500	.04307
.200	-10.110	.43780	.06240	.44190	-.01724	.01390	.00630	.11700	.02100	.04125
.200	-8.090	.42690	.06490	.43160	-.01278	.01840	.00100	.07700	.01600	.04105
.200	-6.060	.42080	.06830	.42620	-.00827	.02260	-.00420	.03900	.01200	.03926
.200	-4.060	.41720	.07050	.42310	-.00545	.02620	-.00900	.00200	.00800	.03890
.200	-2.030	.41360	.07110	.41970	-.00424	.02830	-.01340	-.03100	.00500	.03960
.200	-.020	.41360	.07260	.41990	-.00266	.03020	-.01730	-.06400	.00600	.03821
.200	2.020	.41640	.07150	.42250	-.00426	.03220	-.02160	-.09800	.00700	.03867
.200	4.030	.42030	.06900	.42600	-.00749	.03280	-.02530	-.12900	.01100	.03970
.200	6.050	.42410	.06650	.42910	-.01069	.03350	-.02860	-.16100	.01400	.04057
.200	8.080	.43150	.06450	.43610	-.01398	.03570	-.03210	-.19600	.01800	.04408
.200	10.100	.43640	.06110	.44030	-.01820	.03790	-.03570	-.23100	.02100	.04742
.200	12.110	.43810	.06110	.44190	-.01847	.03620	-.03600	-.25700	.02100	.04946
.200	14.160	.43840	.05820	.44170	-.02140	.03500	-.03690	-.28300	.02100	.05224
.200	GRADIENT	.00046	-.00013	.00042	-.00020	.00045	-.00202	-.01626	.00039	.00063

0A110 B61C11F12M51M24E40V19R15X29

(RF5025) (08 MAY 74)

REFERENCE DATA

SREF = 4.4119 96.FT. XMRP = 43.5974 INCHES
 LREF = 19.2799 INCHES YMRP = .0000 INCHES
 BREF = 37.5359 INCHES ZMRP = 15.1875 INCHES
 SCALE = .0405 SCALE

PARAMETRIC DATA

ALPHA = 10.000 BDFLAP = -12.000
 ELEVON = .000 AILRON = .000
 RUDDER = -25.000 SPOBRK = 25.000

RUN NO. 25/ 0 RNL = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

MACH	BETA	CL	CLM	CN	CAF	CYN	CBL	CY	XCP/L	CAB
.200	-14.130	.44430	.03140	.44630	-.06919	.00190	.01770	.19800	.62700	-.04564
.200	-12.110	.44180	.03420	.44470	-.02414	.00560	.01340	.16300	.62300	.04530
.200	-10.090	.42950	.04140	.43350	-.01669	.01080	.00800	.12200	.61700	.04323
.200	-8.080	.42250	.04750	.42770	-.00962	.01690	.00210	.07900	.61100	.04207
.200	-6.050	.41590	.05260	.42170	-.00584	.02230	-.00380	.03700	.60600	.04146
.200	-4.020	.41230	.05690	.41860	-.00301	.02570	-.00860	.00100	.60200	.04025
.200	-2.020	.40730	.05860	.41390	-.00090	.02820	-.01330	-.03300	.60000	.03983
.200	.000	.40950	.05840	.41620	-.00043	.03080	-.01760	-.06800	.60000	.03985
.200	2.000	.41060	.05840	.41710	-.00188	.03320	-.02220	-.10200	.60200	.04069
.200	4.020	.41390	.05280	.41990	-.00439	.03480	-.02650	-.13400	.60500	.04195
.200	6.040	.42040	.04810	.42590	-.00799	.03750	-.03110	-.17000	.61000	.04363
.200	8.070	.42290	.04500	.42760	-.01099	.03890	-.03400	-.20400	.61300	.04667
.200	10.100	.42730	.04280	.43200	-.01282	.03880	-.03560	-.23500	.61500	.04844
.200	12.120	.42910	.04460	.43380	-.01297	.03570	-.03540	-.25700	.61400	.0507
.200	14.140	.43100	.04420	.43520	-.01584	.03530	-.03690	-.28500	.61400	.05380
.200	GRADIENT	.00032	-.00013	.00029	-.00015	.00115	-.00222	-.01682	.00040	.00021

CA110 861C11F12M51M24E40V19R15Z29

(RF5026) (08 MAY 74)

REFERENCE DATA

SREF = 4.4119 SQ.FT. YMRP = 43.9974 INCHES
 LREF = 19.2299 INCHES YMRP = .0000 INCHES
 BRP = 37.9359 INCHES ZMRP = 15.1875 INCHES
 SCALE = .5405 SCALE

PARAMETRIC DATA

ALPHA = 10.000 BDFLAP = -12.000
 ELEVON = .000 AILRON = .000
 RUDDER = -20.000 SPOBRK = 25.000

RUN NO. 26/ 0 RW/L = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

MACH	BETA	CL	CDF	CLM	CN	CAF	CYN	CBL	CY	XCF/L	CAB
.200	-14.140	.44580	.04950	.02800	.44750	-.03132	-.00340	.02070	.20700	.62900	.04586
.200	-12.110	.44100	.05440	.03240	.44360	-.02565	.00020	.01670	.17200	.62500	.04367
.200	-10.080	.43650	.05810	.03700	.43980	-.02121	.00500	.01150	.13400	.62100	.04313
.200	-8.050	.42720	.06250	.04290	.43155	-.01510	.01070	.00570	.09500	.61500	.04133
.200	-6.030	.42060	.06540	.04770	.42550	-.01106	.01620	-.00030	.05100	.61000	.04038
.200	-4.060	.41540	.06770	.05240	.42080	-.00790	.01960	-.00530	.01200	.60600	.03882
.200	-2.010	.41270	.06840	.05440	.41830	-.00668	.02230	-.00990	-.02100	.60400	.03954
.200	.000	.41150	.06990	.05440	.41740	-.00502	.02470	-.01430	-.05400	.60400	.03870
.200	2.020	.41240	.06980	.05230	.41820	-.00325	.02720	-.01880	-.09000	.60600	.03657
.200	4.020	.41560	.06810	.04960	.42110	-.00751	.02910	-.02320	-.12300	.60800	.03965
.200	6.040	.41990	.06450	.04560	.42460	-.01183	.03280	-.02830	-.16100	.61200	.04235
.200	8.090	.42620	.06230	.04270	.43050	-.01511	.03490	-.03180	-.19600	.61500	.04591
.200	10.100	.43290	.06090	.04010	.43680	-.01774	.03620	-.03490	-.22900	.61800	.04826
.200	12.120	.43820	.06080	.04270	.43610	-.01768	.03340	-.03440	-.25300	.61600	.04980
.200	14.160	.43290	.05970	.04170	.43620	-.01890	.03340	-.03620	-.28100	.61600	.05131
.200	GRADIENT	.00000	.00011	-.00038	.00002	.00011	.00118	-.00221	-.01679	.00030	.00003



DATE 05 AUG 74
 TABULATED SOURCE DATA - CA110
 CA110 861C11F12M51M24E40V19R15X29

(RF5027) (08 MAY 74)

ALPHA = 10.000 BDFLAP = -12.000
 ELEVON = .000 AILRON = .000
 RUDDER = -10.000 SPOBRK = 25.000

PARAMETRIC DATA

REFERENCE DATA

SREF = 4.4119 SQ.FT. YMRP = 43.9974 INCHES
 LREF = 19.2299 INCHES YMRP = .0000 INCHES
 BREF = 37.9359 INCHES ZMRP = 15.1875 INCHES
 SCALE = .5405 SCALE

RUN NO. 27/ 0 RM/L = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

MACH	BETA	CL	CDF	CLM	CN	CAF	CYN	CBL	CY	X/P/L	CAB
.200	-14.050	.44680	.04930	.02690	.44840	-.03172	-.01420	.02660	.23000	.63000	.04574
.200	-12.120	.44470	.05170	.02930	.44670	-.02901	-.01160	.02340	.19800	.62700	.04459
.200	-10.070	.44090	.05510	.03310	.44370	-.02496	-.00740	.01850	.16100	.62400	.04277
.200	-8.080	.43300	.05900	.03700	.43650	-.01962	-.00250	.01340	.12200	.62000	.03951
.200	-6.040	.42710	.06150	.04120	.43120	-.01606	.00260	.00730	.08100	.61600	.03761
.200	-4.050	.42470	.06290	.04640	.42910	-.01429	.00670	.00200	.04500	.61200	.03744
.200	-2.020	.42310	.06400	.04840	.42770	-.01298	.00940	-.00270	.00900	.61000	.03827
.200	.000	.41550	.06460	.04930	.42030	-.01094	.01220	-.00700	-.02600	.60800	.03725
.200	2.040	.41870	.06310	.04690	.42360	-.01108	.01510	-.01200	-.06300	.61100	.03699
.200	4.020	.41800	.06310	.04490	.42250	-.01279	.01760	-.01670	-.09700	.61300	.03783
.200	6.070	.42360	.06050	.04040	.42760	-.01646	.02210	-.02210	-.13700	.61700	.04055
.200	8.070	.43090	.05940	.03690	.43460	-.01891	.02510	-.02650	-.17300	.62000	.04276
.200	10.100	.43590	.05690	.03380	.43900	-.02221	.02790	-.03040	-.20900	.62300	.04543
.200	12.120	.43910	.05640	.03310	.44110	-.02310	.02830	-.03230	-.24500	.62400	.04636
.200	14.140	.44050	.05420	.03350	.44300	-.02575	.02890	-.03440	-.27000	.62400	.04915
.200	GRADIENT	-.00088	.00008	-.00022	-.00086	.00024	.00136	-.00231	-.01762	.00015	-.00003

0A110 861C11F12M51M24E45V19R15X29

(RF5028) (08 MAY 74)

REFERENCE DATA

SREF = 4.4119 3d.FT. YMRP = 43.9974 INCHES.
 LREF = 19.2299 INCHES YMRP = .0000 INCHES
 BREF = 37.9359 INCHES YMRP = 15.1875 INCHES
 SCALE = .0405 SCALE

PARAMETRIC DATA

ALPHA = 10.000 BDFLA = -12.000
 ELEVON = .000 AIRLON = .000
 RUDDER = .000 SPOBRK = 25.000

RUN NO. 28/ 0 RNVL = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

MACH	BETA	CL	CD	C _M	CN	CAF	CYN	CBL	CY	XCP/L	CAB
.200	-14.150	.44510	.04970	.02700	.44680	-.03088	-.02320	.03110	.24800	.62900	.04868
.200	-12.130	.44180	.05210	.02970	.44400	-.02798	-.02150	.02840	.21700	.62700	.04628
.200	-10.110	.43950	.05350	.03120	.44200	-.02620	-.01990	.02560	.18500	.62600	.04509
.200	-8.090	.43250	.05750	.03480	.43580	-.02091	-.01580	.02080	.14800	.62200	.04057
.200	-6.050	.42990	.05730	.03780	.43320	-.02165	-.01140	.01550	.11500	.61900	.04041
.200	-4.070	.42320	.06080	.04290	.42720	-.01600	-.00690	.01010	.07100	.61500	.03771
.200	-2.030	.41680	.06230	.04550	.42130	-.01332	-.00410	.00520	.03600	.61200	.03635
.200	.000	.41640	.06240	.04650	.42090	-.01318	-.00120	.00560	.00100	.61100	.03692
.200	2.000	.41850	.06260	.04570	.42300	-.01333	.00140	-.00390	-.03200	.61200	.03676
.200	4.000	.41840	.05910	.04320	.42220	-.01679	.00400	-.00800	-.06800	.61400	.03840
.200	6.040	.42360	.05680	.03800	.42700	-.02000	.00820	-.01410	-.10800	.61900	.03985
.200	8.070	.42940	.05660	.03400	.43260	-.02125	.01220	-.01910	-.14600	.62300	.04112
.200	10.090	.43240	.05420	.03020	.43510	-.02408	.01670	-.02410	-.18400	.62600	.04261
.200	12.100	.43930	.05260	.02690	.44160	-.02693	.01890	-.02750	-.21900	.62800	.04439
.200	14.140	.44150	.05040	.02830	.44340	-.02954	.01900	-.02890	-.24800	.62800	.04730
.200	GRADIENT	-.00039	-.00015	.00007	-.00041	-.00008	.00130	-.00233	-.01715	-.00010	.00009



04110 B61C11F12H51W24E41V19R15X29

(RFS029) (06 MAY 74)

REFERENCE DATA

SREF = 4.4119 SQ.FT. XMRP = 43.5974 INCHES
 LREF = 19.2299 INCHES YMRP = .0000 INCHES
 BREF = 37.9359 INCHES ZMRP = 15.1875 INCHES
 SCALE = .5455 SCALE

PARAMETRIC DATA

ALPHA = 10.000 BDFLAP = -12.000
 ELEVON = .000 ALLRON = .000
 RUDDER = .000 SPOBRK = 25.000

RUN NO. 29/ 0 RM/L = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

MACH	BETA	CL	CLM	CN	CAF	CYN	CDL	CY	XCP/L	CAB
.000	-14.130	.45000	.05110	.45190	-.03037	-.02340	.03140	.24900	.63000	.04840
.200	-12.120	.44600	.05370	.44840	-.02725	-.02130	.02850	.21700	.62800	.04586
.250	-10.090	.44110	.05630	.44410	-.02380	-.02000	.02570	.18500	.62600	.04259
.250	-8.070	.43680	.05770	.44010	-.02165	-.01630	.02130	.14900	.62300	.04095
.200	-6.030	.43500	.05910	.43850	-.01985	-.01160	.01580	.11100	.62100	.03959
.200	-4.030	.42750	.06160	.43170	-.01610	-.00720	.01050	.07200	.61600	.03777
.200	-2.020	.42350	.06280	.42790	-.01411	-.00430	.00560	.03700	.61300	.03726
.200	-.010	.42450	.06360	.42900	-.01338	-.00370	.00100	.00200	.61300	.03738
.200	2.030	.42280	.06270	.42720	-.01408	-.00120	-.00370	-.03300	.61300	.03730
.200	4.020	.42310	.06180	.42750	-.01503	.00390	-.00870	-.06800	.61500	.03663
.200	6.070	.42690	.05850	.43050	-.01897	.00800	-.01390	-.10600	.62000	.03865
.200	8.080	.43320	.05740	.43650	-.02123	.01220	-.01910	-.14600	.62400	.04086
.200	10.100	.43840	.05530	.44120	-.02426	.01670	-.02420	-.18400	.62700	.04261
.200	12.140	.44160	.05290	.44390	-.02713	.01920	-.02780	-.22000	.62800	.04431
.200	14.150	.44560	.05080	.44750	-.02994	.02040	-.03000	-.25200	.62900	.04654
GRADIENT	-.00047	.00001	.00004	-.00047	.00011	.00137	-.00235	-.01737	-.00010	-.00011

OM110 861C11F12M31A24E41V19R15X29

(RF3030) (08 MAY 74)

REFERENCE DATA

SHEF = 4.4119 30.FT. YMRP = 43.5974 INCHES
 LSEF = 19.2299 INCHES YMRP = .0000 INCHES
 BSEF = 37.9359 INCHES ZMRP = 15.1875 INCHES
 SCALE = .0405 SCALE

PARAMETRIC DATA

BETA = .000 BDFLAP = -12.000
 ELEVON = .000 AILRON = .000
 RUDDER = .000 SPOBPK = 25.000

RUN NO. 30/ 0 RNL = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

MACH	ALPHA	CL	CLM	CN	CAF	CYN	CBL	CY	XCF/L	CAB
.200	-2.190	-.26500	.04430	-.79750	.02484	-.00140	.00079	.00200	.72000	.53951
.200	-2.090	-.16400	.04820	-.16520	.02830	-.00130	.00079	.00300	.75900	.53812
.200	-1.970	-.11930	.04770	-.11980	.02794	-.00140	.00079	.00200	.79800	.53957
.200	-.040	-.06980	.04690	-.06980	.02965	-.00150	.00060	.00200	.89900	.53711
.200	.970	-.02620	.04650	-.02570	.02846	-.00150	.00079	.00200	1.31600	.53795
.200	2.010	.02310	.04650	.02400	.02745	-.00140	.00050	.00200	-.05800	.53721
.200	4.090	.11830	.04610	.12010	.02078	-.00130	.00080	.00100	.51000	.53755
.200	6.170	.21770	.04540	.22020	.01195	-.00140	.00080	.00100	.57600	.53657
.200	8.250	.32240	.04460	.32570	-.00036	-.00150	.00090	.00100	.67100	.53696
.200	10.330	.42090	.04620	.42540	-.01337	-.00170	.00070	.00100	.61200	.53689
.200	12.420	.52880	.04710	.53510	-.02924	-.00170	.00090	.00100	.61900	.53847
.200	14.510	.64630	.04480	.65580	-.04646	-.00160	.00040	.00100	.62700	.54122
.200	16.590	.77350	.03490	.78870	-.06199	-.00190	.00040	.00100	.63500	.54221
.200	18.680	.89190	.02980	.91540	-.07745	-.00210	.00010	.00100	.64000	.54470
.200	20.810	1.00450	.02740	1.04010	-.09086	-.00160	-.00020	.00100	.64200	.54746
.200	22.980	1.12230	.01020	1.18390	-.08130	-.00130	-.00020	.00100	.64800	.55333
.200	24.970	1.20220	.46070	1.28430	-.08999	-.00030	.00450	-.00900	.64700	.52798
.200	27.060	1.24470	.53510	1.35190	-.08984	-.00050	.00800	-.00900	.64300	.56346
.200	29.030	1.17810	.56320	1.30340	-.07926	-.00570	.01080	.00000	.63000	.56952
.200	30.930	1.02430	.54570	1.15920	-.05851	-.00680	.00100	.00000	.61100	.57585
.200	GRADIENT	.04614	-.00172	.04666	-.00040	.00000	.00000	-.00014	-.04515	-.00020

C4110 061C11F12M51424E41V19R15X29

(RF9531) (00 MAY 74)

REFERENCE DATA

SREF = 4.4119 SQ.FT. WWRP = 43.5974 INCHES
 LREF = 19.2299 INCHES YWRP = .0000 INCHES
 BREF = 37.9359 INCHES ZWRP = 15.1675 INCHES
 SCALE = .0405 SCALE

PARAMETRIC DATA

BETA = .000 BDPLAP = -12.000
 ELEWON = 15.000 AILRON = .000
 RUDDER = .000 SFCBRK = 25.000

RUN NO. 31/ 0 RWL = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

MMCH	ALPHA	CL	CDF	CLM	CN	CAF	CYN	CBL	CY	XCP/L	CAB
.200	-4.010	.04530	.04030	-.08330	.04230	.04340	-.00120	.00090	.00400	1.46200	.04750
.200	-1.940	.14210	.04130	-.09580	.14060	.04610	-.00120	.00190	.00300	.90200	.04750
.200	-.890	.19120	.04120	-.09790	.19050	.04420	-.00120	.00100	.00400	.64100	.04960
.200	.120	.24190	.04470	-.09850	.24200	.04410	-.00130	.00100	.00400	.80100	.04890
.200	1.160	.28960	.04910	-.09920	.29070	.04310	-.00120	.00110	.00400	.77700	.04740
.200	2.170	.33090	.05350	-.09960	.33280	.04292	-.00130	.00110	.00300	.76200	.04521
.200	4.230	.42690	.06560	-.10130	.43060	.03372	-.00140	.00130	.00300	.73000	.04627
.200	6.330	.52890	.08380	-.10440	.53490	.02493	-.00130	.00140	.00400	.72400	.04407
.200	8.420	.63540	.10390	-.10670	.64500	.01155	-.00130	.00120	.00400	.71300	.04456
.200	10.500	.73850	.13470	-.10890	.75060	-.00209	-.00120	.00070	.00200	.70500	.04553
.200	12.600	.85600	.17420	-.11260	.87340	-.01673	-.00120	.00070	.00100	.69400	.04768
.200	14.690	.96810	.21870	-.11510	.99200	-.03380	-.00210	.00030	.00200	.69200	.04961
.200	16.770	1.09100	.27740	-.12280	1.12460	-.04933	-.00180	.00030	.00200	.68000	.05250
.200	18.870	1.19880	.34330	-.12420	1.24540	-.06296	-.00120	.00030	.00200	.66600	.05050
.200	20.960	1.29840	.43010	-.12530	1.35700	-.05931	-.00300	.00170	-.00500	.64600	.05050
.200	23.060	1.42560	.54370	-.14420	1.52280	-.05749	-.00190	-.00340	.00300	.66700	.06353
.200	25.130	1.44650	.67450	-.11200	1.36500	-.06335	-.00160	.00690	-.01700	.67000	.06797
.200	27.120	1.38910	.64370	-.06060	1.32980	-.06047	-.00290	.01630	-.01900	.66600	.07377
.200	29.030	1.10610	.61130	.02470	1.33380	-.04113	-.00330	-.00300	.02900	.64500	.06533
.200	29.990	1.13880	.61160	.04610	1.29200	-.03974	-.00580	-.00480	.02700	.63900	.04959
.200	.04622	.00317	-.00094	-.00107	.04703	-.00107	-.00702	.00004	.00018	-.07439	-.00125

Q0115 861C11F12451M24E41V19R15X29

(RF5032) (58 MAY 74)

REFERENCE DATA

SREF = 4.4119 SQ.FT. ZMRP = 43.9974 INCHES
 LREF = 19.2299 INCHES YMRP = .0005 INCHES
 DREF = 37.9359 INCHES ZMRP = 15.1875 INCHES
 SCALE = .0405 SCALE

PARAMETRIC DATA

BETA = .000 BDFLAP = -12.000
 ELEWON = -20.000 AILRON = .000
 RUDDER = .000 SFBRBK = 25.000

RUN NO. 32/ 0 RVAL = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

MACH	ALPHA	CL	CDP	CLM	CN	CAF	CYN	CBL	CY	XCP/L	CAB
.200	-4.410	-.66410	.10900	.22490	-.57050	.05767	-.00200	-.00010	.00500	.77500	.02872
.200	-2.320	-.55890	.08430	.21920	-.56190	.06160	-.00150	.00080	.00400	.79500	.02906
.200	-1.300	-.50810	.07540	.21690	-.50960	.06385	-.00140	.00090	.00300	.80800	.02766
.200	-.260	-.43100	.06310	.21260	-.45210	.06308	-.00150	.00070	.00300	.82500	.02813
.200	.770	-.39840	.05740	.20980	-.39760	.06283	-.00170	.00000	.00300	.84600	.02816
.200	1.800	-.35050	.05060	.20670	-.34870	.06170	-.00160	.00010	.00200	.87200	.02874
.200	3.870	-.25560	.04060	.20610	-.23230	.05780	-.00150	.00040	.00300	.95200	.02844
.200	5.950	-.16450	.03340	.20870	-.16020	.05033	-.00140	.00040	.00200	1.13100	.02930
.200	8.040	-.06950	.03320	.21060	-.06320	.04246	-.00140	.00030	.00200	1.87800	.02831
.200	10.090	.02350	.03500	.21590	.02930	.03039	-.00130	.00040	.00100	-2.05200	.03071
.200	12.180	.11690	.04510	.22020	.12380	.01940	-.00120	.00050	.00100	-.00200	.03052
.200	14.280	.22260	.06140	.22230	.23090	.00474	-.00130	.00050	.00100	.29700	.03368
.200	16.370	.33680	.09030	.22010	.34870	-.00830	-.00140	.00060	.00100	.41900	.03419
.200	18.450	.46030	.12740	.21620	.47750	-.02478	-.00150	.00100	.00100	.48500	.03719
.200	20.530	.56390	.17210	.21790	.58350	-.03662	-.00160	.00040	.00100	.51500	.03972
.200	22.610	.66540	.22750	.21600	.70150	-.04632	-.00060	.00070	.00000	.53700	.03984
.200	24.720	.78270	.30280	.20620	.83760	-.05233	.00000	.00010	-.01000	.56100	.04450
.200	26.800	.86460	.37270	.20570	.93980	-.05716	-.00060	.00000	-.00300	.57100	.04805
.200	28.650	.92040	.44110	.21120	1.01900	-.05782	-.00170	.00060	.00100	.57500	.05351
.200	30.860	.83260	.45990	.24450	.96780	-.04283	-.00000	.00290	.00100	.55900	.05770
GRADIENT	.04848	-.00717	-.00173	-.00173	.04950	-.00076	.00003	-.00000	-.00025	.03200	.00004



OA110 B61C11F12M51W24E42V19R15X29

(RF9533) (57 MAY 74)

REFERENCE DATA

SREF = 4.4119 SQ.FT. XMRP = 43.5974 INCHES
 LREF = 19.2299 INCHES YMRP = .0000 INCHES
 BREF = 37.9359 INCHES ZMRP = 15.1875 INCHES
 SCALE = .0405 SCALE

PARAMETRIC DATA

BETA = .005 BDFLAP = -12.000
 ELFVON = -20.000 AILRON = .010
 RUDDER = .000 SPDBRK = 25 Lt

RUN NO. 33/ 0 RIVL = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

MACH	ALPHA	CL	CLM	CN	CAF	CYN	CBL	CV	KCP/L	CAB
.200	-4.380	-.62420	.10960	-.63070	.56159	-.00140	.00310	.00500	.77400	.02976
.200	-2.310	-.52345	.08820	-.52650	.56700	-.00130	.00280	.05400	.79600	.02959
.200	-1.270	-.47050	.07680	-.47160	.56636	-.00110	.00300	.05300	.81000	.03081
.200	-.195	-.41080	.06910	-.41110	.56771	-.00120	.00280	.00200	.83000	.02888
.200	.780	-.36440	.06150	-.36360	.56653	-.00130	.00250	.00200	.85100	.03039
.200	1.845	-.31220	.05690	-.31020	.56692	-.00130	.00260	.00300	.88300	.02894
.200	3.900	-.21250	.04740	-.20880	.56185	-.00110	.00250	.00100	.99200	.03026
.200	5.980	-.12310	.04260	-.11790	.55327	-.00110	.00260	.00100	1.25400	.02873
.200	8.050	-.02670	.04100	-.02060	.54438	-.00100	.00270	.00000	4.12700	.03016
.200	10.120	.06520	.04490	.07210	.53278	-.00100	.00250	.00000	-.36900	.03102
.200	12.200	.15780	.05320	.16590	.52063	-.00090	.00240	.00000	.19500	.03090
.200	14.280	.25680	.07130	.26640	.50580	-.00080	.00220	.00000	.36200	.03377
.200	16.360	.36410	.10010	.37760	-.00648	-.00120	.00160	.00000	.44700	.03349
.200	18.450	.47750	.13550	.49570	-.02260	-.00180	.00170	.00000	.49600	.03690
.200	20.550	.57590	.17890	.62210	-.03458	-.00200	.00020	.00100	.52100	.03966
.200	22.630	.67510	.23120	.71030	-.04566	-.00090	.00080	.00000	.53900	.04144
.200	24.740	.78740	.30660	.84340	-.05112	-.00020	.00480	-.00000	.56200	.04528
.200	26.800	.86400	.37500	.94030	-.05489	.00000	.00190	-.00400	.57100	.04752
.200	28.860	.91020	.44010	1.00960	-.05388	-.00190	.00300	.00200	.57400	.05316
.200	30.840	.84655	.46050	.96290	-.03871	-.00500	.00170	.01200	.55700	.05766
GRADIENT	.04885	-.00636	-.00179	.04996	-.00069	.00002	-.00005	-.00038	.04229	-.00005

CA115 861C11F12M51M24E42V19R15X29

(RF503*) (08 MAY 74)

REFERENCE DATA

SREF = 4.4119 SQ.FT. XMRP = 43.5974 INCHES
 UREF = 19.2299 INCHES YMRP = .0000 INCHES
 BREF = 37.9339 INCHES ZMRP = 15.1675 INCHES
 SCALE = .0405 SCALE

PARAMETRIC DATA

BETA = .000 BDFLAP = -12.500
 ELEVON = 15.000 AIRLON = .000
 RUDDER = .000 SPDRK = 25.000

RUN NO. 34/ 0 RNVL = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

MACH	ALPHA	CL	CLM	CN	CAF	CYN	CRL	CY	XCF/L	CAB
.200	-3.580	.04525	-.09240	.03730	.04279	-.00140	.00030	.00400	1.56200	.04634
.200	-1.910	.13380	-.09440	.13440	.04330	-.00150	.00040	.00500	.91000	.04796
.200	-.680	.18440	-.09410	.18370	.04663	-.00150	.00010	.00400	.84000	.04614
.200	.130	.23200	-.09330	.23210	.04392	-.00170	.00000	.00500	.80300	.04640
.200	1.170	.27610	-.09600	.27710	.04464	-.00170	.00000	.00500	.77900	.04616
.200	2.200	.32410	.09680	.32390	.04096	-.00160	-.00020	.00500	.76100	.04741
.200	4.270	.41630	-.09790	.42020	.03615	-.00170	-.00030	.00500	.73700	.04400
.200	6.360	.51790	-.10160	.52400	.02582	-.00180	-.00030	.00500	.72300	.04424
.200	8.430	.62760	-.10470	.63640	.01227	-.00180	-.00040	.00500	.71200	.04312
.200	10.510	.73480	-.10770	.74710	-.00143	-.00200	.00030	.00500	.70500	.04509
.200	12.610	.84450	-.11040	.86200	-.01524	-.00180	.00000	.00400	.69900	.04556
.200	14.720	.97060	-.11680	.99490	-.03289	-.00180	-.00030	.00400	.69500	.04808
.200	16.800	1.08950	-.12300	1.12370	-.04783	-.00190	-.00010	.00300	.69200	.04914
.200	18.890	1.19410	-.12340	1.24120	-.06127	-.00130	.00030	.00200	.68800	.05231
.200	20.970	1.28200	-.12190	1.34840	-.06398	.00100	.00190	-.00100	.68500	.05710
.200	23.080	1.42310	-.14490	1.52240	-.05737	-.00180	-.00290	.00200	.68700	.06417
.200	25.140	1.45010	-.11380	1.57220	-.06335	.00140	.00390	-.01300	.67800	.06713
.200	27.220	1.38540	-.06080	1.52470	-.05860	-.00260	.01960	-.02200	.66600	.07409
.200	29.030	1.10690	.02440	1.33430	-.04191	-.00810	-.00590	.00300	.64500	.08655
.200	31.000	1.11640	.02330	1.28120	-.03547	-.00450	-.00160	.01900	.63700	.09035
.200	GRADIENT	.04559	-.00066	.04641	-.00066	-.00004	-.00009	.00012	-.08462	-.00543

OA110 B61C11F12M51424E242V19R15X29

REFERENCE DATA
 SREF = 4.4119 SQ.FT. XMRP = 43.5974 INCHES BETA = .000 BDFLAP = -12.000
 LREF = 19.2299 INCHES YMRP = .0000 INCHES ELEVON = .000 AILRON = .000
 BREF = 37.9359 INCHES ZMRP = 15.1075 INCHES RUDDER = .000 SPCBRK = 25.000
 SCALE = .0405 SCALE

RUN NO. 35/ 0 RVAL = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

MACH	ALPHA	CL	COF	CLM	CN	CAF	CYN	CBL	CY	XCP/L	CAB
.200	-4.180	-.25940	.04480	.04810	-.28190	.02581	-.00130	.00090	.00400	.71000	.03786
.200	-2.110	-.16190	.03500	.04600	-.16300	.02910	-.00110	.00100	.00300	.79000	.03717
.200	-1.080	-.11550	.03060	.04570	-.11600	.02848	-.00120	.00080	.00300	.79700	.03691
.200	-.030	-.06920	.02930	.04530	-.05320	.02934	-.00130	.00060	.00300	.90800	.03741
.200	.990	-.01750	.02870	.04540	-.01700	.02901	-.00110	.00070	.00200	1.63400	.03768
.200	2.040	.02880	.02740	.04520	.02980	.02644	-.00110	.00080	.00200	.09450	.03842
.200	4.110	.12230	.03110	.04430	.12420	.02232	-.00110	.00070	.00200	.52000	.03627
.200	6.180	.22300	.03660	.04360	.22570	.01235	-.00110	.00070	.00200	.58000	.03688
.200	8.250	.32310	.04870	.04300	.32870	.00155	-.00120	.00050	.00300	.60300	.03515
.200	10.320	.42330	.06350	.04400	.42780	-.01331	-.00120	.00040	.00200	.61400	.03737
.200	12.410	.52130	.08800	.04450	.53780	-.02822	-.00130	.00030	.00300	.62100	.03819
.200	14.510	.64590	.12030	.04340	.65540	-.04537	-.00140	-.00010	.00100	.62700	.04070
.200	16.600	.77450	.16820	.03410	.78970	-.06202	-.00160	.00000	.00100	.63600	.04284
.200	18.700	.88970	.22070	.02880	.91350	-.07819	-.00180	.00000	.00200	.64000	.04371
.200	20.790	1.00310	.28510	.02730	1.03900	-.08960	-.00130	-.00030	.00200	.64200	.04684
.200	22.890	1.12250	.36920	.00950	1.16400	-.08180	-.00100	-.00020	.00300	.64900	.05339
.200	24.970	1.20120	.46070	.01780	1.28340	-.08945	.00040	.00470	-.01000	.64700	.05833
.200	27.020	1.24830	.53460	.03130	1.35490	-.09099	-.00080	.00800	-.00900	.64300	.06451
.200	29.020	1.19190	.56990	.07090	1.31880	-.08004	-.00480	.00550	.00800	.63200	.07001
.200	30.940	1.03090	.54950	.12670	1.16670	-.05885	-.00550	-.00290	.02400	.61200	.07696
.200	GRADIENT	.04609	-.00165	-.00039	.04661	-.00543	.00002	-.00003	-.00025	-.02971	-.00012

REFERENCE DATA
 SREF = 4.4119 50.FT. YMRP = 43.9974 INCHES ALPHA = 10.000 BDFLAP = -12.000
 LREF = 19.2239 INCHES YMRP = .0000 INCHES ELEVON = .000 AILRON = .000
 BREF = 37.9339 INCHES ZMRP = 15.1075 INCHES RUDDER = .000 SPOBER = 25.000
 SCALE = .5405 SCALE

PARAMETRIC DATA

RUN NO. 36/ 0 RNL = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

MACH	BETA	CL	CLM	CN	CAF	CYN	CBL	CY	XCF/L	CAB
.200	-14.130	.45380	.03150	.45570	-.03085	-.02390	.03220	.25000	.63100	.04794
.200	-12.130	.45130	.03440	.45380	-.02760	-.02250	.02940	.22000	.62900	.04552
.200	-10.100	.44920	.03580	.45190	-.02584	-.02000	.02600	.18500	.62800	.04457
.200	-8.080	.44100	.03940	.44450	-.02074	-.01610	.02130	.14900	.62500	.04010
.200	-6.050	.43650	.04130	.44040	-.01804	-.01140	.01570	.11000	.62200	.03761
.200	-4.060	.43310	.04090	.43740	-.01579	-.00690	.01010	.07500	.61700	.03728
.200	-2.060	.42780	.04300	.43230	-.01415	-.00410	.00530	.03800	.61500	.03718
.200	.000	.42620	.04390	.43080	-.01358	-.00130	.00550	.00400	.61400	.03732
.200	2.030	.42600	.04320	.43240	-.01476	.00140	-.00410	-.03100	.61500	.03759
.200	4.010	.42730	.04060	.43160	-.01511	.00400	-.00900	-.06600	.61700	.03640
.200	6.030	.43400	.03650	.43750	-.02021	.00830	-.01430	-.10600	.62100	.03981
.200	8.060	.43550	.03760	.43870	-.02147	.01260	-.01970	-.14400	.62400	.04125
.200	10.110	.44350	.02940	.44620	-.02578	.01700	-.02470	-.18400	.62700	.04414
.200	12.110	.44730	.02820	.44930	-.02934	.02030	-.02870	-.22100	.62900	.04644
.200	14.130	.45170	.02590	.45340	-.03135	.02180	-.03120	-.25300	.63100	.04766
GRADIENT		-.00057	-.00002	-.00057	.00004	.00135	-.00236	-.01719	-.00000	-.00007



0A110 861C11F12M51M24E40V19R16X29

(RF5037) (08 MAY 74)

REFERENCE DATA

XREF = 4.4119 50.FT. XMRP = 43.5974 INCHES
 LREF = 19.2599 INCHES YMRP = .0000 INCHES
 BREF = 37.9359 INCHES ZMRP = 15.1875 INCHES
 SCALE = .0405 SCALE

BETA = .000 BDFLAP = -12.000
 ELEVON = .000 ALLRON = .000
 RUDDER = .000 SFD8RK = 25.000

PARAMETRIC DATA

RUN NO. 37/0 RNVL = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

MACH	ALPHA	CL	CLM	CN	CAF	CYN	CBL	CY	XCF/L	CAB
.200	-4.160	-.26590	.04340	-.26830	.02397	-.00150	.00080	.00300	.71800	.03928
.200	-2.110	-.16390	.03410	-.16500	.02808	-.00150	.00080	.00300	.75700	.03796
.200	-1.060	-.11830	.03050	-.11860	.02838	-.00150	.00070	.00400	.79600	.03441
.200	-.040	-.07000	.02800	-.07000	.02802	-.00150	.00060	.00300	.89300	.03693
.200	.980	-.02440	.02830	-.02390	.02873	-.00150	.00060	.00300	1.35400	.03692
.200	2.050	.02380	.02740	.02470	.02658	-.00140	.00070	.00300	-.03100	.03796
.200	4.090	.12040	.02980	.12220	.02114	-.00140	.00060	.00200	.51500	.03695
.200	6.170	.21820	.03590	.22080	.01227	-.00150	.00040	.00200	.57700	.03560
.200	8.250	.31710	.04520	.32030	-.00076	-.00130	.00030	.00200	.60000	.03705
.200	10.330	.41960	.04560	.42400	-.01423	-.00130	.00020	.00100	.61200	.03724
.200	12.420	.52910	.06600	.53520	-.02974	-.00150	.00000	.00200	.61900	.03857
.200	14.500	.64380	.11820	.65290	-.04674	-.00160	-.00030	.00100	.62700	.04129
.200	16.590	.76930	.16530	.78470	-.06137	-.00190	.00010	.00200	.63500	.04111
.200	18.700	.89240	.22030	.91590	-.07744	-.00220	-.00010	.00300	.64000	.04448
.200	20.800	1.00220	.28420	1.03780	-.09026	-.00150	-.00020	.00100	.64200	.04654
.200	22.910	1.12840	.36690	1.19080	-.08299	-.00110	-.00050	.00000	.64900	.05387
.200	24.980	1.20960	.46370	1.29220	-.09047	.00040	.00400	-.00900	.64800	.05840
.200	27.030	1.24880	.55590	1.35590	-.09021	-.00060	.00830	-.01100	.64300	.06331
.200	29.010	1.18040	.56550	1.30650	-.07808	-.00490	.00260	.00800	.63100	.06934
.200	30.940	1.03360	.54840	1.16850	-.06110	-.00320	-.00140	.02000	.61200	.07729
.200	GRADIENT	.04637	-.00161	.04688	-.00032	.00001	-.00003	-.00001	-.04263	-.00025

CA110 861C11F12M51M24E4DV19R16X29

(RF5938) (08 MAY 74)

REFERENCE DATA

SREF = 4.4119 SQ.FT. XMRP = 43.5974 INCHES
 LREF = 19.2299 INCHES YMRP = .0000 INCHES
 BREF = 37.9359 INCHES ZMRP = 15.1875 INCHES
 SCALE = .5495 SCALE

PARAMETRIC DATA

ALPHA = 10.500 BDFLAP = -12.000
 ELEVON = .000 AILRON = .000
 RUDDER = .000 SPODRK = 25.000

RUN NO. 38/ 0 RNVL = 1.42 GRADIENT INTERVAL = -6.05/ 6.05

MACH	BETA	CL	CLM	CN	CAF	CYN	CBL	CY	XCP/L	CAB
.200	-14.120	.44810	.02745	.44980	-.03134	-.02140	.03010	-.24500	.62900	.05904
.200	-12.120	.44700	.02880	.44950	-.02655	-.02030	.02710	-.21500	.62800	.04554
.200	-10.070	.44090	.03130	.44390	-.02333	-.01800	.02410	-.18200	.62600	.04282
.200	-8.090	.43920	.03400	.44260	-.02139	-.01540	.02050	-.14800	.62300	.04072
.200	-6.070	.43360	.03700	.43750	-.01814	-.01120	.01520	-.11000	.62000	.03765
.200	-4.070	.42740	.04230	.43150	-.01653	-.00700	.00990	-.07300	.61600	.03776
.200	-2.020	.42230	.04460	.42650	-.01488	-.00410	.00500	-.03800	.61300	.03761
.200	.000	.42540	.04590	.42990	-.01387	-.00130	.00040	-.00300	.61200	.03713
.200	2.010	.42330	.04510	.42770	-.01436	.00140	-.00380	-.03100	.61300	.03758
.200	4.030	.41970	.04220	.42390	-.01515	.00390	-.00860	-.06600	.61500	.03617
.200	6.050	.42980	.03790	.43330	-.01987	.00810	-.01420	-.10500	.61900	.03964
.200	8.060	.43290	.03420	.43820	-.02103	.01210	-.01940	-.14300	.62300	.04560
.200	10.080	.43920	.03140	.44200	-.02465	.01510	-.02320	-.17900	.62600	.04374
.200	12.120	.44260	.03000	.44510	-.02664	.01820	-.02680	-.21500	.62700	.04431
.200	14.140	.44600	.02960	.44780	-.03052	.01950	-.02960	-.24800	.62800	.04781
	GRADIENT	-.00071	.00002	-.00069	.00016	.00135	-.00226	-.01715	-.00010	-.00017



Q4110 B61C11F12H31A24E40V19R17X29

(RF5039) (06 MAY 74)

REFERENCE DATA

SREF = 4.4119 30.FT. XMRP = 45.5974 INCHES
 LREF = 19.2299 INCHES YMRP = .0000 INCHES
 BREF = 37.9359 INCHES ZMRP = 15.1875 INCHES
 SCALE = .0455 SCALE

BETA = .000 BDFLAP = -12.000
 ELEVON = .000 AILRON = .000
 RUDDER = .000 SFOBRK = 25.000

PARAMETRIC DATA:

RUN NO. 39/ 0 RNL = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

MACH	ALPHA	CL	CDP	CLM	CN	CAF	CYN	CBL	CY	MCP/L	CAB
.200	-4.180	-.26500	.04440	.04910	-.26750	.02497	-.00120	.00080	.00300	.71900	.03812
.200	-2.100	-.16610	.03310	.04720	-.16720	.02698	-.00110	.00080	.00300	.75600	.03906
.200	-1.070	-.11650	.03110	.04700	-.11710	.02900	-.00140	.00060	.00400	.79900	.03773
.200	-.040	-.06800	.02870	.04670	-.06900	.02874	-.00130	.00050	.00300	.90400	.03610
.200	.990	-.02280	.02830	.04630	-.02230	.02878	-.00120	.00070	.00300	1.41300	.03708
.200	2.920	.02640	.02710	.04590	.02730	.02615	-.00120	.00060	.00300	.03400	.03629
.200	4.100	.12050	.03000	.04660	.12240	.02135	-.00110	.00050	.00200	.51200	.03686
.200	6.170	.22090	.03570	.04530	.22330	.01172	-.00120	.00060	.00300	.57700	.03673
.200	8.260	.32030	.04710	.04480	.32370	.00062	-.00120	.00030	.00300	.60100	.03581
.200	10.320	.42200	.06260	.04640	.42640	-.01407	-.00120	.00030	.00200	.61200	.03744
.200	12.410	.52700	.08700	.04650	.53330	-.02833	-.00130	.00000	.00200	.62000	.03761
.200	14.500	.64590	.12030	.04480	.65540	-.04525	-.00130	.00000	.00200	.62600	.04025
.200	16.590	.77090	.16550	.03820	.78610	-.06164	-.00170	.00020	.00100	.63500	.04165
.200	18.700	.89410	.22120	.02910	.91790	-.07719	-.00190	.00000	.00200	.64000	.04426
.200	20.810	1.00500	.28540	.02760	1.04080	-.09019	-.00130	.00000	.00200	.64200	.04660
.200	22.900	1.12560	.36640	.00830	1.18730	-.08211	-.00090	-.00050	.00100	.64900	.05334
.200	25.000	1.21520	.46660	.01270	1.29860	-.09046	.00080	.00310	-.00700	.64800	.05814
.200	27.040	1.24450	.53590	.03190	1.35210	-.08842	-.00040	.00710	-.00900	.64300	.06228
.200	29.020	1.17180	.56160	.07650	1.29710	-.07736	-.00040	.00890	.00300	.63000	.06936
.200	30.950	1.02870	.54770	.12770	1.16390	-.05941	-.00050	-.00020	.00200	.61100	.07665
.200	GRADIENT	.04654	-.00167	-.00031	.04706	-.00038	.00001	-.00003	-.00012	-.03814	-.00017

0A110 861C11F12M51A24E6V19R17X29

(RF5040) (08 MAY 74)

REFERENCE DATA

SREF = 4.4119 98.FT. XMRP = 43.5974 INCHES
 LREF = 19.2299 INCHES YMRP = .5000 INCHES
 BREF = 37.9359 INCHES ZMRP = 15.1875 INCHES
 SCALE = .0455 SCALE

PARAMETRIC DATA

ALPHA = 10.000 BDFLAP = -12.000
 ELEVON = .000 AILRON = .000
 RUDDER = .000 SFCBRK = 25.000

RUN NO. 40/ 0 RVAL = 1.42 GRADIENT INTERVAL = -6.00/ 6.50

WACH	BETA	CL	CLM	CN	CAF	CYN	CBL	CY	KCF/L	CAB
.200	-14.130	.45310	.02640	.45480	-.03145	-.02370	.03150	.25000	.63000	.04808
.200	-12.100	.44670	.02850	.44690	-.02823	-.02210	.02870	.21900	.62800	.04575
.200	-10.100	.44490	.03070	.44760	-.02564	-.01930	.02510	.18500	.62600	.04404
.200	-8.080	.43950	.03350	.44270	-.02202	-.01570	.02060	.14900	.62400	.04117
.200	-6.030	.43450	.03750	.43810	-.01980	-.01120	.01530	.11100	.62000	.03877
.200	-4.040	.42650	.04210	.43070	-.01592	-.00680	.01000	.07500	.61600	.03721
.200	-2.020	.42600	.04440	.43030	-.01315	-.00390	.00500	.03900	.61400	.03634
.200	.020	.42240	.04570	.42690	-.01325	-.00110	.00040	.00300	.61200	.03695
.200	2.030	.42500	.04560	.42940	-.01470	.00150	-.00410	-.03100	.61300	.03755
.200	4.010	.42360	.04270	.42770	-.01600	.00430	-.00880	-.06700	.61500	.03724
.200	6.080	.42840	.03790	.43210	-.01644	.00840	-.01420	-.10500	.61900	.03649
.200	8.060	.43550	.03430	.43860	-.02229	.01280	-.01970	-.14500	.62300	.04172
.200	10.100	.43760	.03050	.44030	-.02454	.01700	-.02440	-.18200	.62600	.04301
.200	12.120	.44500	.02850	.44720	-.02806	.01990	-.02800	-.22000	.62800	.04500
.200	14.160	.44640	.02750	.44820	-.03060	.02130	-.03040	-.25200	.62900	.04666
.200	GRADIENT	-.00034	.00012	-.00034	.00001	-.00137	-.00232	-.01757	-.00015	-.00004

41



0A110 B61C11F12M51M24E40V19R17X29

(RFS041) (58 MAY 74)

REFERENCE DATA

SREF = 4.4119 38.FT. XMRP = 43.5974 INCHES
 LREF = 19.2299 INCHES YMRP = .0000 INCHES
 BREF = 37.9359 INCHES ZMRP = 15.1875 INCHES
 SCALE = .0425 SCALE

PARAMETRIC DATA

ALPHA = 15.000 BDFLAP = -12.000
 ELEVEN = .000 AILRON = .000
 RUDDER = -20.000 SFCBRK = 23.000

RUN NO. 41/ 0 RML = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

MACH	BETA	CL	CLM	CDF	CN	CAF	CYN	CV	XCP/L	CAB
.200	-14.140	.44520	.02790	.05220	.44750	-.02068	-.00380	.20800	.62900	.04254
.200	-12.130	.44220	.03220	.05460	.44480	-.02373	.00010	.17450	.62500	.04391
.200	-10.090	.43980	.03670	.05690	.43930	-.02037	.00470	.13500	.62100	.04200
.200	-8.060	.43080	.04180	.06290	.43510	-.01546	.01070	.09500	.61600	.04096
.200	-6.030	.42140	.04650	.06340	.42630	-.01133	.01610	.05100	.61200	.03966
.200	-4.040	.41710	.05190	.06710	.42240	-.00885	.01960	.01450	.60600	.03949
.200	-2.020	.41210	.05370	.06880	.41770	-.00631	.02210	-.01920	.60400	.03874
.200	.010	.41040	.05360	.06950	.41610	-.00579	.02460	-.05400	.60400	.03874
.200	2.030	.41250	.05190	.06940	.41820	-.00579	.02700	-.06800	.60600	.03680
.200	4.010	.41760	.04920	.06760	.42290	-.00845	.02910	-.12200	.60900	.04039
.200	6.090	.41880	.04530	.06480	.42360	-.01159	.03260	-.16000	.61200	.04149
.200	8.080	.42540	.04170	.06260	.42970	-.01478	.03470	-.19500	.61600	.04492
.200	10.100	.43050	.03970	.06020	.43430	-.01891	.03640	-.22800	.61800	.04799
.200	12.120	.43190	.04140	.06070	.43580	-.01780	.03290	-.25100	.61000	.04932
.200	14.140	.43450	.04130	.05930	.43610	-.01974	.03280	-.27800	.61700	.05256
GRADIENT		.00007	-.00036	.00008	.00007	.00007	.00119	-.01692	.00540	.00009

04115 B61C11F12M31A24E45V19R16X29

(RF5042) (00 MAY 74)

REFERENCE DATA

SREF = 4.4119 SQ.FT. YMRP = 43.5974 INCHES
 LREF = 19.2299 INCHES YMRP = .0000 INCHES
 BREF = 37.9359 INCHES ZMRP = 15.1875 INCHES
 SCALE = .0405 SCALE

PARAMETRIC DATA

ALPHA = 10.000 BDFLAP = -12.000
 ELEVON = .000 AILRON = .000
 RUDDER = -20.000 SPOBRK = 25.000

RUN NO. 42/ 0 RML = 1.42 GRADIENT INTERVA = -6.00/ 6.00

MACH	BETA	CL	CLM	CLN	CAF	CTN	CBL	CY	XCF/L	CAB
.200	-14.140	.44590	.05080	.44770	-.03913	-.00370	.02060	.20900	.62900	.04467
.200	-12.100	.44530	.05640	.44330	-.02357	.00540	.01630	.17200	.62500	.04232
.200	-10.060	.43320	.05950	.43690	-.01926	.00500	.01140	.13400	.62100	.04171
.200	-8.020	.42750	.06300	.43190	-.01474	.01020	.00610	.09400	.61600	.04085
.200	-6.010	.42135	.06610	.42630	-.01064	.01610	-.00020	.05100	.61100	.04037
.200	-4.050	.41310	.06860	.41870	-.00667	.01950	-.00530	.01400	.60600	.03852
.200	-2.010	.41100	.06970	.41760	-.00535	.02210	-.00980	-.01900	.60400	.03939
.200	.000	.40920	.07040	.41520	-.00414	.02430	-.01400	-.05300	.60300	.03900
.200	2.010	.41230	.06930	.41800	-.00562	.02670	-.01840	-.08800	.60500	.03972
.200	4.030	.41020	.06830	.41500	-.00639	.02850	-.02200	-.12100	.60700	.03921
.200	6.070	.41960	.06500	.42450	-.01137	.03200	-.02770	-.15600	.61100	.04277
.200	8.070	.42310	.06380	.42760	-.01321	.03280	-.03050	-.19000	.61400	.04405
.200	10.110	.42560	.06210	.42990	-.01327	.03120	-.03150	-.21800	.61500	.04700
.200	12.130	.42940	.06210	.43360	-.01590	.03110	-.03290	-.24700	.61600	.04956
.200	14.160	.43040	.05910	.43400	-.01913	.03120	-.03520	-.27500	.61600	.05305
GRADIENT		-.00026	-.00005	-.00027	.00001	.00112	-.00216	-.01600	.00015	.00008



04110 061C11F12M51M24E40V19R15X29

(RFS043) (08 MAY 74)

REFERENCE DATA

WREF = 4.4119 94.FT. WHP = 43.9974 INCHES
 LREF = 19.2299 INCHES YHP = .0000 INCHES
 BREF = 37.9359 INCHES ZHP = 15.1875 INCHES
 SCALE = .5425 SCALE

PARAMETRIC DATA

BETA = .000 BOFLAP = -12.000
 ELEVON = .000 AILRON = .000
 RUDDER = .000 SPOBRK = 85.000

RUN NO. 43/ 0 RWL = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

WACH	ALPHA	QL	QDF	CLM	CN	CAF	CYM	CBL	CY	KCP/L	CAB
.200	-4.180	-.30010	.07740	.09200	-.30500	.05533	-.00150	.00060	.04400	.76300	.05727
.200	-2.120	-.20430	.06690	.09000	-.20665	.05936	-.00140	.00060	.03000	.81200	.05569
.200	-1.060	-.15350	.06210	.08960	-.15470	.05920	-.00130	.00050	.02000	.86500	.05576
.200	-.950	-.10610	.06090	.08940	-.10610	.06069	-.00150	.00040	.03000	.96100	.05370
.200	.970	-.06120	.05650	.08800	-.06020	.05953	-.00140	.00030	.05000	1.19000	.05412
.200	2.010	-.01170	.05710	.08750	-.00970	.05756	-.00140	.00030	.02000	3.96300	.05339
.200	4.090	.06260	.05710	.08610	.08650	.05111	-.00130	.00050	.02000	.28600	.05251
.200	6.150	.17690	.06170	.08600	.18450	.04223	-.00120	.00020	.01000	.48000	.05089
.200	8.290	.28550	.07270	.08460	.29300	.03082	-.00110	.00020	.00500	.54500	.04931
.200	10.320	.38010	.08670	.08770	.38950	.01720	-.00110	.00010	.00000	.56900	.04962
.200	12.410	.48170	.10620	.08790	.49370	.02216	-.00120	.00000	.00000	.58600	.04993
.200	14.510	.59810	.14040	.08620	.61420	-.01390	-.00120	-.00040	.00000	.60000	.05155
.200	16.560	.72720	.18320	.07750	.74980	-.03001	-.00140	-.00030	.00000	.61400	.05296
.200	18.680	.84350	.22910	.07210	.87570	-.04372	-.00180	-.00020	.00000	.62100	.05353
.200	20.780	.95670	.30240	.07140	1.00180	-.05665	-.00110	-.00070	.00100	.62500	.05575
.200	22.840	1.07440	.40010	.05430	1.14540	-.04923	-.00100	-.00030	.00000	.63400	.06223
.200	24.960	1.16070	.47500	.05530	1.28270	-.05928	-.00100	.00480	-.01200	.63500	.06822
.200	27.040	1.20540	.54850	.07200	1.32300	-.06041	-.00020	.00750	-.01000	.63200	.07319
.200	29.040	1.14930	.58020	.11290	1.28650	-.05042	-.00510	.05460	.01000	.61900	.07625
.200	31.010	1.00400	.56820	.16930	1.15330	-.03028	-.00320	-.00480	.01900	.59000	.07690
.200	GRADIENT	.04626	-.00240	-.00070	.04754	-.00647	.00002	-.00003	-.00021	.10822	-.05058

CA110 861C11F12H51M24E00V19R15X29

(RFS544) (50 MAY 74)

REFERENCE DATA

BREF = 4.4119 SQ.FT. WARP = 43.5974 INCHES
 LREF = 19.2299 INCHES WARP = .5505 INCHES
 BREF = 37.9359 INCHES WARP = 15.1875 INCHES
 SCALE = .5495 SCALE

PARAMETRIC DATA

ALPHA = 15.000 BDFLAP = -12.000
 ELEVON = .000 AIRLON = .500
 RUDDER = .000 SFCBRK = 85.000

RUN NO. 44/ 0 RMVL = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

WACH	BETA	CL	CLF	CLM	CN	CAF	CYN	CBL	CY	XCP/L	CAB
.200	-14.140	.42420	.06880	.05330	.42970	-.00852	-.02690	.03220	-.25600	.65600	.05742
.200	-12.120	.41710	.07290	.05920	.42340	-.00320	-.02270	.02800	.21900	.60000	.05729
.200	-15.050	.40850	.07310	.06380	.41530	.00050	-.01870	.02370	.18200	.59500	.05688
.200	-8.040	.40110	.07845	.06950	.40870	.00556	-.01470	.01950	.14500	.58900	.05436
.200	-3.9420	.39420	.06160	.07840	.40250	.00973	-.00960	.01370	.10500	.58200	.05259
.200	-4.040	.38460	.06440	.06270	.39370	.01397	-.00510	.00840	.06700	.57400	.04993
.200	-2.050	.38150	.06640	.06640	.39060	.01632	-.00270	.00370	.03400	.57000	.04977
.200	-.010	.38050	.06880	.06770	.38970	.01720	-.00090	.00030	.00200	.56900	.04958
.200	2.050	.37880	.06820	.06610	.38810	.01683	.00050	-.00330	-.03000	.56900	.05028
.200	4.060	.37960	.06400	.06340	.38850	.01451	.00270	-.00720	-.06400	.57300	.05079
.200	6.040	.36960	.06260	.07965	.39810	.01134	.00700	-.01290	-.10300	.57800	.05366
.200	8.040	.39440	.07840	.07100	.40210	.00634	.01180	-.01800	-.14300	.58600	.05493
.200	10.110	.40410	.07370	.06470	.41110	.00193	.01650	-.02290	-.18300	.59400	.05530
.200	12.120	.41290	.07260	.06540	.41930	-.00255	.02090	-.02740	-.22100	.59900	.05614
.200	14.160	.41700	.06710	.05330	.42220	-.00882	.02580	-.03240	-.26100	.60500	.05609
GRADIENT	-.00065	-.00065	-.00005	.00008	-.00065	.00007	.00093	-.00189	-.00015	-.00015	.00011

(RFS045) (00 MAY 74)

04110 00111F12H51M4E2J0M1R17R25

REFERENCE DATA

SREF = 4.4119 90.FT. XMRP = 43.9974 INCHES
 LREF = 19.2299 INCHES XMRP = .0020 INCHES
 WREF = 37.9359 INCHES XMRP = 15.1875 INCHES
 SCALE = .0425 SCALE

PARAMETRIC DATA

BETA = .000 00FLAP = -12.000
 ELEVON = .000 01LRON = .000
 RUDDER = .000 03DRK = 05.500

RUN NO. 45/ 0 RWL = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

MACH	ALPHA	CL	CDP	CLM	CN	CAF	CYN	CBL	CY	XCP/L	CAB
.200	-4.100	-3.0250	.07870	.09150	-.30740	.05648	-.00180	.00090	.00400	.78150	.05504
.200	-2.500	-.20200	.06820	.04970	-.20430	.05083	-.00150	.00050	.00300	.81350	.05510
.200	-1.000	-.11250	.06190	.04910	-.15360	.05912	-.00150	.00040	.00300	.86500	.05500
.200	-.020	-.10530	.05910	.04900	-.10530	.05909	-.00150	.00030	.00300	.96300	.05514
.200	.990	-.06010	.05690	.04880	-.05910	.05753	-.00160	.00040	.00300	1.20500	.05564
.200	2.050	-.01250	.05610	.04720	-.01050	.05655	-.00140	.00050	.00300	3.70600	.05397
.200	4.100	.04540	.05710	.04640	.04430	.05122	-.00130	.00030	.00200	.27400	.05187
.200	6.190	.17790	.06110	.04460	.18340	.04164	-.00120	.00020	.00100	.48200	.05094
.200	8.200	.27630	.07110	.04320	.28370	.03063	-.00120	.00040	.00200	.94100	.04944
.200	10.330	.37930	.08530	.04700	.38850	.01594	-.00130	.00050	.00200	.96900	.05068
.200	12.420	.48420	.10790	.04730	.49600	.00110	-.00120	.00000	.00000	.58700	.05597
.200	14.520	.60050	.14030	.04510	.61600	-.01466	-.00150	-.00020	.00100	.60150	.05170
.200	16.600	.72310	.18420	.07760	.74760	-.03564	-.00160	-.00020	.00100	.61300	.05330
.200	18.700	.84400	.23060	.07150	.87600	-.04467	-.00180	-.00010	.00200	.62200	.05430
.200	20.800	.95740	.30060	.07030	1.00160	-.05910	-.00120	-.00040	.00200	.62600	.05777
.200	22.900	1.07600	.40030	.05370	1.14700	-.05010	-.00090	-.00090	.00100	.63400	.06265
.200	24.970	1.18360	.47620	.05410	1.25590	-.05963	-.00080	-.00060	-.00000	.63600	.06435
.200	27.040	1.20160	.54560	.07200	1.31830	-.06053	-.00080	.00750	-.00900	.63200	.07307
.200	29.090	1.13310	.54310	.11200	1.29120	-.05016	-.00160	.00140	.01300	.62000	.07962
.200	30.970	1.00890	.58650	.16760	1.15490	-.03244	-.00410	-.03560	.02400	.59000	.07063
GRADIENT	.04612	-.00057	-.00237	-.00059	.04716	-.00063	.00003	-.00006	-.00016	.04668	-.00042

OA1110 861C11F12M51M24E40V19R17X29

(RF5046) (08 MAY 74)

REFERENCE DATA

SREF = 4.4119 88.FT. VMRP = 43.9974 INCHES
 LREF = 19.2299 INCHES VMRP = .0000 INCHES
 BREF = 37.9359 INCHES ZMRP = 15.1875 INCHES
 SCALE = .0405 SCALE

PARAMETRIC DATA

ALPHA = 10.000 BOFLAP = -12.000
 ELEVON = .000 ALLCON = .000
 RUDDER = .000 SPDBRK = 85.000

RUN NO. 46/ 0 RML = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

MACH	BETA	CL	CLM	CN	CAF	CYN	CBL	CY	XCF/L	CAB
.200	-14.140	.42680	.55330	.43210	-.00941	-.02650	.03210	.25400	.65600	.55830
.200	-12.140	.41870	.55890	.42500	-.00341	-.02250	.02780	.21800	.60100	.55689
.200	-10.110	.41260	.56170	.41940	-.00051	-.01900	.02390	.18300	.59800	.55661
.200	-8.090	.40300	.56810	.41040	.00419	-.01450	.01900	.14400	.59100	.55445
.200	-6.040	.39690	.57280	.40520	.00989	-.00950	.01360	.10400	.58200	.55177
.200	-4.060	.38930	.58130	.39800	.01238	-.00520	.00830	.06800	.57600	.55061
.200	-2.020	.38610	.58480	.39540	.01596	-.00280	.00390	.03400	.57300	.54950
.200	.000	.38230	.58620	.39160	.01619	-.00080	.00340	.00100	.57000	.55050
.200	2.020	.37990	.58480	.38930	.01694	.00050	-.00310	-.04917	.57100	.04917
.200	4.020	.38140	.58390	.39030	.01479	.00270	-.00700	-.06400	.57300	.05580
.200	6.060	.39030	.57910	.38860	.01037	.00700	-.01260	-.10300	.57900	.05446
.200	8.090	.39590	.57110	.40360	.00616	.01180	-.01810	-.14300	.57000	.05444
.200	10.100	.40820	.56320	.41510	.00097	.01640	-.02310	-.18200	.55000	.05561
.200	12.140	.41200	.55890	.41830	-.00295	.02080	-.02740	-.22100	.60000	.05546
.200	14.190	.42290	.55330	.42800	-.01045	.02600	-.03240	-.26200	.63600	.05692
GRADIENT	-.00109	.00002	.00016	-.00107	.00022	.00095	-.00186	-.01624	-.00010	.00000



(RF5047) (08 MAY 74)

0A110 861C11F12H51M24E40V19R10X29

REFERENCE DATA

SREF = 4.4119 90.FT. XMRP = 43.5974 INCHES
 LREF = 19.2299 INCHES YMRP = .0500 INCHES
 BREF = 37.9359 INCHES ZMRP = 15.1875 INCHES
 SCALE = .0405 SCALE

PARAMETRIC DATA

BETA = .000 SDFLAP = -12.000
 ELEVON = .000 AIRLON = .000
 RUDDER = .000 SPOBRK = 65.000

RUN NO. 47/0 RWL = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

MACH	ALPHA	CL	CLM	CN	CAF	CYN	CBL	CY	XCP/L	CAB
.200	-4.100	-.29940	.07650	-.30420	.05447	-.00150	.00070	.00400	.76200	.05768
.200	-2.110	-.20070	.06920	-.20310	.05935	-.00150	.00060	.00300	.61300	.05461
.200	-1.080	-.15460	.06170	-.15580	.05876	-.00150	.00040	.00200	.66100	.05597
.200	-.040	-.10460	.06020	-.10470	.06018	-.00140	.00030	.00200	.96300	.05337
.200	.970	-.06130	.03750	-.06030	.05862	-.00140	.00030	.00200	1.18700	.05421
.200	2.020	-.01110	.05680	-.00910	.05721	-.00140	.00040	.00100	4.14100	.05303
.200	4.100	.07970	.05650	.08360	.05072	-.00130	.00030	.00100	.27300	.05251
.200	6.170	.17710	.06170	.18270	.04236	-.00120	.00020	.00000	.47900	.05033
.200	8.240	.27960	.07590	.28690	.03012	-.00110	.00020	.00000	.54200	.05042
.200	10.310	.37880	.08640	.38810	.01722	-.00120	.00020	.00000	.57000	.04919
.200	12.450	.48820	.10870	.50020	.00089	-.00120	-.00020	.00000	.58700	.05094
.200	14.500	.59810	.14130	.61450	-.01299	-.00130	-.00020	.00000	.60000	.05094
.200	16.590	.72850	.18390	.75070	-.03185	-.00140	.00000	.00000	.61400	.05482
.200	18.700	.84620	.23850	.87800	-.04937	-.00180	-.00020	.00000	.62200	.05455
.200	20.780	.95110	.30620	.99570	-.05690	-.00110	-.00070	.00000	.62500	.05566
.200	22.900	1.07470	.40080	1.14590	-.04909	-.00090	-.00070	.00000	.63500	.06183
.200	24.990	1.16780	.47710	1.26000	-.06092	.00090	.00310	-.01000	.63500	.06920
.200	27.030	1.20280	.54370	1.31940	-.06077	.00020	.00630	-.01000	.63100	.07303
.200	29.010	1.19030	.57990	1.28720	-.05082	-.00500	.00460	.00800	.61900	.07635
.200	30.950	1.00120	.56540	1.14940	-.03016	-.00410	-.00150	.01600	.59800	.07865
.200	GRADIENT	.64580	-.00240	.04685	-.00045	.00003	-.00014	-.00037	.11830	-.00061

OA110 B61C1F12M51M24E40V19R16X29

(RF5048) (08 MAY 74)

REFERENCE DATA

SREF = 4.4119 50.FT. XMRP = 43.9974 INCHES
 LREF = 19.2299 INCHES YMRP = .0050 INCHES
 BREF = 37.9359 INCHES ZMRP = 15.1875 INCHES
 SCALE = .0405 SCALE

PARAMETRIC DATA

ALPHA = 10.000 BDFLAP = -12.000
 ELEVON = .000 AILRON = .000
 RUDDER = .000 SPDBRK = 85.000

RUN NO. 48/ 0 RNVL = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

MACH	BETA	CL	CLM	CN	CAF	CYN	CBL	CY	XCF/L	CAB
.200	-14.150	.42660	.05340	.43190	-.00918	-.02660	.03210	.25500	.65600	.05790
.200	-12.130	.41600	.05640	.42230	-.00276	-.02270	.02780	.21800	.60100	.05652
.200	-10.110	.41100	.06250	.41800	.00108	-.01850	.02360	.18200	.59700	.05647
.200	-8.090	.40270	.06820	.41030	.00512	-.01460	.01900	.14400	.59000	.05459
.200	-6.080	.39610	.07610	.40440	.01020	-.00960	.01370	.10500	.58200	.05229
.200	-4.060	.38470	.08080	.39370	.01456	-.00520	.00840	.06800	.57600	.04902
.200	-2.020	.38340	.08630	.39270	.01613	-.00280	.00400	.03500	.57200	.04993
.200	.000	.37900	.08640	.38830	.01684	-.00120	.00040	.00300	.57000	.04965
.200	2.010	.38110	.08540	.39040	.01628	.00045	-.00300	-.02900	.57100	.05013
.200	4.020	.38330	.08280	.39040	.01375	.00260	-.00730	-.06400	.57400	.05118
.200	6.080	.38600	.07760	.39460	.01219	.00680	-.01250	-.10200	.57900	.05205
.200	8.080	.39570	.07840	.40340	.00622	.01160	-.01790	-.14300	.58700	.05302
.200	10.110	.40710	.06320	.41410	.00172	.01620	-.02300	-.18200	.59500	.05489
.200	12.140	.41320	.05850	.41940	-.00338	.02070	-.02730	-.22100	.60000	.05603
.200	14.160	.41710	.05220	.42230	-.00899	.02540	-.03200	-.26000	.60600	.05588
GRADIENT	-.00025	-.00012	.00020	-.00027	-.00007	.00093	-.00190	-.01625	-.00025	.00022



O4110 861C11F12M31W24E40V19R16X29

(RF5049) (08 MAY 74)

REFERENCE DATA

SREF = 4.4119 SQ.FT. XMRP = 43.9974 INCHES
 LREF = 19.2299 INCHES YMRP = .0000 INCHES
 BRP = 37.9359 INCHES ZMRP = 15.1875 INCHES
 SCALE = .0405 SCALE

PARAMETRIC DATA

ALPHA = 10.000 BDFLAP = -12.000
 ELEVON = .000 AILRON = .000
 RUDDER = -20.000 SFCBRK = 85.000

RUN NO. 49/ 0 RV/L = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

MACH	BETA	CL	CLM	CN	CAF	CYN	CBL	CY	XCP/L	CAB
.200	-14.150	.43070	.06080	.43470	-.01742	-.01750	.02720	.23400	.61700	.05777
.200	-12.130	.41670	.06830	.42410	-.05779	-.01190	.02210	.19400	.60800	.05546
.200	-10.120	.41000	.07440	.41670	-.05032	-.00640	.01730	.15500	.59900	.05453
.200	-8.100	.39820	.07930	.40600	.05668	.00000	.01150	.11350	.58900	.05321
.200	-6.070	.39020	.08240	.39870	.01114	.00570	.00560	.07000	.58000	.05266
.200	-4.050	.38650	.08550	.39560	.01486	.00800	.00170	.03600	.57500	.04931
.200	-2.030	.38340	.08670	.39270	.01661	.00890	-.00190	.00500	.57200	.04842
.200	.000	.38260	.08620	.39190	.01629	.01070	-.00560	-.02700	.57200	.04811
.200	2.020	.38250	.08530	.39160	.01543	.01290	-.00980	-.06800	.57400	.04742
.200	4.030	.38450	.08390	.39340	.01361	.01550	-.01470	-.09600	.57700	.04687
.200	6.080	.39130	.08190	.39960	.01046	.01850	-.01900	-.13200	.58200	.04935
.200	8.090	.39780	.07870	.40550	.00613	.02150	-.02360	-.16800	.58700	.05150
.200	10.120	.40430	.07670	.41180	.00492	.02370	-.02730	-.20300	.59100	.05099
.200	12.150	.40730	.07630	.41450	.00241	.02620	-.03030	-.23800	.59400	.05092
.200	14.190	.41000	.07430	.41660	-.00043	.02690	-.03260	-.26700	.59500	.05294
.200	GRADIENT	-.00024	-.00023	-.00027	-.00018	.00094	-.00201	-.01638	.00039	-.00029

04110 861C11F12M51M24E40V19R17X29

(RF5050) (08 MAY 74)

REFERENCE DATA

SREF = 4.4119 SQ.FT. XMR = 43.5974 INCHES
 LREF = 19.2299 INCHES YMRP = .0000 INCHES
 BREF = 37.9359 INCHES ZMRP = 15.1875 INCHES
 SCALE = .0405 SCALE

PARAMETRIC DATA

ALPHA = 10.000 BDFLAP = -12.000
 ELEVON = .000 AILRON = .000
 RUDDER = -20.000 SPDBRK = 85.000

RUN NO. 50/0 RVAL = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

MACH	BETA	CL	CLM	CN	CAF	CYN	CBL	CY	XCP/L	CAB
.200	-14.100	.42800	.06070	.43000	-.01676	-.01770	.02740	.23300	.61700	.05666
.200	-12.110	.42090	.06770	.42620	-.00897	-.01200	.02220	.19600	.60900	.05629
.200	-10.120	.41070	.07330	.41720	-.00156	-.00650	.01750	.15500	.59900	.05514
.200	-8.090	.39680	.07910	.40460	.00666	-.00010	.01160	.11200	.58900	.05267
.200	-6.040	.39160	.08190	.39990	.01082	.00540	.00380	.07200	.58100	.05317
.200	-4.050	.38580	.08470	.39470	.01420	.00770	.00190	.03800	.57500	.04972
.200	-2.010	.38610	.08760	.39550	.01703	.00860	-.00150	.00600	.57300	.04798
.200	.010	.38060	.08660	.39000	.01705	.01020	-.00540	-.02600	.57200	.04677
.200	2.040	.38290	.08530	.38200	.01530	.01250	-.00950	-.06100	.57400	.04736
.200	4.040	.38310	.08330	.39180	.01332	.01510	-.01430	-.09600	.57600	.04751
.200	6.080	.39150	.08120	.39970	.00970	.01830	-.01880	-.13200	.58200	.04983
.200	8.090	.39720	.08040	.40520	.00787	.02150	-.02340	-.16800	.58800	.05002
.200	10.120	.40390	.07800	.41130	.00429	.02440	-.02760	-.20400	.59200	.05113
.200	12.150	.40990	.07620	.41690	.00146	.02700	-.03180	-.23800	.59400	.05170
.200	14.180	.41330	.07290	.41970	-.00237	.02780	-.03320	-.26900	.59700	.05387
GRADIENT		-.00043	-.00023	-.00046	-.00017	.00092	-.00200	-.01656	.00015	-.00025



OAI10 061C11F12M51M24E4DV19R15X29

(RF5051) (06 MAY 74)

REFERENCE DATA

SREF = 4.4119 SQ.FT. YMRP = 43.9974 INCHES
 LREF = 19.2299 INCHES YMRP = .0000 INCHES
 BRP = 37.9359 INCHES ZMRP = 15.1075 INCHES
 SCALE = .0405 SCALE

PARAMETRIC DATA

ALPHA = 10.000 BDFLAP = -12.000
 ELEVON = .000 AILRON = .000
 RUDDER = -20.000 SFCBRK = 85.000

RUN NO. 51/ 0 RVL = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

MACH	BETA	CL	CLM	CN	CAF	CYN	CBL	CY	XCP/L	CAB
.200	-14.150	.43410	.06110	.43800	-.01789	-.01800	.02760	.23600	.61700	.05760
.200	-12.120	.41990	.06790	.42320	-.05062	-.01220	.02260	.19600	.60700	.05600
.200	-10.100	.40980	.07340	.41630	-.00136	-.00660	.01770	.15500	.59800	.05543
.200	-8.100	.39810	.07830	.40570	.00556	-.00030	.01190	.11200	.58900	.05398
.200	-6.020	.39160	.08320	.40020	.01156	.00330	.00590	.07200	.58000	.05180
.200	-4.060	.38670	.08610	.39590	.01523	.00770	.00180	.03800	.57400	.04893
.200	-2.020	.38260	.08710	.39250	.01701	.00840	-.00150	.00700	.57100	.04783
.200	.000	.38200	.08680	.39220	.01665	.01010	-.00330	-.02600	.57100	.04766
.200	2.020	.38340	.08500	.39250	.01531	.01230	-.00960	-.06000	.57400	.04715
.200	4.030	.38440	.08390	.39330	.01358	.01500	-.01410	-.09000	.57600	.04759
.200	6.060	.39030	.08190	.39870	.01052	.01810	-.01860	-.13000	.58100	.04925
.200	8.090	.39810	.07990	.40600	.00709	.02140	-.02320	-.16800	.58700	.05057
.200	10.130	.40470	.07830	.41220	.00435	.02420	-.02730	-.20400	.59000	.05165
.200	12.150	.41070	.07610	.41770	.00104	.02700	-.03080	-.23900	.59400	.05184
.200	14.180	.41600	.07360	.42240	-.00235	.02810	-.03330	-.27000	.59600	.05366
	GRADIENT	-.00019	-.00030	-.00023	-.00025	.00091	-.00197	-.01647	.00034	-.00017

CA110 061C11F12M51M24E40V21R15X29

(RF5052) (08 MAY 74)

REFERENCE DATA

SREF = 4.4119 SQ.FT. XMRP = 43.5974 INCHES
 LREF = 19.2299 INCHES YMRP = .0000 INCHES
 BREF = 37.9359 INCHES ZMRP = 13.1275 INCHES
 SCALE = .0405 SCALE

PARAMETRIC DATA

ALPHA = 10.000 BDFLAP = -12.000
 ELEVON = .000 AILRON = .000
 RUDDER = -20.000 SPOBRK = 85.000

RUN NO. 52/ 0 RV/L = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

MACH	P-TA	CL	CLM	CDF	CN	CAF	CYN	CBL	CY	XCP/L	CAB
.200	-14.150	.42740	.04560	.56190	.43150	-.01601	-.02010	.52930	.23900	.61300	.05822
.200	-12.150	.41690	.05660	.56920	.42260	-.00691	-.01560	.52420	.20400	.60200	.05700
.200	-10.110	.40960	.06380	.57490	.41640	.00004	-.00960	.51890	.16400	.59500	.05670
.200	-8.080	.39370	.08070	.58070	.40380	.00826	-.00330	.51340	.12000	.58500	.05311
.200	-6.060	.38650	.08320	.58320	.39320	.01237	.00310	.50710	.07800	.57600	.05315
.200	-4.060	.38080	.08660	.58660	.38200	.01685	.00610	.50270	.04200	.57100	.04923
.200	-2.020	.38070	.08760	.58760	.37030	.01778	.00680	-.00080	.01200	.56800	.04889
.200	.000	.37830	.08870	.58870	.36810	.01932	.00850	-.00450	-.02100	.56800	.04686
.200	2.020	.37900	.08800	.58800	.36060	.01847	.01080	-.00860	-.05700	.57100	.04619
.200	4.020	.38430	.08550	.58550	.35350	.01511	.01390	-.01350	-.09300	.57400	.04819
.200	6.060	.38980	.08360	.58360	.34950	.01226	.01740	-.01830	-.12900	.57900	.04984
.200	8.090	.39370	.08040	.58040	.40180	.00833	.02090	-.02300	-.16600	.58500	.05068
.200	10.120	.40370	.07880	.57880	.41320	.00460	.02390	-.02710	-.20200	.59000	.05292
.200	12.140	.40990	.07660	.57660	.41700	.00168	.02620	-.03030	-.23700	.59200	.05339
.200	14.170	.41020	.07410	.56530	.41680	-.00079	.02740	-.03270	-.26800	.59400	.05415
GRADIENT	.00026	-.00009	-.00035	.00024	-.00014	.00097	-.01678	-.00199	.00044	-.00024	-.00024



OA110 661C11F12H51424E40V2R15X29

(RF5053) (08 MAY 74)

REFERENCE DATA

SREF = 4.4119 SQ.FT. XMRP = 43.5974 INCHES
 LREF = 19.2299 INCHES YMRP = .0000 INCHES
 BREF = 37.9359 INCHES ZMRP = 15.1875 INCHES
 SCALE = .0405 SCALE

PARAMETRIC DATA

ALPHA = 10.000 BDFLAP = -12.000
 ELEVON = .000 AILRON = .000
 RUDDER = .000 SECBRK = 85.000

RUN NO. 53/ 0 RML = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

WACH	BETA	CL	CLM	CN	CAF	CYN	CBL	CY	XCF/L	CAB
.200	-14.140	.41190	.06390	.41790	-.05433	-.02380	.03180	.25200	.59350	.05985
.200	-12.130	.40795	.06910	.41480	.00110	-.02280	.02820	.21800	.59000	.05769
.200	-10.120	.40020	.07340	.40770	.00514	-.01850	.02390	.18100	.58500	.05705
.200	-8.080	.38870	.08160	.39740	.01231	-.01440	.01950	.14400	.57800	.05460
.200	-6.070	.37950	.08660	.38890	.01723	-.00910	.01320	.10400	.56700	.05388
.200	-4.050	.37090	.09220	.38090	.02137	-.00450	.00810	.06500	.55900	.05191
.200	-2.010	.36760	.09210	.37820	.02479	-.00250	.00360	.03300	.55300	.05126
.200	.010	.36540	.09650	.37690	.02526	-.00050	.00020	.00000	.55200	.05067
.200	2.020	.36650	.09270	.37670	.02569	.00080	-.00340	-.03300	.55300	.05047
.200	4.040	.36930	.09780	.37960	.02318	.00240	-.00750	-.06500	.55700	.05165
.200	6.090	.37130	.09220	.38080	.01911	.00680	-.01260	-.10500	.56300	.05407
.200	8.090	.38240	.08380	.39120	.01347	.01150	-.01790	-.14300	.57300	.05512
.200	10.110	.39630	.07760	.40380	.00533	.01630	-.02320	-.18500	.58300	.05760
.200	12.140	.40160	.07250	.40690	.00390	.02040	-.02730	-.22100	.58600	.05594
.200	14.160	.40810	.06660	.41430	-.00299	.02330	-.03230	-.26300	.59200	.05679
GRADIENT	-.00024	.00019	.00013	-.00020	.00022	.00085	-.00189	-.01613	-.00020	-.00007

0A110 861C11F12M51M24E45V21R15X29

(RF5054) (08 MAY 74)

REFERENCE DATA

XREF = 4.4119 90.FT. XMRP = 43.5974 INCHES
 LREF = 19.2299 INCHES YMRP = .0000 INCHES
 BREF = 37.9399 INCHES ZMRP = 15.1875 INCHES
 SCALE = .5405 SCALE

PARAMETRIC DATA

BETA = .000 BDFLAP = -12.000
 ELEWON = .000 AILRON = .000
 RUDDER = .000 SFDPRK = 89.000

RUN NO. 54/ 0 RVAL = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

MACH	ALPHA	CL	CLM	CN	CAF	CYN	CBL	CV	XCP/L	CAB
.200	-4.190	-.30470	.08160	-.30990	.55918	-.00070	.00010	.00200	.76800	.05711
.200	-2.120	-.21530	.07620	-.21800	.06816	-.00100	.00050	.00200	.83200	.05608
.200	-1.080	-.16450	.07220	-.16580	.06912	-.00110	.00020	.00200	.88600	.05487
.200	-.040	-.11710	.06780	-.11720	.06775	-.00110	.00020	.00200	.98300	.05698
.200	.980	-.06980	.06680	-.06870	.06804	-.00110	.00020	.00100	1.20200	.05471
.200	2.020	-.02310	.06450	-.02080	.06536	-.00110	.00030	.00200	2.47100	.05513
.200	4.070	.06640	.06520	.07280	.06021	-.00100	.00030	.00100	.13700	.05298
.200	6.170	.16280	.06820	.16910	.05032	-.00100	.00000	.00000	.43000	.05292
.200	8.230	.26390	.07850	.27240	.03987	-.00100	.00020	.00000	.51600	.05059
.200	10.310	.36430	.09180	.37490	.02314	-.00100	.00020	.00000	.55100	.05141
.200	12.400	.46860	.11230	.48180	.00898	-.00110	.00000	.00000	.57300	.05213
.200	14.500	.58700	.14440	.60450	-.00713	-.00110	.00040	.00000	.59000	.05306
.200	16.590	.71330	.18790	.75730	-.02370	-.00120	-.00010	-.00100	.60500	.05441
.200	18.680	.83150	.24350	.86570	-.03572	-.00190	.00000	.00200	.61500	.05378
.200	20.790	.94200	.30590	.98930	-.04840	-.00120	-.00030	.00000	.61900	.05378
.200	22.880	1.06120	.40250	1.13420	-.04191	-.00170	.00000	.00100	.62900	.05218
.200	24.970	1.18410	.48190	1.23870	-.05466	.00080	.00000	-.00100	.63400	.06876
.200	27.040	1.21860	.55860	1.33940	-.06658	.00030	.01050	-.01600	.63200	.07293
.200	29.020	1.14760	.58420	1.28690	-.04601	-.00680	.00530	.01200	.61800	.07618
.200	30.930	.98410	.55690	1.13040	-.02819	-.00070	-.00750	.01900	.59500	.07904
.200	GRADIENT	.04545	-.00216	.04662	-.05006	-.00004	.00001	-.00012	.02507	-.00043



0A110 B61C11F12M51M24E4D0V2R15X29

(RF5055) (08 MAY 74)

REFERENCE DATA

SREF = 4.4119 30.FT. YMRP = 43.5974 INCHES
 LREF = 19.2299 INCHES YMRP = .0000 INCHES
 BRFP = 37.9359 INCHES ZMRP = 15.1875 INCHES
 SCALE = .0405 SCALE

PARAMETRIC DATA

ALPHA = 10.000 BCFLAP = -12.500
 ELEVON = .000 AILTRON = .000
 RUDDER = -20.000 SPOBRK = 25.000

RUN NO. 55/ 0 RVAL = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

MACH	BETA	CL	CLM	CN	CAF	CYN	CBL	CY	XCF/L	CAB
.200	-14.190	.44270	.02820	.44500	-.02760	-.00470	.02130	.21200	.62800	.04325
.200	-12.120	.43690	.03280	.43990	-.02300	-.00120	.01720	.17600	.62400	.04200
.200	-10.100	.43050	.03770	.43430	-.01814	.00410	.01230	.13700	.62000	.04202
.200	-8.070	.42520	.04340	.42950	-.01473	.01010	.00630	.09500	.61400	.04315
.200	-6.050	.41830	.04790	.42330	-.01034	.01570	.00000	.05300	.61000	.04110
.200	-4.030	.41240	.05250	.41810	-.00583	.01930	-.00510	.01500	.60500	.03852
.200	-2.020	.40750	.05480	.41360	-.00346	.02180	-.00950	-.01800	.60300	.03772
.200	.010	.40620	.05490	.41210	-.00399	.02430	-.01420	-.05300	.60300	.03912
.200	2.020	.41030	.05210	.41620	-.00478	.02700	-.01870	-.08900	.60600	.03901
.200	4.020	.41260	.04810	.41800	-.00773	.02930	-.02300	-.12300	.60900	.04034
.200	6.070	.41730	.04490	.42220	-.01124	.03320	-.02860	-.16100	.61300	.04209
.200	8.090	.42440	.04080	.42870	-.01428	.03480	-.03180	-.19500	.61700	.04558
.200	10.110	.43020	.03810	.43410	-.01754	.03680	-.03520	-.22900	.61900	.04840
.200	12.140	.43120	.04000	.43510	-.01775	.03390	-.03480	-.25300	.61800	.05031
.200	14.160	.43190	.03930	.43550	-.01907	.03290	-.03590	-.27900	.61700	.05290
.200	GRADIENT	.00016	-.00023	.00012	-.00025	.00125	-.00223	-.01719	.00054	.00024

O4110 061C11F12M51M24E40V21R15X29

REFERENCE DATA

BREF = 4.4119 SQ.FT. XMRP = 43.9974 INCHES
 LREF = 19.2299 INCHES YMRP = .0000 INCHES
 BREF = 37.9359 INCHES ZMRP = 15.1875 INCHES
 SCALE = .0405 SCALE

PARAMETRIC DATA

ALPHA = 15.000 BDFLAP = -12.000
 ELEVCN = .000 AILRCN = .000
 RUDDER = .000 SFCBRK = 25.000

RUN NO. 58/ 0 RVL = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

MACH	BETA	CL	CLM	CN	CAF	CYN	CBL	CY	XCP/L	CAB
.200	-14.110	.45050	.02760	.45210	-.03212	-.02390	.03160	.25000	.62900	.04928
.200	-12.120	.44520	.02800	.44740	-.02799	-.02250	.02950	.22100	.62800	.04615
.200	-10.090	.44240	.03030	.44320	-.02487	-.02010	.02560	.18600	.62700	.04354
.200	-8.090	.43700	.03750	.44020	-.02191	-.01960	.02080	.14800	.62300	.04139
.200	-6.060	.43120	.03700	.43500	-.01825	-.01100	.01530	.10800	.62000	.03831
.200	-4.030	.42710	.04250	.43120	-.01637	-.00650	.00970	.07100	.61500	.03661
.200	-2.010	.42260	.04320	.42700	-.01428	-.00340	.00470	.03600	.61000	.03816
.200	.000	.42070	.04360	.42330	-.01290	-.00060	.00000	.00200	.61200	.03713
.200	2.020	.42050	.04270	.42490	-.01374	-.00450	-.00450	-.03400	.61000	.03768
.200	4.030	.42080	.04150	.42500	-.01502	.00480	-.00930	-.06800	.61500	.03782
.200	6.080	.42750	.03850	.43080	-.01914	.00920	-.01500	-.10900	.61900	.03969
.200	8.090	.43200	.03440	.43530	-.02101	.01380	-.02050	-.14800	.62300	.04159
.200	10.110	.44290	.03030	.44570	-.02409	.01830	-.02570	-.18700	.62700	.04395
.200	12.130	.44190	.02870	.44430	-.02701	.02080	-.02860	-.22300	.62800	.04540
.200	14.170	.44280	.02800	.44460	-.03057	.02260	-.03150	-.25600	.62800	.04759
GRADIENT		-.00002	-.00005	-.00072	.00016	.00139	-.00234	-.01727	-.00000	-.00016

OAL110 061C11F12M514R24E45V21R15X29

(RF5057) (08 MAY 74)

REFERENCE DATA

SREF = 4.4119 SQ.FT. YMRP = 43.5974 INCHES
 LREF = 19.2299 INCHES YMRP = .5000 INCHES
 BREF = 37.9359 INCHES ZMRP = 15.1875 INCHES
 SCALE = .5455 SCALE

PARAMETRIC DATA

BETA = .500 BDFLAP = -12.000
 ELEVON = .500 AILRON = .500
 RUDELA = .500 SPOBRK = 25.000

RUN NO. 57/ 0 RML = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

WACH	ALPHA	CL	CLM	CLN	CAN	CYN	CBL	CY	XCF/L	CAB
.200	-4.170	-26690	.54460	-26940	.02508	-.00050	.00010	.00000	.72000	.03956
.250	-2.580	-16540	.03420	-16650	.02815	-.00050	.00320	.00000	.75500	.03891
.200	-1.970	-11970	.03150	-12020	.02925	-.00060	.00000	.00000	.79400	.03880
.250	-.920	-56690	.02860	-56690	.02861	-.00070	.00000	.00100	.90700	.03954
.200	1.500	-02210	.02820	-02160	.02865	-.00050	.00000	.00000	1.43600	.03850
.250	2.040	.02300	.02850	.02410	.02767	-.00040	.00010	.00000	-.05300	.03767
.200	4.080	.11760	.03080	.11950	.02242	-.00060	.00010	.00000	.51100	.03679
.250	6.170	.21660	.03690	.21950	.01341	-.00050	.00010	.00000	.57500	.03631
.200	8.200	.32050	.04630	.32390	-.00014	-.00060	.00000	.00000	.65100	.03761
.250	10.330	.41990	.06320	.42050	-.01240	-.00050	-.00010	.00000	.61100	.03694
.200	12.420	.52690	.08660	.53320	-.02878	-.00060	-.00030	.00000	.61900	.03907
.250	14.520	.64270	.11970	.65220	-.04334	-.00060	-.00080	.00000	.62600	.04158
.200	16.610	.77290	.16330	.78000	-.06250	-.00080	-.00050	-.00100	.63600	.04296
.250	18.710	.89460	.22230	.91870	-.07850	-.00120	-.00040	.00000	.64500	.04497
.200	20.810	1.00230	.28630	1.03660	-.08853	-.00080	-.00070	.00000	.64200	.04659
.250	22.890	1.12770	.38050	1.19000	-.08083	-.00050	-.00090	-.00100	.64900	.05389
.200	25.000	1.25090	.47060	1.30540	-.09965	-.00160	.05420	-.01400	.64900	.05865
.250	27.060	1.26230	.54820	1.37350	-.08623	.00030	.01260	-.01900	.64500	.06145
.200	29.030	1.17930	.56670	1.35640	-.07693	-.00090	.01130	.02000	.63100	.07106
.250	30.930	1.00520	.54040	1.14000	-.05310	-.00050	-.00730	.01700	.61100	.07513
	GRADIENT	.04647	-.00162	.04700	-.00228	-.00000	-.00000	.00000	-.04183	-.00032

04110 061C11F12M51W25E45V19M15X29

(RF5056) (90 MAY 74)

REFERENCE DATA

SREF = 4.419 50.FT. XMRP = 43.9974 INCHES
 LREF = 19.2299 INCHES YMRP = .0000 INCHES
 BREF = 37.9359 INCHES ZMRP = 15.1875 INCHES
 SCALE = .5405 SCALE

PARAMETRIC DATA

BETA = .000 BCPLAP = -12.000
 ELEVON = .000 AILRON = .000
 RUDDER = .000 SPOBRK = 25.000

RUN NO. 50 / 0 RWL = 1.42 GRADIENT INTERVAL = -6.00 / 6.00

WACH	ALPHA	CL	CDP	CLM	CM	CAF	CYN	CBL	CY	XCP/L	CAB
.200	-4.190	-2.6650	.04420	.04890	-.26900	.02459	-.00060	.00030	.00200	.71900	.03003
.200	-2.120	-1.6640	.03440	.04720	-.16760	.02824	-.00050	.00040	.00500	.75500	.03822
.200	-1.070	-1.1840	.03140	.04650	-.11900	.02920	-.00070	.00020	.00200	.79600	.03025
.200	-.040	-.06040	.02930	.04600	-.06840	.02931	-.00050	.00020	.00100	.89900	.03747
.200	1.000	-.02100	.02790	.04570	-.02130	.02831	-.00050	.00030	.00100	1.43900	.03825
.200	2.030	.02040	.02950	.04490	.02940	.02891	-.00050	.00020	.00100	.09000	.03663
.200	4.040	.12100	.02950	.04400	.12360	.02904	-.00050	.00020	.00100	.32000	.03014
.200	6.190	.22260	.03690	.04270	.22330	.01271	-.00040	.00020	.00000	.58200	.03594
.200	8.250	.32610	.04740	.04150	.32950	.00013	-.00050	.00010	.00100	.60500	.03696
.200	10.340	.43160	.06350	.04160	.43620	-.01501	-.00060	.00000	.00100	.61700	.03637
.200	12.420	.53890	.04950	.04050	.54520	-.02841	-.00060	-.00020	.00000	.62400	.03784
.200	14.540	.6370	.12320	.03840	.65560	-.04531	-.00070	-.00070	.00000	.63000	.03969
.200	16.600	.71910	.16610	.03300	.78930	-.06199	-.00080	-.00030	.00000	.63600	.04226
.200	18.670	.84130	.21850	.03060	.90780	-.07819	-.00100	-.00020	.00000	.63900	.04326
.200	20.600	1.00290	.28640	.02720	1.04210	-.09553	-.00110	-.00050	.00100	.64200	.04641
.200	22.900	1.13330	.36990	.00760	1.19570	-.04201	-.00020	.00000	-.00100	.64900	.05362
.200	25.010	1.23790	.47790	.00560	1.32330	-.09009	-.00170	.00070	-.01600	.65000	.05078
.200	27.070	1.28050	.55950	.01450	1.40200	-.08823	.00030	.01000	-.02400	.64800	.06291
.200	28.960	1.10960	.54090	.04970	1.23290	-.06418	-.00260	-.02120	.03700	.62500	.07255
.200	20.990	1.02200	.54740	.12290	1.15610	-.05993	.00000	-.00780	.01800	.61300	.07621
.200	00.000	.04694	-.00100	-.00056	.04746	-.00037	.00001	-.00002	-.00021	-.03396	-.00014



(RF5559) (58 MAY 74)

0A110 861C11F12M61M425E40V19R15X29

REFERENCE DATA

XREF = 4.4119 97.1FT. YMRP = 43.5974 INCHES
 LREF = 19.2299 INCHES YMRP = .5000 INCHES
 BREF = 37.9359 INCHES ZMRP = 15.1875 INCHES
 SCALE = .5405 SCALE

PARAMETRIC DATA

ALPHA = 10.000 BCF LAP = -12.000
 ELEVON = .500 AIRLON = .500
 RUDDER = .500 SPCORR = 25.000

RUN NO. 59/ 0 RINL = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

MACH	BETA	CL	CLM	CDF	CN	CAF	CYN	CBL	CY	XCP/L	CAB
.250	-14.140	.46490	.02240	.03340	.46690	-.03137	-.02420	.03240	.24900	.63450	.54800
.250	-12.120	.46140	.02300	.02650	.46400	-.02769	-.02280	.02990	.21000	.63300	.54536
.250	-10.120	.45340	.02340	.02850	.45850	-.02459	-.02000	.02610	.18400	.63100	.54307
.250	-8.100	.45040	.02300	.02900	.45410	-.02127	-.01900	.02140	.14600	.62800	.54065
.250	-6.085	.44750	.02310	.02900	.45100	-.01864	-.01100	.01570	.11800	.62500	.53828
.250	-4.060	.44600	.02370	.02900	.45040	-.01642	-.00660	.01020	.07000	.62100	.53793
.250	-2.020	.43850	.02970	.02590	.44320	-.01425	-.00360	.00510	.03700	.61900	.53719
.250	.500	.43650	.04120	.02650	.44100	-.01323	-.00000	.00000	.02000	.61700	.53685
.250	2.020	.43310	.03990	.02600	.43990	-.01351	.00210	-.00460	-.03300	.61800	.53675
.250	4.020	.43450	.03770	.02610	.43890	-.01520	.00500	-.00960	-.06900	.62000	.53721
.250	6.030	.44150	.03390	.02810	.44540	-.01853	.00940	-.01510	-.10400	.62400	.53959
.250	8.090	.44830	.03040	.02990	.45170	-.02191	.01400	-.02060	-.14900	.62700	.54151
.250	10.100	.45320	.02680	.02760	.45620	-.02509	.01820	-.02580	-.18600	.63000	.54385
.250	12.120	.45310	.02510	.02590	.45300	-.02672	.02070	-.02900	-.22300	.63100	.54503
.250	14.150	.45730	.02240	.02240	.45930	-.02691	.02260	-.03230	-.25500	.63200	.54730
.250	GRADIENT	-.00131	.00009	-.00009	-.00130	.00016	.00143	-.00244	-.01723	-.00015	-.00009

0A110 B61C11F12M51M24E40V2R15X29

(RF5066) (08 MAY 74)

REFERENCE DATA

SREF = 4.4119 SQ.FT. YMRP = 43.9974 INCHES
 LREF = 19.2299 INCHES YMRP = .0000 INCHES
 BREF = 37.9359 INCHES ZMRP = 15.1875 INCHES
 SCALE = .5495 SCALE

PARAMETRIC DATA

ALPHA = 10.000 BDFLAP = -12.000
 ELEWON = .000 AIRLON = .000
 RUDDER = .000 SFBRRK = 25.000

RUN NO. 60/ 0 RNVL = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

MACH	BETA	CL	CLM	CN	CAF	CYN	CBL	CY	XCF/L	CAB
.200	-14.110	.45240	.52480	.45390	-.03282	-.02400	.03220	.25100	.63200	.04749
.200	-12.120	.44420	.52700	.44630	-.02848	-.02280	.02950	.22200	.62900	.04491
.200	-10.100	.43760	.52990	.44030	-.02522	-.01950	.02540	.18400	.62700	.04327
.200	-8.080	.43490	.53400	.43810	-.02142	-.01550	.02040	.14800	.62300	.04011
.200	-6.070	.42720	.53780	.43100	-.01803	-.01090	.01510	.11000	.61900	.03800
.200	-4.040	.42690	.54270	.43100	-.01578	-.00650	.00960	.07100	.61500	.03725
.200	-2.010	.42090	.54660	.42310	-.01480	-.00350	.00460	.03600	.61300	.03770
.200	.010	.41810	.54960	.42250	-.01353	-.00060	.00010	.00100	.61200	.03721
.200	2.020	.41830	.54880	.42290	-.01348	.00220	-.00450	-.03600	.61300	.03699
.200	4.020	.42060	.54250	.42480	-.01491	.00510	-.00940	-.07100	.61500	.03687
.200	6.070	.42590	.53620	.42970	-.01812	.00970	-.01930	-.11200	.61900	.03461
.200	8.060	.43190	.53440	.43510	-.02166	.01380	-.02030	-.15000	.62300	.04115
.200	10.120	.43720	.53030	.43980	-.02521	.01730	-.02490	-.18700	.62600	.04362
.200	12.130	.43950	.52790	.44170	-.02800	.02060	-.02880	-.22400	.62800	.04459
.200	14.160	.44670	.52590	.44830	-.03203	.02340	-.03280	-.25900	.63000	.04658
.200	GRADIENT	-.00075	-.00001	-.00075	.00015	.00143	-.00234	-.01767	-.00000	-.00007



REFERENCE DATA
 WACH = 4.4119 SQ.FT. XMRP = 43.9974 INCHES ALPHA = 10.000 BDELAP = -12.000
 LREF = 19.2299 INCHES YMRP = .0000 INCHES ELEVON = .000 ALLRON = .000
 B-DF = 37.9359 INCHES ZMRP = 15.1875 INCHES RUDDER = -10.000 SPDBRK = 25.000
 SCALE = .5455 SCALE

PARAMETRIC DATA
 RUN NO. 61/ 0 RNVL = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

WACH	BETA	CL	CLM	CN	CAF	CYN	CBL	CY	KCF/L	C/B
.200	-14.140	.49220	.02930	.43370	-.03255	-.01460	.02690	.23300	.63100	.04514
.200	-12.120	.45040	.02800	.43270	-.02826	-.01170	.02330	.19900	.62900	.04307
.200	-10.090	.44790	.03200	.43360	-.02418	-.00740	.01880	.16200	.62500	.04194
.200	-8.080	.43480	.03650	.43845	-.01940	-.00290	.01330	.12300	.62100	.03925
.200	-6.050	.42930	.04070	.43350	-.01604	.00220	.00750	.08400	.61700	.03763
.200	-4.040	.42220	.04530	.42670	-.01353	.00750	.00160	.04400	.61300	.03704
.200	-2.020	.42010	.04770	.42490	-.01172	.00990	-.00290	.00700	.61000	.03707
.200	.000	.41690	.04780	.42.76	-.01106	.01270	-.00750	-.02900	.61000	.03757
.200	2.030	.42030	.04560	.42530	-.01074	.01560	-.01240	-.06300	.61200	.03699
.200	4.020	.42230	.04370	.42690	-.01356	.01820	-.01730	-.09800	.61400	.03848
.200	6.080	.42800	.03930	.43210	-.01610	.02210	-.02230	-.13700	.61800	.04016
.200	8.080	.43090	.03680	.43450	-.01918	.02570	-.02720	-.17600	.62000	.04292
.200	10.120	.43610	.03400	.43920	-.02289	.02710	-.03030	-.20700	.62300	.04645
.200	12.120	.44320	.03190	.44390	-.02514	.02990	-.03400	-.24400	.62500	.04694
.200	14.160	.44410	.03090	.44620	-.02873	.03110	-.03650	-.27500	.62600	.04974
.200	GRADIENT	.00002	-.00025	.00004	.00010	.00139	-.00234	-.01755	.00020	.00014

OAL110 061C131F12H01M24E60V0R15X29

(RF5062) (06 MAY 74)

REFERENCE DATA

SREF = 4.4119 94.FT. YMRP = 43.5974 INCHES
 LREF = 19.2299 INCHES YMRP = .0000 INCHES
 BREF = 37.9339 INCHES ZMRP = 15.1875 INCHES
 SCALE = .0405 SCALE

PARAMETRIC DATA

ALPHA = 10.000 9CFLAP = -12.000
 ELEVON = .000 AILRON = .000
 RUDDER = -20.000 SPDPRK = 25.000

RUN NO. 62/ 0 RN/L = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

MACH	BETA	CL	CLM	CN	CAF	CYN	CBL	CY	XCP/L	CAB
.200	-14.140	.44920	.02860	.45120	-.02927	-.00400	.02100	.21000	.63000	.04359
.200	-12.120	.44370	.03150	.44660	-.02437	.00000	.01650	.17500	.62600	.04272
.200	-10.100	.43500	.03660	.43870	-.01925	.00600	.01100	.13300	.62100	.04235
.200	-8.080	.42940	.04220	.43390	-.01396	.01160	.00480	.09200	.61600	.04205
.200	-6.060	.41940	.04730	.42470	-.00867	.01620	-.00066	.05300	.61100	.03937
.200	-4.050	.41630	.05250	.42180	-.00732	.02020	-.00560	.01300	.60600	.03964
.200	-2.020	.41300	.05430	.41910	-.00421	.02290	-.01040	-.02000	.60400	.03883
.200	.010	.41310	.05410	.41950	-.00356	.02560	-.01490	-.05600	.60400	.03868
.200	2.040	.41080	.05270	.41670	-.00444	.02780	-.01930	-.09100	.60300	.03936
.200	4.020	.41300	.04990	.42080	-.00605	.02930	-.02350	-.12500	.60800	.03975
.200	6.050	.42000	.04500	.42500	-.01025	.03300	-.02850	-.16100	.61300	.04225
.200	8.080	.42710	.04240	.43140	-.01447	.03580	-.03250	-.19700	.61500	.04663
.200	10.110	.43390	.03870	.43790	-.01734	.03720	-.03570	-.23000	.61900	.04654
.200	12.130	.43990	.03640	.43940	-.01990	.03820	-.03790	-.26200	.62100	.04920
.200	14.150	.43880	.03800	.44220	-.02069	.03650	-.03900	-.28700	.62000	.05130
.200	GRADIENT	-.00024	-.00007	-.00022	.00012	.00114	-.00221	-.01716	.00025	.00004



OA110 861C11F12M51M24E4DV2R15X29

(RF5063) (08 MAY 74)

REFERENCE DATA

SREF = 4.4119 SQ.FT. XMRP = 43.5974 INCHES
 LREF = 19.2299 INCHES YMRP = .5000 INCHES
 BRP = 37.9359 INCHES ZMRP = 15.1875 INCHES
 SCALE = .5405 SCALE

PARAMETRIC-DATA

ALPHA = 10.500 BDFLAP = -12.000
 ELEVON = .500 AILRON = .000
 RUDDER = -25.500 SPCBRK = 25.900

RUN NO. 63/ 0 RNL = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

MACH	BETA	CL	CLM	CN	CAF	CYN	CBL	CY	XCP/L	CAB
.200	-14.140	.44370	.05180	.44580	-.02862	.00130	.01840	.19900	.62800	.04510
.200	-12.120	.43980	.05610	.44310	-.02171	.00670	.01320	.16000	.62300	.04456
.200	-10.070	.42990	.06310	.43420	-.01494	.01240	.00740	.11800	.61600	.04393
.200	-8.070	.42220	.06730	.42750	-.00943	.01770	.00140	.07800	.61100	.04279
.200	-6.060	.41770	.07050	.42360	-.00550	.02240	-.00380	.03600	.60600	.04249
.200	-4.050	.41100	.07240	.41730	-.00237	.02820	-.00890	.00000	.60100	.04121
.200	-2.010	.40630	.07490	.41320	.00100	.02830	-.01320	-.03300	.59800	.03995
.200	.000	.40330	.07410	.41170	.00040	.03080	-.01780	-.06800	.59900	.04028
.200	2.020	.40560	.07370	.41610	-.00076	.03330	-.02260	-.10300	.60100	.04031
.200	4.020	.40970	.07130	.41580	-.00314	.03420	-.02600	-.13400	.60300	.04135
.200	6.050	.41740	.06780	.42280	-.00803	.03630	-.03000	-.16900	.60900	.04435
.200	8.080	.42360	.06470	.42840	-.01223	.03880	-.03420	-.20400	.61300	.04756
.200	10.120	.42600	.06200	.43100	-.01551	.04060	-.03720	-.23900	.61600	.04997
.200	12.140	.43660	.06170	.44060	-.01759	.03980	-.03840	-.26700	.61800	.05067
.200	14.180	.43510	.05970	.43870	-.01923	.03950	-.03960	-.29300	.61600	.05232
.200	GRADIENT	.00003	-.00017	-.00047	-.00001	.00104	-.00216	-.01676	.00035	.00006

0A110 B61C11F12M51A24E40V2R15X29

(RF5064) (00 MAY 74)

REFERENCE DATA

SREF = 4.4119 SQ.FT. XMRP = 43.9974 INCHES
 LREF = 19.2299 INCHES YMRP = .0000 INCHES
 BRREF = 37.9359 INCHES ZMRP = 15.1875 INCHES
 SCALE = .0405 SCALE

ALPHA = 10.000 BDFLAP = -12.050
 ELEWON = .000 AILRON = .000
 RUDDER = -25.000 SPDRBK = .000

PARAMETRIC DATA

RUN NO. 64 / 0 RIN/L = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

MACH	BETA	CL	CDF	CLM	CN	CAF	CYN	CBL	CY	KCP/L	CAB
.200	-14.120	.45310	.05260	.02640	.45520	-.02970	.00570	.01530	.19100	.63000	.04375
.200	-12.100	.44740	.05620	.02940	.45020	-.02507	.00640	.01170	.15700	.62800	.04257
.200	-10.050	.43450	.05950	.03400	.44200	-.02016	.01250	.00720	.11900	.62300	.04184
.200	-8.060	.42880	.06310	.03950	.43320	-.01489	.01700	.00180	.08000	.61800	.04003
.200	-6.010	.42480	.06540	.04300	.42520	-.01187	.02040	-.05290	.04200	.61400	.04010
.200	-4.030	.41770	.06880	.04640	.42330	-.00783	.02410	-.00790	.00500	.61000	.03876
.200	-2.010	.41720	.06910	.05060	.42290	-.00640	.02630	-.01220	-.02800	.60800	.03919
.200	.010	.41520	.07000	.05010	.42100	-.00555	.02790	-.01610	-.06200	.60600	.03931
.200	2.040	.41610	.06950	.04820	.42180	-.00623	.02980	-.02620	-.09600	.61000	.03829
.200	4.040	.41900	.06710	.04570	.42420	-.00914	.03150	-.02450	-.13000	.61200	.03915
.200	6.060	.42440	.06340	.04110	.42890	-.01375	.03330	-.02830	-.16300	.61600	.04135
.200	8.090	.42920	.06190	.03920	.43330	-.01608	.03520	-.03220	-.19700	.61800	.04407
.200	10.110	.43460	.05980	.03590	.43830	-.01918	.03710	-.03550	-.23100	.62200	.04651
.200	12.140	.44260	.05690	.03160	.44560	-.02346	.03810	-.03780	-.26500	.62600	.04750
.200	14.130	.44740	.05600	.03090	.45010	-.02326	.03530	-.03820	-.28500	.62600	.04993
.200	GRADIENT	.00007	-.00015	-.00039	.00003	-.00016	.00091	-.00204	-.01674	.00030	.00005



(RF3065) (08 MAY 74)

CA1110 861C11F12M51M24E40V2R15X29

REFERENCE DATA

SREF = 4.4119 SQ.FT. XMRP = 43.5974 INCHES
 LREF = 19.2299 INCHES YMRP = .5000 INCHES
 BREF = 37.9359 INCHES ZMRP = 15.1875 INCHES
 SCALE = .5425 SCALE

PARAMETRIC DATA

ALPHA = 15.500 BDFLAP = -12.000
 ELEVON = .500 AILRON = .500
 RUDDER = -20.500 SPDRK = .500

RUN NO. 65/ 0 RNVL = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

MACH	BETA	CL	CDF	CLM	CN	CAF	CYN	CBL	CY	XCP/L	CAB
.200	-14.110	.45320	.05050	.02570	.45690	-.03207	-.00170	.01950	.20700	.63100	.54308
.200	-12.100	.44690	.05440	.02800	.44940	-.02676	.00050	.01640	.17400	.62900	.54101
.200	-10.970	.44410	.05740	.03235	.44720	-.02329	.00450	.01220	.13800	.62500	.54098
.200	-8.080	.43370	.06150	.03600	.43770	-.01734	.00860	.00680	.09900	.62100	.53824
.200	-6.060	.42950	.06440	.04180	.43410	-.01375	.01210	.00180	.06100	.61600	.53734
.200	-4.050	.42590	.06650	.04590	.43090	-.01096	.01560	-.00300	.02400	.61200	.53731
.200	-2.020	.42020	.06860	.04870	.42570	-.00793	.01780	-.00750	-.00900	.61000	.53619
.200	.000	.41920	.06810	.04860	.42460	-.00820	.01990	-.01120	-.04400	.60900	.53715
.200	2.030	.42150	.06700	.04680	.42670	-.00974	.02120	-.01510	-.07700	.61100	.53799
.200	4.020	.42500	.06580	.04460	.42990	-.01154	.02270	-.01950	-.10900	.61300	.53862
.200	6.040	.42780	.06350	.04010	.43250	-.01426	.02480	-.02350	-.14300	.61700	.53941
.200	8.060	.43070	.05930	.03660	.43430	-.01696	.02740	-.02780	-.17900	.62100	.54331
.200	10.080	.43960	.05750	.03370	.44280	-.02236	.02970	-.03150	-.21400	.62400	.54588
.200	12.120	.44270	.05490	.03070	.44540	-.02545	.03270	-.03320	-.25100	.62600	.54638
.200	14.140	.44920	.05330	.03000	.45140	-.02827	.03220	-.03680	-.27700	.62700	.54898
.200	GRADIENT	-.00003	-.00015	-.00022	-.00005	-.00015	.00087	-.00202	-.01654	.00015	.00022

QAL10 061C11F12H51M24E4DV2R15X29

(06F5066) (08 MAY 74)

REFERENCE DATA

SREF = 4.4119 SQ.FT. YMRP = 43.5974 INCHES
 LREF = 19.2299 INCHES YMRP = .0000 INCHES
 BREF = 37.9359 INCHES ZMRP = 15.1875 INCHES
 SCALE = .0405 SCALE

PARAMETRIC DATA

ALPHA = 10.000 BDFLAP = -12.000
 ELEVON = .000 AILRON = .000
 RUDDER = -10.000 SPOBRK = .000

RUN NO. 66/ 0 RM/L = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

MACH	BETA	CL	CLM	CN	CAF	CYN	CBL	CY	KCF/L	CAB
.200	-14.120	.49610	.04730	.43920	-.03573	-.01020	.02470	.22400	.63400	.04142
.200	-12.110	.45090	.02460	.43260	-.03134	-.00800	.02120	.19200	.63200	.03950
.200	-10.100	.44700	.02740	.44950	-.02684	-.00330	.01650	.15200	.62900	.03601
.200	-8.070	.44340	.03560	.44630	-.02446	.00020	.01180	.11700	.62600	.03711
.200	-6.050	.44010	.03500	.44375	-.02023	.00380	.00680	.08100	.62300	.03432
.200	-4.040	.43320	.03900	.43720	-.01714	.00670	.00190	.04500	.61900	.03368
.200	-2.020	.42840	.04160	.43260	-.01563	.00910	-.00240	.00900	.61600	.03491
.200	.000	.42910	.04300	.43350	-.01465	.01170	-.00690	-.02500	.61500	.03430
.200	2.030	.42610	.04140	.43040	-.01408	.01410	-.01120	-.06100	.61600	.03507
.200	4.020	.42770	.03890	.43160	-.01705	.01550	-.01560	-.09300	.61800	.03540
.200	6.040	.43210	.03450	.43540	-.02057	.01850	-.02030	-.13100	.62200	.03707
.200	8.060	.43750	.03080	.44030	-.02426	.02080	-.02440	-.16500	.62600	.04016
.200	10.060	.44370	.02660	.44610	-.02700	.02330	-.02840	-.20000	.63000	.04103
.200	12.110	.45140	.02370	.45310	-.03156	.02690	-.03270	-.23700	.63200	.04412
.200	14.190	.45060	.02390	.45200	-.03305	.02590	-.03350	-.26400	.63200	.04585
GRADIENT	-.00066	-.00007	-.00002	-.00067	.00006	.00112	-.00217	-.01715	-.00010	.00010



OM110 B61C11F12M51M24E40M6R15X29

(RFS067) (08 MAY 74)

REFERENCE DATA

WREF = 4.4119 SQ.FT. WRRP = 43.9974 INCHES
 LREF = 19.2299 INCHES YRRP = .0500 INCHES
 BREF = 37.9359 INCHES ZRRP = 15.1875 INCHES
 SCALE = .0405 SCALE

PARAMETRIC DATA

ALPHA = 10.000 BDFLAP = -12.000
 ELEVON = .000 AILRON = .000
 RUDDER = -10.000 SPOBRK = .000

RUN NO. 67/ 0 RMVL = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

WACH	BETA	CL	CLF	CLM	CN	CAF	CYN	CBL	CY	XCF/L	CAB
.200	-14.110	.45930	.04690	.02130	.46030	-.03666	-.01080	.02480	.22700	.63500	.04157
.200	-12.110	.45420	.05020	.02380	.45580	-.03246	-.00800	.02160	.19200	.63200	.03964
.200	-10.060	.44630	.05310	.02660	.44860	-.02812	-.00530	.01650	.15400	.63000	.03819
.200	-8.070	.44380	.05580	.03020	.44660	-.02497	.00020	.01130	.11800	.62700	.03646
.200	-6.040	.43430	.05810	.03380	.43770	-.02096	.00390	.00640	.08100	.62300	.03438
.200	-4.040	.43100	.05970	.03850	.43470	-.01884	.00700	.00170	.04500	.61900	.03414
.200	-2.010	.42690	.06140	.04110	.43100	-.01640	.00940	-.00290	.00900	.61700	.03358
.200	.000	.42550	.06220	.04130	.42970	-.01540	.01210	-.00720	-.02600	.61600	.03390
.200	2.040	.42700	.06070	.03960	.43100	-.01716	.01450	-.01180	-.06200	.61800	.03340
.200	4.020	.42670	.05970	.03750	.43050	-.01804	.01610	-.01600	-.09400	.62000	.03483
.200	6.060	.43520	.05760	.03270	.43640	-.02169	.01870	-.02040	-.13000	.62400	.03687
.200	8.070	.43850	.05530	.02920	.44130	-.02446	.02050	-.02400	-.16400	.62700	.03961
.200	10.090	.44450	.05260	.02670	.44670	-.02828	.02320	-.02850	-.19900	.63000	.04252
.200	12.180	.45340	.05050	.02350	.45500	-.03215	.02720	-.03310	-.23600	.63300	.04409
.200	14.150	.45270	.04820	.02340	.45400	-.03404	.02640	-.03390	-.26500	.63300	.04574
GRADIENT	-.00042	-.00042	-.00053	-.00019	-.00042	.00004	.00116	-.00220	-.01750	.00015	.00016

CA110 561C1F12M91M24E40V2R15X29

(RF5068) (06 MAY 74)

REFERENCE DATA

SREF = 4.4119 SQ.FT. XMRP = 43.3974 INCHES
 LREF = 19.2299 INCHES YMRP = .0000 INCHES
 BRP = 37.9359 INCHES ZMRP = 15.1675 INCHES
 SCALE = .0405 SCALE

PARAMETRIC DATA

ALPHA = 10.000 BDFLAP = -12.000
 ELEVON = .000 AILERON = .000
 RUDDER = .000 SPOBRK = .500

RUN NO. 68/ 0 RNL = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

MACH	BETA	CL	CLM	CN	CAF	CYN	CBL	CY	KCP/L	CAB
.200	-14.110	.43360	.02120	.45420	-.03626	-.02160	.03050	.24700	.63400	.64390
.200	-12.110	.45040	.02360	.45170	-.03382	-.01990	.02790	.21500	.63200	.64156
.200	-10.080	.45040	.02490	.45230	-.03072	-.01630	.02390	.17900	.63100	.64037
.200	-8.060	.43980	.02850	.44130	-.02561	-.01240	.01860	.14400	.62800	.63597
.200	-6.030	.43630	.03270	.43920	-.02372	-.00920	.01390	.10800	.62400	.63471
.200	-4.043	.43340	.03730	.43660	-.02151	-.00610	.00940	.07100	.62000	.63394
.200	-2.010	.42690	.03940	.43040	-.01930	-.00380	.00520	.03600	.61800	.63347
.200	.000	.42480	.04090	.42840	-.01825	-.00110	.00060	.00100	.61700	.63332
.200	2.020	.42920	.04020	.43270	-.01949	.00150	-.00410	-.03400	.61700	.63375
.200	4.020	.42700	.03760	.43010	-.02130	.00350	-.00870	-.06800	.61900	.63395
.200	6.050	.43260	.03330	.43550	-.02342	.00680	-.01370	-.10500	.62300	.63457
.200	8.080	.43510	.02980	.43760	-.02595	.00990	-.01830	-.14100	.62700	.63670
.200	10.090	.44210	.02620	.44390	-.02984	.01350	-.02300	-.17900	.63000	.63925
.200	12.120	.44730	.02270	.44830	-.03487	.01760	-.02750	-.21700	.63300	.64204
.200	14.120	.45080	.02150	.45150	-.03731	.01930	-.03050	-.25500	.63400	.64284
WGRADIENT		-.00052	.00007	-.00053	.00001	.00122	-.00226	-.01727	-.00015	.00001



CA110 061C11F12M51M24E40V0R15M29

(RFS069) (08 MAY 74)

REFERENCE DATA

BRDF = 4.4119 SQ.FT. WRP = 43.5974 INCHES
 LREF = 19.2299 INCHES YWRP = .0000 INCHES
 BRDF = 37.9339 INCHES ZWRP = 15.1875 INCHES
 SCALE = .0405 SCALE

PARAMETRIC DATA

ALPHA = 10.000 BDPLAP = -12.000
 ELEVON = .000 AILRON = .000
 RUDDER = .000 SPCBRK = .000

RUN NO. 69/ 0 RVAL = 1.42 GRADIENT INTERVAL = -6.00/ 6.00

WACH	BETA	CL	CLF	CLM	CN	CAF	CYN	COL	CY	XCP/L	CAB
.200	-14.120	.45630	.04540	.02090	.45700	-.03746	-.02140	.03050	.24700	.63500	.04353
.200	-12.110	.45350	.04850	.02320	.45480	-.03369	-.01970	.02760	.21500	.63300	.04169
.200	-10.020	.44980	.05280	.02600	.45200	-.02897	-.01620	.02370	.17900	.63000	.03835
.200	-8.080	.44430	.05900	.02870	.44700	-.02590	-.01290	.01930	.14300	.62800	.03630
.200	-6.050	.43930	.05700	.03200	.44240	-.02288	-.00900	.01390	.10600	.62500	.03377
.200	-4.050	.43290	.05730	.03680	.43620	-.02142	-.00600	.00930	.07000	.62100	.03413
.200	-2.020	.43050	.05950	.03930	.43420	-.01889	-.00380	.00500	.03700	.61800	.03324
.200	.020	.42840	.05920	.04050	.43210	-.01677	-.00100	.00200	.02200	.61700	.03305
.200	2.020	.43110	.05850	.03870	.43460	-.01997	.00130	-.00420	-.03400	.61900	.03465
.200	4.030	.43040	.05670	.03700	.43360	-.02159	.00370	-.00880	-.06000	.62000	.03464
.200	6.030	.43690	.05530	.03300	.43970	-.02414	.00700	-.01340	-.10600	.62400	.03592
.200	8.070	.44150	.05360	.02870	.44400	-.02663	.00980	-.01820	-.14100	.62800	.03741
.200	10.090	.44950	.05050	.02620	.44730	-.03045	.01390	-.02330	-.17900	.63000	.04017
.200	12.140	.44990	.04800	.02240	.45120	-.03373	.01760	-.02750	-.21700	.63300	.04078
.200	14.150	.45640	.04410	.02090	.45690	-.03868	.01900	-.03040	-.24950	.63500	.04414
GRADIENT		-.00022	-.00011	-.00001	-.00024	-.00007	.00122	-.00225	-.01718	-.00005	.00012