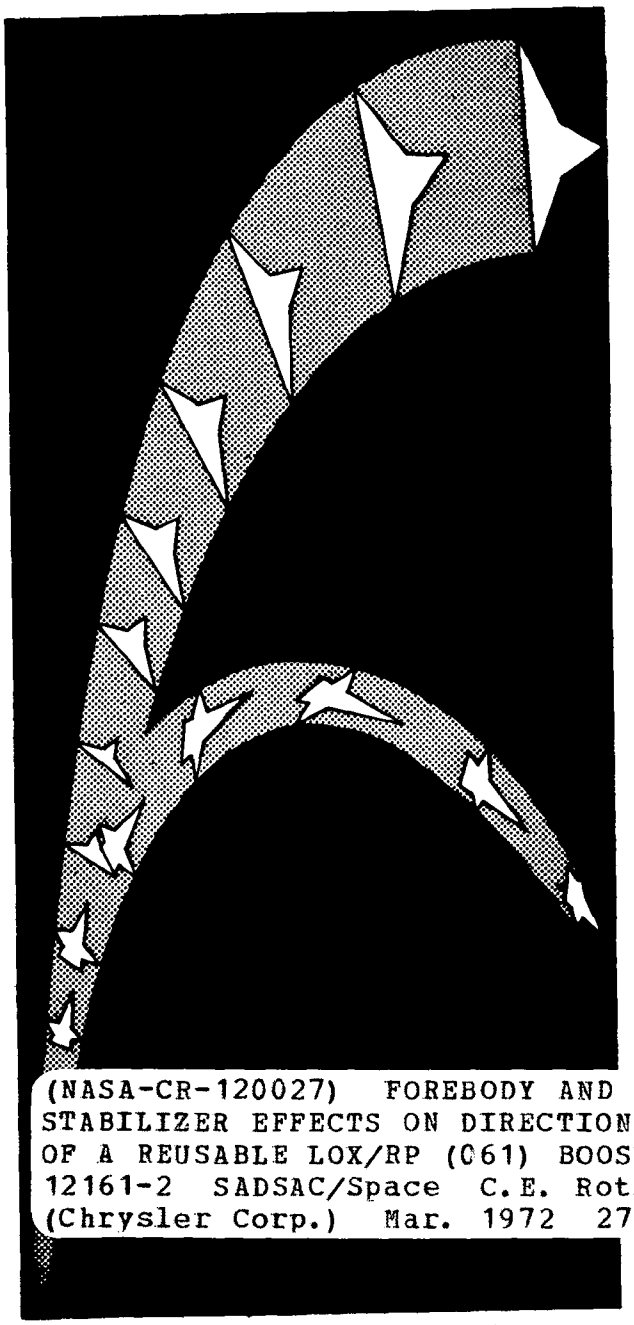
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CR-120,027
MARCH 1972

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—SPACE SHUTTLE—

FOREBODY AND VERTICAL STABILIZER EFFECTS ON DIRECTIONAL STABILITY OF A REUSABLE LOX/RP (061) BOOSTER AR 1216I-2

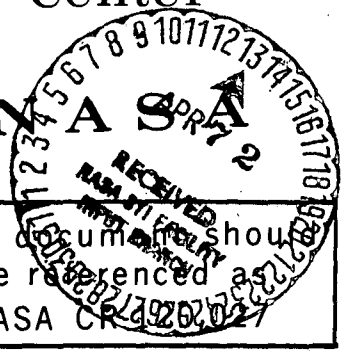
by

C.E. Roth, TBC
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MSFC 14 INCH
TRISONIC WIND TUNNEL

(NASA-CR-120027) FOREBODY AND VERTICAL STABILIZER EFFECTS ON DIRECTIONAL STABILITY OF A REUSABLE LOX/RP (C61) BOOSTER AR 12161-2 SADSAC/Space (Chrysler Corp.) C.E. Roth, et al Mar. 1972 273 p CSCL 22B G3/31
N72-22893
Unclas
25135

Marshall Space Flight Center



This document should be referenced as NASA CR-120,027

SADSAC SPACE SHUTTLE
AEROTHERMODYNAMIC
DATA MANAGEMENT SYSTEM

CONTRACT NAS8-4016
MARSHALL SPACE FLIGHT CENTER

SPACE DIVISION CHRYSLER CORPORATION

CAT.31

NASA Series Number: S-0621

DMS-DR-1209
CR-120,027
March, 1972

SADSAC/SPACE SHUTTLE

WIND TUNNEL TEST DATA REPORT

CONFIGURATION: AR 1216I-2, 0.003366 Scale

TEST PURPOSE: To Investigate the Forebody and Vertical Stabilizer Effects on Directional Stability of Booster Configurations

TEST FACILITY: NASA/MSFC 14-Inch Trisonic Tunnel

TESTING AGENCY: The Boeing Company

TEST NO. & DATE: MSFC TWT 513; December 6, 1971

FACILITY COORDINATOR: Jim Weaver, NASA/MSFC

PROJECT ENGINEER(S): C. E. Roth, L. L. Watts, and R. W. Ainsworth, The Boeing Company

DATA MANAGEMENT SERVICES

LIAISON: V. W. Sparks
V. W. Sparks

DATA OPERATIONS: R. L. Crawford
R. L. Crawford
Aero-Thermo Data Group

RELEASE APPROVAL: for N. D. Kemp, Supervisor
Aero Thermo Data Group

CONTRACT NAS 8-4016 AMENDMENT 153 DRL 184-58

This report has been prepared by Chrysler Corporation Space Division under a Data Management Contract to the NASA. Chrysler assumes no responsibility for the data presented herein other than its display characteristics.

MSFC 14 INCH TRISONIC WIND TUNNEL

Marshall Space Flight Center

NASA

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FOREBODY AND VERTICAL STABILIZER EFFECTS ON DIRECTIONAL STABILITY OF A REUSABLE LOX-RP (061) BOOSTER AR 1216I-2

By C. E. Roth, L. L. Watts and R. W. Ainsworth

ABSTRACT

This was an investigation of forebody and vertical stabilizer effects on the directional stability of some Reusable LOX/RP Booster configurations.

The test was conducted at the MSFC 14-Inch Trisonic Tunnel starting Monday, December 6, 1971, and continued through Saturday December 11, 1971, for a total of 66 occupancy hours. Configurations tested included a cylindrical body with two axisymmetrical noses, one with and without canopy, one delta wing, located in two positions, five vertical tails (including a "V" tail), two having split rudders, ventral fins, two sets of chines, three airbreathing engine pods, and rocket engine shrouds. The model scale was 0.003366.

NOMENCLATURE

(General)

SYMBOL	SADSAC SYMBOL	DEFINITION
α	ALPHA	angle of attack, angle between the projection of the wind X_w-axis on the body X, Z-plane and the body X-axis; degrees
β	BETA	sideslip angle, angle between the wind X_w-axis and the projection of this axis on the body X-Z-plane; degrees
ψ	PSI	yaw angle, angle of rotation about the body Z-axis, positive when the positive X-axis is rotated toward the positive Y-axis; degrees
ϕ	PHI	roll angle, angle of rotation about the body X-axis, positive when the positive Y-axis is rotated toward the positive Z-axis; degrees
ρ		air density; K_g/m^3, slugs/ft^3
a		speed of sound; m/sec, ft/sec
V		speed of vehicle relative to surrounding atmosphere; m/sec, ft/sec
q	Q(PSI) Q(PSF)	dynamic pressure; $1/2\rho V^2$, psi, psf
M	MACH	Mach number; V/a
RN/L	RN/L	Reynolds number per unit length; million/ft
p		static pressure; psi
P		total pressure; psi
C_p	CP	pressure coefficient; $(p-p_\infty)/q$

NOMENCLATURE (Continued)

Reference & C. G. Definitions

SYMBOL	SADSAC SYMBOL	DEFINITION
S		wing area; m^2, ft^2
S	SREF	reference area; m^2, ft^2
$\bar{c}$		wing mean aerodynamic chord or reference chord; m, ft, in (see ℓ_{ref} or LREF)
ℓ_{ref}	LREF	reference length; m, ft, in.; (see $\bar{c}$)
b_{ref}	BREF	wing span or reference span; m, ft, in
A_b		base area; m^2, ft^2, in^2
c. g.		center of gravity
MRP	MRP	abbreviation for moment reference point
	XMRP	abbreviation for moment reference point on X-axis
	YMRP	abbreviation for moment reference point on Y-axis
	ZMRP	abbreviation for moment reference point on Z-axis

NOMENCLATURE (Continued)

Axis System General

SYMBOL	DEFINITION
F	force; F, lbs
M	moment; M, in-lb

Subscript	Definition
N	normal force
A	axial force
L	lift force
D	drag force
Y	force or moment about the Y axis
Z	moment about the Z axis
X	moment about the X axis
s	stability axis system
w	wind axis system
ref	reference conditions
∞	free stream conditions
t	total conditions
b	base

NOMENCLATURE (Continued)

Body & Stability Axis System

SYMBOL	SADSAC SYMBOL	DEFINITION
		Body Axis System
C_N	CN	normal force coefficient; F_N/qS
C_A	CA	axial force coefficient; F_A/qS
C_{A_b}	CAB	base axial force coefficient; $\left[-1\right]\ \left[(p_b - p_\infty)/q\right]\ (A_b/S)$
C_{A_f}	CAF	forebody axial force coefficient; $C_A - C_{A_b}$
C_n	CYN	yawing moment coefficient; $M_Z/qS\ b_{ref}$
C_ℓ	CBL	rolling moment coefficient; $M_X/qS\ b_{ref}$
		Common to Both Axis Systems
C_m	CLM	pitching moment coefficient; $M_Y/qS\ \ell_{ref}$
C_y	CY	side force coefficient; F_Y/qS
		Stability Axis System
C_L	CL	lift force coefficient; F_L/qS
C_D	CD	drag force coefficient; F_D/qS
C_{D_b}	CDB	base drag coefficient
C_{D_f}	CDF	forebody drag coefficient; $C_D - C_{D_b}$
C_n	CLN	yawing moment coefficient; $M_{Z,s}/qS\ b_{ref}$
C_ℓ	CSL	rolling moment coefficient; $M_{X,s}/qS\ b_{ref}$
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)

Surface Definitions

SYMBOL	SADSAC SYMBOL	DEFINITION
i_t	HORIZT	horizontal tail incidence; positive when trailing edge down; degrees
δ		symmetrical surface deflection angle; degrees; positive deflections are:
	AILRON	aileron - total aileron deflection; (left aileron - right aileron)/2
	CANARD	canard - trailing edge down
	ELEVON	elevon - trailing edge down
	ELEVTR	elevator - trailing edge down
	FLAP	flap - trailing edge down
	RUDDER	rudder - trailing edge to the left
	SPOILR	spoiler - trailing edge down
	TAB	tab - trailing edge down with respect to control surface
δ		antisymmetrical surface deflection angle, degrees; positive trailing edge down:
	AIL-L	left aileron - trailing edge down
	AIL-R	right aileron - trailing edge down
	ELVN-L	left elevon - trailing edge down
	ELVN-R	right elevon - trailing edge down
	SPLR-L	left spoiler - trailing edge down
	SPLR-R	right spoiler - trailing edge down

SURFACE SUBSCRIPTS	DEFINITION
a	aileron
b	base
c	canard
e	elevator or elevon
f	flap
r	rudder or ruddervator
s	spoiler
t	tail

ADDITIONS TO SADSAC NOMENCLATURE
FOR
MSFC TWT 513

SYMBOL	SADSAC SYMBOL	DEFINITION
	CPB(AVG)	average base pressure coefficient
	CAT	axial force coefficient corrected to freestream pressure at the base region
$\delta C_m/\delta C_n$	DCLMCN	derivative of pitching moment coefficient with respect to normal force coefficient
$\delta C_n/\delta C_y$	DCYNCY	derivative of yawing moment coefficient with respect to side force coefficient

CONFIGURATIONS INVESTIGATED

The following is a description of body components investigated during the test:

BOOSTER BODY: Model 979-061 (Reusable LOX-RP Configuration)

BODIES: Cylindrical with Axisymmetrical Nose

	ℓ	d	ℓ/d	Engine Shrouds
B_4 (049 Body)	6.86 in (169.8 ft)	1.333 in (33 ft)	5.146	On
B_5 (061 Body)	6.14 in (152.0 ft)	1.333 in (33 ft)	4.606	On
$B_5{}^C$ (With Cab)	6.14 in (152.0 ft)	1.333 in (33 ft)	4.606	On
B_6 (Hemisphere Nose)	5.726 in (141.8 ft)	1.333 in (33 ft)	4.296	On

WINGS:

	Area	Section	Span	AR	λ	Λ_{LE}
W_{11} & $W_{11}{}^A$	9000 sq.ft.	0006-64	140.0 ft	2.177	0.1524	51.5°

VERTICAL TAILS:

	Area	Section	Span	AR	λ	Λ_{LE}
V_5 & $V_5{}^A$	1500 sq.ft.	0008-65	47.459 ft	1.5	0.5	45°
V_7	1500 sq.ft.	0008-65	54.763 ft	2.0	0.25	43.3°
V_8	2000 sq.ft.	0008-65	63.255 ft	2.0	0.25	43.3°
V_9 (Vee Tails)	750 sq.ft. ea.	0008-65	38.720 ft	2.0	0.25	43.3°
V_{10} (Twin Ventrals)	180 sq.ft. ea.	-	16.587 ft	1.34	1.0	0°

CHINE:

	Area	Exp. Span	Length	Location
C_3		0.08/side	1.440	MS 1.057 (LE) (1761)
C_4		0.08/side	0.767	MS 1.730 (LE) (1561)

PROPULSION PODS: - AIRBREATHING ENGINES

(E_1 - Concealed Nose Location - B_4)

E_2 - Underwing Pods

E_3 - External Nose Pods

E_4 - Upper Body Pods (E_4^F - Forward Loc., E_4^A - Aft Loc.)

SHROUDS:

S_1 - Booster Rocket Engine Shrouds

BODY FLAP:

F_1 - Flap T.E.M.S. = 7.202"
Incidence = 2°
(To match wing incidence)

F_2 - Flap T.E.M.S. = 7.539" (+100" FS)
Incidence = 2°
(To match wing incidence)

Combinations of the components investigated are:

B_5

$B_5{}^{C}S_1$

$B_5{}^{C}W_{11}{}^{A}F_2S_1$

$B_5W_{11}{}^{A}F_2S_1V_7$

$B_5{}^{C}W_{11}{}^{A}F_2S_1V_7$

$B_5{}^{C}W_{11}{}^{A}F_2S_1V_7E_2$

$B_5{}^{C}W_{11}{}^{A}F_2S_1V_7E_2C_4$

$B_5{}^{C}W_{11}{}^{A}F_2S_1V_7E_2C_3$

$B_5{}^{C}W_{11}{}^{A}V_{10}S_1V_7E_2$

$B_5{}^{C}W_{11}{}^{A}V_{10}S_1V_7$

$B_4W_{11}{}^{A}F_2S_1V_5{}^{A}$

$B_4W_{11}{}^{A}F_2S_1V_7$

$B_5{}^{C}W_{11}{}^{A}F_2S_1V_8E_2$

$B_5{}^{C}W_{11}{}^{A}F_2S_1V_9E_2$

$B_5{}^{C}W_{11}{}^{A}F_2S_1V_7E_3$

$B_5{}^{C}W_{11}{}^{A}F_2S_1V_7E_4{}^{F}$

$B_5{}^{C}W_{11}{}^{A}F_2S_1V_7E_4{}^{A}$

$B_6W_{11}{}^{A}F_2S_1V_7E_2$

$B_4W_{11}F_1S_1V_5{}^{A}$

TEST FACILITY

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

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

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

Downstream of the test section is a hydraulically controlled pitch sector that provides a total angle of attack range of 40° ($\pm 10^{\circ}$). Sting offsets are available for obtaining various maximum angles of attack up to 25°.

TEST CONDITIONS

Table 1 presents the range of test conditions for which data were recorded. The model was mounted on an internal balance and supported by a bent sting which was utilized to provide fixed nominal α positions for zero angle of β for the pitch runs, and fixed angles of α for sideslip runs. Pitch runs were made with the model upright while sideslip runs were made in the pitch plane with the model, balance and sting rolled 90°. Pitch data were obtained to +60° utilizing the bent sting. Yaw data were obtained through a sector range of ±6° at fixed angles of attack of 10°, 15° and 25°.

Boundary layer trip strips were located on the model as shown in Figure 15 No. 180 grit (0.0035") was used for all Mach numbers.

Schlieren photographs were taken for selected Mach numbers.

Base pressures were measured for two positions at the base of the model located approximately 5 o'clock and 11 o'clock when viewing the model from the rear. Balance chamber pressure was also measured. The wing was set at an incidence of +2° for both its fore and aft locations.

Balance #227 was used throughout the test.

DATA REDUCTION

Six component aerodynamic force and moment data were recorded using an internal strain gage balance. Base pressures (C_{p_b}#1 and C_{p_b}#2) and chamber pressure (C_{P_c}) were recorded and utilized to correct the axial force measured data (C_{A_T}) to a condition corresponding to free stream pressure acting at the base region.

$$C_{A_T} = C_{A_F} + C_{A_B}$$

$$C_{A_B} = \left(\frac{C_{P_{B_1}} + C_{P_{B_2}}}{2} \frac{A_B}{S_{ref}}\right) + \left(C_{P_c} \times \frac{A_c}{S_{ref}}\right)$$

$$C_{P_B} = \frac{\Delta P_B}{q}$$

$$C_{P_c} = \frac{\Delta P_c}{q}$$

C_L and C_D were computed based on C_{A_F}.

DATA REDUCTION DETAILS

1. MOMENT REFERENCE CENTER LOCATION

   x = 1.4821 inches ahead of booster base (50.739% $W_{11}C_R$)

   y = 0 inches from centerline of model

   z = 0 inches from centerline of model

2. MODEL BASE AREA

   Total Base Area = 1.5580 Sq. In. (955 Sq. Ft., Nominal)

   A_B = 0.9567 Sq. In. (Includes Shroud Base)

   A_C = 0.6013 Sq. In. (Cavity Area)

3. REFERENCE AREAS

   W_{11} = 14.6836 Sq. In. (9000 Sq. Ft.)

   Wing Off = 14.6836 Sq. In. (9000 Sq. Ft.)

4. REFERENCE LENGTHS

	LONGITUDINAL	LATERAL
W_{11}	C_R = 4.508 In.	b = 5.655 In.
Wing Off	C_R = 4.508 In.	b = 5.655 In.

TABLE 1

TEST CONDITIONS

TEST TWT # 513

MACH NUMBER	REYNOLDS NUMBER per unit length	DYNAMIC PRESSURE (pounds/sq. inch)	STAGNATION TEMPERATURE (degrees Fahrenheit)
0.60	5.1×10^6	4.3	100°F (nominal)
0.90	6.4×10^6	7.4	
0.95	6.4×10^6	7.8	
1.00	6.5×10^6	8.1	
1.10	6.7×10^6	8.7	
1.20	6.8×10^6	9.1	
1.46	7.5×10^6	10.8	
1.96	7.6×10^6	11.0	
2.80	7.8×10^6	9.6	
3.50	7.1×10^6	6.9	
4.96	5.4×10^6	3.1	

BALANCE UTILIZED: #227

	CAPACITY: #227	CAPACITY:	COEFFICIENT TOLERANCE:
NF	125 lbs (at gages)		
SF	45 lbs		
AF	25 lbs		
PM	300 in.lbs.		
YM	100 in.lbs.		
RM	50 in.lbs.		

COMMENTS:

TABLE II.

TEST TWT #513 DATA SET COLLATION SHEET

☐ PRETEST
☑ POSTTEST

DATA SET IDENTIFIER	CONFIGURATION	SCHD. α	SCHD. β	PARAMETERS/VALUES δ_{eL}	δ_{eR}	δ_r	δ_{FL}	NO. of RUNS	MACH NUMBERS (OR ALTERNATE INDEPENDENT VARIABLE) 0.6		0.9				1.2		1.96	2.8	3.5	4.96
R5325A	$B_4W_{11}F_1S_1V_5^A$	A	0°	0°	0°	0°	0°		001/0						002/0					
20A	$B_4W_{11}^AF_2S_1V_5^A$	✓	✓	↓	↓	↓	↓		005/0		004/0				003/0					
20G	↓	10°	B						006/0		007/0				008/0					
20H		15°	✓												009/0					
20L		25°	✓														105/0			
20M		M	0°														106/0			
20K	↓	K	✓																131/0	
21G	$B_4W_{11}^AF_2S_1V_7$	10°	B						015/0		016/0				017/0					
21H	↓	15°	✓												010/0					
21L		25°	✓			↓											093/0			
29L		✓	✓			±30°											092/0			
29H		15°	✓			↓									011/0					
29G	↓	10°	✓						014/0		013/0				012/0					
19A	$B_5W_{11}^AF_2S_1V_7$	A	0°						031/0		030/0				029/0					
19G	↓	10°	B						020/0		019/0				018/0					
19H		15°	✓												028/0					
19L		25°	✓														091/0			
19M		M	0°														107/0			
19K	↓	K	✓	↓	↓	↓	↓												124/0	

1	7	13	19	25	31	37	43	49	55	61	67	75 76
CLM	CN	CY	CBL	CYN	CAF	CAB	CPC	CL	CDF	IDPVAR(1)	IDPVAR(2)	NDV 10

COEFFICIENTS:

α or β SCHEDULES

αA = 0°, 2°, 4°, 6°, 8°, 10°, 12°, 14°, 16°, 18°, 20° αM = 20°, 22°, 24°, 26°, 28°, 30°, 32°, 34°, 36°, 38°, 40°

αK = 40°, 42°, 44°, 46°, 48°, 50°, 52°, 54°, 56°, 58°, 60°

βB = −6°, −4°, −2°, 0°, +2°, +4°, +6° βC = −6°, −4°, −2°, 0°, +2°, +4°, +6°, (+8°), +6, +4°, +2°, 0°, −2°, −4°, −6°

NASA-MSFC-MAF

TABLE II. (CONTINUED)

TEST TWT #513 DATA SET COLLATION SHEET

☐ PRETEST
☑ POSTTEST

DATA SET IDENTIFIER	CONFIGURATION	SCHD. α	SCHD. β	PARAMETERS/VALUES δ_{e_L}	δ_{e_R}	δ_r	δ_{FL}	NO. of RUNS	MACH NUMBERS (OR ALTERNATE INDEPENDENT VARIABLE) 0.6		0.9				1.2		1.96	2.8	3.5	4.96
R5305A	$B_5^E W_{11}^A F_2 S_1 V_7$	A	0°	0°	0°	±30°	0°		032/0		033/0				034/0					
05M		M	✓														108/0			
05K		K	✓																115/0	
05G		10°	B						021/0		022/0				023/0					
05H		15°	✓												027/0					
05L		25°	✓														090/0			
06A	$B_5^E W_{11}^A F_2 S_1 V_7 E_2$	A	0°						037/0		036/0				035/0					
06M		M	✓														110/0			
06K		K	✓																121/1	120/0
06G		10°	B						025/0						024/0					
06H		15°	✓												026/0					
06L		25°	✓														095/0			
22A		A	0°			0°									038/0					
22G		10°	B						066/0											
22H		15°	✓												039/0					
22L		25°	✓														094/0			
	$B_5^E W_{11}^A V_{10} S_1 V_7 E_2$	A	0°			±30°														
14G		10°	B						067/0											
		15°	✓																	
14L		25°	✓														097/0			

1 7 13 19 25 31 37 43 49 55 61 67 75 76

IDPVAR(1) | IDPVAR(2) | NDV

COEFFICIENTS:

α or β SCHEDULES: SEE SHEET #1

NASA-MSFC-MAF

TABLE II. (CONTINUED)

TEST TWT #513 DATA SET COLLATION SHEET

☐ PRETEST
☑ POSTTEST

DATA SET IDENTIFIER	CONFIGURATION	SCHD. α	SCHD. β	PARAMETERS/VALUES δ_{e_L}	δ_{e_R}	δ_r	δ_{f_L}	NO. of RUNS	MACH NUMBERS (OR ALTERNATE INDEPENDENT VARIABLE) 0.6		0.9				1.2		1.96	2.8	3.5	4.96
R53 11G	$B_5^C W_{11}^A F_2 S_1 E_2 V_8$	10°	B	0°	0°	±30°	0°		045/0											
11H	↓	15°	✓	↓	↓	↓	↓								046/0					
11L	↓	25°	✓	↓	↓	↓	↓										101/0			
12A	$B_5^C W_{11}^A F_2 S_1 E_2 V_9$	A	0°	↓	↓	0°	↓		042/0		043/0				044/0					
12M	↓	M	✓	↓	↓	↓	↓										115/0			
12K	↓	K	✓	↓	↓	↓	↓												129/0	130/0
12G	↓	10°	B	↓	↓	↓	↓		041/0											
12H	↓	15°	✓	↓	↓	↓	↓								040/0					
12L	↓	25°	✓	↓	↓	↓	↓										100/0			
09A	$B_5^E W_{11}^A F_2 S_1 V_7 E_3$	A	0°	↓	↓	±30°	↓		058/0		057/0				056/0					
09M	↓	M	✓	↓	↓	↓	↓										114/0			
09K	↓	K	✓	↓	↓	↓	↓												126/0	127/0
09G	↓	10°	B	↓	↓	↓	↓		053/0		054/0				055/0					
09H	↓	15°	✓	↓	↓	↓	↓								051/0					
09L	↓	25°	✓	↓	↓	↓	↓										098/0		128/0	
10A	$B_5^E W_{11}^A F_2 S_1 V_7 E_4^F$	A	0°	↓	↓	↓	↓		059/0		060/0				061/0					
10G	↓	10°	B	↓	↓	↓	↓		064/0		063/0				062/0					
10H	↓	15°	✓	↓	↓	↓	↓								048/0					
10L	↓	25°	✓	↓	↓	↓	↓										102/0			

1 7 13 19 25 31 37 43 49 55 61 67 75 76

COEFFICIENTS: → IDPVAR(1) | IDPVAR(2) | NDV

α or β SCHEDULES: SEE SHEET #1

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TABLE II. (CONTINUED)

TEST TWT #513 DATA SET COLLATION SHEET

☐ PRETEST
☑ POSTTEST

DATA SET IDENTIFIER	CONFIGURATION	SCHD. α	SCHD. β	PARAMETERS/VALUES δ_{eL}	δ_{eR}	δ_r	δ_{FL}	NO. of RUNS	MACH NUMBERS (OR ALTERNATE INDEPENDENT VARIABLE) 0.6		0.9				1.2		1.96	2.8	3.5	4.96
R513G	$B_5^C W_{11}^A F_2 S_1 V_7 E_4^A$	10°	B	0°	0°	±30°	0°		052/0		051/0				050/0					
13H	↓	15°	✓	↓	↓	↓	↓								049/0					
13L	↓	25°	✓														103/0			
08A	$B_5^C W_{11}^A F_2 S_1 V_7 E_2 C_3$	A	0°						079/0						078/0					
08M	↓	M	✓														111/0			
08K	↓	K	✓																	119/0
08G	↓	10°	B						080/0						081/0					
08H	↓	15°	✓												082/0					
08L	↓	25°	✓														099/0			
07M	$B_5^C W_{11}^A F_2 S_1 V_7 E_2 C_4$	M	0°														112/0			
07L	✓	25°	B														113/0			
18A	$B_6 W_{11}^A F_2 S_1 V_7 E_2$	A	0°						075/0		076/0				077/0					
18M	↓	M	✓														109/0			
18K	↓	K	✓																122/0	123/0
18G	↓	10°	B						074/0		073/0									
18H	↓	15°	✓												072/0					
18L	↓	25°	✓			↓											096/0			
04G	$B_5^C W_{11}^A F_2 S_1$	10°	✓			—			068/0		069/0				070/0					
04H	↓	15°	✓												071/0					
04L	↓	25°	✓	↓	↓	↓	↓										104/0			

1 7 13 19 25 31 37 43 49 55 61 67 75 76

COEFFICIENTS: → IDPVAR(1) | IDPVAR(2) | NDV

α or β SCHEDULES: SEE SHEET #1

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TABLE II. (CONCLUDED)

TEST TWT #513 DATA SET COLLATION SHEET

☐ PRETEST
☑ POSTTEST

DATA SET IDENTIFIER	CONFIGURATION	SCHD. α	SCHD. β	PARAMETERS/VALUES δ_{eL}	δ_{eR}	δ_r	δ_{FL}	NO. of RUNS	MACH NUMBERS (OR ALTERNATE INDEPENDENT VARIABLE) 0.6		0.9				1.2		1.96	2.8	3.5	4.96
R5305C	$B_5^C W_{11}^A F_2 S_1 V_7$	0°	C	0°	0°	±30°	0°		088/0						087/0					
05X	✓ (TRIMS OFF)	✓	✓	✓	✓	✓	✓		089/0											
03L	$B_5^C S_1$	25°	B	—	—	—	—										116/0			
01A	B_5	A	0°						085/0						086/0					
01M	↓	M	✓														118/0			
01D		10°	C						084/0											
01H		15°	B												083/0					
01L		25°	✓	↓	↓	↓	↓										117/0			
276	$B_5^F W_{11}^A V_{10} S_1 V_7$	10°	B	0°	0°	±30°	0°		065/0											

1 7 13 19 25 31 37 43 49 55 61 67 75 76

COEFFICIENTS: IDPVAR(1) | IDPVAR(2) | NDV

α or β SCHEDULES: SEE SHEET #1

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TABLE III.
DIMENSIONAL DATA

MODEL COMPONENT: BODY - B_4

GENERAL DESCRIPTION: 0.003366 Scale RS-IC Cylindrical Body with an Axisymmetrical Nose

DRAWING NUMBER: 1216-10 and 11

DIMENSIONS:	FULL-SCALE	MODEL SCALE
Length	169.98 ft.	6.866 in.
Max. Width	33.075 dia.	1.336 in. dia.
Max. Depth	-	-
Fineness Ratio	5.15/1	5.15/1
Area		
Max. Cross-Sectional	858.75 ft^2	1.401 in^2
Planform		
Wetted		
Base	955	1.55 in^2

TABLE III. (CONTINUED)

MODEL COMPONENT: BODY - B_5 CYLINDRICAL BODY WITH A BLUNT OGIVE NOSE

GENERAL DESCRIPTION:

DRAWING NUMBER: 1216-55

DIMENSIONS:	FULL-SCALE FT/FT^2	MODEL SCALE IN/IN^2
Length	152	6.14
Max. Width DIA.	33.075	1.336
Max. Depth		
Fineness Ratio	4.59/1	4.59/1
Area		
Max. Cross-Sectional	858.75	1.401
Planform		
Wetted		
Base	955	1.55

TABLE III. (CONTINUED)

MODEL COMPONENT: BODY - B_5^C CYLINDRICAL BODY WITH A BLUNT OGIVE NOSE AND CAB

GENERAL DESCRIPTION: _____

DRAWING NUMBER: 1216-73

DIMENSIONS:	FULL-SCALE FT/FT^2	MODEL SCALE IN/IN^2
Length	152	6.14
Max. Width DIA.	33.075	1.336
Max. Depth		
Fineness Ratio	4.59/1	4.59/1
Area		
Max. Cross-Sectional	858.75	1.401
Planform		
Wetted		
Base	955	1.55

TABLE III. (CONTINUED)

MODEL COMPONENT: BODY - B_6 CYLINDRICAL BODY WITH A HEMISPHERIC NOSE

GENERAL DESCRIPTION:

DRAWING NUMBER: 1216-54

DIMENSIONS:	FULL-SCALE FT/FT²	MODEL SCALE IN/IN²
Length	141.44	5.713
Max. Width DIA.	33.075	1.336
Max. Depth		
Fineness Ratio	4.28/1	4.28/1
Area		
Max. Cross-Sectional	858.75	1.401
Planform		
Wetted		
Base	955	1.55

TABLE III. (CONTINUED)

MODEL COMPONENT: WING - W_{11}^{A}

GENERAL DESCRIPTION: 0.003366 Scale Clipped Delta Wing

DRAWING NUMBER: 1216-27

DIMENSIONS:	FULL-SCALE FT^2/FT	MODEL SCALE IN^2/IN
TOTAL DATA		
Area		
Planform	9000	14.6835
Wetted		
Span (equivalent)	140	5.668
Aspect Ratio	2.177	
Rate of Taper		
Taper Ratio		
Diehedral Angle, degrees	5°	5°
Incidence Angle, degrees	2°	2°
Aerodynamic Twist, degrees	0	0
Toe-In Angle		
Cant Angle		
Sweep Back Angles, degrees		
Leading Edge	51°30'	51°30'
Trailing Edge	5°30'	5°30'
0.25 Element Line		
Chords:		
Root (Wing Sta. 0.0)	111.6	4.508
Tip, (equivalent)	17.0	0.687
MAC		
Fus. Sta. of .25 MAC		
W.P. of .25 MAC		
B.L. of .25 MAC		
Airfoil Section		
Root		
Tip		
EXPOSED DATA		
Area		
Span, (equivalent)		
Aspect Ratio		
Taper Ratio		
Chords		
Root	89.2	3.606
Tip	17.0	0.687
MAC		
Fus. Sta. of .25 MAC		
W.P. of .25 MAC		
B.L. of .25 MAC		

TABLE III. (CONTINUED)

MODEL COMPONENT: VERTICAL STABILIZER - V_5^A

GENERAL DESCRIPTION: 0.003366 Scale Tail with a 45° Leading Edge Sweep, Mounted on the Centerline of the Booster

DRAWING NUMBER: 1216-30

DIMENSIONS:	FULL-SCALE	MODEL SCALE
	FT^2/FT	IN^2/IN
Area	1500	2.447
Span (equivalent)	47.29	1.91
Inb'd equivalent chord	42.21	1.705
Outb'd equivalent chord	20.72	0.837
Ratio movable surface chord/ total surface chord		
At Inb'd equiv. chord		
At Outb'd equiv. chord		
Sweep Back Angles, degrees		
Leading Edge	45°52'	45°52'
Tailing Edge	59°54'	59°54'
Hingeline		
Area Moment (Normal to hinge line)		

TABLE III. (CONTINUED)

MODEL COMPONENT: V_7 VERTICAL STABILIZER

GENERAL DESCRIPTION: _____

DRAWING NUMBER: 1216-56

DIMENSIONS:	FULL-SCALE FT/FT^2	MODEL SCALE IN/IN^2
Area	1500	2.447
Span (equivalent)	54.94	2.219
Inb'd equivalent chord	43.821	1.77
Outb'd equivalent chord	10.82	0.437
Taper Ratio	.25	.25
Aspect Ratio	2.0	2.0
Sweep Back Angles, degrees		
Leading Edge	43°30'	43°30'
Tailing Edge	18°45'	18°45'
Hingeline		
Area Moment (Normal to hinge line)		

TABLE III. (CONTINUED)

MODEL COMPONENT: V_8 VERTICAL STABILIZER

GENERAL DESCRIPTION:

DRAWING NUMBER: 1216-57

DIMENSIONS:	FULL-SCALE FT/FT^2	MODEL SCALE IN/IN^2
Area	2000	3.264
Span (equivalent)	63.55	2.567
Inb'd equivalent chord	50.6	2.044
Outb'd equivalent chord	12.38	0.5
Taper Ratio	.25	.25
Aspect Ratio	2.0	2.0
Sweep Back Angles, degrees		
Leading Edge	43°30'	43°30'
Tailing Edge	18°50'	18°50'
Hingeline		
Area Moment (Normal to hinge line)		

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TABLE III. (CONTINUED)

MODEL COMPONENT: V_9 VEE TAIL STABILIZER

GENERAL DESCRIPTION: VERTICAL TAIL ROLLED 30° FROM THE VERTICAL (TWO)

DRAWING NUMBER: 1216-61

DIMENSIONS:	FULL-SCALE FT/FT^2	MODEL SCALE IN/IN^2
Area	750 ea.	1.223 ea.
Span (equivalent)	38.72	1.564
Inb'd equivalent chord	30.97	1.251
Outb'd equivalent chord	7.5	.303
Taper Ratio	.25	.25
Aspect Ratio	2.0	2.0
Sweep Back Angles, degrees		
Leading Edge	43°30'	43°30'
Tailing Edge	18°50'	18°50'
Hinge line		
Area Moment (Normal to hinge line)		

TABLE III. (CONTINUED)

MODEL COMPONENT: V_{10} TWIN VENTRALS

GENERAL DESCRIPTION: FOLD DOWN FLAP - SPLIT

DRAWING NUMBER: 1216-75

DIMENSIONS:	FULL-SCALE FT/FT²	MODEL SCALE IN/IN²
Area	220 ea.	.335 ea.
Span (equivalent)	16.09	.65
Inb'd equivalent chord	12.379	.50
Outb'd equivalent chord	12.379	.50
Taper Ratio	1.0	1.0
Aspect Ratio	1.34	1.34
Sweep Back Angles, degrees		
Leading Edge	0°	0°
Tailing Edge	0°	0°
Hingeline		
Area Moment (Normal to hinge line)		

TABLE III. (CONTINUED)

MODEL COMPONENT: E_2 - PROPULSION POD

GENERAL DESCRIPTION: 0.003366 SCALE AIRBREATHING ENGINE POD MOUNTED UNDER THE WING

DRAWING NUMBER:

DIMENSIONS:	FULL-SCALE FT	MODEL SCALE IN
Length	42.46	1.715
Inlet Width MS 3.994	31.81	1.285
Exit Width	45.04	1.819
Max. Width	48.89	1.975
Area		
Max. Cross-Sectional		
Planform		
Wetted		
Base		

TABLE III. (CONTINUED)

MODEL COMPONENT: E_3 - NOSE PROPULSION PODS

GENERAL DESCRIPTION:

DRAWING NUMBER: 1216-63

DIMENSIONS:	FULL-SCALE FT	MODEL SCALE IN
Length	31.05	1.254
Max. Width (Overall)	41.81	1.689
Max. Width	27.9	1.125
Fineness Ratio		
Area		
Max. Cross-Sectional		
Planform		
Wetted		
Base		
Inlet Width (MS 1.144)	18.72	0.756
Exit Width	27.23	1.100

TABLE III. (CONTINUED)

MODEL COMPONENT: E_4 - PROPULSION PODS

GENERAL DESCRIPTION: 0.003366 SCALE AIRBREATHING ENGINE PODS MOUNTED IN TWO LONGITUDINAL POSITIONS 34°30' OFF THE BODY CENTERLINE ON THE UPPER PART OF THE BODY

DRAWING NUMBER: 1216-79

DIMENSIONS:	FULL-SCALE FT	MODEL SCALE IN
Length	22.38	0.904
Exit Diameter	2.48	0.10
Max. Diameter	5.94	0.24
Fineness Ratio		
Area		
Max. Cross-Sectional		
Planform		
Wetted		
Base		
Exit Plane	MS 3.772 FWD LOCATION MS 4.766 AFT LOCATION	

TABLE III. (CONTINUED)

MODEL COMPONENT: C_3 CHINE

GENERAL DESCRIPTION: FOREBODY CHINE

DRAWING NUMBER: 1216-62

DIMENSIONS:	FULL-SCALE FT/FT^2	MODEL SCALE IN/IN^2
Length	33.55	1.355
Max. Width		
Max. Depth		
Fineness Ratio		
Area		
Max. Cross-Sectional		
Planform		
Wetted		
Base		
Exposed Span Aft of Sta. 2.15	2.3/side	0.093/side
L.E. Sweep	30°	30°

TABLE III. (CONTINUED)

MODEL COMPONENT: C_4 CHINE

GENERAL DESCRIPTION: FOREBODY CHINE

DRAWING NUMBER: 1216-62

DIMENSIONS:	FULL-SCALE FT/FT^2	MODEL SCALE IN/IN^2
Length	19.80	0.80
Max. Width		
Max. Depth		
Fineness Ratio		
Area		
Max. Cross-Sectional		
Planform		
Wetted		
Base		
Exposed Span Aft of Sta. 2.15	2.3/side	0.093/side
L.E. Sweep	30° 30'	30°30'

TABLE III. (CONTINUED)

MODEL COMPONENT: F_1 - BODY FLAP (FORE)

GENERAL DESCRIPTION: _____

DRAWING NUMBER: _____

DIMENSIONS:	FULL-SCALE FT/FT^2	MODEL SCALE IN/IN^2
Area		
Span (equivalent)	40.4	1.632
Inb'd equivalent chord	13.4	0.542
Outb'd equivalent chord		
Ratio movable surface chord/ total surface chord		
At Inb'd equiv. chord		
At Outb'd equiv. chord		
Sweep Back Angles, degrees		
Leading Edge		
Tailing Edge	0°	0°
Hingeline	0°	0°
Area Moment (Normal to hinge line)		

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TABLE III. (CONTINUED)

MODEL COMPONENT: F_2 - BODY FLAP (AFT)

GENERAL DESCRIPTION:

DRAWING NUMBER: 1216-20

DIMENSIONS:	FULL-SCALE FT/FT^2	MODEL SCALE IN/IN^2
Area		
Span (equivalent)	40.4	1.632
Inb'd equivalent chord	13.4	0.542
Outb'd equivalent chord		
Ratio movable surface chord/ total surface chord		
At Inb'd equiv. chord		
At Outb'd equiv. chord		
Sweep Back Angles, degrees		
Leading Edge		
Tailing Edge	0°	0°
Hingeline	0°	0°
Area Moment (Normal to hinge line)		

TABLE III. (CONCLUDED)

MODEL COMPONENT: S_1 - ROCKET ENGINE SHROUDS (2)

GENERAL DESCRIPTION: _____

DRAWING NUMBER: 1216-18/71

DIMENSIONS:	FULL-SCALE FT	MODEL SCALE IN
Area		
Length (Equivalent)	31.98	1.292
Maximum Diameter	13.7	0.556
Outb'd equivalent chord		
Ratio movable surface chord/ total surface chord		
At Inb'd equiv. chord		
At Outb'd equiv. chord		
Sweep Back Angles, degrees		
Leading Edge		
Tailing Edge		
Hingeline		
Area Moment (Normal to hinge line)		

TABLE IV
INDEX OF MODEL FIGURES

Figure		Page Number
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TABLE V. INDEX TO DATA FIGURES

TITLE	PLOTTED COEFFICIENTS SCHEDULE*	CONDITIONS VARYING	PAGES
Longitudinal Stability	A	Mach, Configuration	1-115
Lateral Stability	B	Mach, Configuration	116-271

* PLOTTED COEFFICIENTS SCHEDULE:

(A) CN, CL, CLM, CAT, CAF, DCLMCN, CPB(AVG) vs. Alpha & CL vs. CLM & CL vs. CDF

(B) CY, CYN, CBL, CL, CDF, CAF, CLM, DCYNCY vs. Beta

MODEL FIGURES

Notes:

1. Positive directions of force coefficients moment coefficients, and angles are indicated by arrows.

2. For clarity, origins of wind and stability axes have been displaced from the center of gravity.

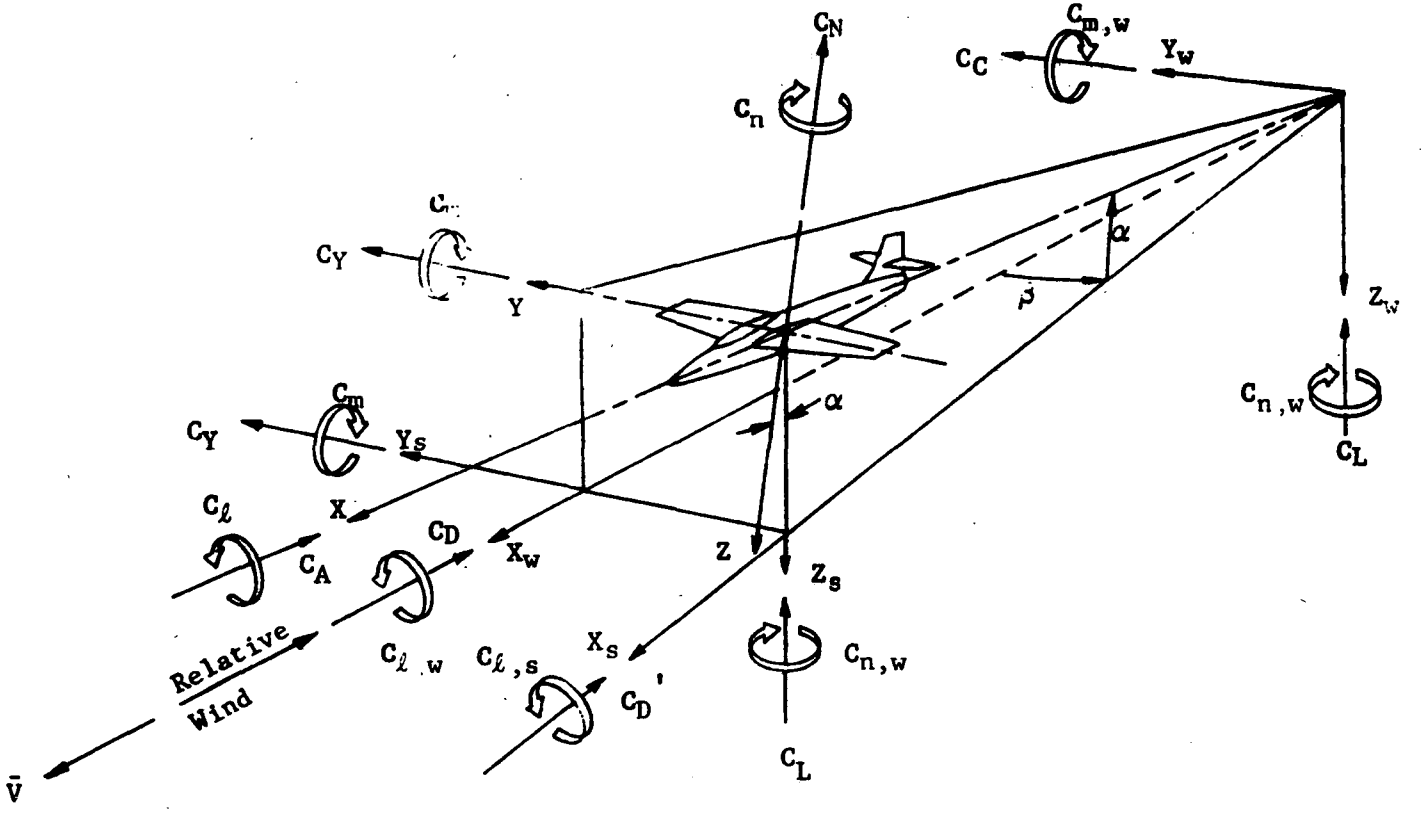
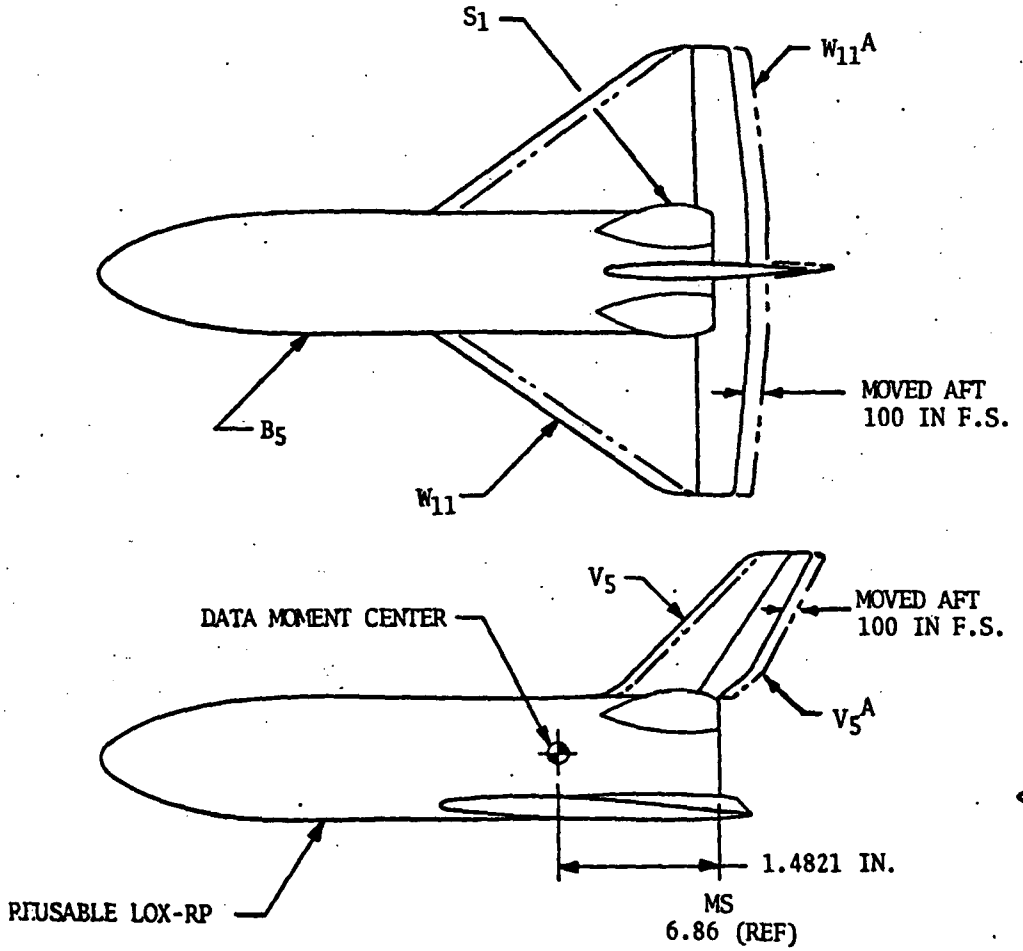


Figure 1. Axis systems, showing direction and sense of force and moment coefficients, angle of attack, and sideslip angle



S = 14.6836 sq.in. (9000 sq.ft.) [W_{11}]

ℓ_{LONG} = 4.508 in.

ℓ_{LAT} = 5.655

AR = 2.18

λ = 0.15 i_w = +2°

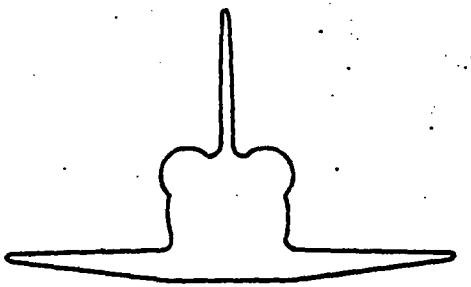


FIGURE 2. REUSABLE LOX-RP (-061) BOOSTER
0.003366 SCALE AR 1216I-2 MODEL

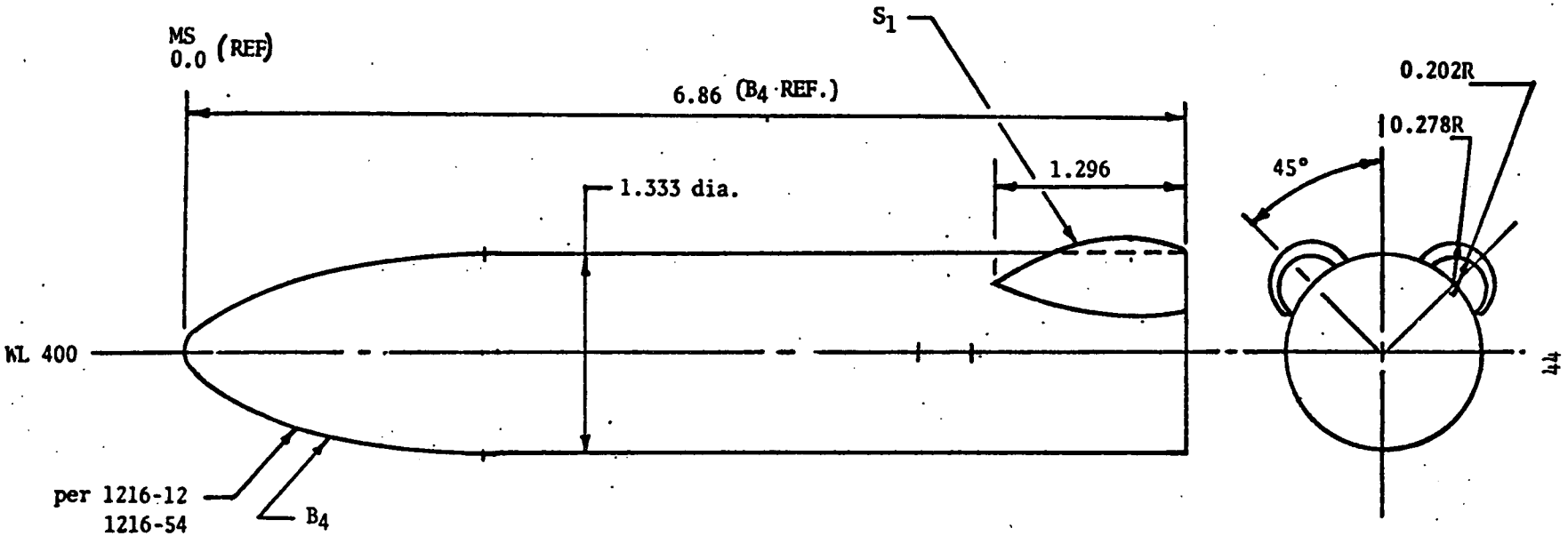


FIGURE 3.3 REUSABLE LOX-RP (-061) BOOSTER BODY
0.003366 SCALE AR 1216I-2 MODEL

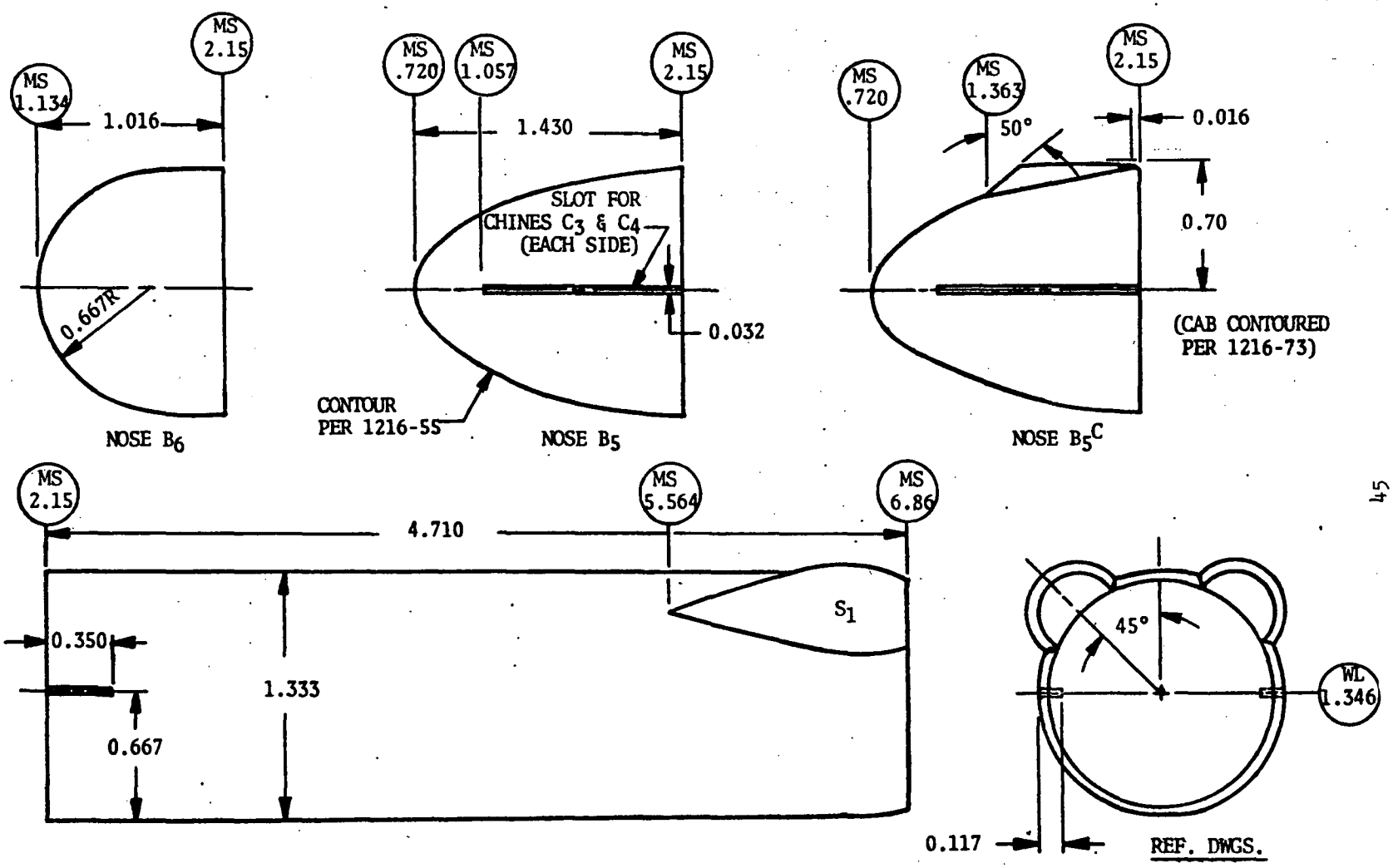
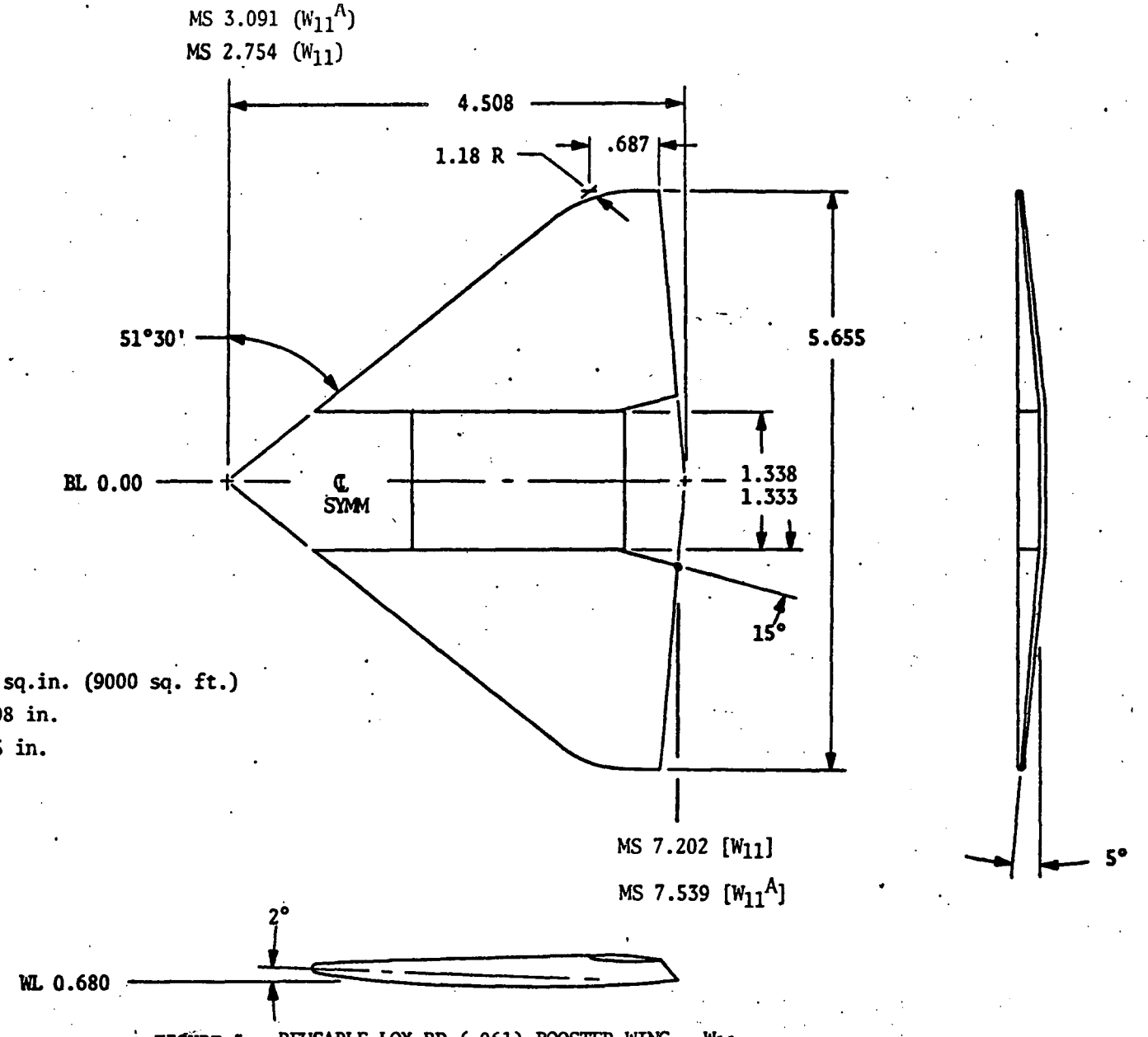


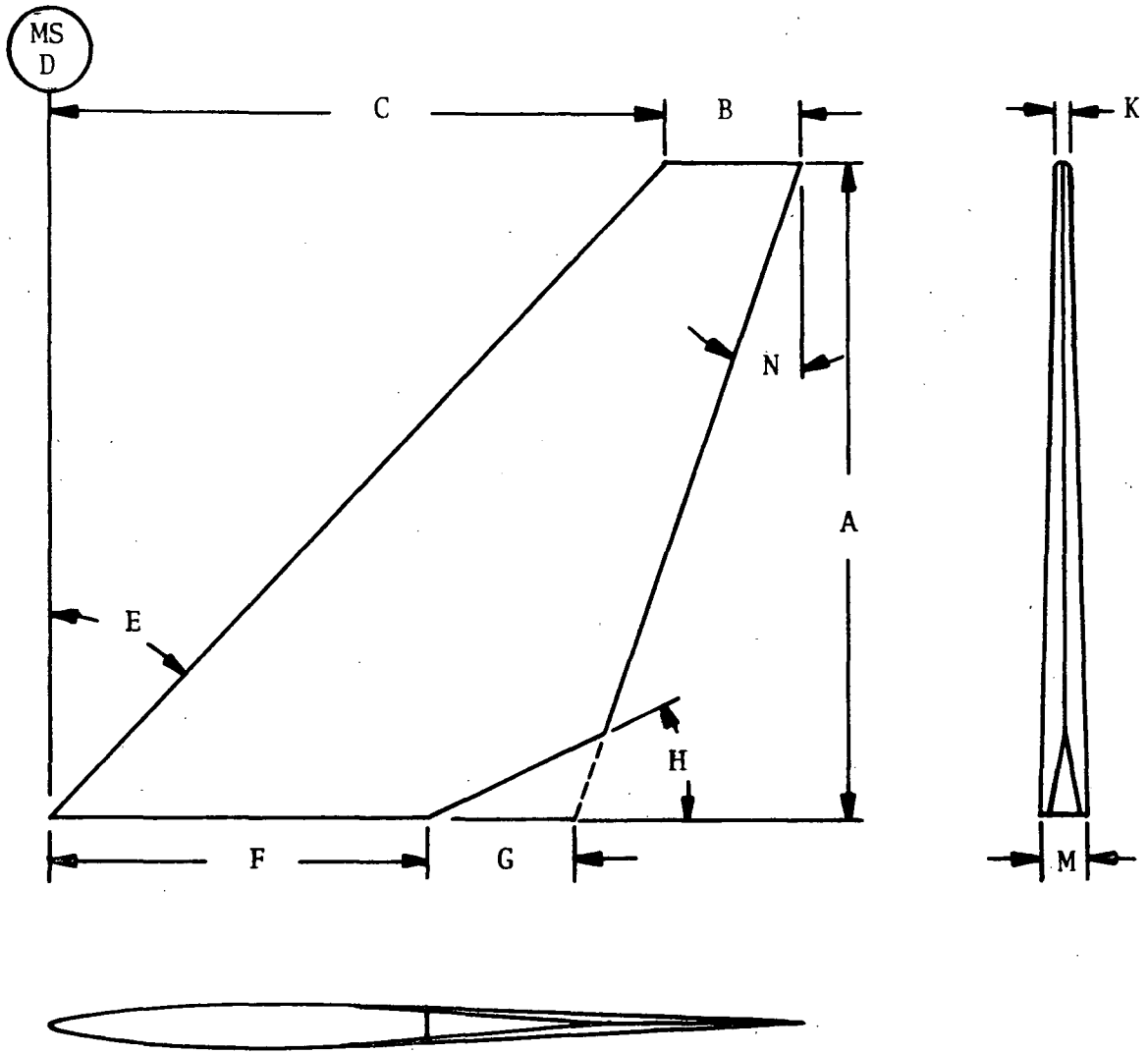
FIGURE 4. BODY B_5, B_6 AND B_5^C

0.003366 SCALE AR 1216I-2



S = 14.6836 sq.in. (9000 sq. ft.)
ℓ_{LONG} = 4.508 in.
ℓ_{LAT} = 5.655 in.
AR = 2.18
λ = 0.15

FIGURE 5. REUSABLE LOX-RP (-061) BOOSTER WING - W_{11}
0.003366 SCALE AR 1216I-2 MODEL



DIMEN.	VERTICAL TAIL		
	V_5	V_7	V_8
A	1.917"	2.212"	2.555"
B	0.854"	0.442"	0.511"
C	1.917"	2.085"	2.408"
D	5.746	5.681	5.407
E	45°	43°18'	43°18'
F	1.505"	1.179"	1.453"
G	0.20"	0.591"	0.591"
H	45°	25°	25°
K	-	0.035"	0.040"
M	0.125"	0.143"	0.165"
N	31°	18°54'	18°54'

FIGURE 6. VERTICAL TAILS V_5, V_7 AND V_8
0.003366 SCALE AR 1216I-2

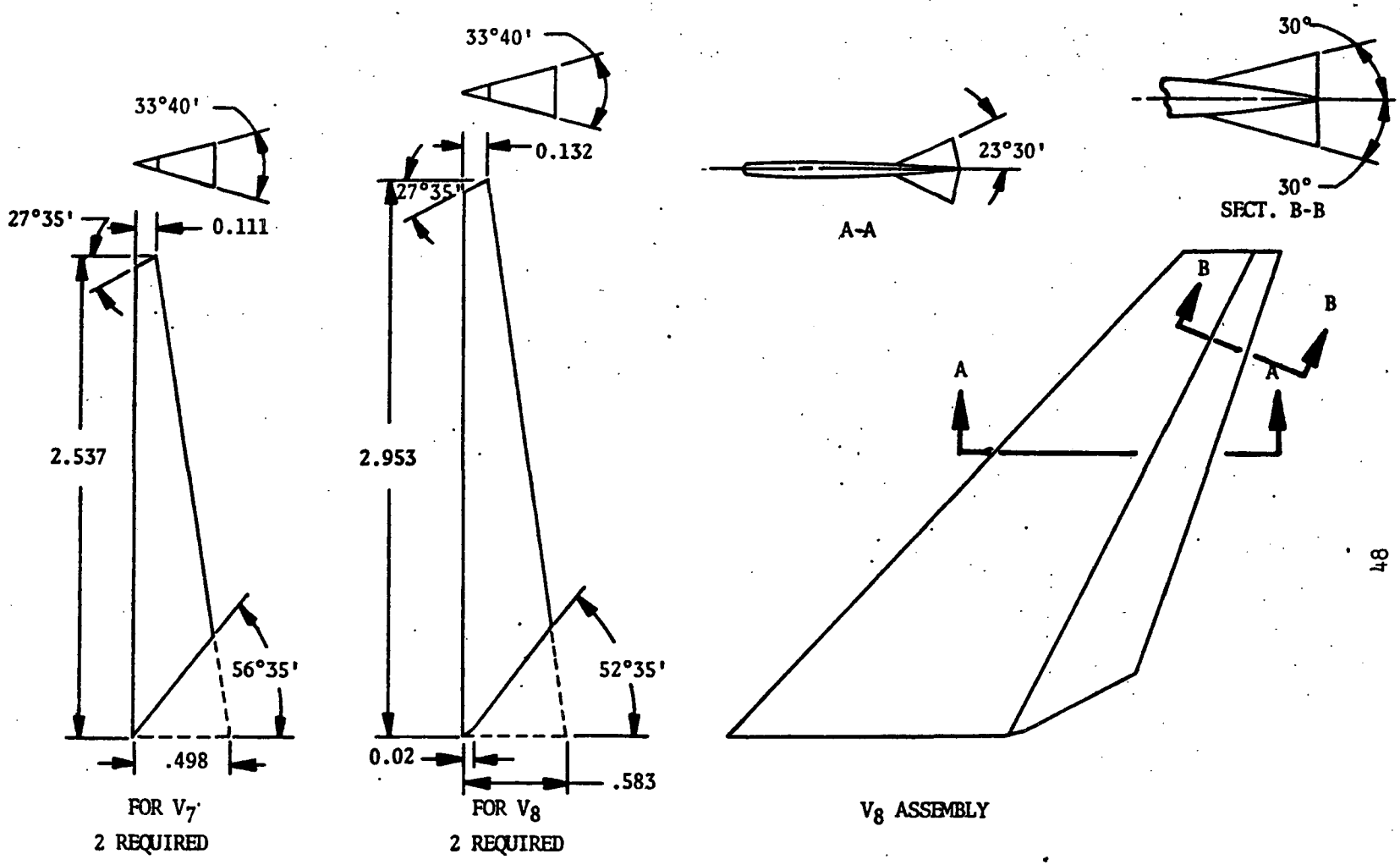
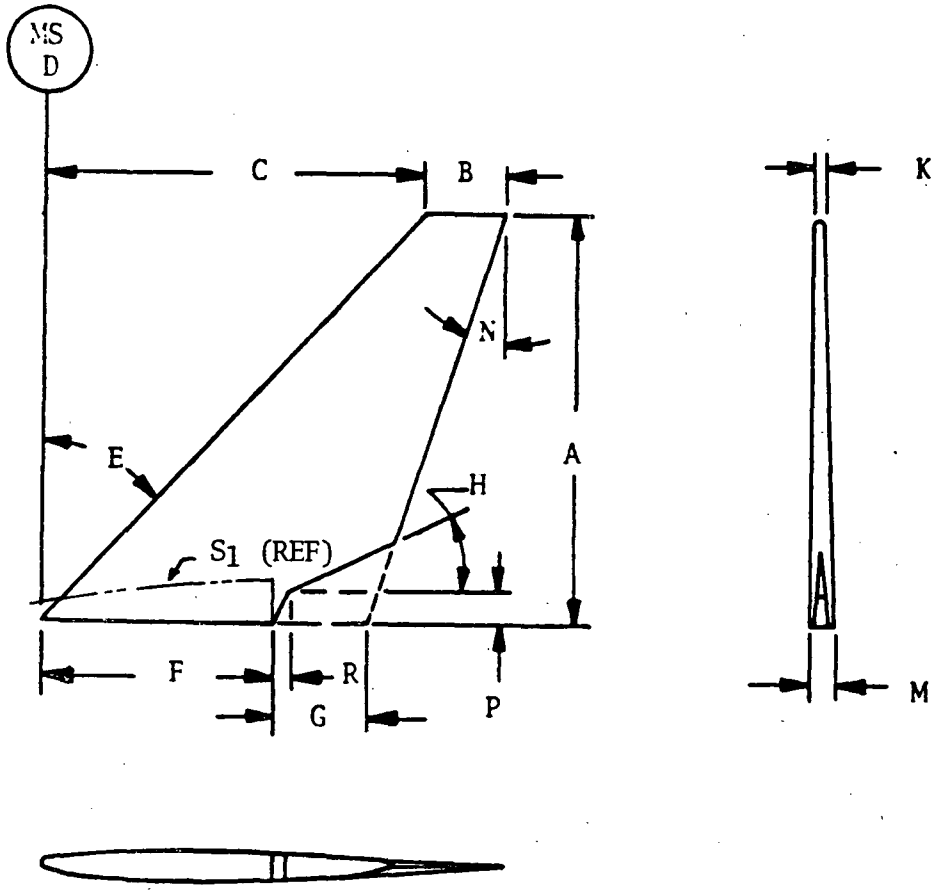


FIGURE 7. SPLIT RUDDERS - V_7 AND V_8
0.003366 SCALE AR 1216I-2



DIMEN.	VERTICAL TAIL	
	V_9*	
A	1.564"	
B	0.313"	
C	1.474"	
D	5.969	
E	43°18'	
F	0.891"	
G	0.360"	
H	25°	
K	0.025"	
M	0.100"	
N	18°54'	
P	0.108"	
R	0.059"	

*NOTE: TWO REQUIRED TO BE LOCATED ±30° OFF VERTICAL.

FIGURE 8. VERTICAL TAIL V_9

0.003366 SCALE AR 1216I-2

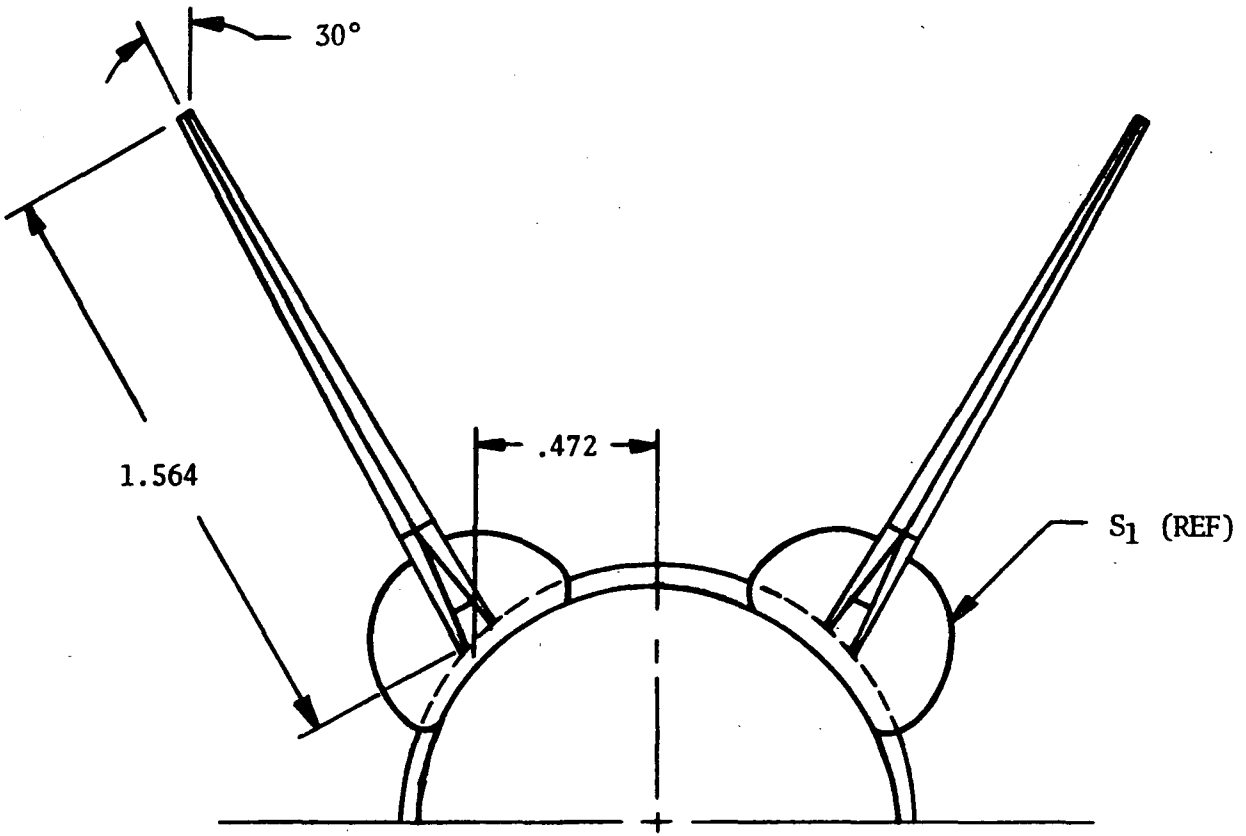


FIGURE 9. VERTICAL V_9 ASSEMBLY
0.003366 SCALE AR 1216I-2

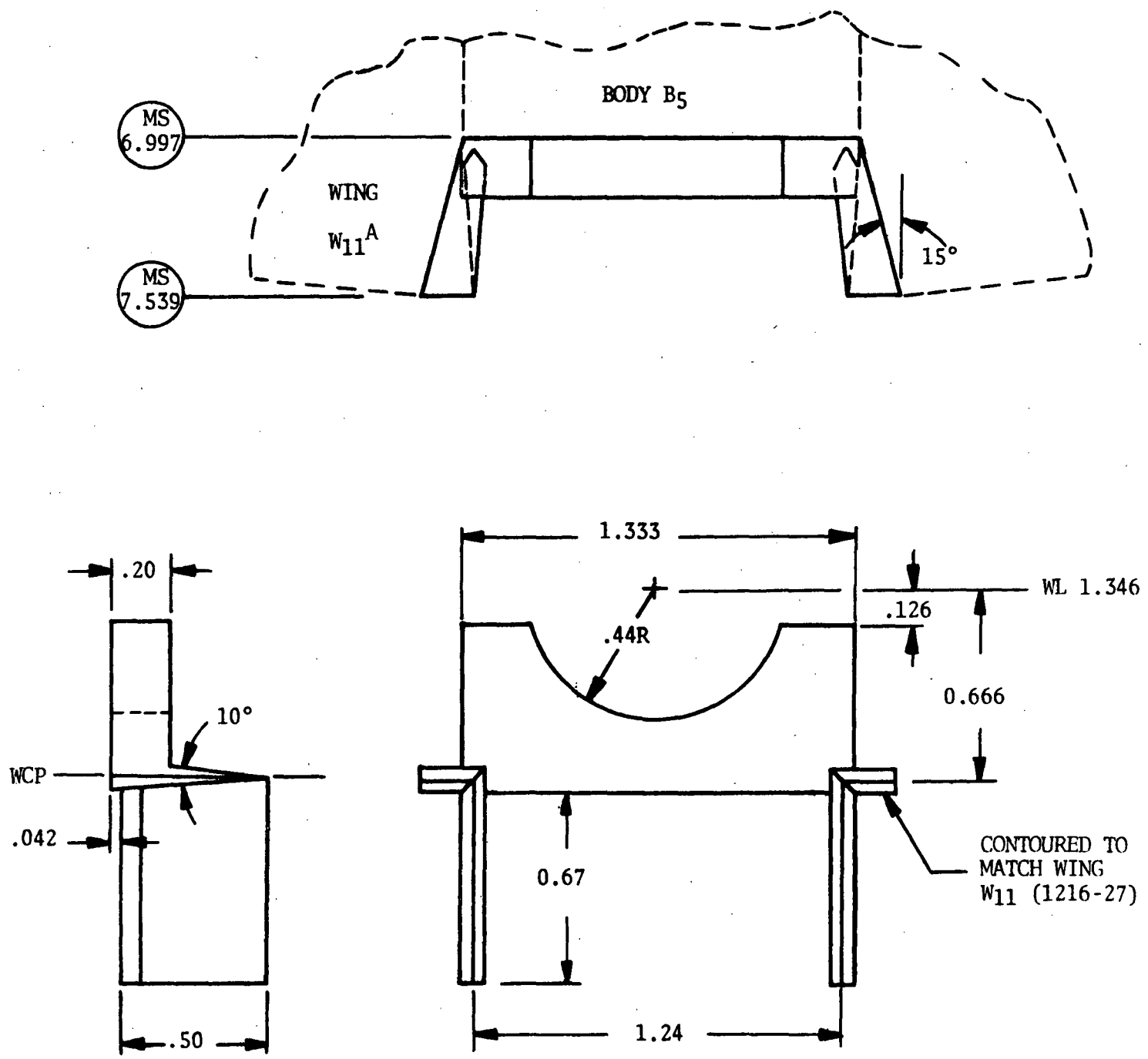
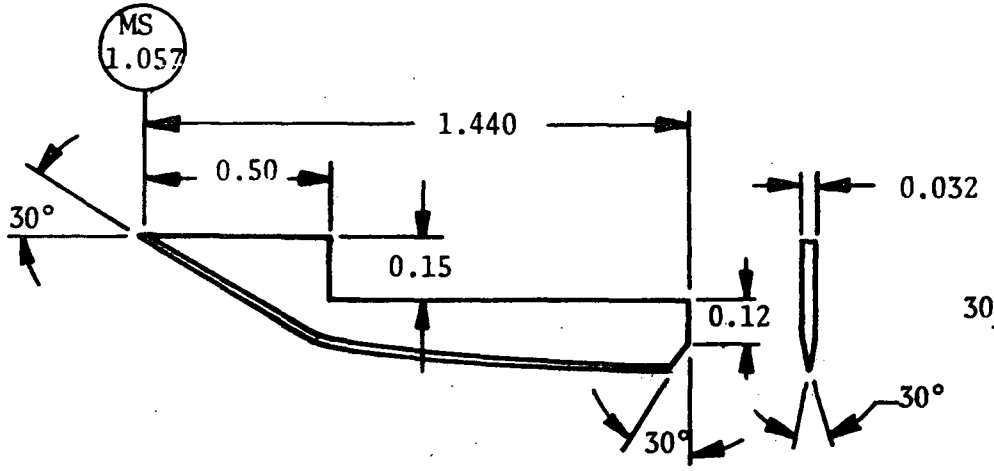
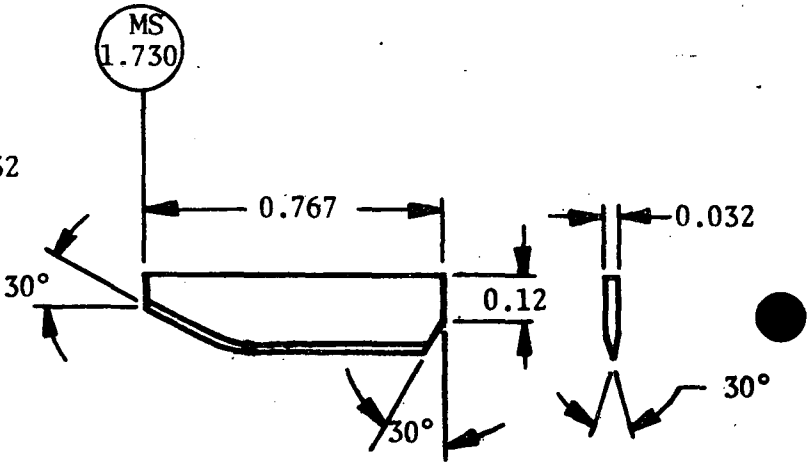


FIGURE 10. VENTRALS V_{10}
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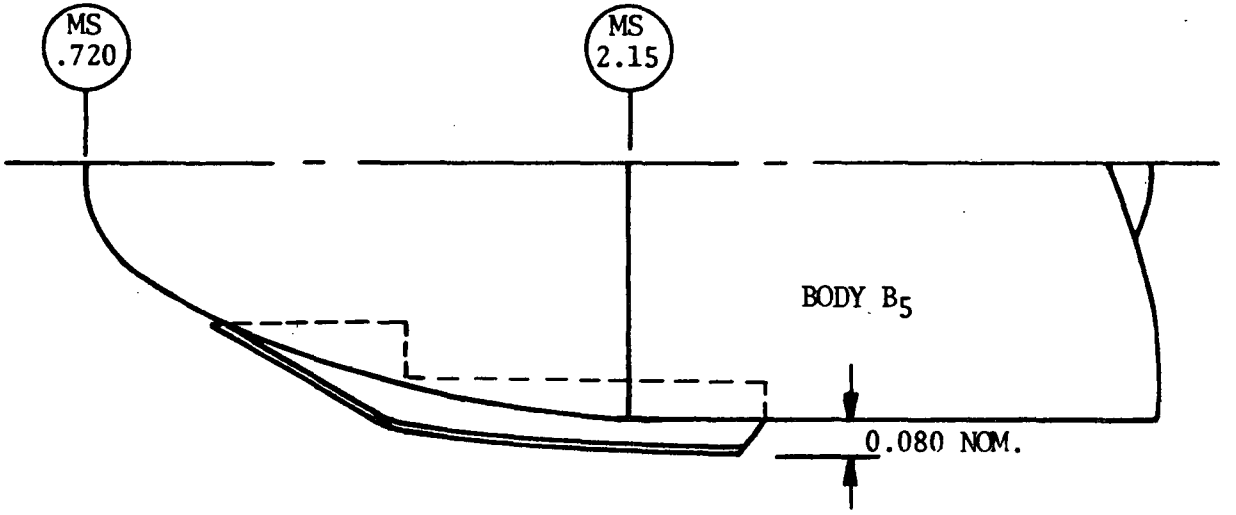


CHINE C_3



CHINE C_4

REF. 1216-62 FOR LOWER CONTOURS



TYPICAL INSTALLATION - (CHINE C_3 SHOWN)

FIGURE 11. CHINES C_3 AND C_4
0.003366 SCALE AR 1216I-2

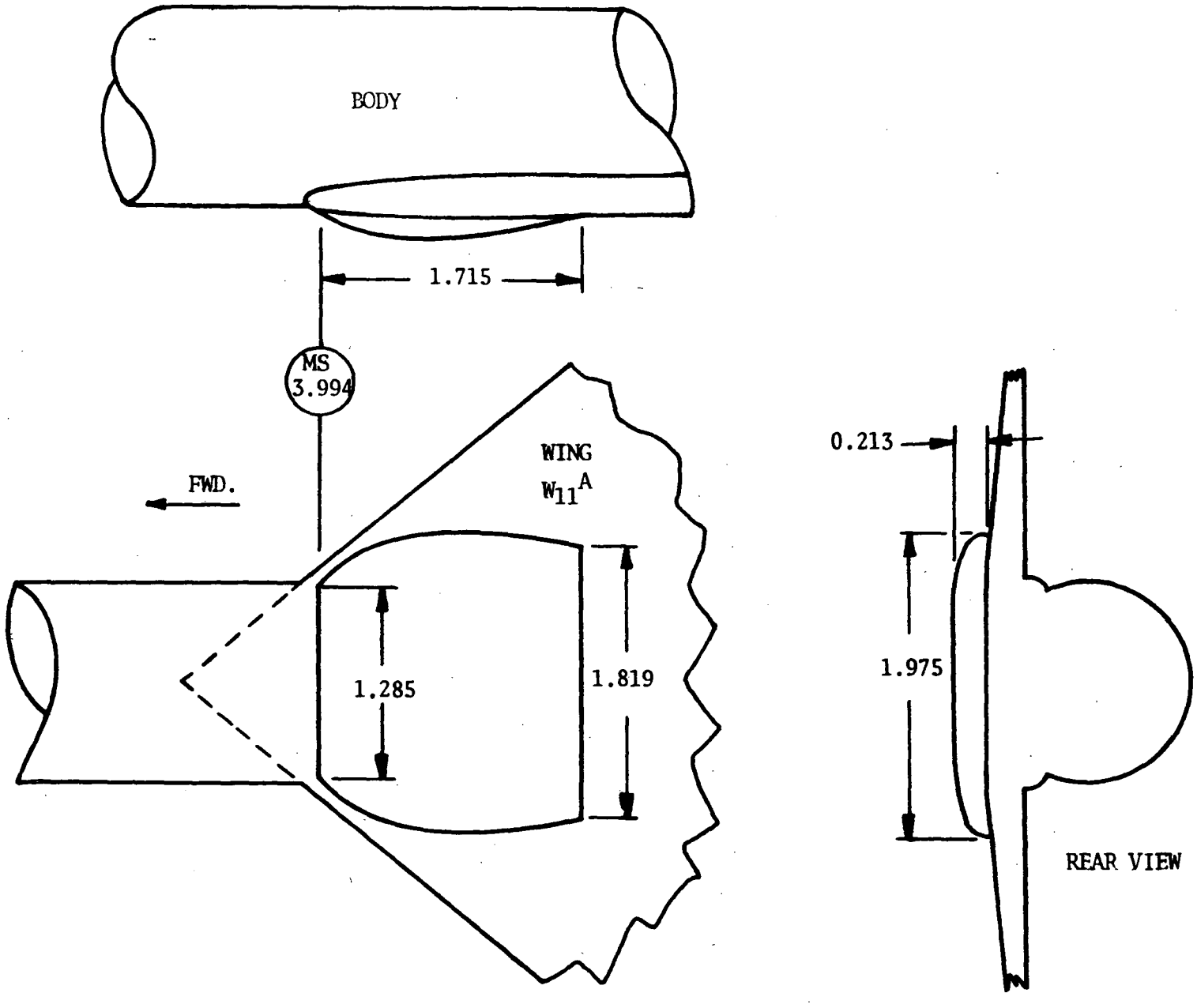


FIGURE 12. ENGINE POD E_2

0.003366 SCALE MODEL AR 1216I-2

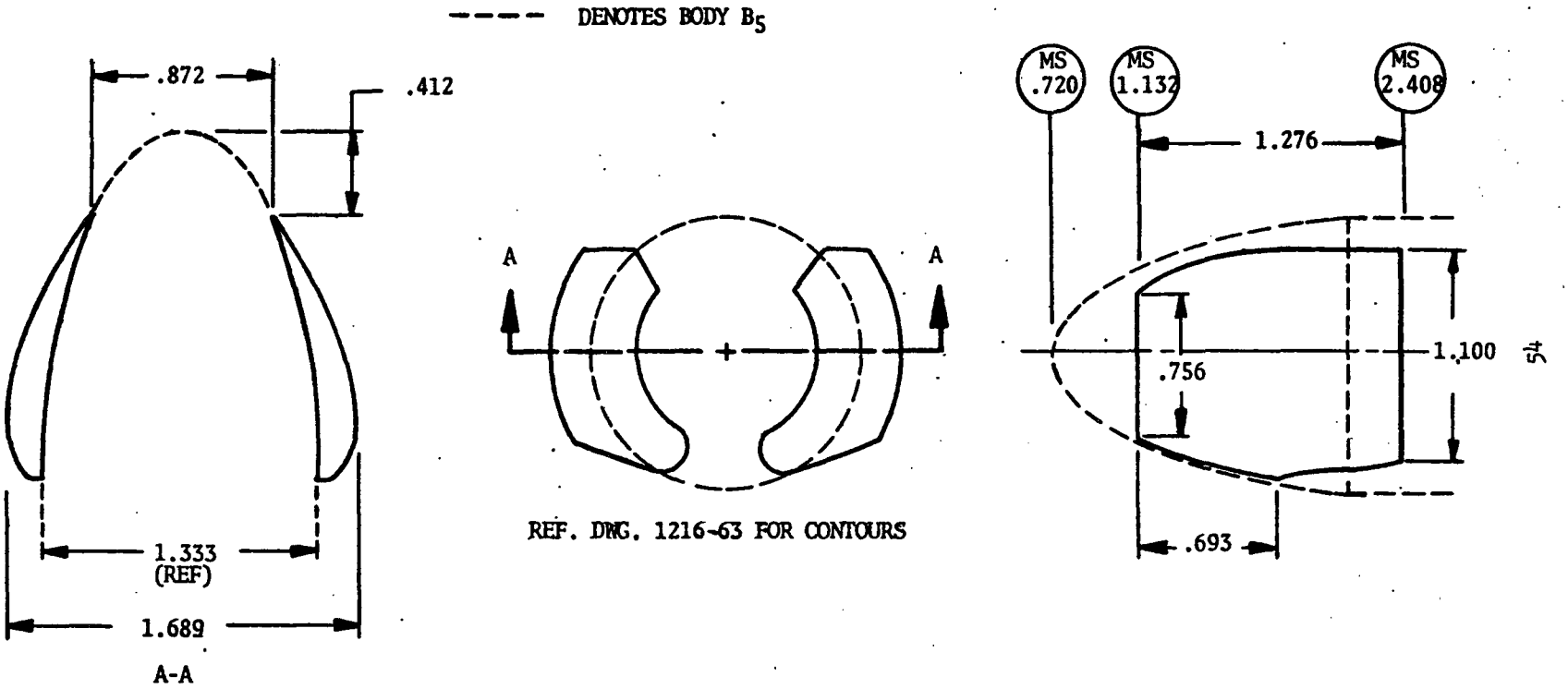
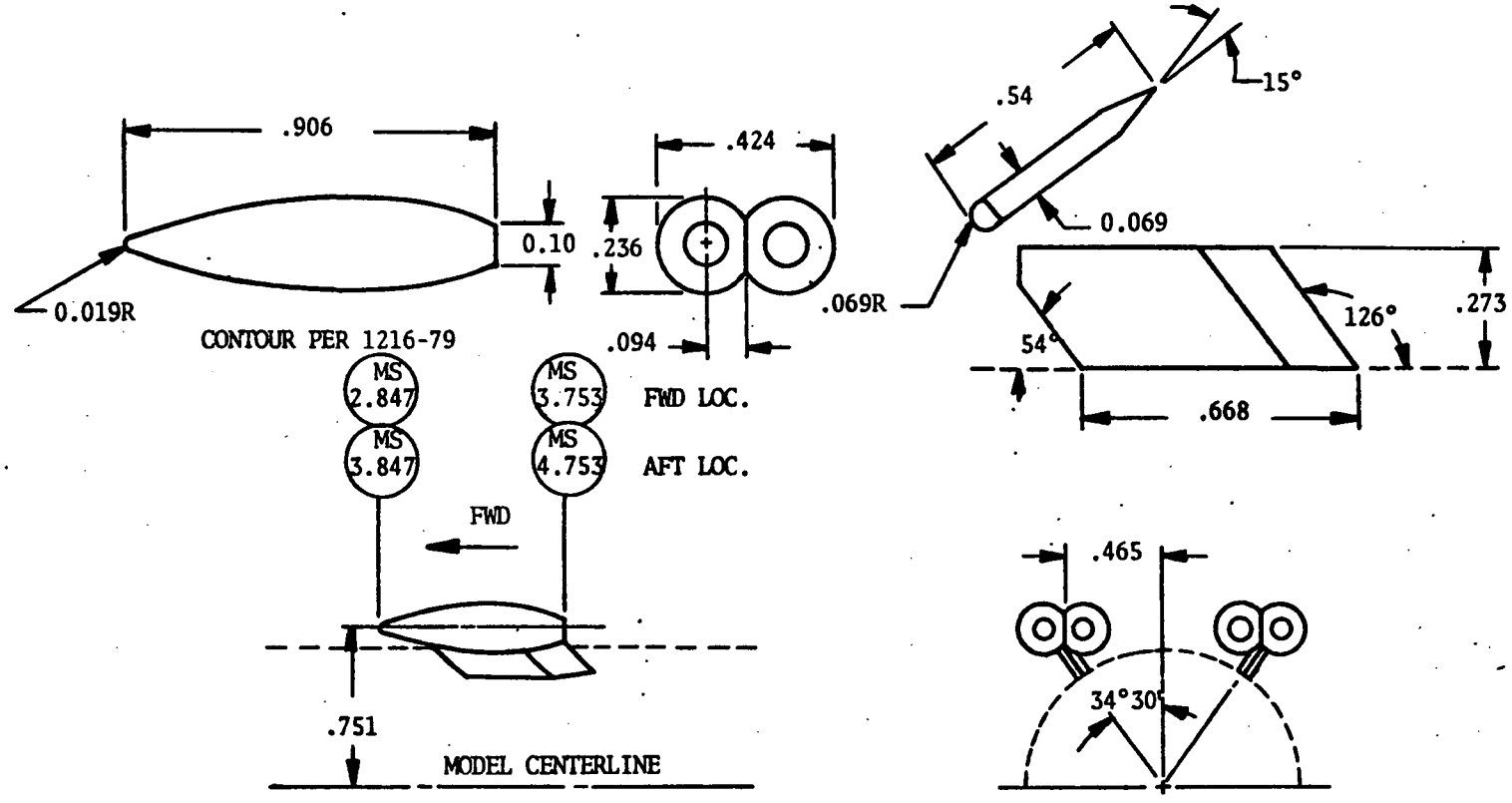


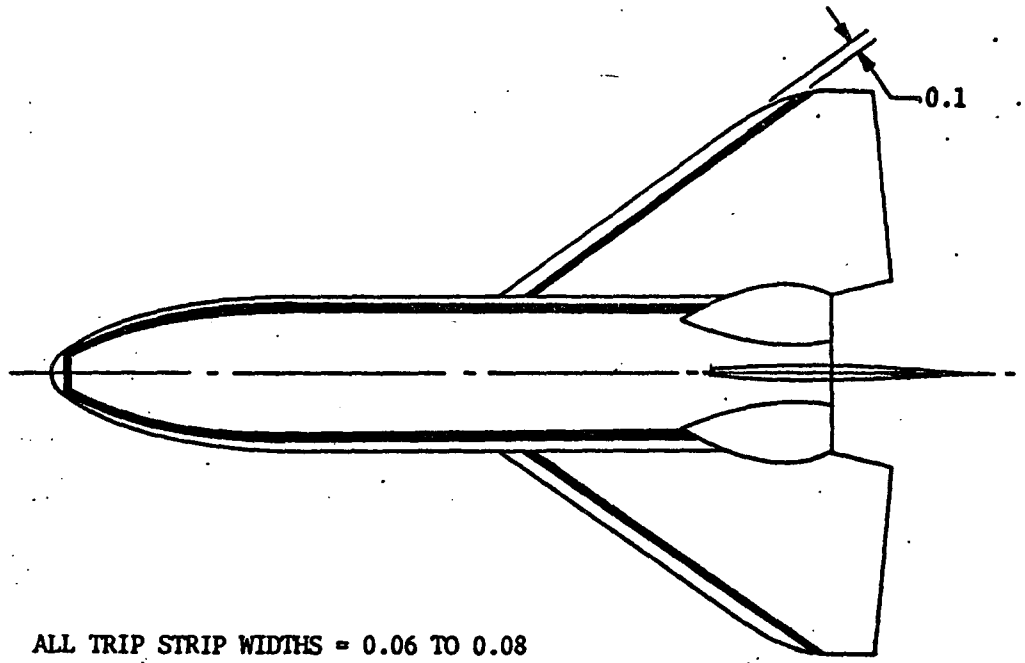
FIGURE 13. ENGINE POD E_3
0.003366 SCALE AR 1216I-2



NOTE: TWO DIFFERENT SCALES SHOWN
REF. DWG. 1216-79

FIGURE 14. ENGINE PODS E_4
0.003366 SCALE AR 1216I-2

USE GRIT #180



ALL TRIP STRIP WIDTHS = 0.06 TO 0.08

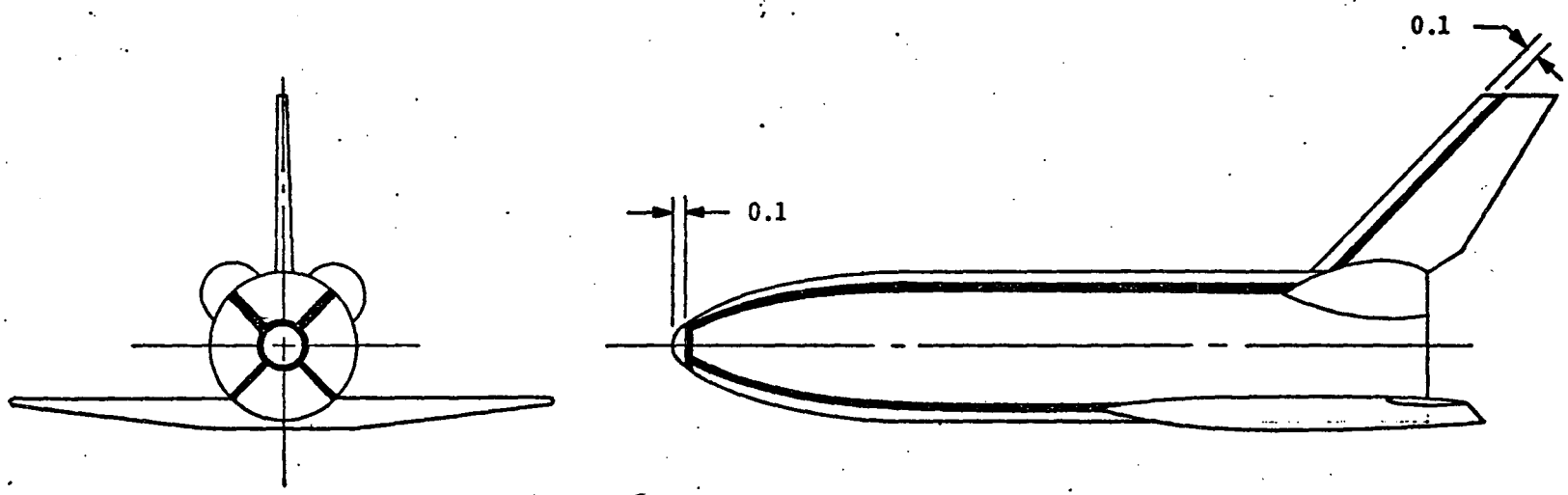


FIGURE 15. TRIP STRIP CHART
AR1216I-2 MODEL

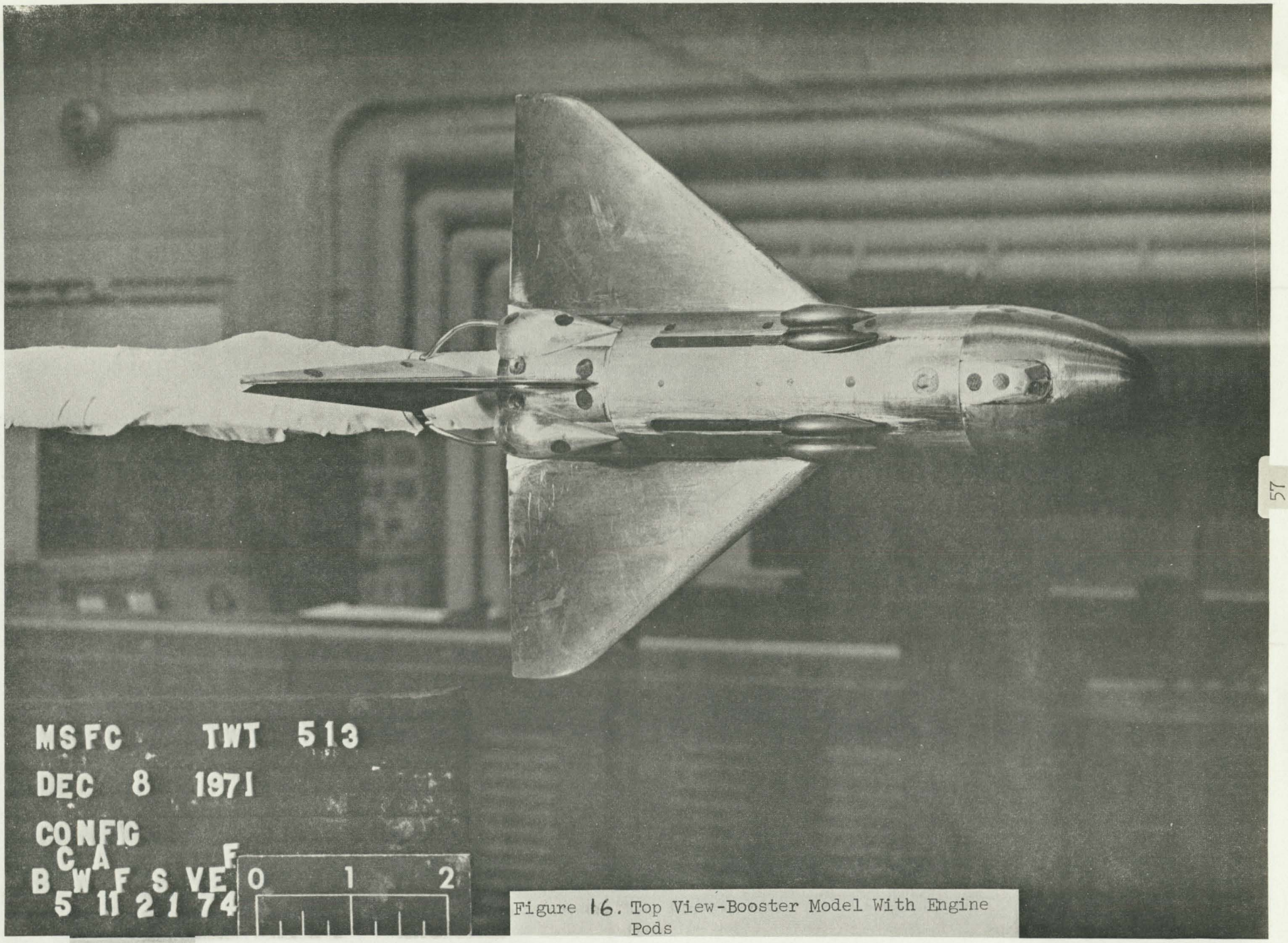


Figure 16. Top View-Booster Model With Engine Pods

NASA-MSFC
S&E-Aero-AE

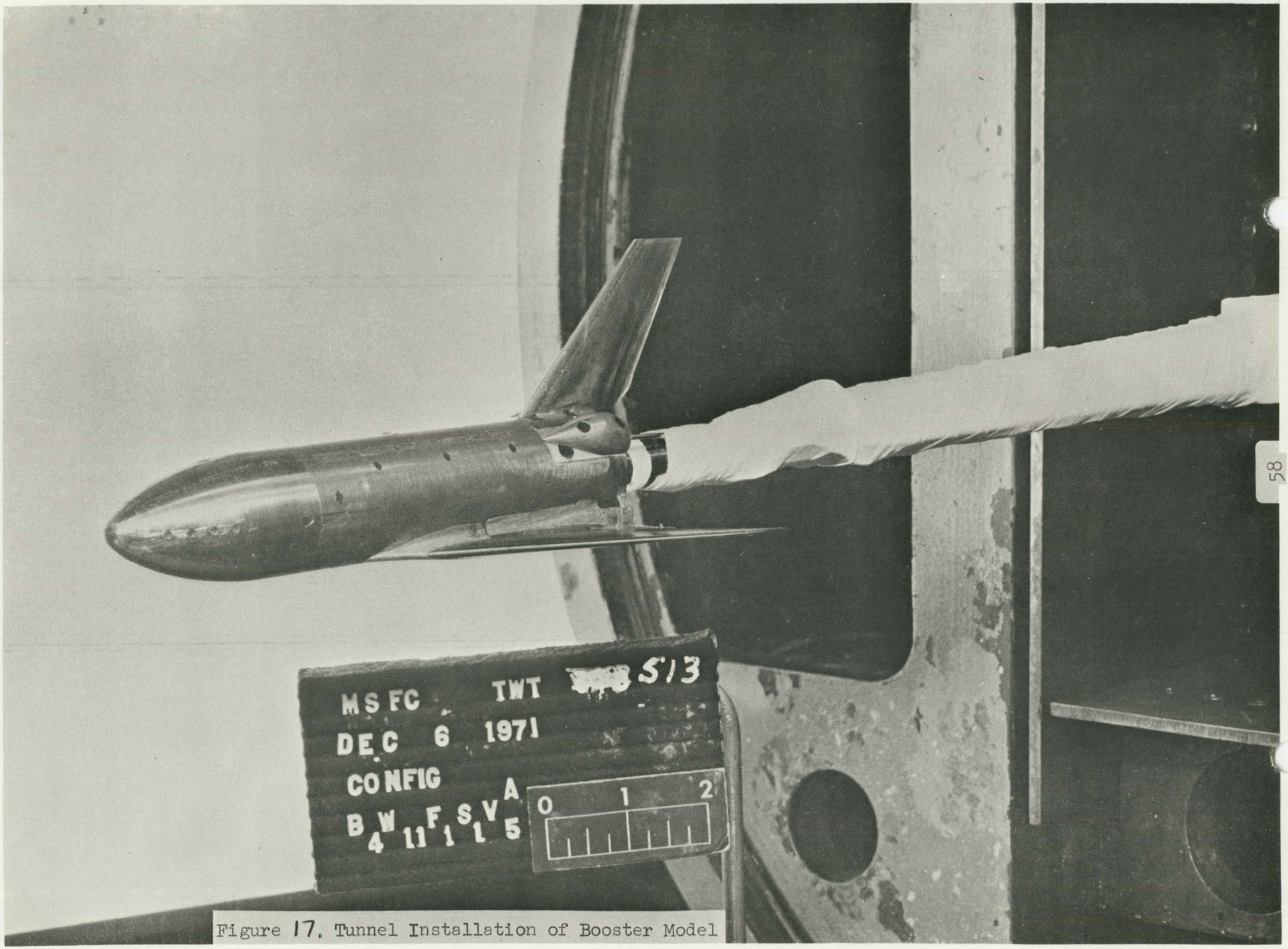
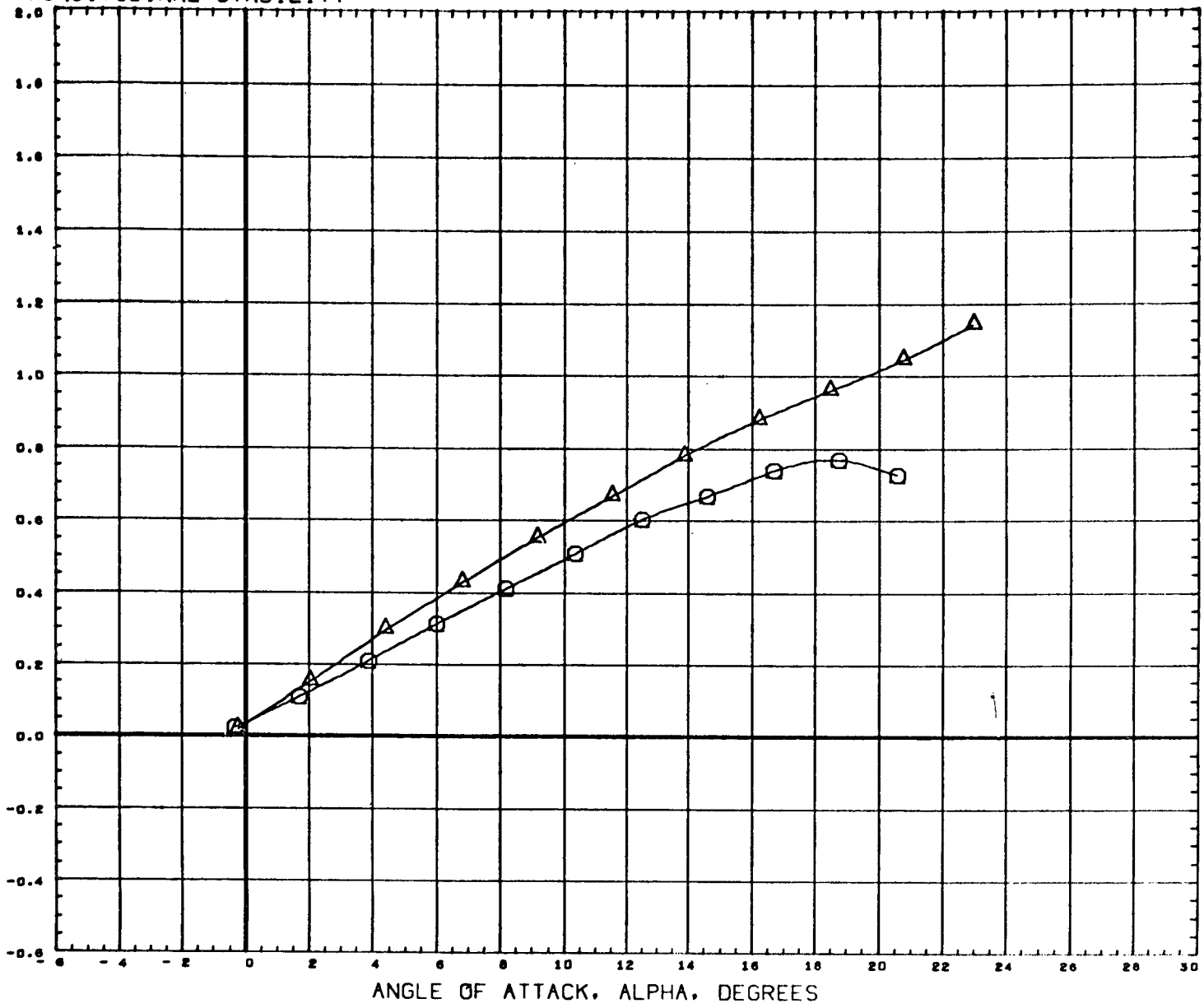


Figure 17. Tunnel Installation of Booster Model

PLOTTED DATA

Tabulations of the plotted data and corresponding source data are available from SADSAC Operations.

LONGITUDINAL STABILITY



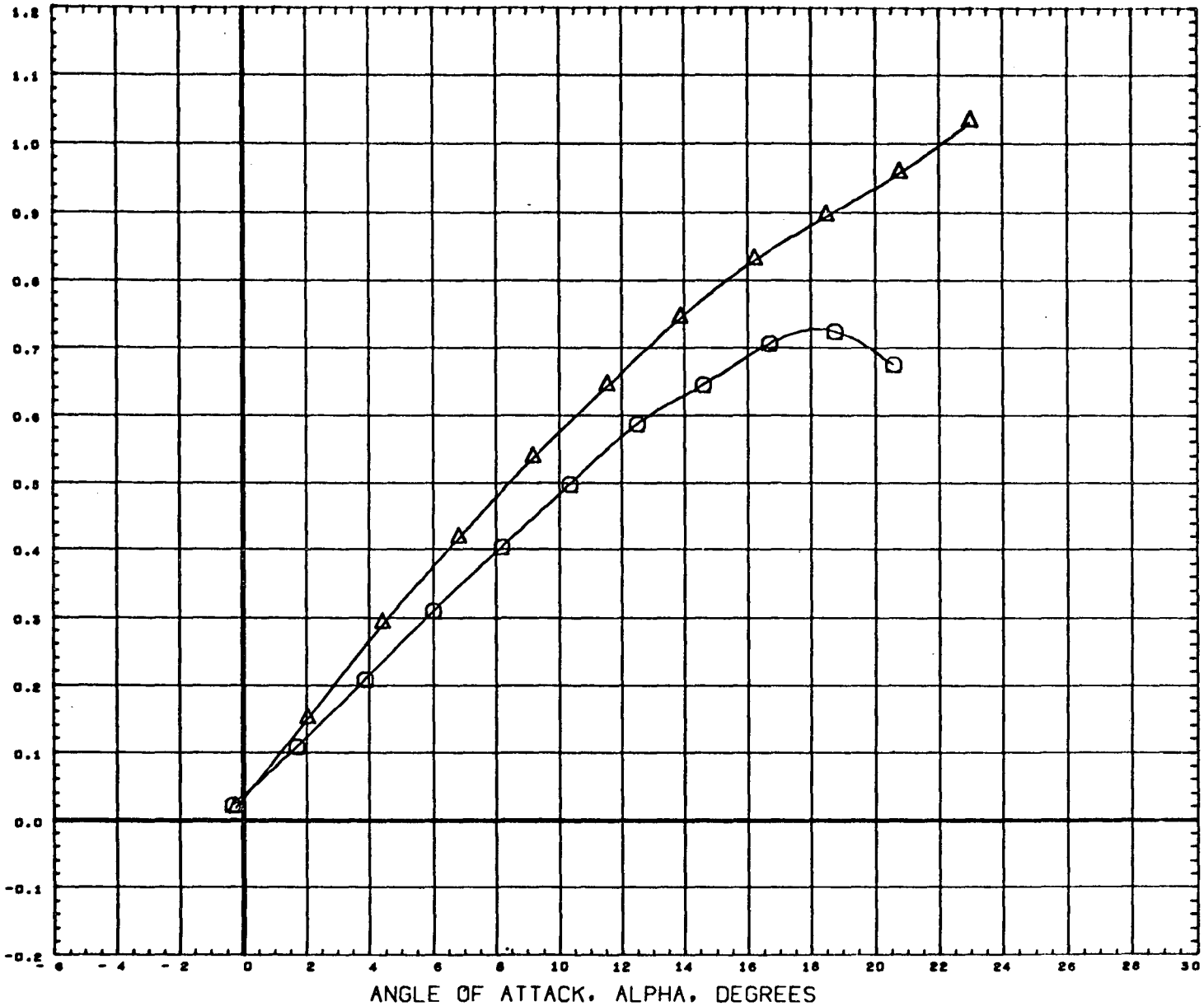
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△	1.204	RUDFLR	0.000		

DATA HIST. CODE GC

REFERENCE INFORMATION

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BREF	5.6550	IN.
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YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LONGITUDINAL STABILITY



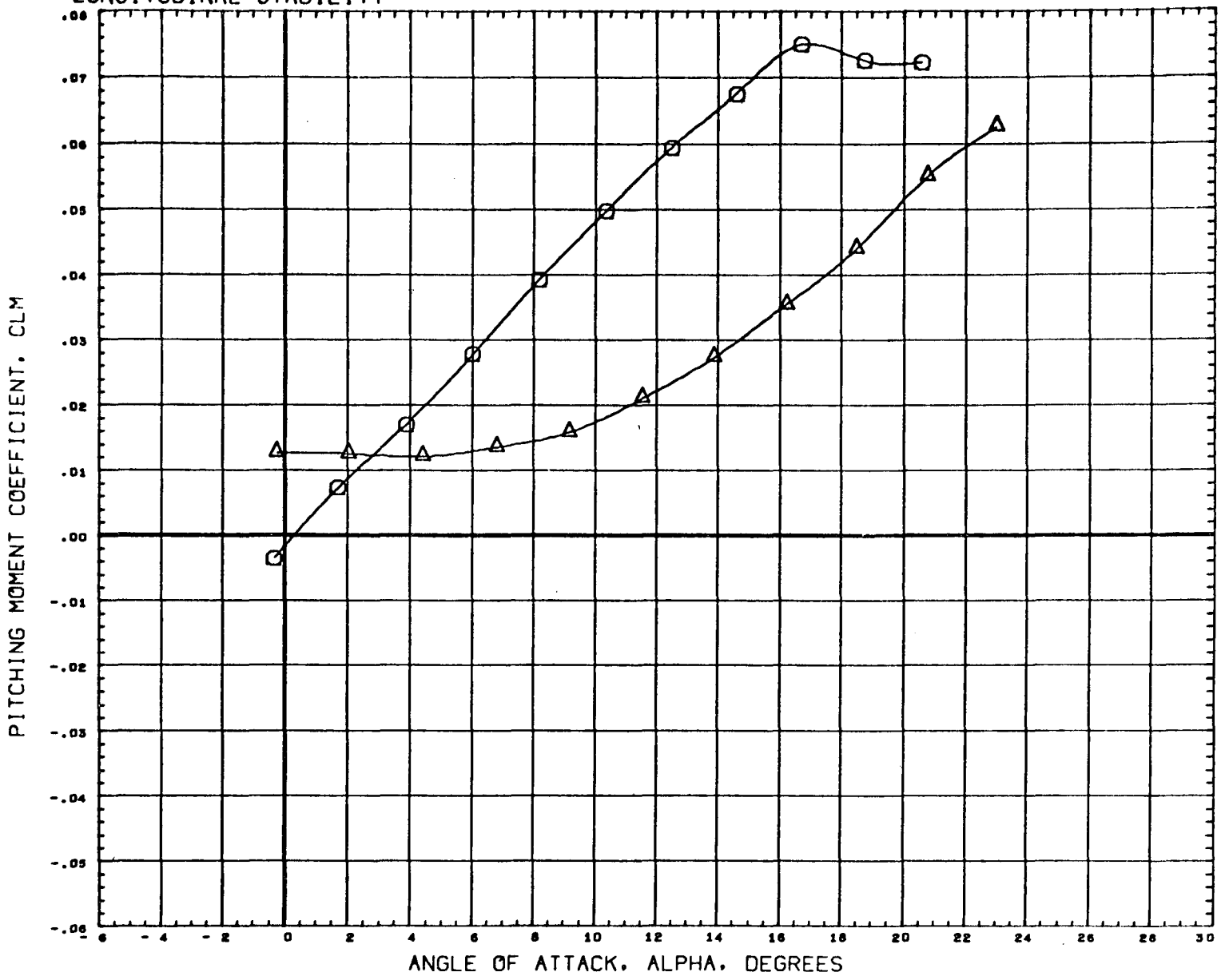
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LONGITUDINAL STABILITY



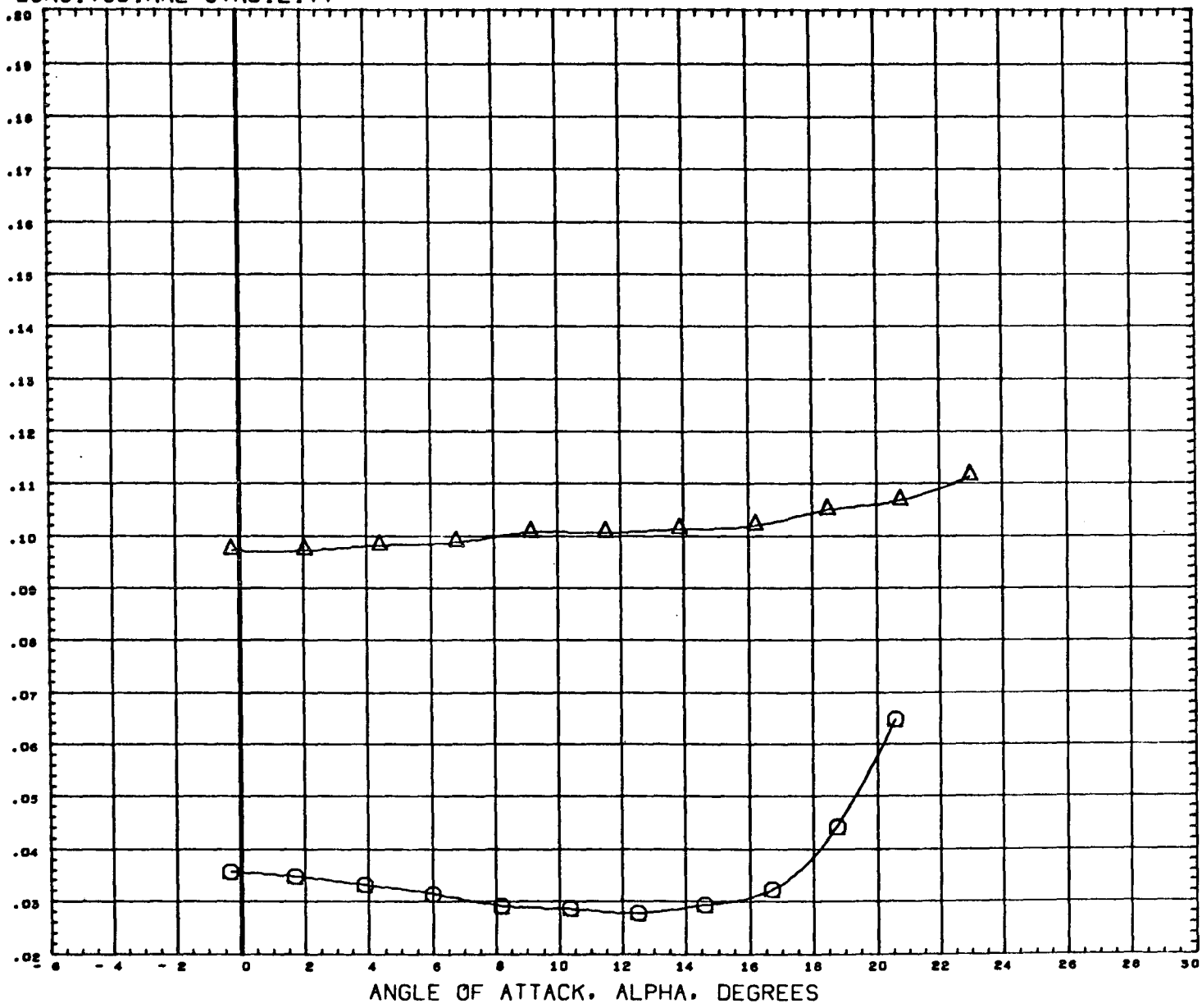
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LONGITUDINAL STABILITY



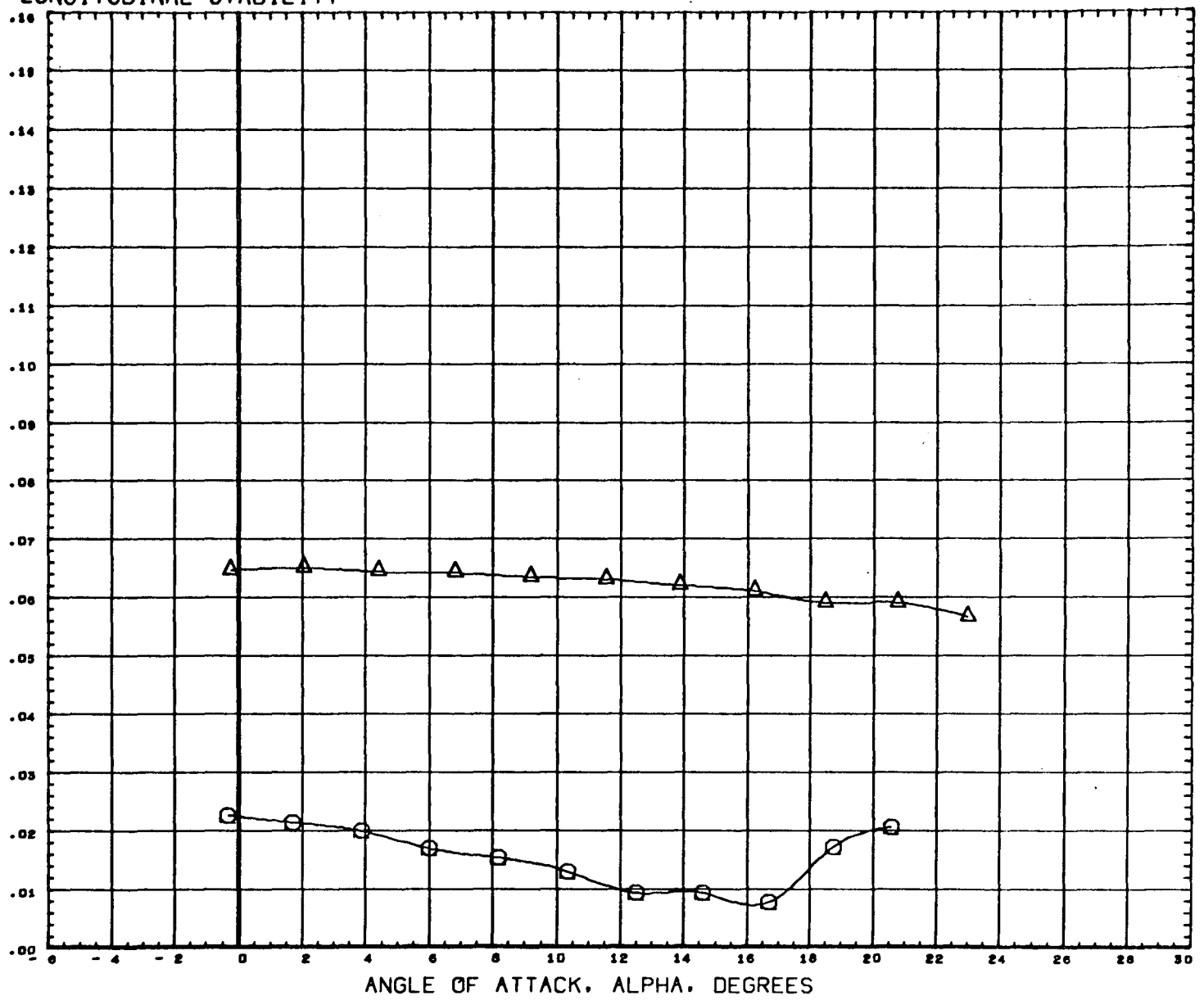
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DATA HIST. CODE GC

LONGITUDINAL STABILITY



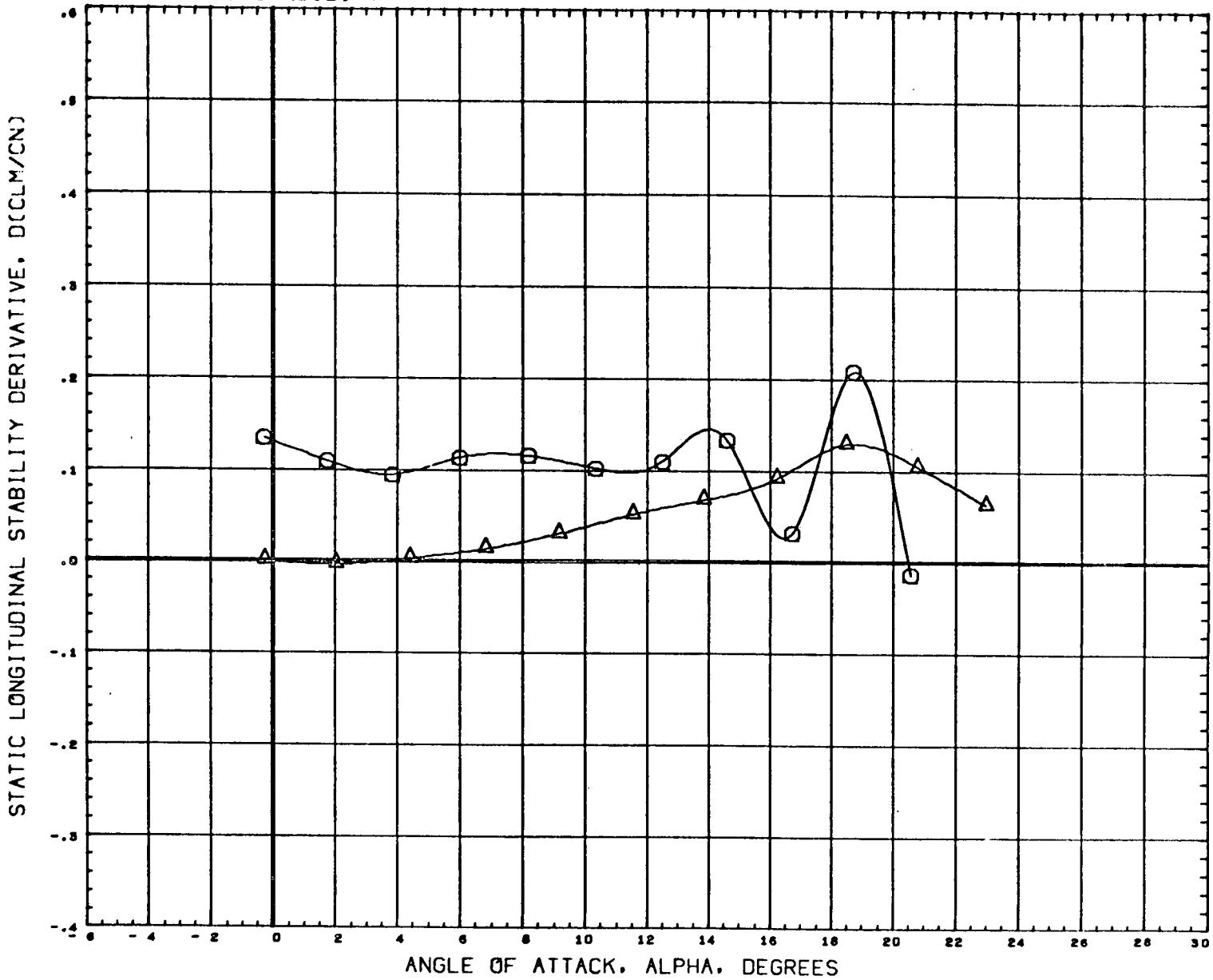
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LONGITUDINAL STABILITY



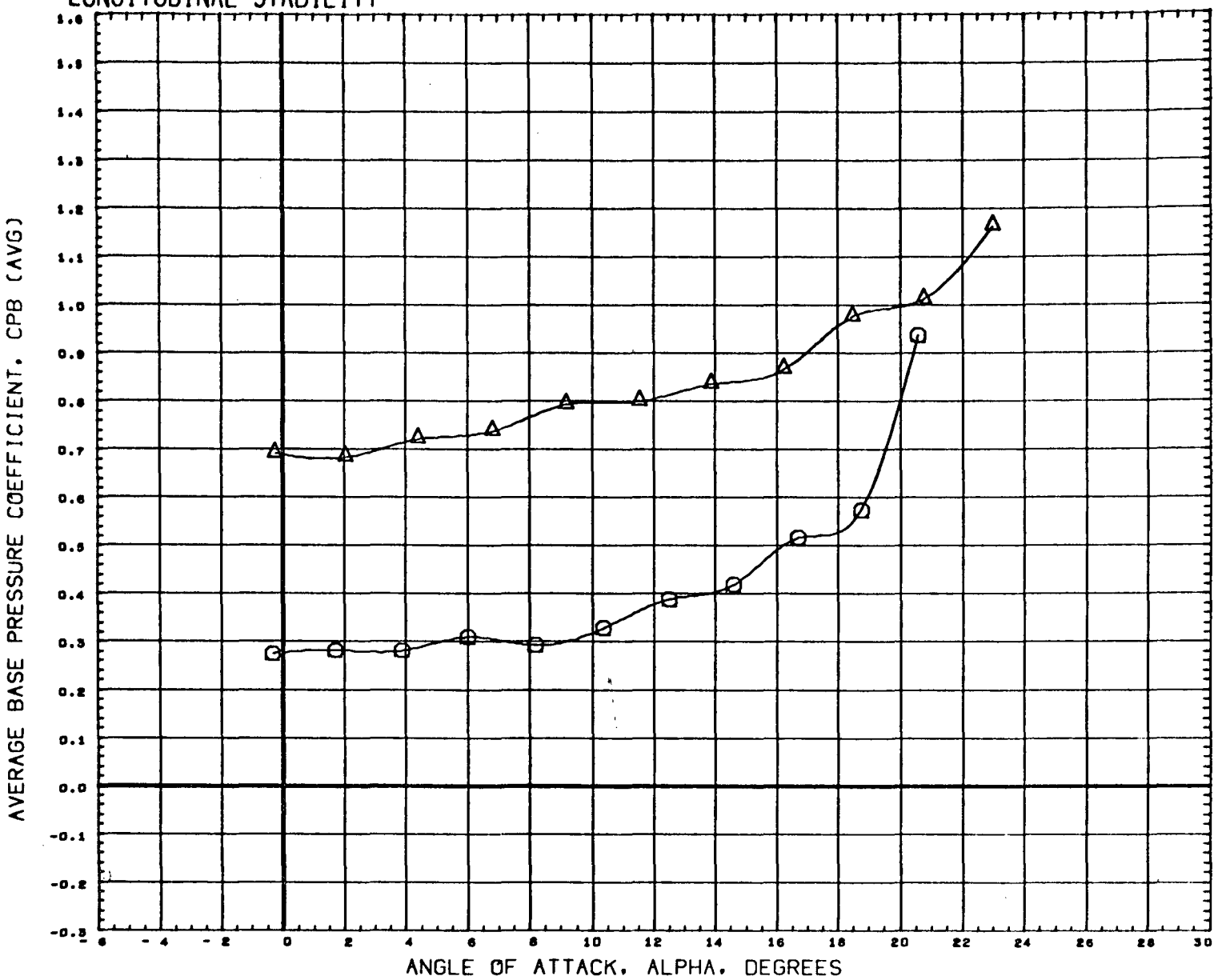
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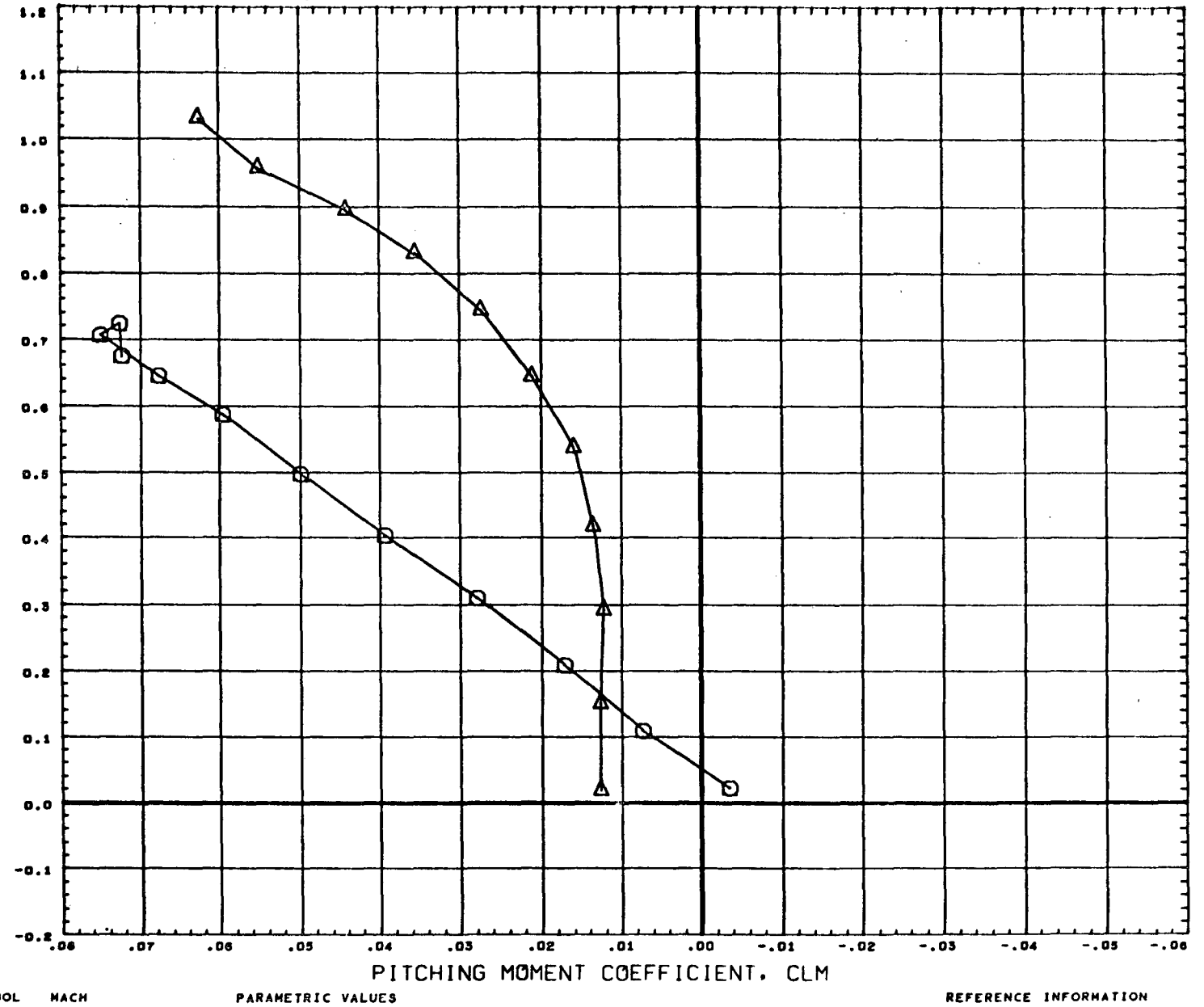


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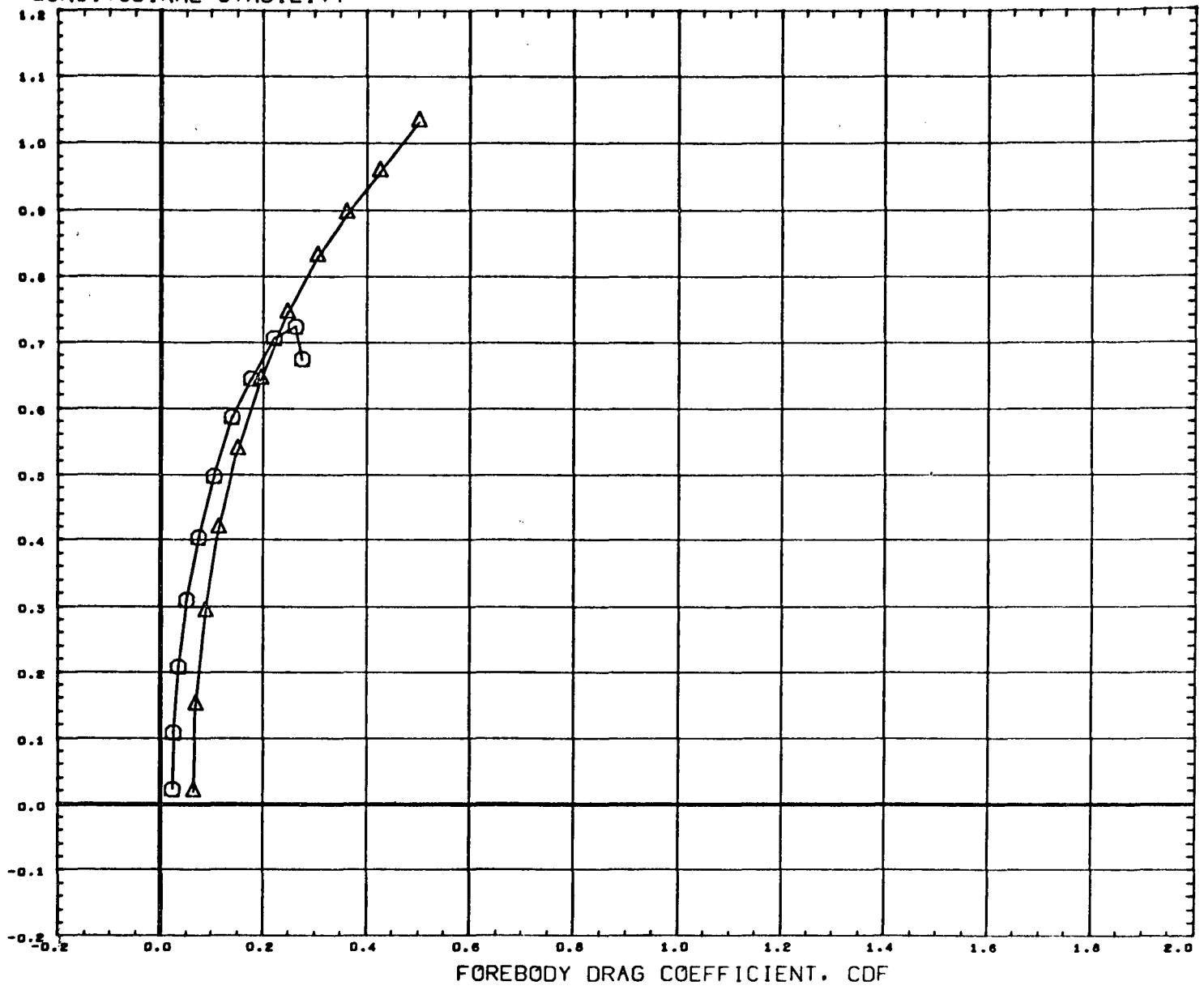


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LONGITUDINAL STABILITY



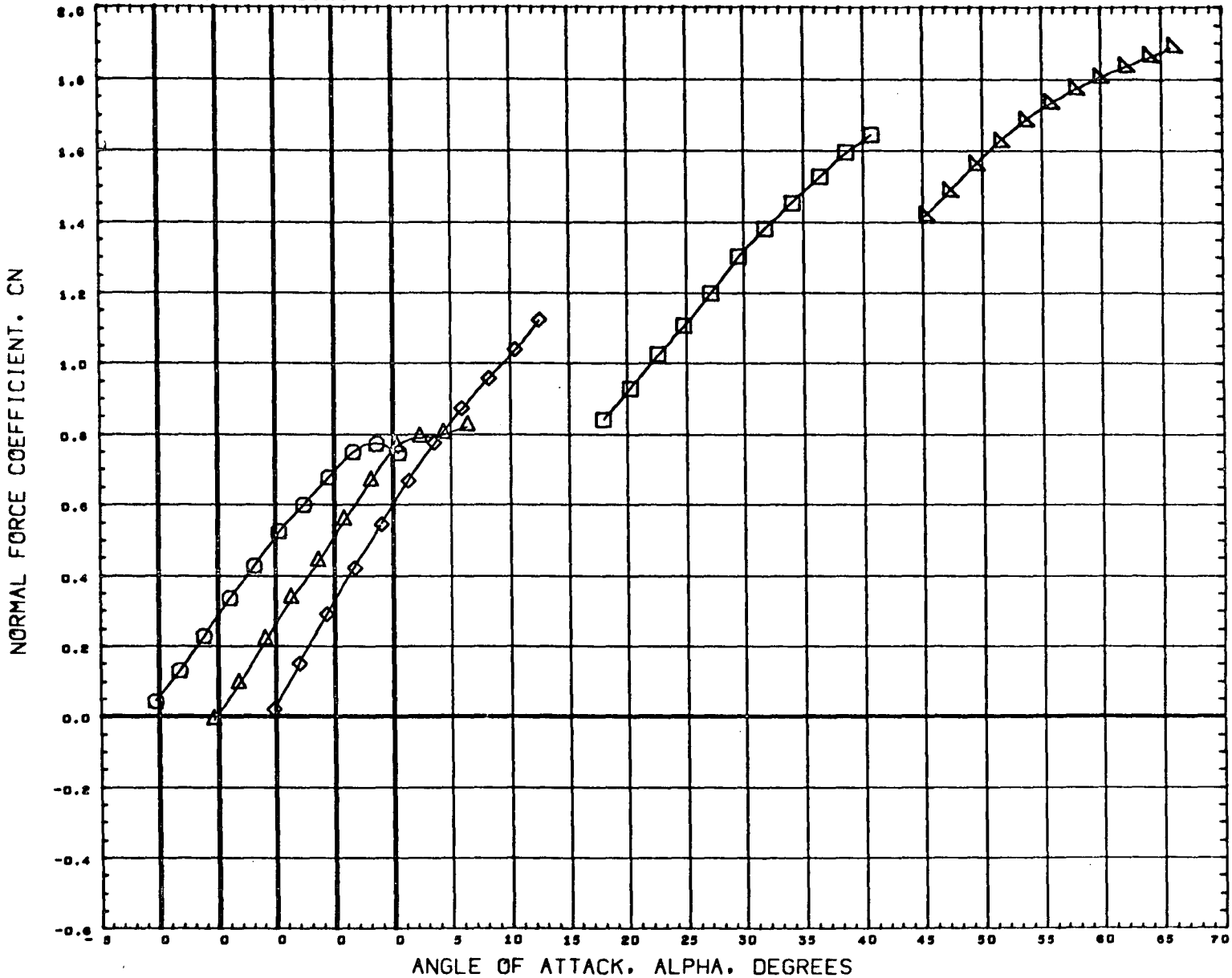
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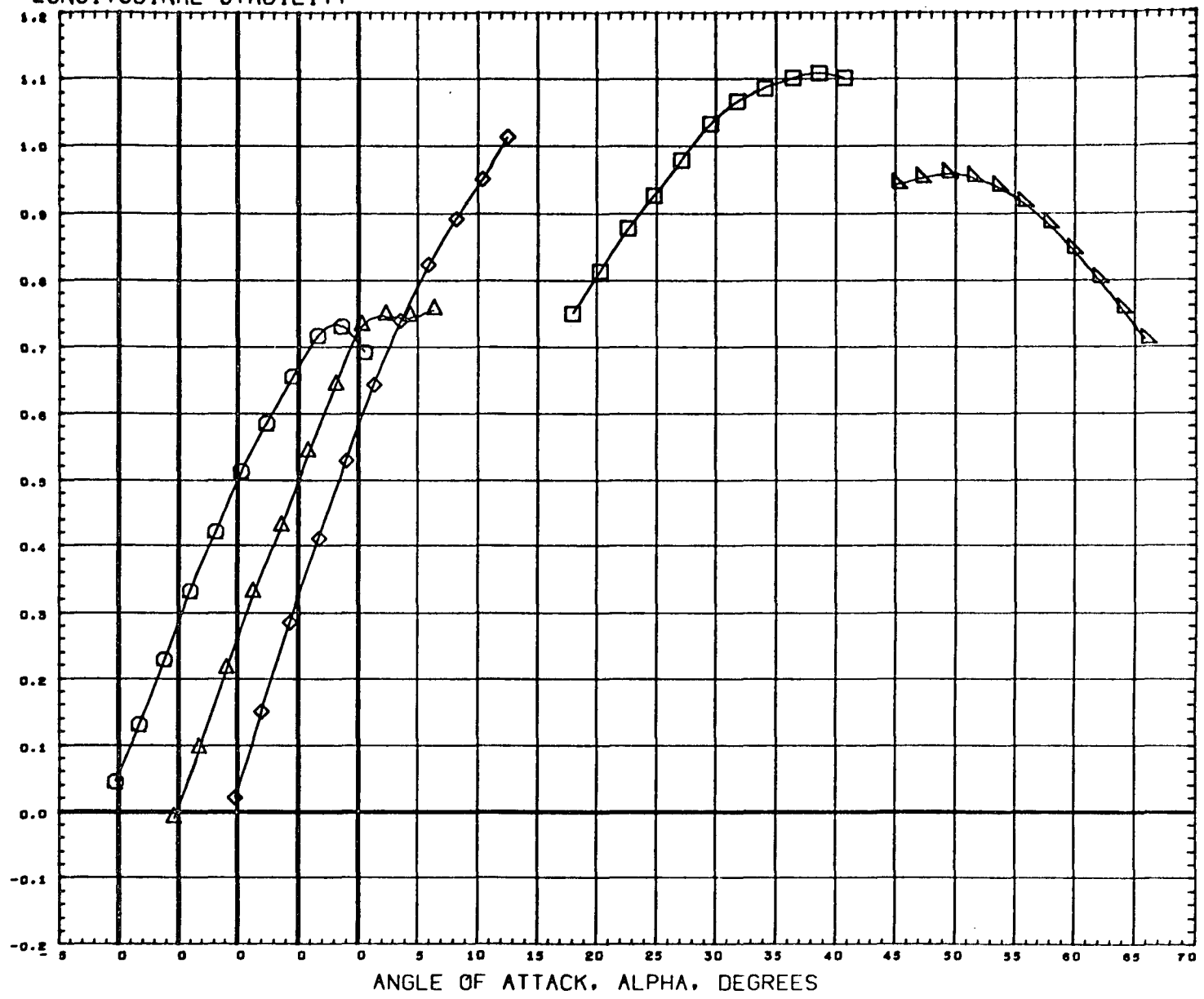


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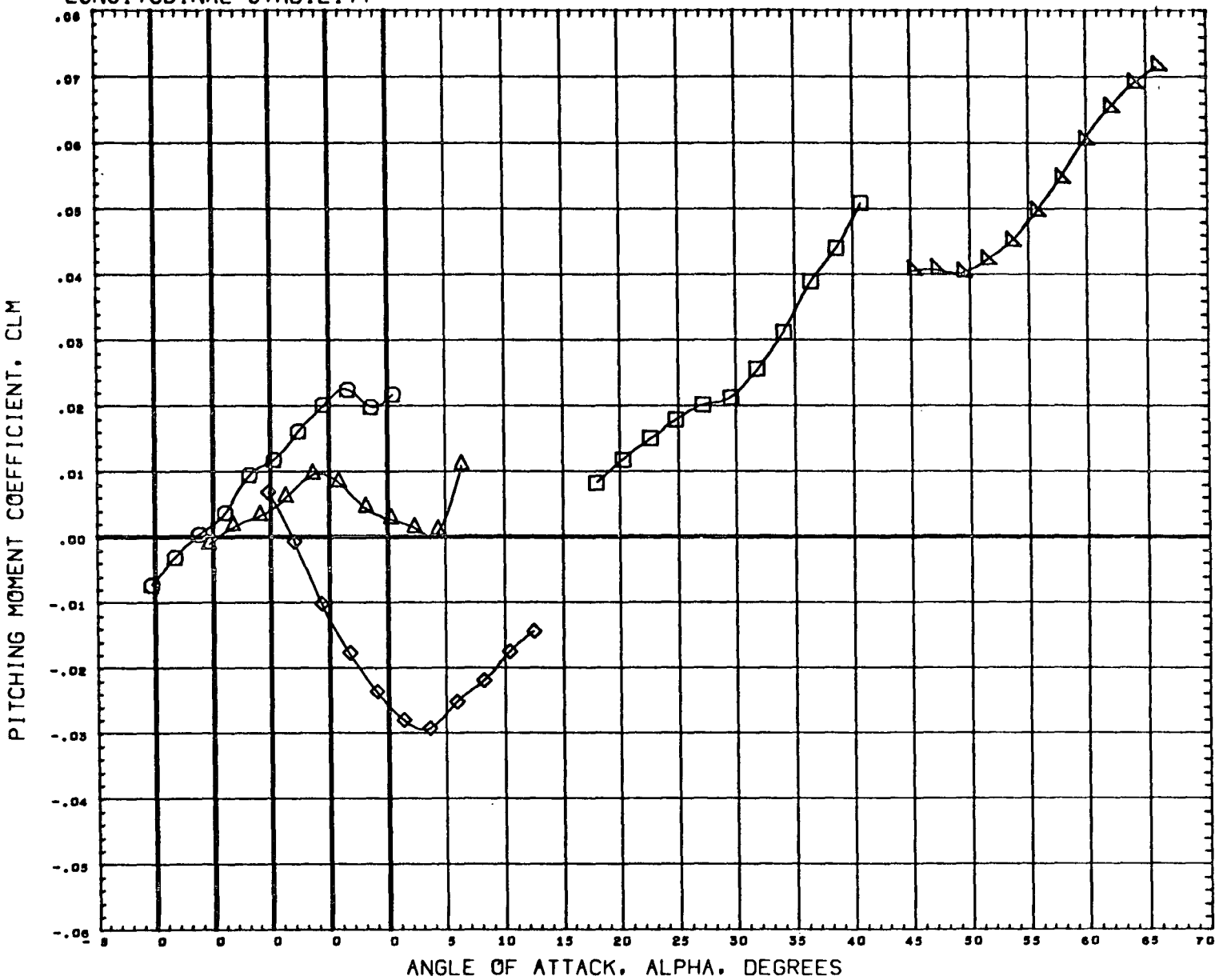
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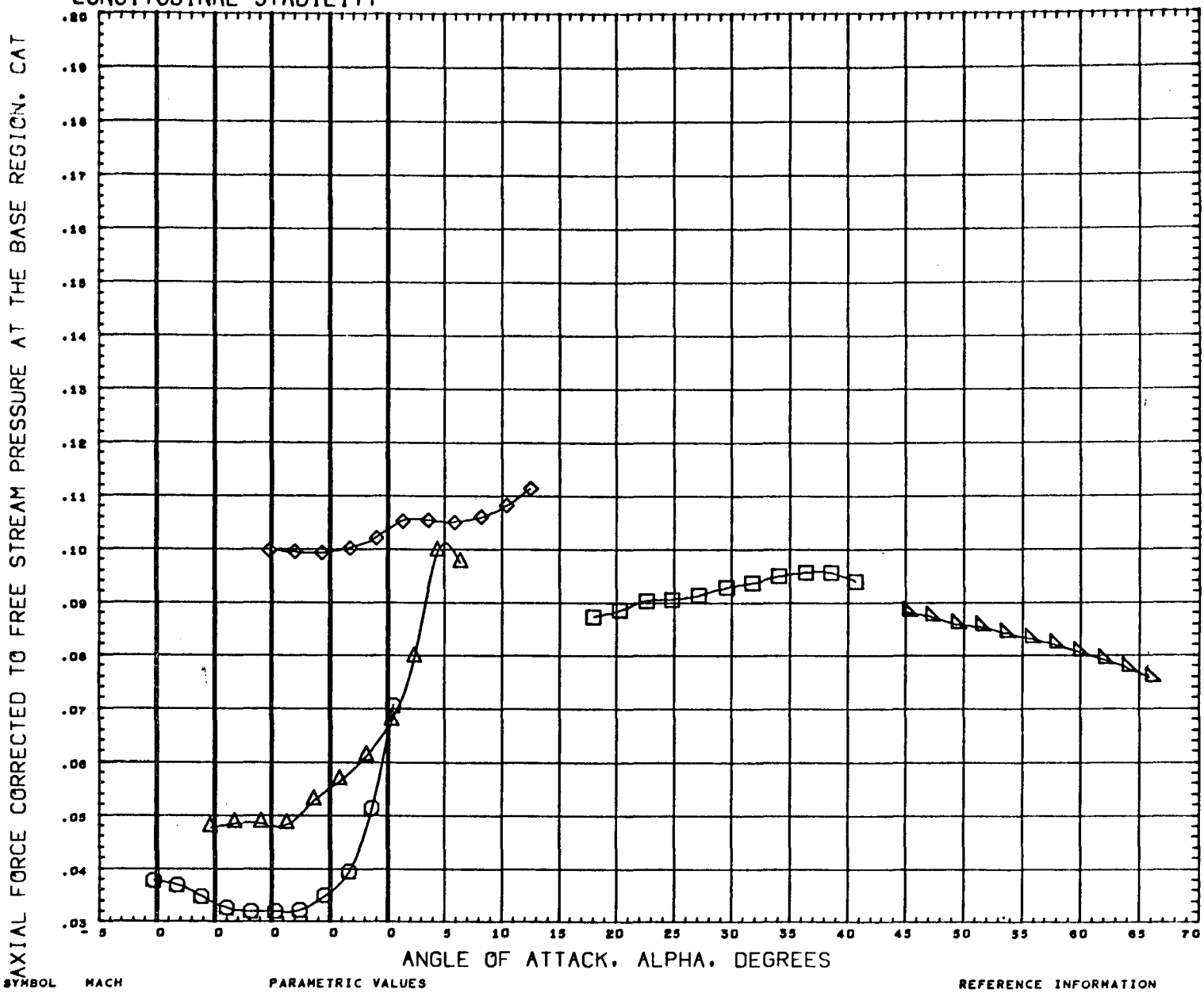


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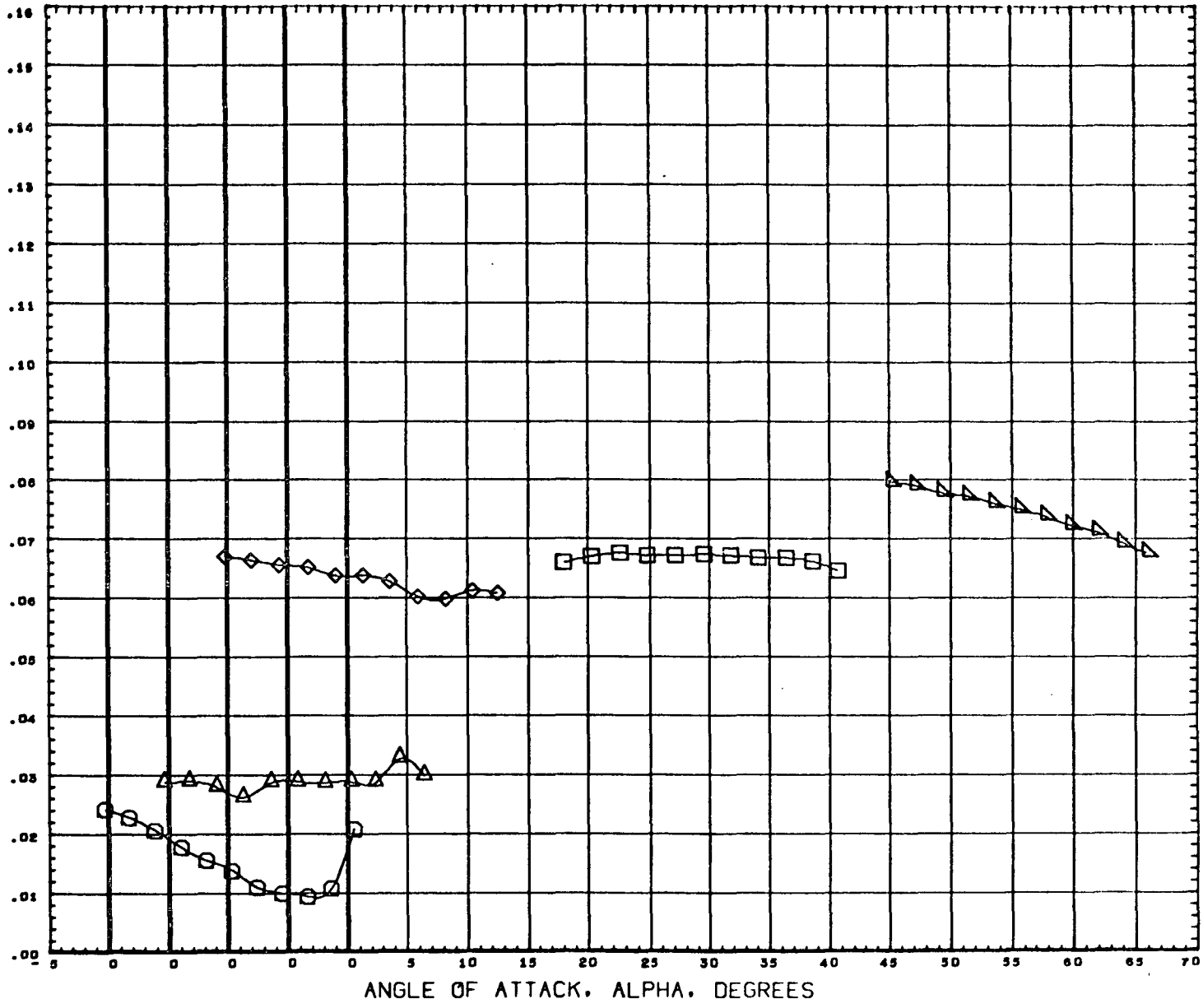


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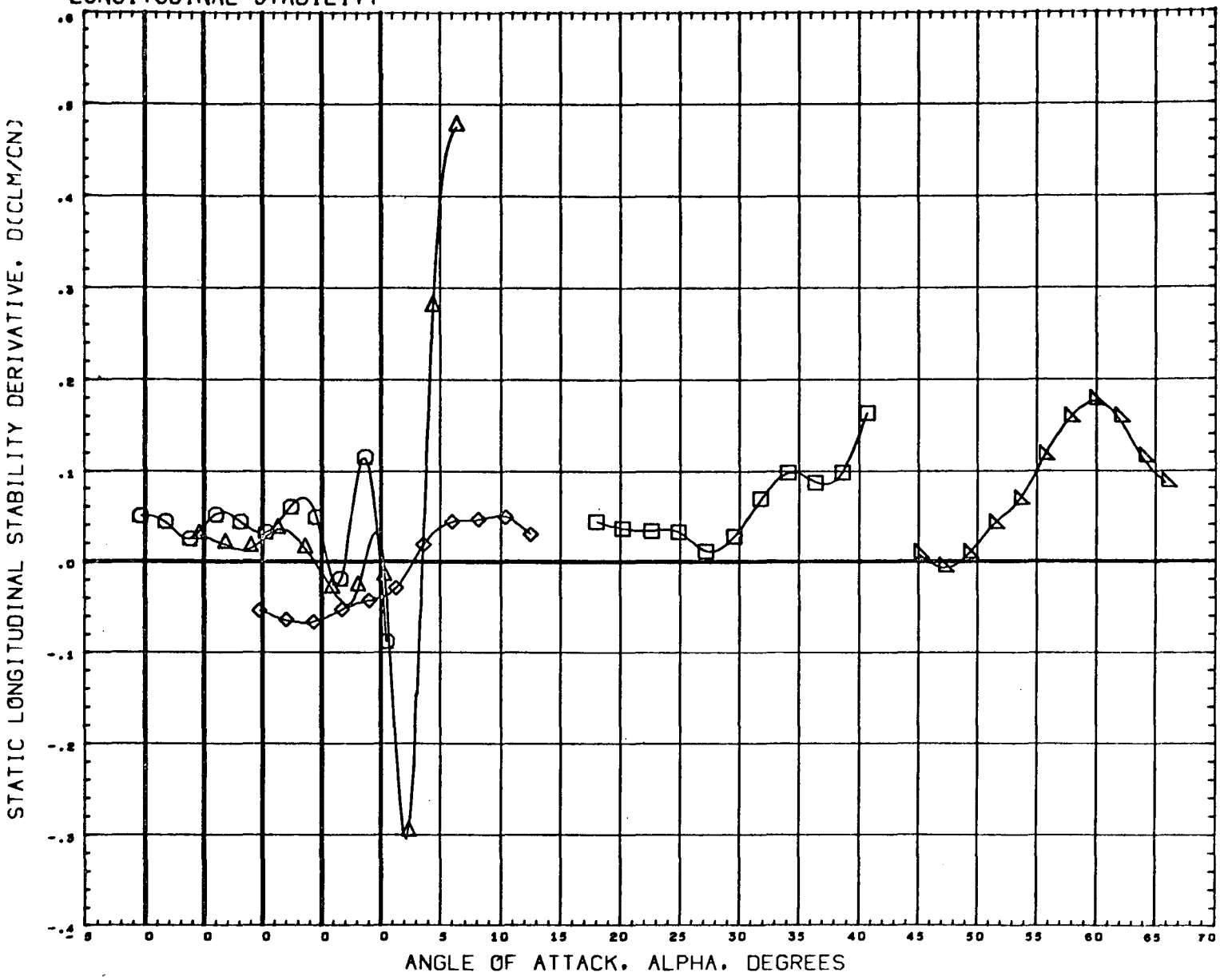


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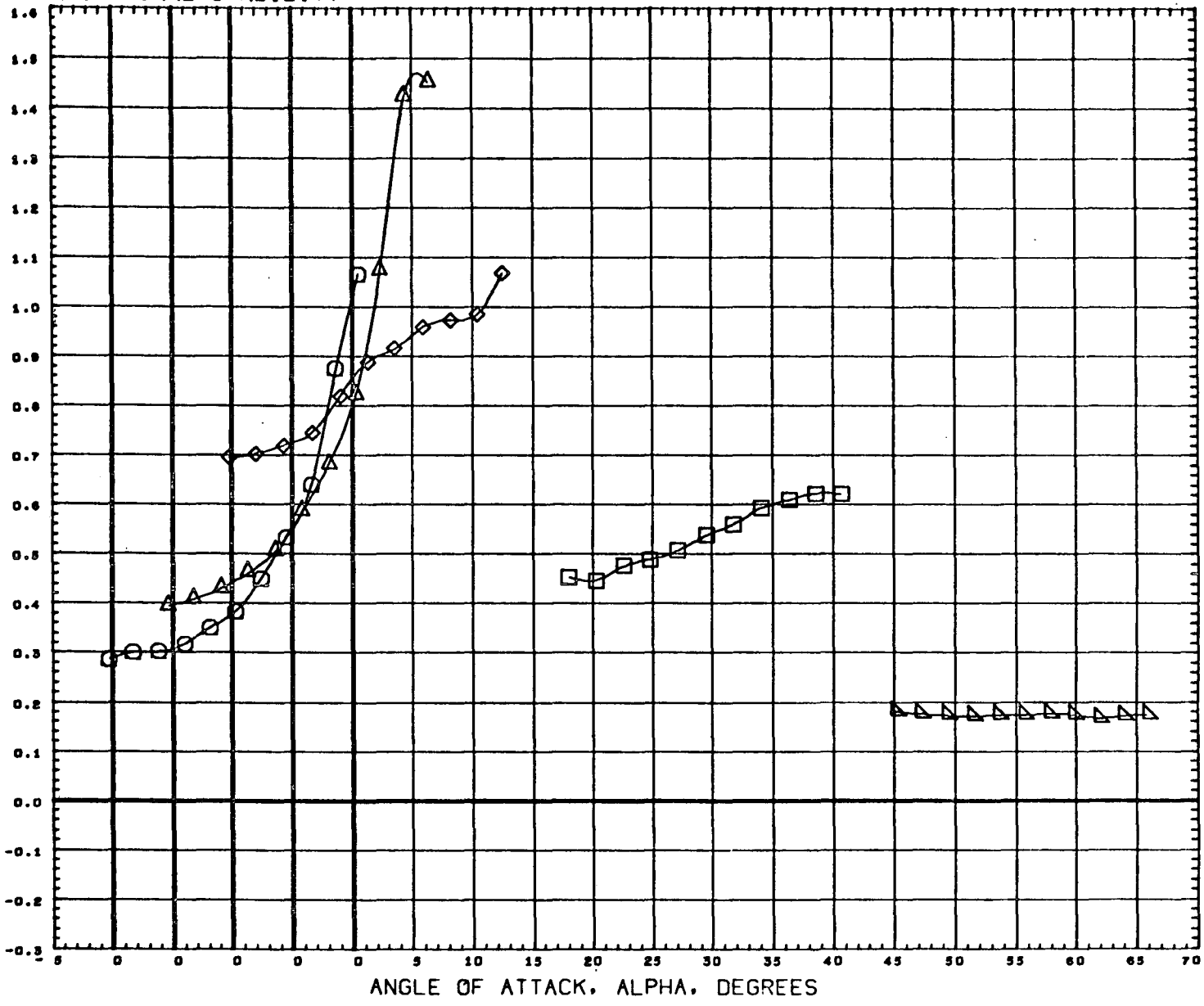


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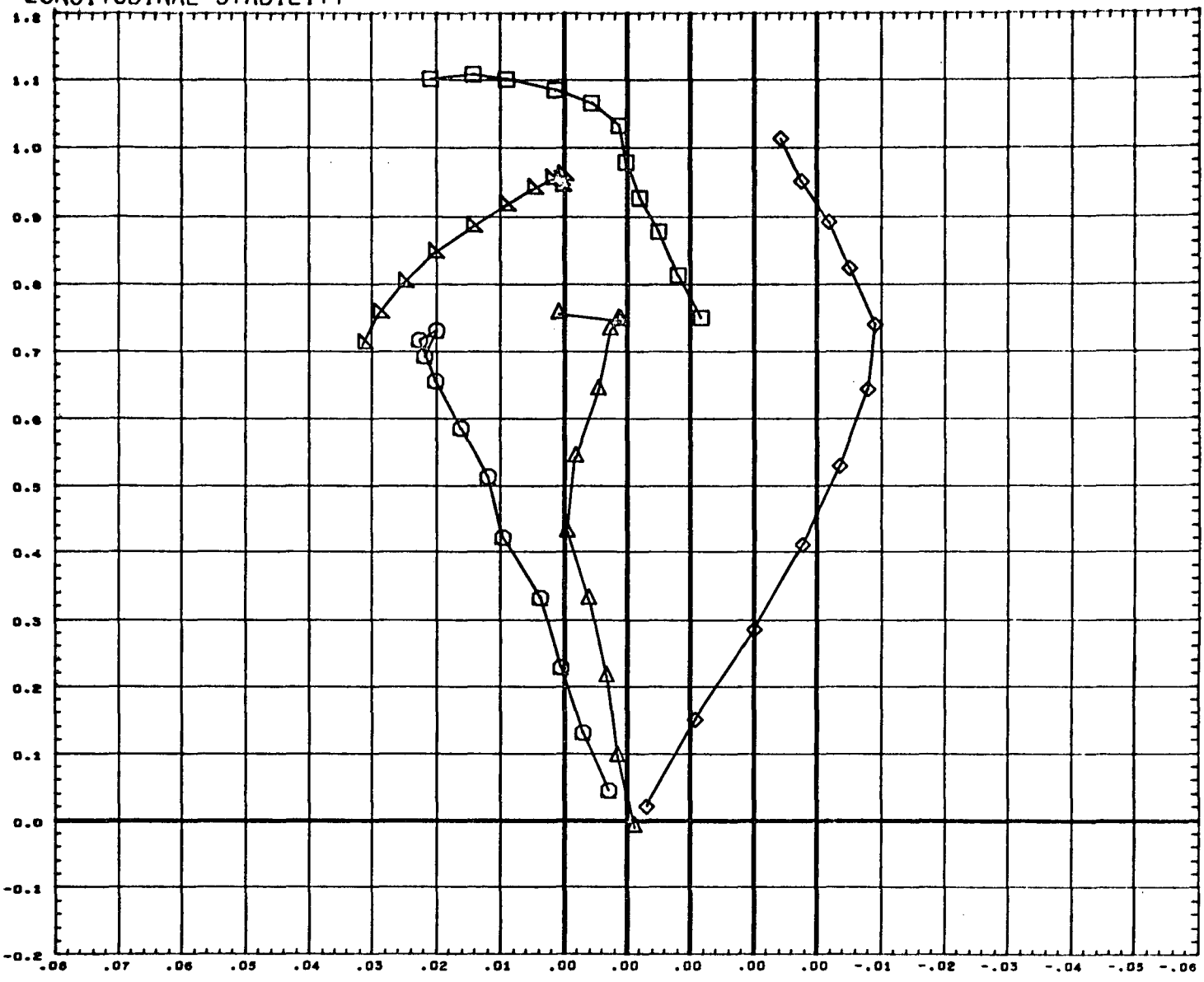


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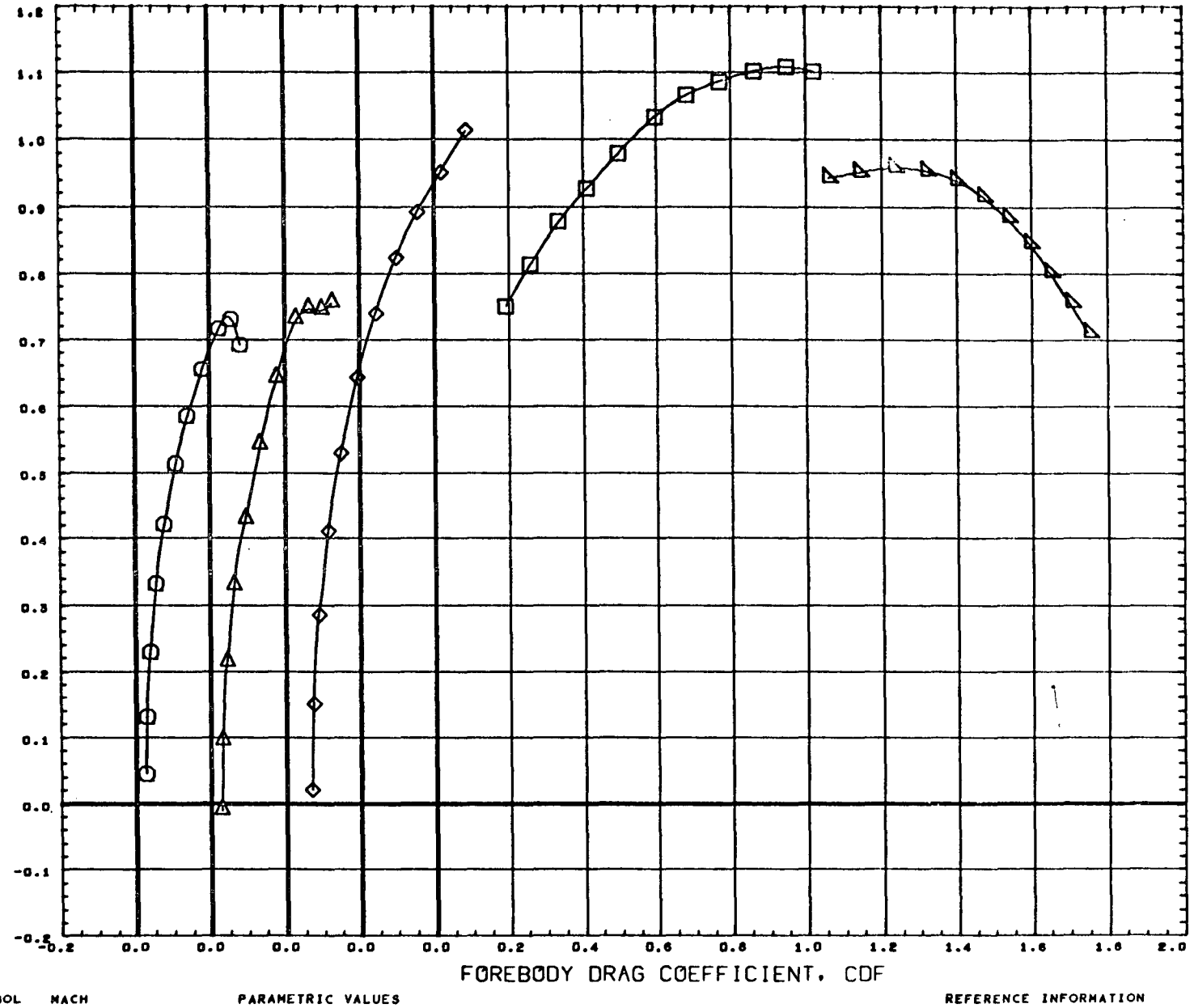


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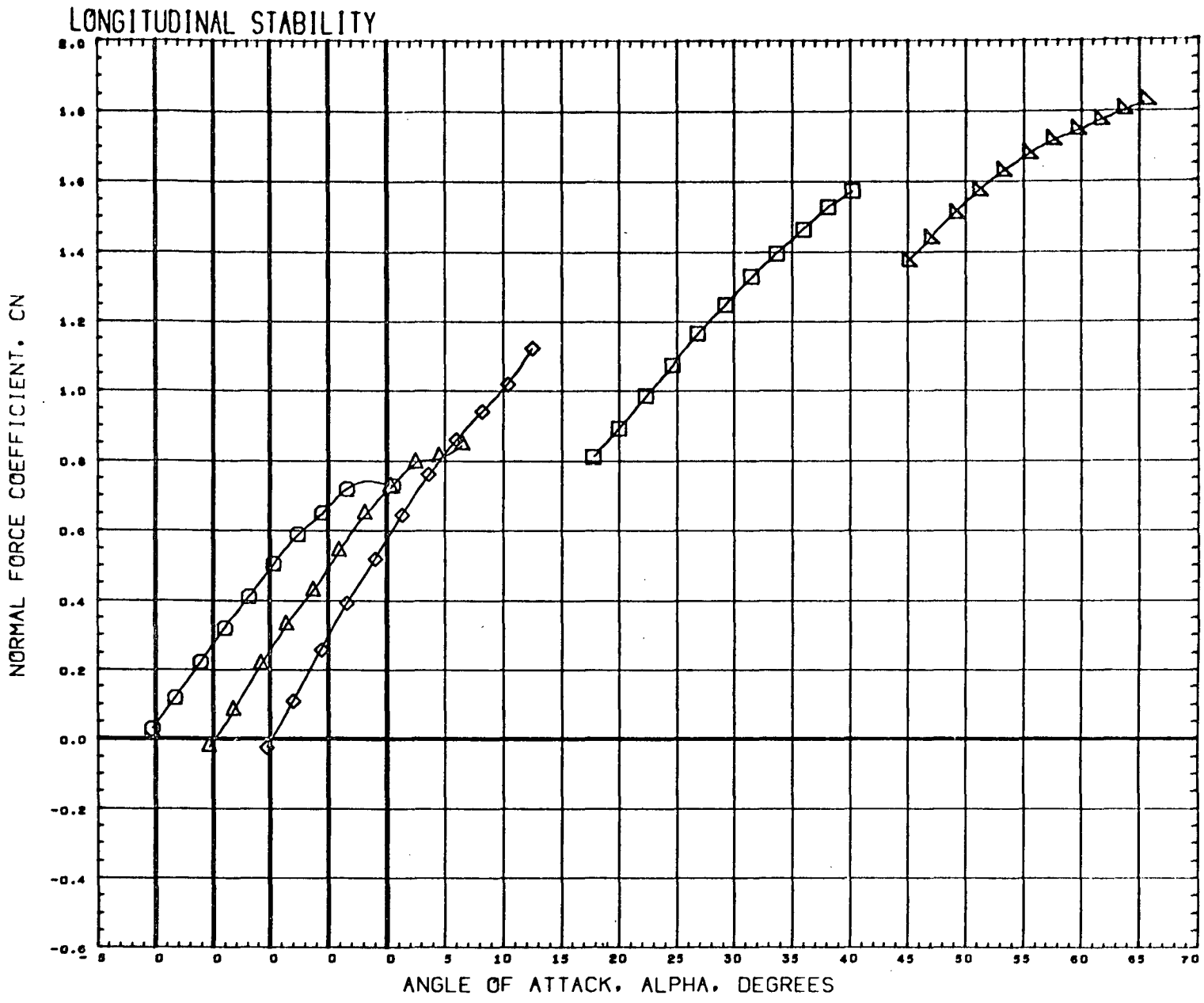
LONGITUDINAL STABILITY



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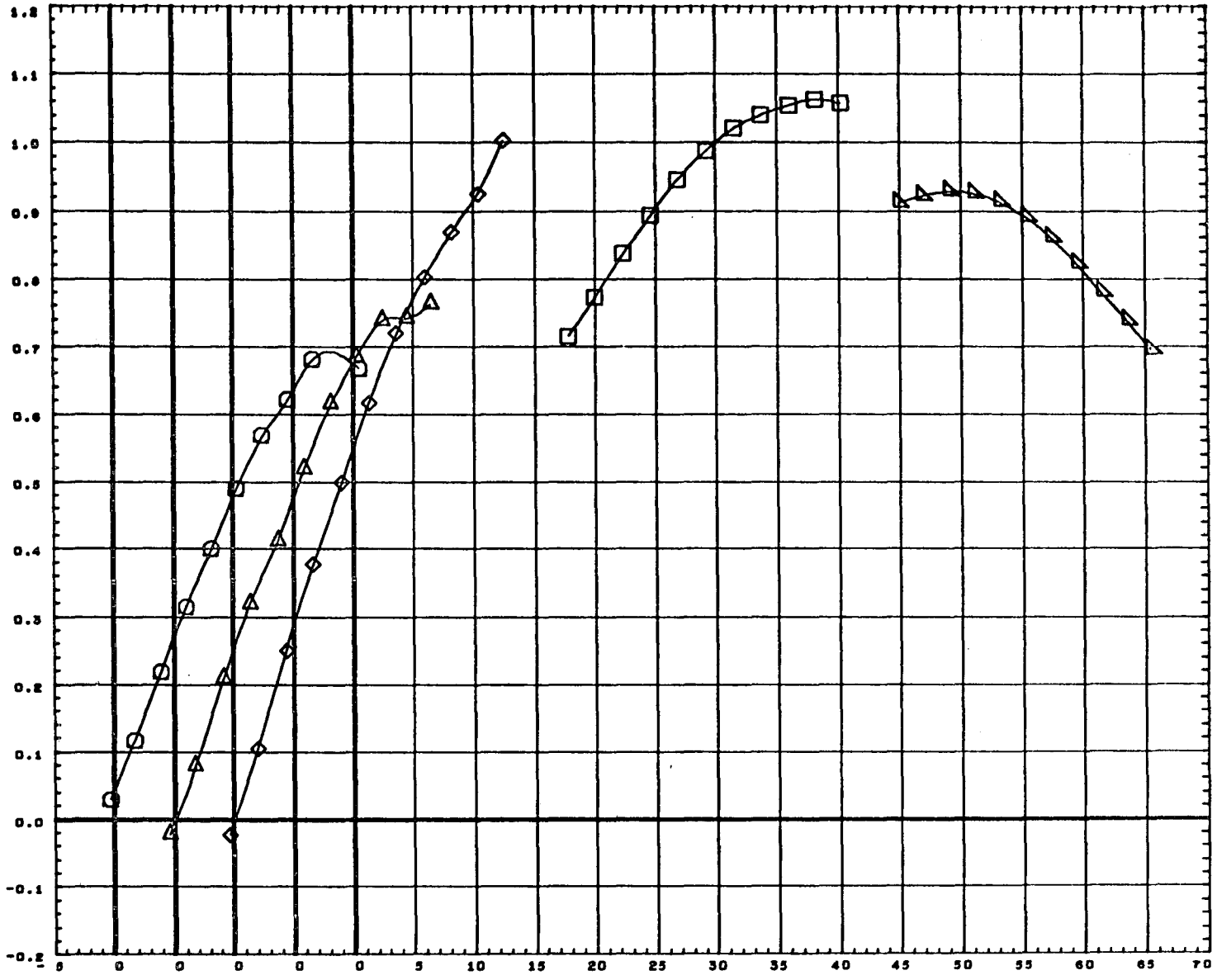


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LONGITUDINAL STABILITY

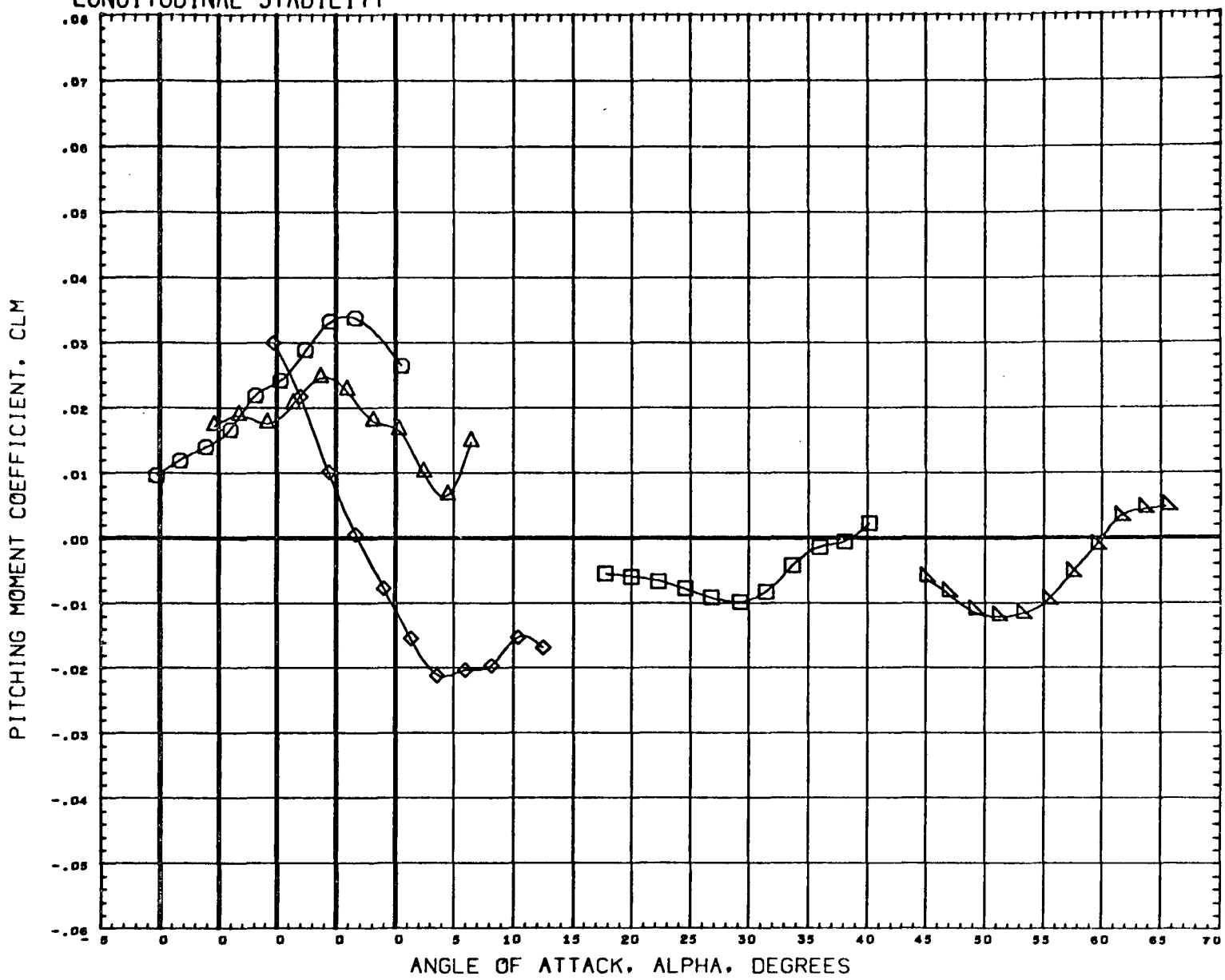


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DATA HIST. CODE *GGC*G

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4021	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LONGITUDINAL STABILITY

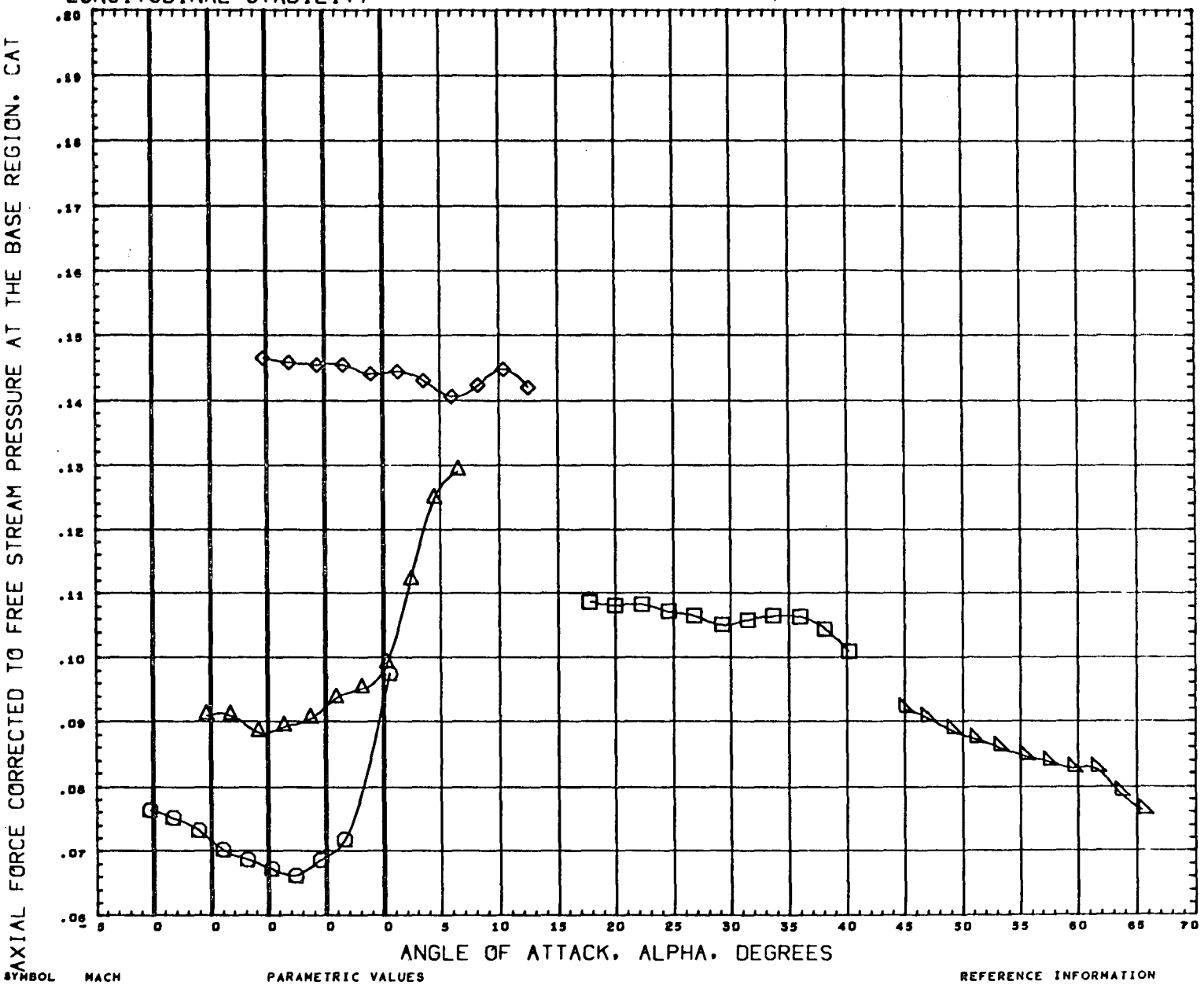


SYMBOL	MACH	PARAMETRIC VALUES			
○	0.599	BETA	0.000	RUDDER	0.000
△	0.905	RUDFLR	30.000		
◇	1.200				
□	1.959				
◸	3.480				

DATA HIST. CODE *GGC*G

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LONGITUDINAL STABILITY

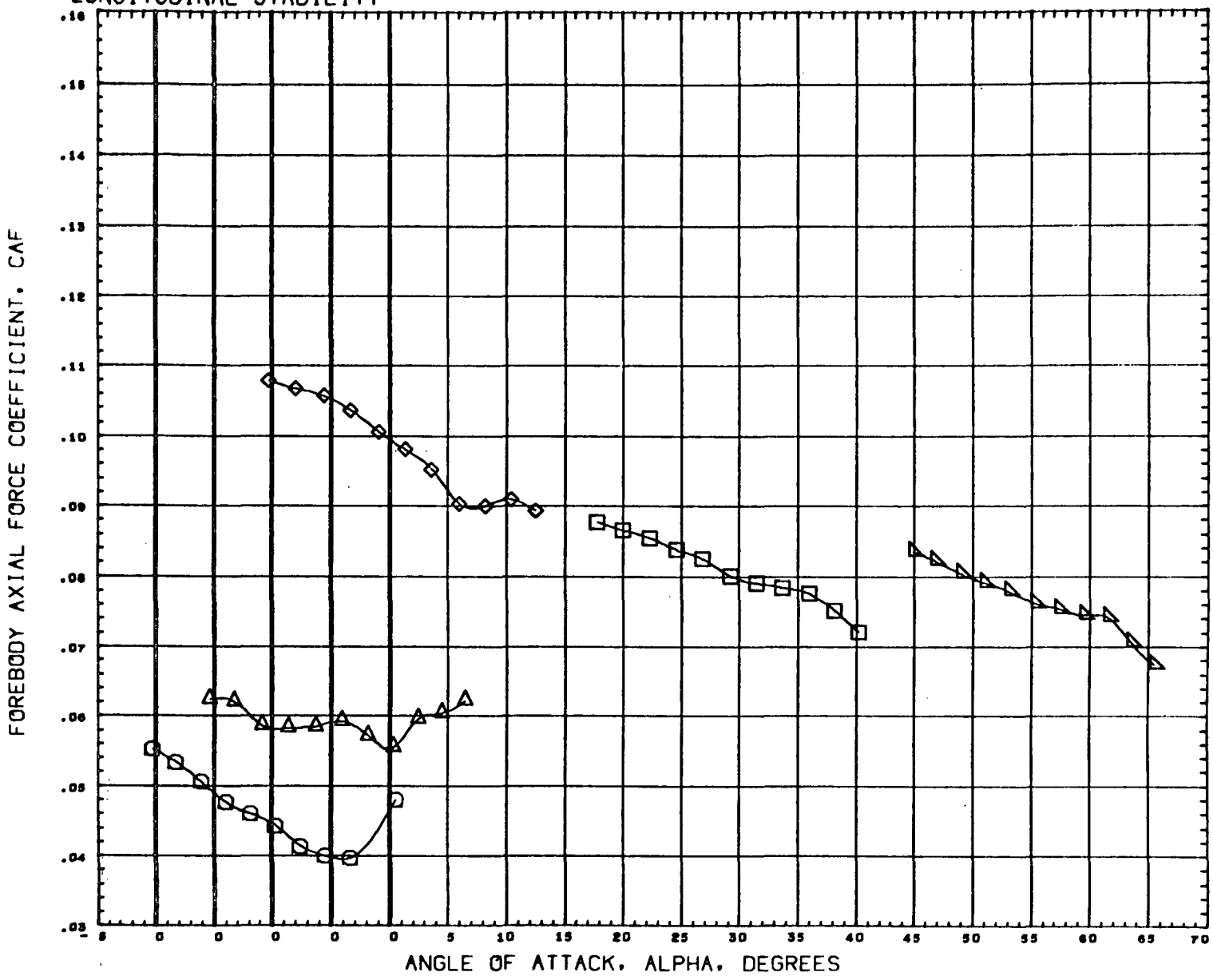


SYMBOL	MACH	PARAMETRIC VALUES			
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	0.905	RUDFLR	30.000		
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	1.959				
	3.460				

DATA HIST. CODE *GGC*G

REFERENCE INFORMATION		
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LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LONGITUDINAL STABILITY

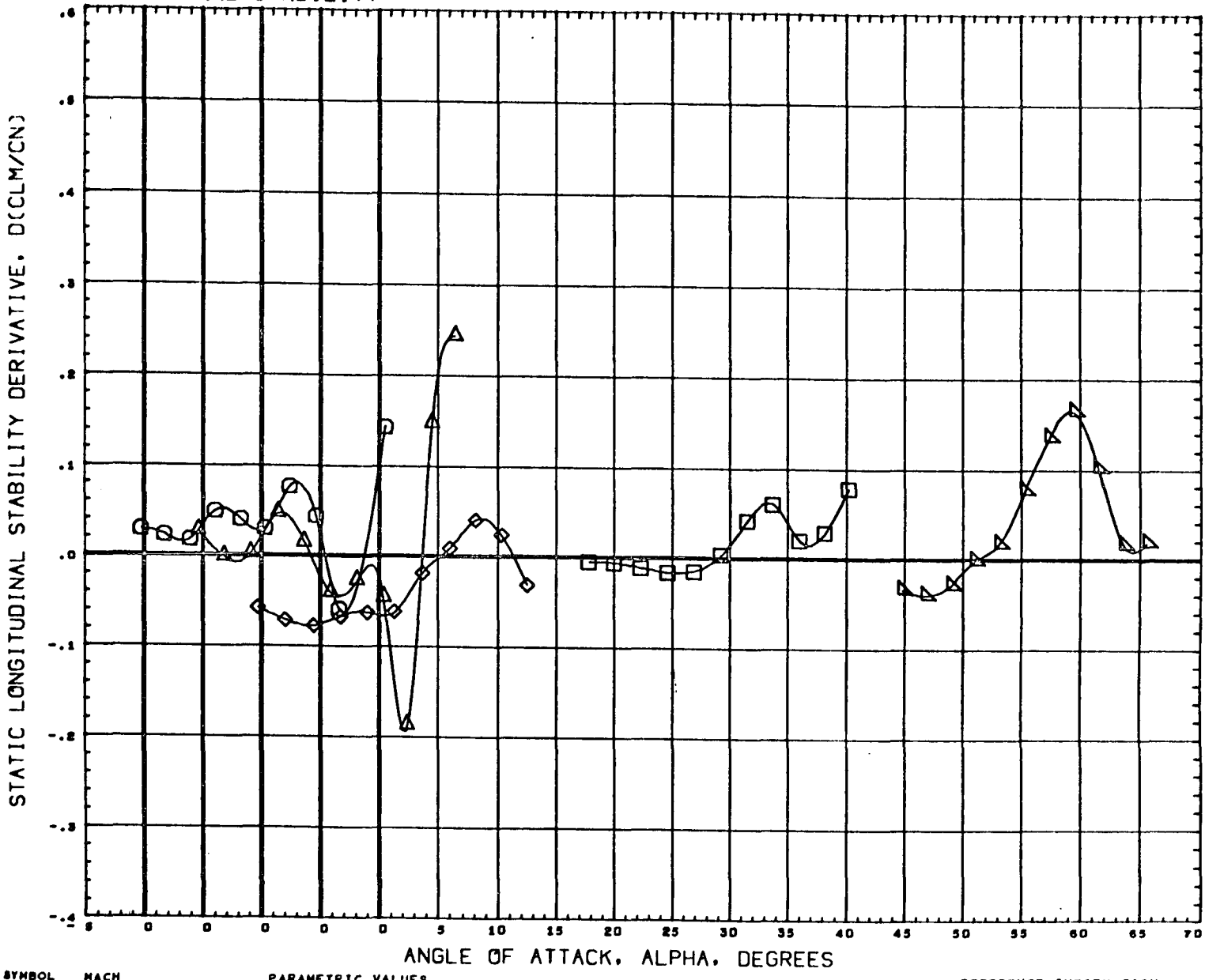


SYMBOL	MACH	PARAMETRIC VALUES			
○	0.599	BETA	0.000	RUDDER	0.000
△	0.905	RUDFLR	30.000		
◇	1.200				
□	1.959				
▽	3.480				

DATA HIST. CODE *GGC*G

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5060	IN.
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YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LONGITUDINAL STABILITY

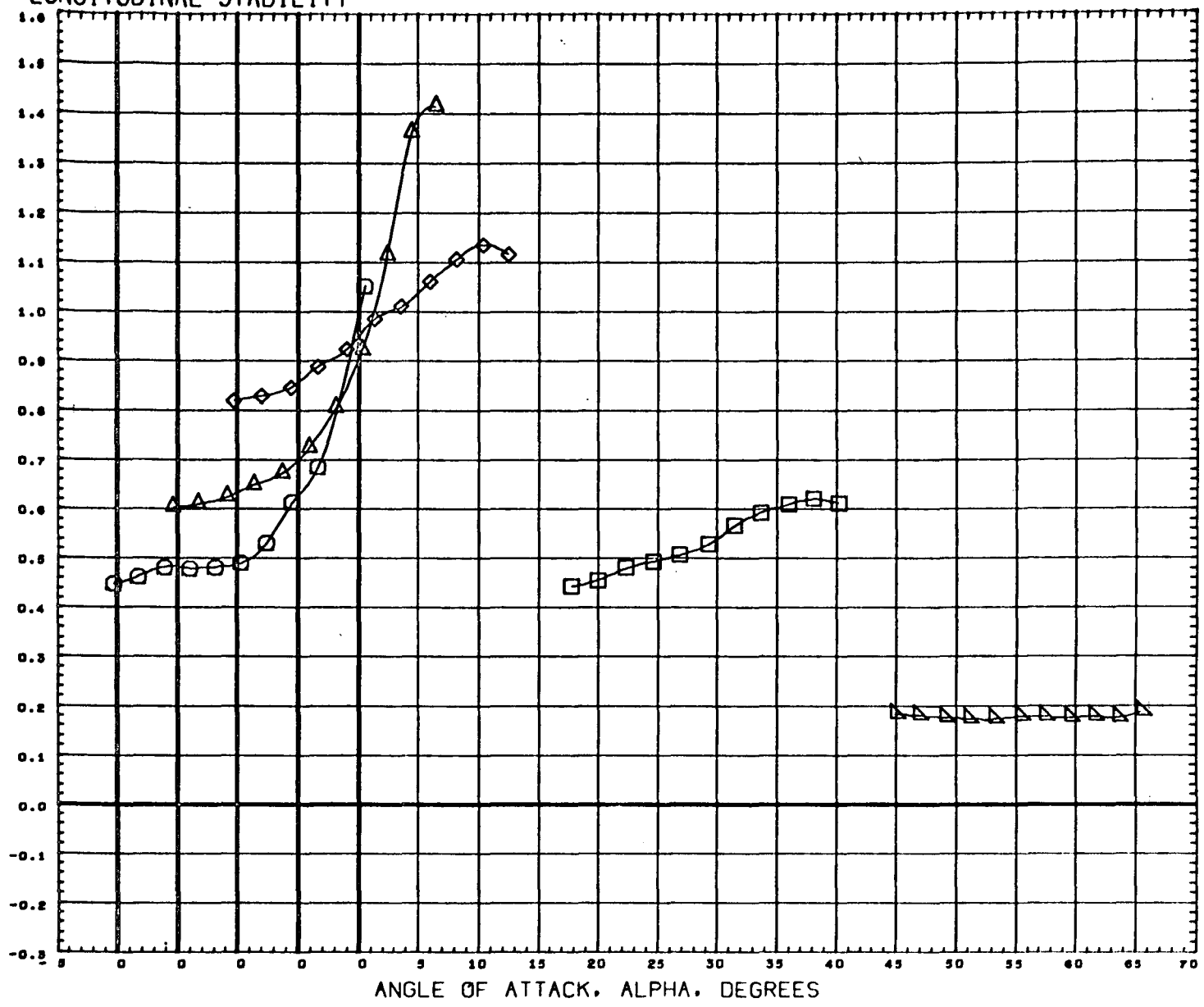


SYMBOL	MACH	PARAMETRIC VALUES			
○	0.599	BETA	0.000	RUDDER	0.000
△	0.905	RUDFLR	30.000		
◇	1.200				
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DATA HIST. CODE *GGC*G

REFERENCE INFORMATION		
SREF	14.6636	SQ.IN.
LREF	4.5080	IN.
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YMRP	0.0000	IN.
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SCALE	0.0034	

LONGITUDINAL STABILITY

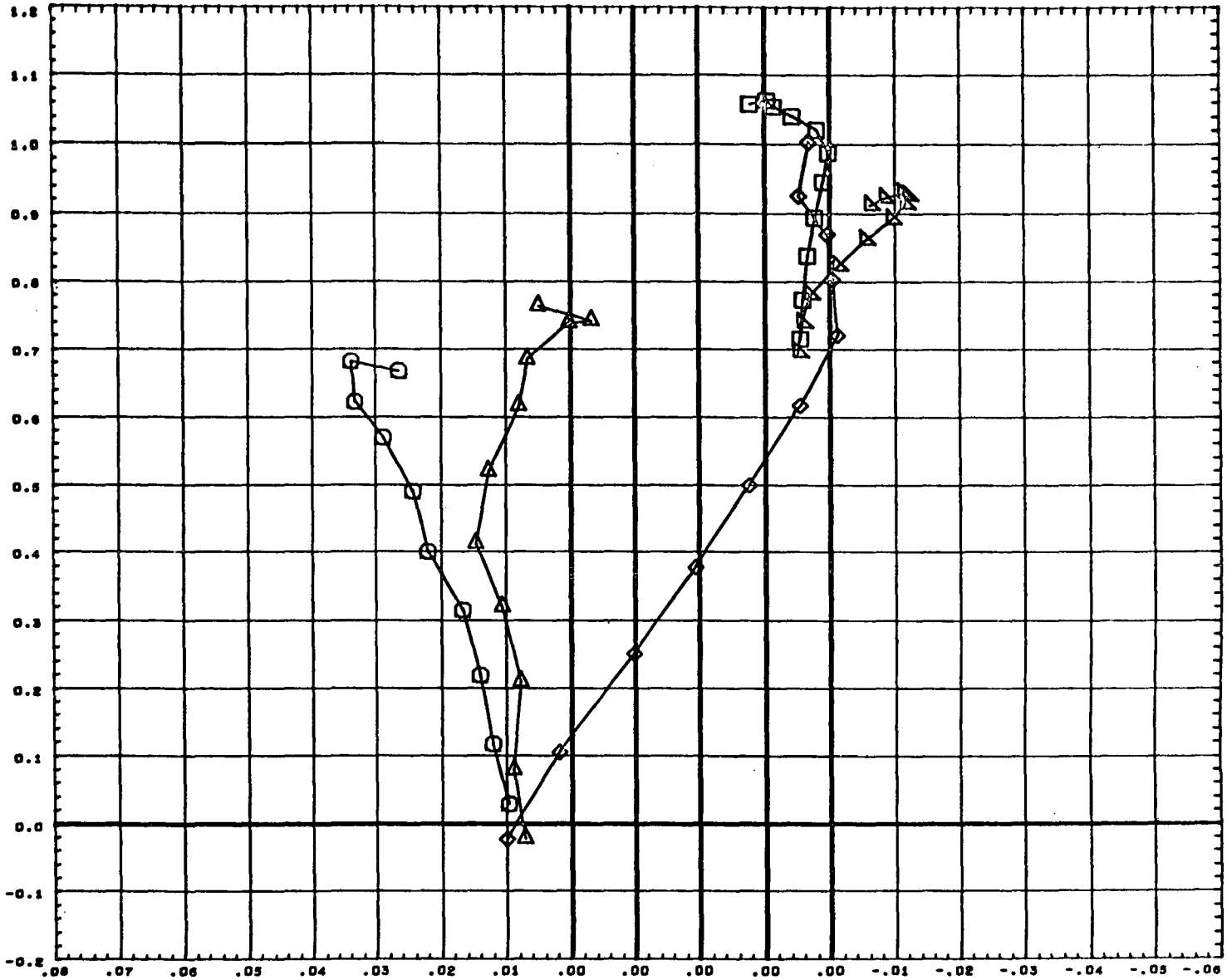


SYMBOL	MACH	PARAMETRIC VALUES			
○	0.599	BETA	0.000	RUDDER	0.000
△	0.905	RUDFLR	30.000		
◇	1.200				
□	1.959				
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DATA HIST. CODE *GGC*G

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
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YMRP	0.0000	IN.
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SCALE	0.0034	

LONGITUDINAL STABILITY

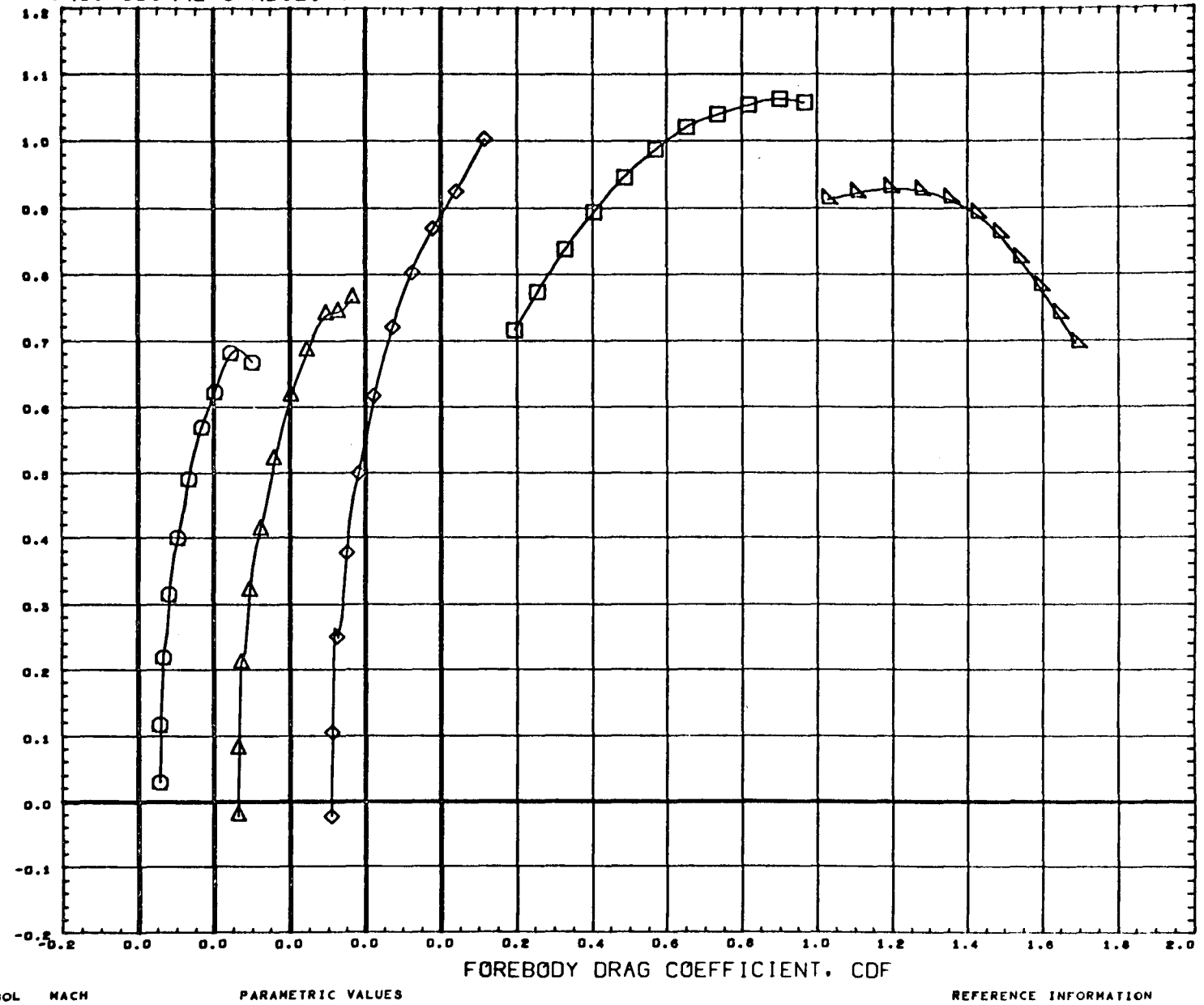


SYMBOL	MACH	PARAMETRIC VALUES			
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◇	1.200				
□	1.959				
▽	3.480				

DATA HIST. CODE *GGC*G

REFERENCE INFORMATION		
SREF	14.6636	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
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YMRP	0.0000	IN.
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SCALE	0.0034	

LONGITUDINAL STABILITY



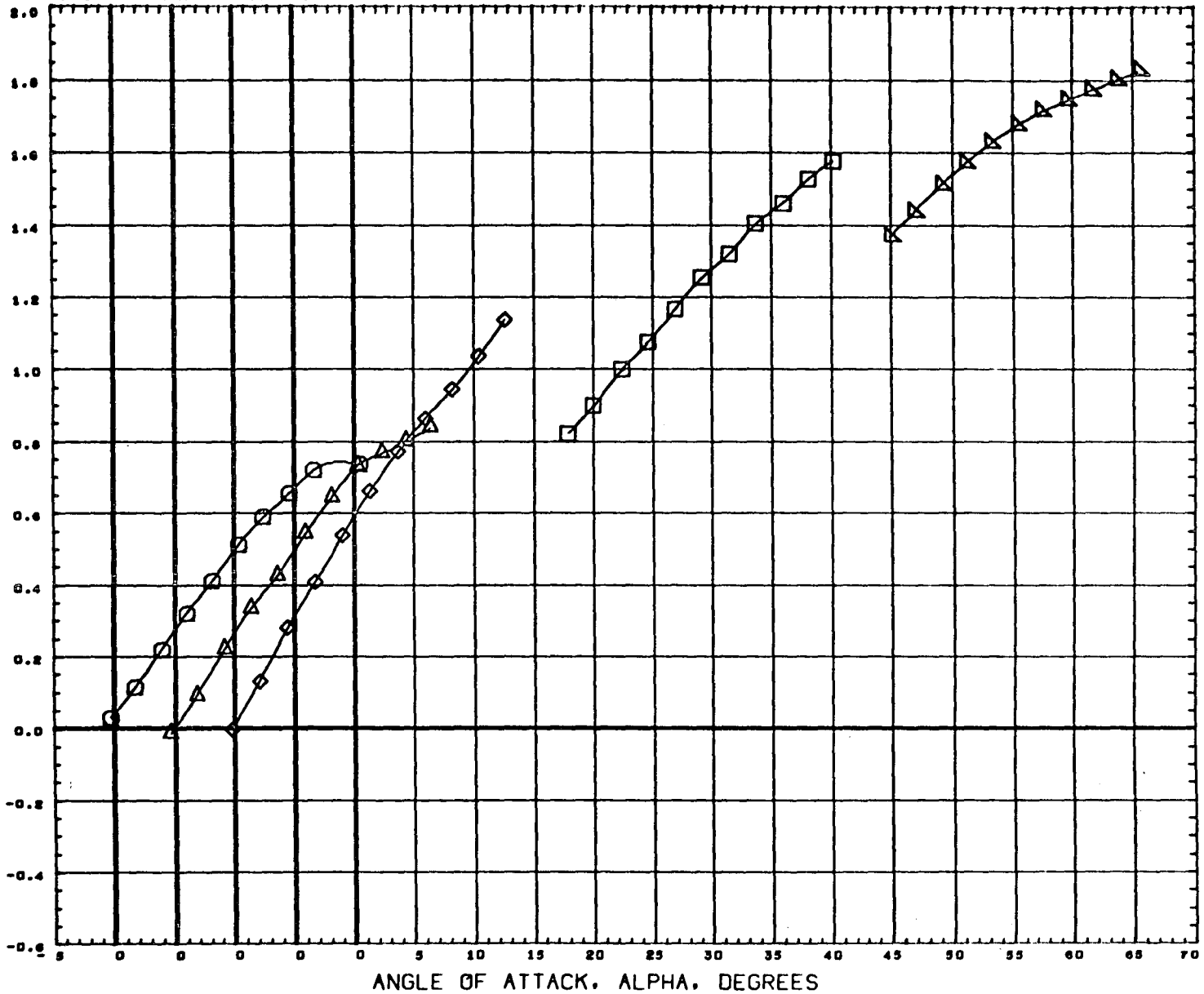
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DATA HIST. CODE *GGC*G

REFERENCE INFORMATION

SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
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YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LONGITUDINAL STABILITY

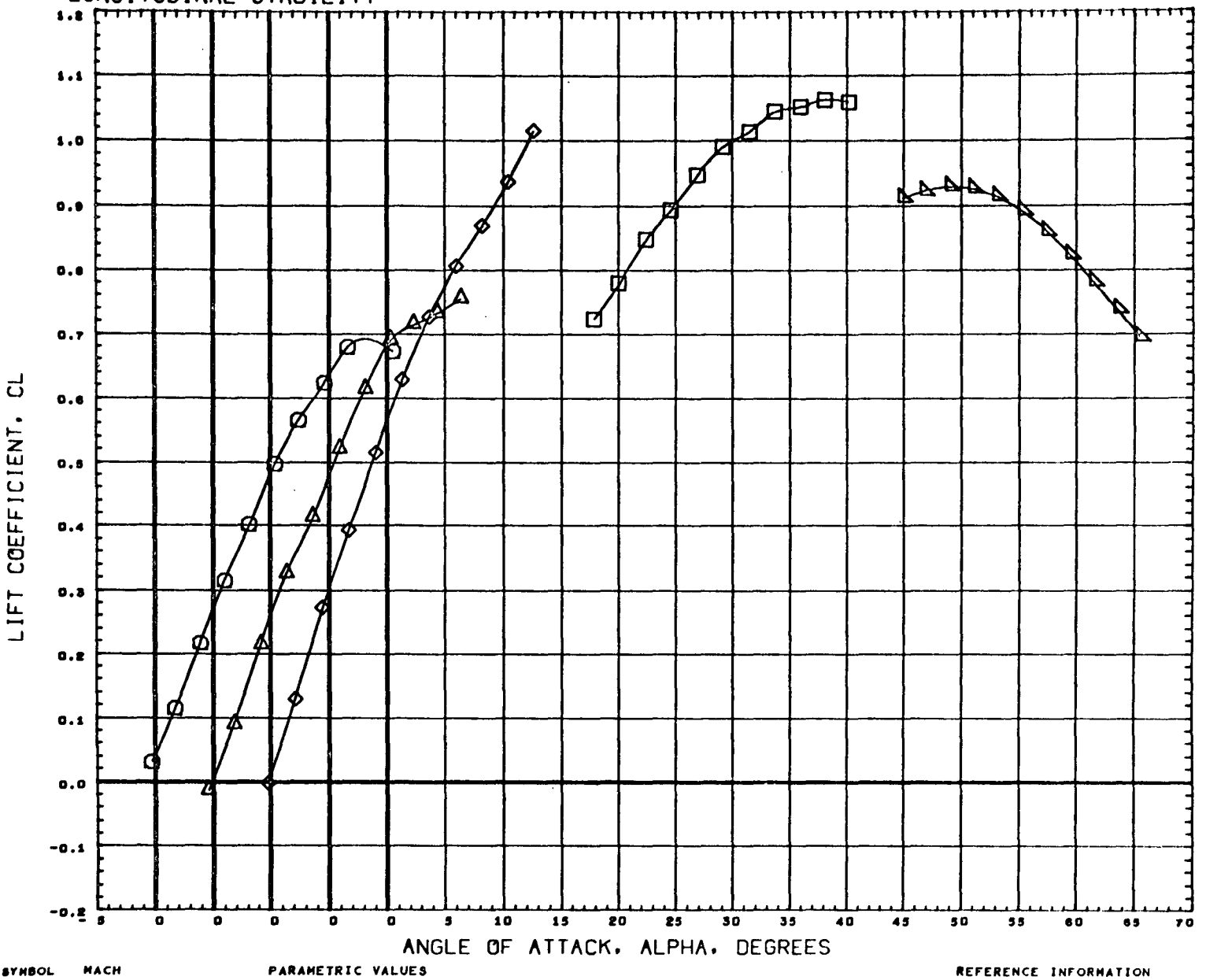


SYMBOL	MACH		PARAMETRIC VALUES		
○	0.598	BETA	0.000	RUDDER	0.000
△	0.897	RUDFLR	30.000		
◇	1.194				
□	1.956				
	3.480				

DATA HIST. CODE *GGC*G

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4621	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LONGITUDINAL STABILITY

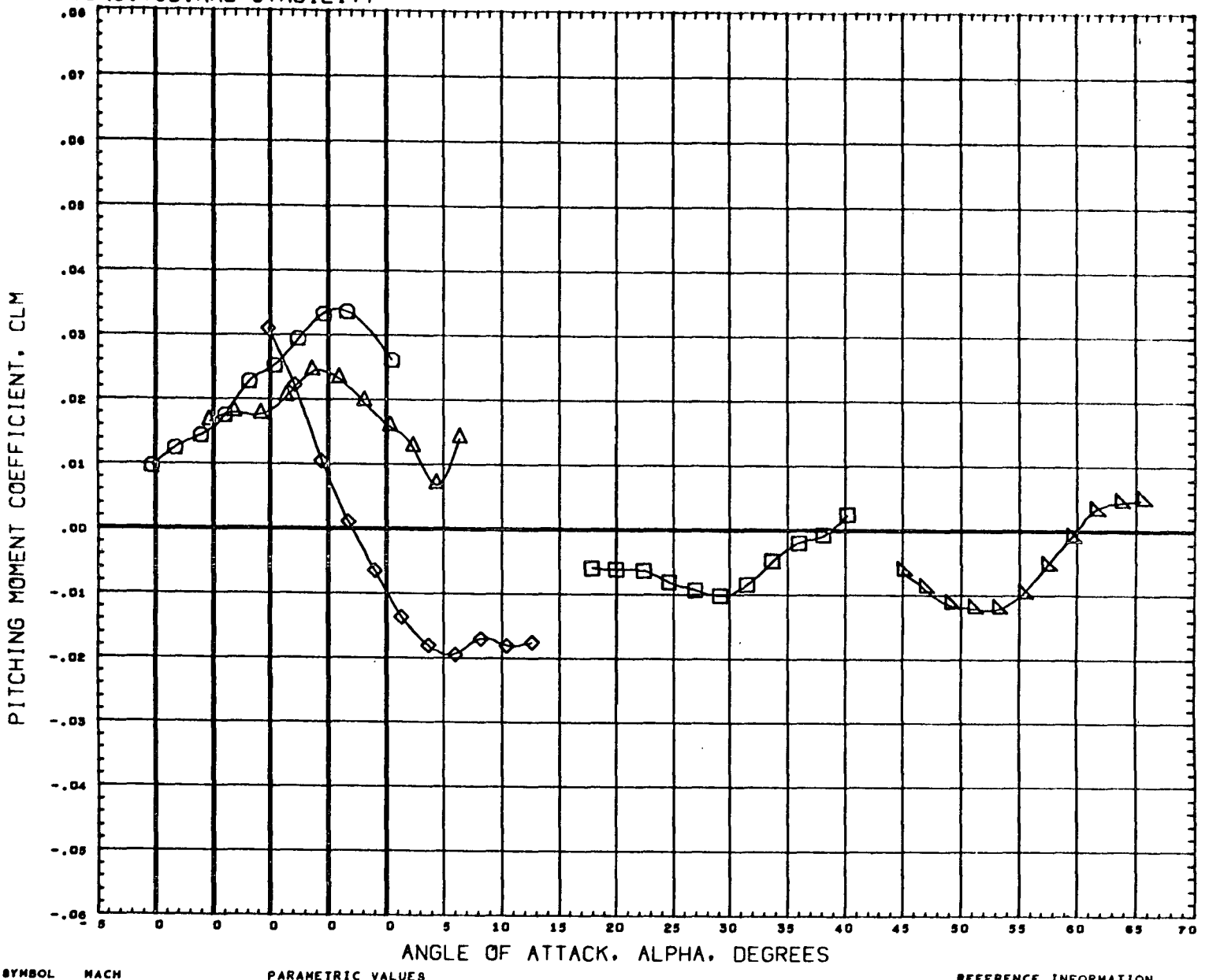


SYMBOL	MACH	PARAMETRIC VALUES			
○	0.598	BETA	0.000	RUDDER	0.000
△	0.897	RUDFLR	30.000		
◇	1.194				
□	1.956				
▽	3.480				

DATA HIST. CODE *GGC*G

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5060	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LONGITUDINAL STABILITY



SYMBOL	MACH
○	0.598
△	0.897
◇	1.194
□	1.956
▽	3.480

PARAMETRIC VALUES

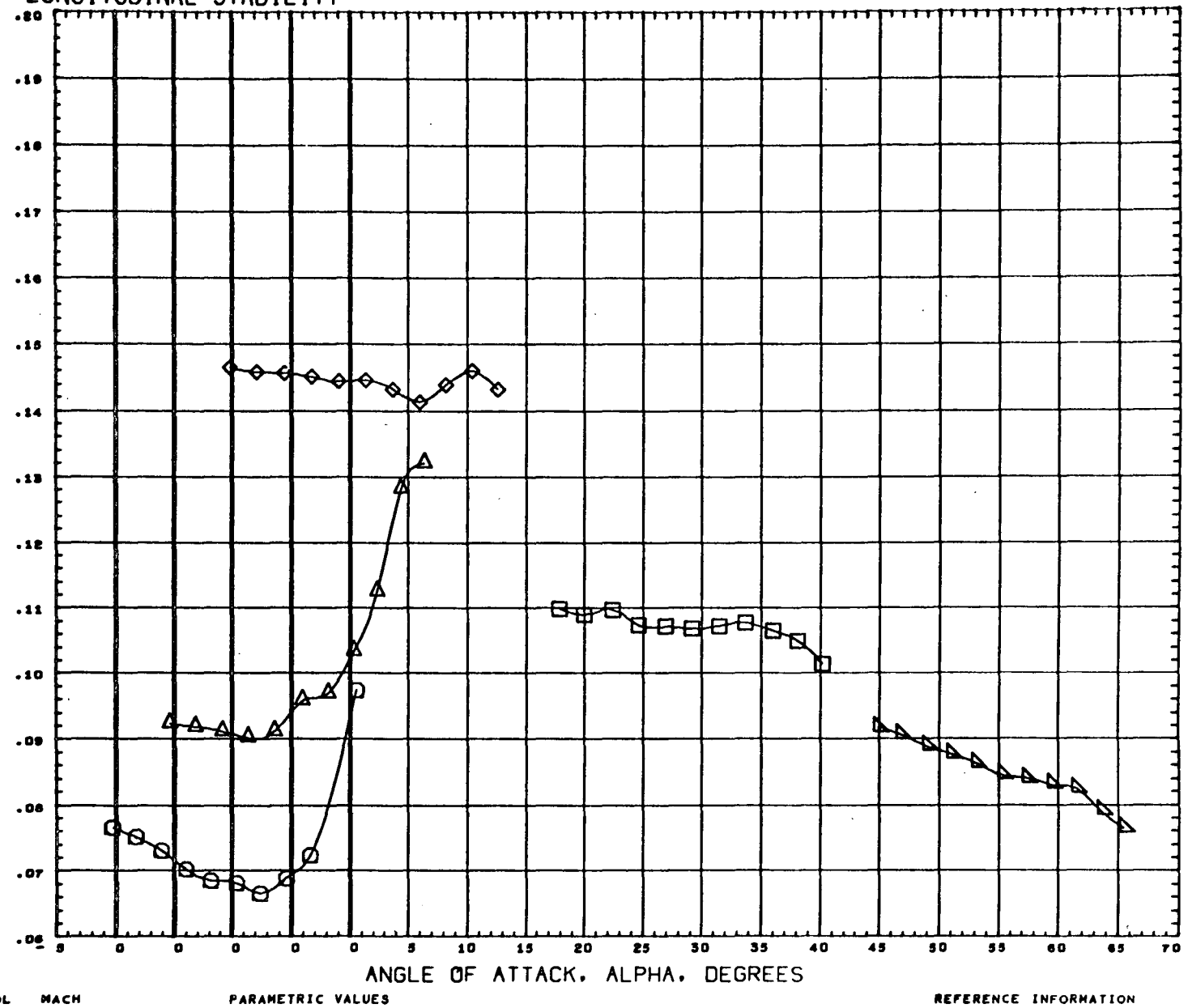
BETA	0.000	RUDDER	0.000
RUDFLR	30.000		

DATA HIST. CODE *GGC*G

REFERENCE INFORMATION

SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4621	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LONGITUDINAL STABILITY

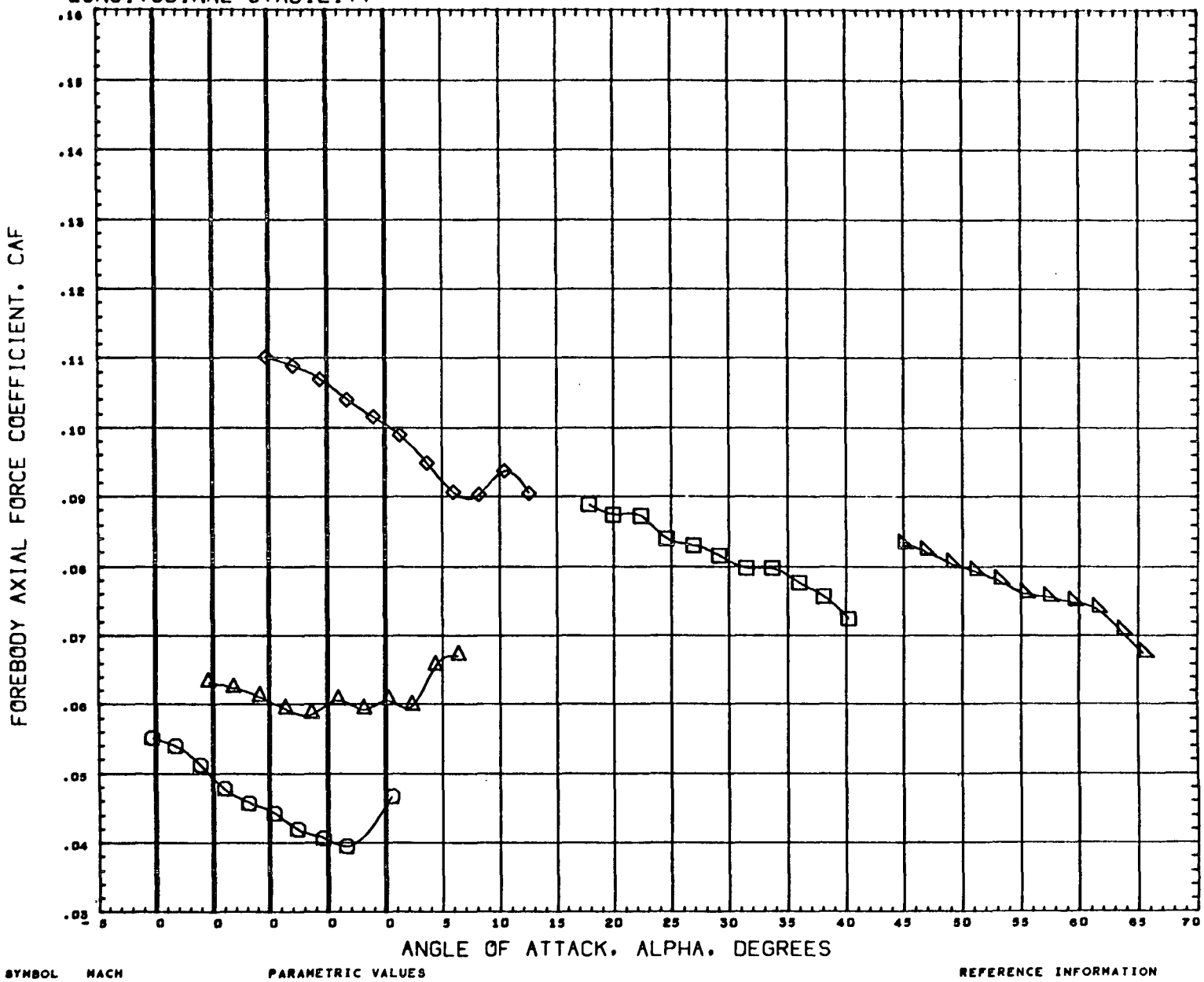


SYMBOL	MACH	PARAMETRIC VALUES			
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	0.897	RUDFLR	30.000		
	1.194				
	1.956				
	3.460				

DATA HIST. CODE *GGC*G

REFERENCE INFORMATION		
SREF	14.6636	SQ.IN.
LREF	4.5060	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LONGITUDINAL STABILITY

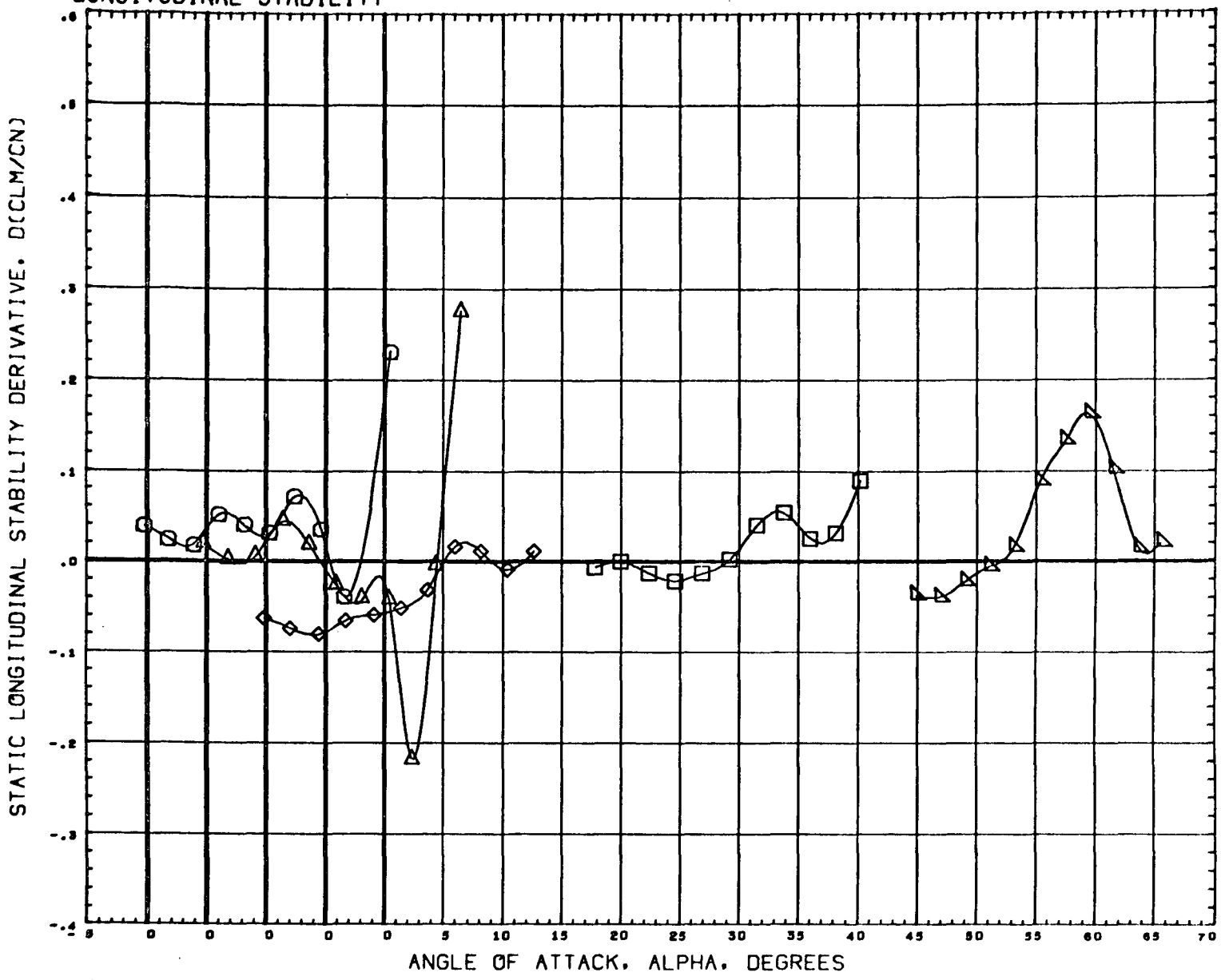


SYMBOL	MACH	PARAMETRIC VALUES			
○ △	0.598	BETA	0.000	RUDDER	0.000
	0.897	RUDFLR	30.000		
◇	1.194				
□	1.956				
◸	3.460				

DATA HIST. CODE #GGC#G

REFERENCE INFORMATION		
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YMRP	0.0000	IN.
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LONGITUDINAL STABILITY

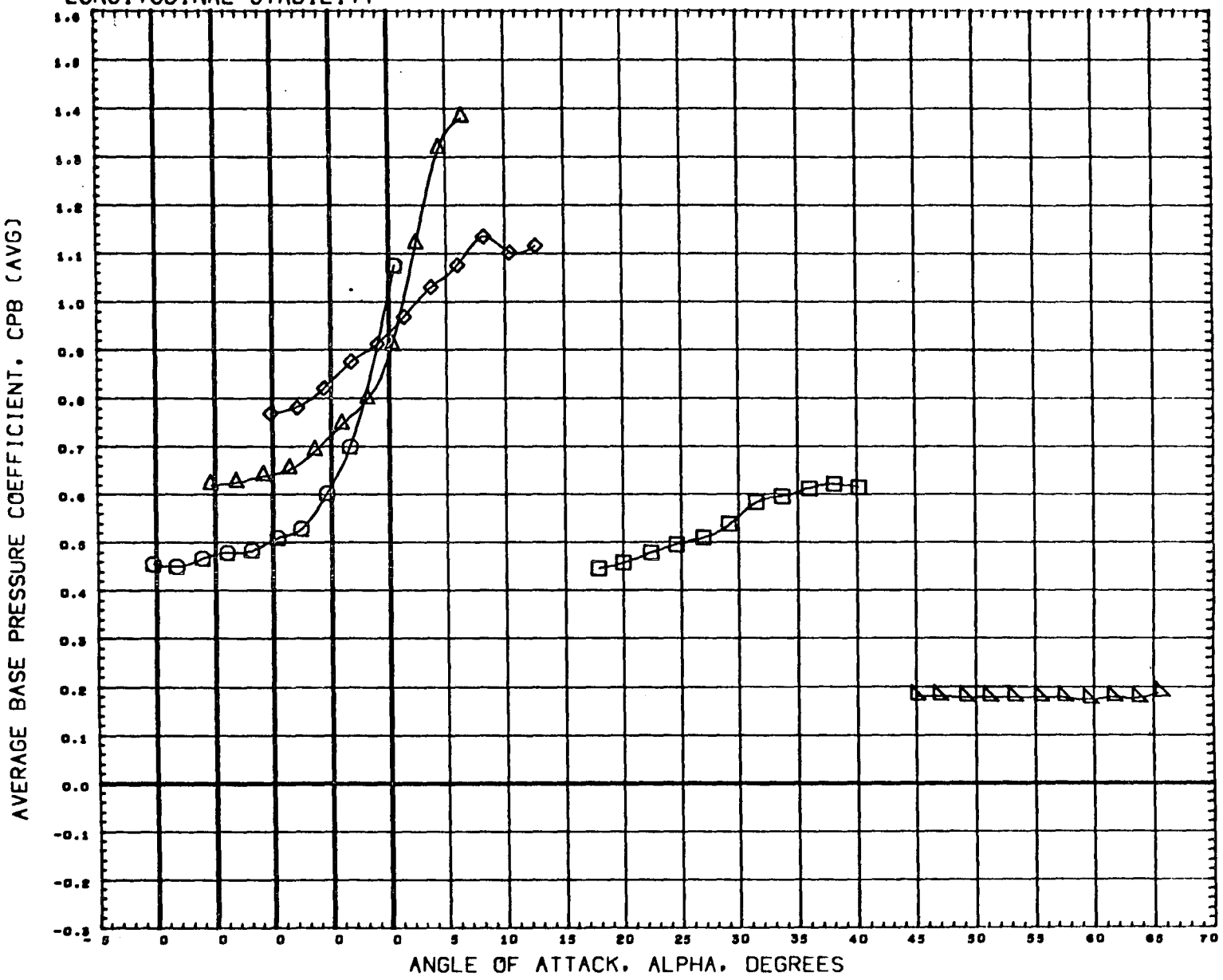


SYMBOL	MACH	PARAMETRIC VALUES			
○	0.598	BETA	0.000	RUDDER	0.000
△	0.897	RUDFLR	30.000		
◇	1.194				
□	1.956				
▽	3.480				

DATA HIST. CODE *GGC*G

REFERENCE INFORMATION		
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LREF	4.9060	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LONGITUDINAL STABILITY

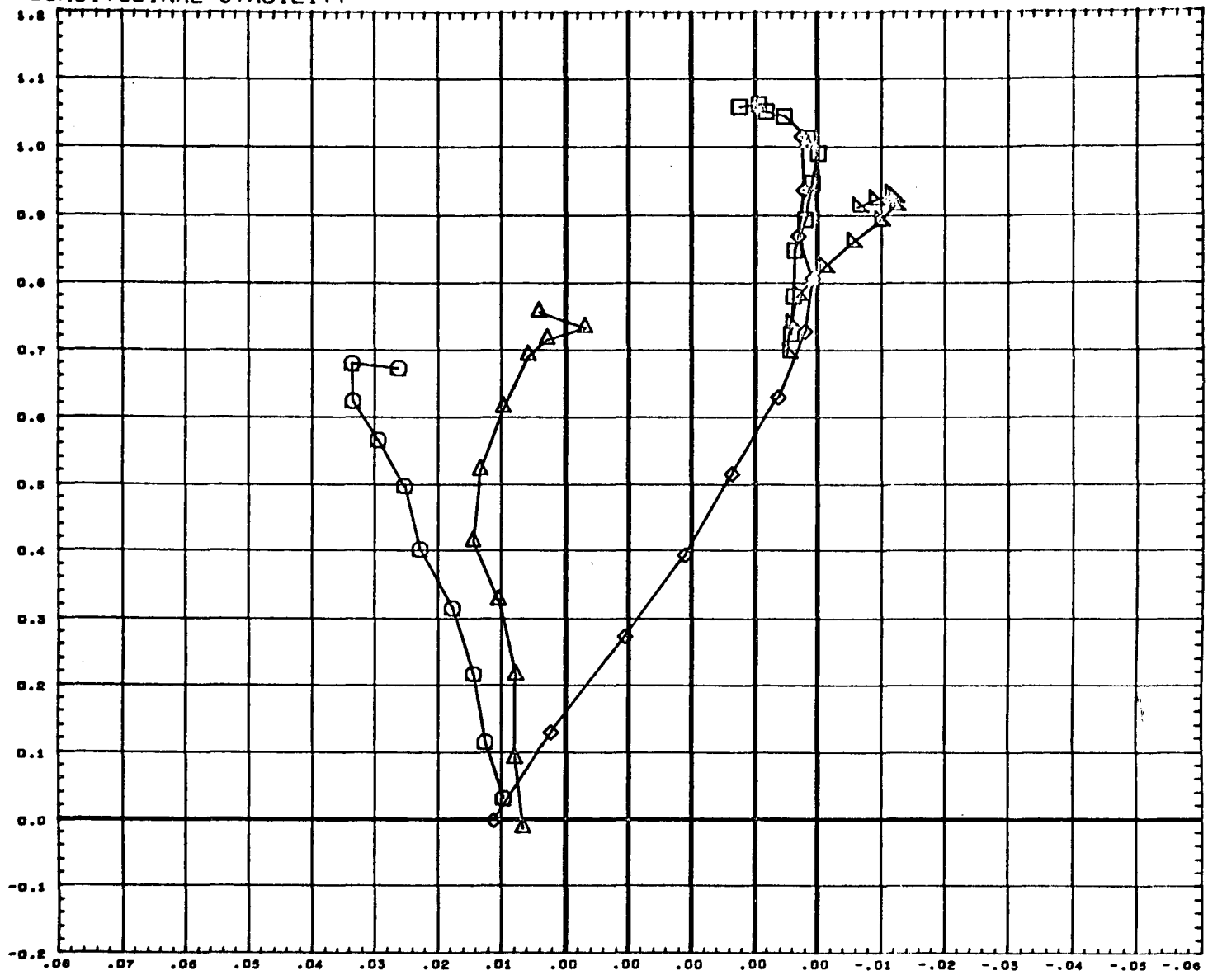


SYMBOL	MACH	PARAMETRIC VALUES			
○	0.598	BETA	0.000	RUDDER	0.000
△	0.897	RUDFLR	30.000		
◇	1.194				
□	1.956				
⌀	3.480				

DATA HIST. CODE *GGC*G

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
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SCALE	0.0034	

LONGITUDINAL STABILITY

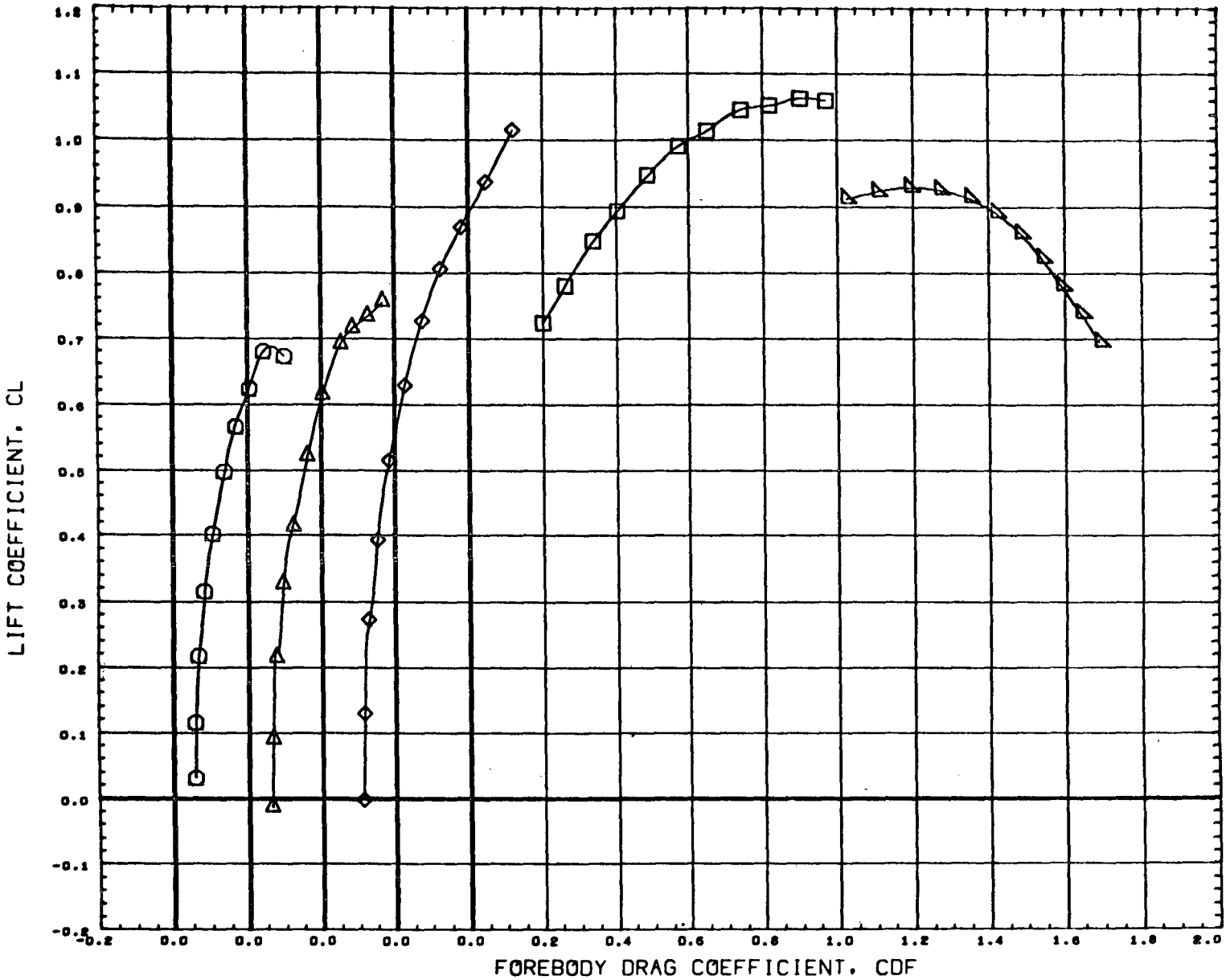


SYMBOL	MACH		PARAMETRIC VALUES			
□ ◇ △ ○	0.598	BETA	0.000	RUDDER	0.000	
	0.897	RUDFLR	30.000			
	1.194					
	1.956					
	3.480					

DATA HIST. CODE #GGC#G

REFERENCE INFORMATION		
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LREF	4.5080	IN.
BREF	5.6550	IN.
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YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LONGITUDINAL STABILITY

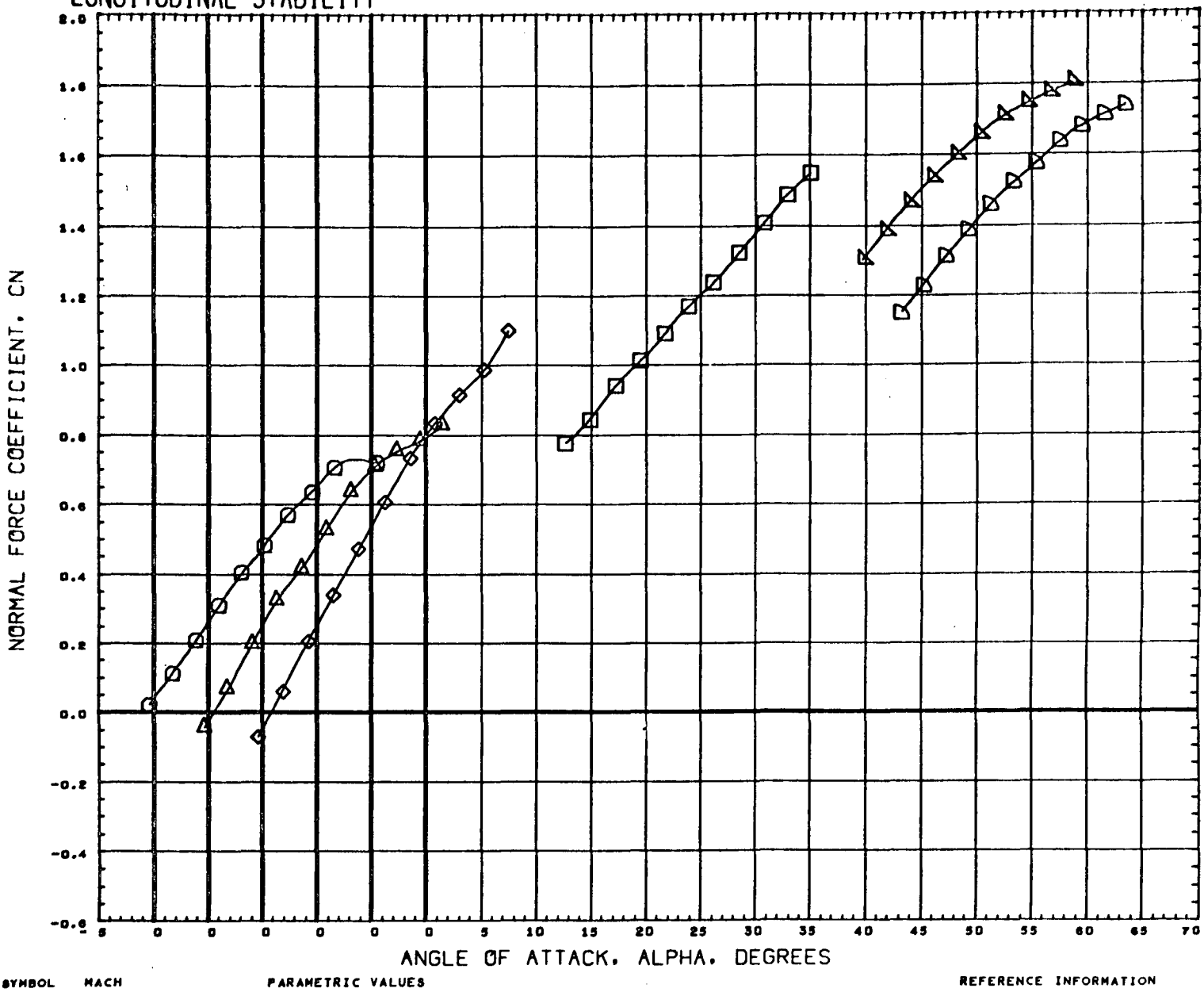


SYMBOL	MACH	PARAMETRIC VALUES			
○	0.598	BETA	0.000	RUDDER	0.000
△	0.897	RUDFLR	30.000		
◇	1.194				
□	1.956				
◸	3.460				

DATA MIST. CODE #GGC#G

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LREF	4.5080	IN.
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XMRP	1.4621	IN.
YMRP	0.0000	IN.
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SCALE	0.0034	

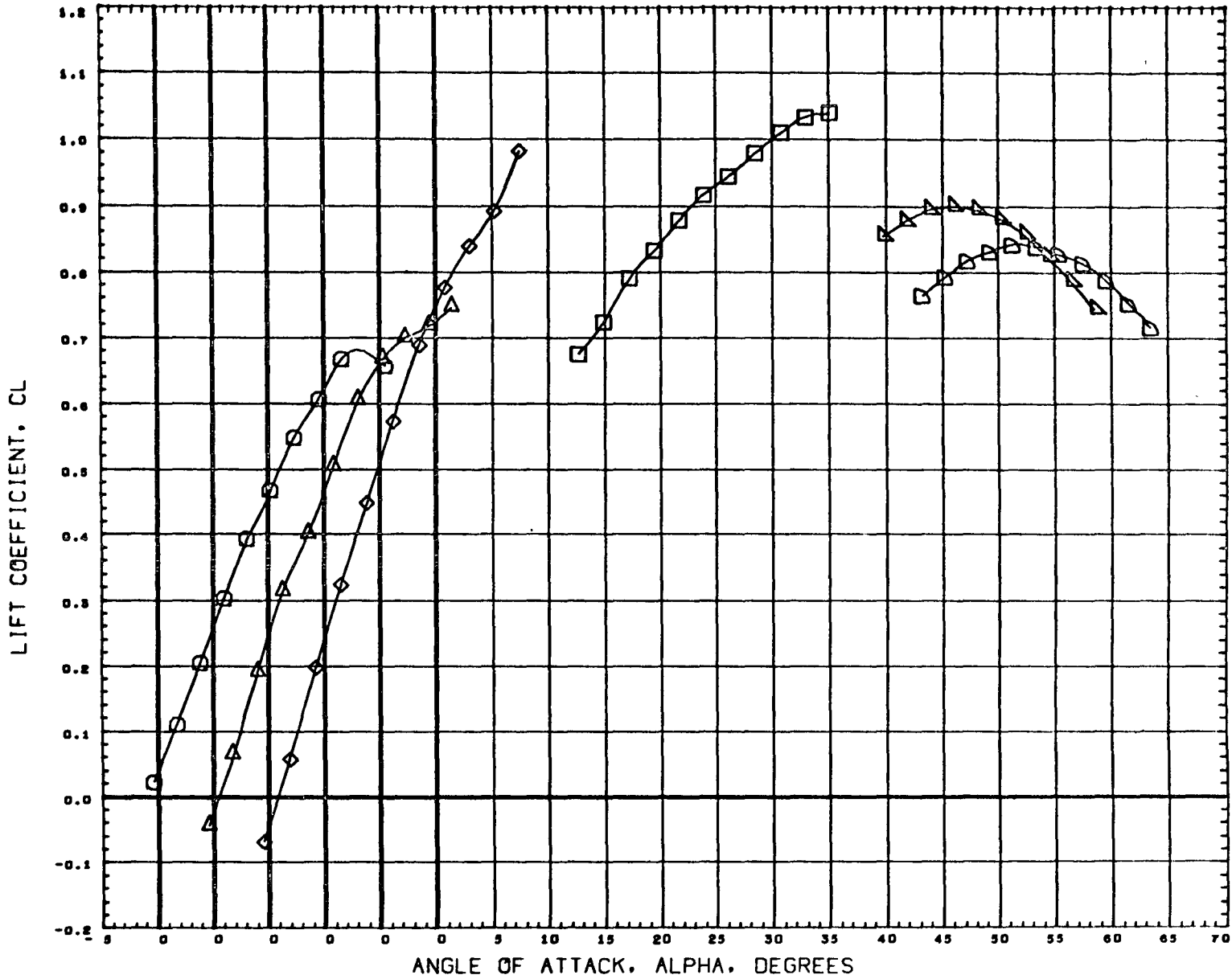
LONGITUDINAL STABILITY



SYMBOL	MACH	PARAMETRIC VALUES			
○	0.594	BETA	0.000	RUDDER	0.000
△	0.903	RUDFLR	30.000		
◇	1.198				
□	1.958				
▷	3.480				
D	4.959	DATA HIST. CODE	*GGC*G		

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
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YMRP	0.0000	IN.
ZMRP	0.0000	IN.
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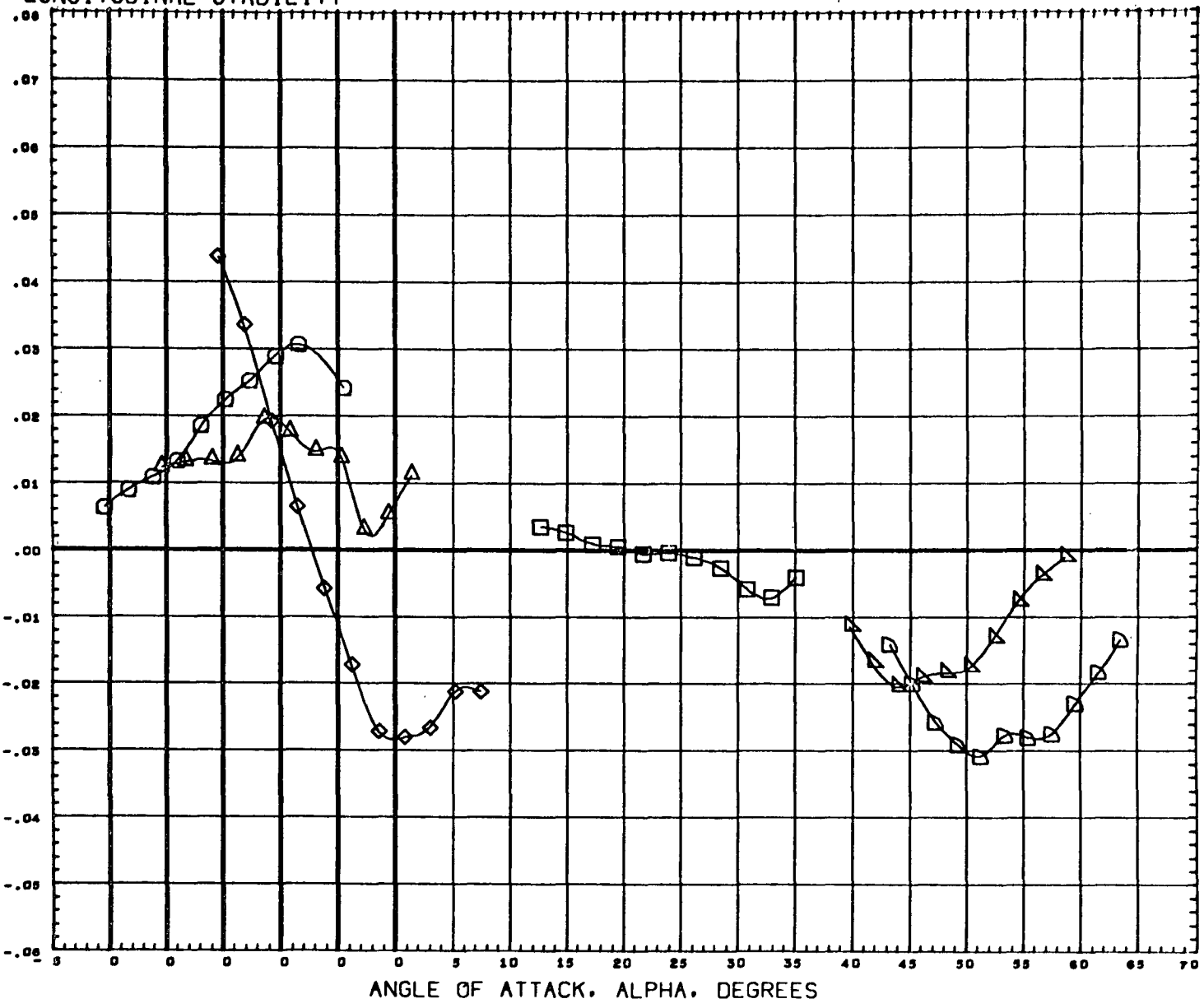
LONGITUDINAL STABILITY



SYMBOL	MACH		PARAMETRIC VALUES		
○	0.594	BETA	0.000	RUDDER	0.000
△	0.903	RUDFLR	30.000		
◇	1.196				
□	1.958				
◸	3.460				
▷	4.959	DATA HIST. CODE	#GGC#G		

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
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YMRP	0.0000	IN.
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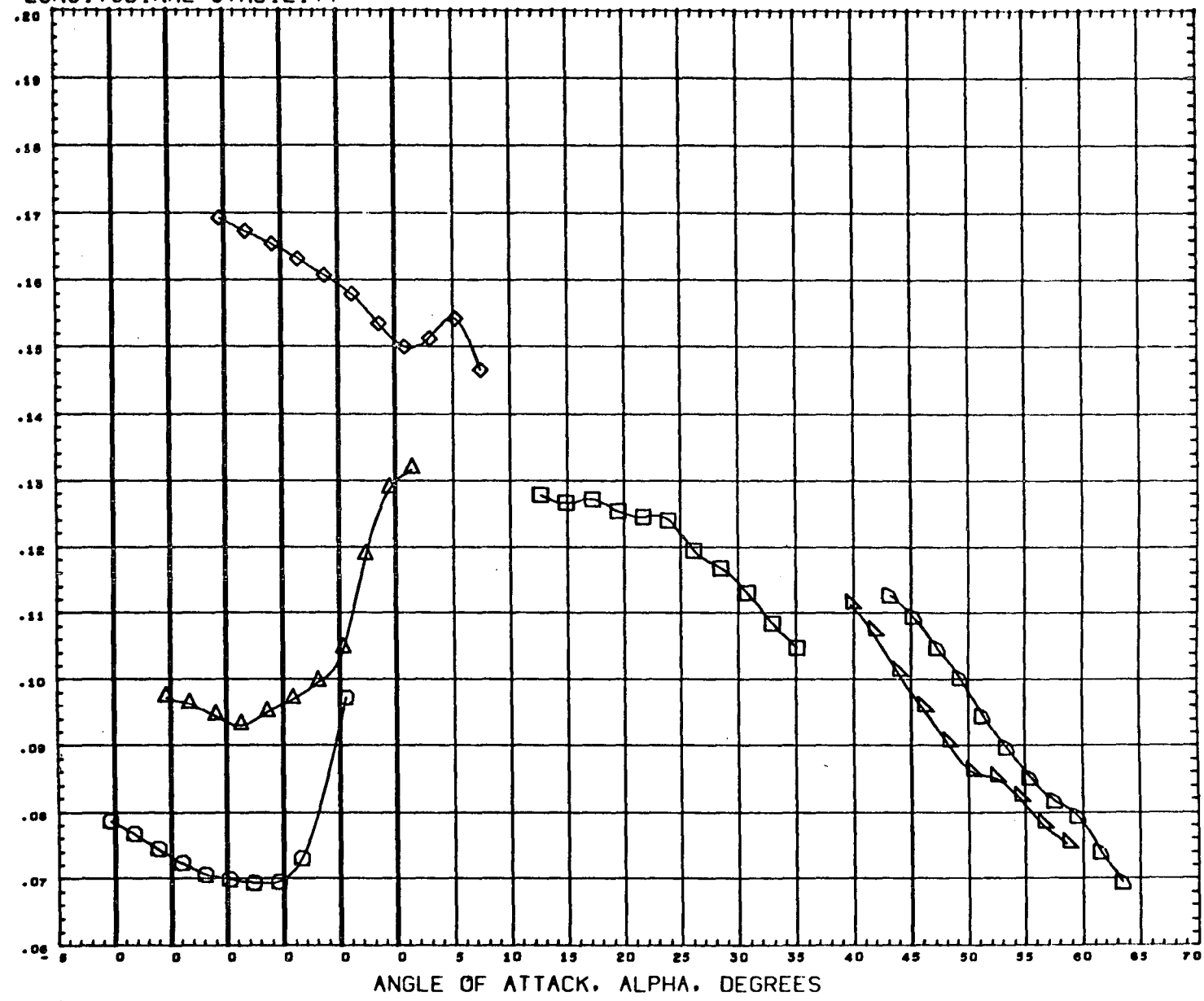
LONGITUDINAL STABILITY



SYMBOL	MACH	PARAMETRIC VALUES			
○	0.594	BETA	0.000	RUDDER	0.000
△	0.903	RUDFLR	30.000		
◇	1.198				
□	1.956				
▱	3.480				
D	4.959	DATA HIST. CODE	*GGC*G		

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
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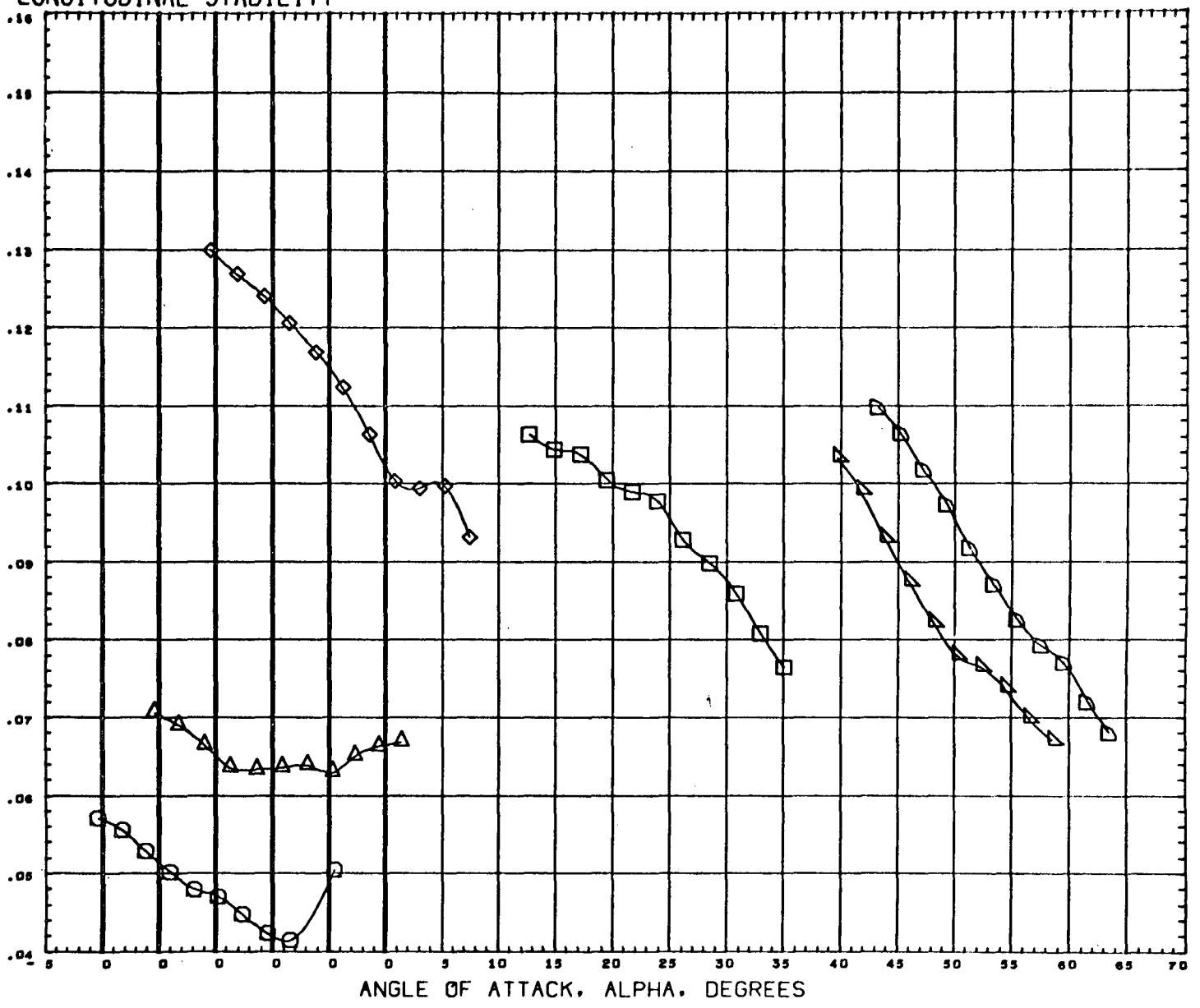
LONGITUDINAL STABILITY



SYMBOL	MACH	PARAMETRIC VALUES			
○	0.594	BETA	0.000	RUDDER	0.000
△	0.905	RUDFLR	30.000		
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□	1.958				
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◁	4.959	DATA HIST. CODE	#GGC#G		

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5060	IN.
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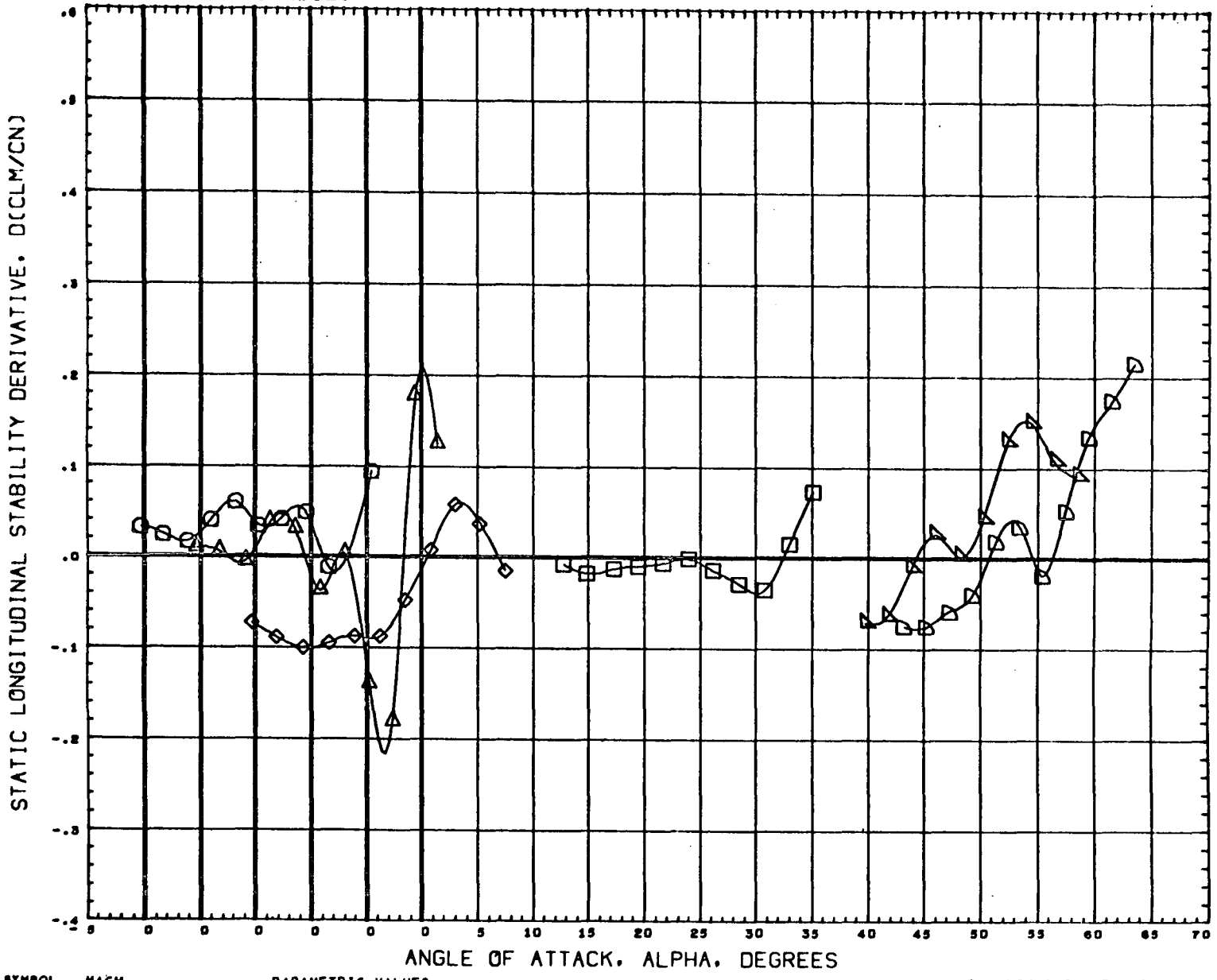
LONGITUDINAL STABILITY



SYMBOL	MACH	PARAMETRIC VALUES			
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□	1.958				
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D	4.959	DATA HIST. CODE	*GGC*G		

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
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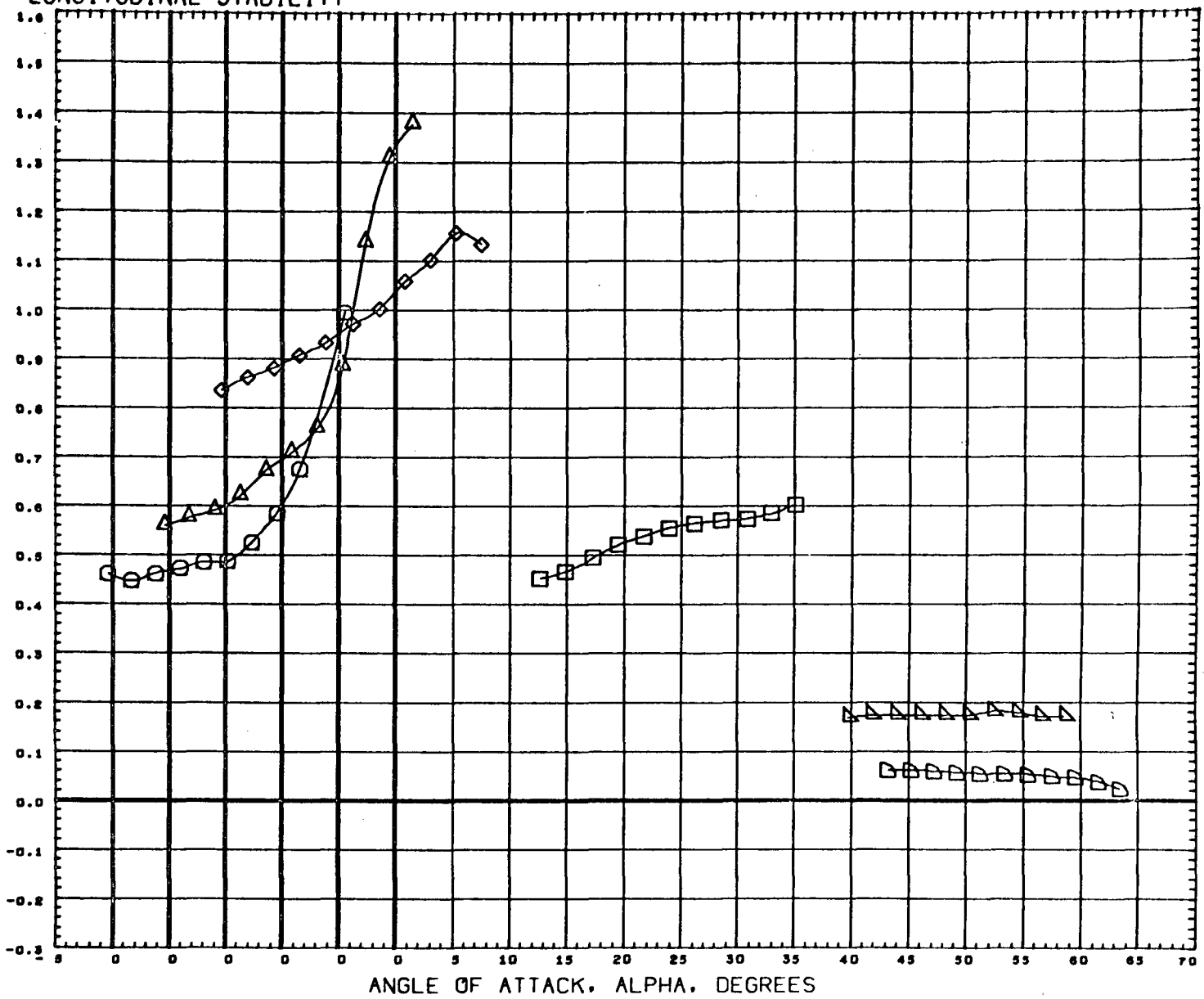
LONGITUDINAL STABILITY



SYMBOL	MACH		PARAMETRIC VALUES		
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	0.903	RUDFLR	30.000		
	1.198				
	1.956				
	3.480				
	4.959	DATA HIST. CODE	*GGC*G		

REFERENCE INFORMATION		
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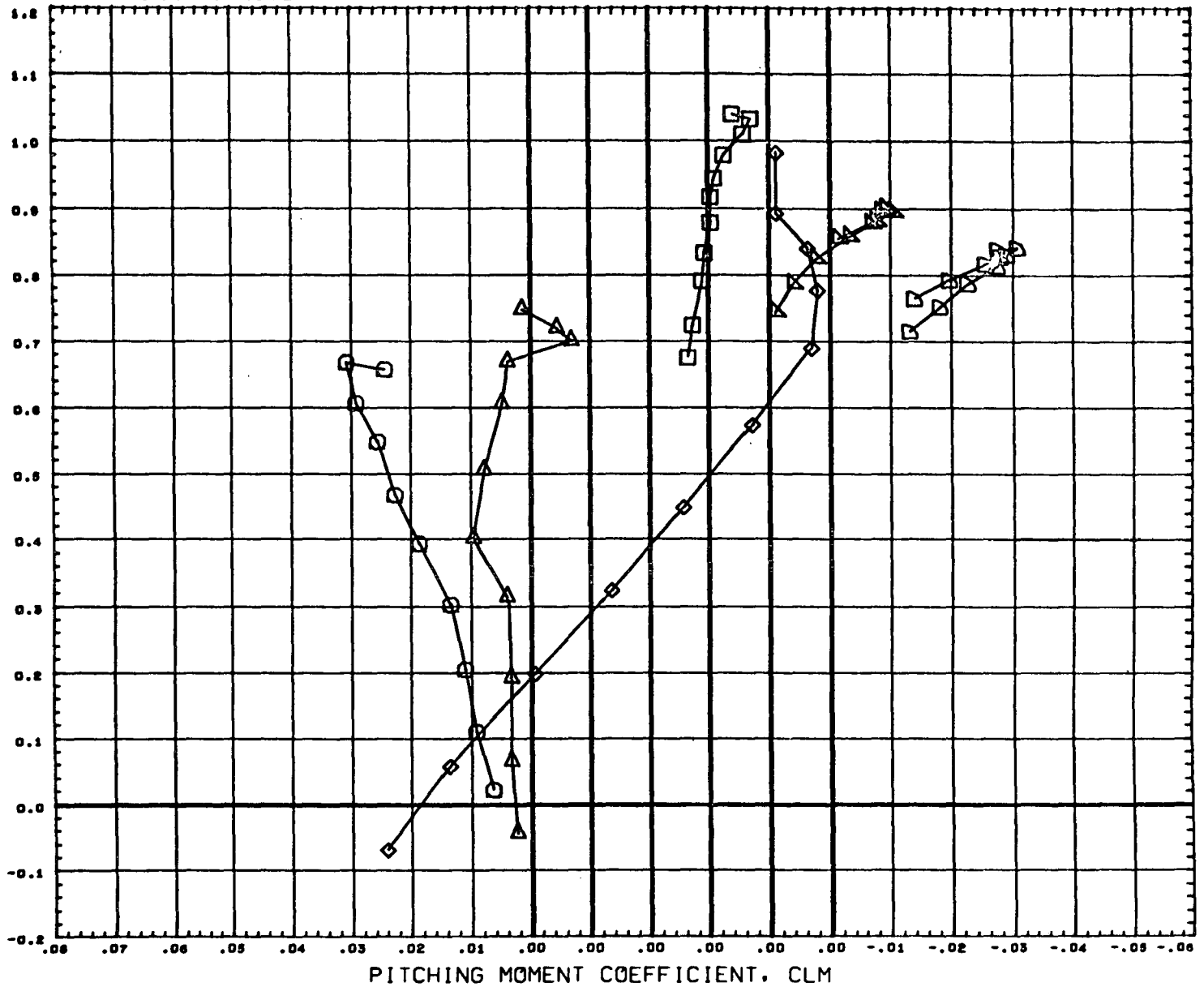
LONGITUDINAL STABILITY



SYMBOL	MACH	PARAMETRIC VALUES			
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△	0.903	RUDFLR	30.000		
◇	1.196				
□	1.958				
⊘	3.480				
D	4.959	DATA HIST. CODE	#GGC#G		

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5060	IN.
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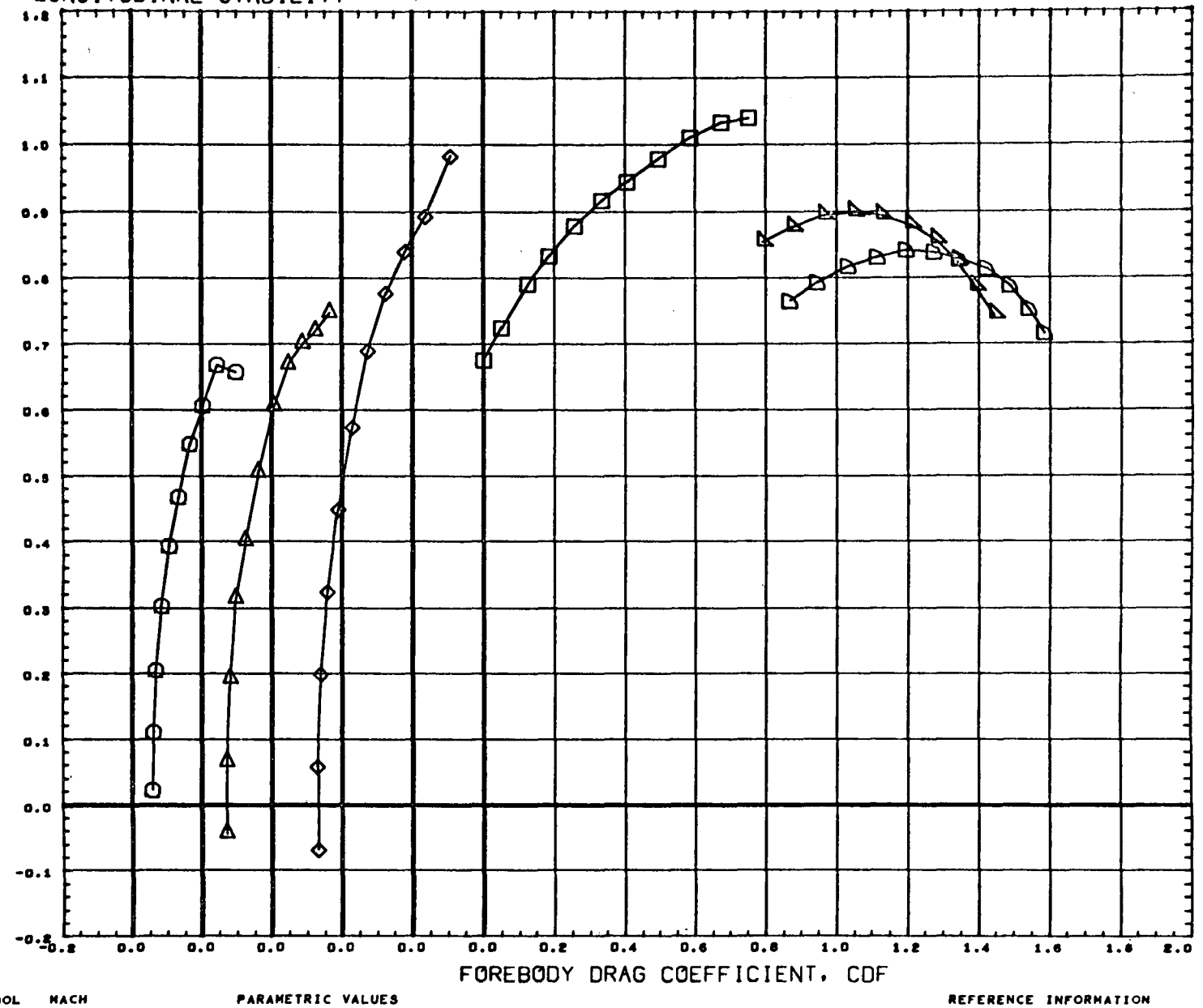
LONGITUDINAL STABILITY



SYMBOL	MACH	PARAMETRIC VALUES			
○	0.594	BETA	0.000	RUDDER	0.000
△	0.903	RUDFLR	30.000		
◇	1.196				
□	1.958				
▽	3.480				
⬠	4.959	DATA HIST. CODE	*GGC*G		

REFERENCE INFORMATION		
SREF	14.6636	SQ.IN.
LREF	4.5060	IN.
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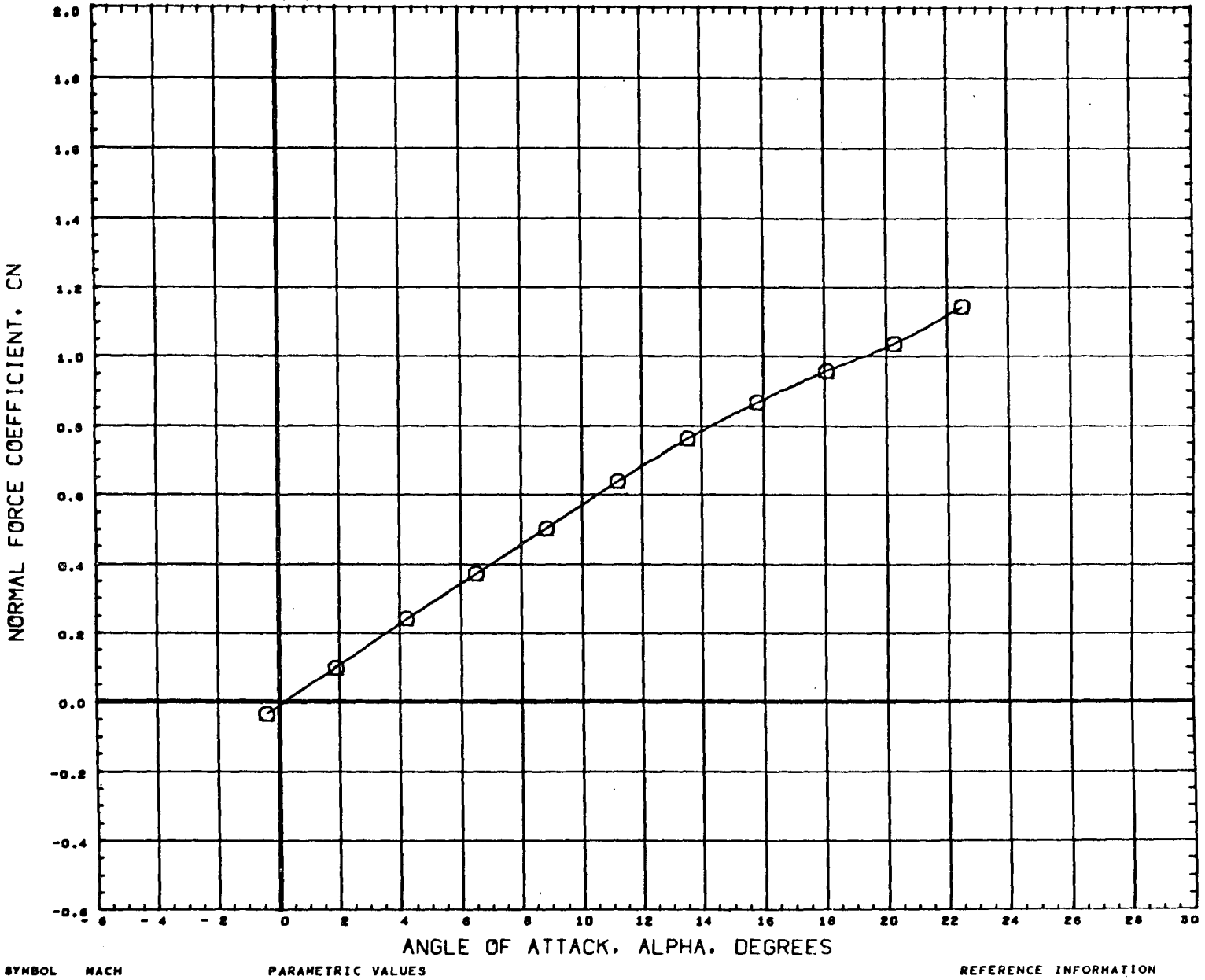
LONGITUDINAL STABILITY



SYMBOL	MACH		PARAMETRIC VALUES		
○	0.594	BETA	0.000	RUDDER	0.000
△	0.903	RUDFLR	30.000		
◇	1.196				
□	1.956				
▱	3.460				
▷	4.959	DATA HIST. CODE	#GGC#G		

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.3060	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LONGITUDINAL STABILITY

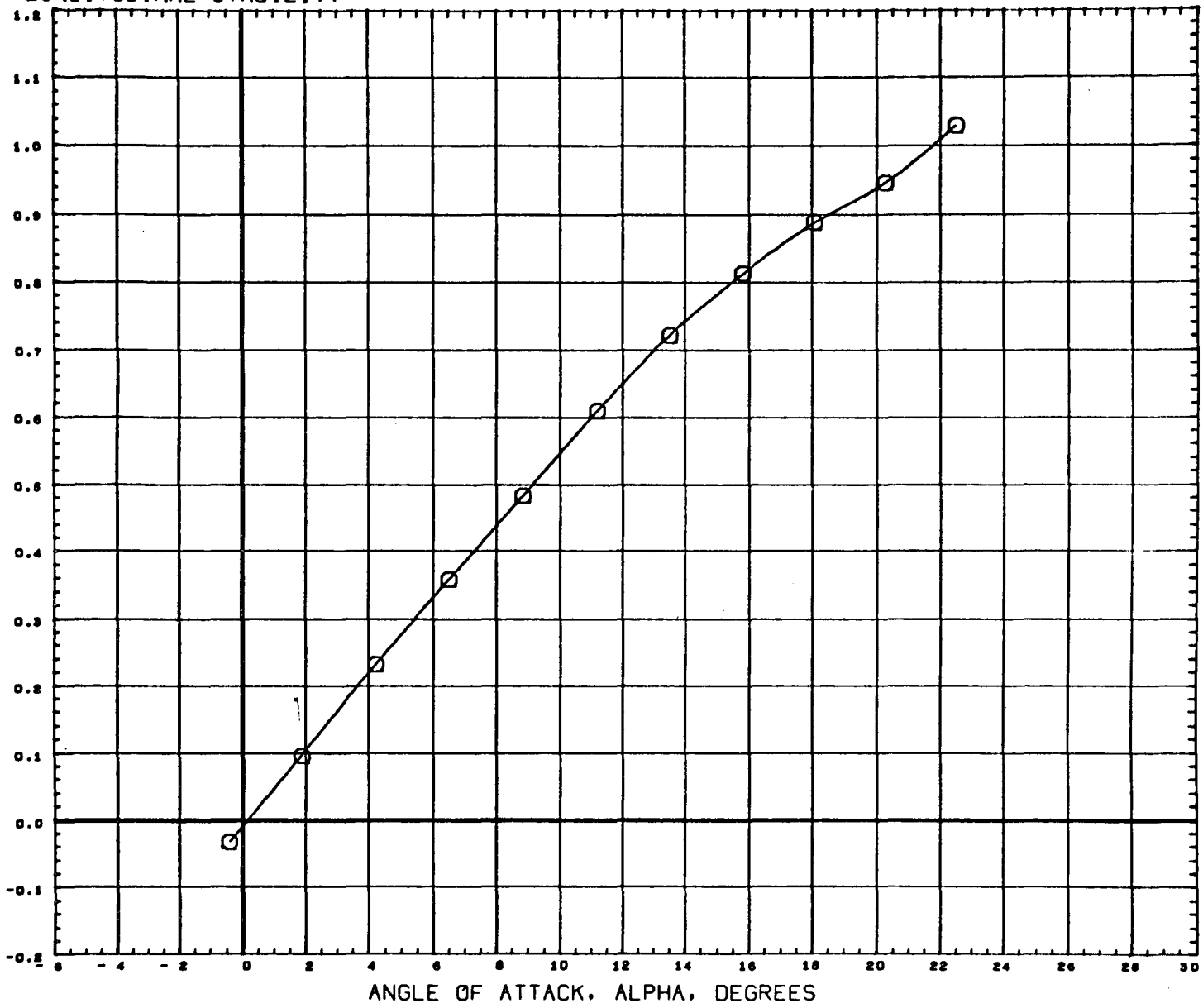


SYMBOL	MACH	PARAMETRIC VALUES			
O	1.198	BETA	0.000	RUDDER	0.000
		RUDFLR	30.000		

DATA HIST. CODE GC

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4621	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LONGITUDINAL STABILITY



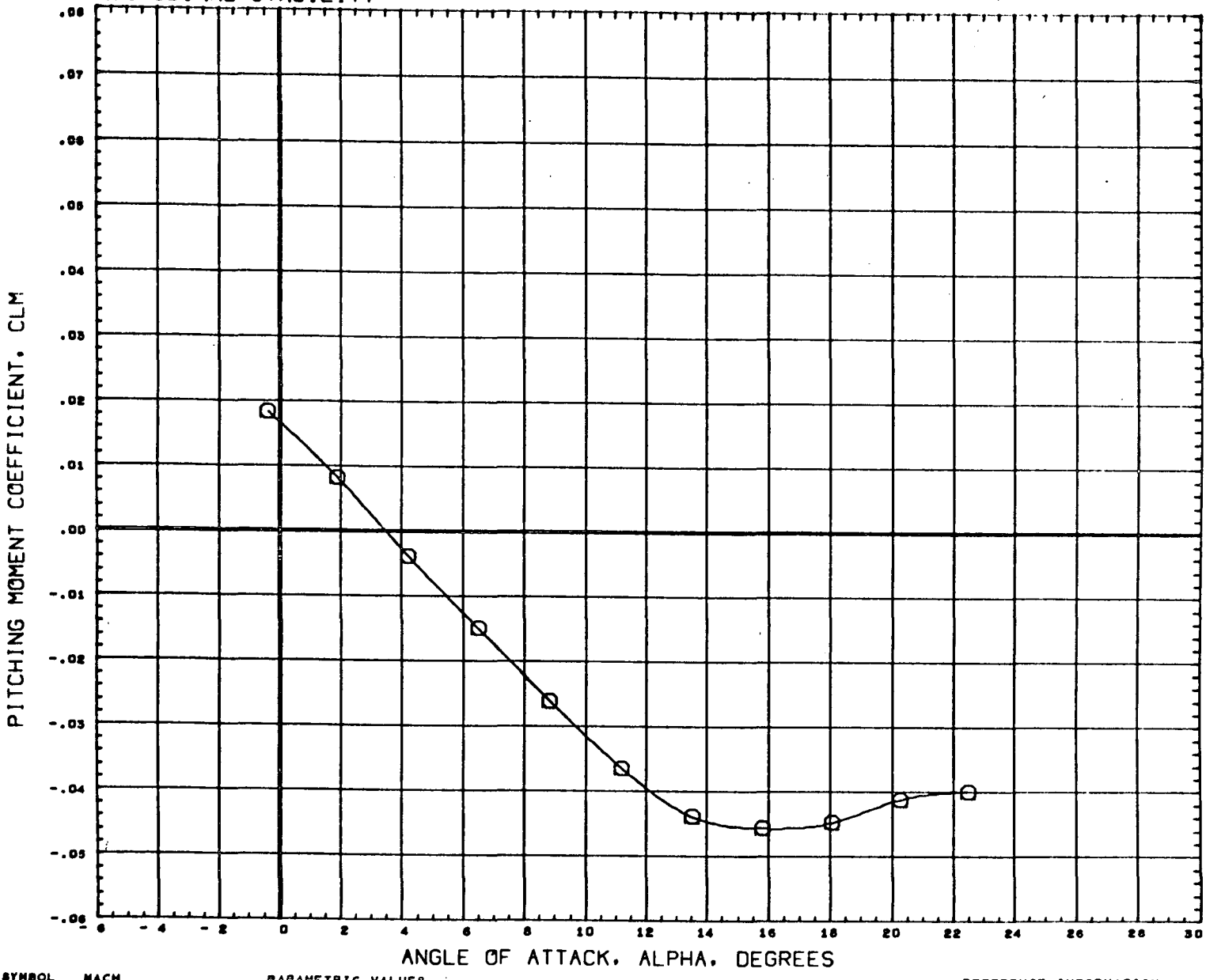
SYMBOL	MACH	PARAMETRIC VALUES			
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		RUDFLR	30.000		

DATA HIST. CODE GC

REFERENCE INFORMATION

SREF	14.6656	SQ.IN.
LREF	4.5080	IN.
BREF	3.6550	IN.
XMRP	1.4621	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LONGITUDINAL STABILITY



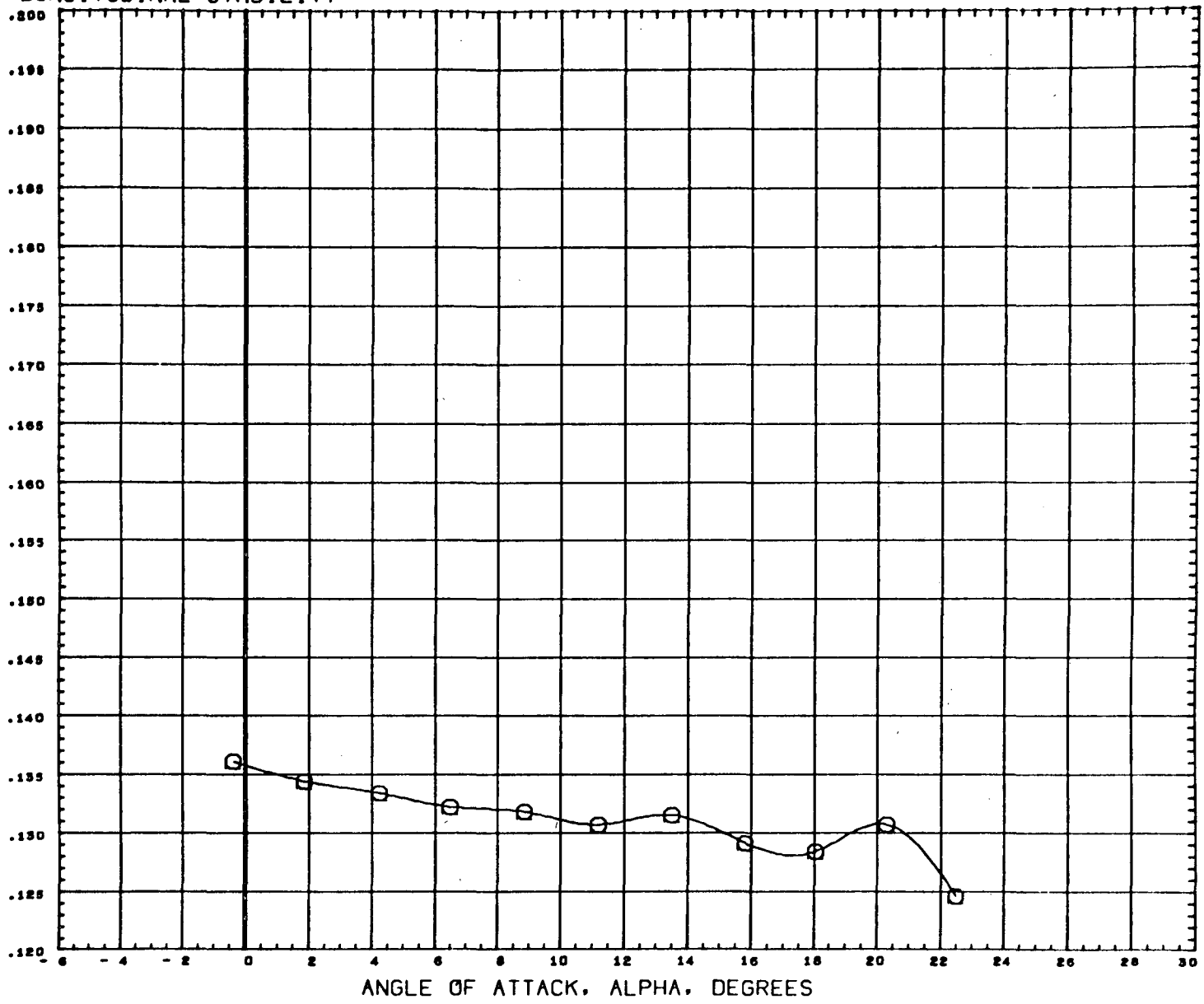
SYMBOL	MACH	PARAMETRIC VALUES			
O	1.196	BETA	0.000	RUDDER	0.000
		RUDFLR	30.000		

DATA HIST. CODE GC

REFERENCE INFORMATION

SREF	14.6836	SQ.IN.
LREF	4.5060	IN.
BREF	5.6550	IN.
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YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LONGITUDINAL STABILITY

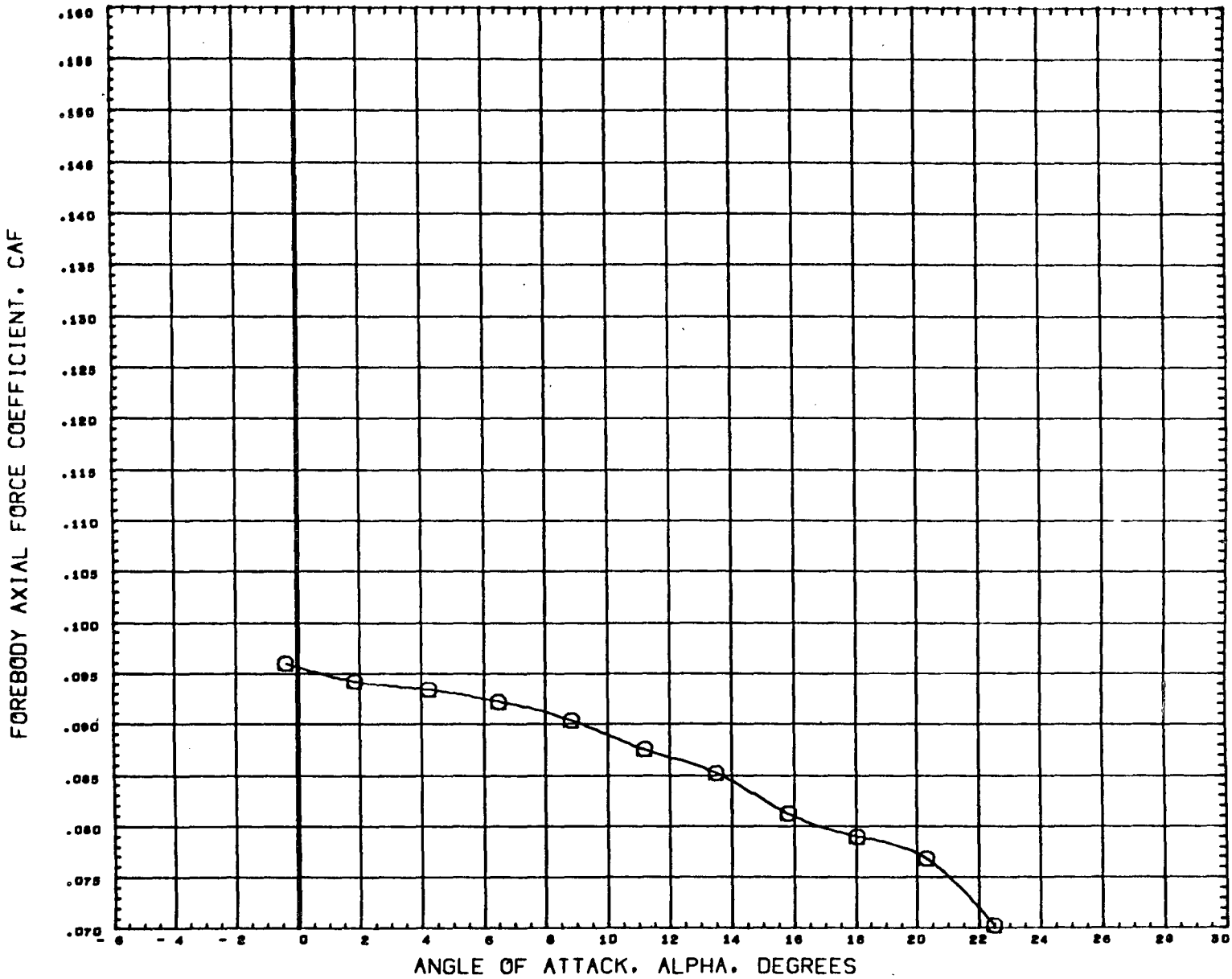


SYMBOL	MACH	PARAMETRIC VALUES			
O	1.196	BETA	0.000	RUDDER	0.000
		RUDFLR	30.000		

DATA HIST. CODE GC

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LONGITUDINAL STABILITY

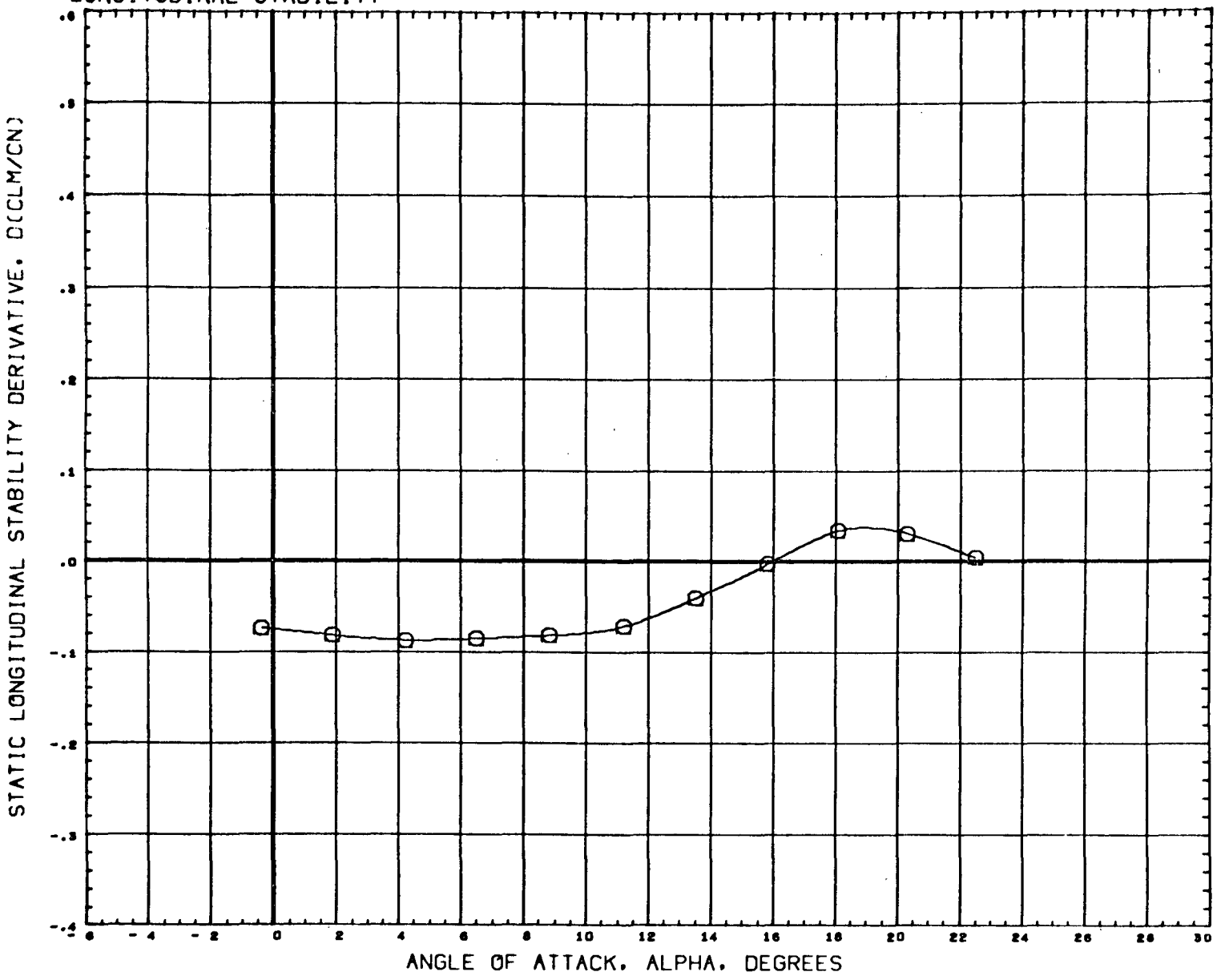


SYMBOL	MACH	PARAMETRIC VALUES			
O	1.196	BETA	0.000	RUDDER	0.000
		RUDFLR	30.000		

DATA HIST. CODE GC

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5060	IN.
BREF	5.6550	IN.
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YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LONGITUDINAL STABILITY

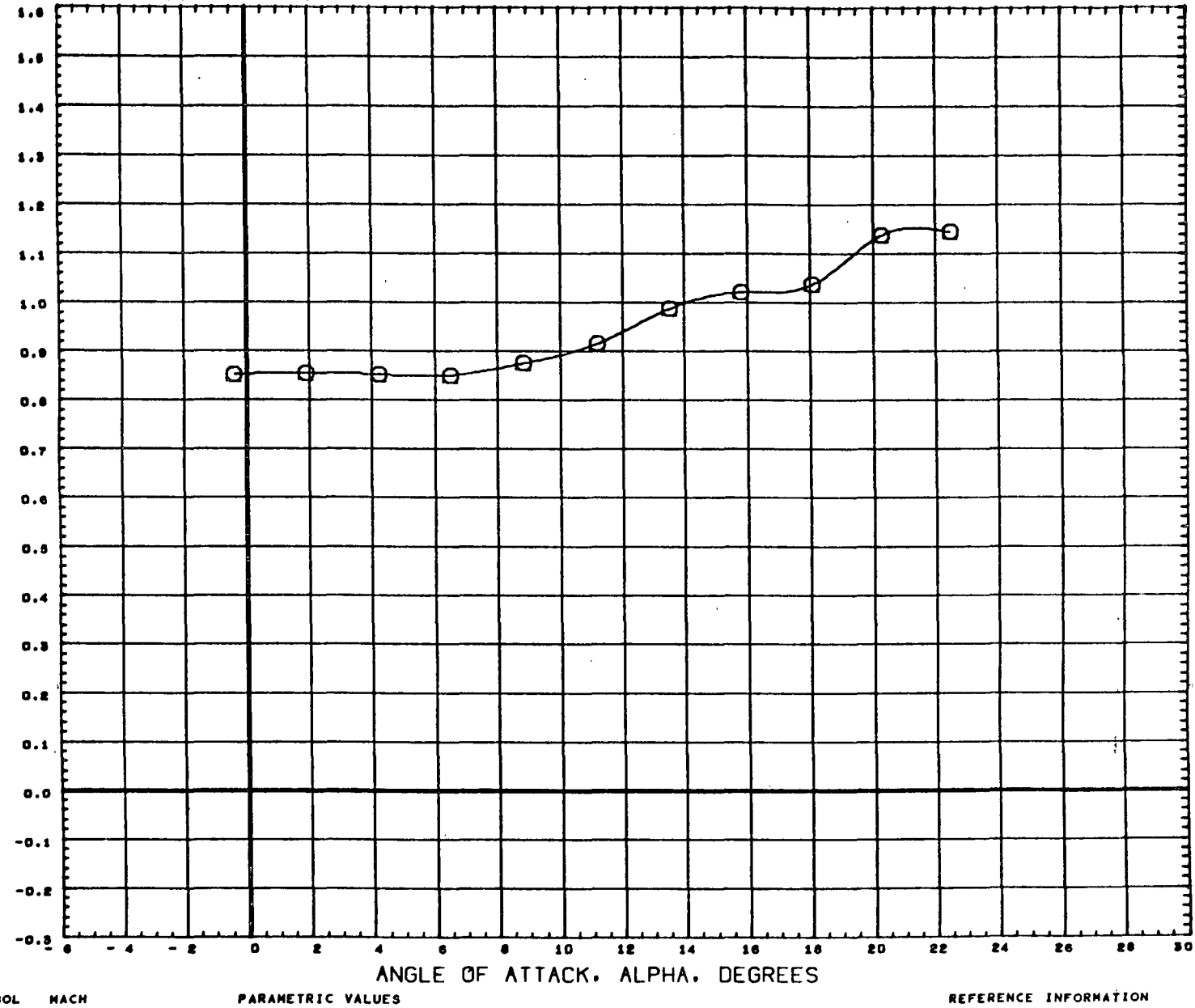


SYMBOL	MACH	PARAMETRIC VALUES			
O	1.196	BETA	0.000	RUDDER	0.000
		RUDFLR	30.000		

DATA HIST. CODE GC

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
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YMRP	0.0000	IN.
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SCALE	0.0034	

LONGITUDINAL STABILITY

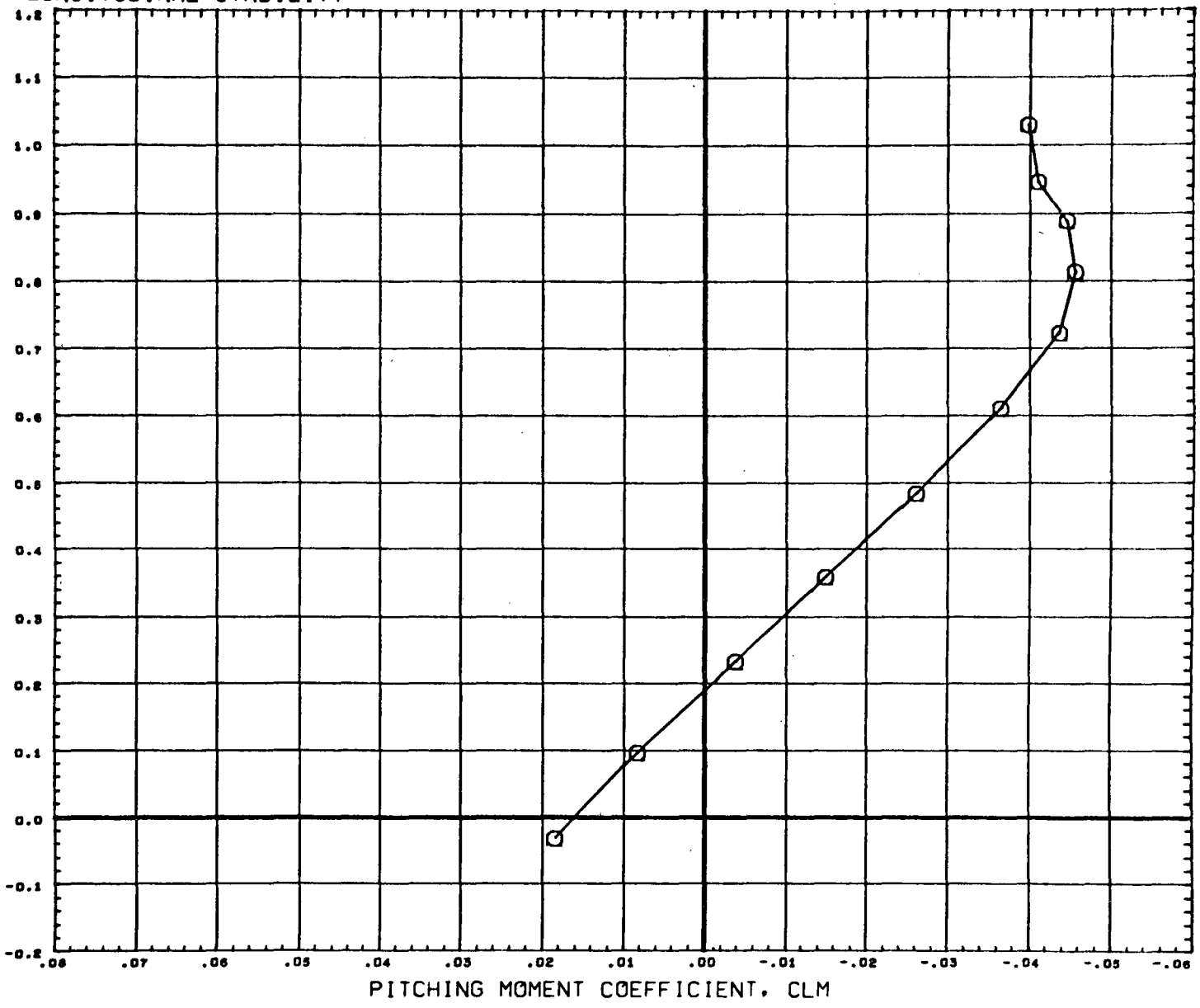


SYMBOL	MACH	PARAMETRIC VALUES			
O	1.198	BETA	0.000	RUDDER	0.000
		RUDFLR	30.000		

DATA HIST. CODE GC

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LONGITUDINAL STABILITY



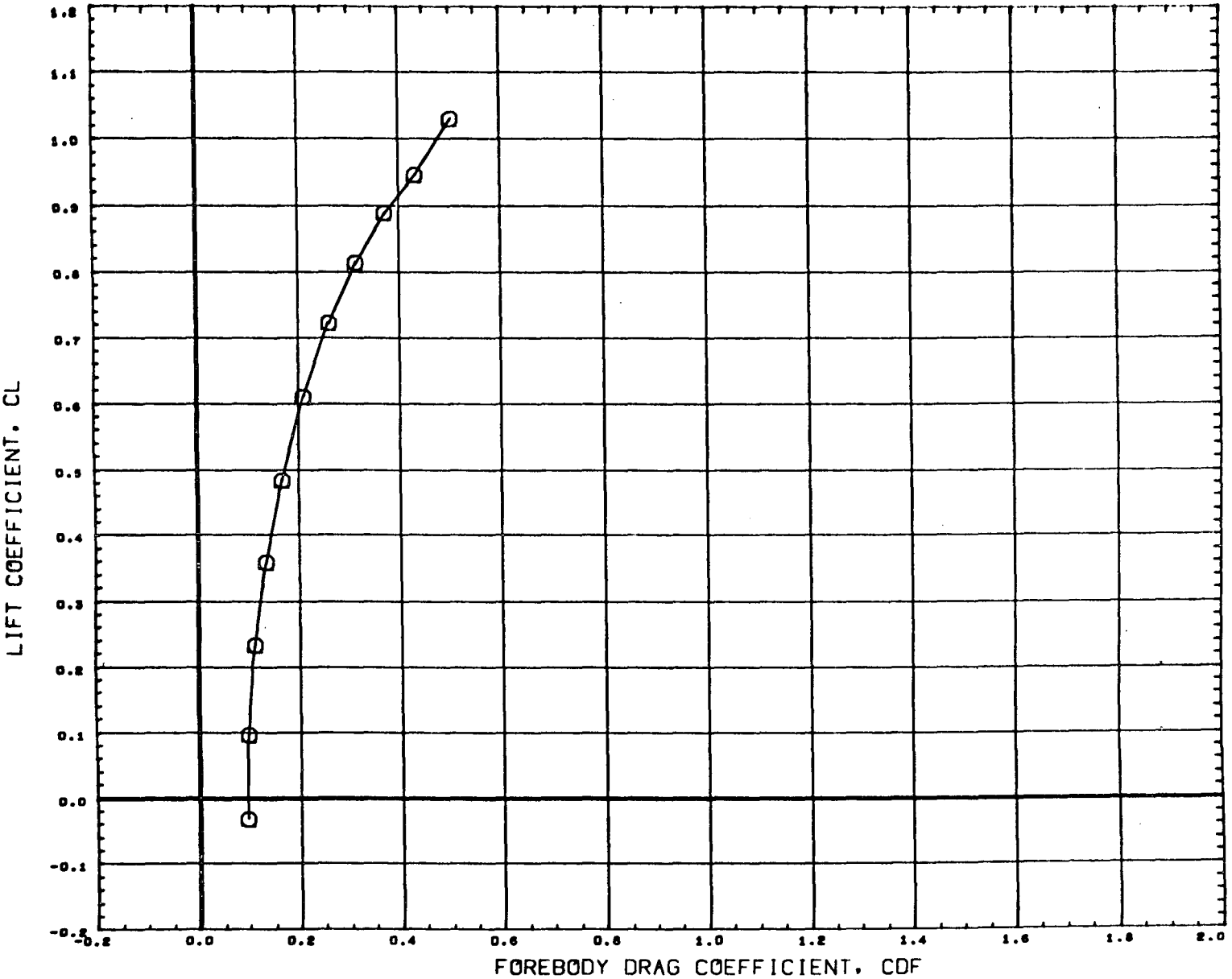
SYMBOL	MACH	PARAMETRIC VALUES			
O	1.198	BETA	0.000	RUDDER	0.000
		RUDFLR	30.000		

DATA HIST. CODE GC

REFERENCE INFORMATION

SREF	14.6836	SQ.IN.
LREF	4.5060	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LONGITUDINAL STABILITY



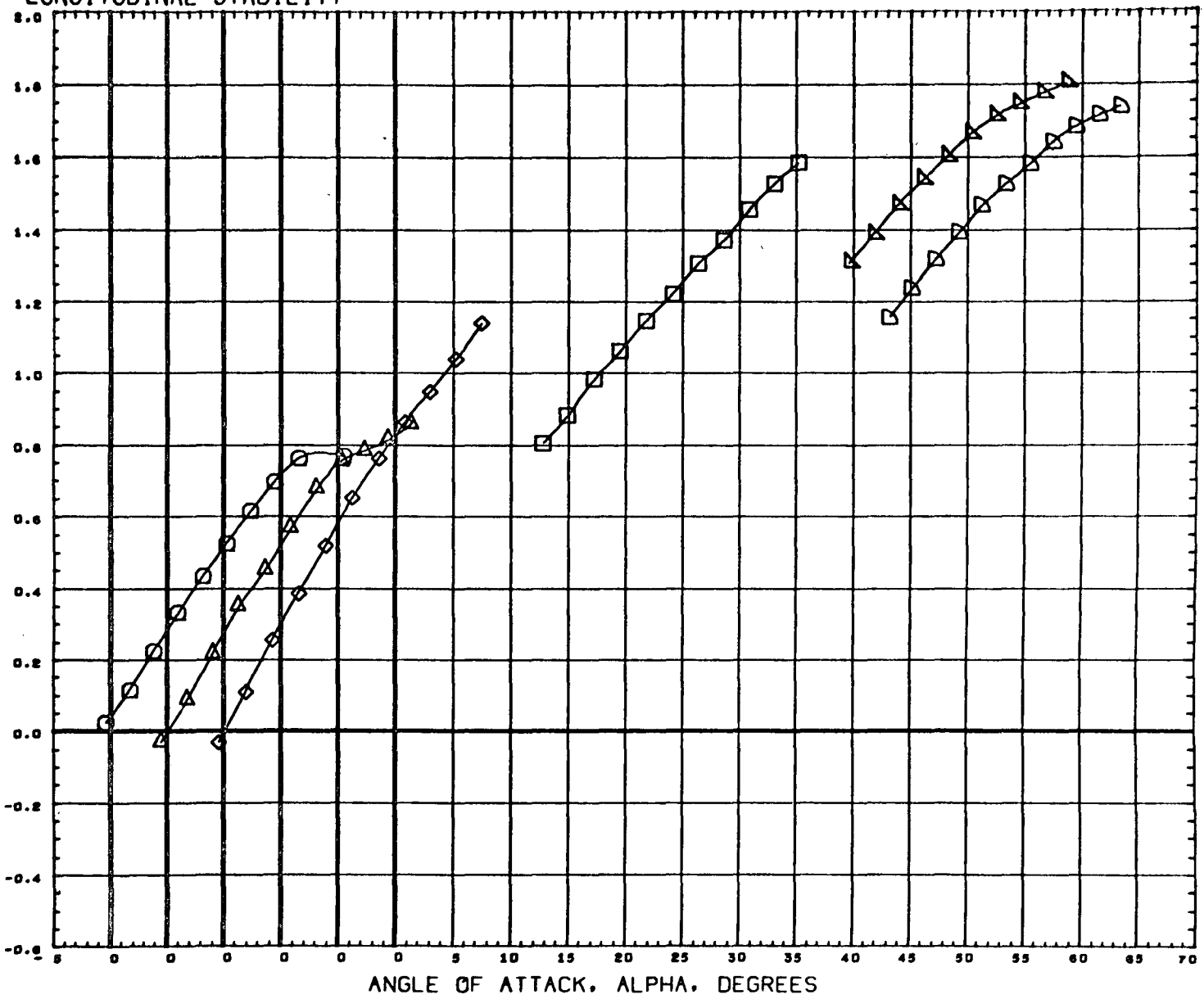
SYMBOL	MACH	PARAMETRIC VALUES			
O	1.198	BETA	0.000	RUDDER	0.000
		RUDFLR	30.000		

DATA HIST. CODE GC

REFERENCE INFORMATION

SREF	14.6836	SQ.IN.
LREF	4.5060	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

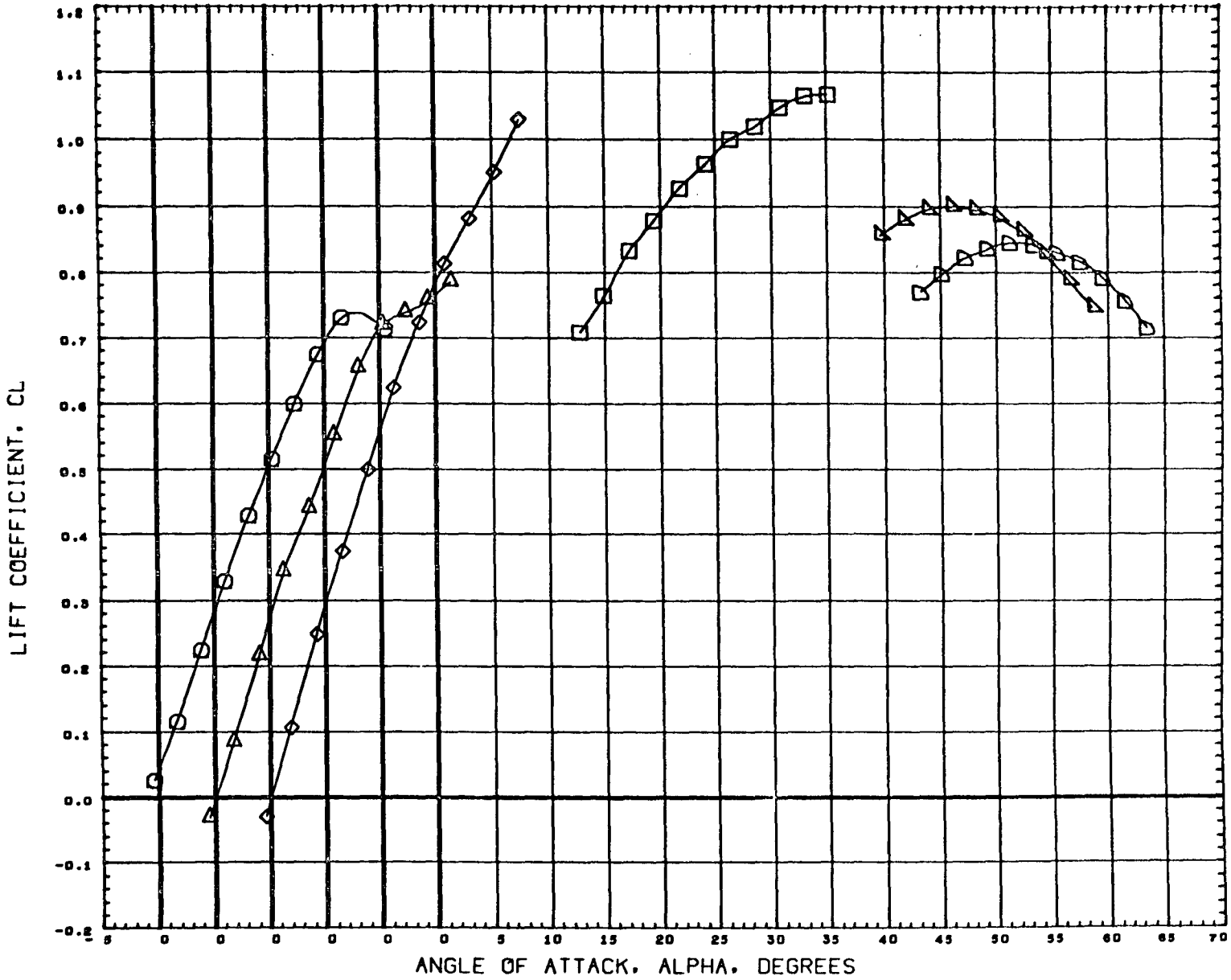
LONGITUDINAL STABILITY



SYMBOL	MACH	PARAMETRIC VALUES			
○	0.599	BETA	0.000	RUDDER	0.000
△	0.904	RUDFLR	0.000		
◇	1.198				
□	1.950				
▱	3.480				
▷	4.959	DATA HIST. CODE	*GGC*G		

REFERENCE INFORMATION		
SREF	14.6636	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

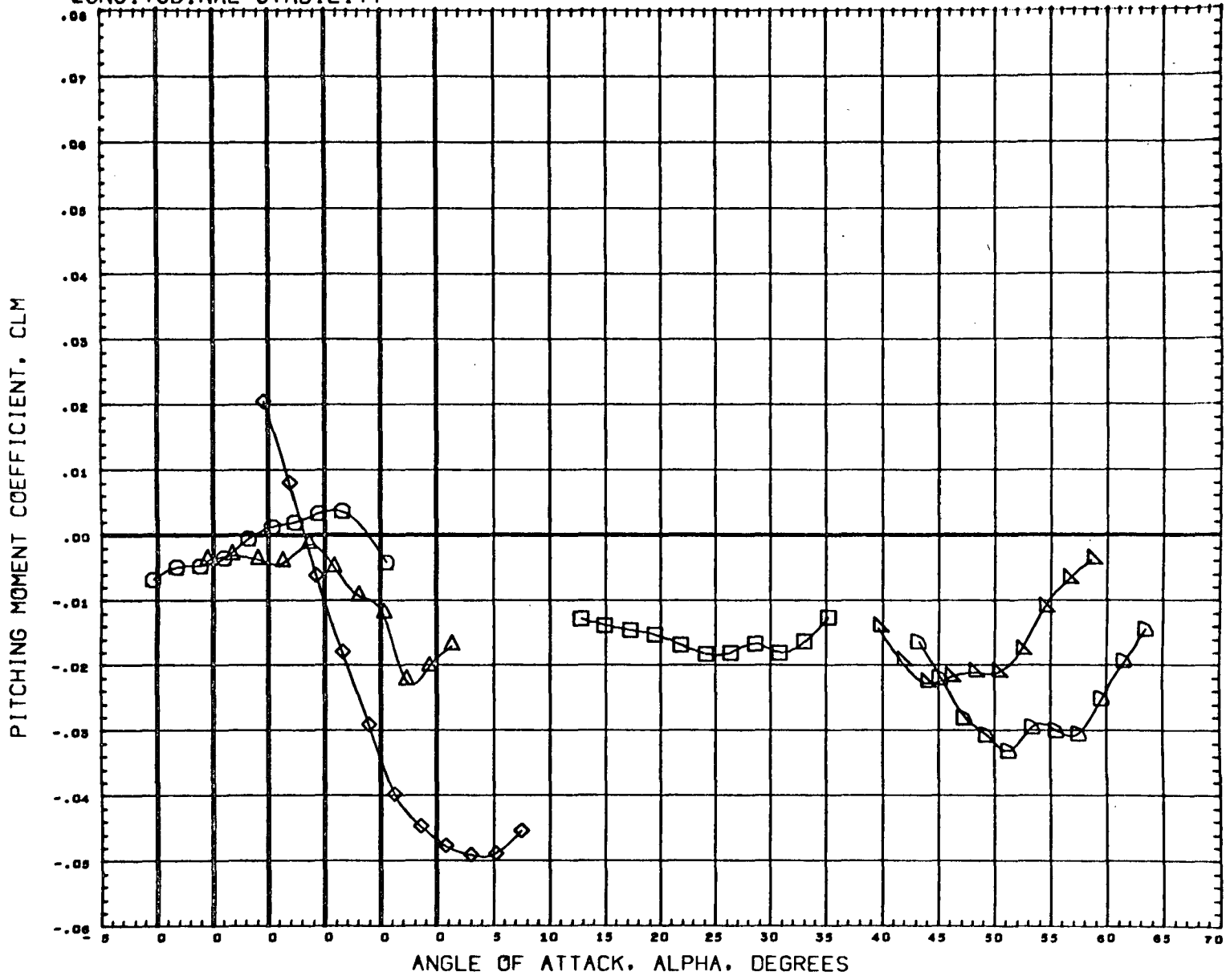
LONGITUDINAL STABILITY



SYMBOL	MACH		PARAMETRIC VALUES		
○	0.599	BETA	0.000	RUDDER	0.000
△	0.804	RUDFLR	0.000		
◇	1.198				
□	1.950				
◸	3.460				
▷	4.959	DATA HIST. CODE	*GGC*G		

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4621	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

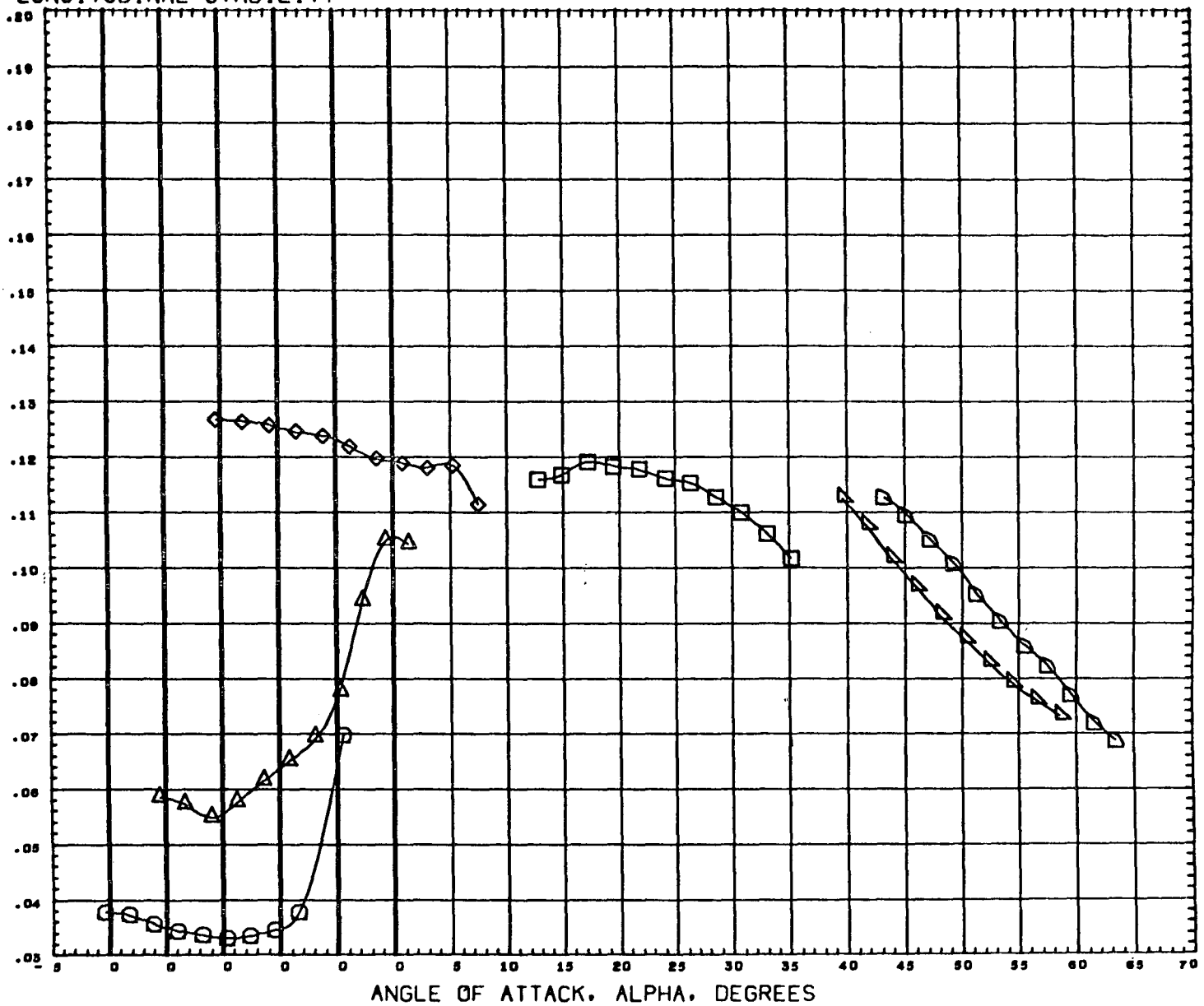
LONGITUDINAL STABILITY



SYMBOL	MACH		PARAMETRIC VALUES		
○	0.599	BETA	0.000	RUDDER	0.000
△	0.904	RUDFLR	0.000		
◇	1.198				
□	1.950				
▽	3.460				
⬠	4.959	DATA HIST. CODE	*GGC*G		

REFERENCE INFORMATION		
SREF	14.6636	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4621	IN.
YMRP	0.0000	IN.
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SCALE	0.0034	

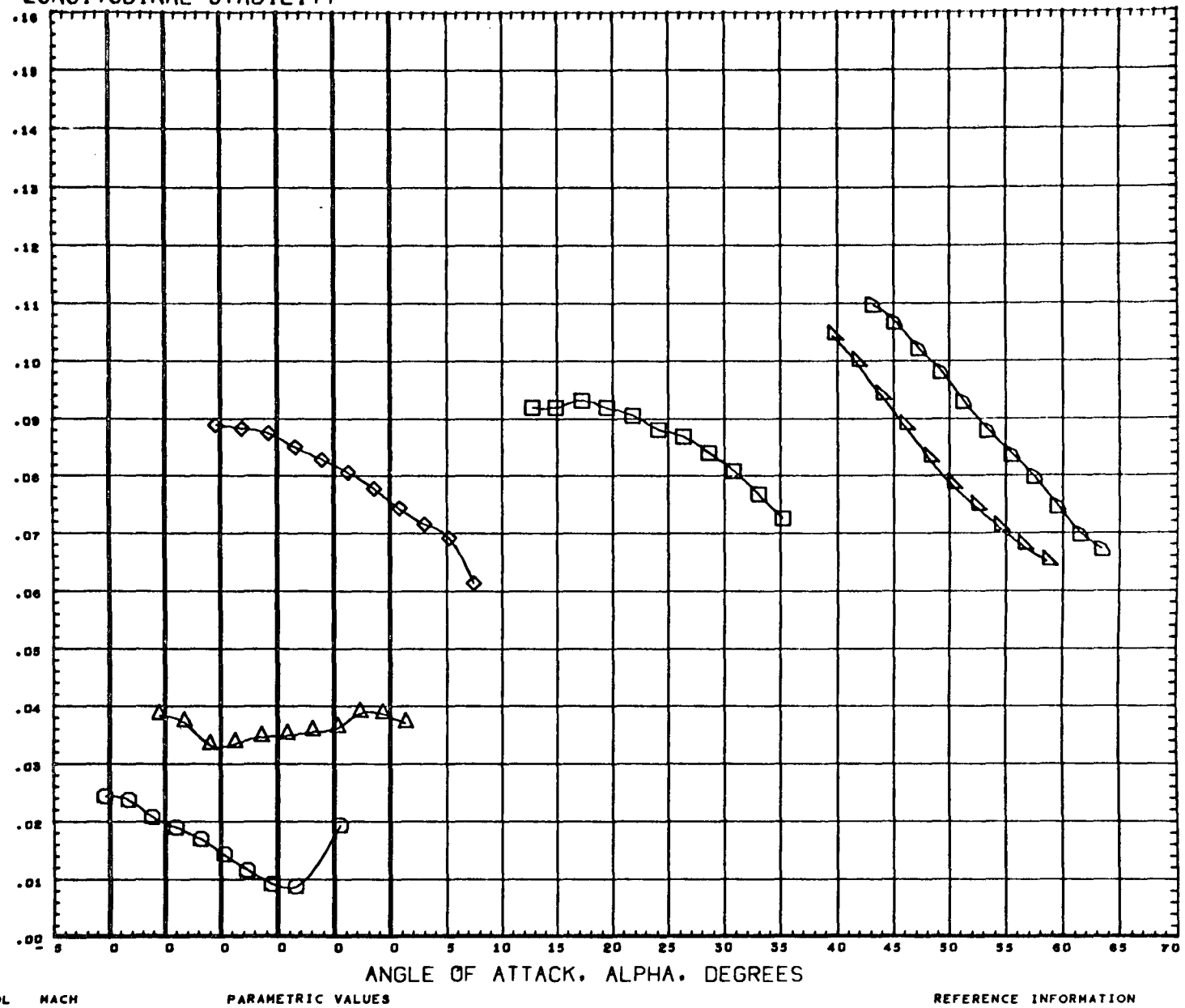
LONGITUDINAL STABILITY



SYMBOL	MACH	PARAMETRIC VALUES			
◇	0.599	BETA	0.000	RUDDER	0.000
□	0.904	RUDFLR	0.000		
◇	1.196				
□	1.950				
◇	3.480				
□	4.959	DATA MIST. CODE	#GGC#G		

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
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XMRP	1.4821	IN.
YMRP	0.0000	IN.
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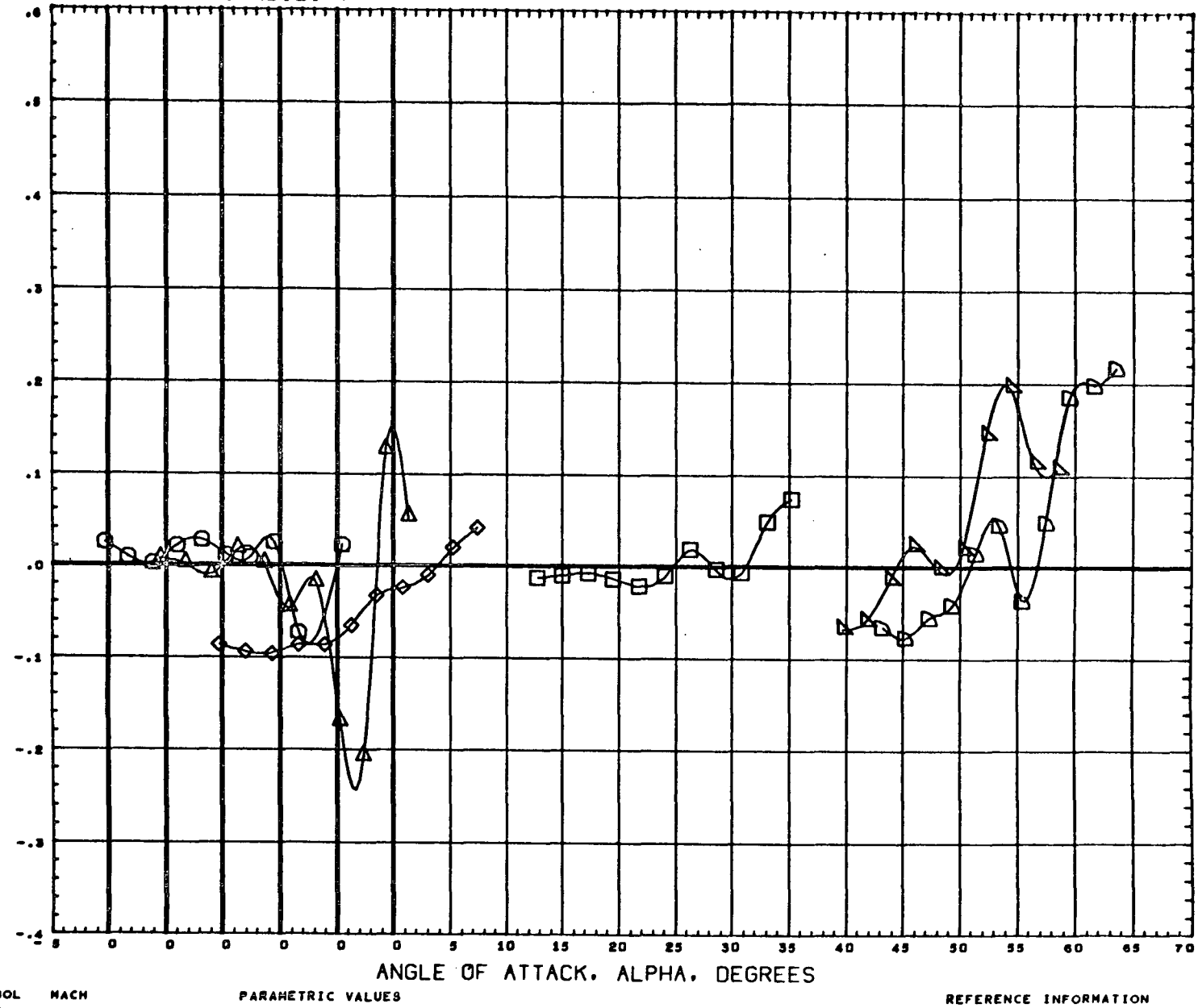
LONGITUDINAL STABILITY



SYMBOL	MACH		PARAMETRIC VALUES		
○	0.599	BETA	0.000	RUDDER	0.000
△	0.904	RUDFLR	0.000		
◇	1.196				
□	1.950				
◸	3.460				
D	4.959	DATA HIST. CODE	*GGC*G		

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
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XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
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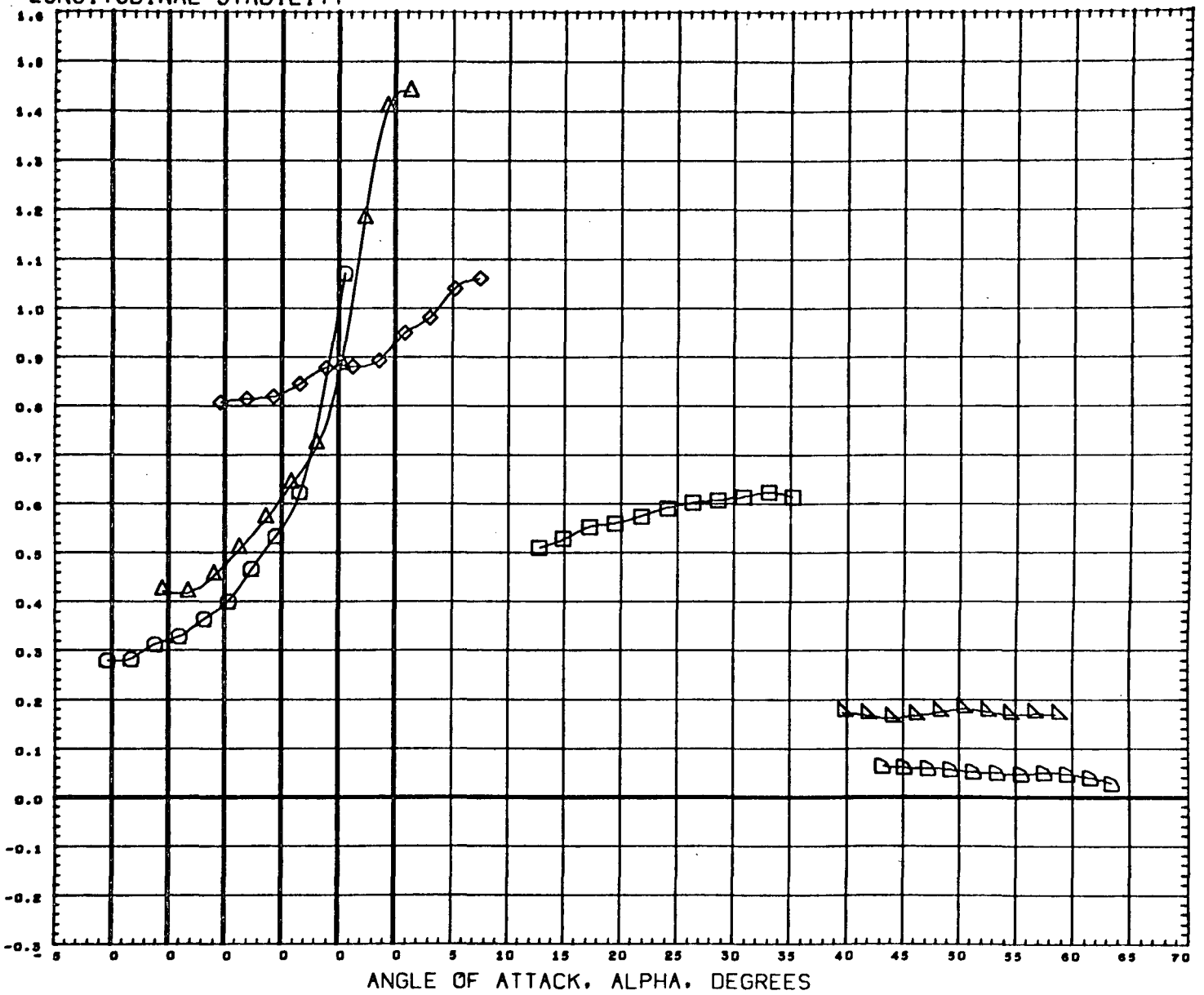
LONGITUDINAL STABILITY



SYMBOL	MACH		PARAMETRIC VALUES		
○	0.599	BETA	0.000	RUDDER	0.000
◇	0.904	RUDFLR	0.000		
△	1.198				
□	1.950				
◸	3.460				
◺	4.959	DATA HIST. CODE	*GGC*G		

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

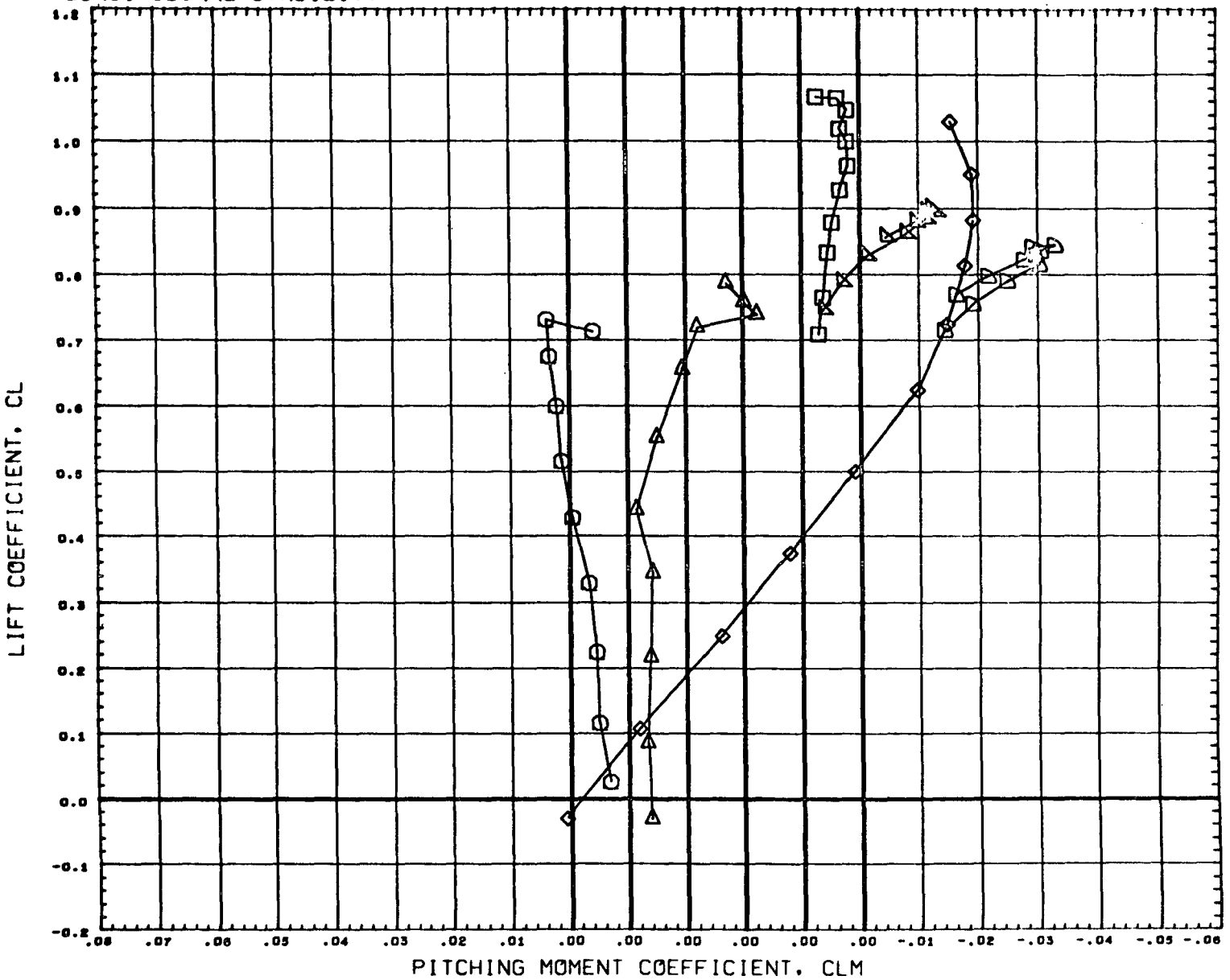
LONGITUDINAL STABILITY



SYMBOL	MACH		PARAMETRIC VALUES		
△	0.599	BETA	0.000	RUDDER	0.000
◇	0.904	RUDFLR	0.000		
□	1.108				
◸	1.950				
D	3.460				
	4.959	DATA HIST. CODE	*GGC*G		

REFERENCE INFORMATION		
SREF	14.6636	SQ.IN.
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YMRP	0.0000	IN.
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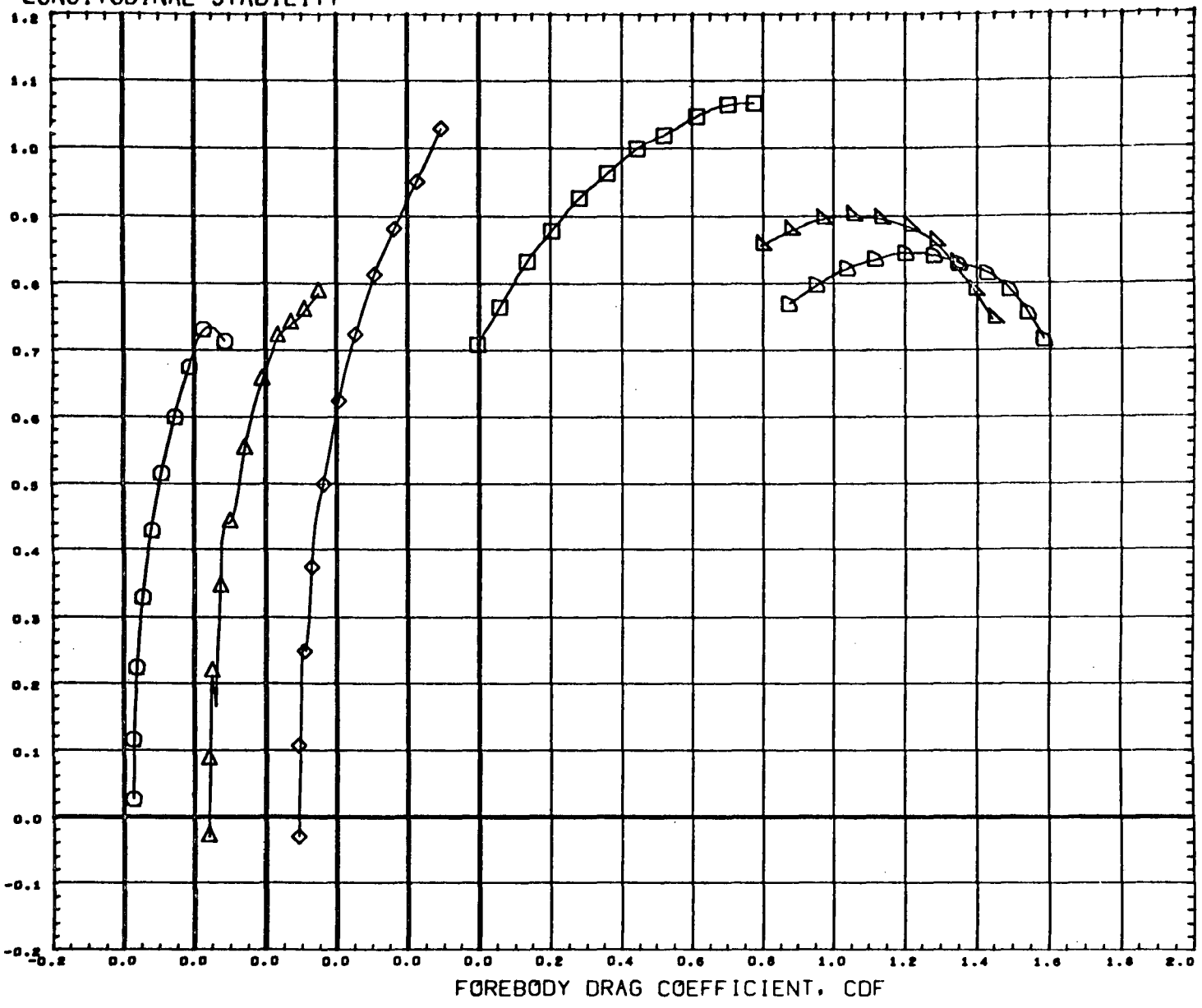
LONGITUDINAL STABILITY



SYMBOL	MACH	PARAMETRIC VALUES			
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	0.904	RUDFLR	0.000		
	1.196				
	1.950				
	3.480				
	4.959	DATA HIST. CODE	*GGC*G		

REFERENCE INFORMATION		
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LREF	4.3080	IN.
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XMRP	1.4621	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
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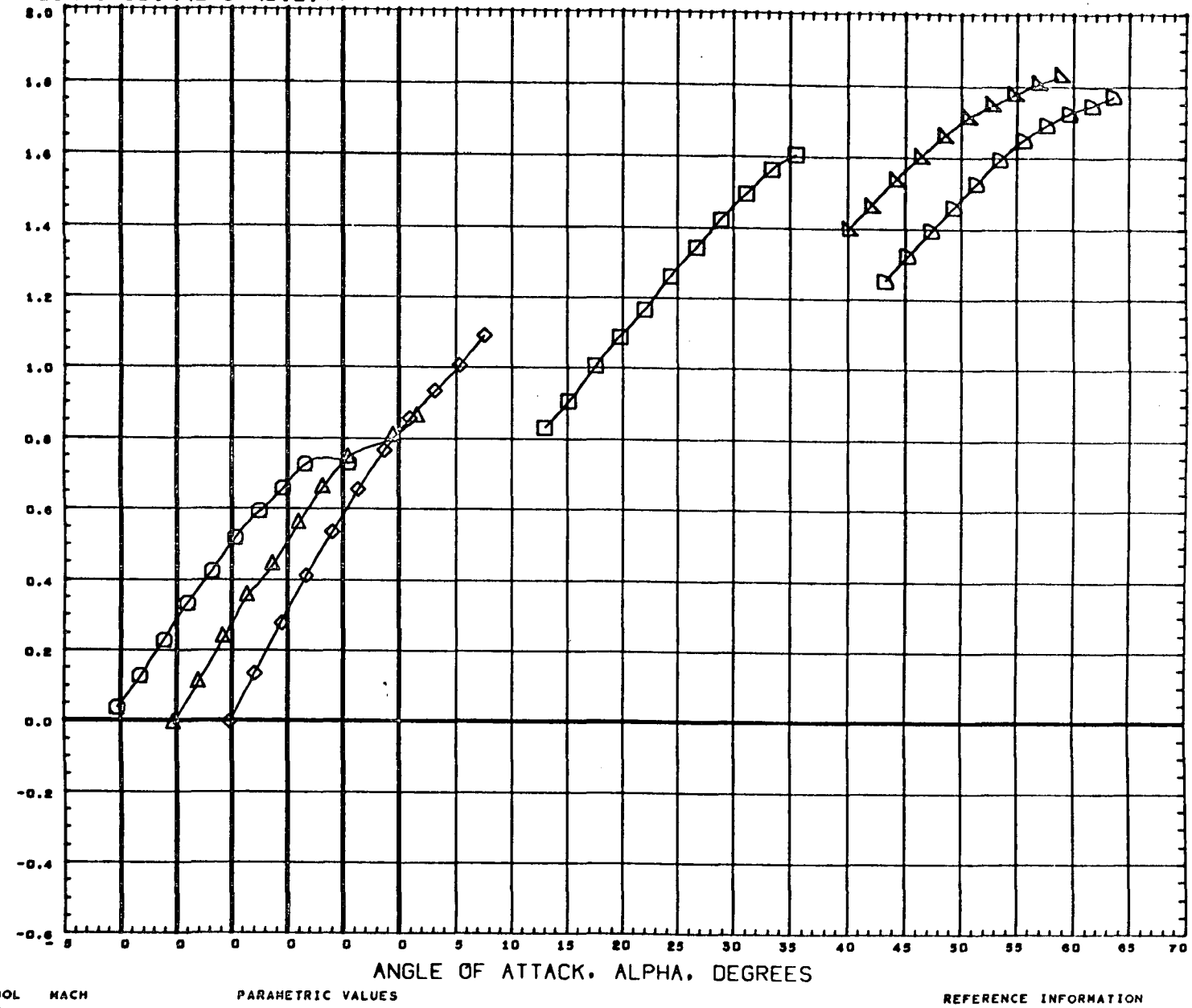
LONGITUDINAL STABILITY



SYMBOL	MACH	PARAMETRIC VALUES			
○	0.599	BETA	0.000	RUDDER	0.000
△	0.904	RUDFLR	0.000		
◇	1.198				
□	1.950				
▽	3.460				
D	4.959	DATA HIST. CODE	*GGC*G		

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
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LONGITUDINAL STABILITY

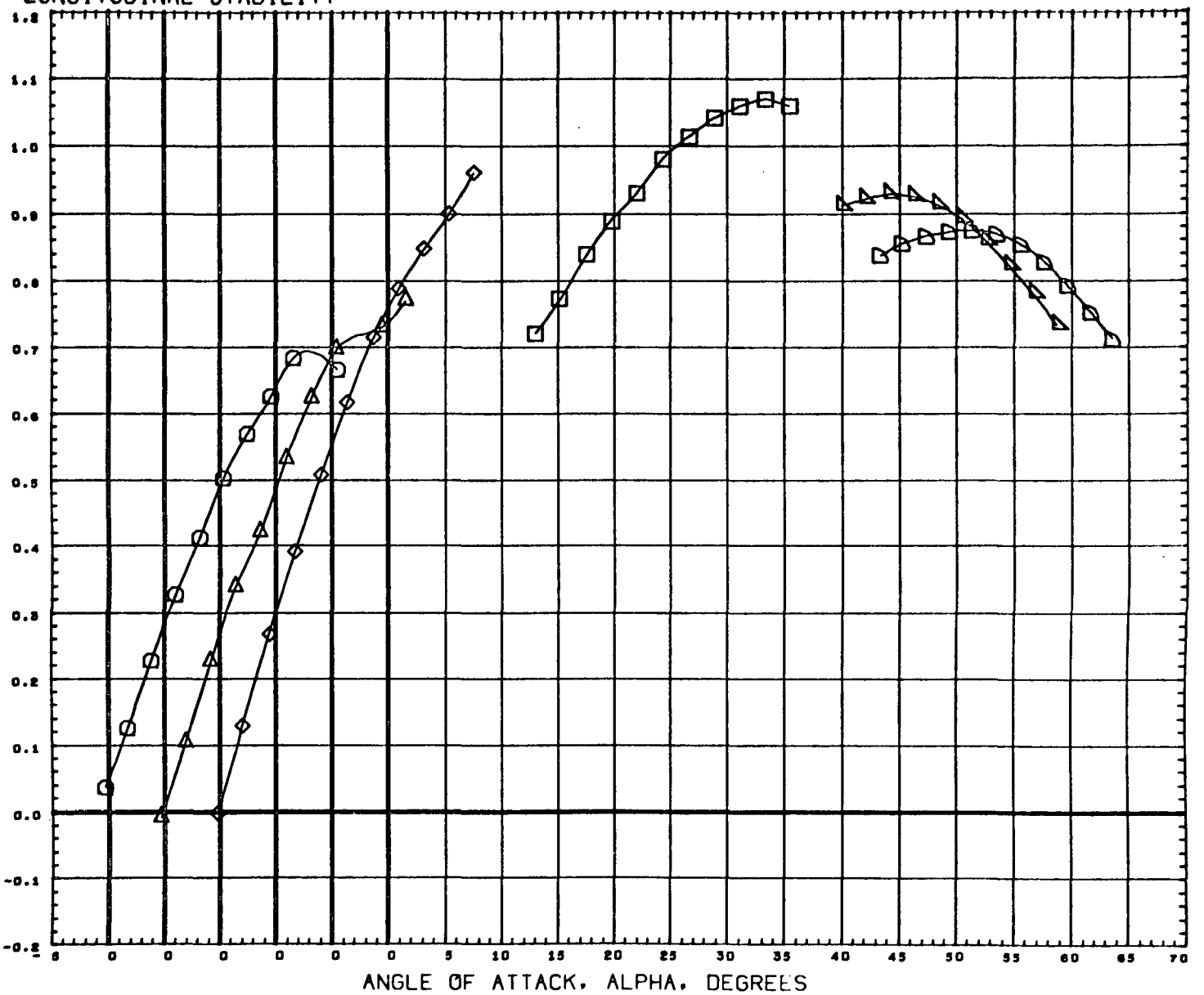


SYMBOL	MACH		PARAMETRIC VALUES		
○	0.600	BETA	0.000	RUDDER	0.000
△	0.902	RUDFLR	30.000		
◇	1.196				
□	1.951				
▱	3.460				
▷	4.959	DATA HIST. CODE	*GGC*G		

REFERENCE INFORMATION

SREF	14.6636	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
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LONGITUDINAL STABILITY

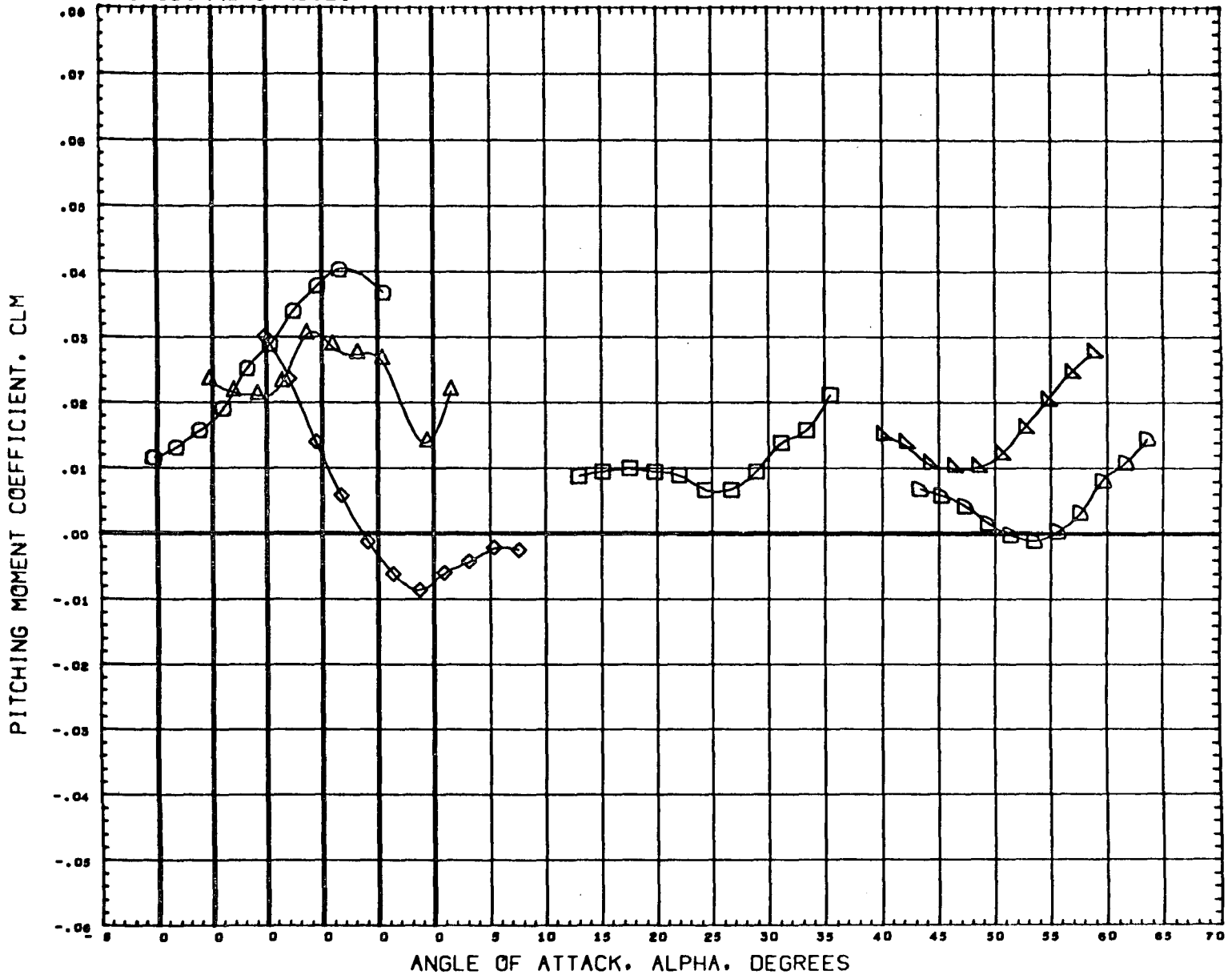


SYMBOL	MACH		PARAMETRIC VALUES		
○	0.600	BETA	0.000	RUDDER	0.000
△	0.902	RUDFLR	30.000		
◇	1.196				
□	1.951				
▱	3.480				
▷	4.959	DATA HIST. CODE	#GGC#G		

REFERENCE INFORMATION

SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
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YMRP	0.0000	IN.
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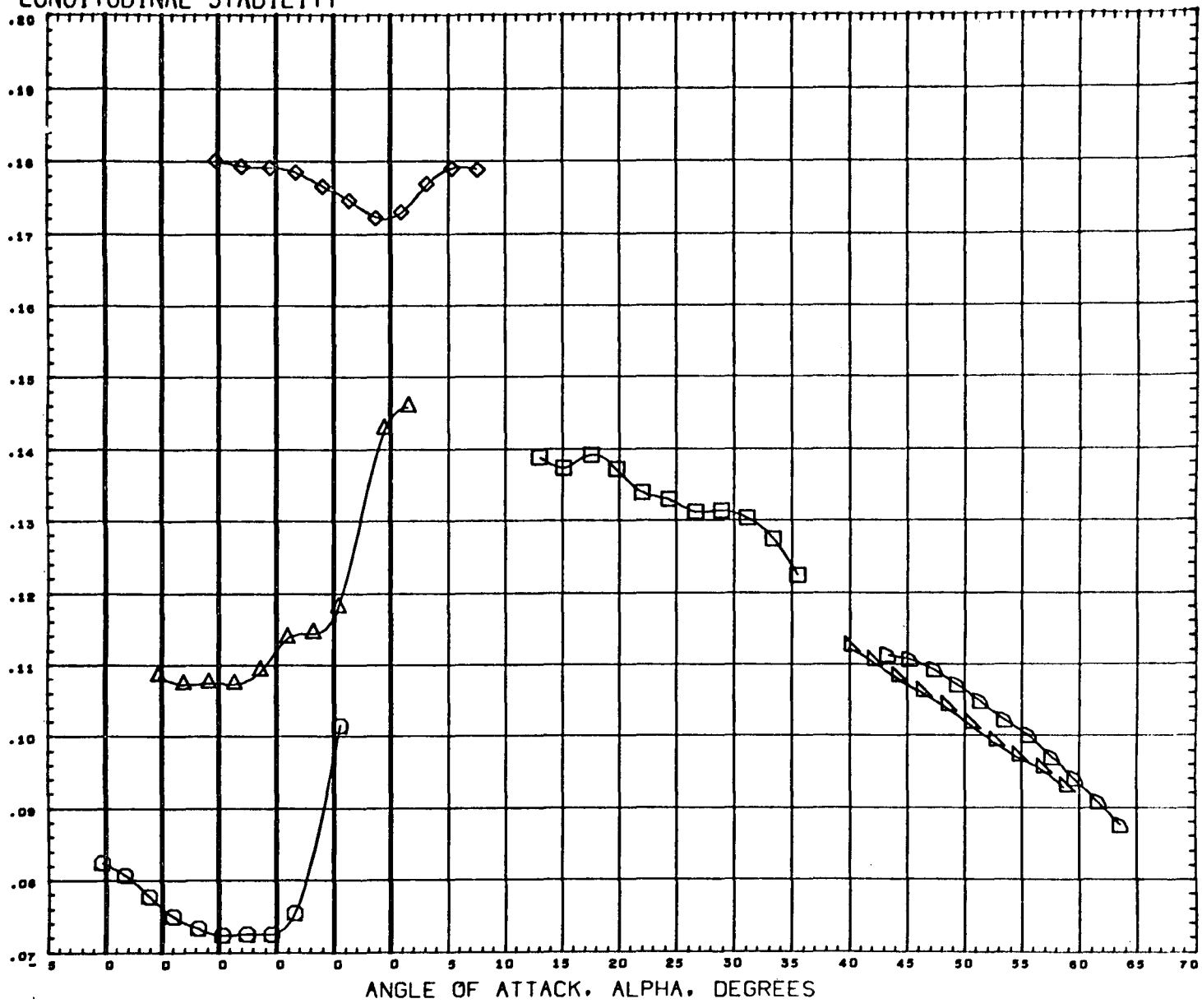
LONGITUDINAL STABILITY



SYMBOL	MACH		PARAMETRIC VALUES		
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◇	1.196				
□	1.951				
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▷	4.959	DATA HIST. CODE	#GGC#G		

REFERENCE INFORMATION		
SREF	14.6636	SQ.IN.
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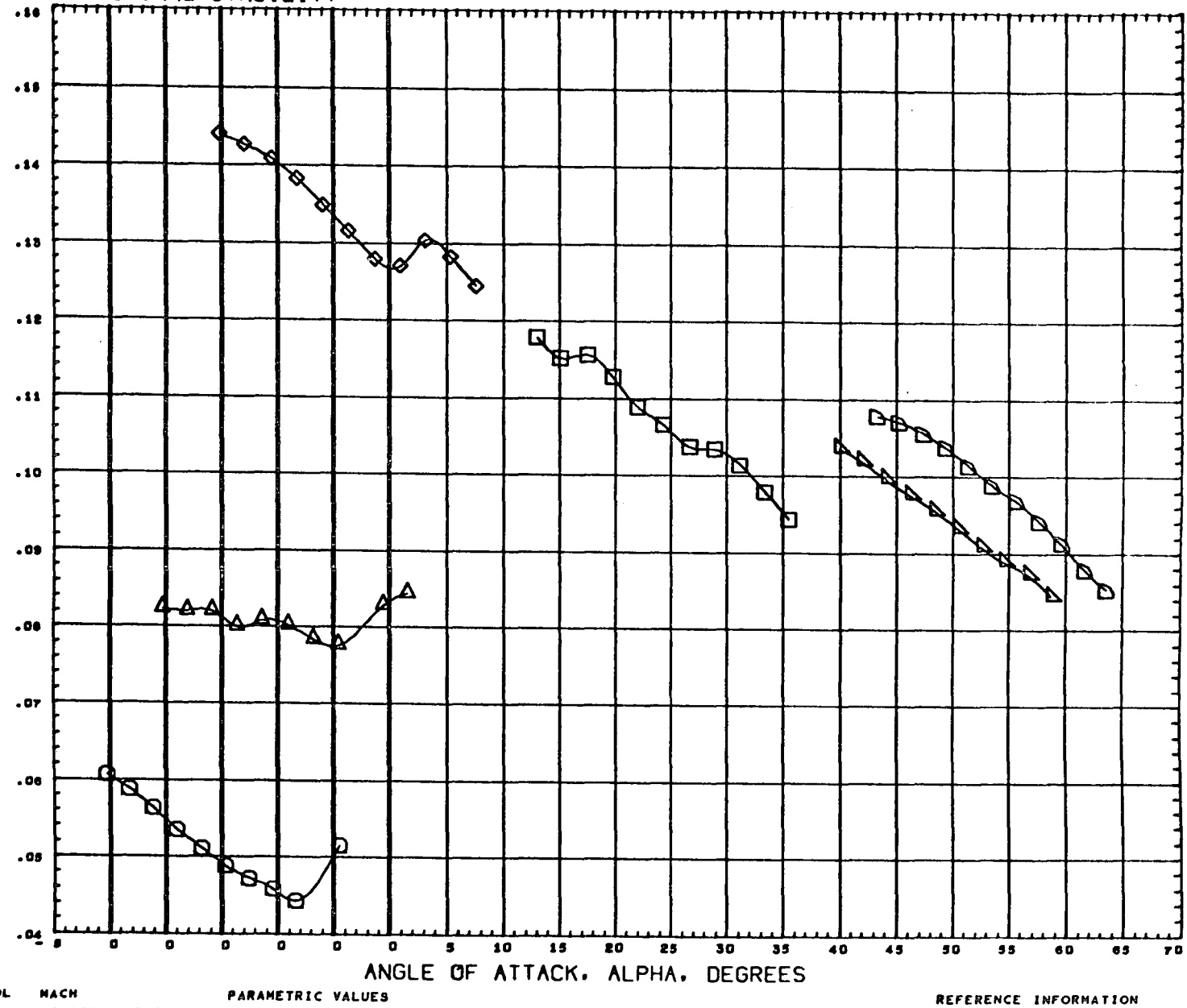
LONGITUDINAL STABILITY



SYMBOL	MACH	PARAMETRIC VALUES			
	0.600	BETA	0.000	RUDDER	0.000
	0.902	RUDFLR	30.000		
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	1.951				
	3.480				
	4.959	DATA HIST. CODE	*GGC*G		

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
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SCALE	0.0034	

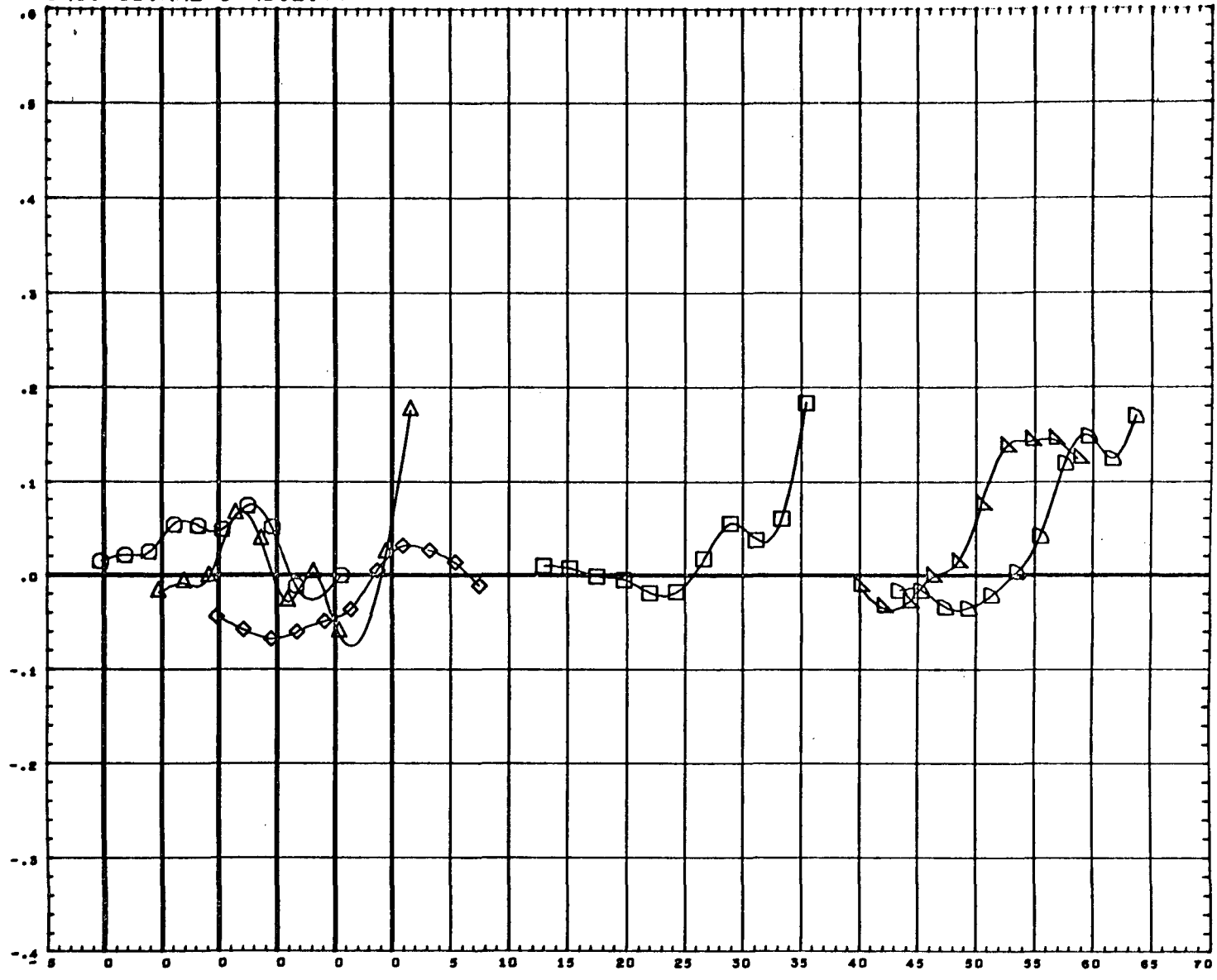
LONGITUDINAL STABILITY



SYMBOL	MACH	PARAMETRIC VALUES			
○	0.600	BETA	0.000	RUDDER	0.000
△	0.902	RUDFLR	30.000		
◇	1.196				
□	1.951				
▷	3.480				
D	4.959	DATA HIST. CODE	*GGC*G		

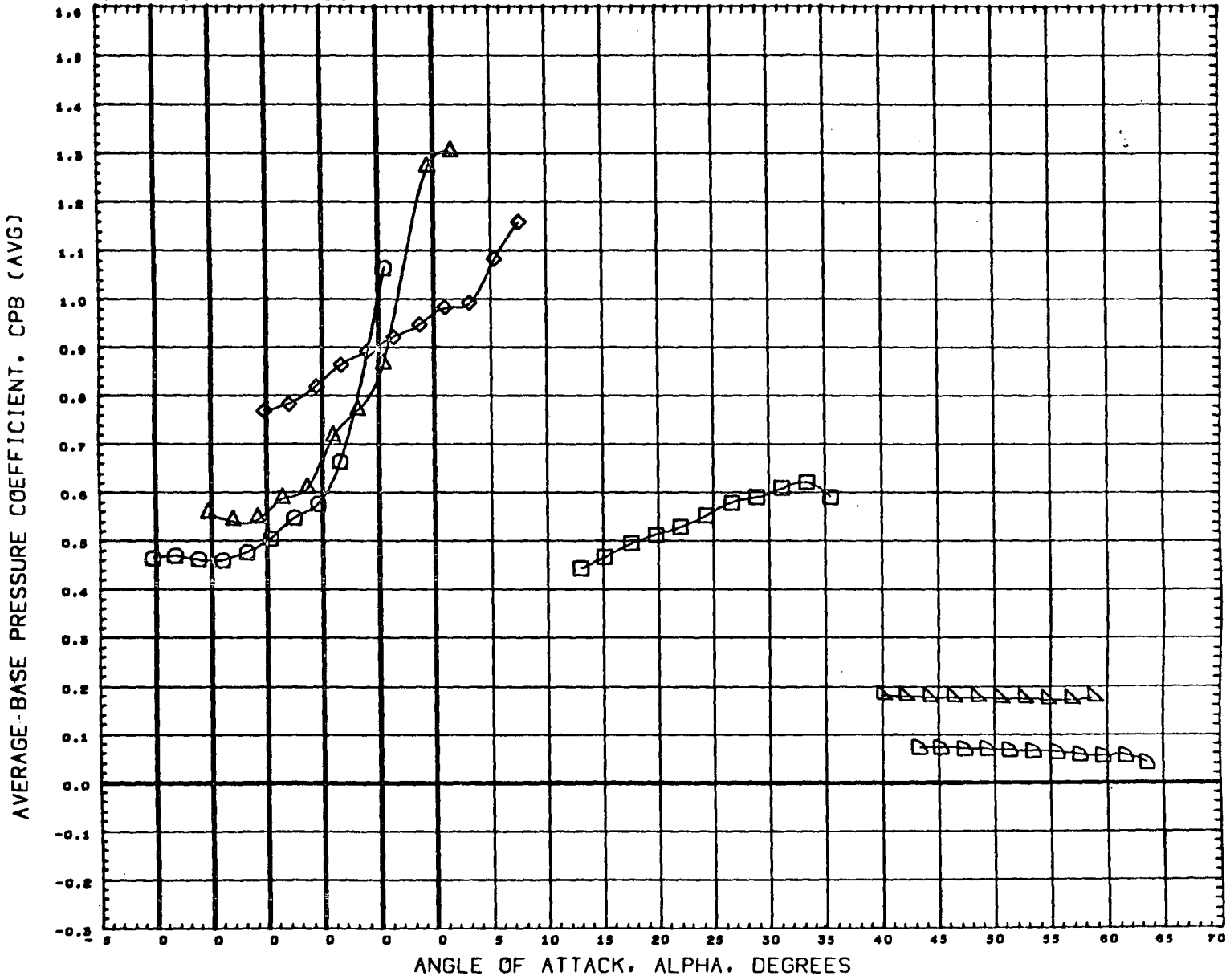
REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4621	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LONGITUDINAL STABILITY



SYMBOL	MACH		PARAMETRIC VALUES			REFERENCE INFORMATION		
○	0.600	BETA	0.000	RUDDER	0.000	SREF	14.6836	SQ.IN.
△	0.902	RUDFLR	30.000			LREF	4.5080	IN.
◇	1.196					BREF	5.6550	IN.
□	1.951					XMRP	1.4621	IN.
▽	3.480					YMRP	0.0000	IN.
▷	4.959	DATA HIST. CODE	*GGC*G			ZMRP	0.0000	IN.
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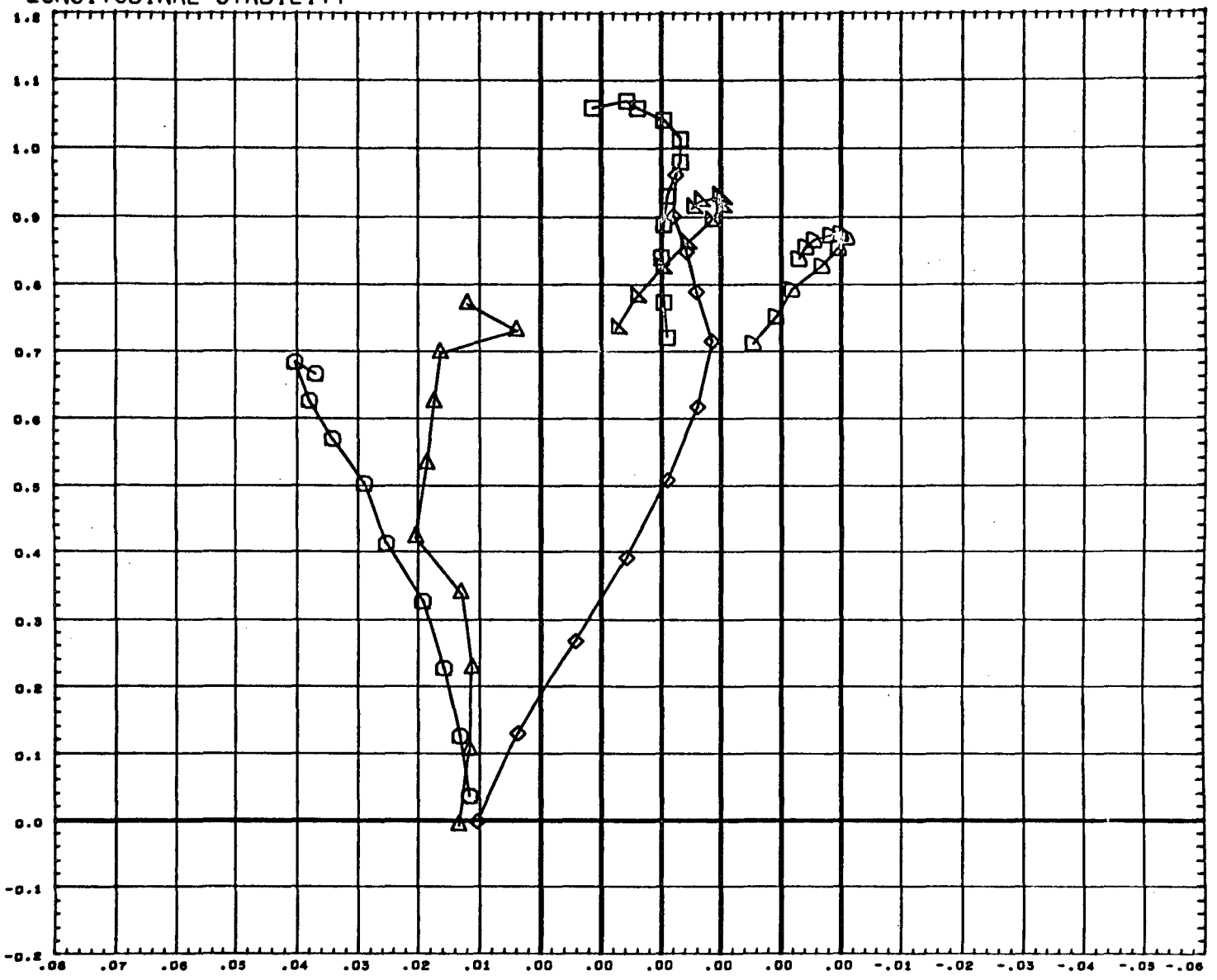
LONGITUDINAL STABILITY



SYMBOL	MACH	PARAMETRIC VALUES			
○	0.600	BETA	0.000	RUDDER	0.000
△	0.902	RUDFLR	30.000		
◇	1.196				
□	1.951				
▱	3.480				
▷	4.959	DATA HIST. CODE		*GGC*G	

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

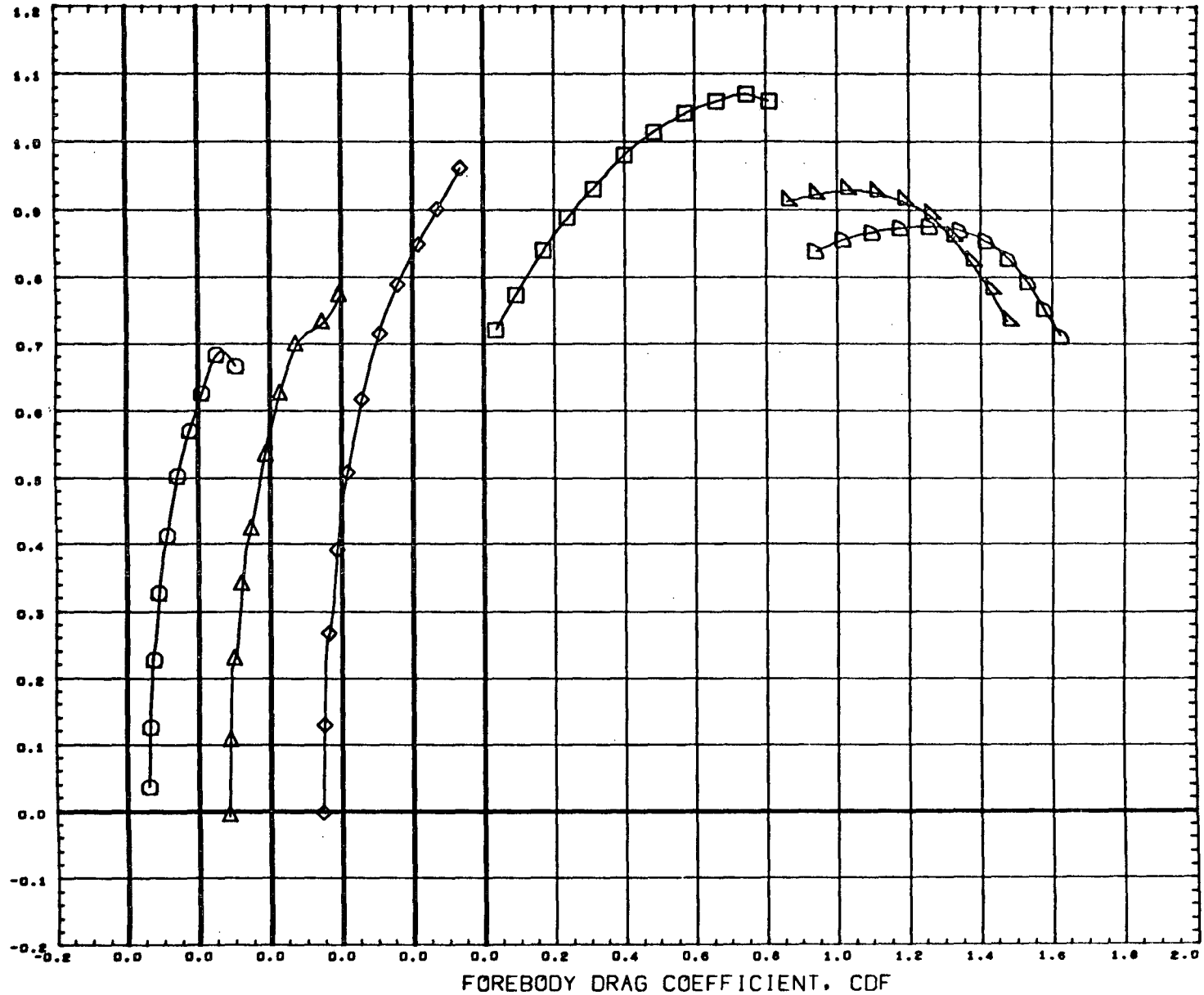
LONGITUDINAL STABILITY



SYMBOL	MACH	PARAMETRIC VALUES			
○	0.600	BETA	0.000	RUDDER	0.000
△	0.902	RUDFLR	30.000		
◇	1.196				
□	1.951				
▱	3.460				
D	4.959	DATA HIST. CODE	*GGC*G		

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

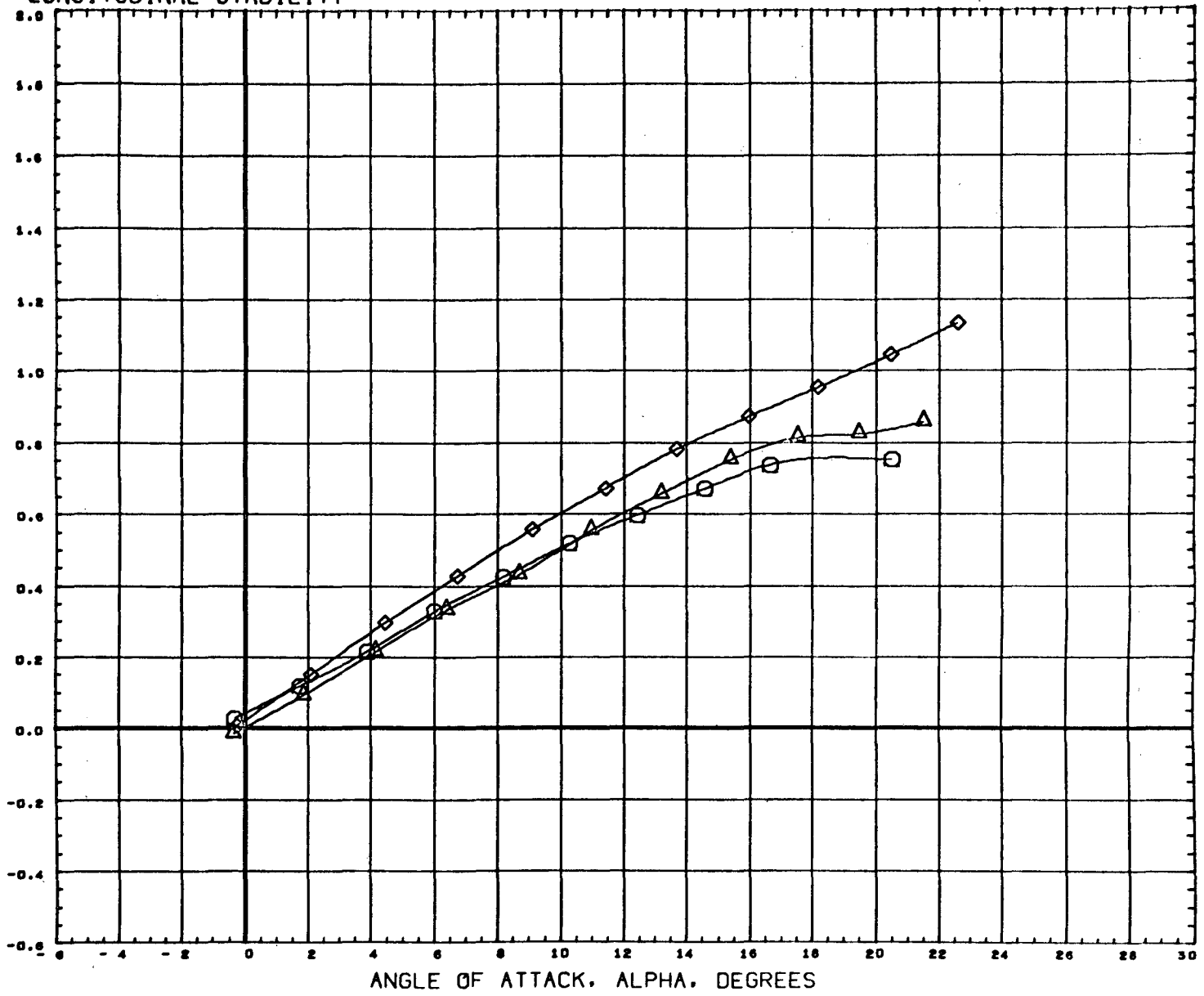
LONGITUDINAL STABILITY



SYMBOL	MACH		PARAMETRIC VALUES		
○	0.600	BETA	0.000	RUDDER	0.000
△	0.902	RUDFLR	30.000		
◇	1.196				
□	1.951				
▽	3.480				
◁	4.959	DATA HIST. CODE	#GGC#G		

REFERENCE INFORMATION		
SREF	14.6636	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LONGITUDINAL STABILITY

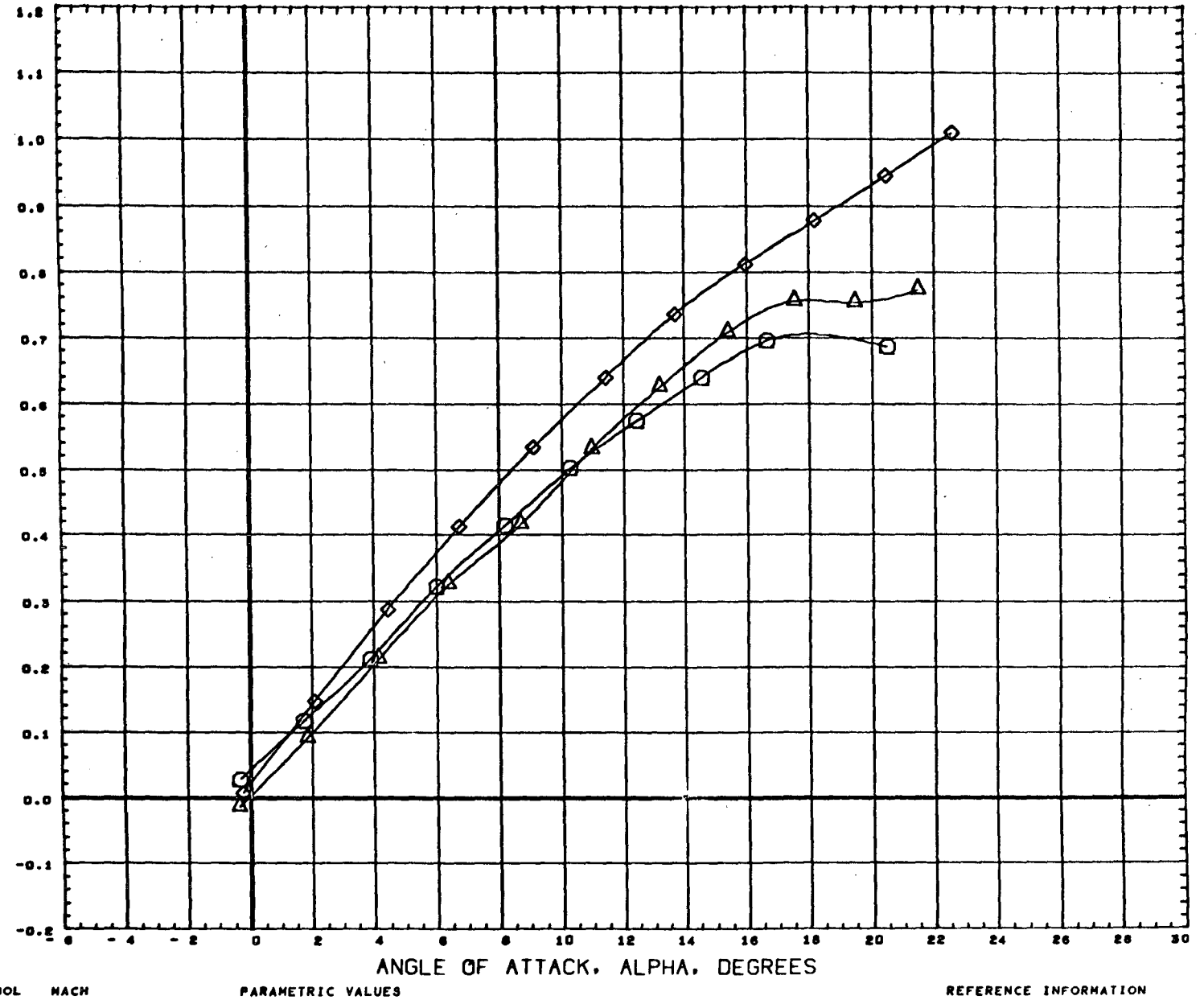


SYMBOL	MACH		PARAMETRIC VALUES		
○	0.598	BETA	0.000	RUDDER	0.000
△	0.906	RUDFLR	30.000		
◇	1.201				

DATA HIST. CODE GC#G

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4621	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LONGITUDINAL STABILITY

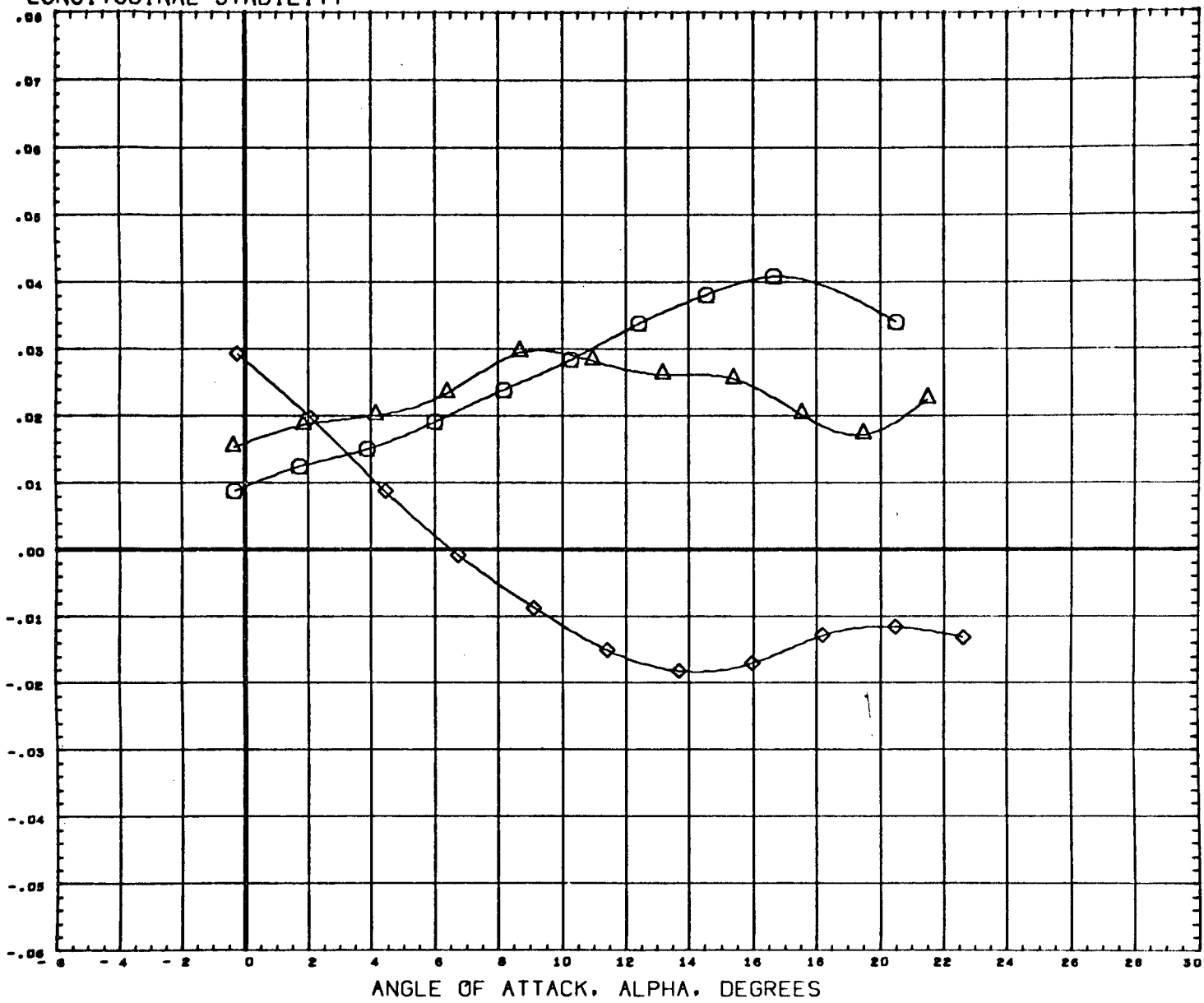


SYMBOL	MACH		PARAMETRIC VALUES		
○	0.598	BETA	0.000	RUDDER	0.000
△	0.906	RUDFLR	30.000		
◇	1.201				

DATA HIST. CODE GC#G

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4621	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LONGITUDINAL STABILITY



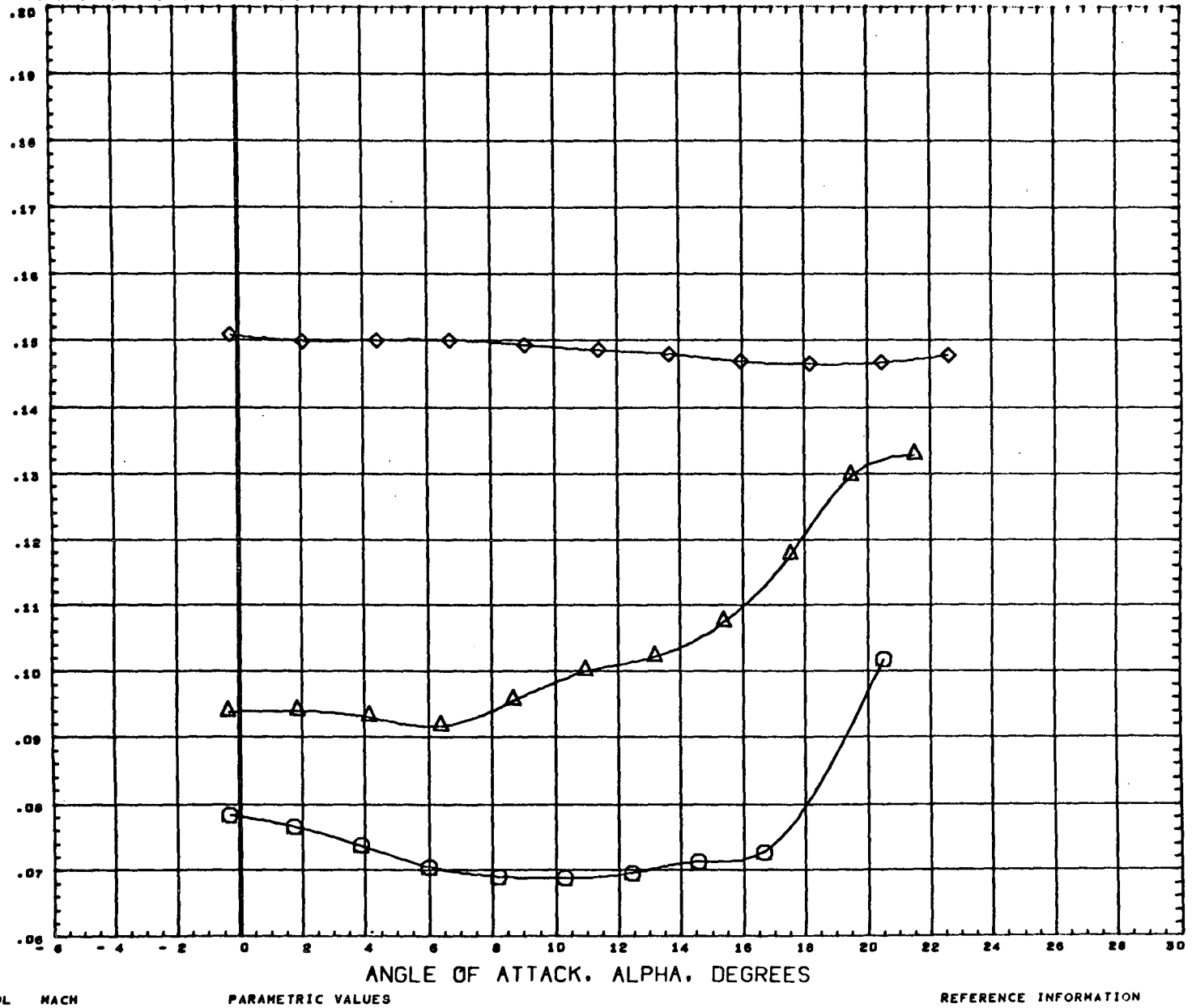
SYMBOL	MACH		PARAMETRIC VALUES		
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◇	1.201				

REFERENCE INFORMATION

SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

DATA HIST. CODE GC#G

LONGITUDINAL STABILITY

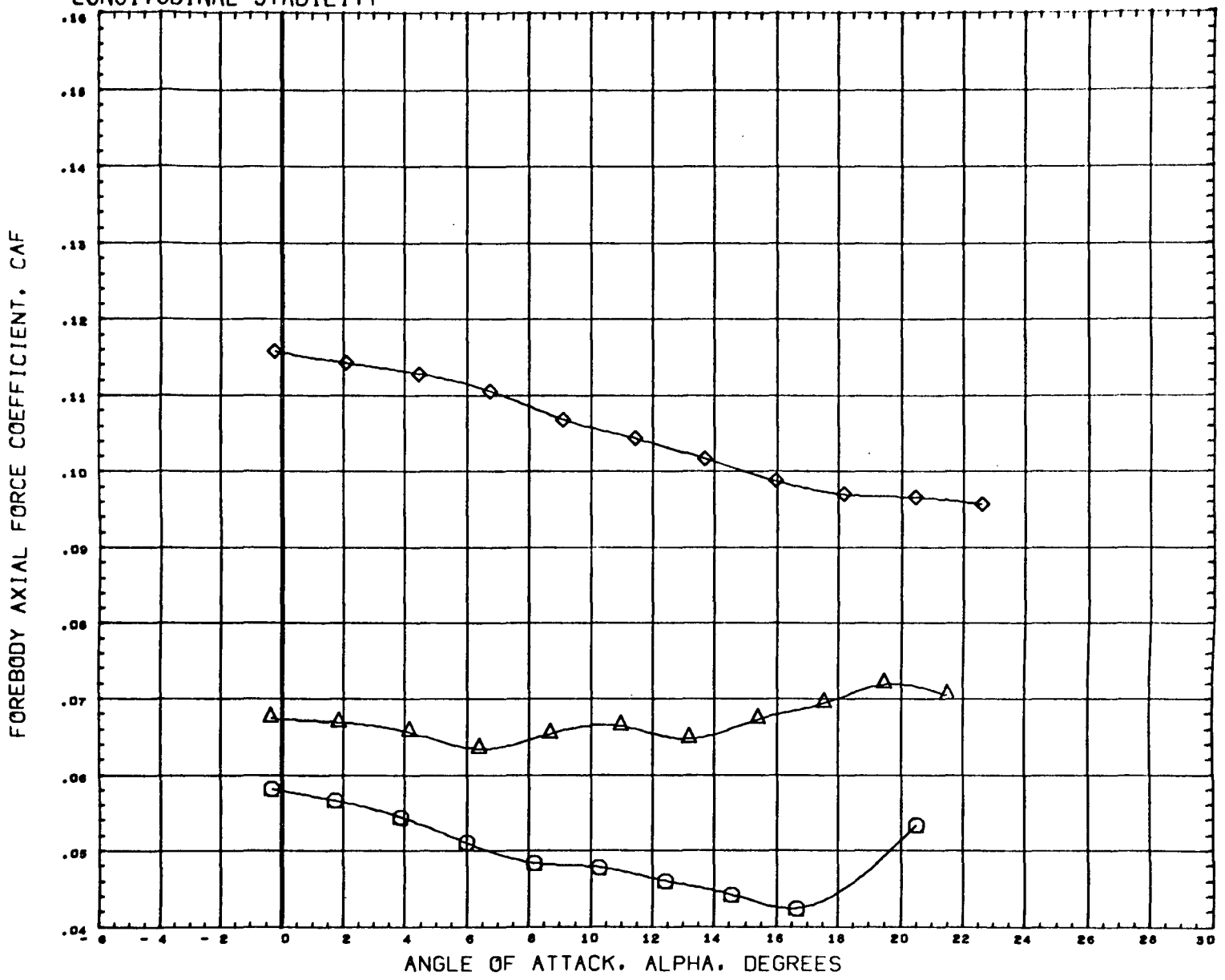


SYMBOL	MACH	PARAMETRIC VALUES			
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△	0.906	RUDFLR	30.000		
◇	1.201				

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
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ZMRP	0.0000	IN.
SCALE	0.0034	

DATA HIST. CODE GC#G

LONGITUDINAL STABILITY

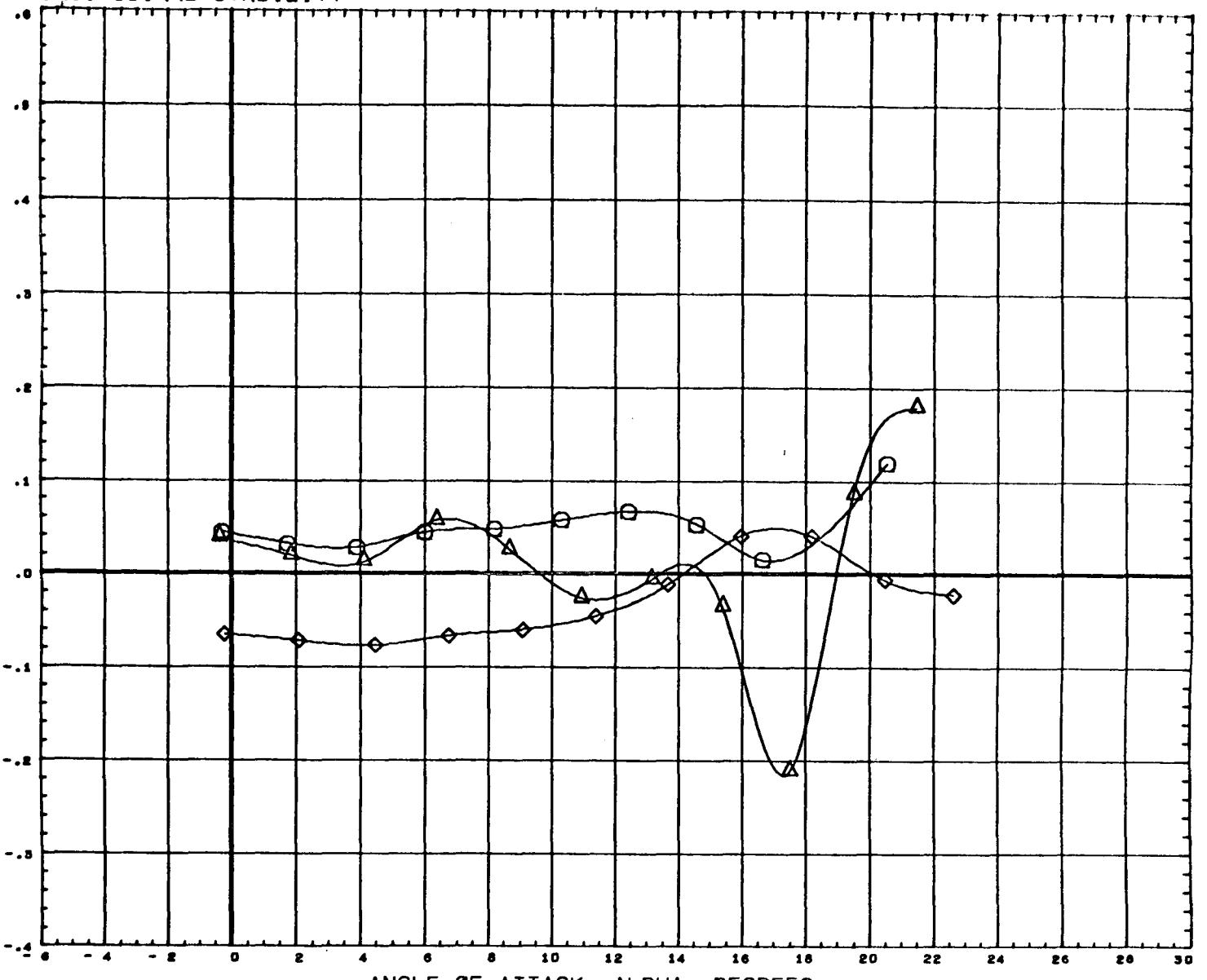


SYMBOL	MACH	PARAMETRIC VALUES			
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△	0.906	RUDFLR	30.000		
◇	1.201				

DATA HIST. CODE GC*G

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YMRP	0.0000	IN.
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SCALE	0.0034	

LONGITUDINAL STABILITY

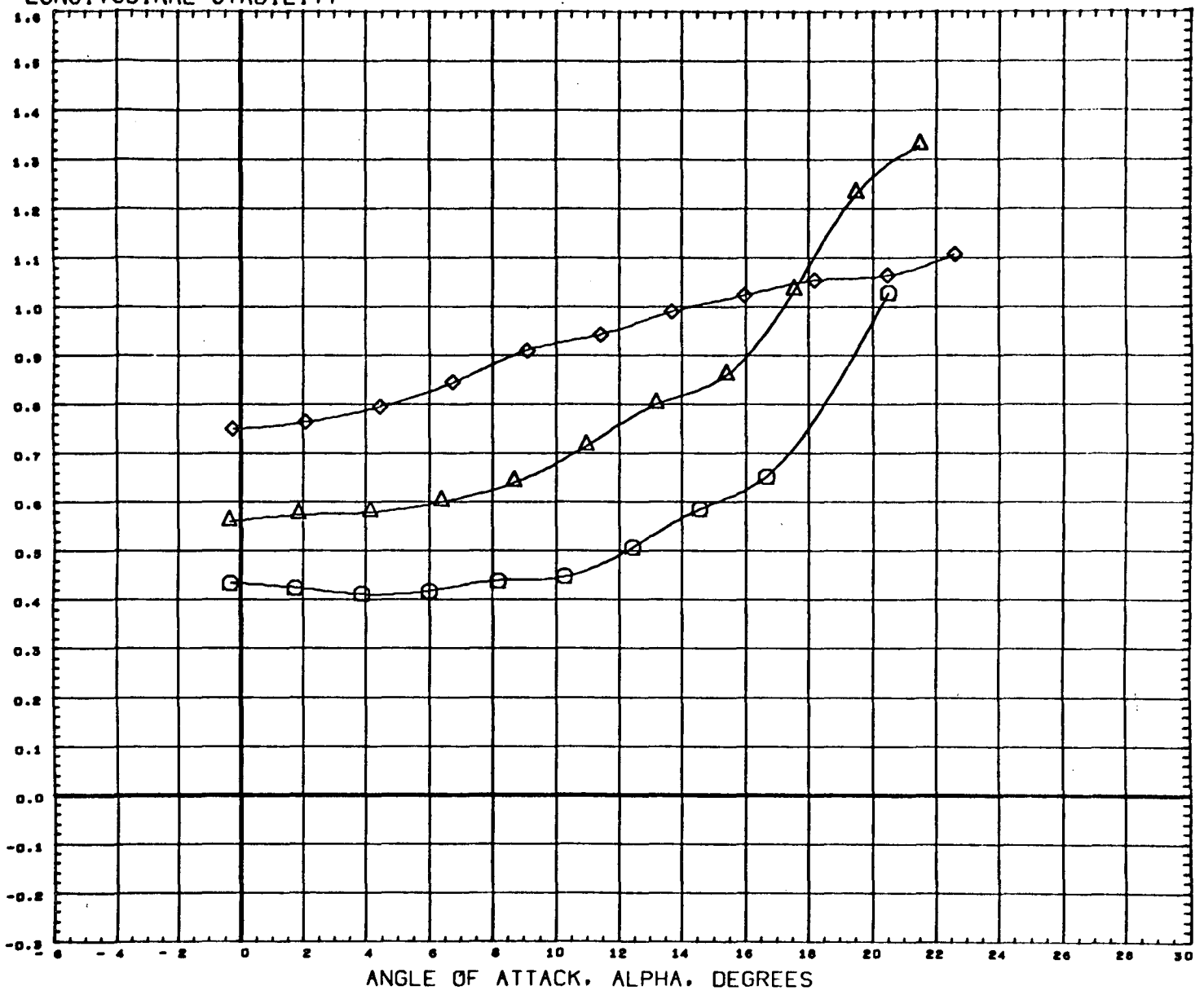


SYMBOL	MACH		PARAMETRIC VALUES		
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△	0.906	RUDFLR	30.000		
◇	1.201				

DATA HIST. CODE GC#G

REFERENCE INFORMATION		
SREF	14.6636	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LONGITUDINAL STABILITY

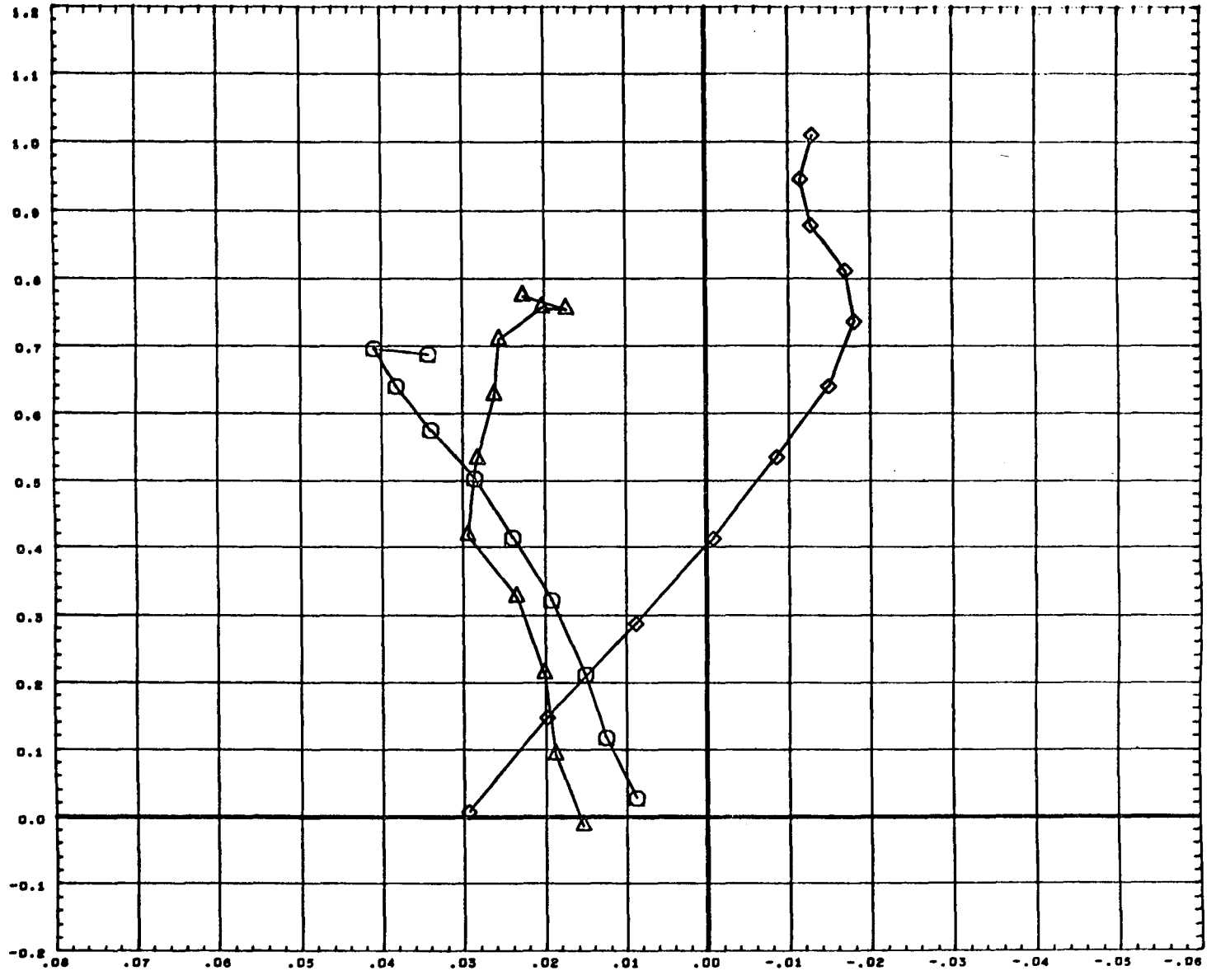


SYMBOL	MACH	PARAMETRIC VALUES			
○	0.598	BETA	0.000	RUDDER	0.000
△	0.906	RUDFLR	30.000		
◇	1.201				

DATA HIST. CODE GC#G

REFERENCE INFORMATION		
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LREF	4.5080	IN.
BREF	5.6550	IN.
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YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LONGITUDINAL STABILITY



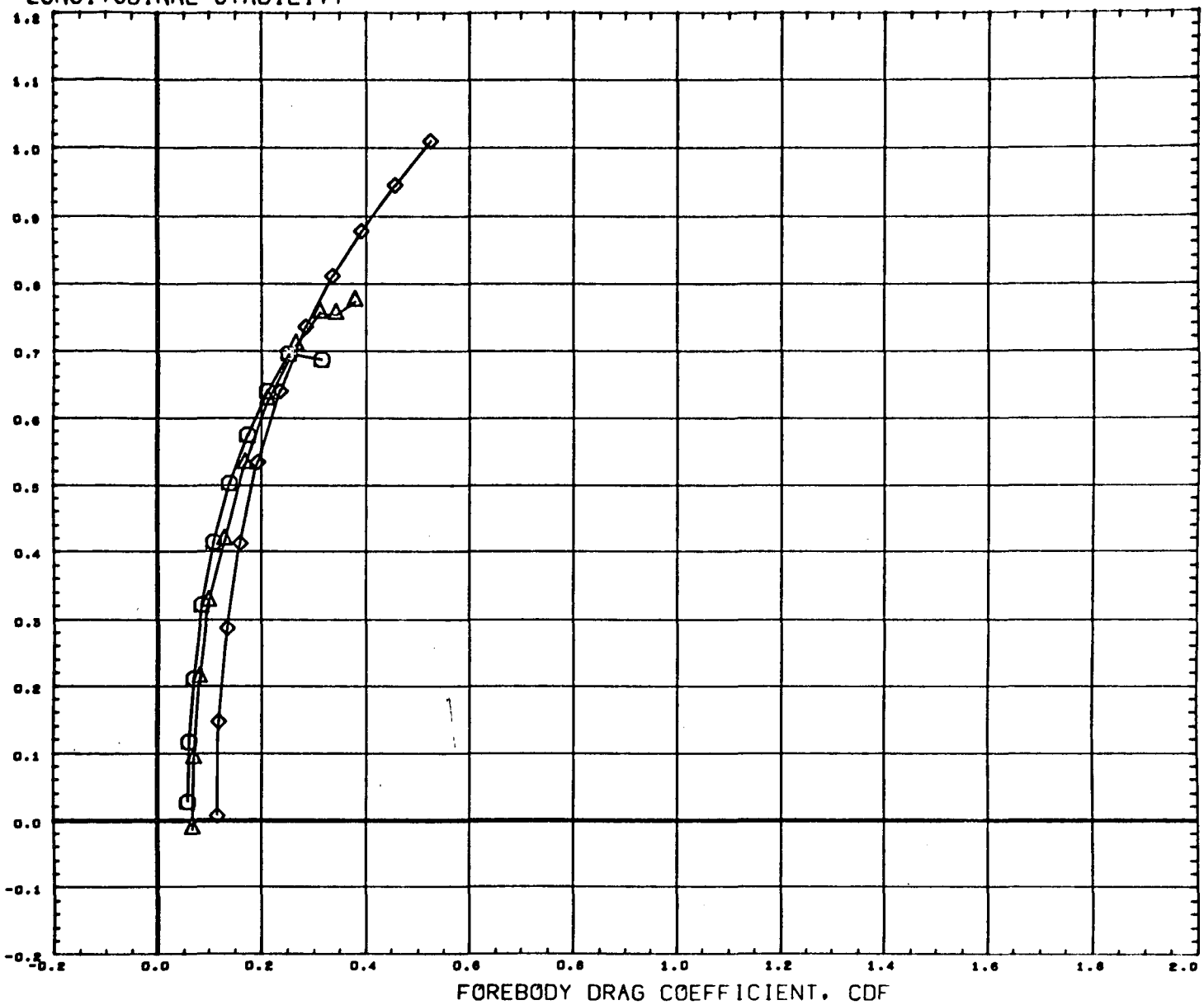
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△	0.906	RUDFLR	30.000		
◇	1.201				

DATA HIST. CODE GC*G

REFERENCE INFORMATION

SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
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YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LONGITUDINAL STABILITY



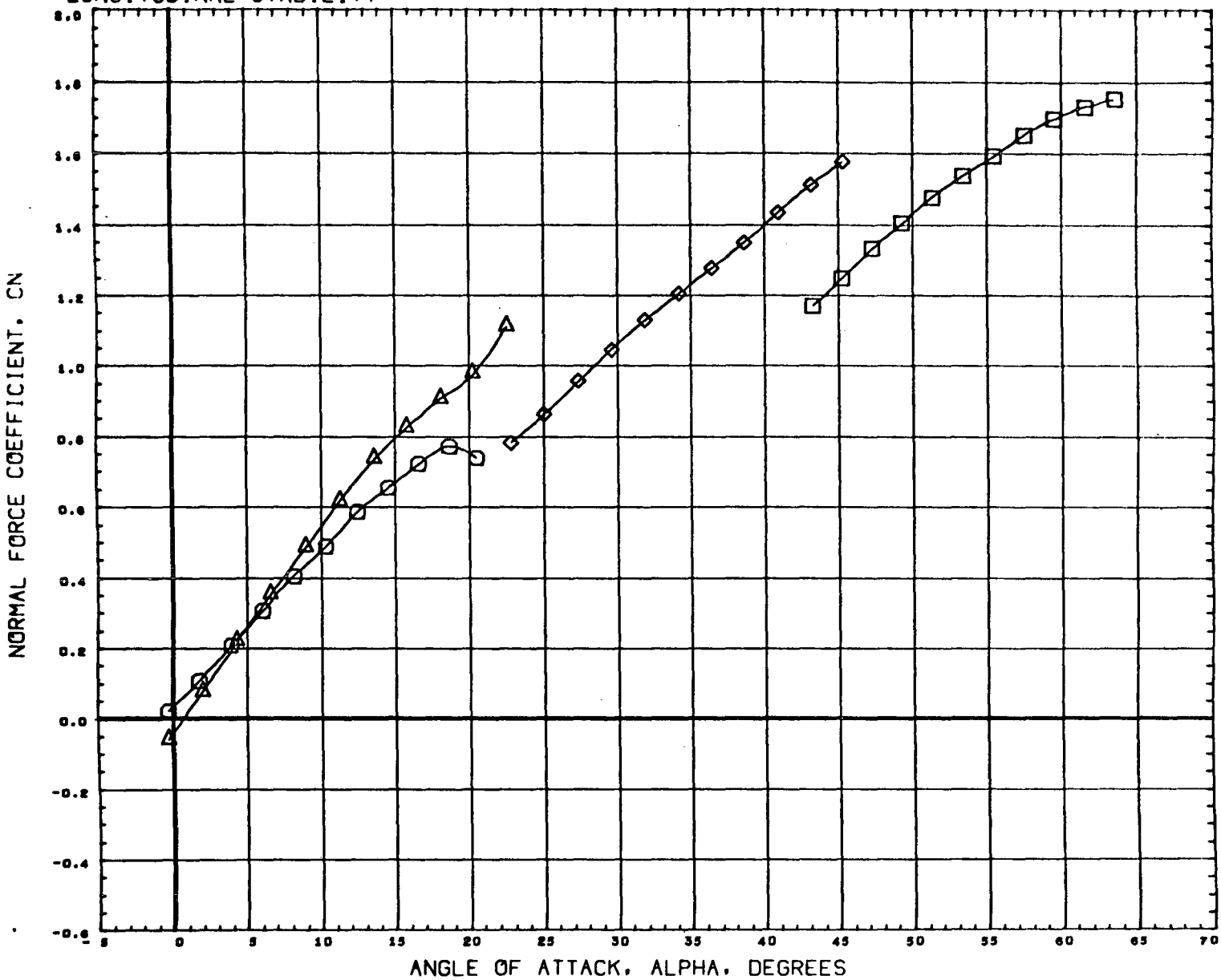
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○	0.598	BETA	0.000	RUDDER	0.000
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◇	1.201				

DATA HIST. CODE GC*G

REFERENCE INFORMATION

SREF	14.6836	SQ.IN.
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YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LONGITUDINAL STABILITY

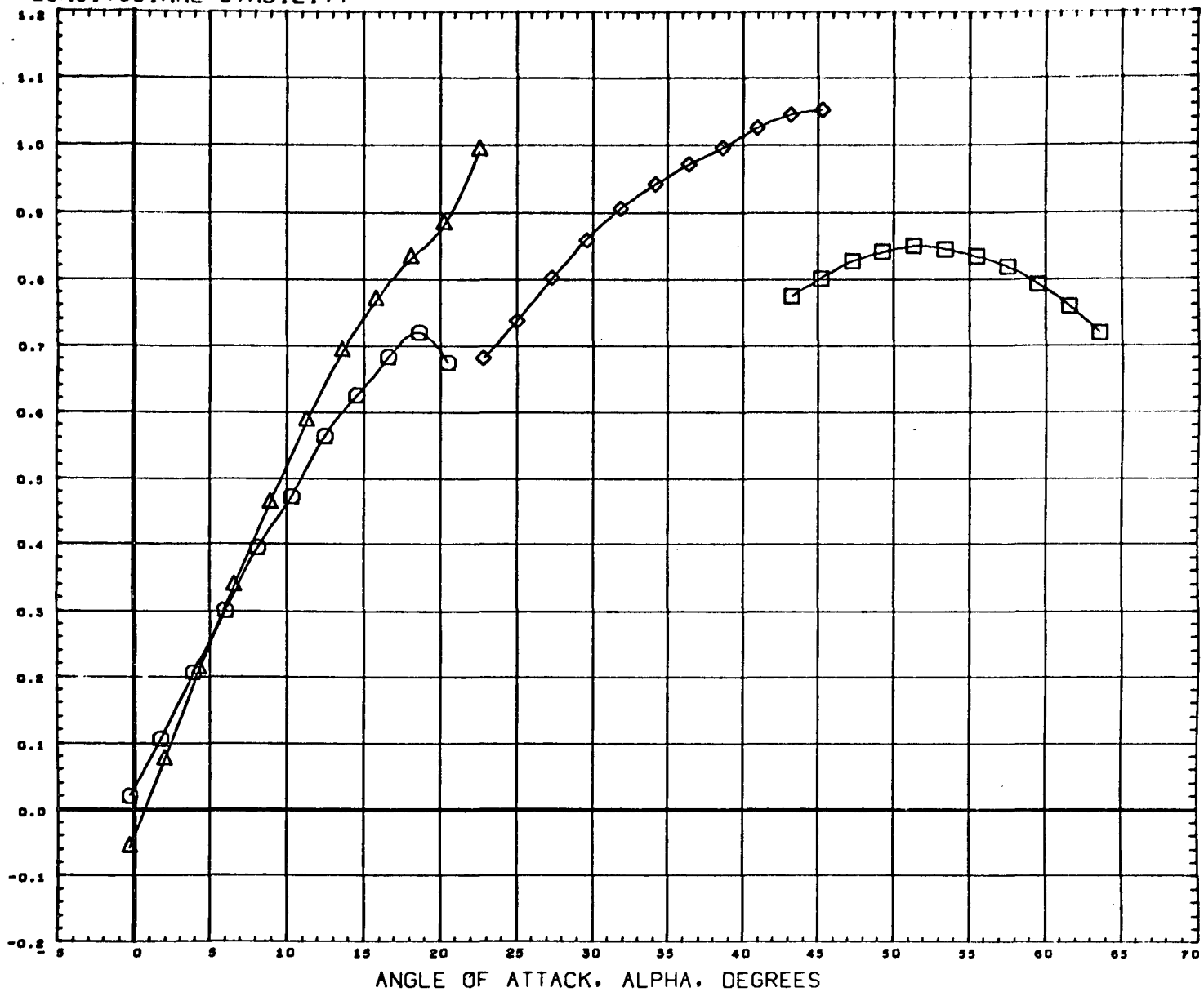


SYMBOL	MACH	PARAMETRIC VALUES			
○	0.595	BETA	0.000	RUDDER	0.000
△	1.195	RUDFLR	30.000		
◇	1.957				
□	4.959				

DATA HIST. CODE #GGC

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
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YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LONGITUDINAL STABILITY

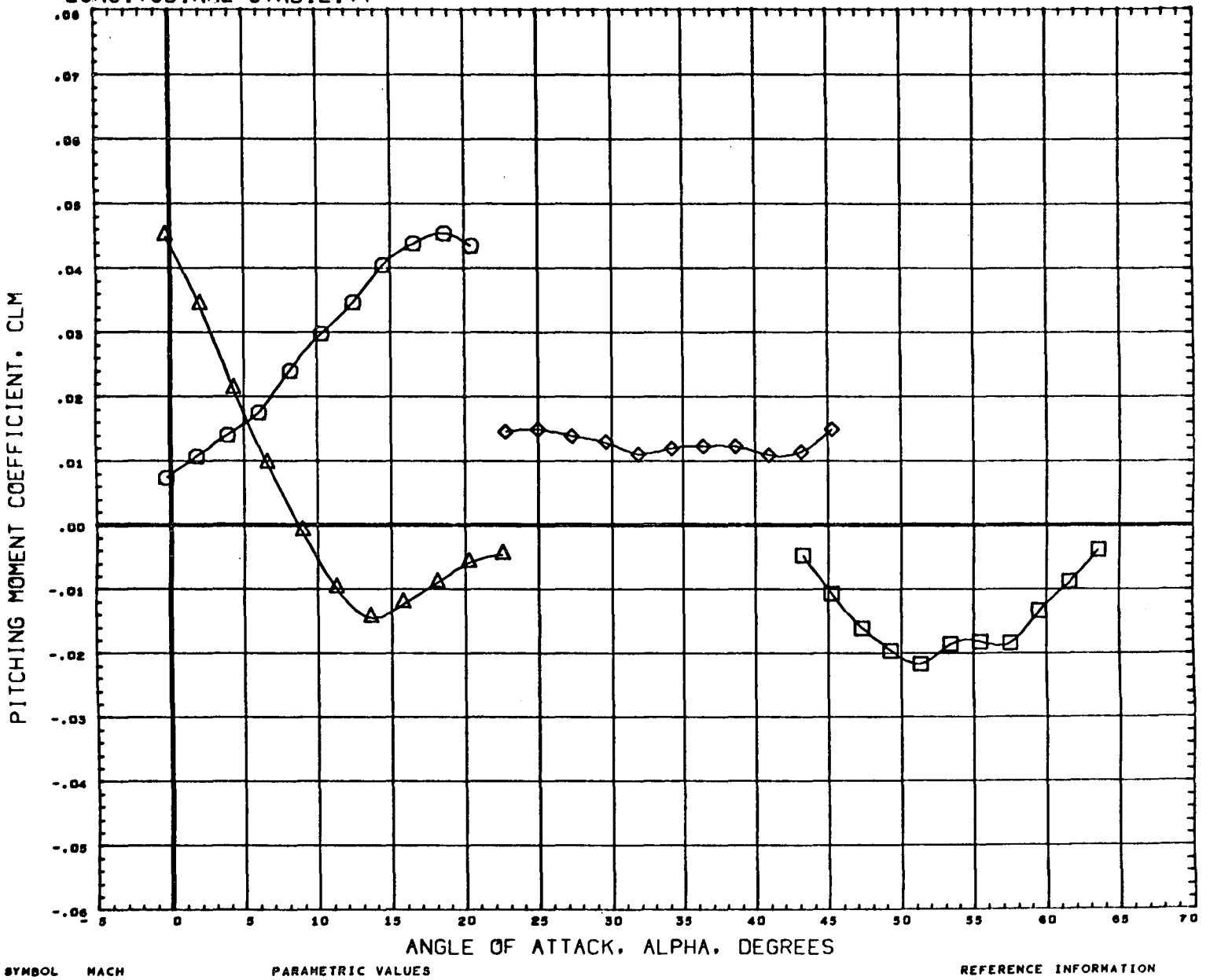


SYMBOL	MACH		PARAMETRIC VALUES		
○	0.595	BETA	0.000	RUDDER	0.000
△	1.195	RUDFLR	30.000		
◇	1.957				
□	4.959				

DATA HIST. CODE *GGC

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
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YMRP	0.0000	IN.
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SCALE	0.0034	

LONGITUDINAL STABILITY



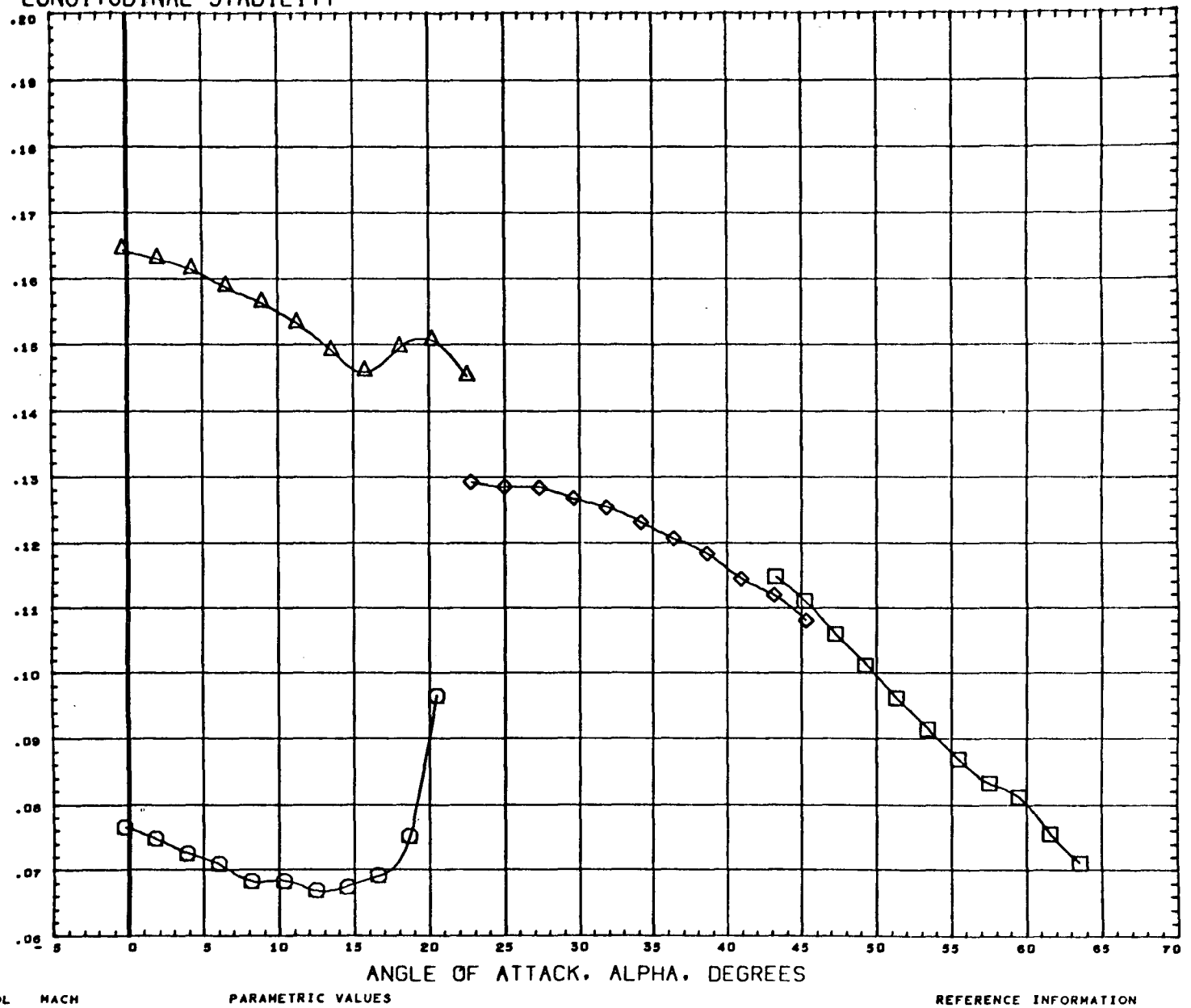
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○	0.595	BETA	0.000	RUDDER	0.000
△	1.199	RUDFLR	30.000		
◇	1.957				
□	4.959				

DATA HIST. CODE #GGC

REFERENCE INFORMATION

SREF	14.6836	SQ.IN.
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BREF	5.6550	IN.
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YMRP	0.0000	IN.
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LONGITUDINAL STABILITY

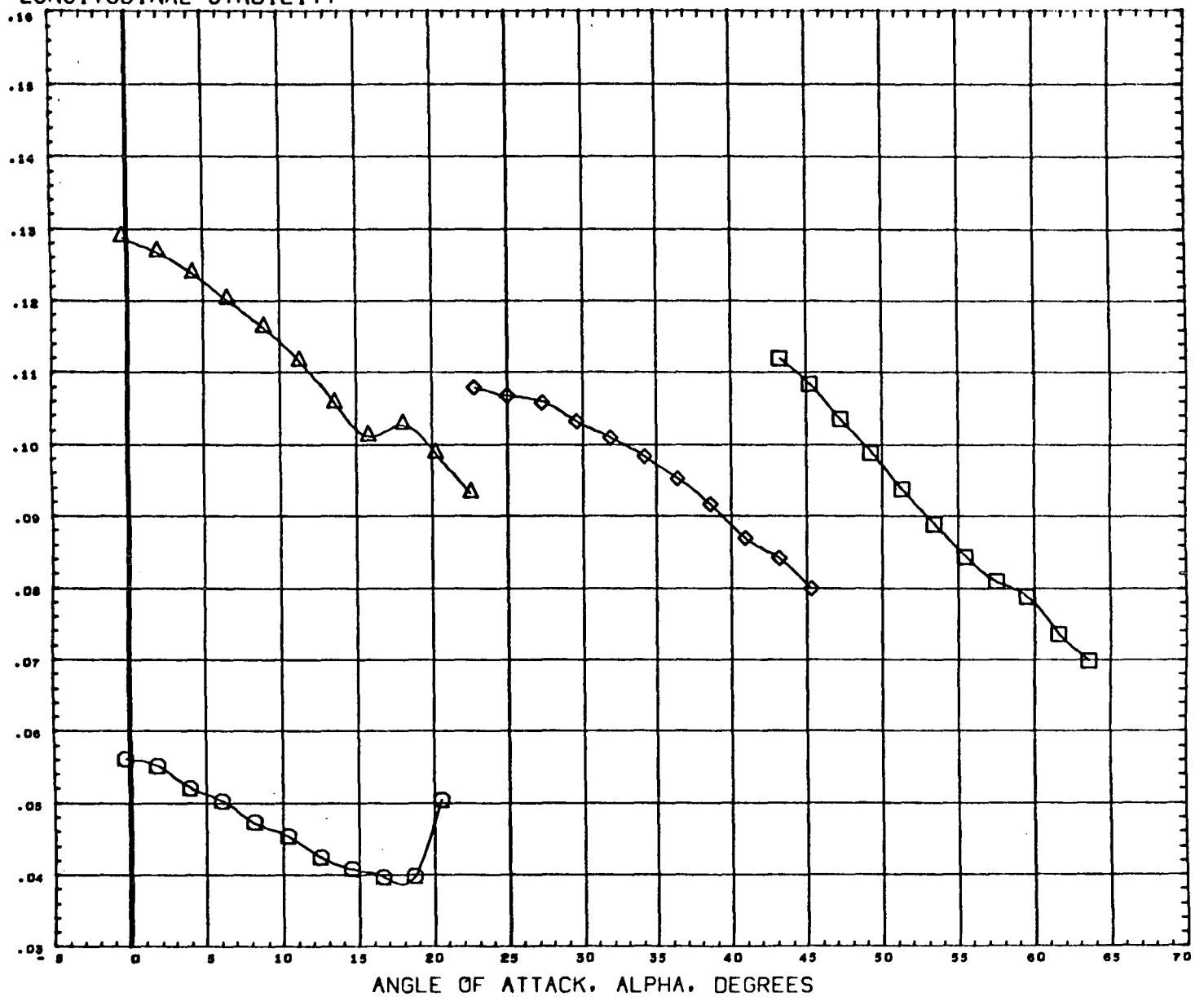


SYMBOL	MACH		PARAMETRIC VALUES		
△	0.595	BETA	0.000	RUDDER	0.000
◇	1.195	RUDFLR	30.000		
□	1.957				
○	4.959				

DATA HIST. CODE *GGC

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
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BREF	5.6550	IN.
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YMRP	0.0000	IN.
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SCALE	0.0034	

LONGITUDINAL STABILITY

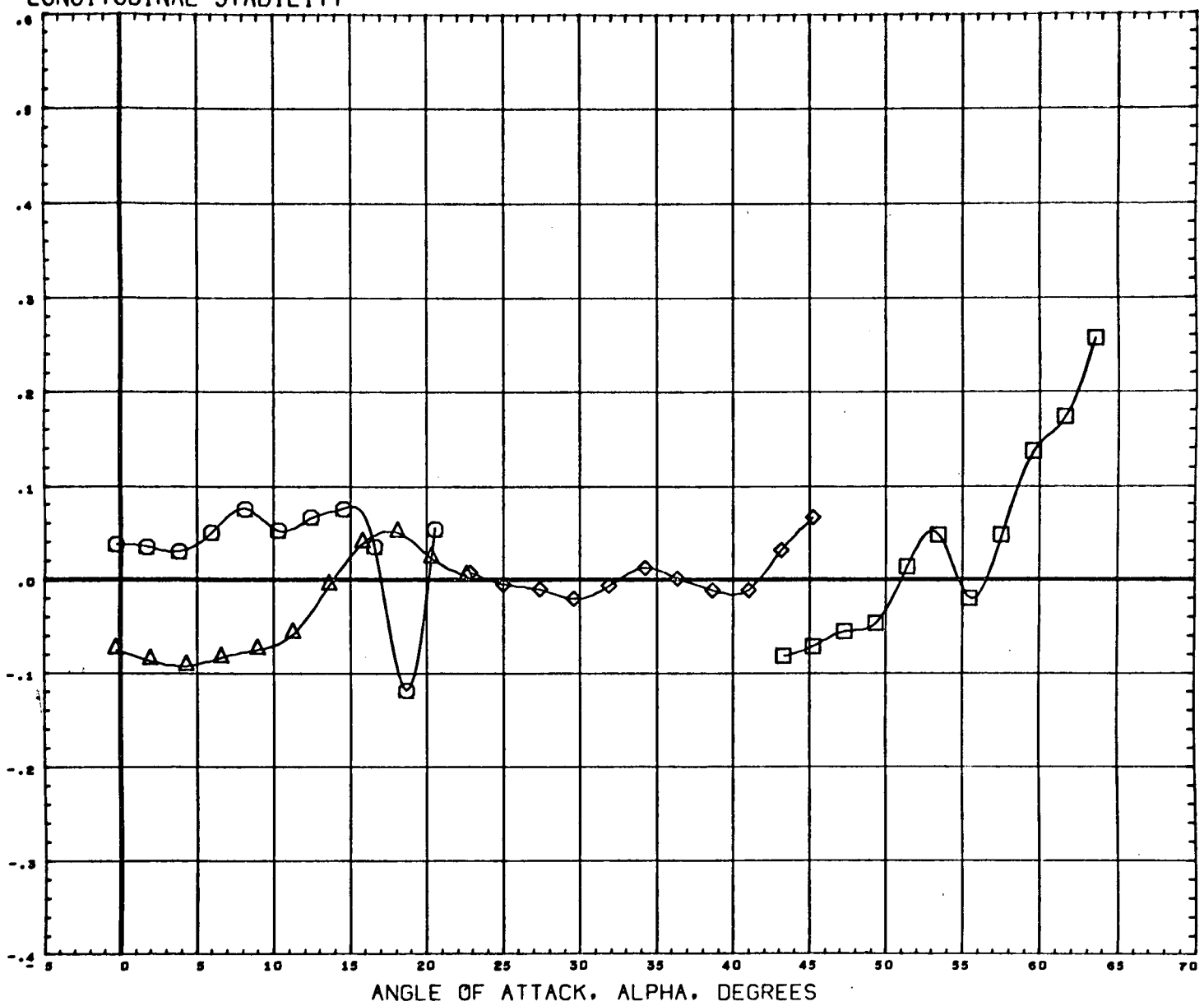


SYMBOL	MACH		PARAMETRIC VALUES		
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△	1.195	RUDFLR	30.000		
◇	1.957				
□	4.959				

DATA HIST. CODE *GGC

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YMRP	0.0000	IN.
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SCALE	0.0034	

LONGITUDINAL STABILITY

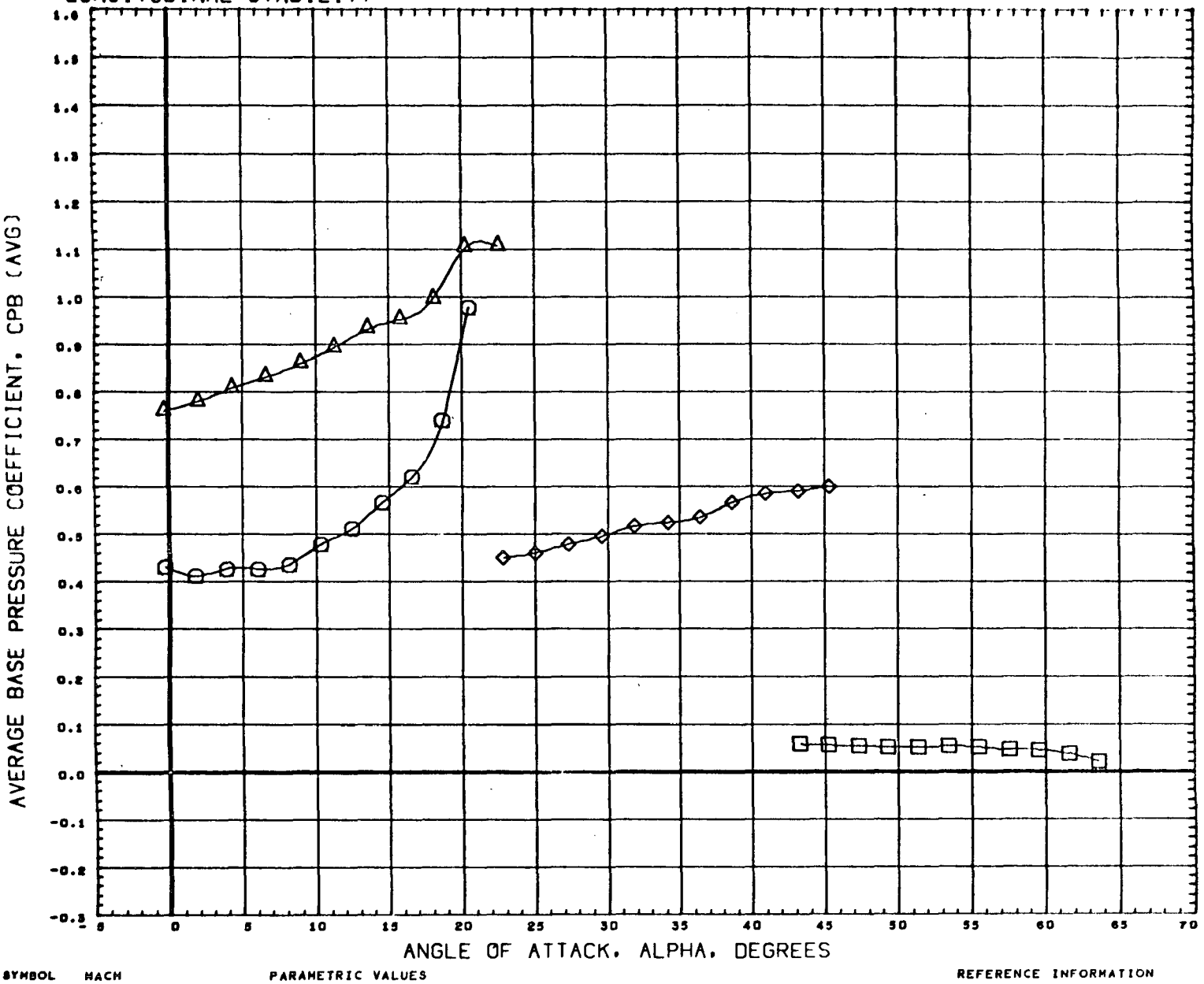


SYMBOL	MACH		PARAMETRIC VALUES		
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△	1.195	RUDFLR	30.000		
◇	1.957				
□	4.959				

DATA HIST. CODE #GGC

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YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LONGITUDINAL STABILITY

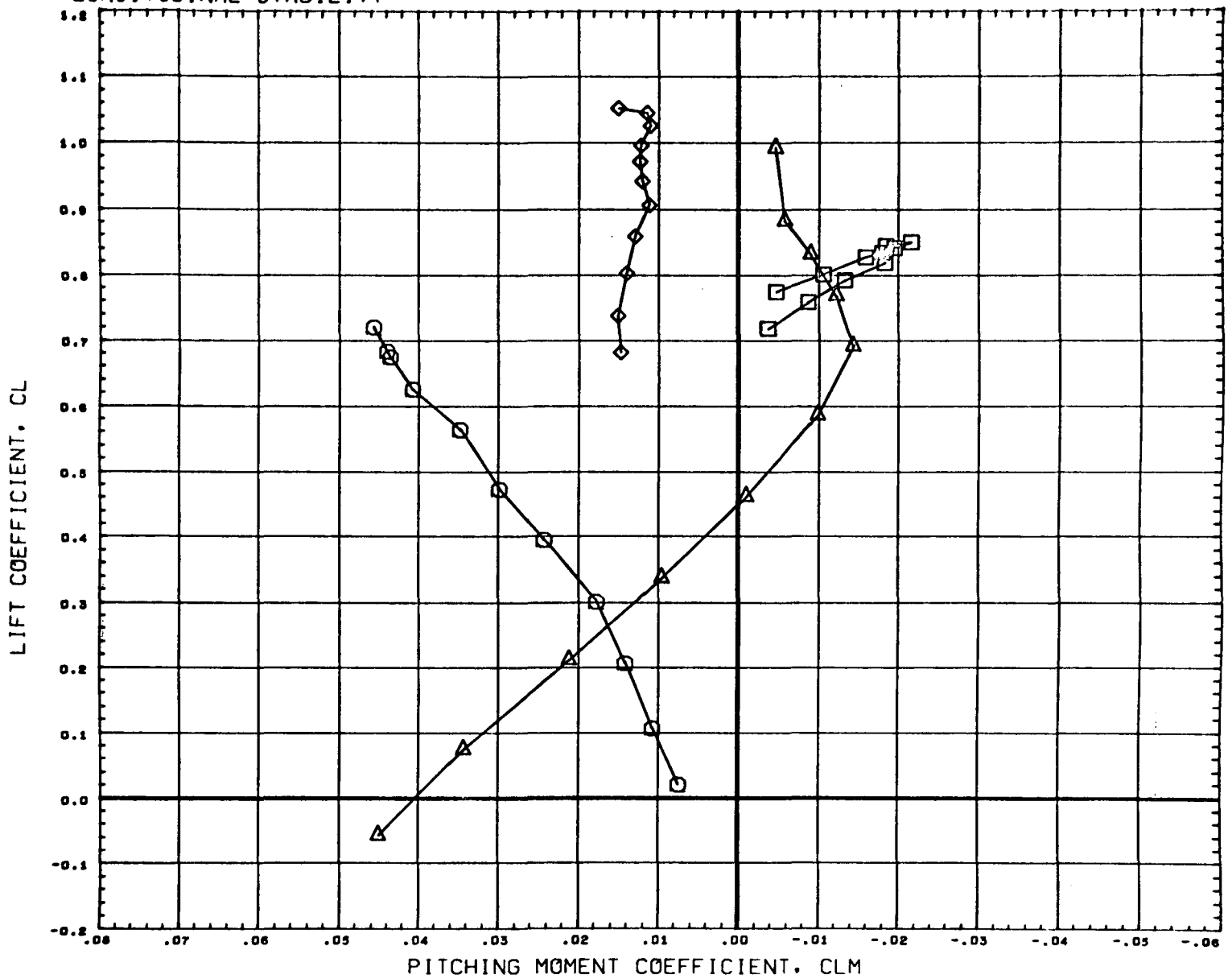


SYMBOL	MACH	PARAMETRIC VALUES			
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△	1.195	RUDFLR	30.000		
◇	1.957				
□	4.959				

DATA HIST. CODE *GGC

REFERENCE INFORMATION		
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LREF	4.5080	IN.
BREF	5.6550	IN.
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YMRP	0.0000	IN.
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SCALE	0.0034	

LONGITUDINAL STABILITY

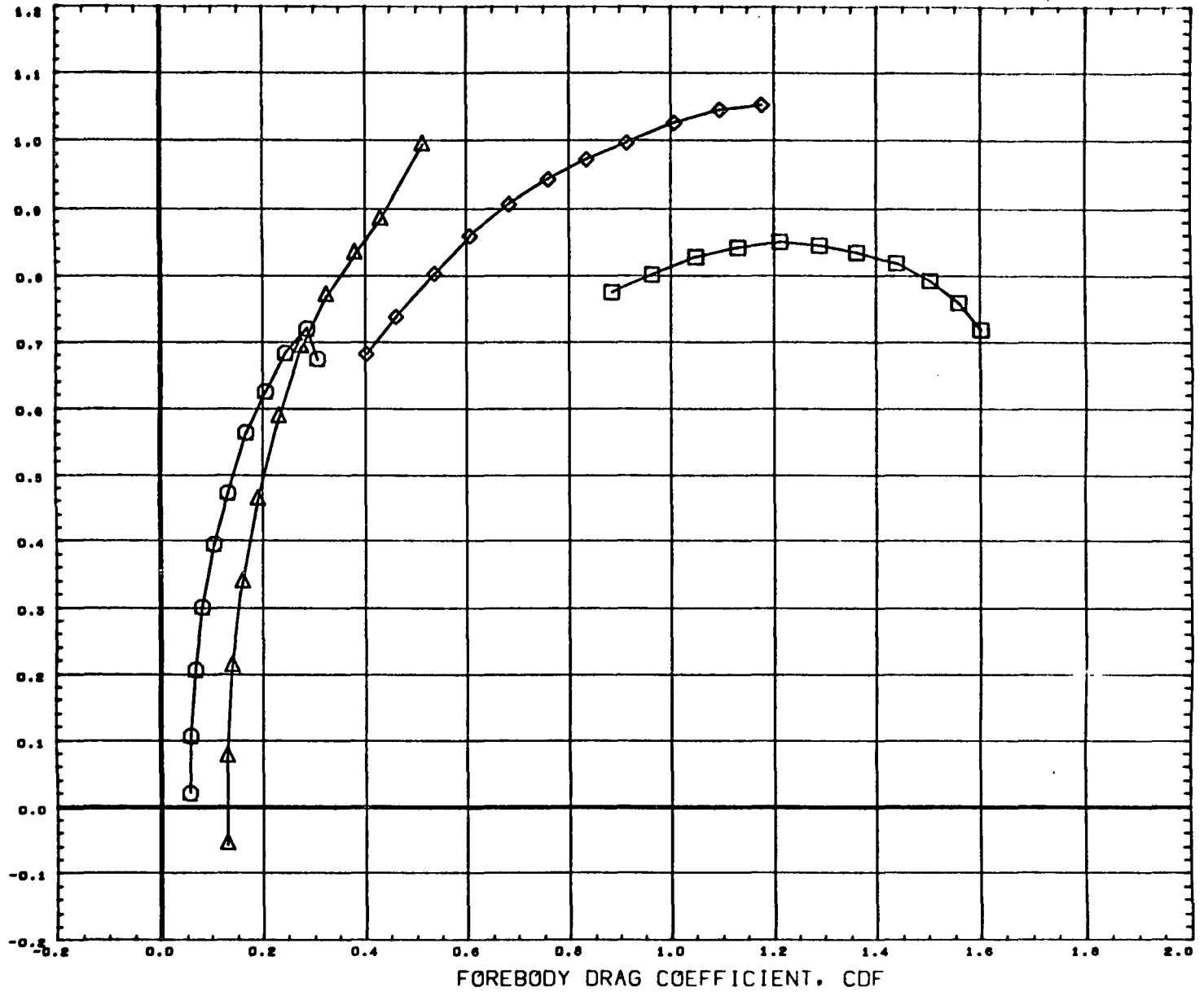


SYMBOL	MACH	PARAMETRIC VALUES			
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△	1.195	RUDFLR	30.000		
◇	1.957				
□	4.959				

DATA HIST. CODE #GGC

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
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SCALE	0.0034	

LONGITUDINAL STABILITY



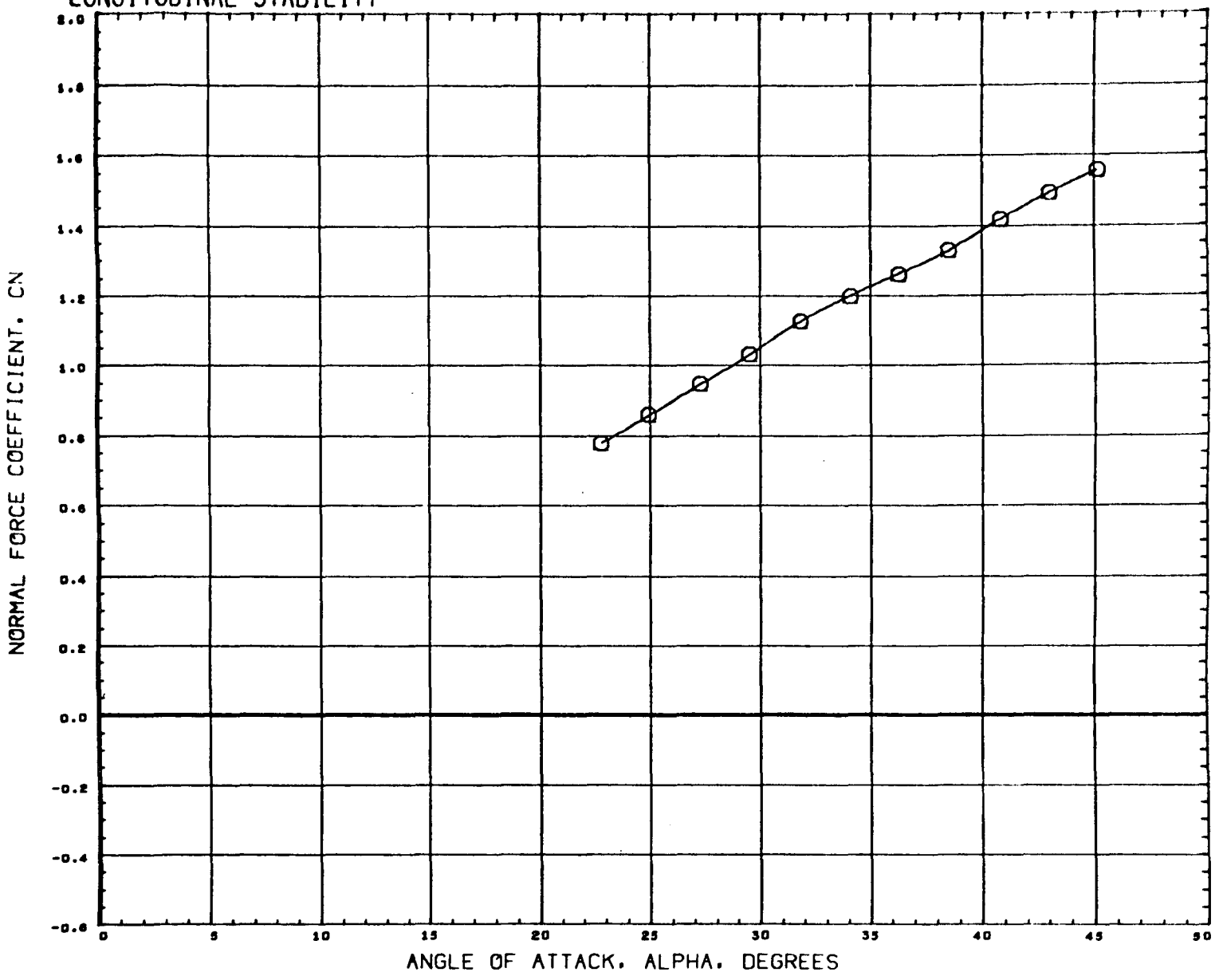
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△	1.195	RUDFLR	30.000		
◇	1.957				
□	4.959				

DATA HIST. CODE *GGC

REFERENCE INFORMATION

SREF	14.6836	SQ.IN.
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BREF	5.6550	IN.
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LONGITUDINAL STABILITY



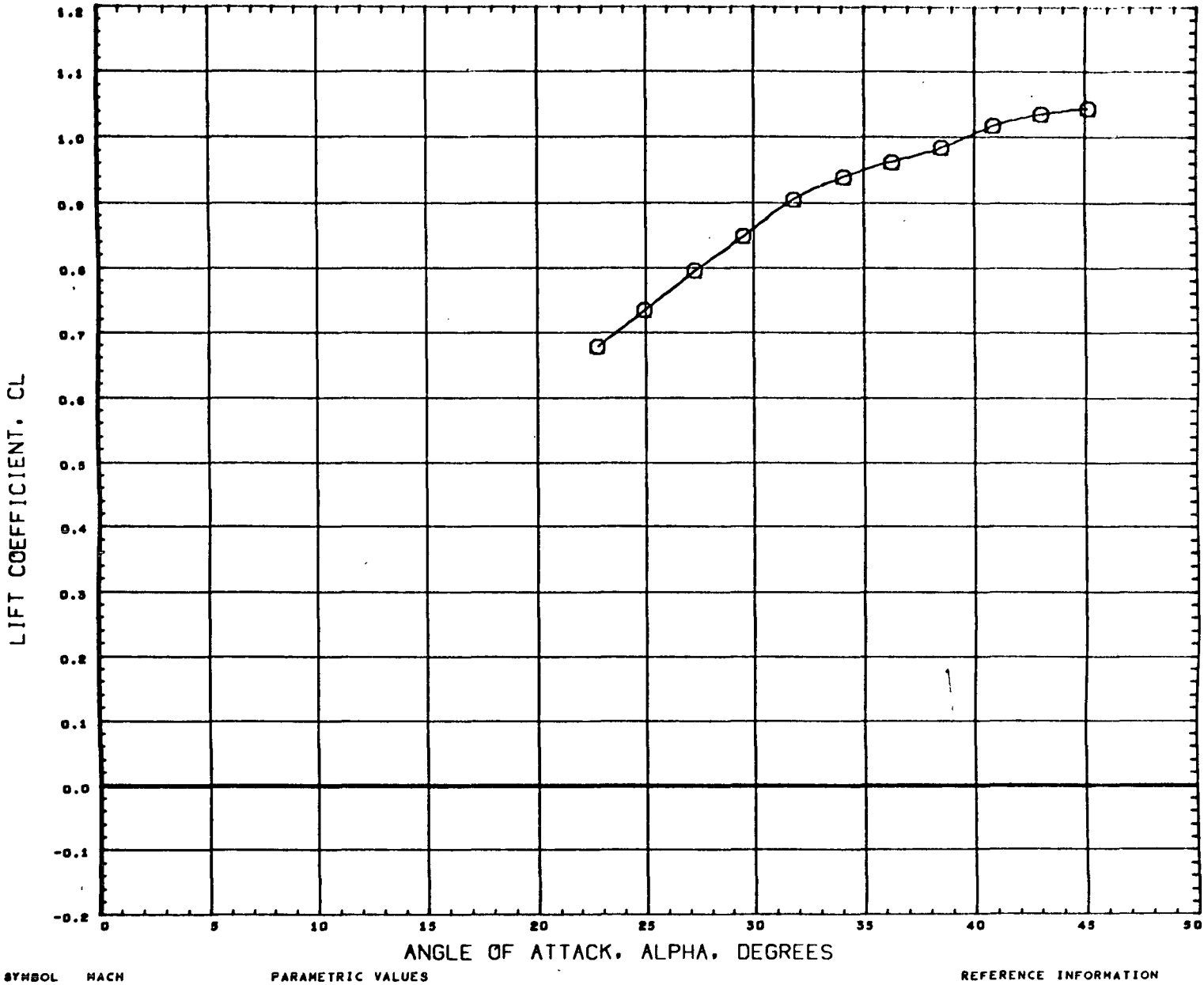
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		RUDFLR	30.000		

DATA HIST. CODE GC

REFERENCE INFORMATION

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LREF	4.5080	IN.
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YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LONGITUDINAL STABILITY

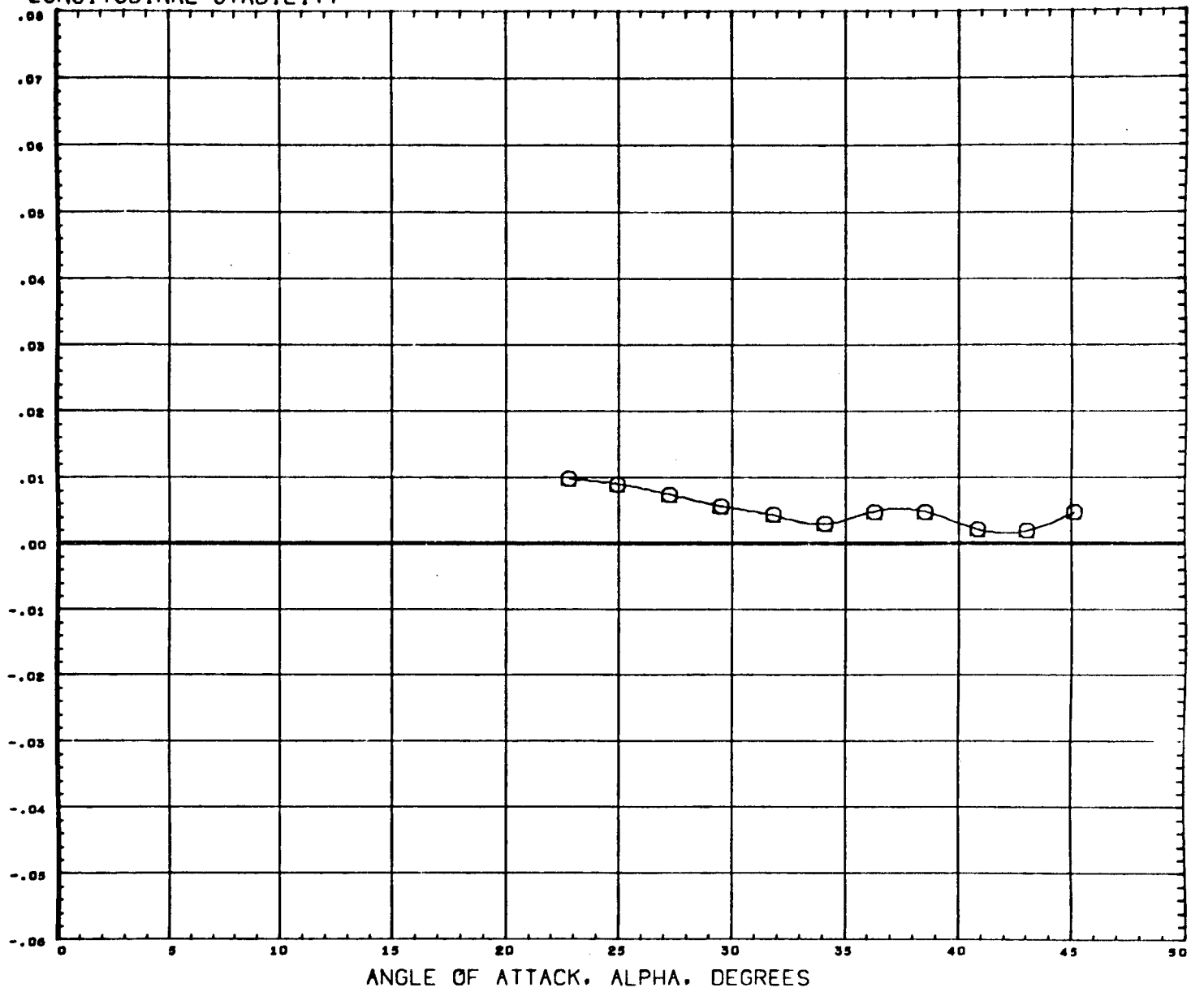


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		RUDFLR	30.000		

DATA HIST. CODE GC

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BREF	5.6550	IN.
XMRP	1.4621	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LONGITUDINAL STABILITY



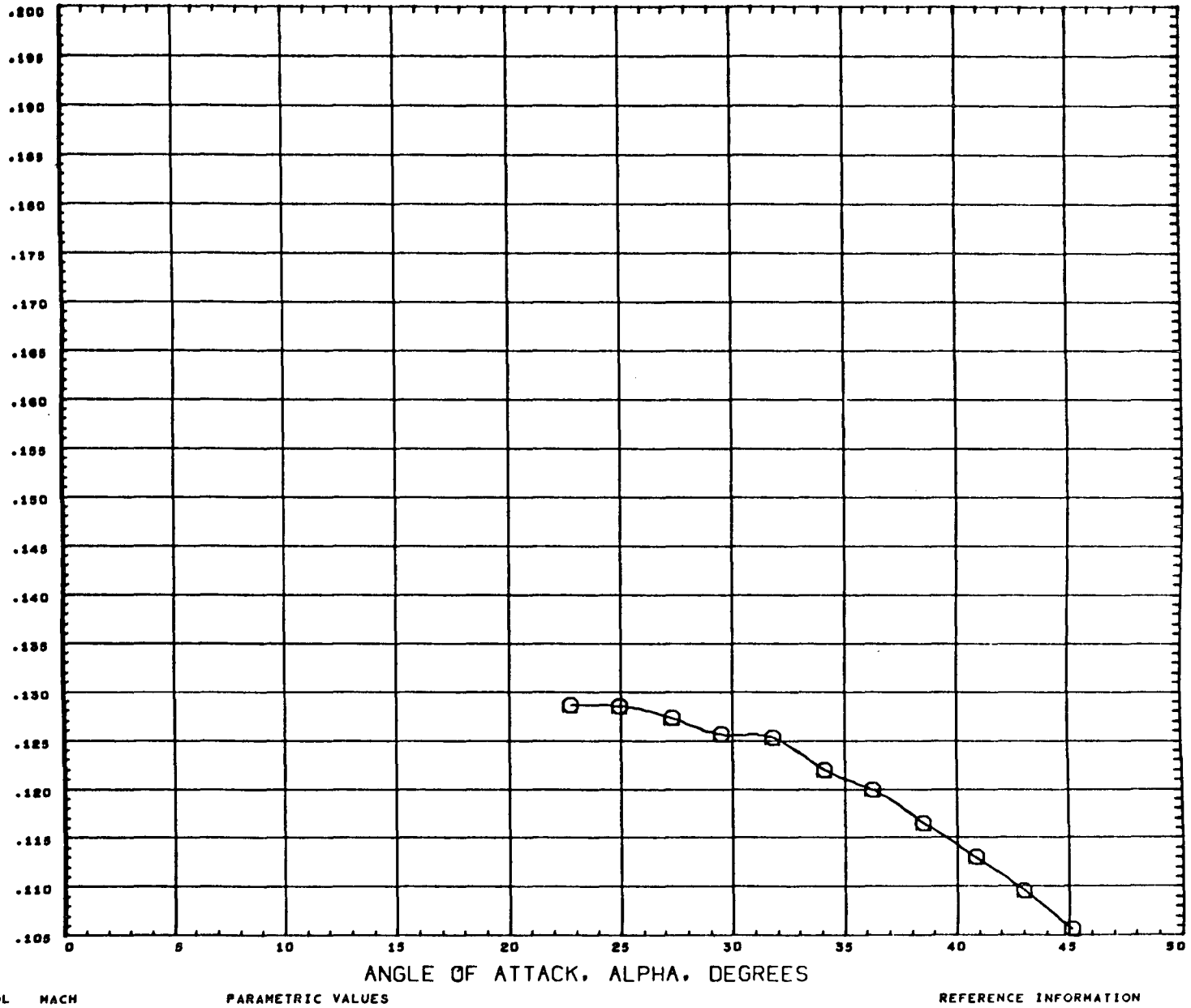
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DATA HIST. CODE GC

REFERENCE INFORMATION

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YMRP	0.0000	IN.
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SCALE	0.0034	

LONGITUDINAL STABILITY



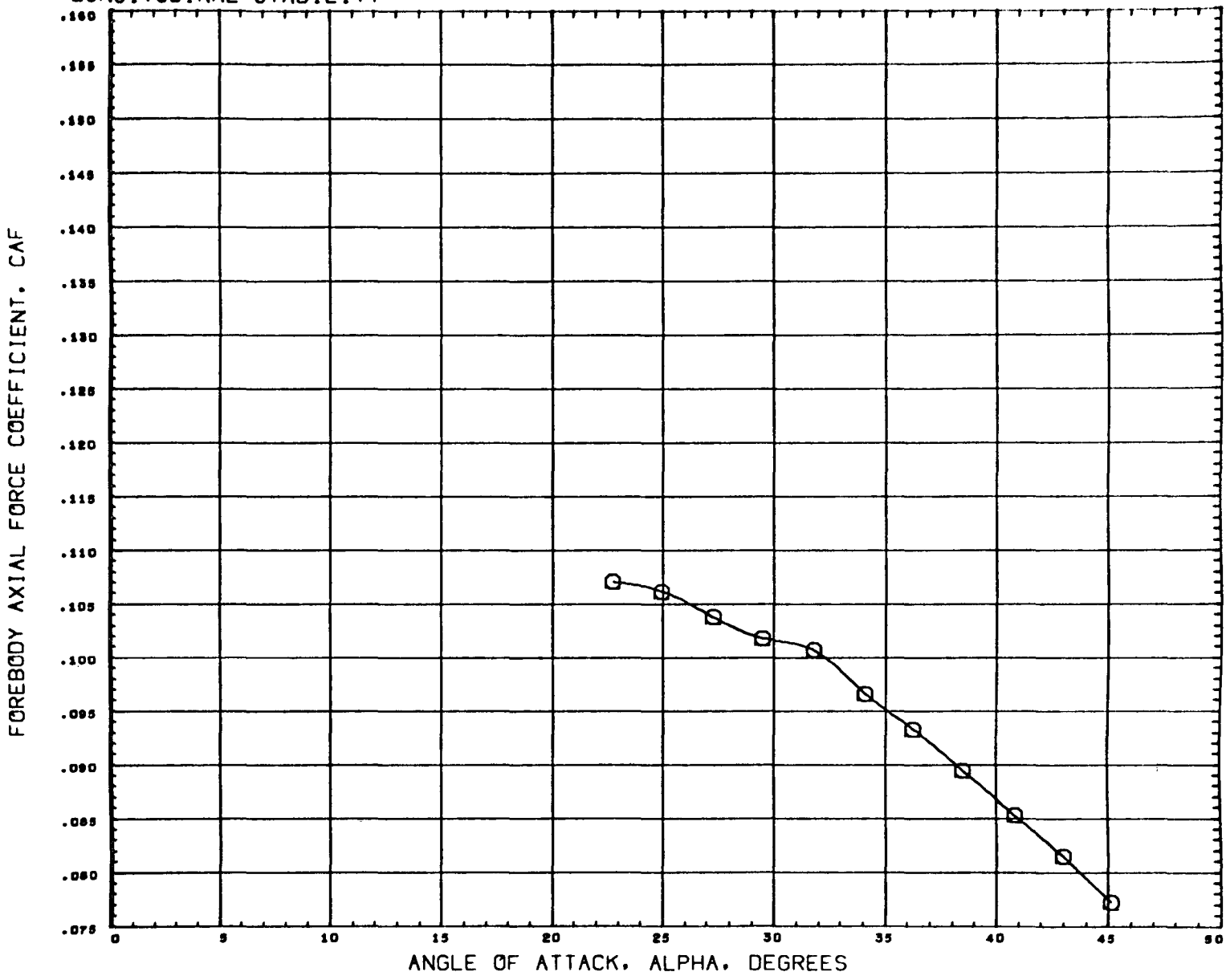
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DATA HIST. CODE GC

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SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
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YMRP	0.0000	IN.
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SCALE	0.0034	

LONGITUDINAL STABILITY



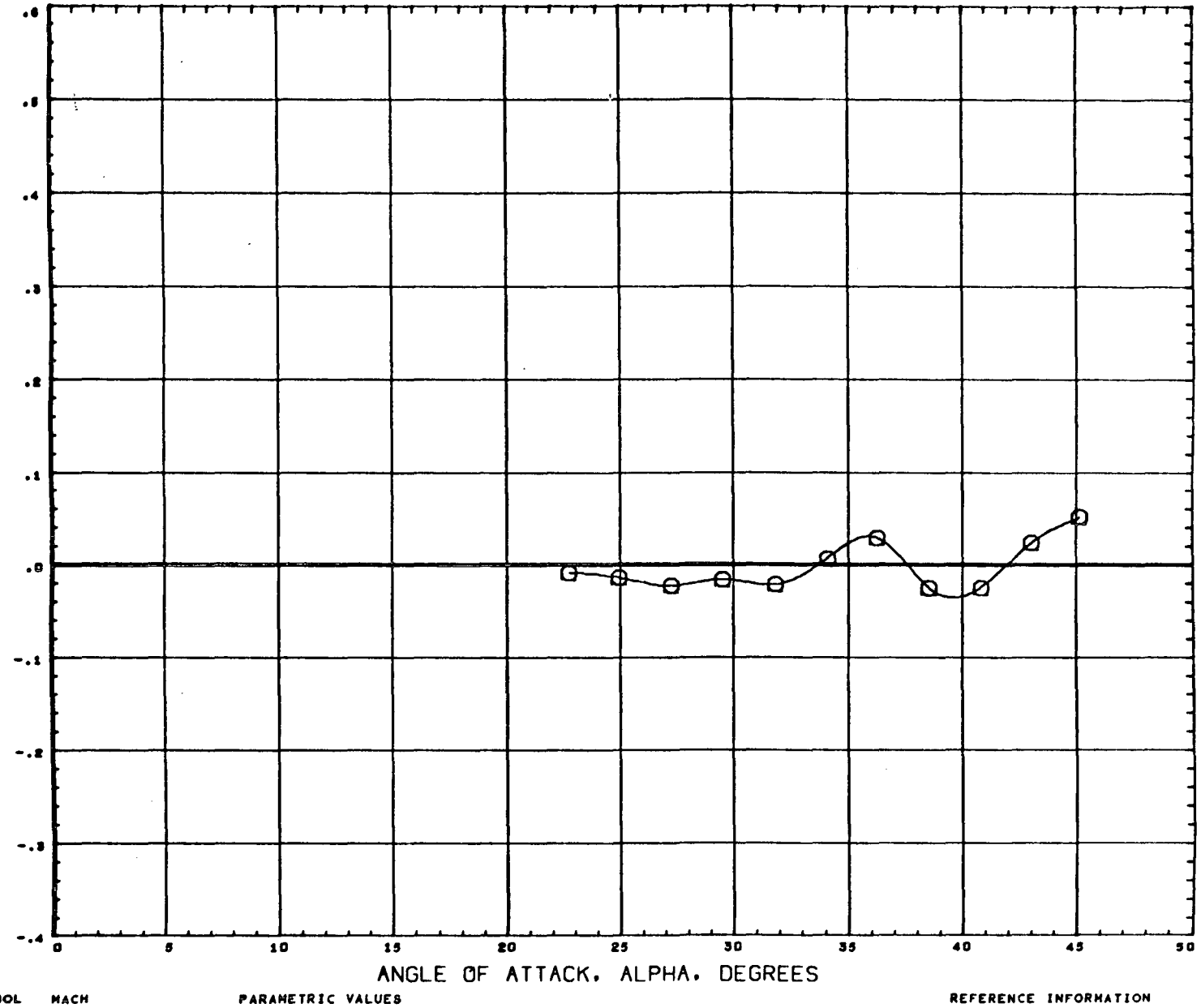
SYMBOL	MACH	PARAMETRIC VALUES			
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		RUDFLR	30.000		

DATA HIST. CODE GC

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SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
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YMRP	0.0000	IN.
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SCALE	0.0034	

LONGITUDINAL STABILITY

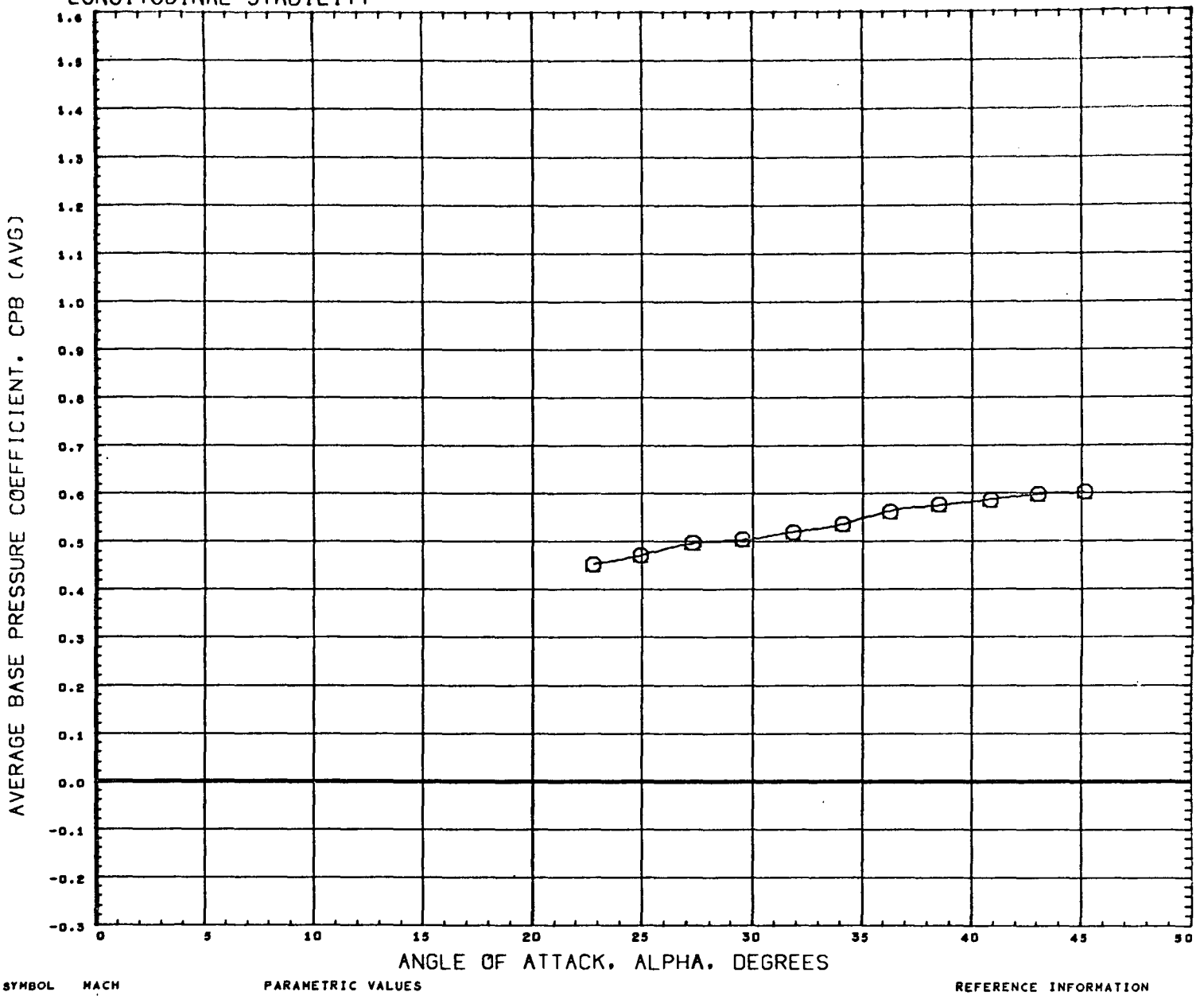


SYMBOL	MACH	PARAMETRIC VALUES			
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		RUDFLR	30.000		

DATA HIST. CODE GC

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LONGITUDINAL STABILITY

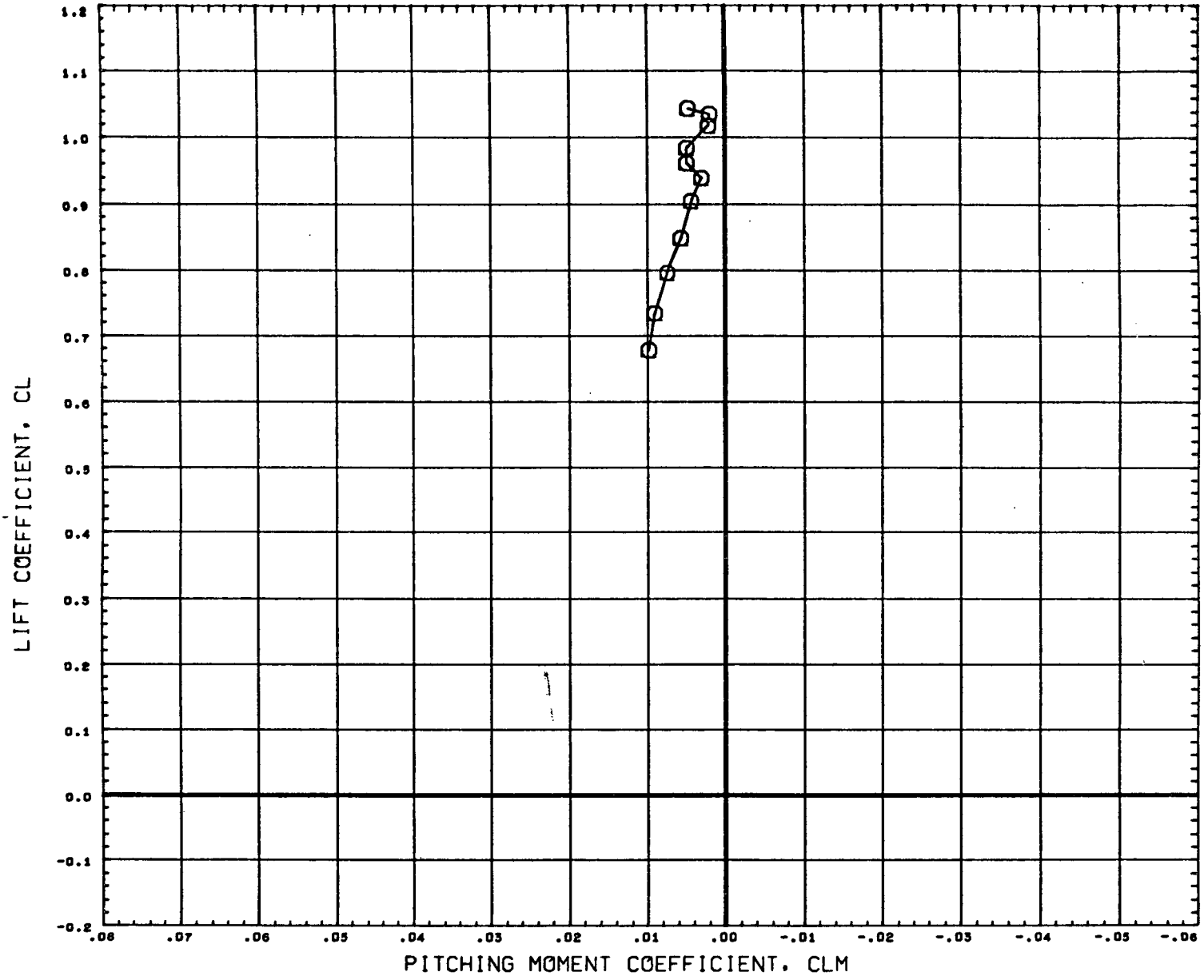


SYMBOL	MACH	PARAMETRIC VALUES			
O	1.960	BETA	0.000	RUDDER	0.000
		RUDFLR	30.000		

DATA HIST. CODE GC

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LONGITUDINAL STABILITY

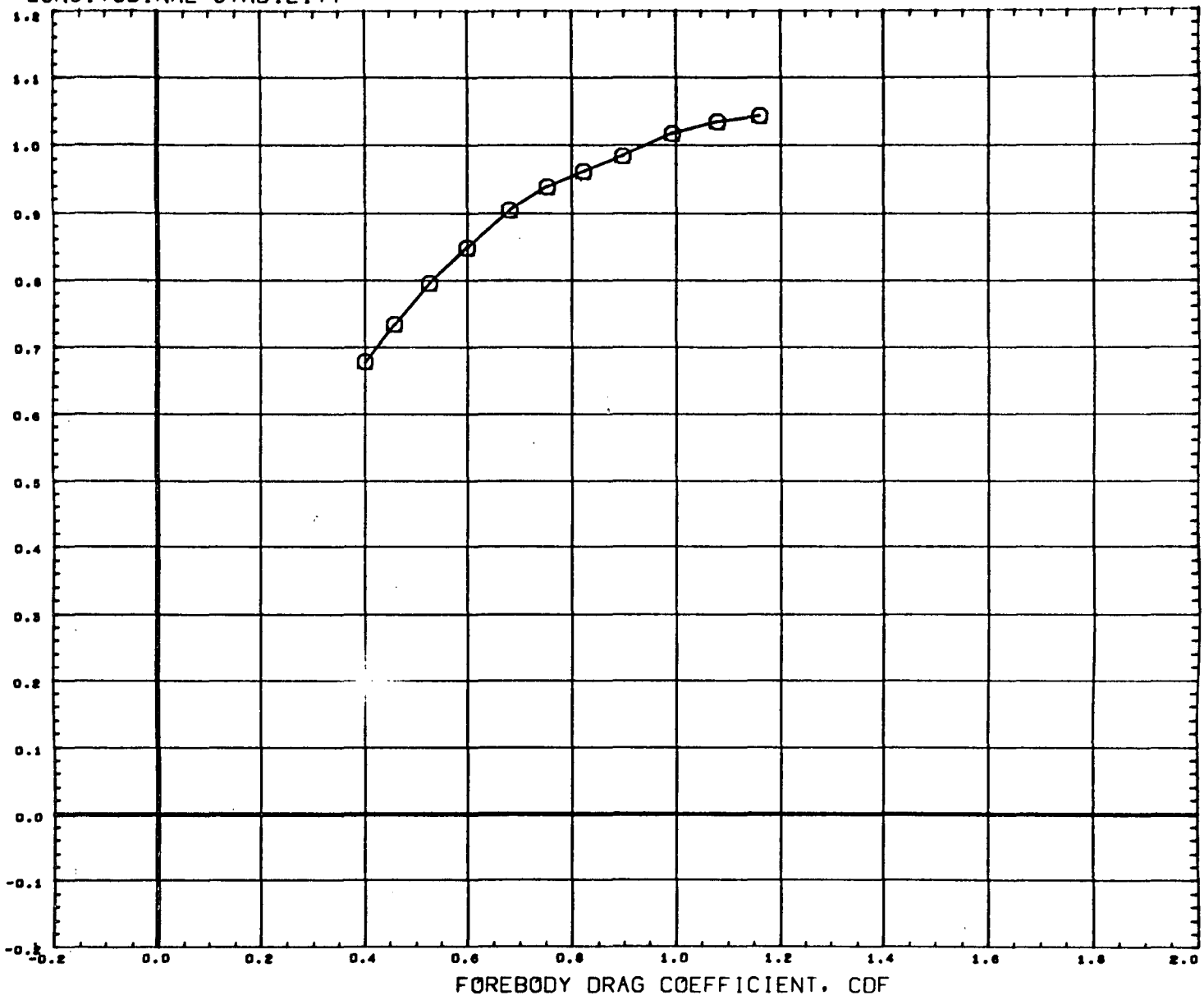


SYMBOL	MACH	PARAMETRIC VALUES			
O	1.960	BETA	0.000	RUDDER	0.000
		RUDFLR	30.000		

DATA HIST. CODE GC

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LONGITUDINAL STABILITY



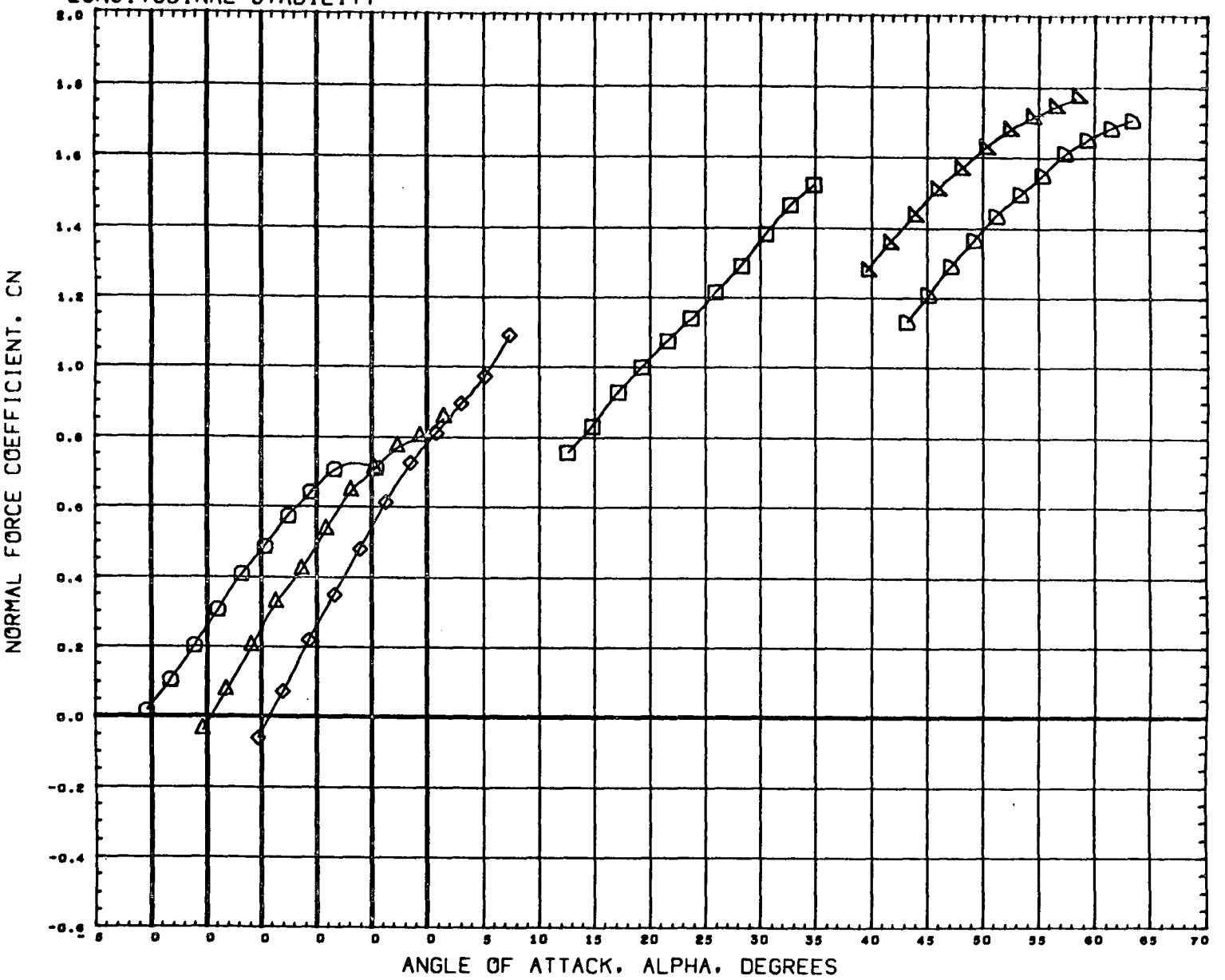
SYMBOL	MACH		PARAMETRIC VALUES		
O	1.960	BETA	0.000	RUDDER	0.000
		RUDFLR	30.000		

DATA HIST. CODE GC

REFERENCE INFORMATION

SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LONGITUDINAL STABILITY



SYMBOL	MACH		PARAMETRIC VALUES		
○	0.598	BETA	0.000	RUDDER	0.000
△	0.905	RUDFLR	30.000		
◇	1.197				
□	1.959				
◸	3.479				
▽	4.959	DATA HIST. CODE	#GGC#G		

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

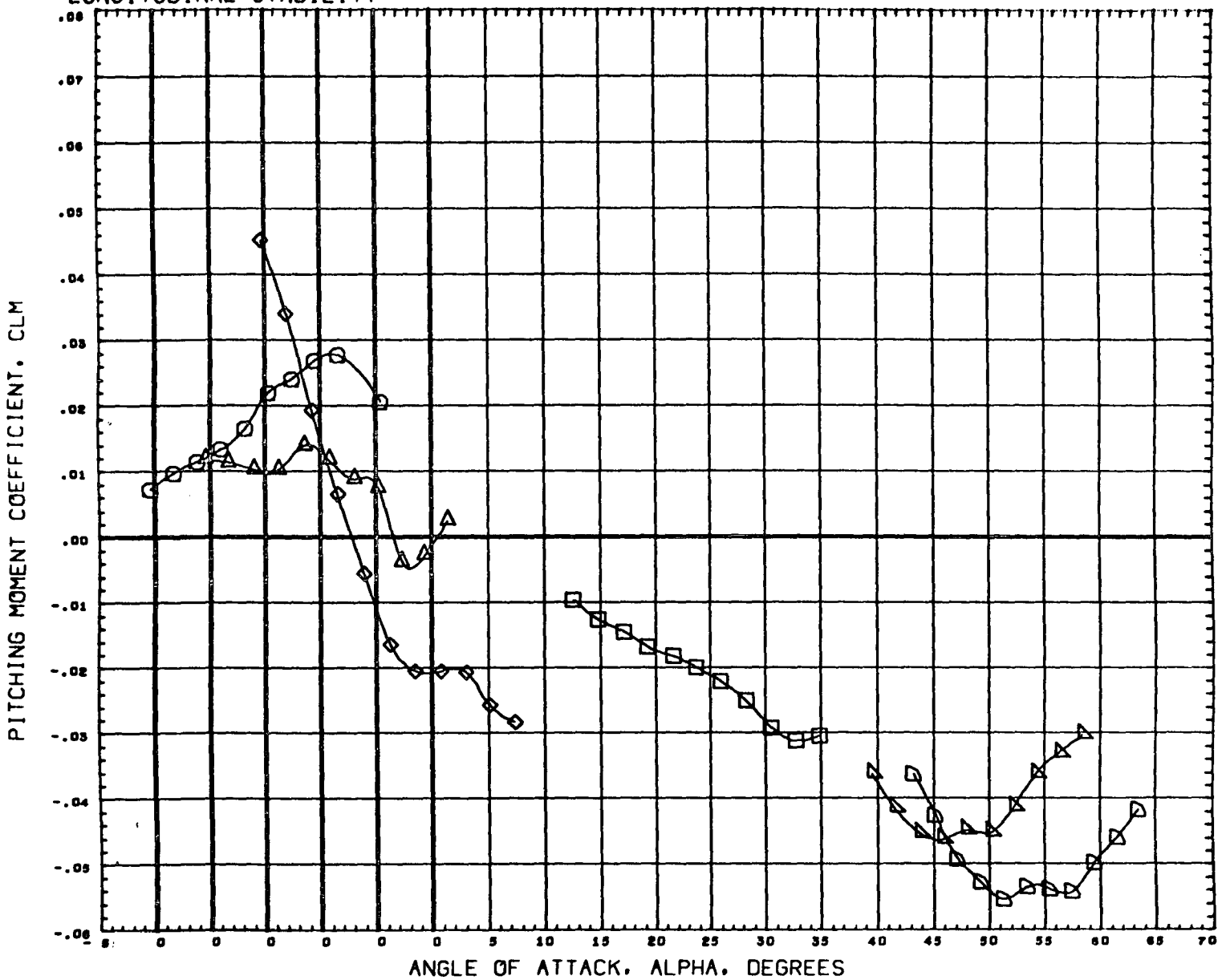
LONGITUDINAL STABILITY



SYMBOL	MACH		PARAMETRIC VALUES		
○	0.598	BETA	0.000	RUDDER	0.000
△	0.905	RUDFLR	30.000		
◇	1.197				
□	1.959				
▽	3.479				
D	4.959	DATA HIST. CODE	*GGC*G		

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4621	IN.
YMRP	0.0000	IN.
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SCALE	0.0034	

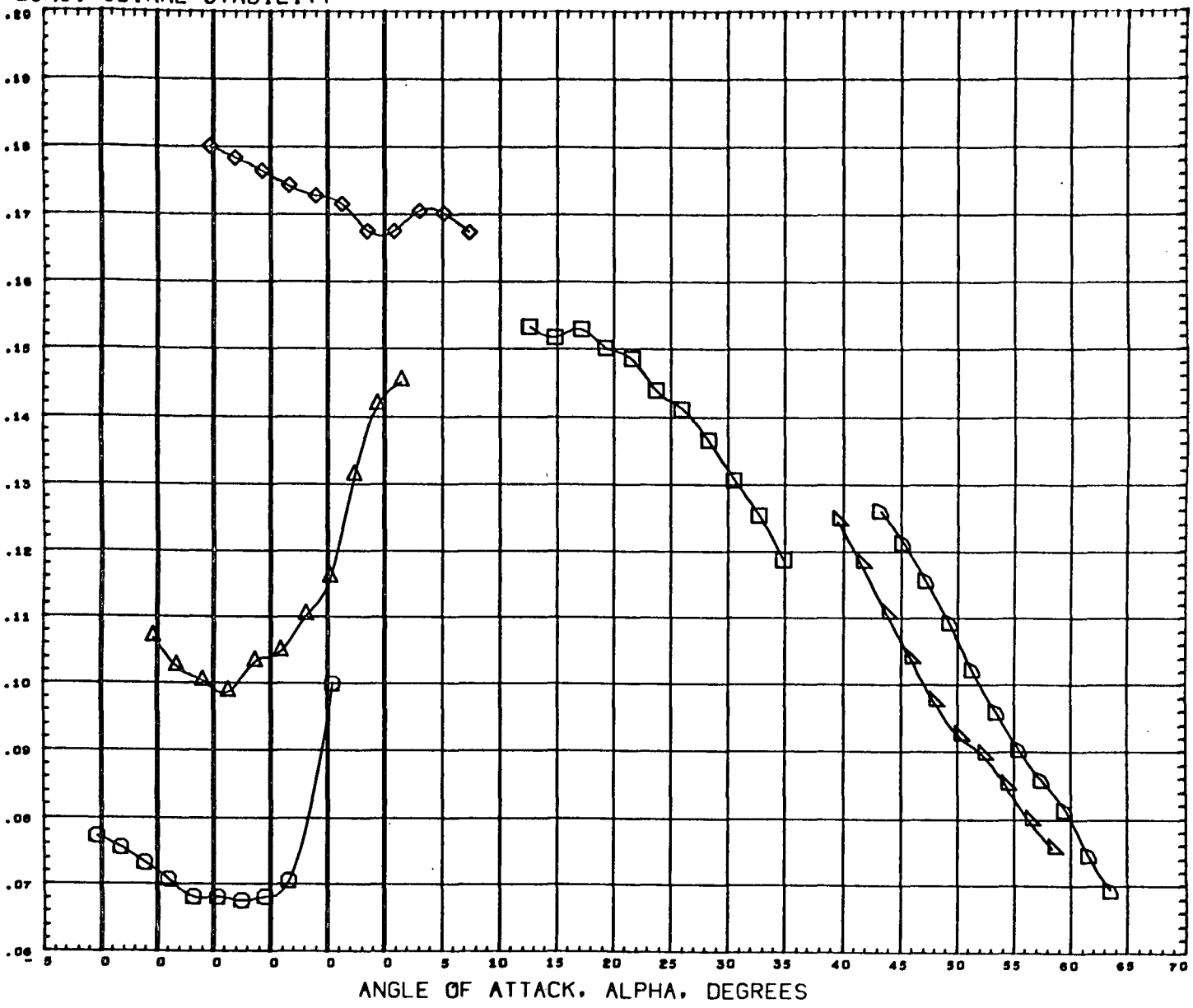
LONGITUDINAL STABILITY



SYMBOL	MACH	PARAMETRIC VALUES			
○	0.598	DETA	0.000	RUDDER	0.000
△	0.905	RUDFLR	30.000		
◇	1.197				
□	1.959				
▽	3.479				
▷	4.959	DATA HIST. CODE	#GGC#G		

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
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YMRP	0.0000	IN.
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SCALE	0.0034	

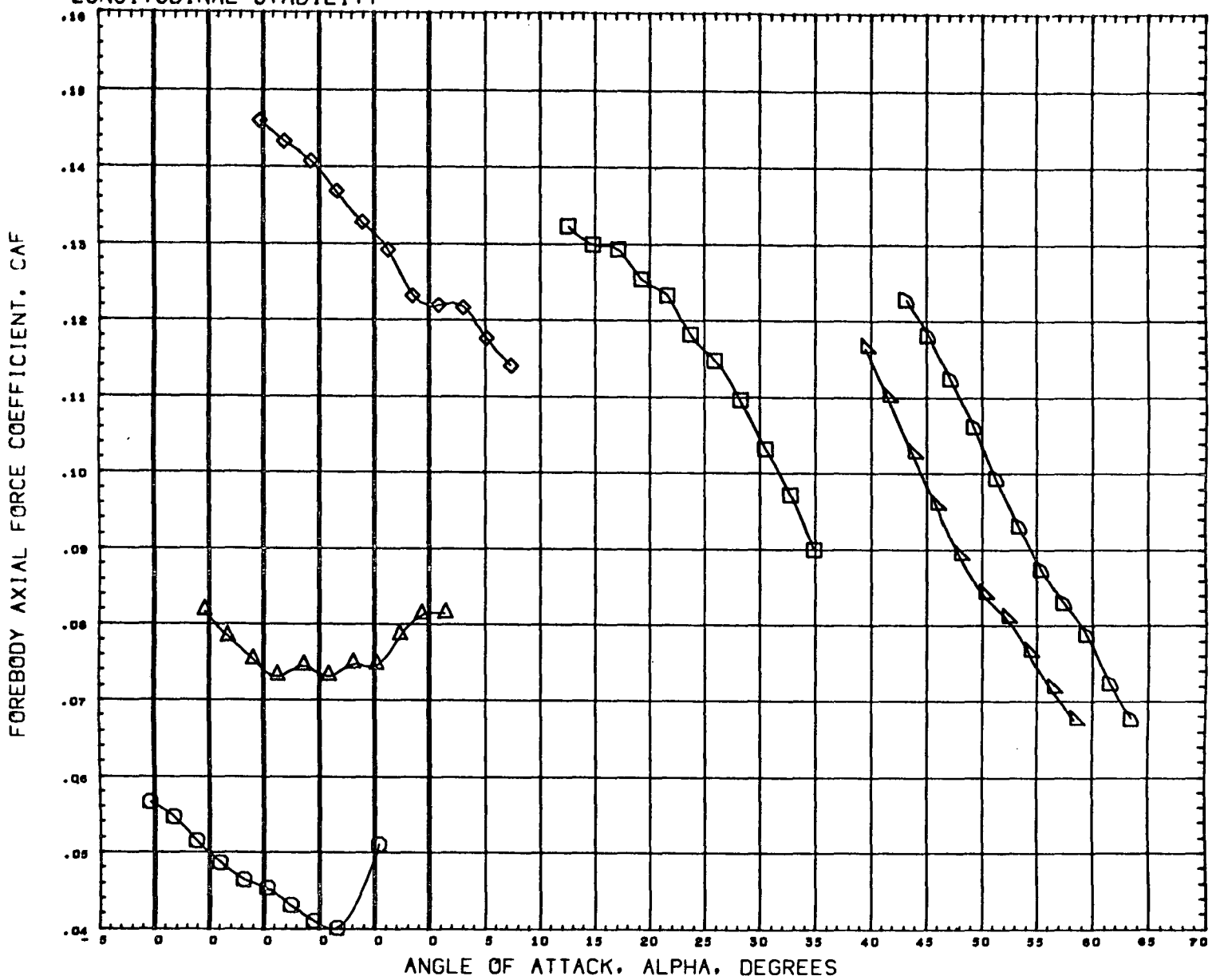
LONGITUDINAL STABILITY



SYMBOL	MACH		PARAMETRIC VALUES		
◇	0.598	BETA	0.000	RUDDER	0.000
□	0.905	RUDFLR	30.000		
△	1.197				
◇	1.959				
□	3.479				
△	4.959	DATA HIST. CODE	*GGC*G		

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
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YMRP	0.0000	IN.
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SCALE	0.0034	

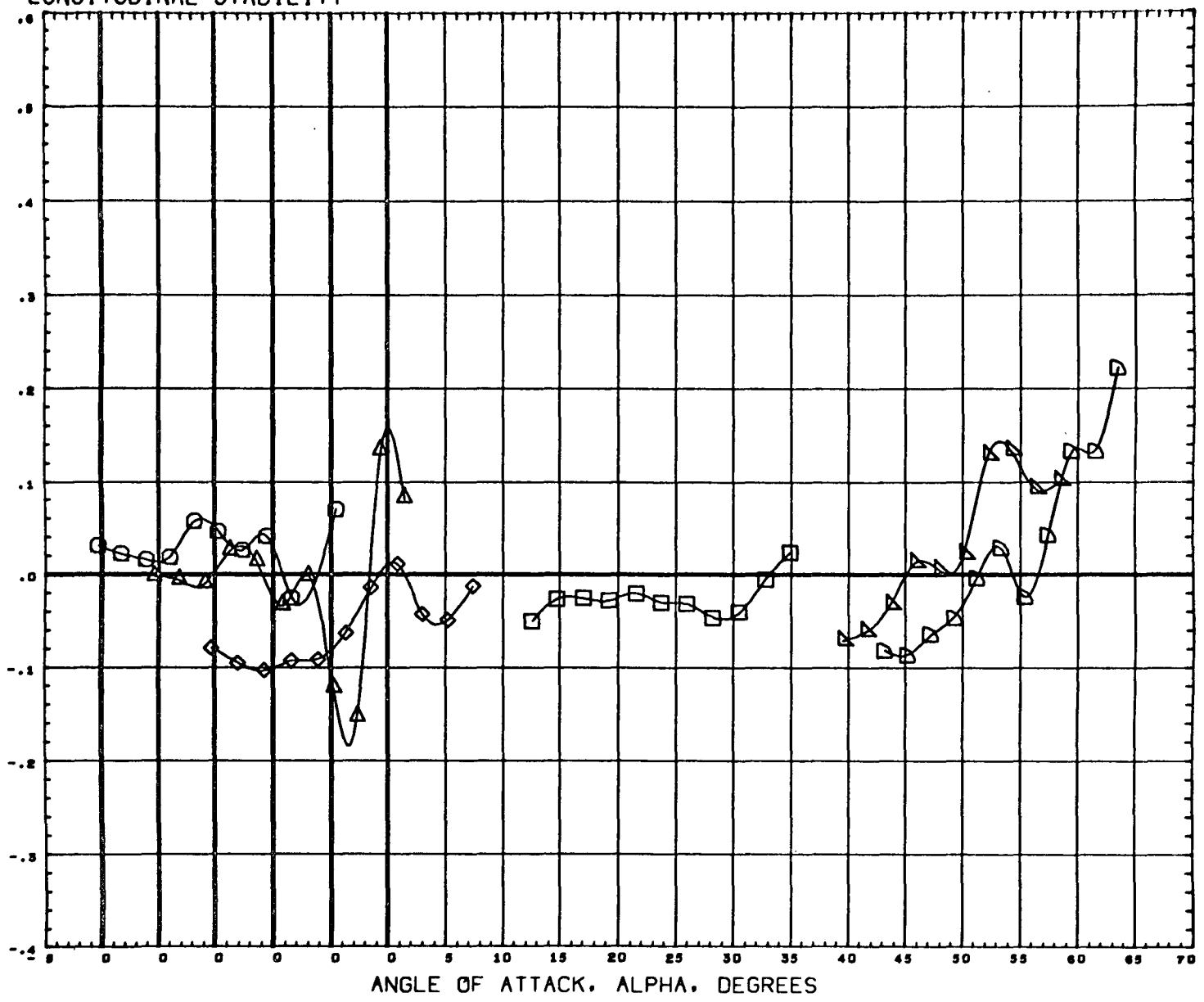
LONGITUDINAL STABILITY



SYMBOL	MACH	PARAMETRIC VALUES			
○	0.598	BETA	0.000	RUDDER	0.000
△	0.905	RUDFLR	30.000		
◇	1.197				
□	1.959				
▽	3.479				
D	4.959	DATA HIST. CODE	*GGC*G		

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

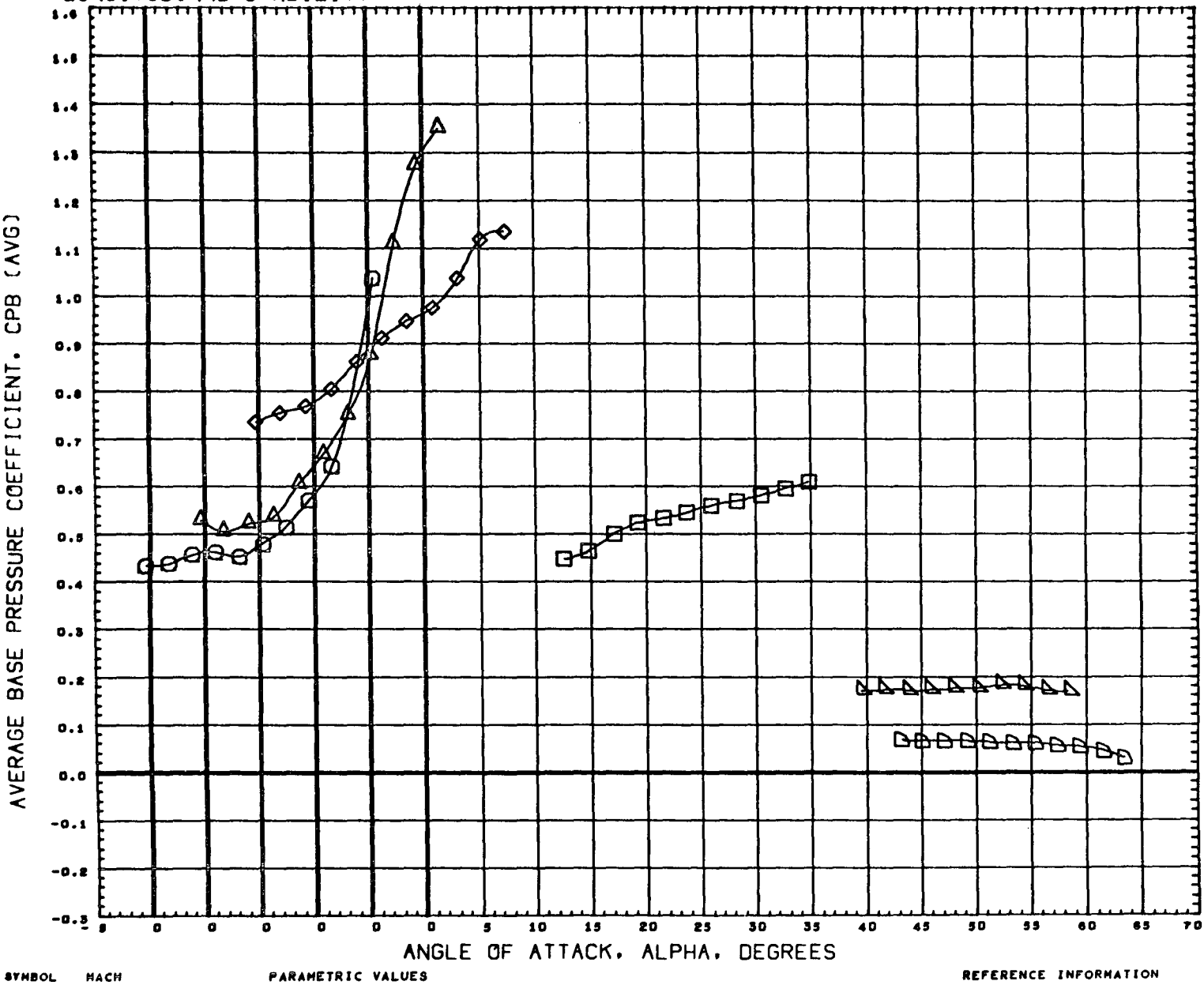
LONGITUDINAL STABILITY



SYMBOL	MACH		PARAMETRIC VALUES		
○	0.598	BETA	0.000	RUDDER	0.000
△	0.905	RUDFLR	30.000		
◇	1.197				
□	1.959				
▽	3.479				
D	4.959	DATA HIST. CODE	*GGC*G		

REFERENCE INFORMATION		
SREF	14.6636	SQ.IN.
LREF	4.5080	IN.
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XMRP	1.4621	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

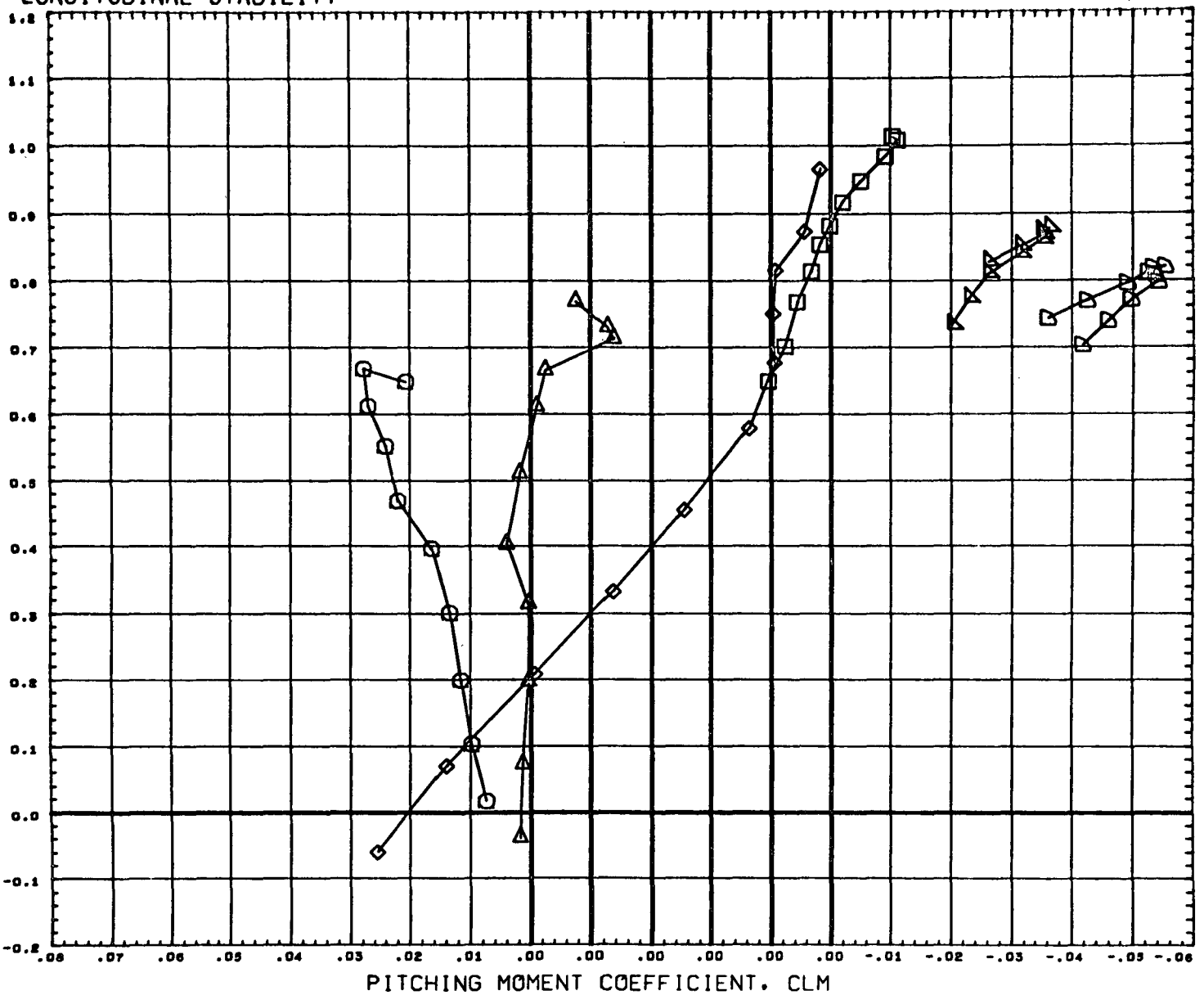
LONGITUDINAL STABILITY



SYMBOL	MACH	PARAMETRIC VALUES			
○	0.598	BETA	0.000	RUDDER	0.000
△	0.905	RUDFLR	30.000		
◇	1.197				
□	1.959				
▽	3.479				
▷	4.959	DATA HIST. CODE	*GGC*G		

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
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SCALE	0.0034	

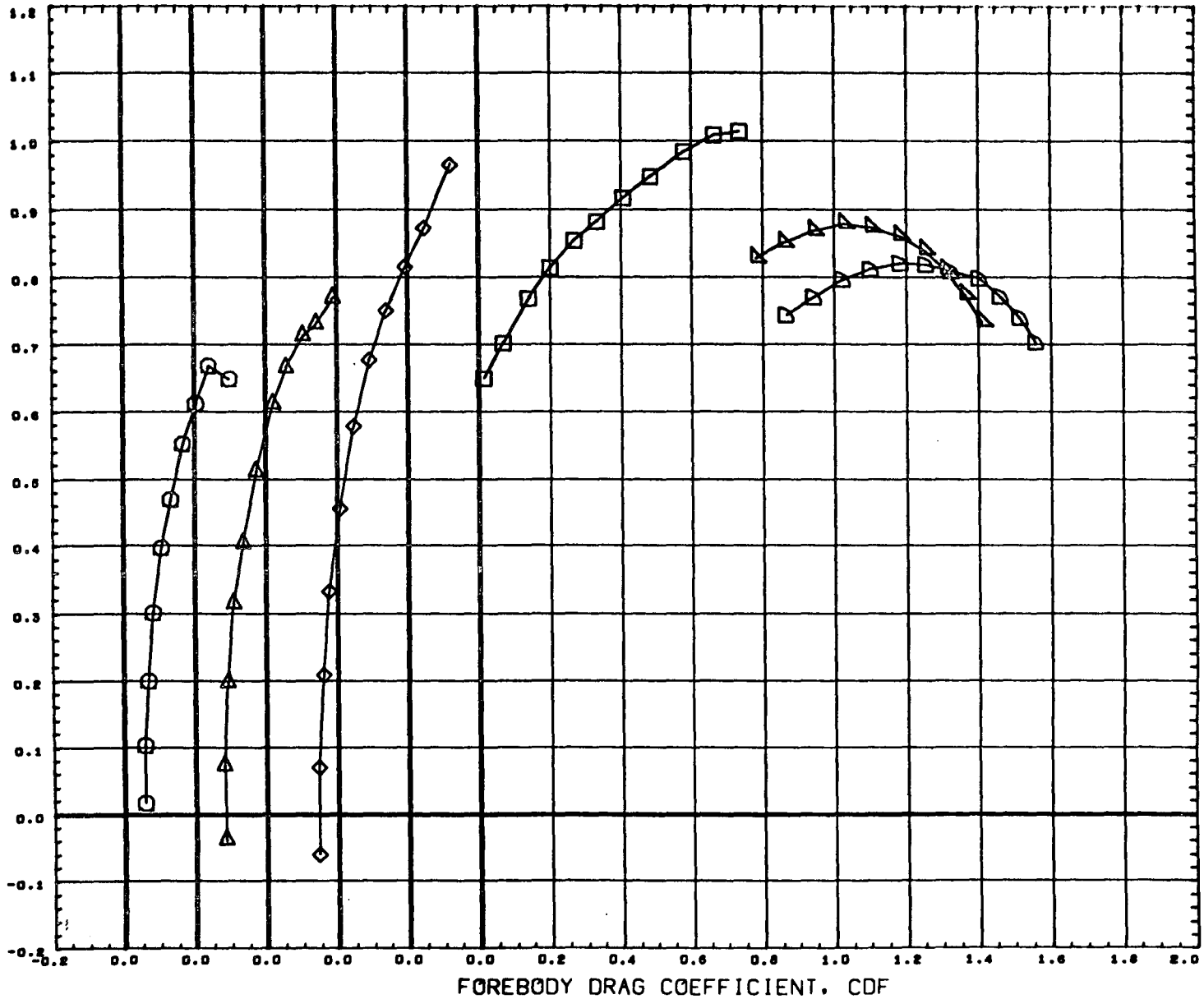
LONGITUDINAL STABILITY



SYMBOL	MACH	PARAMETRIC VALUES			
○	0.598	BETA	0.000	RUDDER	0.000
△	0.905	RUDFLR	30.000		
◇	1.197				
□	1.959				
◸	3.479				
▷	4.959	DATA HIST. CODE	*GGC*G		

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5060	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

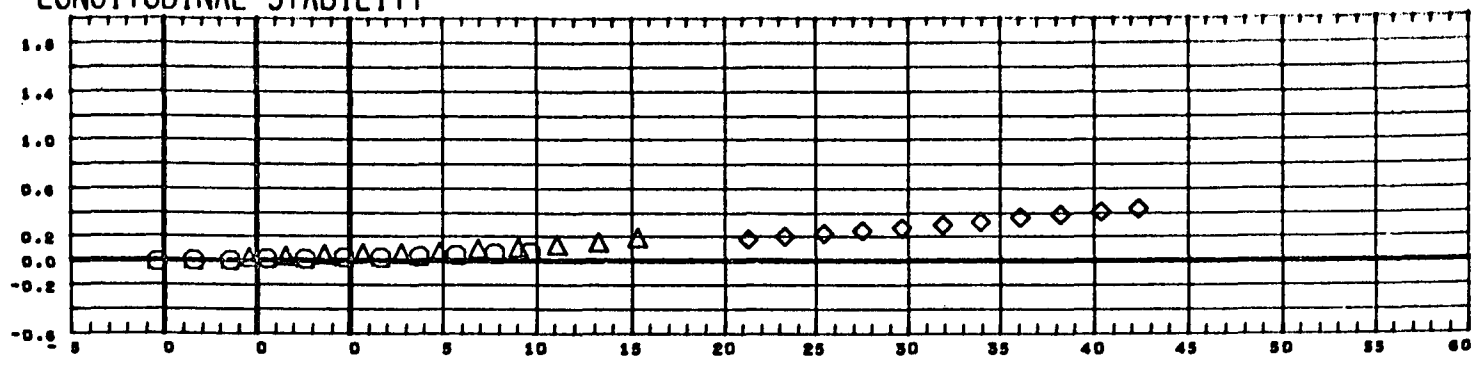
LONGITUDINAL STABILITY

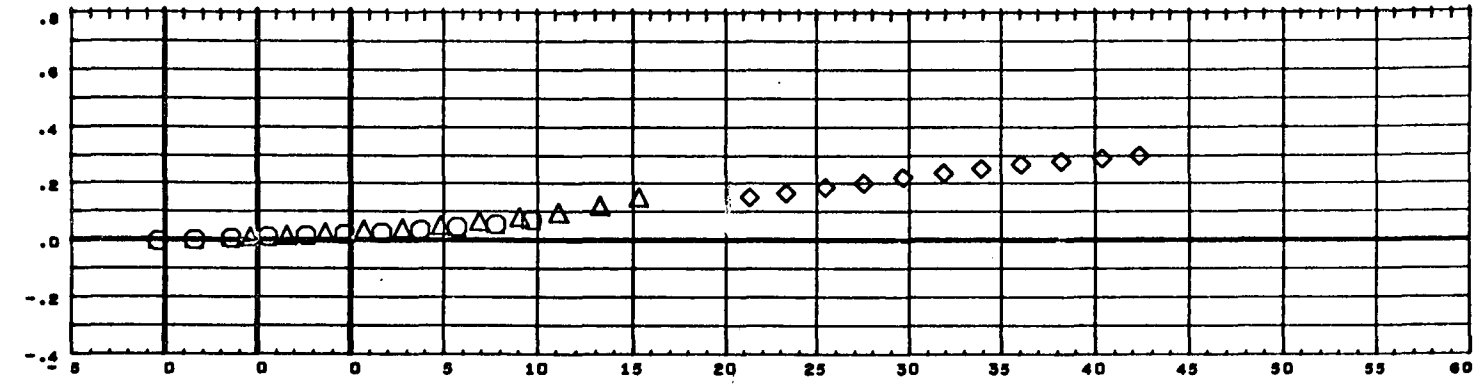


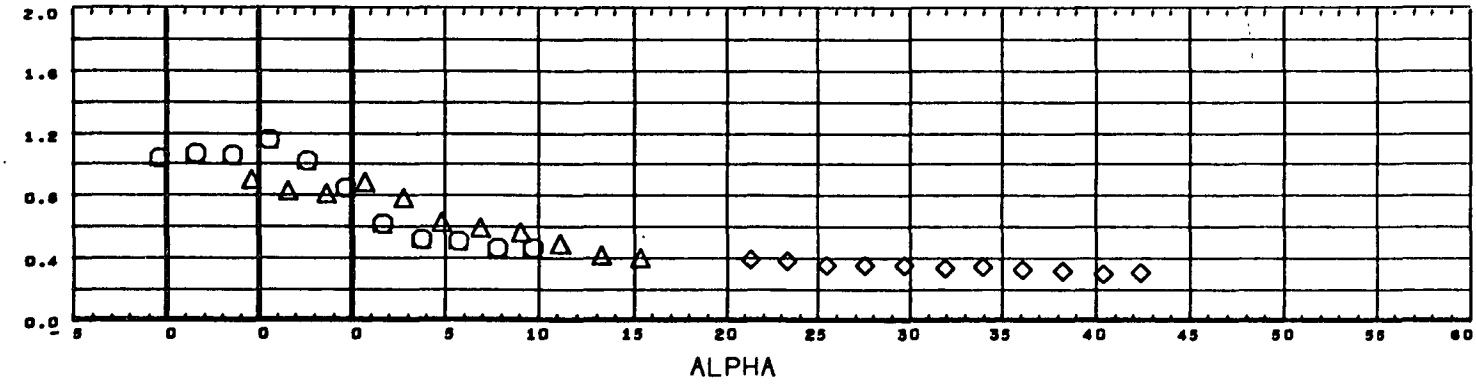
SYMBOL	MACH		PARAMETRIC VALUES		
○	0.598	BETA	0.000	RUDDER	0.000
△	0.905	RUDFLR	30.000		
◇	1.197				
□	1.959				
▱	3.479				
▷	4.959	DATA HIST. CODE	#GGC#G		

REFERENCE INFORMATION		
SREF	14.6636	SQ.IN.
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BREF	5.6550	IN.
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YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LONGITUDINAL STABILITY







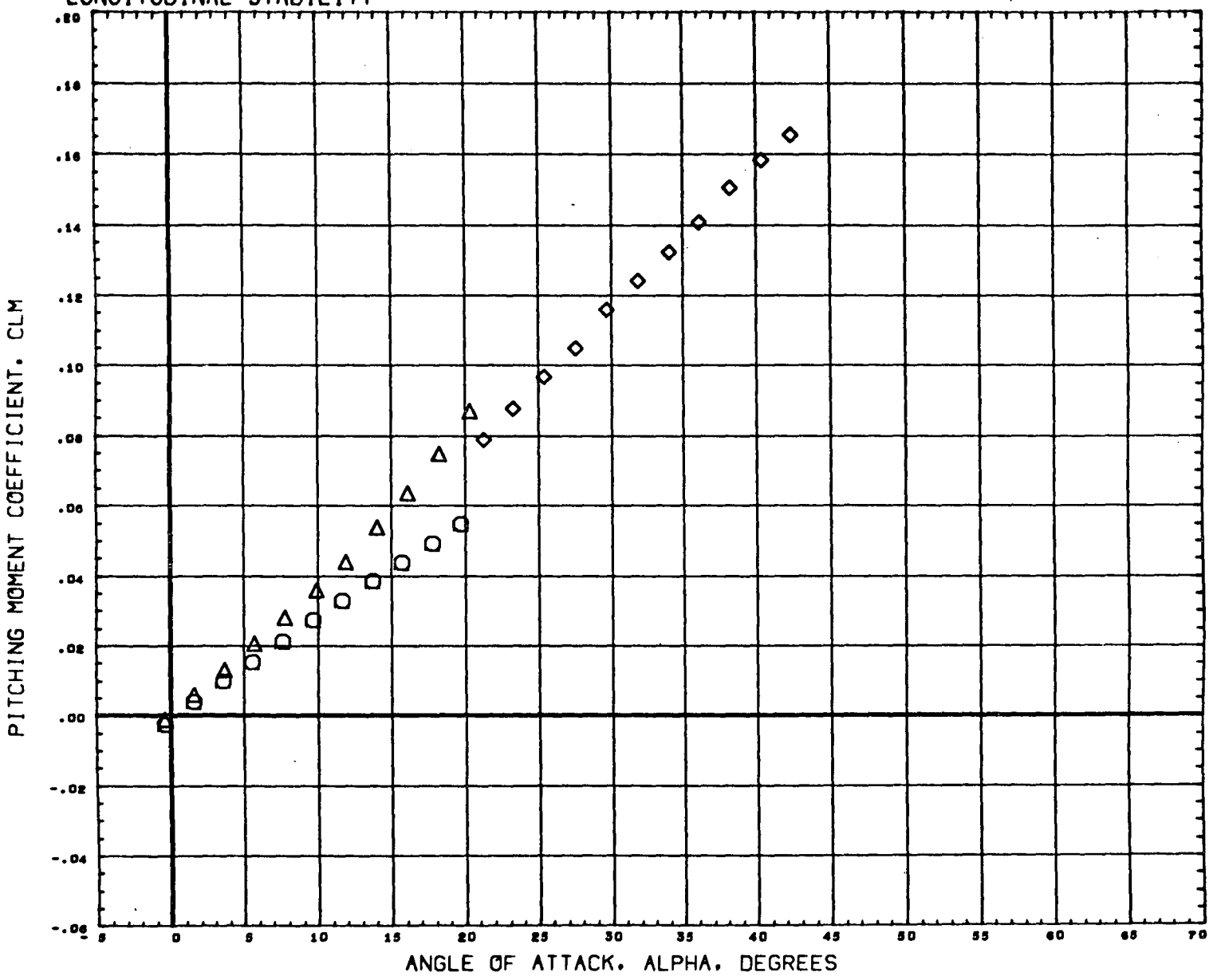
SYMBOL	MACH	PARAMETRIC VALUES	
○	0.596	BETA	0.000
△	1.196		
◇	1.961		

DATA HIST. CODE *GGC

REFERENCE INFORMATION

SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
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YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LONGITUDINAL STABILITY



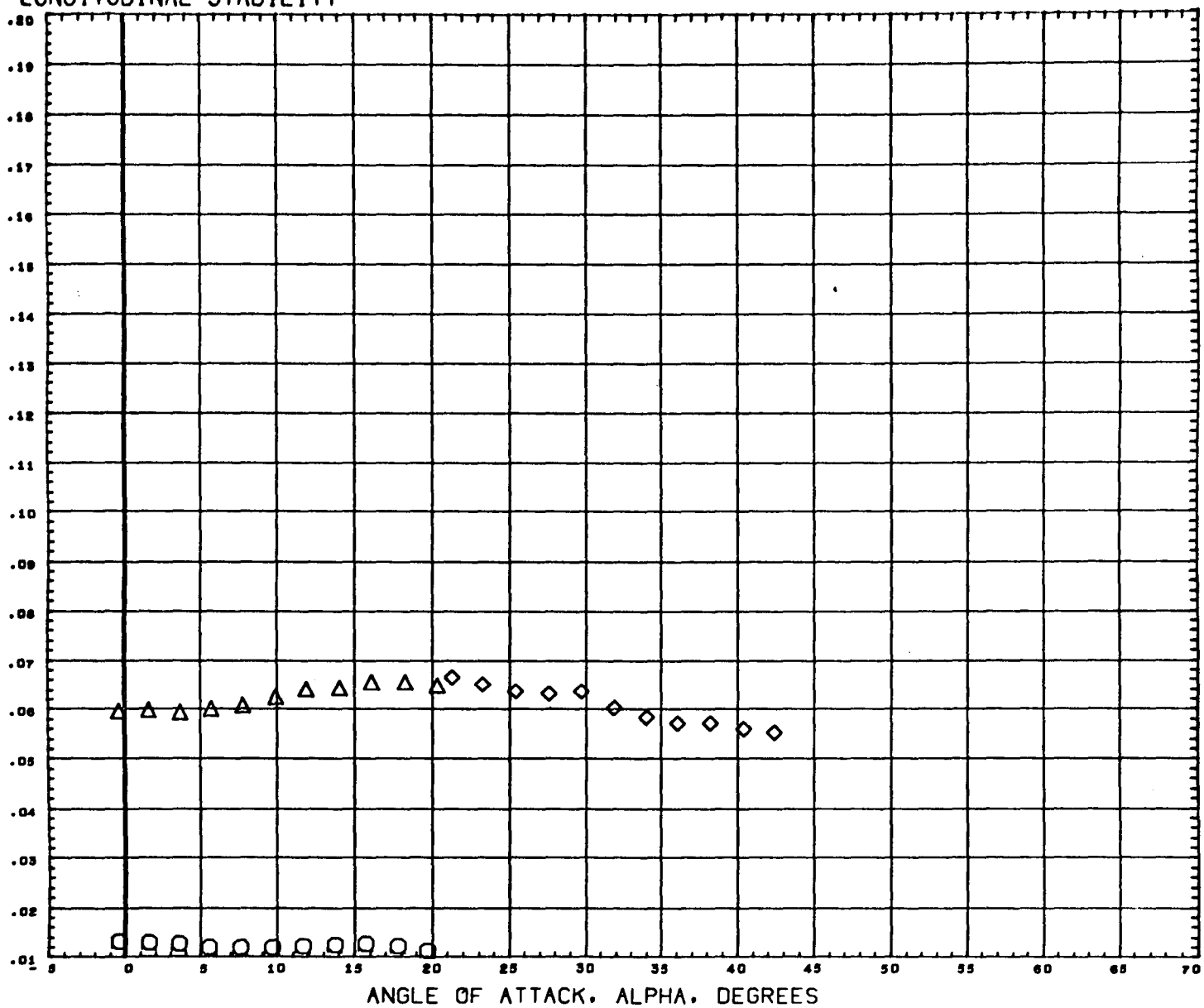
SYMBOL	MACH	PARAMETRIC VALUES	
○	0.596	BETA	0.000
△	1.196		
◇	1.961		

DATA HIST. CODE #GGC

REFERENCE INFORMATION

SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
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YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LONGITUDINAL STABILITY

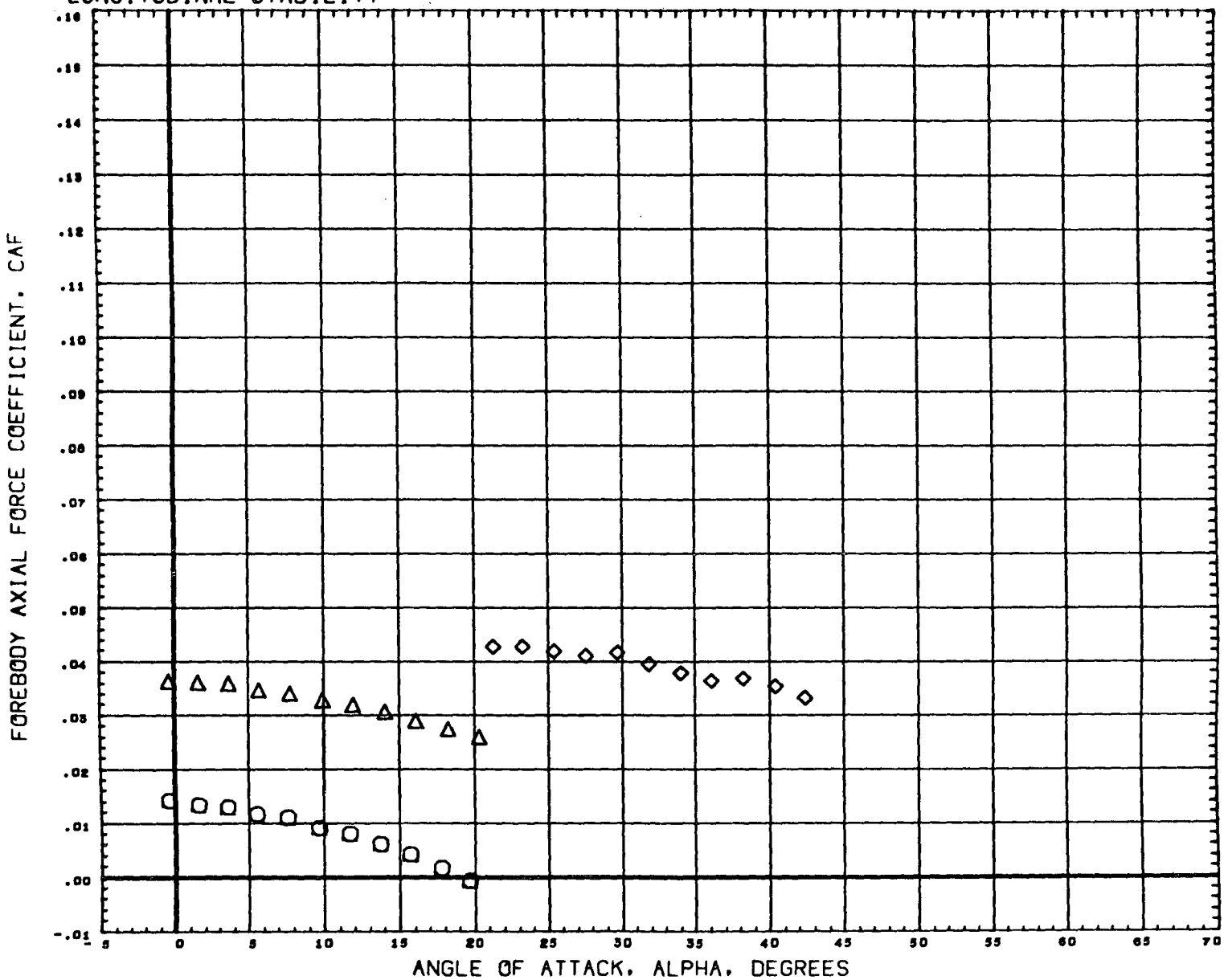


SYMBOL	MACH	PARAMETRIC VALUES	
○	0.596	BETA	0.000
△	1.196		
◇	1.961		

DATA HIST. CODE *GGC

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LONGITUDINAL STABILITY



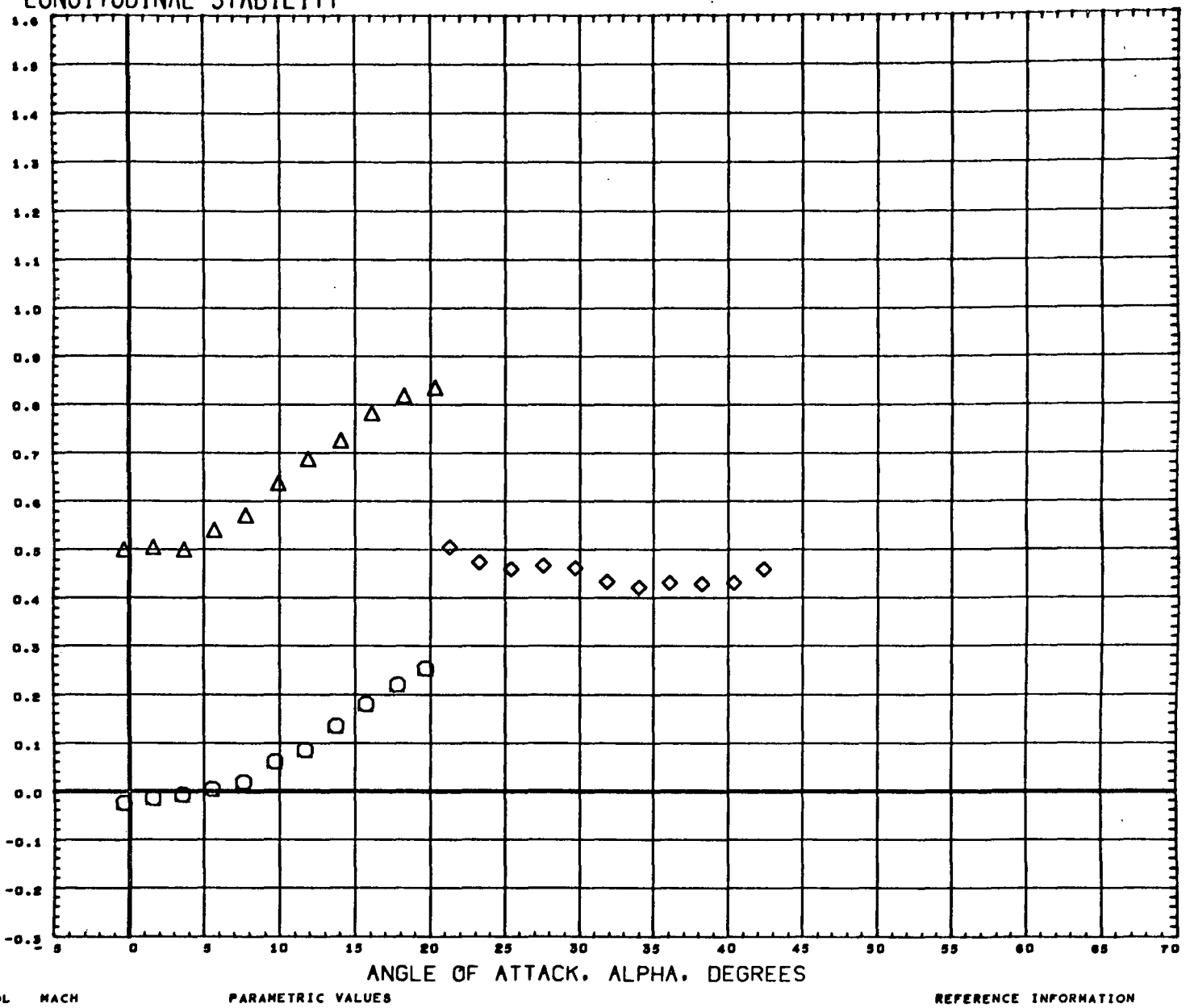
SYMBOL	MACH		PARAMETRIC VALUES
○	0.596	BETA	0.000
△	1.196		
◇	1.961		

DATA HIST. CODE *GGC

REFERENCE INFORMATION

SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
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YMRP	0.0000	IN.
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SCALE	0.0034	

LONGITUDINAL STABILITY



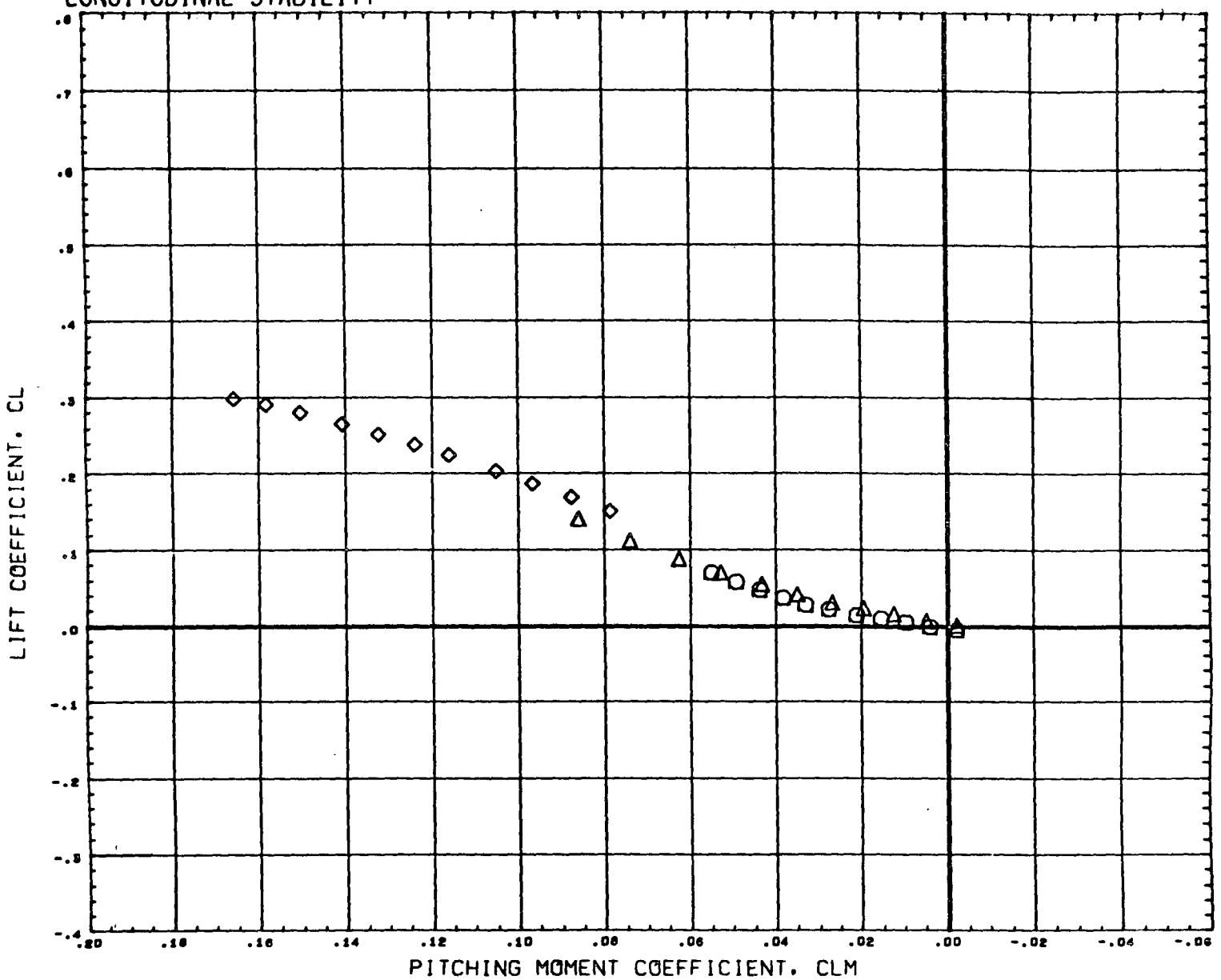
SYMBOL	MACH	PARAMETRIC VALUES	
○	0.596	BETA	0.000
△	1.196		
◇	1.961		

DATA HIST. CODE #GGC

REFERENCE INFORMATION

SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4621	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LONGITUDINAL STABILITY



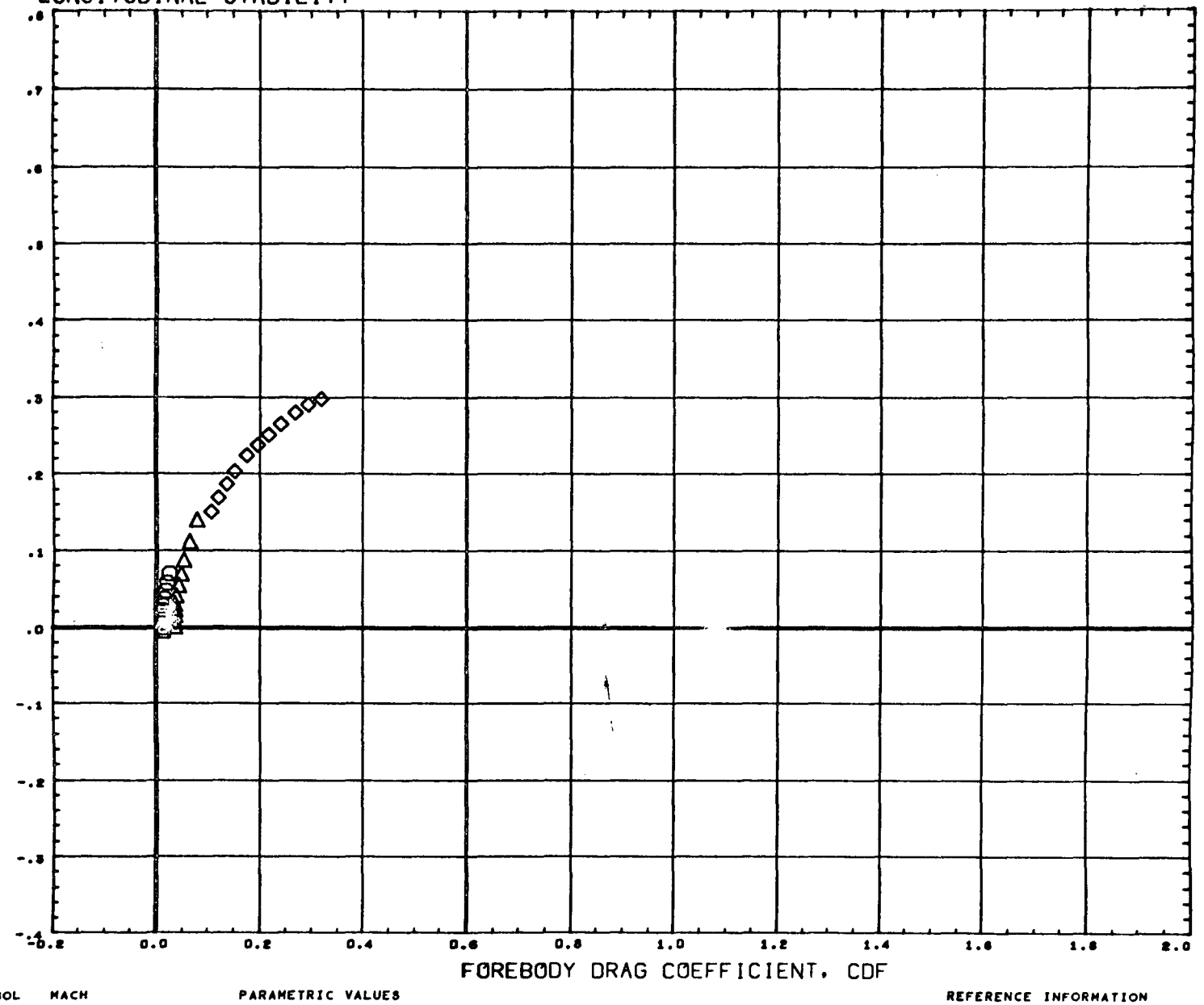
SYMBOL	MACH	PARAMETRIC VALUES	
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◇	1.961		

DATA HIST. CODE #GGC

REFERENCE INFORMATION

SREF	14.6836	SQ.IN.
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BREF	5.6550	IN.
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YMRP	0.0000	IN.
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SCALE	0.0034	

LONGITUDINAL STABILITY



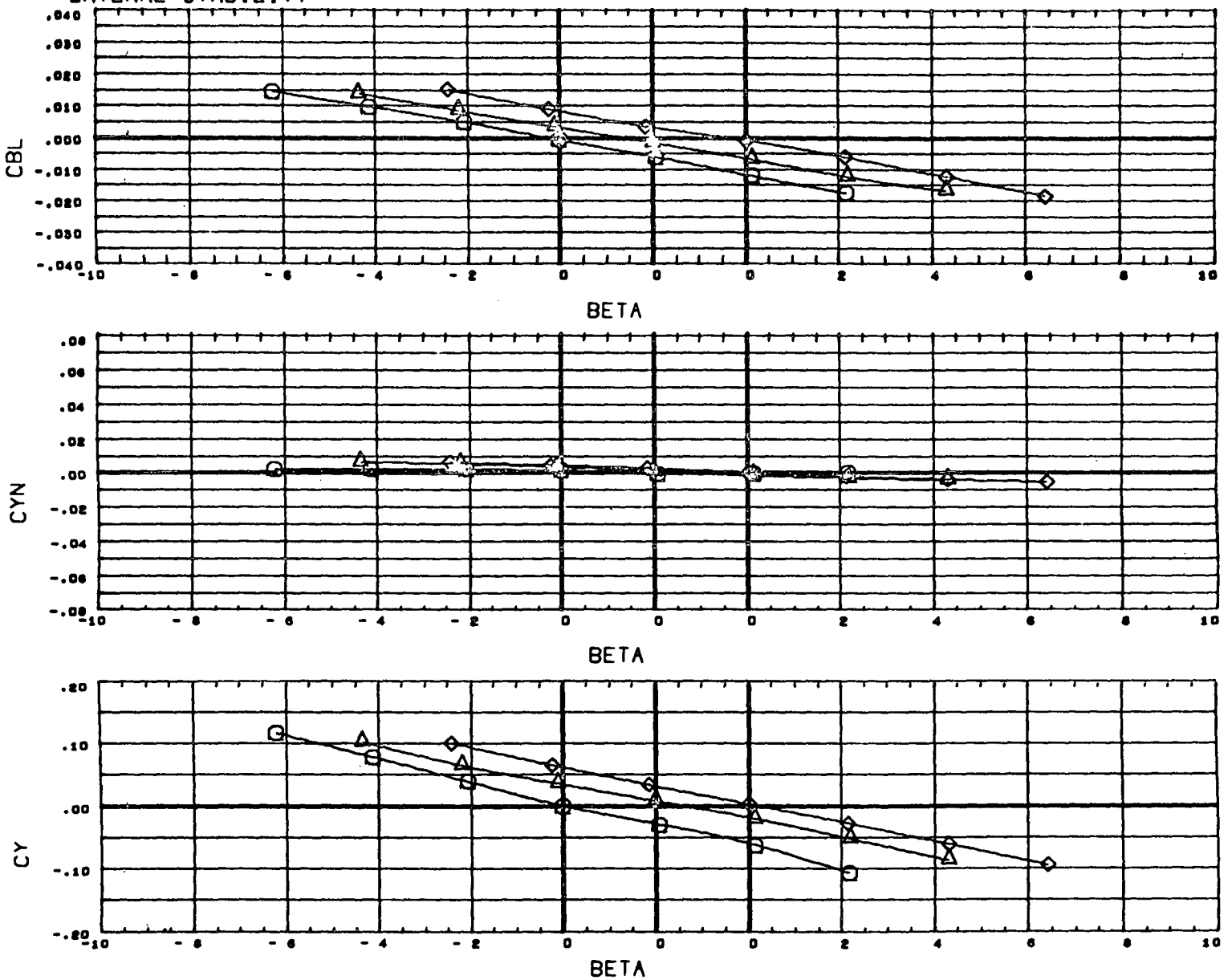
SYMBOL	MACH	PARAMETRIC VALUES	
○	0.596	BETA	0.000
△	1.196		
◇	1.961		

DATA HIST. CODE *GGC

REFERENCE INFORMATION

SREF	14.6636	SQ.IN.
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YMRP	0.0000	IN.
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SCALE	0.0054	

LATERAL STABILITY

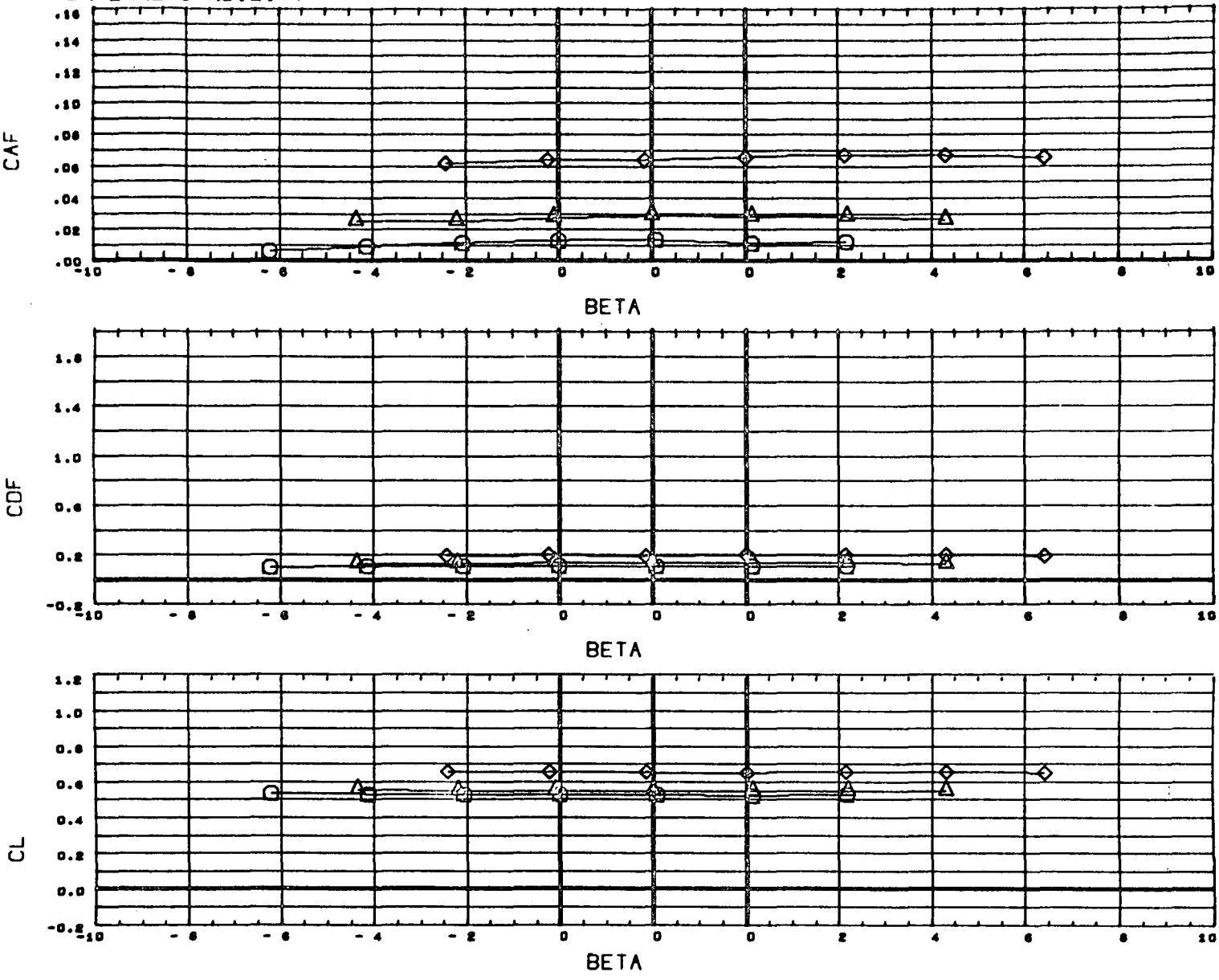


SYMBOL	MACH	PARAMETRIC VALUES			
○	0.598	ALPHA	10.000	RUDDER	0.000
△	0.897	RUDFLR	0.000		
◇	1.196				

DATA HIST. CODE GC

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	9.6550	IN.
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YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



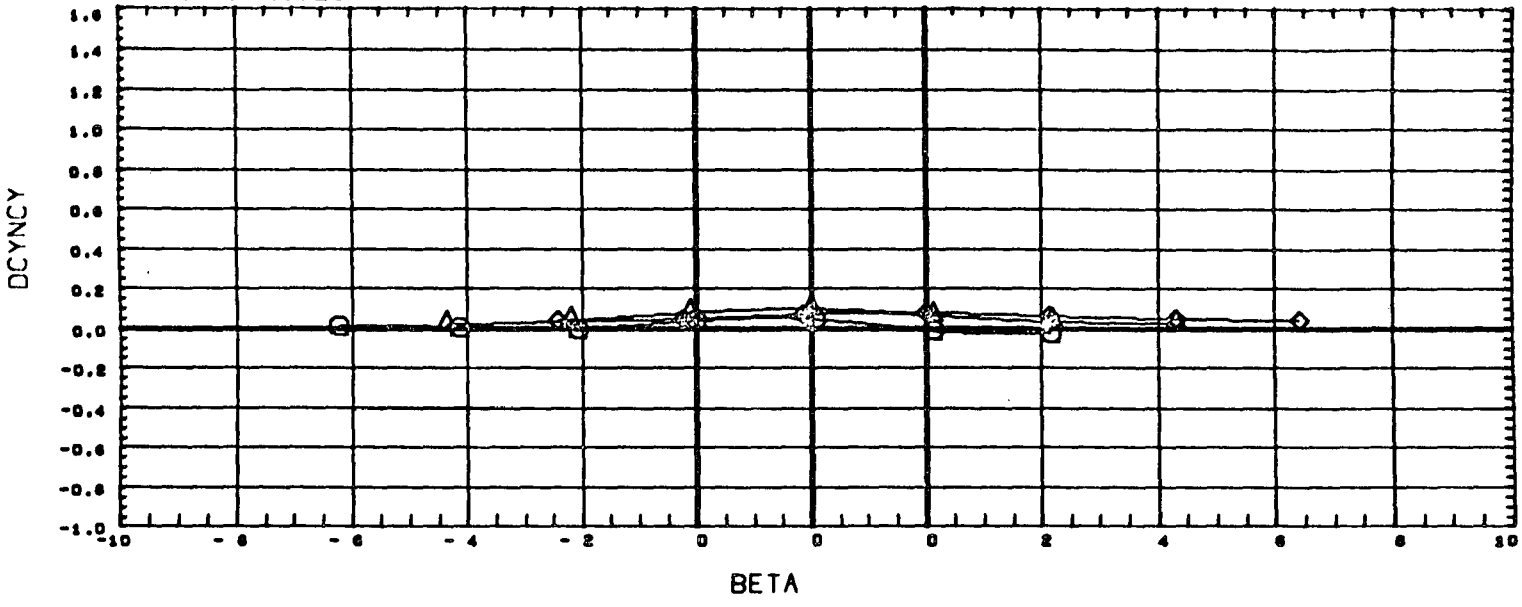
SYMBOL	MACH	PARAMETRIC VALUES			
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△	0.897	RUDFLR	0.000		
◇	1.196				

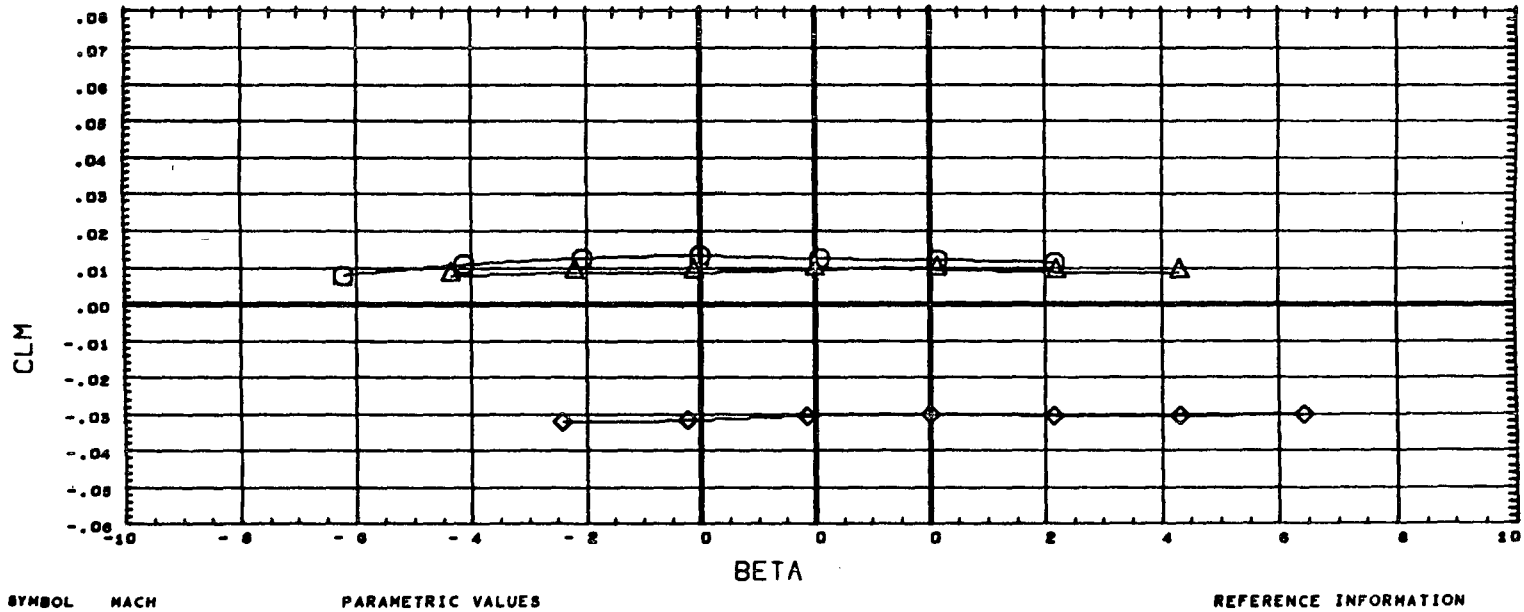
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SCALE	0.0034	

LATERAL STABILITY



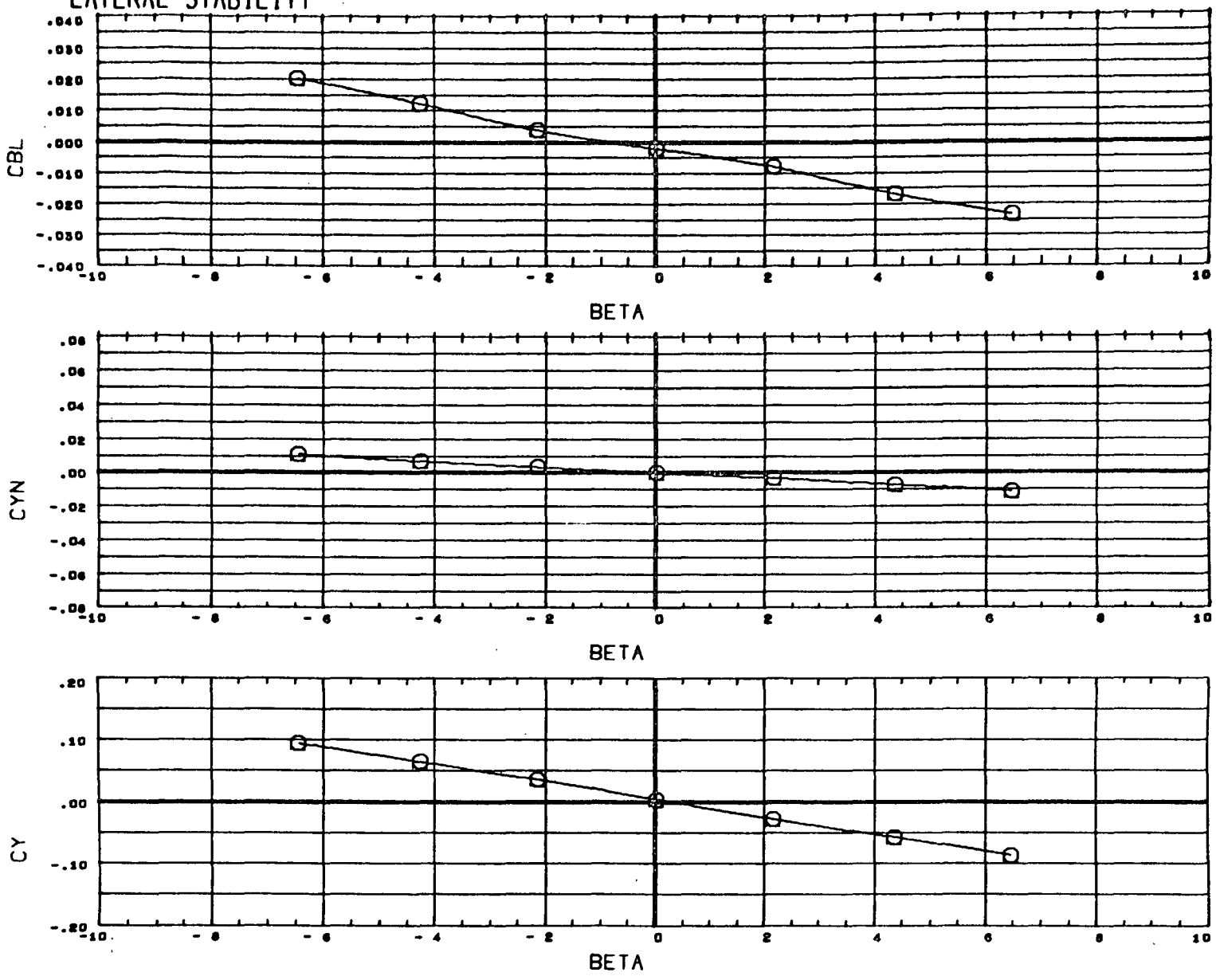


SYMBOL	MACH		PARAMETRIC VALUES		
○	0.598	ALPHA	10.000	RUDDER	0.000
△	0.897	RUDFLR	0.000		
◇	1.196				

DATA HIST. CODE GC

REFERENCE INFORMATION		
SREF	14.6636	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
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YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY

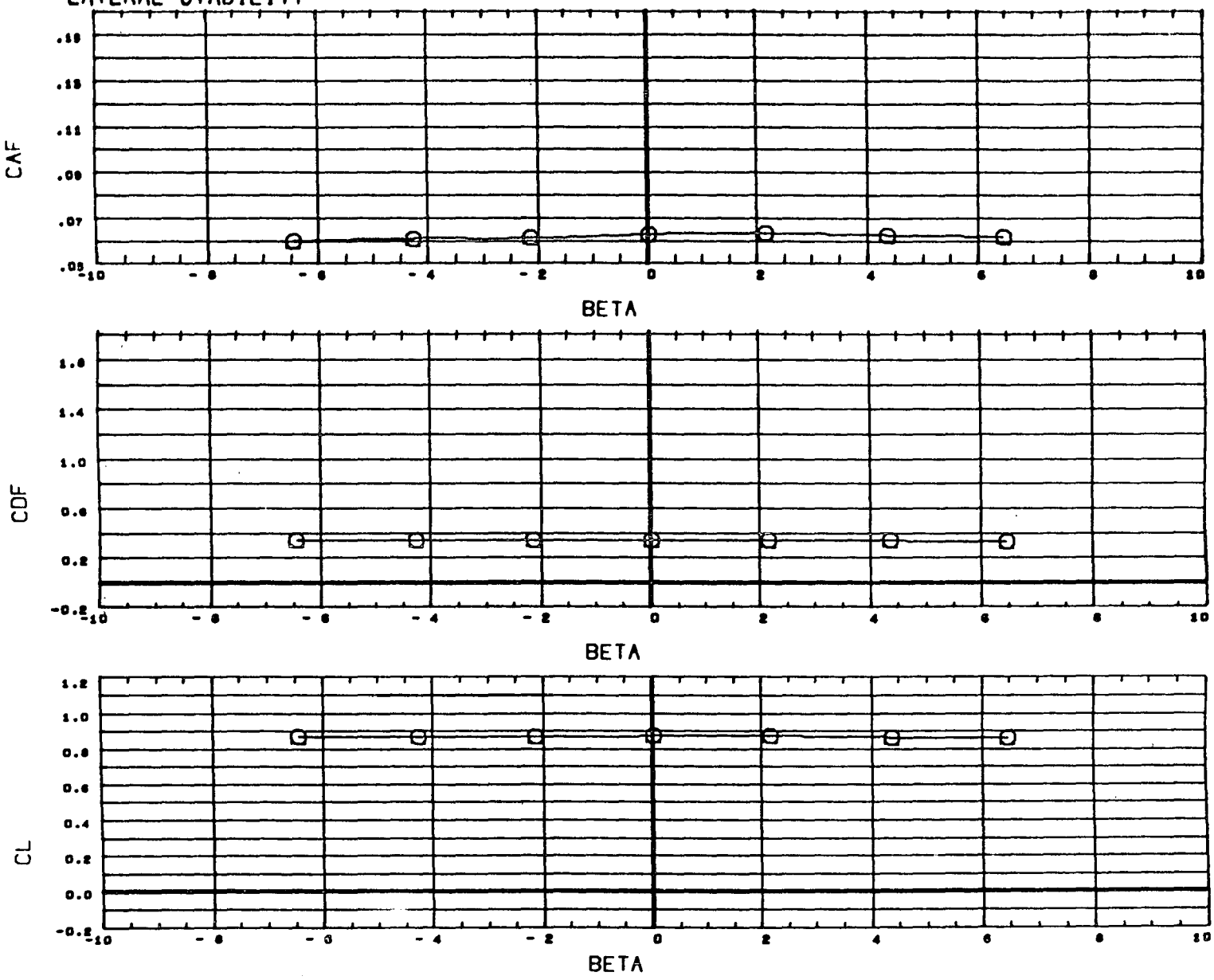


SYMBOL	MACH	PARAMETRIC VALUES			
O	1.199	ALPHA	15.000	RUDDER	0.000
		RUDFLR	0.000		

DATA HIST. CODE GC

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
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YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY

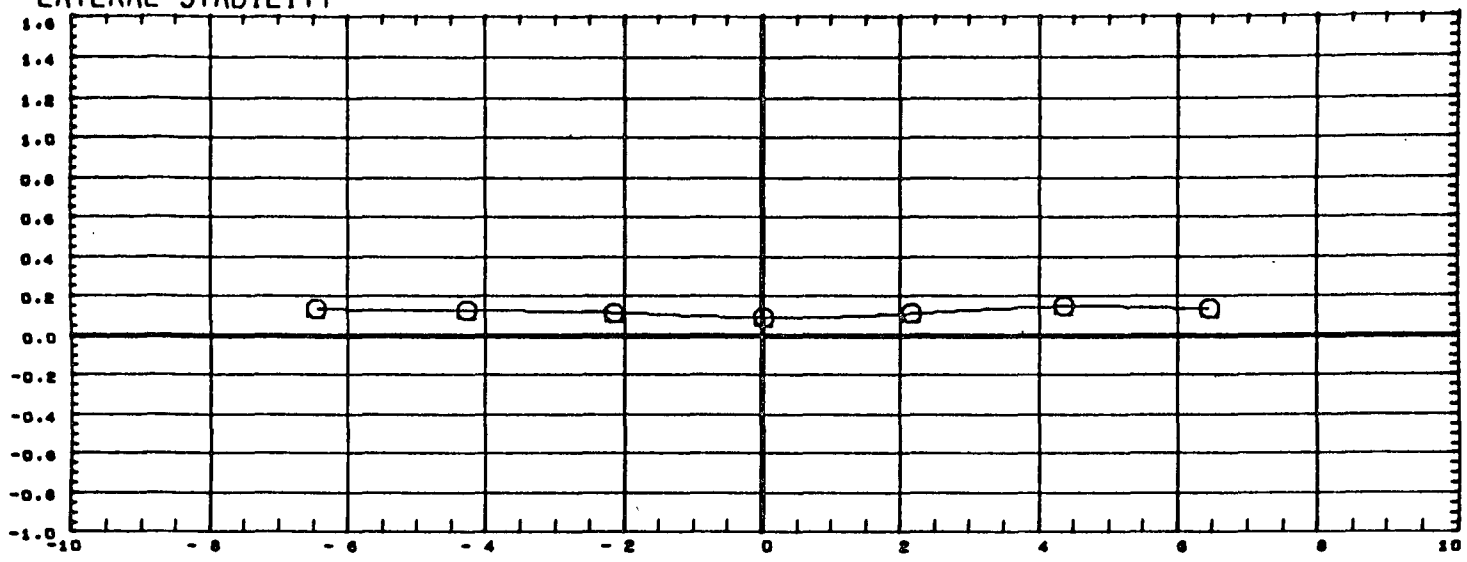


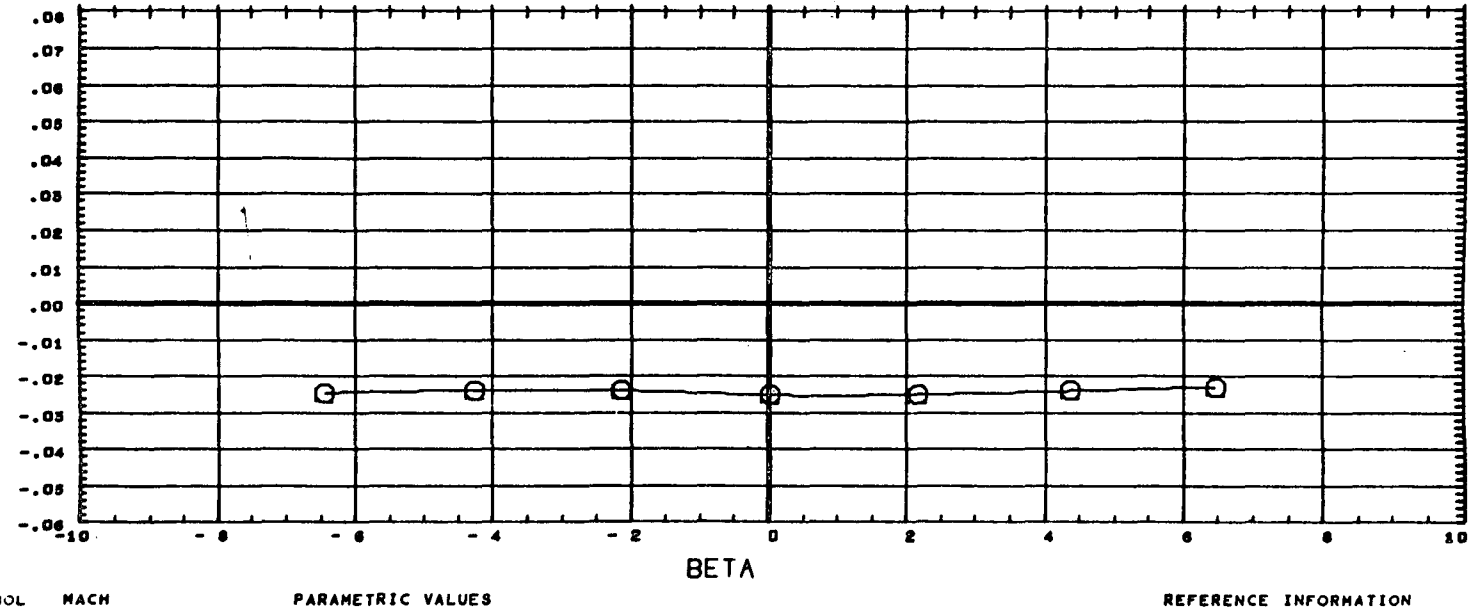
SYMBOL	MACH	PARAMETRIC VALUES			
O	1.199	ALPHA	15.000	RUDDER	0.000
		RUDFLR	0.000		

DATA HIST. CODE GC

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SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
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ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



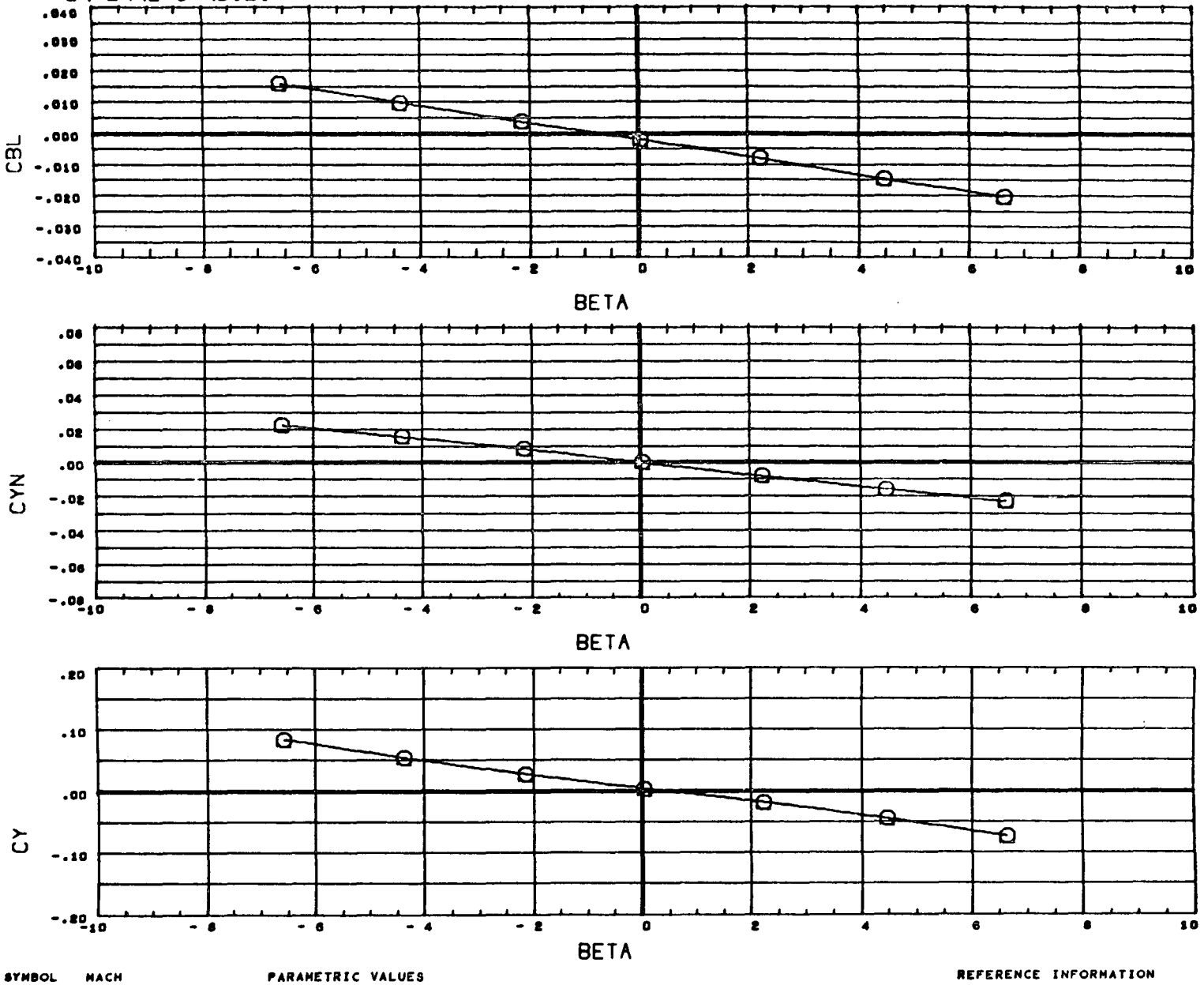


SYMBOL	MACH		PARAMETRIC VALUES		
O	1.199	ALPHA	15.000	RUDDER	0.000
		RUDFLR	0.000		

DATA HIST. CODE GC

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
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YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY

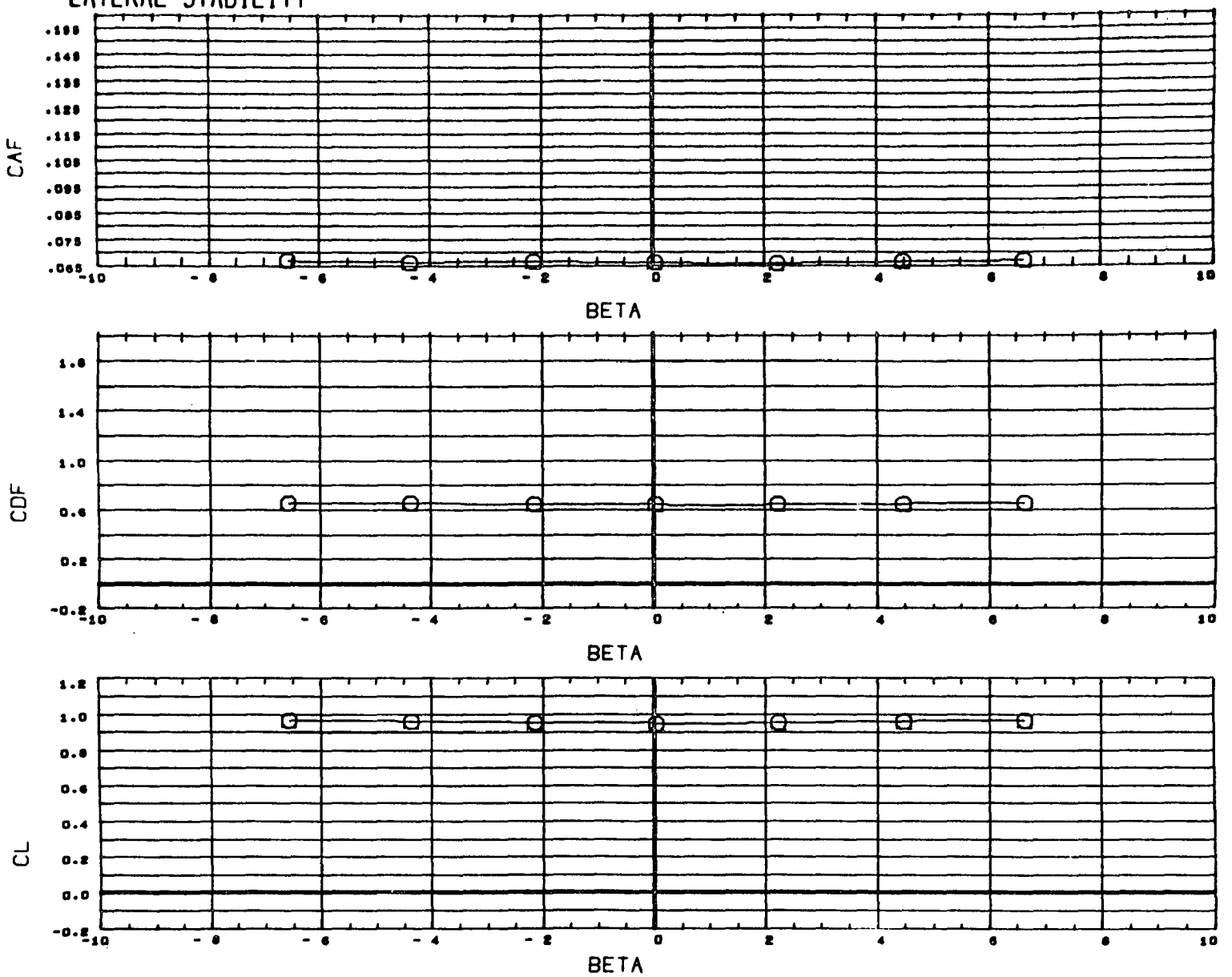


SYMBOL	MACH	PARAMETRIC VALUES			
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		RUDFLR	0.000		

DATA HIST. CODE GC

REFERENCE INFORMATION		
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LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4621	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY

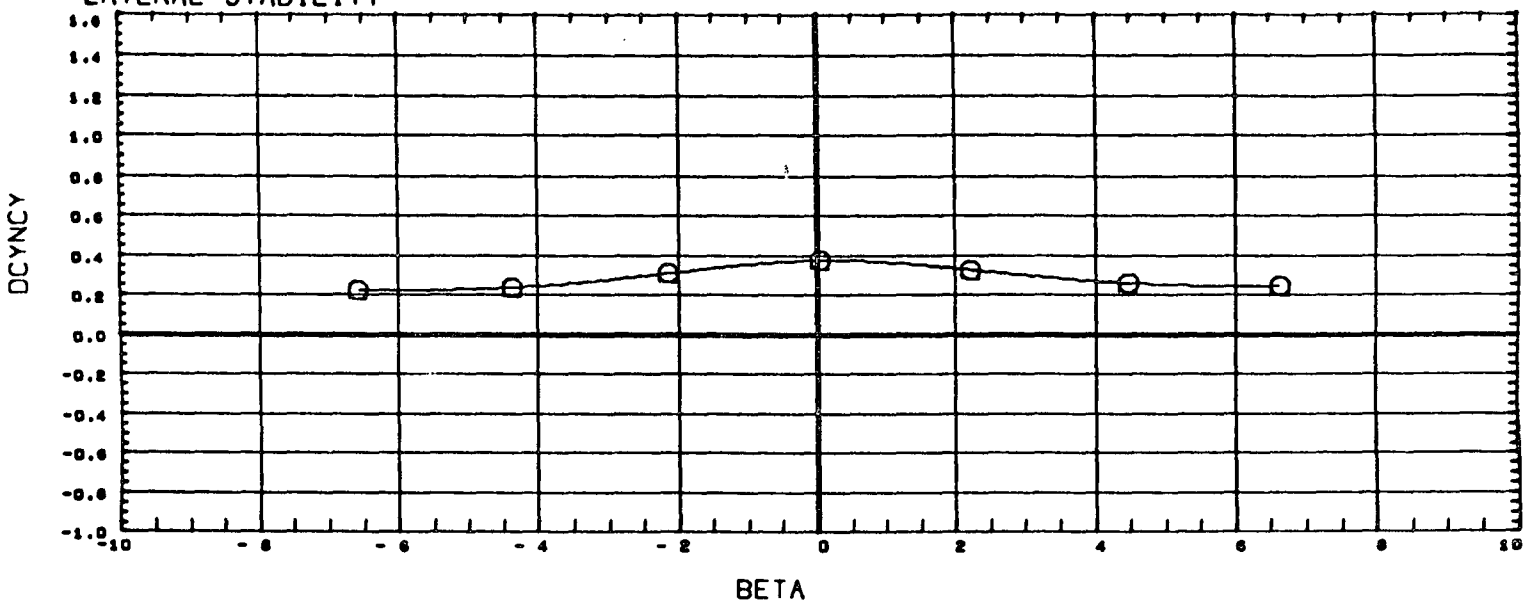


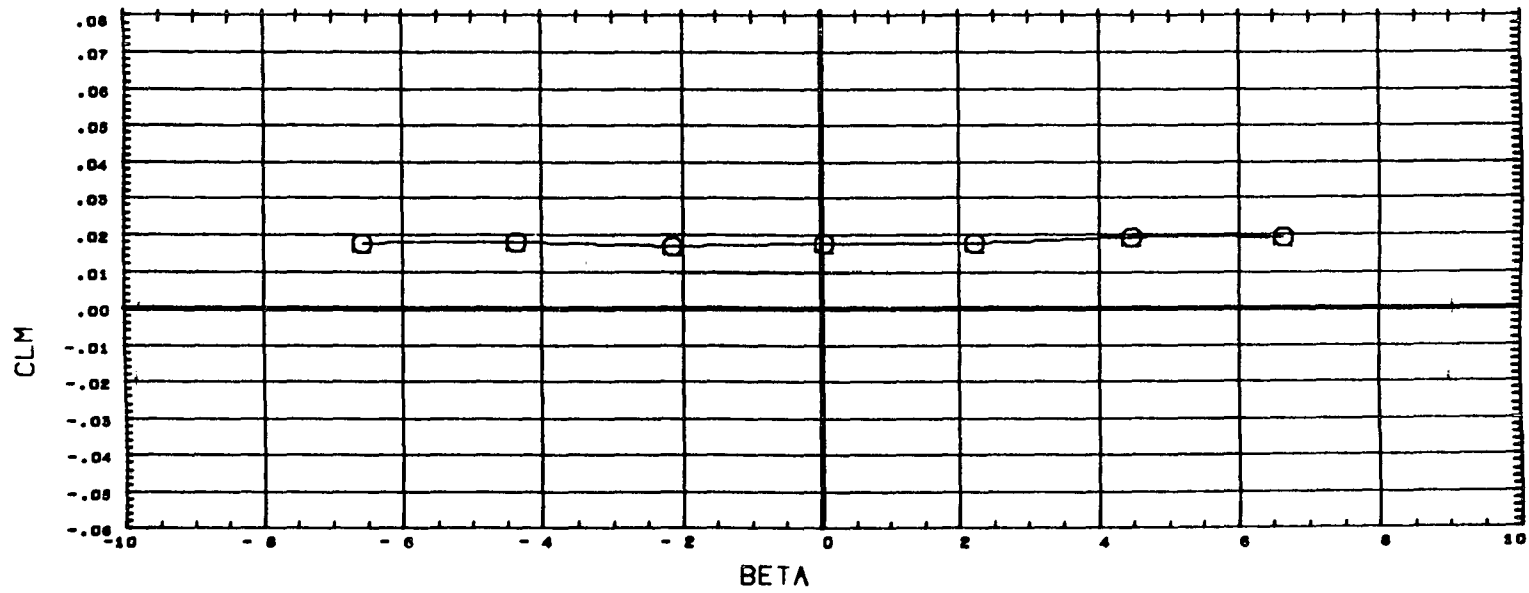
SYMBOL	MACH		PARAMETRIC VALUES		
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		RUDFLR	0.000		

DATA HIST. CODE GC

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.9060	IN.
BREF	5.6550	IN.
XMRP	1.4621	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



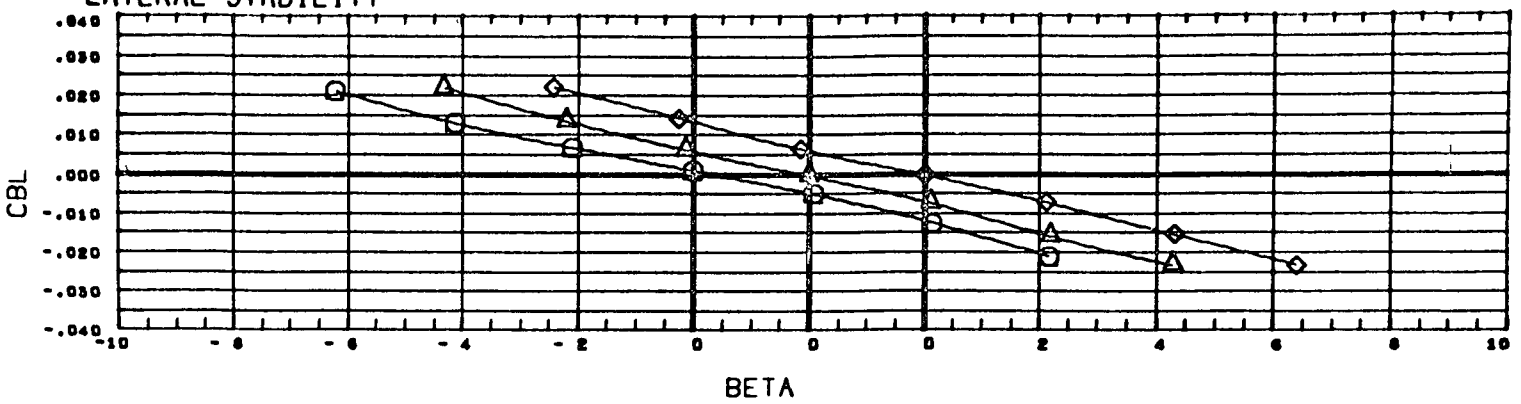


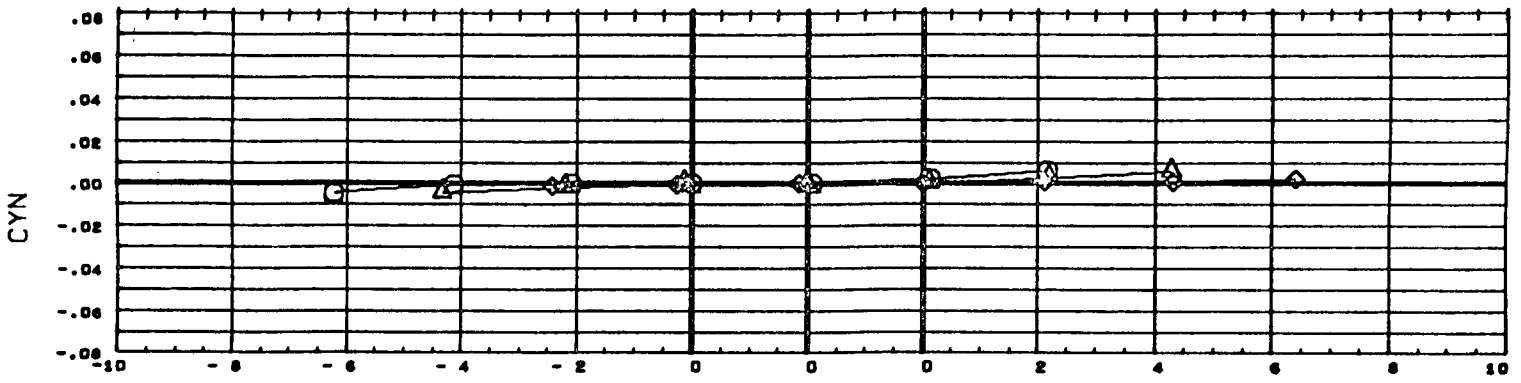
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		RUDFLR	0.000		

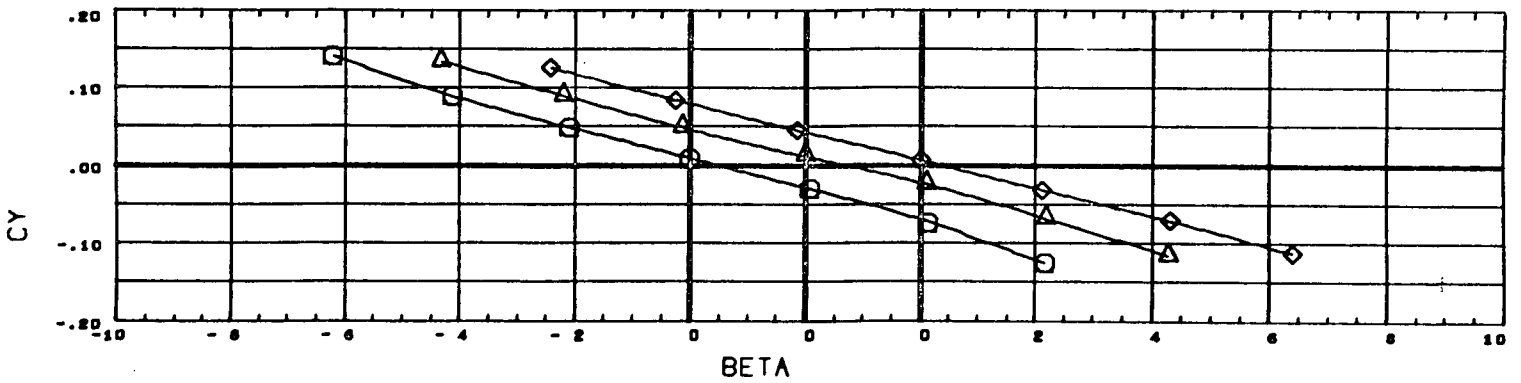
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YMRP	0.0000	IN.
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SCALE	0.0034	

LATERAL STABILITY





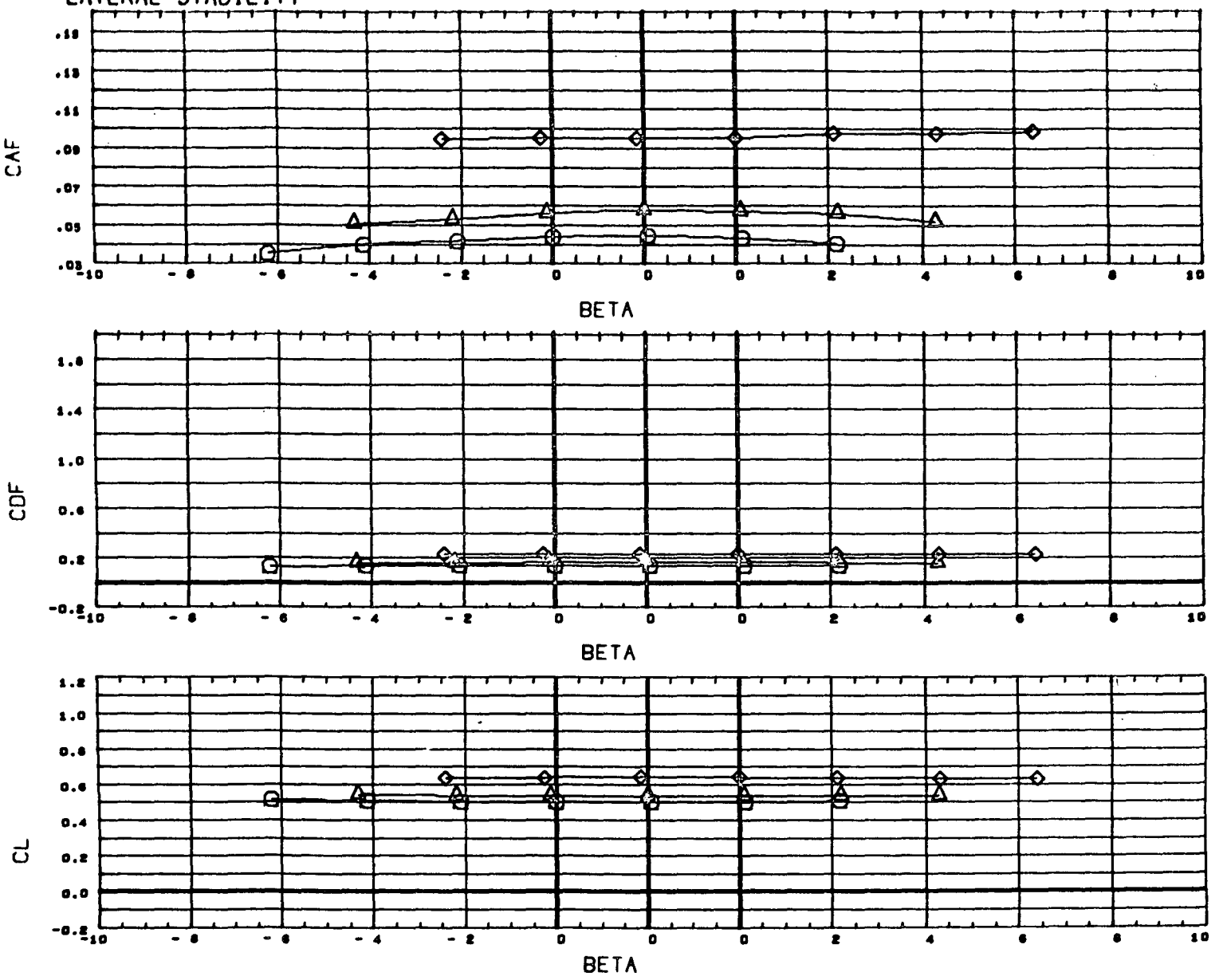


SYMBOL	MACH		PARAMETRIC VALUES		
○	0.595	ALPHA	10.000	RUDDER	0.000
△	0.697	RUDFLR	30.000		
◇	1.201				

DATA HIST. CODE GC

REFERENCE INFORMATION		
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LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



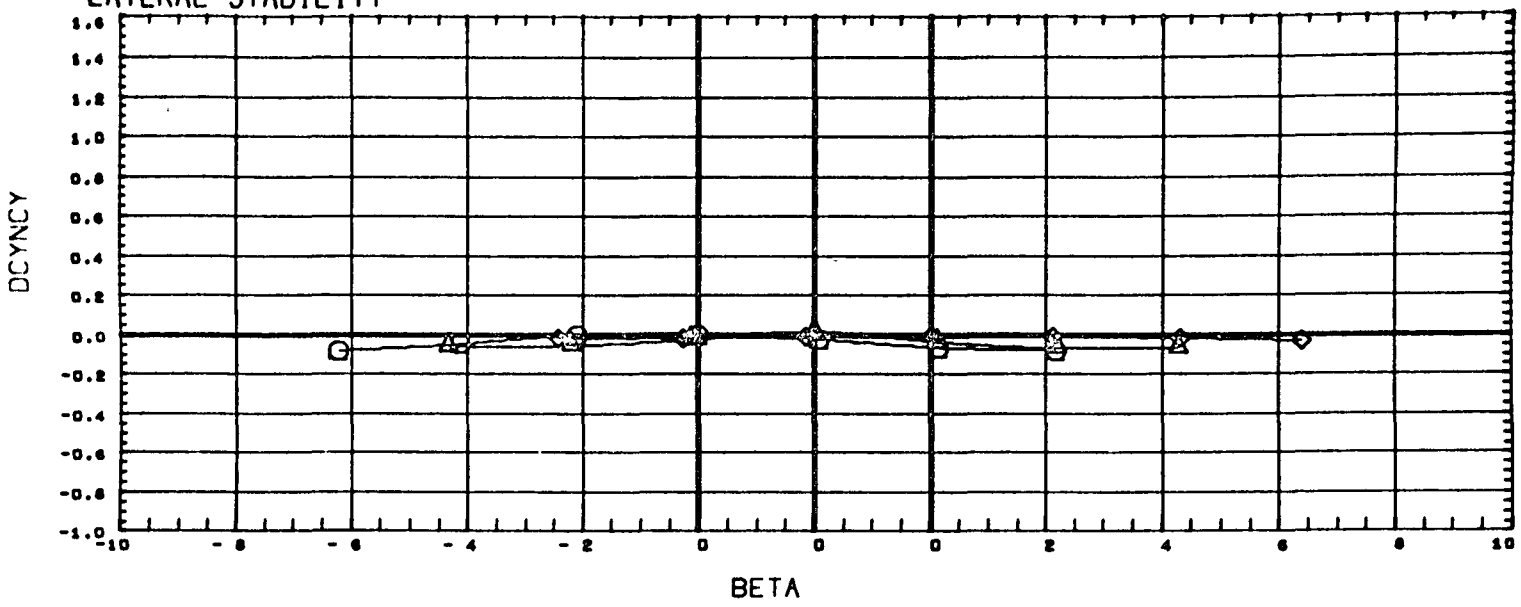
SYMBOL	MACH		PARAMETRIC VALUES		
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△	0.897	RUDFLR	30.000		
◇	1.201				

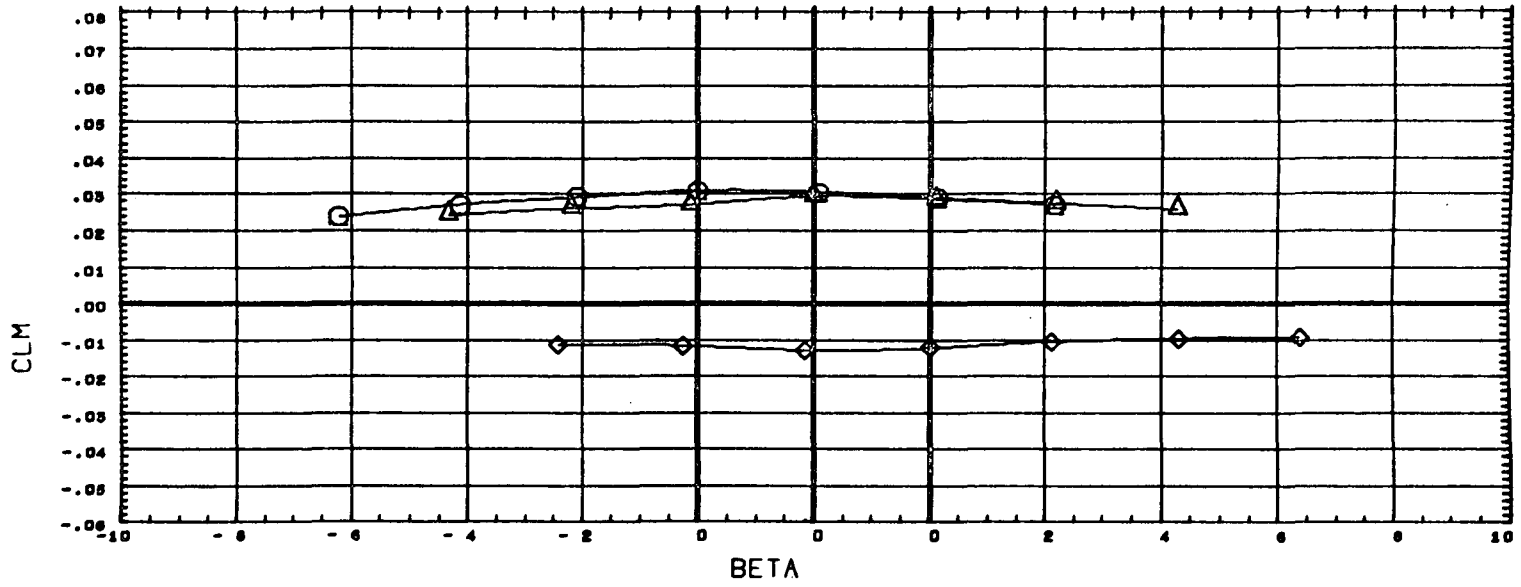
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SCALE	0.0034	

DATA HIST. CODE GC

LATERAL STABILITY





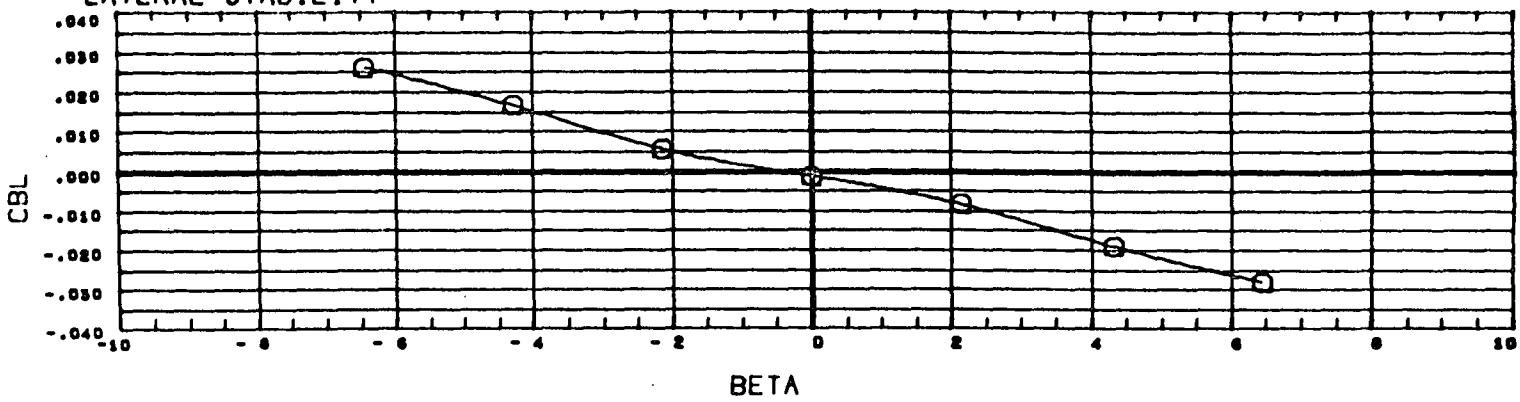
SYMBOL	MACH		PARAMETRIC VALUES		
○	0.595	ALPHA	10.000	RUDDER	0.000
△	0.897	RUDFLR	30.000		
◇	1.201				

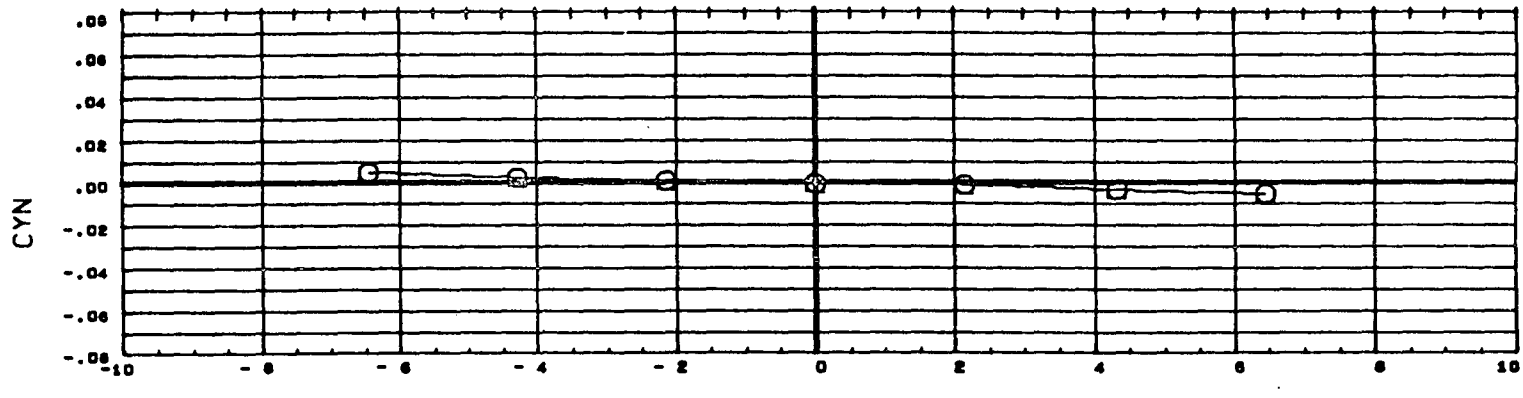
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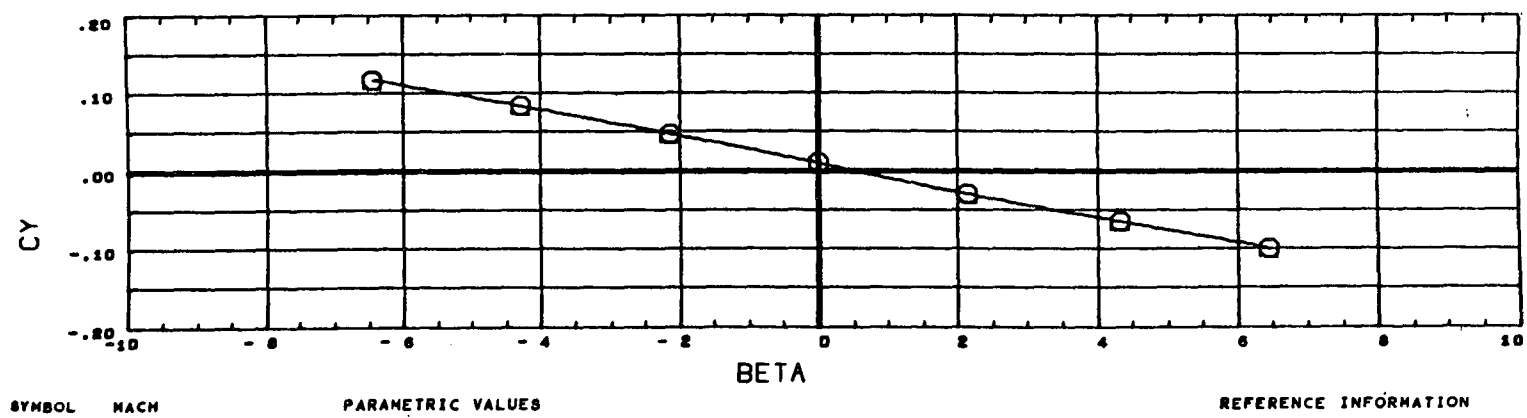
REFERENCE INFORMATION

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BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY







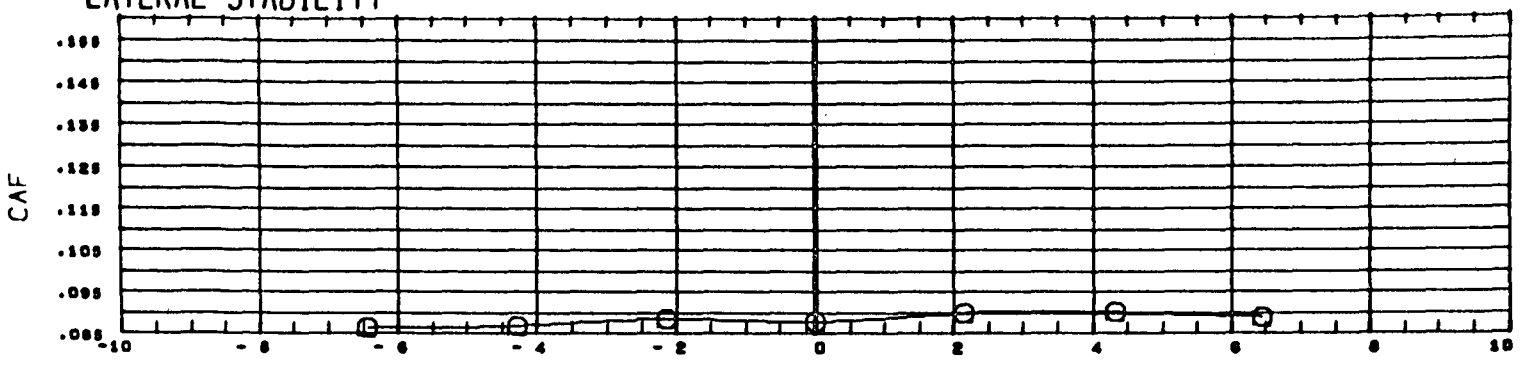
SYMBOL	MACH	PARAMETRIC VALUES			
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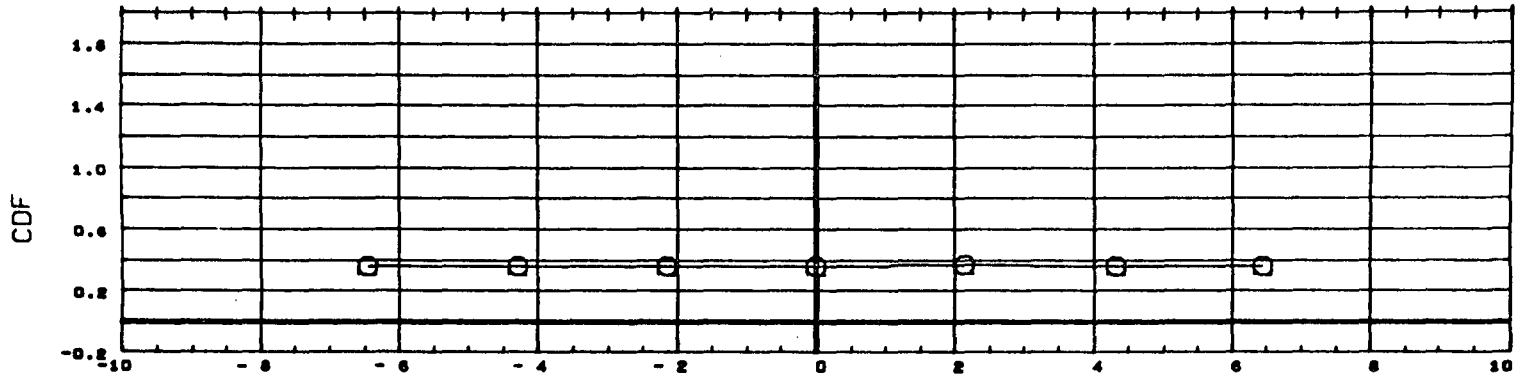
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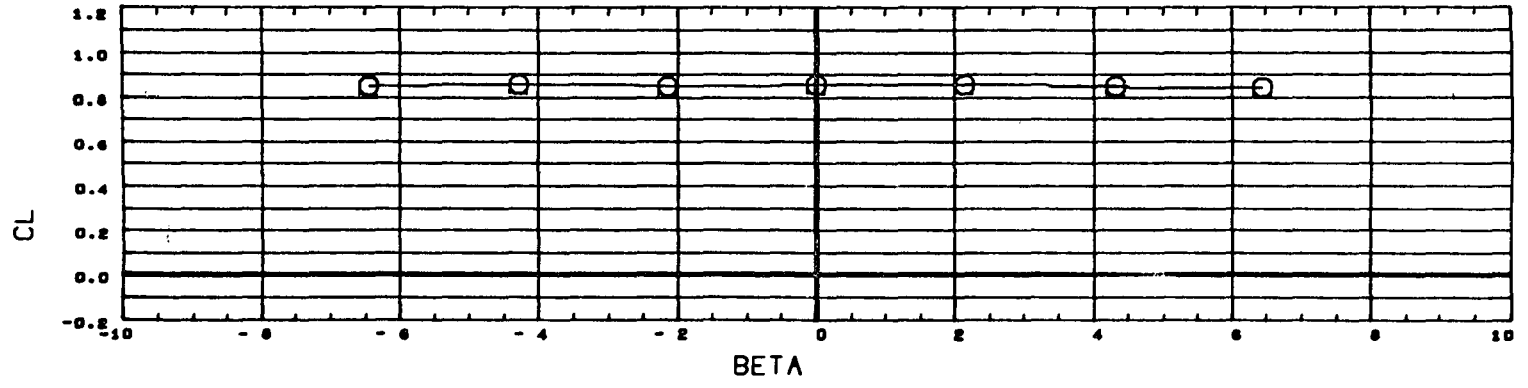
REFERENCE INFORMATION

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XMRP	1.4821	IN.
YMRP	0.0000	IN.
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SCALE	0.0034	

LATERAL STABILITY







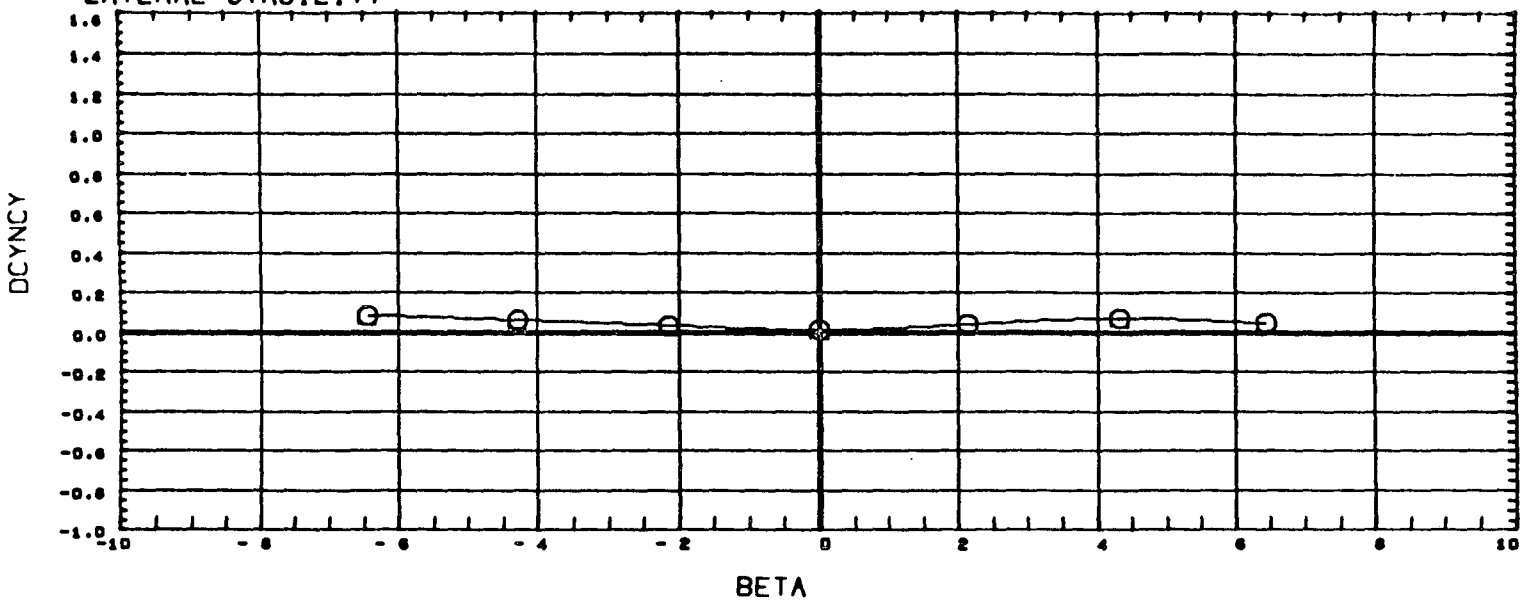
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		RUDFLR	30.000		

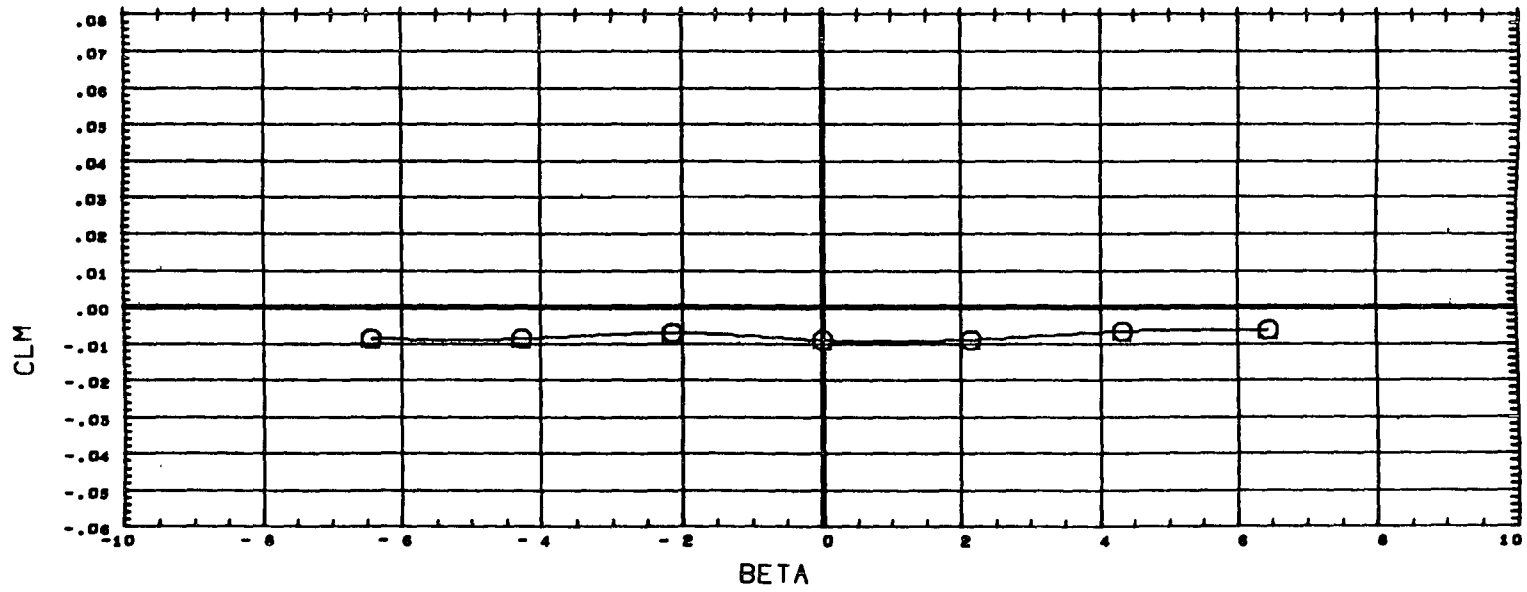
DATA HIST. CODE GC

REFERENCE INFORMATION

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BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



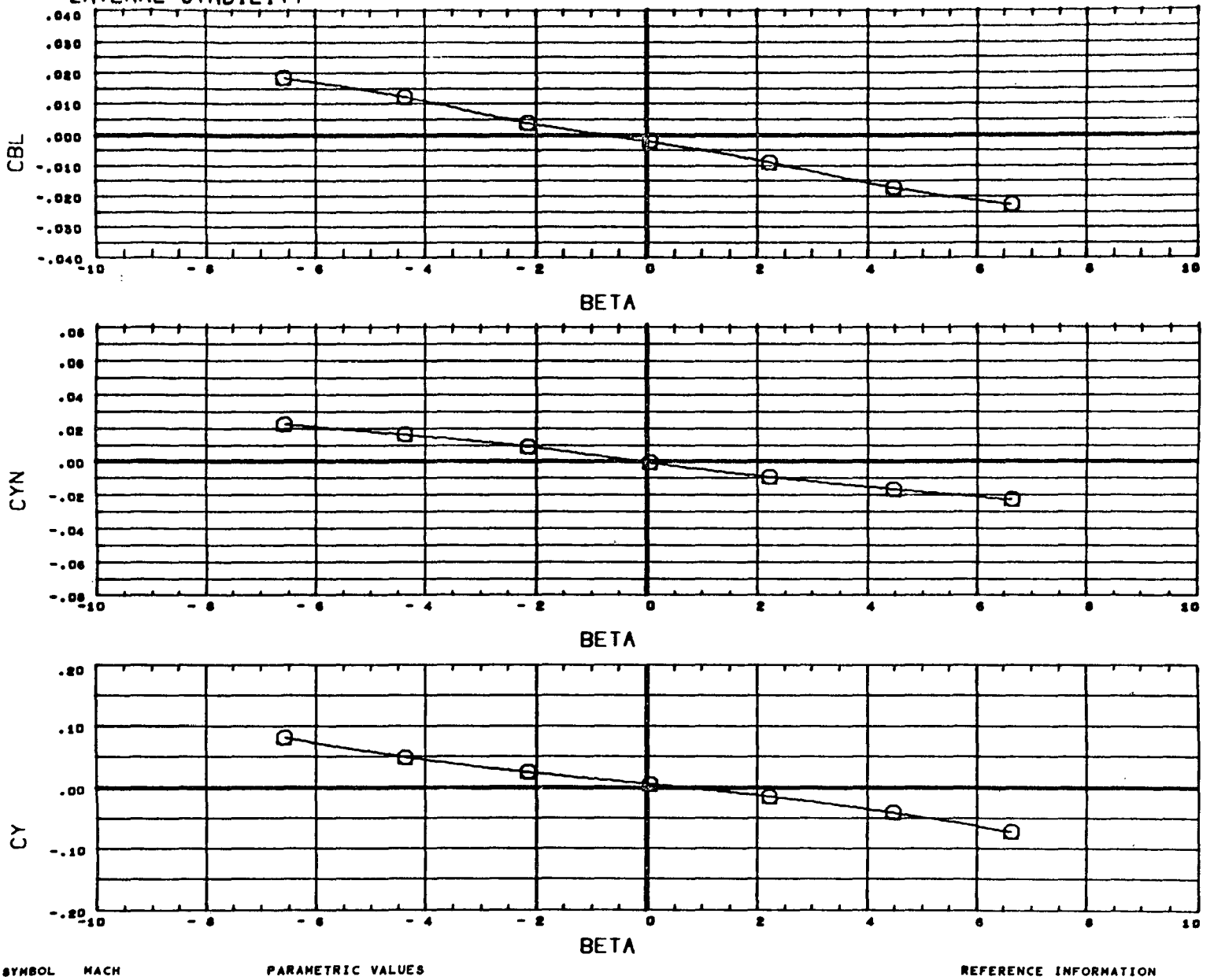


SYMBOL	MACH	PARAMETRIC VALUES			
O	1.201	ALPHA	15.000	RUDDER	0.000
		RUDFLR	30.000		

DATA HIST. CODE GC

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SREF	14.6636	SQ.IN.
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BREF	5.6550	IN.
XMRP	1.4621	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY

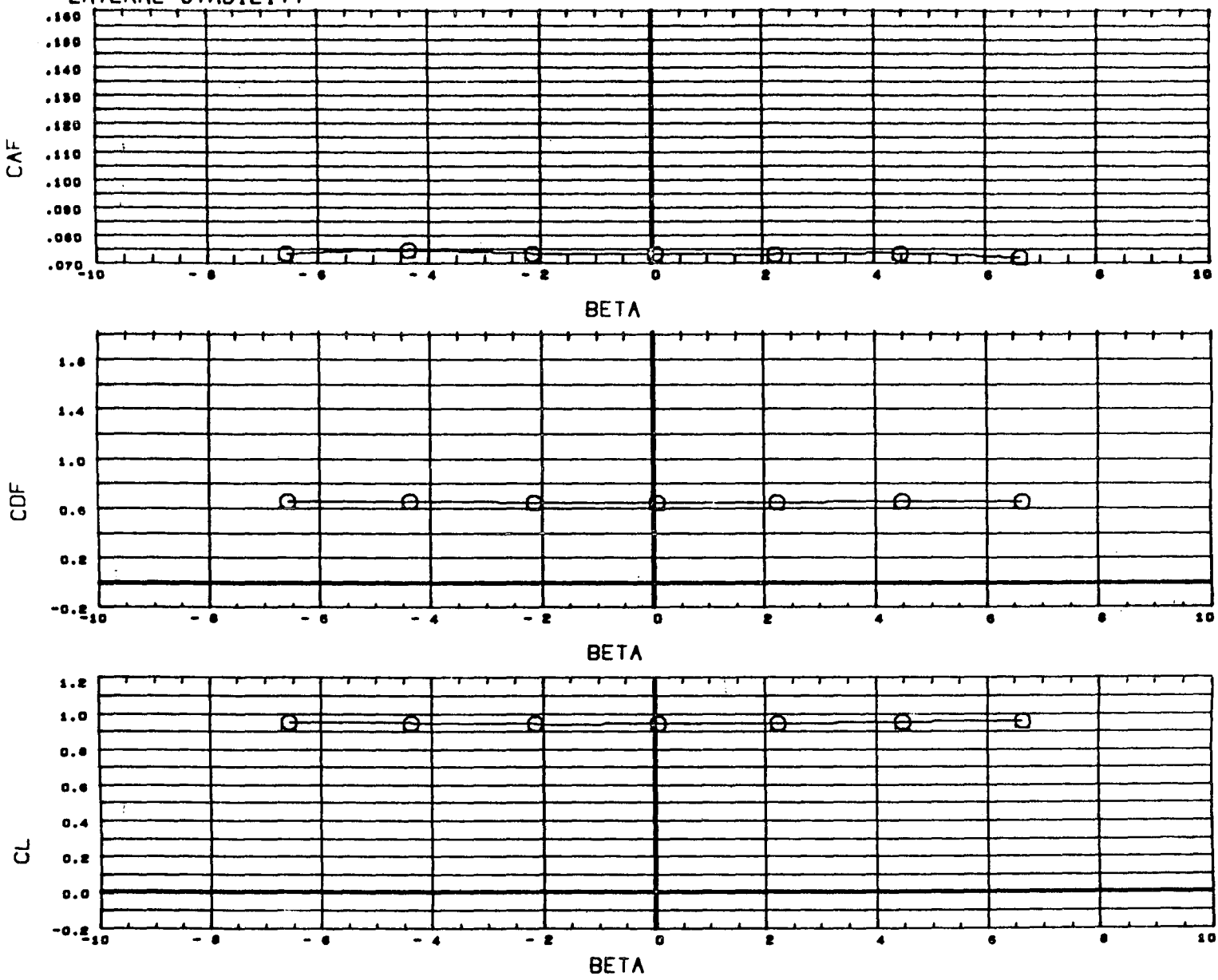


SYMBOL	MACH	PARAMETRIC VALUES			
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DATA HIST. CODE GC

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SCALE	0.0034	

LATERAL STABILITY



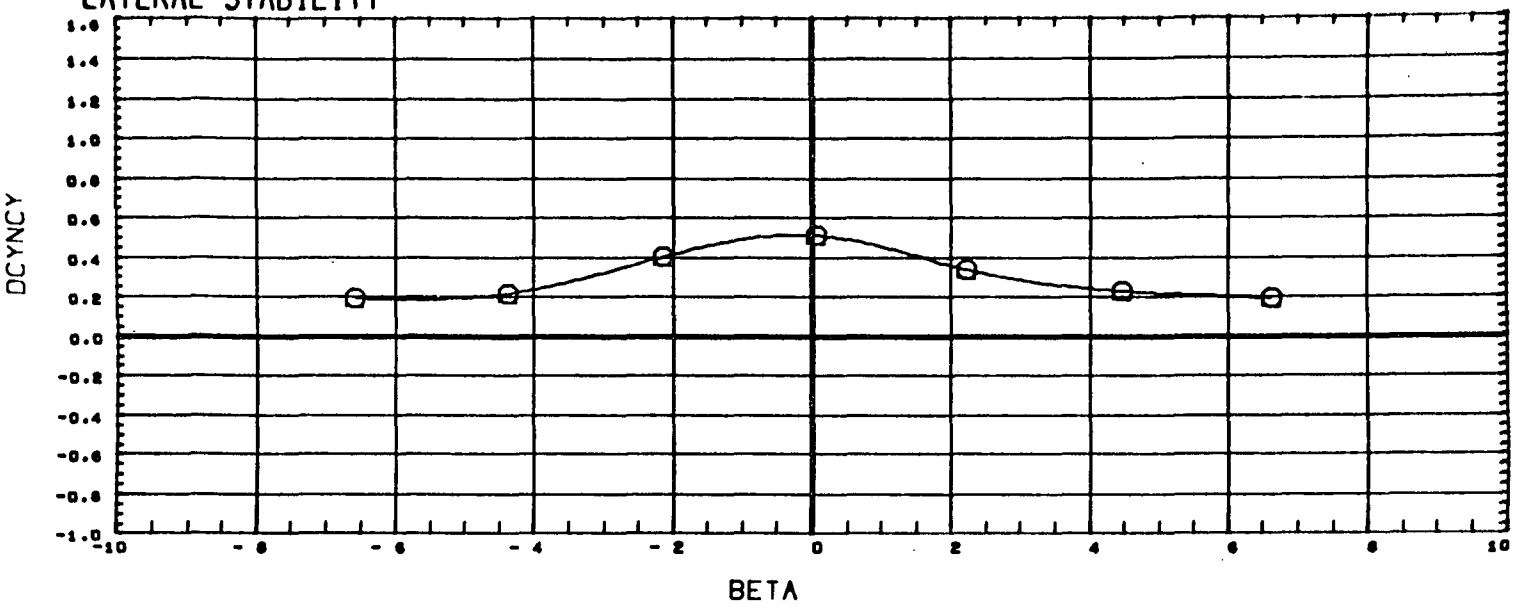
SYMBOL	MACH	PARAMETRIC VALUES			
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		RUDFLR	30.000		

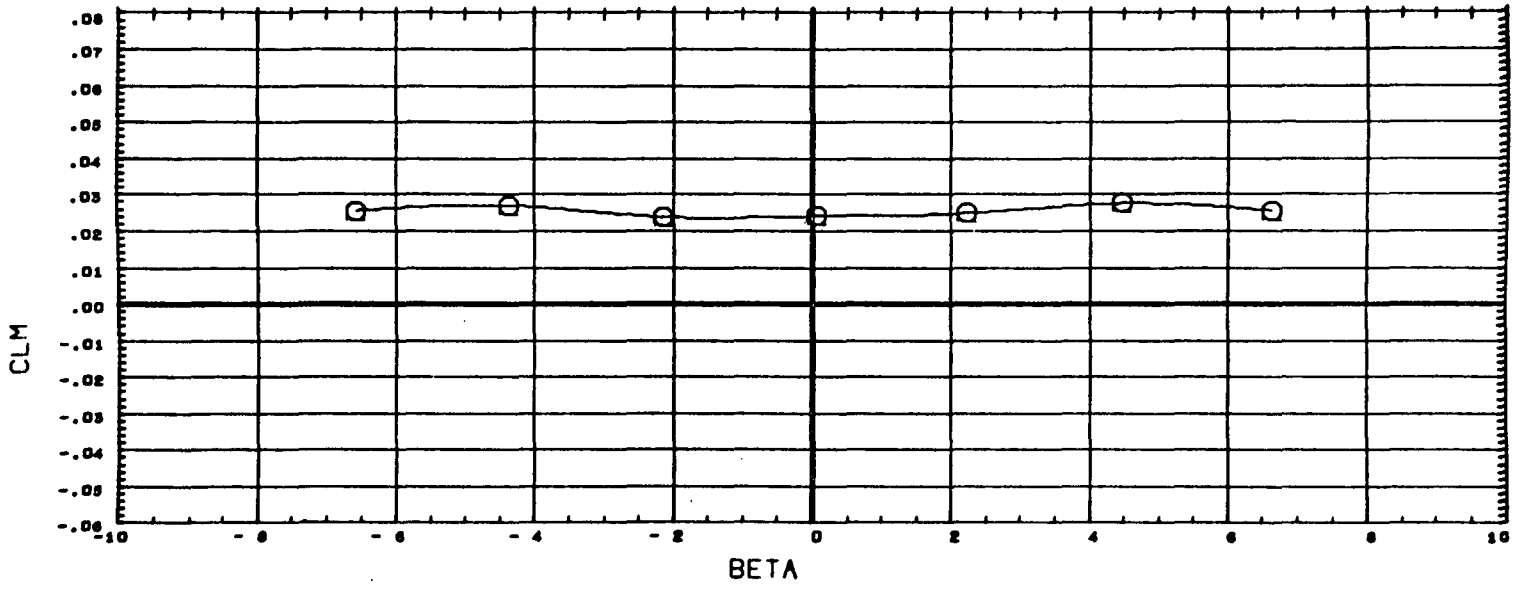
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YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY





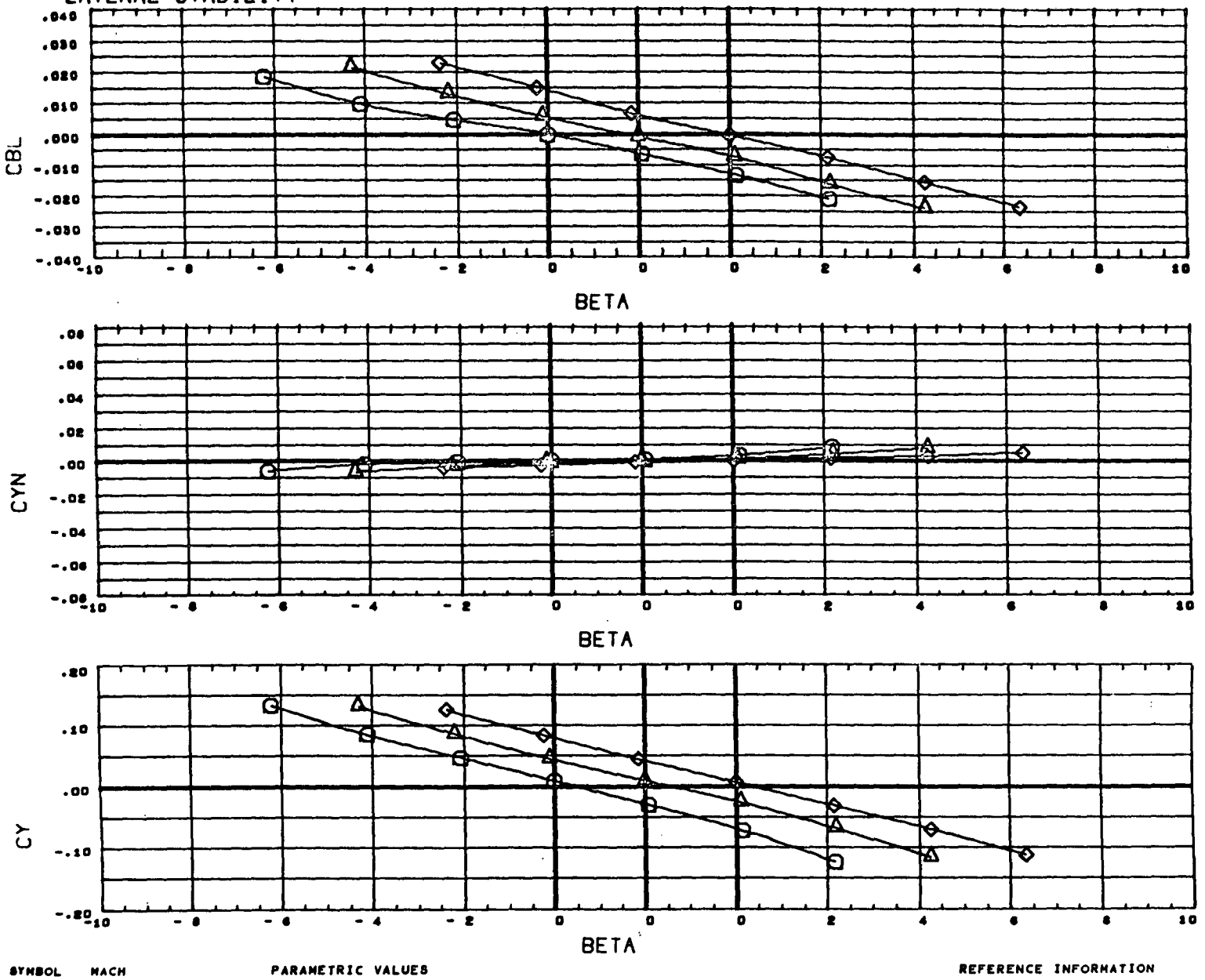
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DATA HIST. CODE GC

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YMRP	0.0000	IN.
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SCALE	0.0034	

LATERAL STABILITY

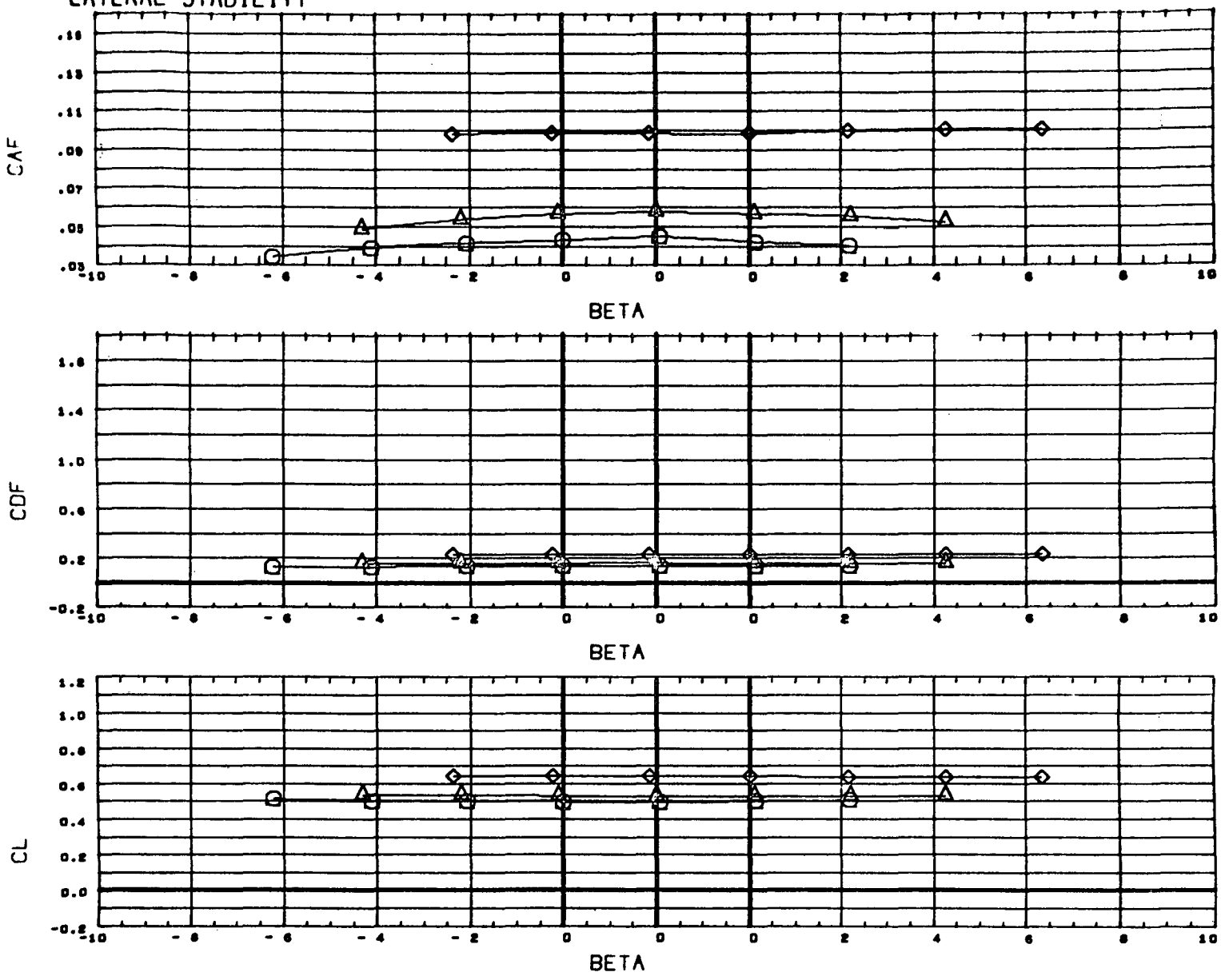


SYMBOL	MACH		PARAMETRIC VALUES		
○	0.598	ALPHA	10.000	RUDDER	0.000
△	0.898	RUDFLR	30.000		
◇	1.193				

DATA HIST. CODE GC

REFERENCE INFORMATION		
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BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



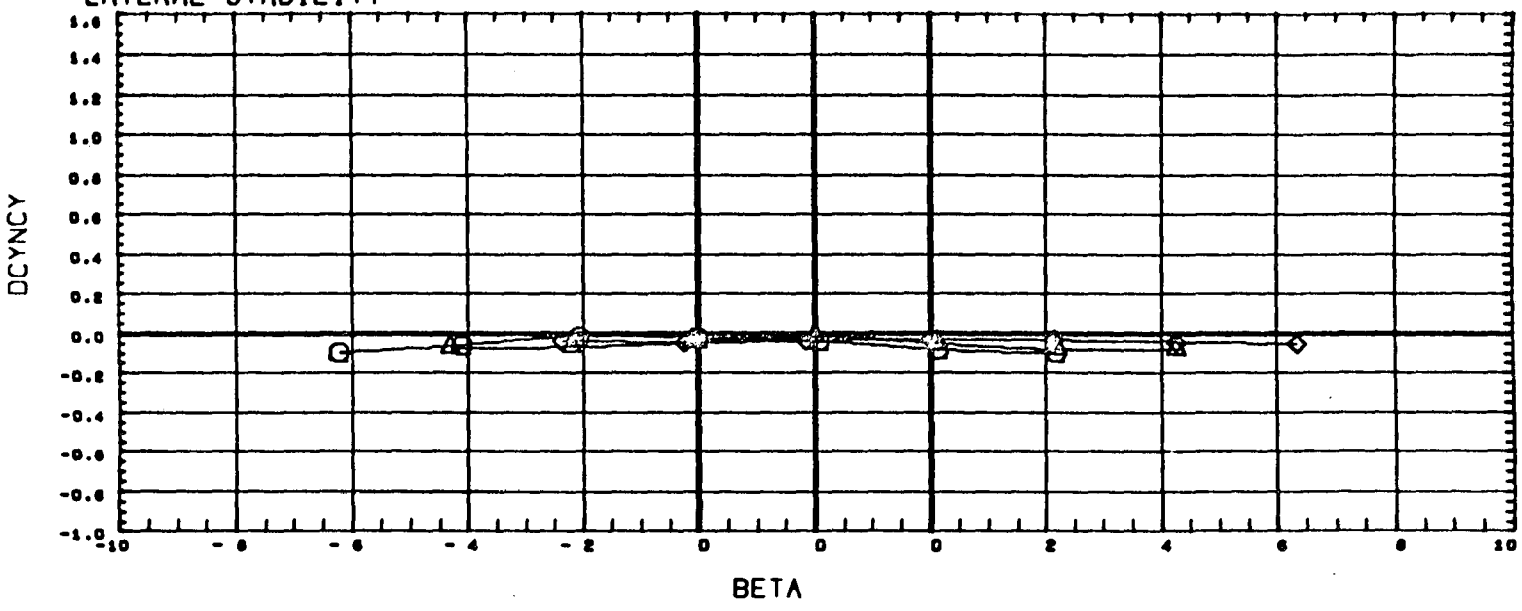
SYMBOL	MACH	PARAMETRIC VALUES			
○	0.598	ALPHA	10.000	RUDDER	0.000
△	0.898	RUDFLR	30.000		
◇	1.193				

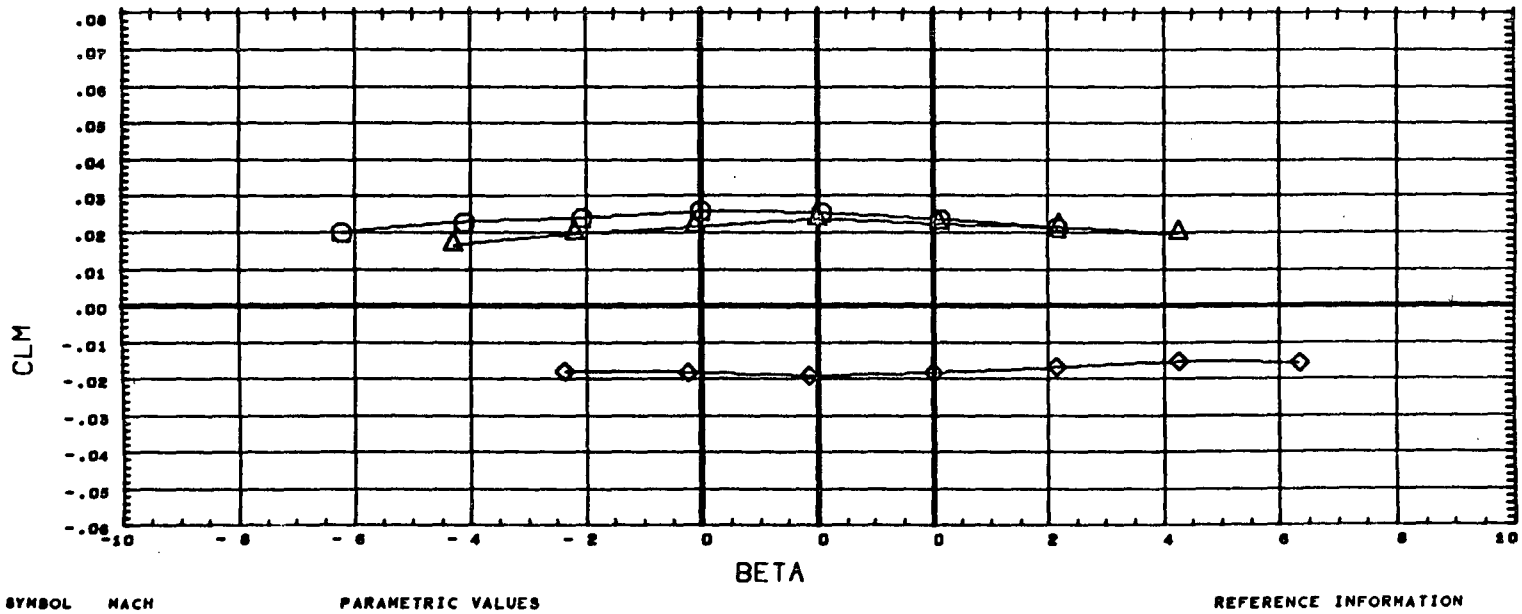
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YMRP	0.0000	IN.
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SCALE	0.0034	

LATERAL STABILITY



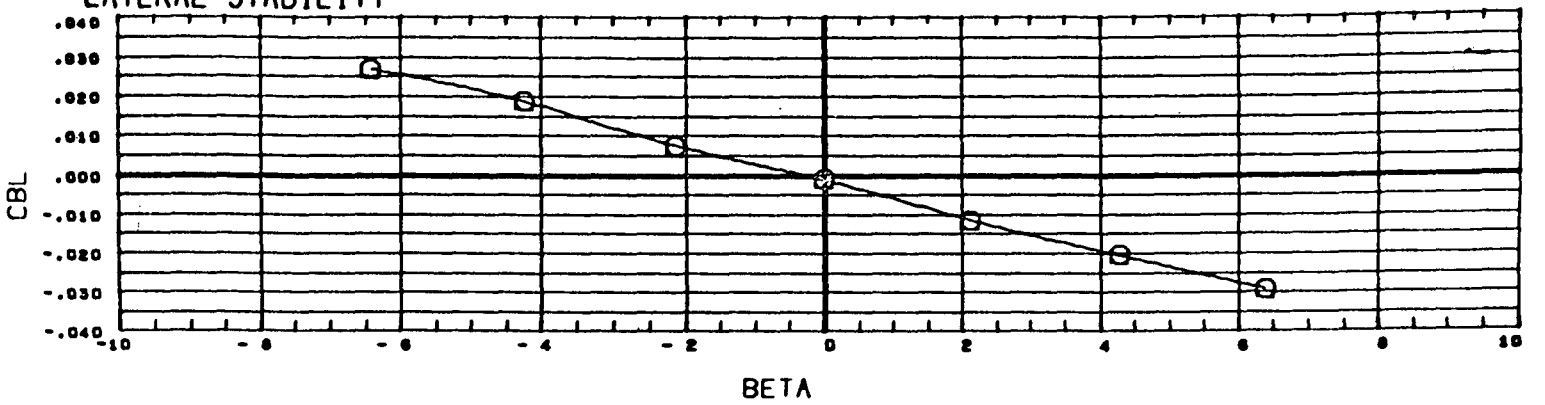


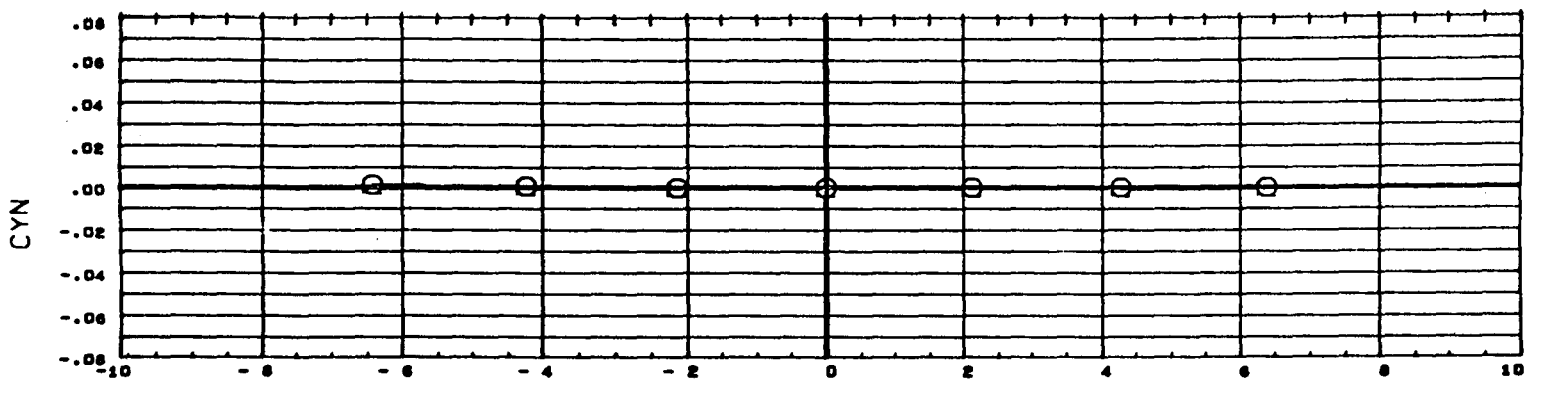
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◇	1.193				

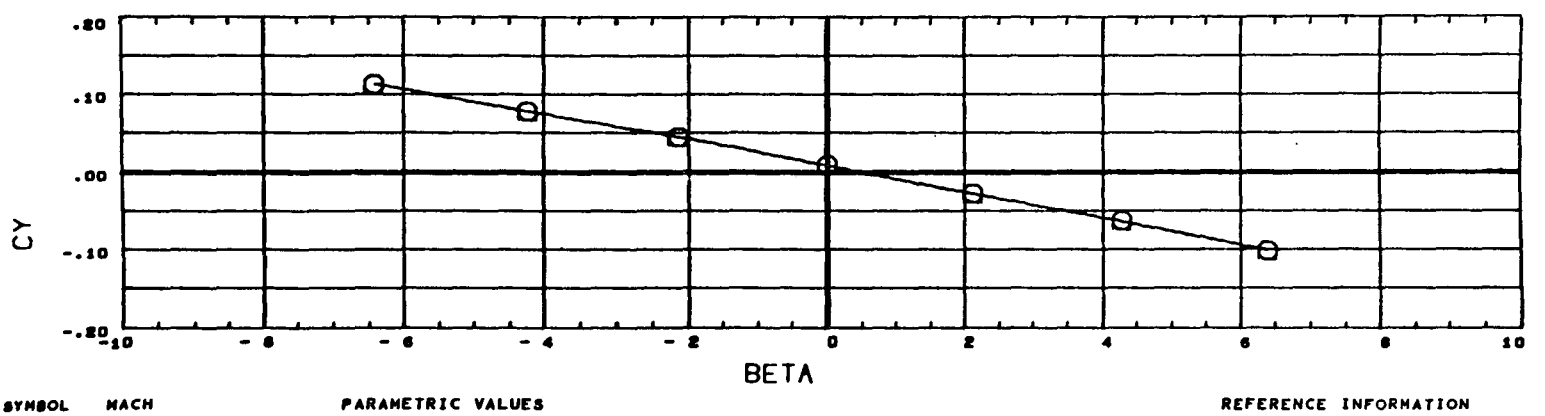
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YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY







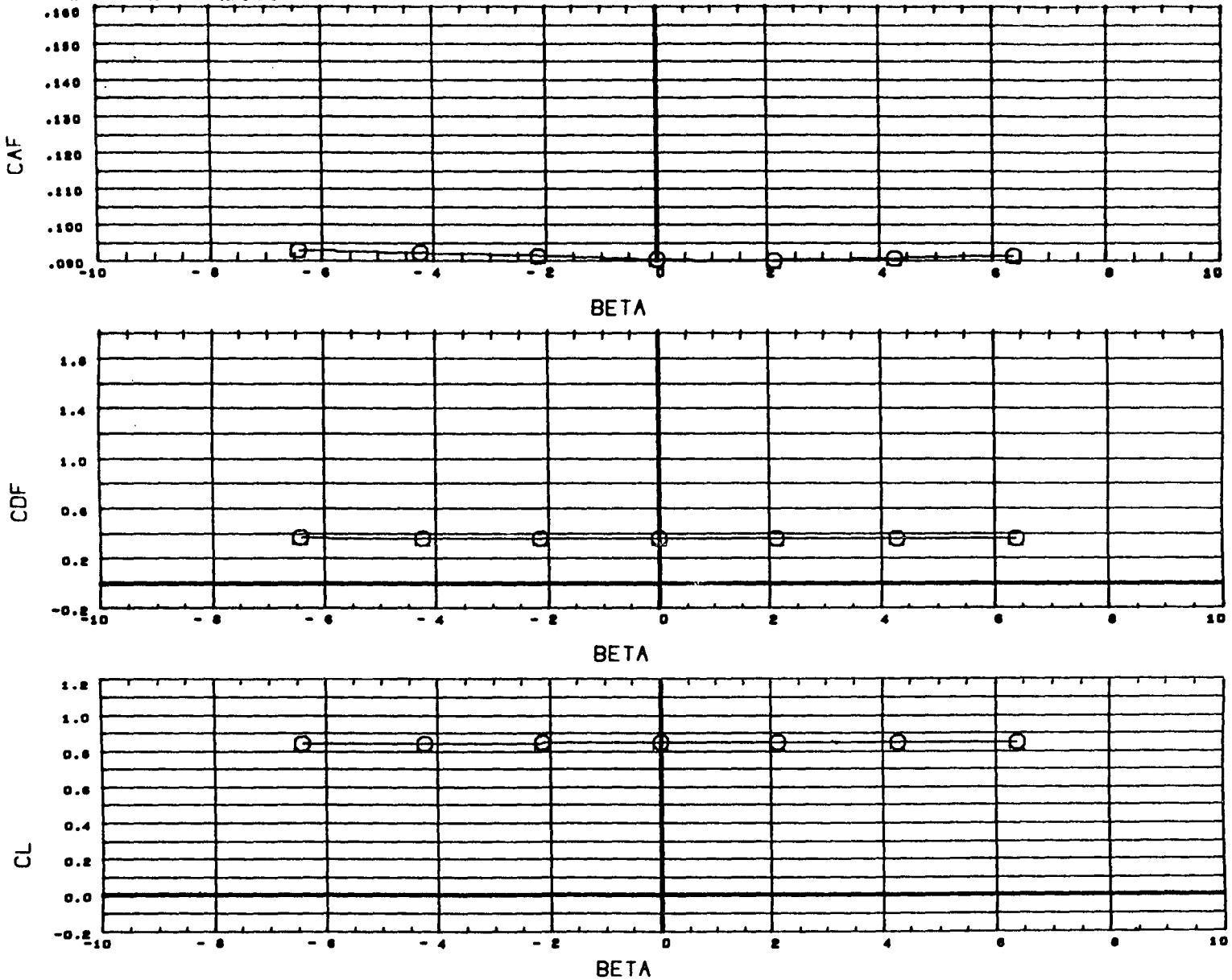
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DATA HIST. CODE GC

REFERENCE INFORMATION

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YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



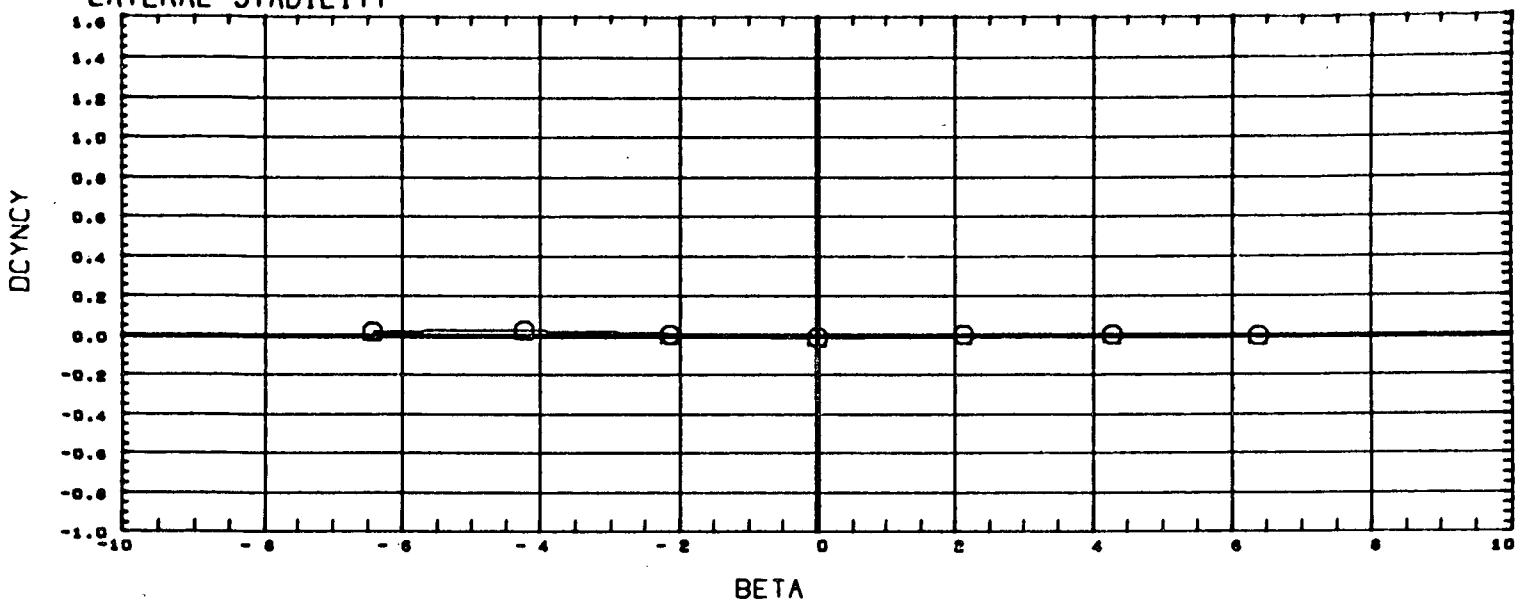
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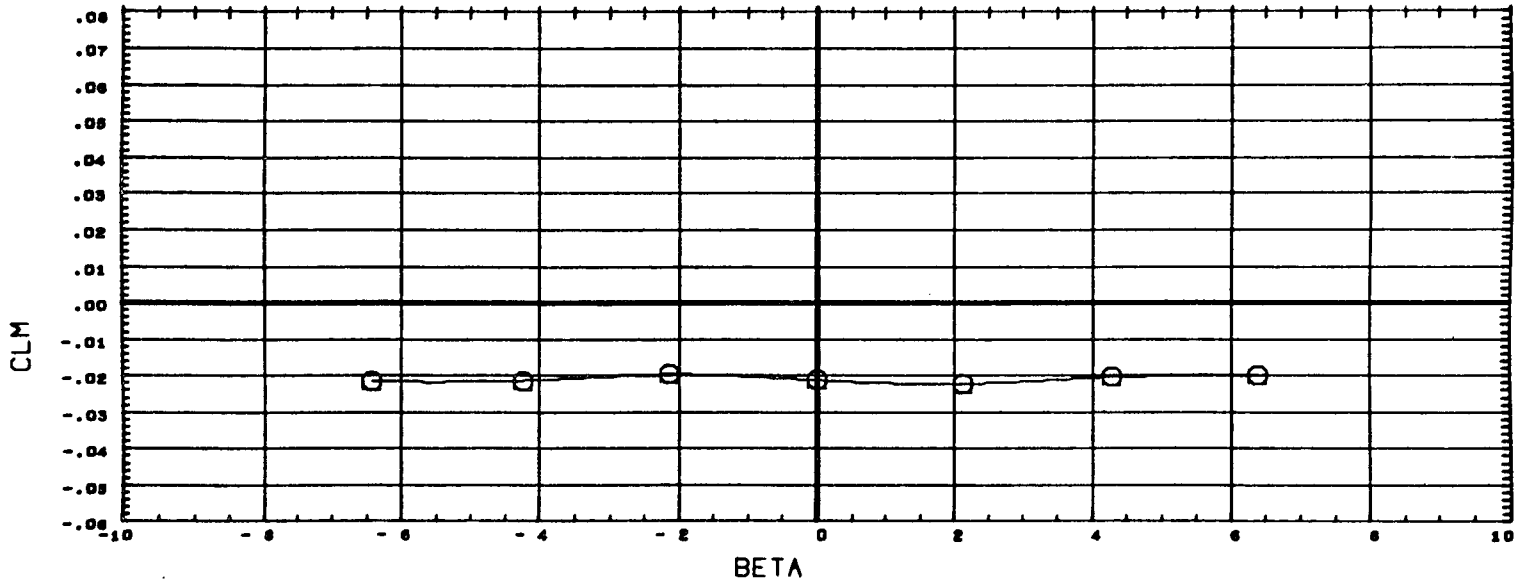
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YMRP	0.0000	IN.
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SCALE	0.0034	

LATERAL STABILITY





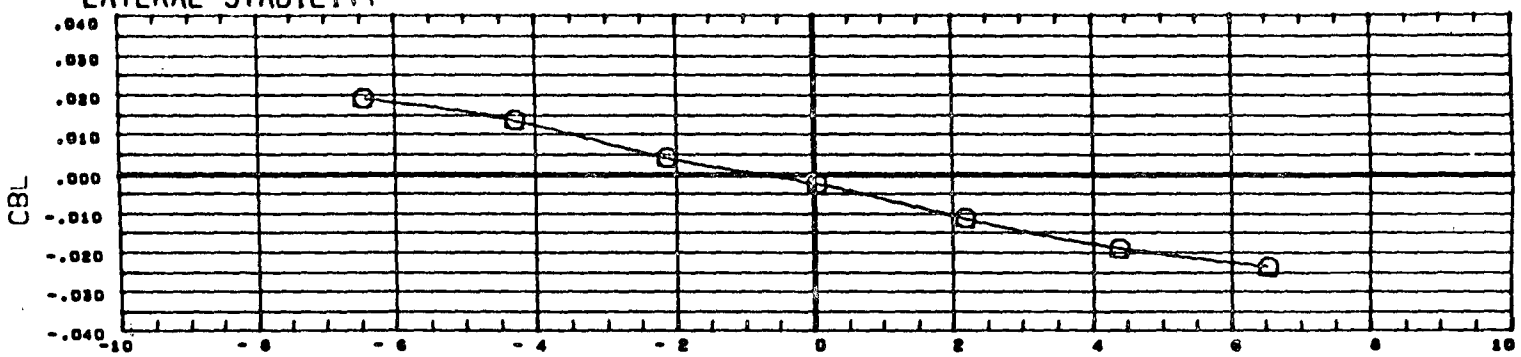
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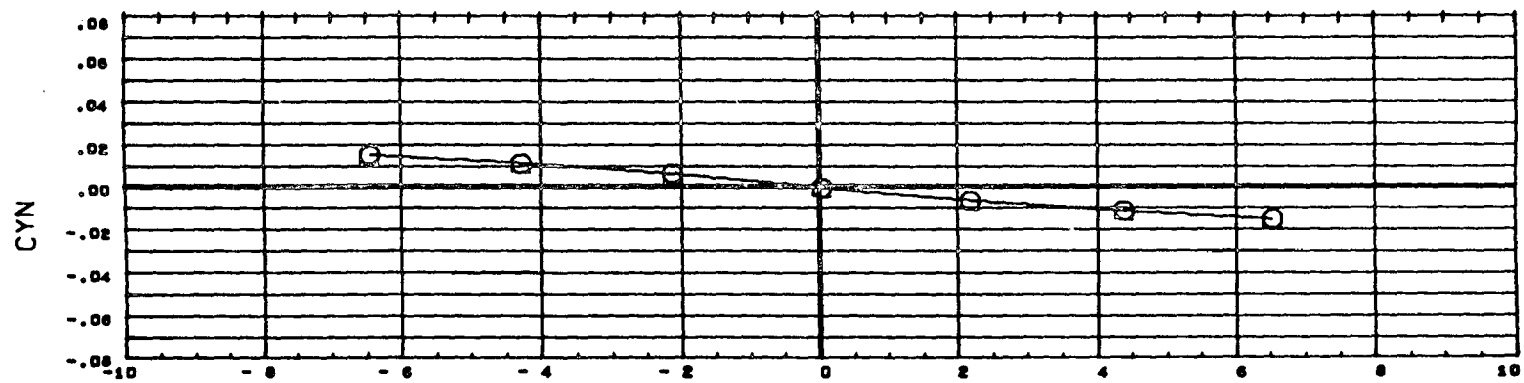
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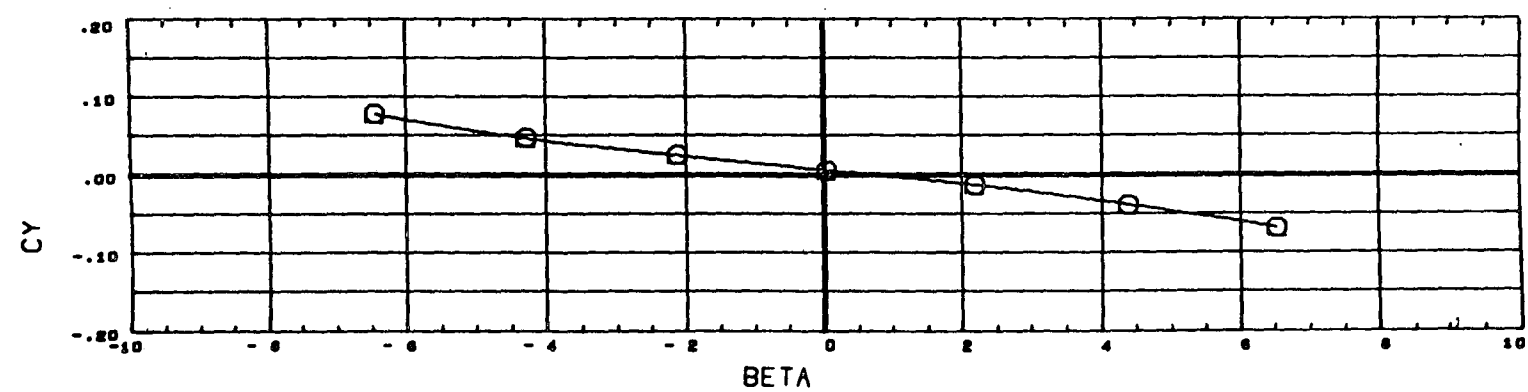
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YMRP	0.0000	IN.
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SCALE	0.0034	

LATERAL STABILITY







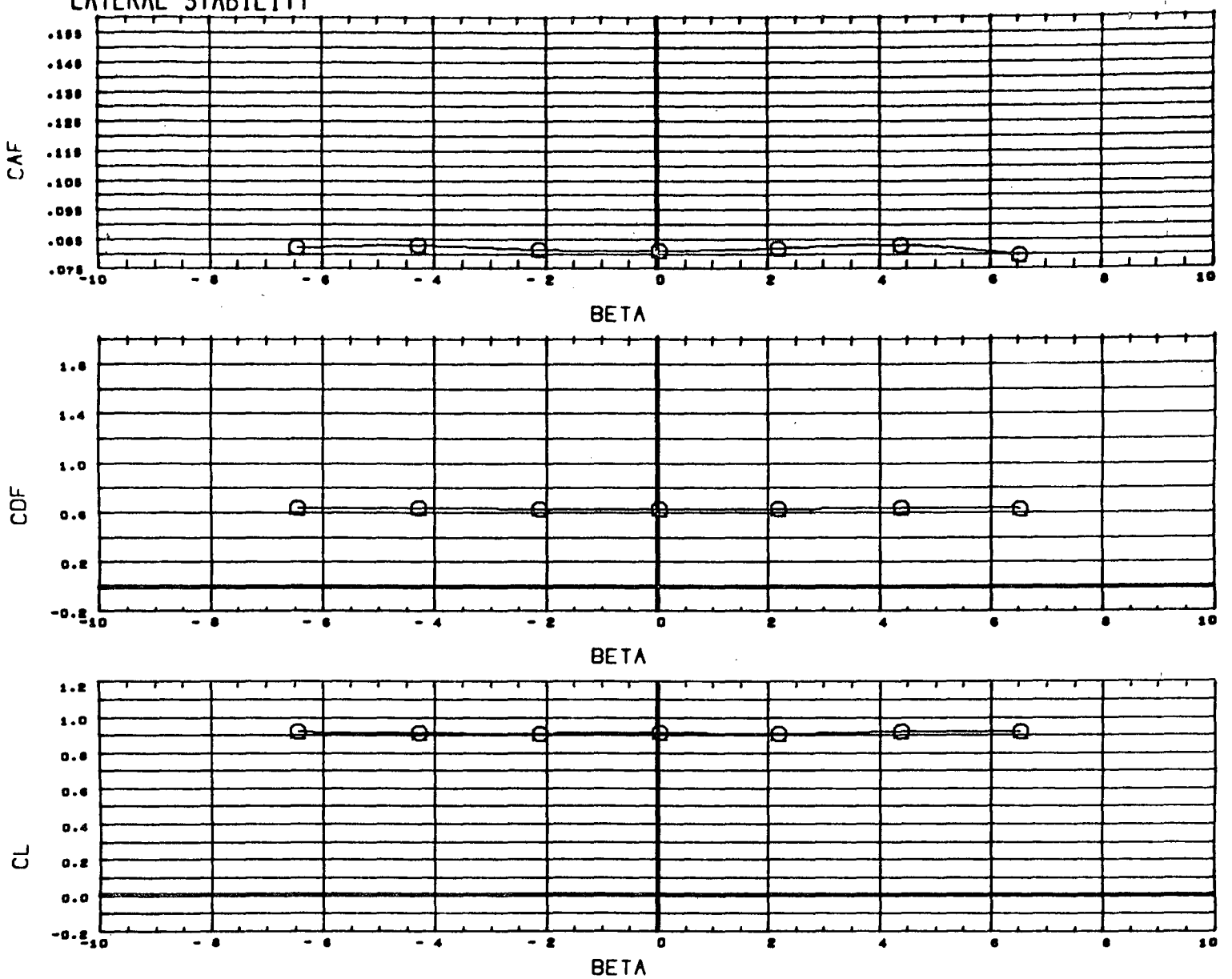
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		RUDFLR	30.000		

DATA HIST. CODE GC

REFERENCE INFORMATION

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BREF	5.6550	IN.
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YMRP	0.0000	IN.
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SCALE	0.0034	

LATERAL STABILITY

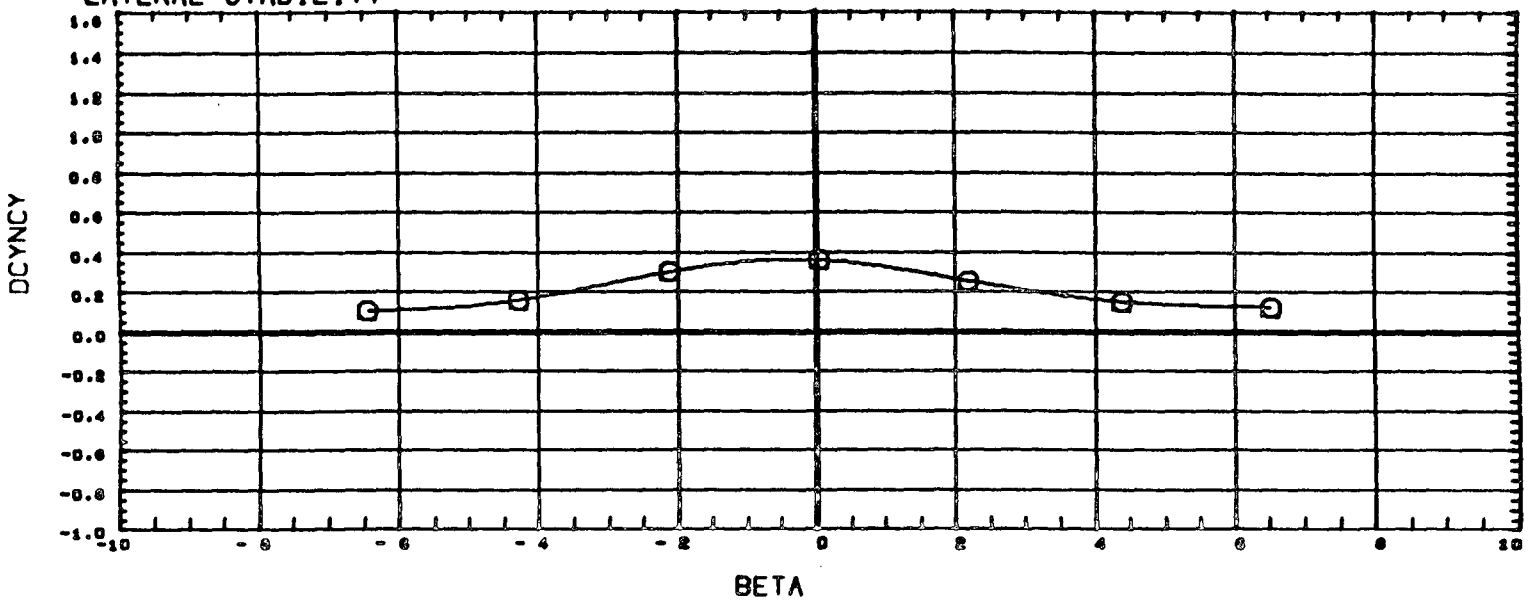


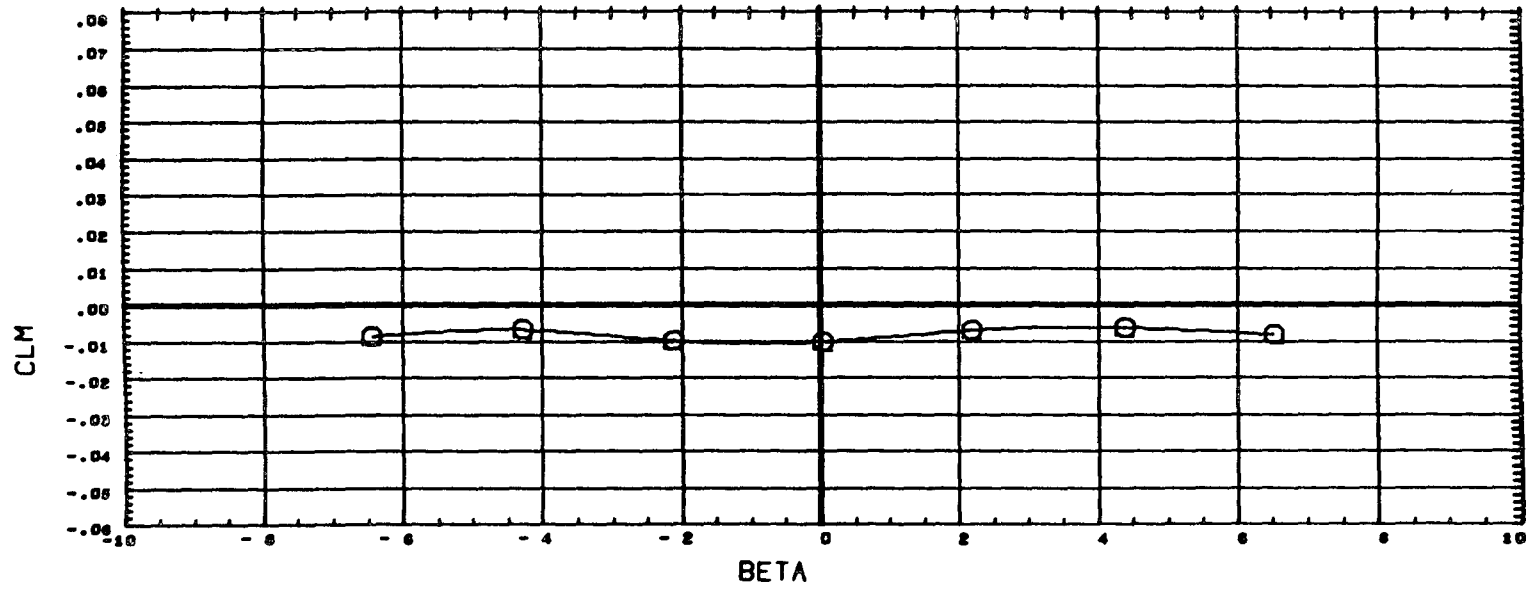
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		RUDFLR	30.000		

DATA HIST. CODE GC

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YMRP	0.0000	IN.
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SCALE	0.0034	

LATERAL STABILITY





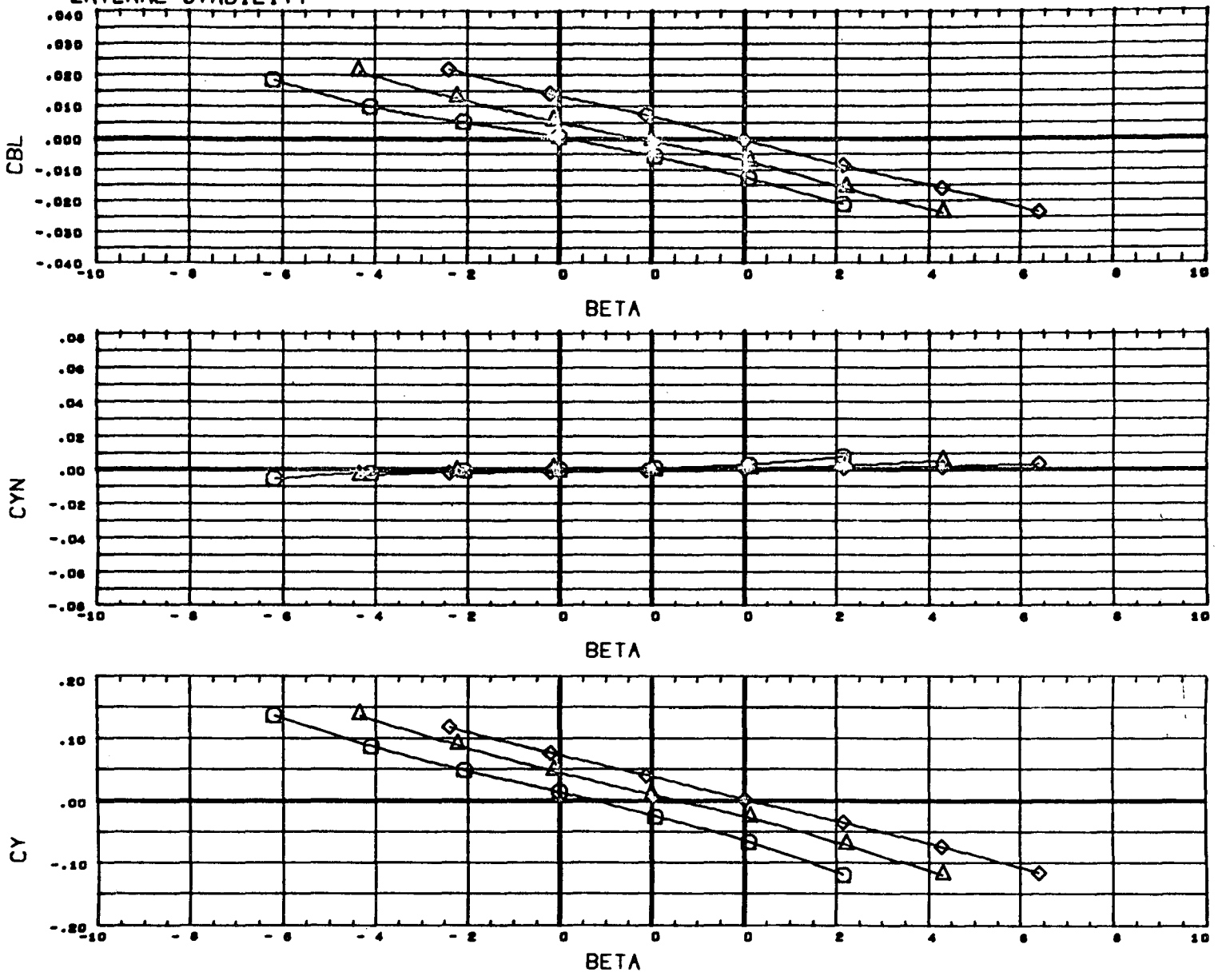
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		RUDFLR	30.000		

DATA HIST. CODE GC

REFERENCE INFORMATION

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BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



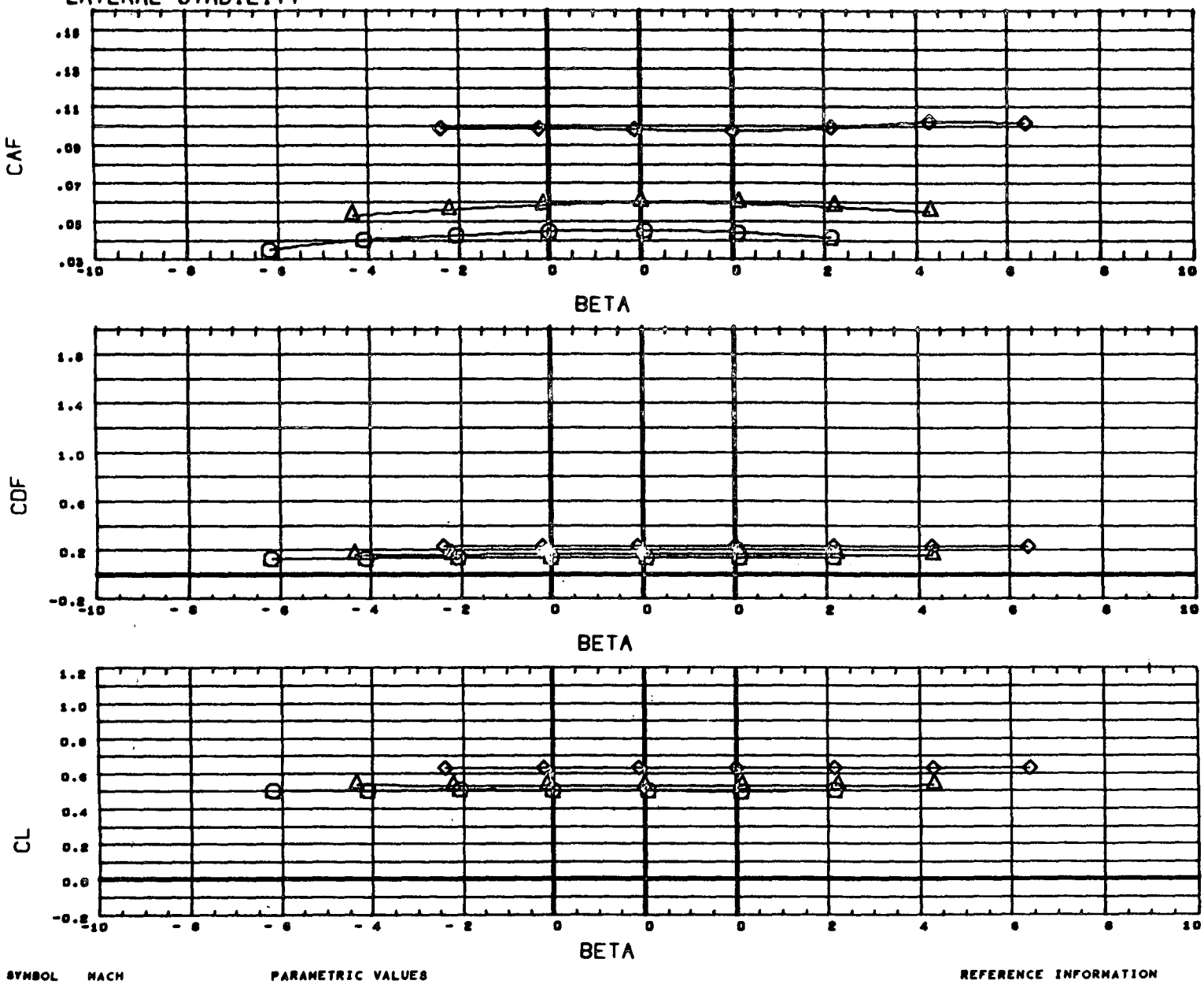
SYMBOL	MACH		PARAMETRIC VALUES		
○	0.596	ALPHA	10.000	RUDDER	0.000
△	0.696	RUDFLR	30.000		
◇	1.196				

DATA HIST. CODE GC

REFERENCE INFORMATION

SREF	14.6836	SQ.IN.
LREF	4.5060	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



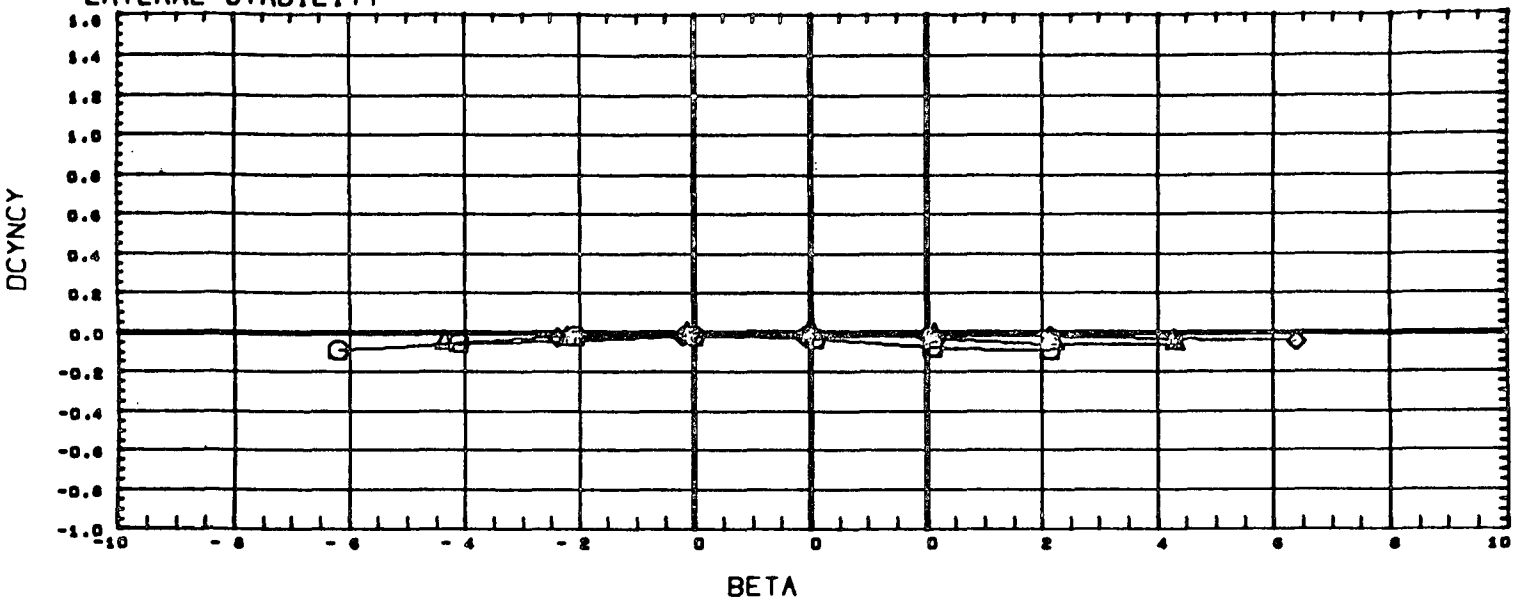
SYMBOL	MACH		PARAMETRIC VALUES		
○	0.598	ALPHA	10.000	RUDDER	0.000
△	0.898	RUDFLR	50.000		
◇	1.198				

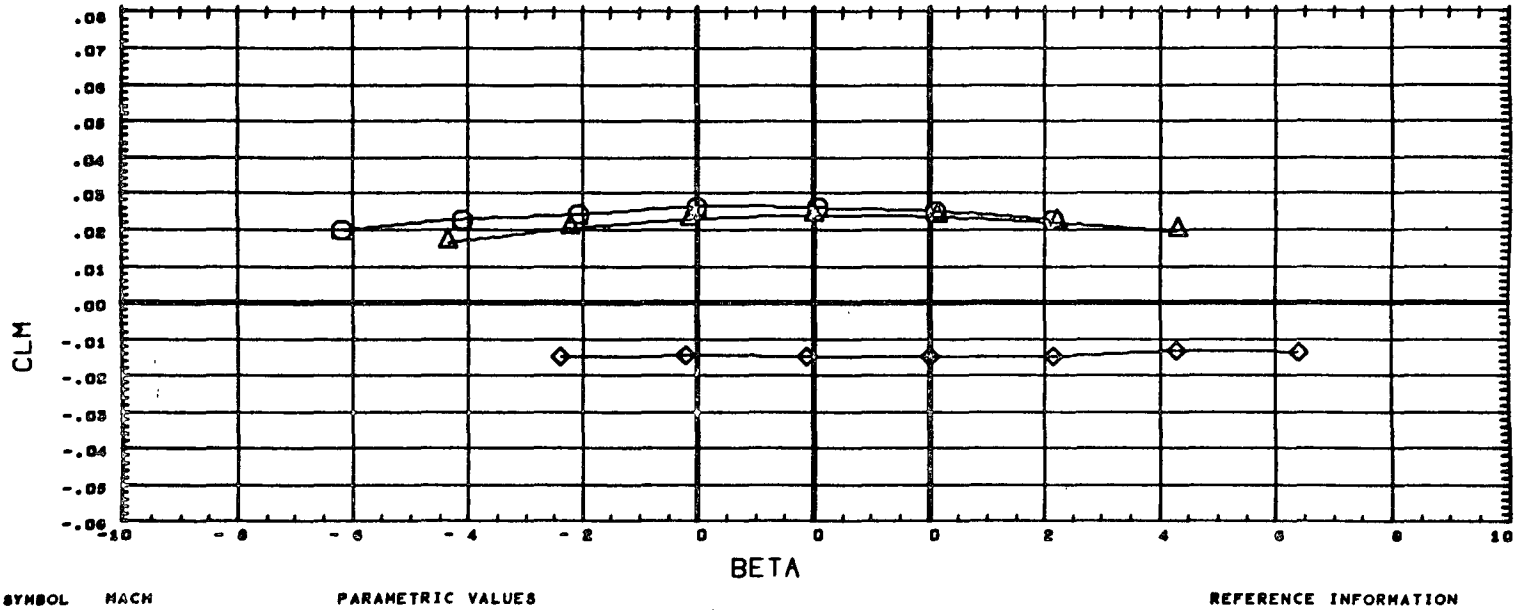
DATA HIST. CODE GC

REFERENCE INFORMATION

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BREF	5.6550	IN.
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YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY





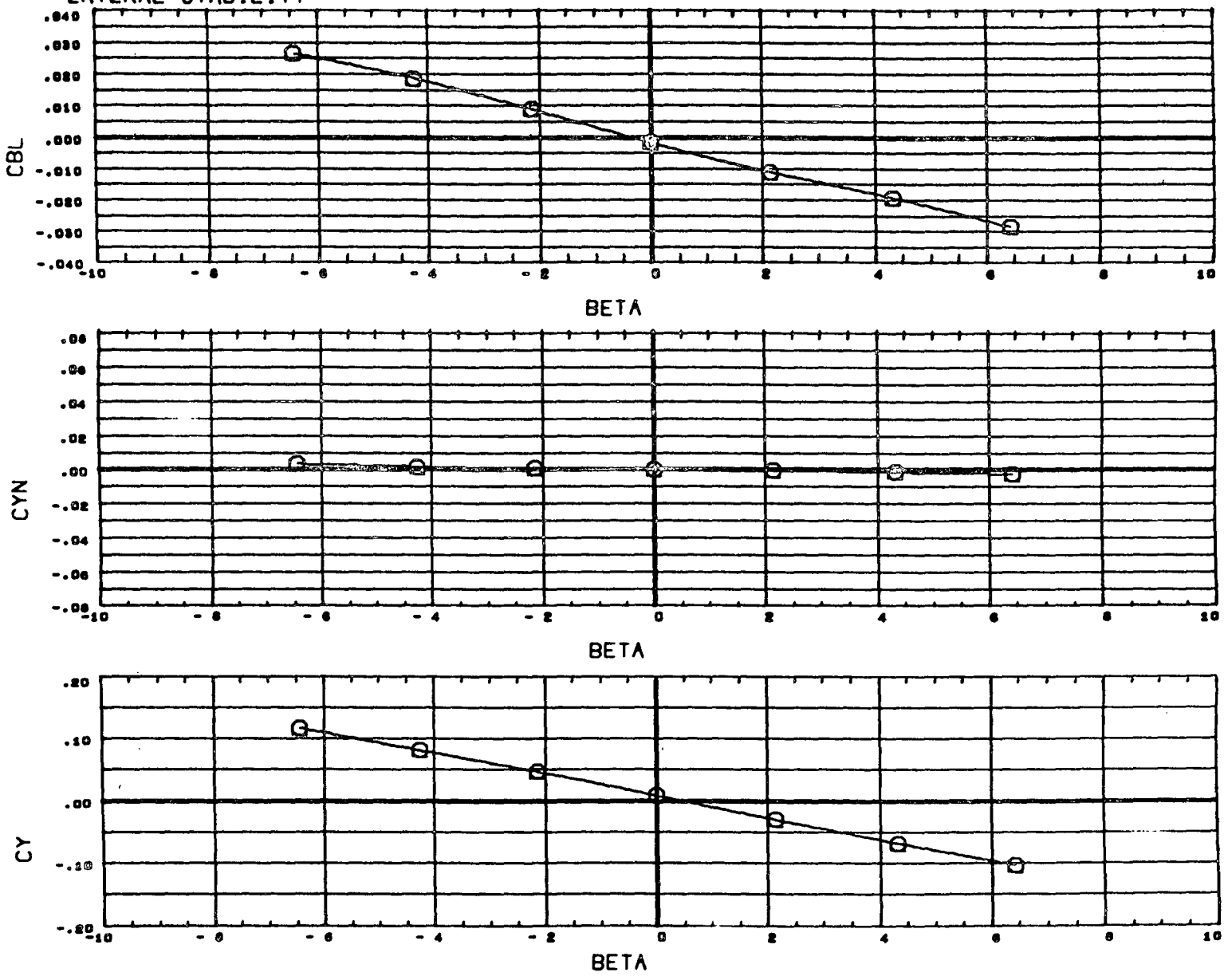
SYMBOL	MACH		PARAMETRIC VALUES		
○	0.590	ALPHA	10.000	RUDDER	0.000
△	0.896	RUDFLR	30.000		
◇	1.196				

DATA HIST. CODE 6C

REFERENCE INFORMATION

SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY

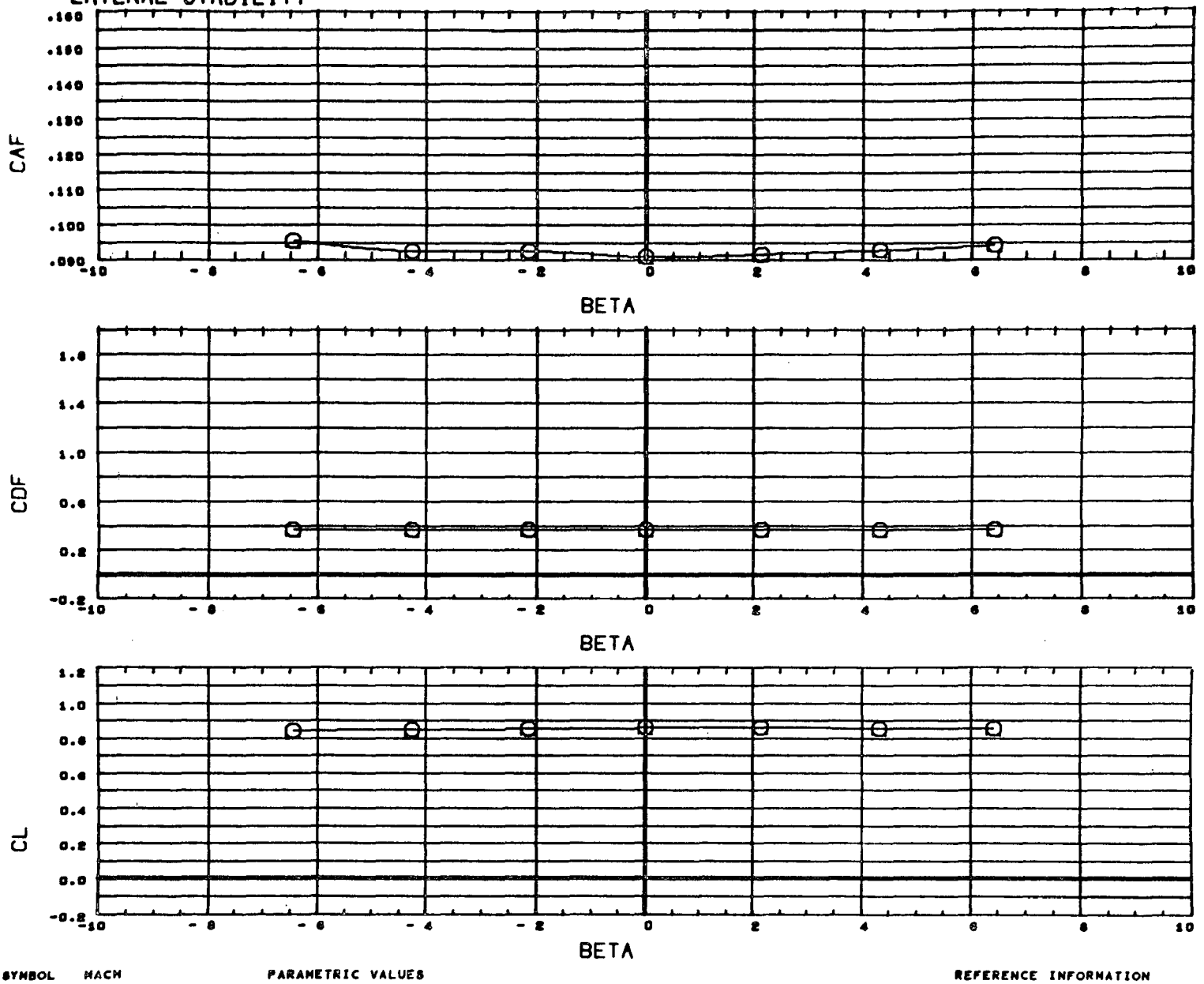


SYMBOL	MACH	PARAMETRIC VALUES			
O	1.199	ALPHA	15.000	RUDDER	0.000
		RUDFLR	30.000		

DATA HIST. CODE GC

REFERENCE INFORMATION		
SREF	14.6636	SQ.IN.
LREF	4.5060	IN.
BREF	5.6550	IN.
XMRP	1.4621	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY

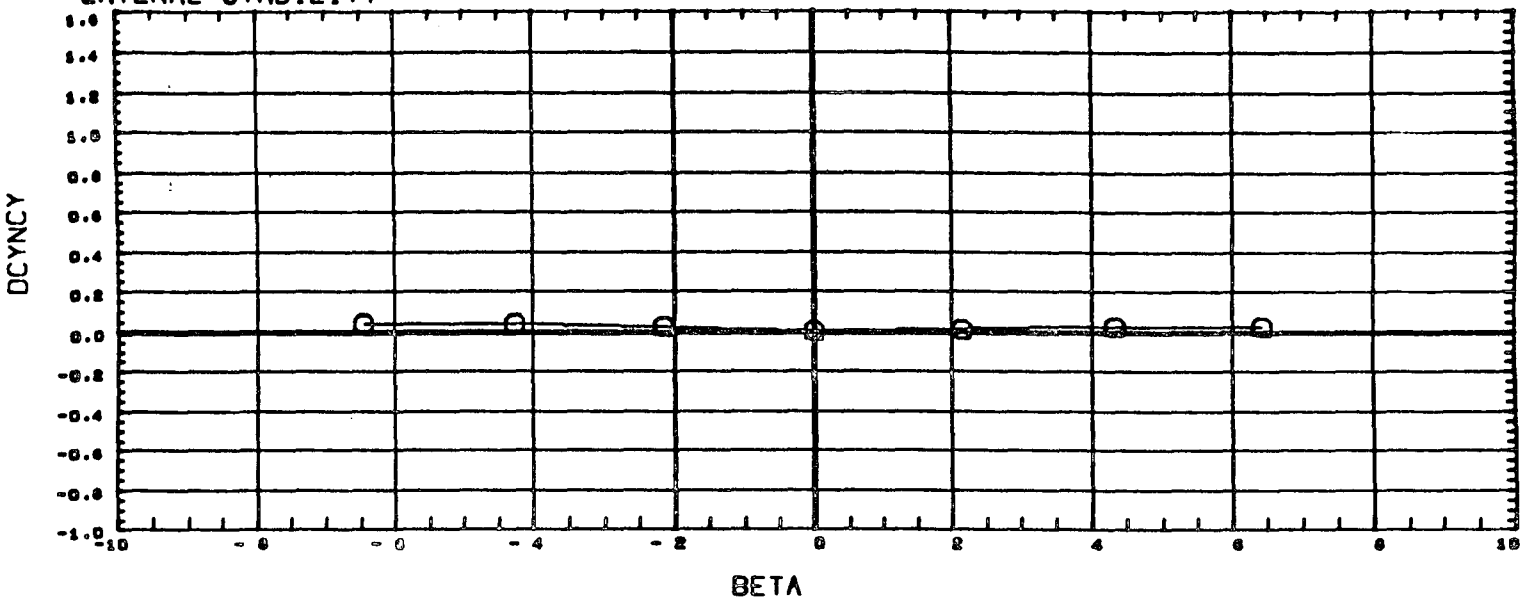


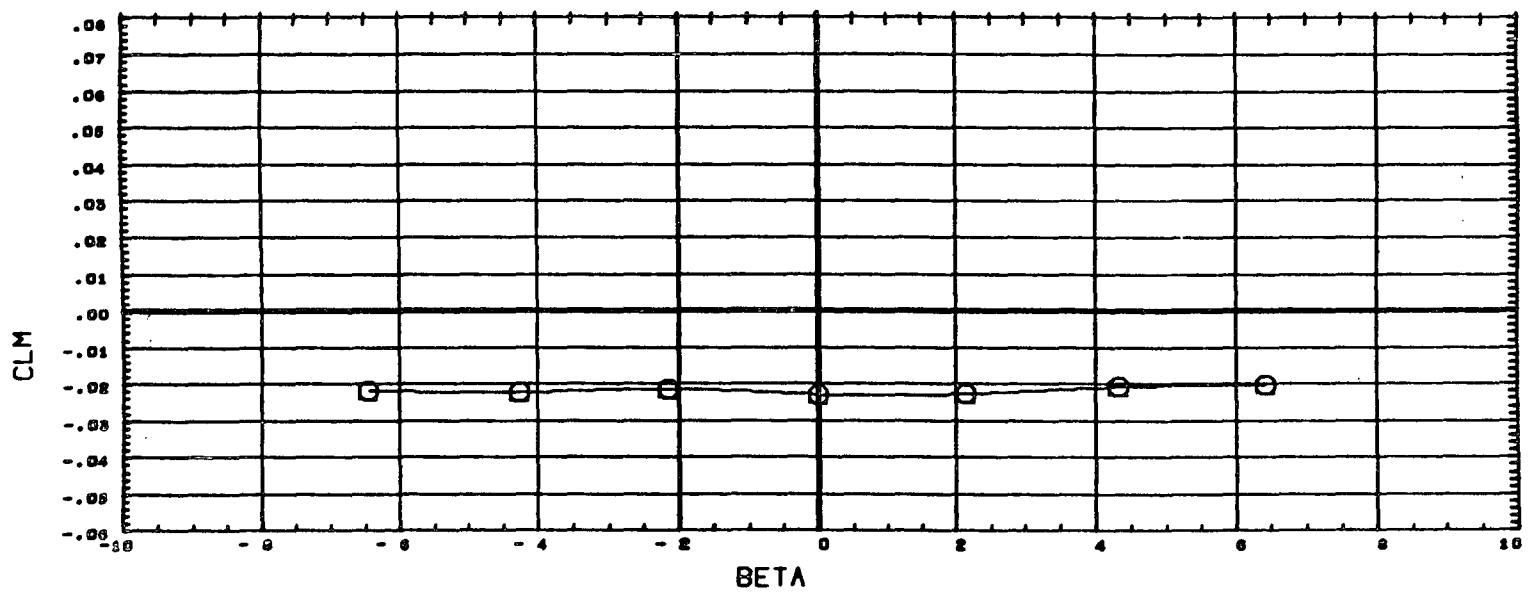
SYMBOL	MACH	PARAMETRIC VALUES			
O	1.199	ALPHA	15.000	RUDDER	0.000
		RUDFLR	30.000		

DATA HIST. CODE GC

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SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



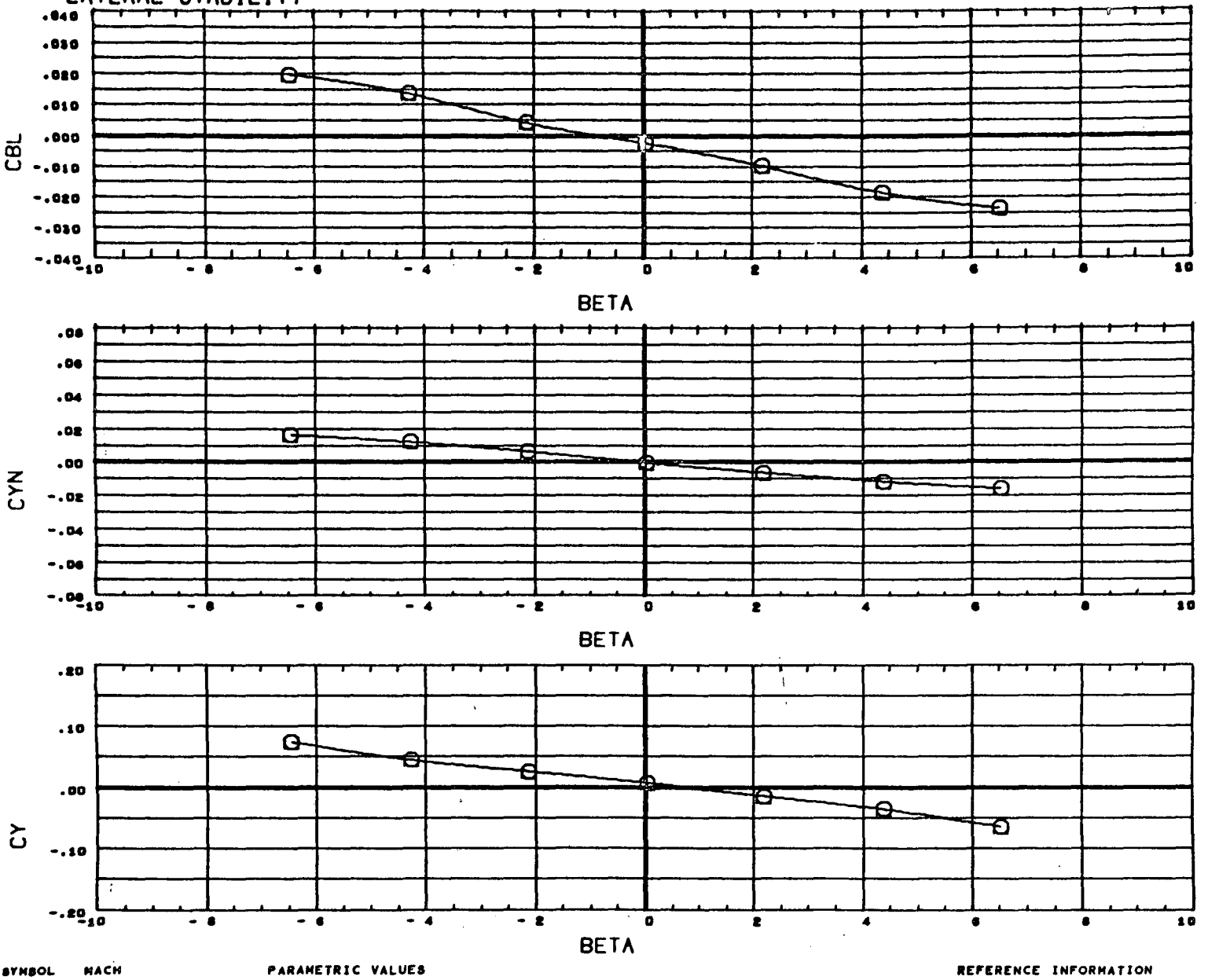


SYMBOL	MACH	PARAMETRIC VALUES			
O	1.199	ALPHA	15.000	RUDDER	0.000
		RUDFLR	30.000		

DATA HIST. CODE GC

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SREF	14.6636	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4621	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



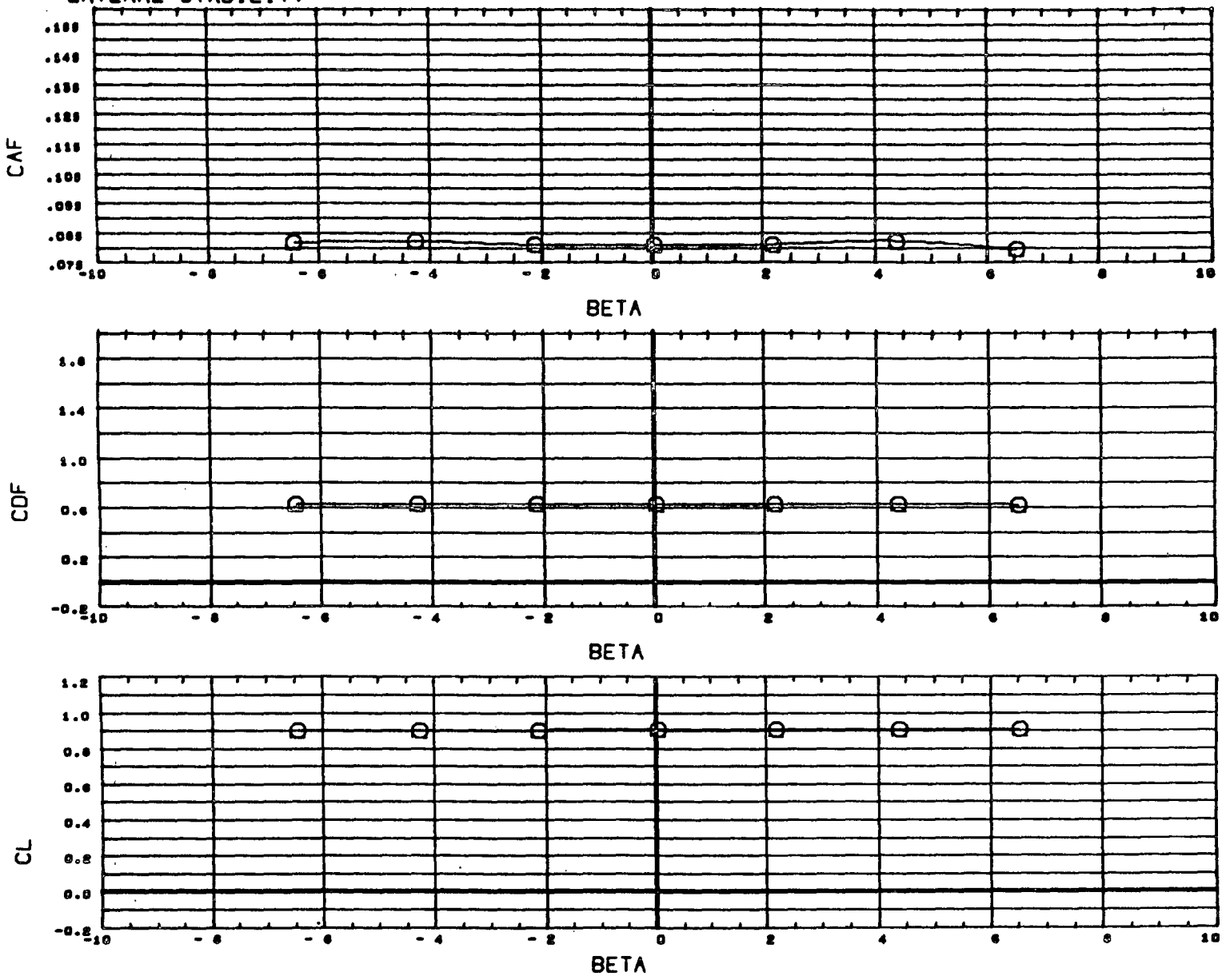
SYMBOL	MACH		PARAMETRIC VALUES		
O	1.970	ALPHA	25.000	RUDDER	0.000
		RUDFLR	30.000		

DATA HIST. CODE .GC

REFERENCE INFORMATION

SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4621	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY

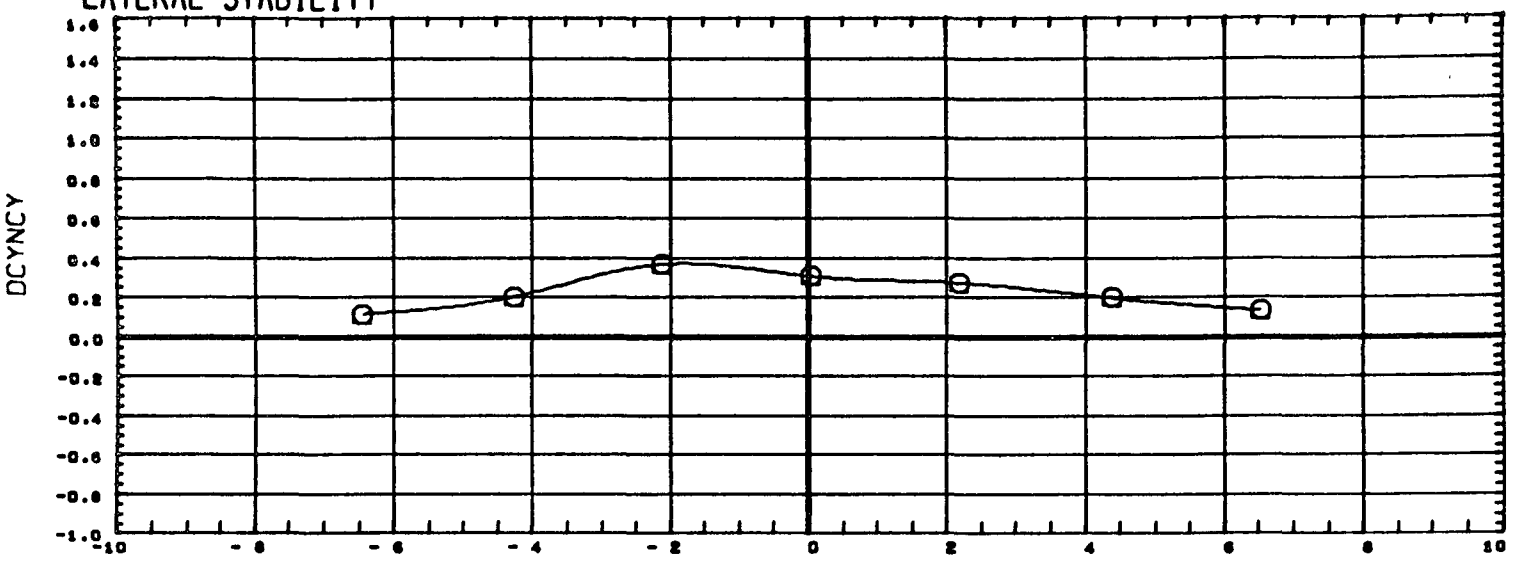


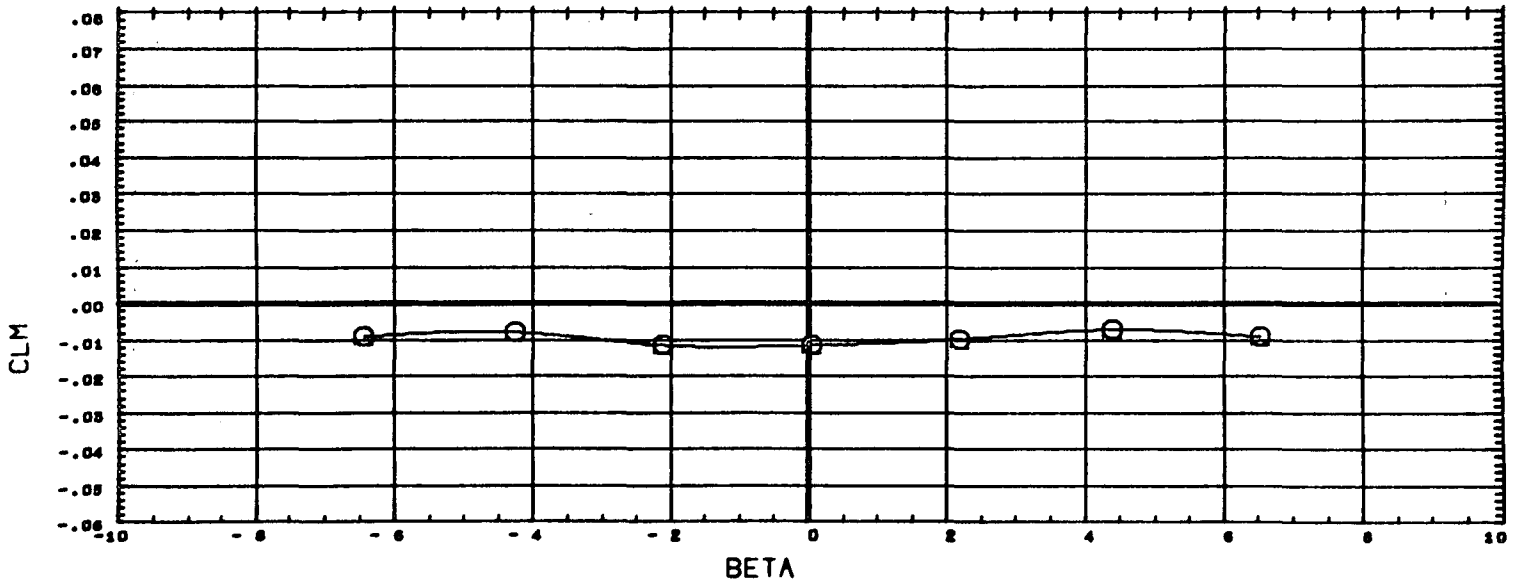
SYMBOL	MACH	PARAMETRIC VALUES			
O	1.979	ALPHA	25.000	RUDDER	0.000
		RUDFLR	30.000		

DATA HIST. CODE GC

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4621	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY





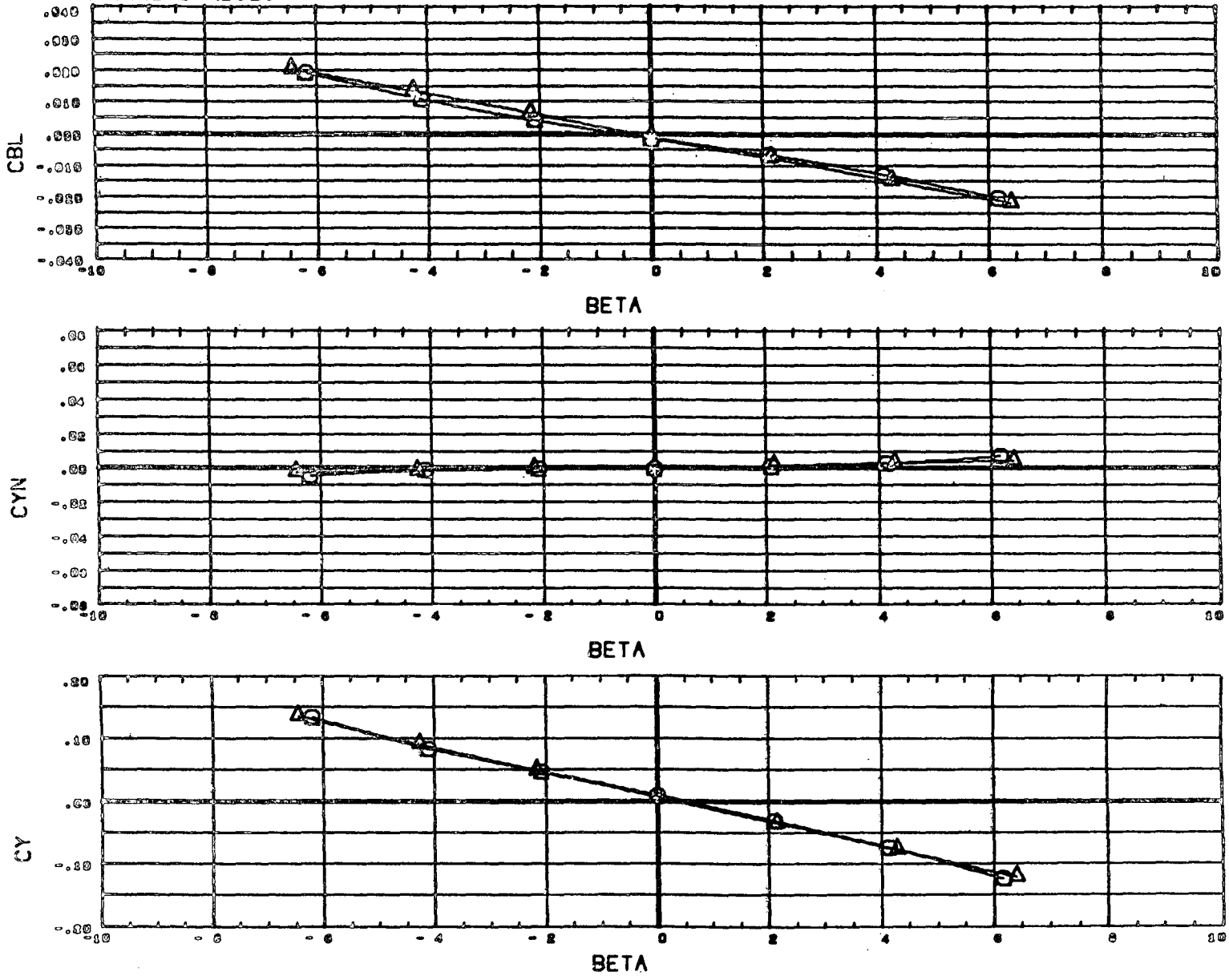
SYMBOL	MACH	PARAMETRIC VALUES			
O	1.979	ALPHA	25.000	RUDDER	0.000
		RUDFLR	30.000		

DATA HIST. CODE GC

REFERENCE INFORMATION

SREF	14.6836	SQ.IN.
LREF	4.5060	IN.
BREF	5.6550	IN.
XMRP	1.4621	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



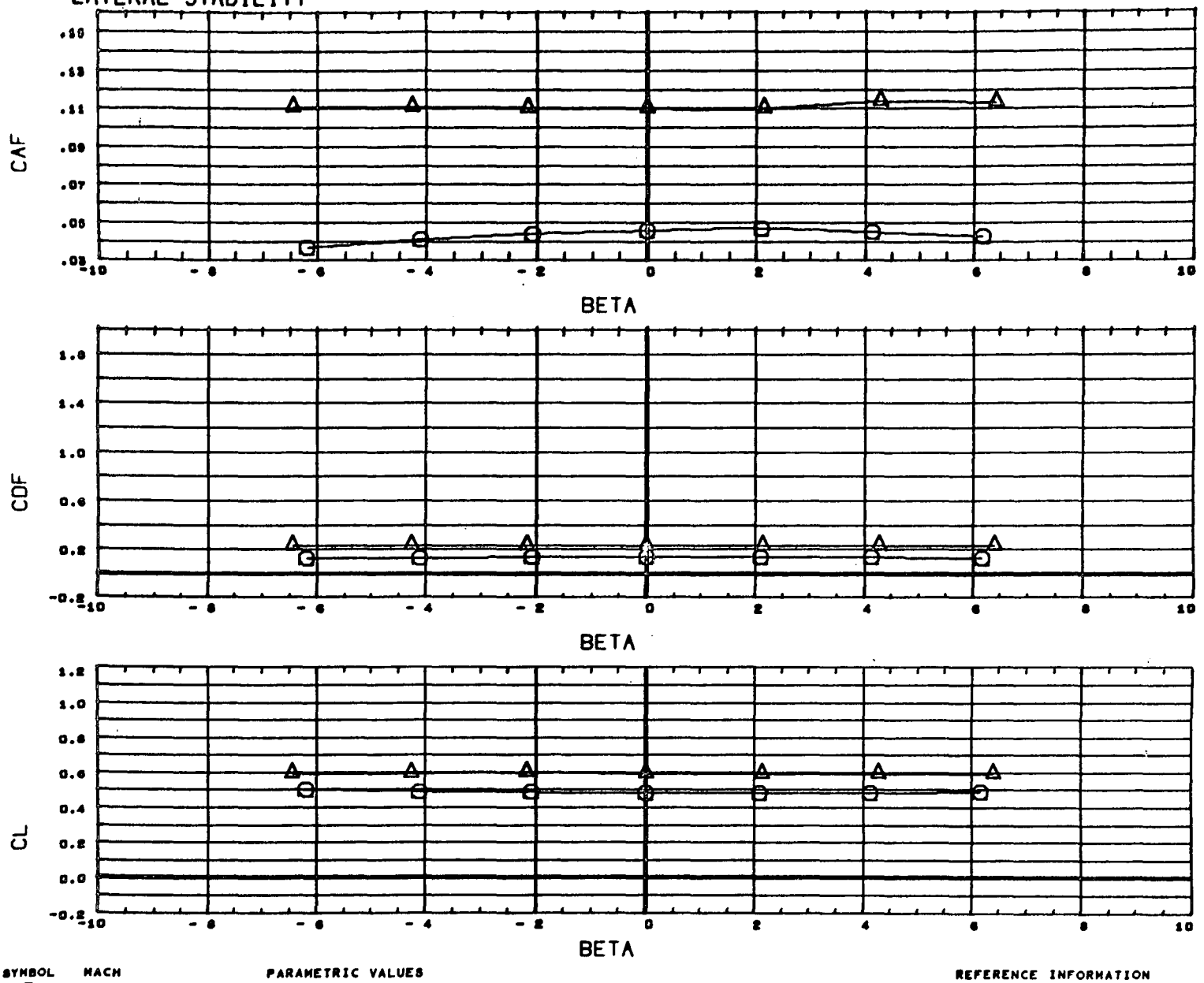
SYMBOL	MACH		PARAMETRIC VALUES		
○	0.890	ALPHA	10.000	RUDDER	0.000
△	1.190	RUDFLR	30.000		

DATA HIST. CODE 6C

REFERENCE INFORMATION

SREF	14.6836	60.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4021	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



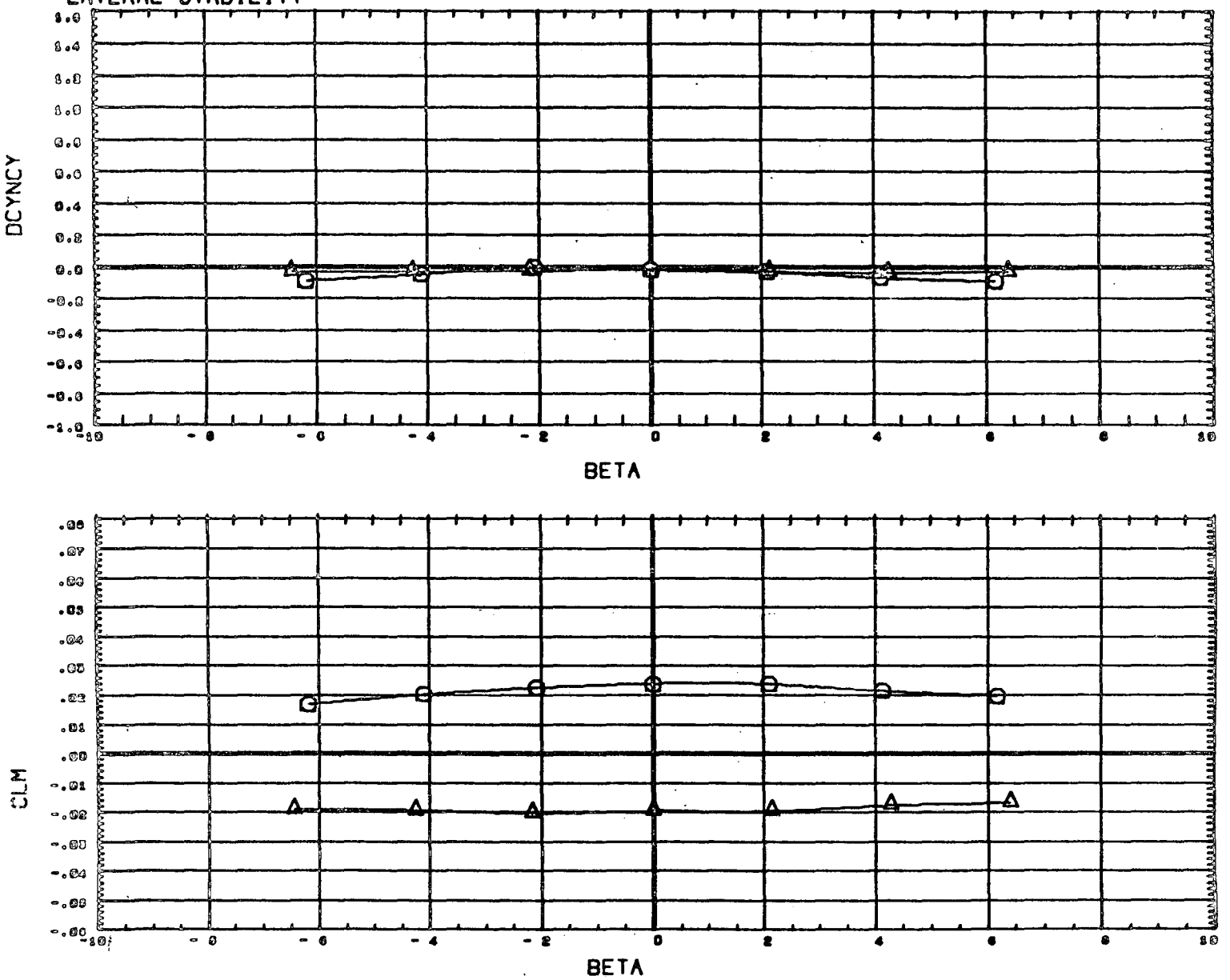
SYMBOL	MACH		PARAMETRIC VALUES		
○	0.596	ALPHA	10.000	RUDDER	0.000
△	1.196	RUDFLR	30.000		

DATA HIST. CODE GC

REFERENCE INFORMATION

SREF	14.6636	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



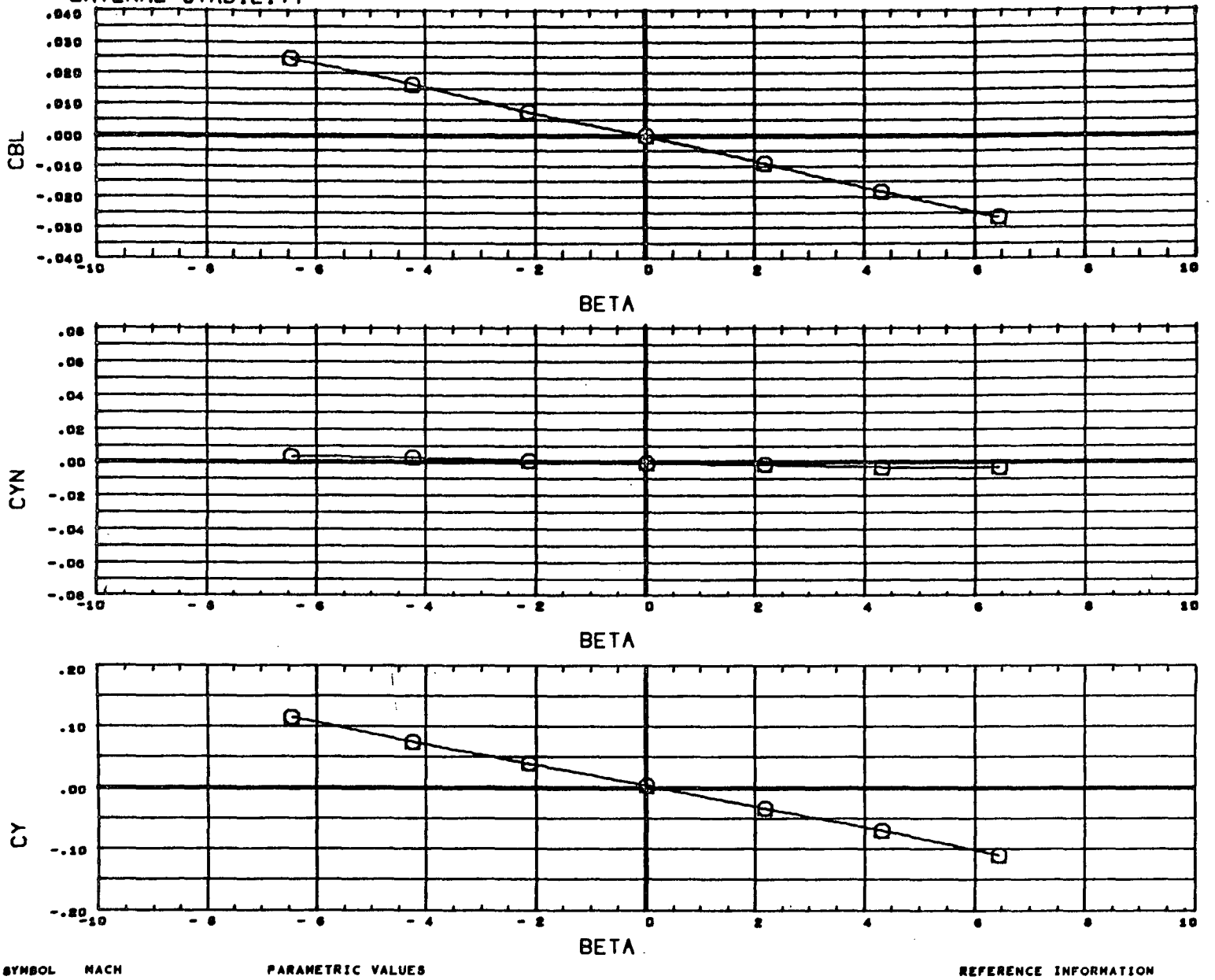
SYMBOL	MACH		PARAMETRIC VALUES		
○	0.800	ALPHA	10.000	RUDDER	0.000
△	1.198	RUDFLR	30.000		

DATA HIST. CODE GC

REFERENCE INFORMATION

SREF	14.6636	SQ.IN.
LREF	4.5060	IN.
BREF	9.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY

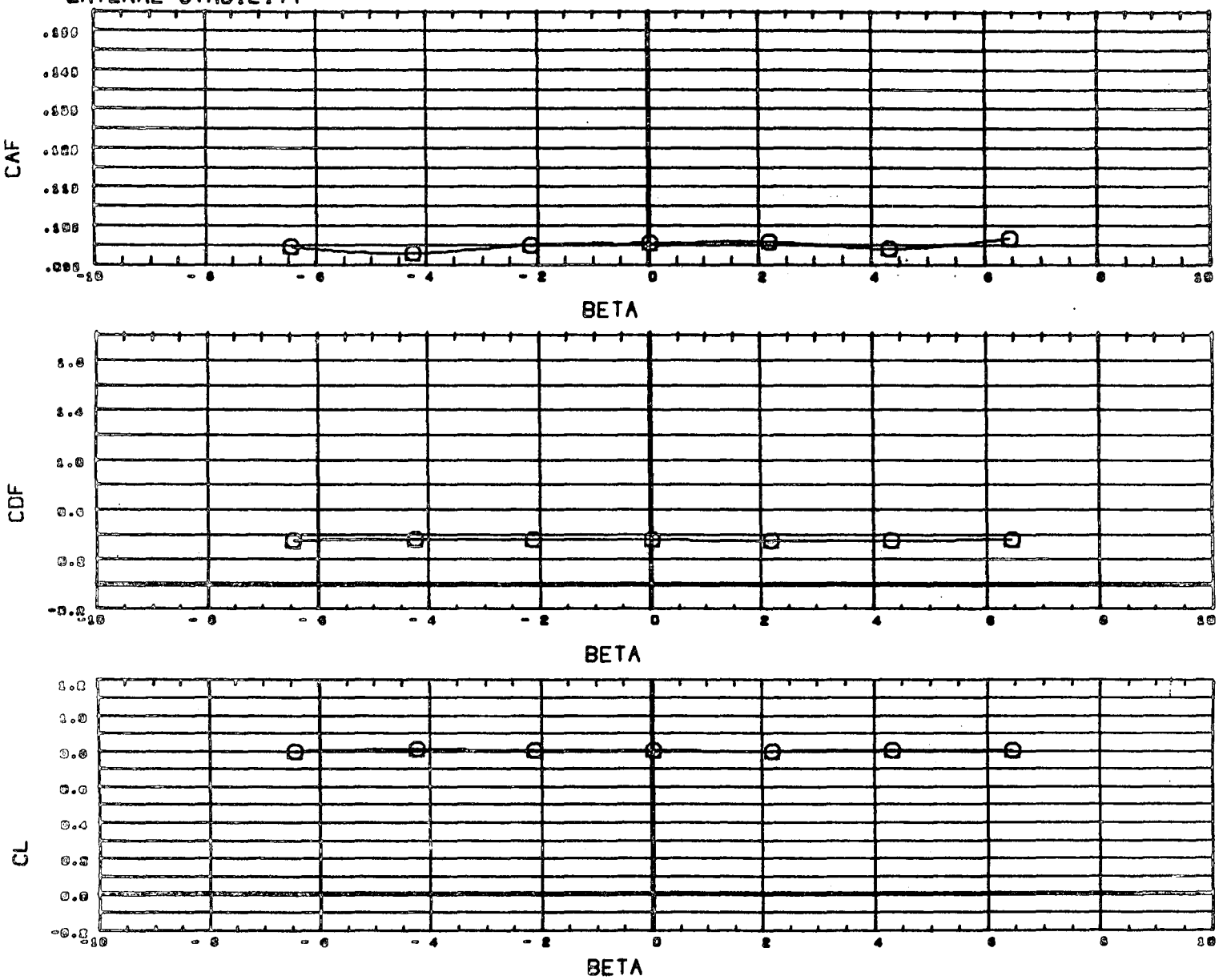


SYMBOL	MACH	PARAMETRIC VALUES			
O	1.197	ALPHA	15.000	RUDDER	0.000
		RUDFLR	30.000		

DATA HIST. CODE GC

REFERENCE INFORMATION		
SREF	14.6636	86.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

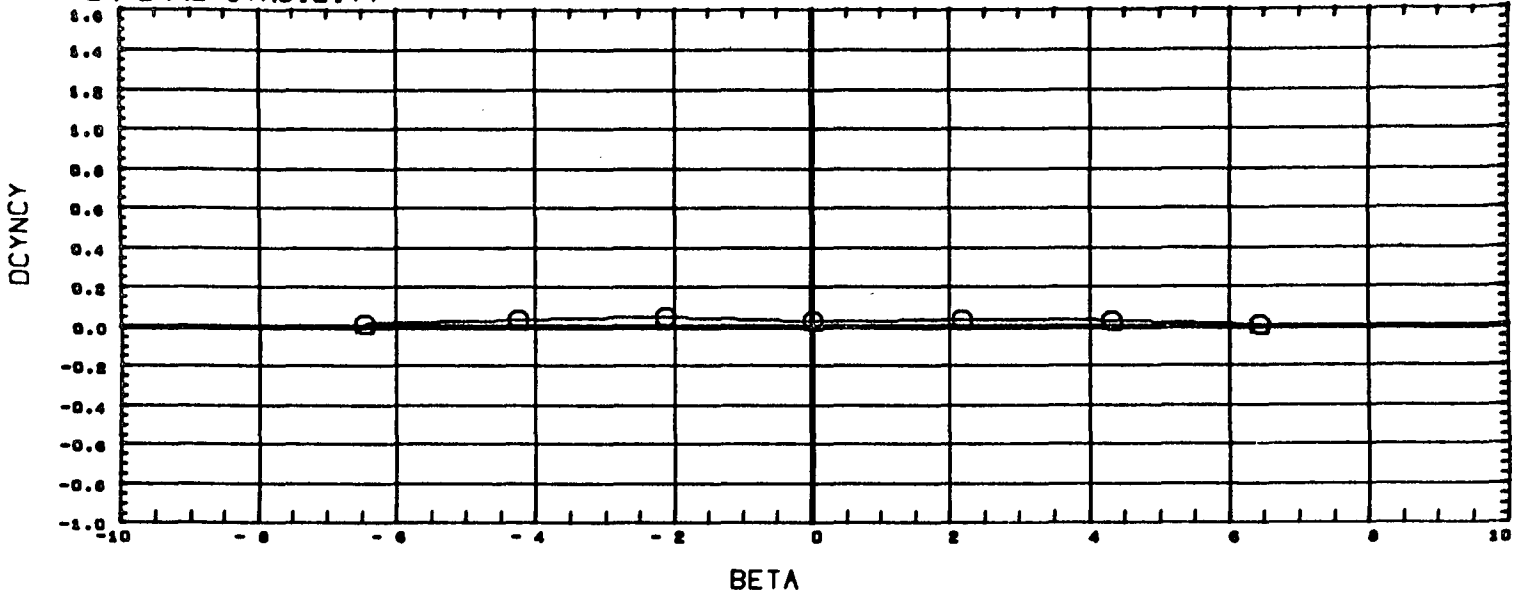
LATERAL STABILITY

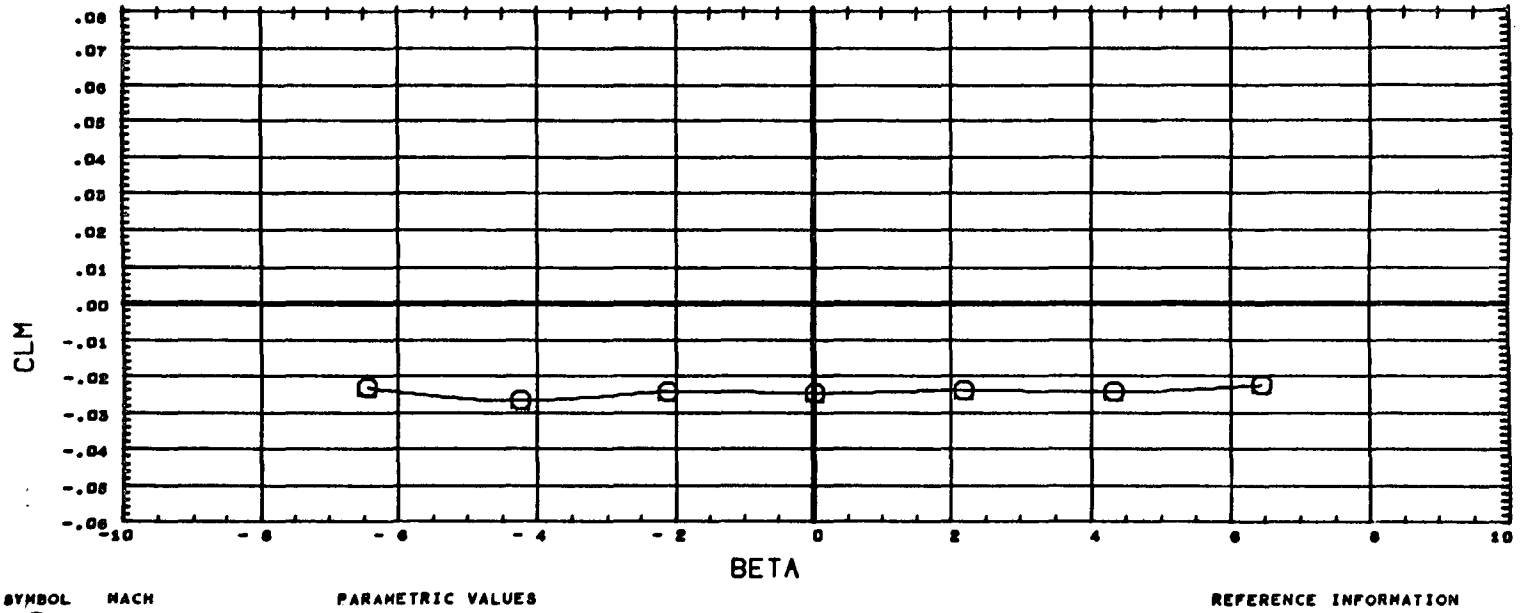


SYMBOL	MACH		PARAMETRIC VALUES			REFERENCE INFORMATION		
○	1.197	ALPHA	15.000	RUDDER	0.000	SREF	14.6636	SQ.IN.
		RUDFLR	30.000			LREF	4.5000	IN.
						BREF	9.6550	IN.
						XMRP	1.4821	IN.
						YMRP	0.0000	IN.
						ZMRP	0.0000	IN.
						SCALE	0.0034	

DATA HIST. CODE 0C

LATERAL STABILITY



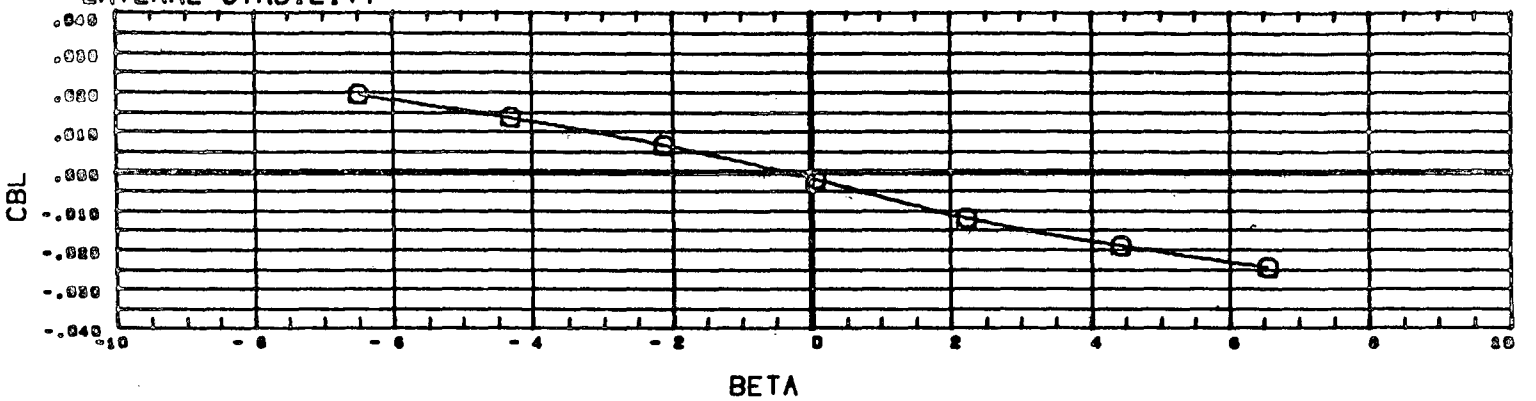


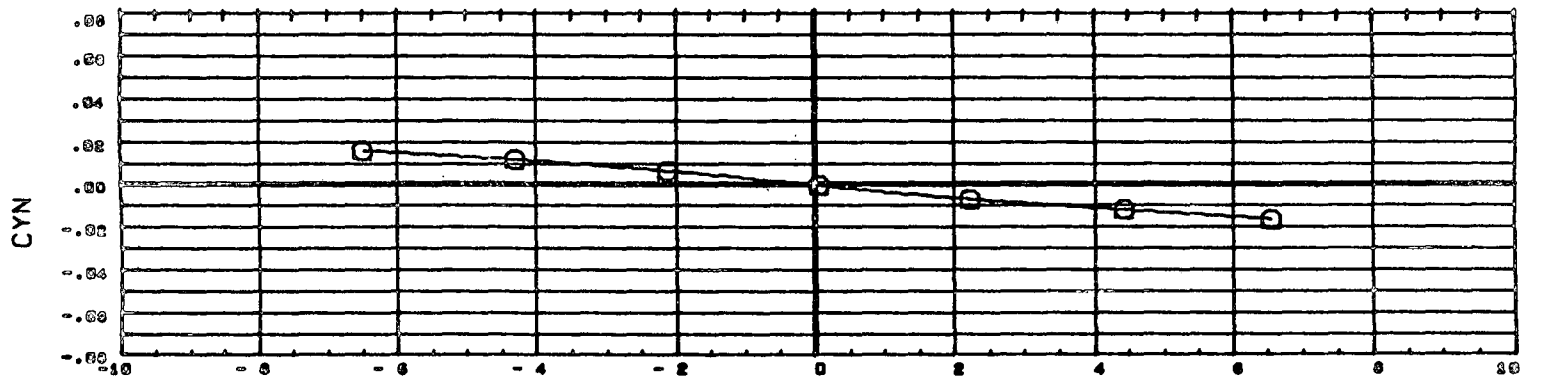
SYMBOL	MACH	PARAMETRIC VALUES			
O	1.197	ALPHA	15.000	RUDDER	0.000
		RUDFLR	30.000		

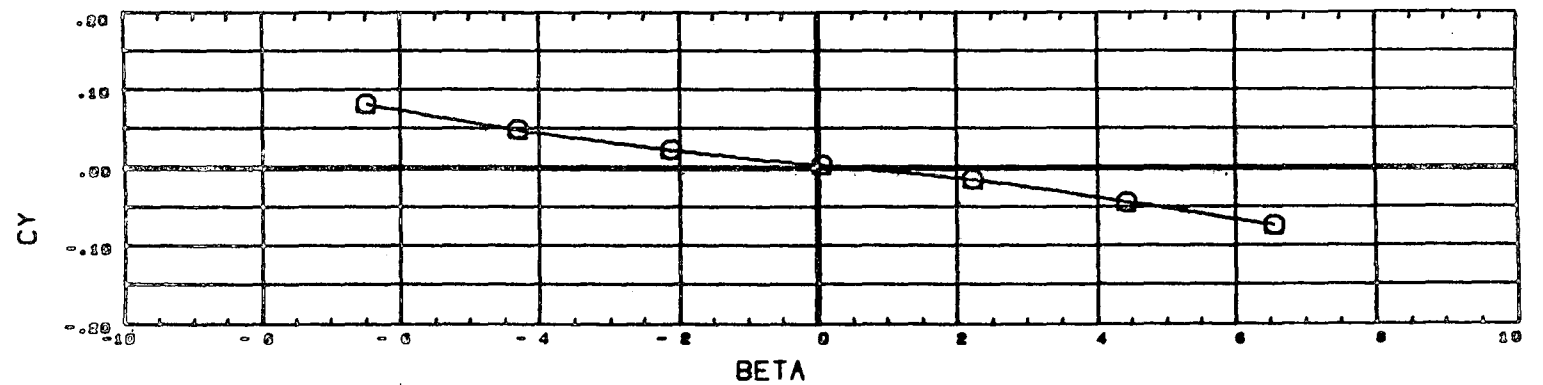
DATA HIST. CODE GC

REFERENCE INFORMATION		
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BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY





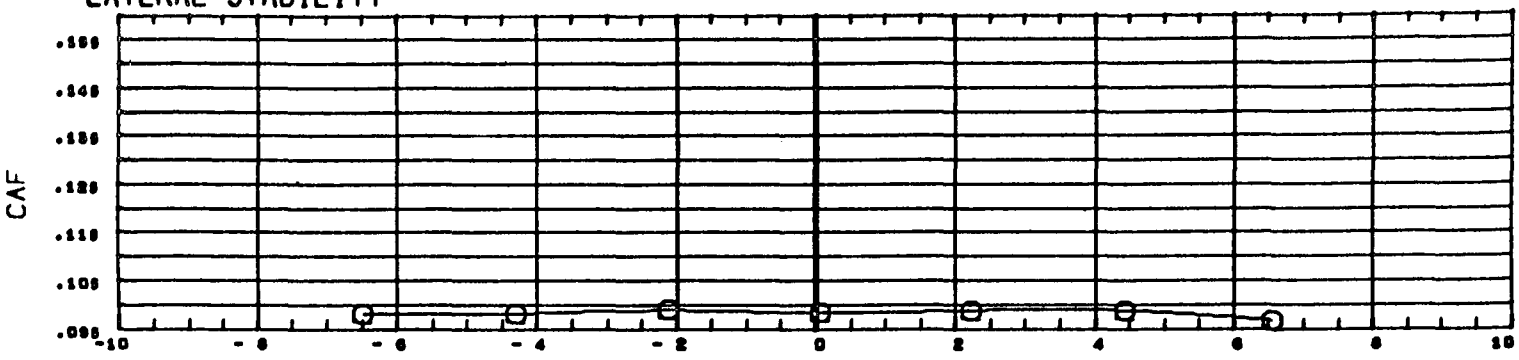


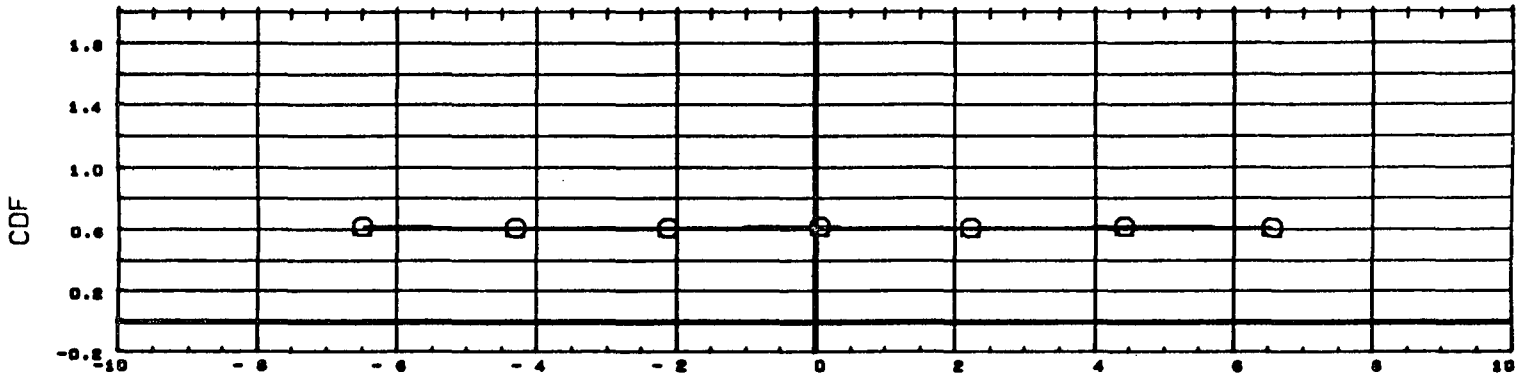
SYMBOL	MACH	PARAMETRIC VALUES			
O	1.969	ALPHA	25.000	RUDDER	0.000
		RUDFLR	30.000		

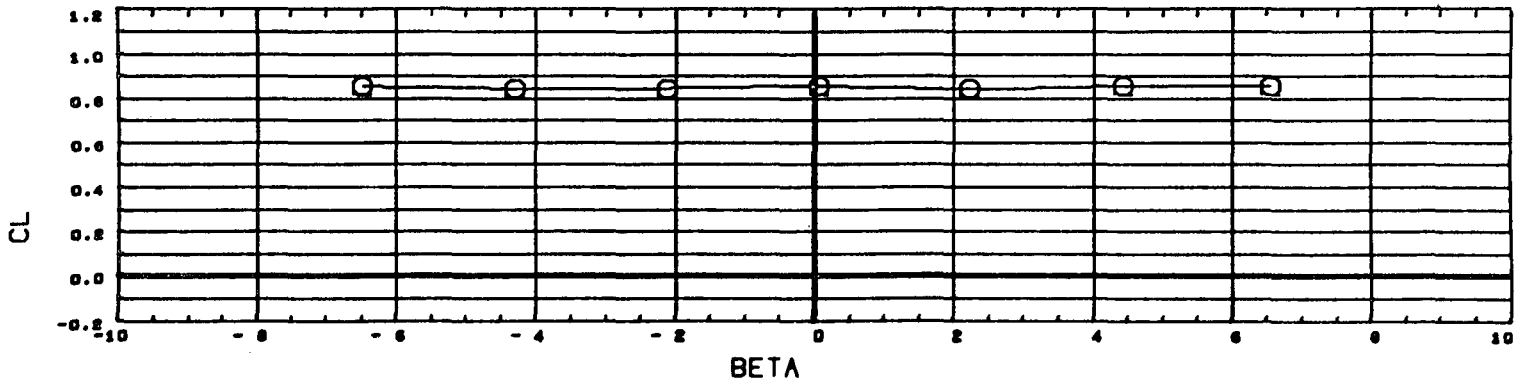
DATA MIST. CODE 6C

REFERENCE INFORMATION		
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LREF	4.5060	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY





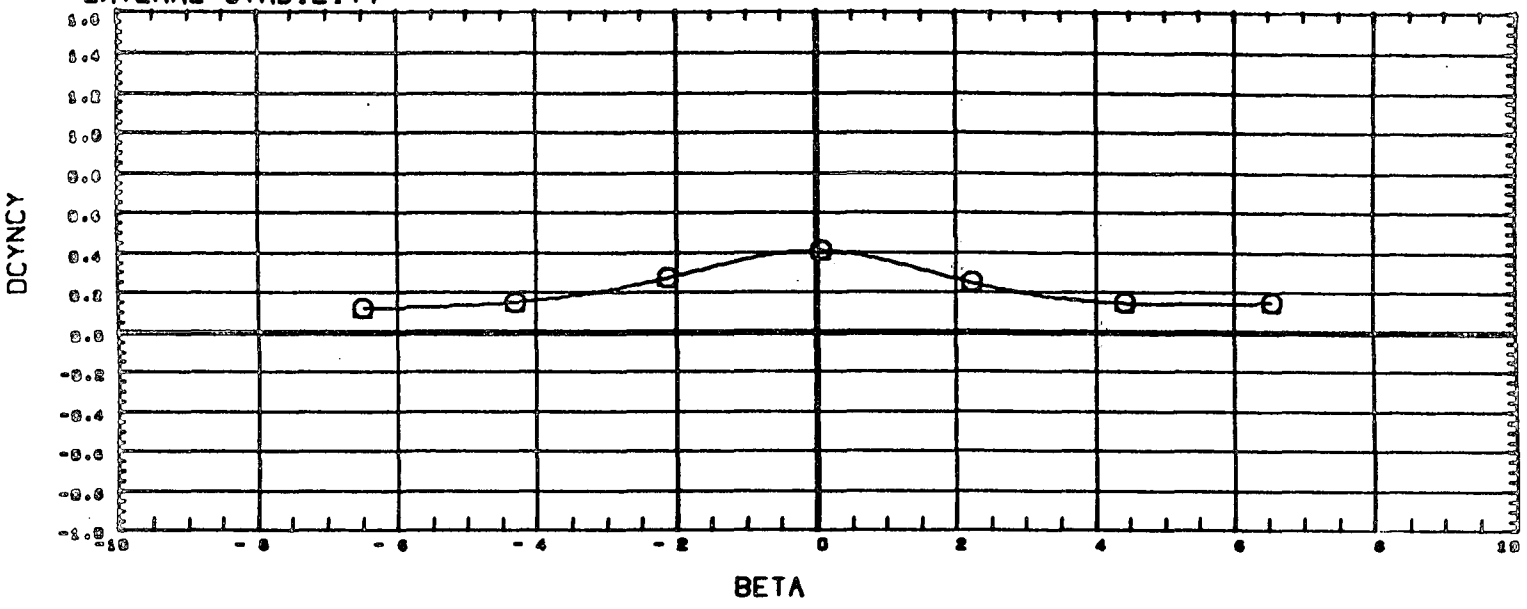


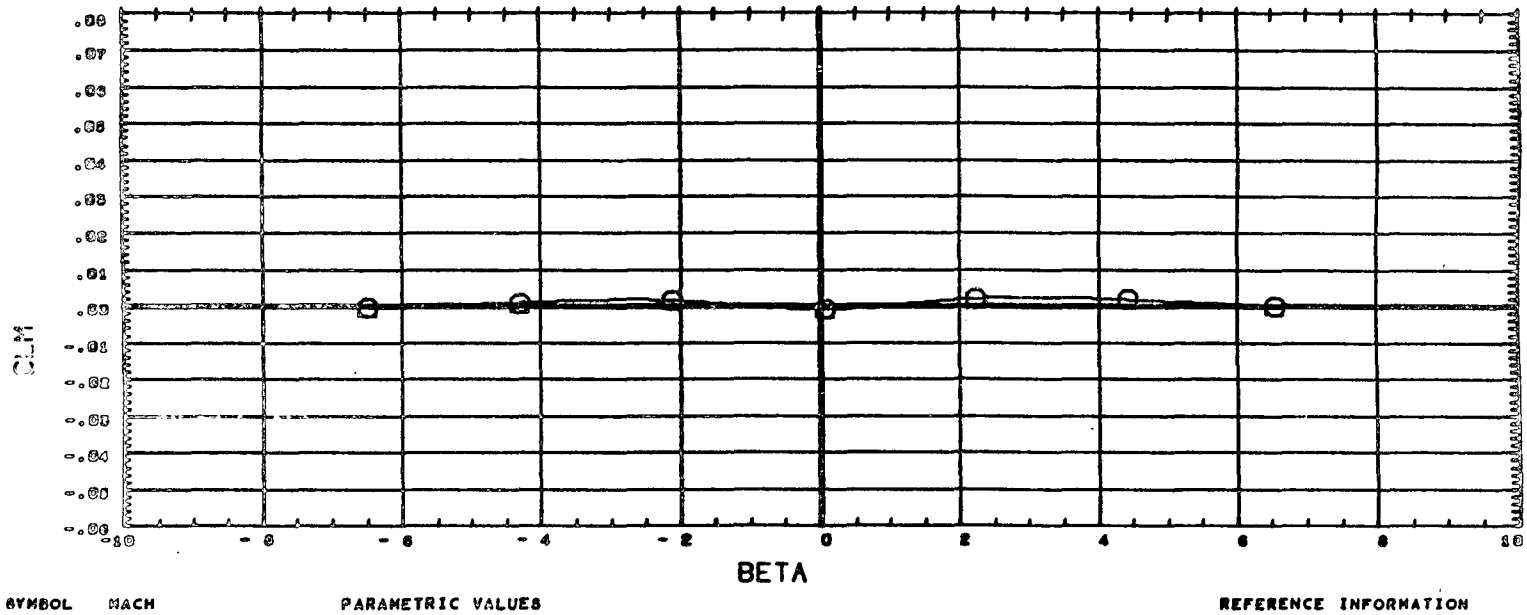
SYMBOL	MACH	PARAMETRIC VALUES			
O	1.969	ALPHA	25.000	RUDDER	0.000
		RUDFLR	30.000		

DATA HIST. CODE GC

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.9080	IN.
BREF	5.6550	IN.
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YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



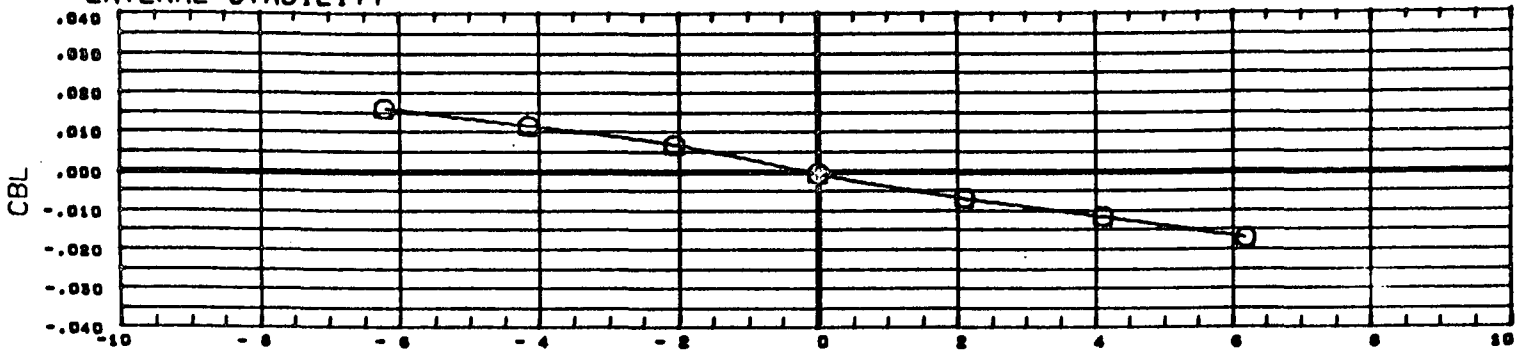


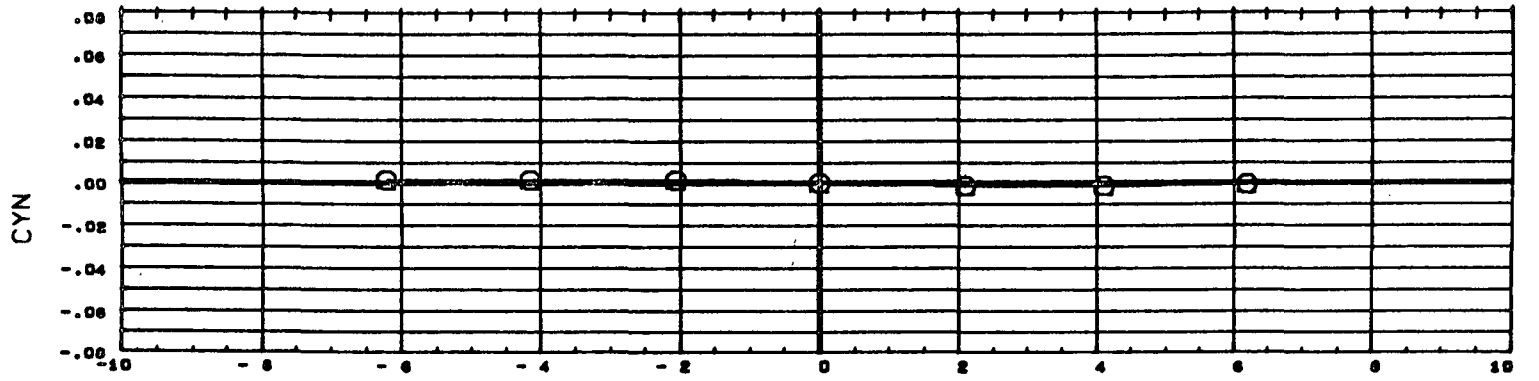
SYMBOL	MACH		PARAMETRIC VALUES		
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		RUDFLR	30.000		

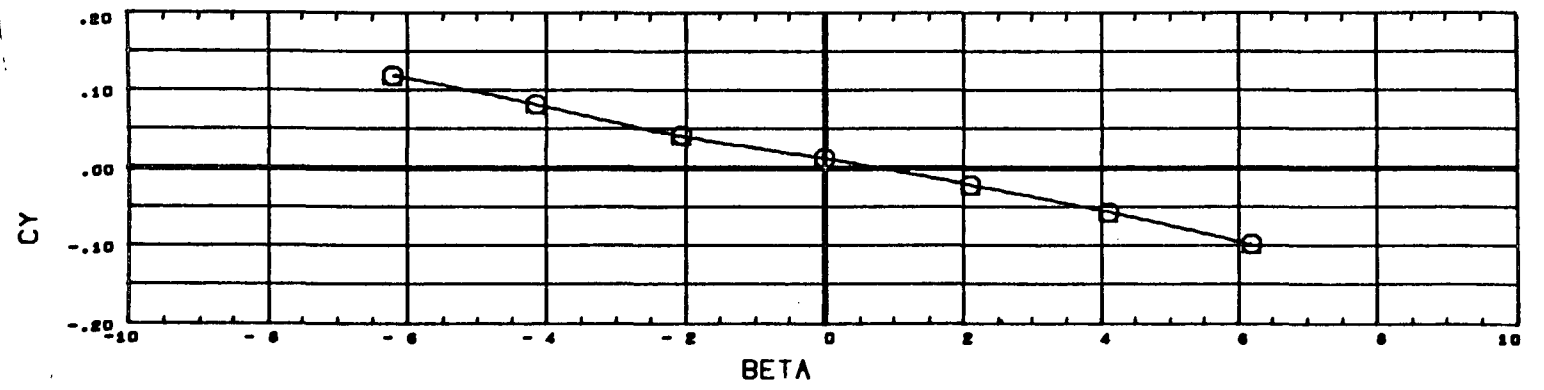
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REFERENCE INFORMATION		
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BREF	5.6550	IN.
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YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY





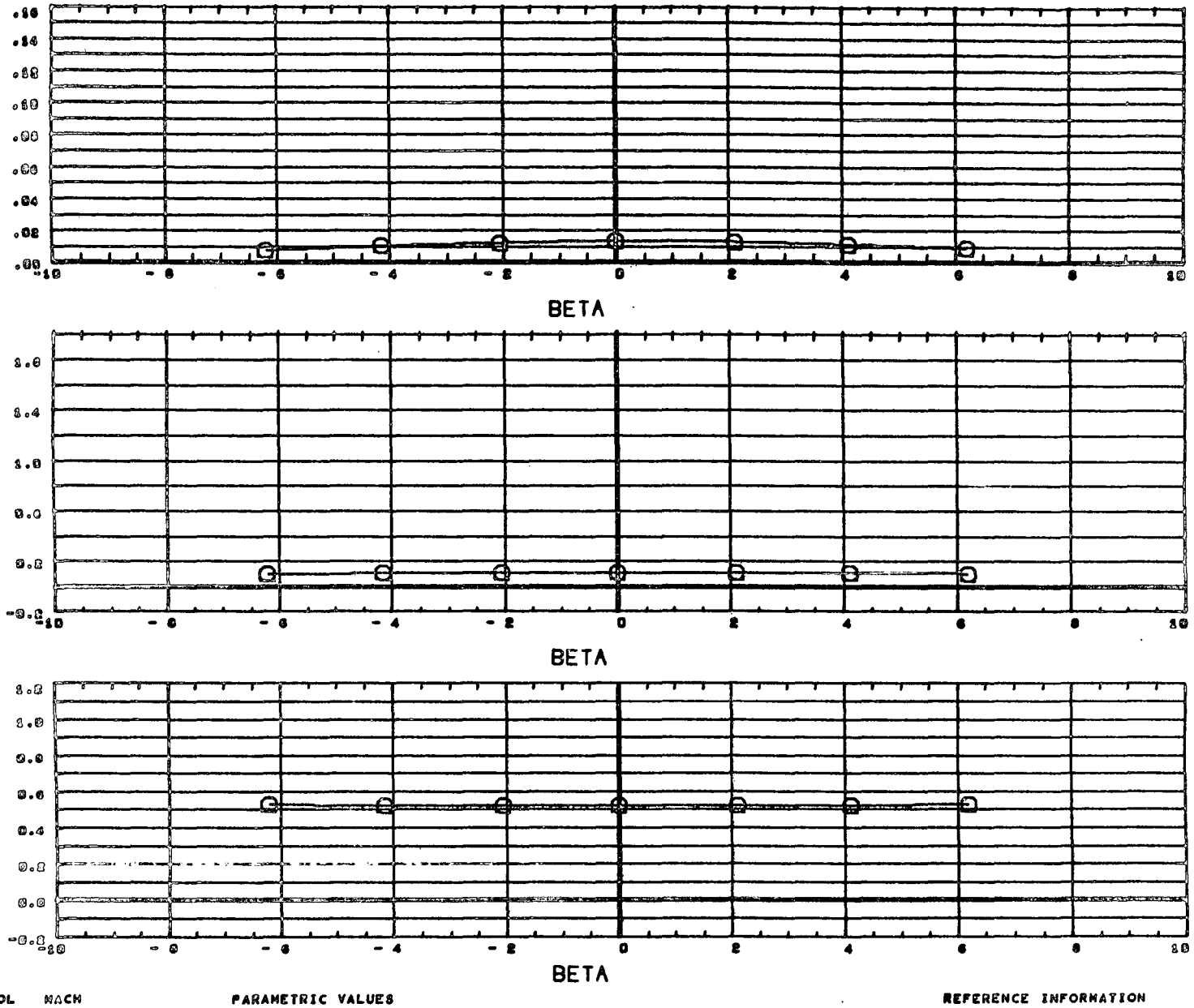


SYMBOL	MACH		PARAMETRIC VALUES		
O	0.597	ALPHA	10.000	RUDDER	0.000
		RUDFLR	30.000		

DATA HIST. CODE GC

REFERENCE INFORMATION		
SREF	14.6856	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4621	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



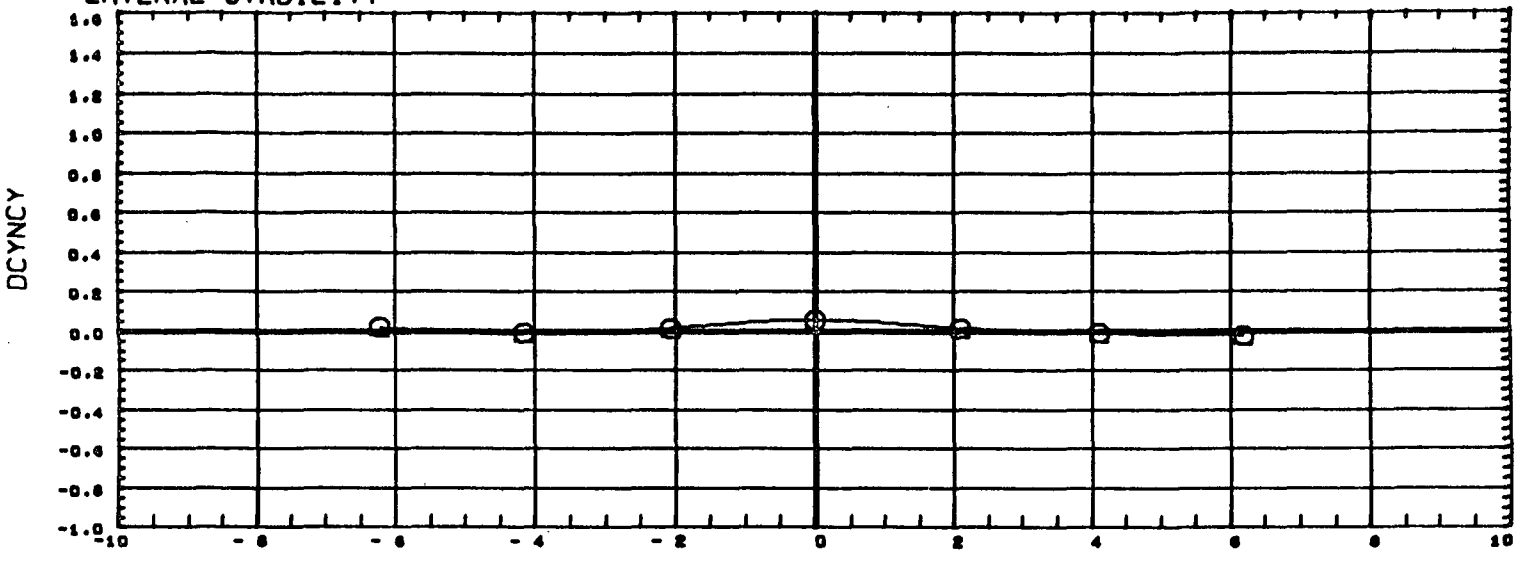
SYMBOL	MACH		PARAMETRIC VALUES		
O	0.897	ALPHA	10.000	RUDDER	0.000
		RUDFLR	30.000		

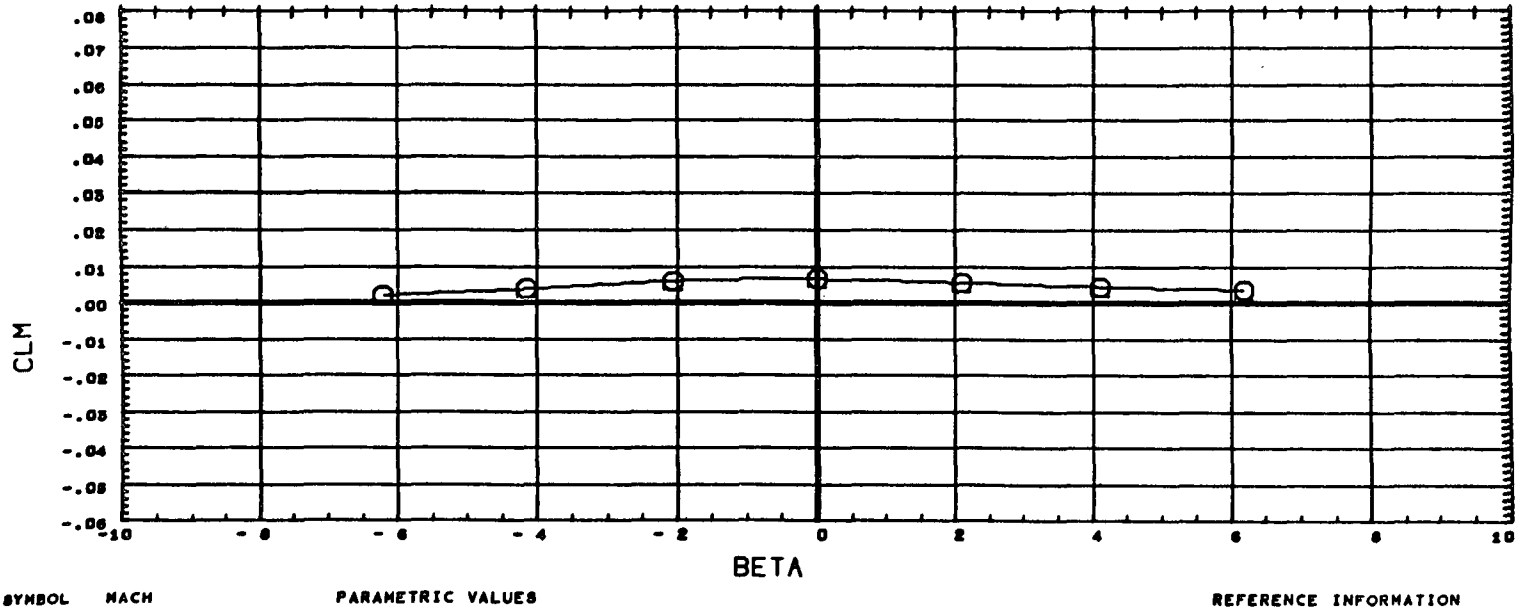
DATA HIST. CODE GC

REFERENCE INFORMATION

SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.0550	IN.
XMRP	1.4621	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY





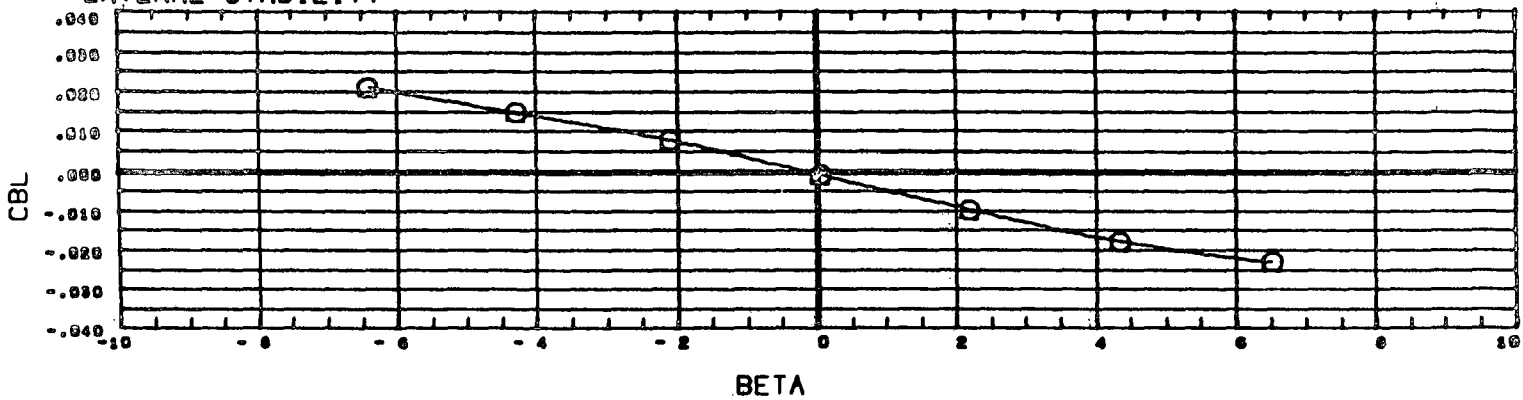
SYMBOL	MACH		PARAMETRIC VALUES		
O	0.597	ALPHA	10.000	RUDDER	0.000
		RUDFLR	30.000		

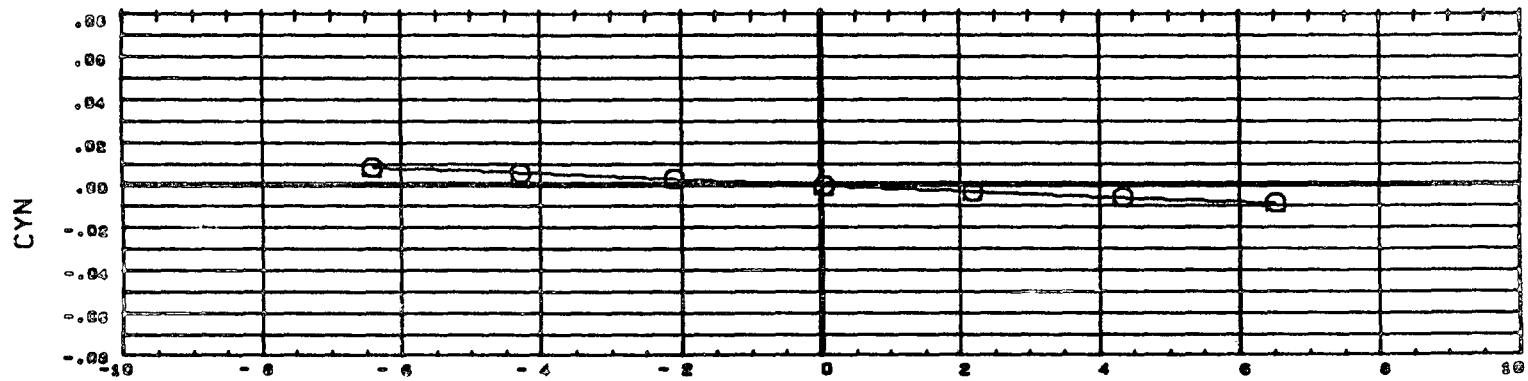
DATA HIST. CODE GC

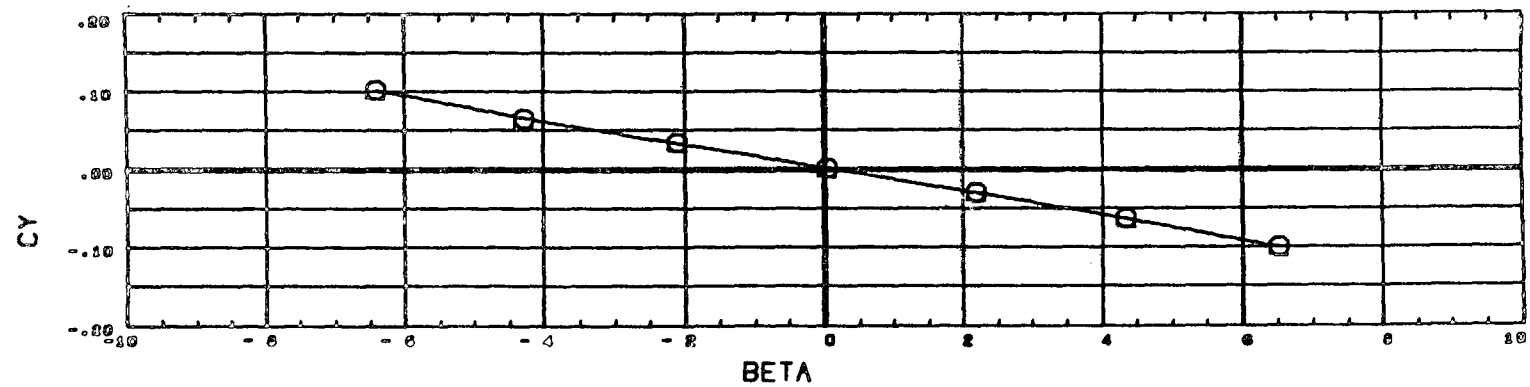
REFERENCE INFORMATION

SREF	14.6636	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY







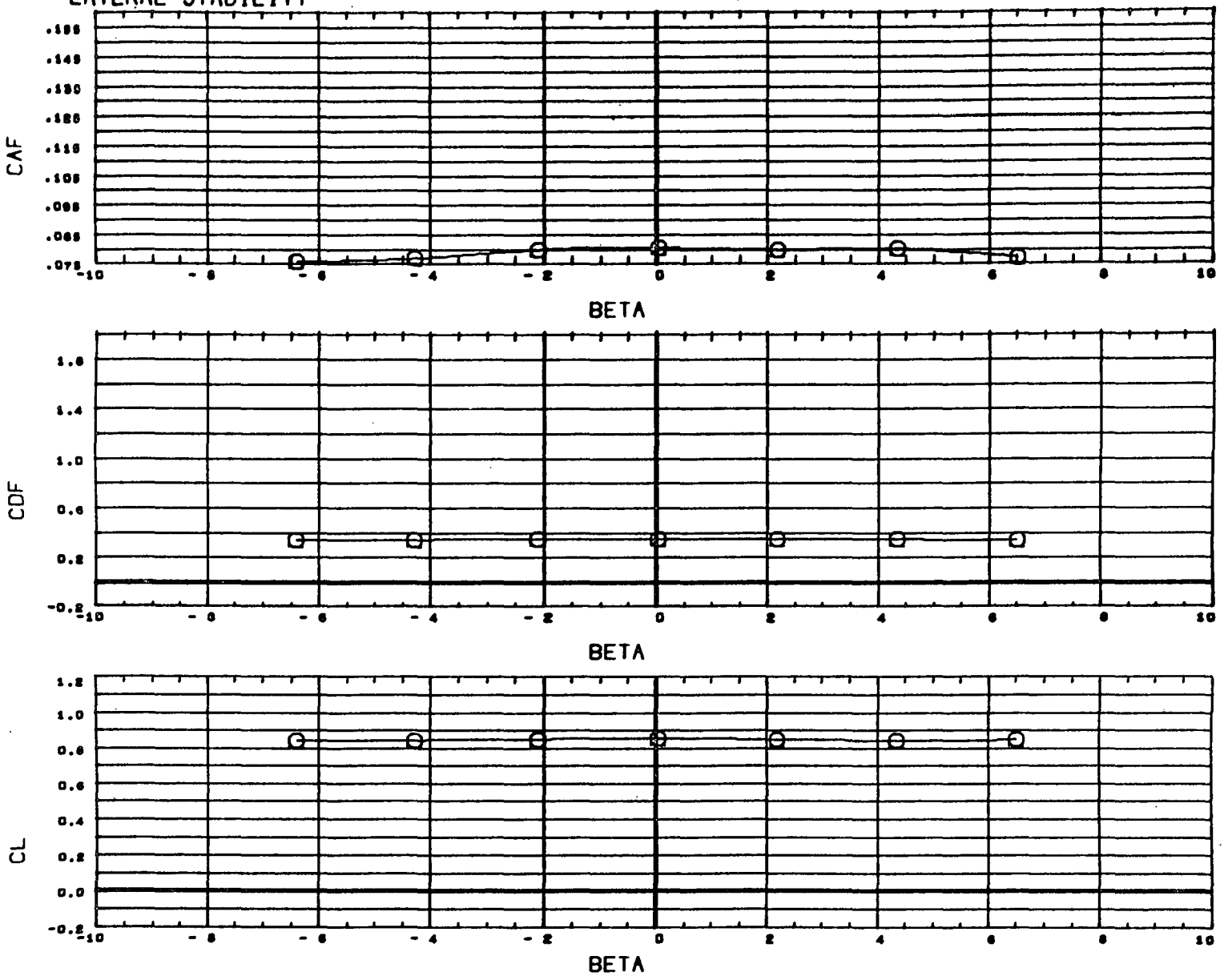
SYMBOL	MACH	PARAMETRIC VALUES			
O	1.199	ALPHA	15.000	RUDDER	0.000
		RUDFLR	30.000		

DATA HIST. CODE GC

REFERENCE INFORMATION

SREF	14.6836	SQ.IN.
LREF	4.5060	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY

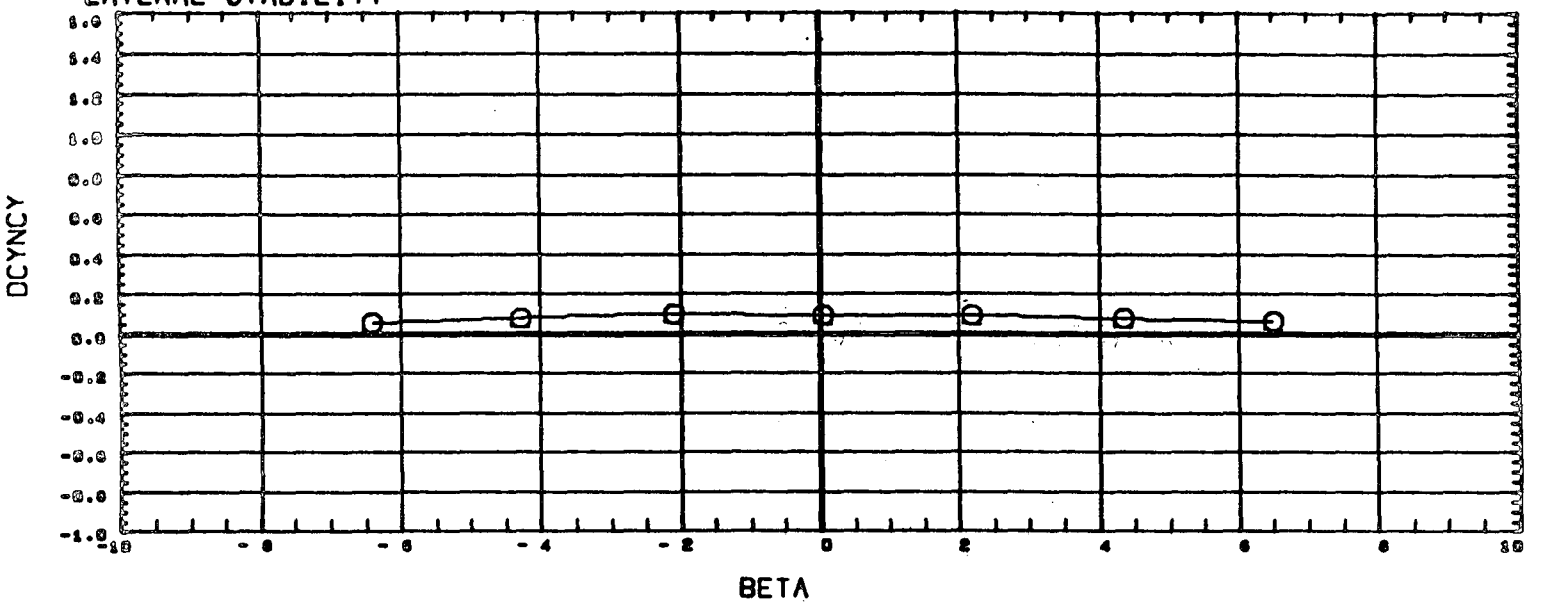


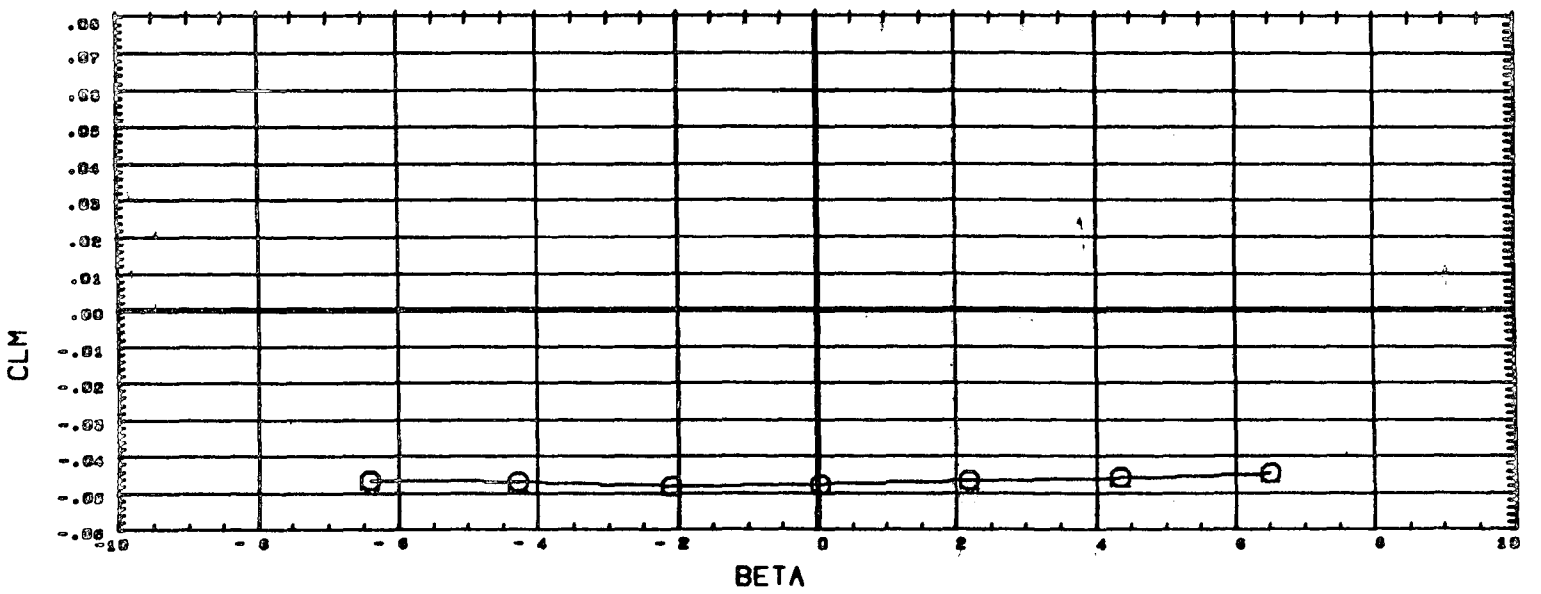
SYMBOL	MACH		PARAMETRIC VALUES		
O	1.199	ALPHA	15.000	RUDDER	0.000
		RUDFLR	30.000		

DATA HIST. CODE GC

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



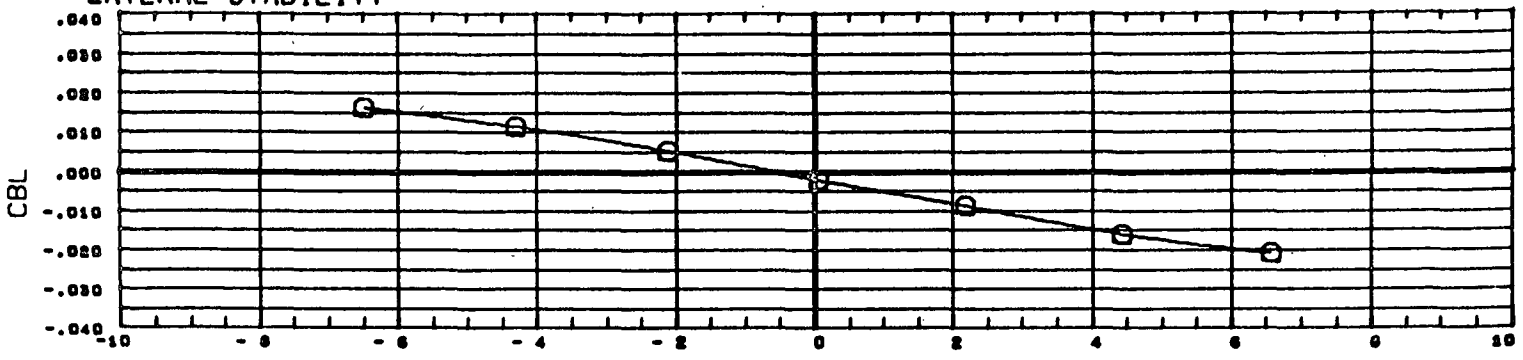


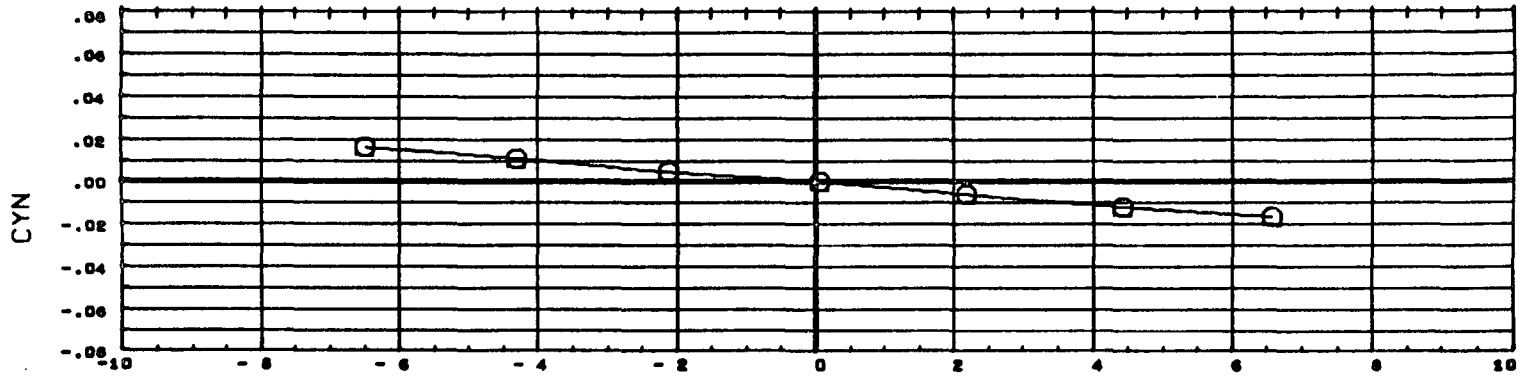
SYMBOL	MACH	PARAMETRIC VALUES			
O	1.199	ALPHA	19.000	RUDDER	0.000
		RUDFLR	30.000		

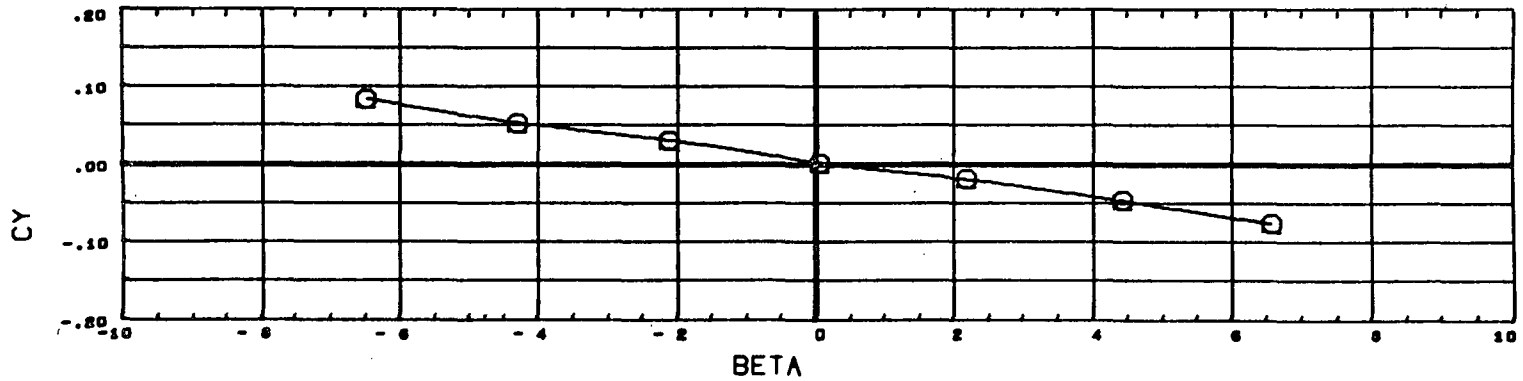
DATA HIST. CODE GC

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5060	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY





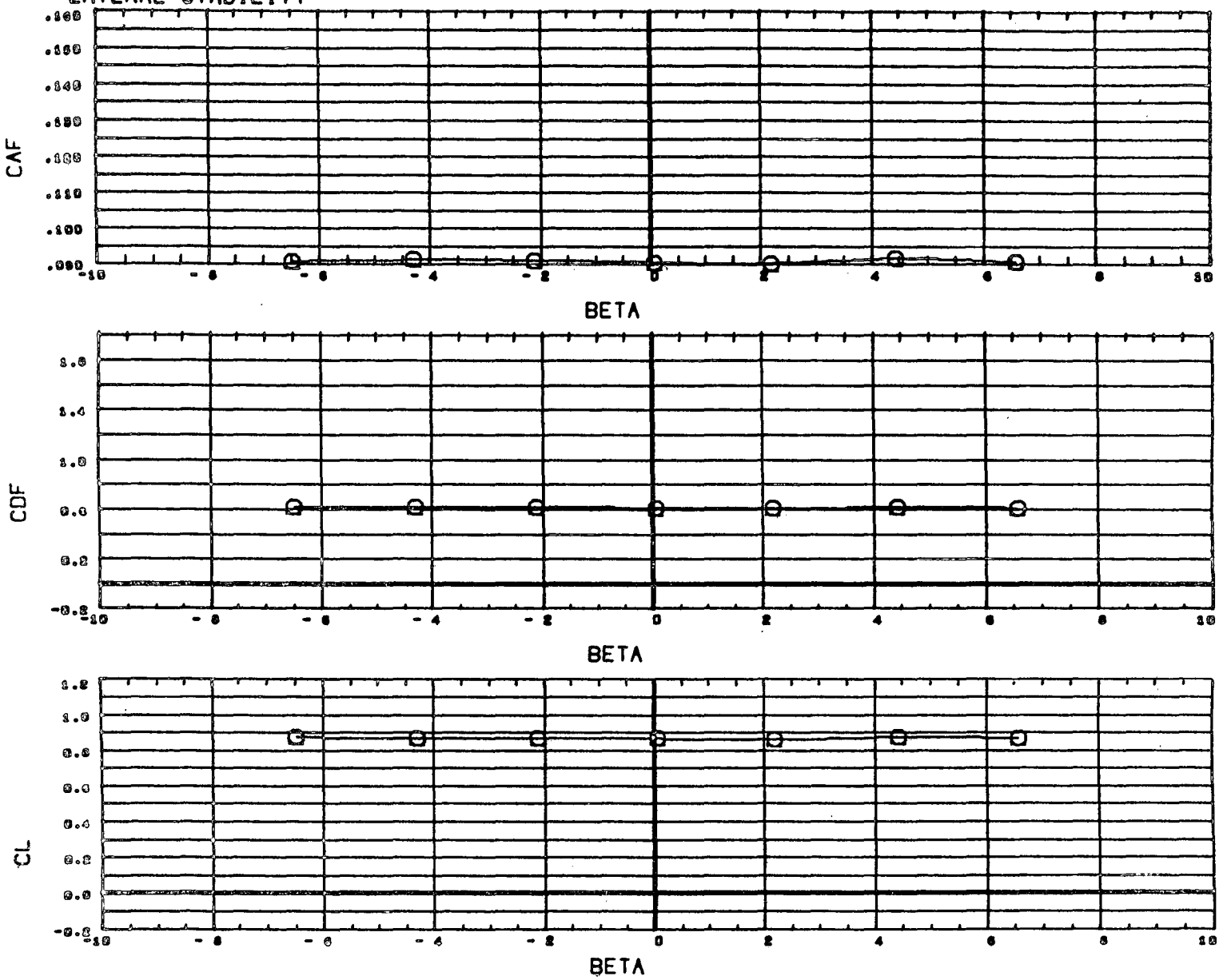


SYMBOL	MACH	PARAMETRIC VALUES			
O	1.969	ALPHA	25.000	RUDDER	0.000
		RUDFLR	30.000		

DATA HIST. CODE 6C

REFERENCE INFORMATION		
SREF	14.6636	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



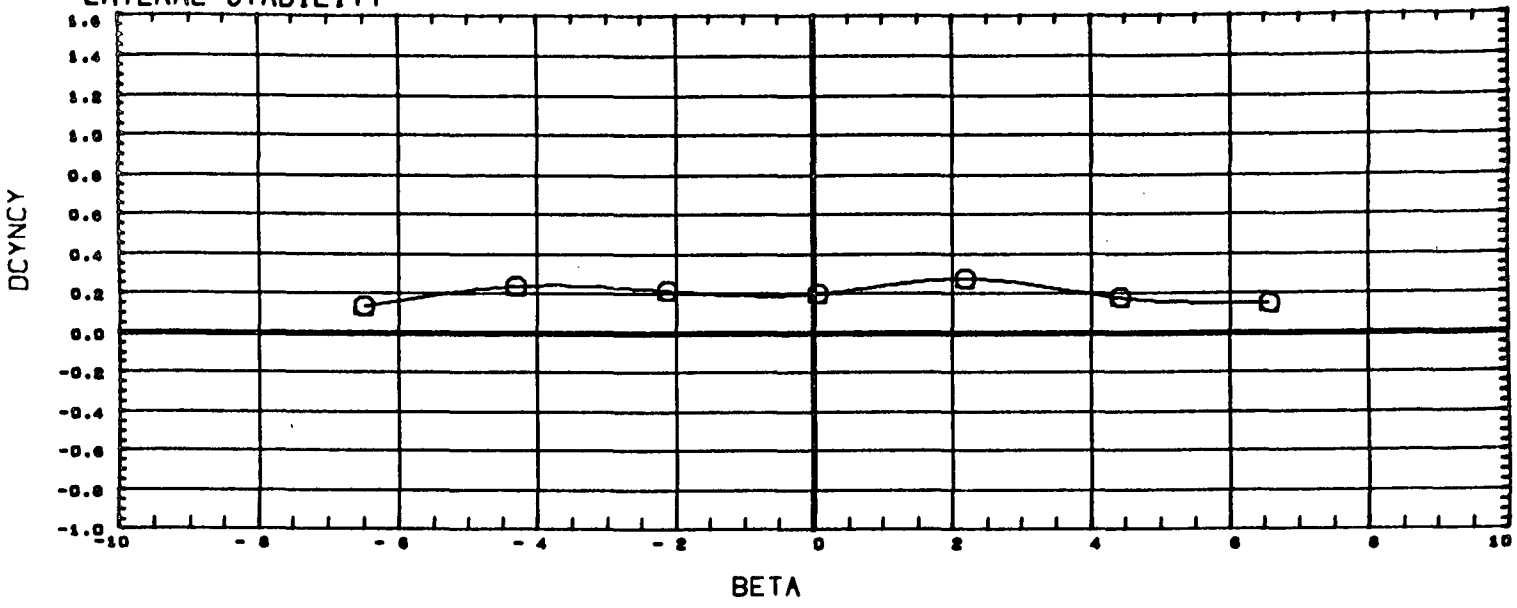
SYMBOL	MACH		PARAMETRIC VALUES		
O	1.060	ALPHA	25.000	RUDDER	0.000
		RUDFLR	30.000		

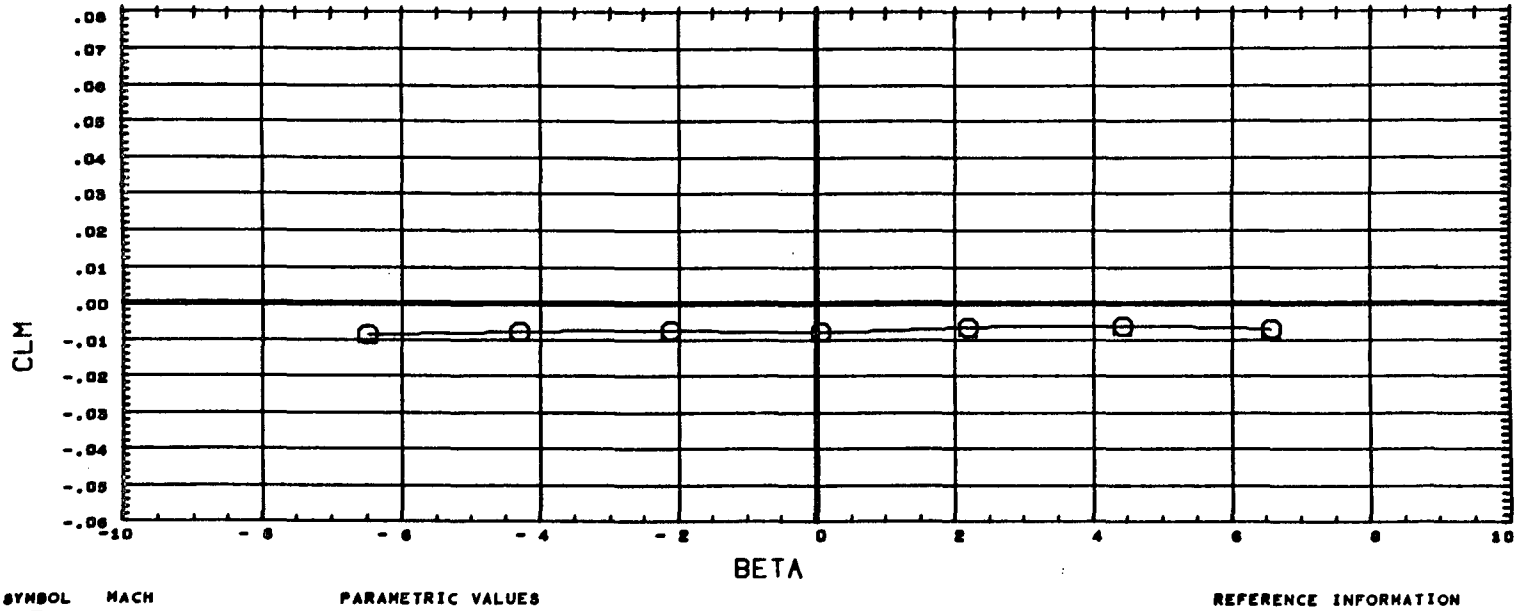
DATA HIST. CODE GC

REFERENCE INFORMATION

SREF	14.6836	SQ.IN.
LREF	4.5060	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



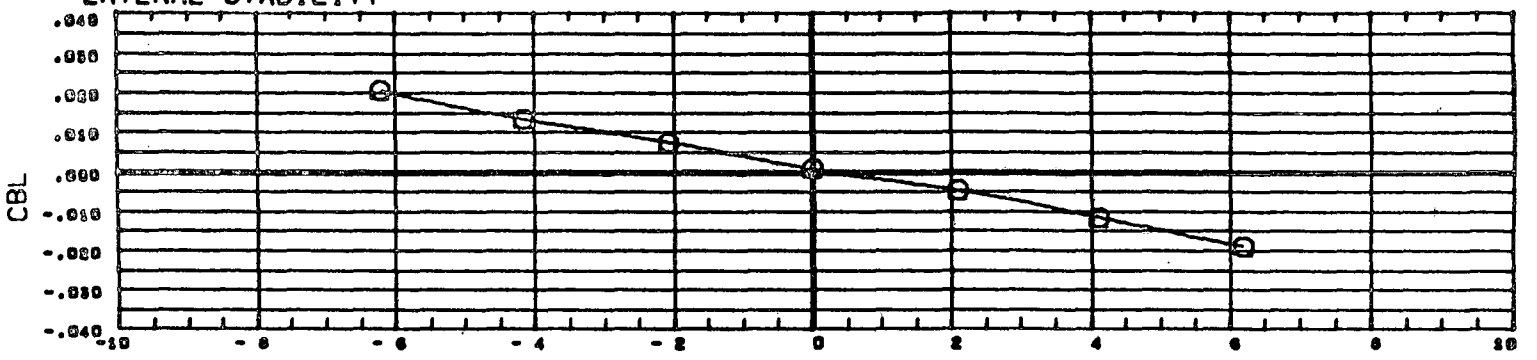


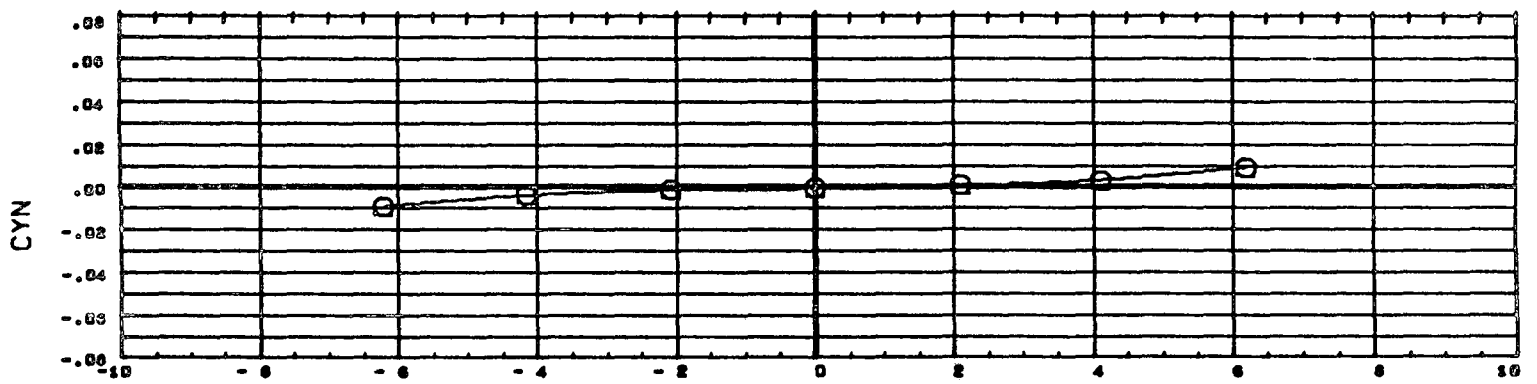
SYMBOL	MACH	PARAMETRIC VALUES			
O	1.969	ALPHA	25.000	RUDDER	0.000
		RUDFLR	30.000		

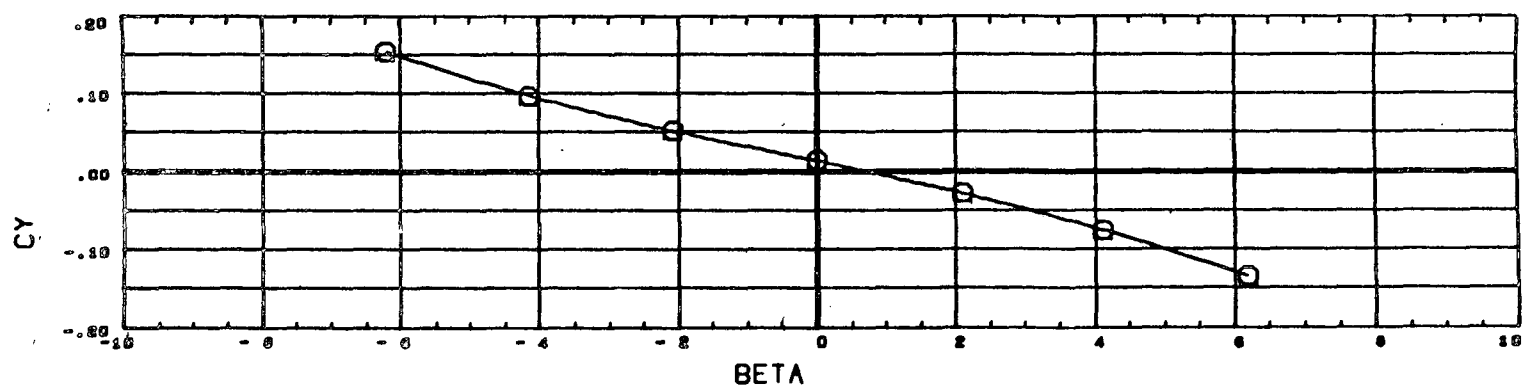
DATA HIST. CODE GC

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5060	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY







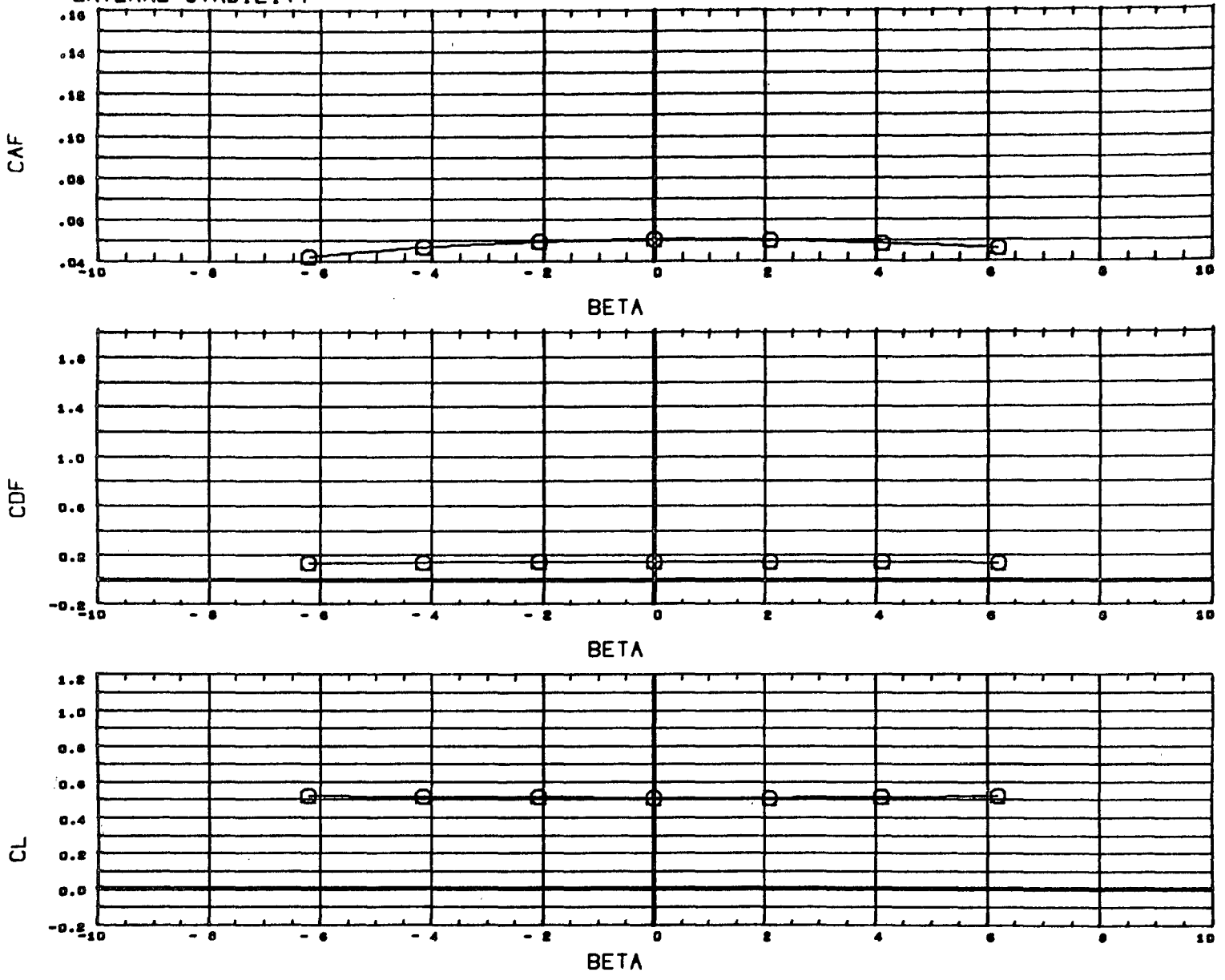
SYMBOL	MACH	PARAMETRIC VALUES			
O	0.596	ALPHA	10.000	RUDDER	0.000
		RUDFLR	30.000		

DATA HIST. CODE GC

REFERENCE INFORMATION

SREF	14.6636	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY

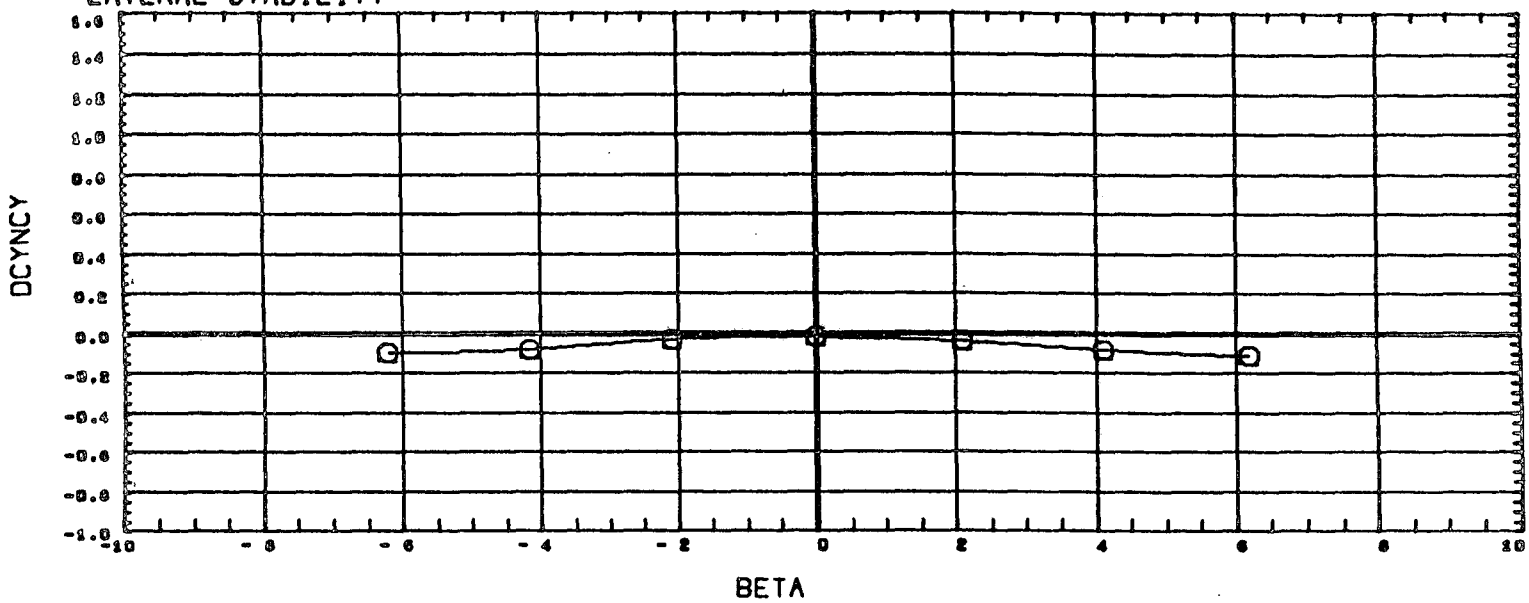


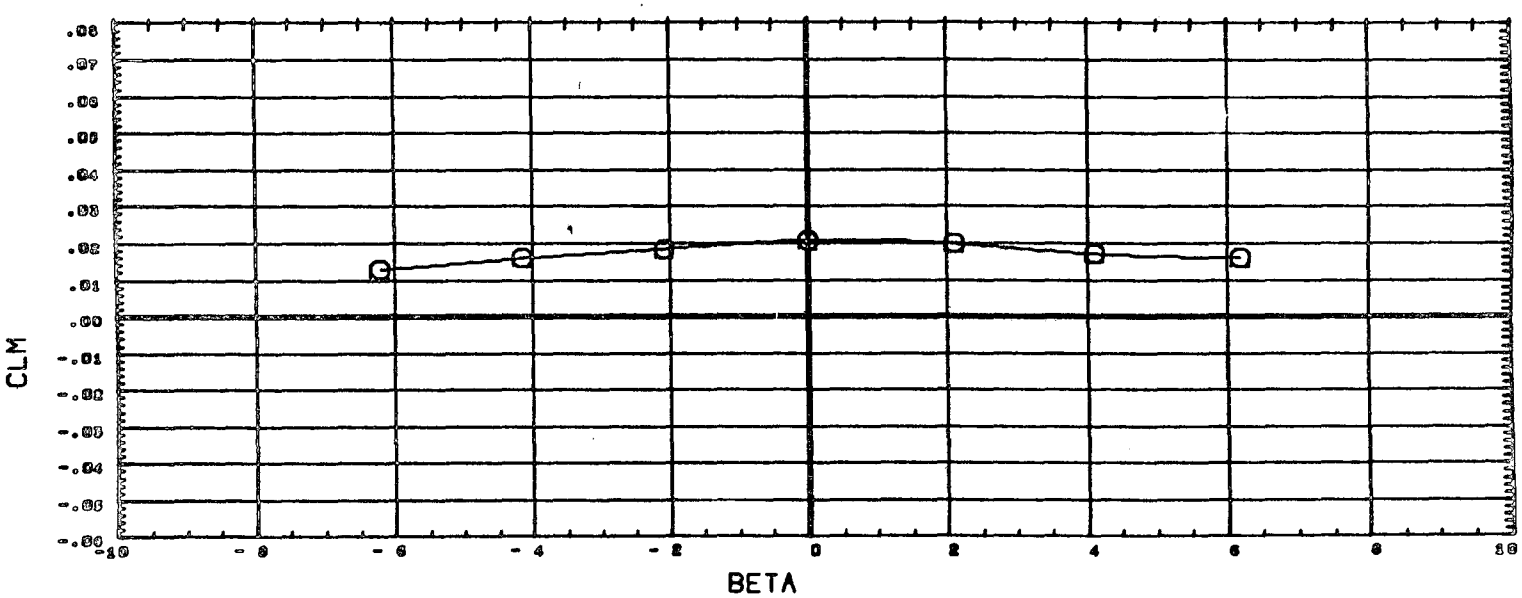
SYMBOL	MACH	PARAMETRIC VALUES			
O	0.596	ALPHA	10.000	RUDDER	0.000
		RUDFLR	30.000		

DATA HIST. CODE GC

REFERENCE INFORMATION		
SREF	14.6656	SQ.IN.
LREF	4.5060	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY





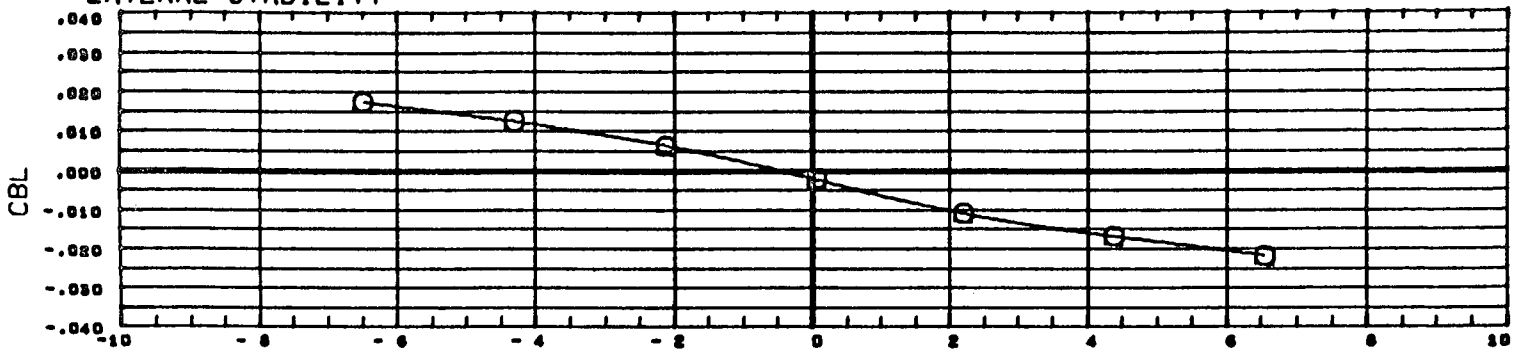
SYMBOL	MACH		PARAMETRIC VALUES		
O	0.998	ALPHA	10.000	RUDDER	0.000
		RUDFLR	30.000		

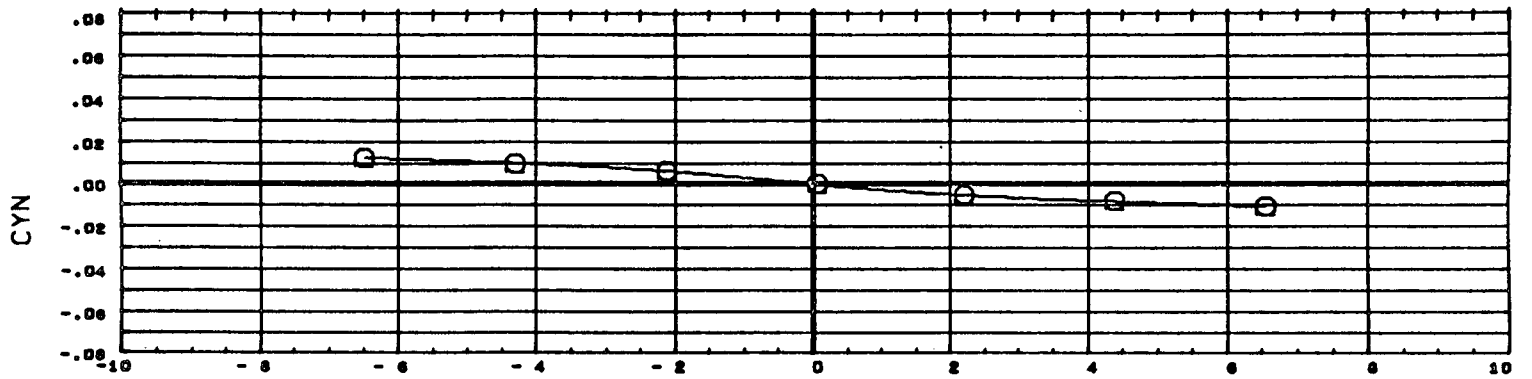
DATA HIST. CODE GC

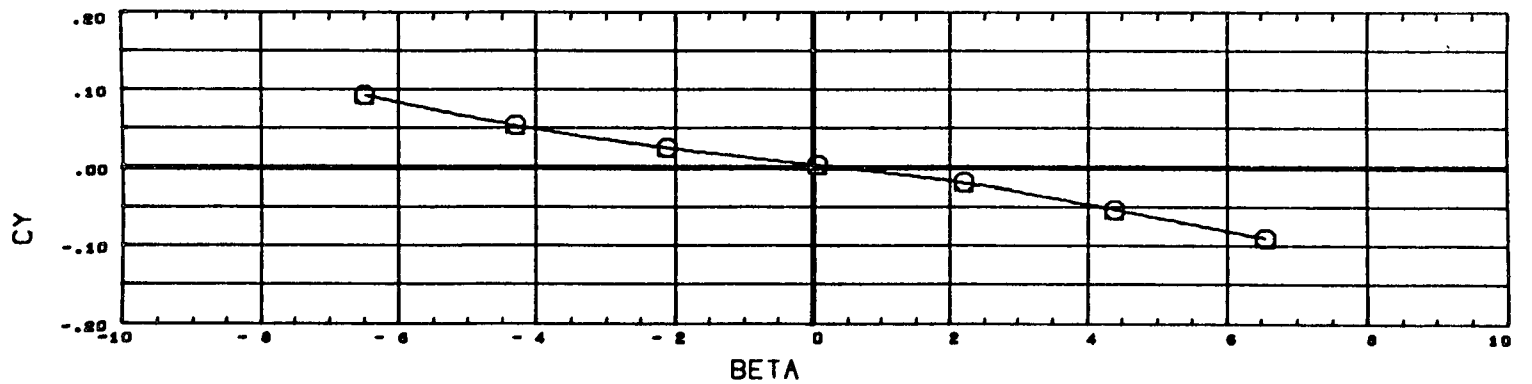
REFERENCE INFORMATION

SREF	14.6636	06.IN.
LREF	4.9060	IN.
BREF	5.6550	IN.
XMRP	1.4021	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY







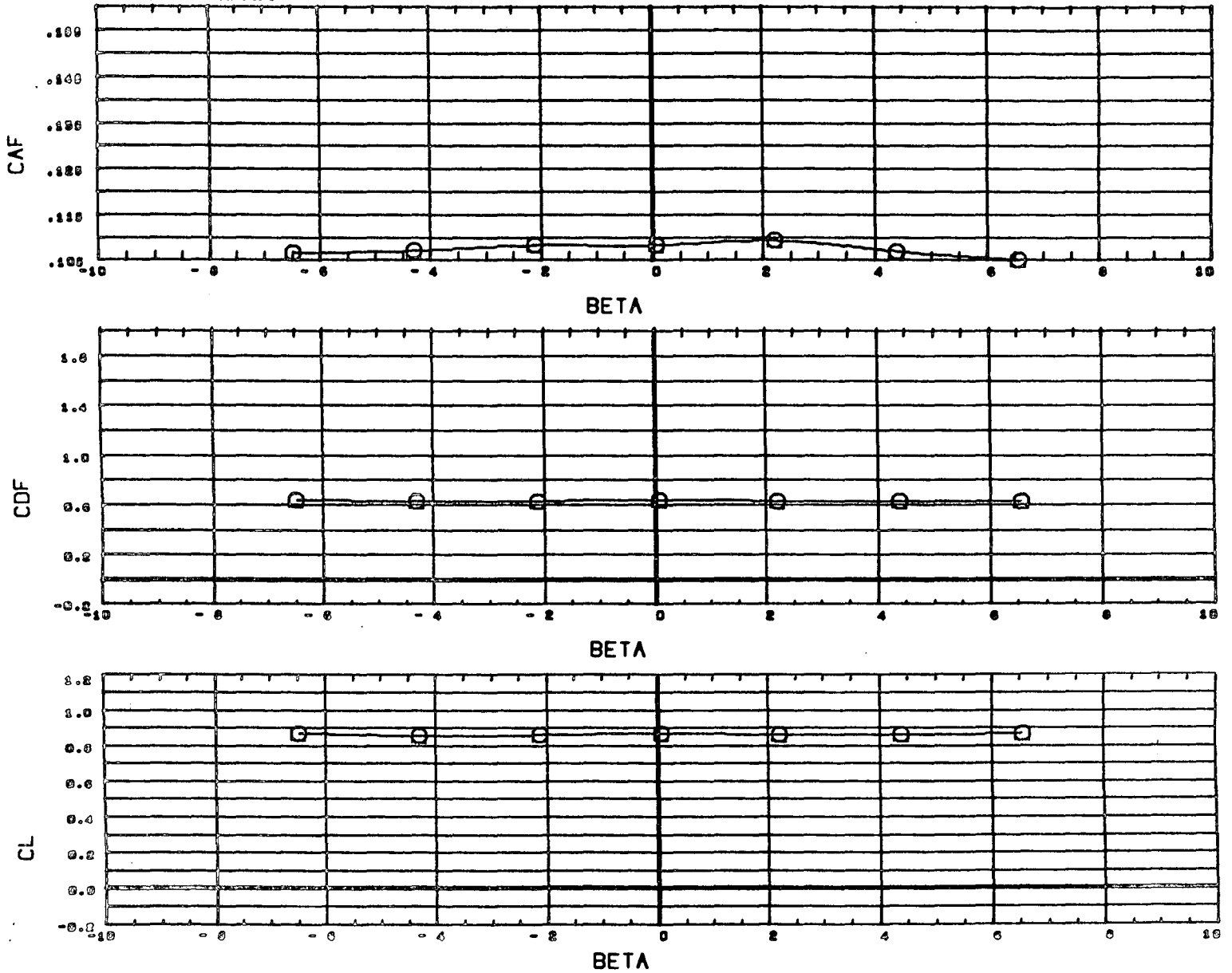
SYMBOL	MACH		PARAMETRIC VALUES		
O	1.966	ALPHA	25.000	RUDDER	0.000
		RUDFLR	30.000		

DATA MIST. CODE GC

REFERENCE INFORMATION

SREF	14.6636	SQ.IN.
LREF	4.5060	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY

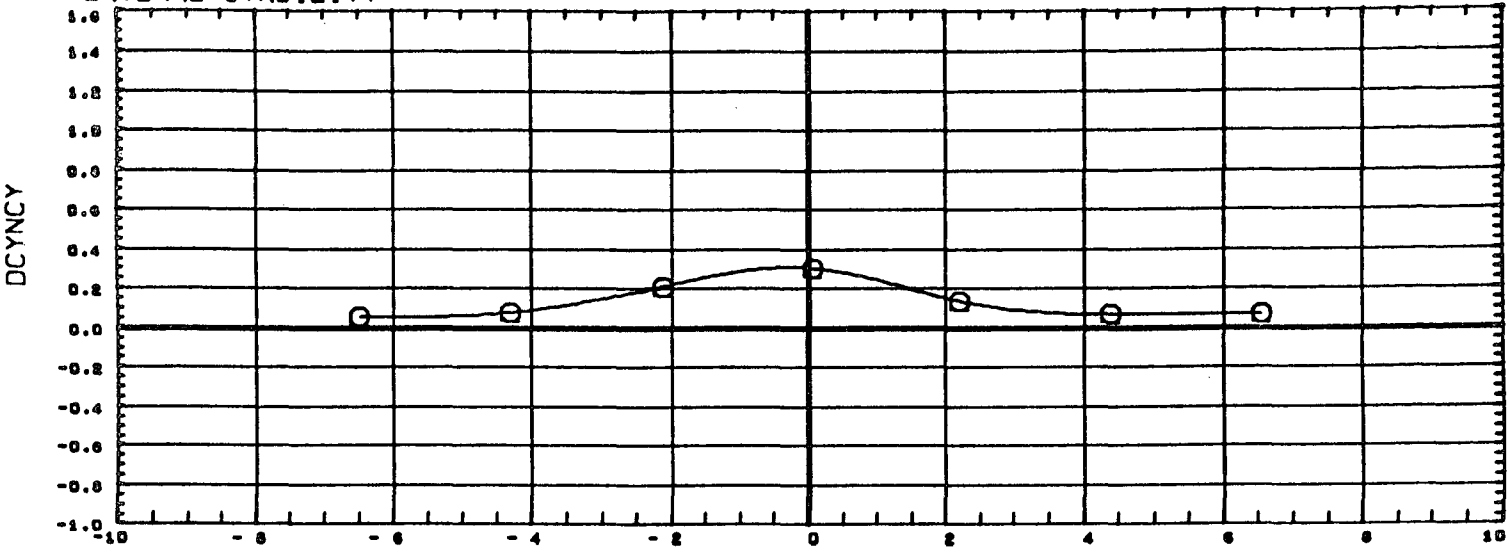


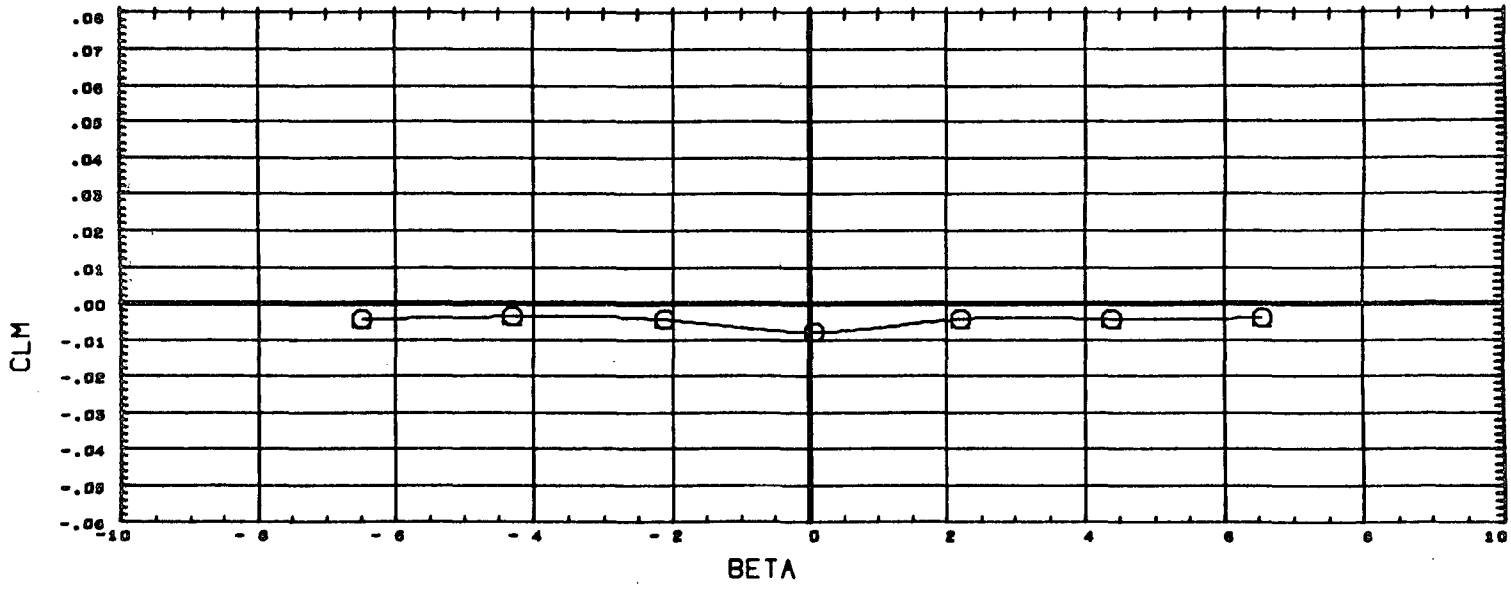
SYMBOL	MACH		PARAMETRIC VALUES		
O	1.960	ALPHA	25.000	RUDDER	0.000
		RUDFLR	30.000		

DATA HIST. CODE GC

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



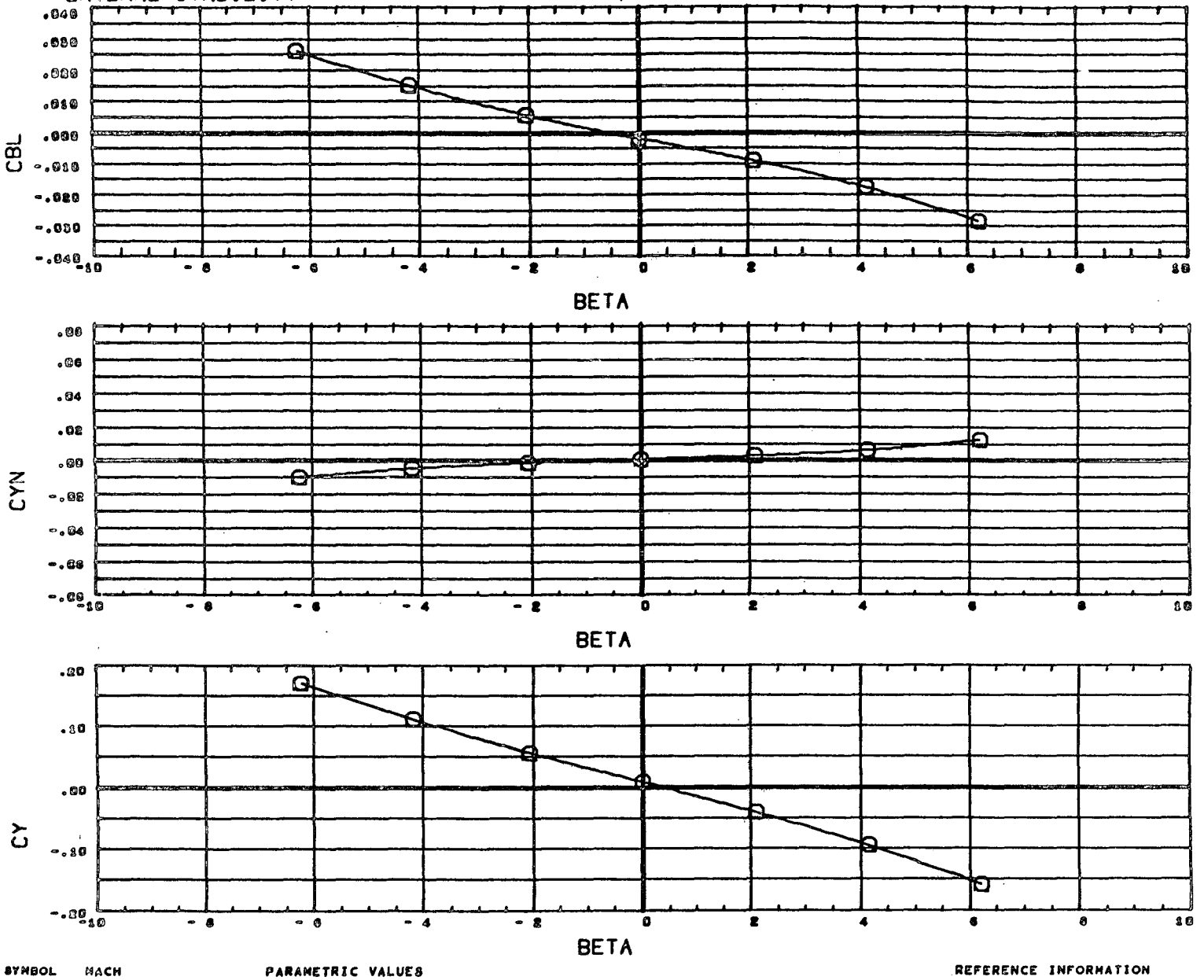


SYMBOL	MACH		PARAMETRIC VALUES		
O	1.966	ALPHA	25.000	RUDDER	0.000
		RUDFLR	30.000		

DATA HIST. CODE GC

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



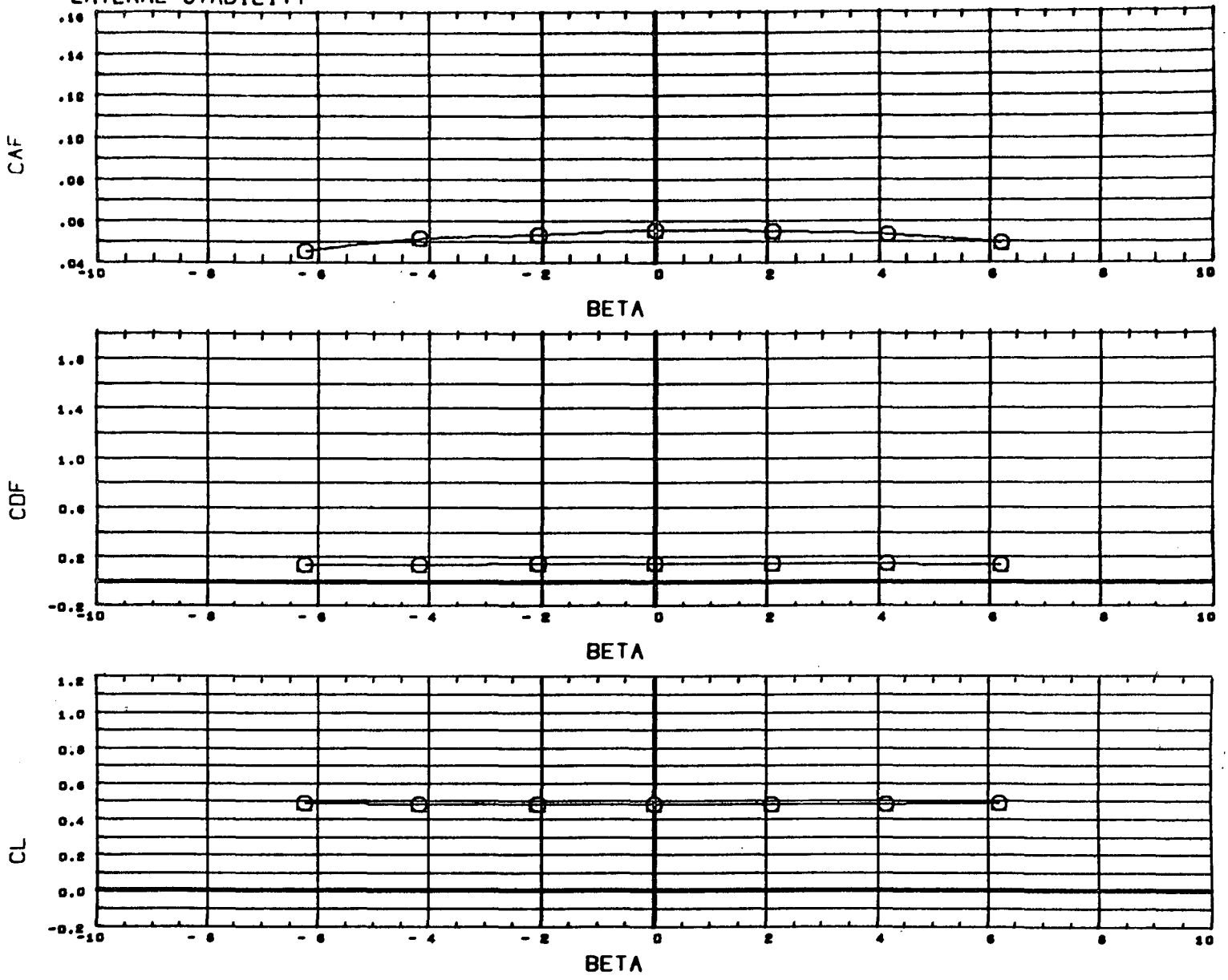
SYMBOL	MACH	PARAMETRIC VALUES			
O	0.601	ALPHA	10.000	RUDDER	0.000
		RUDFLR	30.000		

DATA HIST. CODE GC

REFERENCE INFORMATION

SREF	14.6836	SQ.IN.
LREF	4.8060	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY

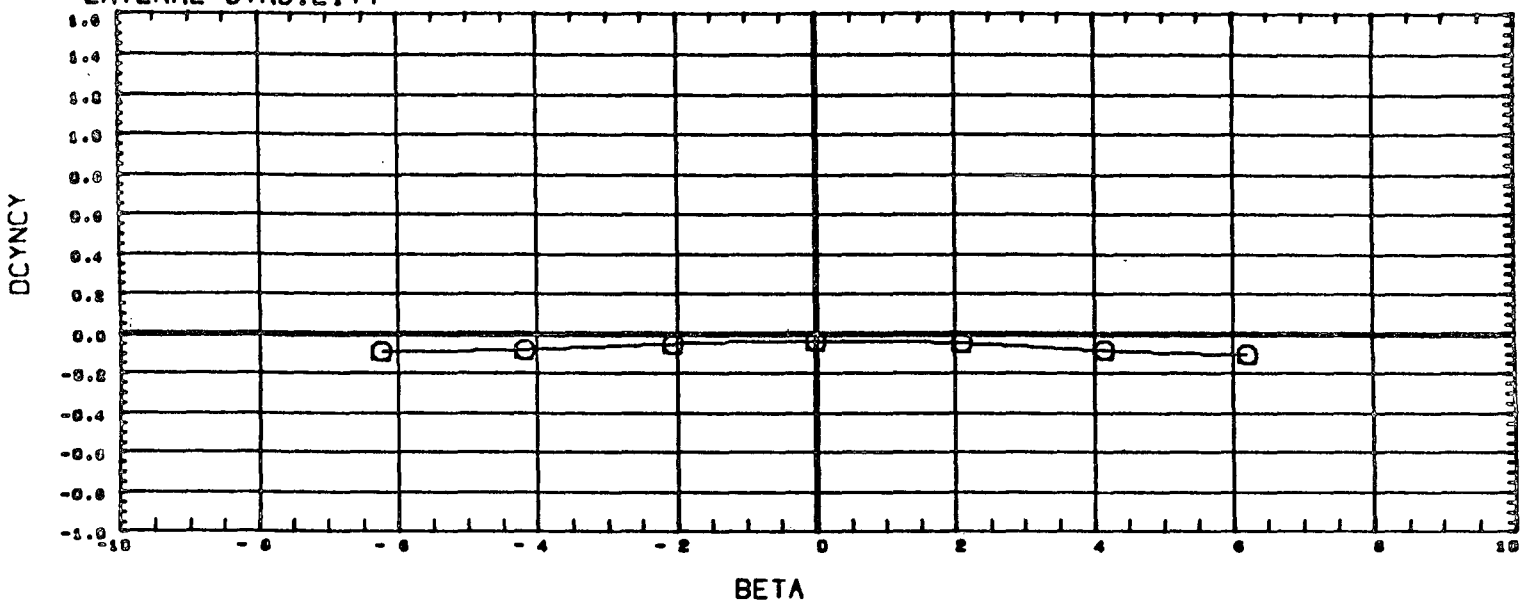


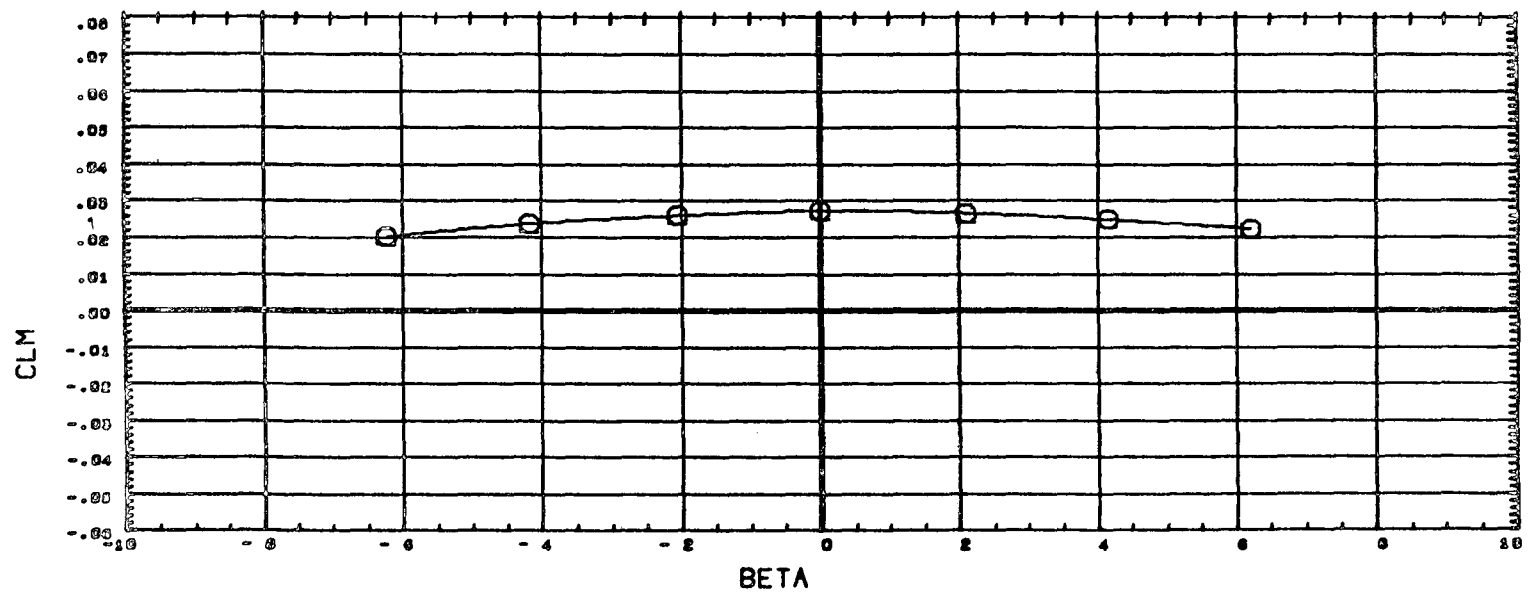
SYMBOL	MACH	PARAMETRIC VALUES			
O	0.601	ALPHA	10.000	RUDDER	0.000
		RUDFLR	30.000		

DATA HIST. CODE GC

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5060	IN.
BREF	5.6550	IN.
XMRP	1.4621	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY





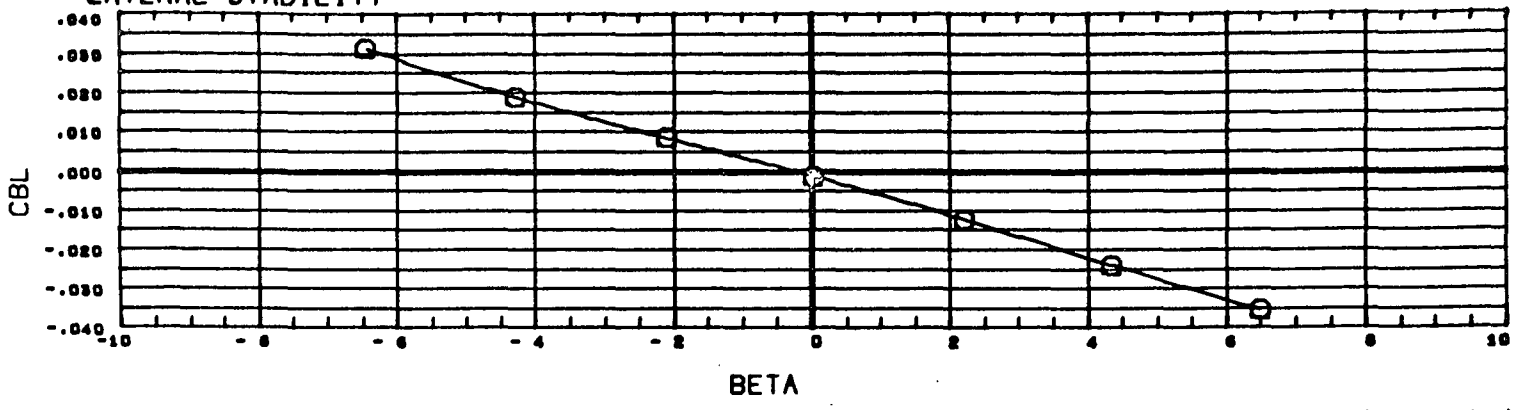
SYMBOL	MACH		PARAMETRIC VALUES		
O	0.601	ALPHA	10.000	RUDDER	0.000
		RUDFLR	30.000		

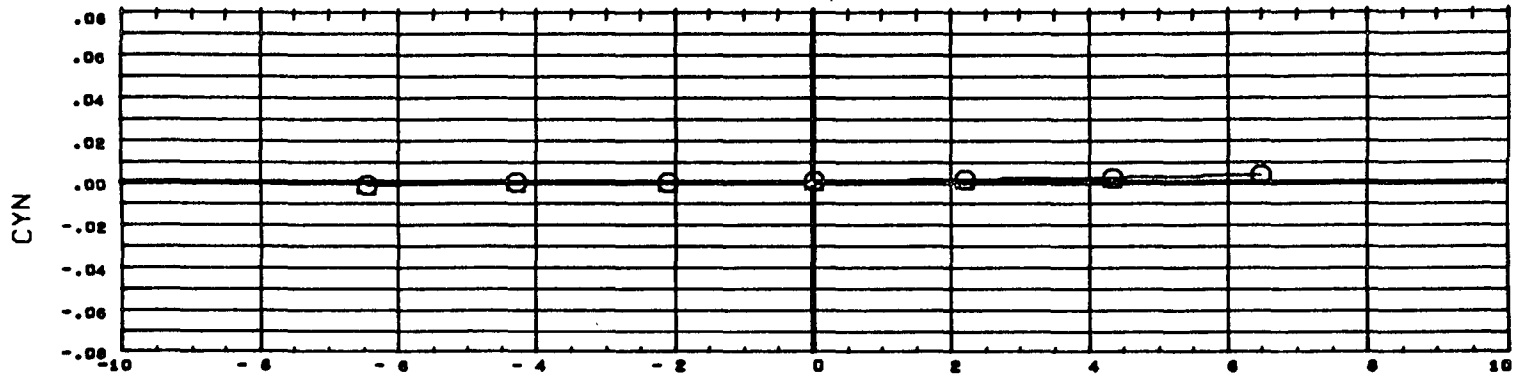
DATA HIST. CODE GC

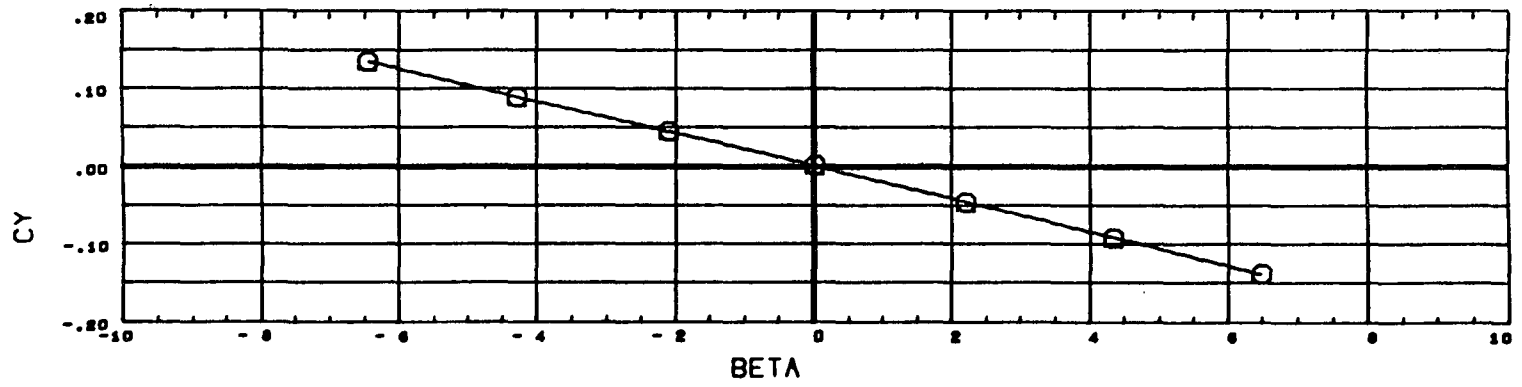
REFERENCE INFORMATION

SREF	14.6656	SQ.IN.
LREF	4.5060	IN.
BREF	5.6590	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY





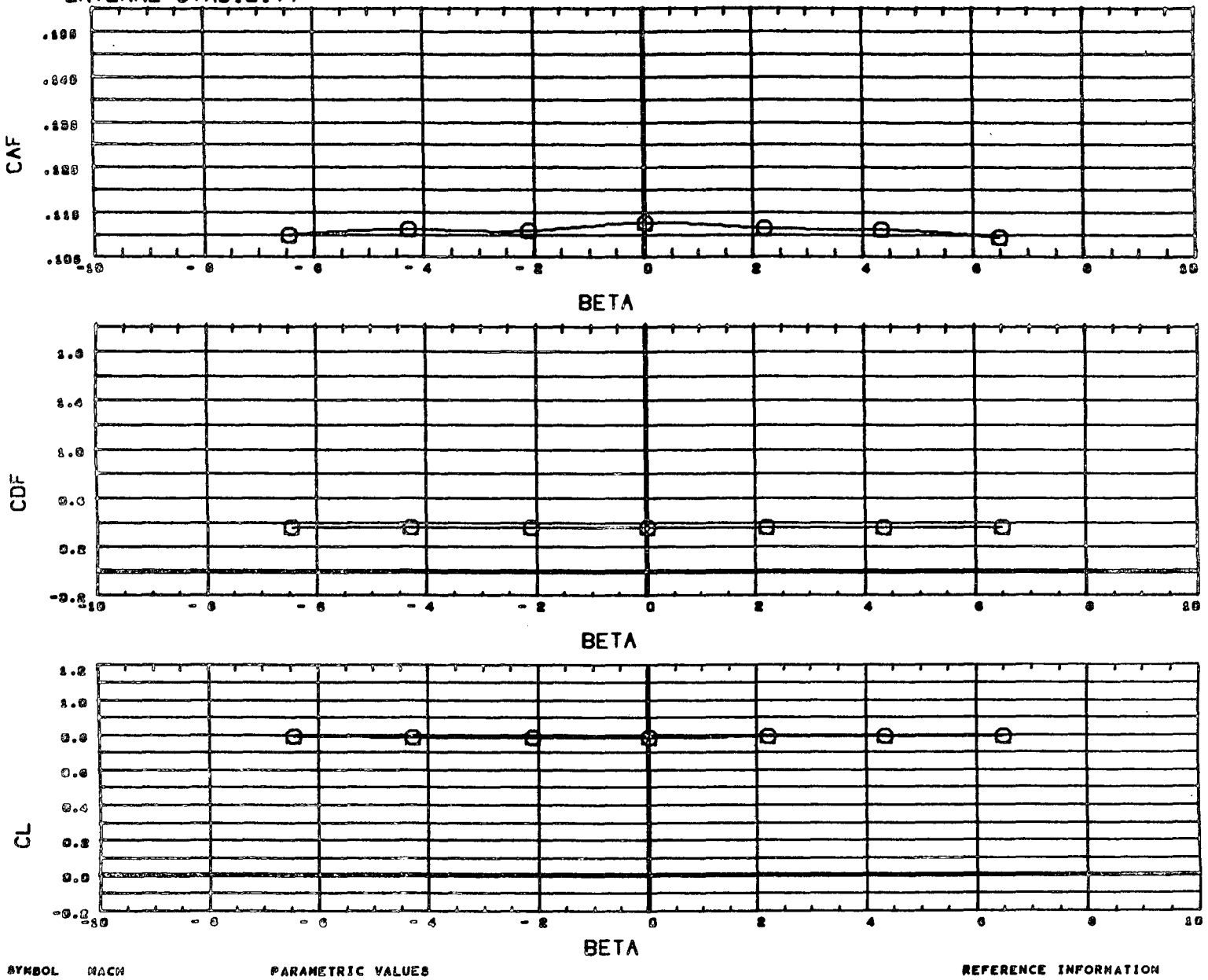


SYMBOL	MACH		PARAMETRIC VALUES		
O	1.198	ALPHA	15.000	RUDDER	0.000
		RUDFLR	30.000		

DATA HIST. CODE 6C

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



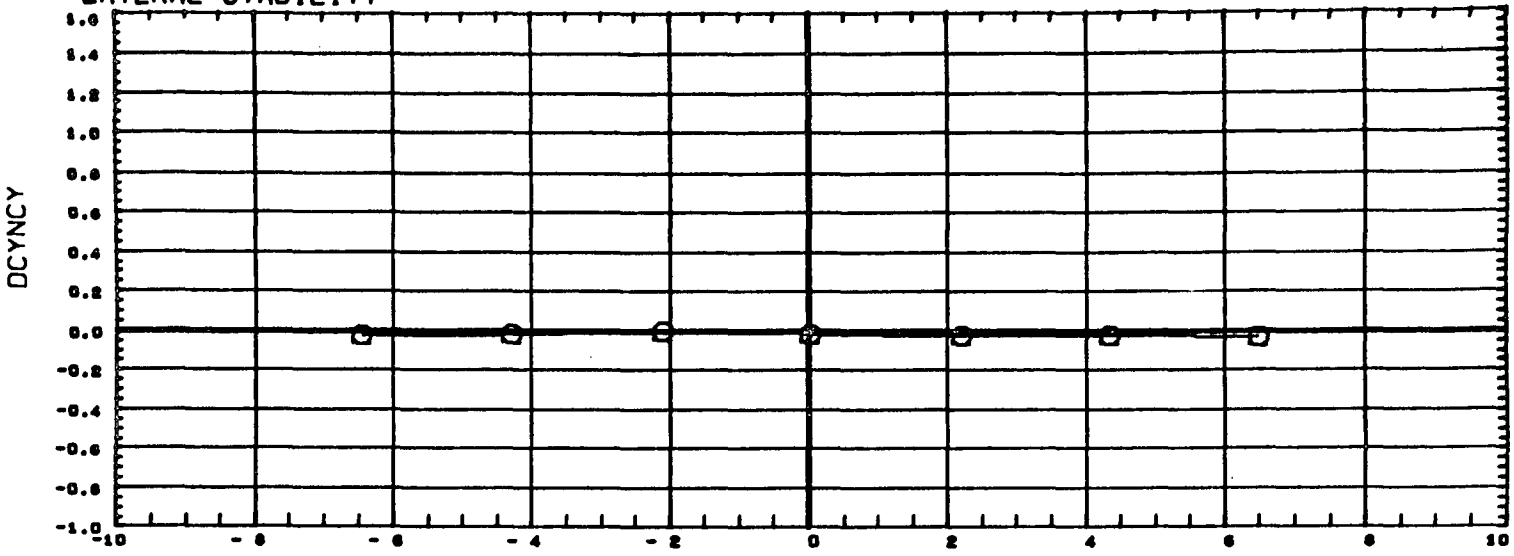
SYMBOL	MACH		PARAMETRIC VALUES		
O	1.190	ALPHA	15.000	RUDDER	0.000
		RUDFLR	30.000		

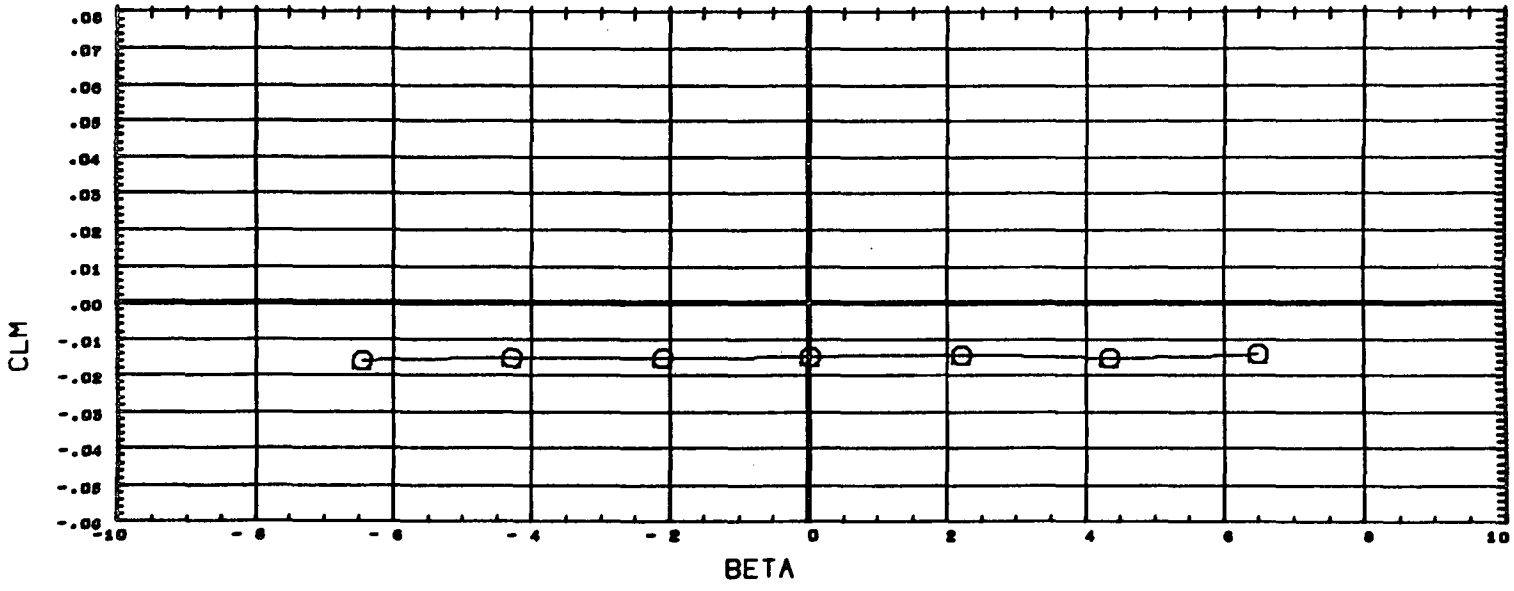
DATA HIST. CODE 6C

REFERENCE INFORMATION

SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



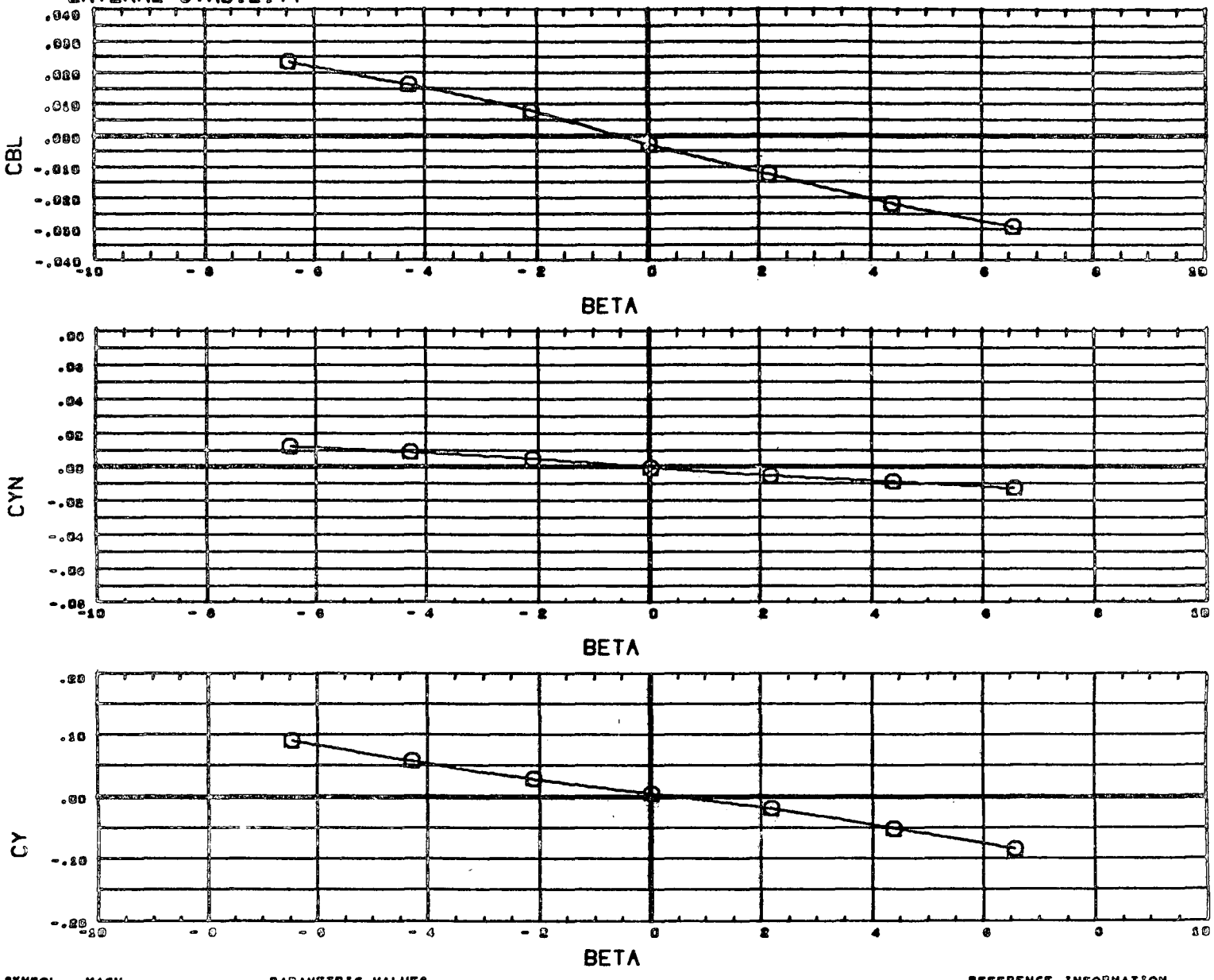


SYMBOL	MACH	PARAMETRIC VALUES			
O	1.196	ALPHA	15.000	RUDDER	0.000
		RUDFLR	30.000		

DATA HIST. CODE 6C

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



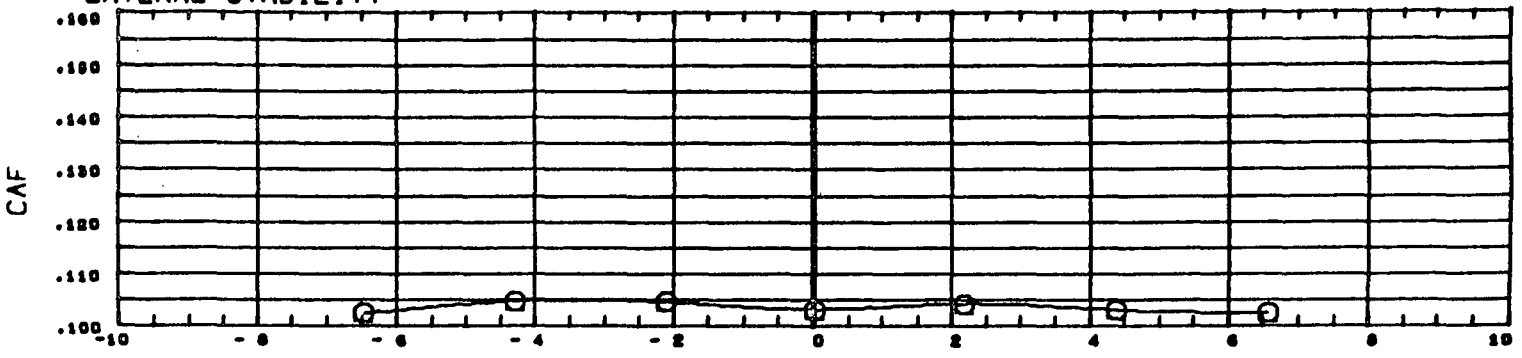
SYMBOL	MACH	PARAMETRIC VALUES			
O	1.900	ALPHA	25.000	RUDDER	0.000
		RUDFLR	30.000		

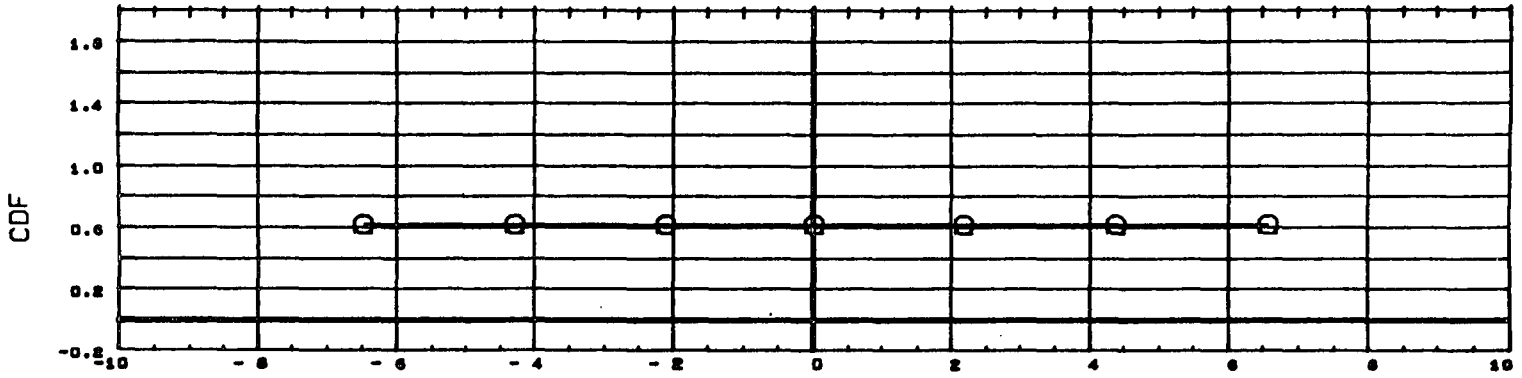
DATA HIST. CODE 6C

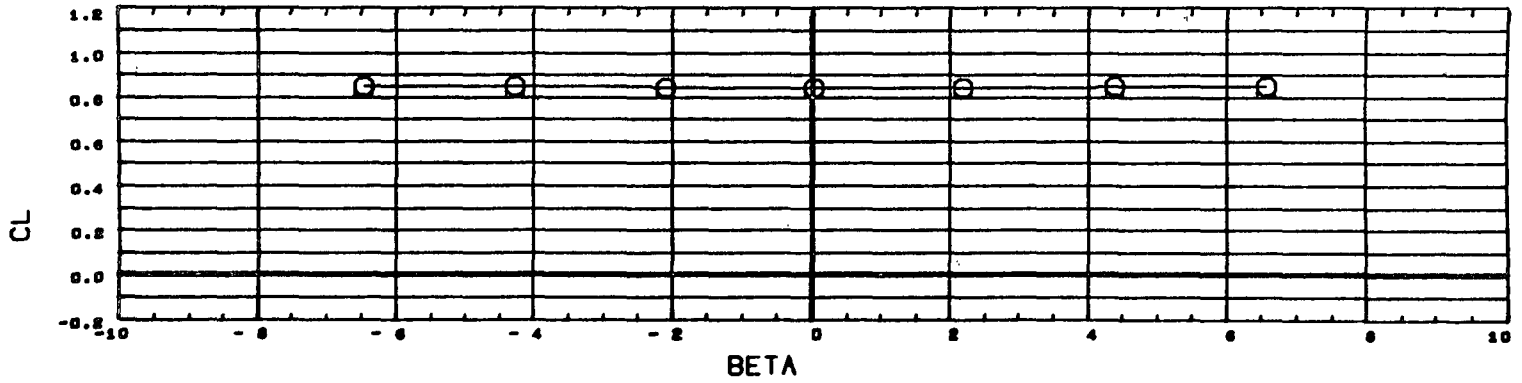
REFERENCE INFORMATION

SREF	14.6836	SQ.IN.
LREF	4.9060	IN.
BREF	5.6550	IN.
XMRP	1.4621	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY







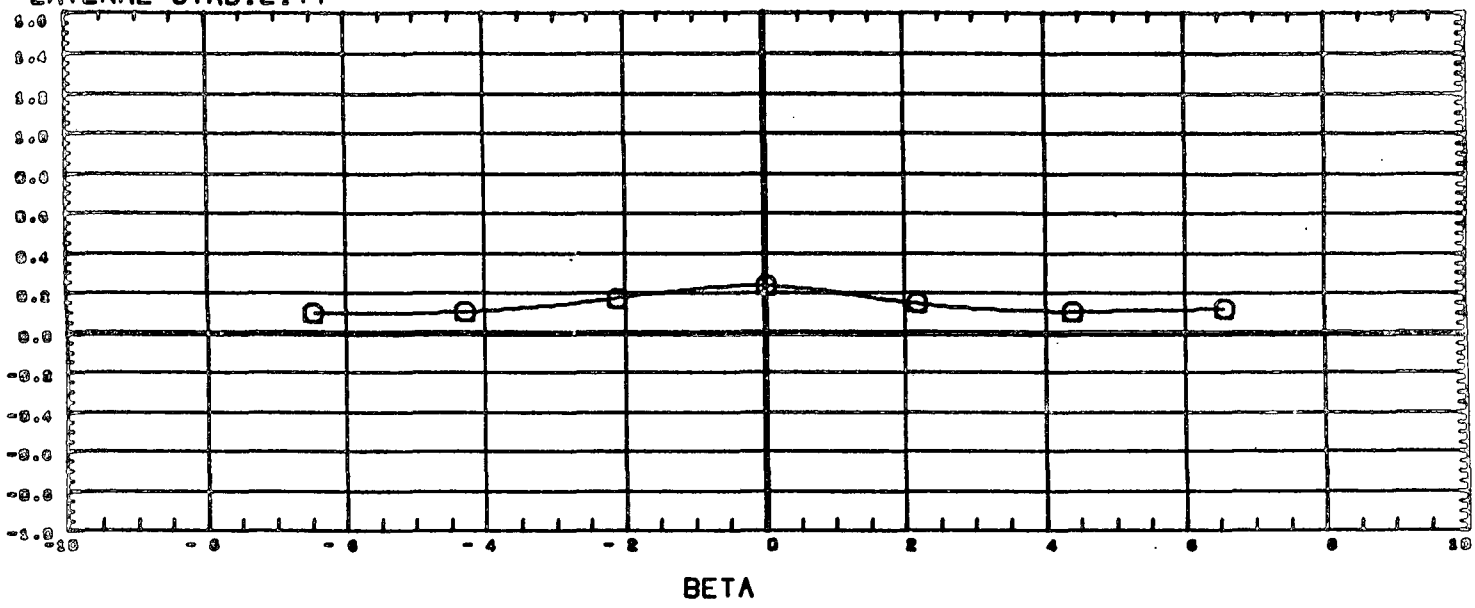
SYMBOL	MACH	PARAMETRIC VALUES			
O	1.969	ALPHA	25.000	RUDDER	0.000
		RUDFLR	30.000		

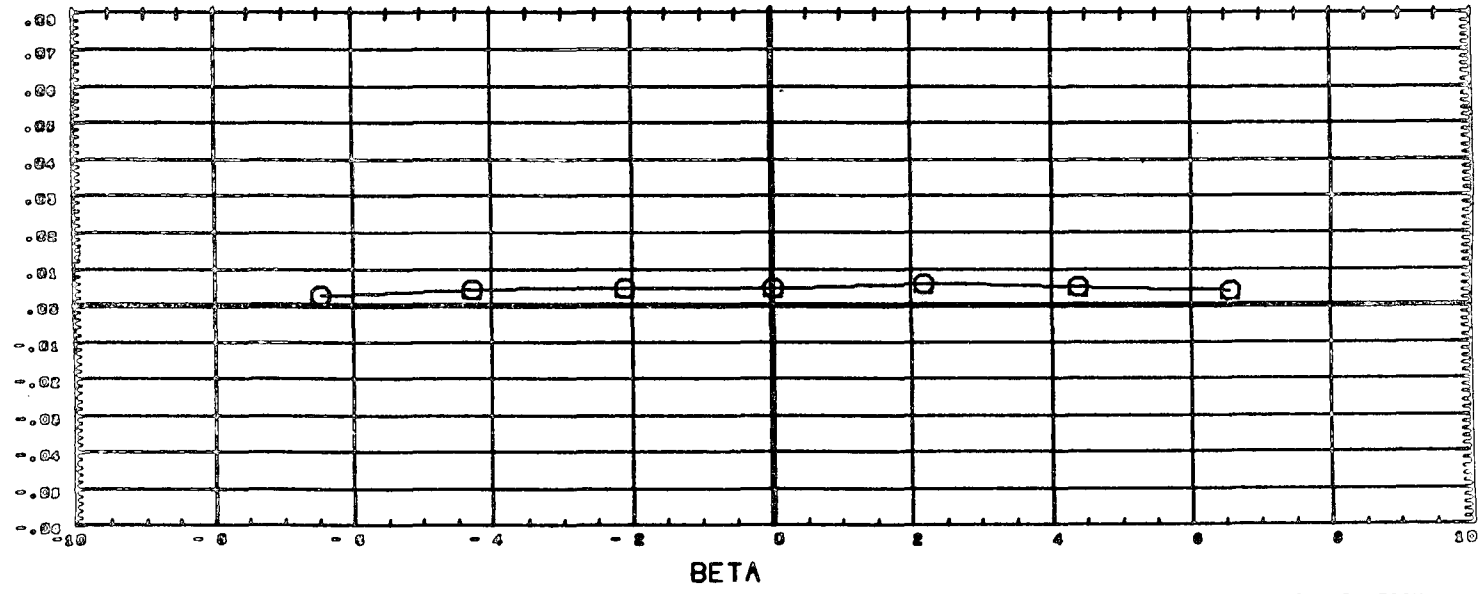
DATA HIST. CODE GC

REFERENCE INFORMATION

SREF	14.6836	SQ.IN.
LREF	4.5060	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY





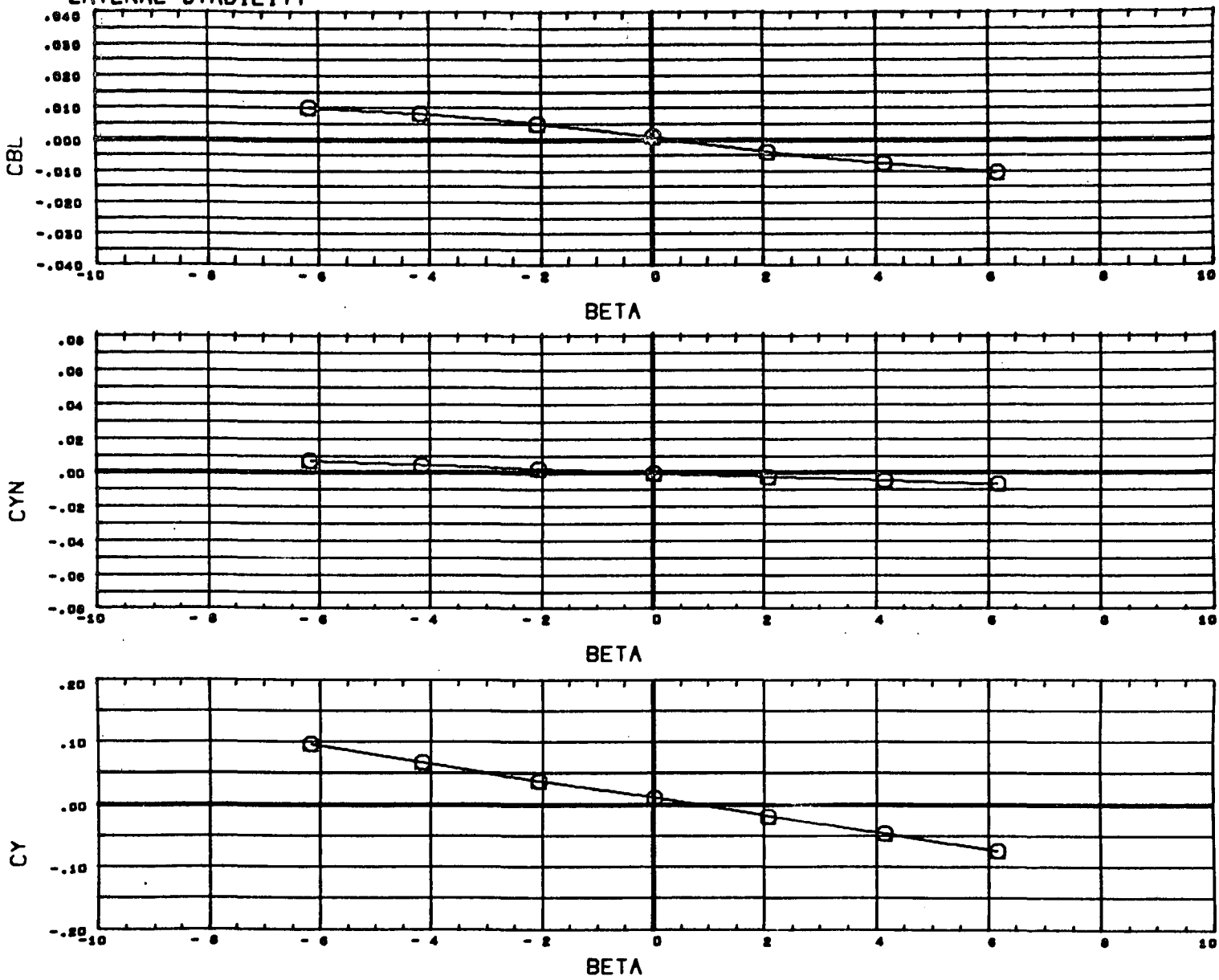
SYMBOL	MACH		PARAMETRIC VALUES		
O	1.060	ALPHA	29.000	RUDDER	0.000
		RUDPLR	30.000		

DATA HIST. CODE GC

REFERENCE INFORMATION

SREF	14.6630	SQ.IN.
LREF	4.5060	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY

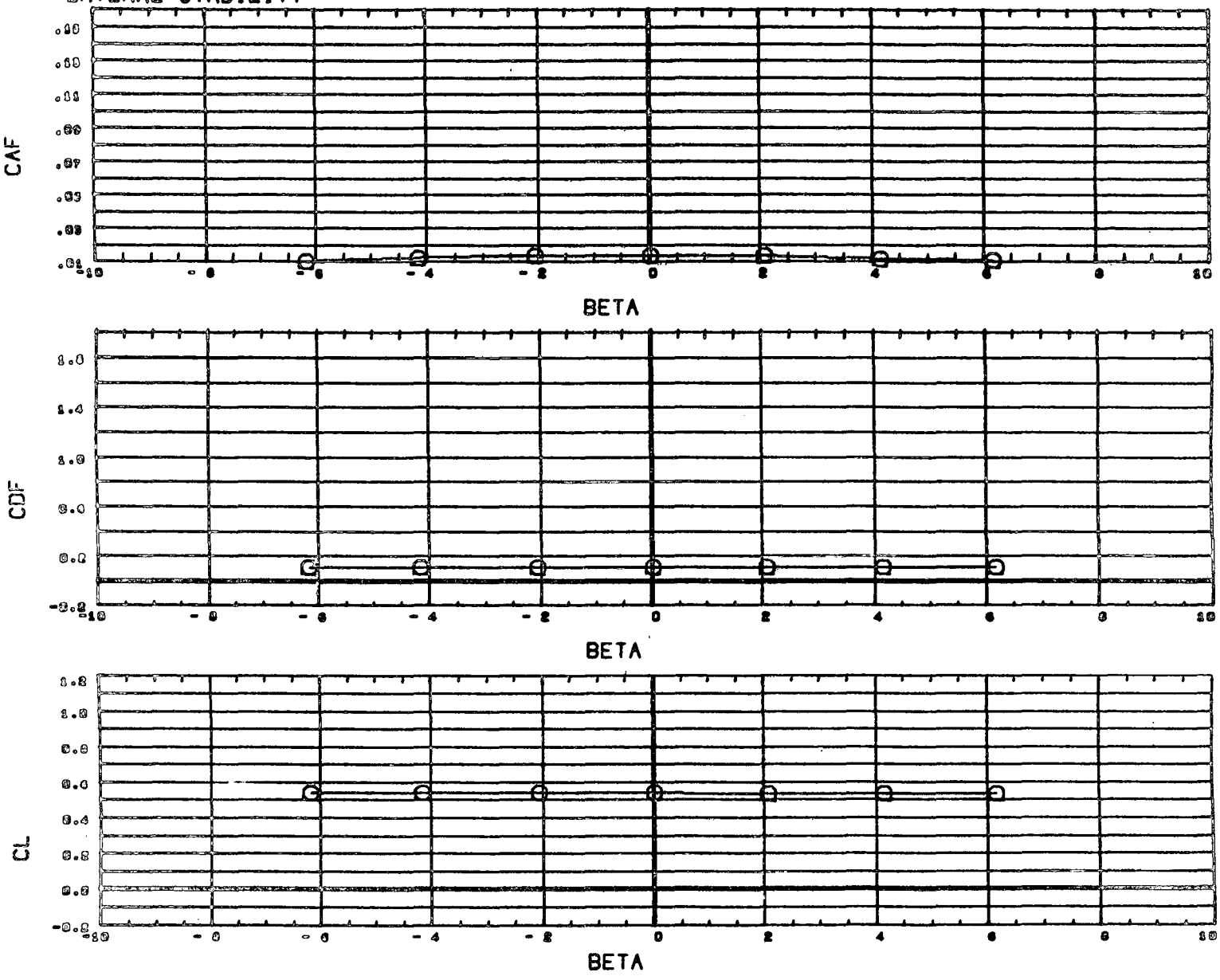


SYMBOL	MACH		PARAMETRIC VALUES		
O	0.002	ALPHA	10.000	RUDDER	0.000
		RUDFLR	0.000		

DATA MIST. CODE GC

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY

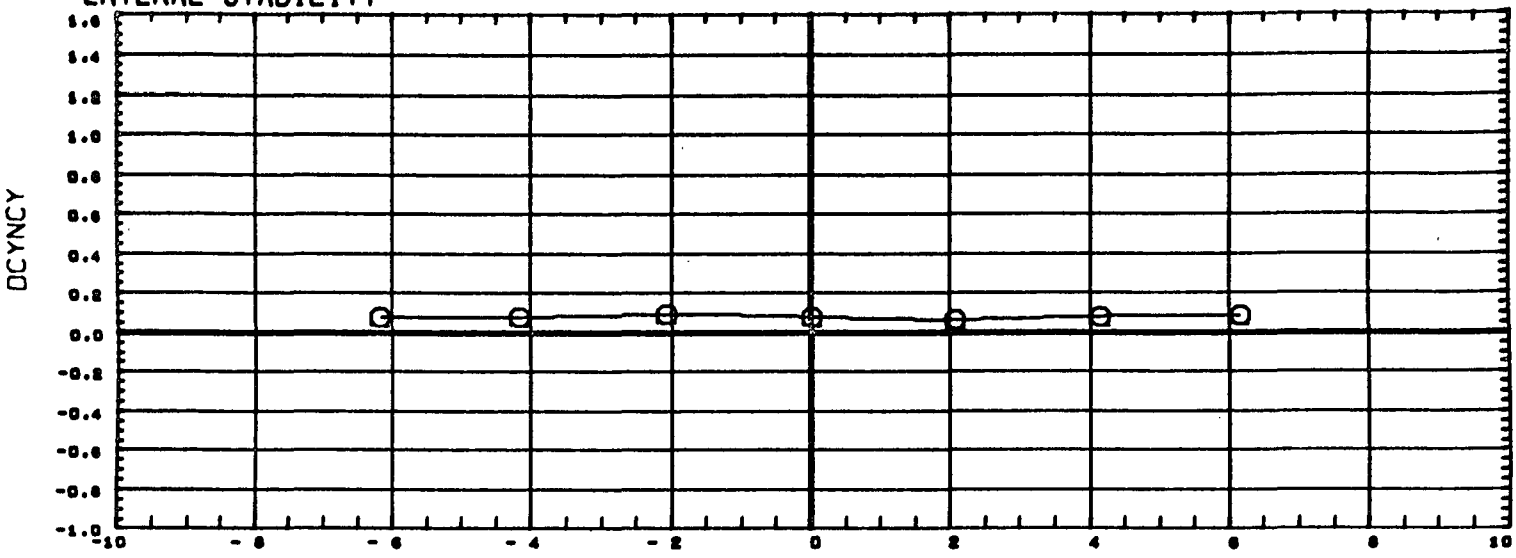


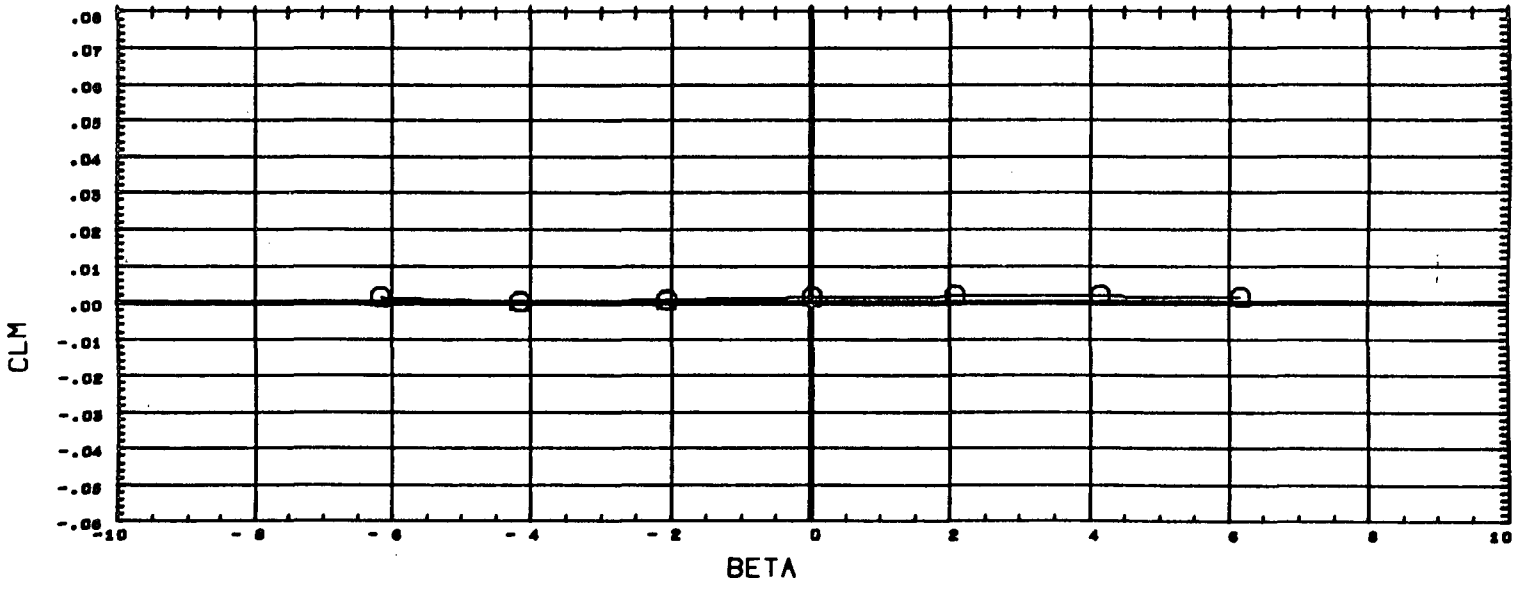
SYMBOL	MACH	PARAMETRIC VALUES			
○	0.008	ALPHA	10.000	RUDDER	0.000
		RUDFLR	0.000		

DATA HIST. CODE GC

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5060	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



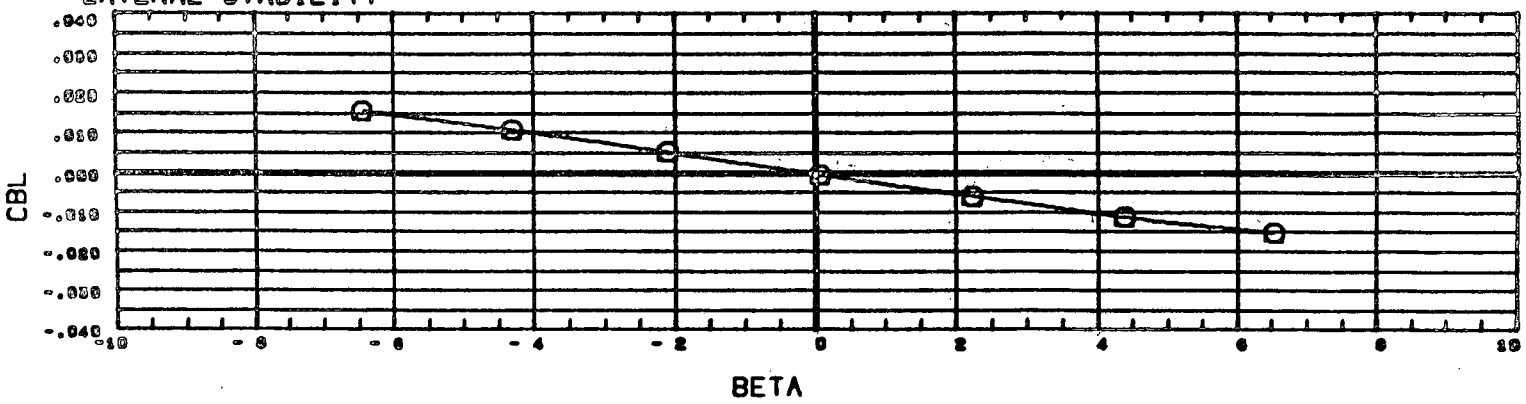


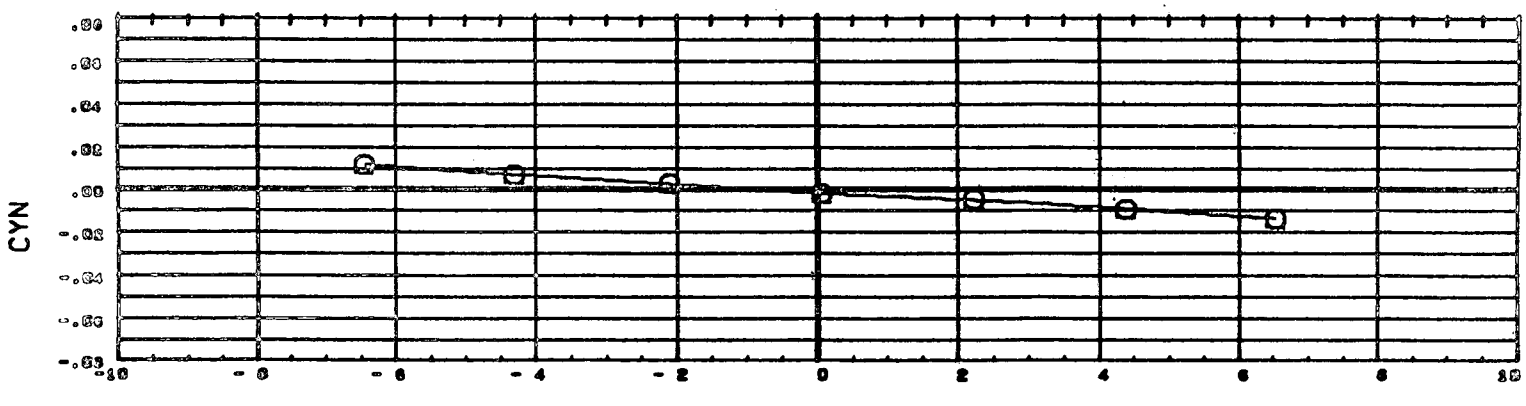
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O	0.602	ALPHA	10.000	RUDDER	0.000
		RUDFLR	0.000		

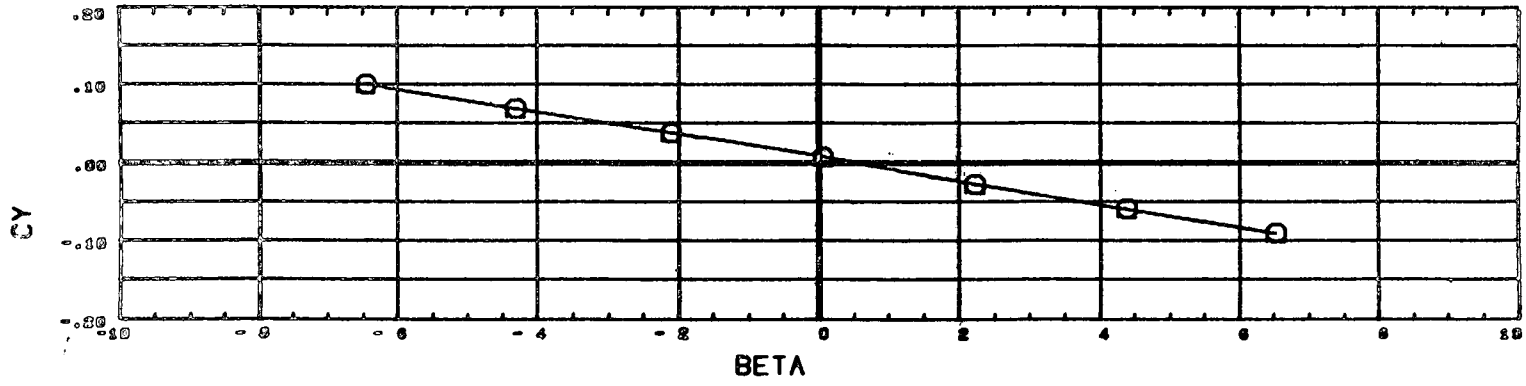
DATA HIST. CODE GC

REFERENCE INFORMATION		
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LREF	4.5060	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY







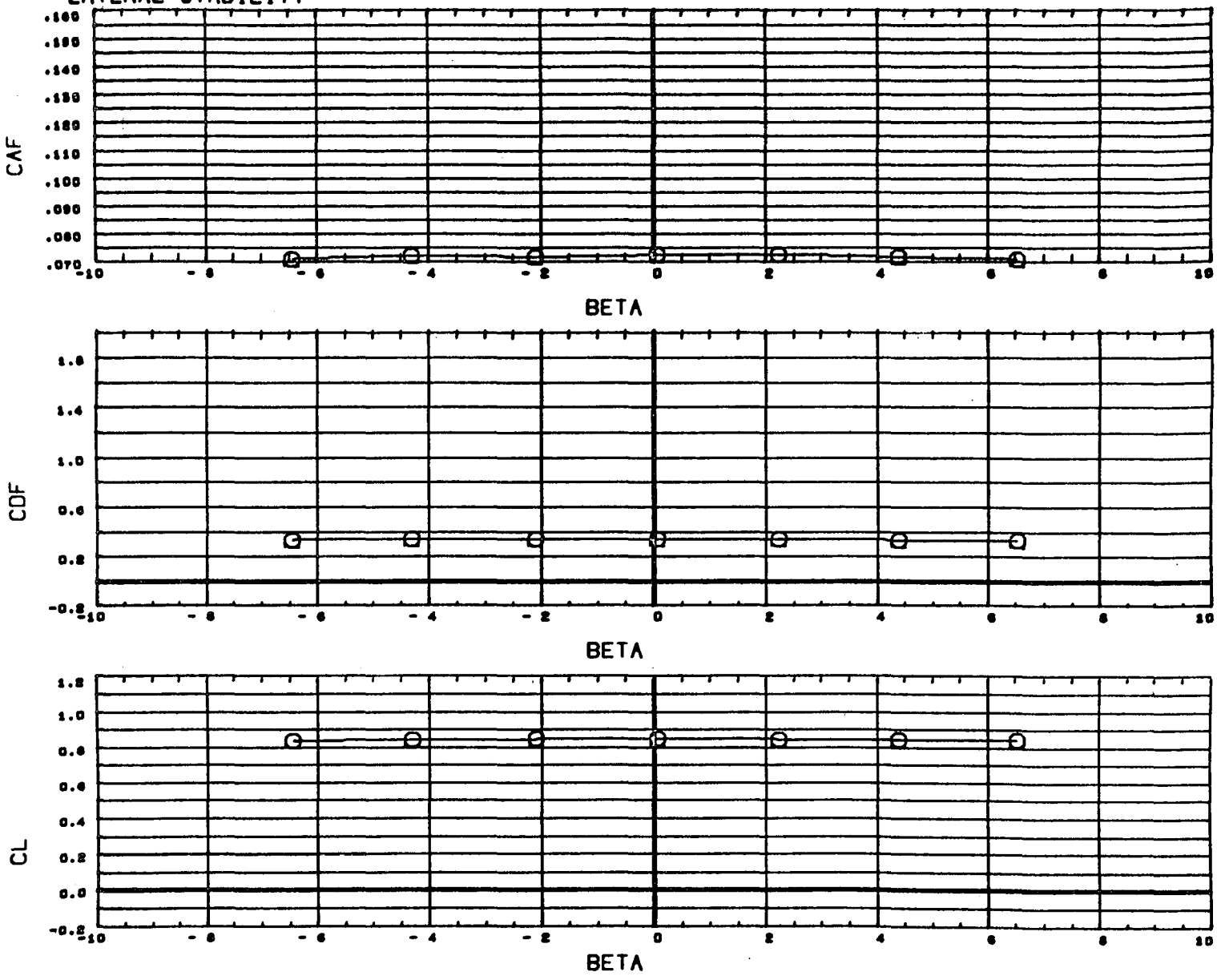
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O	1.203	ALPHA	15.000	RUDDER	0.000
		RUDFLR	0.000		

DATA HIST. CODE GC

REFERENCE INFORMATION

SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY

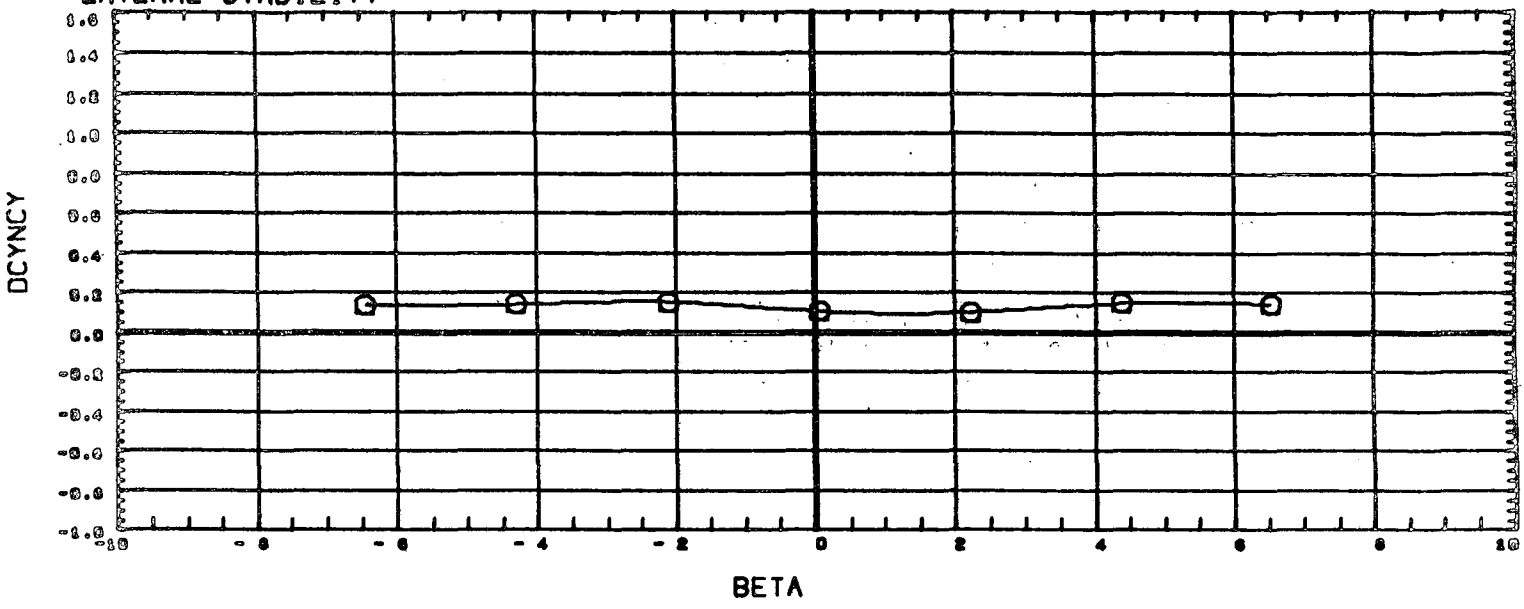


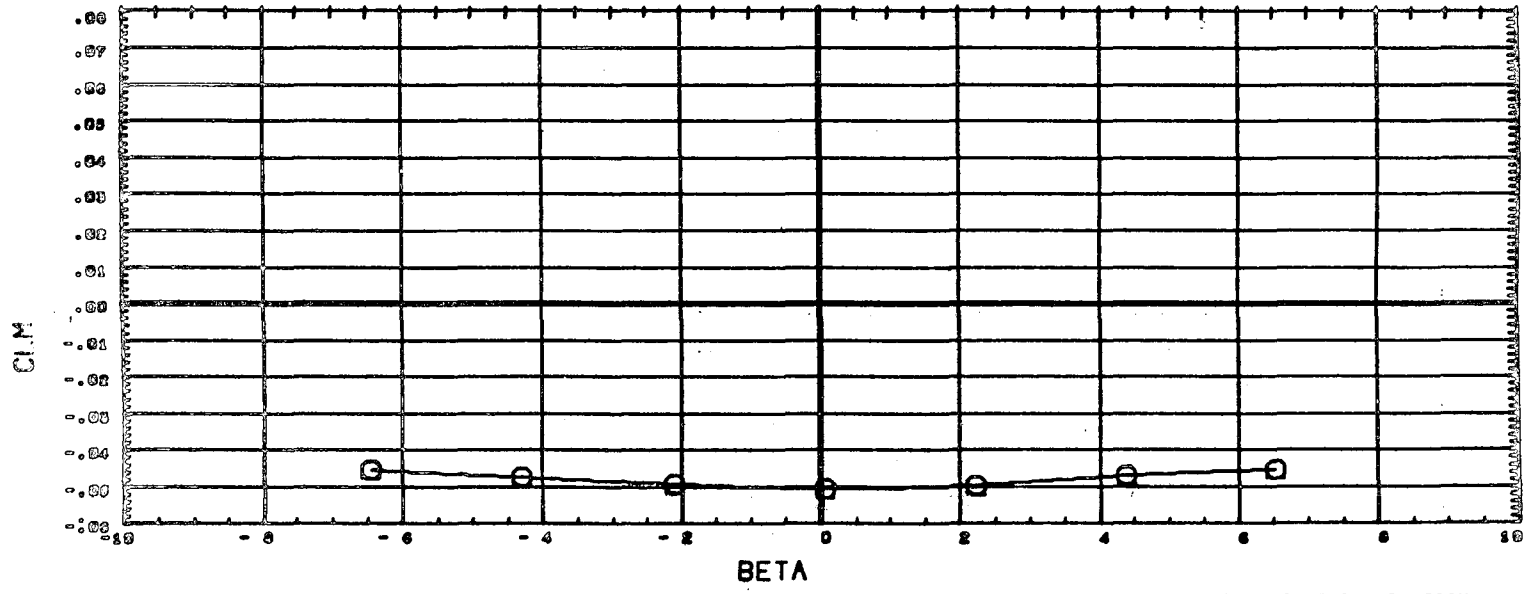
SYMBOL	MACH	PARAMETRIC VALUES			
O	1.201	ALPHA	15.000	RUDDER	0.000
		RUDFLR	0.000		

DATA HIST. CODE GC

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



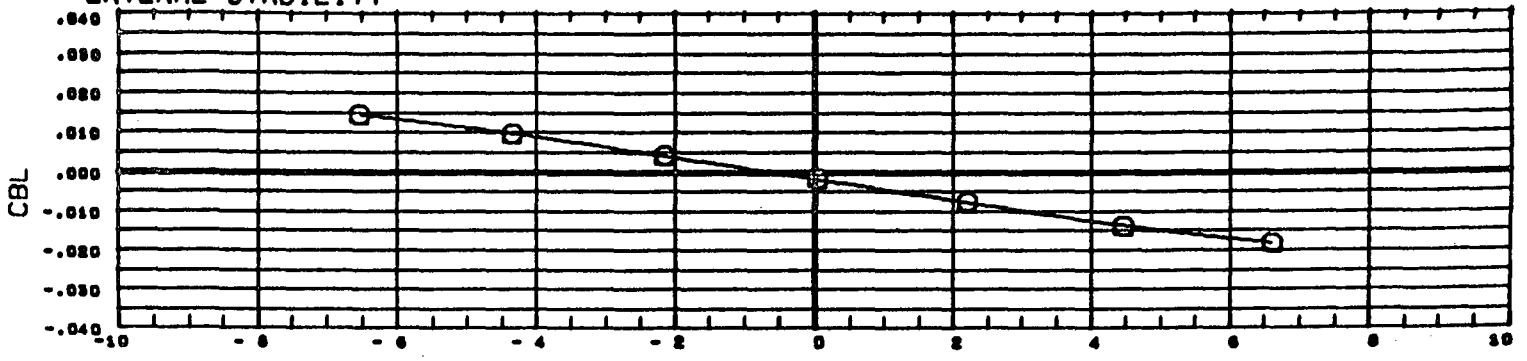


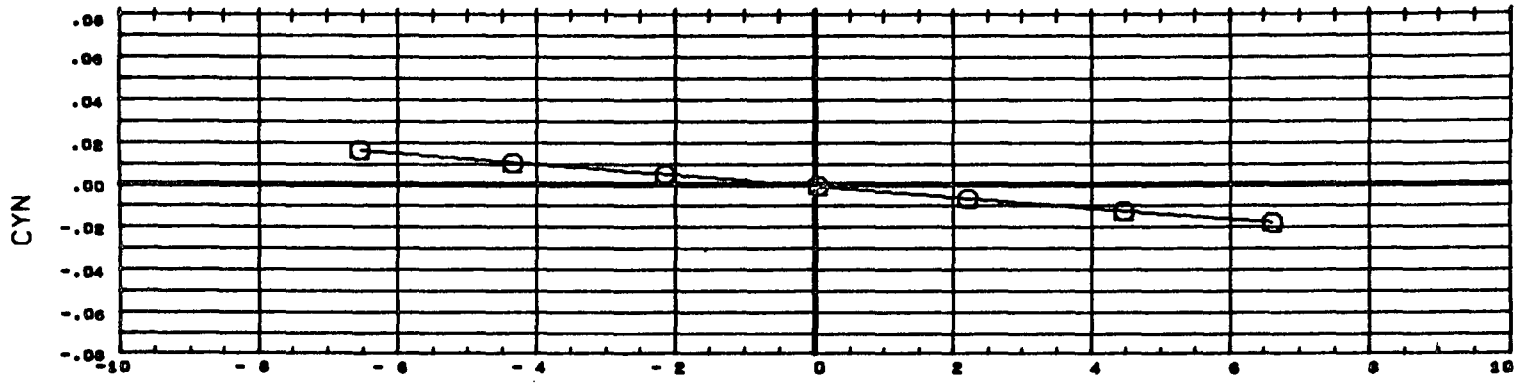
SYMBOL	MACH	PARAMETRIC VALUES			
O	1.201	ALPHA	15.000	RUDDER	0.000
		RUDFLR	0.000		

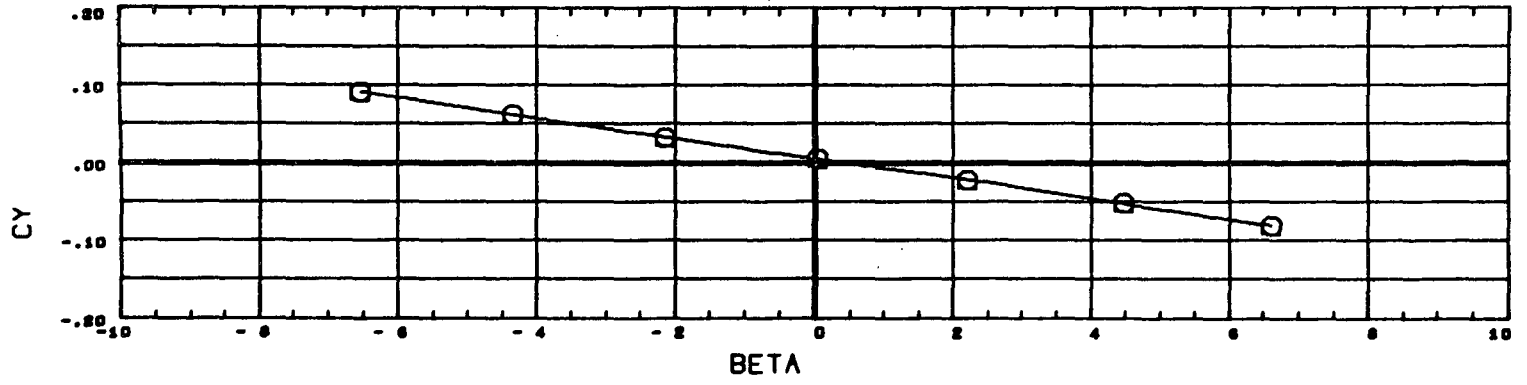
DATA HIST. CODE 6C

REFERENCE INFORMATION		
SREF	14.6636	SQ.IN.
LREF	4.5080	IN.
BREF	5.6850	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY







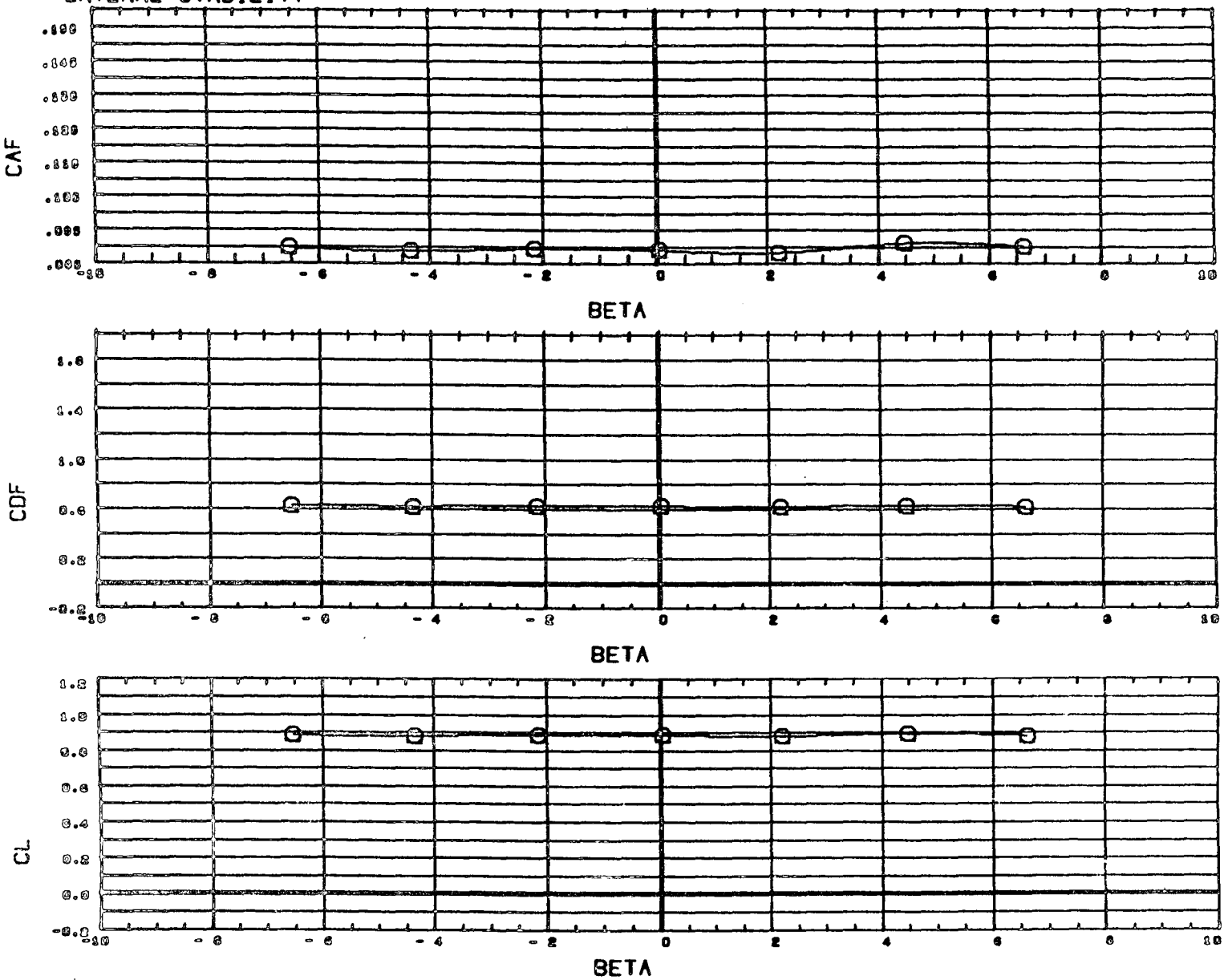
SYMBOL	MACH	PARAMETRIC VALUES			
O	1.967	ALPHA	25.000	RUDDER	0.000
		RUDFLR	0.000		

DATA HIST. CODE 6C

REFERENCE INFORMATION

SREF	14.6836	SQ.IN.
LREF	4.5060	IN.
BREF	5.6550	IN.
XMRP	1.4621	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



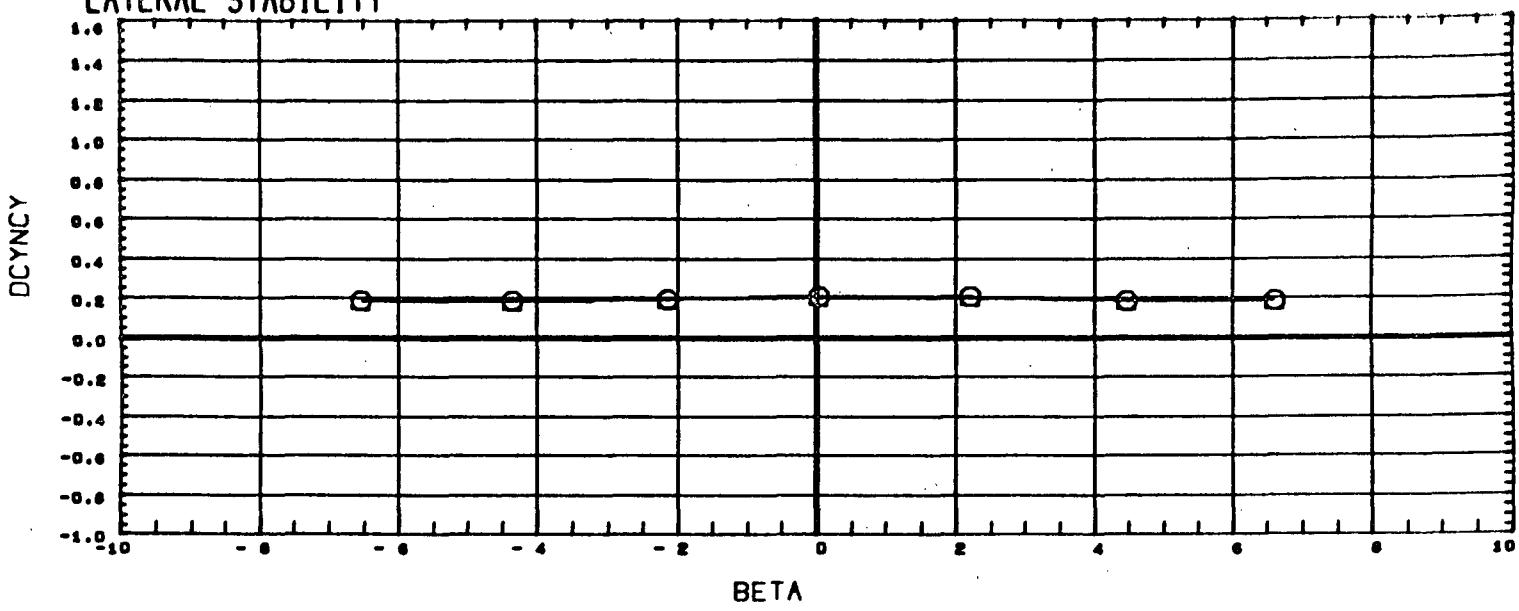
SYMBOL	MACH		PARAMETRIC VALUES		
O	1.969	ALPHA	25.000	RUDDER	0.000
		RUDFLR	0.000		

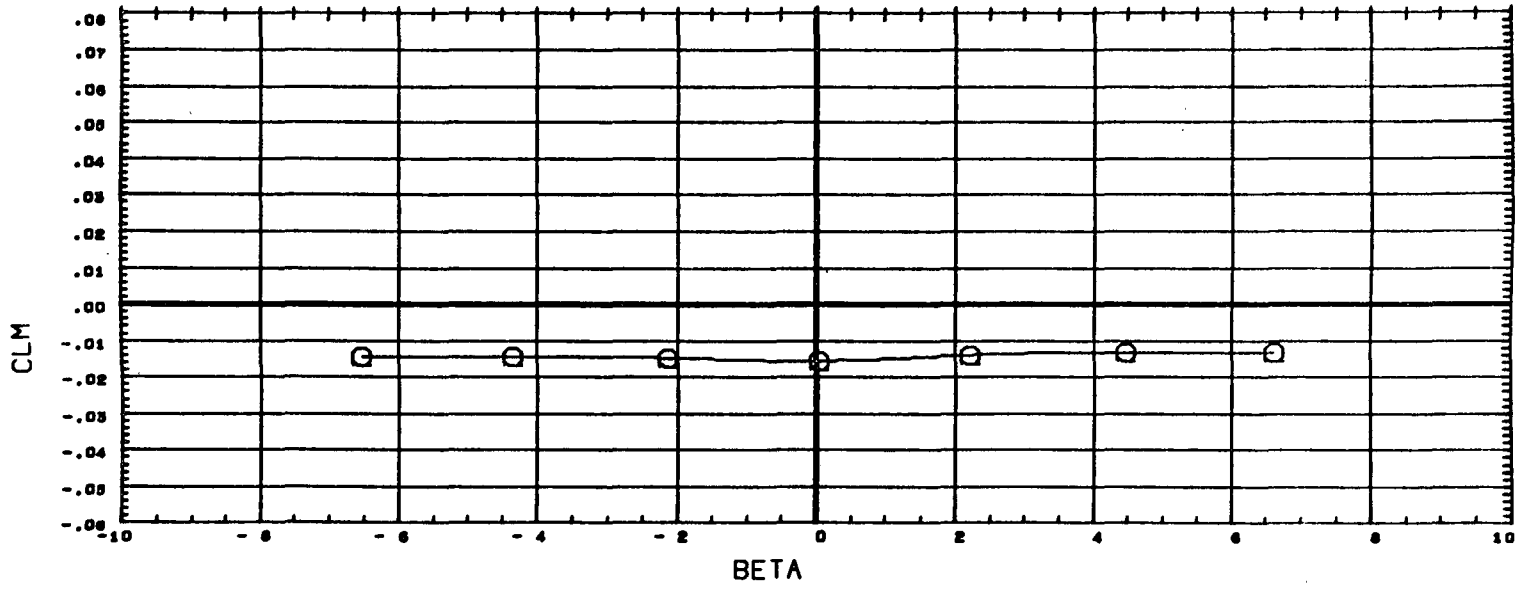
DATA HIST. CODE 6C

REFERENCE INFORMATION

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BREF	5.6550	IN.
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YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



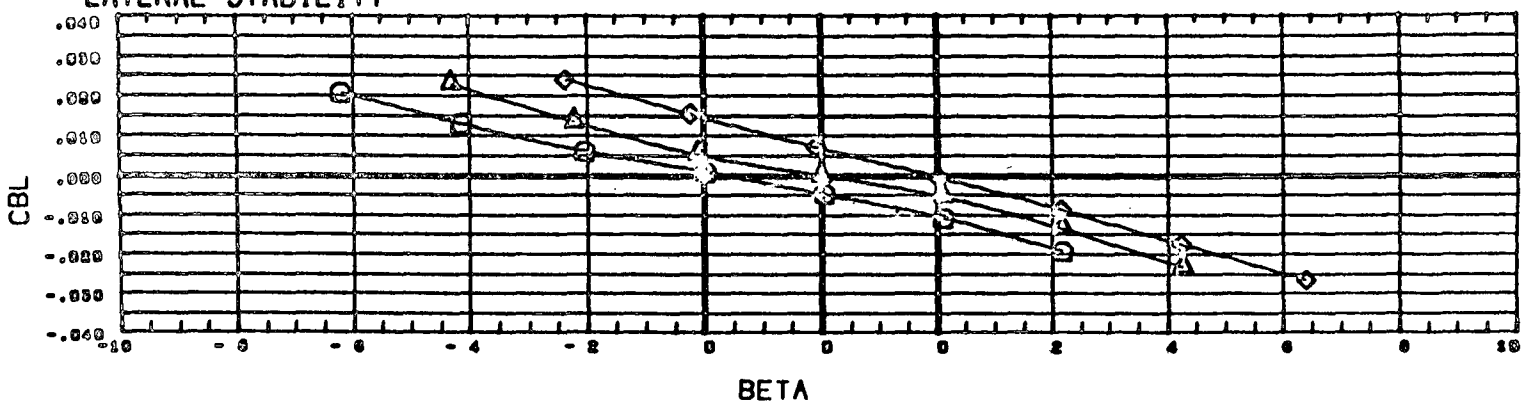


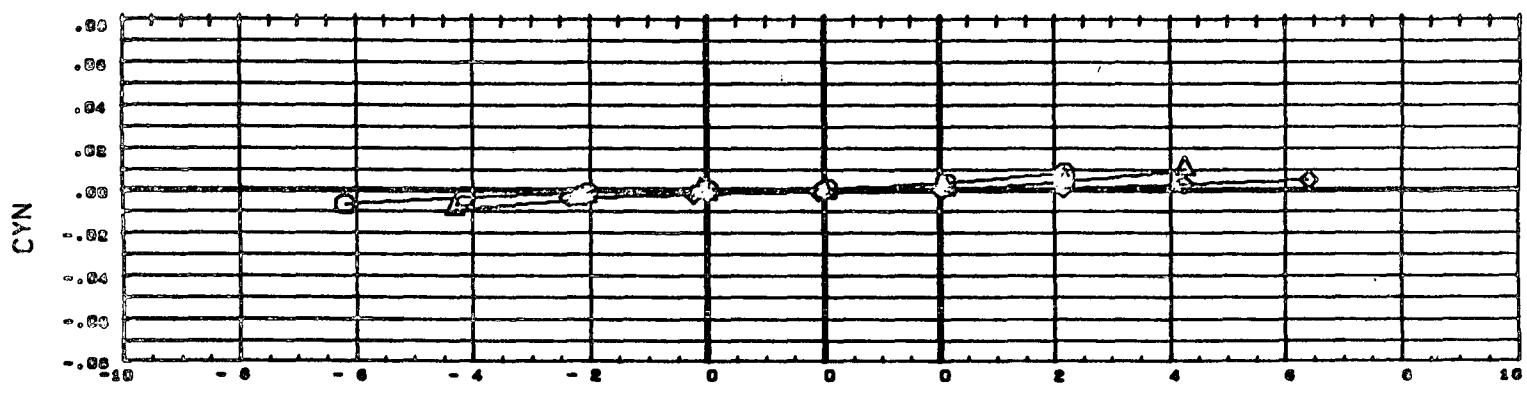
SYMBOL	MACH	PARAMETRIC VALUES			
O	1.967	ALPHA	25.000	RUDDER	0.000
		RUDFLR	0.000		

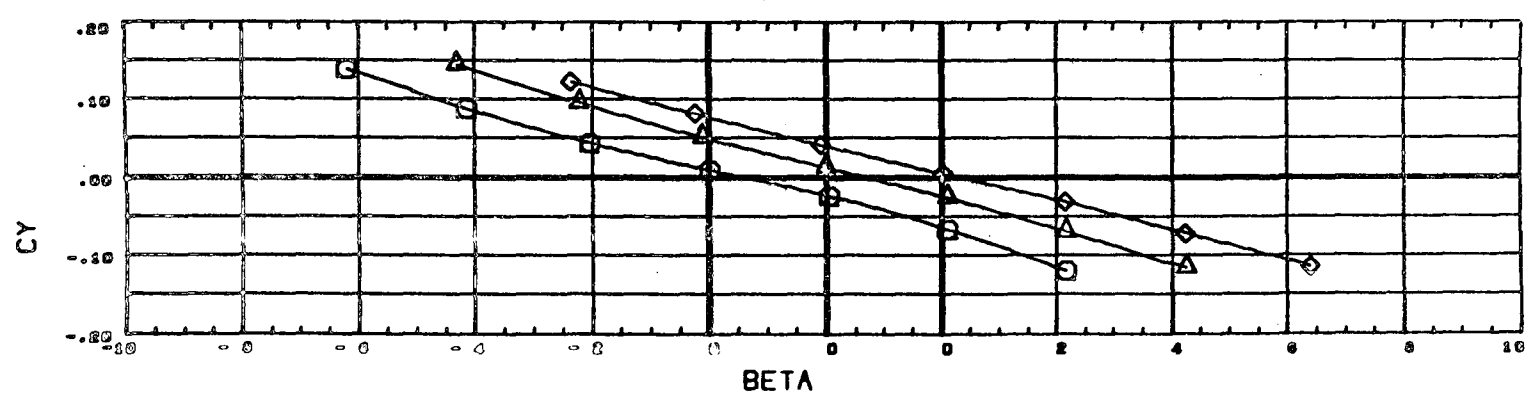
DATA HIST. CODE GC

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5060	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY







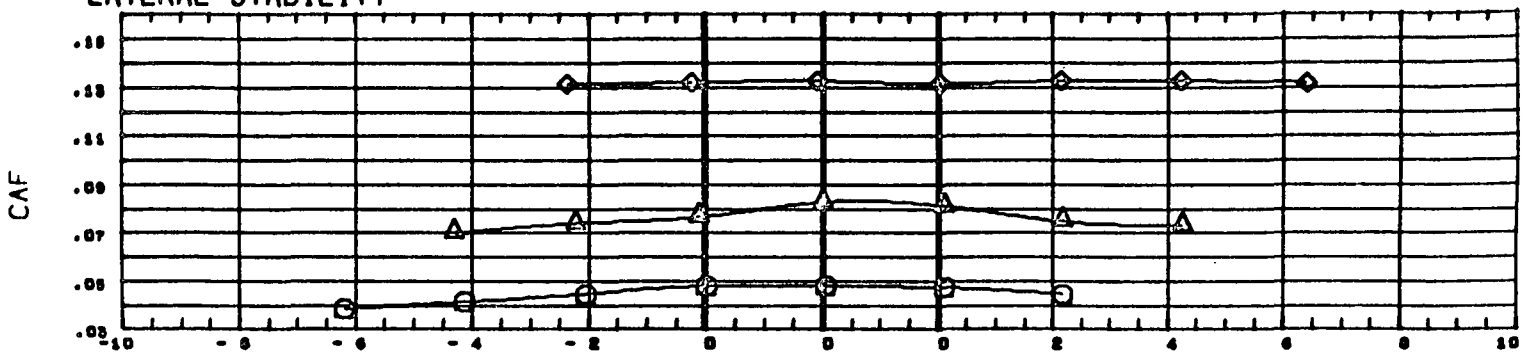
SYMBOL	MACH	PARAMETRIC VALUES			
○	0.601	ALPHA	10.000	RUDDER	0.000
△	0.902	RUDFLR	30.000		
◇	1.196				

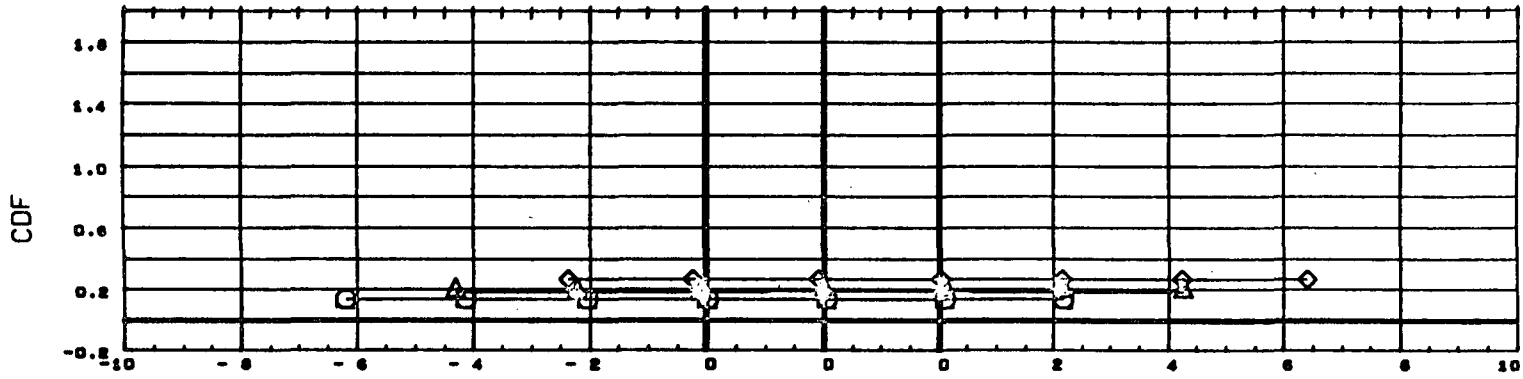
DATA HIST. CODE GC

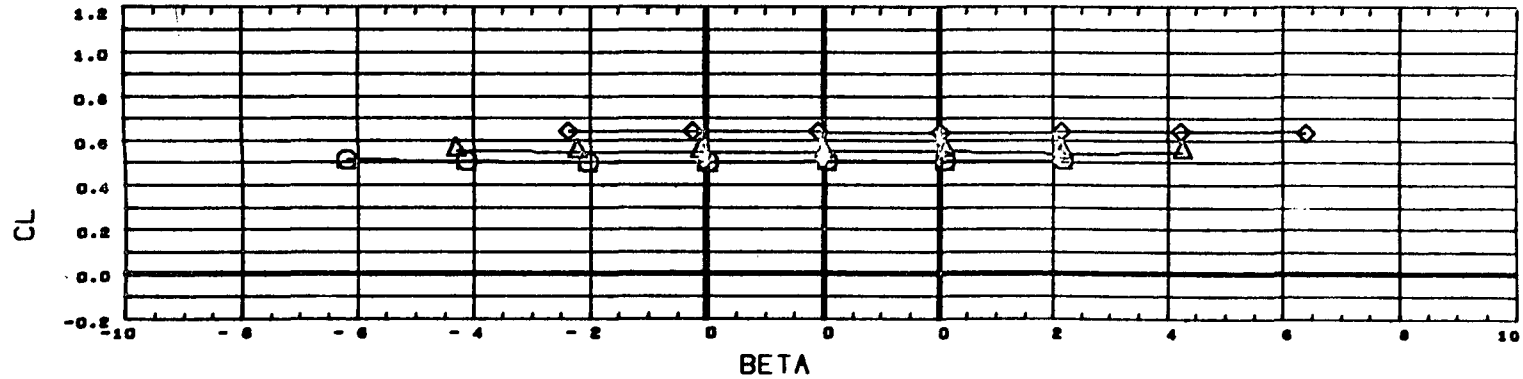
REFERENCE INFORMATION

SREF	14.6636	SQ.IN.
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BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY







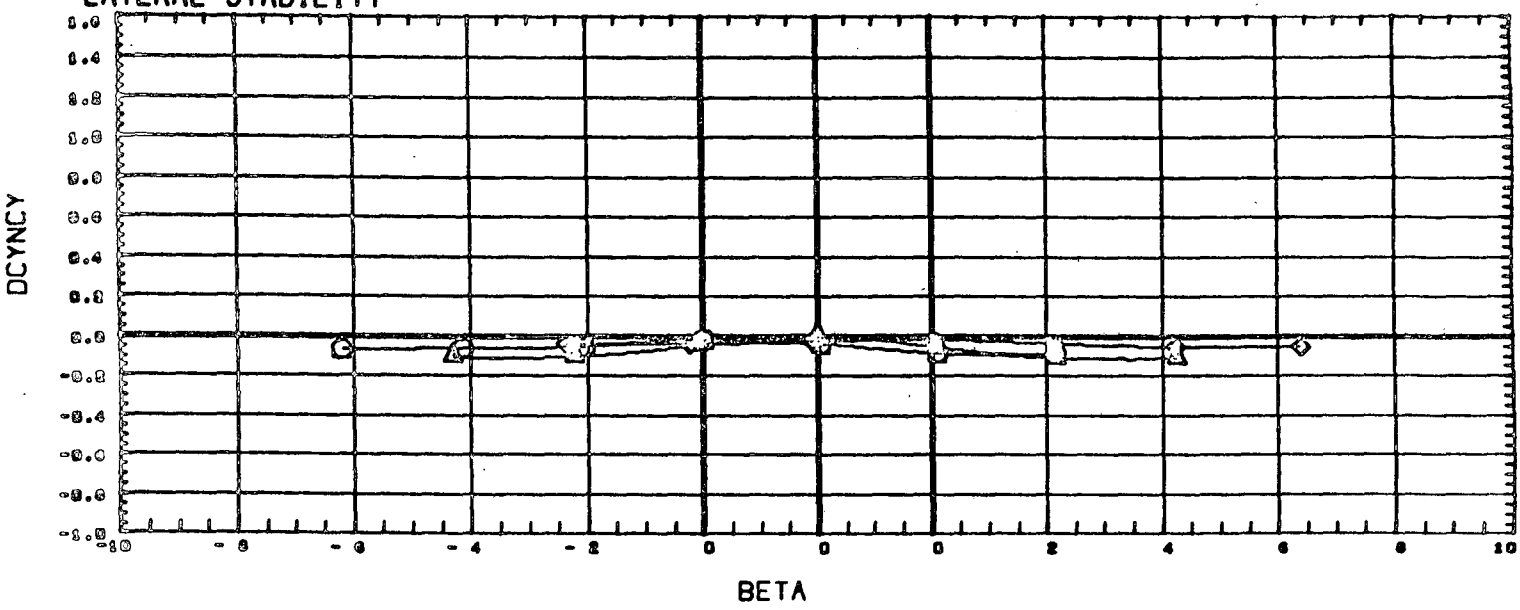
SYMBOL	MACH		PARAMETRIC VALUES		
○	0.601	ALPHA	10.000	RUDDER	0.000
△	0.902	RUDFLR	30.000		
◇	1.198				

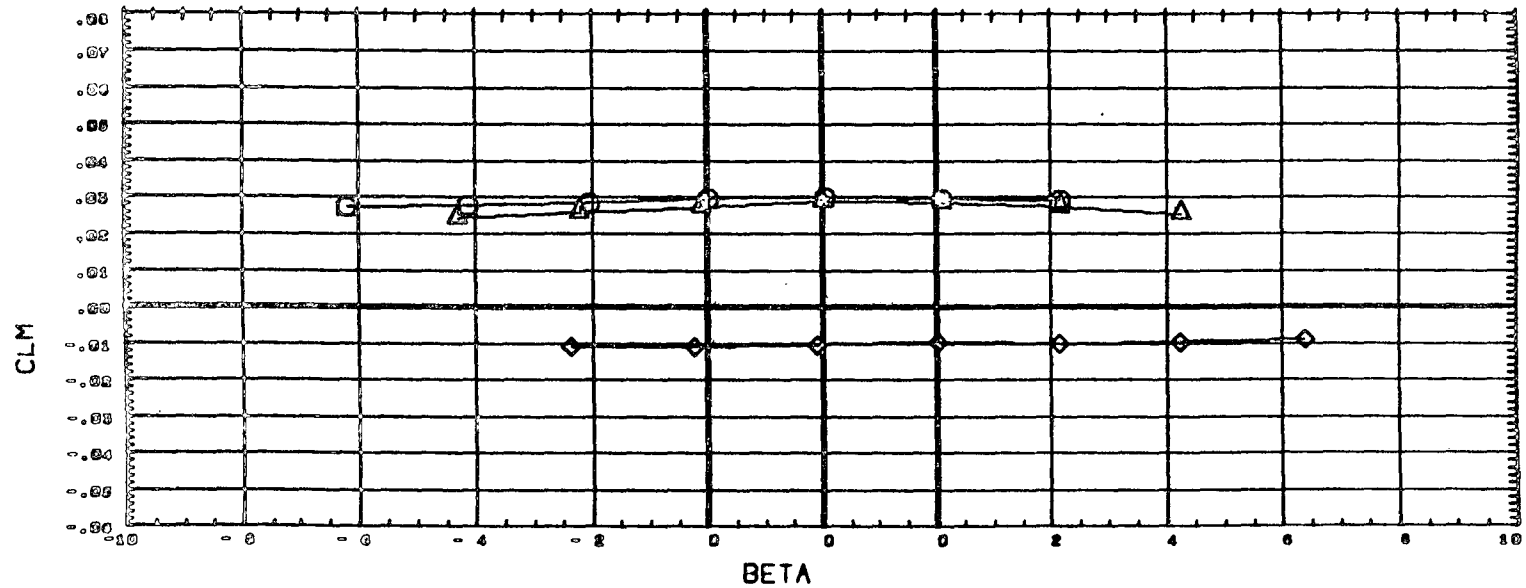
DATA HIST. CODE GC

REFERENCE INFORMATION

SREF	14.6836	SQ.IN.
LREF	4.5060	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY





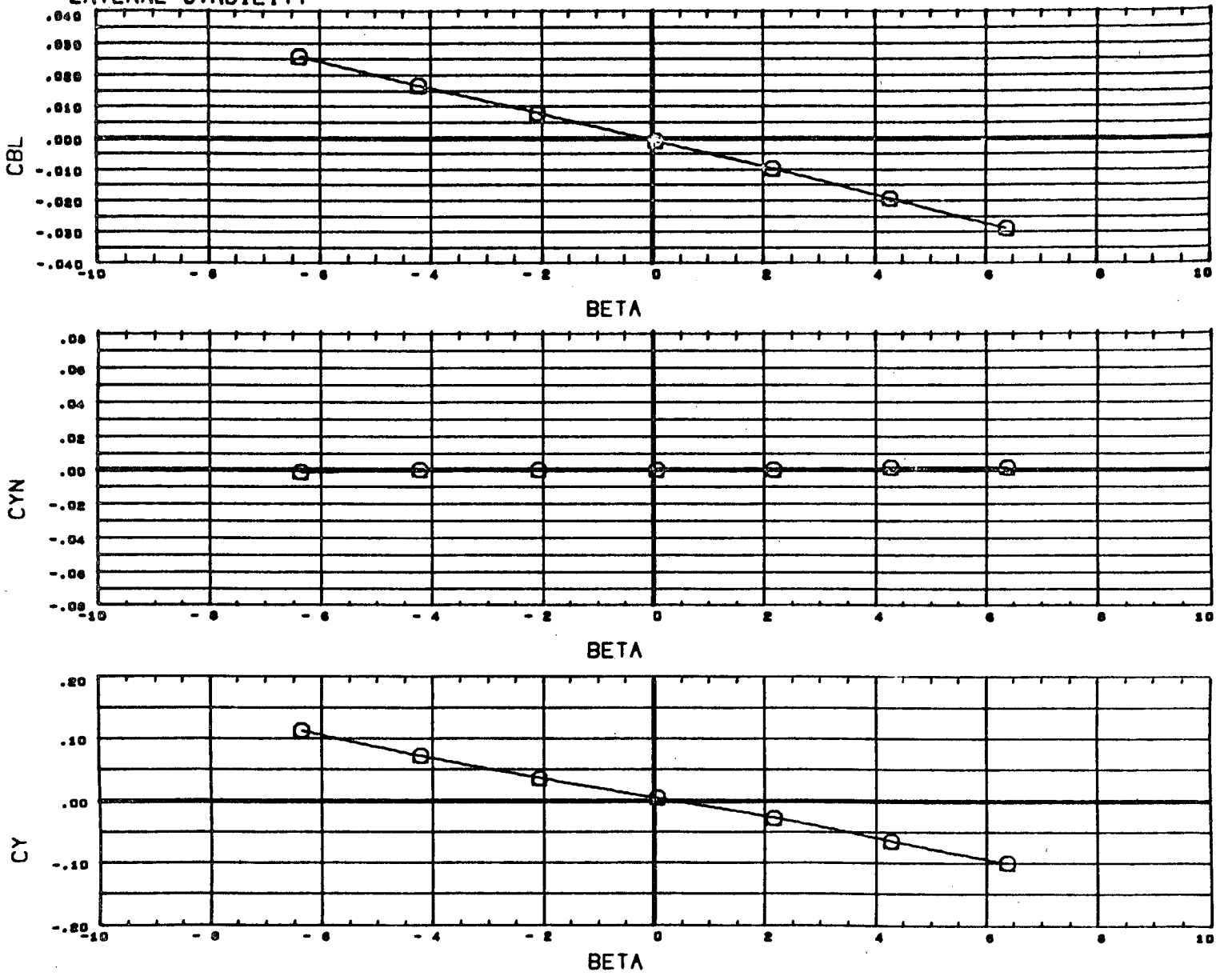
SYMBOL	MACH		PARAMETRIC VALUES		
○	0.601	ALPHA	10.000	RUDDER	0.000
△	0.902	RUDFLR	30.000		
◇	1.100				

DATA HIST. CODE GC

REFERENCE INFORMATION

SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4021	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



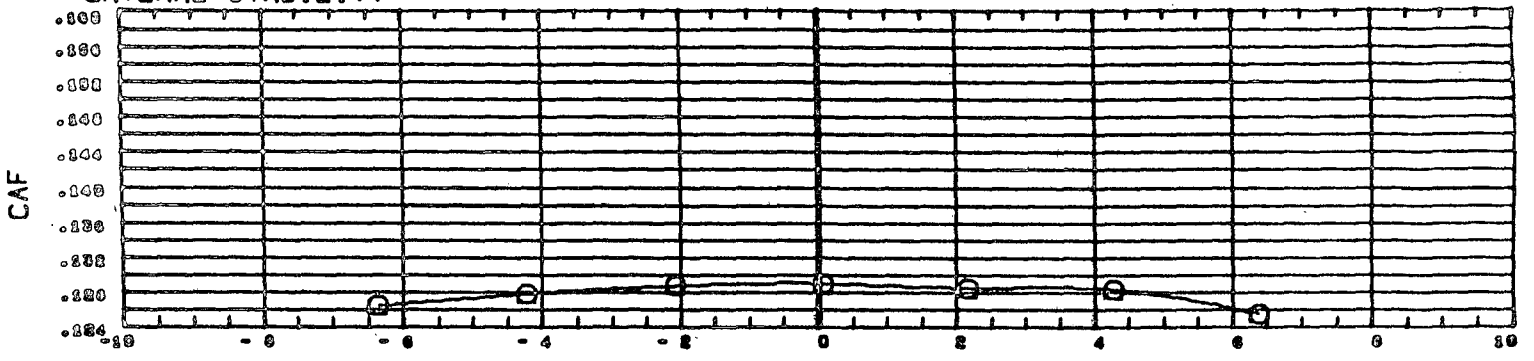
SYMBOL	MACH		PARAMETRIC VALUES		
O	1.200	ALPHA	15.000	RUDDER	0.000
		RUDFLR	30.000		

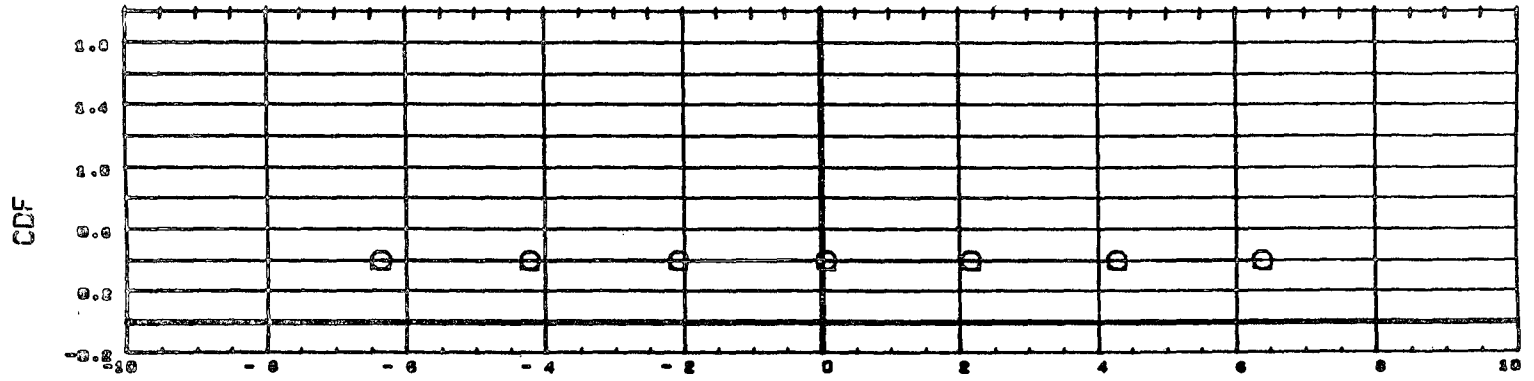
DATA MIST. CODE GC

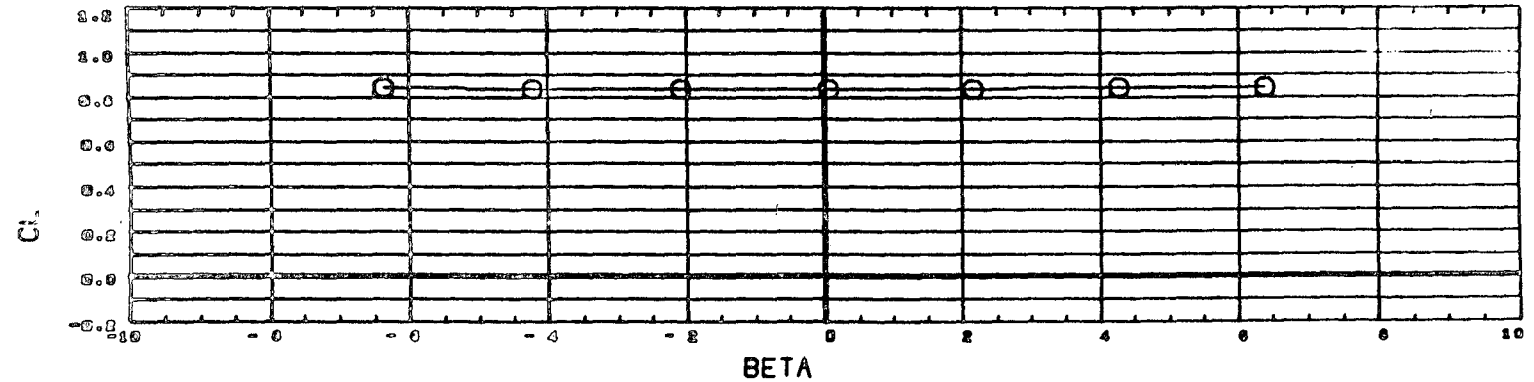
REFERENCE INFORMATION

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LREF	4.5060	IN.
BREF	5.6550	IN.
XMRP	1.4621	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY







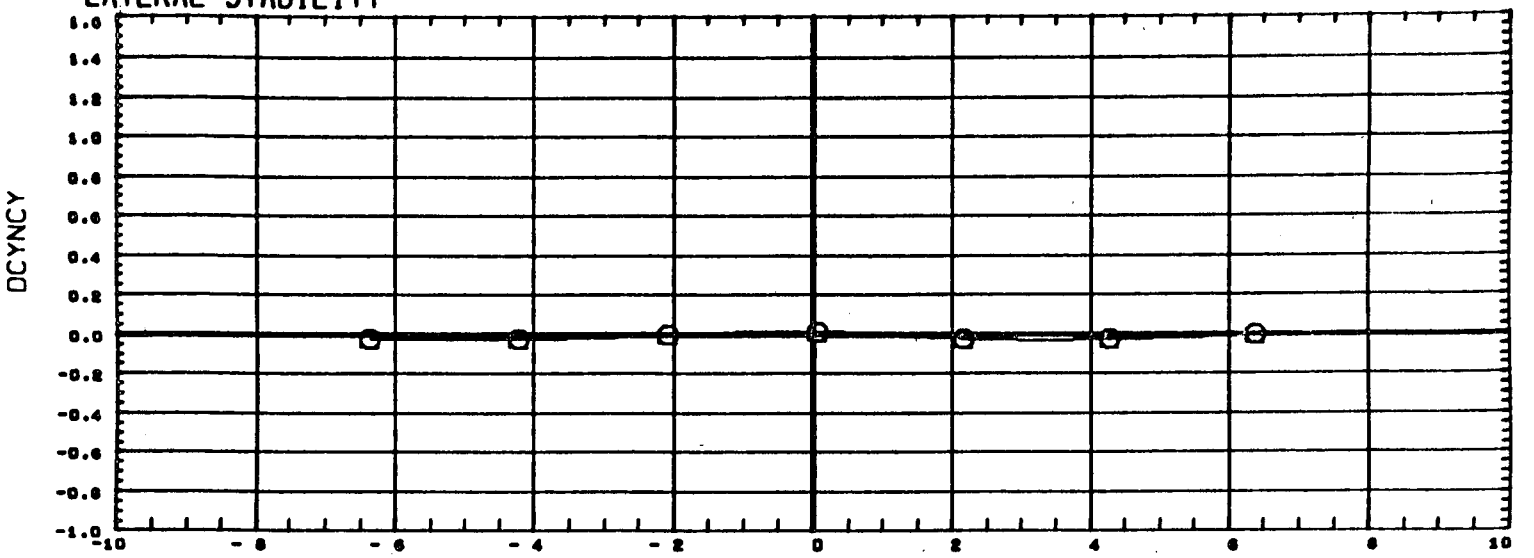
SYMBOL	MACH		PARAMETRIC VALUES		
O	1.800	ALPHA	15.000	RUDDER	0.000
		RUDFLR	30.000		

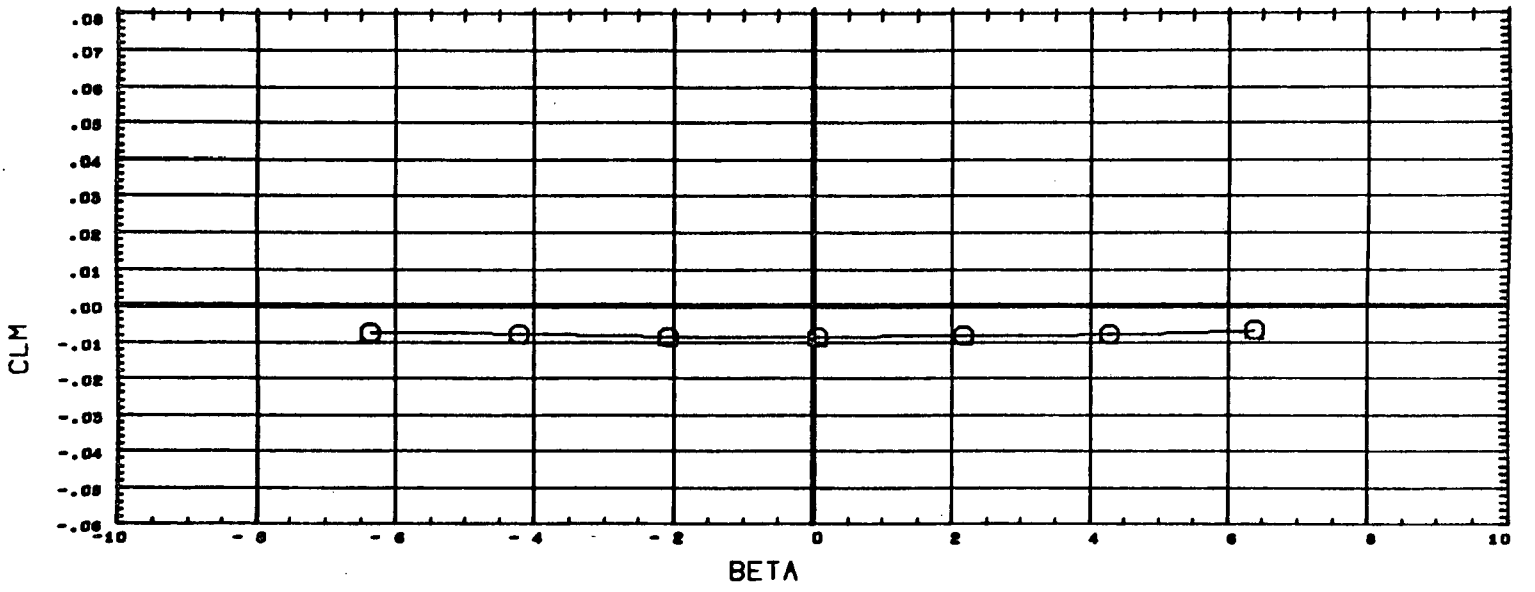
DATA HIST. CODE GC

REFERENCE INFORMATION

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LREF	4.5060	IN.
BREF	5.6550	IN.
XMRP	1.4621	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



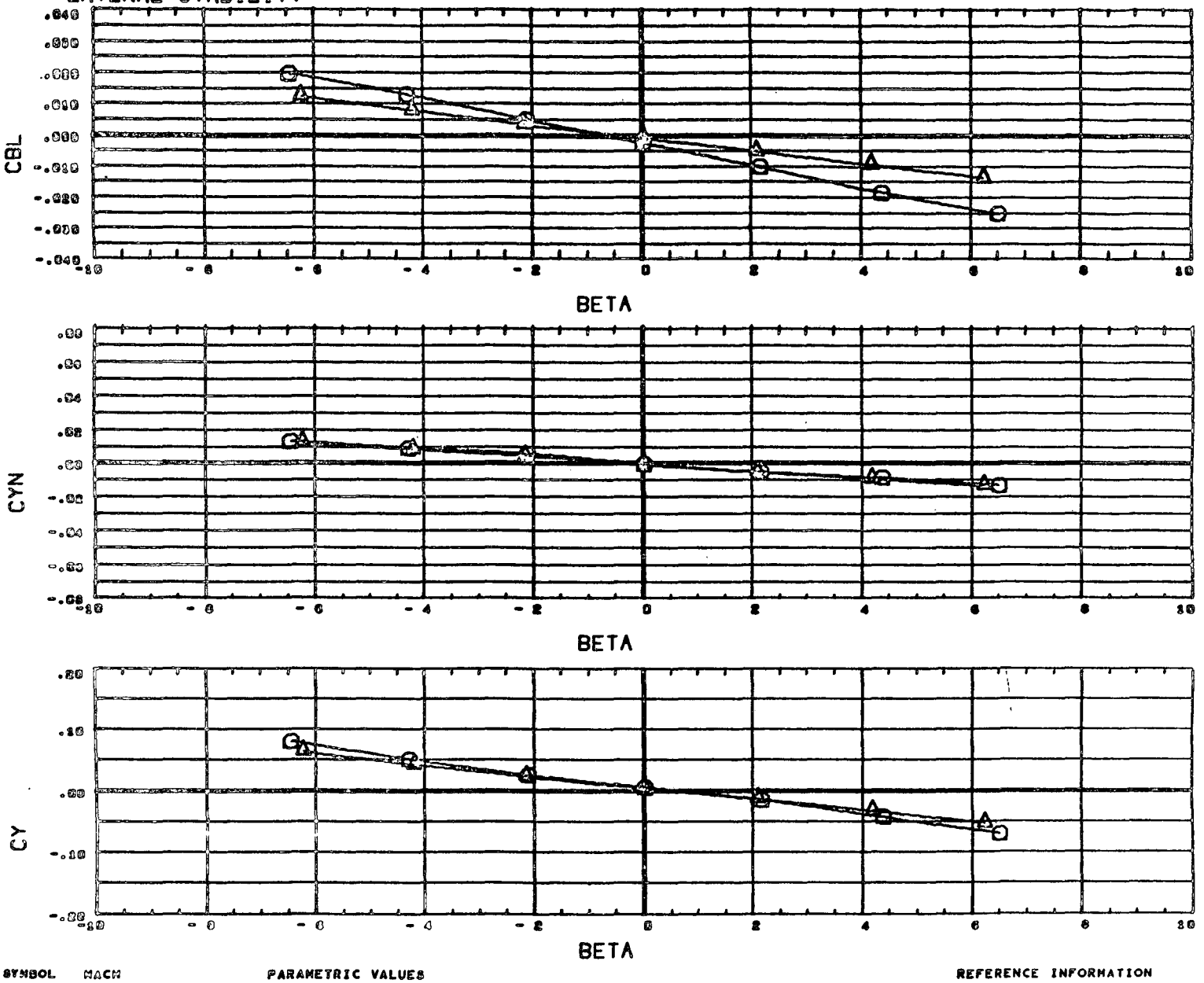


SYMBOL	MACH		PARAMETRIC VALUES		
O	1.200	ALPHA	15.000	RUDDER	0.000
		RUDFLR	30.000		

DATA HIST. CODE 6C

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5060	IN.
BREF	9.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



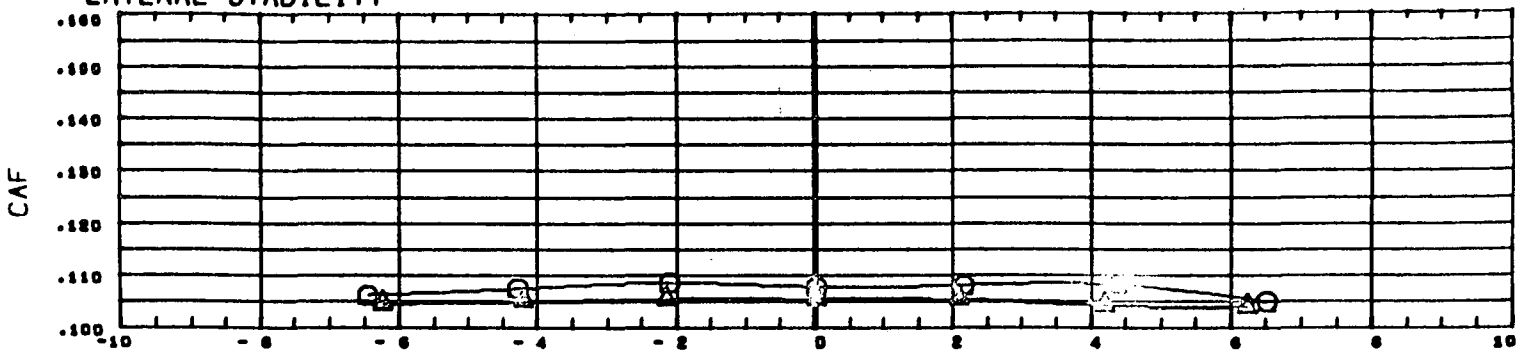
SYMBOL	MACH		PARAMETRIC VALUES		
	1.967	ALPHA	25.000	RUDDER	0.000
	0.470	RUDFLR	30.000		

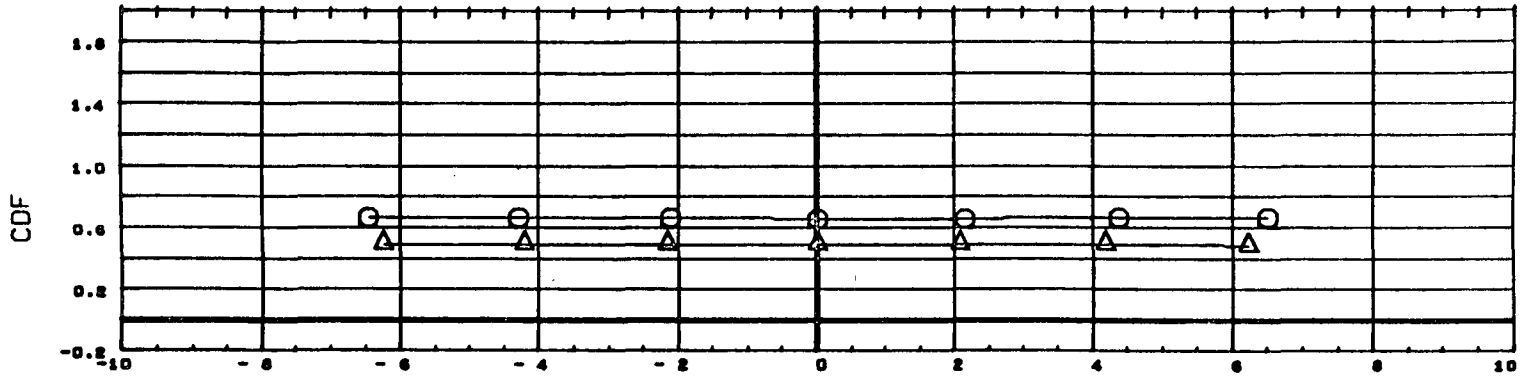
DATA HIST. CODE GC

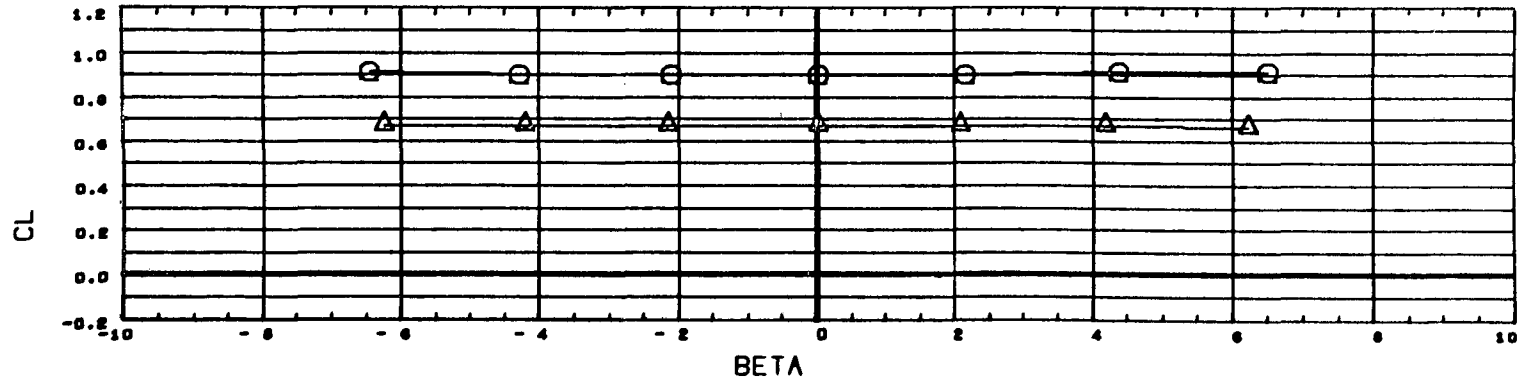
REFERENCE INFORMATION

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BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0030	

LATERAL STABILITY





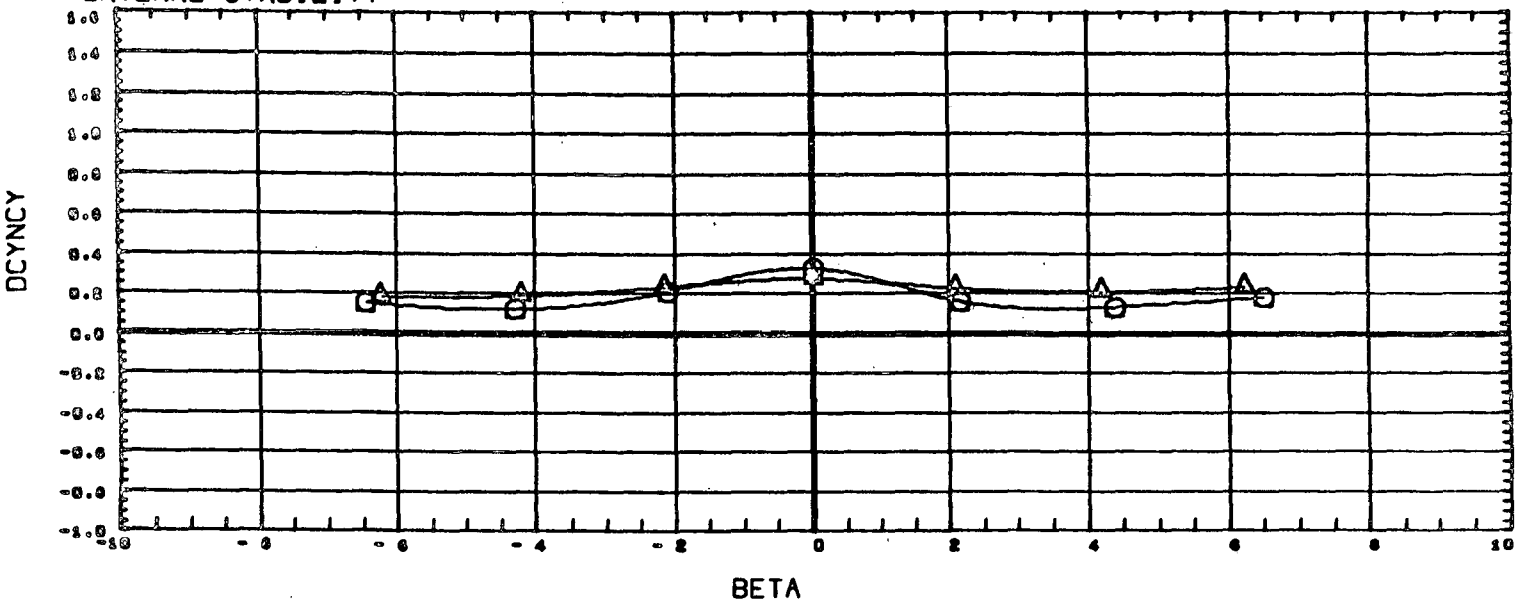


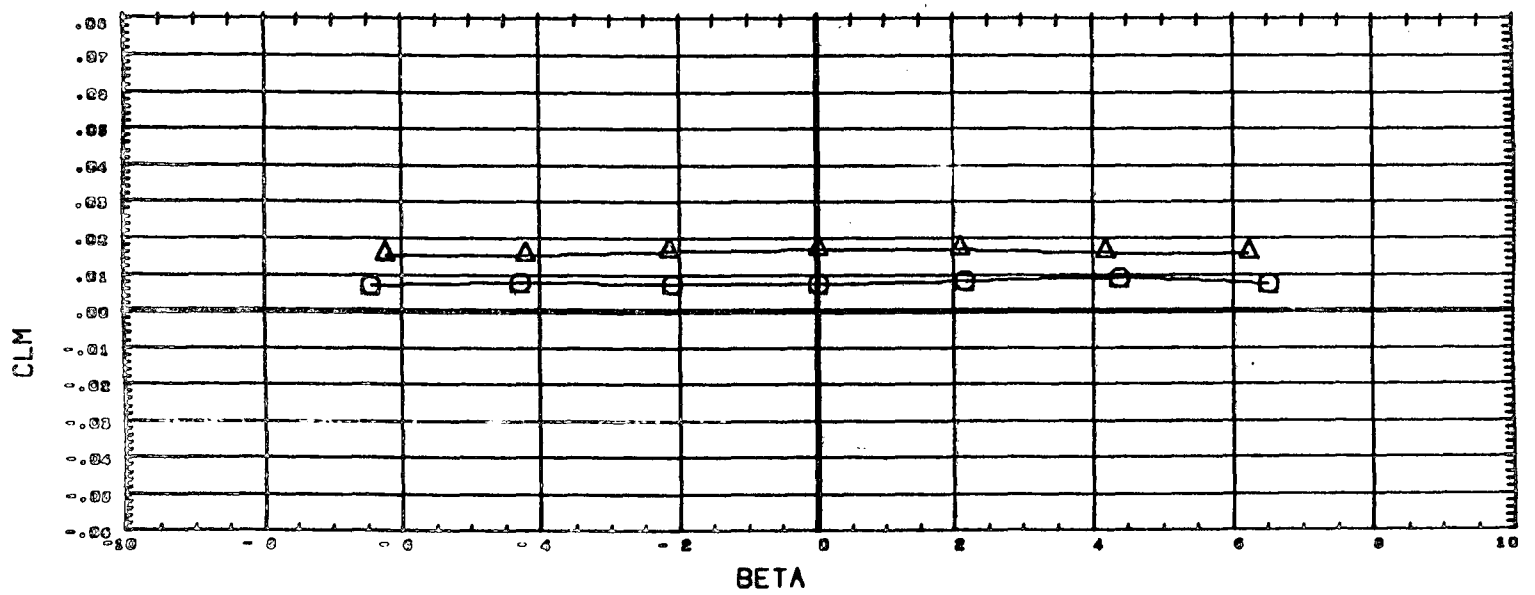
SYMBOL	MACH		PARAMETRIC VALUES		
○	1.967	ALPHA	25.000	RUDDER	0.000
△	3.479	RUDFLR	30.000		

DATA HIST. CODE GC

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4621	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY





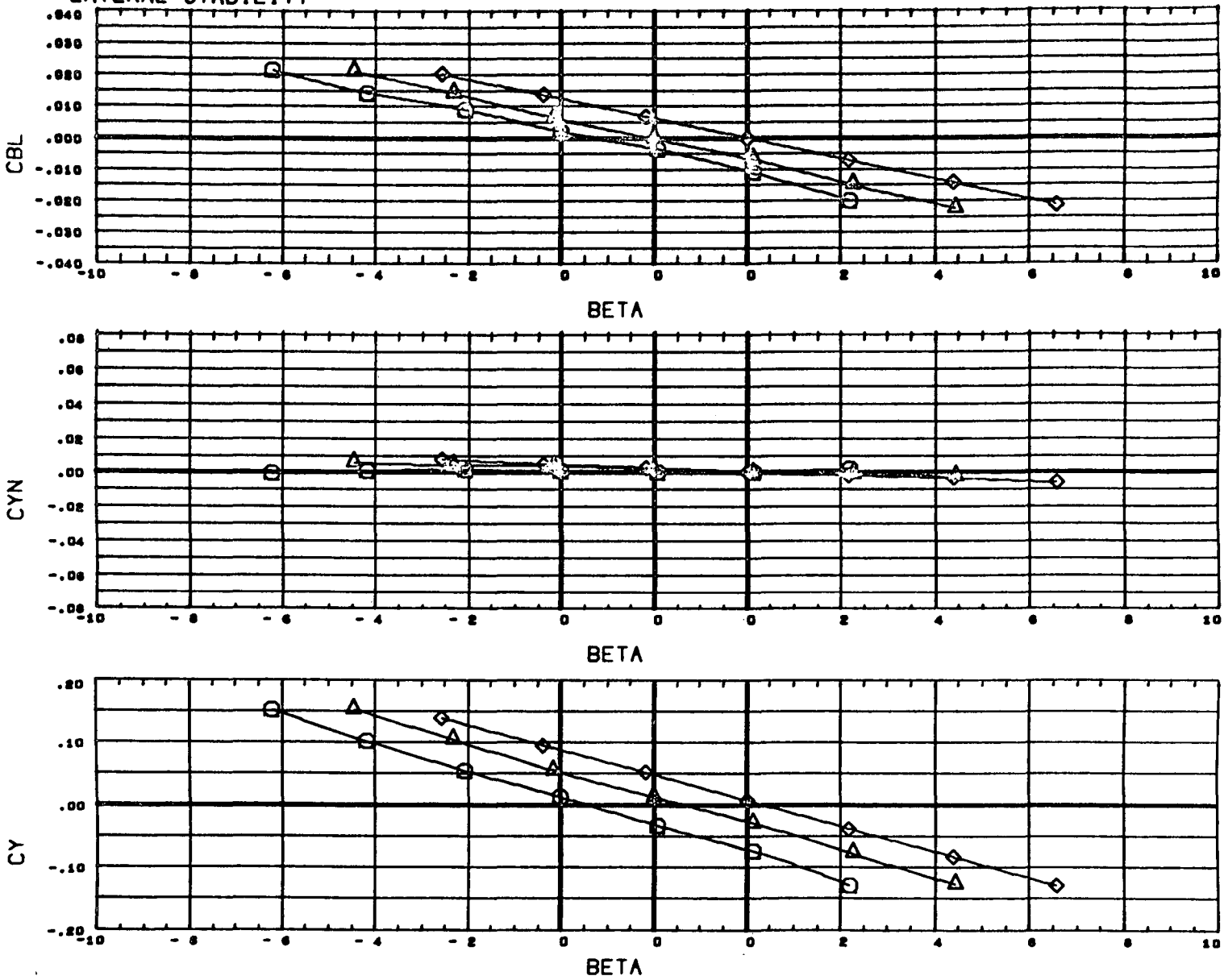
SYMBOL	MACH		PARAMETRIC VALUES		
○	1.967	ALPHA	25.000	RUDDER	0.000
△	0.470	RUDFLR	30.000		

DATA HIST. CODE 6C

REFERENCE INFORMATION

SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY

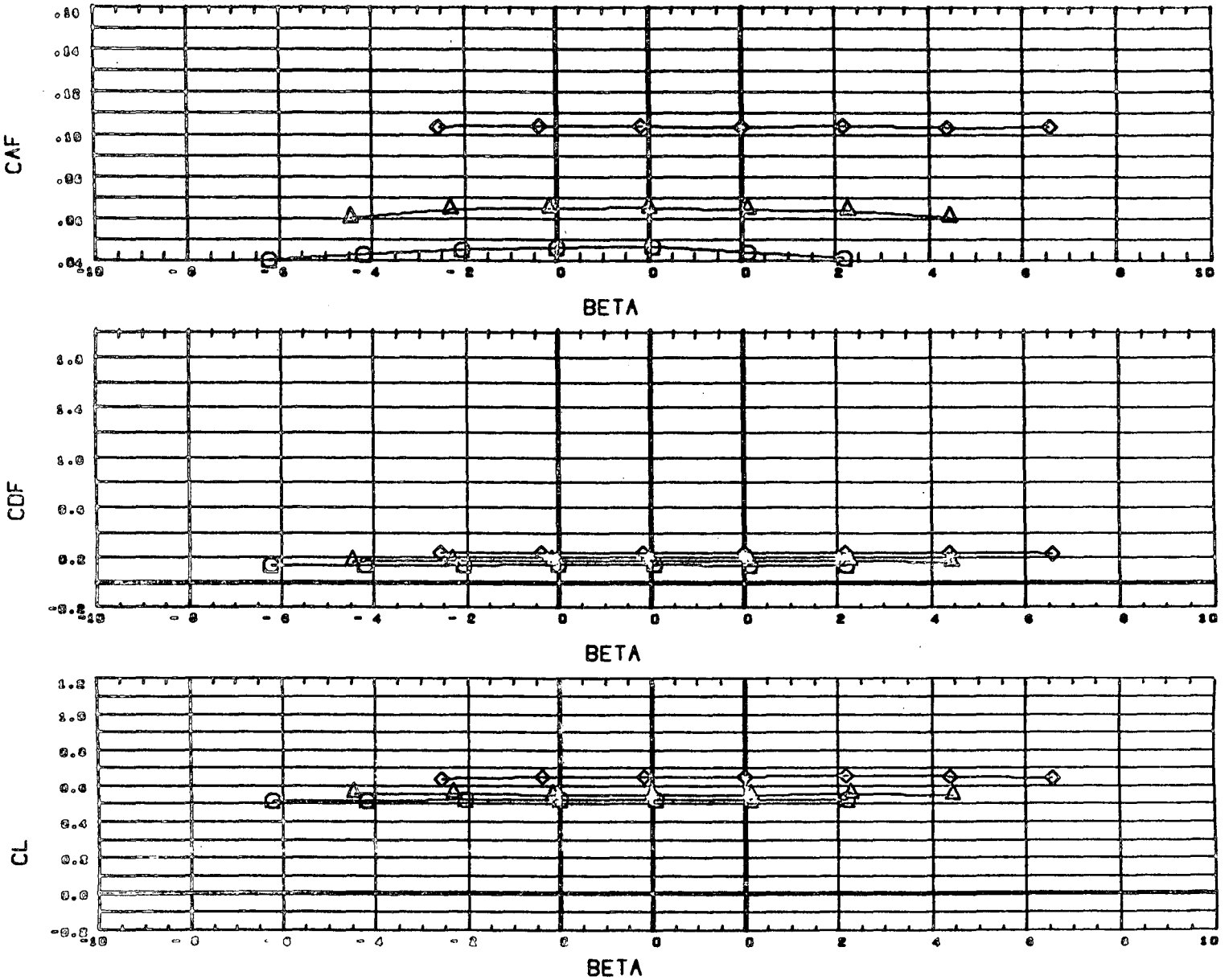


SYMBOL	MACH	PARAMETRIC VALUES			
○	0.596	ALPHA	10.000	RUDDER	0.000
△	0.905	RUDFLR	30.000		
◇	1.201				

DATA HIST. CODE GC

REFERENCE INFORMATION		
SREF	14.6636	SQ.IN.
LREF	4.5060	IN.
BREF	5.6550	IN.
XMRP	1.4621	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY

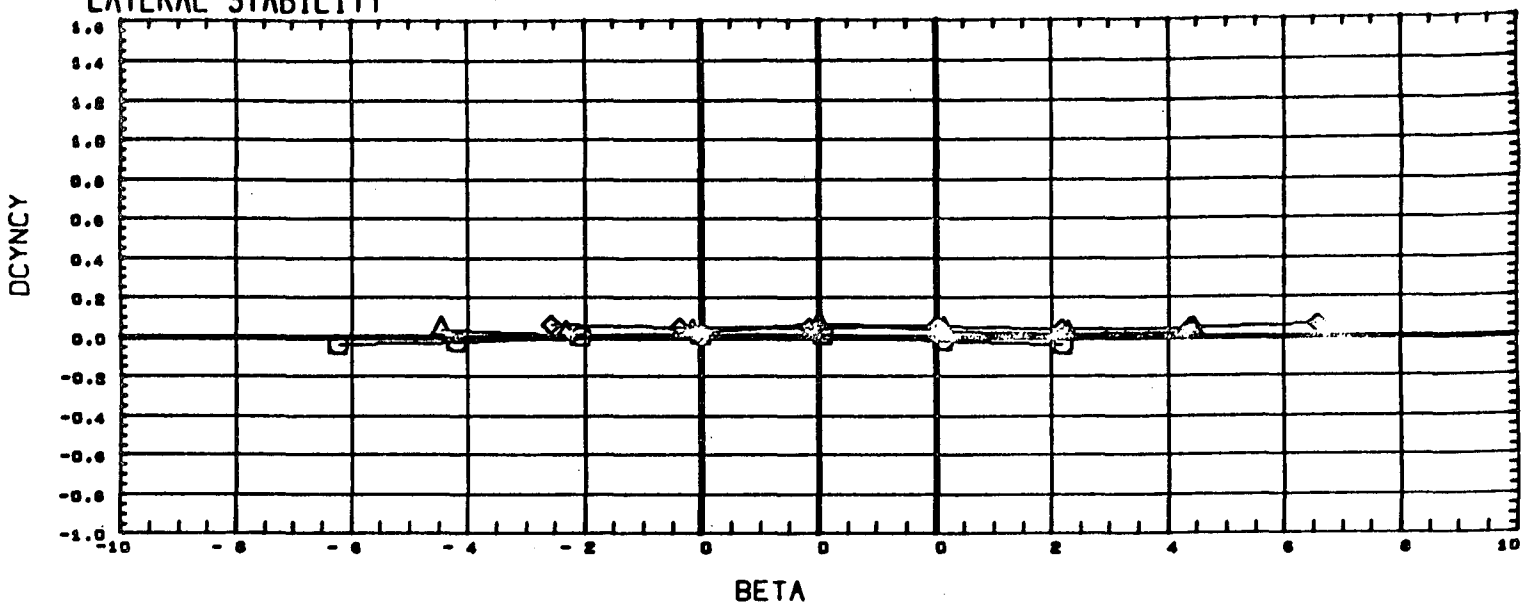


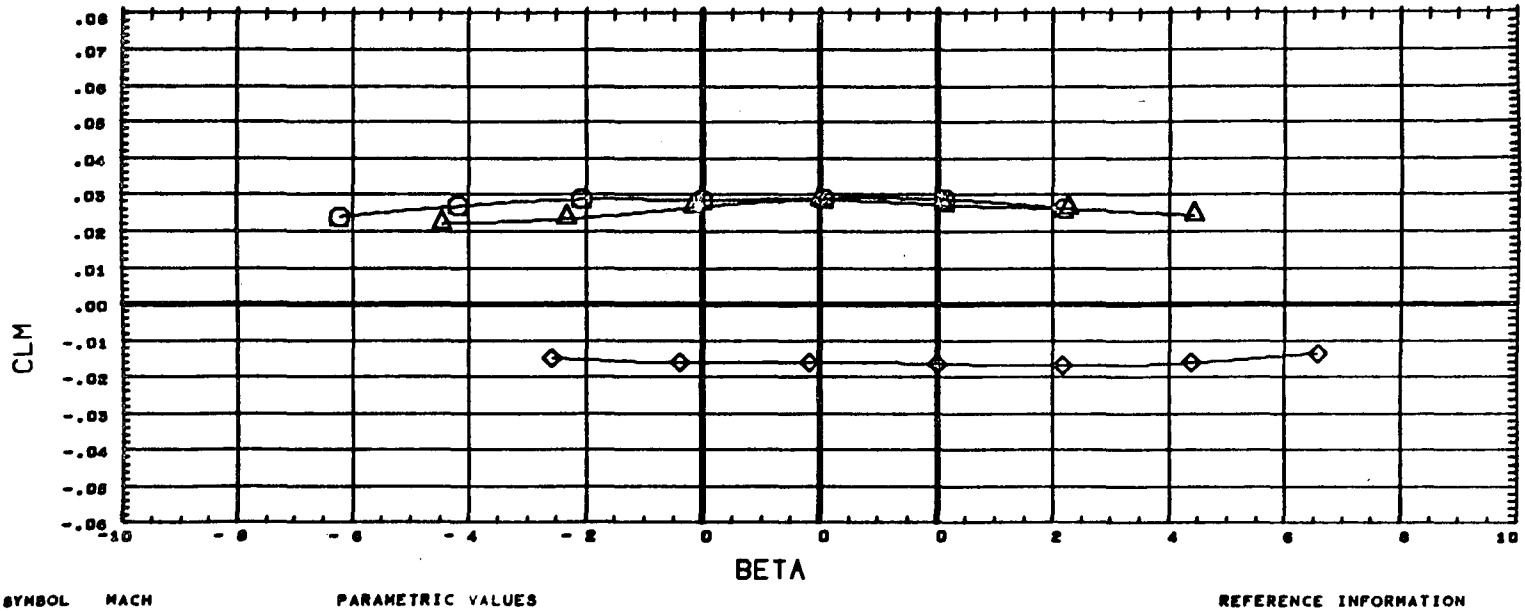
SYMBOL	MACH		PARAMETRIC VALUES		
◇	0.590	ALPHA	10.000	RUDDER	0.000
△	0.900	RUDFLR	30.000		
◇	1.201				

DATA HIST. CODE GC

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5060	IN.
BREF	5.6550	IN.
XMRP	1.4621	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



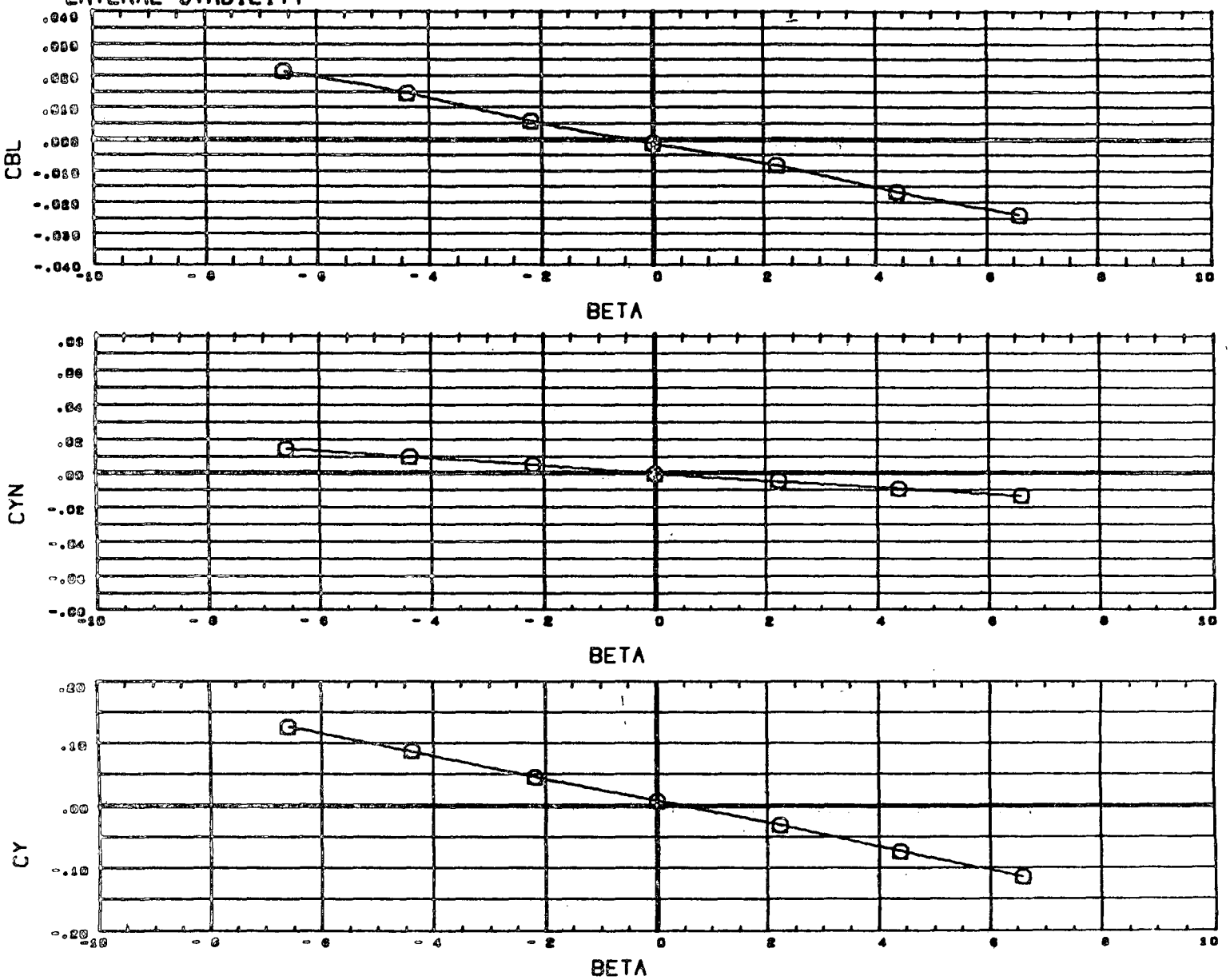


SYMBOL	MACH		PARAMETRIC VALUES		
○	0.598	ALPHA	10.000	RUDDER	0.000
△	0.905	RUDFLR	30.000		
◇	1.201				

DATA HIST. CODE GC

REFERENCE INFORMATION		
SREF	14.6636	SQ.IN.
LREF	4.5060	IN.
BREF	9.6550	IN.
XMRP	1.4621	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



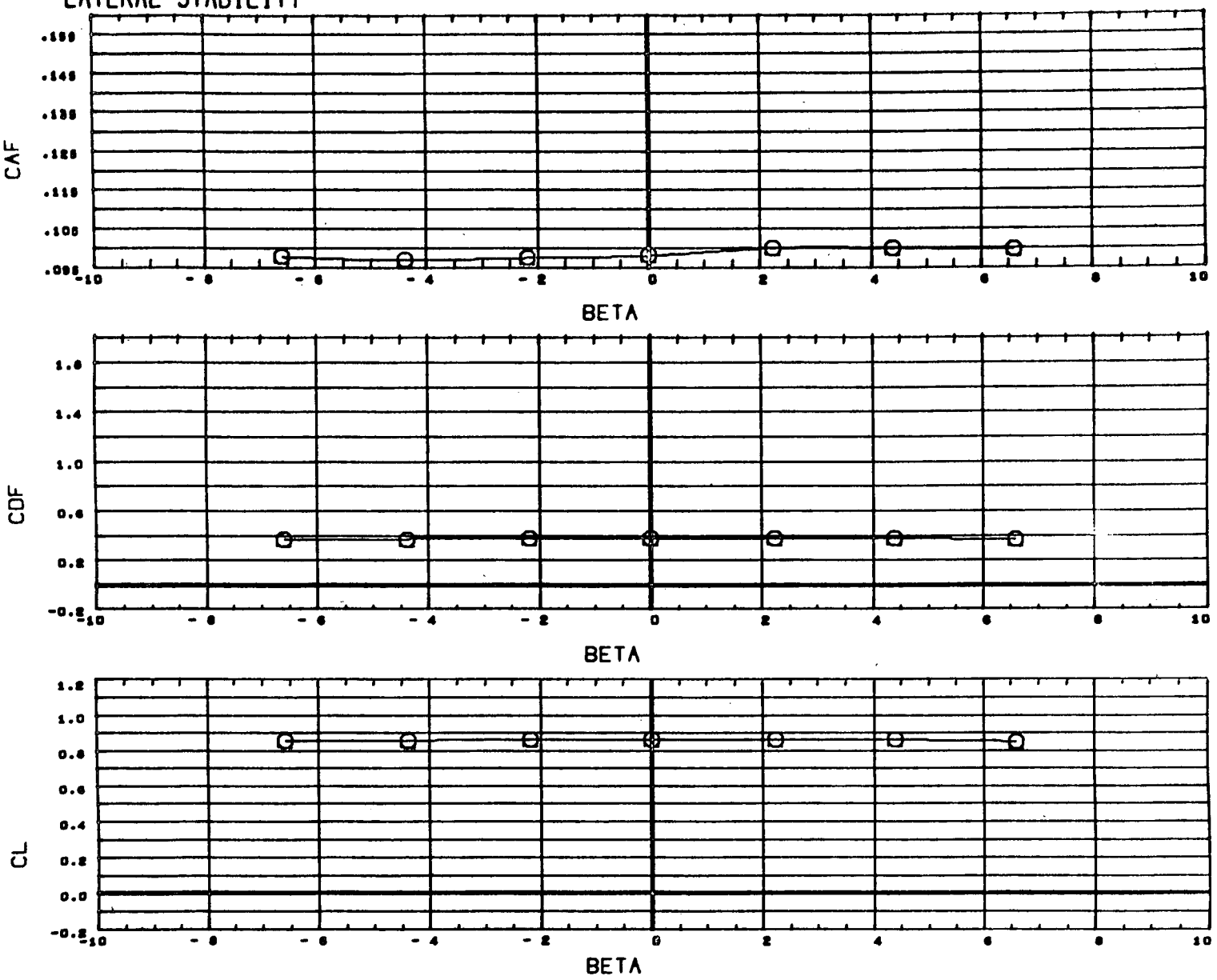
SYMBOL	MACH	PARAMETRIC VALUES			
○	1.199	ALPHA	15.000	RUDDER	0.000
		RUDFLR	30.000		

DATA HIST. CODE GC

REFERENCE INFORMATION

SREF	14.6836	SQ.IN.
LREF	4.9060	IN.
BREF	5.6550	IN.
XMRP	1.4021	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



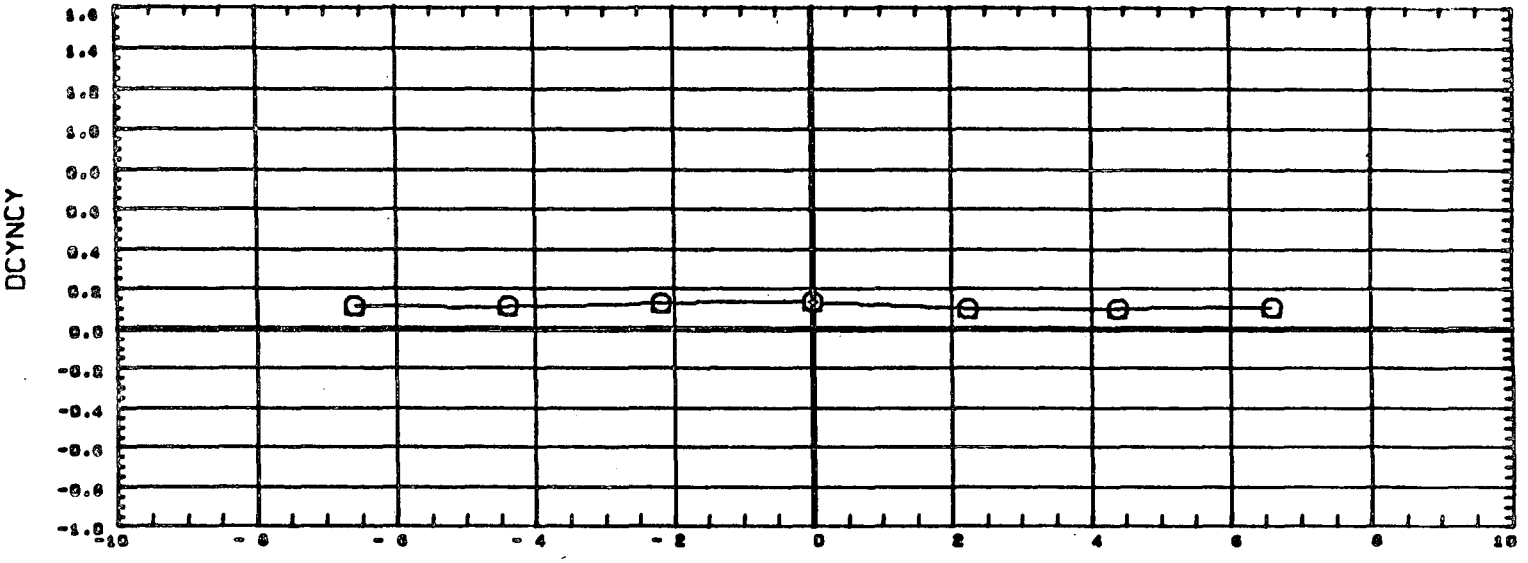
SYMBOL	MACH		PARAMETRIC VALUES		
O	1.196	ALPHA	15.000	RUDDER	0.000
		RUDFLR	30.000		

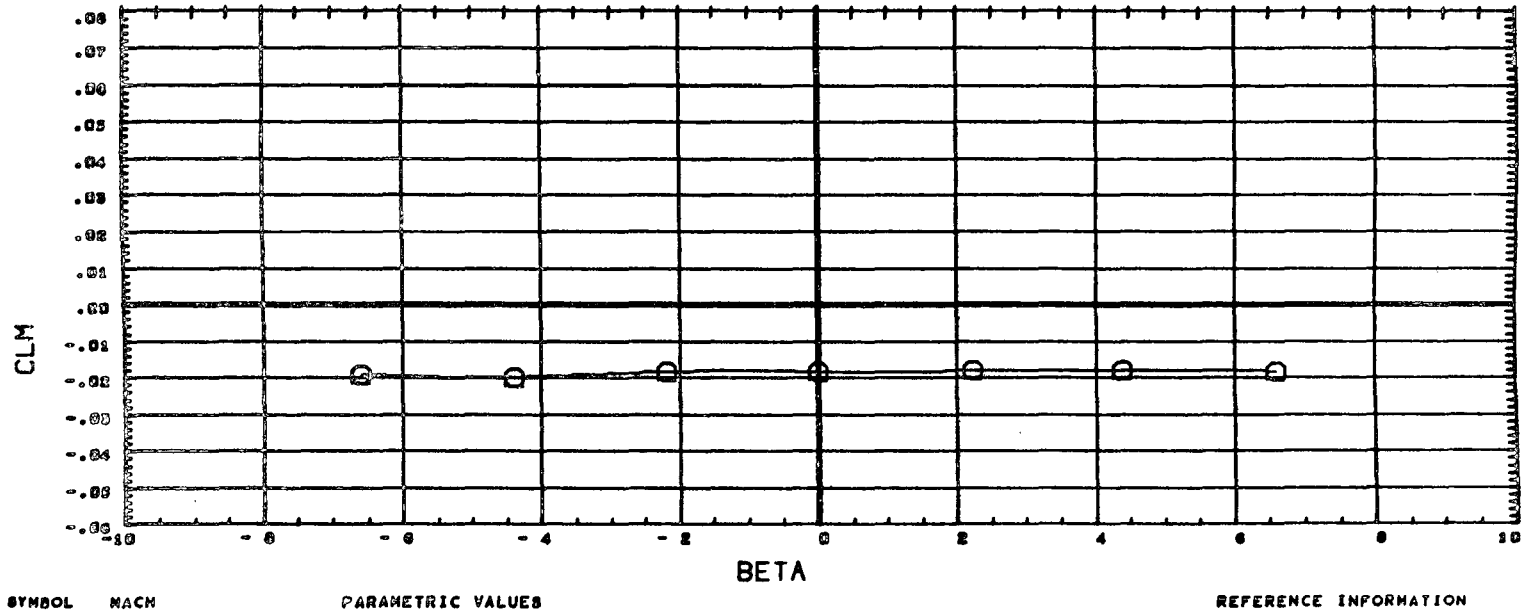
DATA HIST. CODE GC

REFERENCE INFORMATION

SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY





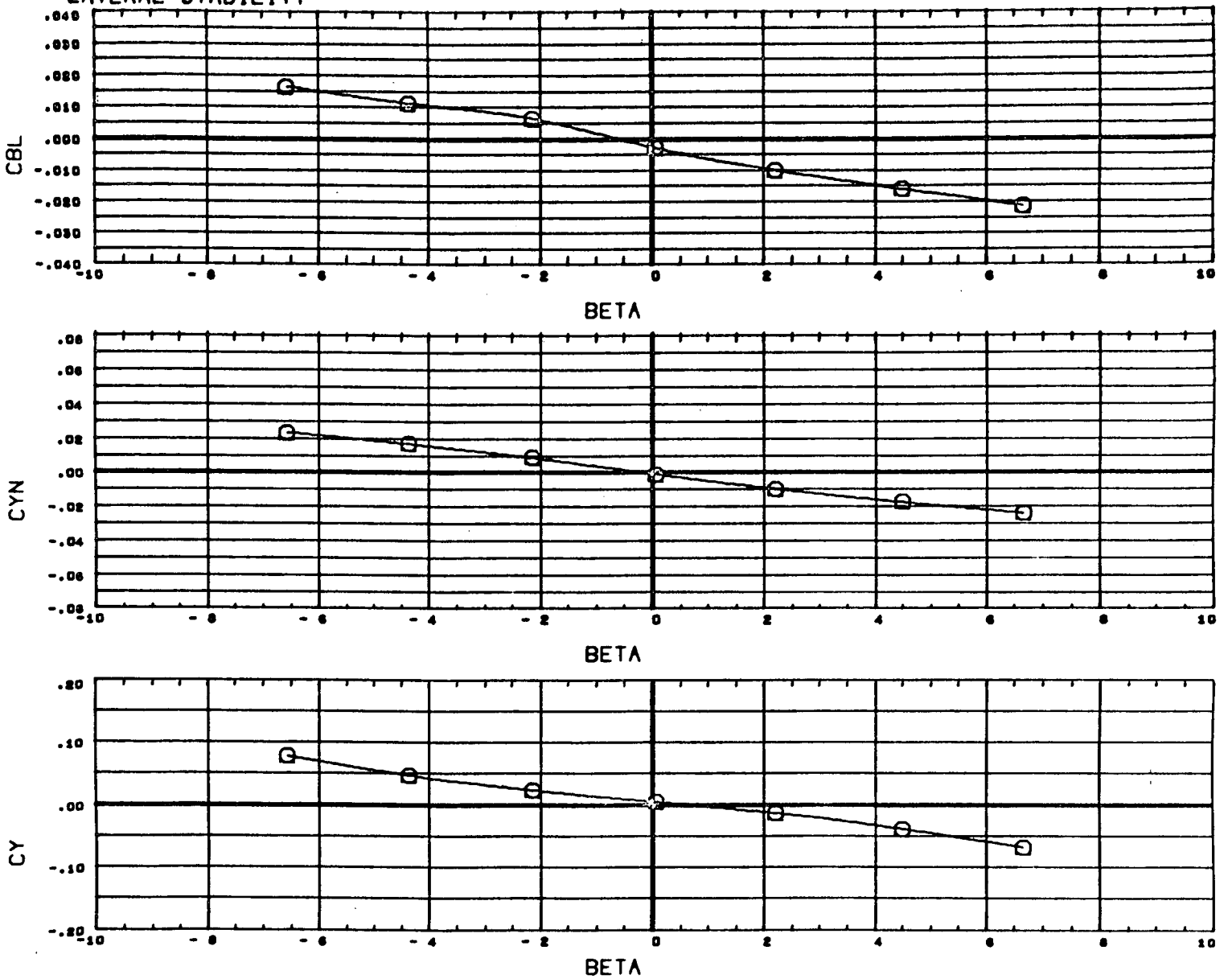
SYMBOL	MACH		PARAMETRIC VALUES			
O	1.198	ALPHA	15.000	RUDDER	0.000	
		RUDFLR	30.000			

DATA HIST. CODE GC

REFERENCE INFORMATION

SREF	14.6836	SQ.IN.
LREF	4.5060	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY

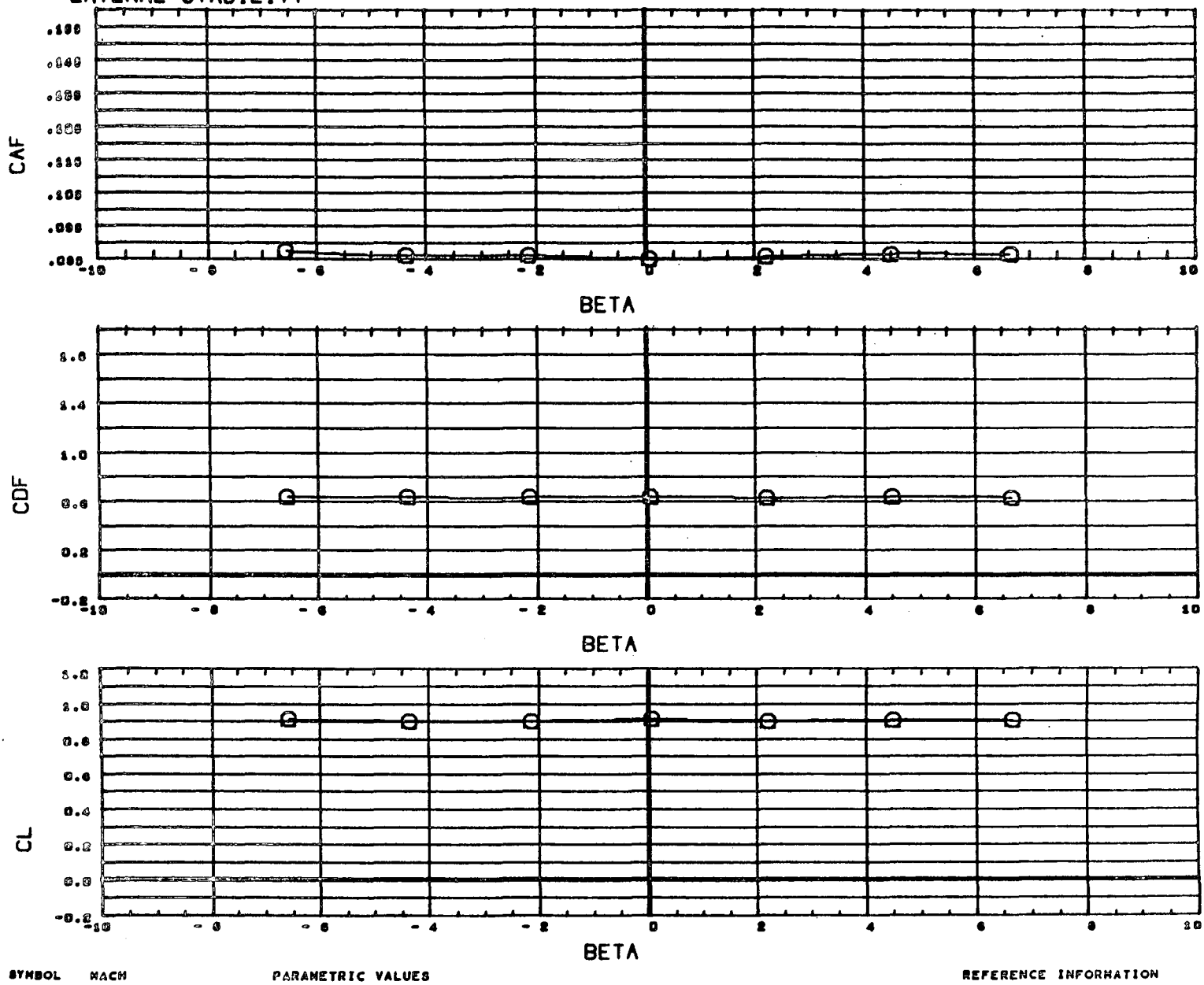


SYMBOL	MACH		PARAMETRIC VALUES		
O	1.960	ALPHA	25.000	RUDDER	0.000
		RUDFLR	30.000		

DATA HIST. CODE GC

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



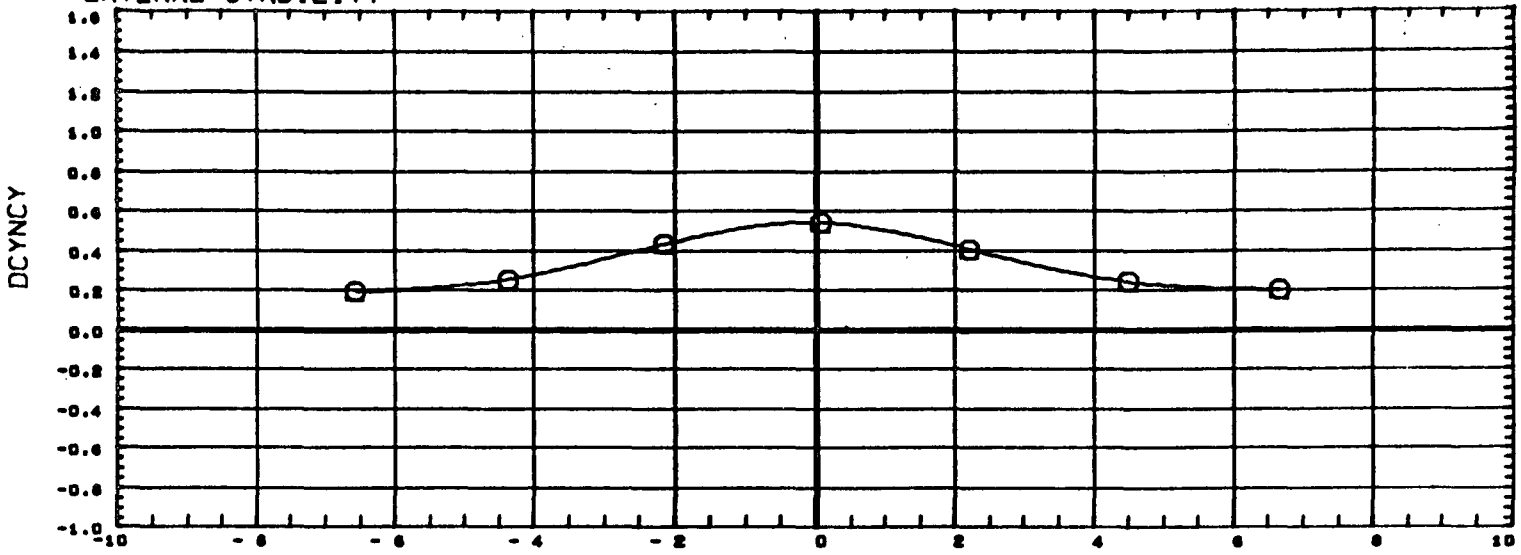
SYMBOL	MACH	PARAMETRIC VALUES			
O	1.960	ALPHA	28.000	RUDDER	0.000
		RUDFLR	30.000		

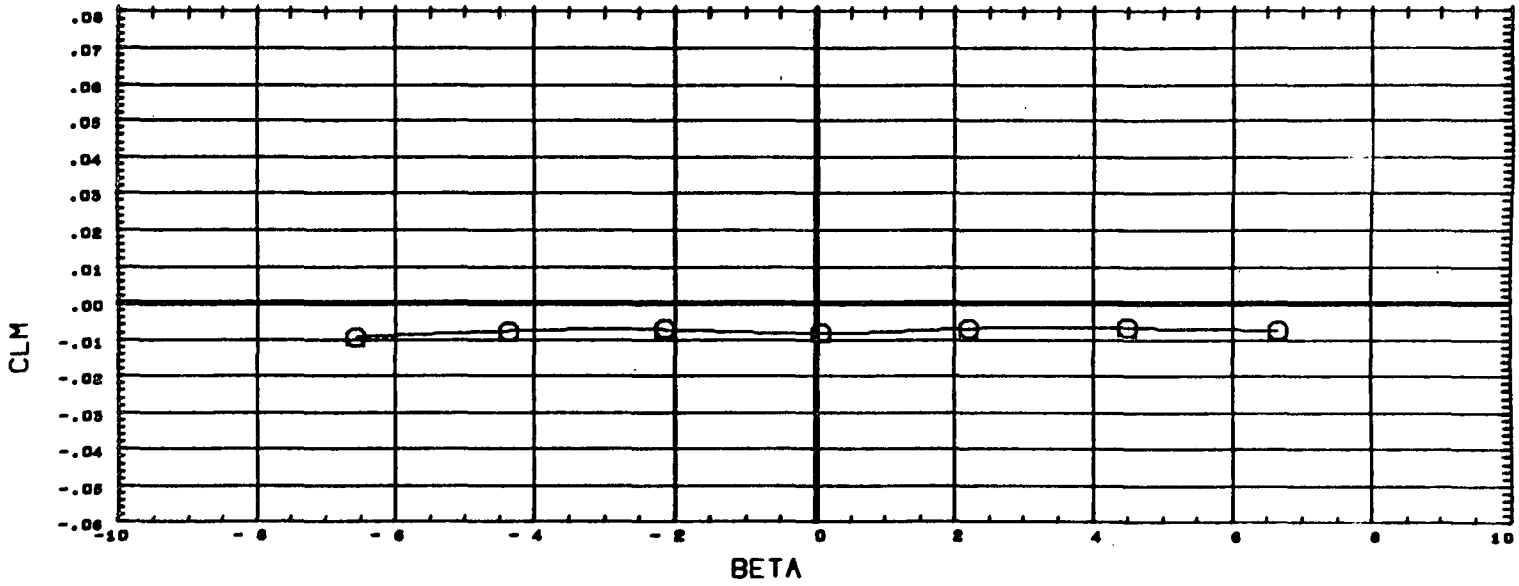
DATA HIST. CODE GC

REFERENCE INFORMATION

SREF	14.6836	SQ.IN.
LREF	4.5060	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



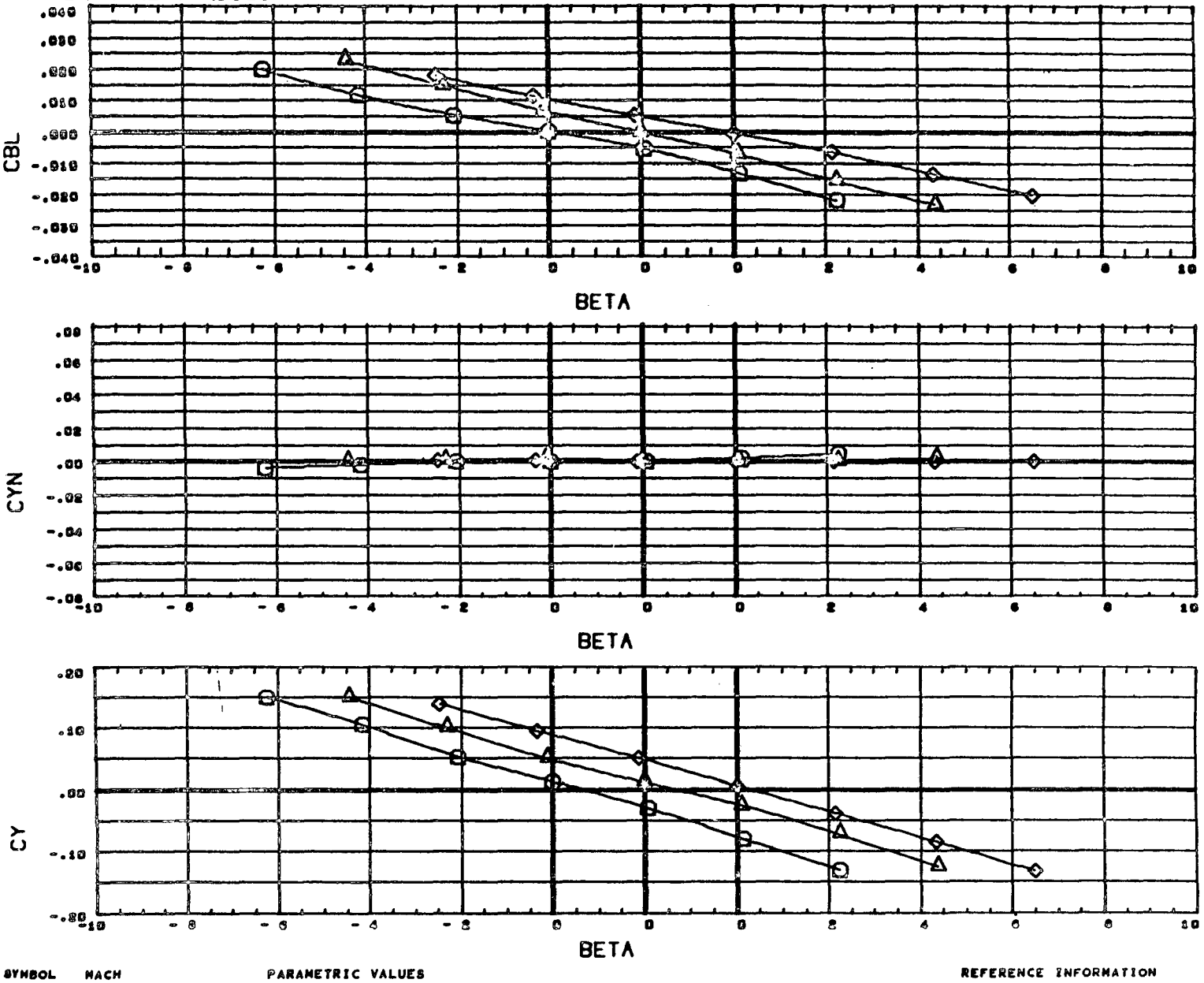


SYMBOL	MACH		PARAMETRIC VALUES		
O	1.960	ALPHA	25.000	RUDDER	0.000
		RUDFLR	30.000		

DATA HIST. CODE GC

REFERENCE INFORMATION		
SREF	14.6636	SQ.IN.
LREF	4.5060	IN.
BREF	5.6550	IN.
XMRP	1.4621	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



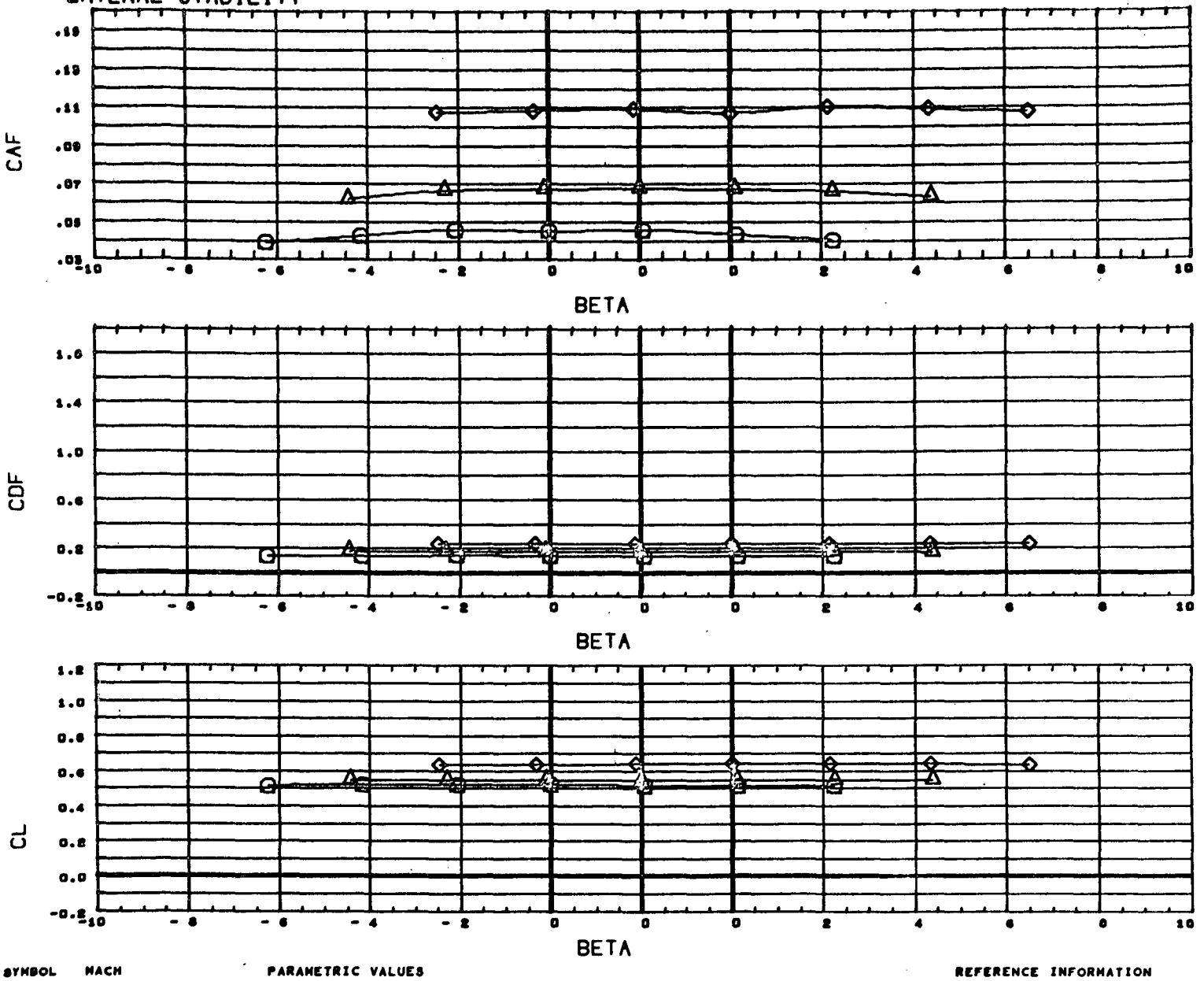
SYMBOL	MACH		PARAMETRIC VALUES		
○	0.601	ALPHA	10.000	RUDDER	0.000
△	0.906	RUDFLR	30.000		
◇	1.200				

DATA HIST. CODE GC

REFERENCE INFORMATION

SREF	14.6836	SQ.IN.
LREF	4.5060	IN.
BREF	5.6550	IN.
XMRP	1.4621	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY

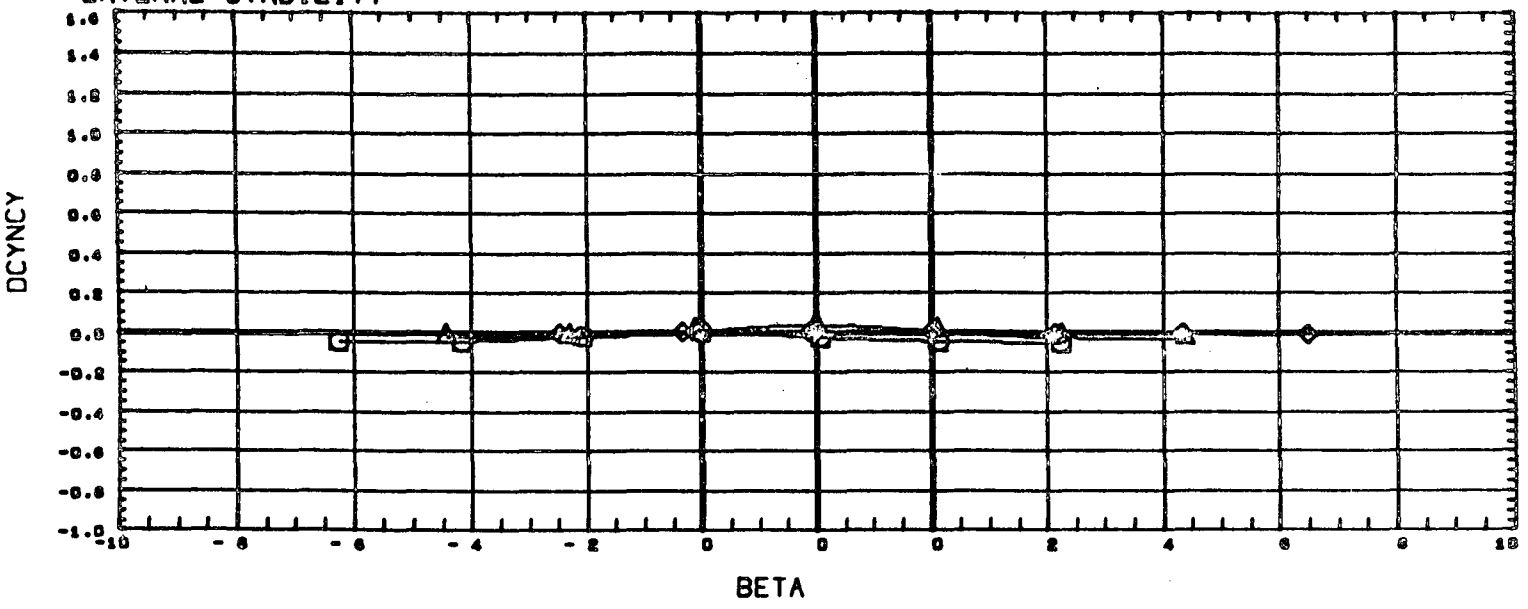


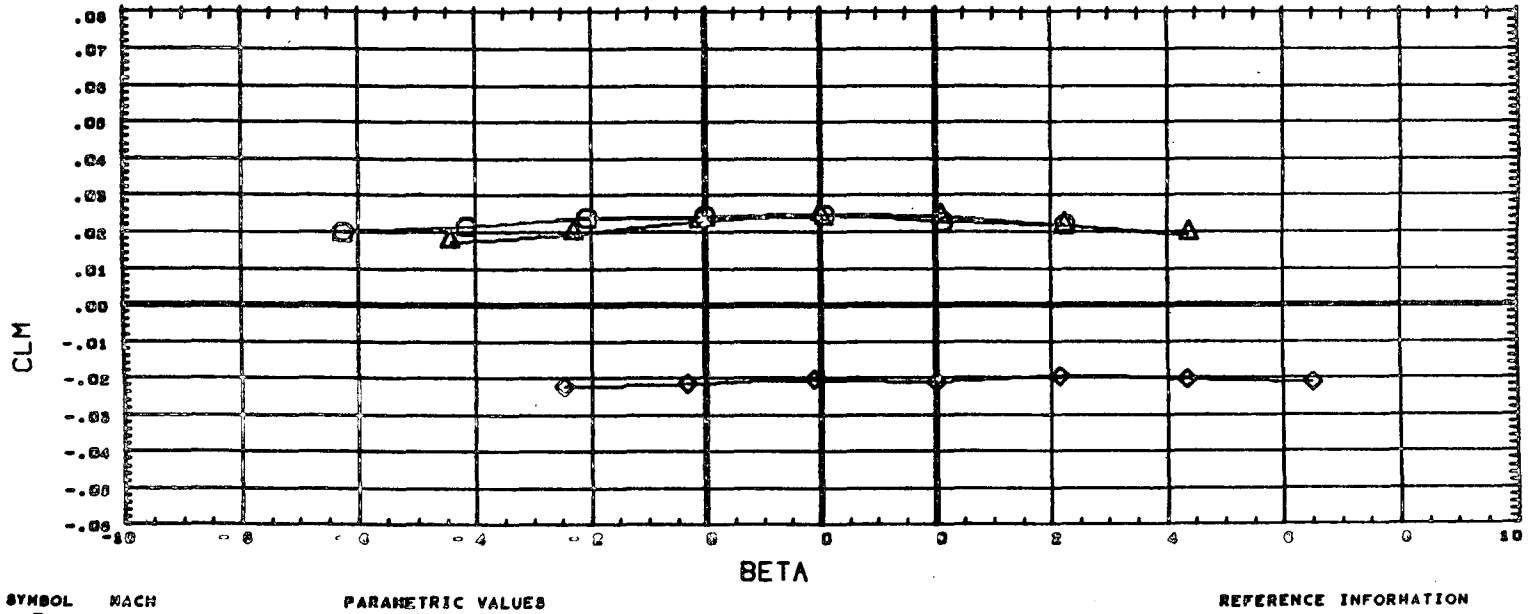
SYMBOL	MACH		PARAMETRIC VALUES		
○	0.601	ALPHA	10.000	RUDDER	0.000
△	0.906	RUDFLR	30.000		
◇	1.200				

DATA MIST. CODE GC

REFERENCE INFORMATION		
SREF	14.6636	SQ.IN.
LREF	4.8060	IN.
BREF	5.6550	IN.
XMRP	1.4621	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY





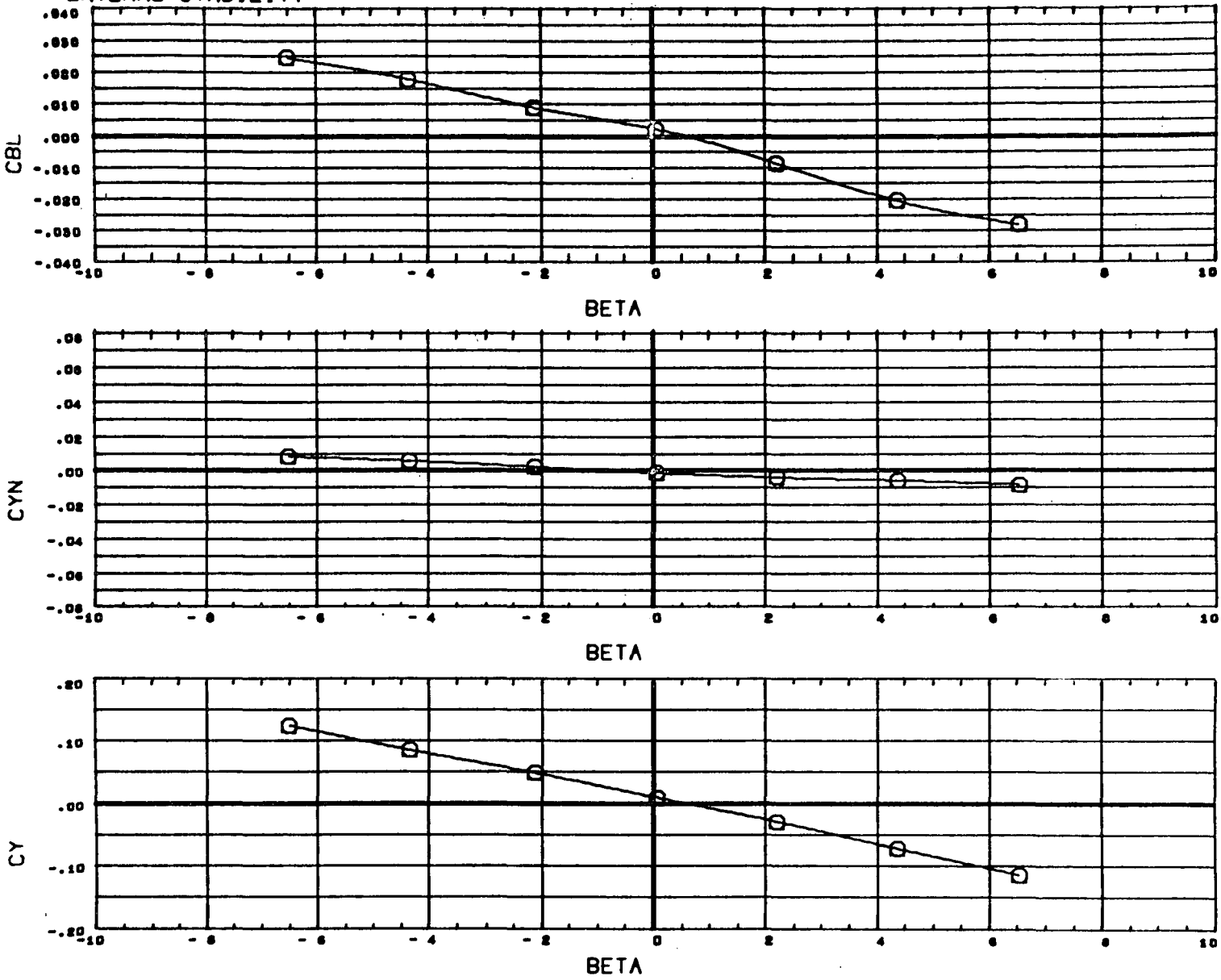
SYMBOL	MACH		PARAMETRIC VALUES		
○	0.601	ALPHA	10.000	RUDDER	0.000
△	0.806	RUDFLR	30.000		
◇	1.200				

DATA HIST. CODE 6C

REFERENCE INFORMATION

SREF	14.6636	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY

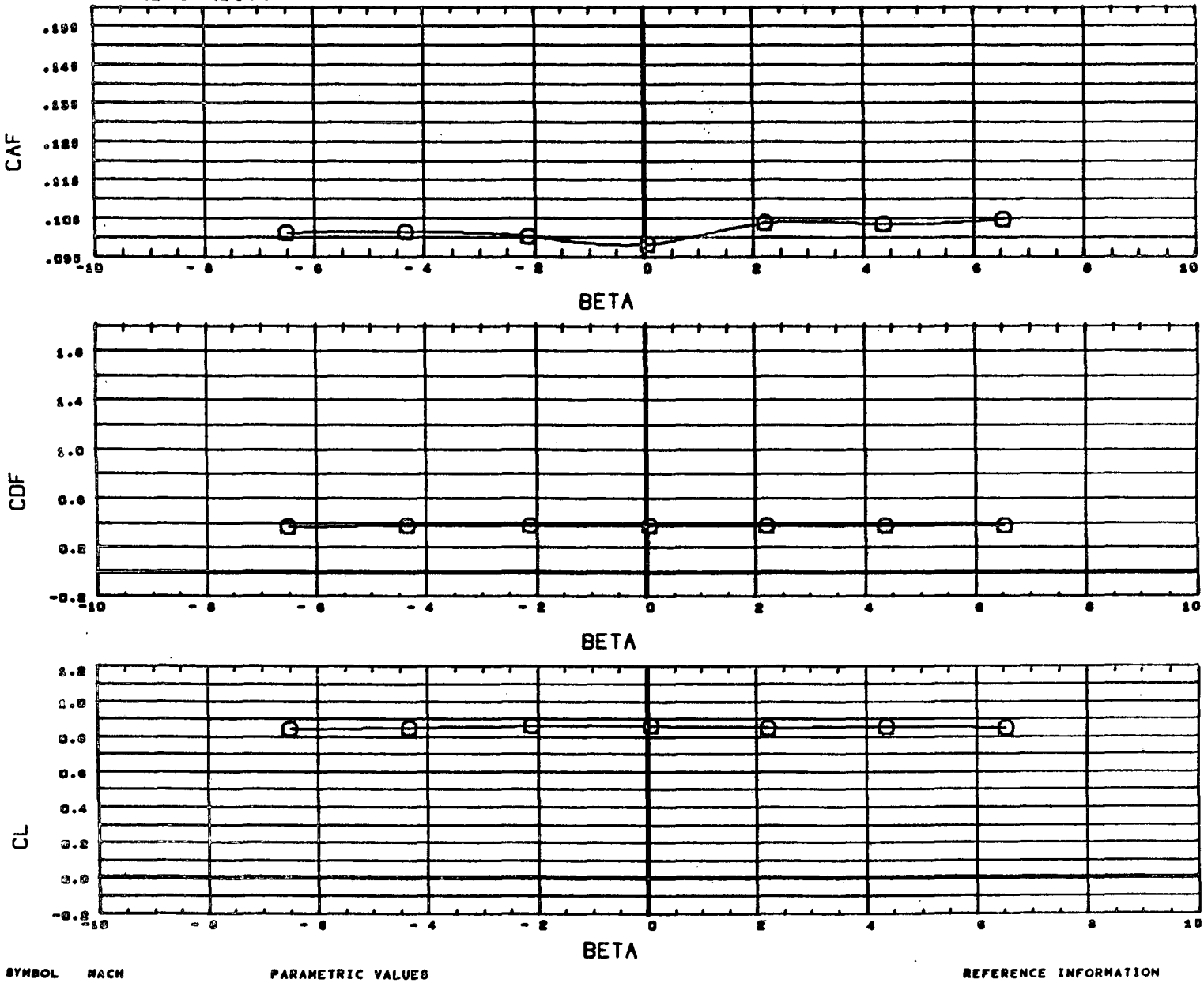


SYMBOL	MACH	PARAMETRIC VALUES			
O	1.201	ALPHA	15.000	RUDDER	0.000
		RUDFLR	30.000		

DATA HIST. CODE GC

REFERENCE INFORMATION		
SREF	14.6636	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4621	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



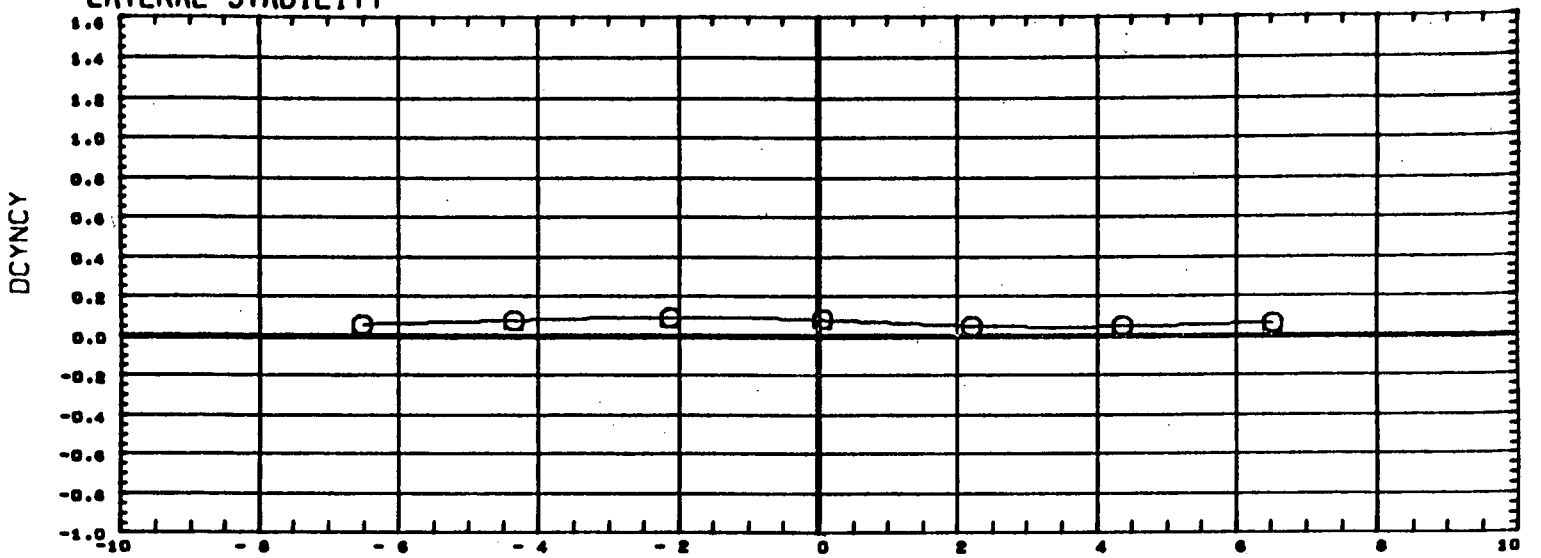
SYMBOL	MACH	PARAMETRIC VALUES			
O	0.201	ALPHA	15.000	RUDDER	0.000
		RUDFLR	30.000		

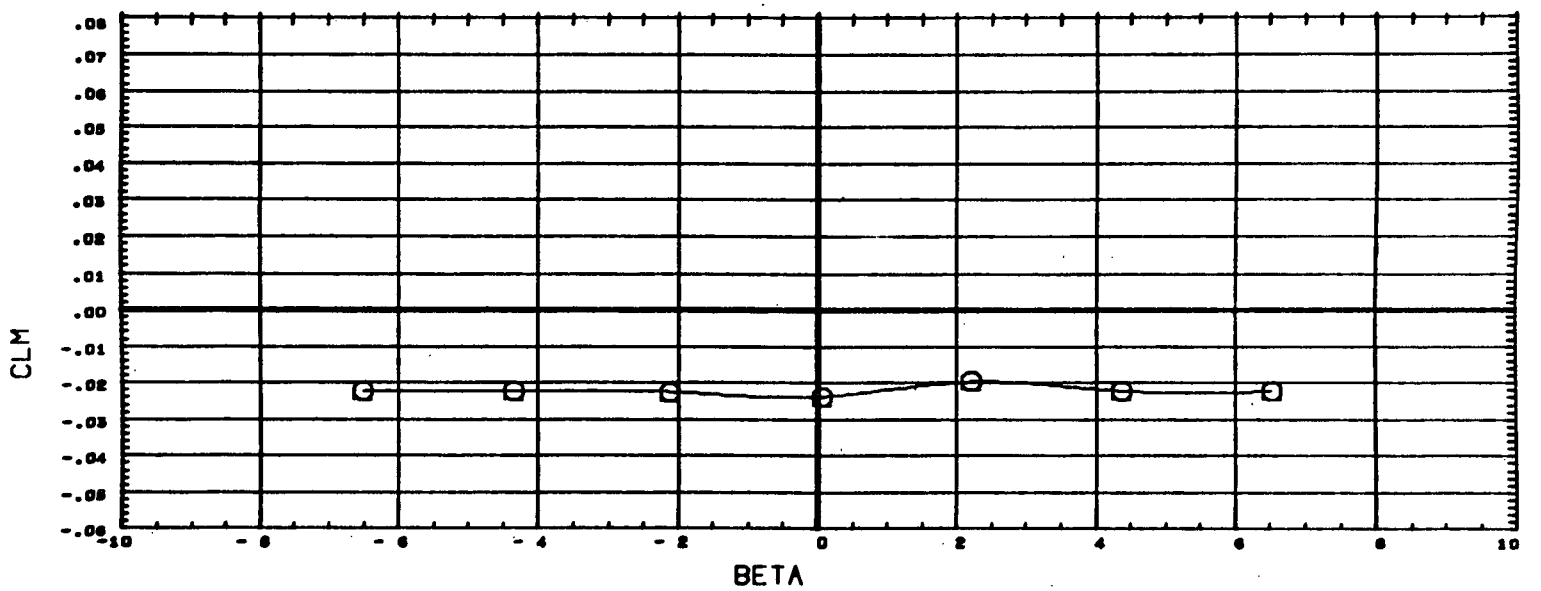
DATA HIST. CODE GC

REFERENCE INFORMATION

SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



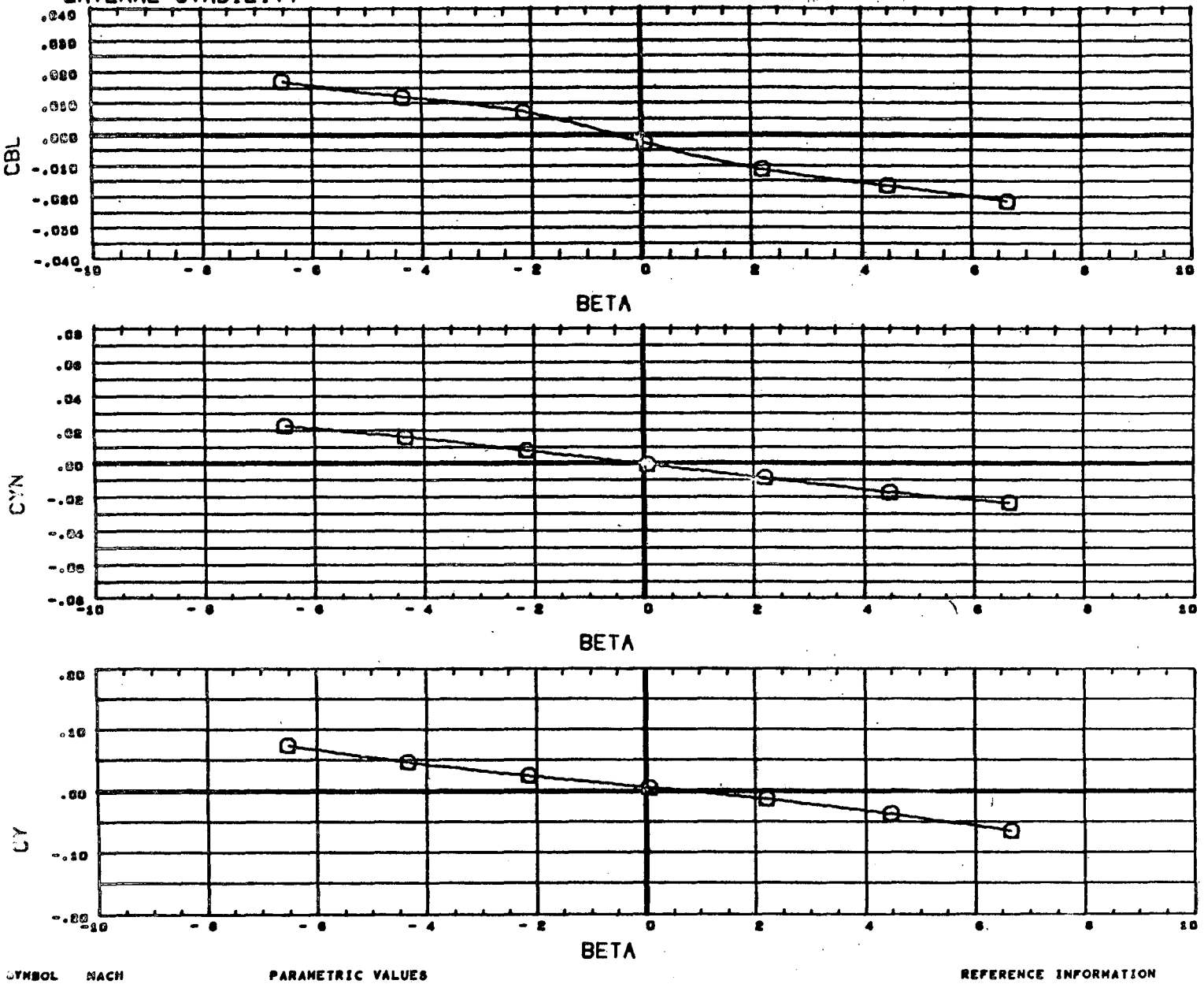


SYMBOL	MACH		PARAMETRIC VALUES		
O	1.201	ALPHA	15.000	RUDDER	0.000
		RUDFLR	30.000		

DATA HIST. CODE GC

REFERENCE INFORMATION		
SREF	14.6636	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4621	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



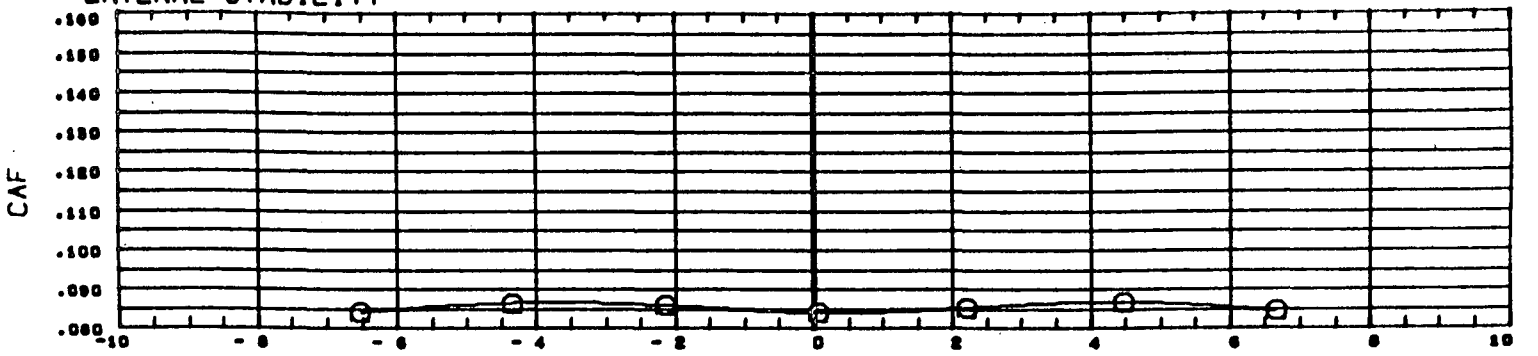
SYMBOL	MACH		PARAMETRIC VALUES		
O	1.970	ALPHA	25.000	RUDDER	0.000
		RUDFLR	30.000		

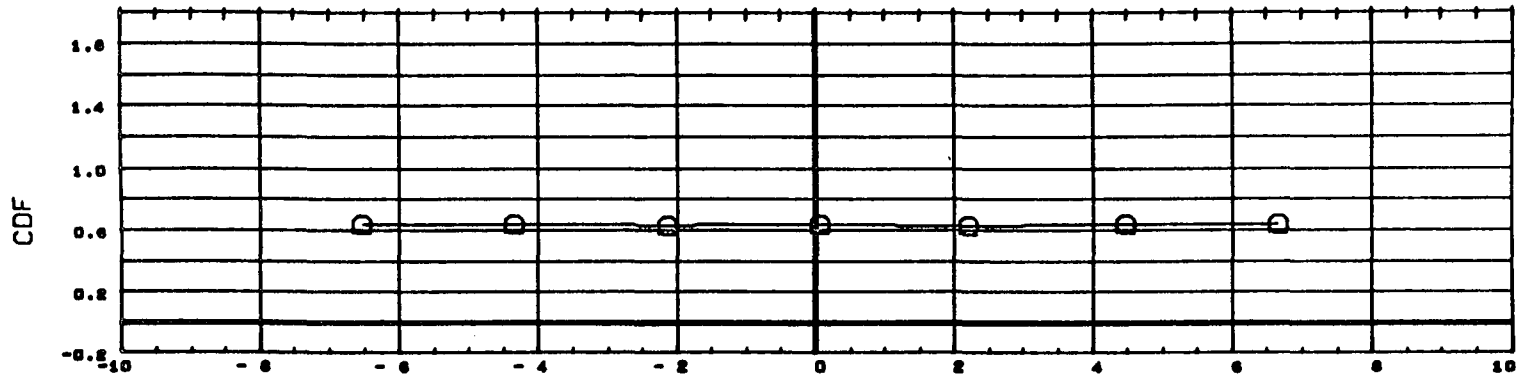
DATA HIST. CODE GC

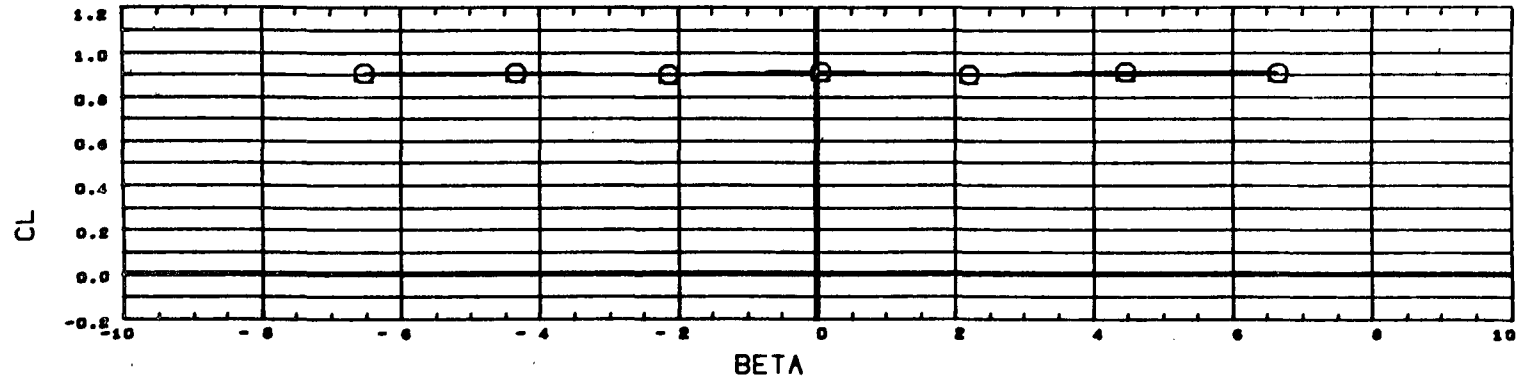
REFERENCE INFORMATION

SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY





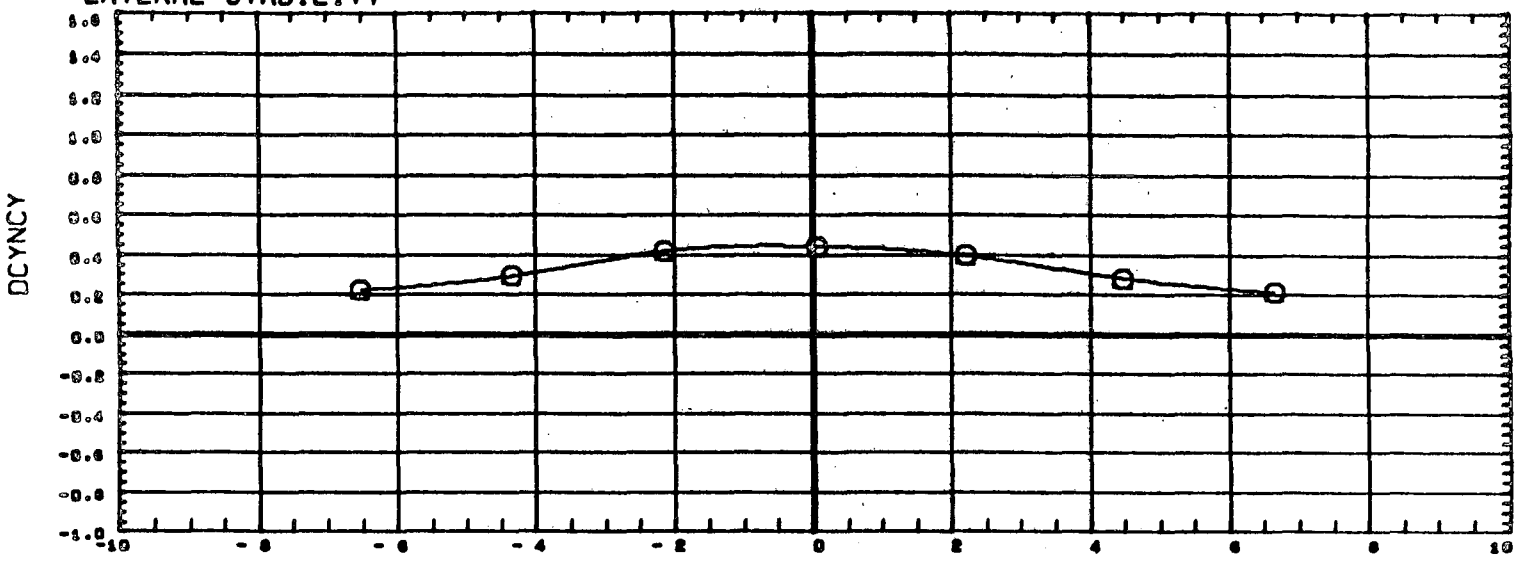


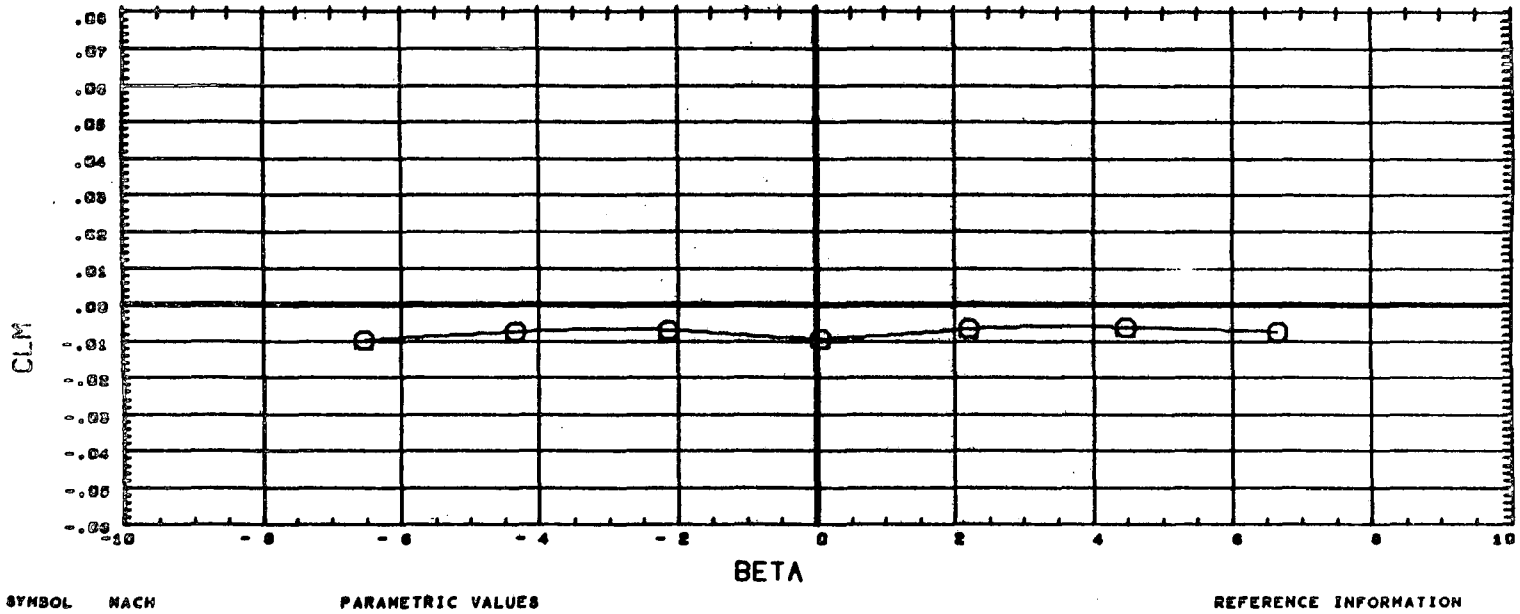
SYMBOL	MACH	PARAMETRIC VALUES			
O	1.970	ALPHA	25.000	RUDDER	0.000
		RUDFLR	30.000		

DATA HIST. CODE GC

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5060	IN.
BREF	5.6550	IN.
XMRP	1.4621	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY





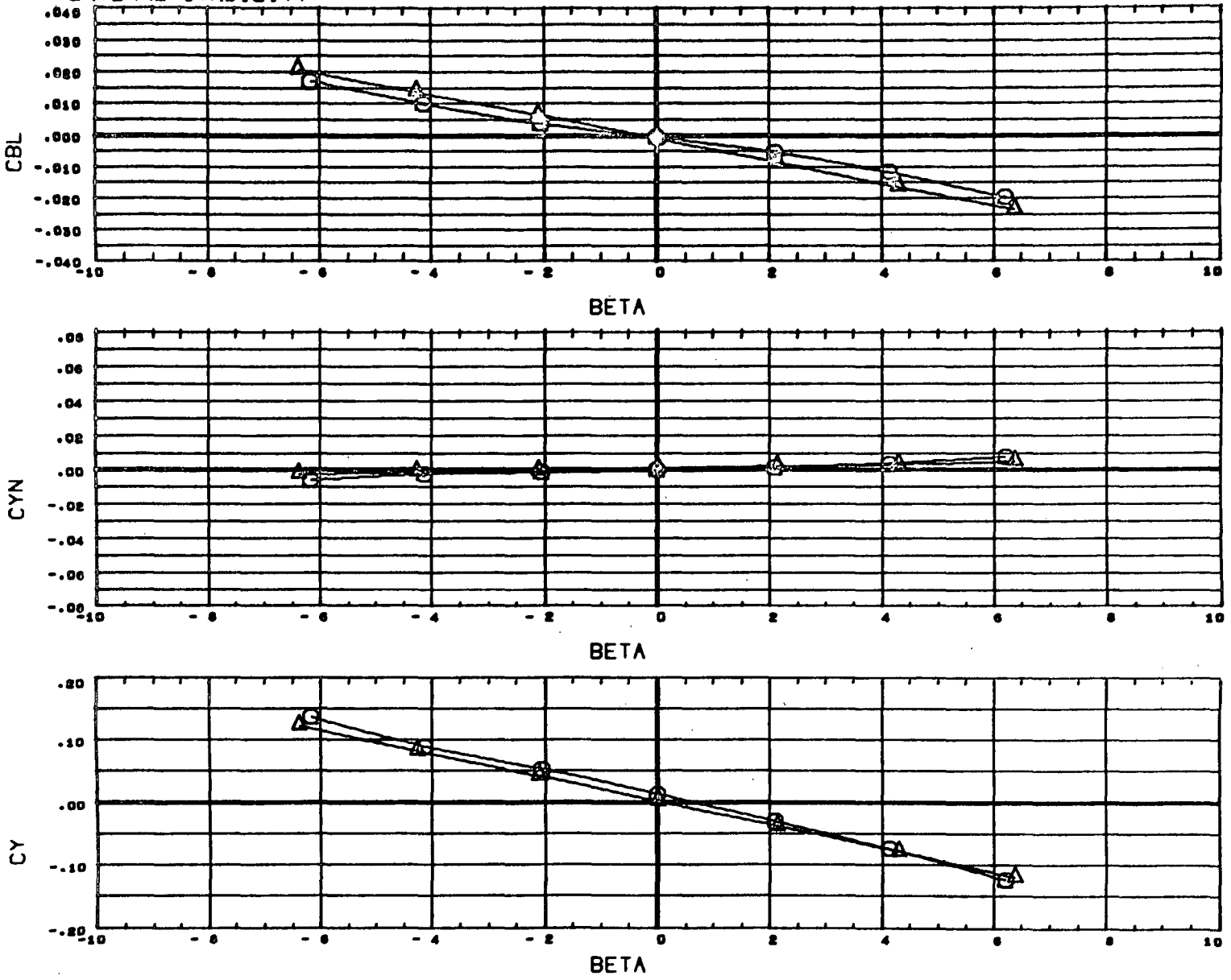
SYMBOL	MACH		PARAMETRIC VALUES		
O	1.970	ALPHA	25.000	RUDDER	0.000
		RUDFLR	30.000		

DATA HIST. CODE GC

REFERENCE INFORMATION

SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



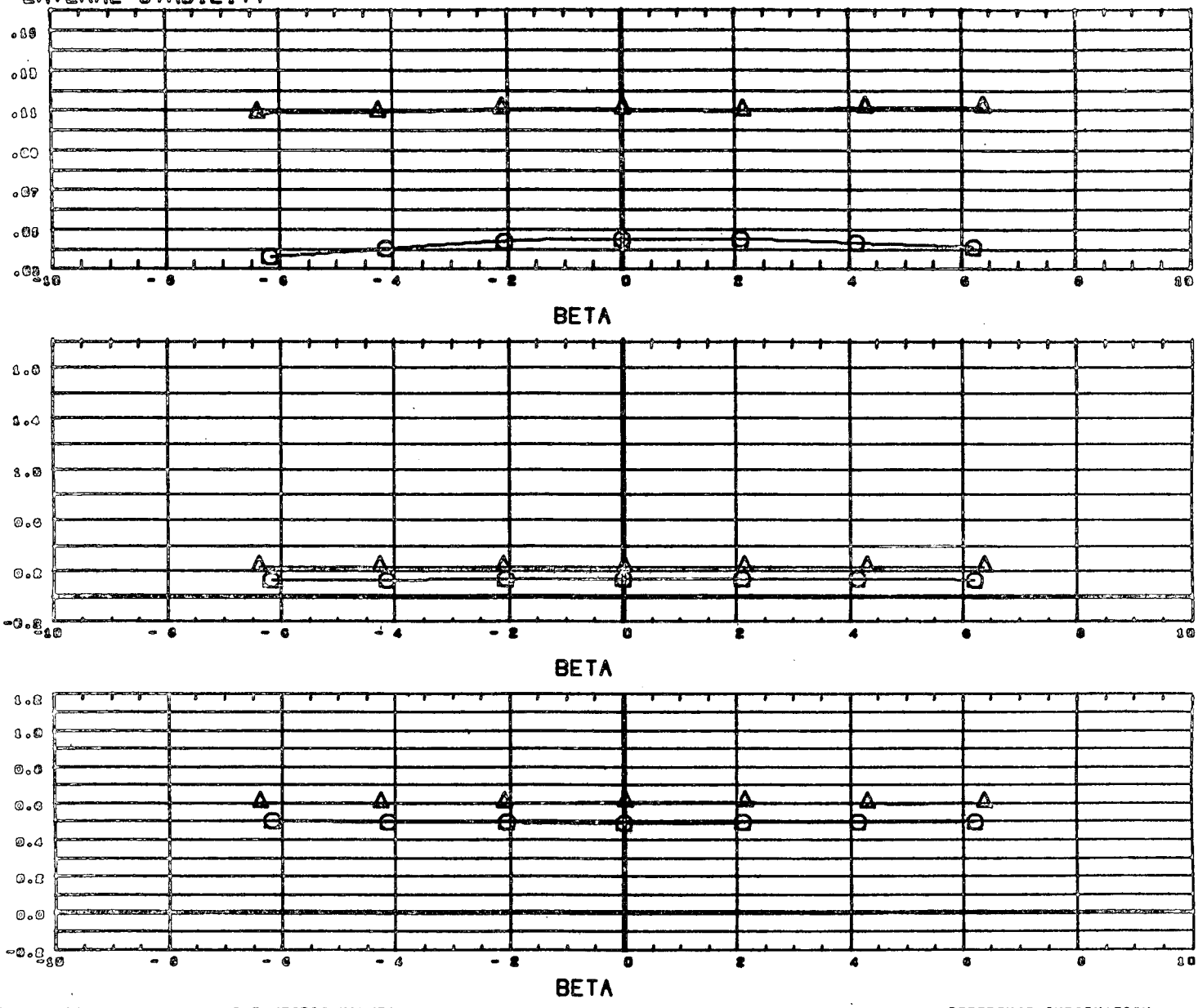
SYMBOL	MACH		PARAMETRIC VALUES		
○	0.600	ALPHA	10.000	RUDDER	0.000
△	1.196	RUDFLR	30.000		

DATA HIST. CODE 6C

REFERENCE INFORMATION

SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



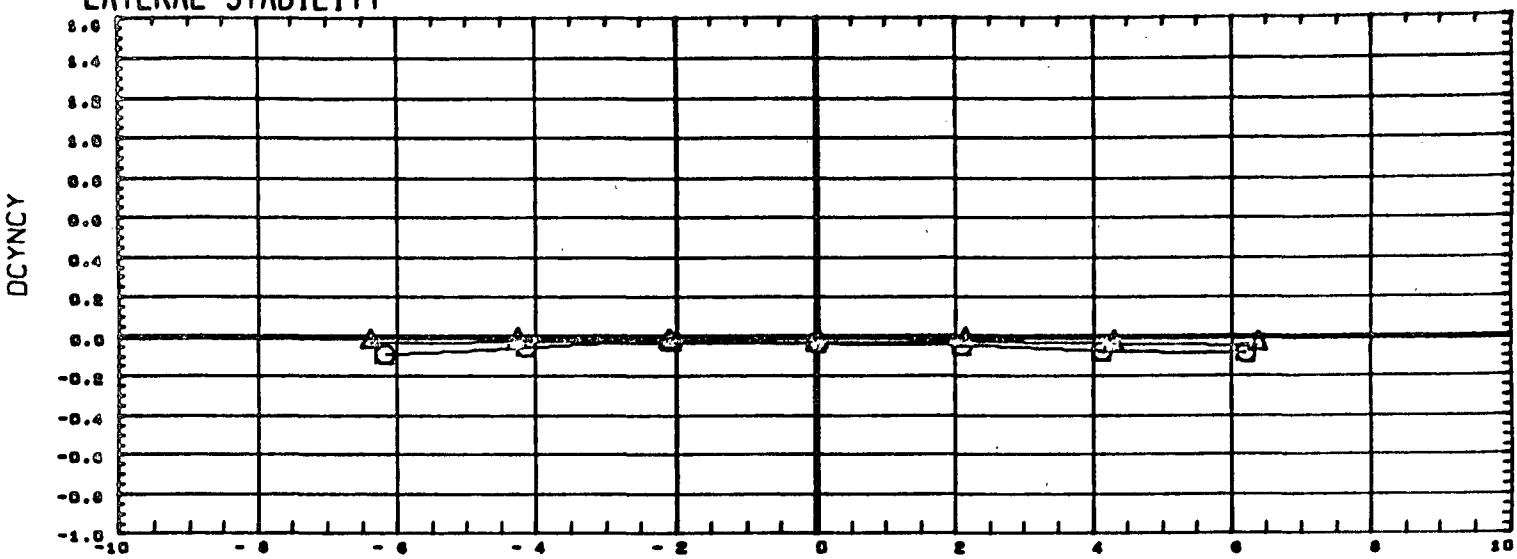
SYMBOL	MACH		PARAMETRIC VALUES		
○	0.600	ALPHA	10.000	RUDDER	0.000
△	1.199	RUDFLR	30.000		

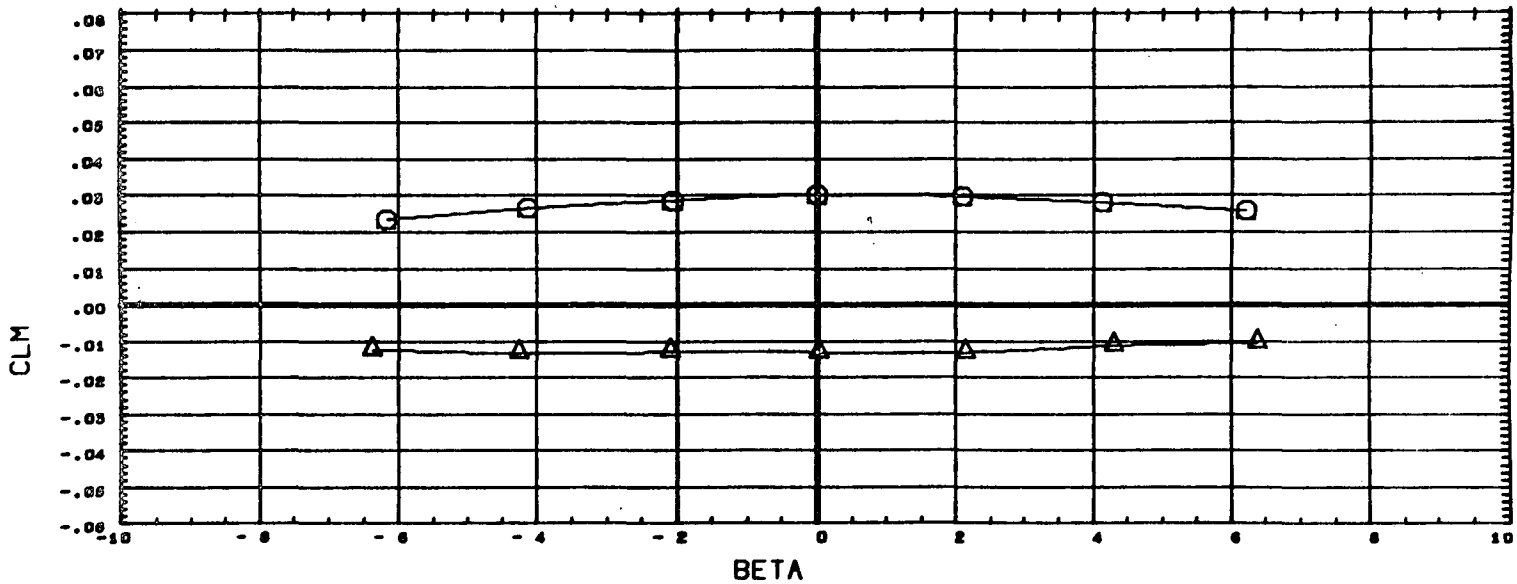
DATA HIST. CODE GC

REFERENCE INFORMATION

SREF	14.6836	SQ.IN.
LREF	4.5000	IN.
BREF	5.6550	IN.
XMRP	1.4621	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



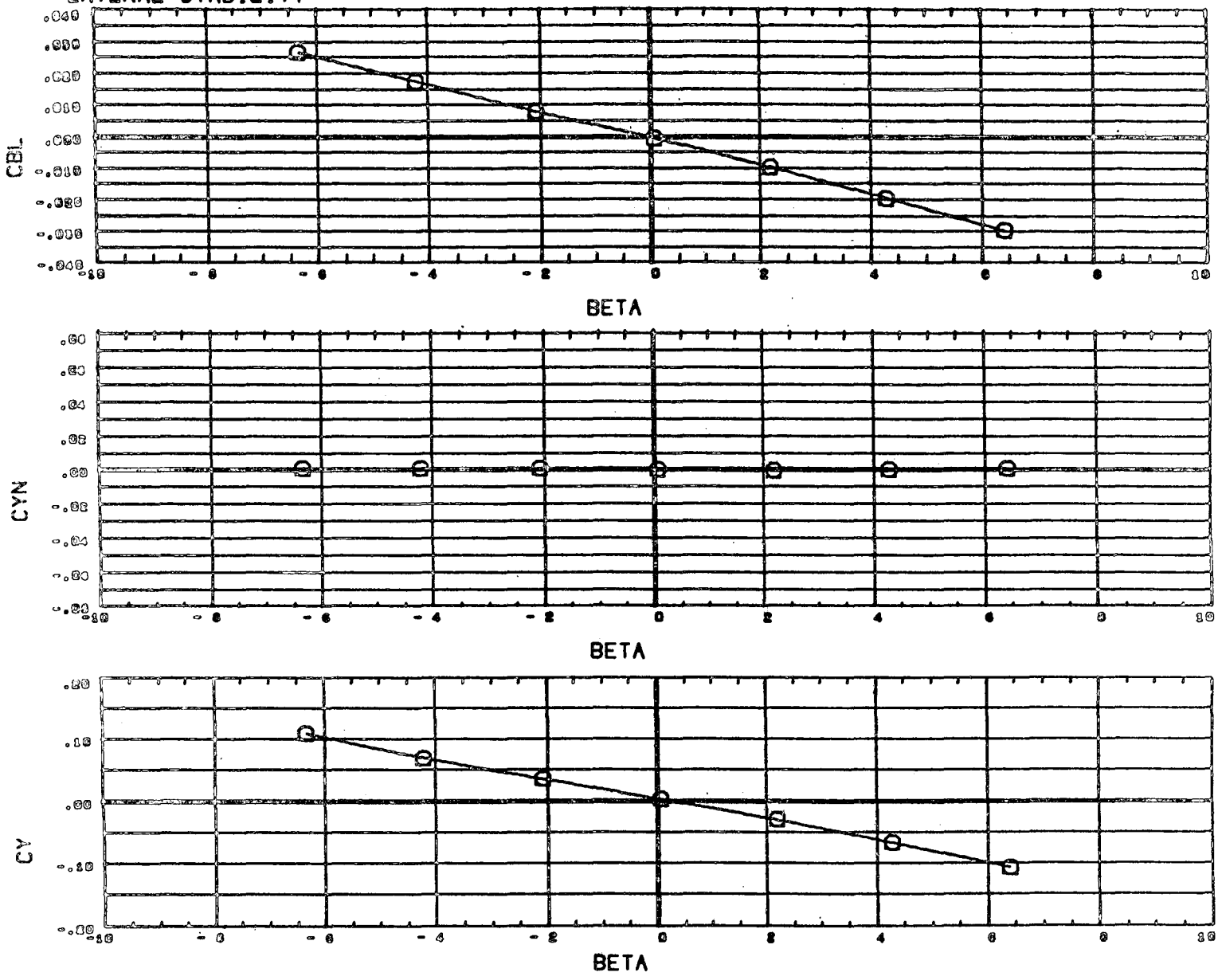


SYMBOL	MACH		PARAMETRIC VALUES		
○	0.600	ALPHA	10.000	RUDDER	0.000
△	1.190	RUDFLR	30.000		

DATA HIST. CODE GC

REFERENCE INFORMATION		
SREF	14.6636	SQ.IN.
LREF	4.5060	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



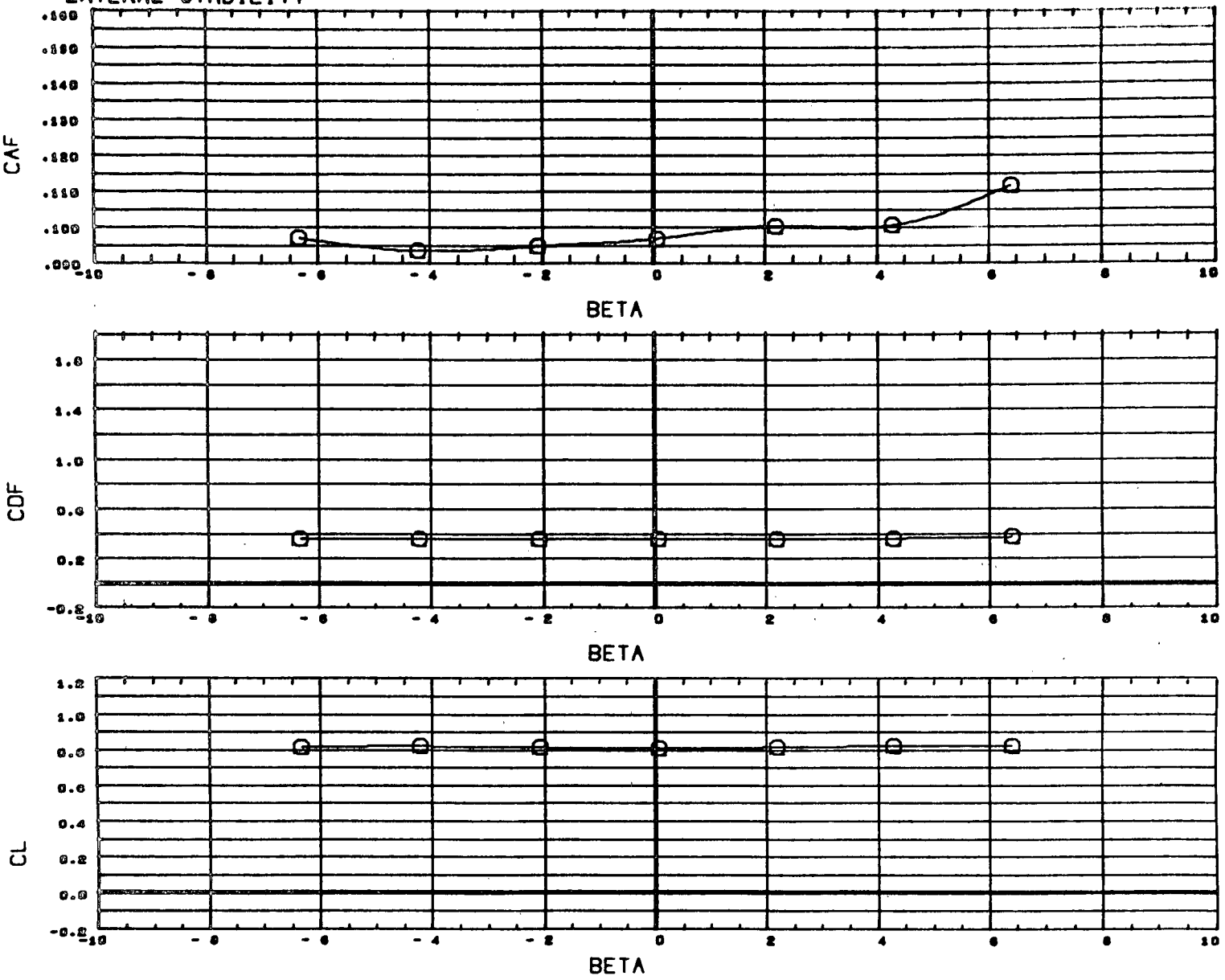
SYMBOL	MACH		PARAMETRIC VALUES		
○	1.201	ALPHA	15.000	RUDDER	0.000
		RUDFLR	30.000		

DATA HIST. CODE GC

REFERENCE INFORMATION

SREF	14.6636	SQ.IN.
LREF	4.9080	IN.
BREF	5.6550	IN.
XMRP	1.4621	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY

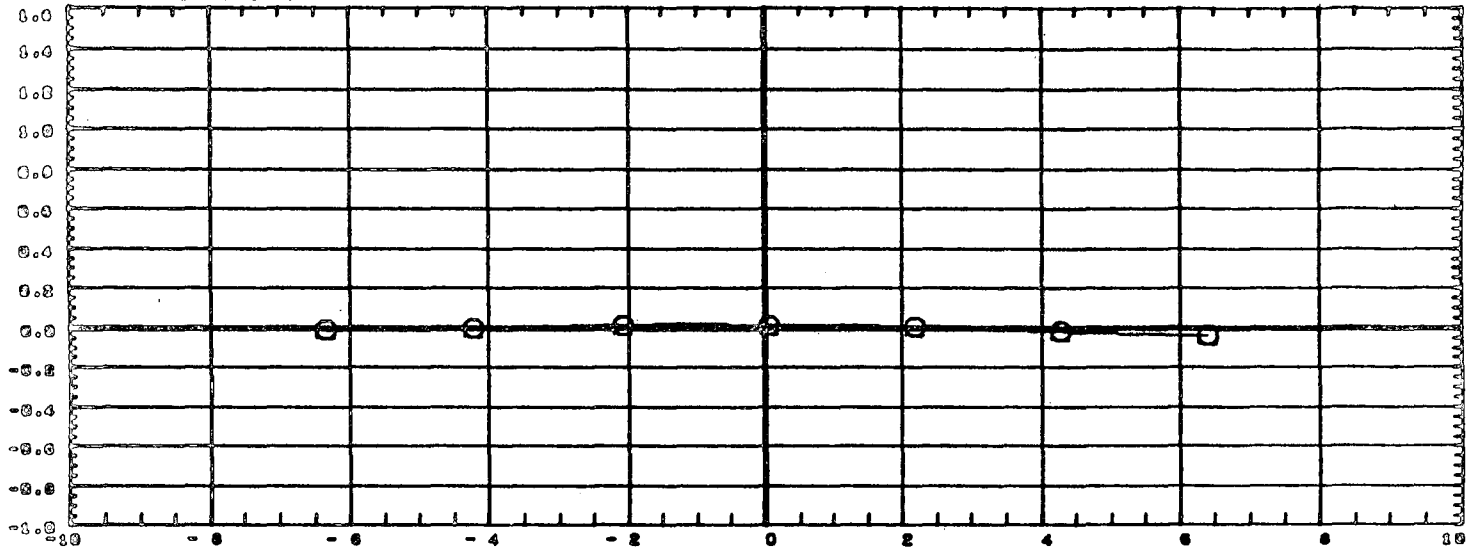


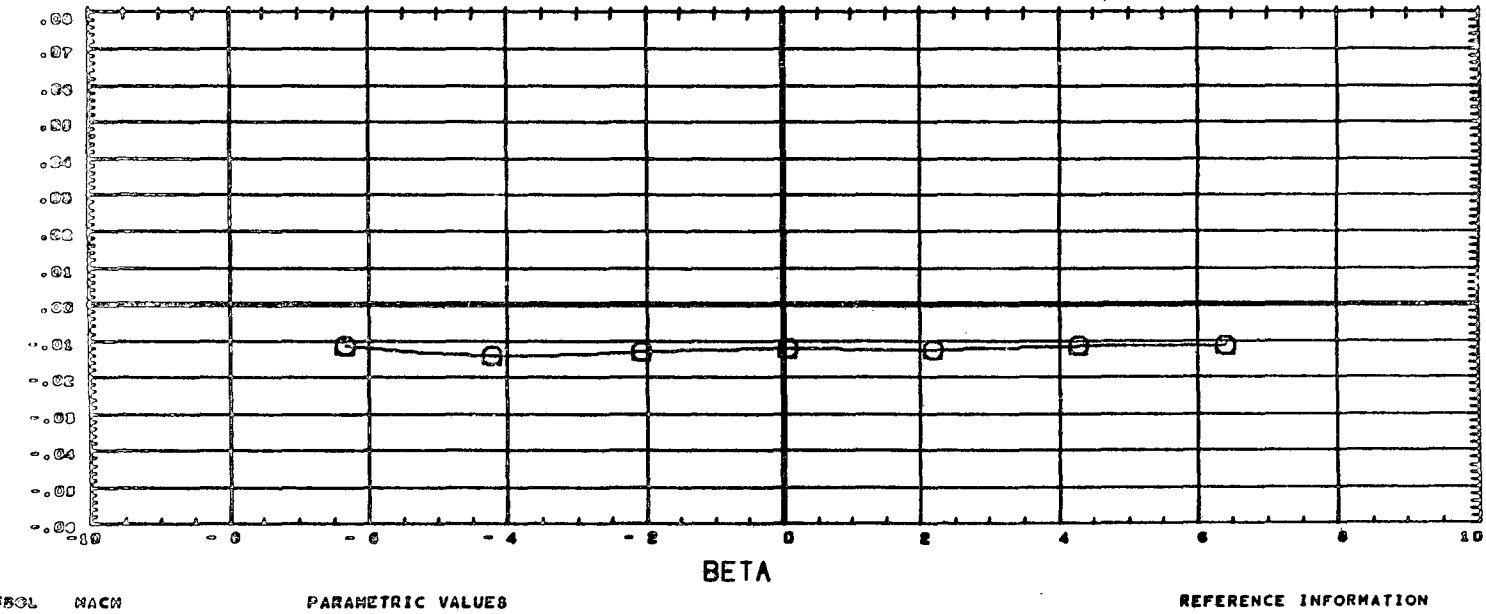
SYMBOL	MACH	PARAMETRIC VALUES			
O	1.201	ALPHA	19.000	RUDDER	0.000
		RUDFLR	30.000		

DATA HIST. CODE GC

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY





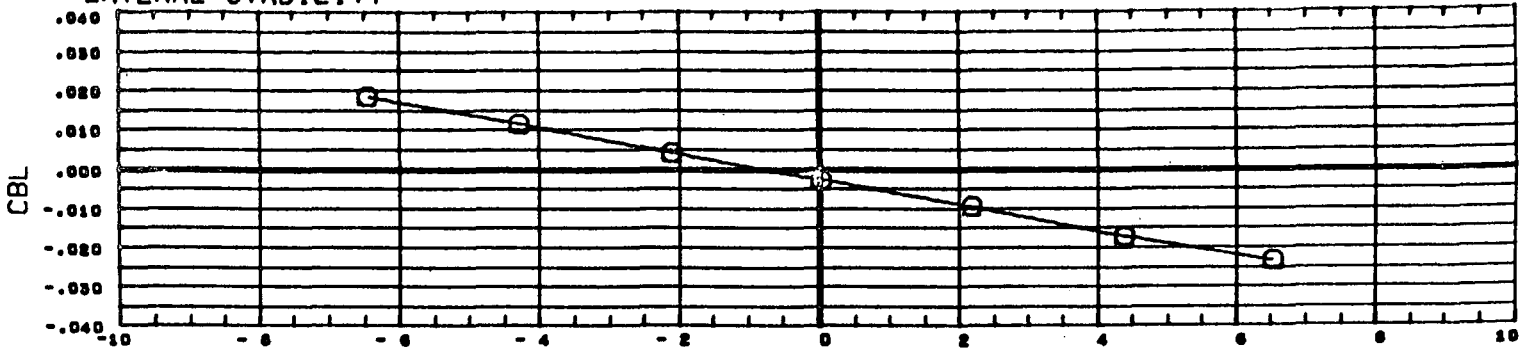
SYMBOL	MACH		PARAMETRIC VALUES			
O	1.201	ALPHA	15.000	RUDDER	0.000	
		RUDFLR	30.000			

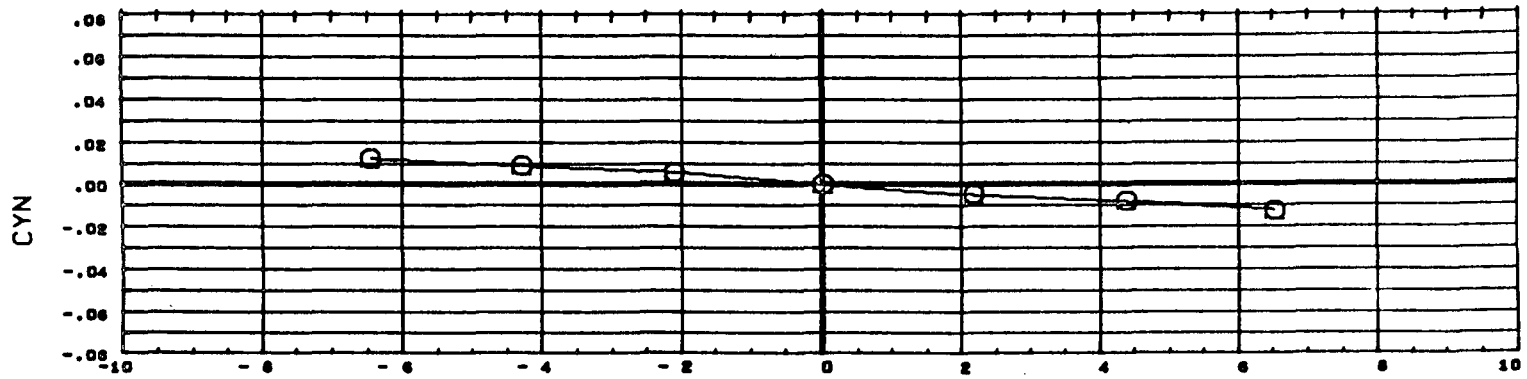
DATA HIST. CODE GC

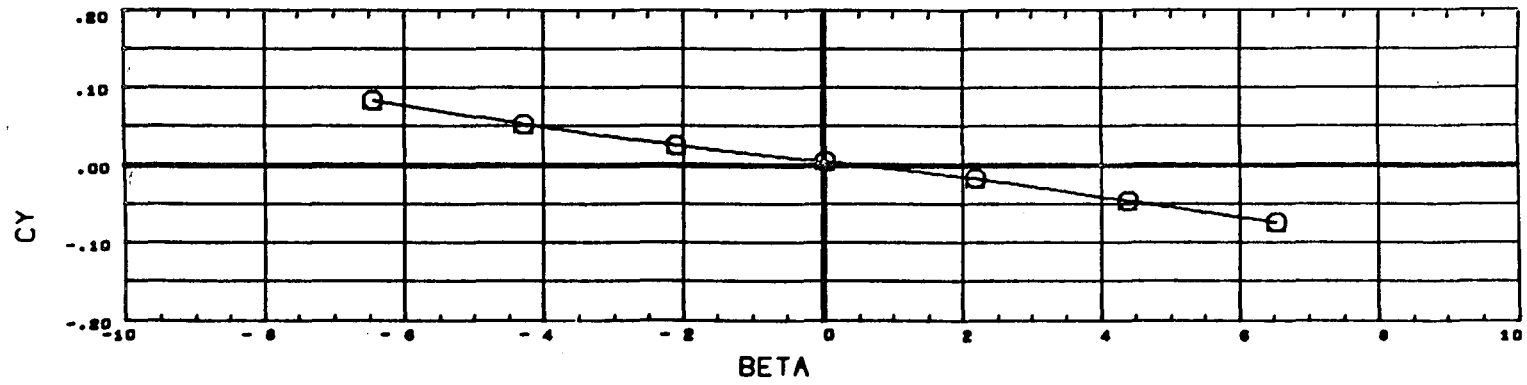
REFERENCE INFORMATION

SREF	14.6636	SQ.IN.
LREF	4.5060	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



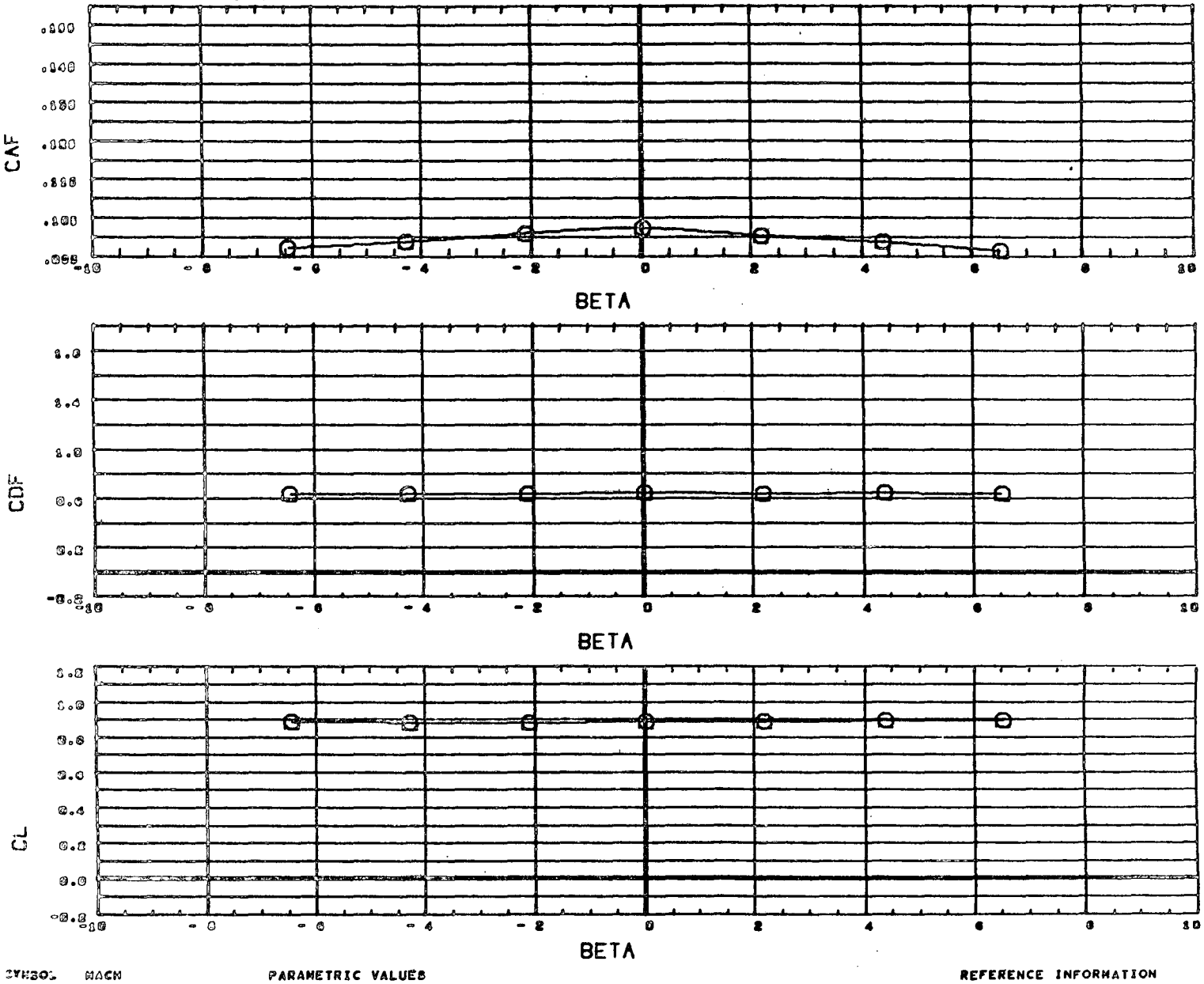




SYMBOL	MACH		PARAMETRIC VALUES			REFERENCE INFORMATION		
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		RUDFLR	30.000			LREF	4.5060	IN.
						BREF	5.6550	IN.
						XMRP	1.4821	IN.
						YMRP	0.0000	IN.
						ZMRP	0.0000	IN.
						SCALE	0.0034	

DATA HIST. CODE GC

LATERAL STABILITY



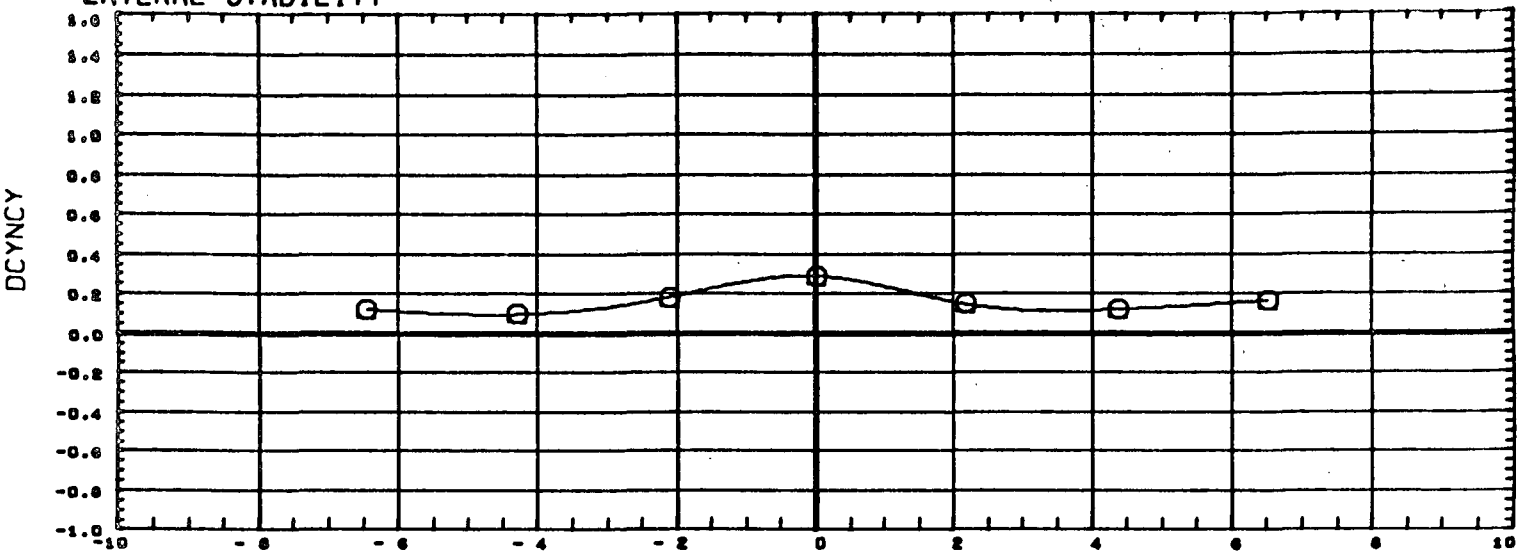
SYMBOL	MACH	PARAMETRIC VALUES			
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		RUDDLR	30.000		

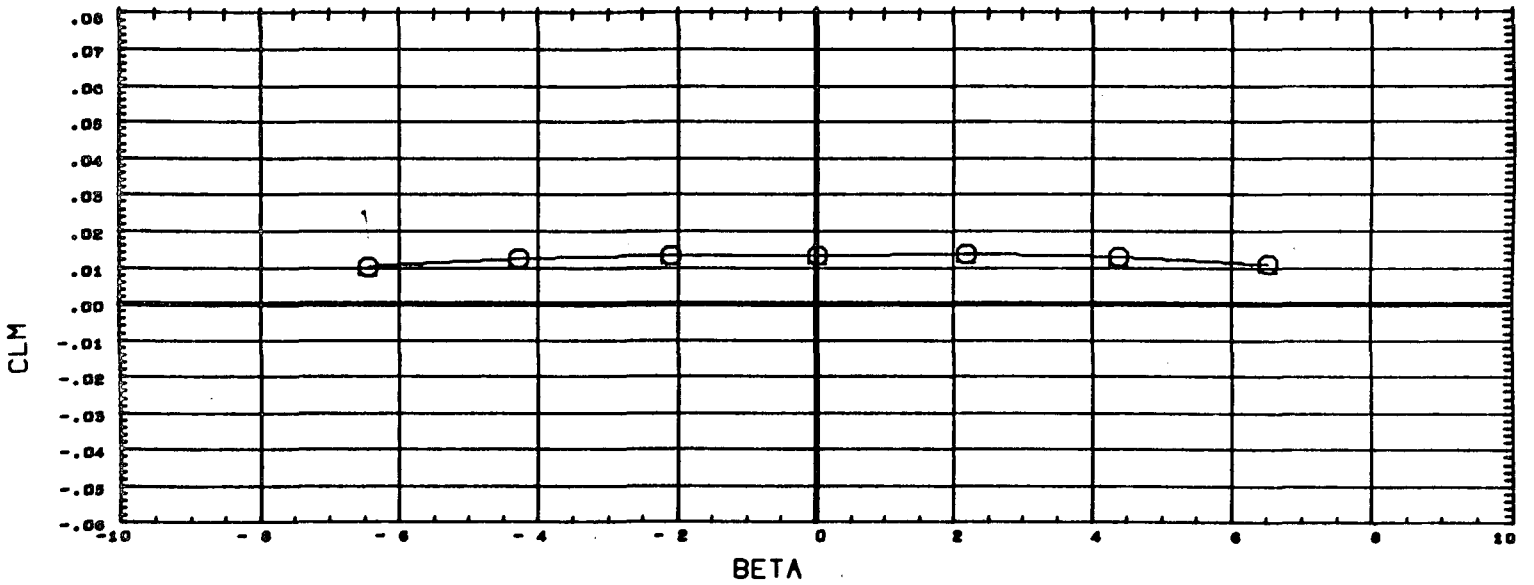
DATA MIDT. CODE GC

REFERENCE INFORMATION

SREF	14.6836	SQ.IN.
LREF	4.5060	IN.
BREF	9.6550	IN.
XMRP	1.4621	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY





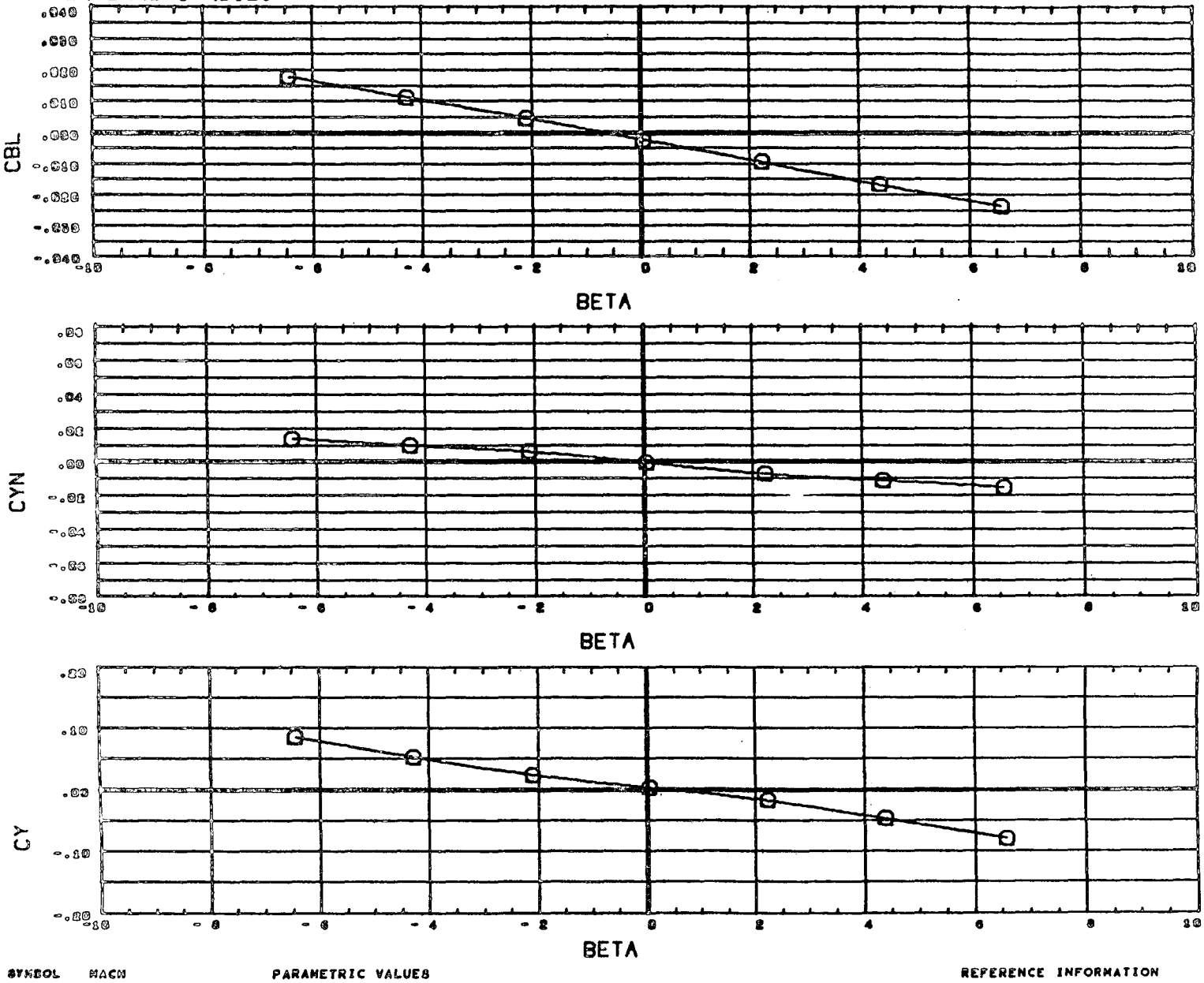
SYMBOL	MACH		PARAMETRIC VALUES		
O	1.966	ALPHA	25.000	RUDDER	0.000
		RUDFLR	30.000		

DATA HIST. CODE GC

REFERENCE INFORMATION

SREF	14.6636	SQ.IN.
LREF	4.5060	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



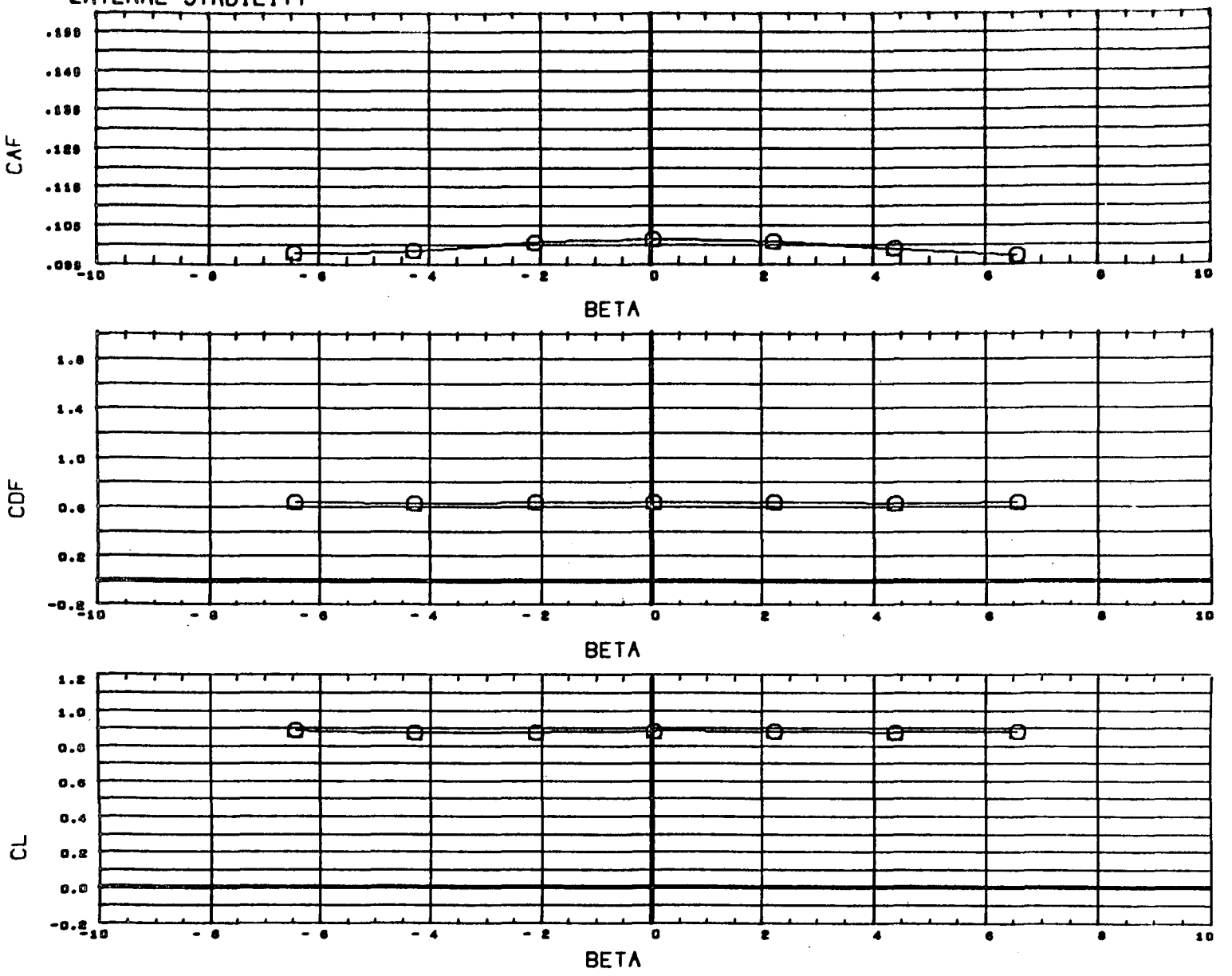
SYMBOL	MACH		PARAMETRIC VALUES		
○	1.061	ALPHA	25.000	RUDDER	0.000
		RUDFLR	30.000		

DATA HIST. CODE 6C

REFERENCE INFORMATION

SREF	14.6836	SQ.IN.
LREF	4.5060	IN.
BREF	5.6550	IN.
XMRP	1.4621	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



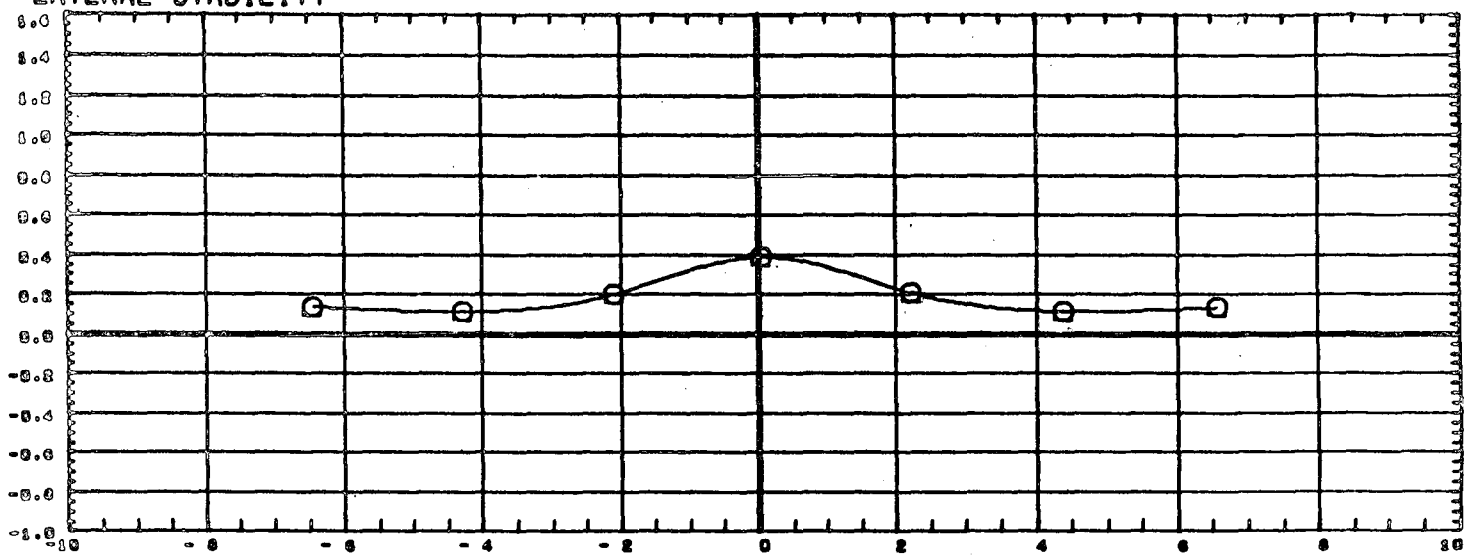
SYMBOL	MACH		PARAMETRIC VALUES		
O	1.961	ALPHA	25.000	RUDDER	0.000
		RUDFLR	30.000		

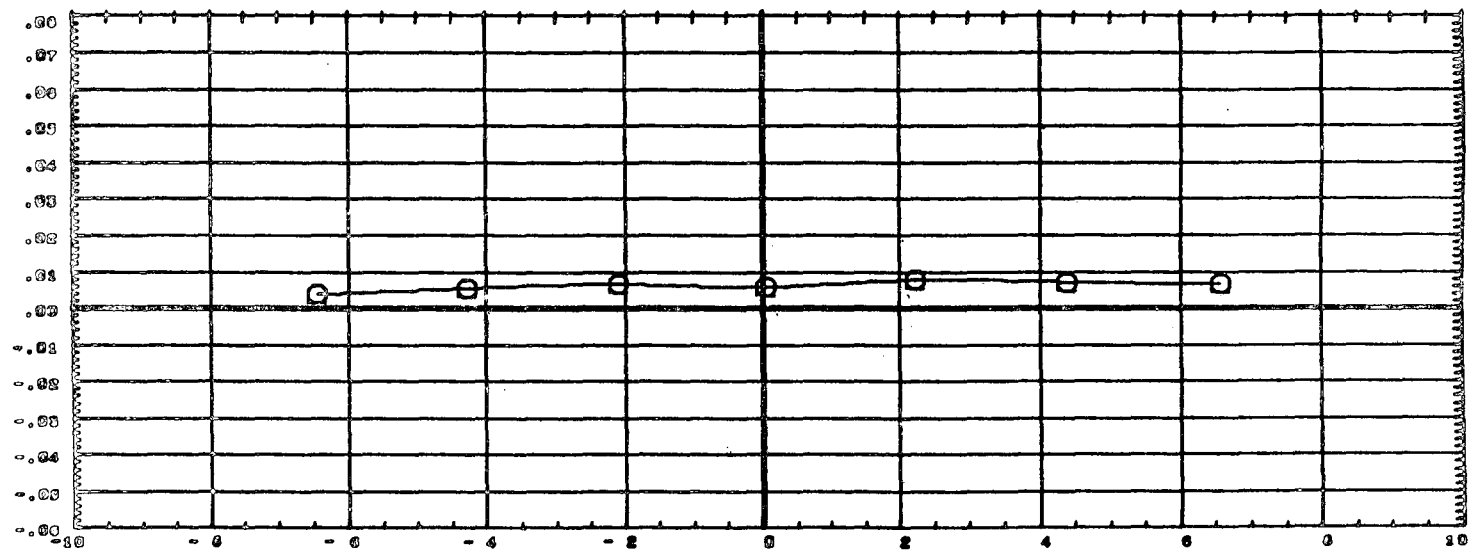
DATA HIST. CODE GC

REFERENCE INFORMATION

SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
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YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



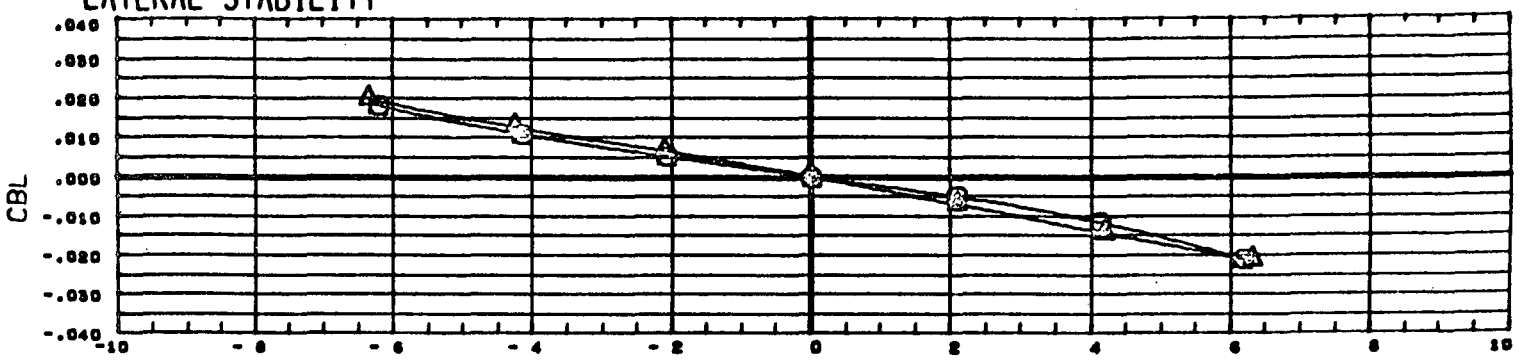


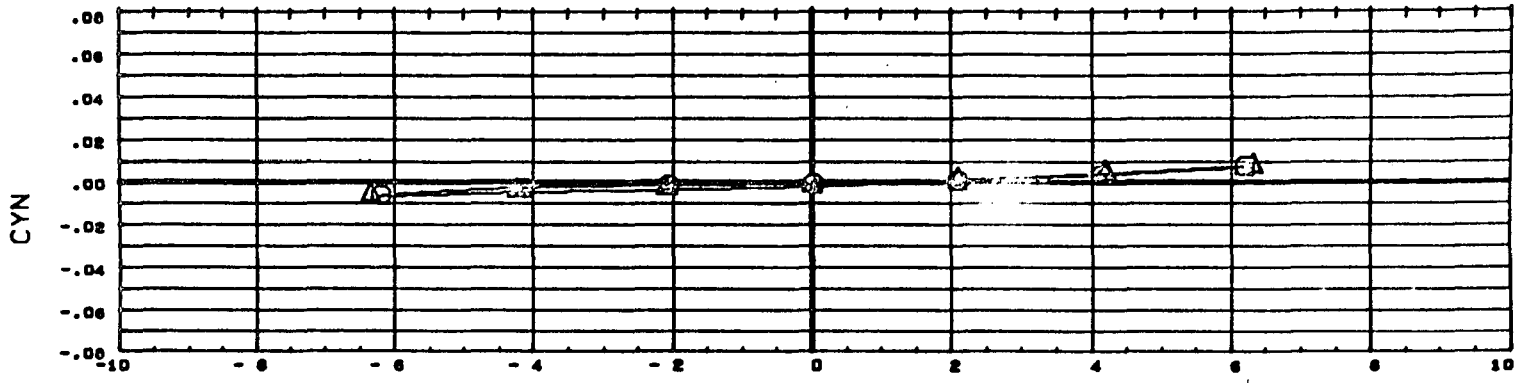
SYMBOL	MACH		PARAMETRIC VALUES		
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		RUDFLR	30.000		

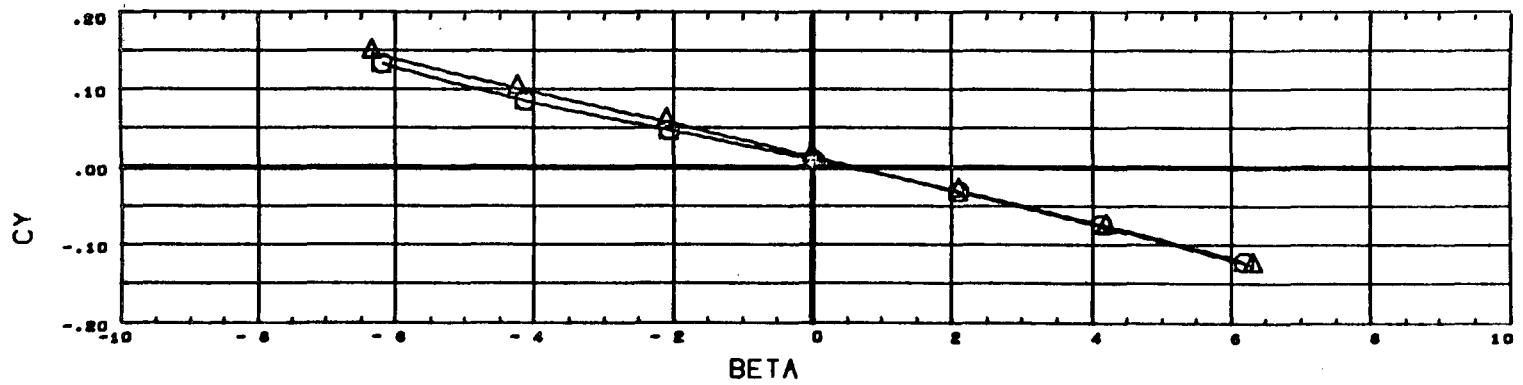
DATA HIST. CODE GC

REFERENCE INFORMATION		
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BREF	5.6550	IN.
XMRP	1.4621	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY





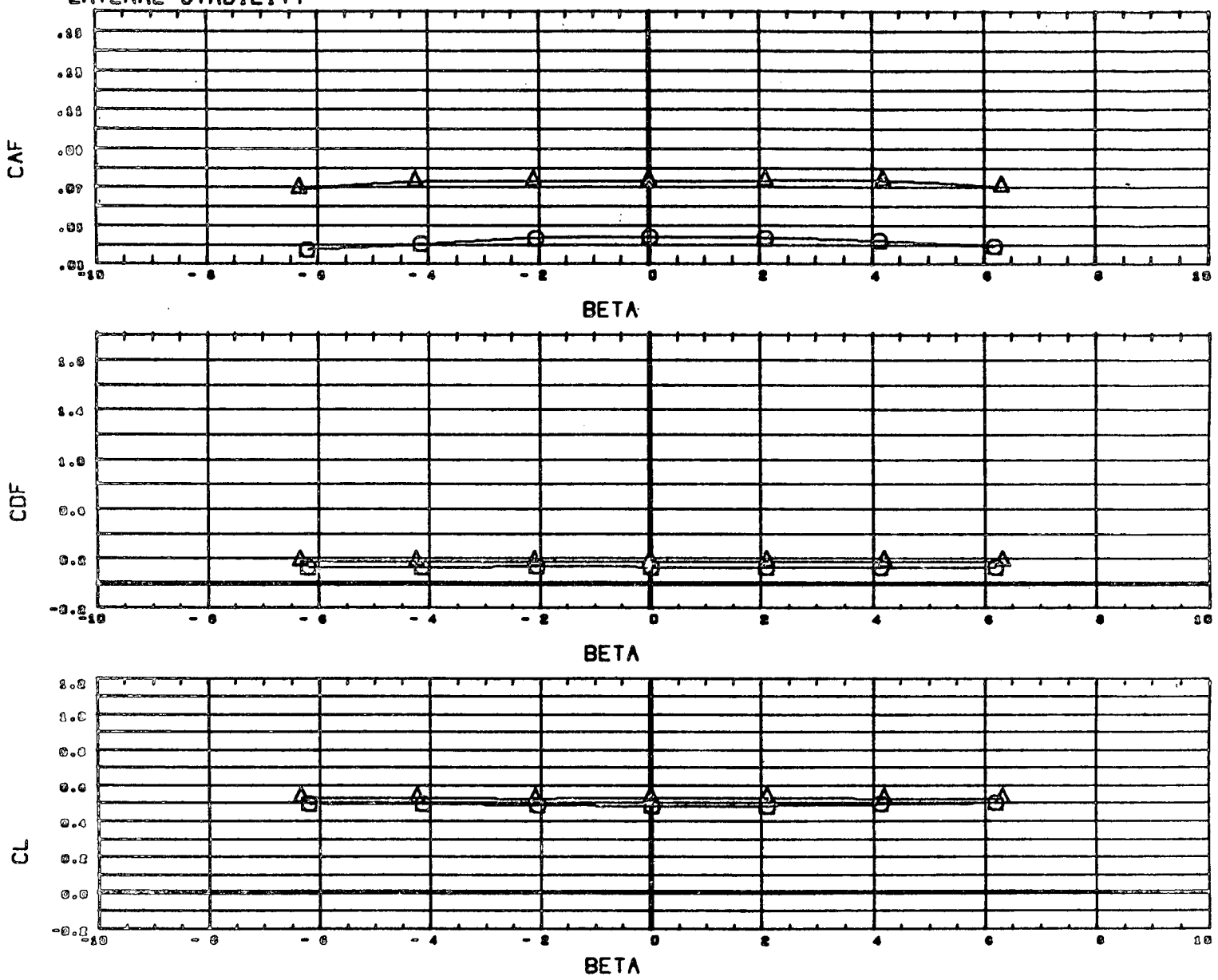


SYMBOL	MACH		PARAMETRIC VALUES		
○	0.899	ALPHA	10.000	RUDDER	0.000
△	0.904	RUDFLR	30.000		

DATA HIST. CODE GC

REFERENCE INFORMATION		
SREF	14.6636	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



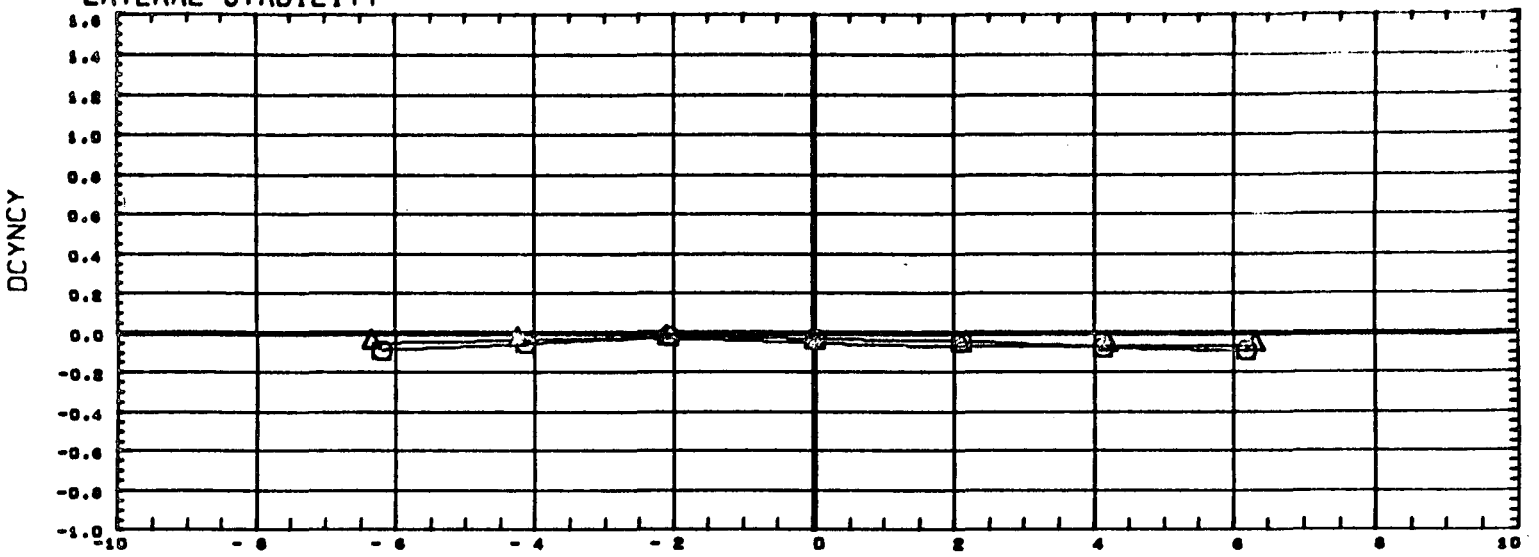
SYMBOL	MACH		PARAMETRIC VALUES		
◇	0.900	ALPHA	10.000	RUDDER	0.000
△	0.904	RUDFLR	30.000		

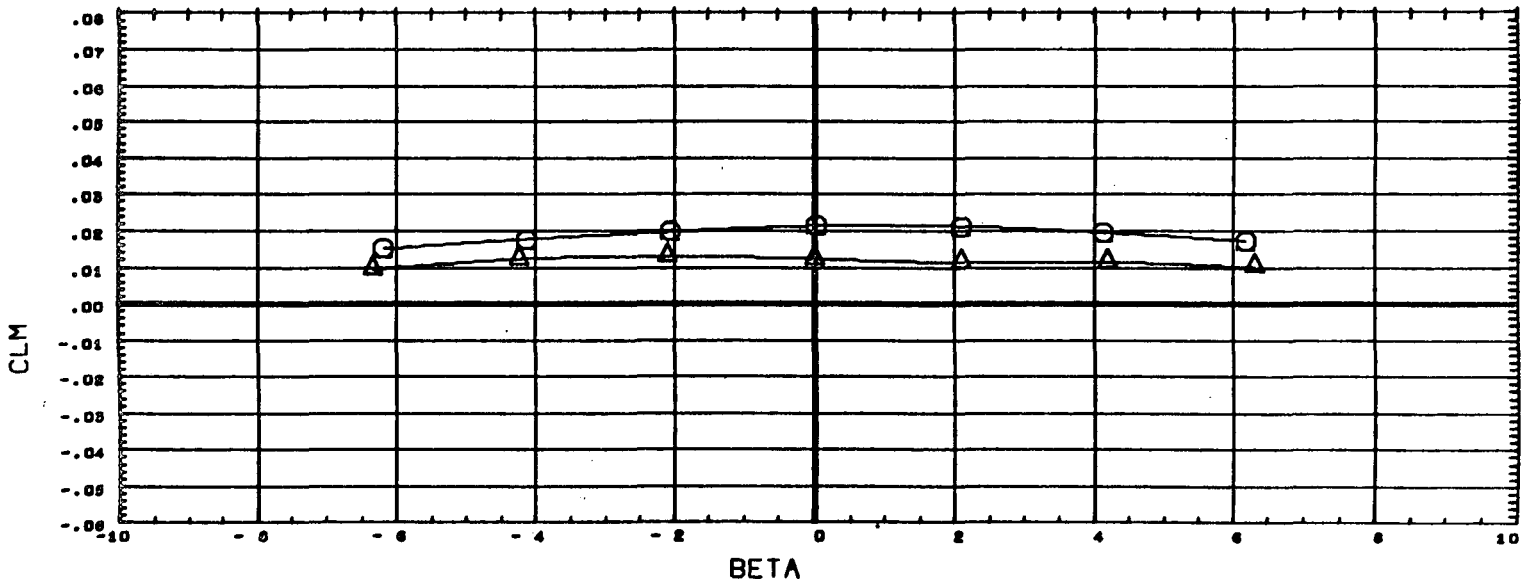
DATA HIST. CODE GC

REFERENCE INFORMATION

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LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4621	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY





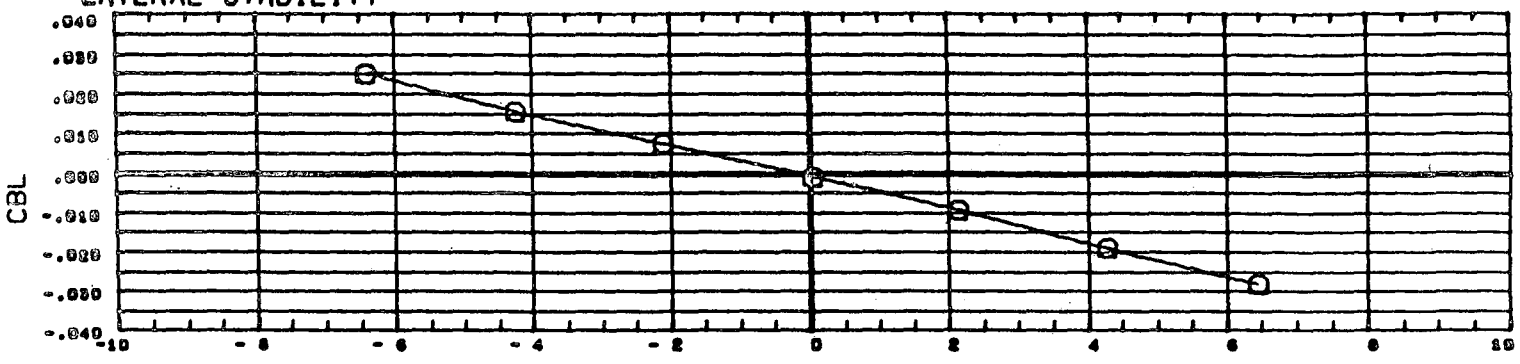
SYMBOL	MACH		PARAMETRIC VALUES		
○	0.899	ALPHA	10.000	RUDDER	0.000
△	0.004	RUDFLR	30.000		

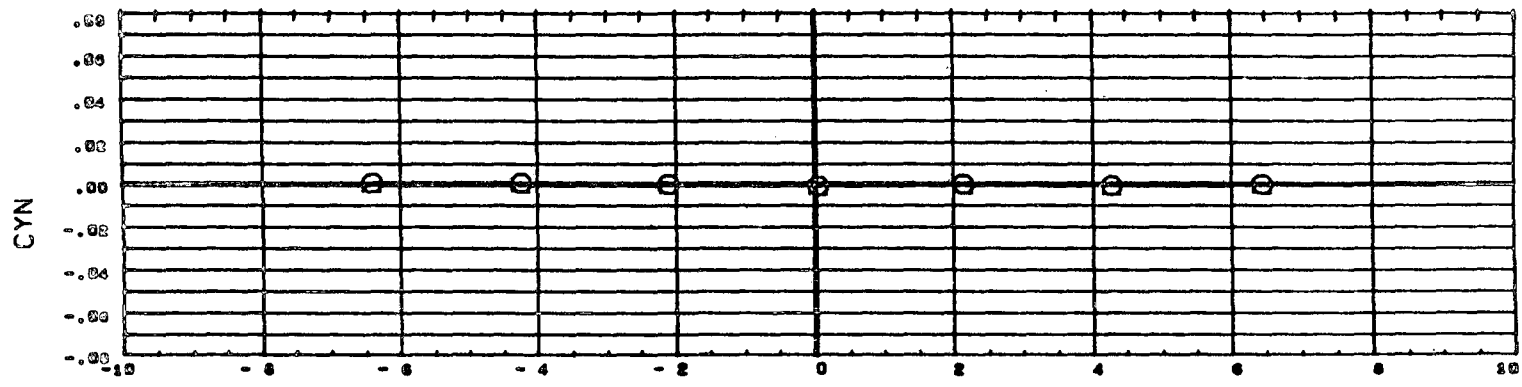
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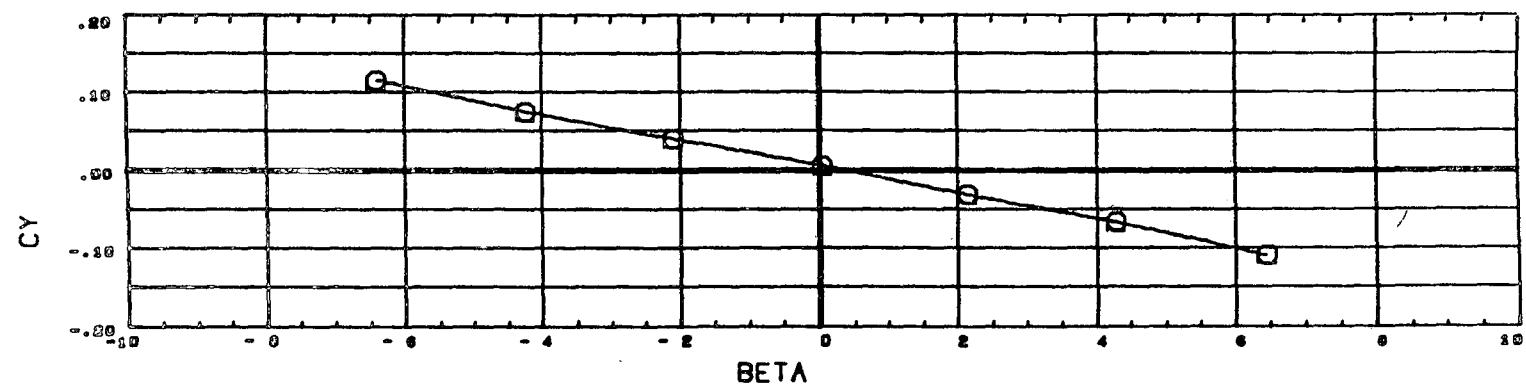
REFERENCE INFORMATION

SREF	14.6636	SQ.IN.
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BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY







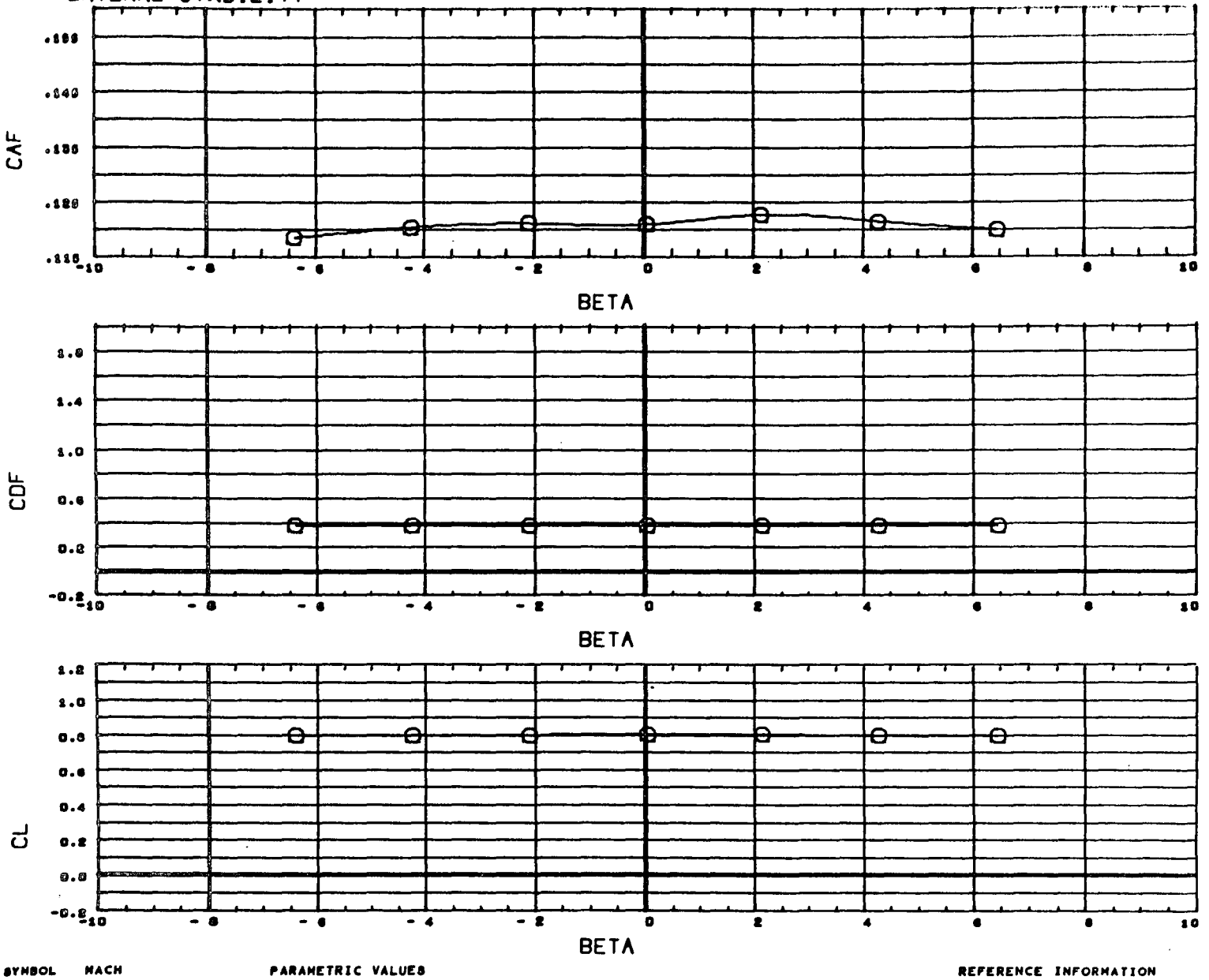
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O	1.197	ALPHA	16.000	RUDDER	0.000
		RUDFLR	30.000		

DATA HIST. CODE GC

REFERENCE INFORMATION

SREF	14.6636	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



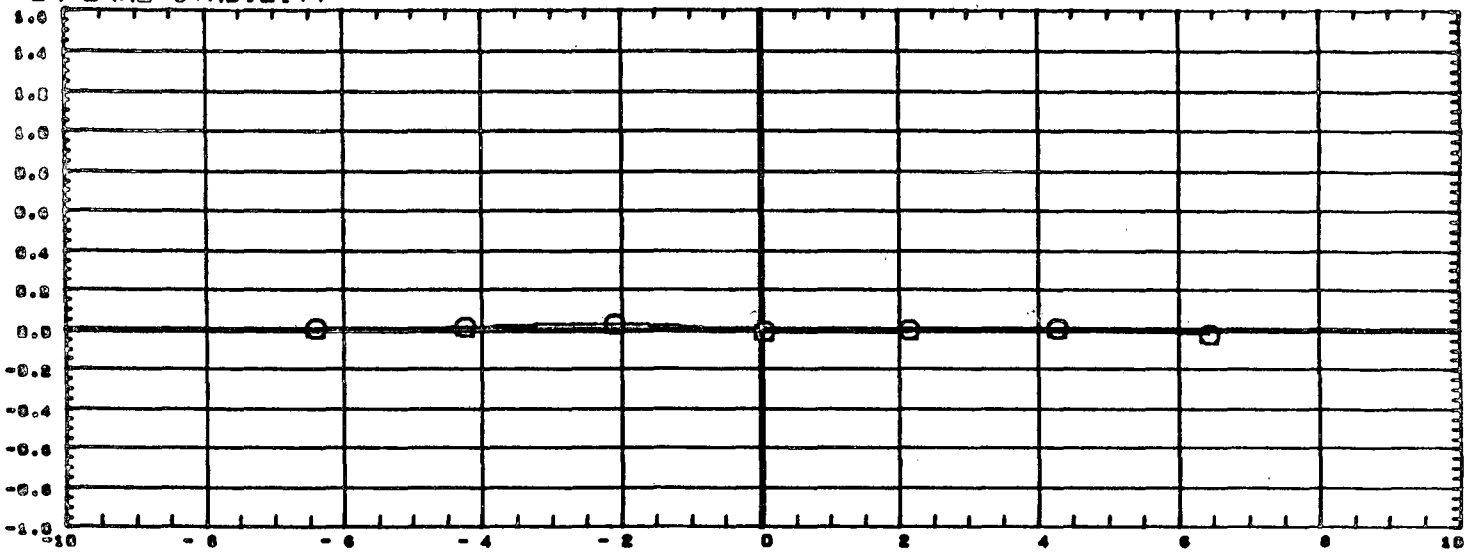
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O	1.197	ALPHA	15.000	RUDDER	0.000
		RUDFLR	30.000		

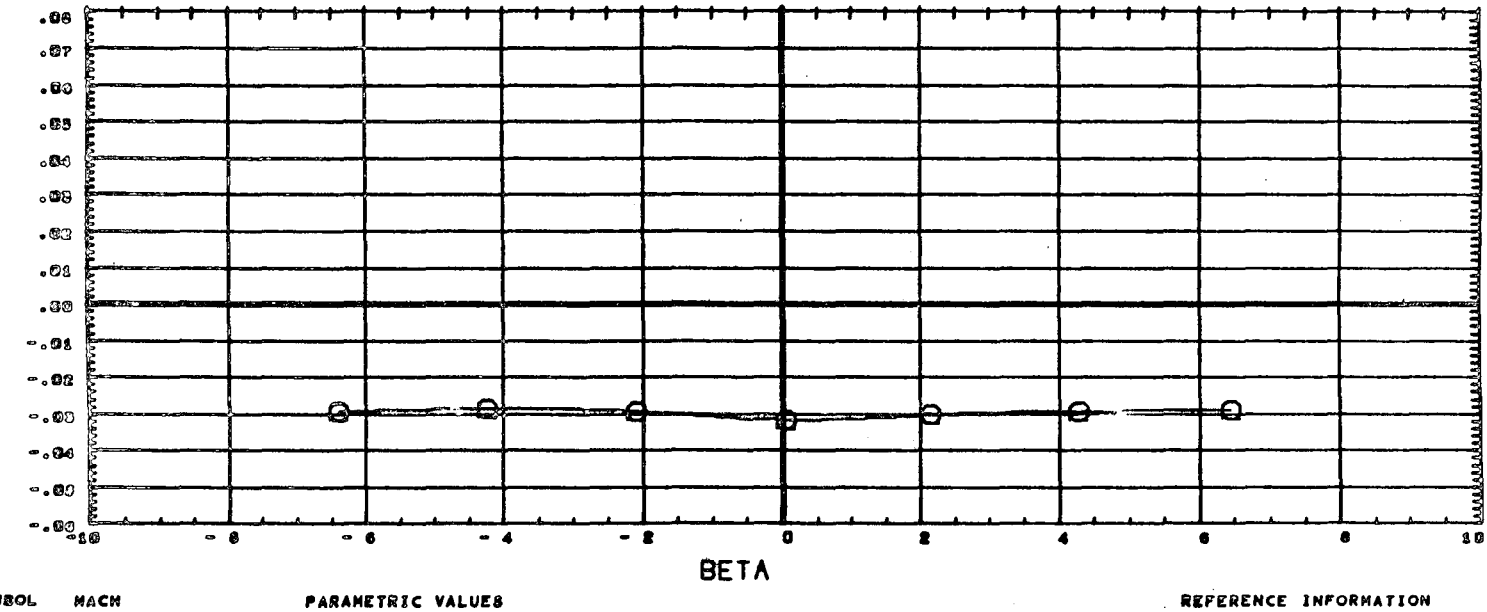
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REFERENCE INFORMATION

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BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY





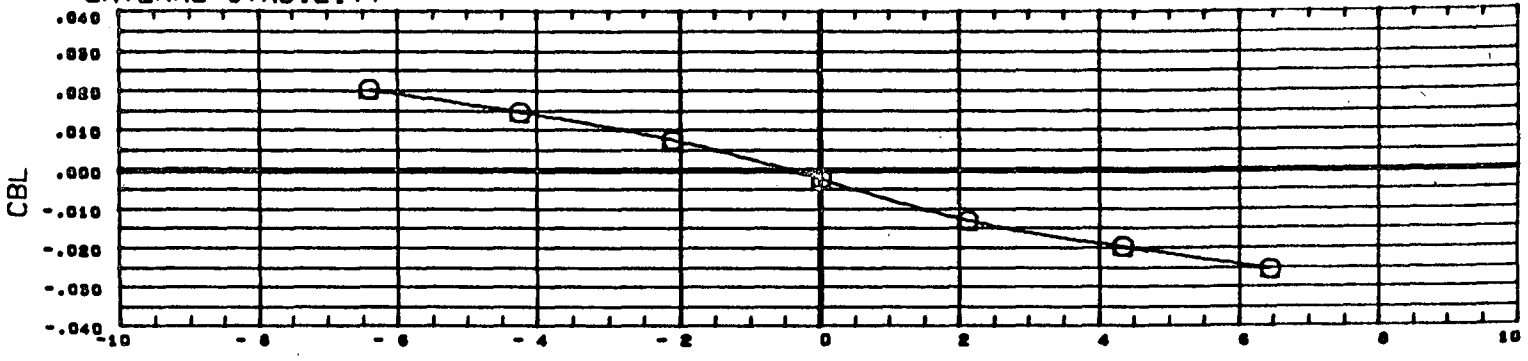
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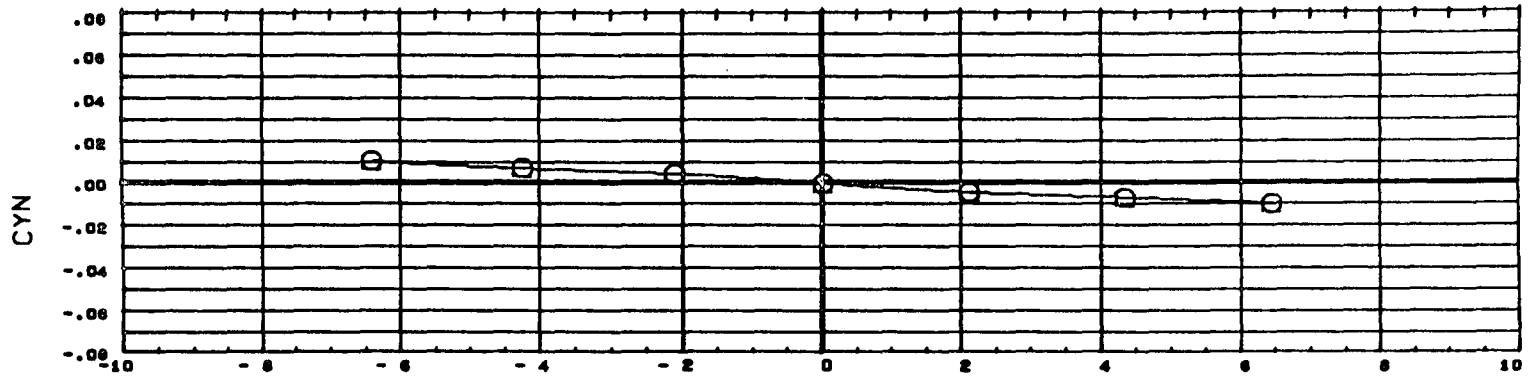
DATA HIST. CODE GC

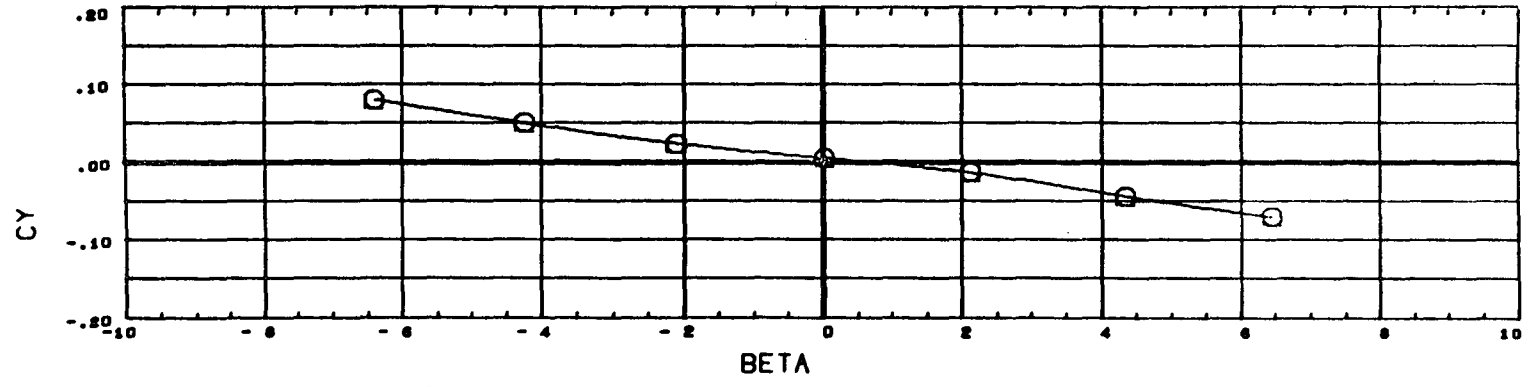
REFERENCE INFORMATION

SREF	14.6836	SQ.IN.
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YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY





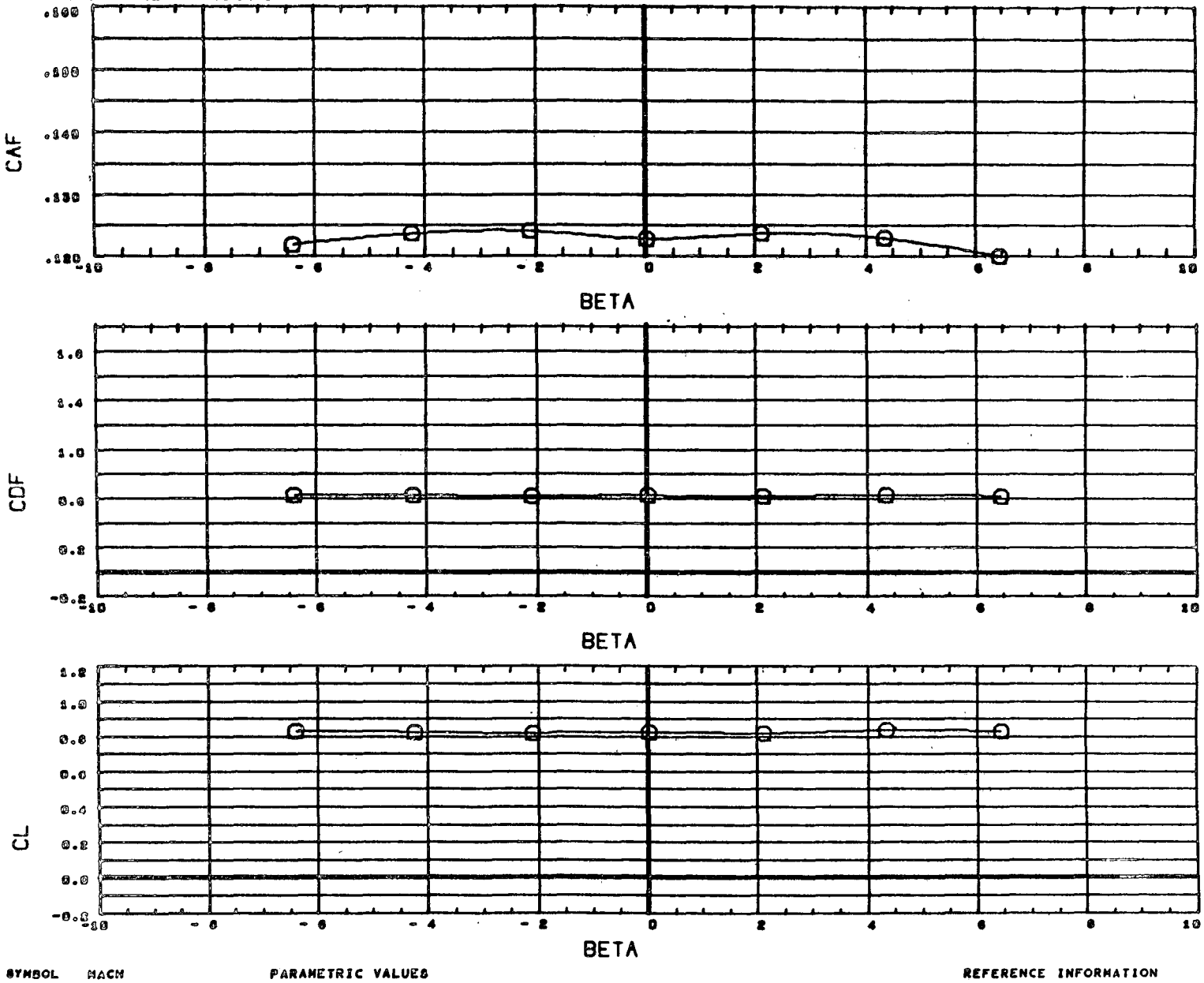


SYMBOL	MACH	PARAMETRIC VALUES			
O	1.971	ALPHA	25.000	RUDDER	0.000
		RUDFLR	30.000		

DATA HIST. CODE GC

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
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YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY

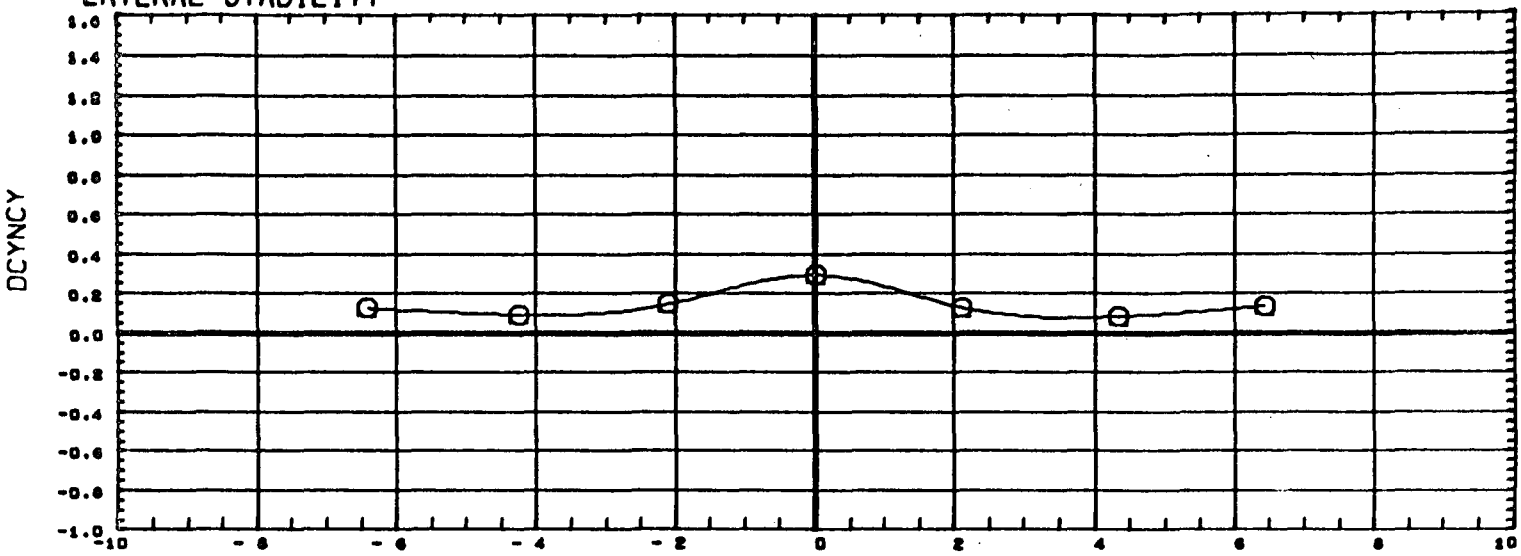


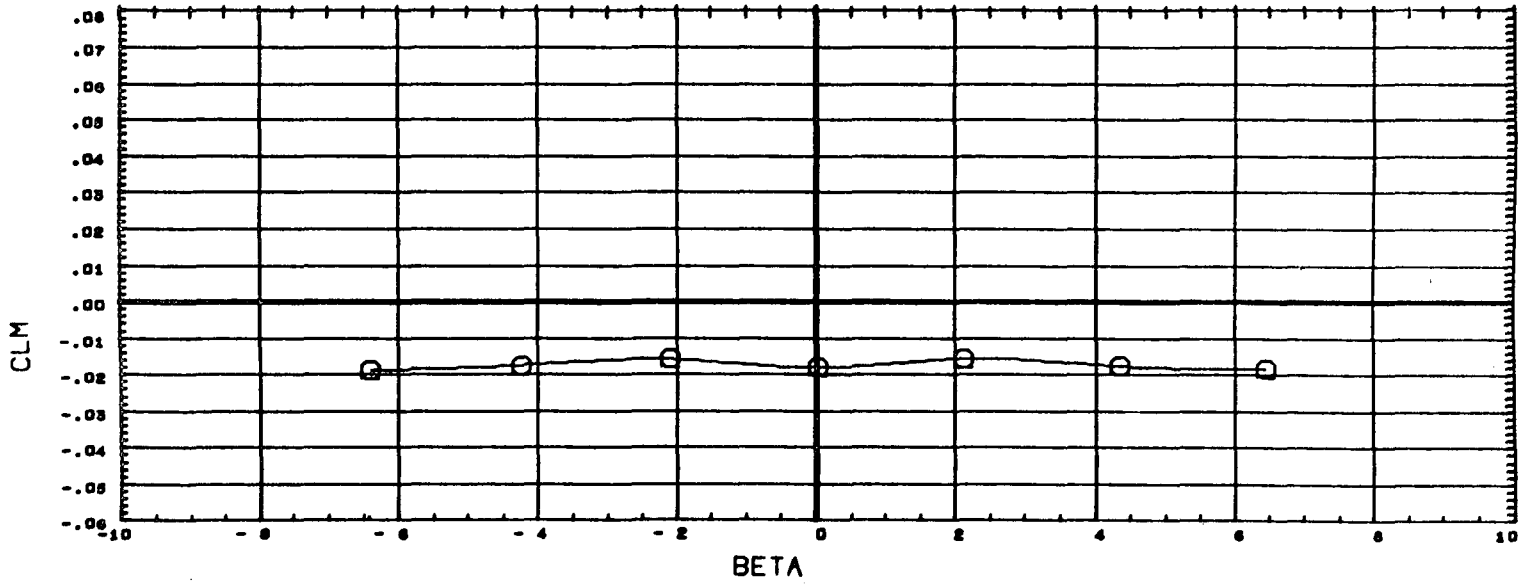
SYMBOL	MACH	PARAMETRIC VALUES			
○	1.071	ALPHA	25.000	RUDDER	0.000
		RUDFLR	30.000		

DATA HIST. CODE . GC

REFERENCE INFORMATION		
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BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



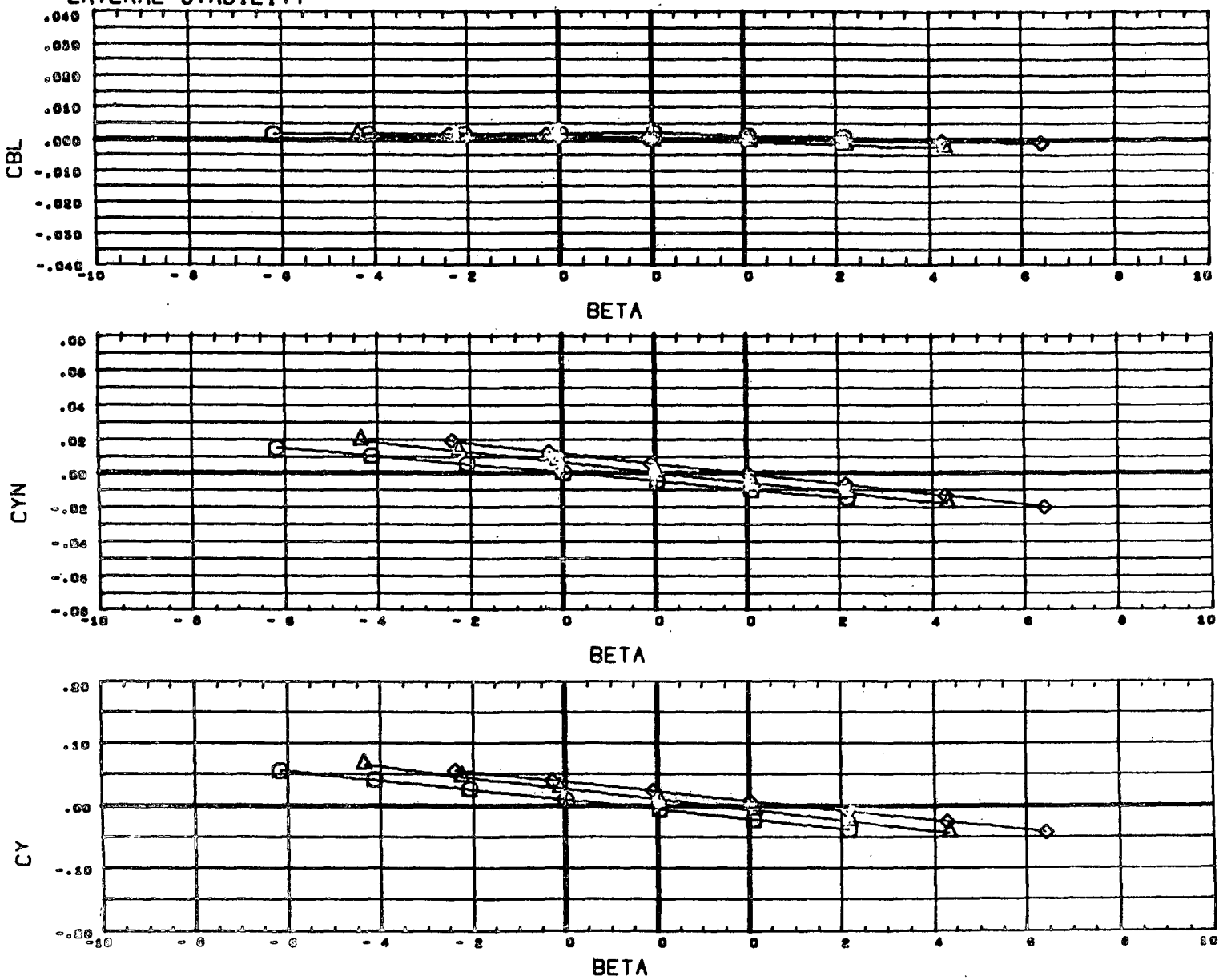


SYMBOL	MACH		PARAMETRIC VALUES		
O	1.971	ALPHA	25.000	RUDDER	0.000
		RUDFLR	30.000		

DATA HIST. CODE GC

REFERENCE INFORMATION		
SREF	14.6636	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



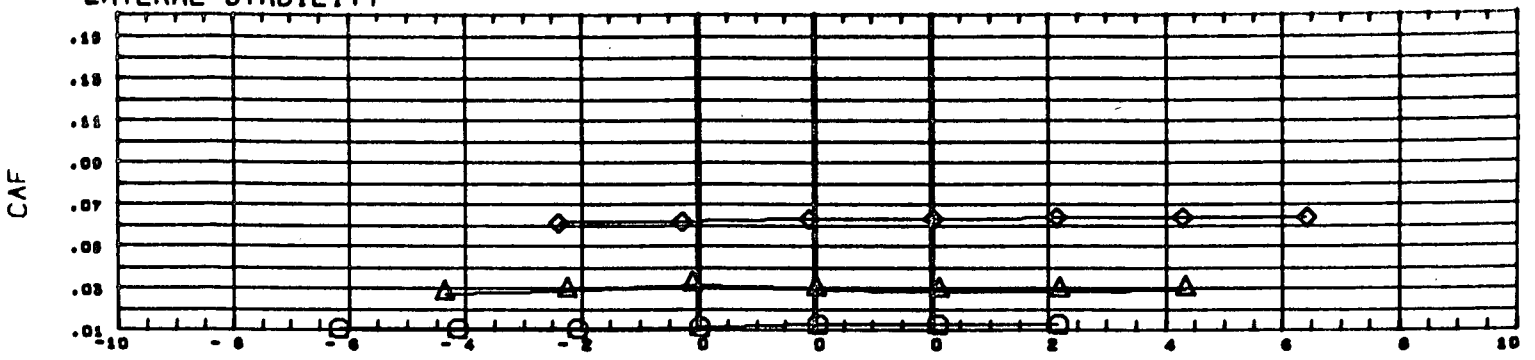
SYMBOL	MACH	PARAMETRIC VALUES	
○	0.597	ALPHA	10.000
△	0.900		
◇	1.200		

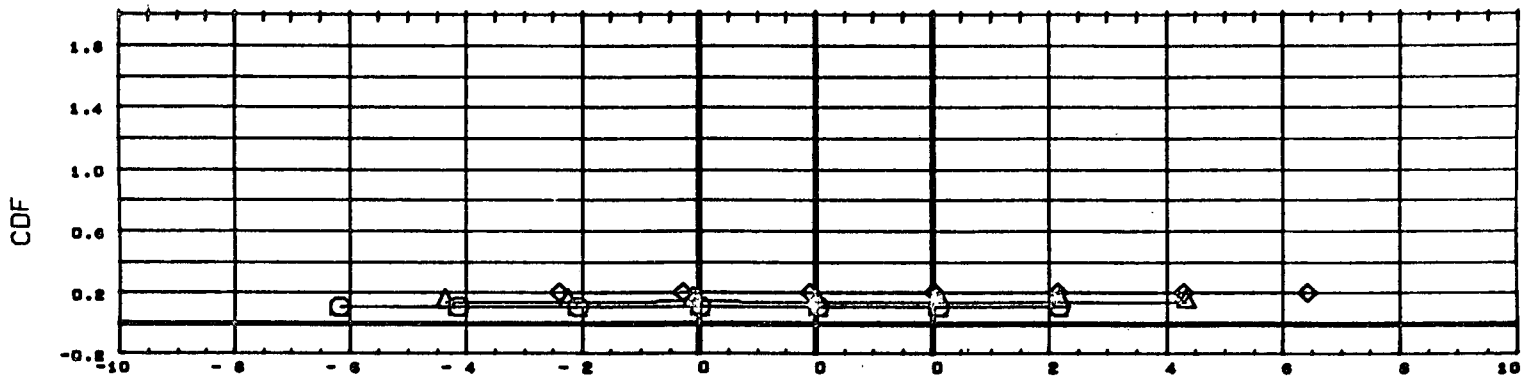
DATA HIST. CODE GC

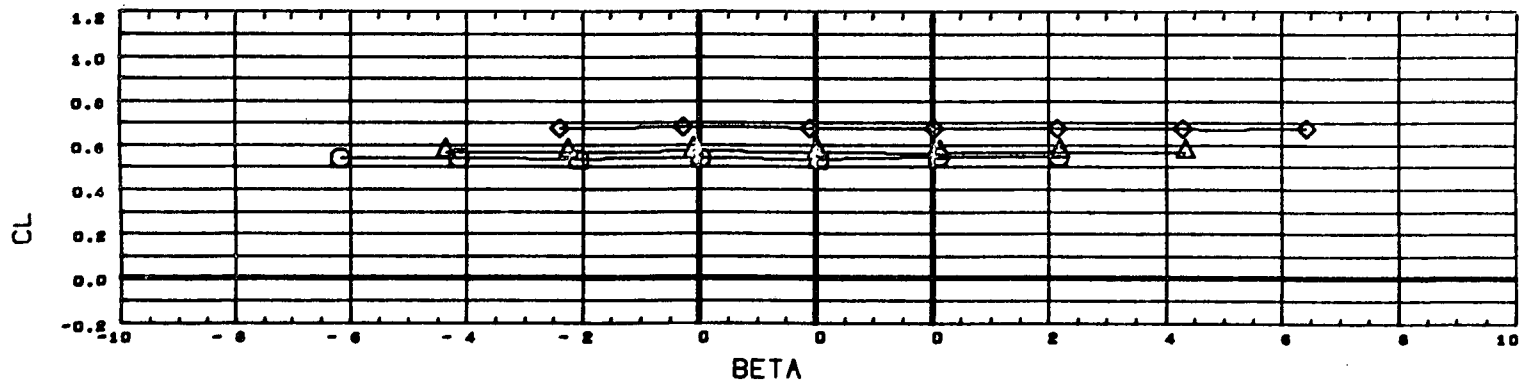
REFERENCE INFORMATION

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SCALE	0.0094	

LATERAL STABILITY







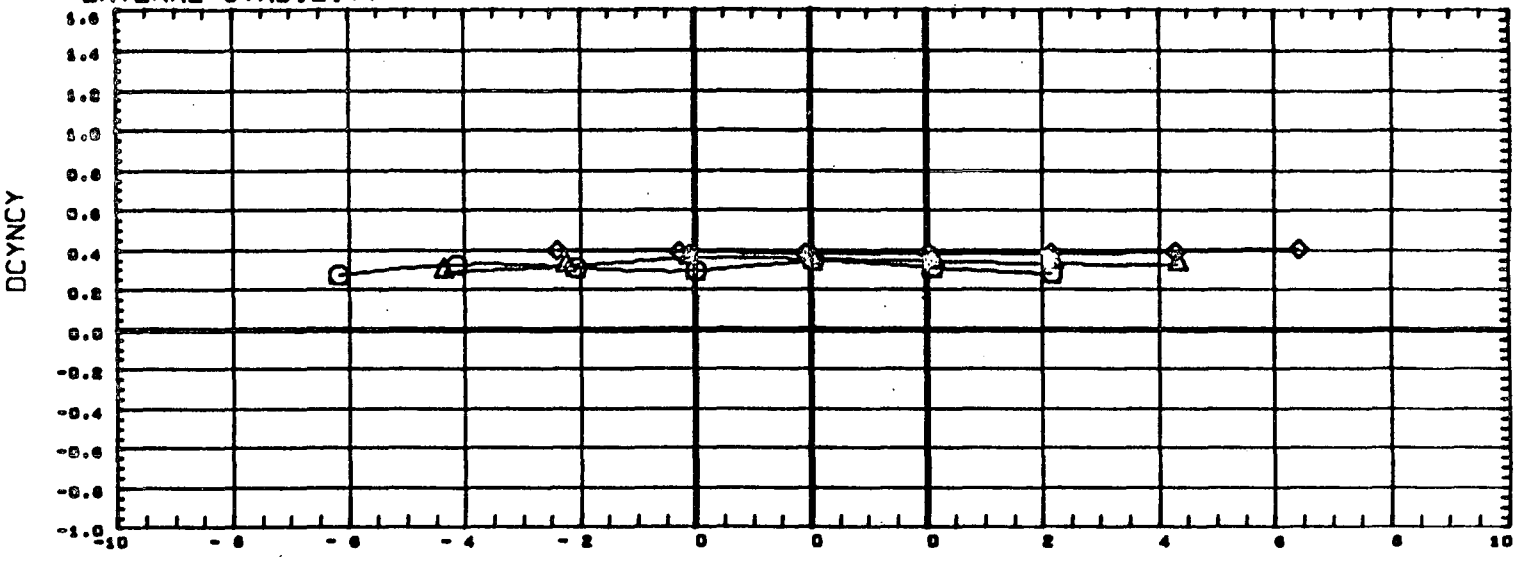
SYMBOL	MACH	PARAMETRIC VALUES	
○	0.597	ALPHA	10.000
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◇	1.196		

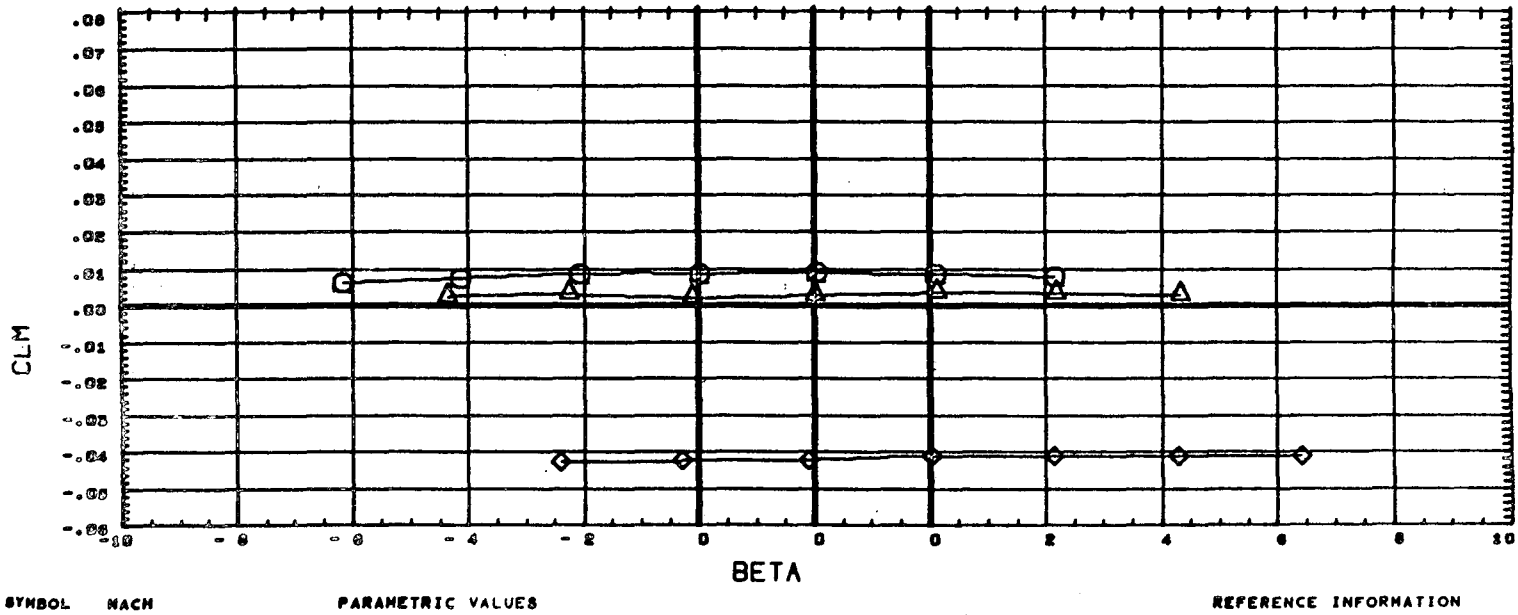
DATA HIST. CODE GC

REFERENCE INFORMATION

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BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY





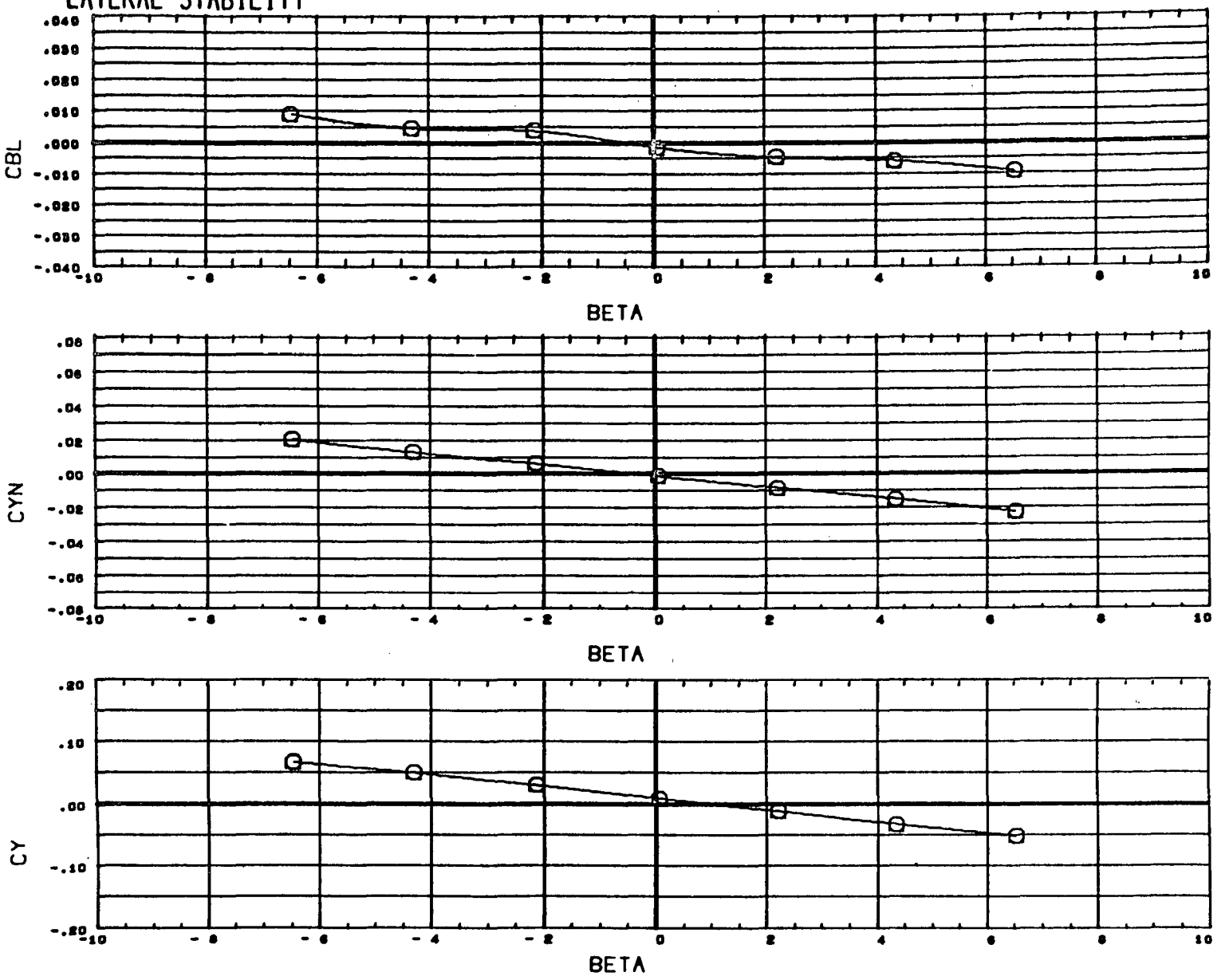
SYMBOL	MACH		PARAMETRIC VALUES
○	0.597	ALPHA	10.000
△	0.905		
◇	1.196		

DATA HIST. CODE GC

REFERENCE INFORMATION

SREF	14.6636	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
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YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



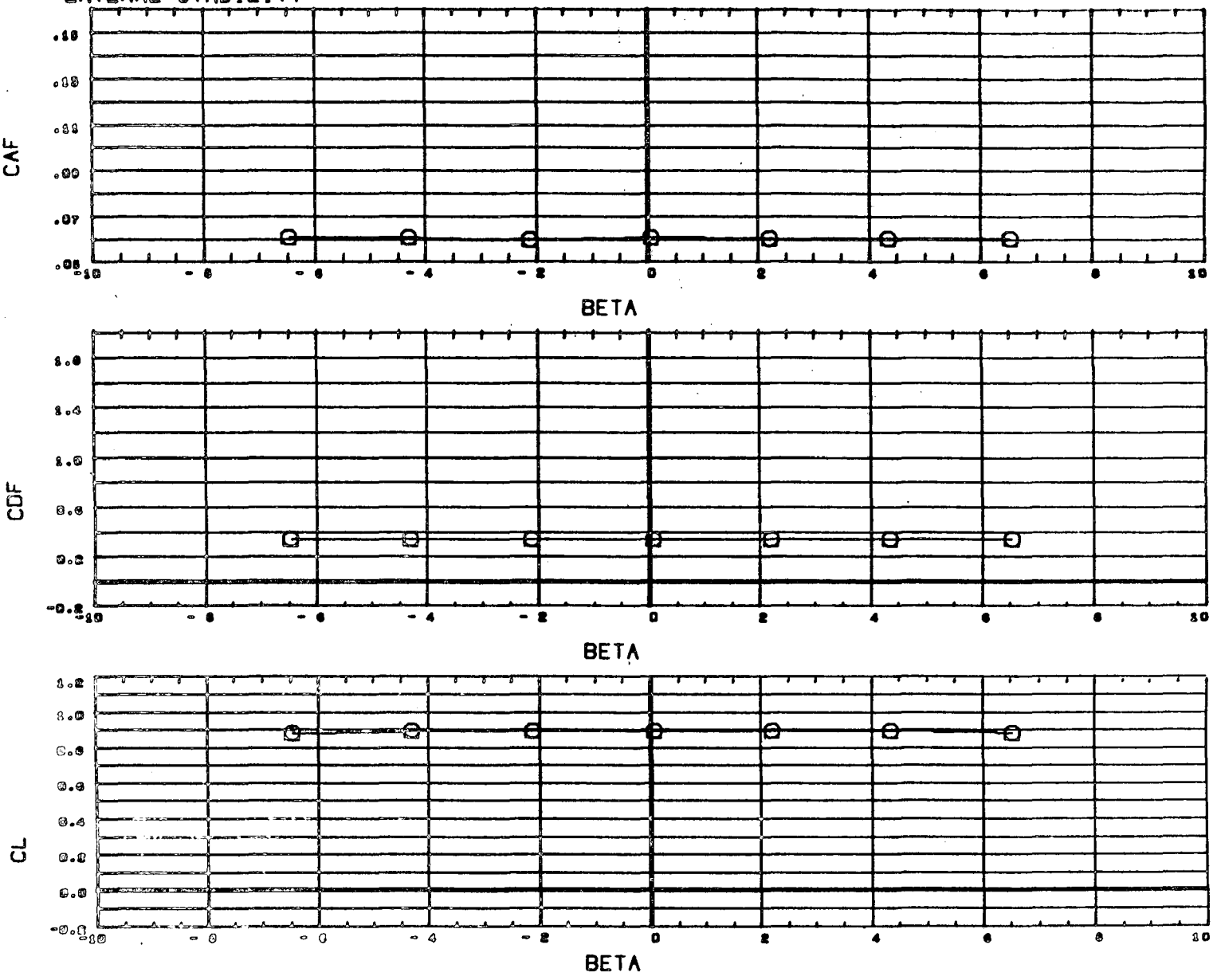
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O	1.199	ALPHA	15.000

DATA HIST. CODE GC

REFERENCE INFORMATION

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LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4621	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



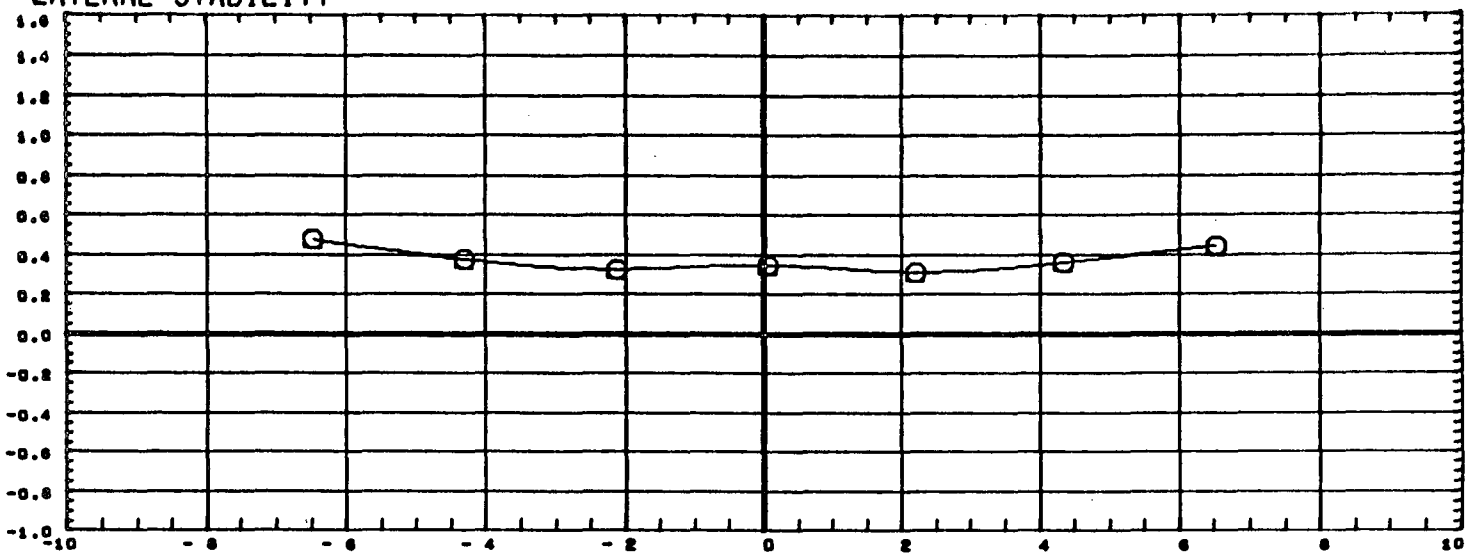
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O	0.899	ALPHA	15.000

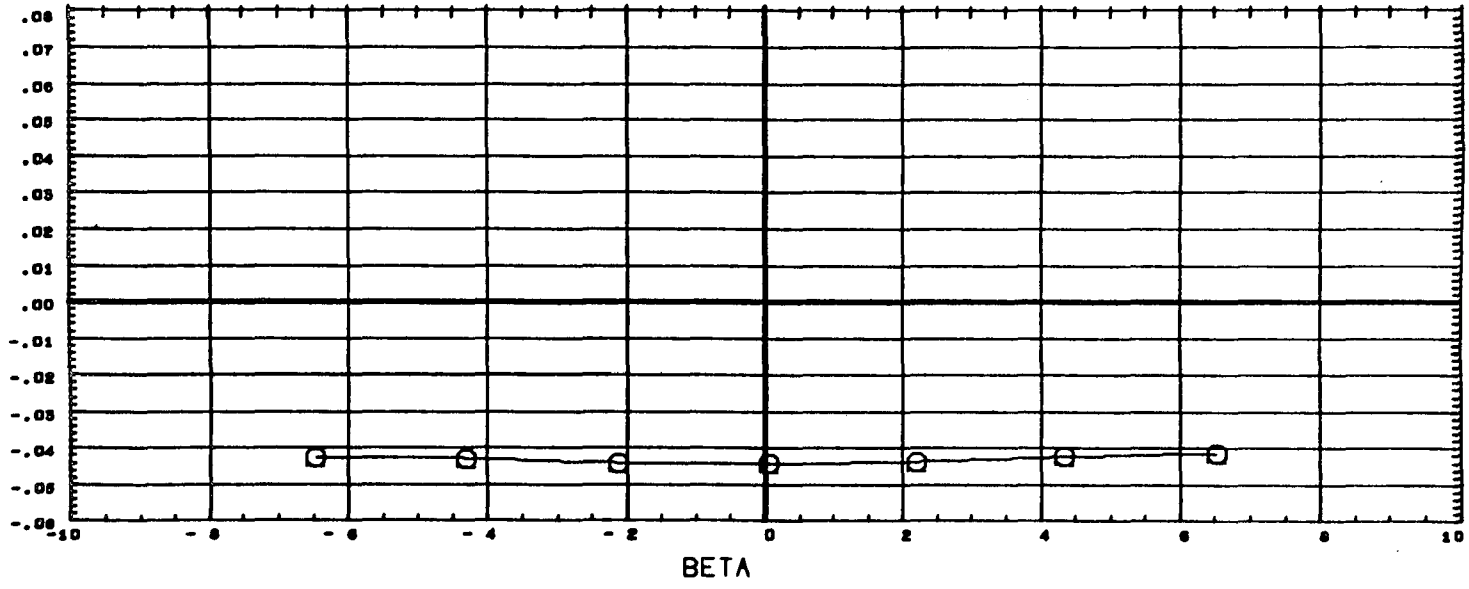
DATA MIDT. CODE 6C

REFERENCE INFORMATION

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LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY





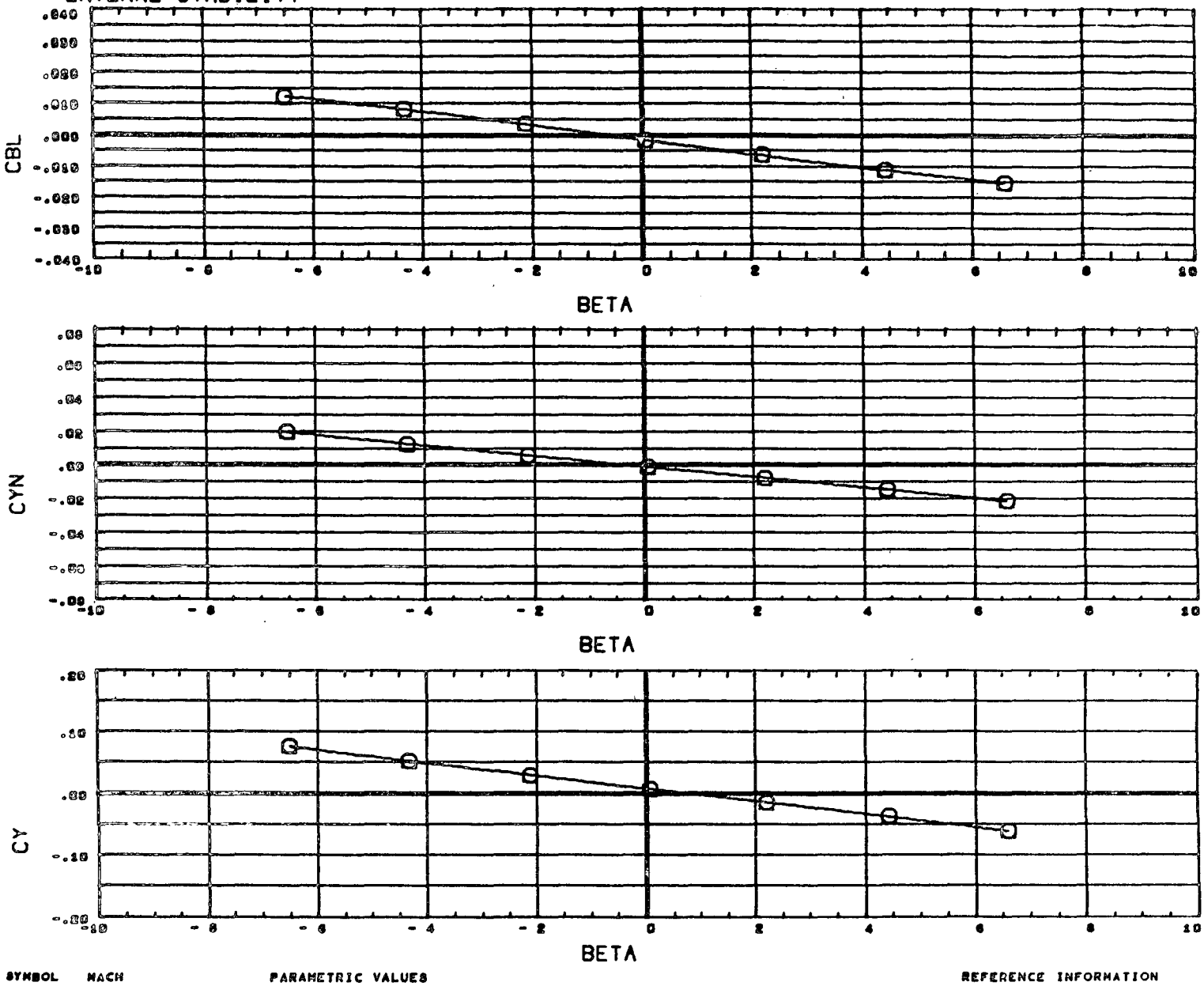
SYMBOL	MACH		PARAMETRIC VALUES
O	1.199	ALPHA	15.000

DATA HIST. CODE 6C

REFERENCE INFORMATION

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LREF	4.5080	IN.
BREF	5.6550	IN.
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YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



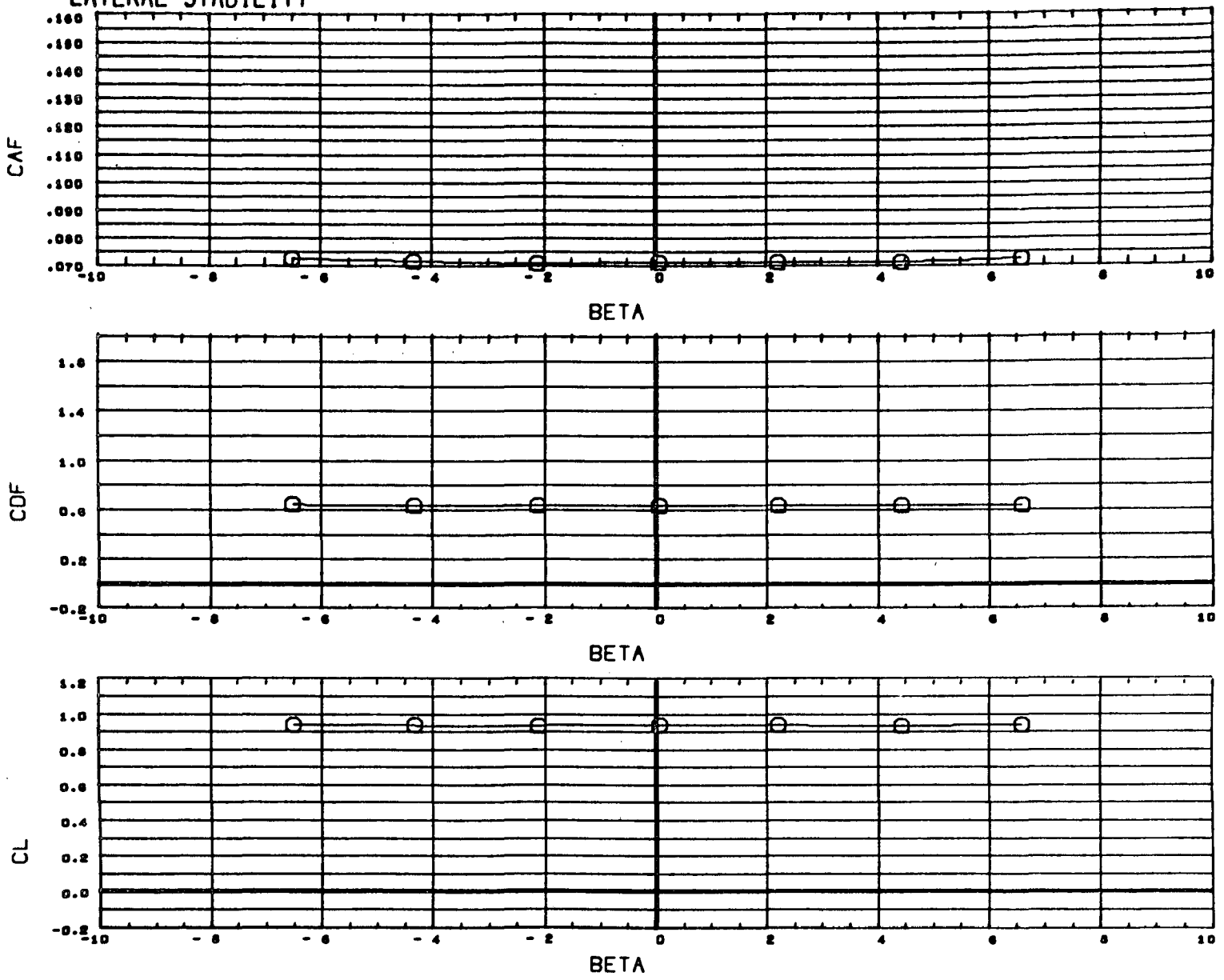
SYMBOL	MACH		PARAMETRIC VALUES
O	1.900	ALPHA	25.000

DATA HIST. CODE GC

REFERENCE INFORMATION

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BREF	5.6550	IN.
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YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



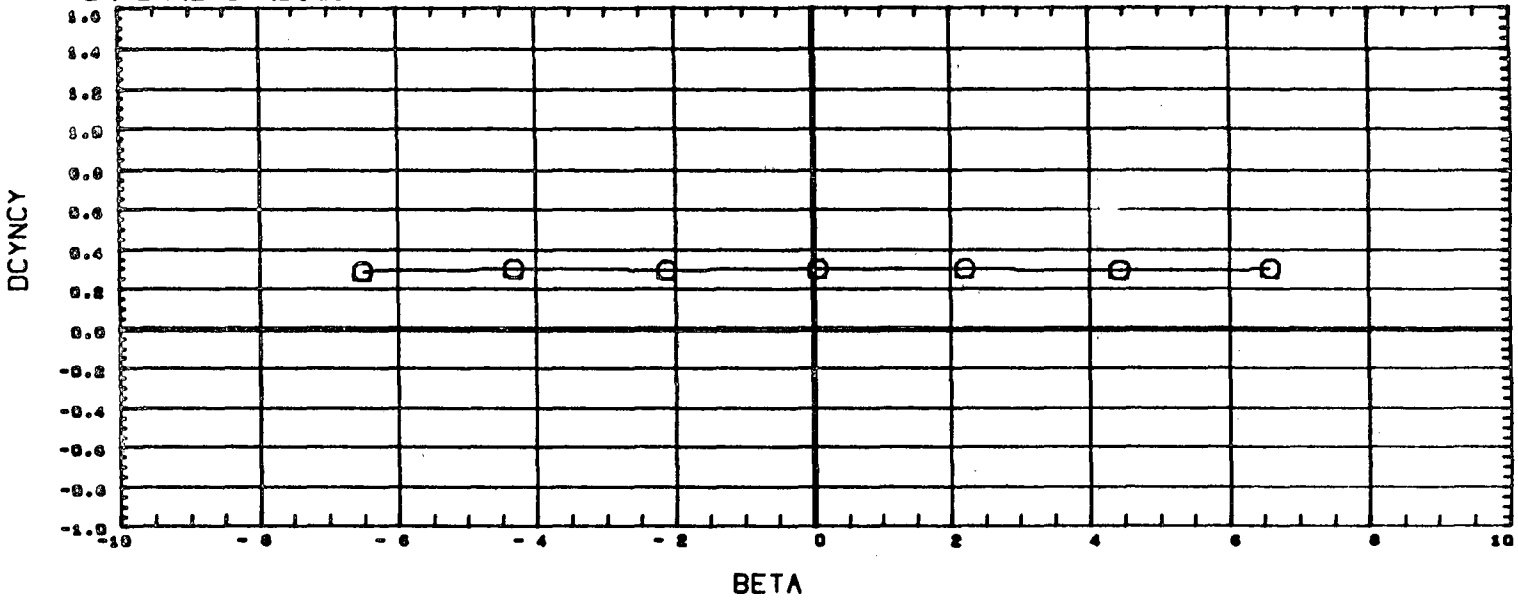
SYMBOL	MACH		PARAMETRIC VALUES
O	1.962	ALPHA	25.000

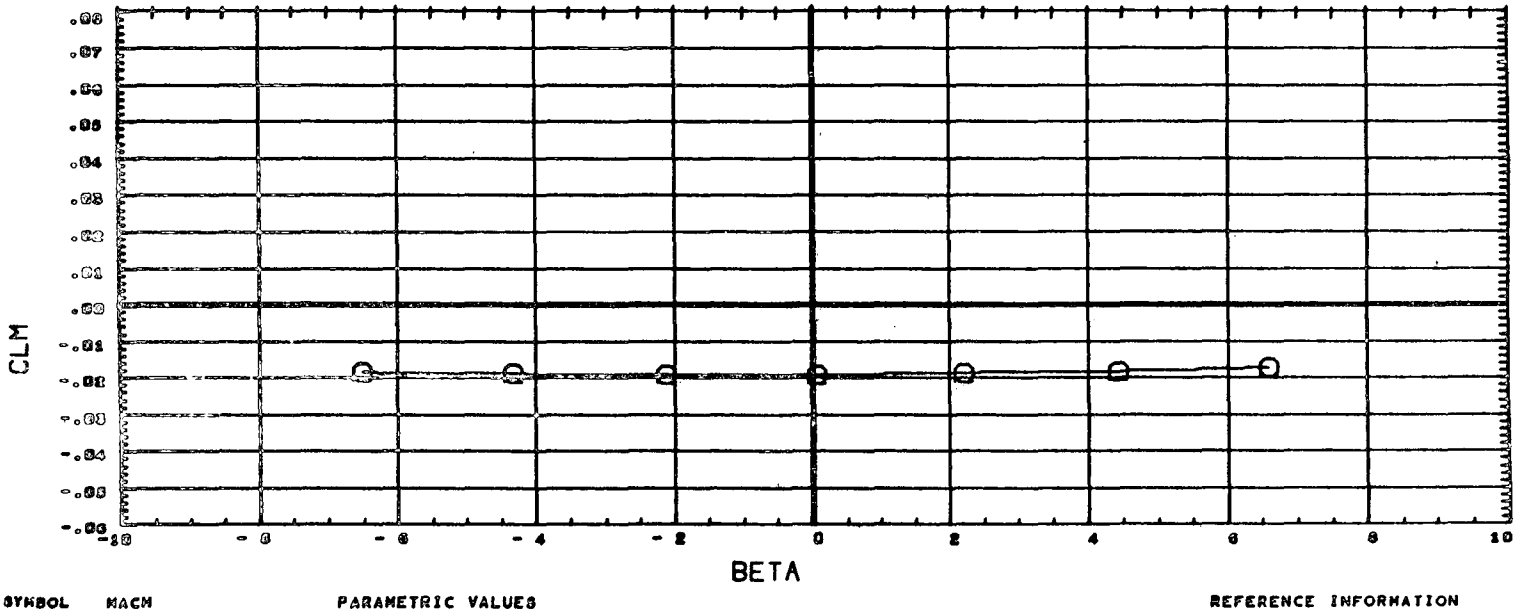
DATA HIST. CODE GC

REFERENCE INFORMATION

SREF	14.6636	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4621	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY





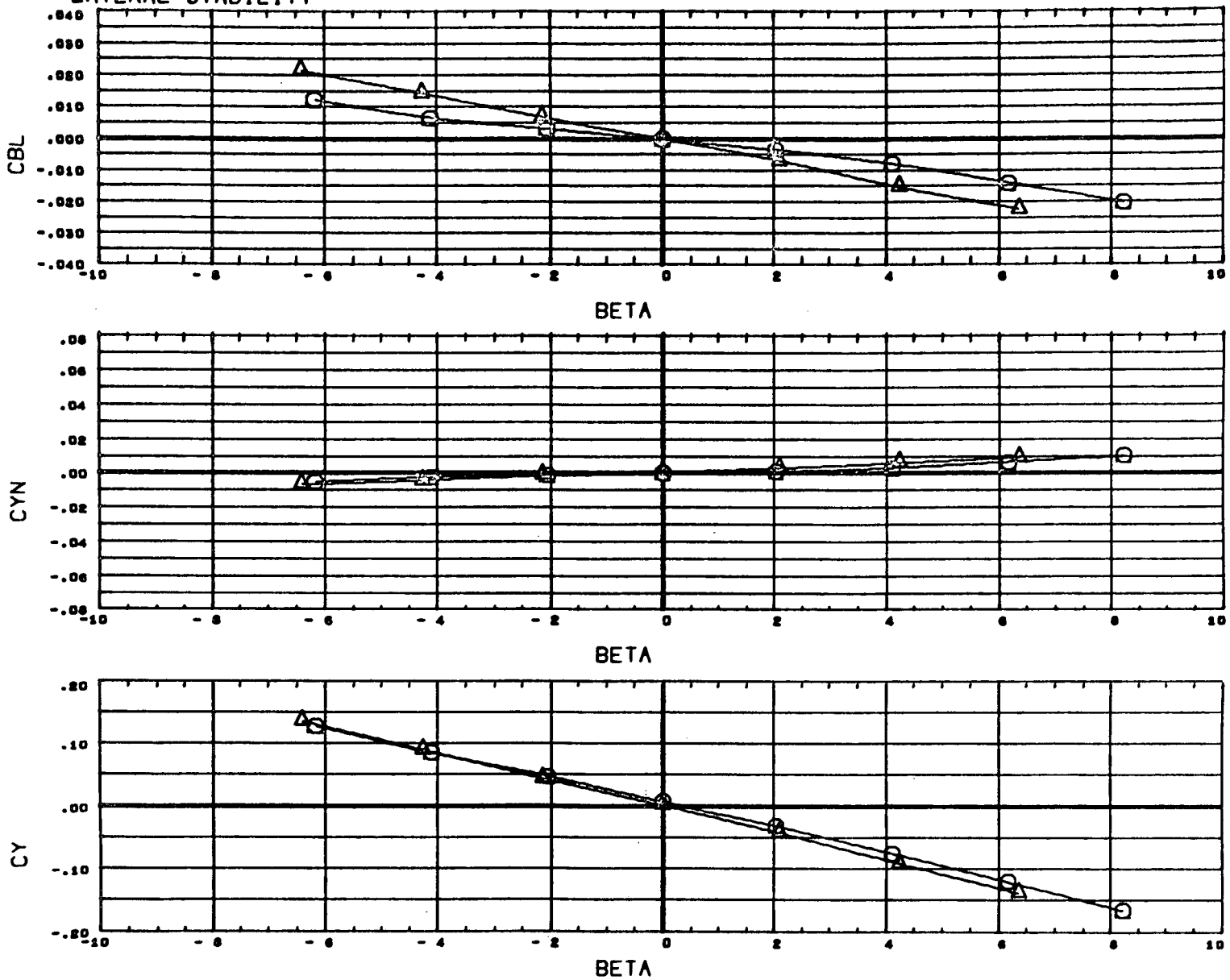
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O	1.960	ALPHA	25.000

DATA HIST. CODE GC

REFERENCE INFORMATION

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BREF	5.6550	IN.
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YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



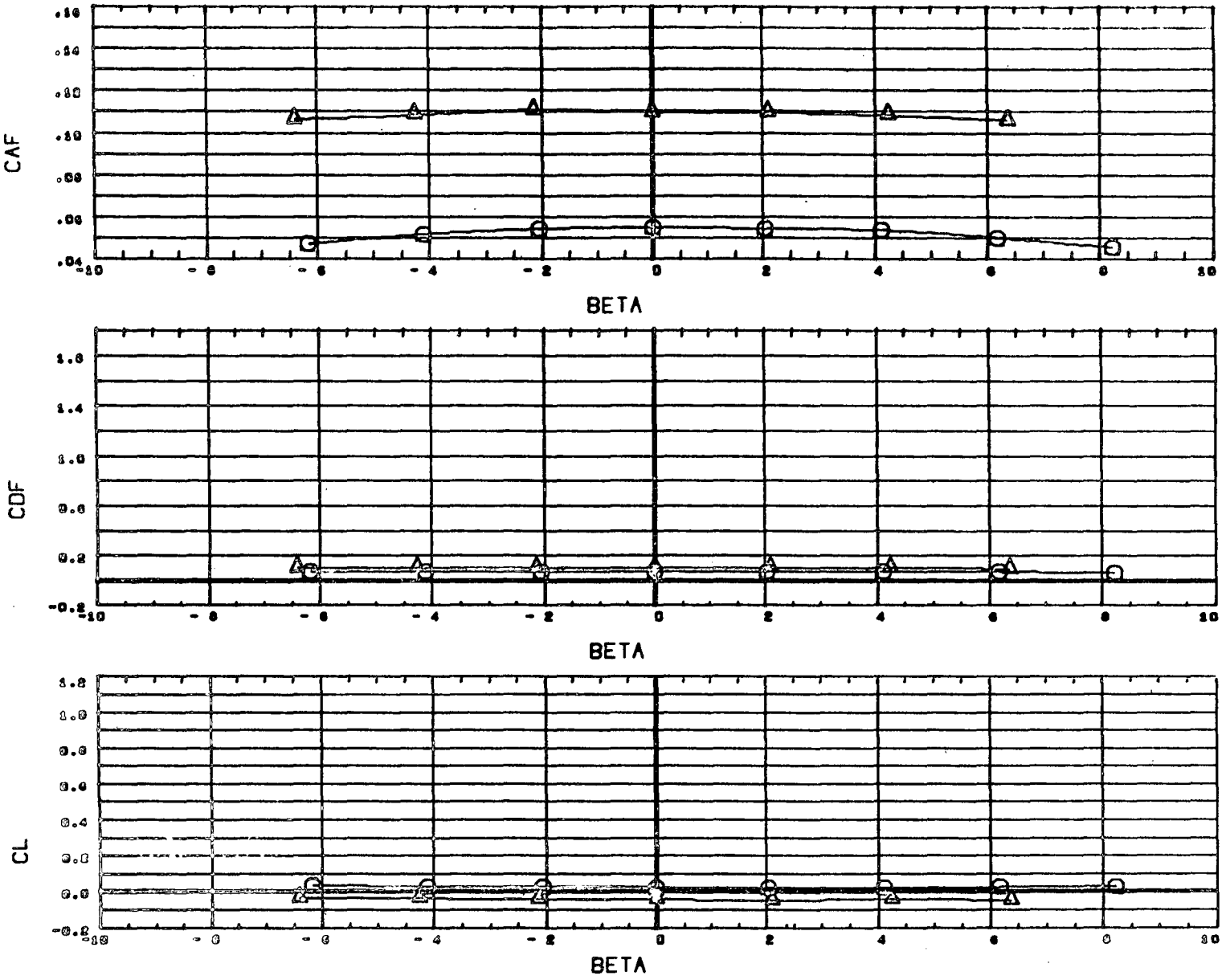
SYMBOL	MACH		PARAMETRIC VALUES		
○	0.597	ALPHA	0.000	RUDDER	0.000
△	1.199	RUDFLR	30.000		

DATA HIST. CODE GC

REFERENCE INFORMATION

SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



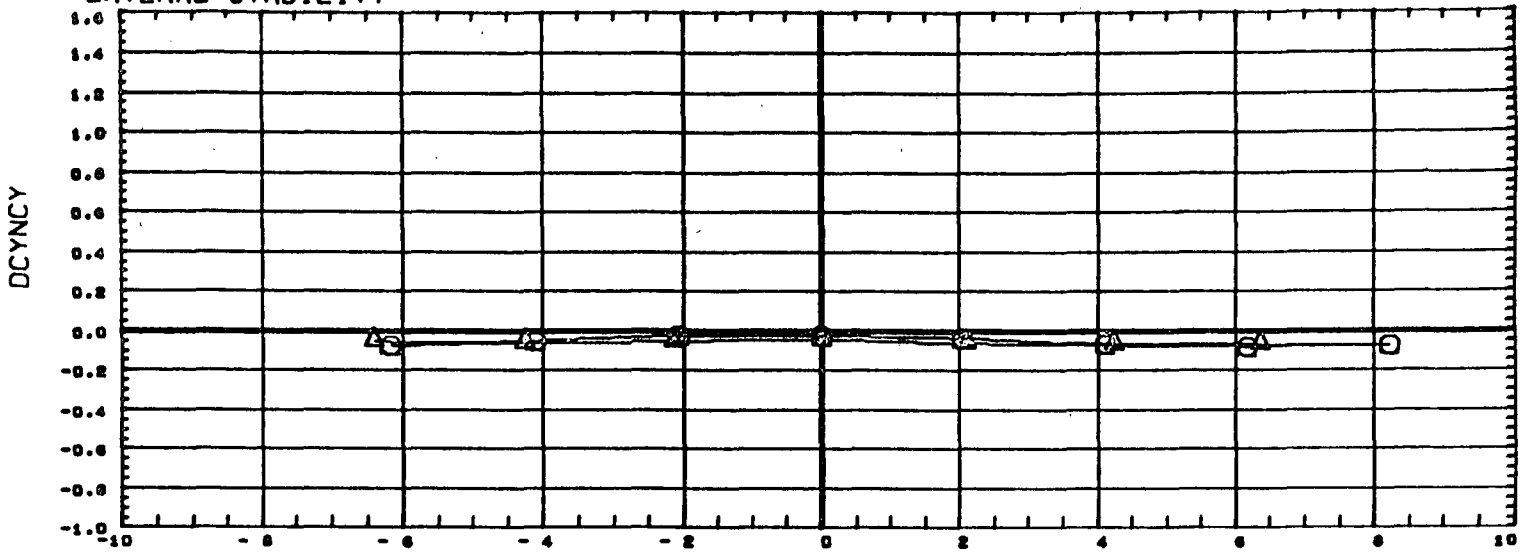
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○	0.897	ALPHA	0.000	RUDDER	0.000
△	1.199	RUDFLG	30.000		

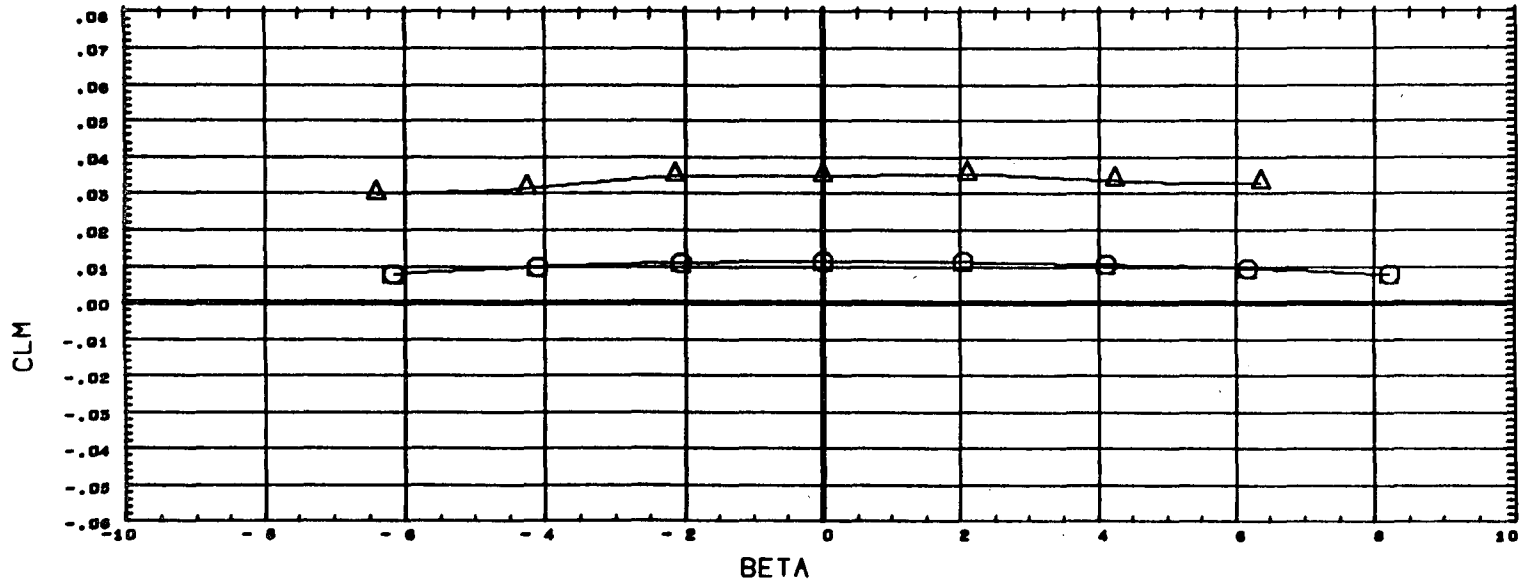
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REFERENCE INFORMATION

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SCALE	0.0034	

LATERAL STABILITY



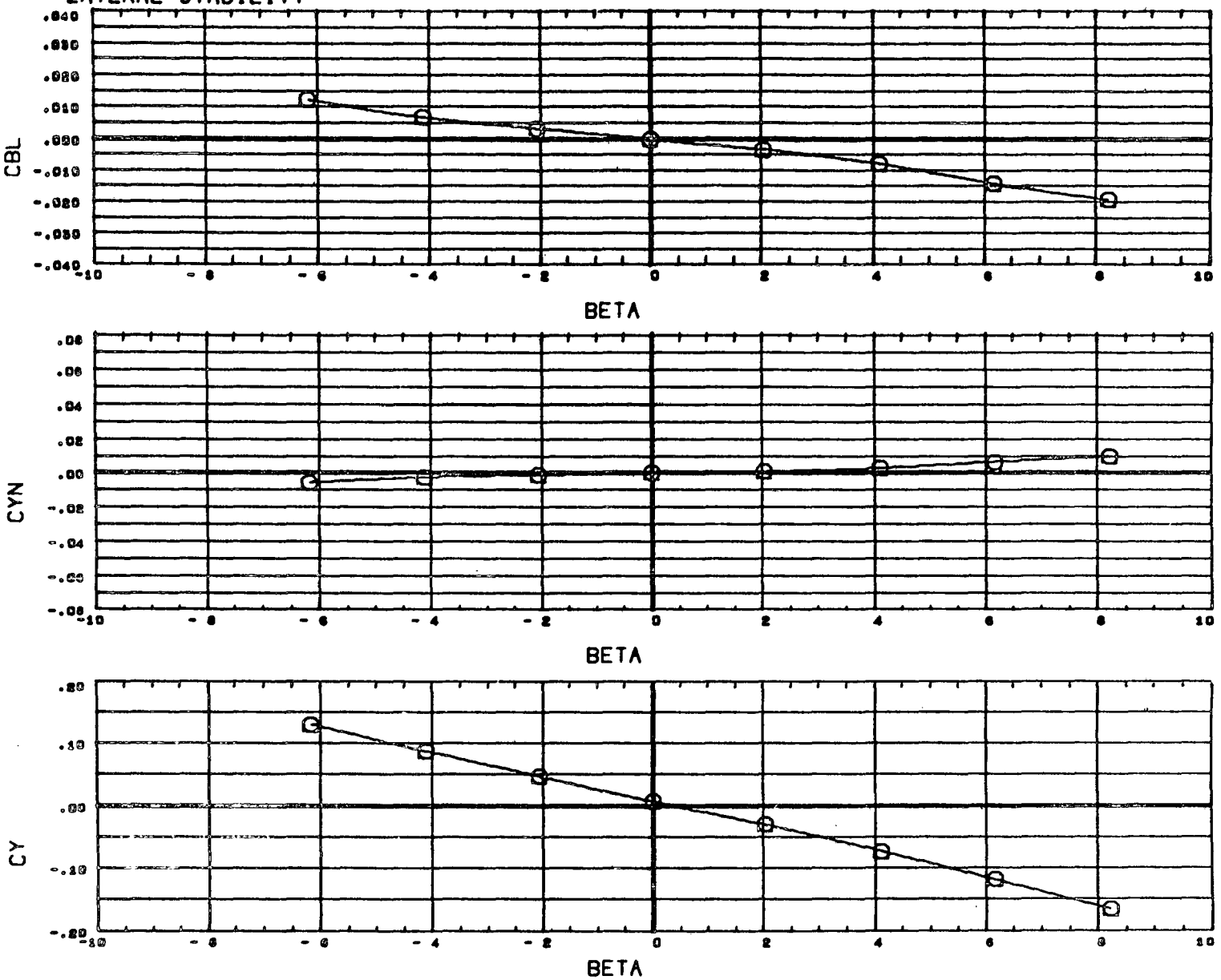


SYMBOL	MACH		PARAMETRIC VALUES		
○	0.597	ALPHA	0.000	RUDDER	0.000
△	1.199	RUDFLR	30.000		

DATA HIST. CODE GC

REFERENCE INFORMATION		
SREF	14.6636	SQ.IN.
LREF	4.5060	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



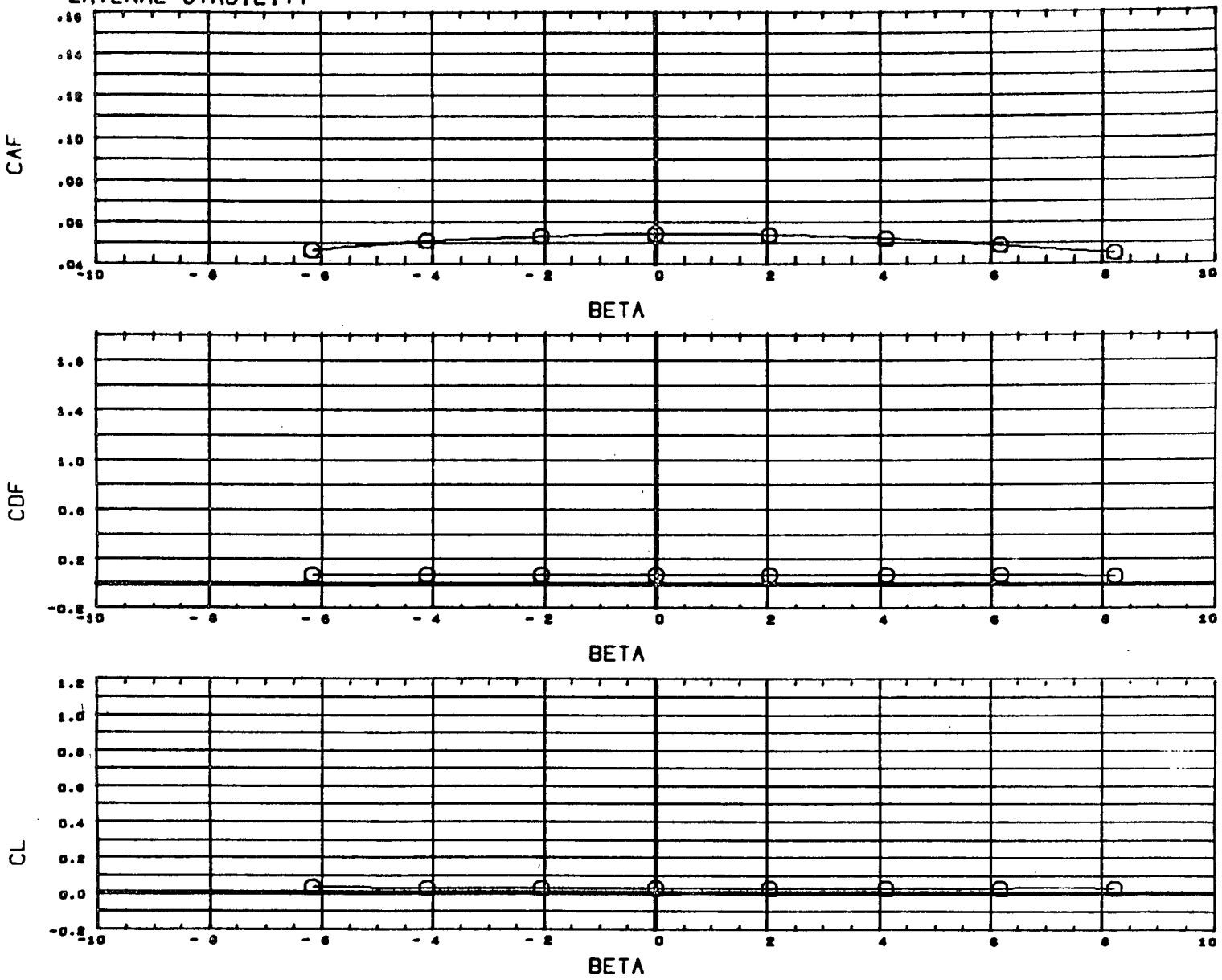
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DATA HIST. CODE GC

REFERENCE INFORMATION

SREF	14.6636	SQ.IN.
LREF	4.5060	IN.
BREF	5.6550	IN.
XMRP	1.4621	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY

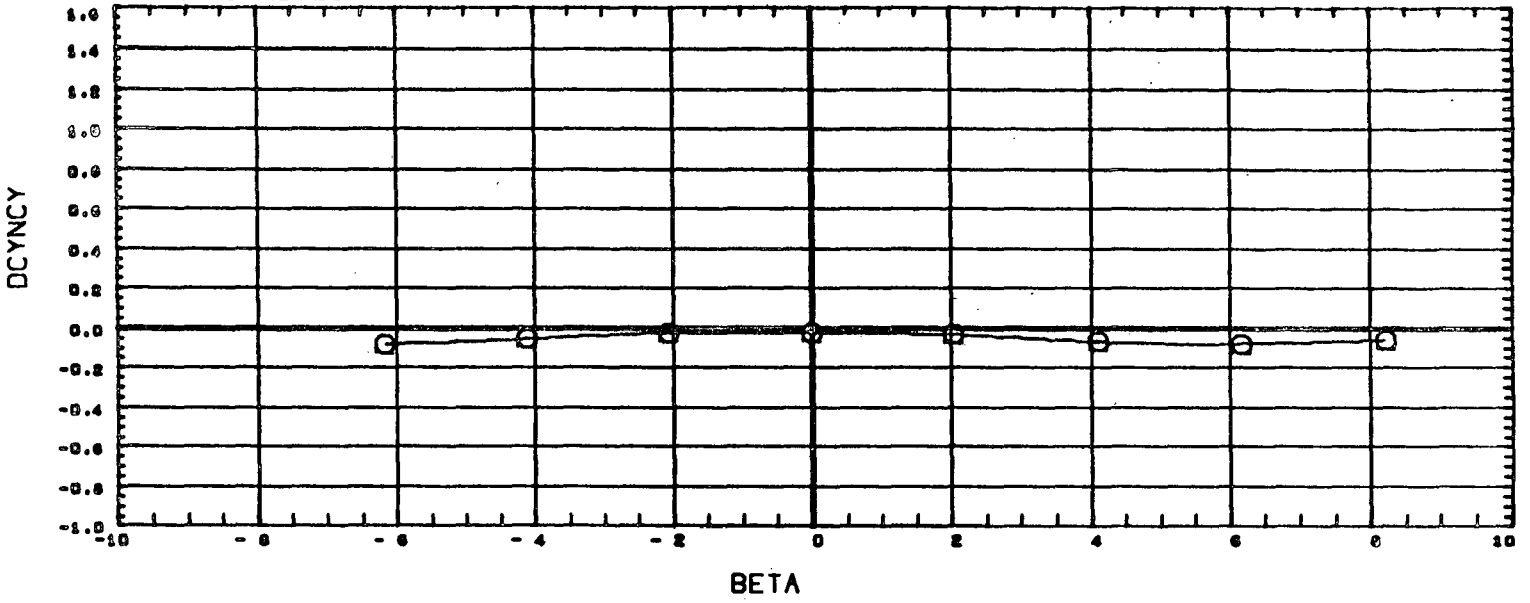


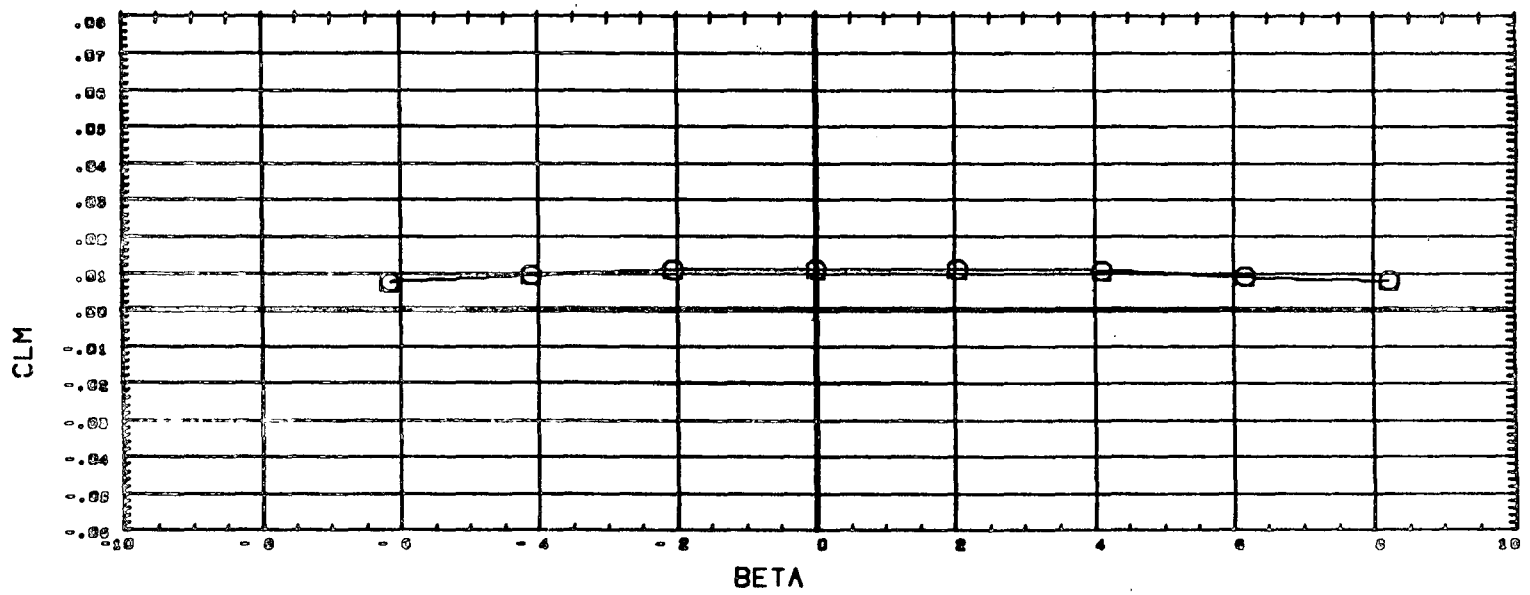
SYMBOL	MACH	PARAMETRIC VALUES			
O	0.599	ALPHA	0.000	RUDDER	0.000
		RUDFLR	30.000		

DATA HIST. CODE GC

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY





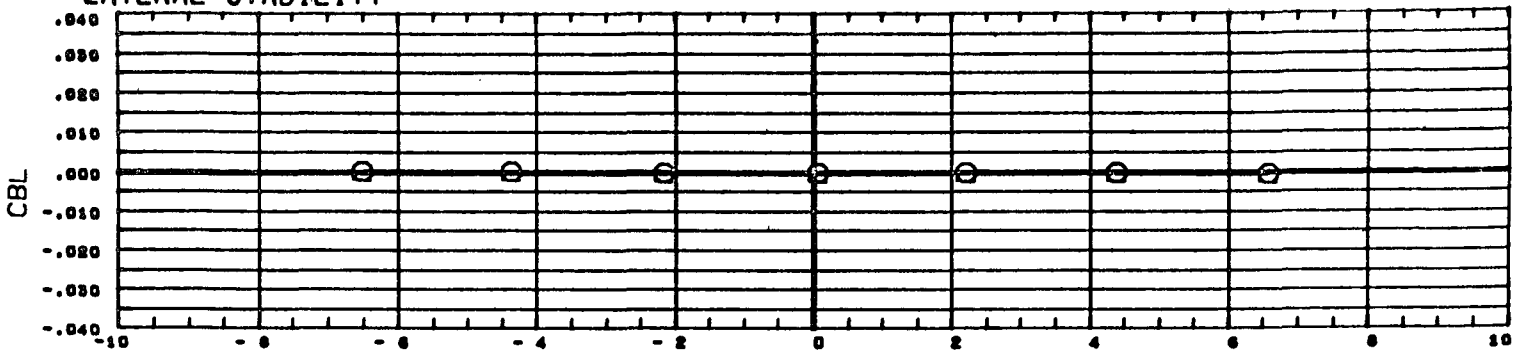
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O	0.599	ALPHA	0.000	RUDDER	0.000
		RUDFLR	30.000		

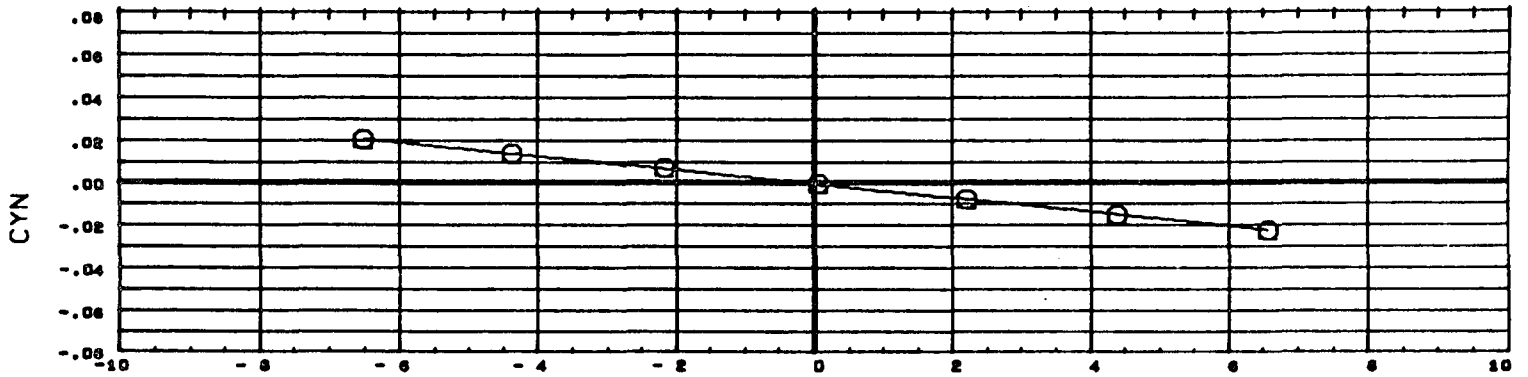
DATA HIST. CODE 6C

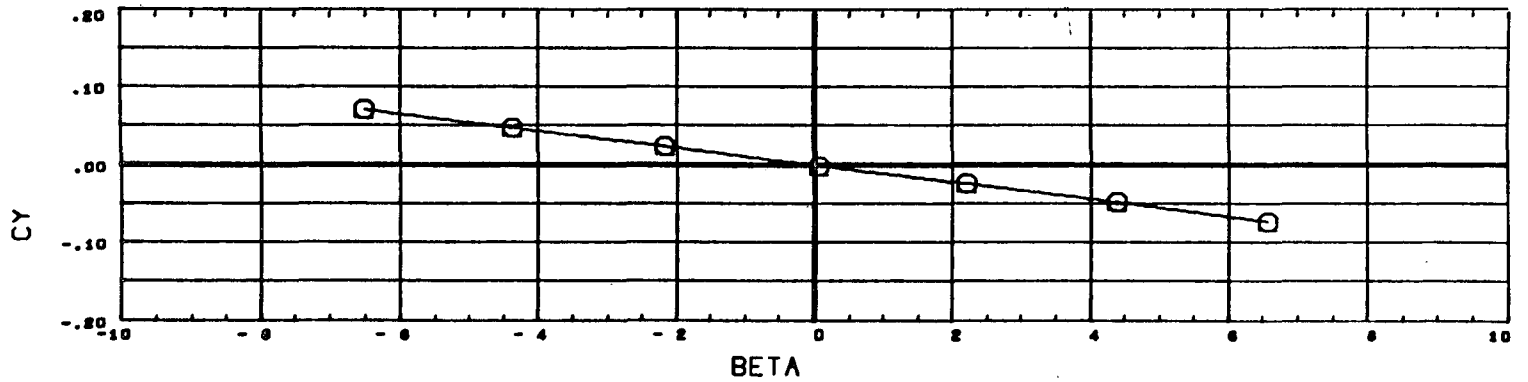
REFERENCE INFORMATION

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BREF	5.6550	IN.
XMRP	1.4621	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY







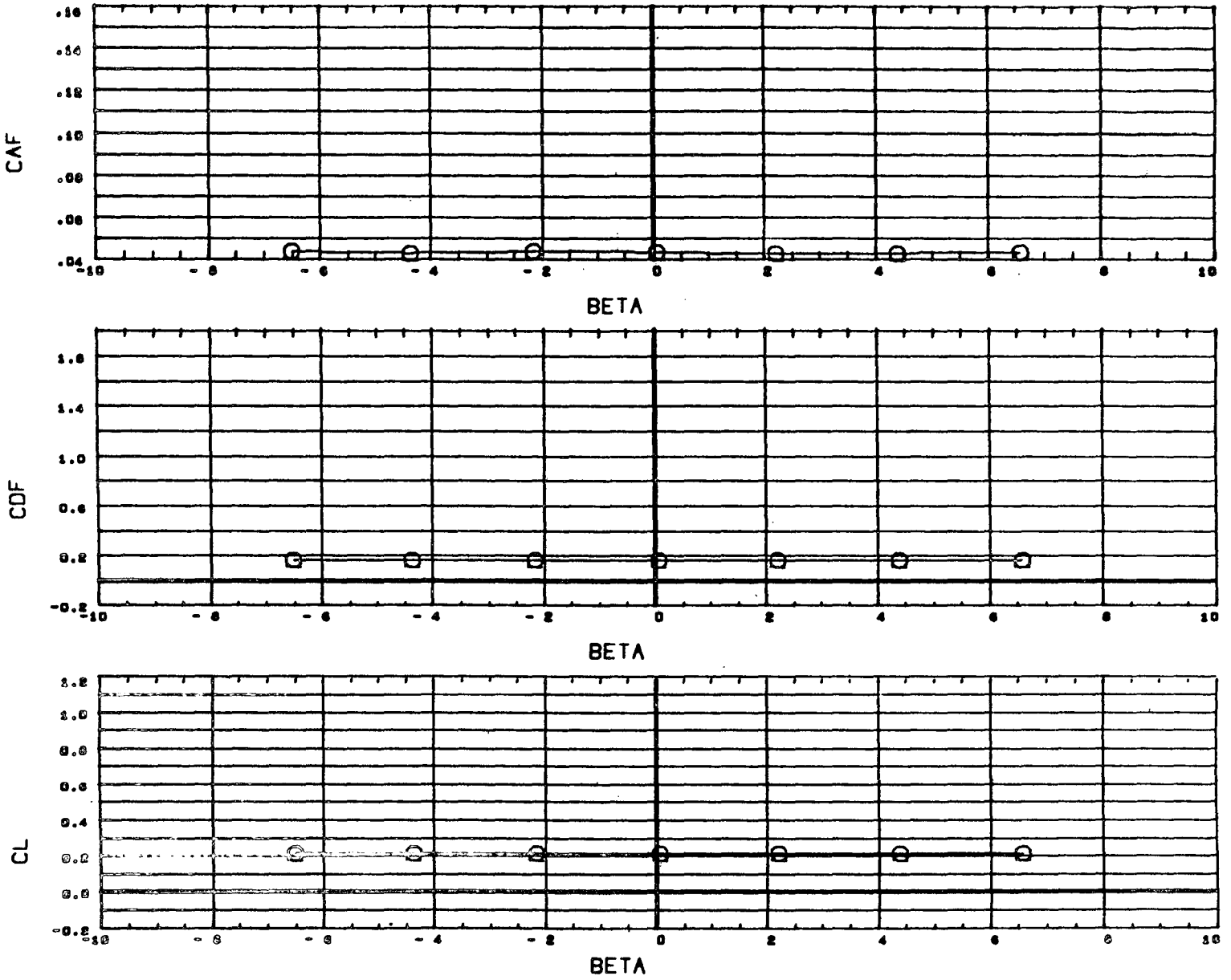
SYMBOL	MACH		PARAMETRIC VALUES
O	1.957	ALPHA	25.000

DATA HIST. CODE GC

REFERENCE INFORMATION

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BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



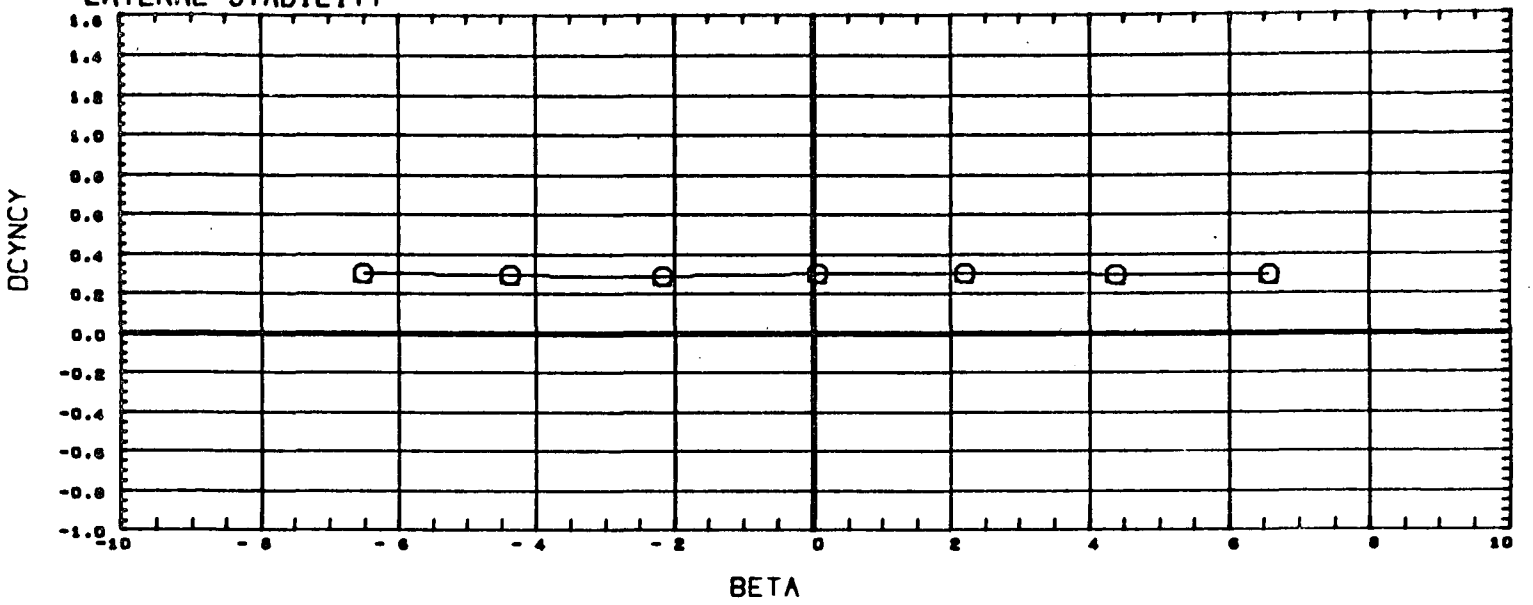
SYMBOL	MACH		PARAMETRIC VALUES
O	1.957	ALPHA	25.000

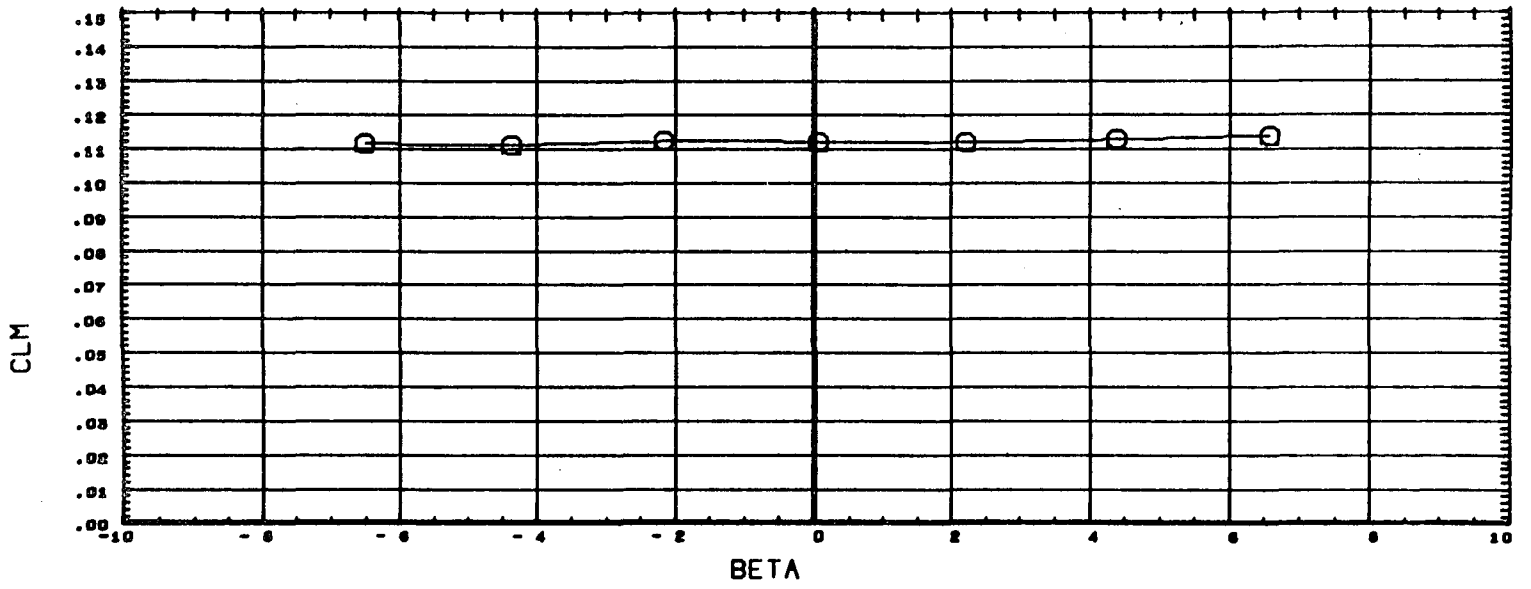
REFERENCE INFORMATION

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BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

DATA HIST. CODE GC

LATERAL STABILITY





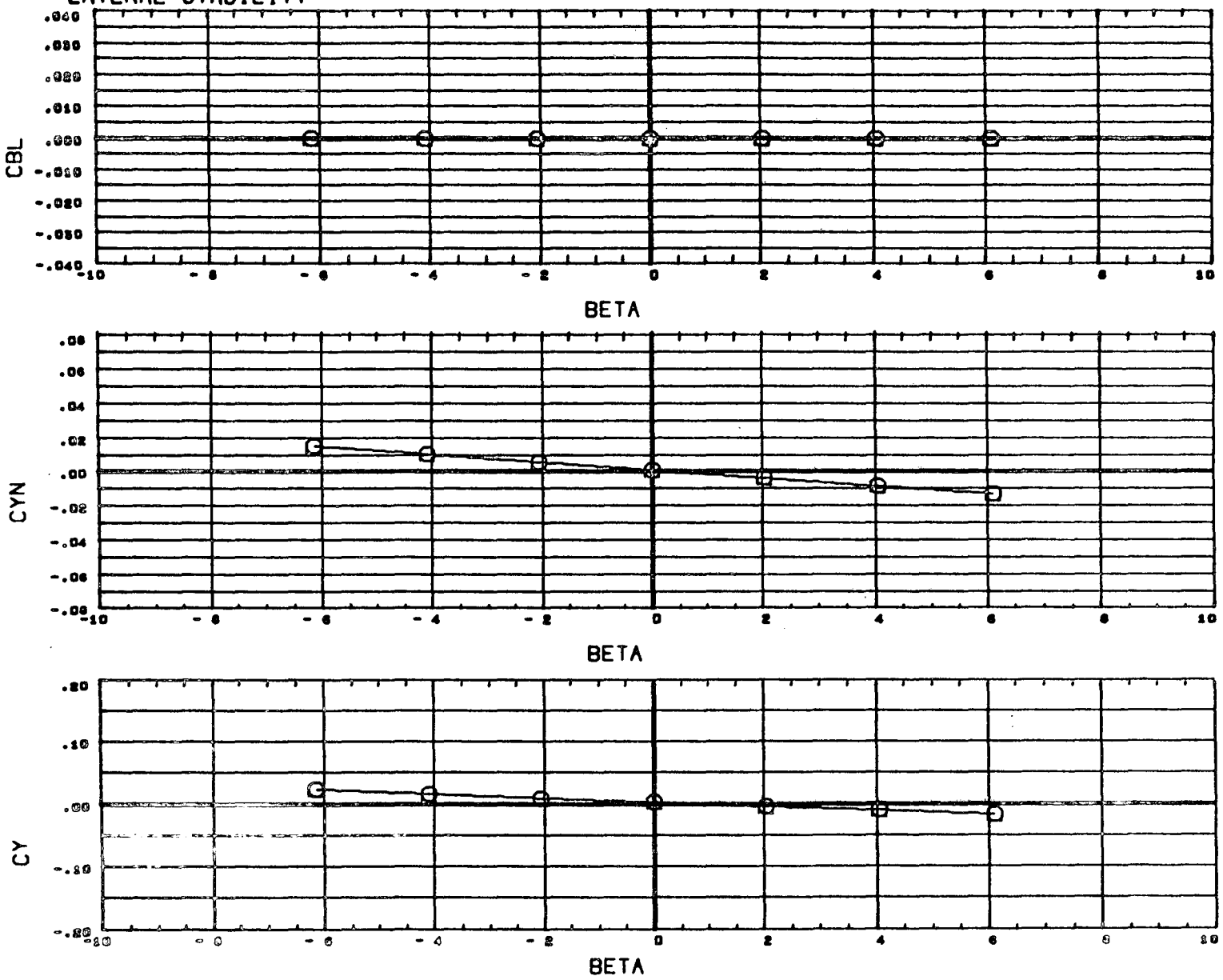
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O	1.957	ALPHA	25.000

DATA HIST. CODE GC

REFERENCE INFORMATION

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BREF	5.6550	IN.
XMRP	1.4621	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



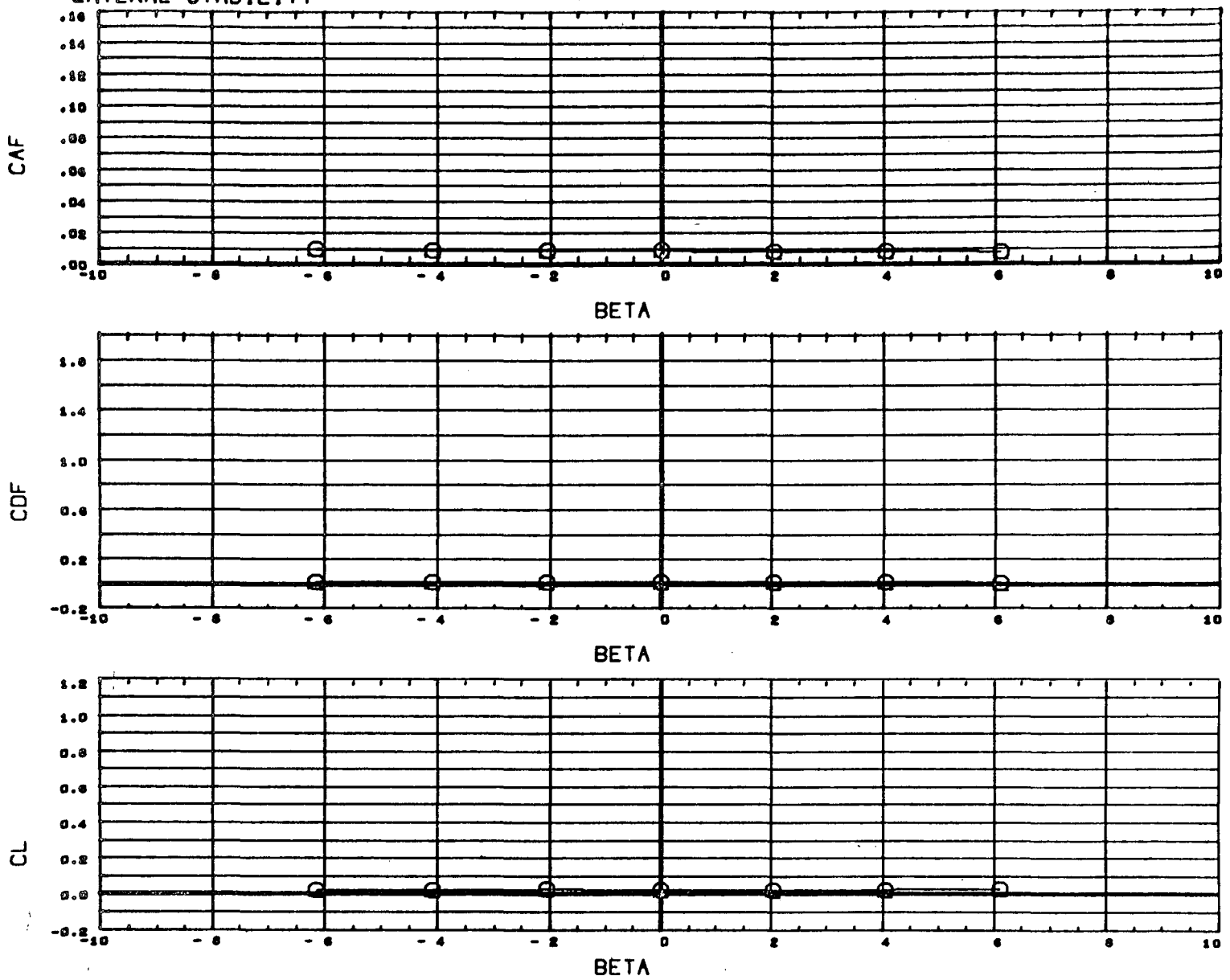
SYMBOL	MACH	PARAMETRIC VALUES	
O	0.601	ALPHA	10.000

DATA HIST. CODE 6C

REFERENCE INFORMATION

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LREF	4.9000	IN.
BREF	5.6550	IN.
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YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



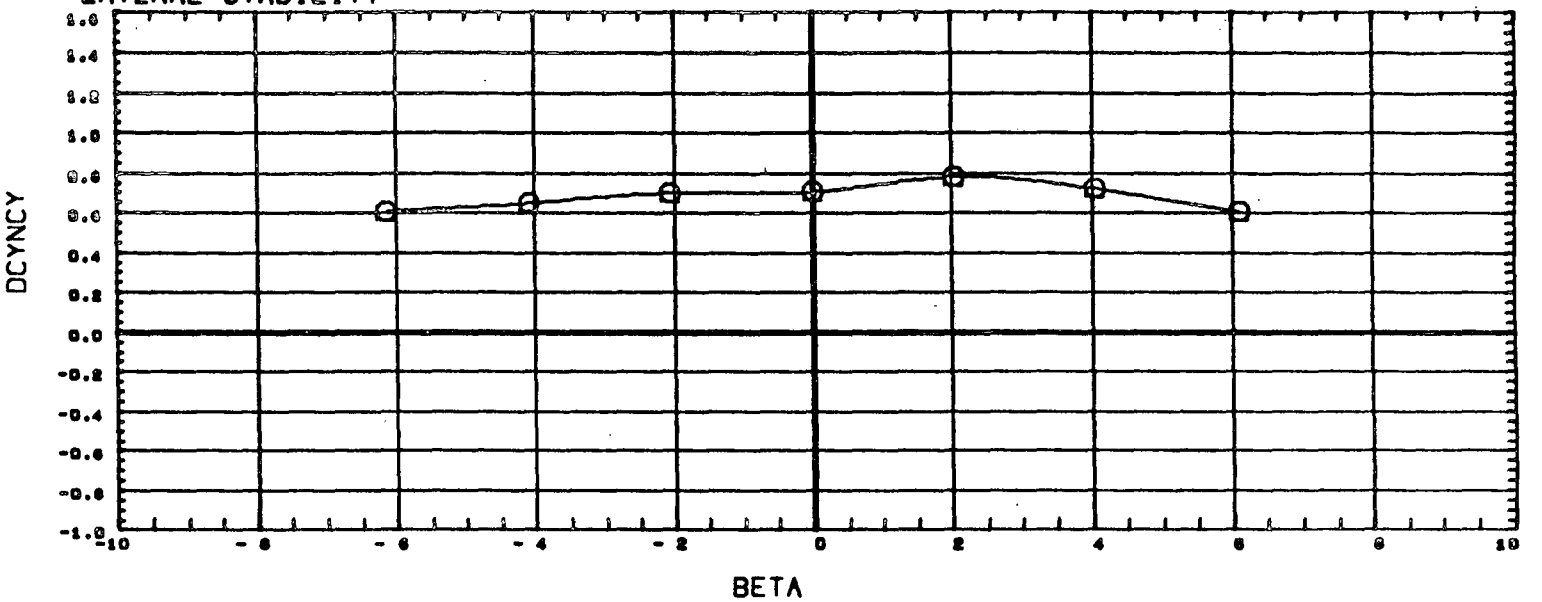
SYMBOL	MACH		PARAMETRIC VALUES
O	0.801	ALPHA	10.000

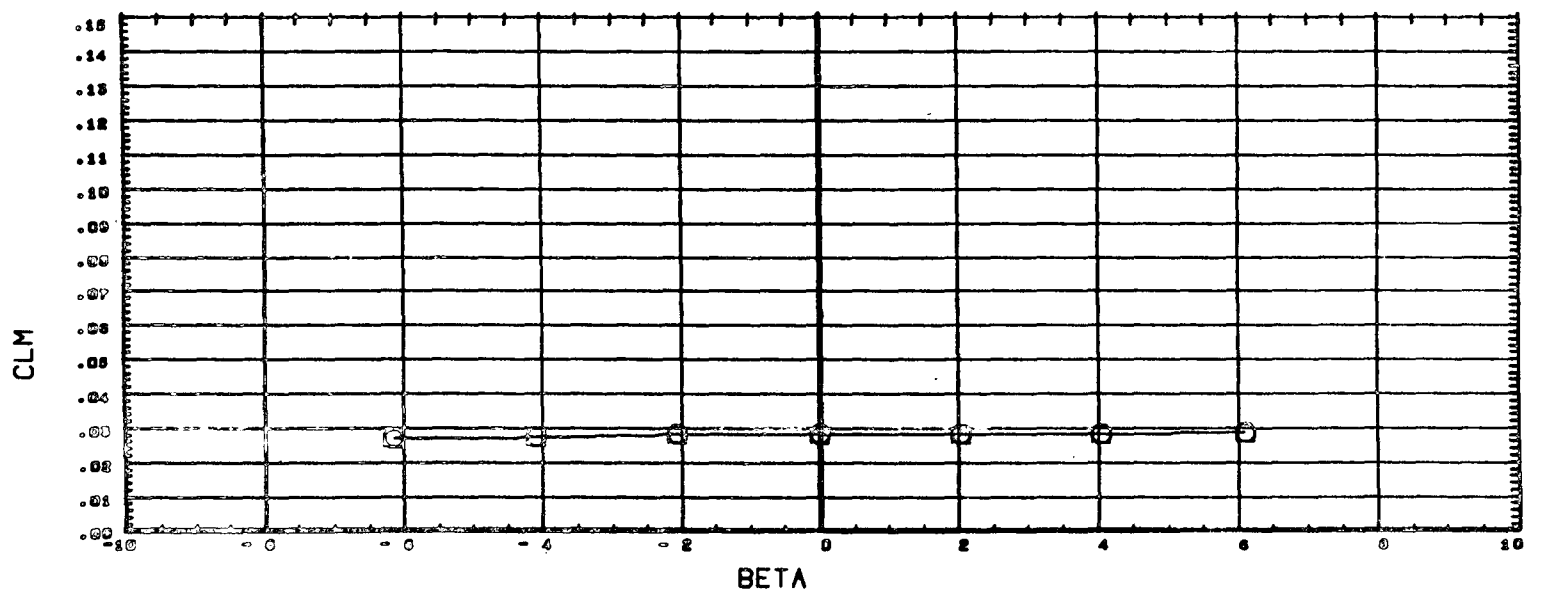
DATA HIST. CODE GC

REFERENCE INFORMATION

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BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY





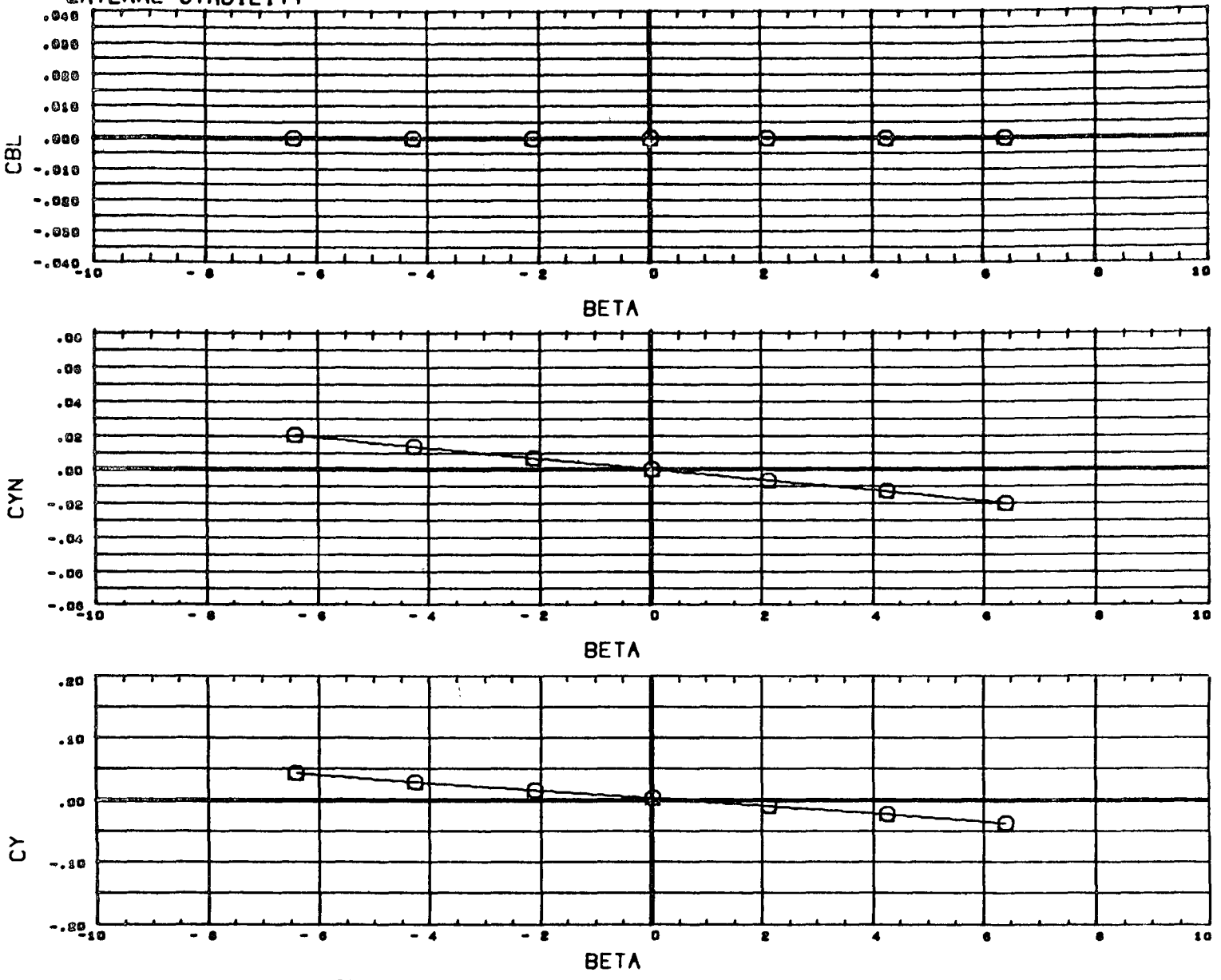
SYMBOL	MACH		PARAMETRIC VALUES
O	0.601	ALPHA	10.000

DATA HIST. CODE GC

REFERENCE INFORMATION

SREF	14.6636	SQ.IN.
LREF	4.9080	IN.
BREF	9.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



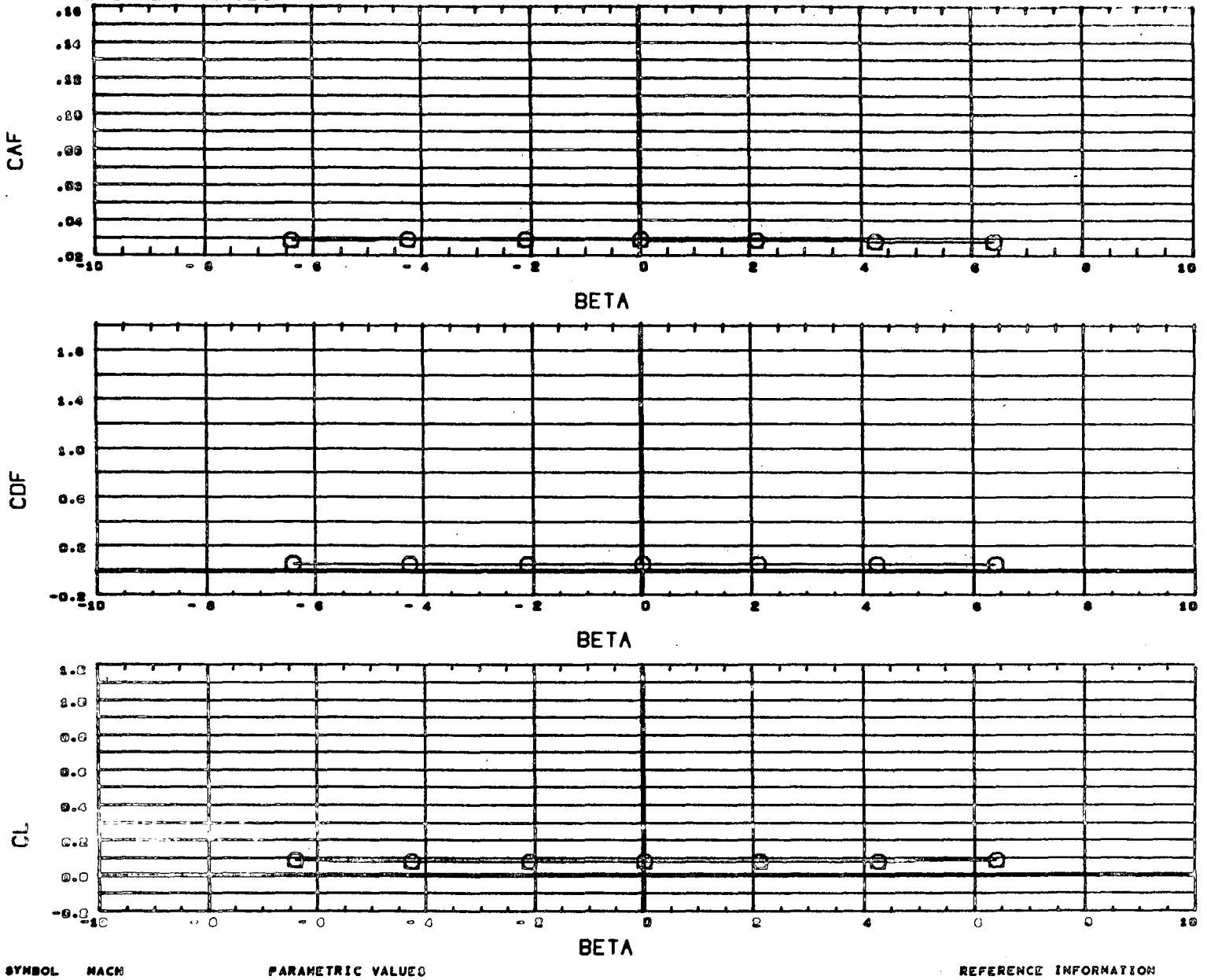
SYMBOL	MACH		PARAMETRIC VALUES
O	1.197	ALPHA	15.000

DATA HIST. CODE GC

REFERENCE INFORMATION

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YMRP	0.0000	IN.
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SCALE	0.0034	

LATERAL STABILITY



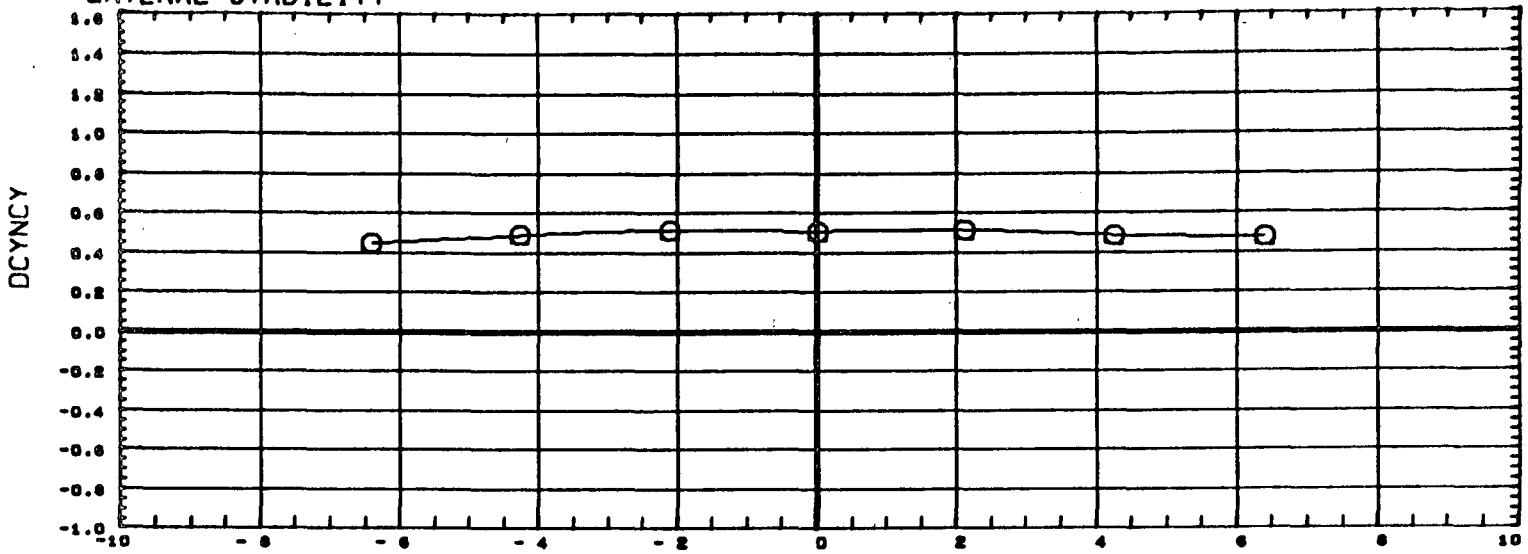
SYMBOL	MACH		PARAMETRIC VALUES
O	1.197	ALPHA	15.000

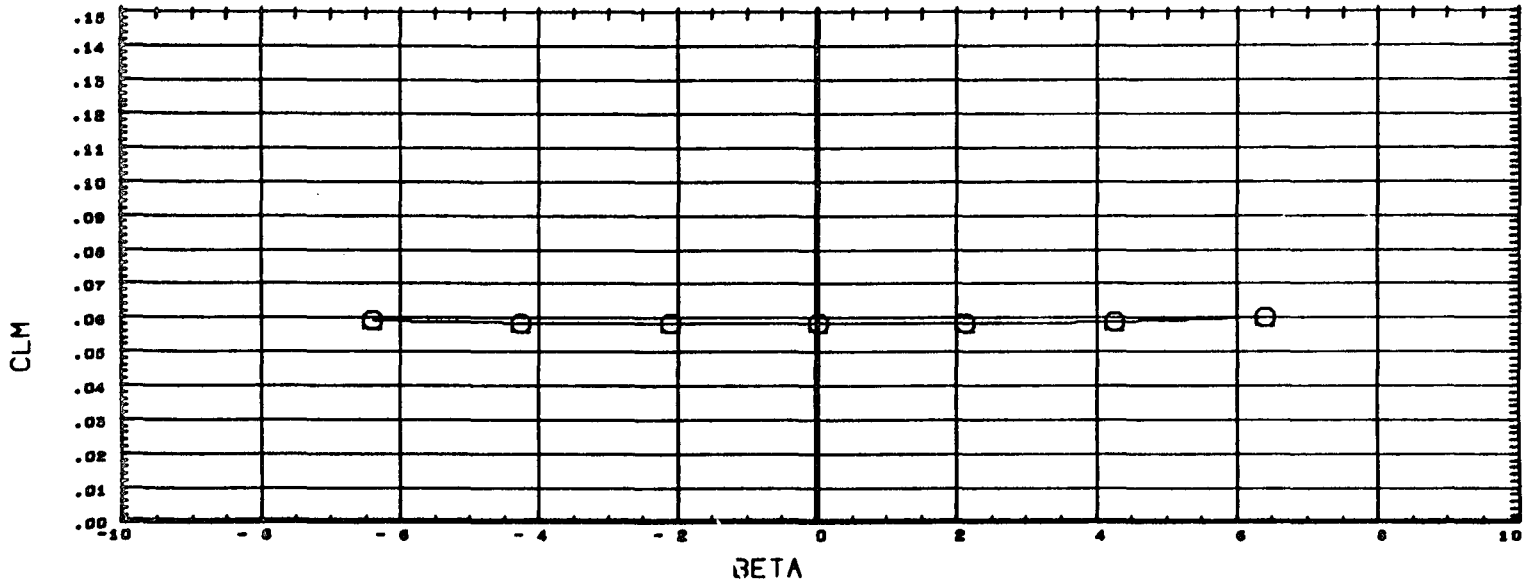
DATA HIST. CODE GC

REFERENCE INFORMATION

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YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY





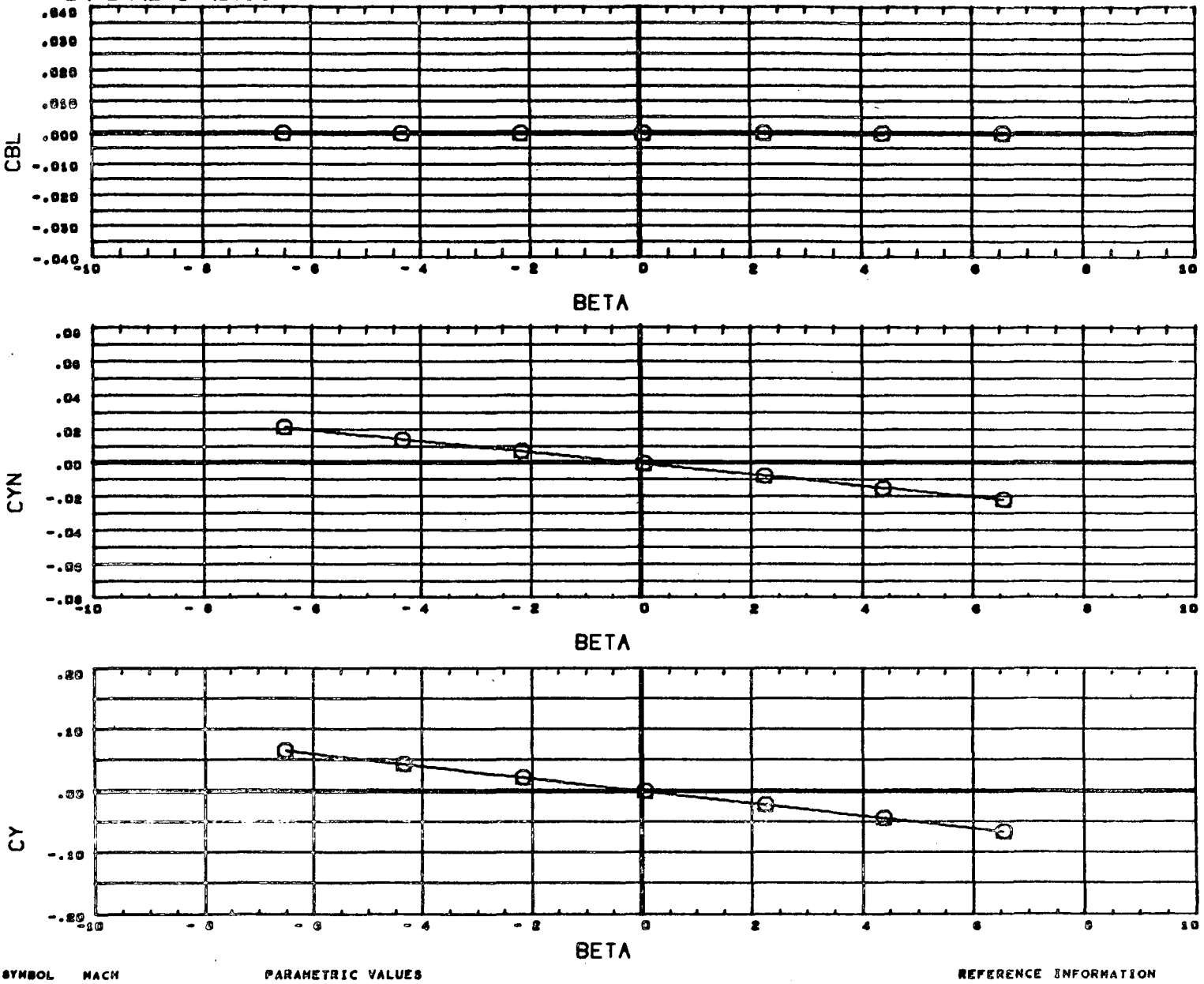
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DATA HIST. CODE GC

REFERENCE INFORMATION

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BREF	5.6550	IN.
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YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



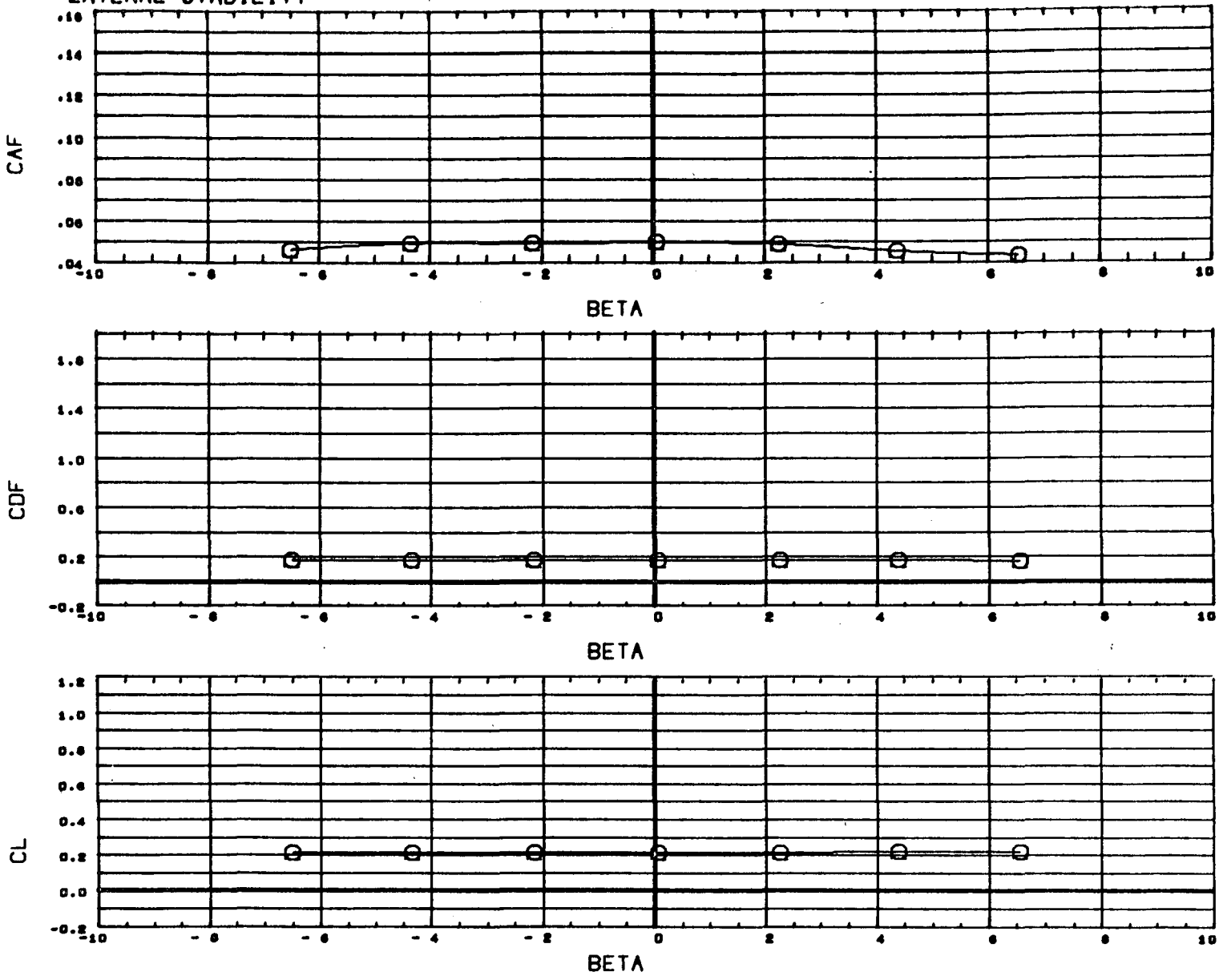
SYMBOL	MACH		PARAMETRIC VALUES
O	1.962	ALPHA	25.000

REFERENCE INFORMATION

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LREF	4.9060	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

DATA MIST. CODE GC

LATERAL STABILITY



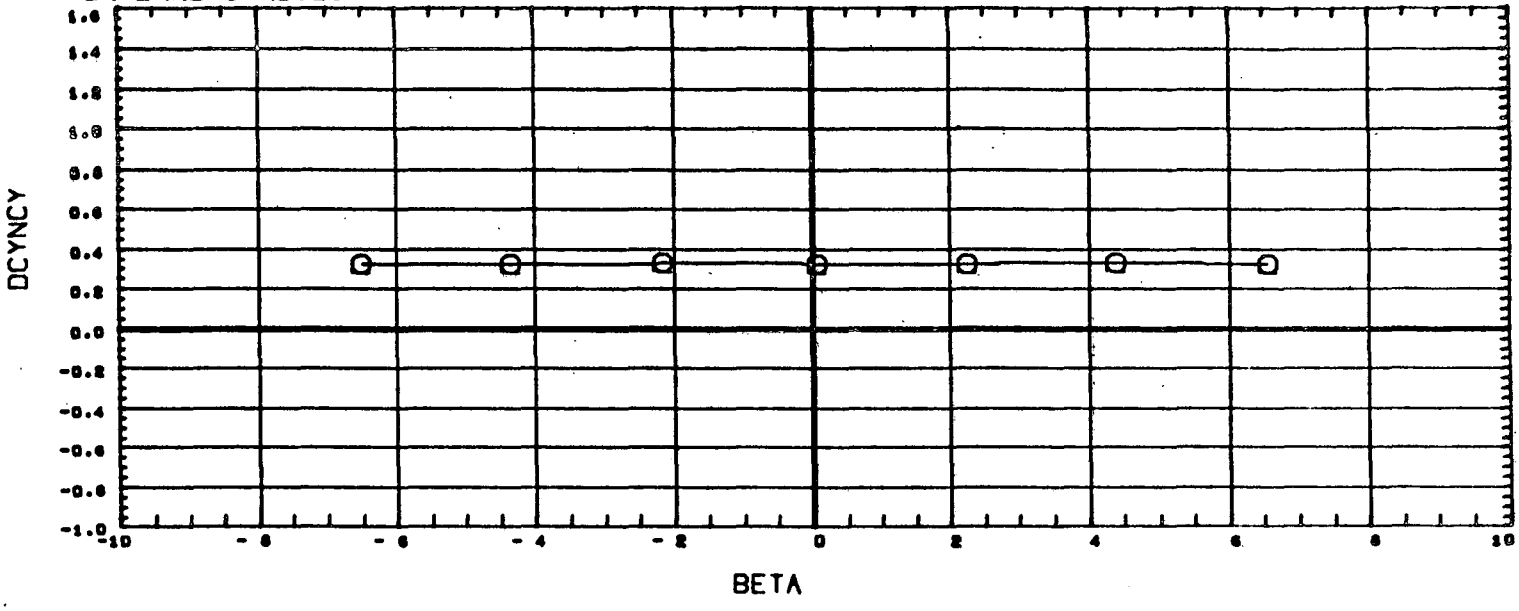
SYMBOL	MACH		PARAMETRIC VALUES
O	1.952	ALPHA	25.000

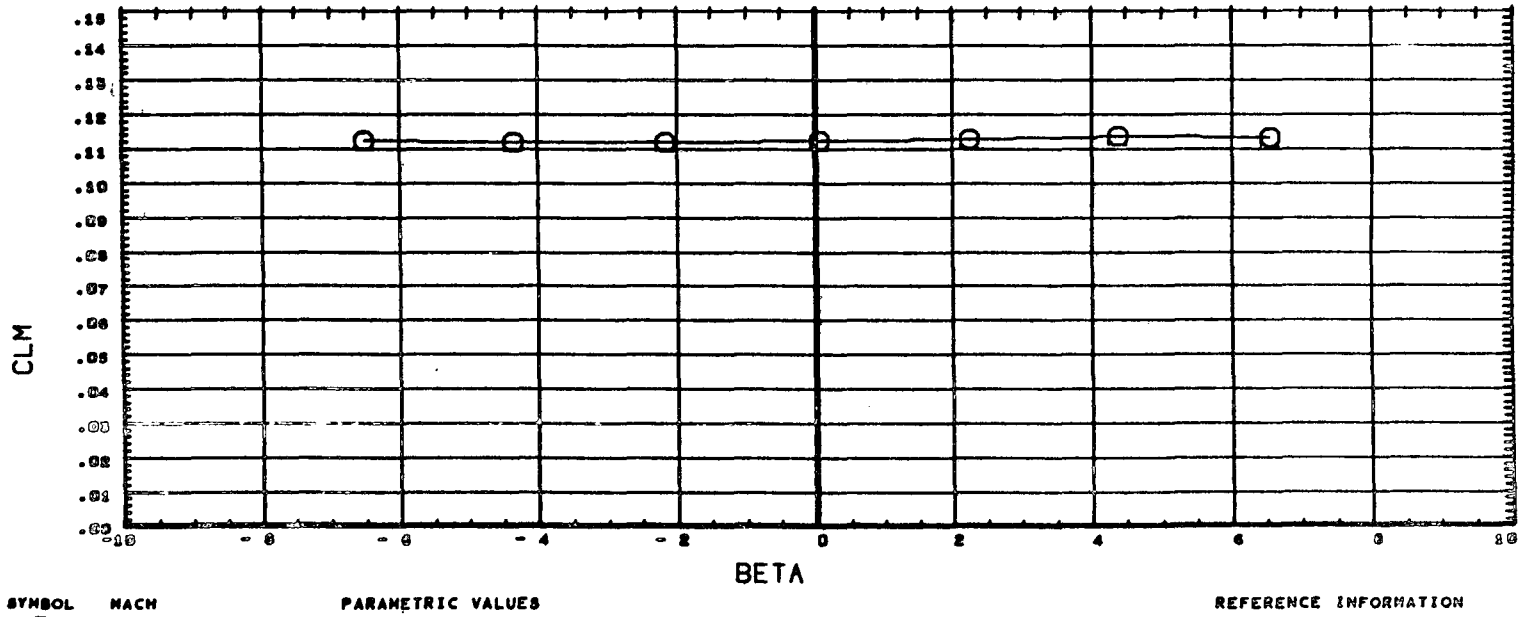
DATA HIST. CODE GC

REFERENCE INFORMATION

SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY





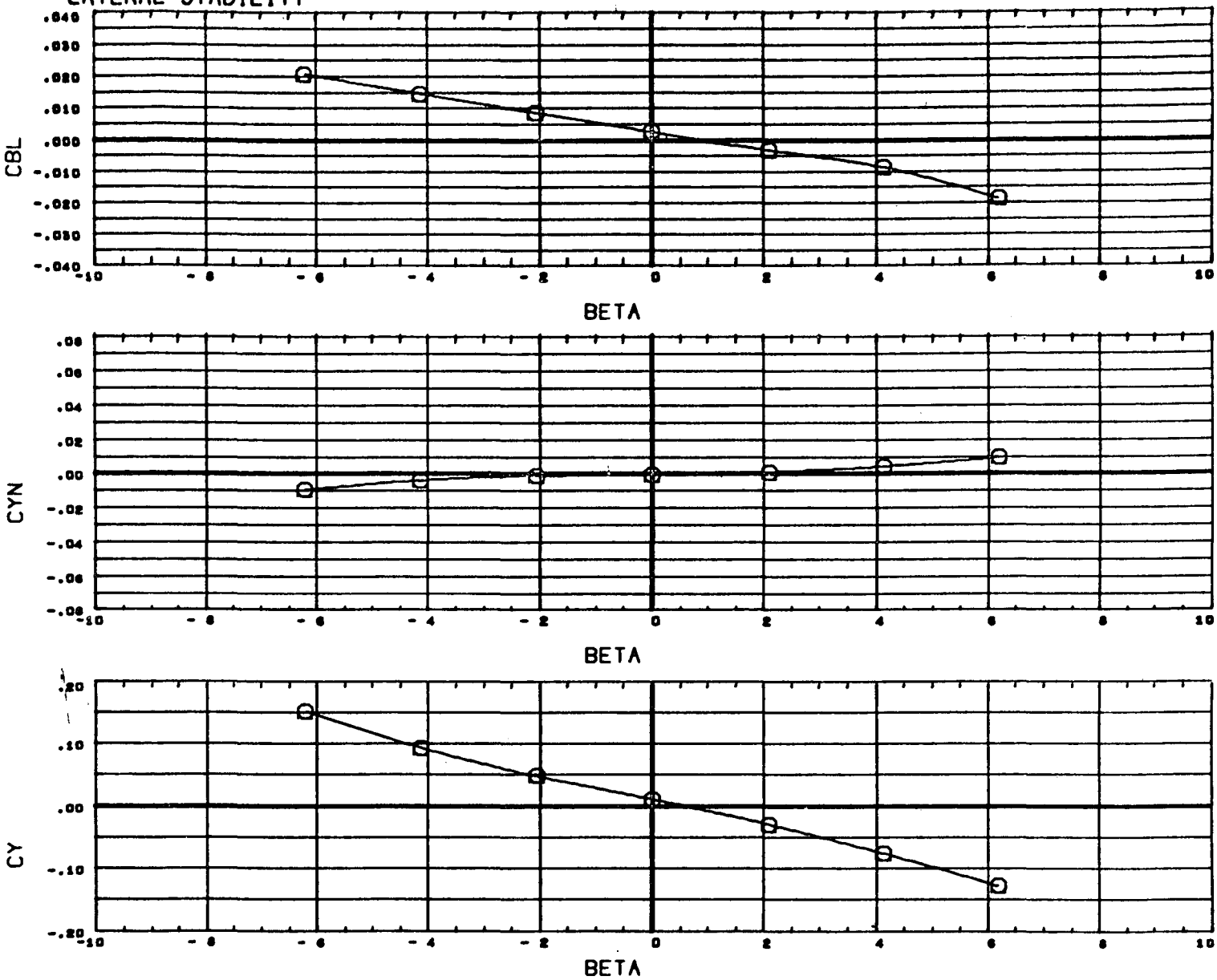
SYMBOL	MACH		PARAMETRIC VALUES
O	1.952	ALPHA	25.000

DATA HIST. CODE GC

REFERENCE INFORMATION

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LREF	4.9060	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY

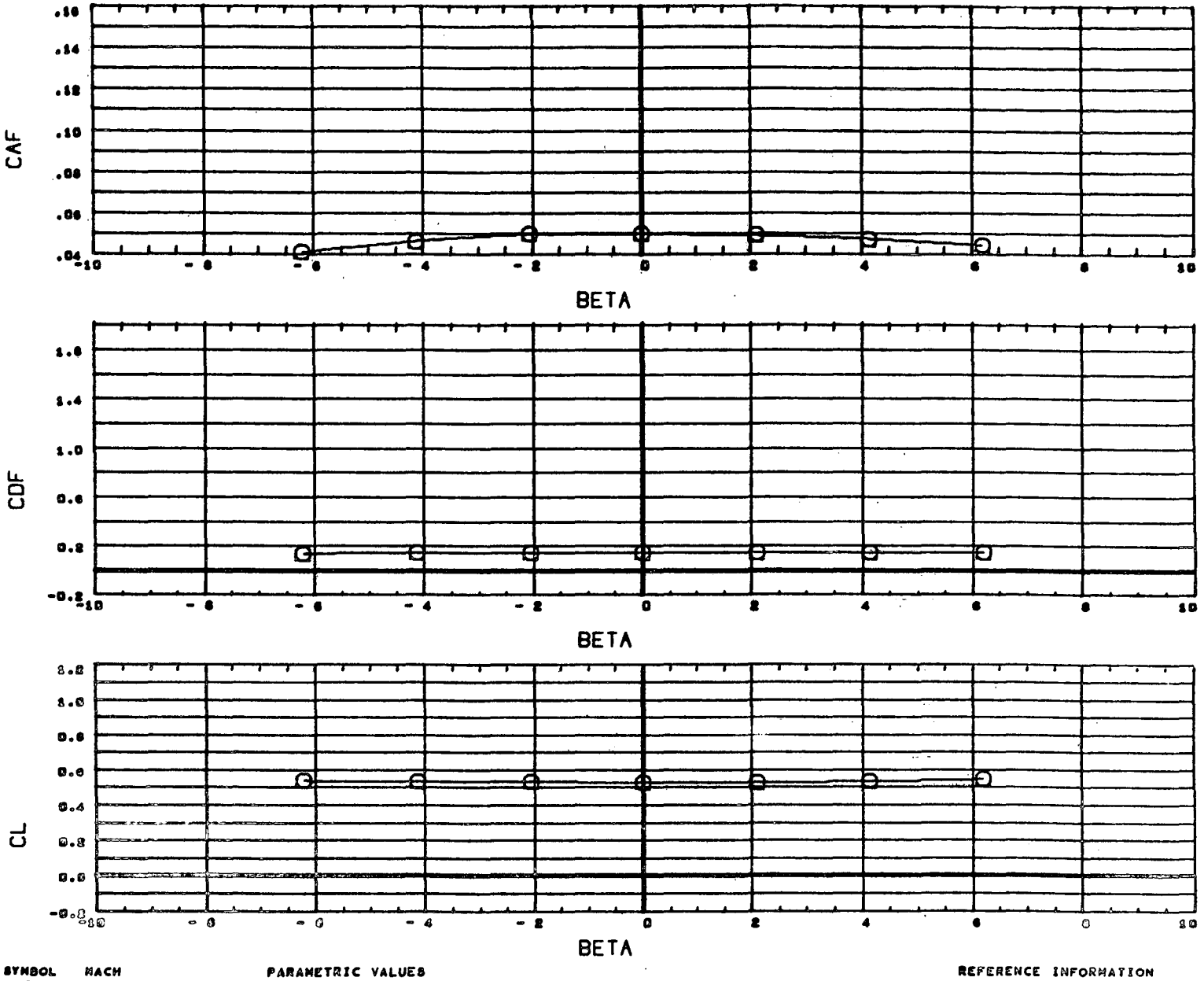


SYMBOL	MACH	PARAMETRIC VALUES			
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		RUDFLR	30.000		

DATA HIST. CODE GC

REFERENCE INFORMATION		
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LREF	4.5060	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY



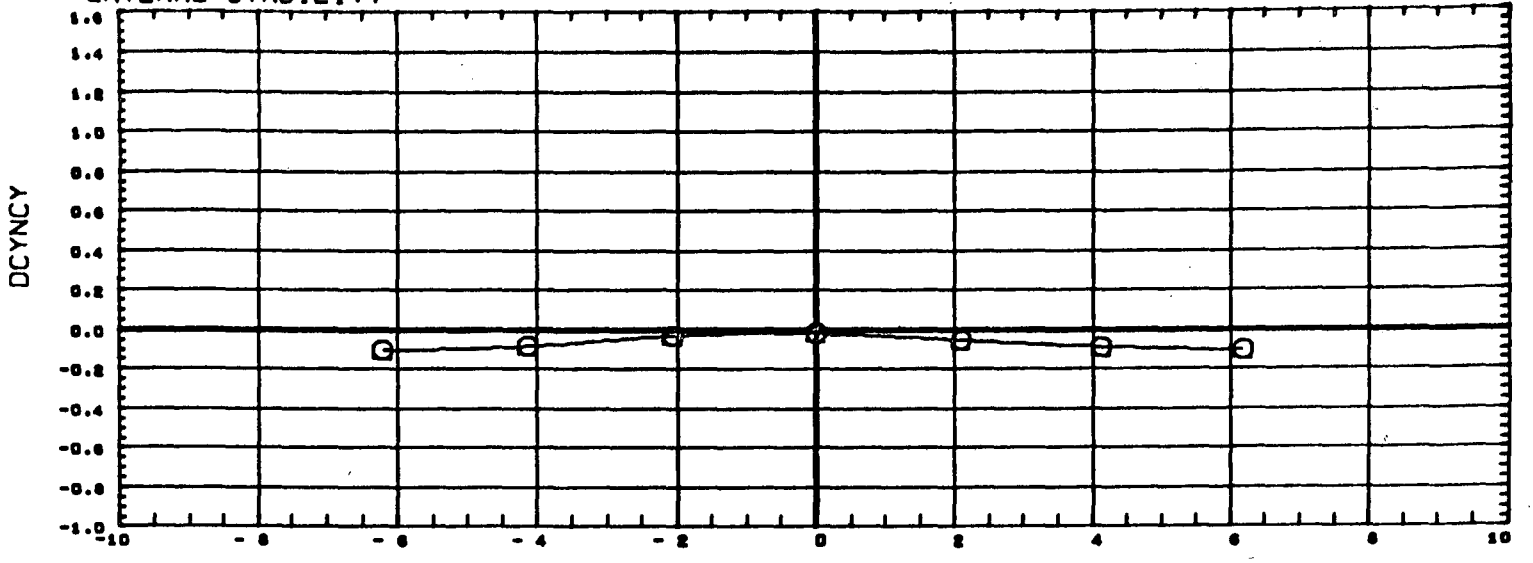
SYMBOL	MACH	PARAMETRIC VALUES			
O	0.603	ALPHA	10.000	RUDDER	0.000
		RUDFLR	30.000		

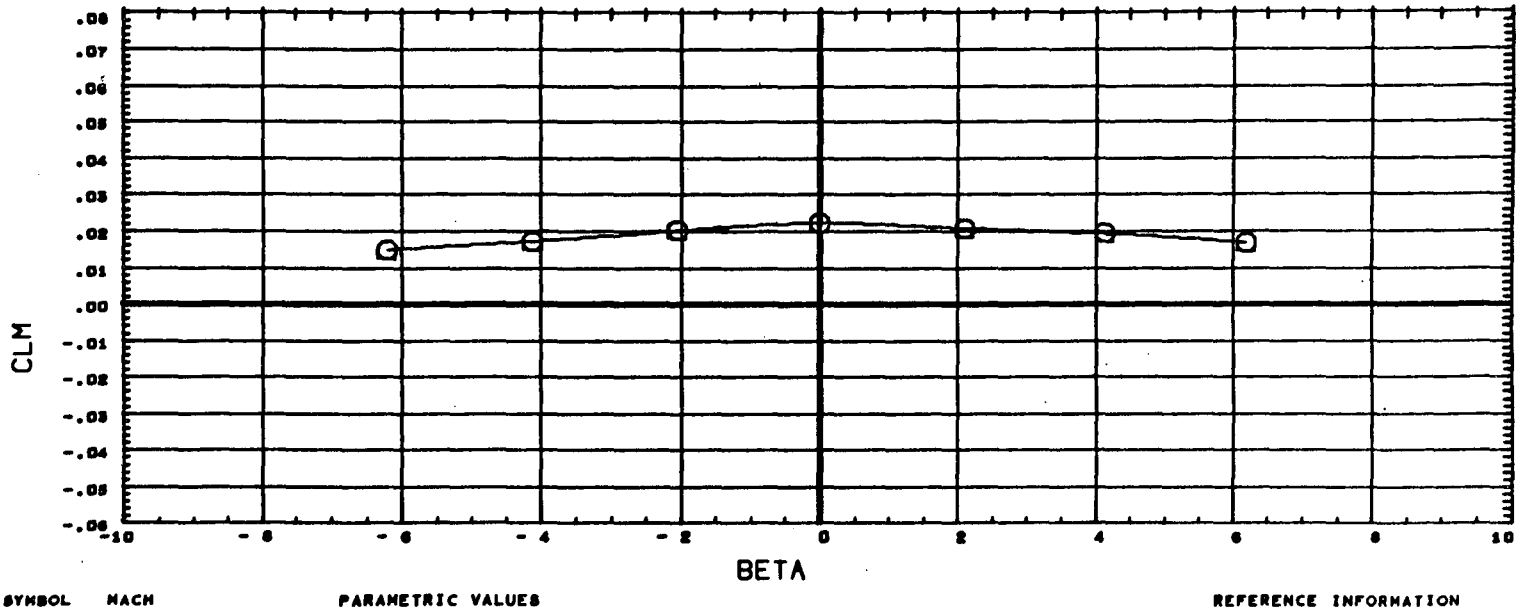
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REFERENCE INFORMATION

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BREF	5.6590	IN.
XMRP	1.4621	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	

LATERAL STABILITY





SYMBOL	MACH		PARAMETRIC VALUES			
O	0.605	ALPHA	10.000	RUDDER	0.000	
		RUDFLR	30.000			

DATA HIST. CODE GC

REFERENCE INFORMATION		
SREF	14.6836	SQ.IN.
LREF	4.5080	IN.
BREF	5.6550	IN.
XMRP	1.4821	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0034	