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MARCH 1972

—SPACE SHUTTLE—

**STATIC AERODYNAMIC  
CHARACTERISTICS AND CONTROL  
EFFECTIVENESS OF TWO DELTA  
WING ORBITER CONFIGURATIONS  
(M = 0.6 TO 4.96)**

by

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R.E. Buchholz, LMSC  
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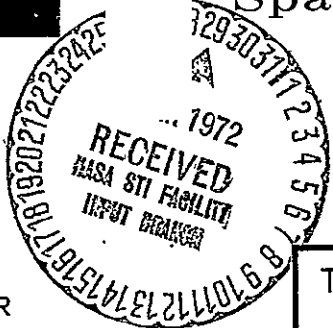
**MSFC 14-INCH  
TRISONIC WIND TUNNEL**

**Marshall  
Space Flight Center**

**N A S A**

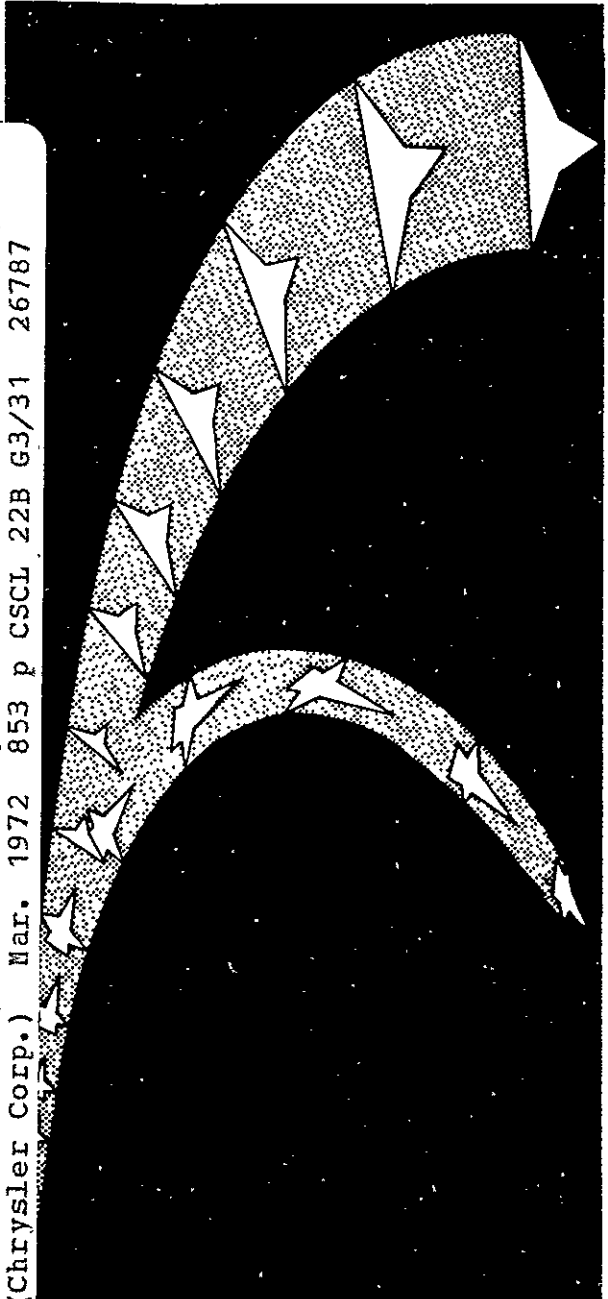
SADSAC SPACE SHUTTLE  
AEROTHERMODYNAMIC  
DATA MANAGEMENT SYSTEM

CONTRACT NAS8-4016  
MARSHALL SPACE FLIGHT CENTER



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March, 1972

SADSAC/SPACE SHUTTLE  
WIND TUNNEL TEST DATA REPORT

CONFIGURATION: 0.00325 Scale MSFC Parametric Orbiter

TEST PURPOSE: Obtain Force, Static Stability, and Control Effectiveness  
Data

TEST FACILITY: NASA/MSFC 14 Inch Trisonic Wind Tunnel

TESTING AGENCY: Lockheed Missiles and Space Company - Huntsville

TEST NO. & DATE: TWT 498; August/September, 1971

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PROJECT ENGINEER(S): Mr. Roger R. Ellis - IMSC/HREC

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CONTRACT NAS 8-4016

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STATIC AERODYNAMIC CHARACTERISTICS AND CONTROL EFFECTIVENESS OF  
TWO DELTA WING SPACE SHUTTLE ORBITER CONFIGURATIONS  
(M = 0.6 to 4.96)

By: Roger R. Ellis, Robert E. Buchholz, and James A. Moore

SUMMARY

Two 0.00325-scale models of an IMSC/MSFC-designed space shuttle orbiter were tested in the MSFC 14 x 14-Inch Trisonic Wind Tunnel. The purpose of the test was to obtain force, static stability, and control effectiveness data. These data were obtained using the MSFC six component internal strain gauge balance designated No. 232.

Two separate configurations were tested; however, the fuselage and basic wing were of one-piece construction. The configurations were varied by replacing the straight wing tip extensions (Model 2A configuration) with upswept wing tips (Model 2B configuration). Directional stability was provided for the Model 2A configuration by a centerline vertical tail. Due to the one-piece body/wing construction, no body-alone data were obtained. The effect of tip fins and vertical tail size were, however, investigated.

Both configurations were tested over a Mach range of 0.6 to 4.96 with data taken at angles of attack from  $-4^{\circ}$  to  $60^{\circ}$  and at angles of sideslip from  $-4^{\circ}$  to  $10^{\circ}$ .

## NOMENCLATURE

(General)

<u>SYMBOL</u>	<u>SADSAC SYMBOL</u>	<u>DEFINITION</u>
$\alpha$	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
$\beta$	BETA	sideslip angle, angle between the wind $X_w$ -axis and the projection of this axis on the body X-Z-plane; degrees
$\psi$	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
$\phi$	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
$\rho$		air density; $K_g/m^3$ , slugs/ft <sup>3</sup>
a		speed of sound; m/sec, ft/sec
$\dot{V}$		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

<u>SYMBOL</u>	<u>SADSAC SYMBOL</u>	<u>DEFINITION</u>
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

<u>SYMBOL</u>	<u>DEFINITION</u>
F	force; F, lbs
M	moment; M, in-lb

<u>Subscript</u>	<u>Definition</u>
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
$\infty$	free stream conditions
t	total conditions
b	base

NOMENCLATURE (Continued)  
Body & Stability Axis System

<u>SYMBOL</u>	<u>SADSAC SYMBOL</u>	<u>DEFINITION</u>
<u>Body Axis System</u>		
$C_N$	CN	normal force coefficient; $F_N/qS$
$C_A$	CA	axial force coefficient; $F_A/qS$
$C_{A_b}$	CAB	base axial force coefficient; $[-1] \left[ (P_b - p_\infty)/q \right] (A_b/S)$
$C_{A_f}$	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; $M_X/qS b_{ref}$
<u>Common to Both Axis Systems</u>		
$C_m$	CIM	pitching moment coefficient; $M_Y/qS l_{ref}$
$C_y$	CY	side force coefficient; $F_Y/qS$
<u>Stability Axis System</u>		
$C_L$	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; $C_D - C_{D_b}$
$C_n$	CIN	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 <sub>f</sub>	L/DF	lift to forebody drag ratio; $C_L/C_{D_f}$

NOMENCLATURE (Continued)

Surface Definitions

<u>SYMBOL</u>	<u>SADSAC SYMBOL</u>	<u>DEFINITION</u>
$i_t$	HORIZT	horizontal tail incidence; positive when trailing edge down; degrees
$\delta$		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
$\delta$		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 TEST NO. 498

<u>SYMBOL</u>	<u>SADSAC SYMBOL</u>	<u>DEFINITION</u>
$\delta_a$	AILRON	differential deflection angle of elevons for roll control; degrees; positive deflection produces a positive rolling moment $\delta_a = \frac{\delta_{aL} - \delta_{aR}}{2}$
$\delta_e$	ELEVON	symmetrical deflection angle of elevons for pitch control; degrees; positive deflection is trailing edge down $\delta_e = \frac{\delta_{aL} + \delta_{aR}}{2}$
$\delta_{aL}$	AIL-L	deflection angle of left-hand elevon; degrees; positive deflection is trailing edge down
$\delta_{aR}$	AIL-R	deflection angle of right-hand elevon; degrees; positive deflection is trailing edge down
$\delta_{e3}$	ELEVN3	symmetrical deflection angle of elevons for pitch control, elevon configuration E3; degrees
$\delta_{e4}$	ELEVN4	symmetrical deflection angle of elevons for pitch control, elevon configuration E4; degrees
$\delta_r$	RUDDER	deflection angle of rudder(s); degrees; positive deflection is trailing edge left looking forward
$\delta_{r1}$	RUDER1	deflection angle of centerline rudder, rudder configuration R1; degrees
$\delta_{r2}$	RUDER2	deflection angle of centerline rudder, rudder configuration R2; degrees
$\delta_{r4}$	RUDER4	deflection angle of wing tip rudders, rudder configuration R4; degrees (applies only to equal deflections of both rudders)

ADDITIONS TO SADSAC NOMENCLATURE  
FOR  
MSFC TWT TEST NO. 498  
(Continued)

<u>SYMBOL</u>	<u>SADSAC SYMBOL</u>	<u>DEFINITION</u>
$C_{L\alpha}$	DCL	lift coefficient rate of change with angle of attack, local slope; stability axis system; per degree
$C_{m\alpha}$	DCIM	pitching moment coefficient rate of change with angle of attack, local slope; per degree
$\frac{dC_m}{dC_L}$	DCIMCL	static longitudinal stability derivative, $C_{m\alpha}/C_{L\alpha}$ , local slope
$C_{Y\beta}$	CYBETA	side force coefficient rate of change with sideslip angle, local slope at zero sideslip; per degree
$C_{n\beta}$	DCYNDB	yawing moment coefficient rate of change with sideslip angle, local slope at zero sideslip; body axis system; per degree
$C_{l\beta}$	DCBLDB	rolling moment coefficient rate of change with sideslip angle, local slope at zero sideslip; body axis system; per degree
$C_{Y\delta_r}$	DCY/DR	side force coefficient rate of change with rudder deflection between two runs (rudder deflection = 0 and +10°); per degree
$C_{n\delta_r}$	DCYNDR	yawing moment coefficient rate of change with rudder deflection between two runs (rudder deflection = 0 and +10°); body axis system; per degree
$C_{l\delta_r}$	DCBLDR	rolling moment coefficient rate of change with rudder deflection between two runs (rudder deflection = 0 and +10°); body axis system; per degree

ADDITIONS TO SADSAC NOMENCLATURE  
 FOR  
 MSFC TWT TEST NO. 498  
 (Concluded)

<u>SYMBOL</u>	<u>SADSAC SYMBOL</u>	<u>DEFINITION</u>
$C_{D\delta_r}$	DCD/DR	drag coefficient rate of change with rudder deflection between two runs (rudder deflection = 0 and +10°); stability axis system; per degree
$C_{m\delta_e}$	DCIMDE	pitching moment coefficient rate of change with elevon deflection between two runs (elevon deflection = 0 and -10°); per degree
$C_{L\delta_e}$	DCL/DE	lift coefficient rate of change with elevon deflection between two runs (elevon deflection = 0 and -10°); stability axis system; per degree
$C_{D\delta_e}$	DCD/DE	drag coefficient rate of change with elevon deflection between two runs (elevon deflection = 0 and -10°); stability axis system; per degree
$C_{l\delta_a}$	DCBLDA	rolling moment coefficient rate of change with aileron deflection between two runs (aileron deflection = 0 and -10°); body axis system; per degree
$C_{n\delta_a}$	DCYNDA	yawing moment coefficient rate of change with aileron deflection between two runs (aileron deflection = 0 and -10°); body axis system; per degree

## CONFIGURATIONS INVESTIGATED

Refer to Model Component Description Sheets for specific dimensions. The models were basically one-piece with provisions to obtain various control surface deflections. The following is a list of model components:

- B2 - model 2A and 2B body
- W2 - model 2A wing
- W5 - model 2B wing
- V2 - tip fin (wing W5)
- V4 - tip extension (wing W2)
- D1 - centerline vertical tail ( $S_v = 508.3 \text{ ft}^2$ )
- D2 - centerline vertical tail ( $S_v = 722.1 \text{ ft}^2$ )
- E3 - model 2A elevon
- E4 - model 2B elevon
- R1 - rudder (vertical tail D1)
- R2 - rudder (vertical tail D2)
- R4 - rudder (tip fin V2)

The Dataset Collation Sheets illustrate the various component combinations tested, dataset identifiers, parametric data, and run numbers associated with each dataset.

## TEST FACILITY DESCRIPTION

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

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

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

Downstream of the test section is a hydraulically controlled pitch sector that provides a total angle of attack range of 20° ( $\pm 10^\circ$ ). Sting offsets are available for obtaining various maximum angles of attack up to 25°.



## TEST CONDITIONS

Table I lists the tunnel conditions which existed during the test and states the balance accuracy. The high angle of attack range was accomplished by four separate runs using the North American variable-angle sting. The angle of attack ranges were from  $-4^{\circ}$  to  $10^{\circ}$ ,  $6^{\circ}$  to  $25^{\circ}$ ,  $20^{\circ}$  to  $40^{\circ}$ , and  $40^{\circ}$  to  $60^{\circ}$  in two degree increments except for the second range where a single one degree increment was required in order to provide an overlap at three common angles of attack. The nominal angle of attack overlap between the second and third settings were off by one degree. Figure 6 shows the model prior to installation in the tunnel.

Model base pressures were recorded and used to determine the base axial force coefficient. Pressure tubes were located on the top, bottom and right side of the base region.

To assure turbulent flow over the model, the boundary layer was artificially tripped by grit transition strips. The transition strips were located on both surfaces of the wings and vertical surfaces approximately 0.05 aft of the leading edge and around the nose of the body approximately 0.3 in. aft of the nose. All strips were approximately 0.10 in. wide and the grit size was No. 120 on all surfaces.

## REDUCTION OF DATA

The measured six component force and moment data were corrected for balance tares and sting deflections and reduced about the moment reference point and the body axis system. The data were reduced to coefficient form using the following reference dimensions:

$$S_{\text{ref}} = 9.025 \text{ in.}^2 \quad (\text{model reference area based on a full scale reference area of } 5935 \text{ ft}^2)$$

$$l_{\text{ref}} = b_{\text{ref}} = 6.142 \text{ in.} \quad (\text{model reference length and span based on full scale body length of } 157.487 \text{ ft.})$$

Moments are referenced about the c.g. location 3.995 inches aft of the model nose and 0.135 inches below the balance centerline (0.579 inches below the top surface of the fuselage).

Base axial force coefficients were calculated as follows:

$$CAB = \left( \frac{P_{\infty} - P_b}{q} \right) \left( \frac{A_b}{S_{\text{ref}}} \right)$$

$$P_b = \frac{P_{b1} + P_{b2} + P_{b3}}{3}$$

$$A_b = \text{base area} = 0.461 \text{ in.}^2$$

$$A_b/S_{\text{ref}} = 0.0511$$

TABLE I.

TEST CONDITIONS  
TEST IWT 498

MACH NUMBER	REYNOLDS NUMBER per unit length	DYNAMIC PRESSURE (pounds/sq. inch)	STAGNATION TEMPERATURE (degrees Fahrenheit)
0.6	$5.0 \times 10^6$	4.35	100
0.7	5.5 "	5.42	
0.9	6.3 "	7.42	
1.1	6.8 "	8.73	
1.46	6.8 "	9.48	
1.96	7.0 "	10.99	
4.96	4.0 "	3.07	

BALANCE UTILIZED: MSFC No. 232

CAPACITY:	ACCURACY:	COEFFICIENT TOLERANCE: ( $C_0$ @ $q = 10$ PSI)
NF <u>200 LB</u>	<u>±1.50 LB</u>	<u>± 0.0166</u>
SF <u>143 "</u>	<u>±0.72 "</u>	<u>± 0.0080</u>
AF <u>50 "</u>	<u>±0.25 "</u>	<u>± 0.0028</u>
PM <u>400 IN.-LB</u>	<u>±2.00 IN.-LB</u>	<u>± 0.0036</u>
YM <u>192 "</u>	<u>± 0.96 "</u>	<u>± 0.0017</u>
RM <u>100 "</u>	<u>± 0.50 "</u>	<u>± 0.0009</u>

- COMMENTS:
- BALANCE ACCURACIES ARE BASED ON ±0.5% OF THE MAXIMUM BALANCE CAPACITY.
  - ACTUAL COEFFICIENT TOLERANCE :

$$C = C_0 \left( \frac{10}{q(\text{MEAS.})} \right)$$

TABLE II. TEST TWT 498 DATA SET COLLATION SHEET

PRETEST  
 POSTTEST

DATA SET IDENTIFIER	CONFIGURATION	SCHD.		PARAMETERS/VALUES				NO. of RUNS	PARAMETERS/VALUES			MACH NUMBERS								
		$\alpha$	$\beta$	$S_{e3}$	$S_{r1}$	$S_{r2}$	$S_{r4}$		$S_{aL}$	$S_{aR}$		0.6	0.7	0.9	1.1	1.46	1.96	4.96		
R4101A	B2W2Y4D2e3r2	A	0	0	-	0	-	7	0	0				121/0	122/0	123/0	124/0	145/0	154/0	001/0
01B		B	0					7						123/0	142/0	140/0	141/0	144/0	155/0	026/0
01C		C	0					6						174/0	175/0	176/0		168/0	156/0	315/0
01D		D	0					2											157/0	324/0
01X		0	X					7						120/0	119/0	118/0	117/0	146/0	153/0	012/0
01Y		10	Y					7						225/0	226/0	227/0	228/0	310/0	304/0	021/0
01Z		15	Z					7						238/0	239/0	240/0	241/0	311/0	300/0	027/0
R4102A		A	0	+10				5						127/0		126/0	125/0		290/0	002/0
02B		B	0					4						243/0		242/0			289/0	029/0
03A		A	0	-10				5						132/0		130/0	131/0		297/0	004/0
03B		B	0					4						138/0		139/0			282/0	031/0
03C		C	0					2											167/0	316/0
03D		D	0					2											164/0	325/0
04A		A	0	-20				5						133/0		134/0	135/0		293/0	005/0
04B		B	0					4						137/0		136/0			286/0	036/0
04C		C	0					2											166/0	317/0
04D		D	0					2											165/0	324/0
05A		A	0	-30				4						181/0		182/0			294/0	008/0
05B		B	0					4						248/0		249/0			285/0	027/0
R4106A		A	0	0				4	-10	+10				128/0		129/0			296/0	003/0

1      7      13      19      25      31      37      43      49      55      61      67      7576  
 CLM    CN    CY    CBL    CYN    CAF    CAB    CPB1    CPB2    CA    10

COEFFICIENTS:  $\alpha A = -4, -2, 0, 2, 4, 6, 8, 10$ ;  $\alpha B = 6, 8, 10, 12, 14, 15, 17, 19, 21, 23, 25$ ;  $\alpha C = 10, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40$ ;  $\alpha D = 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60$   
 SCHEDULES  $\beta X = -4, -2, 0, 2, 4, 6, 8, 10$  OR  $-9, -6, -3, 0, 3, 6, 9$  @  $\alpha = 0$ ;  $\beta Y @ \alpha = 10$ ;  $\beta Z @ \alpha = 15$

PRETEST  
 POSTTEST

DATA SET IDENTIFIER	CONFIGURATION	SCHD.		PARAMETERS/VALUES				NO. of RUNS	PARAMETERS/VALUES		MEASUREMENTS								
		α	β	Sr3	Sr1	Sr2	Sr4		SrL	SrR	0.6	0.7	0.9	1.1	1.46	1.96	4.96		
R4106B	BZWZYADZe3uZ	B	0	0	-	0	-	4	-10	+10			244/0		245/0			233/0	030/0
07A		A	0					4	-20	+20			188/0		187/0			292/0	006/0
07B		B	0					4					252/0		253/0			297/0	033/0
R4108A		A	0	+10				4	0				189/0		190/0			298/0	007/0
08B		B	0					1											034/0
09A		A	0					4	-10	+30			192/0		191/0			291/0	011/0
09B		B	0					4					251/0		250/0			288/0	032/0
10A		A	0	-10				4	-20	0			185/0		186/0			299/0	010/0
10B		B	0					1											035/0
11A		A	0					4	-30	+10			184/0		183/0			295/0	009/0
11B		B	0					4					247/0		246/0			284/0	028/0
R4112X		0	X	0		+10		5	0	0			193/0		194/0	195/0		303/0	013/0
12Y		10	Y					1											020/0
12Z		15	Z					5					237/0		236/0	235/0		301/0	023/0
13X		0	X			+20		5					198/0		197/0	196/0		302/0	014/0
13Y		10	Y					1											019/0
13Z		15	Z					1											024/0
R4114X	BZWZVAD1e3u1	0	X	0	-			5					199/0		200/0	201/0		307/0	015/0
14Y		10	Y					5					231/0		230/0	229/0		305/0	018/0
14Z		15	Z					5					232/0		233/0	234/0		306/0	025/0

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CLM    EN            ISY            KBL            ISYN            CAF            CAB            CPB1            CPBZ            ICA            110

COEFFICIENTS: \_\_\_\_\_  
 α or β                    - SEE PAGE 1 -  
 SCHEDULES              \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

TABLE II. TEST TWT 498 DATA SET COLLATION SHEET (CONTINUED)

PRETEST  
 POSTTEST

DATA SET IDENTIFIER	CONFIGURATION	SCHD.		PARAMETERS/VALUES				NO. of RUNS	PARAMETERS/VALUES		MACH NUMBERS									
		$\alpha$	$\beta$	$S_{e3}$	$S_{r1}$	$S_{r2}$	$S_{rA}$		$S_{aL}$	$S_{aR}$	0.6	0.7	0.9	1.1	1.46	1.96	4.96			
RA115X	B2WZVAD1e3r1	0	X	0	+10	-	-	5	0	0			204/0		203/0	202/0			308/0	016/0
15Y	↓	10	Y					1												017/1
RA116X	B2WZV4 e3	0	X		-			6					205/0		206/0	207/0	254/0		309/0	314/0
DSI	CONFIGURATION	$\alpha$	$\beta$	$S_{e4}$	$S_{r1}$	$S_{r2}$	$S_{rA}$		$S_{aL}$	$S_{aR}$			0.6	0.7	0.9	1.1	1.46	1.96	4.96	
RA1A01	B2WSV2e4r4	A	0	0	-	-	0	7	0	0			074/0	075/0	076/0	077/0	148/0	151/0	057/0	
B01		B	0					7					112/0	111/0	109/0	110/0	149/0	150/0	047/0	
C01		C	0					6					173/0	172/0	171/0		169/0	159/0	320/0	
D01		D	0					2										158/0	321/0	
X01		0	X					7					113/0	114/0	115/0	116/0	147/0	152/0	054/0	
Y01		10	Y					7					224/0	223/0	222/0	221/0	313/0	263/0	053/0	
Z01		15	Z					7					217/0	218/0	219/0	220/0	312/0	262/0	048/0	
RA1A02		A	0	+10				5					080/0		079/0	078/0		264/0	058/0	
B02		B	0					4					107/0		108/0			281/0	042/0	
A03		A	0	-10				5					085/0		093/0	084/0		266/0	063/0	
B03		B	0					4					103/0		104/0			290/0	042/0	
C03		C	0					2										160/0	319/0	
D03		D	0					2										163/0	322/0	
RA1A04		A	0	-20				5					096/0		097/0	098/0		273/0	064/0	

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CLM    CN            CY            CBL    CYN            CAF            CAB            CPB1    CPB2    CA            10

COEFFICIENTS: \_\_\_\_\_ → IDPVAR(1) IDPVAR(2) NI

$\alpha$  or  $\beta$  \_\_\_\_\_

SCHEDULES \_\_\_\_\_

- SEE PAGE 1 -

TABLE II. TEST TWT 498 DATA SET COLLATION SHEET (CONTINUED)

PRETEST  
 POSTTEST

DATA SET IDENTIFIER	CONFIGURATION	SCHD.		PARAMETERS/VALUES				NO. of RUNS	PARAMETERS/VALUES		INITIALS							
		a	B	Sx1	Sx2	Sx4	SxR		SxR	0.6	0.7	0.9	1.1	1.46	1.96	4.96		
R41B04	BZWSV2e4u4	B	0	-20	-	-	0	4	0	0		102/0		101/0			274/0	037/0
C04		C	0					2									161/0	318/0
D04		D	0					2									162/0	323/0
A05		A	0	-30				4				090/0		099/0			272/0	061/0
B05		B	0					4				099/0		100/0			275/0	026/0
A06		A	0	0				4	-10	+10		081/0		082/0			265/0	059/0
B06		B	0					4				106/0		105/0			278/0	043/0
A07		A	0					4	-20	+20		070/0		071/0			269/0	065/0
B07		B	0					4				258/0		257/0			277/0	040/0
A08		A	0	-10				4	0			069/0		068/0			270/0	067/0
B08		B	0					1										039/0
A09		A	0					4	-10	+30		094/0		093/0			267/0	062/0
B09		B	0					4				095/0		096/0			279/0	047/0
A10		A	0	-10				4	-20	0		073/0		072/0			268/0	060/0
B10		B	0					1										038/0
A11		A	0					4	-30	+10		091/0		092/0			271/0	060/0
B11		B	0					4				098/0		097/0			276/0	045/0
R41X12		O	X	0			+10	5	0	0		210/0		209/0	208/0		260/0	055/0
Y12		10	Y					1										052/0
Z12		15	Z					5				216/0		215/0	214/0		261/0	049/0

1      7      13      19      25      31      37      43      49      55      61      67      7576

CL14    EN    CY    TEL    KX14    KX15    KX16    CPB1    CPB2    ICA    10

COEFFICIENTS: \_\_\_\_\_ IDPVAR(1) IDPVAR(2) NDV  
 a or B \_\_\_\_\_  
 SCHEDULES \_\_\_\_\_

TABLE II. TEST TWT 498 DATA SET COLLATION SHEET (CONCLUDED)

PRETEST  
 POSTTEST

DATA SET IDENTIFIER	CONFIGURATION	SCHD.		PARAMETERS/VALUES				NO. of RUNS	PARAMETERS/VALUES		PARAMETERS/VALUES						
		$\alpha$	$\beta$	Sa1	Sn1	Sn2	SnA		SaL	SaR	0.6	0.7	0.9	1.1	1.46	1.96	4.96
R41K13	BZWSVZ e 4 2 2 4	0	X	0	-	-	+20	5	0	0							
Y13	↓	10	Y					1									051/1
Z13	↓	15	Z					1									050/0
R41B14	BZWSVZ D2 e 4 2 2 2 Z	B	0			0	0	2	-20	+20							

1      7      13      19      25      31      37      43      49      55      61      67      75 76  
 EN    CY    TEL    CAL    CAE    LAE    CPB1    CPBZ    CA

COEFFICIENTS: SEE PAGE 1 IDPVAR(1) IDPVAR(2) NDV  
 $\alpha$  or  $\beta$   
 SCHEDULES



TABLE III.  
MODEL COMPONENTS DESCRIPTIONS

MODEL COMPONENT: BODY - B2

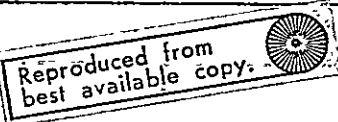
GENERAL DESCRIPTION: BASIC BODY (MODELS 2A & 2B)

DRAWING NUMBER: A152048

<u>DIMENSIONS:</u>	<u>FULL-SCALE</u>	<u>MODEL SCALE</u> (0.00325)
Length	<u>1889.8 IN.</u>	<u>6.142 IN.</u>
Max. Width	<u>377.8 IN.</u>	<u>1.228 IN.</u>
Max. Depth	<u>301.2 IN.</u>	<u>0.979 IN.</u>
Fineness Ratio	<u>—</u>	<u>—</u>
Area		
Max. Cross-Sectional	<u>—</u>	<u>—</u>
Planform (APPROX.)	<u>4395 FT<sup>2</sup></u>	<u>6.67 IN.<sup>2</sup></u>
Wetted	<u>—</u>	<u>—</u>
Base	<u>303.2 FT<sup>2</sup></u>	<u>0.461 IN.<sup>2</sup></u>

TABLE III. (CONTINUED)

MODEL COMPONENT: WZ  
 GENERAL DESCRIPTION: BASIC WING FOR MODEL 2A  
DIMENSIONS INCLUDE TIP EXTENSION V4 AND  
OUTER TIP OF ELEVON E3)



DRAWING NUMBER: A152041

DIMENSIONS:	FULL-SCALE	MODEL SCALE (0.00325)
<u>TOTAL DATA</u>		
Area		
Planform	<u>6646 FT<sup>2</sup></u>	<u>10.108 IN<sup>2</sup></u>
Wetted	<u>—</u>	<u>—</u>
Span (equivalent)	<u>1440.6 IN.</u>	<u>4.682 IN.</u>
Aspect Ratio	<u>2.17</u>	<u>2.17</u>
Rate of Taper	<u>—</u>	<u>—</u>
Taper Ratio	<u>0.155</u>	<u>0.155</u>
Diehedral Angle, degrees	<u>7.0°</u>	<u>7.0°</u>
Incidence Angle, degrees	<u>0°</u>	<u>0°</u>
Aerodynamic Twist, degrees	<u>—</u>	<u>—</u>
Toe-In Angle	<u>—</u>	<u>—</u>
Cant Angle	<u>—</u>	<u>—</u>
Sweep Back Angles, degrees		
Leading Edge	<u>53.5°</u>	<u>53.5°</u>
Trailing Edge	<u>0°</u>	<u>0°</u>
0.25 Element Line	<u>45.3°</u>	<u>45.3°</u>
Chords:		
Root (Wing Sta. 0.0)	<u>1150.2 IN.</u>	<u>3.738 IN.</u>
Tip, (equivalent)	<u>178.5 IN.</u>	<u>0.580 IN.</u>
MAC	<u>782.8 IN.</u>	<u>2.544 IN.</u>
Fus. Sta. of .25 MAC	<u>1502.8 IN.</u>	<u>4.884 IN.</u>
W.P. of .25 MAC	<u>—</u>	<u>—</u>
B.L. of .25 MAC	<u>272.3 IN.</u>	<u>0.885 IN.</u>
Airfoil Section		
Root	<u>64A010</u>	<u>64A010</u>
Tip	<u>64A010</u>	<u>64A010</u>
<u>EXPOSED DATA</u>		
Area	<u>3963 FT<sup>2</sup></u>	<u>6.028 IN</u>
Span, (equivalent)	<u>1062.8 IN.</u>	<u>3.454 IN.</u>
Aspect Ratio	<u>1.98</u>	<u>1.98</u>
Taper Ratio	<u>0.20</u>	<u>0.20</u>
Chords:		
Root	<u>995.4 IN.</u>	<u>2.910 IN.</u>
Tip	<u>178.5 IN.</u>	<u>0.580 IN.</u>
MAC	<u>1616.6 IN.</u>	<u>2.004 IN.</u>
Fus. Sta. of .25 MAC	<u>—</u>	<u>5.289 IN.</u>
W.P. of .25 MAC	<u>—</u>	<u>—</u>
B.L. of .25 MAC	<u>395.4 IN.</u>	<u>1.285 IN.</u>

MODEL COMPONENT: W5

GENERAL DESCRIPTION: BASIC WING FOR MODEL 2-B  
(TIP FINS NOT INCLUDED)

DRAWING NUMBER: A152041

DIMENSIONS:

FULL-SCALE

MODEL SCALE  
(0.00325)

TOTAL DATA

Area		
Planform	<u>6151 FT<sup>2</sup></u>	<u>9.356 IN<sup>2</sup></u>
Wetted	<u>—</u>	<u>—</u>
Span (equivalent)	<u>1174.8 IN.</u>	<u>3.818 IN.</u>
Aspect Ratio	<u>1.56</u>	<u>1.56</u>
Rate of Taper	<u>—</u>	<u>—</u>
Taper Ratio	<u>0.311</u>	<u>0.311</u>
Diehedral Angle, degrees	<u>7.0°</u>	<u>7.0°</u>
Incidence Angle, degrees	<u>0°</u>	<u>0°</u>
Aerodynamic Twist, degrees	<u>—</u>	<u>—</u>
Toe-In Angle	<u>—</u>	<u>—</u>
Cant Angle	<u>—</u>	<u>—</u>
Sweep Back Angles, degrees		
Leading Edge	<u>53.5°</u>	<u>53.5°</u>
Trailing Edge	<u>0°</u>	<u>0°</u>
0.25 Element Line	<u>45.3°</u>	<u>45.3°</u>
Chords:		
Root (Wing Sta. 0.0)	<u>1150.2 IN.</u>	<u>3.738 IN.</u>
Tip, (equivalent)	<u>357.8 IN.</u>	<u>1.163 IN.</u>
MAC	<u>823.4 IN.</u>	<u>2.676 IN.</u>
Fus. Sta. of .25 MAC	<u>1472.3 IN.</u>	<u>4.785 IN.</u>
W.P. of .25 MAC	<u>—</u>	<u>—</u>
B.L. of .25 MAC	<u>242.2 IN.</u>	<u>0.787 IN.</u>
Airfoil Section		
Root	<u>64A010</u>	<u>64A010</u>
Tip	<u>64A010</u>	<u>64A010</u>

EXPOSED DATA

Area	<u>3468 FT<sup>2</sup></u>	<u>5.274 IN<sup>2</sup></u>
Span, (equivalent)	<u>796.9 IN.</u>	<u>2.590 IN.</u>
Aspect Ratio	<u>1.27</u>	<u>1.27</u>
Taper Ratio	<u>0.40</u>	<u>0.40</u>
Chords		
Root	<u>895.4 IN.</u>	<u>2.910 IN.</u>
Tip	<u>357.8 IN.</u>	<u>1.163 IN.</u>
MAC	<u>664.9 IN.</u>	<u>2.161 IN.</u>
Fus. Sta. of .25 MAC	<u>1591.1 IN.</u>	<u>5.171 IN.</u>
W.P. of .25 MAC	<u>—</u>	<u>—</u>
B.L. of .25 MAC	<u>359.7 IN.</u>	<u>1.169 IN.</u>

TABLE III. (CONTINUED)

MODEL COMPONENT: V2

GENERAL DESCRIPTION: TIP FIN FOR WING. W5 (MODEL 2B)

DIMENSIONS INCLUDE RUBBER SURFACES AND ARE FOR ONE FIN ONLY

DRAWING NUMBER: A152041

DIMENSIONS:

FULL-SCALE

MODEL SCALE  
(0.00325)

TOTAL DATA

Area		
Planform	<u>632.4 FT<sup>2</sup></u>	<u>0.961 IN<sup>2</sup></u>
Wetted	<u>—</u>	<u>—</u>
Span (equivalent)	<u>381.3 IN.</u>	<u>1.239 IN.</u>
Aspect Ratio	<u>—</u>	<u>—</u>
Rate of Taper	<u>—</u>	<u>—</u>
Taper Ratio	<u>0.30</u>	<u>0.30</u>
Diehedral Angle, degrees	<u>—</u>	<u>—</u>
Incidence Angle, degrees	<u>—</u>	<u>—</u>
Aerodynamic Twist, degrees	<u>—</u>	<u>—</u>
Toe-In Angle	<u>—</u>	<u>—</u>
Cant Angle	<u>13.0°</u>	<u>13.0°</u>
Sweep Back Angles, degrees		
Leading Edge	<u>50.0°</u>	<u>50.0°</u>
Trailing Edge	<u>28.9°</u>	<u>28.9°</u>
0.25 Element Line	<u>45.9°</u>	<u>45.9°</u>
Chords:		
Root (Wing Sta. 0.0)	<u>357.9 IN.</u>	<u>1.163 IN.</u>
Tip, (equivalent)	<u>107.4 IN.</u>	<u>0.349 IN.</u>
MAC	<u>255.1 IN.</u>	<u>0.829 IN.</u>
Fus. Sta. of .25 MAC	<u>1987.1 IN.</u>	<u>6.458 IN.</u>
W.P. of .25 MAC	<u>—</u>	<u>—</u>
B.L. of .25 MAC	<u>—</u>	<u>—</u>
Airfoil Section		
Root	<u>64A009</u>	<u>64A009</u>
Tip	<u>64A009</u>	<u>64A009</u>
<u>EXPOSED DATA</u> ~ N/A		

Area		
Span, (equivalent)		
Aspect Ratio		
Taper Ratio		
Chords		
Root		
Tip		
MAC		
Fus. Sta. of .25 MAC		
W.P. of .25 MAC		
B.L. of .25 MAC		

TABLE III. (CONTINUED)

MODEL COMPONENT: V4

GENERAL DESCRIPTION: TIP EXTENSION FOR WING W/2 (MODEL 2A).  
DIMENSIONS INCLUDE PORTION OF ELEVON SURFACE AND  
ARE FOR ONE TIP EXTENSION ONLY

DRAWING NUMBER: A152042

DIMENSIONS:

FULL-SCALE

MODEL SCALE  
(0.00325)

TOTAL DATA

Area		
Planform	<u>356.4 FT<sup>2</sup></u>	<u>0.542 IN<sup>2</sup></u>
Wetted	<u>—</u>	<u>—</u>
Span (equivalent)	<u>14.5 FT</u>	<u>0.564 IN.</u>
Aspect Ratio	<u>—</u>	<u>—</u>
Rate of Taper	<u>—</u>	<u>—</u>
Taper Ratio	<u>—</u>	<u>—</u>
Diehedral Angle, degrees	<u>—</u>	<u>—</u>
Incidence Angle, degrees	<u>—</u>	<u>—</u>
Aerodynamic Twist, degrees	<u>—</u>	<u>—</u>
Toe-In Angle	<u>—</u>	<u>—</u>
Cant Angle	<u>—</u>	<u>—</u>
Sweep Back Angles, degrees		
Leading Edge	<u>53.5°</u>	<u>53.5°</u>
Trailing Edge	<u>0°</u>	<u>0°</u>
0.25 Element Line	<u>45.3°</u>	<u>45.3°</u>
Chords:		
Root (Wing Sta. 0.0)	<u>34.4 FT</u>	<u>1.342 IN.</u>
Tip, (equivalent)	<u>17.5 IN.</u>	<u>0.580 IN.</u>
MAC	<u>—</u>	<u>—</u>
Fus. Sta. of .25 MAC	<u>—</u>	<u>—</u>
W.P. of .25 MAC	<u>—</u>	<u>—</u>
B.L. of .25 MAC	<u>—</u>	<u>—</u>
Airfoil Section		
Root	<u>—</u>	<u>—</u>
Tip	<u>—</u>	<u>—</u>
<u>EXPOSED DATA</u> ~ N/A		
Area		
Span, (equivalent)		
Aspect Ratio		
Taper Ratio		
Chords		
Root		
Tip		
MAC		
Fus. Sta. of .25 MAC		
W.P. of .25 MAC		
B.L. of .25 MAC		

TABLE III. (CONTINUED)

MODEL COMPONENT: V1  
 GENERAL DESCRIPTION: DORSAL FIN (RUDDER SURFACE  
INCLUDED) ~ STRAIGHT T.E.



DRAWING NUMBER: A152049

DIMENSIONS: FULL-SCALE MODEL SCALE  
(0.00325)

TOTAL DATA

Area		
Planform	<u>509.3 FT<sup>2</sup></u>	<u>1.369 IN<sup>2</sup></u>
Wetted	<u>—</u>	<u>—</u>
Span (equivalent)	<u>259.4 IN.</u>	<u>0.843 IN.</u>
Aspect Ratio	<u>0.519</u>	<u>0.519</u>
Rate of Taper	<u>—</u>	<u>—</u>
Taper Ratio	<u>0.438</u>	<u>0.438</u>
Diehedral Angle, degrees	<u>—</u>	<u>—</u>
Incidence Angle, degrees	<u>—</u>	<u>—</u>
Aerodynamic Twist, degrees	<u>—</u>	<u>—</u>
Toe-In Angle	<u>—</u>	<u>—</u>
Cant Angle	<u>—</u>	<u>—</u>
Sweep Back Angles, degrees		
Leading Edge	<u>40.0°</u>	<u>40.0°</u>
Trailing Edge	<u>0°</u>	<u>0°</u>
0.25 Element Line	<u>32.2°</u>	<u>32.2°</u>
Chords:		
Root (Wing Sta. 0.0)	<u>387.4 IN.</u>	<u>1.259 IN.</u>
Tip, (equivalent)	<u>169.9 IN.</u>	<u>0.552 IN.</u>
MAC	<u>290.2 IN.</u>	<u>0.943 IN.</u>
Fus. Sta. of .25 MAC	<u>1869.5 IN.</u>	<u>6.076 IN.</u>
W.P. of .25 MAC	<u>—</u>	<u>—</u>
B.L. of .25 MAC	<u>117.9 IN.</u>	<u>0.367 IN.</u>
Airfoil Section		
Root	<u>64A009</u>	<u>64A009</u>
Tip	<u>64A009</u>	<u>64A009</u>

EXPOSED DATA ~ N/A

Area	<u>—</u>	<u>—</u>
Span, (equivalent)	<u>—</u>	<u>—</u>
Aspect Ratio	<u>—</u>	<u>—</u>
Taper Ratio	<u>—</u>	<u>—</u>
Chords	<u>—</u>	<u>—</u>
Root	<u>—</u>	<u>—</u>
Tip	<u>—</u>	<u>—</u>
MAC	<u>—</u>	<u>—</u>
Fus. Sta. of .25 MAC	<u>—</u>	<u>—</u>
W.P. of .25 MAC	<u>—</u>	<u>—</u>
B.L. of .25 MAC	<u>—</u>	<u>—</u>

TABLE III. (CONTINUED)

MODEL COMPONENT: D2  
 GENERAL DESCRIPTION: DORSAL FIN (RUDDER SURFACE INCLUDED) ~ SWEEP T.E.

DRAWING NUMBER: A152052

<u>DIMENSIONS:</u>	<u>FULL-SCALE</u>	<u>MODEL SCALE</u> (0.00325)
<u>TOTAL DATA</u>		
Area		
Planform	<u>722.1 FT<sup>2</sup></u>	<u>1.098 IN<sup>2</sup></u>
Wetted	<u>—</u>	<u>—</u>
Span (equivalent)	<u>274.8 IN.</u>	<u>0.893 IN.</u>
Aspect Ratio	<u>0.726</u>	<u>0.726</u>
Rate of Taper	<u>—</u>	<u>—</u>
Taper Ratio	<u>0.67</u>	<u>0.67</u>
Diehedral Angle, degrees	<u>—</u>	<u>—</u>
Incidence Angle, degrees	<u>—</u>	<u>—</u>
Aerodynamic Twist, degrees	<u>—</u>	<u>—</u>
Toe-In Angle	<u>—</u>	<u>—</u>
Cant Angle	<u>—</u>	<u>—</u>
Sweep Back Angles, degrees		
Leading Edge	<u>45.0°</u>	<u>45.0°</u>
Trailing Edge	<u>25.3°</u>	<u>25.3°</u>
0.25 Element Line	<u>41.0°</u>	<u>41.0°</u>
Chords:		
Root (Wing Sta. 0.0)	<u>439.1 IN.</u>	<u>1.427 IN.</u>
Tip, (equivalent)	<u>294.2 IN.</u>	<u>0.956 IN.</u>
MAC	<u>371.4 IN.</u>	<u>1.207 IN.</u>
Fus. Sta. of .25 MAC	<u>2003.7 IN.</u>	<u>6.512 IN.</u>
W.P. of .25 MAC	<u>—</u>	<u>—</u>
B.L. of .25 MAC	<u>128.3 IN.</u>	<u>0.417 IN.</u>
Airfoil Section		
Root	<u>64A009</u>	<u>64A009</u>
Tip	<u>64A009</u>	<u>64A009</u>
<u>EXPOSED DATA</u> ~ N/A		
Area	<u>—</u>	<u>—</u>
Span, (equivalent)	<u>—</u>	<u>—</u>
Aspect Ratio	<u>—</u>	<u>—</u>
Taper Ratio	<u>—</u>	<u>—</u>
Chords		
Root	<u>—</u>	<u>—</u>
Tip	<u>—</u>	<u>—</u>
MAC	<u>—</u>	<u>—</u>
Fus. Sta. of .25 MAC	<u>—</u>	<u>—</u>
W.P. of .25 MAC	<u>—</u>	<u>—</u>
B.L. of .25 MAC	<u>—</u>	<u>—</u>

TABLE III. (CONTINUED)

MODEL COMPONENT: E3

GENERAL DESCRIPTION: ELEVON - WING W2 (DIMENSIONS ARE  
FOR ONE ELEVON ONLY AND ARE  
FROM THE L.E.)

DRAWING NUMBER: 4152042



<u>DIMENSIONS:</u>	<u>FULL-SCALE</u>	<u>MODEL SCALE</u> (0.00325)
Area	<u>687.2 FT<sup>2</sup></u>	<u>1.045 IN<sup>2</sup></u>
Span (equivalent)	<u>520.0 IN.</u>	<u>1.690 IN.</u>
Inb'd equivalent chord	<u>317.2 IN.</u>	<u>1.031 IN.</u>
Outb'd equivalent chord	<u>63.4 IN.</u>	<u>0.206 IN.</u>
Ratio movable surface chord/ total surface chord		
At Inb'd equiv. chord	<u>0.36</u>	<u>0.36</u>
At Outb'd equiv. chord	<u>0.36</u>	<u>0.36</u>
Sweep Back Angles, degrees		
Leading Edge	<u>26.0°</u>	<u>26.0°</u>
Tailing Edge	<u>0°</u>	<u>0°</u>
Hingeline	<u>22.0°</u>	<u>22.0°</u>
Area Moment (Normal to hinge line)	<u>—</u>	<u>—</u>



TABLE III. (CONTINUED)

MODEL COMPONENT: E4

GENERAL DESCRIPTION: ELEVON ~ WING WS (DIMENSIONS ARE  
FOR ONE ELEVON ONLY AND ARE  
FROM THE L.E.)

DRAWING NUMBER: A152047

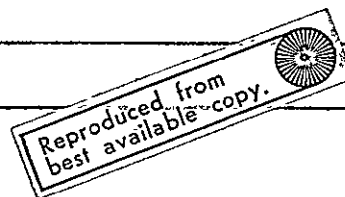
<u>DIMENSIONS:</u>	<u>FULL-SCALE</u>	<u>MODEL SCALE</u> (0.00325)
Area	<u>558.3 FT<sup>2</sup></u>	<u>0.949 IN<sup>2</sup></u>
Span (equivalent)	<u>344.3 IN.</u>	<u>1.119 IN.</u>
Inb'd equivalent chord	<u>317.2 IN.</u>	<u>1.031 IN.</u>
Outb'd equivalent chord	<u>149.2 IN.</u>	<u>0.485 IN.</u>
Ratio movable surface chord/ total surface chord		
At Inb'd equiv. chord	<u>0.36</u>	<u>0.36</u>
At Outb'd equiv. chord	<u>0.36</u>	<u>0.36</u>
Sweep Back Angles, degrees		
Leading Edge	<u>26.0°</u>	<u>26.0°</u>
Tailing Edge	<u>0°</u>	<u>0°</u>
Hingeline	<u>22.0°</u>	<u>22.0°</u>
Area Moment (Normal to hinge line)	<u>—</u>	<u>—</u>

TABLE III. (CONTINUED)

MODEL COMPONENT: R1

GENERAL DESCRIPTION: DUDGER FOR D1 (DIMENSIONS  
ARE FROM S.E. OF DUDGER)

DRAWING NUMBER: A 152049



<u>DIMENSIONS:</u>	<u>FULL-SCALE</u>	<u>MODEL SCALE:</u> <u>(0.00325)</u>
Area	<u>176.2 FT<sup>2</sup></u>	<u>0.268 IN<sup>2</sup></u>
Span (equivalent)	<u>259.4 IN.</u>	<u>0.843 IN.</u>
Inb'd equivalent chord	<u>136.0 IN.</u>	<u>0.442 IN.</u>
Outb'd equivalent chord	<u>60.3 IN.</u>	<u>0.196 IN.</u>
Ratio movable surface chord/ total surface chord		
At Inb'd equiv. chord	<u>0.36</u>	<u>0.36</u>
At Outb'd equiv. chord	<u>0.36</u>	<u>0.36</u>
Sweep Back Angles, degrees		
Leading Edge	<u>17.9°</u>	<u>17.9°</u>
Tailing Edge	<u>0°</u>	<u>0°</u>
Hingeline	<u>14.1°</u>	<u>14.1°</u>
Area Moment (Normal to hinge line)	<u>—</u>	<u>—</u>

TABLE III. (CONTINUED)

MODEL COMPONENT: R2

GENERAL DESCRIPTION: RUDDER FOR D2 (DIMENSIONS ARE FROM L.E. OF RUDDER)

DRAWING NUMBER: A152052

<u>DIMENSIONS:</u>	<u>FULL-SCALE</u>	<u>MODEL SCALE</u> (0.00325)
Area	<u>269.0 FT<sup>2</sup></u>	<u>0.409 IN<sup>2</sup></u>
Span (equivalent)	<u>274.8 IN.</u>	<u>0.893 IN.</u>
Inb'd equivalent chord	<u>159.4 IN.</u>	<u>0.518 IN.</u>
Outb'd equivalent chord	<u>106.8 IN.</u>	<u>0.347 IN.</u>
Ratio movable surface chord/ total surface chord		
At Inb'd equiv. chord	<u>0.36</u>	<u>0.36</u>
At Outb'd equiv. chord	<u>0.36</u>	<u>0.36</u>
Sweep Back Angles, degrees		
Leading Edge	<u>33.6°</u>	<u>33.6°</u>
Tailing Edge	<u>25.3°</u>	<u>25.3°</u>
Hingeline	<u>32.2°</u>	<u>32.2°</u>
Area Moment (Normal to hinge line)	<u>—</u>	<u>—</u>

TABLE III. (CONCLUDED)

MODEL COMPONENT: R4

GENERAL DESCRIPTION: RUDDER FOR TIP FIN V2 (DIM.  
ARE FROM L.E. OF RUDDER & ARE FOR ONE  
RUDDER ONLY)

DRAWING NUMBER: A152047



<u>DIMENSIONS:</u>	<u>FULL-SCALE</u>	<u>MODEL SCALE</u> (0.00325)
Area	<u>196.6 FT<sup>2</sup></u>	<u>0.299 IN<sup>2</sup></u>
Span (equivalent)	<u>352.9 IN.</u>	<u>1.147 IN.</u>
Inb'd equivalent chord	<u>121.2 IN.</u>	<u>0.394 IN.</u>
Outb'd equivalent chord	<u>39.4 IN.</u>	<u>0.128 IN.</u>
Ratio movable surface chord/ total surface chord		
At Inb'd equiv. chord	<u>0.36</u>	<u>0.36</u>
At Outb'd equiv. chord	<u>0.36</u>	<u>0.36</u>
Sweep Back Angles, degrees		
Leading Edge	<u>40.2°</u>	<u>40.2°</u>
Tailing Edge	<u>28.9°</u>	<u>28.9°</u>
Hingeline	<u>38.8°</u>	<u>38.8°</u>
Area Moment (Normal to hinge line)	<u>—</u>	<u>—</u>

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TITLE	PLOTTED COEFFICIENTS SCHEDULE	CONDITIONS VARYING	PAGES
LMSC/HREC Orbiter Studies - Model 2A - Longitudinal Characteristics, Mach Number Effects	A	MACH	1-20
LMSC/HREC Orbiter Studies - Model 2A - Lateral/Directional Characteristics, Mach Number Effects, ALPHA =0	D	MACH	21-28
LMSC/HREC Orbiter Studies - Model 2A - Lateral/Directional Characteristics, Mach Number Effects, ALPHA =10 Degrees	D	MACH	29-36
LMSC/HREC Orbiter Studies - Model 2A - Lateral/Directional Characteristics, Mach Number Effects, ALPHA =15 Degrees	D	MACH	37-44
LMSC/HREC Orbiter Studies - Model 2A - Longitudinal Characteristics, Elevon Effects	B	ELEVON3, MACH	45-84
LMSC/HREC Orbiter Studies - Model 2A - Lateral/Directional Characteristics, Rudder Effects, ALPHA =0	D	RUDER2, MACH	85-104
LMSC/HREC Orbiter Studies - Model 2A - Lateral/Directional Characteristics, Rudder Effects, ALPHA =15 Degrees	D	RUDER2, MACH	105-124
LMSC/HREC Orbiter Studies - Model 2A - Lateral/Directional Characteristics, Aileron Effects, ELEVON =0	C	AILERON, MACH	125-140
LMSC/HREC Orbiter Studies - Model 2A - Lateral/Directional Characteristics, Aileron Effects, ELEVON =+10 Degrees	C	AILERON, MACH	141-160

TABLE V. INDEX OF DATA FIGURES  
(Continued)

TITLE	PLOTTED COEFFICIENTS SCHEDULE	CONDITIONS VARYING	PAGES
IMSC/HREC Orbiter Studies - Model 2A - Lateral/Directional Characteristics, Aileron Effects, ELEVEN = -10 Degrees	C	AILRON, MACH	161-180
IMSC/HREC Orbiter Studies - Model 2A - Longitudinal Characteristics Versus Mach Number	E	ALPHA	181-210
IMSC/HREC Orbiter Studies - Model 2A - Pitch Effectiveness Versus Mach Number, ALPHA = 0	F	ELEVN3	211-216
IMSC/HREC Orbiter Studies - Model 2A - Pitch Effectiveness Versus Mach Number, ALPHA = 10 Degrees	F	ELEVN3	217-222
IMSC/HREC Orbiter Studies - Model 2A - Pitch Effectiveness Versus Mach Number, ALPHA = 15 Degrees	F	ELEVN3	223-228
IMSC/HREC Orbiter Studies - Model 2A - Lateral/Directional Characteristics Versus Mach Number	G	ALPHA	229-246
IMSC/HREC Orbiter Studies - Model 2A - Lateral/Directional Characteristics, Rudder Effectiveness (Derivative Versus Mach Number)	H	ALPHA	247-254
IMSC/HREC Orbiter Studies - Model 2A - Longitudinal Characteristics, Elevon Effec- tiveness (Derivative Versus Mach Number)	I	ALPHA	255-263
IMSC/HREC Orbiter Studies - Model 2A - Lateral/Directional Characteristics, Aileron Effectiveness (Derivative Versus Mach Number)	J	ALPHA	264-267

TABLE V. INDEX OF DATA FIGURES  
(Continued)

TITLE	PLOTTED COEFFICIENTS SCHEDULE	CONDITIONS VARYING	PAGES
IMSC/HREC Orbiter Studies - Model 2A - Effect of Vertical Tail Size, ALPHA =0	D	Configurations, MACH	268-287
IMSC/HREC Orbiter Studies - Model 2A - Effect of Vertical Tail Size, ALPHA =10 Degrees	D	Configuration, MACH	288-307
IMSC/HREC Orbiter Studies - Model 2A - Effect of Vertical Tail Size, ALPHA =15 Degrees	D	Configuration, MACH	308-327
IMSC/HREC Orbiter Studies - Model 2A - Lateral/ Directional Characteristics, Rudder Effects (Dorsal DL), ALPHA =0	D	RUDER1, MACH	328-347
IMSC/HREC Orbiter Studies - Model 2A - Lateral/ Directional Characteristics, Vertical Tail Off, ALPHA =0	D	Configuration, MACH	348-375
IMSC/HREC Orbiter Studies - Model 2A - Longitudinal Characteristics, Elevon Control Effectiveness, High ALPHA	B	ELEVN3, MACH	376-391
IMSC/HREC Orbiter Studies - Model 2B - Longitudinal Characteristics, Mach Number Effects	A	MACH	392-411
IMSC/HREC Orbiter Studies - Model 2B - Lateral/ Directional Characteristics, Mach Number Effects, ALPHA =0	D	MACH	412-419
IMSC/HREC Orbiter Studies - Model 2B - Lateral/ Directional Characteristics, Mach Number Effects, ALPHA =10 Degrees	D	MACH	420-427
IMSC/HREC Orbiter Studies - Model 2B - Lateral/ Directional Characteristics, Mach Number Effects, ALPHA =15 Degrees	D	MACH	428-435



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(Continued)

TITLE	PLOTTED COEFFICIENTS SCHEDULE	CONDITIONS VARYING	PAGES
IMSC/HREC Orbiter Studies - Model 2B - Longitudinal Characteristics, Elevon Effects	B	ELEVON <sup>4</sup> , MACH	436-475
IMSC/HREC Orbiter Studies - Model 2B - Lateral/ Directional Characteristics, Rudder Effects, ALPHA =0	D	RUDER <sup>4</sup> , MACH	476-495
IMSC/HREC Orbiter Studies - Model 2B - Lateral/ Directional Characteristics, Rudder Effects, ALPHA =15 Degrees	D	RUDER <sup>4</sup> , MACH	496-515
IMSC/HREC Orbiter Studies - Model 2B - Lateral/ Directional Characteristics, Aileron Effects, ELEVON =0	C	AILRON, MACH	516-531
IMSC/HREC Orbiter Studies - Model 2B - Lateral/ Directional Characteristics, Aileron Effects, ELEVON =+10 Degrees	C	AILRON, MACH	532-547
IMSC/HREC Orbiter Studies - Model 2B - Lateral/ Directional Characteristics, Aileron Effects, ELEVON =-10 Degrees	C	AILRON, MACH	548-563
IMSC/HREC Orbiter Studies - Model 2B - Longitudinal Characteristics Versus Mach Number	E	ALPHA	564-593
IMSC/HREC Orbiter Studies - Model 2B - Pitch Effectiveness Versus Mach Number (ALPHA =0)	F	ELEVON <sup>4</sup>	594-599
IMSC/HREC Orbiter Studies - Model 2B - Pitch Effectiveness Versus Mach Number (ALPHA =10 Degrees)	F	ELEVON <sup>4</sup>	600-605
IMSC/HREC Orbiter Studies - Model 2B - Pitch Effectiveness Versus Mach Number (ALPHA =15 Degrees)	F	ELEVON <sup>4</sup>	606-611

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(Continued)

TITLE	PLOTTED COEFFICIENTS SCHEDULE	CONDITIONS VARYING	PAGES
IMSC/HREC orbiter Studies - Model 2B - Lateral/ Directional Characteristics Versus Mach Number	G	ALPHA	612-629
IMSC/HREC Orbiter Studies - Model 2B - Lateral/ Directional Characteristics, Rudder Effectiveness (Derivative Versus Mach Number)	H	ALPHA	630-637
IMSC/HREC Orbiter Studies - Model 2B - Longitudinal Characteristics, Elevon Effectiveness (Derivative Versus Mach Number)	I	ALPHA	638-646
IMSC/HREC Orbiter Studies - Model 2B - Lateral/ Directional Characteristics, Aileron Effectiveness (Derivative Versus Mach Number)	J	ALPHA	647-650
IMSC/HREC Orbiter Model 2A/2B Comparisons - Longitudinal Characteristics (BETA =0)	A	Configuration, MACH	651-720
IMSC/HREC Orbiter Model 2A/2B Comparisons - Lateral/Directional Characteristics, ALPHA =0	D	Configuration, MACH	721-740
IMSC/HREC Orbiter Model 2A/2B Comparisons - Lateral/Directional Characteristics, ALPHA =10 Degrees	D	Configuration, MACH	741-760
IMSC/HREC Orbiter Model 2A/2B Comparisons - Lateral/Directional Characteristics, ALPHA =15 Degrees	D	Configuration, MACH	761-780
IMSC/HREC Orbiter Model 2A/2B Comparisons - Longitudinal Characteristics Versus Mach Number (BETA =0)	E	Configuration, ALPHA	781-810

TABLE V. INDEX OF DATA FIGURES

TITLE	PLOTTED COEFFICIENTS SCHEDULE	CONDITIONS VARYING	PAGES
LMSC/HREC Orbiter Model 2A/2B Comparisons - Lateral/Directional Characteristics Versus Mach Number (BETA =0)	G	Configuration, ALPHA	811-828
LMSC/HREC Orbiter Model 2A/2B Comparisons - Rudder Effectiveness (Derivative Versus Mach Number), BETA =0	H	Configuration, ALPHA	829-836
LMSC/HREC Orbiter Model 2A/2B Comparisons - Elevon Effectiveness (Derivative Versus Mach Number), BETA =0	I	Configuration, ALPHA	837-845
LMSC/HREC Orbiter Model 2A/2B Comparisons - Aileron Effectiveness (Derivative Versus Mach Number), BETA =0	J	Configuration, ALPHA	846-849

PLOTTED COEFFICIENTS SCHEDULE:

- (A) CLM, CL, CD, L/D, CN, CA, CAB vs. ALPHA  
CLM, CD vs. CL  
CD, vs. CLSQR
- (B) CLM, CL, CD, L/D, CN, CA, CAB vs. ALPHA  
CLM vs. CL
- (C) CYN, CY, CBL, CAB vs. ALPHA
- (D) CYN, CY, CBL, CAB vs. BETA
- (E) CLM, CL, CD, L/D, CN, CA, CAB, DCIMCL, DCIM, DCL vs. MACH
- (F) CLM, CL, CD, L/D, CN, CA vs. MACH
- (G) CYN, CY, CBL, DCYNDB, DCBLDB, DCY/DB vs. MACH
- (H) DCYNDR, DCY/DR, DCBLDR, DCD/DR vs. MACH
- (I) DCLMDE, DCL/DE, DCD/DE vs. MACH
- (J) DCBLDA, DCYNDA vs. MACH

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.

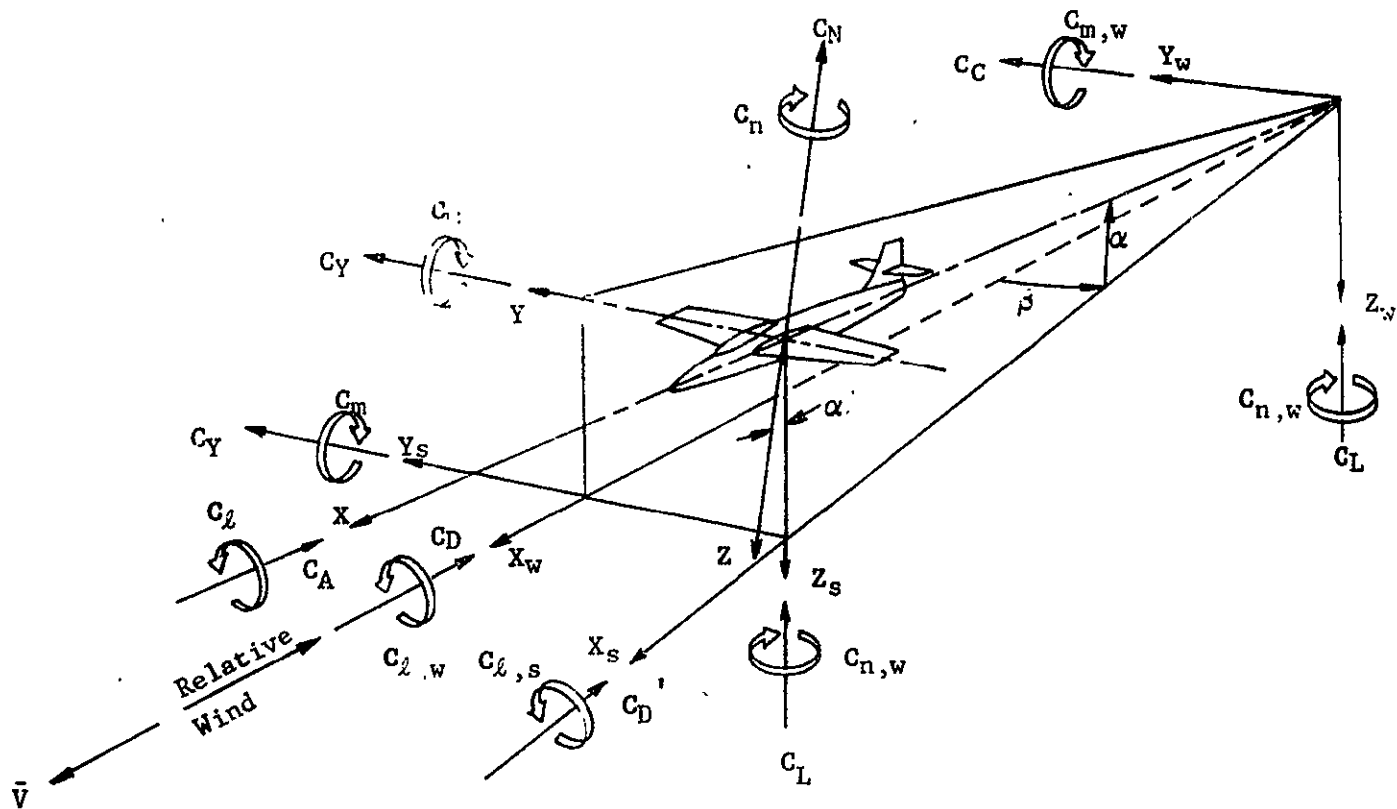
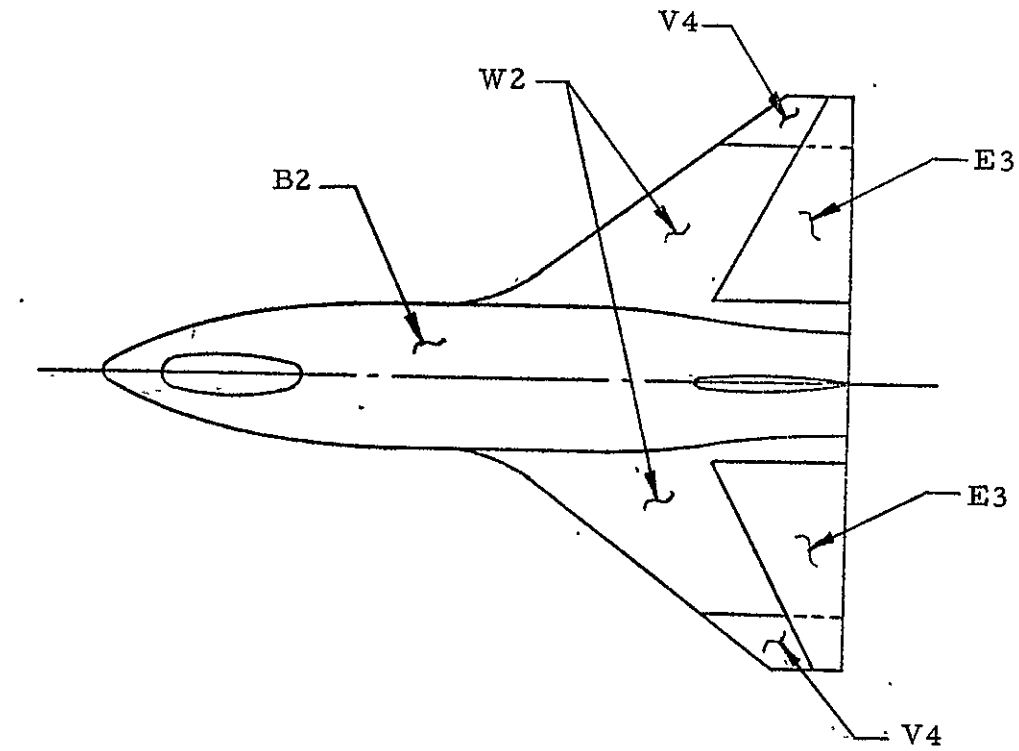


Figure 1. Axis systems, showing direction and sense of force and moment coefficients, angle of attack, and sideslip angle



NOTE: Combination B2W2 is identical to B2W5 due to one-piece body/wing.

40

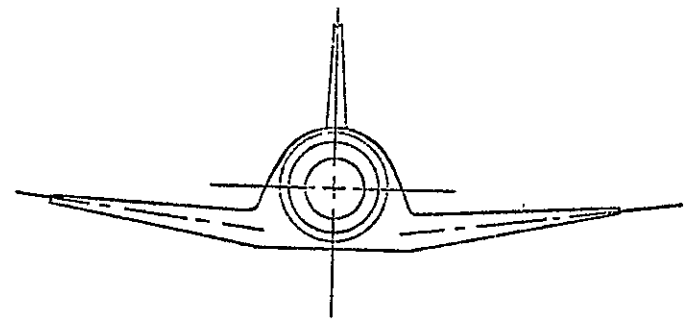
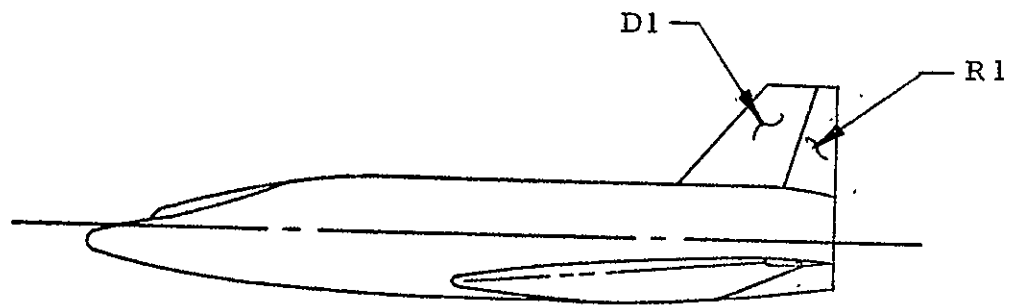


Figure 2. General Arrangement, Orbiter Model 2A, Model Component Location

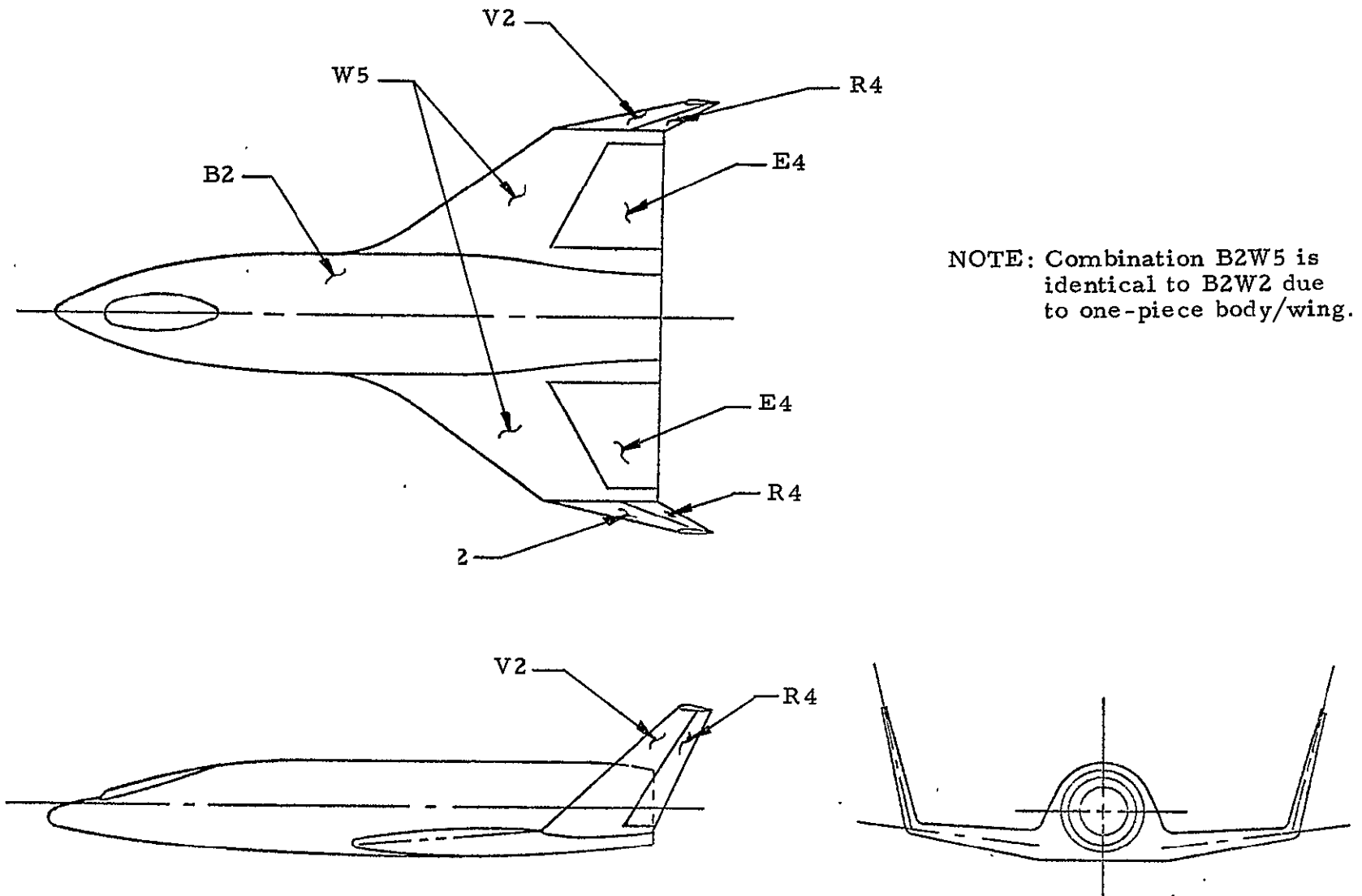
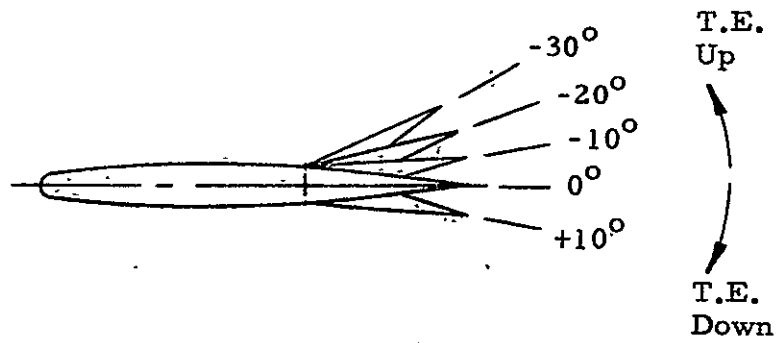
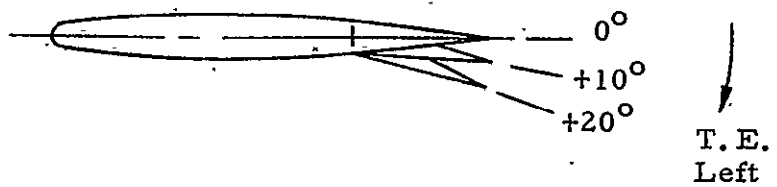


Figure 3. General Arrangement, Orbiter Model 2B, Model Component Location

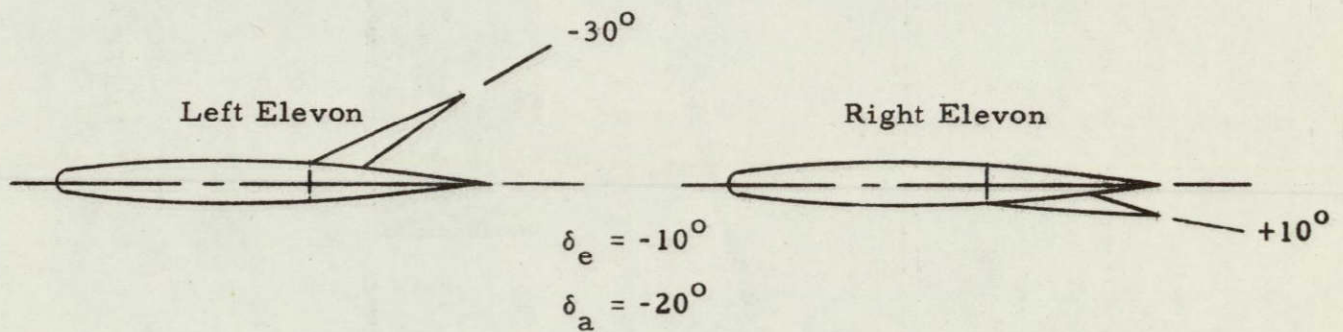
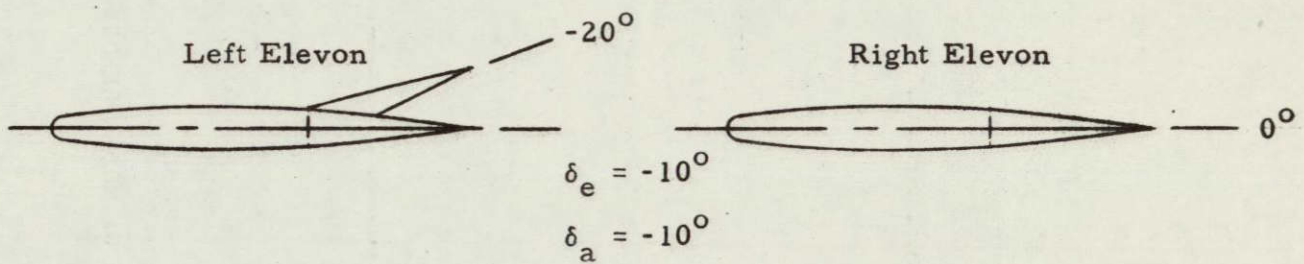
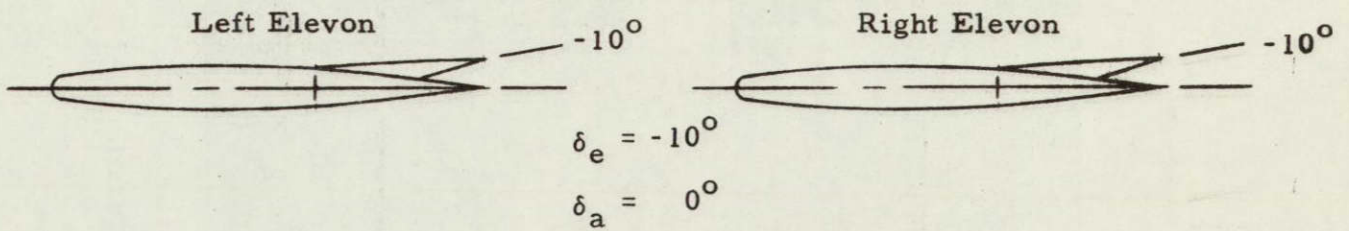


Sign Convention, Elevon Deflection



Sign Convention, Rudder Deflection

Figure 4. Deflection Angles Measured About the Hinge Line



Note: Aileron Sign Convention is Defined as Follows:

$$\delta_a = \frac{\text{Elevon (Left)} - \text{Elevon (Right)}}{2}$$

### Sign Convention, Elevon/Aileron Deflection

FIGURE 5. DEFLECTION ANGLES MEASURED ABOUT THE HINGE LINE



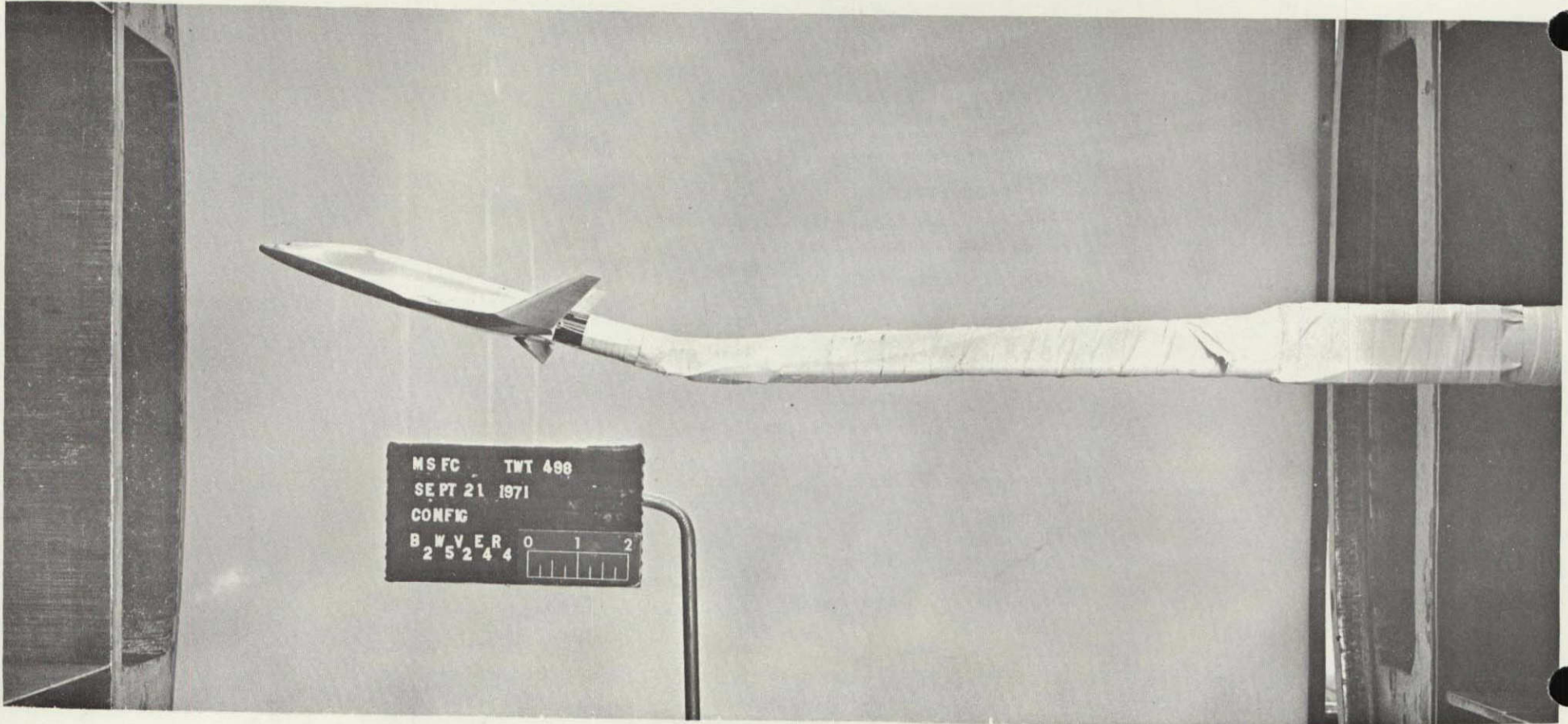


FIGURE 6. PHOTOGRAPH OF MODEL BEFORE INSTALLATION IN TUNNEL

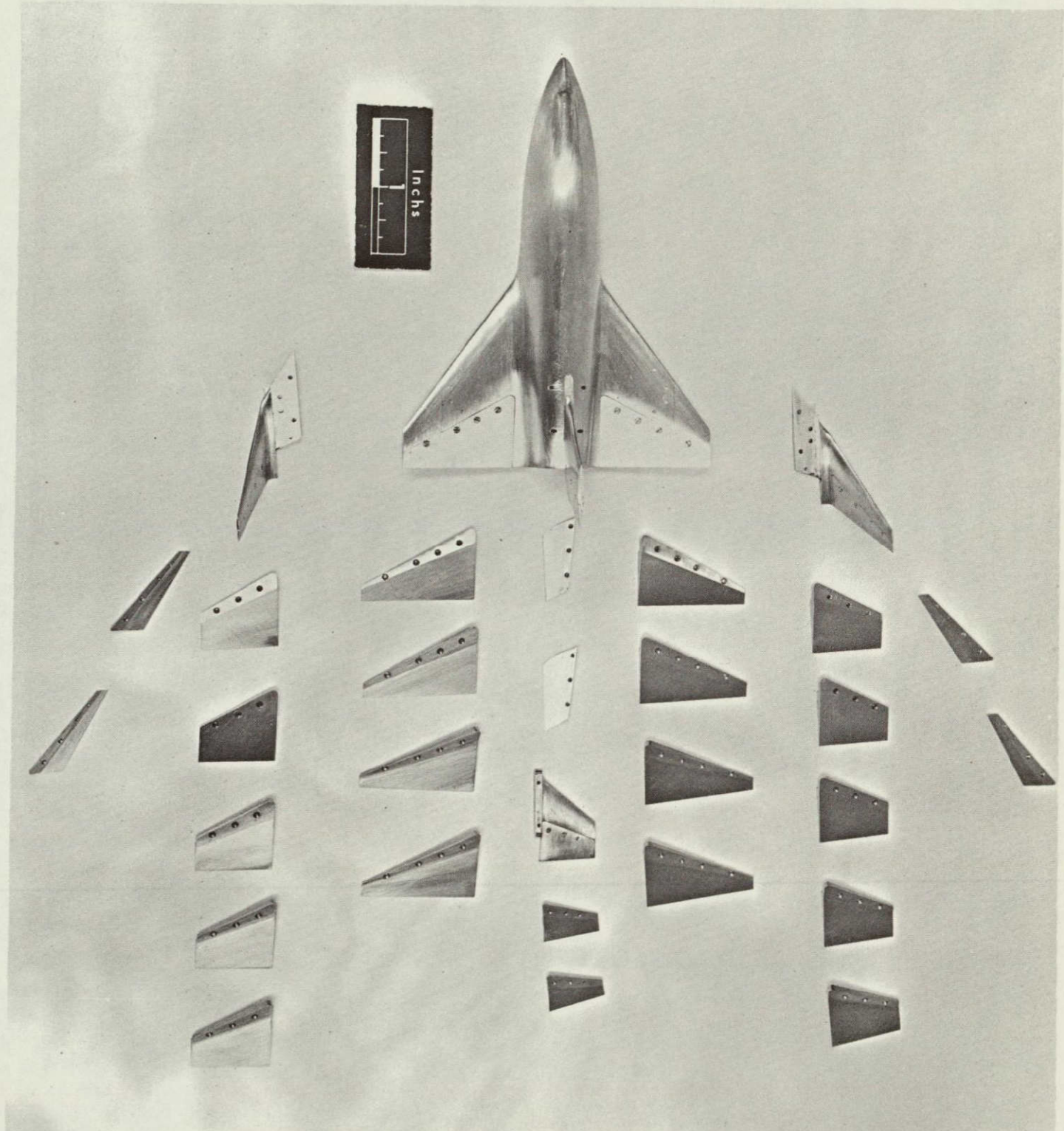


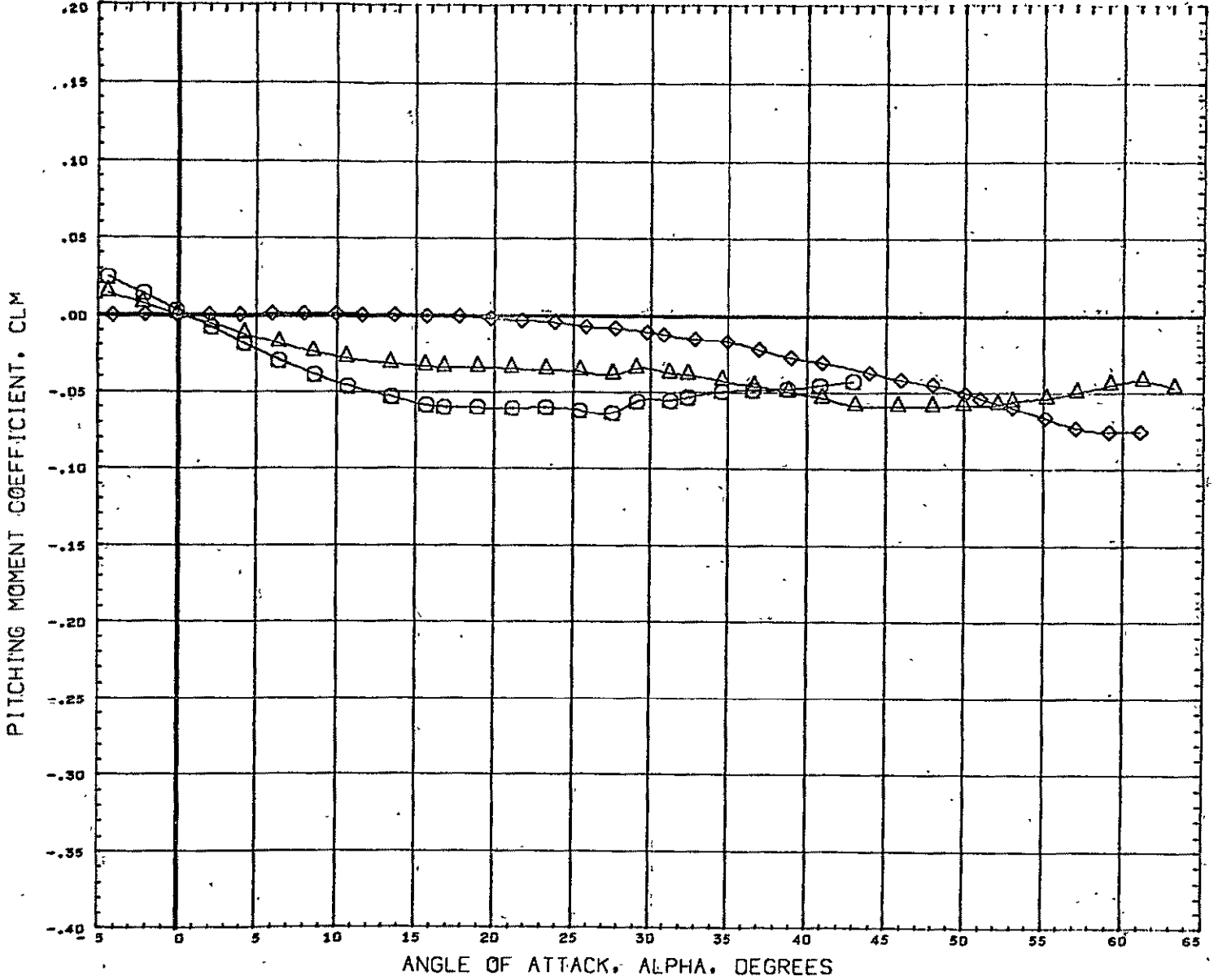
FIGURE 7. PHOTOGRAPH OF MODEL AND COMPONENTS

P L O T T E D   D A T A

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

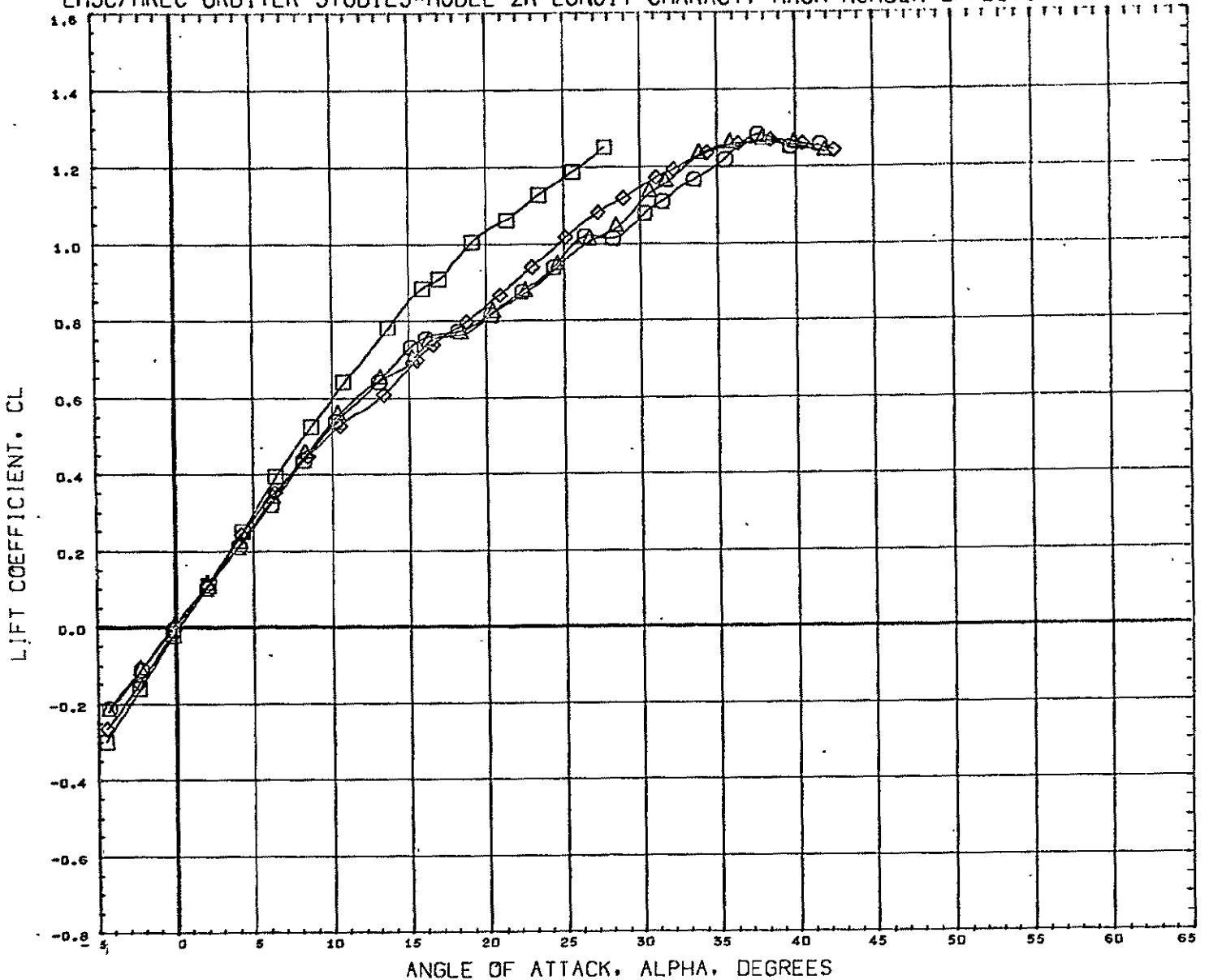
LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, MACH NUMBER EFFECTS



SYMBOL	MACH	PARAMETRIC VALUES			REFERENCE INFORMATION			
○	1.461	BETA	0.000	ELEVNS'	0.000	SREF	9.0250	SQ. IN
△	1.964	RUDER2	0.000	STING	4.000	LREF	6.1420	INCHES
◇	4.969					BREF	6.1420	INCHES
						XHRF	3.9950	INCHES
						YHRF	0.0000	INCHES
						ZHRF	0.1350	INCHES
						SCALE	0.0033	SCALE

DATA HIST. CODE #GTV#E

# LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, MACH NUMBER EFFECTS

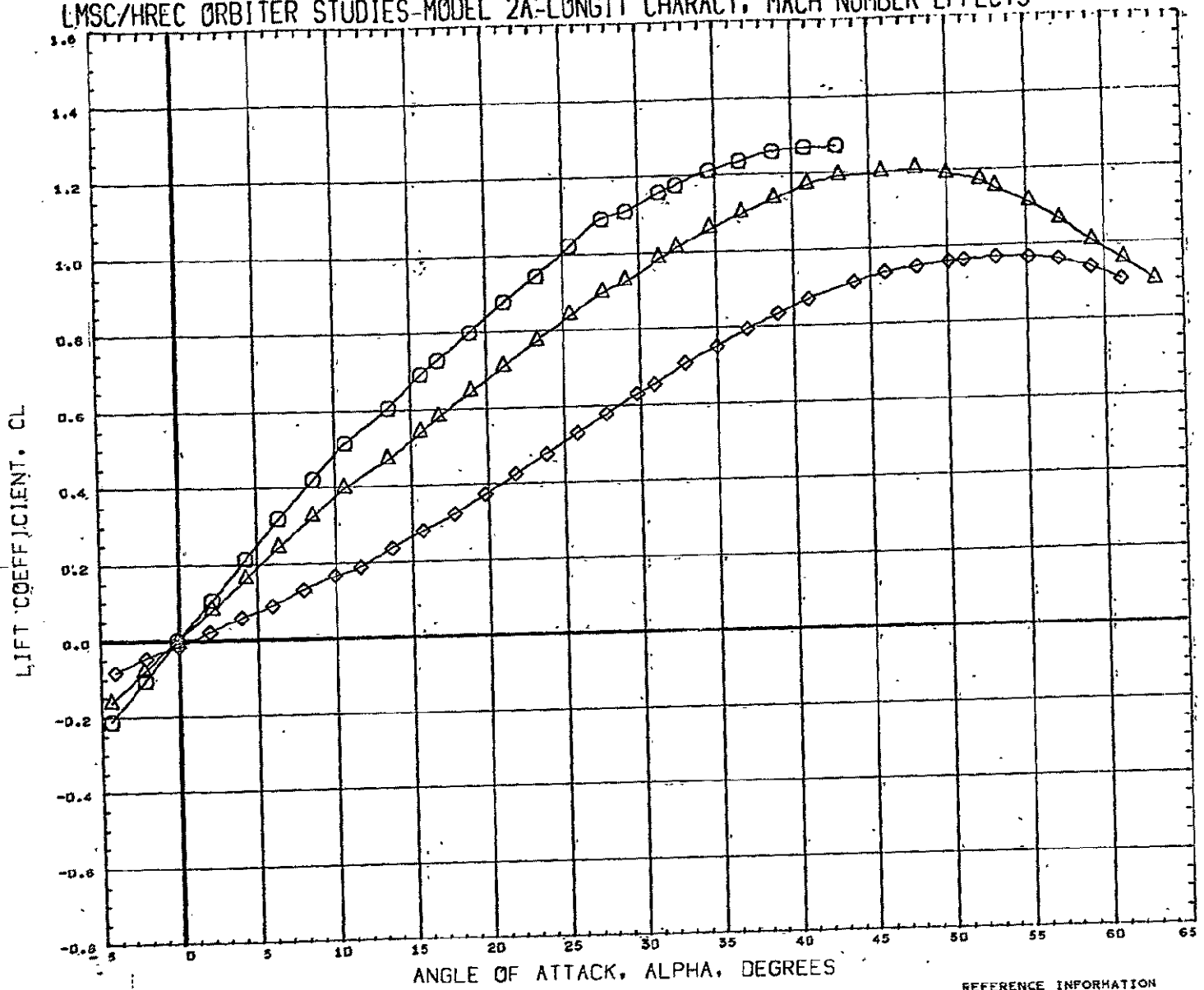


SYMBOL	MACH	PARAMETRIC VALUES			
○	0.597	BETA	0.000	ELEVNS	0.000
△	0.701	RUDER2	0.000	STING	4.000
◇	0.902				
□	1.103				

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE #GTV#E

LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, MACH NUMBER EFFECTS

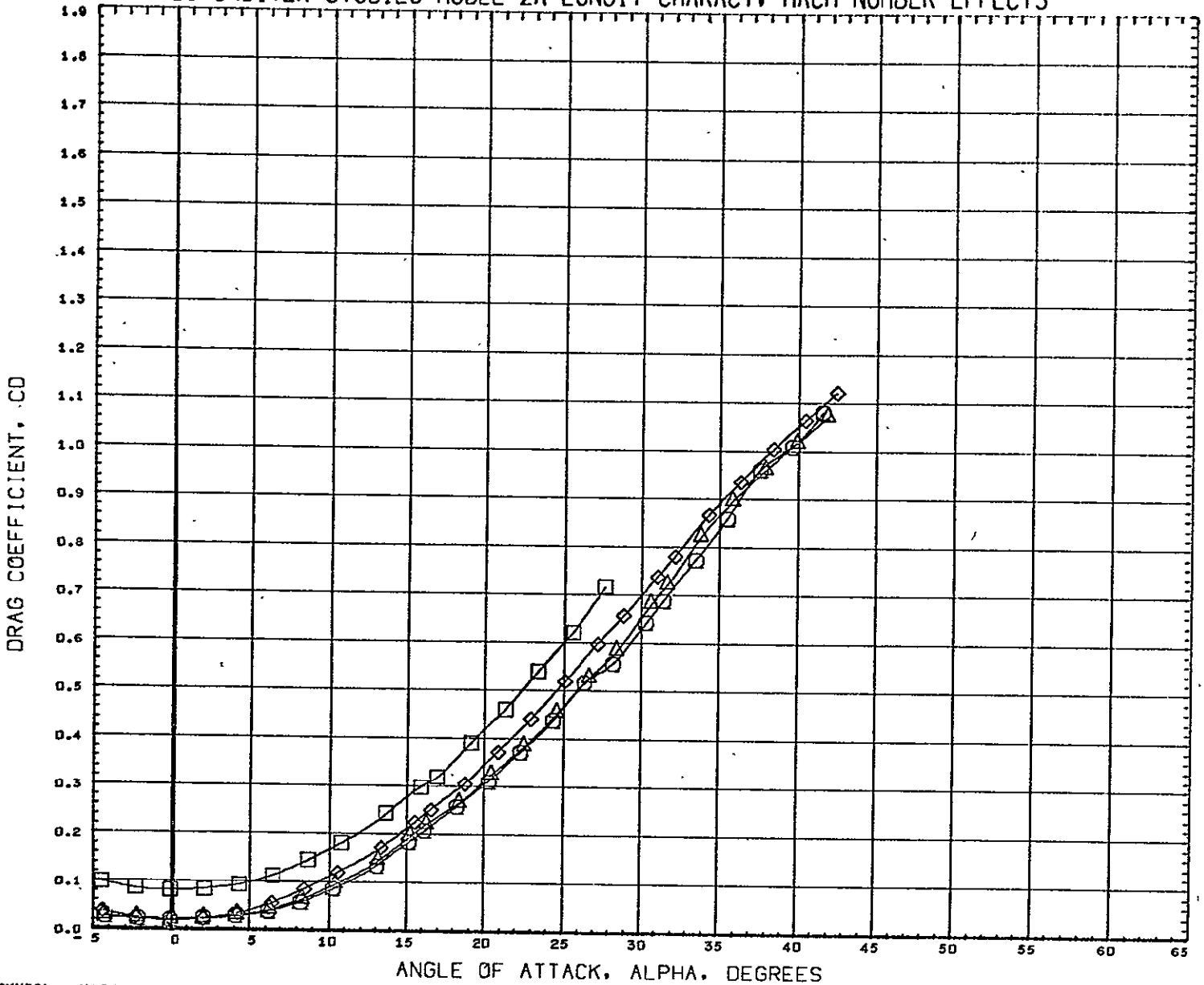


SYMBOL	MACH	PARAMETRIC VALUES			
○	1.461	BETA	0.000	ELEVNS	0.000
△	1.964	RUDER2	0.000	STING	4.000
◇	4.960				

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE #GTV#E

# LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, MACH NUMBER EFFECTS

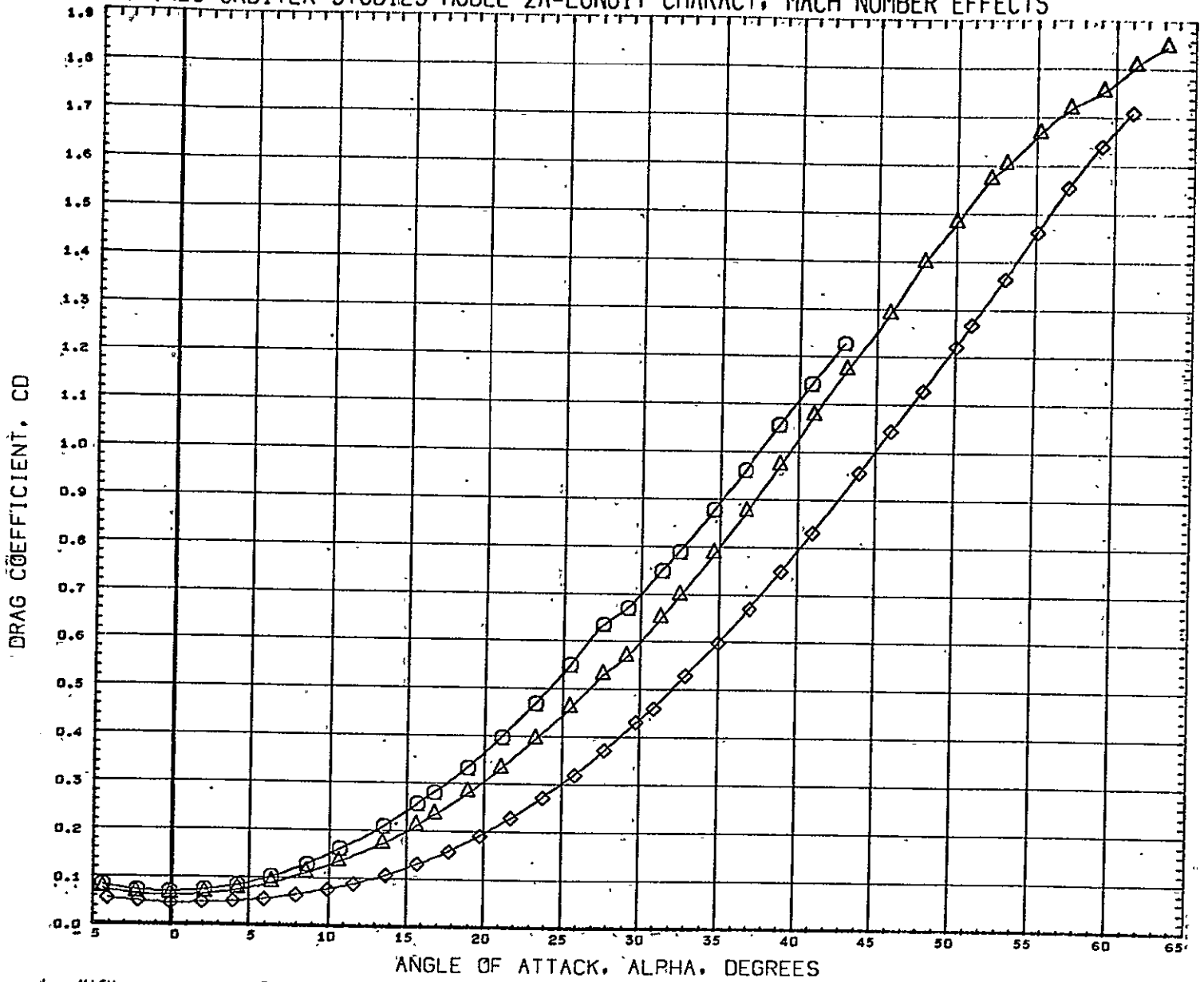


SYMBOL	MACH	PARAMETRIC VALUES			
○	0.597	BETA	0.000	ELEVN3	0.000
△	0.701	RUDER2	0.000	STING	4.000
◇	0.902				
□	1.103				

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE #GTV#E

LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, MACH NUMBER EFFECTS



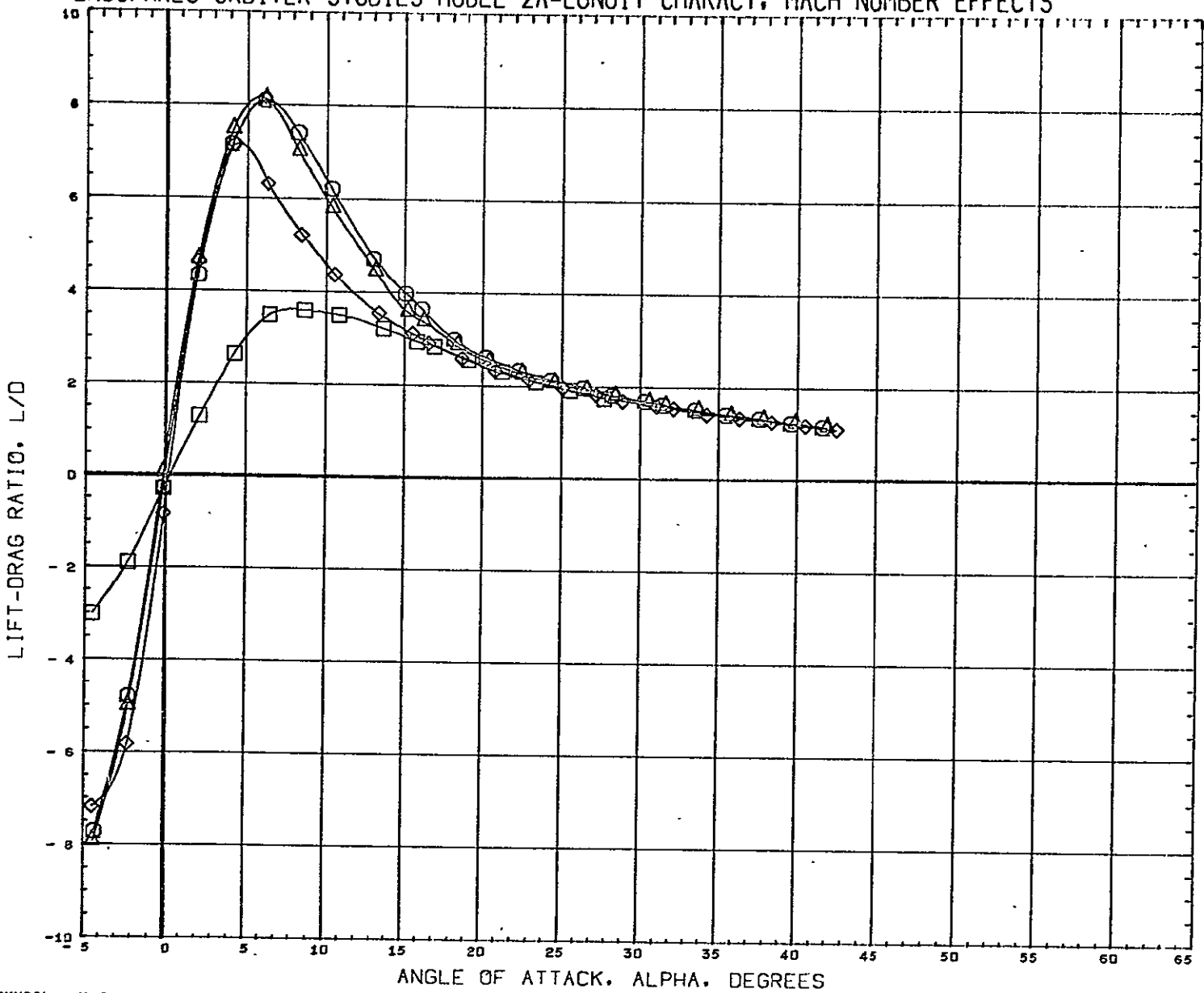
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4.960				

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XHRF	3.9950	INCHES
YHRF	0.0000	INCHES
ZHRF	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE #GTV#E



# LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, MACH NUMBER EFFECTS

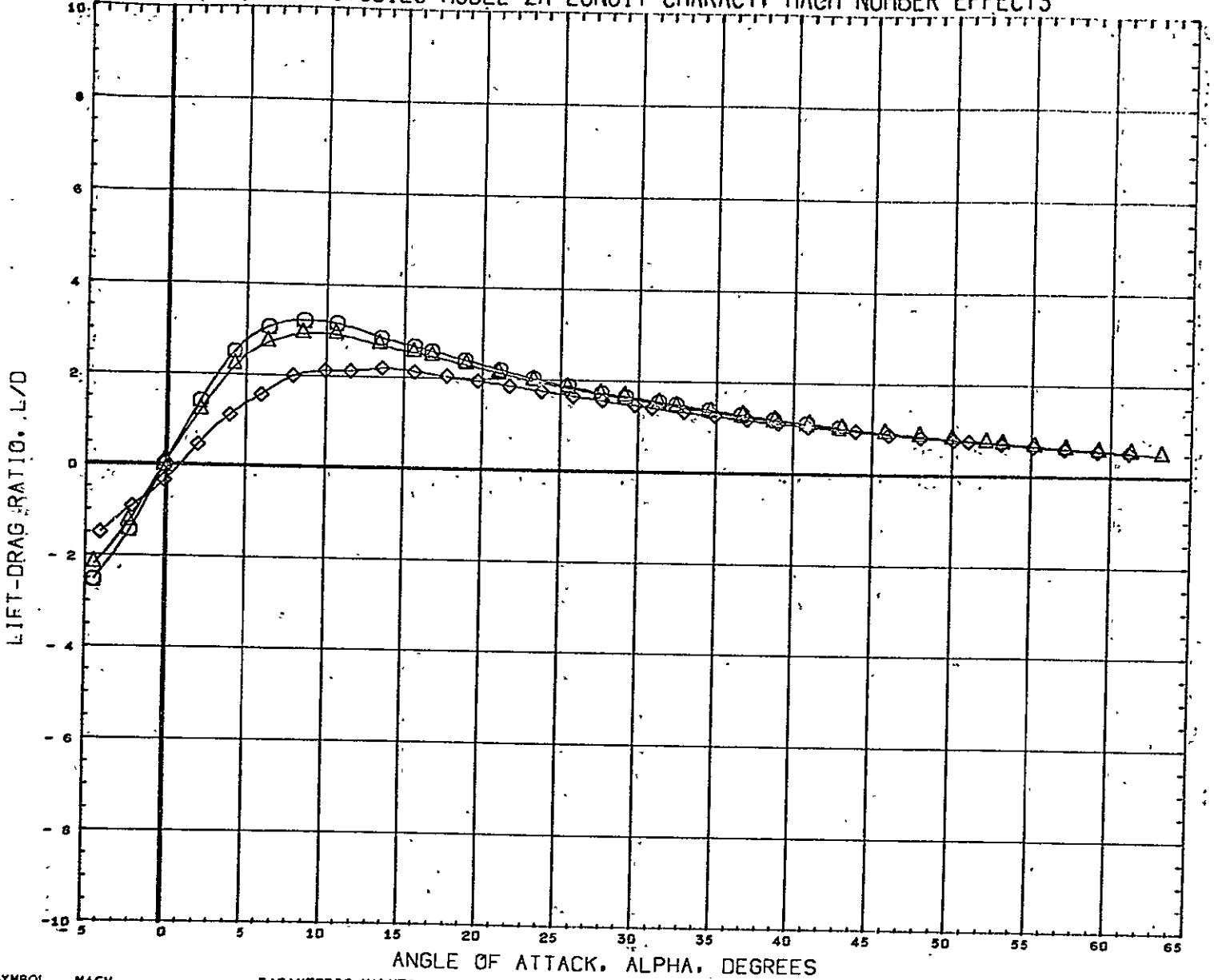


SYMBOL	MACH	PARAMETRIC VALUES			
○	0.597	BETA	0.000	ELEVNS	0.000
△	0.701	RUDER2	0.000	STING	4.000
◇	0.902				
□	1.103				

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE \*GTV#E

LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, MACH NUMBER EFFECTS

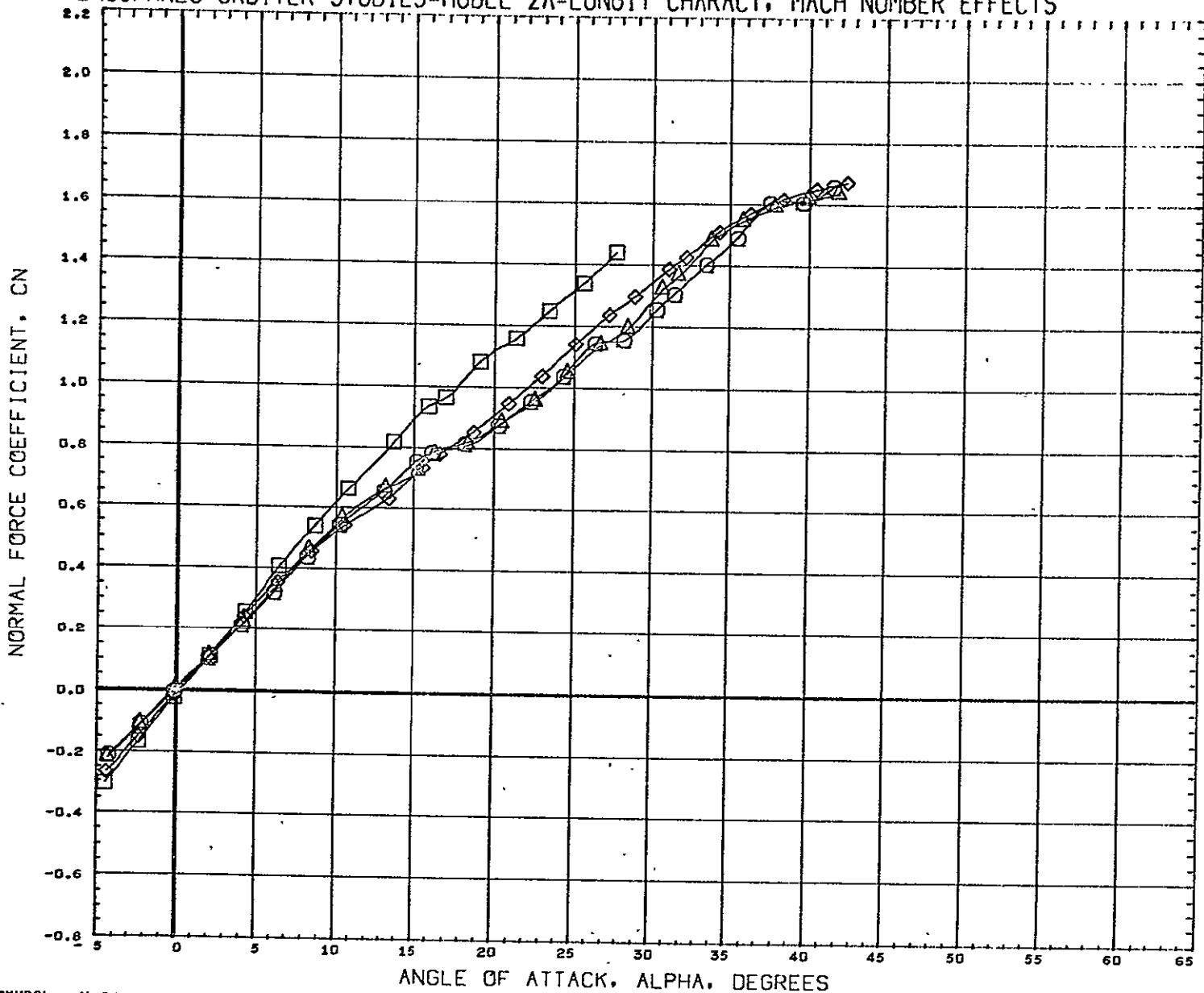


SYMBOL	MACH	PARAMETRIC VALUES			
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△	1.964	RÜDER2	0.000	STING	4.000
◇	4.960				

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XHRF	3.9950	INCHES
YHRF	0.0000	INCHES
ZHRF	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE \*GTV#E

# LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, MACH NUMBER EFFECTS

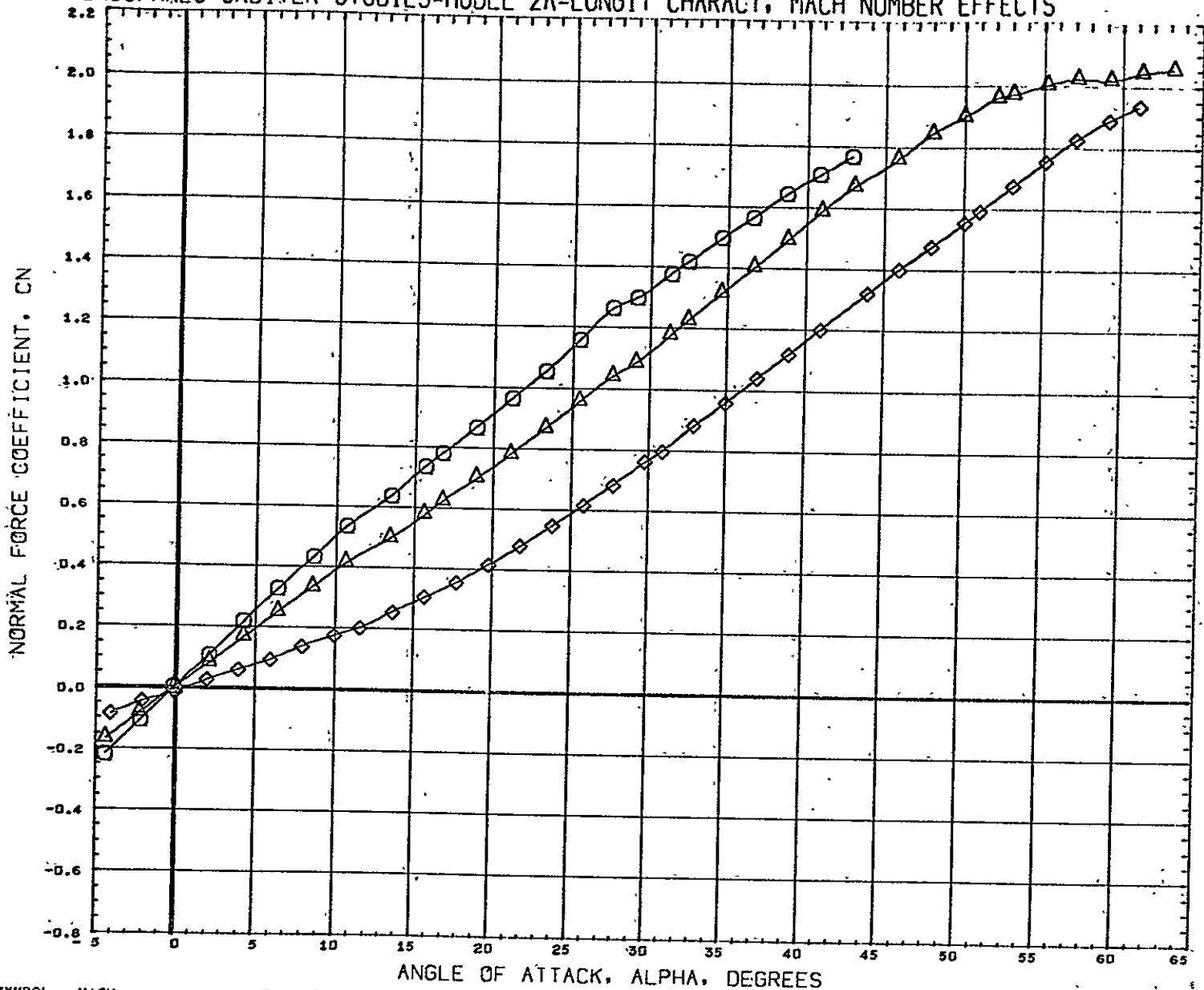


SYMBOL	MACH	PARAMETRIC VALUES			
○	0.597	BETA	0.000	ELEVNS	0.000
△	0.791	RUDER2	0.000	STING	4.000
◇	0.992				
□	1.193				

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
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ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE #6TV#E

LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, MACH NUMBER EFFECTS



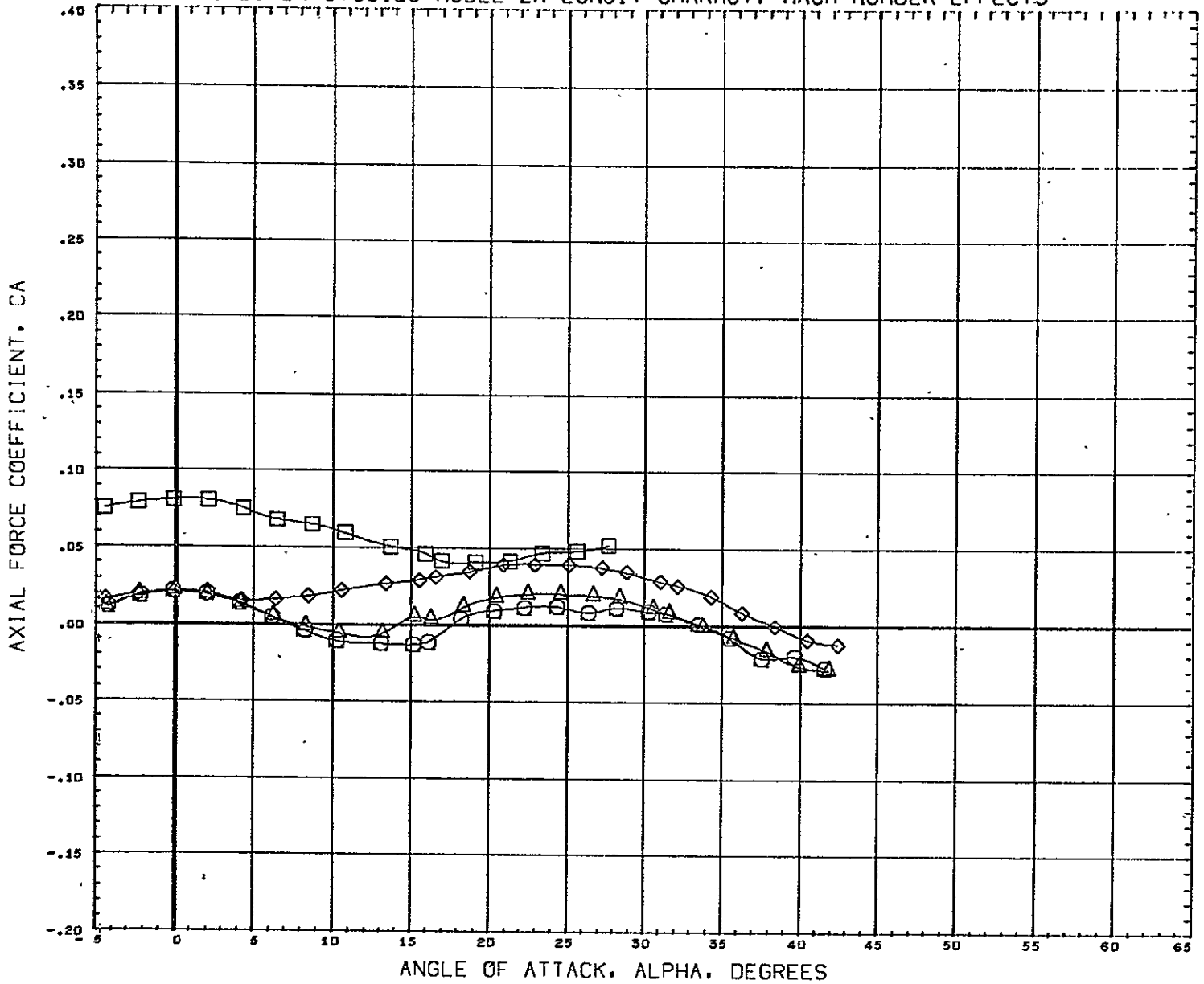
SYMBOL	MACH	PARAMETRIC VALUES			
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△	1.964	RUDER2	0.000	STING	4.000
◇	4.960				

REFERENCE INFORMATION		
SREF	9.0250	sq. IN
LREF	6.1420	INCHES
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XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE #GTV#E

C.2

# LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, MACH NUMBER EFFECTS

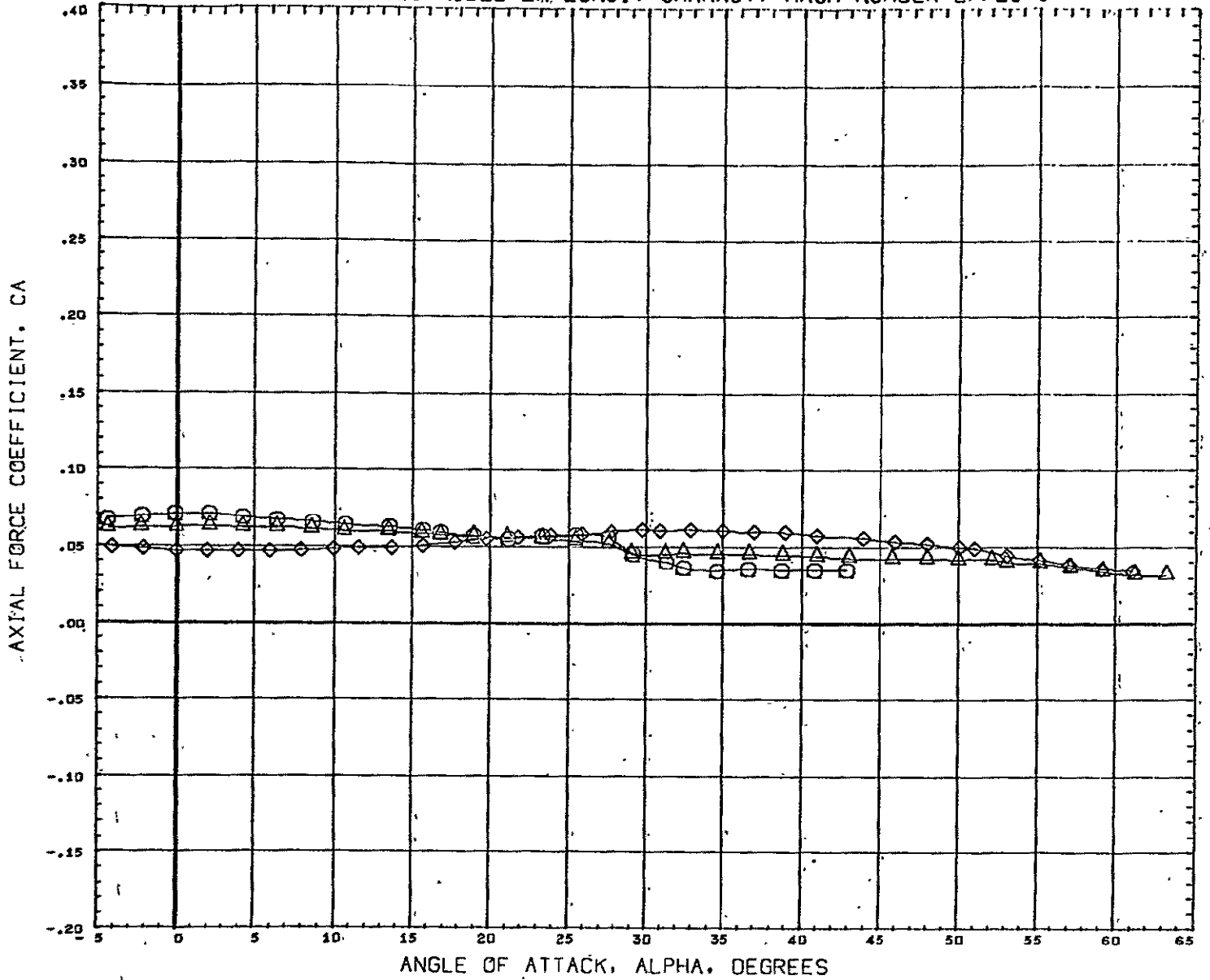


SYMBOL	MACH	PARAMETRIC VALUES			
○	0.597	BETA	0.000	ELEVN3	0.000
△	0.751	RUDER2	0.000	STING	4.000
◇	0.902				
□	1.103				

REFERENCE INFORMATION		
SREF	9.0250	sq. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
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DATA HIST. CODE #GTV#E

LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, MACH NUMBER EFFECTS

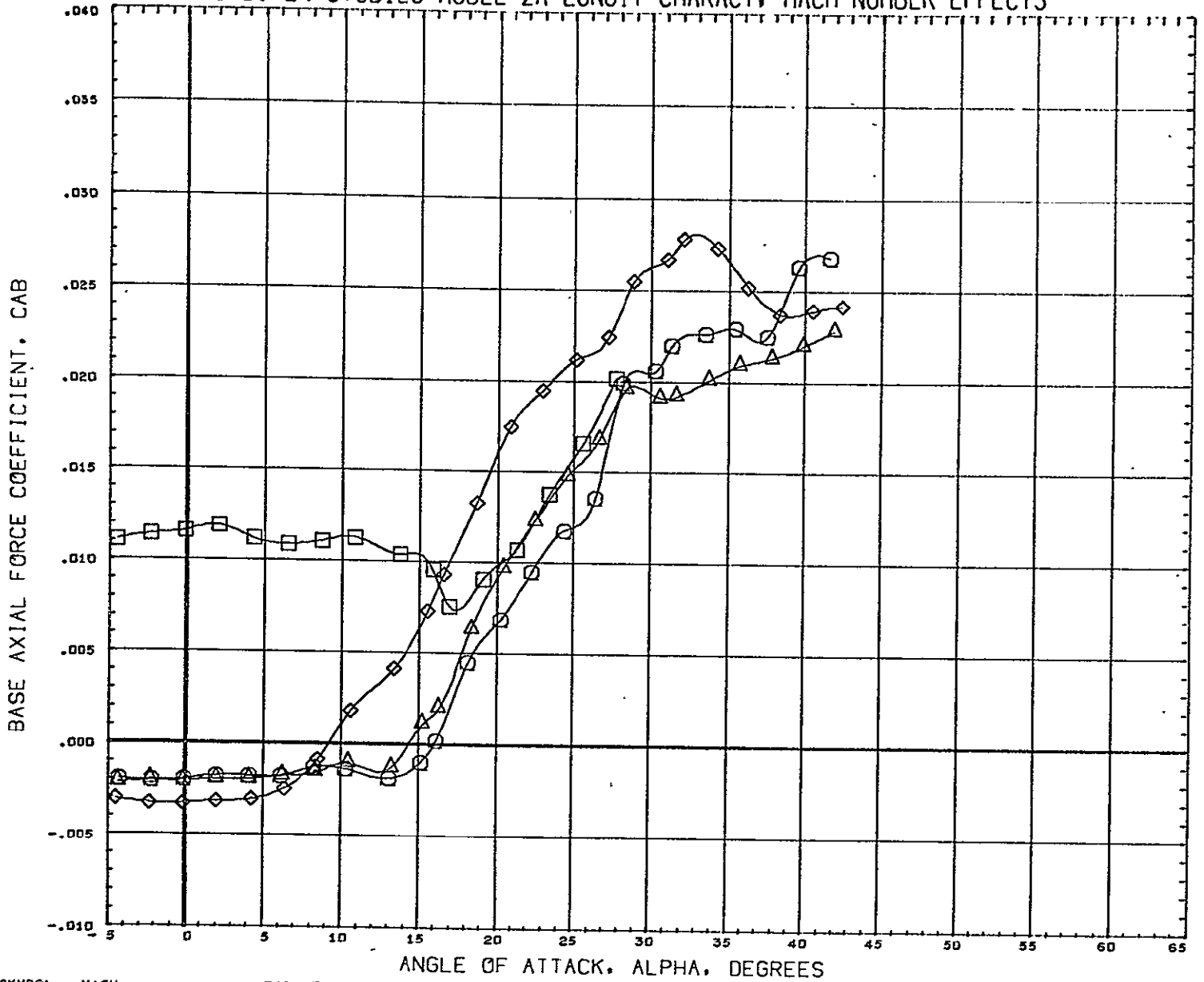


SYMBOL	MACH	PARAMETRIC VALUES			
○	1.461	BETA	0.000	ELEVN3	0.000
△	1.964	RUDER2	0.000	STING	4.000
◇	4.960				

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
YHRP	3.9950	INCHES
YHRP	0.0000	INCHES
ZHRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE #GTV#E

# LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, MACH NUMBER EFFECTS

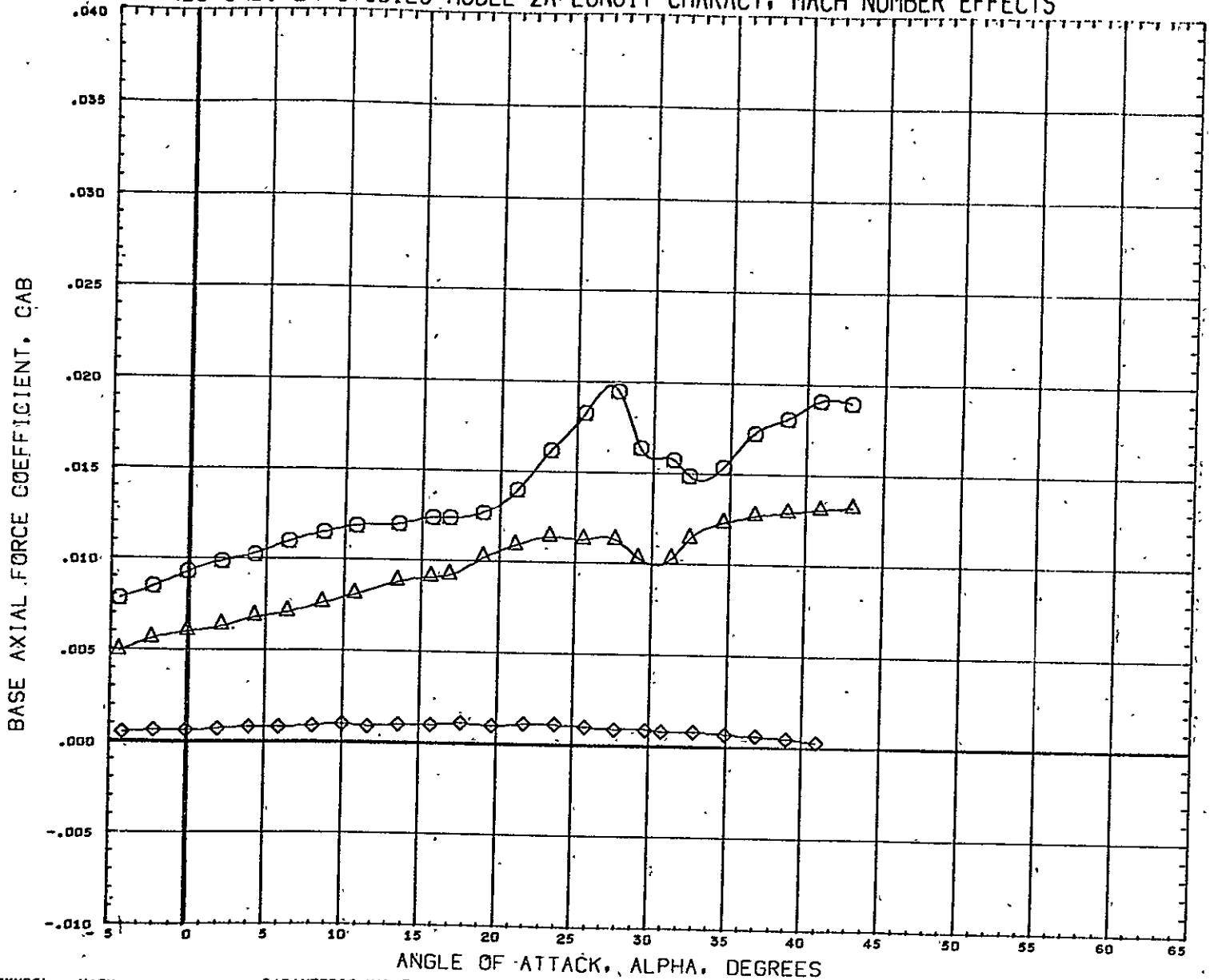


SYMBOL	MACH	PARAMETRIC VALUES			
○	0.597	BETA	0.000	ELEVNS	0.000
△	0.701	RUDER2	0.000	STING	4.000
◇	0.902				
□	1.103				

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE \*G

# LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, MACH NUMBER EFFECTS



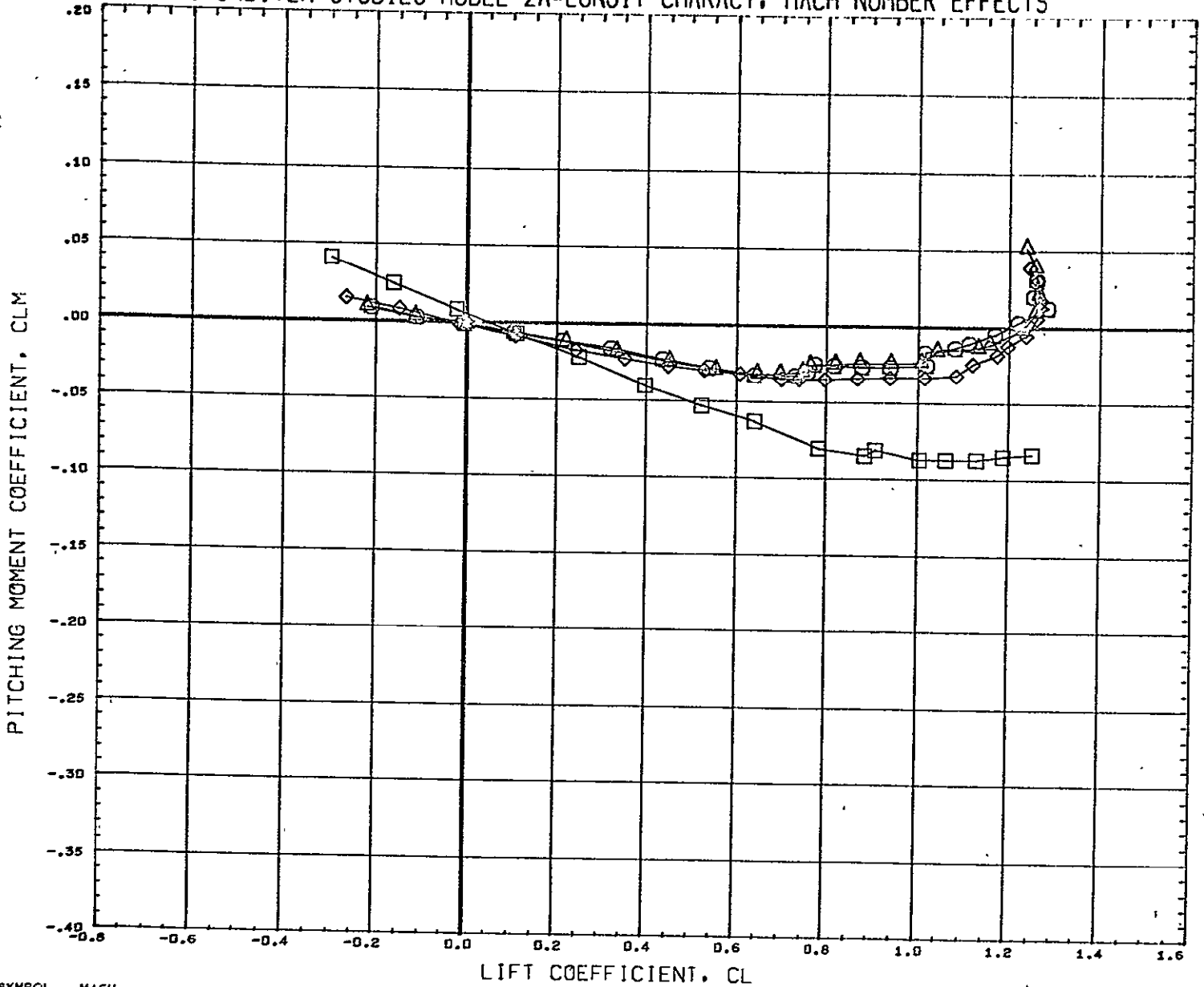
SYMBOL	MACH	PARAMETRIC VALUES			
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△	1.964	RUDER2	0.000	STING	4.000
◇	4.960				

REFERENCE INFORMATION		
SREF	9.0250	Sq. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE #6



# LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, MACH NUMBER EFFECTS

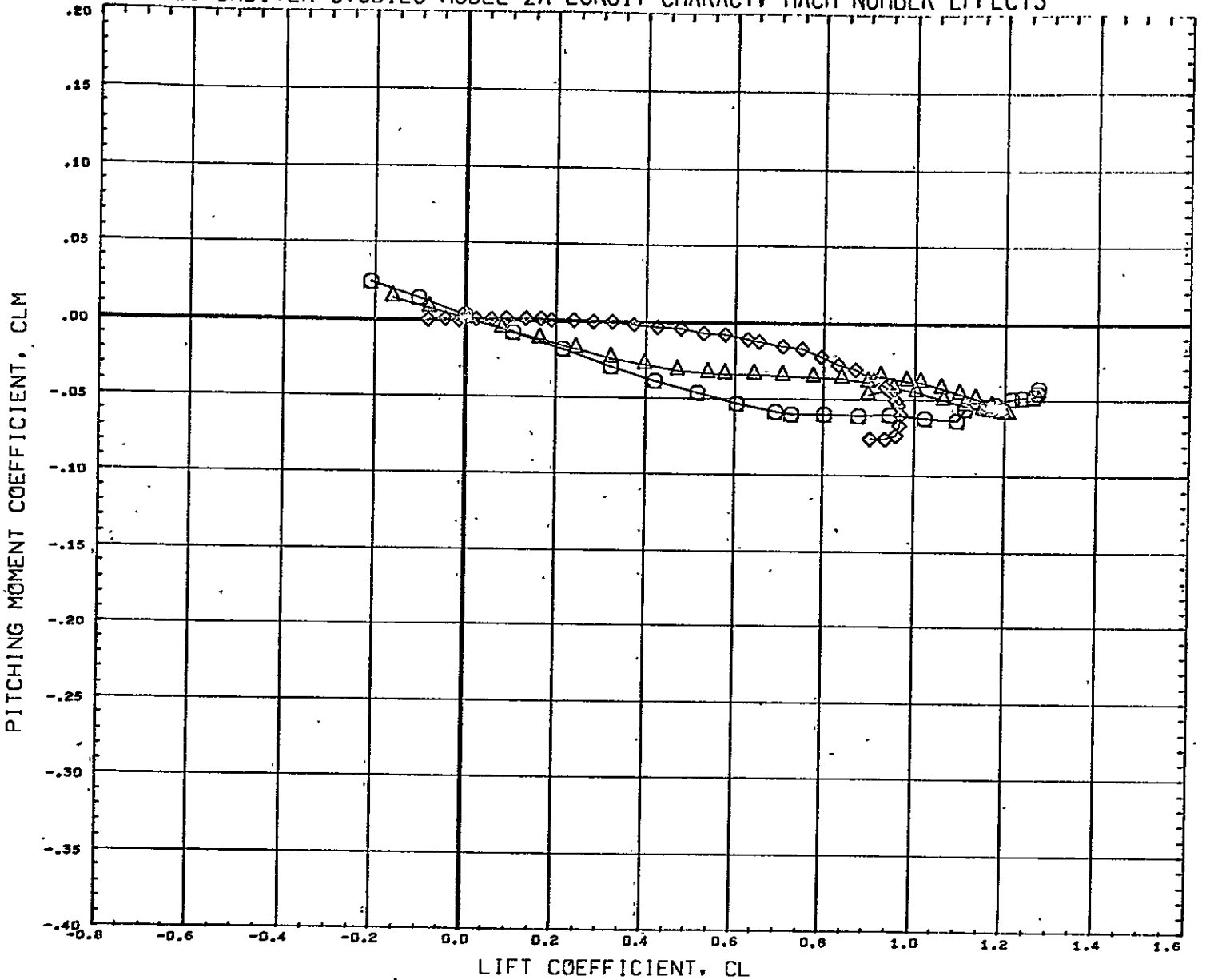


SYMBOL	MACH	PARAMETRIC VALUES			
○	0.597	BETA	0.000	ELEVNS	0.000
△	0.791	RUDER2	0.000	STING	4.000
◇	0.992				
□	1.103				

REFERENCE INFORMATION		
SREF	9.0250	SQ.IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE \*GTV\*E

# LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, MACH NUMBER EFFECTS

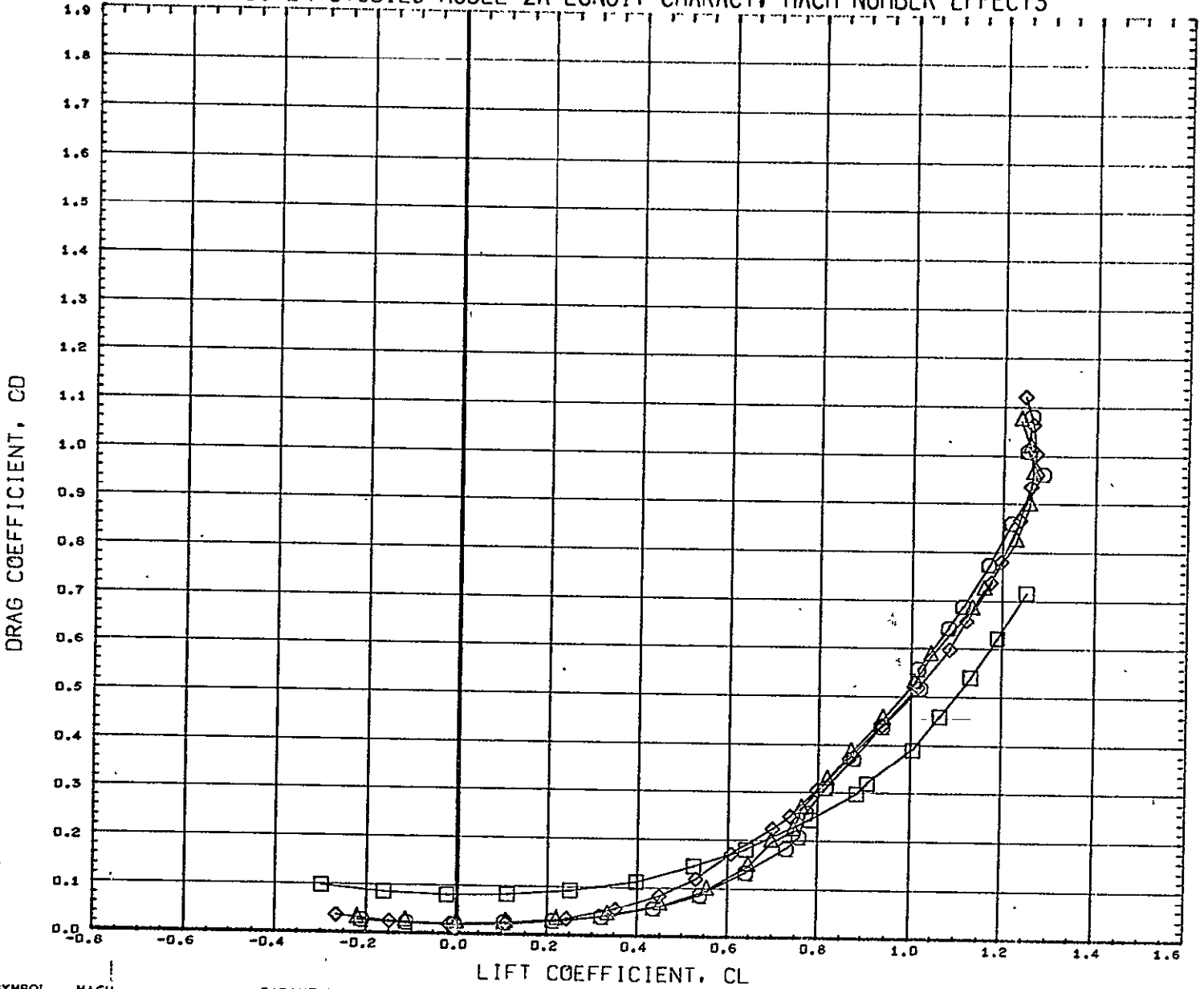


SYMBOL	MACH	PARAMETRIC VALUES			
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△	1.964	RUDER2	0.000	STING	4.000
◇	4.969				

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE #GTV#E

# LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, MACH NUMBER EFFECTS

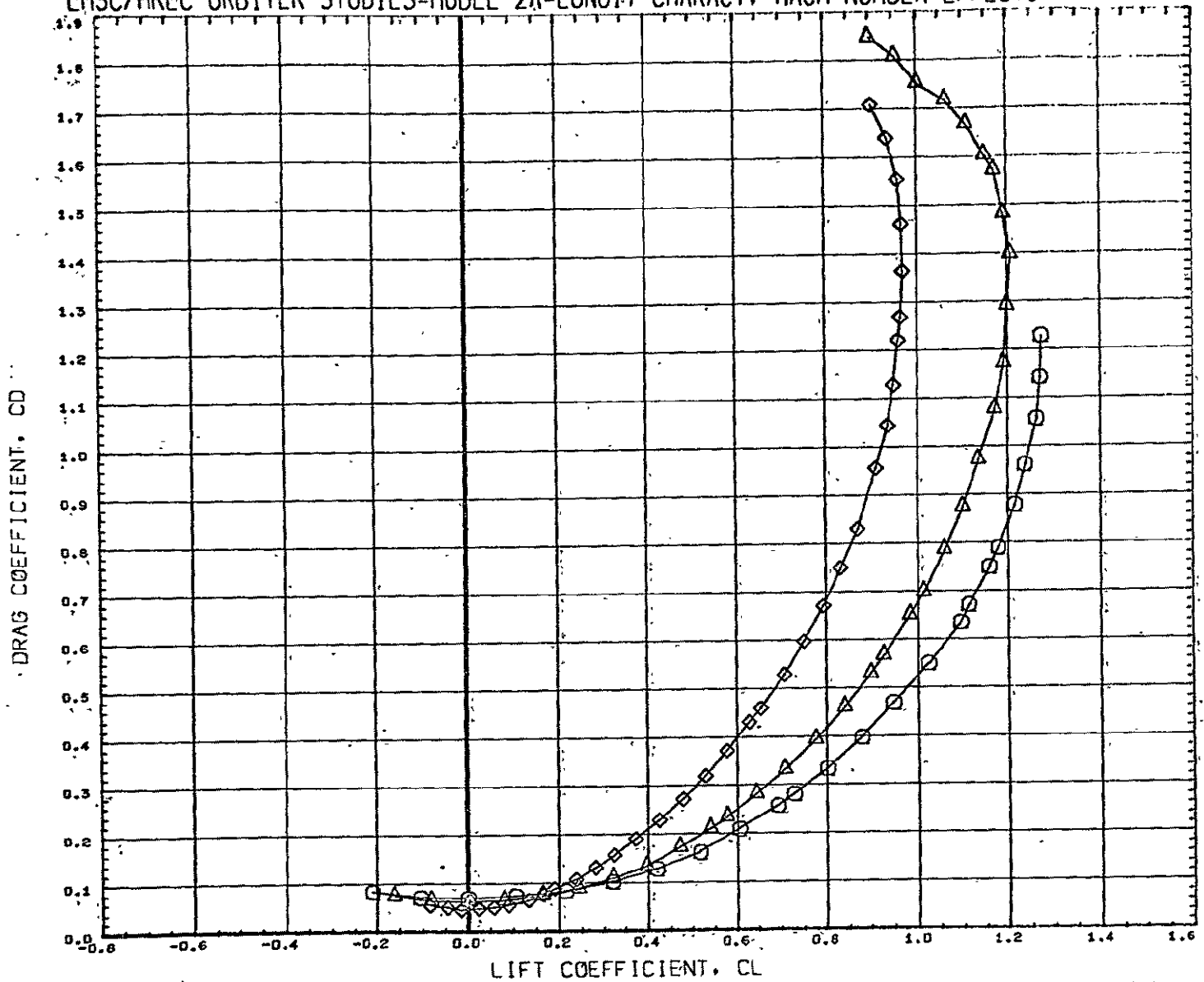


SYMBOL	MACH	PARAMETRIC VALUES			
○	0.597	BETA	0.000	ELEVN3	0.000
△	0.791	RUDER2	0.000	STING	4.000
◇	0.902				
□	1.103				

REFERENCE INFORMATION		
SREF	9.0250	Sq. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE \*GTV#E

LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, MACH NUMBER EFFECTS

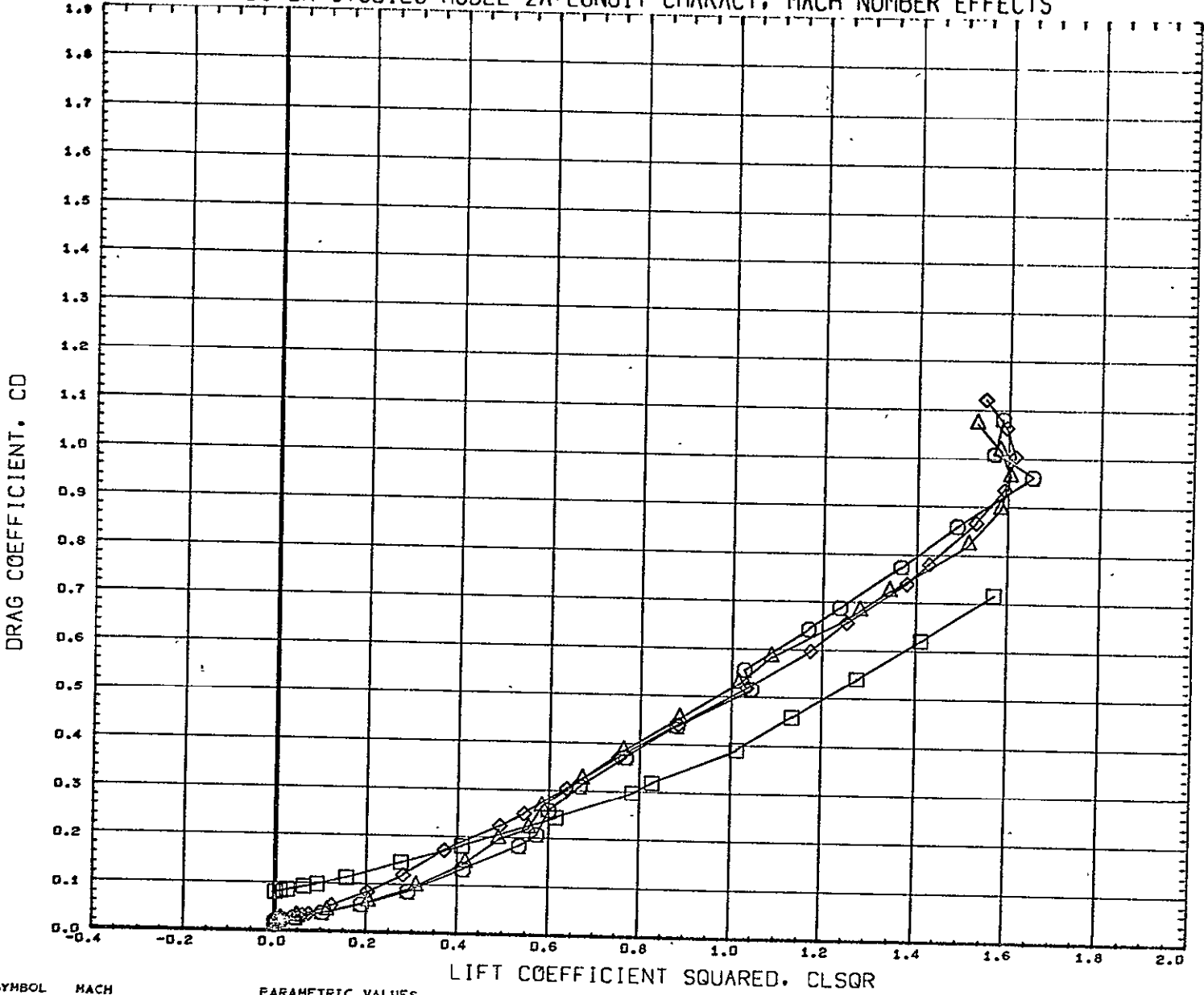


SOL	MACH	PARAMETRIC VALUES			
~	1.461	BETA	0.000	ELEVNS	0.000
◇	1.964	RUDER <sub>2</sub>	0.000	STING	4.000
◇	4.960				

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XHRP	3.9950	INCHES
YHRP	0.0000	INCHES
ZHRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE #GTV#E

LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, MACH NUMBER EFFECTS

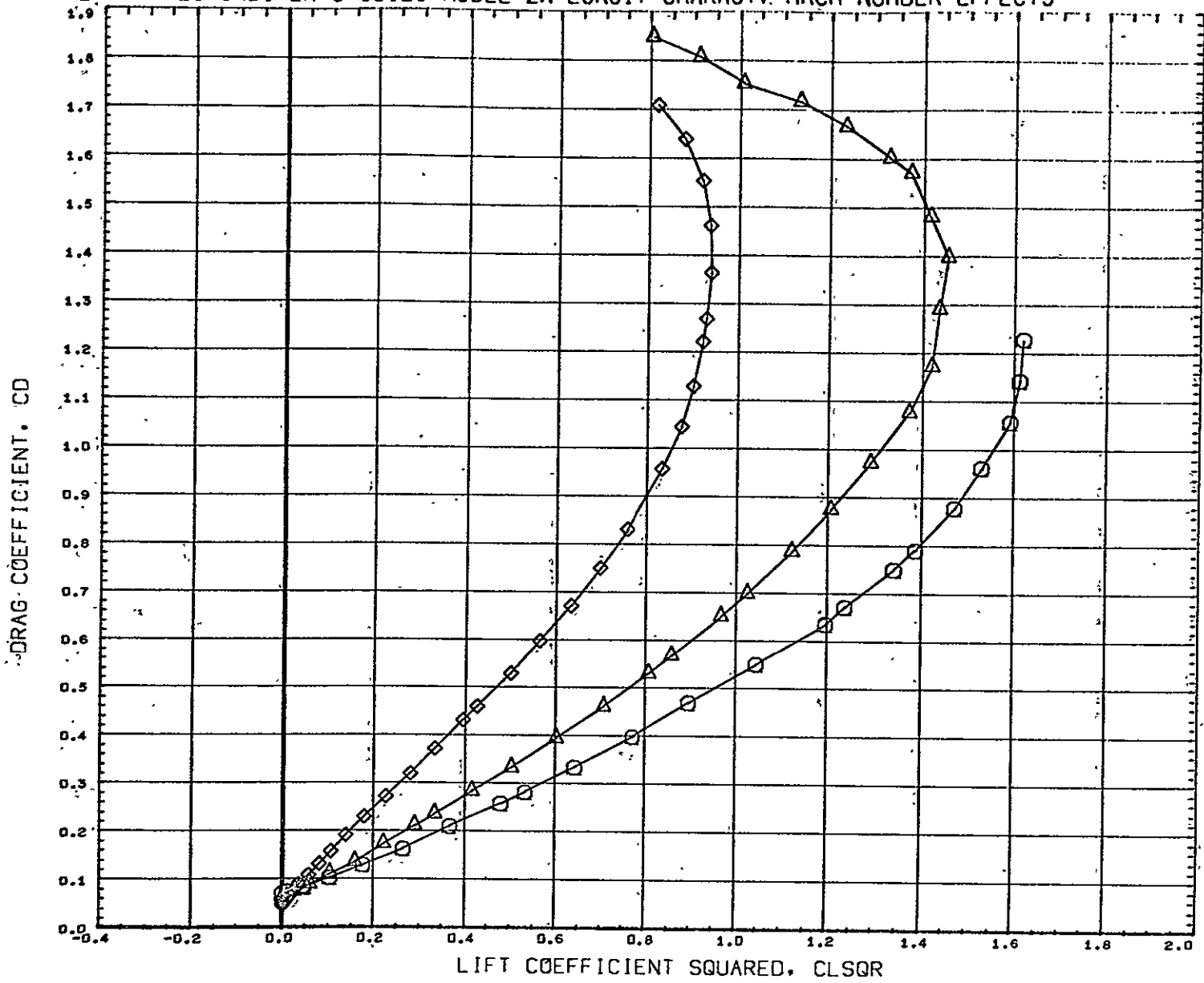


SYMBOL	MACH	PARAMETRIC VALUES			
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△	0.791	RUDER2	0.000	STING	4.000
◇	0.902				
□	1.103				

REFERENCE INFORMATION		
SREF	9.0250	SQ.IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XHRP	3.9950	INCHES
YHRP	0.0000	INCHES
ZHRP	0.1350	INCHES
SCALE	0.0033	SCALE

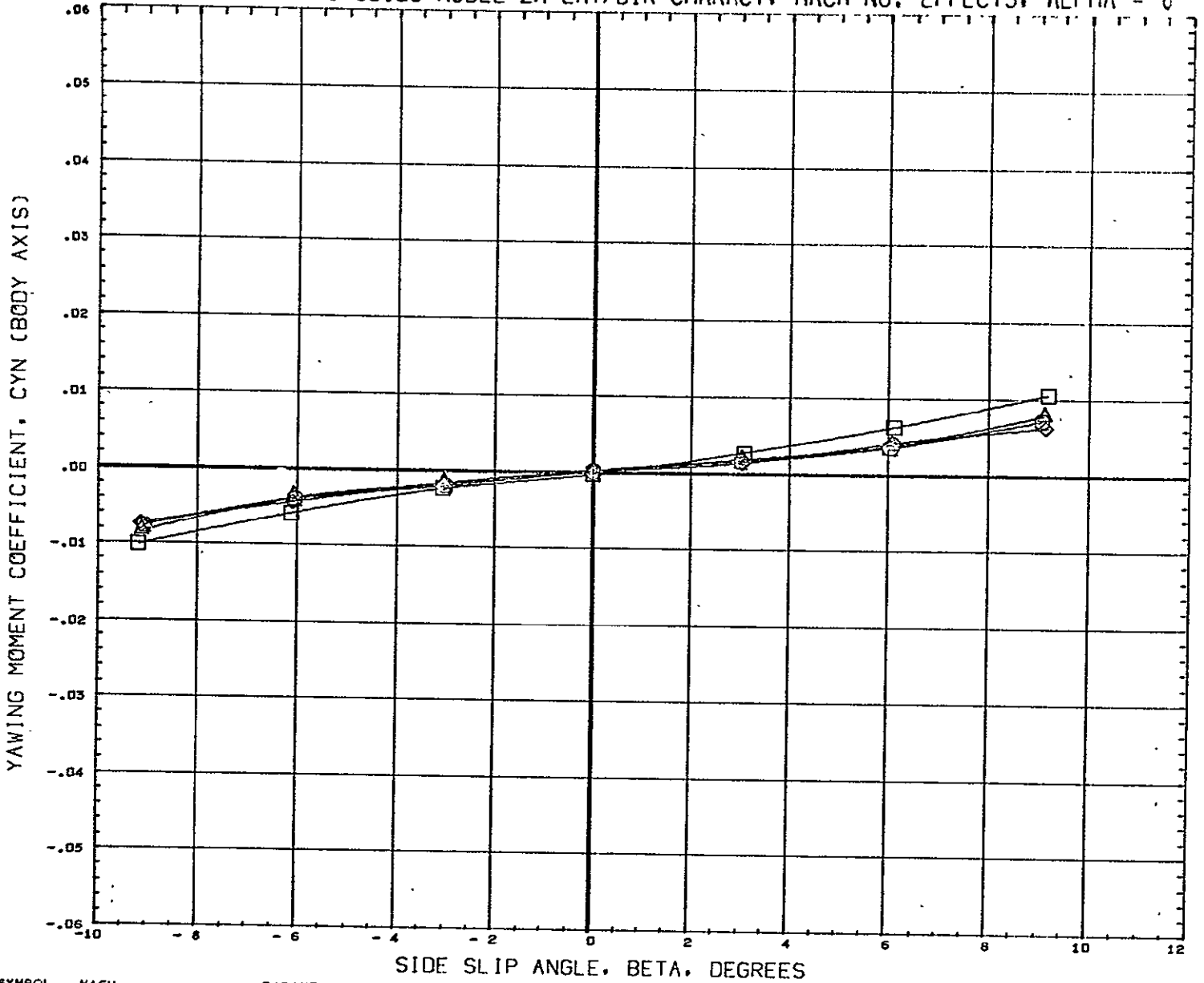
DATA HIST. CODE #GTV#E

# LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT. MACH NUMBER EFFECTS



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○	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION																																																																					
△	1.461	BETA	0.000	ELEVNS	0.000	SREF	9.0250	SQ. IN																																																																			
◇	1.964	RUDER2	0.000	STING	4.000	LREF	6.1420	INCHES																																																																			
	4.960					BREF	6.1420	INCHES																																																																			
						XMRP	3.9950	INCHES																																																																			
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						SCALE	0.0033	SCALE																																																																			
DATA HIST. CODE	#GTV#E																																																																										

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT. MACH NO. EFFECTS. ALPHA = 0

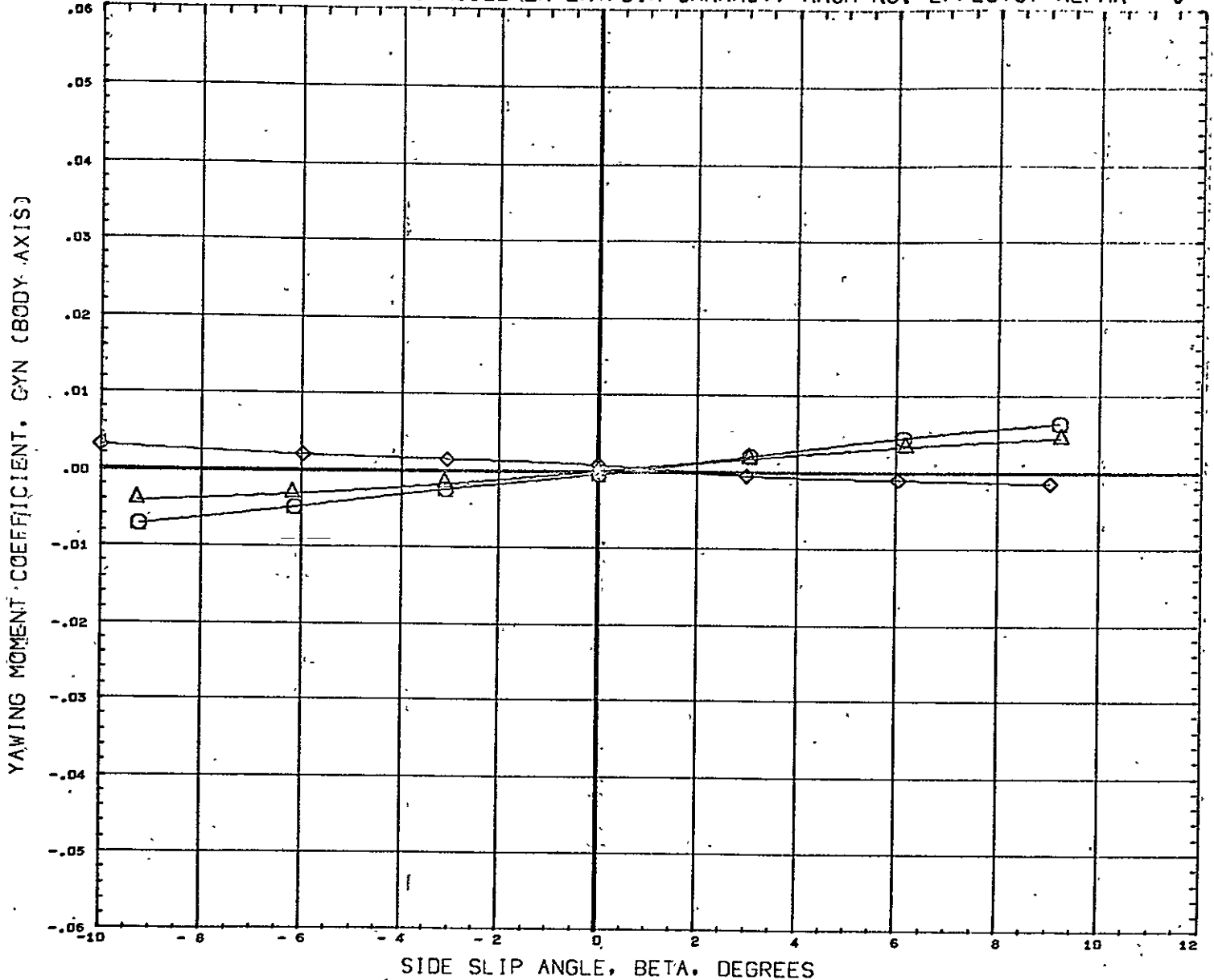


SYMBOL	MACH	PARAMETRIC VALUES			
○	0.599	ALPHA	0.000	ELEVNS	0.000
△	0.704	RUDER2	0.000	STING	4.000
◇	0.903				
□	1.098				

REFERENCE FILE LSHC/HREC D225042A

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, MACH NO. EFFECTS, ALPHA = 0



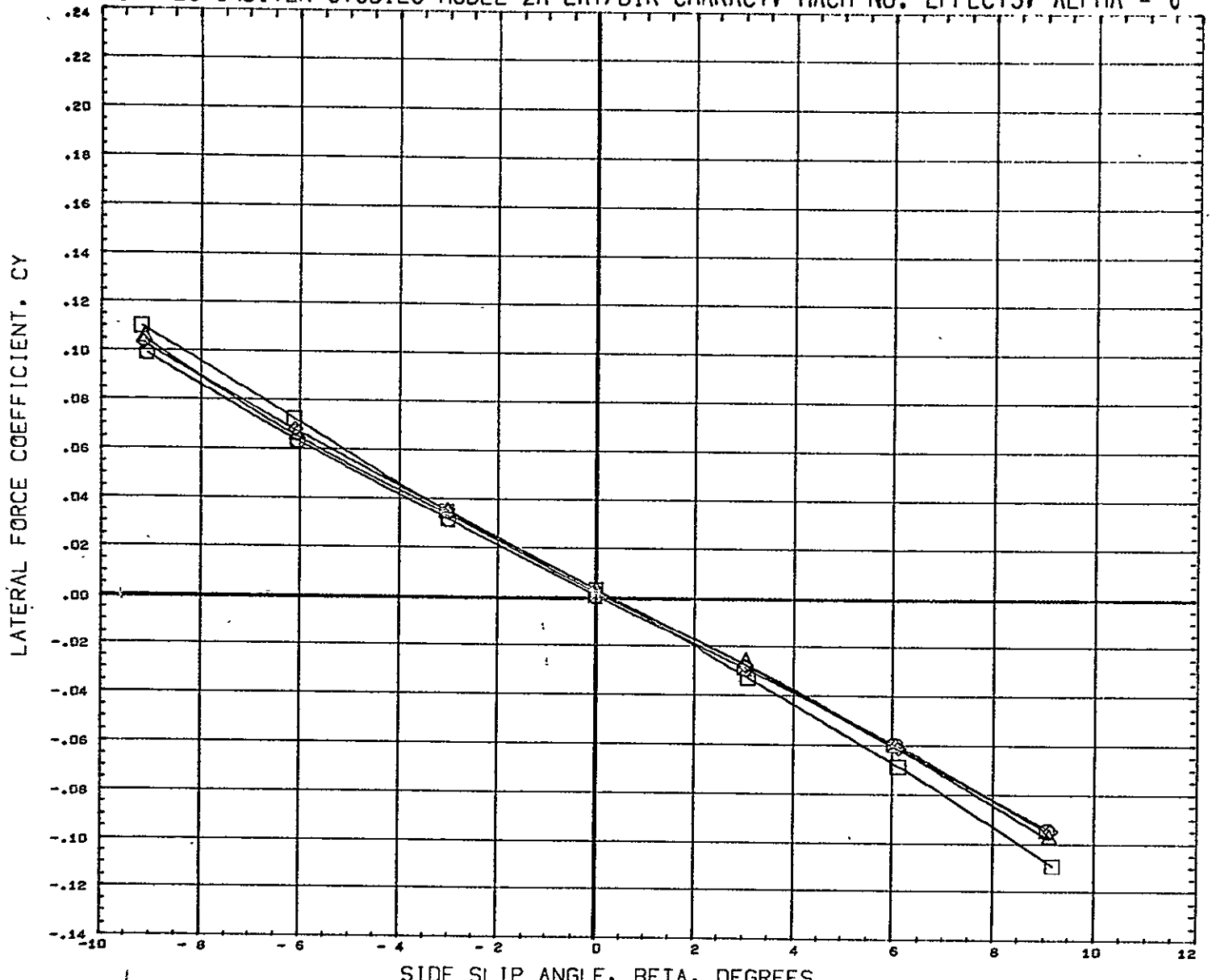
SYMBOL	MACH	PARAMETRIC VALUES			
○	1.464	ALPHA	0.000	ELEVNS	0.000
△	1.960	RUDER2	0.000	STING	4.000
◇	4.960				

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

REFERENCE FILE LSHC/HREC D225042A



LSMC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, MACH NO. EFFECTS, ALPHA = 0

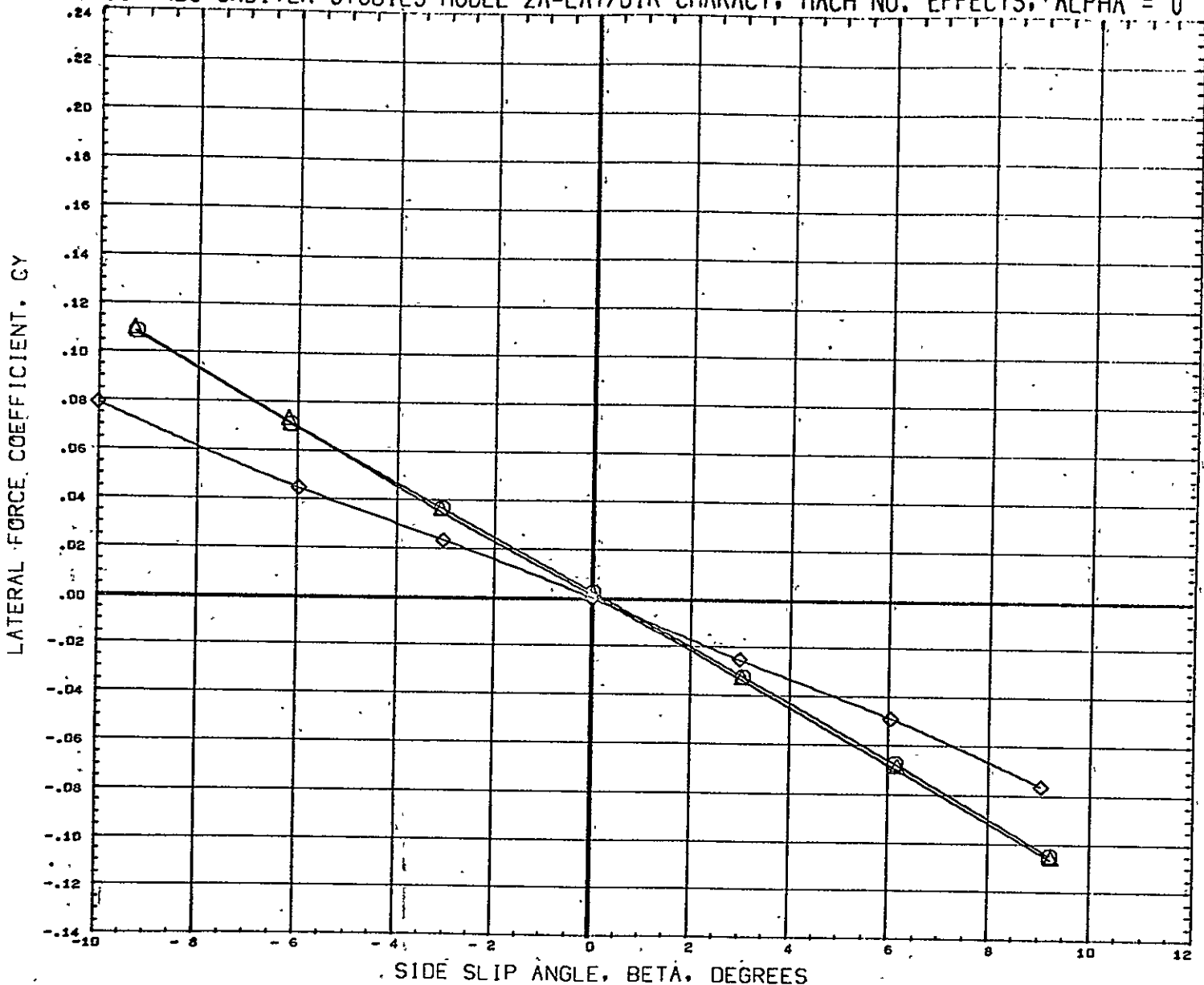


SYMBOL	MACH	PARAMETRIC VALUES			
○	0.599	ALPHA	0.000	ELEVNS	0.000
△	0.704	RUDER2	0.000	STING	4.000
◇	0.903				
□	1.098				

REFERENCE FILE      LSMC/HREC D225042A

REFERENCE INFORMATION		
SREF	9.0250	50. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XNRF	3.9950	INCHES
YNRF	0.0000	INCHES
ZNRF	0.1350	INCHES
SCALE	0.0033	SCALE

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, MACH NO. EFFECTS, ALPHA = 0

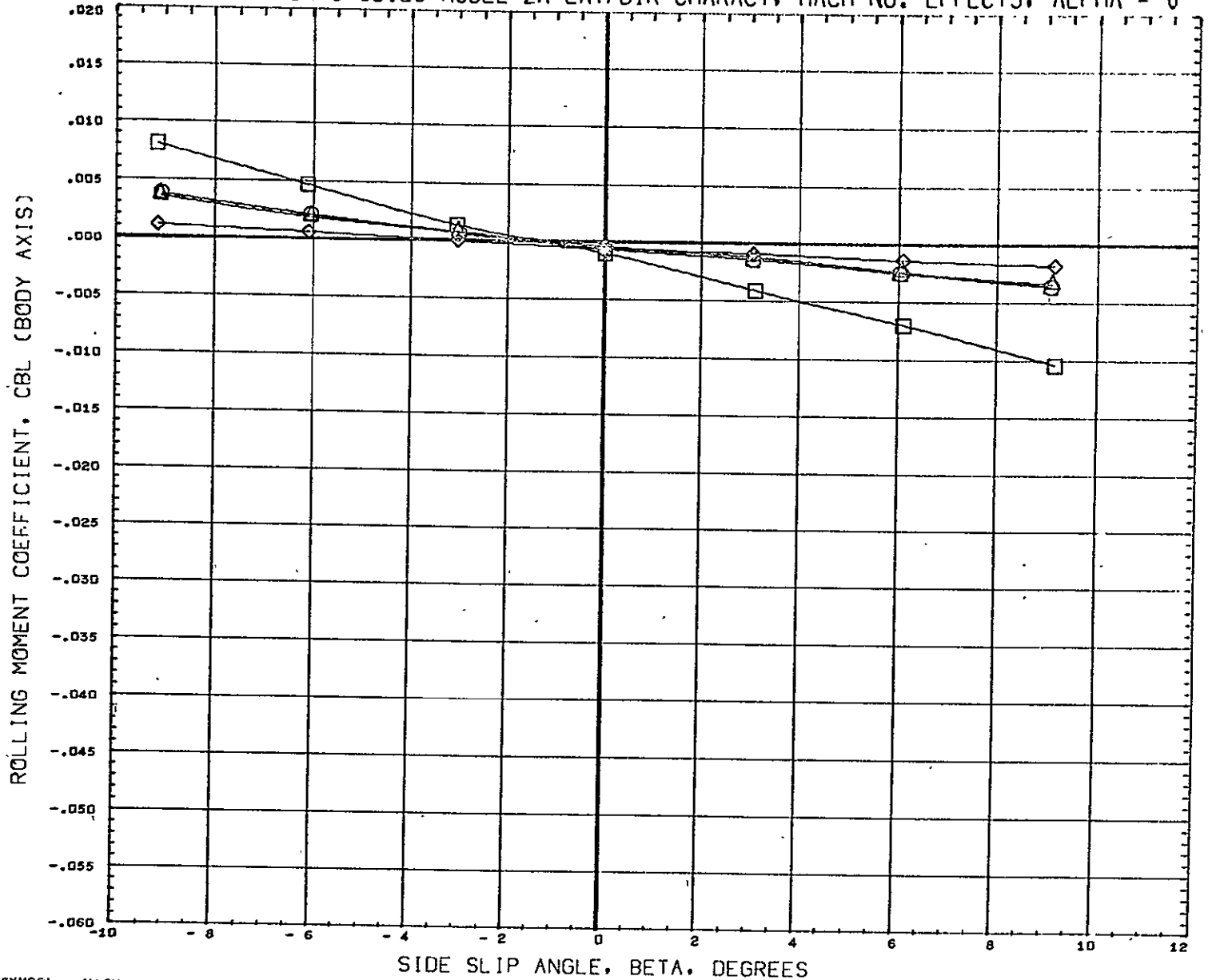


SYMBOL	MACH	PARAMETRIC VALUES
○	1.464	ALPHA 0.000 ELEVNS 0.000
△	1.960	RUDER2 0.000 STING 4.000
◇	4.960	

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
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ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

REFERENCE FILE LMSC/HREC D225042A

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, MACH NO. EFFECTS, ALPHA = 0

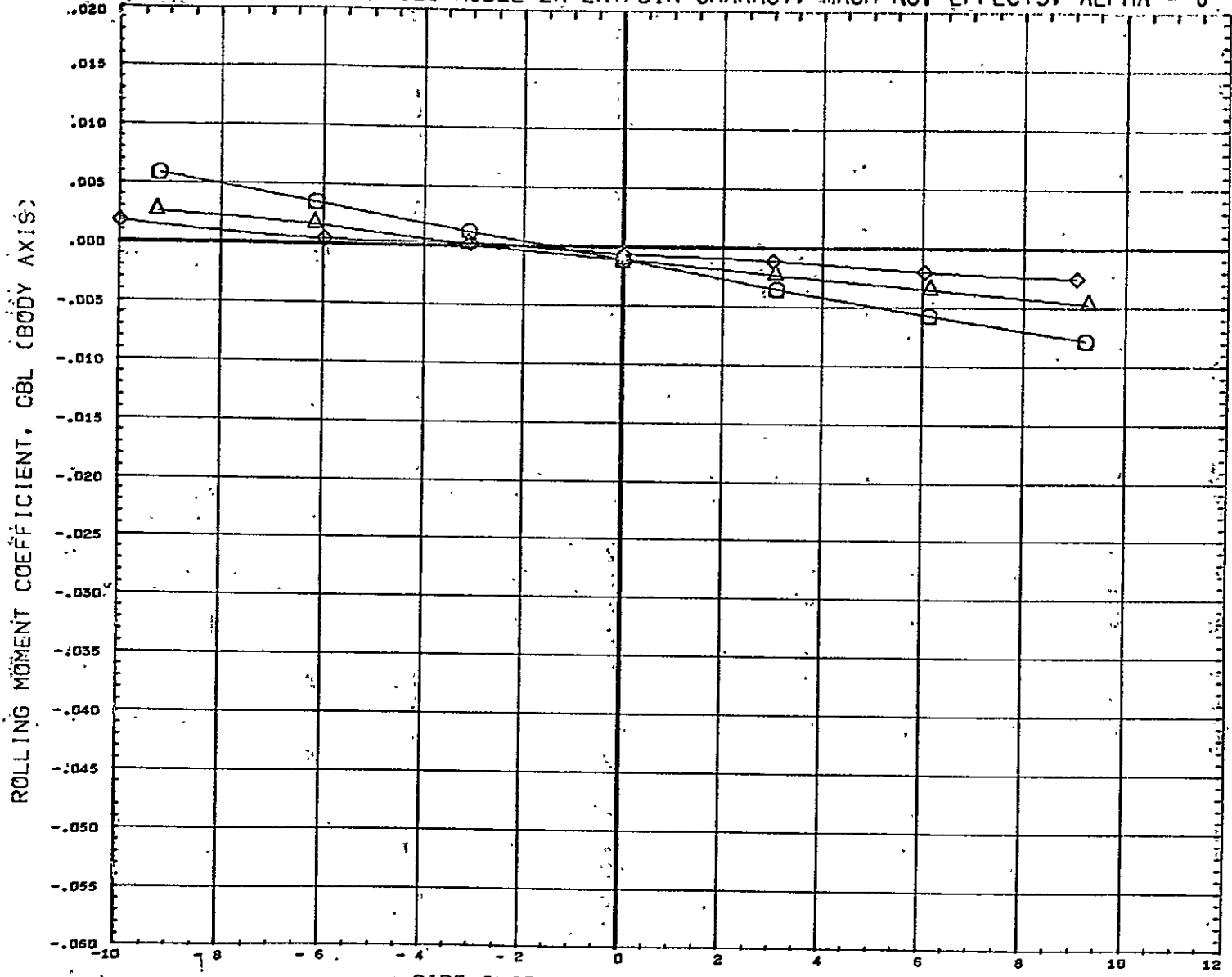


SYMBOL	MACH	PARAMETRIC VALUES			
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△	0.704	RUDER2	0.000	STING	4.000
◇	0.903				
□	1.098				

REFERENCE FILE LSHC/HREC D225042A

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
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YMRP	0.0000	INCHES
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LSMC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, MACH NO. EFFECTS, ALPHA = 0



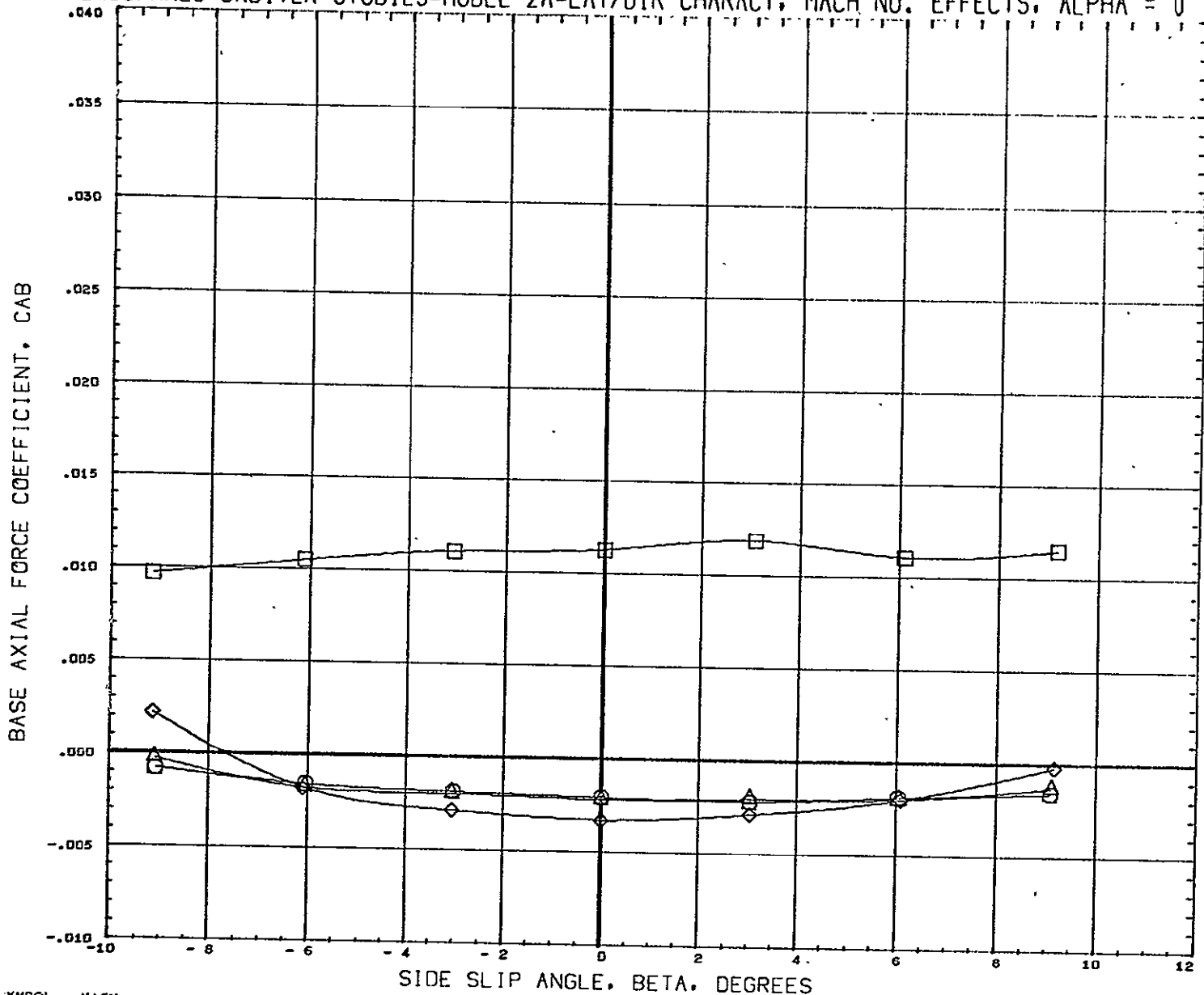
SIDE SLIP ANGLE, BETA, DEGREES

SYMBOL	MACH	PARAMETRIC VALUES
○	1.464	ALPHA 0.000 ELEVN3 0.000
△	1.960	RUDER2 0.000 STING 4.000
◇	4.960	

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN.
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0933	SCALE

REFERENCE FILE LSMC/HREC D225042A

LSMC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, MACH NO. EFFECTS, ALPHA = 0

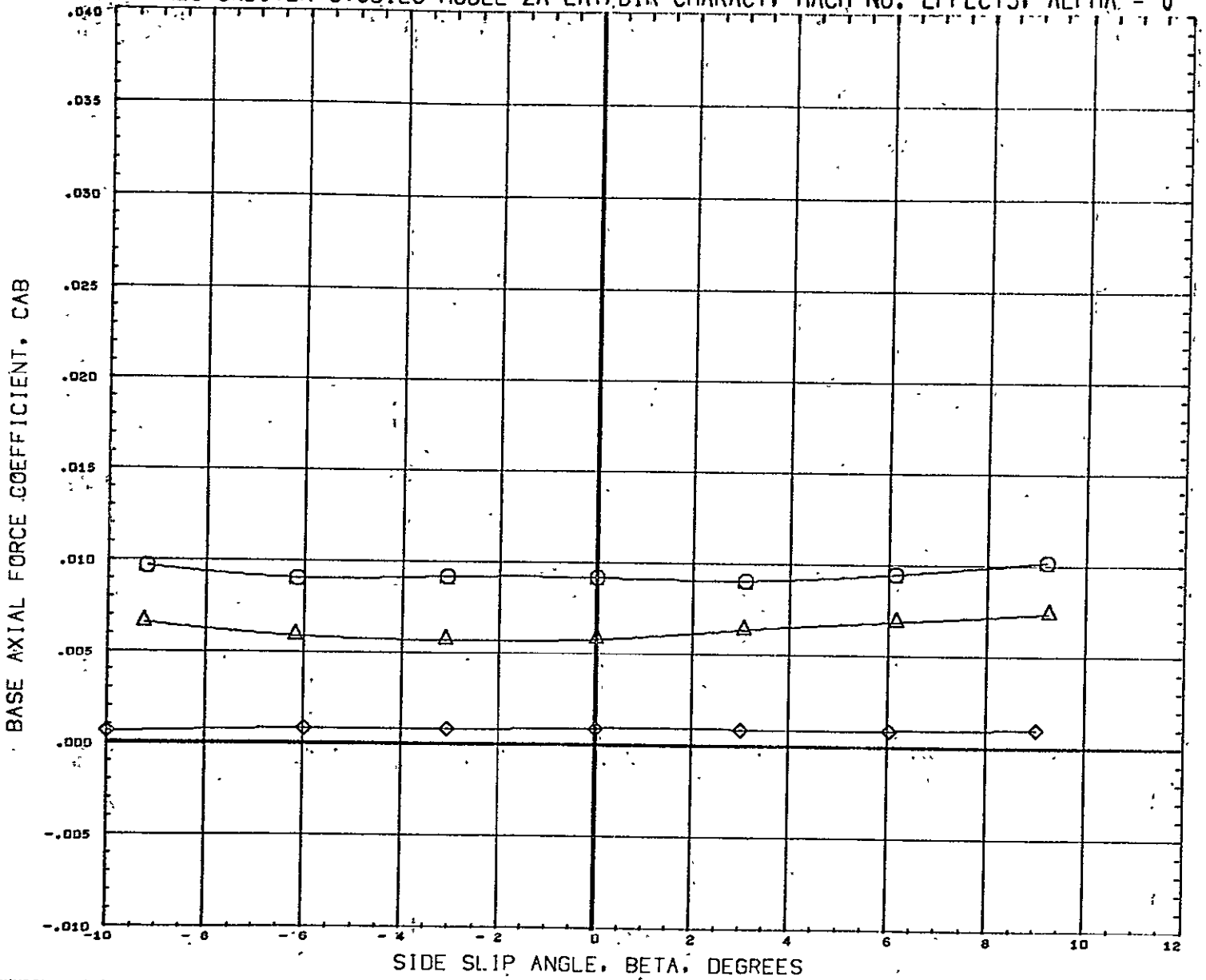


SYMBOL	MACH	PARAMETRIC VALUES
○	0.599	ALPHA 0.000 ELEVNS 0.000
△	0.704	RUDER2 0.000 STING 4.000
◇	0.903	
□	1.098	

REFERENCE FILE LSMC/HREC D225042A

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, MACH NO. EFFECTS, ALPHA = 0

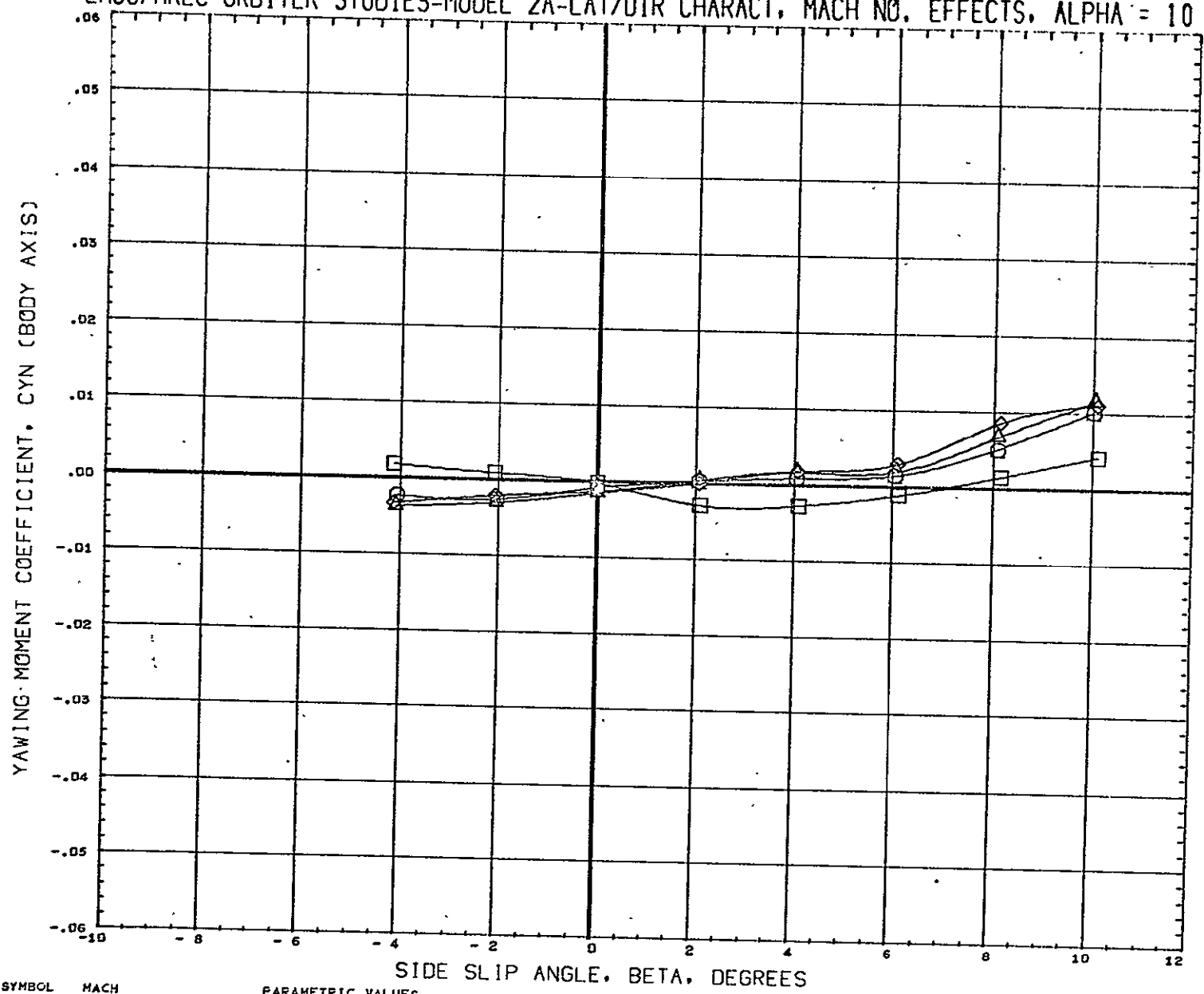


SYMBOL	MACH	PARAMETRIC VALUES			
○	1.464	ALPHA	0.000	ELEVN3	0.000
△	1.960	RUDER2	0.000	STING	4.000
◇	4.960				

REFERENCE INFORMATION		
SREF	9.0250	SQ.IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

REFERENCE FILE LSHC/HREC 0225042A

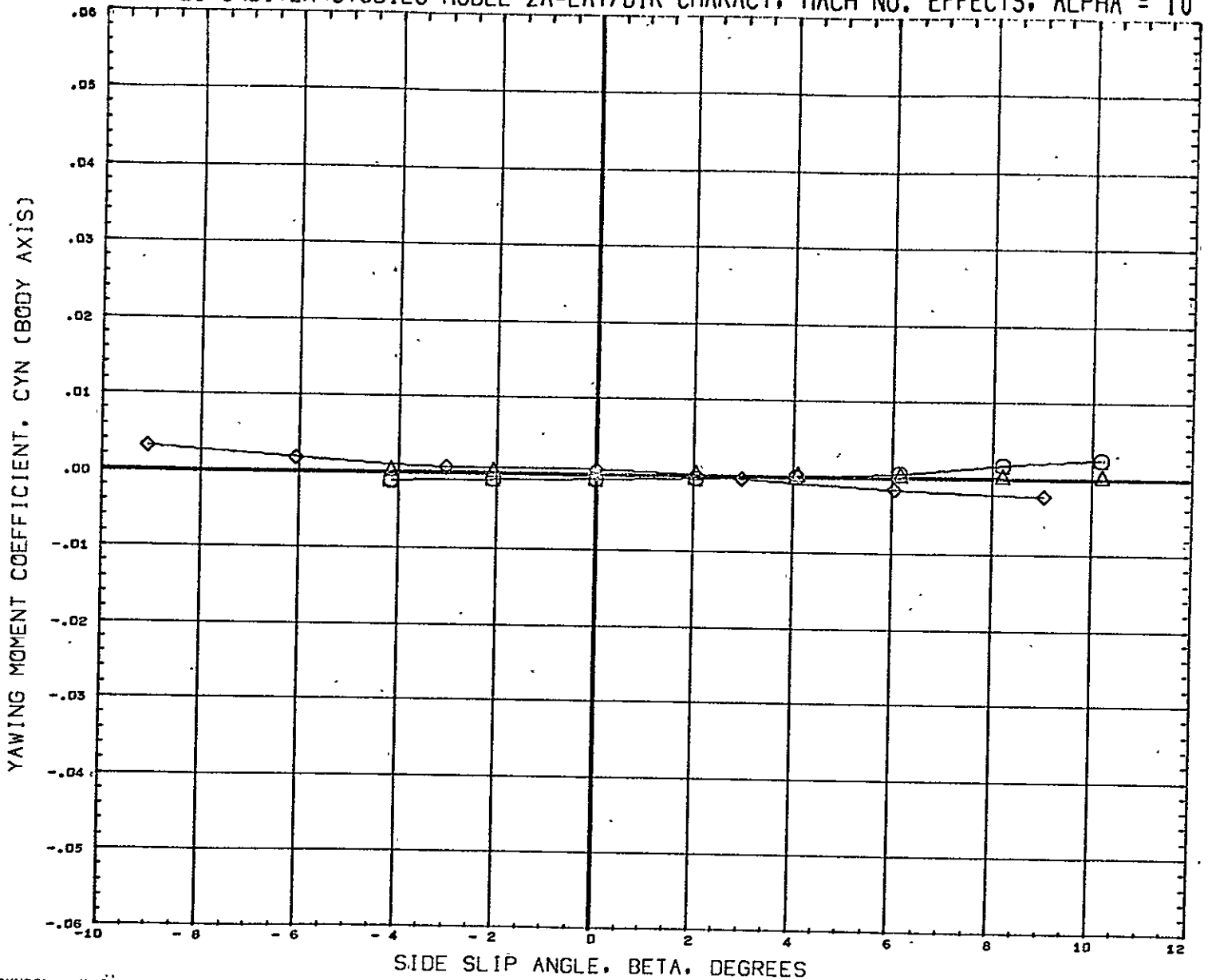
LSMC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, MACH NO. EFFECTS, ALPHA = 10



SYMBOL	MACH	PARAMETRIC VALUES			REFERENCE INFORMATION			
○	0.595	ALPHA	10.000	ELEVNS	0.000	SREF	9.0250	SQ.IN
◇	0.698	RUDER2	0.000	STING	4.000	LREF	6.1420	INCHES
△	0.899					BREF	6.1420	INCHES
□	1.104					XMRP	3.9950	INCHES
						YMRP	0.0000	INCHES
						ZMRP	0.1350	INCHES
						SCALE	0.0033	SCALE

REFERENCE FILE LSMC/HREC D225042A

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, MACH NO. EFFECTS, ALPHA = 10



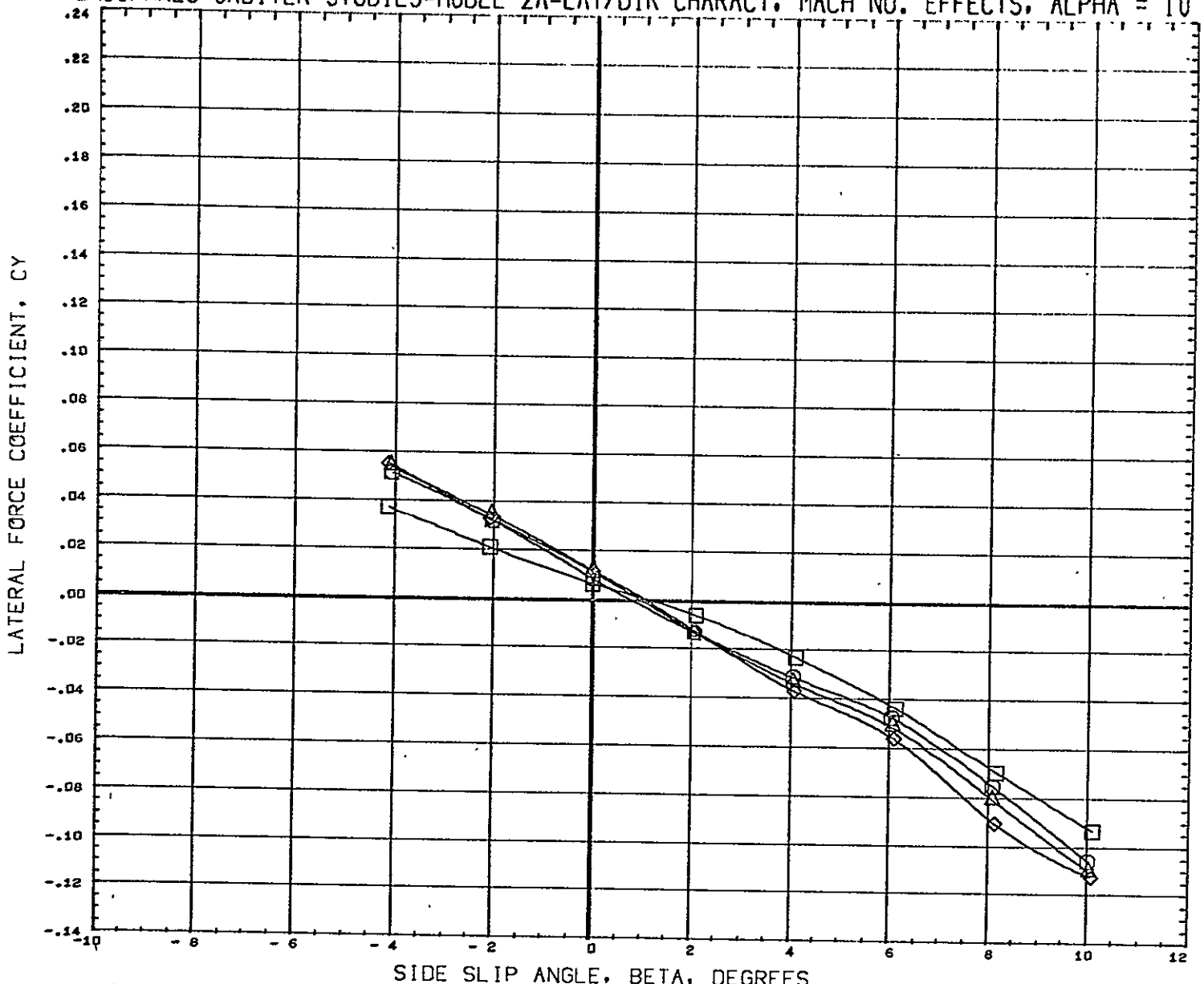
SYMBOL	MACH	PARAMETRIC VALUES			
○	1.457	ALPHA	10.000	ELEVNS	0.000
△	1.964	RUDER2	0.000	STING	4.000
◇	4.969				

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

REFERENCE FILE LSHC/HREC 0225042A



LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT. MACH NO. EFFECTS, ALPHA = 10

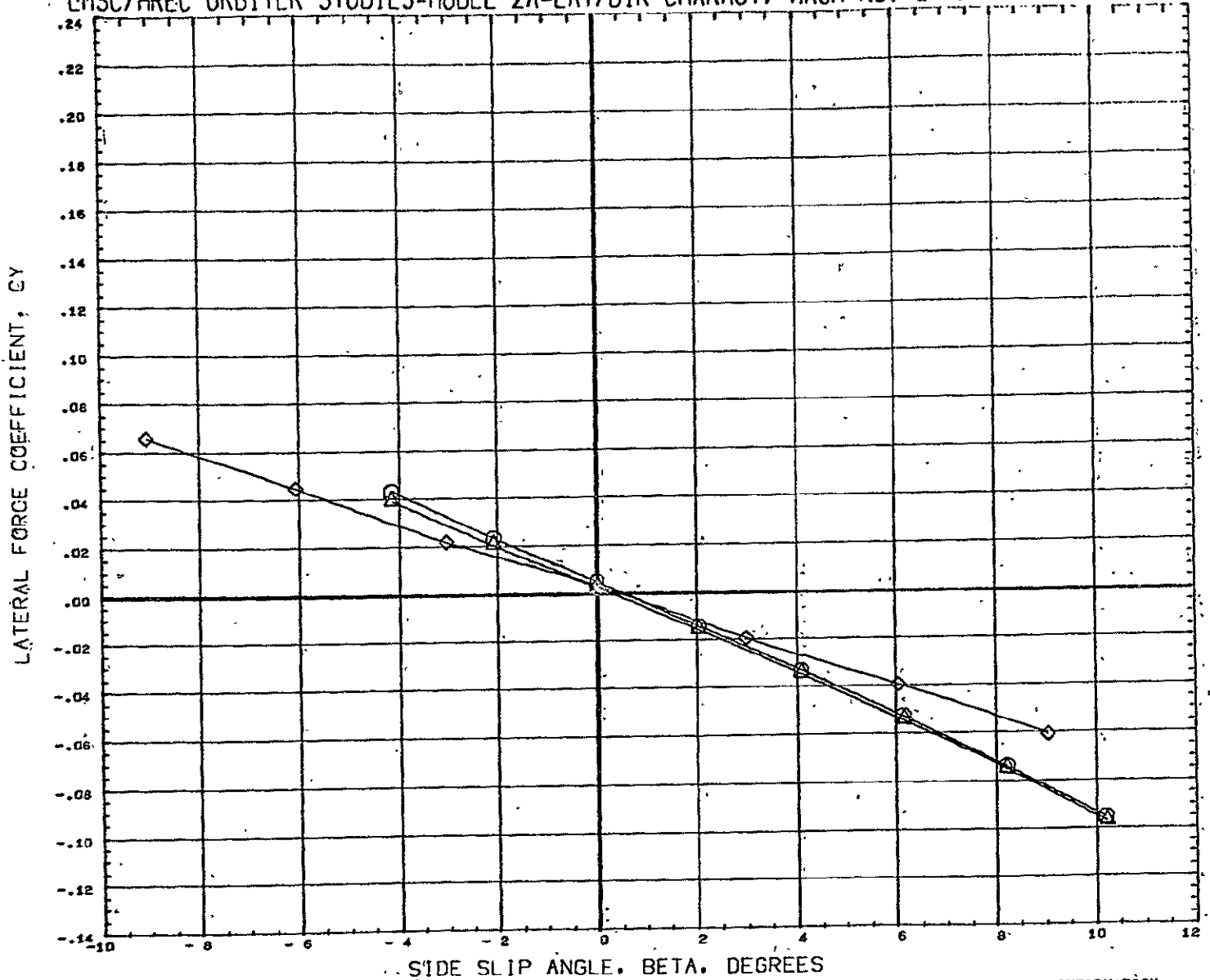


SYMBOL	MACH	ALPHA	PARAMETRIC VALUES		
○	0.595	10.000	ELEVNS	0.000	
◇	0.698	RUDER2	0.000	STING	4.000
△	0.899				
□	1.104				

REFERENCE FILE LMSC/HREC D225042A

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, MACH NO. EFFECTS, ALPHA = 1.0

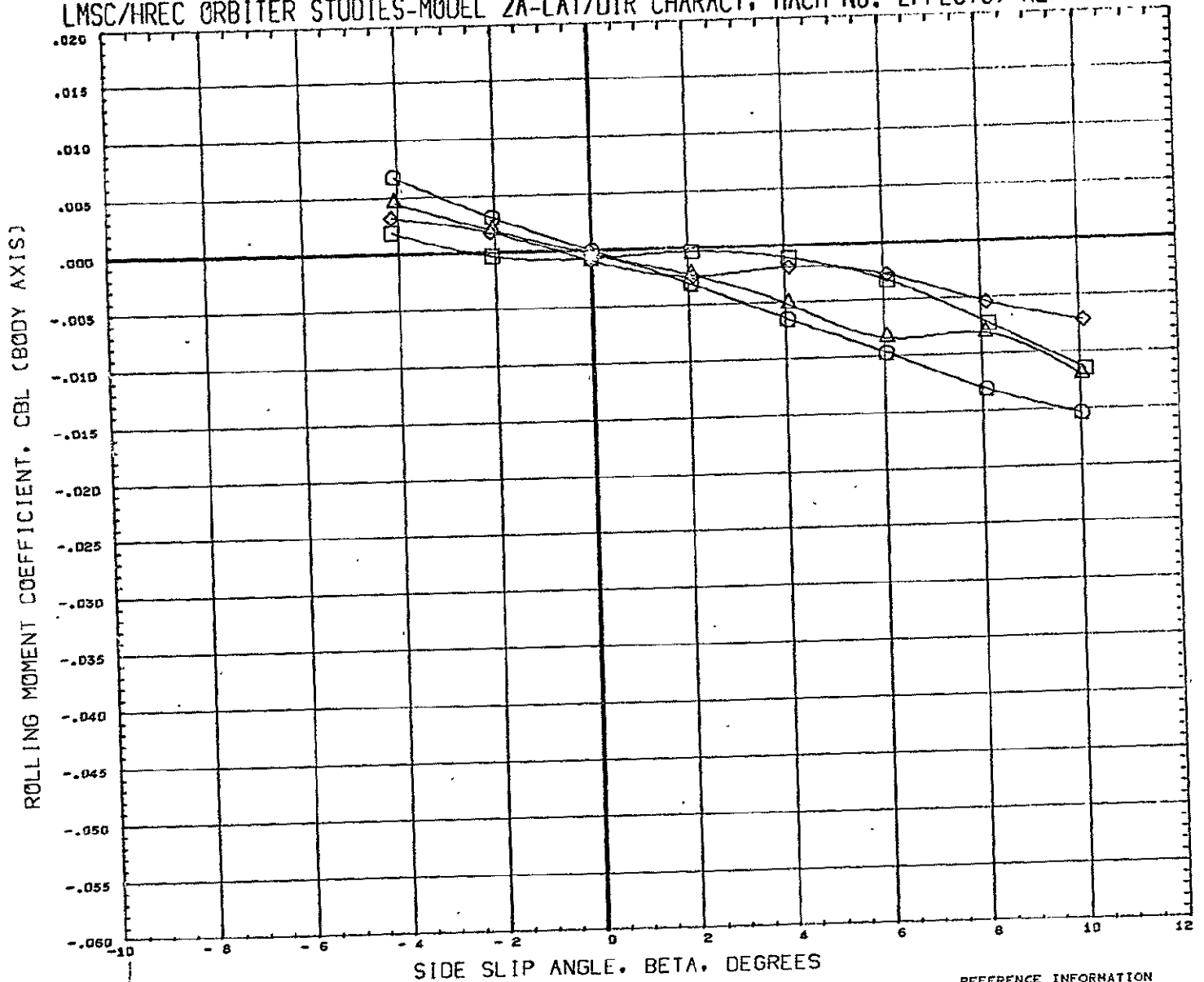


SYMBOL	MACH	PARAMETRIC VALUES			
○	1.457	ALPHA	10.000	ELEVNS	0.000
△	1.964	RUDER2	0.000	STING	4.000
◇	4.960				

REFERENCE INFORMATION		
SREF	9.0250	50. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

REFERENCE FILE LMSC/HREC D225042A

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, MACH NO. EFFECTS, ALPHA = 10

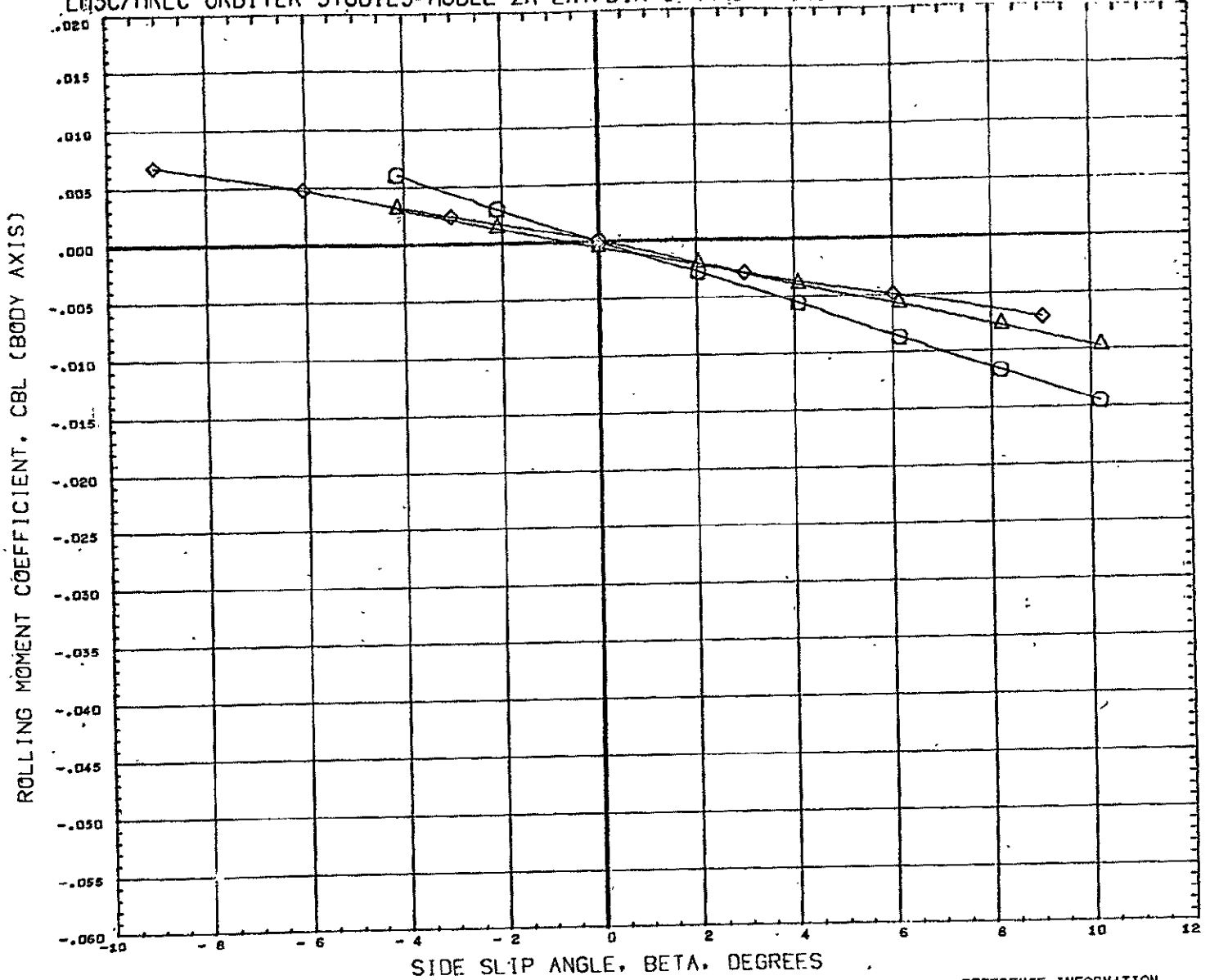


SYMBOL	MACH	PARAMETRIC VALUES
○	0.595	ALPHA 10.000 ELEVNS 0.000
△	0.698	RUDER2 0.000 STING 4.000
◇	0.899	
□	1.104	

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XHRF	3.9950	INCHES
YHRF	0.0000	INCHES
ZHRF	0.1350	INCHES
SCALE	0.0033	SCALE

REFERENCE FILE LMSC/HREC D225G42A

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, MACH NO. EFFECTS; ALPHA = 10

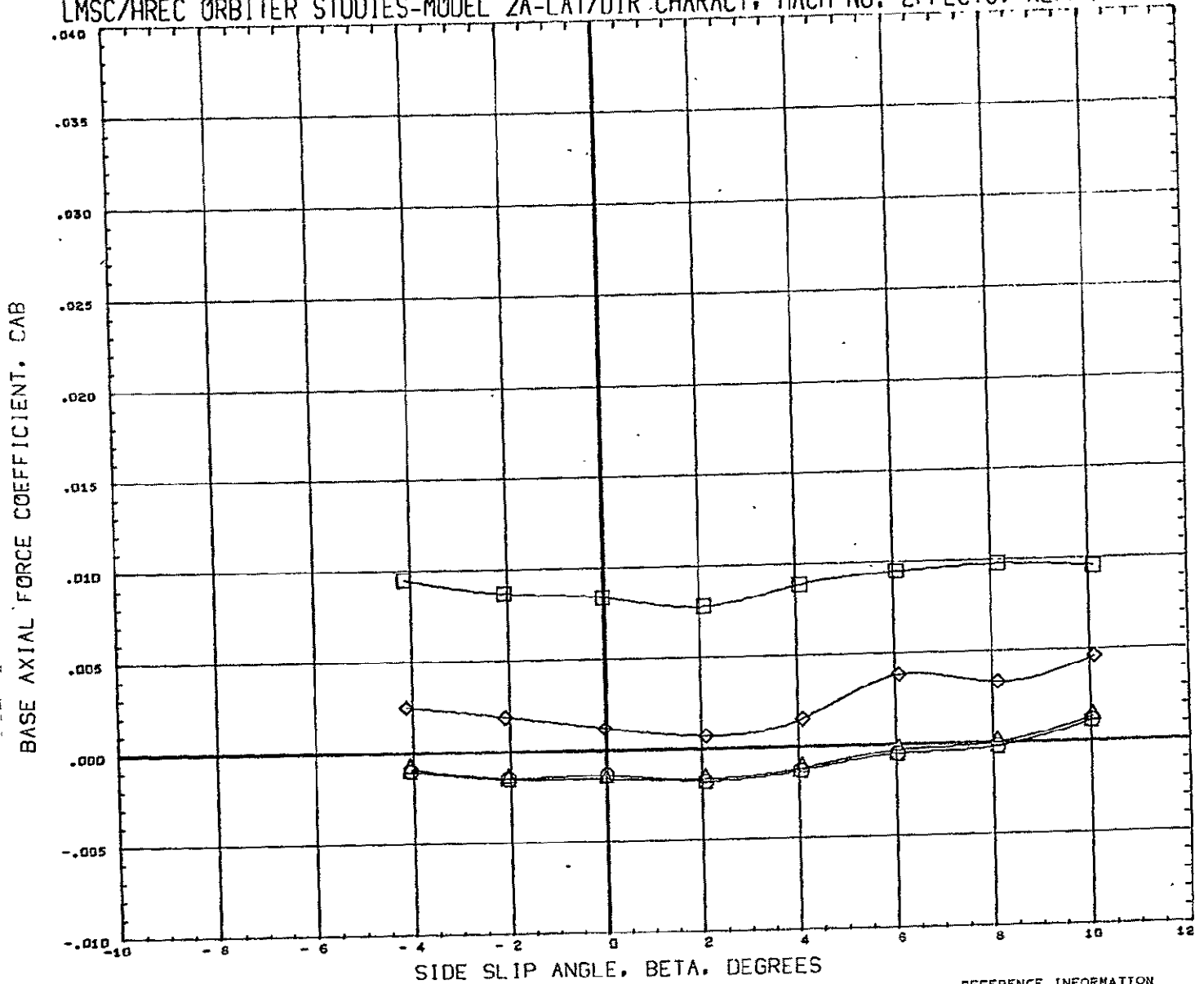


SYMBOL	MACH	PARAMETRIC VALUES			
		ALPHA	ELEVNS	STING	
○	1.457	10.000	0.000	0.000	
△	1.964	0.000	0.000	4.000	
◇	4.960				

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XHRF	3.9950	INCHES
YHRF	0.0000	INCHES
ZHRF	0.1350	INCHES
SCALE	0.0033	SCALE

REFERENCE FILE LMSC/HREC D225042A

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, MACH NO. EFFECTS, ALPHA = 10

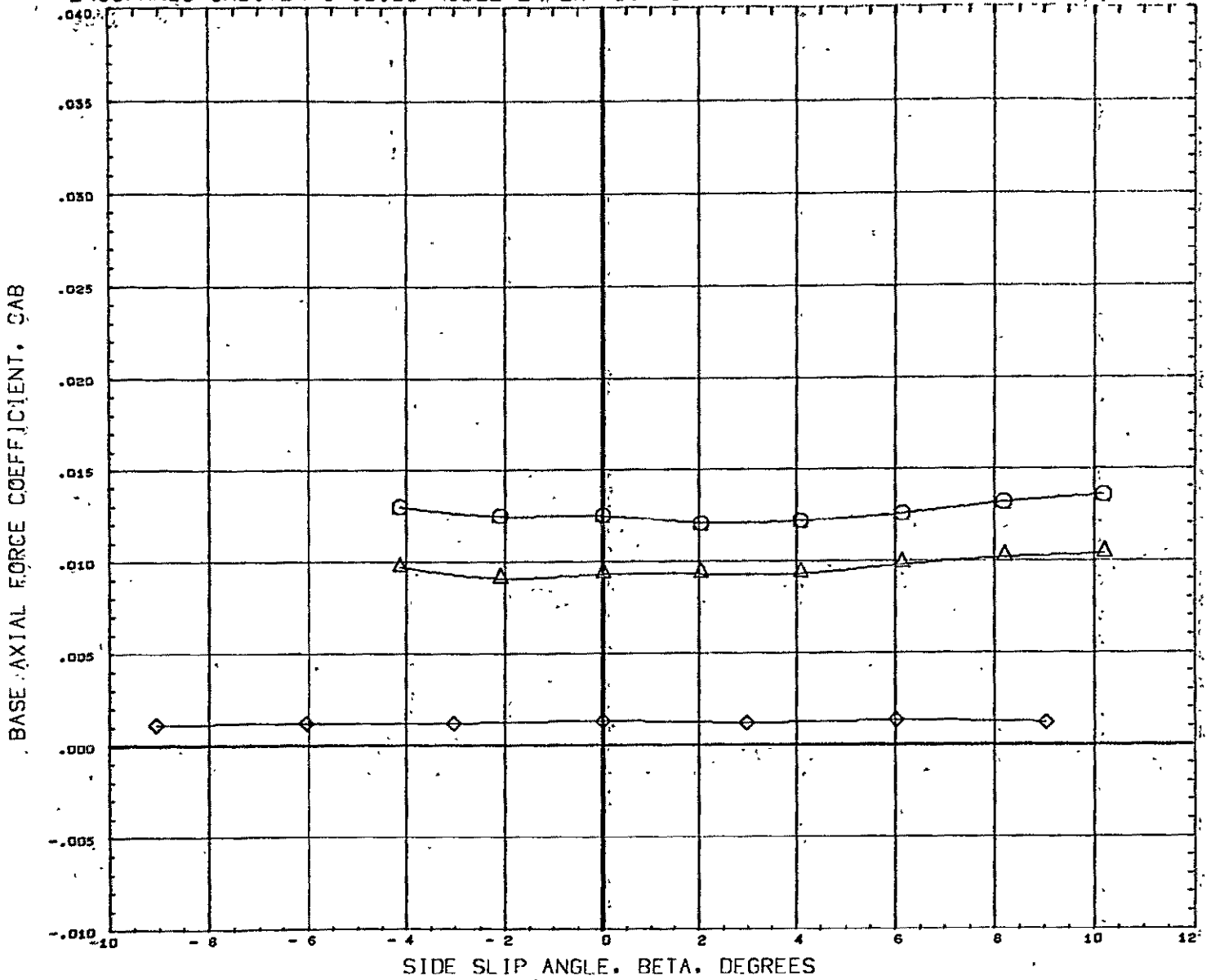


SYMBOL	MACH	PARAMETRIC VALUES			
○	0.595	ALPHA	10.000	ELEVN3	0.000
△	0.698	RUDER2	0.000	STING	4.000
◇	0.899				
□	1.104				

REFERENCE INFORMATION		
SREF	9.0250	50. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XHRF	3.9950	INCHES
YHRF	0.0000	INCHES
ZHRF	0.1350	INCHES
SCALE	0.0033	SCALE

REFERENCE FILE LMSC/HREC D225042A

LSMC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, MACH NO. EFFECTS, ALPHA = 10

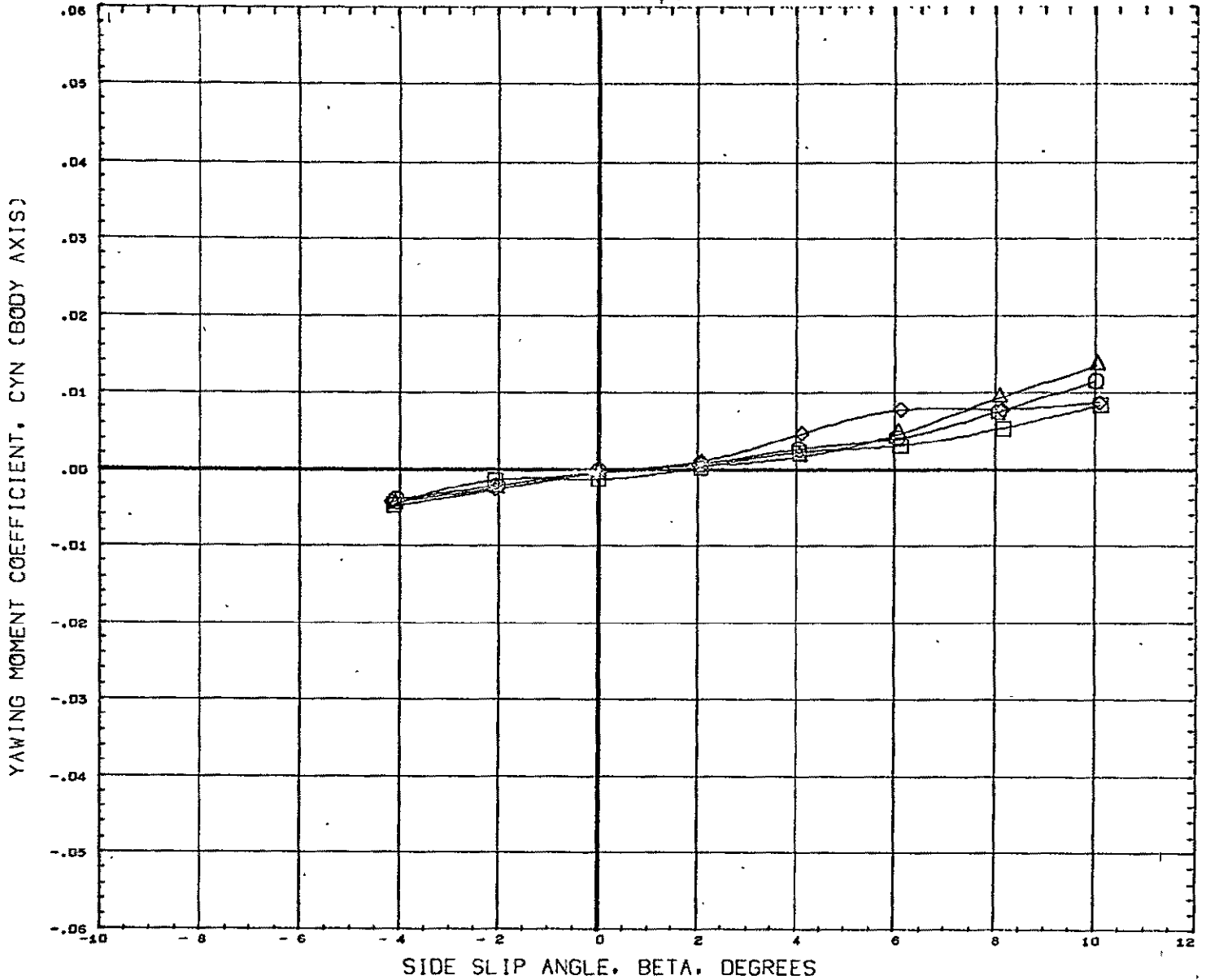


SYMBOL	MACH	PARAMETRIC VALUES			
○	1.457	ALPHA	10.000	ELEVN3	0.000
△	1.964	RUDER2	0.000	STING	4.000
◇	4.960				

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

REFERENCE FILE LSMC/HREC D225042A

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, MACH NO. EFFECTS, ALPHA = 15

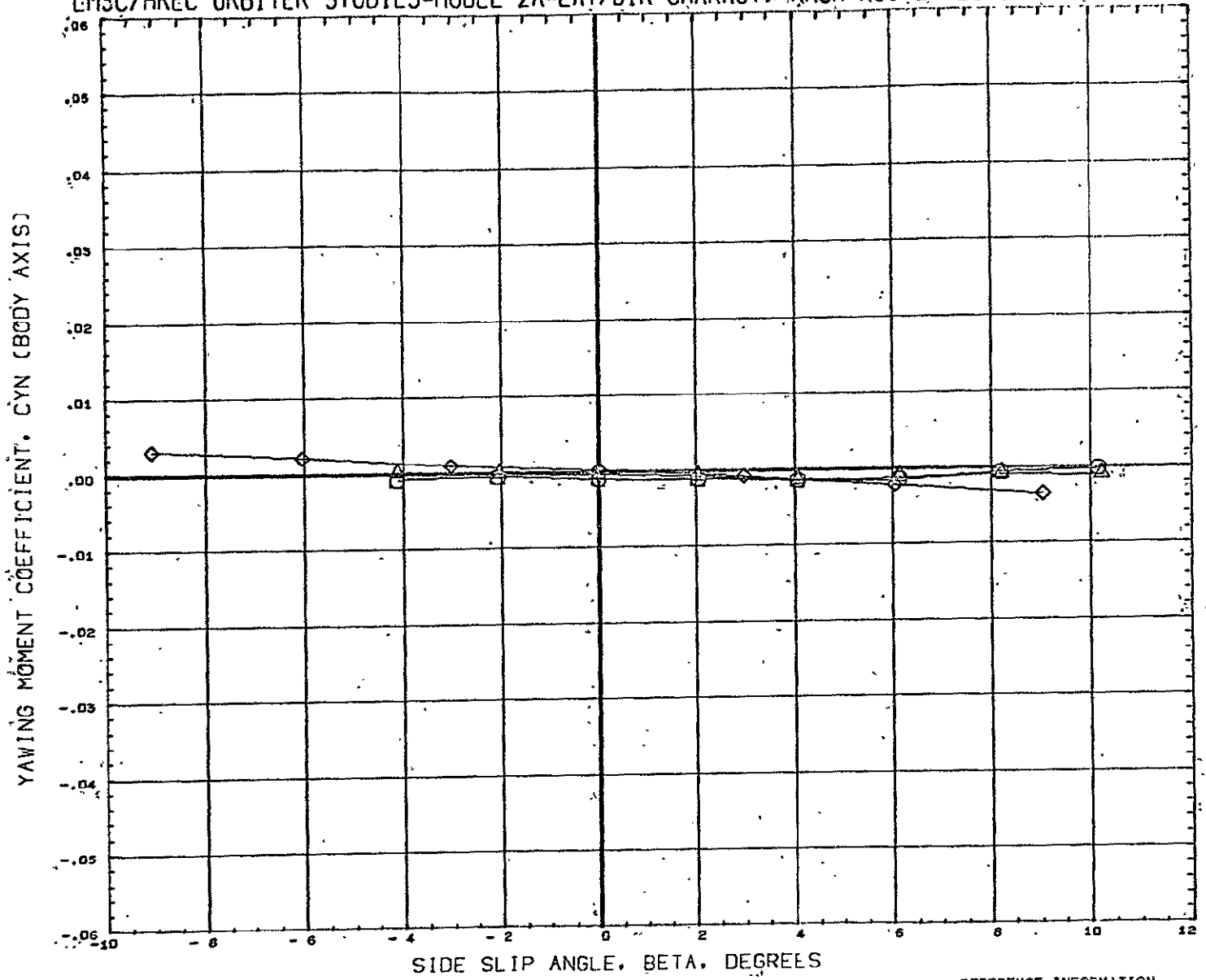


SYMBOL	MACH	PARAMETRIC VALUES			
○	0.597	ALPHA	15.000	ELEVNS	0.000
△	0.699	RUDER2	0.000	STING	4.000
◇	0.899				
□	1.098				

REFERENCE INFORMATION-		
SREF	9.0250	sq. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

REFERENCE FILE LSNC/HREC D225042A

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT. MACH NO. EFFECTS, ALPHA = 15



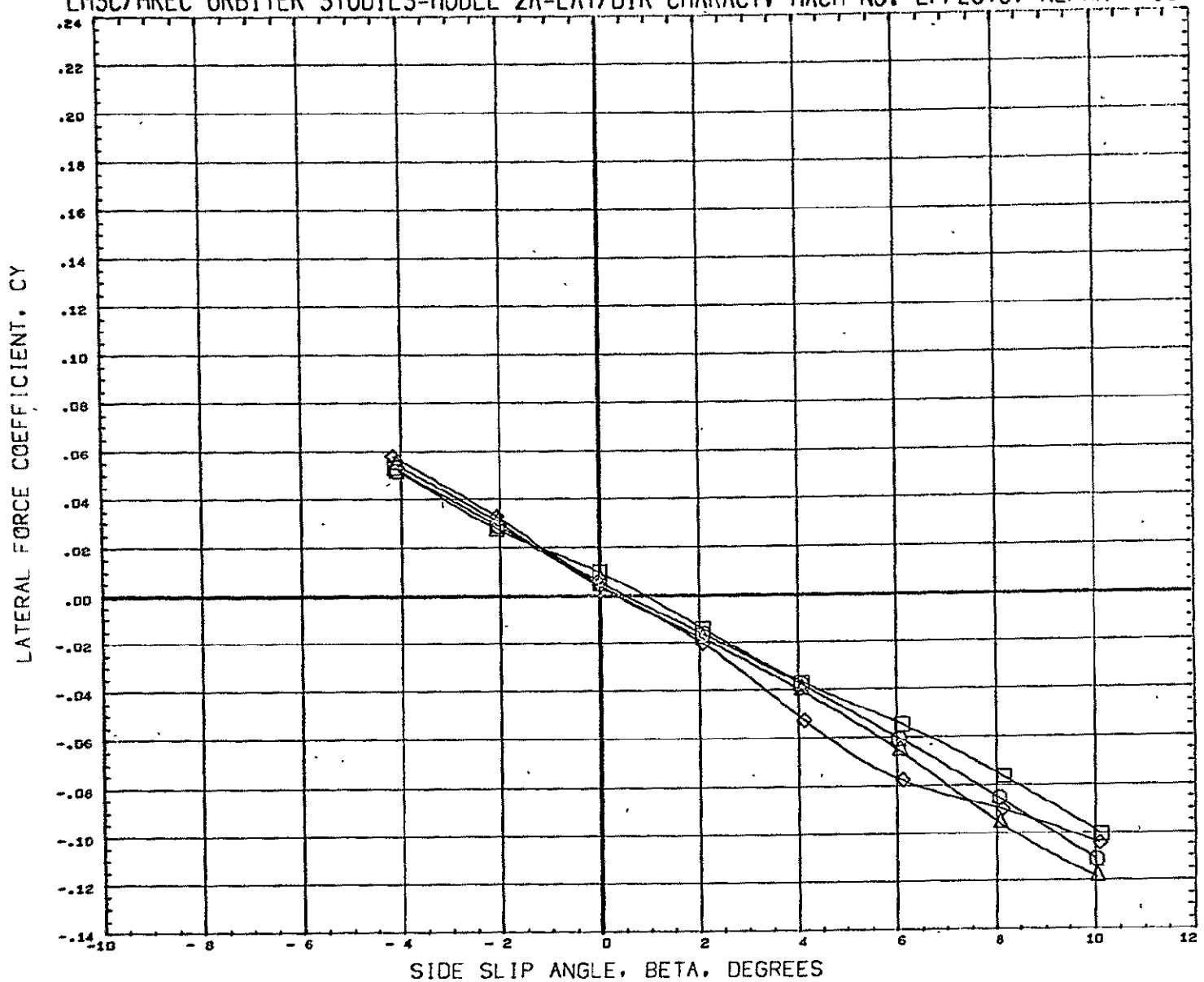
SYMBOL	MACH	PARAMETRIC VALUES
$\triangle$	1.457	ALPHA 15.000 ELEVNS 0.000
$\square$	1.962	RUDER2 0.000 STING 4.000
$\diamond$	4.969	

REFERENCE INFORMATION		
SREF	9.0250	90. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XHRP	3.9950	INCHES
YHRP	0.0000	INCHES
ZHRP	0.1350	INCHES
SCALE	0.0033	SCALE

REFERENCE FILE LMSC/HREC 0225042A



LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, MACH NO. EFFECTS, ALPHA = 15

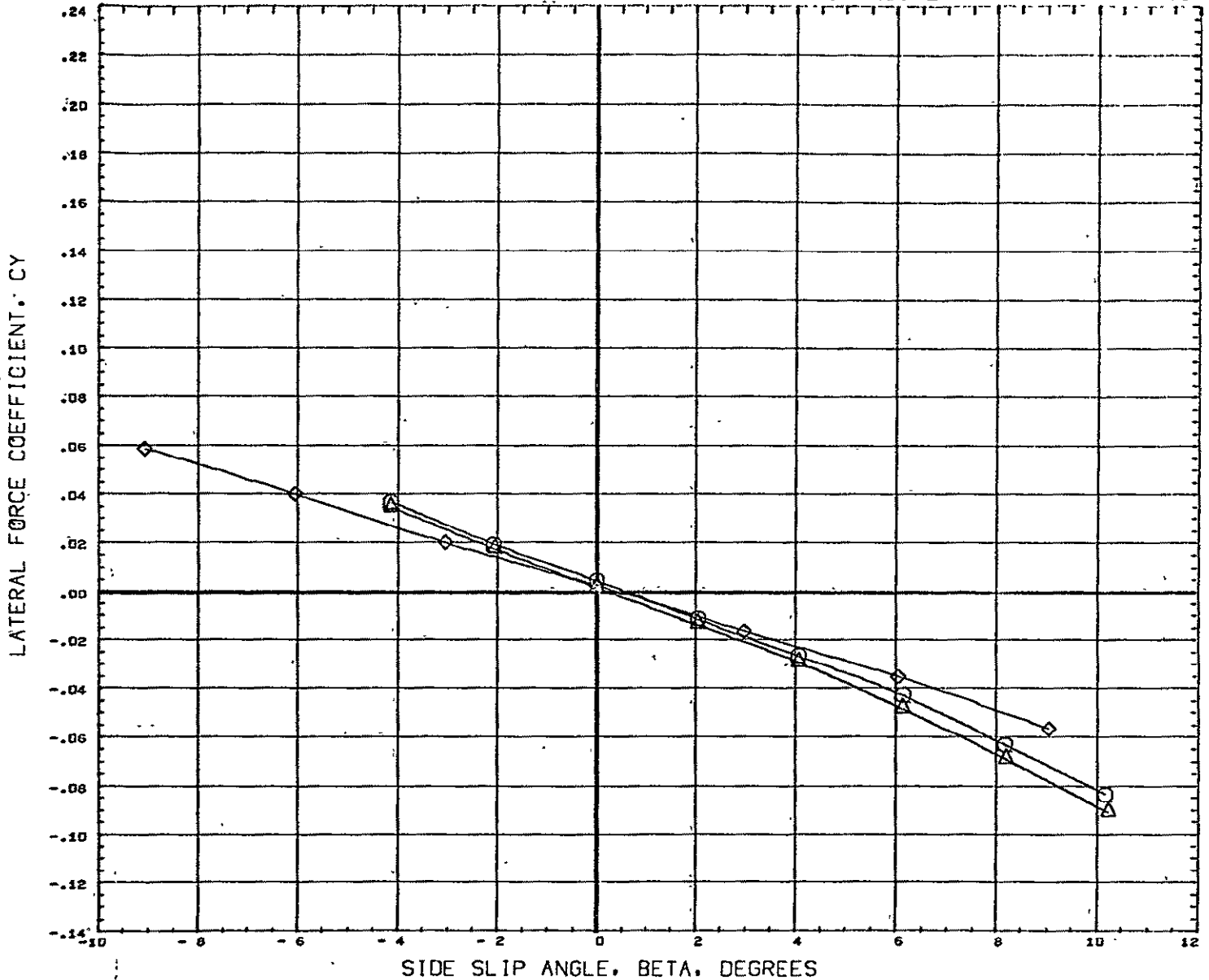


SYMBOL	MACH	PARAMETRIC VALUES			
○	0.597	ALPHA	15.000	ELEVNS	0.000
△	0.699	RUDER2	0.000	STING	4.000
◇	0.899				
□	1.098				

REFERENCE INFORMATION		
SREF	9.0250	50. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

REFERENCE FILE LMSC/HREC D225042A

MSFC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, MACH NO. EFFECTS, ALPHA = 15

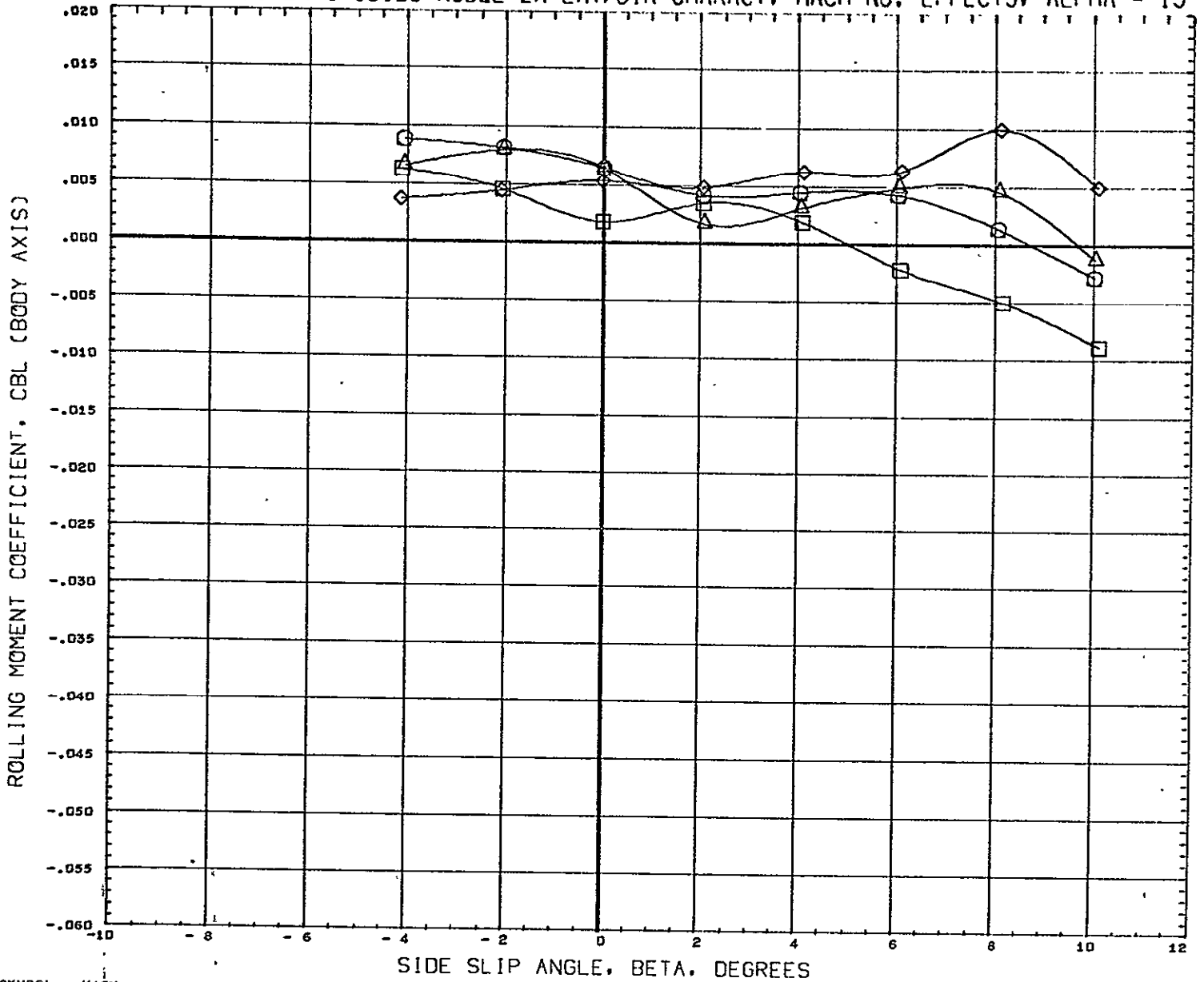


SYMBOL	MACH	PARAMETRIC VALUES			
□	1.457	ALPHA	15.000	ELEVNS	0.000
△	1.962	RUDER2	0.000	STING	4.000
◇	4.960				

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

REFERENCE FILE LSNC/HREC D225042A

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, MACH NO. EFFECTS, ALPHA = 15

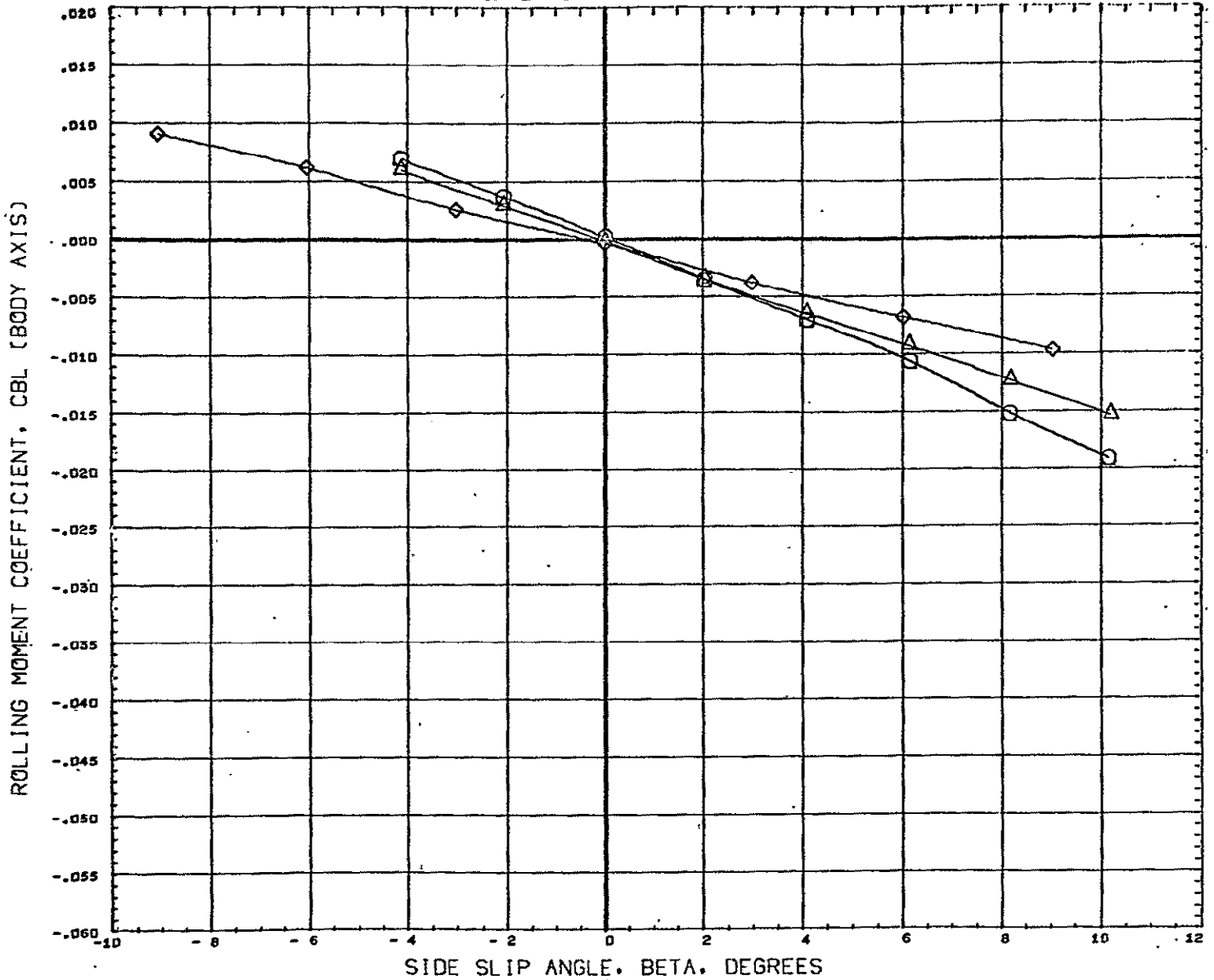


SYMBOL	MACH	PARAMETRIC VALUES			
○	0.597	ALPHA	15.000	ELEVN3	0.000
◇	0.699	RUDER2	0.000	STING	4.000
△	0.899				
□	1.098				

REFERENCE INFORMATION:		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

REFERENCE FILE LMSC/HREC D225042A

LSMC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, MACH NO. EFFECTS, ALPHA = 15

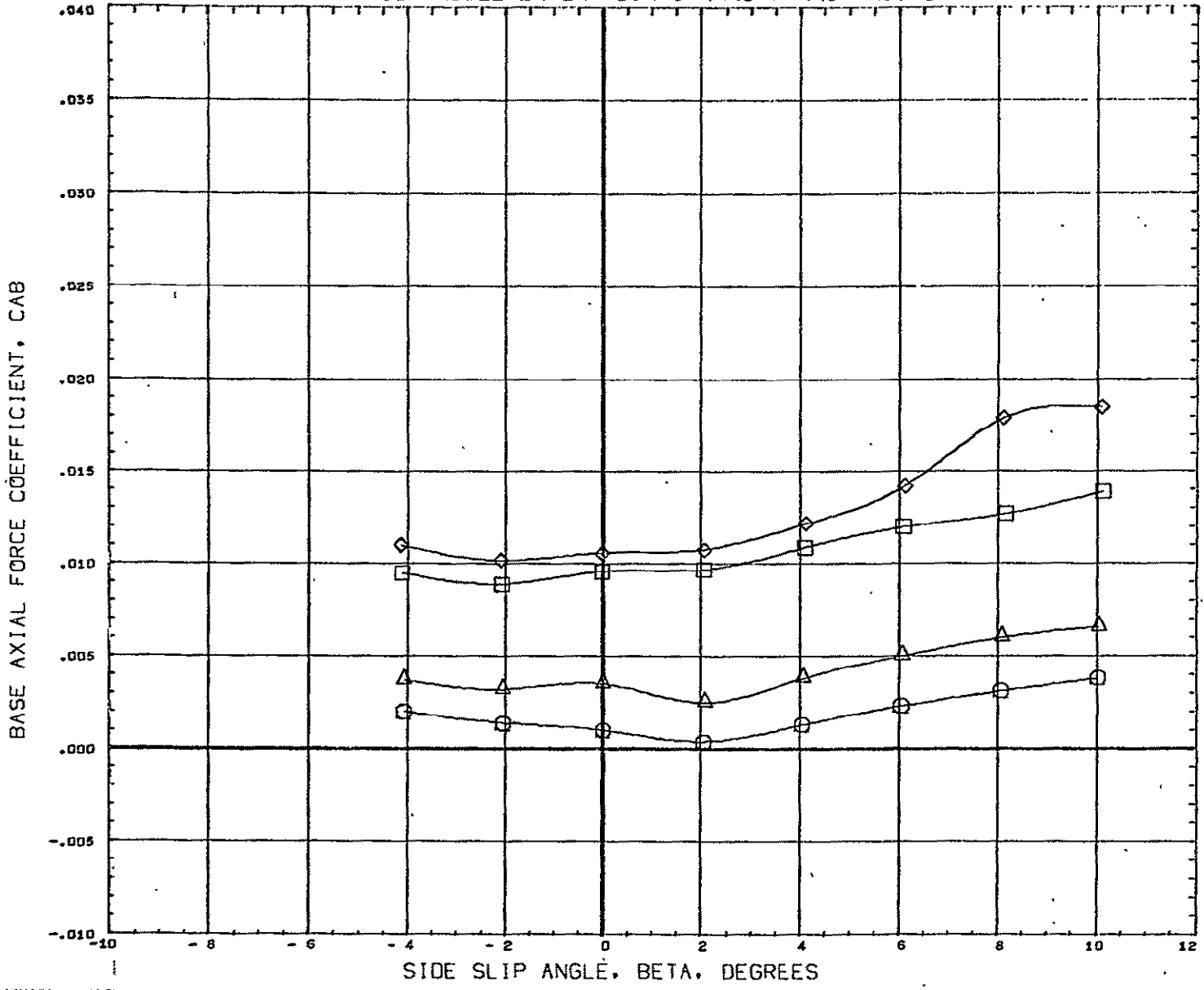


SYMBOL	MACH	PARAMETRIC VALUES			
○	1.457	ALPHA	15.000	ELEVN3	0.000
△	1.962	RUDER2	0.000	STING	4.000
◇	4.960				

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XHRP	3.9950	INCHES
YHRP	0.0000	INCHES
ZHRP	0.1350	INCHES
SCALE	0.0033	SCALE

REFERENCE FILE LSMC/HREC D225042A

LSMC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, MACH NO. EFFECTS, ALPHA = 15

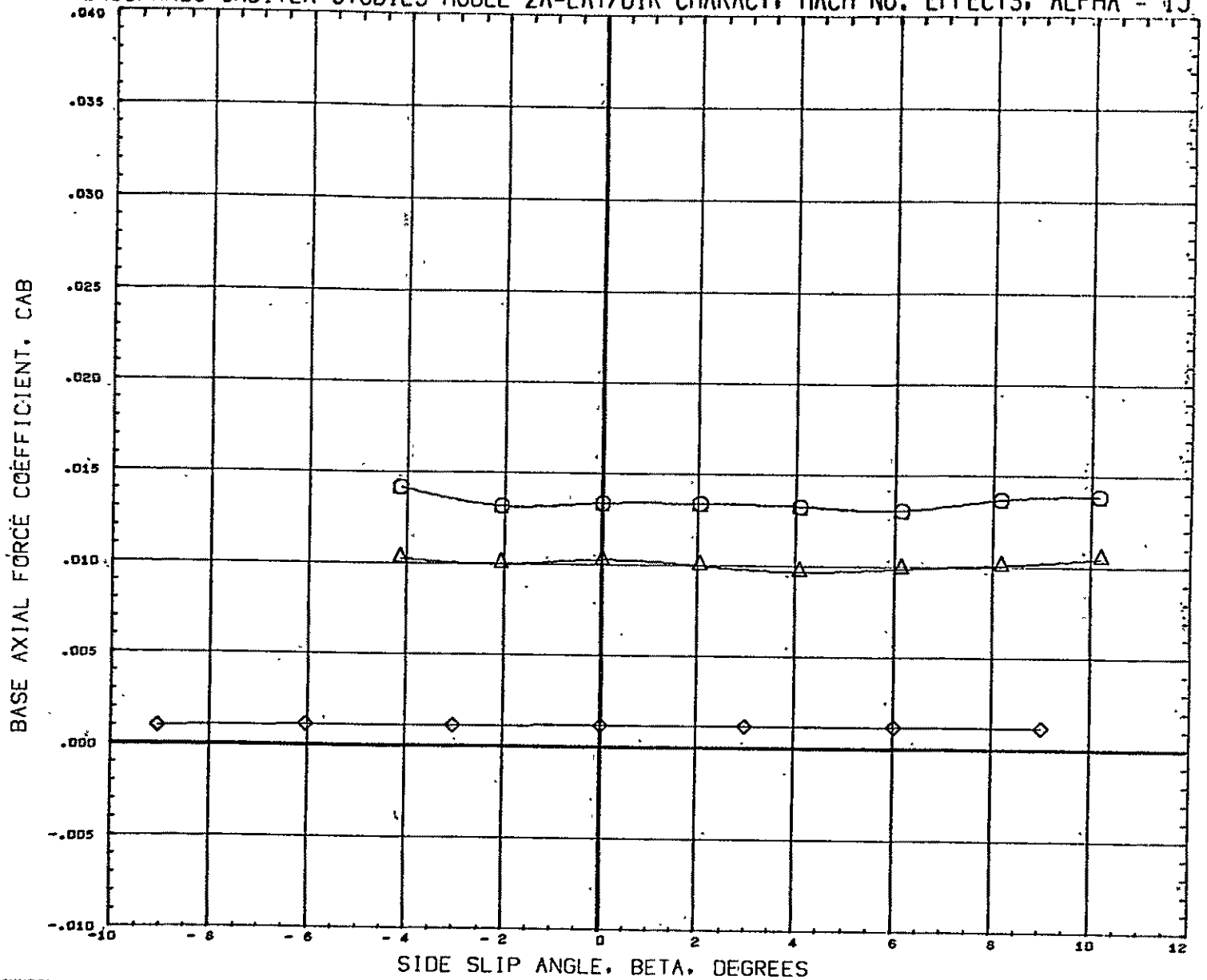


SYMBOL	MACH	PARAMETRIC VALUES			
◇	0.597	ALPHA	15.000	ELEVN3	0.000
△	0.699	RUDER2	0.000	STING	4.000
◇	0.899				
□	1.098				

REFERENCE FILE      LSMC/HREC D225042A

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, MACH NO. EFFECTS, ALPHA = 15

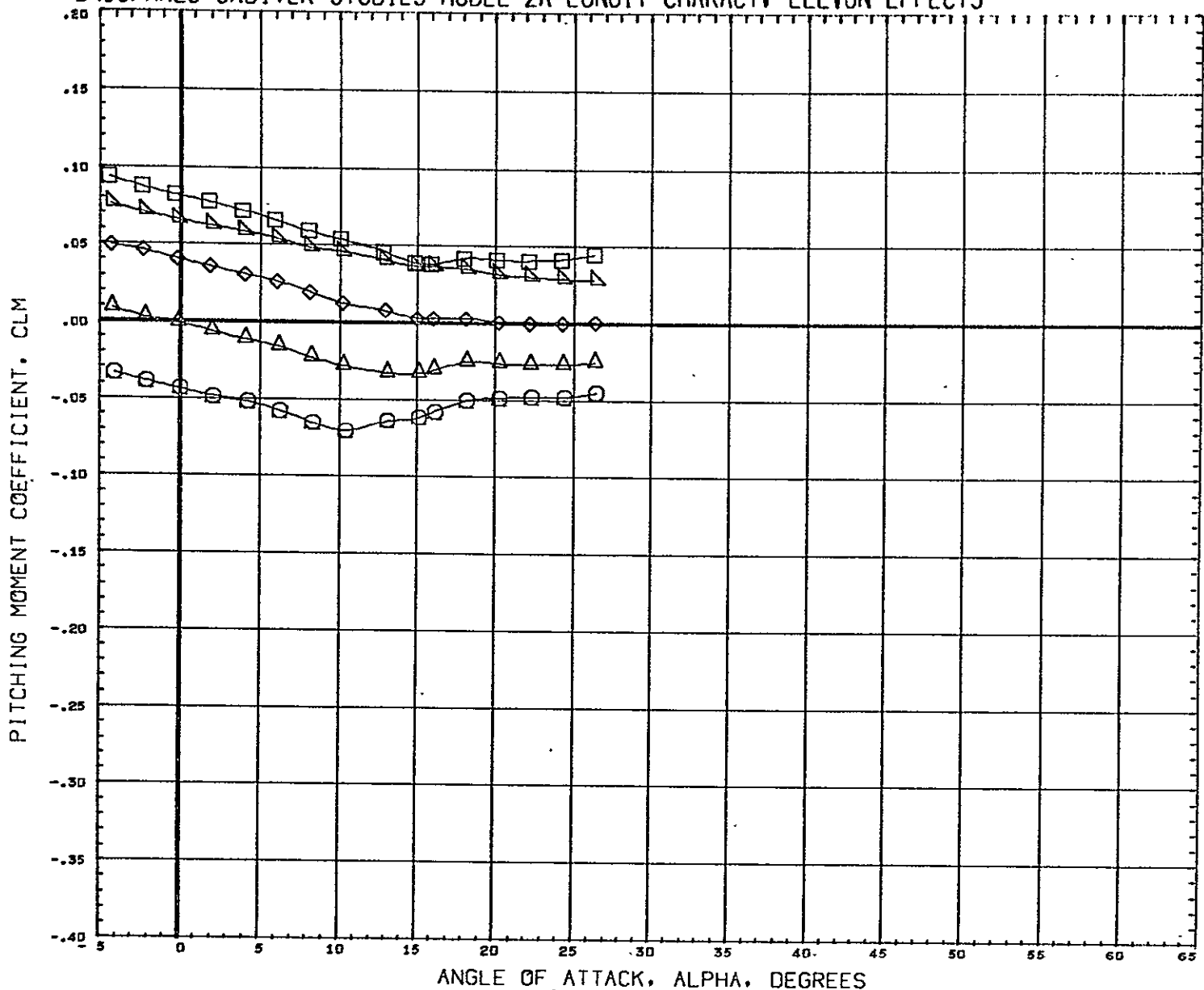


SYMBOL	MACH	PARAMETRIC VALUES			
○	1.457	ALPHA	15.000	ELEVN3	0.000
△	1.962	RUDER2	0.000	STING	4.000
◇	4.960				

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XHRP	3.9950	INCHES
YHRP	0.0000	INCHES
ZHRP	0.1350	INCHES
SCALE	0.0033	SCALE

REFERENCE FILE LMSC/HREC D225042A

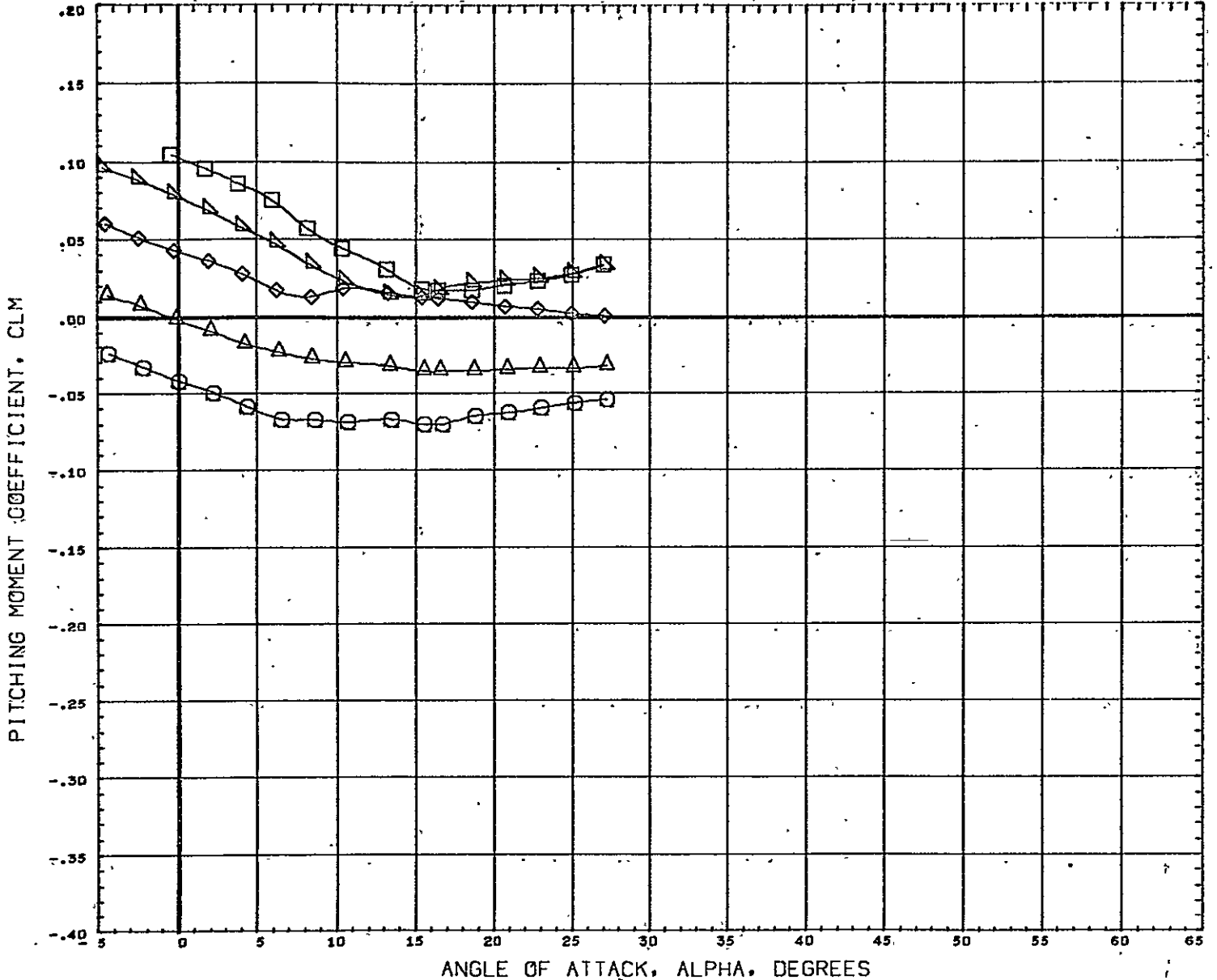
# LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, ELEVON EFFECTS



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVNS	RUDER2	STING	BETA	REFERENCE INFORMATION
(D4102S)	MSFC TWT 498 MSFC/LHSC ORBITER B2W2V4D2E3R2	10.000	0.000	4.000	0.000	SREF 9.0250 SQ. IN
(D41011)	MSFC TWT 498 MSFC/LHSC ORBITER B2W2V4D2E3R2	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D4103S)	MSFC TWT 498 MSFC/LHSC ORBITER B2W2V4D2E3R2	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D4104S)	MSFC TWT 498 MSFC/LHSC ORBITER B2W2V4D2E3R2	-20.000	0.000	4.000	0.000	XMRP 3.9950 INCHES
(D4105S)	MSFC TWT 498 MSFC/LHSC ORBITER B2W2V4D2E3R2	-30.000	0.000	4.000	0.000	YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.598

# LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, ELEVON EFFECTS

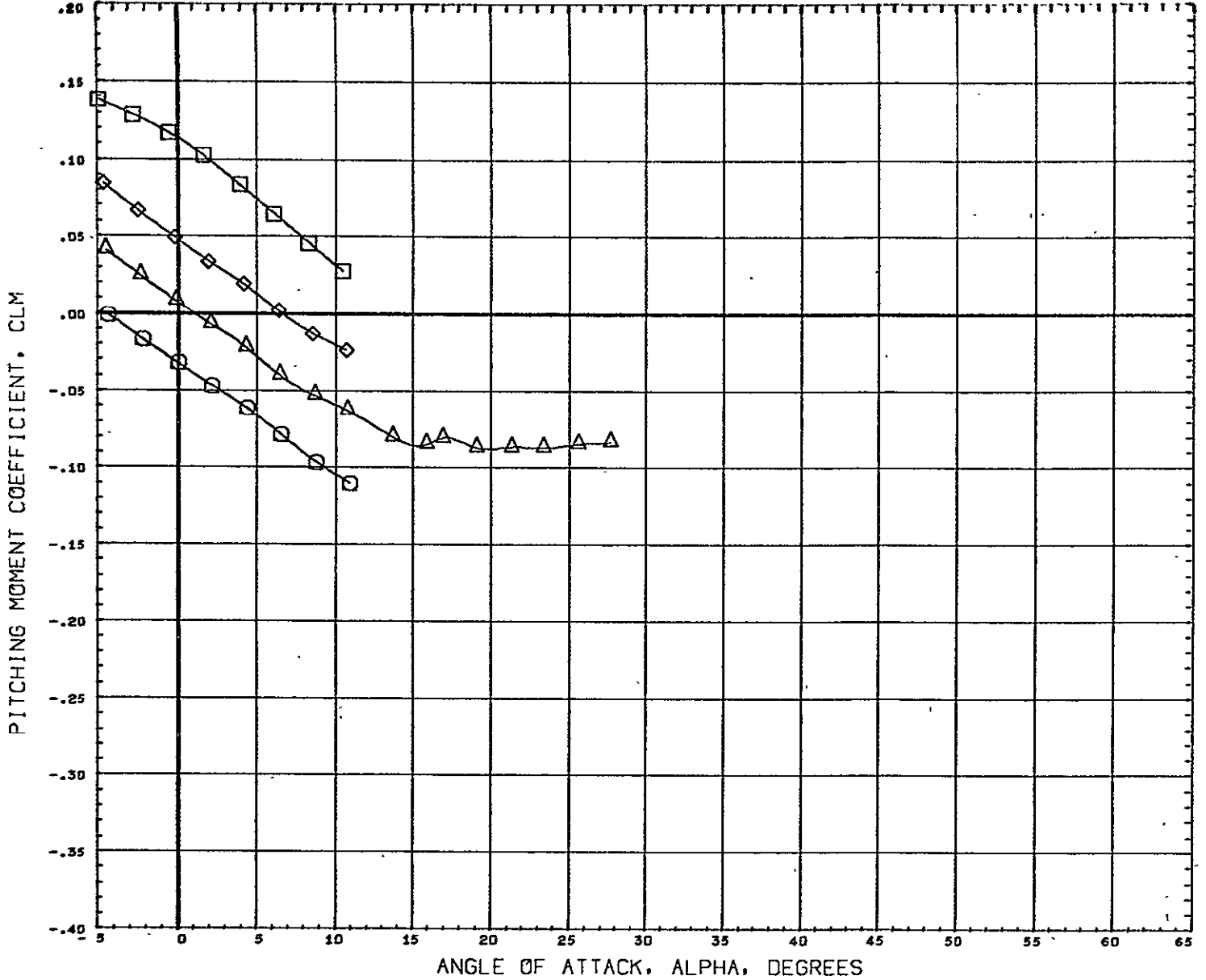


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	STING	BETA	REFERENCE INFORMATION
(D4102S)	MSFC TWT 498 MSFC/LMSC ORBITER	10.000	0.000	4.000	0.000	SREF 9.0250 SQ. IN
(D41011)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D4103S)	MSFC TWT 498 MSFC/LMSC ORBITER	10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D4104S)	MSFC TWT 498 MSFC/LMSC ORBITER	-20.000	0.000	4.000	0.000	XMRP 3.9950 INCHES
(D4105S)	MSFC TWT 498 MSFC/LMSC ORBITER	-30.000	0.000	4.000	0.000	ZMRP 0.0000 INCHES
						SCALE 0.0033 INCHES SCALE

MACH 0.898



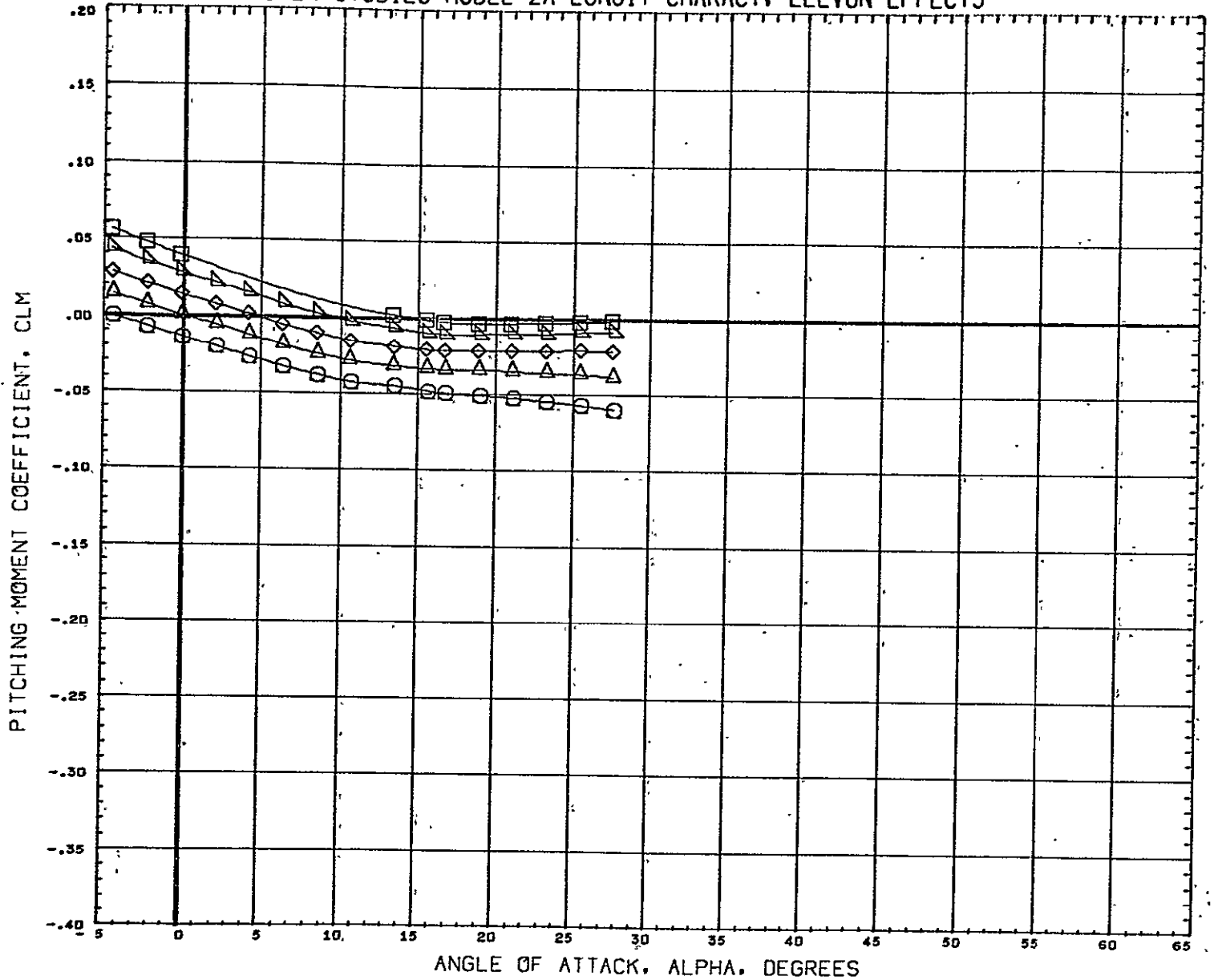
# LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, ELEVON EFFECTS



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	STING	BETA	REFERENCE INFORMATION
(D41025)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	10.000	0.000	4.000	0.000	SREF 9.0250 SQ. IN
(D41011)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D41038)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D41048)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	-20.000	0.000	4.000	0.000	XMRP 3.9950 INCHES
(D41058)	DATA NOT AVAILABLE FOR ALL CONDITIONS	-30.000	0.000	4.000	0.000	YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.100

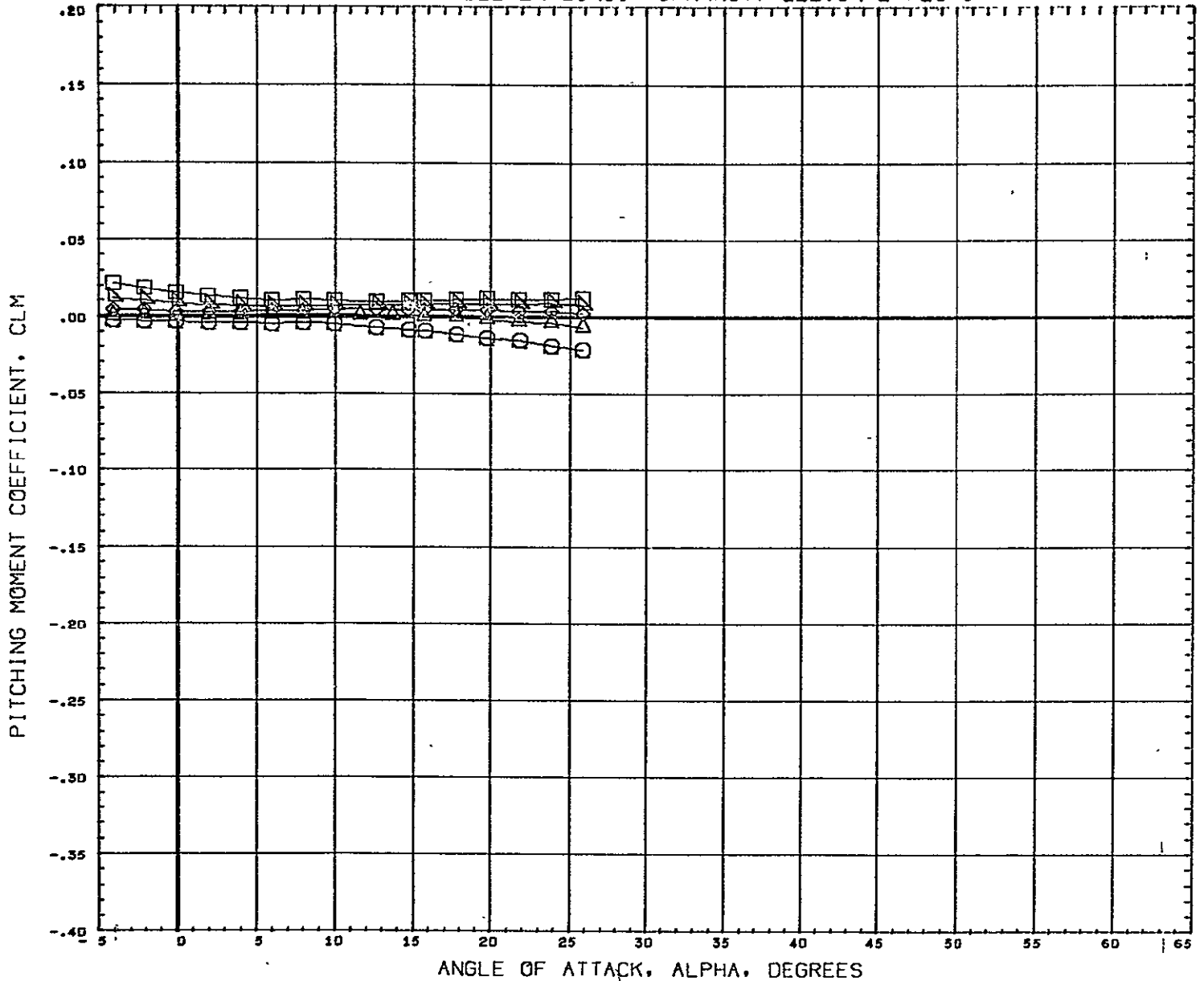
# LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, ELEVON EFFECTS



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVNS	RUDER2	STING	BETA	REFERENCE INFORMATION
(D4102S)	MSFC TWT 498 MSFC/LMSC ORBITER	10.000	0.000	4.000	0.000	SREF 9.0250 SQ. IN
(D41011)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D4103S)	MSFC TWT 498 MSFC/LMSC ORBITER	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D4104S)	MSFC TWT 498 MSFC/LMSC ORBITER	-20.000	0.000	4.000	0.000	XMRP 3.9950 INCHES
(D4105S)	MSFC TWT 498 MSFC/LMSC ORBITER	-30.000	0.000	4.000	0.000	YMRP 0.0000 INCHES ZMRP 0.1350 INCHES SCALE 0.0033 SCALE

MACH 1.958

# LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, ELEVON EFFECTS

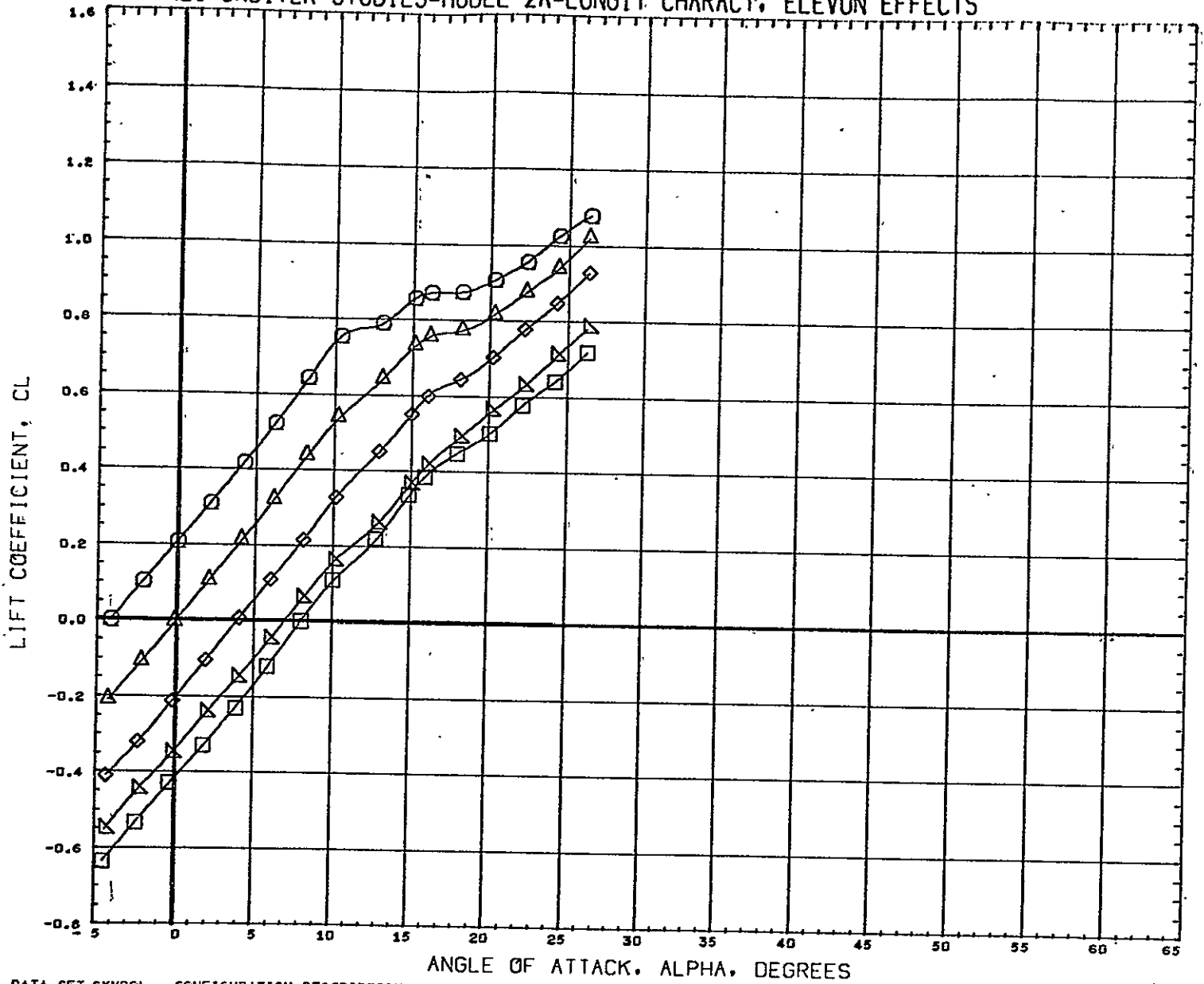


ANGLE OF ATTACK, ALPHA, DEGREES

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVNS	RUDER2	STING	BETA	REFERENCE INFORMATION
(D4102S)	MSFC TWT 498 MSFC/LMSC ORBITER	10.000	0.000	4.000	0.000	SREF 9.0250 SQ. IN
(D41011)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D4103S)	MSFC TWT 498 MSFC/LMSC ORBITER	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D4104S)	MSFC TWT 498 MSFC/LMSC ORBITER	-20.000	0.000	4.000	0.000	XMRP 3.9950 INCHES
(D4105S)	MSFC TWT 498 MSFC/LMSC ORBITER	-30.000	0.000	4.000	0.000	YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 4.960

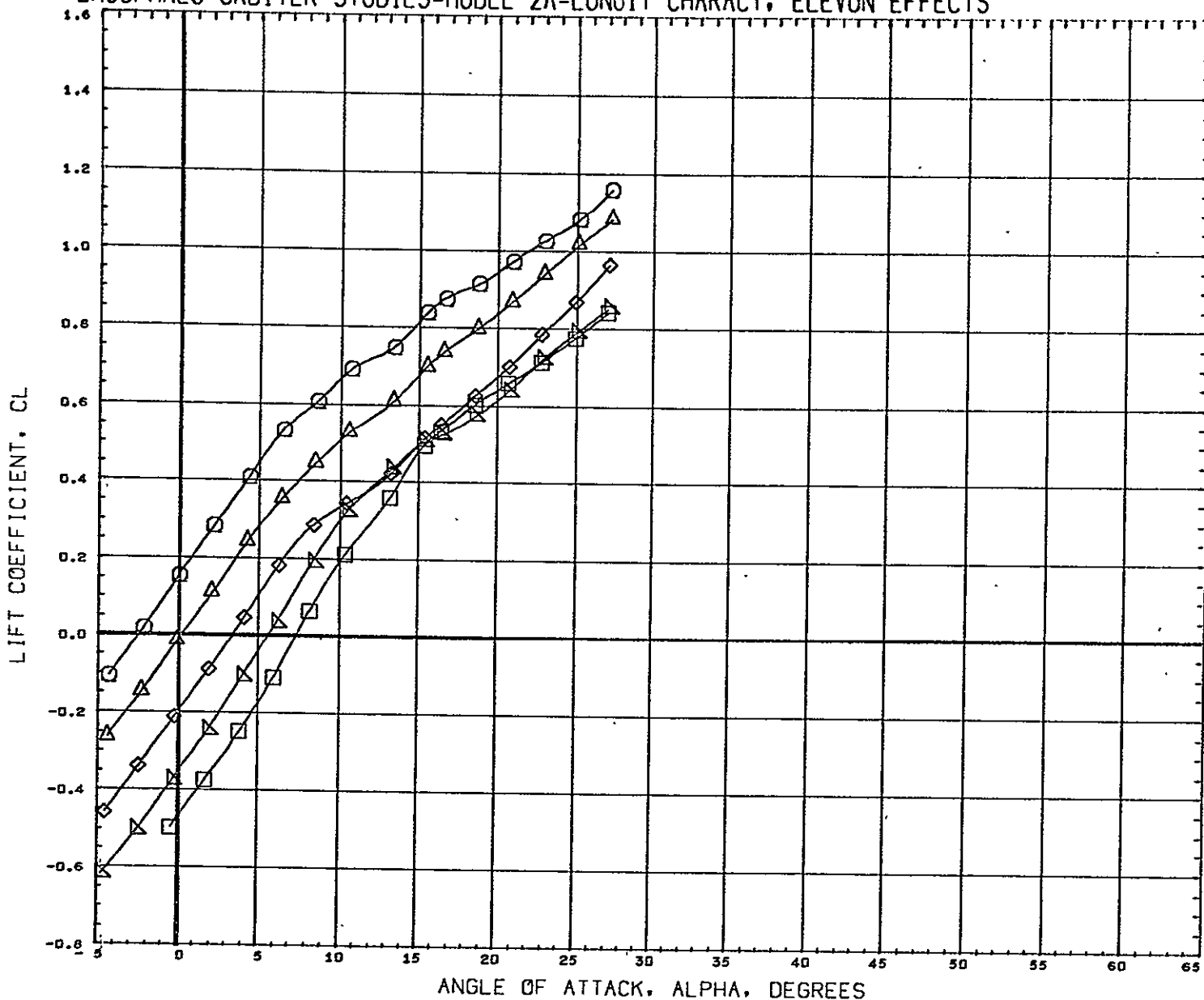
# LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, ELEVON EFFECTS



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	STING	BETA	REFERENCE INFORMATION
(D41D2S)	MSFC TWT 498 MSFC/LMSC ORBITER	10.000	0.000	4.000	0.000	SREF 9.0250 SQ. IN
(D41D11)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D41D3S)	MSFC TWT 498 MSFC/LMSC ORBITER	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D41D4S)	MSFC TWT 498 MSFC/LMSC ORBITER	-20.000	0.000	4.000	0.000	XMRP 3.9950 INCHES
(D41D5S)	MSFC TWT 498 MSFC/LMSC ORBITER	-30.000	0.000	4.000	0.000	YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.598

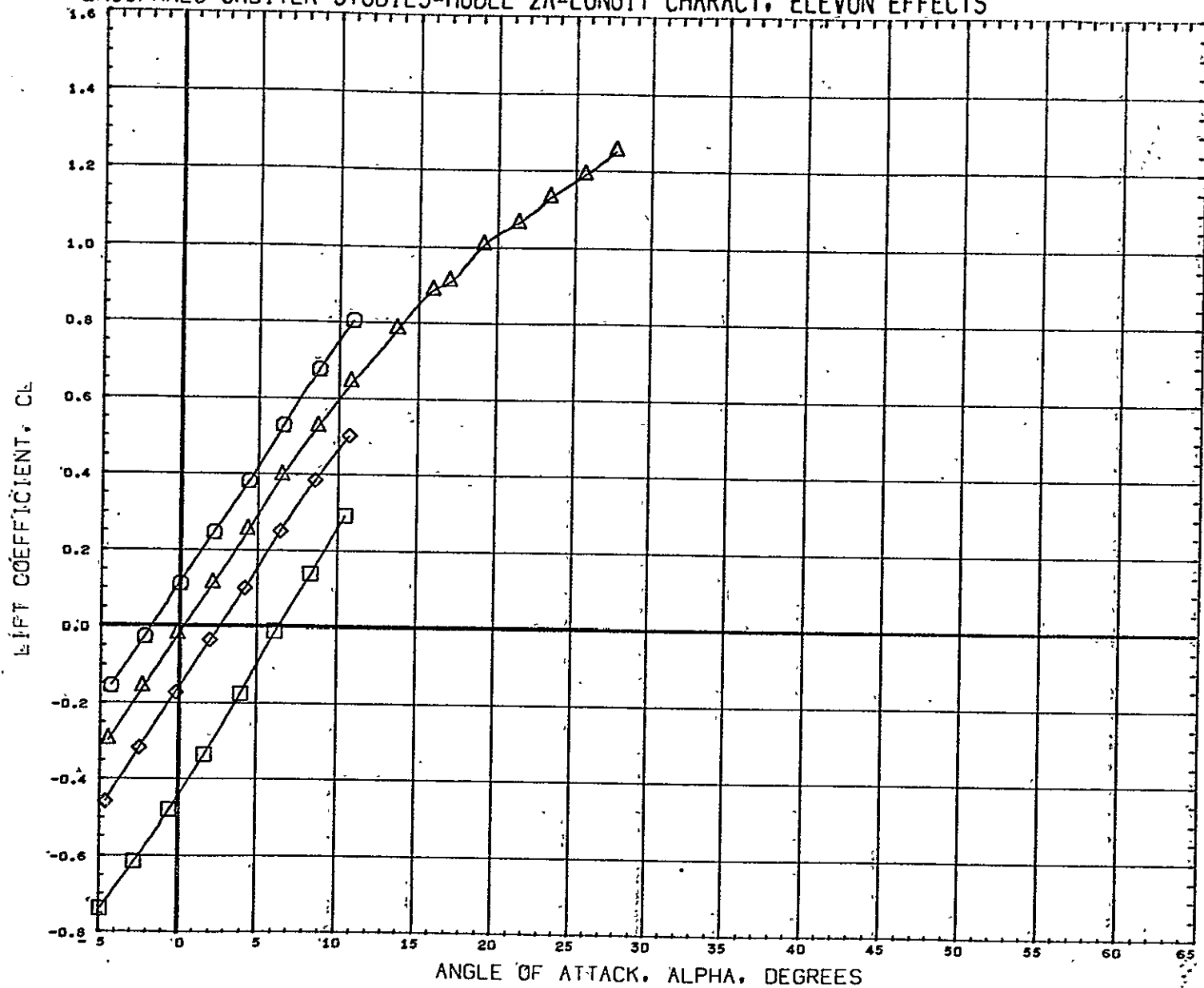
# LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, ELEVON EFFECTS



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	STING	BETA	REFERENCE INFORMATION
(D4102S)	MSFC TWT 498 MSFC/LMSC ORBITER	10.000	0.000	4.000	0.000	SREF 9.0250 SQ. IN
(D41011)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D4103S)	MSFC TWT 498 MSFC/LMSC ORBITER	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D4104S)	MSFC TWT 498 MSFC/LMSC ORBITER	-20.000	0.000	4.000	0.000	XMRF 3.9950 INCHES
(D4105S)	MSFC TWT 498 MSFC/LMSC ORBITER	-30.000	0.000	4.000	0.000	YMRF 0.0000 INCHES
						ZMRF 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.898

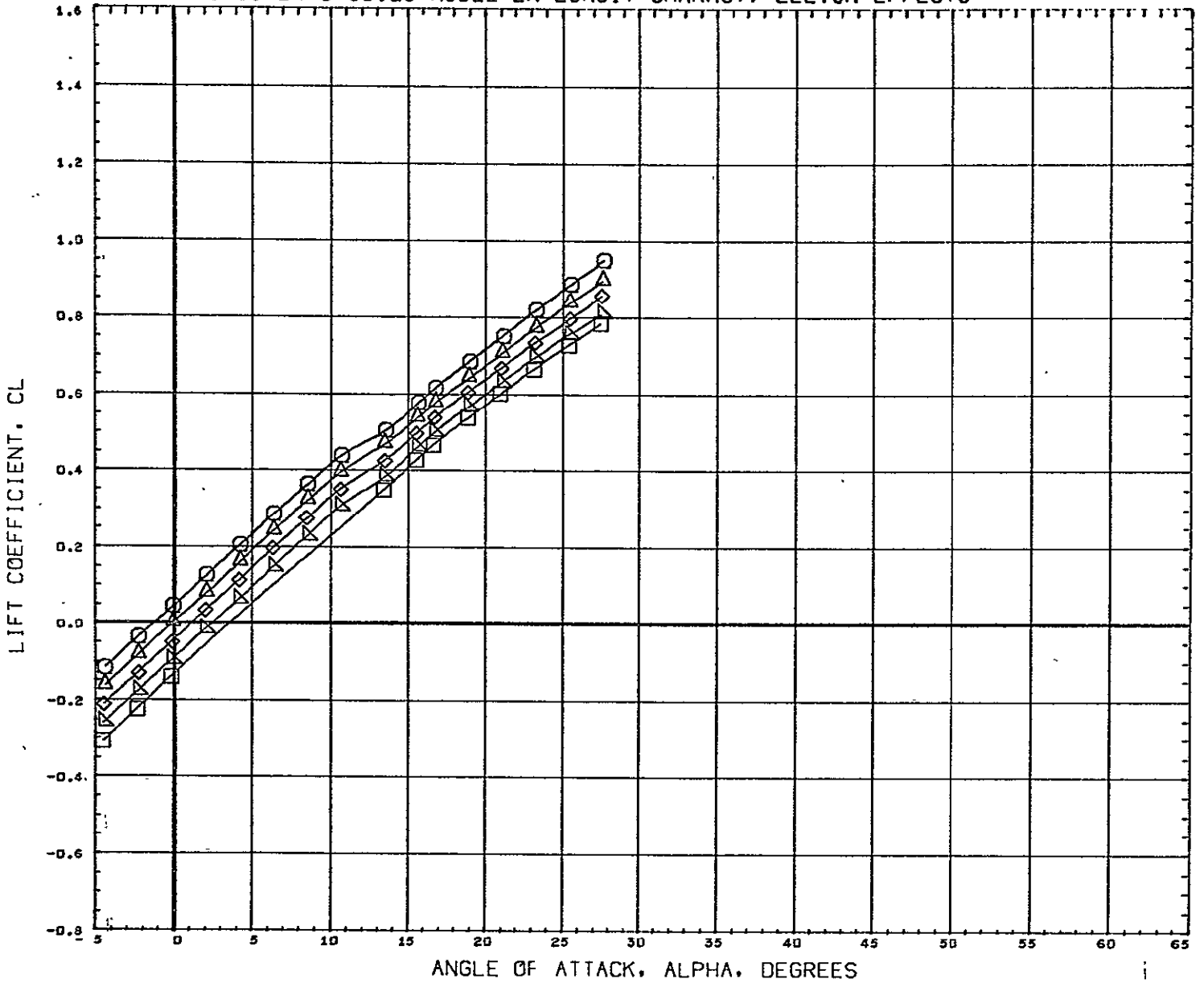
# LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, ELEVON EFFECTS



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEV3	RUDER2	STING	BETA	REFERENCE INFORMATION
(D41029)	MSFC TWT 498 MSFC/LMSC ORBITER	10.000	0.000	4.000	0.000	SREF 9.0250 SQ. IN
(D41011)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D41038)	MSFC TWT 498 MSFC/LMSC ORBITER	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D41045)	MSFC TWT 498 MSFC/LMSC ORBITER	-20.000	0.000	4.000	0.000	XMRP 3.9950 INCHES
(D41055)	DATA NOT AVAILABLE FOR ALL CONDITIONS	-30.000	0.000	4.000	0.000	YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.100

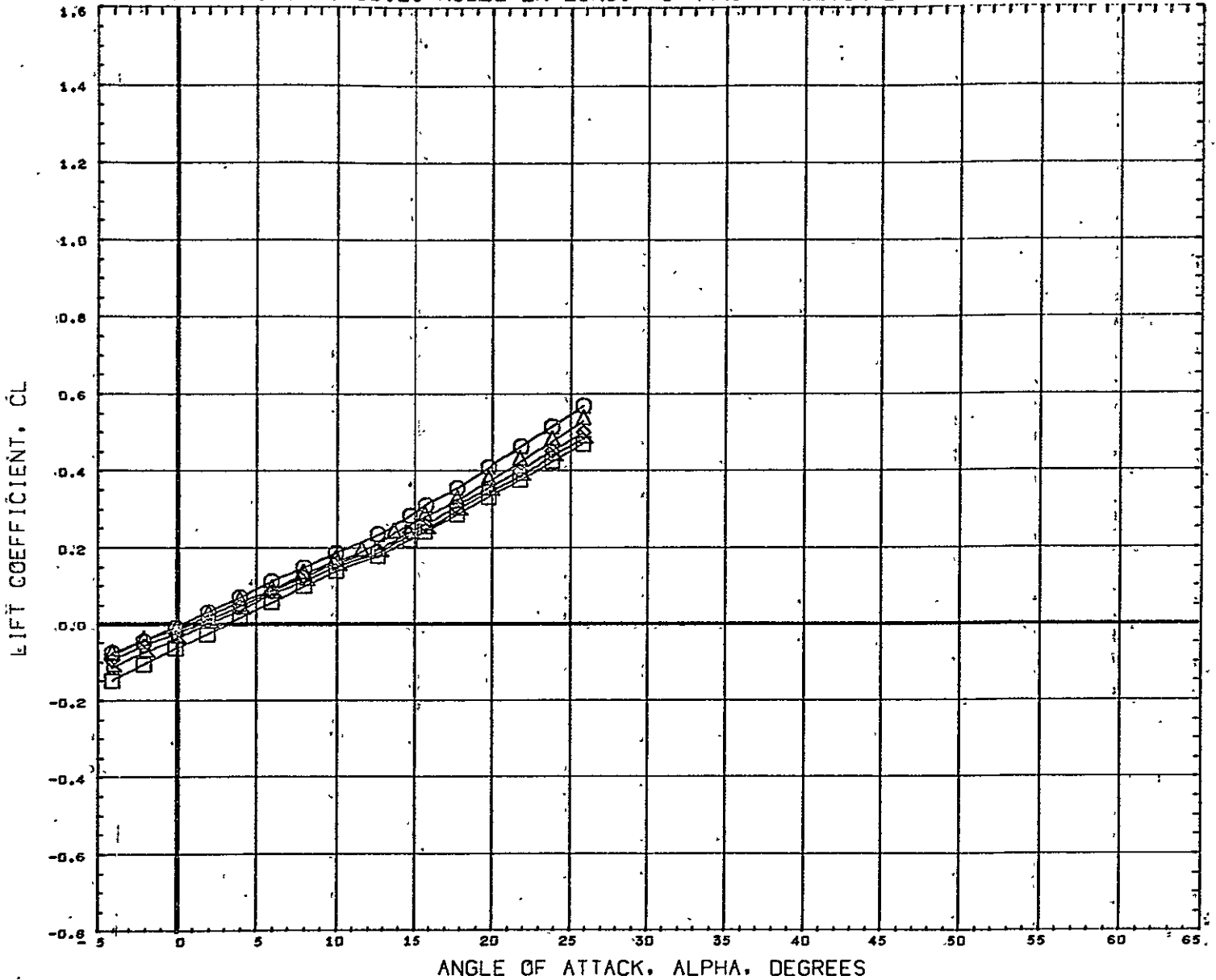
# LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, ELEVON EFFECTS



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVNS	RUDER2	STING	BETA	REFERENCE INFORMATION
(D41D2S)	MSFC TWT 498 MSFC/LMSC ORBITER	10.000	0.000	4.000	0.000	SREF 9.0250 SQ. IN
(D41D11)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D41D3S)	MSFC TWT 498 MSFC/LMSC ORBITER	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D41D4S)	MSFC TWT 498 MSFC/LMSC ORBITER	-20.000	0.000	4.000	0.000	XNRP 3.9950 INCHES
(D41D5S)	MSFC TWT 498 MSFC/LMSC ORBITER	-30.000	0.000	4.000	0.000	YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.958

# LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, ELEVON EFFECTS

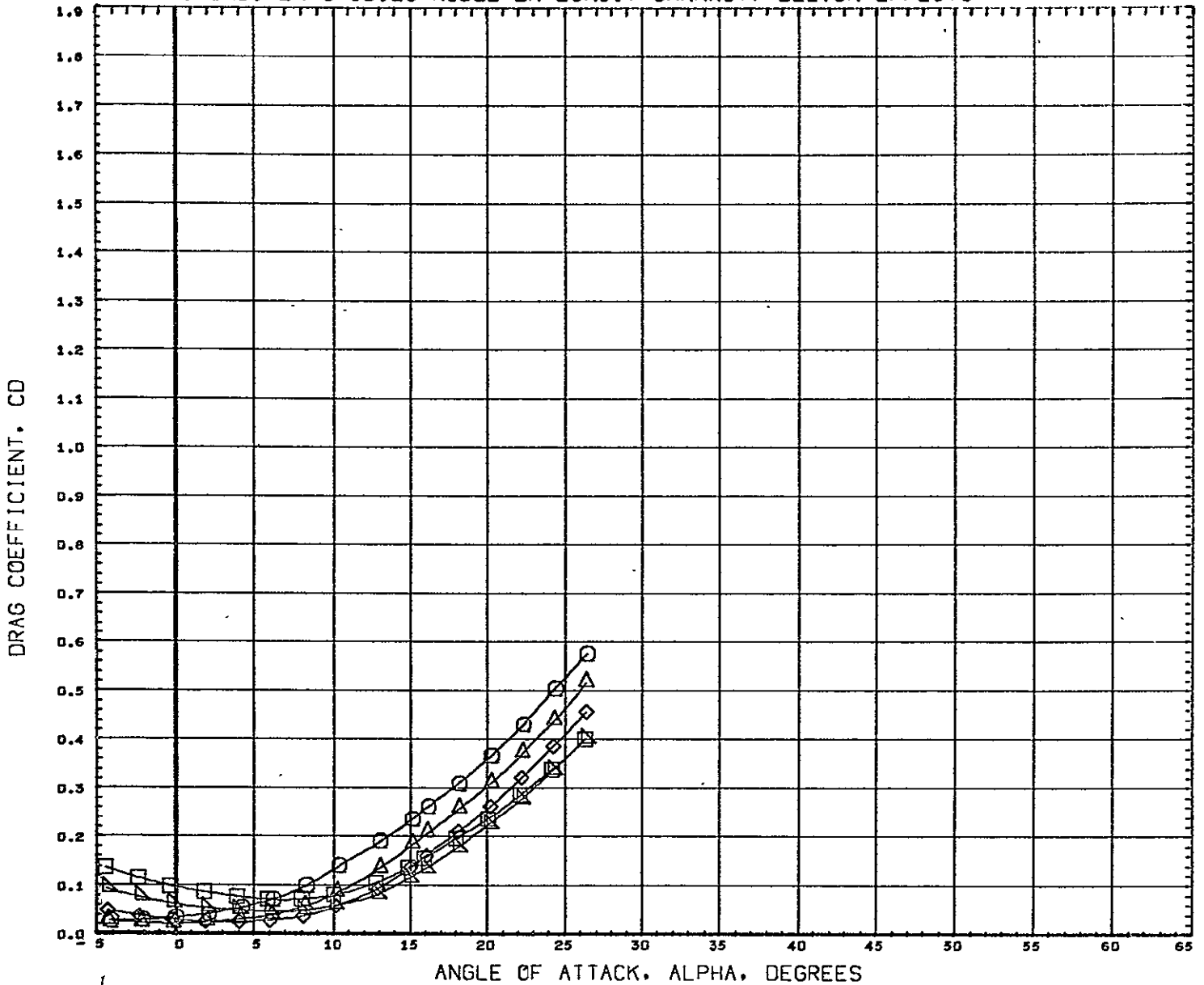


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVNS	RUDER2	STING	BETA	REFERENCE INFORMATION
(D41025)	MSFC TWT 498 MSFC/LHSC ORBITER	10.000	0.000	4.000	0.000	SREF 9.0250 SQ. IN
(D41011)	MSFC TWT 498 MSFC/LHSC ORBITER	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D41035)	MSFC TWT 498 MSFC/LHSC ORBITER	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D41045)	MSFC TWT 498 MSFC/LHSC ORBITER	-20.000	0.000	4.000	0.000	XMRP 3.9950 INCHES
(D41055)	MSFC TWT 498 MSFC/LHSC ORBITER	-30.000	0.000	4.000	0.000	YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 4.960



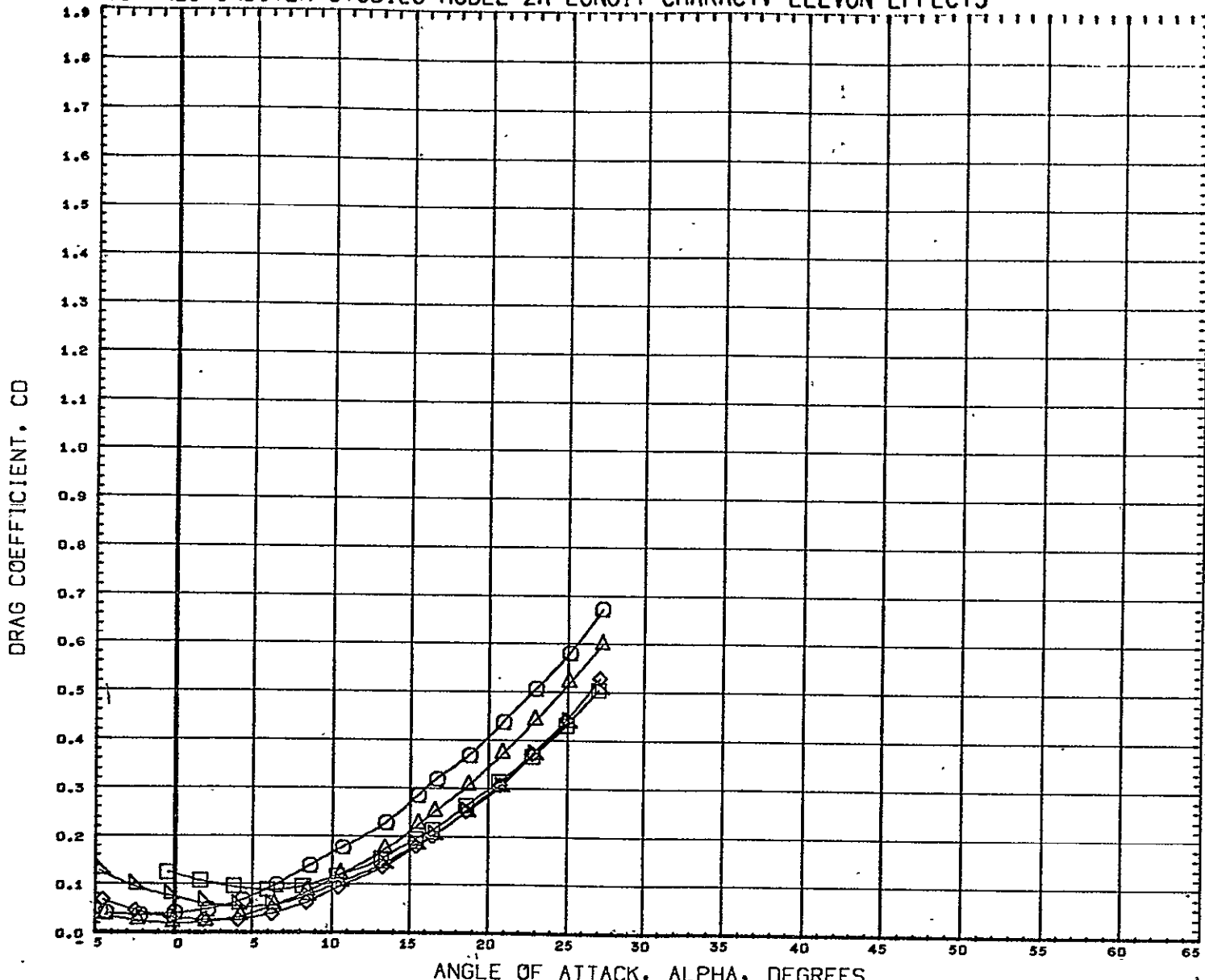
# LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, ELEVON EFFECTS



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVNS	RUDER2	STING	BETA	REFERENCE INFORMATION
(D4102S)	○	MSFC TWT 498 MSFC/LMSC ORBITER	10.000	0.000	4.000	0.000	SREF 9.0250 SQ. IN
(D41011)	△	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D4103S)	◇	MSFC TWT 498 MSFC/LMSC ORBITER	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D4104S)	□	MSFC TWT 498 MSFC/LMSC ORBITER	-20.000	0.000	4.000	0.000	XMRP 3.9950 INCHES
(D4105S)	▽	MSFC TWT 498 MSFC/LMSC ORBITER	-30.000	0.000	4.000	0.000	YMRP 0.0000 INCHES
							ZMRP 0.1350 INCHES
							SCALE 0.0033 SCALE

MACH 0.598

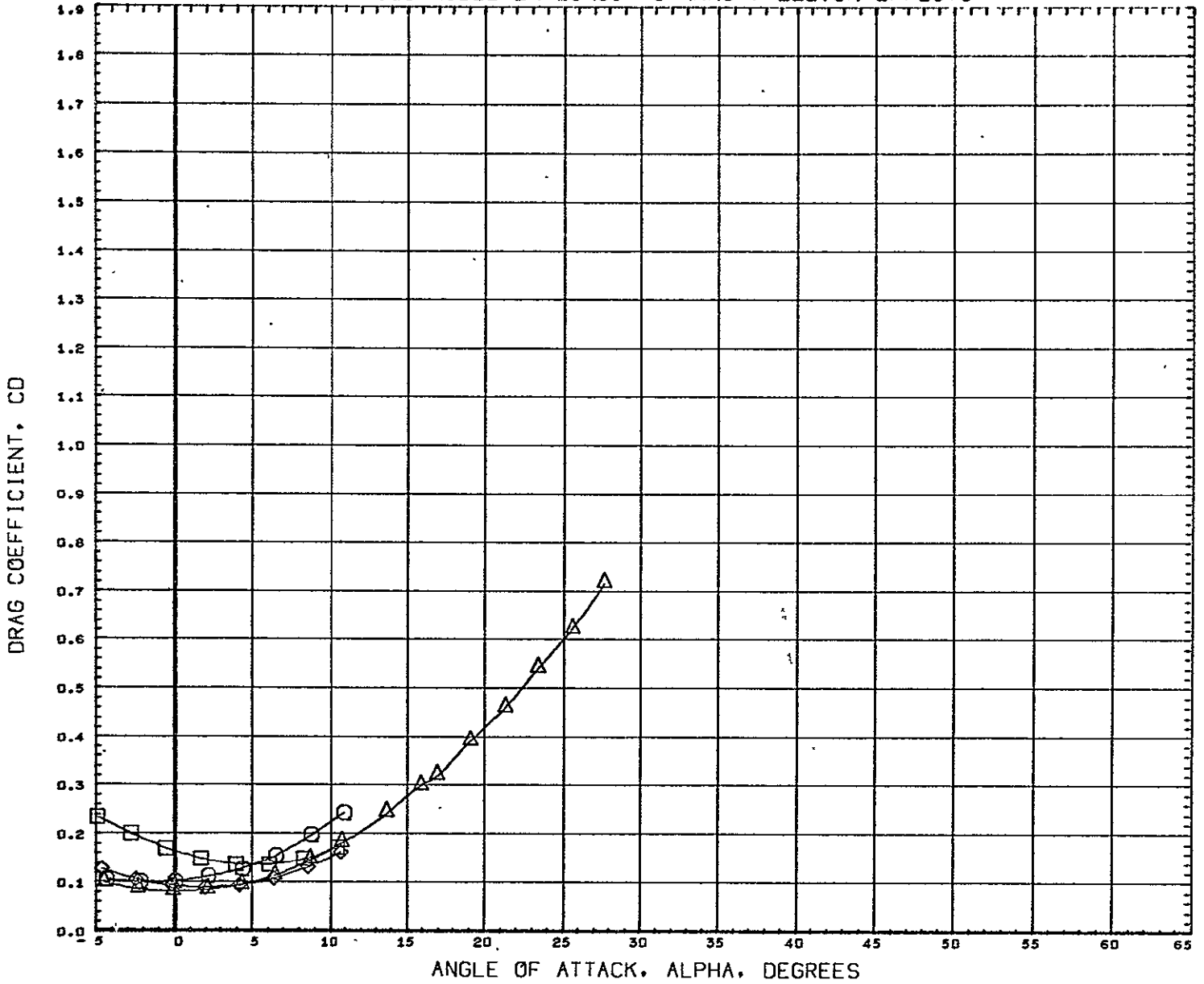
# LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, ELEVON EFFECTS



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVNS	RUDER2	STING	BETA	REFERENCE INFORMATION
(D4102S)	MSFC TWT 498 MSFC/LMSC ORBITER	10.000	0.000	4.000	0.000	SREF 9.0250 SQ. IN
(D41011)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D4103S)	MSFC TWT 498 MSFC/LMSC ORBITER	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D4104S)	MSFC TWT 498 MSFC/LMSC ORBITER	-20.000	0.000	4.000	0.000	XMRP 3.9950 INCHES
(D4105S)	MSFC TWT 498 MSFC/LMSC ORBITER	-30.000	0.000	4.000	0.000	YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.898

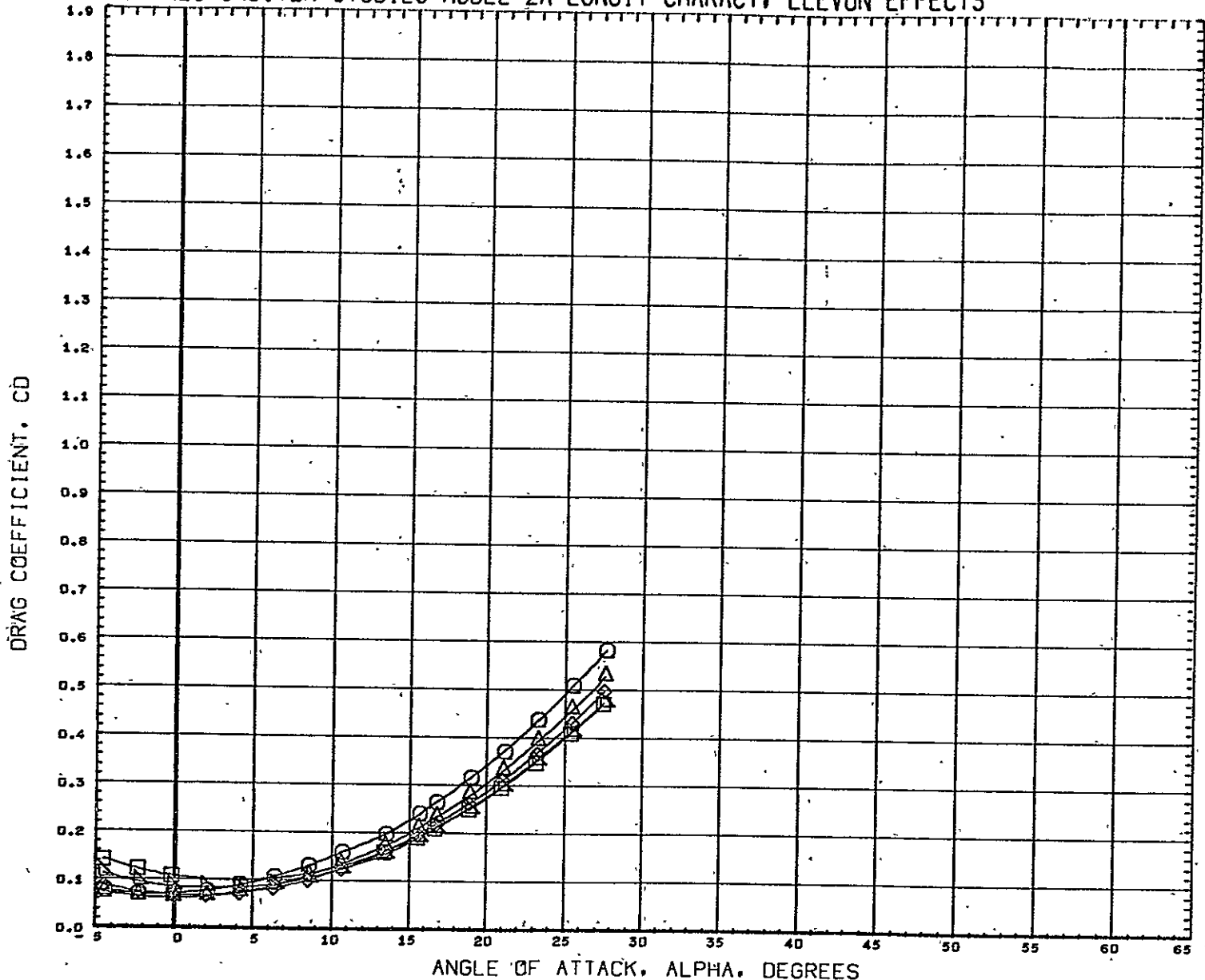
# LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, ELEVON EFFECTS



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVNS	RUDER2	STING	BETA	REFERENCE INFORMATION
(D41025)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	10.000	0.000	4.000	0.000	SREF 9.0250 SQ. IN
(D41011)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D41035)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D41045)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	-20.000	0.000	4.000	0.000	XMRP 3.9950 INCHES
(D41055)	DATA NOT AVAILABLE FOR ALL CONDITIONS	-30.000	0.000	4.000	0.000	YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.100

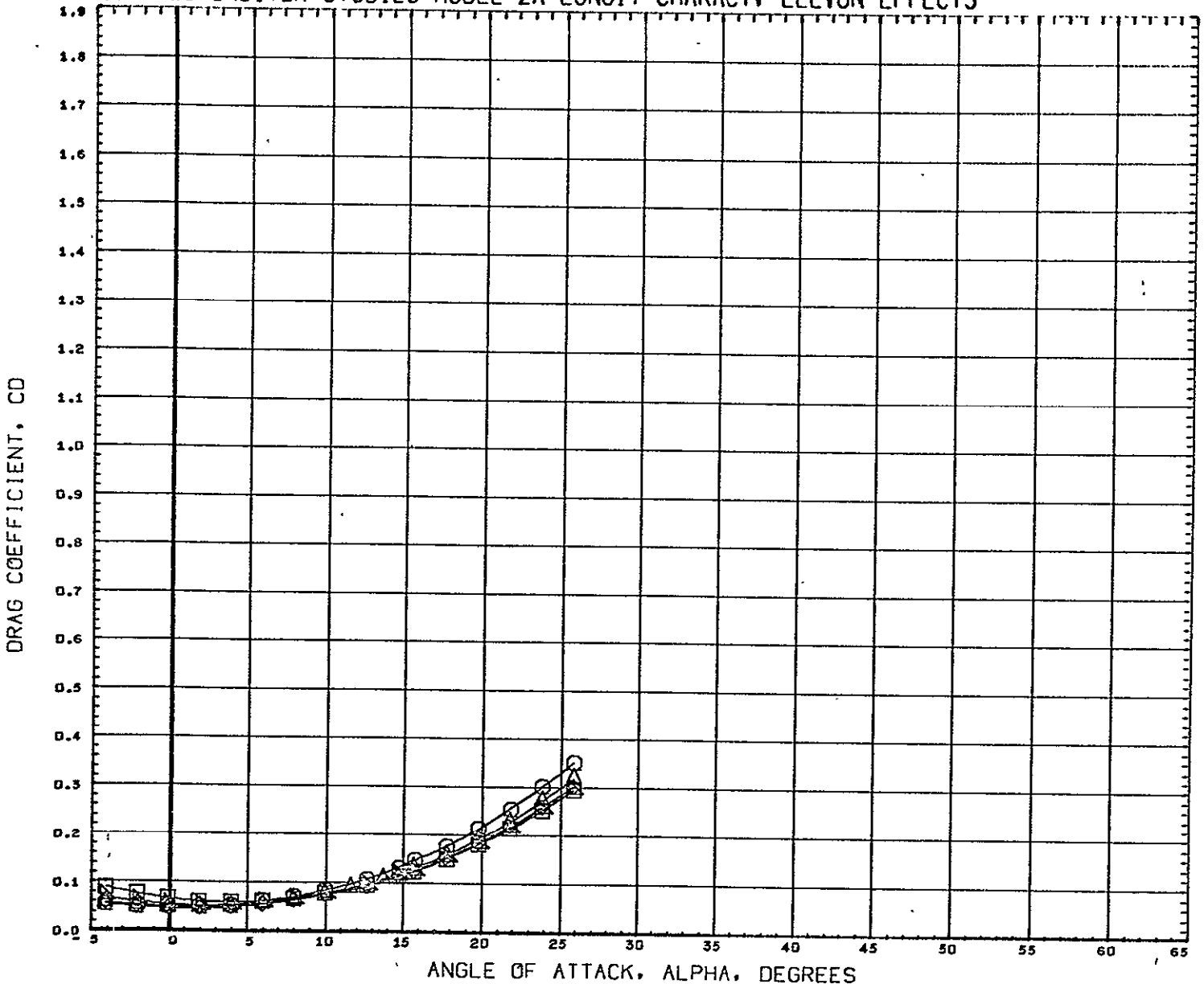
# LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, ELEVON EFFECTS



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVNS	RUDER2	STING	BETA	REFERENCE INFORMATION
(D4102S)	MSFC TWT 498 MSFC/LMSC ORBITER	10.000	0.000	4.000	0.000	SREF 9.0250 SQ. IN
(D41011)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D4103S)	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	-10.000	0.000	4.000	BREF 6.1420 INCHES
(D4104S)	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	-20.000	0.000	4.000	XHRP 3.9950 INCHES
(D4105S)	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	-30.000	0.000	4.000	YHRP 0.0000 INCHES
						ZHRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.958

# LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, ELEVON EFFECTS

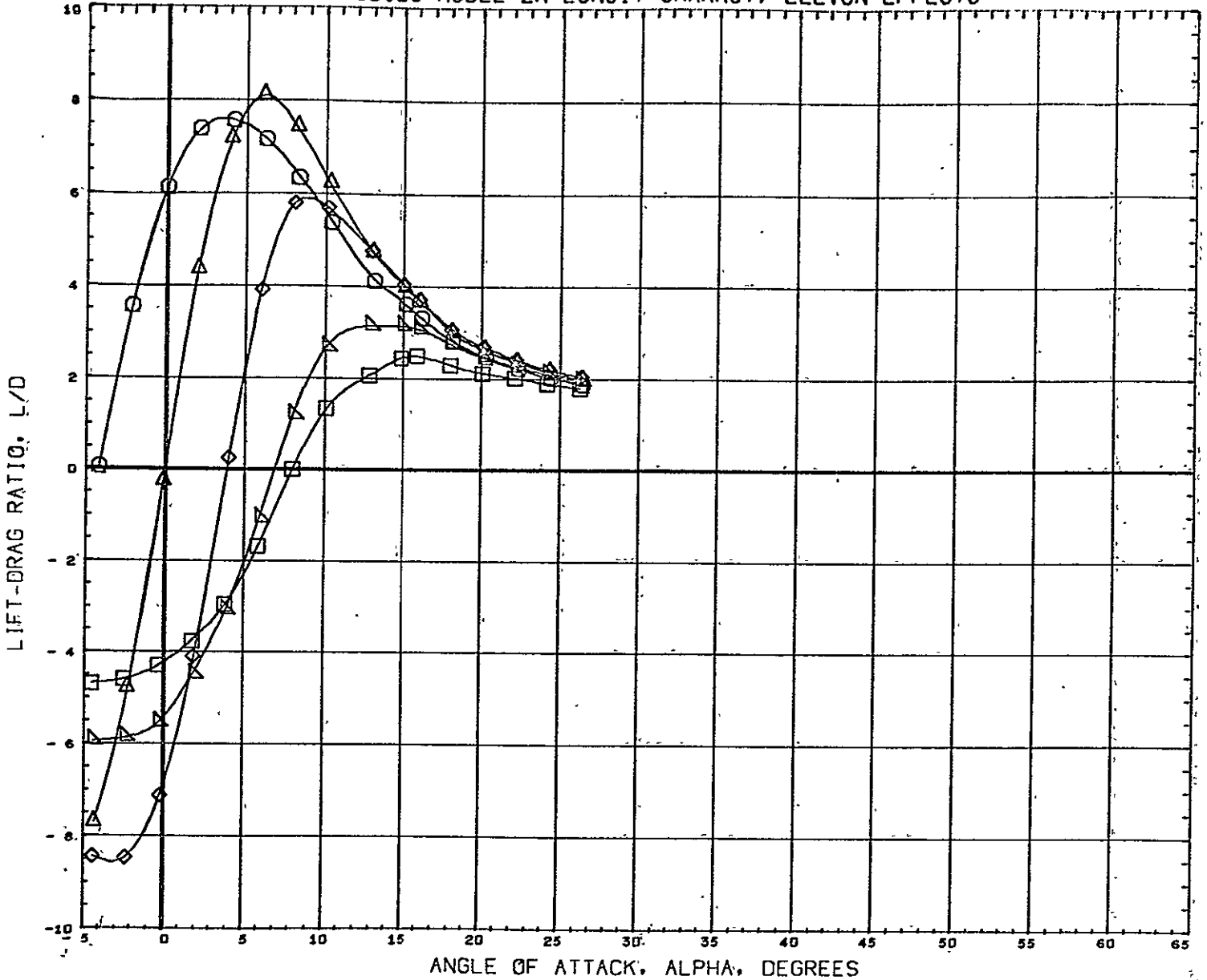


ANGLE OF ATTACK, ALPHA, DEGREES

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVNS	RUDER2	STING	BETA	REFERENCE INFORMATION
(D4102S)	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	10.000	0.000	4.000	0.000 SREF 9.0250 SQ. IN
(D41011)	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	0.000	0.000	4.000	0.000 LREF 6.1420 INCHES
(D4103S)	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	-10.000	0.000	4.000	0.000 BREF 6.1420 INCHES
(D4104S)	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	-20.000	0.000	4.000	0.000 XMRP 3.9950 INCHES
(D4155S)	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	-30.000	0.000	4.000	0.000 YMRP 0.0000 INCHES
						ZMRP - 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 4.960

# LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, ELEVON EFFECTS

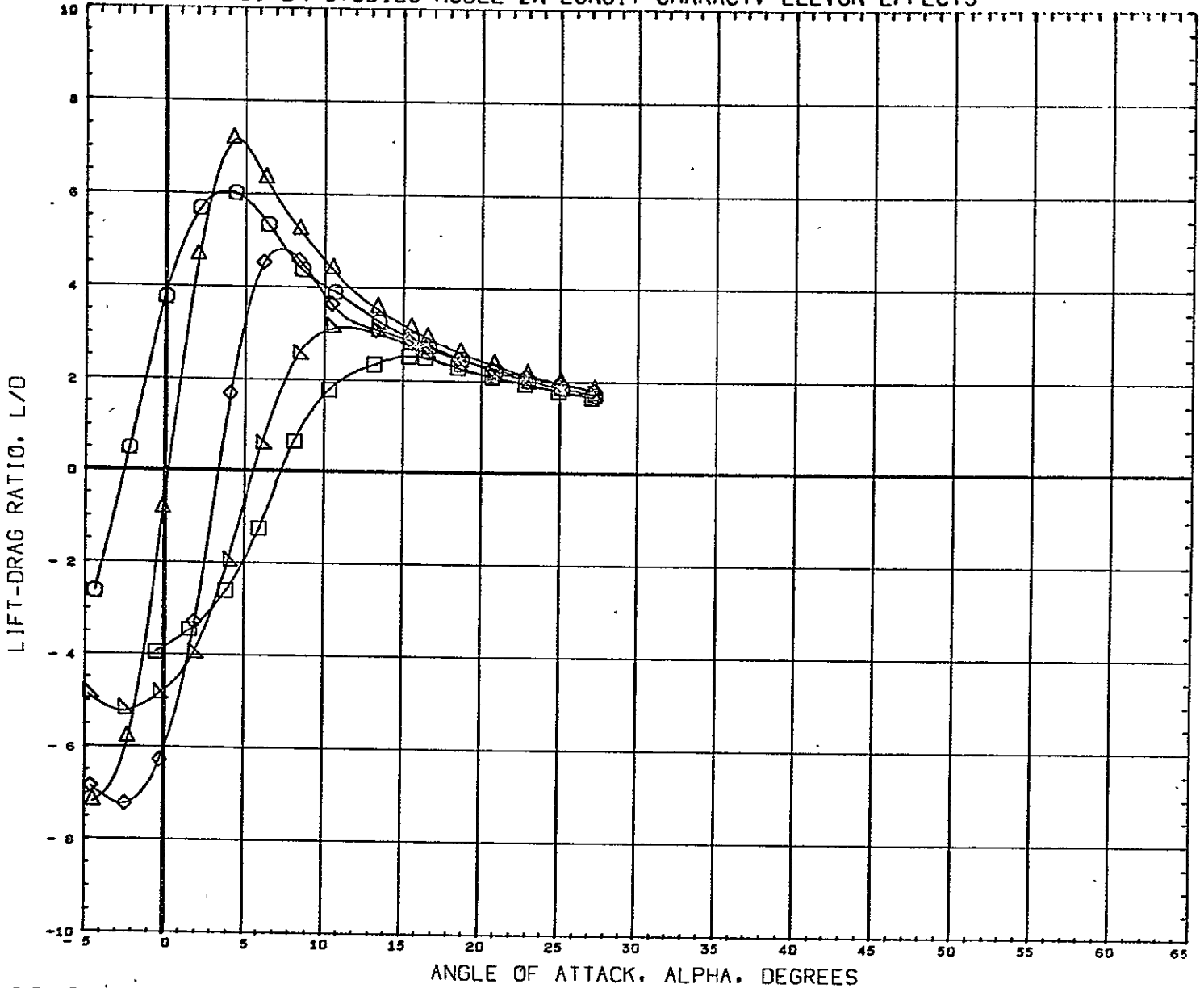


ANGLE OF ATTACK, ALPHA, DEGREES

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVNS	RUDER2	STING	BETA	REFERENCE INFORMATION
(D4102S)	MSFC TWT 498 MSFC/LMSC ORBITER	10.000	0.000	4.000	0.000	SREF 9.0250 SQ. IN
(D41011)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D4103S)	MSFC TWT 498 MSFC/LMSC ORBITER	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D4104S)	MSFC TWT 498 MSFC/LMSC ORBITER	-20.000	0.000	4.000	0.000	XMRP 3.9950 INCHES
(D4105S)	MSFC TWT 498 MSFC/LMSC ORBITER	-30.000	0.000	4.000	0.000	YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.598

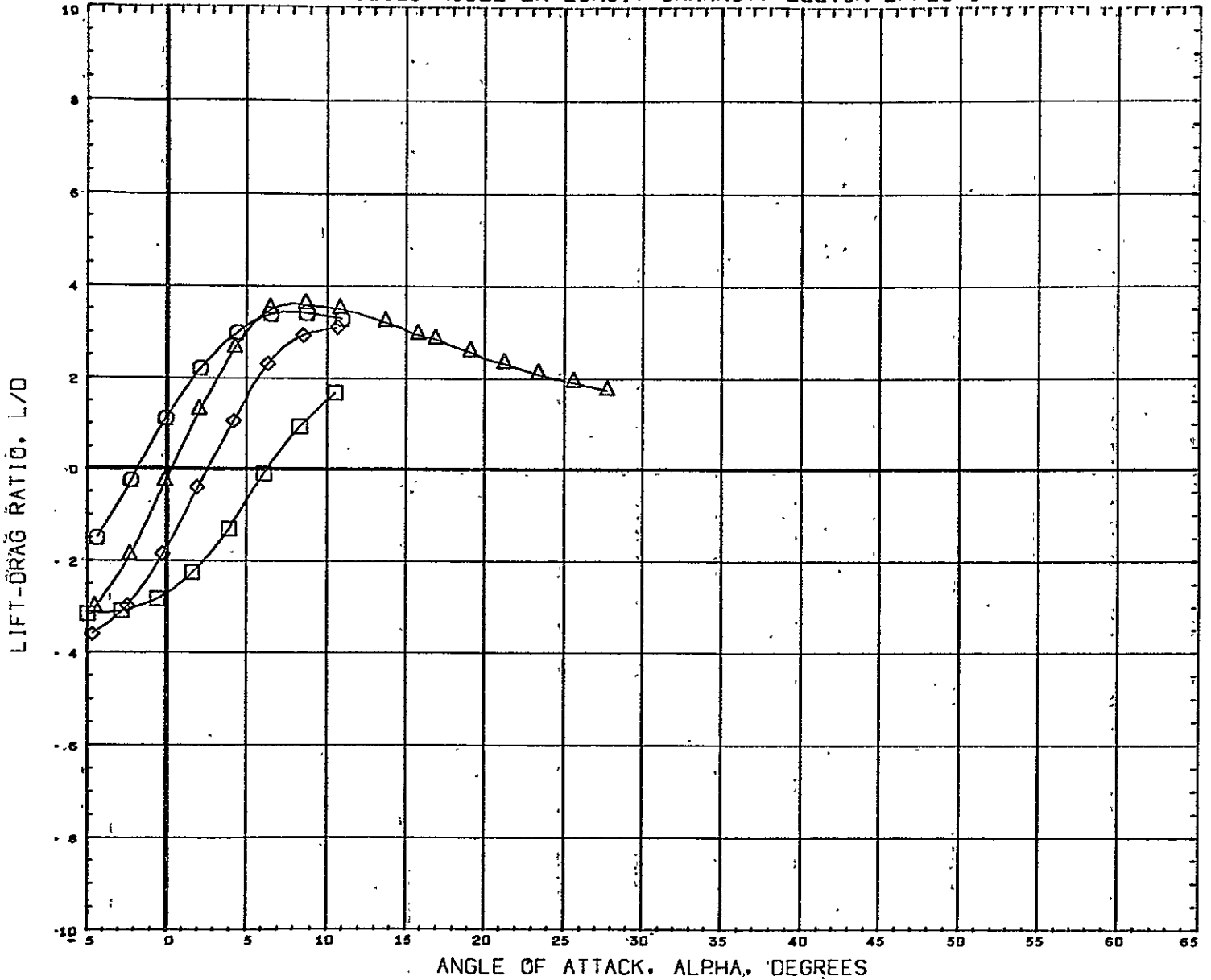
# LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, ELEVON EFFECTS



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVNS	RUDER2	STING	BETA	REFERENCE INFORMATION
(D41025)	MSFC TWT 498 MSFC/LMSC ORBITER	10.000	0.000	4.000	0.000	SREF 9.0250 SQ. IN
(D41011)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D41039)	MSFC TWT 498 MSFC/LMSC ORBITER	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D41049)	MSFC TWT 498 MSFC/LMSC ORBITER	-20.000	0.000	4.000	0.000	XMRP 3.9950 INCHES
(D41055)	MSFC TWT 498 MSFC/LMSC ORBITER	-30.000	0.000	4.000	0.000	YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.898

# LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, ELEVON EFFECTS

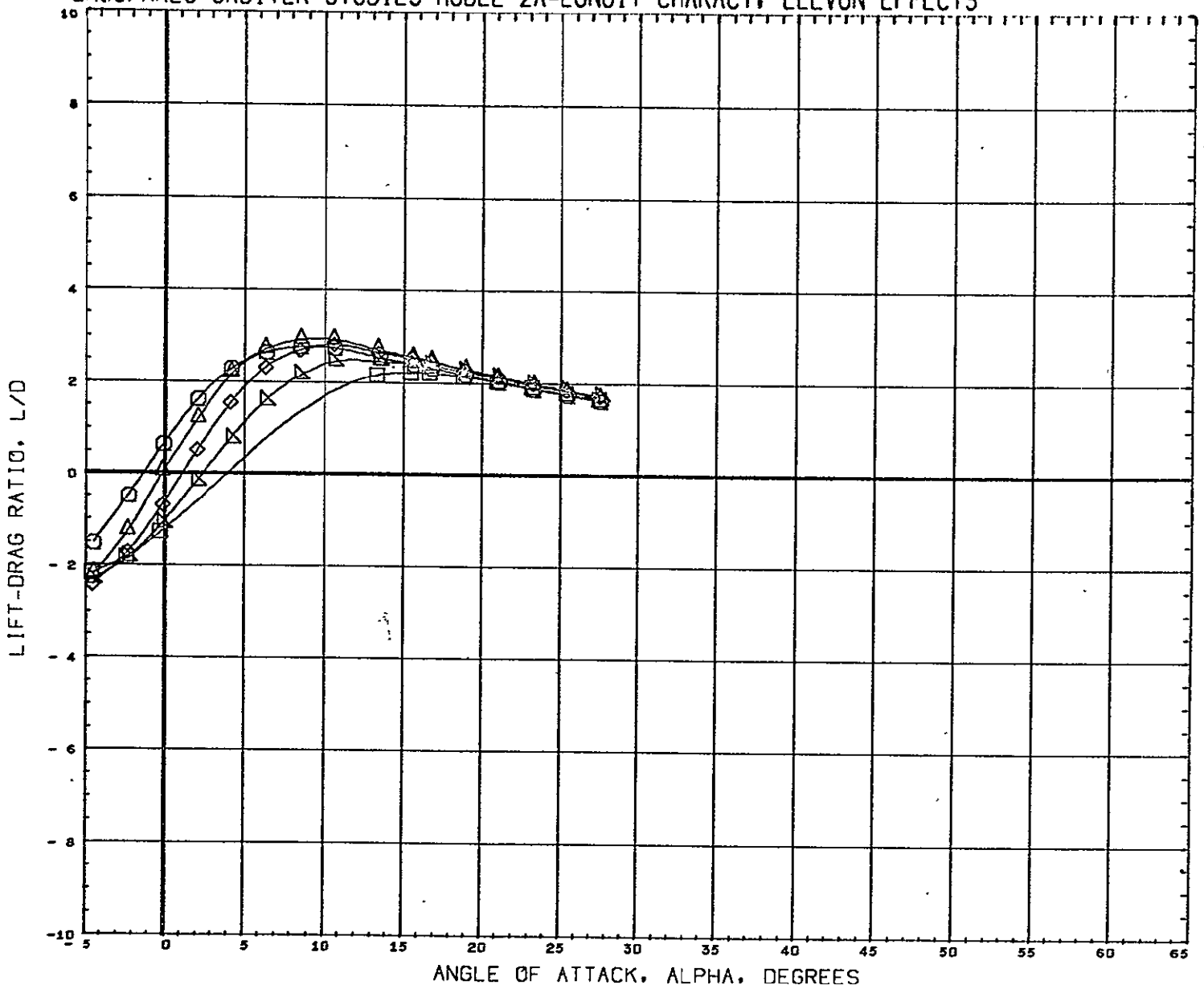


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVNS	RUDER2	STING	BETA	REFERENCE INFORMATION
(D4102S)	MSFC TWT 498 MSFC/LMSC ORBITER	10.000	0.000	4.000	0.000	SREF 9.0250 SQ. IN.
(D41011)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D4103S)	MSFC TWT 498 MSFC/LMSC ORBITER	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D4104S)	MSFC TWT 498 MSFC/LMSC ORBITER	-20.000	0.000	4.000	0.000	XHRP 3.9950 INCHES
(D4105S)	DATA NOT AVAILABLE FOR ALL CONDITIONS	-30.000	0.000	4.000	0.000	YHRP 0.0000 INCHES
						ZHRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.100



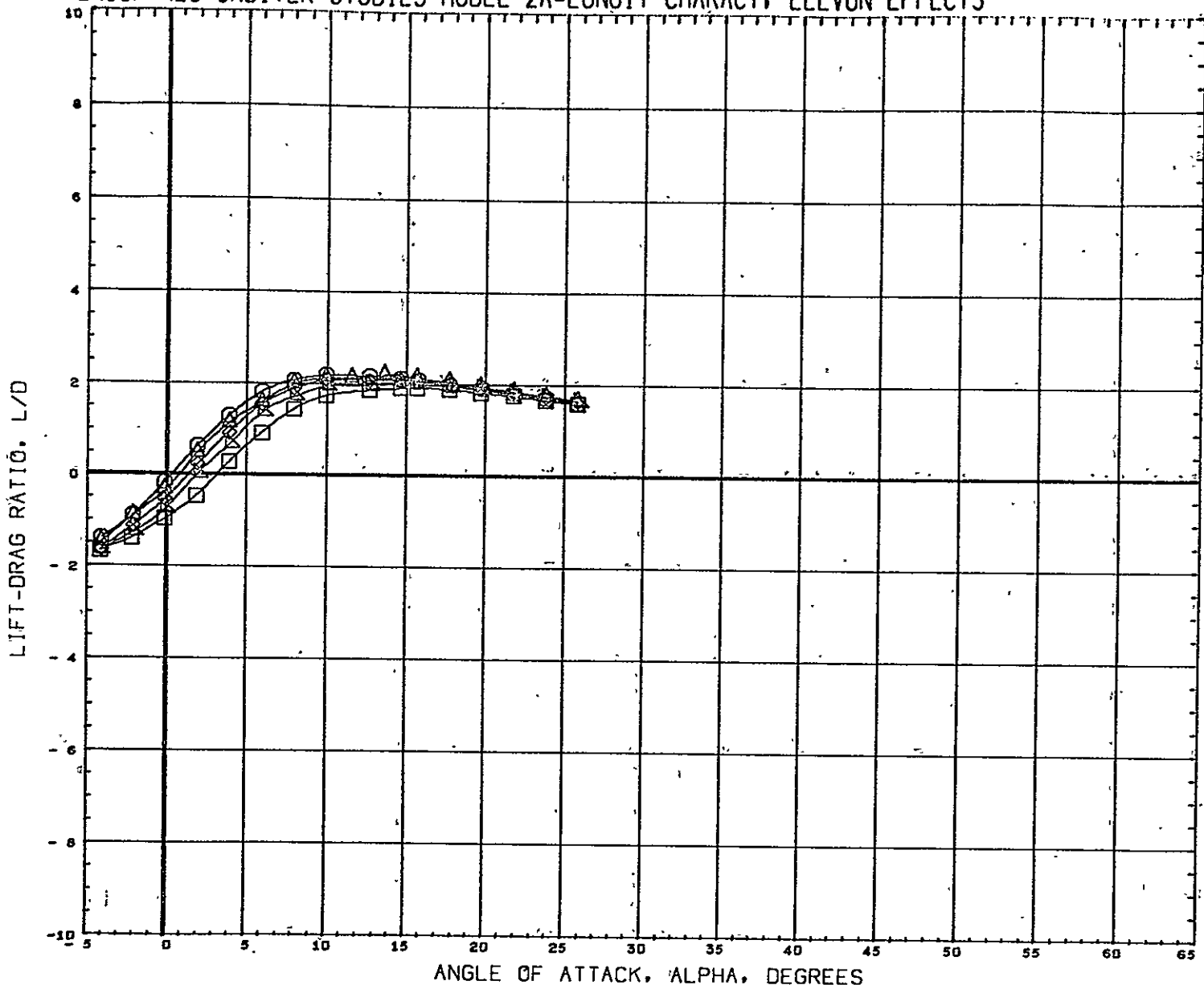
# LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, ELEVON EFFECTS



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVNS	RUDER2	STING	BETA	REFERENCE INFORMATION
(D41025)	MSFC TWT 498 MSFC/LMSC ORBITER	10.000	0.000	4.000	0.000	SREF 9.0250 SQ. IN
(D41011)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D41035)	MSFC TWT 498 MSFC/LMSC ORBITER	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D41045)	MSFC TWT 498 MSFC/LMSC ORBITER	-20.000	0.000	4.000	0.000	XMRP 3.9950 INCHES
(D41055)	MSFC TWT 498 MSFC/LMSC ORBITER	-30.000	0.000	4.000	0.000	YMRP 0.0000 INCHES
						ZMRP - 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.958

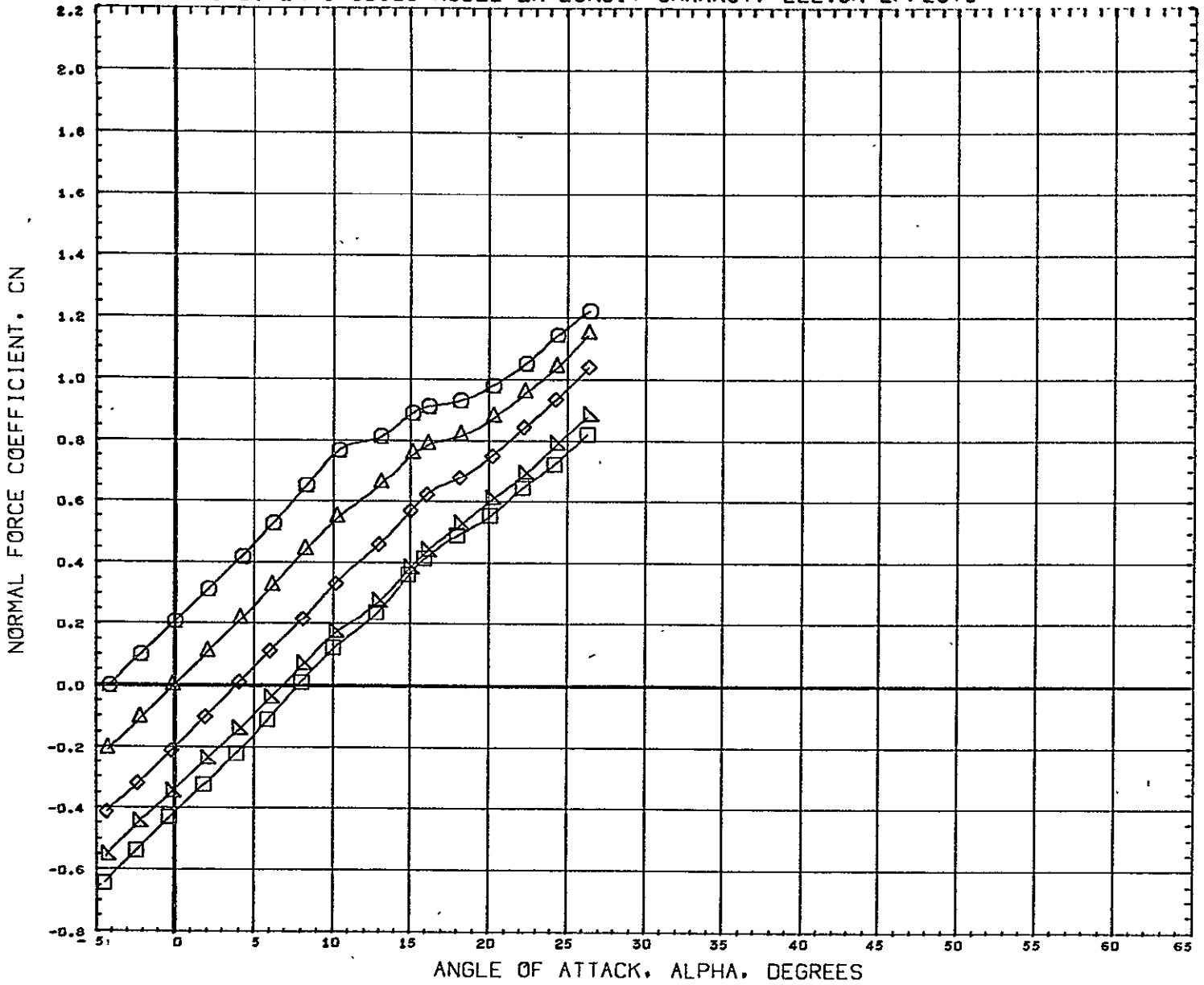
# LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, ELEVON EFFECTS



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVNS	RUDER2	STING	BETA	REFERENCE INFORMATION
(D4102S)	MSFC TWT 498 MSFC/LMSC ORBITER	10.000	0.000	4.000	0.000	SREF 9.0250 SQ. IN
(D41011)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D4103S)	MSFC TWT 498 MSFC/LMSC ORBITER	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D4104S)	MSFC TWT 498 MSFC/LMSC ORBITER	-20.000	0.000	4.000	0.000	XHRF 3.9950 INCHES
(D4105S)	MSFC TWT 498 MSFC/LMSC ORBITER	-30.000	0.000	4.000	0.000	YHRF 0.0000 INCHES
						ZHRF 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 4.960

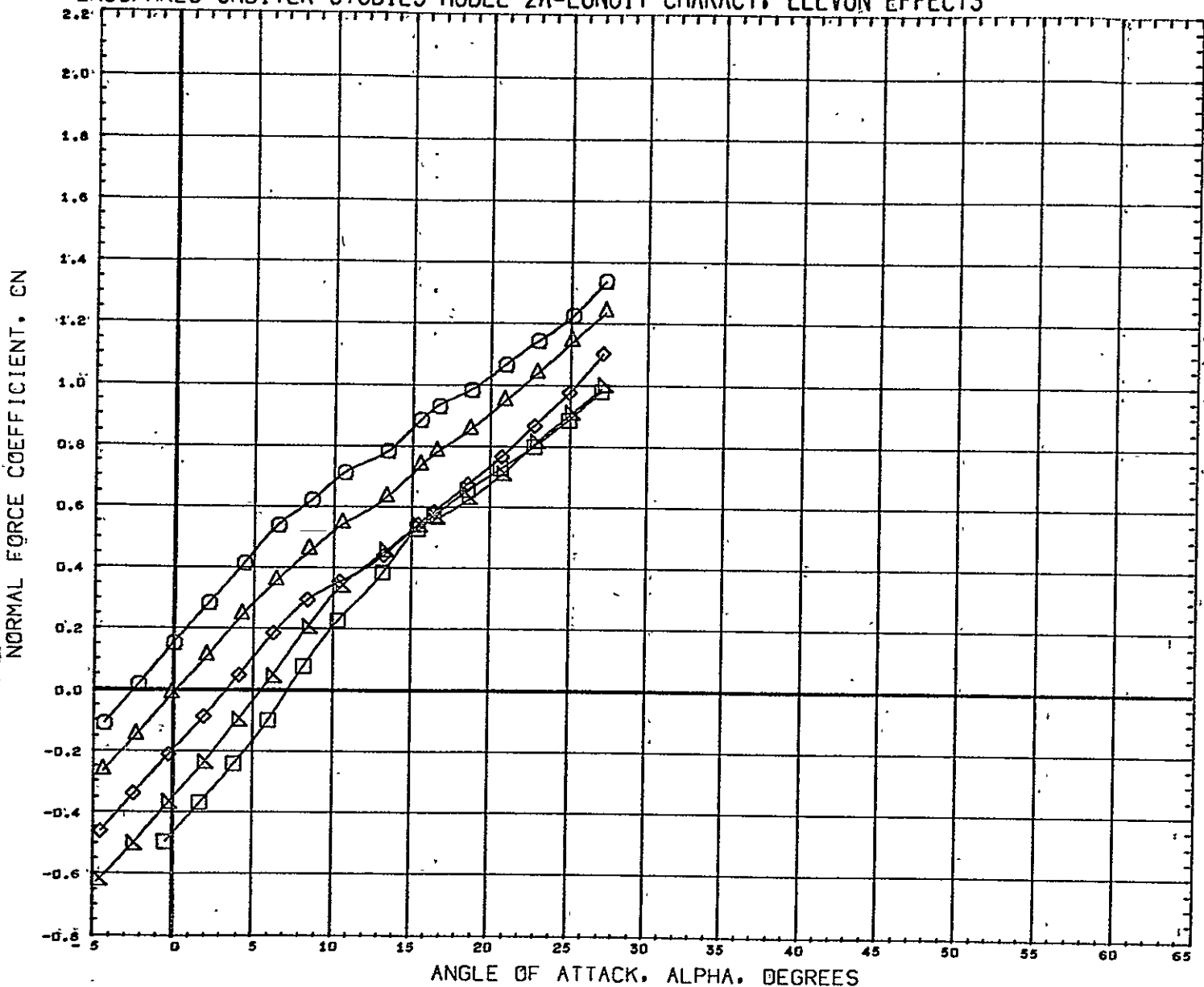
# LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, ELEVON EFFECTS



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	STING	BETA	REFERENCE INFORMATION
(D4102S)	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	10.000	0.000	4.000	0.000 SREF 9.0250 SQ. IN
(D41011)	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	0.000	0.000	4.000	0.000 LREF 6.1420 INCHES
(D4103S)	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	-10.000	0.000	4.000	0.000 BREF 6.1420 INCHES
(D4104S)	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	-20.000	0.000	4.000	0.000 XMRP 3.9950 INCHES
(D4105S)	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	-30.000	0.000	4.000	0.000 YMRP 0.0000 INCHES
						ZMRP - 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.598

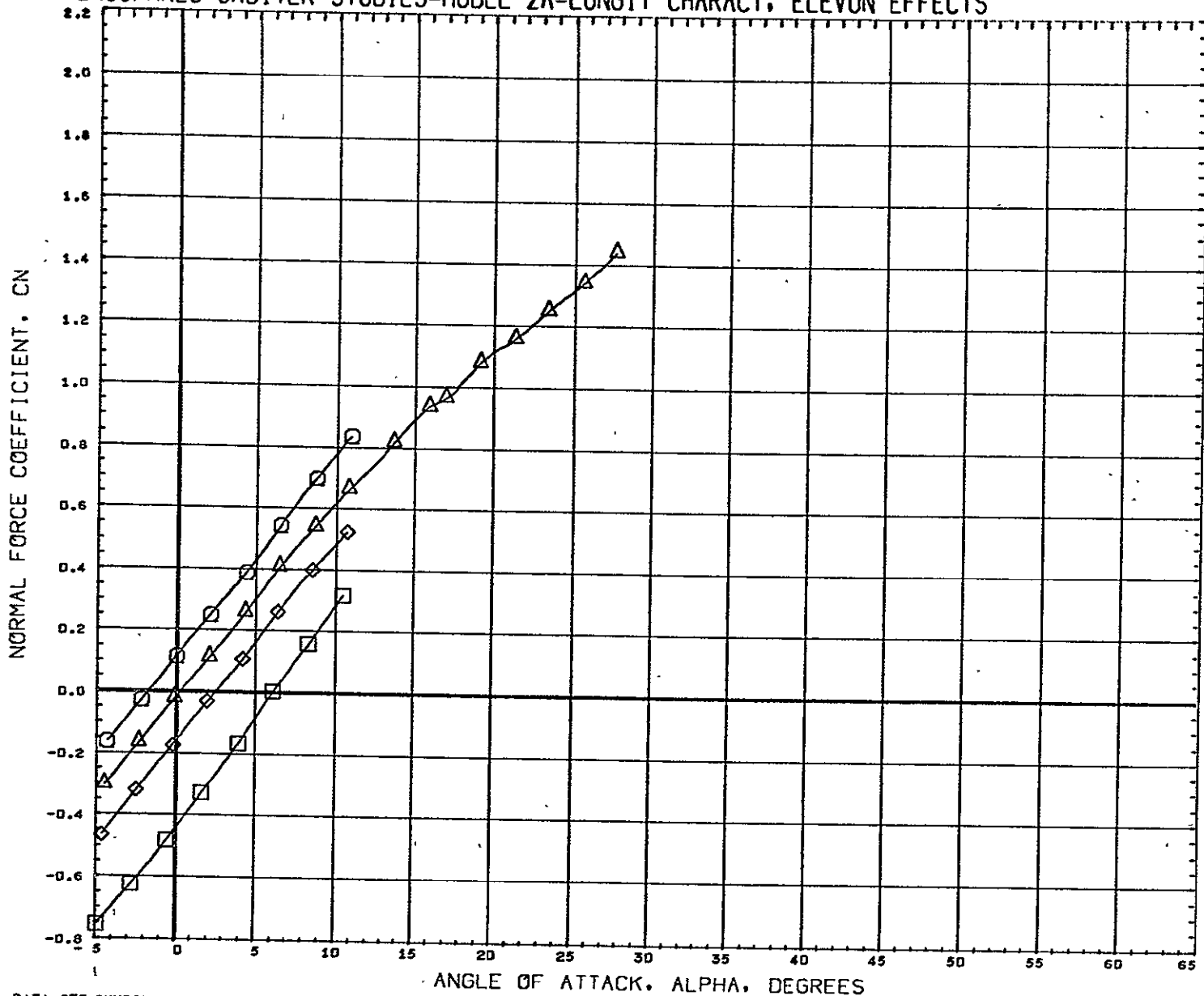
# LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, ELEVON EFFECTS



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVNS	RUDER2	STING	BETA	REFERENCE INFORMATION
(D4102S)	MSFC TWT 498 MSFC/LMSC ORBITER	10.000	0.000	4.000	0.000	SREF 9.0250 SQ. IN
(D41011)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D4103S)	MSFC TWT 498 MSFC/LMSC ORBITER	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D4104S)	MSFC TWT 498 MSFC/LMSC ORBITER	-20.000	0.000	4.000	0.000	XMRP 3.9950 INCHES
(D4105S)	MSFC TWT 498 MSFC/LMSC ORBITER	-30.000	0.000	4.000	0.000	YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.898

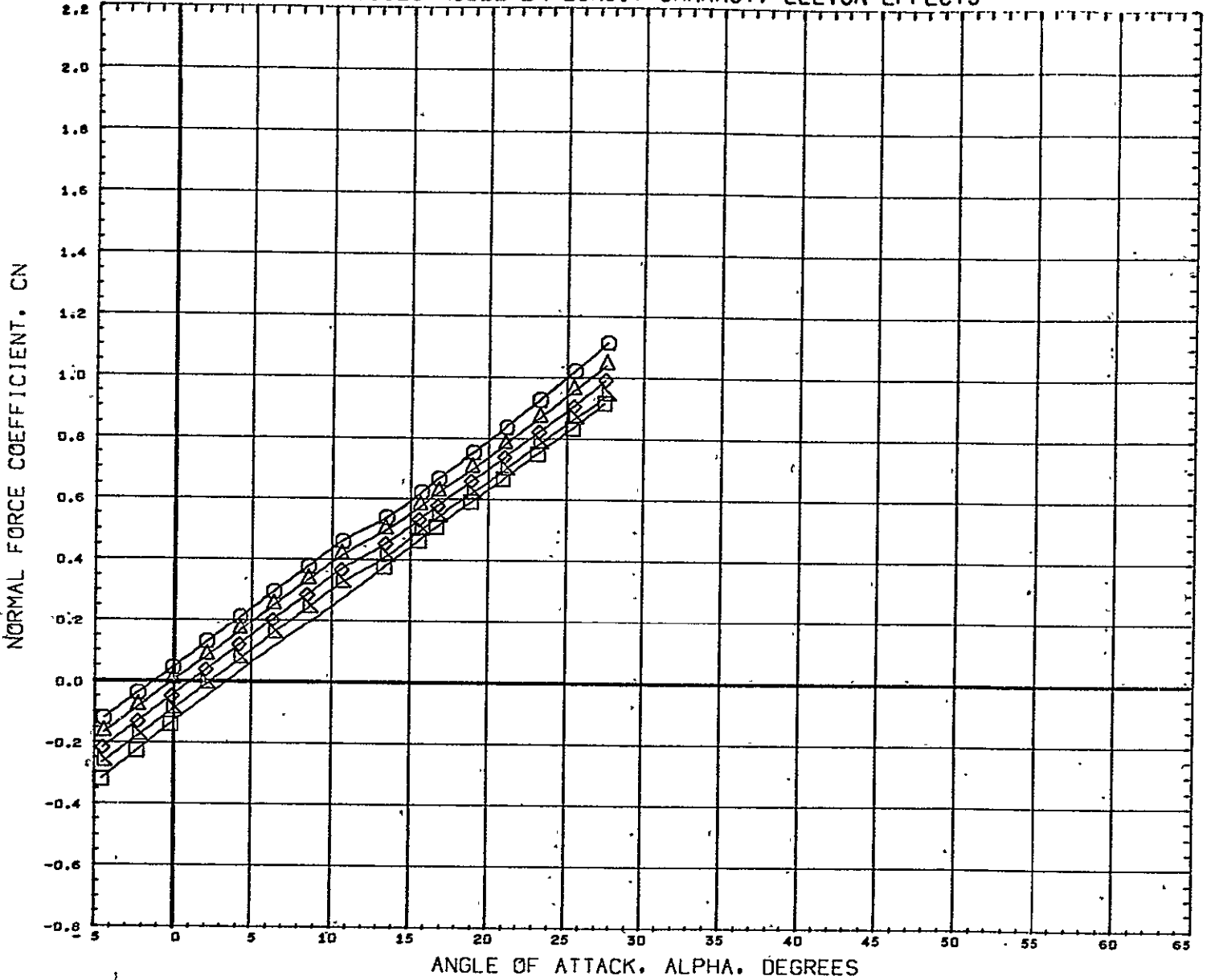
# LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, ELEVON EFFECTS



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVNS	RUDER2	STING	BETA	REFERENCE INFORMATION
(D4102S)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	10.000	0.000	4.000	0.000	SREF 9.0250 SQ. IN
(D41011)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D4103S)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D4104S)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	-20.000	0.000	4.000	0.000	XMRP 3.9950 INCHES
(D4105S)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	-30.000	0.000	4.000	0.000	YMRP 0.0000 INCHES
	DATA NOT AVAILABLE FOR ALL CONDITIONS					ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.100

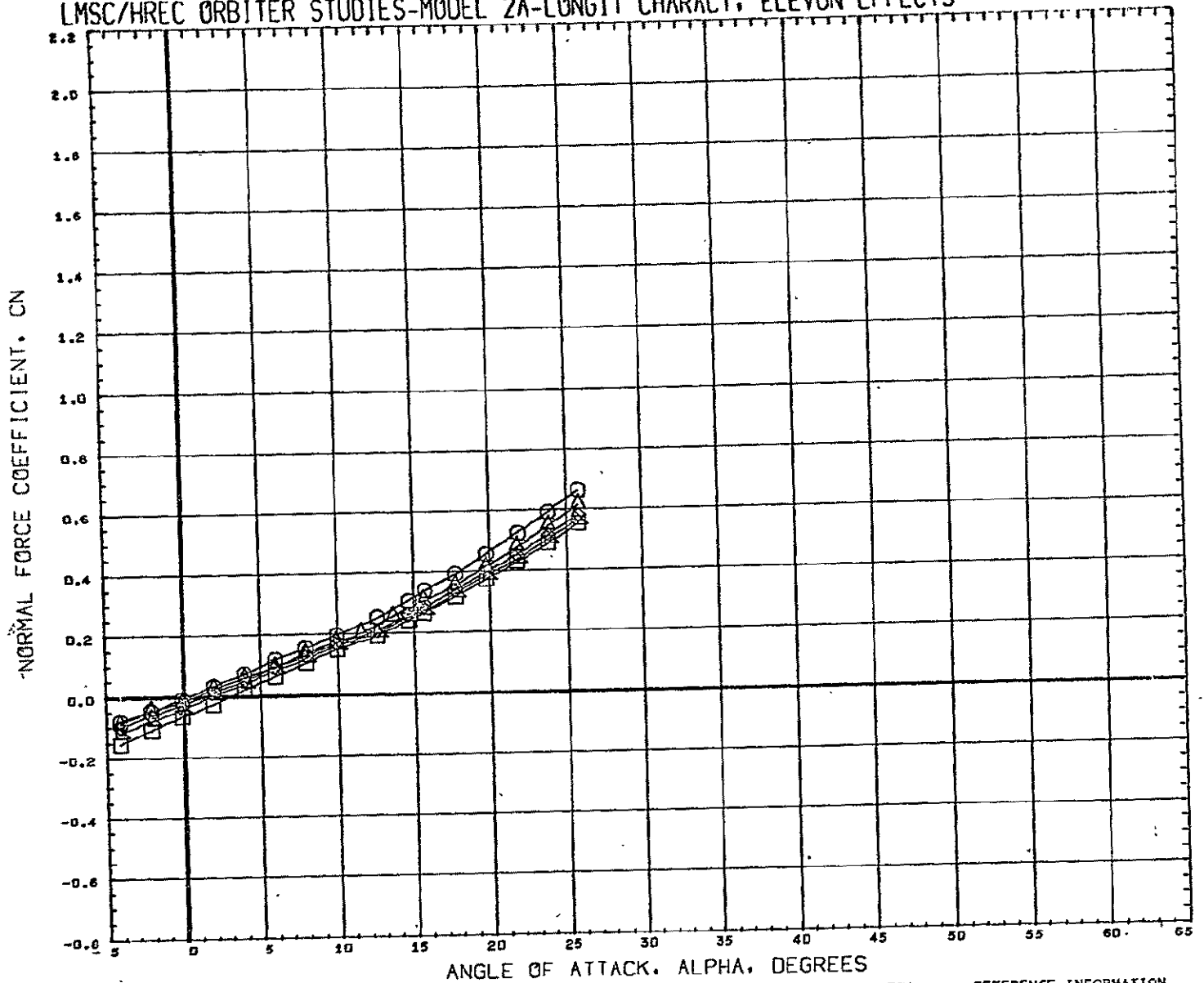
# LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, ELEVON EFFECTS



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	STING	BETA	REFERENCE INFORMATION
(D41025)	MSFC TWT 498 MSFC/LMSC ORBITER	10.000	0.000	4.000	0.000	SREF 9.0250 SQ. IN
(D41011)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D41035)	MSFC TWT 498 MSFC/LMSC ORBITER	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D41045)	MSFC TWT 498 MSFC/LMSC ORBITER	-20.000	0.000	4.000	0.000	XMRP 3.9950 INCHES
(D41055)	MSFC TWT 498 MSFC/LMSC ORBITER	-30.000	0.000	4.000	0.000	YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.958

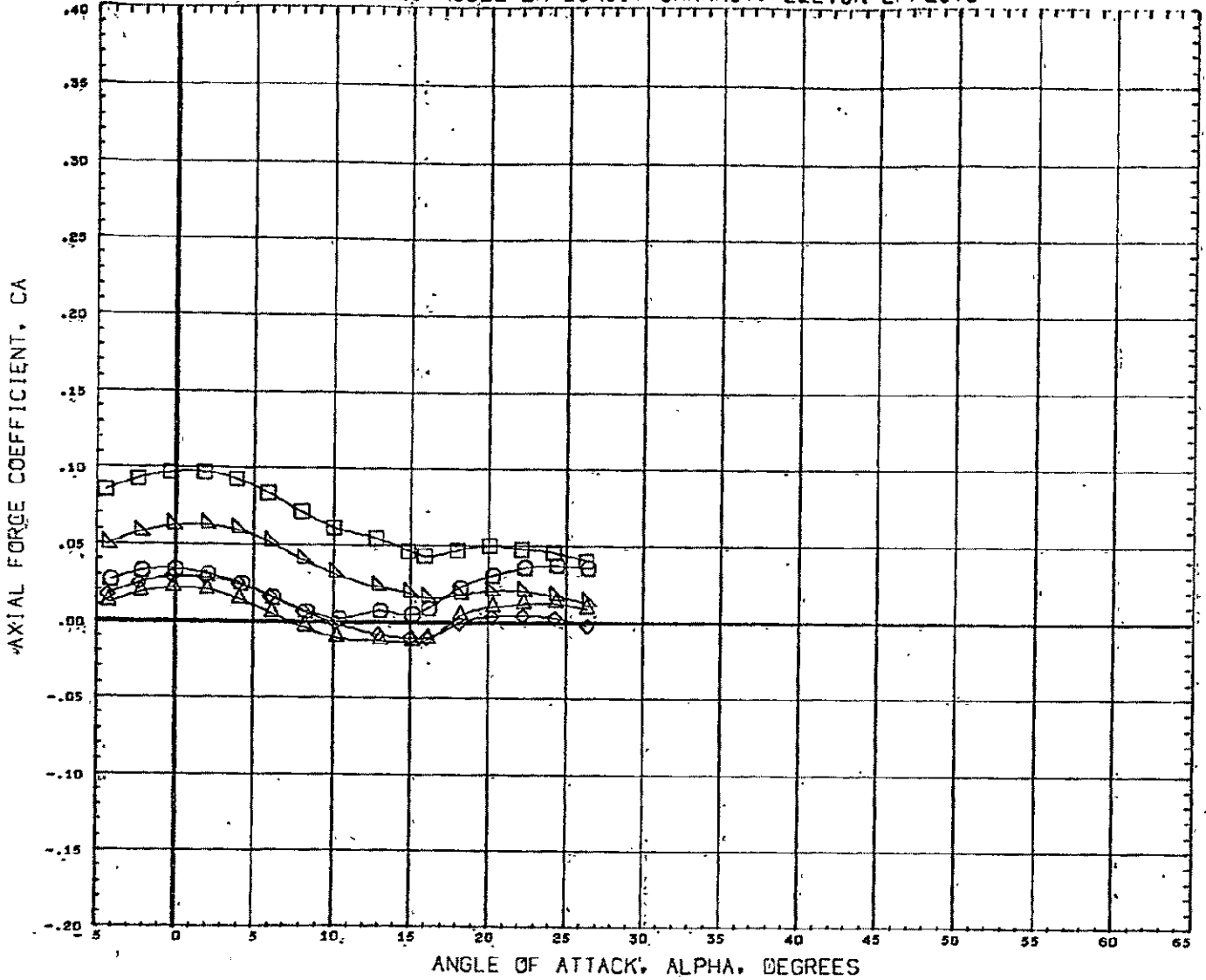
# LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, ELEVON EFFECTS



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVNS	RUDER2	STING	BETA	REFERENCE INFORMATION
(D4192S)	MSFC TWI 498 MSFC/LMSC ORBITER	10.000	0.000	4.000	0.000	SREF 9.0250 SQ. IN
(D41911)	MSFC TWI 498 MSFC/LMSC ORBITER	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D4193S)	MSFC TWI 498 MSFC/LMSC ORBITER	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D4194S)	MSFC TWI 498 MSFC/LMSC ORBITER	-20.000	0.000	4.000	0.000	XMRP 3.9950 INCHES
(D4195S)	MSFC TWI 498 MSFC/LMSC ORBITER	-30.000	0.000	4.000	0.000	YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 4.960

LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, ELEVON EFFECTS

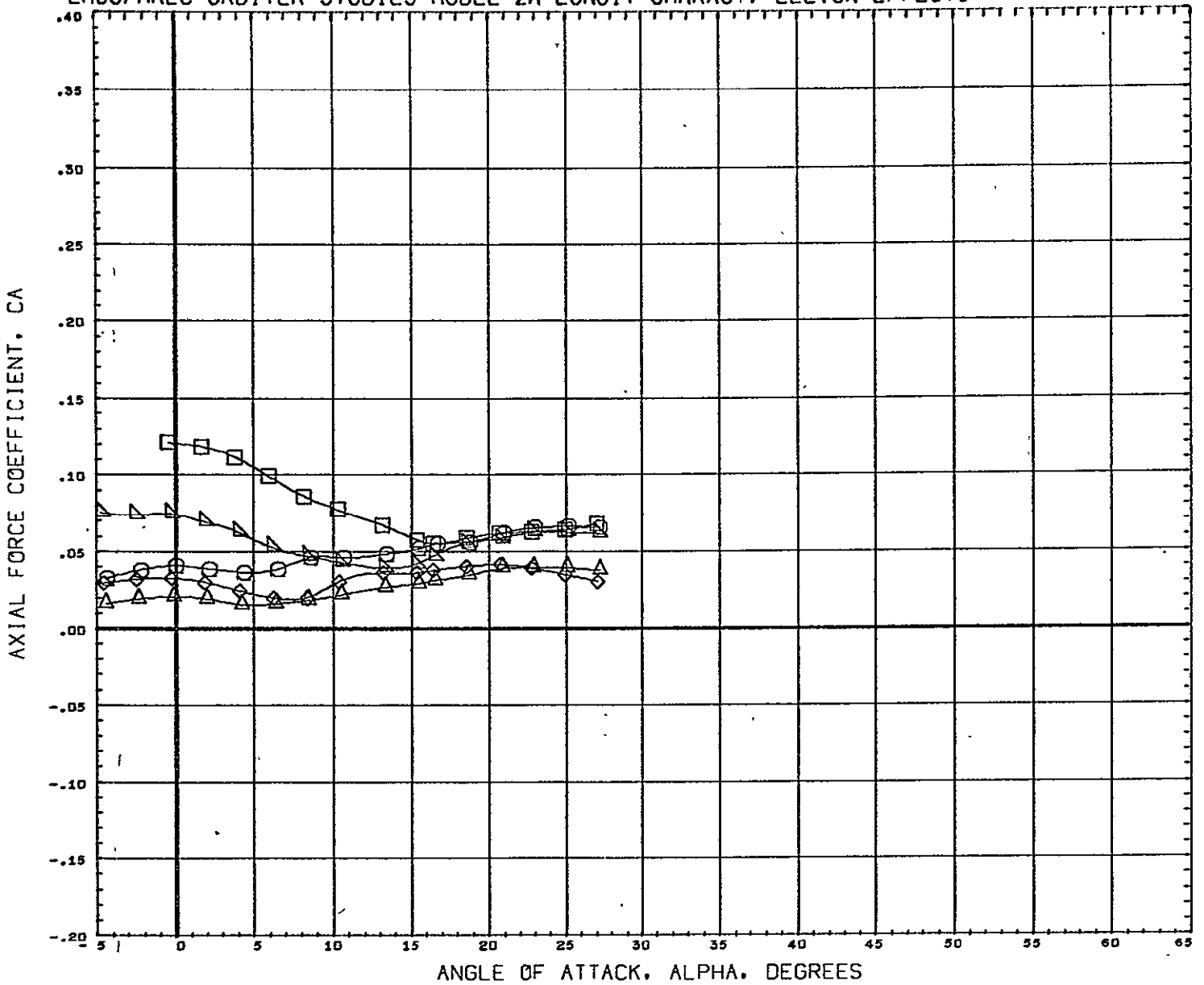


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVNS	RUDR2	STING	BETA	REFERENCE INFORMATION
(D41025)	MSFC TWT 498 MSFC/LMSC ORBITER	12.000	0.000	4.000	0.000	SREF 9.0250 SQ. IN
(D41011)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D41038)	MSFC TWT 498 MSFC/LMSC ORBITER	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D41049)	MSFC TWT 498 MSFC/LMSC ORBITER	-20.000	0.000	4.000	0.000	XMRP 3.9950 INCHES
(D41055)	MSFC TWT 498 MSFC/LMSC ORBITER	-30.000	0.000	4.000	0.000	YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.598



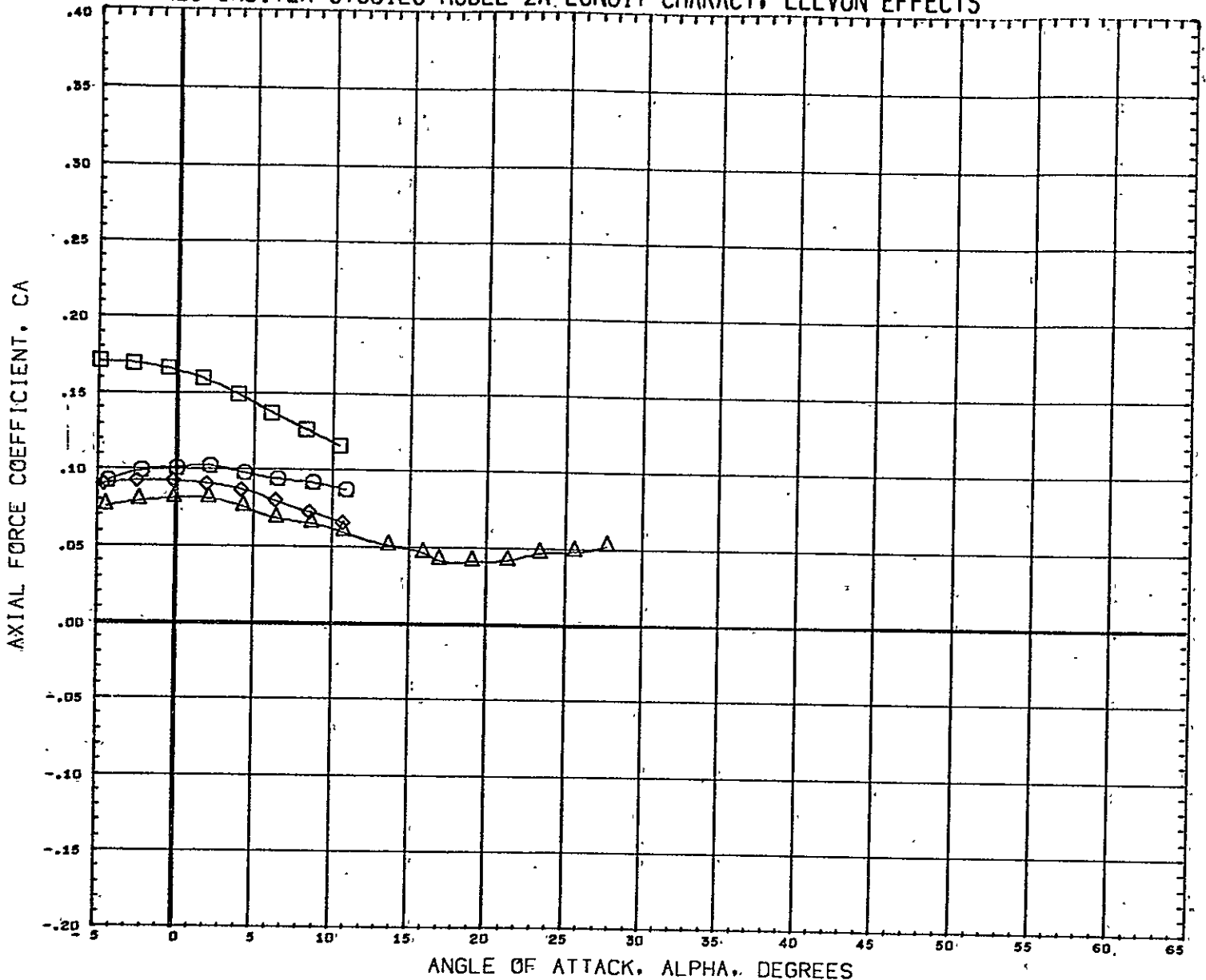
# LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, ELEVON EFFECTS



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEV3	RUDER2	STING	BETA	REFERENCE INFORMATION
(D41025)	□	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	10.000	0.000	4.000	SREF 9.0250 SQ. IN
(D41011)	△	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	0.000	0.000	4.000	LREF 6.1420 INCHES
(D41035)	◇	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	-10.000	0.000	4.000	BREF 6.1420 INCHES
(D41045)	○	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	-20.000	0.000	4.000	XMRP 3.9950 INCHES
(D41055)	▽	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	-30.000	0.000	4.000	YMRP 0.0000 INCHES
							ZMRP 0.1350 INCHES
							SCALE 0.0033 SCALE

MACH 0.898

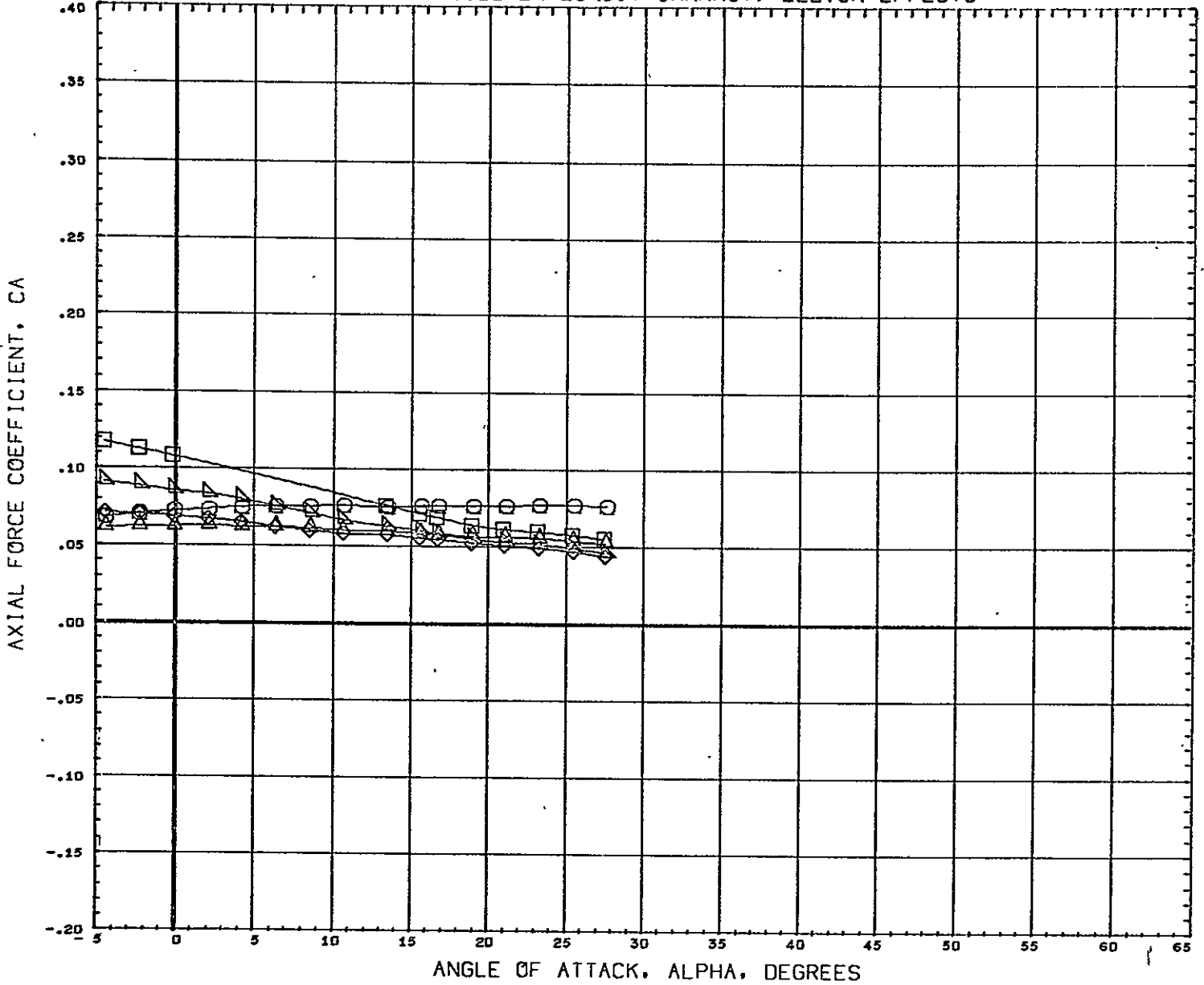
# LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, ELEVON EFFECTS



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	STING	BETA	REFERENCE INFORMATION
(D4102S)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	10.000	0.000	4.000	0.000	SREF 9.0250 SQ. IN
(D41011)	MSEC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D4103S)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D4104S)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	-20.000	0.000	4.000	0.000	XMHP 3.9950 INCHES
(D4105S)	DATA NOT AVAILABLE FOR ALL CONDITIONS	-30.000	0.000	4.000	0.000	YMHP 0.0000 INCHES
						ZMHP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.105

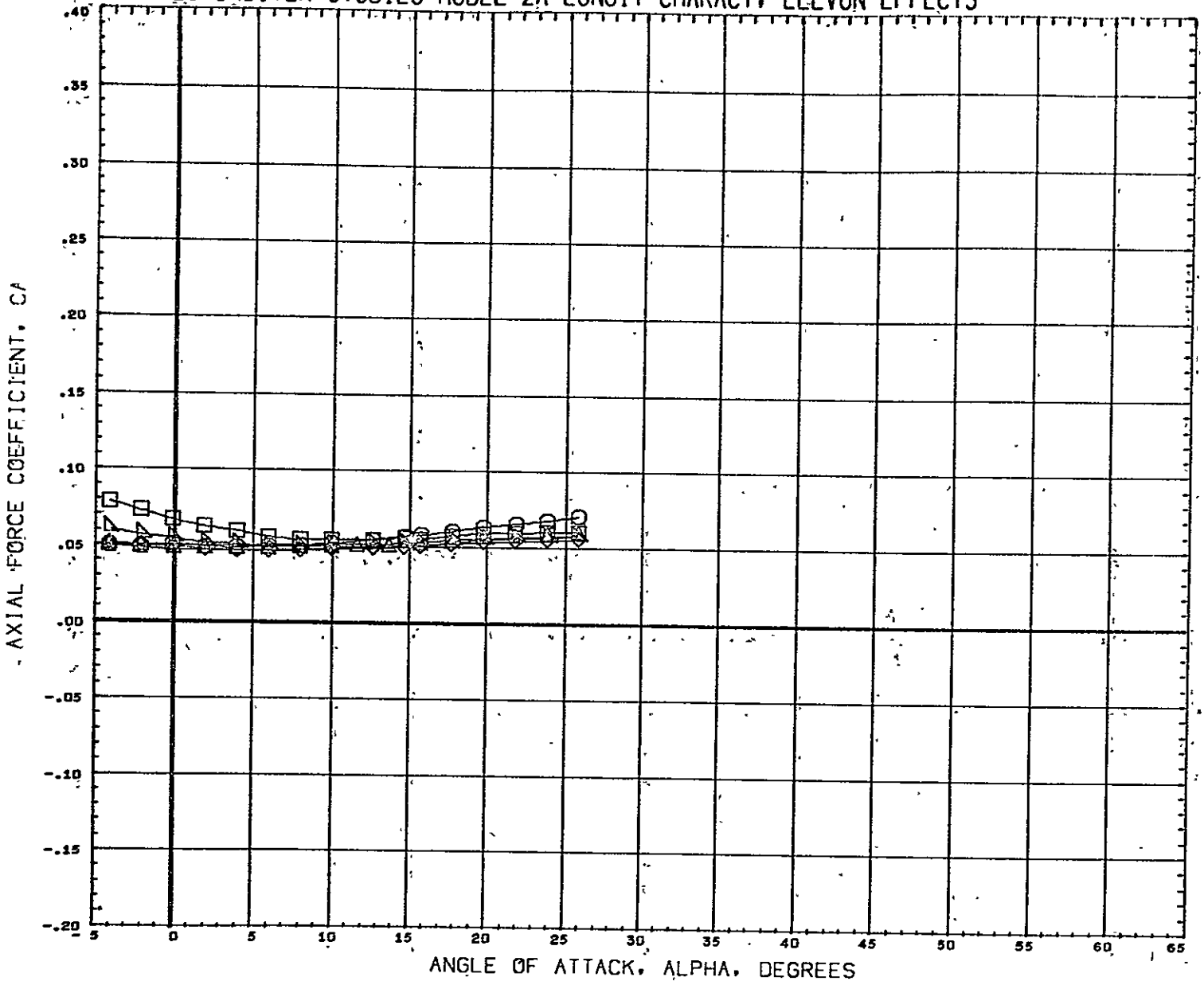
# LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, ELEVON EFFECTS



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	STING	BETA	REFERENCE INFORMATION
(D4102S)	MSFC TWT 498 MSFC/LMSC ORBITER	10.000	0.000	4.000	0.000	SREF 9.0250 SQ. IN
(D41011)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D4103S)	MSFC TWT 498 MSFC/LMSC ORBITER	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D4104S)	MSFC TWT 498 MSFC/LMSC ORBITER	-20.000	0.000	4.000	0.000	XMRF 3.9950 INCHES
(D4105S)	MSFC TWT 498 MSFC/LMSC ORBITER	-30.000	0.000	4.000	0.000	YMRF 0.0000 INCHES
						ZMRF 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.958

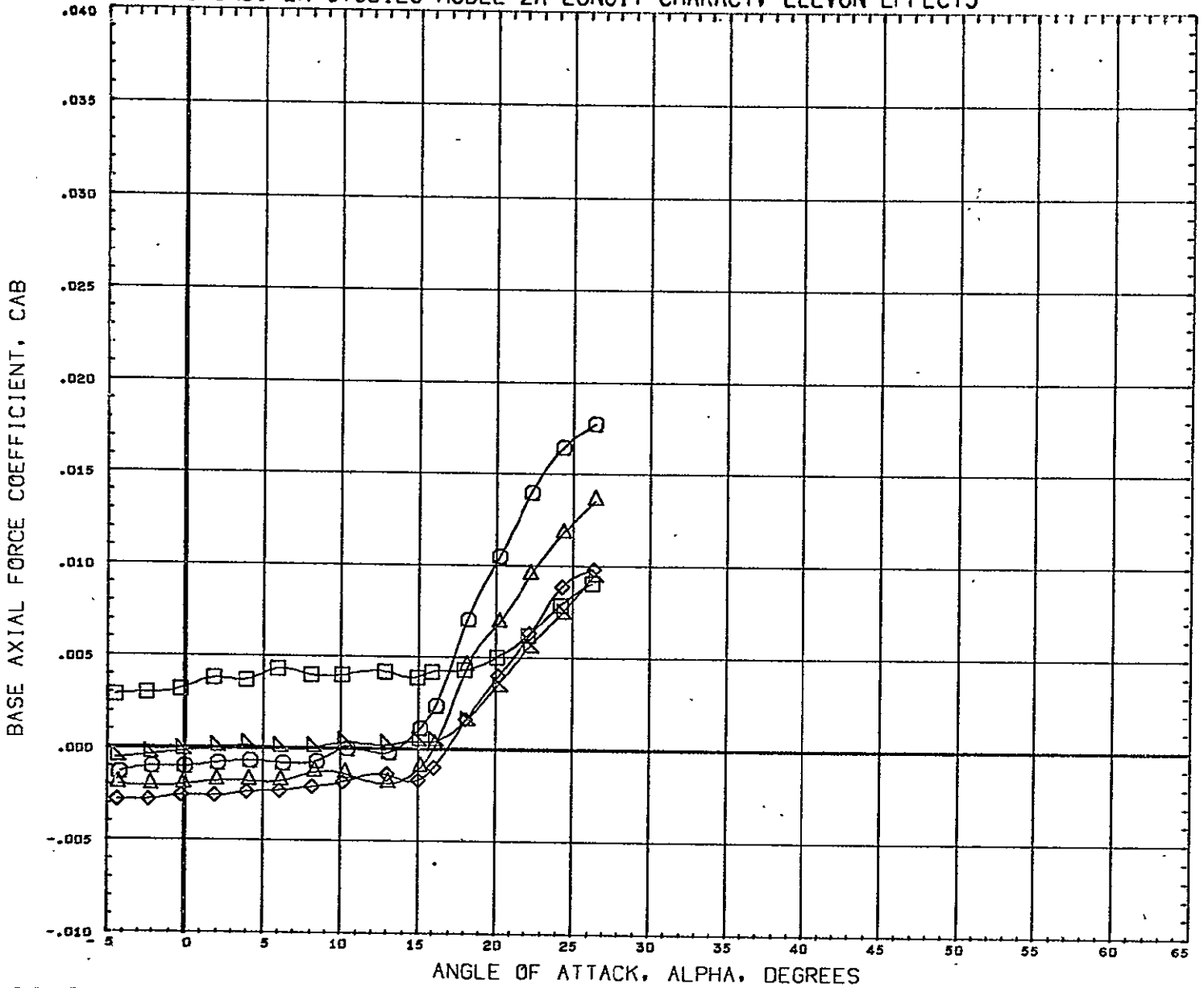
LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, ELEVON EFFECTS



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	STING	BETA	REFERENCE INFORMATION
(D4102S)	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	10.000	0.000	4.000	0.000 SREF 9.0250 SQ. IN
(D41011)	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	0.000	0.000	4.000	0.000 LREF 6.1420 INCHES
(D4103S)	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	-10.000	0.000	4.000	0.000 BREF 6.1420 INCHES
(D4104S)	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	-20.000	0.000	4.000	0.000 XHRF 3.9950 INCHES
(D4105S)	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	-30.000	0.000	4.000	0.000 YHRF 0.0000 INCHES
						ZHRF 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 4.960

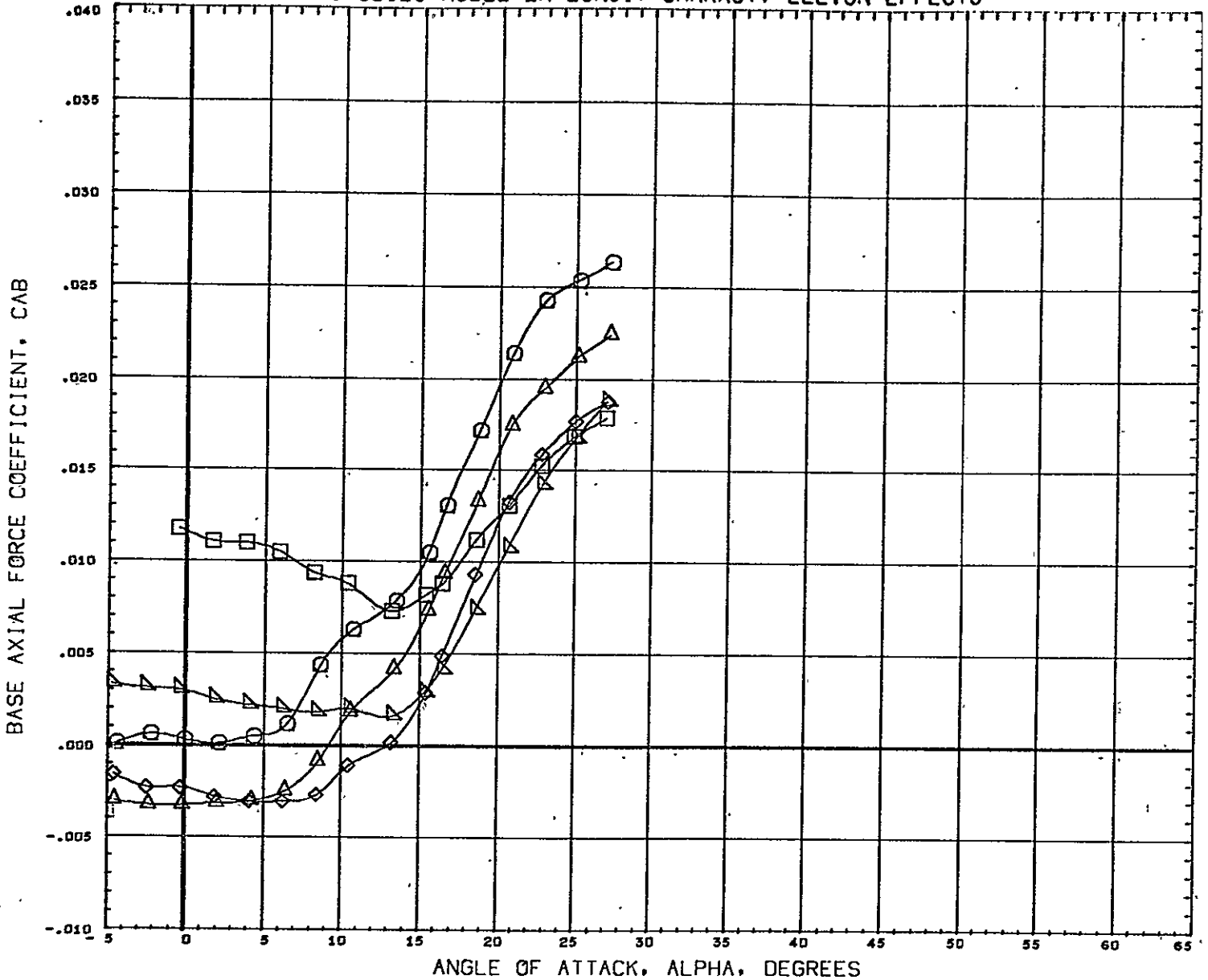
# LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, ELEVON EFFECTS



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	STING	BETA	REFERENCE INFORMATION
(D4102S)	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	10.000	0.000	4.000	0.000 SREF 9.0250 SQ. IN
(D41011)	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	0.000	0.000	4.000	0.000 LREF 6.1420 INCHES
(D4103S)	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	-10.000	0.000	4.000	0.000 BREF 6.1420 INCHES
(D4104S)	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	-20.000	0.000	4.000	0.000 XMRP 3.9950 INCHES
(D4105S)	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	-30.000	0.000	4.000	0.000 YMRP 0.0000 INCHES
						ZMRP - 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.598

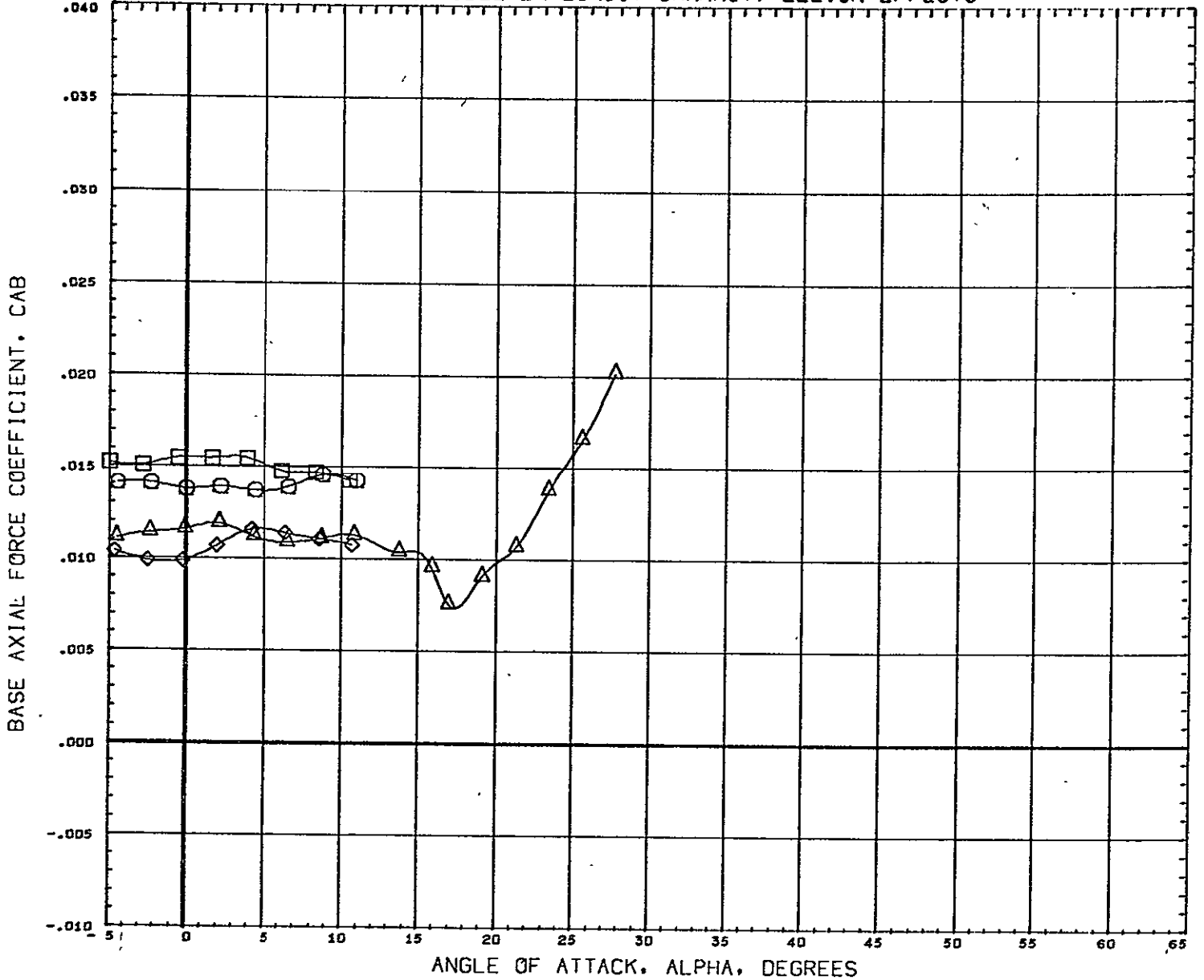
# LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, ELEVON EFFECTS



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVNS	RUDER2	STING	BETA	REFERENCE INFORMATION
(D4102S)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	10.000	0.000	4.000	0.000	SREF 9.0250 SQ. IN
(D41011)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D4103S)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D4104S)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	-20.000	0.000	4.000	0.000	XMRP 3.9950 INCHES
(D4105S)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	-30.000	0.000	4.000	0.000	YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.898

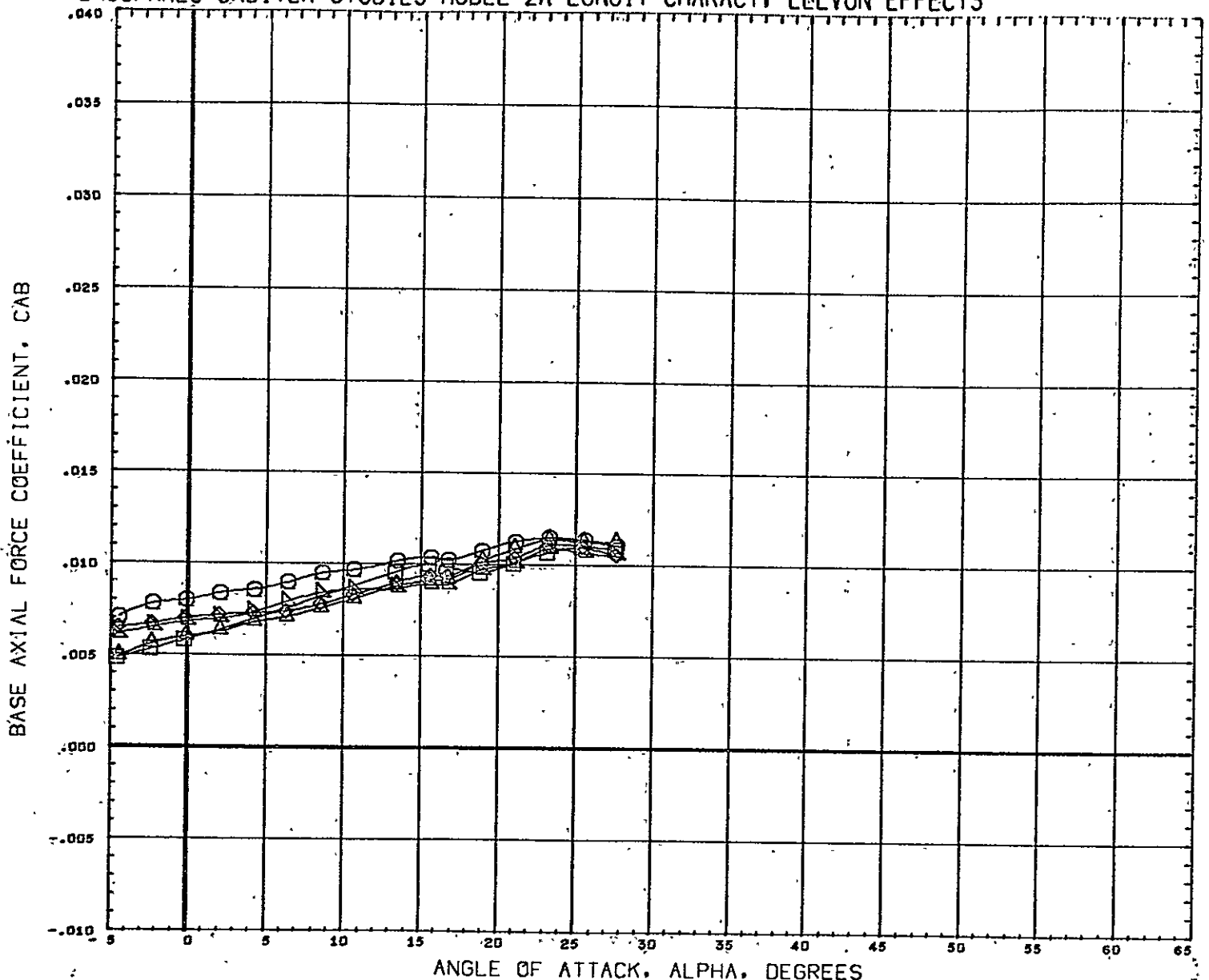
# LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, ELEVON EFFECTS



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	STING	BETA	REFERENCE INFORMATION
(D4102S)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	10.000	0.000	4.000	0.000	SREF 9.0250 SQ. IN
(D41011)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D4103S)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D4104S)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	-20.000	0.000	4.000	0.000	XMRP 3.9950 INCHES
(D4105S)	DATA NOT AVAILABLE FOR ALL CONDITIONS	-30.000	0.000	4.000	0.000	YMRP 0.0000 INCHES
						ZMRP - 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.100

# LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, ELEVON EFFECTS

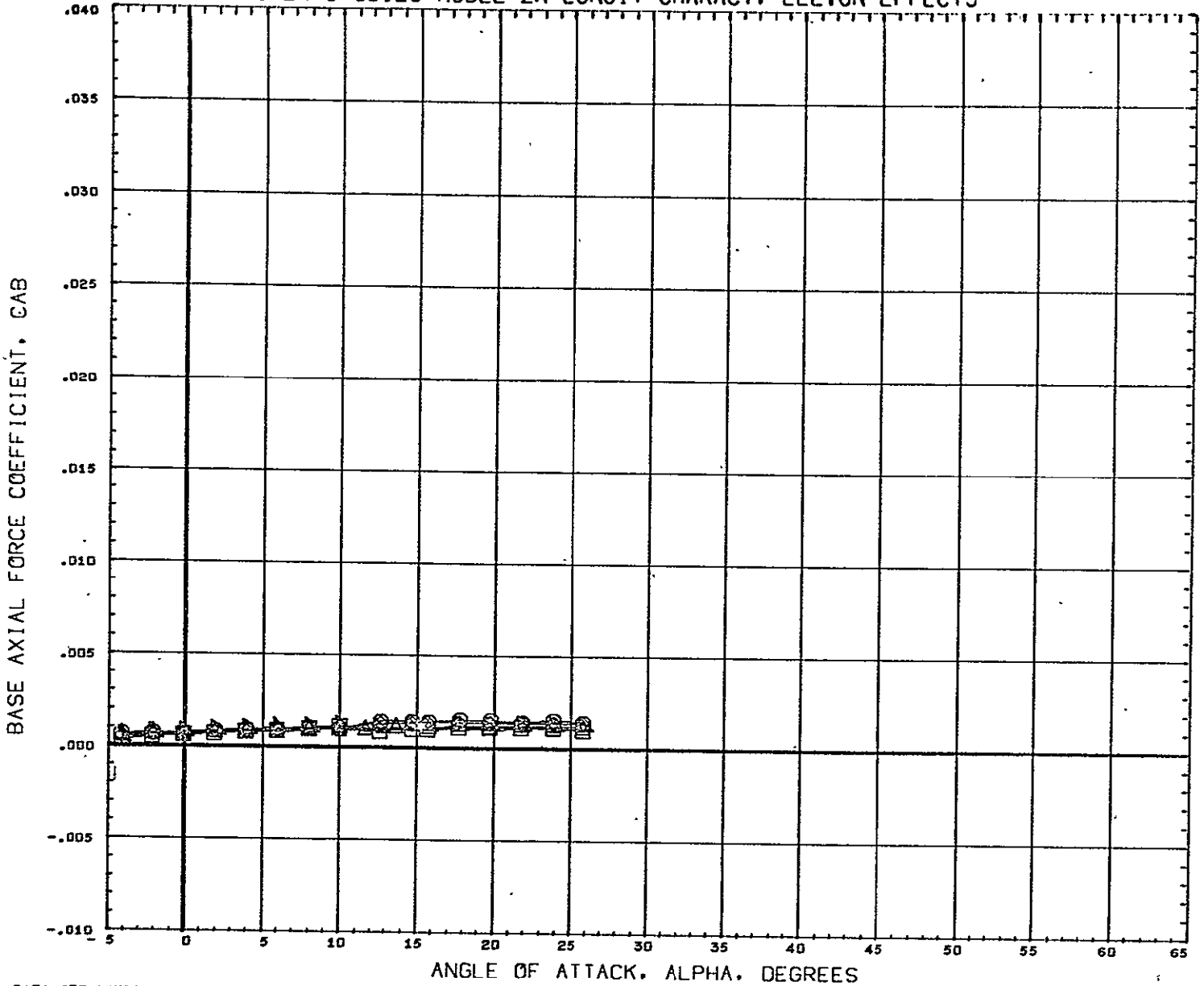


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVNS	RUDER2	STING	BETA	REFERENCE INFORMATION
(D4102S)	MSFC TWT 498 MSFC/LMSC ORBITER	10.000	0.000	4.000	0.000	SREF 9.0250 SQ. IN
(D41011)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D4103S)	MSFC TWT 498 MSFC/LMSC ORBITER	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D4104S)	MSFC TWT 498 MSFC/LMSC ORBITER	-20.000	0.000	4.000	0.000	XHRP 3.9950 INCHES
(D4105S)	MSFC TWT 498 MSFC/LMSC ORBITER	-30.000	0.000	4.000	0.000	YHRP 0.0000 INCHES
						ZHRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.958



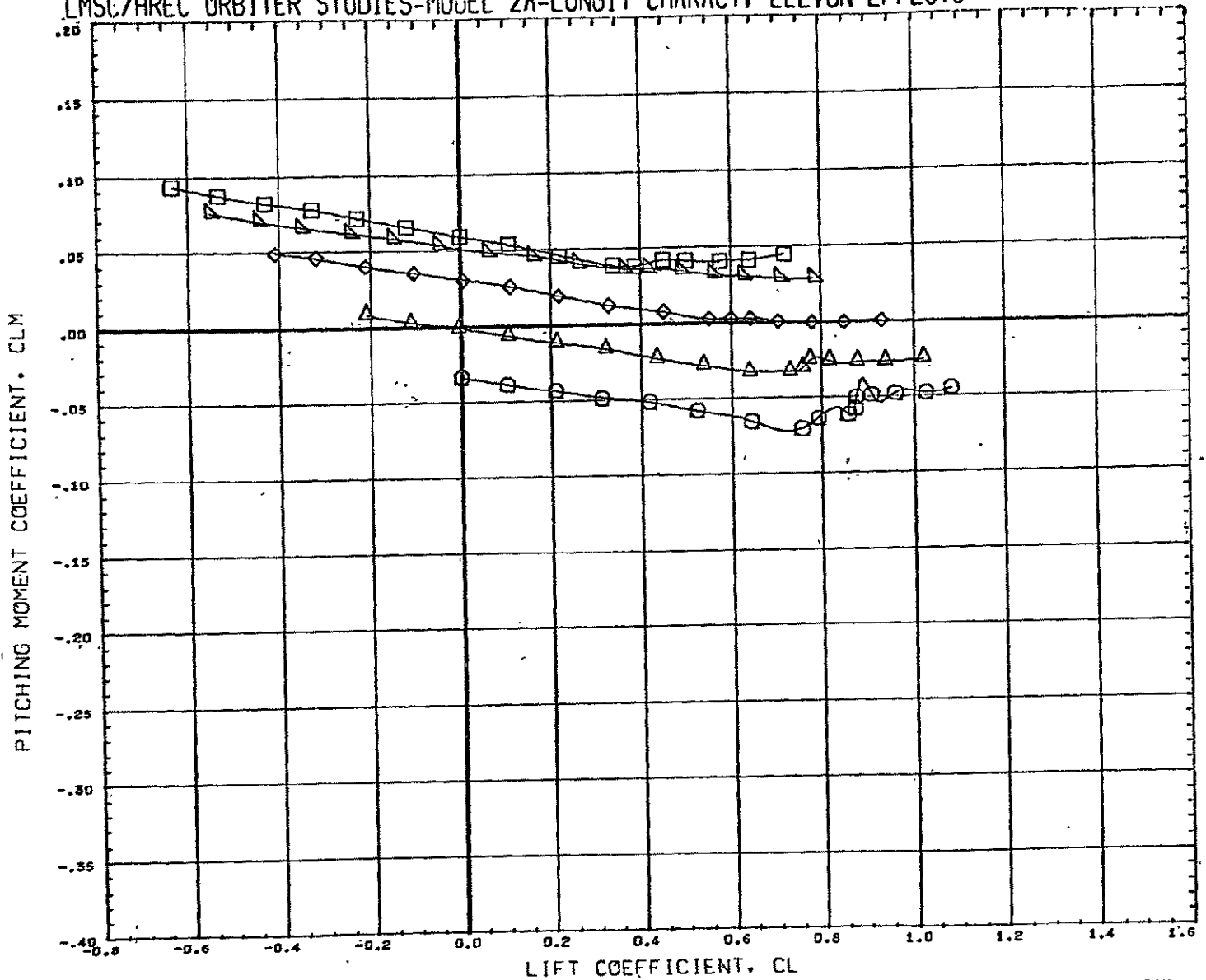
# LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, ELEVON EFFECTS



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	STING	BETA	REFERENCE INFORMATION
(D41025)	MSFC TWT 498 MSFC/LMSC ORBITER	10.000	0.000	4.000	0.000	SREF 9.0250 SQ. IN
(D41011)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D41035)	MSFC TWT 498 MSFC/LMSC ORBITER	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D41045)	MSFC TWT 498 MSFC/LMSC ORBITER	-20.000	0.000	4.000	0.000	XMRP 3.9950 INCHES
(D41055)	MSFC TWT 498 MSFC/LMSC ORBITER	-30.000	0.000	4.000	0.000	YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 4.960

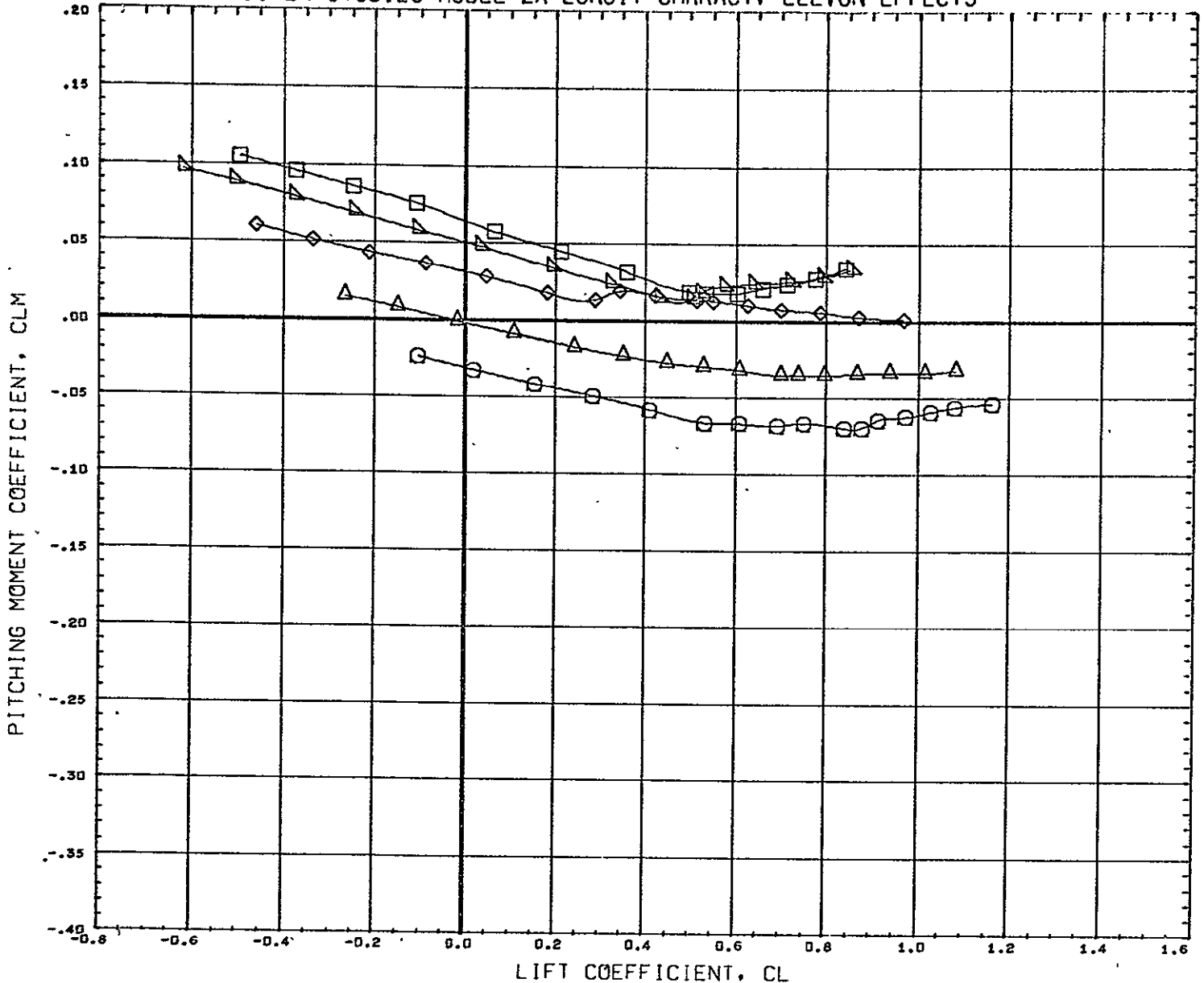
# LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, ELEVON EFFECTS



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	STING	BETA	REFERENCE INFORMATION
(D41025)	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	10.000	0.000	4.000	SREF 9.0250 SQ. IN
(D41011)	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	0.000	0.000	4.000	LREF 6.1420 INCHES
(D41035)	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	-10.000	0.000	4.000	BREF 6.1420 INCHES
(D41045)	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	-20.000	0.000	4.000	XHRP 3.9950 INCHES
(D41055)	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	-30.000	0.000	4.000	YHRP 0.0000 INCHES
						ZHRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.598

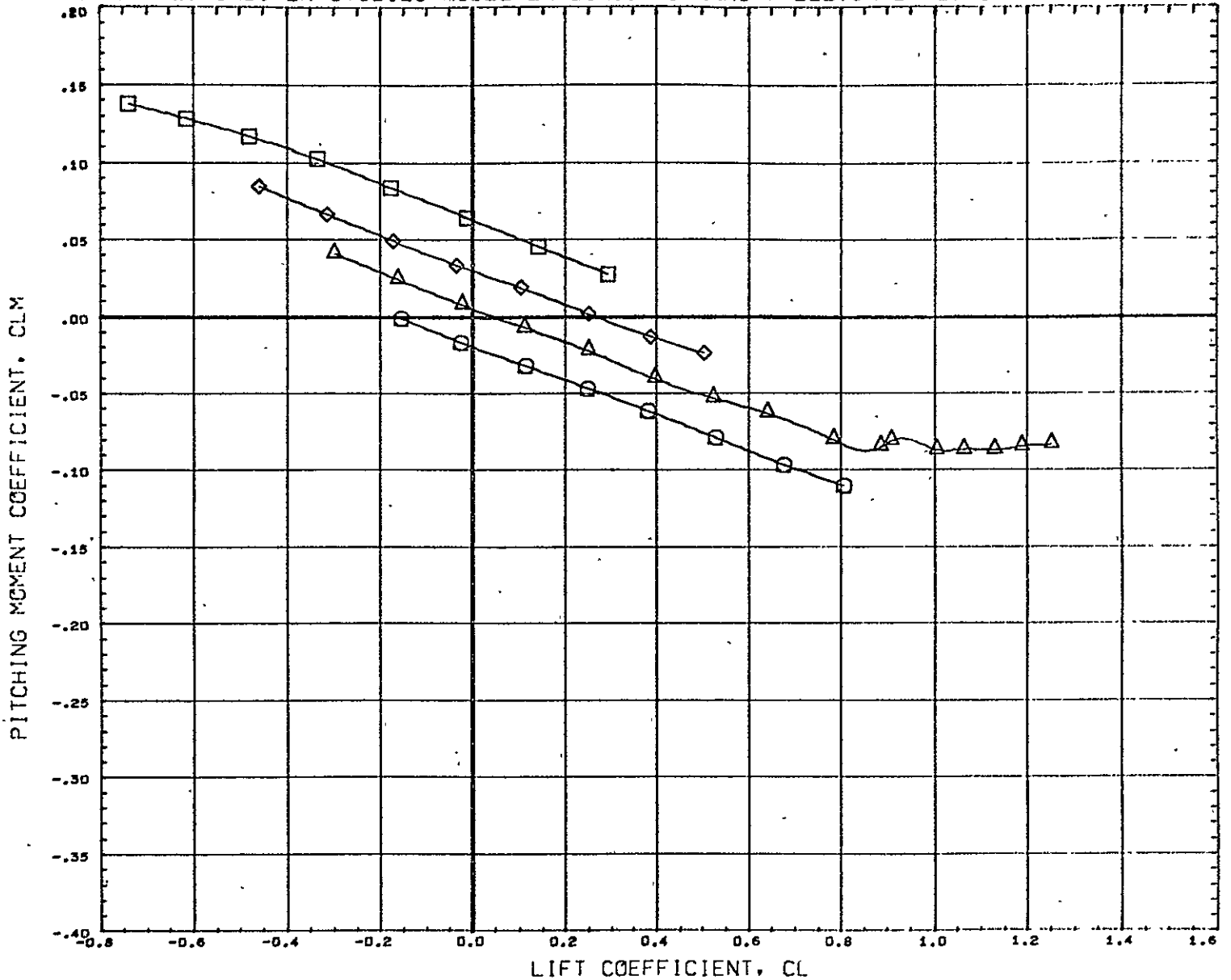
# LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, ELEVON EFFECTS



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVNS	RUDER2	STING	BETA	REFERENCE INFORMATION
(D41025)	MSFC TWT 498 MSFC/LMSC ORBITER	10.000	0.000	4.000	0.000	SREF 9.0250 SQ. IN
(D41011)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D41035)	MSFC TWT 498 MSFC/LMSC ORBITER	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D41045)	MSFC TWT 498 MSFC/LMSC ORBITER	-20.000	0.000	4.000	0.000	XHRP 3.9950 INCHES
(D41055)	MSFC TWT 498 MSFC/LMSC ORBITER	-30.000	0.000	4.000	0.000	YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.898

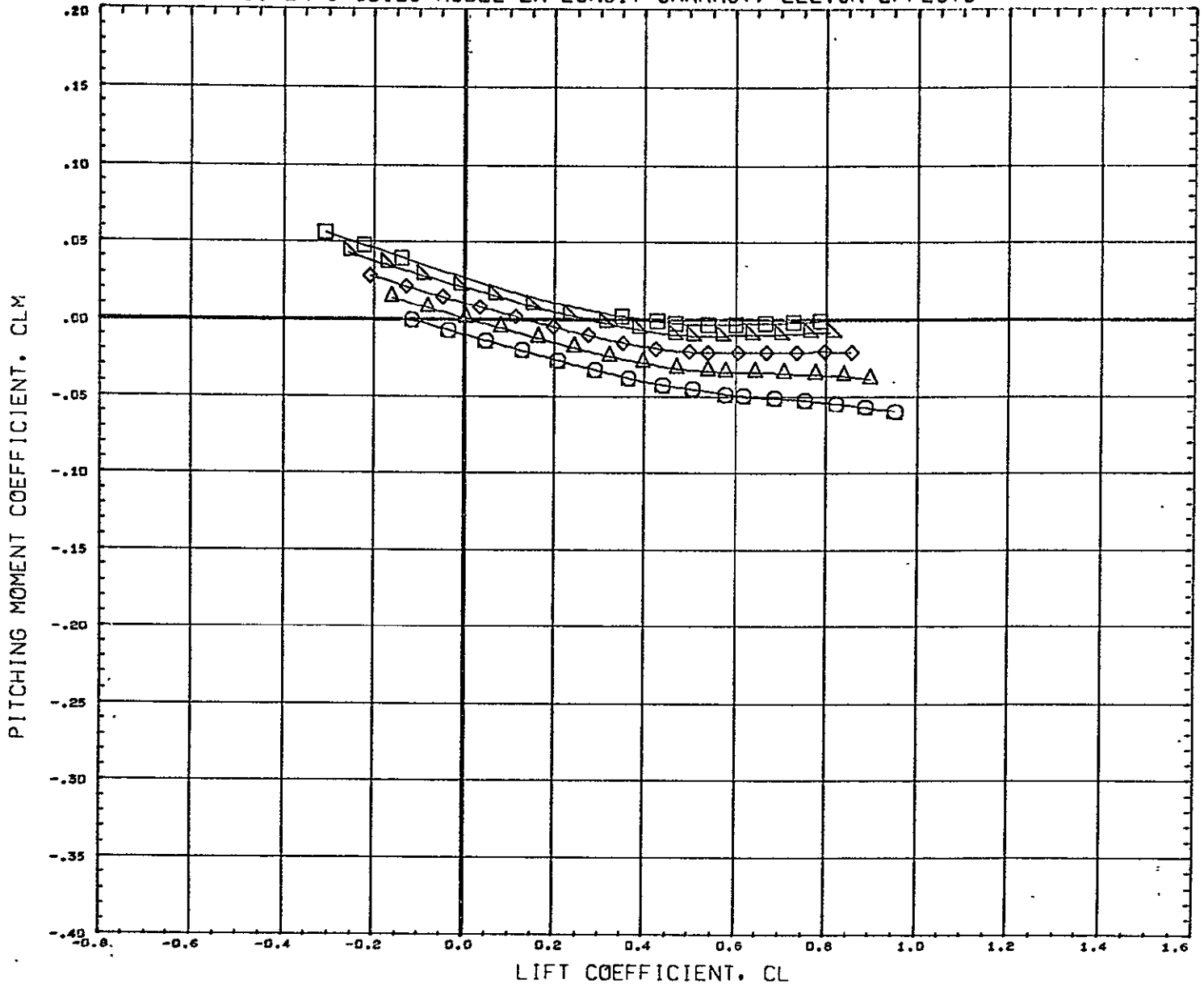
# LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, ELEVON EFFECTS



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVNS	RUDER2	STING	BETA	REFERENCE INFORMATION
(D41025)	MSFC TWT 498 MSFC/LMSC ORBITER	10.000	0.000	4.000	0.000	SREF 9.0250 SQ. IN
(D41011)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D41035)	MSFC TWT 498 MSFC/LMSC ORBITER	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D41045)	MSFC TWT 498 MSFC/LMSC ORBITER	-20.000	0.000	4.000	0.000	XMRP 3.9950 INCHES
(D41055)	DATA NOT AVAILABLE FOR ALL CONDITIONS	-30.000	0.000	4.000	0.000	YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0053 SCALE

MACH 1.100

# LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, ELEVON EFFECTS

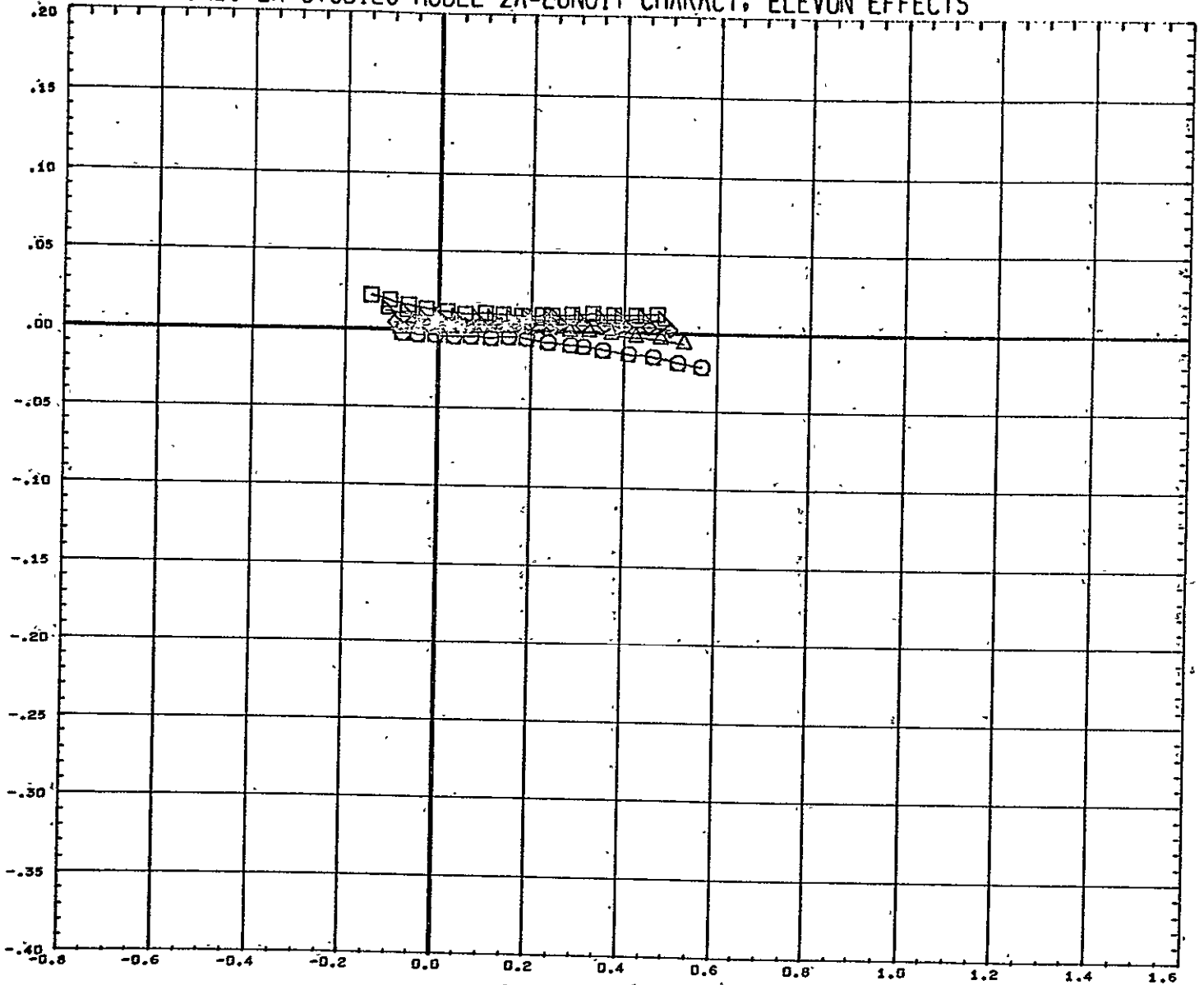


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	STING	BETA	REFERENCE INFORMATION
(D41025)	MSFC TWT 498 MSFC/LMSC ORBITER	10.000	0.000	4.000	0.000	SREF 9.0250 SQ. IN
(D41011)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D41035)	MSFC TWT 498 MSFC/LMSC ORBITER	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D41045)	MSFC TWT 498 MSFC/LMSC ORBITER	-20.000	0.000	4.000	0.000	XMRP 3.9950 INCHES
(D41055)	MSFC TWT 498 MSFC/LMSC ORBITER	-30.000	0.000	4.000	0.000	YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.958

# LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, ELEVON EFFECTS

PITCHING MOMENT COEFFICIENT, CLM

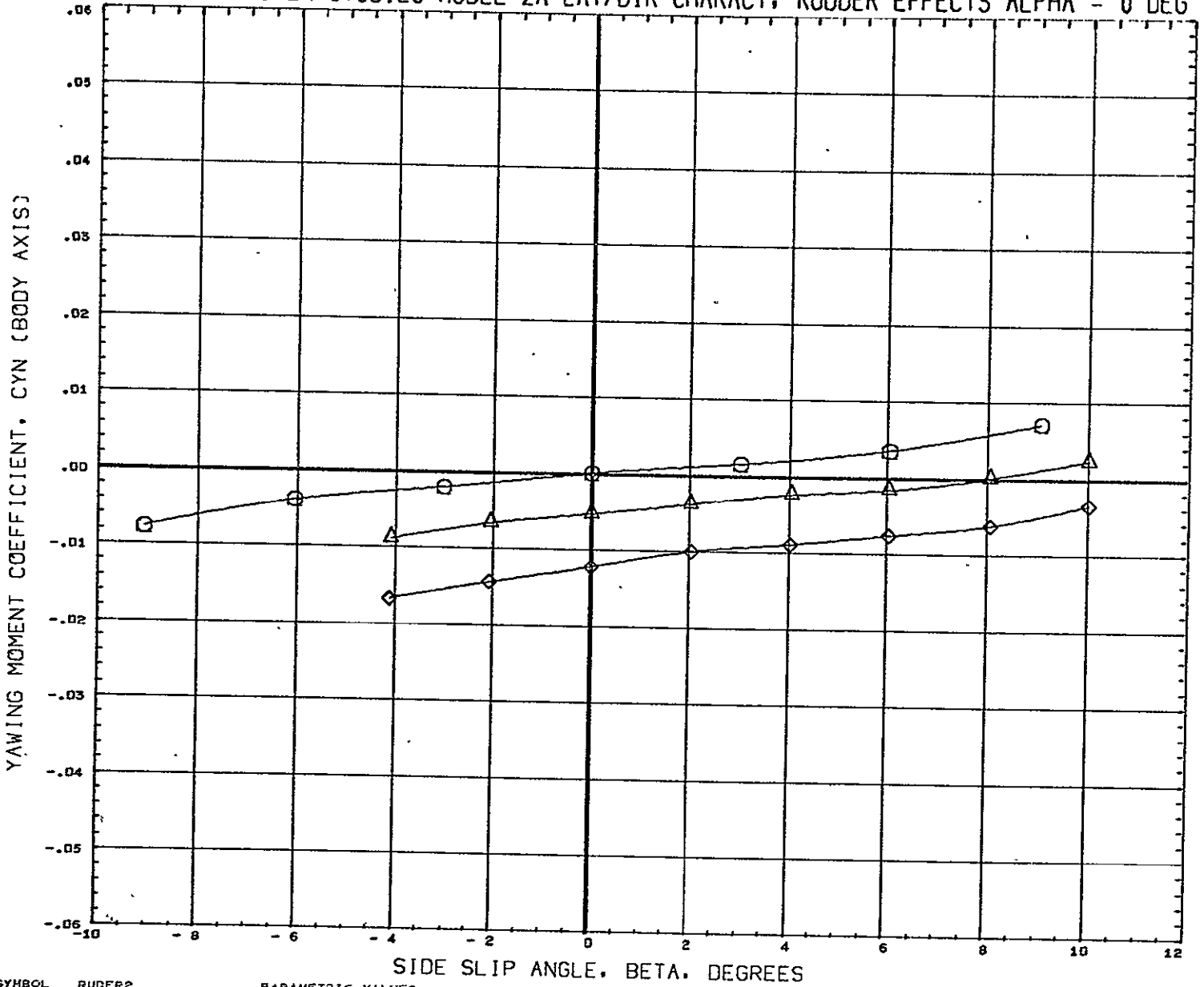


LIFT COEFFICIENT, CL

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	STING	BETA	REFERENCE INFORMATION
(D4102S)	MSFC TWT 498 MSFC/LMSC ORBITER	10.000	0.000	4.000	0.000	SREF 9.0250 SQ. IN
(D41011)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D4103S)	MSFC TWT 498 MSFC/LMSC ORBITER	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D4104S)	MSFC TWT 498 MSFC/LMSC ORBITER	-20.000	0.000	4.000	0.000	XMRP 3.9950 INCHES
(D4105S)	MSFC TWT 498 MSFC/LMSC ORBITER	-30.000	0.000	4.000	0.000	YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 4.960

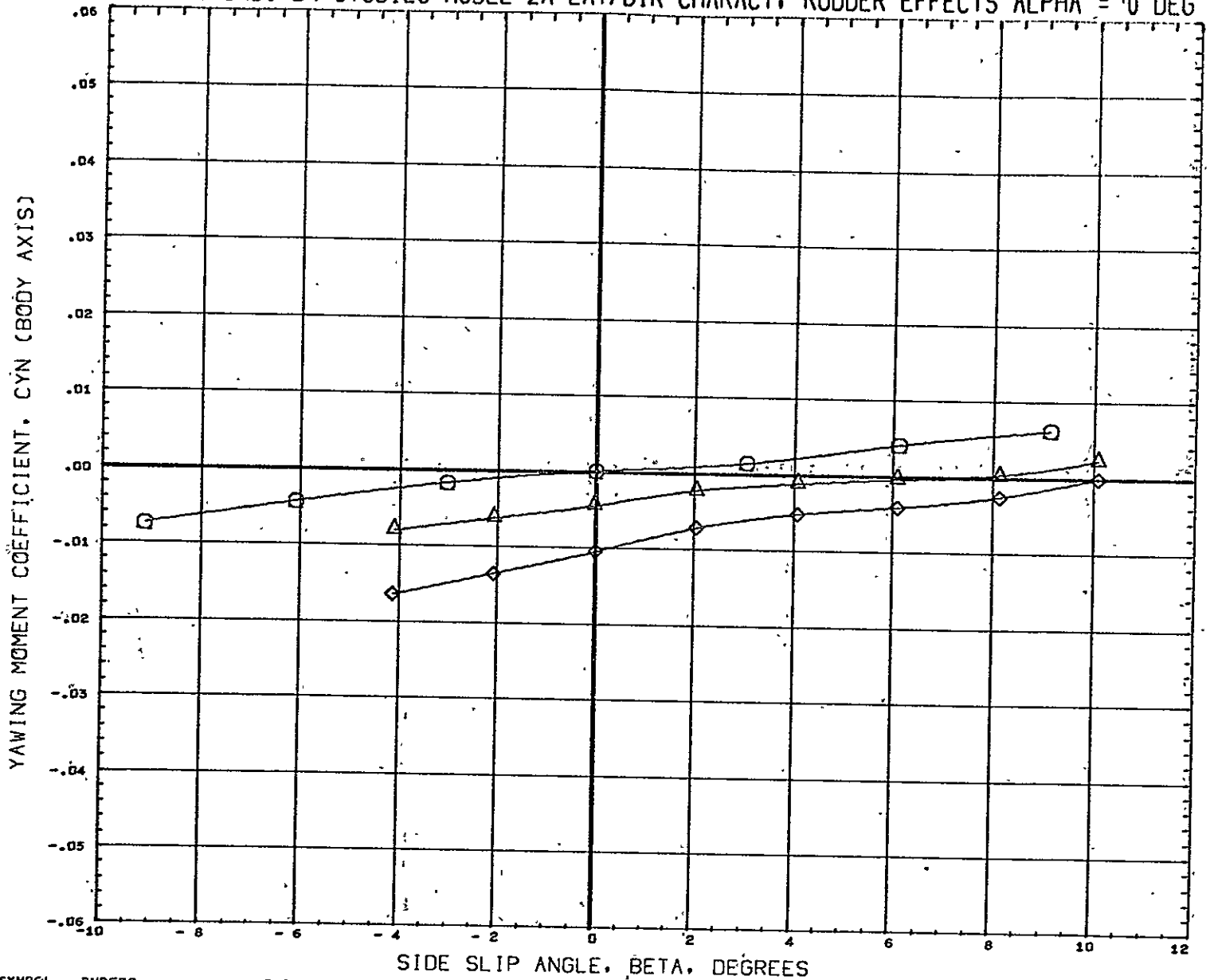
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, RUDDER EFFECTS ALPHA = 0 DEG



SYMBOL	RUDER2	PARAMETRIC VALUES			DATA SOURCE			REFERENCE INFORMATION		
○	0.000	MACH	0.599	ALPHA	0.000	DATASET	RUDER2	SREF	9.0250	58. IN
△	10.000	ELEVNS	0.000	STING	4.000	B4101X	0.000	LREF	6.1420	INCHES
◇	20.000					A4113X	20.000	SREF	6.1420	INCHES
								XMRP	3.9950	INCHES
								YMRP	0.0000	INCHES
								ZMRP	0.1350	INCHES
								SCALE	0.0033	SCALE

DATA HIST. CODE #A

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, RUDDER EFFECTS ALPHA = 0 DEG

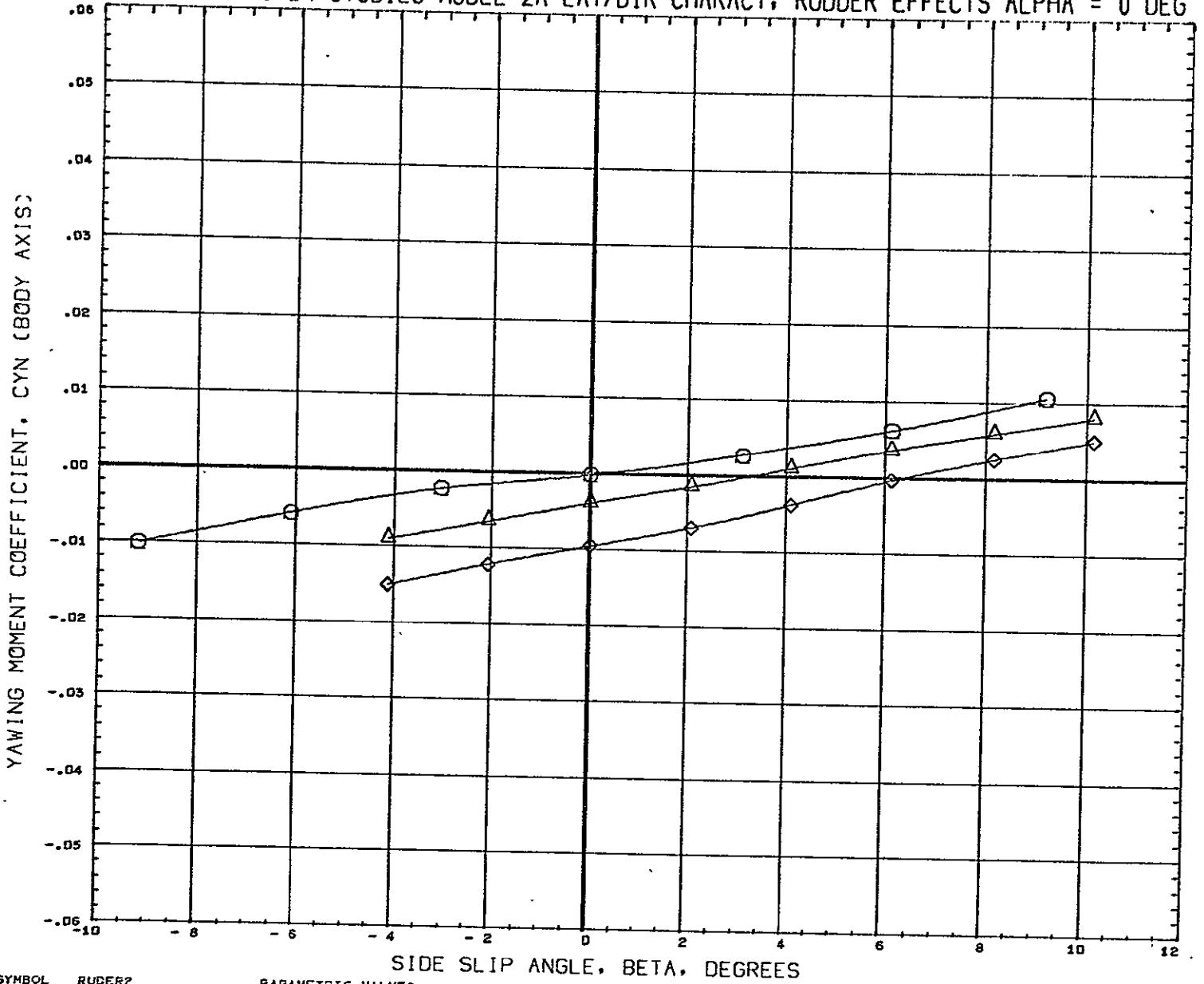


SYMBOL	RUDER2	MACH	PARAMETRIC VALUES		DATA SOURCE			REFERENCE INFORMATION		
○	0.000	10.000	0.903	ALPHA	0.000	RUDER2	0.000	SREF	9.0250	90. IN
△	10.000	ELEVNS	0.000	STING	4.000	B4101X	0.000	LREF	6.1420	INCHES
◇	20.000					A4113X	20.000	BREF	6.1420	INCHES
								XMRP	3.9950	INCHES
								YMRP	0.0000	INCHES
								ZMRP	0.1350	INCHES
								SCALE	0.0033	SCALE

DATA HIST. CODE #A



LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, RUDDER EFFECTS ALPHA = 0 DEG



SYMBOL	RUDER2	PARAMETRIC VALUES			DATA SOURCE			REFERENCE INFORMATION		
○	0.000	MACH	1.098	ALPHA	0.000	DATASET	RUDER2	SREF	9.0250	Sq. IN
△	10.000	ELEVNS	0.000	STING	4.000	B4101X	0.000	LREF	6.1420	INCHES
◇	20.000					A4113X	20.000	A4112X	6.1420	INCHES
								RUDER2	3.9950	INCHES
									0.0000	INCHES
									0.1350	INCHES
									0.0033	SCALE

DATA HIST. CODE #A

MSFC TWT 498 MSFC/LMSC ORBITER

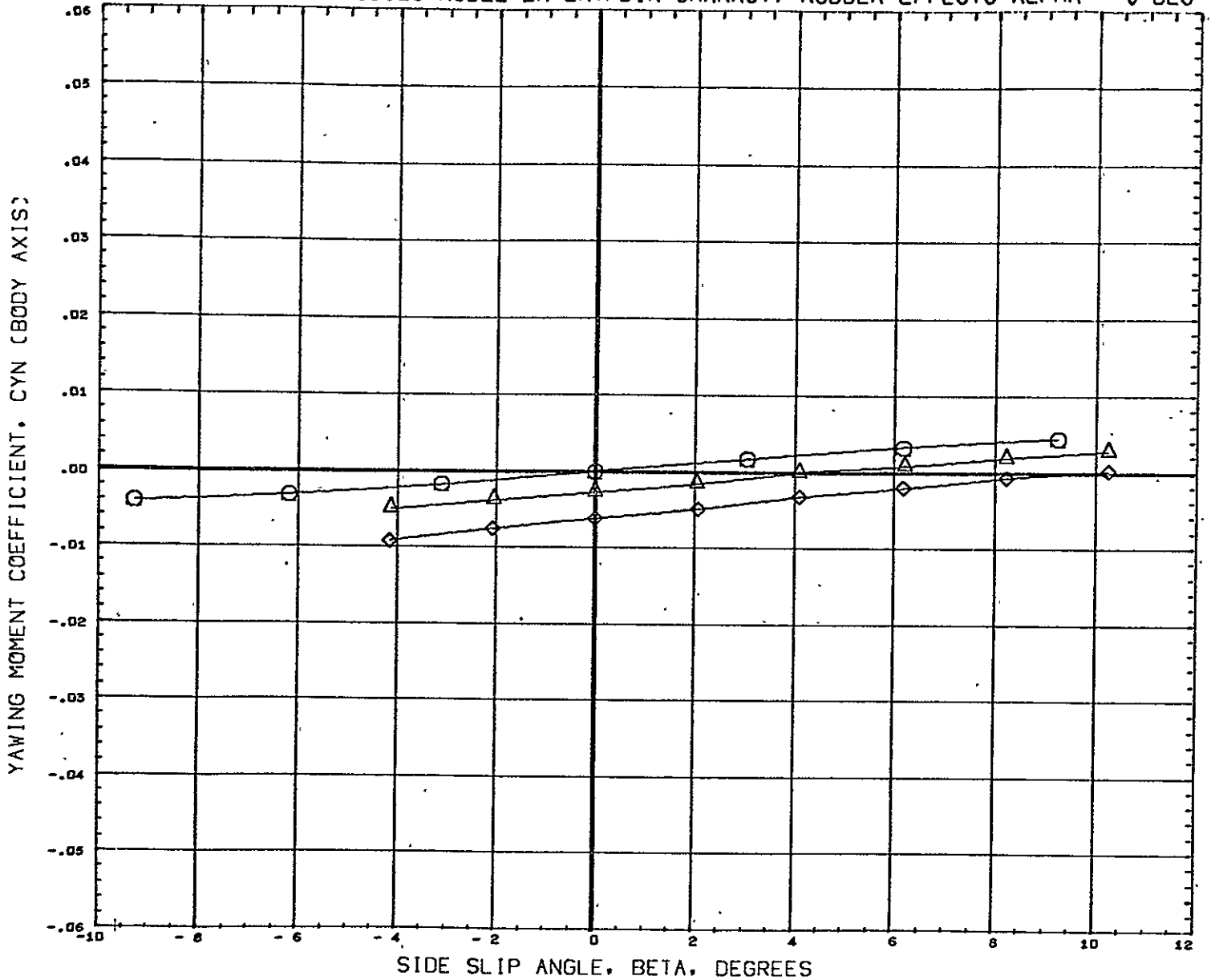
B2W2V4D2E3R2 (B4101X)

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PAGE

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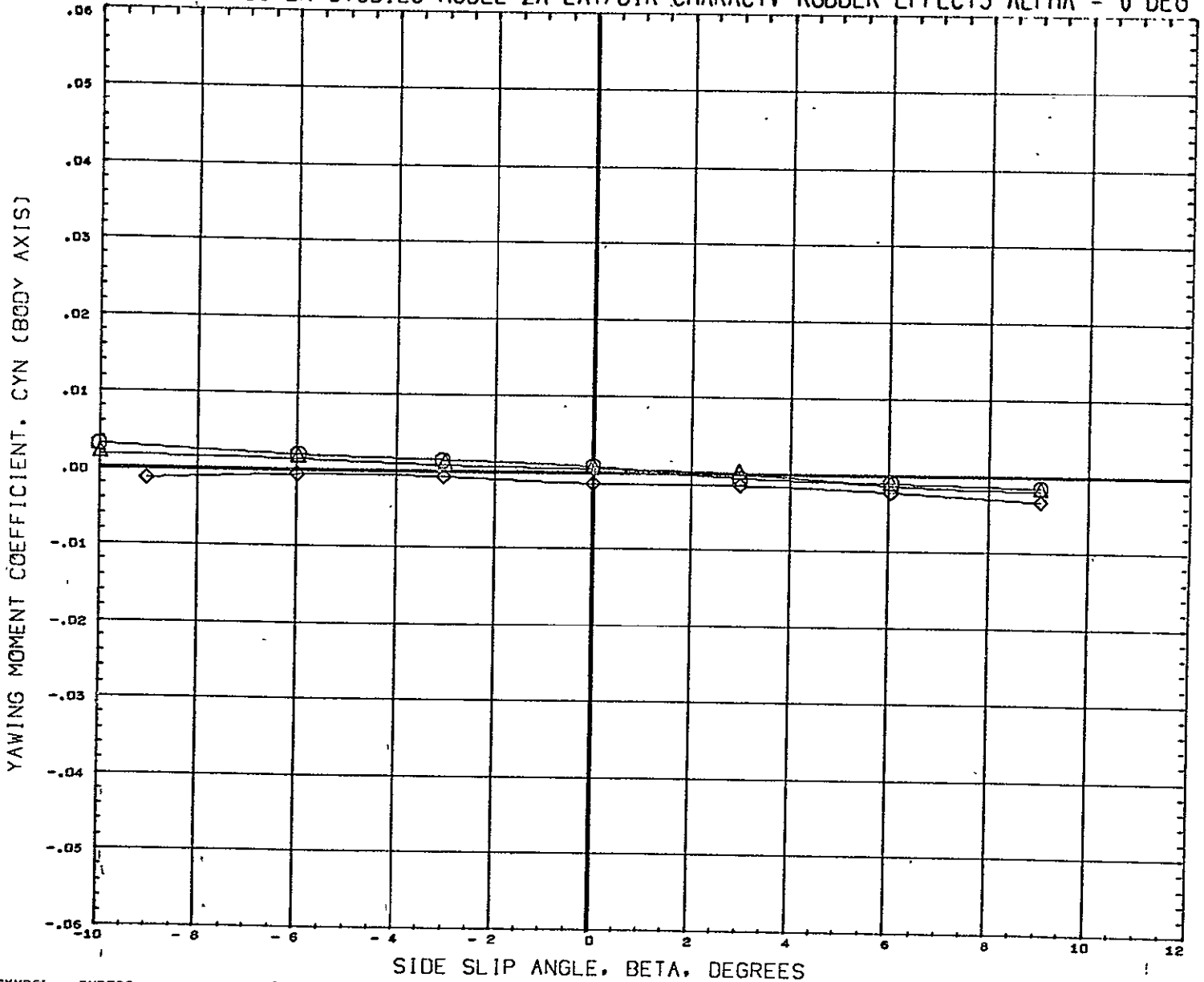
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, RUDDER EFFECTS ALPHA = 0 DEG



SYMBOL	RUDDER2	PARAMETRIC VALUES			DATA SOURCE			REFERENCE INFORMATION		
○	0.000	MACH	1.960	ALPHA	0.000	DATASET	RUDDER2	SREF	9.0250	sq. IN
△	10.000	ELEVN3	0.000	STING	4.000	B4101X	0.000	LREF	6.1420	INCHES
◇	20.000					A4113X	20.000	BREF	6.1420	INCHES
								XMRF	3.9950	INCHES
								YMRF	0.0000	INCHES
								ZMRF	0.1350	INCHES
								SCALE	0.0033	SCALE

DATA HIST. CODE \*A

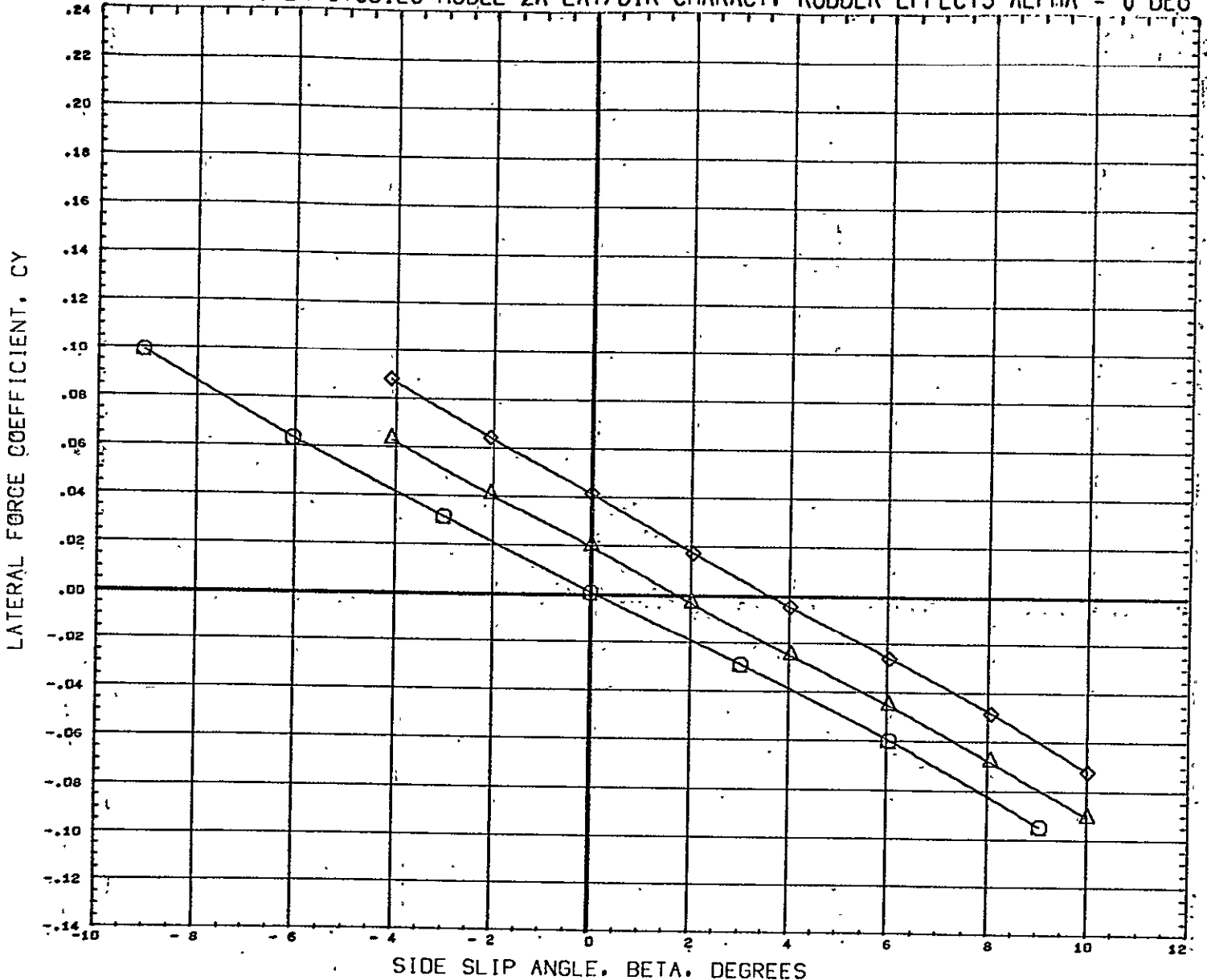
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, RUDDER EFFECTS ALPHA = 0 DEG



SYMBOL	RUDER2	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
○	0.000	MACH 4.960 ALPHA 0.000	RUDER2 DATASET B4101X 0.000	SREF 9.0250 SQ. IN
△	10.000	ELEVN3 0.000 STING 4.000	RUDER2 DATASET A4112X 10.000	LREF 6.1420 INCHES
◇	20.000			BREF 6.1420 INCHES
				XMRP 3.9950 INCHES
				YMRP 0.0000 INCHES
				ZMRP 0.1350 INCHES
				SCALE 0.0033 SCALE

DATA HIST. CODE \*A

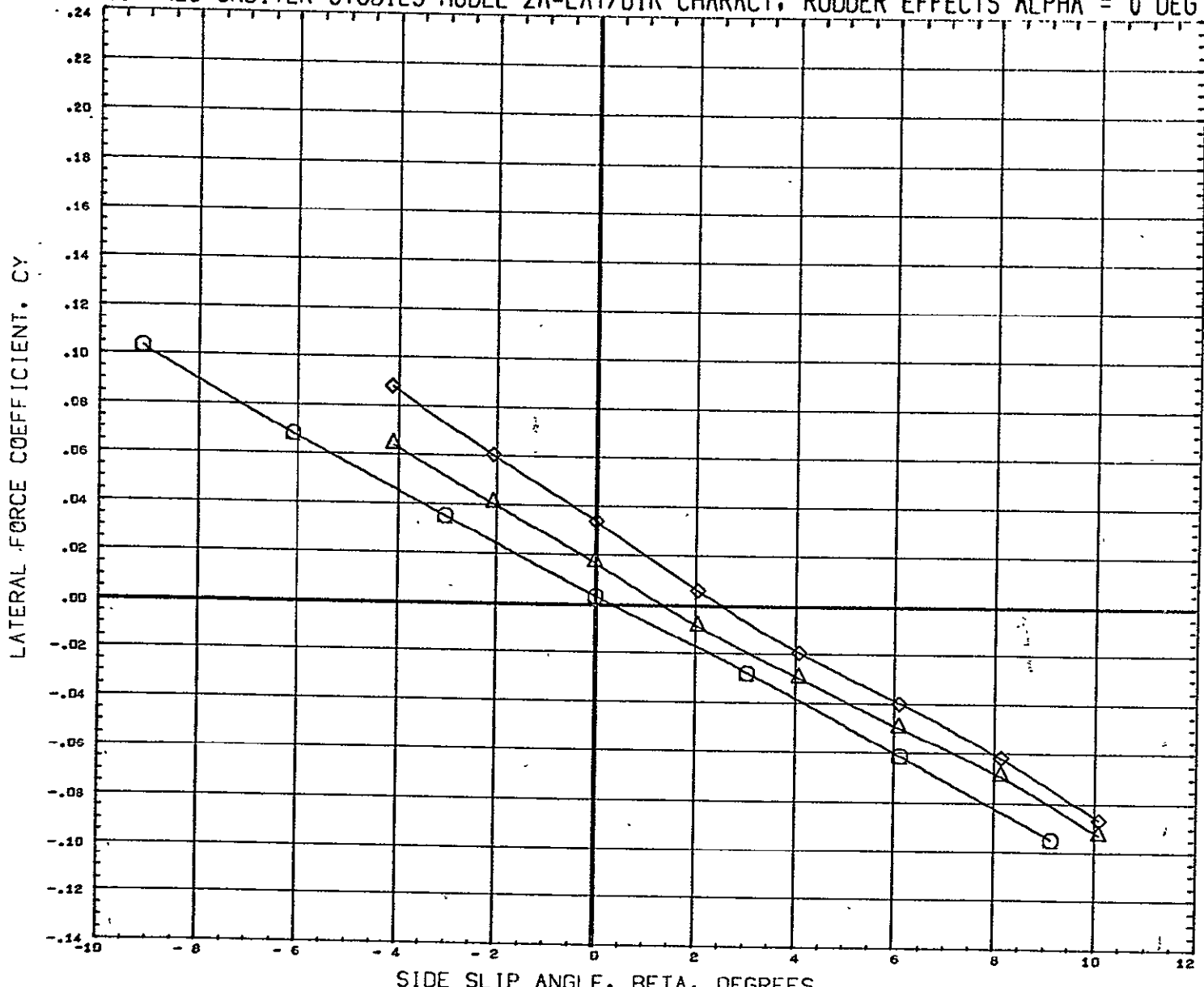
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, RUDDER EFFECTS ALPHA = 0 DEG



SYMBOL	RUDER2	MACH	ELEVNS	PARAMETRIC VALUES	ALPHA	STING	DATA SOURCE	RUDER2	DATASET	RUDER2	DATASET	RUDER2	SREF	LREF	BREF	XMRP	YMRP	ZMRP	SCALE	REFERENCE INFORMATION	SO, IN
○	0.000	0.599	0.000	0.000	0.000	4.000	B4101X	0.000	A4112X	10.000	9.0250	6.1420	6.1420	3.9950	0.0000	0.1350	0.0033				INCHES
△	10.000	0.599	0.000	0.000	0.000	4.000	B4101X	0.000	A4112X	10.000	9.0250	6.1420	6.1420	3.9950	0.0000	0.1350	0.0033				INCHES
◇	20.000	0.599	0.000	0.000	0.000	4.000	A4113X	20.000													INCHES

DATA HIST. CODE \*A

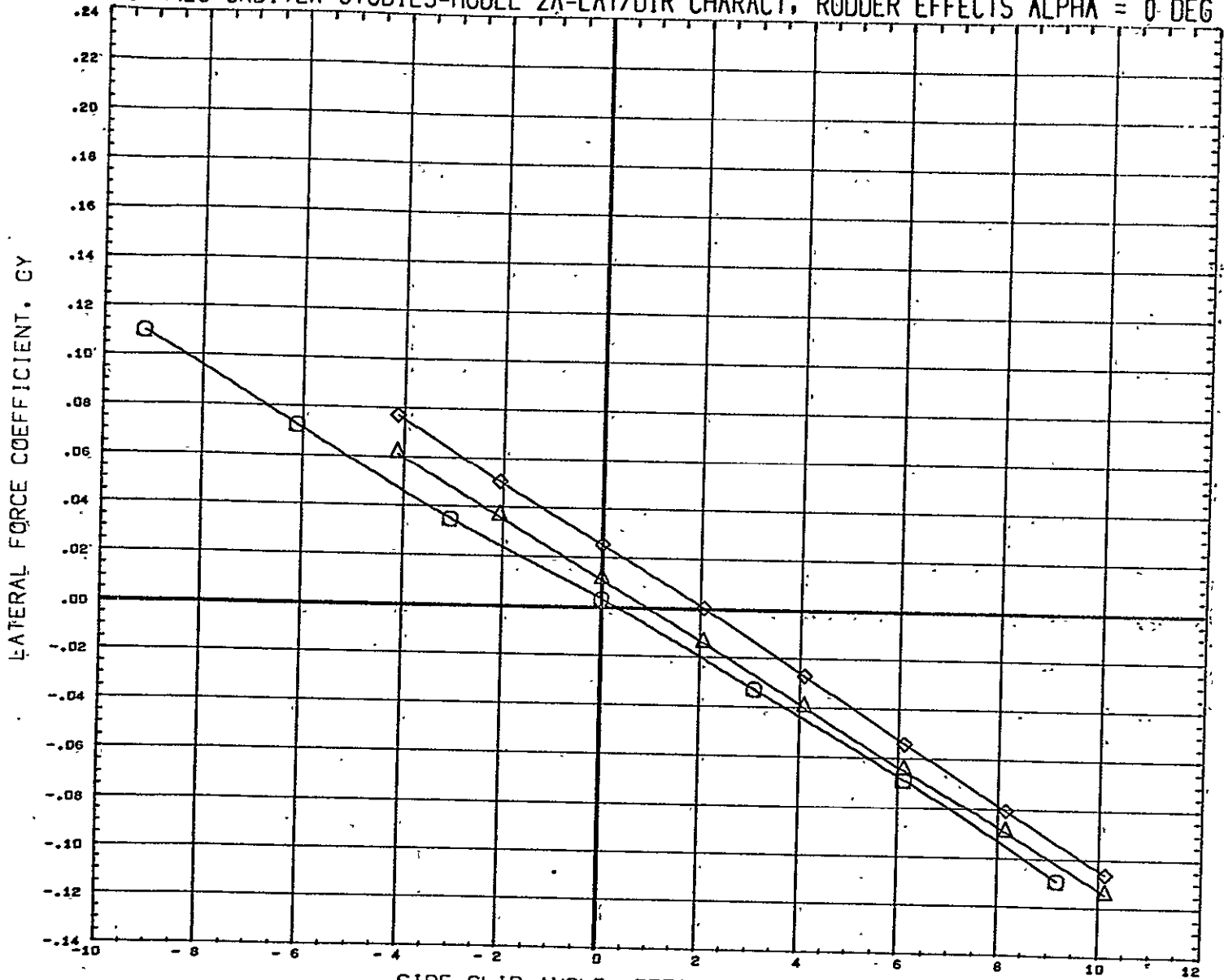
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, RUDDER EFFECTS ALPHA = 0 DEG



SYMBOL	RUDER2	MACH	PARAMETRIC VALUES		DATA SOURCE			REFERENCE INFORMATION		
○	0.000	0.903	ALPHA	0.000	0.000	RUDER2	SREF	9.0250	9.0250	INCHES
△	10.000	ELEVNS	STING	4.000	B4101X	0.000	LREF	6.1420	6.1420	INCHES
◇	20.000				A4113X	20.000	BREF	6.1420	6.1420	INCHES
							XMRP	3.9950	3.9950	INCHES
							YMRP	0.0000	0.0000	INCHES
							ZMRP	0.1350	0.1350	INCHES
							SCALE	0.0033	0.0033	SCALE

DATA HIST. CODE #A

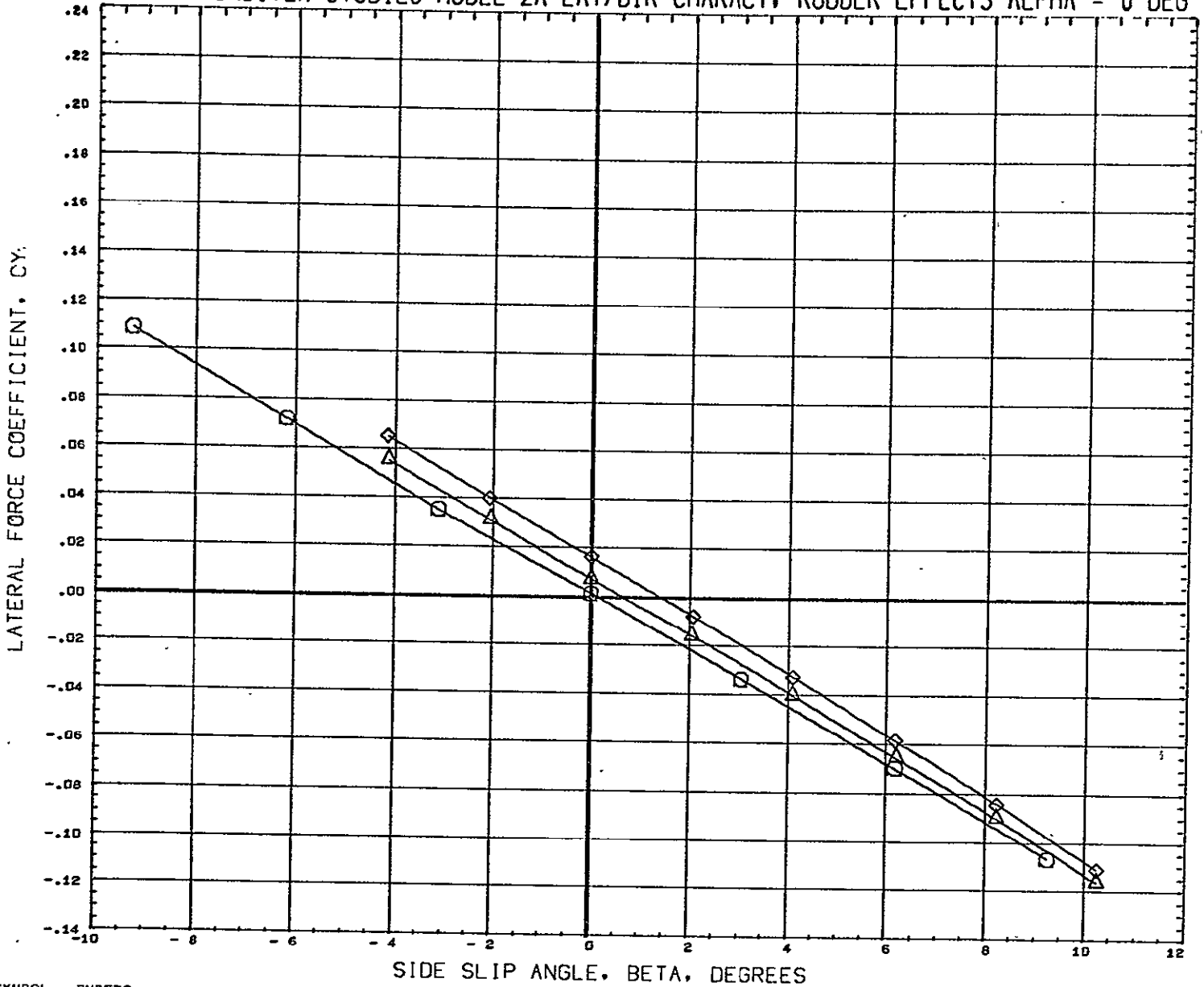
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, RUDDER EFFECTS ALPHA = 0 DEG



SYMBOL	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION		
	RUDER2	MACH	ALPHA	STING	DATASET	RUDER2	DATASET	RUDER2	SREF	SQ.IN
○	0.000	1.098	0.000	0.000	B4101X	0.000	A4112X	10.000	6.1420	INCHES
△	10.000	ELEVNS	0.000	4.000	A4113X	20.000			6.1420	INCHES
◇	20.000								3.9950	INCHES
									0.0000	INCHES
									0.1350	INCHES
									0.0033	SCALE

DATA HIST. CODE #A

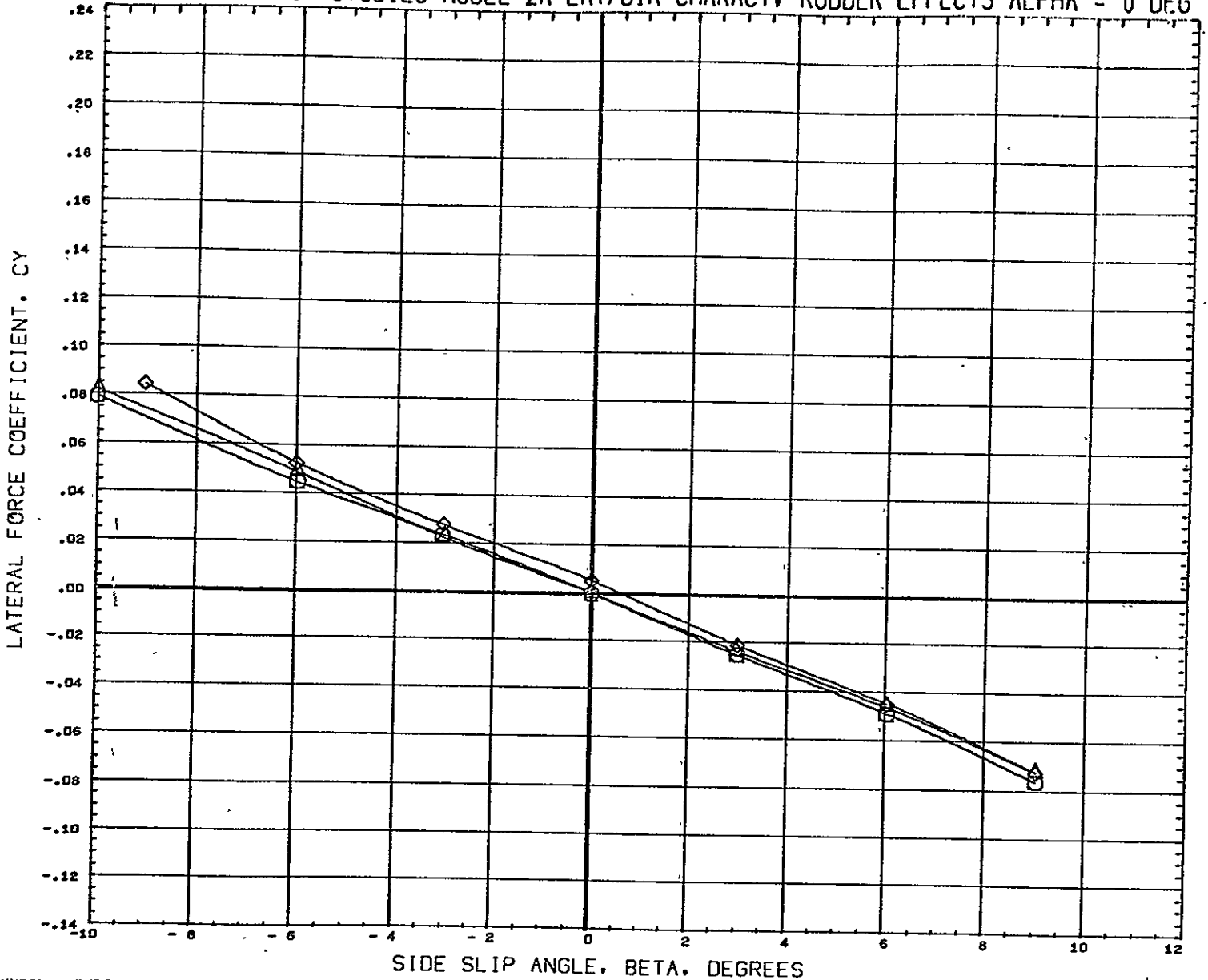
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, RUDDER EFFECTS ALPHA = 0 DEG



SYMBOL	RUDER2	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
○	0.000	MACH 1.960 ALPHA 0.000 DATASET B4101X	RUDER2 0.000 DATASET A4112X	SREF 9.0250 SQ. IN
△	10.000	ELEVNS 0.000 STING 4.000 DATASET A4113X	RUDER2 20.000 DATASET A4112X	LREF 6.1420 INCHES
◇	20.000			BREF 6.1420 INCHES
				XMRP 3.9950 INCHES
				YMRP 0.0000 INCHES
				ZMRP 0.1350 INCHES
				SCALE 0.0033 SCALE

DATA HIST. CODE #A

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, RUDDER EFFECTS ALPHA = 0 DEG

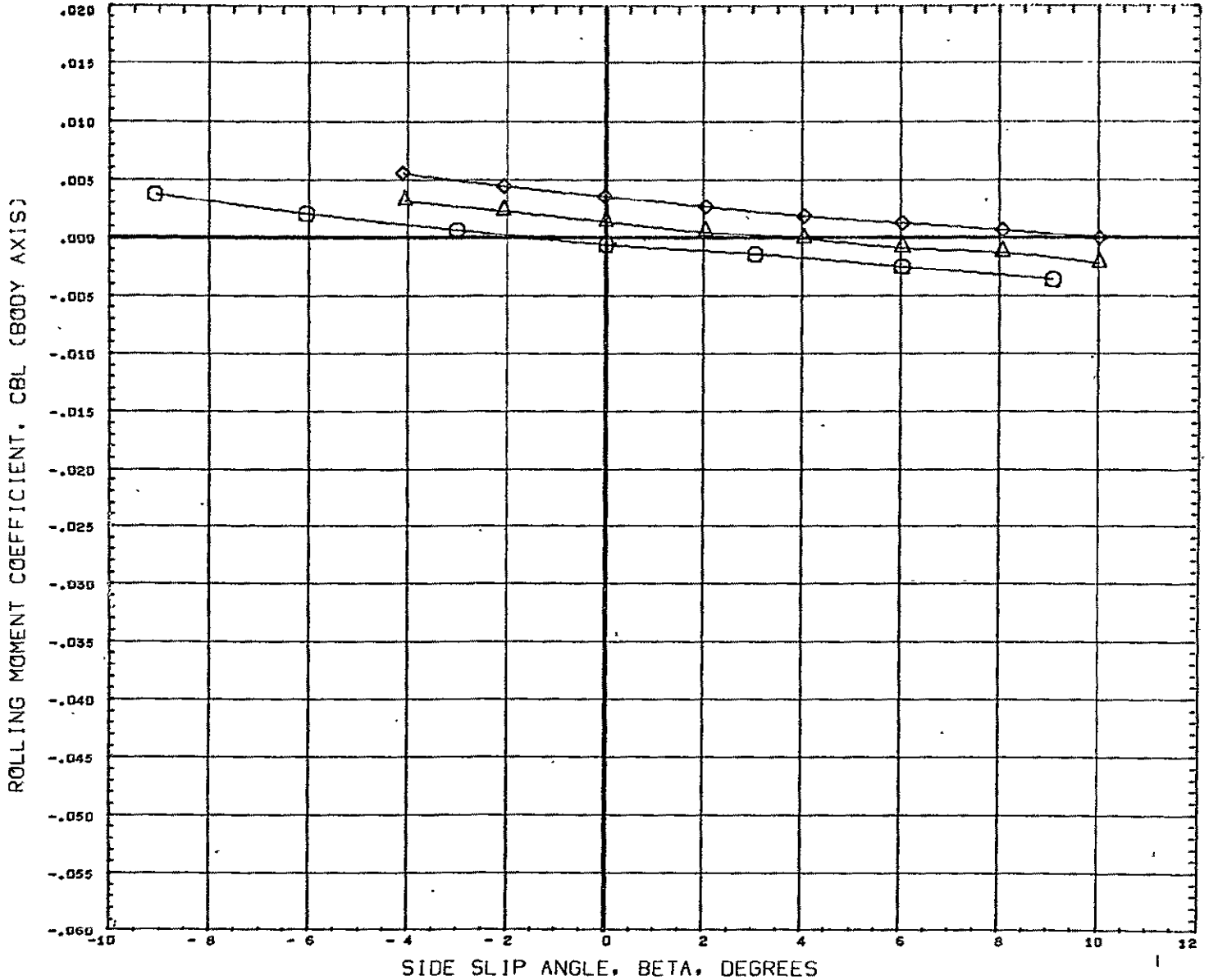


SYMBOL	RUDER2	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION		
○	0.000	MACH	4.960	ALPHA	0.000	DATASET	RUDER2	SREF	9.0250	sq. IN	
△	10.000	ELEVNS	0.000	STING	4.000	B4101X	0.000	LREF	6.1420	INCHES	
◇	20.000					A4113X	20.000	BREF	6.1420	INCHES	
								XHRP	3.9950	INCHES	
								YHRP	0.0000	INCHES	
								ZHRP	0.1350	INCHES	
								SCALE	0.0033	SCALE	

DATA HIST. CODE #A

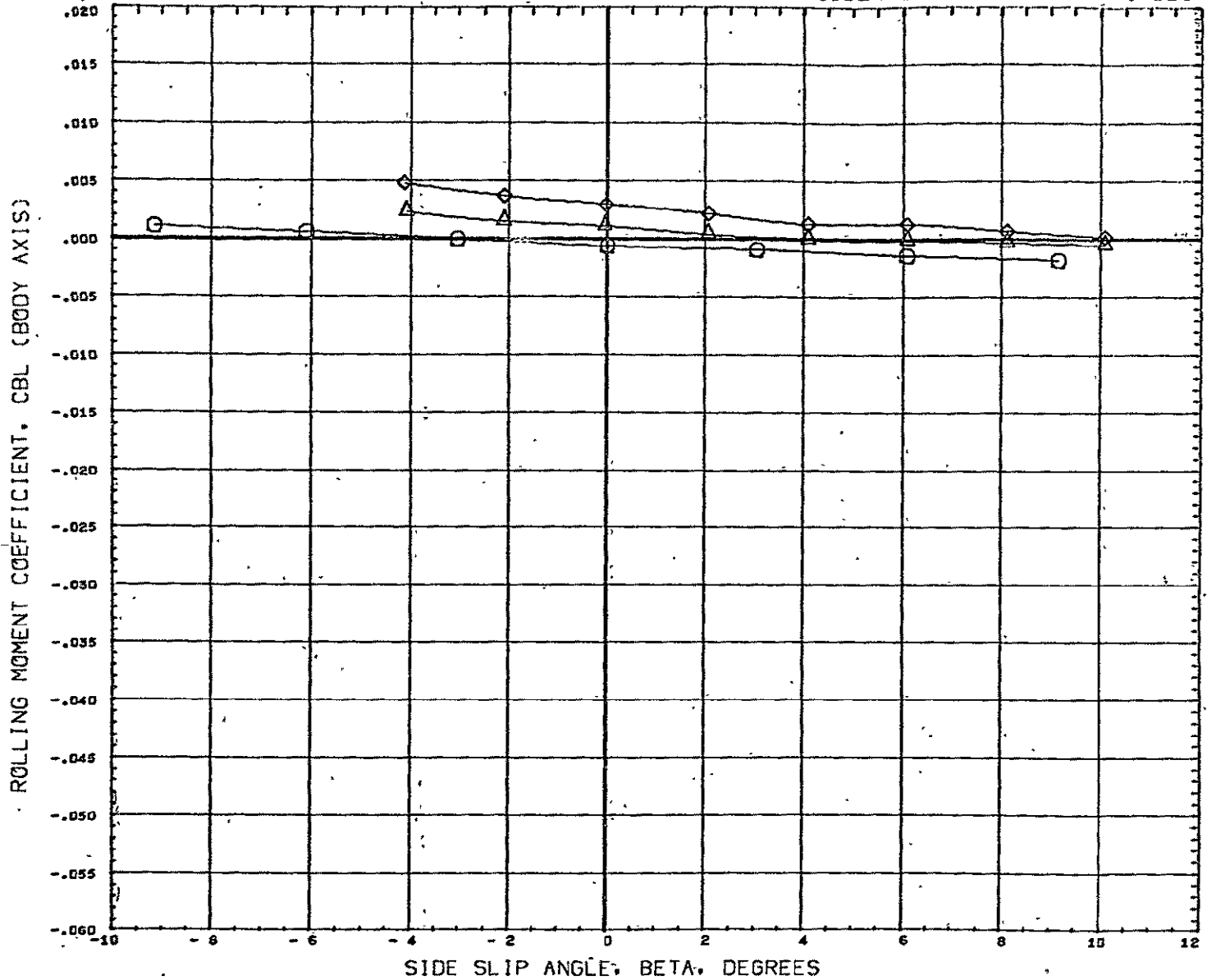


LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, RUDDER EFFECTS ALPHA = 0 DEG



SYMBOL	RUDER2	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION			
○	0.000	MACH	0.599	ALPHA	0.000	DATASET	RUDER2	DATASET	RUDER2	SREF	9.0250	50.1N
△	10.000	ELEVNS	0.000	STINC	4.000	B4101X	0.000	A4112X	10.000	LREF	6.1420	INCHES
◇	20.000					A4113X	20.000			BREF	6.1420	INCHES
										XMRP	3.9950	INCHES
										YMRP	0.0000	INCHES
										ZMRP	0.1350	INCHES
										SCALE	0.0033	SCALE

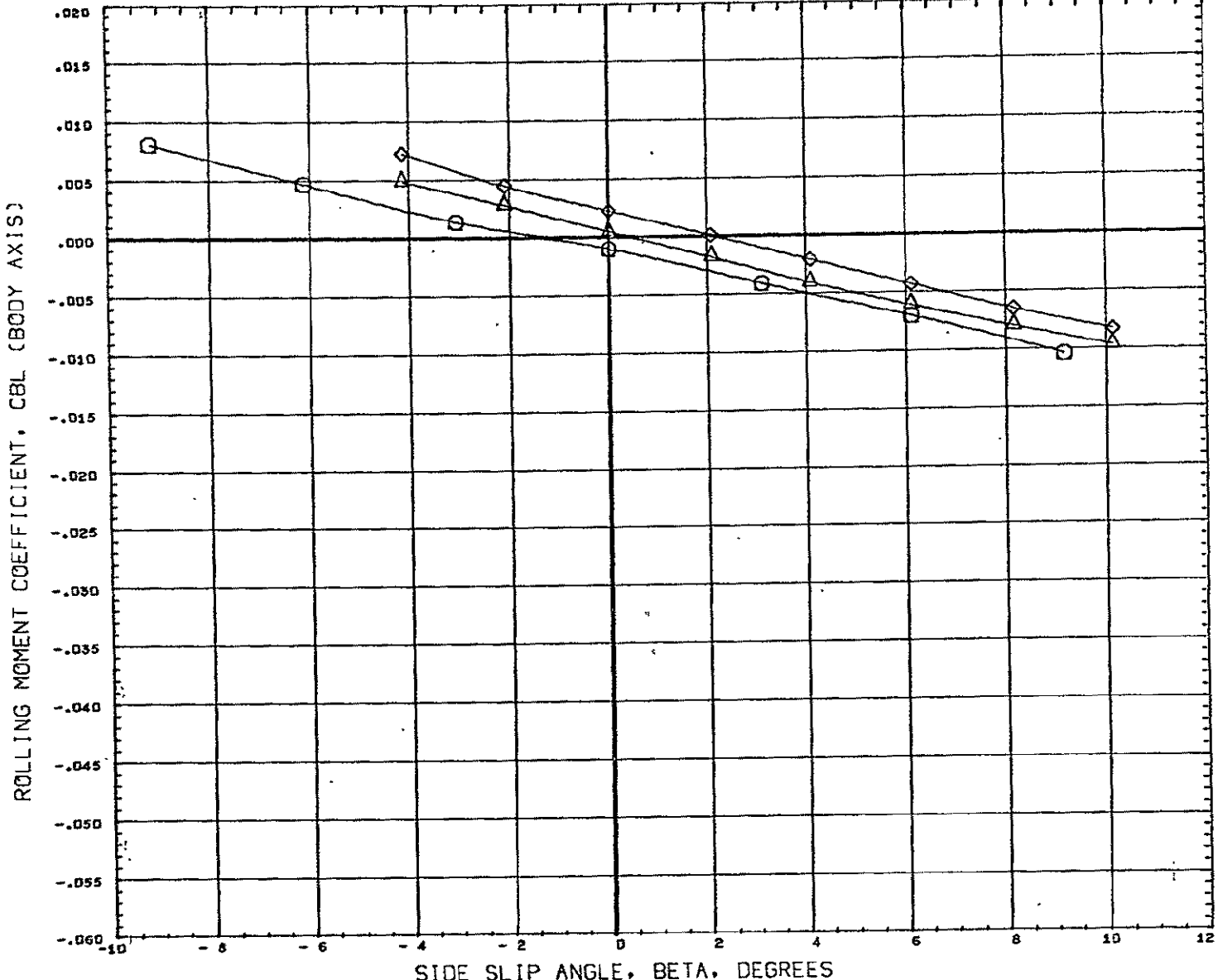
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, RUDDER EFFECTS ALPHA = 0 DEG



SYMBOL	RUDER2	MACH	PARAMETRIC VALUES		DATA SOURCE			REFERENCE INFORMATION		
○	0.000	0.903	ALPHA	0.000	DATASET	RUDER2	SCALE	SREF	9.0250	SQ. IN
△	10.000	ELEVN3	STING	4.000	B4101X	0.000	A4112X	LREF	6.1420	INCHES
◇	20.000				A4113X	20.000		BREF	6.1420	INCHES
								XHRP	3.9950	INCHES
								YHRP	0.0000	INCHES
								ZHRP	0.1350	INCHES
								SCALE	0.0033	SCALE

DATA HIST. CODE

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, RUDDER EFFECTS ALPHA = 0 DEG

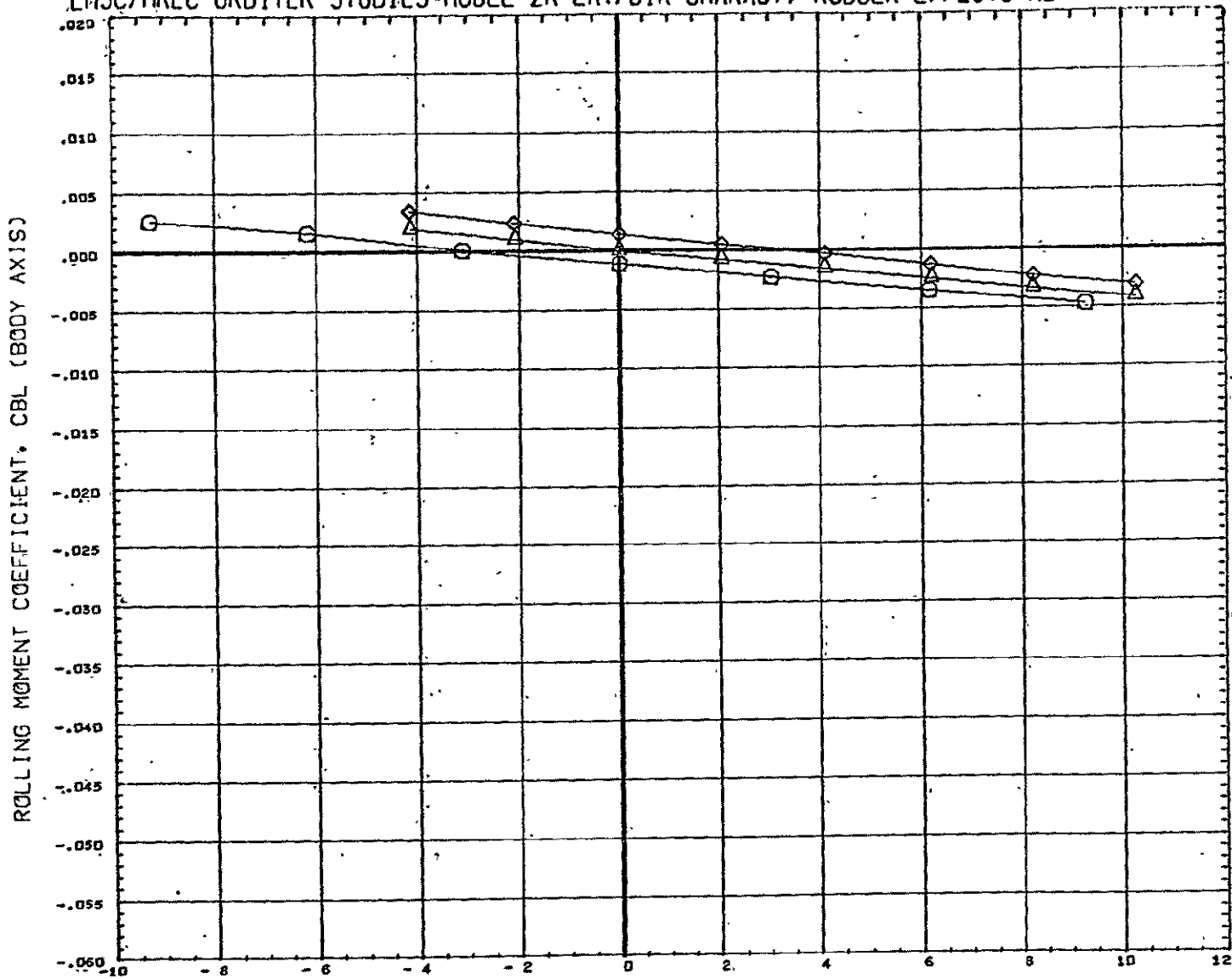


SIDE SLIP ANGLE, BETA, DEGREES

SYMBOL	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION		
	RUDER2	MACH	ALPHA	STING	RUDER2	DATASET	RUDER2	SREF	INCHES	
○	0.000	1.098	0.000	4.000	B4101X	0.000	10.000	9.0250	59. IN	
△	10.000	ELEVN3	0.000	4.000	B4101X	0.000	10.000	6.1420	INCHES	
◇	20.000				A4113X	20.000		6.1420	INCHES	
								3.9950	INCHES	
								0.0000	INCHES	
								0.1350	INCHES	
								0.0033	SCALE	

DATA HIST. CODE \*A

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, RUDDER EFFECTS ALPHA = 0 DEG

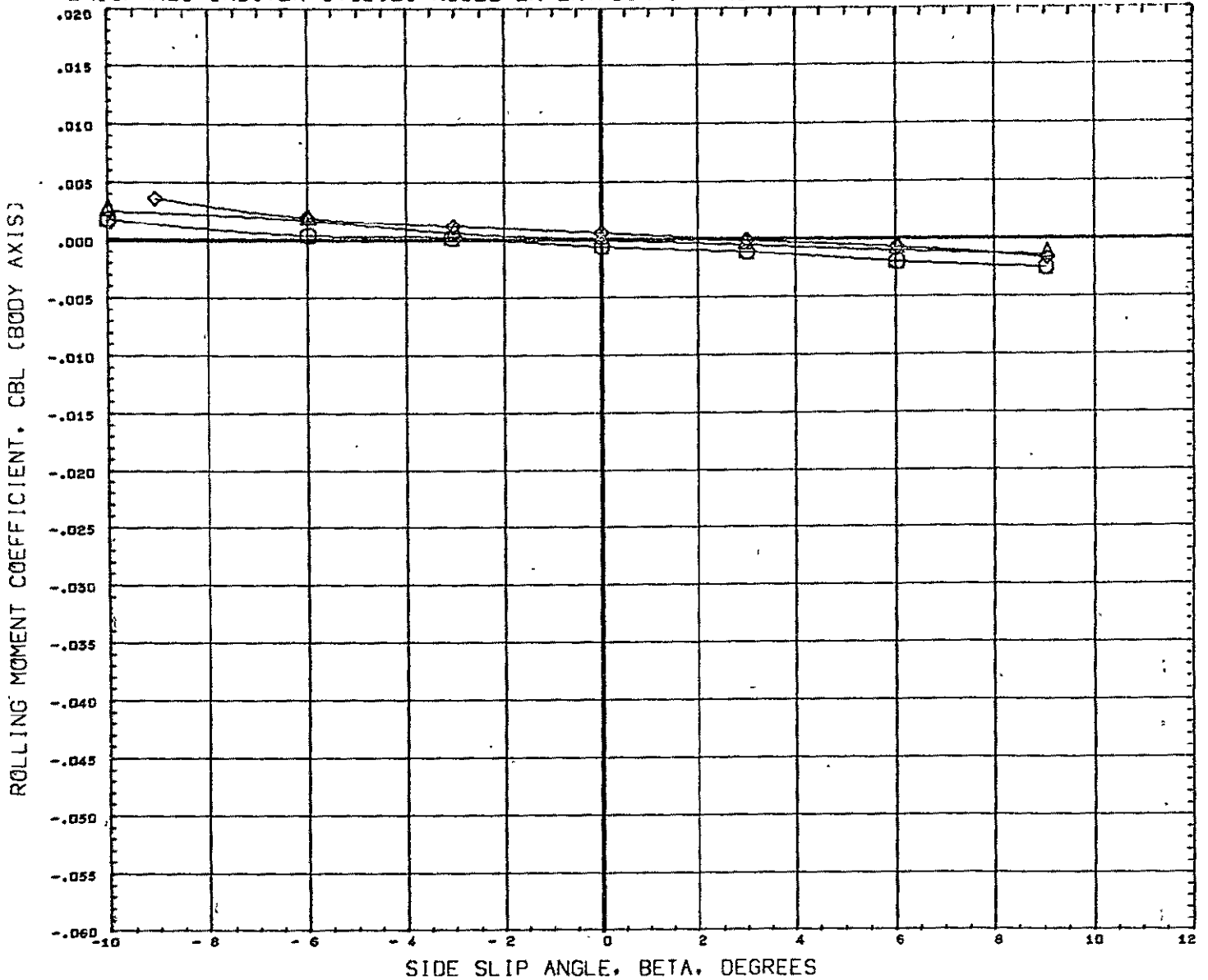


SIDE SLIP ANGLE, BETA, DEGREES

SYMBOL	RUDER2	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION		
		MACH	ALPHA	STING	DATASET	RUDER2	DATASET	RUDER2	SREF	SCALE	
○	0.000	1.960	0.000	1.000	B4101X	0.000	A4112X	10.000	9.0250	50. IN	
△	10.000	1.960	0.000	1.000	B4101X	0.000	A4112X	10.000	6.1420	INCHES	
◇	20.000	1.960	0.000	1.000	A4112X	20.000	A4112X	10.000	6.1420	INCHES	
									3.9950	INCHES	
									0.0000	INCHES	
									0.1350	INCHES	
									0.0033	SCALE	

DATA HIST. CODE #A

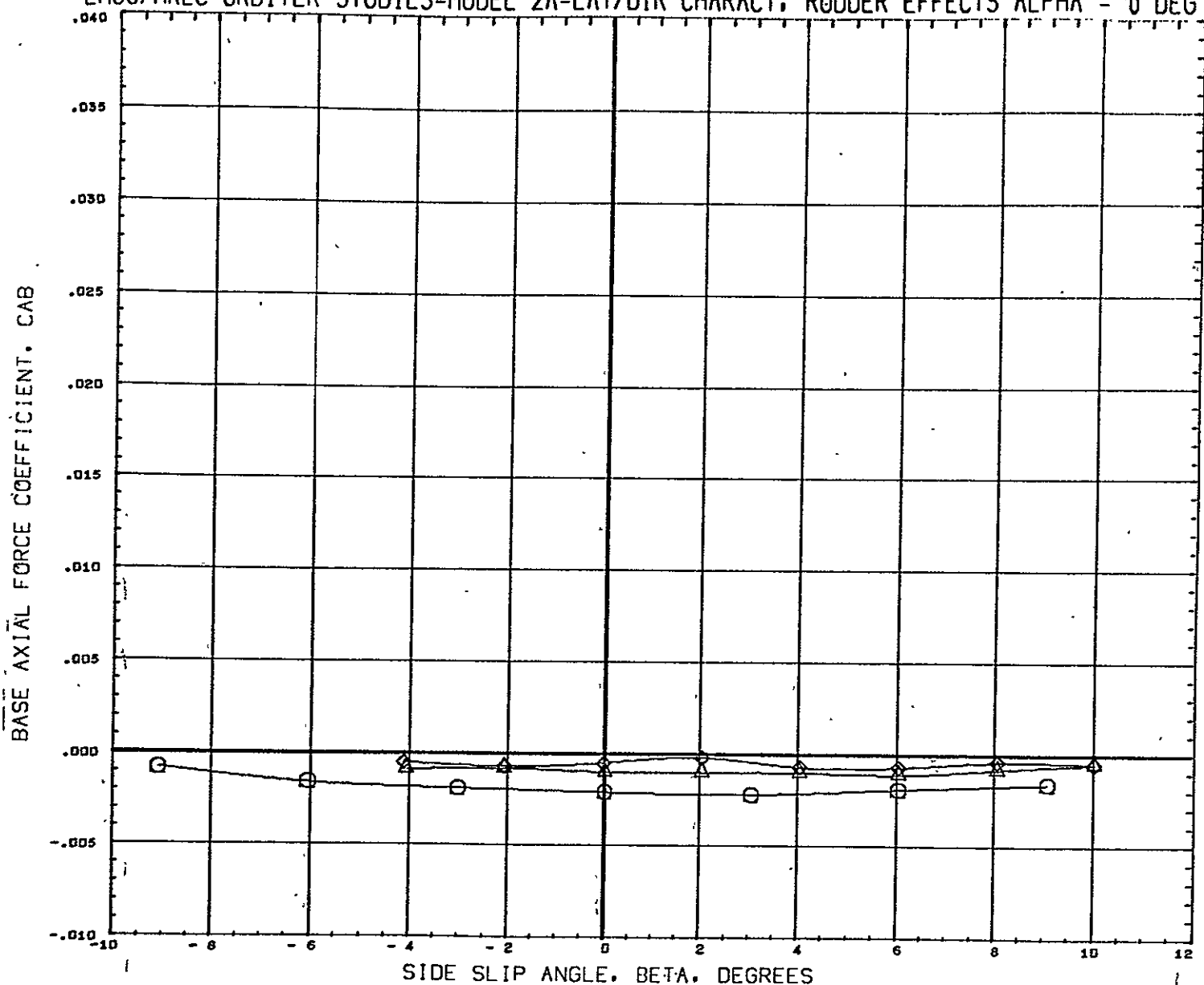
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, RUDDER EFFECTS ALPHA = 0 DEG



SYMBOL	RUDER2	MACH	PARAMETRIC VALUES			DATA SOURCE			REFERENCE INFORMATION		
○	0.000	4.960	ALPHA	0.000	0.000	RUDER2	0.000	SREF	9.0250	SG.IN	
△	10.000	0.000	STING	4.000	B4101X	0.000	A4112X	LREF	6.1420	INCHES	
◇	20.000				A4113X	20.000		BREF	6.1420	INCHES	
								XHRF	3.9950	INCHES	
								YHRF	0.0000	INCHES	
								ZHRF	0.1350	INCHES	
								SCALE	0.0033	SCALE	

DATA HIST. CODE \*A

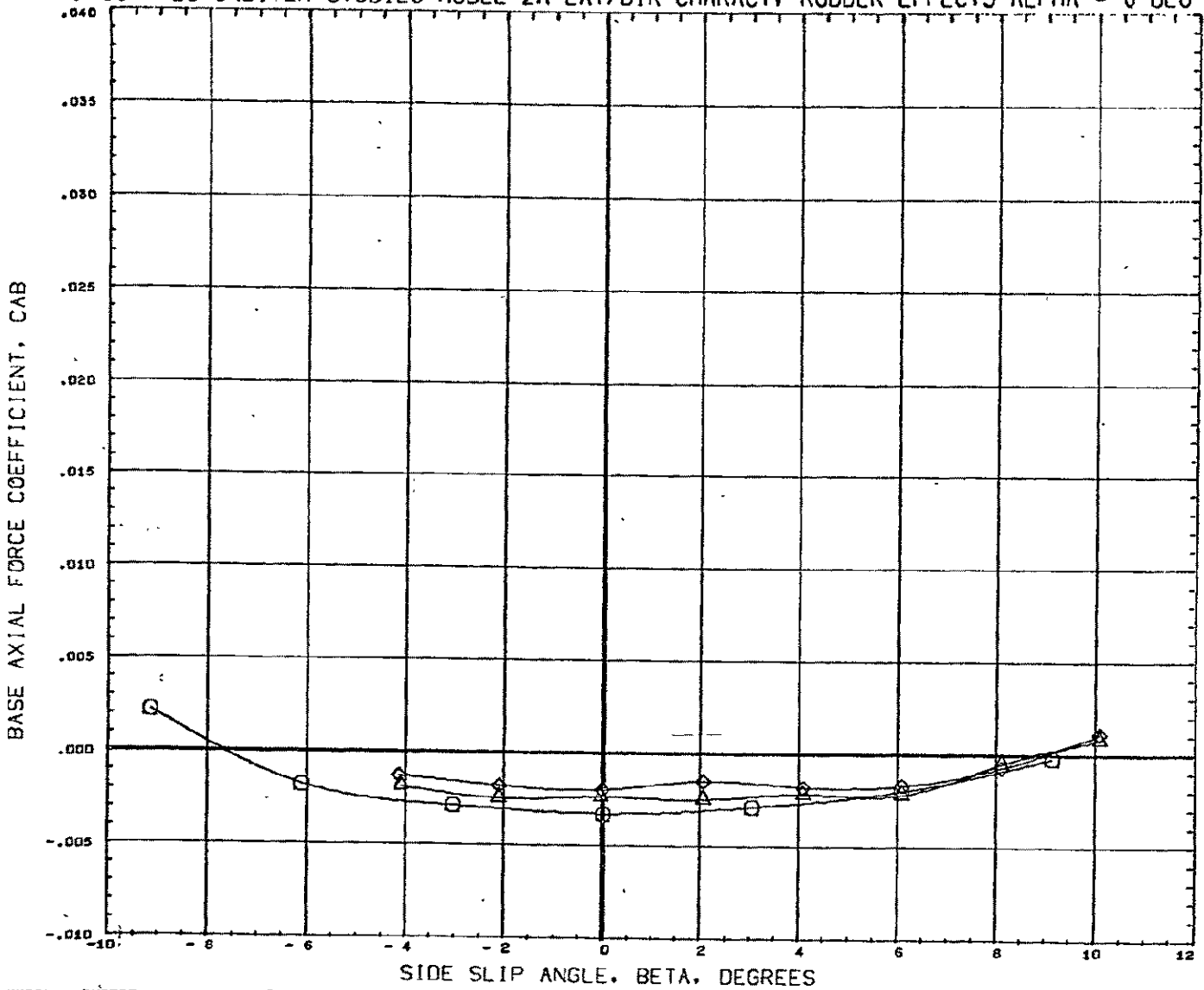
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, RUDDER EFFECTS ALPHA = 0 DEG



SYMBOL	RUDER2	PARAMETRIC VALUES			DATA SOURCE			REFERENCE INFORMATION				
○	0.000	MACH	0.599	ALPHA	0.000	DATASET	RUDER2	DATASET	RUDER2	SREF	9.0250	sq. IN
△	10.000	ELEVN3	0.000	STING	4.000	B4101X	0.000	A4112X	10.000	LREF	6.1420	INCHES
◇	20.000					A4113X	20.000			BREF	6.1420	INCHES
										XHRP	3.9950	INCHES
										YHRP	0.0000	INCHES
										ZHRP	0.1350	INCHES
										SCALE	0.0033	SCALE

DATA HIST. CODE #A

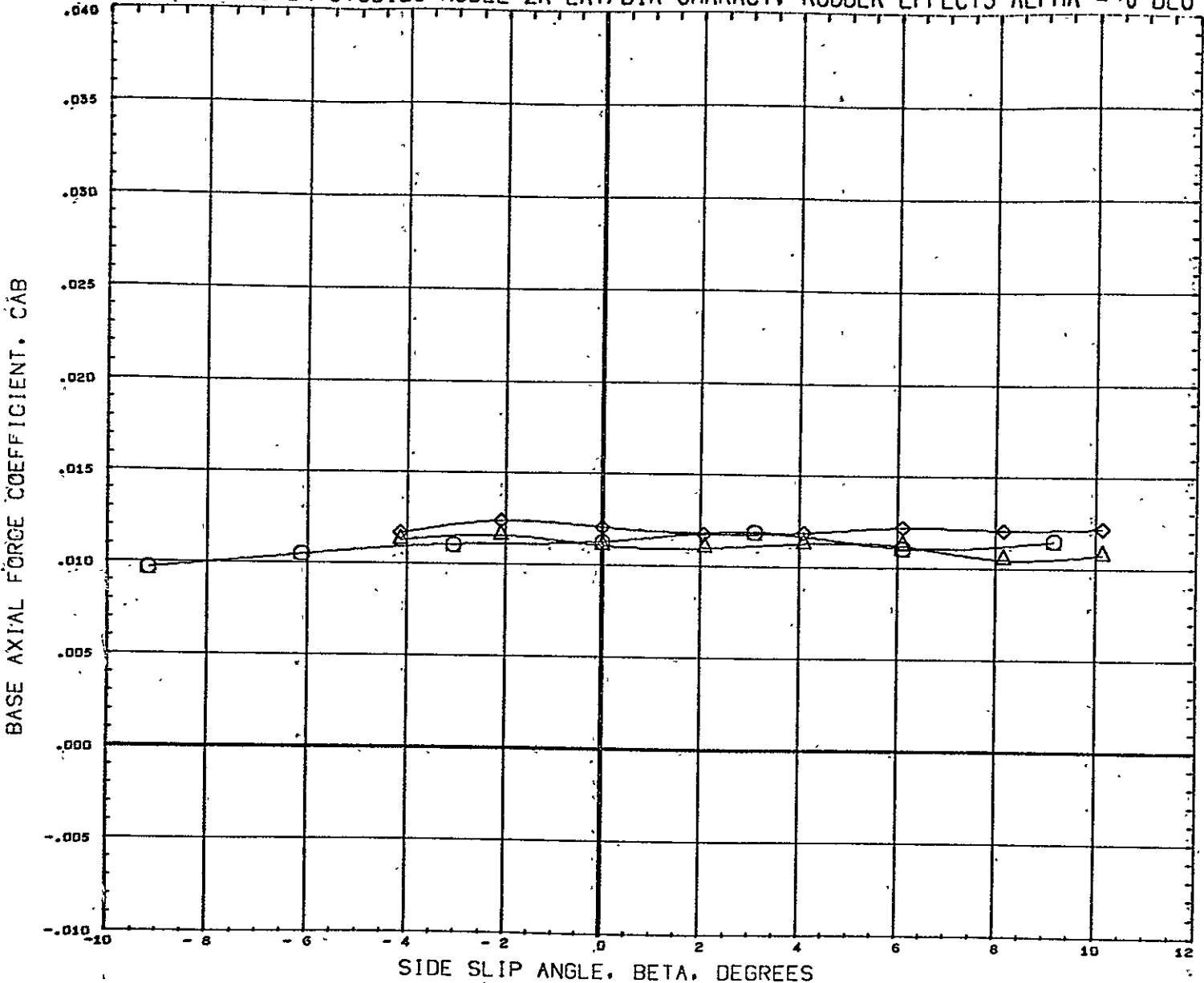
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, RUDDER EFFECTS ALPHA = 0 DEG



YMBOL	RUDER2	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
○	0.000	MACH 0.903 ALPHA 0.000	DATA SOURCE	SREF 9.0250 SQ. IN
△	19.005	ELEVNS 0.000 STING 4.000	RUDER2 0.000 DATASET A4112X RUDER2 10.000	LREF 6.1420 INCHES
◇	20.000			BREF 6.1420 INCHES
				XHRP 3.9950 INCHES
				YHRP 0.0000 INCHES
				ZHRP 0.1350 INCHES
				SCALE 0.0033 SCALE

DATA HIST. CODE #A

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, RUDDER EFFECTS ALPHA = 0 DEG

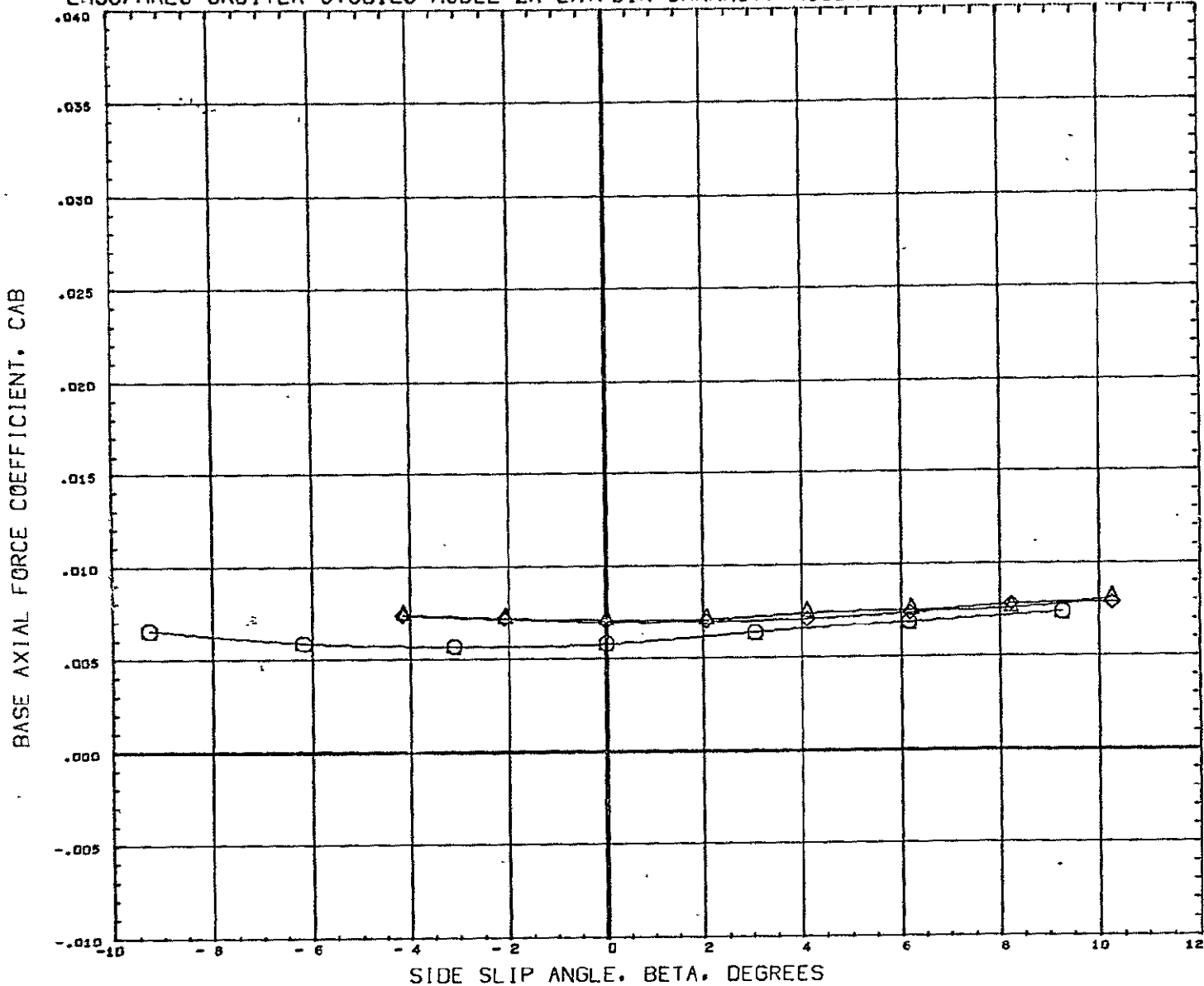


SYMBOL	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION		
	RUDER2	MACH	ALPHA	DATA SET	RUDER2	DATA SET	RUDER2	SREF	SR.IN	
○	5.000	1.098	0.000	B4101X	0.000	A4112X	10.000	9.0250	90.00	
△	10.000	1.098	0.000	B4101X	0.000	A4112X	10.000	6.1420	61.42	
◇	20.000	1.098	0.000	A4113X	20.000			6.1420	61.42	
		ELEVNS	STING					XMRP	3.9950	39.95
								YMRP	0.0000	0.00
								ZMRP	0.1350	13.50
								SCALE	0.0033	0.33

DATA HIST. CODE \*A



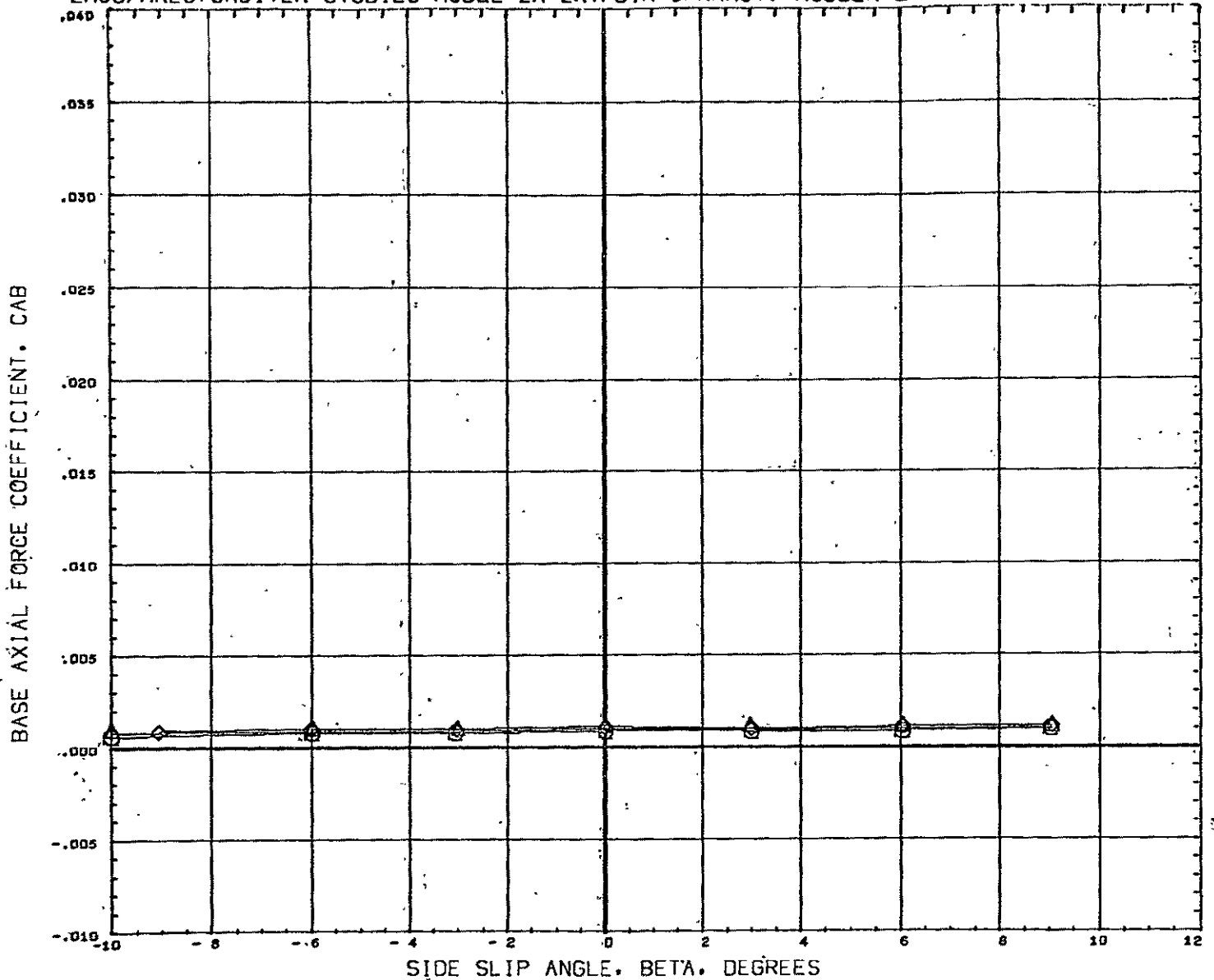
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, RUDDER EFFECTS ALPHA = 0 DEG



SYMBOL	RUDER2	PARAMETRIC VALUES				DATA SOURCE				REFERENCE INFORMATION		
		MACH	ALPHA	STING	4.000	DATA SET	RUDER2	DATA SET	RUDER2	SREF	SQ. IN	
○	0.000	1.960	0.000	0.000	0.000	B4101X	0.000	A4112X	10.000	6.1420	INCHES	
△	10.000	1.960	0.000	4.000	4.000	B4101X	0.000	A4112X	10.000	6.1420	INCHES	
◇	20.000	1.960	0.000	4.000	4.000	A4113X	20.000			3.9950	INCHES	
										0.0000	INCHES	
										0.1350	INCHES	
										0.0033	SCALE	

DATA HIST. CODE #A

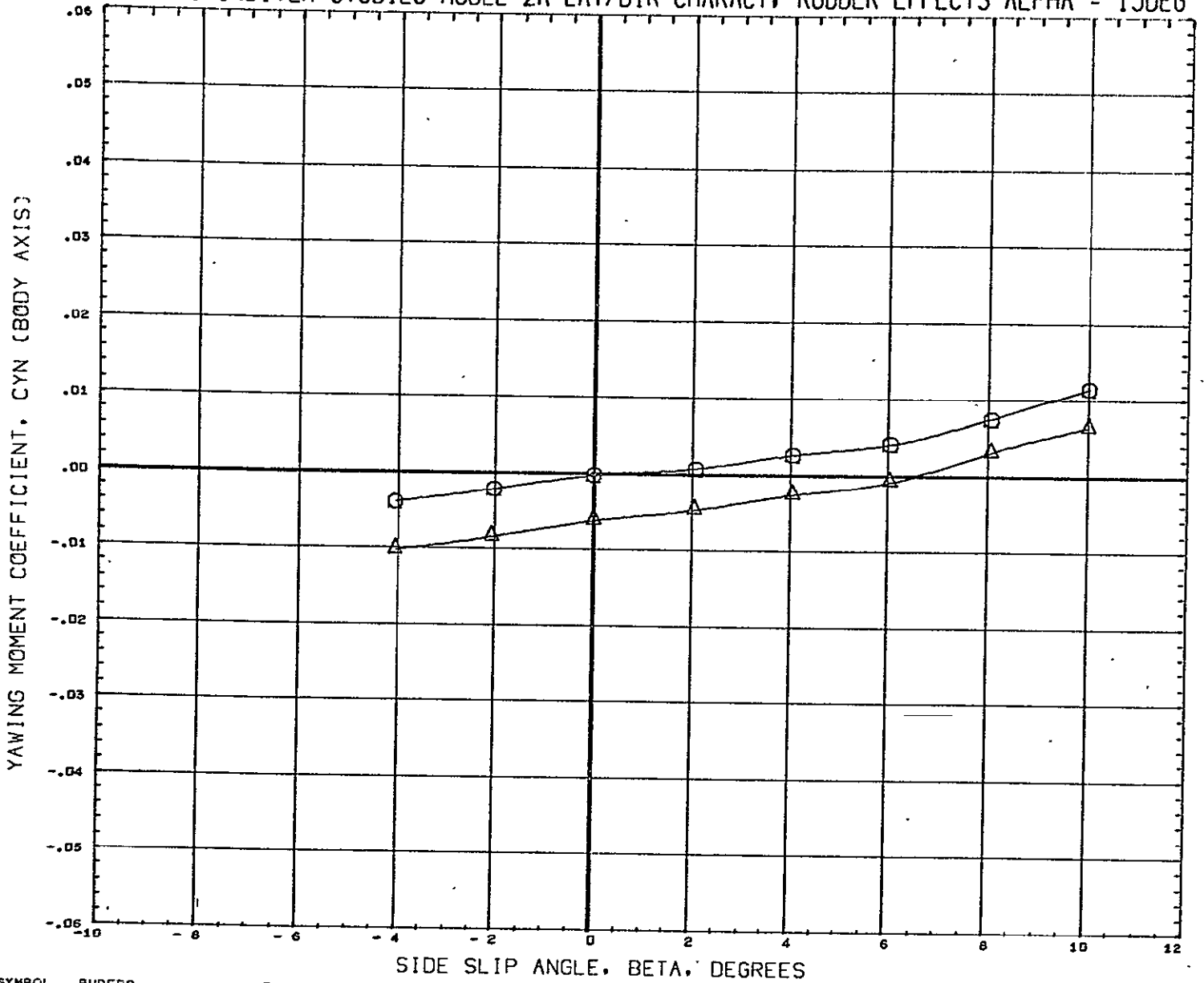
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, RUDDER EFFECTS ALPHA = 0 DEG



SYMBOL	RUDDER2	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
○	0.000	MACH 4.950 ALPHA 0.000	DATASET RUDDER2 DATASET RUDDER2	SREF 9.0250 SQ. IN
△	10.000	ELEVNS 0.000 STING 4.000	B4101X 0.000 A4112X 10.000	LREF 6.1420 INCHES
◇	20.000		A4113X 20.000	BREF 6.1420 INCHES
				XMRF 3.9950 INCHES
				YMRF 0.0000 INCHES
				ZMRF 0.1350 INCHES
				SCALE 0.0035 SCALE

DATA HIST. CODE #A

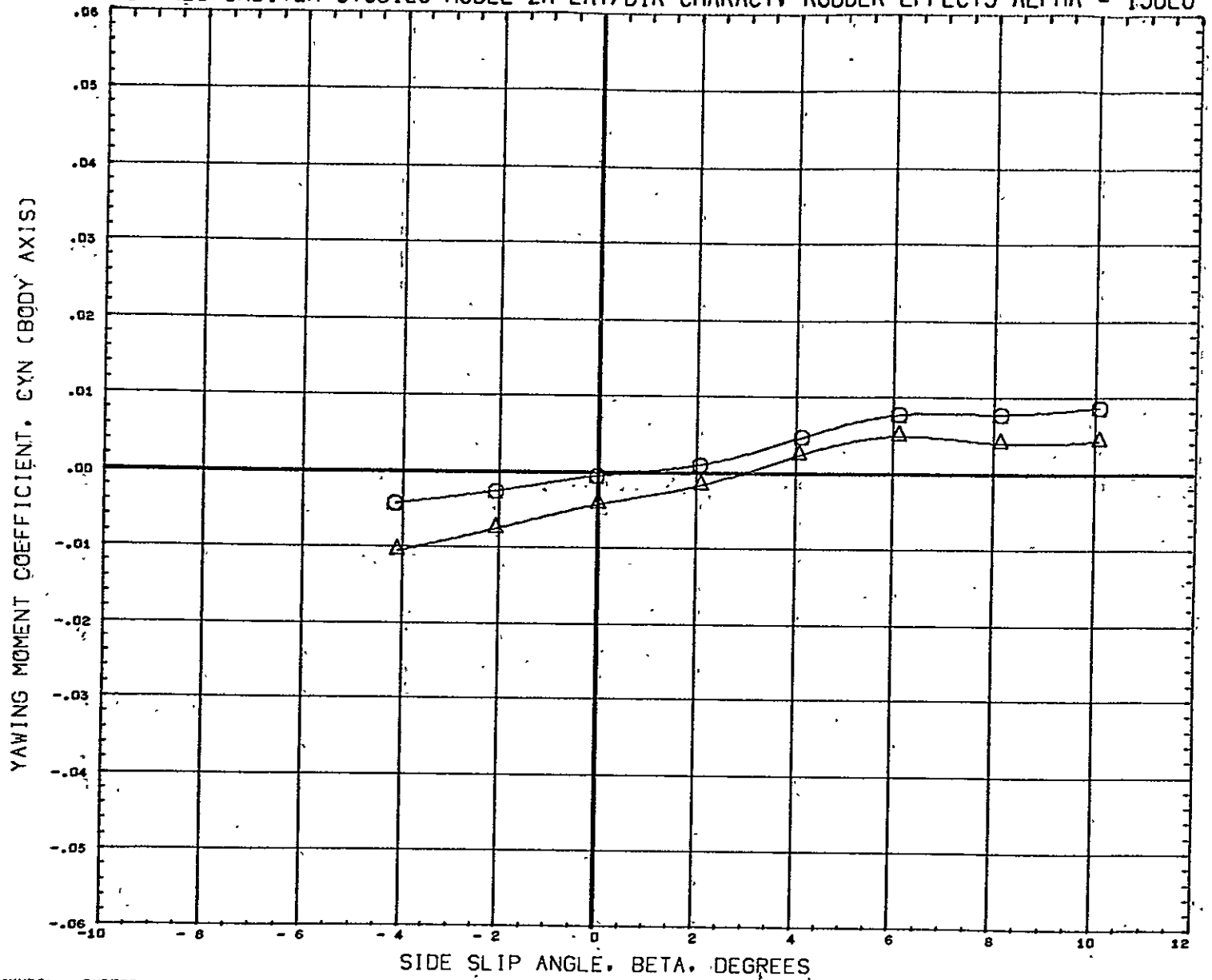
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, RUDDER EFFECTS ALPHA = 15DEG



SYMBOL	RUDER2	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
○	0.000	MACH 0.597 ALPHA 15.000 DATASET B4101Z	RUDER2 0.000 DATASET A4112Z	SREF 9.0250 SQ. IN
△	10.000	ELEVNS 0.000 STING 4.000	RUDER2 10.000	LREF 6.1420 INCHES
				BREF 6.1420 INCHES
				XMRP 3.9950 INCHES
				YMRP 0.0000 INCHES
				ZMRP 0.1350 INCHES
				SCALE 0.0033 SCALE

DATA HIST. CODE #A

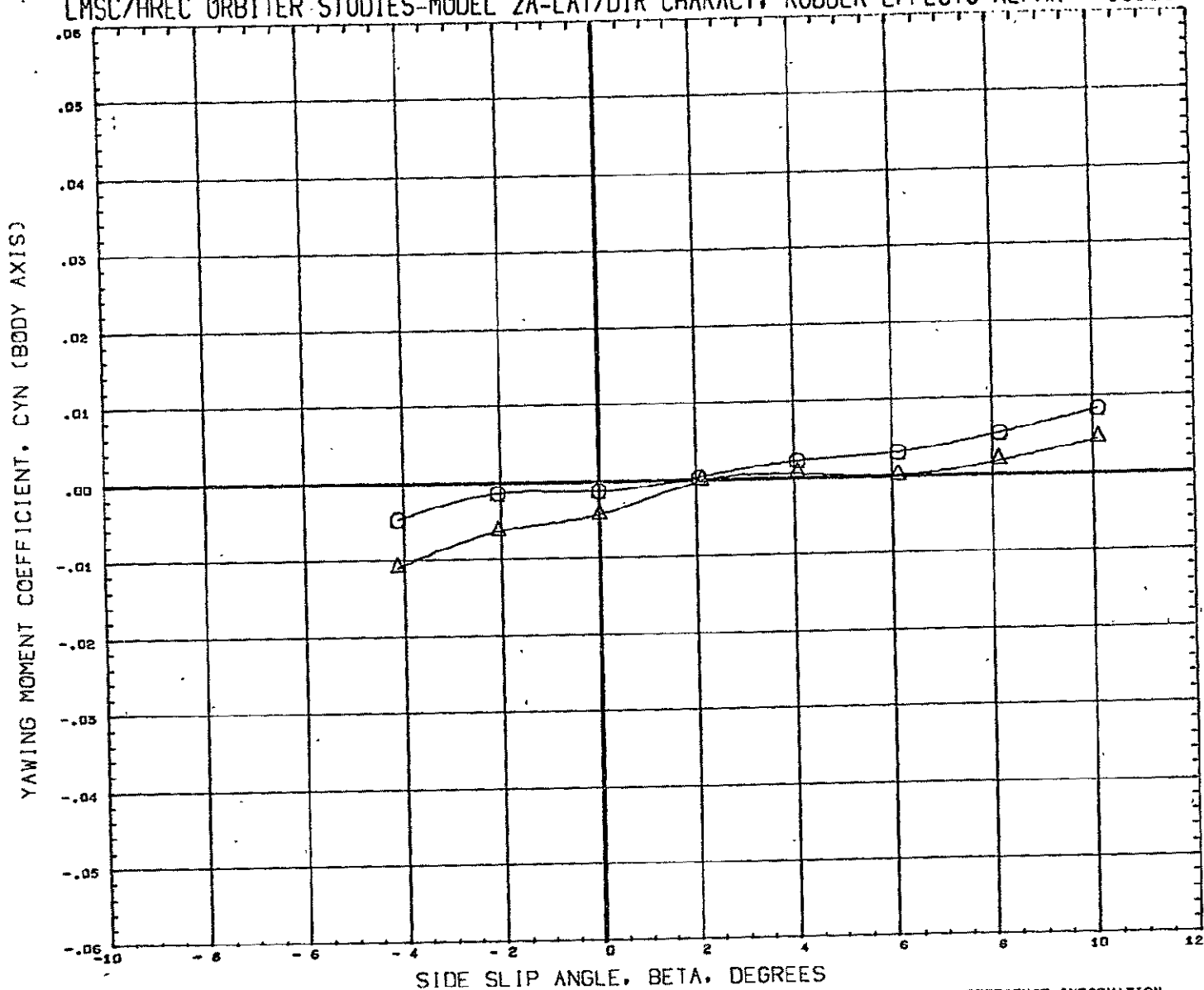
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, RUDDER EFFECTS ALPHA = 15DEG



SYMBOL	RUDDER2	PARAMETRIC VALUES			DATA SOURCE			REFERENCE INFORMATION				
○	0.000	MACH	0.899	ALPHA	15.000	DATASET	RUDDER2	DATASET	RUDDER2	SREF	9.0250	sq. IN
△	10.000	ELEVNS	0.000	STING	4.000	B4101Z	0.000	A4112Z	10.000	LREF	6.1420	INCHES
										BREF	6.1420	INCHES
										XMRP	3.9950	INCHES
										YMRP	0.0000	INCHES
										ZMRP	0.1350	INCHES
										SCALE	0.0033	SCALE

DATA HIST. CODE #A

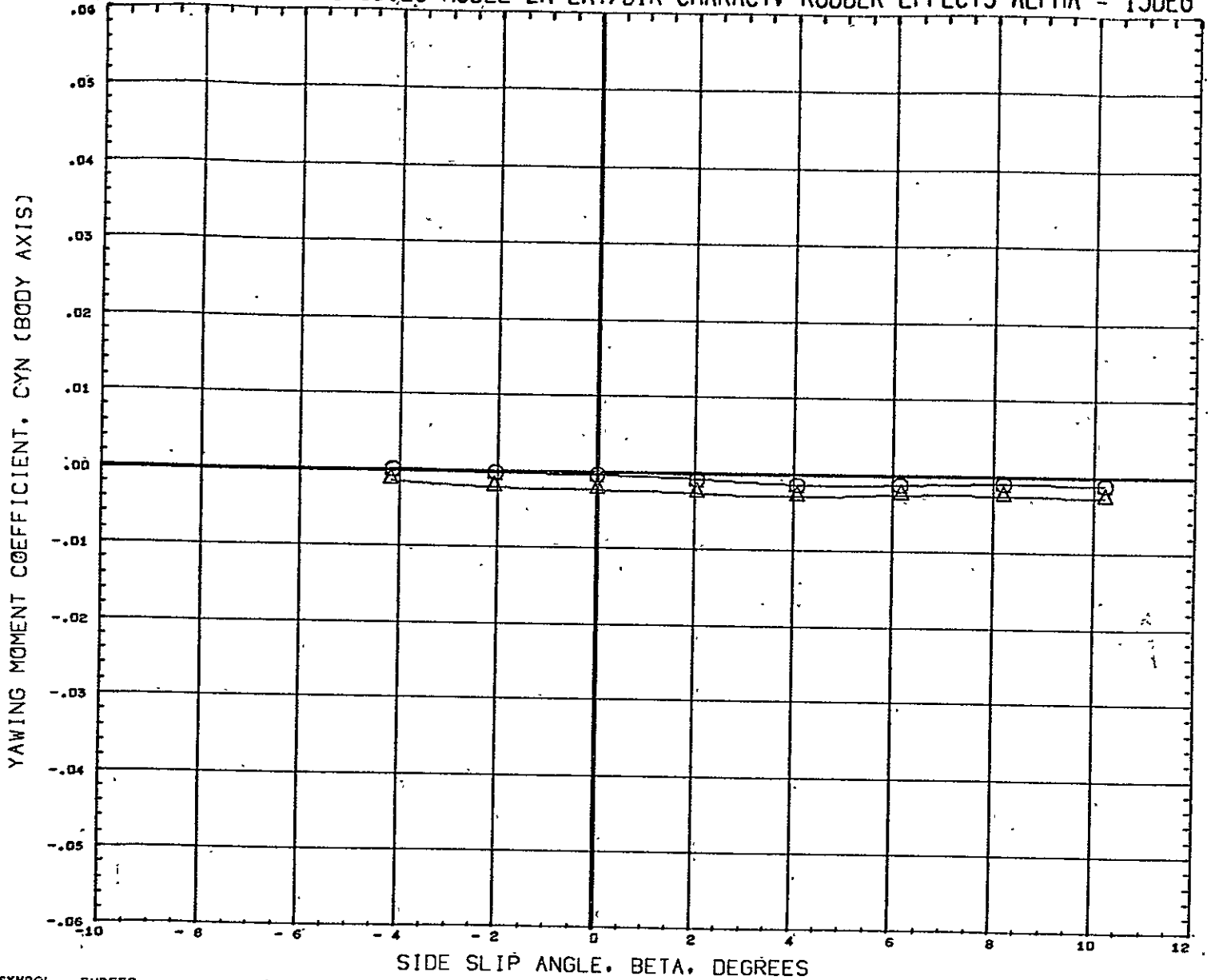
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, RUDDER EFFECTS ALPHA = 15DEG



SYMBOL	RUDER2	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION		
		MACH	ALPHA	DATASET	RUDER2	DATASET	RUDER2	SREF	SQ. IN		
○	0.000	1.098	15.000	84101Z	0.000	A4112Z	10.000	9.0250	INCHES		
△	10.000	0.000	4.000	B4101Z	0.000	A4112Z	10.000	6.1420	INCHES		
								6.1420	INCHES		
								3.9950	INCHES		
								0.0000	INCHES		
								0.1350	INCHES		
								0.0033	SCALE		

DATA HIST. CODE \*A

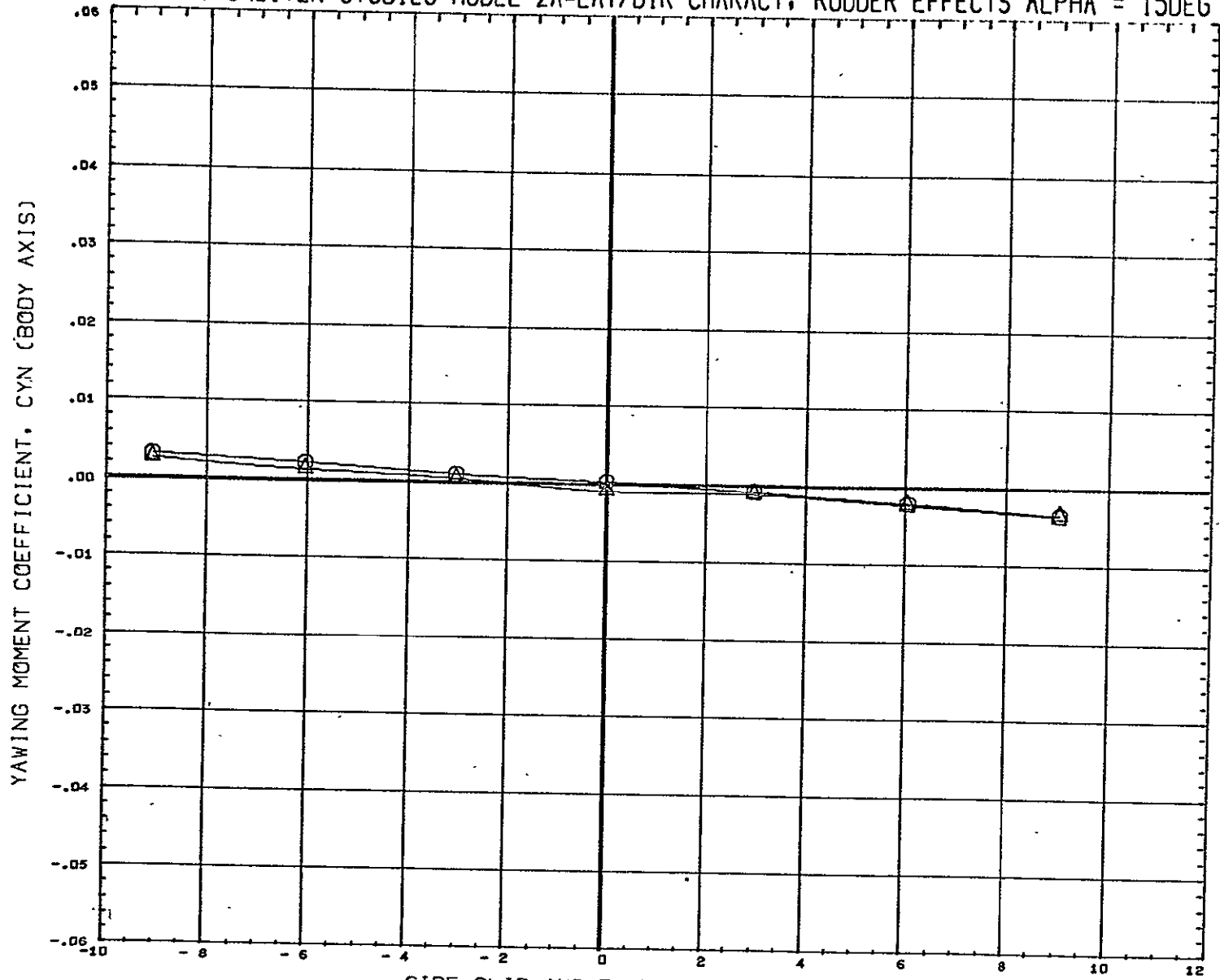
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, RUDDER EFFECTS ALPHA = 15DEG



SYMBOL	RUDER2	PARAMETRIC VALUES			DATA SOURCE			REFERENCE INFORMATION				
○	0.000	MACH	1.962	ALPHA	15.000	DATASET	RUDER2	DATASET	RUDER2	SREF	9.0250	sq. IN
△	10.000	ELEVNS	0.000	STING	4.000	B4101Z	0.000	A4112Z	10.000	LREF	6.1420	INCHES
										BREF	6.1420	INCHES
										XMRP	3.9950	INCHES
										YMRP	0.0000	INCHES
										ZMRP	0.1350	INCHES
										SCALE	0.0033	SCALE

DATA HIST. CODE \*A

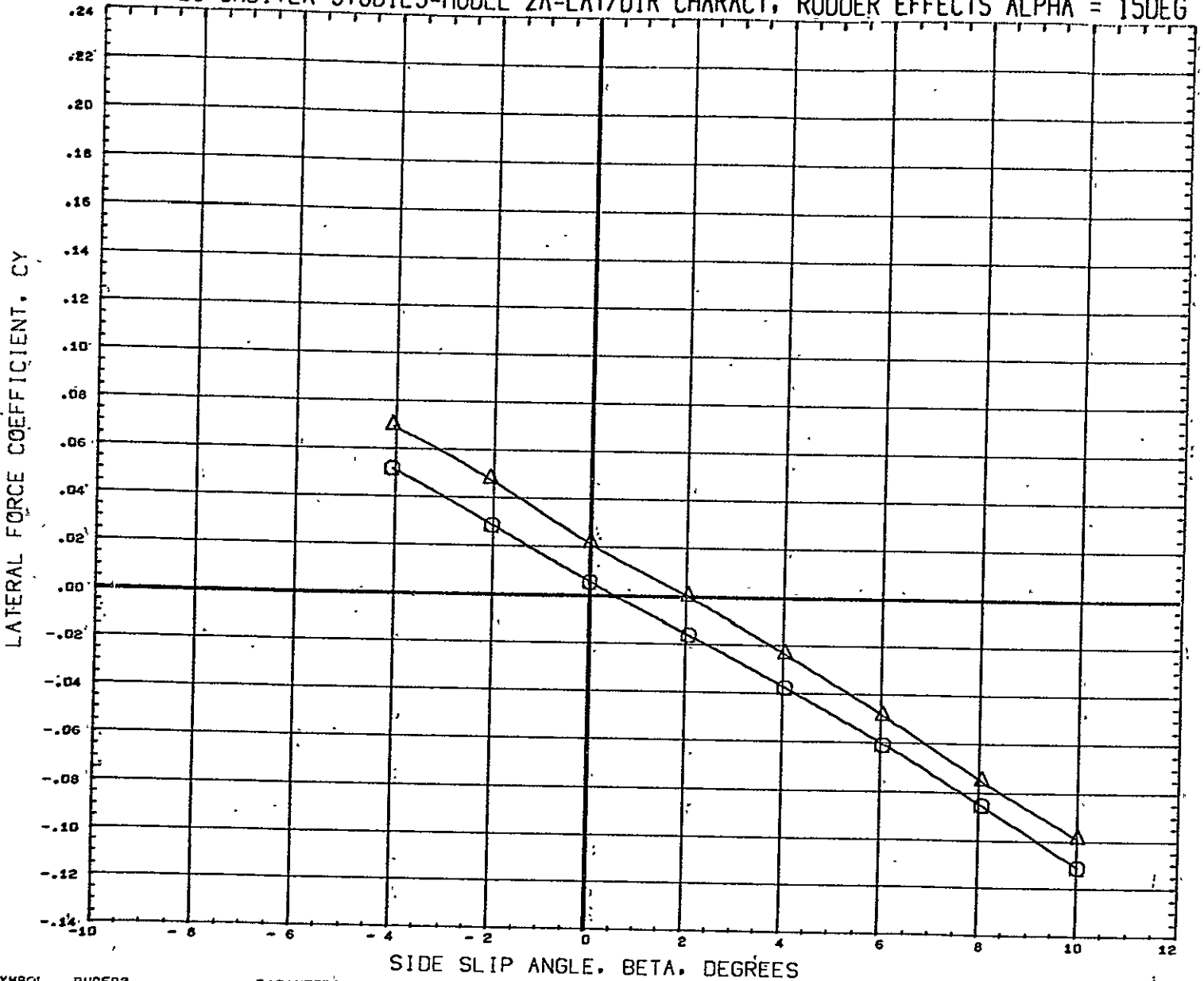
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, RUDDER EFFECTS ALPHA = 15DEG



SYMBOL	RUDDER2	PARAMETRIC VALUES		DATA SOURCE			REFERENCE INFORMATION			
○	0.000	MACH	4.960	ALPHA	15.000	DATASET	RUDDER2	SREF	9.0250	SQ. IN
△	10.000	ELEVN3	0.000	STING	4.000	B4101Z	0.000	A4112Z	10.000	INCHES
								LREF	6.1420	INCHES
								BREF	6.1420	INCHES
								XMRP	3.9950	INCHES
								YMRP	0.0000	INCHES
								ZMRP	0.1350	INCHES
								SCALE	0.0033	SCALE

DATA HIST. CODE \*A

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, RUDDER EFFECTS ALPHA = 15DEG

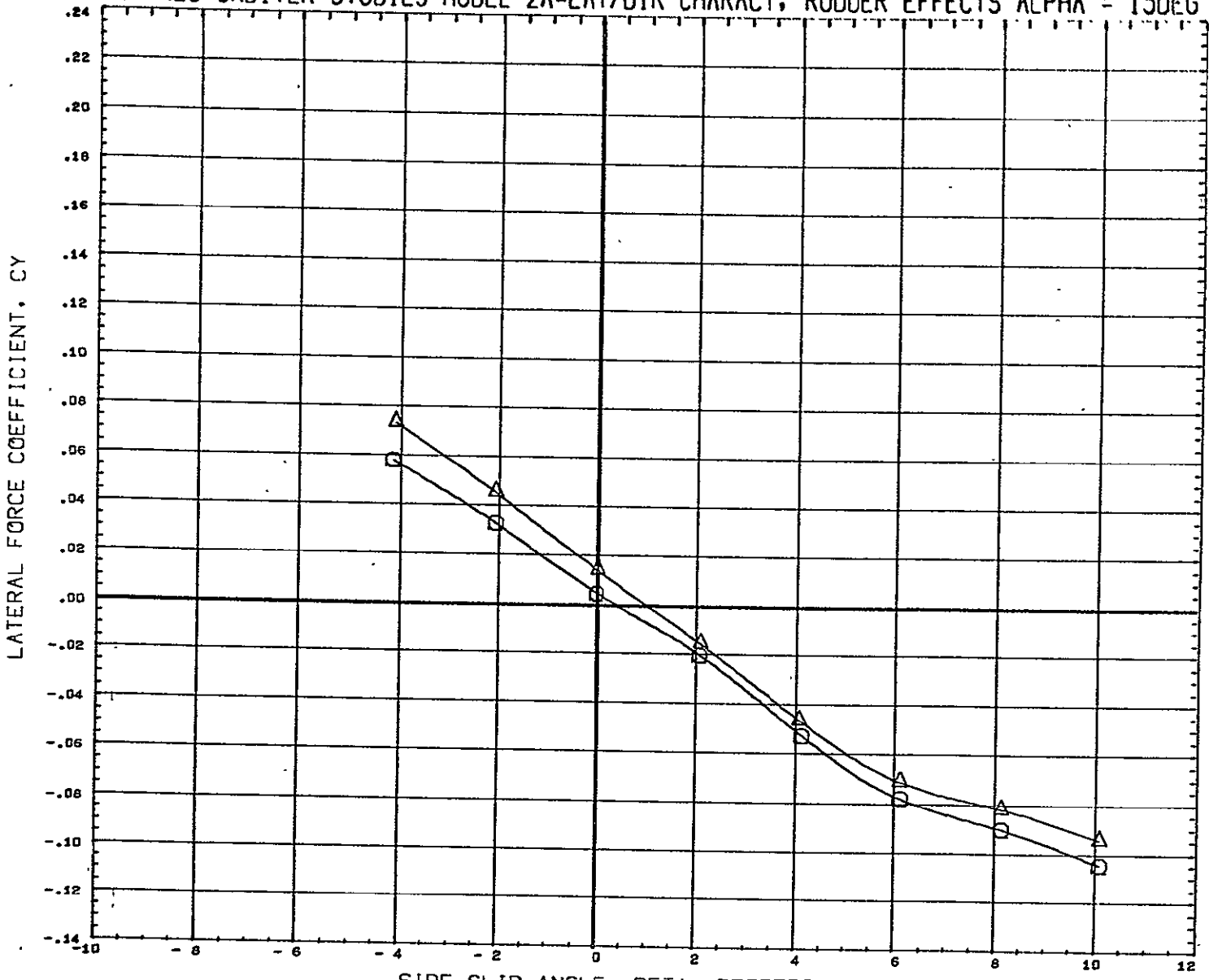


SYMBOL	RUDER2	MACH	PARAMETRIC VALUES		DATA SOURCE			REFERENCE INFORMATION			
○	0.000	0.597	ALPHA	15.000	DATASET	RUDER2	DATASET	RUDER2	SREF	9.0250	SQ. IN
△	10.000	ELEVNS	STING	4.900	B4101Z	0.000	A4112Z	10.000	LREF	6.1420	INCHES
									BREF	6.1420	INCHES
									XMRP	3.9950	INCHES
									YMRP	0.0000	INCHES
									ZMRP	0.1350	INCHES
									SCALE	0.0033	SCALE

DATA HIST. CODE #A



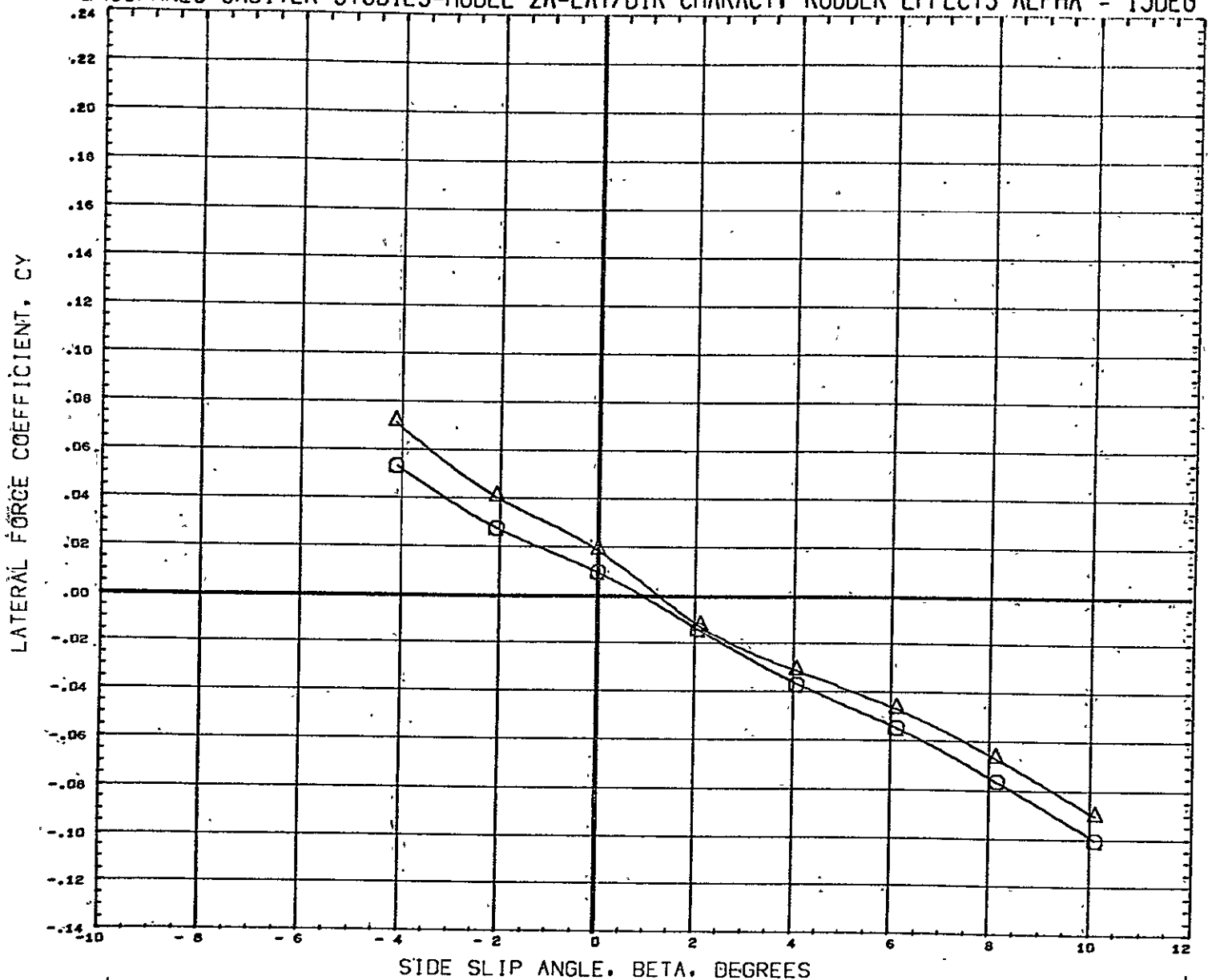
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, RUDDER EFFECTS ALPHA = 15DEG



SYMBOL	RUDDER2	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
○	0.000	MACH 0.899 ALPHA 15.000 DATASET B4101Z	RUDDER2 0.000 DATASET A4112Z	SREF 9.0250 SQ. IN
△	10.000	ELEVNS 0.000 STING 4.000	RUDDER2 10.000	LREF 6.1420 INCHES
				BREF 6.1420 INCHES
				XMRP 3.9950 INCHES
				YMRP 0.0000 INCHES
				ZMRP 0.1350 INCHES
				SCALE 0.0033 SCALE

DATA HIST. CODE \*A

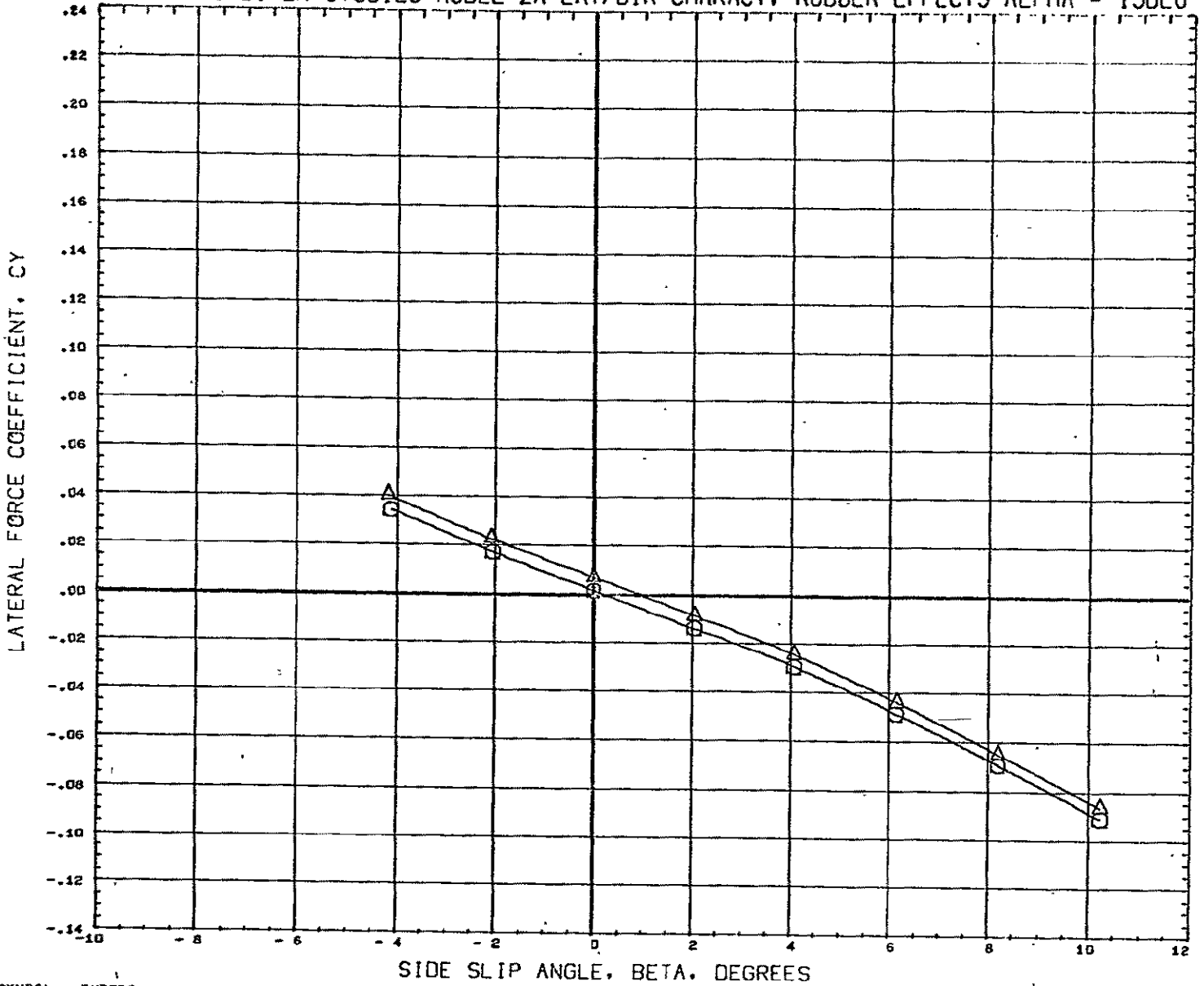
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, RUDDER EFFECTS ALPHA = 15DEG



SYMBOL	RUDER2	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
○	0.000	MACH 1.098 ALPHA 15.000	DATASET RUDER2 DATASET RUDER2	SREF 9.0250 SQ. IN
△	10.000	ELEVNS 0.000 STING 4.000	B4101Z 0.000 A4112Z 10.000	LREF 6.1420 INCHES
				BREF 6.1420 INCHES
				XMRP 3.9950 INCHES
				YMRP 0.0000 INCHES
				ZMRP 0.1350 INCHES
				SCALE 0.0033 SCALE

DATA HIST. CODE \*A

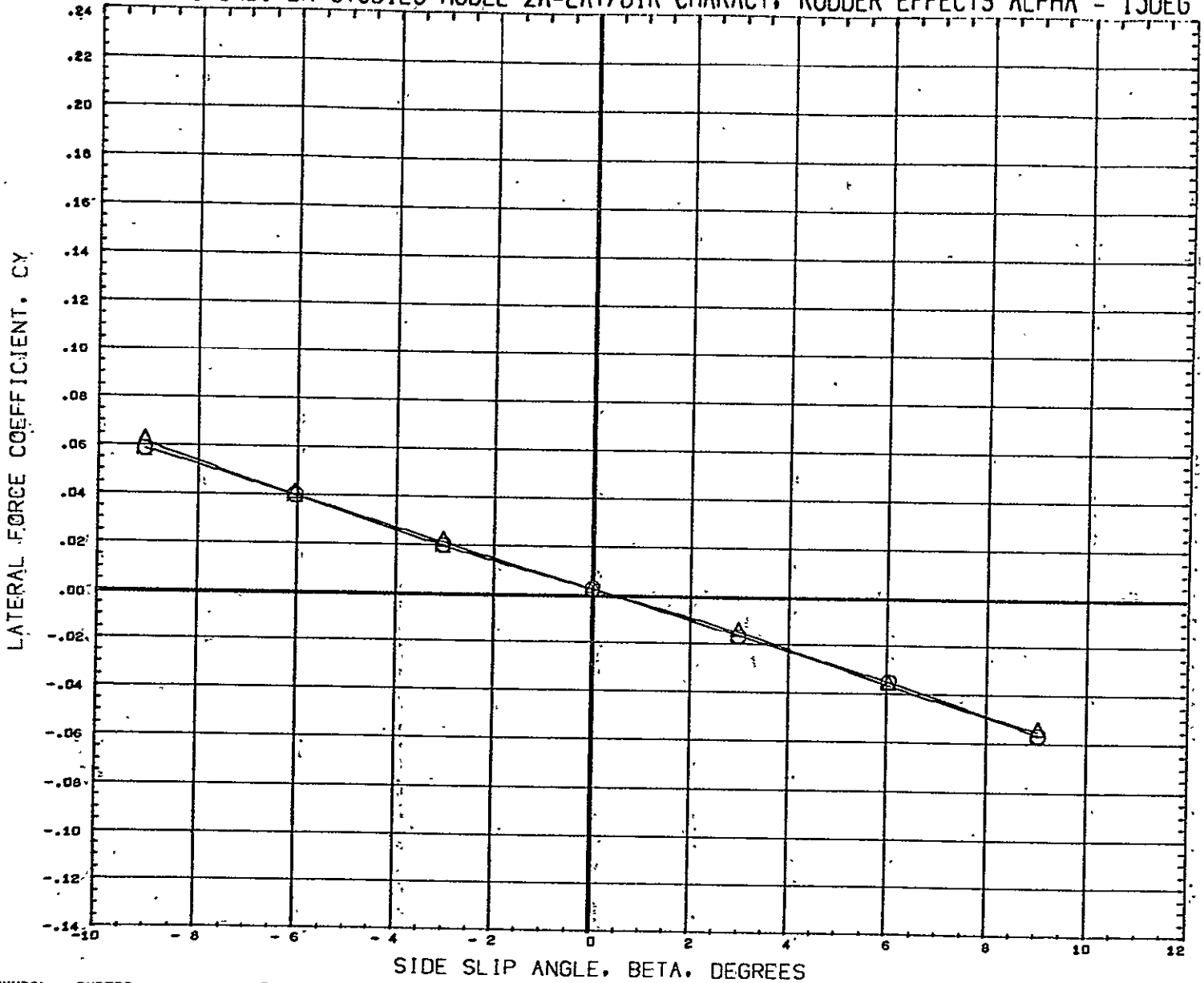
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, RUDDER EFFECTS ALPHA = 15DEG



SYMBOL	RUDER2	PARAMETRIC VALUES			DATA SOURCE			REFERENCE INFORMATION				
○	0.000	MACH	1.962	ALPHA	15.000	DATASET	RUDER2	DATASET	RUDER2	SREF	9.0250	SQ. IN
△	10.000	ELEVN3	0.000	STING	4.000	B4101Z	0.000	A4112Z	10.000	LREF	6.1420	INCHES
										BREF	6.1420	INCHES
										XMRP	3.9950	INCHES
										YMRP	0.0000	INCHES
										ZMRP	0.1350	INCHES
										SCALE	0.0033	SCALE

DATA HIST. CODE #A

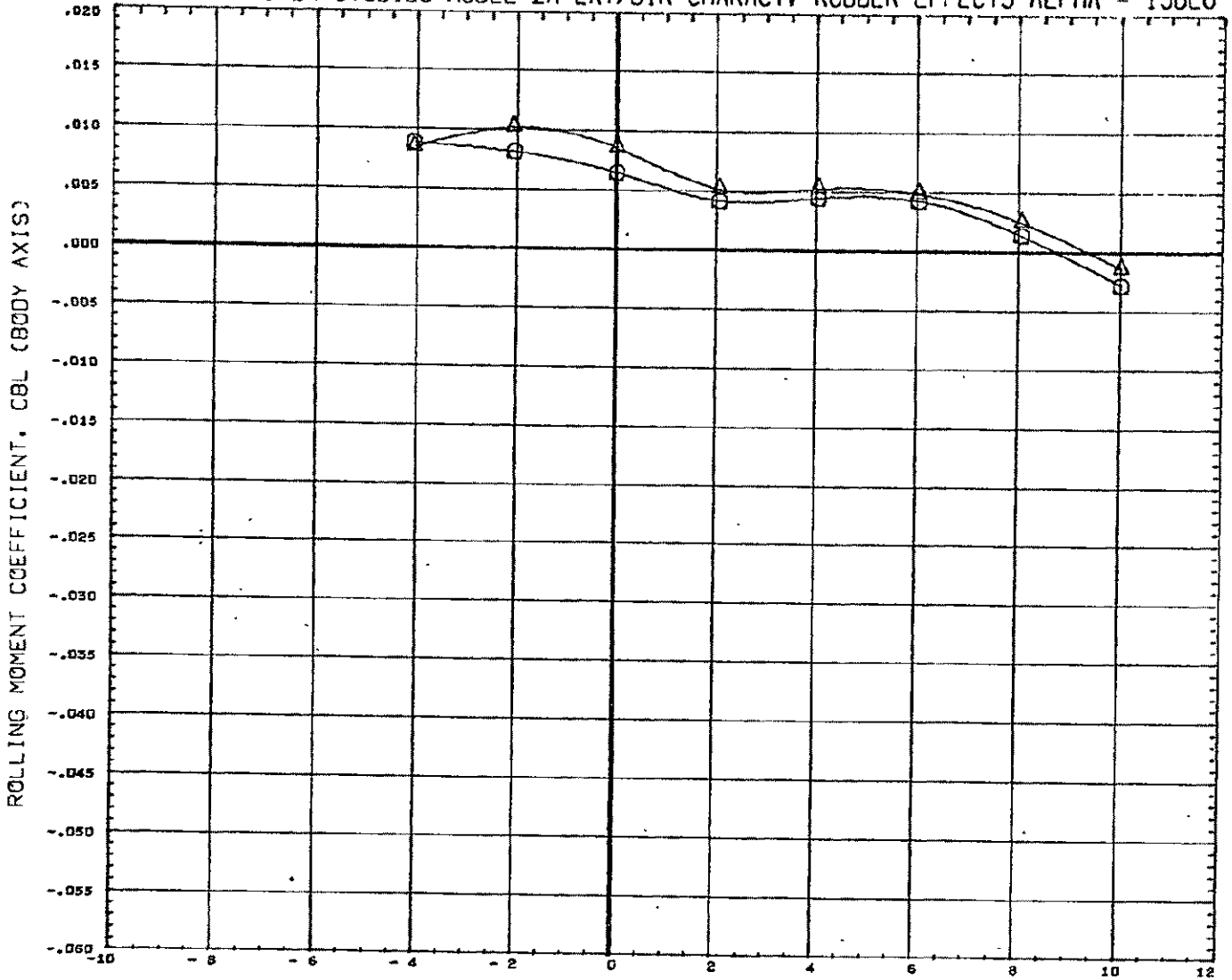
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, RUDDER EFFECTS ALPHA = 15DEG



SYMBOL ○ △	RUDER2	PARAMETRIC VALUES			DATA SOURCE			REFERENCE INFORMATION				
	0.000	MACH	4.960	ALPHA	15.000	DATASET	RUDER2	DATASET	RUDER2	SREF	9.0250	SQ. IN
	10.000	ELEVNS	0.000	STING	4.000	B4101Z	0.000	A4112Z	10.000	LREF	6.1420	INCHES
										BREF	6.1420	INCHES
										XMRP	3.9950	INCHES
										YMRP	0.0000	INCHES
										ZMRP	0.1350	INCHES
										SCALE	0.0033	SCALE

DATA HIST. CODE #A:

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, RUDDER EFFECTS ALPHA = 15DEG

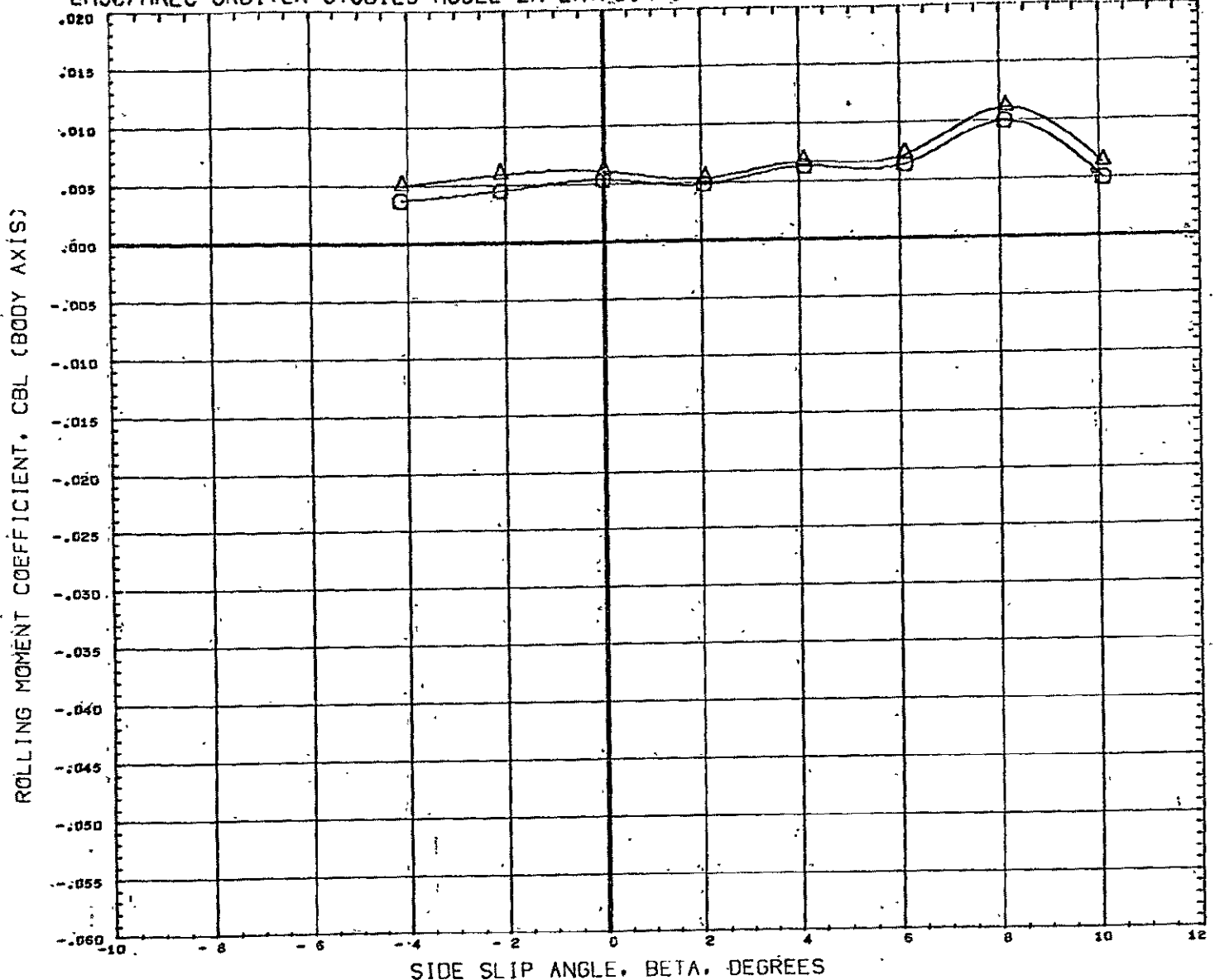


SIDE SLIP ANGLE, BETA, DEGREES

SYMBOL	RUDER2	PARAMETRIC VALUES			DATA SOURCE			REFERENCE INFORMATION				
∞	0.000	MACH	0.597	ALPHA	15.000	DATASET	RUDER2	DATASET	RUDER2	SREF	9.0250	sq. IN
	10.000	ELEVNS	0.000	STING	4.000	B4101Z	0.000	A4112Z	10.000	LREF	6.1420	INCHES
										BREF	6.1420	INCHES
										XMRP	3.9950	INCHES
										YMRP	0.0000	INCHES
										ZMRP	0.1350	INCHES
										SCALE	0.0033	SCALE

DATA HIST. CODE #A

MSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, RUDDER EFFECTS ALPHA = 15DEG

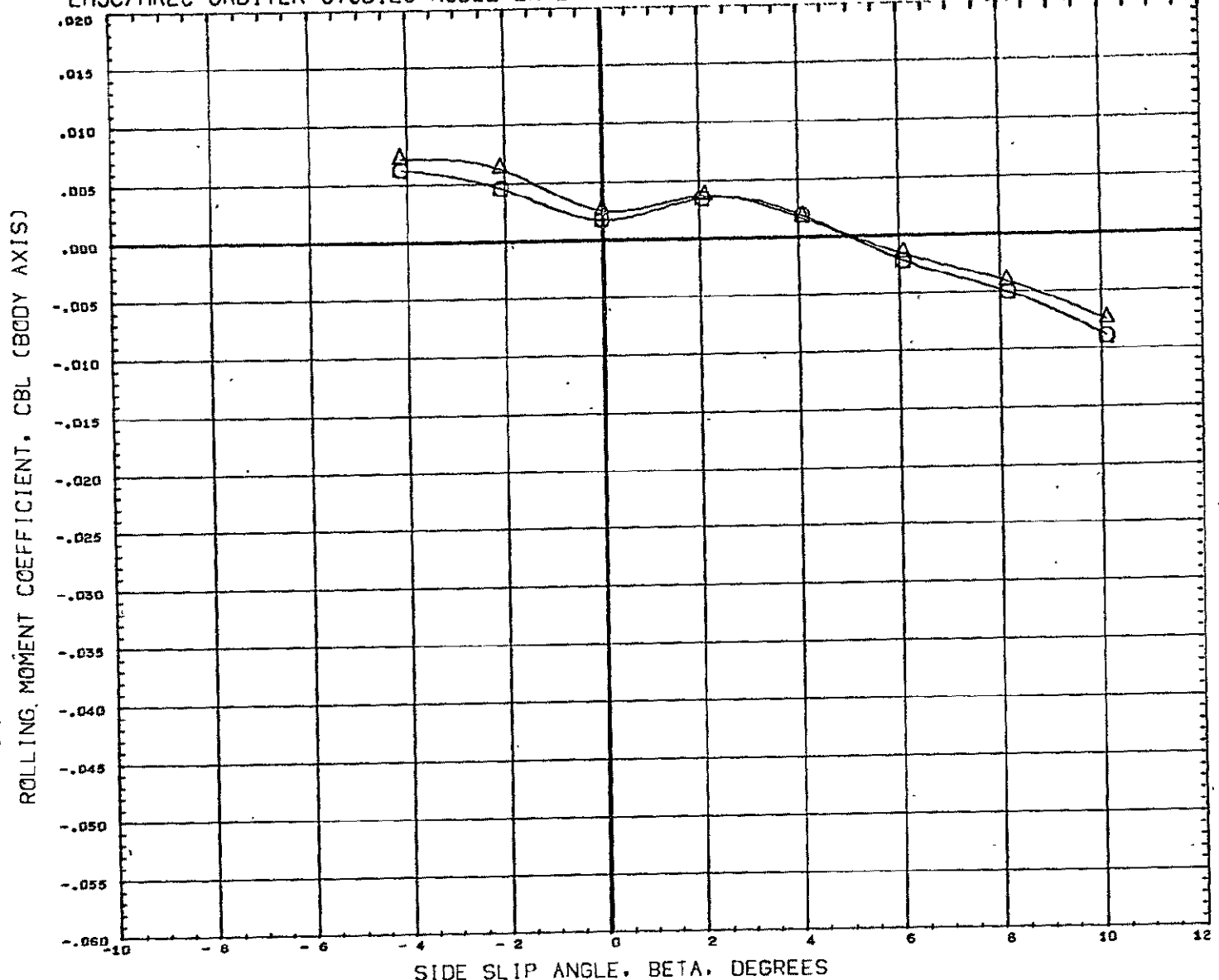


SIDE SLIP ANGLE, BETA, DEGREES

SYMBOL	RUDER2	PARAMETRIC VALUES				DATA-SOURCE			REFERENCE INFORMATION		
		MACH	ALPHA	ALPHA	ALPHA	RUDER2	DATASET	RUDER2	SREF	INCHES	INCHES
○	0.000	0.899	15.000	0.000	0.000	04101Z	0.000	9.0250	6.1420	98. IN	
△	10.000	ELEVNS	4.000	0.000	STING	04101Z	A4112Z	6.1420	3.9950	INCHES	
								0.0000	0.1350	INCHES	
								0.0033		SCALE	

DATA HIST. CODE \*A

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, RUDDER EFFECTS ALPHA = 15DEG

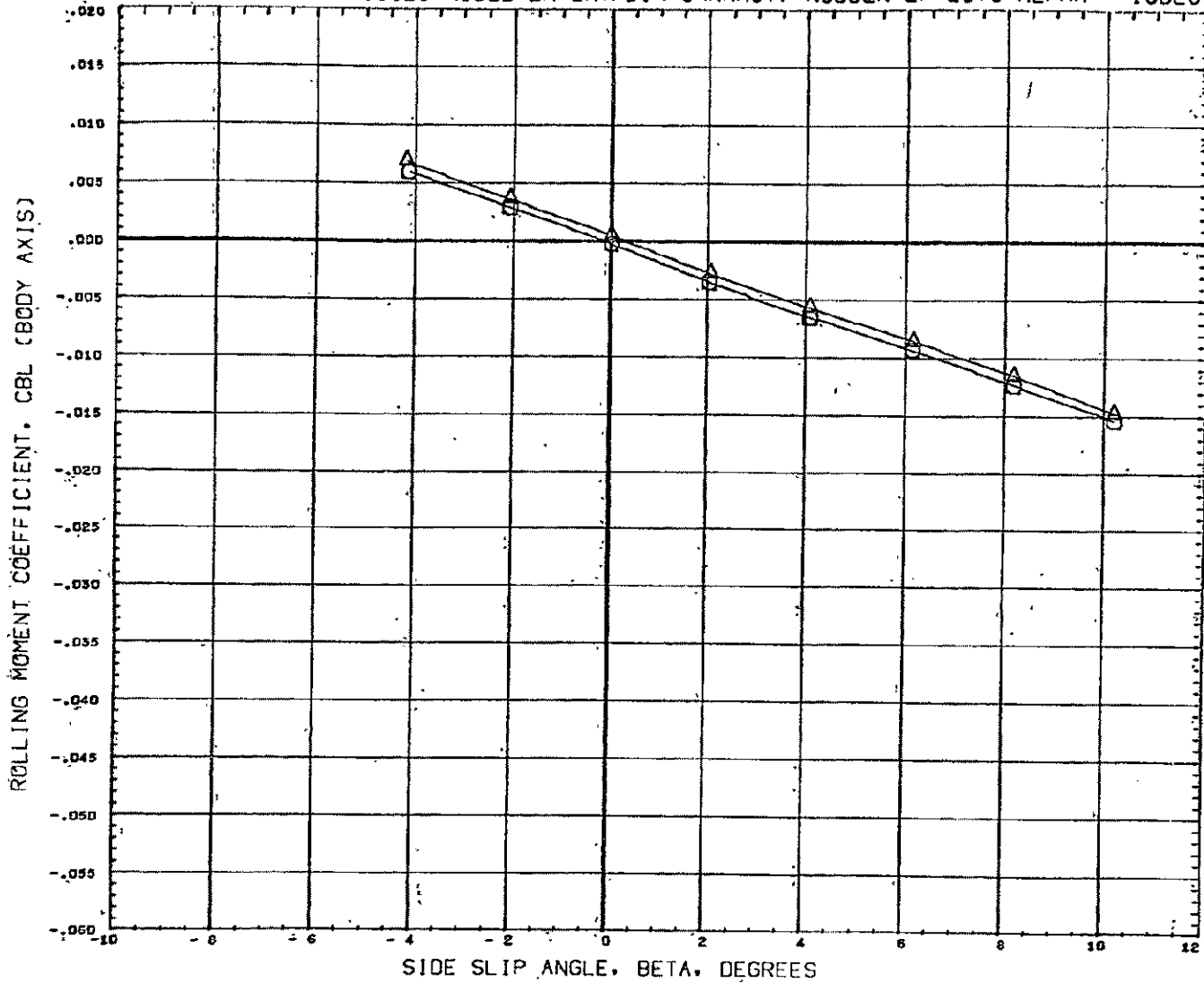


SIDE SLIP ANGLE, BETA, DEGREES

SYMBOL	PARAMETRIC VALUES		DATA SOURCE			REFERENCE INFORMATION			
	RUDER2	MACH	ALPHA	DATASET	RUDER2	DATASET	RUDER2	SREF	SQ. IN
○	0.000	1.098	15.000	B4101Z	0.000	A4112Z	10.000	6.1420	INCHES
△	10.000	ELEVN3	0.000	4.000	0.000	A4112Z	10.000	6.1420	INCHES
								3.9950	INCHES
								0.0000	INCHES
								0.1350	INCHES
								0.0033	SCALE

DATA HIST. CODE #A

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, RUDDER EFFECTS ALPHA = 15DEG

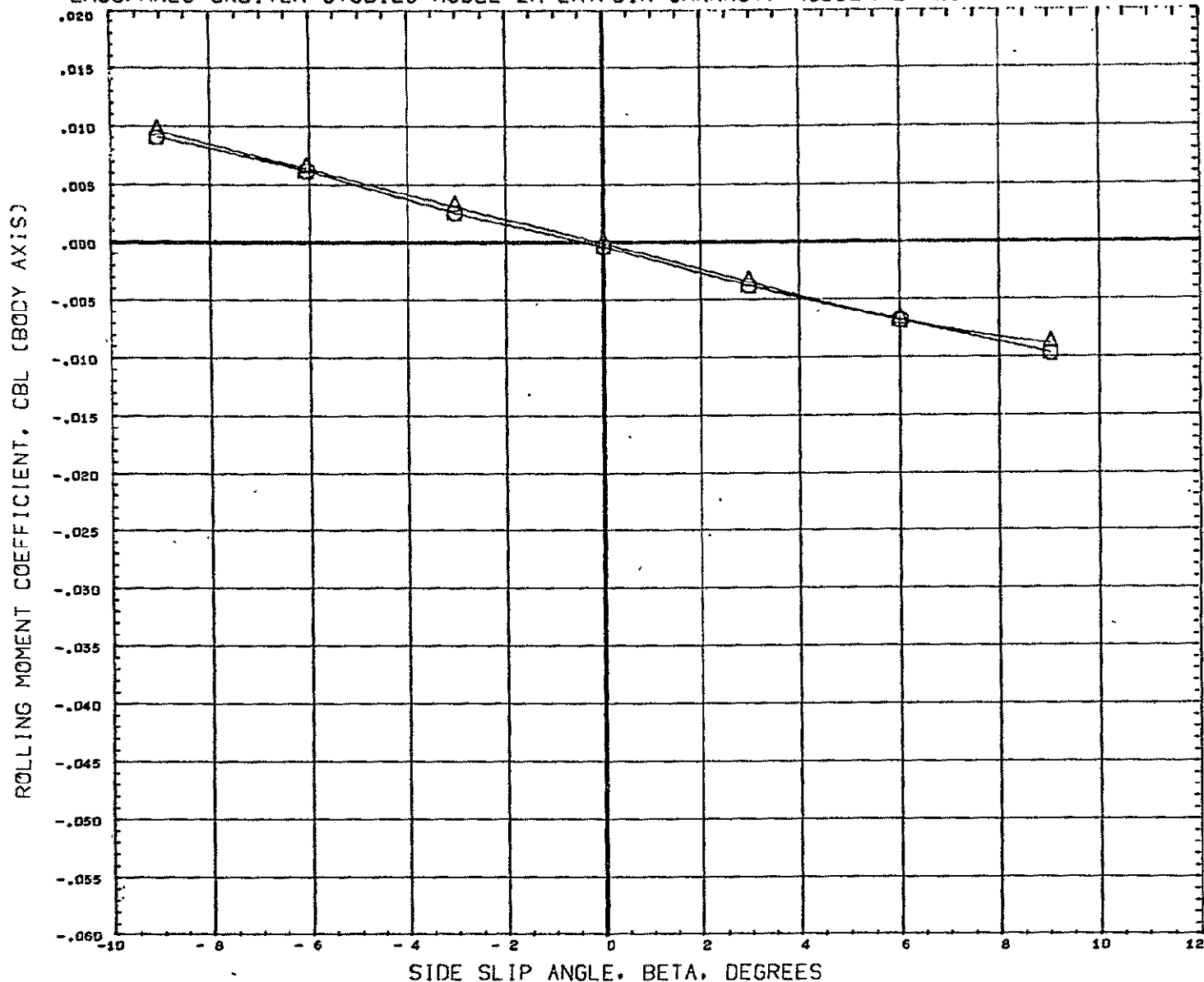


SYMBOL	RUDER2	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION		
		MACH	ALPHA	DATASET	RUDER2	DATASET	RUDER2	SREF	SCALE		
○	0.000	1.962	15.000	B41012	0.000			9.0250	0.0033	99. IN	
△	10.000	ELEVNS	4.000	B41012	0.000	A4112Z	10.000	6.1420		INCHES	
			STINC					6.1420		INCHES	
								3.9950		INCHES	
								0.0000		INCHES	
								0.1350		INCHES	
										SCALE	

DATA HIST. CODE #A



LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, RUDDER EFFECTS ALPHA = 150 DEG

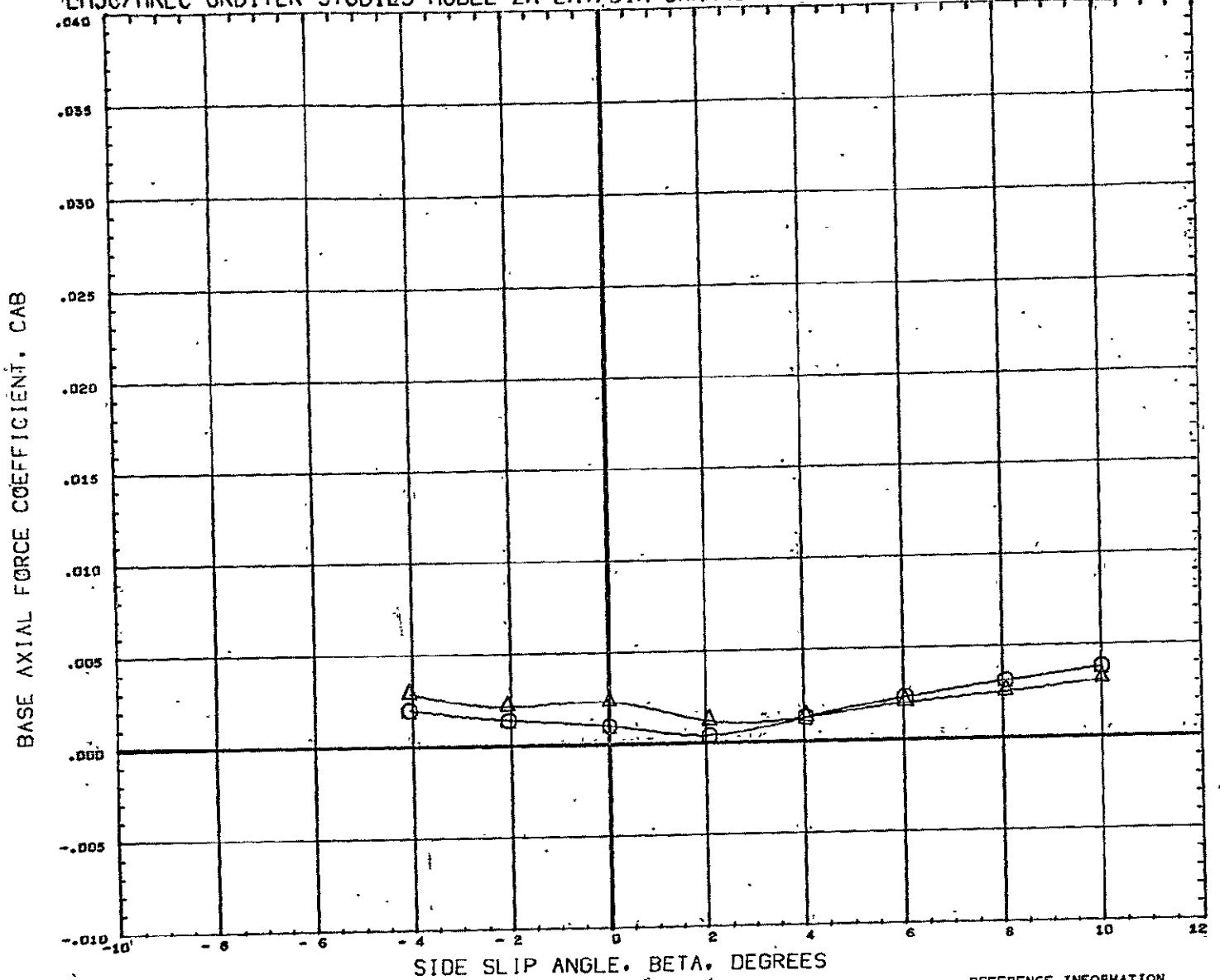


SIDE SLIP ANGLE, BETA, DEGREES

SYMBOL	RUDDER2	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION			
○	0.000	MACH	4.950	ALPHA	15.000	DATASET	RUDDER2	DATASET	RUDDER2	SREF	9.0250	99. IN
△	10.000	ELEVNS	0.000	STING	4.000	B4101Z	0.000	A4112Z	10.000	LREF	6.1420	INCHES
										BREF	6.1420	INCHES
										XMRP	3.9950	INCHES
										YMRP	0.0000	INCHES
										ZMRP	0.1350	INCHES
										SCALE	0.0033	SCALE

DATA HIST. CODE \*A

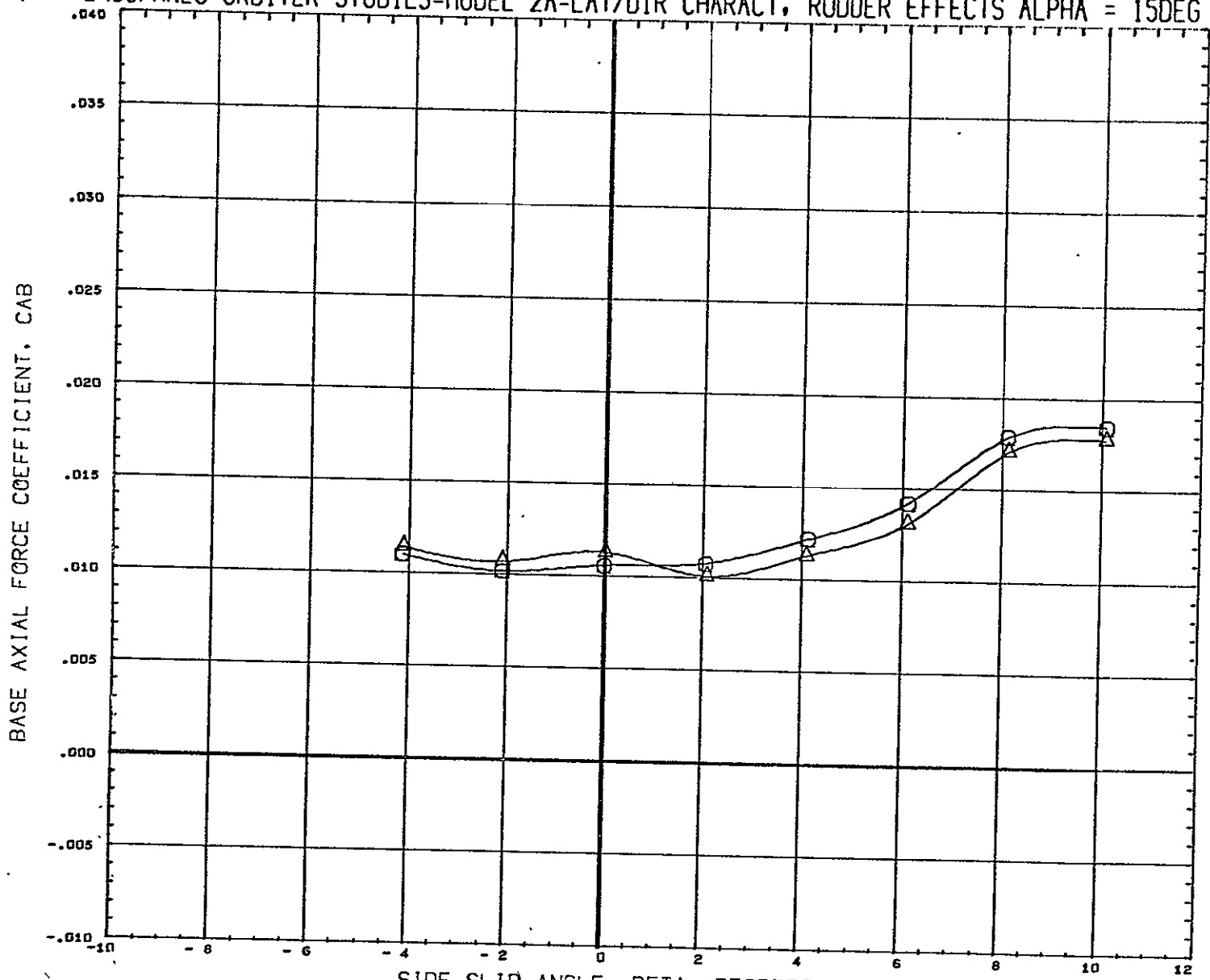
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT. RUDDER EFFECTS ALPHA = 15DEG



SYMBOL	RUDER2	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION		
		MACH	ALPHA	STING	DATASET	RUDER2	DATASET	RUDER2	SREF	SCALE	
○	0.000	0.597	15.000	4.000	B4101Z	0.000	A4112Z	10.000	9.0250	59. IN	
△	10.000	0.000	4.000	4.000	B4101Z	0.000	A4112Z	10.000	6.1420	INCHES	
									6.1420	INCHES	
									3.9950	INCHES	
									0.0000	INCHES	
									0.1350	INCHES	
									0.0033	SCALE	

DATA HIST. CODE \*A

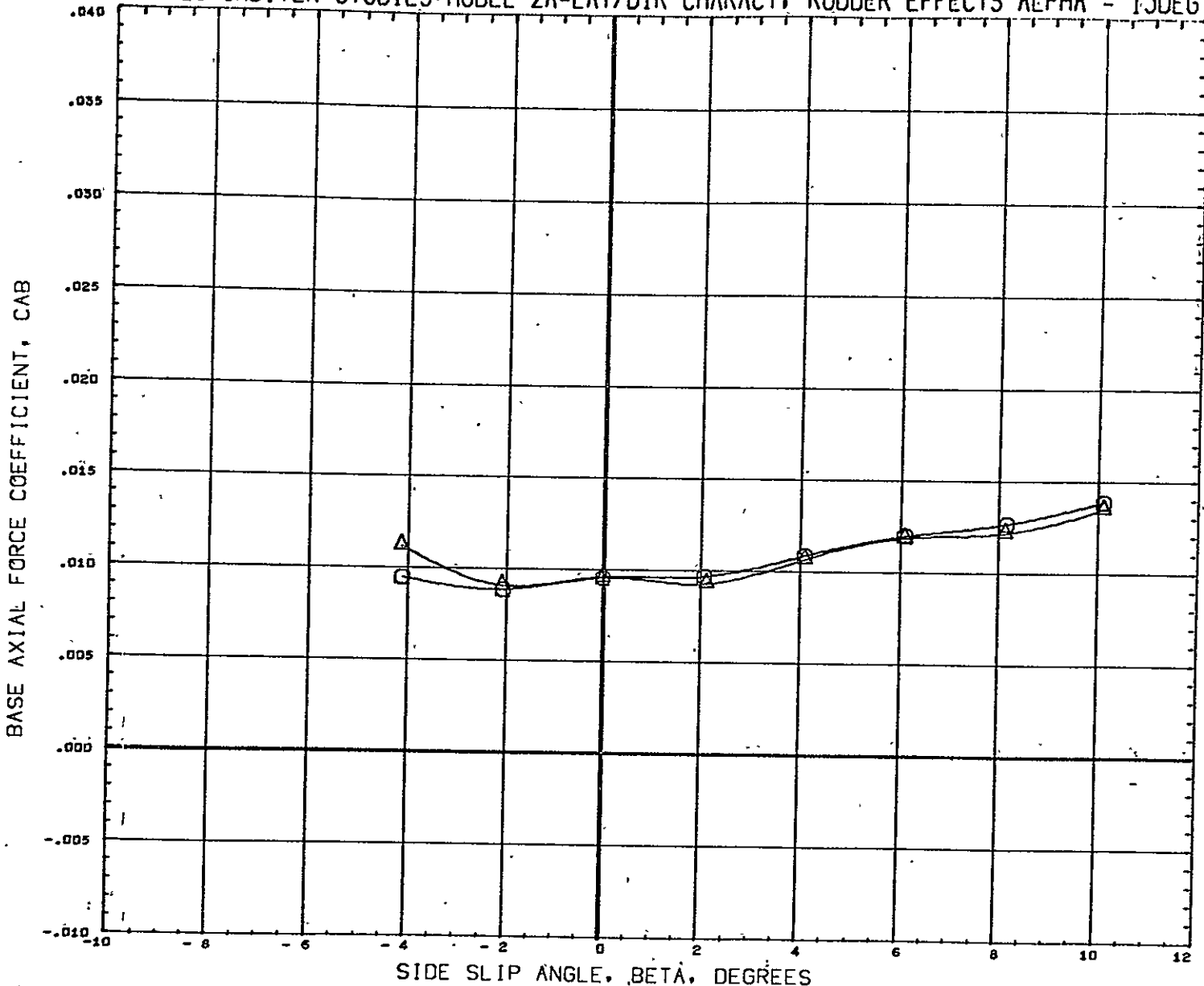
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, RUDDER EFFECTS ALPHA = 15DEG



SYMBOL	RUDER2	PARAMETRIC VALUES		DATA SOURCE		REFERENCE INFORMATION			
○	0.000	MACH	0.899	ALPHA	15.000	RUDER2	SREF	9.0250	sq. IN
△	10.000	ELEV3	0.000	STING	4.000	B4101Z	LREF	6.1420	INCHES
						A4112Z	BREF	6.1420	INCHES
							XMRP	3.9950	INCHES
							YMRP	0.0000	INCHES
							ZMRP	0.1350	INCHES
							SCALE	0.0033	SCALE

DATA HIST. CODE #A

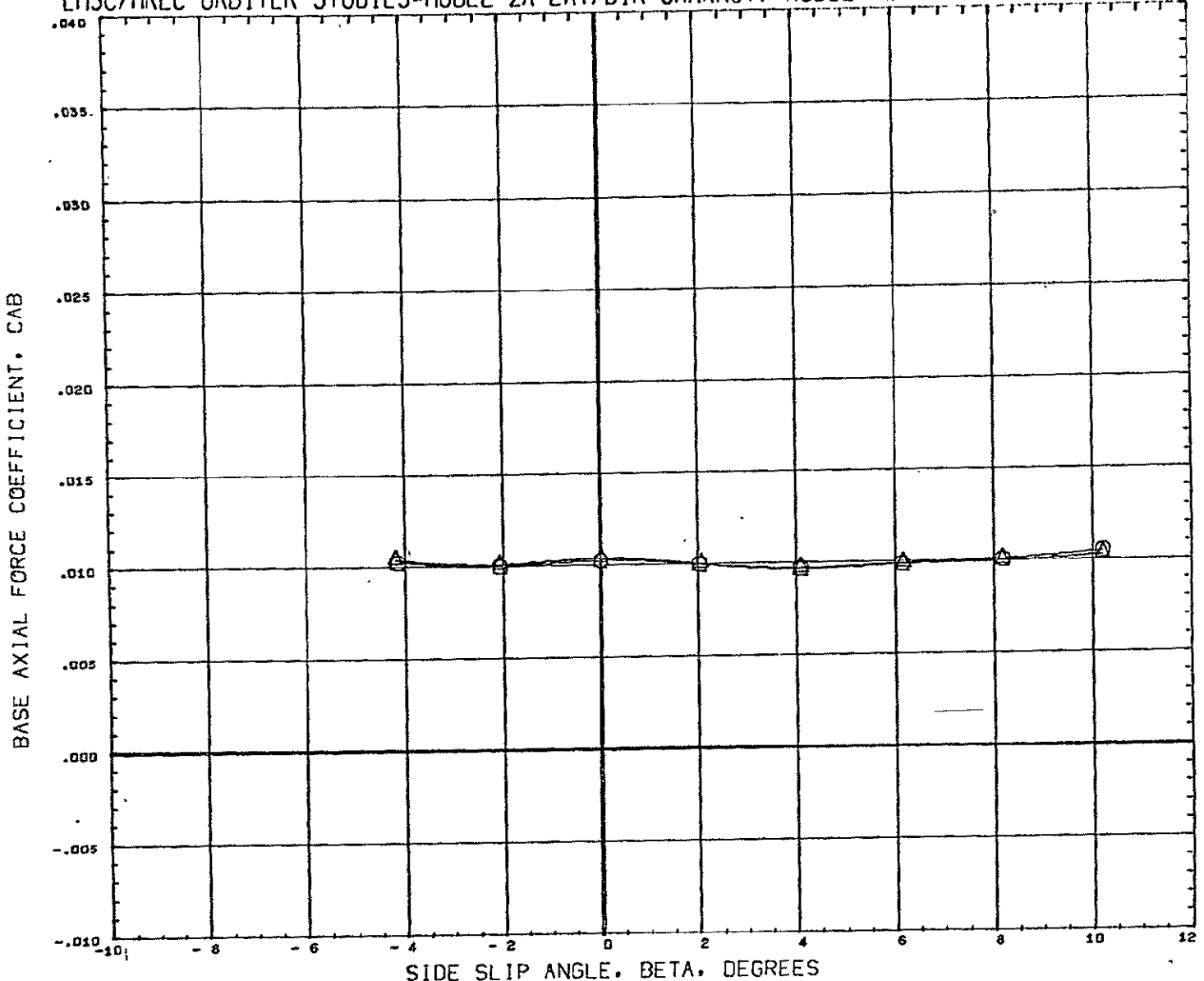
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, RUDDER EFFECTS ALPHA = 15DEG



SYMBOL	RUDER2	PARAMETRIC VALUES			DATA SOURCE			REFERENCE INFORMATION				
○	0.000	MACH	1.098	ALPHA	15.000	DATASET	RUDER2	DATASET	RUDER2	SREF	9.0250	90. IN
△	10.000	ELEVNS	0.000	STING	4.000	B4101Z	0.000	A4112Z	10.000	LREF	6.1420	INCHES
										BREF	6.1420	INCHES
										XMRP	3.9950	INCHES
										YMRP	0.0000	INCHES
										ZMRP	0.1350	INCHES
										SCALE	0.0033	SCALE

DATA HIST. CODE \*A

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, RUDDER EFFECTS ALPHA = 15DEG

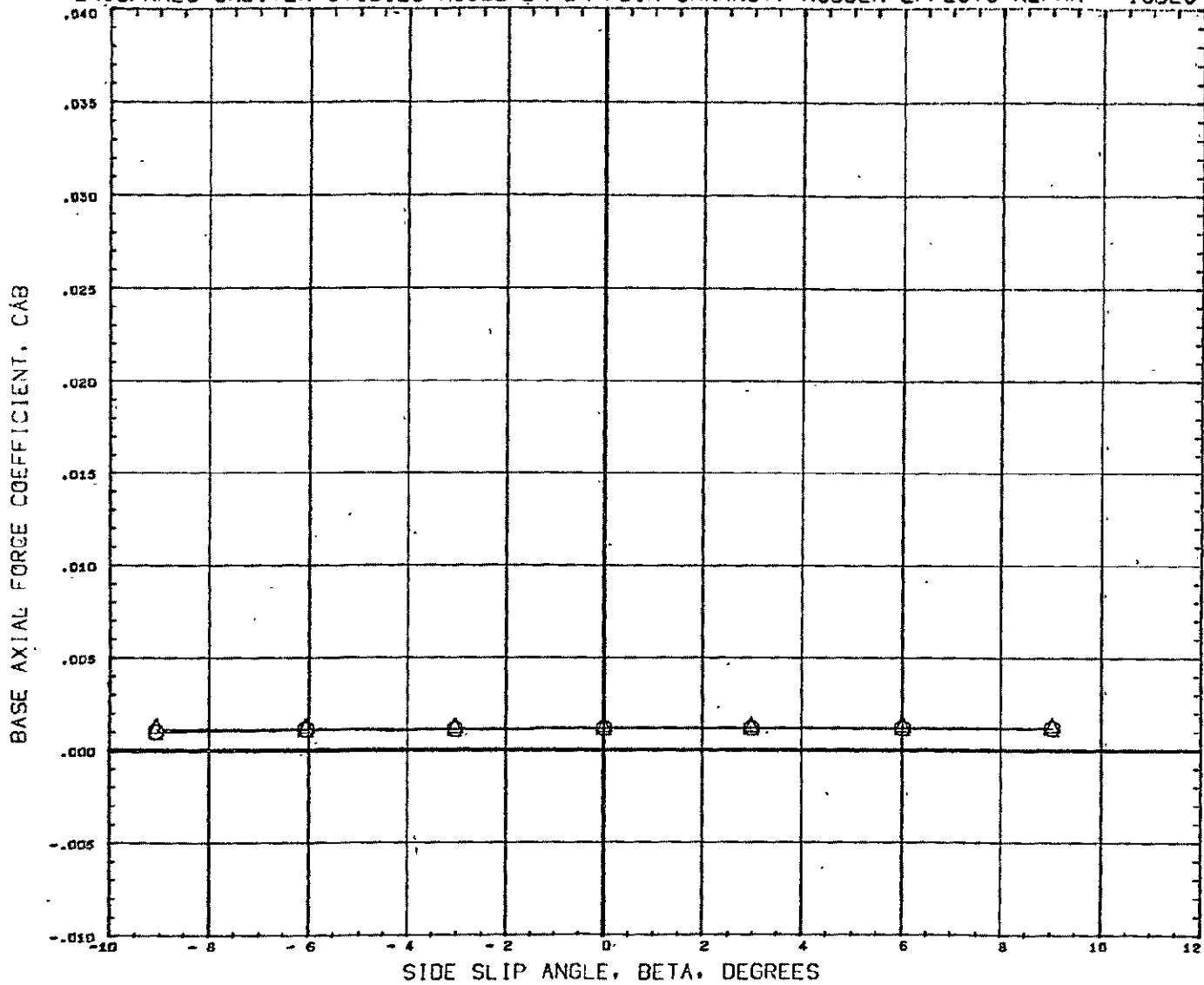


SIDE SLIP ANGLE, BETA, DEGREES

SYMBOL	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION						
	RUDER2	MACH	ALPHA	ALPHA	ALPHA	RUDER2	ALPHA	RUDER2	SREF	LREF	BREF	XMRP	YMRP	ZMRP
○	0.000	1.962	15.000	15.000	0.000	0.000	0.000	9.0250	6.1420	6.1420	3.9950	0.0000	0.1350	0.0033
△	10.000	ELEVNS	0.000	STING	4.000	94101Z	A4112Z	10.000						

DATA HIST. CODE \*A

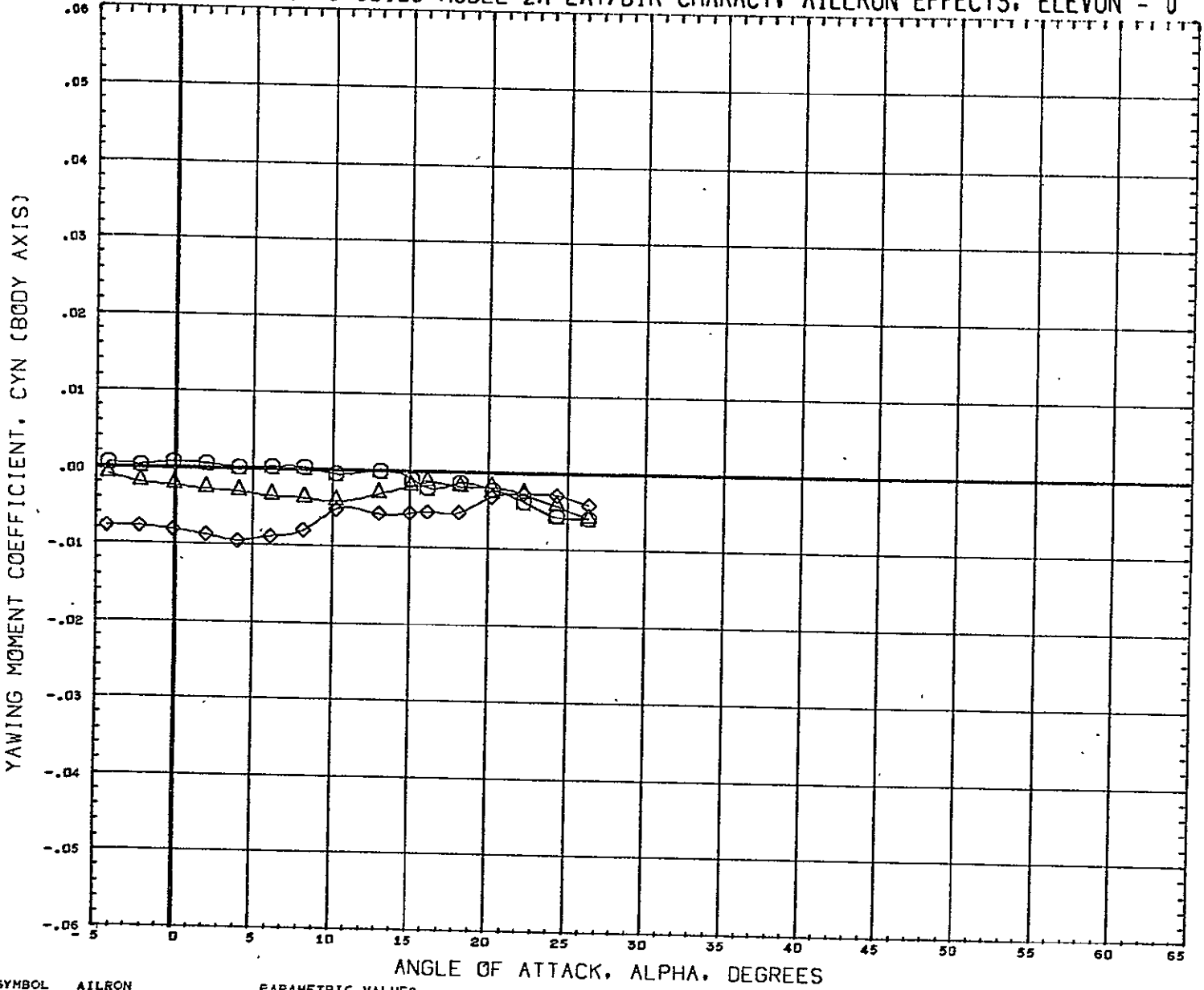
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, RUDDER EFFECTS ALPHA = 15DEG



SYMBOL	RUDDER2	PARAMETRIC VALUES			DATA SOURCE			REFERENCE INFORMATION				
△	0.000	MACH	4.960	ALPHA	15.000	DATASET	RUDDER2	DATASET	RUDDER2	SREF	9.0250	SQ.IN
	10.000	ELEVNS	0.000	STING	4.900	B4101Z	0.000	A4112Z	10.000	LREF	6.1420	INCHES
										BREF	6.1420	INCHES
										XHRP	3.9950	INCHES
										YHRP	0.0000	INCHES
										ZHRP	0.1350	INCHES
										SCALE	0.0033	SCALE

DATA HIST. CODE #A

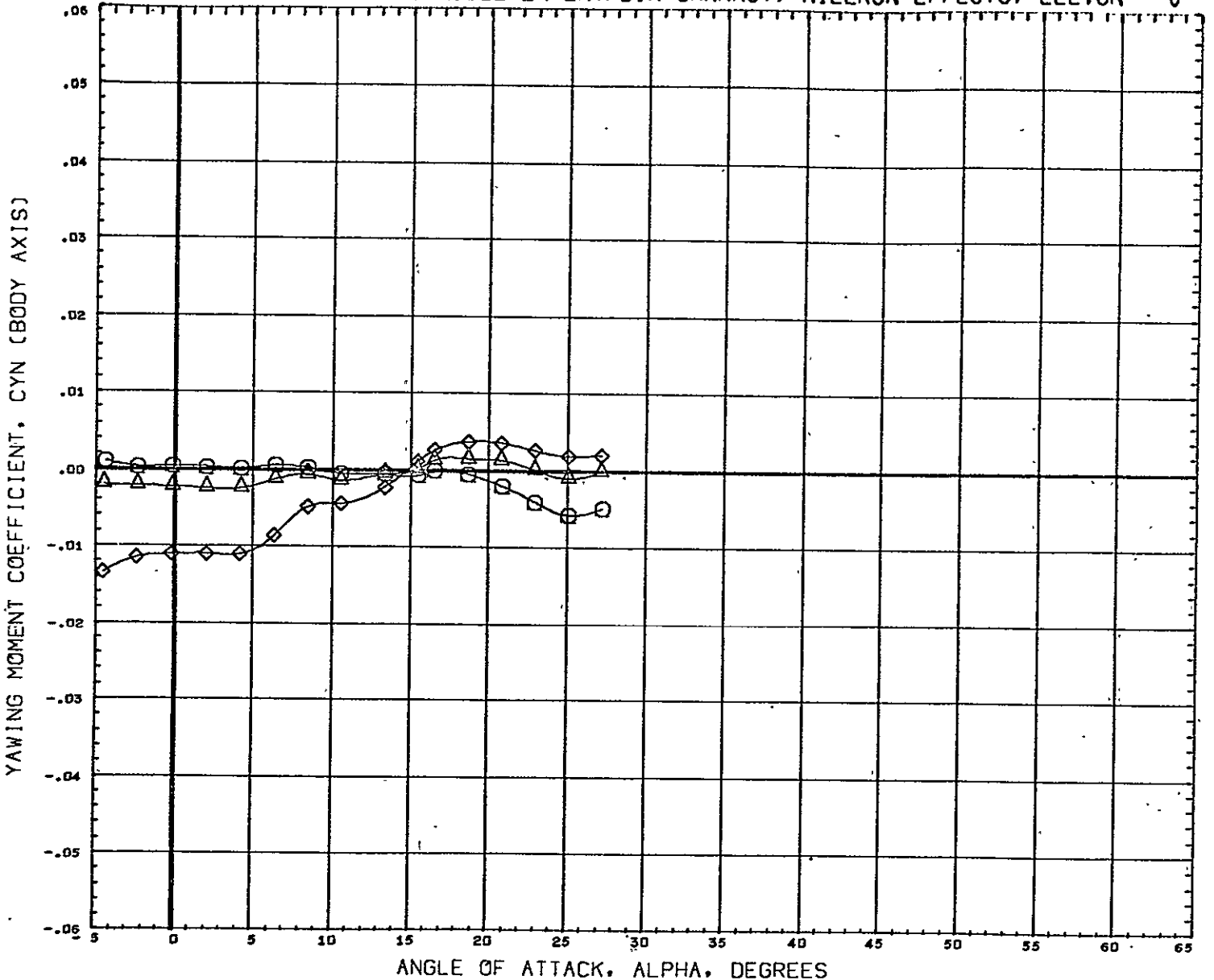
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON = 0



SYMBOL	AILRON	MACH	PARAMETRIC VALUES		DATA SOURCE			REFERENCE INFORMATION		
○	0.000	0.597	BETA	0.000	0.000	AILRON	9.0250	SQ. IN		
△	- 10.000	ELEVN3	RUDER2	0.000	A41012	0.000	6.1420	INCHES		
◇	- 20.000	STING	4.000		A4107S	- 20.000	6.1420	INCHES		
							3.9950	INCHES		
							0.0000	INCHES		
							0.1350	INCHES		
							0.0033	SCALE		

DATA HIST. CODE M#6

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON = 0



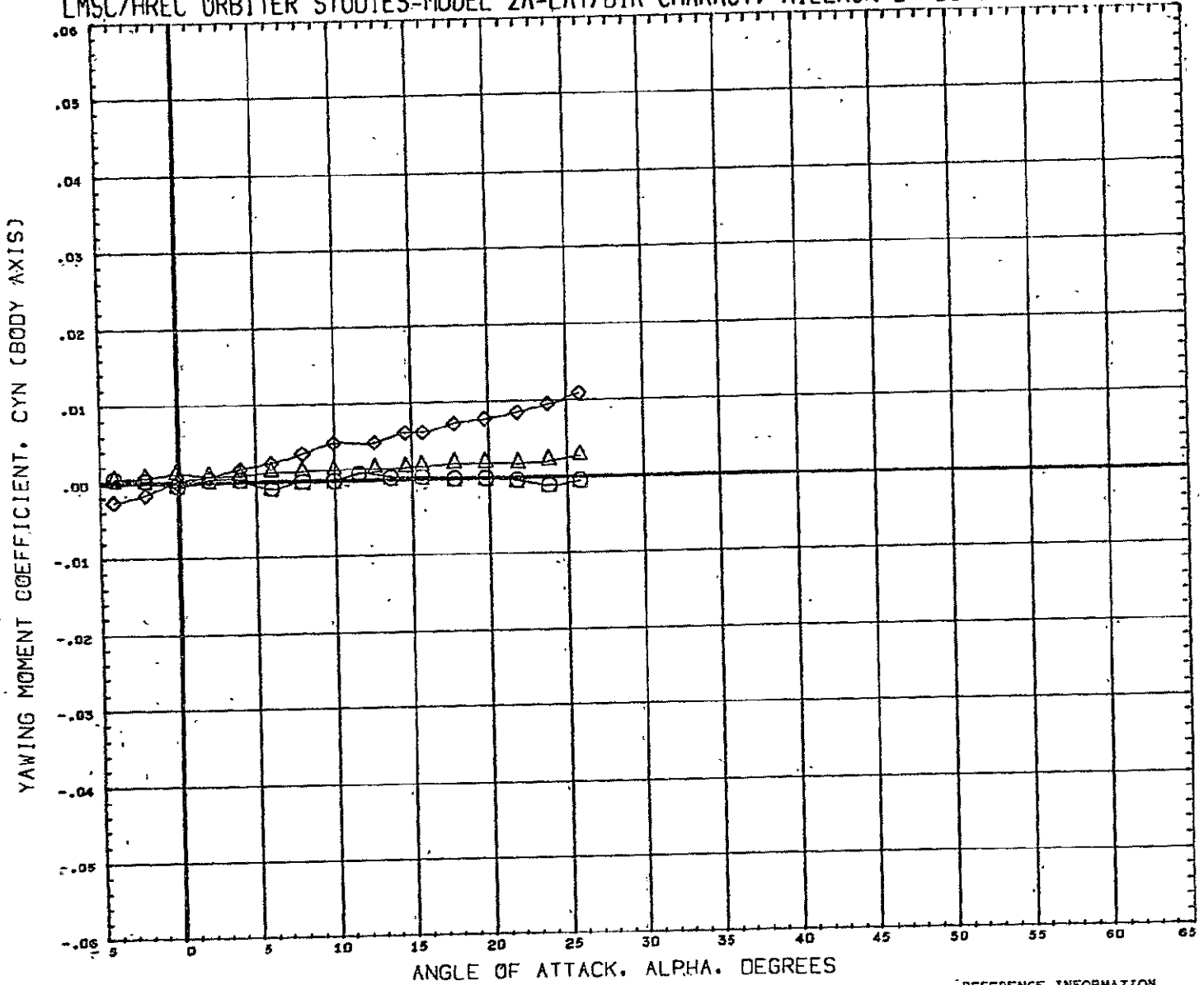
ANGLE OF ATTACK, ALPHA, DEGREES

SYMBOL	AILRON	MACH	PARAMETRIC VALUES	BETA	DATA SOURCE	AILRON	AILRON	REFERENCE INFORMATION
○	0.000	0.902		0.000	DATA SOURCE			SREF 9.0250 SQ. IN
△	-10.000	ELEVNS 0.000	RUDER2 0.000	0.000	A41012	0.000	A4106S -10.000	LREF 6.1420 INCHES
◇	-20.000	STING 4.000			A4107S	-20.000		BREF 6.1420 INCHES
								XMRP 3.9950 INCHES
								YMRP 0.0000 INCHES
								ZMRP 0.1350 INCHES
								SCALE 0.0033 SCALE

DATA HIST. CODE H\*G



LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON = 0



SYMBOL	AILRON	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION		
		MACH	BETA	RUDER2	STING	DATASET	AILRON	AILRON	SREF	INCHES	SCALE
○	0.000	4.900	0.000	0.000	0.000	0.000	0.000	9.0250	6.1420	0.0000	
△	-10.000	0.000	0.000	0.000	A41012	0.000	A4106S	6.1420	6.1420	0.0000	
◇	-20.000	4.000	0.000	0.000	A4107S	-20.000	-10.000	3.9950	6.1420	0.0000	
								3.9950	6.1420	0.0000	
								0.0000	6.1420	0.1350	
								0.1350	6.1420	0.0033	
								0.0033	6.1420	SCALE	

DATA HIST. CODE M%G

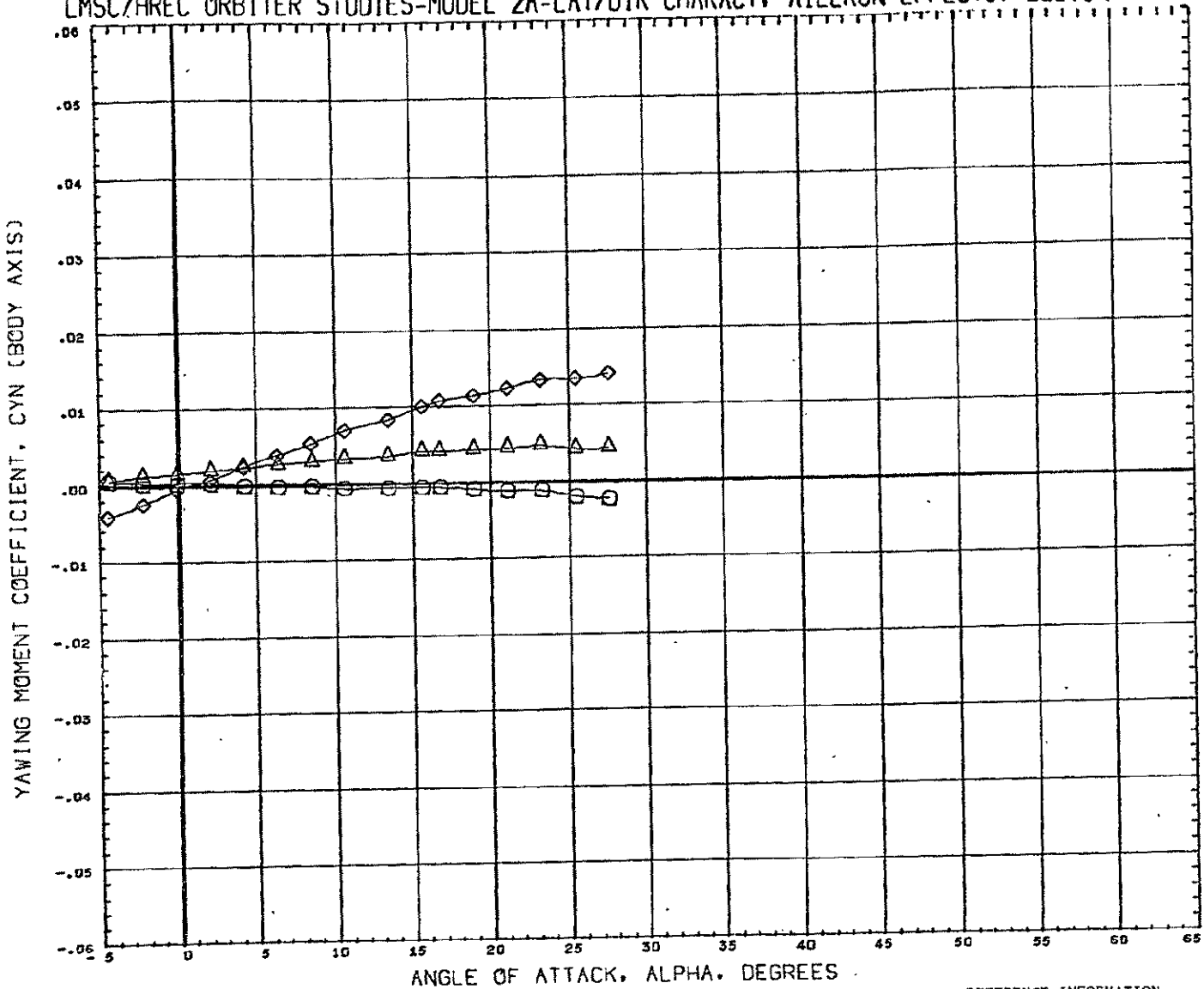
MSFC JWT 498 MSFC/LMSC ORBITER

B2W2V4D2E3R2 (A41012) 08 FEB 72

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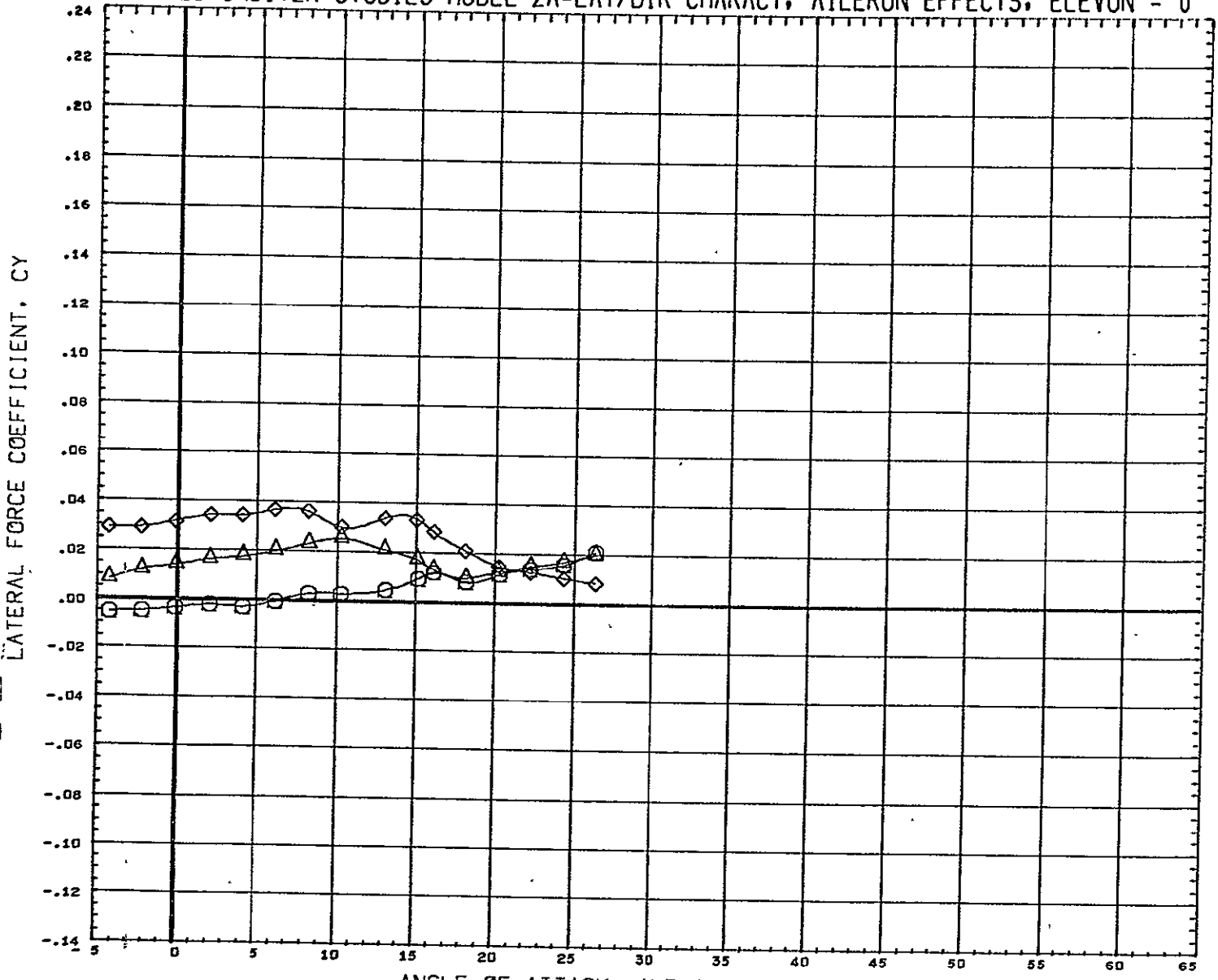
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT. AILERON EFFECTS, ELEVON = 0



SYMBOL	AILRON	MACH	PARAMETRIC VALUES		DATA SOURCE			REFERENCE INFORMATION			
○	0.000	1.964	BETA	0.000	DATASET	AILRON	DATASET	AILRON	SREF	9.0250	SQ. IN
△	- 10.000	0.000	RUDER2	0.000	A41012	0.000	A4106S	- 10.000	LREF	6.1420	INCHES
◇	- 20.000	4.000			A4107S	- 20.000			BREF	6.1420	INCHES
									XMRP	3.9950	INCHES
									YMRP	0.0000	INCHES
									ZMRP	0.1350	INCHES
									SCALE	0.0033	SCALE

DATA HIST. CODE M96

MSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON = 0

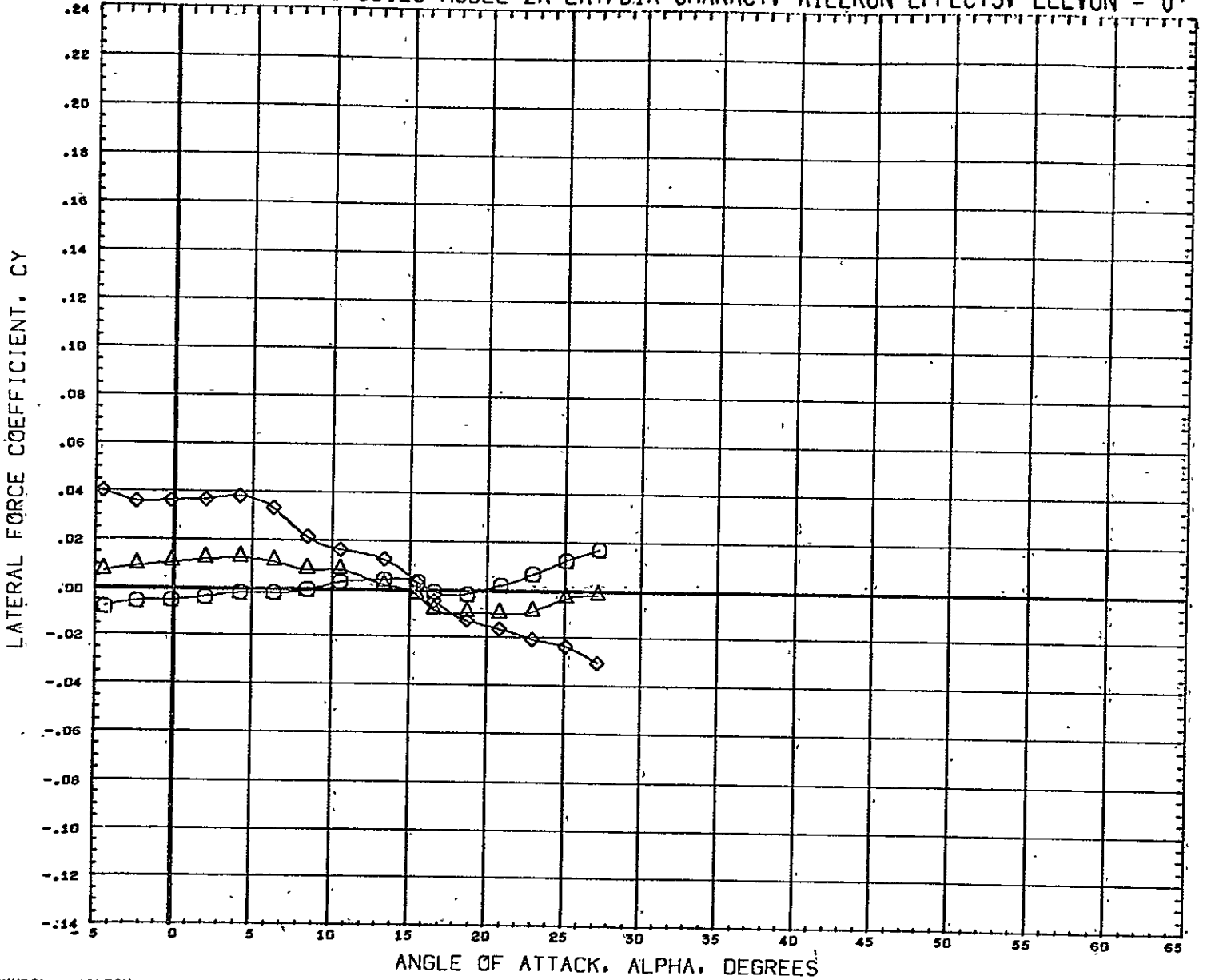


ANGLE OF ATTACK, ALPHA, DEGREES

SYMBOL	AILRON	PARAMETRIC VALUES				DATA SOURCE				REFERENCE INFORMATION		
○	0.000	MACH	0.597	BETA	0.000	DATASET	AILRON	DATASET	AILRON	SREF	9.0250	SQ. IN
△	-10.000	ELEVNS	0.000	RUDER2	0.000	A41012	0.000	A4106S	-10.000	LREF	6.1420	INCHES
◇	-20.000	STING	4.000			A4107S	-20.000			BREF	6.1420	INCHES
										XMRP	3.9950	INCHES
										YMRP	0.0000	INCHES
										ZMRP	0.1350	INCHES
										SCALE	0.9033	SCALE

DATA HIST. CODE M#6

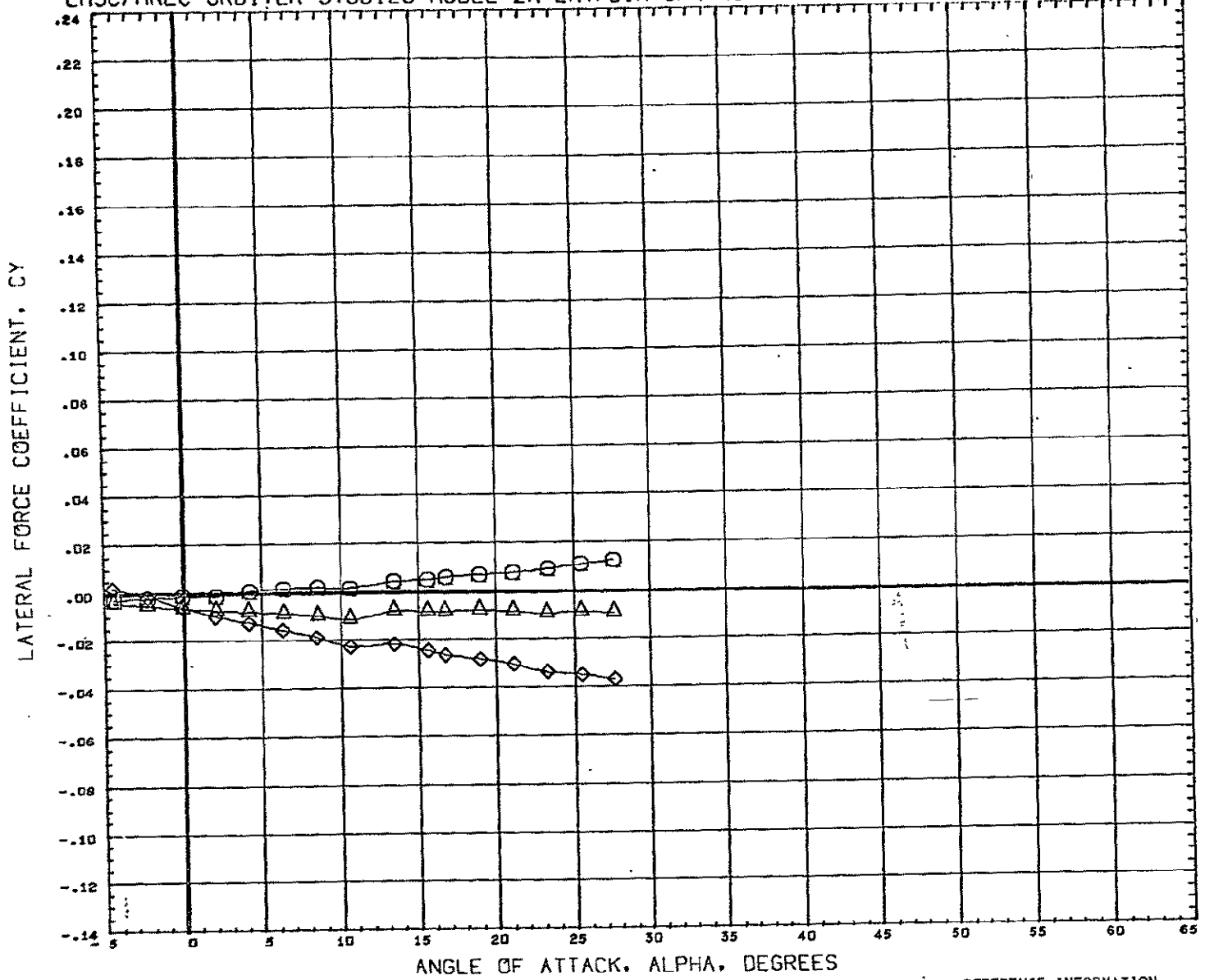
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON = 0.



SYMBOL		PARAMETRIC VALUES		DATA SOURCE		REFERENCE INFORMATION	
○	AILRON 0.000	MACH 0.902	BETA 0.000	DATASET AILRON	0.000	SREF 9.0250	SQ. IN
△	- 10.000	ELEVNS 0.000	RUDER2 0.000	A41012	0.000	LREF 6.1420	INCHES
◇	- 20.000	STING 4.000		A41075	- 20.000	BREF 6.1420	INCHES
						XMRP 3.9950	INCHES
						YMRP 0.0000	INCHES
						ZMRP 0.1350	INCHES
						SCALE 0.0033	SCALE

DATA HIST. CODE M\*G

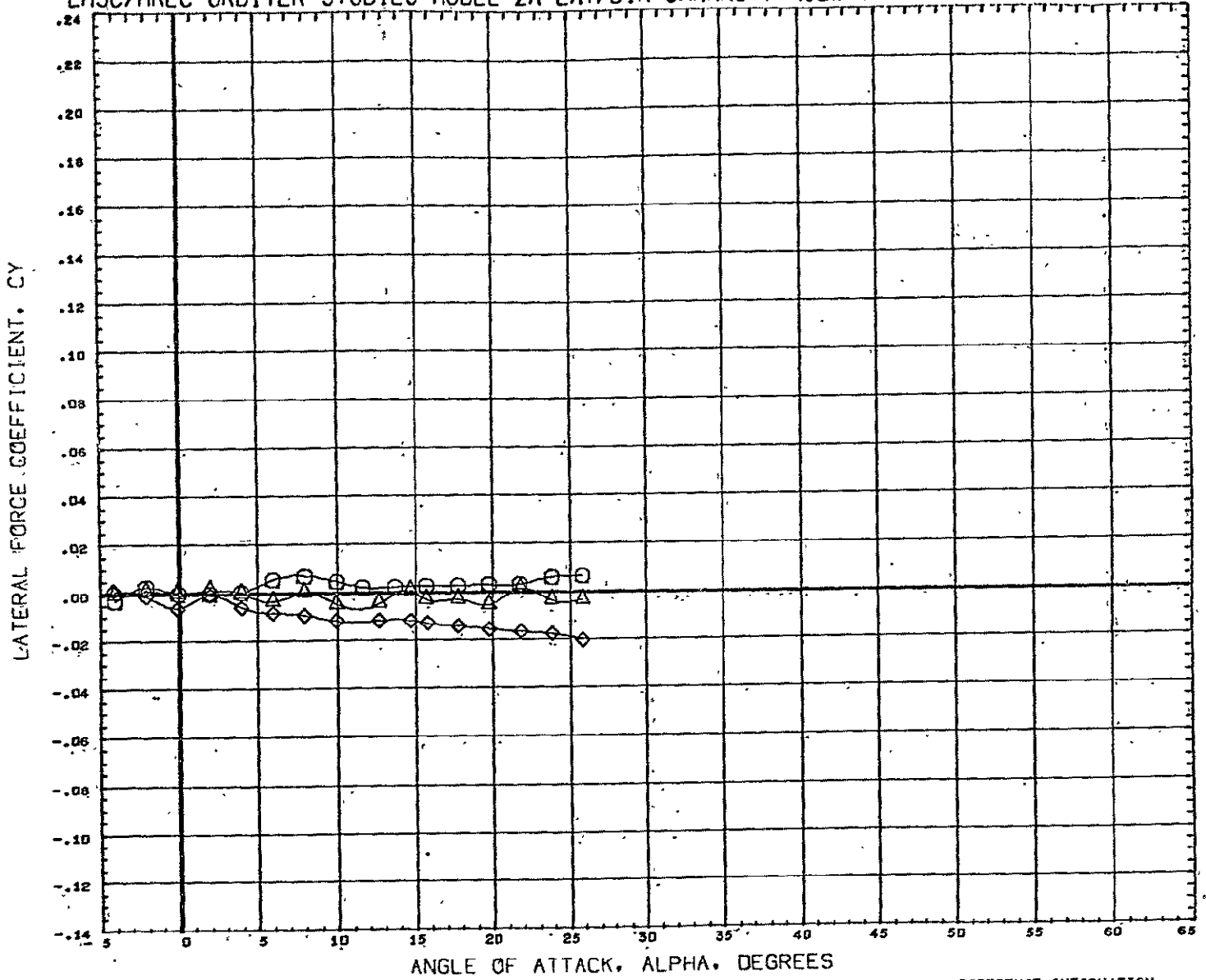
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON = 0



SYMBOL	AILRON	PARAMETRIC VALUES				DATA SOURCE				REFERENCE INFORMATION		
○	0.000	MACH	1.964	BETA	0.000	DATASET	AILRON	DATASET	AILRON	SREF	9.0250	sq. IN
△	- 10.000	ELEVNS	0.000	RUDER2	0.000	A41012	0.000	A4106S	- 10.000	LREF	6.1420	INCHES
◇	- 20.000	STING	4.000			A4107S	- 20.000			BREF	5.1420	INCHES
										XHRP	3.9950	INCHES
										YHRP	0.0000	INCHES
										ZHRP	0.1350	INCHES
										SCALE	0.0033	SCALE

DATA HIST. CODE M#G

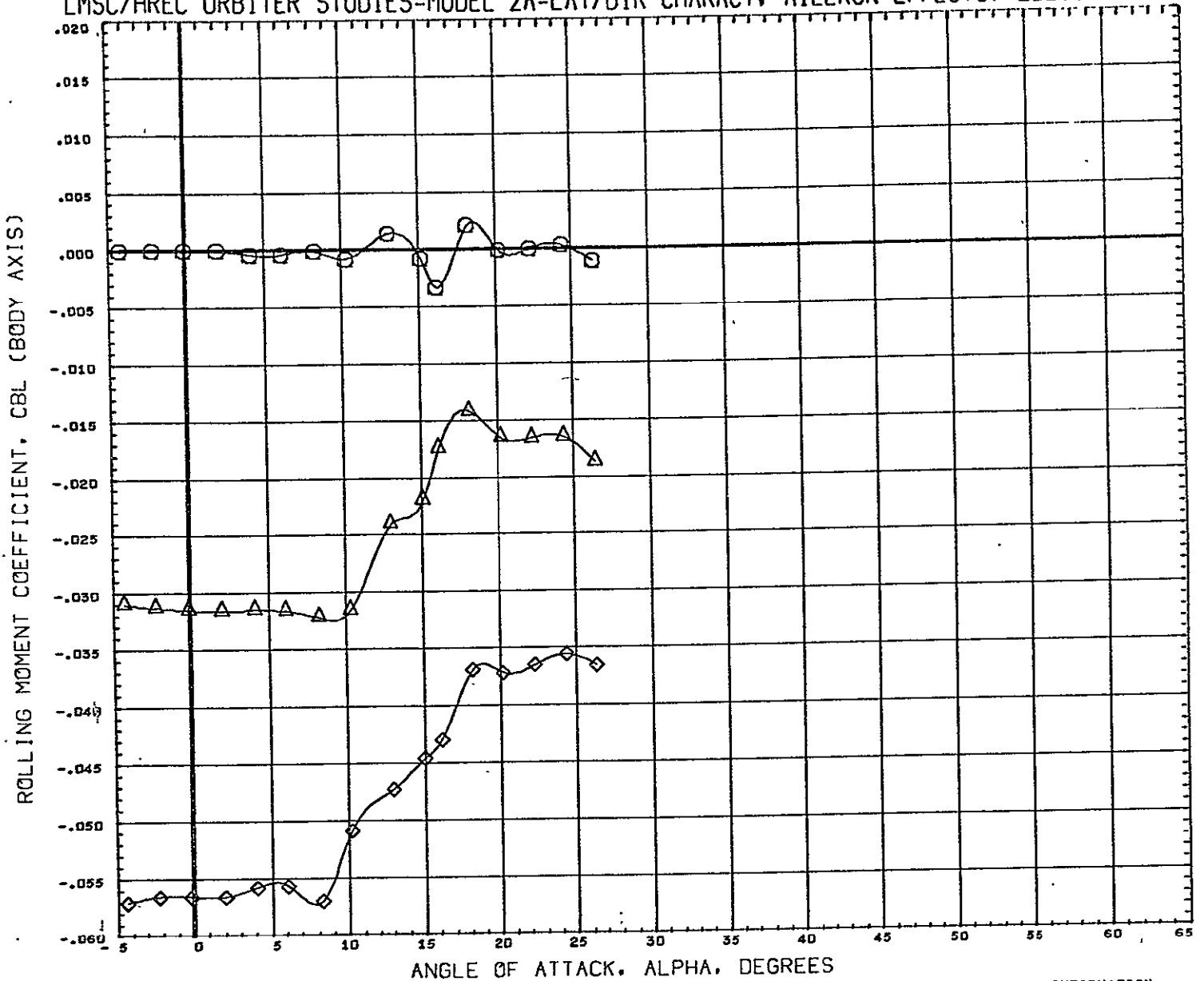
MSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON = 0



SYMBOL	AILRON	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
○	0.000	MACH 4.960 BETA 0.000	DATASET AILRON 0.000	SREF 9.0250 SQ. IN
△	- 10.000	ELEVN3 0.000 RUDER2 0.000	A41012 0.000 A4106S - 10.000	LREF 6.1420 INCHES
◇	- 20.000	STING 4.000	A4107S - 20.000	BREF 6.1420 INCHES
				XMRP 3.9950 INCHES
				YHRP 0.0000 INCHES
				ZHRP 0.1350 INCHES
				SCALE 0.0033 SCALE

DATA HIST. CODE M\*G

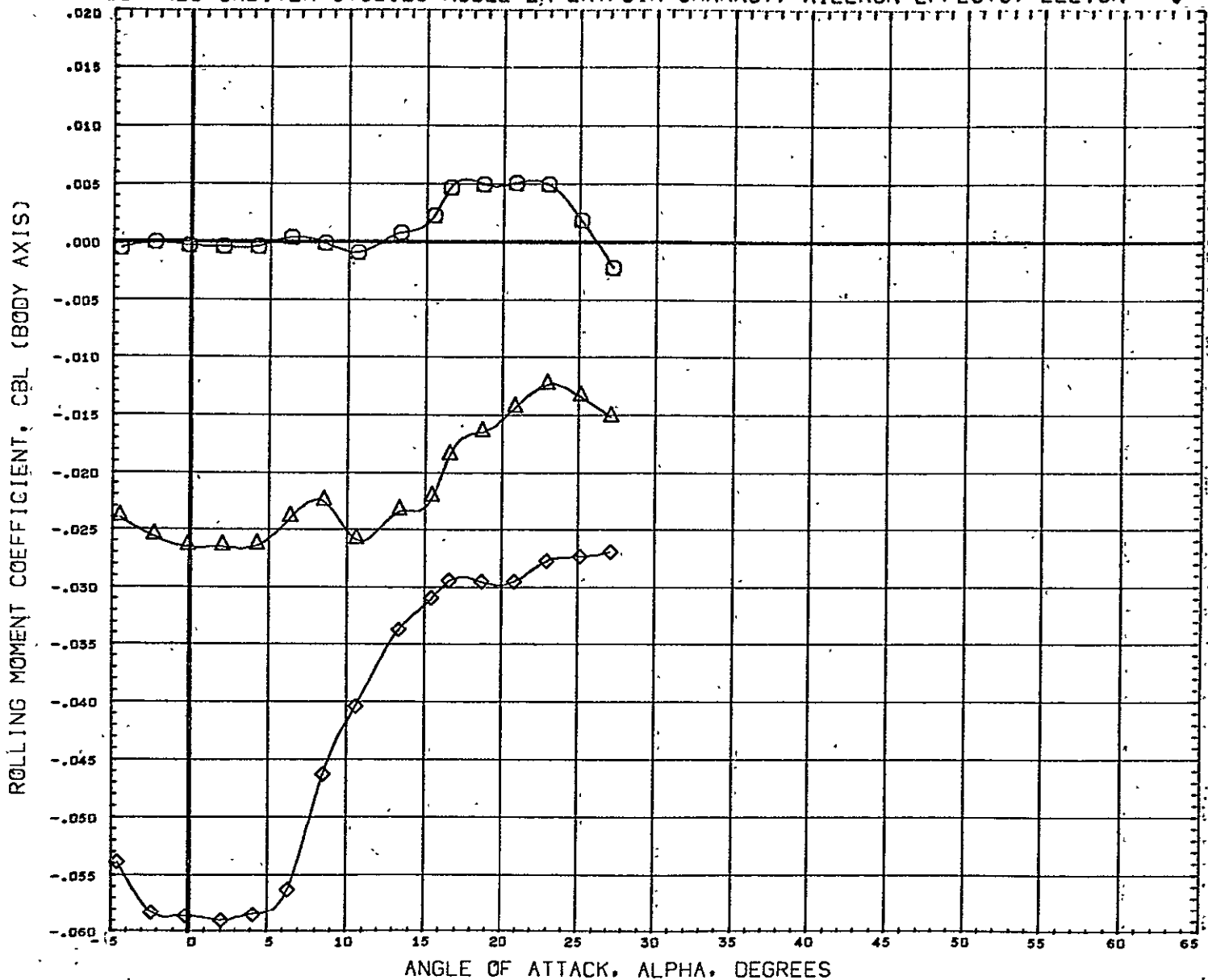
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON = 0



SYMBOL	AILRON	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION			
○	0.000	MACH	0.597	BETA	0.000	DATASET	AILRON	DATASET	AILRON	SREF	9.0250	SQ. IN
△	-10.000	ELEVNS	0.000	RUDER2	0.000	A41012	0.000	A4106S	-10.000	LREF	6.1420	INCHES
◇	-20.000	STING	4.000			A4107S	-20.000			BREF	6.1420	INCHES
										XMRP	3.9950	INCHES
										YMRP	0.0000	INCHES
										ZMRP	0.1350	INCHES
										SCALE	0.0033	SCALE

DATA HIST. CODE M#G

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON = 0

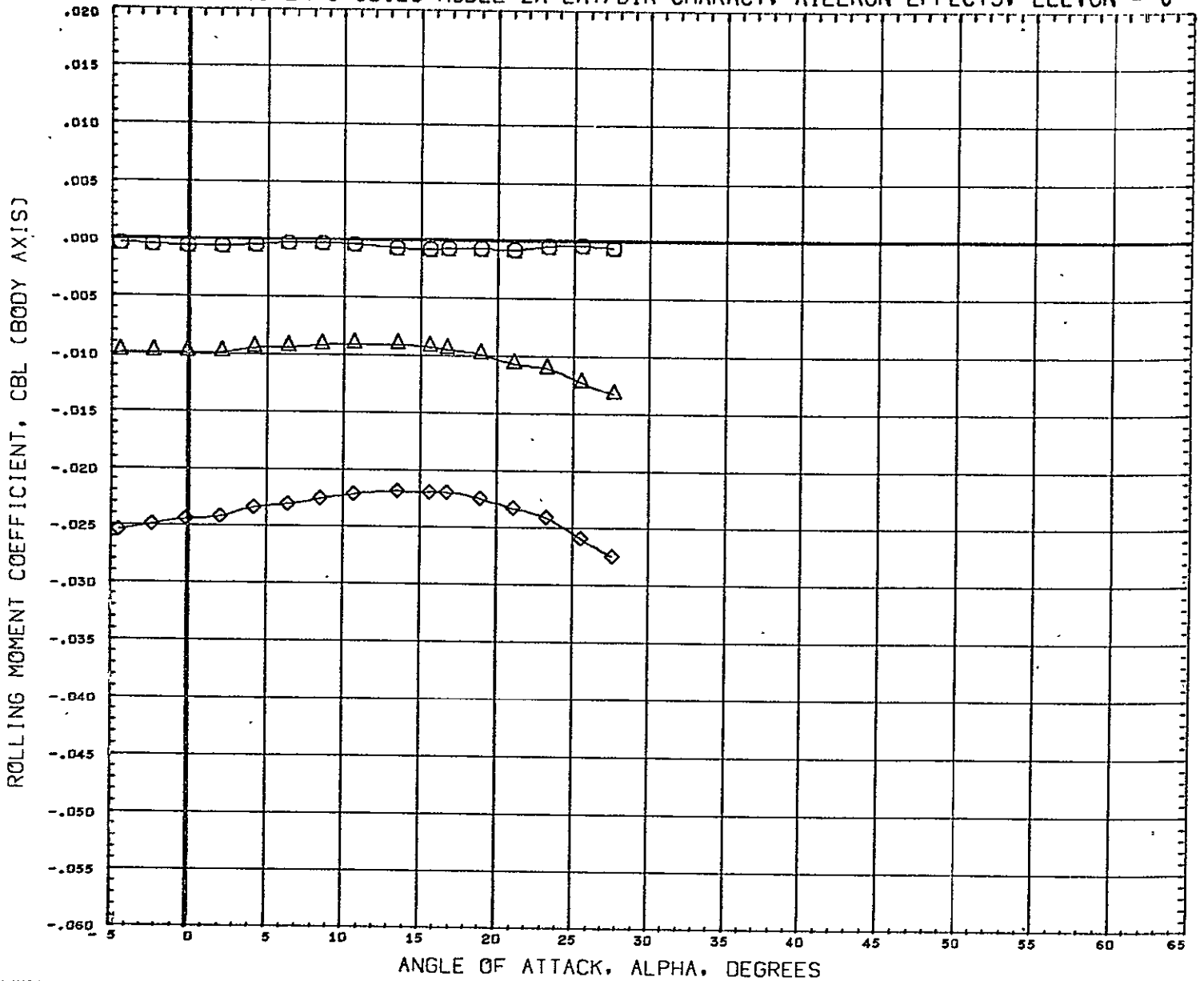


SYMBOL	AILRON	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION		
○	0.000	MACH	0.902	BETA	0.000	DATASET	AILRON	SREF	9.0250	SQ. IN	
△	-10.000	ELEVNS	0.000	RUDER2	0.000	A41012	0.000	BREF	6.1420	INCHES	
◇	-20.000	STING	4.000			A41075	-20.000	XHRP	3.9950	INCHES	
								YHRP	0.0000	INCHES	
								ZHRP	0.1350	INCHES	
								SCALE	0.0033	SCALE	

DATA HIST. CODE M#6



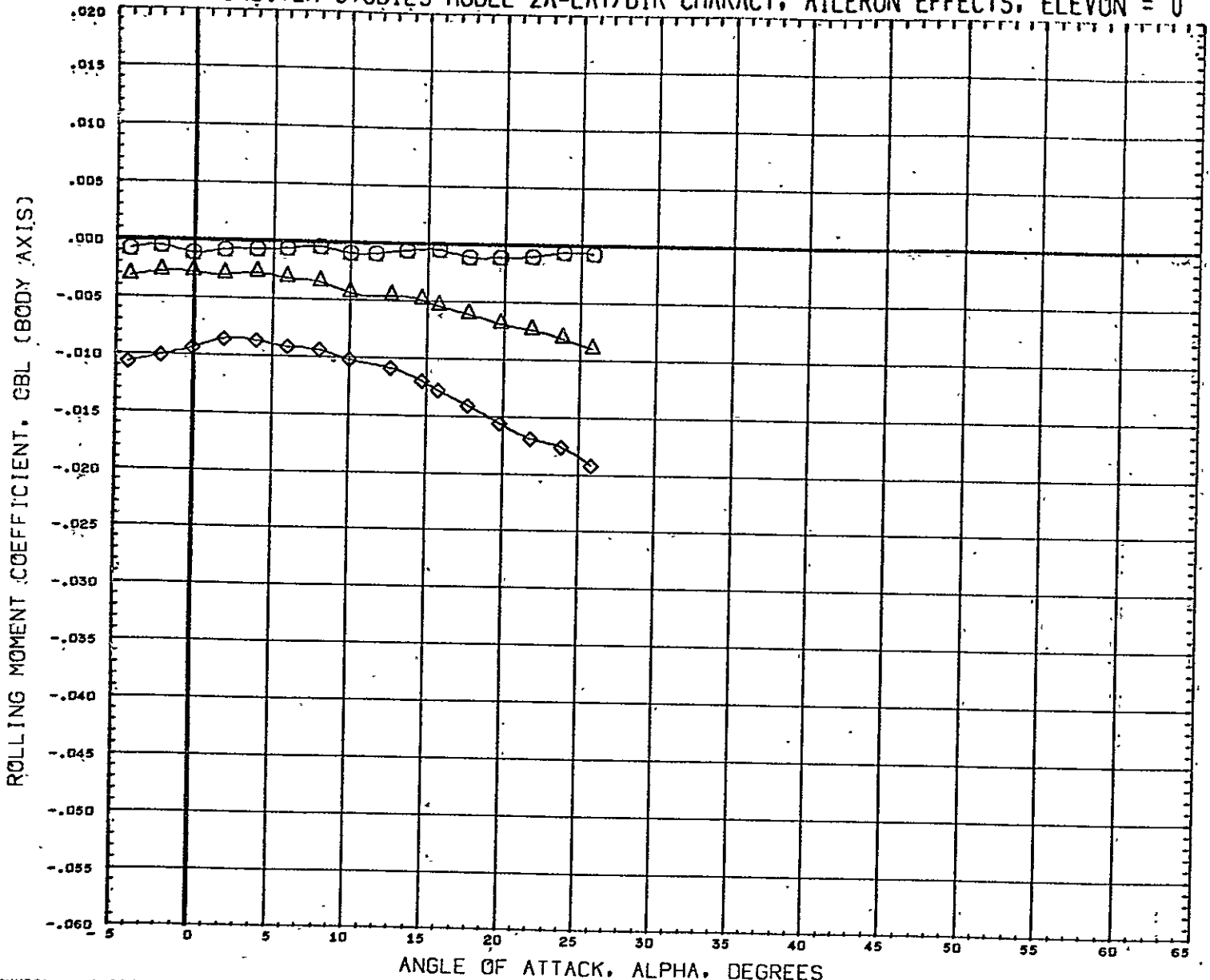
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON = 0



SYMBOL	AILRON	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
○	0.000	MACH 1.964 BETA 0.000	DATA SOURCE AILRON	SREF 9.0250 SQ. IN
△	-10.000	ELEVN3 0.000 RUDER2 0.000	A41012 0.000	LREF 6.1420 INCHES
◇	-20.000	STING 4.000	A4107S -20.000	BREF 6.1420 INCHES
				XHRP 3.9950 INCHES
				YHRP 0.0000 INCHES
				ZHRP - 0.1350 INCHES
				SCALE 0.0033 SCALE

DATA HIST. CODE M#G

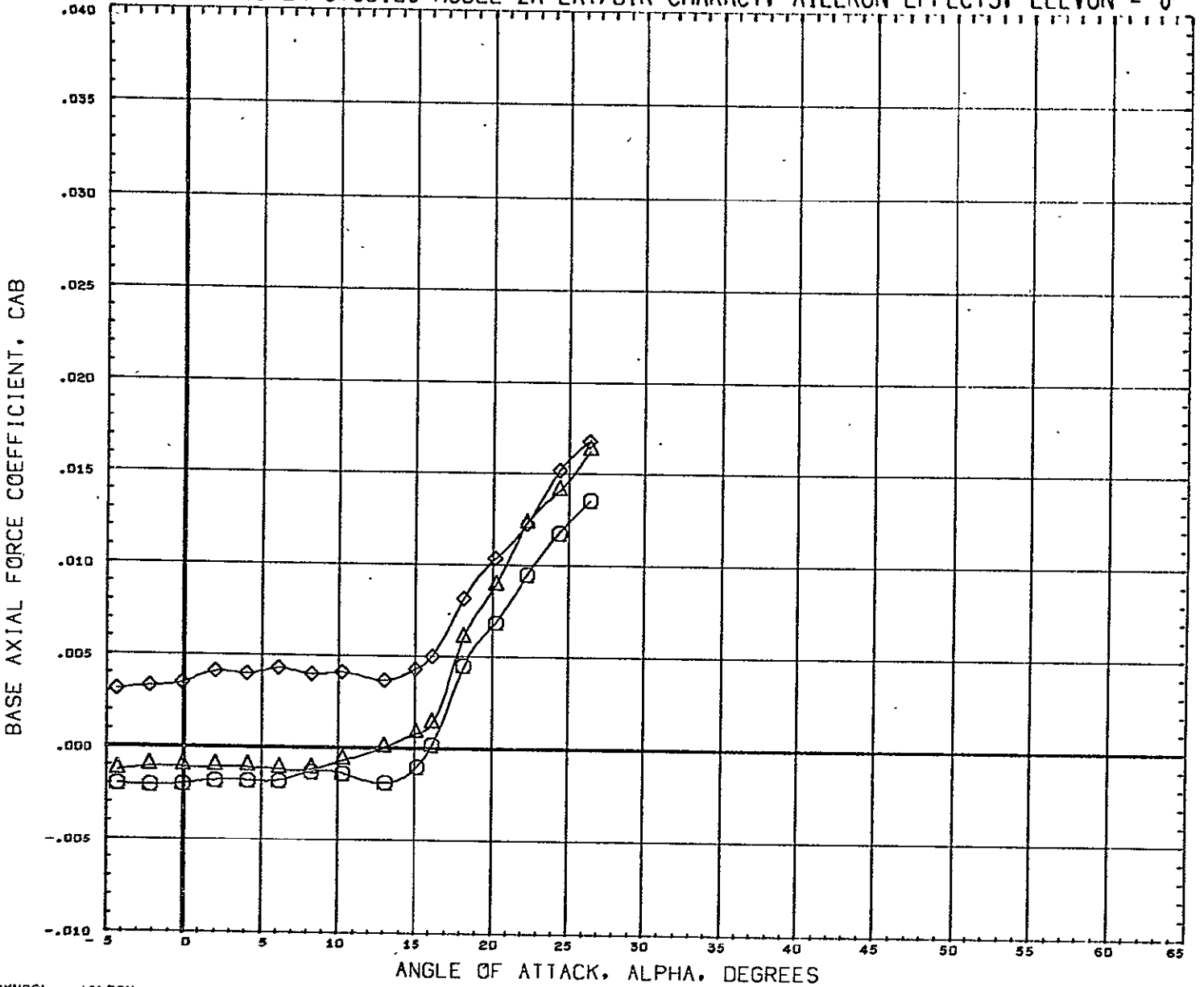
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT. AILERON EFFECTS, ELEVON = 0



SYMBOL	AILRON	PARAMETRIC VALUES		DATA SOURCE		REFERENCE INFORMATION						
○	0.000	MACH	4.960	BETA	0.000	DATA SET	AILRON	SREF	9.0250	SQ. IN		
△	-10.000	ELEVON3	0.000	RUDER2	0.000	A41012	0.000	A4106S	-10.000	LREF	6.1420	INCHES
◇	-20.000	STING	4.000			A4107S	-20.000			BREF	6.1420	INCHES
										XMRF	3.9950	INCHES
										YMRP	0.0000	INCHES
										ZMRP	0.1350	INCHES
										SCALE	0.0033	SCALE

DATA HIST. CODE M#G

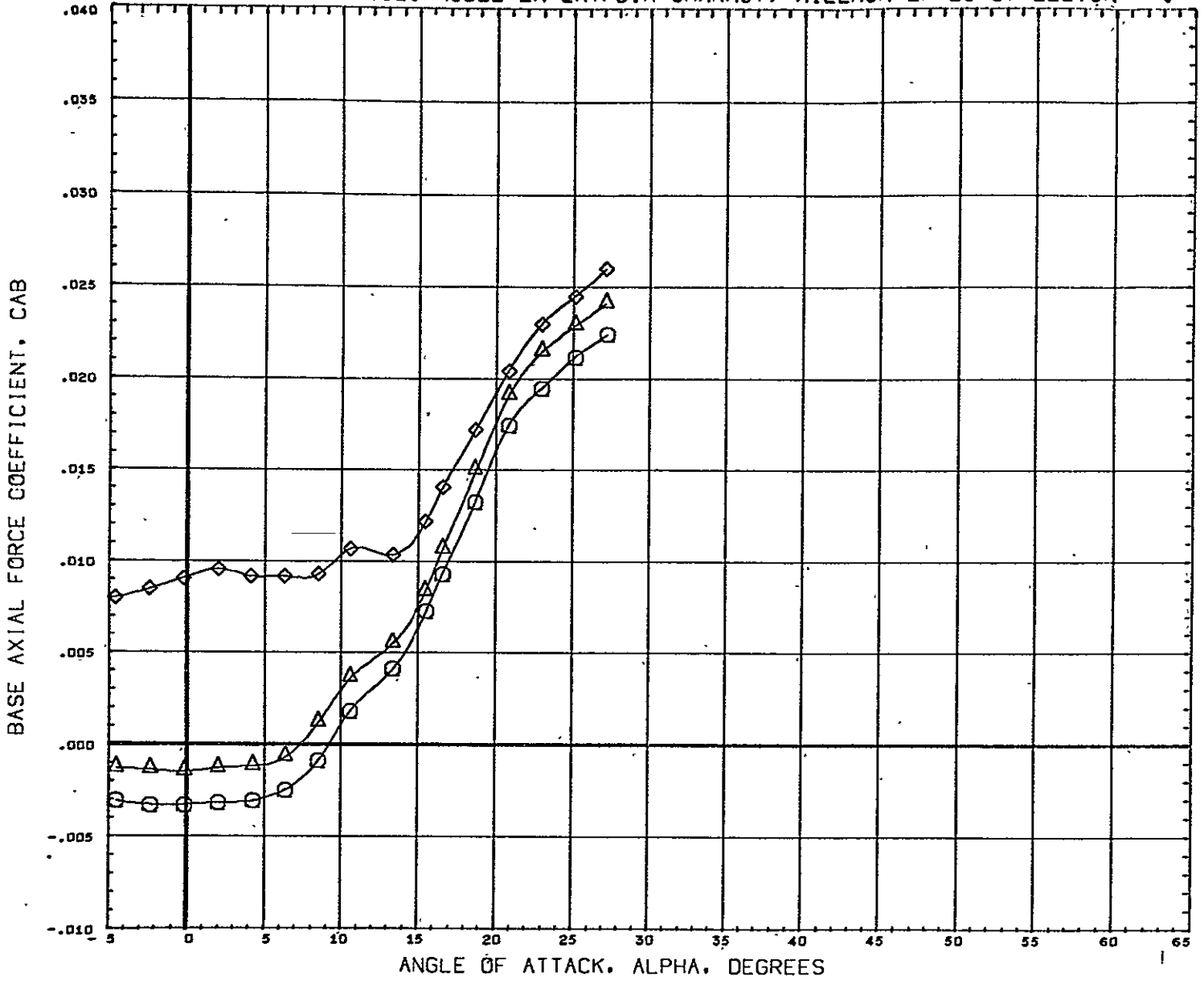
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON = 0



SYMBOL	AILRON	MACH	PARAMETRIC VALUES	BETA	DATASET	AILRON	DATASET	AILRON	REFERENCE INFORMATION
○	0.000	0.597		0.000	A41012	0.000	A4106S	- 10.000	SREF 9.0250 SQ. IN
△	- 10.000	ELEVNS	0.000	0.000	A4107S	- 20.000			LREF 6.1420 INCHES
◇	- 20.000	STING	4.000						BREF 6.1420 INCHES
									XMRP 3.9950 INCHES
									YMRP 0.0000 INCHES
									ZMRP - 0.1350 INCHES
									SCALE 0.0033 SCALE

DATA HIST. CODE M#6

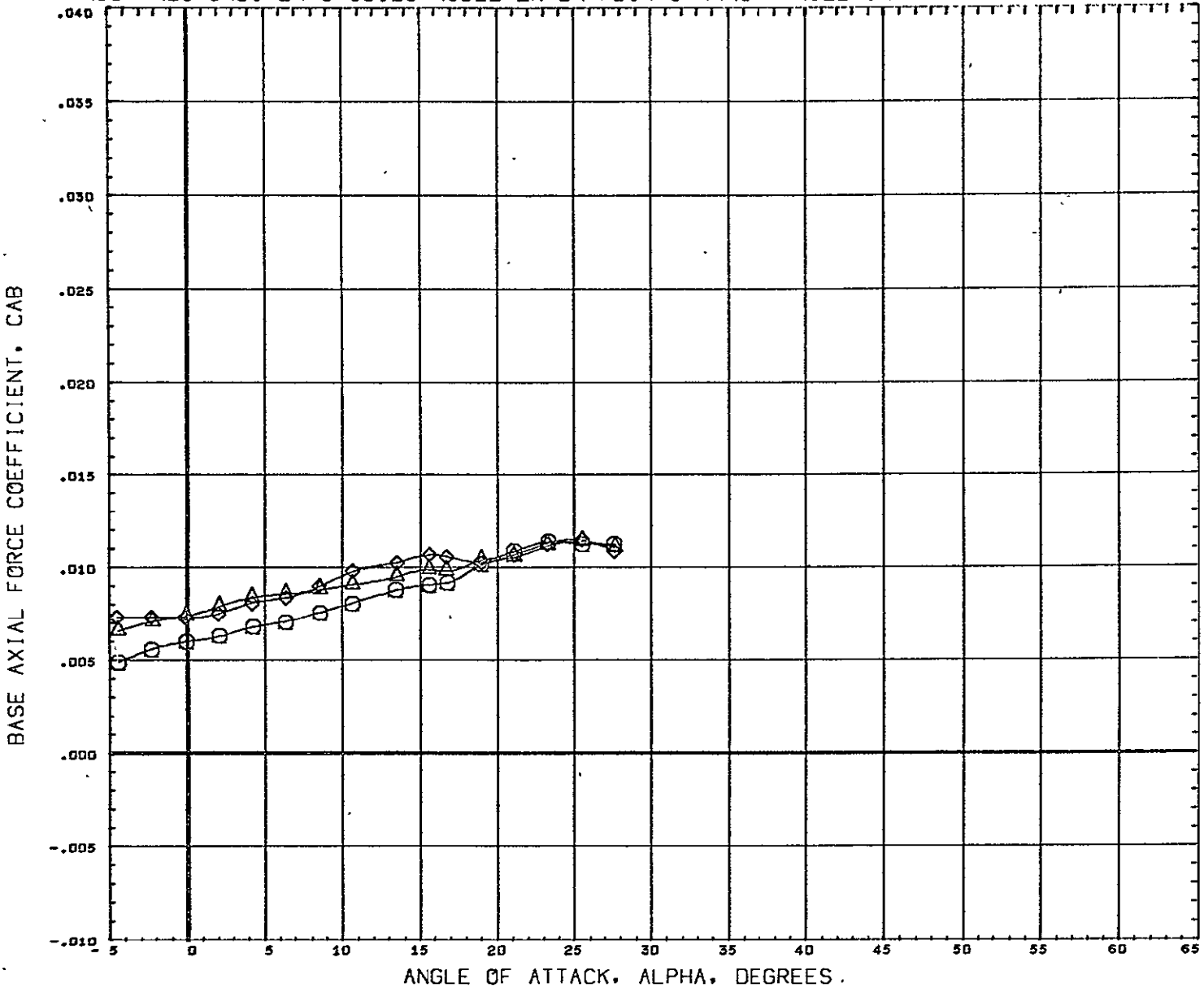
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON = 0



SYMBOL	AILRON	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
○	0.000	MACH 0.902 BETA 0.000	DATA SET AILRON 0.000	SREF 9.0250 SQ. IN
△	-10.000	ELEVN3 0.000 RUDER2 0.000	A41012 0.000	LREF 6.1420 INCHES
◇	-20.000	STING 4.000	A4107S -20.000	BREF 6.1420 INCHES
				XMRP 3.9950 INCHES
				YMRP 0.0000 INCHES
				ZMRP 0.1350 INCHES
				SCALE 0.0033 SCALE

DATA HIST. CODE H#G

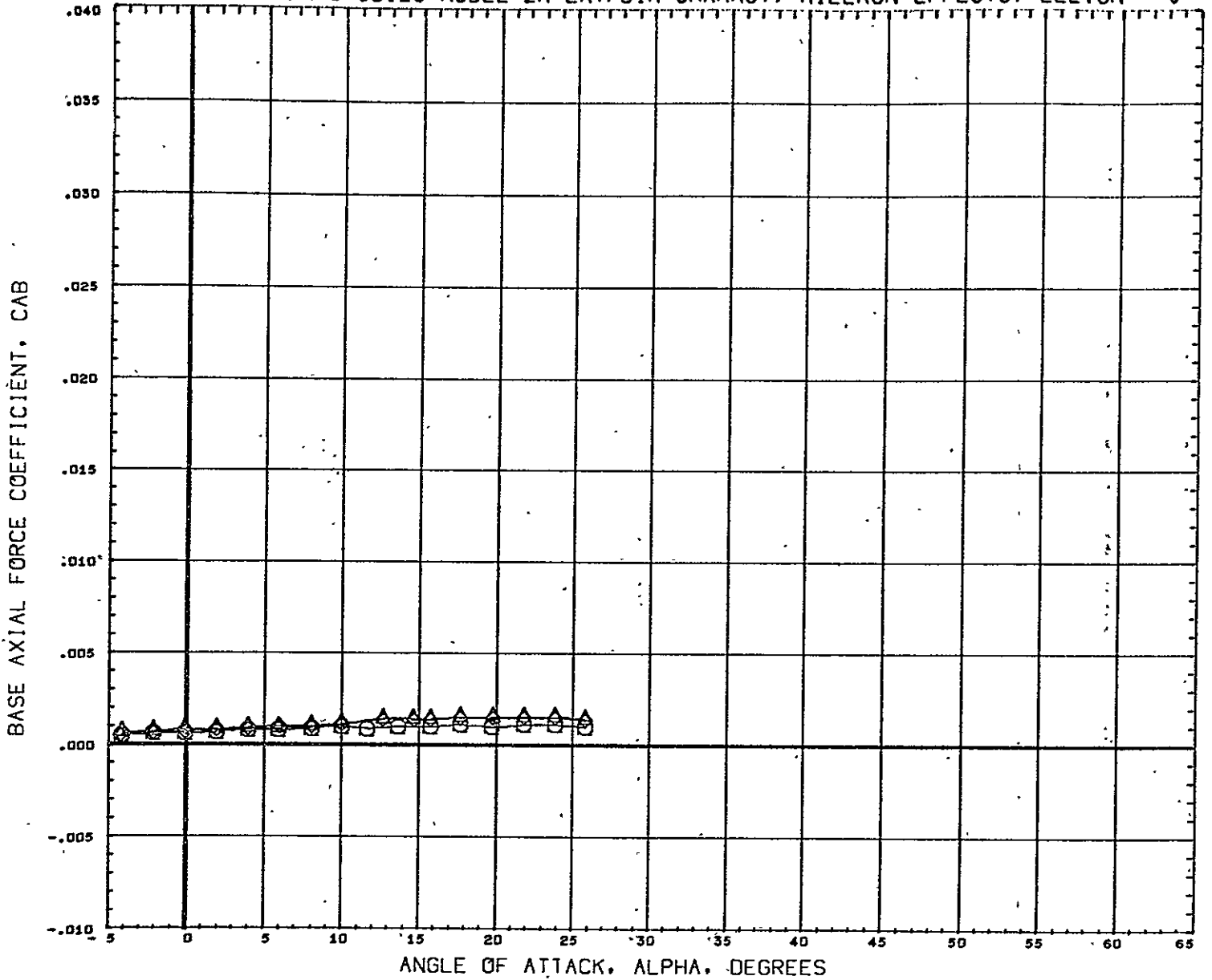
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON = 0



SYMBOL	AILRON	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION			
○	0.000	MACH	1.964	BETA	0.000	DATASET	AILRON	DATASET	AILRON	SREF	9.0250	SQ.IN
△	- 10.000	ELEVN3	0.000	RUDER2	0.000	A41012	0.000	A4106S	- 10.000	LREF	6.1420	INCHES
◇	- 20.000	STING	4.000			A4107S	- 20.000			BREF	6.1420	INCHES
										XMRP	3.9950	INCHES
										YMRP	0.0000	INCHES
										ZMRP	0.1350	INCHES
										SCALE	0.0033	SCALE

DATA HIST. CODE M#6

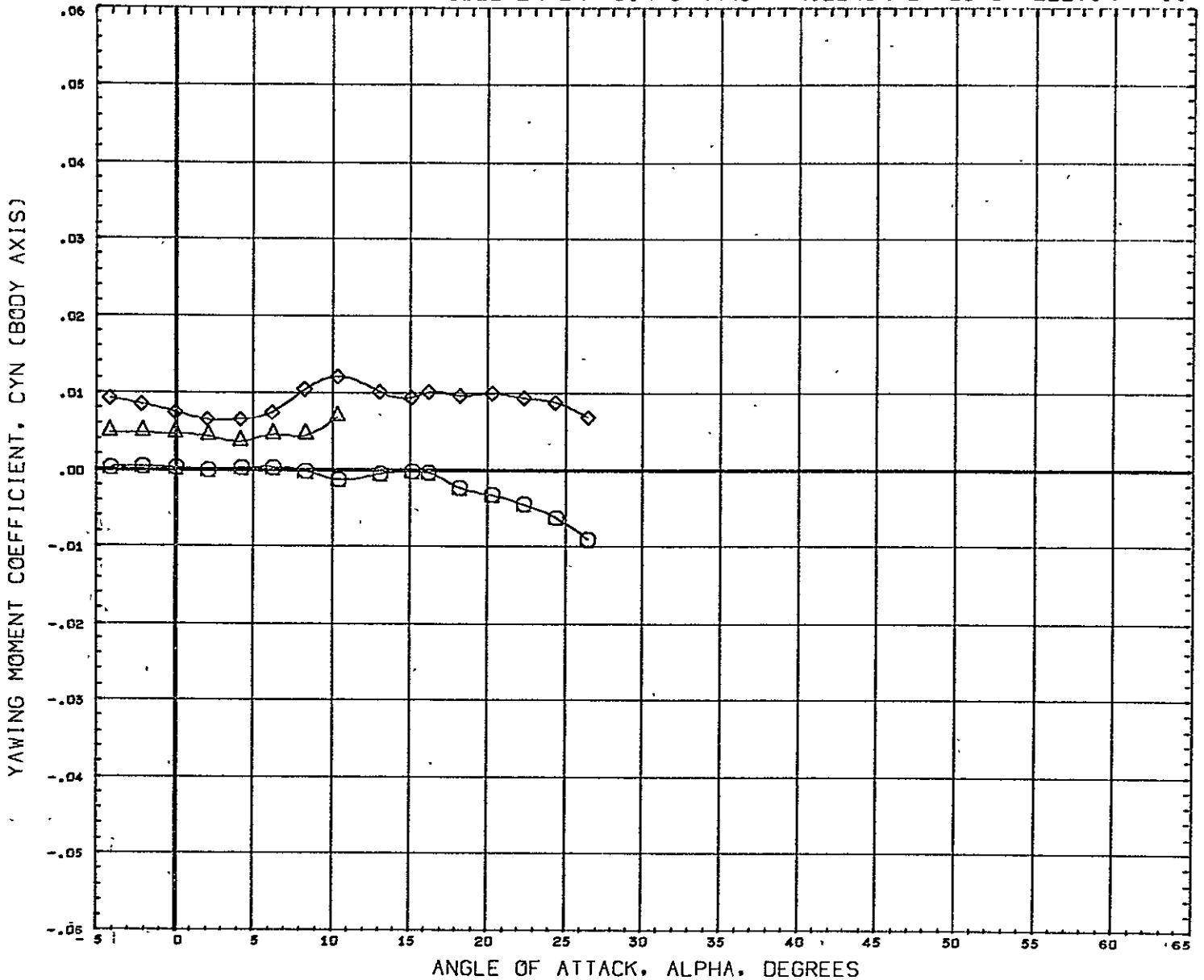
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON = 0



SYMBOL	AILRON	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
○	0.000	MACH 4.960 BETA 0.000	AILRON DATASET A41012 0.000	SREF 9.0250 SQ. IN
△	- 10.000	ELEVN3 0.000 RUDER2 0.000	AILRON DATASET A4106S - 10.000	LREF 6.1420 INCHES
◇	- 20.000	STING 4.000	AILRON DATASET A4107S - 20.000	BREF 6.1420 INCHES
				XMRP 3.9950 INCHES
				YMRP 0.0000 INCHES
				ZMRP 0.1350 INCHES
				SCALE 0.0033 SCALE

DATA HIST. CODE M9G

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON =+10

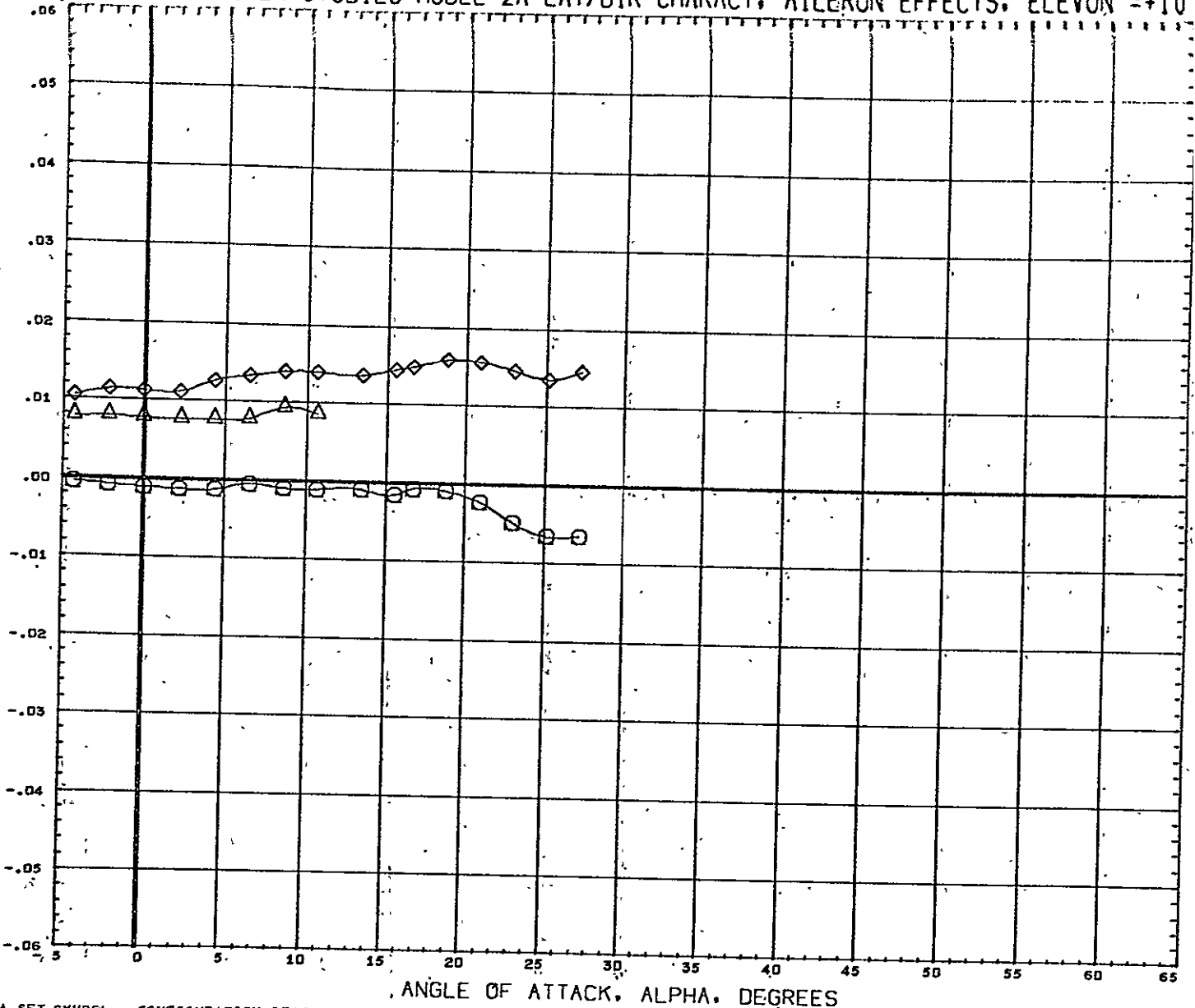


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	AILRON	ELEV3	RUDER2	STING	REFERENCE INFORMATION
(A41021)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	10.000	0.000	4.000	SREF 9.0250 SQ. IN
(A41085)	MSFC TWT 498 MSFC/LMSC ORBITER	-10.000	10.000	0.000	4.000	LREF 6.1420 INCHES
(A41095)	MSFC TWT 498 MSFC/LMSC ORBITER	-20.000	10.000	0.000	4.000	BREF 6.1420 INCHES
						XHRF 3.9950 INCHES
						YHRF 0.0000 INCHES
						ZHRF 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.598

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON =+10

YAWING MOMENT COEFFICIENT, CYN (BODY AXIS)

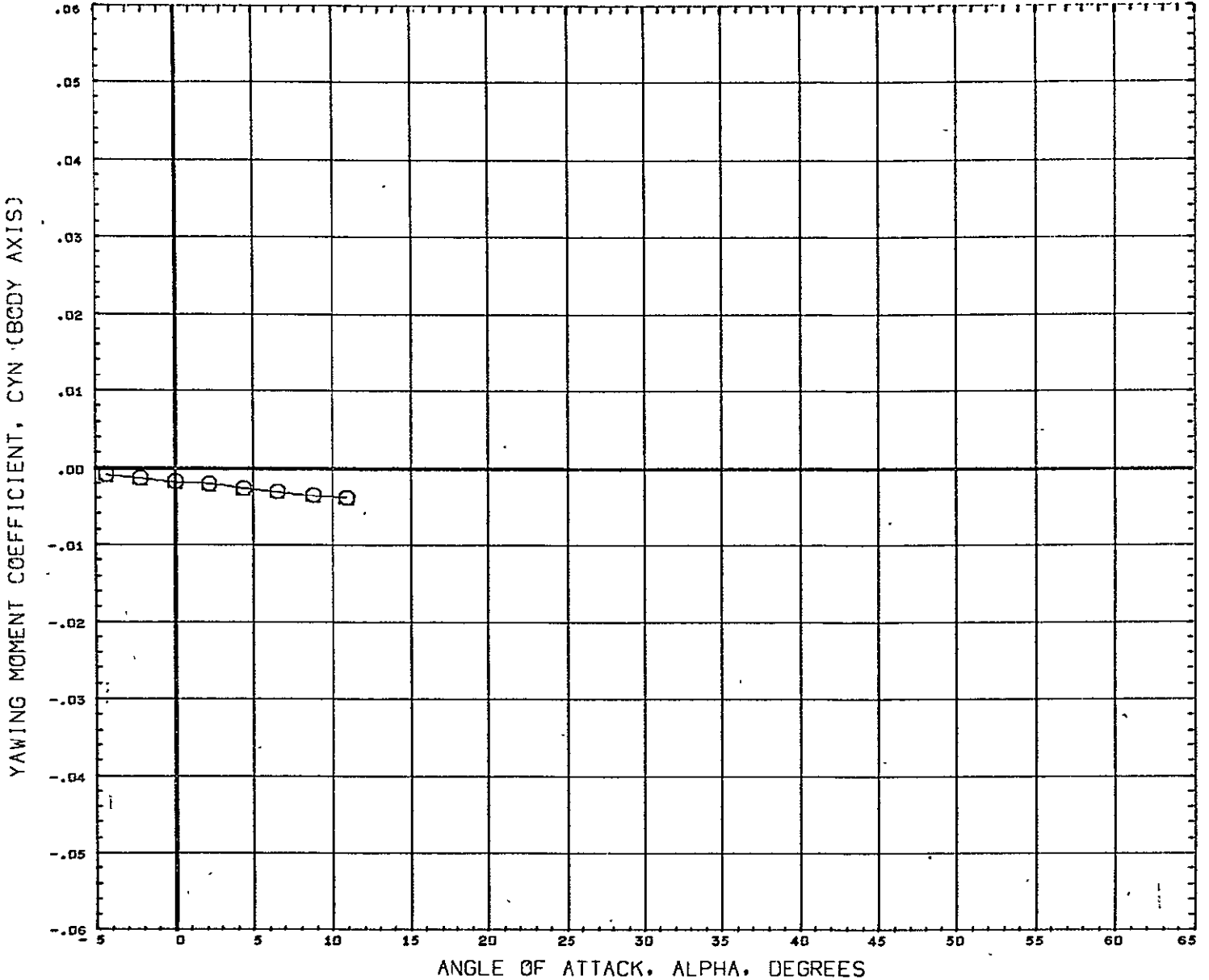


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	AILRON	ELEVNS	RUDER2	STING	REFERENCE INFORMATION
(A41021)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	10.000	0.000	4.000	SREF 9.0250 SQ. IN
(A4108S)	MSFC TWT 498 MSFC/LMSC ORBITER	-10.000	10.000	0.000	4.000	LREF 6.1420 INCHES
(A4109S)	MSFC TWT 498 MSFC/LMSC ORBITER	-20.000	10.000	0.000	4.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.898



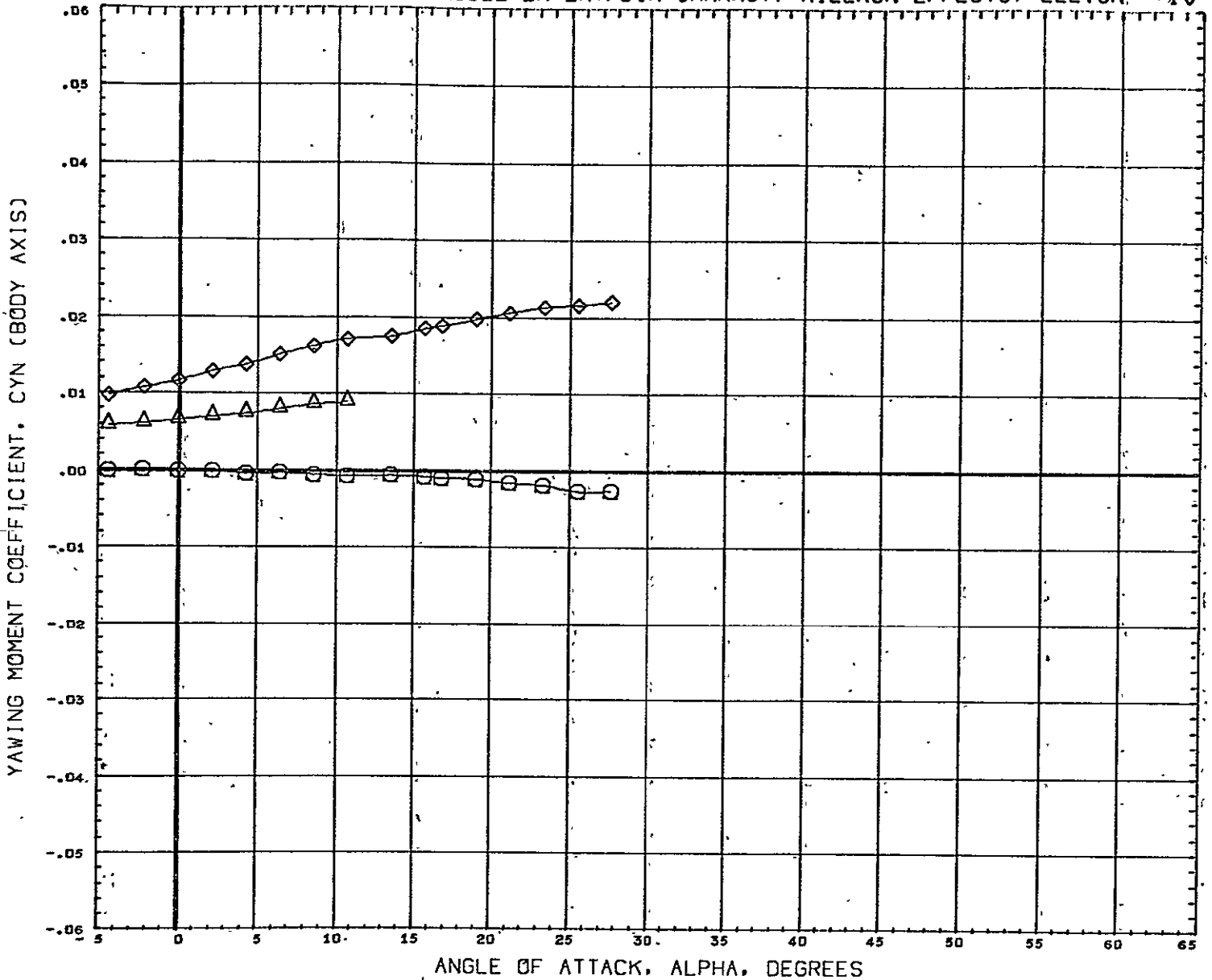
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON =+10



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	AILRON	ELEVNS	RUDER2	STING	REFERENCE INFORMATION
(A41021)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	10.000	0.000	4.000	SREF 9.0250 SQ. IN
(A41088)	DATA NOT AVAILABLE FOR ALL CONDITIONS	-10.000	10.000	0.000	4.000	LREF 6.1420 INCHES
(A41095)	DATA NOT AVAILABLE FOR ALL CONDITIONS	-20.000	10.000	0.000	4.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.100

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON. =+10

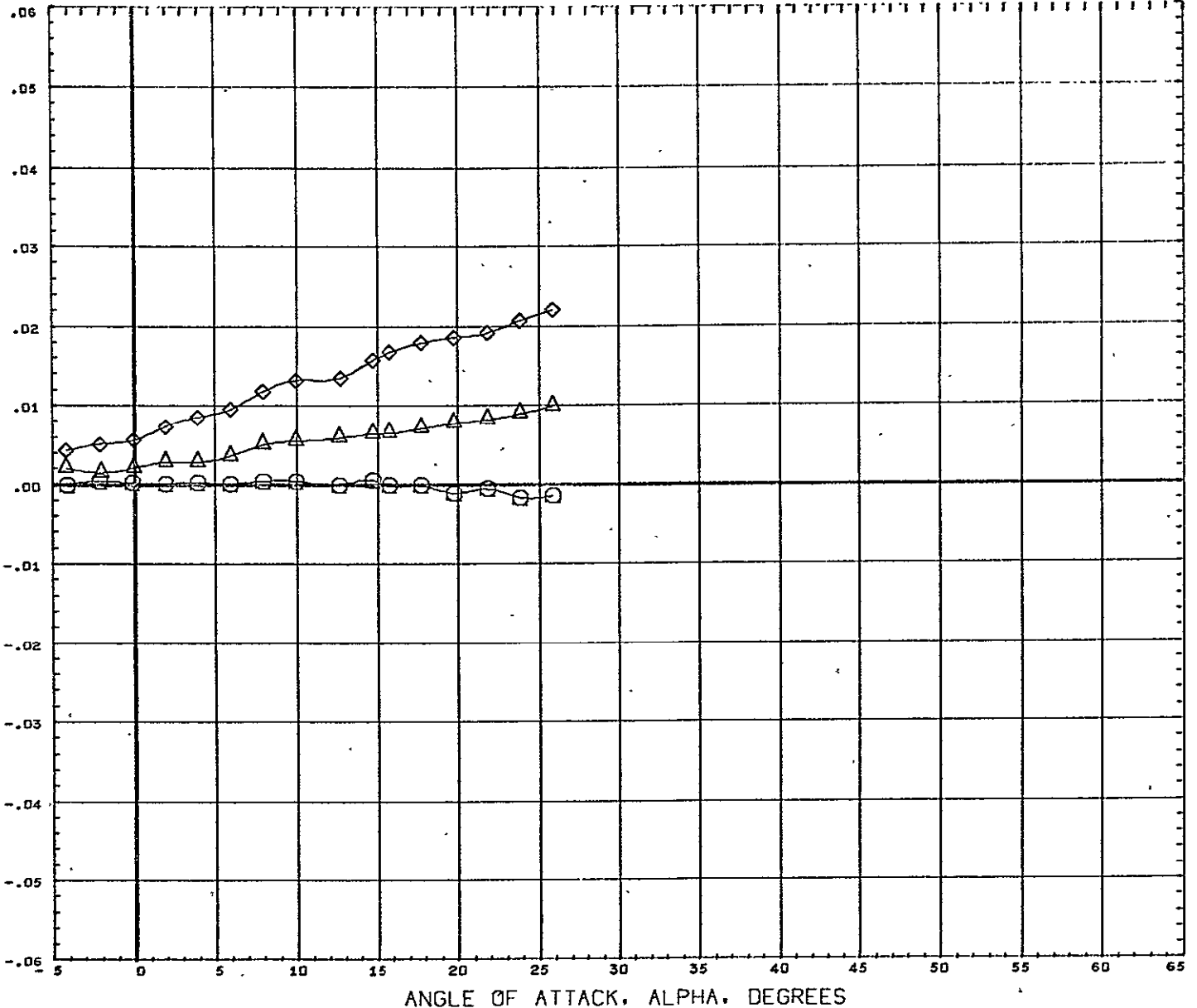


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	AILRON	ELEVN3	RUDER2	STING	REFERENCE INFORMATION
(A41021)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	10.000	0.000	4.000	SREF 9.0250 SQ. IN
(A41085)	MSFC TWT 498 MSFC/LMSC ORBITER	-10.000	10.000	0.000	4.000	LREF 6.1420 INCHES
(A41095)	MSFC TWT 498 MSFC/LMSC ORBITER	-20.000	10.000	0.000	4.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.958

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON =+10

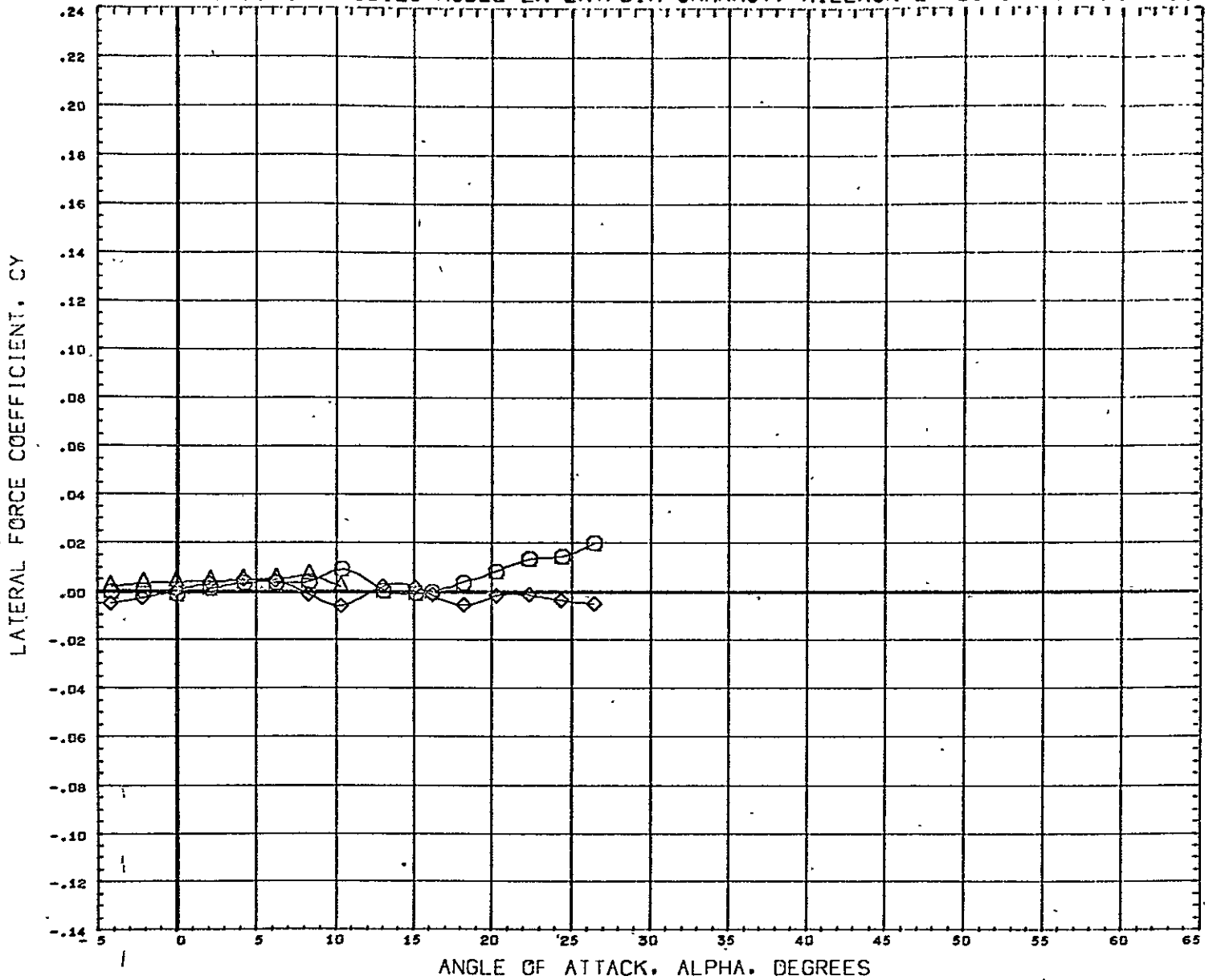
YAWING MOMENT COEFFICIENT, CYN (BODY AXIS)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	AILRON	ELEVON	RUDER2	STING	REFERENCE INFORMATION
(A41921)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	10.000	0.000	4.000	SREF 9.0250 SQ. IN
(A4198S)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	-10.000	10.000	0.000	4.000	LREF 6.1420 INCHES
(A4199S)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	-20.000	10.000	0.000	4.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 4.960

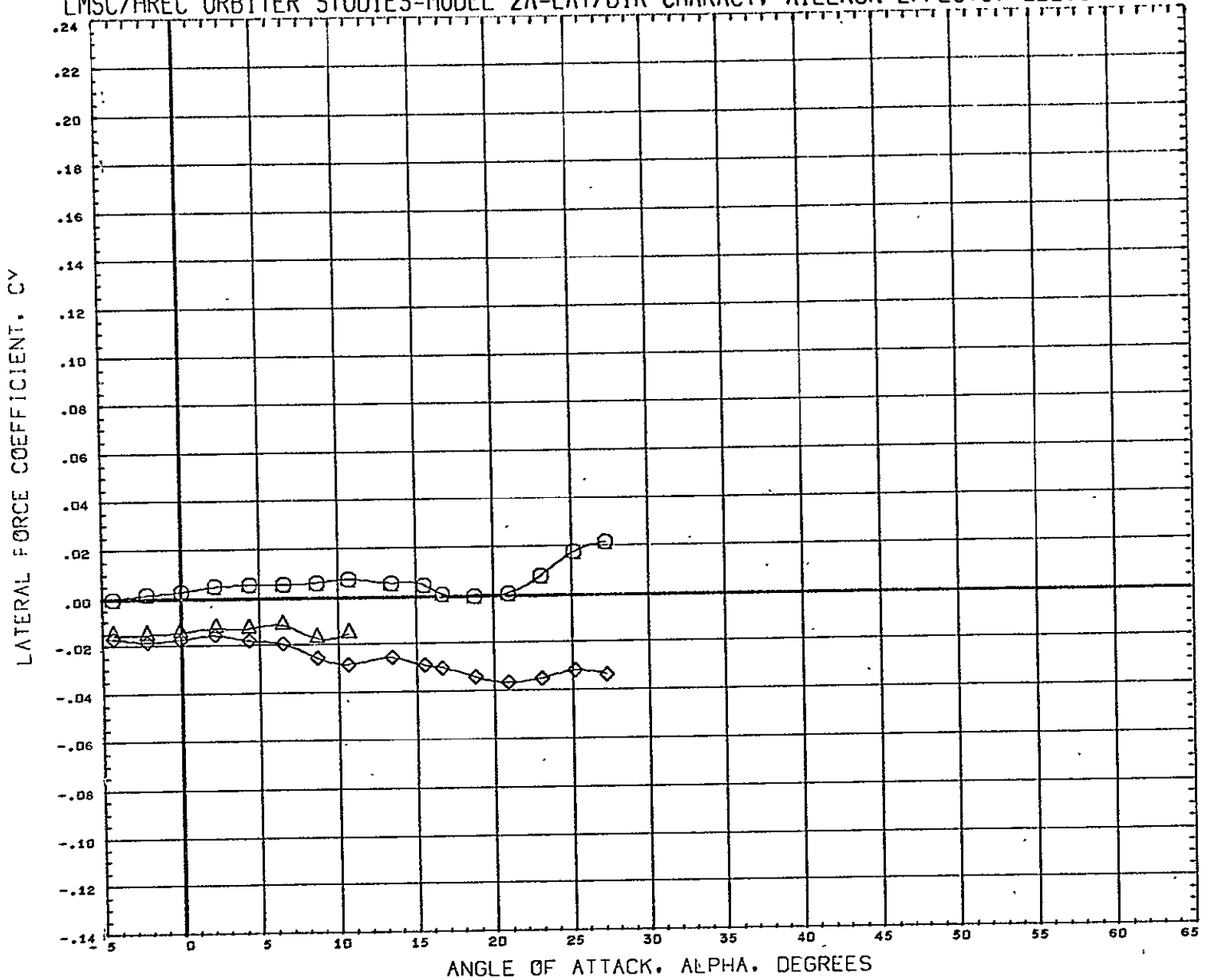
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON =+10



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	AILRON	ELEVN3	RUDER2	STING	REFERENCE INFORMATION
(A41921)	○	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	10.000	0.000	4.000	SREF 9.0250 SQ. IN
(A41985)	△	MSFC TWT 498 MSFC/LMSC ORBITER	-10.000	10.000	0.000	4.000	LREF 6.1420 INCHES
(A41995)	◇	MSFC TWT 498 MSFC/LMSC ORBITER	-20.000	10.000	0.000	4.000	BREF 6.1420 INCHES
							XMRP 3.9950 INCHES
							YMRP 0.0000 INCHES
							ZMRP 0.1350 INCHES
							SCALE 0.0033 SCALE

MACH 0.598

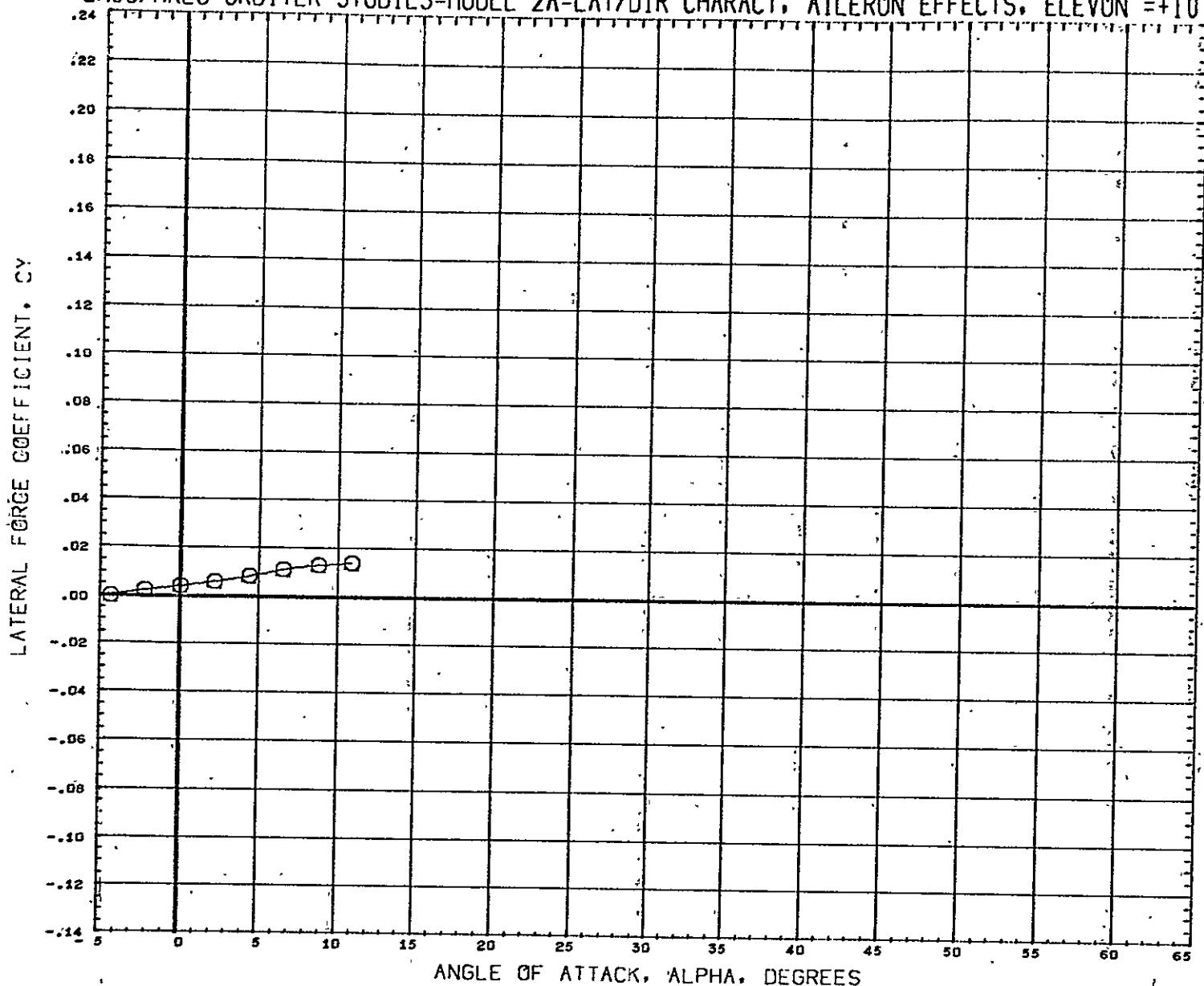
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON =+10



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	AILRON	ELEVNS	RUDER2	STING-	REFERENCE INFORMATION	
(A41921)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	10.000	0.000	4.000	SREF	9.0250 SQ. IN
(A41985)	MSFC TWT 498 MSFC/LMSC ORBITER	-10.000	10.000	0.000	4.000	LREF	6.1420 INCHES
(A41995)	MSFC TWT 498 MSFC/LMSC ORBITER	-20.000	10.000	0.000	4.000	BREF	6.1420 INCHES
						XMRP	3.9950 INCHES
						YMRP	0.0000 INCHES
						ZMRP	0.1350 INCHES
						SCALE	0.0033 SCALE

MACH 0.898

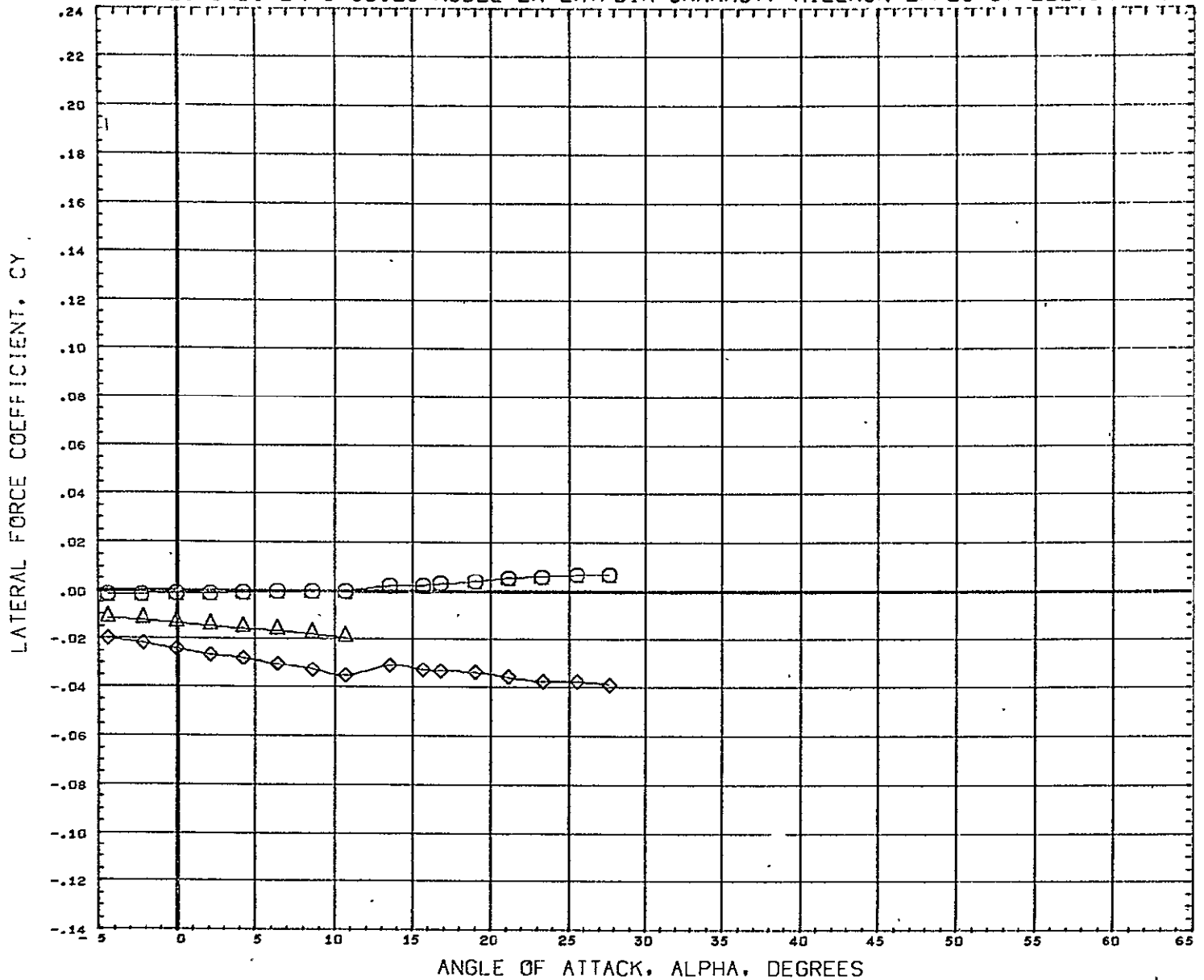
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON =+10



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	AILRON	ELEVN3	RUDER2	STING	REFERENCE INFORMATION
(A41021)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	10.000	0.000	4.000	SREF 9.0250 SQ. IN
(A4103S)	DATA NOT AVAILABLE FOR ALL CONDITIONS	-10.000	10.000	0.000	4.000	LREF 6.1420 INCHES
(A4109S)	DATA NOT AVAILABLE FOR ALL CONDITIONS	-20.000	10.000	0.000	4.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.100

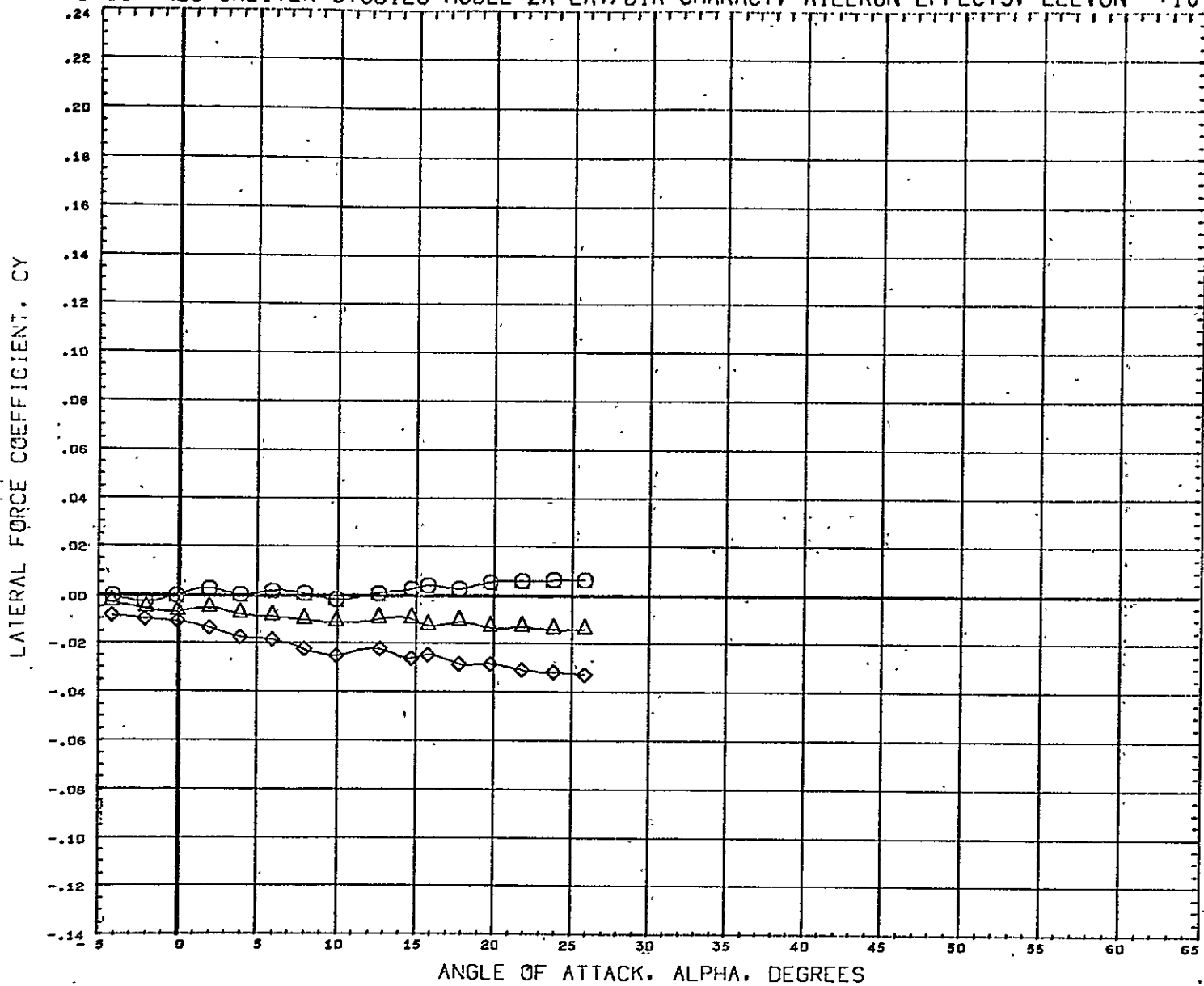
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON =+10



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	AILRON	ELEVN3	RUDER2	STING	REFERENCE INFORMATION
(A41921)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	10.000	0.000	4.000	SREF 9.0250 SQ. IN
(A41985)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	-10.000	10.000	0.000	4.000	LREF 6.1420 INCHES
(A41995)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	-20.000	10.000	0.000	4.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YHRF 0.0000 INCHES
						ZHRF 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.958

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON =+10

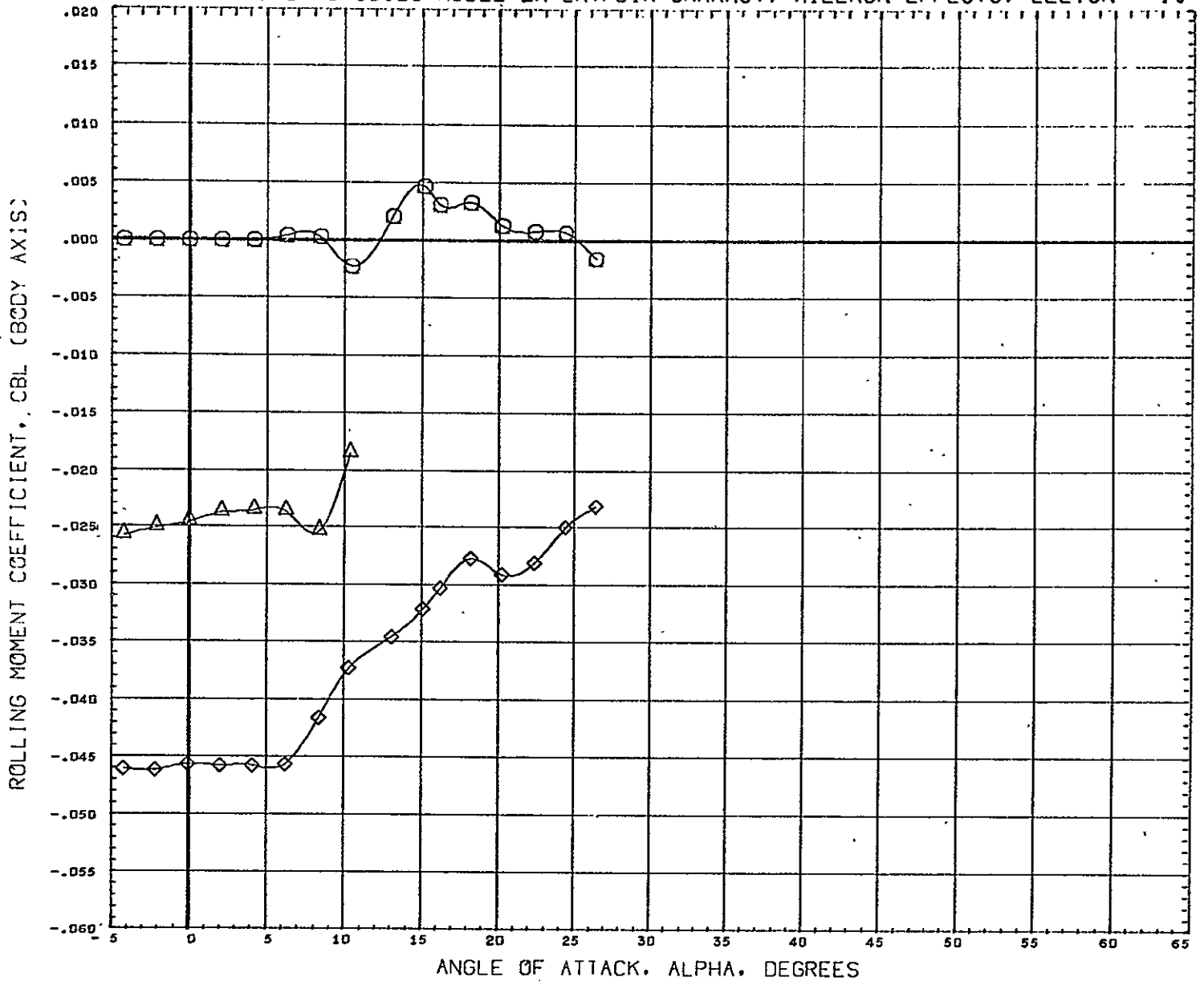


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	AILRON	ELEV3	RUDER2	STING	REFERENCE INFORMATION
(A41021)	○	MSFC TWI 498 MSFC/LMSC ORBITER	0.000	10.000	0.000	4.000	SREF 9.0250 SQ. IN
(A41085)	△	MSFC TWI 498 MSFC/LMSC ORBITER	-10.000	10.000	0.000	4.000	LREF 6.1420 INCHES
(A41095)	◇	MSFC TWI 498 MSFC/LMSC ORBITER	-20.000	10.000	0.000	4.000	BREF 6.1420 INCHES XMRP 3.9950 INCHES YMRP 0.0000 INCHES ZMRP 0.1350 INCHES SCALE 0.0033 SCALE

MACH 4.960



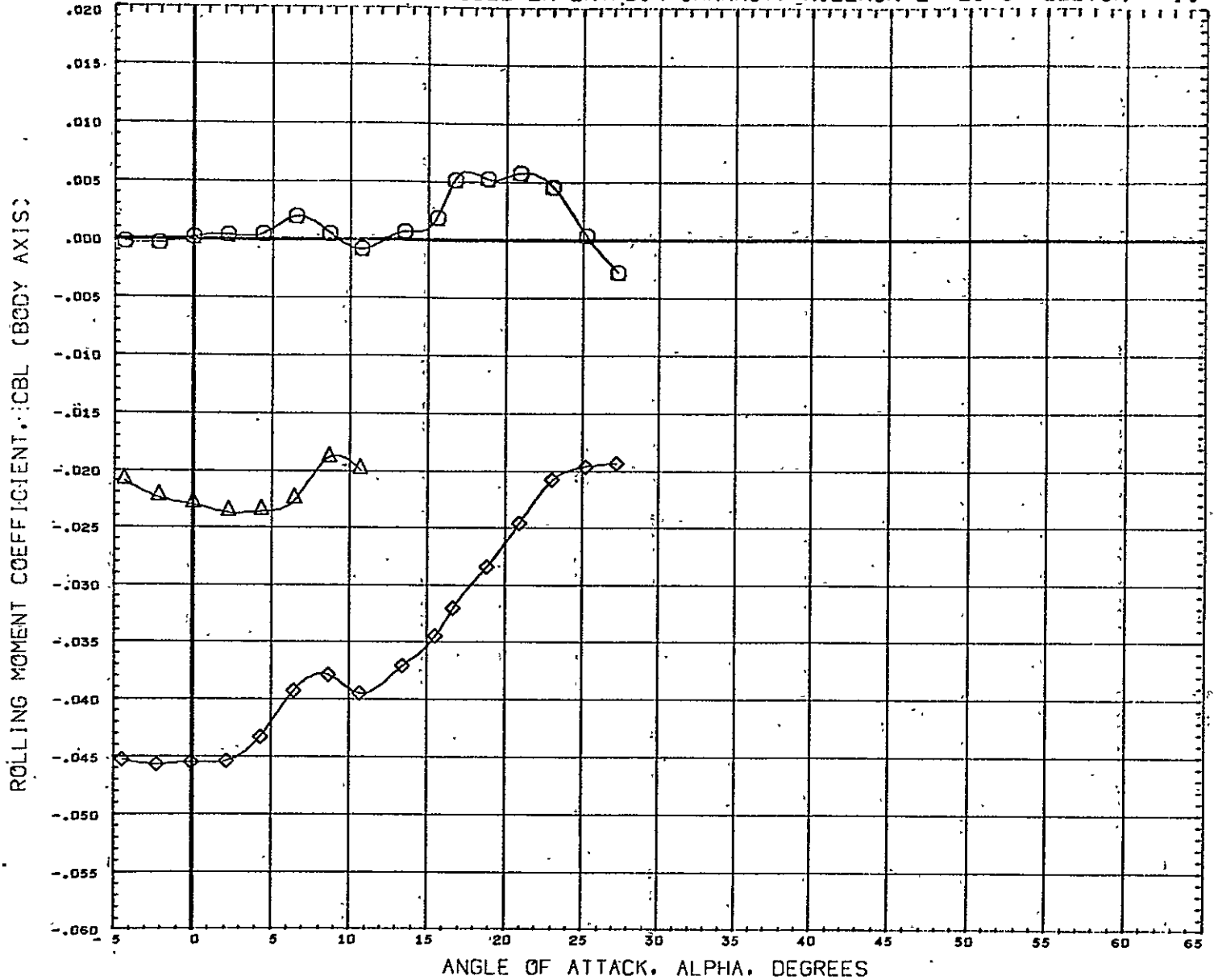
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON =+10



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	AILRON	ELEVNS	RUDER2	STING	REFERENCE INFORMATION
(A41021)	HSFC TWT 498 MSFC/LMSC ORBITER	0.000	10.000	0.000	4.000	SREF 9.0250 SQ. IN
(A41088)	HSFC TWT 498 MSFC/LMSC ORBITER	-10.000	10.000	0.000	4.000	LREF 6.1420 INCHES
(A41098)	HSFC TWT 498 MSFC/LMSC ORBITER	-20.000	10.000	0.000	4.000	BREF 6.1420 INCHES
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						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.598

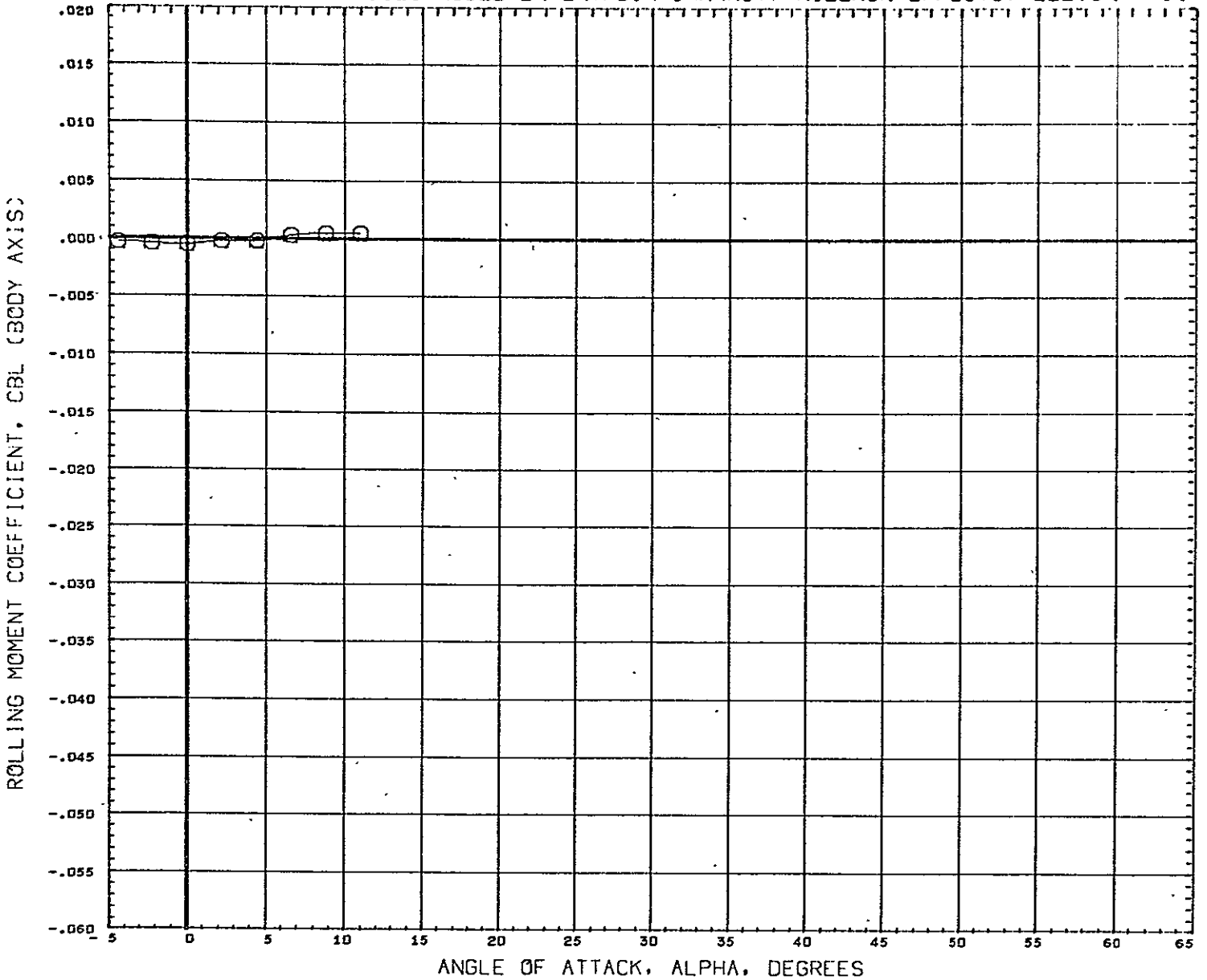
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON =+10



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	AILRON	ELEVN3	RUDER2	STING	REFERENCE INFORMATION
(A41021)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	10.000	0.000	4.000	SREF 9.0250 SQ. IN
(A41085)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	-10.000	10.000	0.000	4.000	LREF 6.1420 INCHES
(A41095)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	-20.000	10.000	0.000	4.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCAL 0.0033 SCALE

MACH 9.898

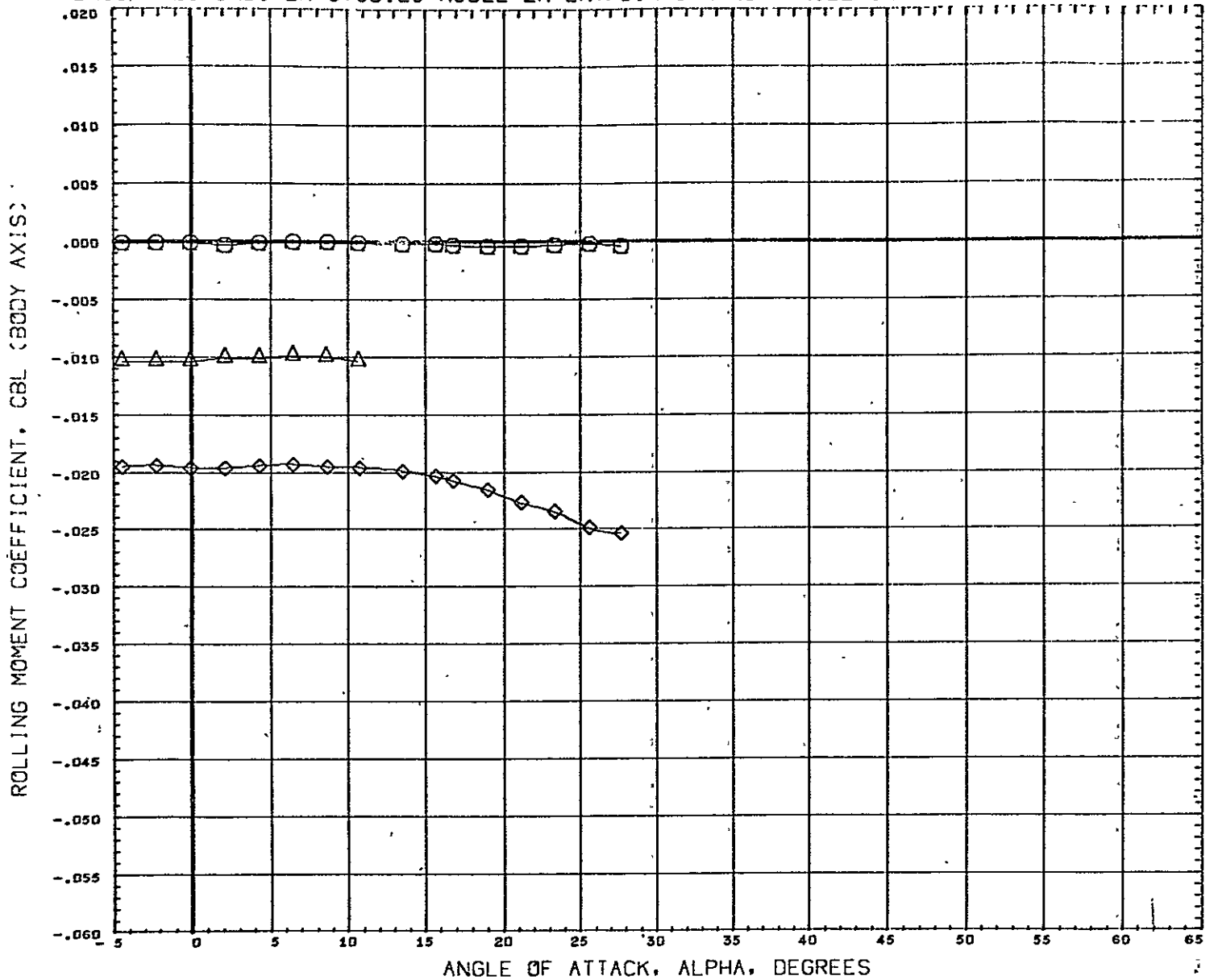
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON =10



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	AILRON	ELEVNS	RUDER2	STING	REFERENCE INFORMATION
(A41521)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	10.000	0.000	4.000	SREF 9.0250 SQ. IN
(A41585)	DATA NOT AVAILABLE FOR ALL CONDITIONS	-10.000	10.000	0.000	4.000	LREF 6.1420 INCHES
(A41595)	DATA NOT AVAILABLE FOR ALL CONDITIONS	-20.000	10.000	0.000	4.000	SREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

[ MACH 1.150

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON =+10

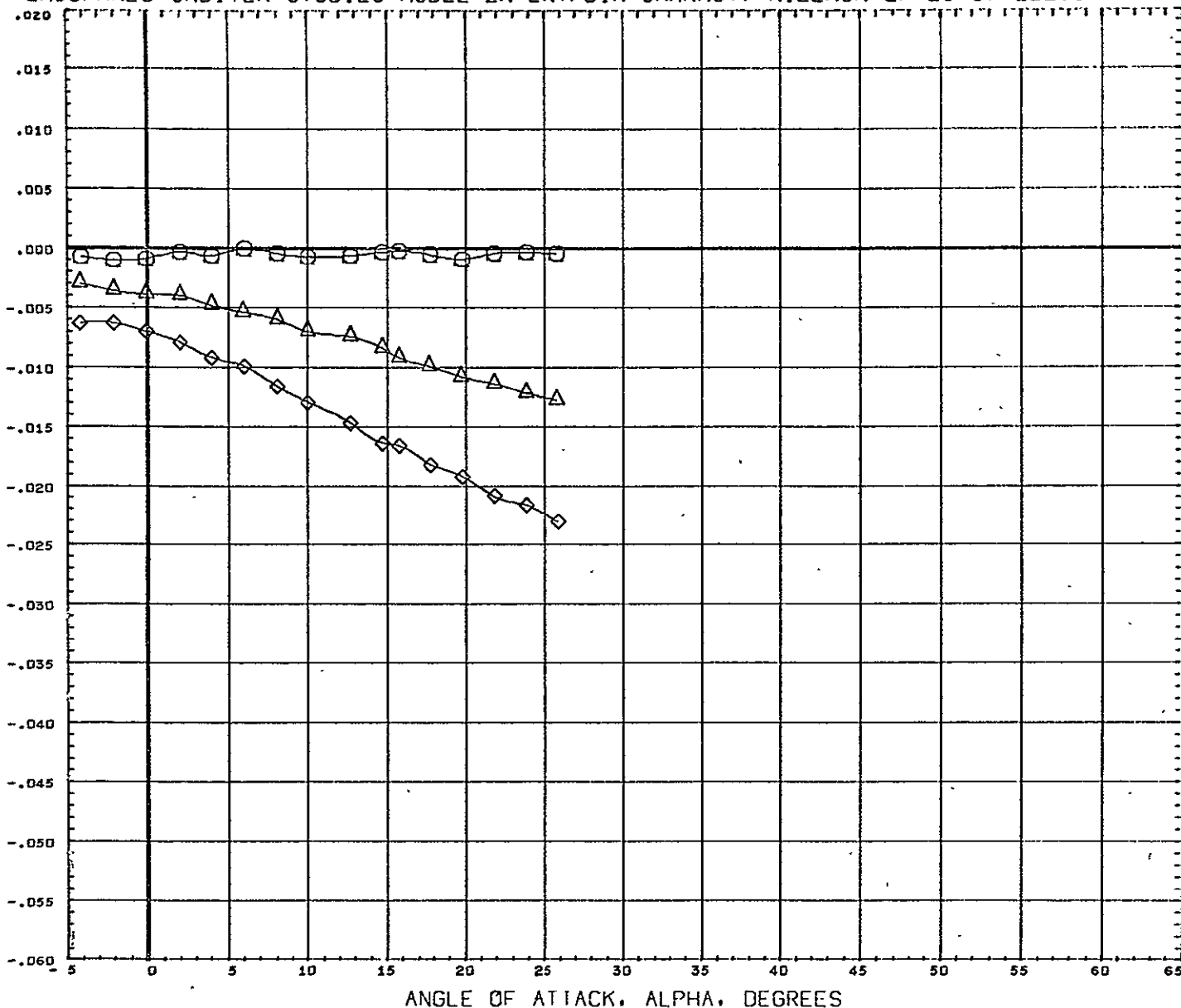


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	AILERON	ELEVON3	RUDER2	STING	REFERENCE INFORMATION	
(A41021)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	10.000	0.000	4.000	SREF	9.9250 SQ. IN.
(A41085)	MSFC TWT 498 MSFC/LMSC ORBITER	-10.000	10.000	0.000	4.000	LREF	6.1420 INCHES
(A41095)	MSFC TWT 498 MSFC/LMSC ORBITER	-20.000	10.000	0.000	4.000	BREF	6.1420 INCHES
						XMRP	3.9950 INCHES
						YMRP	0.0000 INCHES
						ZMRP	0.1350 INCHES
						SCALE	0.0033 SCALE

MACH 1.958

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON =+10

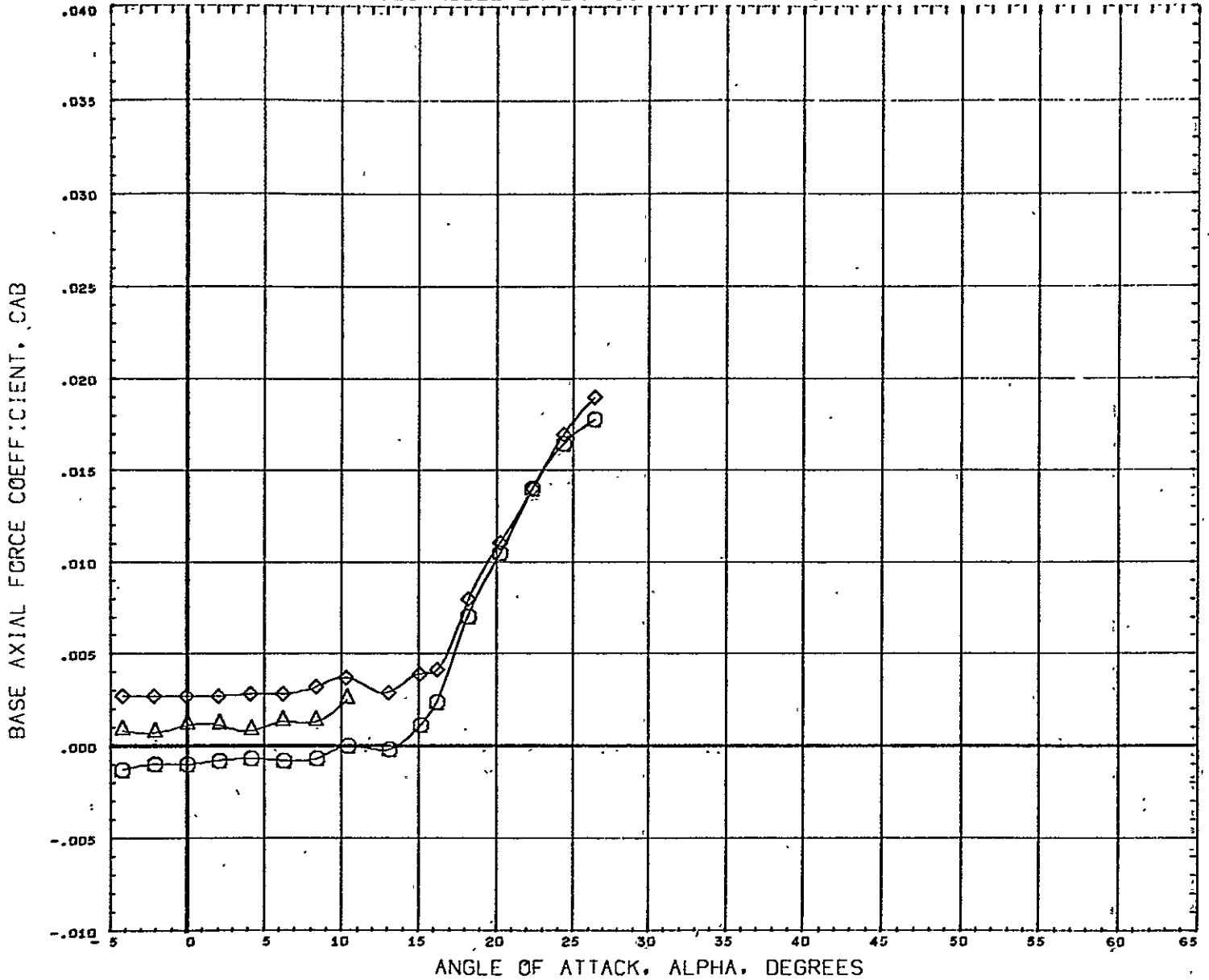
ROLLING MOMENT COEFFICIENT, CBL (BODY AXIS)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	AILRON	ELEVN3	RUDER2	STING	REFERENCE INFORMATION
(A41021)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	10.000	0.000	4.000	SREF 9.0250 SQ. IN
(A41085)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	-10.000	10.000	0.000	4.000	LREF 6.1420 INCHES
(A41095)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	-20.000	10.000	0.000	4.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 4.960

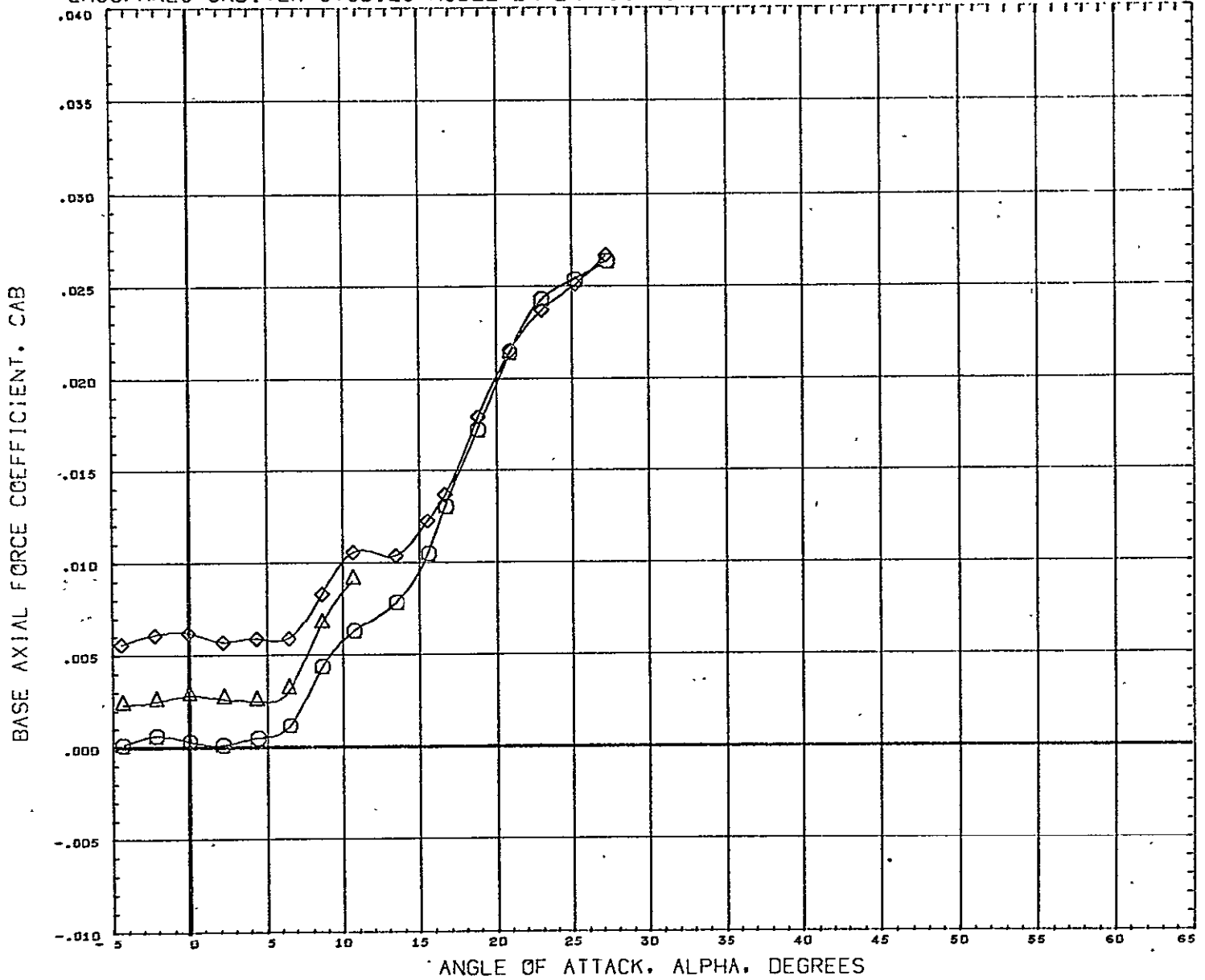
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON =+10



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	AILRON	ELEVN3	RUDER2	STING	REFERENCE INFORMATION
(A41021)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	10.000	0.000	4.000	SREF 9.0250 SQ. IN
(A41085)	MSFC TWT 498 MSFC/LMSC ORBITER	-10.000	10.000	0.000	4.000	LREF 6.1420 INCHES
(A41095)	MSFC TWT 498 MSFC/LMSC ORBITER	-20.000	10.000	0.000	4.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.598

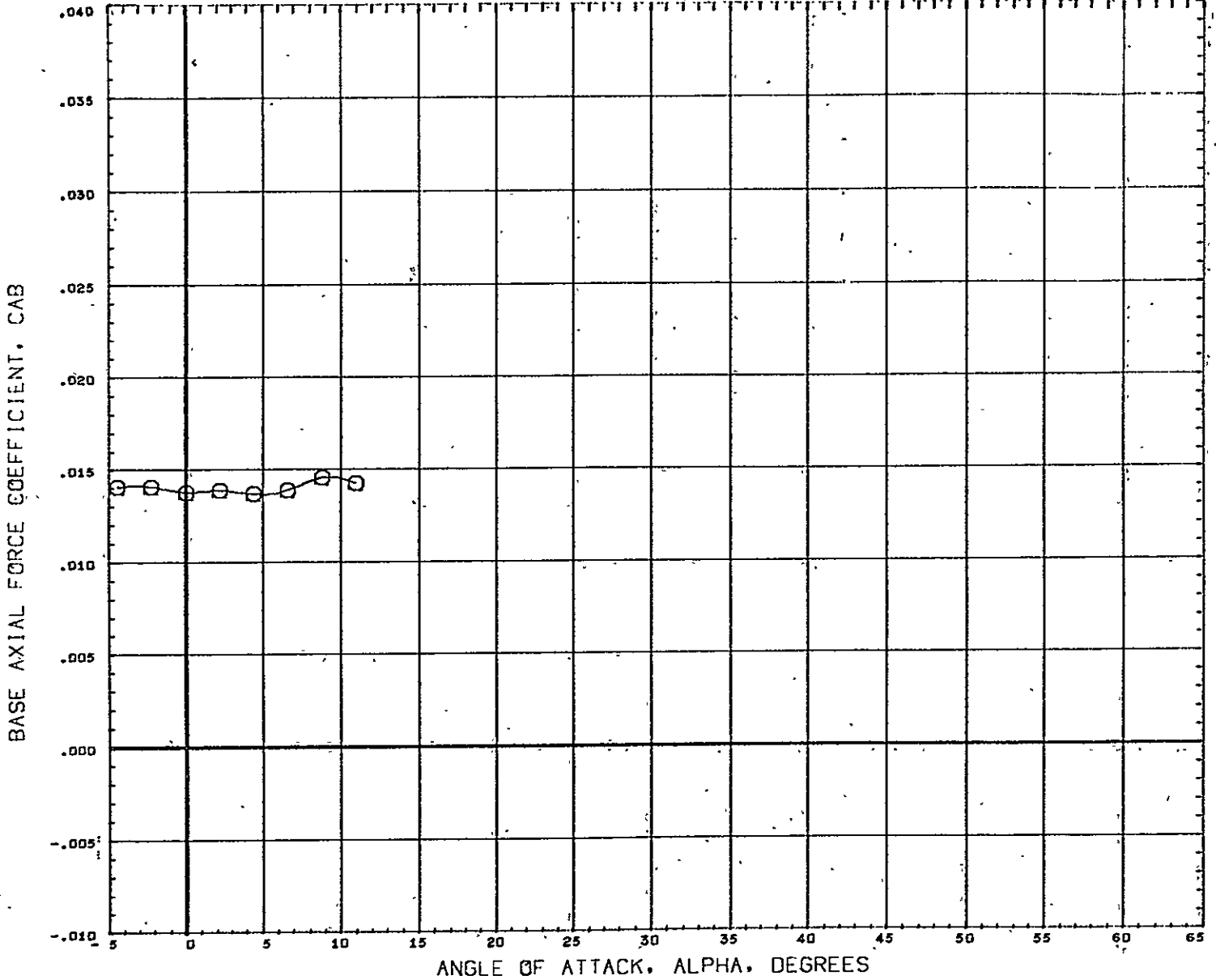
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON =+10



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	AILRON	ELEVON3	RUDER2	STING	REFERENCE INFORMATION
(A41521)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	10.000	0.000	4.000	SREF 9.0250 SQ. IN
(A41585)	MSFC TWT 498 MSFC/LMSC ORBITER	-10.000	10.000	0.000	4.000	LREF 6.1420 INCHES
(A41595)	MSFC TWT 498 MSFC/LMSC ORBITER	-20.000	10.000	0.000	4.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.898

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON =+10

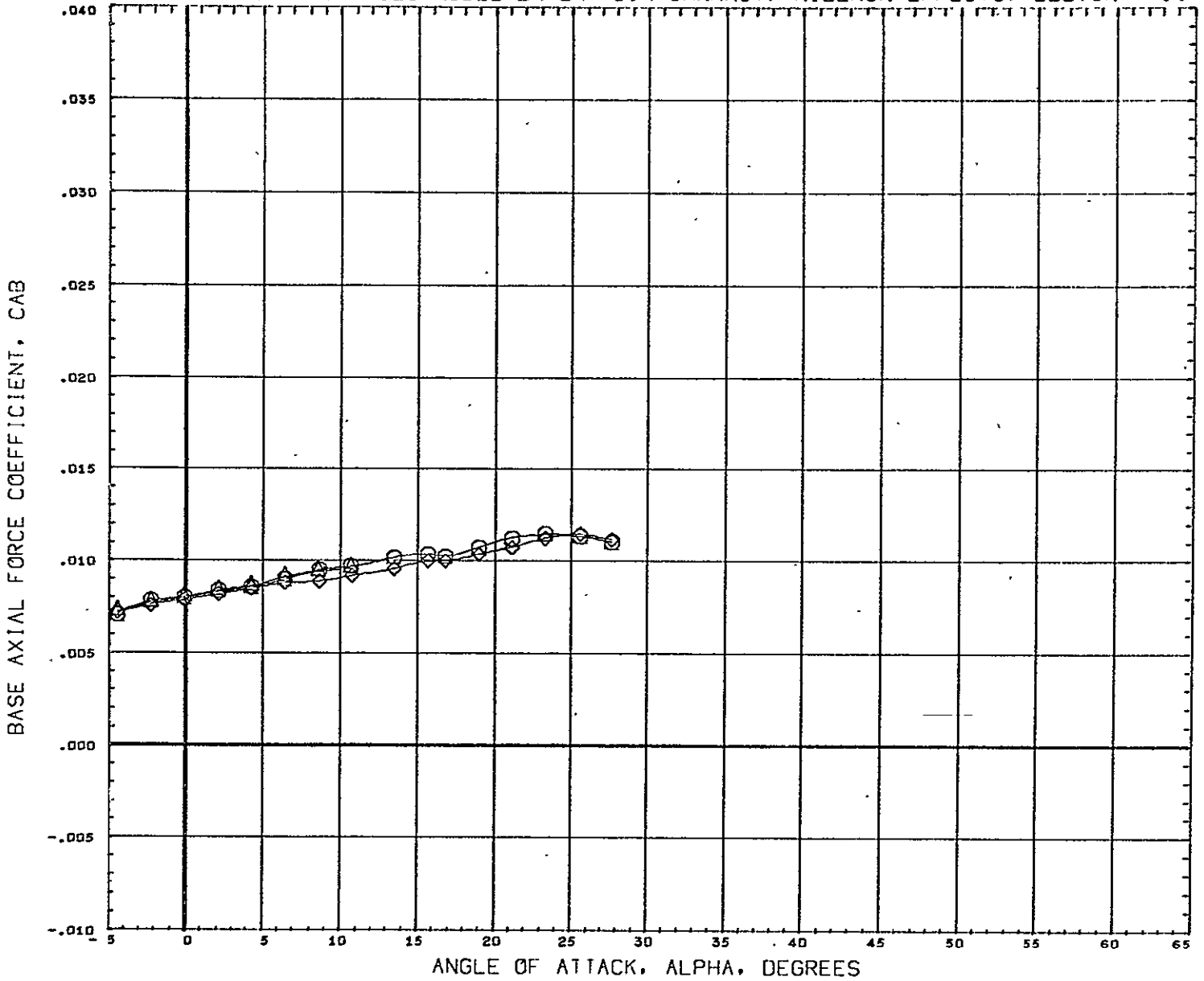


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	AILRON	ELEVNS	RUDER2	STING	REFERENCE INFORMATION
(A41021)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	10.000	0.000	4.000	SREF 9.0250 SQ. IN
(A4108S)	DATA NOT AVAILABLE FOR ALL CONDITIONS	-10.000	10.000	0.000	4.000	LREF 6.1420 INCHES
(A4109S)	DATA NOT AVAILABLE FOR ALL CONDITIONS	-20.000	10.000	0.000	4.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.100



LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON =+10

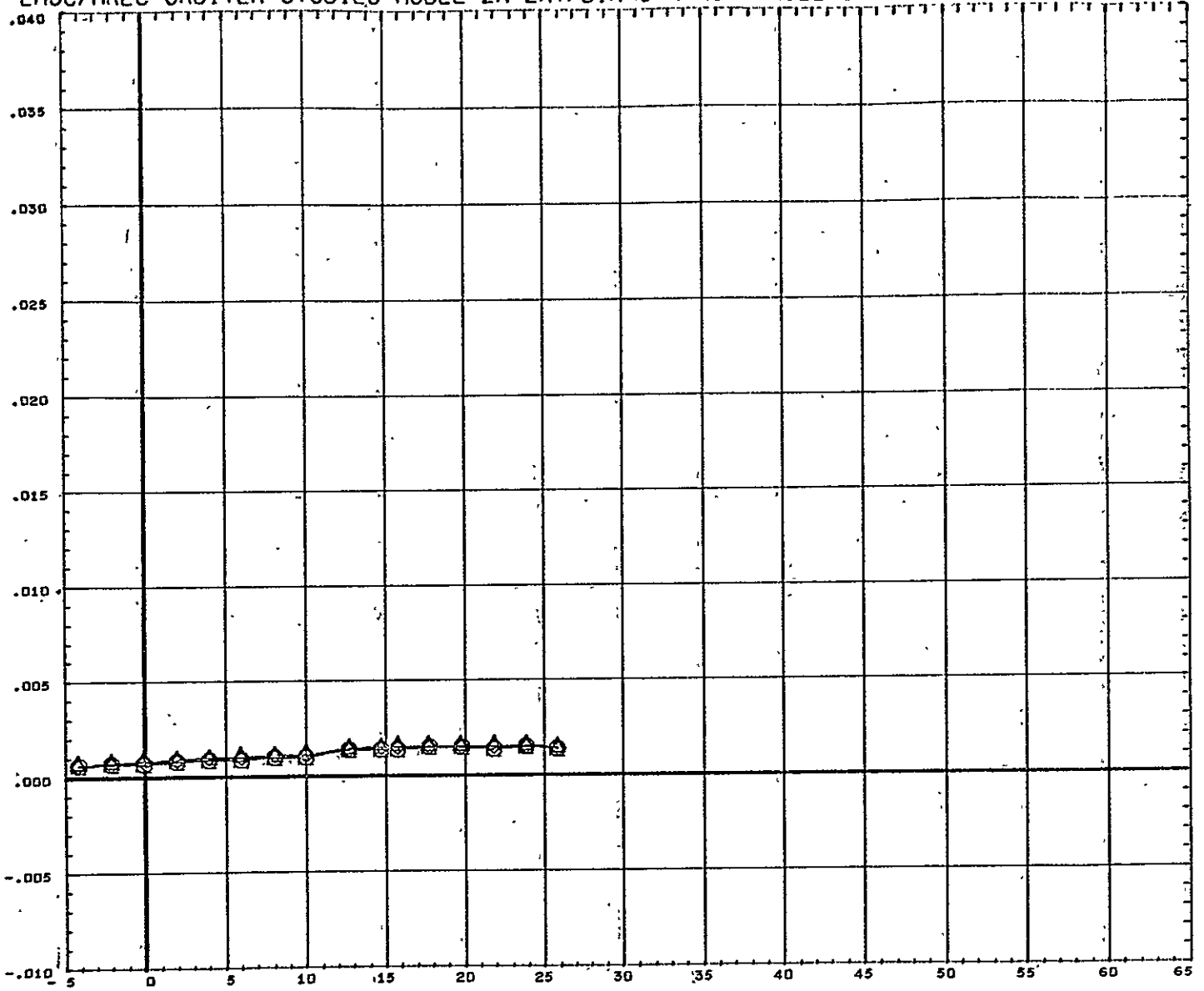


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	AILRON	ELEVN3	RUDER2	STING	REFERENCE INFORMATION
(A41021)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	10.000	0.000	4.000	SREF 9.0250 SQ.IN
(A41085)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	-10.000	10.000	0.000	4.000	LREF 6.1420 INCHES
(A41095)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	-20.000	10.000	0.000	4.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.958

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON =+10

BASE AXIAL FORCE COEFFICIENT, CAB

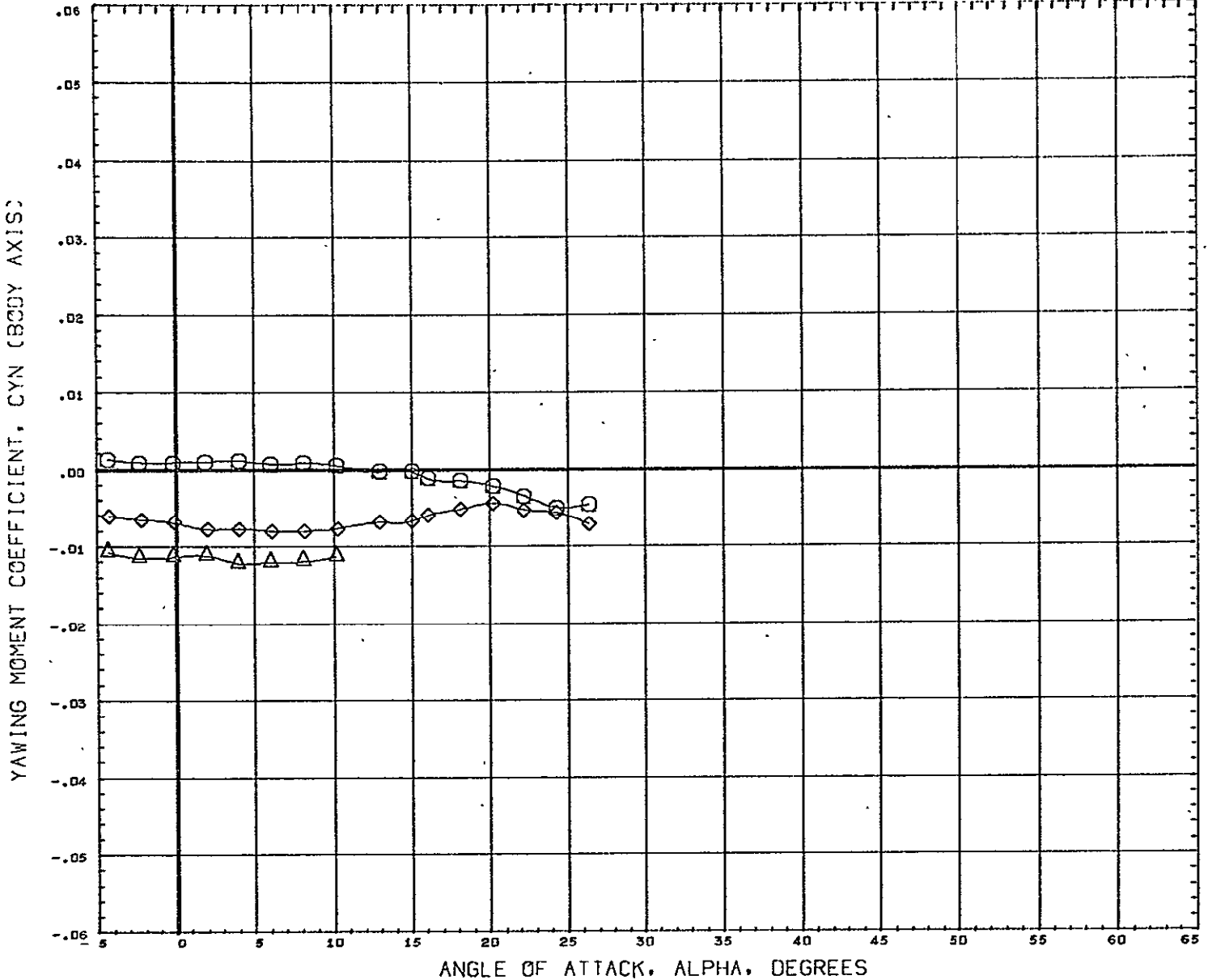


ANGLE OF ATTACK, ALPHA, DEGREES

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	AILRON	ELEVNS	RUDER2	STING	REFERENCE INFORMATION
(A41021)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	10.000	0.000	4.000	SREF 9.0250 SQ.IN
(A4108S)	MSFC TWT 498 MSFC/LMSC ORBITER	-10.000	10.000	0.000	4.000	LREF 6.1420 INCHES
(A4109S)	MSFC TWT 498 MSFC/LMSC ORBITER	-20.000	10.000	0.000	4.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 4.960

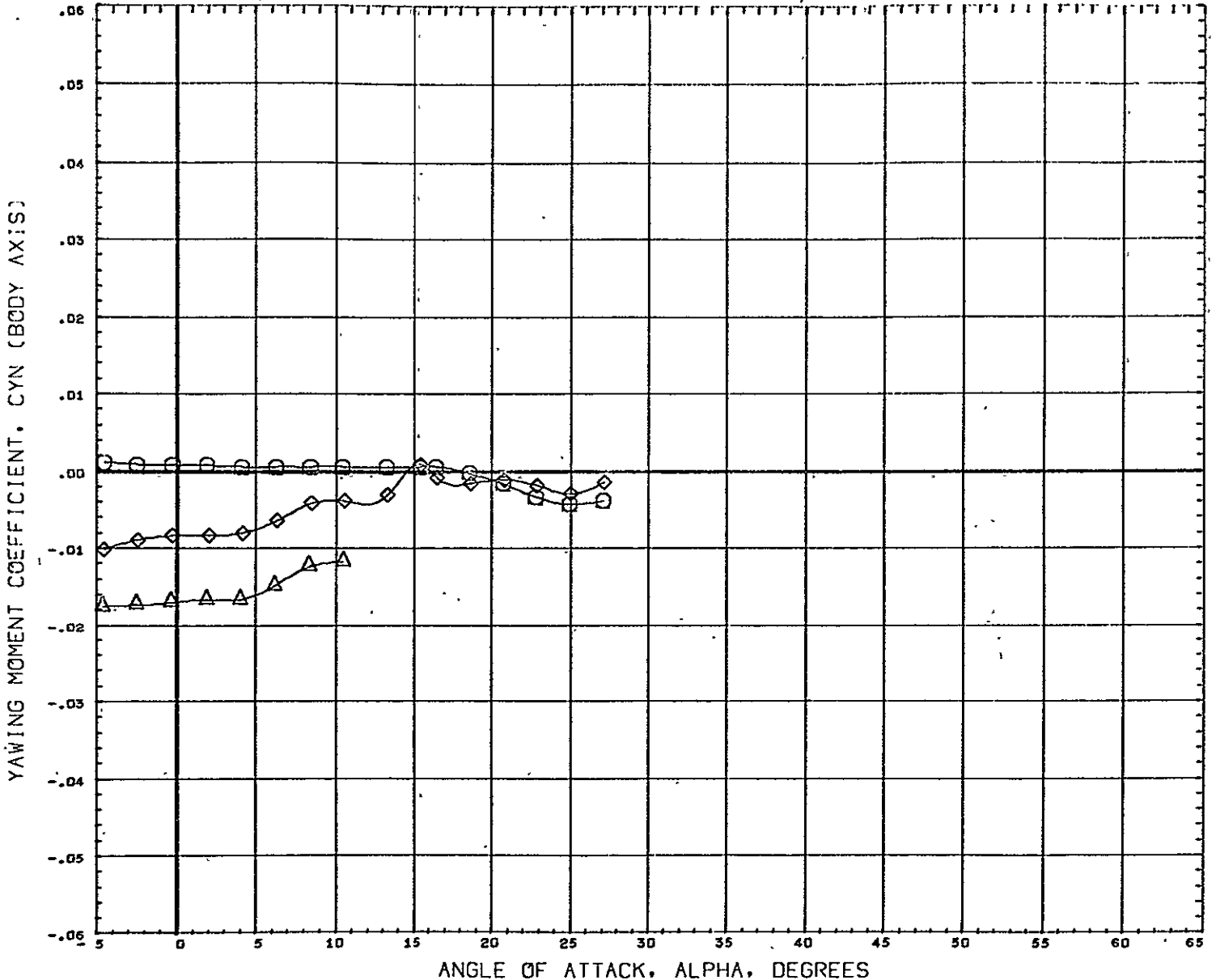
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON = -10



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	AILRON	ELEV3	RUDER2	STING	REFERENCE INFORMATION
(A41031)	○	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	-10.000	0.000	4.000	SREF 9.0250 SQ. IN
(A41105)	△	MSFC TWT 498 MSFC/LMSC ORBITER	-10.000	-10.000	0.000	4.000	LREF 6.1420 INCHES
(A41115)	◇	MSFC TWT 498 MSFC/LMSC ORBITER	-20.000	-10.000	0.000	4.000	BREF 6.1420 INCHES
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							YMRP 0.0000 INCHES
							ZMRP 0.1350 INCHES
							SCALE 0.0033 SCALE

MACH 0.595

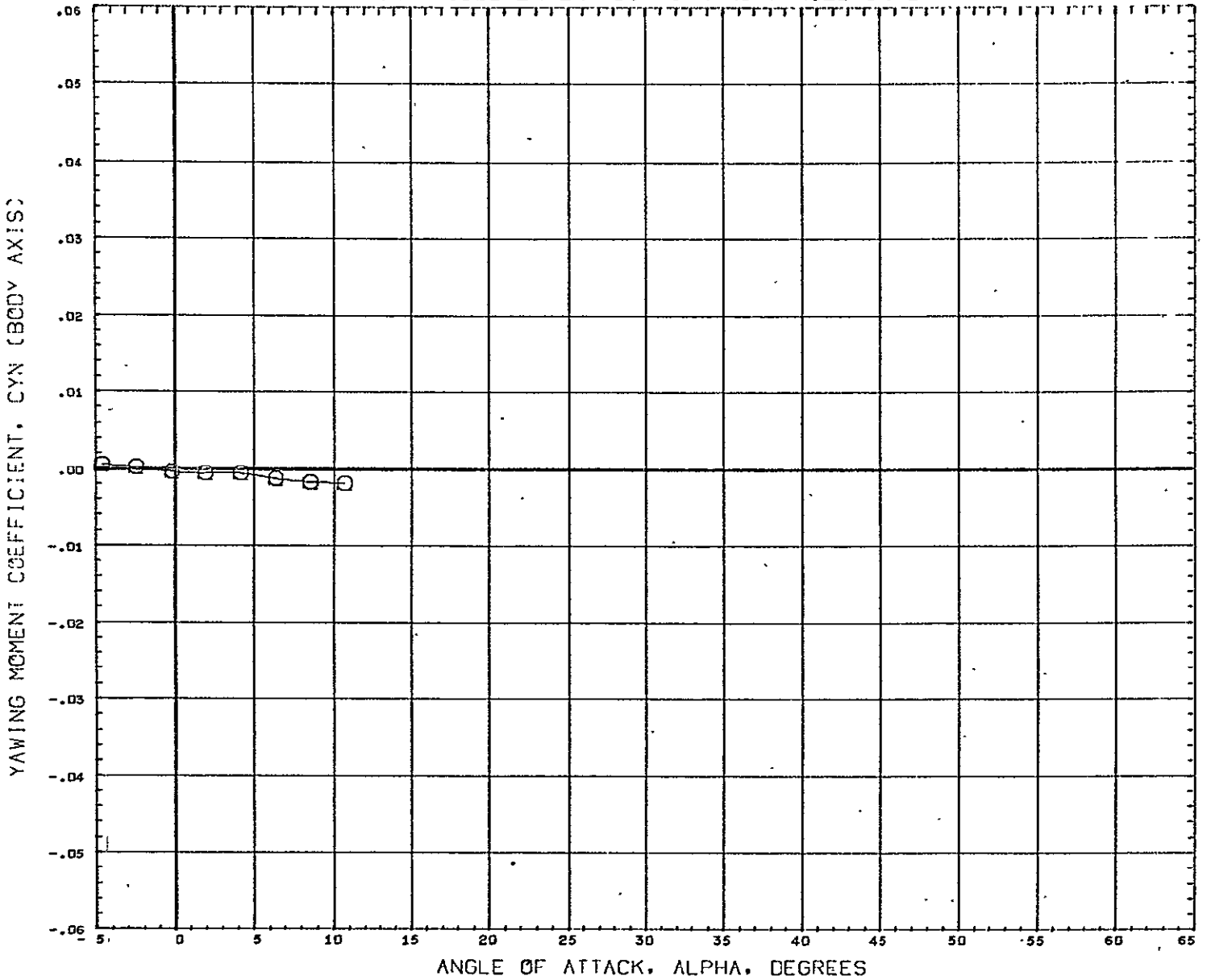
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON =-10



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	AILRON	ELEVN3	RUDER2	STING	REFERENCE INFORMATION
(A41031)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	-10.000	0.000	4.000	SREF 9.0250 SQ.IN
(A41105)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	-10.000	-10.000	0.000	4.000	LREF 6.1420 INCHES
(A41115)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	-20.000	-10.000	0.000	4.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP - 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.901

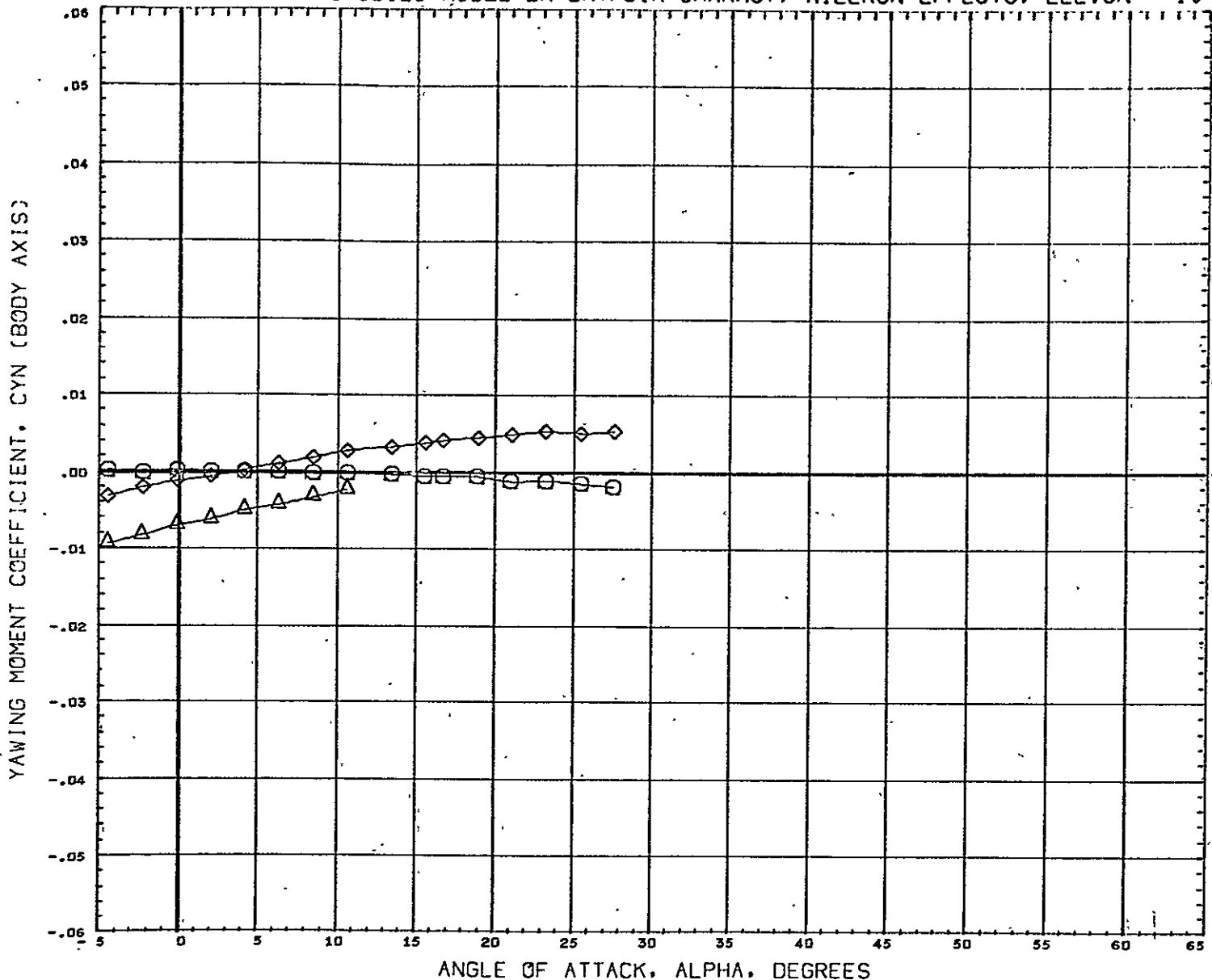
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON = -10



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	AILRON	ELEVN3	RUDER2	STING	REFERENCE INFORMATION
(A41031)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	-10.000	0.000	4.000	SREF 9.0250 SQ. IN
(A41105)	DATA NOT AVAILABLE FOR ALL CONDITIONS	-10.000	-10.000	0.000	4.000	LREF 6.1420 INCHES
(A41115)	DATA NOT AVAILABLE FOR ALL CONDITIONS	-20.000	-10.000	0.000	4.000	BREF 6.1420 INCHES
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						YHRF 0.0000 INCHES
						ZHRF 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.097

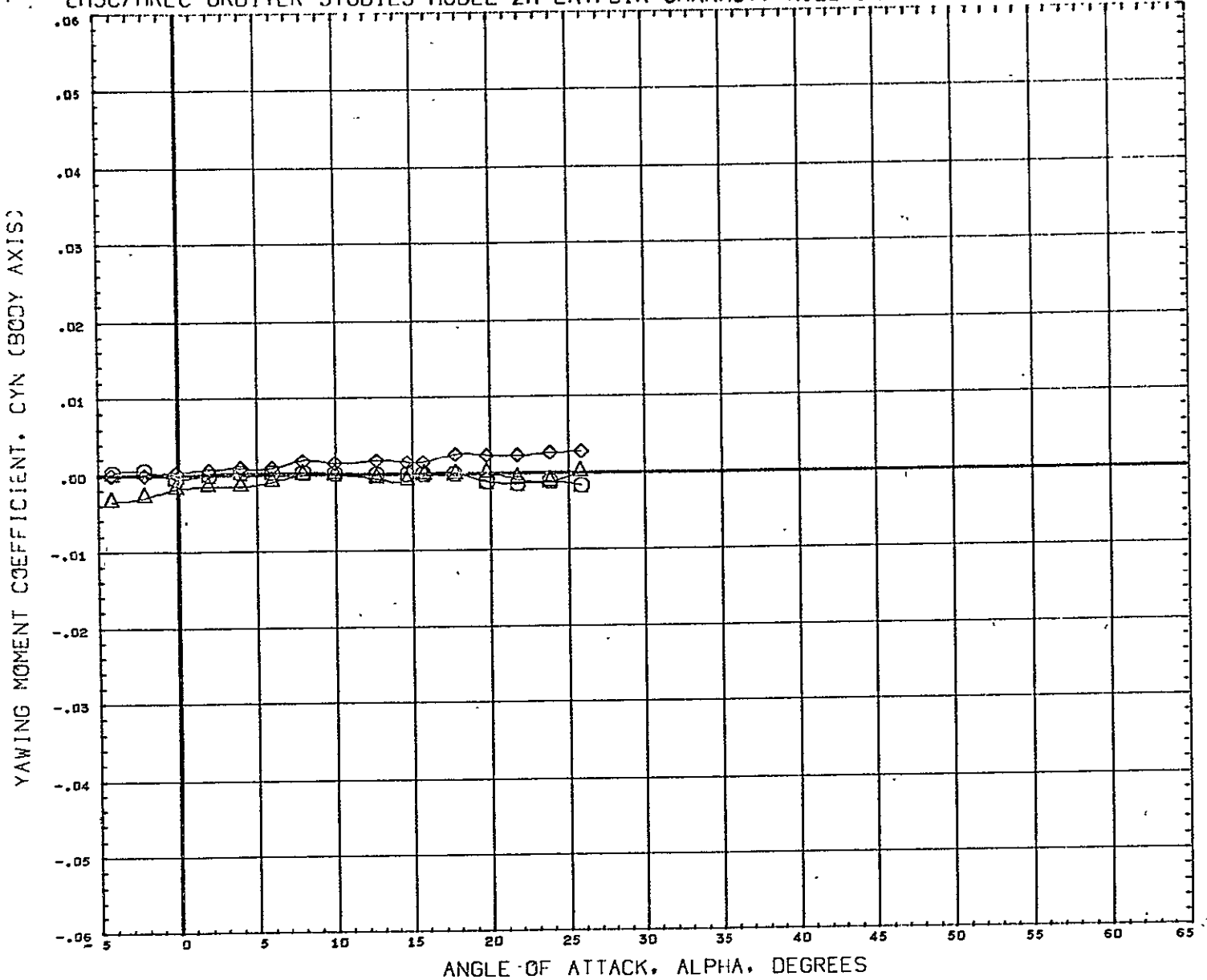
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON =-10



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	AILRON	ELEVNS	RUDER2	STING	REFERENCE INFORMATION
(A41031)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	-10.000	0.000	4.000	SREF 9.0250 SQ. IN
(A4110S)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	-10.000	-10.000	0.000	4.000	LREF 6.1420 INCHES
(A4111S)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	-20.000	-10.000	0.000	4.000	BREF 6.1420 INCHES
						XHRF 3.9950 INCHES
						YHRF 0.0000 INCHES
						ZHRF 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.964

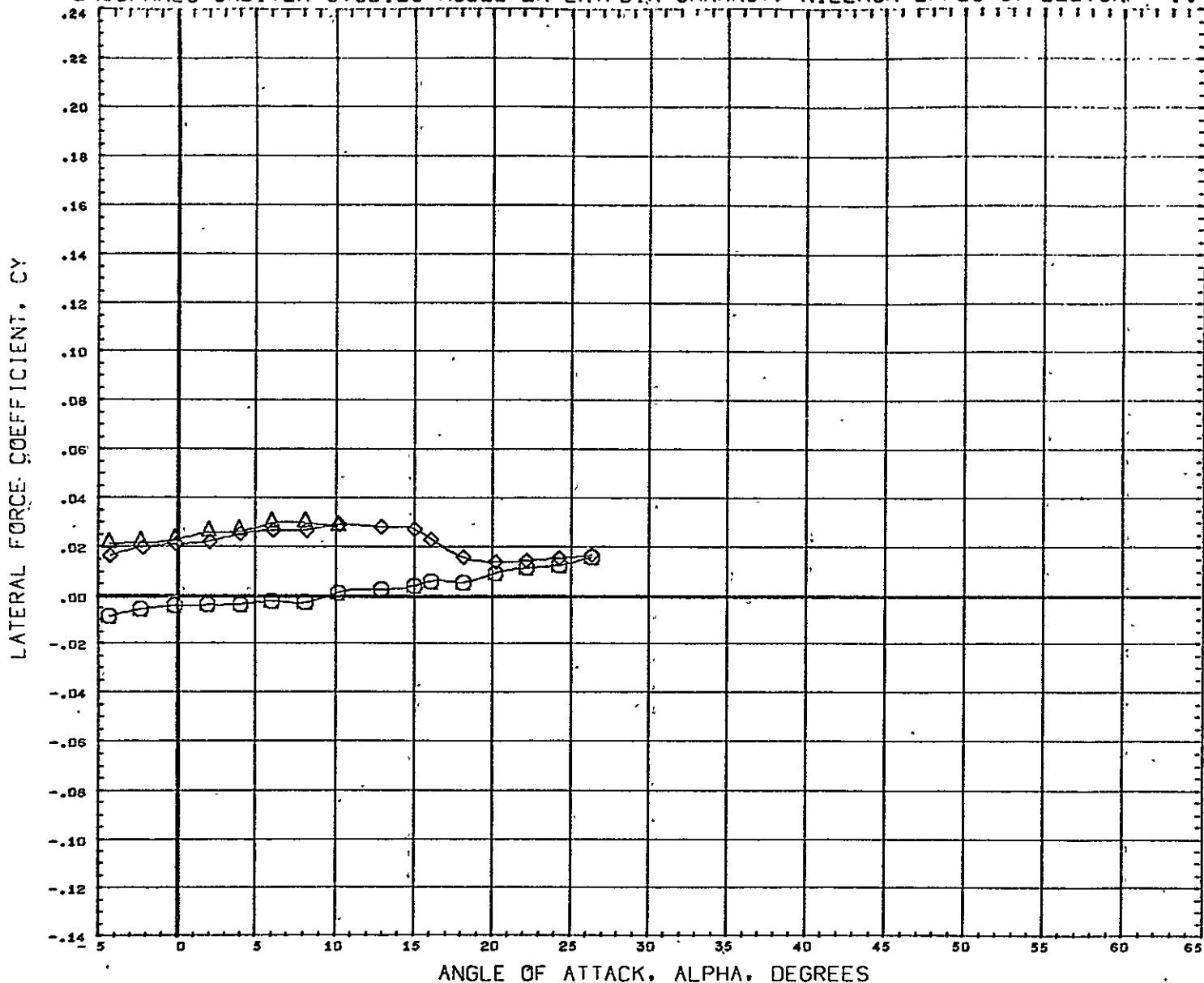
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON --10



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	AILRON	ELEV3	RUDER2	STING	REFERENCE INFORMATION
(A41031)	○	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	-10.000	0.000	4.000	SREF 9.0250 SQ. IN
(A41109)	△	MSFC TWT 498 MSFC/LMSC ORBITER	-10.000	-10.000	0.000	4.000	LREF 6.1420 INCHES
(A41118)	◇	MSFC TWT 498 MSFC/LMSC ORBITER	-20.000	-10.000	0.000	4.000	BREF 6.1420 INCHES
							XHRF 3.9950 INCHES
							YHRF 0.0000 INCHES
							ZHRF 0.1350 INCHES
							SCALE 0.0033 SCALE

MACH 4.960

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON =-10

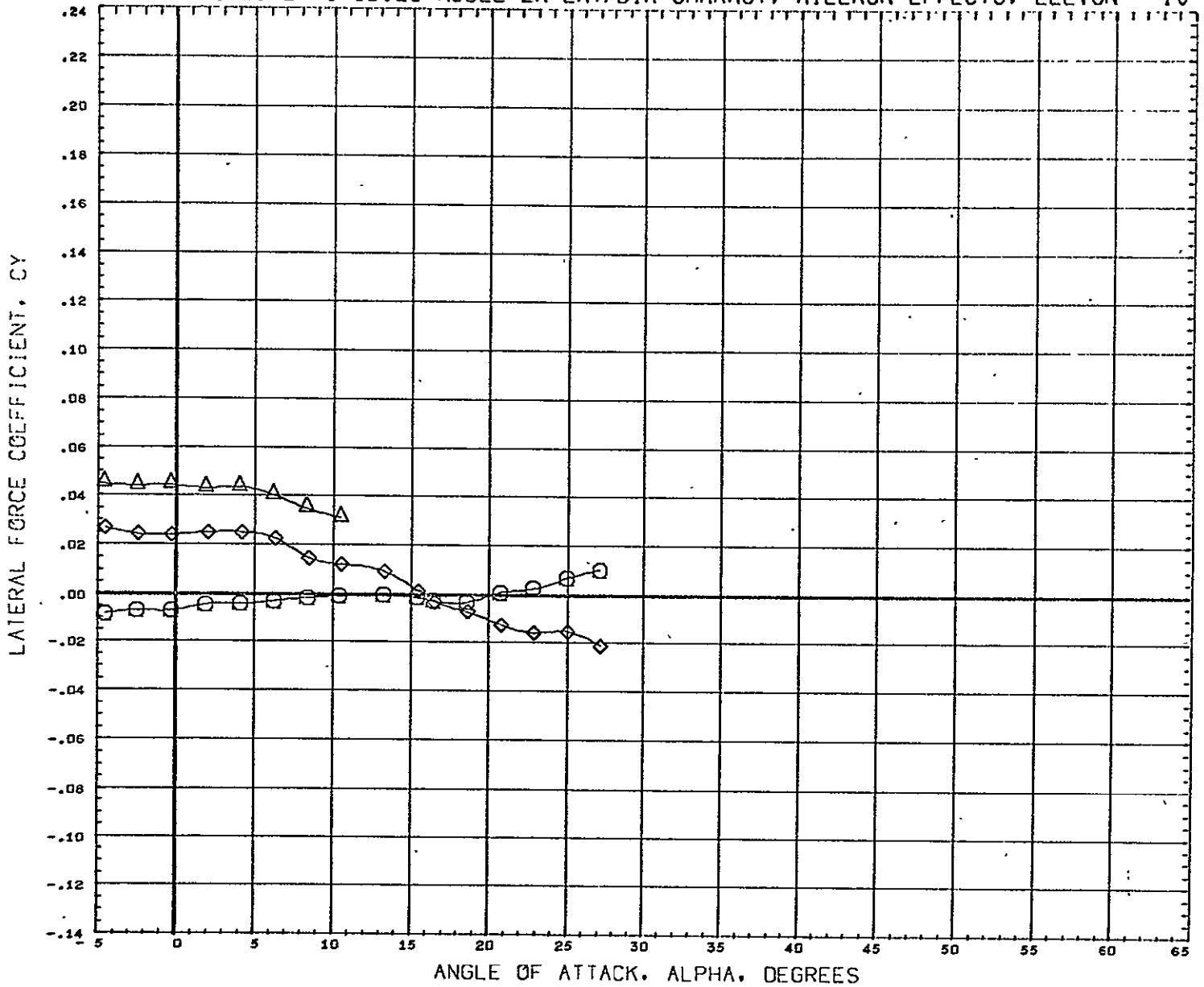


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	AILRON	ELEVN3	RUDER2	STING	REFERENCE INFORMATION
(A41931)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	-10.000	0.000	4.000	SREF 9.0250 SQ. IN
(A4110S)	MSFC TWT 498 MSFC/LMSC ORBITER	-10.000	-10.000	0.000	4.000	LREF 6.1420 INCHES
(A4111S)	MSFC TWT 498 MSFC/LMSC ORBITER	-20.000	-10.000	0.000	4.000	BREF 6.1420 INCHES
						XHRP 3.9950 INCHES
						YHRP 0.0000 INCHES
						ZHRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 9.595



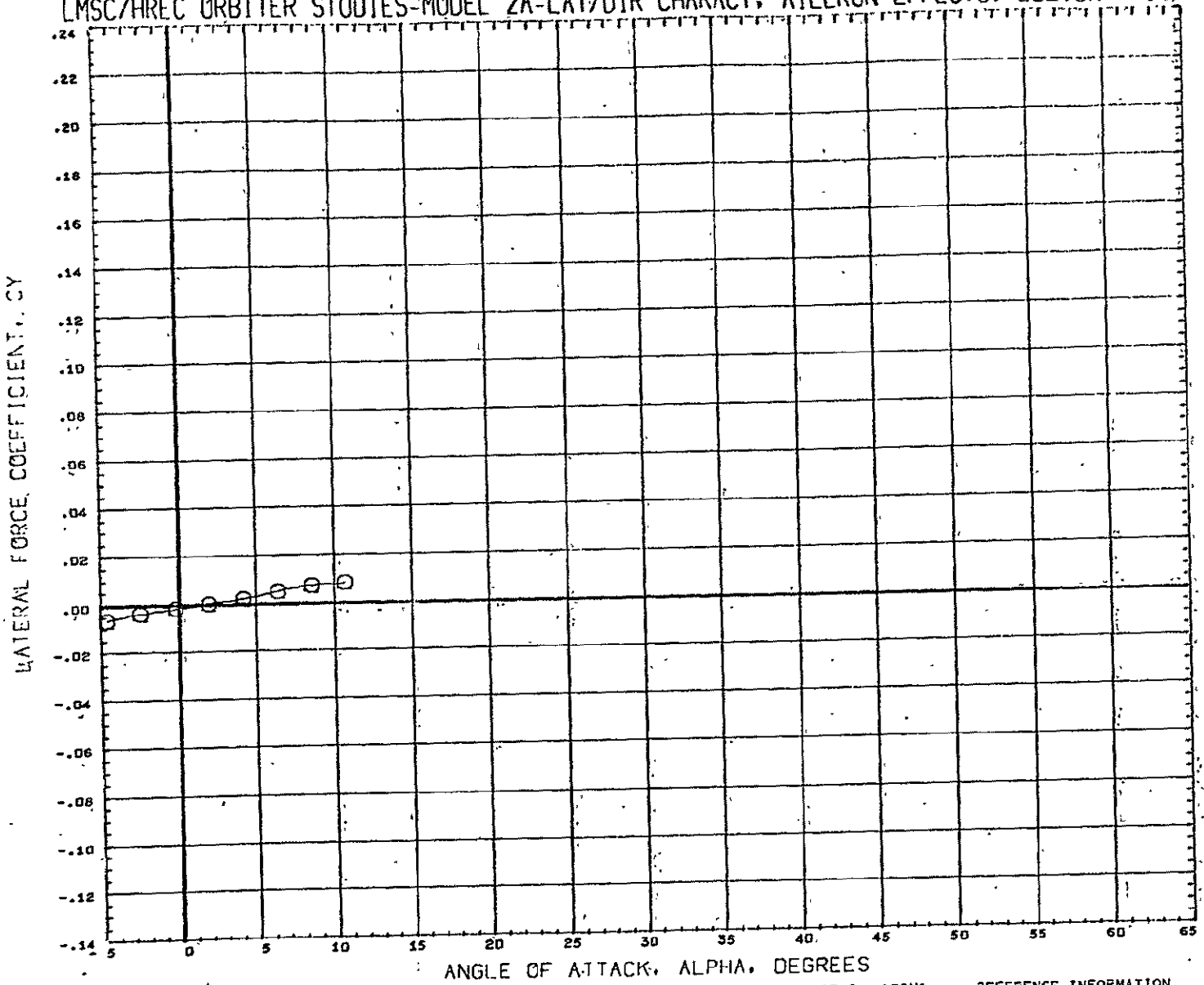
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON = -10



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	AILRON	ELEVON3	RUDER2	STING	REFERENCE INFORMATION
(A41031)	○	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	-10.000	0.000	4.000	SREF 9.0250 SQ. IN
(A41109)	△	MSFC TWT 498 MSFC/LMSC ORBITER	-10.000	-10.000	0.000	4.000	LREF 6.1420 INCHES
(A41115)	◇	MSFC TWT 498 MSFC/LMSC ORBITER	-20.000	-10.000	0.000	4.000	BREF 6.1420 INCHES
							XMRF 3.9950 INCHES
							YMRP 0.0000 INCHES
							ZHRP 0.1350 INCHES
							SCALE 0.0033 SCALE

MACH 9.901

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON = -10



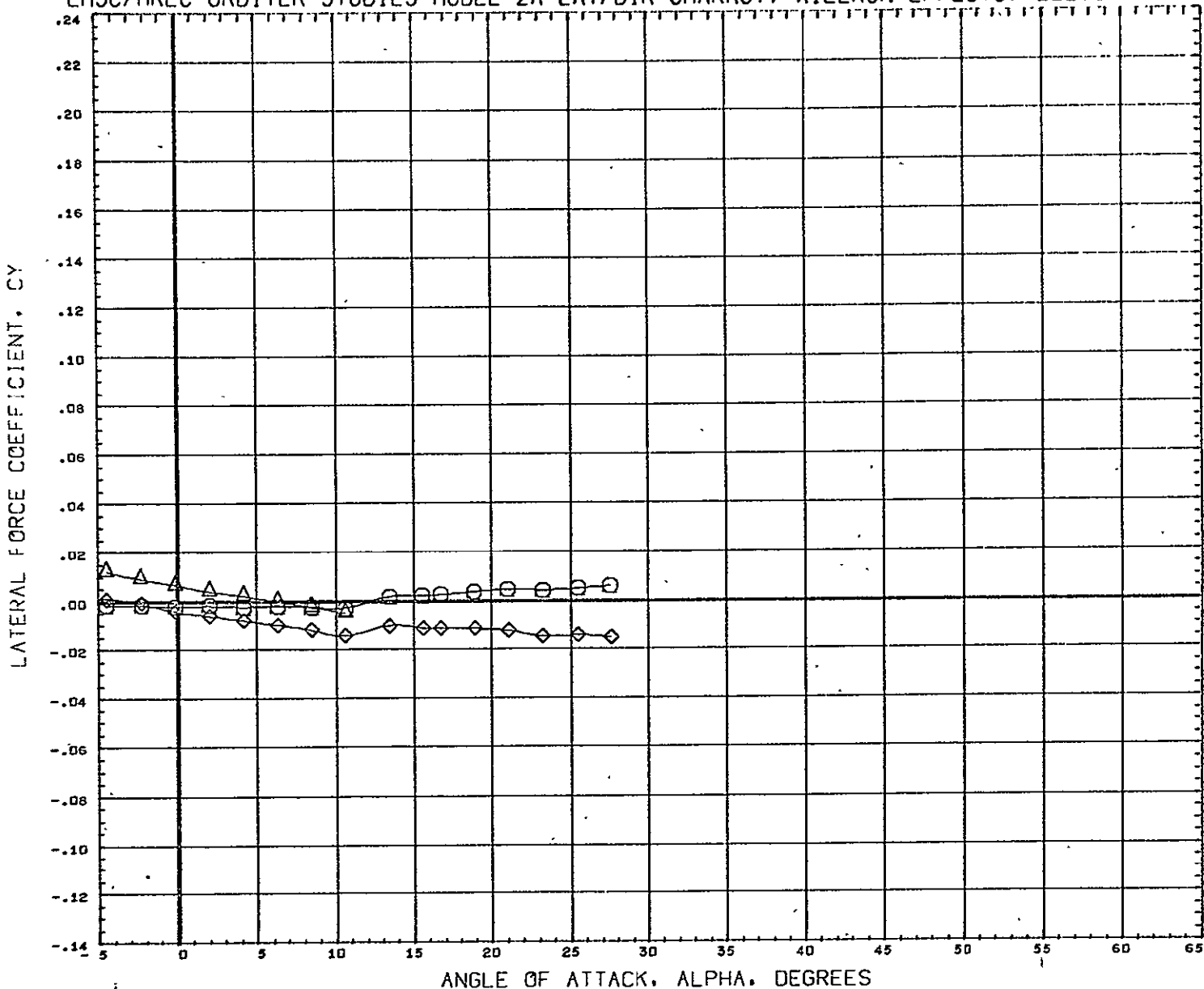
DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(A41034)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2
(A41105)	DATA NOT AVAILABLE FOR ALL CONDITIONS
(A41135)	DATA NOT AVAILABLE FOR ALL CONDITIONS

AILRON	ELEVN3	RUDER2	STING
0.000	-10.000	0.000	4.000
-10.000	-10.000	0.000	4.000
-20.000	-10.000	0.000	4.000

REFERENCE INFORMATION	
SREF	9.0250 SQ. IN
LREF	6.1420 INCHES
BREF	6.1420 INCHES
XMRP	3.9950 INCHES
YMRP	0.0000 INCHES
ZMRP	0.1350 INCHES
SCALE	0.0033 SCALE

MACH 1.097

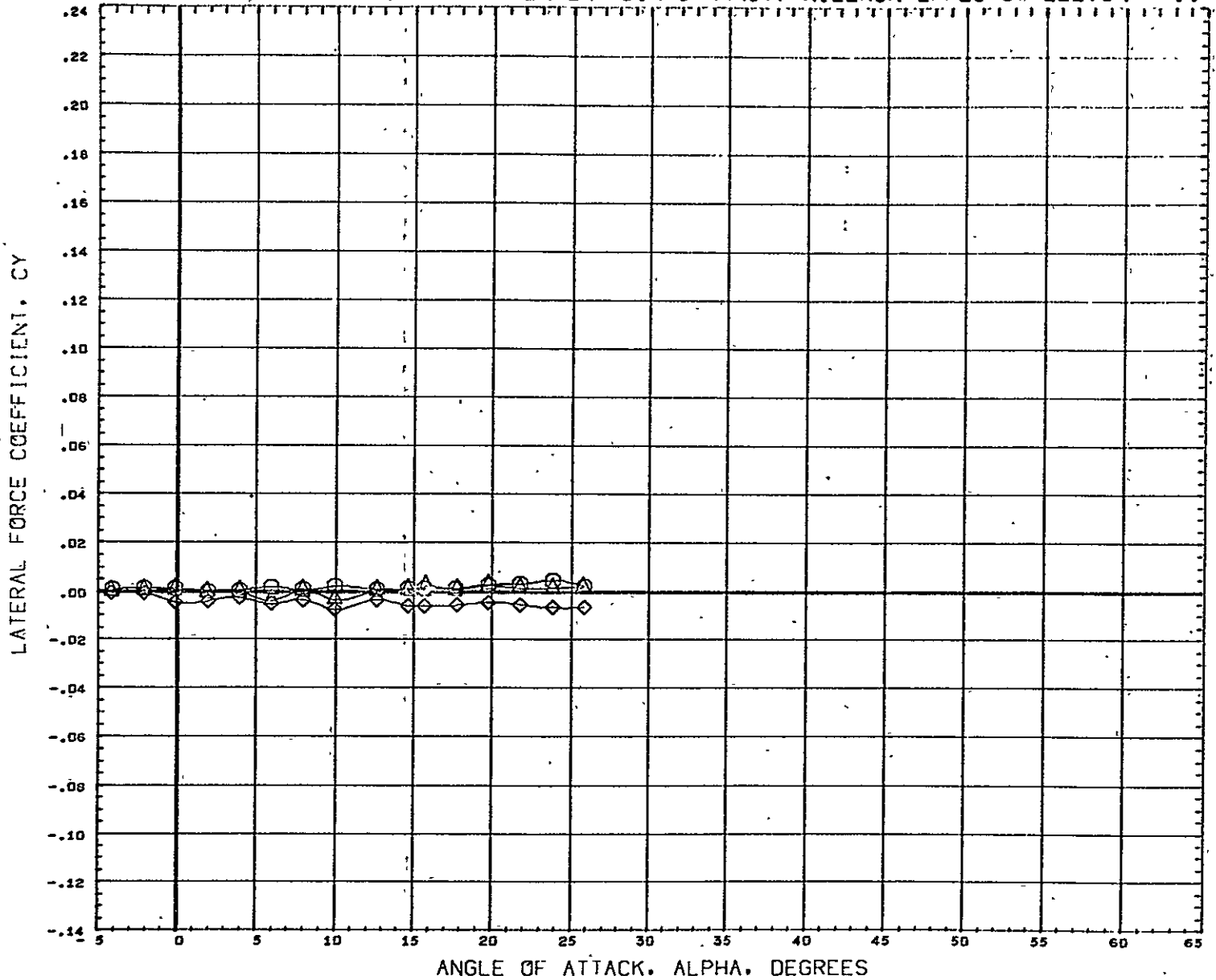
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON = -10



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	AILRON	ELEVNS	RUDER2	STING	REFERENCE INFORMATION
(A41031)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	-10.000	0.000	4.000	SREF 9.0290 SQ. IN
(A41105)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	-10.000	-10.000	0.000	4.000	LREF 6.1420 INCHES
(A41115)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	-20.000	-10.000	0.000	4.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.964

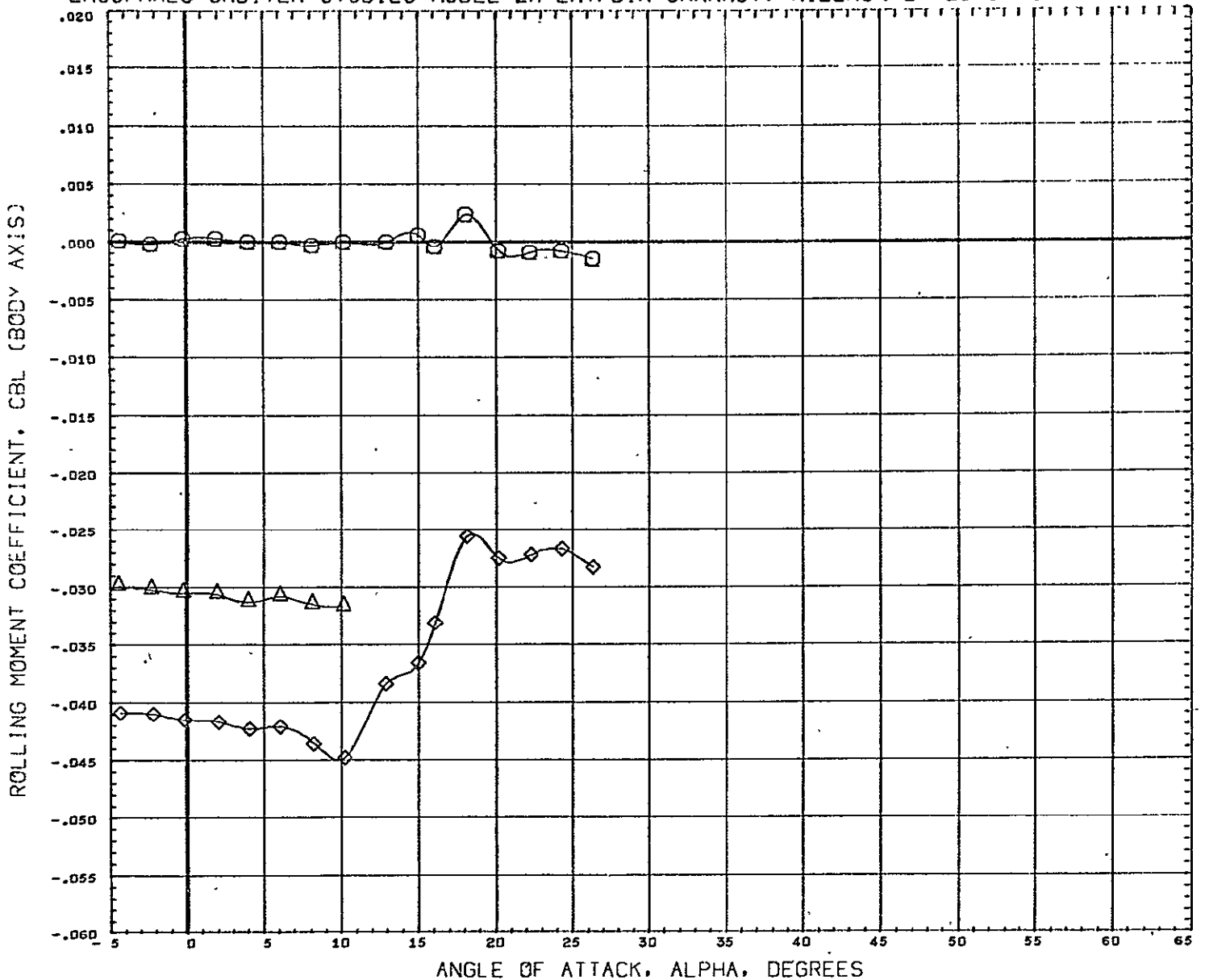
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT., AILERON EFFECTS, ELEVON =-10



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	AILRON	ELEVNS	RUDER2	STING	REFERENCE INFORMATION
(A41031)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	-10.000	0.000	4.000	SREF 9.0250 SQ. IN'
(A4110S)	MSFC TWT 498 MSFC/LMSC ORBITER	-10.000	-10.000	0.000	4.000	LREF 6.1420 INCHES
(A4111S)	MSFC TWT 498 MSFC/LMSC ORBITER	-20.000	-10.000	0.000	4.000	BREF 6.1420 INCHES
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						YHRP 0.0000 INCHES
						ZHRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 4.960

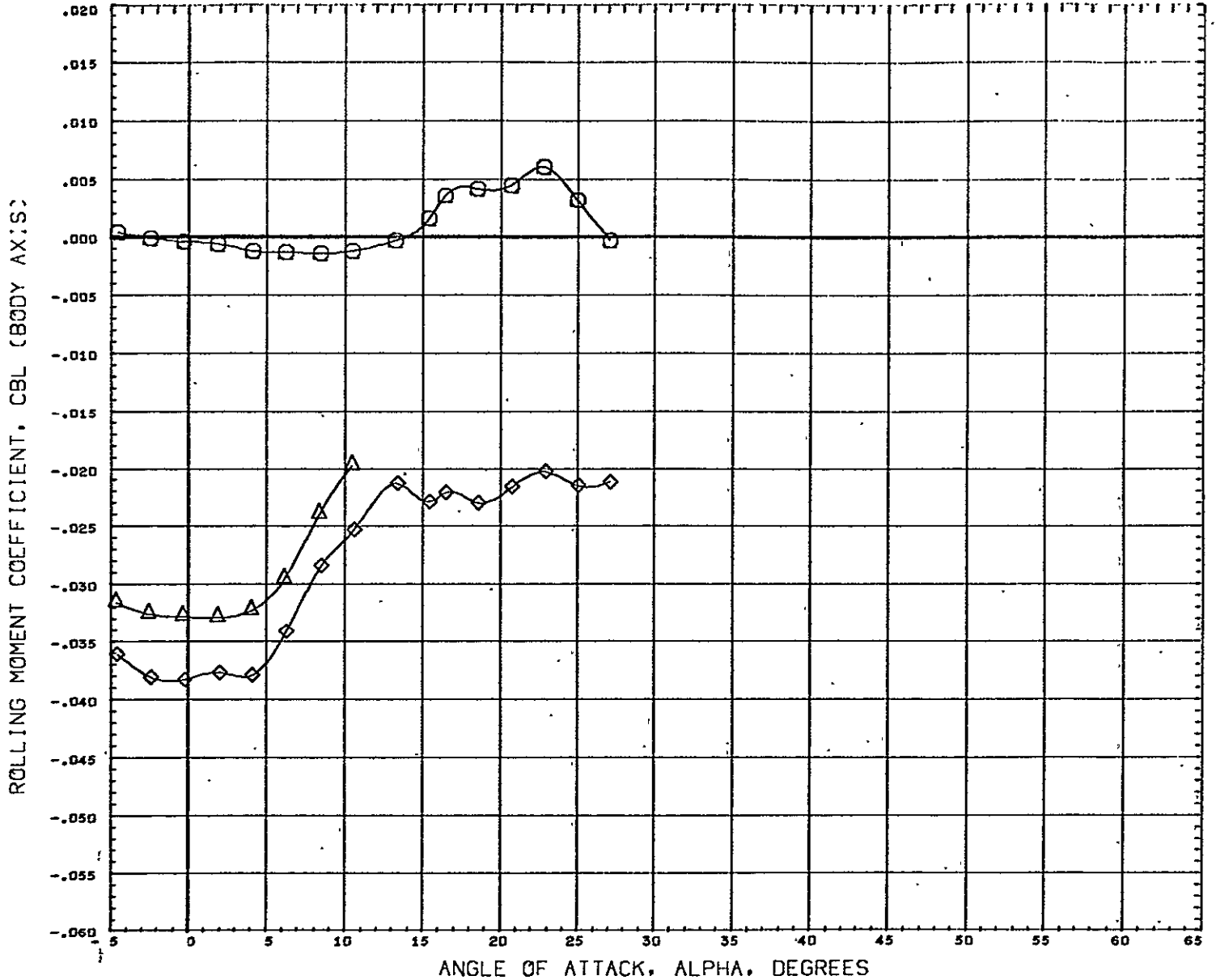
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON = -10°



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	AILRON	ELEVN3	RUDER2	STING	REFERENCE INFORMATION
(A41031)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	-10.000	0.000	4.000	SREF 9.0250 SQ. IN
(A41105)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	-10.000	-10.000	0.000	4.000	LREF 6.1420 INCHES
(A41115)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	-20.000	-10.000	0.000	4.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

1 MACH 0.595

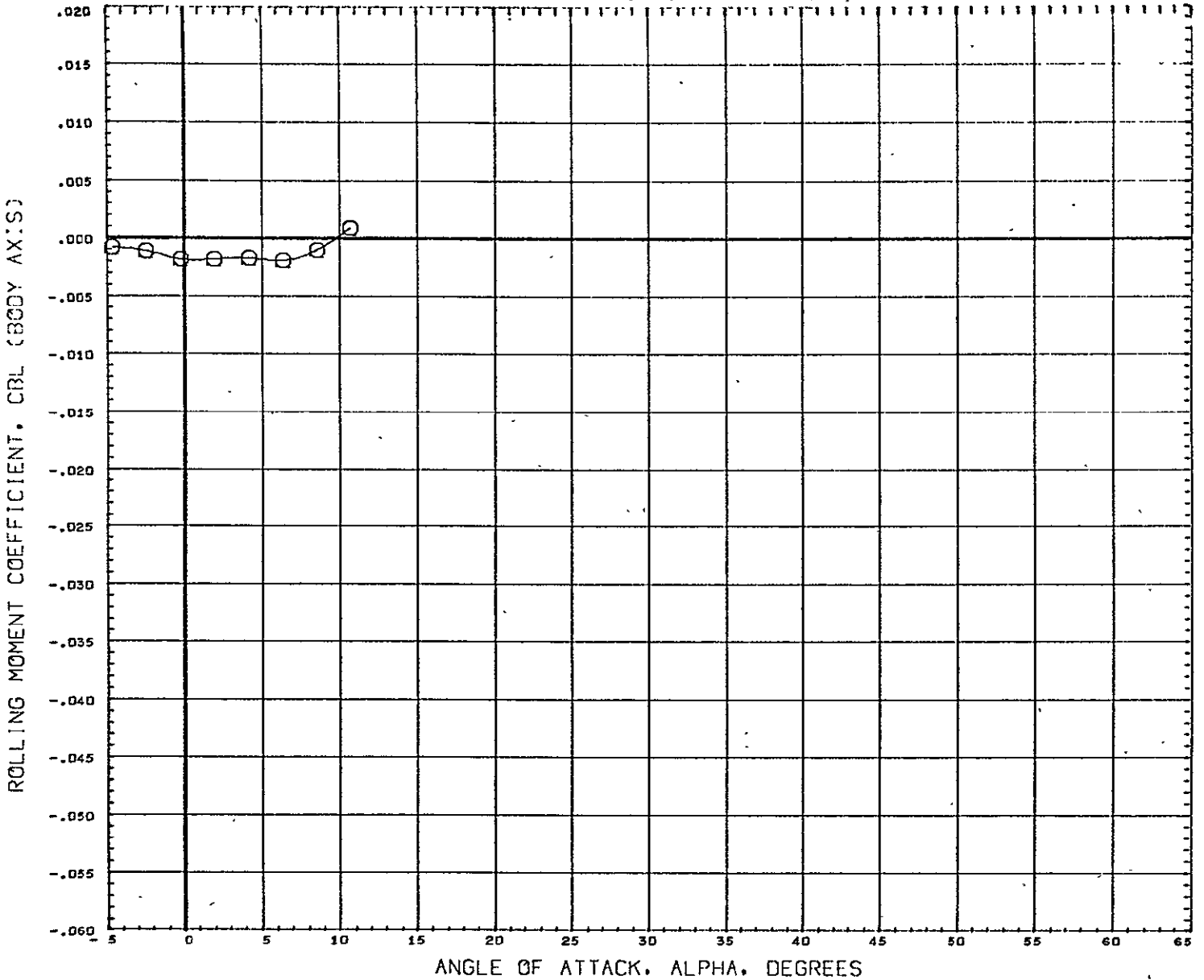
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON =-10



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	AILERON	ELEVON3	RUDER2	STING	REFERENCE INFORMATION	
(A41031)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	-10.000	0.000	4.000	SREF	9.0250 SQ.IN
(A4110S)	MSFC TWT 498 MSFC/LMSC ORBITER	-10.000	-10.000	0.000	4.000	LREF	6.1420 INCHES
(A4111S)	MSFC TWT 498 MSFC/LMSC ORBITER	-20.000	-10.000	0.000	4.000	BREF	6.1420 INCHES
						XMRP	3.9950 INCHES
						YMRP	0.0000 INCHES
						ZMRP	0.1350 INCHES
						SCALE	0.0033 SCALE

MACH 0.901

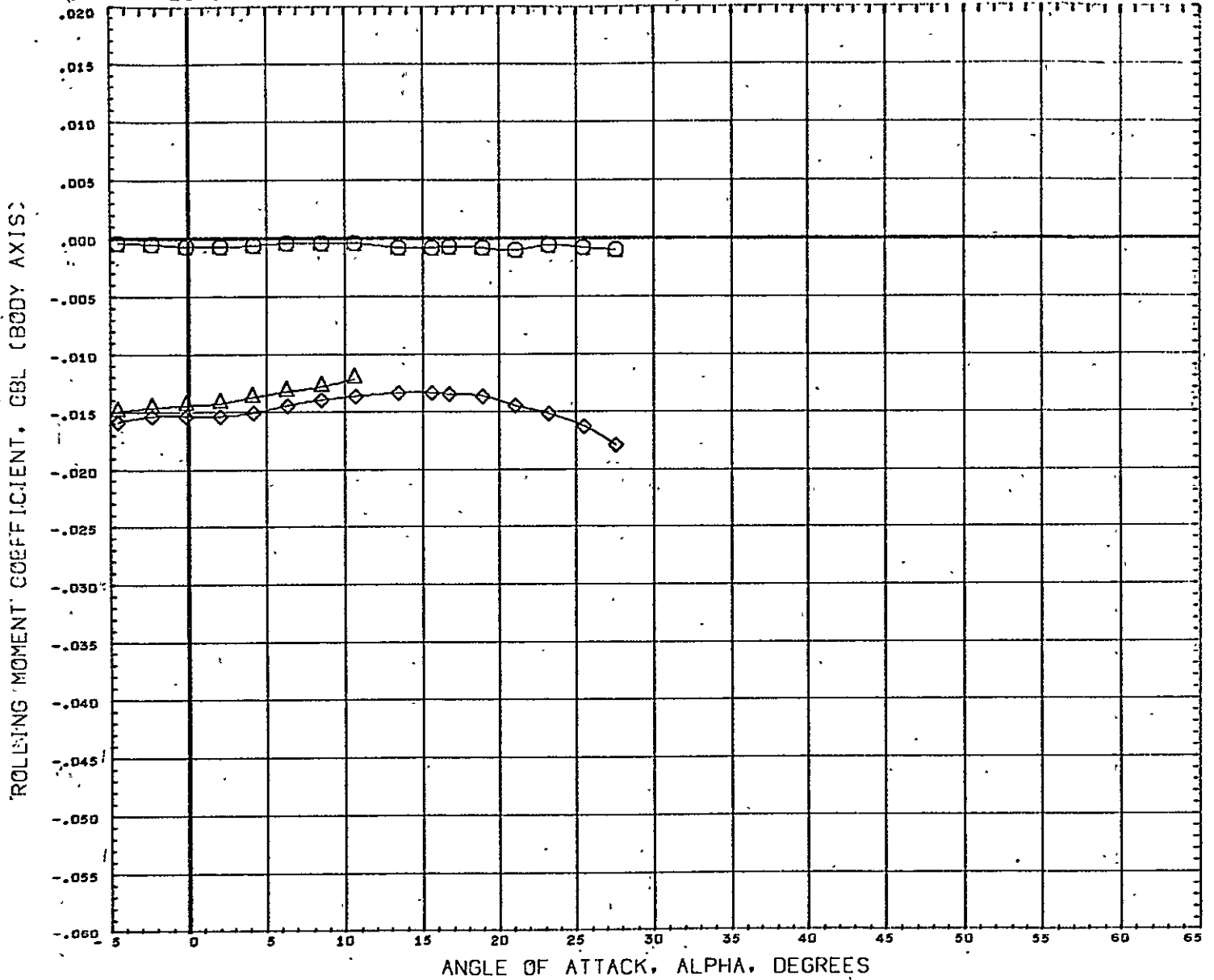
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON = -10



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	AILRON	ELEVNS	RUDER2	STING	REFERENCE INFORMATION
(A41031)	MSFC TWI 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	-10.000	0.000	4.000	SREF 9.0250 SQ. IN
(A41155)	DATA NOT AVAILABLE FOR ALL CONDITIONS	-10.000	-10.000	0.000	4.000	LREF 6.1420 INCHES
(A41115)	DATA NOT AVAILABLE FOR ALL CONDITIONS	-20.000	-10.000	0.000	4.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.097

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT. AILERON EFFECTS, ELEVON = -10



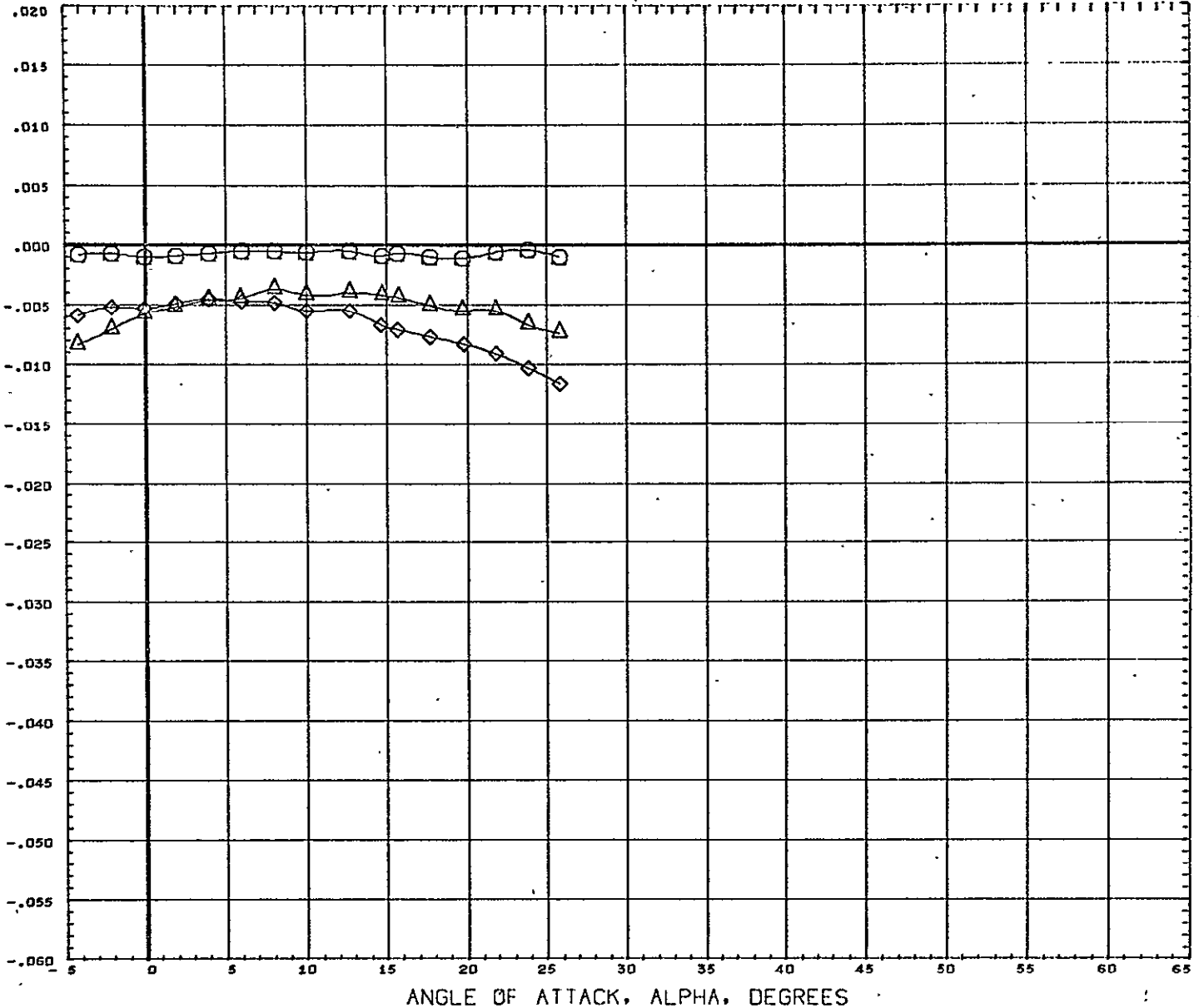
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	AILRON	ELEVON	RUDER2	STING	REFERENCE INFORMATION
(A41031)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	-10.000	0.000	4.000	SREF 9.0250' SQ. IN
(A4110S)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	-10.000	-10.000	0.000	4.000	LREF 6.1420 INCHES
(A4111S)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	-20.000	-10.000	0.000	4.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.964



LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON = -10

ROLLING MOMENT COEFFICIENT, CBL (BODY AXIS)

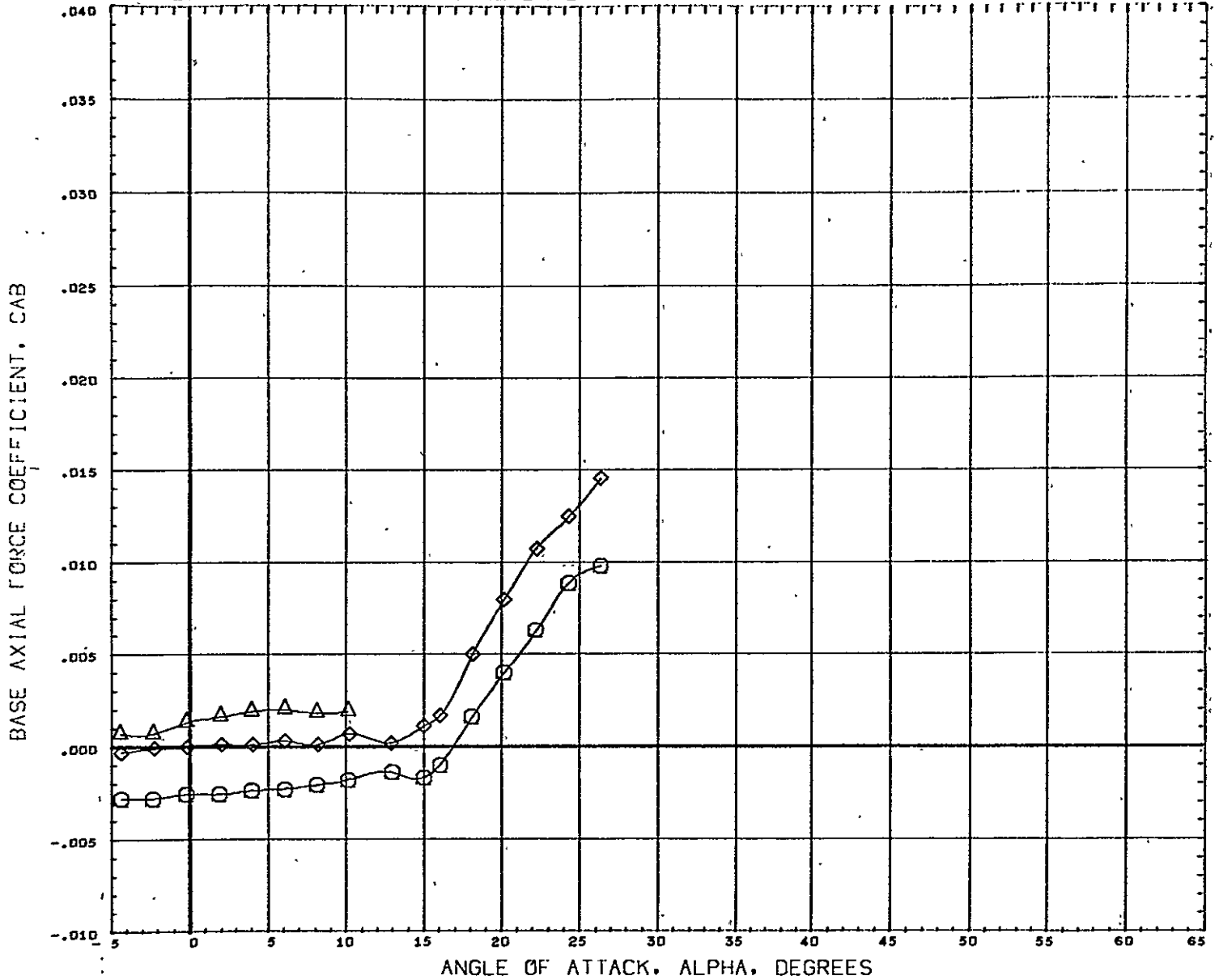


ANGLE OF ATTACK, ALPHA, DEGREES

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	AILRON	ELEVNS	RUDER2	STING	REFERENCE INFORMATION
(A41031)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	-10.000	0.000	4.000	SREF 9.0250 SQ. IN
(A41105)	MSFC TWT 498 MSFC/LMSC ORBITER	-10.000	-10.000	0.000	4.000	LREF 6.1420 INCHES
(A41115)	MSFC TWT 498 MSFC/LMSC ORBITER	-20.000	-10.000	0.000	4.000	BREF 6.1420 INCHES
						XMRP 3.9990 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 4.960

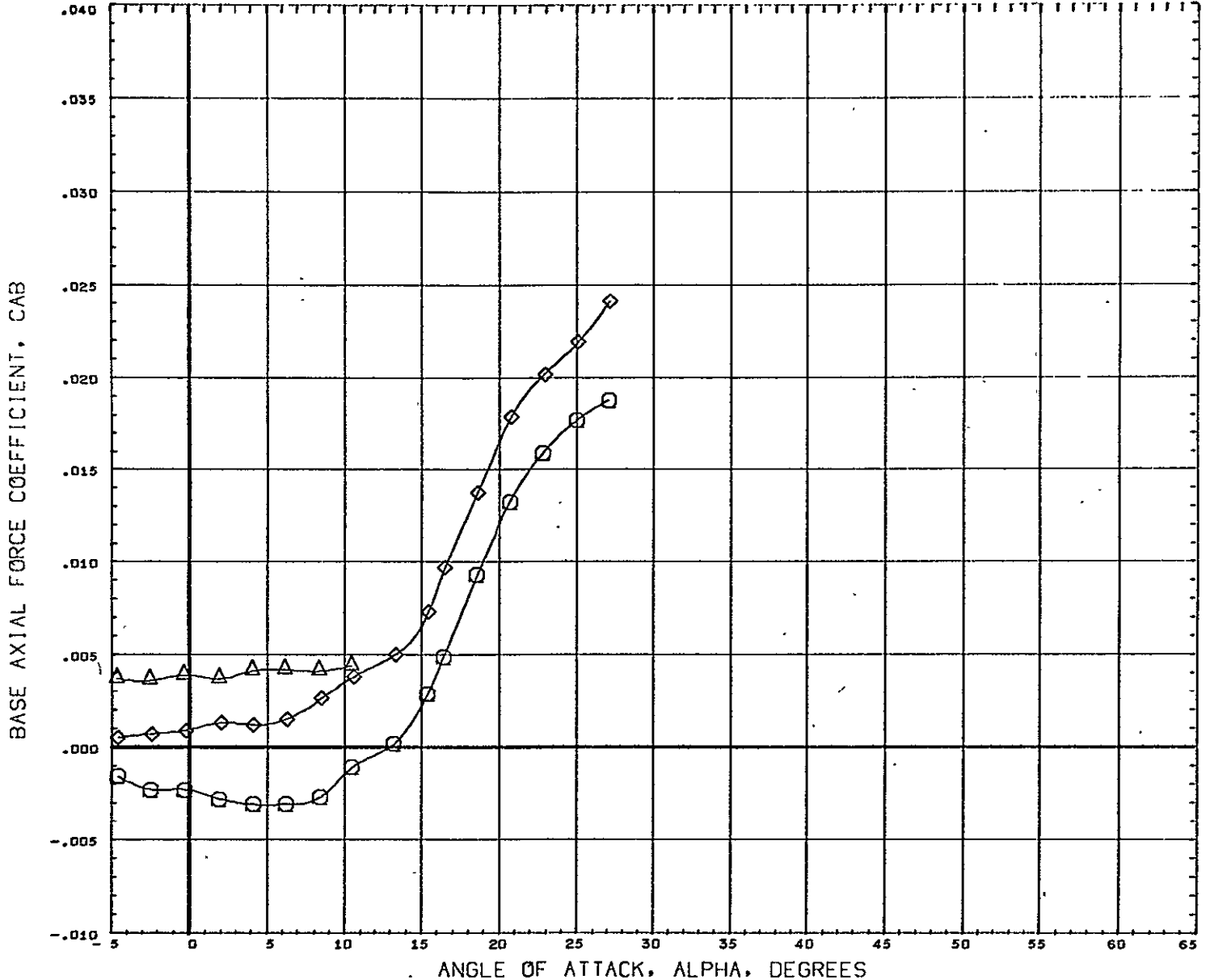
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON =-10



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	AILRON	ELEVN3	RUDER2	STING	REFERENCE INFORMATION
(A41031)	○	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	-10.000	0.000	4.000	SREF 9.0250 SQ. IN
(A41105)	△	MSFC TWT 498 MSFC/LMSC ORBITER	-10.000	-10.000	0.000	4.000	LREF 6.1420 INCHES
(A41115)	◇	MSFC TWT 498 MSFC/LMSC ORBITER	-20.000	-10.000	0.000	4.000	BREF 6.1420 INCHES
							XMRP 3.9950 INCHES
							YMRP 0.0000 INCHES
							ZMRP 0.1350 INCHES
							SCALE 0.0033 SCALE

MACH 0.595

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON =-10

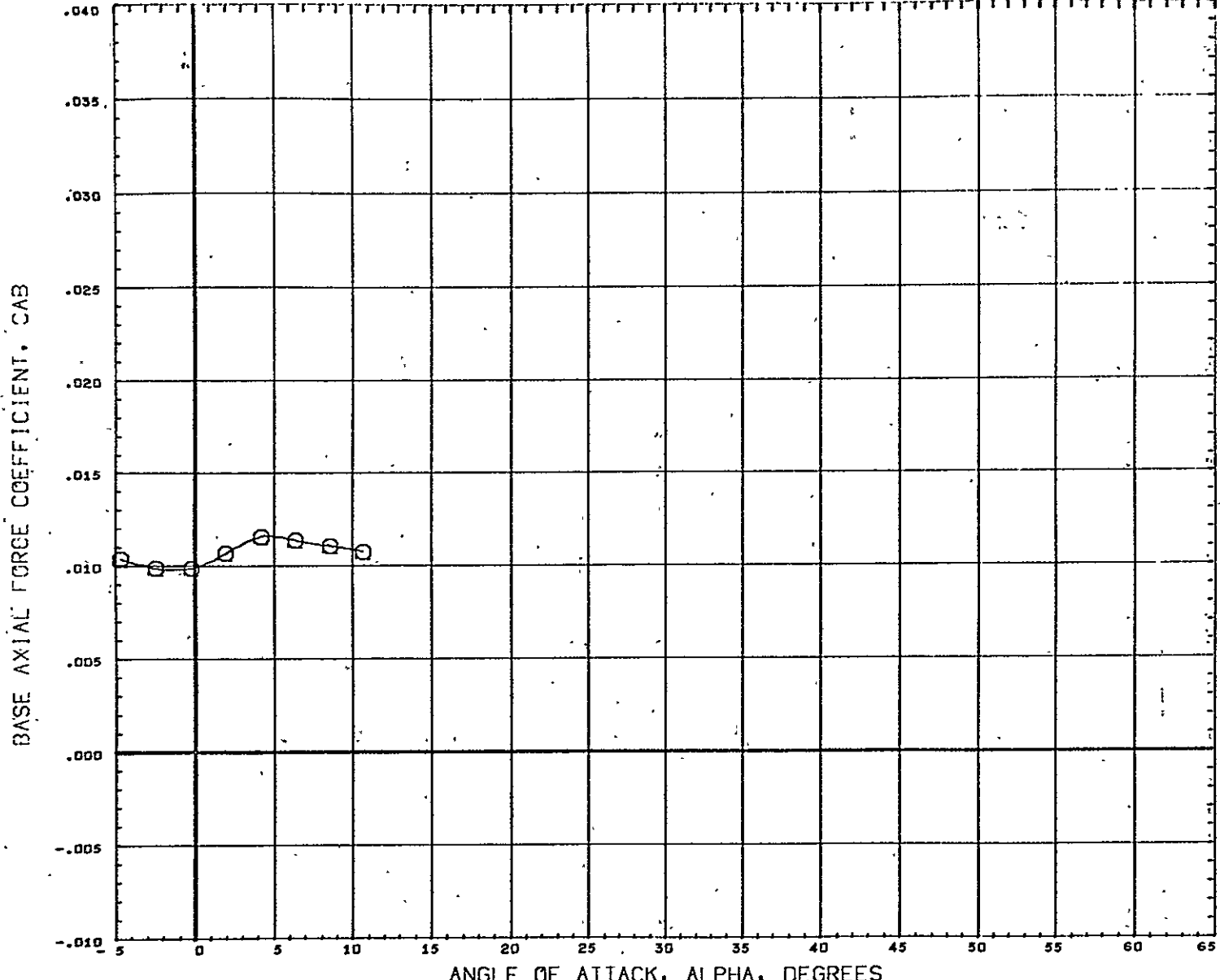


ANGLE OF ATTACK, ALPHA, DEGREES

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	AILRON	ELEVNS	RUDER2	STING	REFERENCE INFORMATION
(A41031)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	-10.000	0.000	4.000	SREF 9.0250 SQ. IN
(A4110S)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	-10.000	-10.000	0.000	4.000	LREF 6.1420 INCHES
(A4111S)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	-20.000	-10.000	0.000	4.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 9.951

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON = -10



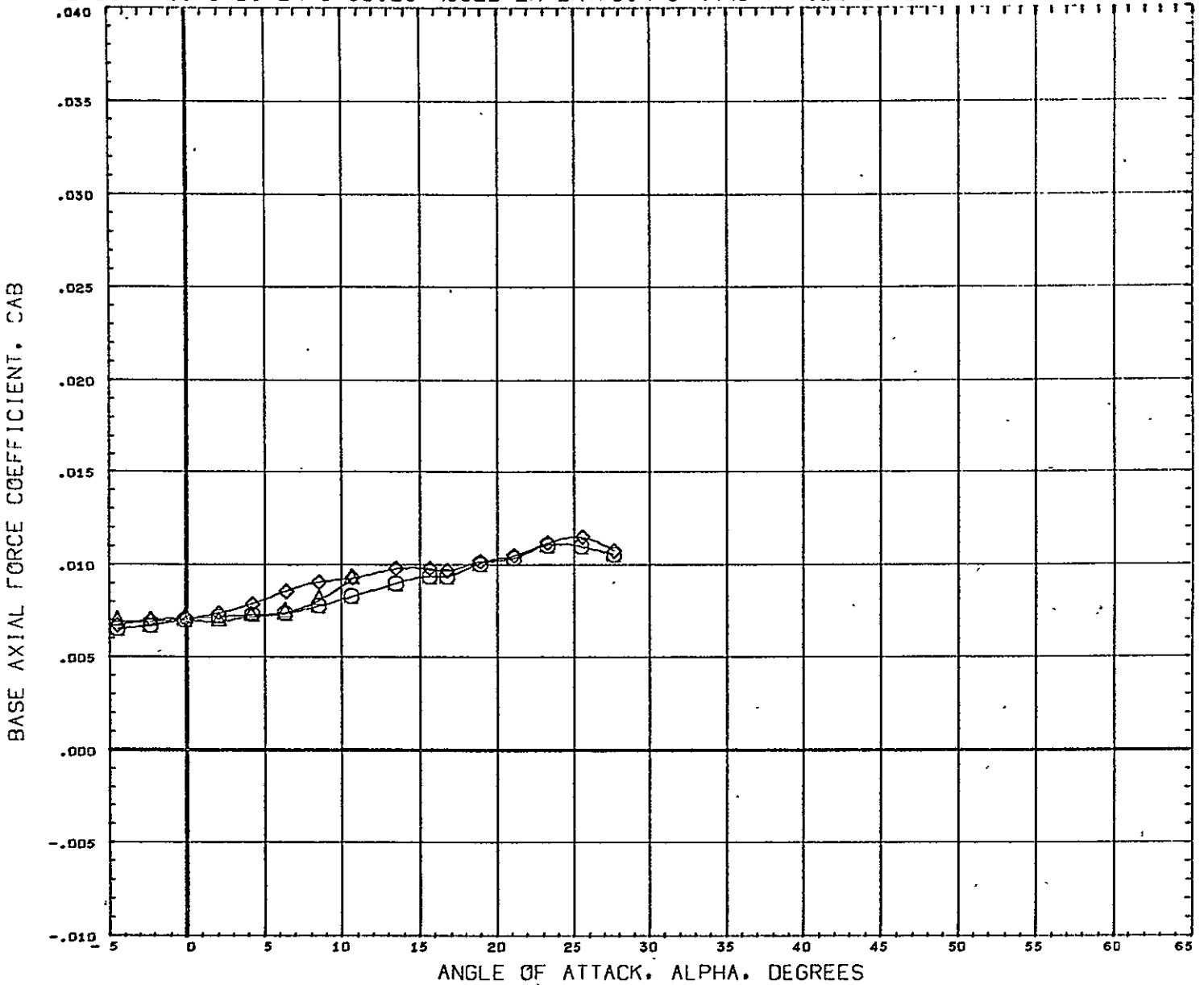
DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(A41531)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2
(A41105)	DATA NOT AVAILABLE FOR ALL CONDITIONS
(A41115)	DATA NOT AVAILABLE FOR ALL CONDITIONS

AILRON	ELEVN3	RUDER2	STING
0.000	-10.000	0.000	4.000
-10.000	-10.000	0.000	4.000
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REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
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ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

MACH 1.097

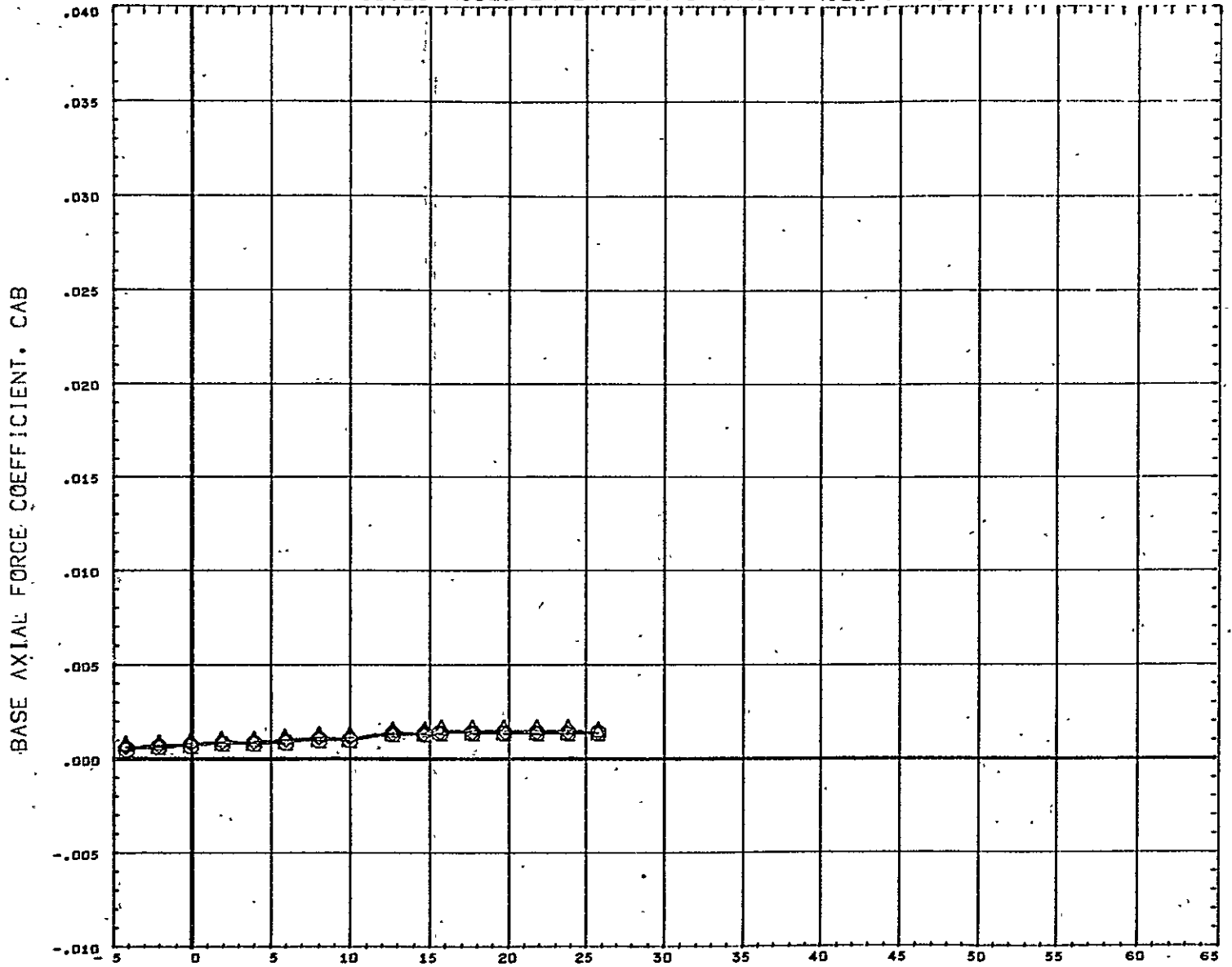
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON = -10



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	AILRON	ELEVNS	RUDER2	STING	REFERENCE INFORMATION
(A41031)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	-10.000	0.000	4.000	SREF 9.0250 SQ. IN
(A41105)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	-15.000	-10.000	0.000	4.000	LREF 6.1420 INCHES
(A41115)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	-25.000	-10.000	0.000	4.000	BREF 6.1420 INCHES
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MACH 1.964

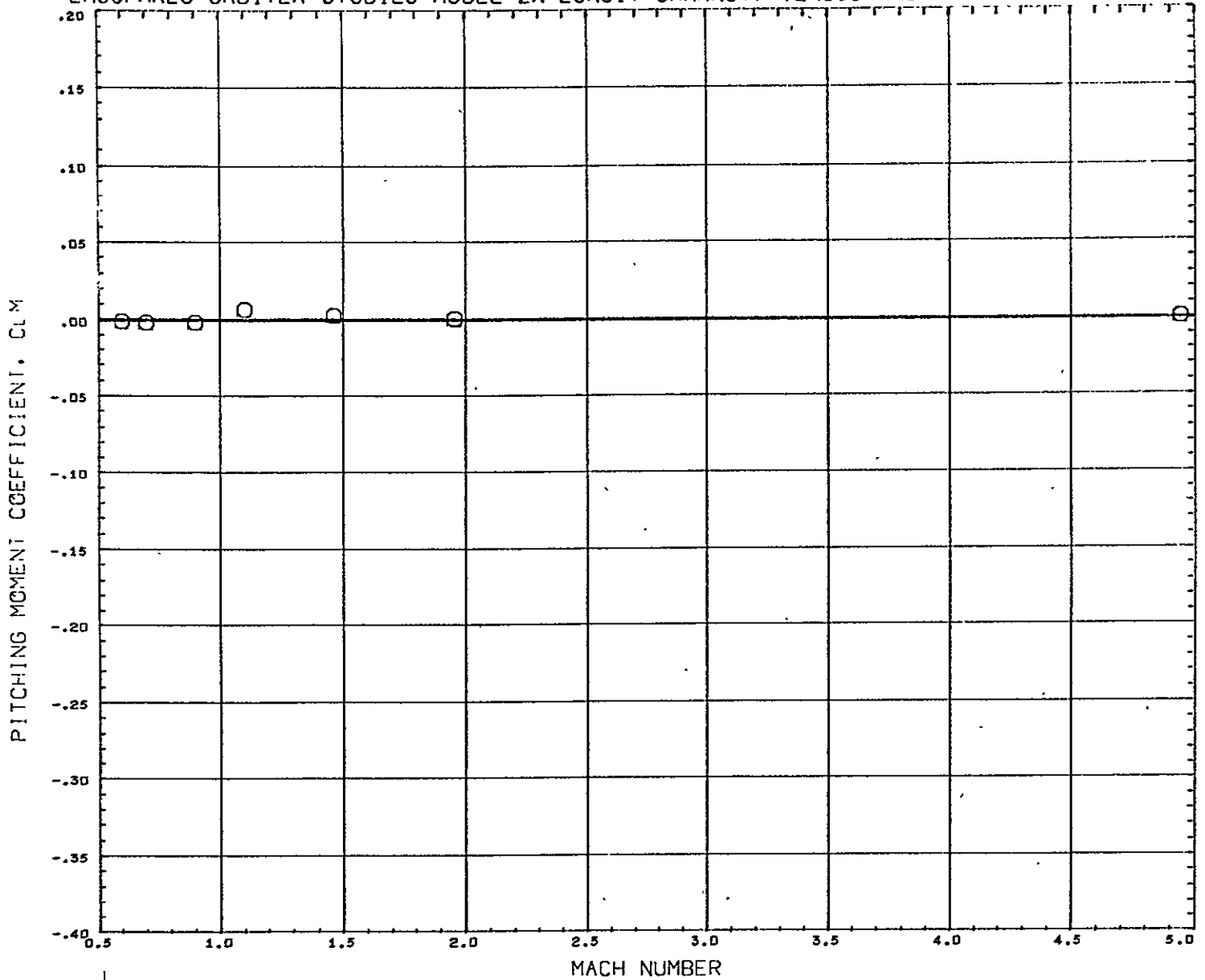
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON =-10



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	AILRON	ELEVN3	RUDER2	STING	REFERENCE INFORMATION
(A41031)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	-10.000	0.000	4.000	SREF 9.0250 SQ. IN
(A41105)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	-10.000	-10.000	0.000	4.000	LREF 6.1420 INCHES
(A41115)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	-20.000	-10.000	0.000	4.000	BREF 6.1420 INCHES
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						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 4.960

# LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, VERSUS MACH NUMBER

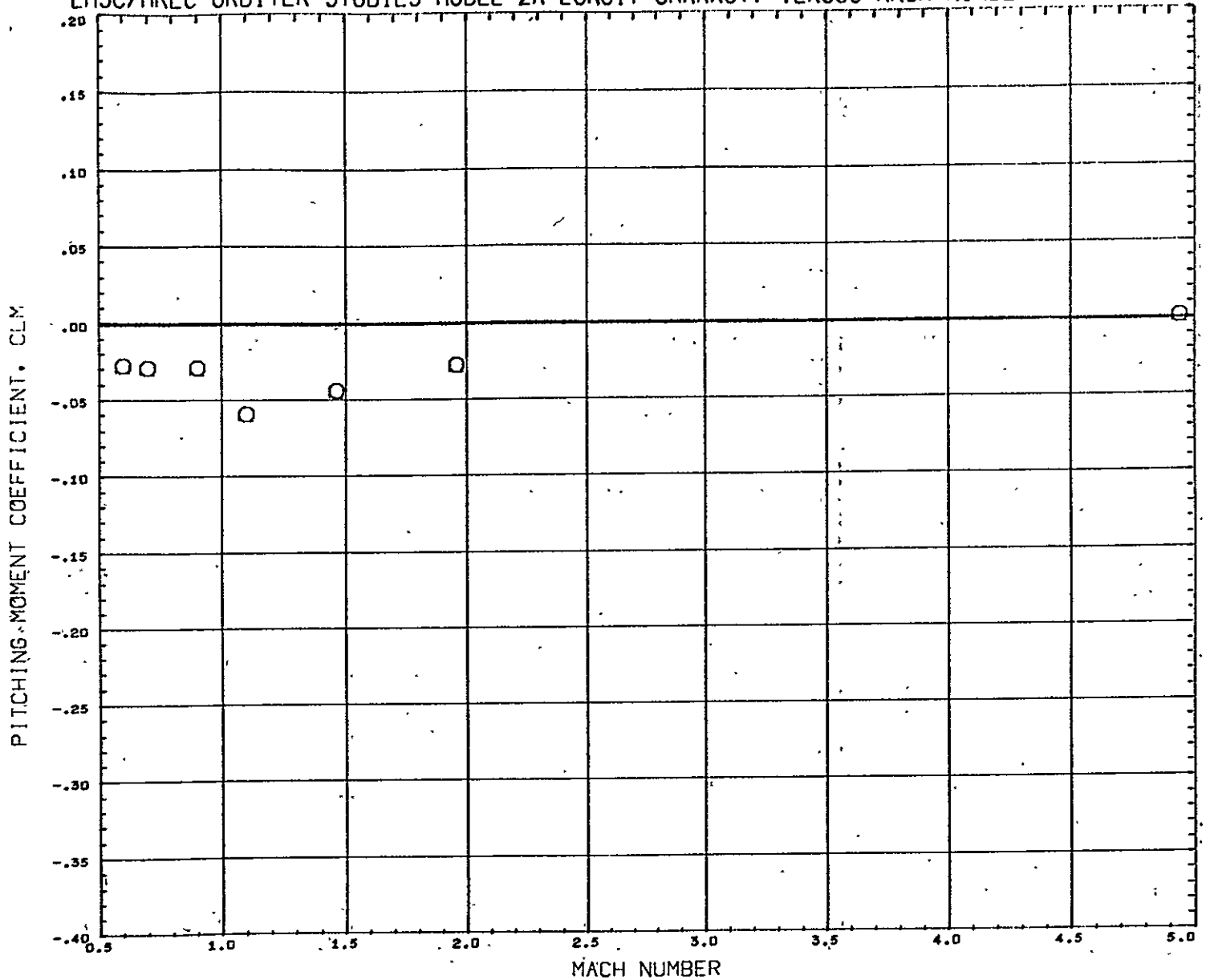


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		RUDER2	0.000	STING	4.000

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LREF	6.1420	INCHES
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XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE #GTV#EI

# LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, VERSUS MACH NUMBER



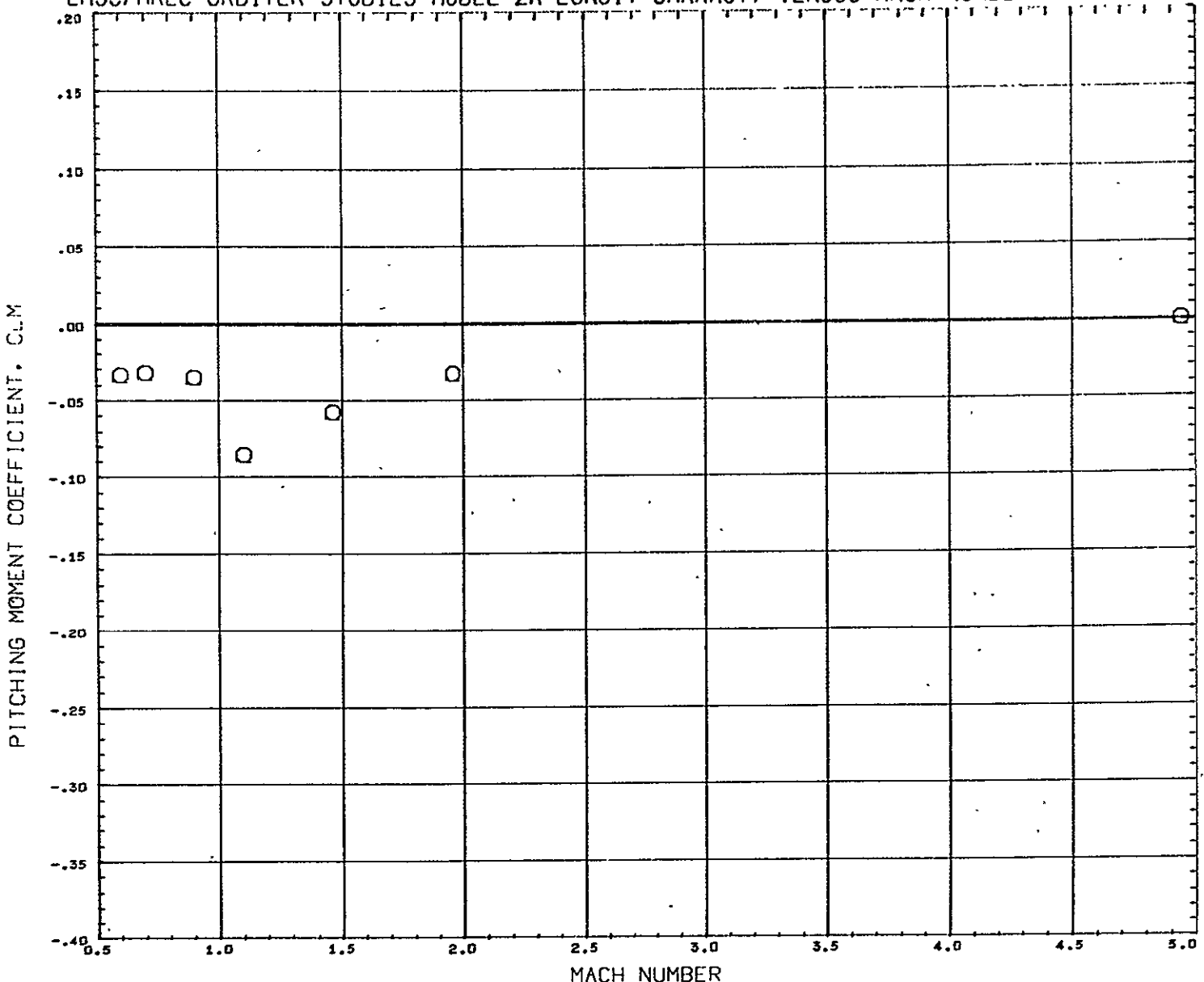
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REFERENCE INFORMATION,		
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XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
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DATA HIST. CODE #GTV\*EI



LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, VERSUS MACH NUMBER

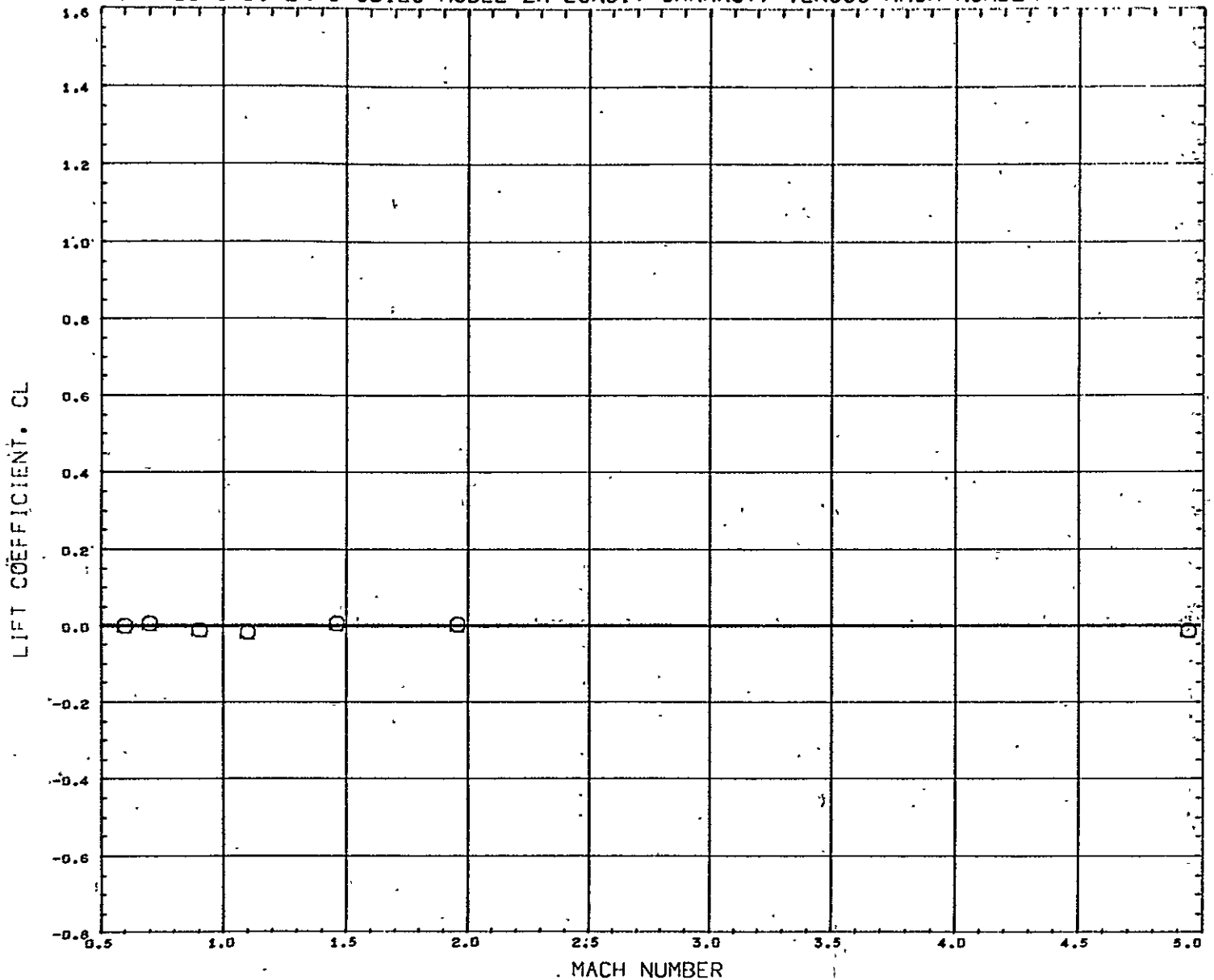


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		RUDER2	0.000	STING	4.000

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LREF	6.1420	INCHES
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ZHRF	0.1350	INCHES
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DATA HIST. CODE #6TV\*EI

LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, VERSUS MACH NUMBER

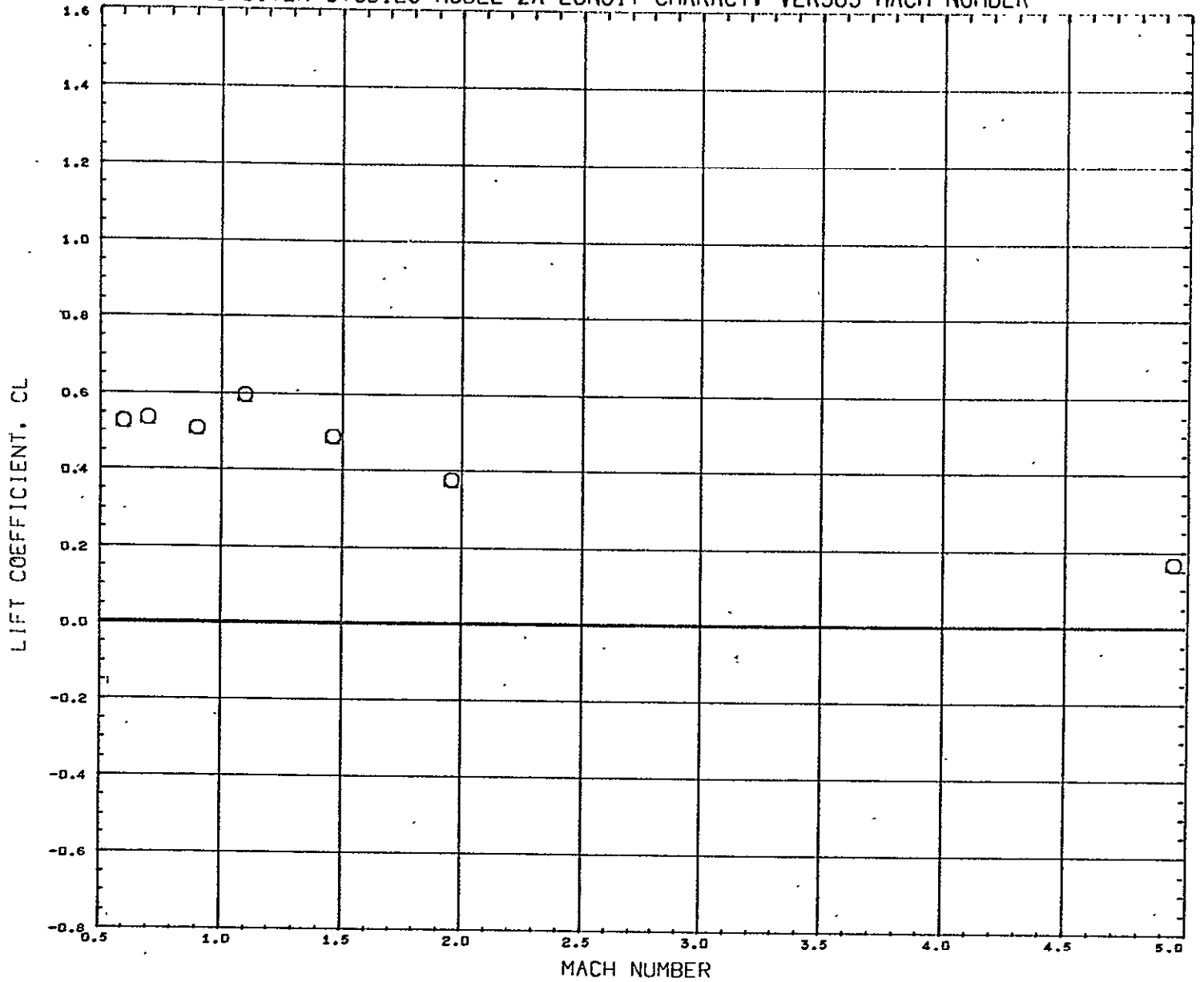


SYMBOL	ALPHA	PARAMETRIC VALUES			
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		RUDER2	0.000	STING	4.000

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LREF	6.1420	INCHES
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ZMRP	0.1350	INCHES
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DATA HIST. CODE \*GTV\*EI

LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, VERSUS MACH NUMBER

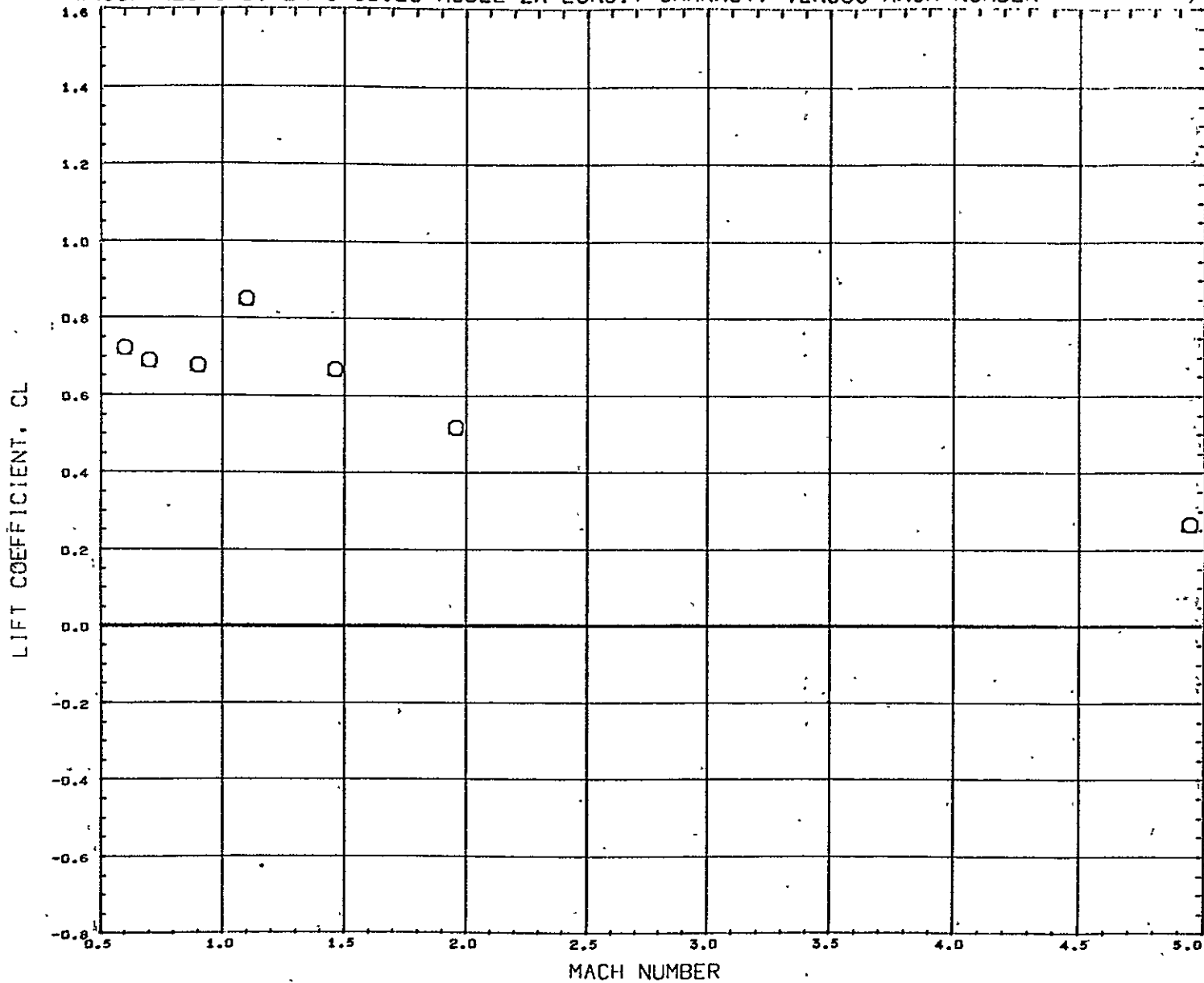


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REFERENCE INFORMATION  
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 ZMRP 0.1350 INCHES  
 SCALE 0.0033 SCALE

DATA HIST. CODE #GTV#E1

# LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, VERSUS MACH NUMBER

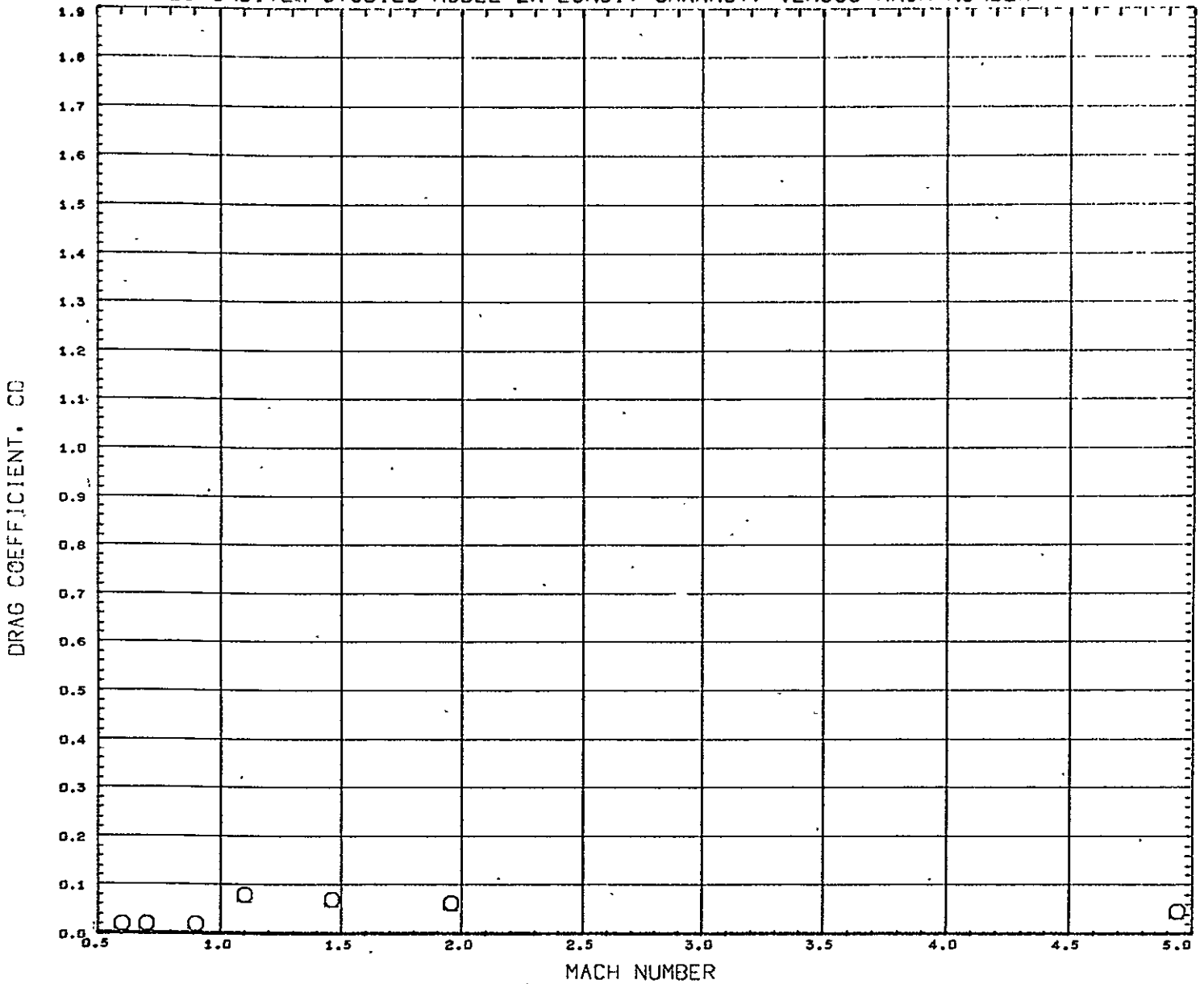


SYMBOL	ALPHA	PARAMETRIC VALUES			
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YHRP	0.0000	INCHES
ZHRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE #GTV#EI

# LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, VERSUS MACH NUMBER



SYMBOL	ALPHA	PARAMETRIC VALUES			
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		RUDER2	0.000	STING	4.000

REFERENCE INFORMATION		
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XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
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SCALE	0.0033	SCALE

DATA HIST. CODE #GTV\*EI

MSFC TWT 498 MSFC/LMSC ORBITER

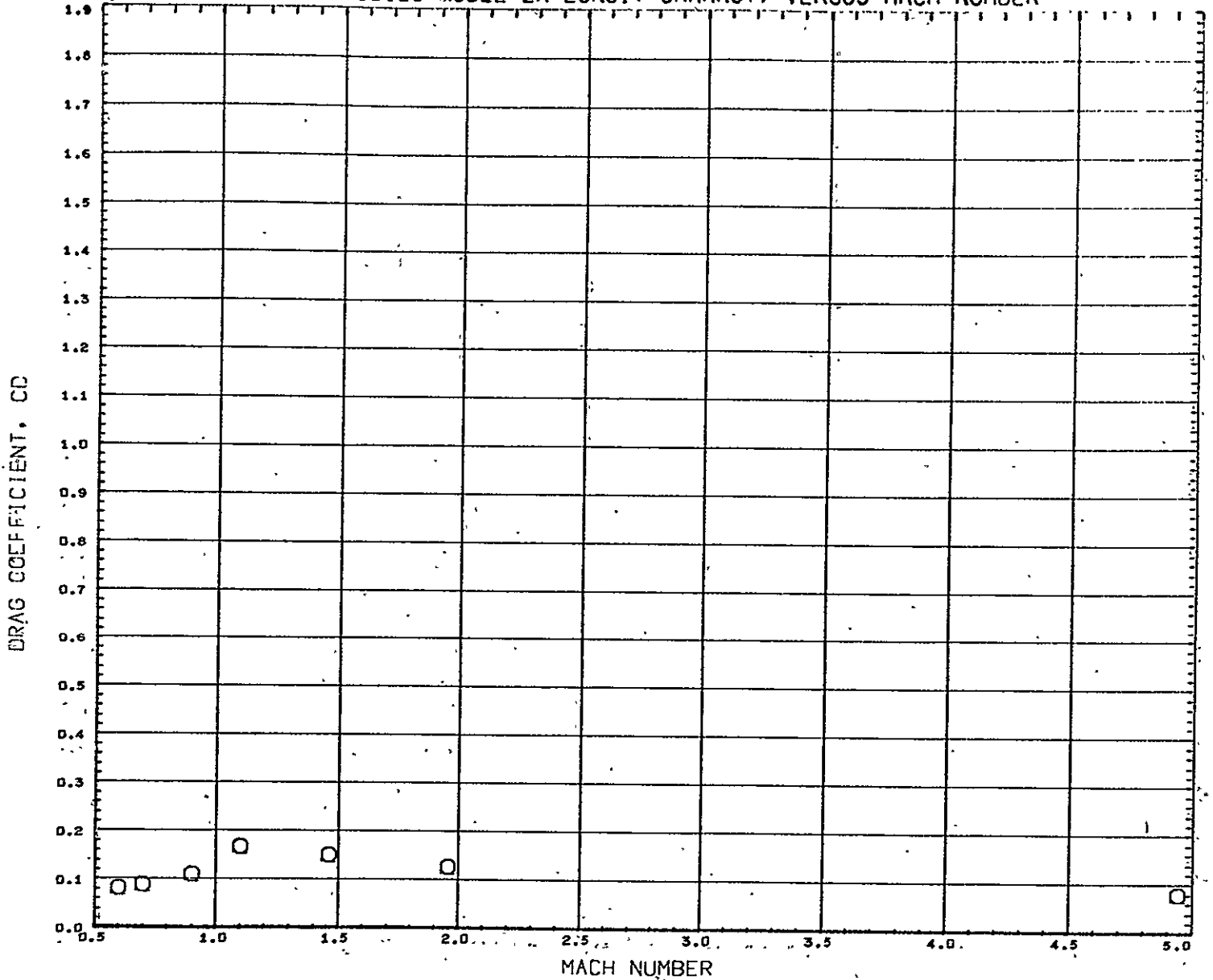
B2W2V4D2E3R2 (E4101S)

08 FEB 72

PAGE 187

0.5

# LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, VERSUS MACH NUMBER

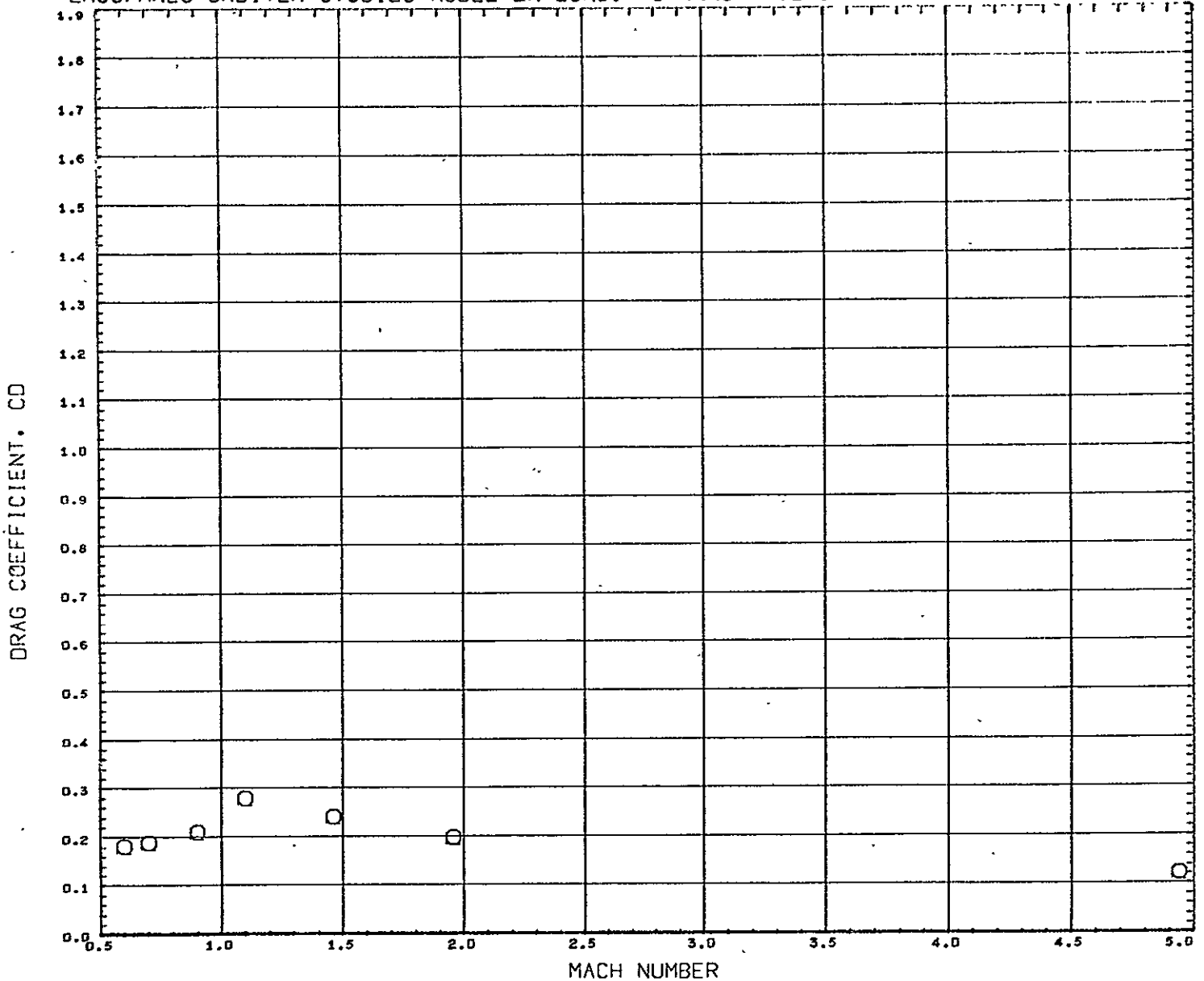


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YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
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DATA HIST. CODE #GTV#EI

LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, VERSUS MACH NUMBER

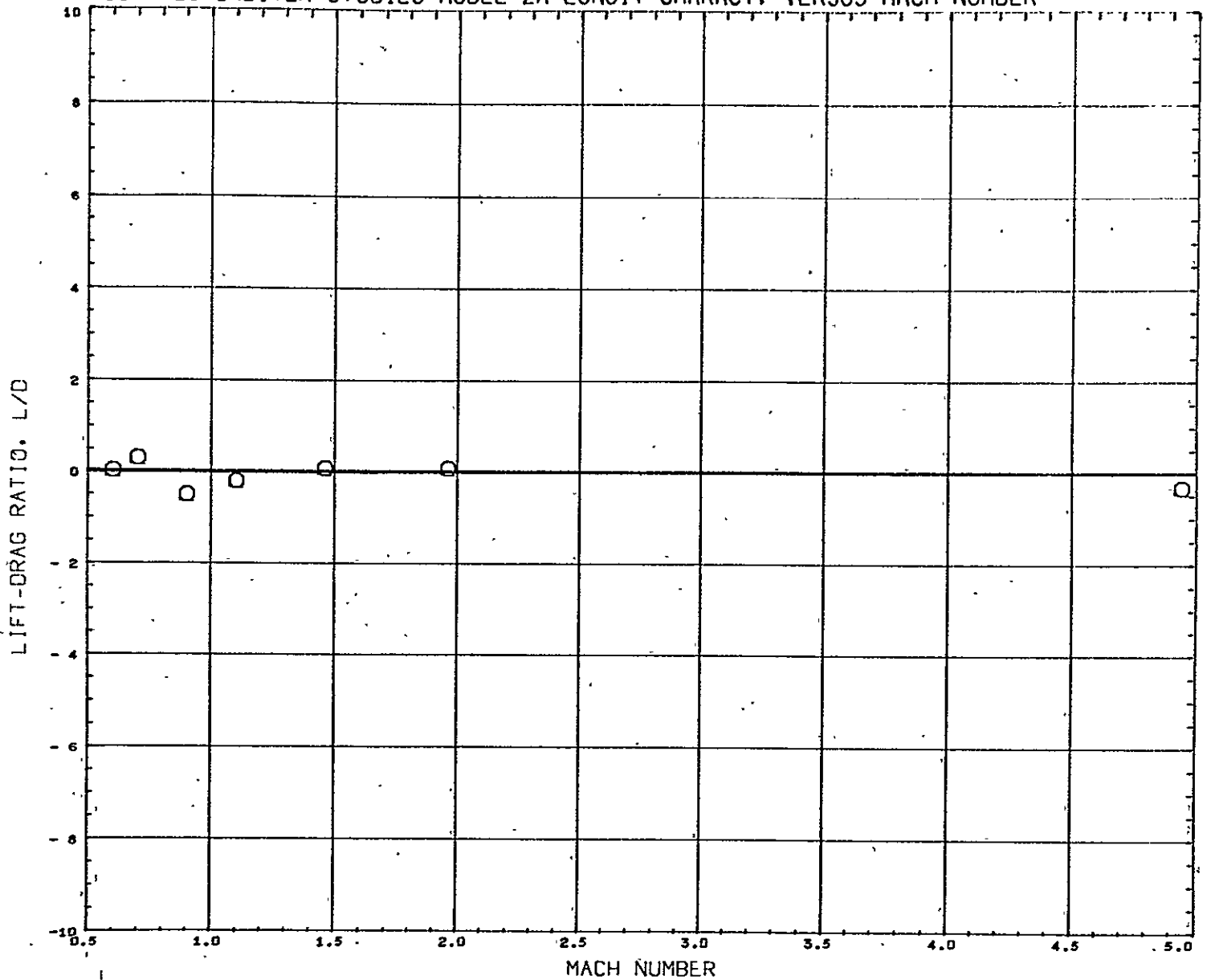


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ZMRP	0.1350	INCHES
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DATA HIST. CODE #GTV#E1

LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, VERSUS MACH NUMBER



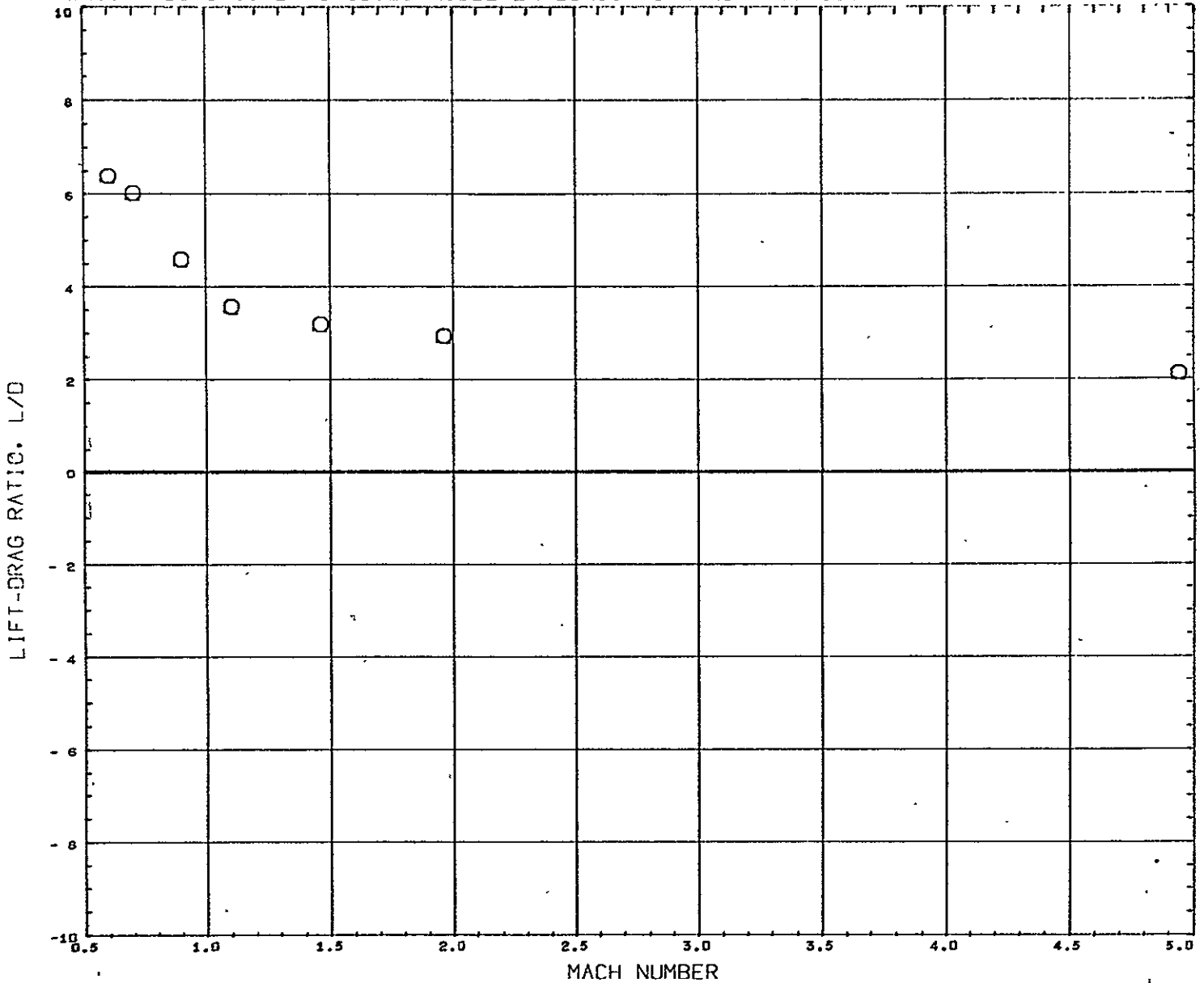
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YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
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DATA HIST. CODE #GTV#E1



LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, VERSUS MACH NUMBER

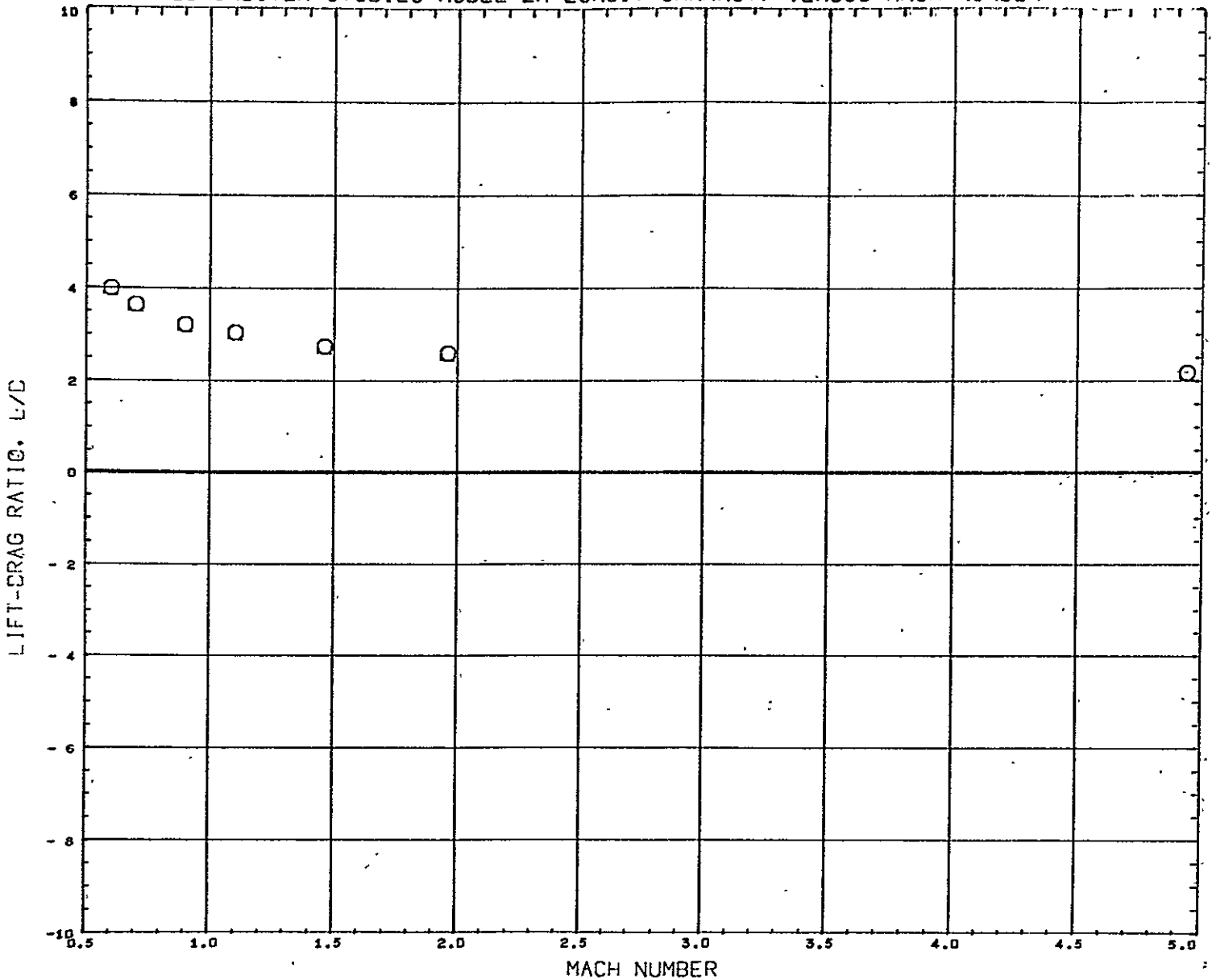


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		RUDER2	0.000	STING	4.000

REFERENCE INFORMATION		
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DATA HIST. CODE #GTV#EI

MSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, VERSUS MACH NUMBER

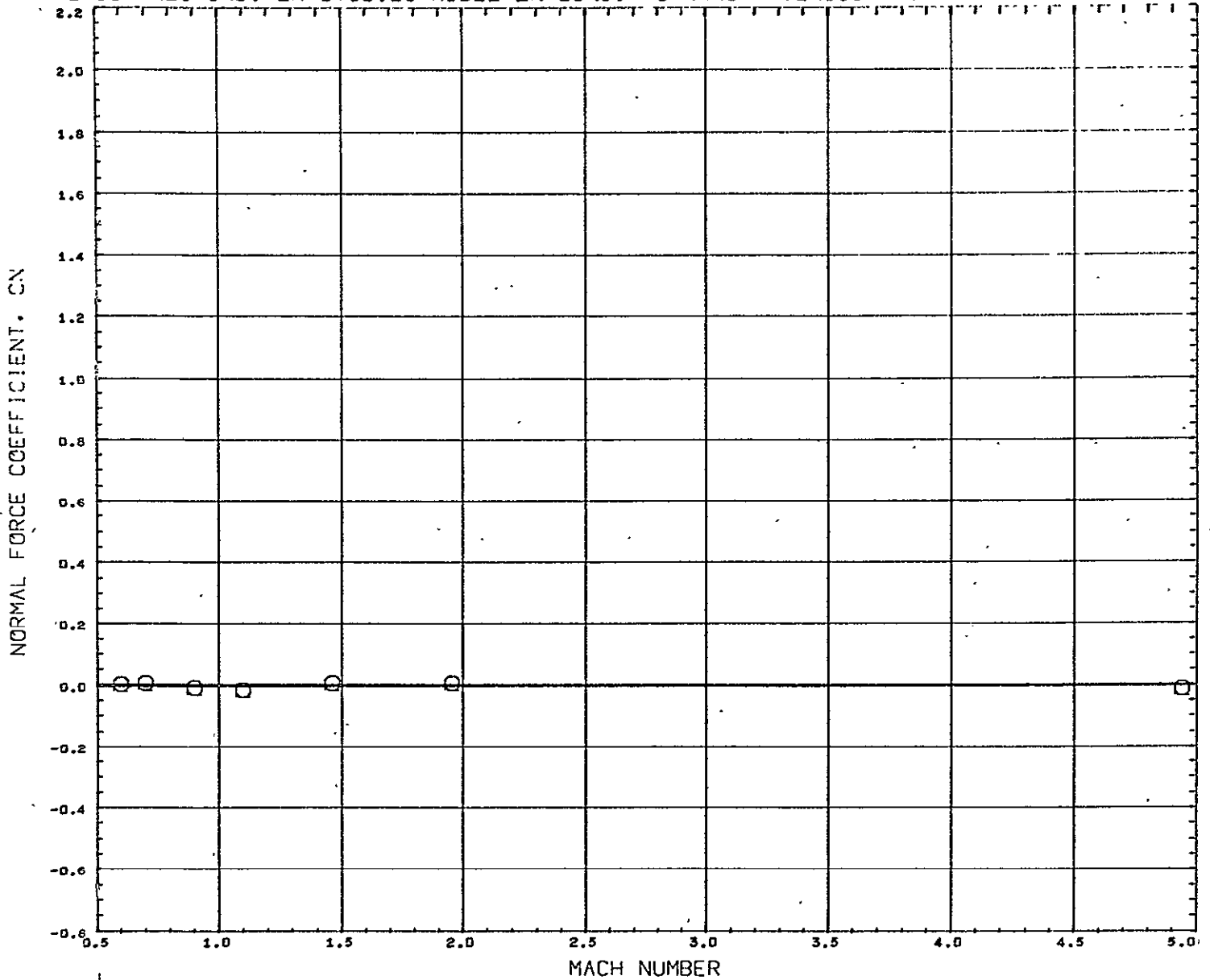


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DATA HIST. CODE \*GTV\*EI

LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, VERSUS MACH NUMBER

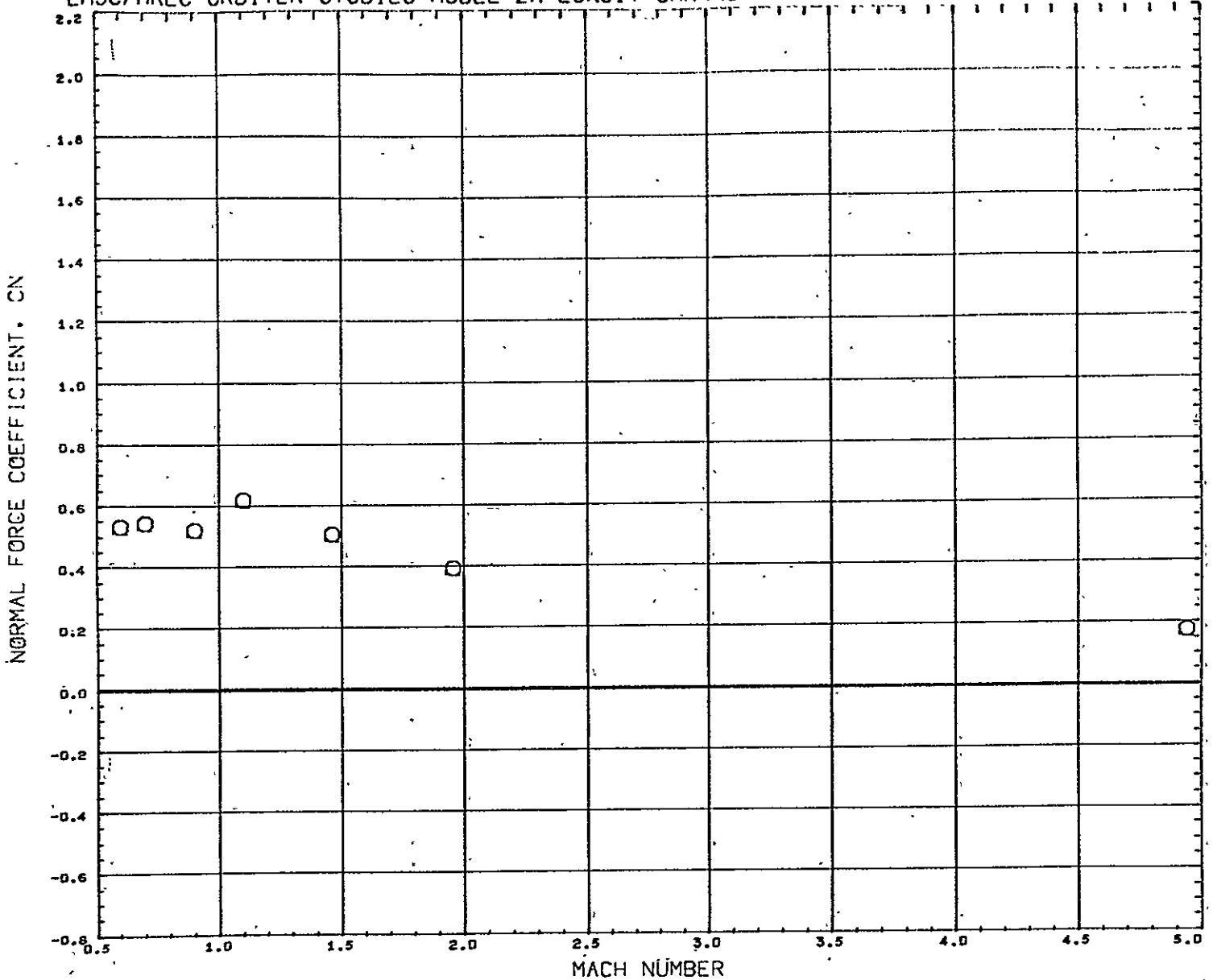


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		RUDER2	0.000	STING	4.000

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ZMRP	0.1350	INCHES
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DATA HIST. CODE #GTV#EI

# LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, VERSUS MACH NUMBER

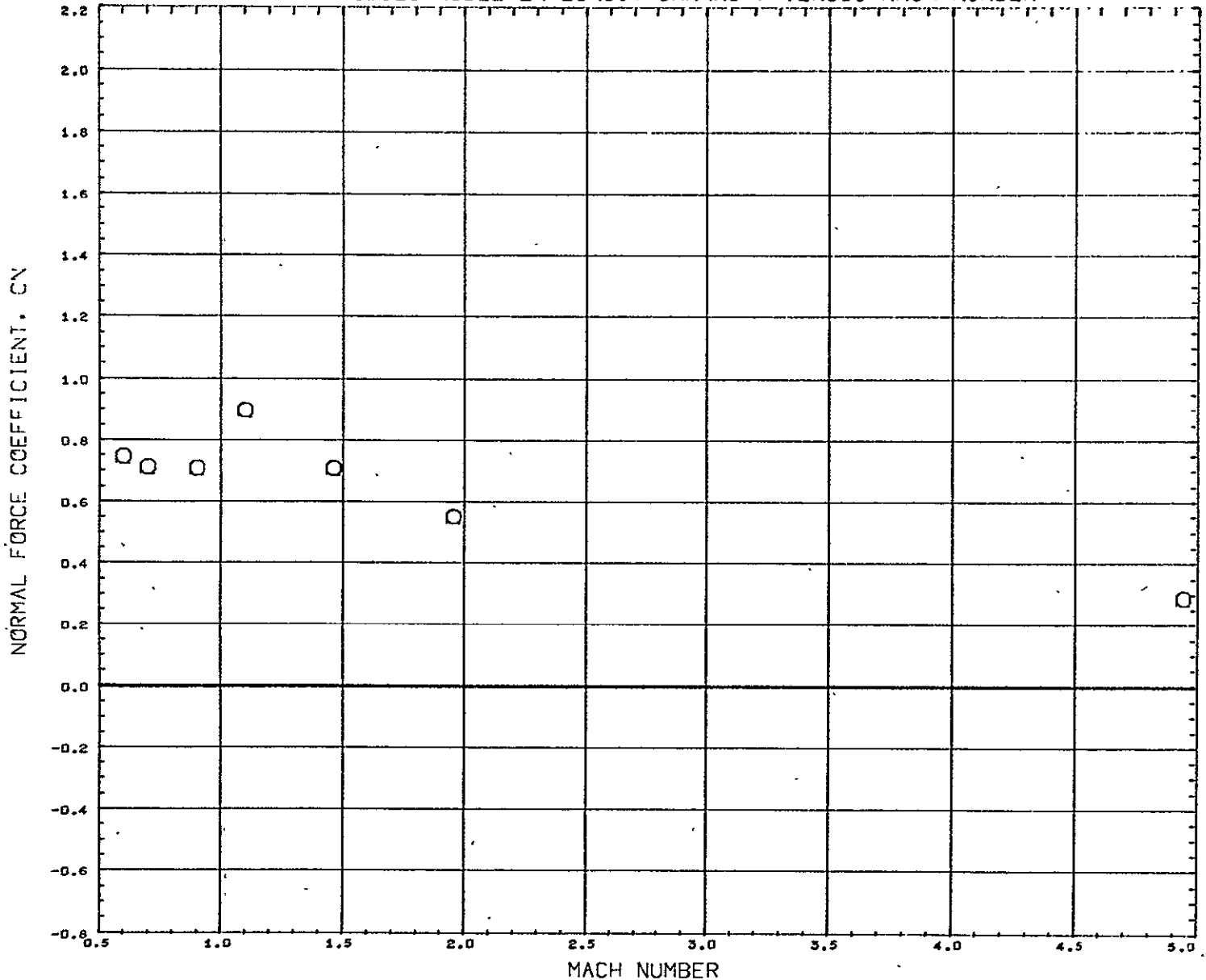


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DATA HIST. CODE #GTV#EI

LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, VERSUS MACH NUMBER

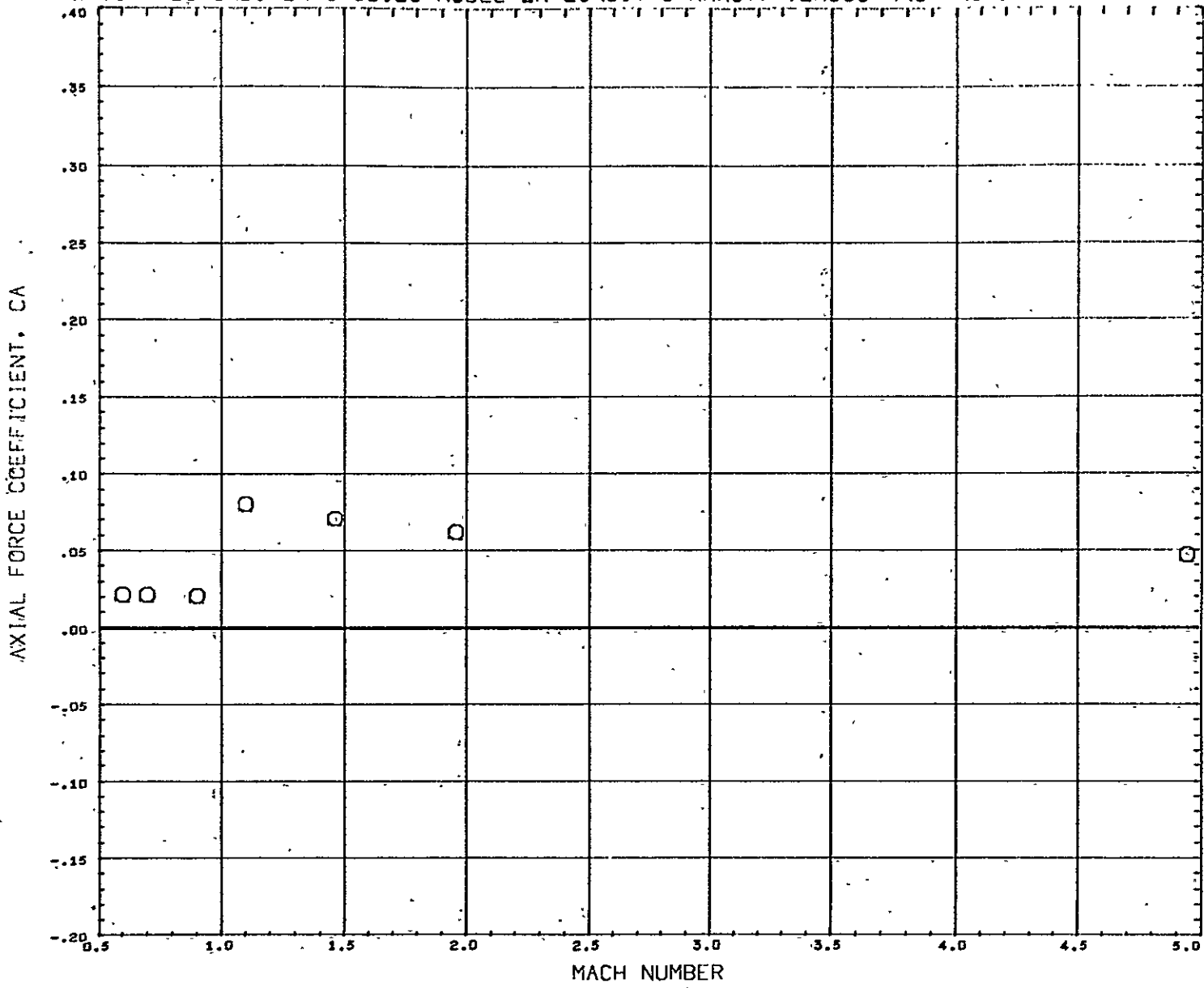


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ZMRP	0.1350	INCHES
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DATA HIST. CODE #GTV#E1

LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, VERSUS MACH NUMBER



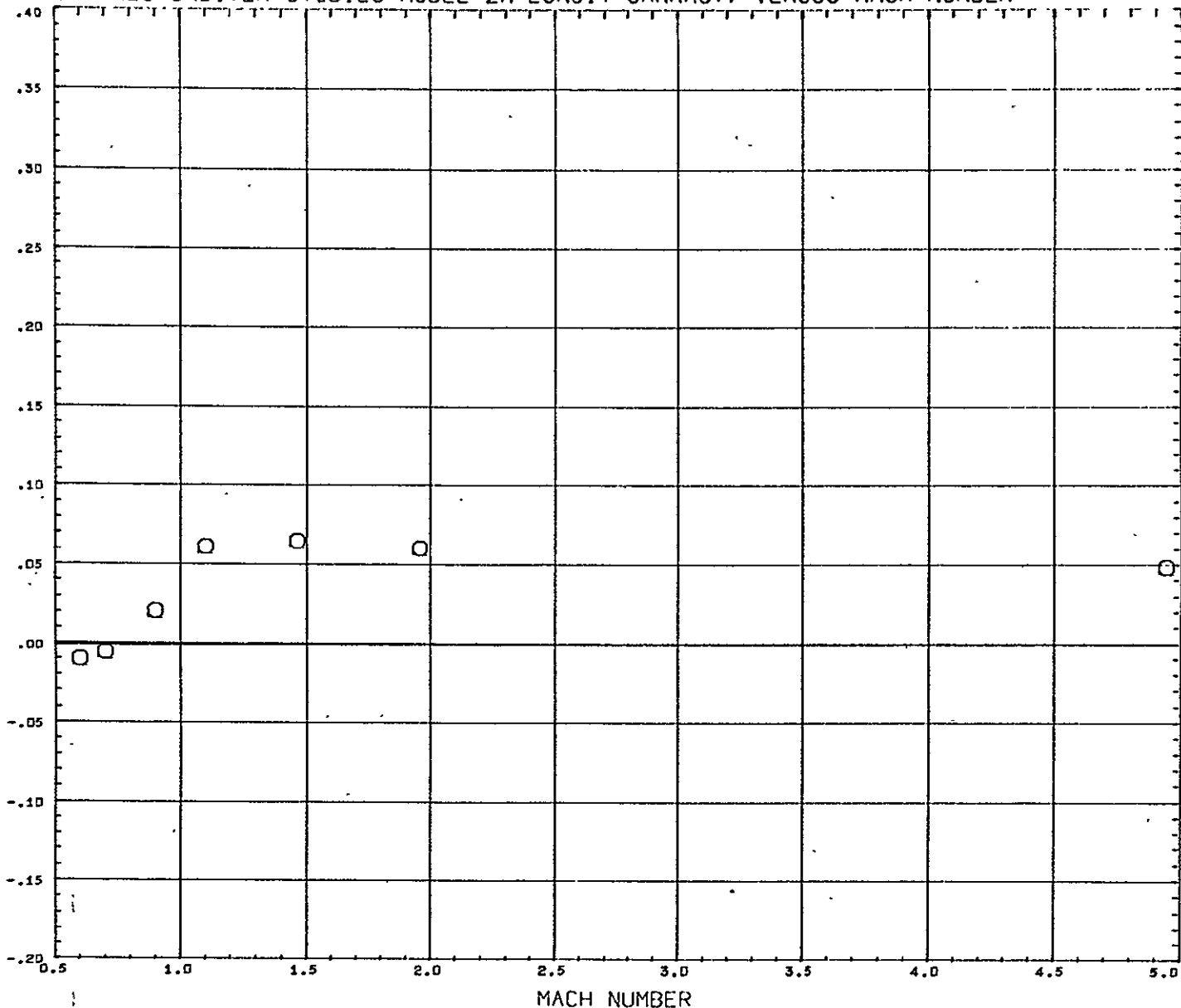
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ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE #GTV#EI

# LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, VERSUS MACH NUMBER

AXIAL FORCE COEFFICIENT, CA

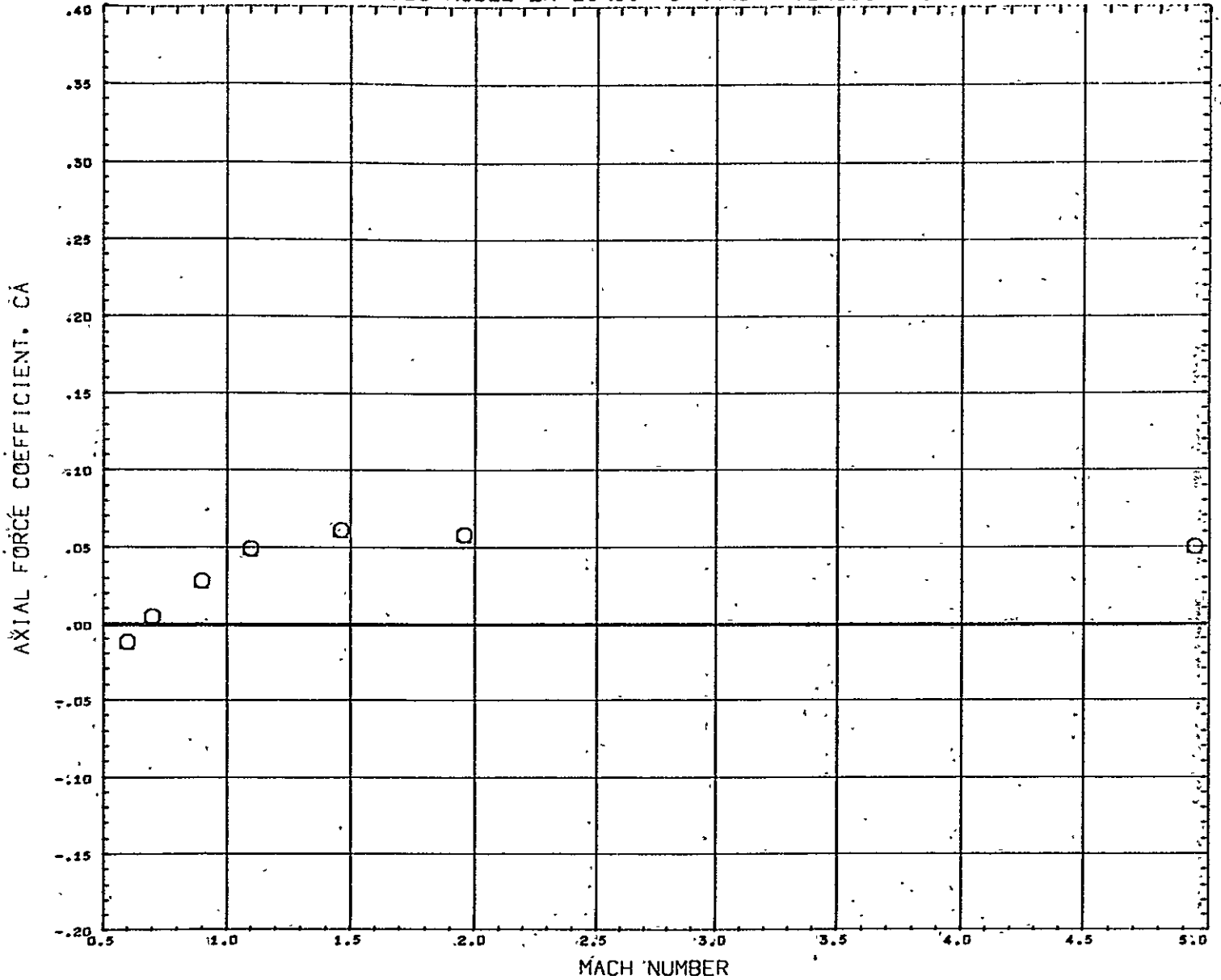


SYMBOL	ALPHA	PARAMETRIC VALUES			
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		RUDER2	0.000	STING	4.000

REFERENCE INFORMATION		
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BREF	6.1420	INCHES
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DATA HIST. CODE #GIV#E1

LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, VERSUS MACH NUMBER



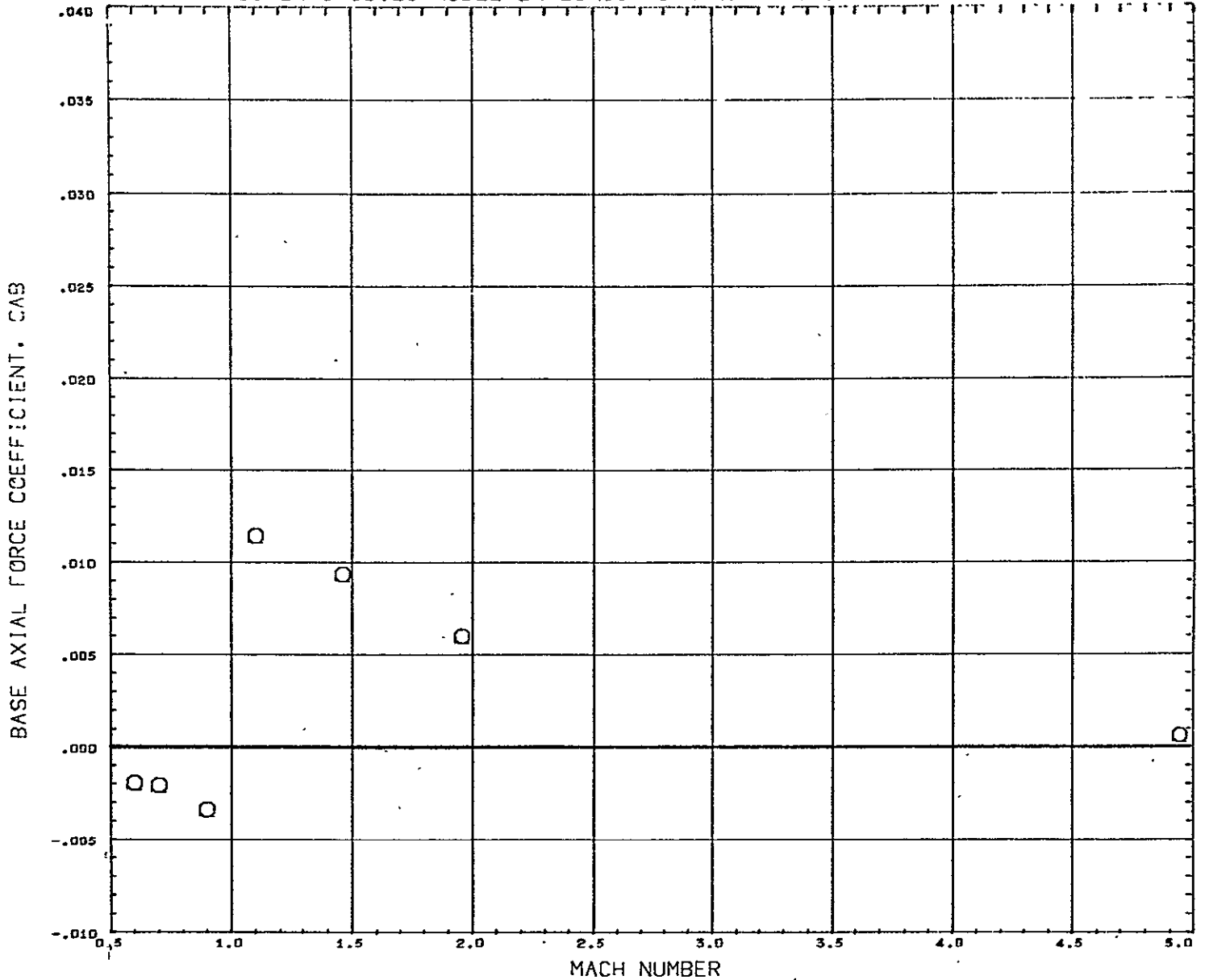
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		RUDER2	0.000	STING	4.000

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DATA HIST. CODE #6TV#EI



LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, VERSUS MACH NUMBER

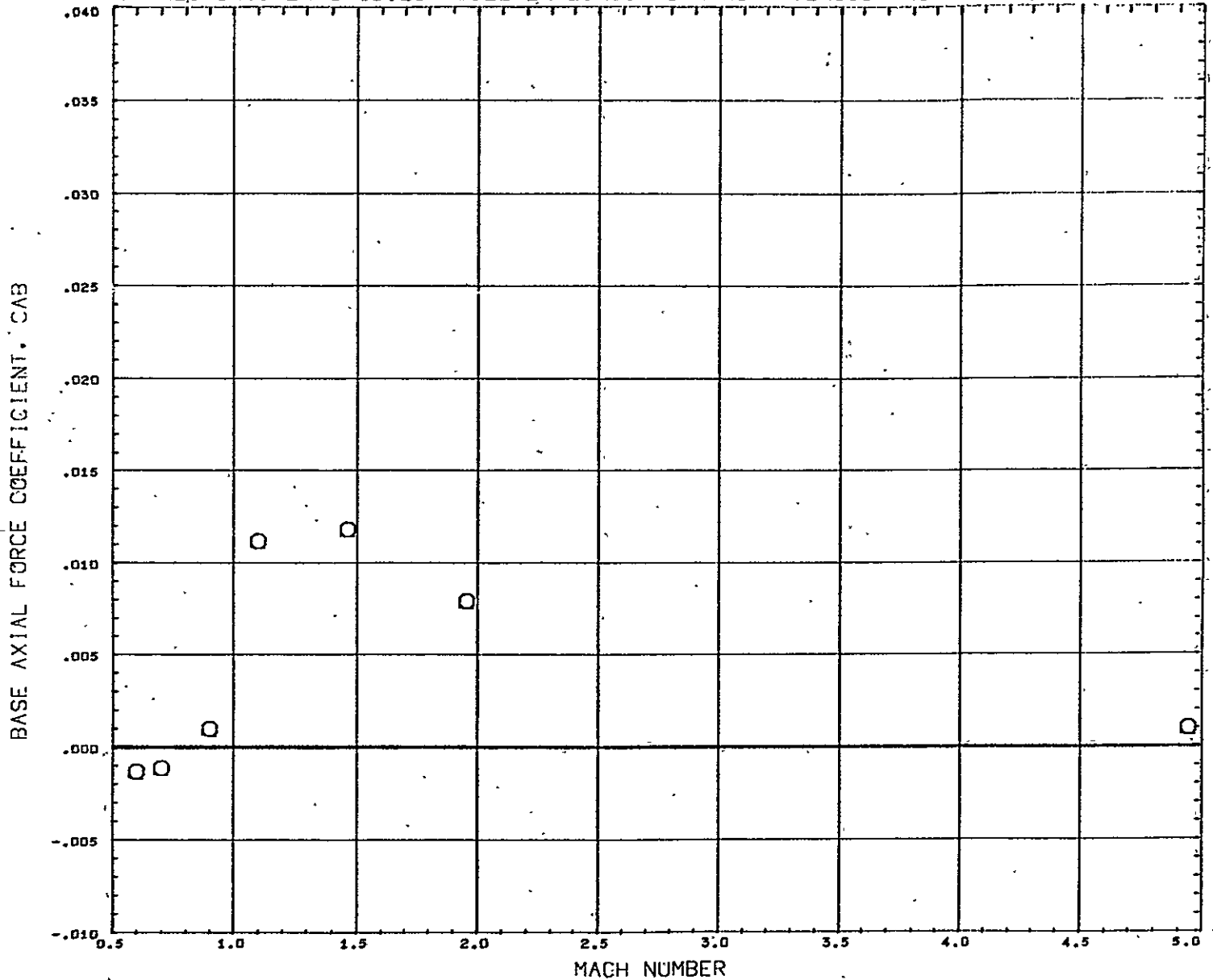


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		RUDER2	0.000	STING	4.000

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YHRF	0.0000	INCHES
ZHRF	0.1350	INCHES
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DATA HIST. CODE #GTV#EI

LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, VERSUS MACH NUMBER

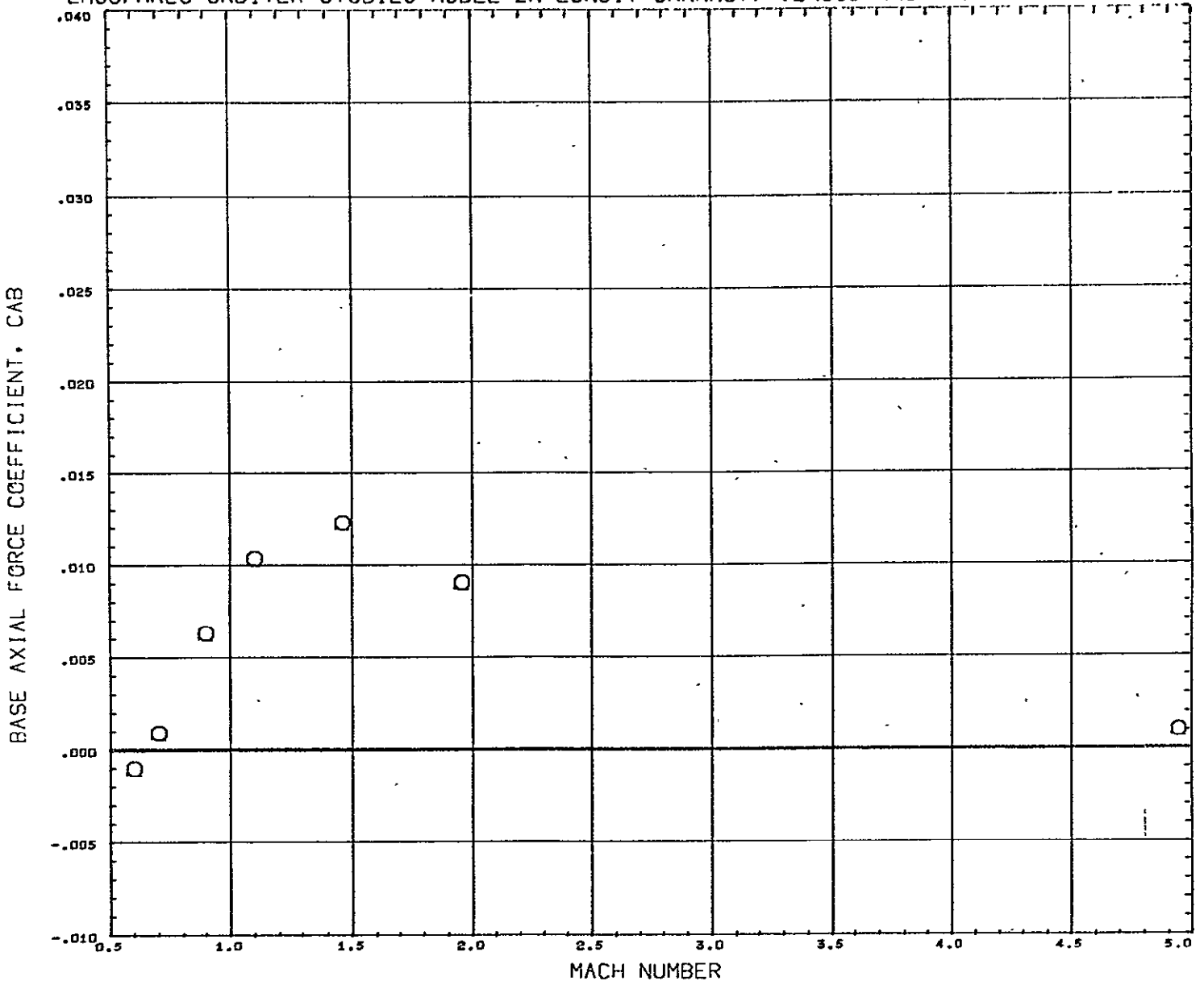


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YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
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DATA HIST. CODE #GTV#EJ

LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, VERSUS MACH NUMBER

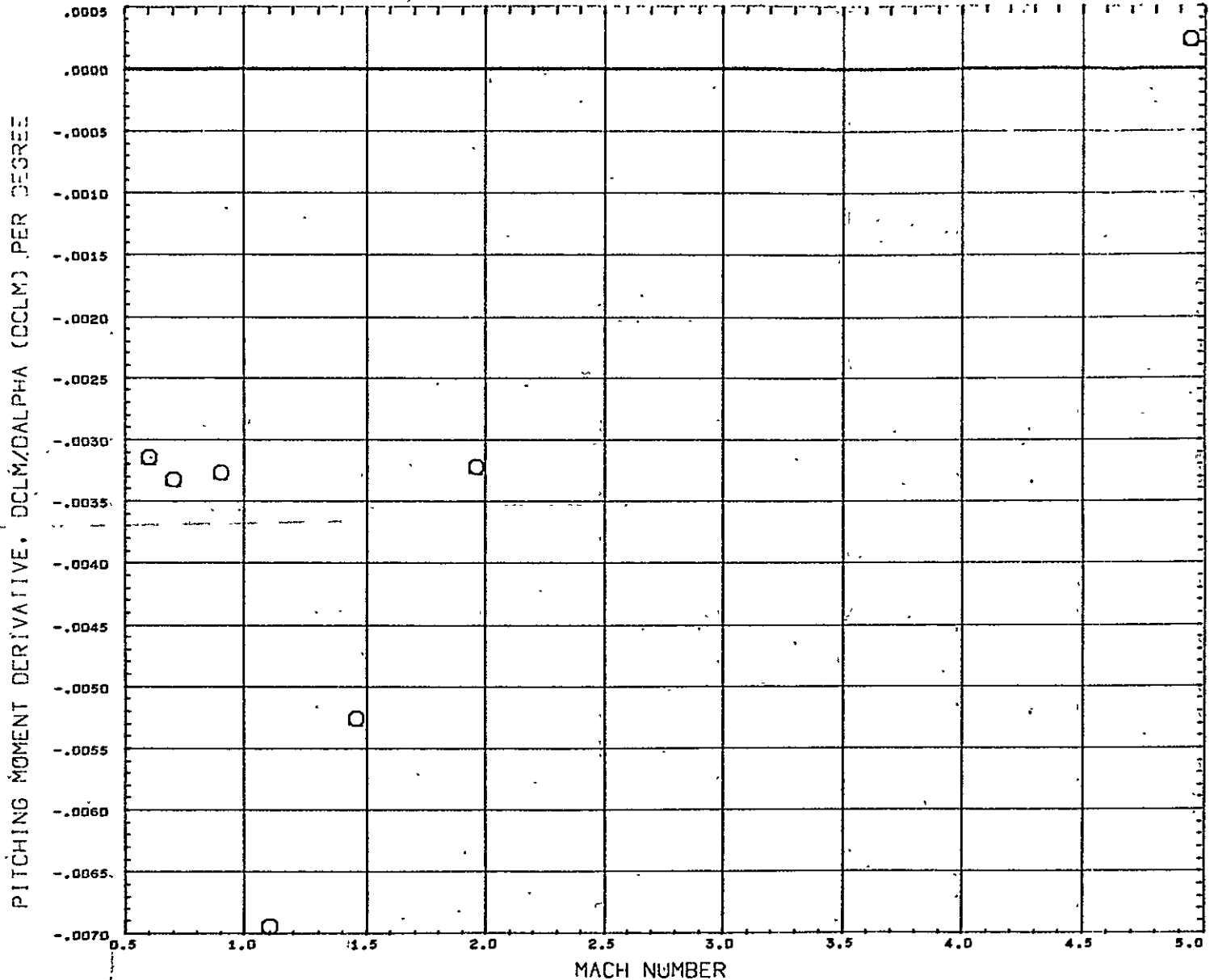


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		RUDER2	0.000	STING	4.000

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DATA HIST. CODE \*GTV#E1

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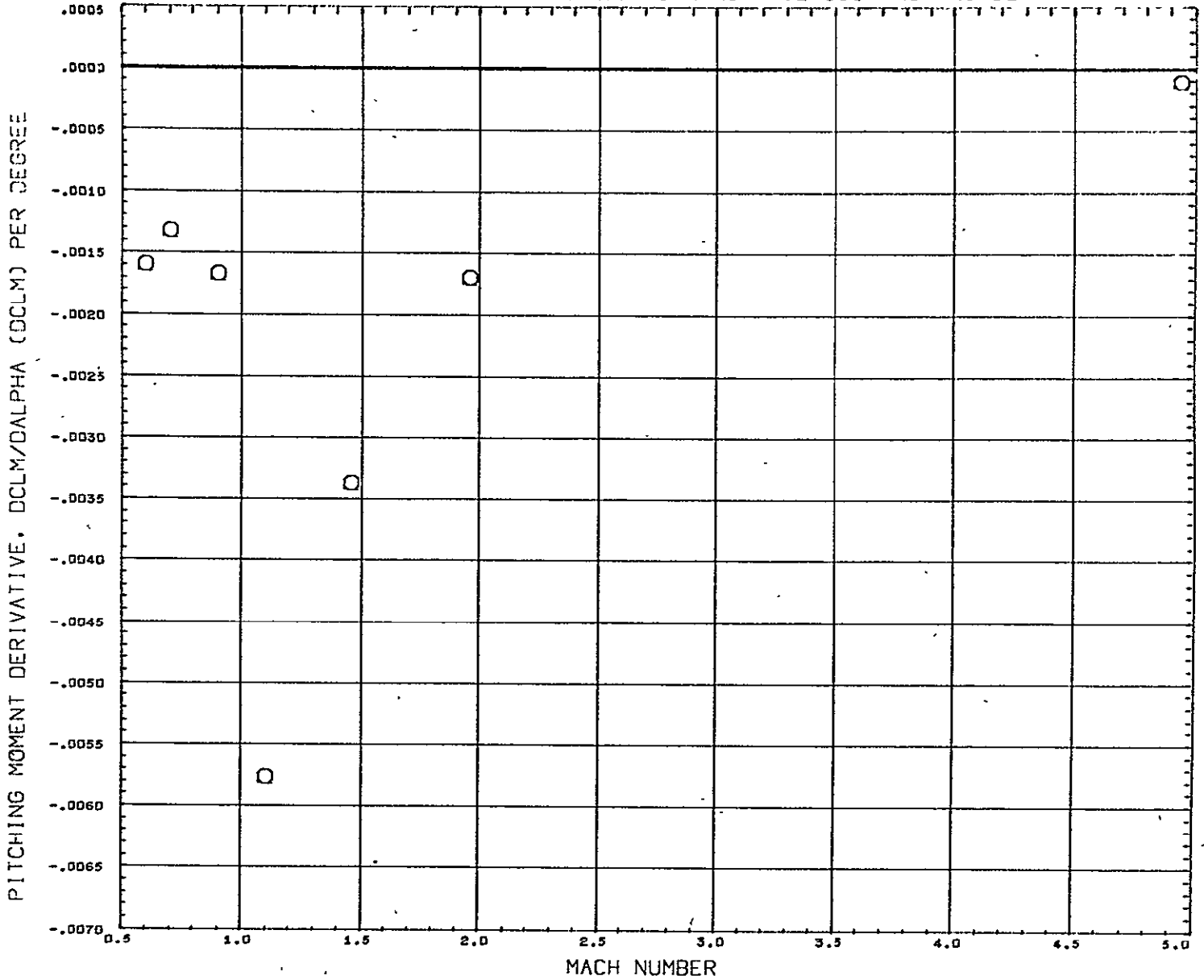


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YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE #6TV#E1G

# LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, VERSUS MACH NUMBER

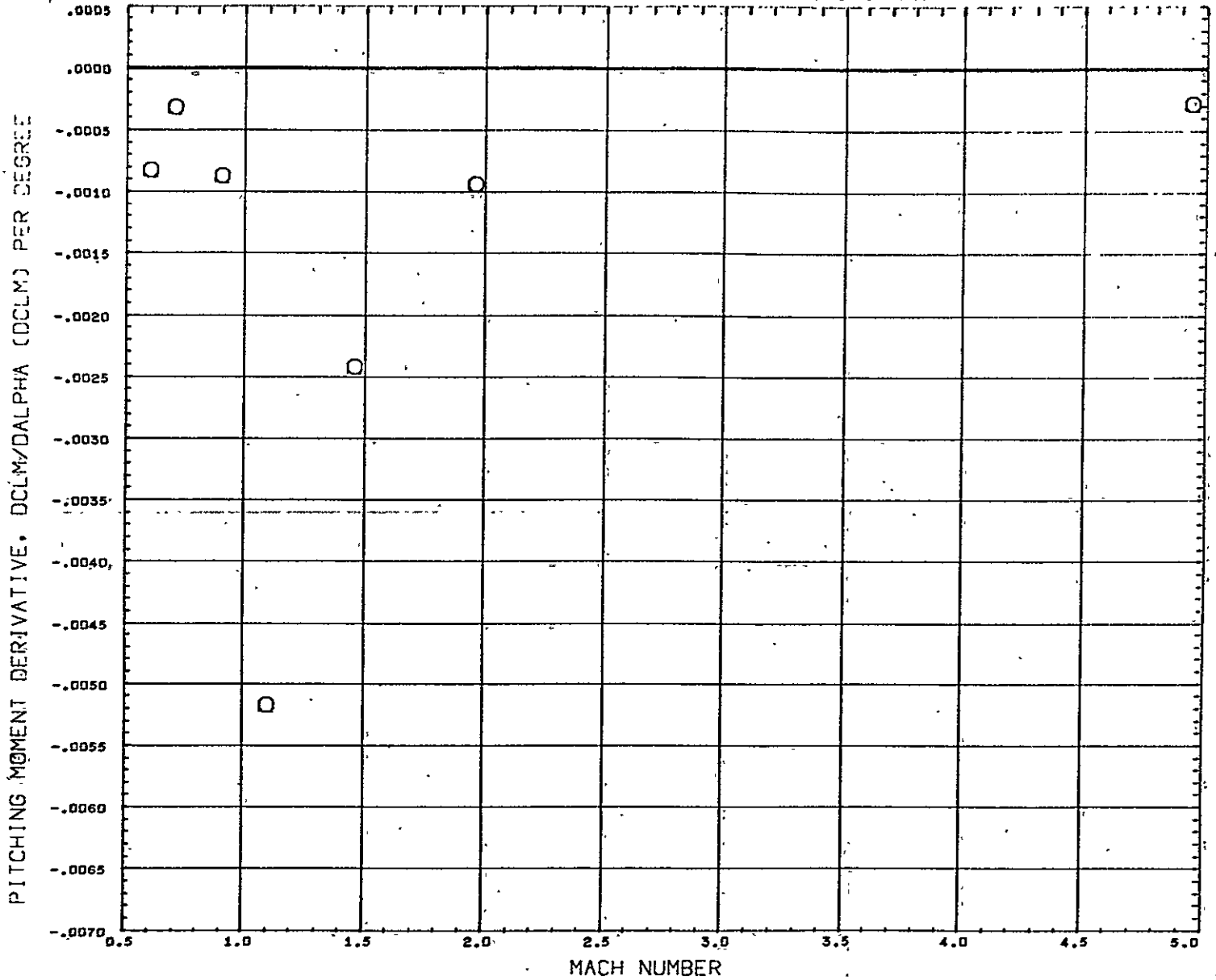


SYMBOL	ALPHA	PARAMETRIC VALUES			
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XHRP	3.9950	INCHES
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DATA HIST. CODE \*GTV\*EIG

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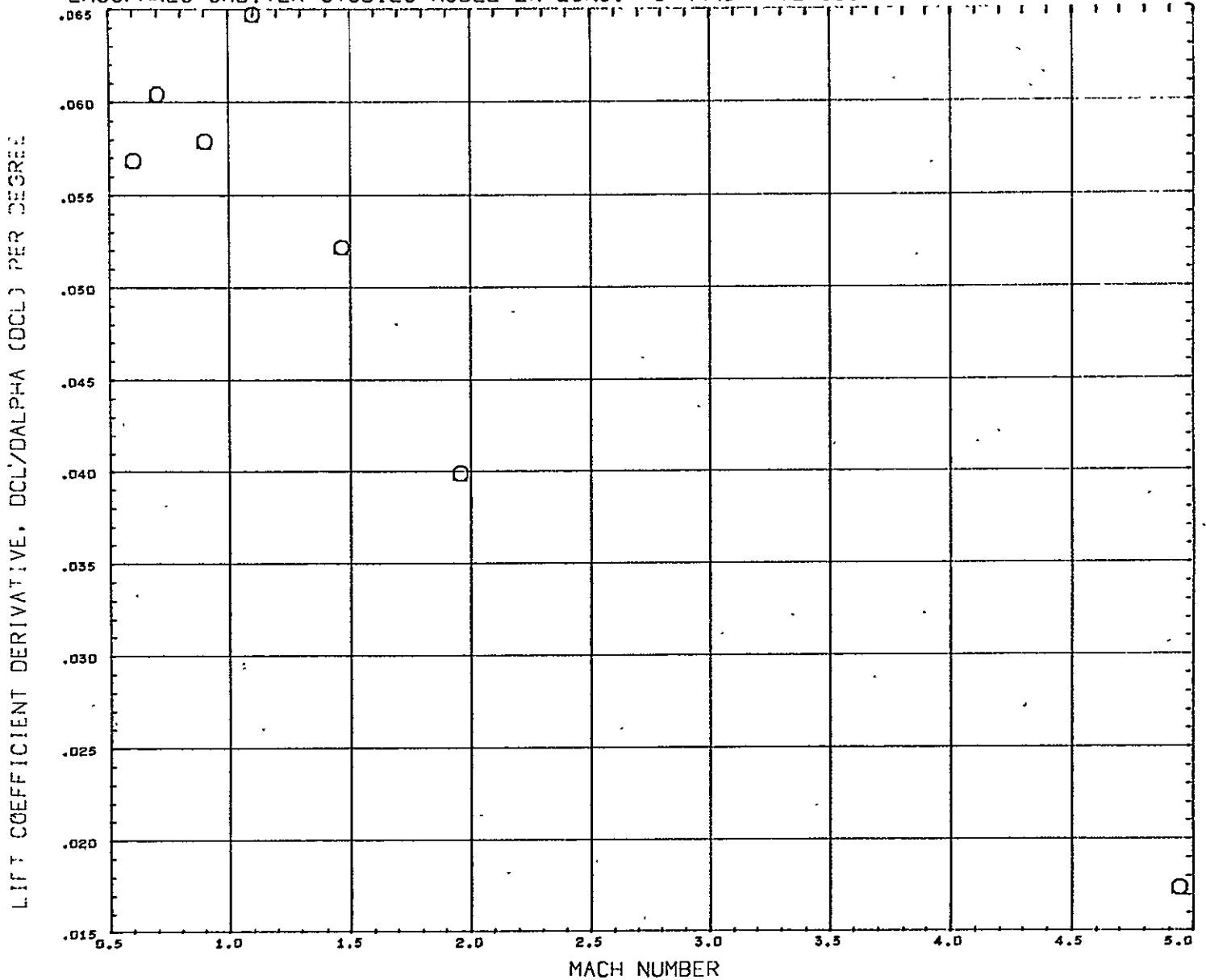


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		RUDER2	0.000	STING	4.000

REFERENCE INFORMATION		
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YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
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DATA HIST. CODE #GTV#EIG

LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, VERSUS MACH NUMBER



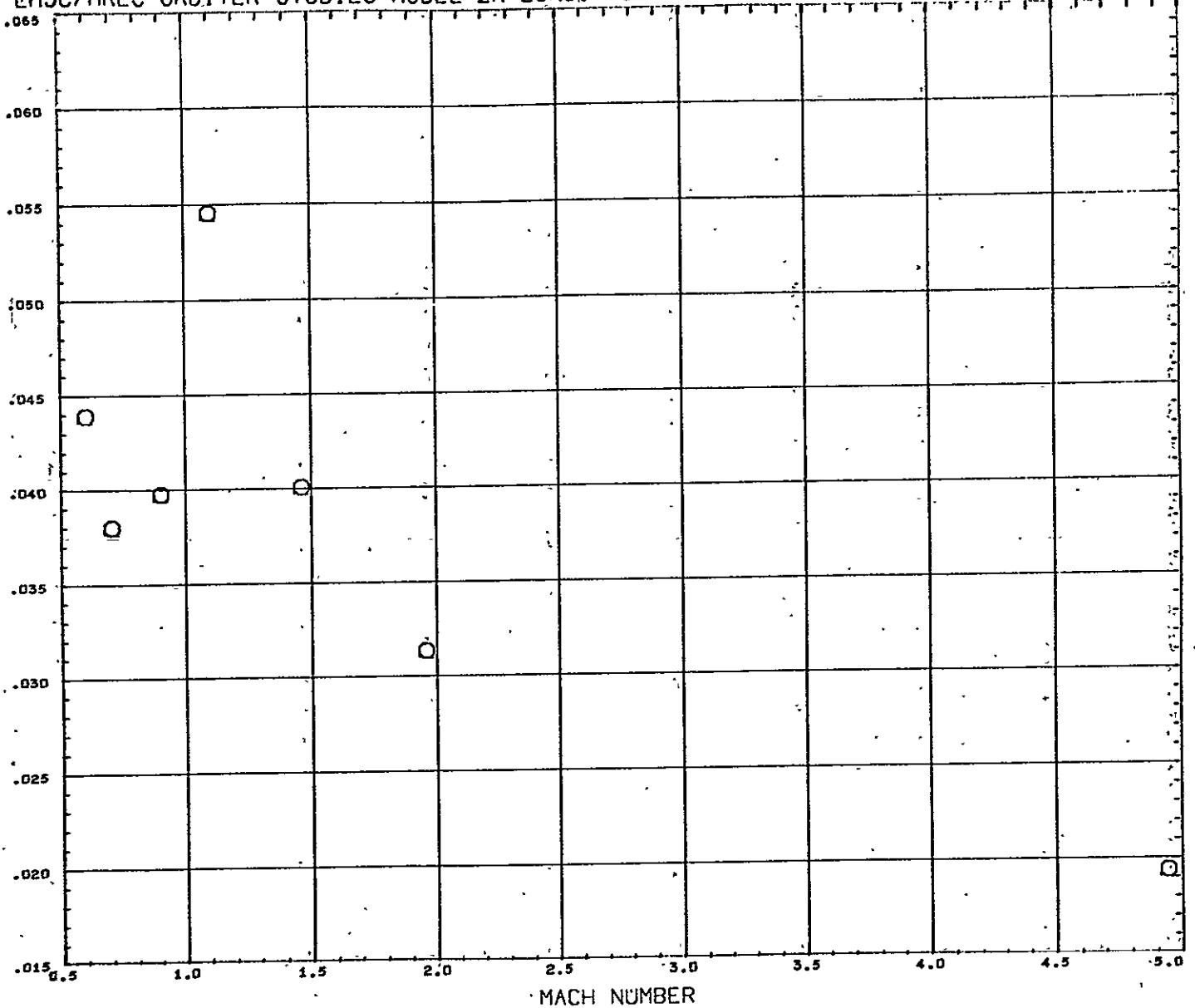
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SCALE	0.0033	SCALE

DATA HIST. CODE #GIV#E16

MSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT. CHARACT. VERSUS MACH NUMBER

LIFT COEFFICIENT DERIVATIVE,  $dC_L/d\alpha$  (DCL) PER DEGREE



SYMBOL	ALPHA	PARAMETRIC VALUES			
○	10.000	BETA	0.000	ELEVN3	0.000
		RUDER2	0.000	STING	4.000

REFERENCE INFORMATION		
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LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE \*#GIV#EIG

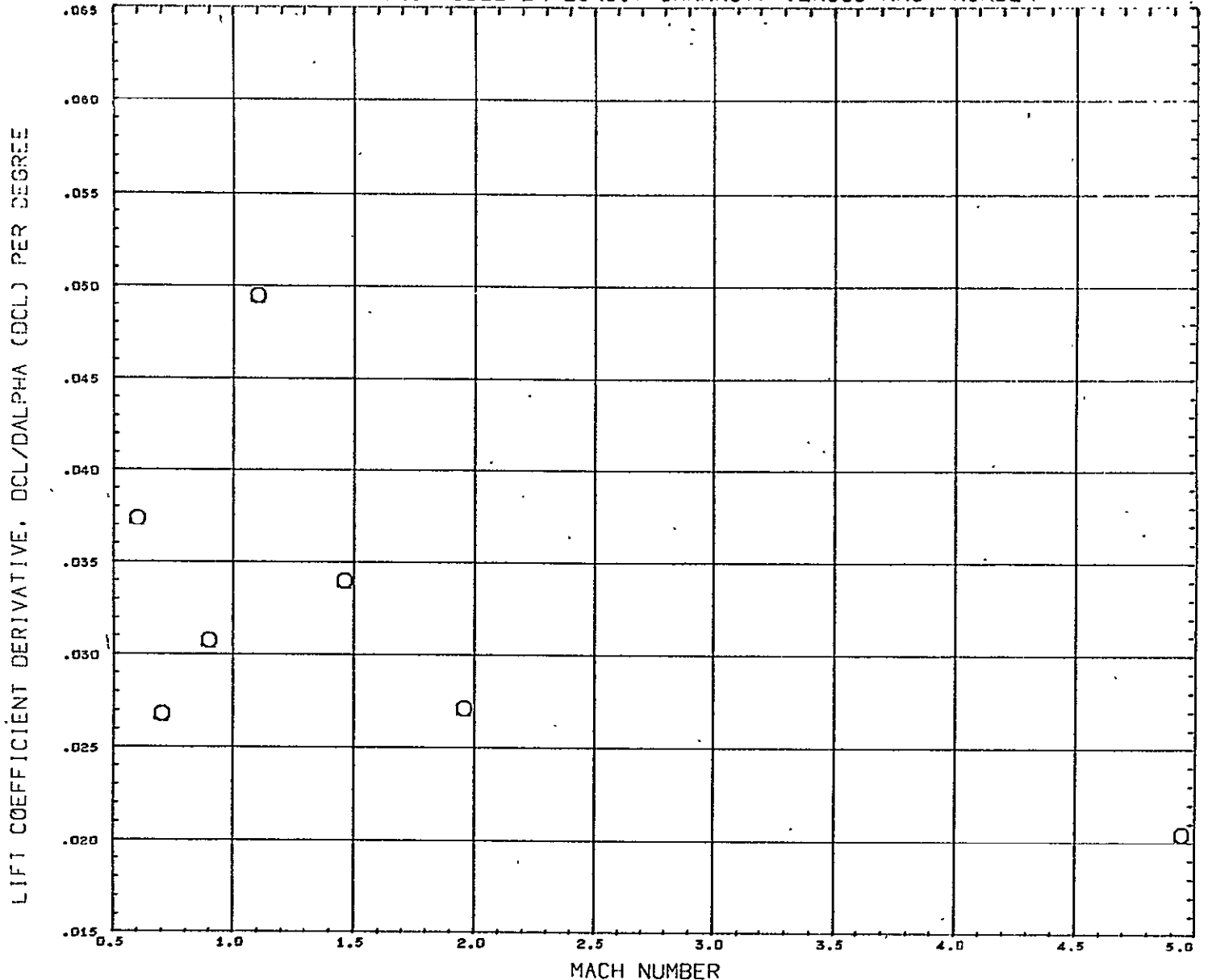
MSFC TWT 498 MSFC/LMSC ORBITER

B2W2V4D2E3R2 (F41.01S), 08 FEB 72

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LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, VERSUS MACH NUMBER

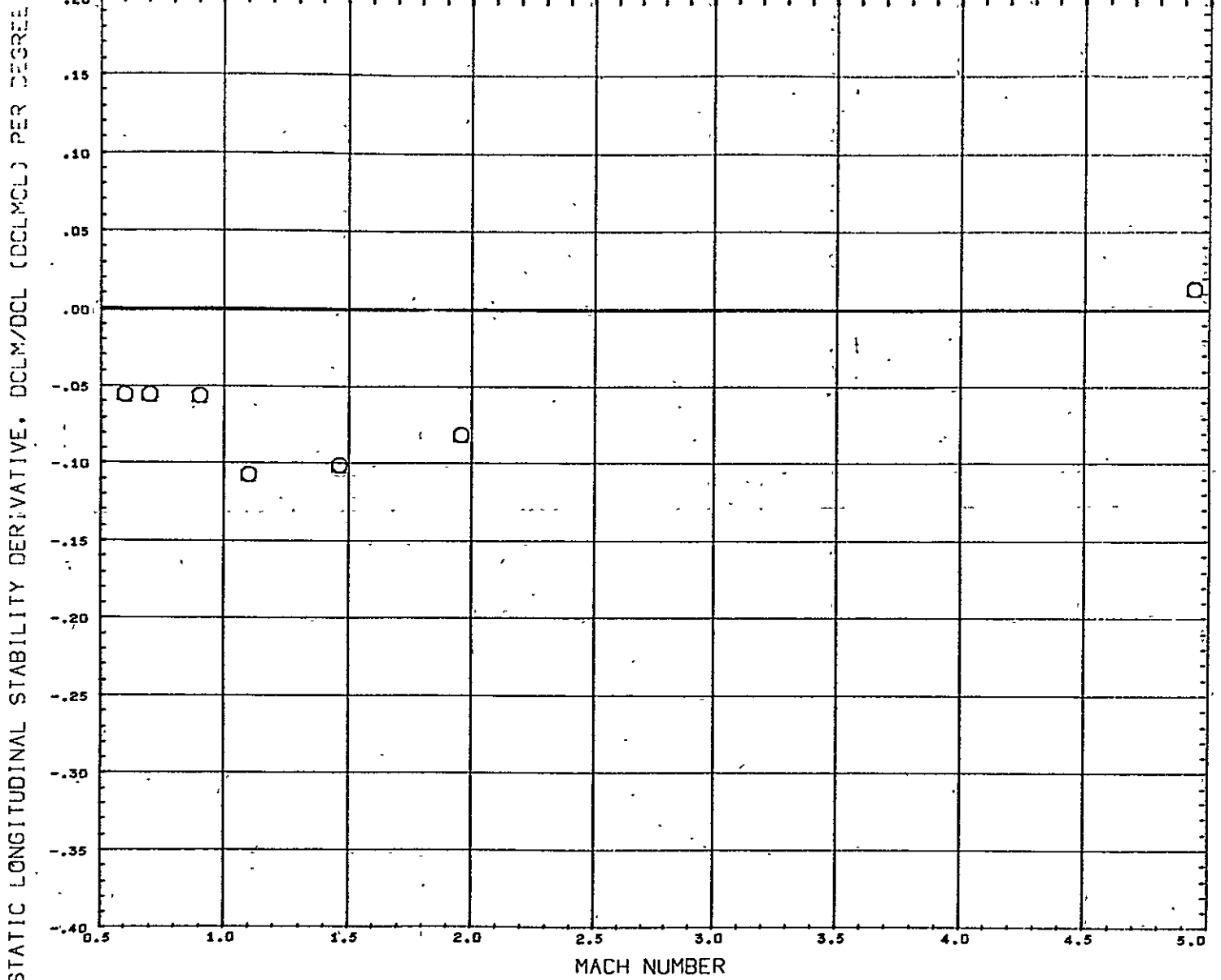


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		RUDER2	0.000	STING	4.000

REFERENCE INFORMATION		
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YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE #GIV#E16

LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT. VERSUS MACH NUMBER



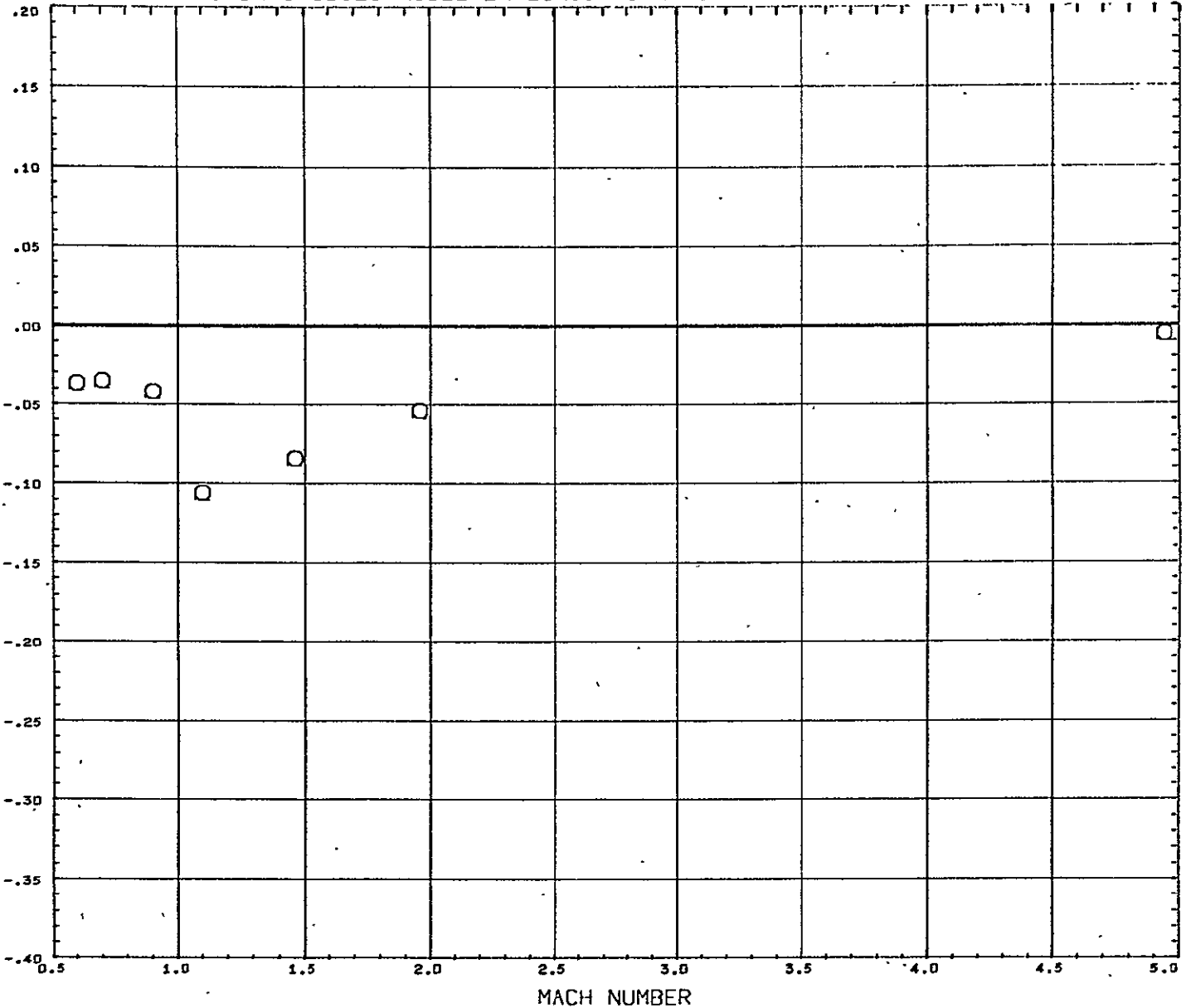
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REFERENCE INFORMATION  
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 SCALE 0.0033 SCALE

DATA HIST. CODE #GJV#EIGR

LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, VERSUS MACH NUMBER

STATIC LONGITUDINAL STABILITY DERIVATIVE: DCLM/DCL (DCLM/DCL) PER DEGREE



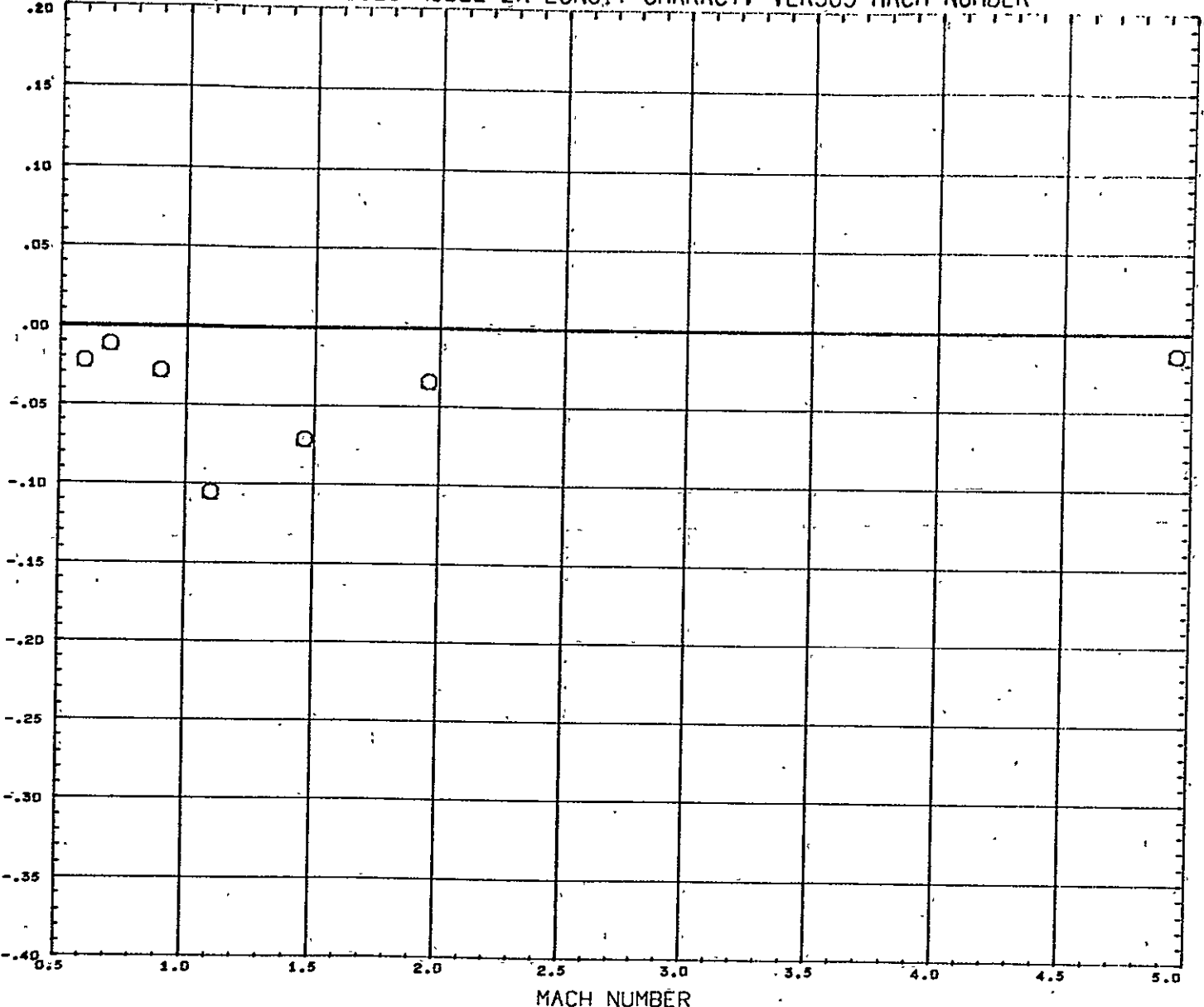
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		RUCER2	0.000 STING
			4.000

REFERENCE INFORMATION		
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ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE #GTV#E1GR

LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, VERSUS MACH NUMBER

STATIC LONGITUDINAL STABILITY DERIVATIVE, DCLM/DCL (DCLMCL) PER DEGREE

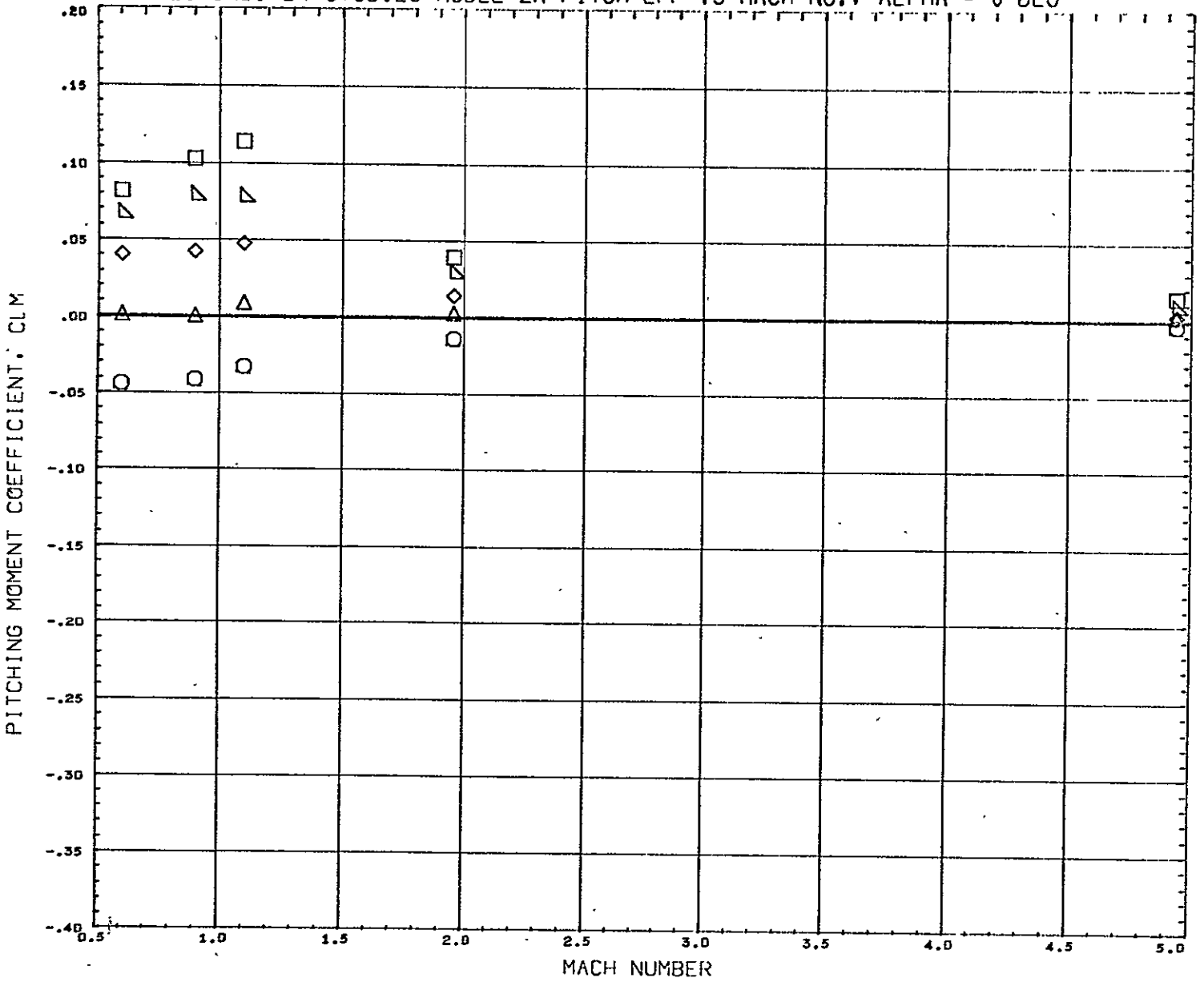


SYMBOL ○ ALPHA 15.000 BETA 0.000 RUDER2 0.000  
 PARAMETRIC VALUES ELEVN3 0.000 STING 4.000

REFERENCE INFORMATION  
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 SCALE 0.0033 SCALE

DATA HIST. CODE #GTV#E1GR

LMSC/HREC ORBITER STUDIES-MODEL 2A-PITCH EFF VS MACH NO., ALPHA = 0 DEG



SYMBOL ELEVNS

10.000  
 0.000  
 - 10.000  
 - 20.000  
 - 30.000

PARAMETRIC VALUES

BETA 0.000 ALPHA 0.000

RUDER2 0.000 STING 4.000

DATA HIST. CODE #GTV#EI#B

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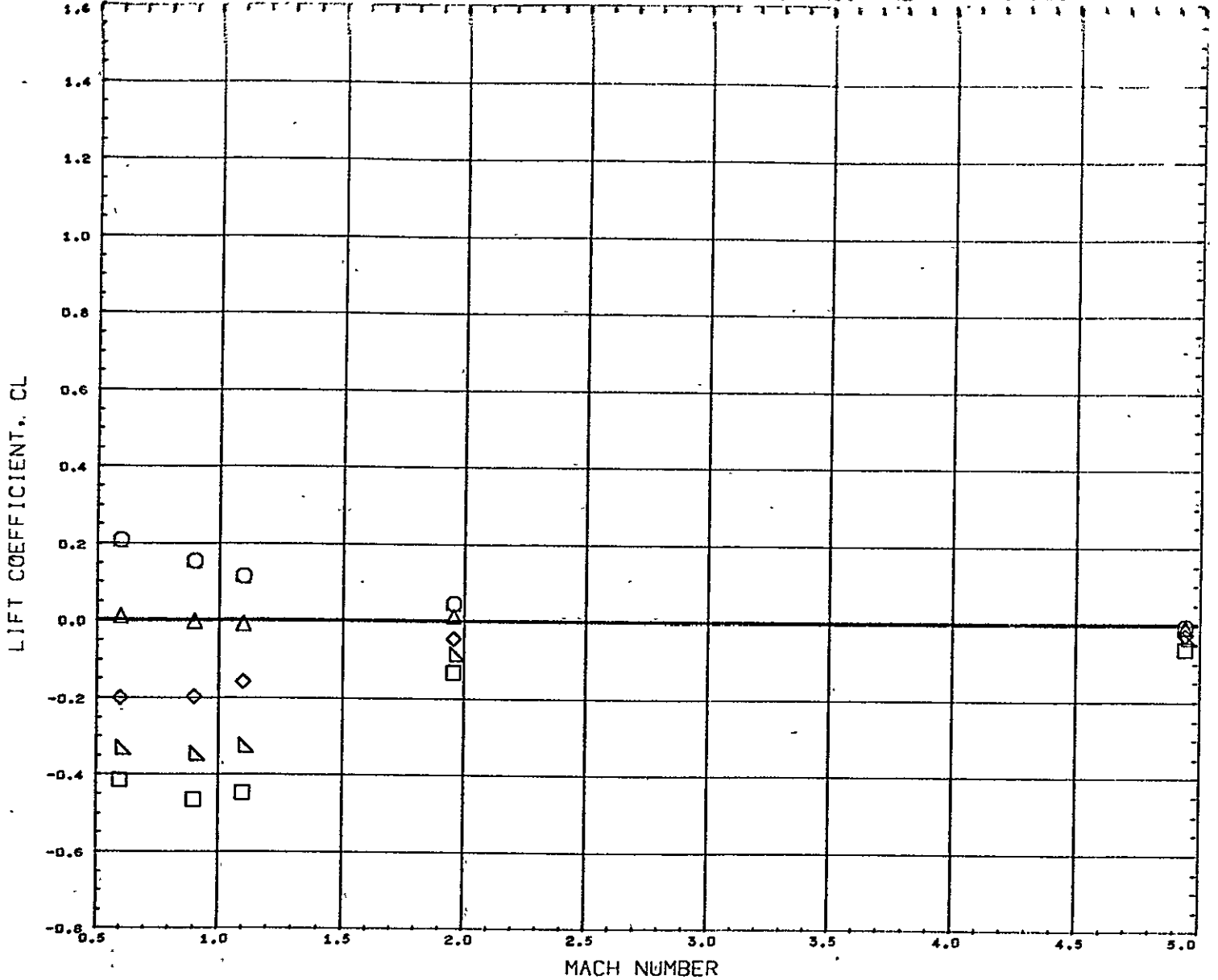
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YMRP 0.0000 INCHES

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SCALE 0.0033 SCALE

LMSC/HREC ORBITER STUDIES-MODEL 2A-PITCH EFF VS MACH NO., ALPHA = 0 DEG

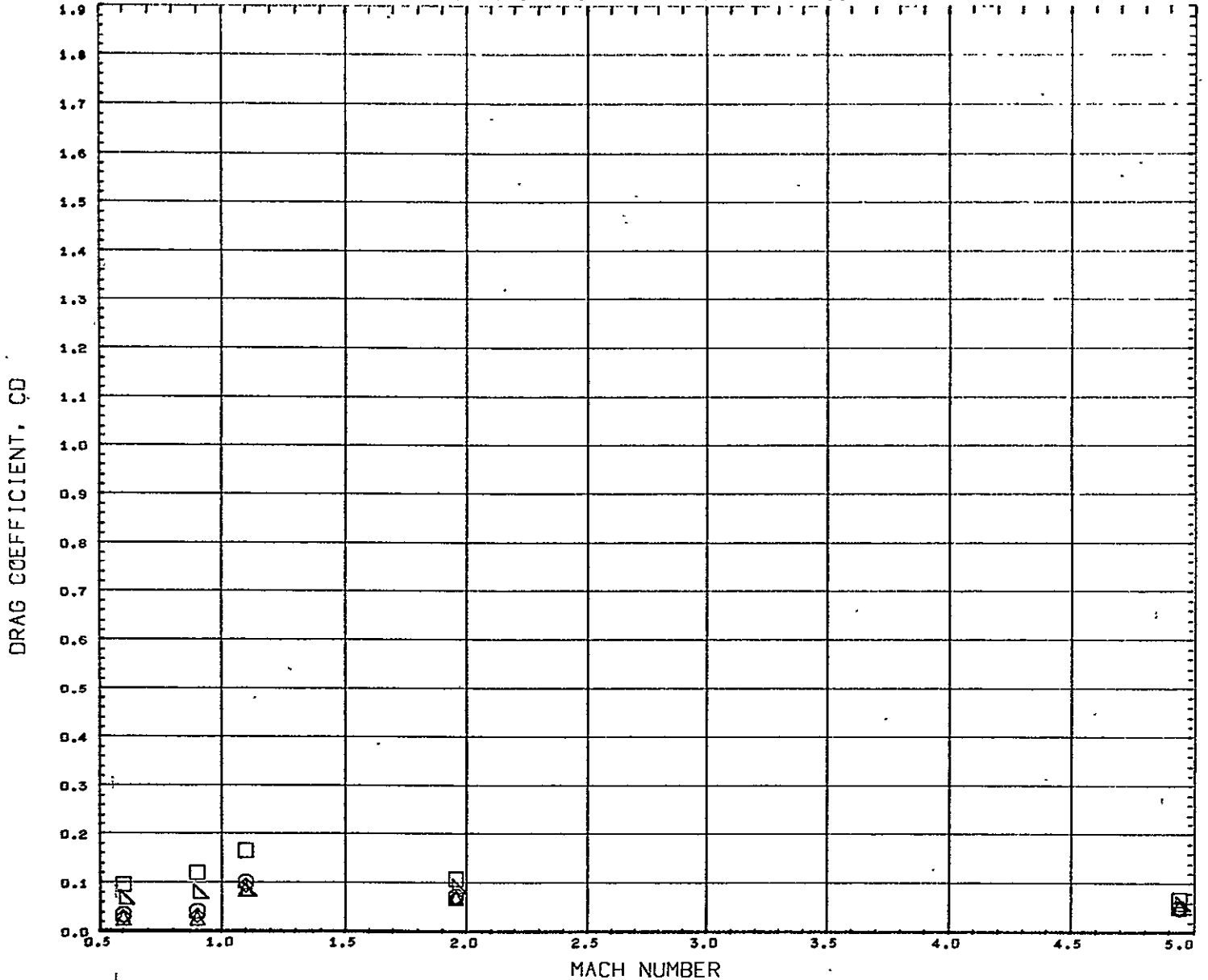


SYMBOL ELEVNS PARAMETRIC VALUES  
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 △ 0.000 RUDER2 0.000 STING 4.000  
 ◇ -10.000  
 □ -20.000  
 ▽ -30.000

DATA HIST. CODE #GJV#E1#B

REFERENCE INFORMATION  
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 YMRP 0.0000 INCHES  
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 SCALE 0.0033 SCALE

LMSC/HREC ORBITER STUDIES-MODEL 2A-PITCH EFF VS MACH NO., ALPHA = 0 DEG

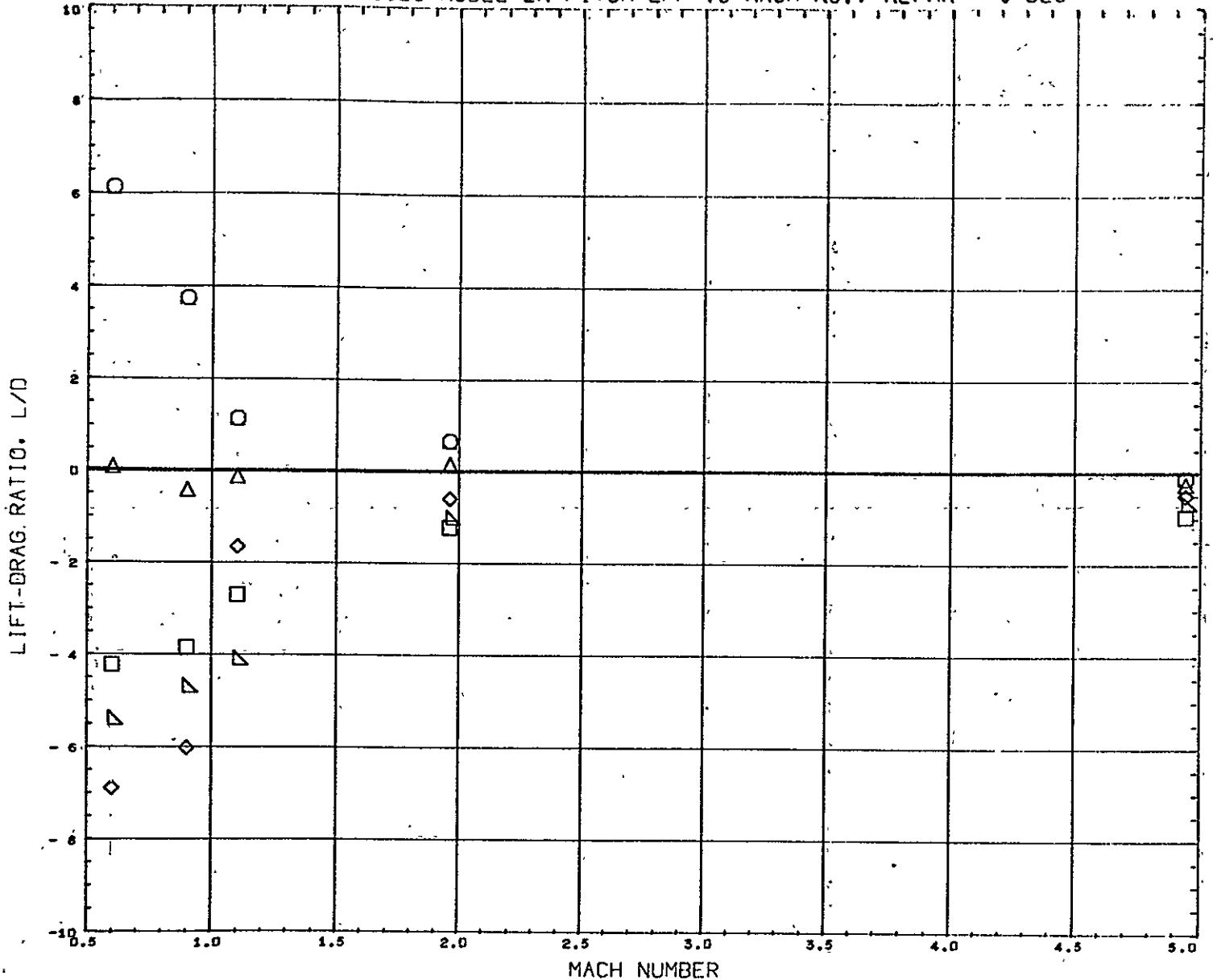


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◇	0.000	RUDER2	0.000	STING	4.000
◇	- 10.000				
◇	- 20.000				
◇	- 30.000				

REFERENCE INFORMATION		
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XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE #GTV#EI#B

LMSC/HREC ORBITER STUDIES-MODEL 2A-PITCH EFF VS MACH NO., ALPHA = 0 DEG

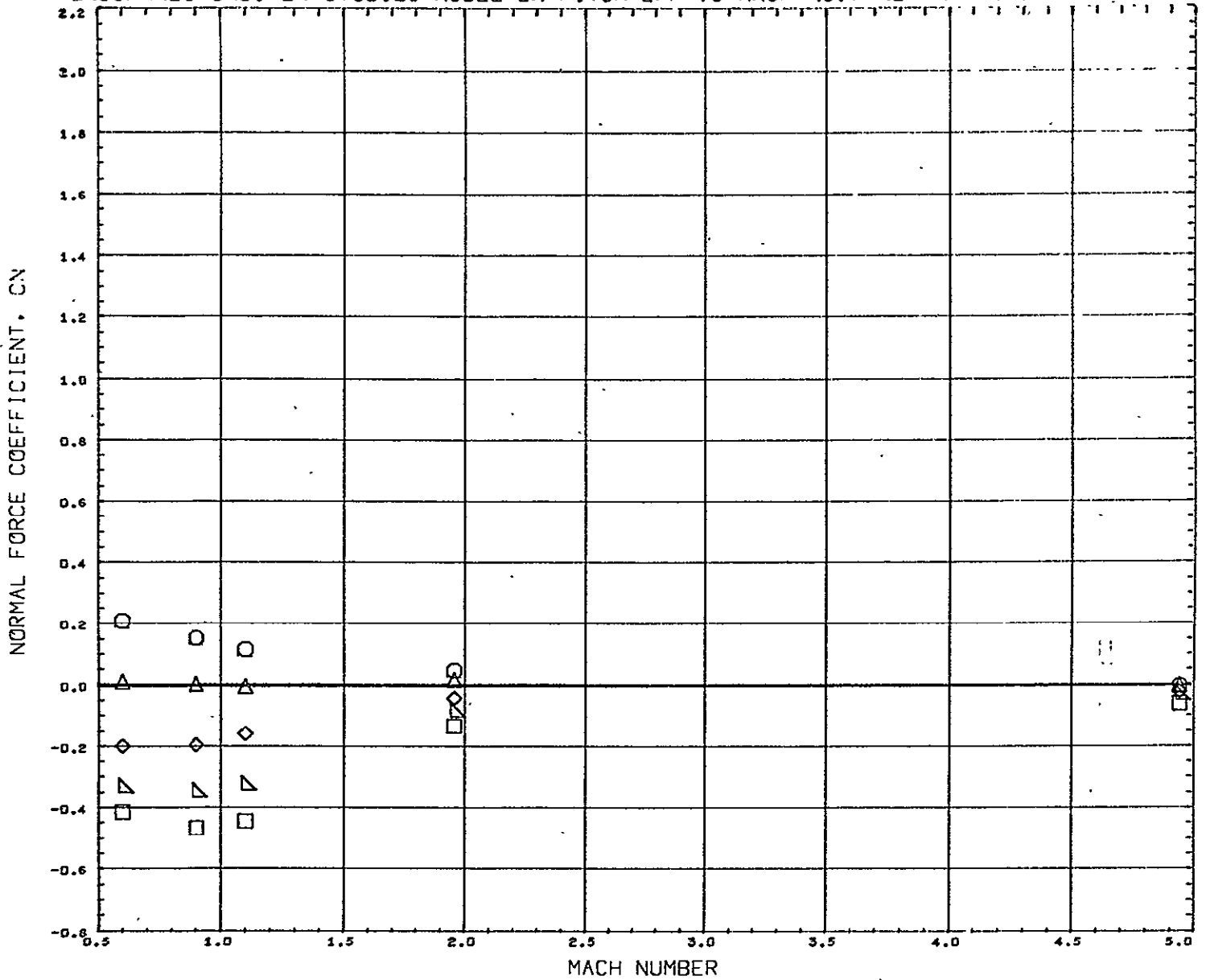


SYMBOL	ELEVNS	PARAMETRIC VALUES			
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△	0.000	RUDER2	0.000	STING	4.000
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□	-20.000				
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		DATA HIST. CODE	#6TV#EI#B		

REFERENCE INFORMATION		
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XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE



LMSC/HREC ORBITER STUDIES-MODEL 2A-PITCH EFF VS MACH NO., ALPHA = 0 DEG

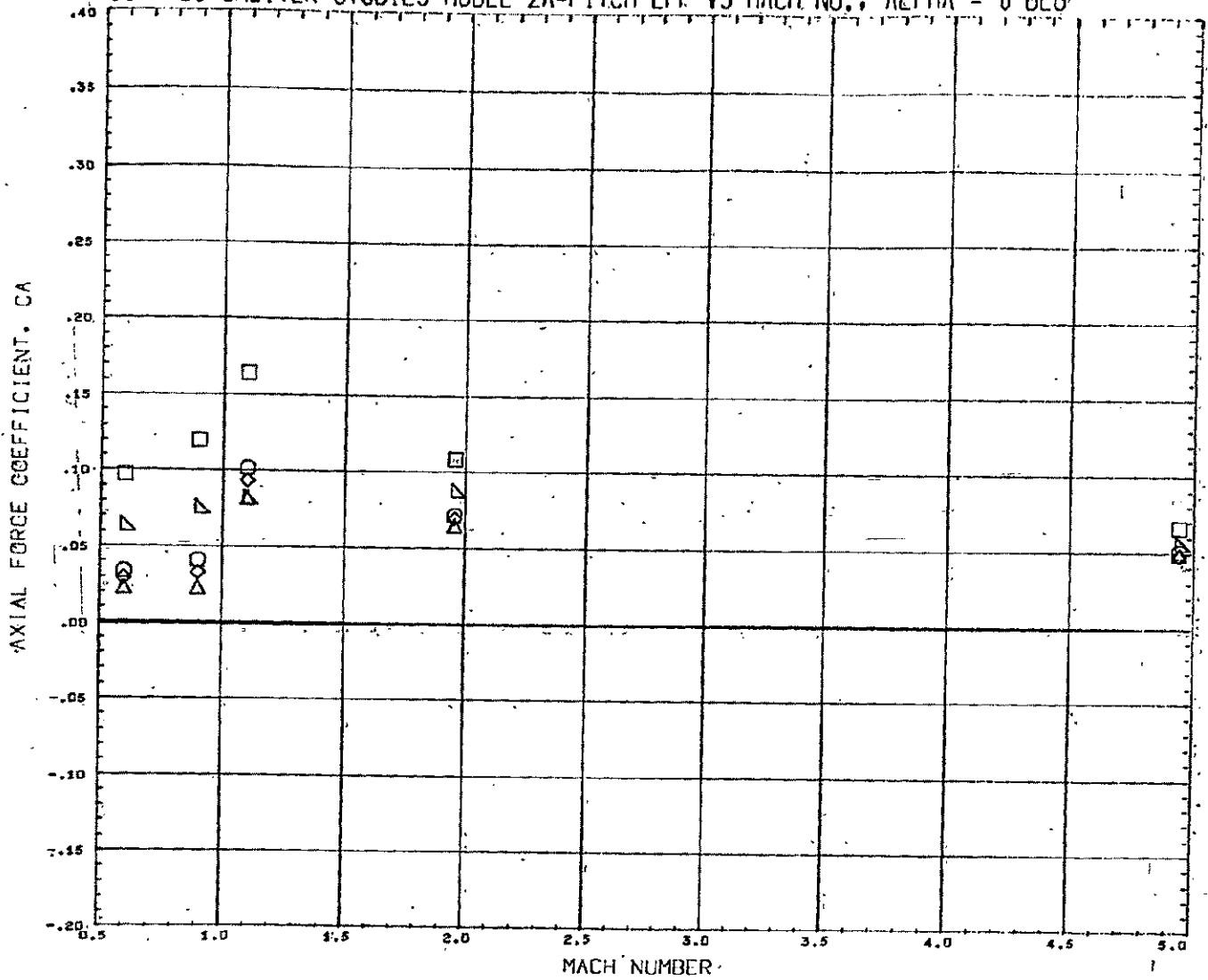


SYMBOL	ELEVNS	BETA	PARAMETRIC VALUES	ALPHA
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△	0.000	RUDER2	0.000	4.000
◇	-10.000			
□	-20.000			
▽	-30.000			

REFERENCE INFORMATION	
SREF	9.0250 SQ. IN
LREF	6.1420 INCHES
BREF	6.1420 INCHES
XMRP	3.9950 INCHES
YMRP	0.0000 INCHES
ZMRP	0.1350 INCHES
SCALE	0.0033 SCALE

DATA HIST. CODE #GTV#E1#B

LMSC/HREC ORBITER STUDIES-MODEL 2A-PITCH EFF VS MACH NO., ALPHA = 0 DEG



SYMBOL	ELEV3	PARAMETRIC VALUES			
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△	0.000	RUDER2	0.000	STING	4.000
○	-10.000				
◇	-20.000				
▽	-30.000				

REFERENCE INFORMATION		
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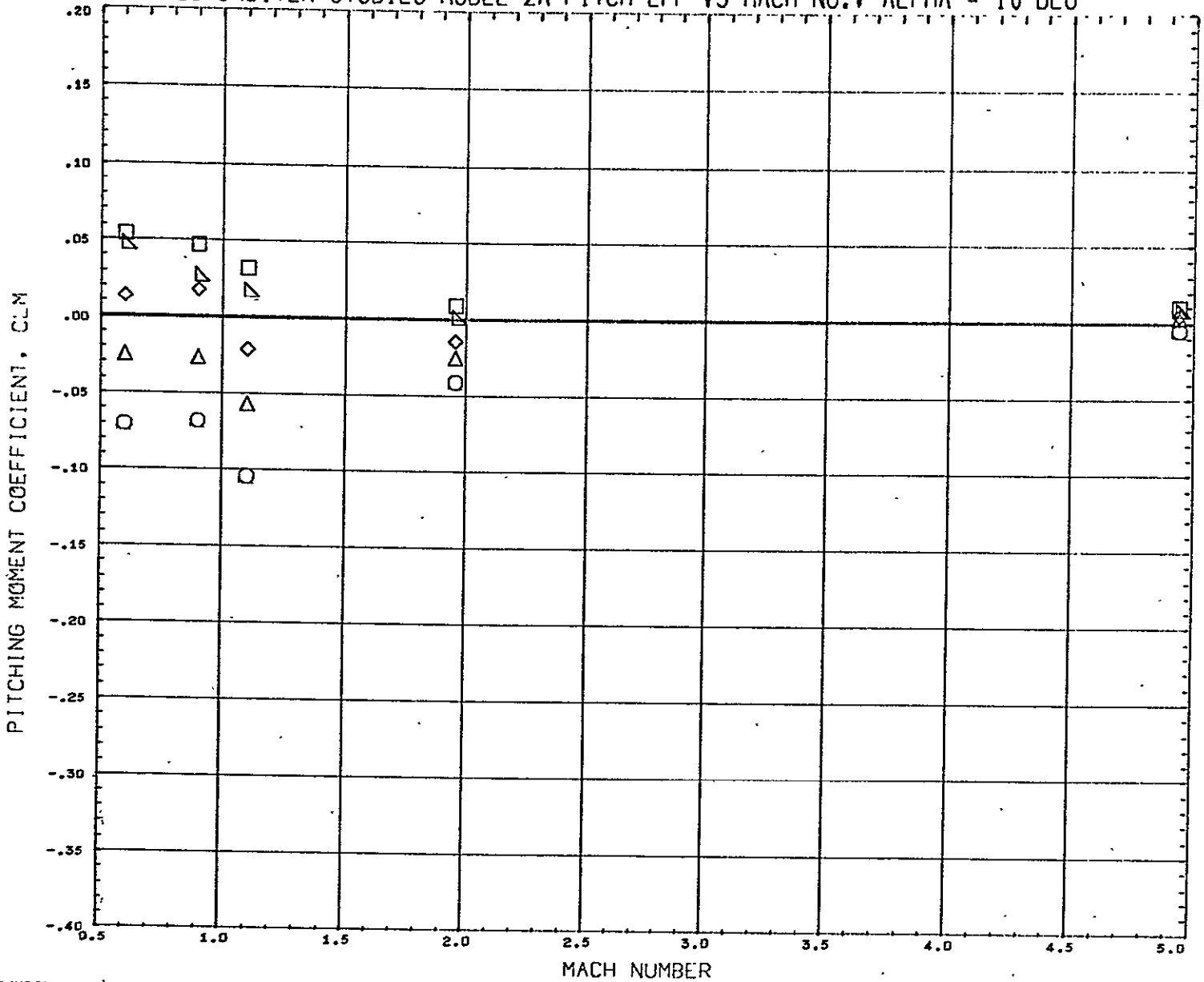
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MSFC TWT 498 MSEC/LMSC ORBITER

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LMSC/HREC ORBITER STUDIES-MODEL 2A-PITCH EFF VS MACH NO., ALPHA = 10 DEG

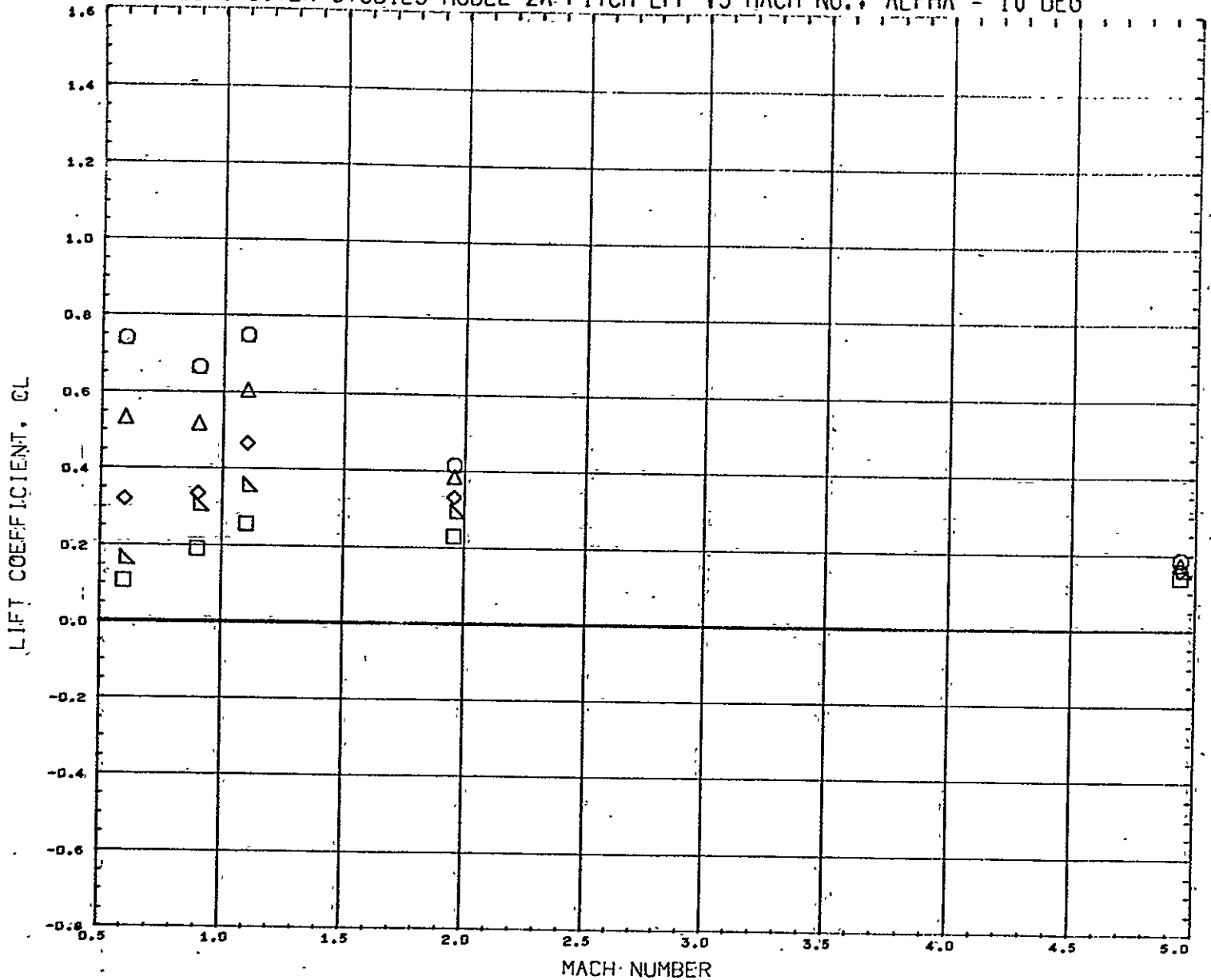


SYMBOL	ELEVNS	PARAMETRIC VALUES			
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DATA HIST. CODE #GTV#EI#B#B

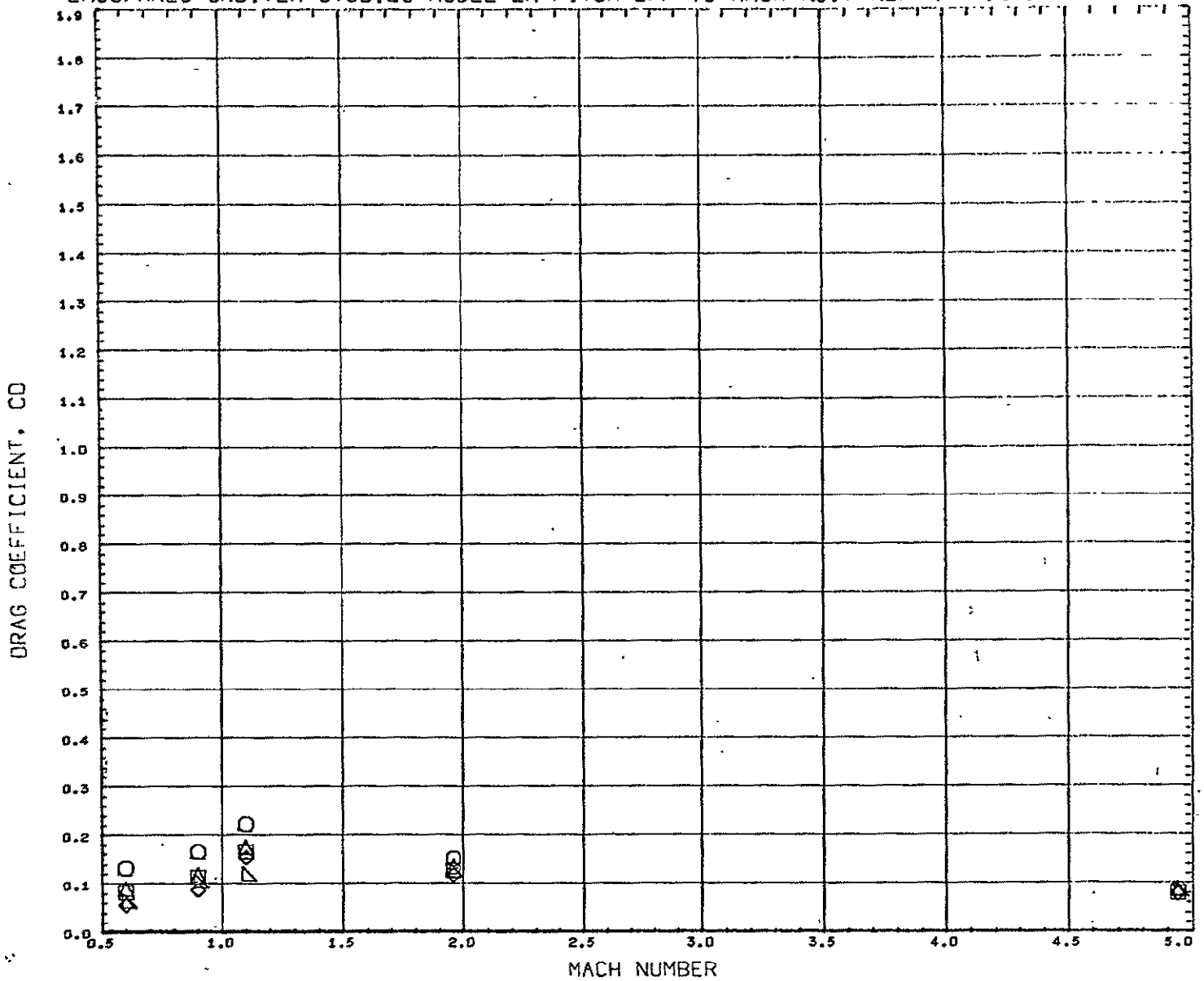
LMSC/HREC ORBITER STUDIES-MODEL 2A-PITCH EFF VS MACH NO., ALPHA = 10 DEG



SYMBOL	ELEVN3	PARAMETRIC VALUES			
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◇	10.000				
□	20.000				
	30.000				
DATA HIST. CODE		*GTV*EI*B*B			

REFERENCE INFORMATION		
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SCALE	0.0033	SCALE

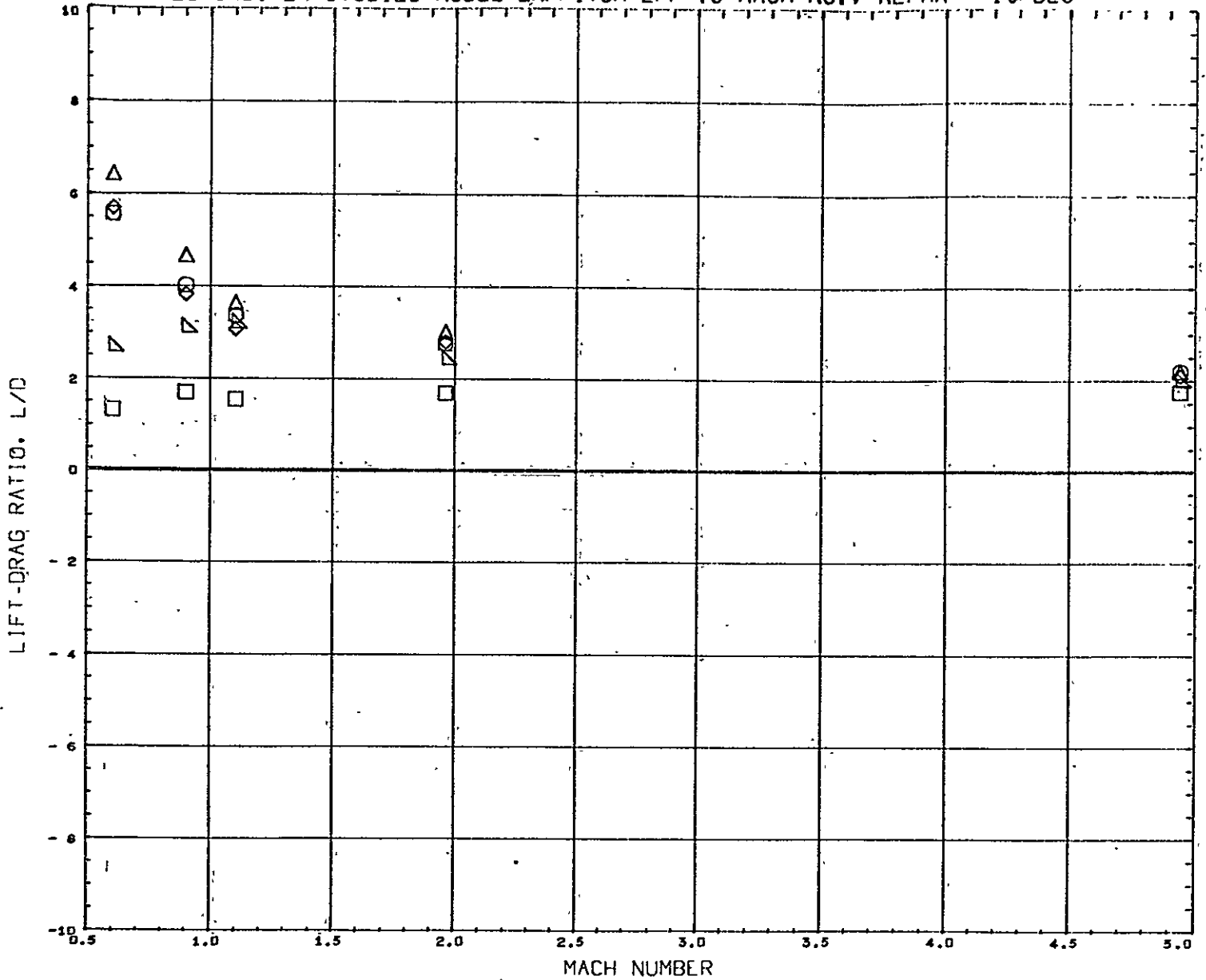
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SYMBOL		ELEVNS	PARAMETRIC VALUES			REFERENCE INFORMATION			
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							ZMRP	0.1350	INCHES
							SCALE	0.0033	SCALE

DATA HIST. CODE \*GTV\*EI\*B\*B

LMSC/HREC ORBITER STUDIES-MODEL 2A-PITCH EFF VS MACH NO., ALPHA = 10 DEG

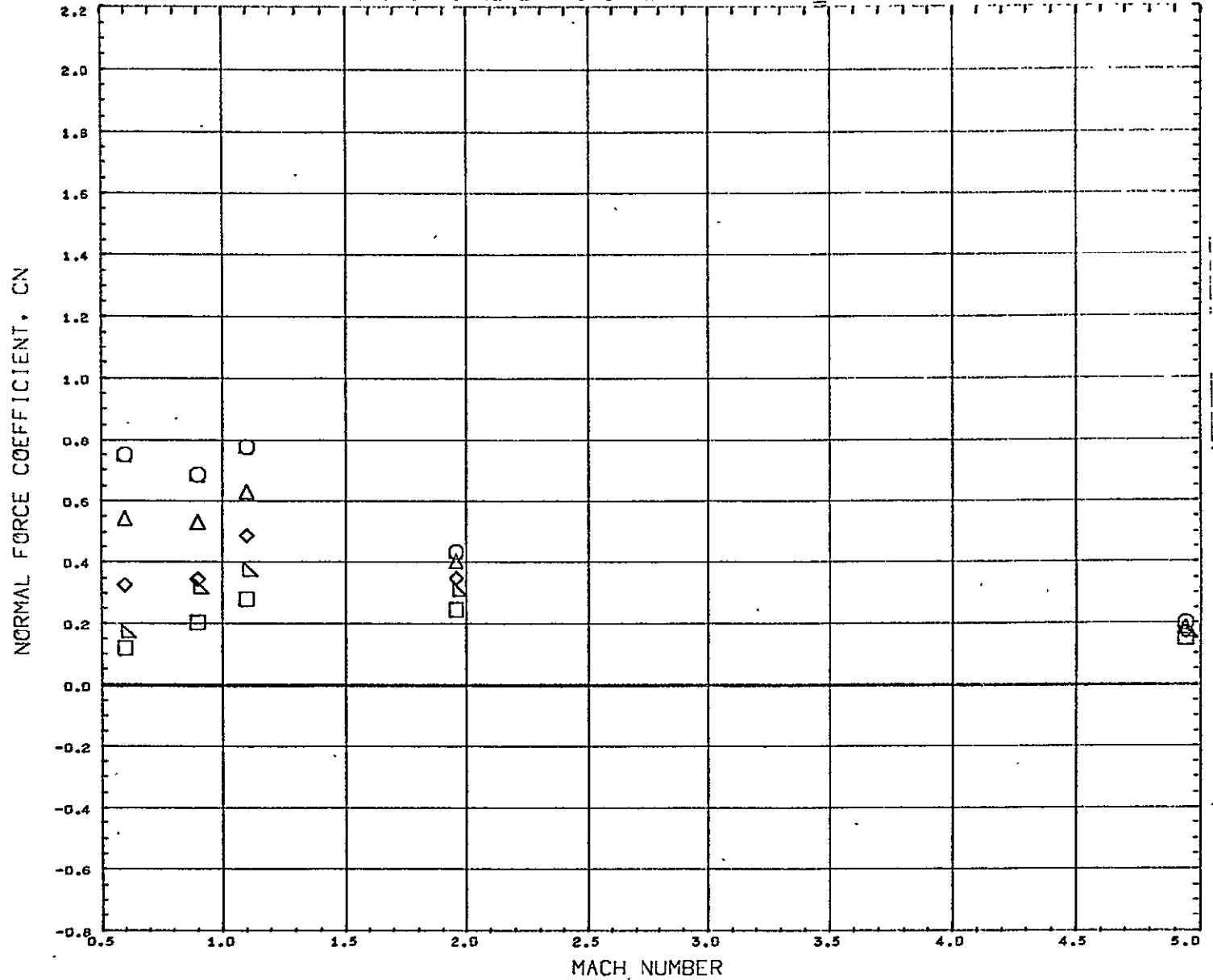


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DATA HIST. CODE \*GTV\*EI#B#B

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LMSC/HREC ORBITER STUDIES-MODEL 2A-PITCH EFF VS MACH NO., ALPHA = 10 DEG

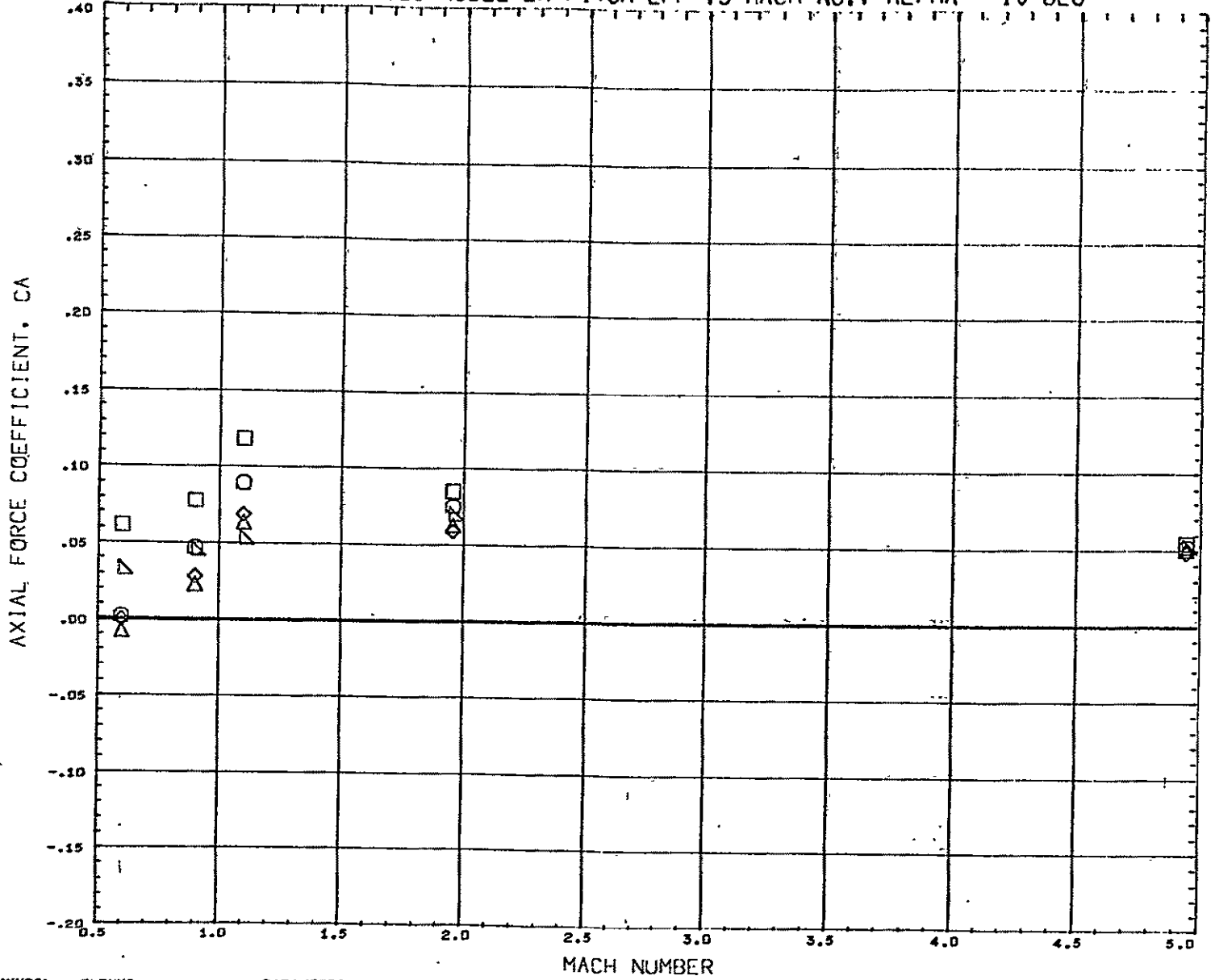


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△	0.000	RUDER2	0.000	STING	4.000
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YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE #GTV#EI#B#D

LMSC/HREC ORBITER STUDIES-MODEL 2A-PITCH EFF VS MACH NO., ALPHA = 10 DEG



SYMBOL ELEVNS PARAMETRIC VALUES

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-	20.000				
-	30.000				

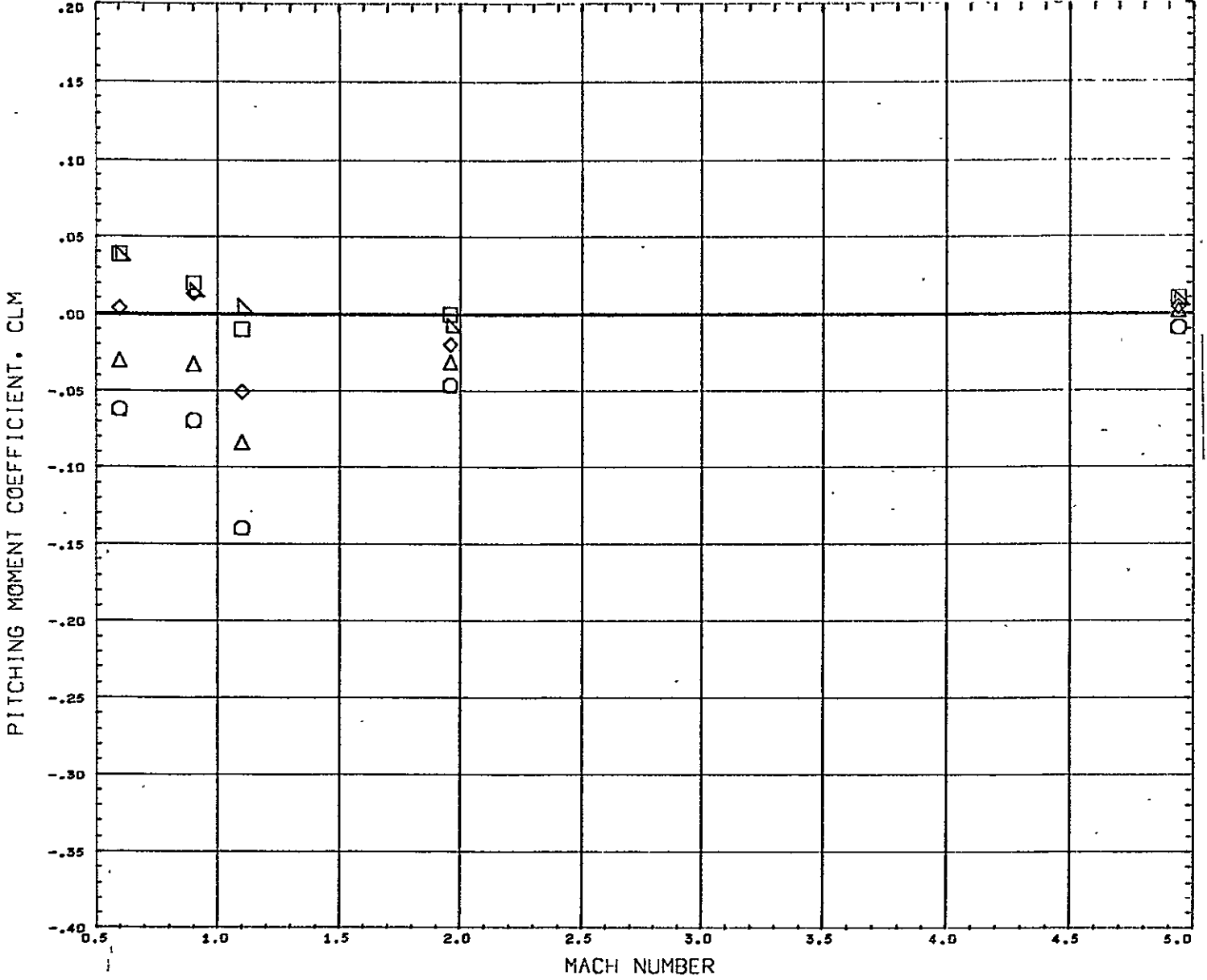
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SCALE	0.0033	SCALE



LMSC/HREC ORBITER STUDIES-MODEL 2A-PITCH EFF VS MACH NO., ALPHA = 15 DEG

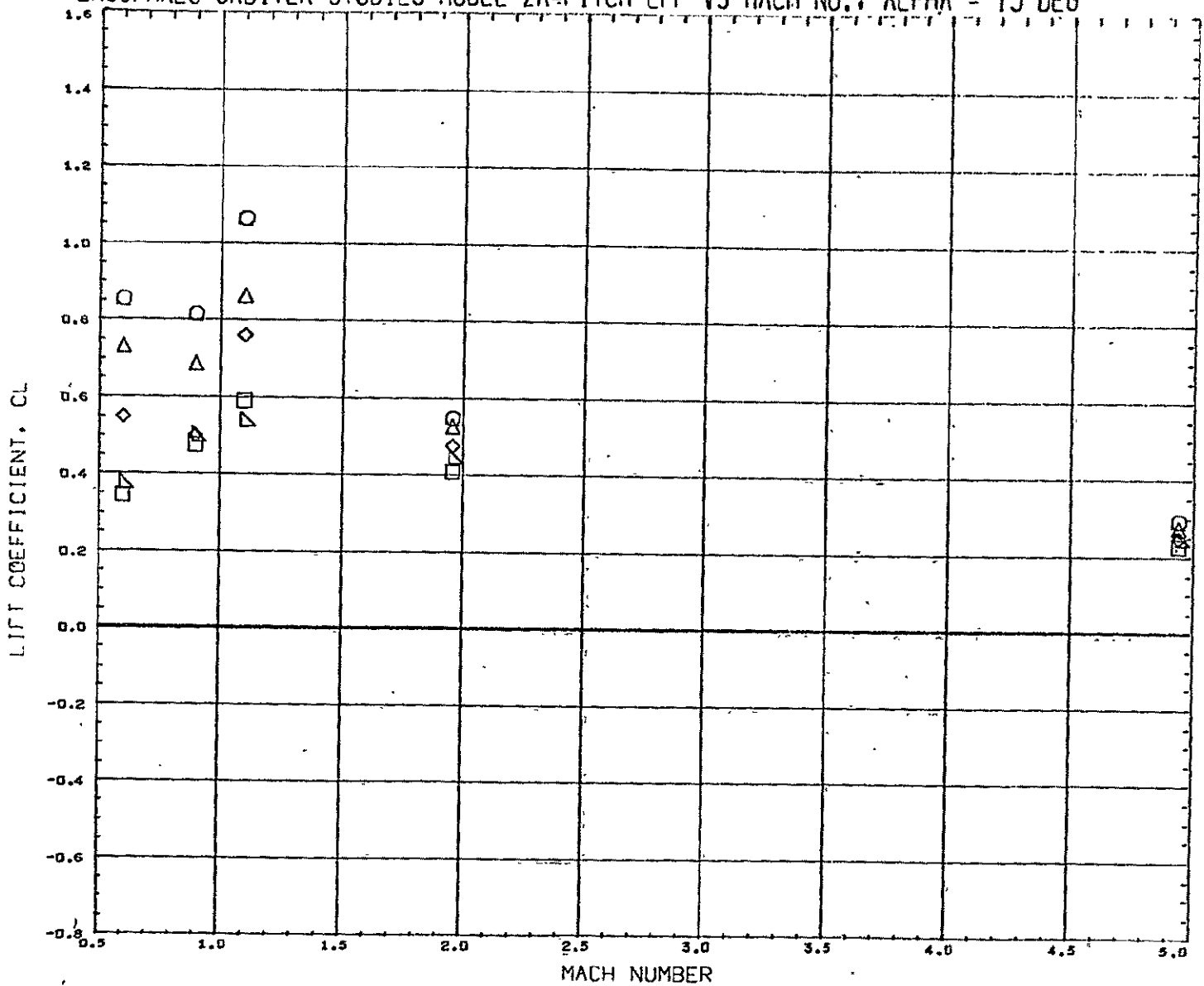


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○	-20.000				
◻	-30.000				

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SCALE	0.0033	SCALE

DATA HIST. CODE #GTV#EI#B#B#B

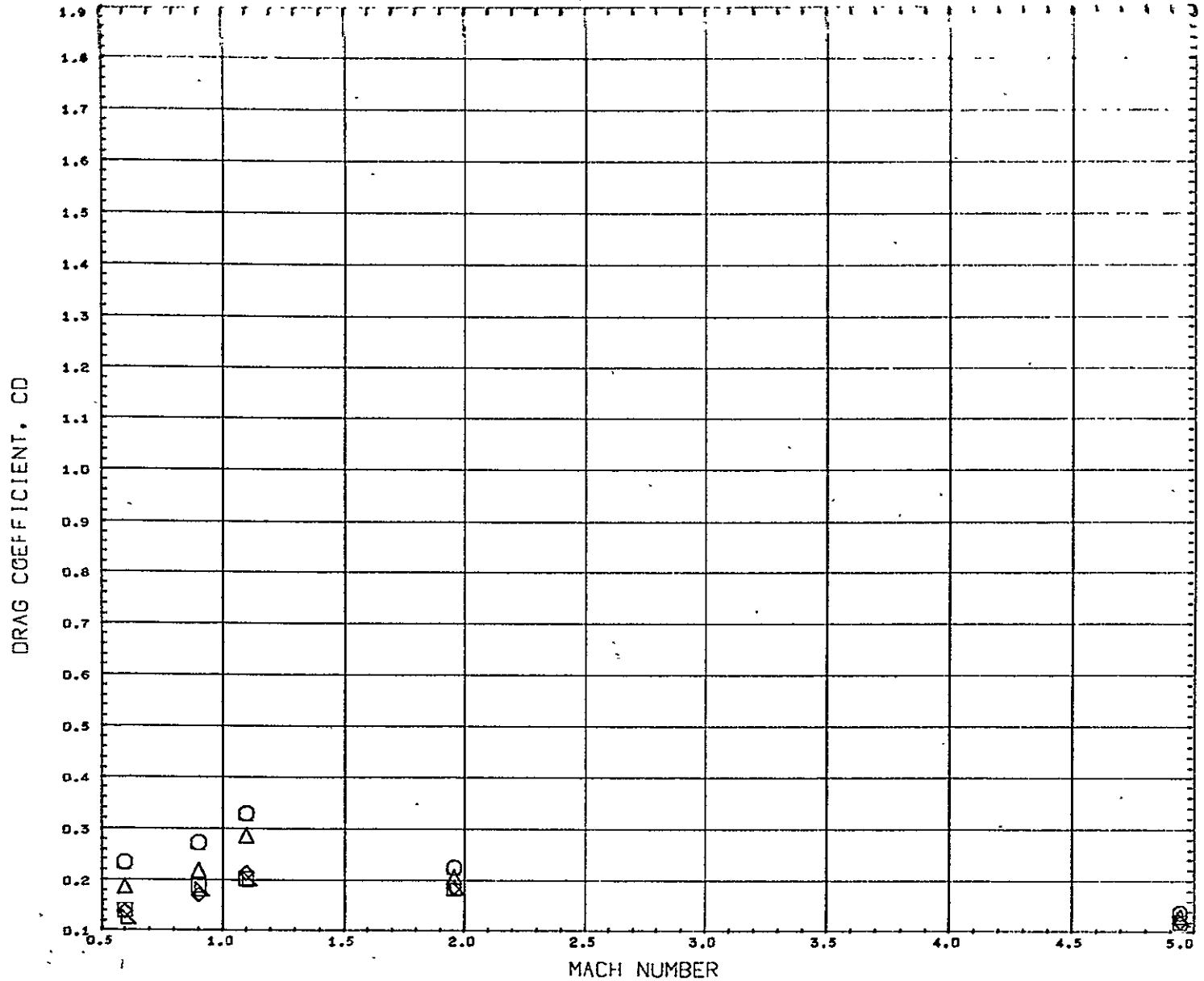
LMSC/HREC ORBITER STUDIES-MODEL 2A-PITCH EFF VS MACH NO., ALPHA = 15 DEG



SYMBOL ELEVNS  
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 0.000 BETA  
 -10.000 RUDER2  
 -20.000  
 -30.000  
 PARAMETRIC VALUES  
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 0.000 STING 4.000  
 DATA HIST. CODE #GTY#EI#B#B#B

REFERENCE INFORMATION  
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 BREF 6.1420 INCHES  
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 YMRP 0.0000 INCHES  
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 SCALE 0.0033 SCALE

LMSC/HREC ORBITER STUDIES-MODEL 2A-PITCH EFF VS MACH NO., ALPHA = 15 DEG

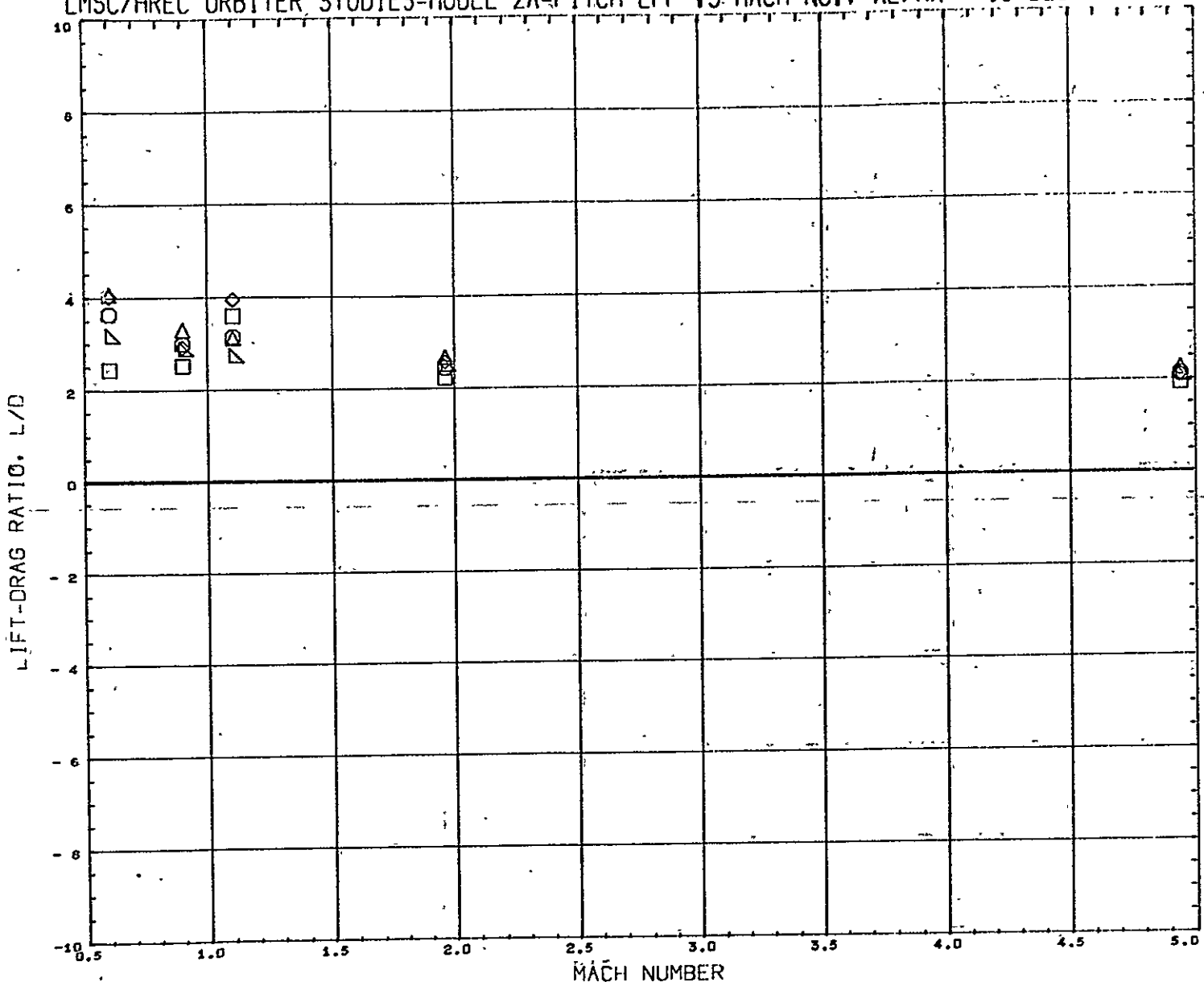


SYMBOL	ELEVNS	PARAMETRIC VALUES			
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△	0.000	RUDER2	0.000	STING	4.000
□	-10.000				
	-20.000				
	-30.000				

REFERENCE INFORMATION		
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DATA HIST. CODE \*GTV\*EI#B\*B#B

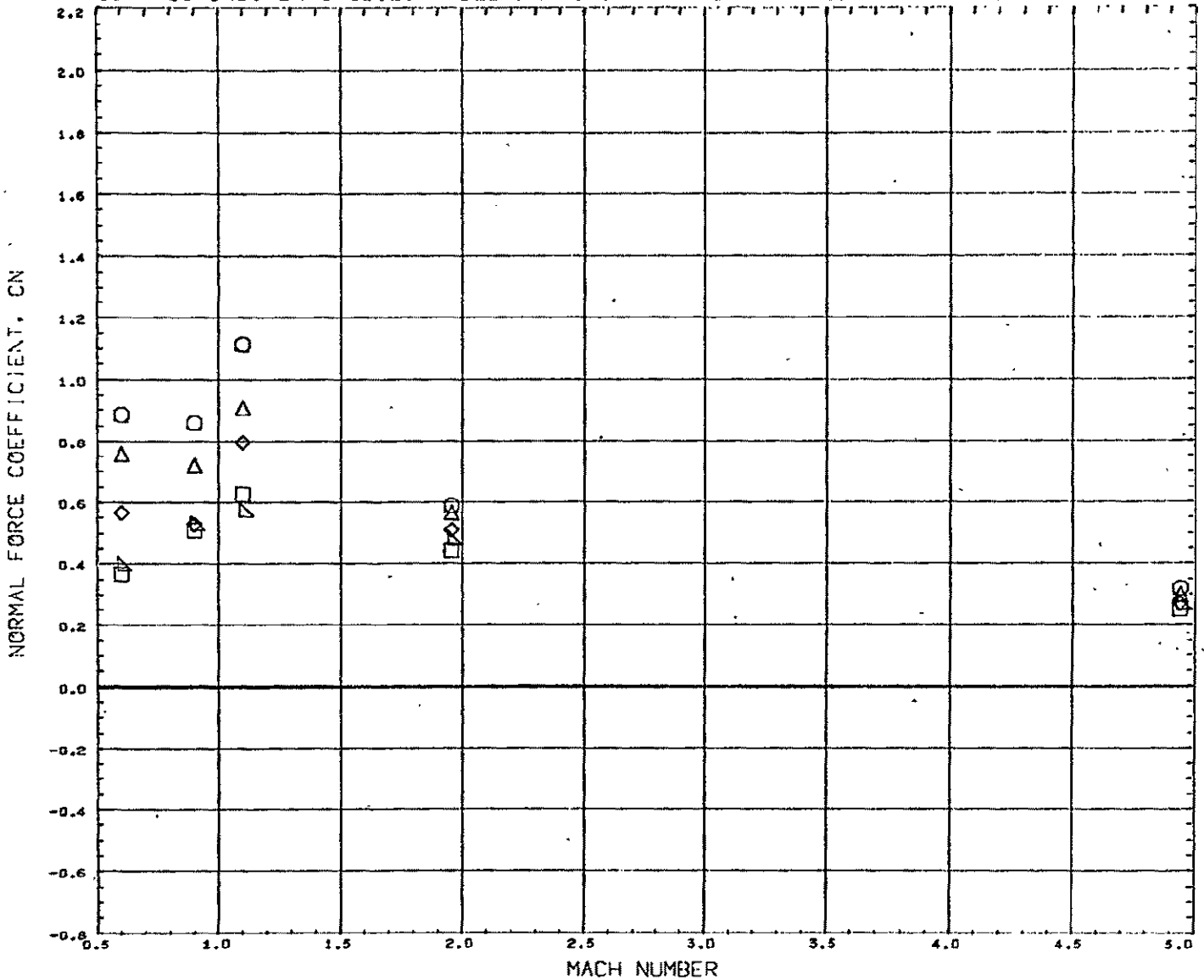
LMSC/HREC ORBITER STUDIES-MODEL 2A-PITCH EFF VS MACH NO., ALPHA = 15 DEG



SYMBOL	ELEVNS	PARAMETRIC VALUES				REFERENCE INFORMATION		
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▽	- 10.000					BREF	6.1420	INCHES
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DATA HIST. CODE \*GIV\*EI\*B\*B\*B

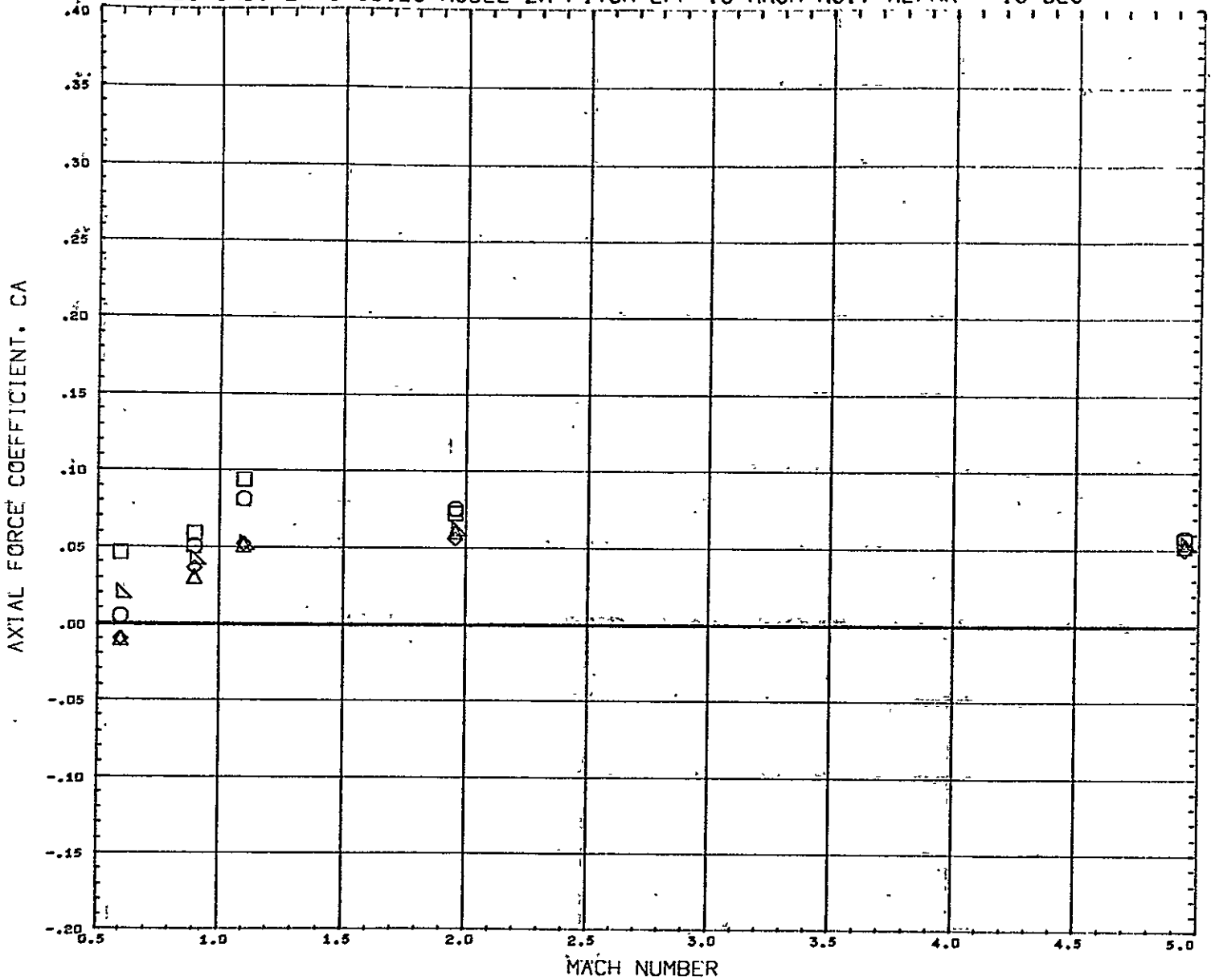
LMSC/HREC ORBITER STUDIES-MODEL 2A-PITCH EFF VS MACH NO., ALPHA = 15 DEG



SYMBOL	ELEVNS	PARAMETRIC VALUES				REFERENCE INFORMATION		
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◇	-10.000					BREF	6.1420	INCHES
□	-20.000					XMRP	3.9950	INCHES
▽	-30.000					YMRP	0.0000	INCHES
						ZMRP	0.1350	INCHES
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DATA HIST. CODE \*GTV\*EI#B#B#B

LMSC/HREC ORBITER STUDIES-MODEL 2A-PITCH EFF VS MACH NO., ALPHA = 15 DEG

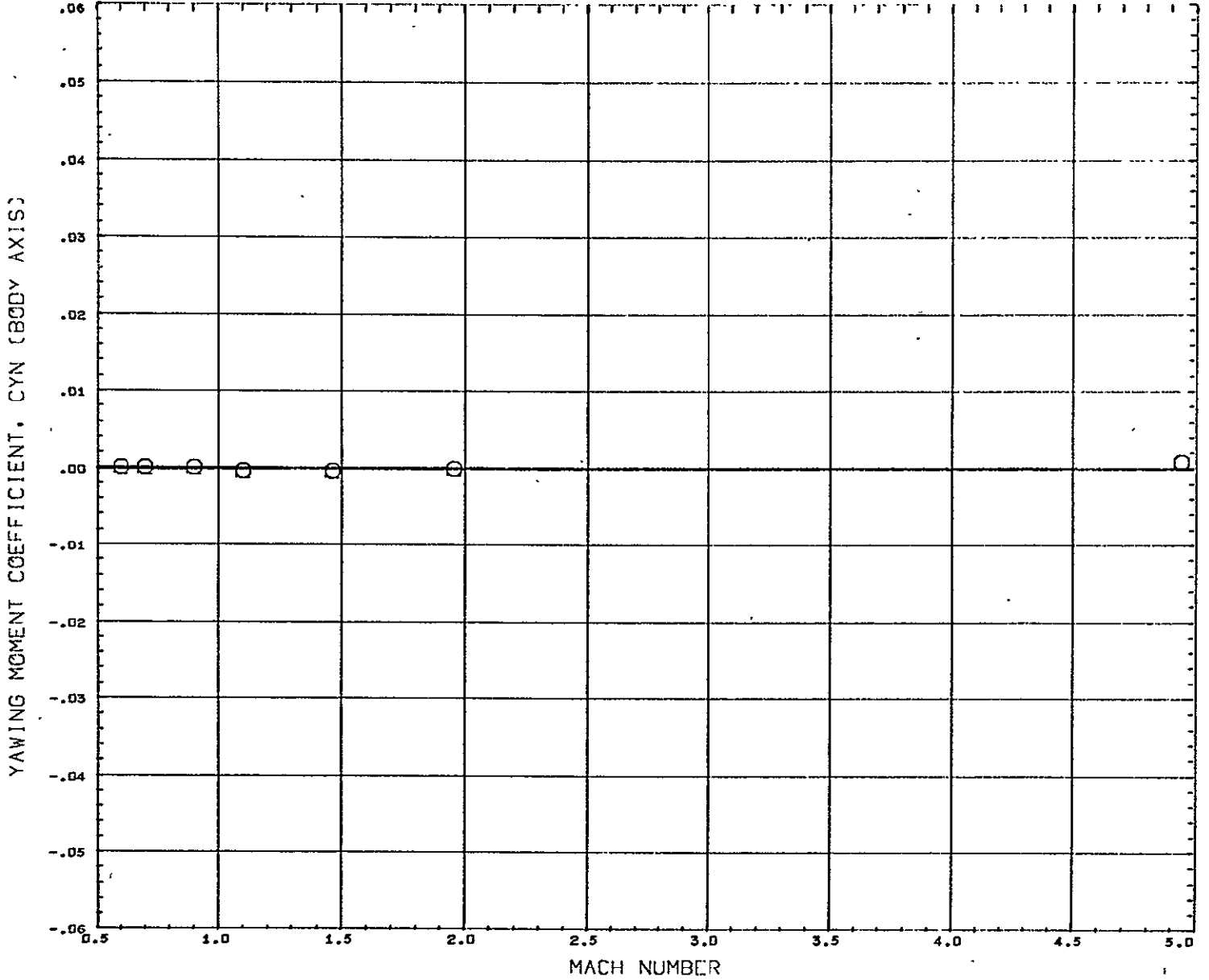


SYMBOL	ELEVNS	PARAMETRIC VALUES			
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◇	0.000	RUDER2	0.000	STING	4.000
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□	- 20.000				
▽	- 30.000				

DATA HIST. CODE #GTV#EI#B#B#E

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BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, VS. MACH NO.

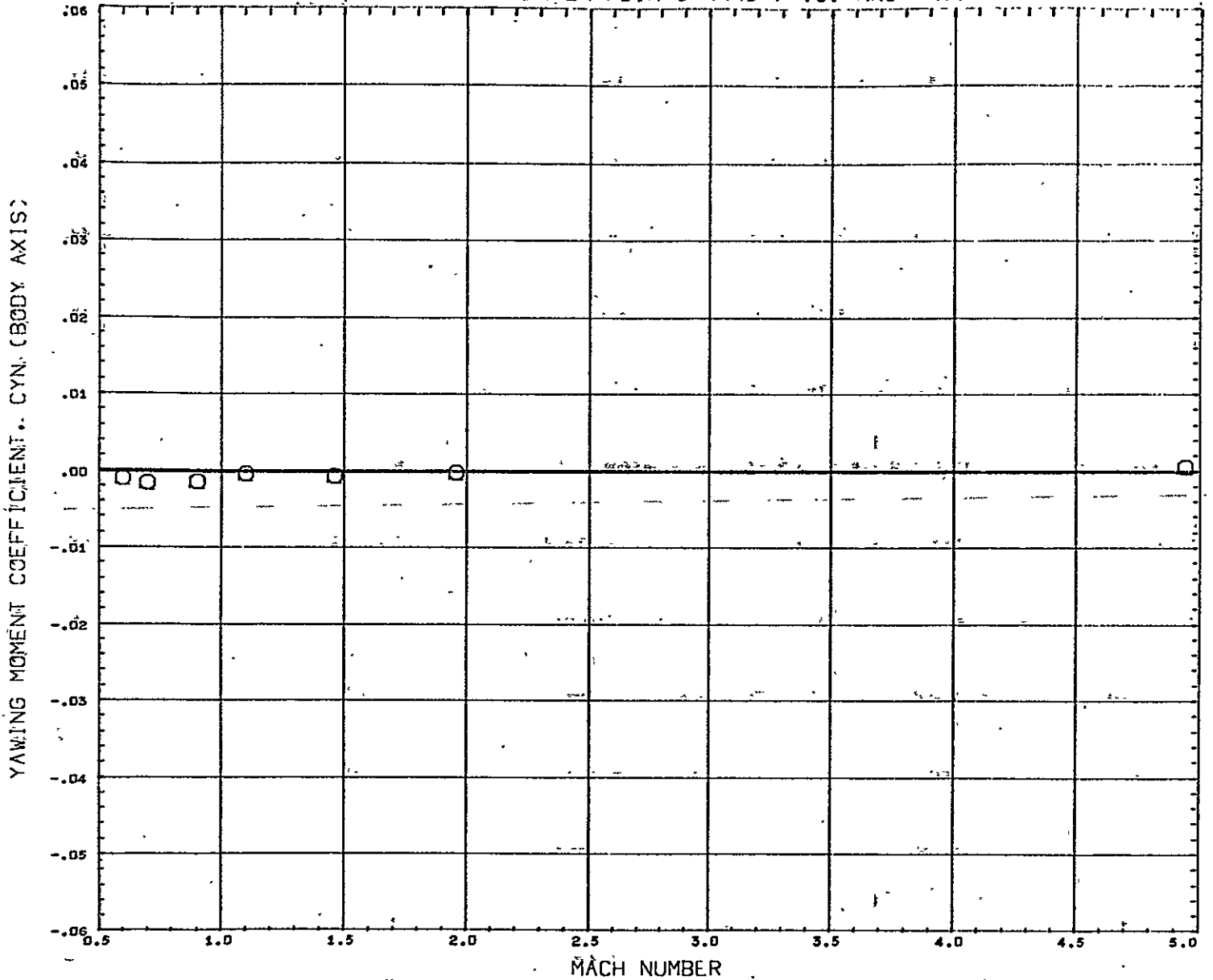


SYMBOL	ALPHA	PARAMETRIC VALUES			
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		RUDER2	0.000	STING	4.000

REFERENCE INFORMATION		
SREF	9.0250	Sq. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE I#E#B

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, VS. MACH NO.



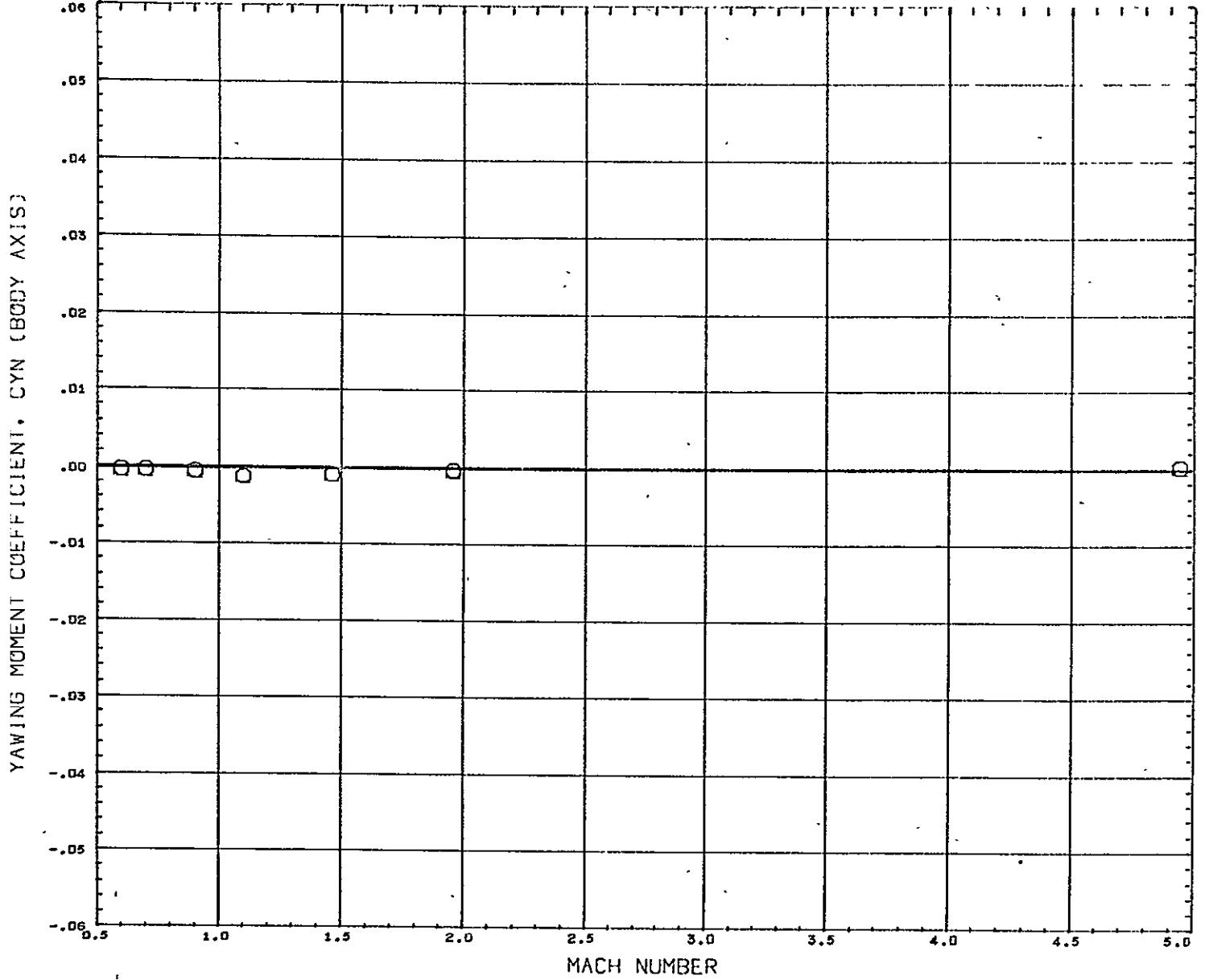
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		RUDER2	0.000	STING	4.000

REFERENCE INFORMATION		
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LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE I#E#B



LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, VS. MACH NO.

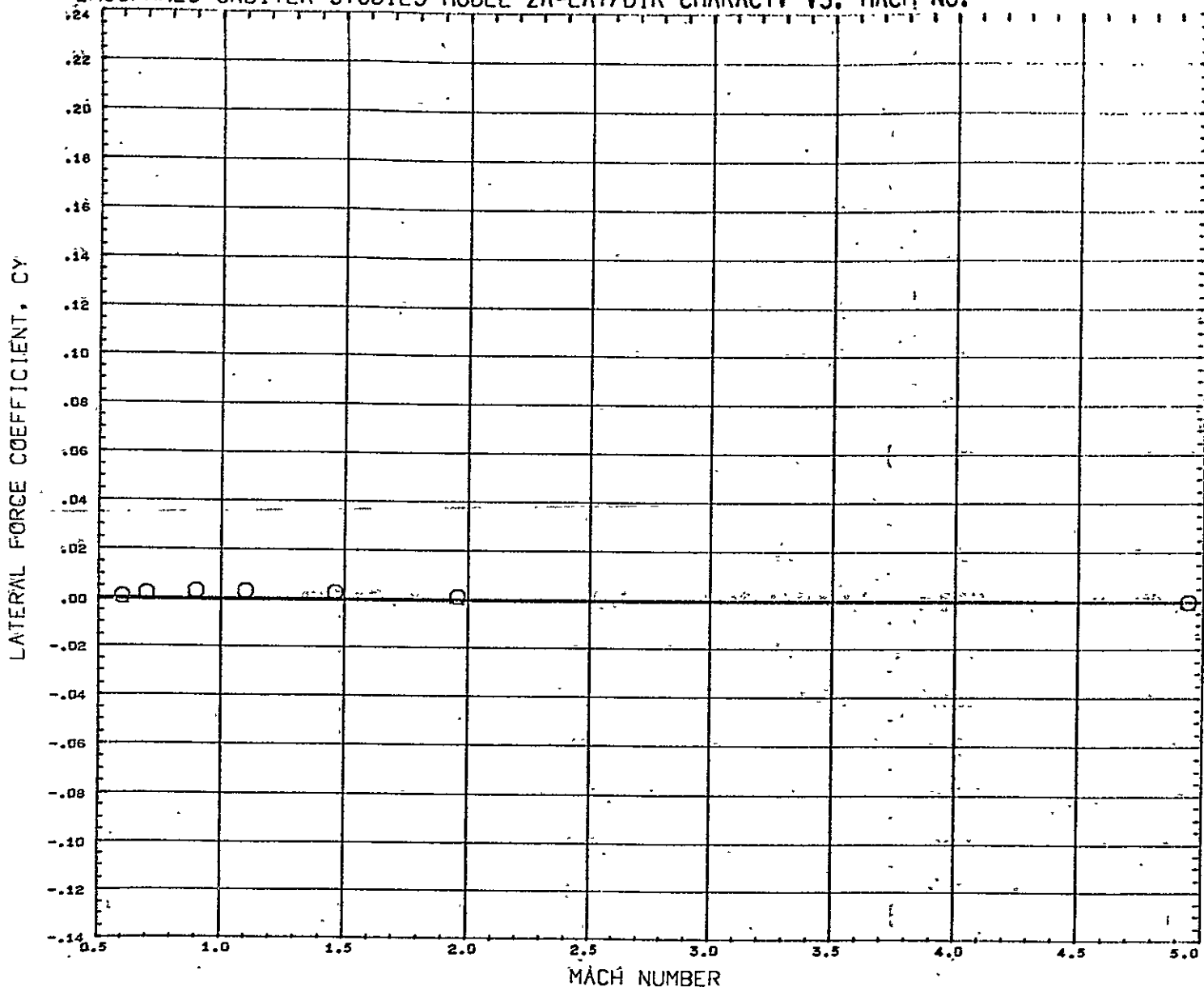


YMBOL	ALPHA	PARAMETRIC VALUES			
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		RUDER2	0.000	STING	4.000

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BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE I#E#B

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT. VS. MACH NO.

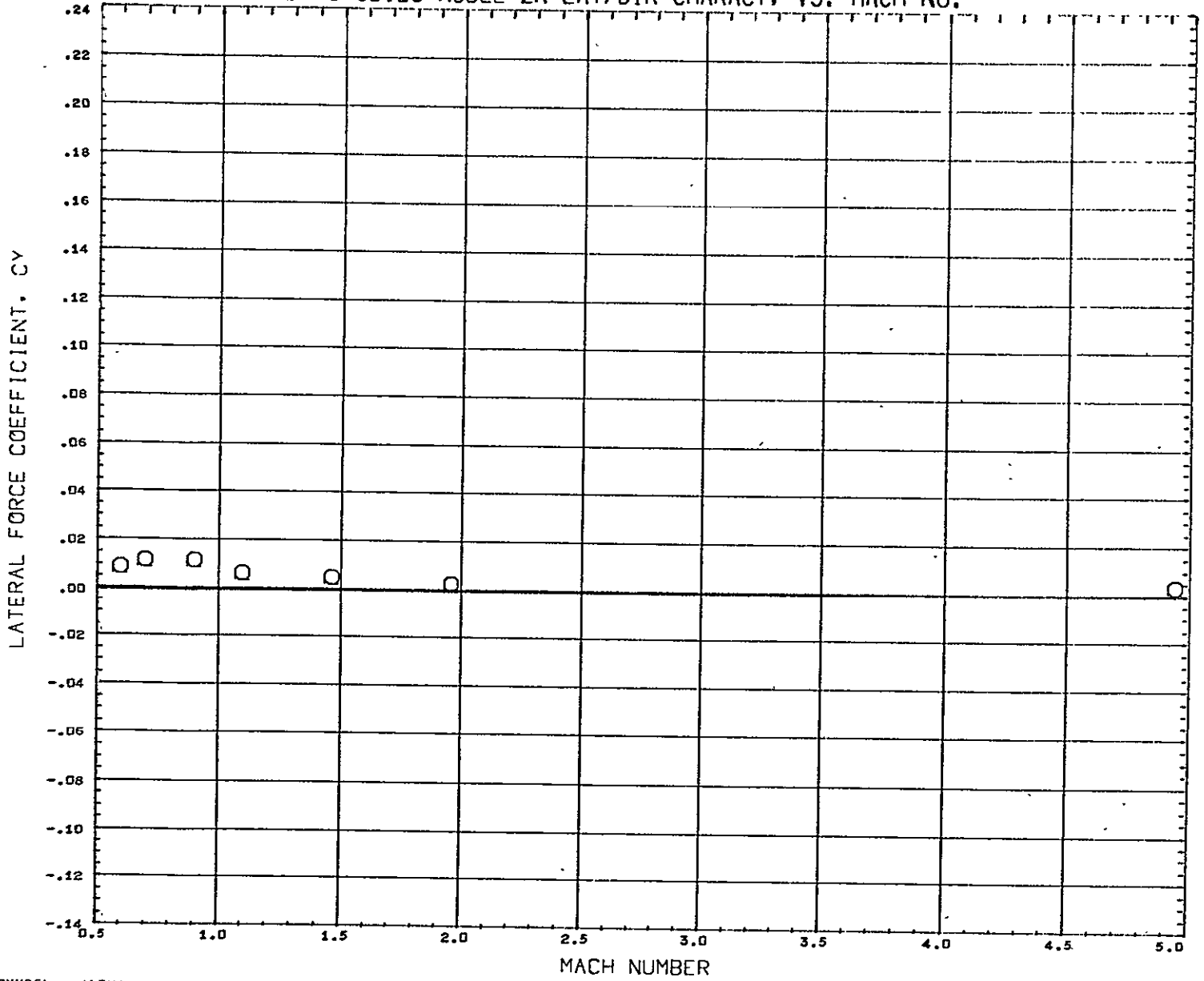


SYMBOL	ALPHA	PARAMETRIC VALUES			
○	0.000	BETA	0.000	ELEVNS	0.000
		RUDER2	0.000	STING	4.000

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE I#E#B

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, VS. MACH NO.

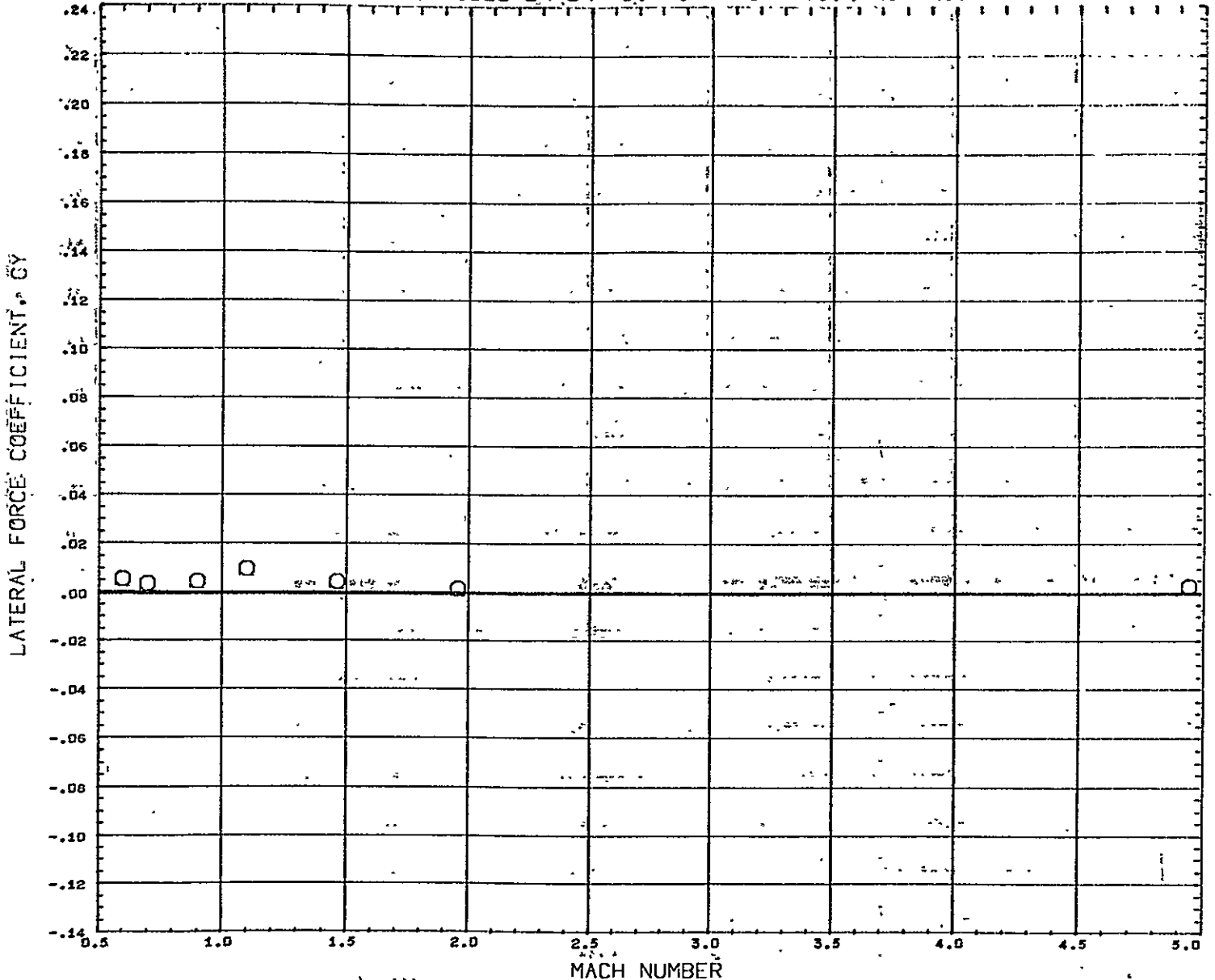


SYMBOL ○ ALPHA 10.000 BETA 0.000 RUDER2 0.000  
 PARAMETRIC VALUES ELEVNS 0.000 STING 4.000

REFERENCE INFORMATION  
 SREF 9.0250 SQ. IN  
 LREF 6.1420 INCHES  
 BREF 6.1420 INCHES  
 XMRP 3.9950 INCHES  
 YMRP 0.0000 INCHES  
 ZMRP 0.1350 INCHES  
 SCALE 0.0033 SCALE

DATA HIST. CODE I#E#B

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT. VS. MACH NO.

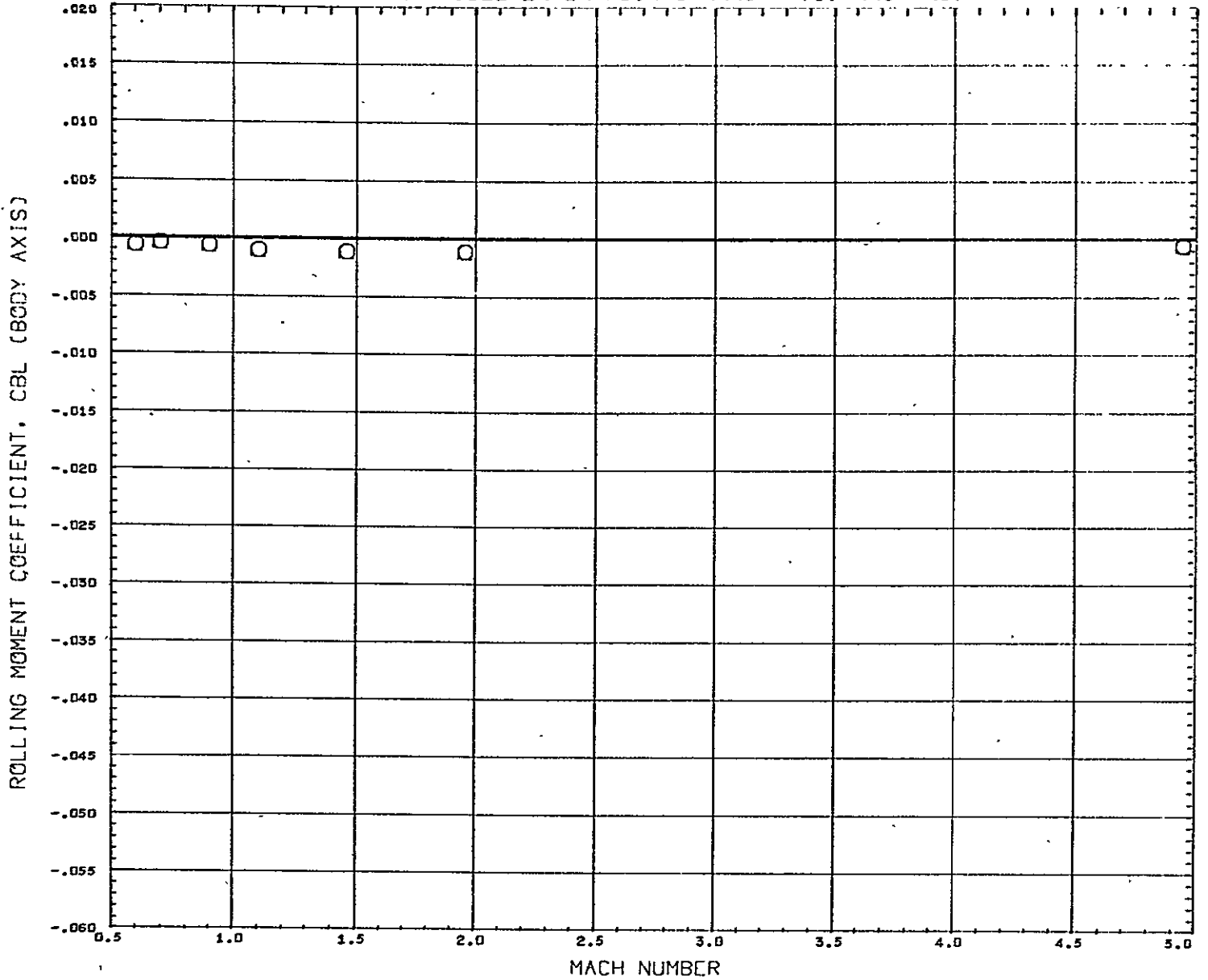


SYMBOL	ALPHA	PARAMETRIC VALUES			
○	15.000	BETA	0.000	ELEVNS	0.000
		RUDER2	0.000	STING	4.000

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE I#E#B

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, VS. MACH NO.

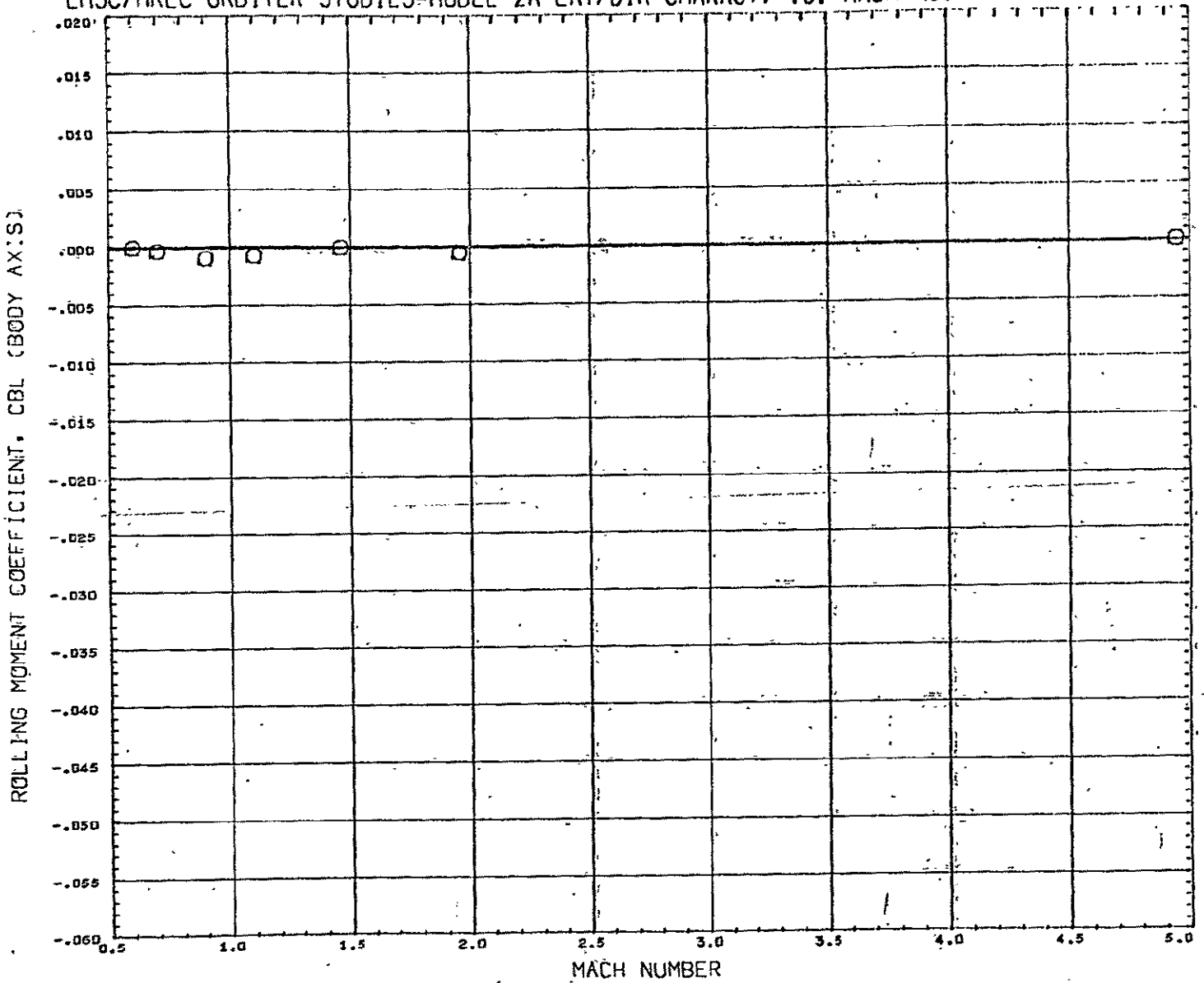


SYMBOL	ALPHA	PARAMETRIC VALUES			
○	0.000	BETA	0.000	ELEVNS	0.000
		RUDER2	0.000	STING	4.000

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE I#E#B

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT. VS. MACH NO.

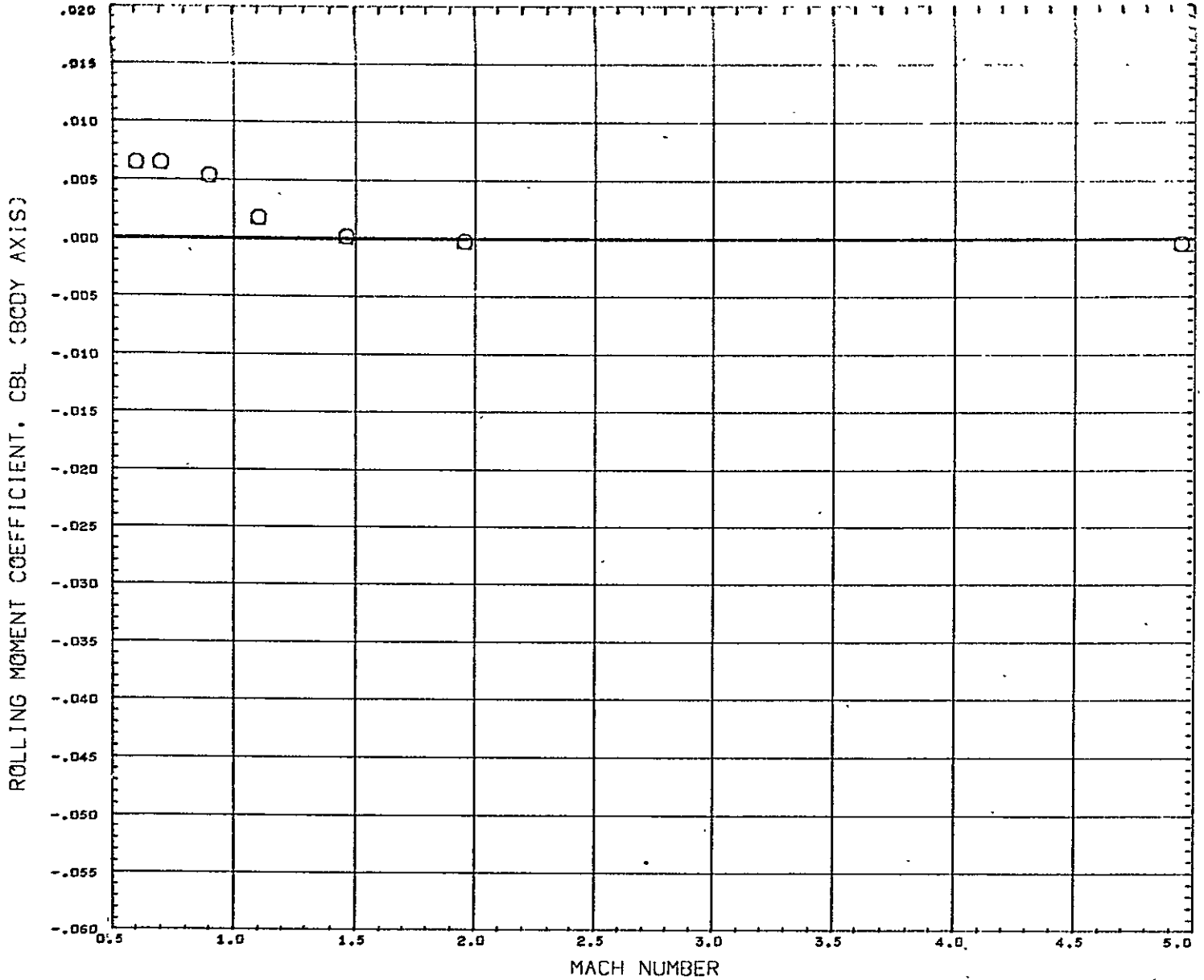


SYMBOL	ALPHA	BETA	PARAMETRIC VALUES	
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		RUDER2	STING	4.000

REFERENCE INFORMATION		
SREF	9.0250	50. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XHRF	3.9950	INCHES
YHRF	0.0000	INCHES
ZHRF	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE 14E4B

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT. VS. MACH NO.

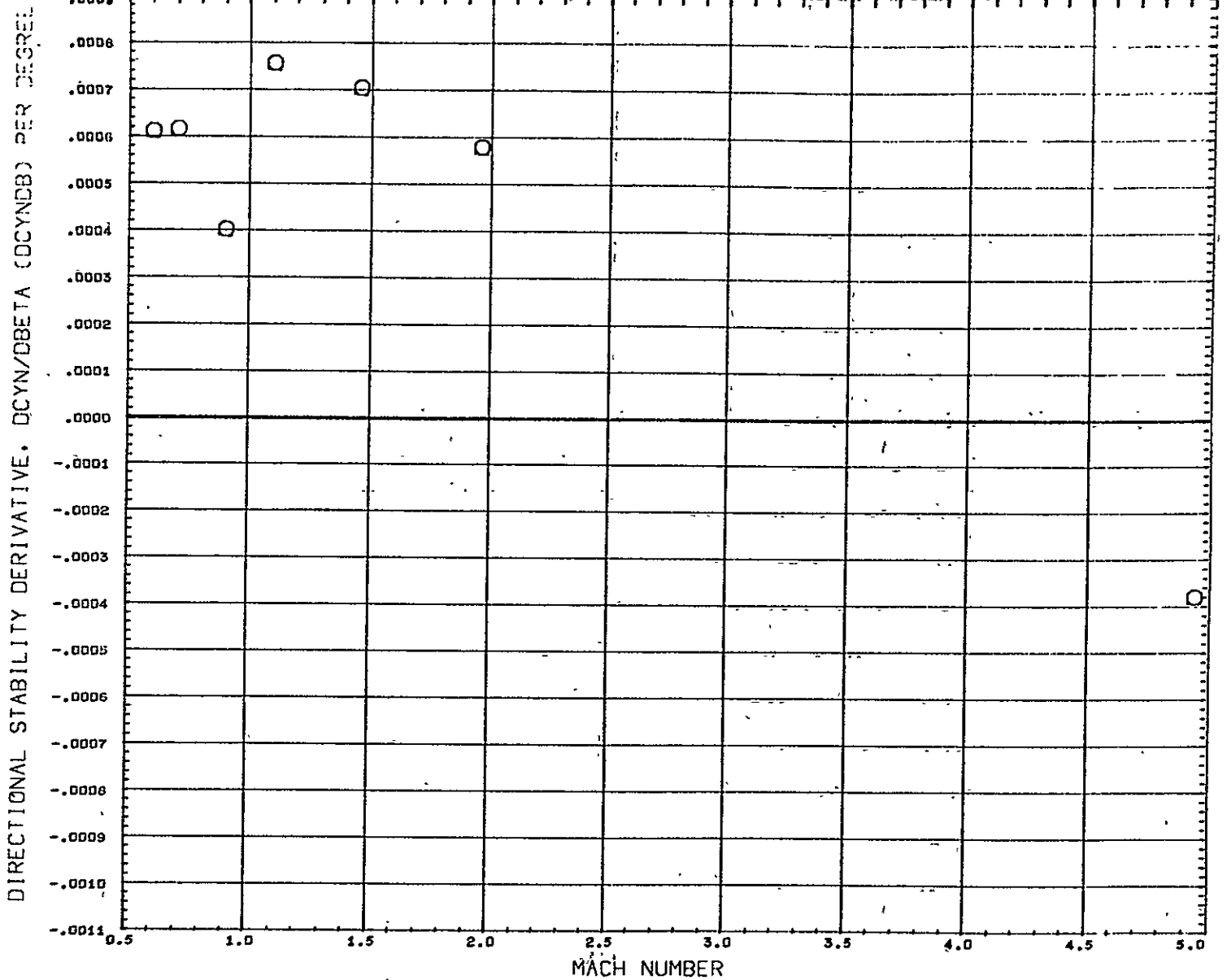


SYMBOL	ALPHA	PARAMETRIC VALUES			
○	15.000	BETA	0.000	ELEVNS	0.000
		RUDER2	0.000	STING	4.000

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE I#E#B

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, VS. MACH NO.



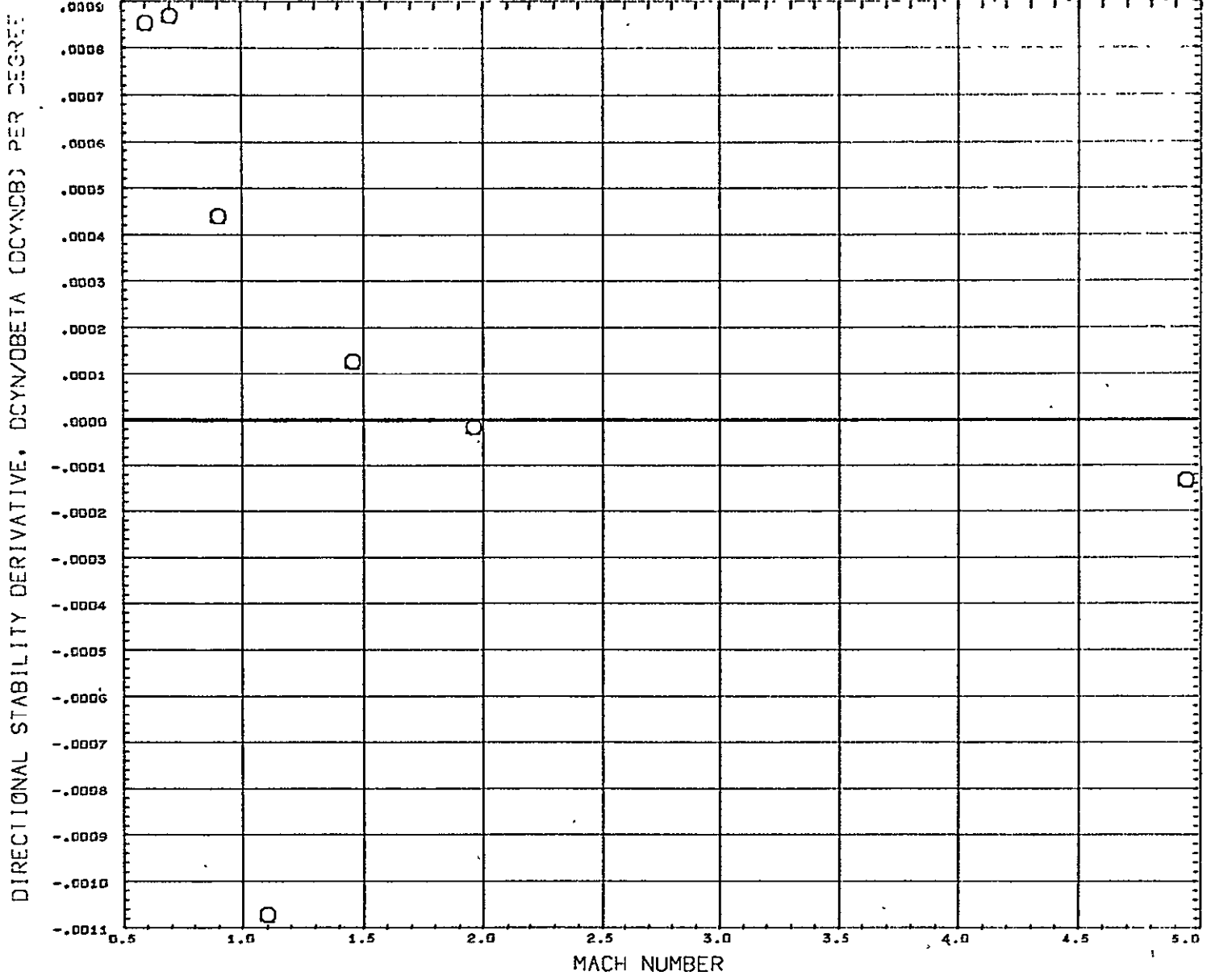
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		RUDER2	0.000	STING	4.000

REFERENCE INFORMATION		
SREF	9.0250	50 IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XNRP	3.9950	INCHES
YNRP	0.0000	INCHES
ZNRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE I#E#B



LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, VS. MACH NO.

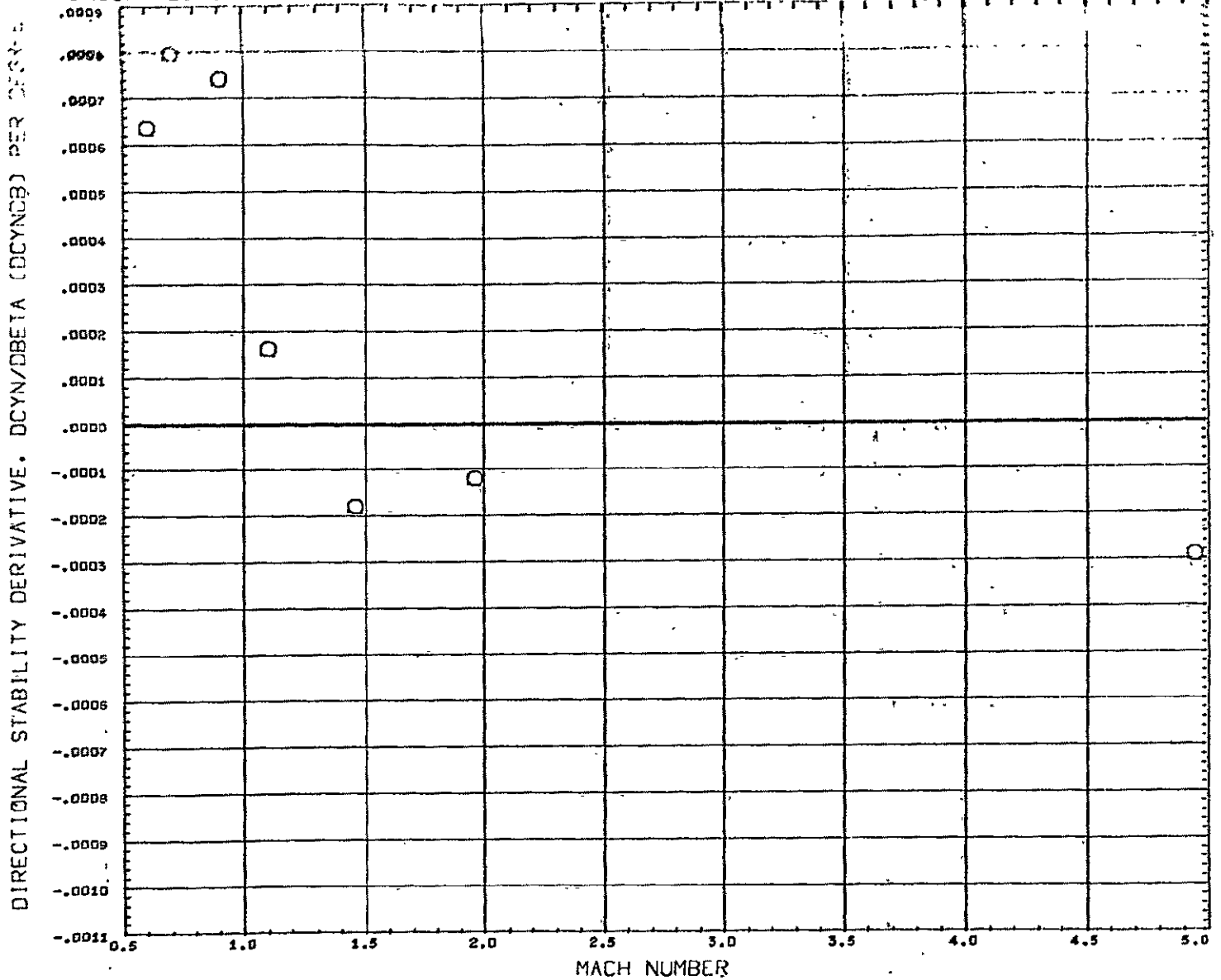


SYMBOL	ALPHA	PARAMETRIC VALUES			
○	10.000	BETA	0.000	ELEVNS	0.000
		RUDER2	0.000	STING	4.000

REFERENCE INFORMATION		
SREF	9.0250	50. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE I#E#B

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT. VS. MACH NO.

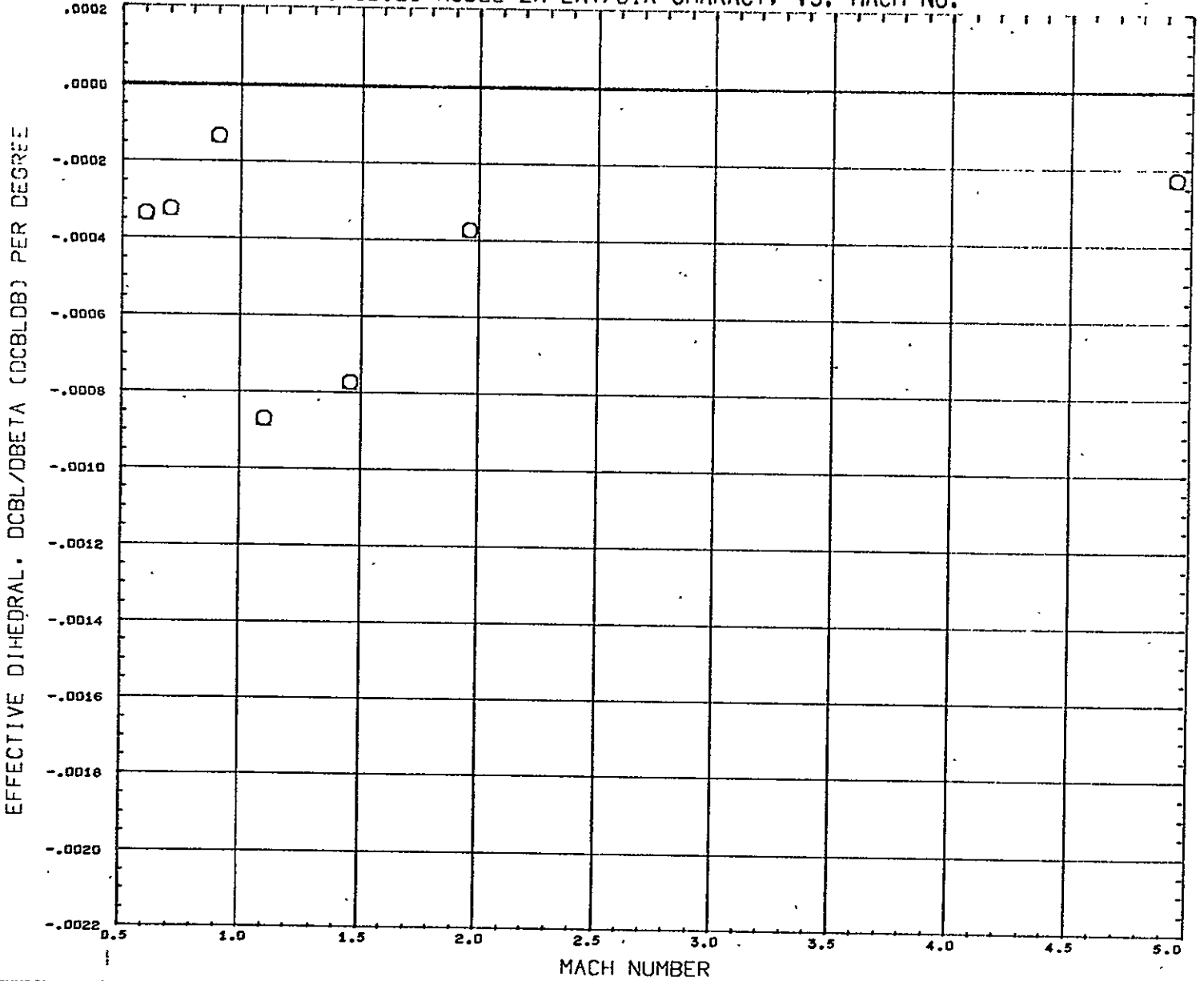


SYMBOL	ALPHA	PARAMETRIC VALUES			
( )	15.000	BETA	0.000	ELEVNS	0.000
		RUDER2	0.000	STING	4.000

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE I#E#B

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, VS. MACH NO.

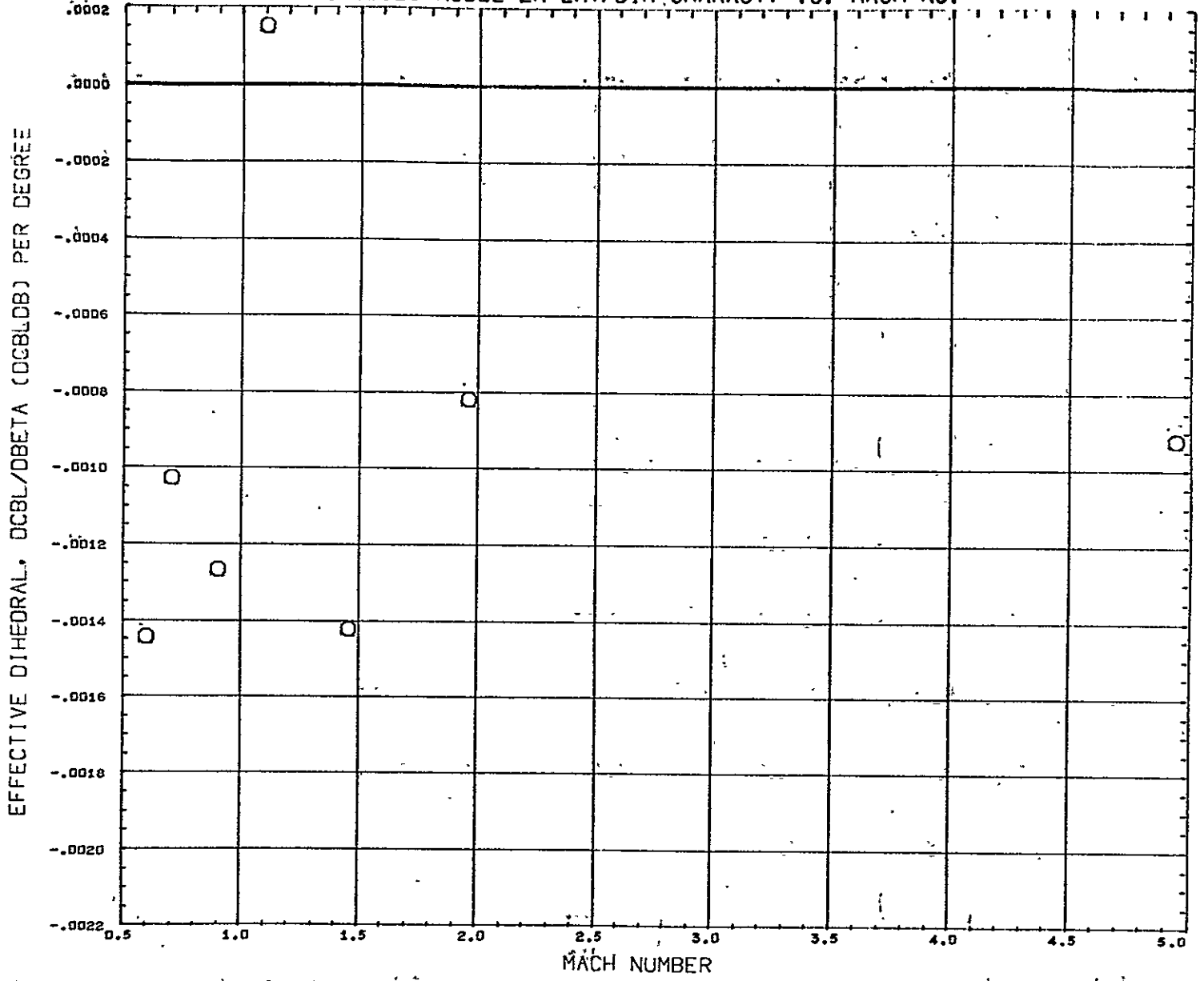


SYMBOL ○ ALPHA 0.000 BETA 0.000 RUDER2 0.000  
 PARAMETRIC VALUES ELEVNS 0.000 STING 4.000

REFERENCE INFORMATION  
 SREF 9.0250 SQ. IN  
 LREF 6.1420 INCHES  
 BREF 6.1420 INCHES  
 XMRP 3.9950 INCHES  
 YMRP 0.0000 INCHES  
 ZMRP 0.1350 INCHES  
 SCALE 0.0033 SCALE

DATA HIST. CODE . I#E#B

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT. VS. MACH NO.

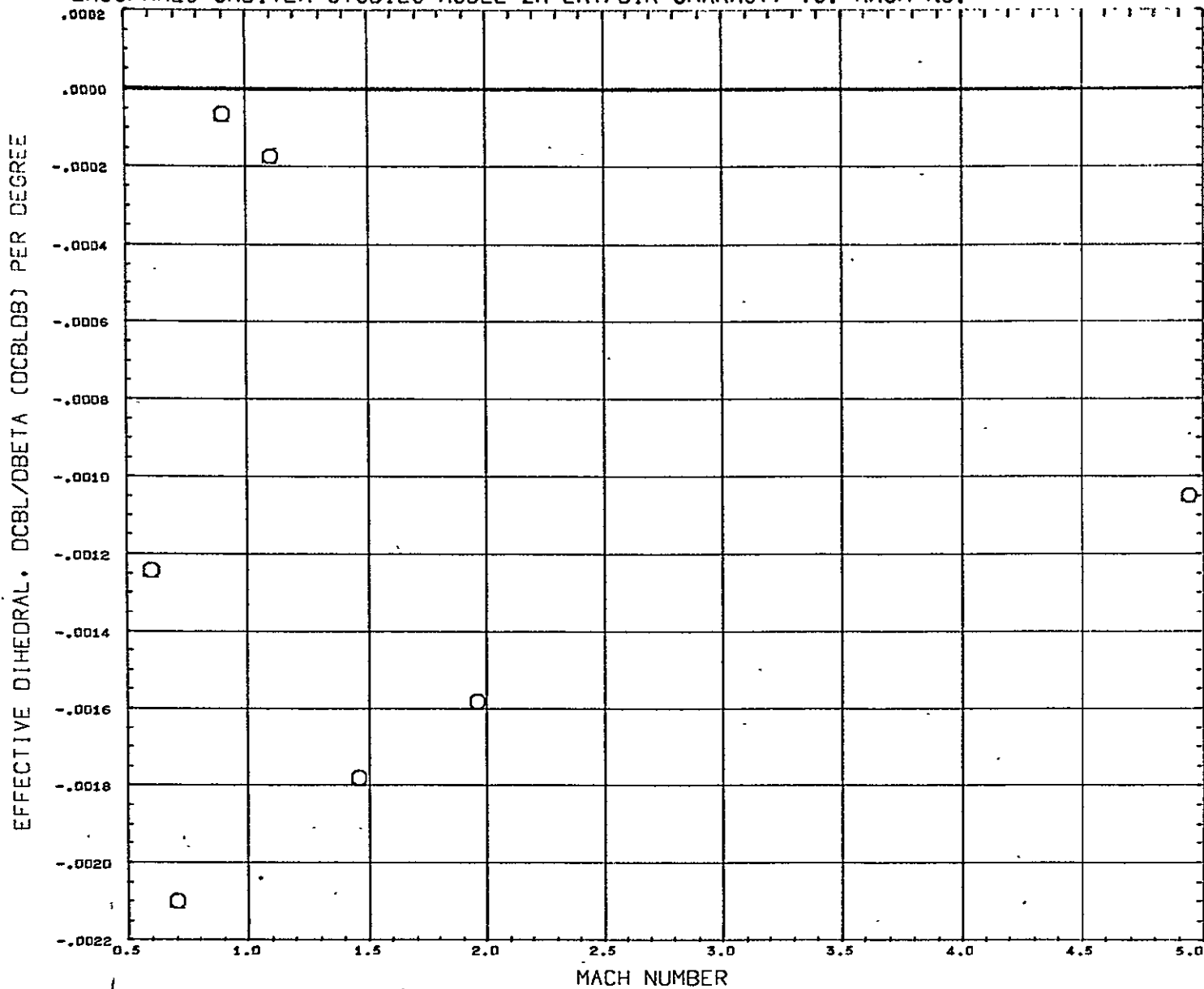


SYMBOL ○ ALPHA 10.000 BETA 0.000 RUDER2 0.000  
 PARAMETRIC VALUES ELEVNS 0.000 STING 4.000

REFERENCE INFORMATION  
 SREF 9.0250 SQ. IN  
 LREF 6.1420 INCHES  
 BREF 6.1420 INCHES  
 XMRP 3.9950 INCHES  
 YMRP 0.0000 INCHES  
 ZMRP 0.1350 INCHES  
 SCALE 0.0033 SCALE

DATA HIST. CODE I#E#B

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT. VS. MACH NO.

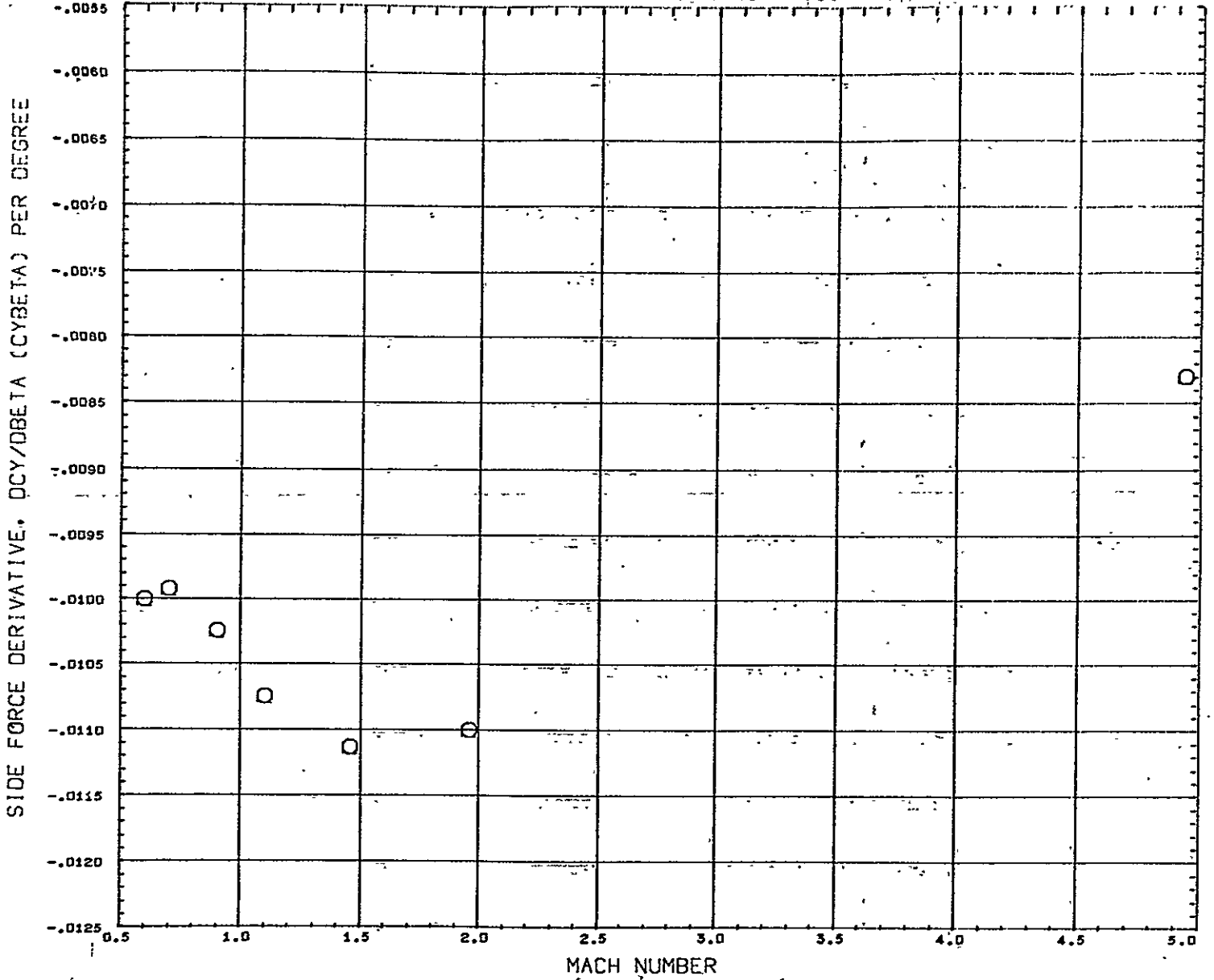


SYMBOL	ALPHA	PARAMETRIC VALUES			
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		RUDER2	0.000	STING	4.000

REFERENCE INFORMATION		
SREF	9.0250	50. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE I#E#B

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, VS. MACH NO.

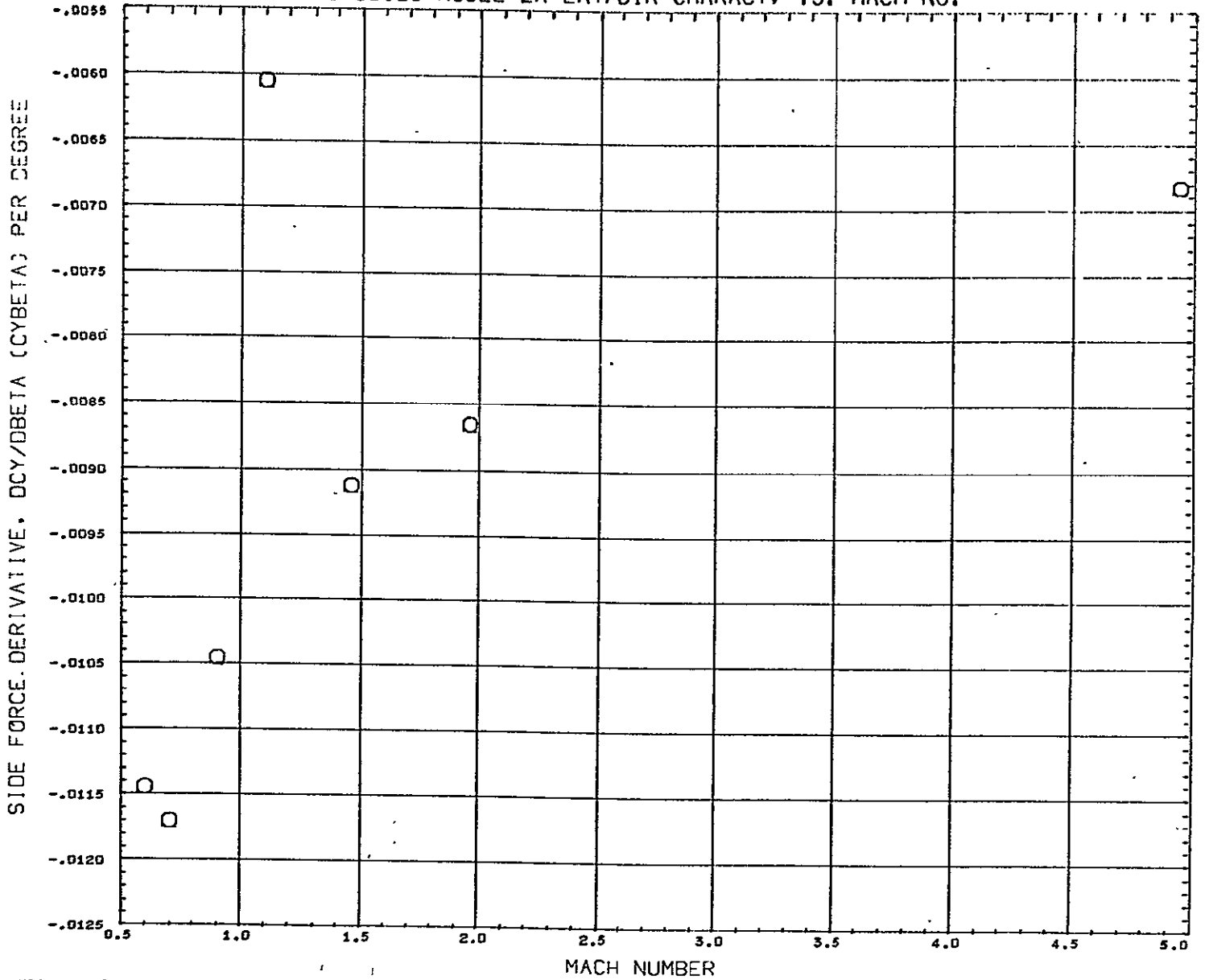


SYMBOL	ALPHA	PARAMETRIC VALUES			
○	0.000	BETA	0.000	ELEVNS	0.000
		RUDER2	0.000	STING	4.000

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE I#E#B

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, VS. MACH NO.

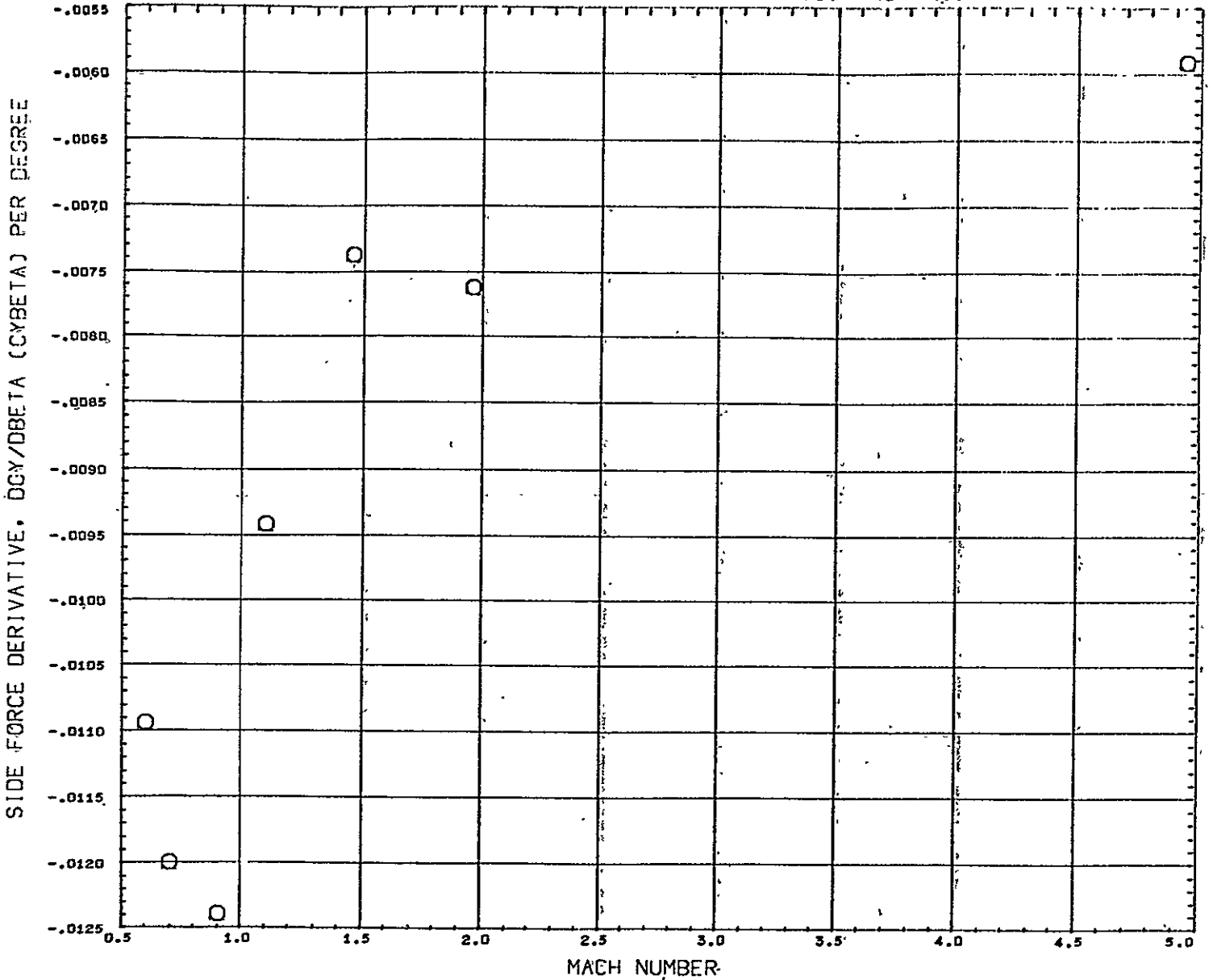


SYMBOL ○ ALPHA 10.000 BETA 0.000 ELEVNS 0.000  
 RUDER2 0.000 STING 4.000

REFERENCE INFORMATION  
 SREF 9.0250 SQ. IN  
 LREF 6.1420 INCHES  
 BREF 6.1420 INCHES  
 XMRP 3.9950 INCHES  
 YMRP 0.0000 INCHES  
 ZMRP 0.1350 INCHES  
 SCALE 0.0033 SCALE

DATA HIST. CODE I#E#B

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, VS. MACH NO.



SYMBOL ○ ALPHA 15.000  
 PARAMETRIC VALUES  
 BETA 0.000 ELEVN3 0.000  
 RUDER2 0.000 STING 4.000

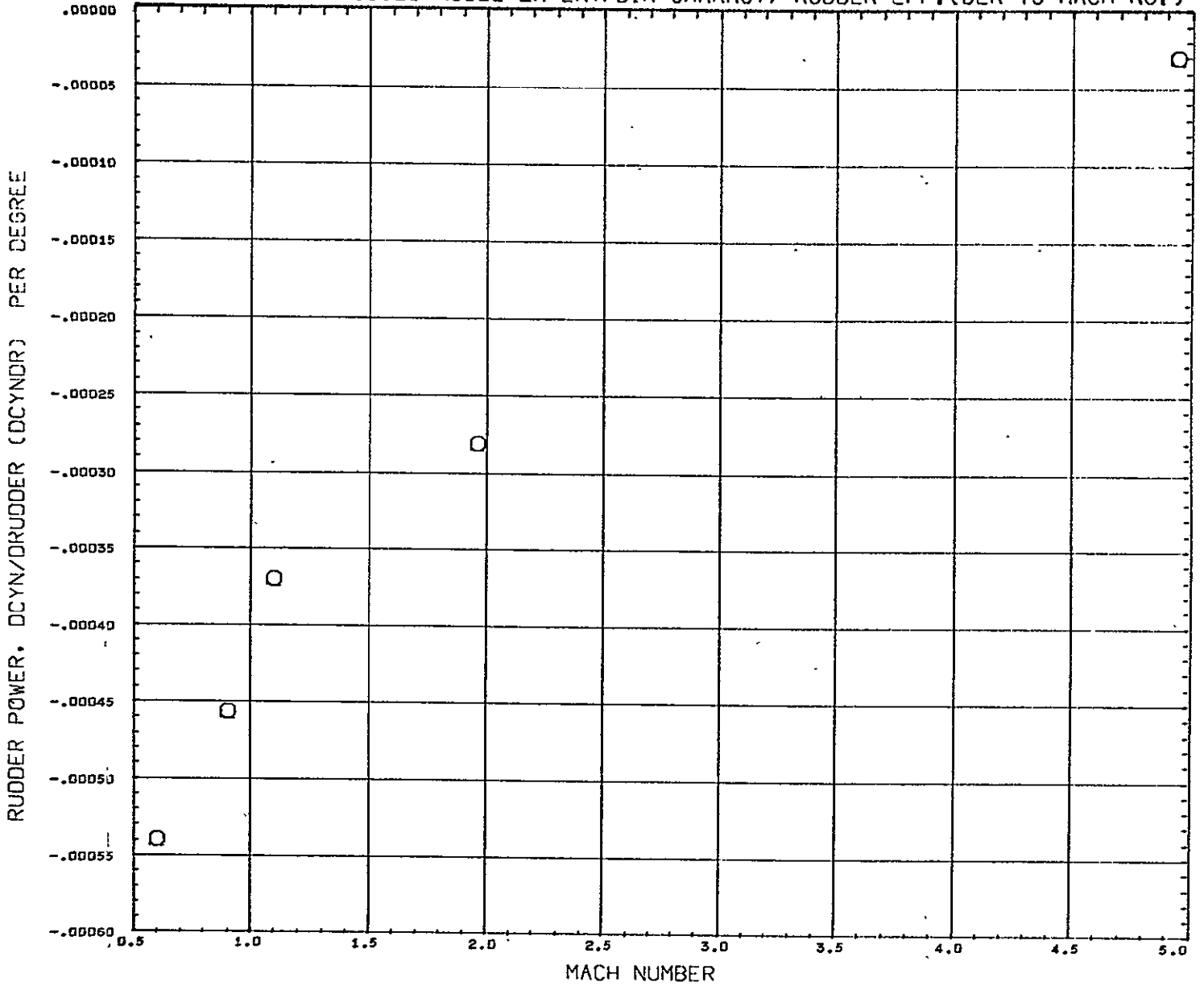
REFERENCE INFORMATION  
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 BREF 6.1420 INCHES  
 XMRP 3.9950 INCHES  
 YMRP 0.0000 INCHES  
 ZMRP 0.1350 INCHES  
 SCALE 0.0033 SCALE

DATA HIST. CODE I#E#B

C.6



LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, RUDDER EFF. (DER VS MACH NO.)

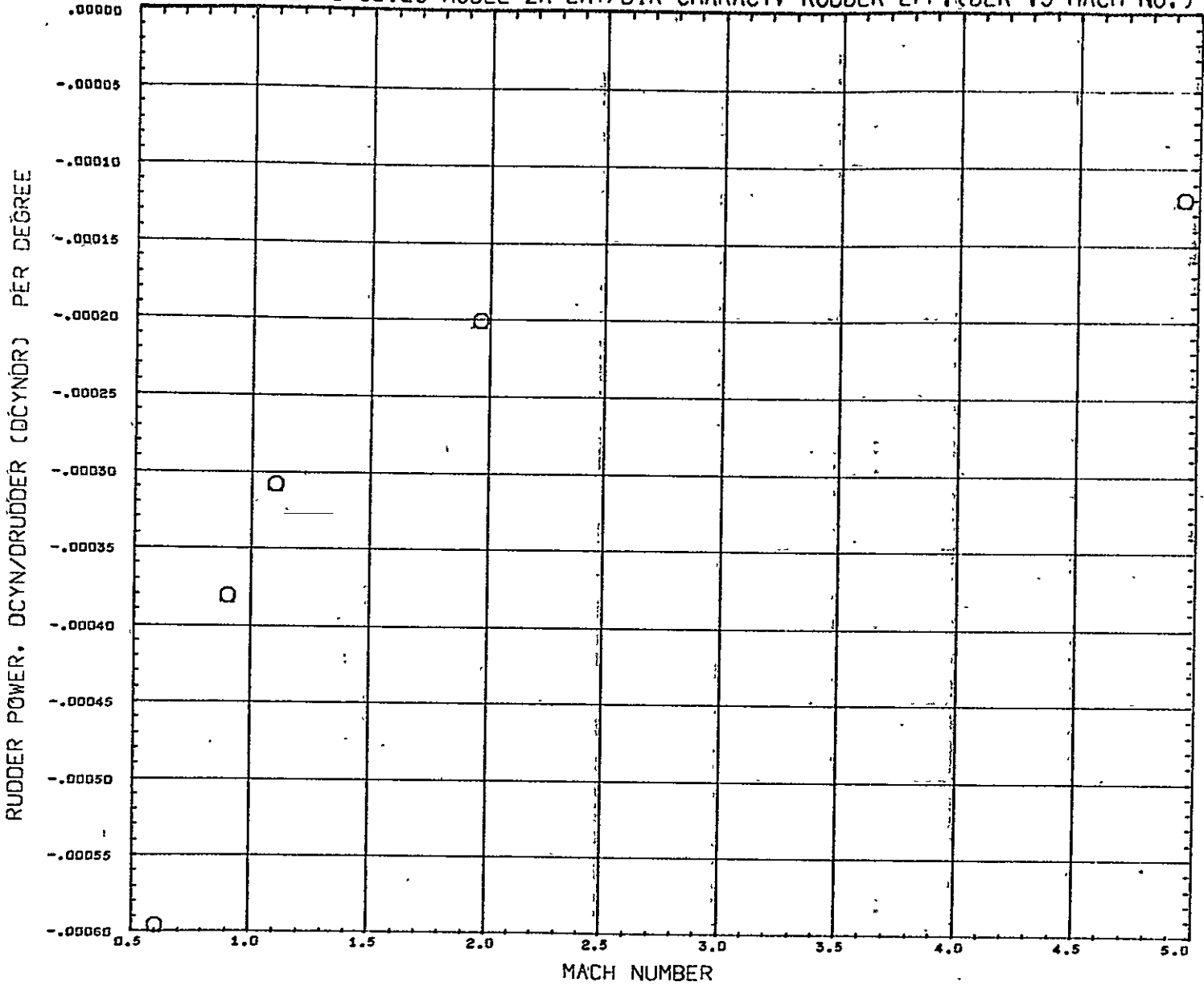


SYMBOL ○ ALPHA 0.000 BETA 0.000 RUDER2 0.000  
 PARAMETRIC VALUES ELEVNS 0.000 STING 4.000

REFERENCE INFORMATION  
 SREF 9.0250 SQ. IN  
 LREF 6.1420 INCHES  
 BREF 6.1420 INCHES  
 XMRP 3.9950 INCHES  
 YMRP 0.0000 INCHES  
 ZMRP 0.1350 INCHES  
 SCALE 0.0033 SCALE

DATA HIST. CODE I#E#P#B

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, RUDDER EFF. (DER VS MACH NO.)

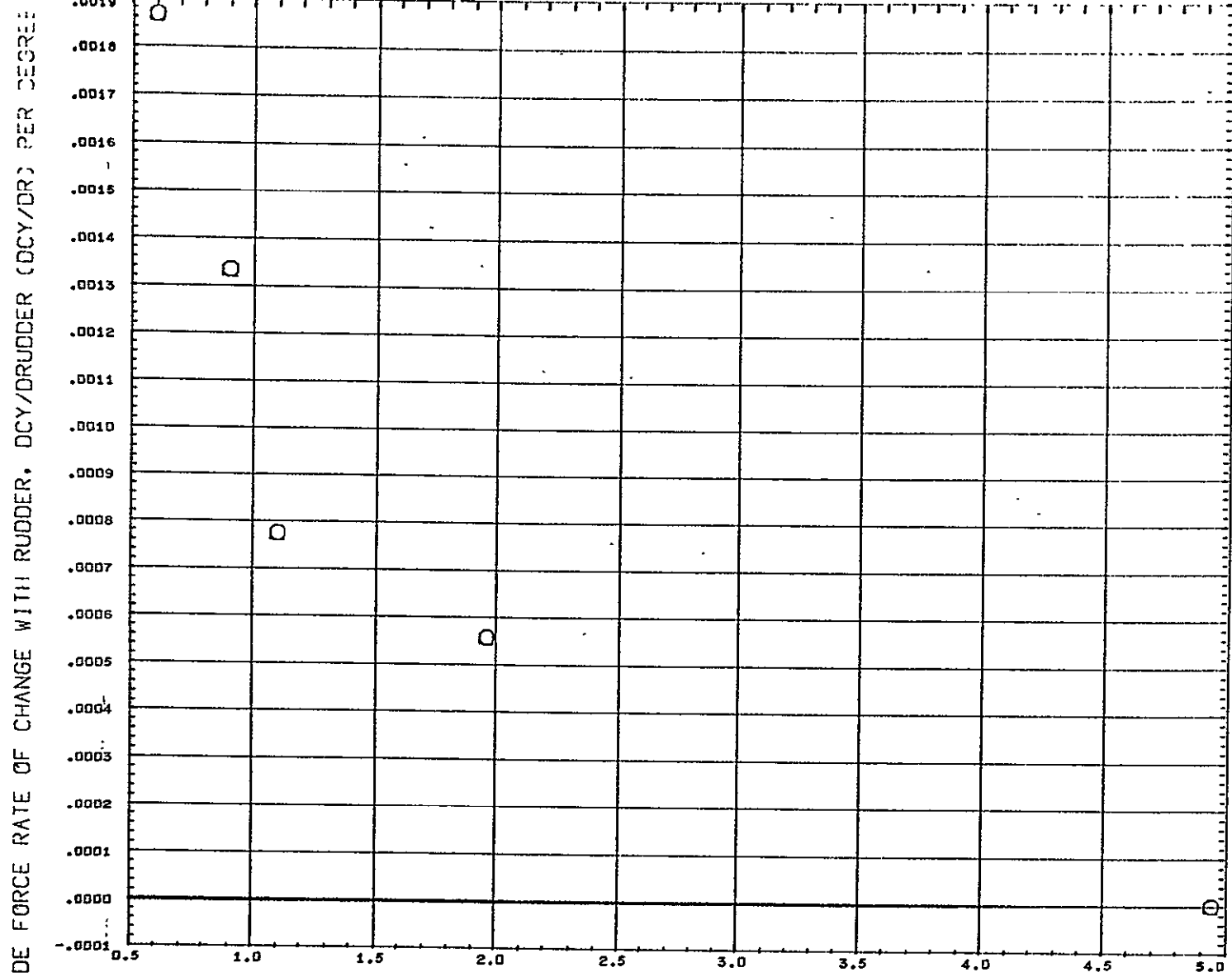


SYMBOL	ALPHA	BETA	PARAMETRIC VALUES		
○	15.000	RUDER2	0.000	ELEVNS	0.000
			0.000	STING	4.000

REFERENCE INFORMATION		
\$REF	9.0250	SQ. IN
LRREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE I+E\*P\*B

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, RUDDER EFF. (DER VS MACH NO.)

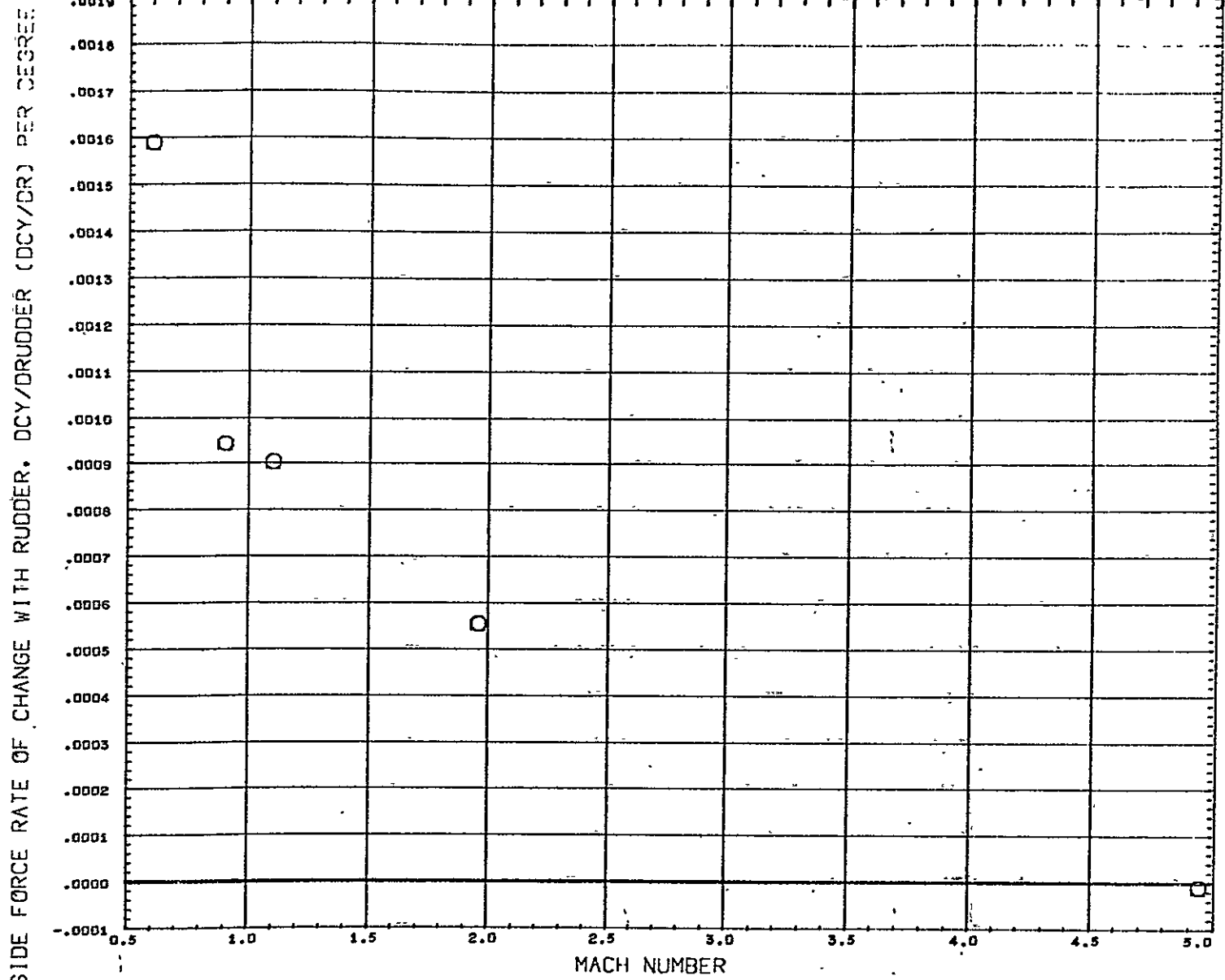


SYMBOL ○  
 ALPHA 0.000  
 BETA 0.000  
 RUDER2 0.000  
 PARAMETRIC VALUES  
 ELEVNS 0.000  
 STING 4.000

REFERENCE INFORMATION  
 SREF 9.0250 SQ. IN  
 LREF 6.1420 INCHES  
 BREF 6.1420 INCHES  
 XMRP 3.9950 INCHES  
 YMRP 0.0000 INCHES  
 ZMRP 0.1350 INCHES  
 SCALE 0.0033 SCALE

DATA HIST. CODE I#E#F#B

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT. RUDDER EFF. (DER VS MACH NO.)



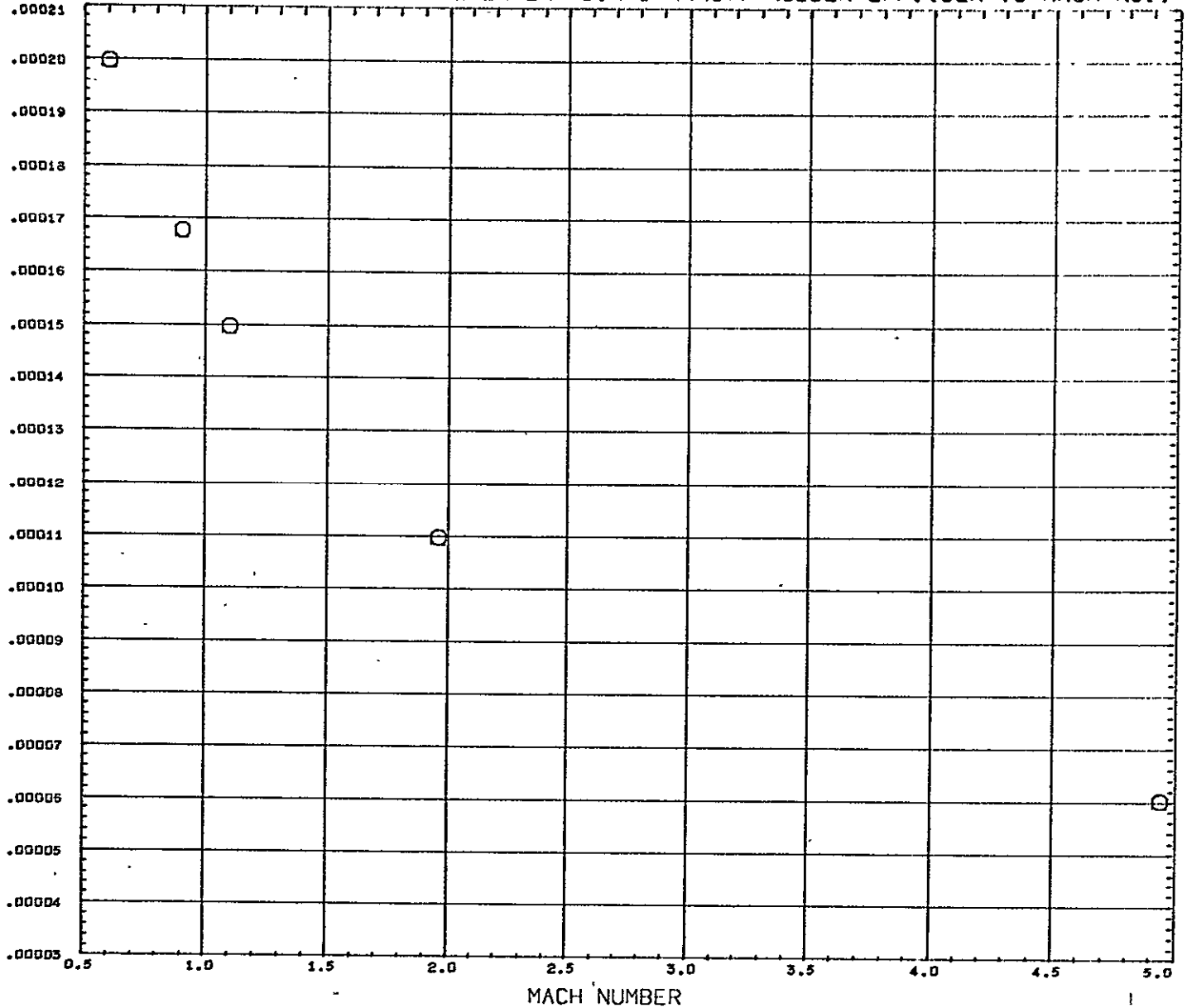
SYMBOL ○ ALPHA 15.000  
 PARAMETRIC VALUES  
 BETA 0.000 ELEVNS 0.000  
 RUDER2 0.000 STING 4.000

REFERENCE INFORMATION  
 SREF 9.0250 SQ. IN  
 BREF 6.1420 INCHES  
 BREF 6.1420 INCHES  
 XMRP 3.9950 INCHES  
 YMRP 0.0000 INCHES  
 ZMRP 0.1350 INCHES  
 SCALE 0.0033 SCALE

DATA HIST. CODE I#E#P#B

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, RUDDER EFF. (DER VS MACH NO.)

ROLLING MOMENT RATE DUE TO RUDDER, DCBL/DRUDDER (DCBLDR) PER DEGREE



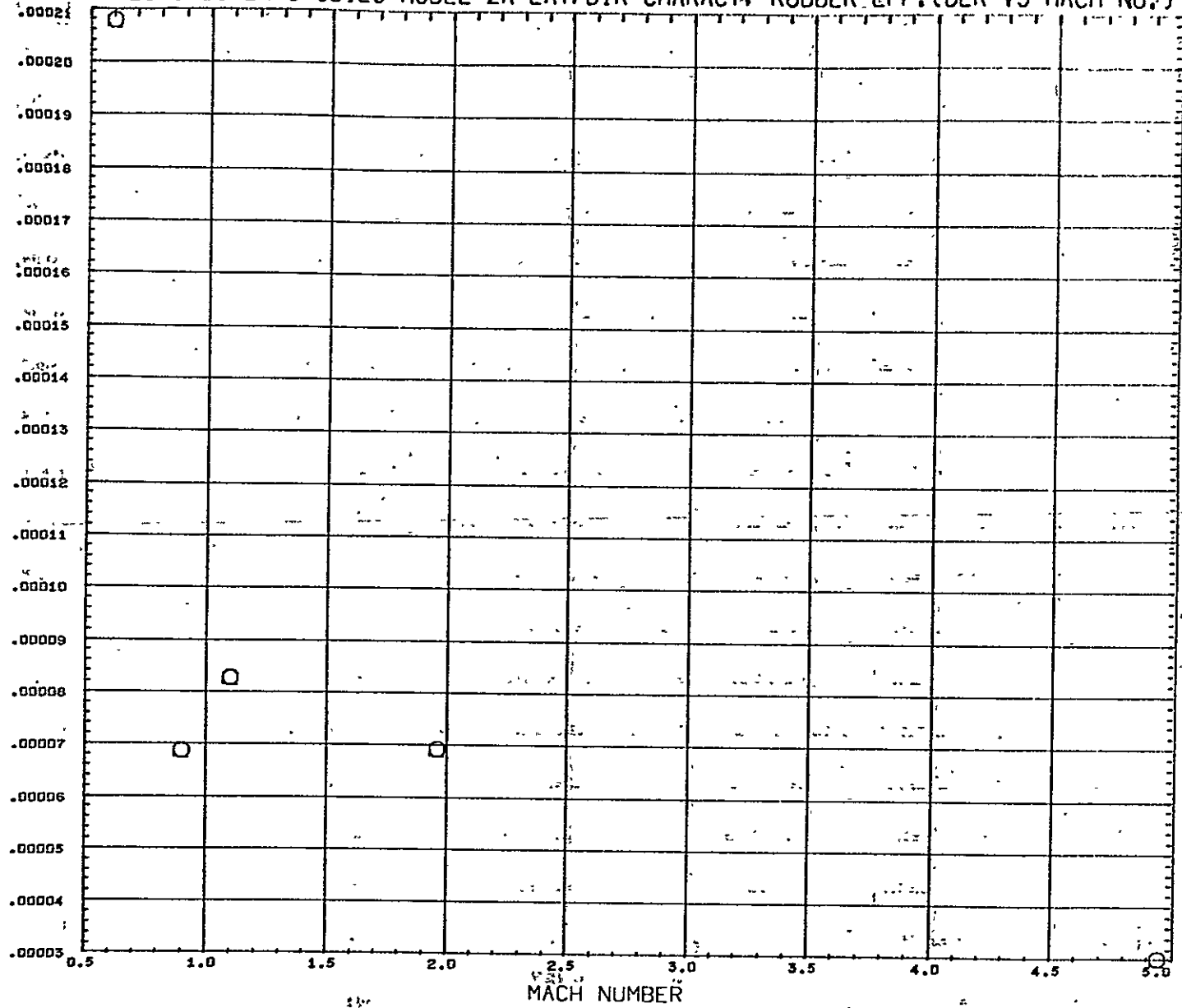
SYMBOL ○  
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 BETA 0.000  
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 PARAMETRIC VALUES  
 ELEVNS 0.005  
 STING 4.000

REFERENCE INFORMATION  
 SREF 9.0250 SQ. IN  
 LREF 6.1420 INCHES  
 BREF 6.1420 INCHES  
 XMRP 3.9950 INCHES  
 YMRP 0.0000 INCHES  
 ZMRP 0.1350 INCHES  
 SCALE 0.0033 SCALE

DATA HIST. CODE I#E#P#B

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT. RUDDER EFF. (DER VS MACH NO.)

ROLLING MOMENT RATE DUE TO RUDDER, DCBL/DRUDDER (DCBLDR), PER DEGREE

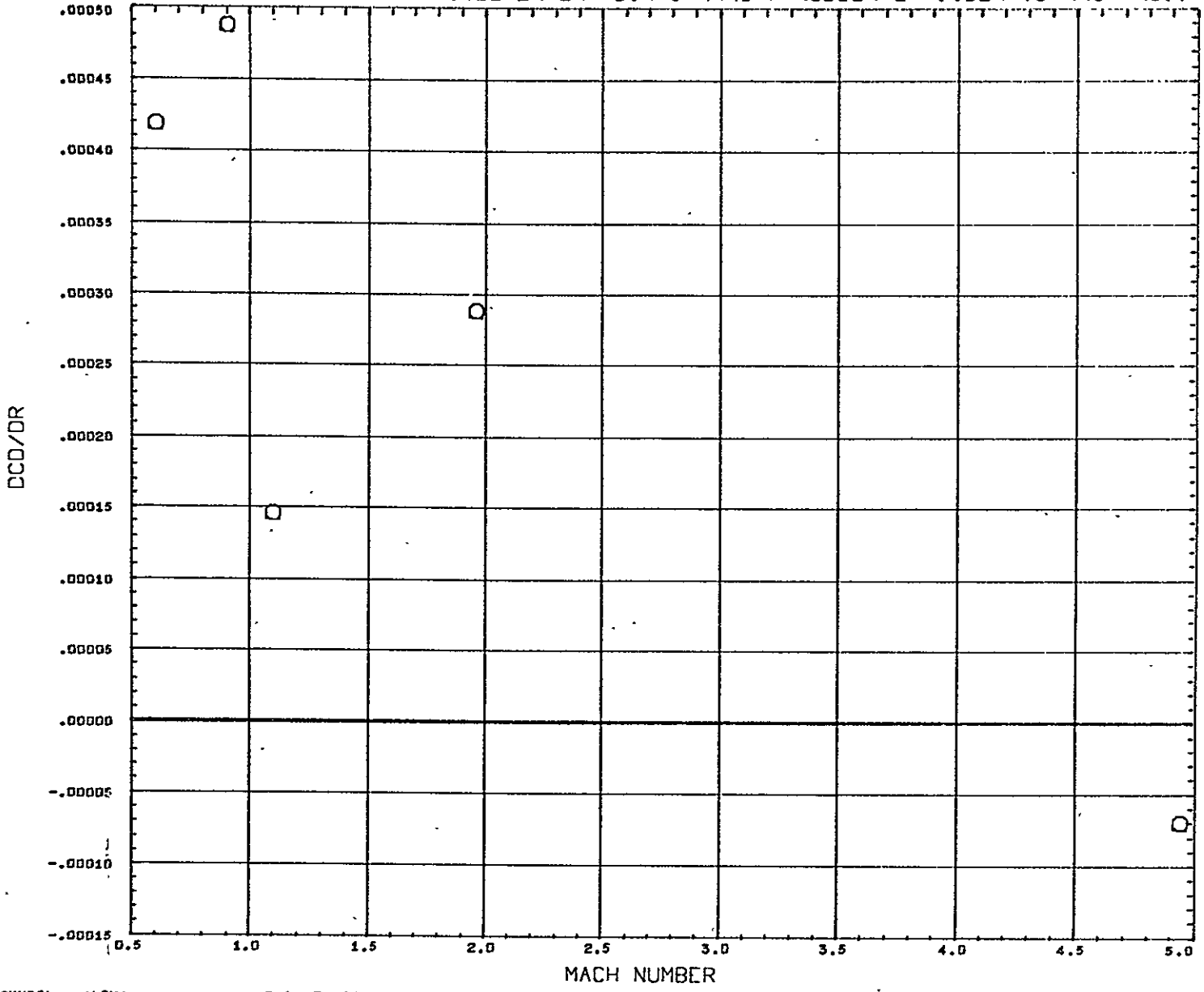


SYMBOL ALPHA 15.600  
 PARAMETRIC VALUES  
 BETA 0.000 ELEVN3 0.000  
 RUDER2 0.000 STING 4.000

REFERENCE INFORMATION  
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 LREF 6.1420 INCHES  
 BREF 6.1420 INCHES  
 XMRP 3.9950 INCHES  
 YMRP 0.0000 INCHES  
 ZMRP 0.1350 INCHES  
 SCALE 0.0033 SCALE

DATA HIST. CODE I#E\*F#B

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, RUDDER EFF. (DER VS MACH NO.)



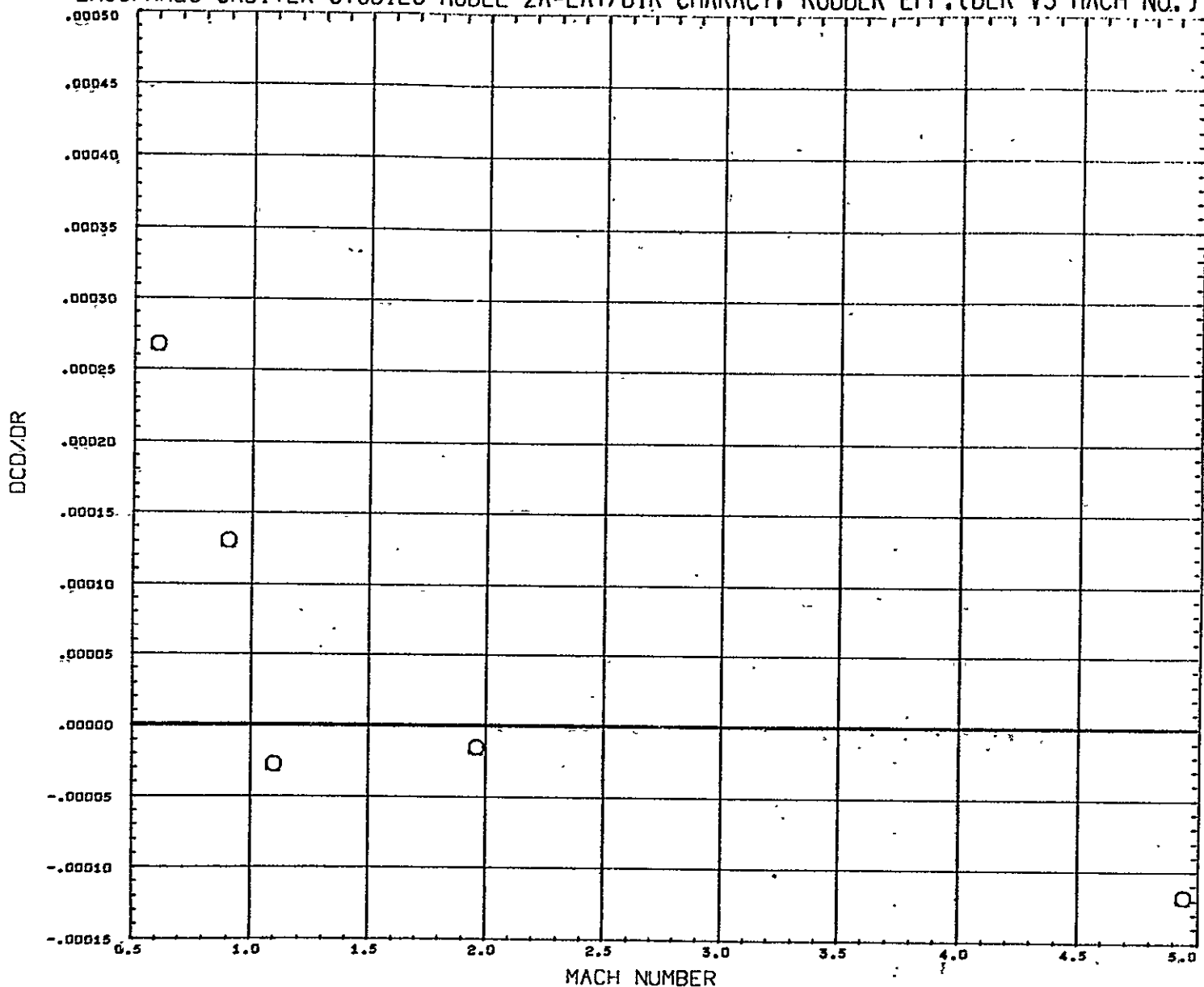
SYMBOL  $\circ$  ALPHA 0.000

PARAMETRIC VALUES  
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 RUDER2 0.000 STING 4.000

REFERENCE INFORMATION  
 SREF 9.0250 SQ. IN  
 LREF 6.1420 INCHES  
 BREF 6.1420 INCHES  
 XMRP 3.9950 INCHES  
 YMRP 0.0000 INCHES  
 ZMRP 0.1350 INCHES  
 SCALE 0.0033 SCALE

DATA HIST. CODE I#E#P#B

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, RUDDER EFF. (DER VS MACH NO.)

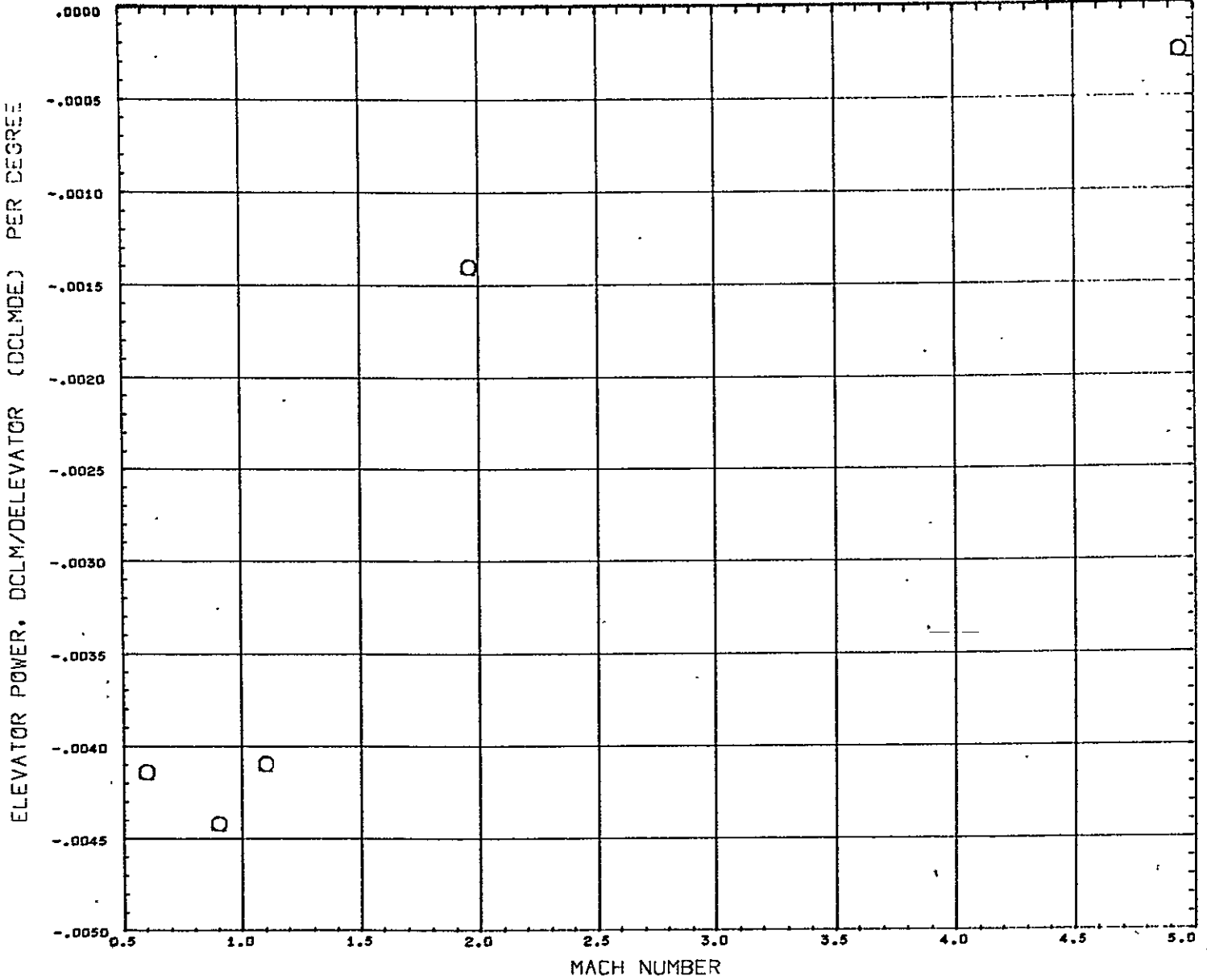


SYMBOL	ALPHA	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	15.000	BETA	0.000	ELEVNS	0.000	SREF	9.0250	SQ. IN
		RUDER2	0.000	STING	4.000	LREF	6.1420	INCHES
						BREF	6.1420	INCHES
						XHRP	3.9950	INCHES
						YHRP	0.0000	INCHES
						ZHRP	0.1350	INCHES
						SCALE	0.0033	SCALE

DATA HIST. CODE I\*E\*P\*B



LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT. ELEVON EFF. (DER VS MACH NO.)

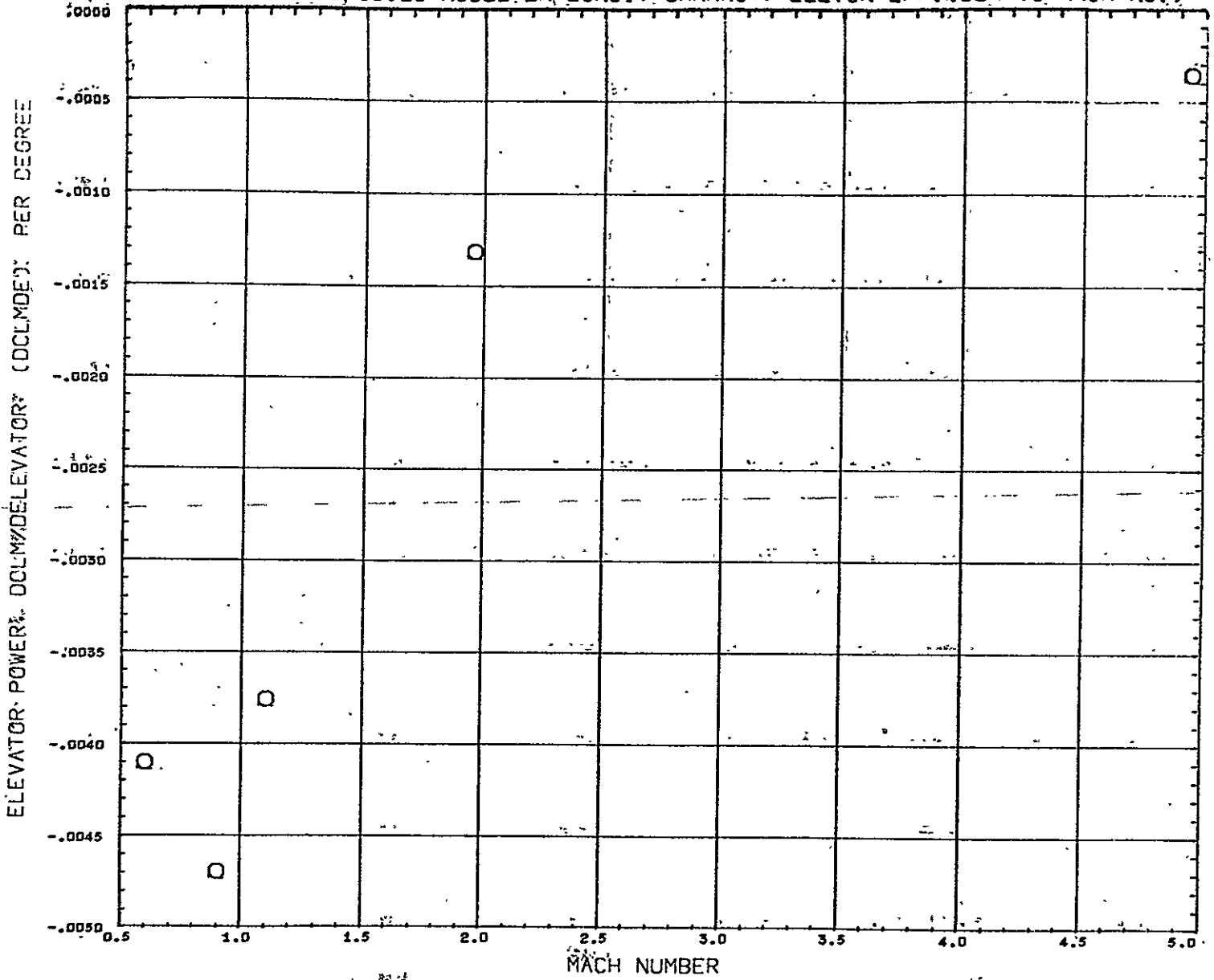


SYMBOL	ALPHA	BETA	PARAMETRIC VALUES		
○	0.000	0.000	0.000	ELEVNS	0.000
		RUDER2	0.000	STING	4.000

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XHRP	3.9950	INCHES
YHRP	0.0000	INCHES
ZHRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE H\*GTV\*EI\*P

LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT. ELEVON EFF. (DER VS MACH NO.)

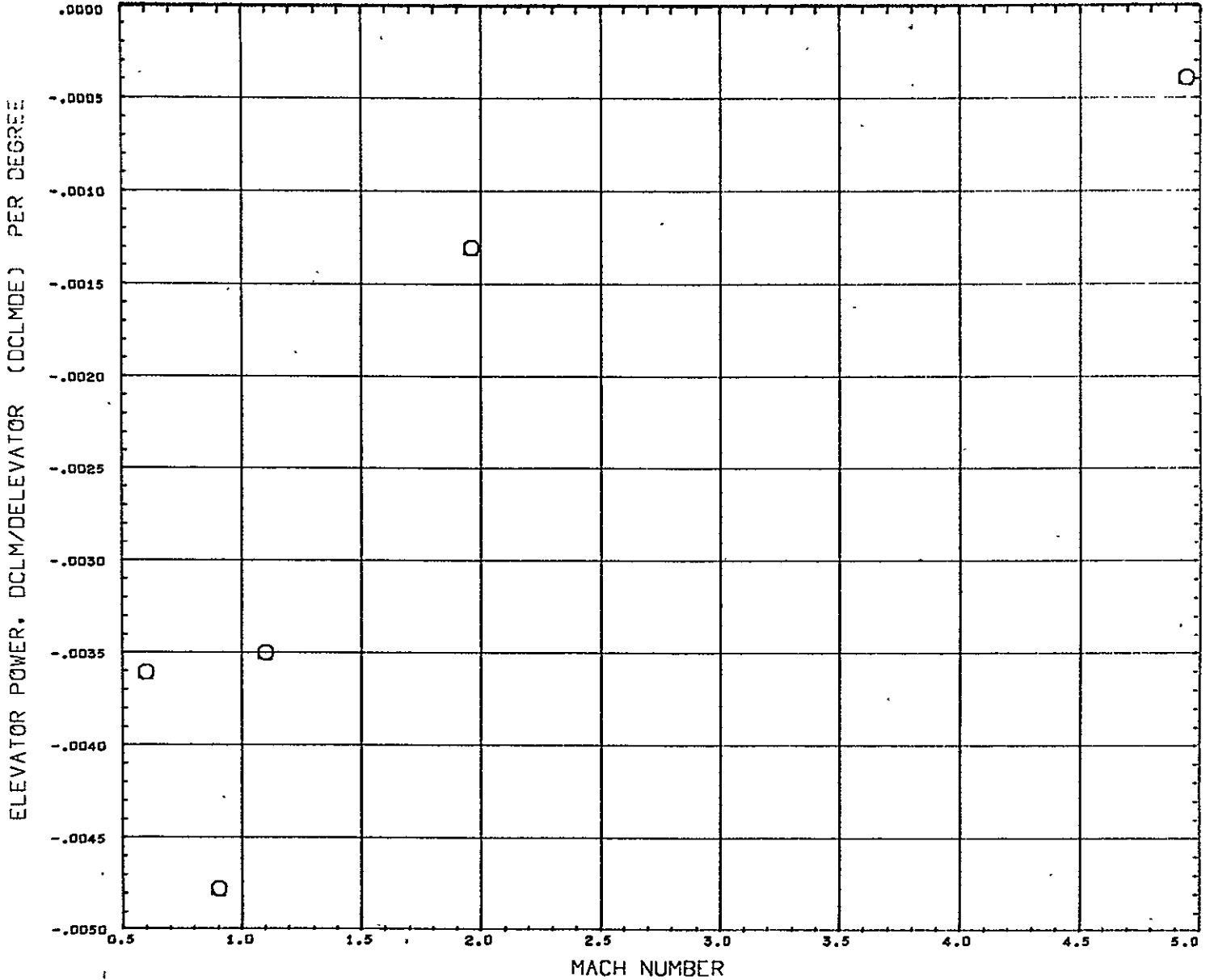


SYMBOL	ALPHA	BETA	PARAMETRIC VALUES		
○	10.000	0.000	ELEVNS	0.000	0.000
		RUDER2	0.000	STING	4.000

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XHRF	3.9950	INCHES
YHRF	0.0000	INCHES
ZHRF	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE M#GIV#E1#P

LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT. ELEVON EFF. (DER VS MACH NO.)



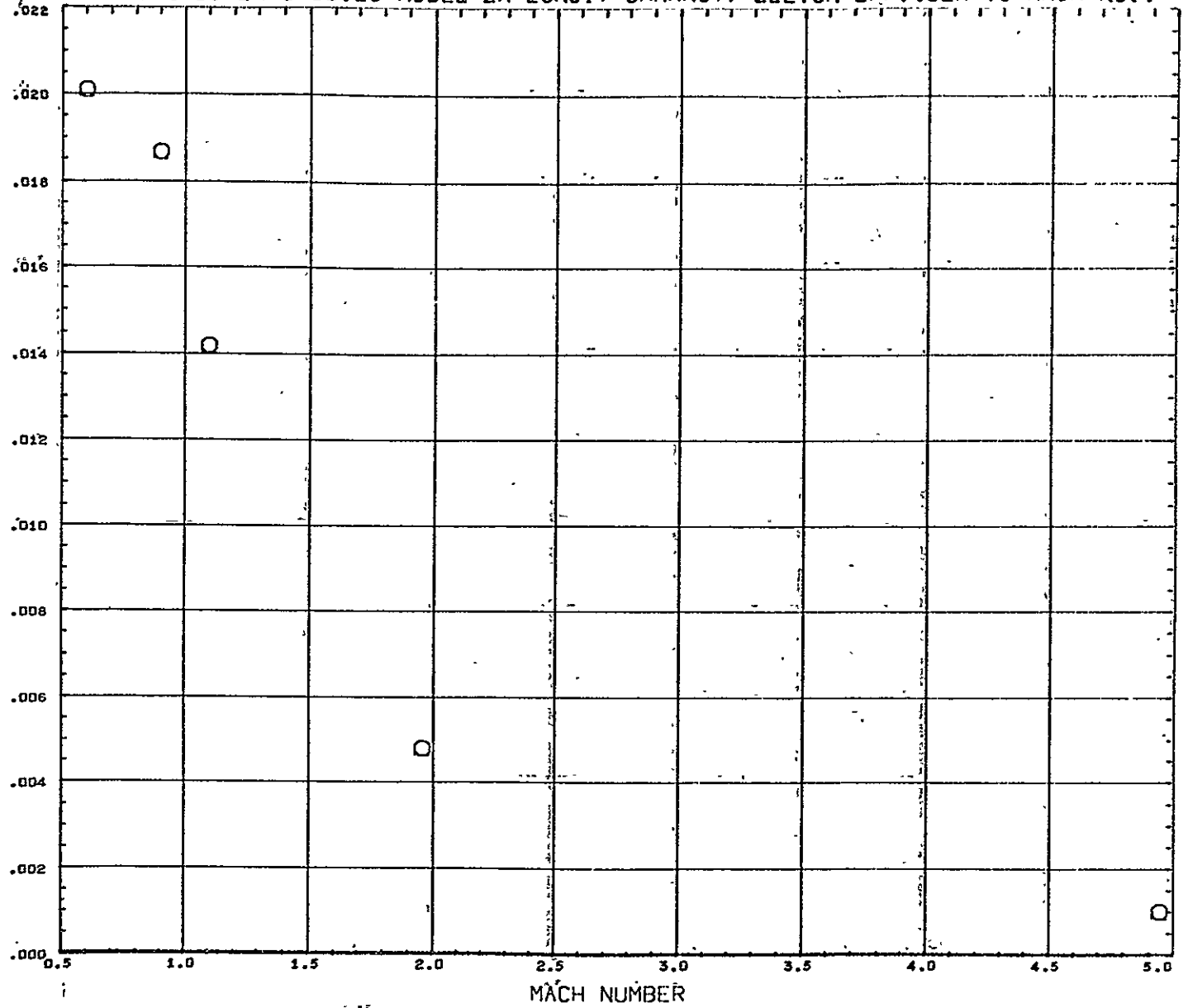
SYMBOL	ALPHA	PARAMETRIC VALUES			
○	15.000	BETA	0.000	ELEVNS	0.000
		RUDER2	0.000	STING	4.000

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE M\*GTV\*EI\*F

LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, ELEVON EFF. (DER VS MACH NO.)

ELEVATOR LIFT EFFECTIVENESS, DCL/ELEVATOR (DCL/DE) PER DEGREE



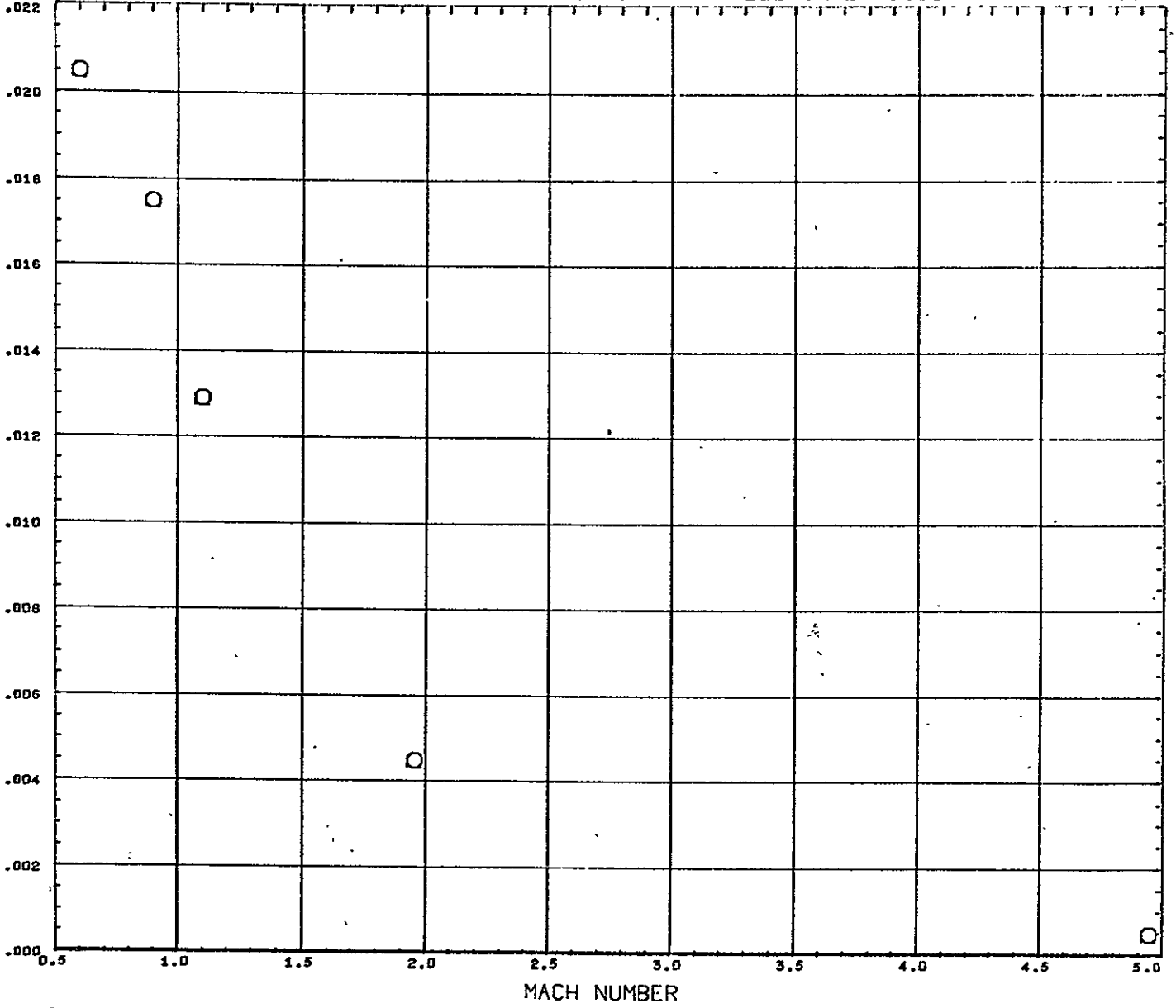
SYMBOL	ALPHA	PARAMETRIC VALUES			
○	0.000	BETA	0.000	ELEVNS	0.000
		RUDER2	0.000	STING	4.000

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE M#GTV#EI#P

LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT. ELEVON EFF. (DER VS MACH NO.)

ELEVATOR LIFT EFFECTIVENESS, DCL/DELEVATOR (DCL/DE) PER DEGREE.



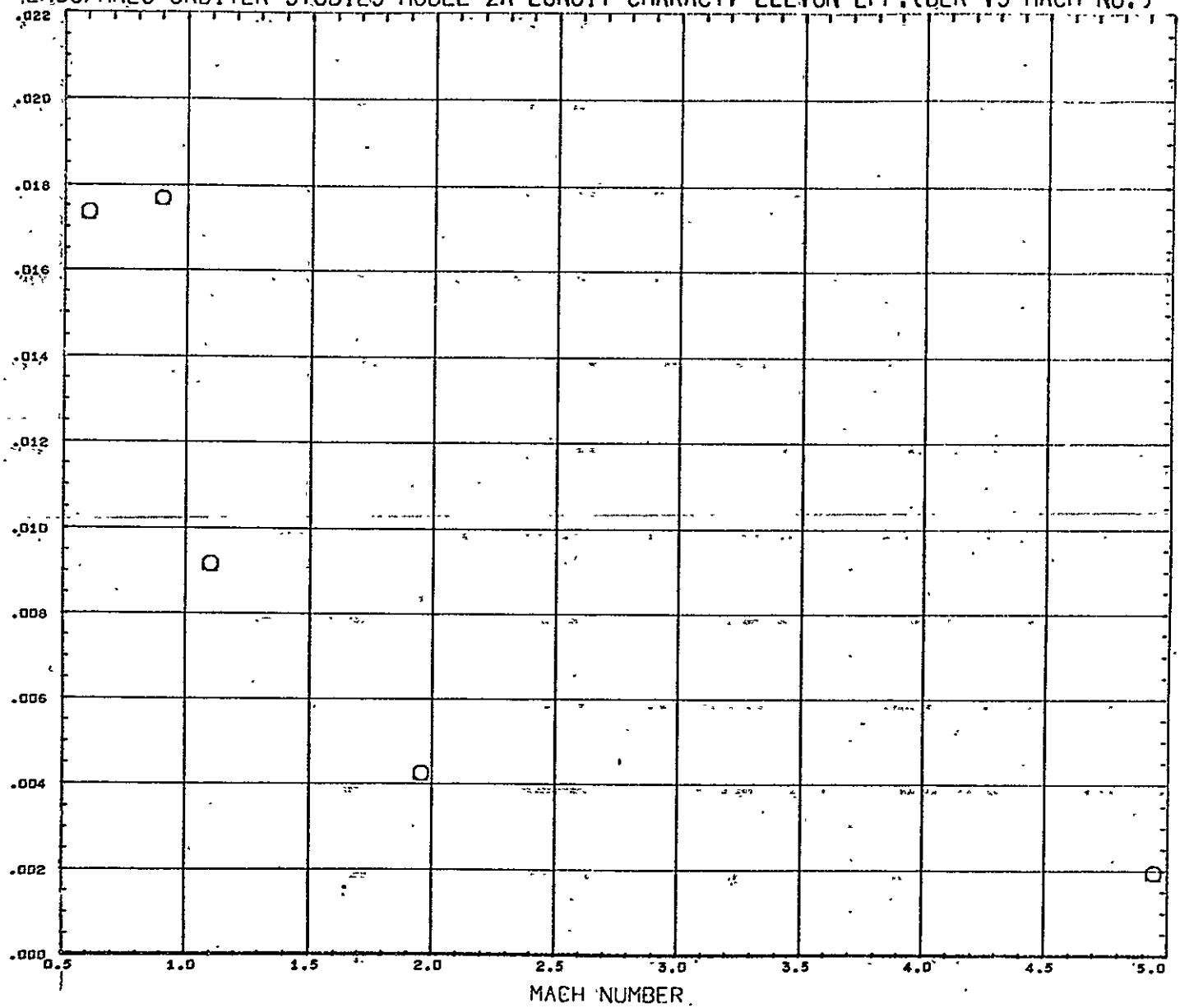
SYMBOL	ALPHA	PARAMETRIC VALUES			
○	10.000	BETA	0.000	ELEVNS	0.000
		RUDER2	0.000	STING	4.000

REFERENCE INFORMATION	
SREF	9.0250 SQ. IN
LREF	6.1420 INCHES
BREF	6.1420 INCHES
XMRP	3.9950 INCHES
YMRP	0.0000 INCHES
ZMRP	0.1350 INCHES
SCALE	0.0033 SCALE

DATA HIST. CODE M0GTV#E1#P

LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, ELEVON EFF. (DER VS MACH NO.)

ELEVATOR LIFT EFFECTIVENESS,  $dC_L/d\delta$  PER DEGREE

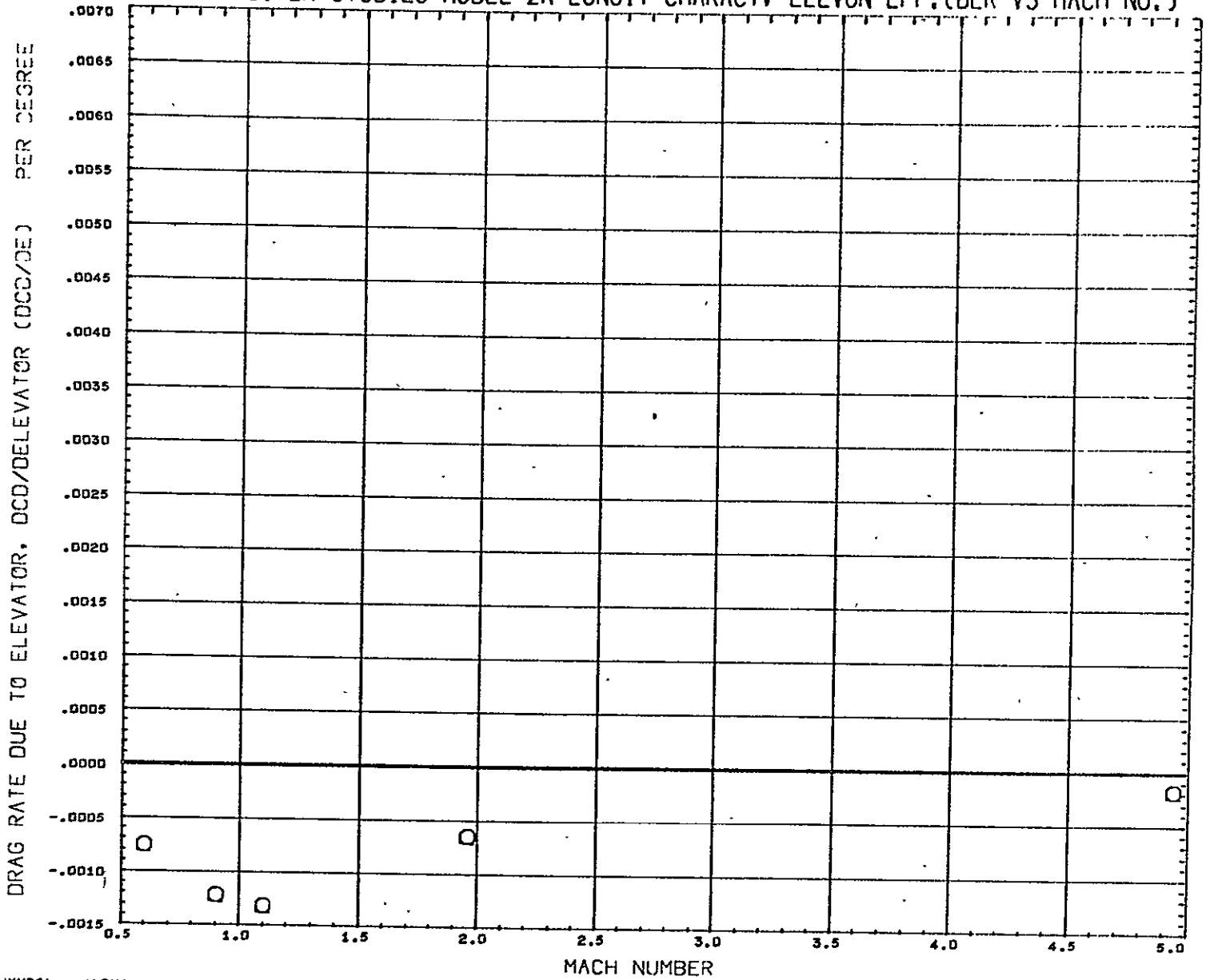


SYMBOL	ALPHA	PARAMETRIC VALUES			
○	15.000	BETA	0.000	ELEVNS	0.000
		RUDER2	0.000	STING	4.000

REFERENCE INFORMATION		
SREF	9.0250	90. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZHRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE M#GTV#E1#F

LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT, ELEVON EFF. (DER VS MACH NO.)

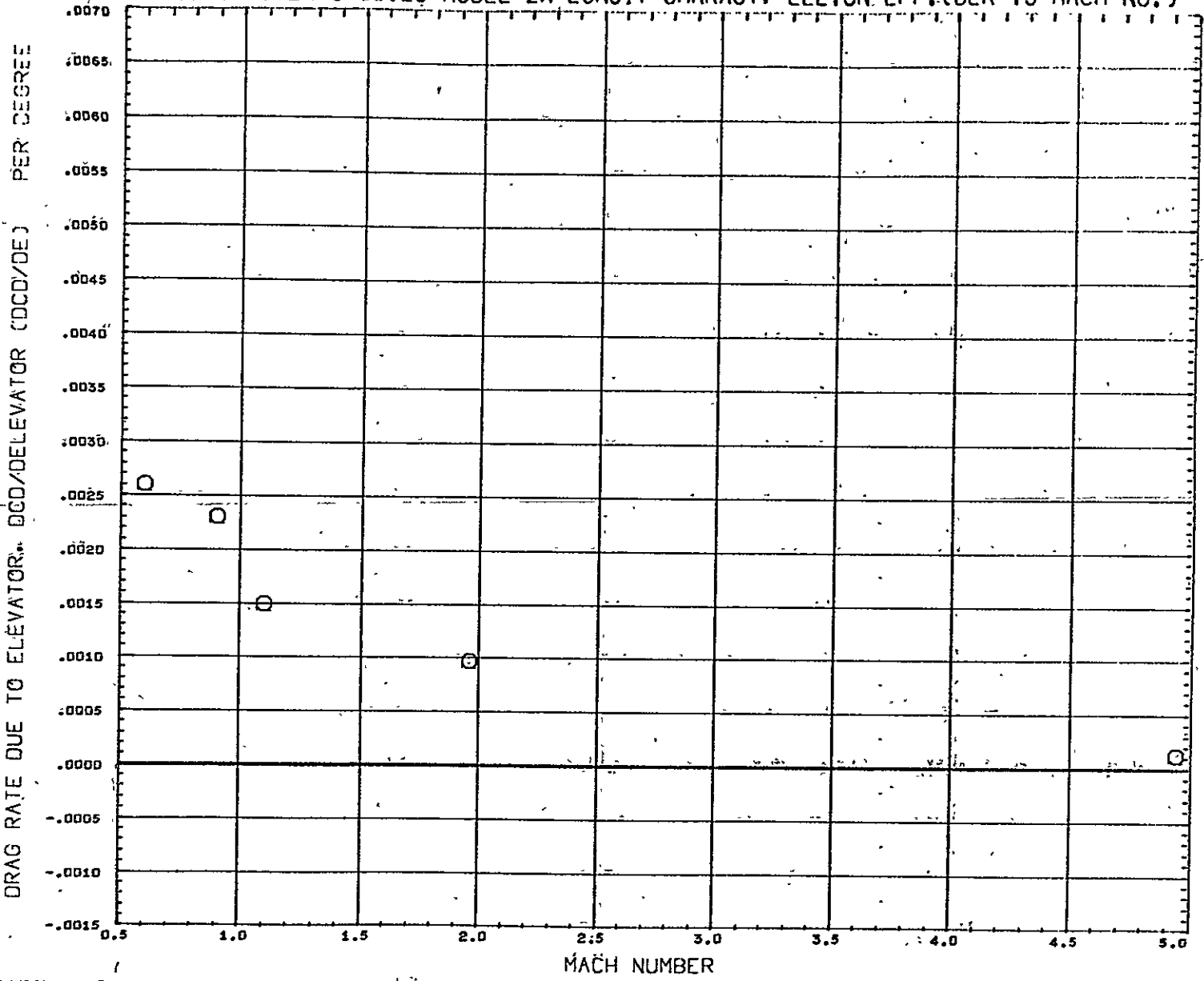


SYMBOL ○  
 ALPHA 0.000  
 BETA 0.000  
 RUDER2 0.000  
 PARAMETRIC VALUES  
 ELEVN3 0.000  
 STING 4.000

REFERENCE INFORMATION  
 SREF 9.0250 SQ. IN  
 LREF 6.1420 INCHES  
 BREF 6.1420 INCHES  
 XMRP 3.9950 INCHES  
 YMRP 0.0000 INCHES  
 ZMRP 0.1350 INCHES  
 SCALE 0.0033 SCALE

DATA HIST. CODE M#GTV#EI#P

LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT. ELEVON EFF. (DER VS MACH NO.)



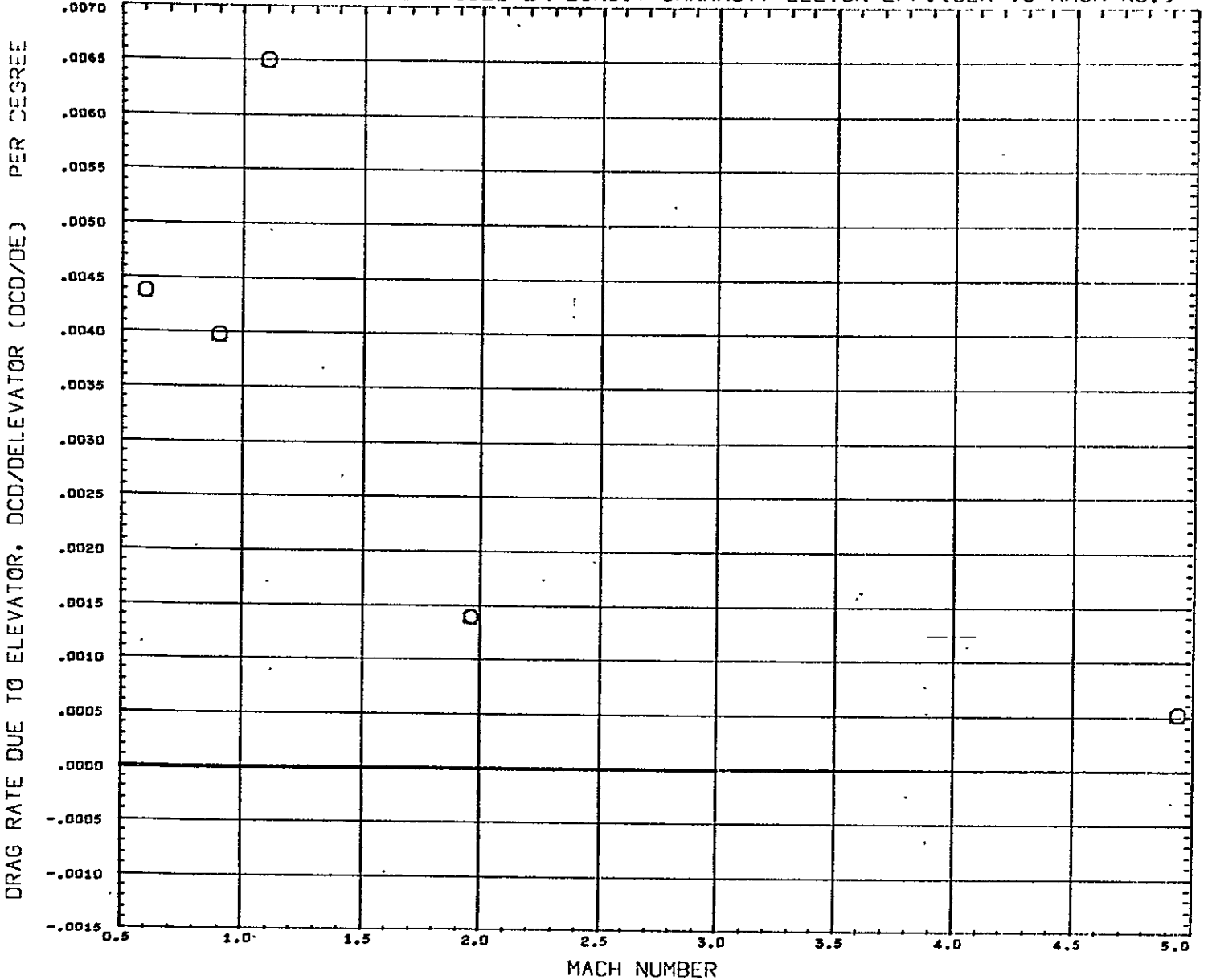
SYMBOL	ALPHA	PARAMETRIC VALUES			
○	10.000	BETA	0.000	ELEVNS	0.000
		RUDER2	0.000	STING	4.000

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE M#GIV#EI#P



LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT CHARACT. ELEVON EFF. (DER VS MACH NO.)



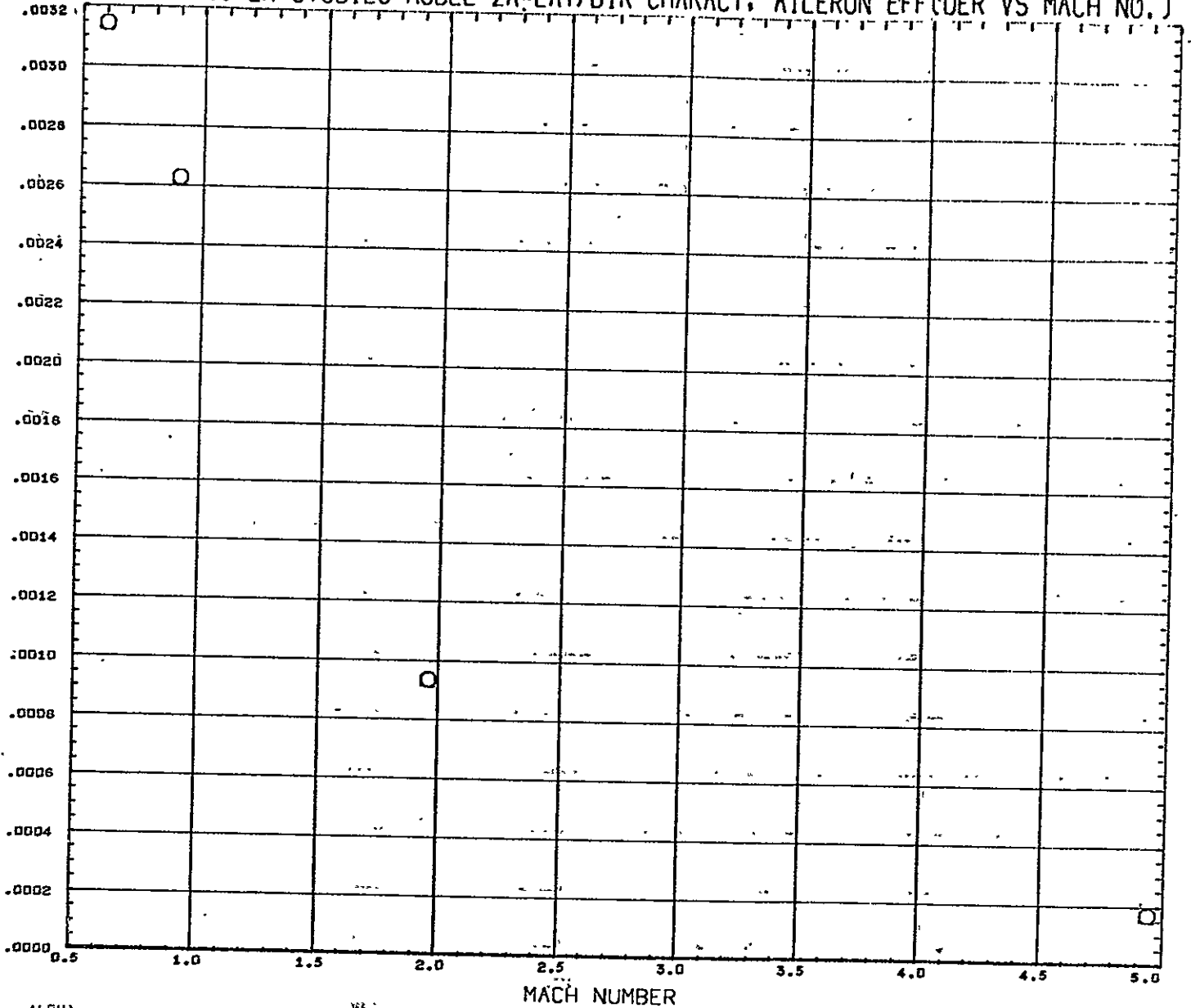
SYMBOL ○ ALPHA 15.000 BETA 0.000 ELEVNS 0.000  
 RUDER2 0.000 STING 4.000

REFERENCE INFORMATION  
 SREF 9.0250 SQ. IN  
 LREF 6.1420 INCHES  
 BREF 6.1420 INCHES  
 XMRP 3.9950 INCHES  
 YMRP 0.0000 INCHES  
 ZMRP 6.1350 INCHES  
 SCALE 0.0033 SCALE

DATA HIST. CODE M#GTV#EI#P

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT. AILERON EFF (DER VS MACH NO.)

AILERON CONTROL POWER, DCBL/DAILERON (DCBLDA) PER DEGREE



SYMBOL ○

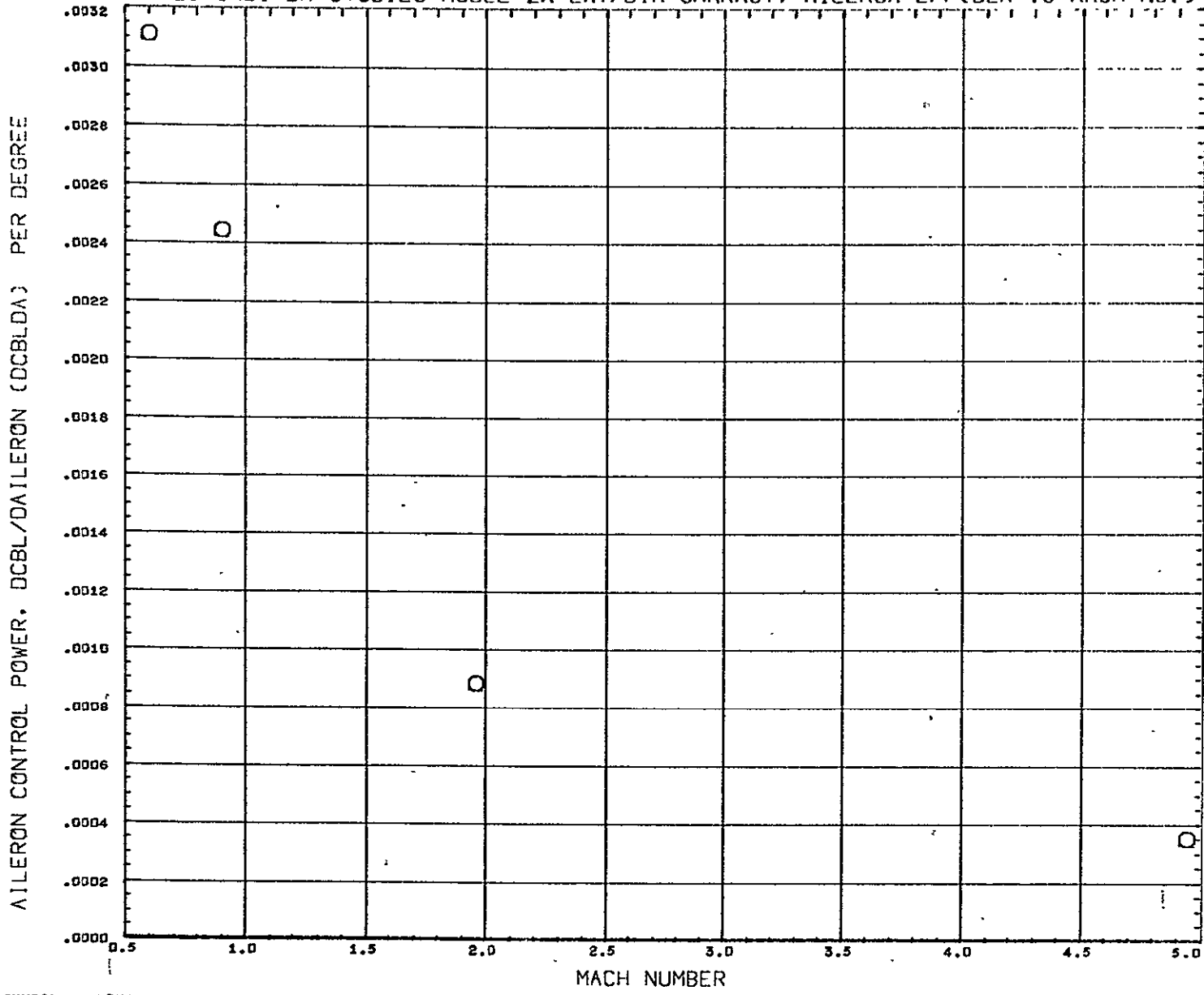
ALPHA	0.000	BETA	0.000	ELEVNS	0.000
		RUDER2	0.000	STING	4.000
		AILRON	0.000		

REFERENCE INFORMATION

SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE M\*GI#P

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, AILERON EFF( DER VS MACH NO.)

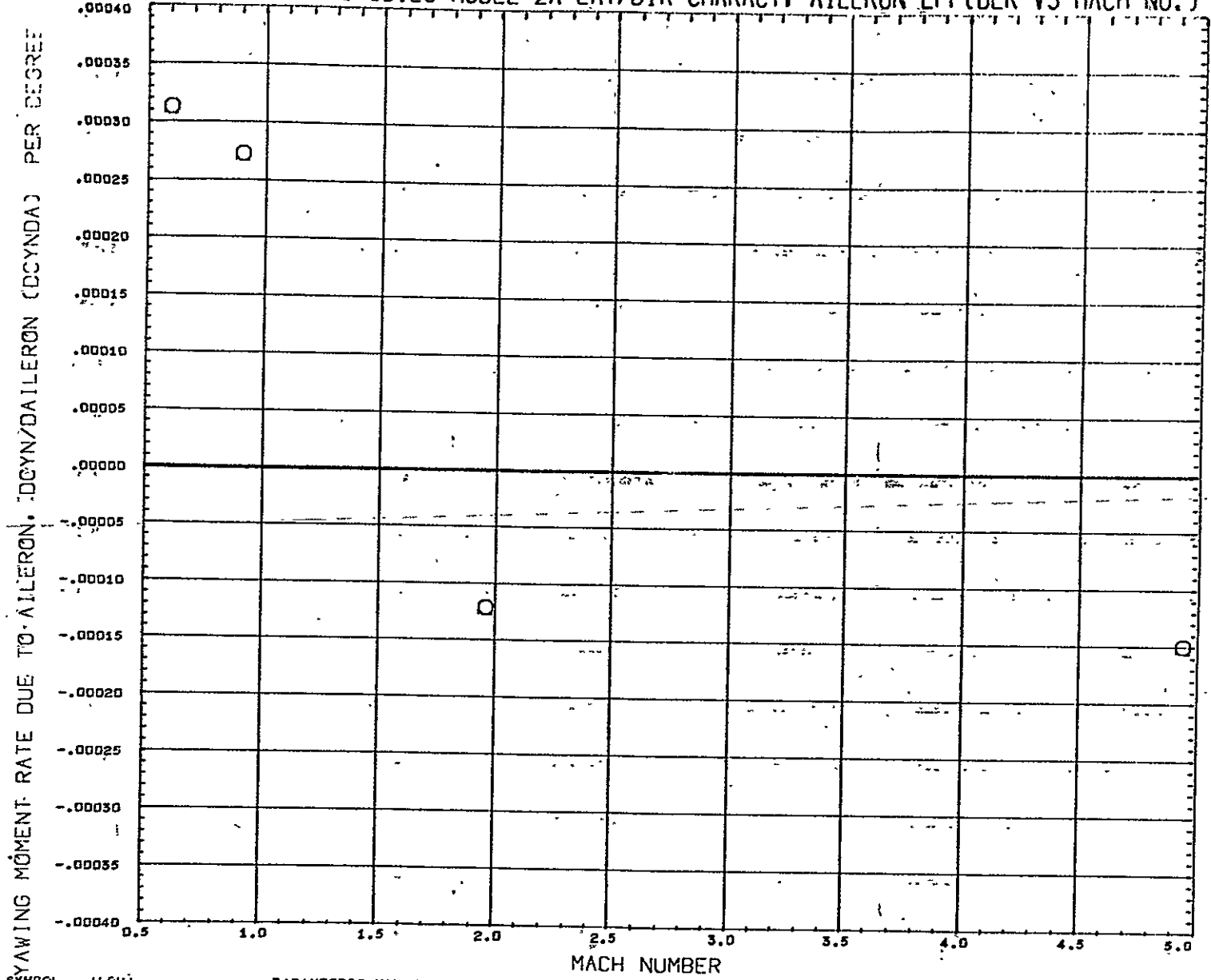


SYMBOL	ALPHA	PARAMETRIC VALUES			
○	10.000	BETA	0.000	ELEVNS	0.000
		RUDER2	0.000	STING	4.000
		AILRON	0.000		

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE M4618P

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT. AILERON EFF( DER VS MACH NO.)

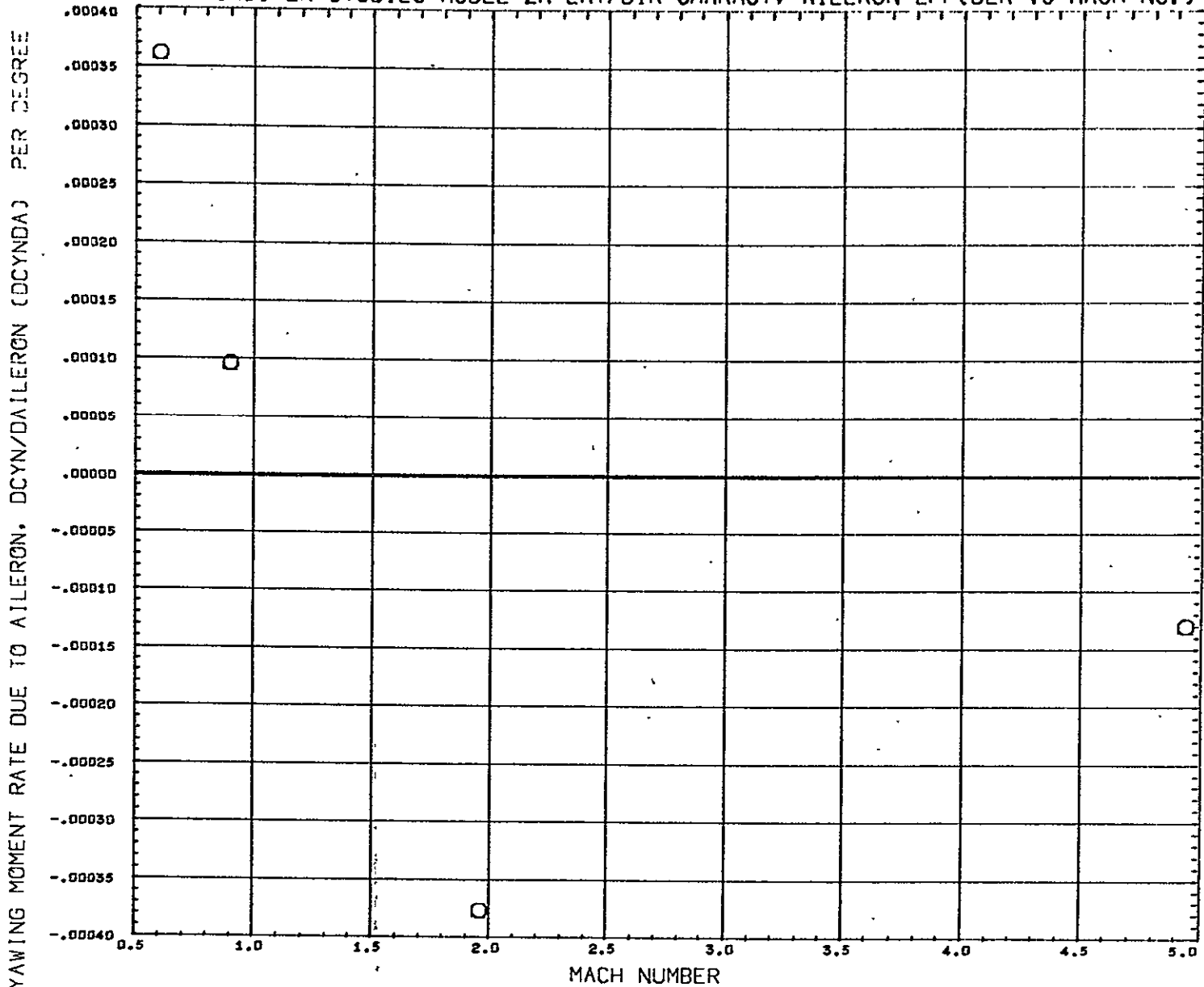


SYMBOL ( )  
 ALPHA 0.000  
 BETA 0.000  
 RUDER2 0.000  
 AILERON 0.000  
 PARAMETRIC VALUES  
 ELEVNS 0.000  
 STING 4.000

REFERENCE INFORMATION  
 SREF 9.0250 SQ. IN  
 LREF 6.1420 INCHES  
 BREF 6.1420 INCHES  
 XMRP 3.9950 INCHES  
 YMRP 0.0000 INCHES  
 ZMRP 0.1350 INCHES  
 SCALE 0.0033 SCALE

DATA HIST. CODE H\*GI\*P

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, AILERON EFF( DER VS MACH NO.)



SYMBOL ○

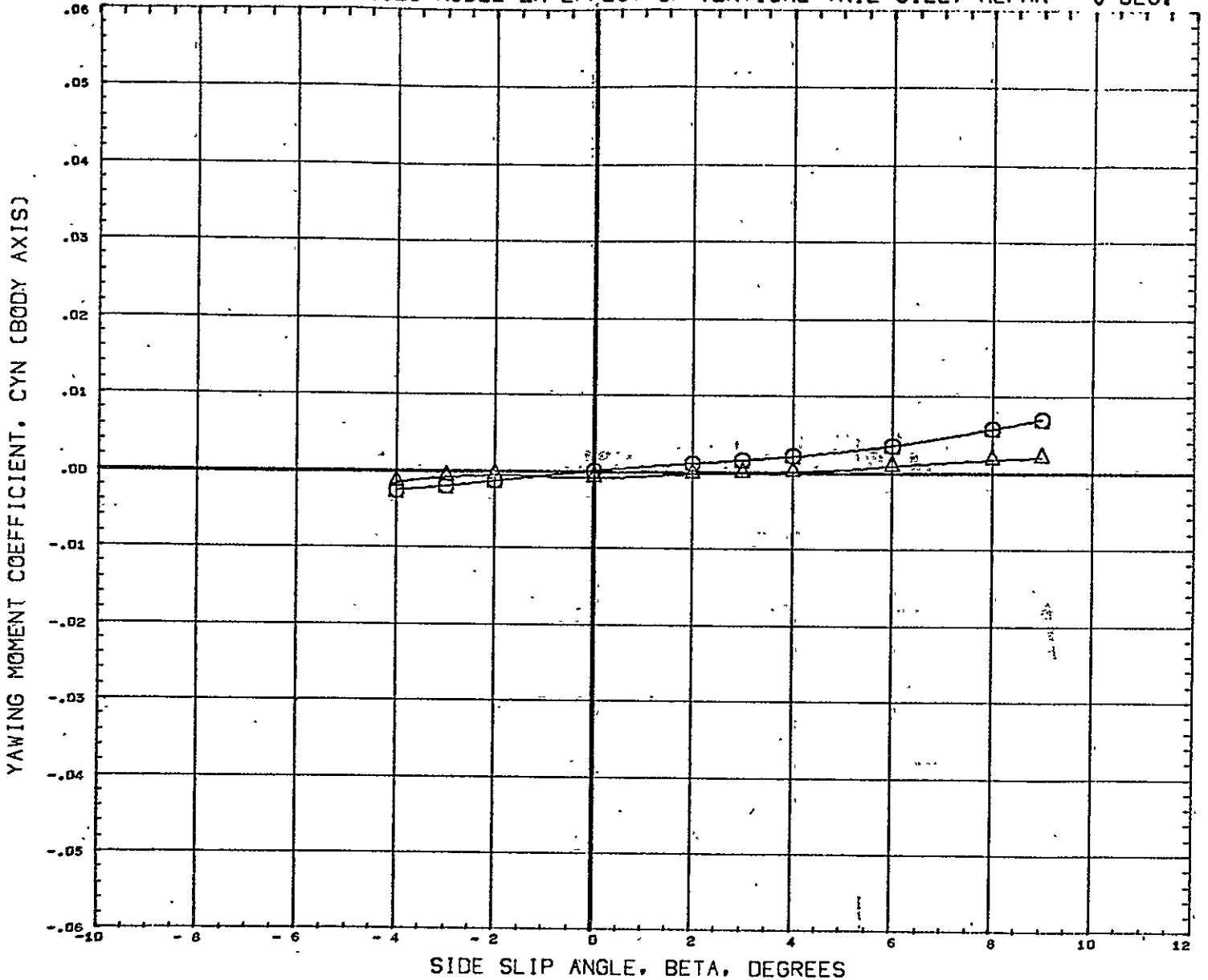
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BETA	0.000	ELEVNS	0.000	
RUDER2	0.000	STING	4.000	
AILRON	0.000			

REFERENCE INFORMATION

SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE M#G1#P

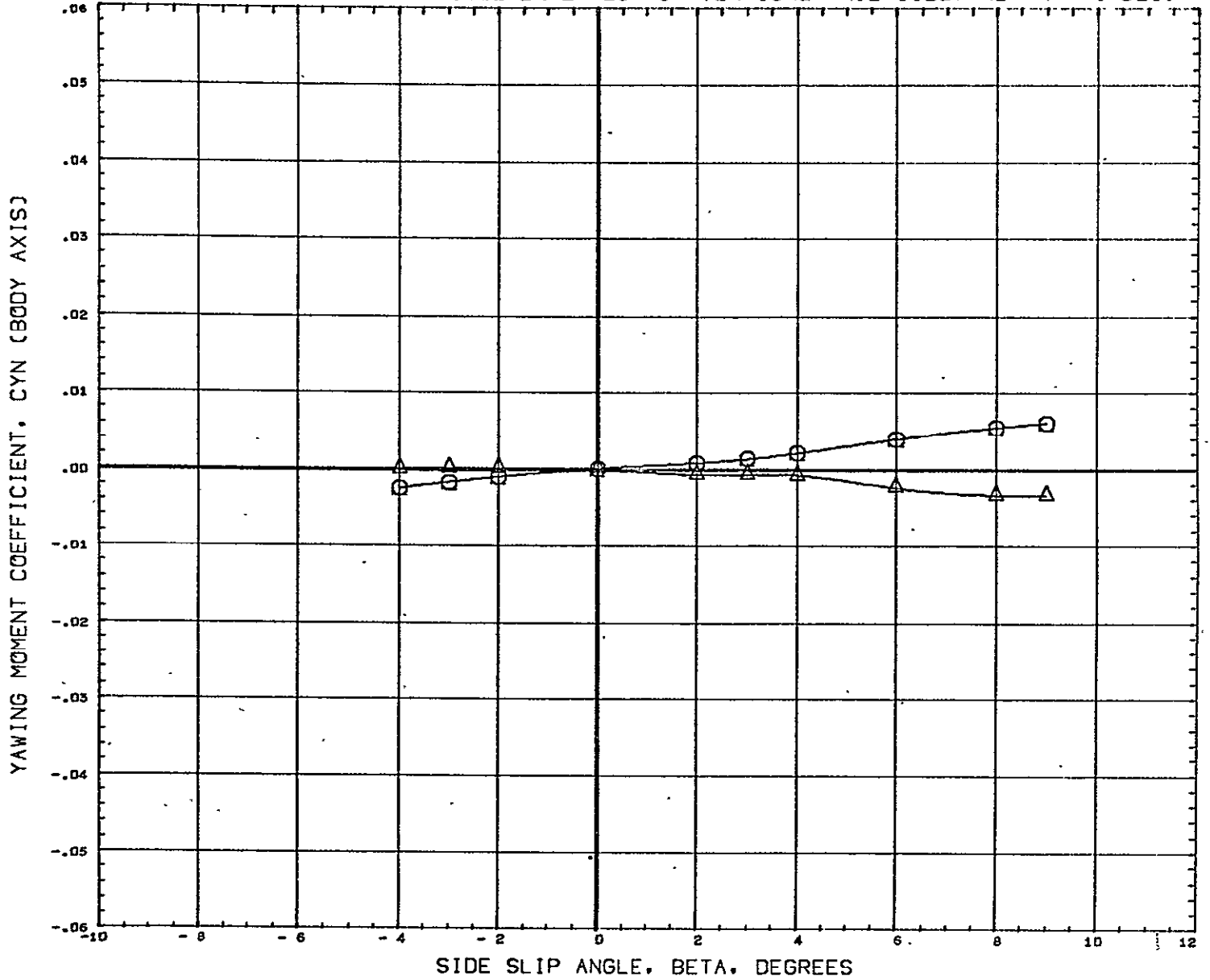
LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 0 DEG.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVNS	REFERENCE INFORMATION
(S4101X)	MSFC TWT 498 MSFC/LHSC ORBITER B2W2V402E3R2	0.000		0.000	0.000	SREF 9.0250 SQ. IN
(S4114X)	MSFC TWT 498 MSFC/LHSC ORBITER B2W2V401E3R1	0.000	0.900	0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.600

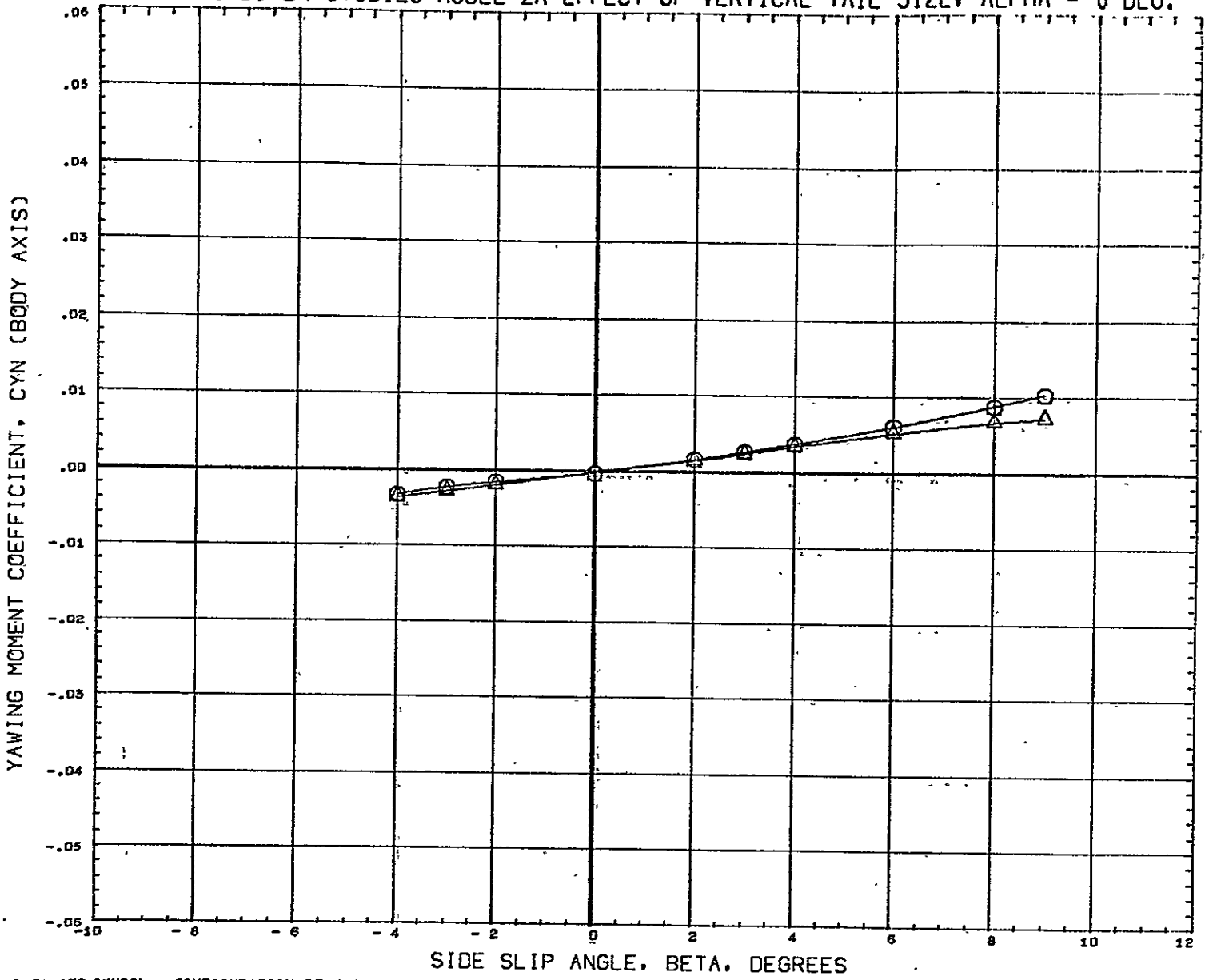
LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 0 DEG.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVNS	REFERENCE INFORMATION
(S4101X)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000		0.000	0.000	SREF 9.0250 SQ. IN
(S4114X)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000		0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.900

LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 0 DEG.

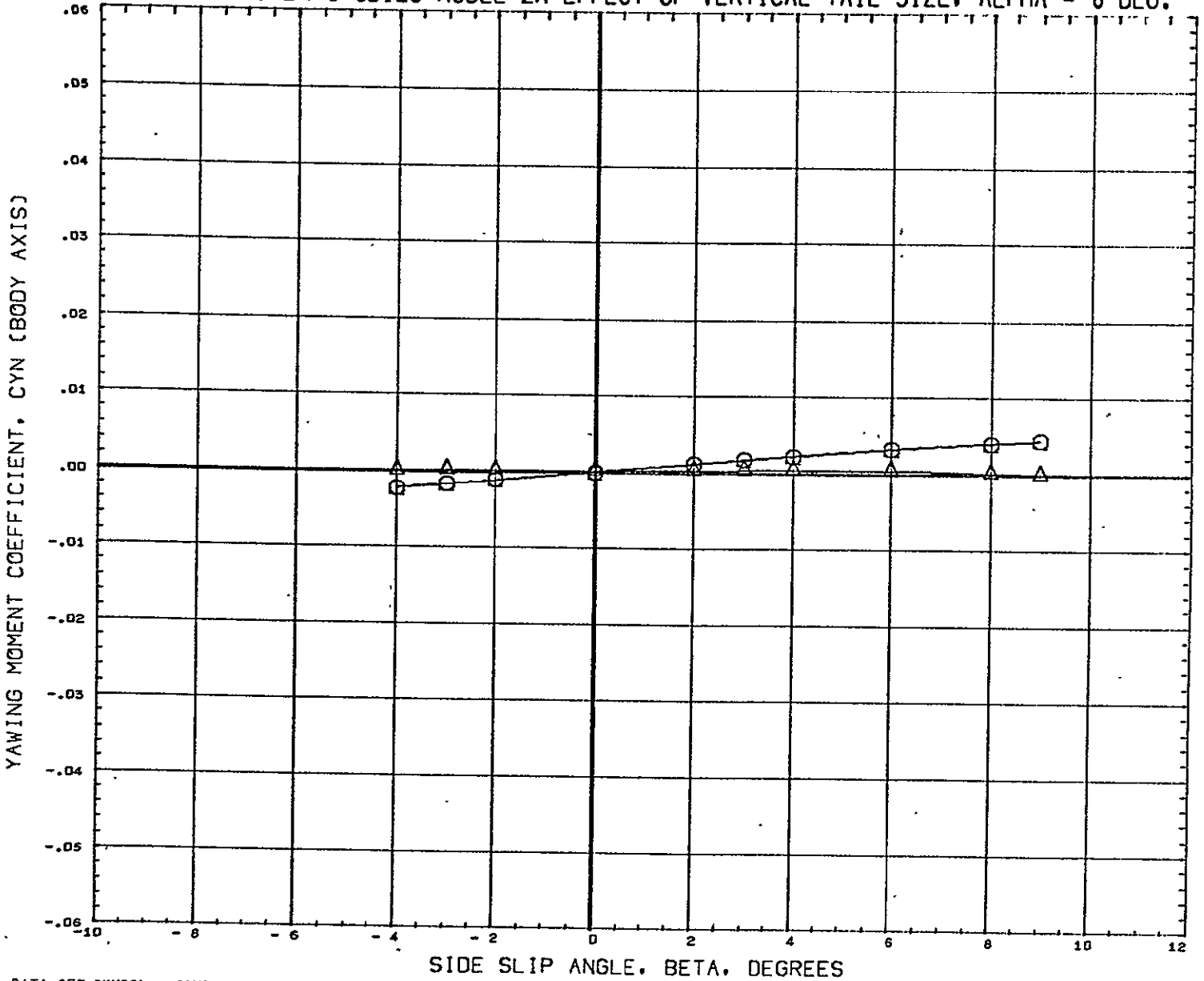


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVNS	REFERENCE INFORMATION
(S4101X)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000			0.000	SREF 9.0250 SQ. IN
(S4114X)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000	0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XHRF 3.9950 INCHES
						YHRF 0.0000 INCHES
						ZHRF 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.100



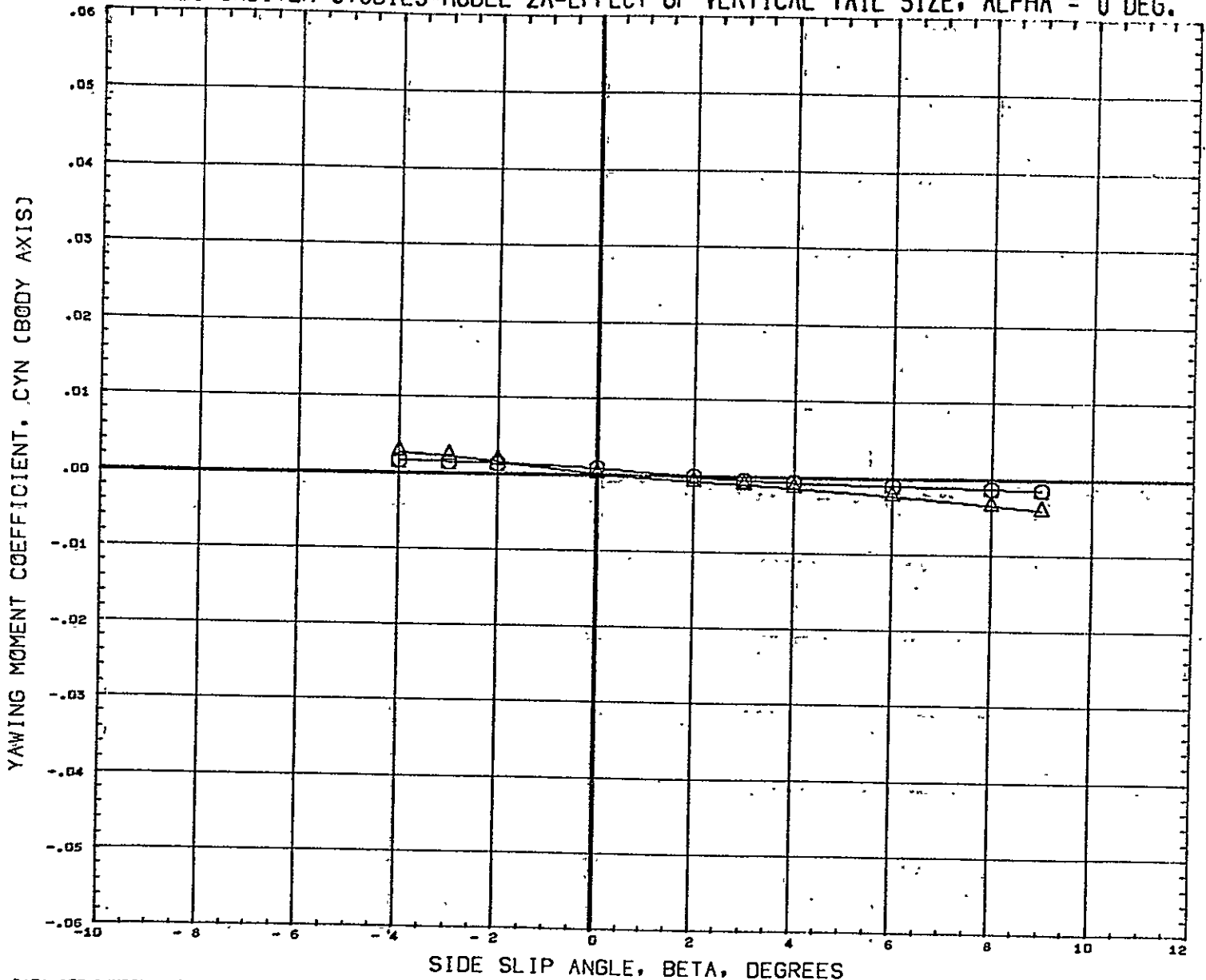
LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 0 DEG.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVNS	REFERENCE INFORMATION
(S4101X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000		0.000	0.000	SREF 9.0250 SQ. IN
(S4114X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	0.000	0.000		0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRF 3.9950 INCHES
						YMRF 0.0000 INCHES
						ZMRF 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.960

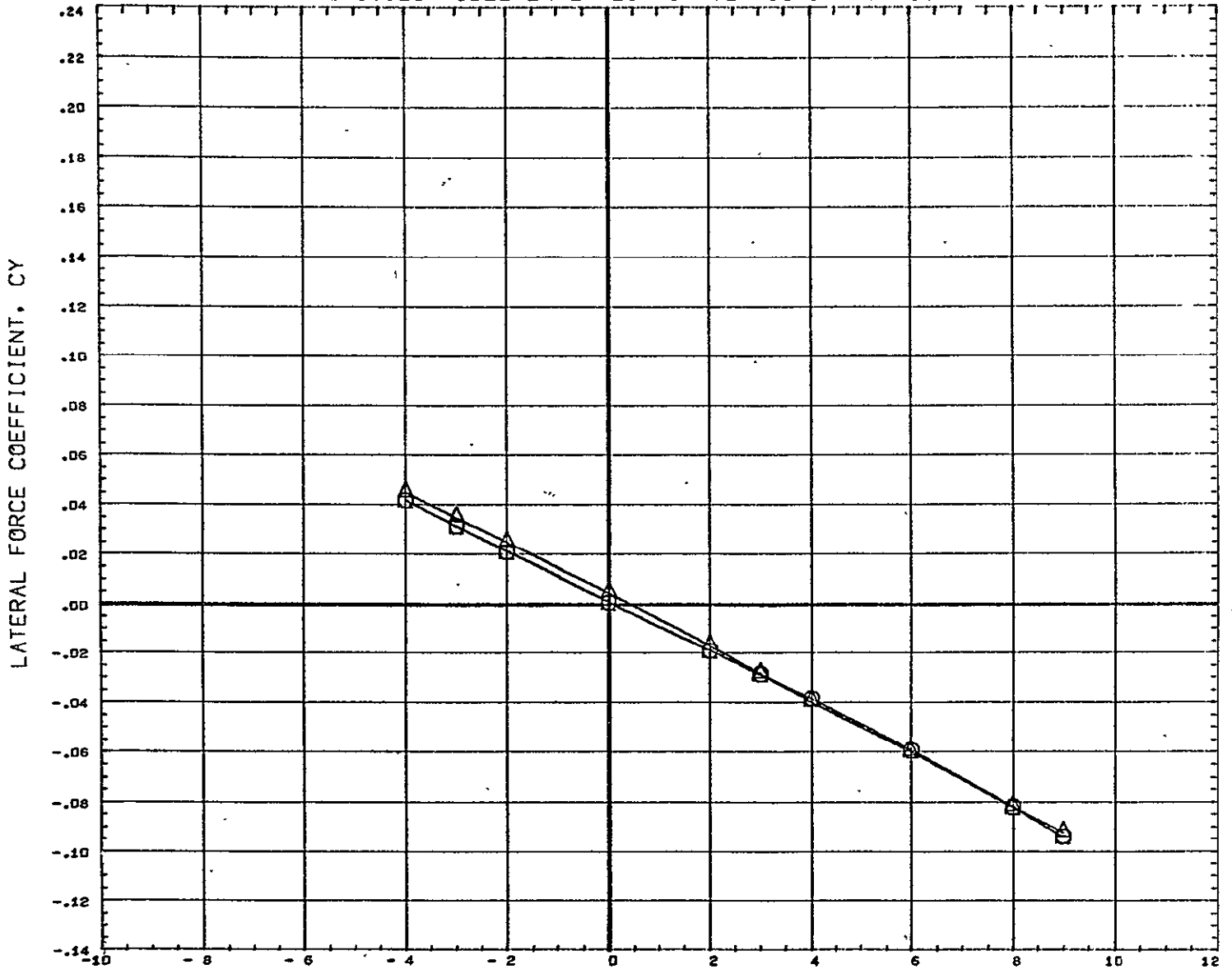
LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 0 DEG.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVN3	REFERENCE INFORMATION
(S4101X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000			0.000	SREF 9.0250 SQ. IN
(S4114X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	0.000	0.000	0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 4.960

LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 0 DEG.

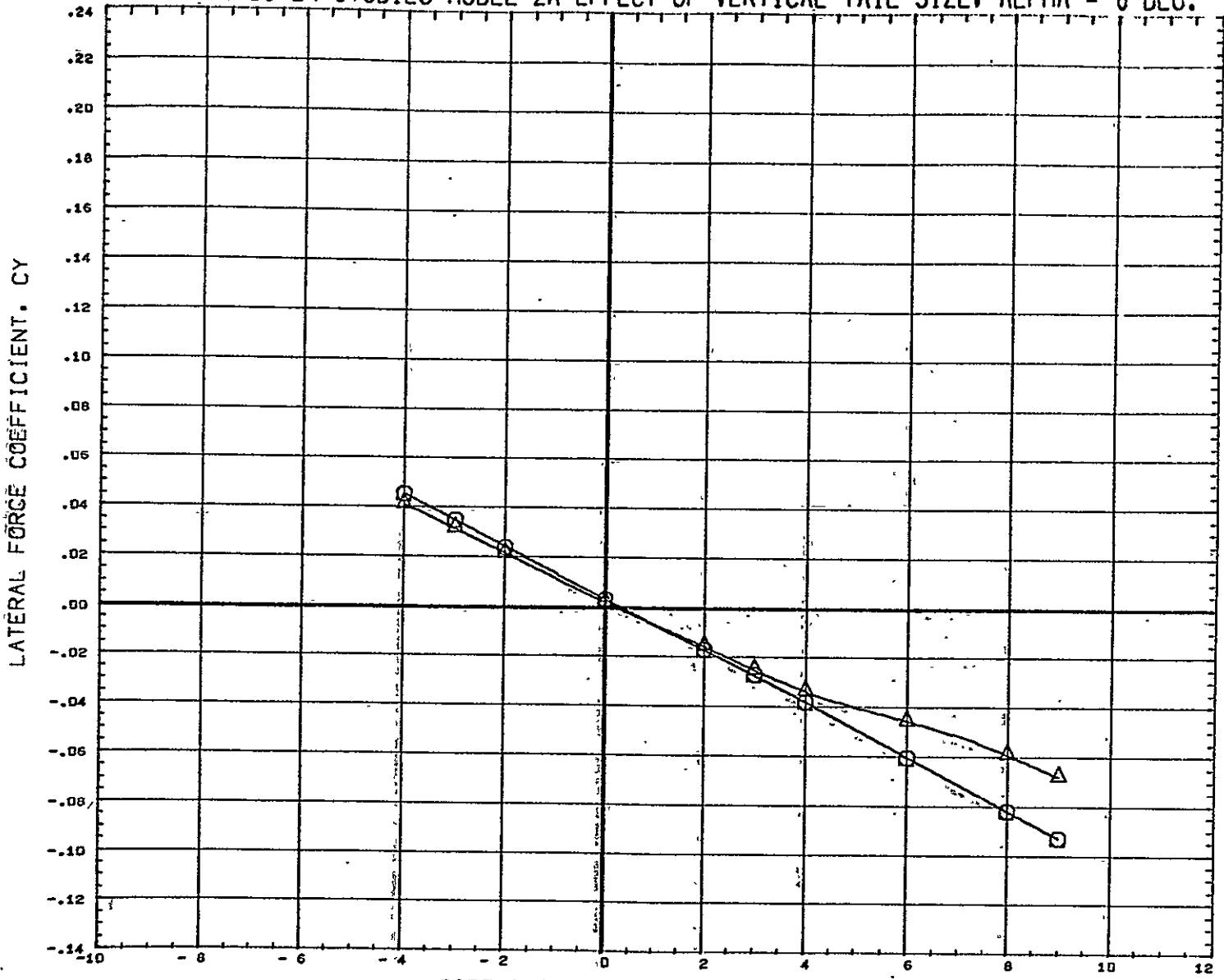


SIDE SLIP ANGLE, BETA, DEGREES

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVNS	REFERENCE INFORMATION
(S4101X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000		0.000	0.000	SREF 9.0250 SQ. IN
(S4114X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	0.000	0.000		0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

HACH 0.600

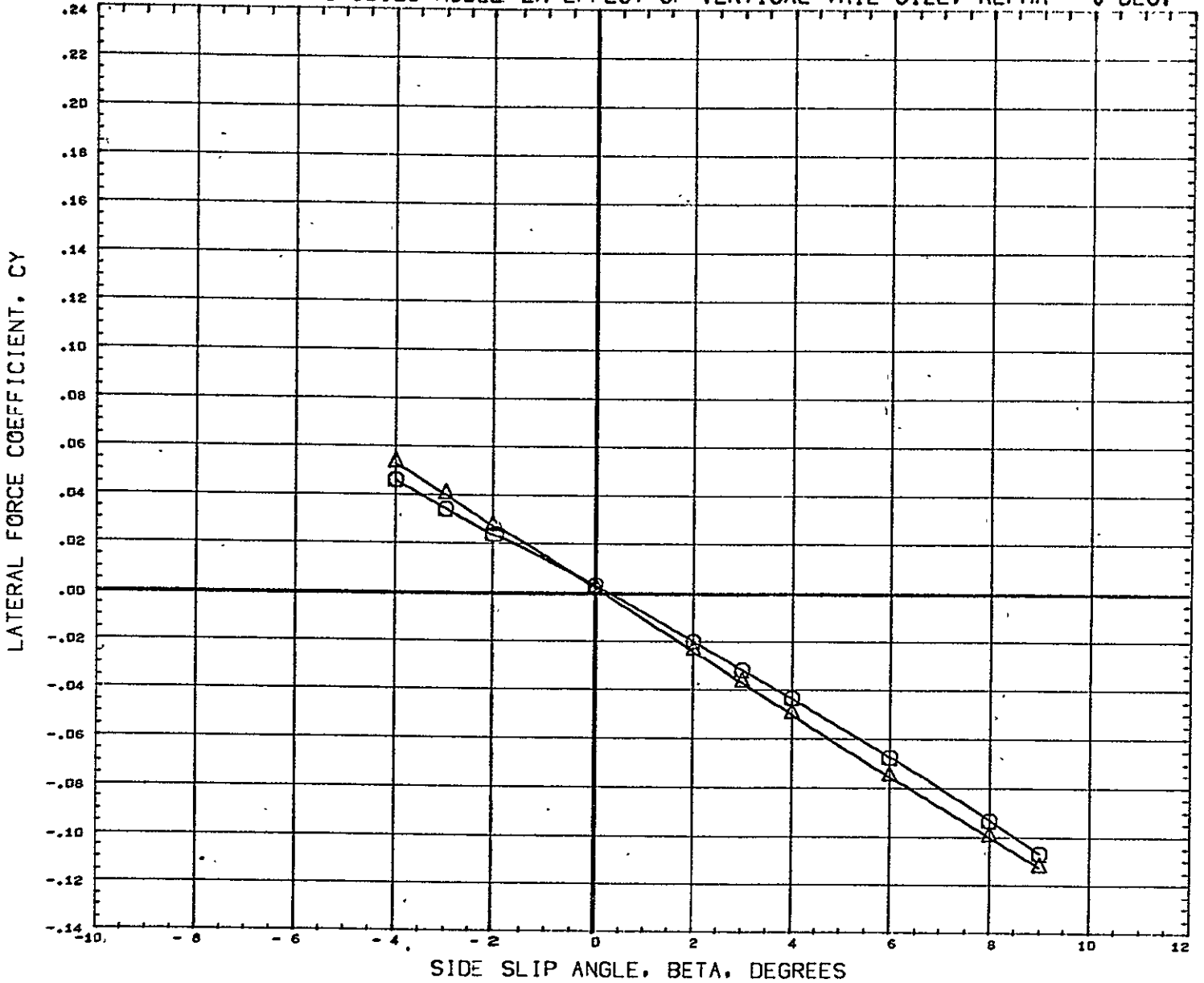
LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 0 DEG.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVN3	REFERENCE INFORMATION
(S4101X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000		0.000	0.000	SREF 9.0250 SQ. IN
(S4114X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	0.000	0.000		0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

HACH 0.900

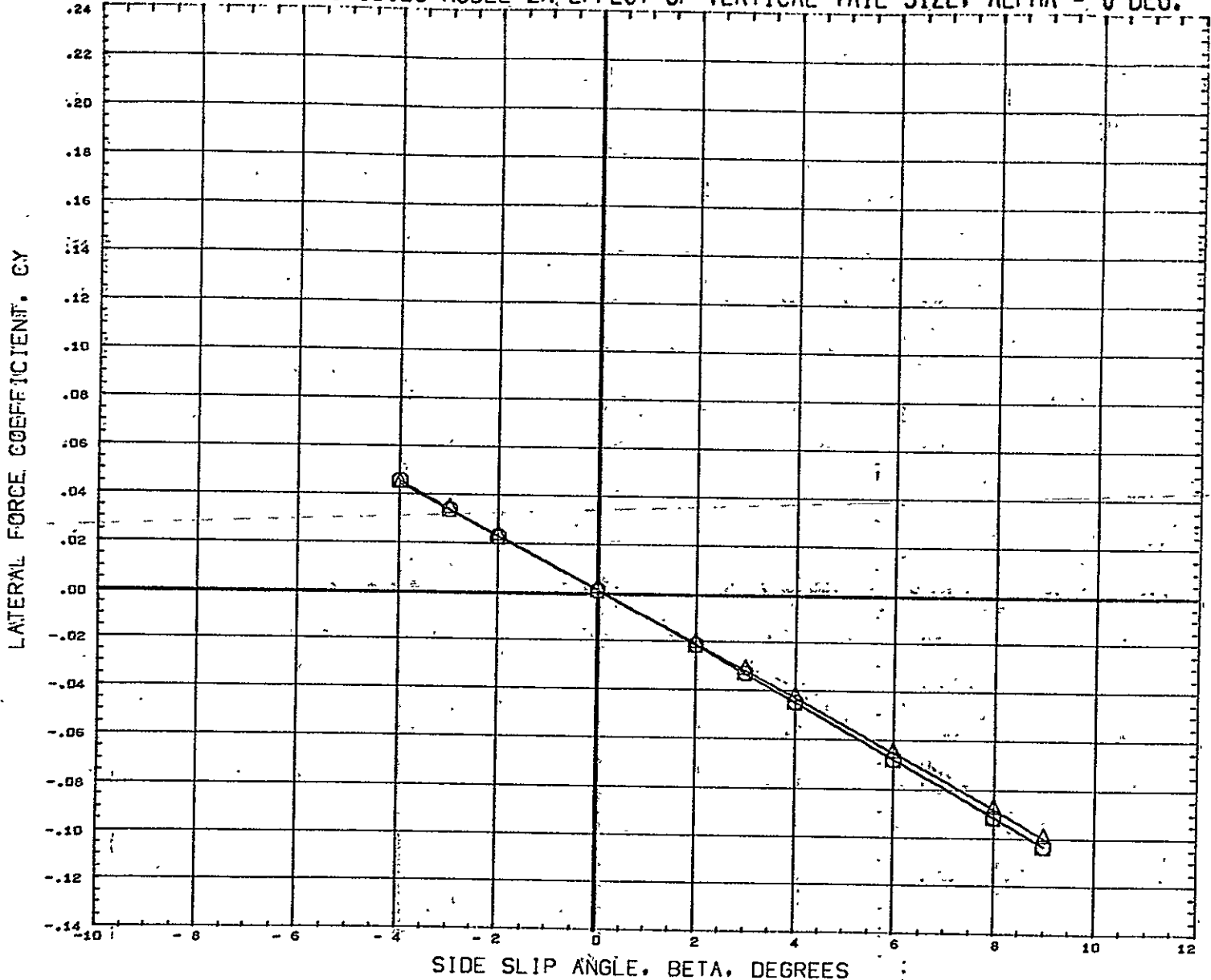
LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 0 DEG.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVN3	REFERENCE INFORMATION
(S4101X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000			0.000	SREF 9.0250 SQ. IN
(S4114X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	0.000	0.000		0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.100

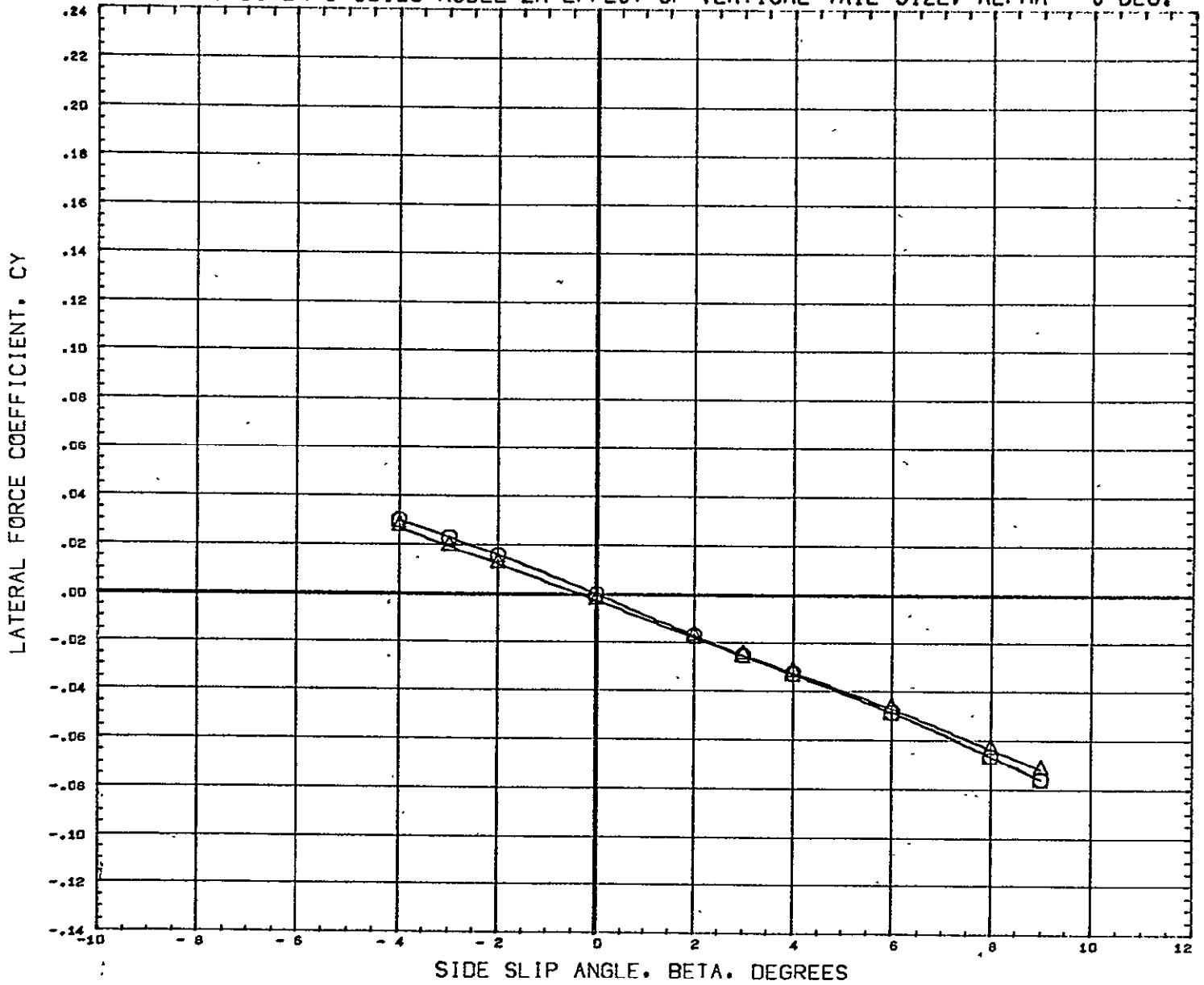
LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 0 DEG.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVNS	REFERENCE INFORMATION
(S4101X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000		0.000	0.000	SREF 9.0250 SQ. IN
(S4114X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	0.000	0.000	0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.960

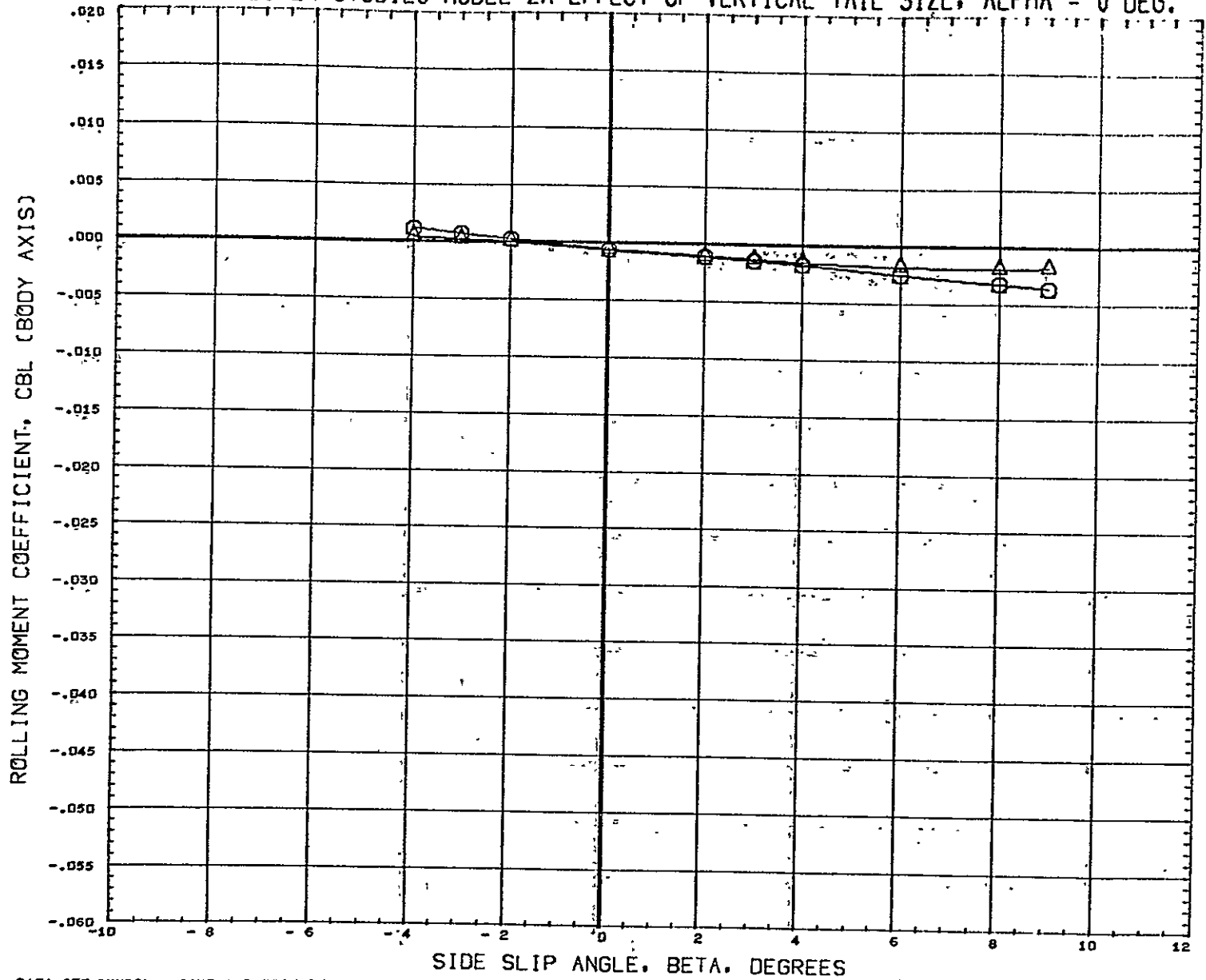
LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 0 DEG.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEV3	REFERENCE INFORMATION
(S4101X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000			0.000	SREF 9.0250 SQ. IN.
(S4114X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	0.000	0.000	0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 4.960

LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 0 DEG.

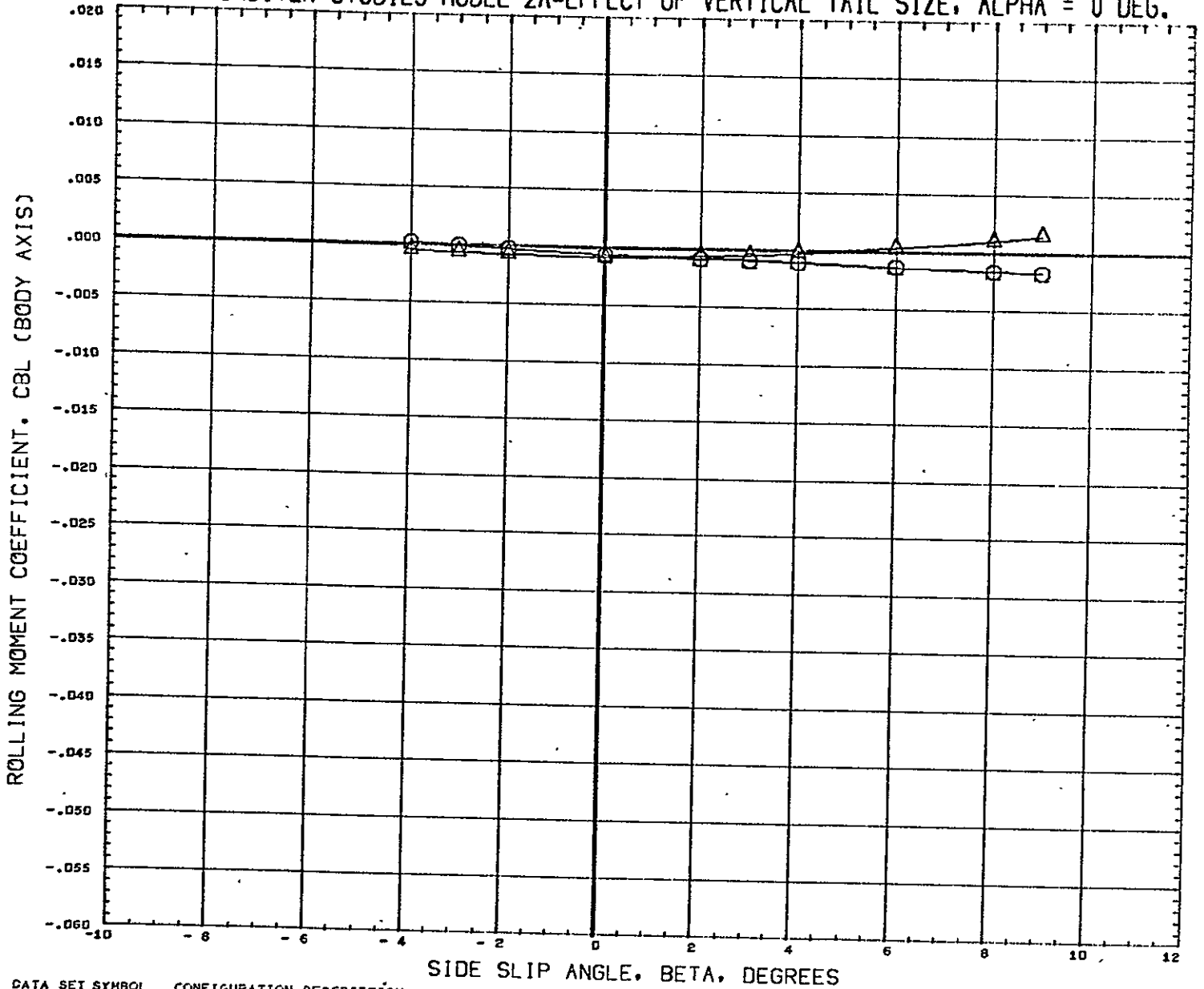


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVNS	REFERENCE INFORMATION
(S4101X)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000			0.000	SREF 9.0250 SQ.IN
(S4114X)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000	0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.600



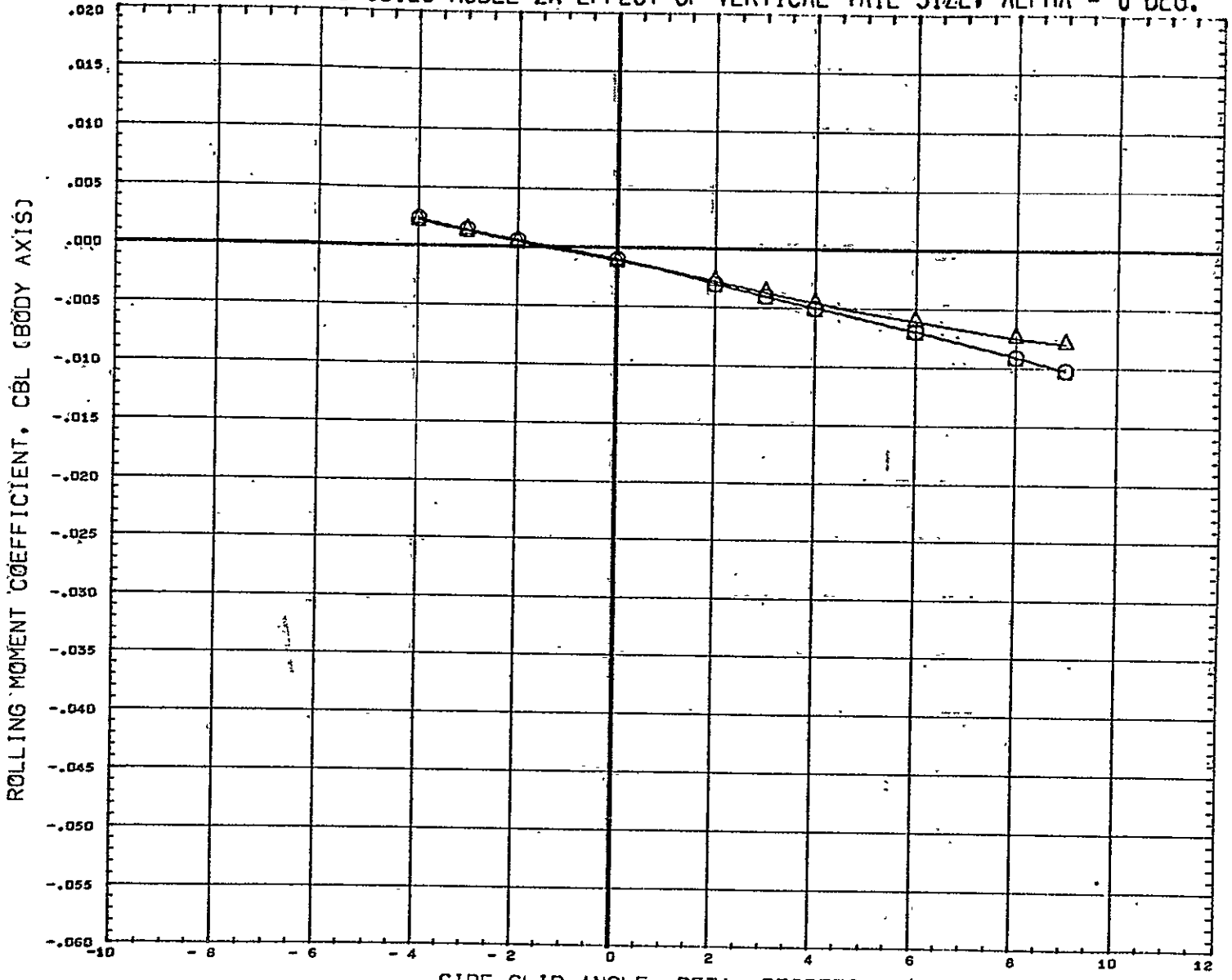
LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 0 DEG.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVN3	REFERENCE INFORMATION
(S4101X)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000			0.000	SREF 9.0250 SQ. IN
(S4114X)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000	0.000	0.000	LREF 6.1420 INCHES
	B2W2V4D2E3R2					BREF 6.1420 INCHES
	B2W2V4D1E3R1					XNRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH - 0.900

LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 0 DEG.



SIDE SLIP ANGLE, BETA, DEGREES

DATA SET SYMBOL CONFIGURATION DESCRIPTION  
 (S4101X)  $\odot$  MSFC TWT 498 MSFC/LMSC ORBITER  
 (S4114X)  $\triangle$  MSFC TWT 498 MSFC/LMSC ORBITER

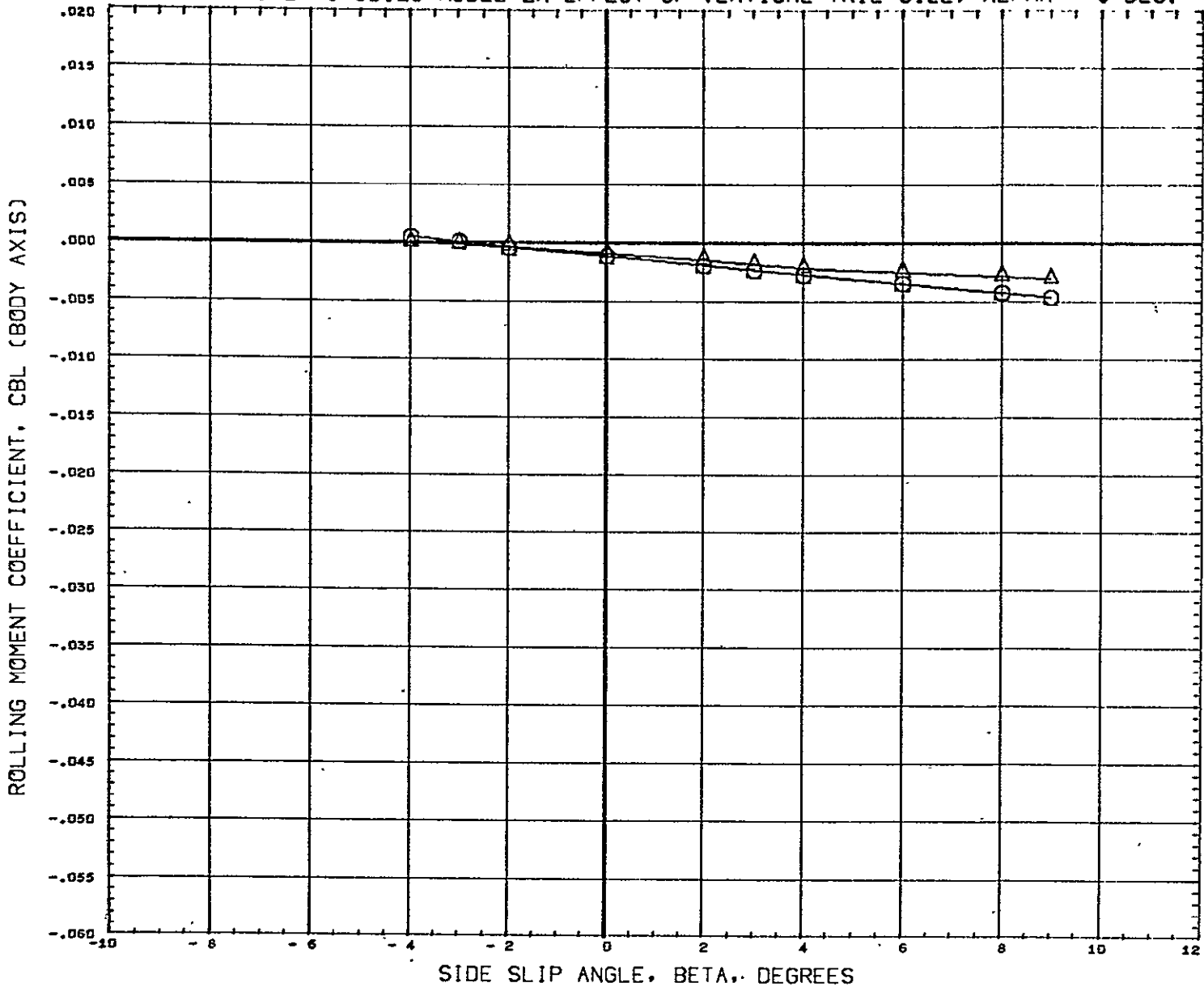
B2W2V4D2E3R2  
 B2W2V4D1E3R1

ALPHA RUDER1 RUDER2  
 0.000 0.000 0.000  
 0.000 0.000

ELEV3 REFERENCE INFORMATION  
 0.000 SREF 9.0250 SQ. IN  
 0.000 LREF 6.1420 INCHES  
 BREF 6.1420 INCHES  
 XMRP 3.9950 INCHES  
 YMRP 0.0000 INCHES  
 ZMRP 0.1350 INCHES  
 SCALE 0.0033 SCALE

MACH 1.100

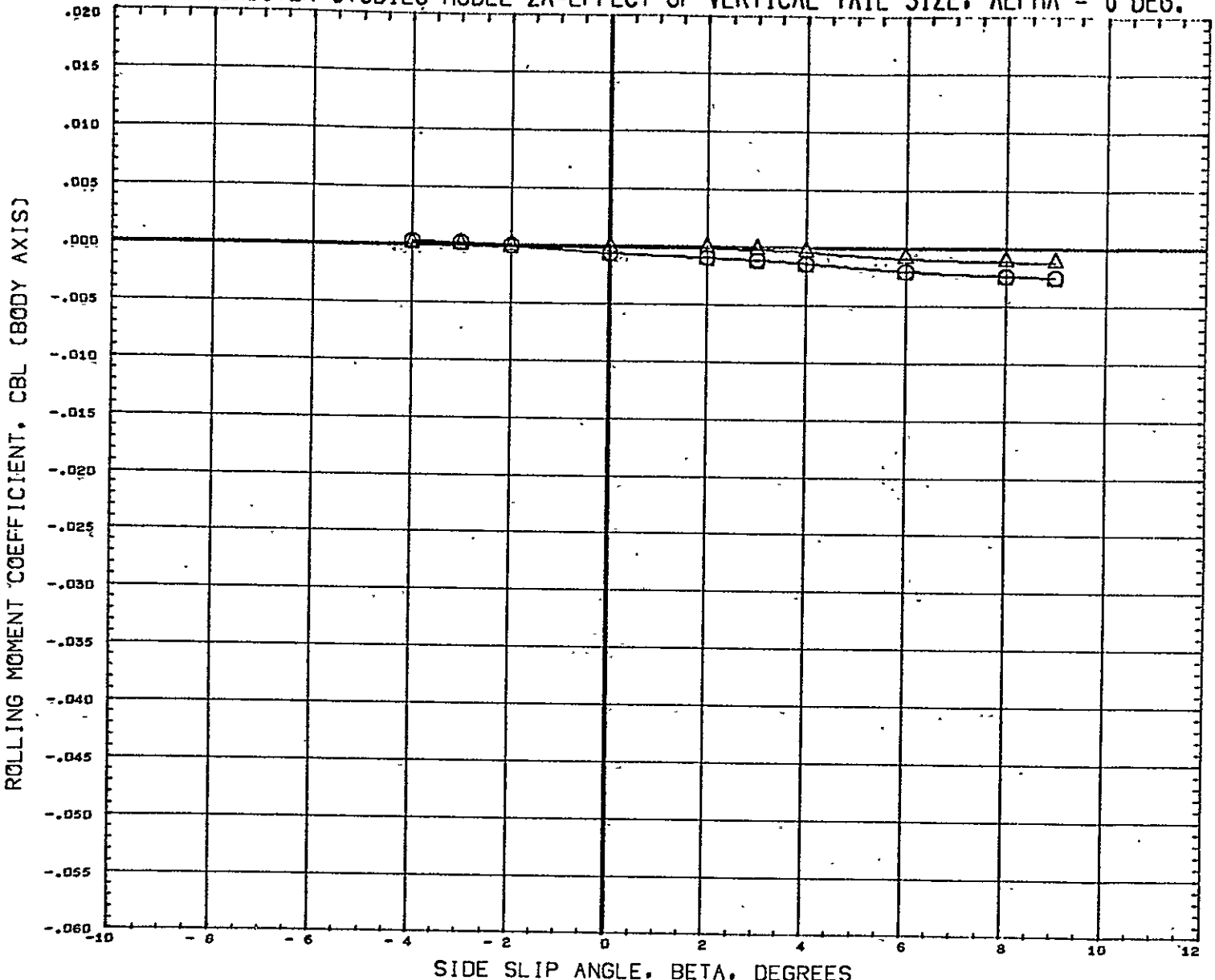
LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 0 DEG.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVNS	REFERENCE INFORMATION
(S4101X)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000			0.000	SREF 9.0250 SQ. IN
(S4114X)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000		0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.960

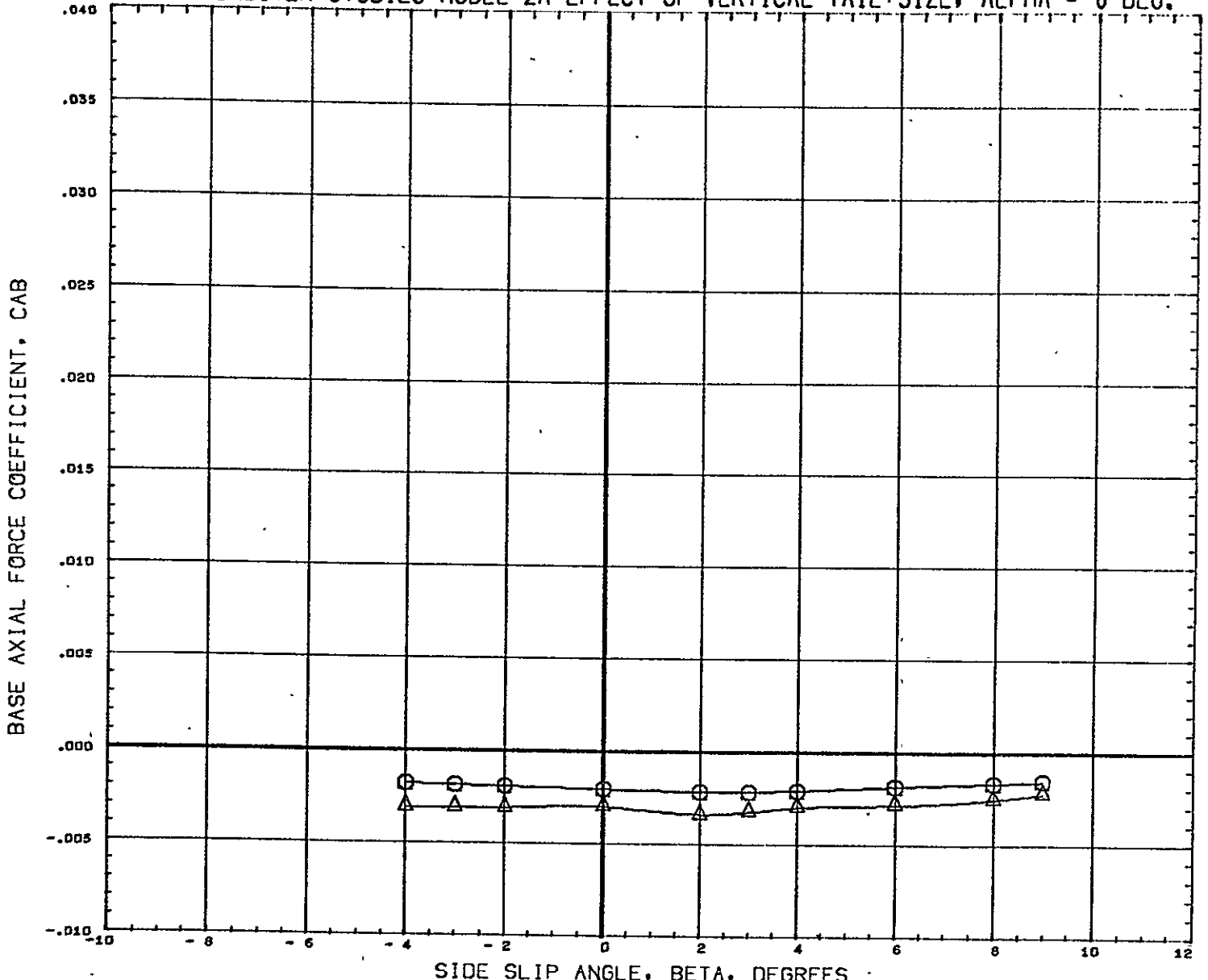
LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 0 DEG.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEV3	REFERENCE INFORMATION
(S4101X)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000			0.000	SREF 9.0250 SQ. IN
(S4114X)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000	0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 4.960

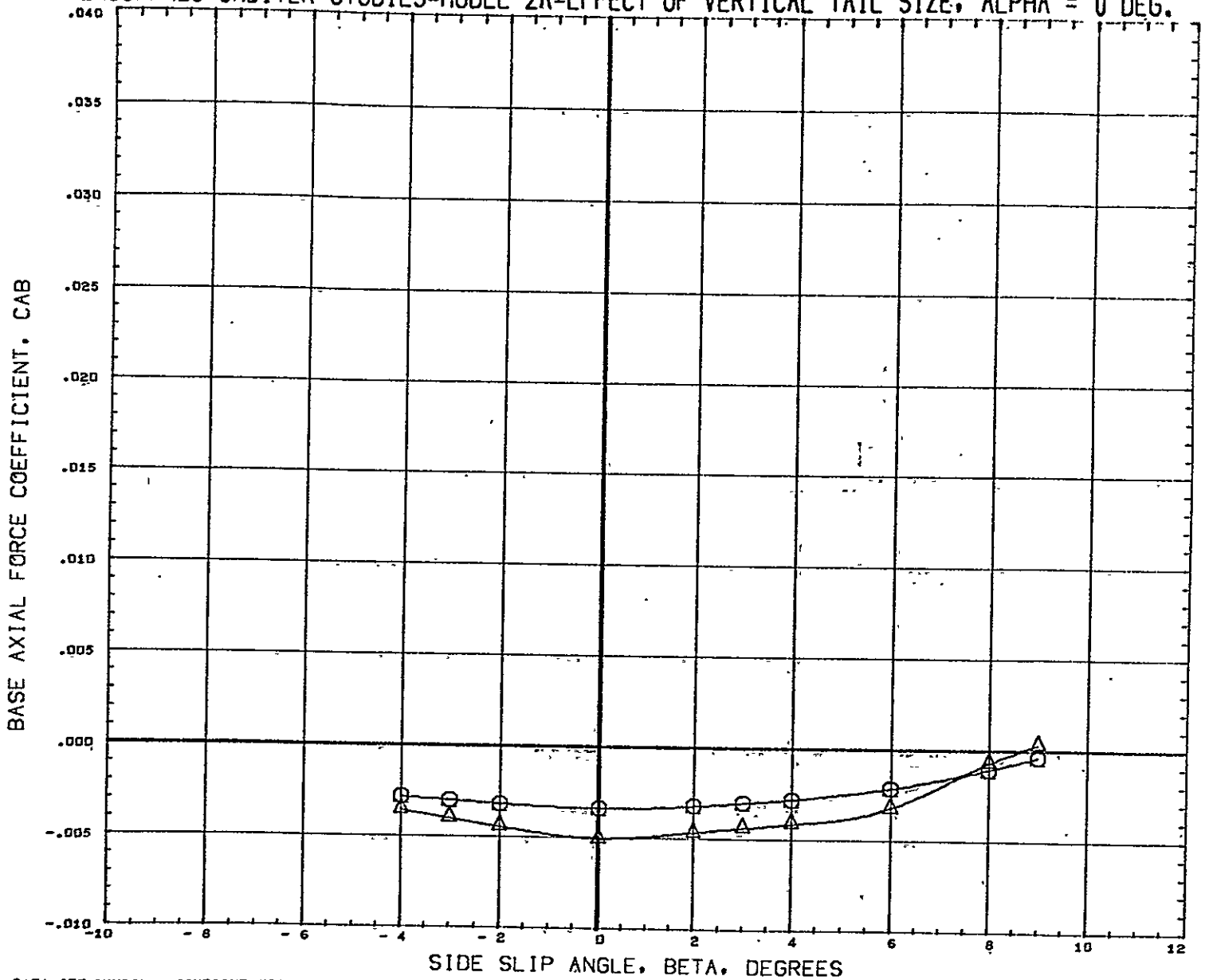
LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 0 DEG.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVN3	REFERENCE INFORMATION
(S4101X)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000			0.000	SREF 9.0250 SQ. IN
(S4114X)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000	0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XHRF 3.9950 INCHES
						YHRF 0.0000 INCHES
						ZHRF 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.600

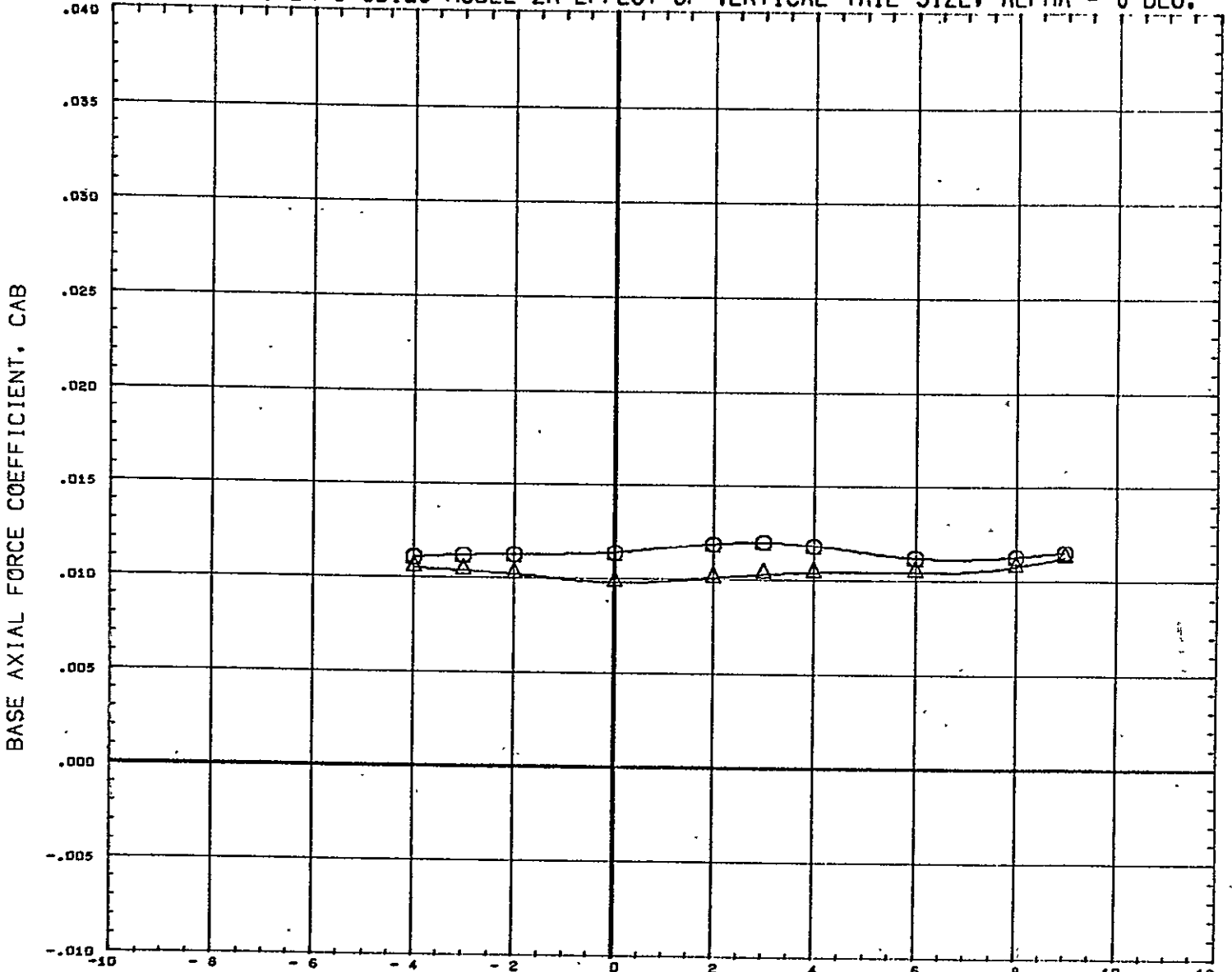
LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 0 DEG.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEV3	REFERENCE INFORMATION
(S4191X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000			0.000	SREF 9.0250 SQ. IN
(S4114X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	0.000	0.000	0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.900

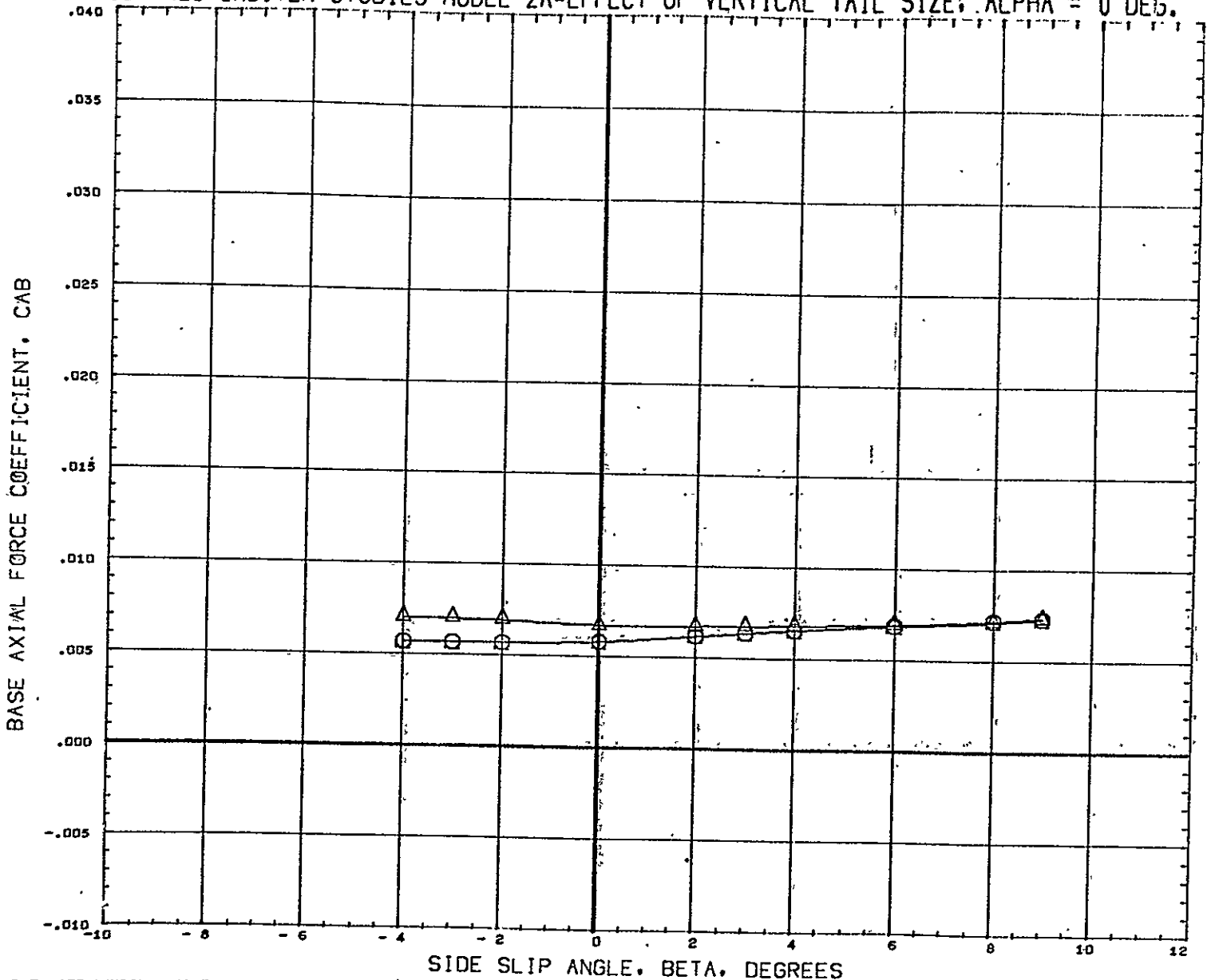
LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 0 DEG.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVNS	REFERENCE INFORMATION
(S4101X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000			0.000	SREF 9.0250 SQ. IN
(S4114X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	0.000	0.000	0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XHRF 3.9950 INCHES
						YHRF 0.0000 INCHES
						ZHRF 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.100

LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 0 DEG.

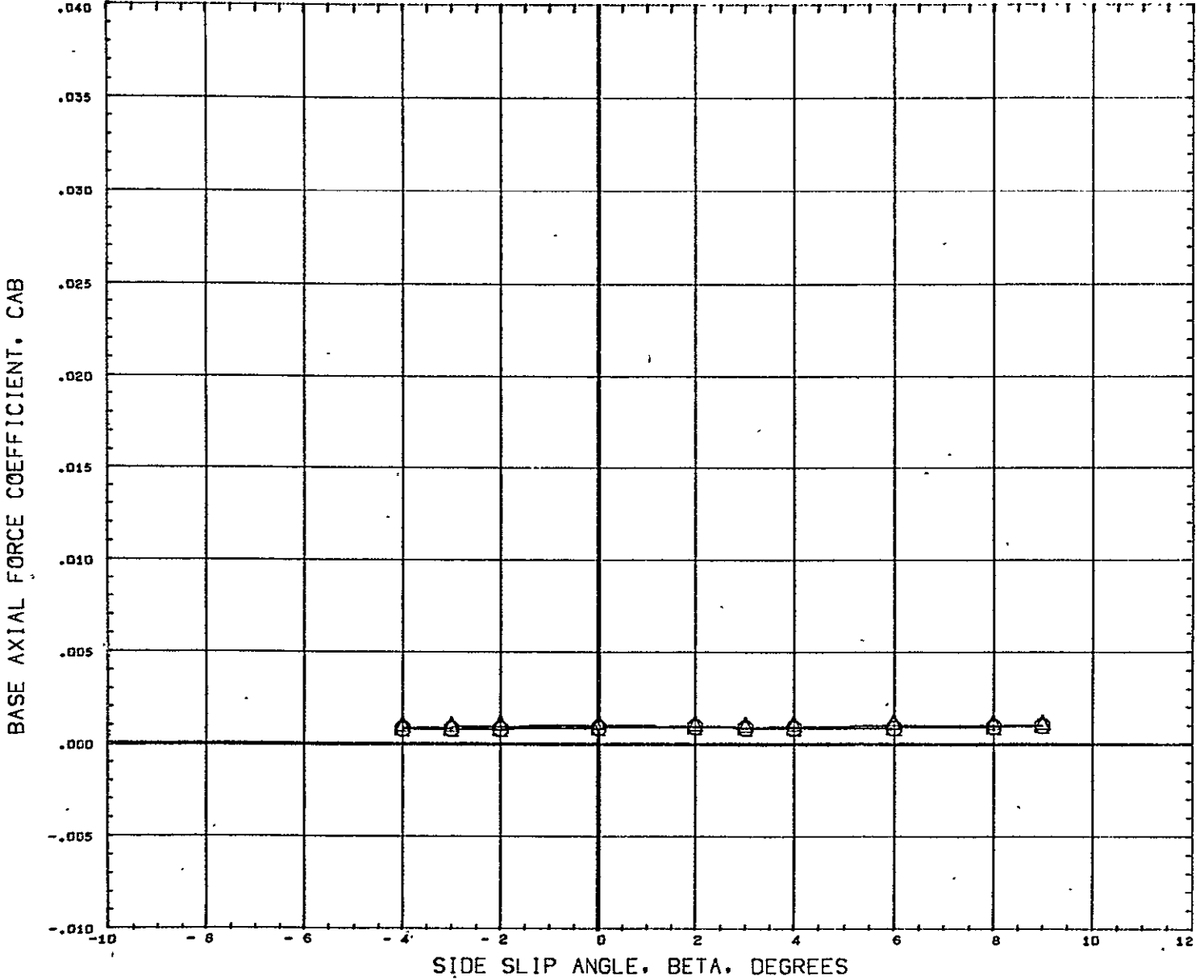


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVNS	REFERENCE INFORMATION
(S4101X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000			0.000	SREF 9.0250 SQ. IN
(S4114X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	0.000	0.000	0.000	0.000	LREF 6.1420 INCHES BREF 6.1420 INCHES XMRP 3.9950 INCHES YMRP 0.0000 INCHES ZMRP 0.1350 INCHES SCALE 0.0033 SCALE

HACH 1.960



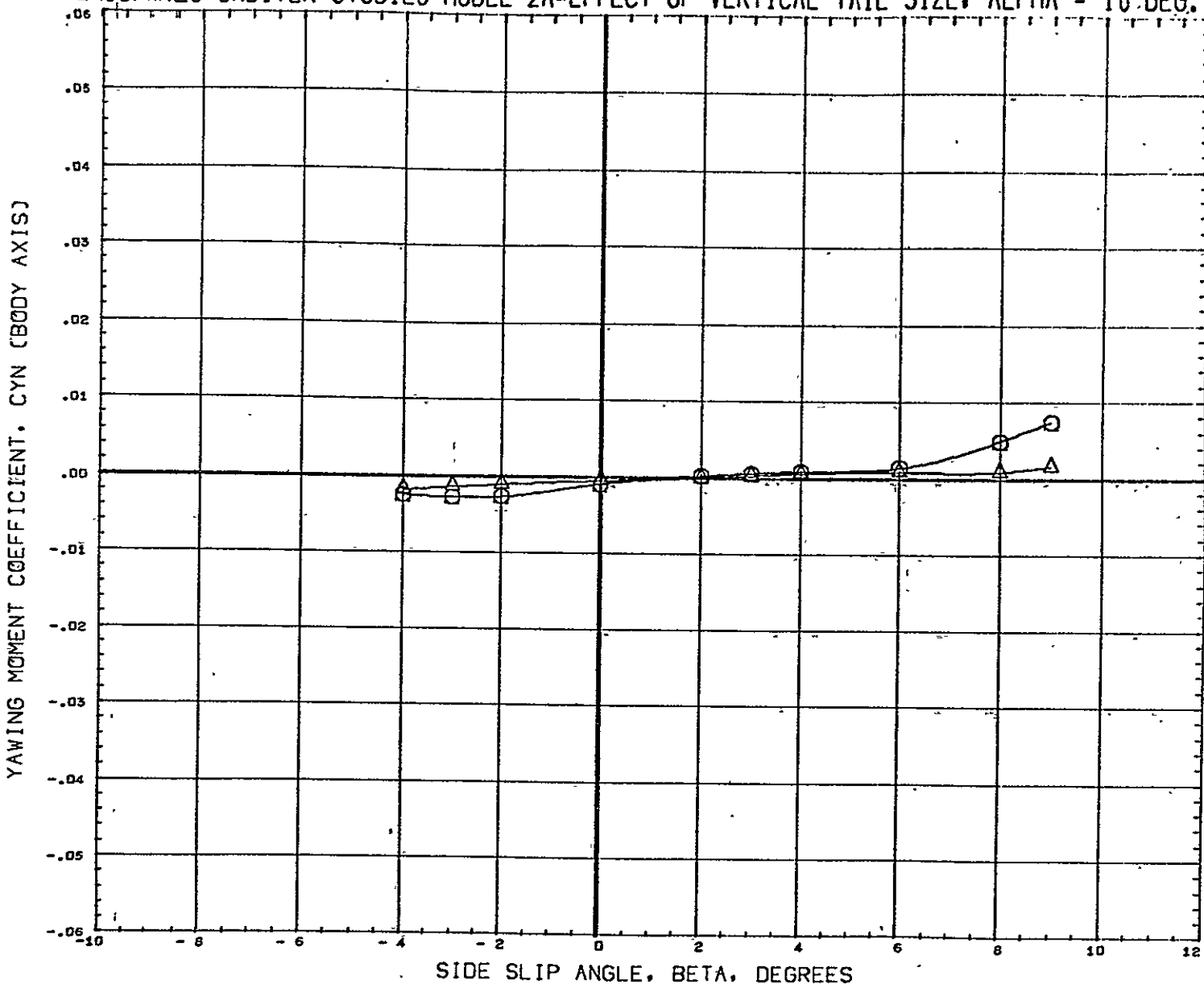
LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 0 DEG.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION:	ALPHA	RUDER1	RUDER2	ELEVN3	REFERENCE INFORMATION	
(S4101X)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000		0.000	0.000	SREF	9.0250 SQ. IN
(S4114X)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	5.000		0.000	LREF	6.1420 INCHES
						BREF	6.1420 INCHES
						XMRP	3.9950 INCHES
						YMRP	0.0000 INCHES
						ZMRP	0.1350 INCHES
						SCALE	0.0033 SCALE

MACH 4.960

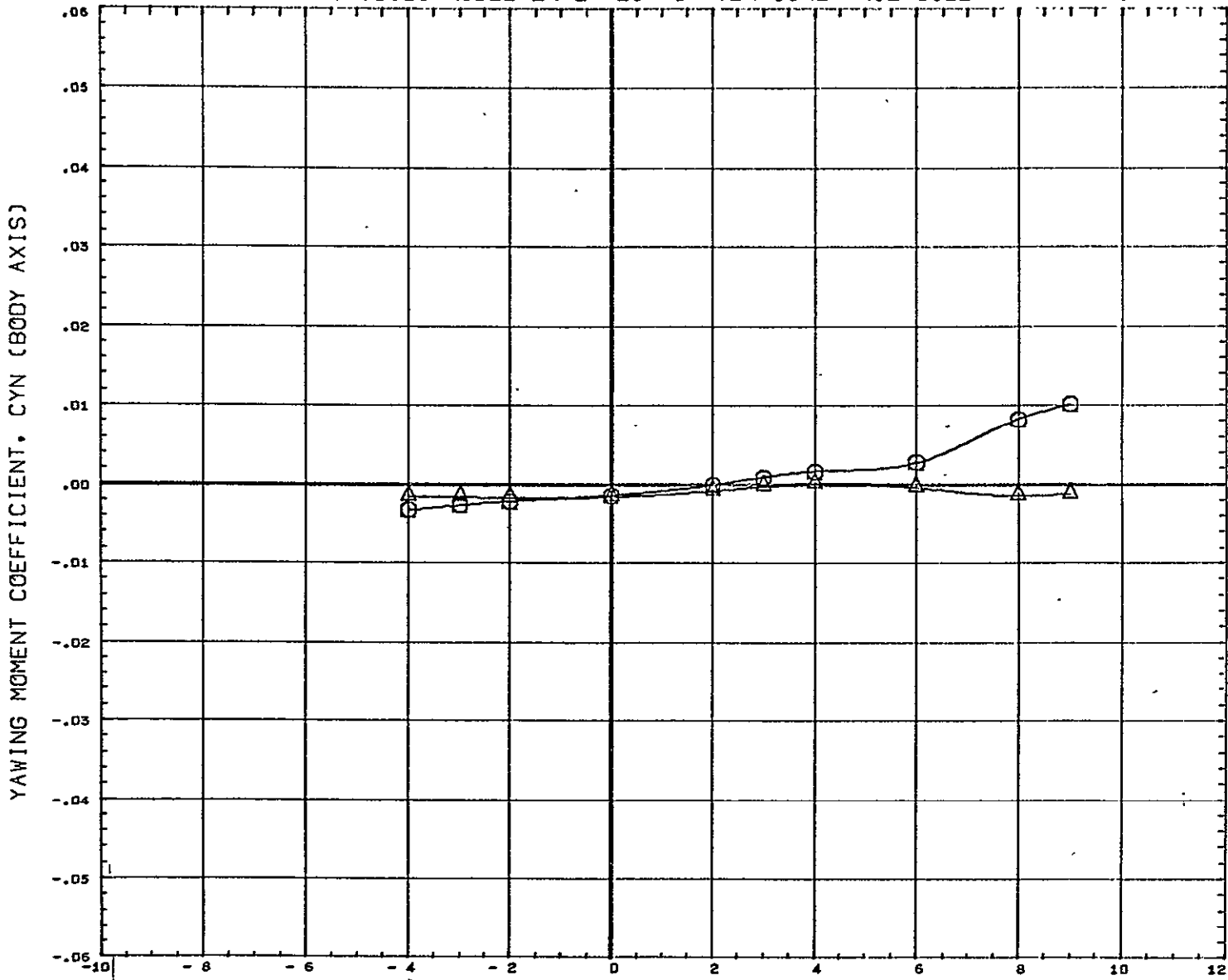
LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 10. DEG.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEV3	REFERENCE INFORMATION
(S4101Y)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	10.000	0.000	0.000	0.000	SREF 9.0250 SQ. IN
(S4114Y)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	10.000	0.000	0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.600

LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 10 DEG.

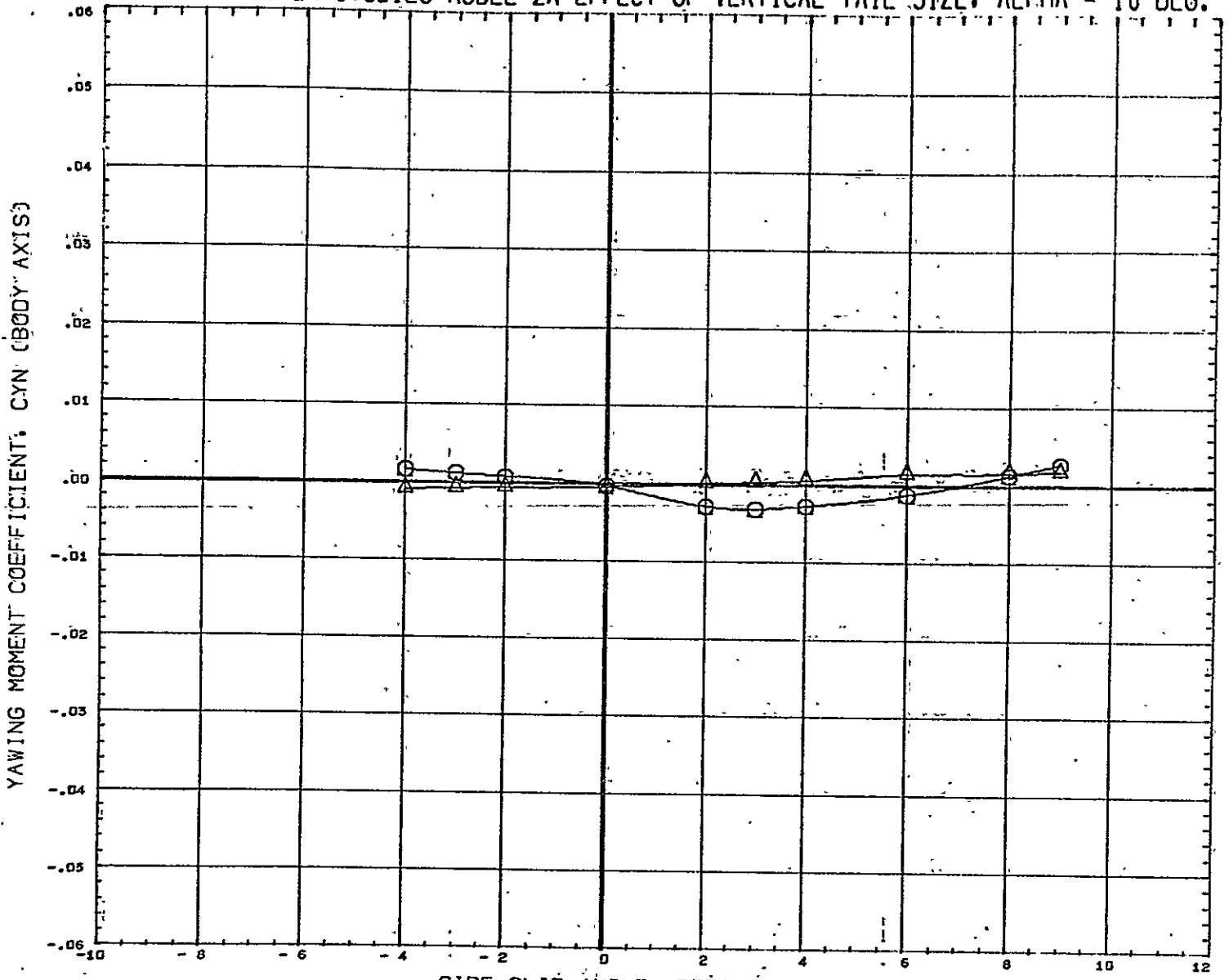


SIDE SLIP ANGLE, BETA, DEGREES

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVNS	REFERENCE INFORMATION
(S4101Y) $\odot$	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	10.000	0.000	0.000	0.000	SREF 9.0250 SQ. IN
(S4114Y) $\triangle$	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	10.000	0.000	0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.900

LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 10 DEG.

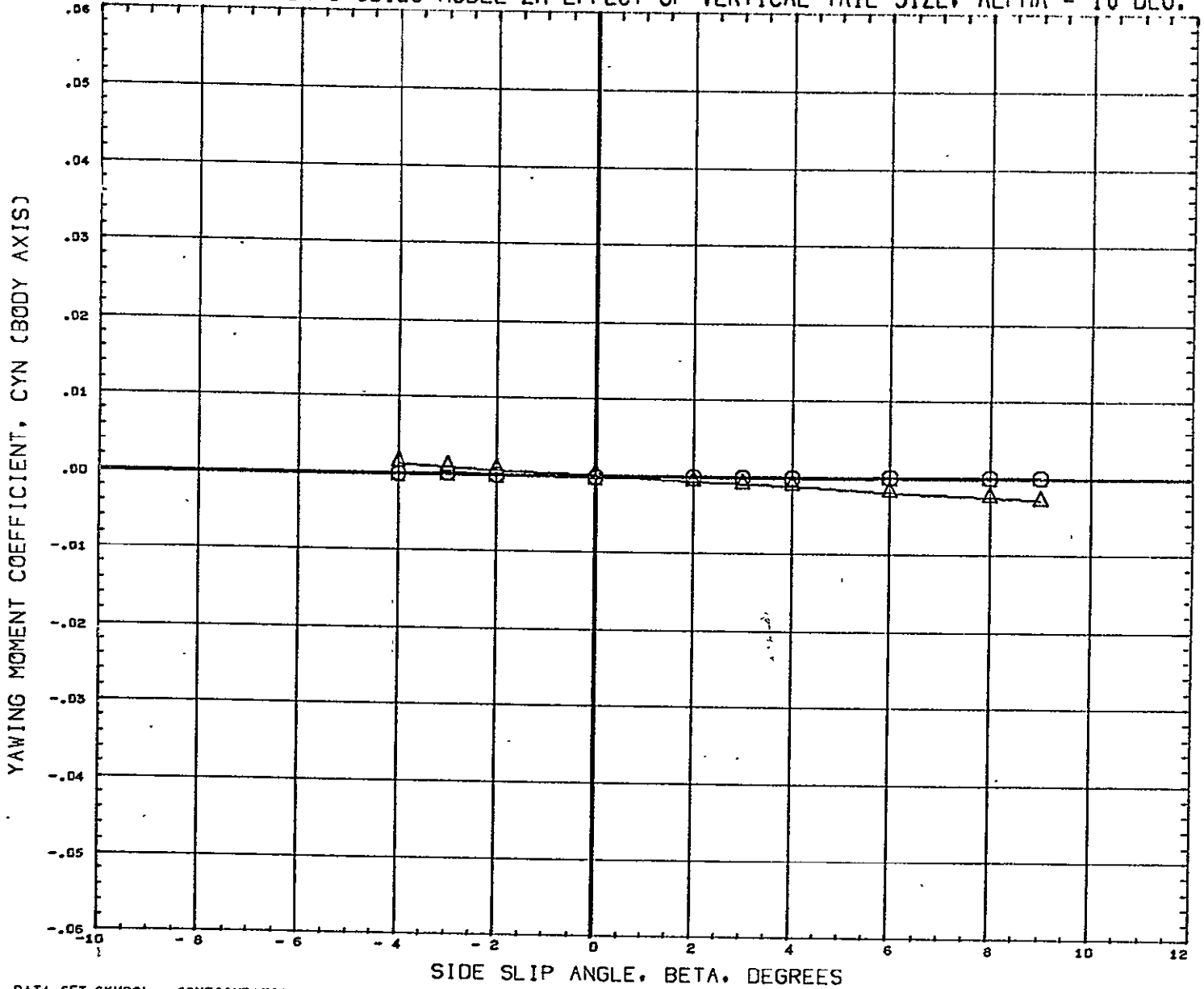


SIDE SLIP ANGLE, BETA, DEGREES

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVNS	REFERENCE INFORMATION
(S4101Y)	○	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	10.000		0.000	0.000	SREF 9.0250 SQ. IN
(S4114Y)	△	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	10.000	0.000		0.000	LREF 6.1420 INCHES
							BREF 6.1420 INCHES
							XMRP 3.9950 INCHES
							YMRP 0.0000 INCHES
							ZMRP 0.1350 INCHES
							SCALE 0.0033 SCALE

MACH 1.100

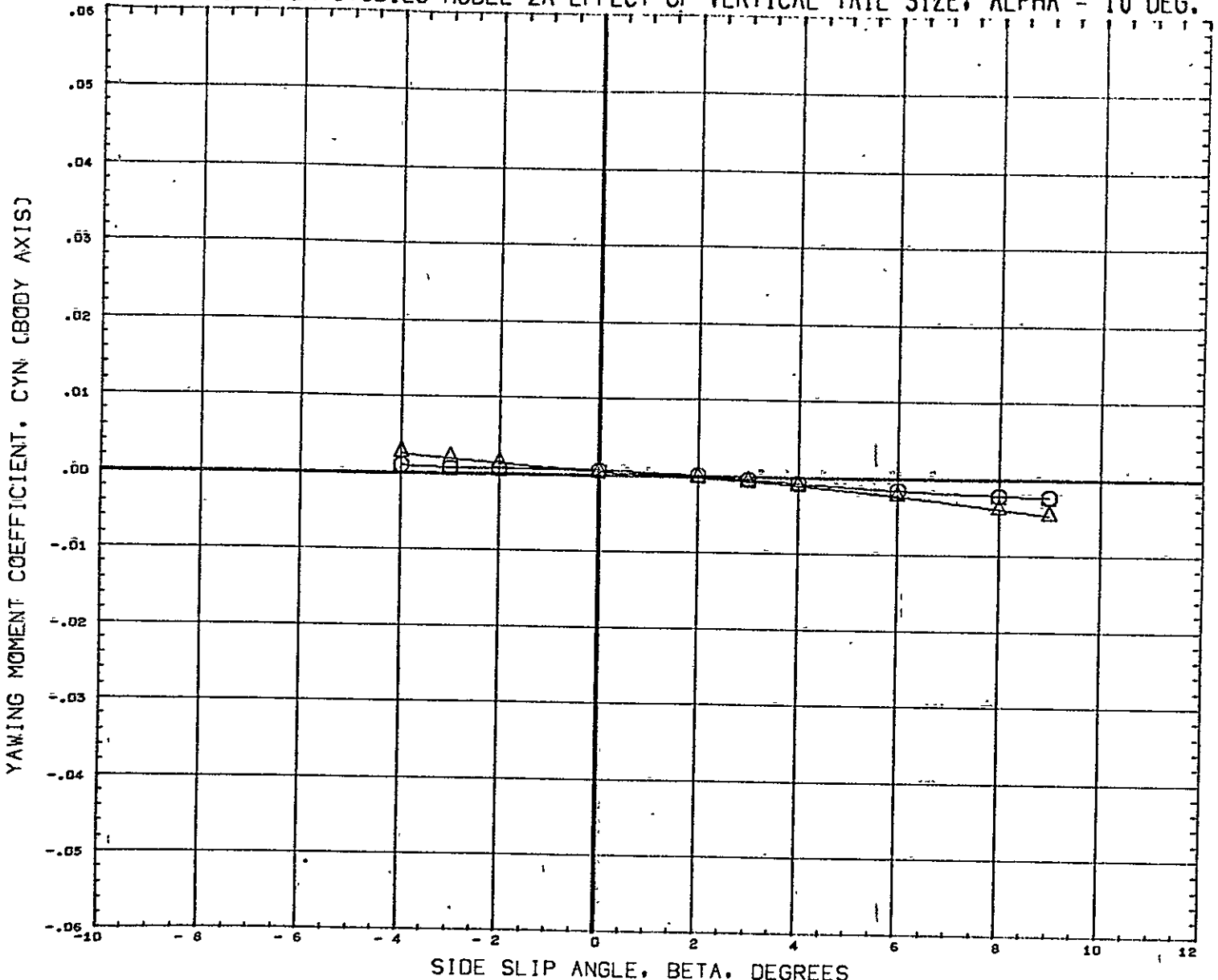
LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 10 DEG.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVNS	REFERENCE INFORMATION
(S4101Y)	MSFC TWT 498 MSFC/LMSC ORBITER	10.000			0.000	SREF 9.0250 SQ. IN
(S4114Y)	MSFC TWT 498 MSFC/LMSC ORBITER	10.000	0.000	0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.960

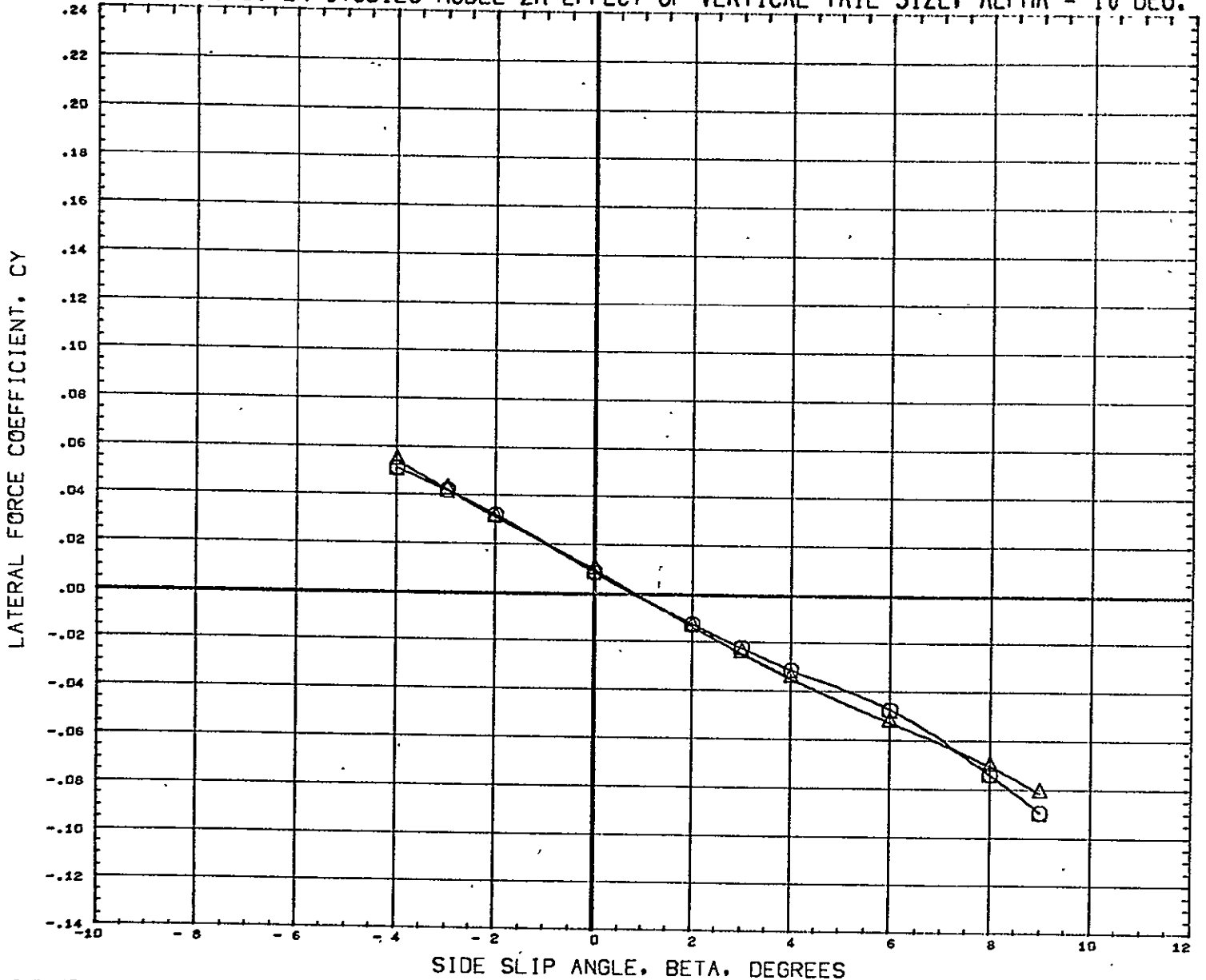
LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 10 DEG.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVN3	REFERENCE INFORMATION
(S4101Y)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	10.000		0.000	0.000	SREF 9.0250 SQ. IN
(S4114Y)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	10.000	0.000	0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 4.960

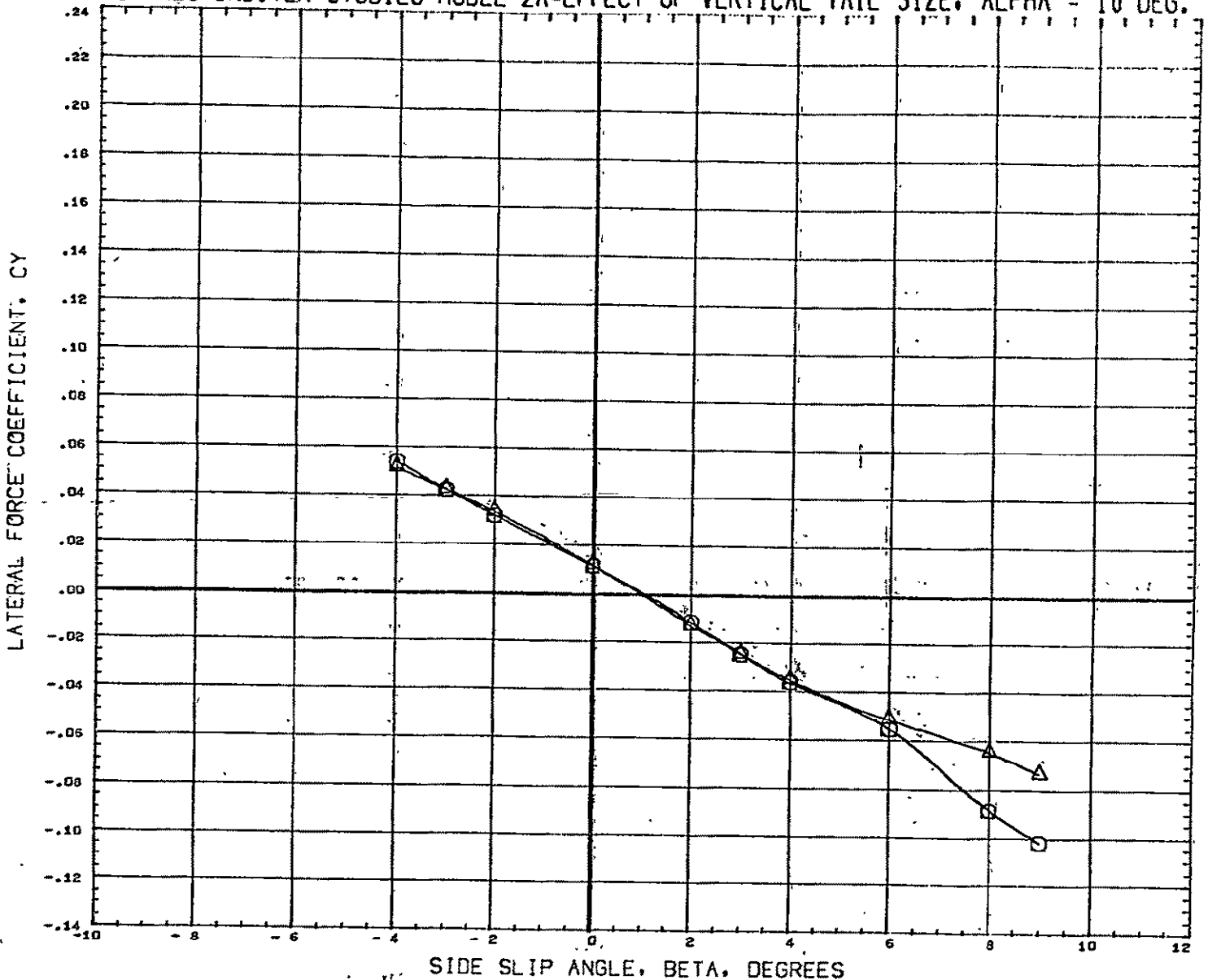
LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 10 DEG.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVNS	REFERENCE INFORMATION
(S4101Y)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	10.000		0.000	0.000	SREF 9.0250 SQ. IN
(S4114Y)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	10.000	0.000		0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.600

LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 10 DEG.

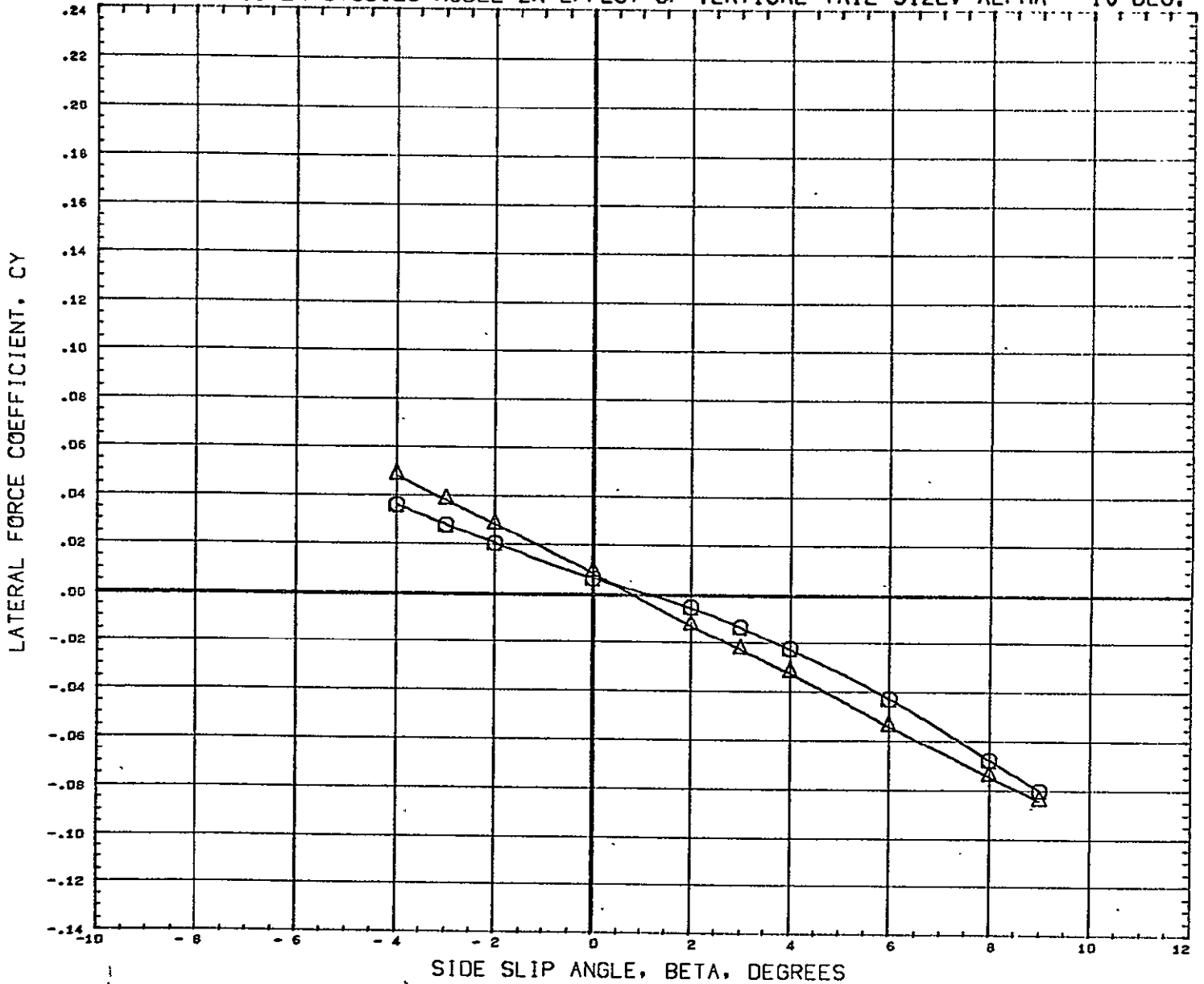


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVNS	REFERENCE INFORMATION
(S4101Y)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	10.000	0.000	0.000	0.000	SREF 9.0250 SQ. IN
(S4114Y)	MSFC TWT 498 MSFC/LHSC ORBITER B2W2V4D1E3R1	10.000	0.000	0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XHRF 3.9950 INCHES
						YHRF 0.0000 INCHES
						ZHRF 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.900



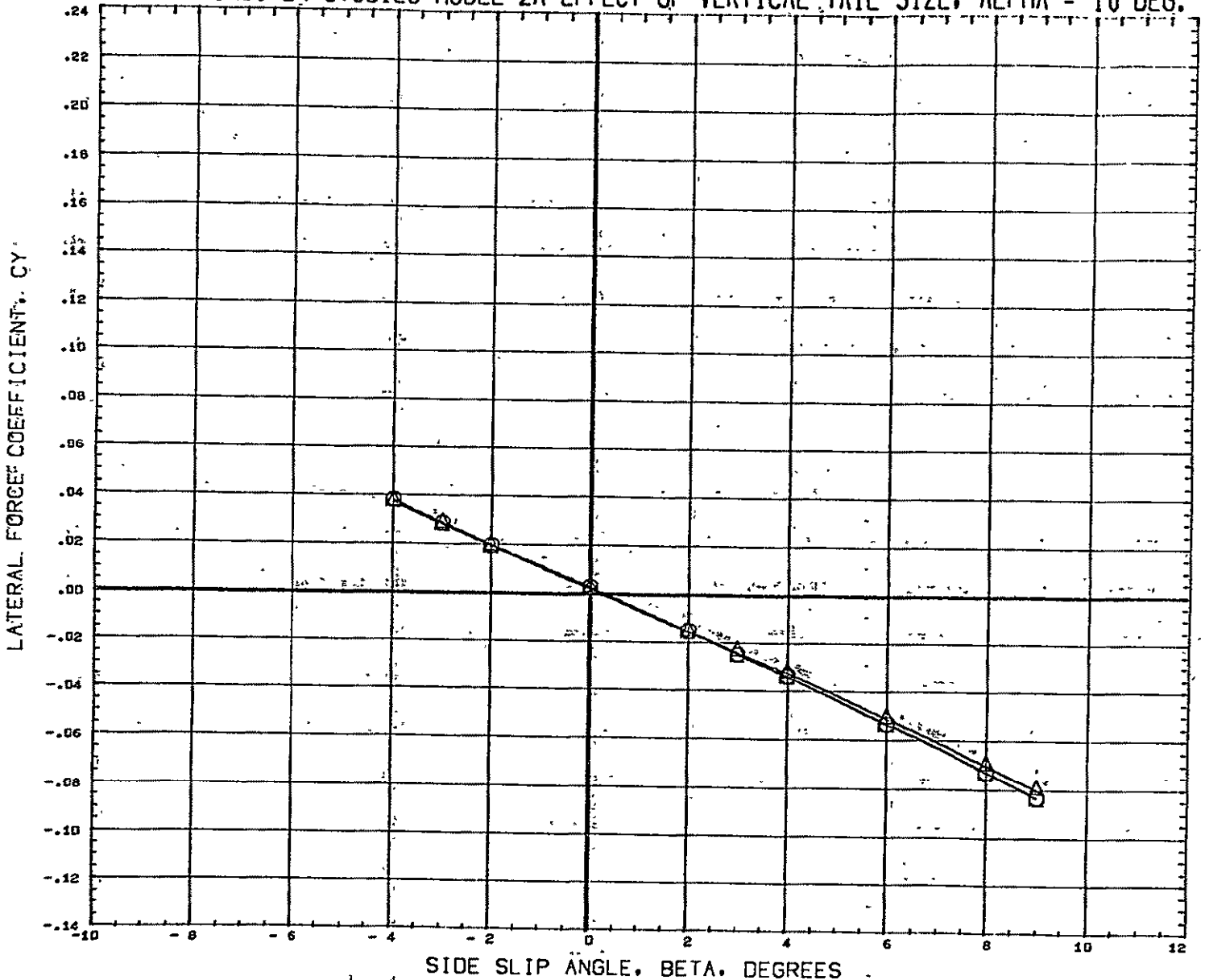
LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 10 DEG.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVN3	REFERENCE INFORMATION
(S4101Y)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	10.000			0.000	SREF 9.0250 SQ. IN
(S4114Y)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	10.000	0.000	0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0035 SCALE

MACH 1.100

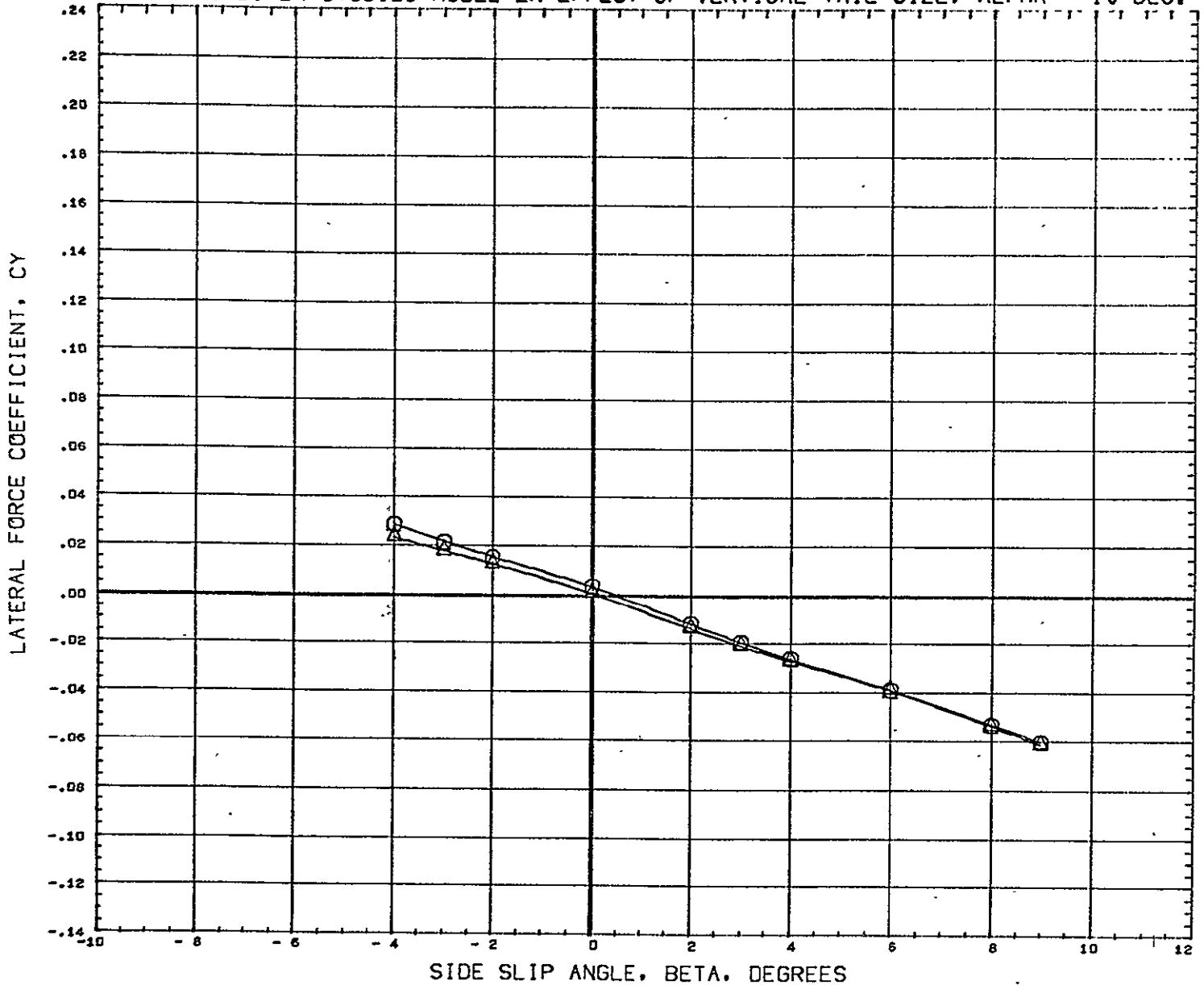
LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 10 DEG.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEV3	REFERENCE INFORMATION
(S4101Y)	MSFC TWT 498 MSFC/LMSC ORBITER	10.000			0.000	SREF 9.0250 SQ. IN
(S4114Y)	MSFC TWT 498 MSFC/LMSC ORBITER	10.000	0.000	0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XHRP 3.9950 INCHES
						YHRP 0.0000 INCHES
						ZHRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.960

LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 10 DEG.

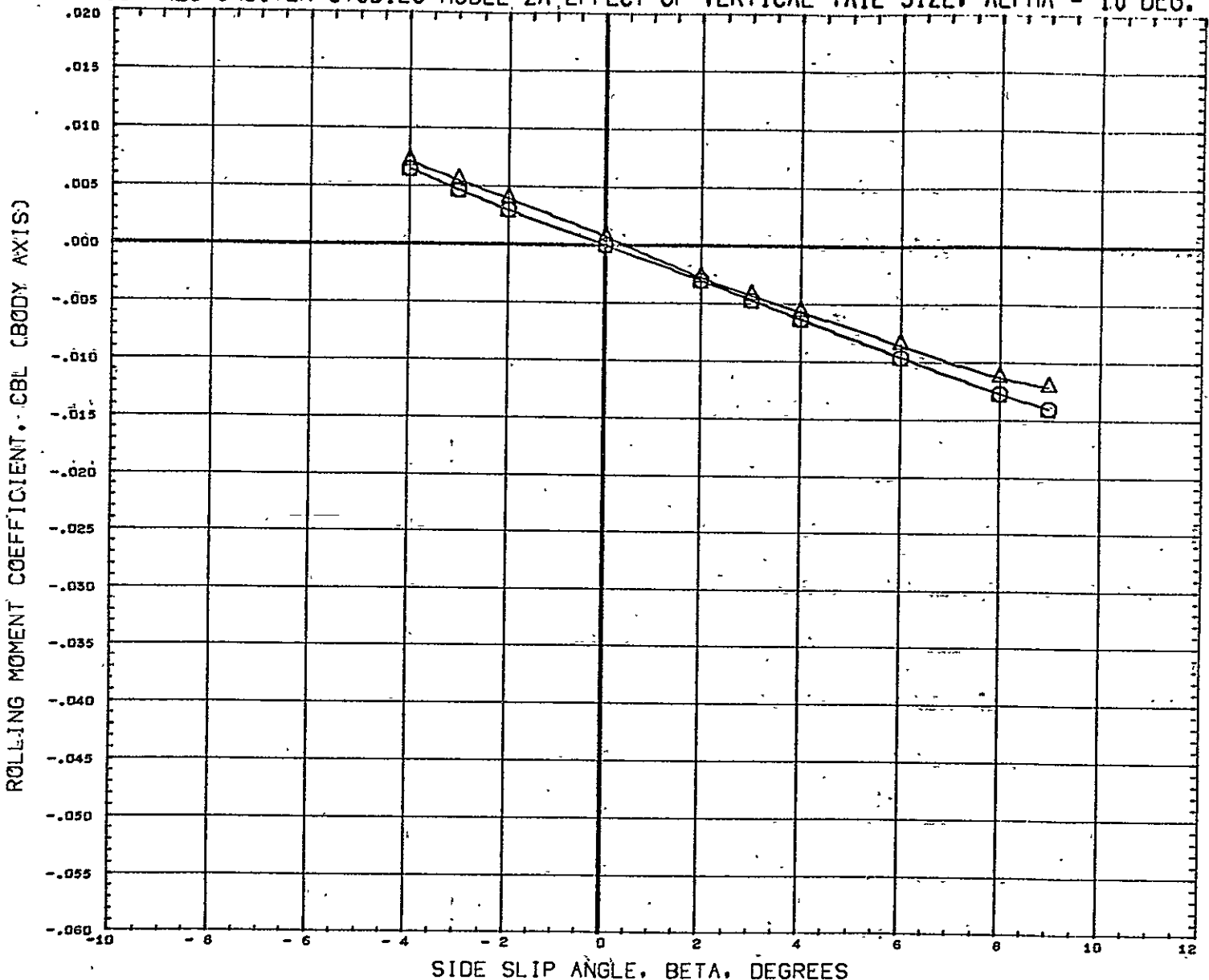


SIDE SLIP ANGLE, BETA, DEGREES

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVNS	REFERENCE INFORMATION
(S4101Y) Q	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	10.000		0.000	0.000	SREF 9.0250 SQ. IN
(S4114Y) A	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	10.000	0.000		0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 4.960

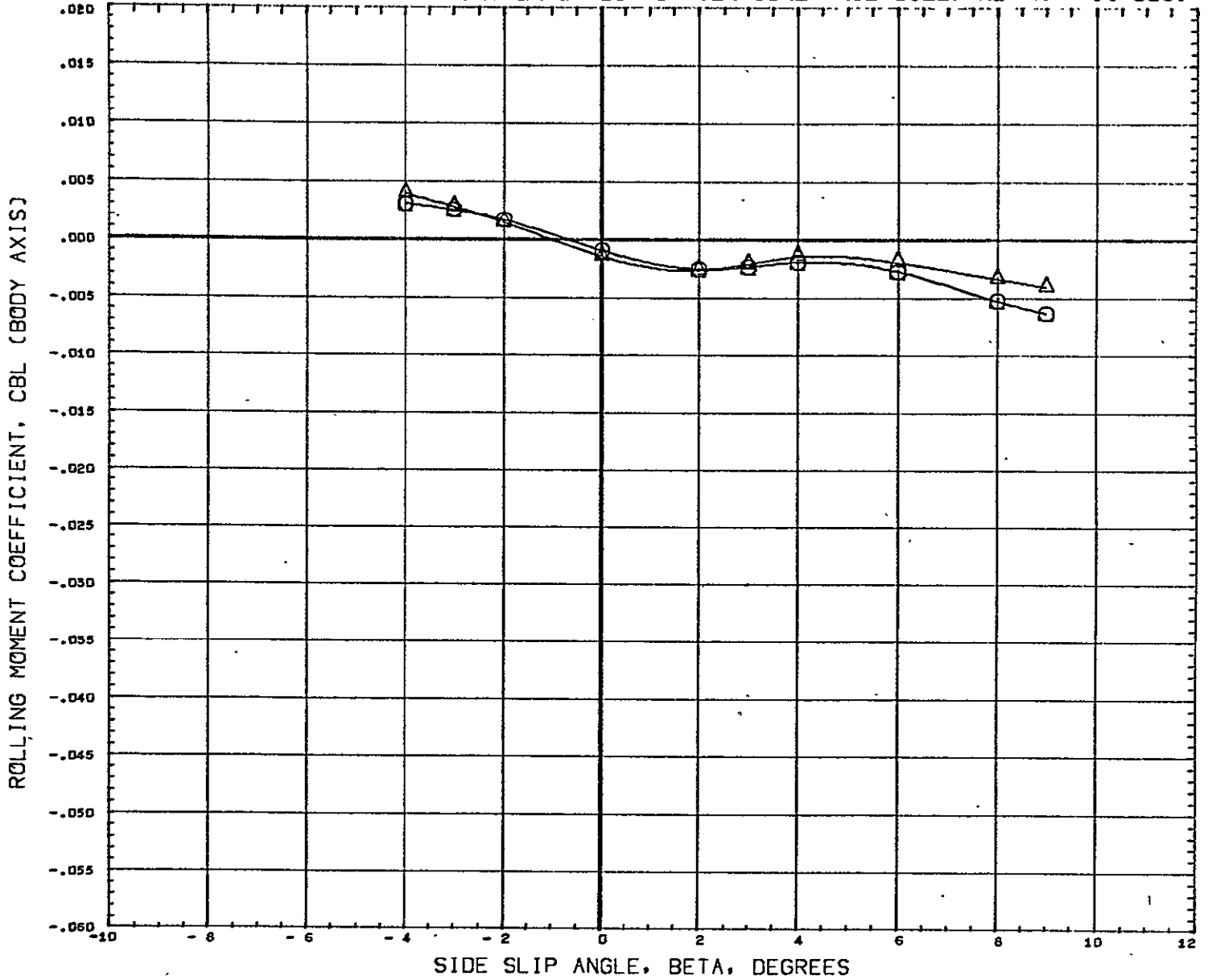
LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 10 DEG.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEV3	REFERENCE INFORMATION
(S4101Y)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	10.000		0.000	0.000	SREF 9.0250 SQ. IN
(S4114Y)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	10.000	0.000		0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.600

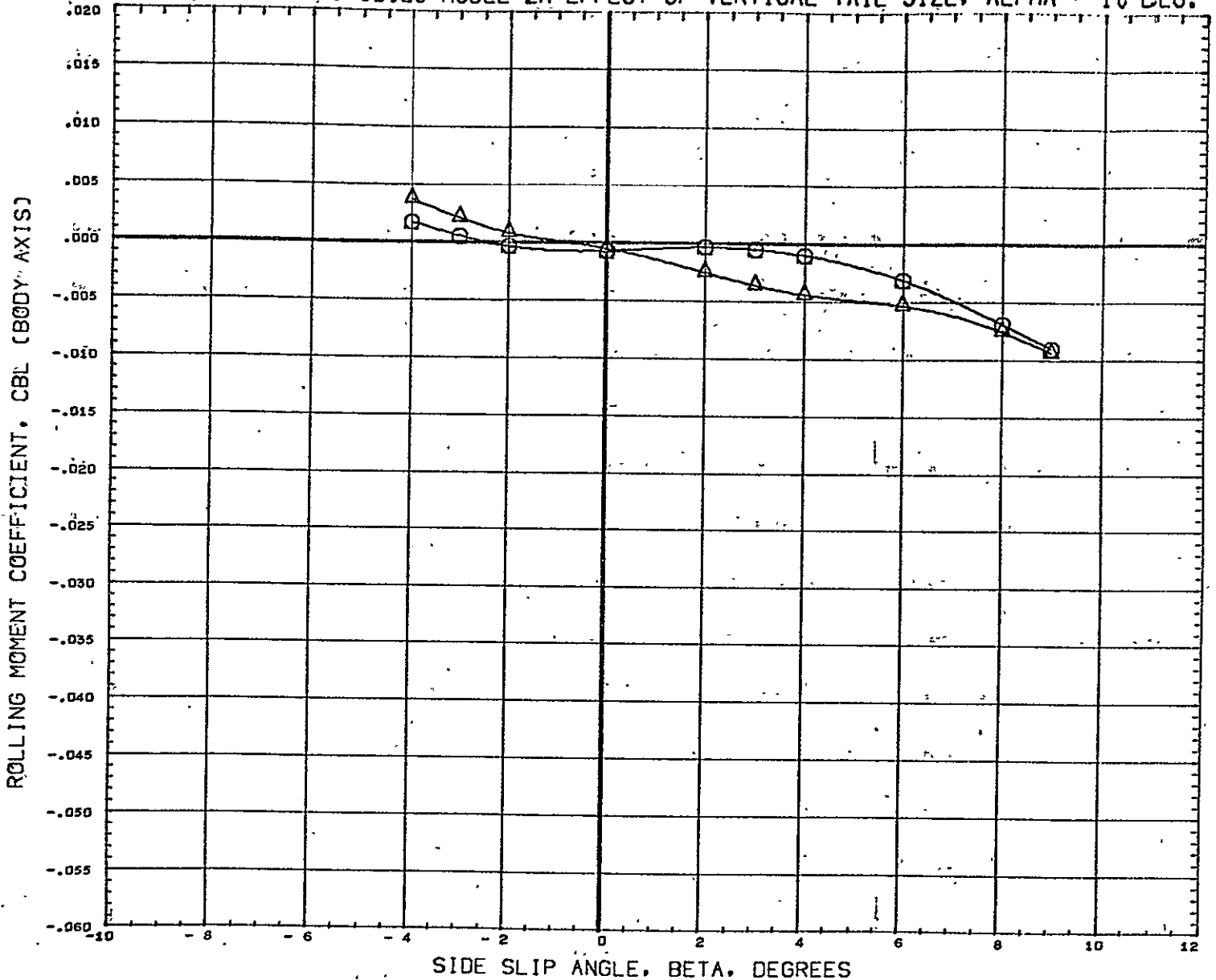
LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 10 DEG.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVN3	REFERENCE INFORMATION
(S4101Y)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	10.000		0.000	0.000	SREF 9.0250 SQ. IN
(S4114Y)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	10.000	0.000		0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.900

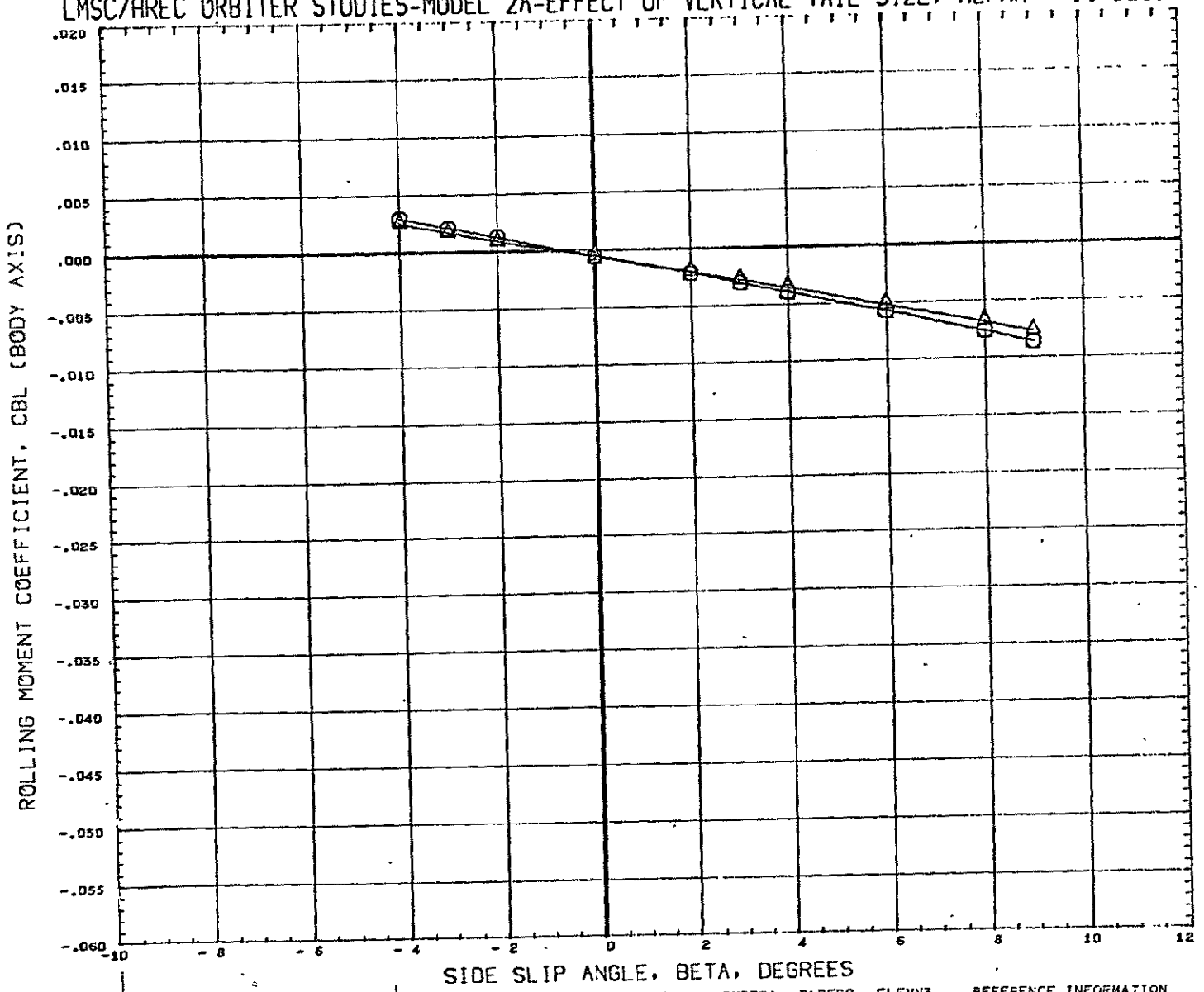
LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 10 DEG.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVN3	REFERENCE INFORMATION
(S4101Y)	MSFC TWT 498 MSFC/LMSC ORBITER	10.000			0.000	SREF 9.0255 SQ. IN
(S4114Y)	MSFC TWT 498 MSFC/LMSC ORBITER	10.000	0.000	0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.100

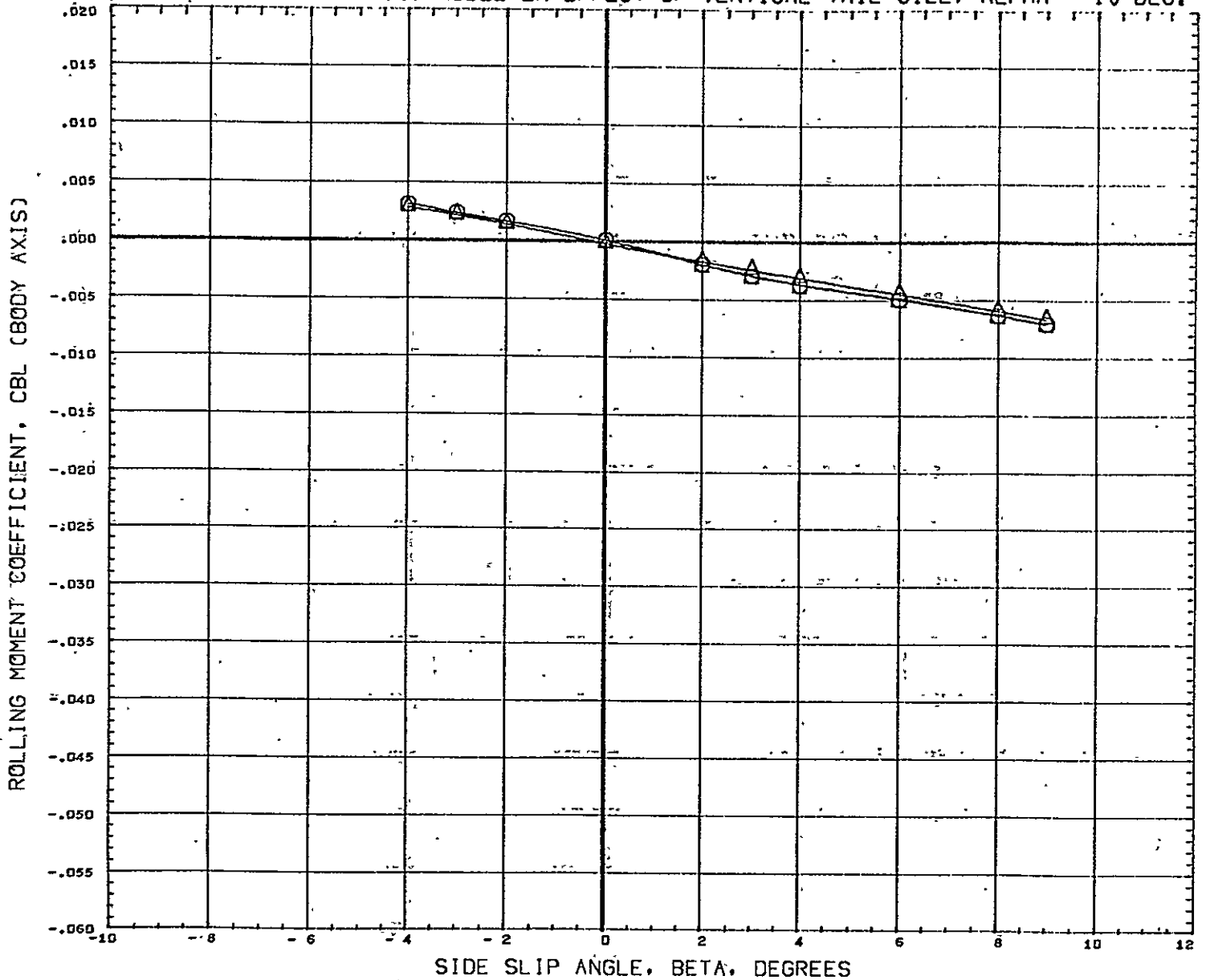
LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 10 DEG.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVNS	REFERENCE INFORMATION
(S4101Y)	NSFC TWT 498 NSFC/LMSC ORBITER	10.000		0.000	0.000	SREF 9.8250 SQ. IN
(S4114Y)	NSFC TWT 498 NSFC/LMSC ORBITER	10.000	0.000		0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XHRF 3.9950 INCHES
						YMRP 0.0500 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.960

LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 10 DEG.

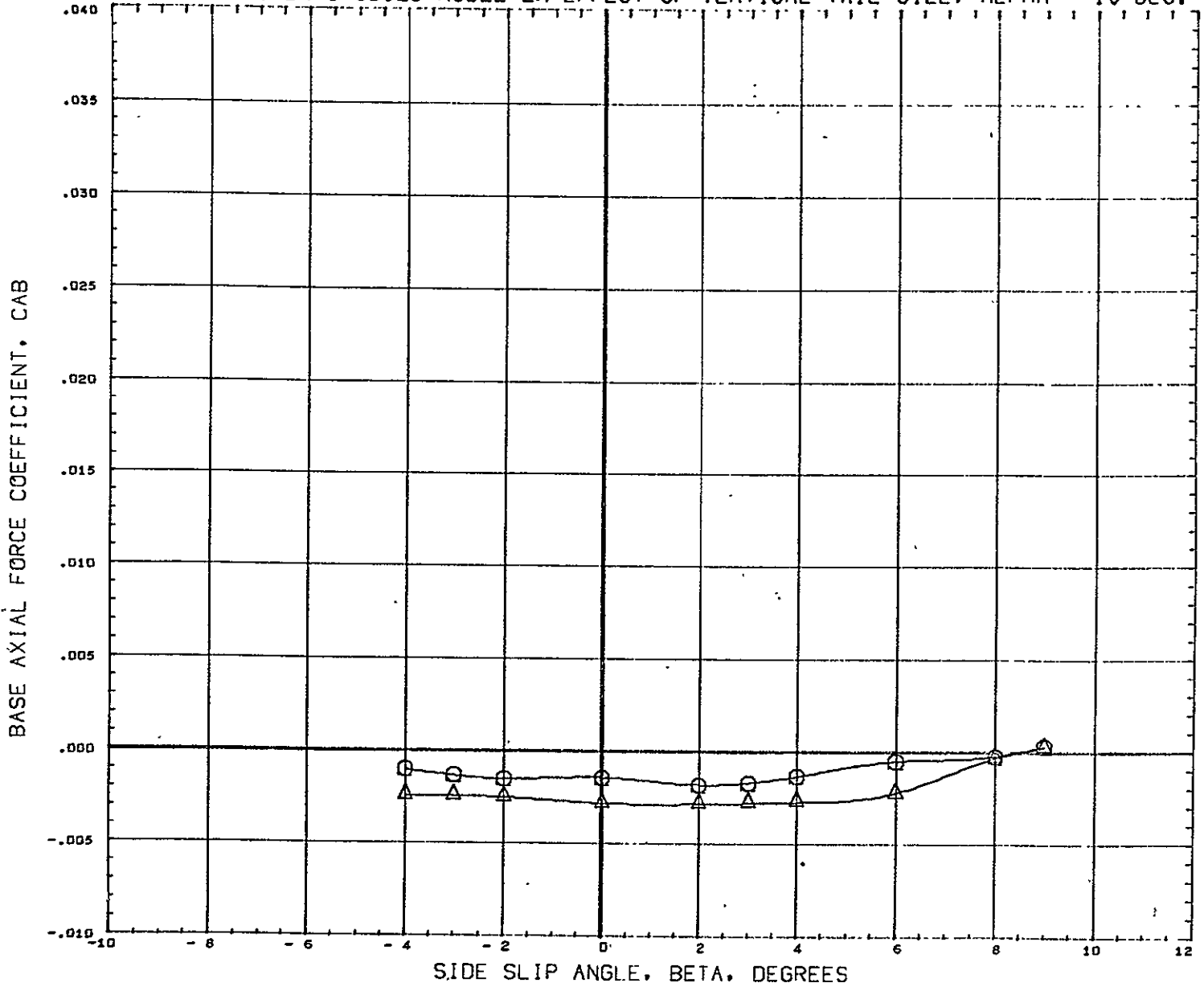


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVNS	REFERENCE INFORMATION
(S4101Y)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	10.000		0.000	0.000	SREF 9.0250 SQ. IN
(S4114Y)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	10.000	0.000		0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 4.960



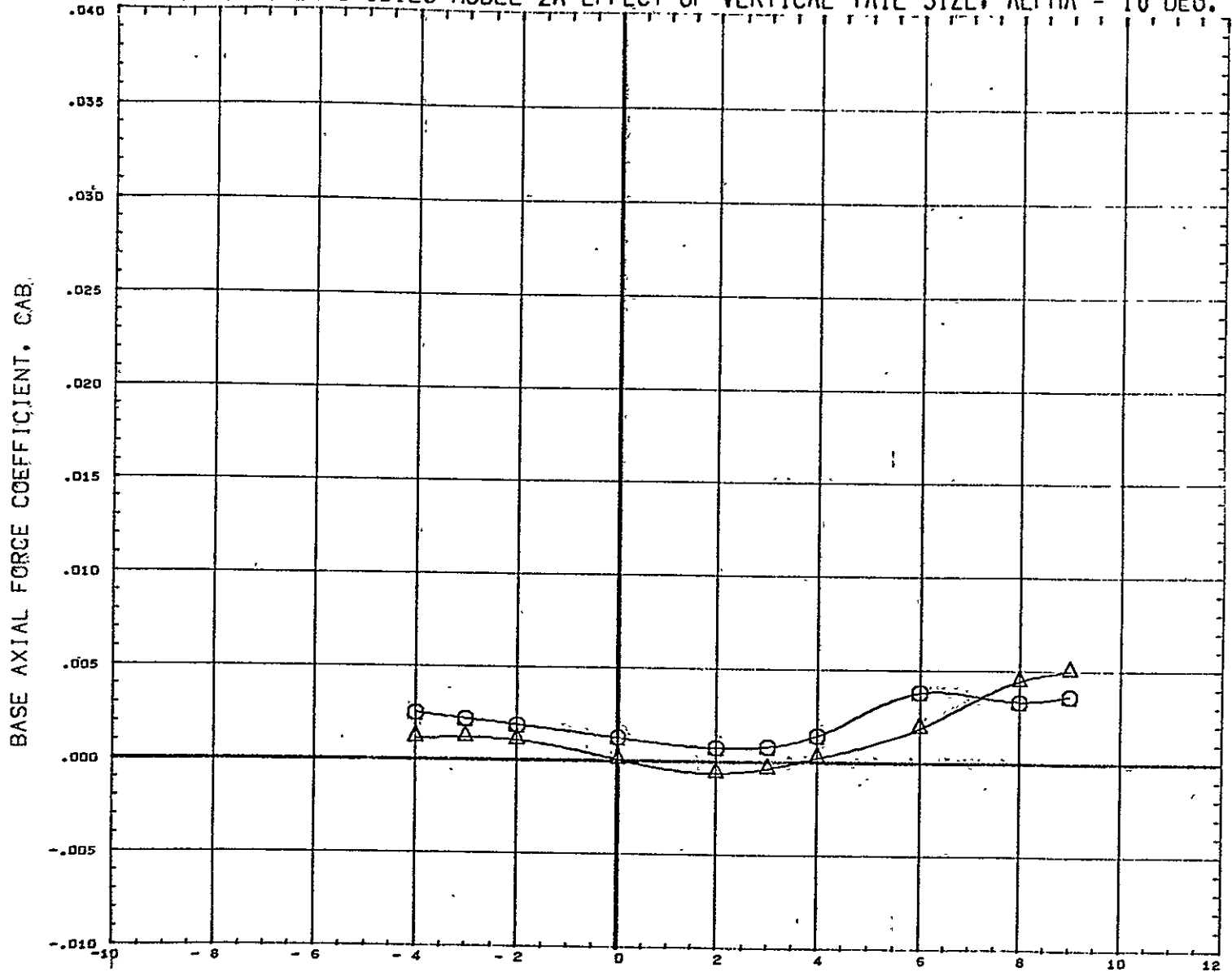
LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 10 DEG.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVN3	REFERENCE INFORMATION
(S4101Y)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	10.000		0.000	0.000	SREF 9.0250 SQ. IN
(S4114Y)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	10.000	0.000		0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1366 INCHES
						SCALE 0.0033 SCALE

HACH 0.600

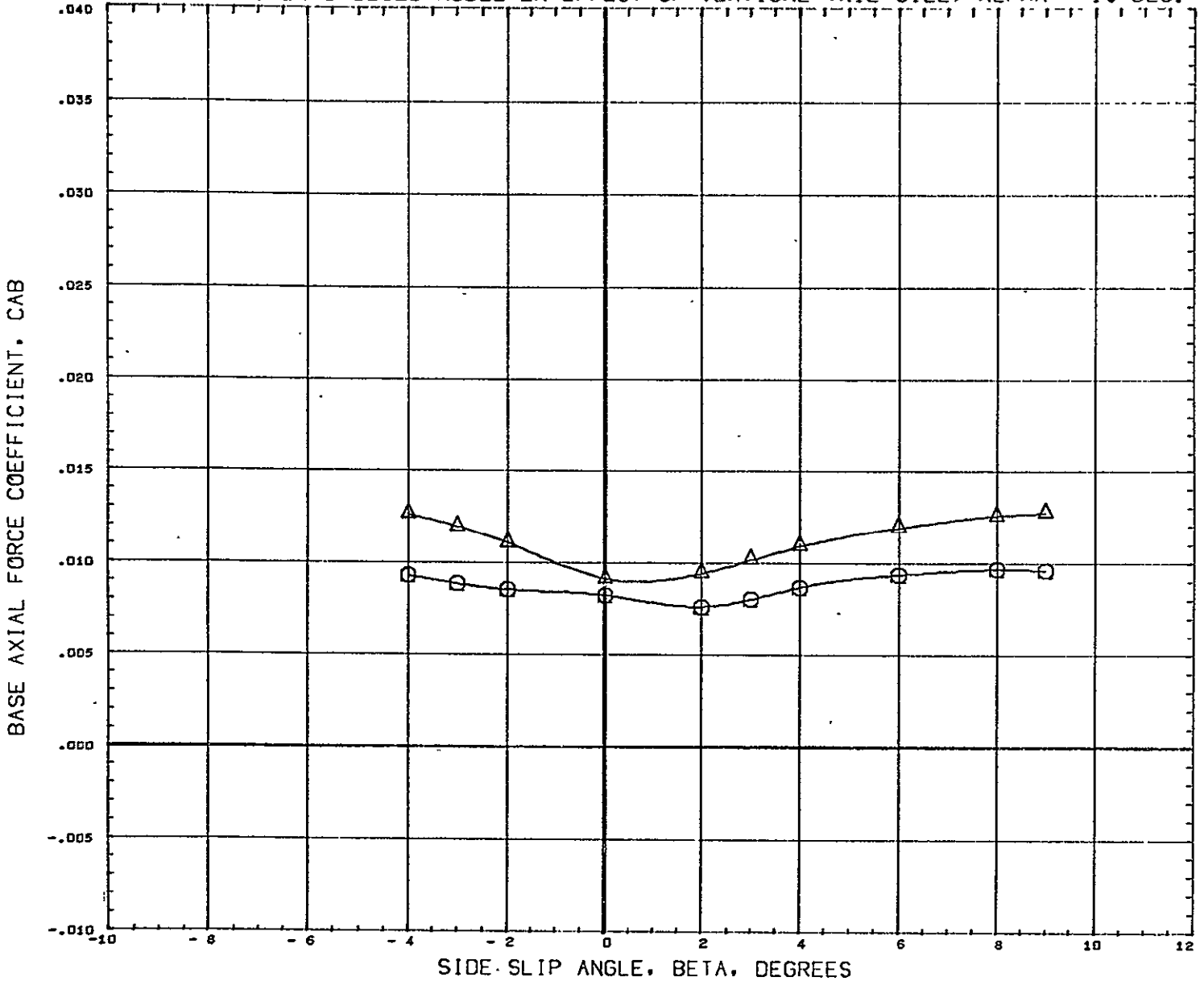
LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 10 DEG.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVNS	REFERENCE INFORMATION
(S4151Y)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	10.000		0.000	0.000	SREF 9.0250 SQ. IN
(S4114Y)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	10.000	0.000		0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XNRP 3.9950 INCHES
						YNRP 0.0000 INCHES
						ZHRF 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.900

LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 10 DEG.

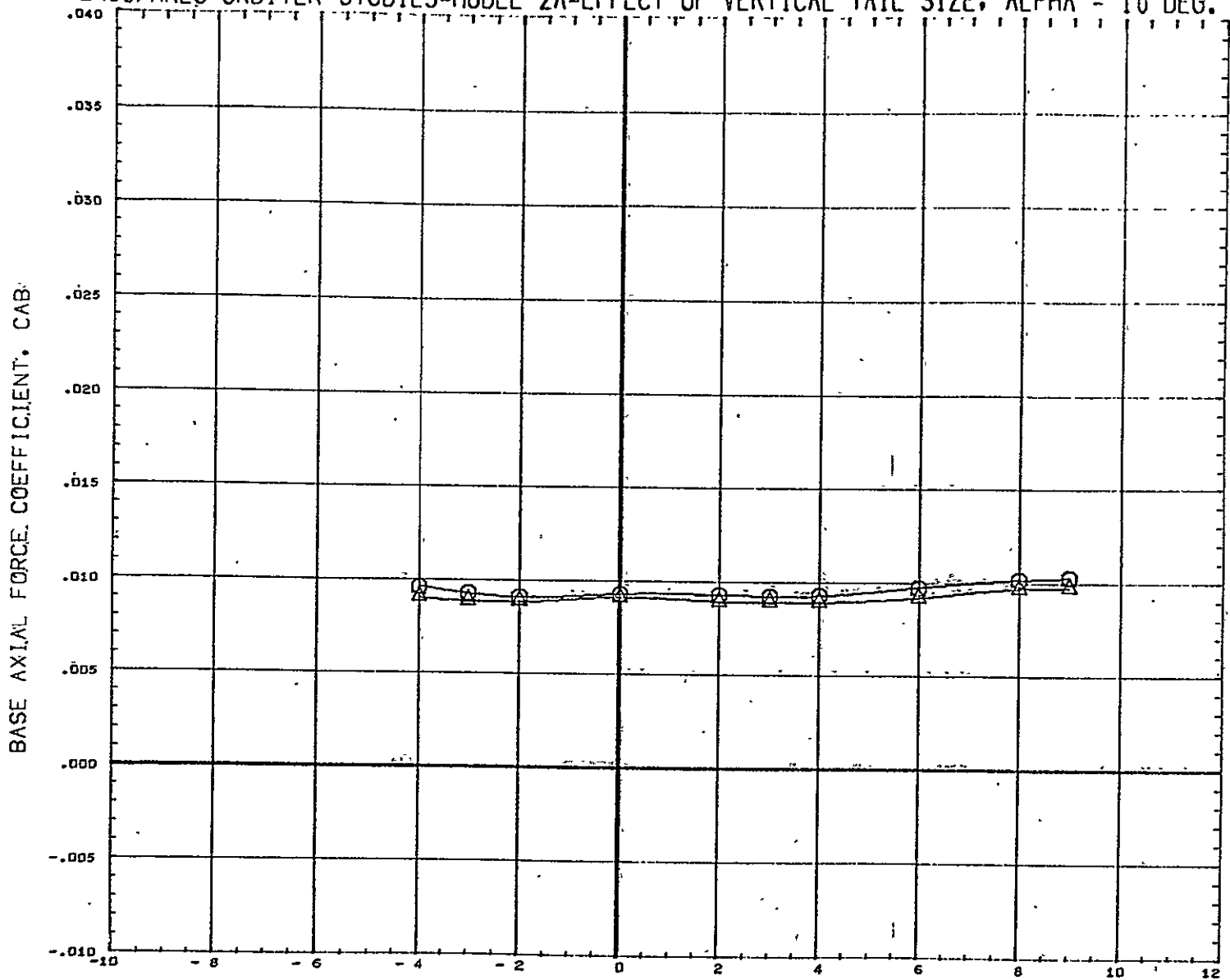


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVN3	REFERENCE INFORMATION
(S4101Y)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	10.000		0.000	0.000	SREF 9.0250 SQ. IN
(S4114Y)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	10.000	0.000		0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP - 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.100

C.7

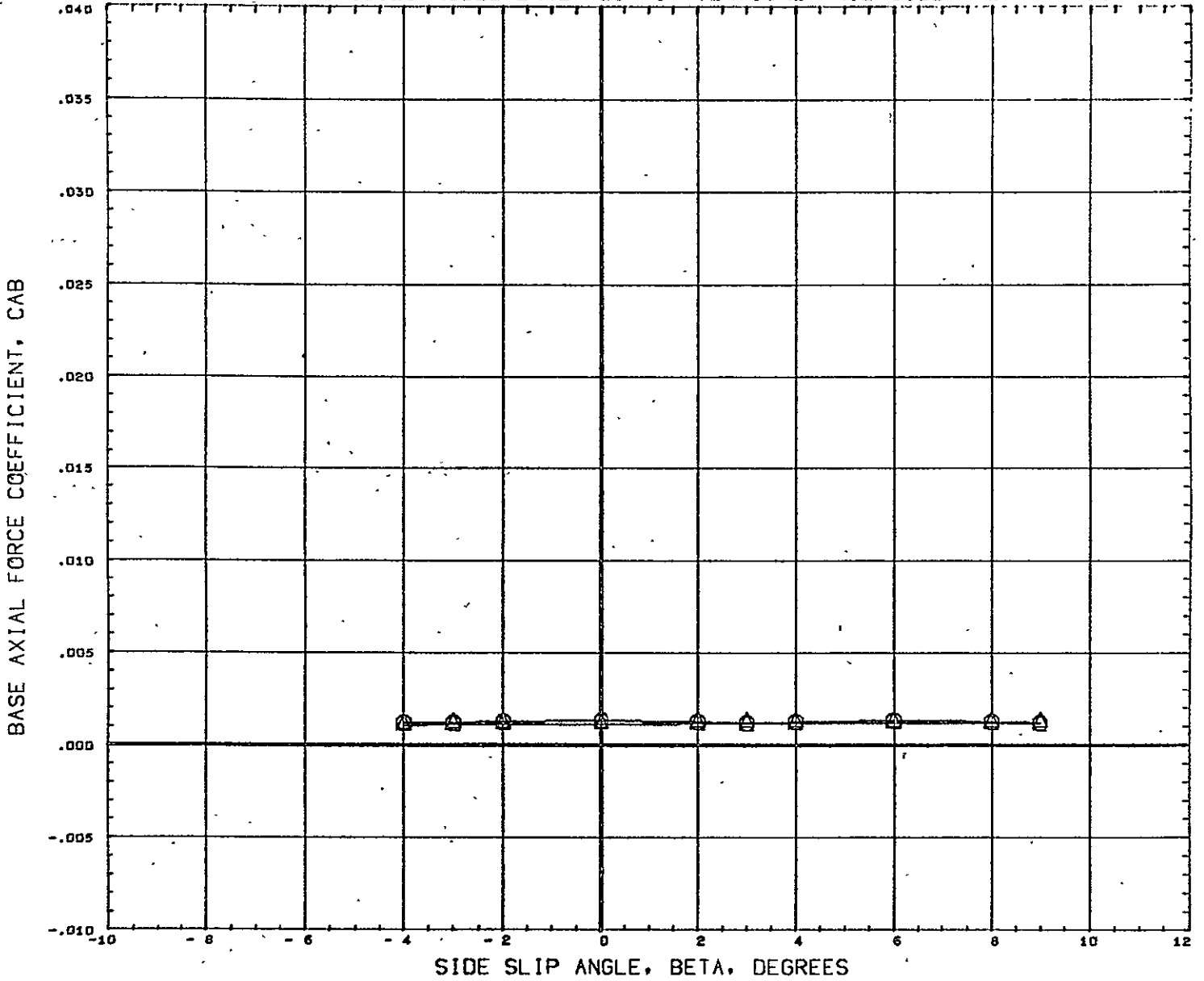
LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 10 DEG.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVN3	REFERENCE INFORMATION
(S4101Y)	MSFC TWT 498 MSFC/LMSC ORBITER	10.000			0.000	SREF 9.0250 SQ. IN
(S4114Y)	MSFC TWT 498 MSFC/LMSC ORBITER	10.000	0.000	0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.965

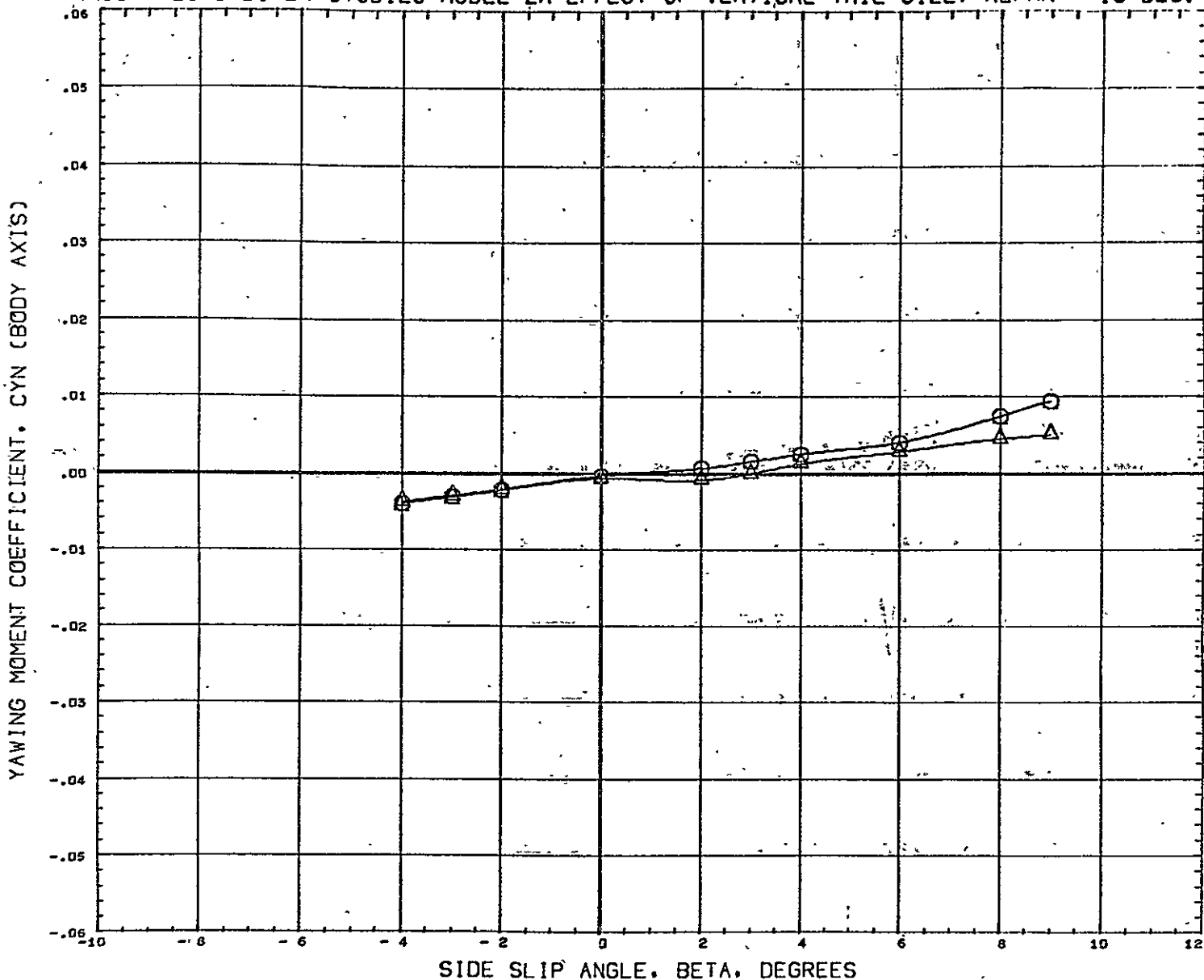
LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 10 DEG.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVN3	REFERENCE INFORMATION
(S4151Y)	MSFC TWT 498 MSFC/LMSC ORBITER	10.000			0.000	SREF 9.0250 SQ.IN
(S4114Y)	MSFC TWT 498 MSFC/LMSC ORBITER	10.000	0.000	0.000	0.000	LREF 6.1425 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 4.960

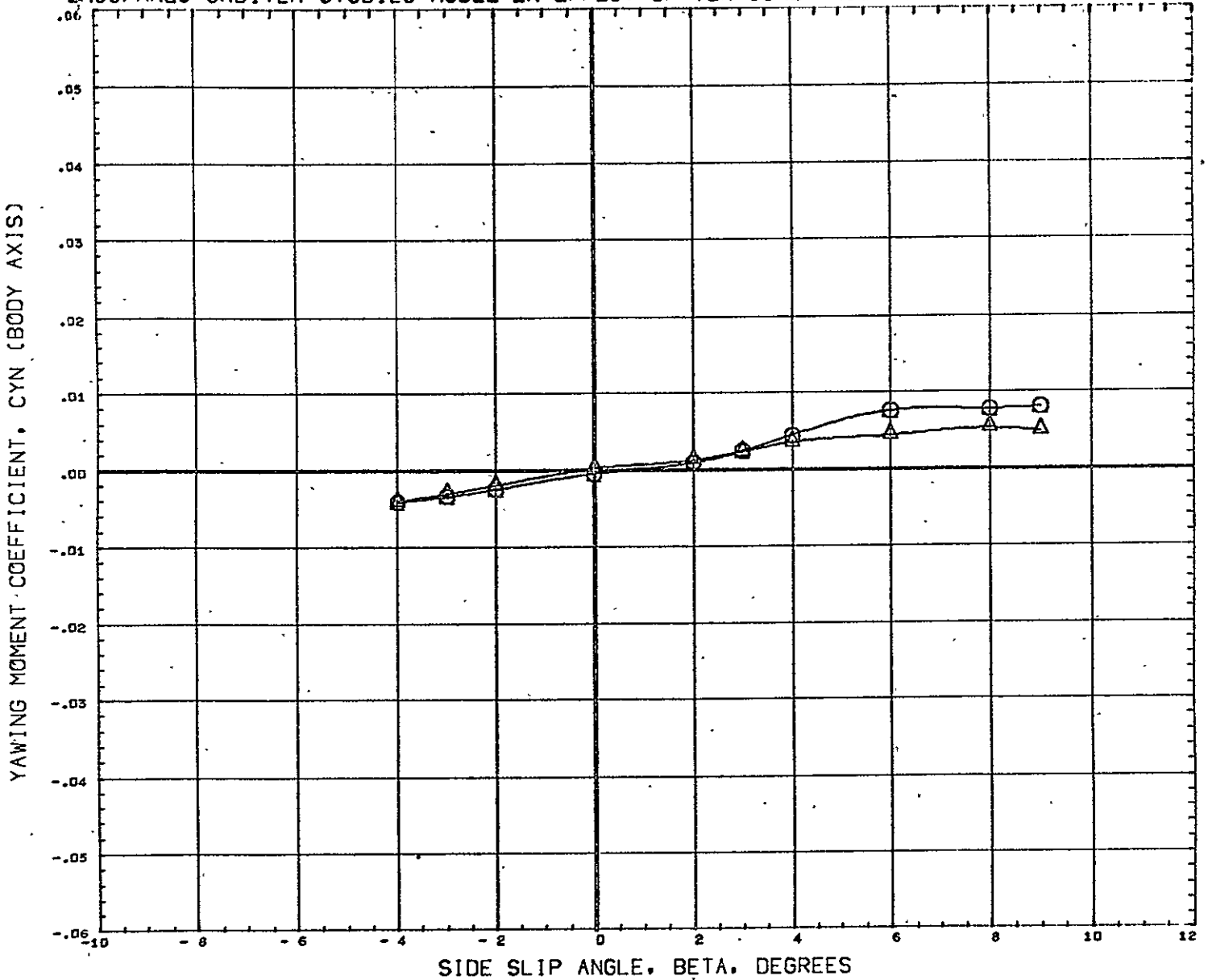
LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 15 DEG.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVNS	REFERENCE INFORMATION
(S4191Z)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	15.000	0.000	0.000	0.000	SREF 9.0250 SQ. IN
(S4114Z)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	15.000	0.000	0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.600

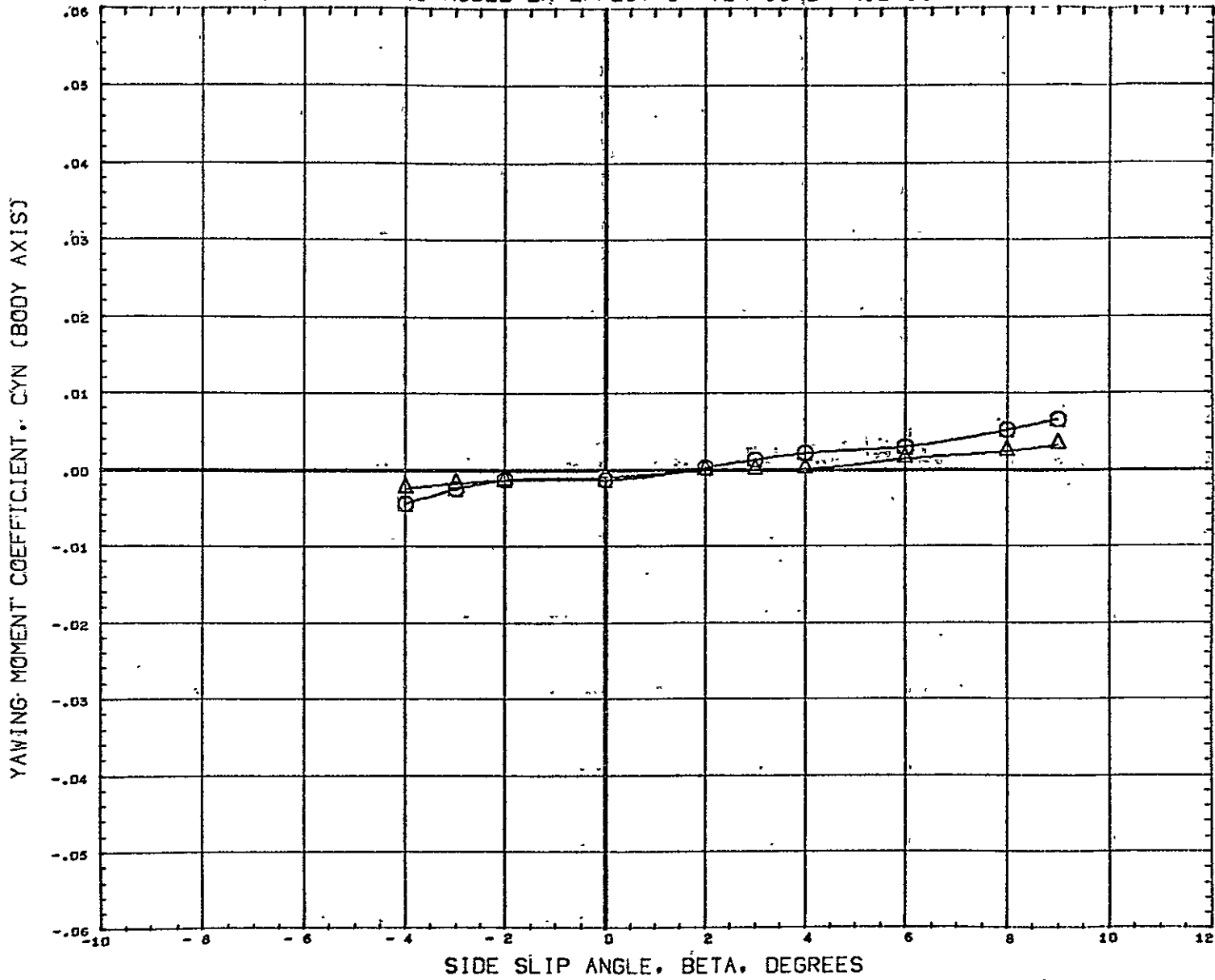
LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 15 DEG.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVN3	REFERENCE INFORMATION
(S4101Z)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	15.000		0.000	0.000	SREF 9.0250 SQ. IN
(S4114Z)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	15.000	0.000		0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.900

LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 15 DEG.



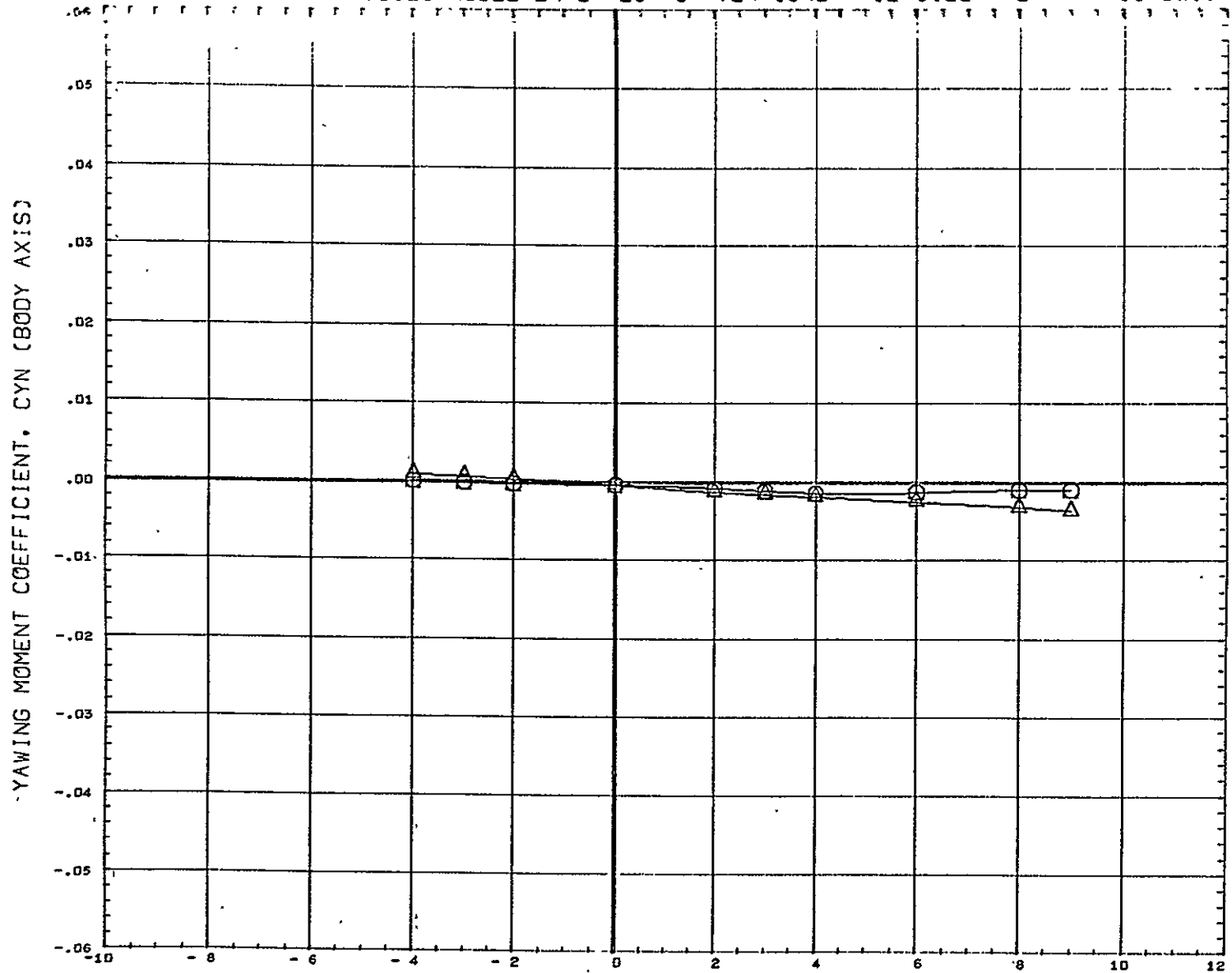
SIDE SLIP ANGLE, BETA, DEGREES

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVNS	REFERENCE INFORMATION
(S4101Z)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	15.000		0.000	0.000	SREF 9.0250 SQ. IN
(S4114Z)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	15.000	0.000		0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.100



LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 15 DEG.

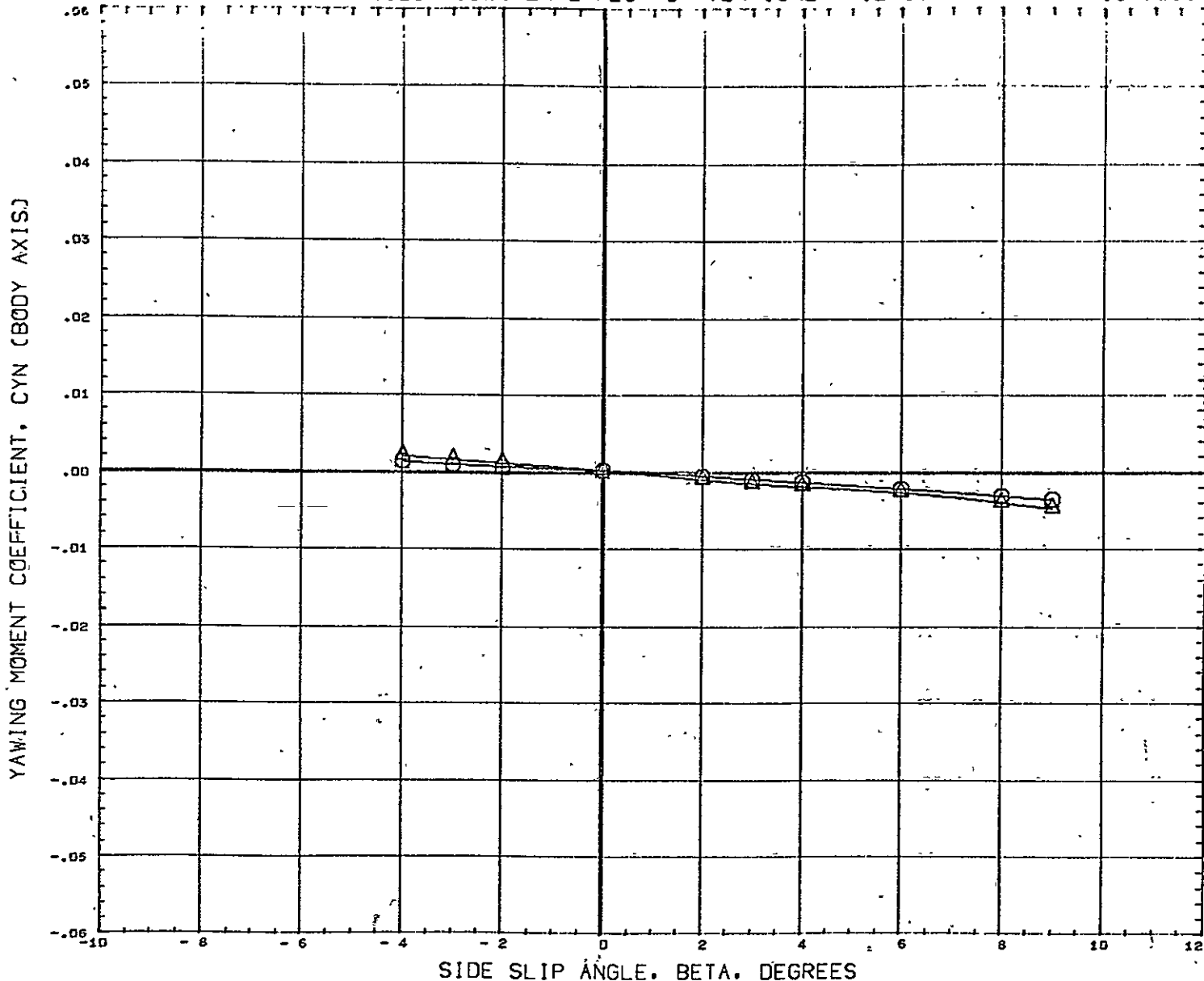


SIDE SLIP ANGLE, BETA, DEGREES

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVNS	REFERENCE INFORMATION
(S4101Z)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	15.000		0.000	0.000	SREF 9.0250 SQ. IN
(S4114Z)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	15.000	0.000		0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.960

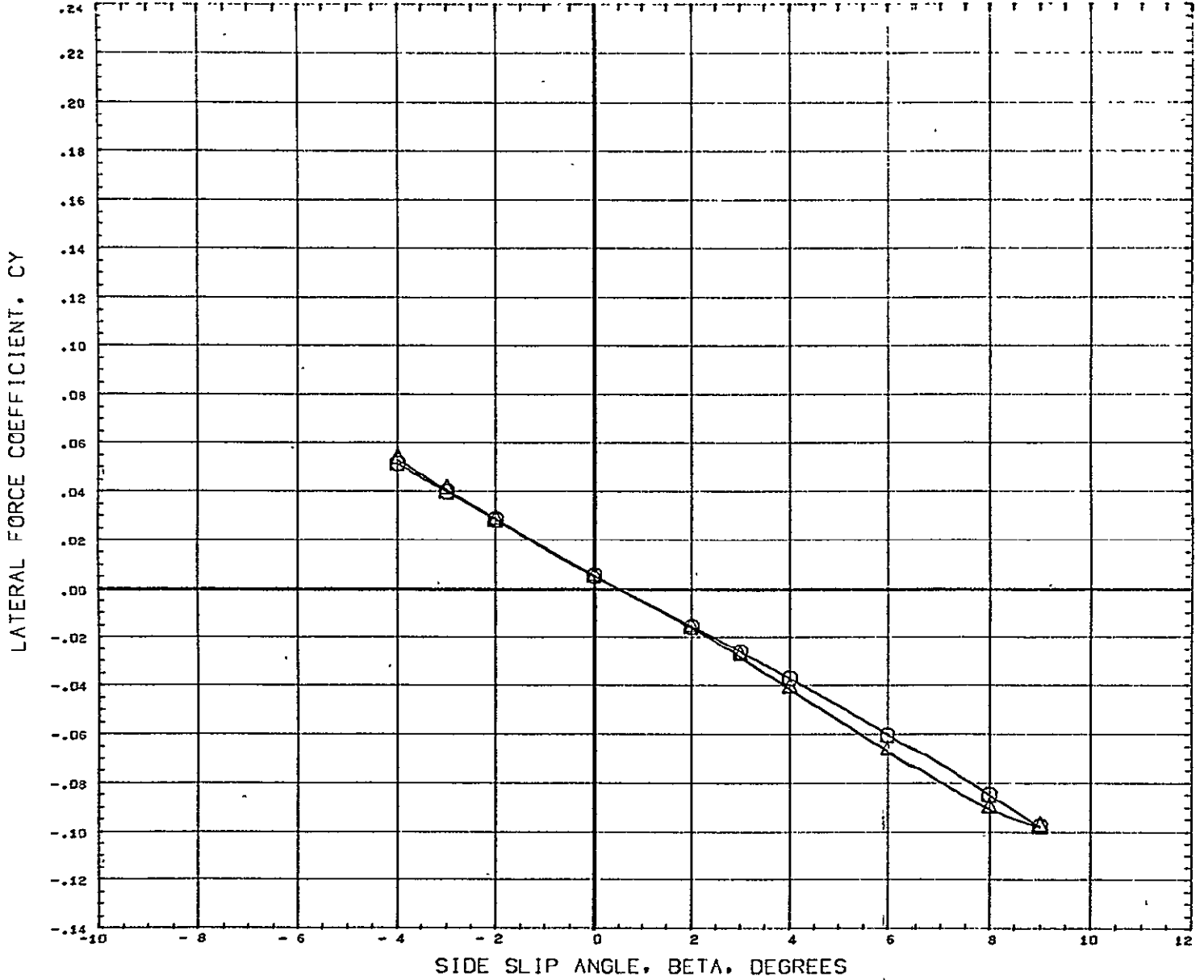
LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 15 DEG.



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ALPHA	RUDER1	RUDER2	ELEVNS	REFERENCE INFORMATION	
(S4101Z)	○	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	15.000		0.000	0.000	SREF	9.0250 SQ. IN
(S4114Z)	△	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D1E3R1	15.000	0.000		0.000	LREF	6.1420 INCHES
								BREF	6.1420 INCHES
								XMRP	3.9950 INCHES
								YMRP	0.0000 INCHES
								ZMRP	0.1350 INCHES
								SCALE	0.0033 SCALE

MACH 4.960

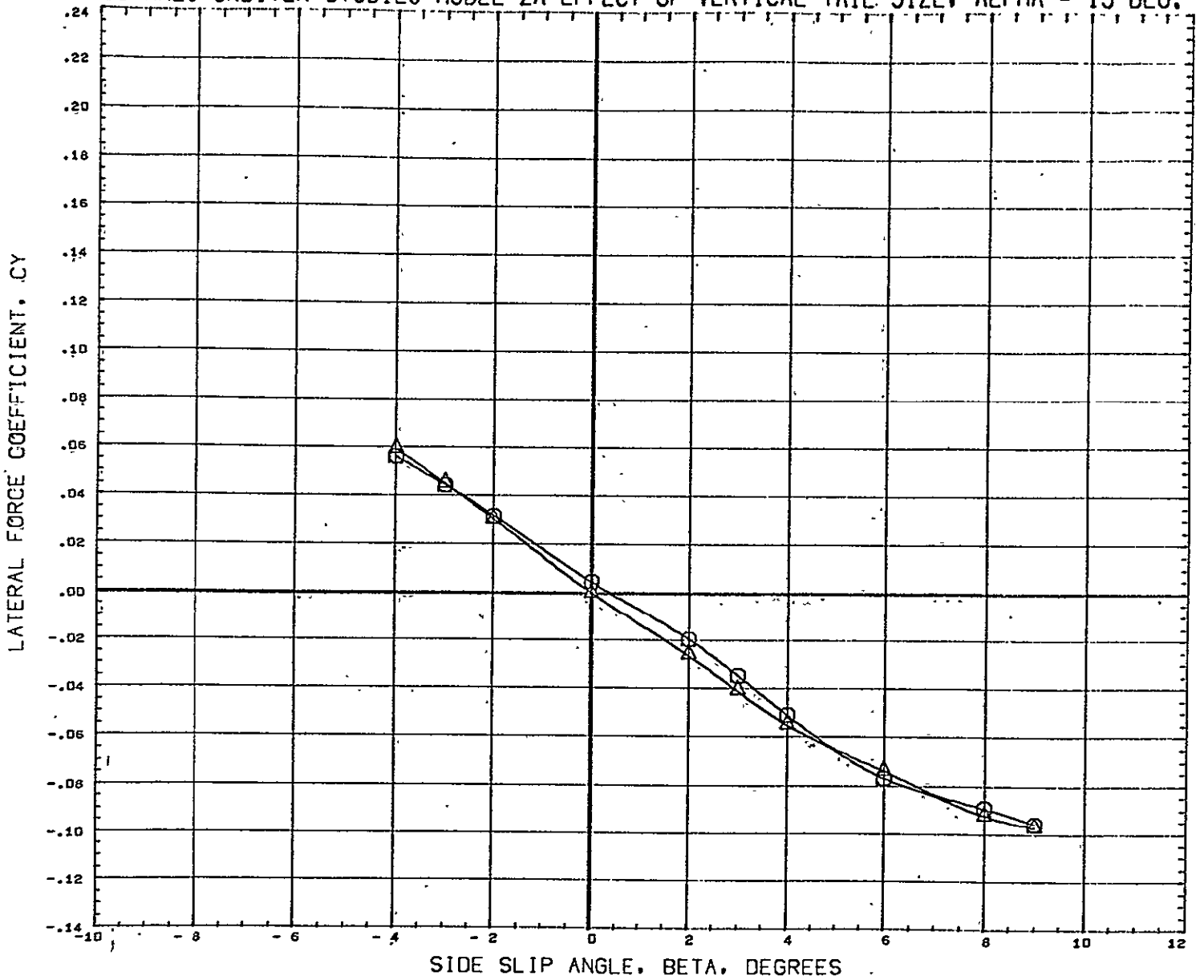
LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 15 DEG.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVNS	REFERENCE INFORMATION
(S41012)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	15.000	0.000	0.000	0.000	SREF 9.0250 SQ. IN
(S41142)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	15.000	0.000	0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.600

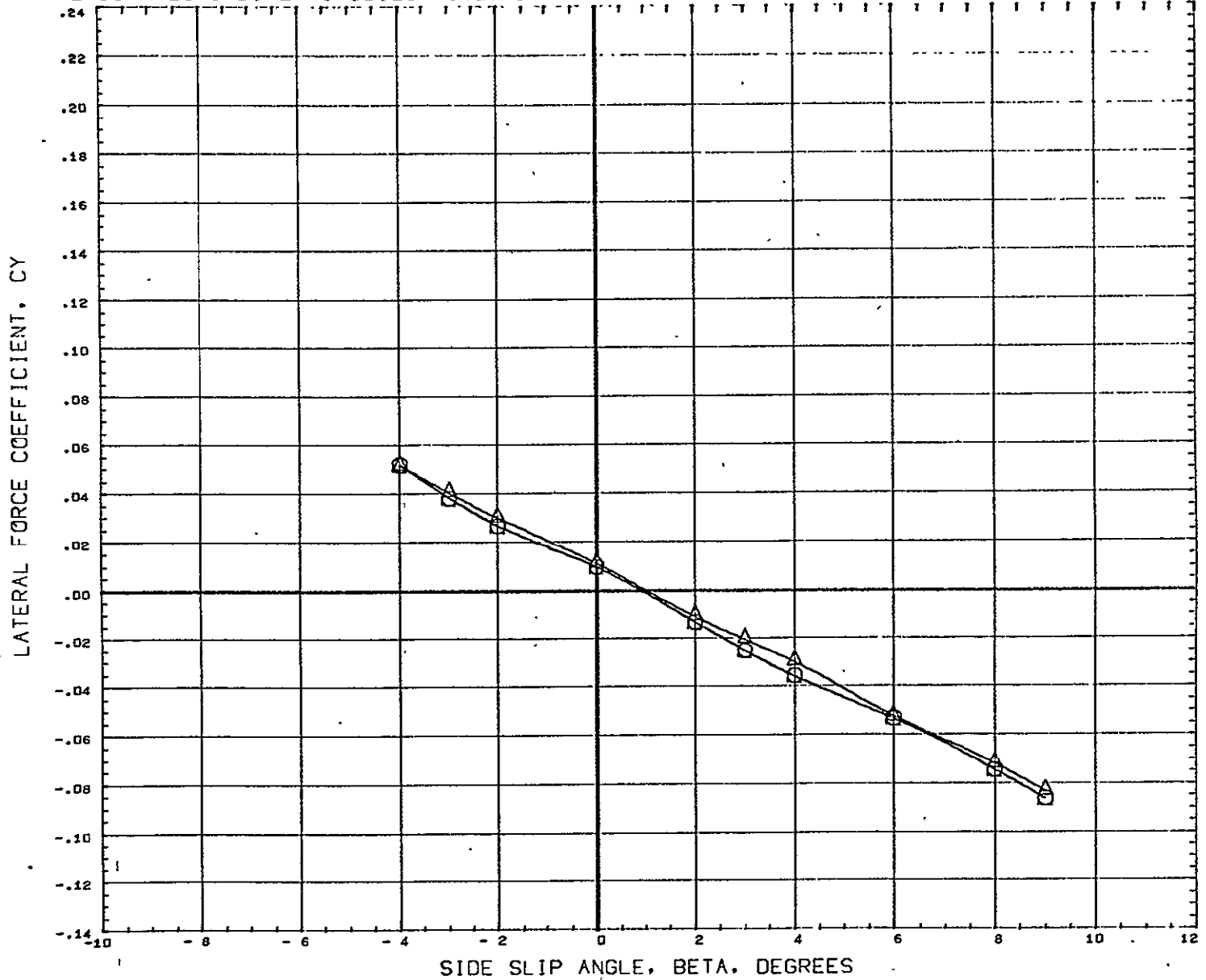
LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 15 DEG.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVNS	REFERENCE INFORMATION
(S41D1Z)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	15.000	0.000	0.000	0.000	SREF 9.0250 SQ. IN
(S4114Z)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	15.000	0.000	0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XHRP 3.9950 INCHES
						YHRP 0.0000 INCHES
						ZHRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.900

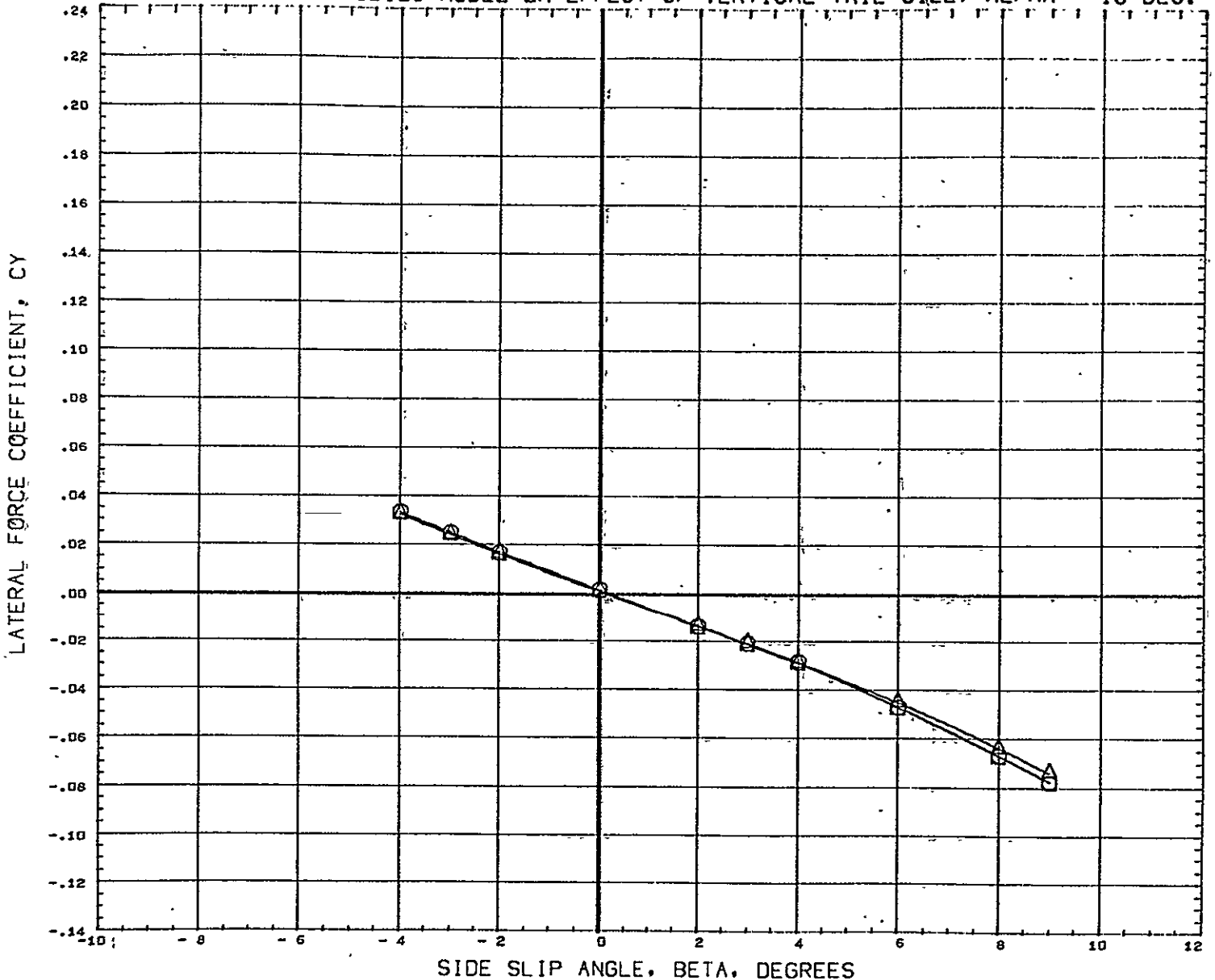
LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 15 DEG.



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVNS	REFERENCE INFORMATION
(S:101Z)	○	MSFC TWT 498 MSFC/LMSC ORBITER	15.000	0.000	0.000	0.000	SREF 9.0250 SQ. IN
(S:114Z)	△	MSFC TWT 498 MSFC/LMSC ORBITER	15.000	0.000	0.000	0.000	LREF 6.1420 INCHES
							BREF 6.1420 INCHES
							XMRP 3.9950 INCHES
							YMRP 0.0000 INCHES
							ZMRP 0.1350 INCHES
							SCALE 0.0033 SCALE

MACH 1.100

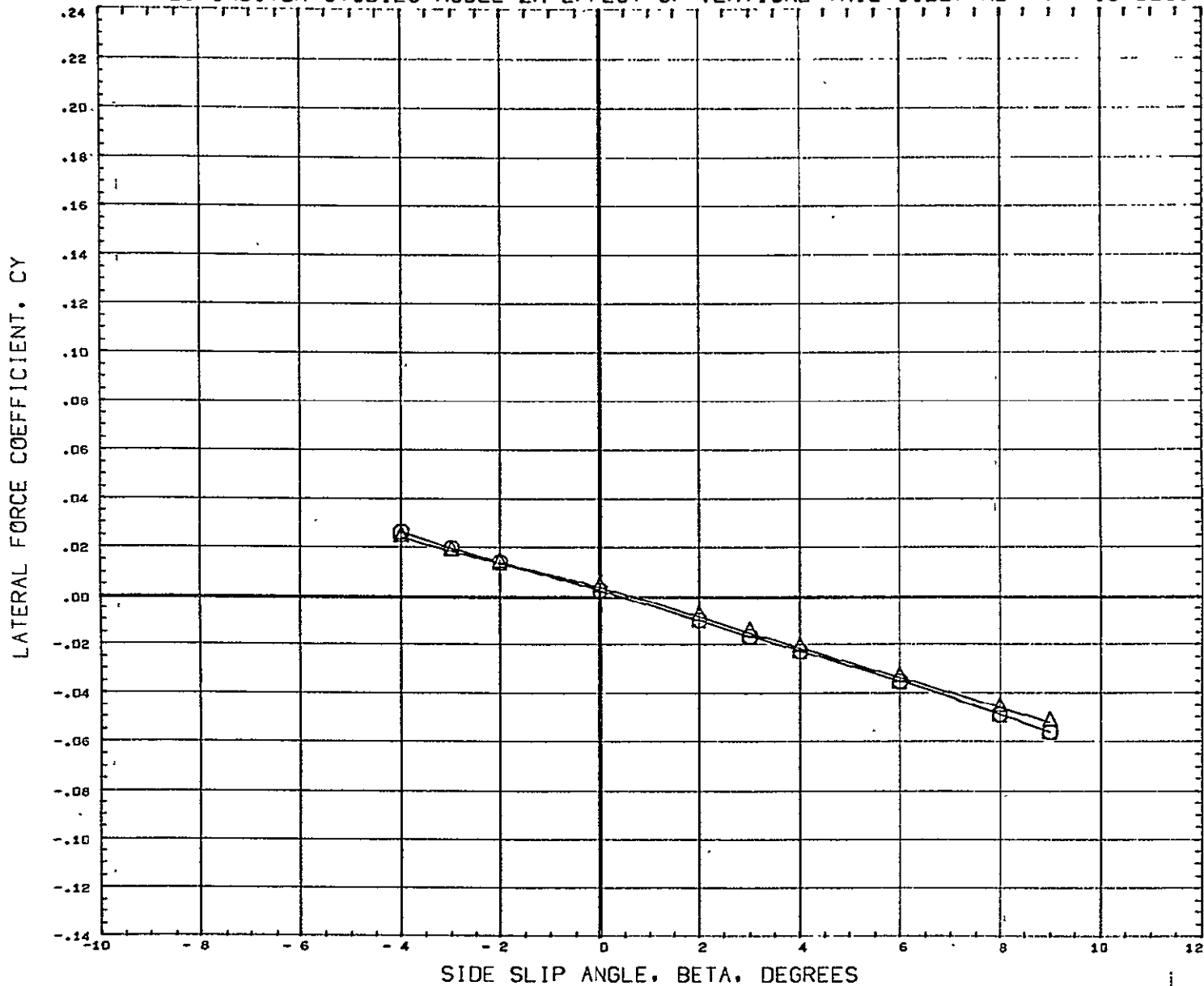
LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 15 DEG.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVN3	REFERENCE INFORMATION
(S41012)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	15.000		0.000	0.000	SREF 9.0250 SQ. IN
(S41142)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	15.000	0.000		0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.965

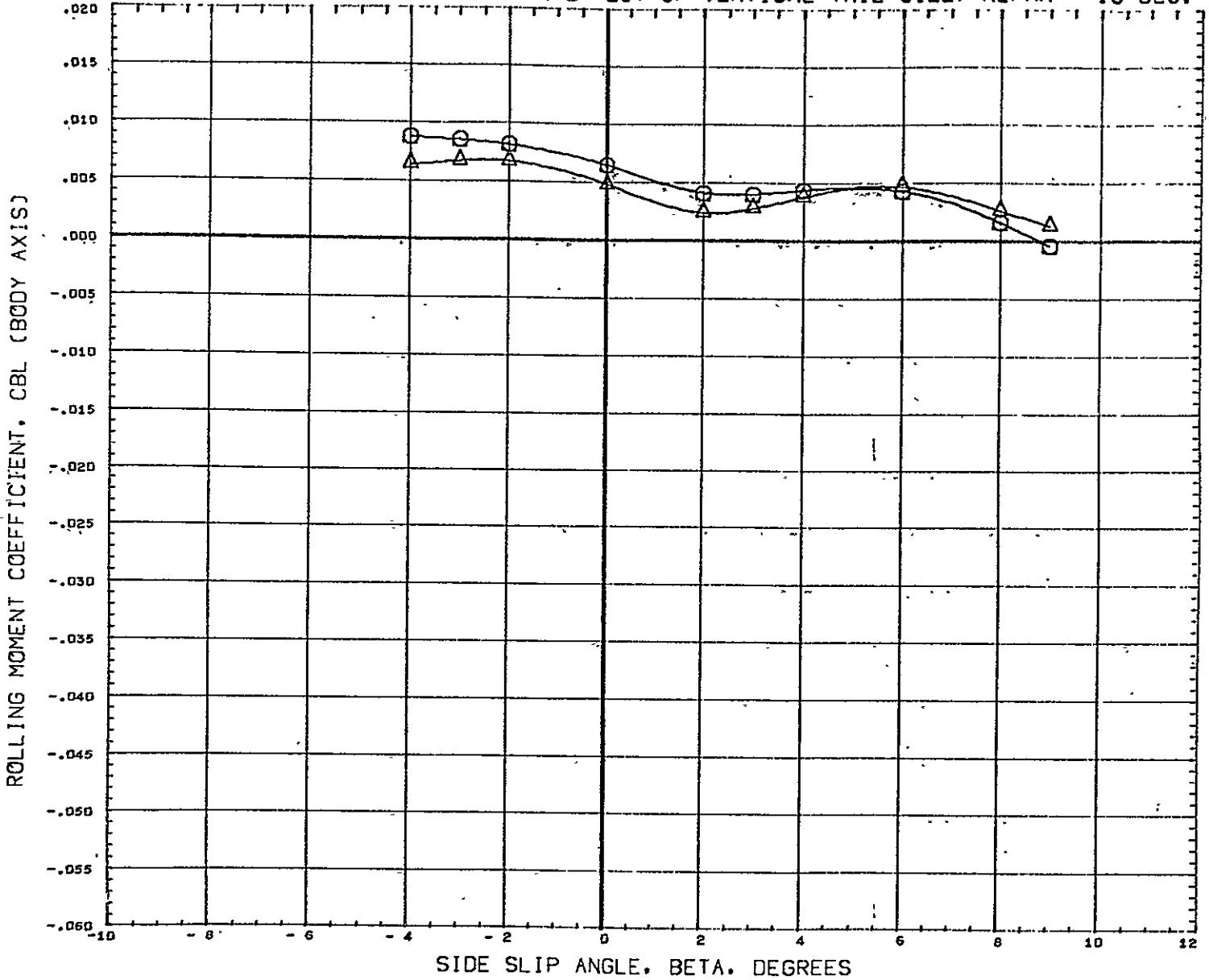
LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 15 DEG.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVN3	REFERENCE INFORMATION
(S4101Z)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	15.000		0.000	0.000	SREF 9.0250 SQ. IN
(S4114Z)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	15.000	0.000		0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 4.965

LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 15 DEG.

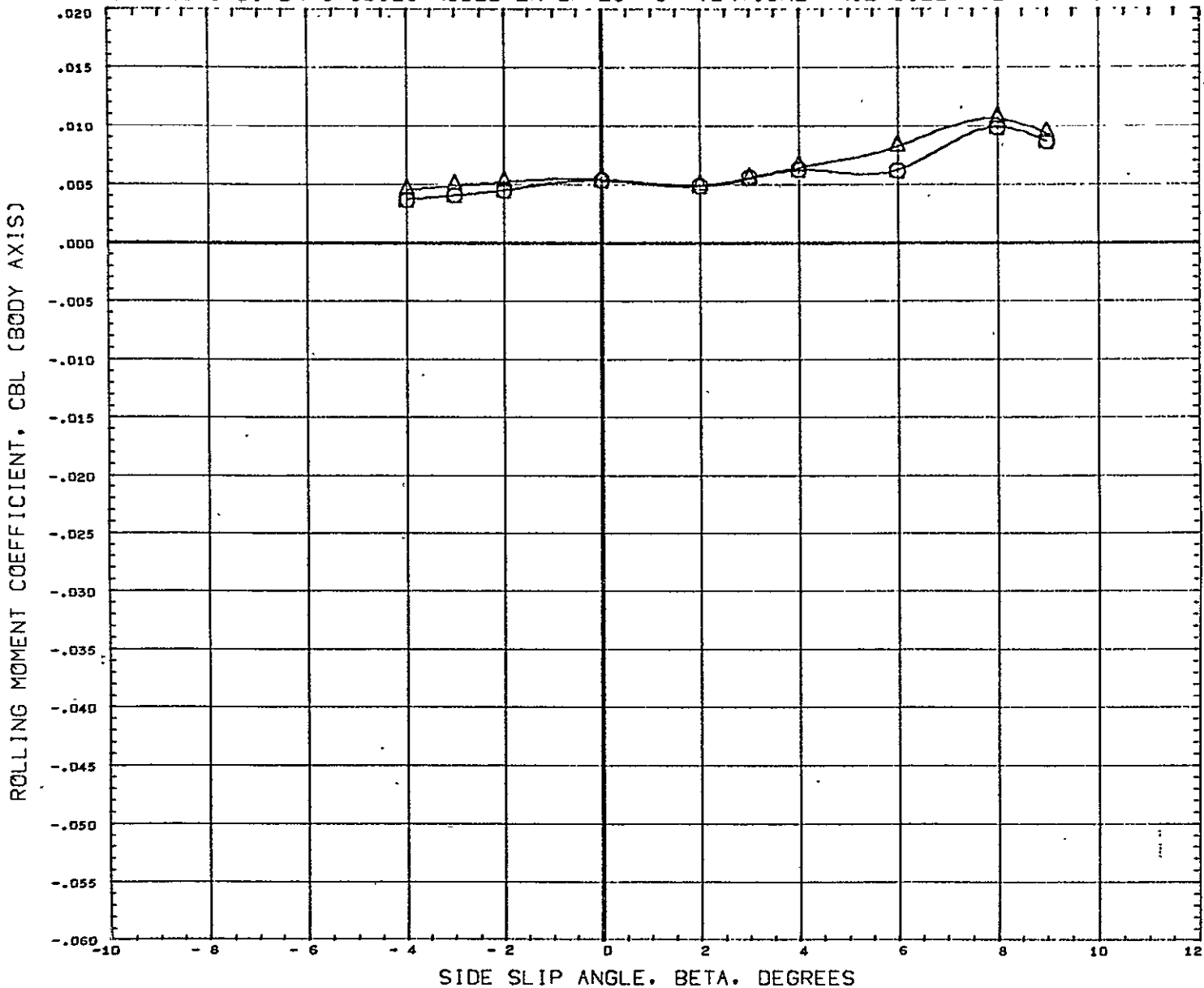


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVNS	REFERENCE INFORMATION
(S4191Z)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	15.000		0.000	0.000	SREF 9.5250 SQ. IN
(S4114Z)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	15.000	0.000		0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 5.655



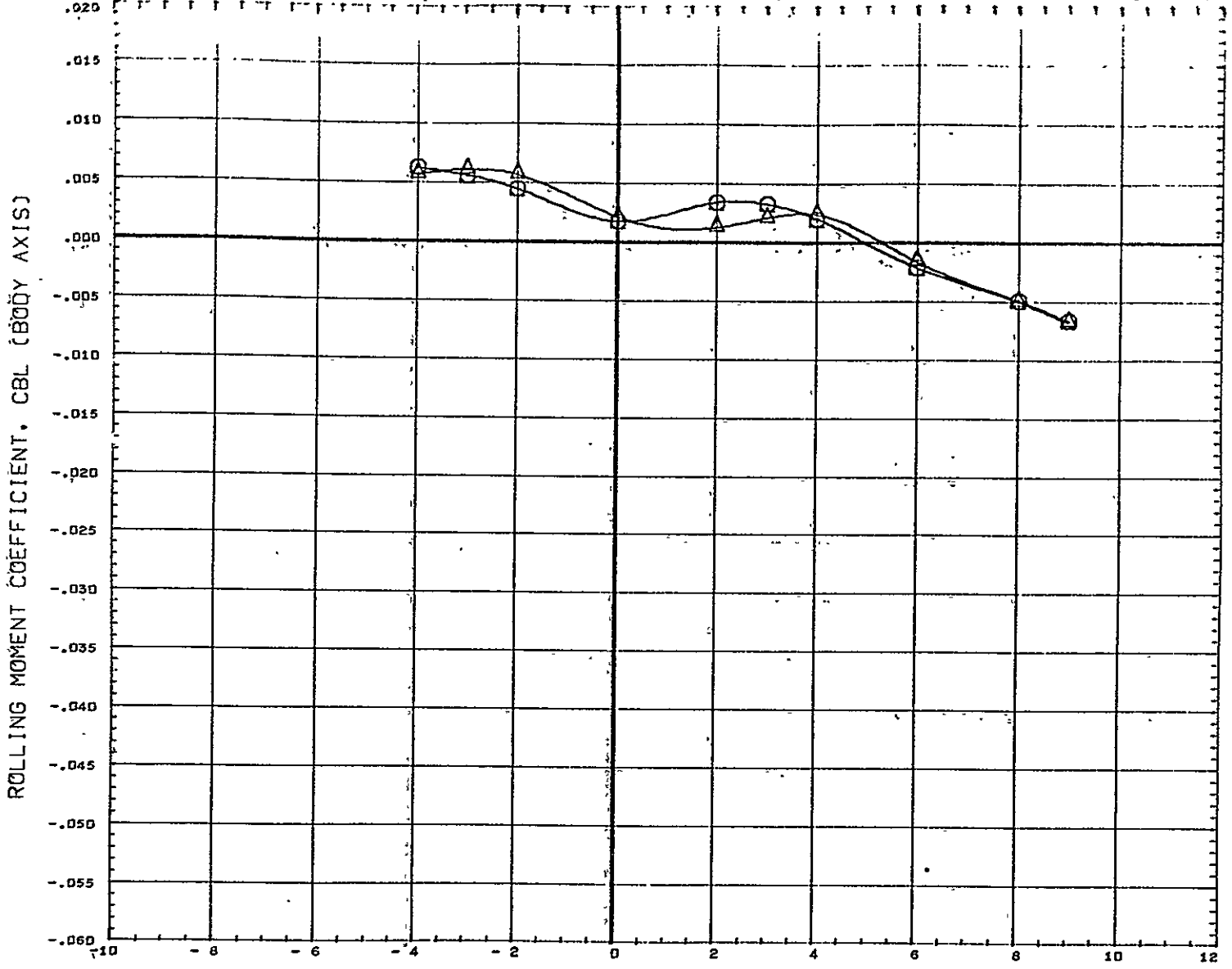
LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 15 DEG.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEV3	REFERENCE INFORMATION
(S4151Z)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	15.000			0.000	SREF 9.0250 SQ. IN
(S4114Z)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	15.000	0.000	0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.950

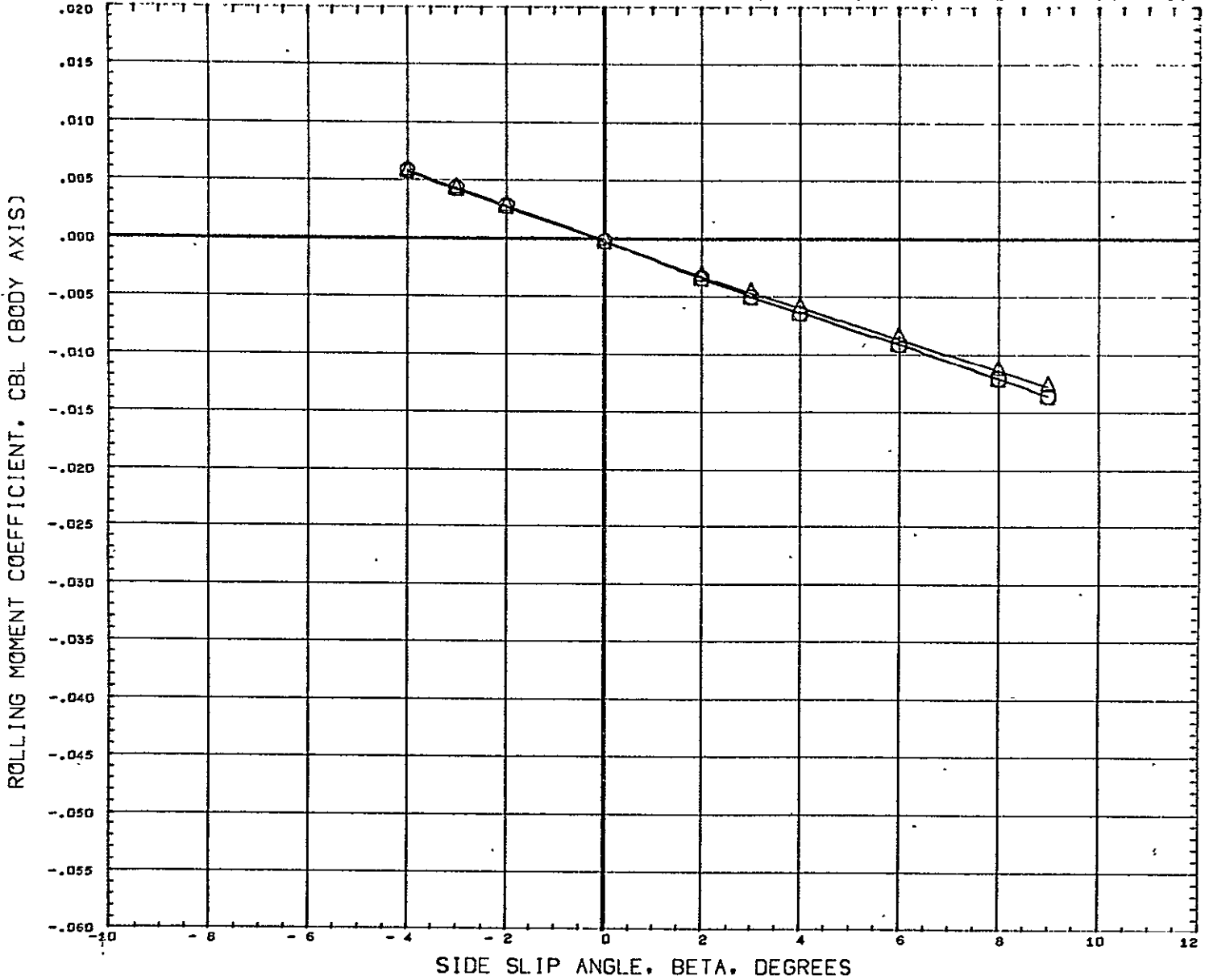
LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 15 DEG.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEV3	REFERENCE INFORMATION
(S4101Z)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	15.000	0.000	0.000	0.000	SREF 9.0250 SQ.IN
(S4114Z)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	15.000	0.000	0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.100

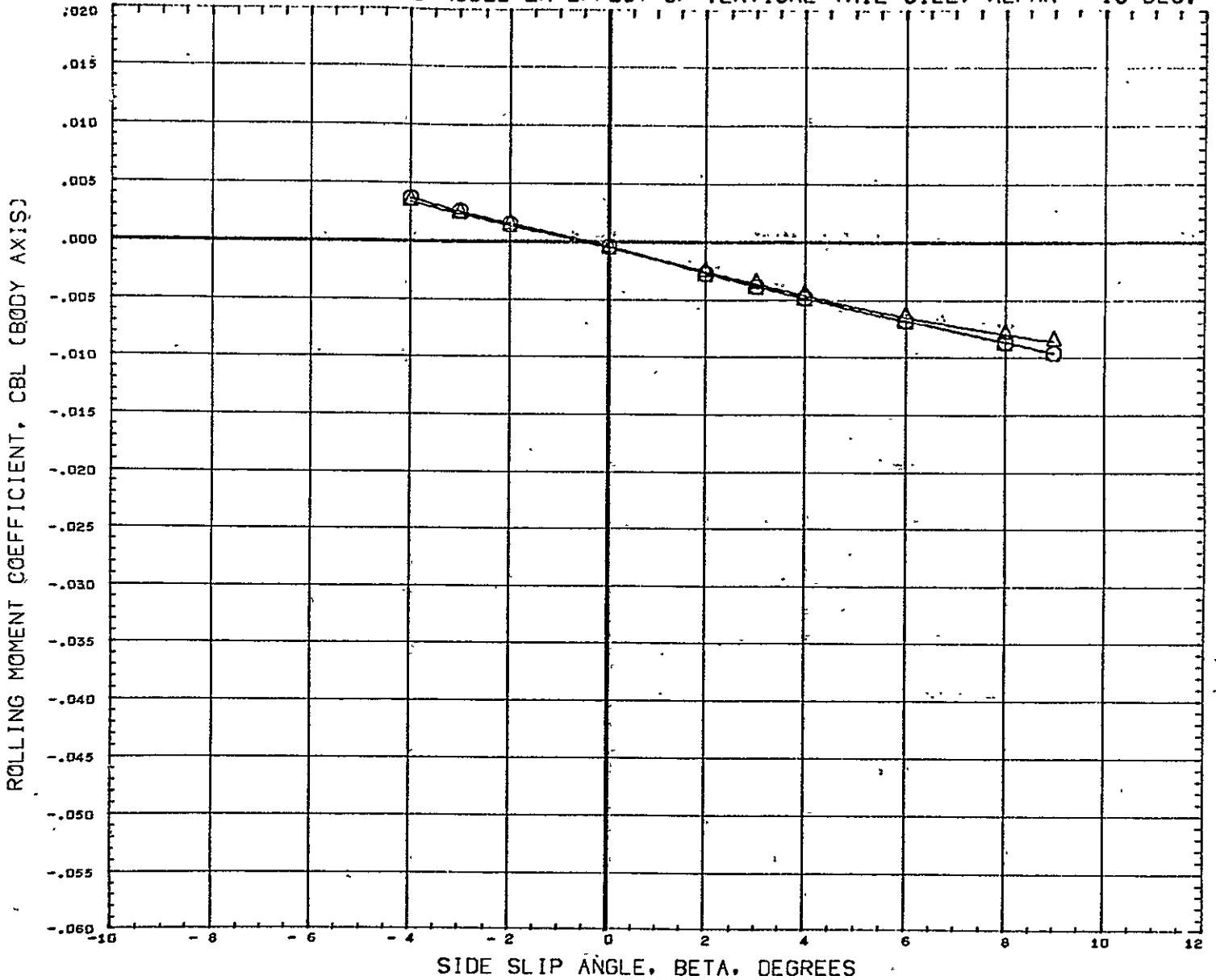
LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 15 DEG.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVN3	REFERENCE INFORMATION
(S41012)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	15.000		0.000	0.000	SREF 9.0250 SQ. IN
(S41142)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	15.000	0.000		0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.960

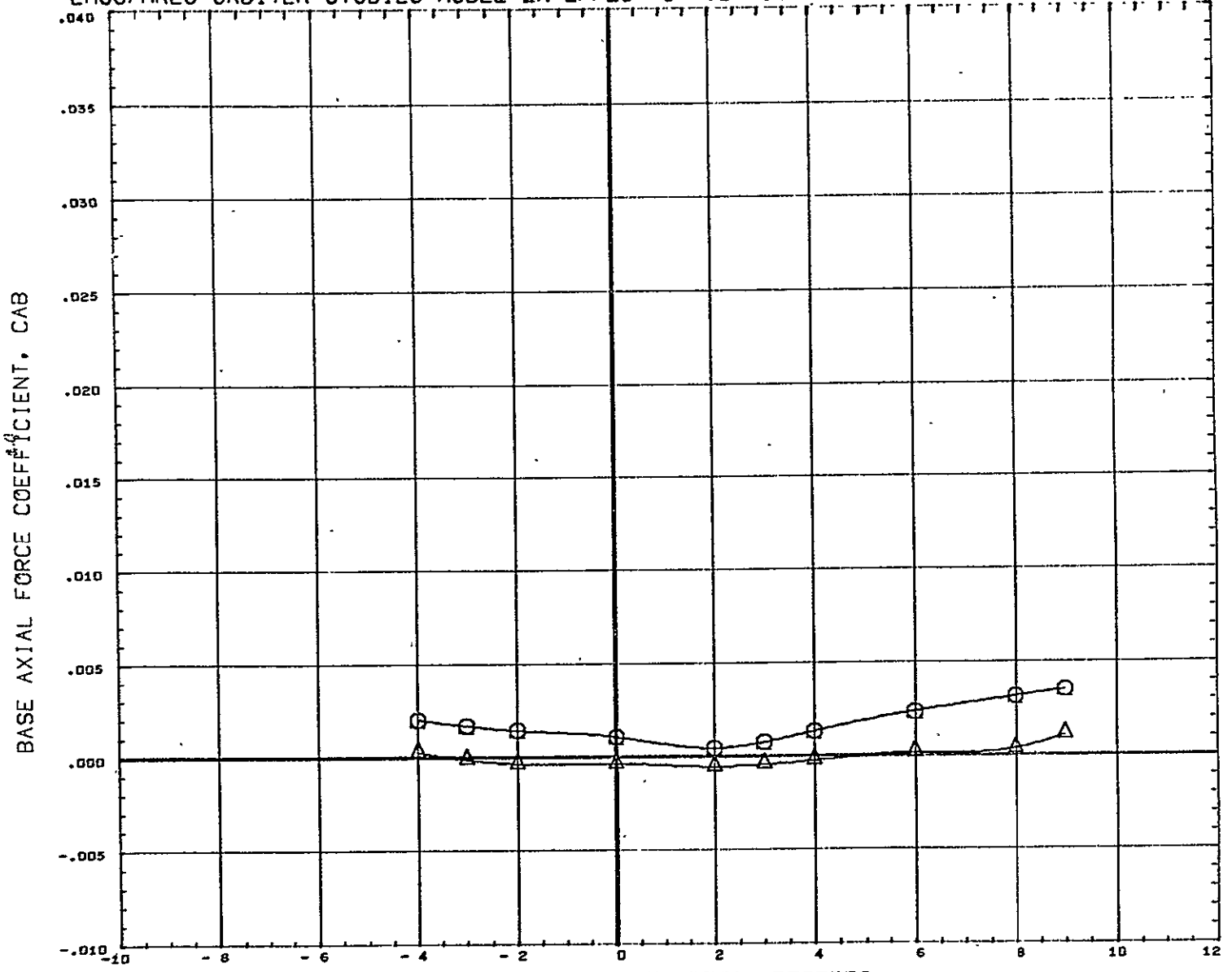
LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 15 DEG.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVNS	REFERENCE INFORMATION
(S4101Z)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	15.000	0.000	0.000	0.000	SREF 9.0250 SQ. IN
(S4114Z)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	15.000	0.000	0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 4.969

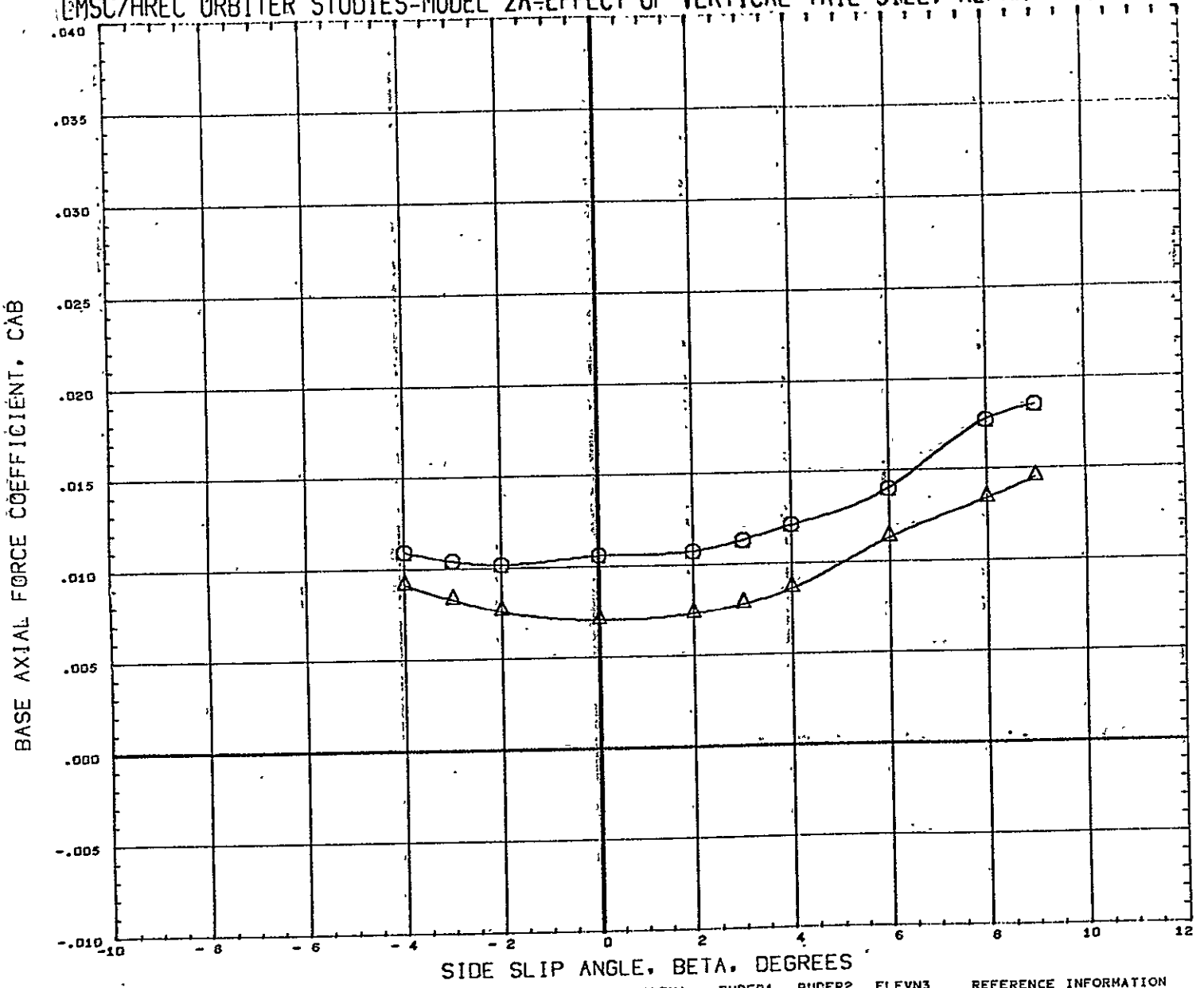
LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 15 DEG.



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ALPHA	RUDER1	RUDER2	ELEVNS	REFERENCE INFORMATION	
(S4101Z)	○	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	15.000		0.000	0.000	SREF	9.0250 SQ. IN
(S4114Z)	△	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D1E3R1	15.000	0.000		0.000	LREF	6.1420 INCHES
								BREF	6.1420 INCHES
								XHRP	3.9950 INCHES
								YHRP	0.0000 INCHES
								ZHRP	0.1350 INCHES
								SCALE	0.0033 SCALE

MACH 0.600

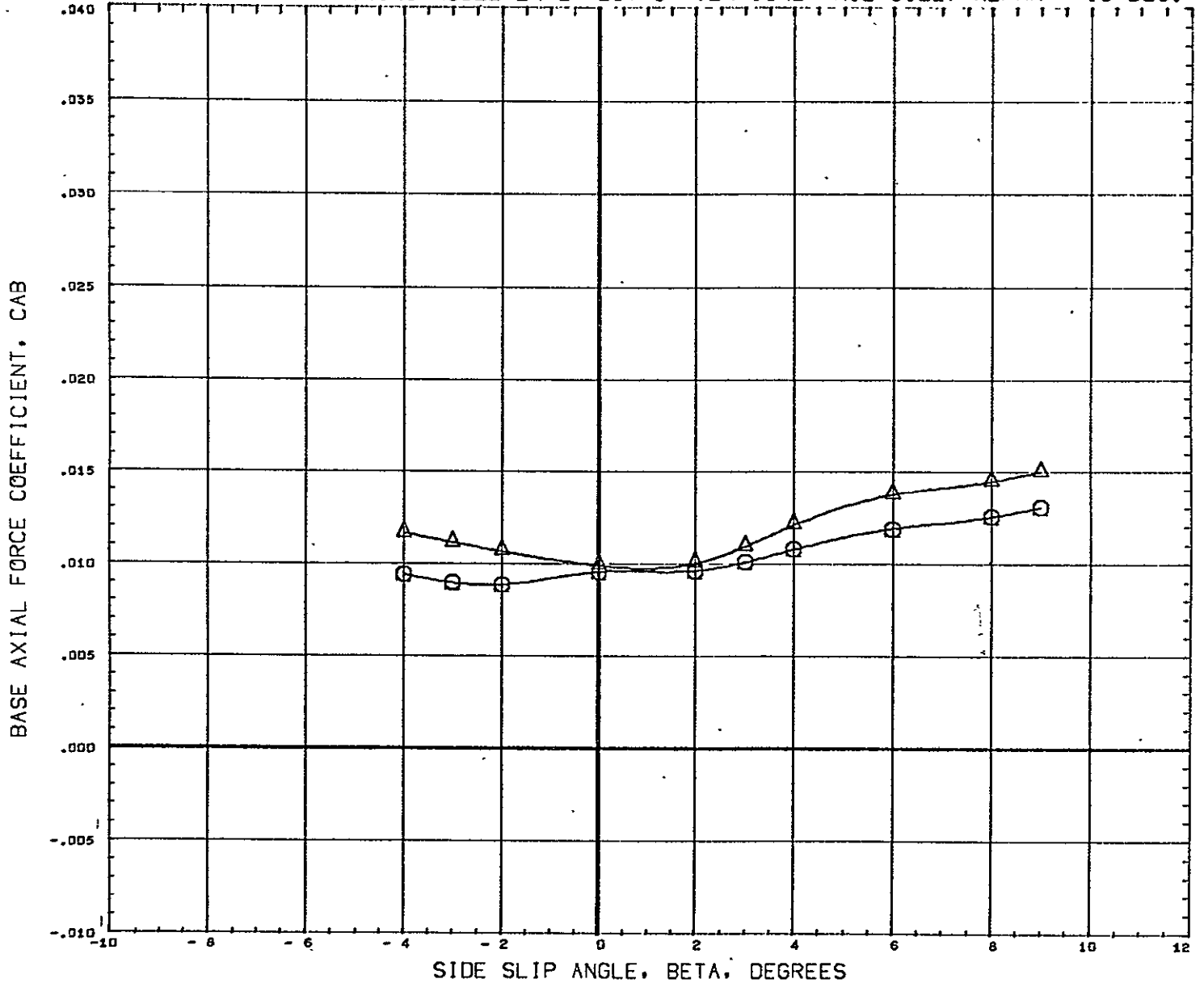
LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 15 DEG.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVN3	REFERENCE INFORMATION
(S4101Z)	MSFC TWT 498 MSFC/LMSC ORBITER	15.000		0.000	0.000	SREF 9.0250 SQ. IN
(S4114Z)	MSFC TWT 498 MSFC/LMSC ORBITER	15.000	0.000		0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XHRP 3.9950 INCHES
						YHRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.900

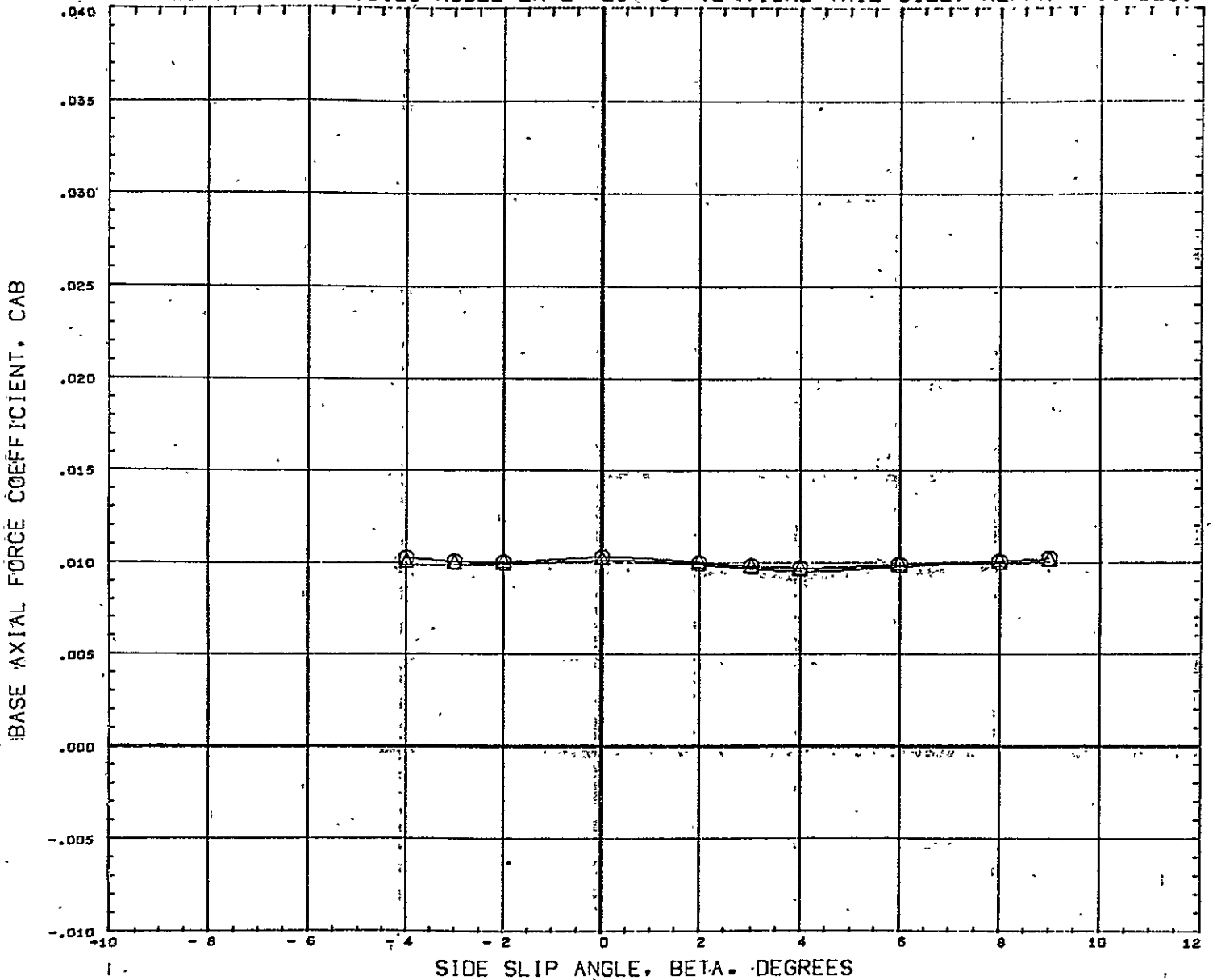
LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 15 DEG.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVNS	REFERENCE INFORMATION
(S410JZ)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	15.000		0.000	0.000	SREF 9.0250 SQ. IN
(S4114Z)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	15.000	0.000		0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.100

LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 15 DEG.



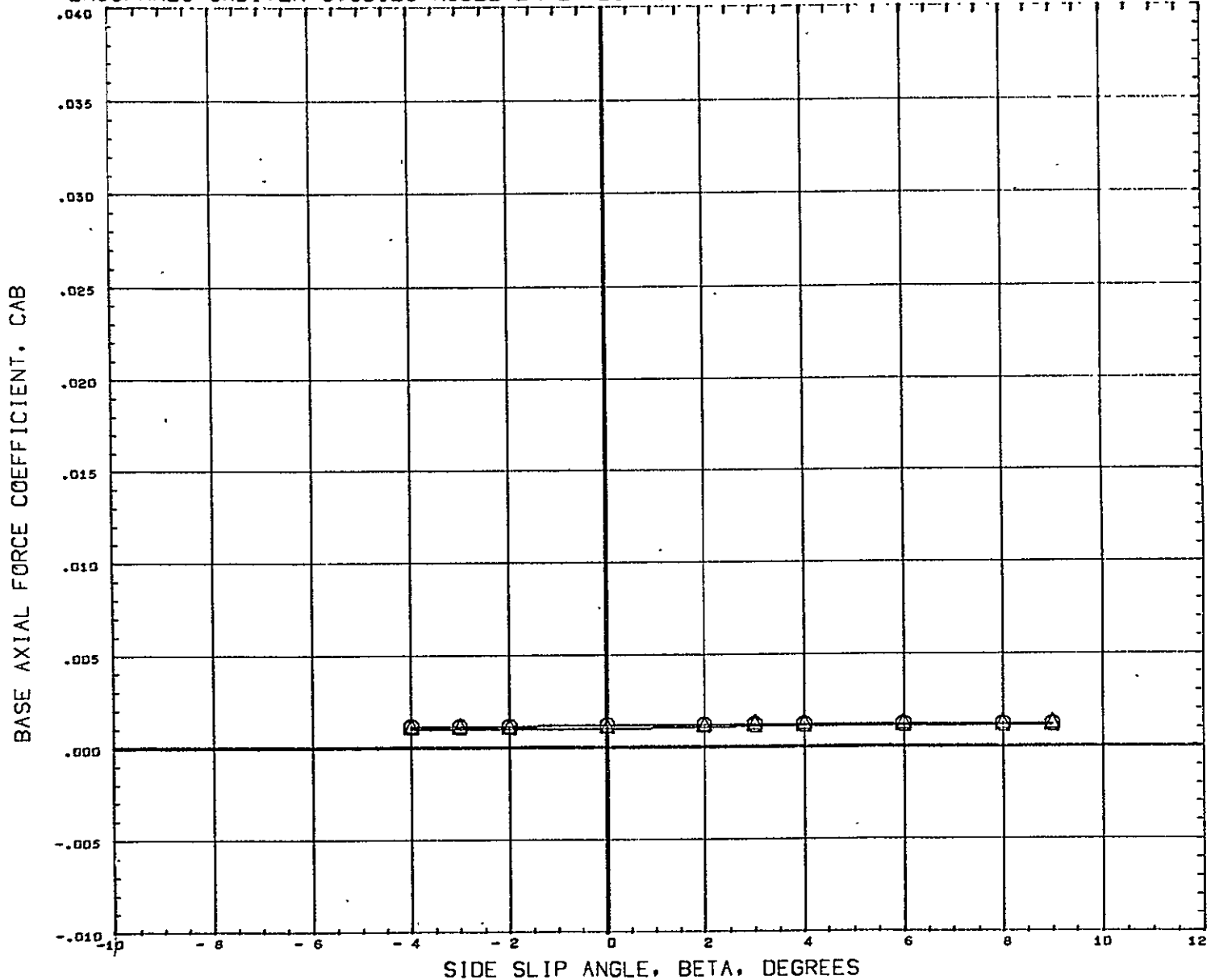
SIDE SLIP ANGLE, BETA, DEGREES

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVNS	REFERENCE INFORMATION
(S4101Z)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	15.000		0.000	0.000	SREF 9.0250 SQ. IN
(S4114Z)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	15.000	0.000		0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XHRP 3.9950 INCHES
						YHRP 0.0000 INCHES
						ZHRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.960



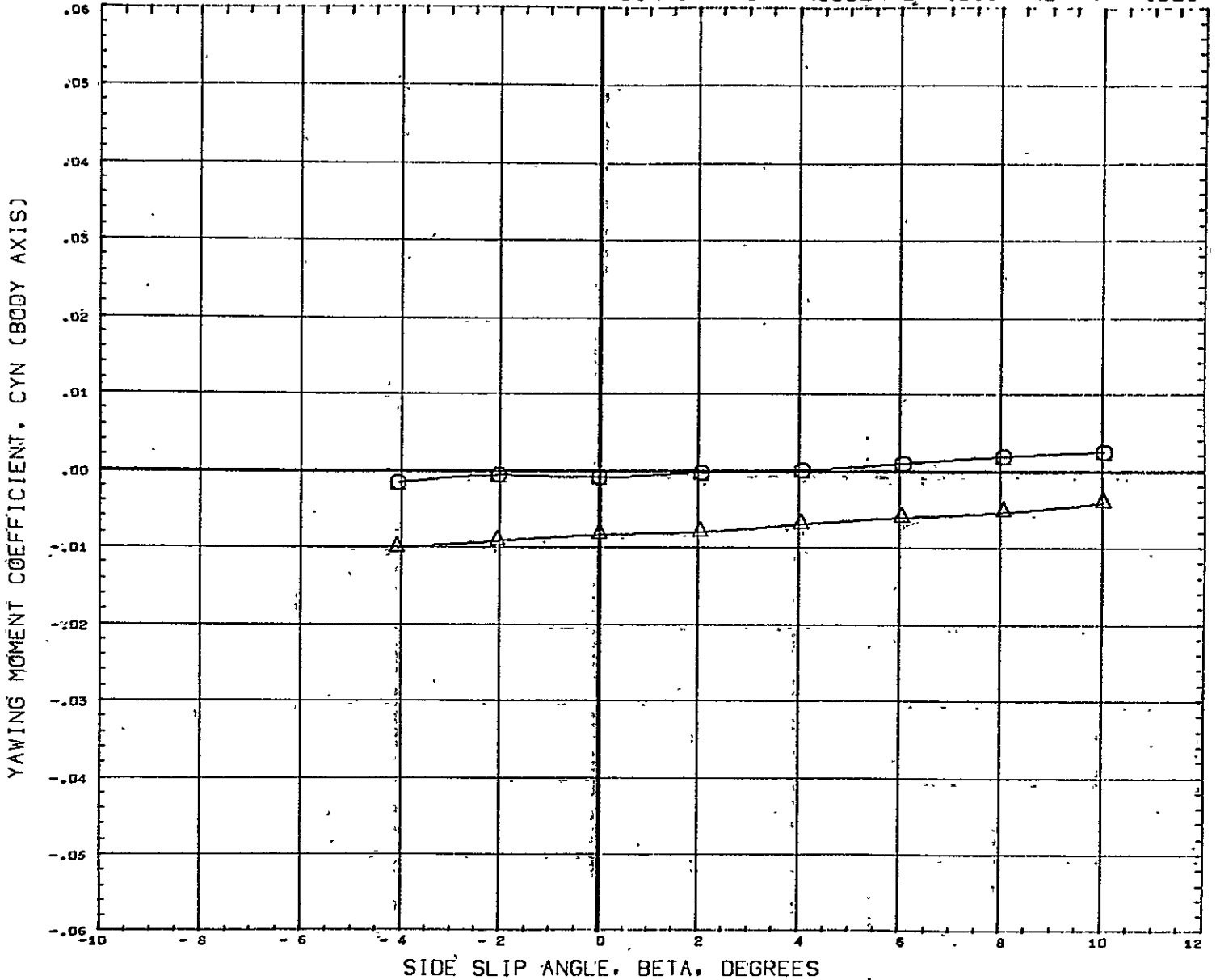
LMSC/HREC ORBITER STUDIES-MODEL 2A-EFFECT OF VERTICAL TAIL SIZE, ALPHA = 15 DEG.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVNS	REFERENCE INFORMATION
(S4101Z)	MSFC TWT 498 MSFC/LMSC ORBITER	15.000		0.000	0.000	SREF 9.0250 SQ. IN
(S4114Z)	MSFC TWT 498 MSFC/LMSC ORBITER	15.000	0.000		0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 4.960

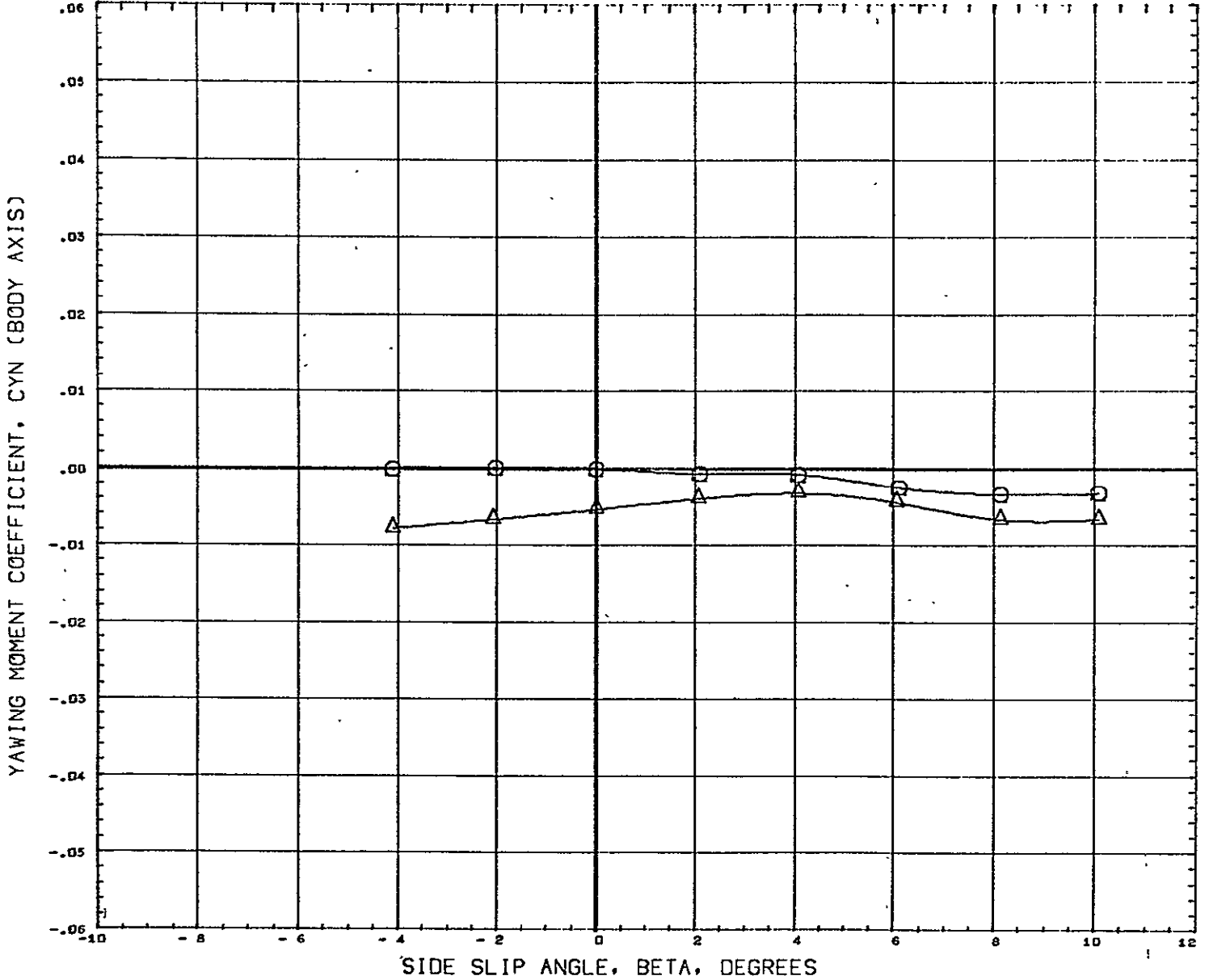
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT-DIR CHARACT, RUDDER EFF(D1), ALPHA = 0DEG



SYMBOL	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION			
	RUDDER1	MACH	ALPHA	DATASET	RUDDER1	DATASET	RUDDER1	SREF	SQ.IN		
○	0.000	0.596	0.000	A4114X	0.000	A4114X	0.000	9.0250	9.0250		
△	10.000	0.000	4.000	A4115X	0.000	A4115X	10.000	6.1420	6.1420		
								6.1420	6.1420		
								3.9950	3.9950		
								0.0000	0.0000		
								0.1350	0.1350		
								0.0033	0.0033		

REFERENCE FILE LSHC/HREC D225042A

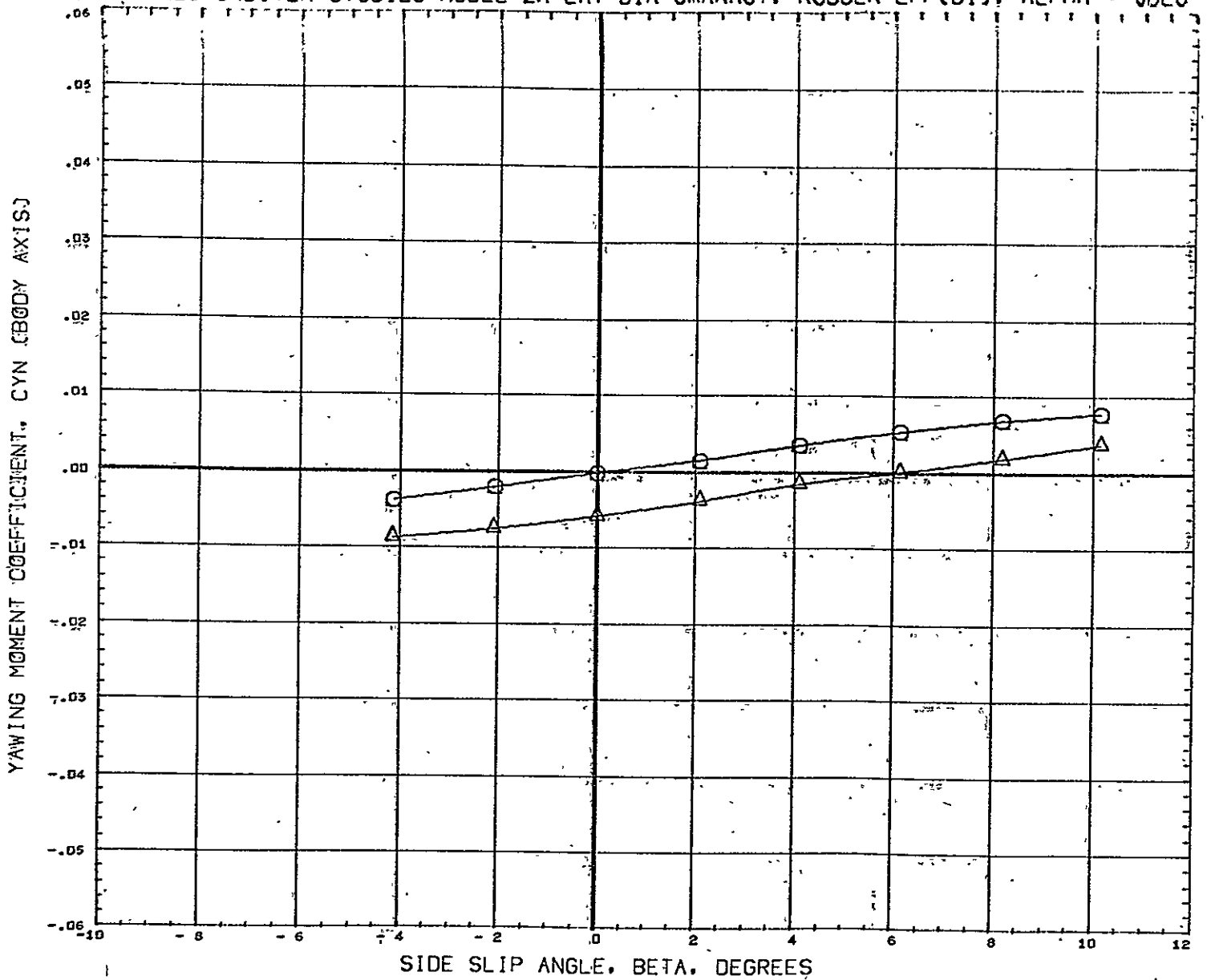
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT-DIR CHARACT, RUDDER EFF(D1), ALPHA = 0DEG



SYMBOL	RUDER1	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION			
○	0.000	MACH	0.899	ALPHA	0.000	DATASET	RUDER1		SREF	9.0250	SQ.IN	
△	10.000	ELEVNS	0.000	STING	4.000	A4114X	0.000	A4115X	10.000	LREF	6.1420	INCHES
										BREF	6.1420	INCHES
										XMRP	3.9950	INCHES
										YMRP	0.0000	INCHES
										ZMRP	0.1350	INCHES
										SCALE	0.0033	SCALE

REFERENCE FILE LSHC/HREC D225D42A

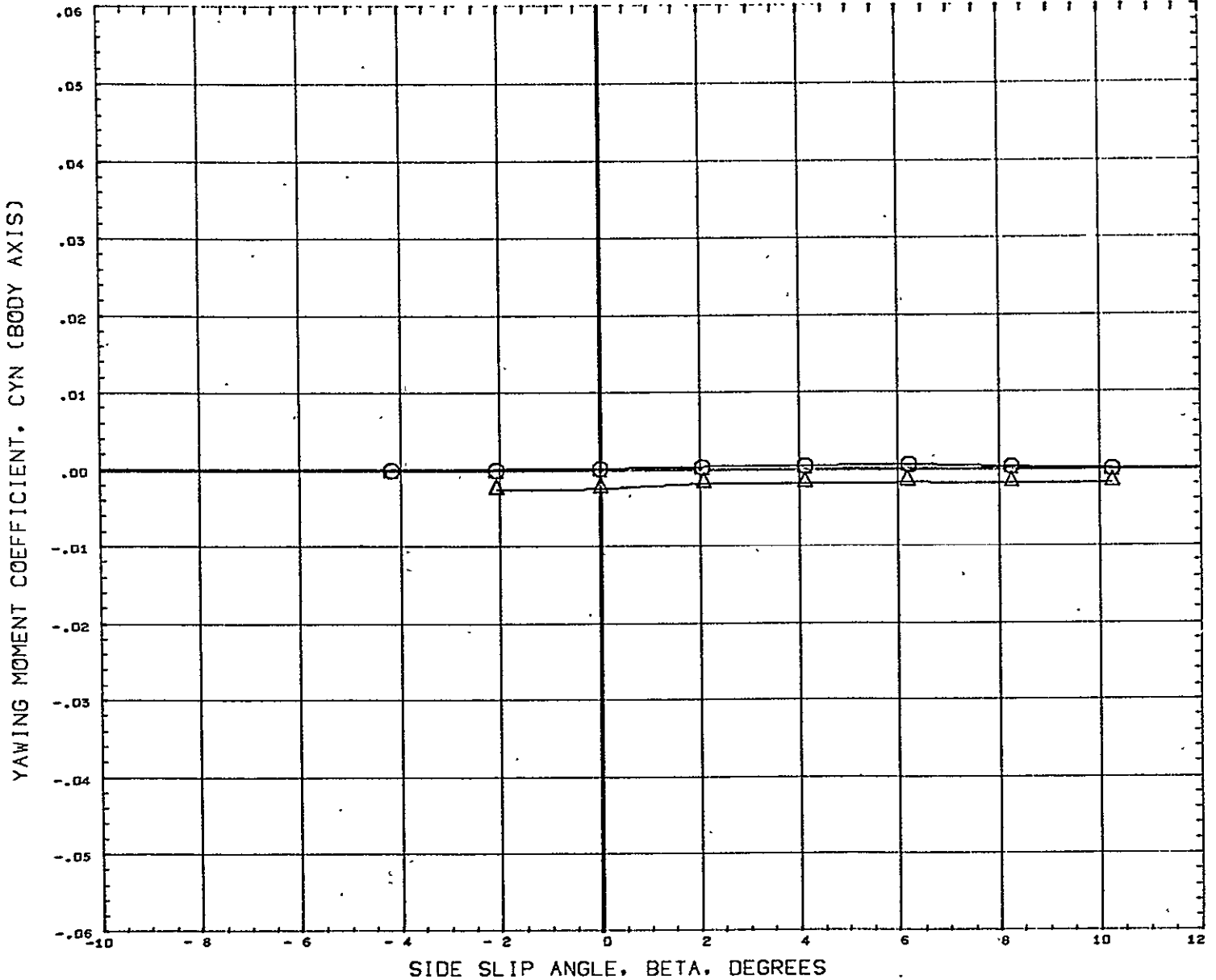
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT-DIR CHARACT, RUDDER EFF(D1), ALPHA = 0DEG



SYMBOL	RUDDER1	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION			
○	0.000	MACH	1.101	ALPHA	0.000	DATASET	RUDDER1	0.000	SREF	9.0250	SQ. IN	
△	10.000	ELEV3	0.000	STING	4.000	A4114X	0.000	A4115X	10.000	LREF	6.1420	INCHES
										BREF	6.1420	INCHES
										XMRP	3.9950	INCHES
										YMRP	0.0000	INCHES
										ZMRP	0.1350	INCHES
										SCALE	0.0033	SCALE

REFERENCE FILE LMSC/HREC D225042A

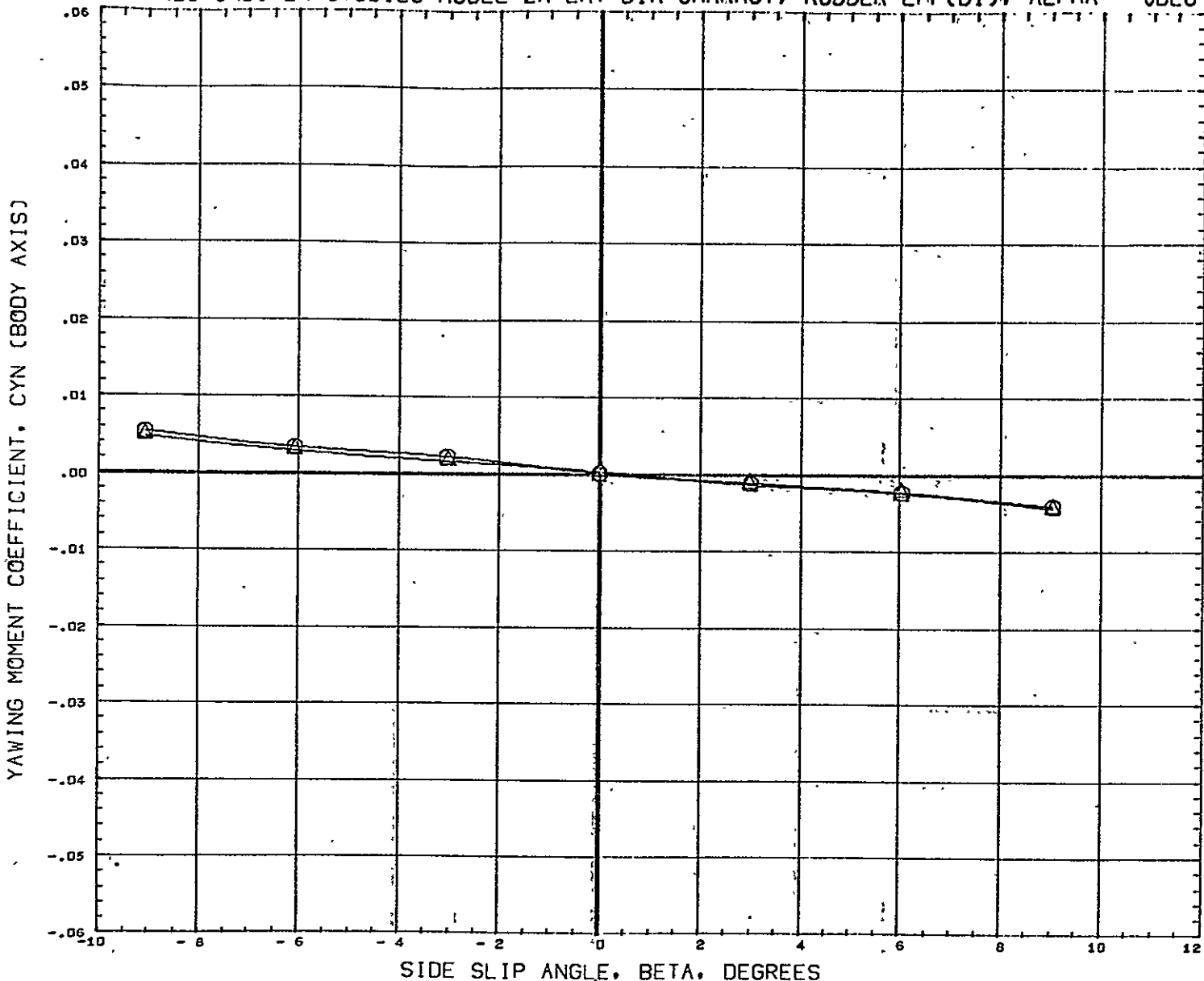
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT-DIR CHARACT, RUDDER EFF(D1), ALPHA = 0DEG



SYMBOL	RUDER1	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION			
○	0.000	MACH	1.955	ALPHA	0.000	DATASET	RUDER1	DATASET	RUDER1	SREF	9.0250	50. IN
△	10.000	ELEVN3	0.000	STING	4.000	A4114X	0.000	A4115X	10.000	LREF	6.1420	INCHES
										BREF	6.1420	INCHES
										XMRP	3.9950	INCHES
										YMRP	0.0000	INCHES
										ZMRP	0.1350	INCHES
										SCALE	0.0033	SCALE

REFERENCE FILE LMSC/HREC D225042A

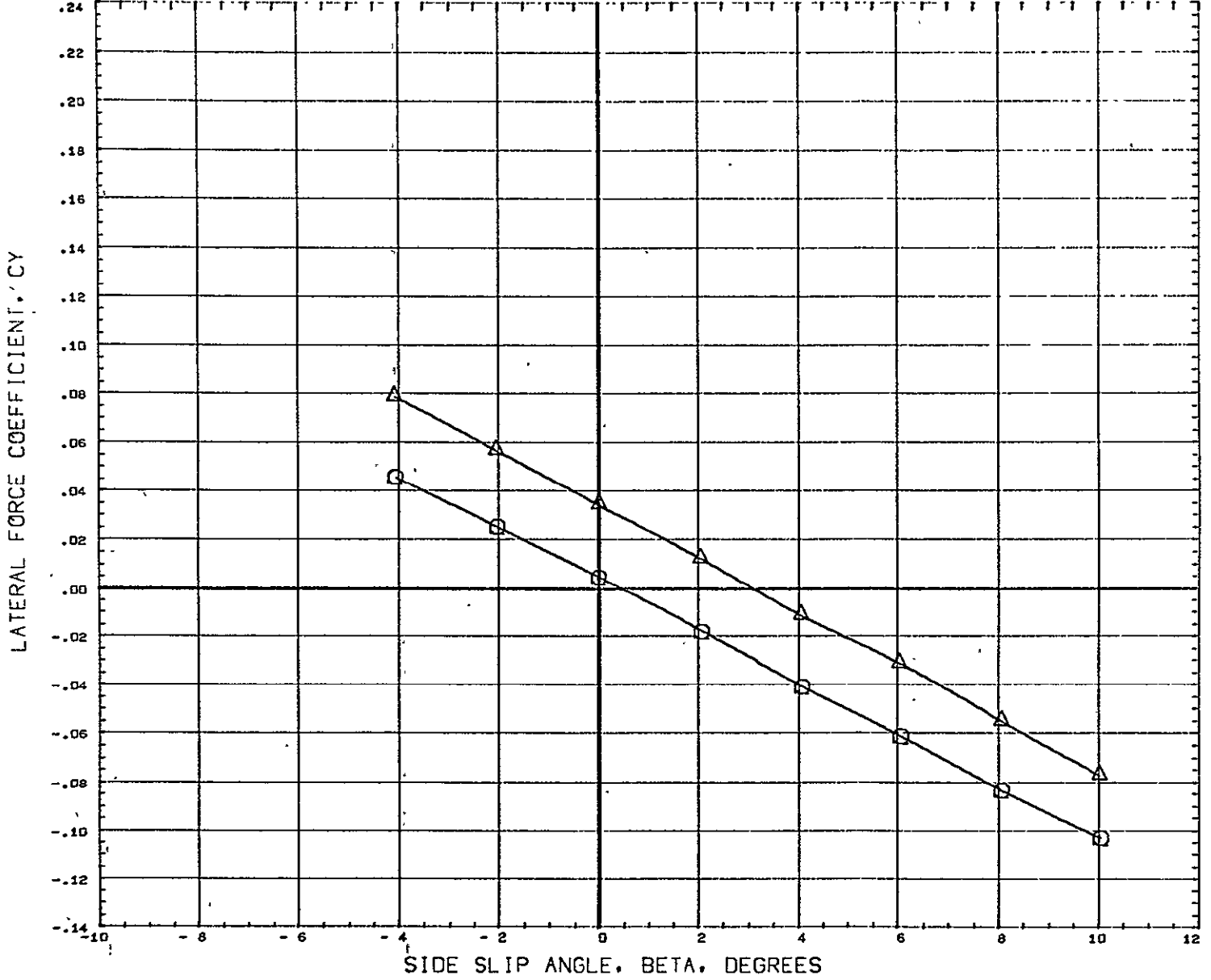
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT-DIR CHARACT, RUDDER EFF(D1), ALPHA = 0 DEG



SYMBOL	RUDER1	PARAMETRIC VALUES			DATA SOURCE			REFERENCE INFORMATION				
○	0.000	MACH	4.965	ALPHA	0.000	DATASET	RUDER1	DATASET	RUDER1	SREF	9.0250	sq. IN
△	10.000	ELEVNS	0.000	STING	4.000	A4114X	0.000	A4115X	10.000	BREF	6.1420	INCHES
										XHRP	3.9950	INCHES
										YHRP	0.0000	INCHES
										ZHRP -	0.1350	INCHES
										SCALE	0.0033	SCALE

REFERENCE FILE LMSC/HREC D225042A

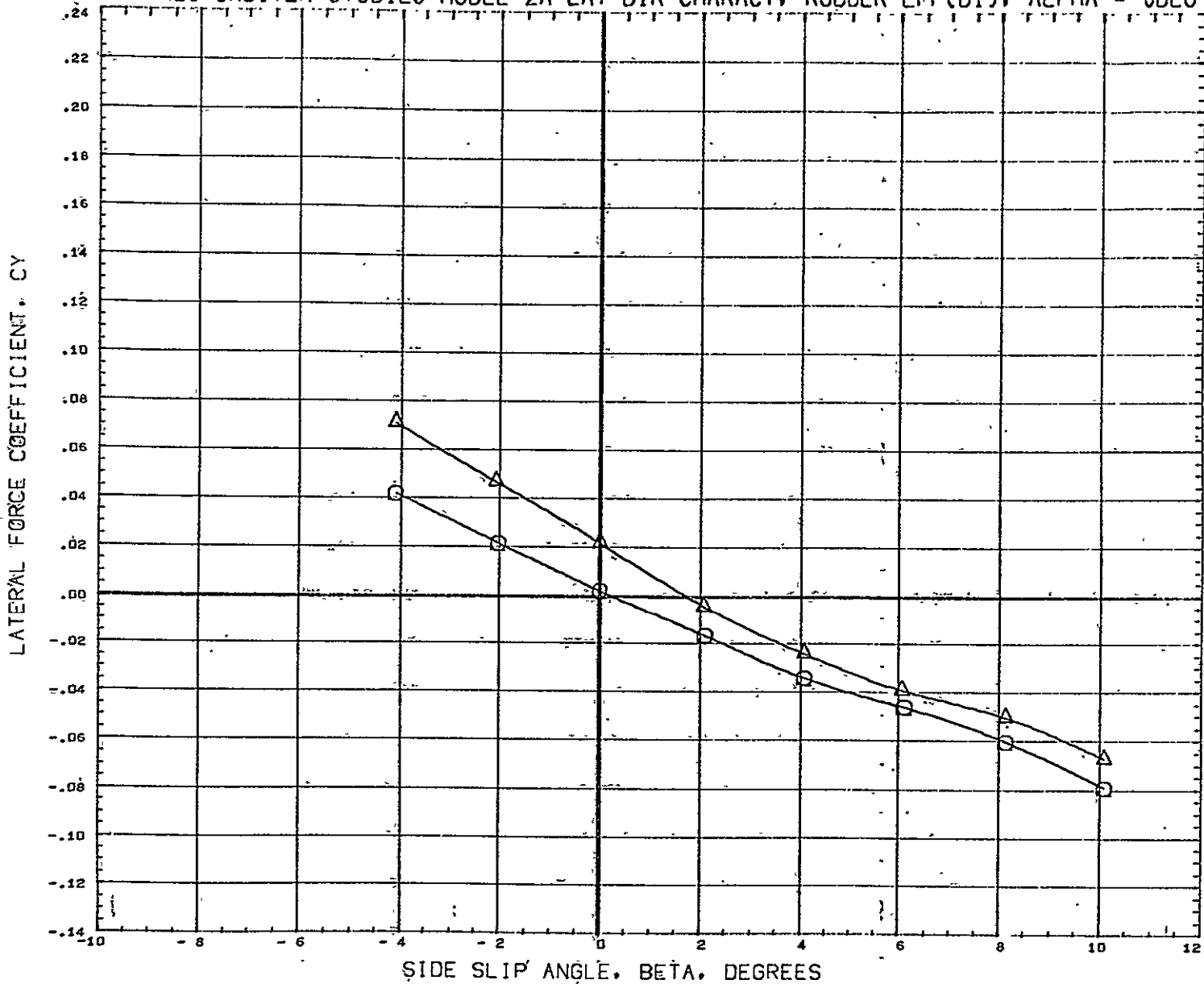
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT-DIR CHARACT, RUDDER EFF(D1), ALPHA = 0DEG



SYMBOL	RUDER1	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION		
		MACH	ALPHA	STING	DATASET	RUDER1	DATASET	RUDER1	SREF	SQ. IN	
○	0.000	0.596	0.000	4.000	A4114X	0.000	A4115X	10.000	9.0250	INCHES	
△	10.000	0.000	0.000	4.000	A4114X	0.000	A4115X	10.000	6.1420	INCHES	
									6.1420	INCHES	
									3.9950	INCHES	
									0.0000	INCHES	
									0.1350	INCHES	
									0.0033	SCALE	

REFERENCE FILE LMSC/HREC D225042A

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT-DIR CHARACT, RUDDER EFF(D1), ALPHA = 0DEG

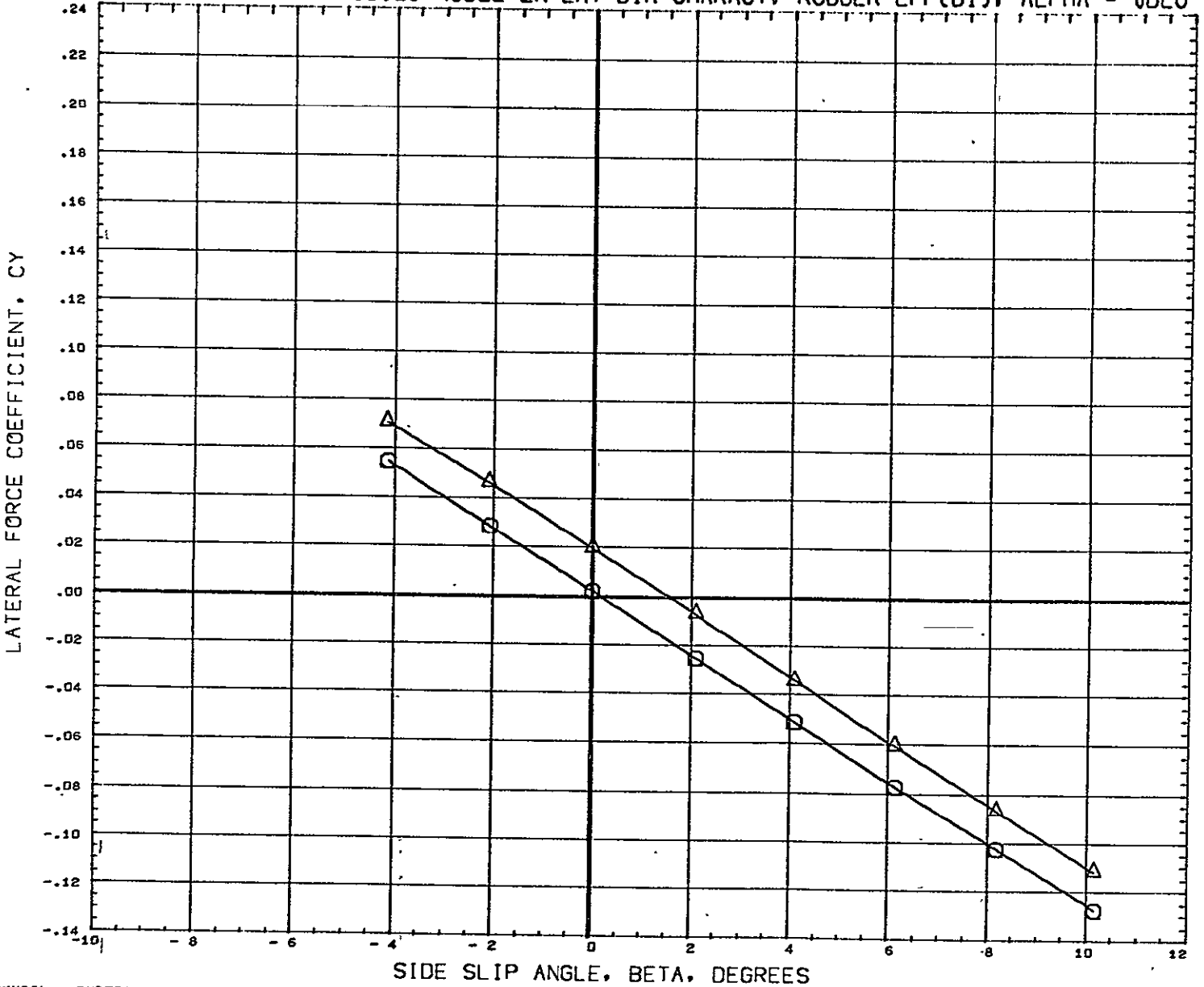


SYMBOL	RUDER1	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
○	0.000	MACH 0.899 ALPHA 0.000 DATASET RUDER1 0.000	A4114X	SREF 9.0250 SQ. IN
△	10.000	ELEVNS 0.000 STING 4.000 DATASET RUDER1 0.000	A4115X 10.000	LREF 6.1420 INCHES
				BREF 6.1420 INCHES
				XMRP 3.9950 INCHES
				YMRP 0.0000 INCHES
				ZMRP 0.1350 INCHES
				SCALE 0.0033 SCALE

REFERENCE FILE LMSC/HREC D225042A



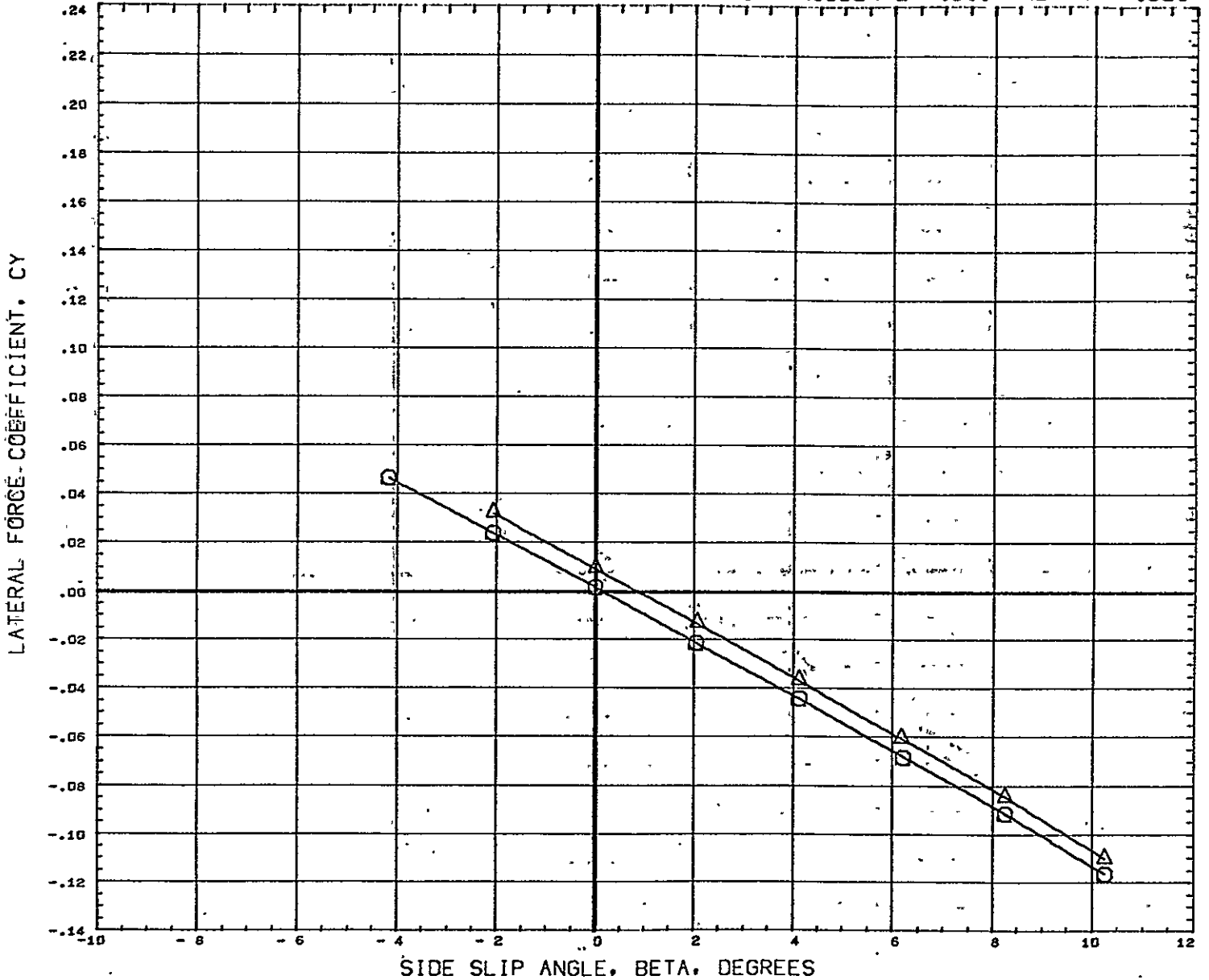
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT-DIR CHARACT, RUDDER EFF(D1), ALPHA = 0DEG



SYMBOL	RUDER1	PARAMETRIC VALUES			DATA SOURCE			REFERENCE INFORMATION				
○	0.000	MACH	1.101	ALPHA	0.000	DATASET	RUDER1	DATASET	RUDER1	SREF	9.0250	SQ. IN
△	10.000	ELEVNS	0.000	STING	4.000	A4114X	0.000	A4115X	10.000	LREF	6.1420	INCHES
										BREF	6.1420	INCHES
										XMRP	3.9950	INCHES
										YMRP	0.0000	INCHES
										ZMRP	0.1350	INCHES
										SCALE	0.0033	SCALE

REFERENCE FILE LMSC/HREC D225042A

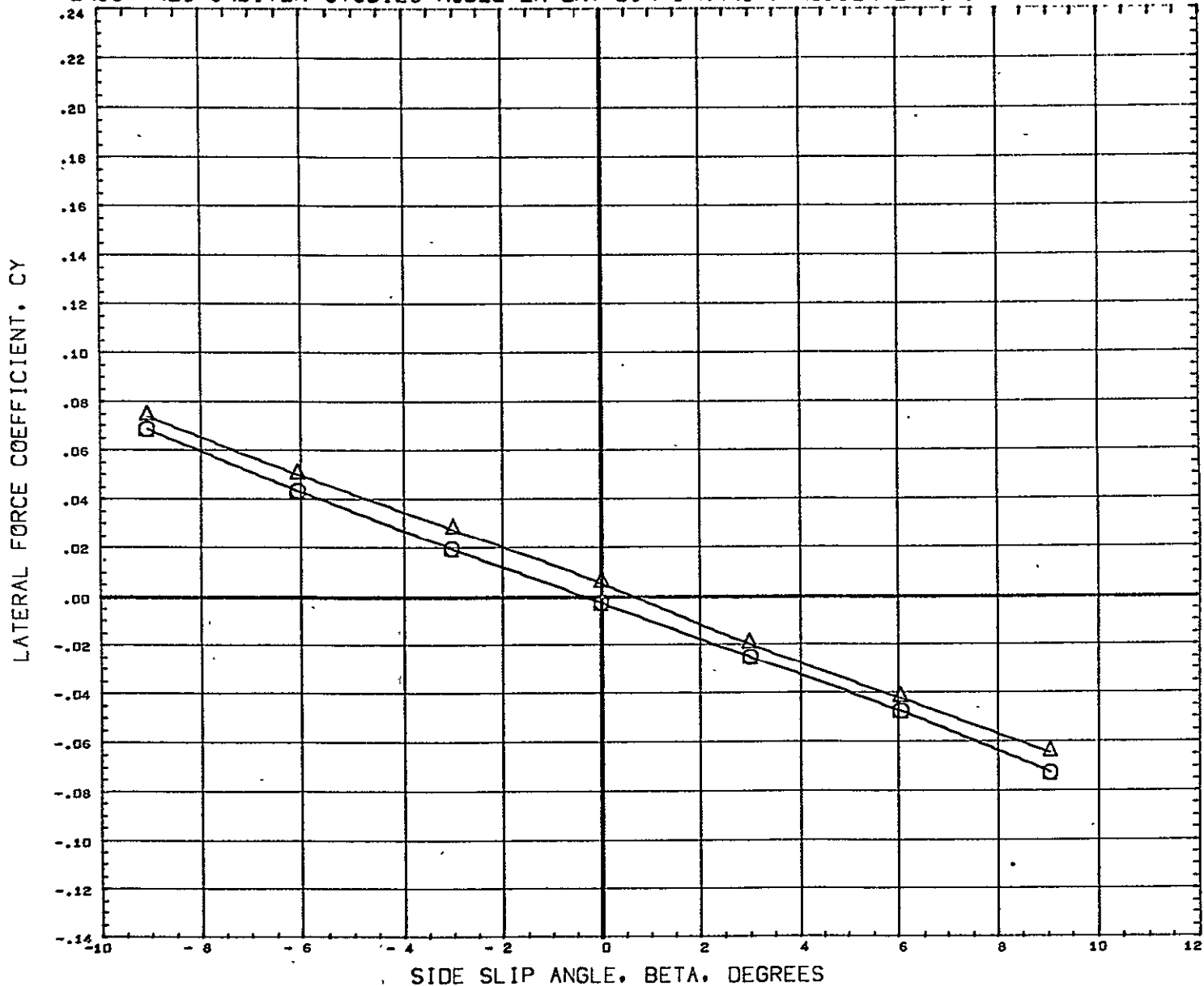
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT-DIR CHARACT, RUDDER EFF(D1), ALPHA = 0 DEG



SYMBOL	RUDER1	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
○	0.000	MACH 1.955 ALPHA 0.000	DATASET RUDER1 DATASET RUDER1	SREF 9.0250 SQ. IN
△	10.000	ELEVN3 0.000 STING 4.000	A4114X 0.000 A4115X 10.000	LREF 6.1420 INCHES
				BREF 6.1420 INCHES
				XMRP 3.9950 INCHES
				YMRP 0.0000 INCHES
				ZMRP 0.1350 INCHES
				SCALE 0.0033 SCALE

REFERENCE FILE LMSC/HREC D225042A

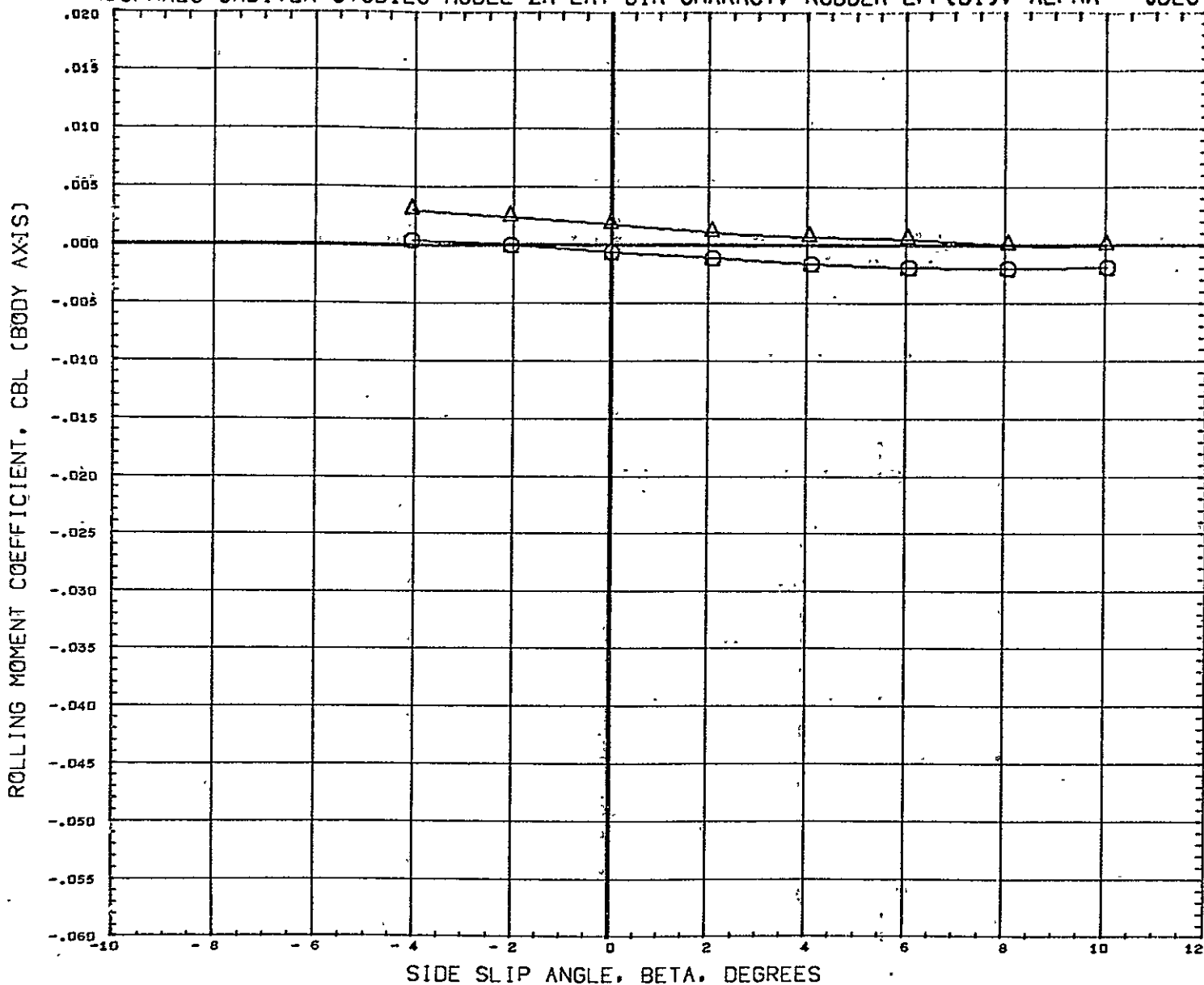
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT-DIR CHARACT, RUDDER EFF(D1), ALPHA = 0DEG



SYMBOL	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION		
	RUDER1	MACH	ALPHA	ALPHA	DATASET	RUDER1	DATASET	RUDER1	SREF	SQ. IN
○	0.000	4.960	0.000	0.000	A4114X	0.000	A4115X	10.000	6.1420	INCHES
△	10.000	0.000	4.000	4.000	A4114X	0.000	A4115X	10.000	6.1420	INCHES
		ELEVNS	STING						3.9950	INCHES
									0.0000	INCHES
									0.1350	INCHES
									0.0033	SCALE

REFERENCE FILE LMSC/HREC D225042A

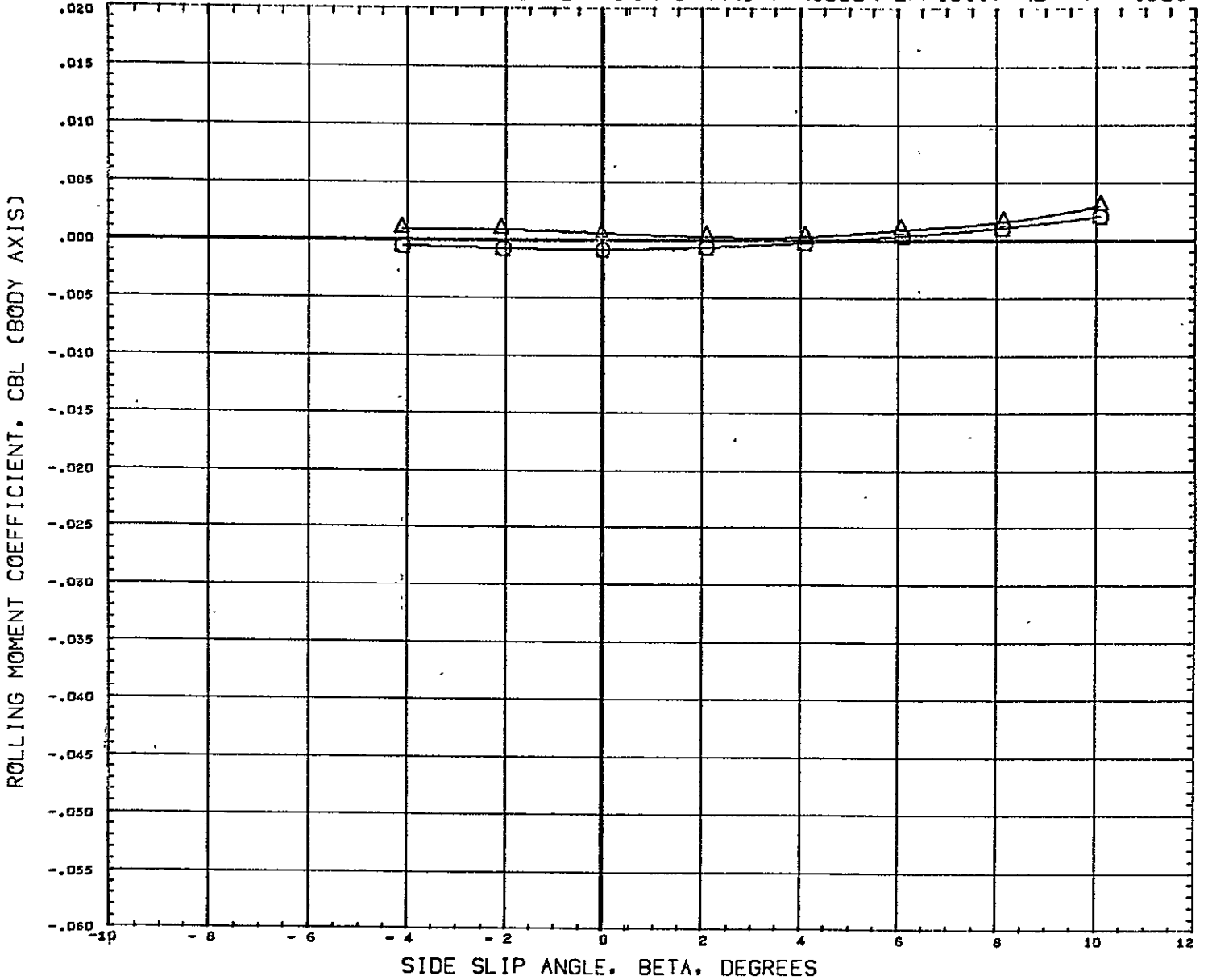
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT-DIR CHARACT, RUDDER EFF(D1), ALPHA = 0DEG



SYMBOL	RUDER1	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION			
○	0.000	MACH	0.596	ALPHA	0.000	DATASET	RUDER1	DATASET	RUDER1	SREF	9.0250	SQ. IN
△	10.000	ELEVNS	0.000	STING	4.000	A4114X	0.000	A4115X	10.000	LREF	6.1420	INCHES
										BREF	6.1420	INCHES
										XMRP	3.9950	INCHES
										YMRP	0.0000	INCHES
										ZMRP	0.1350	INCHES
										SCALE	0.0033	SCALE

REFERENCE FILE LSHC/HREC D225042A

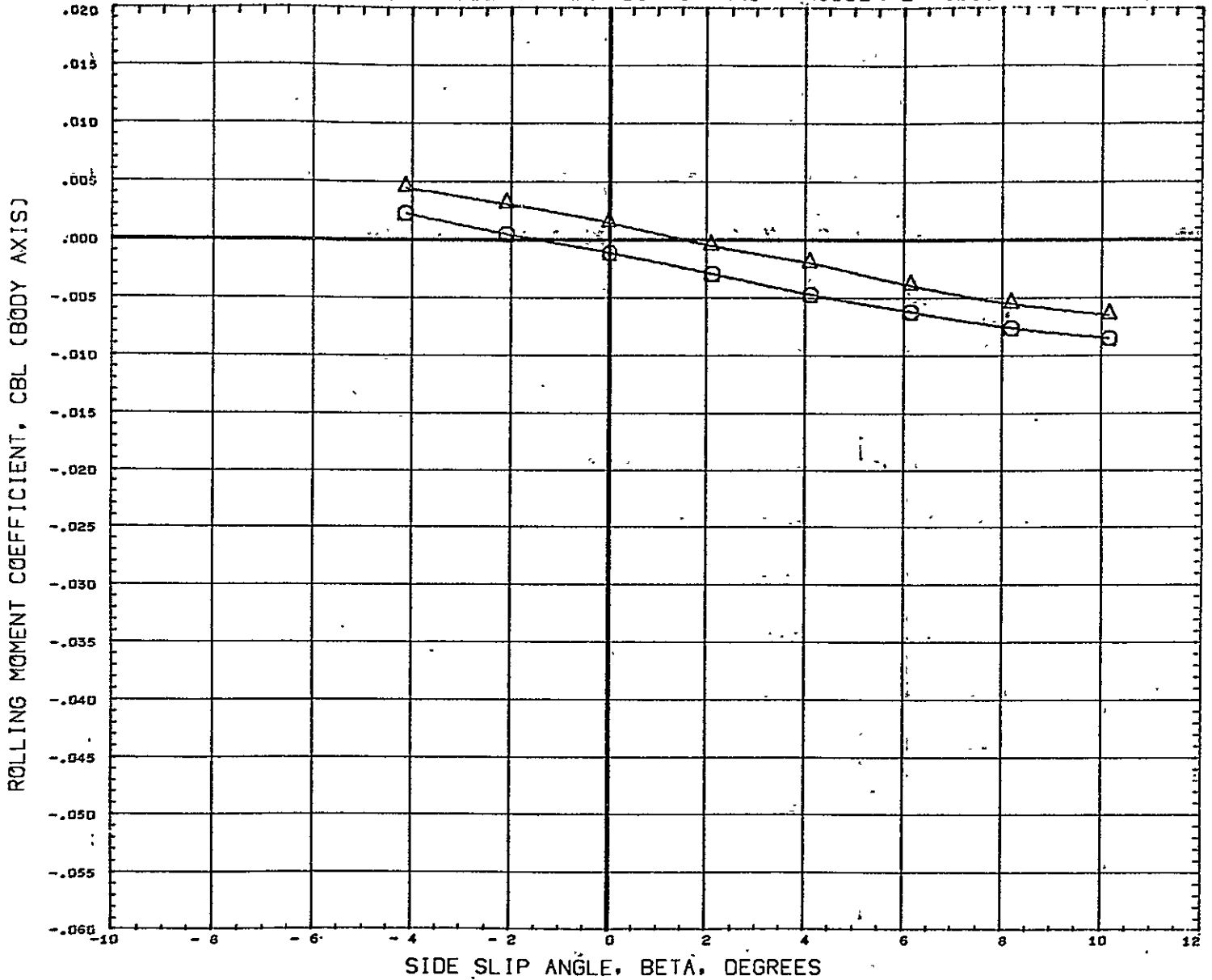
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT-DIR CHARACT, RUDDER EFF(D1), ALPHA = 0DEG



SYMBOL	RUDER1	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION			
○	0.000	MACH	0.899	ALPHA	0.000	DATASET	RUDER1	DATASET	RUDER1	SREF	9.0250	SQ.IN
△	10.000	ELEVNS	0.000	STING	4.000	A4114X	0.000	A4115X	10.000	LREF	6.1420	INCHES
										BREF	6.1420	INCHES
										XMRP	3.9950	INCHES
										YMRP	0.0000	INCHES
										ZMRP	0.1350	INCHES
										SCALE	0.0033	SCALE

REFERENCE FILE LMSC/HREC D225042A

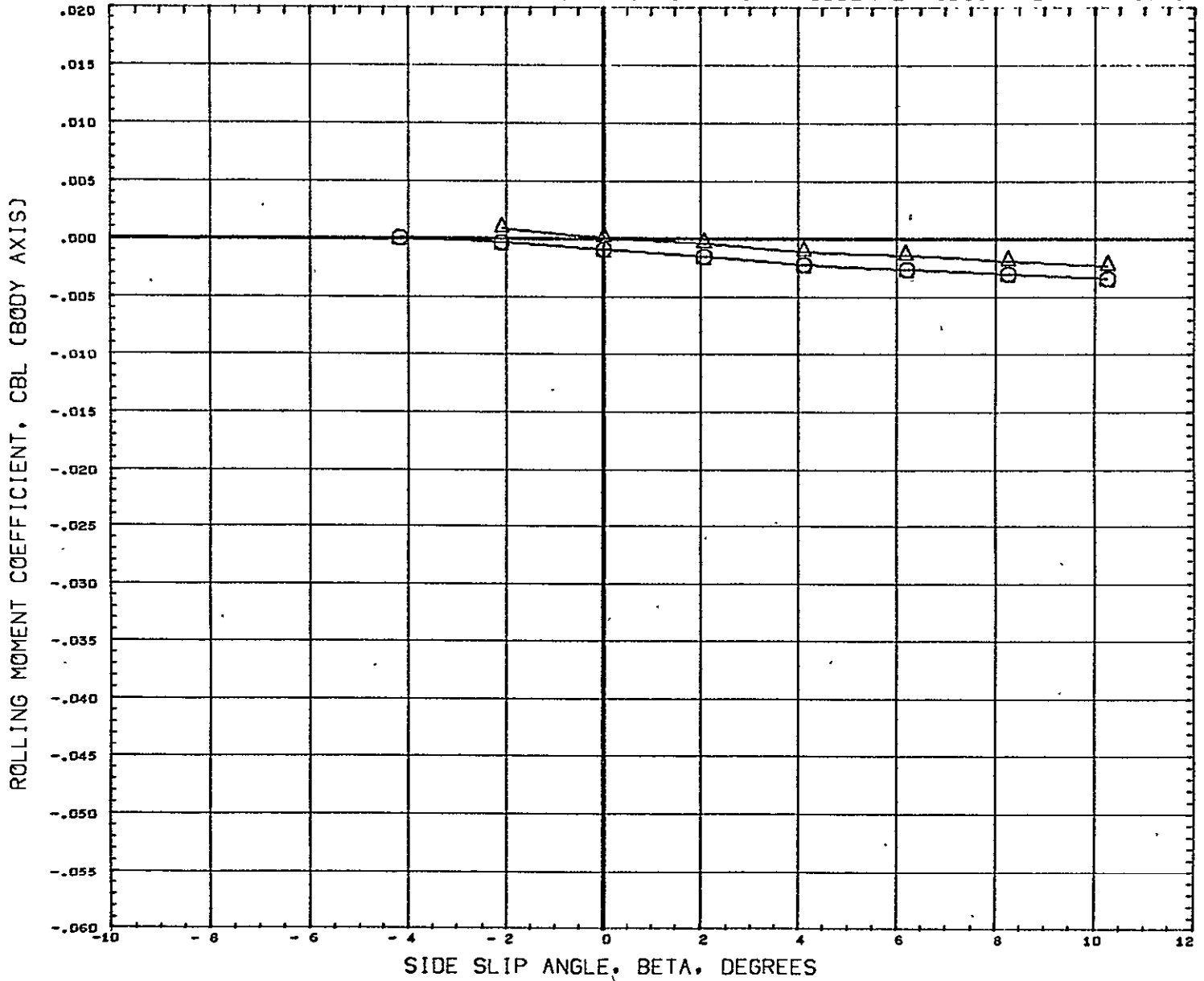
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT-DIR CHARACT, RUDDER EFF(D1), ALPHA = 0DEG



SYMBOL	RUDDER1	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION		
		MACH	ALPHA	STING	DATASET	RUDDER1	DATASET	RUDDER1	SREF	INCHES	
○	0.000	1.101	0.000	A4114X	0.000	0.000	10.000	9.0250	90.00		
△	10.000	0.000	4.000	A4115X	0.000	0.000	10.000	6.1420	61.42		

REFERENCE FILE LMSC/HREC D225042A

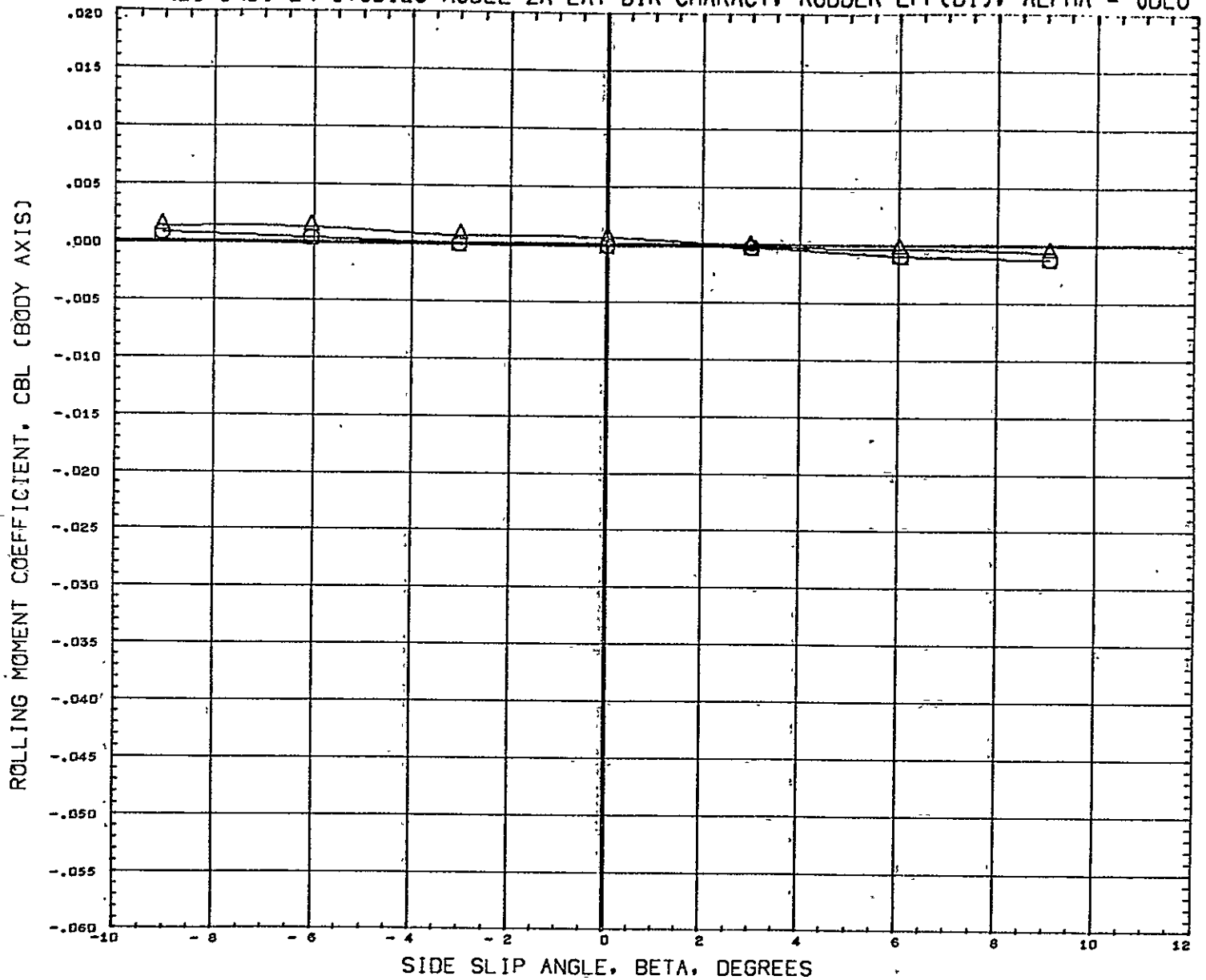
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT-DIR CHARACT, RUDDER EFF(D1), ALPHA = 0DEG



SYMBOL	RUDER1	MACH	PARAMETRIC VALUES		DATA SOURCE			REFERENCE INFORMATION				
○	0.000	1.955	ALPHA	0.000	DATASET	RUDER1	DATASET	RUDER1	SREF	9.0250	50. IN	
△	10.000	ELEVNS	0.000	STING	4.000	A4114X	0.000	A4115X	10.000	LREF	6.1420	INCHES
										BREF	6.1420	INCHES
										XMRP	3.9950	INCHES
										YMRP	0.0000	INCHES
										ZMRP	0.1350	INCHES
										SCALE	0.0033	SCALE

REFERENCE FILE LMSC/HREC D225042A

MSFC/HREC ORBITER STUDIES-MODEL 2A-LAT-DIR CHARACT, RUDDER EFF(D1), ALPHA = 0DEG

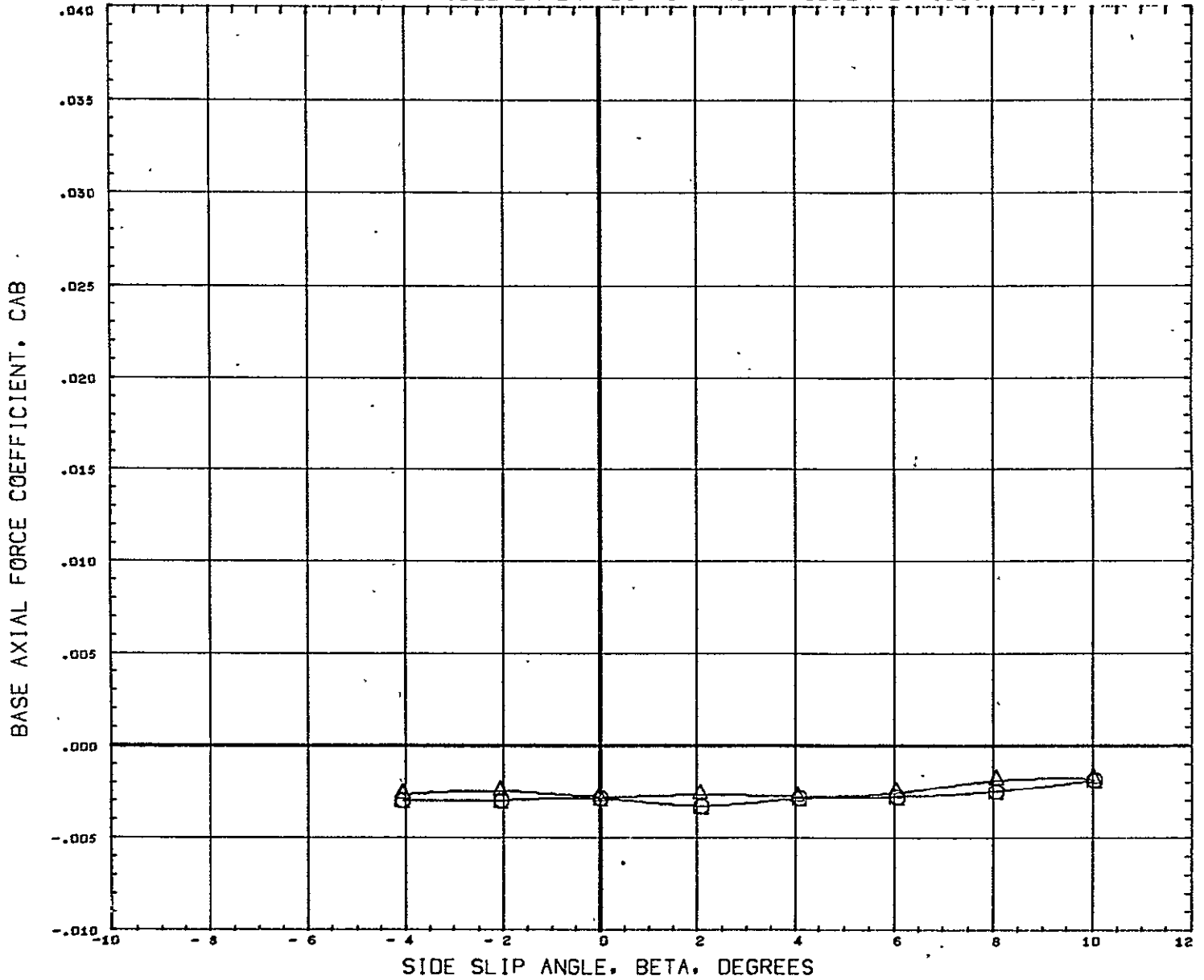


SYMBOL	RUDDER1	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
∅	0.000	MACH 4.960 ALPHA 0.000	RUDER1 DATASET RUDER1	SREF 9.0250 SQ. IN
△	10.000	ELEVN3 0.000 STING 4.000	A4114X 0.000 A4115X 10.000	LREF 6.1420 INCHES
				BREF 6.1420 INCHES
				XHRP 3.9950 INCHES
				YHRP 0.0000 INCHES
				ZHRP 0.1350 INCHES
				SCALE 0.0033 SCALE

REFERENCE FILE LSHC/HREC D225042A



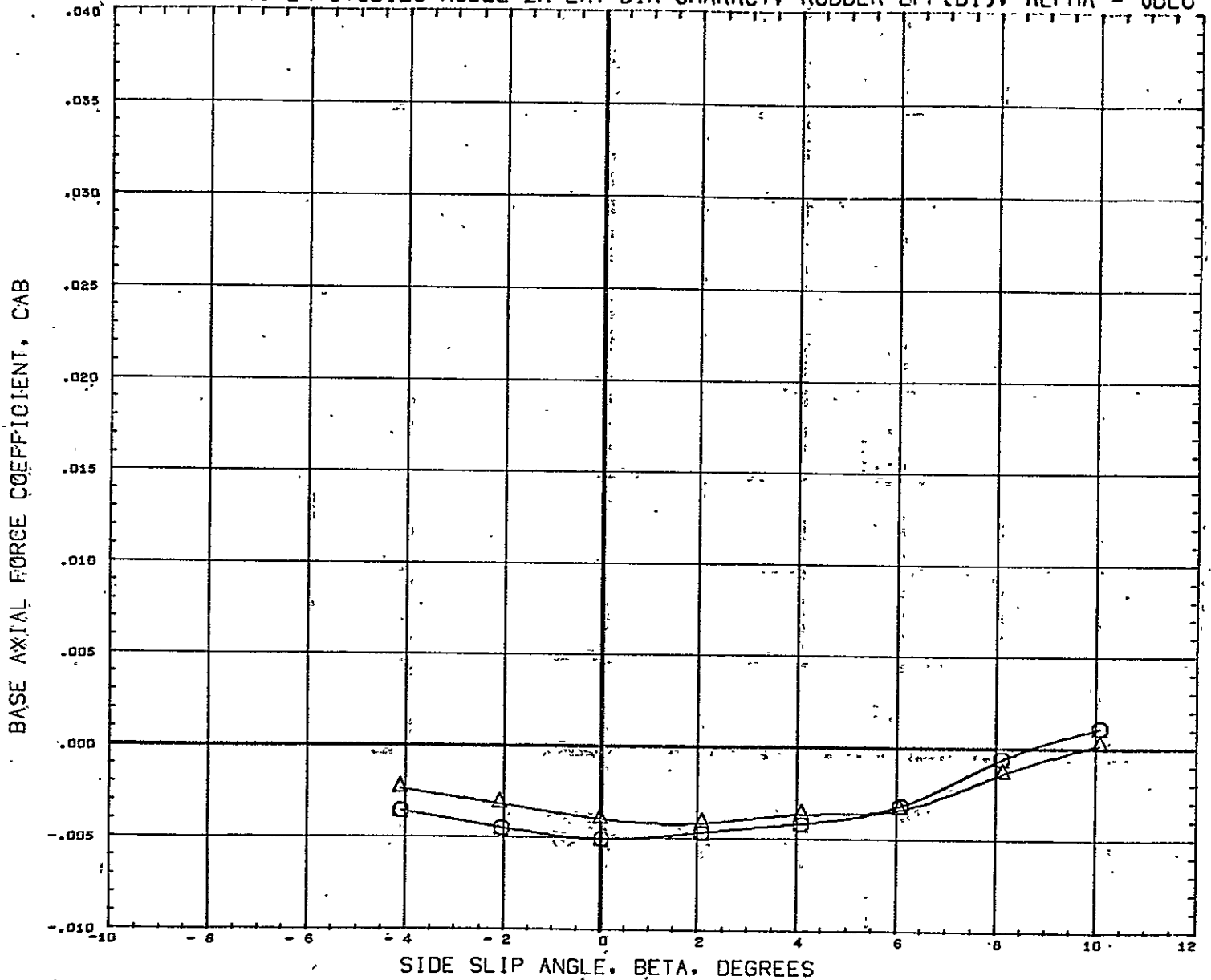
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT-DIR CHARACT, RUDDER EFF(D1), ALPHA = 0DEG



SYMBOL	RUDER1	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
○	0.000	MACH 0.596 ALPHA 0.000 DATASET A4114X	RUDER1 DATASET A4115X	SREF 9.0250 SQ. IN
△	10.000	ELEVNS 0.000 STING 4.000	RUDER1 DATASET A4115X RUDER1 10.000	LREF 6.1420 INCHES
				BREF 6.1420 INCHES
				XMRP 3.9950 INCHES
				YMRP 0.0000 INCHES
				ZMRP 0.1350 INCHES
				SCALE 0.0033 SCALE

REFERENCE FILE LMSC/HREC D225042A

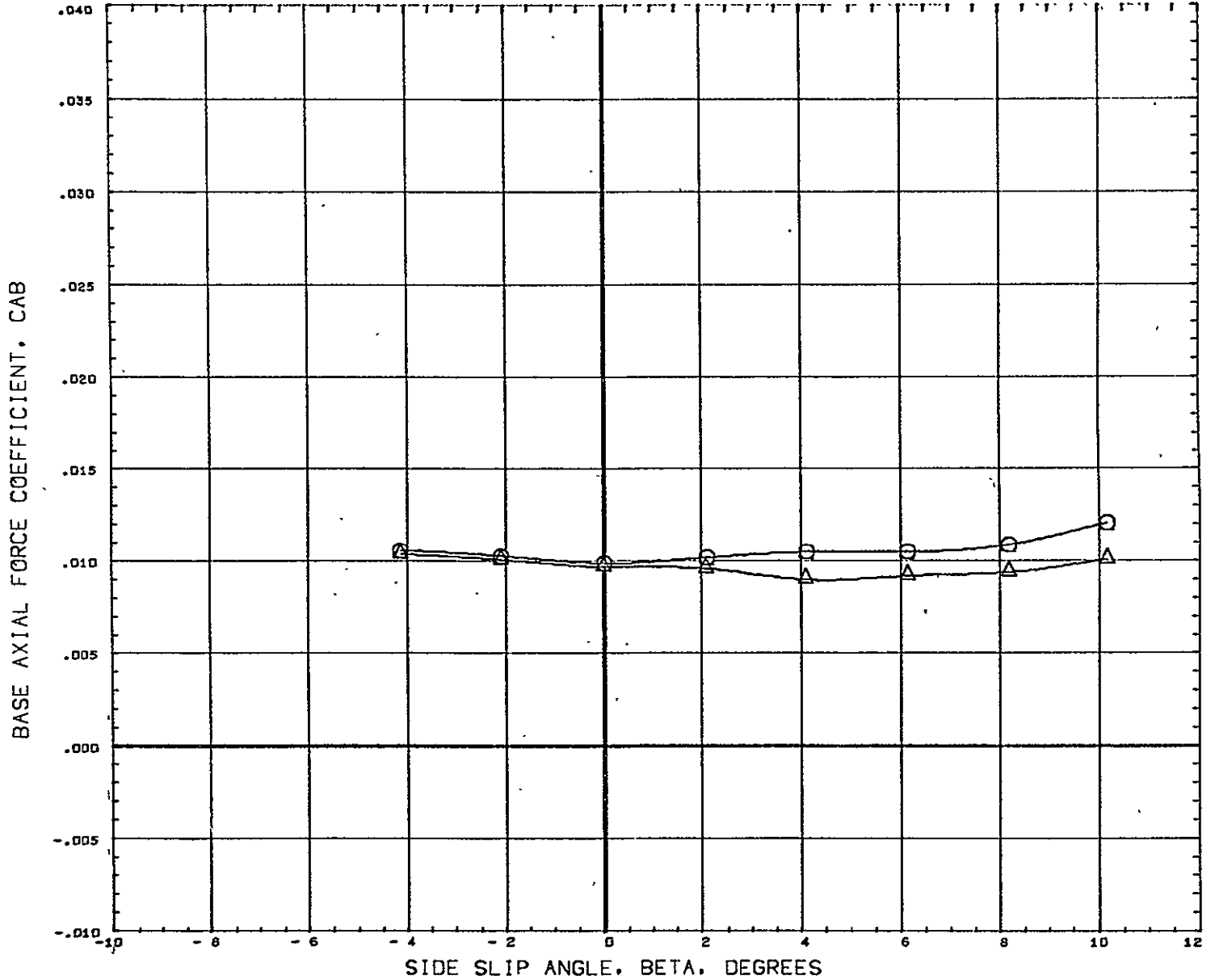
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT-DIR CHARACT, RUDDER EFF(D1), ALPHA = 0DEG



SYMBOL	RUDER1	MACH	PARAMETRIC VALUES		DATA SOURCE			REFERENCE INFORMATION			
○	0.000	0.899	ALPHA	0.000	DATASET	RUDER1	DATASET	RUDER1	SREF	9.0250	90. IN
△	10.000	ELEVNS	0.000	STING	4.000	A4114X	0.000	A4115X	LREF	6.1420	INCHES
								10.000	BREF	6.1420	INCHES
									XMRF	3.9950	INCHES
									YMRF	0.0000	INCHES
									ZMRF	0.1350	INCHES
									SCALE	0.0033	SCALE

REFERENCE FILE LMSC/HREC D225042A

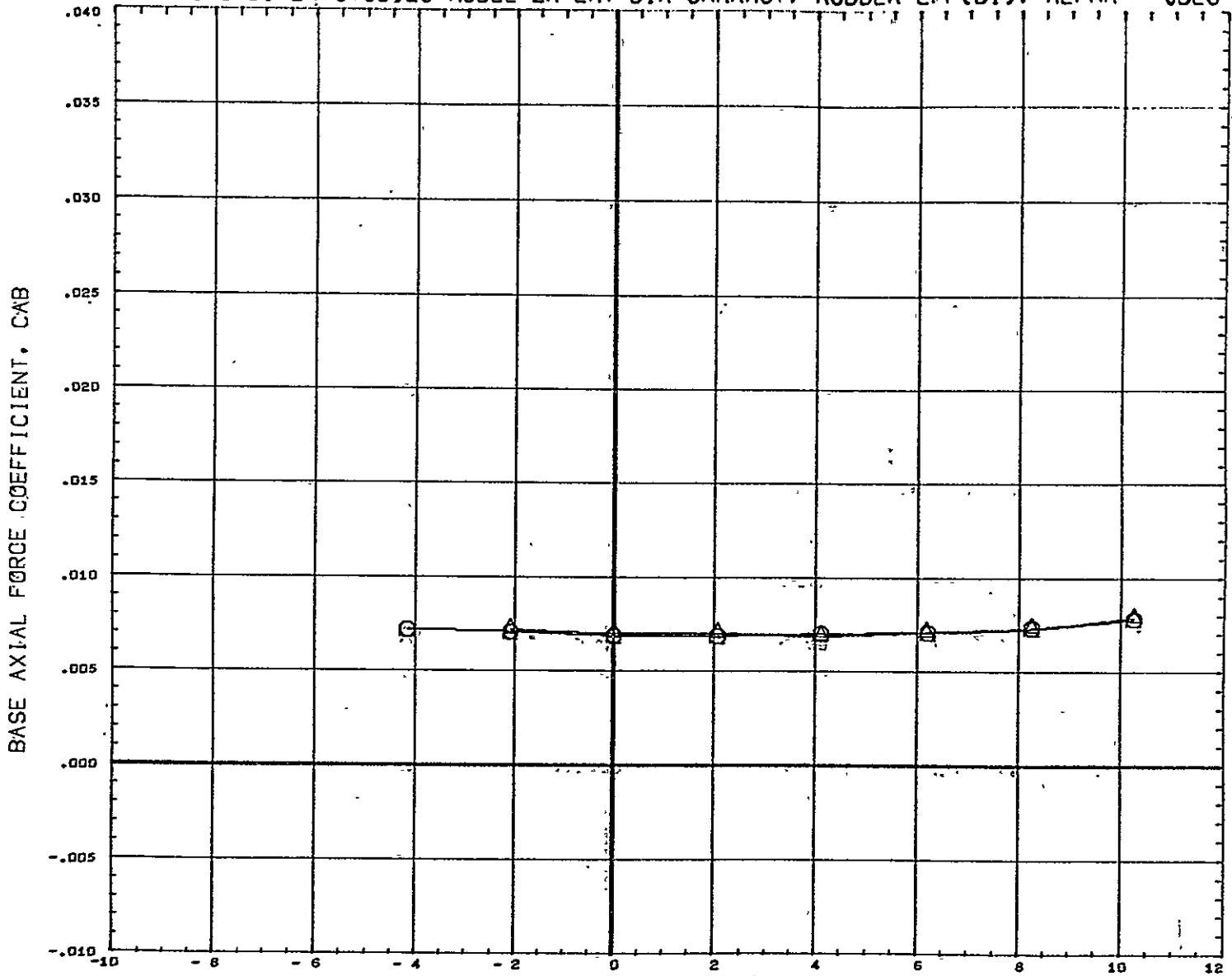
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT-DIR CHARACT, RUDDER EFF(D1), ALPHA = 0DEG



SYMBOL	RUDER1	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION			
○	0.000	MACH	1.101	ALPHA	0.000	DATASET	RUDER1	DATASET	RUDER1	SREF	9.0250	SQ.IN
△	10.000	ELEVNS	0.000	STING	4.000	A4114X	0.000	A4115X	10.000	LREF	6.1420	INCHES
										JREF	6.1420	INCHES
										XMRP	3.9950	INCHES
										YMRP	0.0000	INCHES
										ZMRP	0.1350	INCHES
										SCALE	0.0033	SCALE

REFERENCE FILE LMSC/HREC D225042A

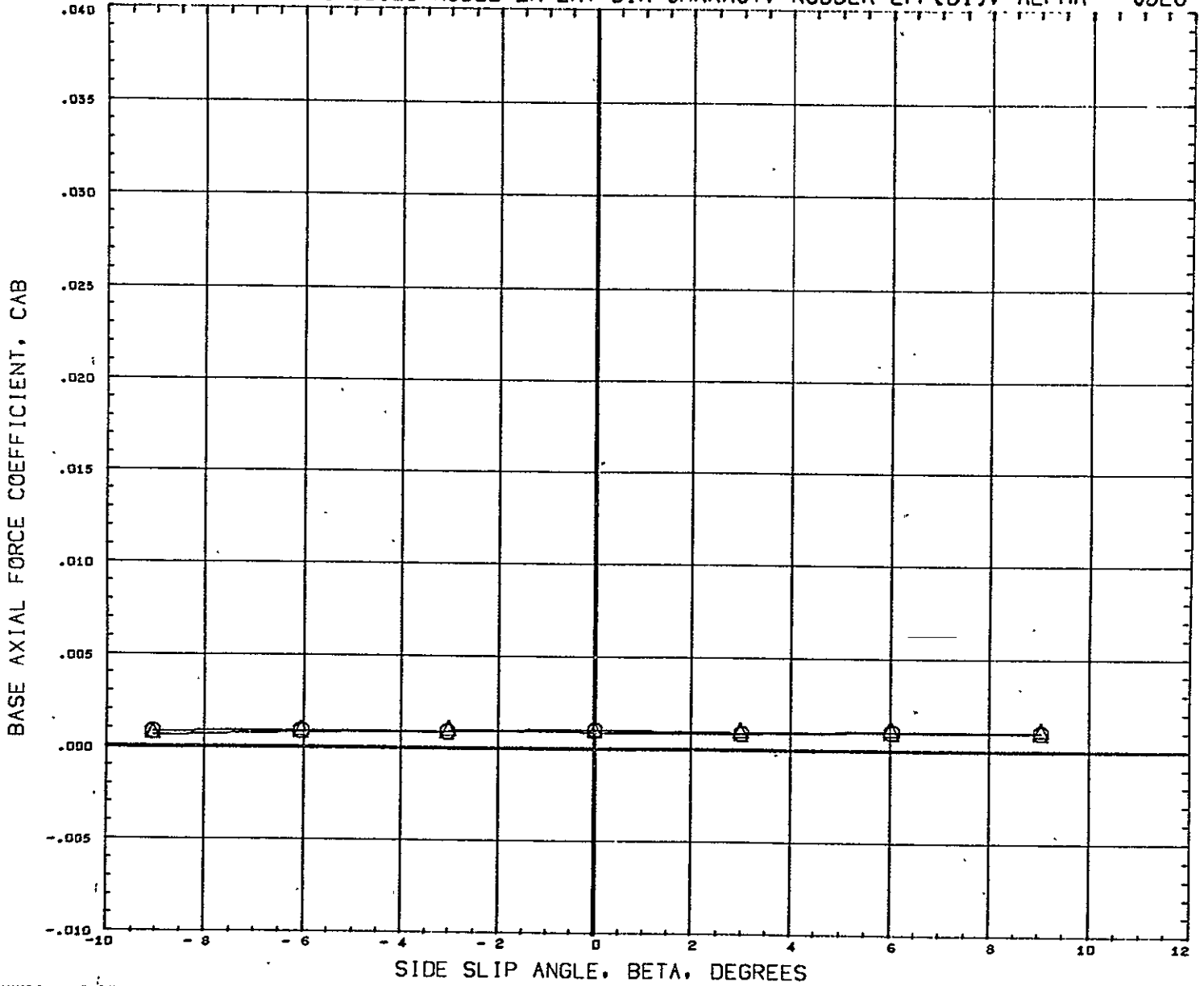
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT-DIR CHARACT, RUDDER EFF(D1), ALPHA = 0DEG



SYMBOL	RUDER1	PARAMETRIC VALUES			DATA SOURCE			REFERENCE INFORMATION		
○	0.000	MACH	1.955	ALPHA	0.000	DATASET	RUDER1	SREF	9.0250	50. IN
△	10.000	ELEVNS	0.000	STING	4.000	A4114X	0.000	LREF	6.1420	INCHES
								BREF	6.1420	INCHES
								XHRF	3.9950	INCHES
								YHRF	0.0000	INCHES
								ZHRF	0.1350	INCHES
								SCALE	0.0033	SCALE

REFERENCE FILE LSHC/HREC D225042A

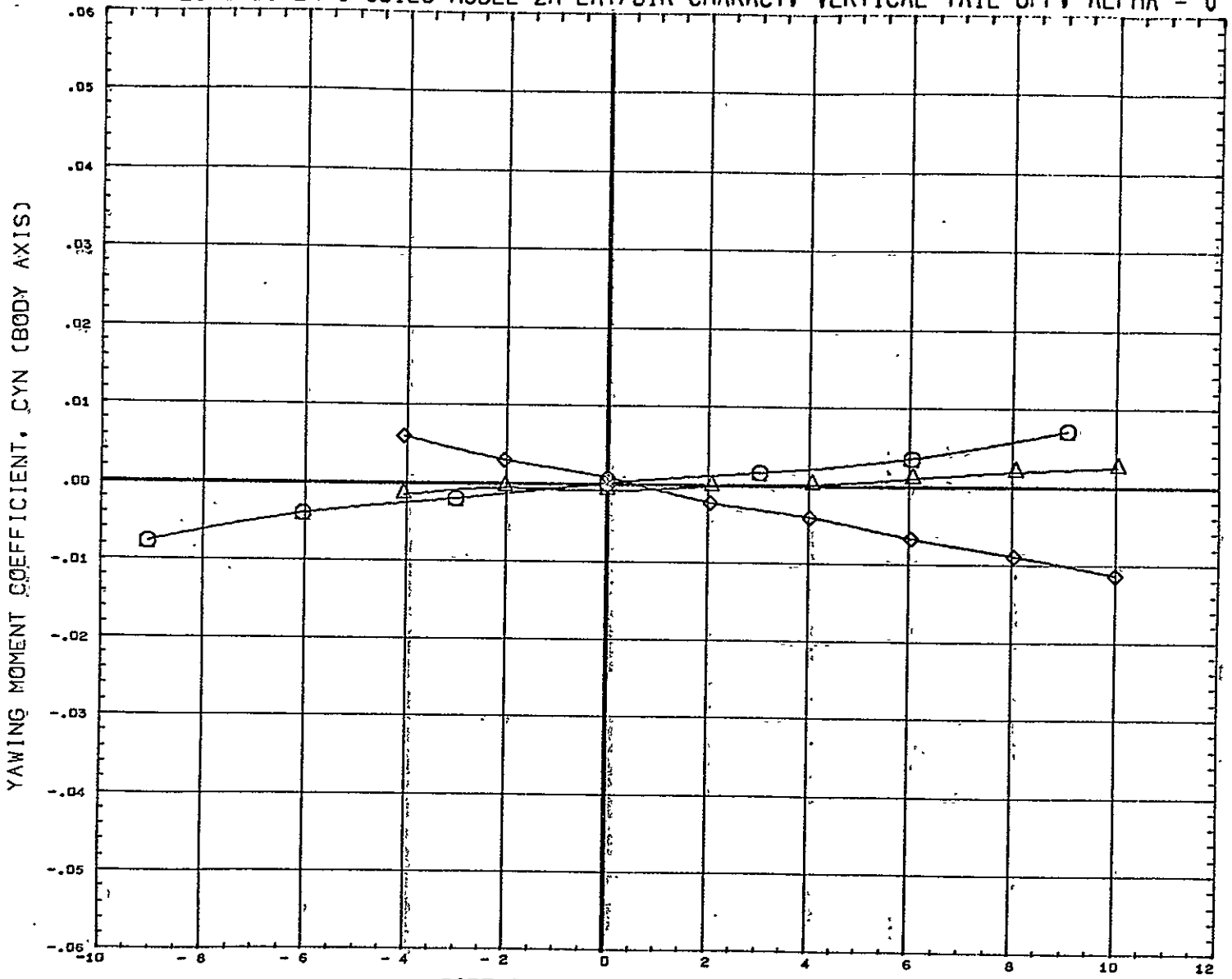
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT-DIR CHARACT, RUDDER EFF(D1), ALPHA = 0DEG



SYMBOL	RUDER1	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION			
○	0.000	MACH	4.960	ALPHA	0.000	DATASET	RUDER1	DATASET	RUDER1	SREF	9.0250	SQ.IN
△	10.000	ELEVNS	0.005	STING	4.000	A4114X	0.000	A4115X	10.000	LREF	6.1420	INCHES
										BREF	6.1420	INCHES
										XHRP	3.9950	INCHES
										YHRP	0.0000	INCHES
										ZHRP	0.1350	INCHES
										SCALE	0.0033	SCALE

REFERENCE FILE LSMC/HREC D225042A

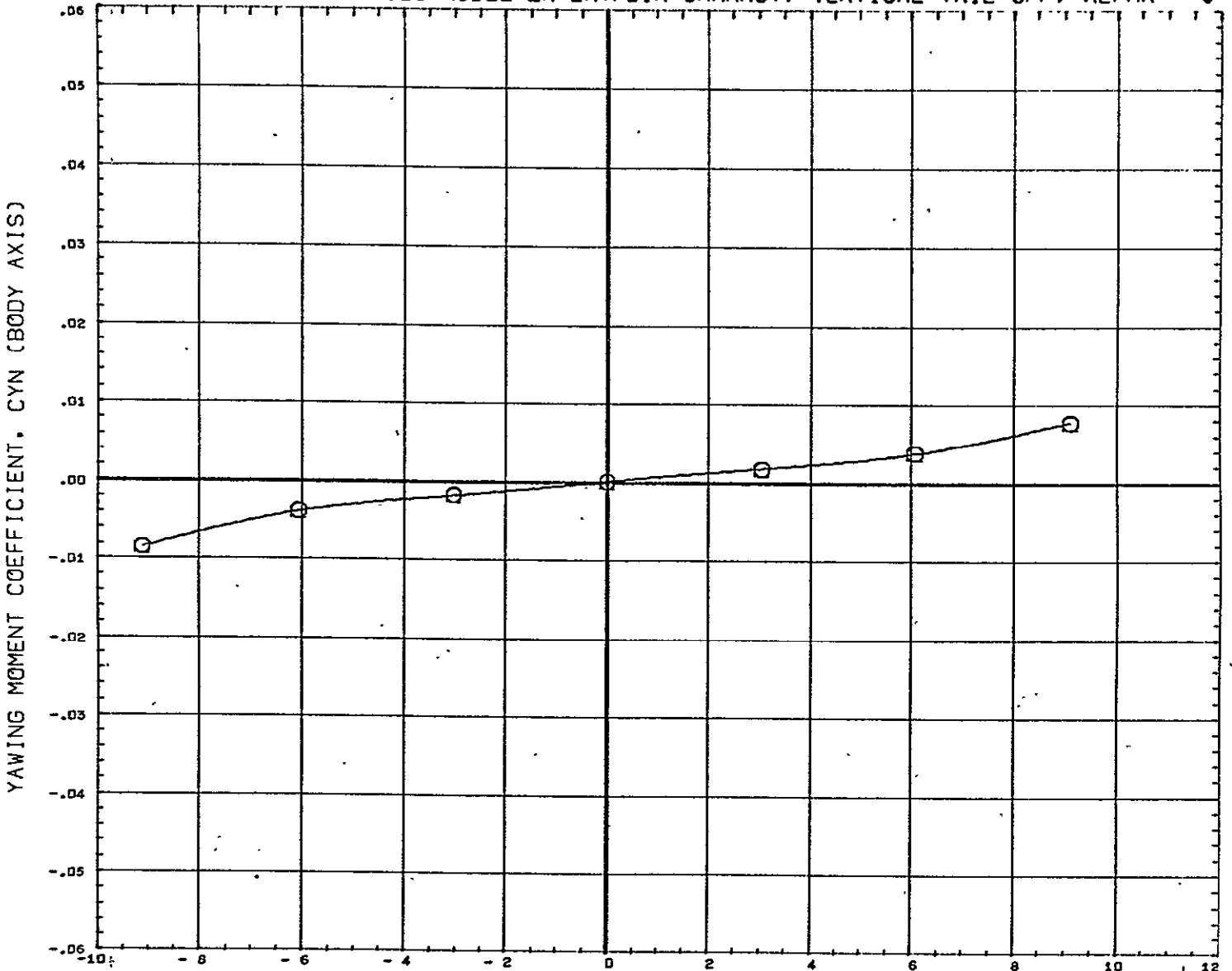
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, VERTICAL TAIL OFF, ALPHA = 0



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVNS	REFERENCE INFORMATION
(A4101X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000			0.000	SREF 9.0250 SQ. IN
(A4114X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	0.000	0.000		0.000	LREF 6.1420 INCHES
(A4116X)	MSFC TWT 498 MSFC/HREC ORBITER B2W2V4E3	0.000			0.000	BREF 6.1420 INCHES XMRP 3.9950 INCHES YMRP 0.0000 INCHES ZMRP 0.1350 INCHES SCALE 0.0033 SCALE

HACH 0.599

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, VERTICAL TAIL OFF, ALPHA = 0

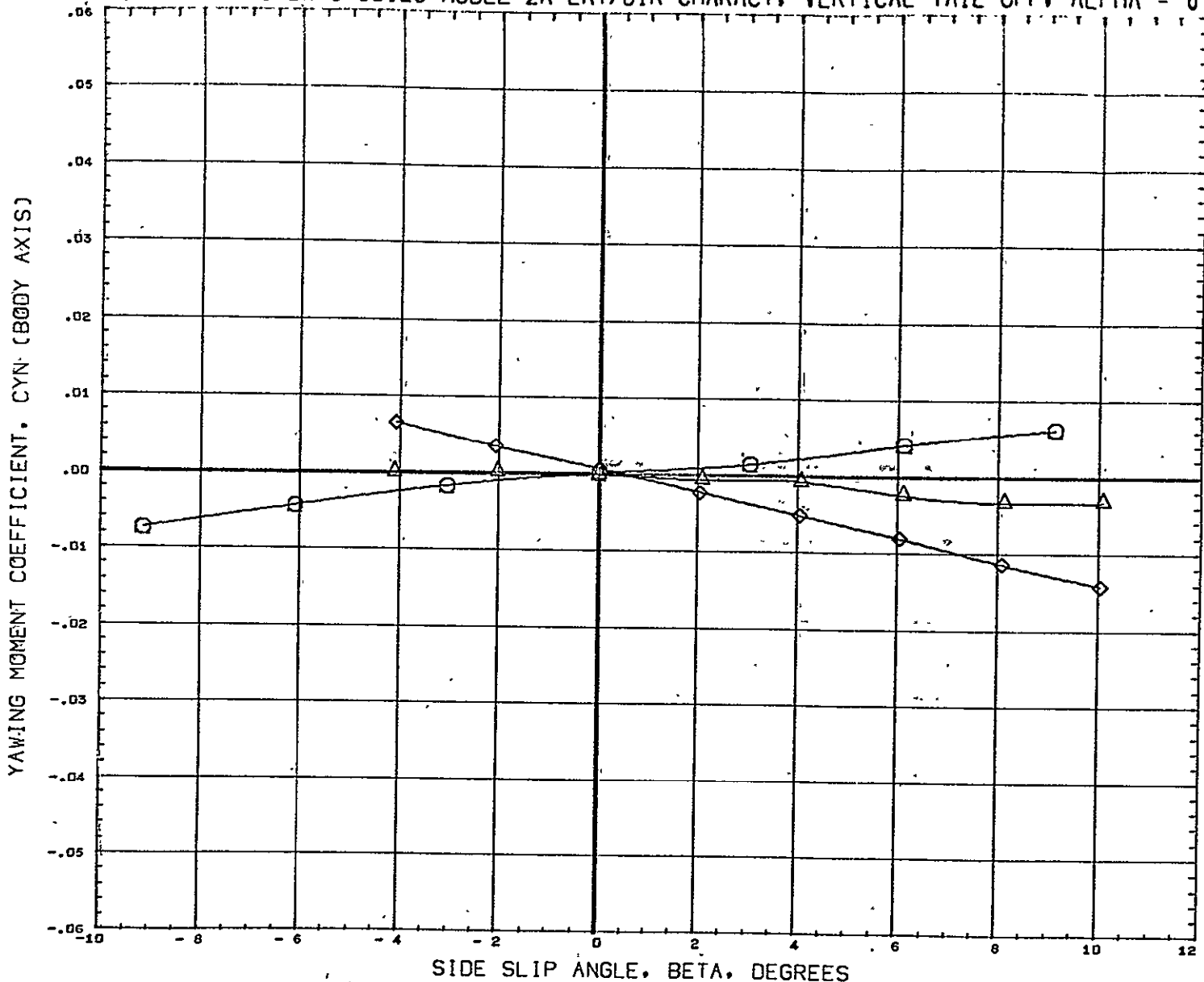


SIDE SLIP ANGLE, BETA, DEGREES

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVN3	REFERENCE INFORMATION
(A4101X)	HSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000			0.000	SREF 9.0250 SQ. IN
(A4114X)	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	0.000		0.000	LREF 6.1420 INCHES
(A4116X)	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000			0.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.734

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, VERTICAL TAIL OFF, ALPHA = 0

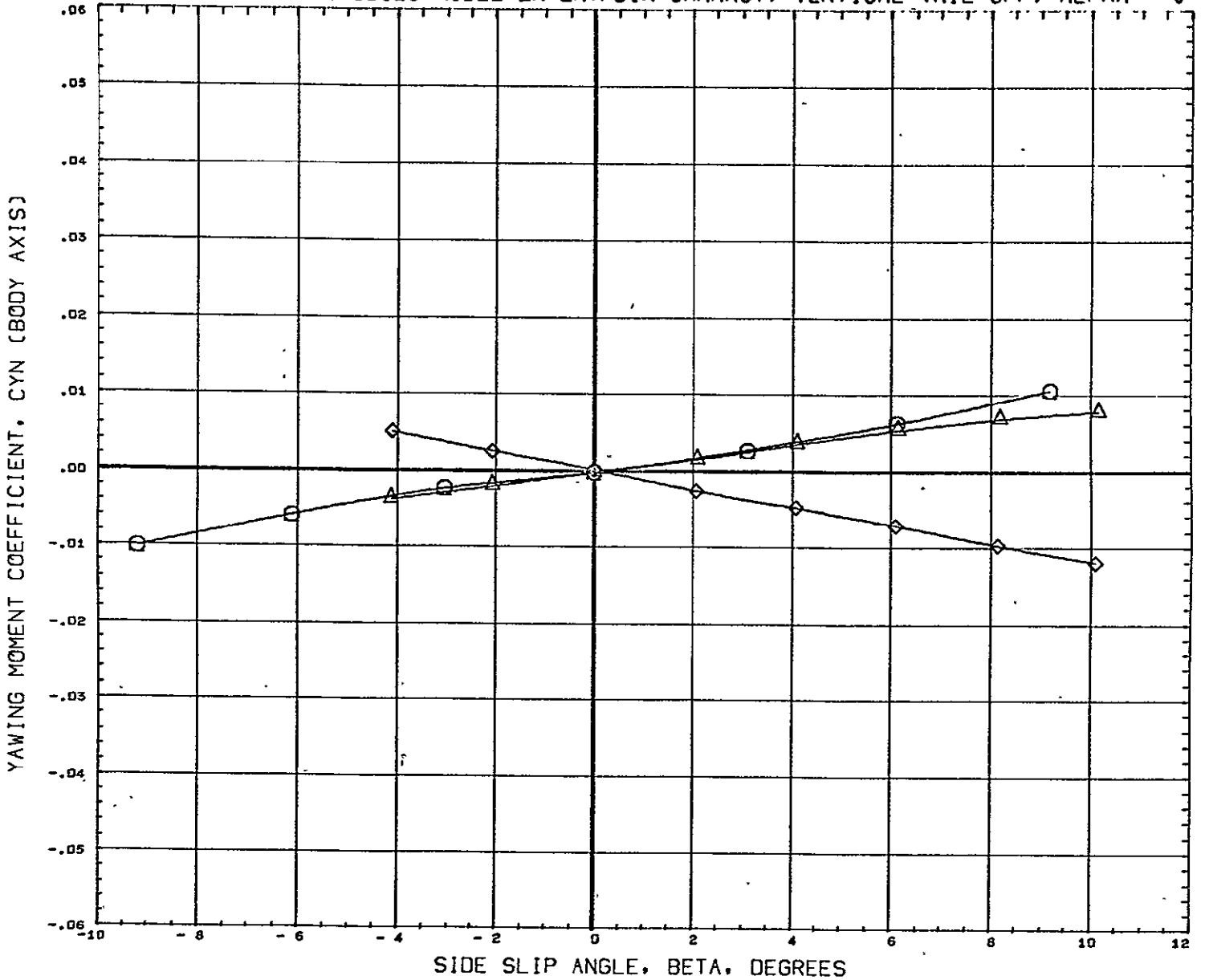


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEV3	REFERENCE INFORMATION
(A4101X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000		0.000	0.000	SREF 9.0250 SQ. IN
(A4114X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	0.000	0.000		0.000	LREF 6.1420 INCHES
(A4116X)	MSFC TWT 498 MSFC/HREC ORBITER B2W2V4E3	0.000			0.000	BREF 6.1420 INCHES XNRF 3.9950 INCHES YNRF 0.0000 INCHES ZNRF 0.1350 INCHES SCALE 0.0033 SCALE

MACH 0.903



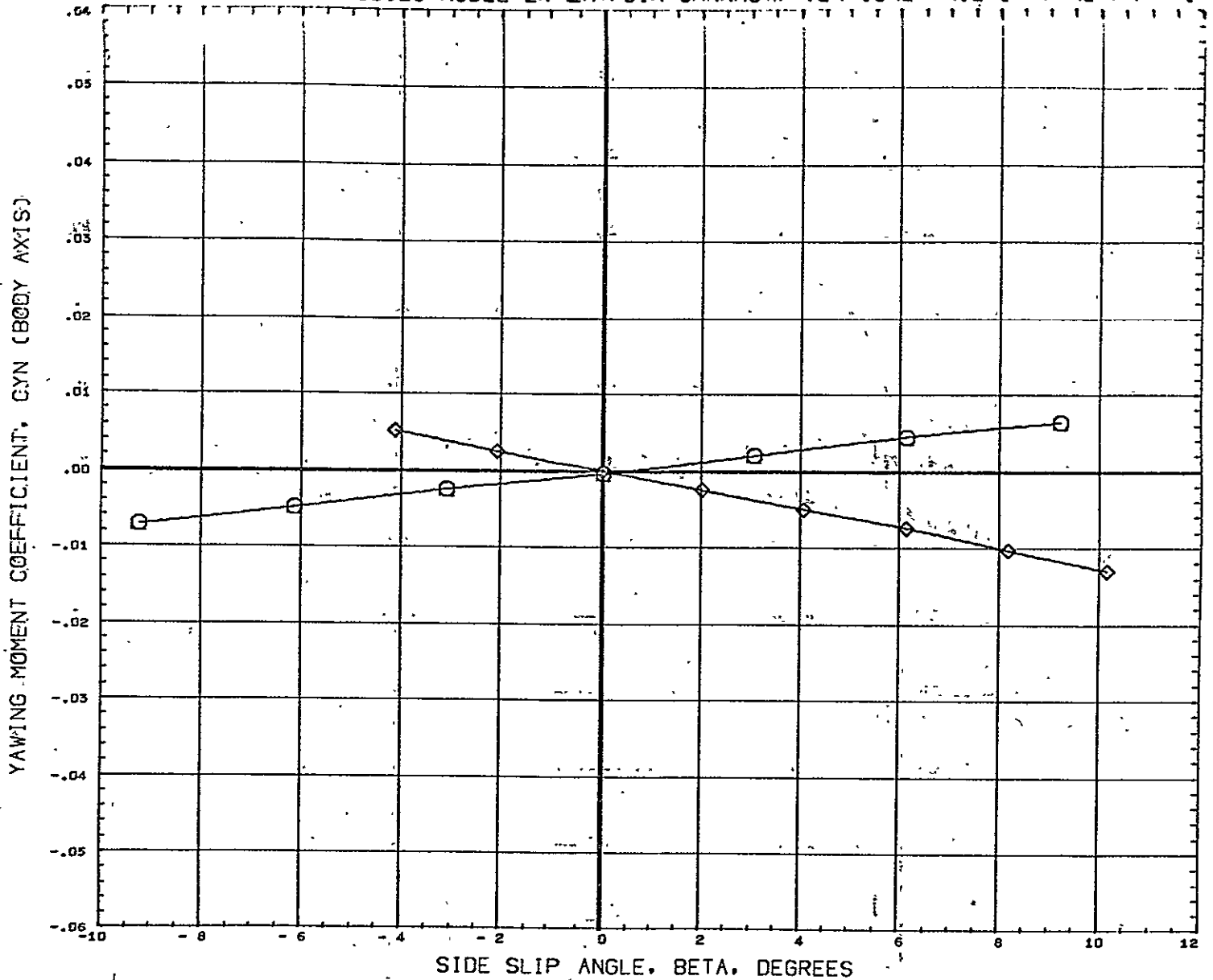
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, VERTICAL TAIL OFF, ALPHA = 0



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVN3	REFERENCE INFORMATION
(A4101X)	MSFC TWT 498 MSFC/LHSC ORBITER B2W2V4D2E3R2	0.000			0.000	SREF 9.0250 SQ. IN
(A4114X)	MSFC TWT 498 MSFC/LHSC ORBITER B2W2V4D1E3R1	0.000	0.000		0.000	LREF 6.1420 INCHES
(A4116X)	MSFC TWT 498 MSFC/HREC ORBITER B2W2V4E3	0.000			0.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.098

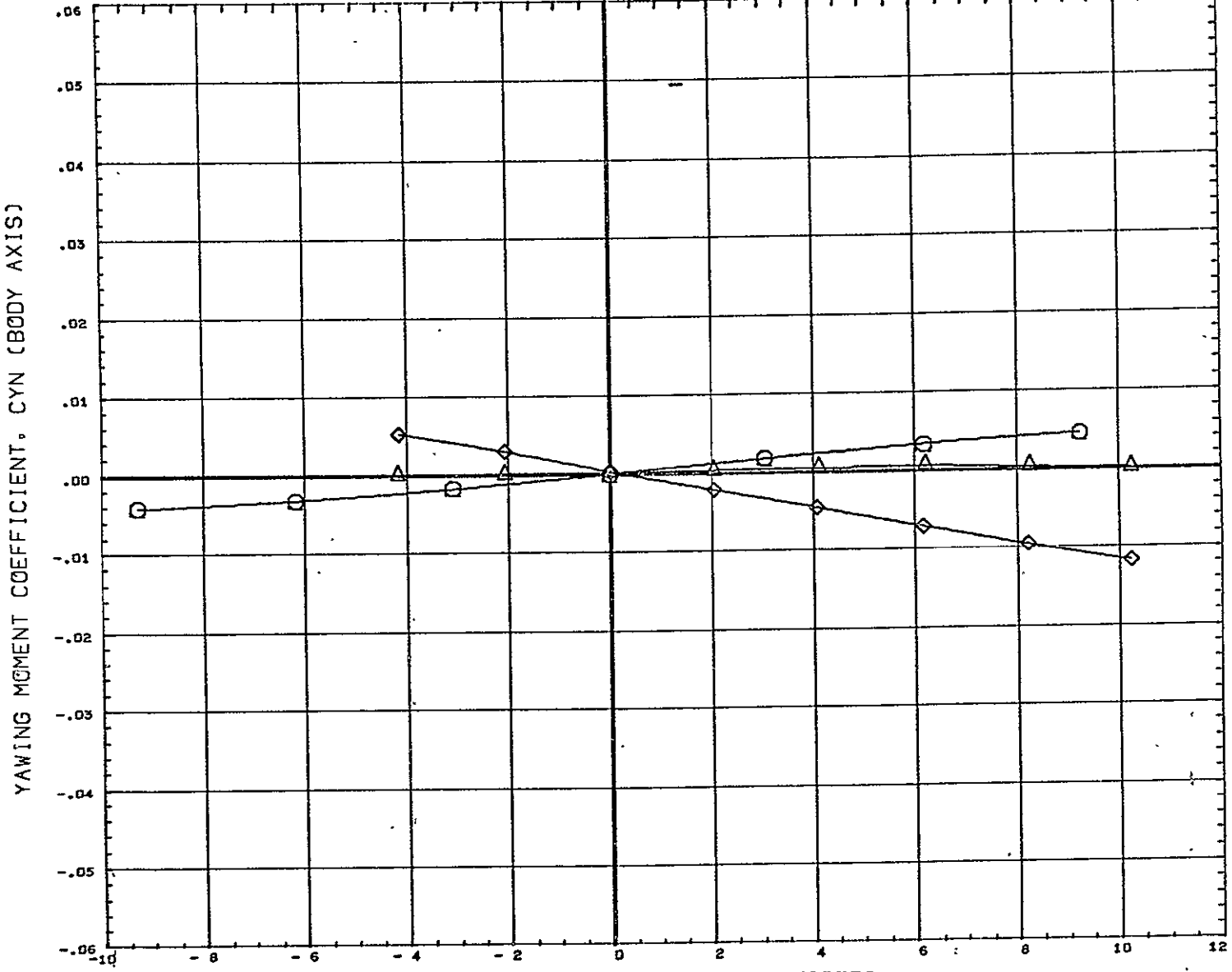
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT. VERTICAL TAIL OFF, ALPHA = 0



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELÉVN3	REFERENCE INFORMATION
(A4101X)	○	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V-D2E3R2	0.000			0.000	SREF 9.0250 SQ. IN
(A4114X)	△	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	0.000	0.000	0.000	LREF 6.1420 INCHES
(A4116X)	◇	MSFC TWT 498 MSFC/HREC ORBITER B2W2V4E3	0.000			0.000	BREF 6.1420 INCHES XMRP 3.9950 INCHES YMRP 0.0000 INCHES ZMRP 0.1350 INCHES SCALE 0.0033 SCALE

MACH 1.464

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, VERTICAL TAIL OFF, ALPHA = 0

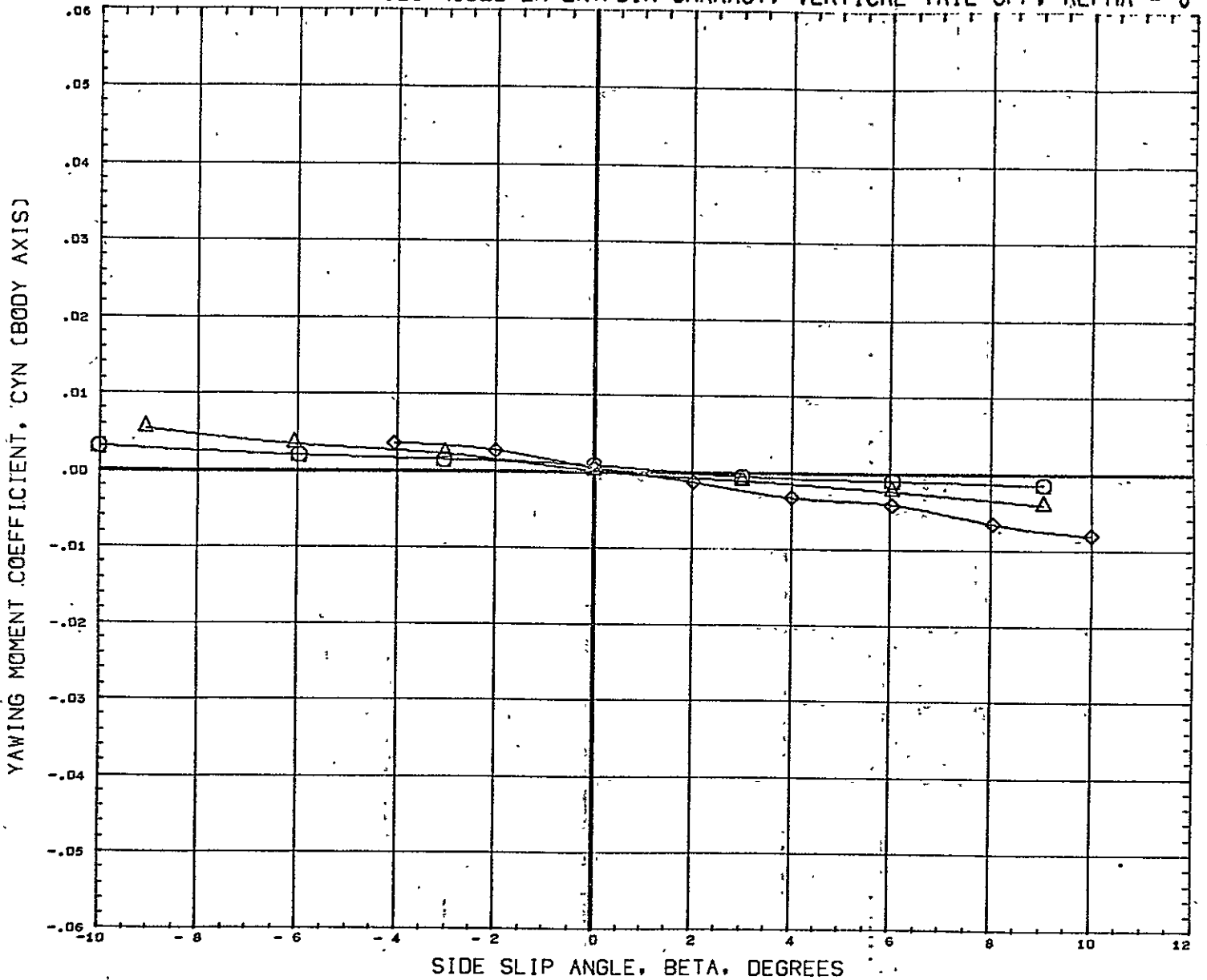


SIDE SLIP ANGLE, BETA, DEGREES

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVNS	REFERENCE INFORMATION
(A4101X) ○	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000		0.000	0.000	SREF 9.0250 SQ. IN
(A4114X) △	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	0.000	0.000		0.000	LREF 6.1420 INCHES
(A4116X) ◇	MSFC TWT 498 MSFC/HREC ORBITER B2W2V4E3	0.000			0.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.960

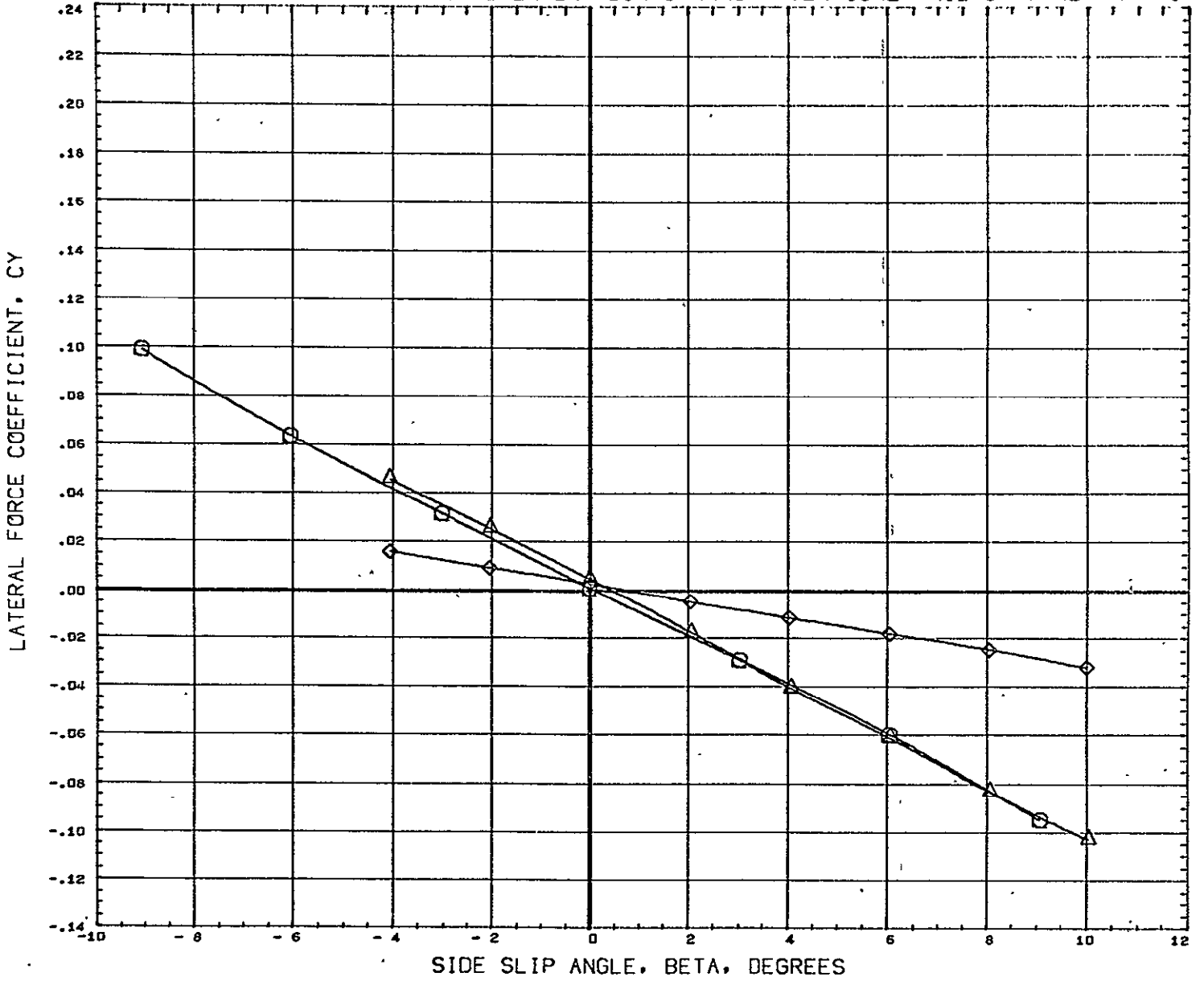
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, VERTICAL TAIL OFF, ALPHA = 0



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVNS	REFERENCE INFORMATION
(A4115X)	○	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000		0.000	0.000	SREF 9.0250 SQ. IN
(A4114X)	△	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	0.000	0.000		0.000	LREF 6.1420 INCHES
(A4116X)	◇	MSFC TWT 498 MSFC/HREC ORBITER B2W2V4E3	0.000			0.000	BREF 6.1420 INCHES XMRP 3.9950 INCHES YMRP 0.0000 INCHES ZMRP 0.1350 INCHES SCALE 0.0033 SCALE

MACH 4.960

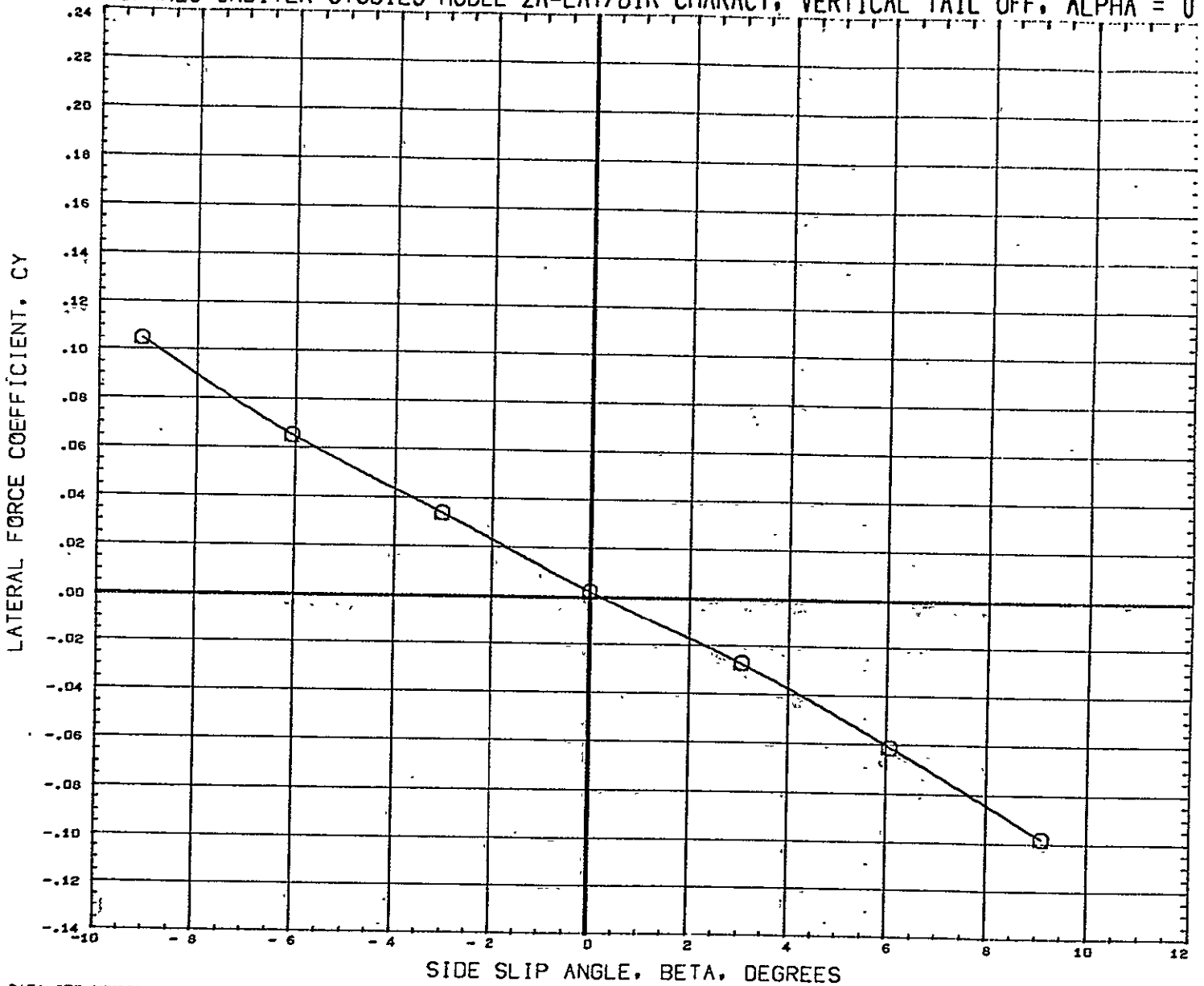
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, VERTICAL TAIL OFF, ALPHA = 0



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVNS	REFERENCE INFORMATION
(A4101X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000		0.000	0.000	SREF 9.0250 SQ. IN
(A4114X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	0.000	0.000		0.000	LREF 6.1420 INCHES
(A4116X)	MSFC TWT 498 MSFC/HREC ORBITER B2W2V4E3	0.000			0.000	BREF 6.1420 INCHES XMRP 3.9950 INCHES YMRP 0.0000 INCHES ZMRP 0.1350 INCHES SCALE 0.0033 SCALE

MACH 0.599

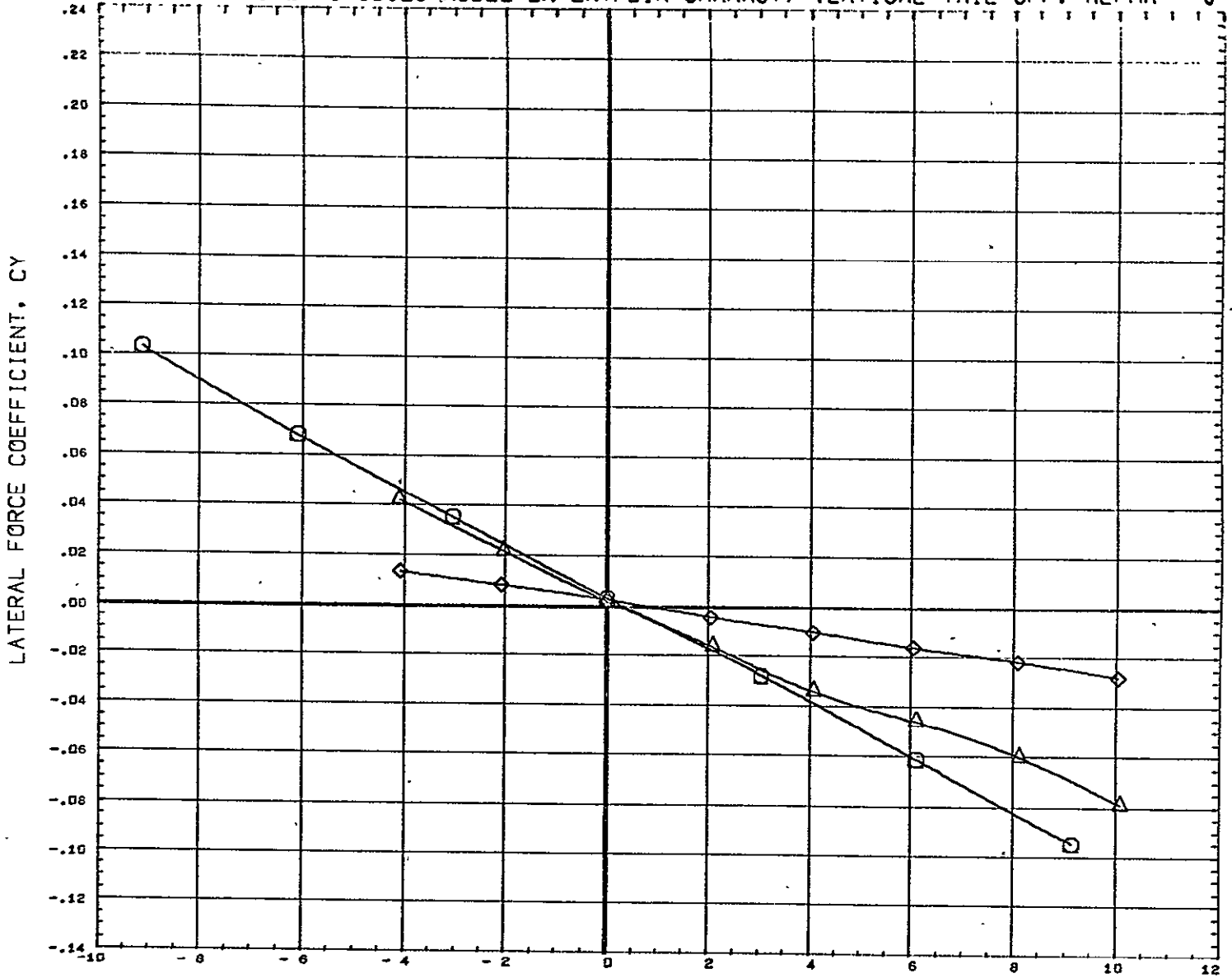
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, VERTICAL TAIL OFF, ALPHA = 0



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVNS	REFERENCE INFORMATION
(A4101X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000		0.000	0.000	SREF 9.0250 SQ. IN
(A4114X)	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	0.000		0.000	LREF 6.1420 INCHES
(A4116X)	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000			0.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.704

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, VERTICAL TAIL OFF, ALPHA = 0

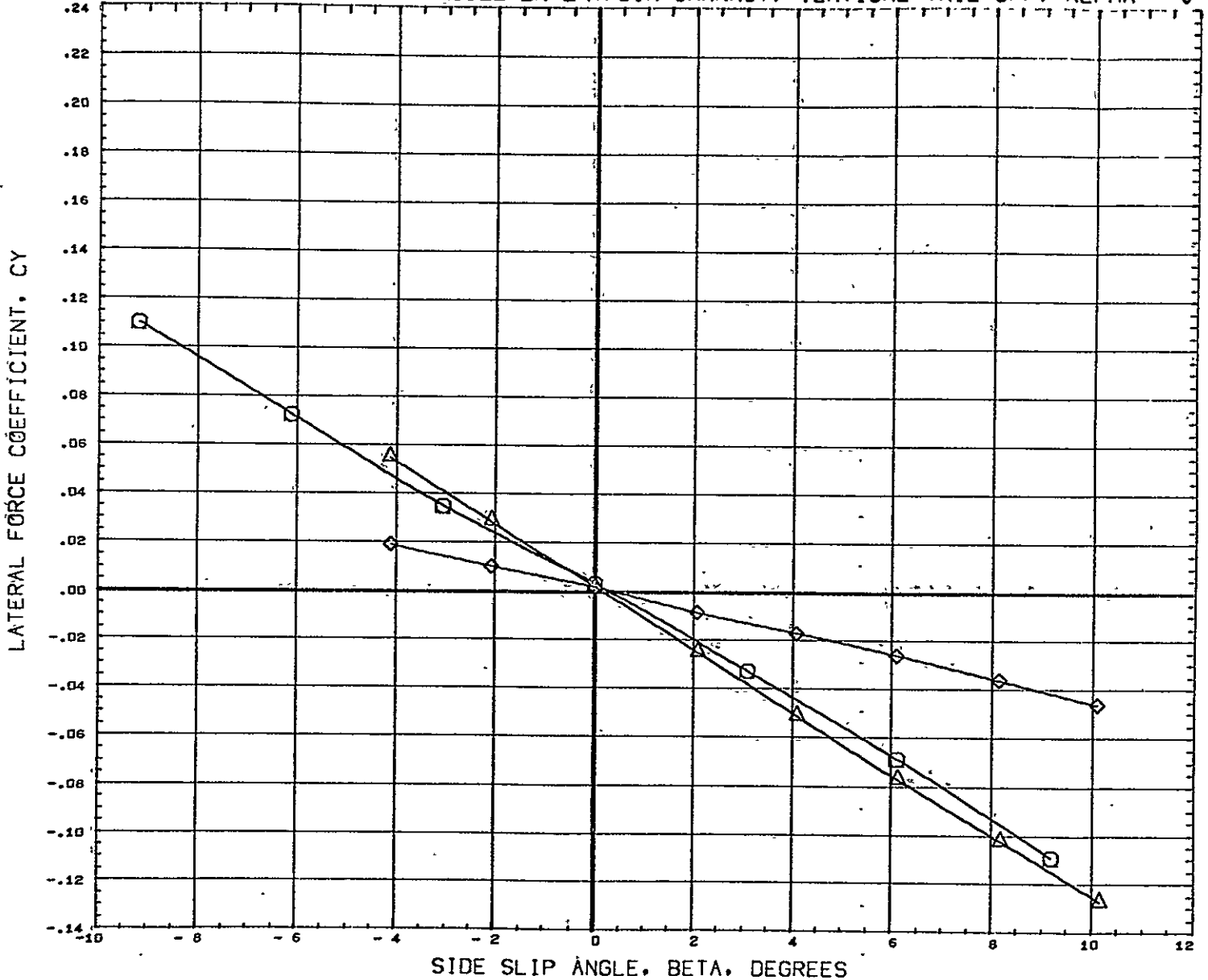


SIDE SLIP ANGLE, BETA, DEGREES

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVNS	REFERENCE INFORMATION
(A4101X)	○	MSFC TWT 498 MSFC/LMSC ORBITER	0.000		0.000	0.000	SREF 9.0250 SQ. IN
(A4114X)	△	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000		0.000	LREF 6.1420 INCHES
(A4116X)	◇	MSFC TWT 498 MSFC/HREC ORBITER	0.000			0.000	BREF 6.1420 INCHES
							XMRP 3.9950 INCHES
							YMRP 0.0000 INCHES
							ZMRP 0.1350 INCHES
							SCALE 0.0033 SCALE

MACH 0.903

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, VERTICAL TAIL OFF, ALPHA = 0

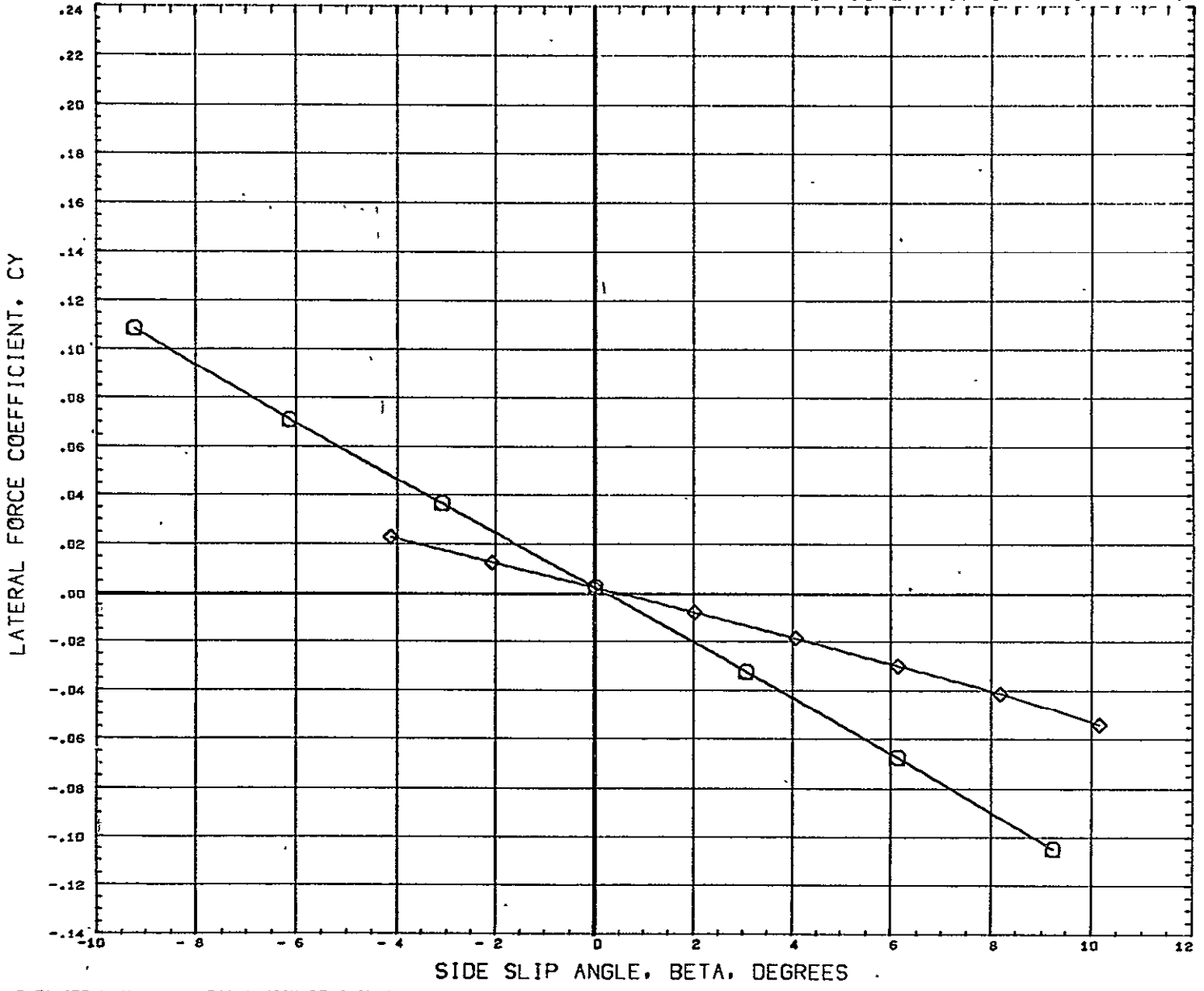


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVNS	REFERENCE INFORMATION
(A4101X)	○	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000		0.000	0.000	SREF 9.0250 SQ. IN
(A4114X)	△	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	0.000	0.000		0.000	LREF 6.1420 INCHES
(A4116X)	◇	MSFC TWT 498 MSFC/HREC ORBITER B2W2V4E3	0.000			0.000	BREF 6.1420 INCHES XMRP 3.9950 INCHES YMRP 0.0000 INCHES ZMRP - 0.1350 INCHES SCALE 0.0033 SCALE

MACH 1.098



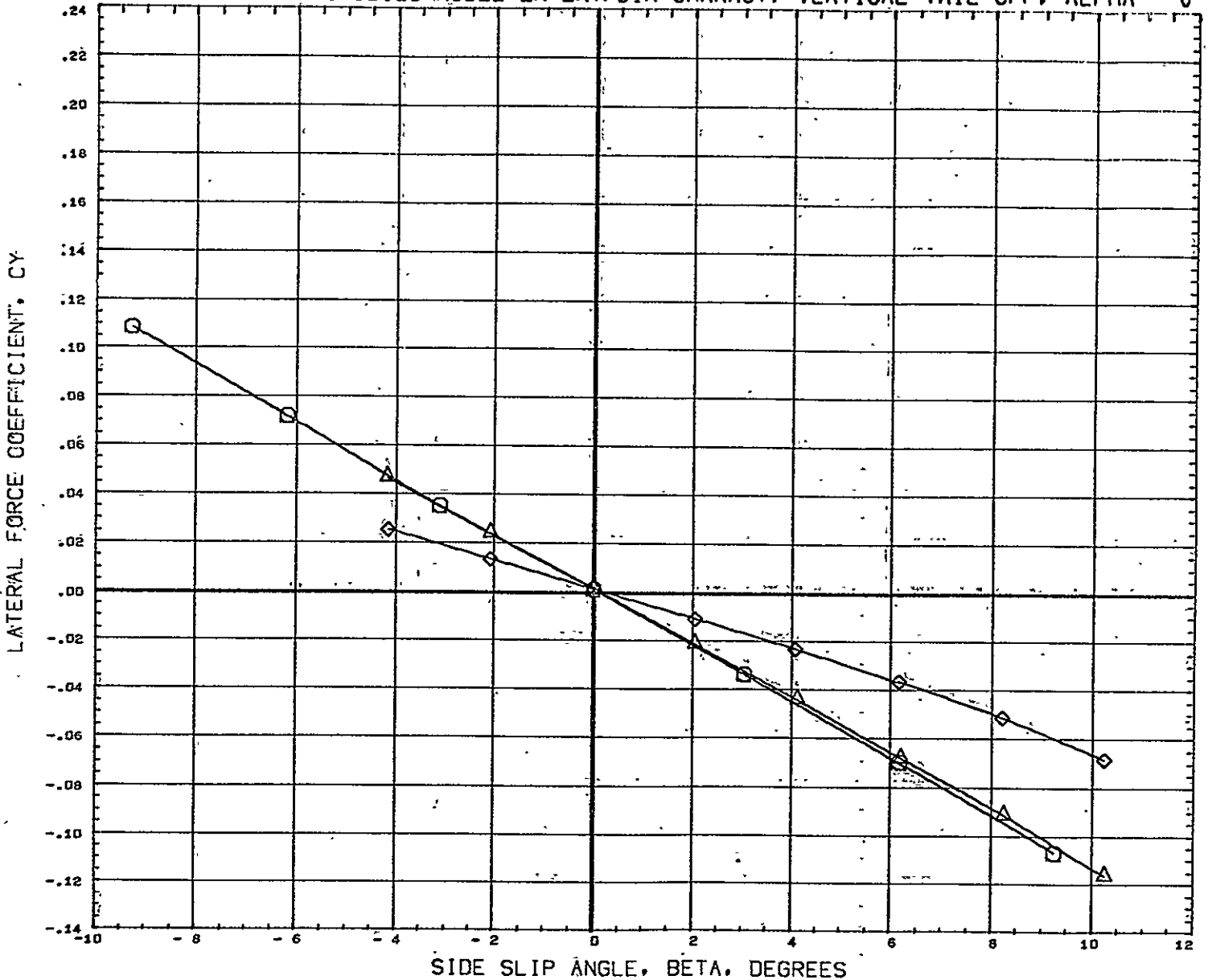
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, VERTICAL TAIL OFF, ALPHA = 0



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVN3	REFERENCE INFORMATION
(A4101X)	MSFC TWT 498 MSFC/LMSC ORBITER. B2W2V4D2E3R2	0.000		0.000	0.000	SREF 9.0250 SQ. IN
(A4114X)	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	0.000		0.000	LREF 6.1420 INCHES
(A4116X)	MSFC TWT 498 MSFC/HREC ORBITER B2W2V4E3	0.000			0.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.464

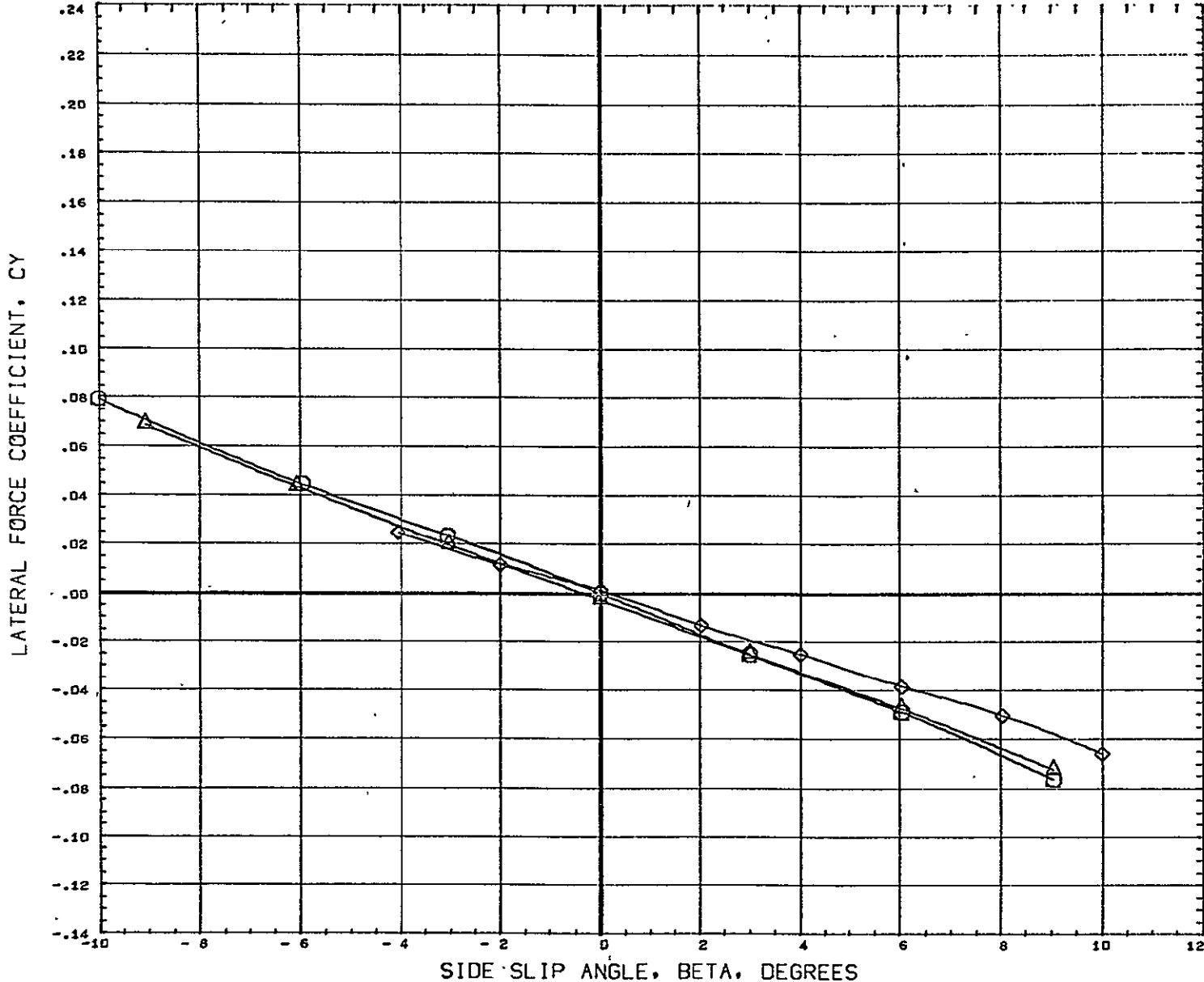
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, VERTICAL TAIL OFF, ALPHA = 0



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEV3	REFERENCE INFORMATION
(A4101X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000		0.000	0.000	SREF 9.0250 SQ. IN
(A4114X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	0.000	0.000		0.000	LREF 6.1420 INCHES
(A4116X)	MSFC TWT 498 MSFC/HREC ORBITER B2W2V4E3	0.000			0.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.965

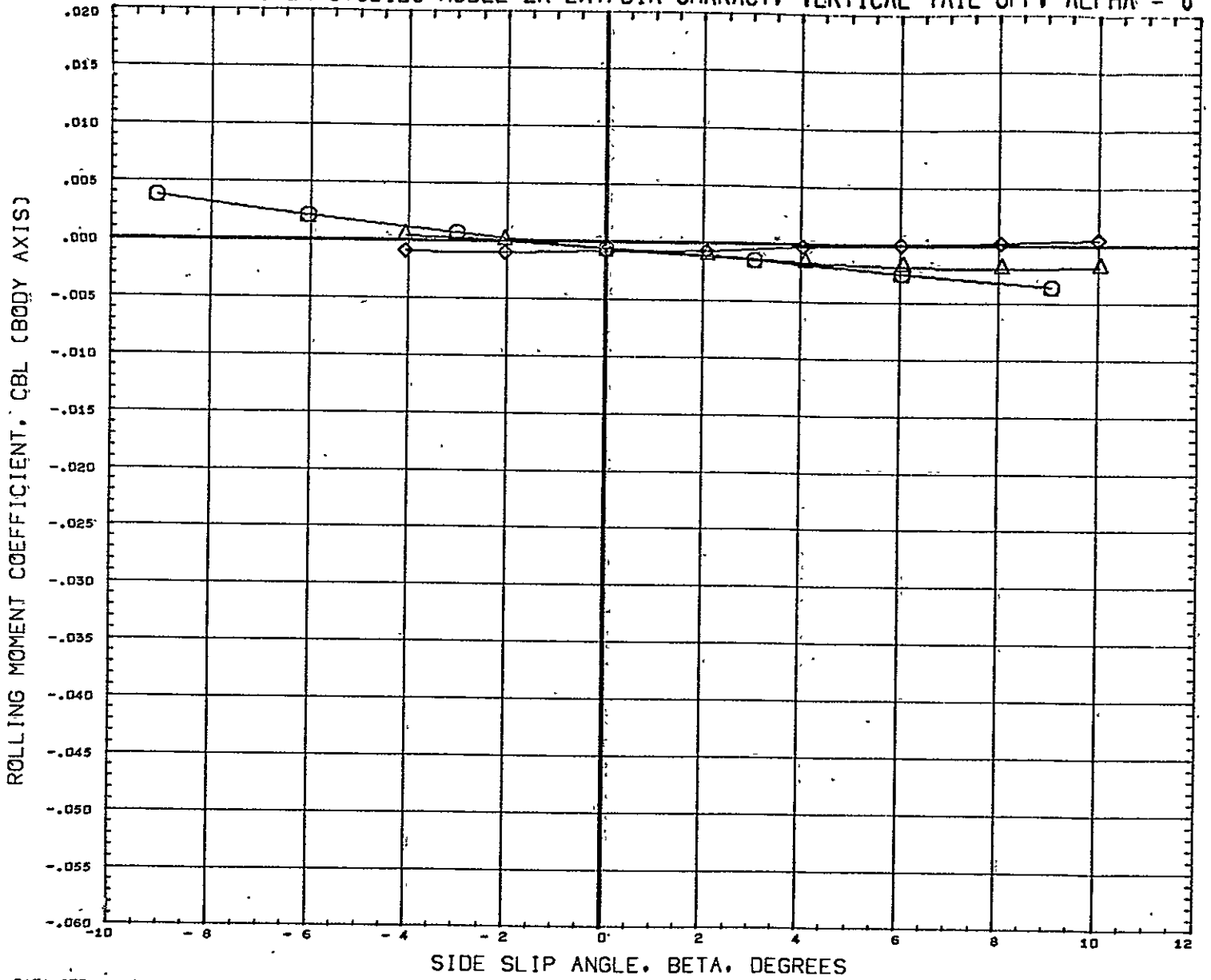
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, VERTICAL TAIL OFF, ALPHA = 0



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEV3	REFERENCE INFORMATION
(A4101X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000		0.000	0.000	SREF 9.0250 SQ. IN
(A4114X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	0.000	0.000		0.000	LREF 6.1420 INCHES
(A4116X)	MSFC TWT 498 MSFC/HREC ORBITER B2W2V4E3	0.000			0.000	BREF 6.1420 INCHES XMRP 3.9950 INCHES YMRP 0.0000 INCHES ZMRP 0.1350 INCHES SCALE 0.0033 SCALE

MACH 4.960

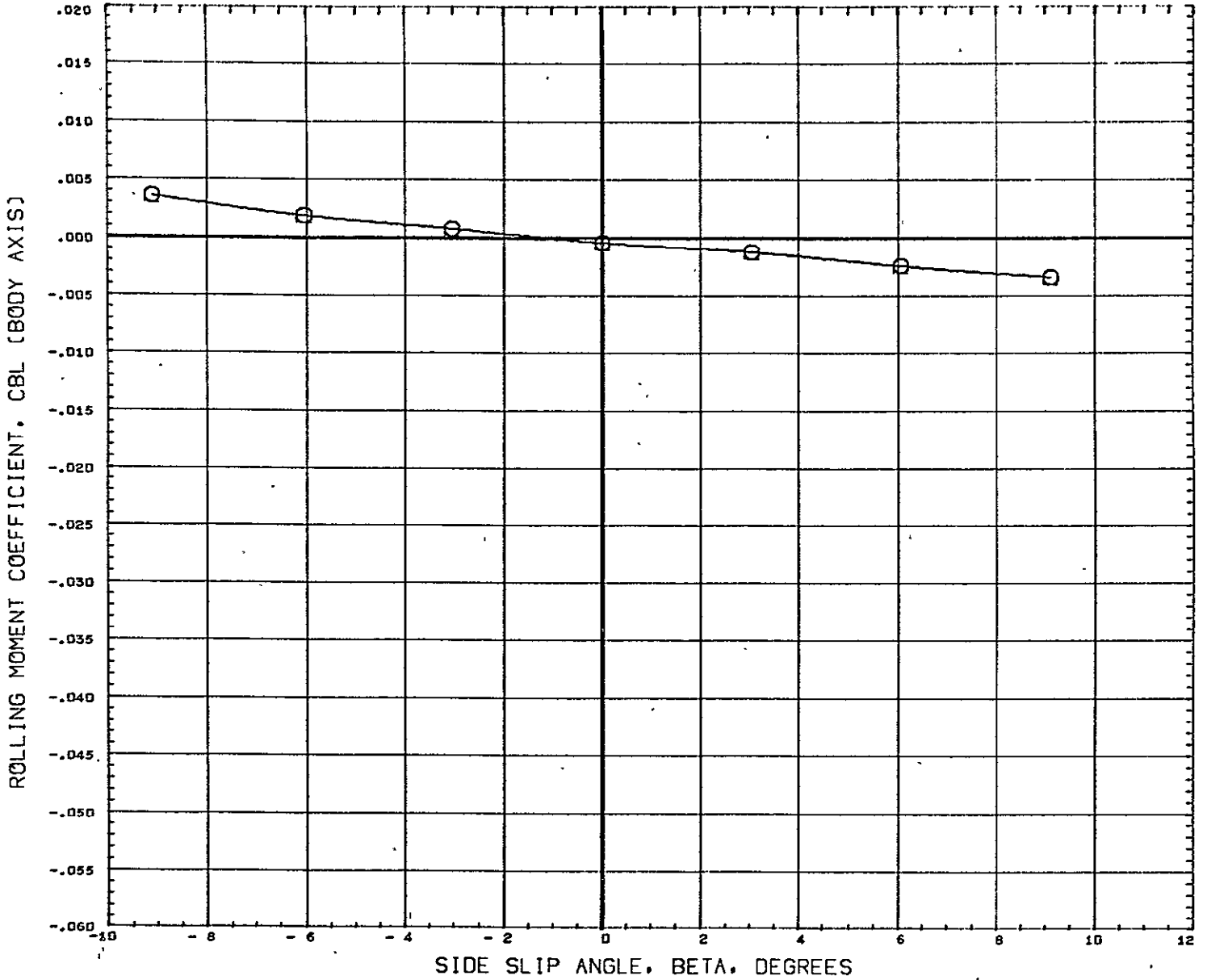
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, VERTICAL TAIL OFF, ALPHA = 0



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVNS	REFERENCE INFORMATION
(A4101X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000		0.000	0.000	SREF 9.0250 SQ. IN
(A4114X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	0.000	0.000		0.000	LREF 6.1420 INCHES
(A4116X)	MSFC TWT 498 MSFC/HREC ORBITER B2W2V4E3	0.000			0.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.599

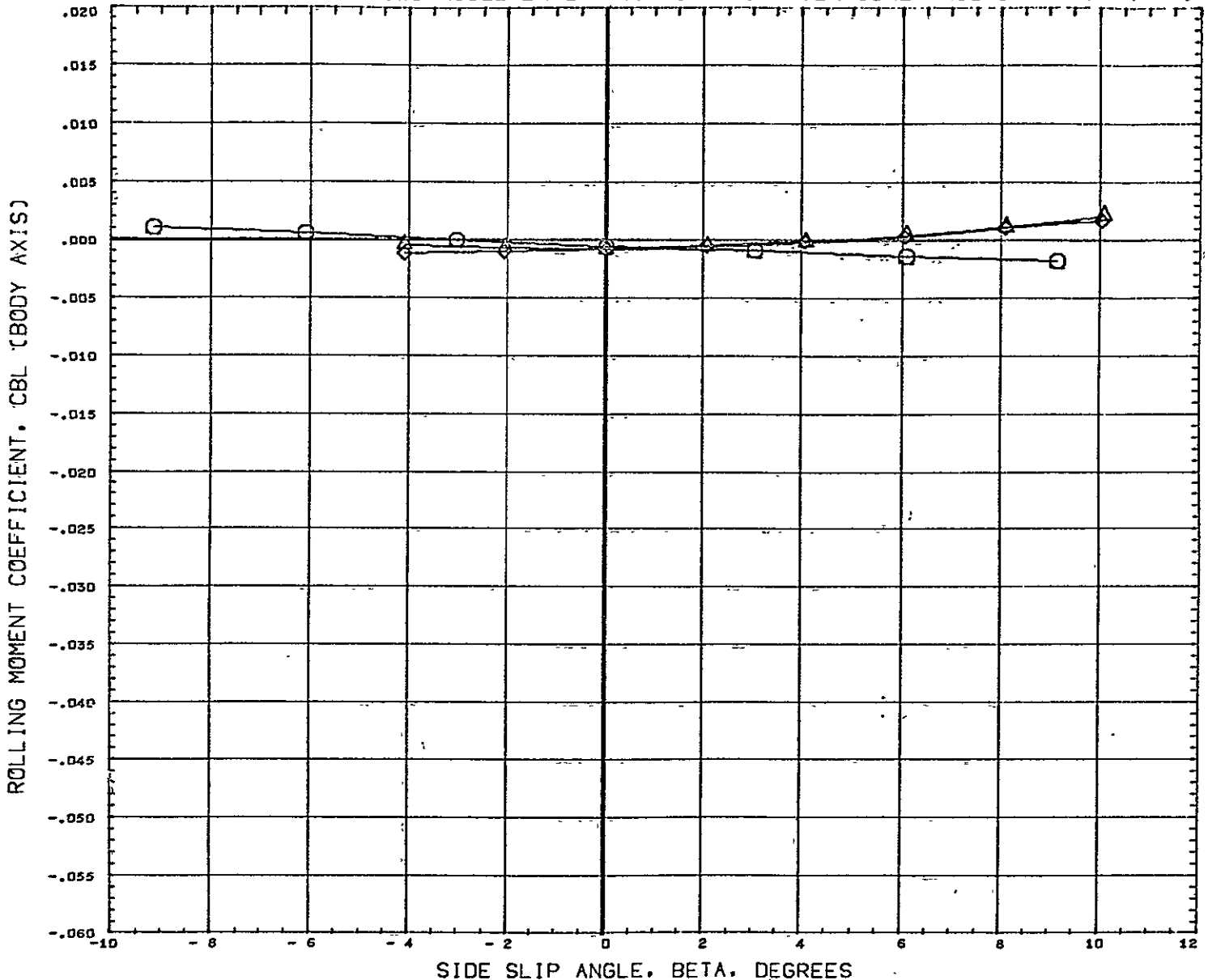
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, VERTICAL TAIL OFF, ALPHA = 0



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVNS	REFERENCE INFORMATION
(A4101X)	○	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000		0.000	0.000	SREF 9.0250 SQ. IN
(A4114X)	△	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	0.000		0.000	LREF 6.1420 INCHES
(A4116X)	◇	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000			0.000	BREF 6.1420 INCHES
							XHRP 3.9950 INCHES
							YHRP 0.0000 INCHES
							ZMRP 0.1350 INCHES
							SCALE 0.0033 SCALE

MACH 0.704

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, VERTICAL TAIL OFF, ALPHA = 0

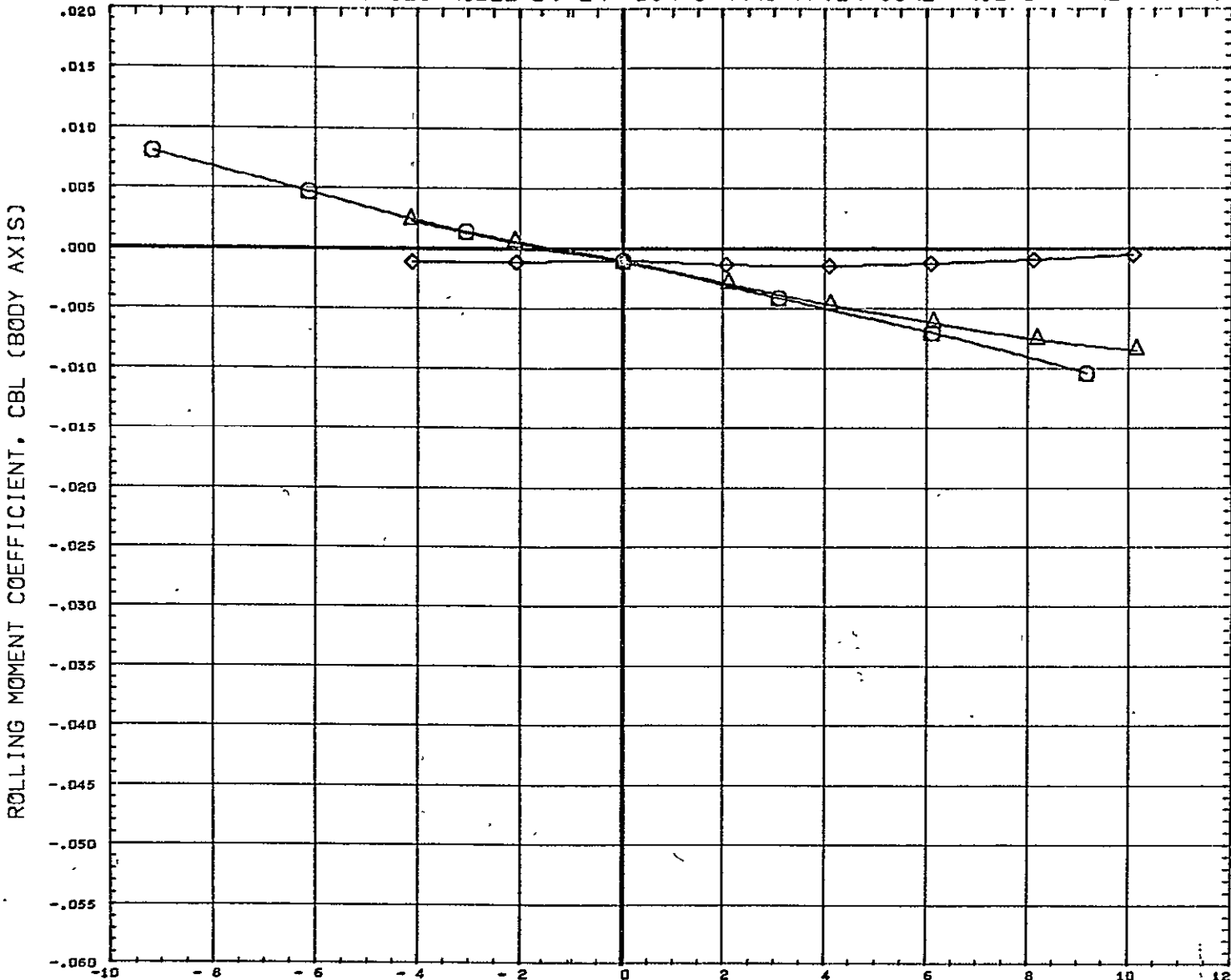


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEV3	REFERENCE INFORMATION
(A4115X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000		0.000	0.000	SREF 9.0250 SQ. IN
(A4114X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	0.000	0.000		0.000	LREF 6.1420 INCHES
(A4116X)	MSFC TWT 498 MSFC/HREC ORBITER B2W2V4E3	0.000			0.000	BREF 6.1420 INCHES XMRP 3.9950 INCHES YMRP 0.0000 INCHES ZMRP 0.1350 INCHES SCALE 0.0033 SCALE

MACH 0.903

C.8

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, VERTICAL TAIL OFF, ALPHA = 0

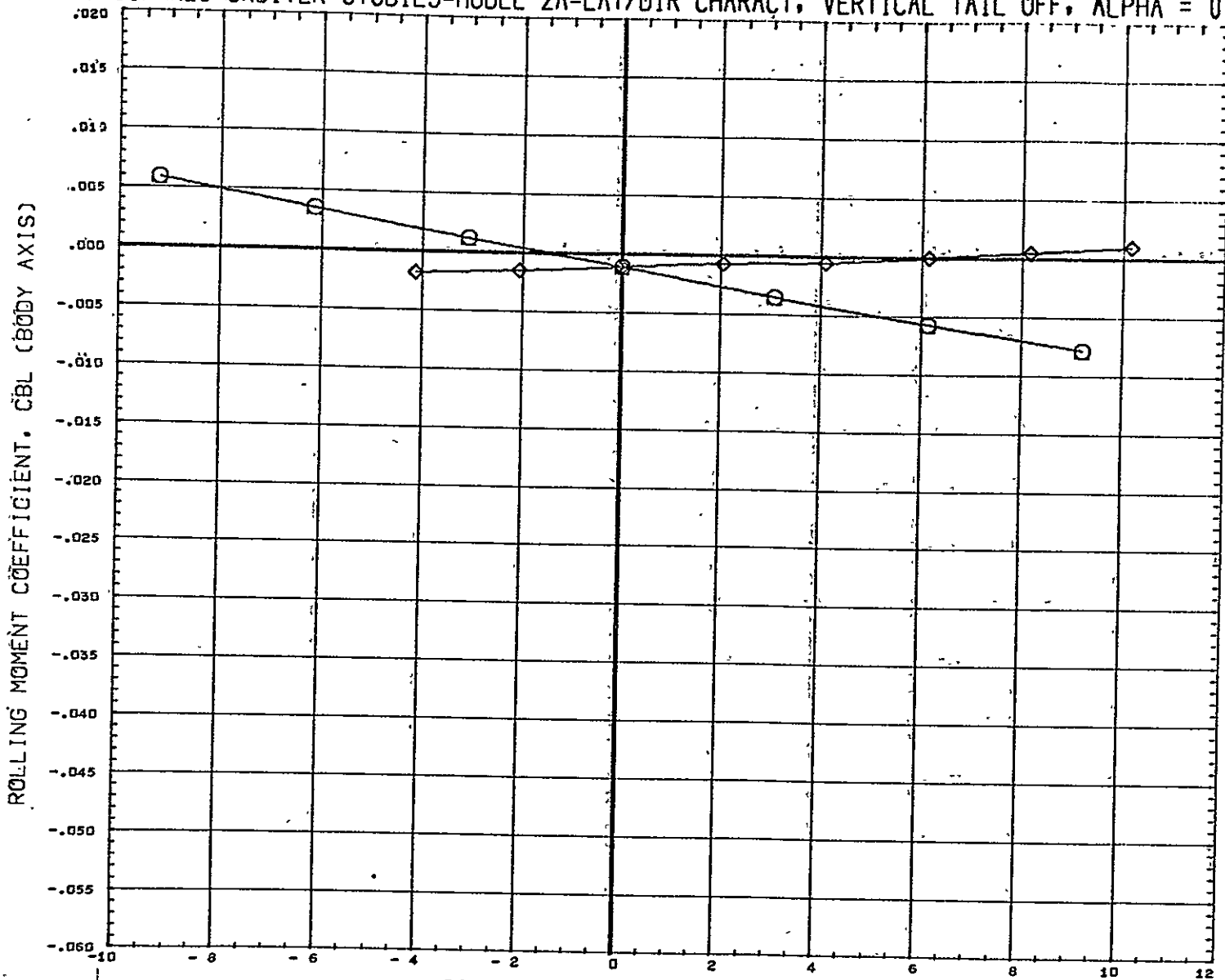


SIDE SLIP ANGLE, BETA, DEGREES

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEV3	REFERENCE INFORMATION
(A4101X)	MSFC TWT 498 MSFC/LHSC ORBITER B2WV4D2E3R2	0.000		0.000	0.000	SREF 9.0250 SQ. IN
(A4114X)	MSFC TWT 498 MSFC/LHSC ORBITER B2WV4D3E3R1	0.000	0.000		0.000	LREF 6.1420 INCHES
(A4116X)	MSFC TWT 498 MSFC/HREC ORBITER B2WV4E3	0.000			0.000	BREF 6.1420 INCHES XMRP 3.9950 INCHES YMRP 0.0000 INCHES ZMRP - 0.1350 INCHES SCALE 0.0033 SCALE

MACH 1.098

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, VERTICAL TAIL OFF, ALPHA = 0

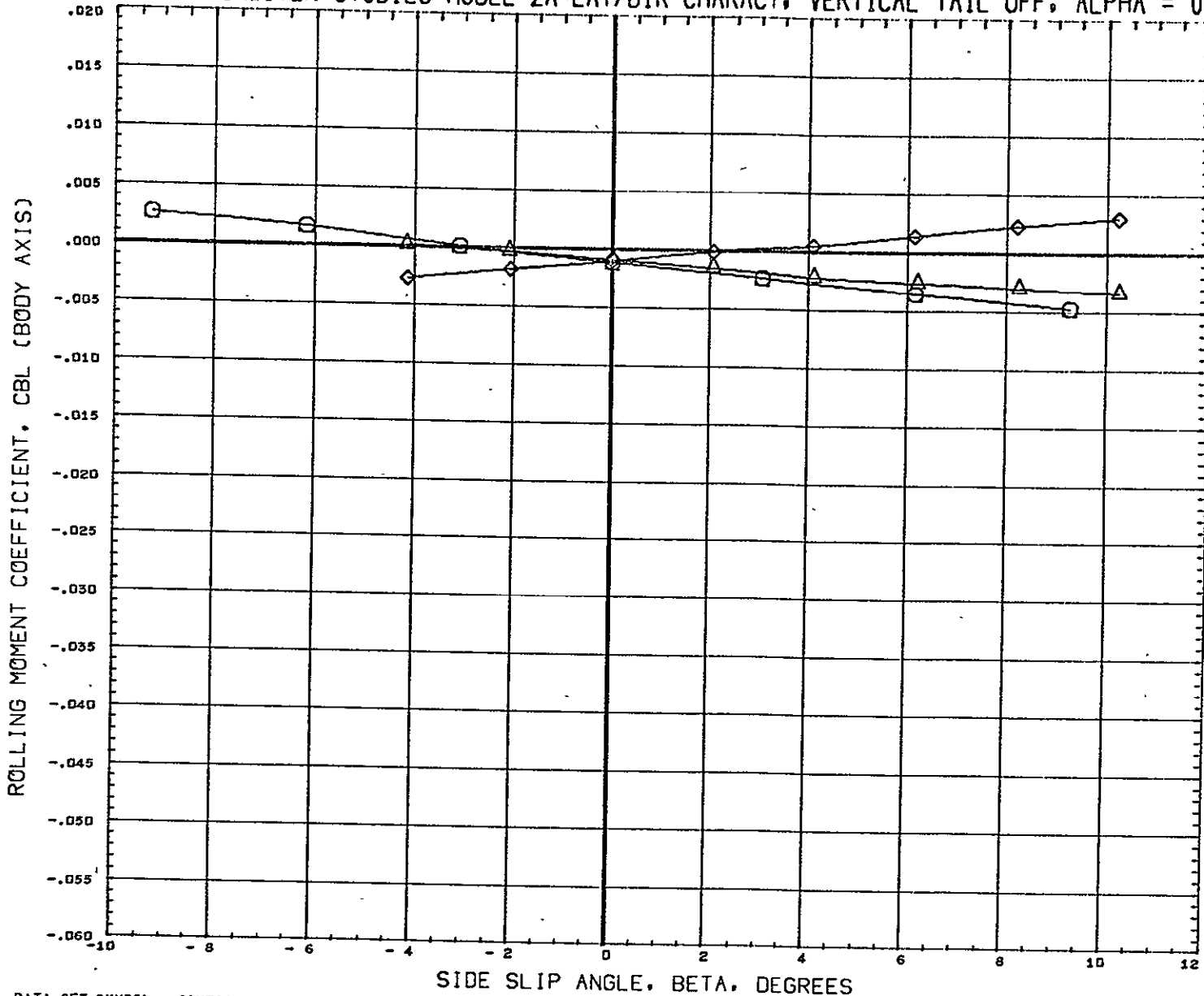


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVN3	REFERENCE INFORMATION
(A4101X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000			0.000	SREF 9.0250 SQ. IN
(A4114X)	DATA NOT AVAILABLE FOR ALL CONDITIONS					
(A4116X)	MSFC TWT 498 MSFC/HREC ORBITER B2W2V4E3	0.000	0.000	0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.464



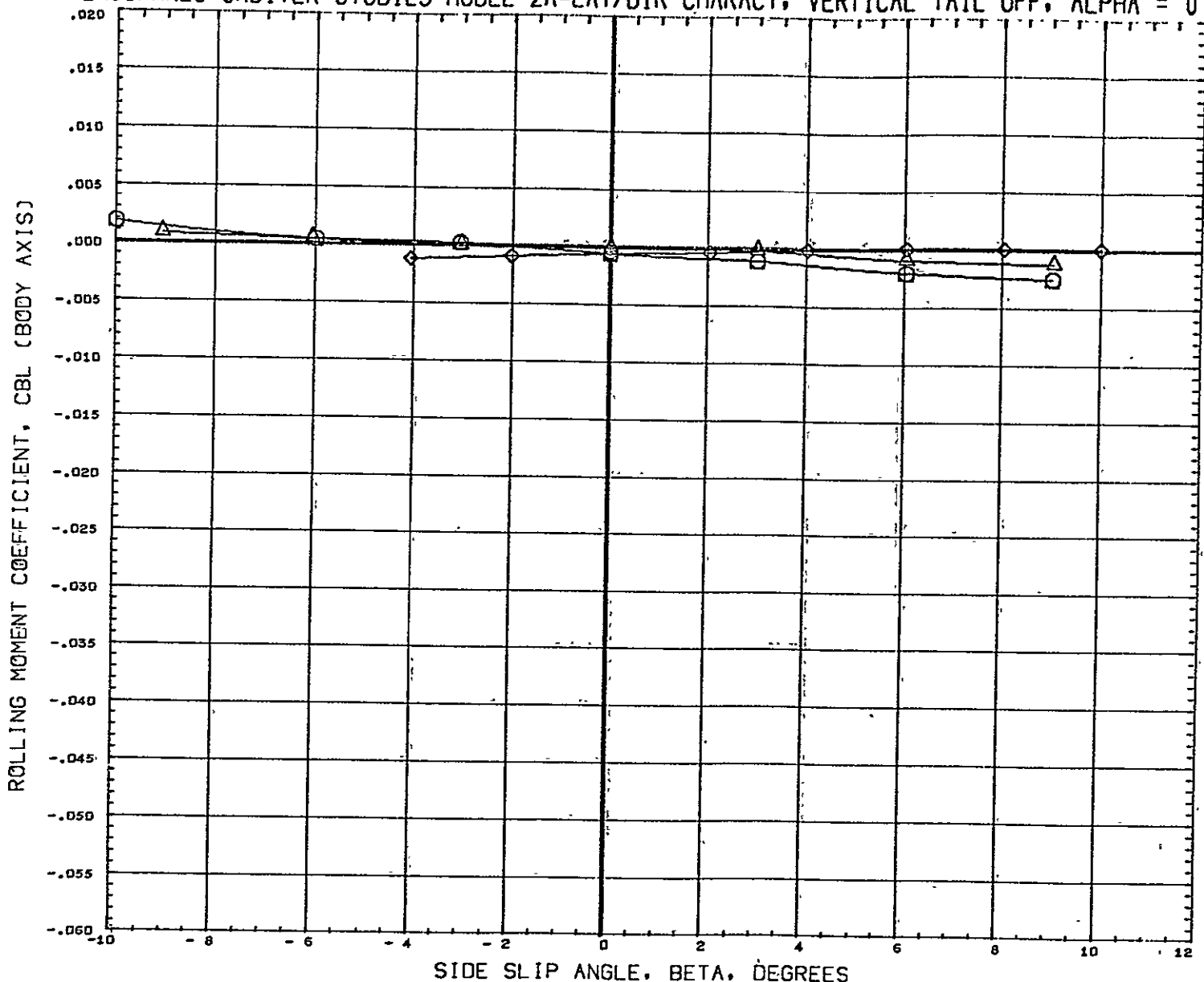
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, VERTICAL TAIL OFF, ALPHA = 0



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVN3	REFERENCE INFORMATION
(A4101X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000		0.000	0.000	SREF 9.0250 SQ. IN
(A4114X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	0.000	0.000		0.000	LREF 6.1420 INCHES
(A4116X)	MSFC TWT 498 MSFC/HREC ORBITER B2W2V4E3	0.000			0.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.960

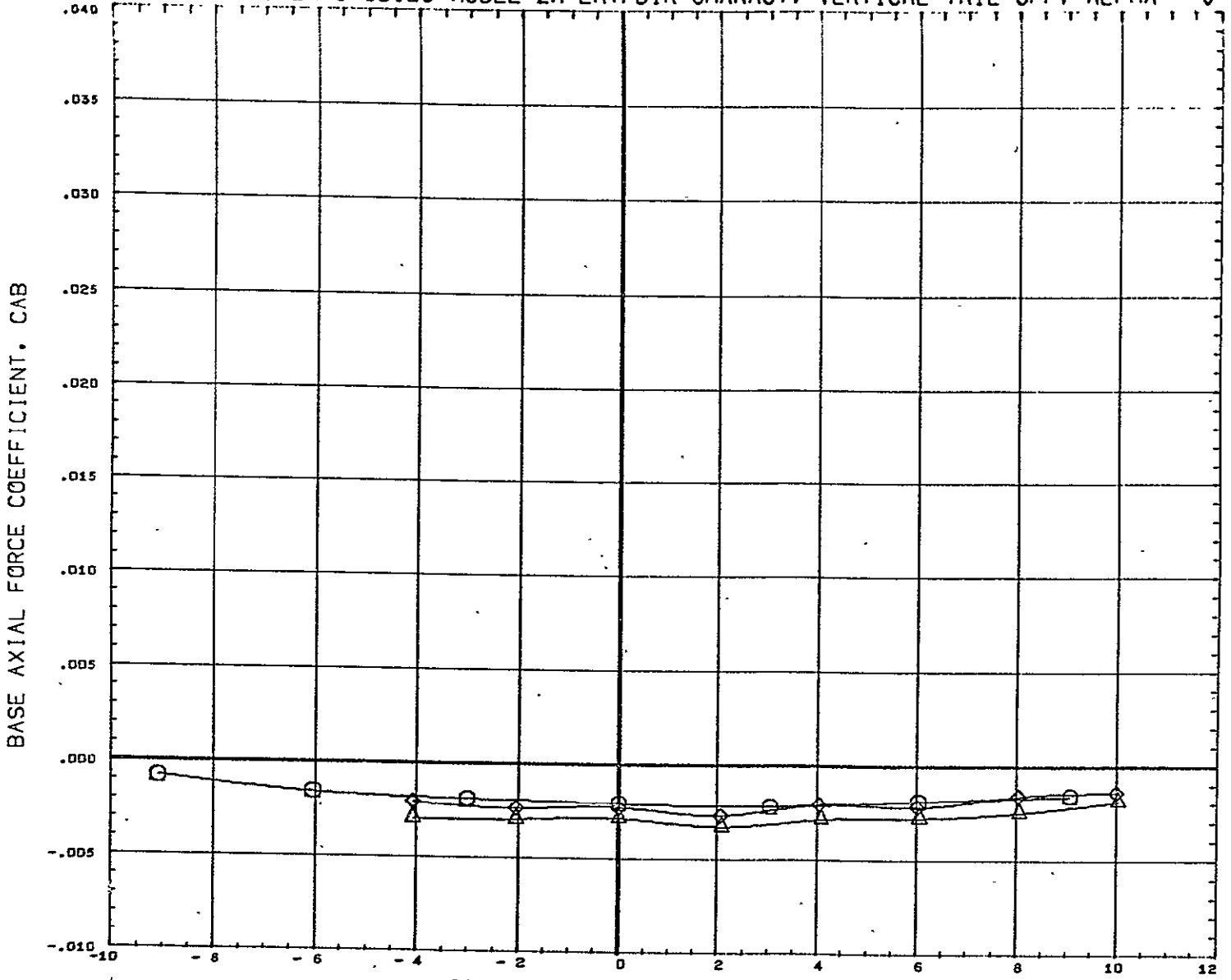
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, VERTICAL TAIL OFF, ALPHA = 0



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVNS	REFERENCE INFORMATION
(A4101X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000		0.000	0.000	SREF 9.0250 SQ. IN
(A4114X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	0.000	0.000		0.000	LREF 6.1420 INCHES
(A4116X)	MSFC TWT 498 MSFC/HREC ORBITER B2W2V4E3	0.000			0.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 4.960

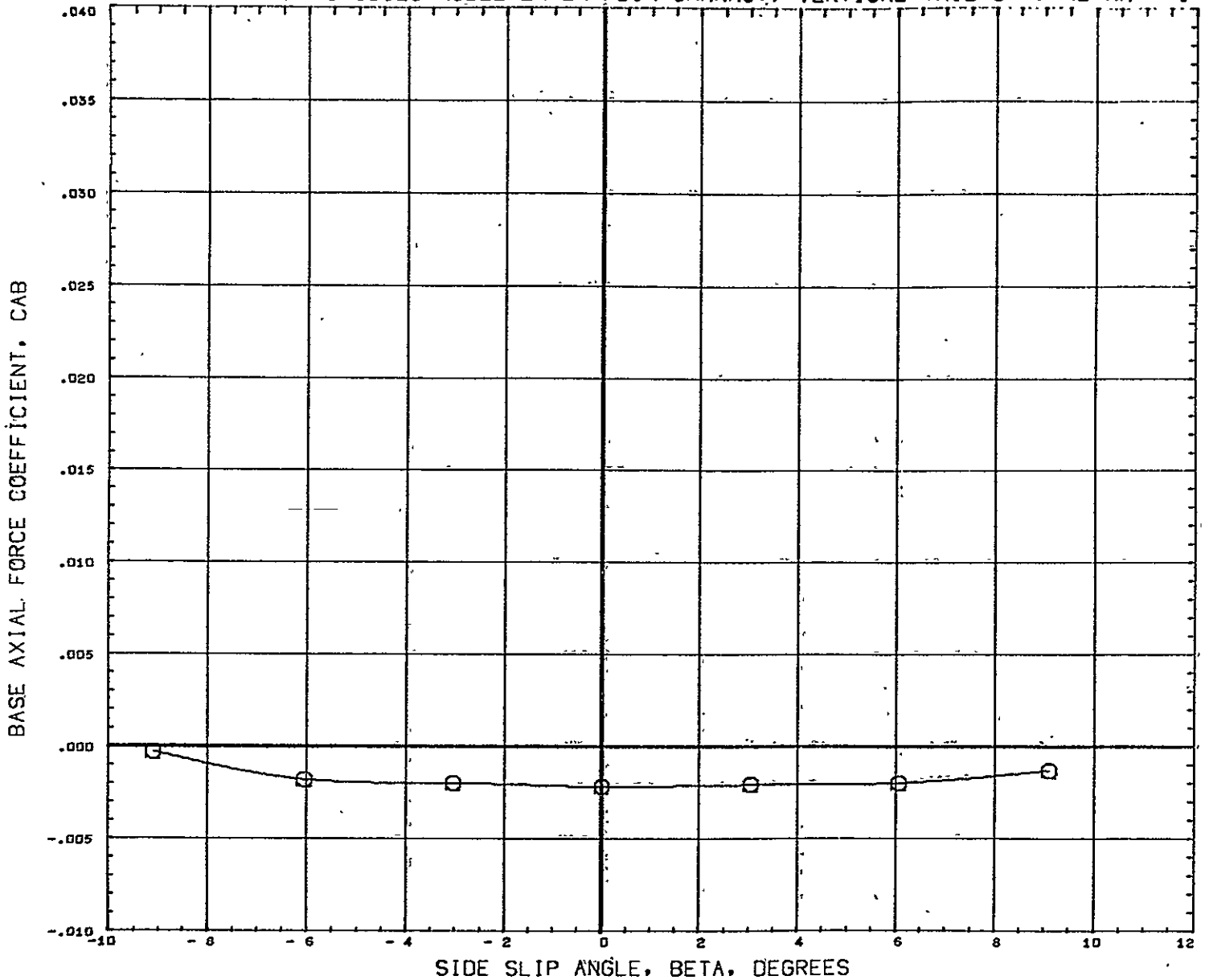
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, VERTICAL TAIL OFF, ALPHA = 0



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVN3	REFERENCE INFORMATION
(A4151X)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000			0.000	SREF 9.0250 SQ. IN
(A4114X)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000			0.000	LREF 6.1420 INCHES
(A4116X)	MSFC TWT 498 MSFC/HREC ORBITER	0.000	0.000	0.000	0.000	BREF 6.1420 INCHES
						XHRP 3.9950 INCHES
						YHRP 0.0000 INCHES
						ZHRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.599

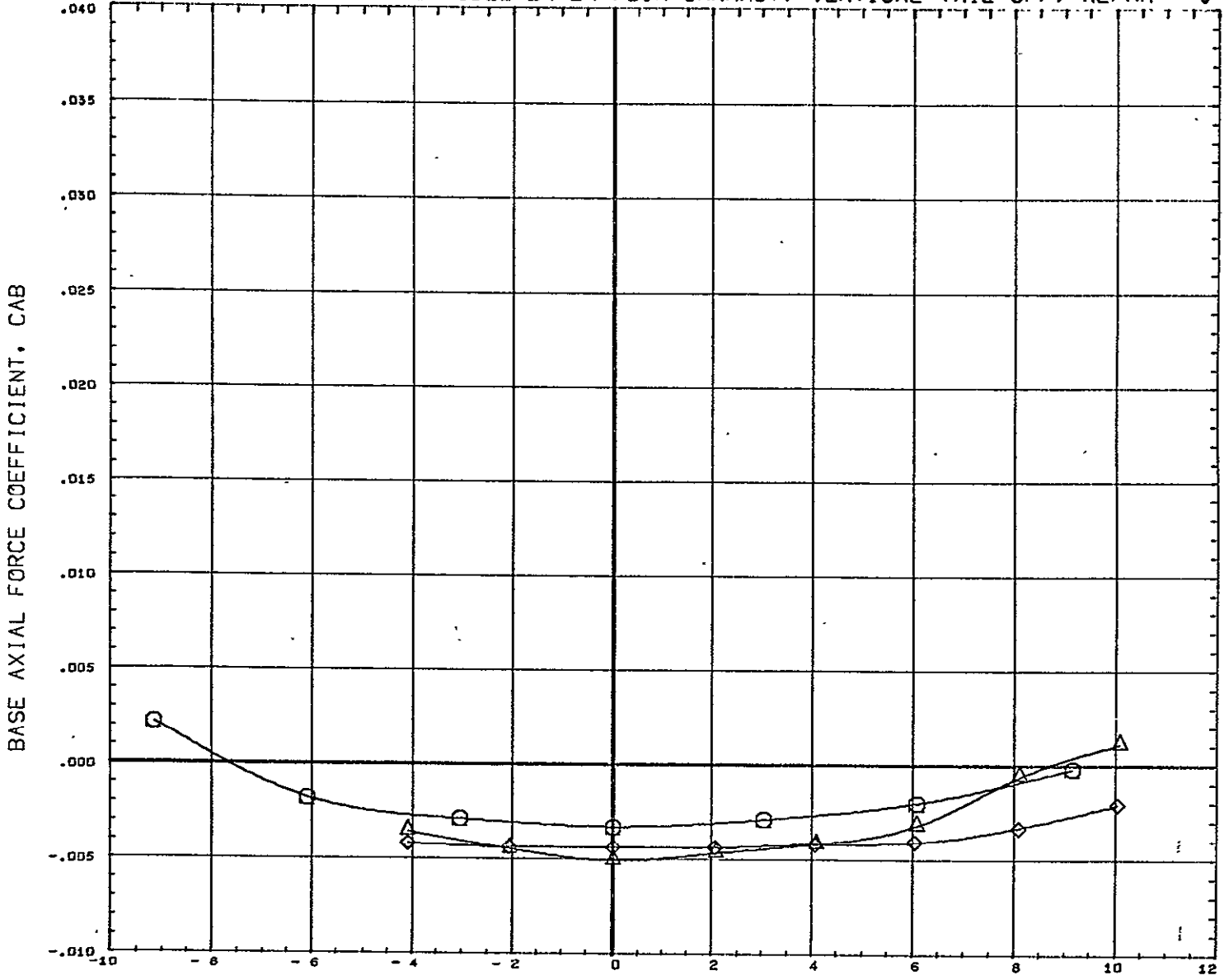
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, VERTICAL TAIL OFF, ALPHA = 0



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVNS	REFERENCE INFORMATION
(A4101X)	MSFC TWT 498 MSFC/LMSC ORBITER 02W2V4D2E3R2	0.000		0.000	0.000	SREF 9.0250 SQ. IN
(A4114X)	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	0.000		0.000	LREF 6.1420 INCHES
(A4116X)	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000			0.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.704

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, VERTICAL TAIL OFF, ALPHA = 0

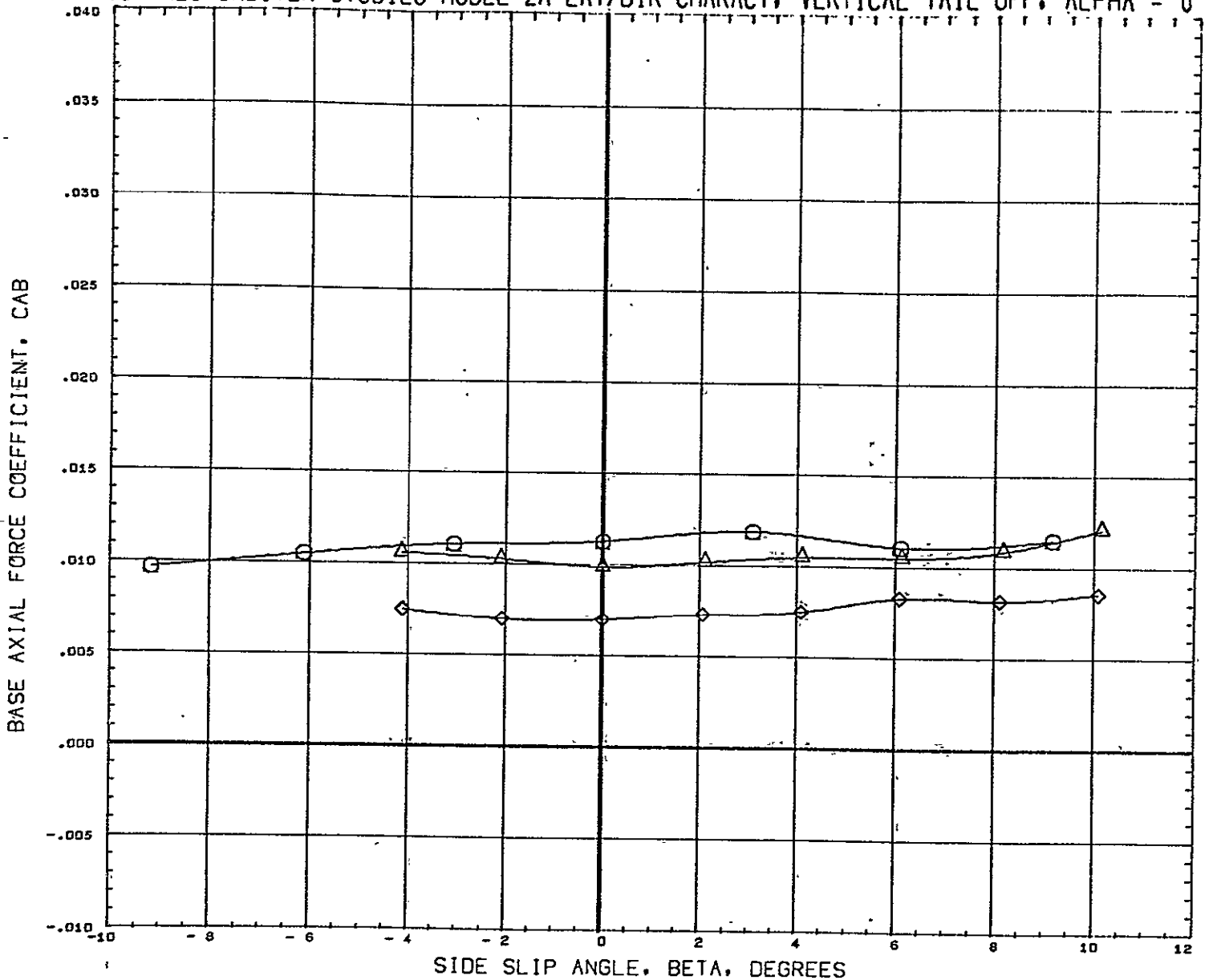


SIDE SLIP ANGLE, BETA, DEGREES

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVNS	REFERENCE INFORMATION
(A4101X)	MSFC TWT 498 MSFC/LMSC ORBITER; B2W2V4D2E3R2	0.000		0.000	0.000	SREF 9.0250 SQ, IN
(A4114X)	MSFC TWT 498 MSFC/LMSC ORBITER; B2W2V4D1E3R1	0.000	0.000		0.000	LREF 6.1426 INCHES
(A4116X)	MSFC TWT 498 MSFC/HREC ORBITER; B2W2V4E3	0.000			0.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.953

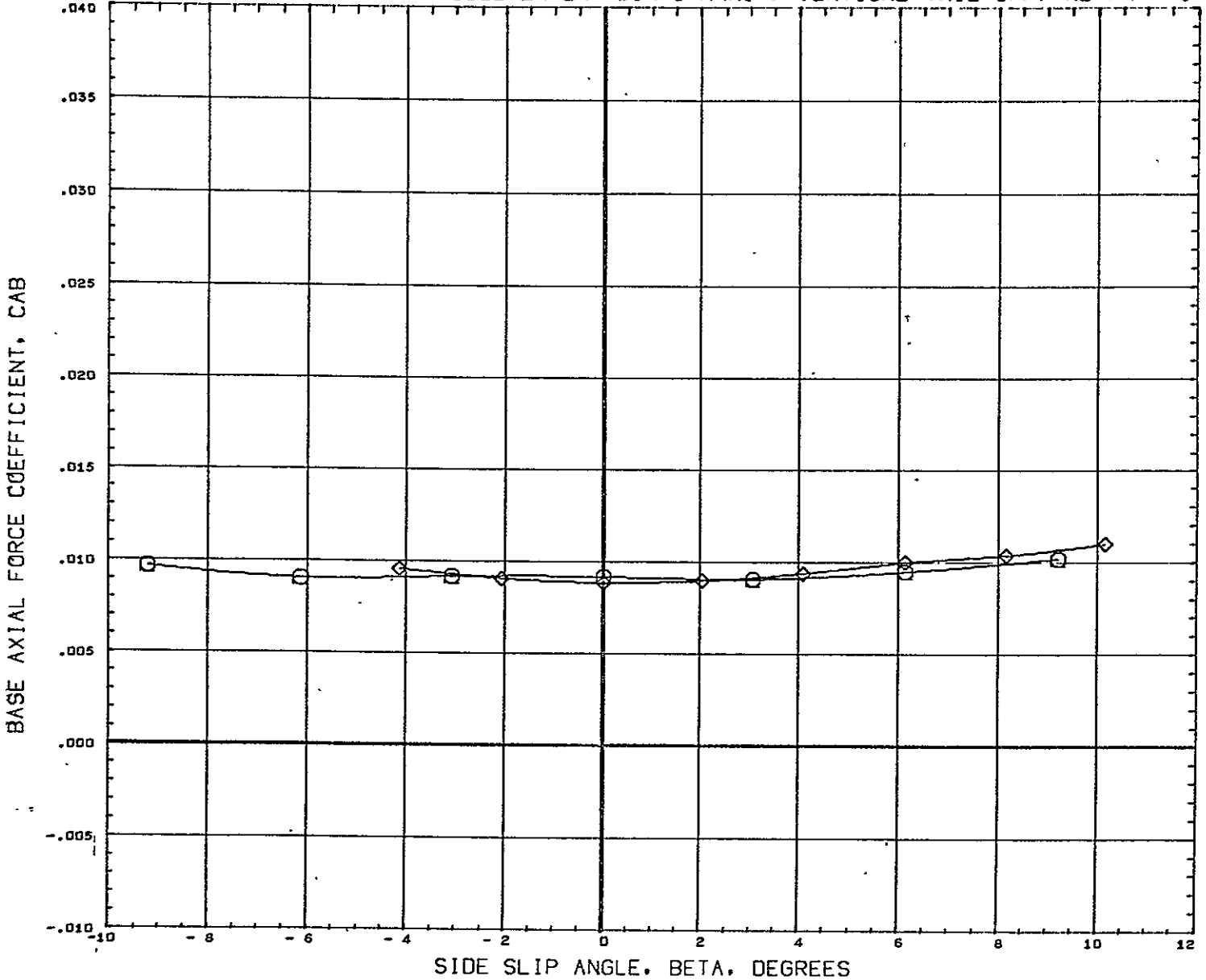
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, VERTICAL TAIL OFF, ALPHA = 0



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVN3	REFERENCE INFORMATION
(A4101X)	MSFC TWT 498 MSFC/LMSC ORBITER . B2W2V4D2E3R2	0.000		0.000	0.000	SREF 9.0250 SQ. IN
(A4114X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	0.000	0.000		0.000	LREF 6.1420 INCHES
(A4116X)	MSFC TWT 498 MSFC/HREC ORBITER B2W2V4E3	0.000			0.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.098

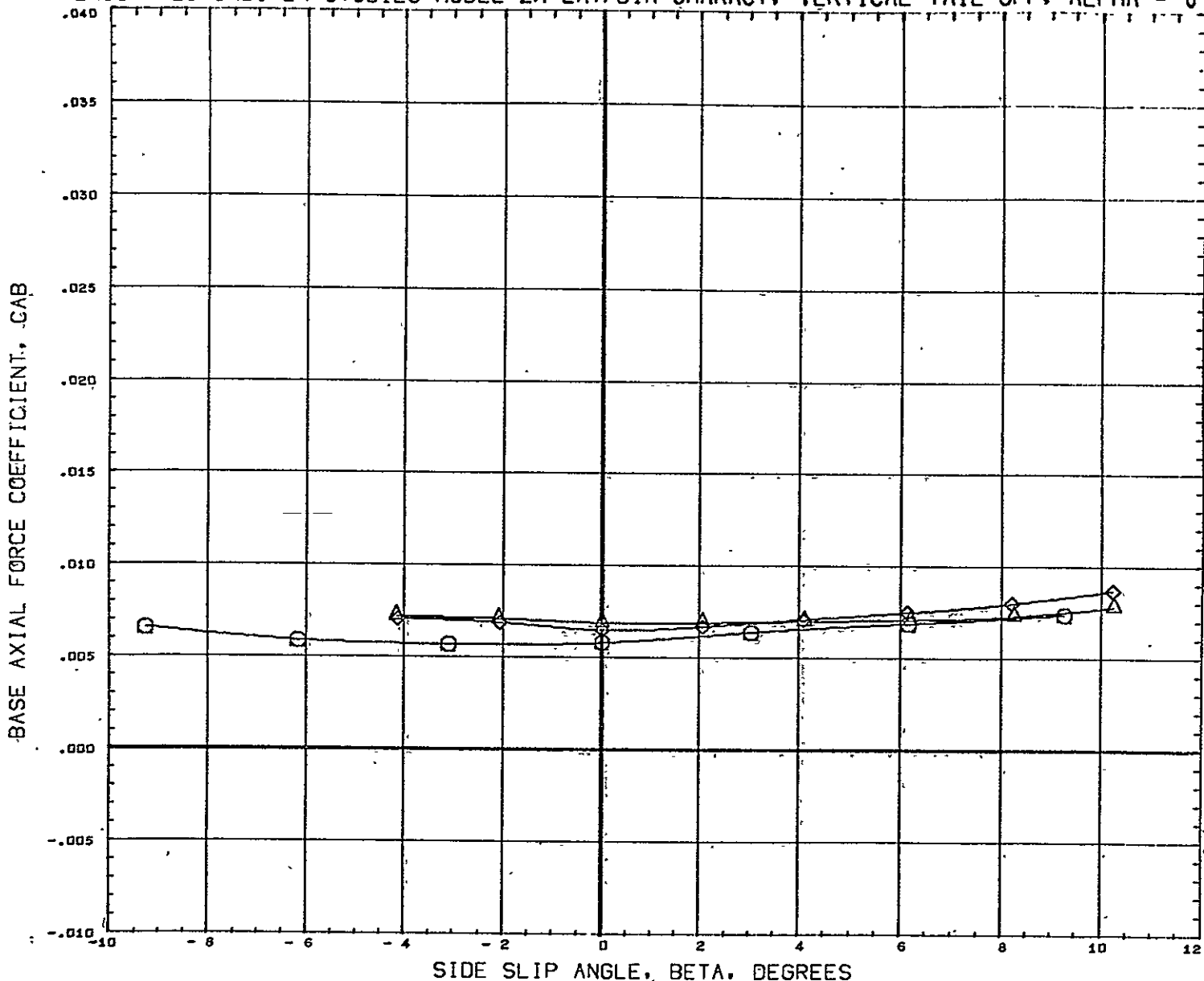
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, VERTICAL TAIL OFF, ALPHA = 0



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVN3	REFERENCE INFORMATION	
(A4101X)	MSFC TWT, 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000		0.000	0.000	SREF	9.0250 SQ. IN
(A4114X)	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	0.000		0.000	LREF	6.1420 INCHES
(A4116X)	MSFC TWT 498 MSFC/HREC ORBITER B2W2V4E3	0.000			0.000	BREF	6.1420 INCHES
						XMRP	3.9950 INCHES
						YMRP	0.0000 INCHES
						ZMRP	0.1350 INCHES
						SCALE	0.0033 SCALE

MACH 1.464

LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, VERTICAL TAIL OFF, ALPHA = 0

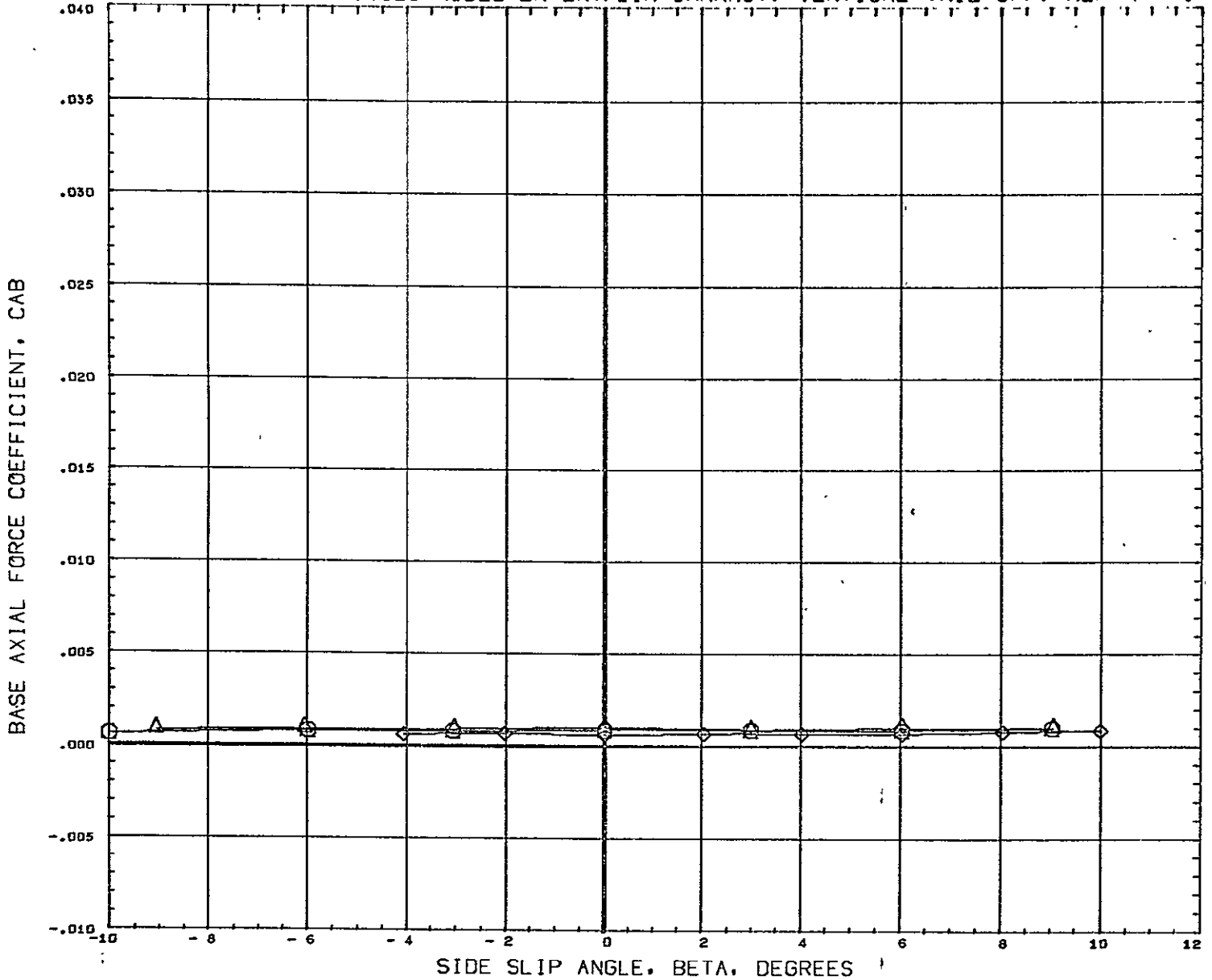


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEV3	REFERENCE INFORMATION
(A4101X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000		0.000	0.000	SREF 9.0250 SQ. IN
(A4114X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	0.000	0.000		0.000	LREF 6.1420 INCHES
(A4116X)	MSFC TWT 498 MSFC/HREC ORBITER B2W2V4E3	0.000			0.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.960



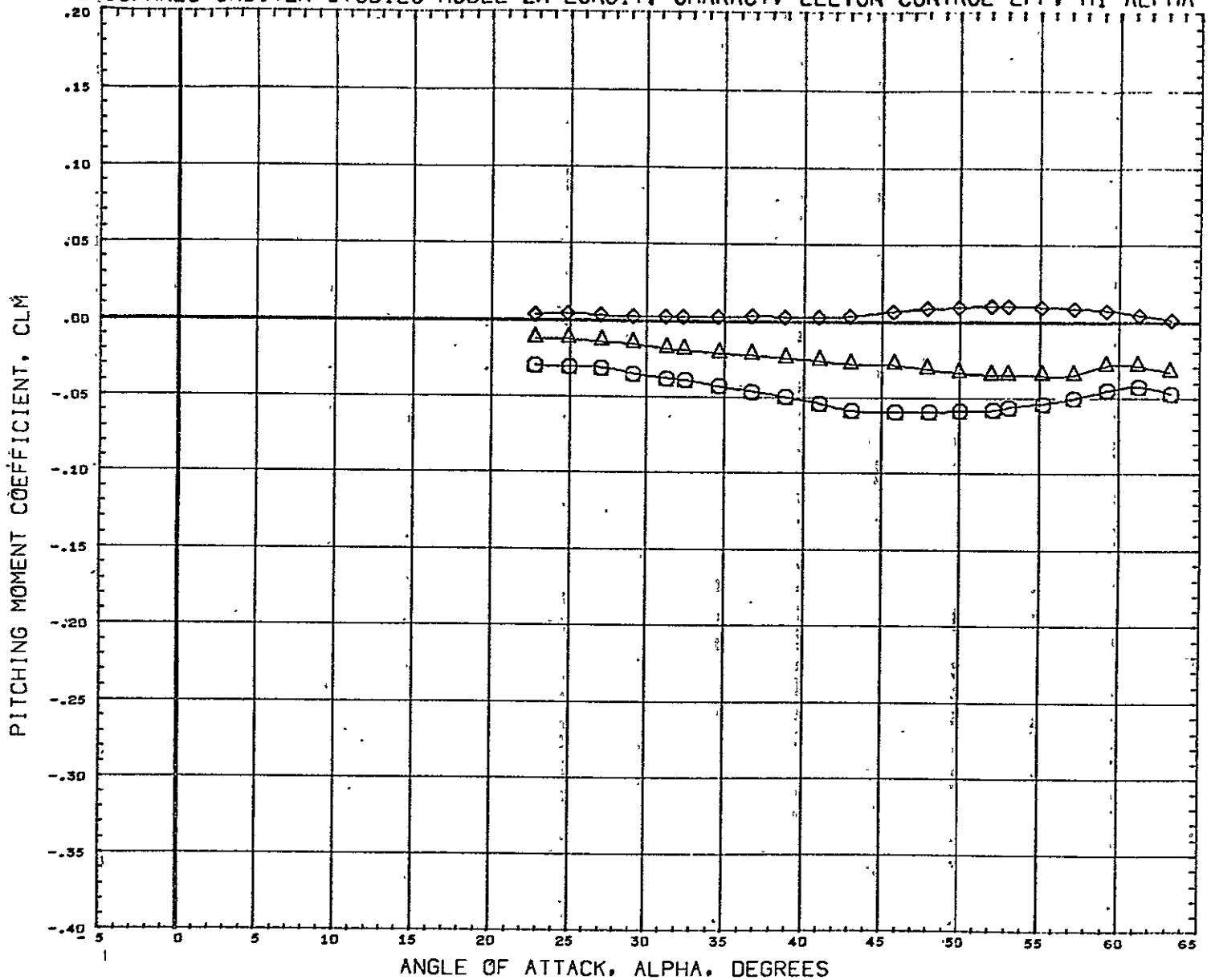
LMSC/HREC ORBITER STUDIES-MODEL 2A-LAT/DIR CHARACT, VERTICAL TAIL OFF, ALPHA = 0



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	RUDER1	RUDER2	ELEVNS	REFERENCE INFORMATION
(A4110X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000		0.000	0.000	SREF 9.0250 SQ. IN
(A4114X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	0.000	0.000		0.000	LREF 6.1420 INCHES
(A4116X)	MSFC TWT 498 MSFC/HREC ORBITER B2W2V4E3	0.000			0.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 4.960

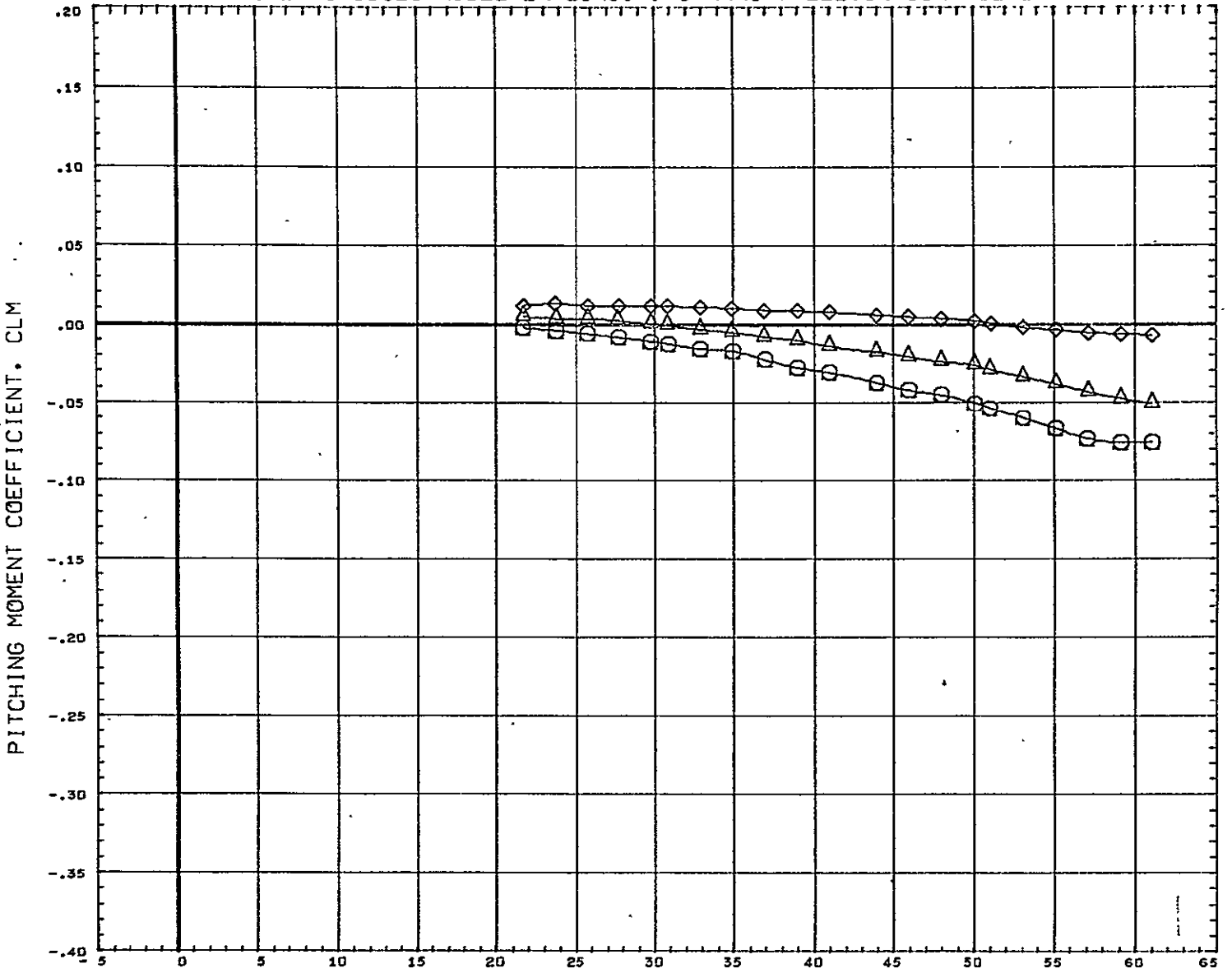
LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT. CHARACT. ELEVON CONTROL EFF. HI ALPHA



SYMBOL	ELEV3	PARAMETRIC VALUES				DATA SOURCE				REFERENCE INFORMATION		
○	0.000	MACH	1.963	BETA	0.000	DATASET	ELEV3	DATASET	ELEV3	SREF	9.0250	SQ.IN
△	-10.000	RUDER2	0.000	STING	4.000	D41013	0.000	D41032	-10.000	LREF	6.1420	INCHES
◇	-20.000					D41041	-20.000			BREF	6.1420	INCHES
										XMRP	3.9950	INCHES
										YMRP	0.0000	INCHES
										ZMRP	0.1350	INCHES
										SCALE	0.0033	SCALE

DATA HIST. CODE #G#E

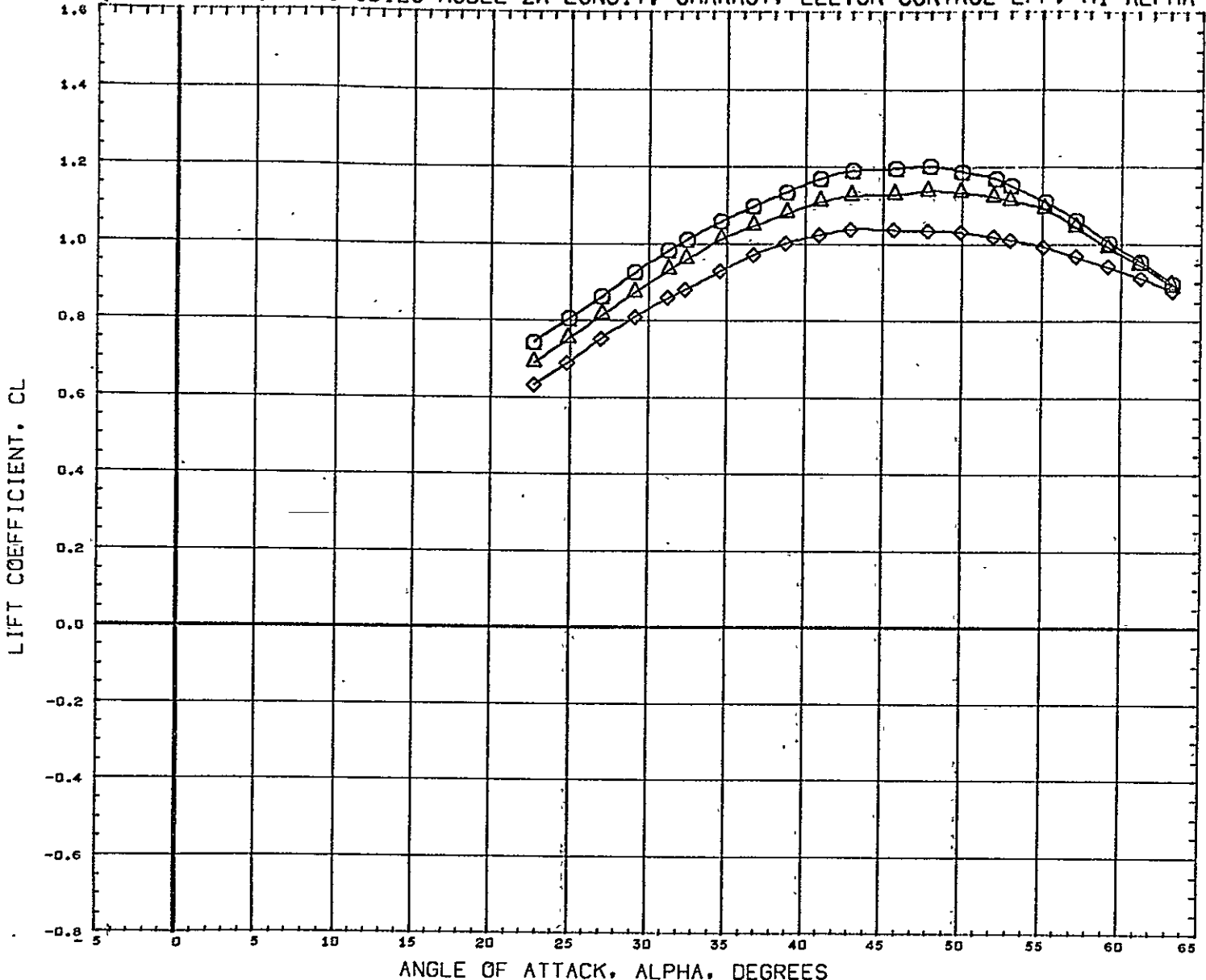
LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT. CHARACT, ELEVON CONTROL EFF, HI ALPHA



SYMBOL	ELEVNS	PARAMETRIC VALUES			DATA SOURCE			REFERENCE INFORMATION				
○	0.000	MACH	4.959	BETA	0.000	DATASET	ELEVNS	DATASET	ELEVNS	SREF	9.0250	sq. IN
△	-10.000	RUDER2	0.000	STING	4.000	D41013	0.000	D41032	-10.000	LREF	6.1420	INCHES
◇	-20.000					D41041	-20.000			BREF	6.1420	INCHES
										XMRP	3.9950	INCHES
										YMRP	0.0000	INCHES
										ZMRP	0.1350	INCHES
										SCALE	0.0033	SCALE

DATA HIST. CODE \*6#E

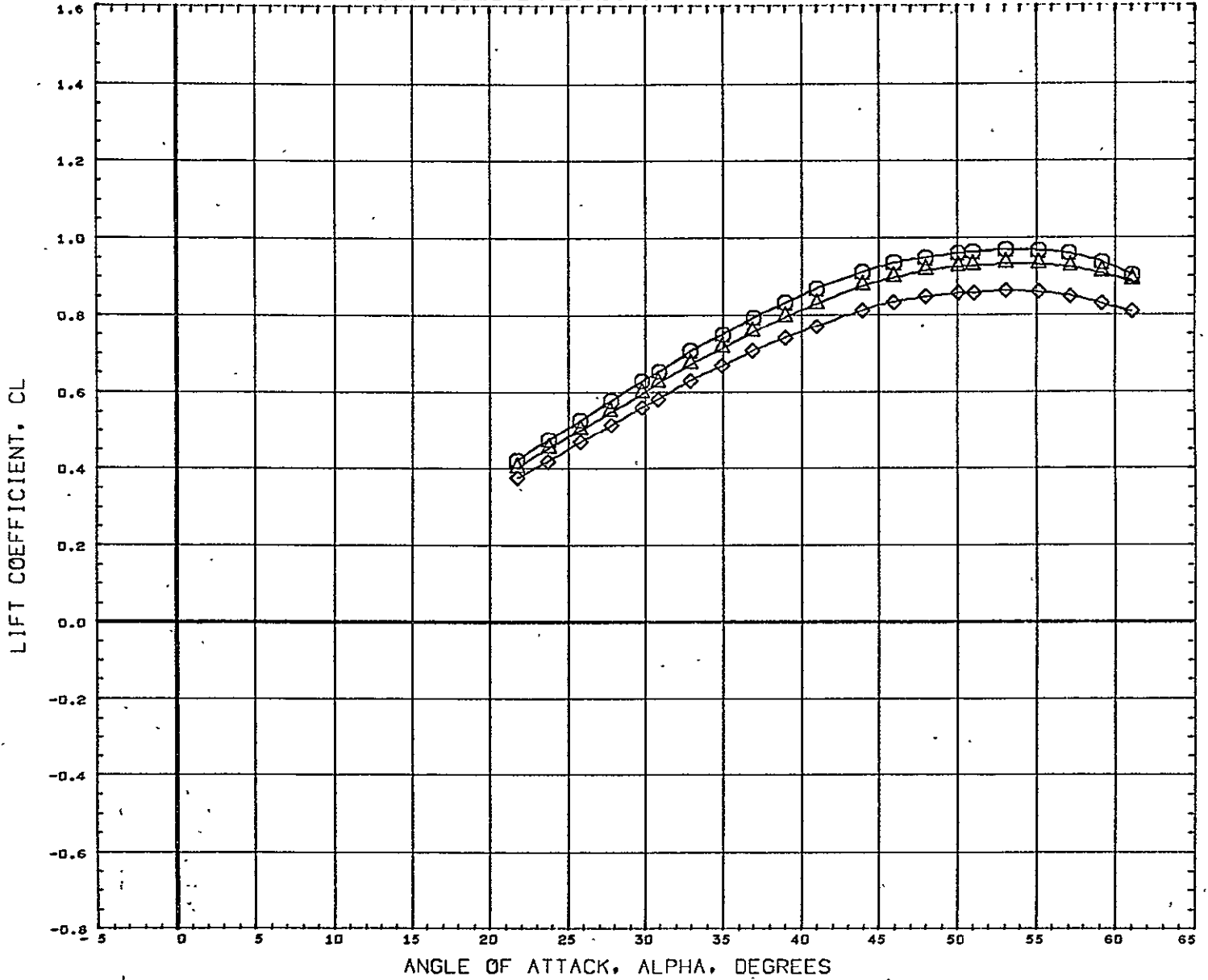
LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT. CHARACT. ELEVON CONTROL EFF. HI ALPHA



SYMBOL	ELEVNS	PARAMETRIC VALUES			DATA SOURCE			REFERENCE INFORMATION		
○	0.000	MACH	1.963	BETA	0.000	DATASET	ELEVNS	SREF	9.0250	SQ. IN
△	- 10.000	RUDER2	0.000	STING	4.000	D41013	0.000	LREF	6.1420	INCHES
◇	- 20.000					D41041	- 20.000	BREF	6.1420	INCHES
								XMRP	3.9950	INCHES
								YMRP	0.0000	INCHES
								ZMRP	0.1350	INCHES
								SCALE	0.0033	SCALE

DATA HIST. CODE #G#E

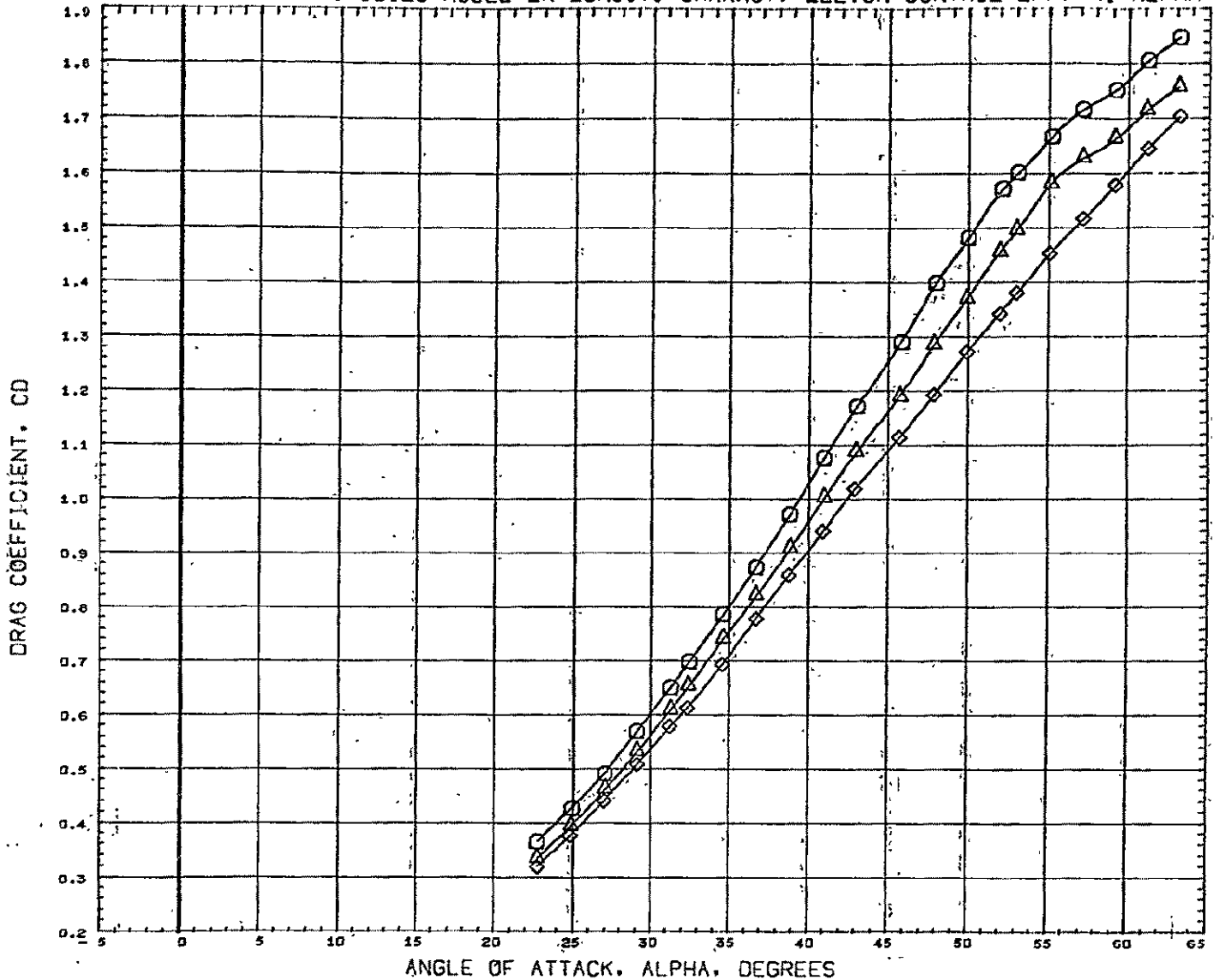
LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT. CHARACT, ELEVON CONTROL EFF, HI ALPHA



SYMBOL		ELEVN3		PARAMETRIC VALUES				DATA SOURCE				REFERENCE INFORMATION		
○		9.000		MACH	4.959	BETA	0.000	DATASET	ELEVN3	DATASET	ELEVN3	SREF	9.0250	SQ. IN
△		10.000		RUDER2	0.000	STING	4.000	D41013	0.000	D41032	- 10.000	LREF	6.1420	INCHES
◇		20.000						D41041	- 20.000			BREF	6.1420	INCHES
												XMRP	3.9950	INCHES
												YMRP	0.0000	INCHES
												ZMRP	0.1350	INCHES
												SCALE	0.0033	SCALE

DATA HIST. CODE #G#E

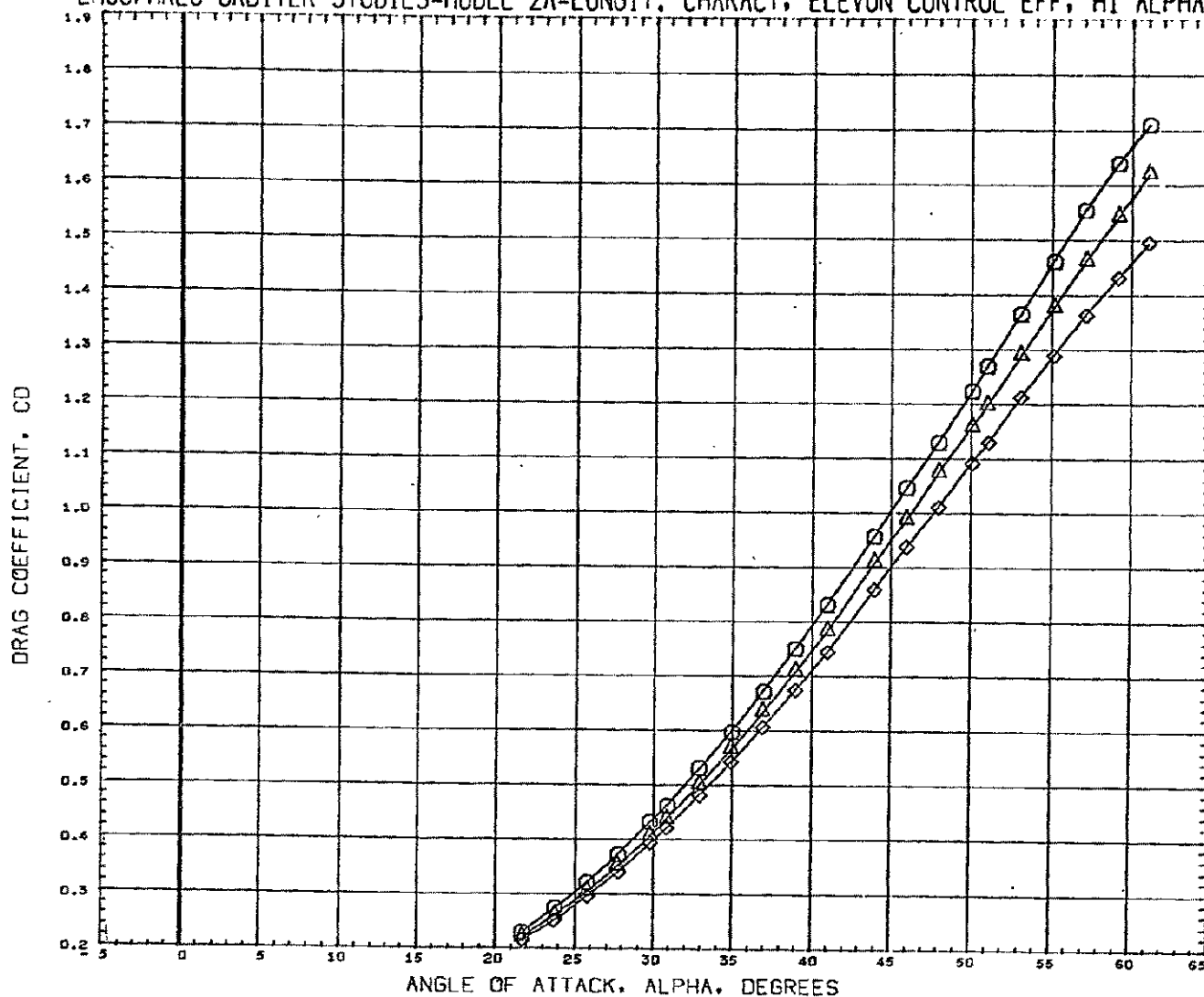
LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT. CHARACT. ELEVON CONTROL EFF. HI ALPHA



SYMBOL	ELEVNS	PARAMETRIC VALUES			DATA SOURCE			REFERENCE INFORMATION				
○	0.000	MACH	1.963	BETA	0.000	DATASET	ELEVNS	DATASET	ELEVNS1	SREF	9.0250	50. IN
△	- 10.000	RUDER2	0.000	STING	4.000	D41013	0.000	D41032	- 10.000	LREF	6.1420	INCHES
◇	- 20.500					D41041	- 20.500			BREF	6.1420	INCHES
										XNRP	3.9950	INCHES
										YNRP	0.0000	INCHES
										ZNRP	0.1350	INCHES
										SCALE	0.0033	SCALE

DATA HIST. CODE #G#E

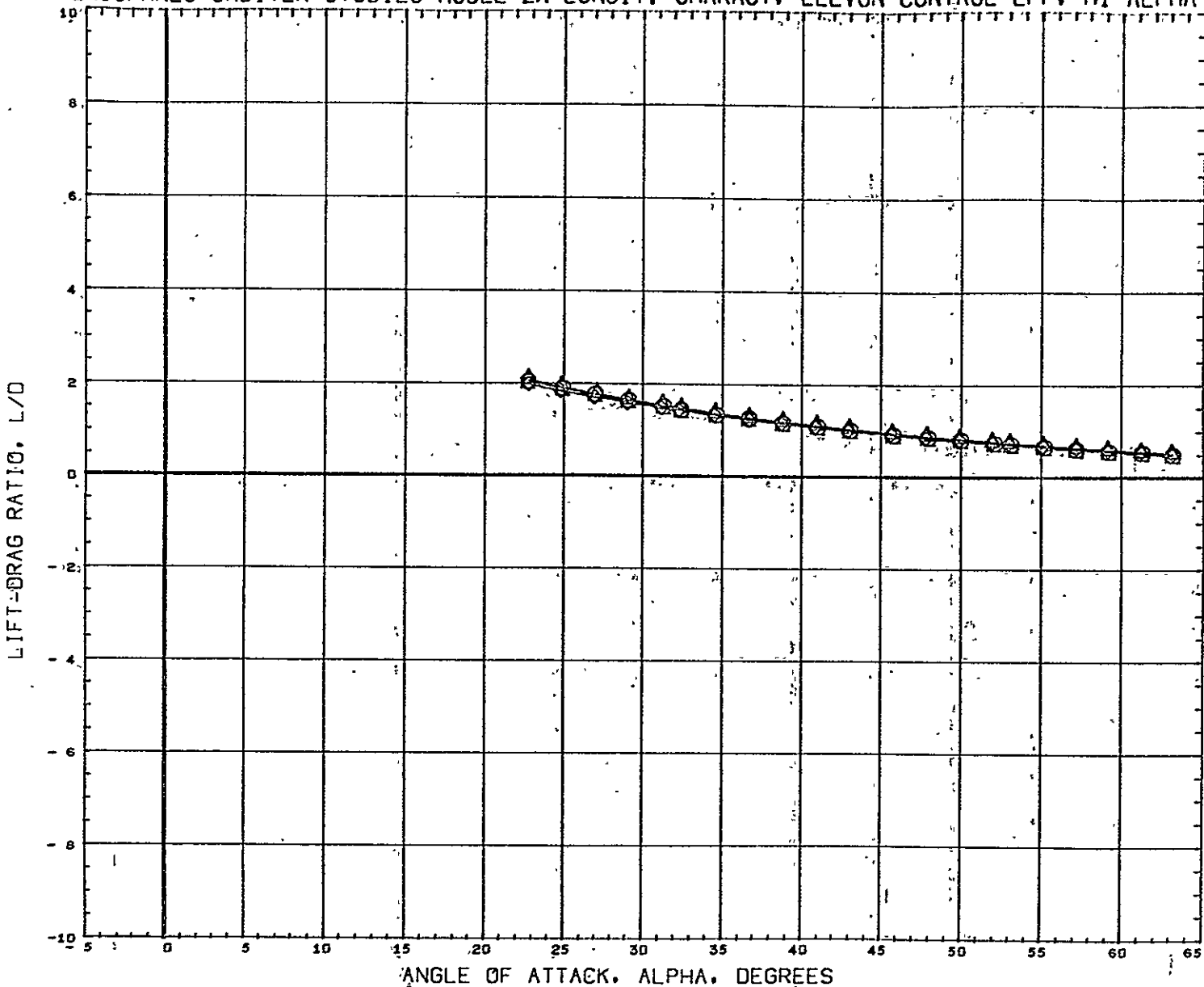
LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT. CHARACT. ELEVON CONTROL EFF, HI ALPHA



SYMBOL	ELEVNS	PARAMETRIC VALUES				DATA SOURCE				REFERENCE INFORMATION		
○	0.000	MACH	4.959	BETA	0.000	DATASET	ELEVNS	DATASET	ELEVNS	SREF	9.0250	SQ. IN
△	- 10.000	RUDER2	0.000	STING	4.000	D41013	0.000	D41032	- 10.000	LREF	6.1420	INCHES
◇	- 20.000					D41041	- 20.000			BREF	6.1420	INCHES
										XREF	3.9950	INCHES
										YREF	0.0000	INCHES
										ZREF	0.1350	INCHES
										SCALE	0.0033	SCALE

DATA HIST. CODE #64E

LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT. CHARACT. ELEVON CONTROL EFF. HI ALPHA



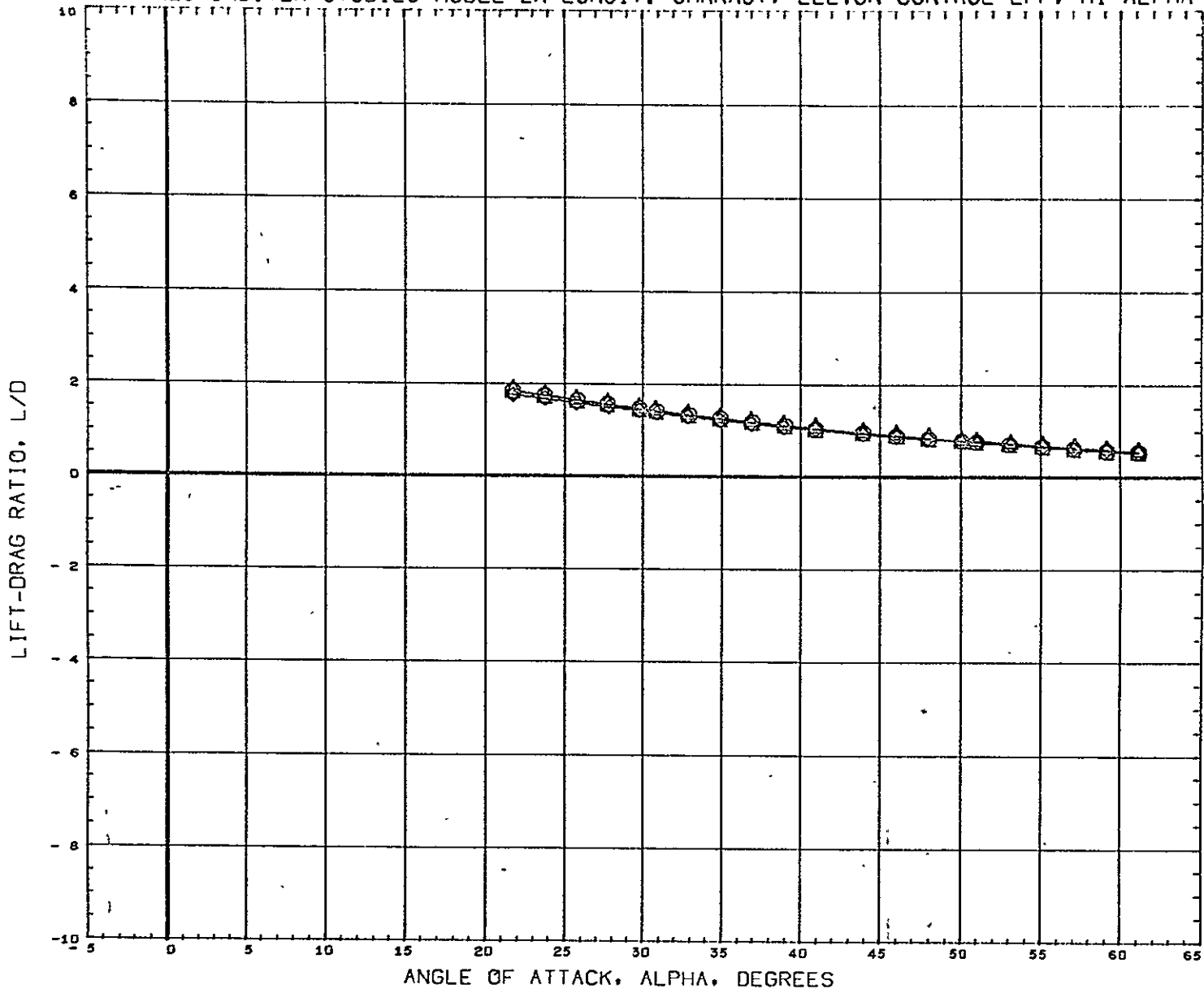
ANGLE OF ATTACK, ALPHA, DEGREES

SYMBOL		ELEVON3		PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION		
○		0.000	MACH	1.963	BETA	0.000	DATASET	ELEVON3	DATASET	ELEVON3	SREF	9.0250	SQ. IN
△		- 10.000	RUDER2	0.000	STING	4.000	D41013	0.000	D41032	- 10.000	LREF	6.1420	INCHES
◇		- 20.000					D41041	- 20.000			BREF	6.1420	INCHES
											XMRP	3.9950	INCHES
											YMRP	0.0000	INCHES
											ZMRP	0.1350	INCHES
											SCALE	0.0033	SCALE

DATA HIST. CODE #G\*E

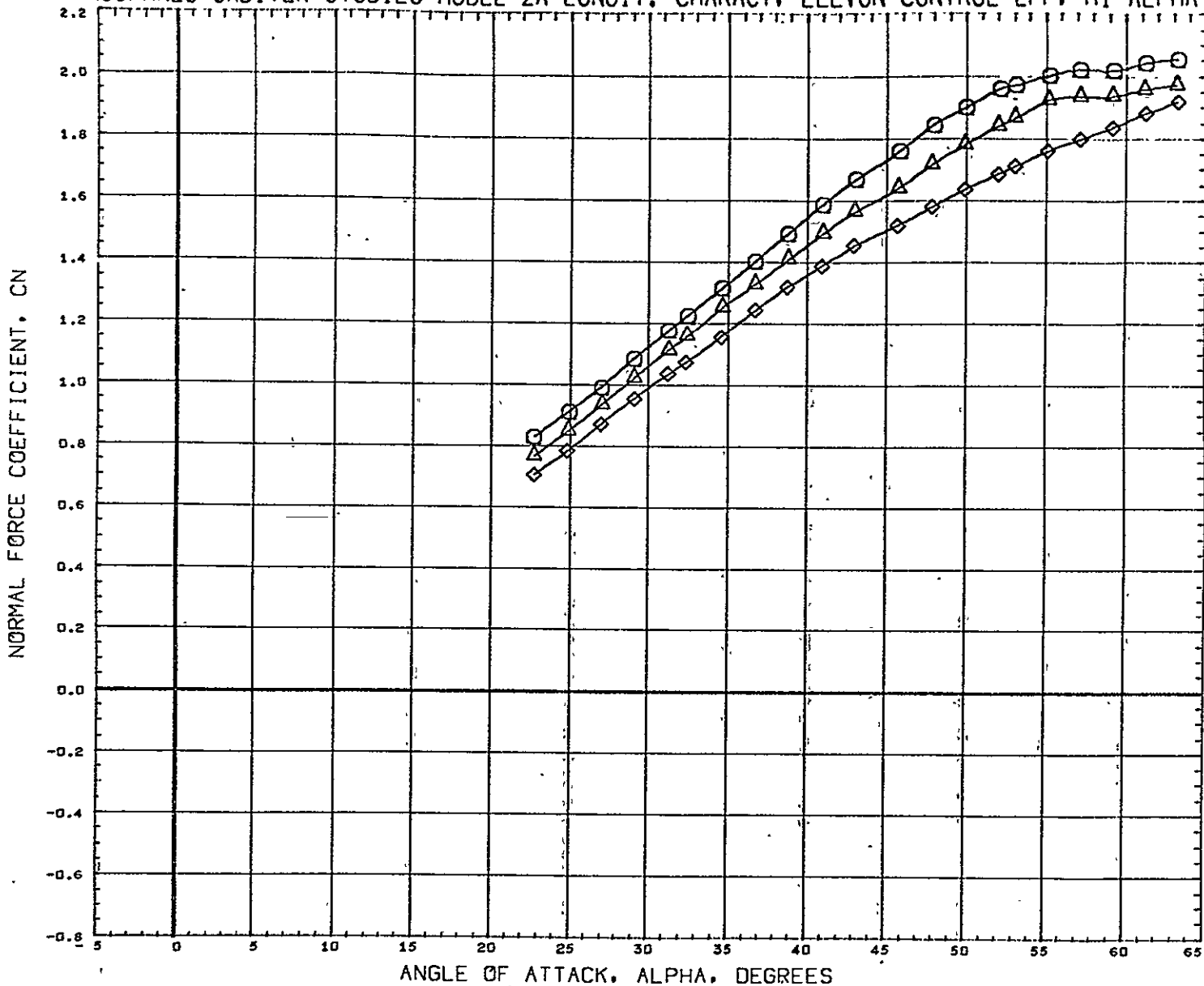


LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT. CHARACT. ELEVON CONTROL EFF. HI ALPHA



SYMBOL	ELEVN3	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
○	0.000	MACH 4.959 BETA 0.000	DATASET ELEVN3	SREF 9.0250 SQ. IN
△	- 10.000	RUDER2 0.000 STING 4.000	D41013 0.000	LREF 6.1420 INCHES
◇	- 20.000		D41041 - 20.000	BREF 6.1420 INCHES
				XMRP 3.9950 INCHES
				YMRP 0.0000 INCHES
				ZMRP 0.1350 INCHES
				SCALE 0.0033 SCALE

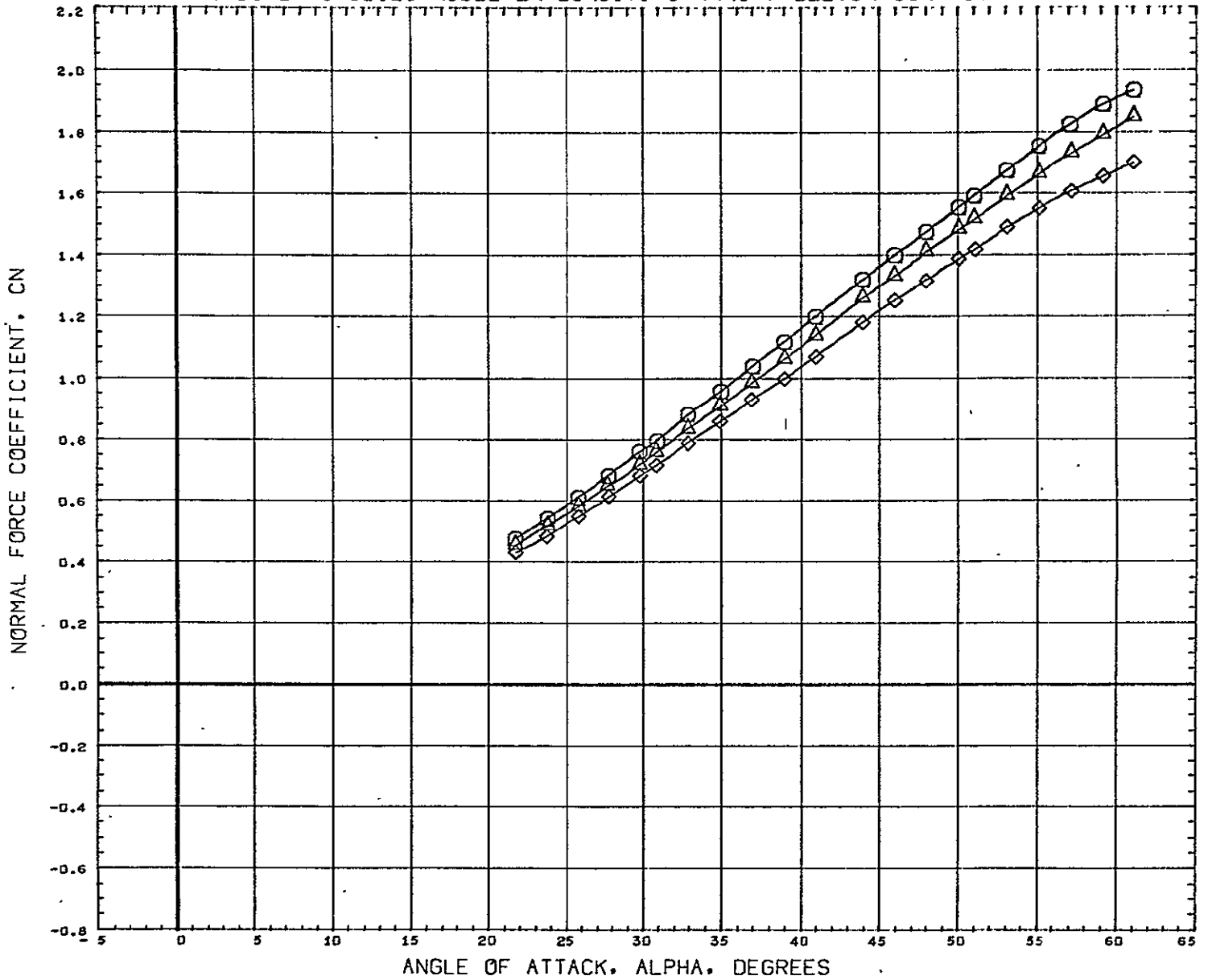
LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT. CHARACT. ELEVON CONTROL EFF. HI ALPHA



SYMBOL	ELEV3	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
○	0.000	MACH 1.963 BETA 0.000	DATASET ELEV3 0.000	SREF 9.0250 SQ. IN
△	- 10.000	RUDER2 0.000 STING 4.000	D41013 0.000 D41032 - 10.000	LREF 6.1420 INCHES
◇	- 20.000		D41041 - 20.000	BREF 6.1420 INCHES
				XMRP 3.9950 INCHES
				YMRP 0.0000 INCHES
				ZMRP - 0.1350 INCHES
				SCALE 0.0033 SCALE

DATA HIST. CODE #6#E

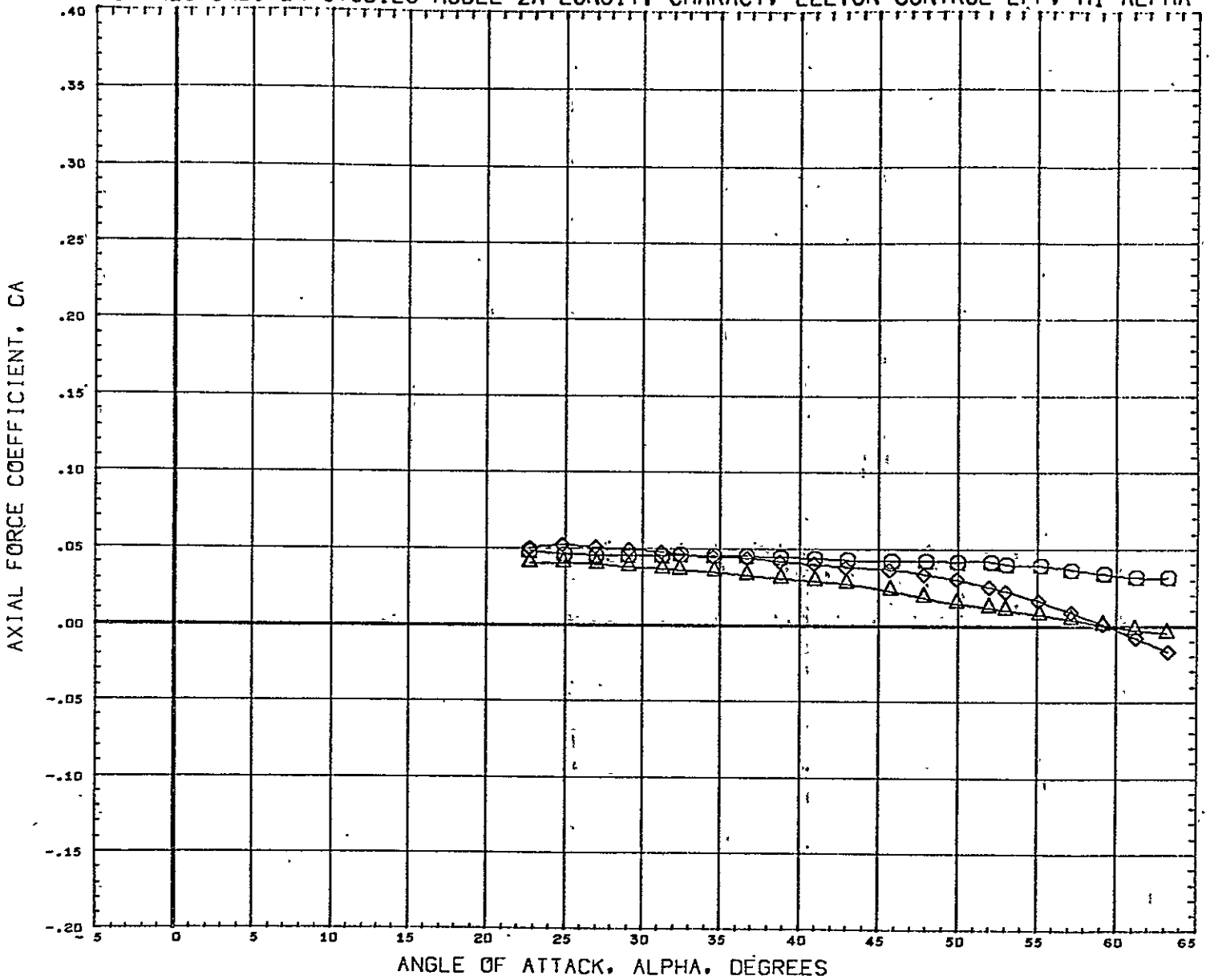
LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT. CHARACT. ELEVON CONTROL EFF. HI ALPHA



SYMBOL	ELEVNS	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
○	0.000	MACH 4.959 BETA 0.000	DATASET ELEVNS 0.000	SREF 9.0250 SQ. IN
△	- 15.000	RUDER2 0.000 STING 4.000	D41013 0.000 D41032 - 10.000	LREF 6.1420 INCHES
◇	- 20.000		D41041 - 20.000	BREF 6.1420 INCHES
				XMRP 3.9950 INCHES
				YMRP 0.0000 INCHES
				ZMRP - 0.1350 INCHES
				SCALE 0.0033 SCALE

DATA HIST. CODE \*G\*E

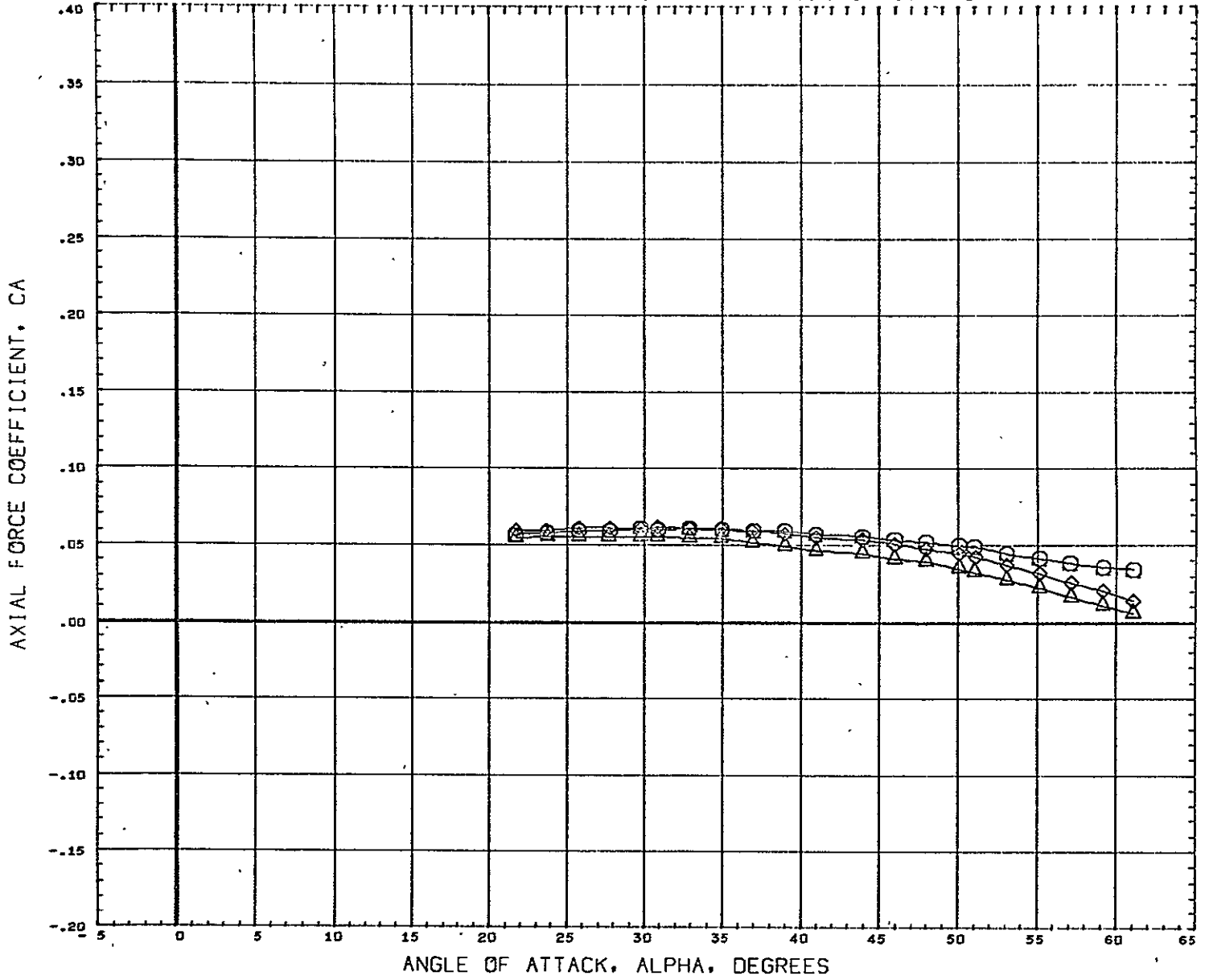
LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT. CHARACT. ELEVON CONTROL EFF. HI ALPHA



SYMBOL	ELEVNS	MACH	PARAMETRIC VALUES		DATA SOURCE			REFERENCE INFORMATION			
○	0.000	1.963	BETA	0.000	D41013	0.000	D41032	- 10.000	SREF	9.0250	SQ. IN
△	- 19.000	0.000	STING	4.000	D41013	0.000	D41032	- 10.000	LREF	6.1420	INCHES
◇	- 20.000				D41041	- 20.000			BREF	6.1420	INCHES
									XMRP	3.9950	INCHES
									YMRP	0.0000	INCHES
									ZMRP	0.1350	INCHES
									SCALE	0.0033	SCALE

DATA HIST. CODE #0#E

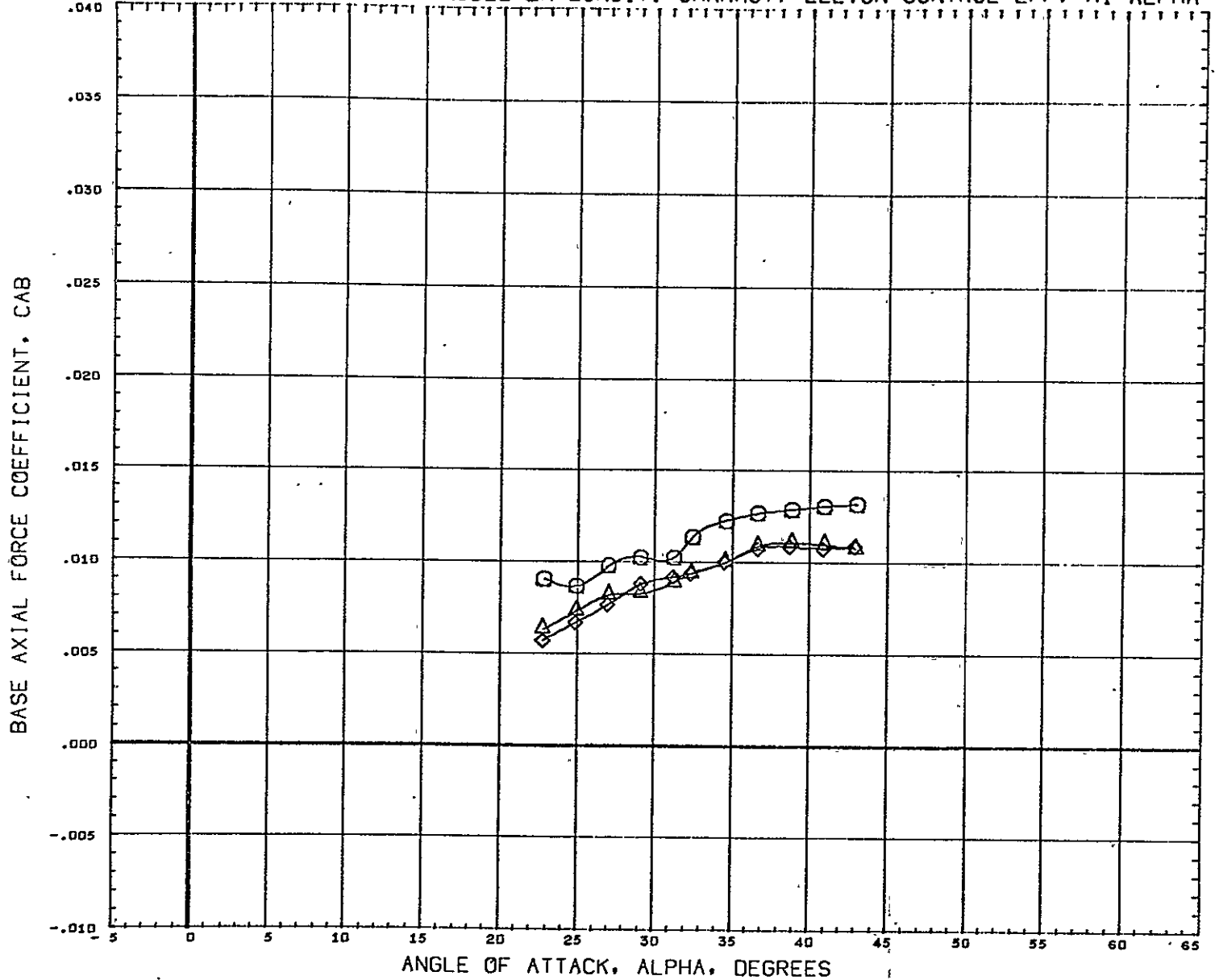
LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT. CHARACT, ELEVON CONTROL EFF, HI ALPHA



SYMBOL	ELEV3	PARAMETRIC VALUES			DATA SOURCE			REFERENCE INFORMATION		
○	0.000	MACH	4.959	BETA	0.000	DATASET	ELEV3	SREF	9.0250	SQ. IN
△	-10.000	RUDER2	0.000	STING	4.000	D41013	0.000	LREF	6.1420	INCHES
◇	-20.000					D41041	-20.000	BREF	6.1420	INCHES
								XMRP	3.9950	INCHES
								YMRP	0.0000	INCHES
								ZMRP	0.1350	INCHES
								SCALE	0.0033	SCALE

DATA HIST. CODE \*G#E

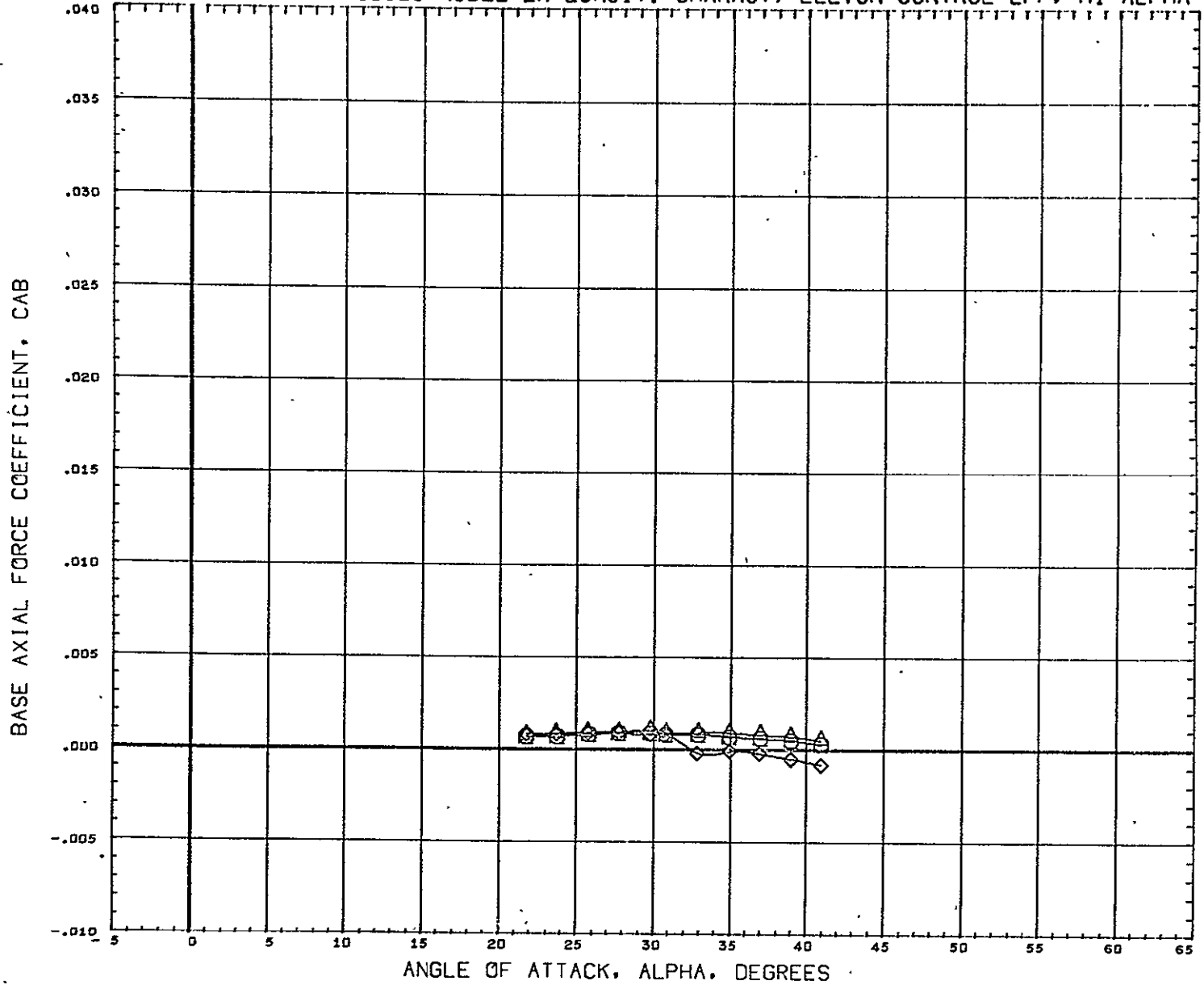
LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT. CHARACT, ELEVON CONTROL EFF. HI ALPHA



SYMBOL	ELEVNS	PARAMETRIC VALUES			DATA SOURCE			REFERENCE INFORMATION				
○	0.000	MACH	1.963	BETA	0.000	DATASET	ELEVNS	DATASET	ELEVNS	-SREF	9.0250	sq. IN
△	-10.000	RUDER2	0.000	STING	4.000	J4101C	0.000	A4103C	-10.000	LREF	6.1420	INCHES
◇	-20.000					A4104C	-20.000			BREF	6.1420	INCHES
										XMRP	3.9950	INCHES
										YMRP	0.0000	INCHES
										ZMRP	0.1350	INCHES
										SCALE	0.0033	SCALE

DATA HIST. CODE \*G

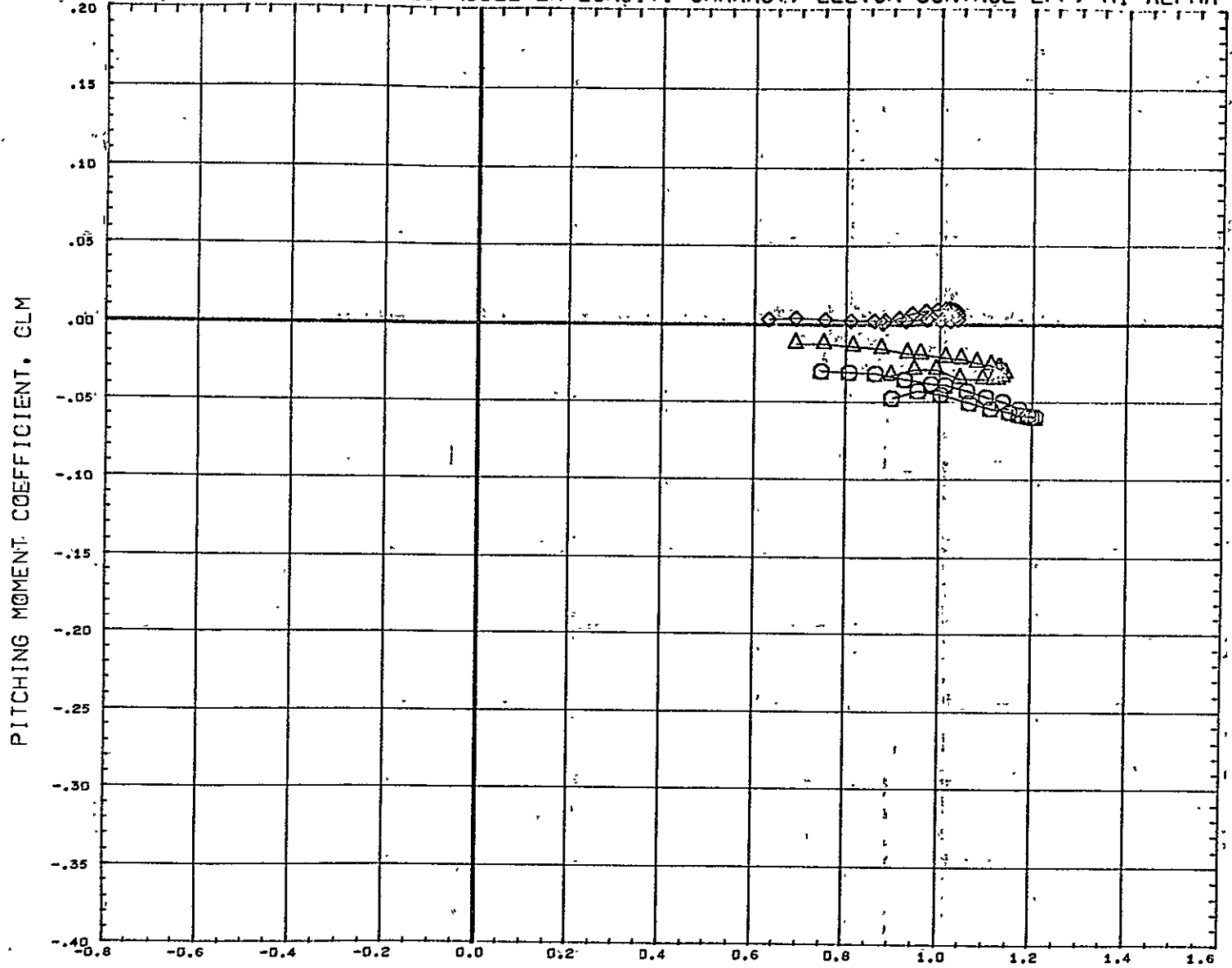
LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT. CHARACT, ELEVON CONTROL EFF, HI ALPHA



SYMBOL	ELEVON3	PARAMETRIC VALUES				DATA SOURCE				REFERENCE INFORMATION		
○	0.000	MACH	4.959	BETA	0.000	DATASET	ELEVON3	DATASET	ELEVON3	SREF	9.0250	SQ. IN
△	- 10.000	RUDEK2	0.000	STING	4.000	J4101C	0.000	A4103C	- 10.000	LREF	6.1420	INCHES
◇	- 20.000					A4104C	- 20.000			BREF	6.1420	INCHES
										XMRP	3.9950	INCHES
										YMRP	0.0000	INCHES
										ZMRP	0.1350	INCHES
										SCALE	0.0033	SCALE

DATA HIST. CODE #0

LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT. CHARACT. ELEVON CONTROL EFF. HI ALPHA

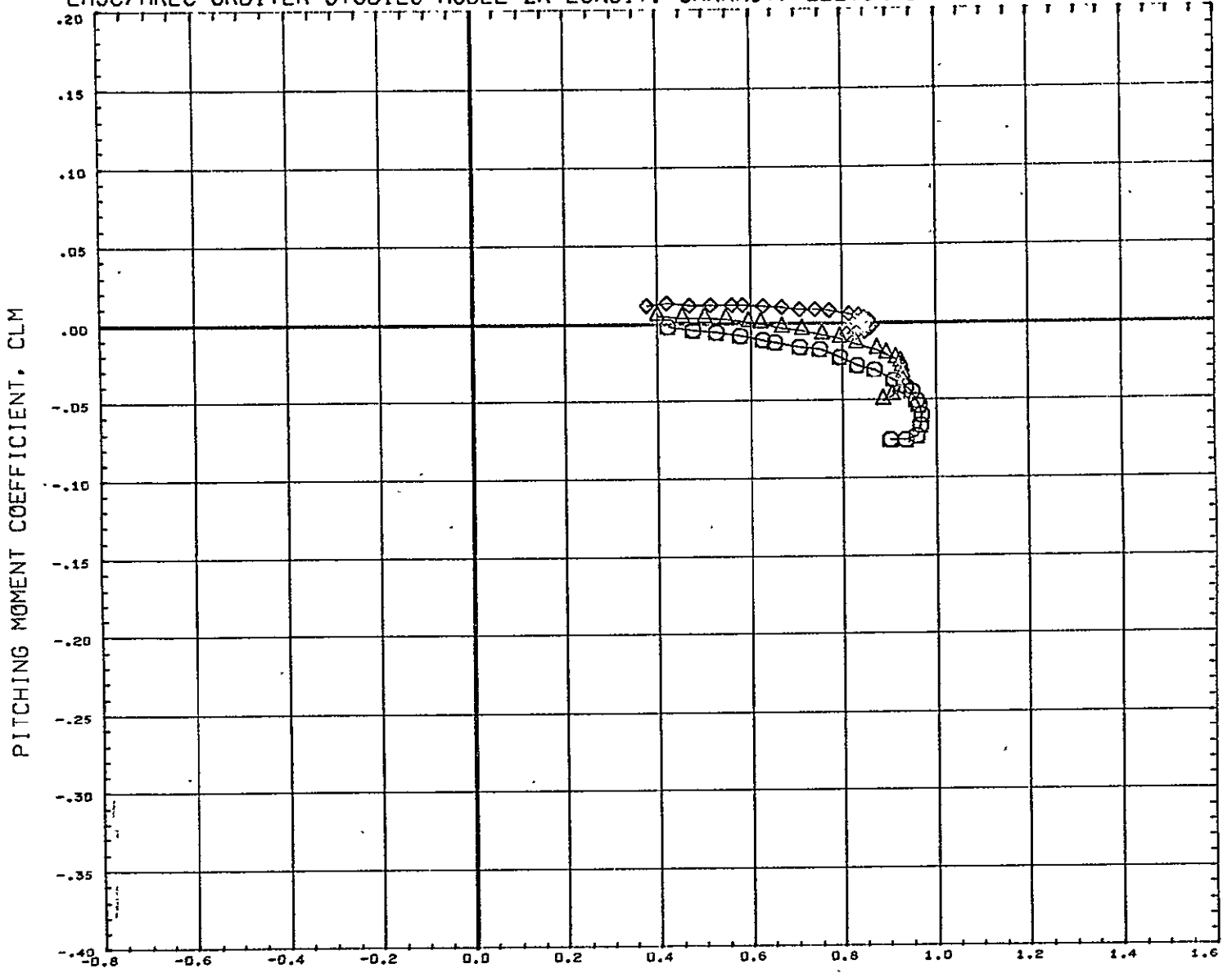


SYMBOL	ELEV3	PARAMETRIC VALUES		DATA SOURCE				REFERENCE INFORMATION		
		MACH	BETA	DATASET	ELEV3	DATASET	ELEV3	SREF	INCHES	SCALE
○	0.000	1.963	BETA	0.000	D41013	0.000	D41032	9.0250	6.1420	SCALE
△	- 10.000	0.000	STING	4.000	D41013	0.000	D41032	6.1420	6.1420	INCHES
◇	- 20.000				D41041	- 20.000		3.9950	0.0000	INCHES
								0.1350		INCHES
								0.0033		SCALE

DATA HIST. CODE #G4E



LMSC/HREC ORBITER STUDIES-MODEL 2A-LONGIT. CHARACT, ELEVON CONTROL EFF, HI ALPHA

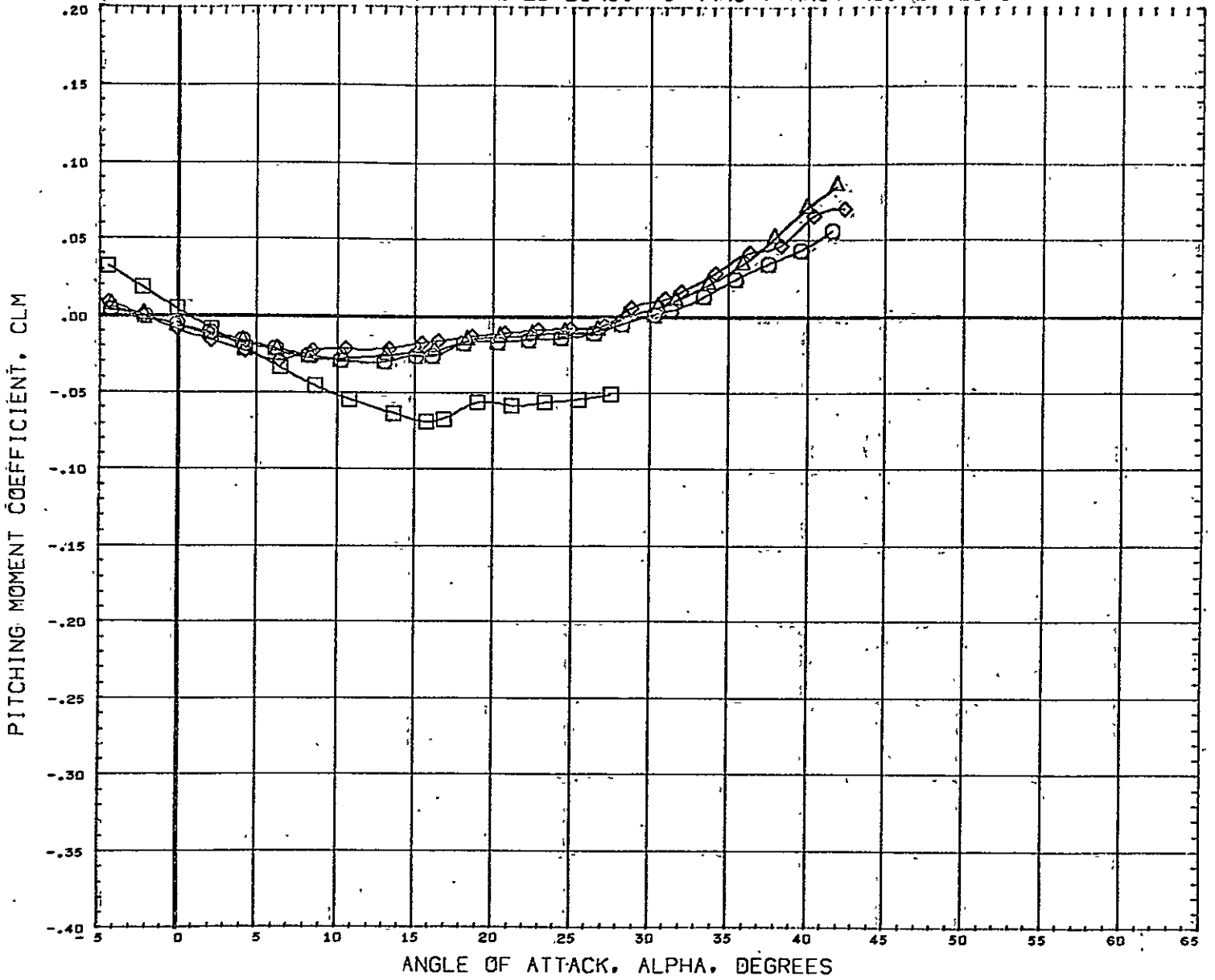


LIFT COEFFICIENT, CL

SYMBOL	ELEVNS	PARAMETRIC VALUES		DATA SOURCE				REFERENCE INFORMATION				
○	0.000	MACH	4.959	BETA	0.000	D41013	0.000	D41032	-10.000	SREF	9.0250	SQ.IN
△	-10.000	RUDER2	0.000	STING	4.000	D41041	-20.000			LREF	6.1420	INCHES
◇	-20.000									BREF	6.1420	INCHES
										XHRP	3.9950	INCHES
										YHRP	0.0000	INCHES
										ZHRP	0.1350	INCHES
										SCALE	0.0033	SCALE

DATA HIST. CODE #6#E

MSFC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, MACH NO. EFFECTS

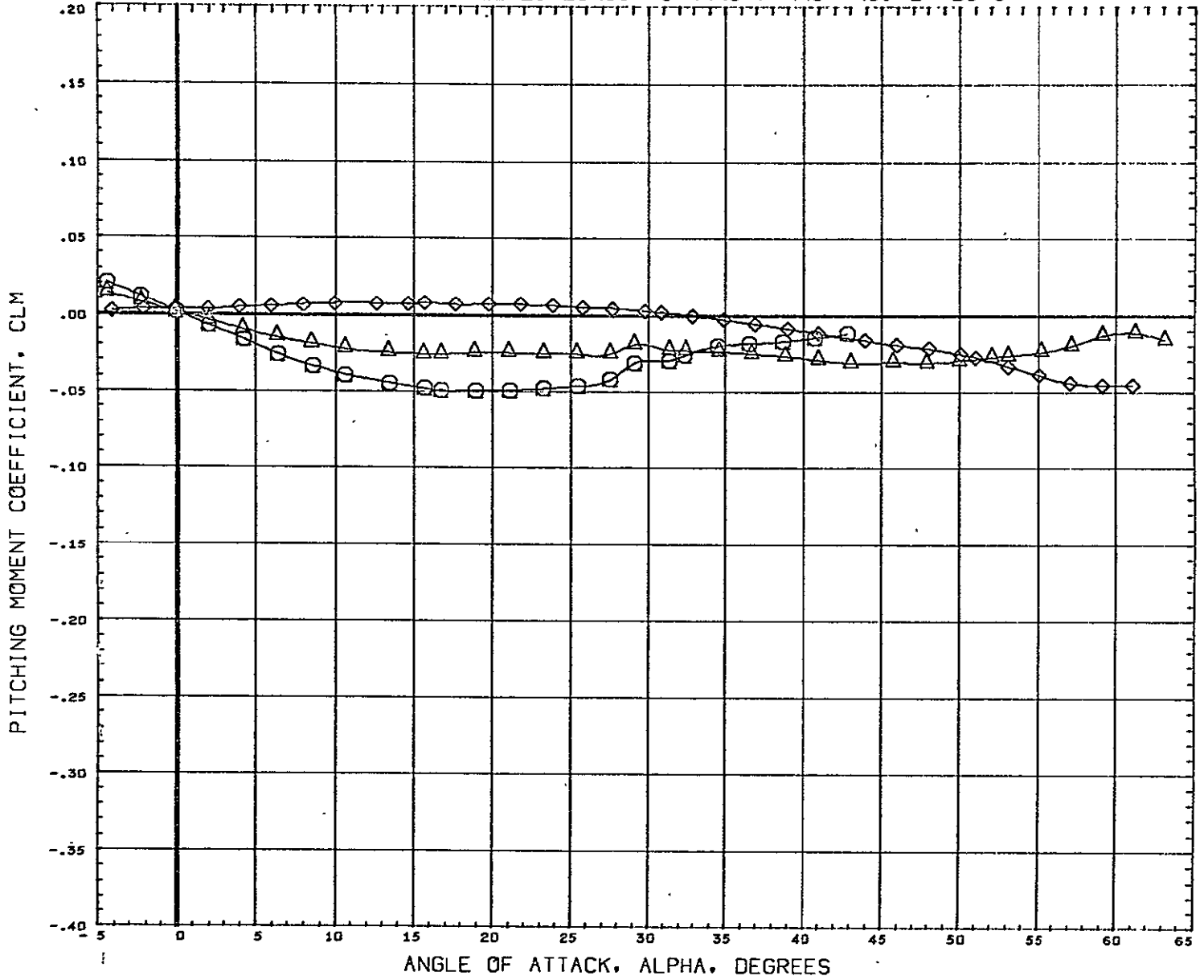


SYMBOL	MACH	PARAMETRIC VALUES			
○	0.596	BETA	0.000	ELEVN4	0.000
△	0.699	RUDER4	0.000	STING	4.000
◇	0.900				
□	1.099				

REFERENCE INFORMATION		
SREF	9.0250	sq. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XHRF	3.9950	INCHES
YHRF	0.0000	INCHES
ZHRF	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE \*G#E

# LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, MACH NO. EFFECTS

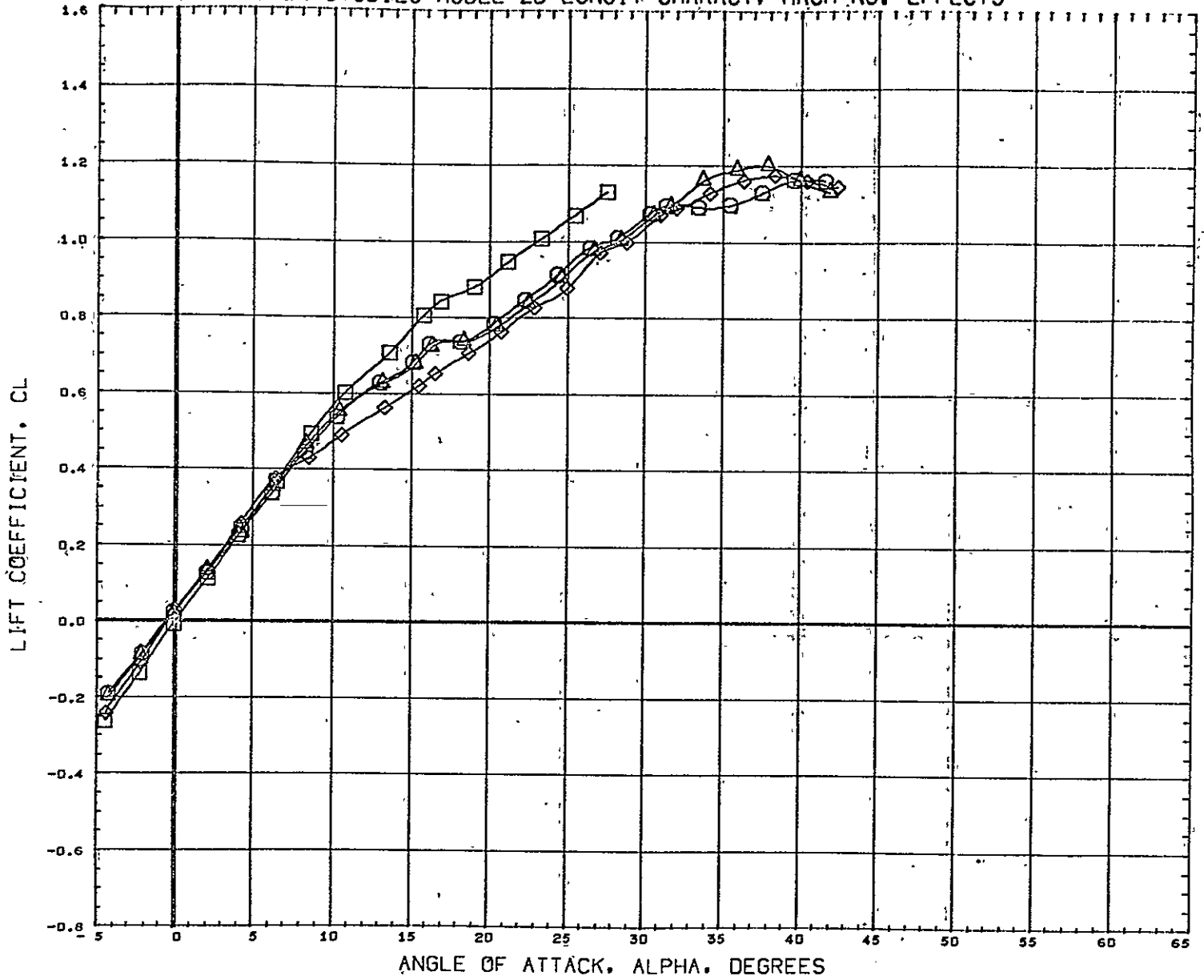


SYMBOL	MACH	PARAMETRIC VALUES			
○	1.461	BETA	0.000	ELEVN4	0.000
△	1.959	RUDER4	0.000	STING	4.500
◇	4.960				

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE \*6#E

MSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, MACH NO. EFFECTS

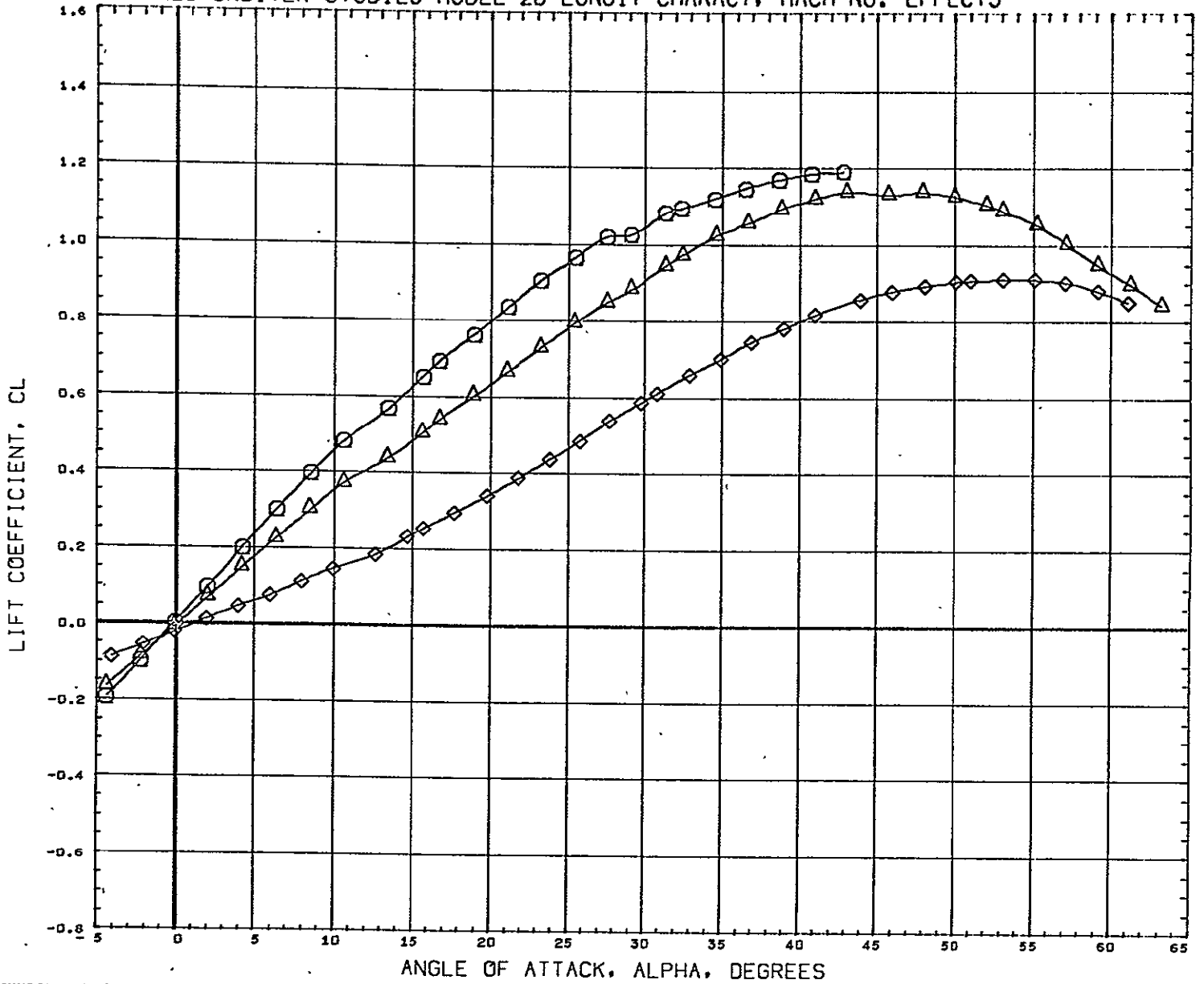


SYMBOL	MACH	PARAMETRIC VALUES			
○	0.596	BETA	0.000	ELEVN4	0.000
△	0.699	RUDER4	0.000	STING	4.000
◇	0.905				
□	1.099				

REFERENCE INFORMATION		
LREF	9.0250	sq. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE \*C\*E

# LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, MACH NO. EFFECTS

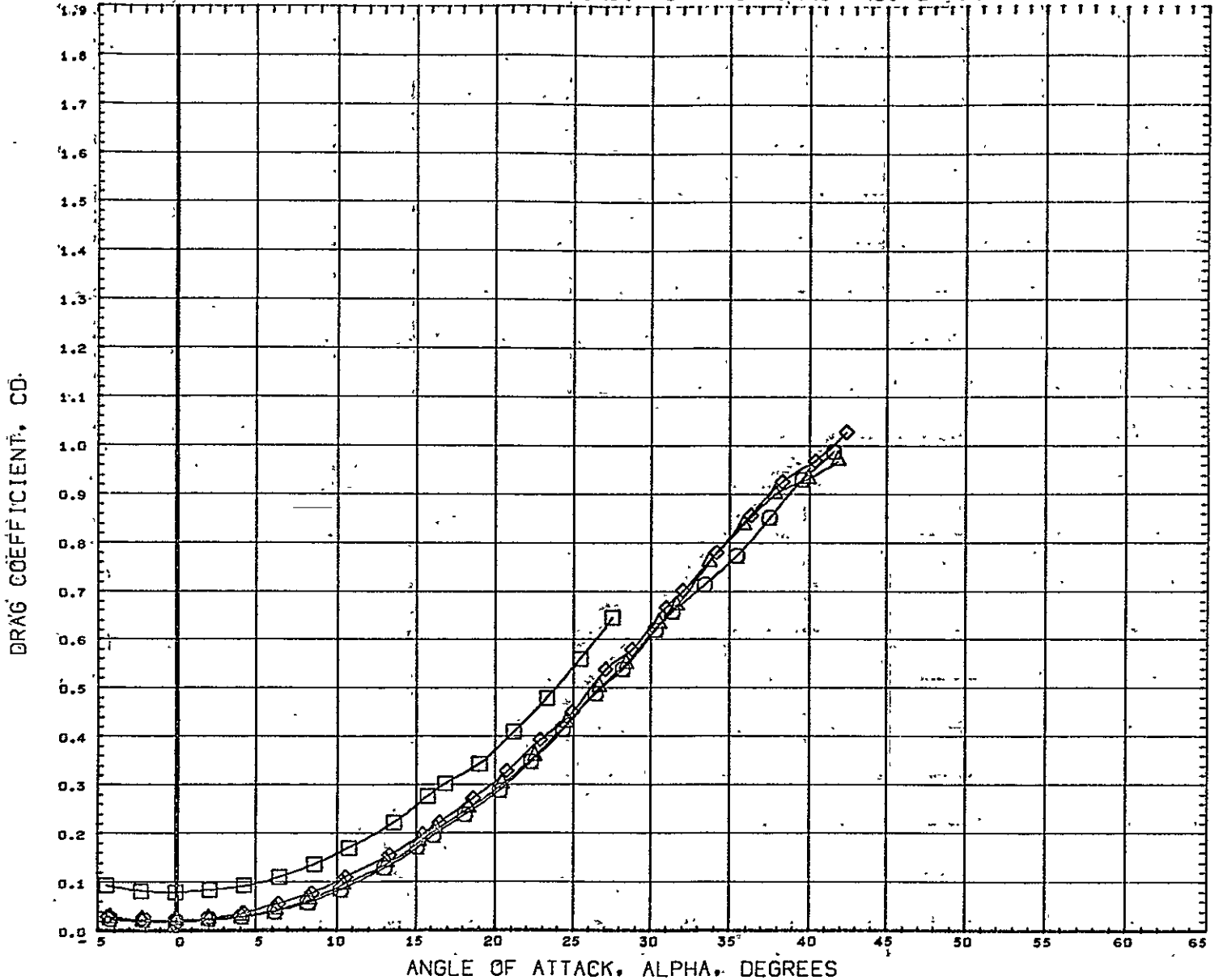


SYMBOL	MACH	PARAMETRIC VALUES			
○	1.461	BETA	0.000	ELEVN4	0.000
△	1.959	RUDER4	0.000	STING	4.000
◇	4.965				

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XHRP	3.9950	INCHES
YHRP	0.0000	INCHES
ZHRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE \*G#E

MSFC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, MACH NO. EFFECTS

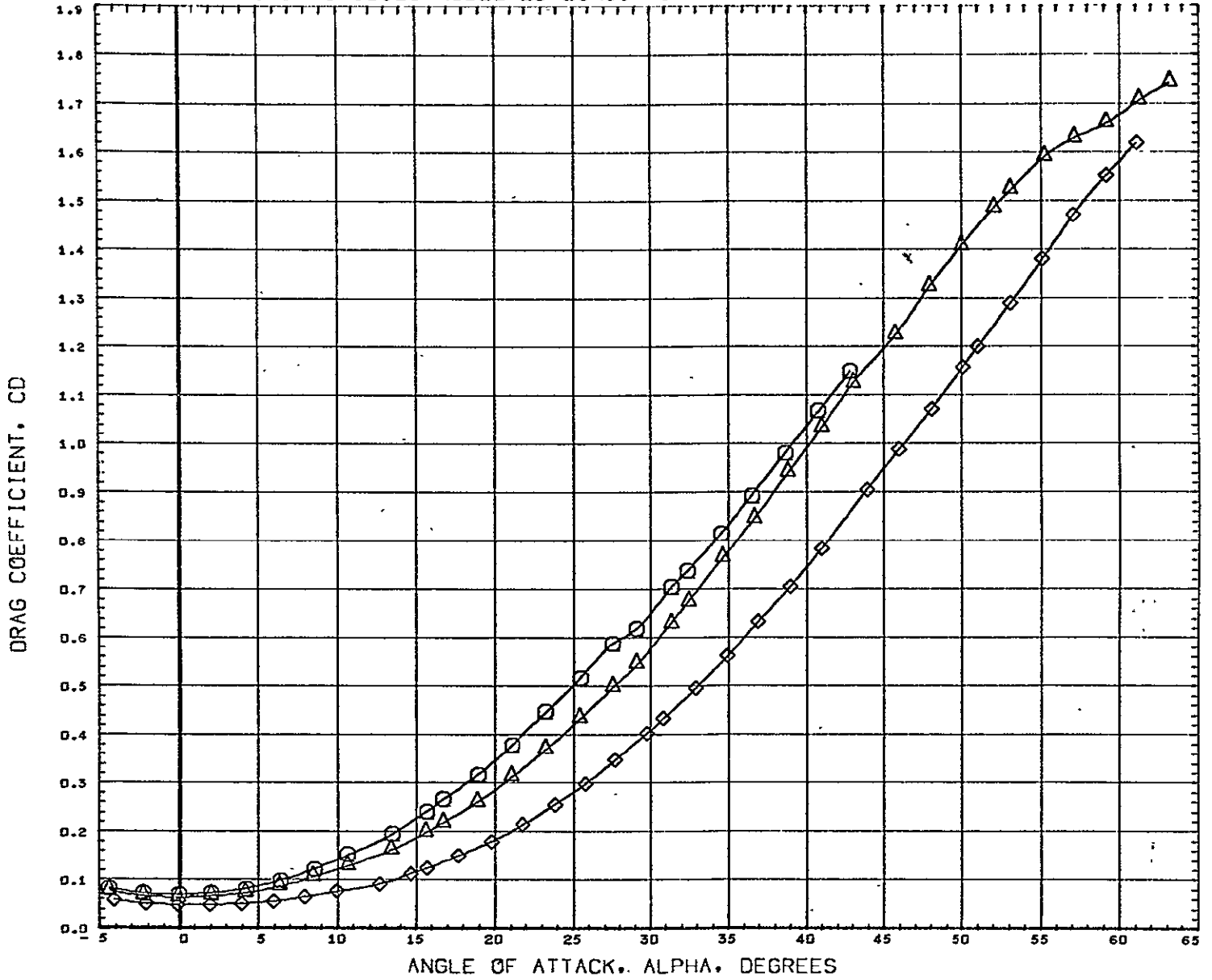


SYMBOL	MACH	PARAMETRIC VALUES			
○	0.596	BETA	0.000	ELEVN4	0.000
△	0.699	RUDER4	0.000	STING	4.000
◇	0.900				
□	1.099				

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN.
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE #G#E

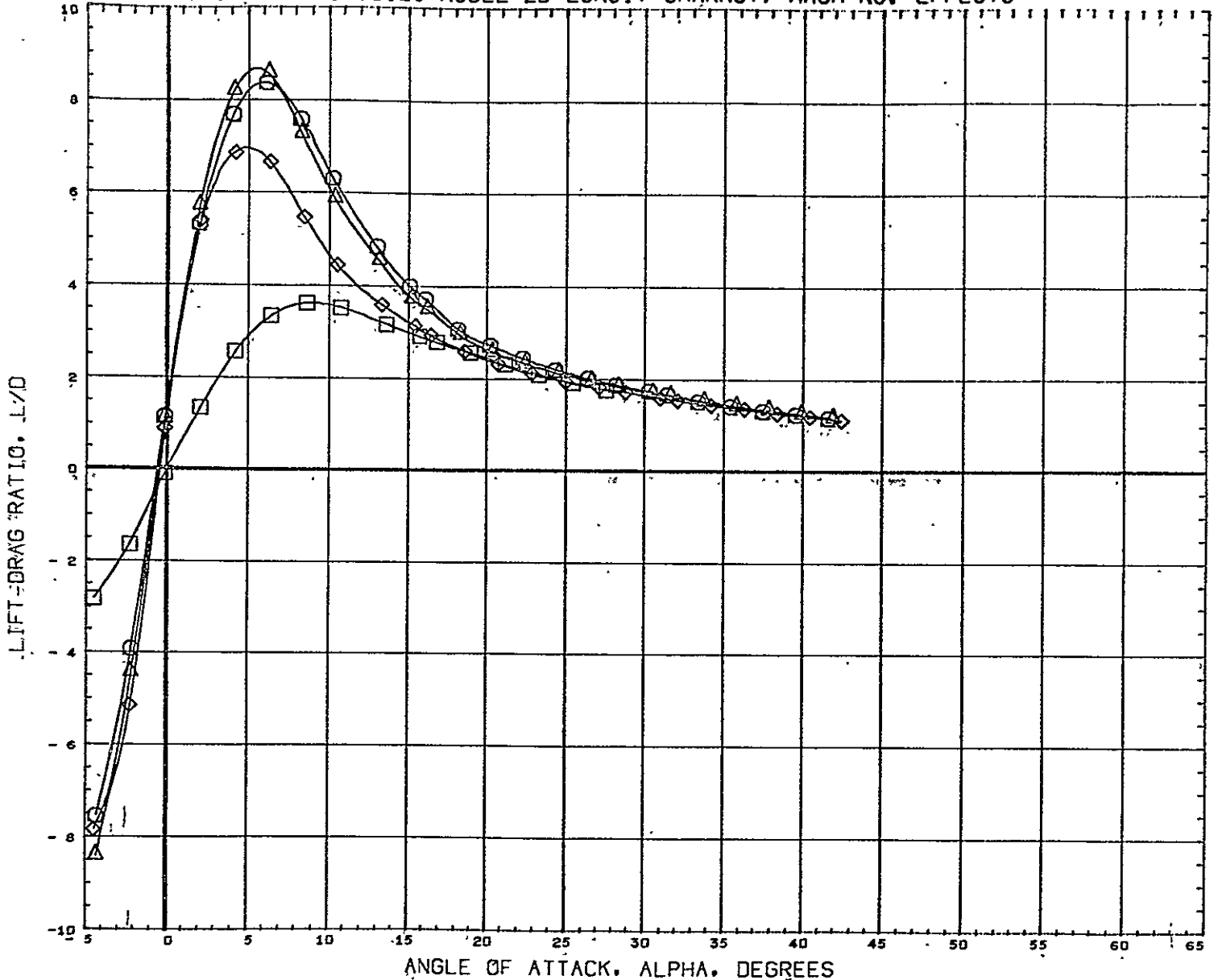
# LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, MACH NO. EFFECTS



<b>SYMBOL</b>	<b>MACH</b>	<b>PARAMETRIC VALUES</b>				<b>REFERENCE INFORMATION</b>		
○	1.461	BETA	0.000	ELEVN4	0.000	SREF	9.0250	SQ. IN
△	1.959	RUDER4	0.000	STING	4.000	LREF	6.1420	INCHES
◇	4.960					BREF	6.1420	INCHES
						XMRP	3.9950	INCHES
						YMRP	0.0000	INCHES
						ZMRP	0.1350	INCHES
						SCALE	0.0033	SCALE

DATA HIST. CODE #6#E

MSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, MACH NO. EFFECTS



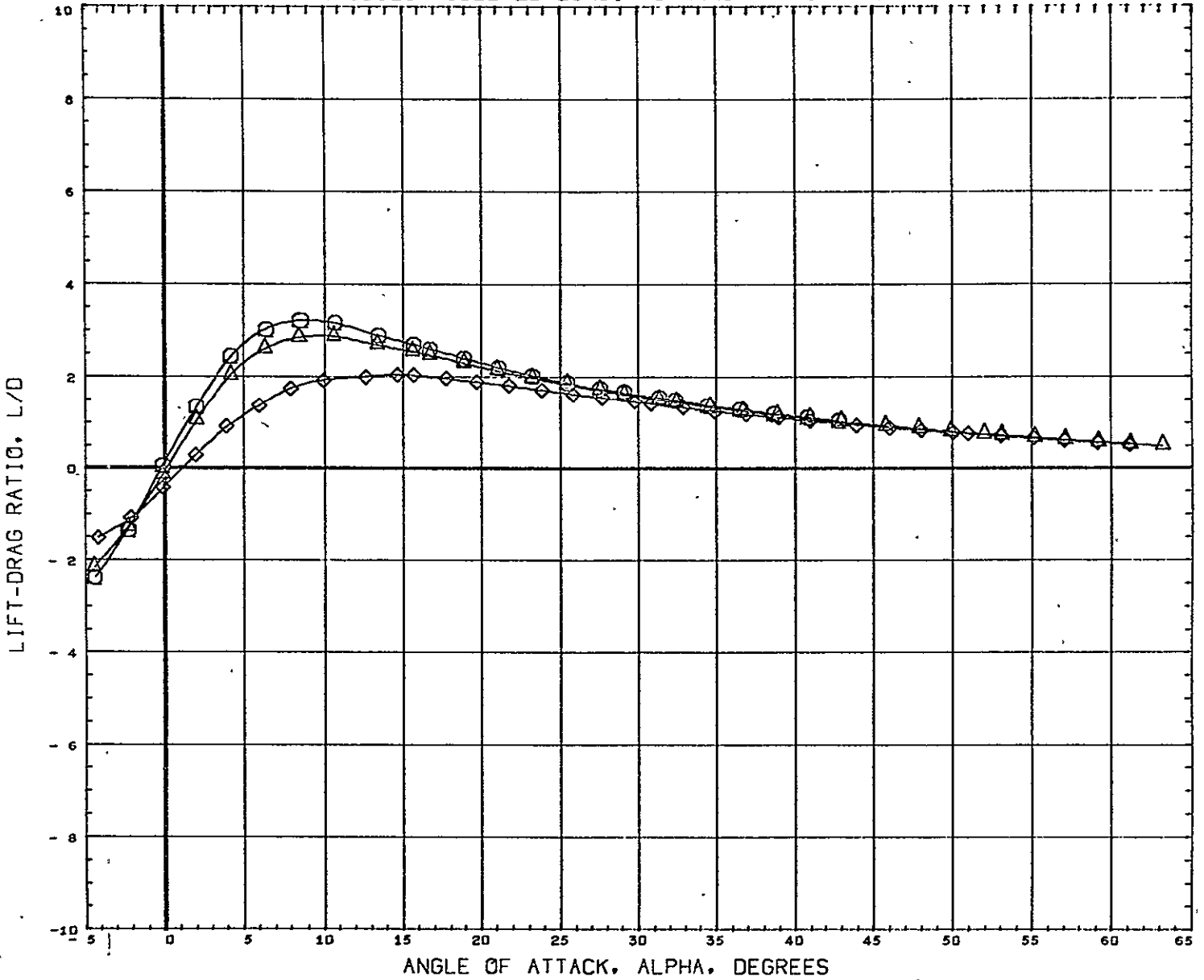
SYMBOL	MACH	PARAMETRIC VALUES			
○	0.599	BETA	0.000	ELEVN4	0.000
△	0.699	RUDER4	0.000	STING	4.000
◇	0.950				
□	1.099				

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE \*G\*E



LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, MACH NO. EFFECTS

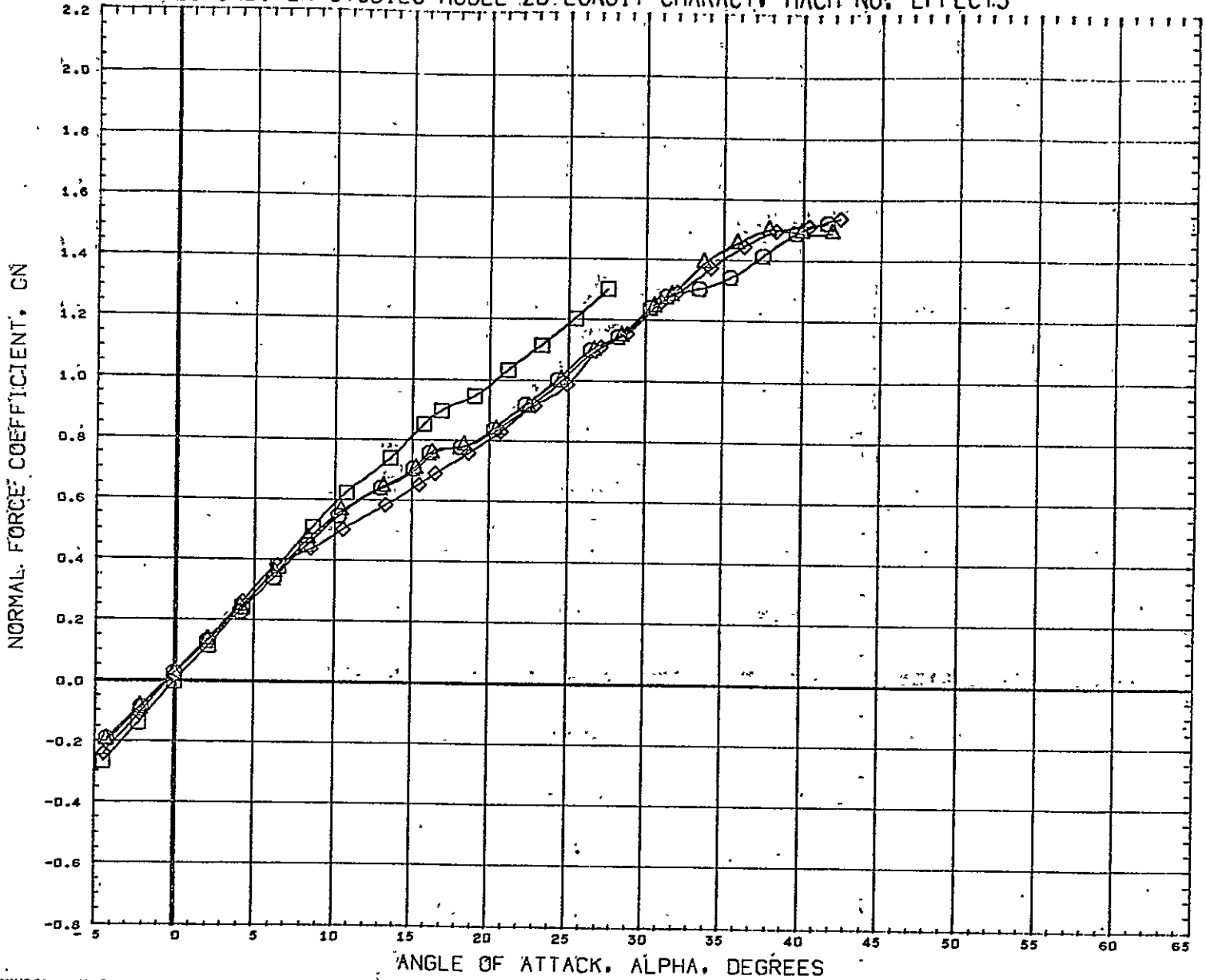


SYMBOL	MACH	PARAMETRIC VALUES			
○	1.461	BETA	0.000	ELEV.4	0.000
△	1.959	RUDER4	0.000	STING	4.000
◇	4.965				

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE \*G\*E

MSFC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, MACH NO. EFFECTS

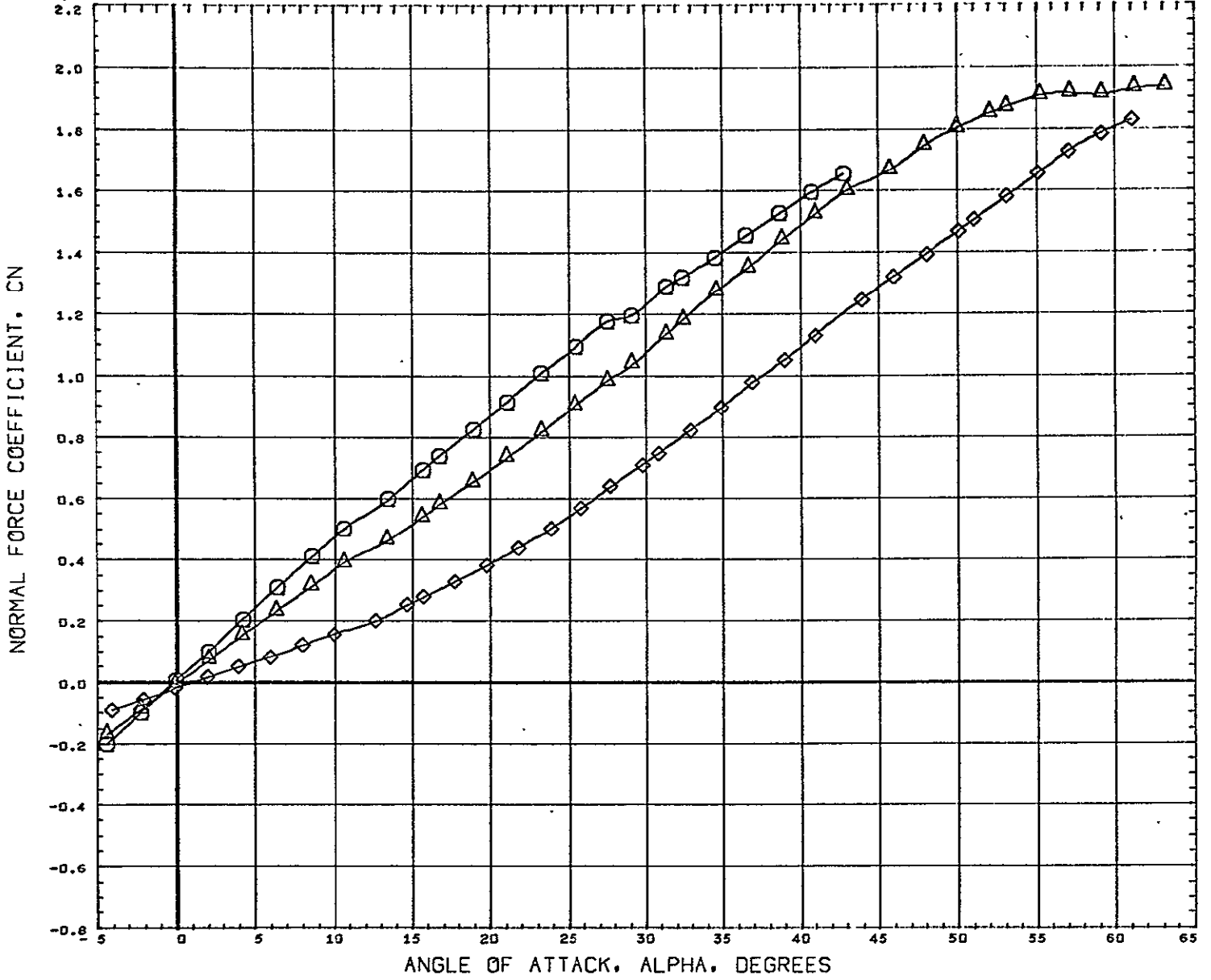


SYMBOL	MACH	PARAMETRIC VALUES			
◇	0.596	BETA	0.000	ELEVN4	0.000
△	0.699	RUDER4	0.000	STING	4.000
○	0.900				
□	1.099				

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE #G#E

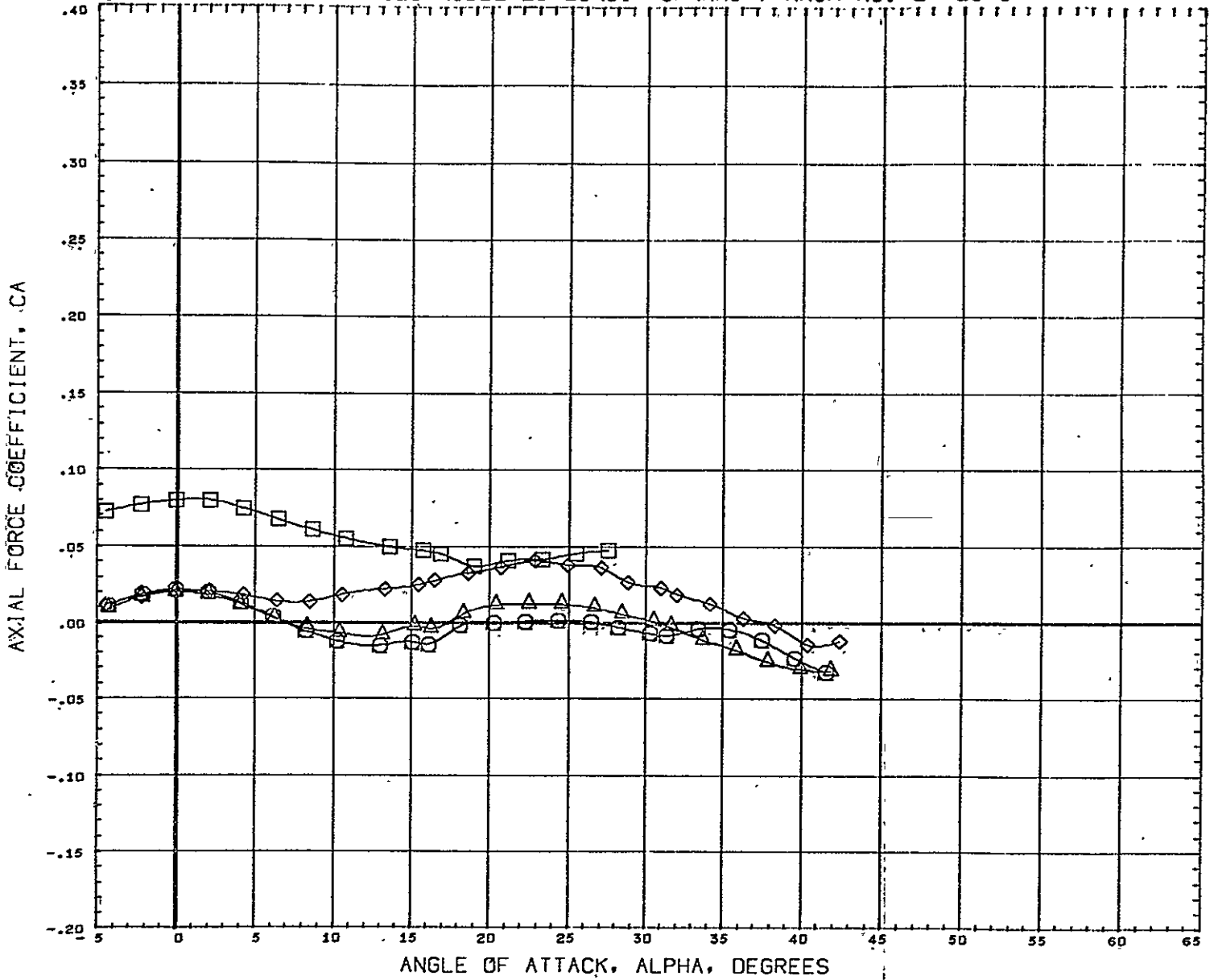
LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, MACH NO. EFFECTS



SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	1.461	BETA	0.000	ELEVN4	0.000	SREF	9.0250	50. IN
Δ	1.959	RUDER4	0.000	STING	4.000	LREF	6.1420	INCHES
◇	4.960					BREF	6.1420	INCHES
						XMRP	3.9950	INCHES
						YMRP	0.0000	INCHES
						ZMRP	0.1350	INCHES
						SCALE	0.0033	SCALE

DATA HIST. CODE #G#E

LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, MACH NO. EFFECTS

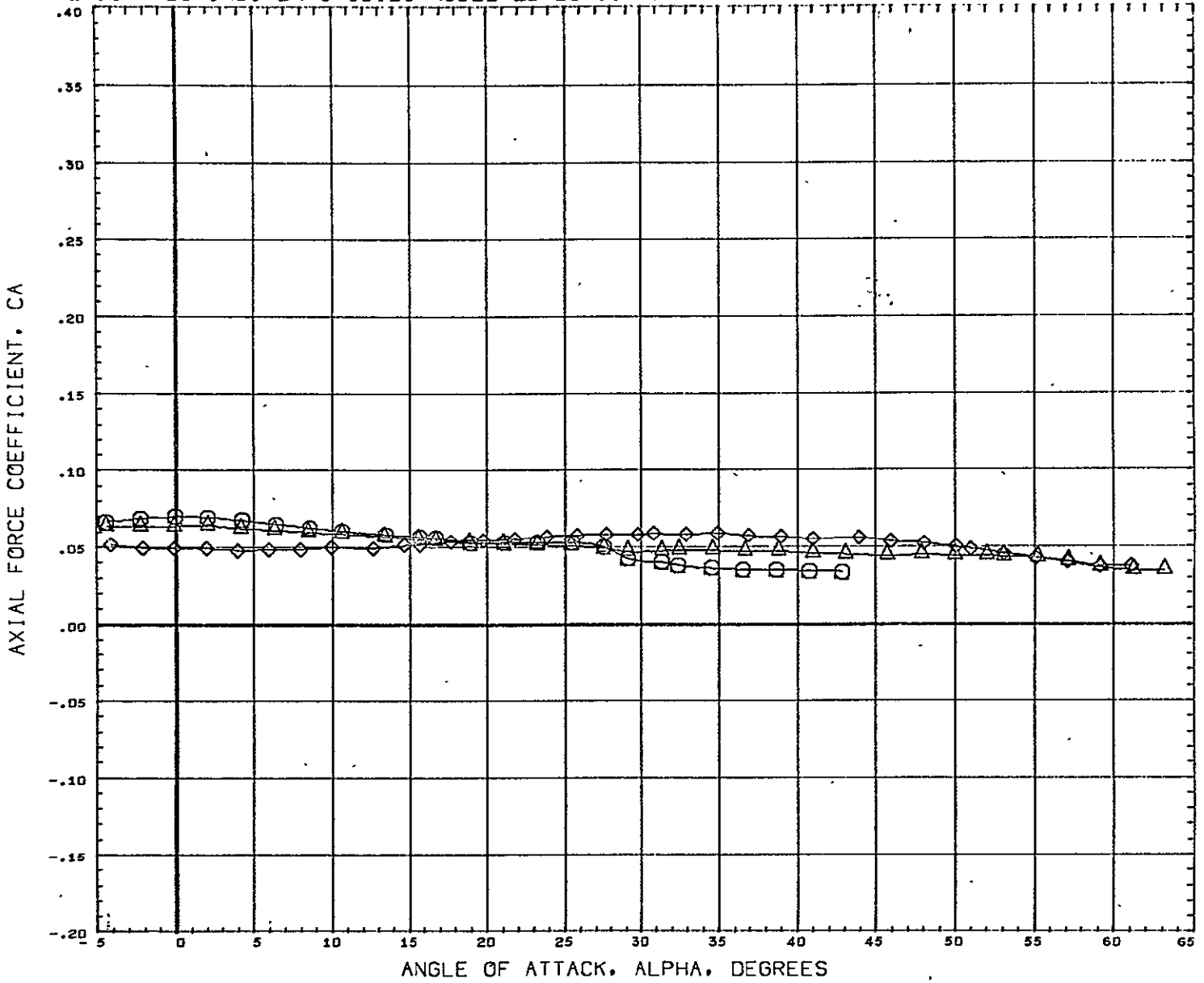


SYMBOL	MACH	PARAMETRIC VALUES			
○	0.596	BETA	0.000	ELEVN4	0.000
△	0.699	RUDER4	0.000	STING	4.000
□	0.999				

REFERENCE INFORMATION		
SREF	9.0250	SQ.IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE #G#E

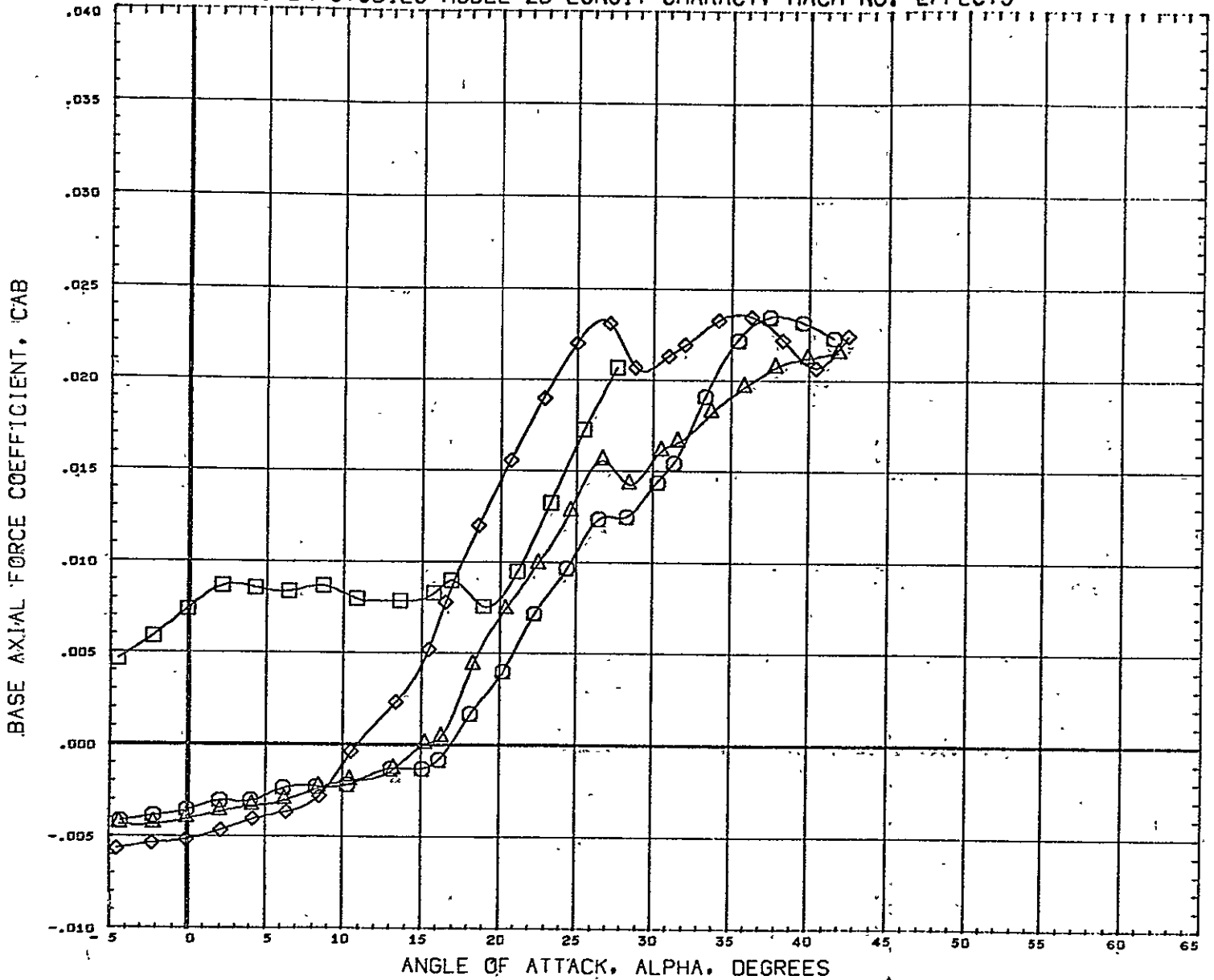
LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, MACH NO. EFFECTS



SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	1.461	BETA	0.000	ELEVN4	0.000	SREF	9.0250	SQ. IN
△	1.959	RUDER4	0.000	STING	4.000	LREF	6.1420	INCHES
◇	4.965					BREF	6.1420	INCHES
						XMRP	3.9950	INCHES
						YMRP	0.0000	INCHES
						ZMRP	0.1350	INCHES
						SCALE	0.0033	SCALE

DATA HIST. CODE #G#E

# LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, MACH NO. EFFECTS

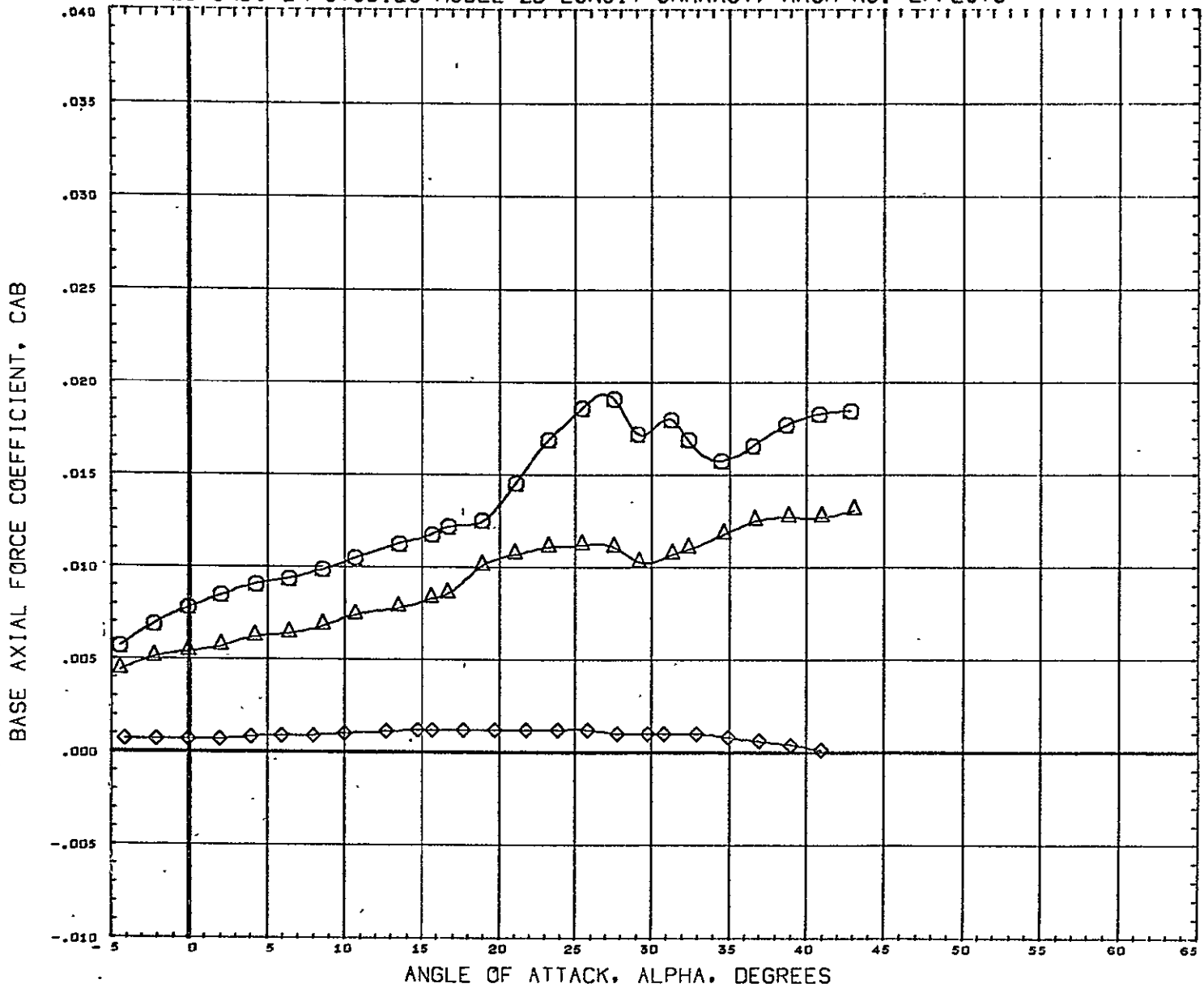


SYMBOL	MACH	PARAMETRIC VALUES			
○	0.596	BETA	0.000	ELEVN4	0.000
△	0.699	RUDER4	0.000	STING	4.000
◇	0.999				
□	1.099				

REFERENCE INFORMATION		
SREF	9.0250	52.1N
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE #6

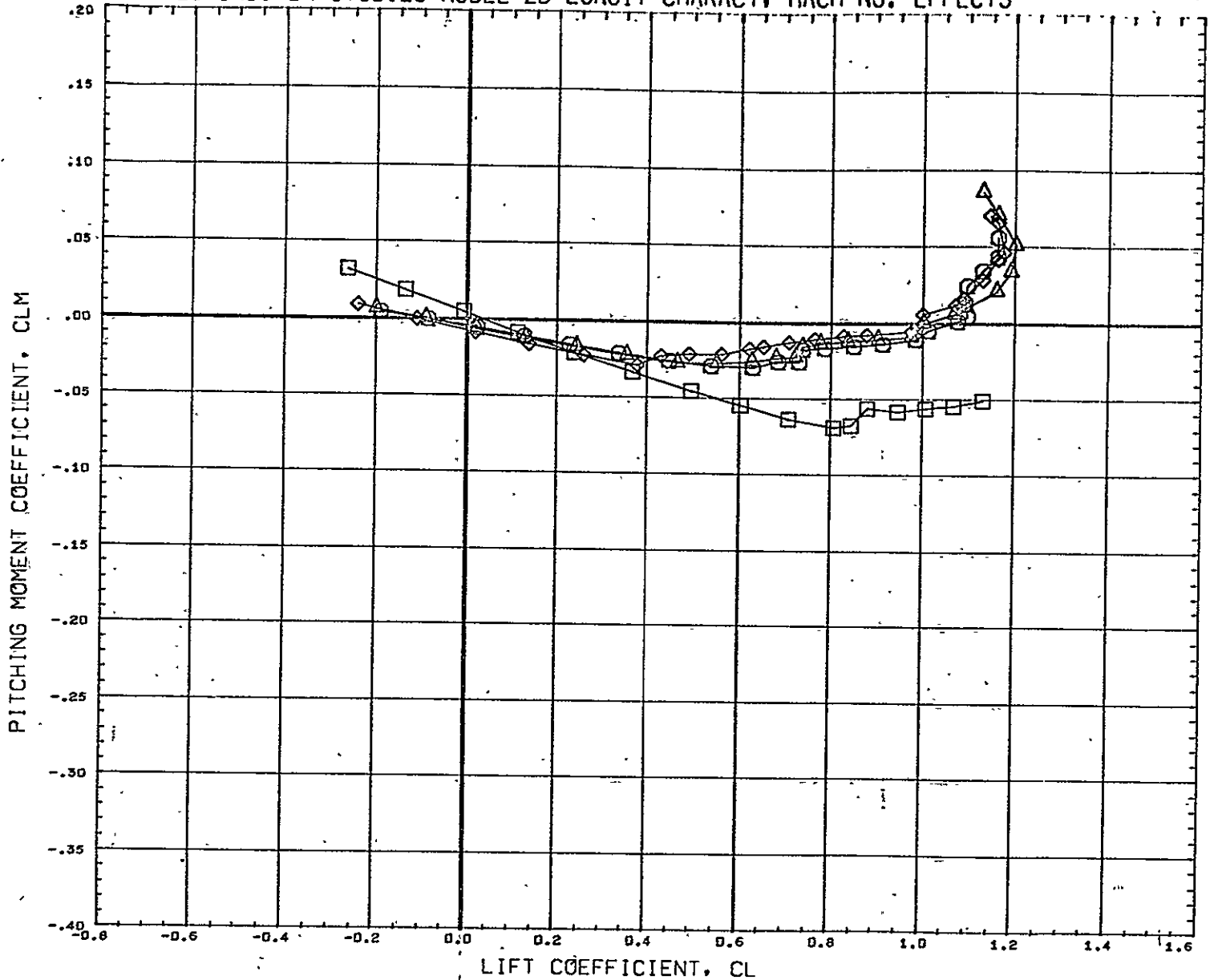
# LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, MACH NO. EFFECTS



<table border="0"> <tr><td>○</td><td>MACH</td><td>1.461</td><td>BETA</td><td>0.000</td><td>ELEVN4</td><td>0.000</td></tr> <tr><td>△</td><td></td><td>1.959</td><td>RUPER4</td><td>0.000</td><td>STING</td><td>4.000</td></tr> <tr><td>◇</td><td></td><td>4.960</td><td></td><td></td><td></td><td></td></tr> </table>	○	MACH	1.461	BETA	0.000	ELEVN4	0.000	△		1.959	RUPER4	0.000	STING	4.000	◇		4.960					<table border="0"> <tr><th colspan="3">REFERENCE INFORMATION</th></tr> <tr><td>SREF</td><td>9.0250</td><td>SQ. IN</td></tr> <tr><td>LREF</td><td>6.1420</td><td>INCHES</td></tr> <tr><td>BREF</td><td>6.1420</td><td>INCHES</td></tr> <tr><td>XMRP</td><td>3.9950</td><td>INCHES</td></tr> <tr><td>YMRP</td><td>0.0000</td><td>INCHES</td></tr> <tr><td>ZMRP</td><td>0.1350</td><td>INCHES</td></tr> <tr><td>SCALE</td><td>0.0033</td><td>SCALE</td></tr> </table>	REFERENCE INFORMATION			SREF	9.0250	SQ. IN	LREF	6.1420	INCHES	BREF	6.1420	INCHES	XMRP	3.9950	INCHES	YMRP	0.0000	INCHES	ZMRP	0.1350	INCHES	SCALE	0.0033	SCALE
○	MACH	1.461	BETA	0.000	ELEVN4	0.000																																								
△		1.959	RUPER4	0.000	STING	4.000																																								
◇		4.960																																												
REFERENCE INFORMATION																																														
SREF	9.0250	SQ. IN																																												
LREF	6.1420	INCHES																																												
BREF	6.1420	INCHES																																												
XMRP	3.9950	INCHES																																												
YMRP	0.0000	INCHES																																												
ZMRP	0.1350	INCHES																																												
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DATA HIST. CODE \*6

# LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, MACH NO. EFFECTS



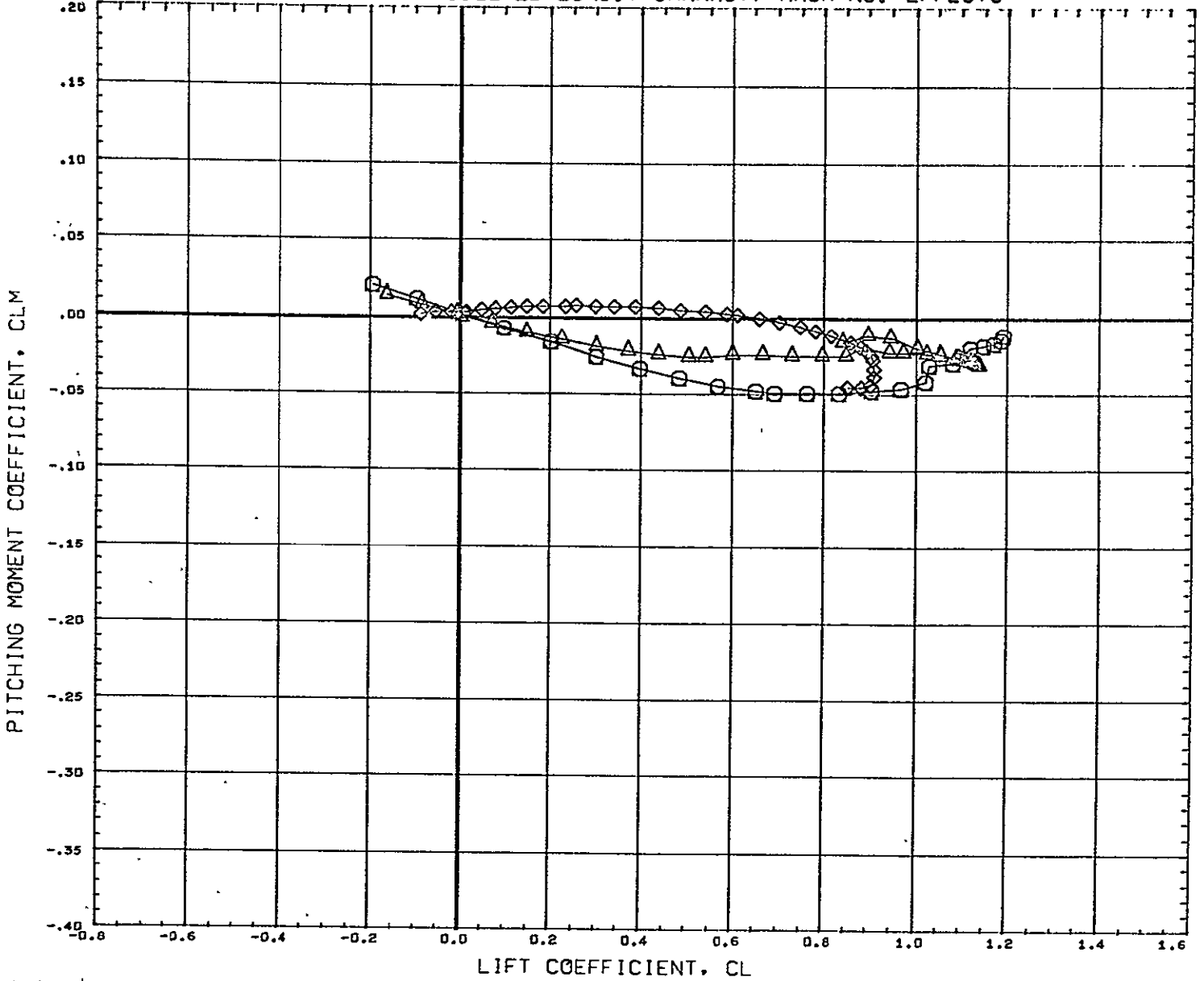
SYMBOL	MACH	PARAMETRIC VALUES			
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△	0.699	RUDER4	0.000	STING	4.000
◇	0.900				
□	1.099				

REFERENCE INFORMATION		
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BREF	6.1420	INCHES
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ZMRP	0.0000	INCHES
SCALE	0.1350	INCHES
	0.0033	SCALE

DATA HIST. CODE #6#E



LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, MACH NO. EFFECTS

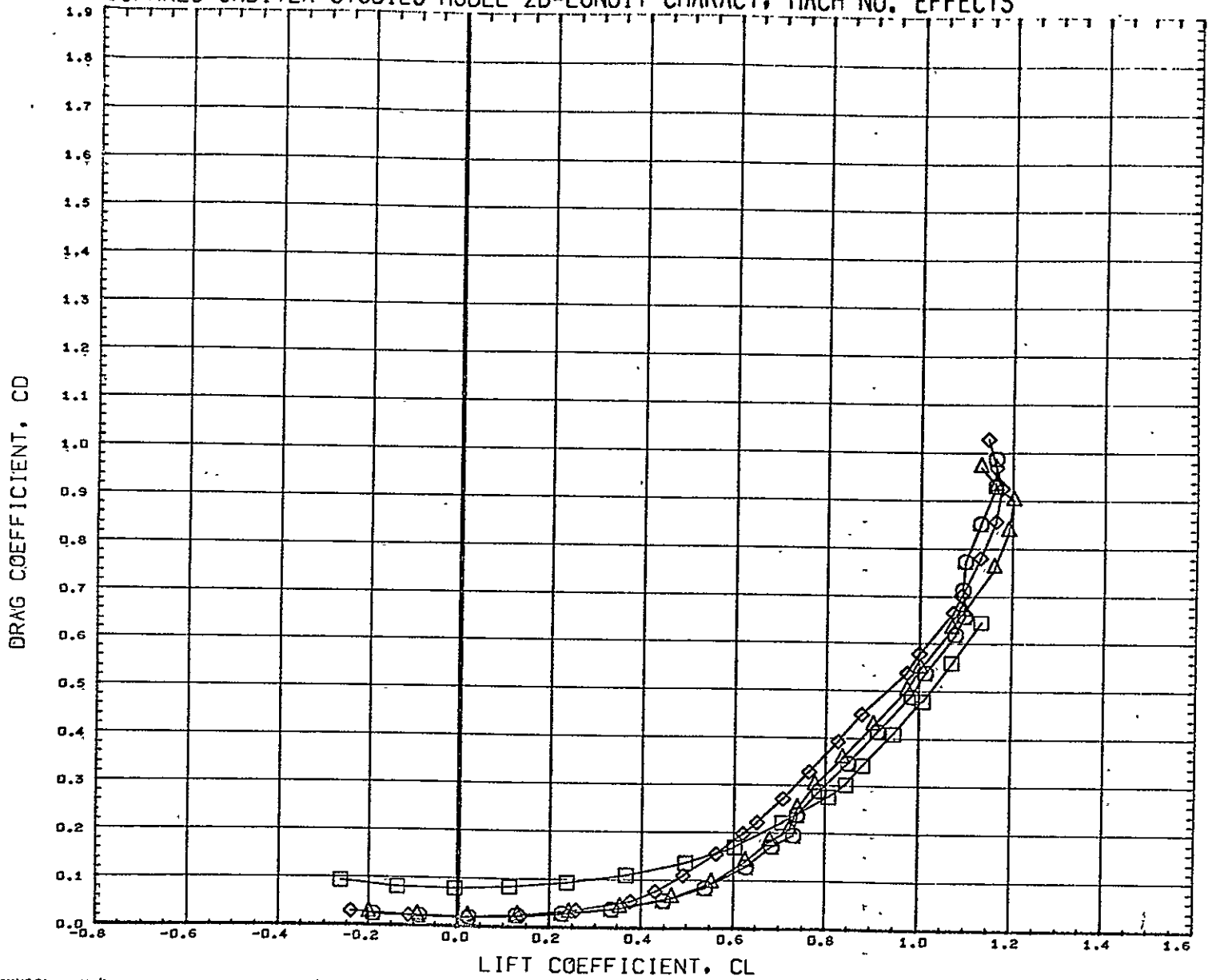


SYMBOL	MACH	PARAMETRIC VALUES			
○	1.461	BETA	0.000	ELEVN4	0.000
△	1.959	RUDER4	0.000	STING	4.000
◇	4.960				

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
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YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE \*0#E

# LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, MACH NO. EFFECTS

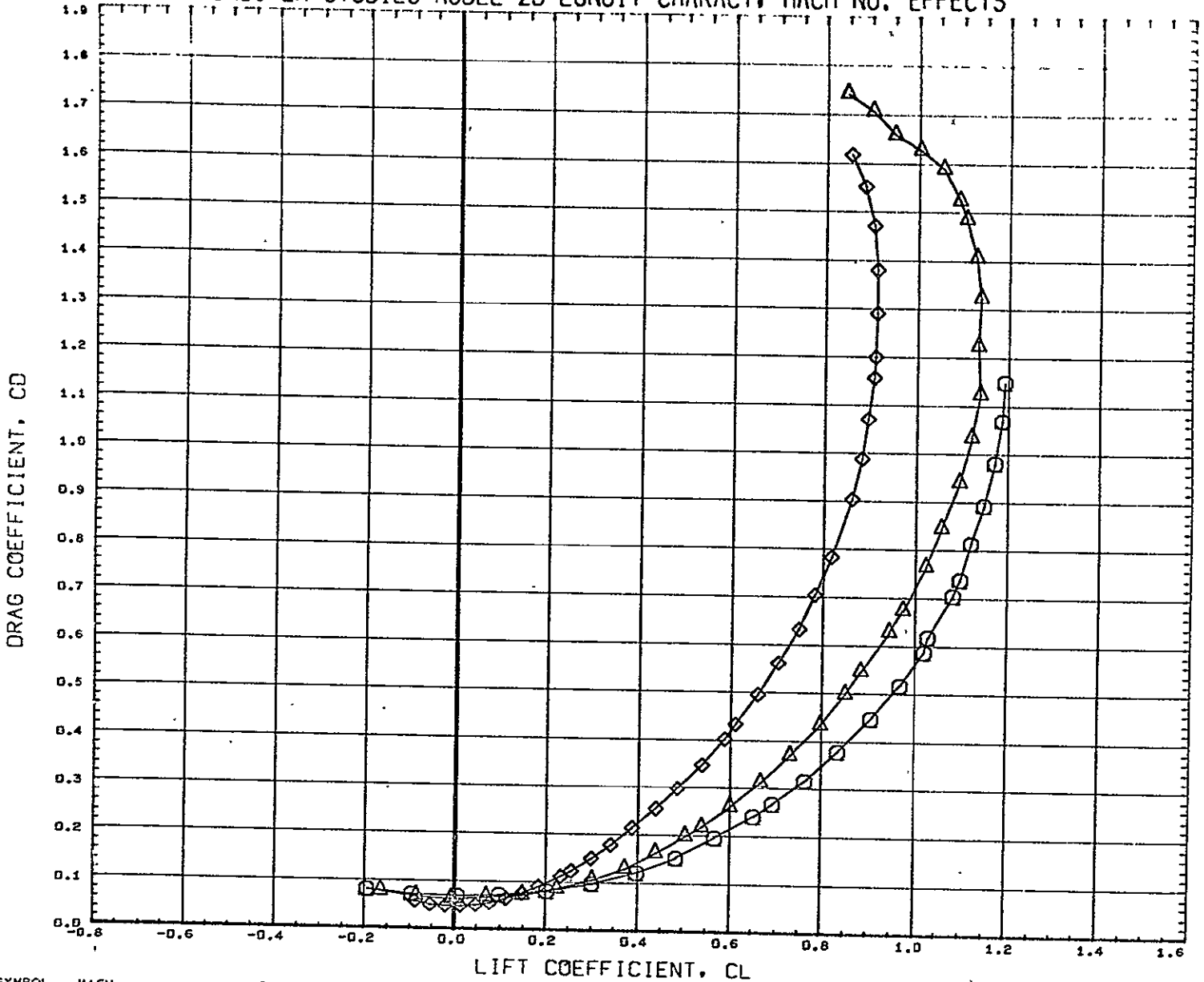


SYMBOL	MACH	PARAMETRIC VALUES			
○	0.596	BETA	0.000	ELEVN4	0.000
△	0.699	RUDER4	0.000	STING	4.000
◇	0.900				
□	1.099				

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
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DATA HIST. CODE \*G#E

LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, MACH NO. EFFECTS

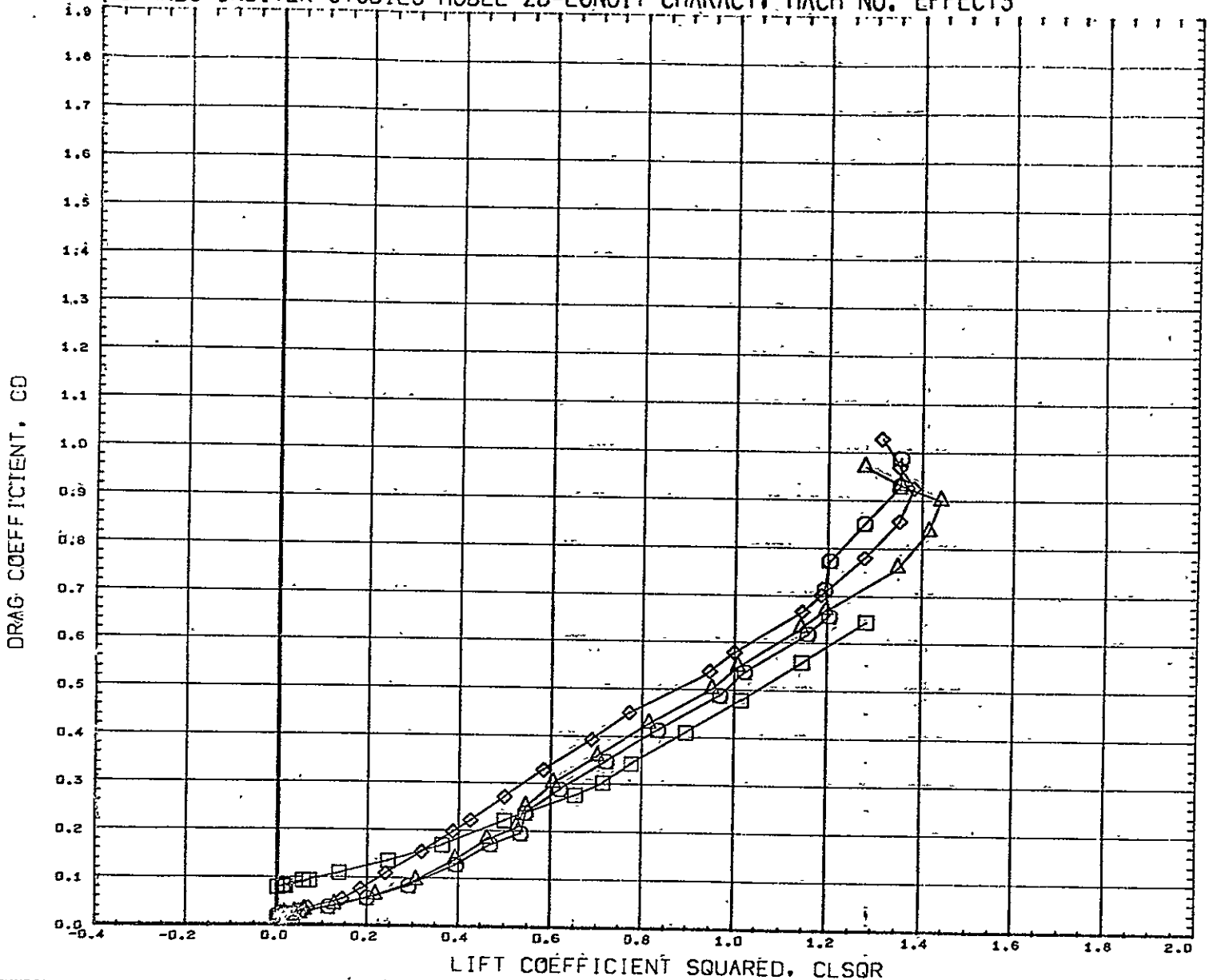


SYMBOL	MACH	PARAMETRIC VALUES			
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△	1.959	RUDER4	0.000	STING	4.000
◇	4.960				

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE #G#E

MSFC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT. MACH NO. EFFECTS

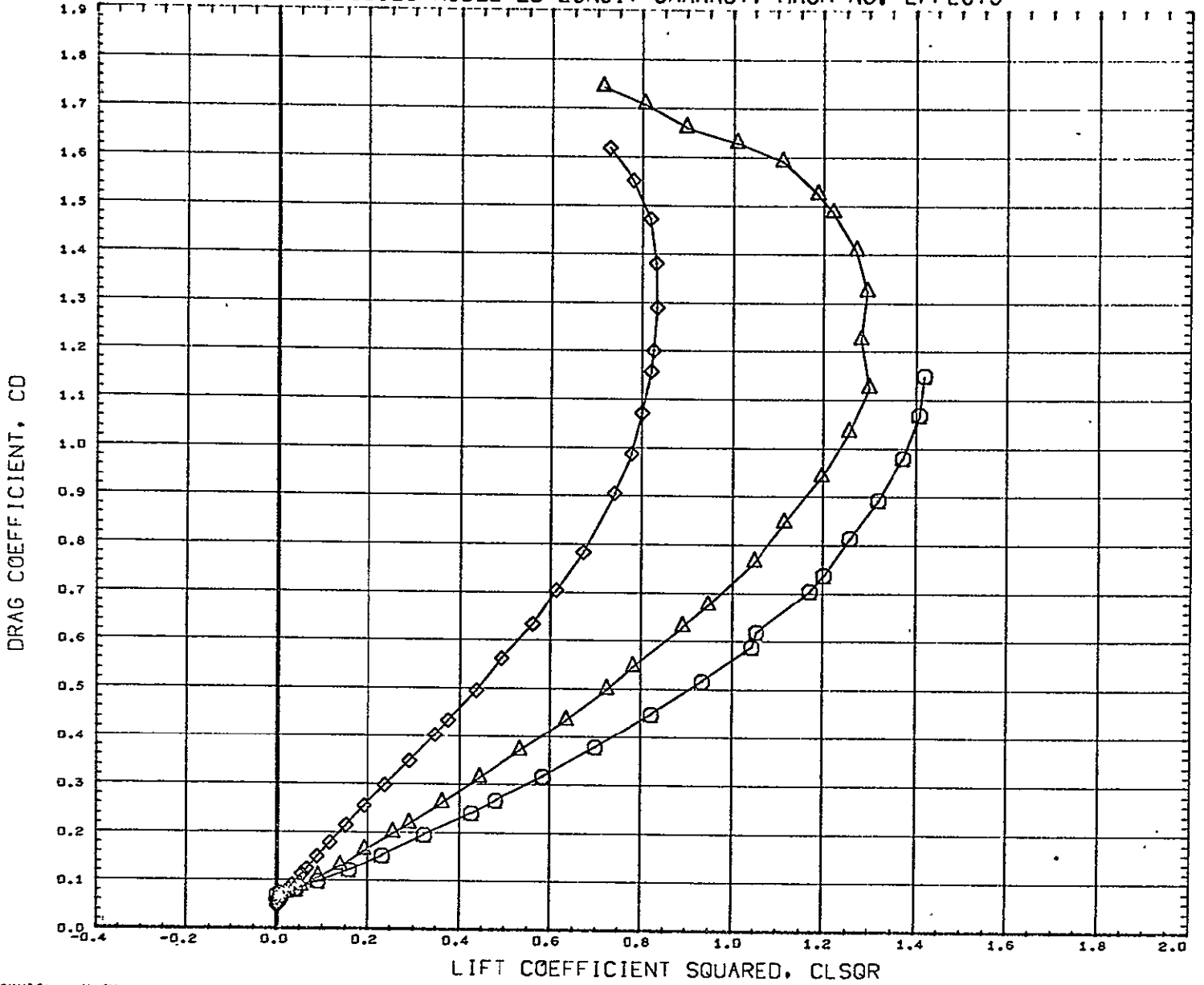


SYMBOL	MACH	PARAMETRIC VALUES			
○	0.596	BETA	0.000	ELEVN4	0.000
△	0.699	RUDER4	0.000	STING	4.000
◇	0.999				
□	1.099				

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE #G#E

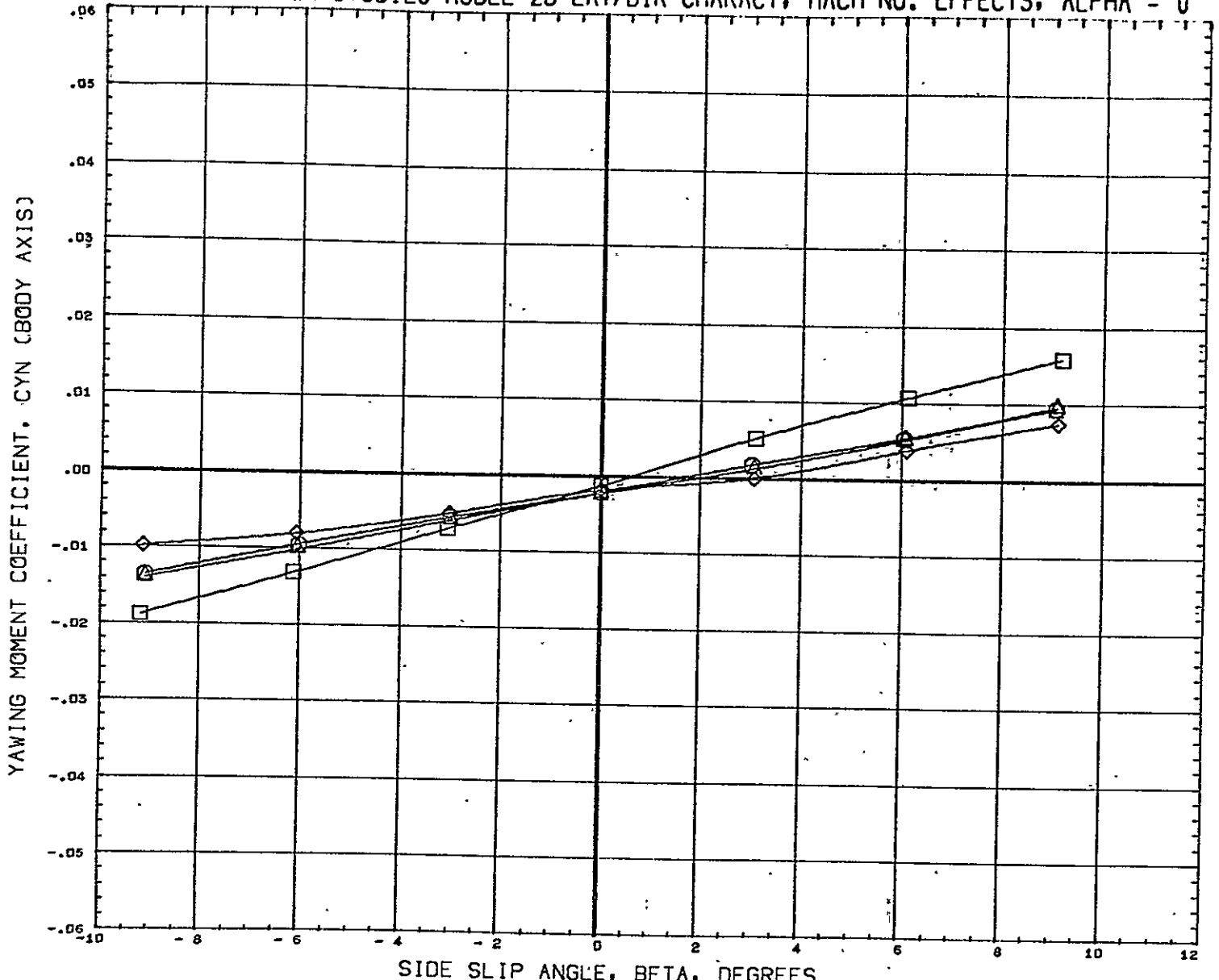
LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, MACH NO. EFFECTS



SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	1.461	BETA	0.000	ELEVN4	0.000	SREF	9.0250	SQ.IN
△	1.959	RUDER4	0.000	STING	4.000	LREF	6.1420	INCHES
◇	4.962					BREF	6.1420	INCHES
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						SCALE	0.0033	SCALE

DATA HIST. CODE #G4E

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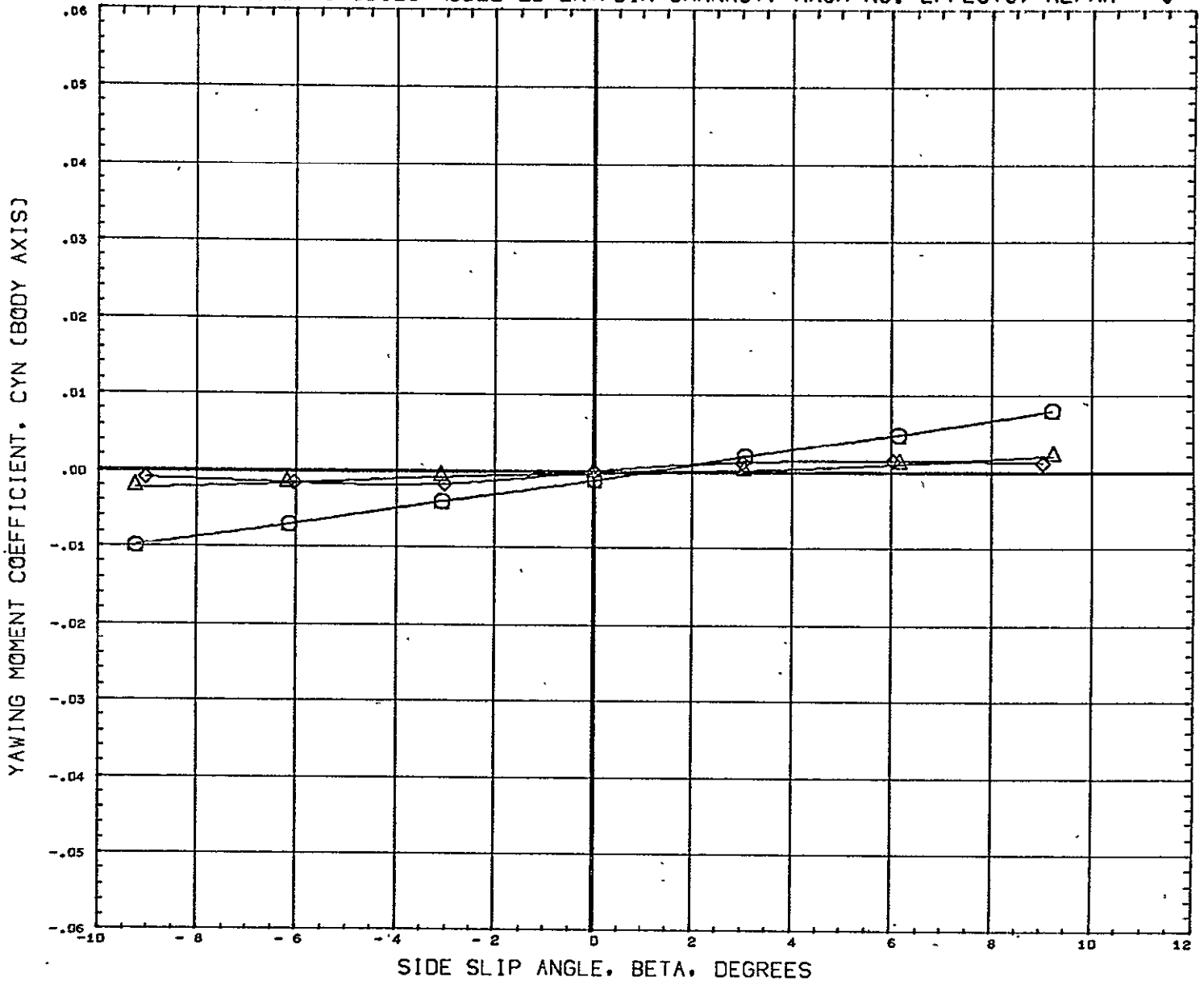


SYMBOL	MACH	PARAMETRIC VALUES			
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△	0.700	RUDER4	0.000	STING	4.000
◇	0.899				
□	1.099				

REFERENCE FILE LSHC/HREC D225042A

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, MACH NO. EFFECTS, ALPHA = 0

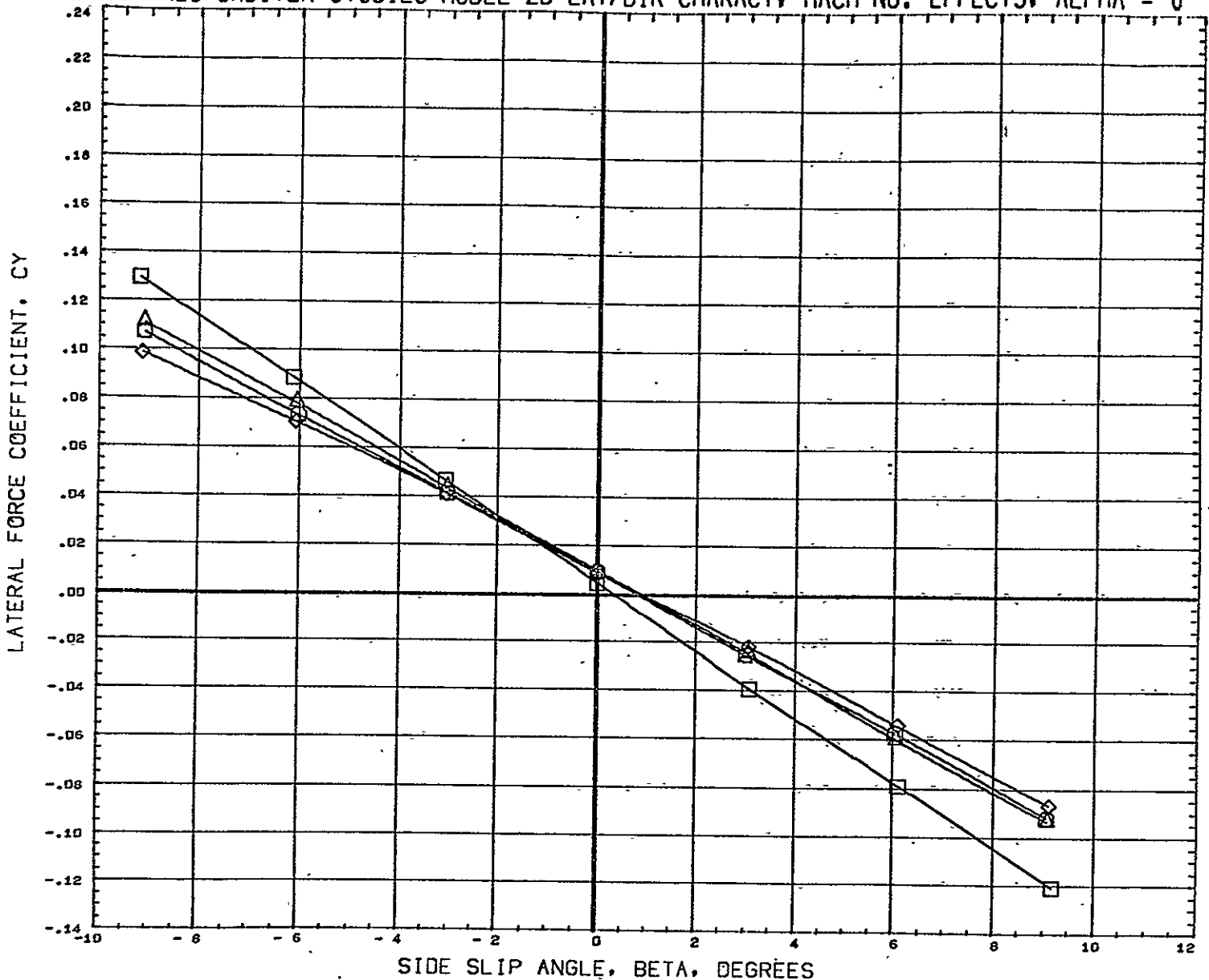


SYMBOL	MACH	PARAMETRIC VALUES			
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◇	4.960				

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
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XHRP	3.9950	INCHES
YHRP	0.0000	INCHES
ZHRP	0.1350	INCHES
SCALE	0.0033	SCALE

REFERENCE FILE LMSC/HREC D225042A

LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, MACH NO. EFFECTS, ALPHA = 0

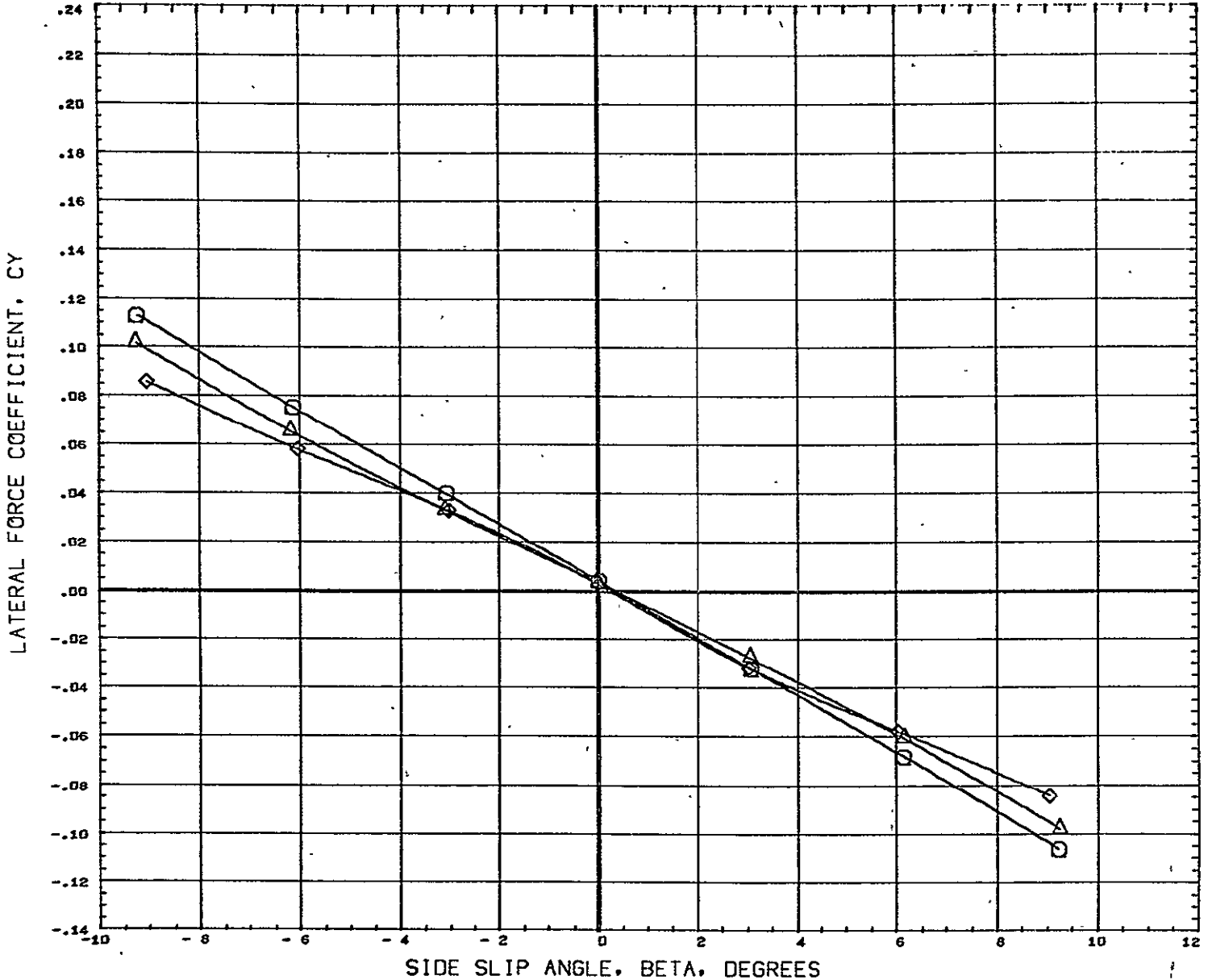


SYMBOL	MACH	PARAMETRIC VALUES			
○	0.600	ALPHA	0.000	ELEVN4	0.000
◇	0.700	RUDER4	0.000	STING	4.000
△	0.899				
□	1.599				
REFERENCE FILE		LSMC/HREC D225042A			

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XHRP	3.9950	INCHES
YHRP	0.0000	INCHES
ZHRP	0.1350	INCHES
SCALE	0.0033	SCALE



LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, MACH NO. EFFECTS, ALPHA = 0

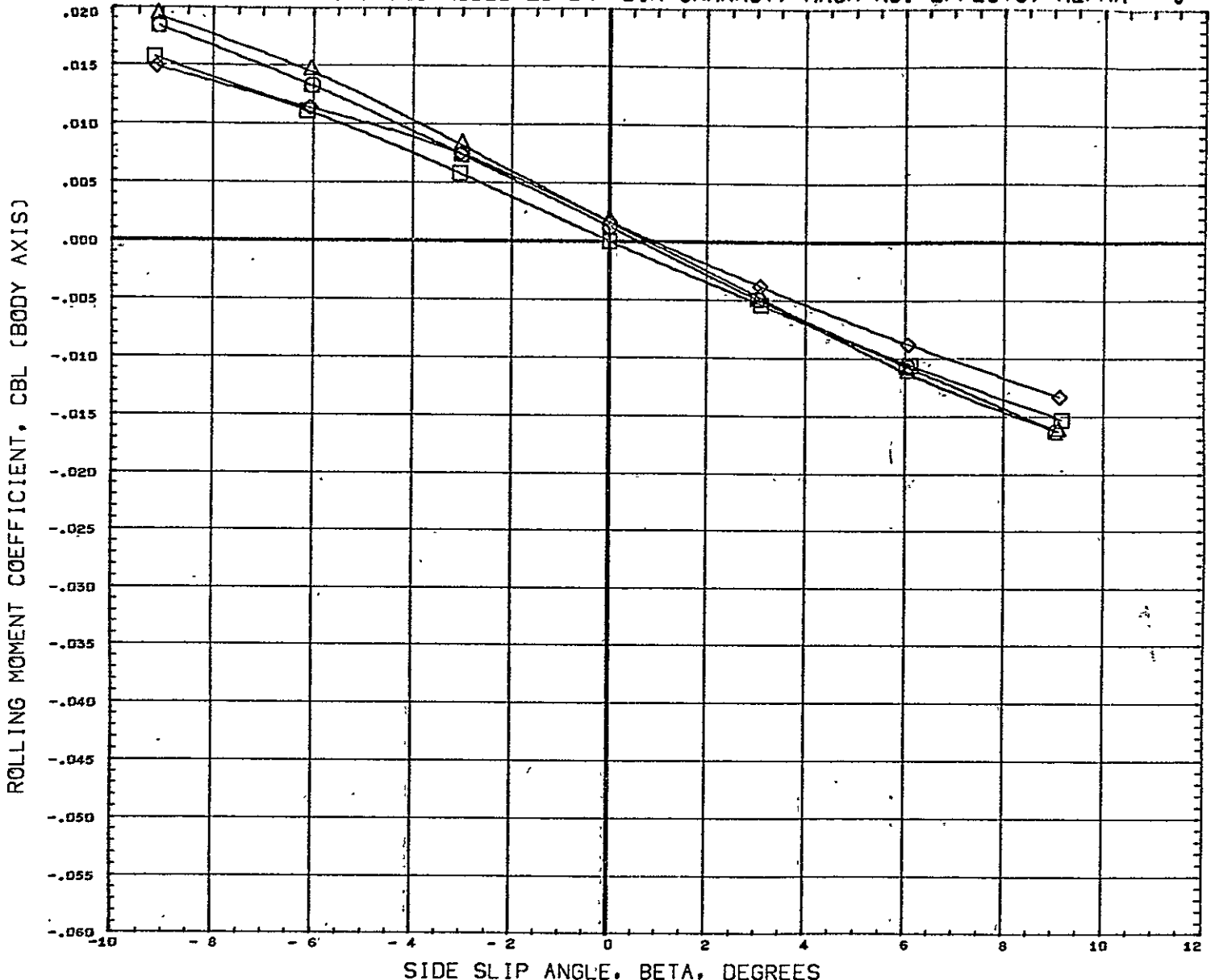


SYMBOL	MACH	ALPHA	PARAMETRIC VALUES		
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△	1.960	RUDER4	0.000	STING	4.000
◇	4.960				

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XHRP	3.9950	INCHES
YHRP	0.0000	INCHES
ZHRP	0.1350	INCHES
SCALE	0.0033	SCALE

REFERENCE FILE LMSC/HREC D225042A

LSMC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, MACH NO. EFFECTS, ALPHA = 0

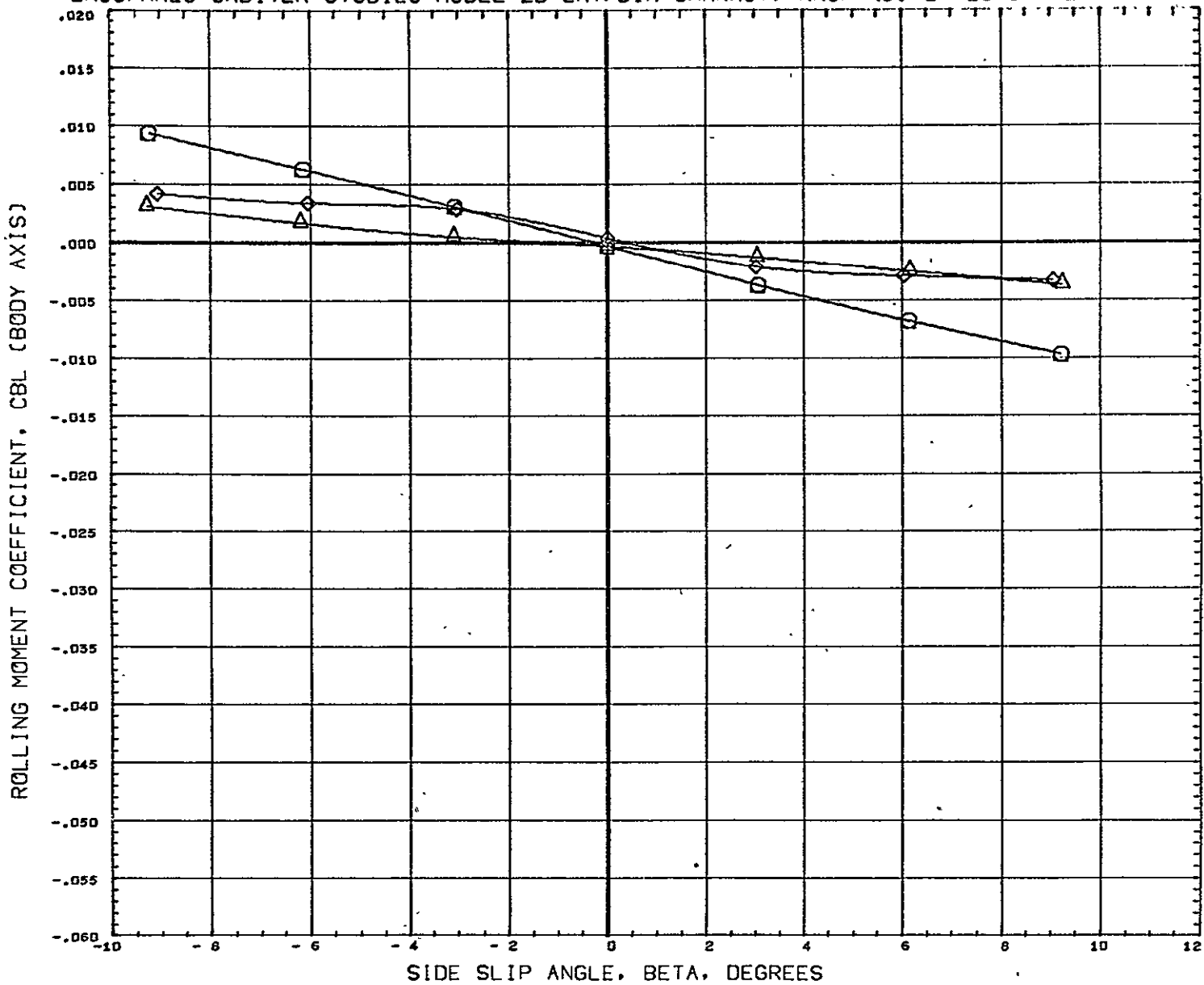


SYMBOL	MACH	PARAMETRIC VALUES			
○	0.699	ALPHA	0.000	ELEVN4	0.000
△	0.799	RUDER4	0.000	STING	4.000
◇	0.899				
□	1.999				

REFERENCE FILE      LSMC/HREC D225042A

REFERENCE INFORMATION		
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XHRP	3.9950	INCHES
YHRP	0.0000	INCHES
ZHRP	0.1350	INCHES
SCALE	0.0033	SCALE

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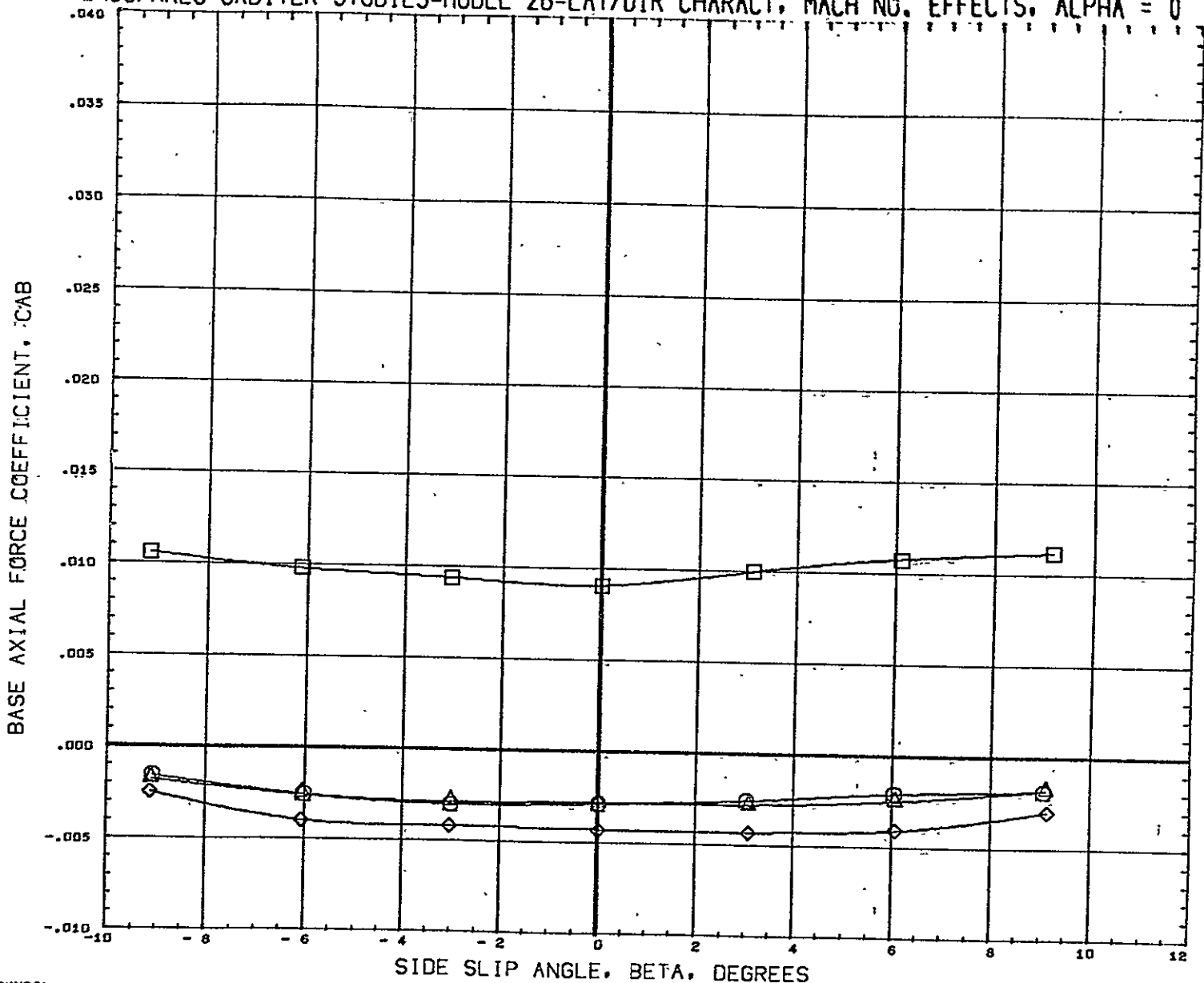


SYMBOL	MACH	PARAMETRIC VALUES
○	1.462	ALPHA 0.000 ELEVN4 0.000
△	1.960	RUDER4 0.000 STING 4.000
◇	4.960	

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

REFERENCE FILE LSMC/HREC D225042A

LSMC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, MACH NO. EFFECTS, ALPHA = 0

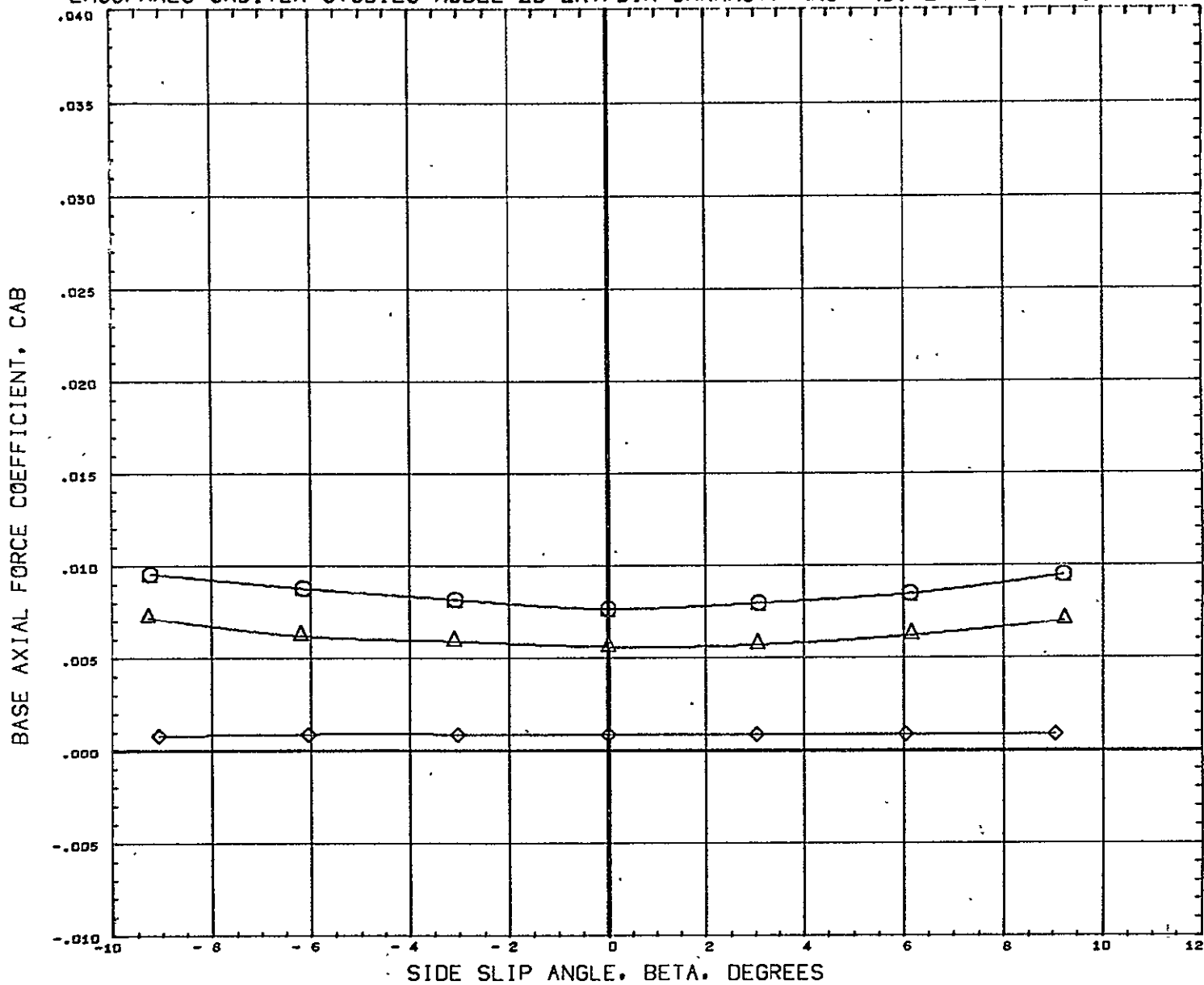


SYMBOL	MACH	PARAMETRIC VALUES
○	0.699	ALPHA 0.000 ELEVN4 0.000
△	0.700	RUDER4 0.000 STING 4.000
◇	0.899	
□	1.099	

REFERENCE FILE LSMC/HREC D225042A

REFERENCE INFORMATION		
SREF	9.0250	50. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, MACH NO. EFFECTS, ALPHA = 0

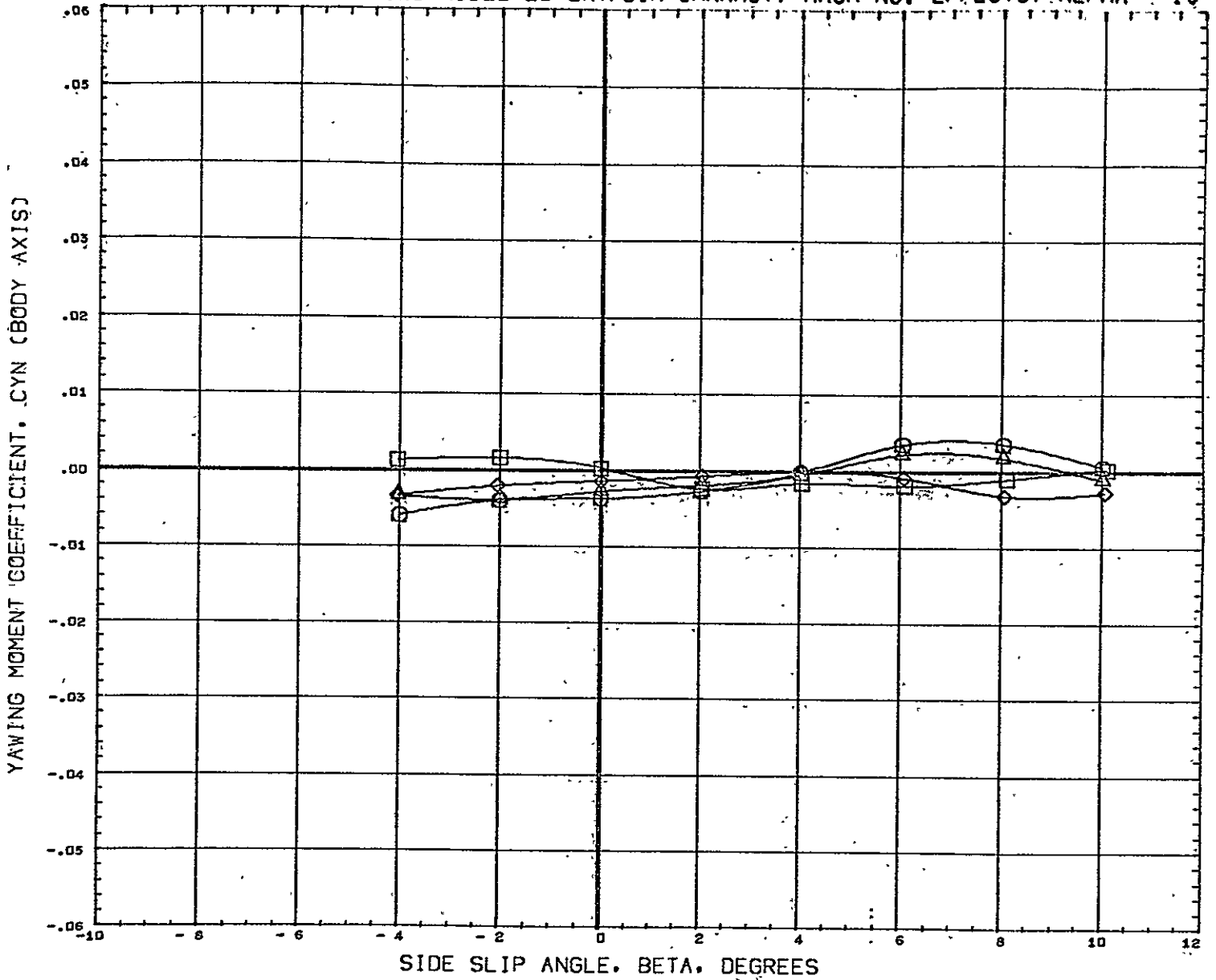


SYMBOL	MACH	PARAMETRIC VALUES			
○	1.462	ALPHA	0.000	ELEVN4	0.000
△	1.960	RUDER4	0.000	STING	4.000
◇	4.960				

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

REFERENCE FILE LMSC/HREC D225042A

LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, MACH NO. EFFECTS, ALPHA = 10

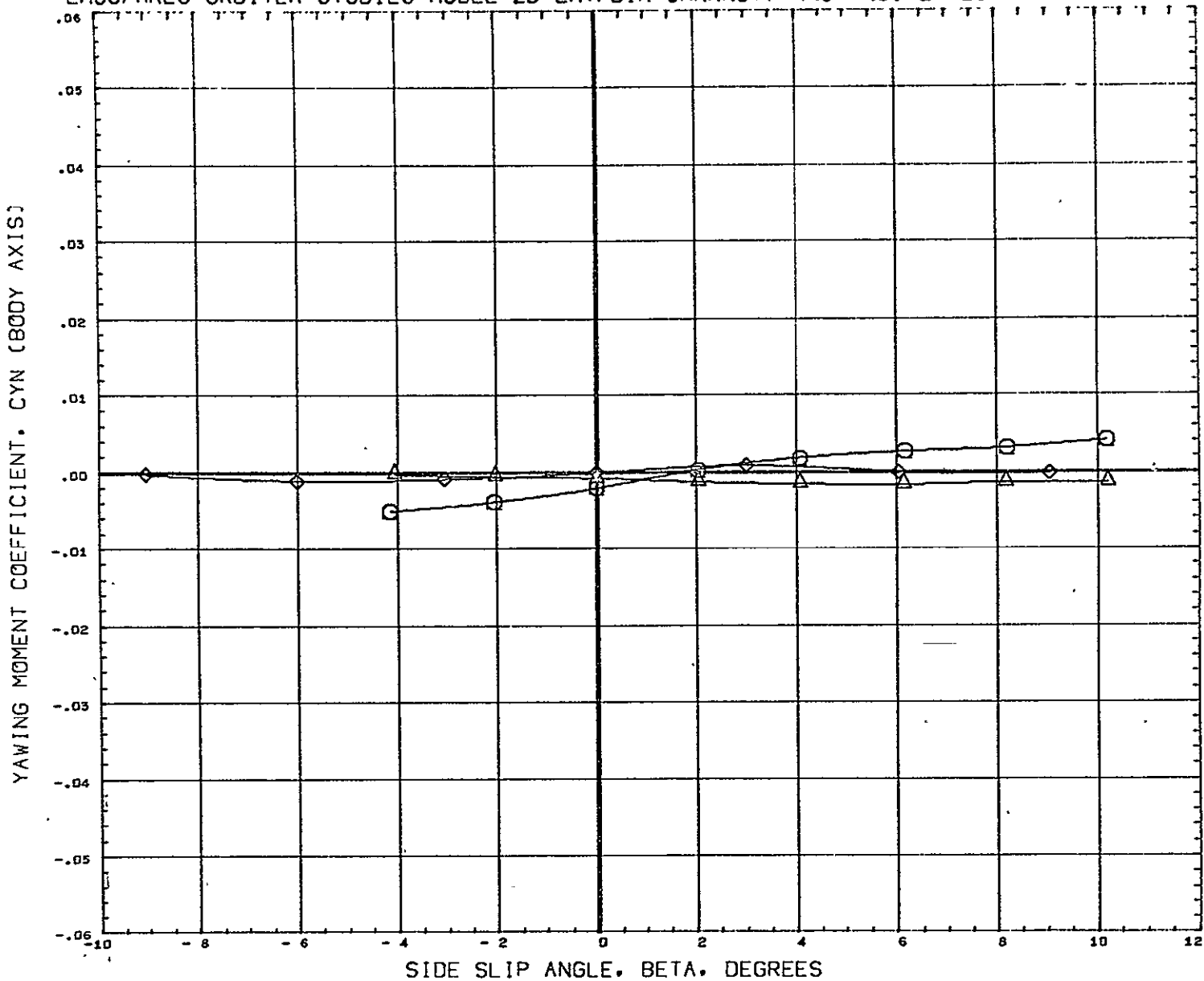


SYMBOL	MACH	PARAMETRIC VALUES			
○	0.599	ALPHA	10.000	ELEVN4	0.000
△	0.698	RUDER4	0.000	STING	4.000
◇	0.901				
□	1.152				

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

REFERENCE FILE LMSC/HREC D225042A

LSMC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, MACH NO. EFFECTS, ALPHA = 10

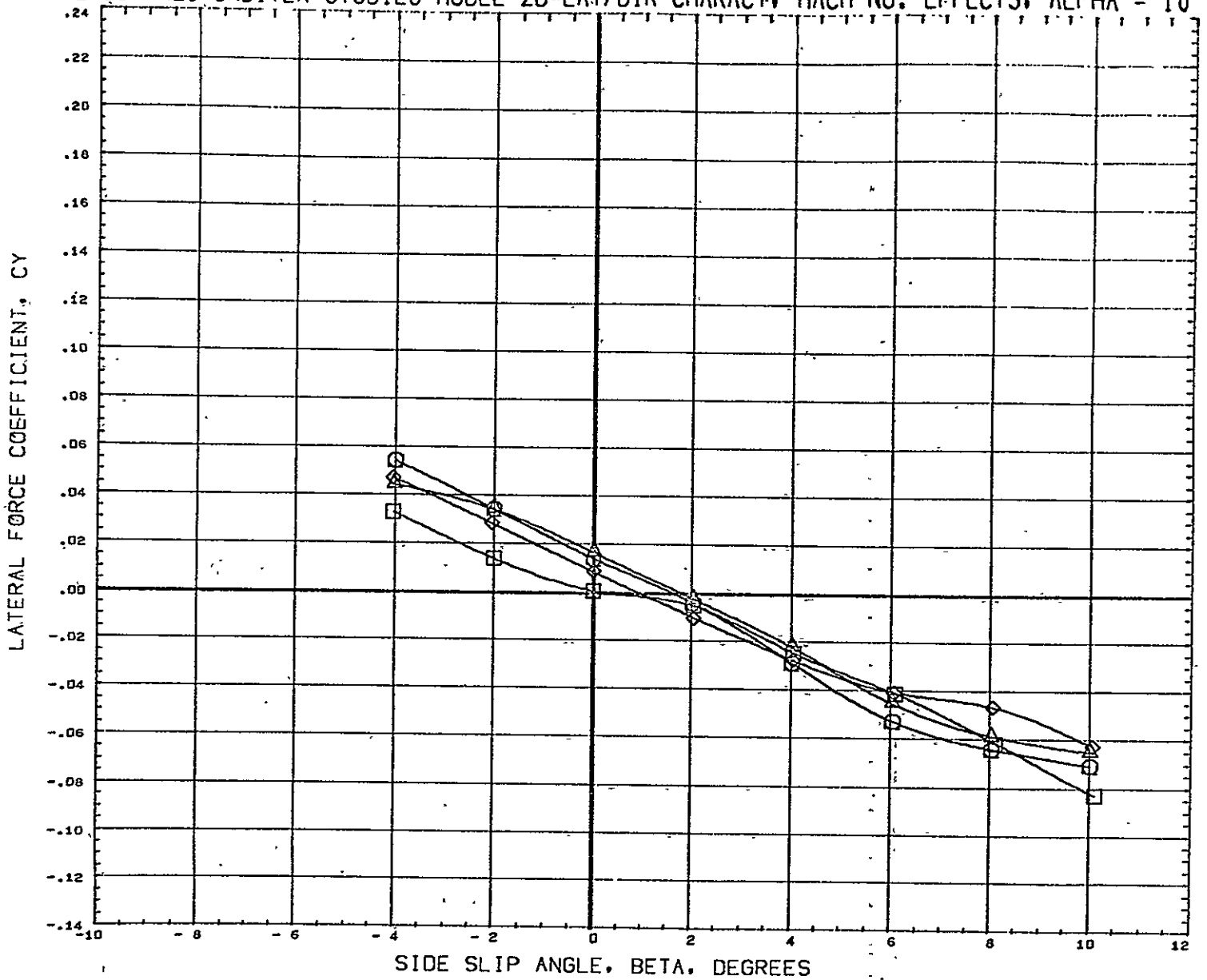


SYMBOL	MACH	PARAMETRIC VALUES			
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◇	4.965				

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

REFERENCE FILE LSMC/HREC D225542A

LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, MACH NO. EFFECTS, ALPHA = 10



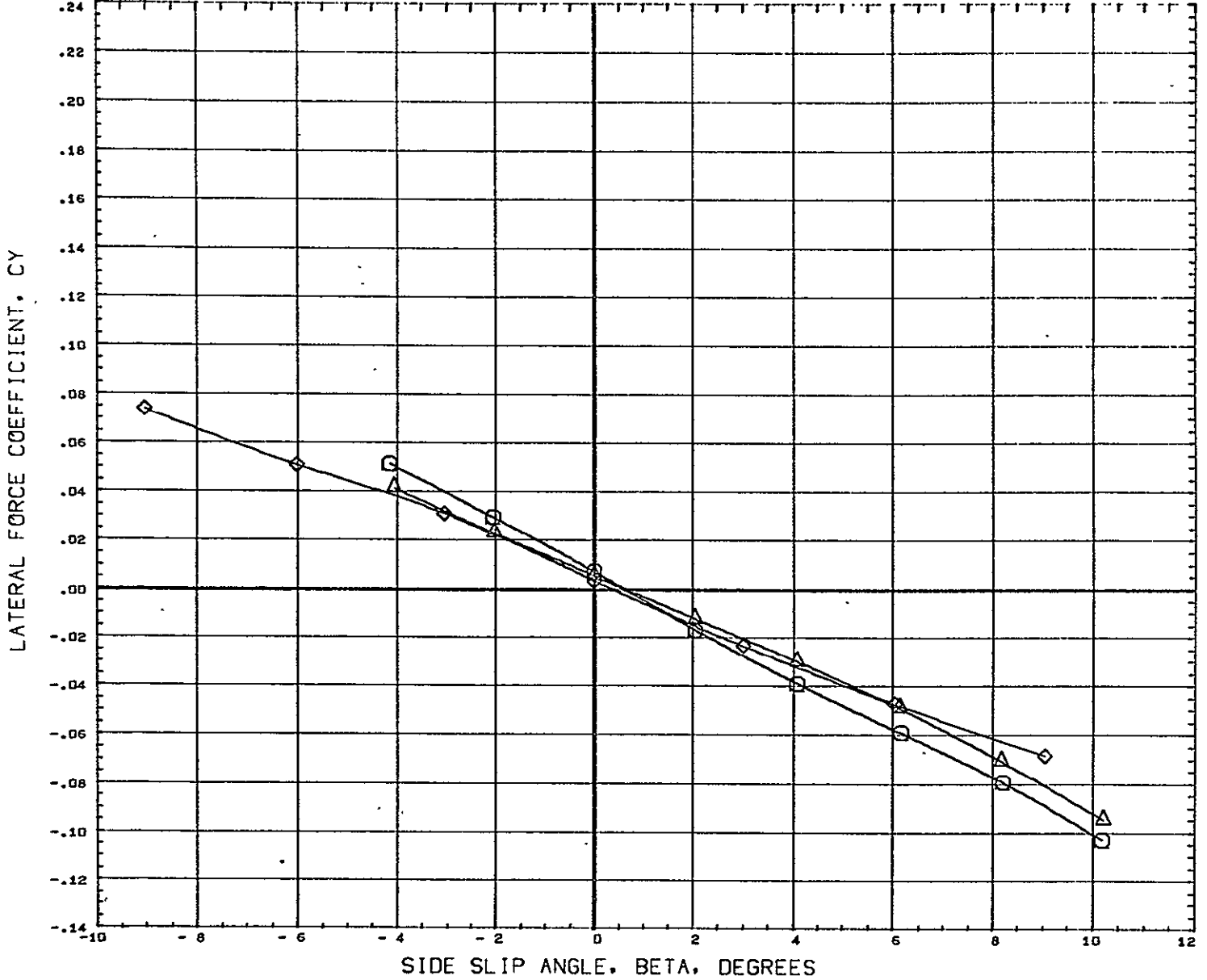
SYMBOL	MACH	PARAMETRIC VALUES
○	0.599	ALPHA 10.000 ELEVN4 0.000
△	0.698	RUDER4 0.000 STING 4.000
□	0.901	

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
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XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

REFERENCE FILE LMSC/HREC D225042A



LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, MACH NO. EFFECTS, ALPHA = 10



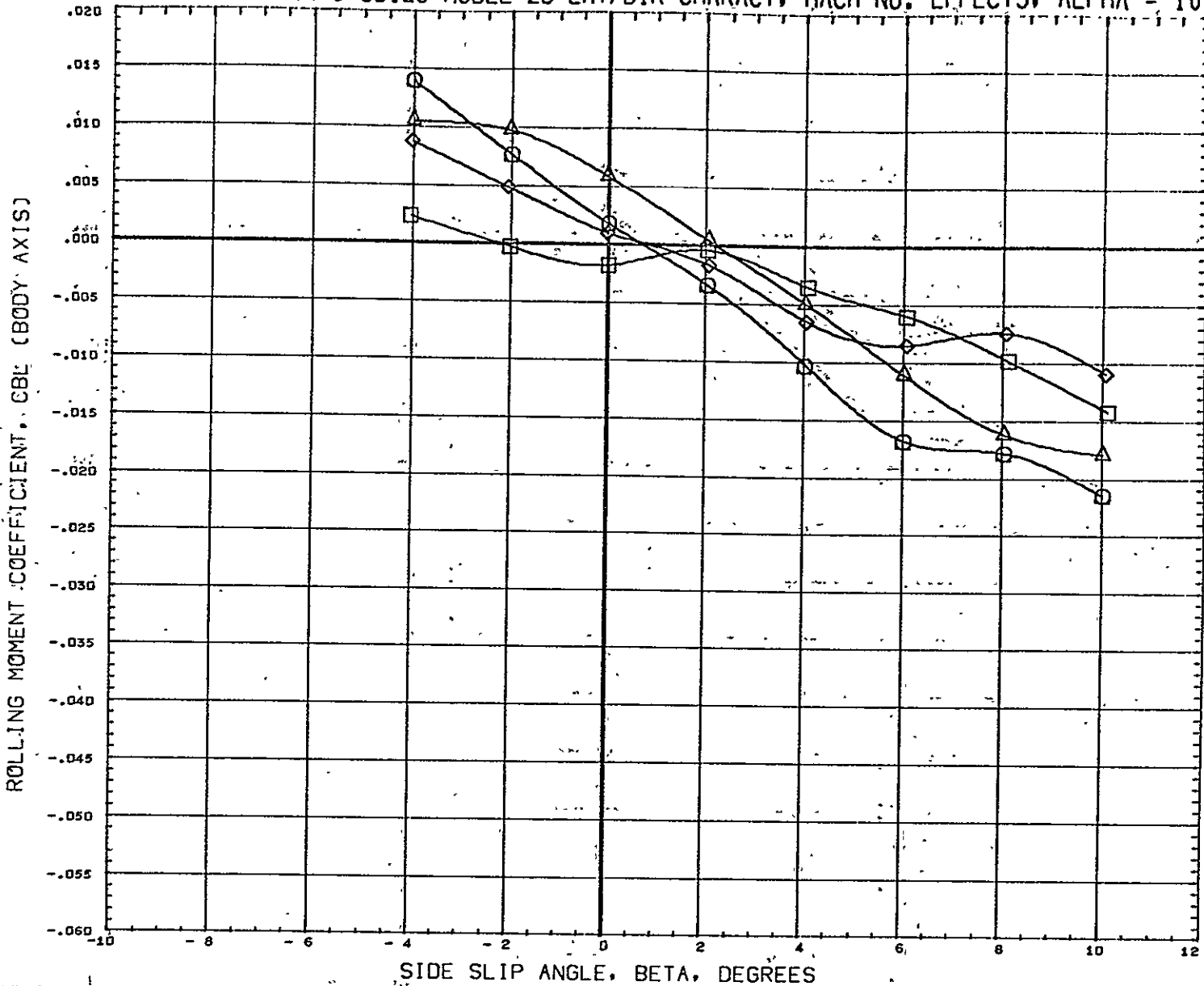
SYMBOL	MACH	PARAMETRIC VALUES			
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△	1.965	RUDER4	0.000	STING	4.000
◇	4.965				

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

REFERENCE FILE LMSC/HREC D225D42A

C.9

LSMC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT; MACH NO. EFFECTS, ALPHA = 10

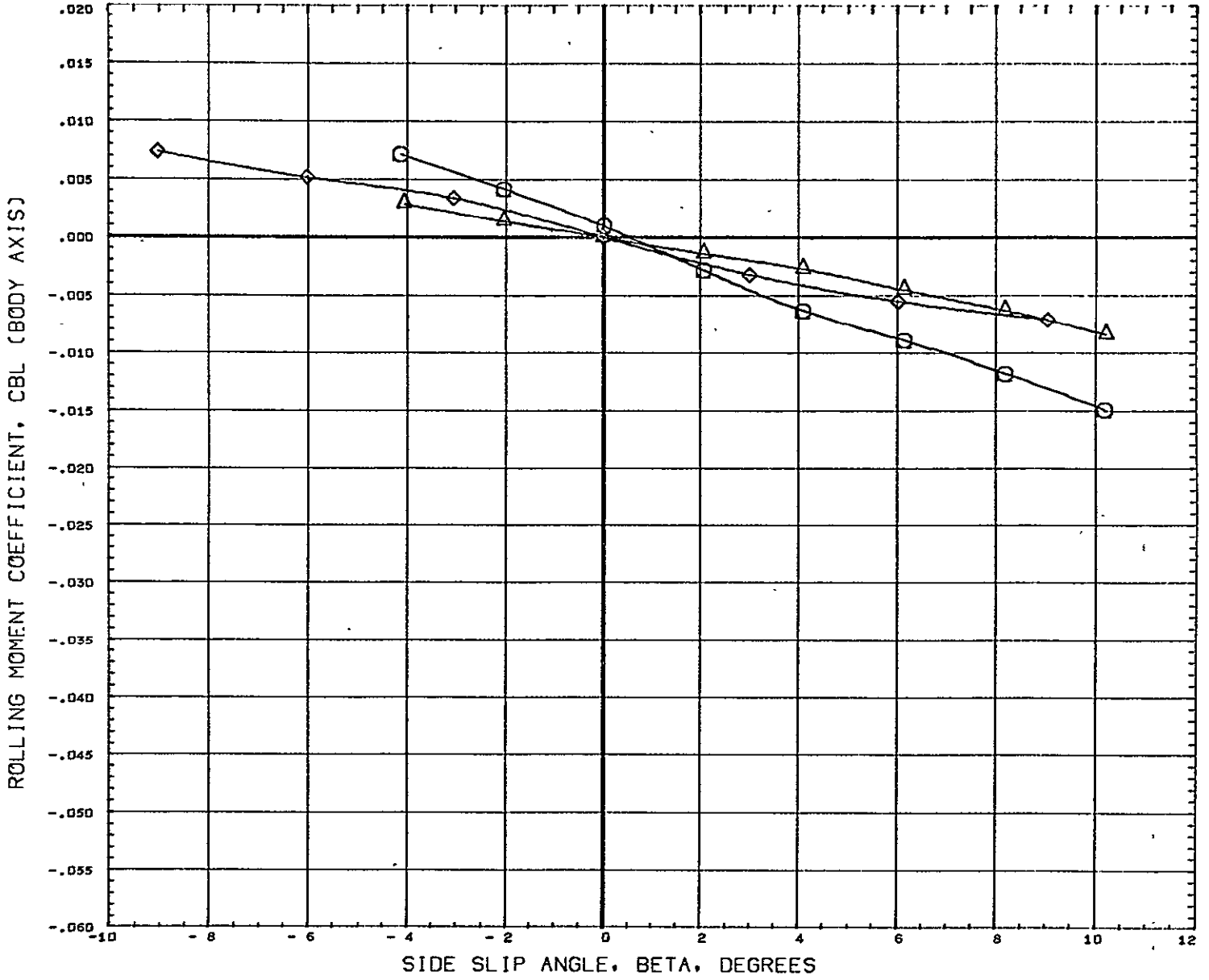


SYMBOL	MACH	PARAMETRIC VALUES
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◇	0.698	RUDER4 0.000 STING 4.000
△	0.951	
□	1.102	

REFERENCE FILE LSMC/HREC D225042A

REFERENCE INFORMATION		
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YMRP	0.0000	INCHES
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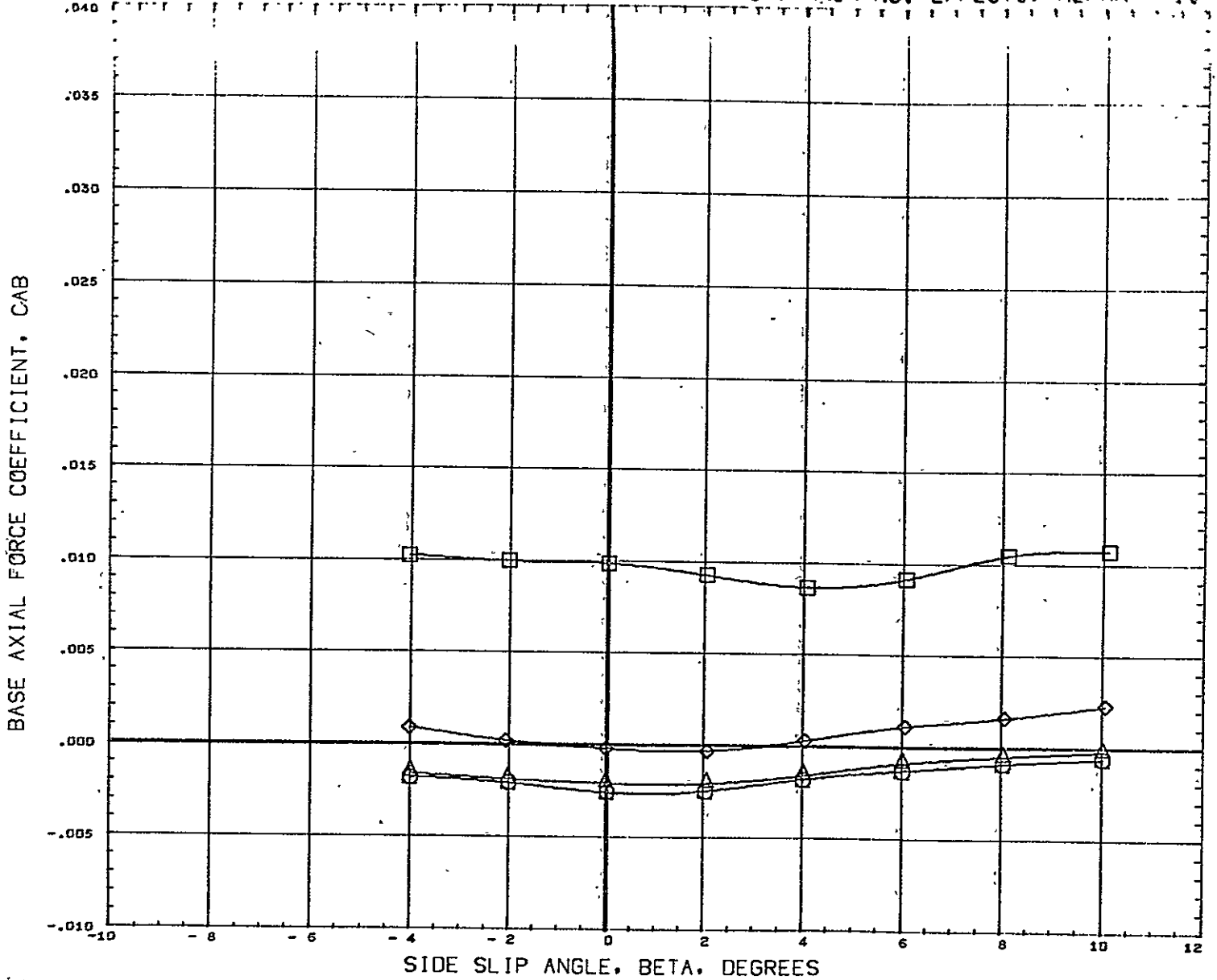
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, MACH NO., EFFECTS, ALPHA = 10



SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	1.456	ALPHA	10.000	ELEVN4	0.000	SREF	9.0250	SQ. IN
△	1.960	RUDER4	0.000	STING	4.000	LREF	6.1420	INCHES
◇	4.960					BREF	6.1420	INCHES
						XMRP	3.9950	INCHES
						YHRF	0.0000	INCHES
						ZHRF	0.1350	INCHES
						SCALE	0.0033	SCALE

REFERENCE FILE LMSC/HREC D225042A

LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, MACH NO. EFFECTS, ALPHA = 10

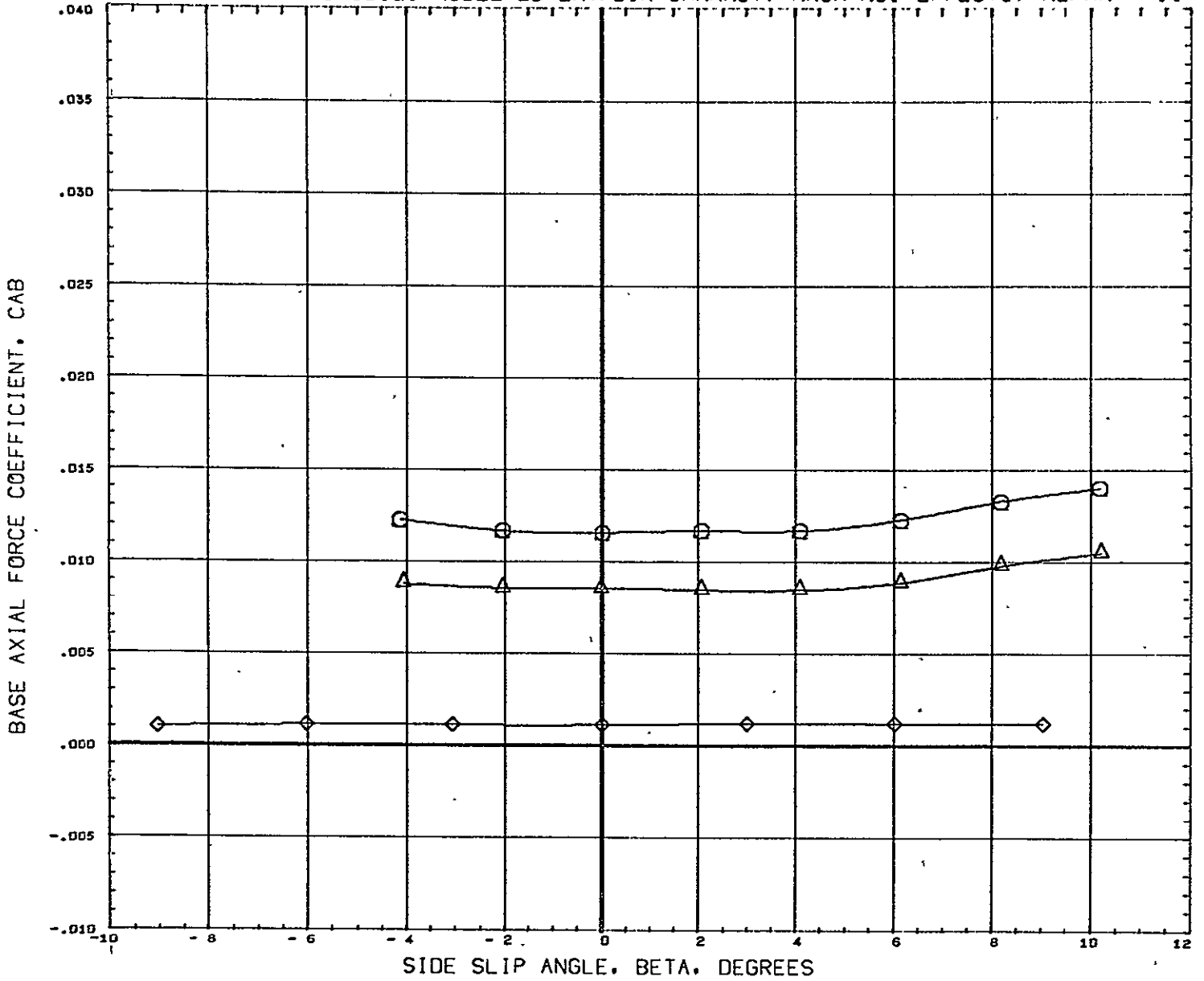


SYMBOL	MACH	PARAMETRIC VALUES			
		ALPHA	ELEVN4	STING	
□	0.599	10.000	0.000		
◇	0.698	0.000	0.000	4.000	
△	0.951				
○	1.102				

REFERENCE FILE LSHC/HREC D225042A

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

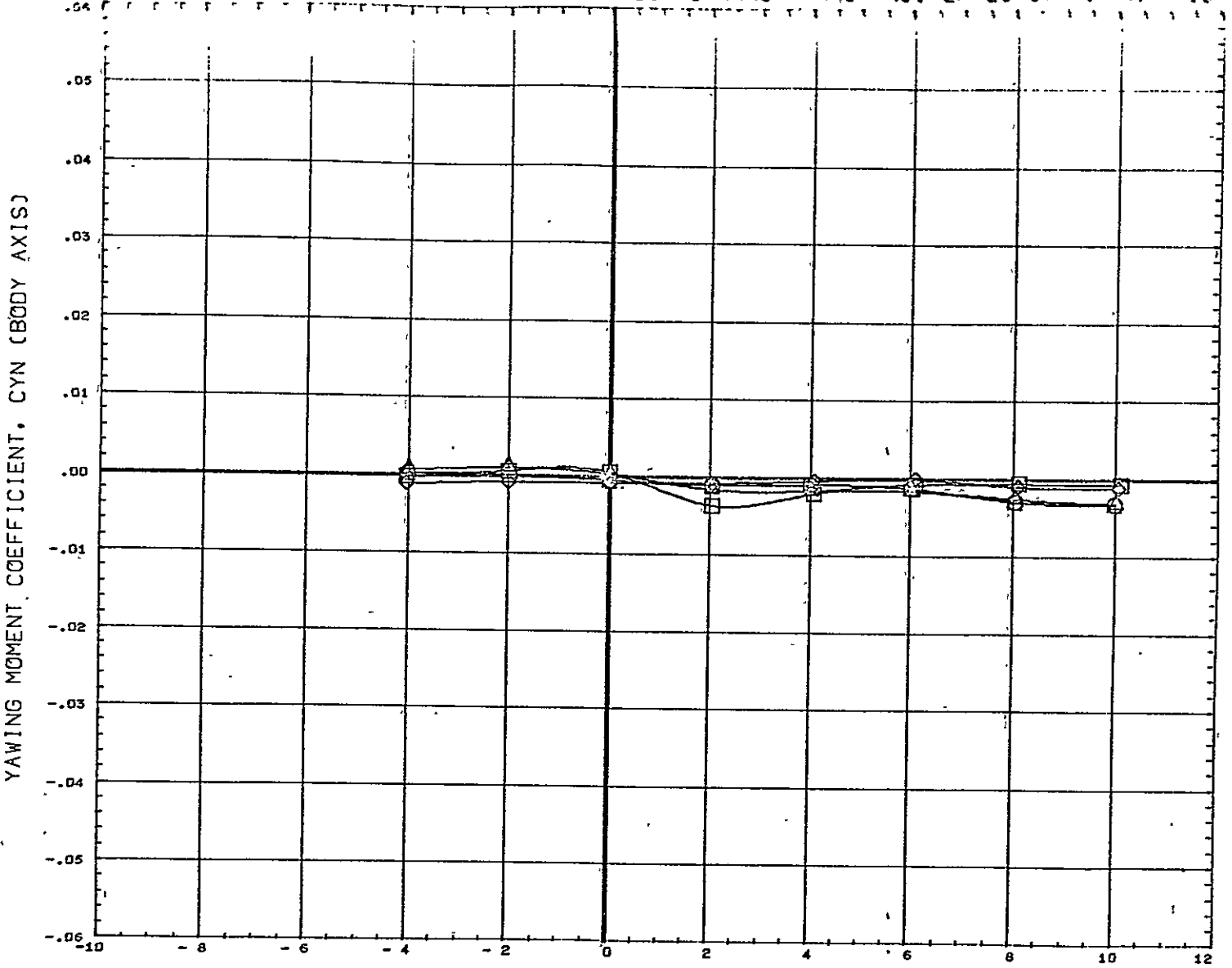
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, MACH NO. EFFECTS, ALPHA = 10



SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	1.456	ALPHA	10.000	ELEVN4	0.000	SREF	9.0250	SQ. IN
△	1.969	RUDER4	0.000	STING	4.000	LREF	6.1420	INCHES
◇	4.969					BREF	6.1420	INCHES
						XMRP	3.9950	INCHES
						YMRP	0.0000	INCHES
						ZMRP	0.1350	INCHES
						SCALE	0.0033	SCALE

REFERENCE FILE LSHC/HREC D225042A

LSMC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, MACH NO. EFFECTS, ALPHA = 15

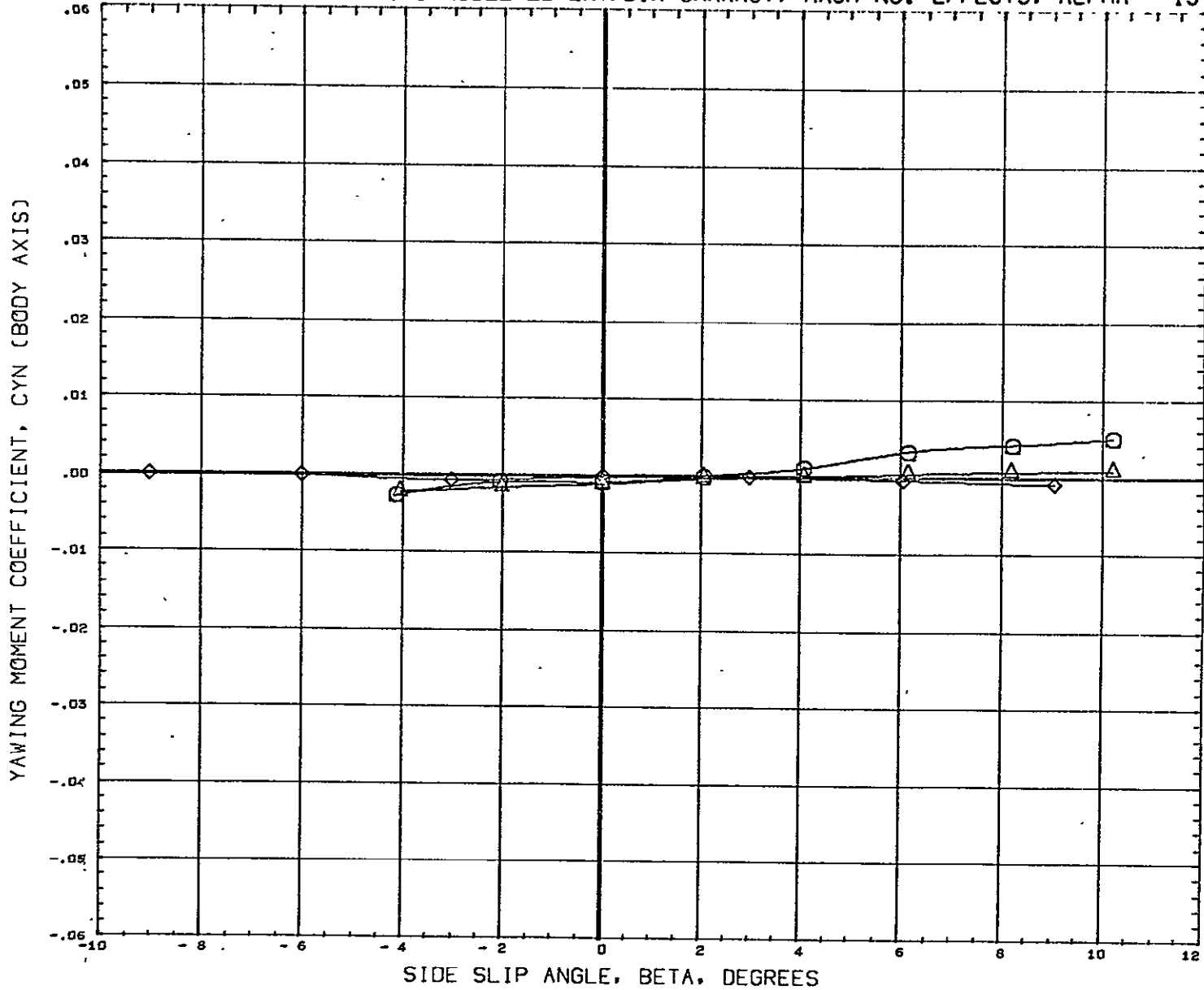


SYMBOL	MACH	PARAMETRIC VALUES			
○	0.596	ALPHA	15.000	ELEVN4	0.000
◇	0.701	RUDER4	0.000	STING	4.000
□	0.899				
△	1.103				

REFERENCE INFORMATION:		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

REFERENCE FILE LSMC/HREC D225D42A

LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, MACH NO. EFFECTS, ALPHA = 15

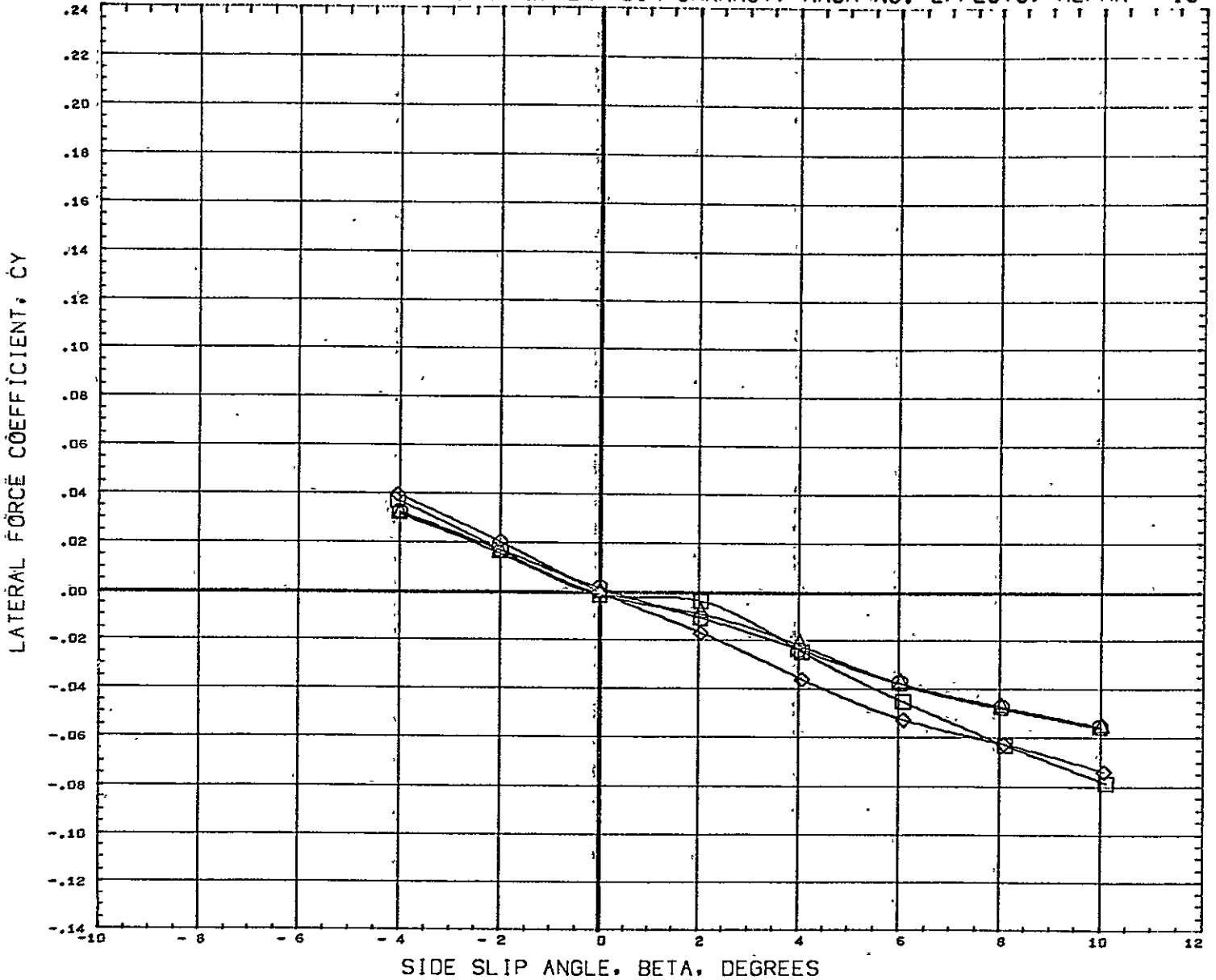


SYMBOL	MACH	PARAMETRIC VALUES			
○	1.458	ALPHA	15.000	ELEVN4	0.000
△	1.961	RUDER4	0.000	STING	4.000
◇	4.960				

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

REFERENCE FILE LMSC/HREC D225042A

LSMC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, MACH NO. EFFECTS, ALPHA = 15



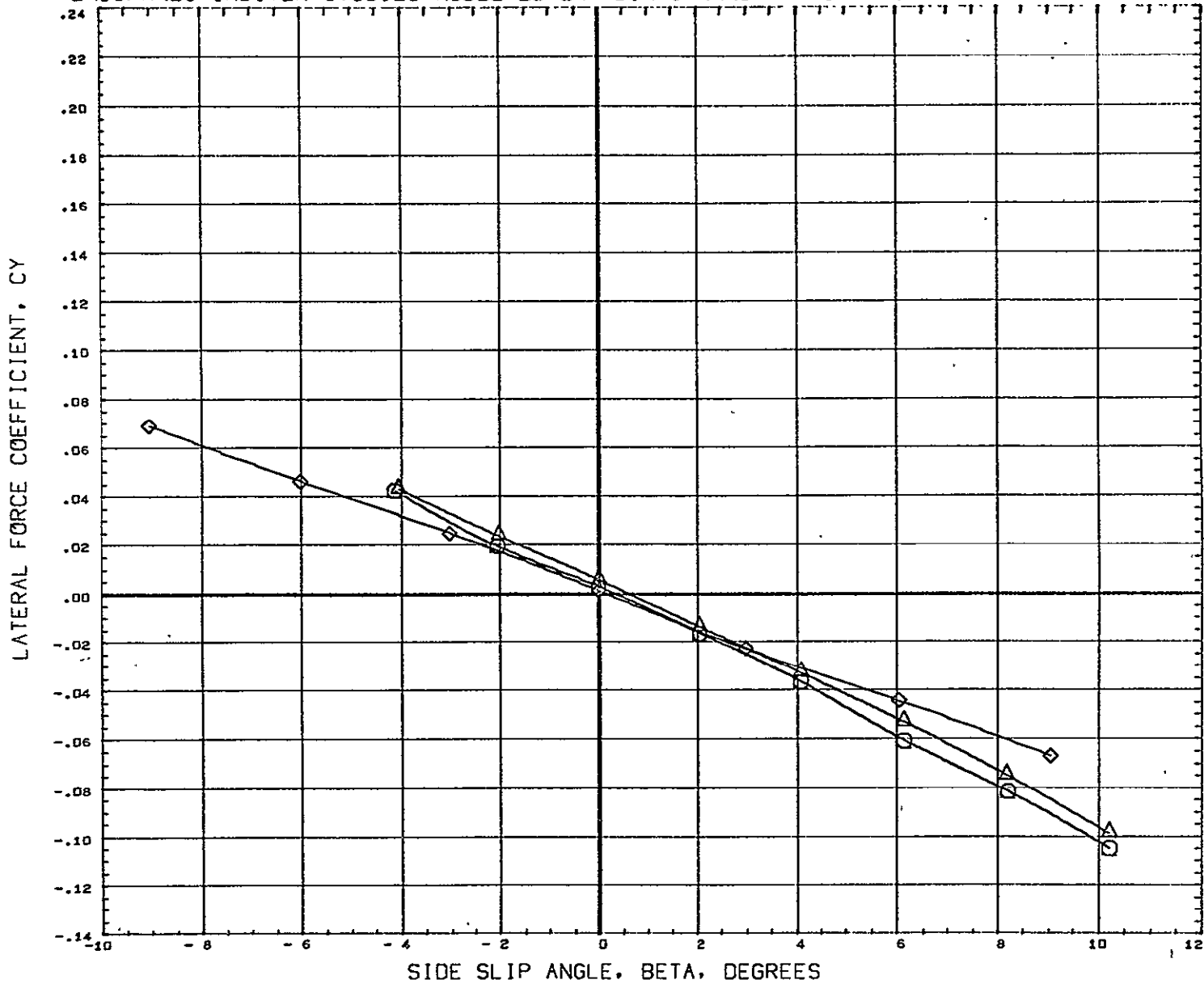
SYMBOL	MACH	PARAMETRIC VALUES		
○	0.596	ALPHA	15.000	ELEVN4 0.000
◇	0.751	RUDER4	0.000	STING 4.000
△	0.899			
□	1.103			

REFERENCE FILE LSMC/HREC D225042A

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE



LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, MACH NO. EFFECTS, ALPHA = 15

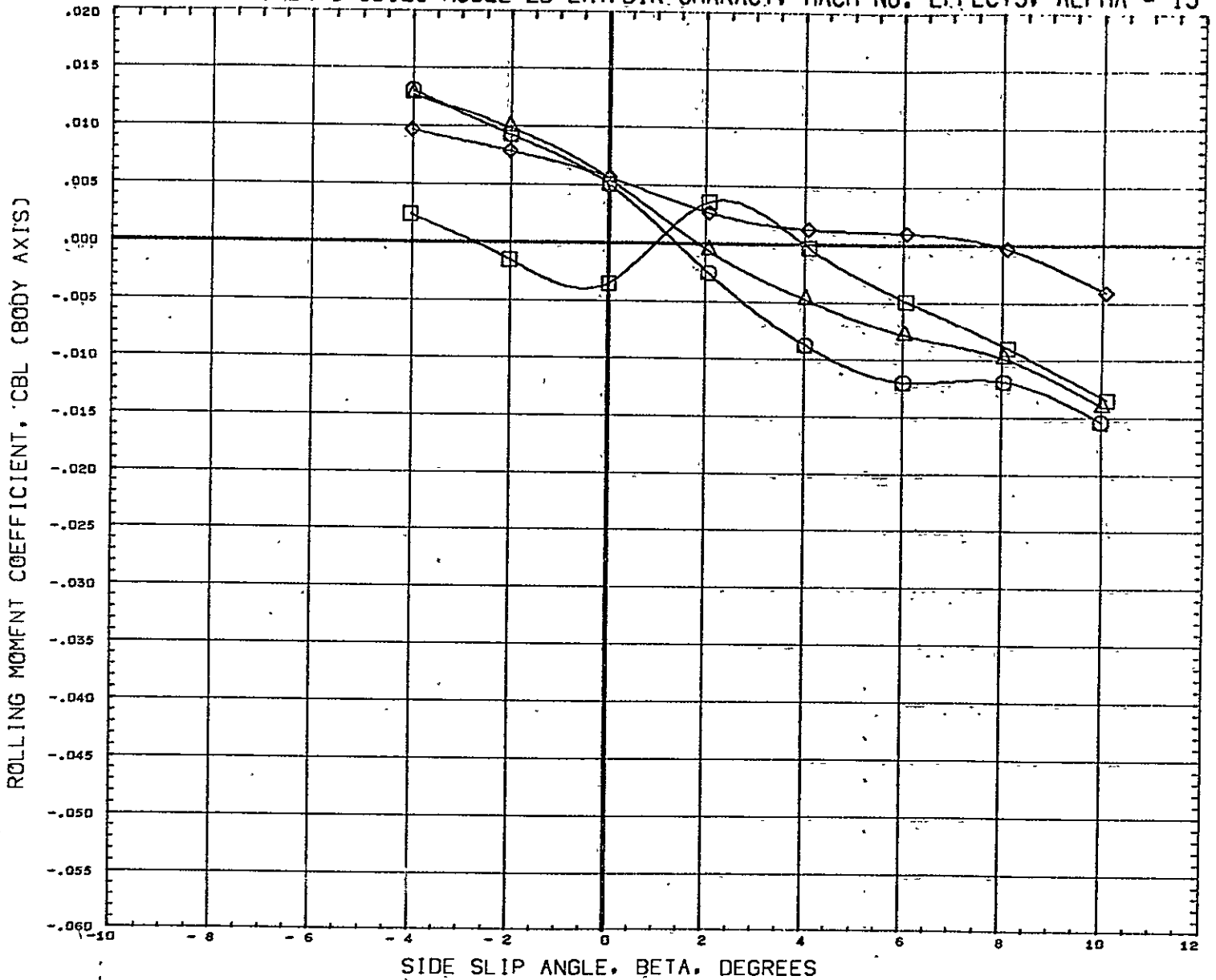


SYMBOL	MACH	PARAMETRIC VALUES			
○	1.458	ALPHA	15.000	ELEVN4	0.000
△	1.961	RUDER4	0.000	STING	4.000
◇	4.960				

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

REFERENCE FILE LSHC/HREC D225042A

LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, MACH NO. EFFECTS, ALPHA = 15

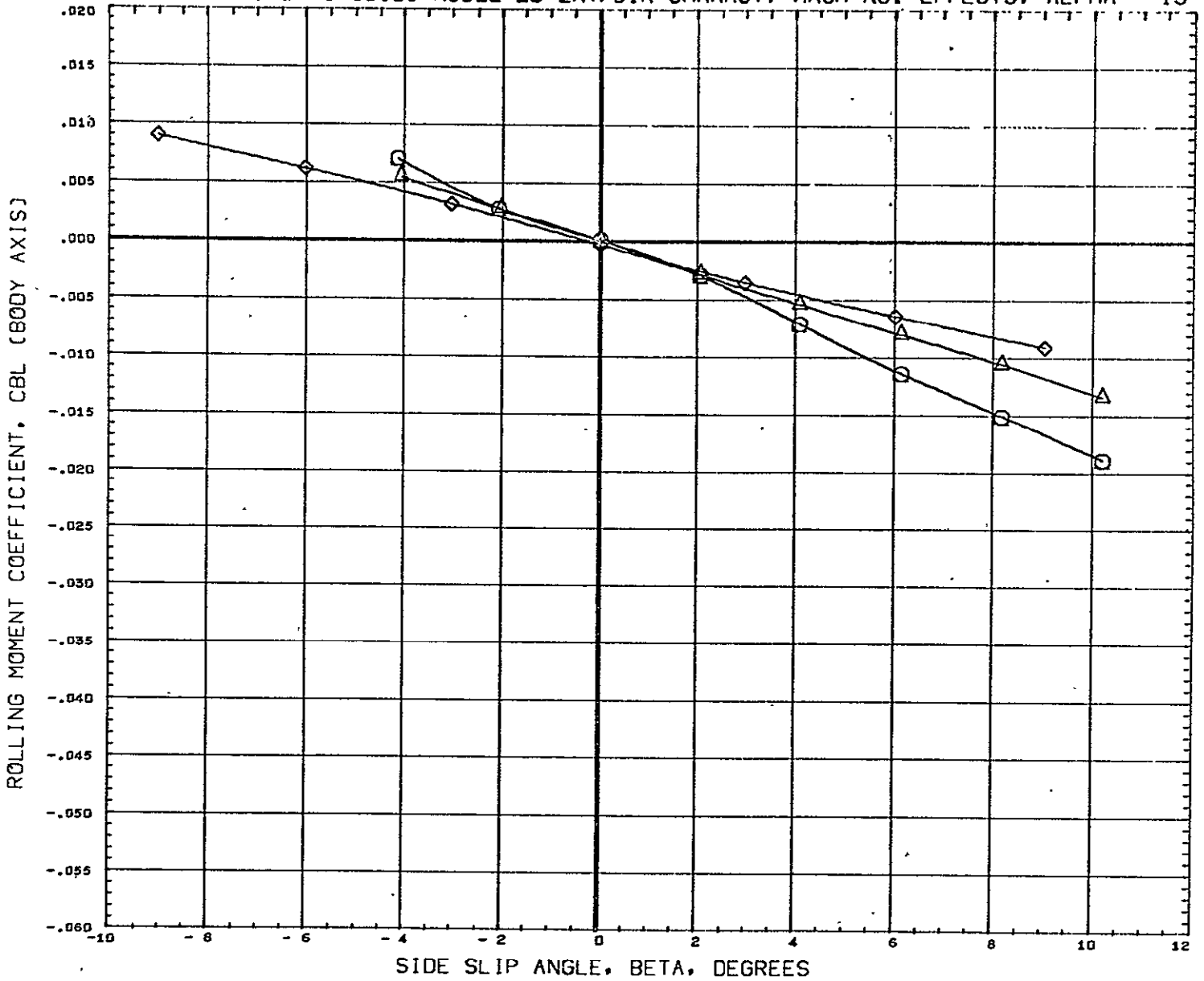


SYMBOL	MACH	PARAMETRIC VALUES			
○	0.596	ALPHA	15.000	ELEVN4	0.000
◇	0.791	RUDER4	0.000	STING	4.000
△	0.899				
□	1.103				

REFERENCE FILE LMSC/HREC D225042A

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XHRP	3.9950	INCHES
YHRP	0.0000	INCHES
ZHRP	0.1350	INCHES
SCALE	0.0033	SCALE

LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, MACH NO. EFFECTS, ALPHA = 15

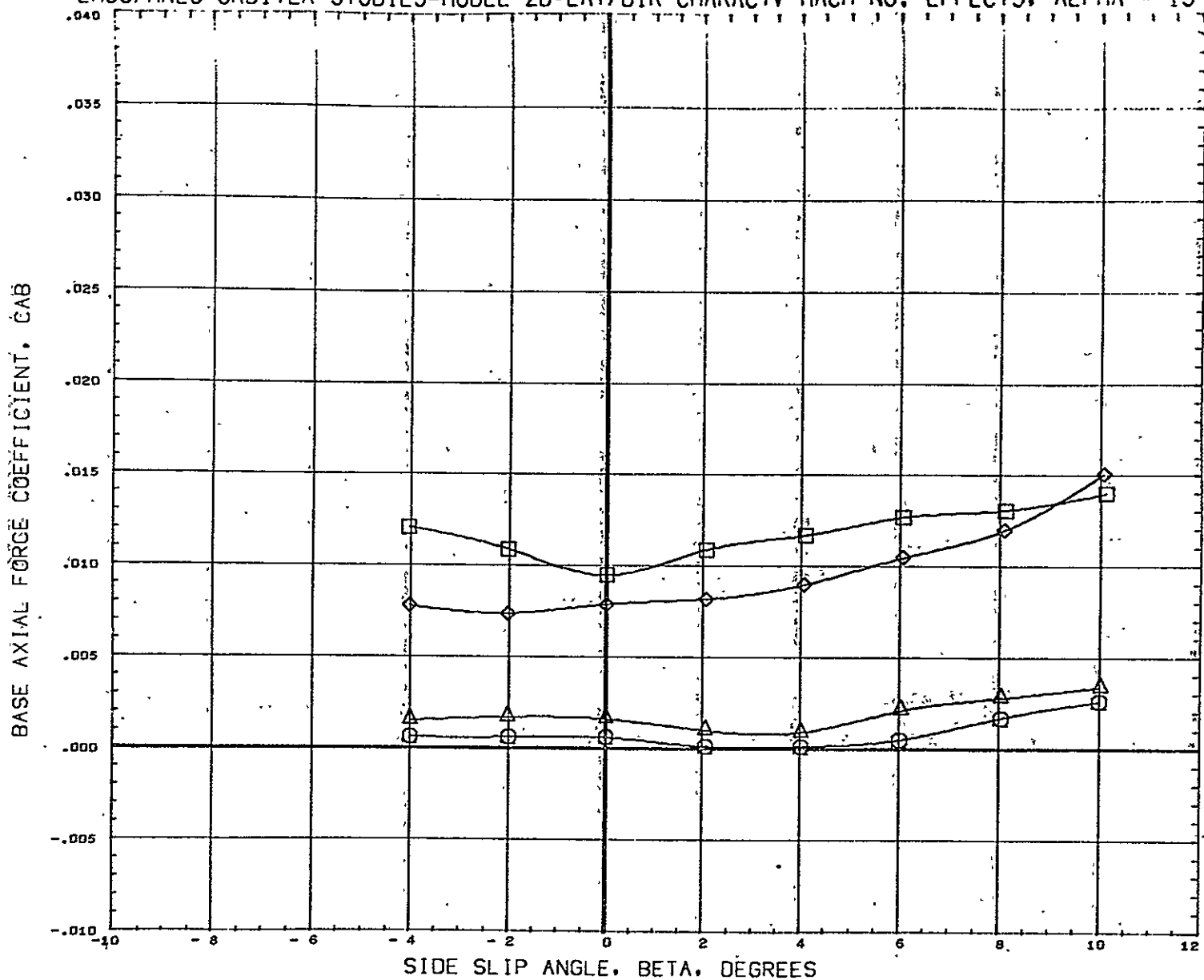


SYMBOL	MACH	PARAMETRIC VALUES			
○	1.458	ALPHA	15.000	ELEVN4	0.000
△	1.961	RUDER4	0.000	STING	4.000
◇	4.960				

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

REFERENCE FILE LSHC/HREC D225042A

MSFC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, MACH NO. EFFECTS, ALPHA = 15

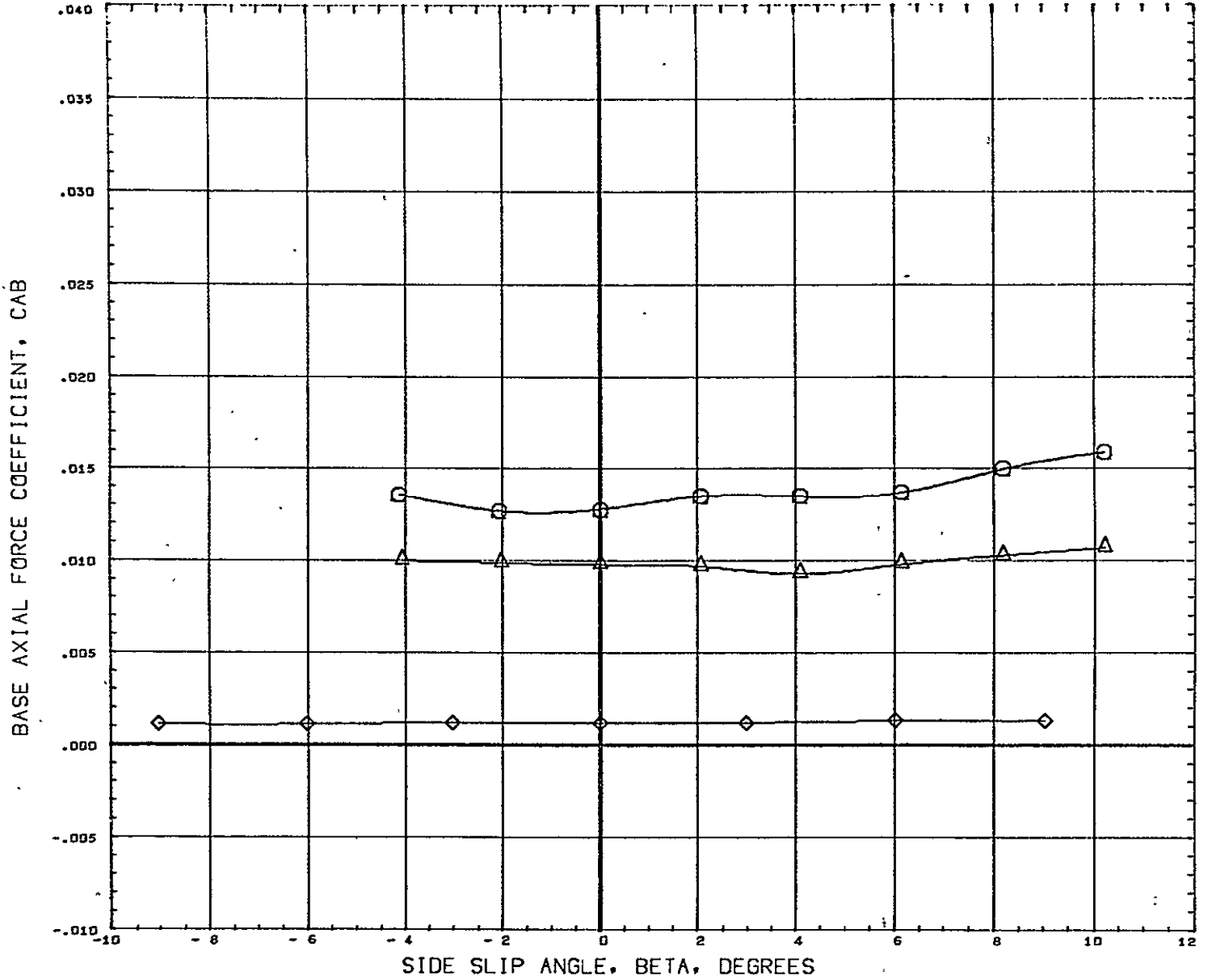


SYMBOL	MACH	PARAMETRIC VALUES			
○	0.596	ALPHA	15.000	ELEVN4	0.000
◇	0.751	RUDER4	0.000	STING	4.000
△	0.899				
□	1.153				

REFERENCE FILE LSHC/HREC D225042A

REFERENCE INFORMATION		
SREF	9.0250	50. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, MACH NO. EFFECTS, ALPHA = 15

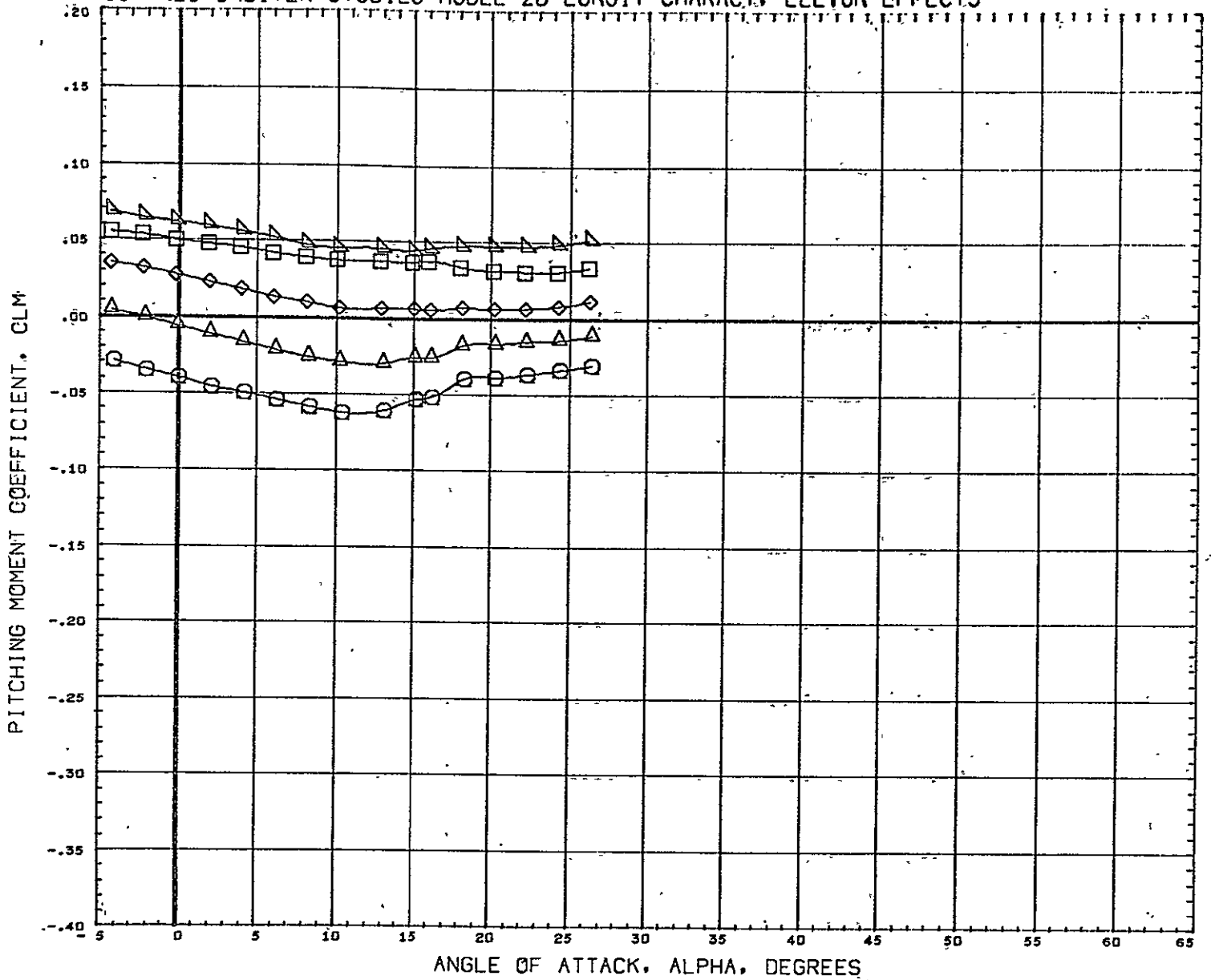


SYMBOL	MACH	PARAMETRIC VALUES			
○	1.458	ALPHA	15.000	ELEVN4	0.000
△	1.961	RUDER4	0.000	STING	4.000
◇	4.960				

REFERENCE INFORMATION:		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

REFERENCE FILE LMSC/HREC D225042A

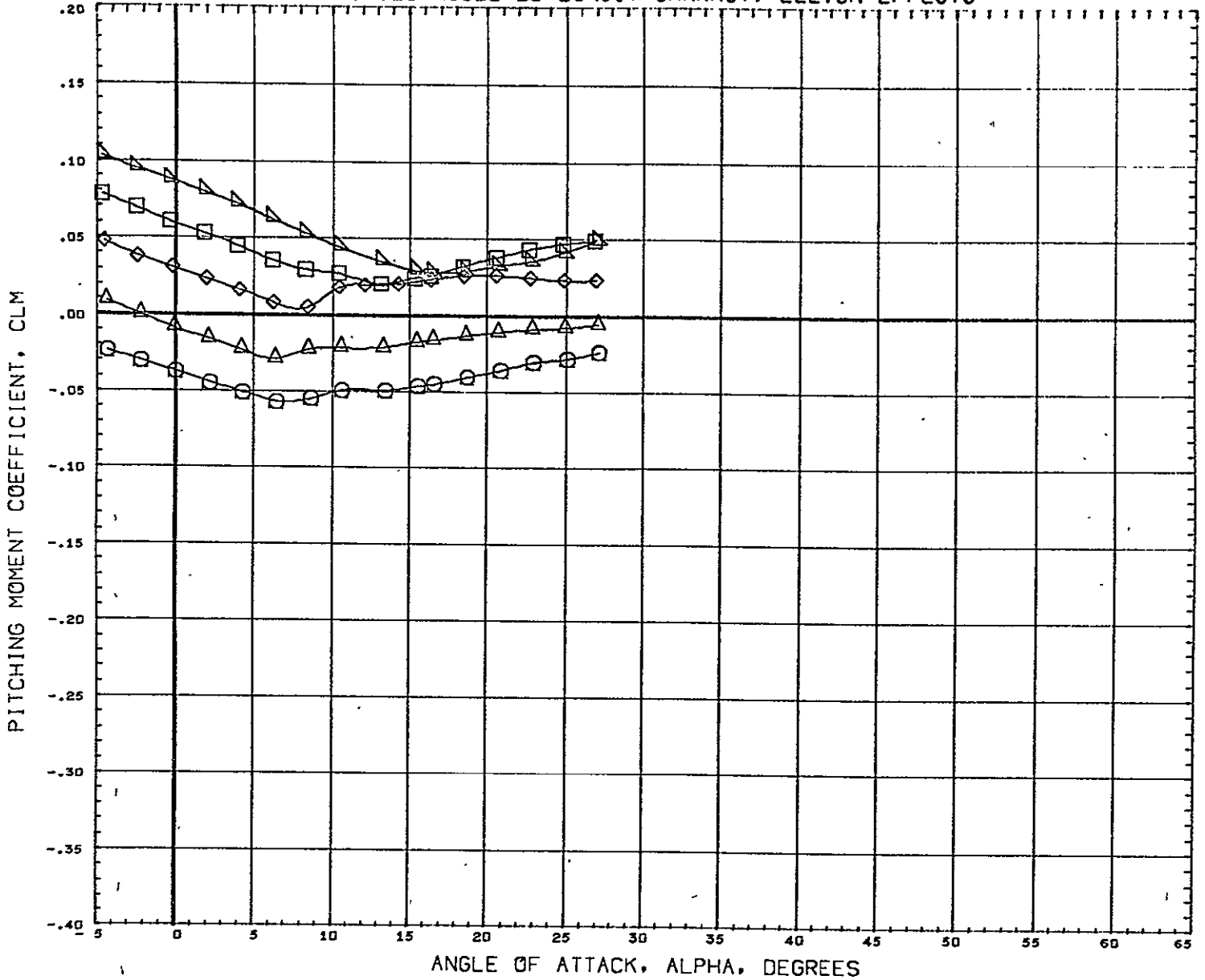
# LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, ELEVON EFFECTS



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVN4	RUDER4	STING	BETA	REFERENCE INFORMATION
(C41S02)	□	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	10.000	0.000	4.000	0.000	SREF 9.0250 SQ. IN
(C41T01)	◇	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(C41S03)	△	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(C41S04)	○	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	-20.000	0.000	4.000	0.000	XHRP 3.9950 INCHES
(C41S05)	▽	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	-30.000	0.000	4.000	0.000	YHRP 0.0000 INCHES ZHRP 0.1350 INCHES SCALE 0.0033 SCALE

MACH 0.596

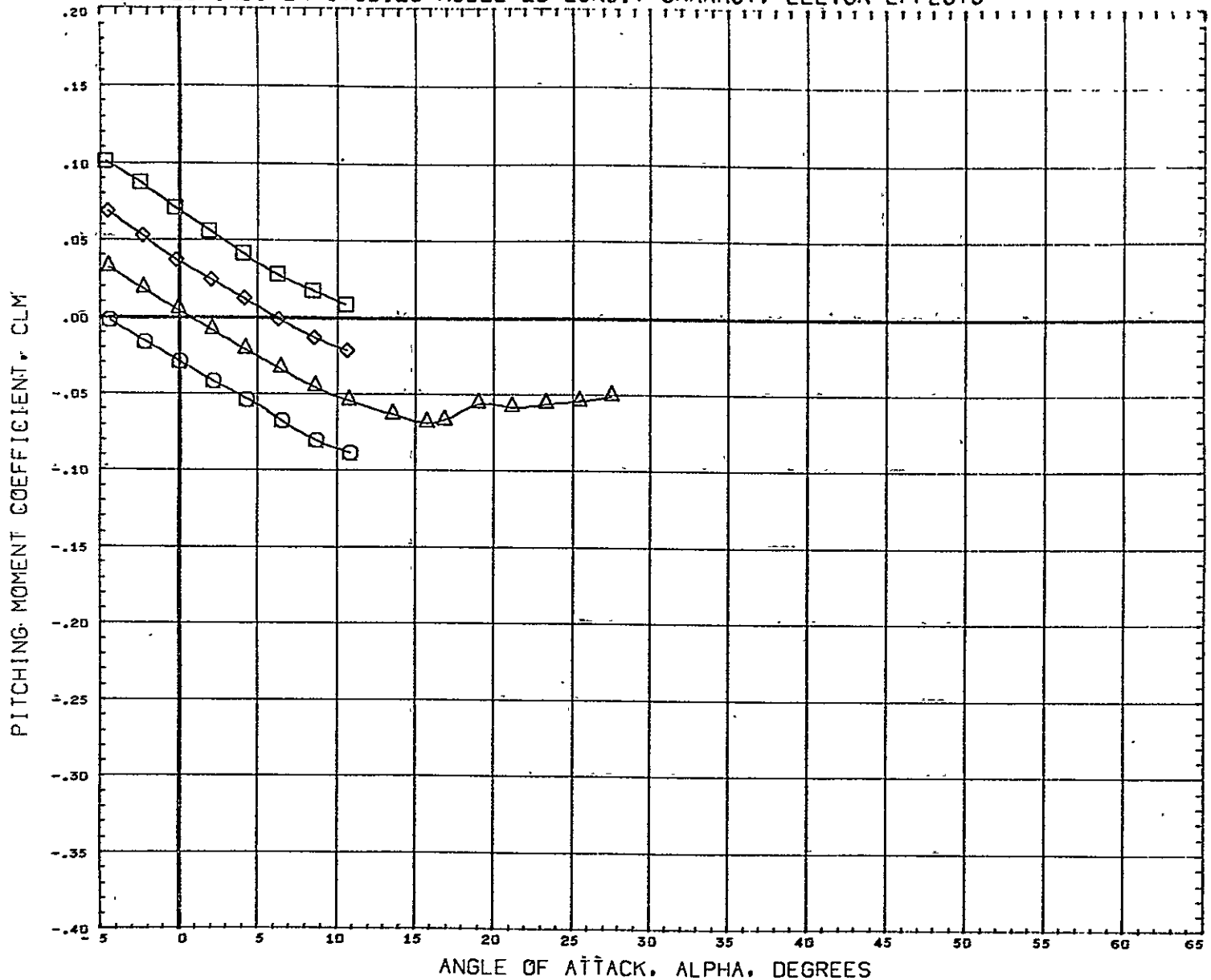
# LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, ELEVON EFFECTS



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN4	RUDER4	STING	BETA	REFERENCE INFORMATION
(D41S02)	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4	10.000	0.000	4.000	0.000 SREF 9.0250 SQ. IN
(D41T01)	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4	0.000	0.000	4.000	0.000 LREF 6.1420 INCHES
(D41S03)	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4	-10.000	0.000	4.000	0.000 BREF 6.1420 INCHES
(D41S04)	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4	-20.000	0.000	4.000	0.000 XMRP 3.9950 INCHES
(D41S05)	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4	-30.000	0.000	4.000	0.000 YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.901

# LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, ELEVON EFFECTS

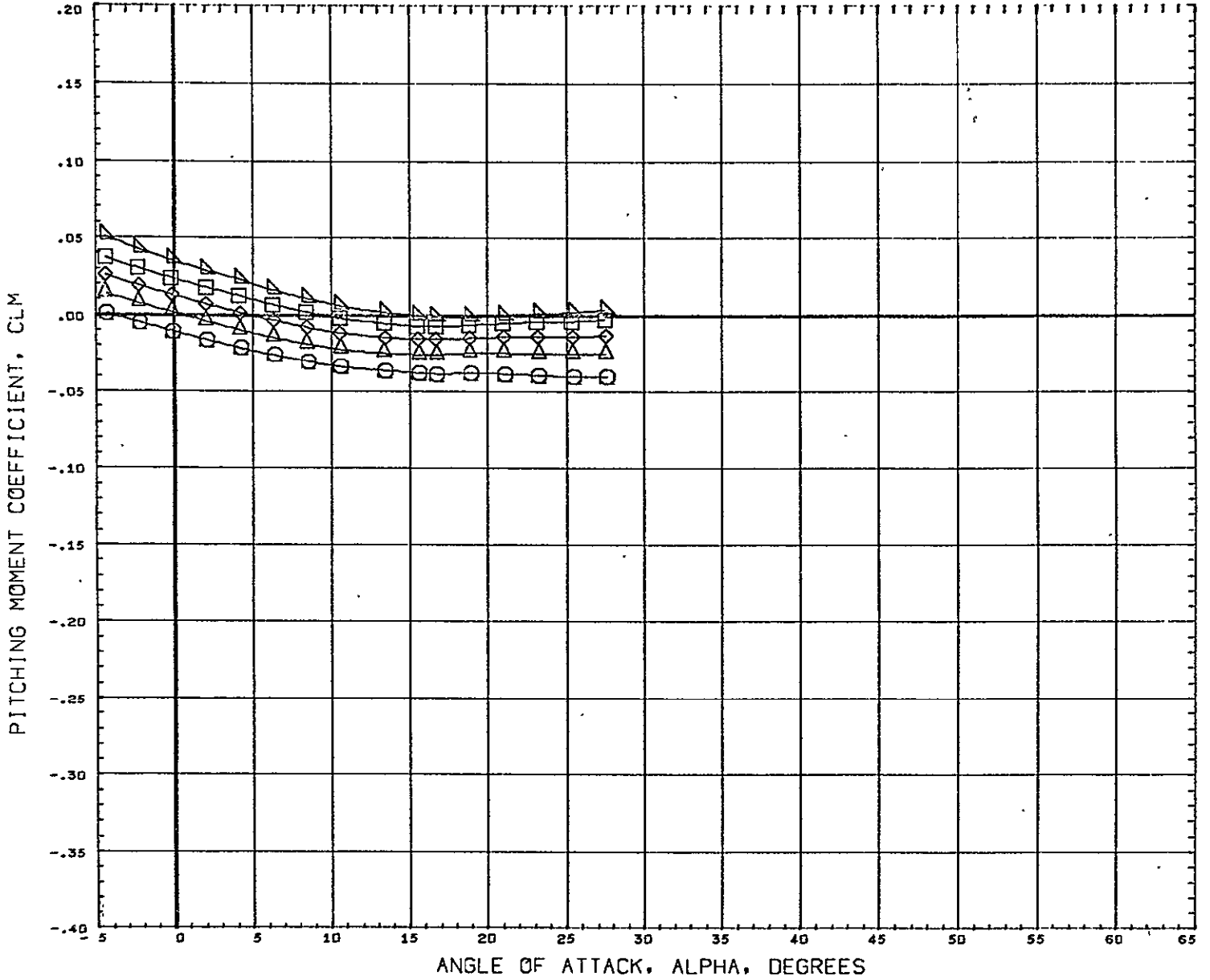


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN4	RUDER4	STING	BETA	REFERENCE INFORMATION
(D41S02)	MSFC TWT 498 MSFC/HREC ORBITER 82W5V2E4R4	10.000	0.000	4.000	0.000	SREF 9.0250 SQ. IN
(D41T51)	MSFC TWT 498 MSFC/HREC ORBITER 82W5V2E4R4	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D41S03)	MSFC TWT 498 MSFC/HREC ORBITER 82W5V2E4R4	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D41S04)	MSFC TWT 498 MSFC/HREC ORBITER 82W5V2E4R4	-20.000	0.000	4.000	0.000	XMRP 3.9950 INCHES
(D41S05)	DATA NOT AVAILABLE FOR ALL CONDITIONS	-30.000	0.000	4.000	0.000	YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.993



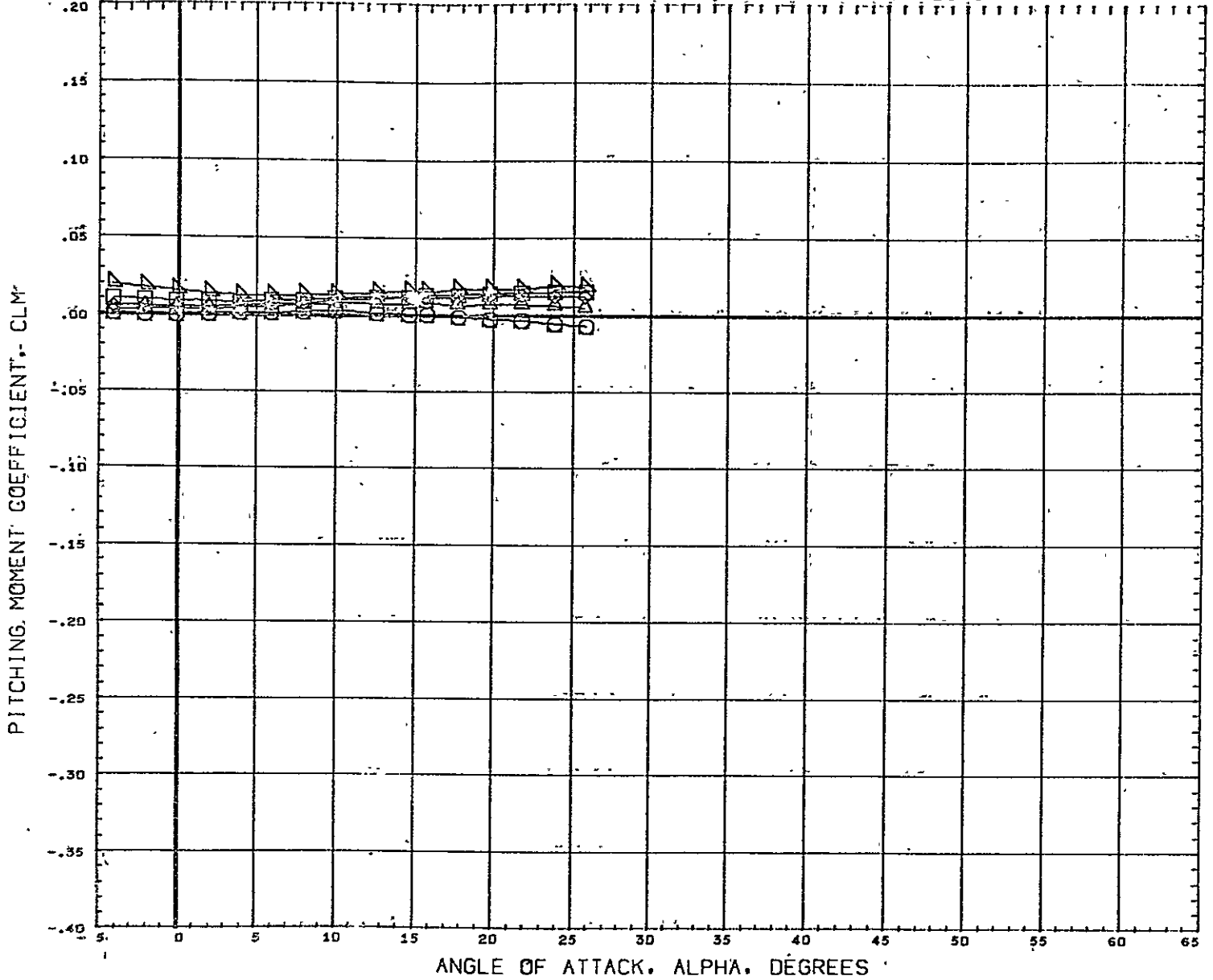
# LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, ELEVON EFFECTS



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN4	RUDER4	STING	BETA	REFERENCE INFORMATION
(D41S02)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	10.000	0.000	4.000	0.000	SREF 9.0250 SQ. IN
(D41T01)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D41S03)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D41S04)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	-20.000	0.000	4.000	0.000	XMRP 3.9950 INCHES
(D41S05)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	-30.000	0.000	4.000	0.000	YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.960

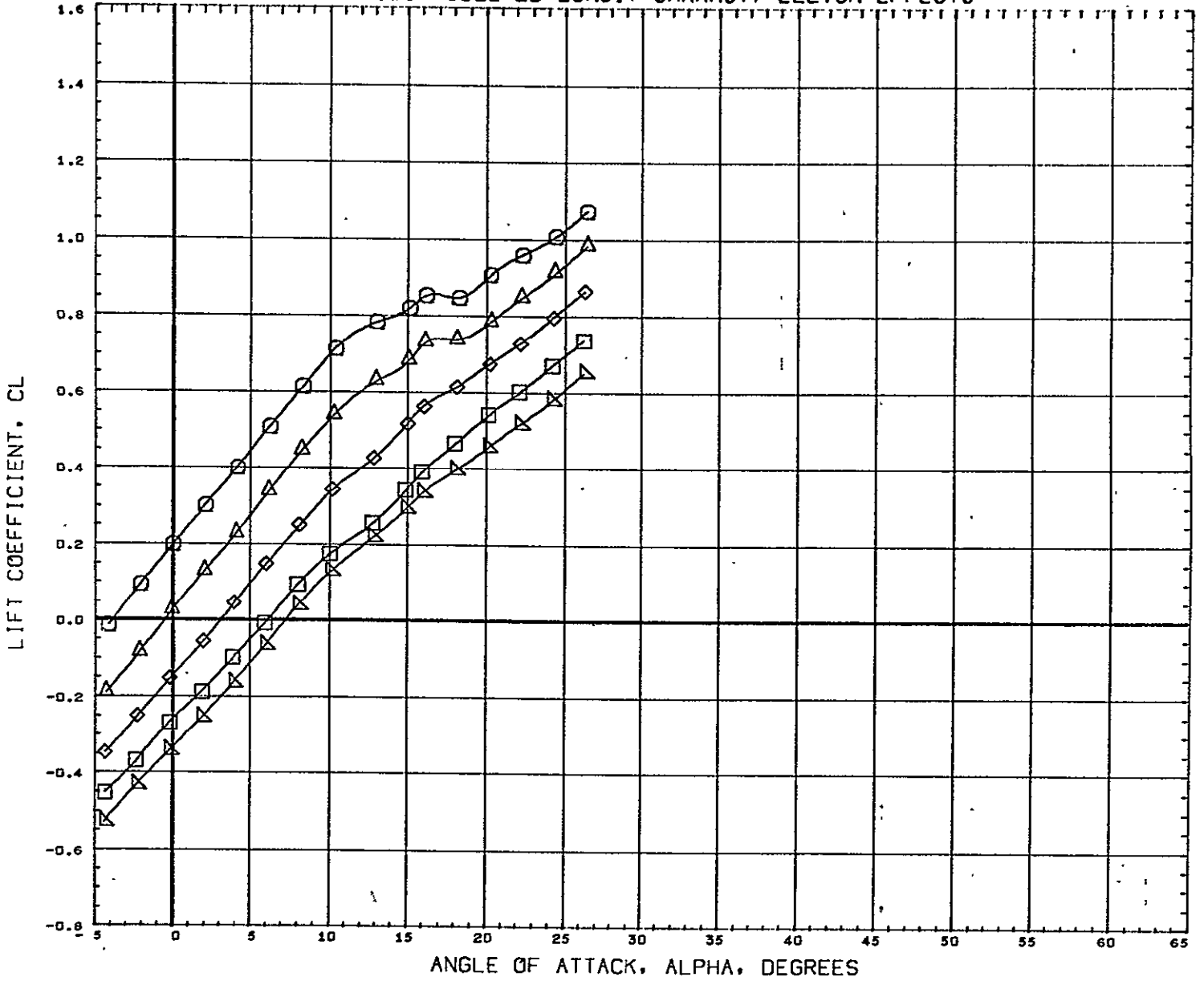
# LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT; ELEVON EFFECTS



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN4	RUDER4	STING	BETA	REFERENCE INFORMATION
(041502)	MSFC TWT 498 MSFC/HREC ORBITER	10.000	0.000	4.000	0.000	SREF 9.0250 SQ. IN
(041701)	MSFC TWT 498 MSFC/HREC ORBITER	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(041503)	MSFC TWT 498 MSFC/HREC ORBITER	0.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(041504)	MSFC TWT 498 MSFC/HREC ORBITER	-10.000	0.000	4.000	0.000	XMRP 3.9950 INCHES
(041505)	MSFC TWT 498 MSFC/HREC ORBITER	-20.000	0.000	4.000	0.000	YMRP 0.0000 INCHES
		-30.000	0.000	4.000	0.000	ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 4.960

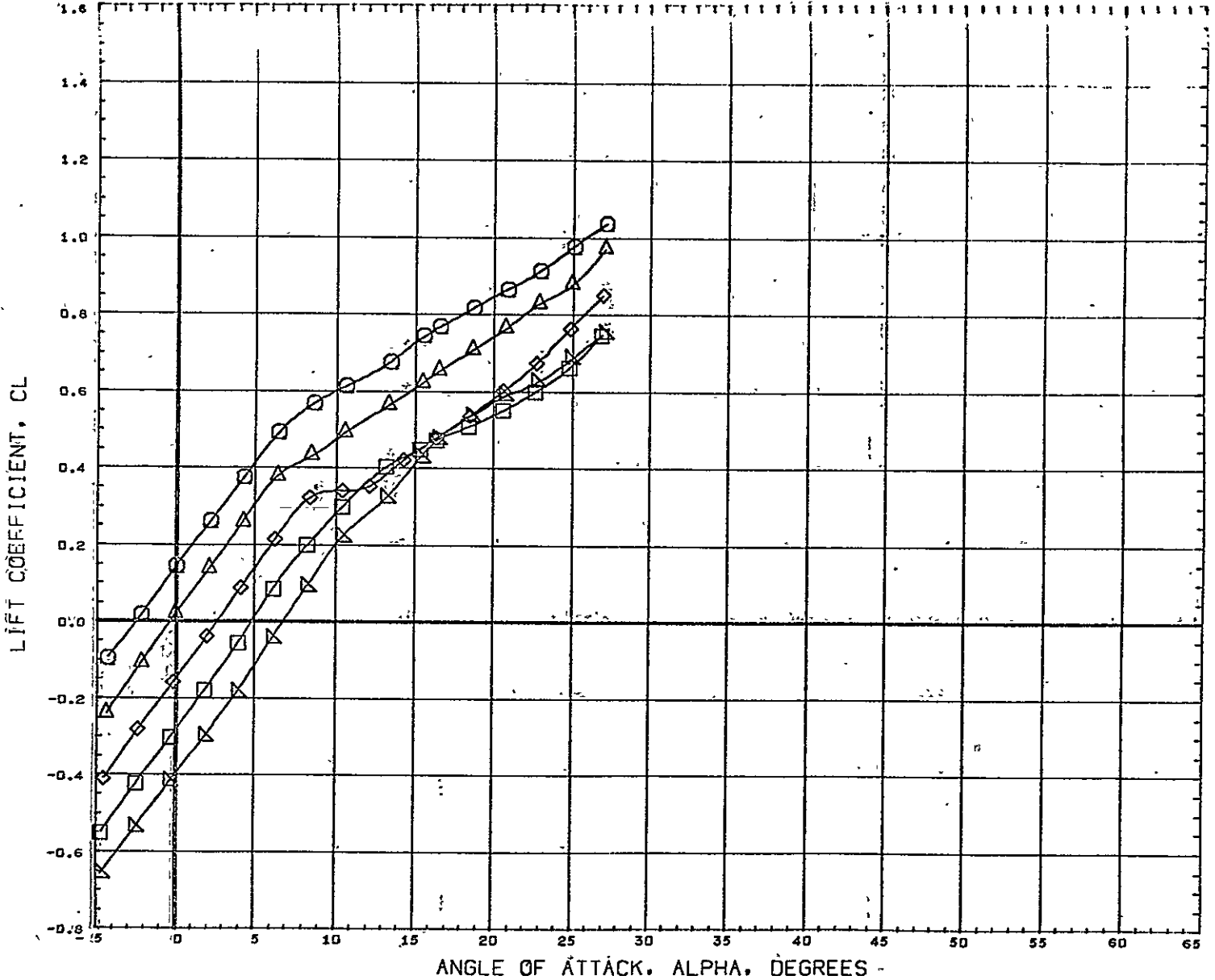
# LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, ELEVON EFFECTS



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN4	RUDE4	STING	BETA	REFERENCE INFORMATION
(D41S02)	MSFC TWT 498 MSFC/HREC ORBITER	10.000	0.000	4.000	0.000	SREF 9.0250 SQ. IN
(D41T91)	MSFC TWT 498 MSFC/HREC ORBITER	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D41S03)	MSFC TWT 498 MSFC/HREC ORBITER	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D41S04)	MSFC TWT 498 MSFC/HREC ORBITER	-20.000	0.000	4.000	0.000	XMRP 3.9950 INCHES
(D41S05)	MSFC TWT 498 MSFC/HREC ORBITER	-30.000	0.000	4.000	0.000	YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.596

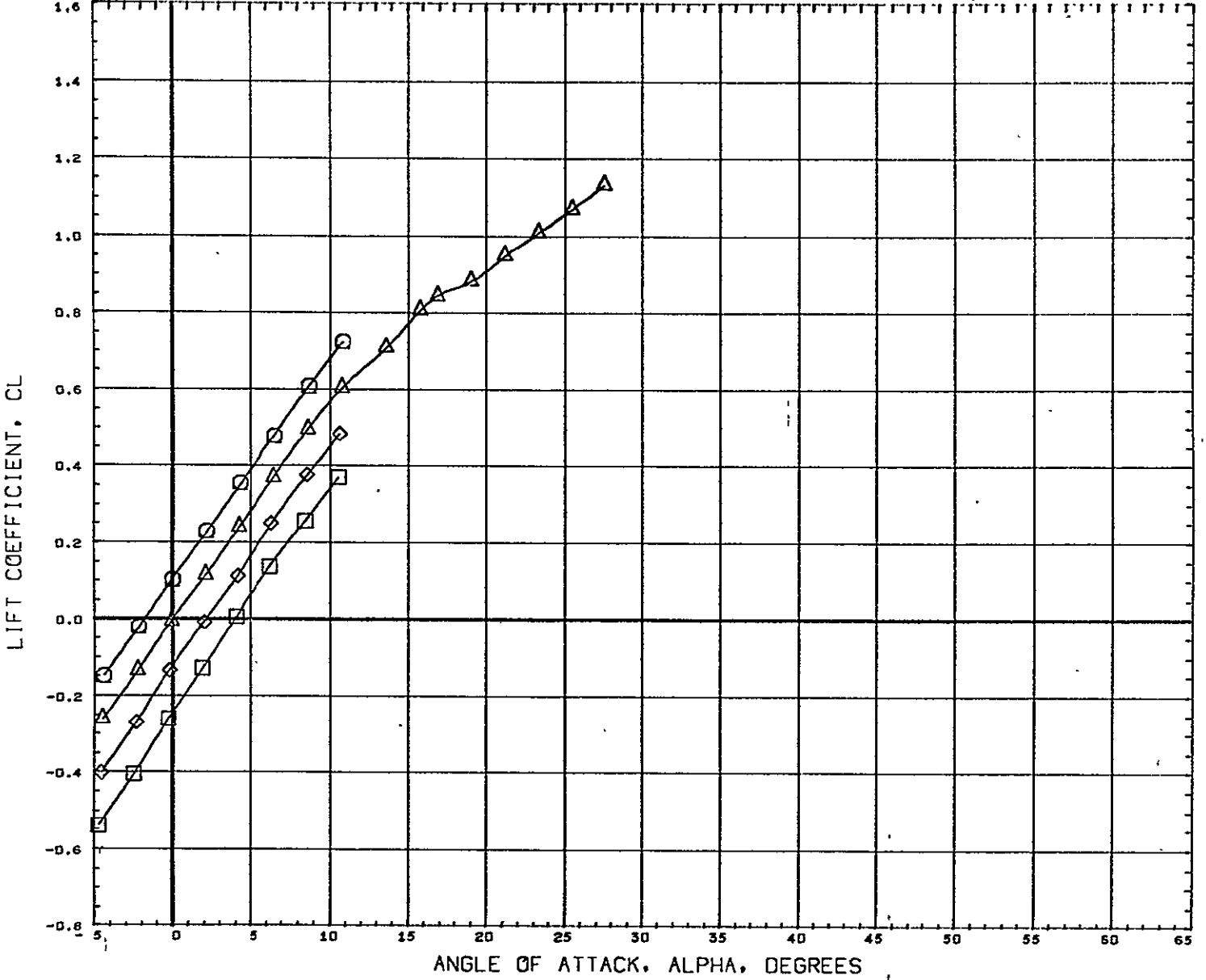
# LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT. ELEVON EFFECTS



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVN4	RUDER4	STING	BETA	REFERENCE INFORMATION
(D41SD2)	○	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	10.000	0.000	4.000	0.000	SREF 9.0250 SQ. IN
(D41SD1)	△	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D41SD3)	◇	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D41SD4)	□	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	-20.000	0.000	4.000	0.000	XMRP 3.9950 INCHES
(D41SD5)	▽	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	-30.000	0.000	4.000	0.000	YMRP 0.0000 INCHES ZMRP 0.1350 INCHES SCALE 0.0033 SCALE

MACH 0.991

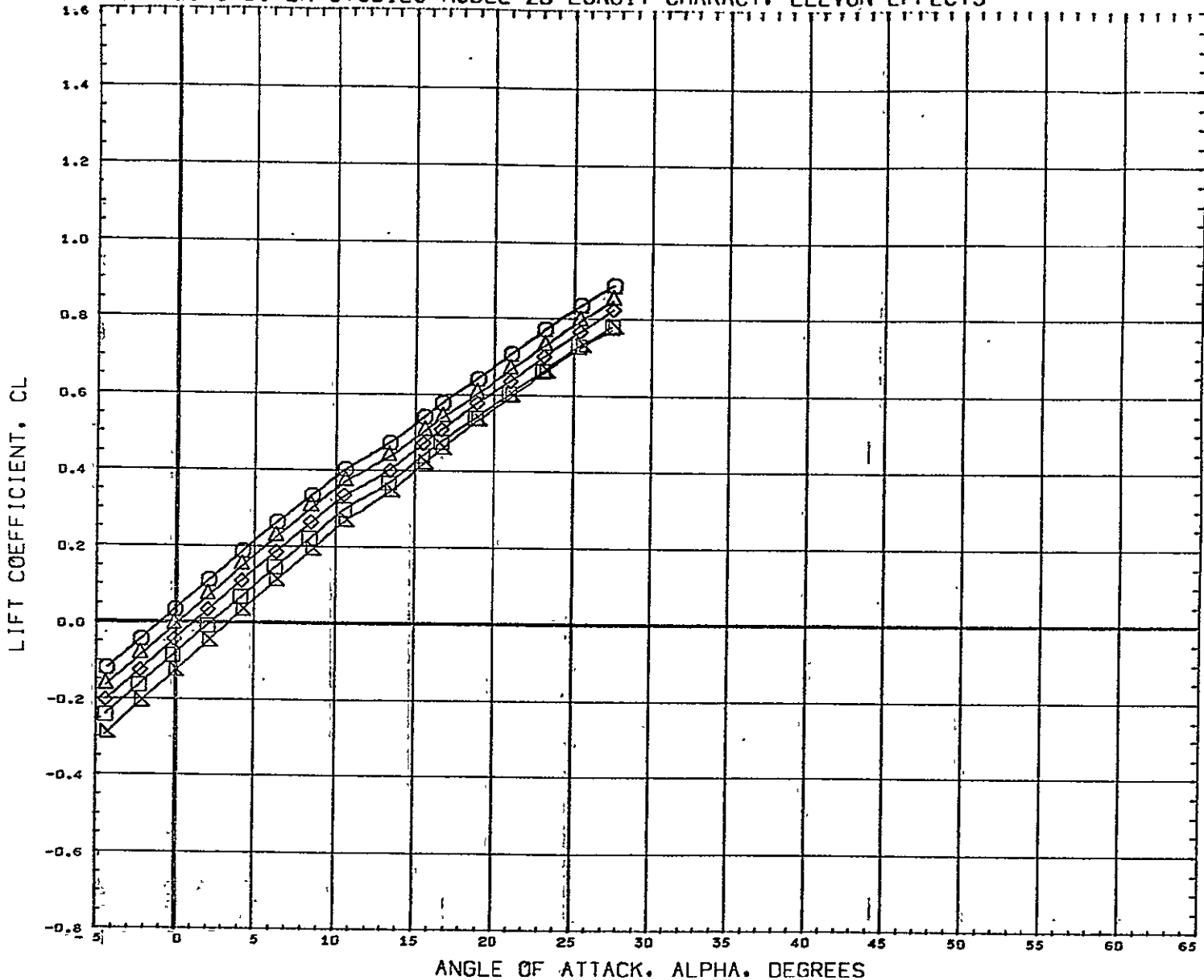
# LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, ELEVON EFFECTS



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN4	RUDER4	STING	BETA	REFERENCE INFORMATION
(D41S02)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	10.000	0.000	4.000	0.000	SREF 9.0250 SQ. IN
(D41T01)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D41S03)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D41S04)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	-20.000	0.000	4.000	0.000	XMRP 3.9950 INCHES
(D41S05)	DATA NOT AVAILABLE FOR ALL CONDITIONS	-30.000	0.000	4.000	0.000	YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.093

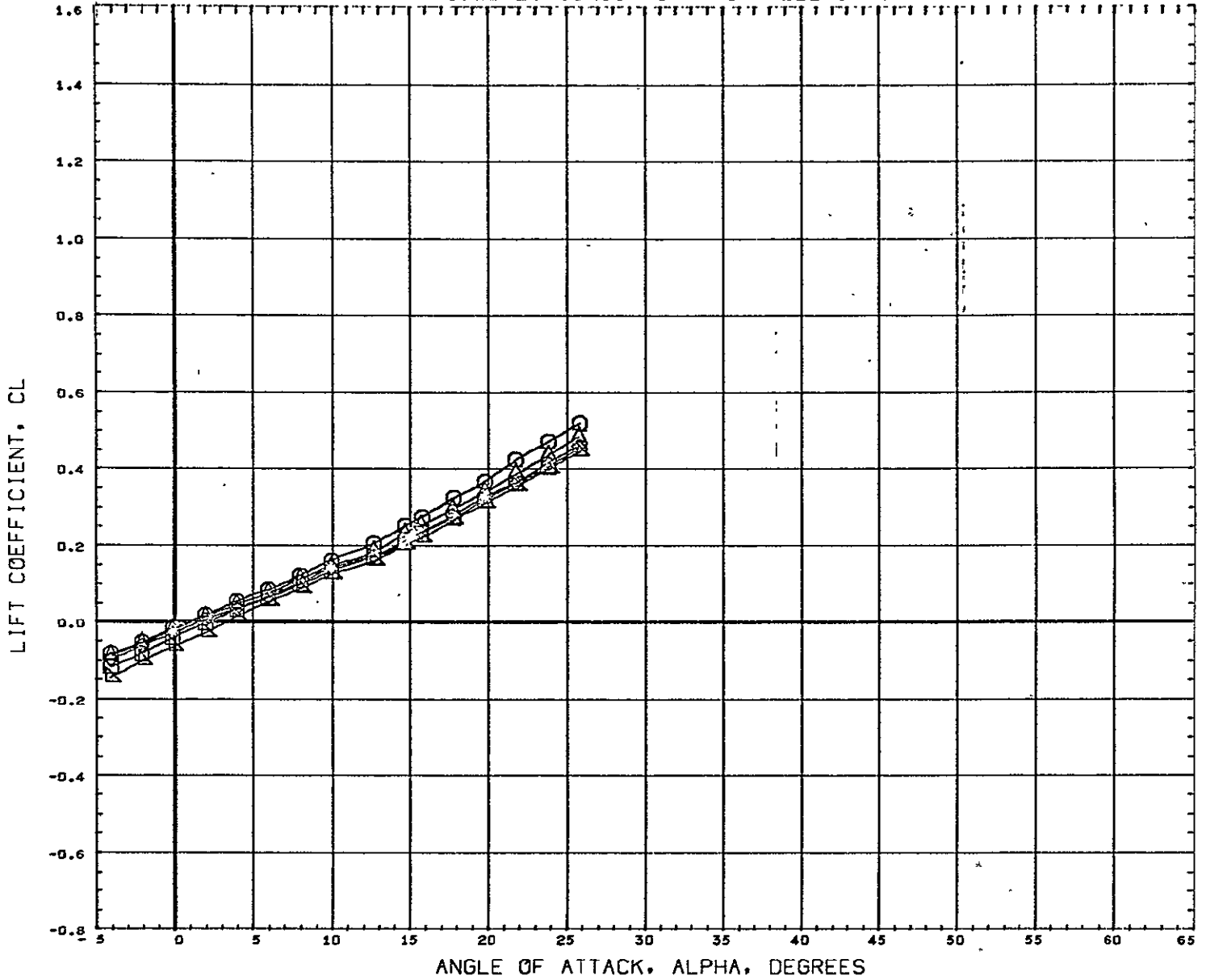
# MSFC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT. ELEVON EFFECTS



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN4	RUDER4	STING	BETA	REFERENCE INFORMATION
(D41S02)	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4	10.000	0.000	4.000	0.000 SREF 9.0250 SQ. IN
(D41T01)	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4	0.000	0.000	4.000	0.000 LREF 6.1420 INCHES
(D41S03)	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4	-10.000	0.000	4.000	0.000 BREF 6.1420 INCHES
(D41S04)	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4	-20.000	0.000	4.000	0.000 XMRP 3.9950 INCHES
(D41S05)	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4	-30.000	0.000	4.000	0.000 YMRP 0.0000 INCHES
						ZMRP - 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.960

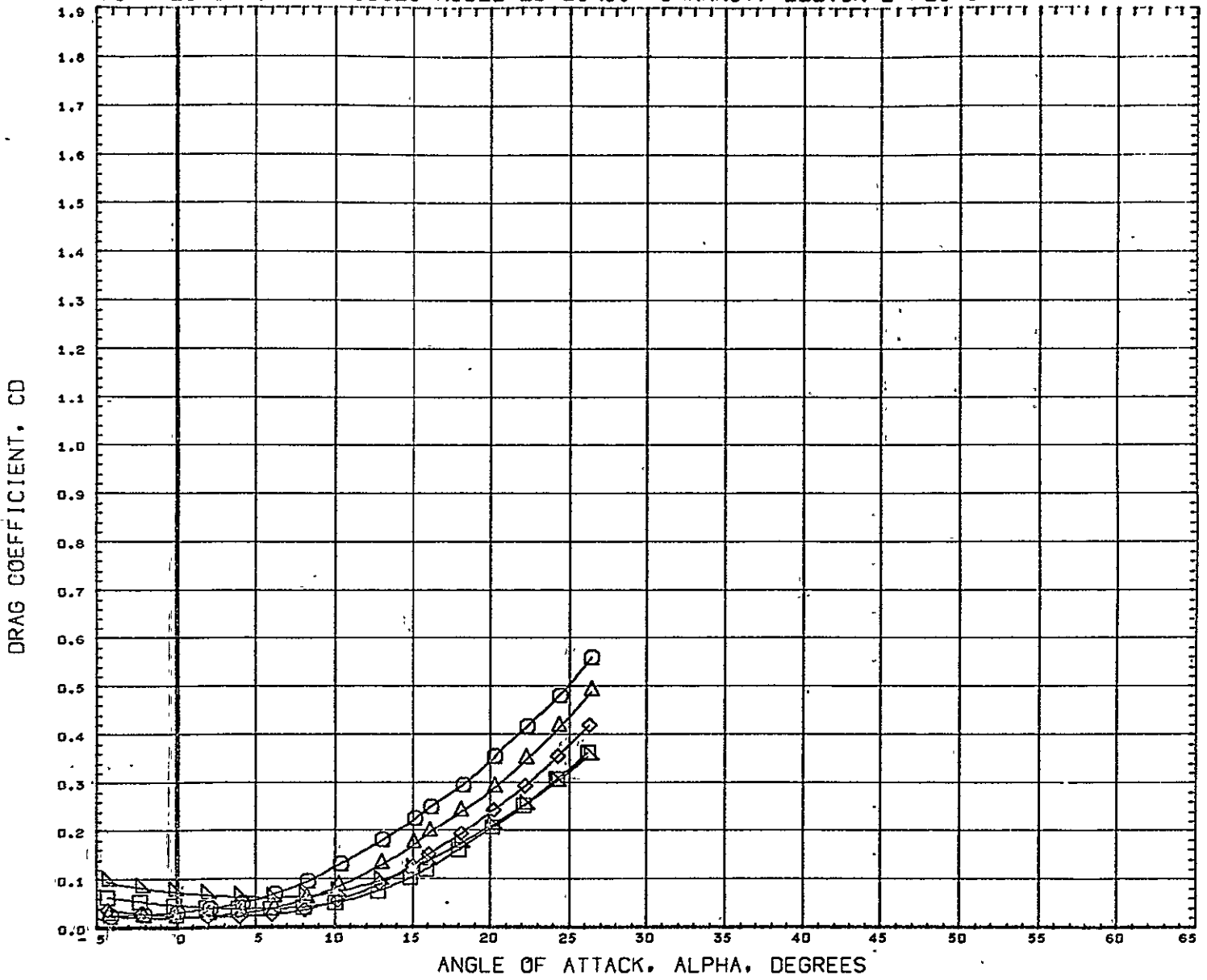
# LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, ELEVON EFFECTS



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN4	RUDER4	STING	BETA	REFERENCE INFORMATION
(D41S02)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	10.000	0.000	4.000	0.000	SREF 9.8250 SQ. IN
(D41T01)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D41S03)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D41S04)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	-20.000	0.000	4.000	0.000	XMRP 3.9950 INCHES
(D41S05)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	-30.000	0.000	4.000	0.000	YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 4.960

# LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, ELEVON EFFECTS

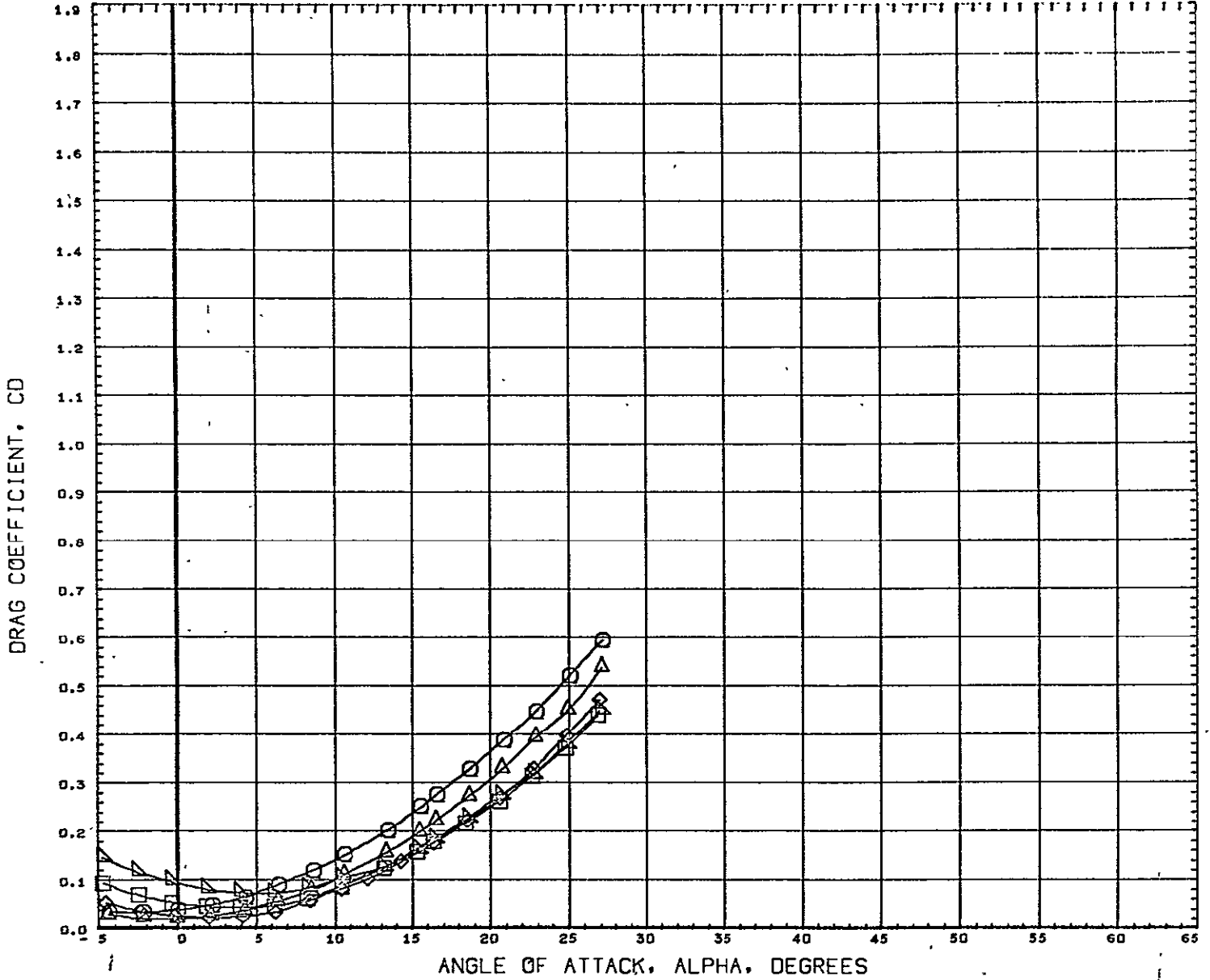


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN4	RUDER4	STING	BETA	REFERENCE INFORMATION
(D41S02)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	10.000	0.000	4.000	0.000	SREF 9.0250 SQ. IN
(D41T01)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D41S03)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D41S04)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	-20.000	0.000	4.000	0.000	XMRP 3.9950 INCHES
(D41S05)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	-30.000	0.000	4.000	0.000	YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.596



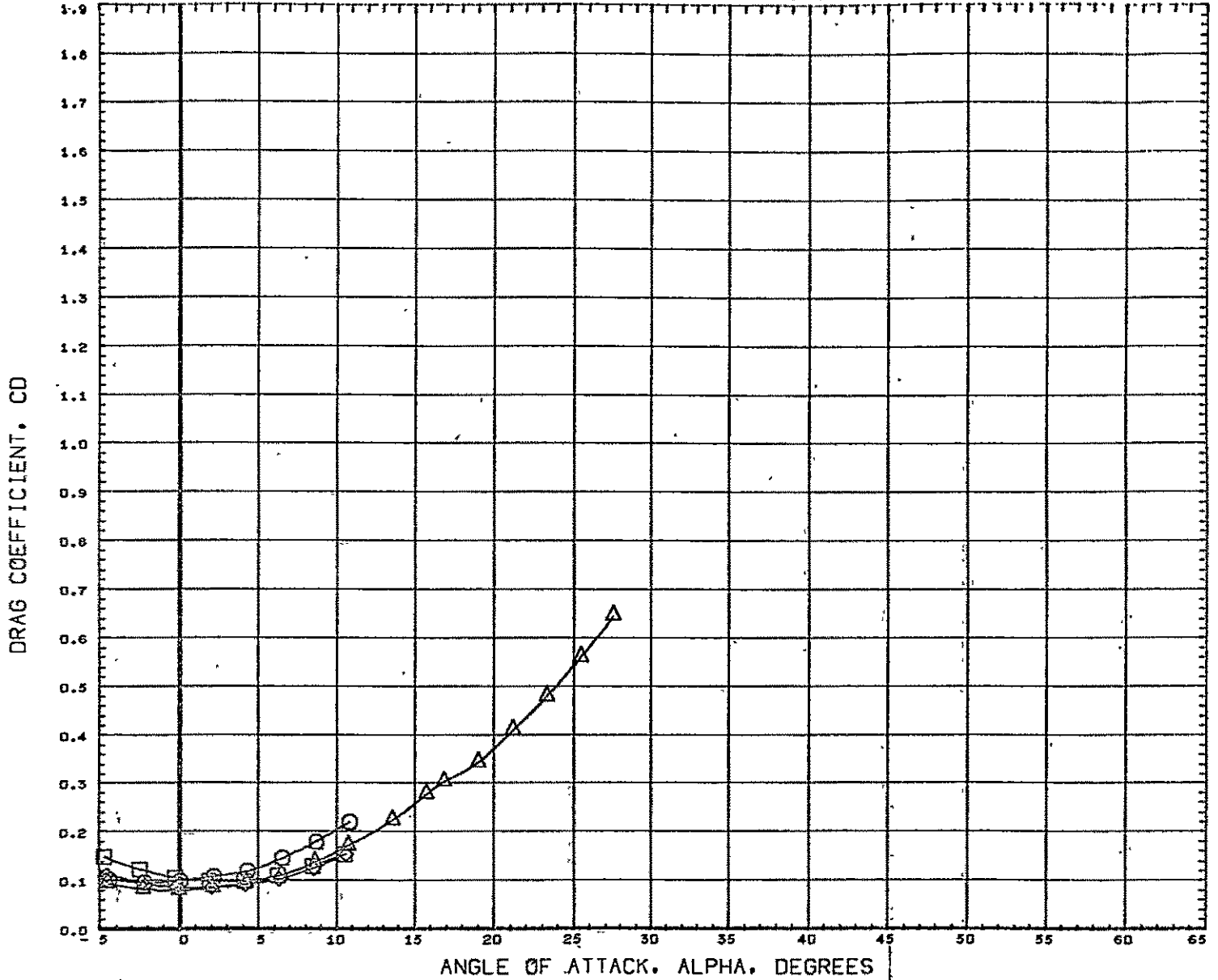
# LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, ELEVON EFFECTS



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVN4	RUDER4	STING	BETA	REFERENCE INFORMATION
(D41S02)	○	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4	10.000	0.000	4.000	0.000 SREF 9.0250 SQ. IN
(D41T01)	△	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4	0.000	0.000	4.000	0.000 LREF 6.1420 INCHES
(D41S03)	□	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4	-10.000	0.000	4.000	0.000 BREF 6.1420 INCHES
(D41S04)	◇	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4	-20.000	0.000	4.000	0.000 XHRP 3.9950 INCHES
(D41S05)	▽	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4	-30.000	0.000	4.000	0.000 YHRP 0.0000 INCHES
							ZHRP 0.1350 INCHES
							SCALE 0.0033 SCALE

MACH 0.901

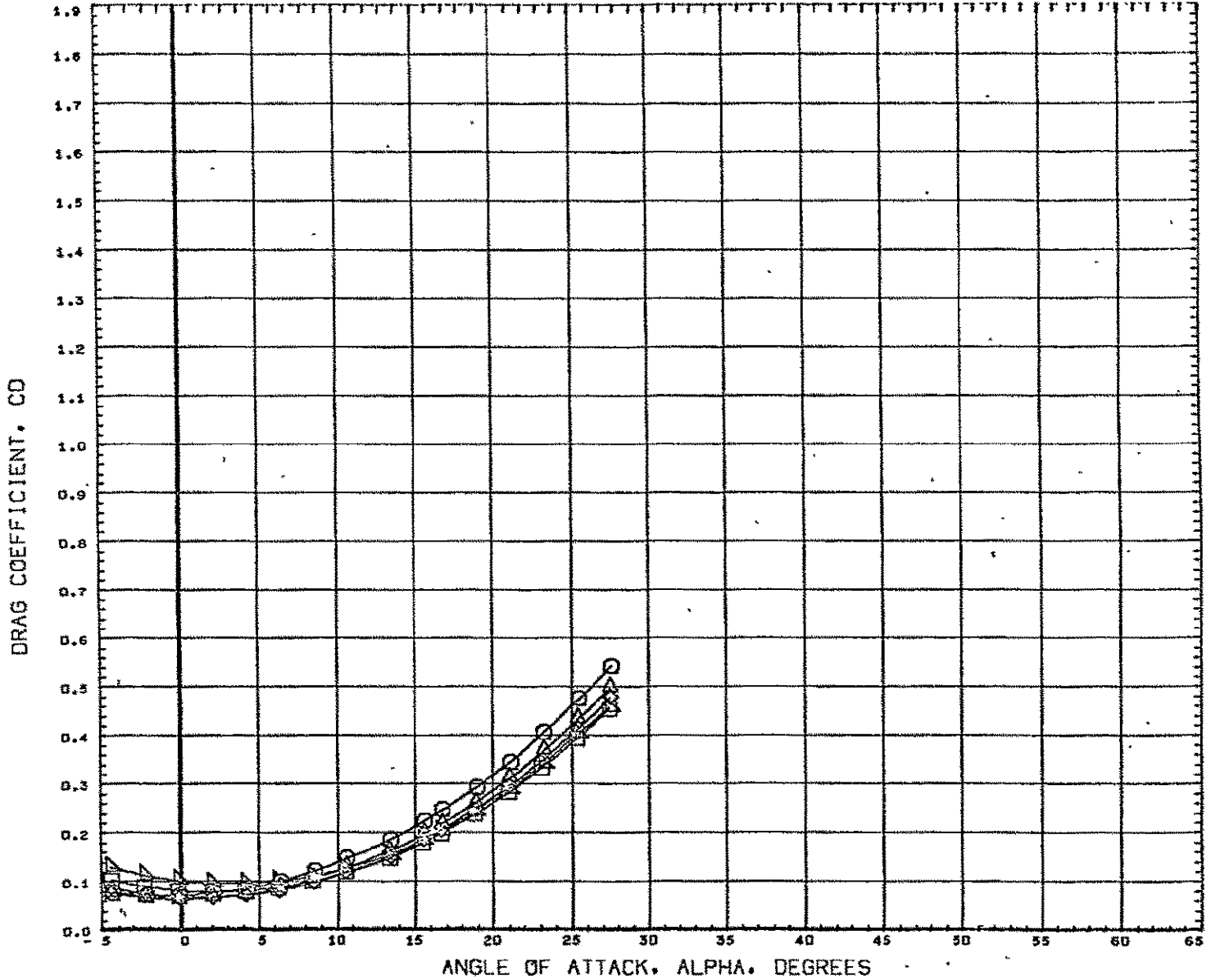
# LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, ELEVON EFFECTS



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVN4	RUDER4	STING	BETA	REFERENCE INFORMATION
(D41S02)	ELEVON	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	10.000	0.000	4.000	0.000	SREF 9.0250 SQ. IN
(D41T01)		MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D41S03)		MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D41S04)		MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	-20.000	0.000	4.000	0.000	XHRP 3.9950 INCHES
(D41S05)		DATA NOT AVAILABLE FOR ALL CONDITIONS	-30.000	0.000	4.000	0.000	YHRP 0.0000 INCHES
							ZHRP 0.1350 INCHES
							SCALE 0.0033 SCALE

MACH 1.093

# LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, ELEVON EFFECTS

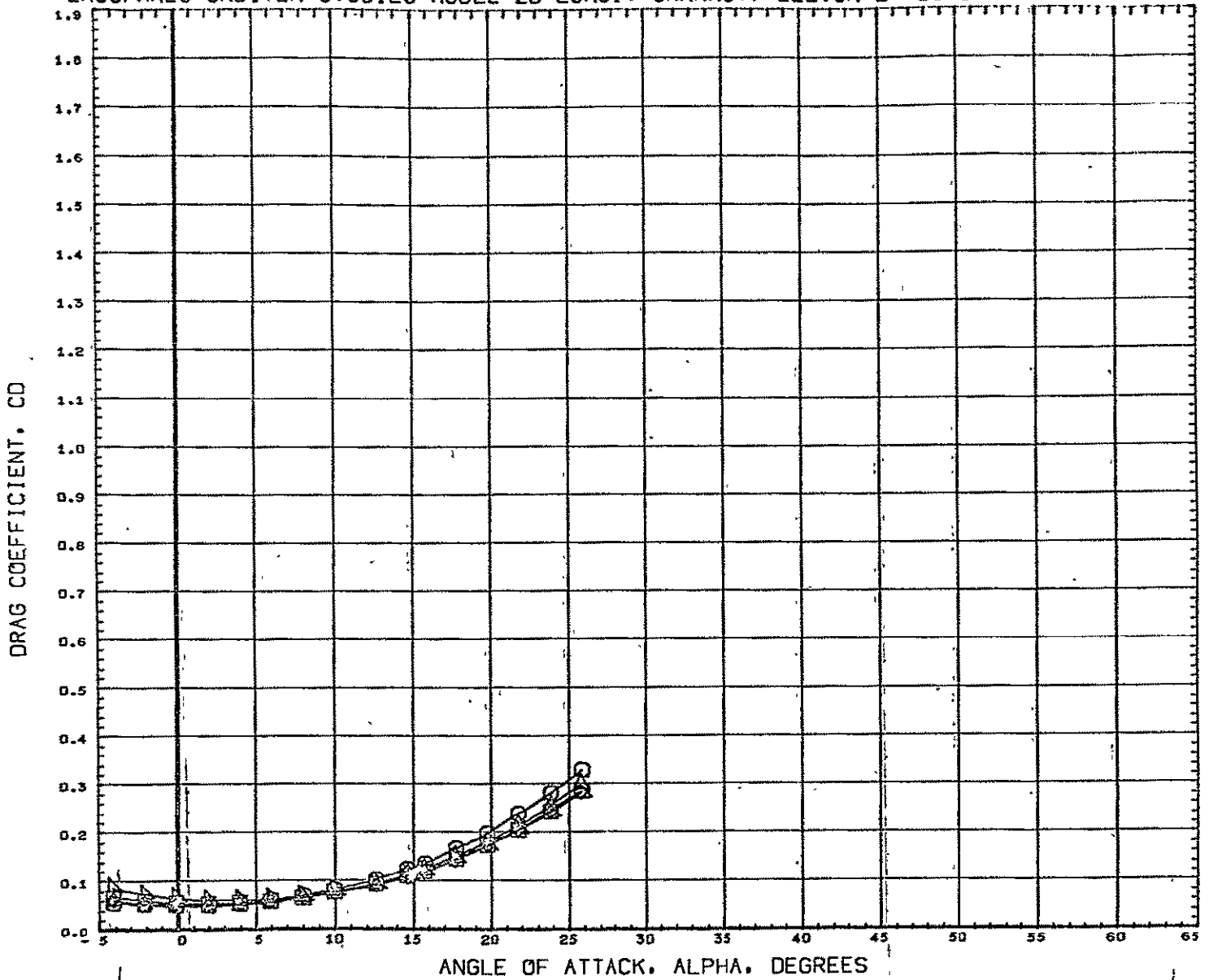


ANGLE OF ATTACK, ALPHA, DEGREES

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN4	RUDER4	STING	BETA	REFERENCE INFORMATION
(D41SD2)	MSFC TWT 498 MSFC/HREC ORBITER	10.000	0.000	4.000	0.000	SREF 9.0250 SR.IN
(D41TD1)	MSFC TWT 498 MSFC/HREC ORBITER	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D41SD3)	MSFC TWT 498 MSFC/HREC ORBITER	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D41SD4)	MSFC TWT 498 MSFC/HREC ORBITER	-20.000	0.000	4.000	0.000	XMRP 3.9950 INCHES
(D41SD5)	MSFC TWT 498 MSFC/HREC ORBITER	-30.000	0.000	4.000	0.000	YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.960

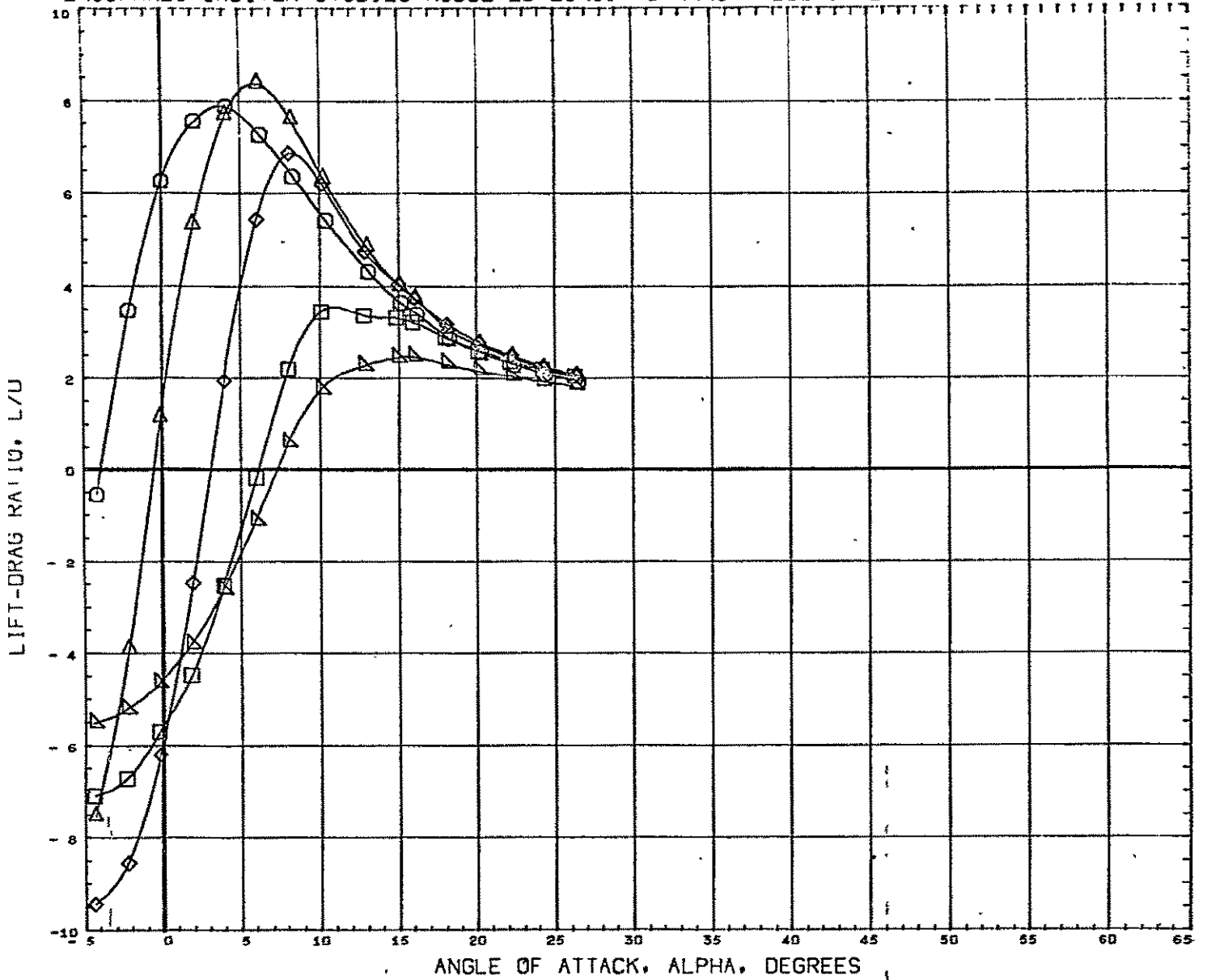
# LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT. ELEVON EFFECTS



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN4	RUDER4	STING	BETA	REFERENCE INFORMATION
(D41S02)	MSFC TWT 498 MSFC/HREC ORBITER	10.000	0.000	4.000	0.000	SREF 9.8250 SQ. IN
(D41T01)	MSFC TWT 498 MSFC/HREC ORBITER	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D41S03)	MSFC TWT 498 MSFC/HREC ORBITER	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D41S04)	MSFC TWT 498 MSFC/HREC ORBITER	-20.000	0.000	4.000	0.000	XMRP 3.9950 INCHES
(D41S05)	MSFC TWT 498 MSFC/HREC ORBITER	-30.000	0.000	4.000	0.000	YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 4.960

# LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, ELEVON EFFECTS

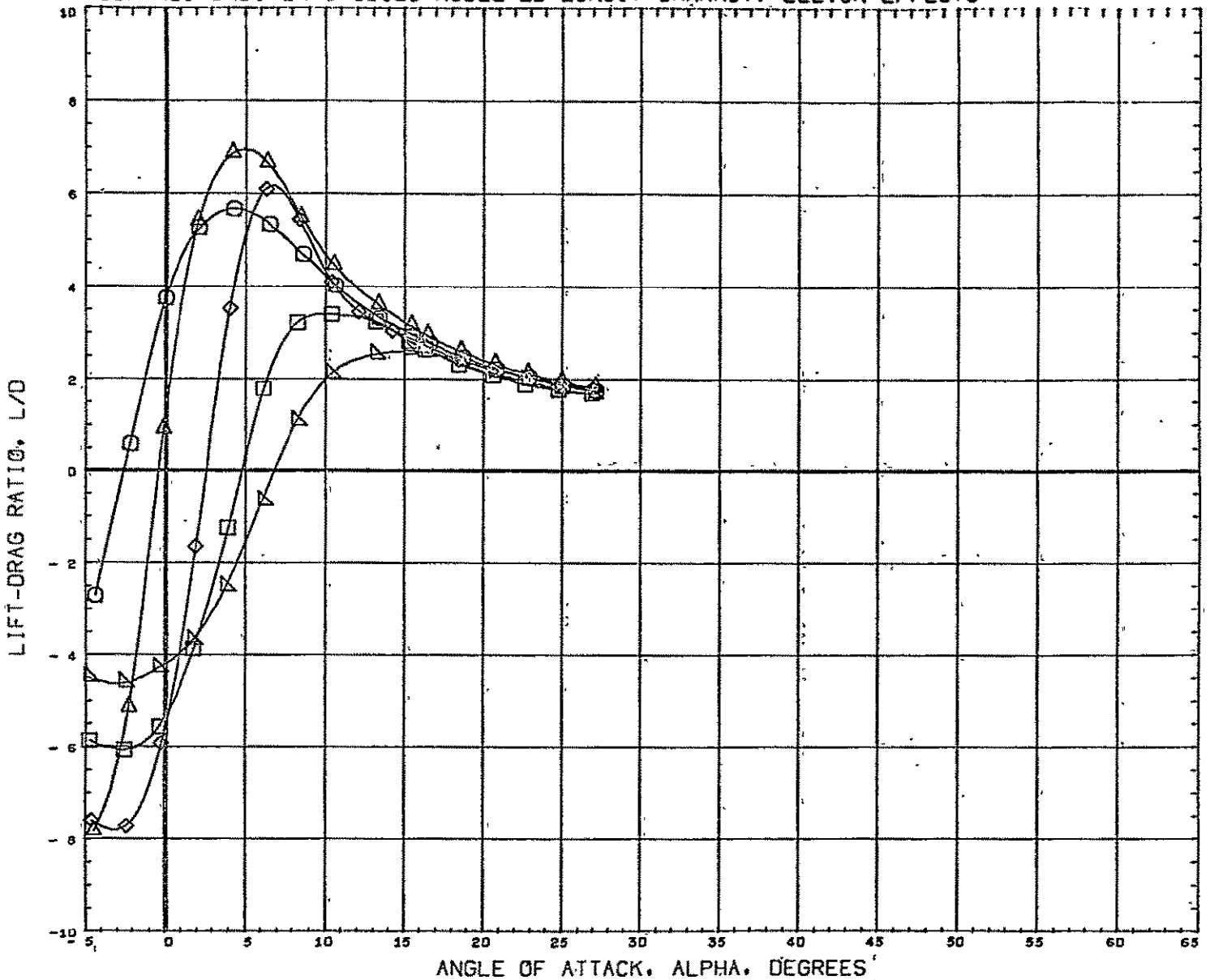


ANGLE OF ATTACK, ALPHA, DEGREES

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN4	RUDER4	STING	BETA	REFERENCE INFORMATION
(D41SD2)	MSFC TWT 498 NSFC/HREC ORBITER	82W5V2E4R4	10.000	0.000	4.000	0.000 SREF 9.0250 SQ. IN
(D41TD1)	MSFC TWT 498 NSFC/HREC ORBITER	82W5V2E4R4	0.000	0.000	4.000	0.000 LREF 6.1420 INCHES
(D41SD3)	MSFC TWT 498 NSFC/HREC ORBITER	82W5V2E4R4	-10.000	0.000	4.000	0.000 BRFP 6.1420 INCHES
(D41SD4)	MSFC TWT 498 NSFC/HREC ORBITER	82W5V2E4R4	-20.000	0.000	4.000	0.000 XMRP 3.9950 INCHES
(D41SD5)	MSFC TWT 498 NSFC/HREC ORBITER	82W5V2E4R4	-30.000	0.000	4.000	0.000 YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.596

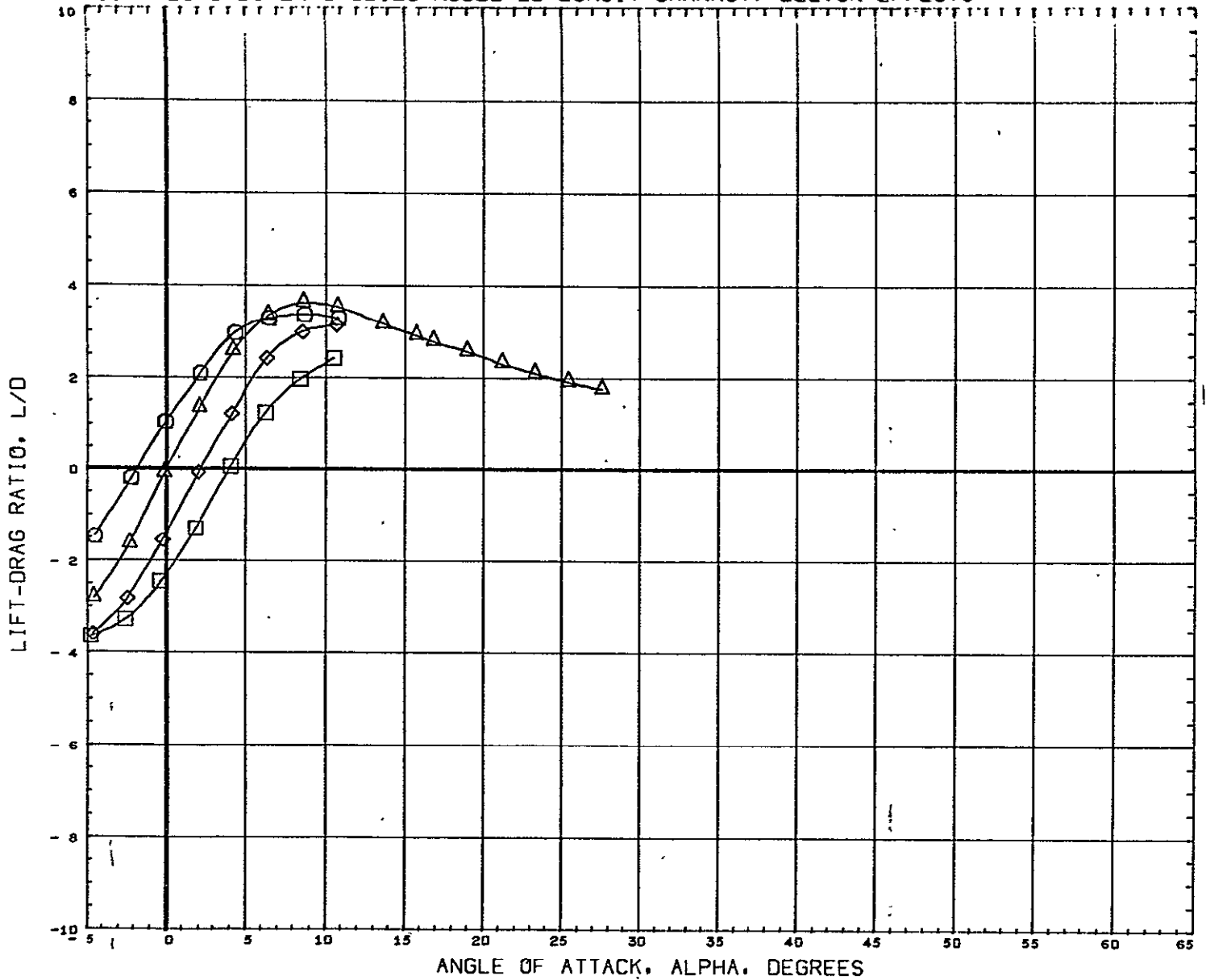
# LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT. ELEVON EFFECTS



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN4	RUDER4	STING	BETA	REFERENCE INFORMATION
(D41502)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	10.000	0.000	4.000	0.000	SREF 9.0250 SQ. IN
(D41791)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D41503)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D41504)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	-20.000	0.000	4.000	0.000	XMRP 3.9950 INCHES
(D41505)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	-30.000	0.000	4.000	0.000	YMRP 0.0000 INCHES
						ZHRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.901

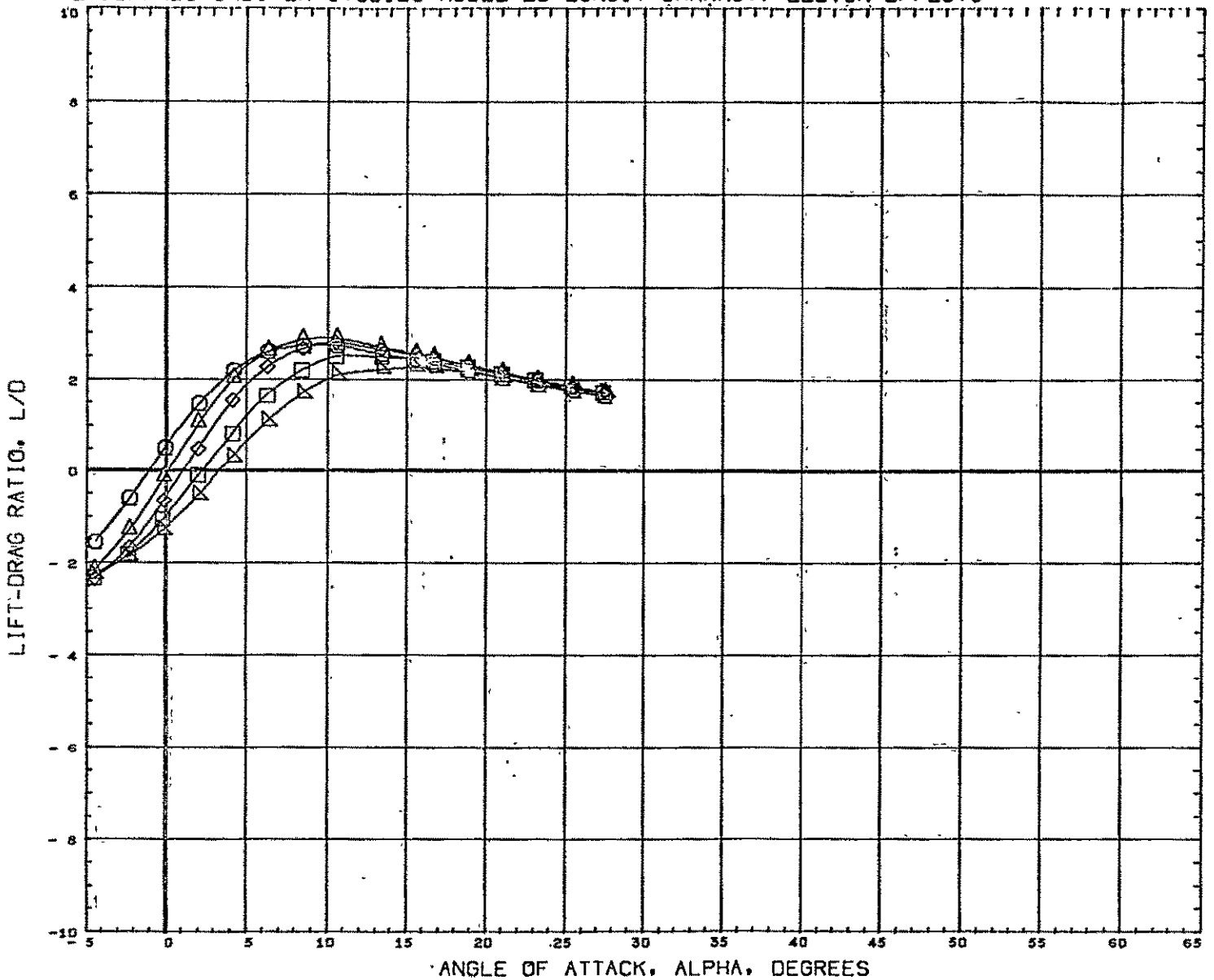
# MSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT. ELEVON EFFECTS



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN4	RUDER4	STING	BETA	REFERENCE INFORMATION
(D41S02)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	10.000	0.000	4.000	0.000	SREF 9.0250 SQ.IN
(D41T01)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D41S53)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D41S54)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	-20.000	0.000	4.000	0.000	XMRP 3.9950 INCHES
(D41S55)	DATA NOT AVAILABLE FOR ALL CONDITIONS	-30.000	0.000	4.000	0.000	YMRP 0.0000 INCHES
						ZMRP - 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.093

# LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, ELEVON EFFECTS

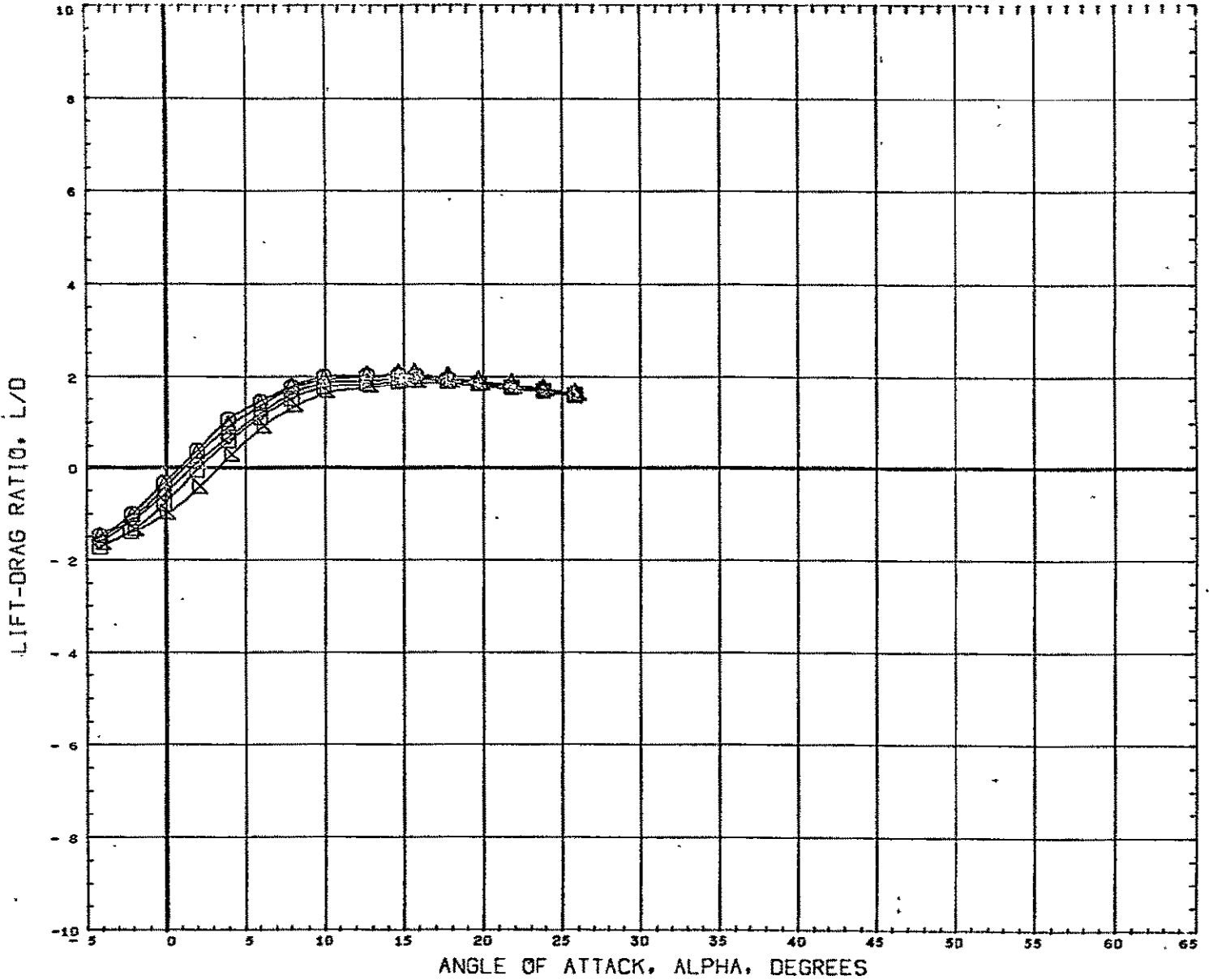


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN4	RUDER4	STING	BETA	REFERENCE INFORMATION
(D41S02)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	10.000	0.000	4.000	0.000	SREF 9.0250 SR IN
(D41T01)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D41S03)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D41S04)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	-20.000	0.000	4.000	0.000	XMRP 3.9950 INCHES
(D41S05)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	-30.000	0.000	4.000	0.000	YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.960



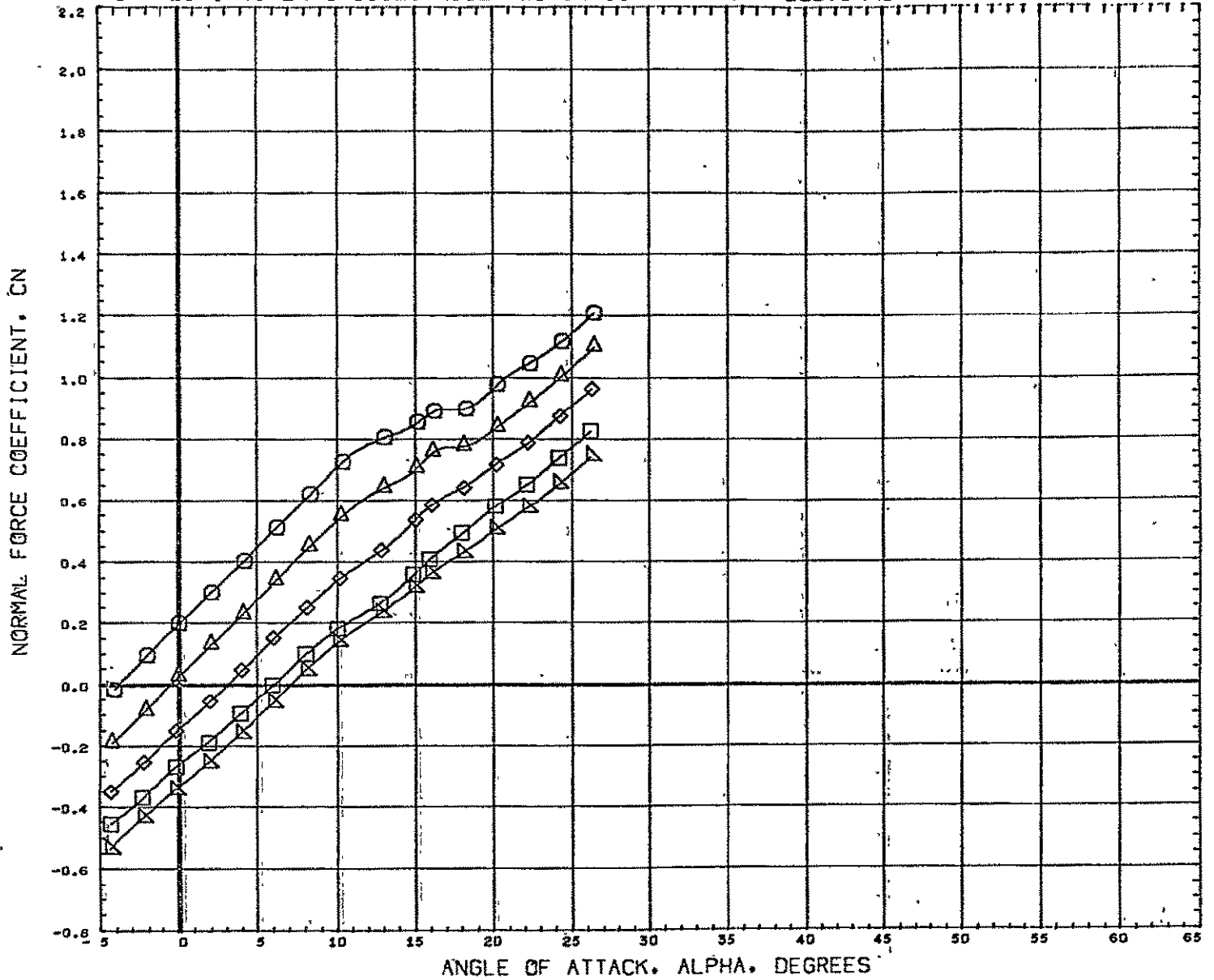
LMSC/HREC ORBITER STUDIES--MODEL 2B--LONGIT CHARACT, ELEVON EFFECTS



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN4	RUDER4	STING	BETA	REFERENCE INFORMATION
(D41S02)	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4	10.000	0.000	4.000	0.000 SREF 9.0250 SQ. IN
(D41T01)	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4	0.000	0.000	4.000	0.000 LREF 6.1420 INCHES
(D41S03)	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4	-10.000	0.000	4.000	0.000 BREF 6.1420 INCHES
(D41S04)	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4	-20.000	0.000	4.000	0.000 XHRP 3.9950 INCHES
(D41S05)	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4	-30.000	0.000	4.000	0.000 YHRP 0.0000 INCHES
						ZHRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 4.965

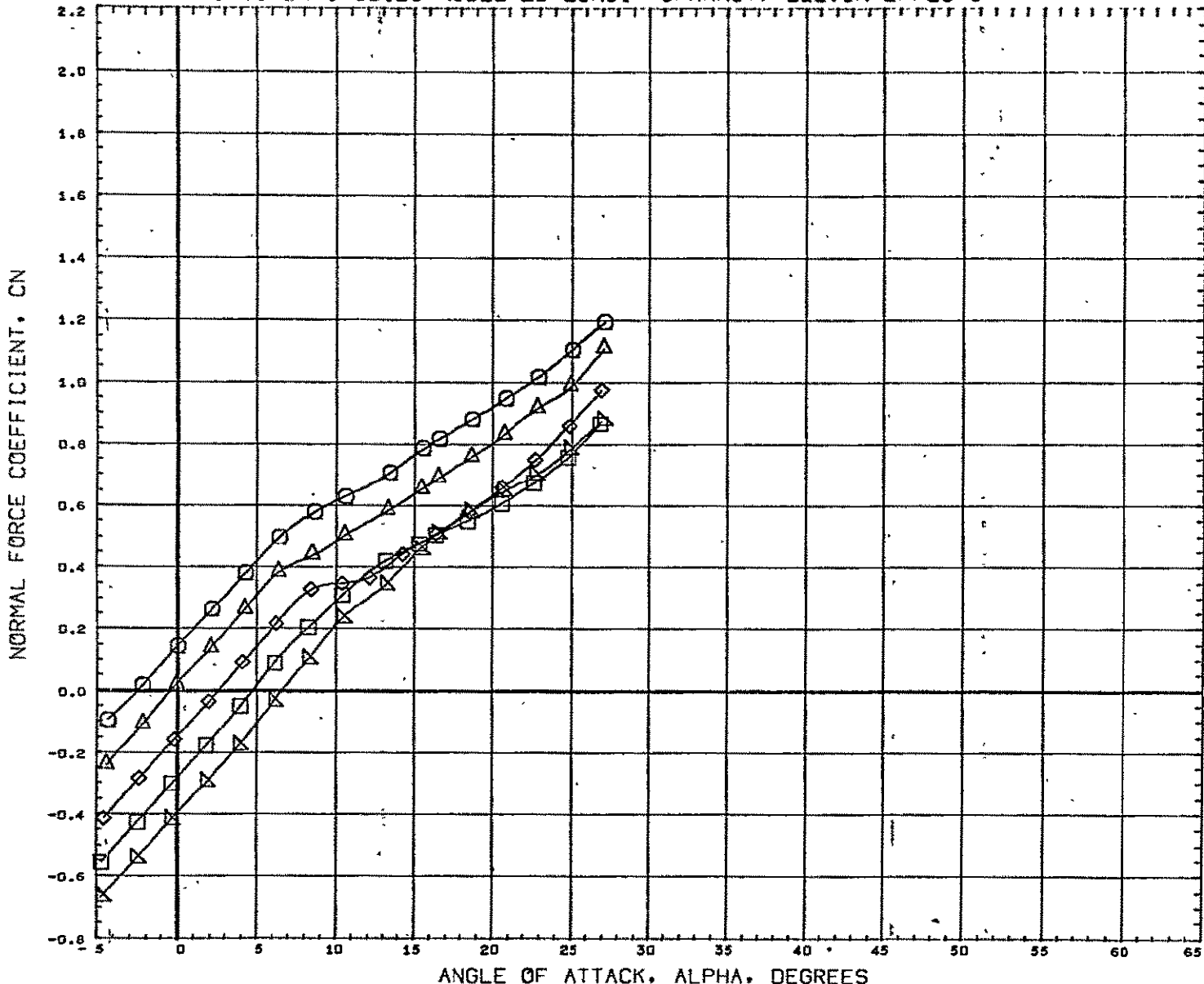
# LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, ELEVON EFFECTS



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN4	RUDER4	STING	BETA	REFERENCE INFORMATION
(D41502)	MSFC TWT 498 MSFC/HREC ORBITER	10.000	0.000	4.000	0.000	SREF 9.0250 50. IN
(D41501)	MSFC TWT 498 MSFC/HREC ORBITER	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D41503)	MSFC TWT 498 MSFC/HREC ORBITER	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D41504)	MSFC TWT 498 MSFC/HREC ORBITER	-20.000	0.000	4.000	0.000	XMRP 3.9950 INCHES
(D41505)	MSFC TWT 498 MSFC/HREC ORBITER	-30.000	0.000	4.000	0.000	YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.596

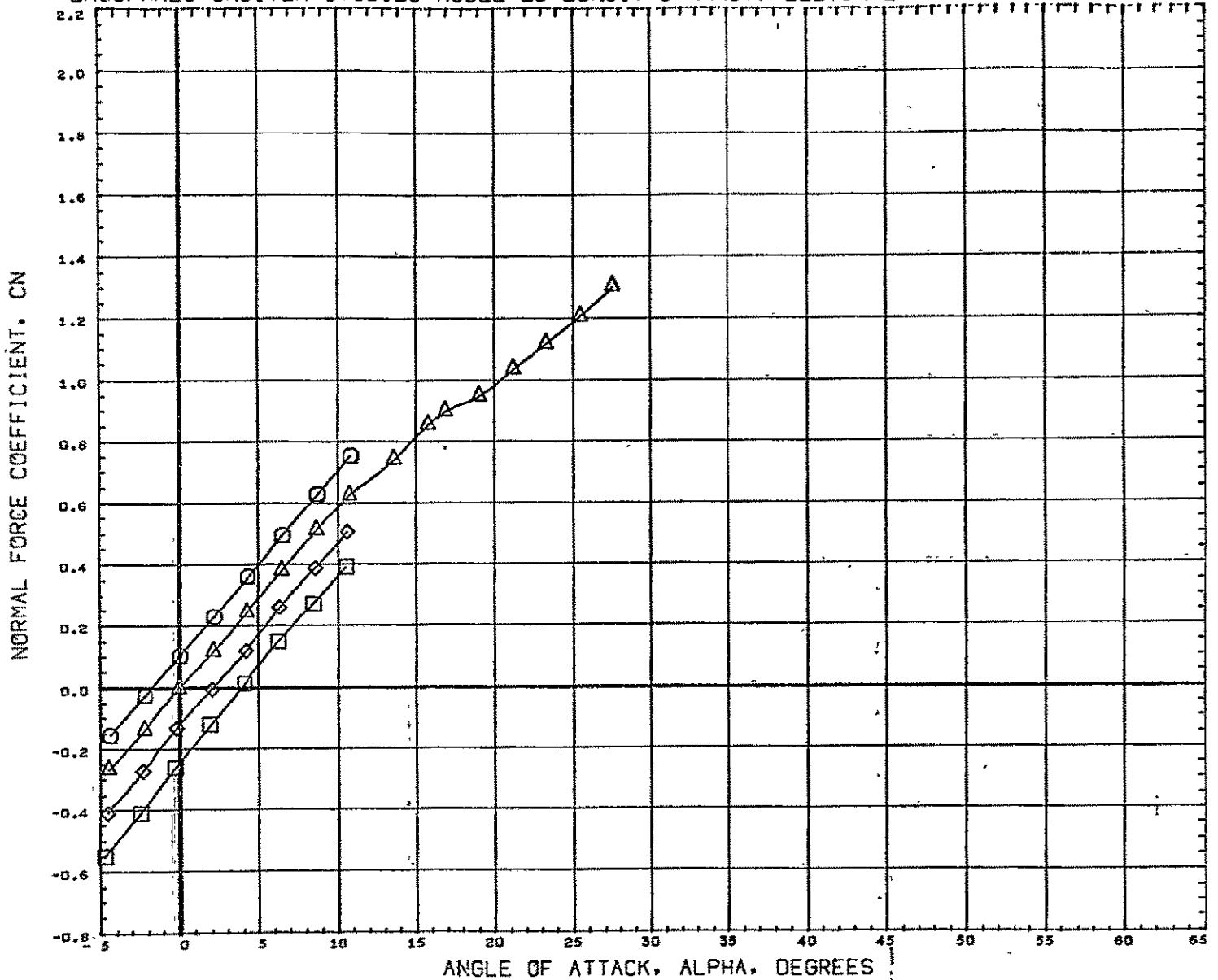
# LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, ELEVON EFFECTS



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN4	RUDER4	STING	BETA	REFERENCE INFORMATION
(D41S02)	MSFC TWT 498 MSFC/HREC ORBITER	10.000	0.000	4.000	0.000	SREF 9.0250 SQ. IN
(D41T01)	MSFC TWT 498 MSFC/HREC ORBITER	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D41S03)	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4	0.000	4.000	0.000	BREF 6.1420 INCHES
(D41S04)	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4	-20.000	0.000	0.000	XMRP 3.9950 INCHES
(D41S05)	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4	-30.000	0.000	0.000	YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0035 SCALE

MACH 0.951

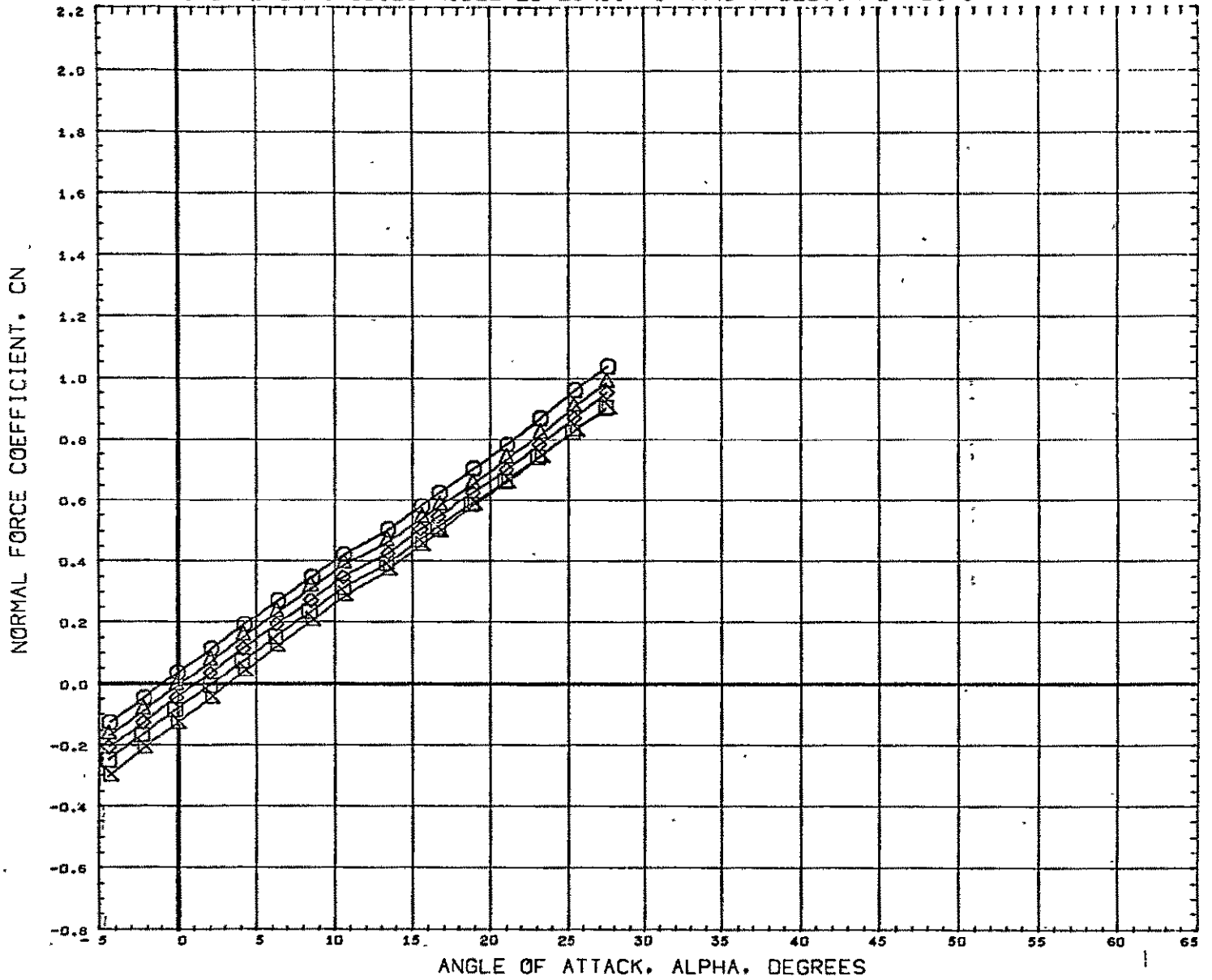
# LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, ELEVON EFFECTS



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN4	RUDER4	STING	BETA	REFERENCE INFORMATION
(D41S52)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	10.000	0.000	4.000	0.000	SREF 9.0250 SQ. IN
(D41T01)	MSFC TWT 498 MSFC/HREC ORBITER B2W5Y2E4R4	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D41S53)	MSFC TWT 498 MSFC/HREC ORBITER B2W5Y2E4R4	-15.000	0.000	4.000	0.000	SREF 6.1420 INCHES
(D41S54)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	-20.000	0.000	4.000	0.000	XMRP 3.9950 INCHES
(D41S55)	DATA NOT AVAILABLE FOR ALL CONDITIONS	-30.000	0.000	4.000	0.000	ZMRP 0.1350 INCHES SCALE 0.0033 SCALE

MACH 1.093

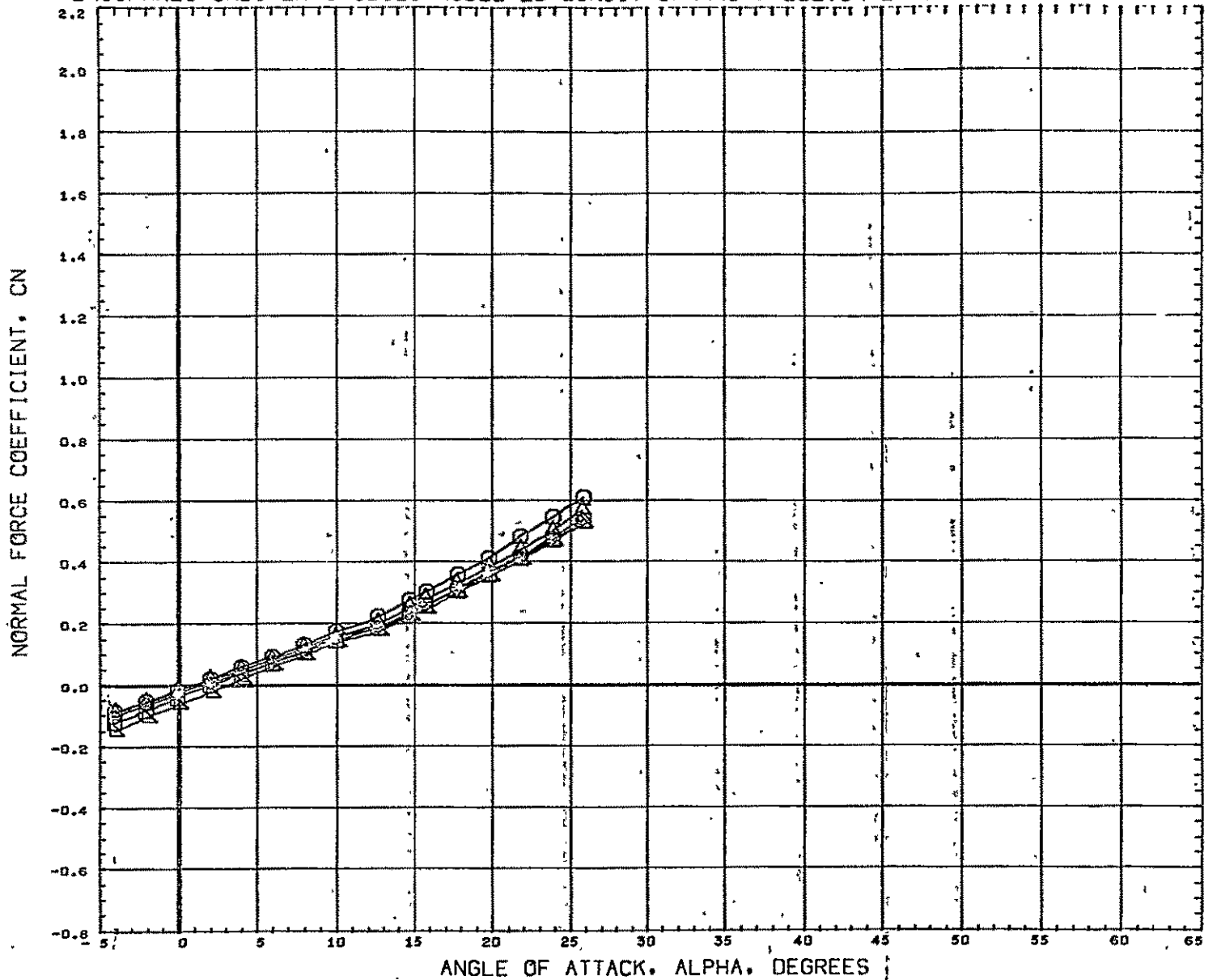
# LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, ELEVON EFFECTS



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN4	RUDER4	STING	BETA	REFERENCE INFORMATION
(D41S02)	MSFC TWT 498 MSFC/HREC ORBITER	10.000	0.000	4.000	0.000	SREF 9.0250 98. IN
(D41T01)	MSFC TWT 498 MSFC/HREC ORBITER	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D41S03)	MSFC TWT 498 MSFC/HREC ORBITER	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D41S04)	MSFC TWT 498 MSFC/HREC ORBITER	-20.000	0.000	4.000	0.000	XMRP 3.9950 INCHES
(D41S05)	MSFC TWT 498 MSFC/HREC ORBITER	-30.000	0.000	4.000	0.000	YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.960

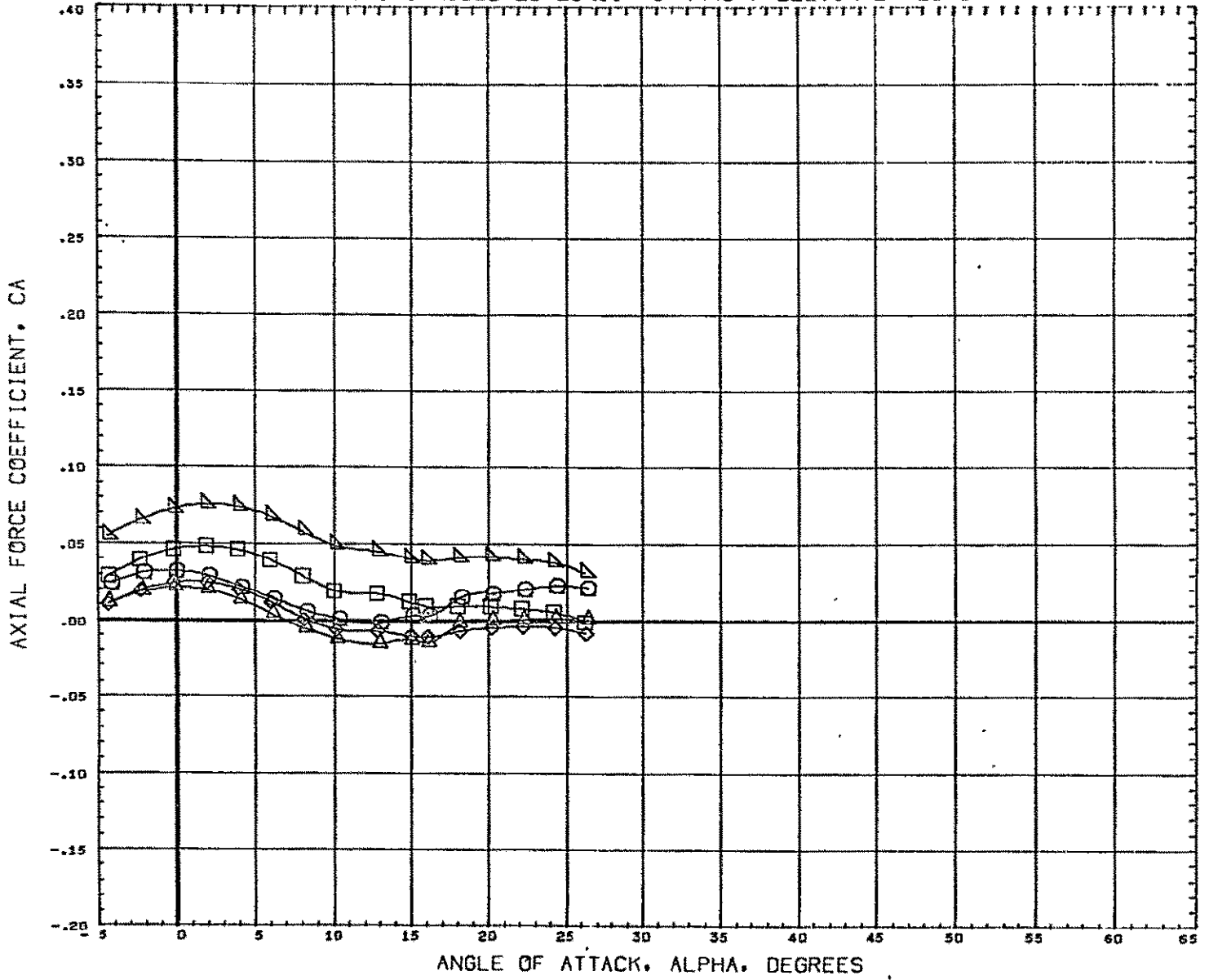
# LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, ELEVON EFFECTS



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN4	RUDER4	STING	BETA	REFERENCE INFORMATION
(D41S02)	MSFC TWT 498 MSFC/HREC ORBITER	10.000	0.000	4.000	0.000	SREF 9.0250 SQ. IN
(D41T01)	MSFC TWT 498 MSFC/HREC ORBITER	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D41S03)	MSFC TWT 498 MSFC/HREC ORBITER	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D41S04)	MSFC TWT 498 MSFC/HREC ORBITER	-20.000	0.000	4.000	0.000	XHRP 3.9950 INCHES
(D41S05)	MSFC TWT 498 MSFC/HREC ORBITER	-30.000	0.000	4.000	0.000	YHRP 0.0000 INCHES
						ZHRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 4.960

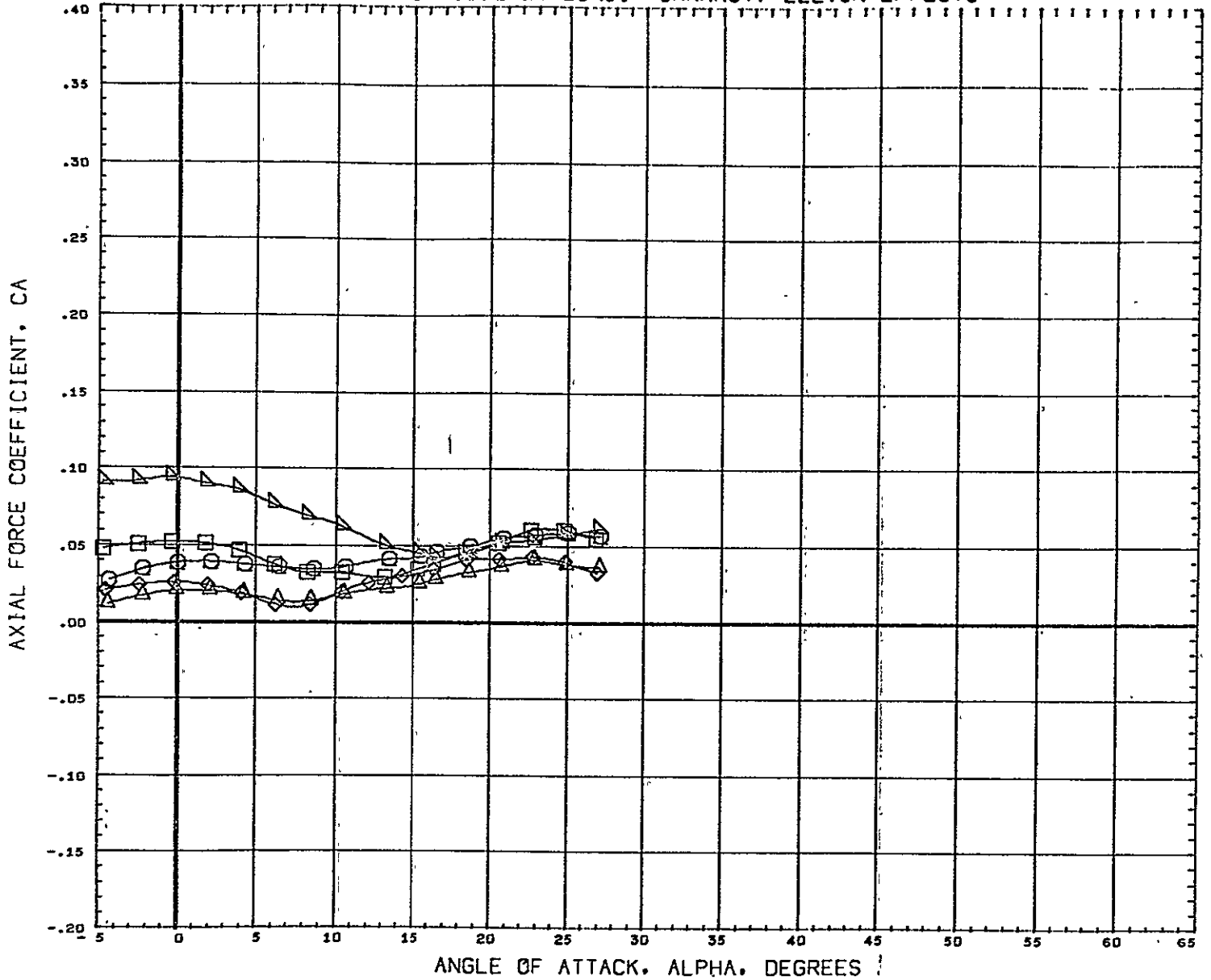
# LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, ELEVON EFFECTS



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN4	RUDER4	STING	BETA	REFERENCE INFORMATION
(D41S52)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	10.000	0.000	4.000	0.000	SREF 9.0250 SQ. IN
(D41T01)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D41S03)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D41S04)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	-20.000	0.000	4.000	0.000	XMRP 3.9950 INCHES
(D41S05)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	-30.000	0.000	4.000	0.000	YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.596

# LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, ELEVON EFFECTS

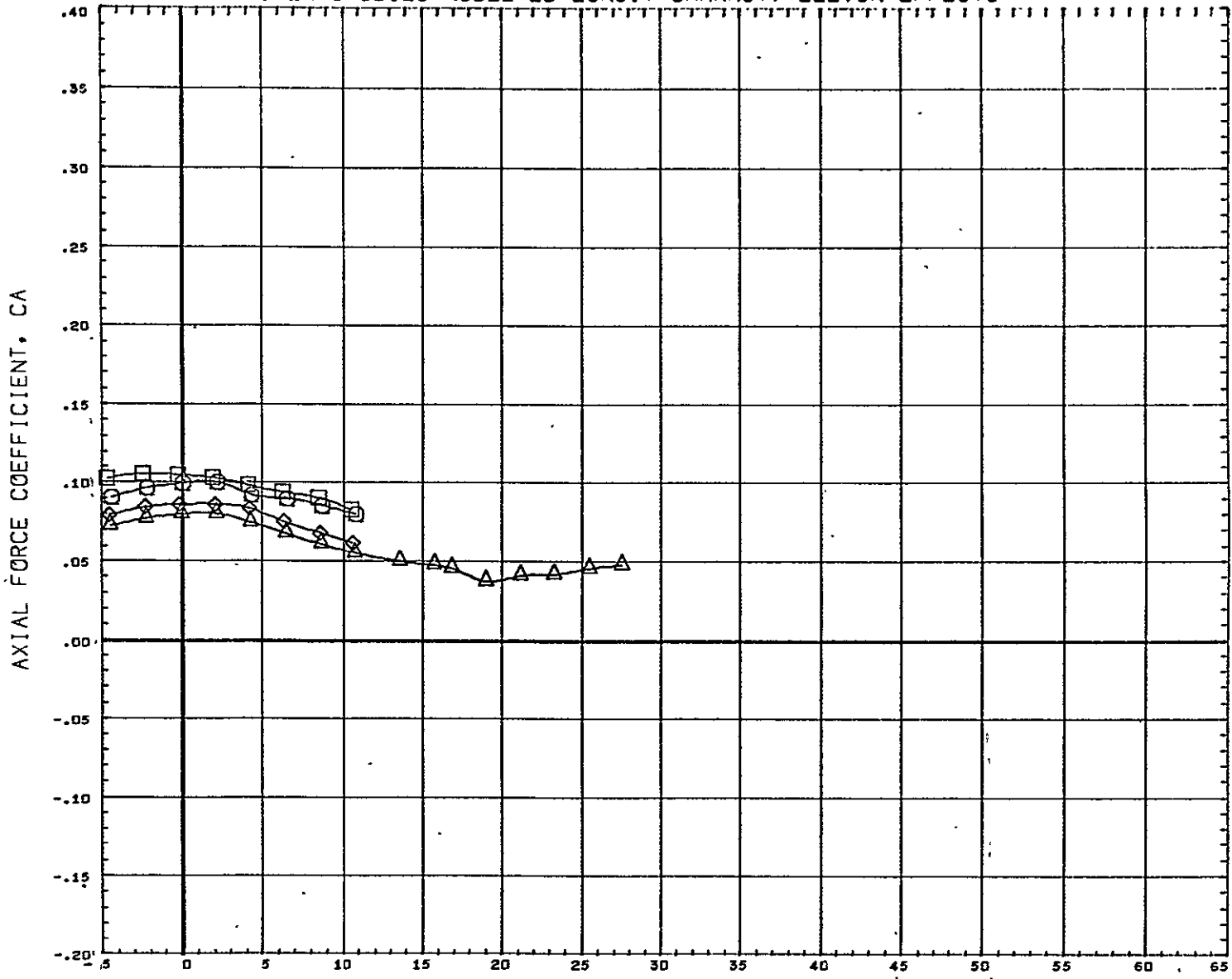


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN4	RUDER4	STING	BETA	REFERENCE INFORMATION
(D41S02)	MSFC TWT 498 MSFC/HREC ORBITER	10.000	0.000	4.000	0.000	SREF. 9.0250 SQ. IN
(D41T01)	MSFC TWT 498 MSFC/HREC ORBITER	0.000	0.000	4.000	0.000	LREF. 6.1420 INCHES
(D41S03)	MSFC TWT 498 MSFC/HREC ORBITER	-10.000	0.000	4.000	0.000	BREF. 6.1420 INCHES
(D41S04)	MSFC TWT 498 MSFC/HREC ORBITER	-20.000	0.000	4.000	0.000	XMRP 3.9950 INCHES
(D41S05)	MSFC TWT 498 MSFC/HREC ORBITER	-30.000	0.000	4.000	0.000	YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.901



# LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, ELEVON EFFECTS

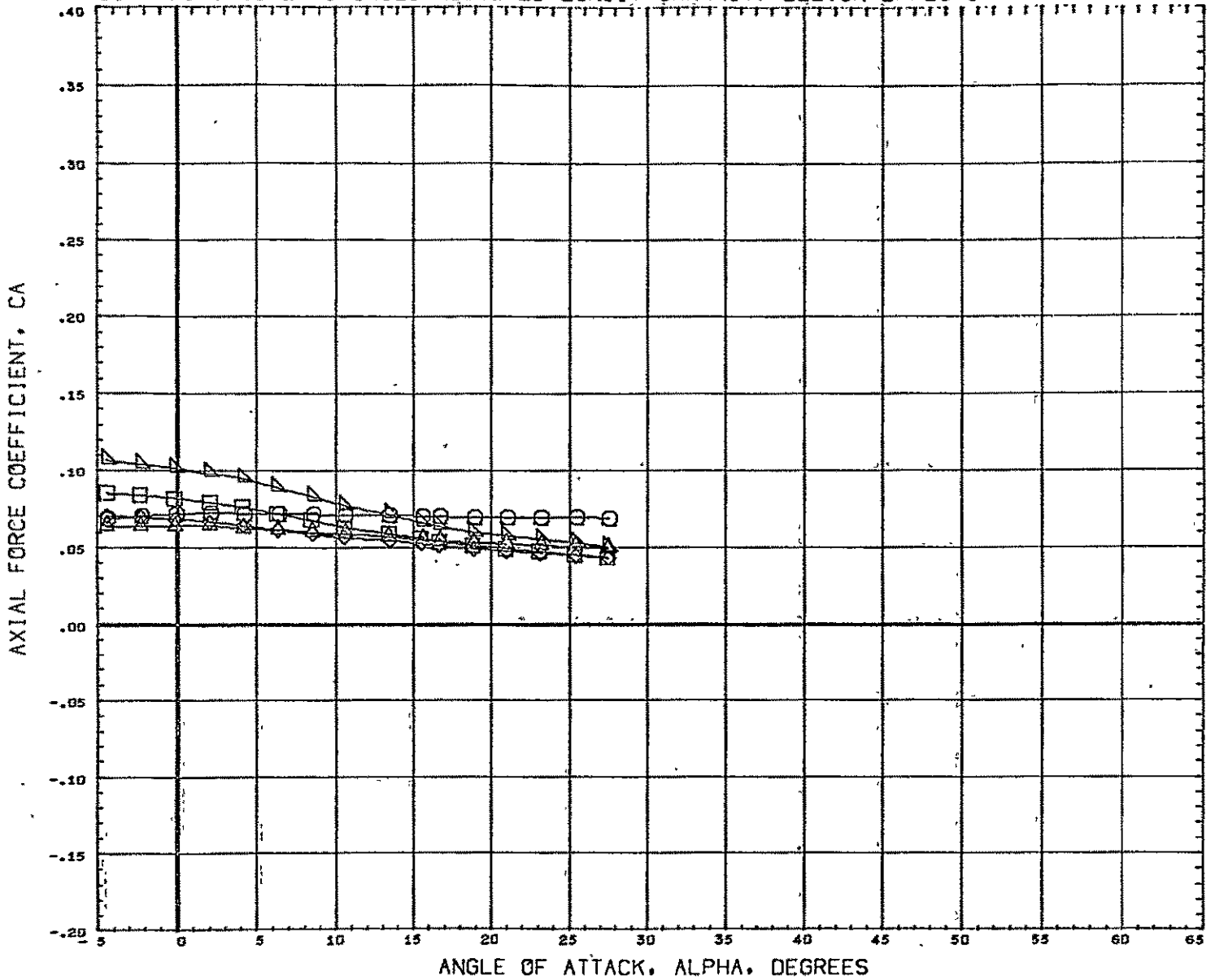


ANGLE OF ATTACK, ALPHA, DEGREES

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN4	RUDER4	STING	BETA	REFERENCE INFORMATION
(D41502)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	10.000	0.000	4.000	0.000	SREF 9.0250 SQ. IN
(D41701)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D41503)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D41504)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	-20.000	0.000	4.000	0.000	XHRP 3.9950 INCHES
(D41505)	DATA NOT AVAILABLE FOR ALL CONDITIONS	-30.000	0.000	4.000	0.000	YMRP 0.0000 INCHES ZMRP 0.1350 INCHES SCALE 0.0033 SCALE

MACH 1.093

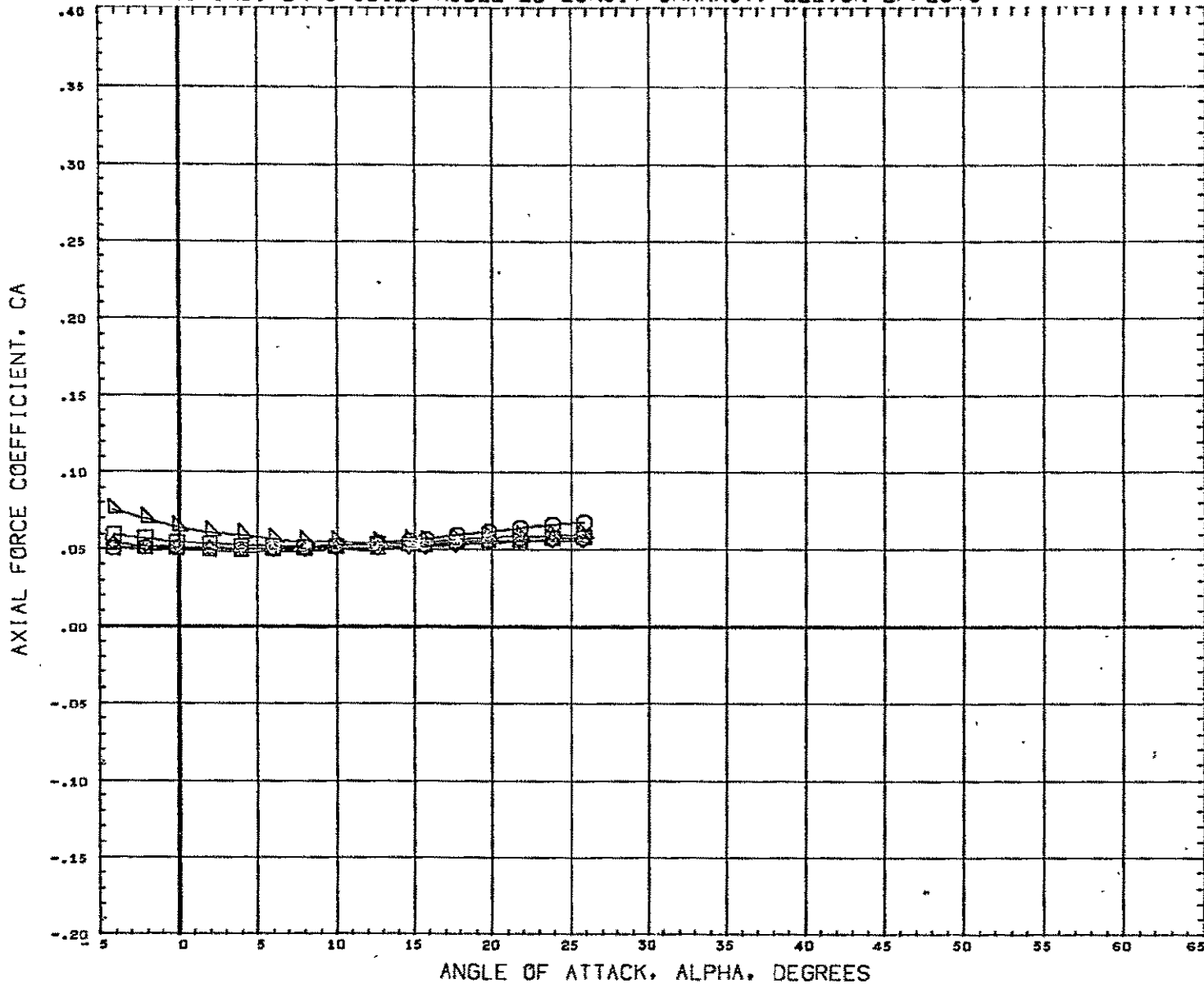
# LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, ELEVON EFFECTS



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVN4	RUDER4	STING	BETA	REFERENCE INFORMATION
(D41S02)	○	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4	10.000	0.000	4.000	0.000 SREF 9.0250 SQ. IN
(D41S01)	□	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4	0.000	0.000	4.000	0.000 LREF 6.1420 INCHES
(D41S03)	◇	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4	-10.000	0.000	4.000	0.000 BREF 6.1420 INCHES
(D41S04)	△	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4	-25.000	0.000	4.000	0.000 XMRP 3.9950 INCHES
(D41S05)	▽	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4	-30.000	0.000	4.000	0.000 YMRP 0.0000 INCHES
							ZMRP - 0.1350 INCHES
							SCALE 0.0033 SCALE

MACH 1.960

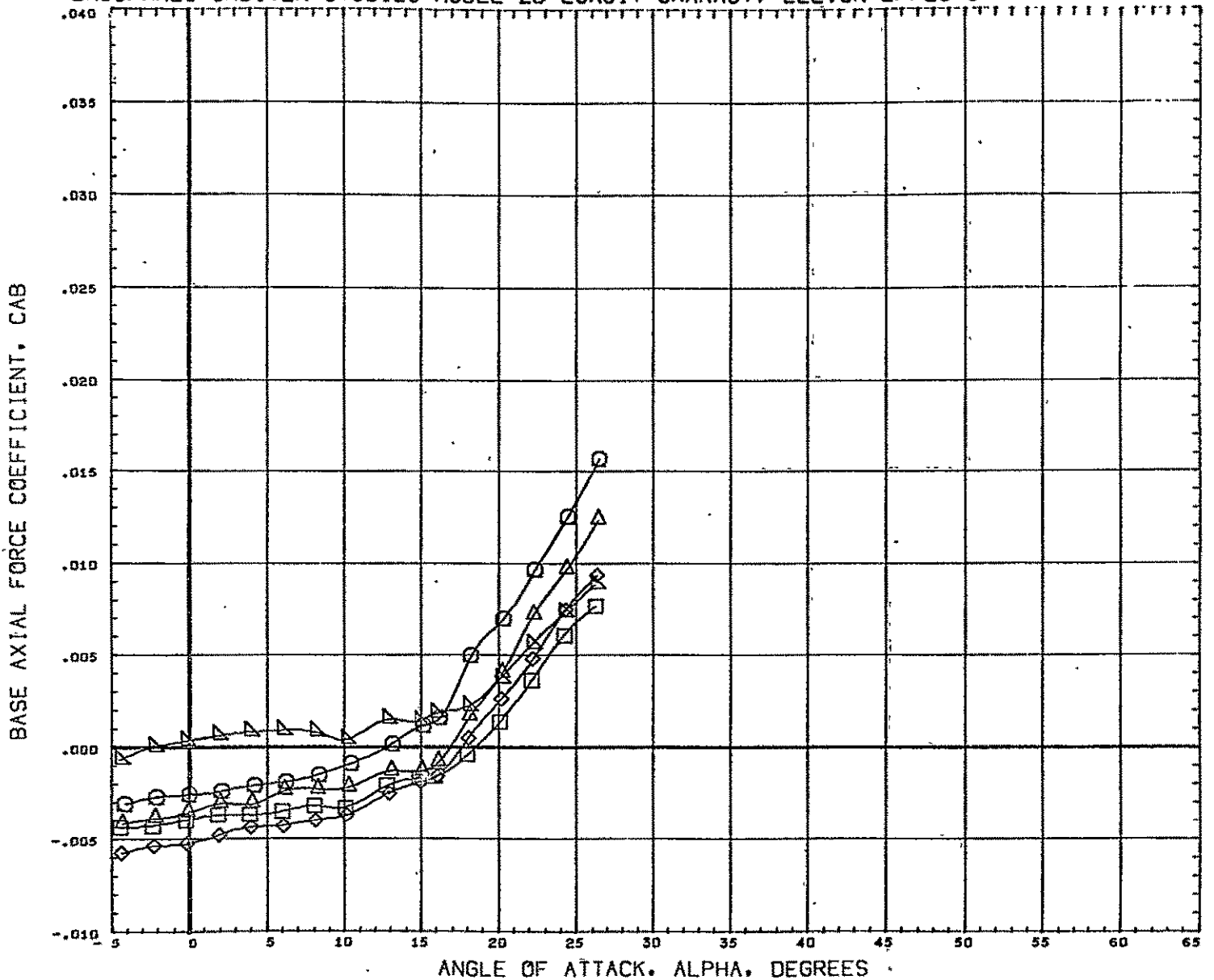
# LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, ELEVON EFFECTS



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN4	RUDER4	STING	BETA	REFERENCE INFORMATION
(D41552)	MSFC TWT 498 MSFC/HREC ORBITER	10.000	0.000	4.000	0.000	SREF 9.0250 SQ.IN
(D41701)	MSFC TWT 498 MSFC/HREC ORBITER	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D41503)	MSFC TWT 498 MSFC/HREC ORBITER	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D41504)	MSFC TWT 498 MSFC/HREC ORBITER	-20.000	0.000	4.000	0.000	XMRP 3.9950 INCHES
(D41505)	MSFC TWT 498 MSFC/HREC ORBITER	-30.000	0.000	4.000	0.000	YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

HACH 4.960

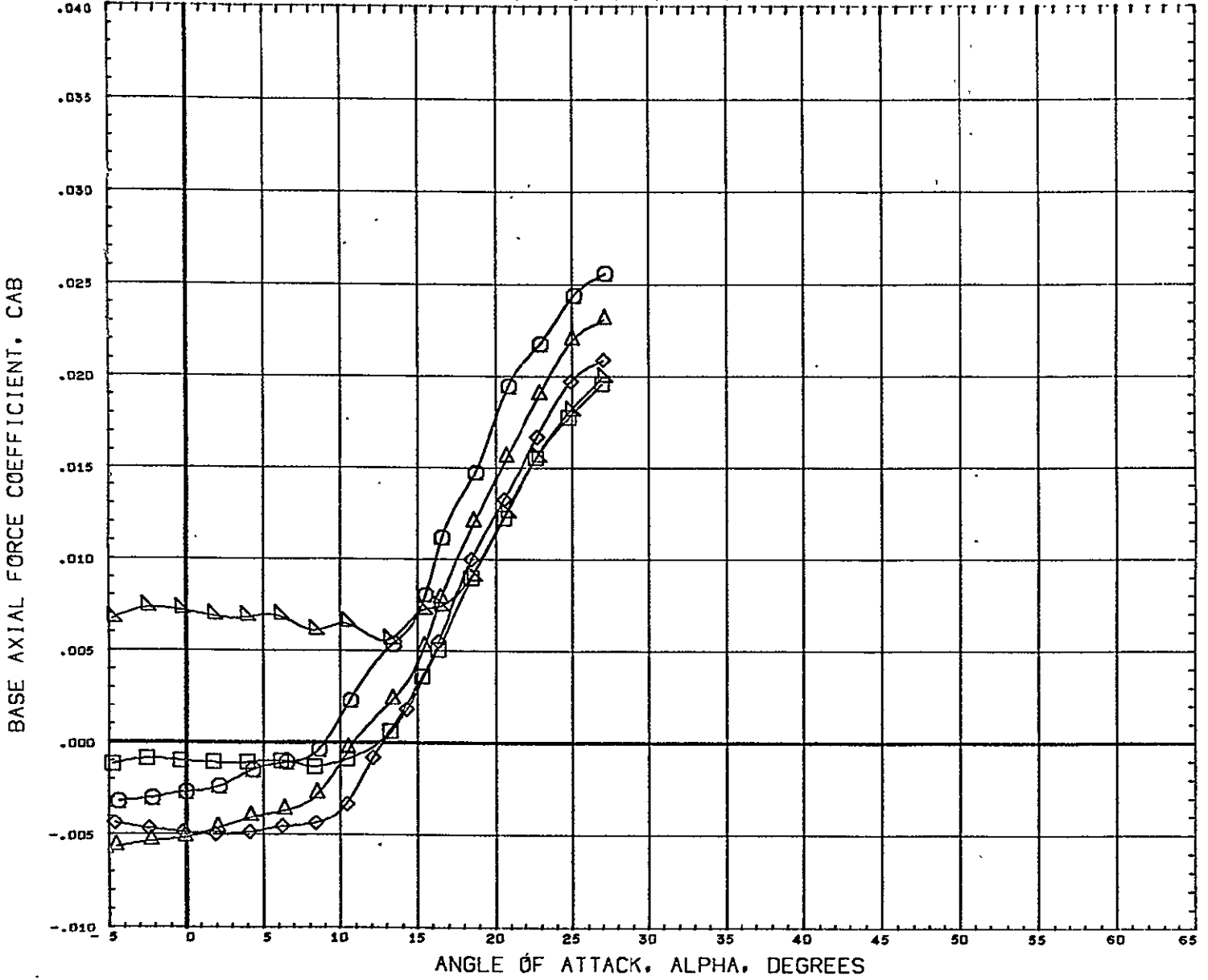
# LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, ELEVON EFFECTS



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN4	RUDER4	STING	BETA	REFERENCE INFORMATION
(D41S02)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	10.000	0.000	4.000	0.000	SREF 9.0250 SQ. IN
(D41T01)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D41S03)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D41S04)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	-20.000	0.000	4.000	0.000	XHRP 3.9950 INCHES
(D41S05)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	-30.000	0.000	4.000	0.000	YHRP 0.0000 INCHES
						ZHRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.596

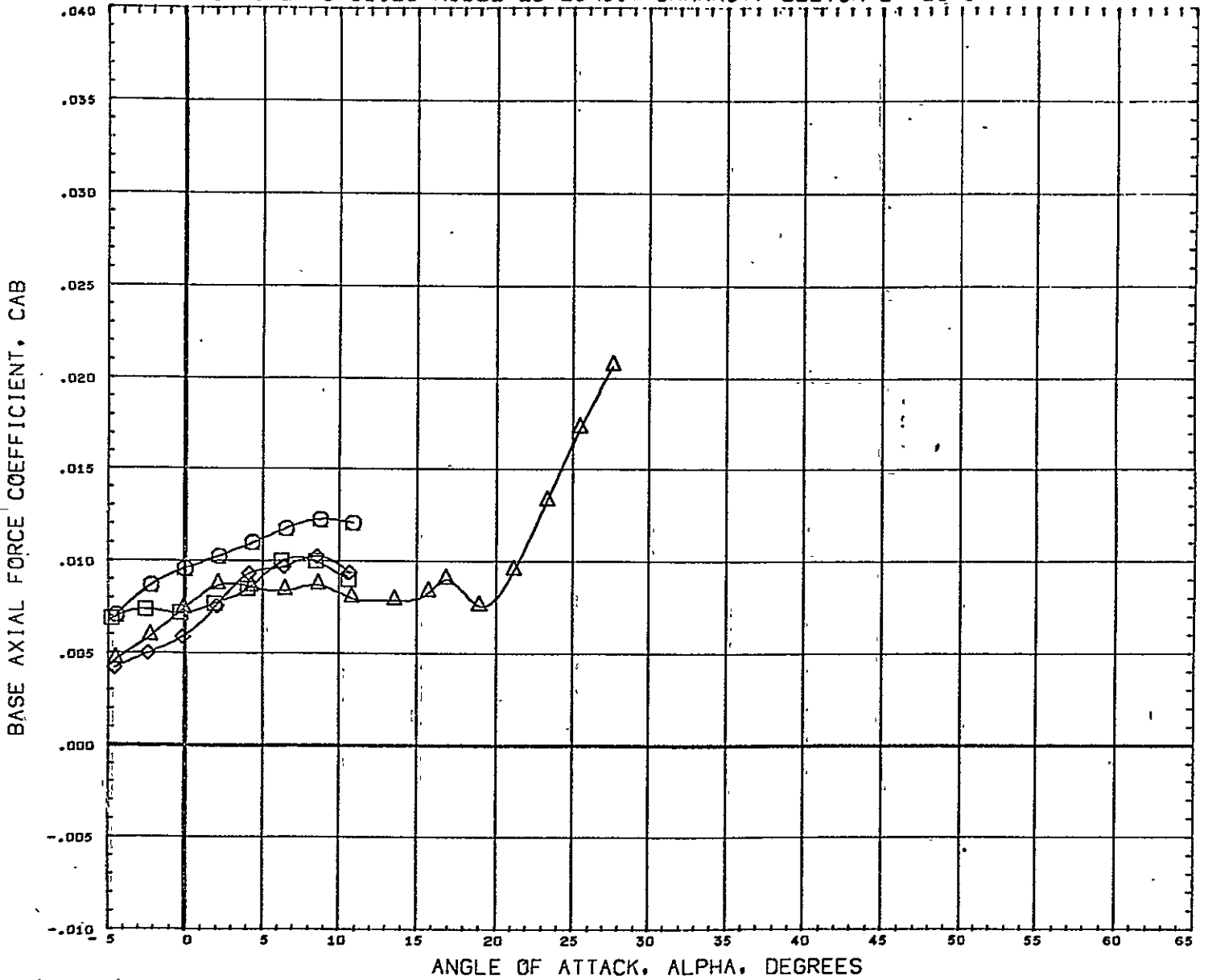
# LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, ELEVON EFFECTS



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN4	RUDER4	STING	BETA	REFERENCE INFORMATION
(D41SD2)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	10.000	0.000	4.000	0.000	SREF 9.0250 SQ. IN
(D41TD1)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D41SD3)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D41SD4)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	-20.000	0.000	4.000	0.000	XMRP 3.9950 INCHES
(D41SD5)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	-30.000	0.000	4.000	0.000	YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.901

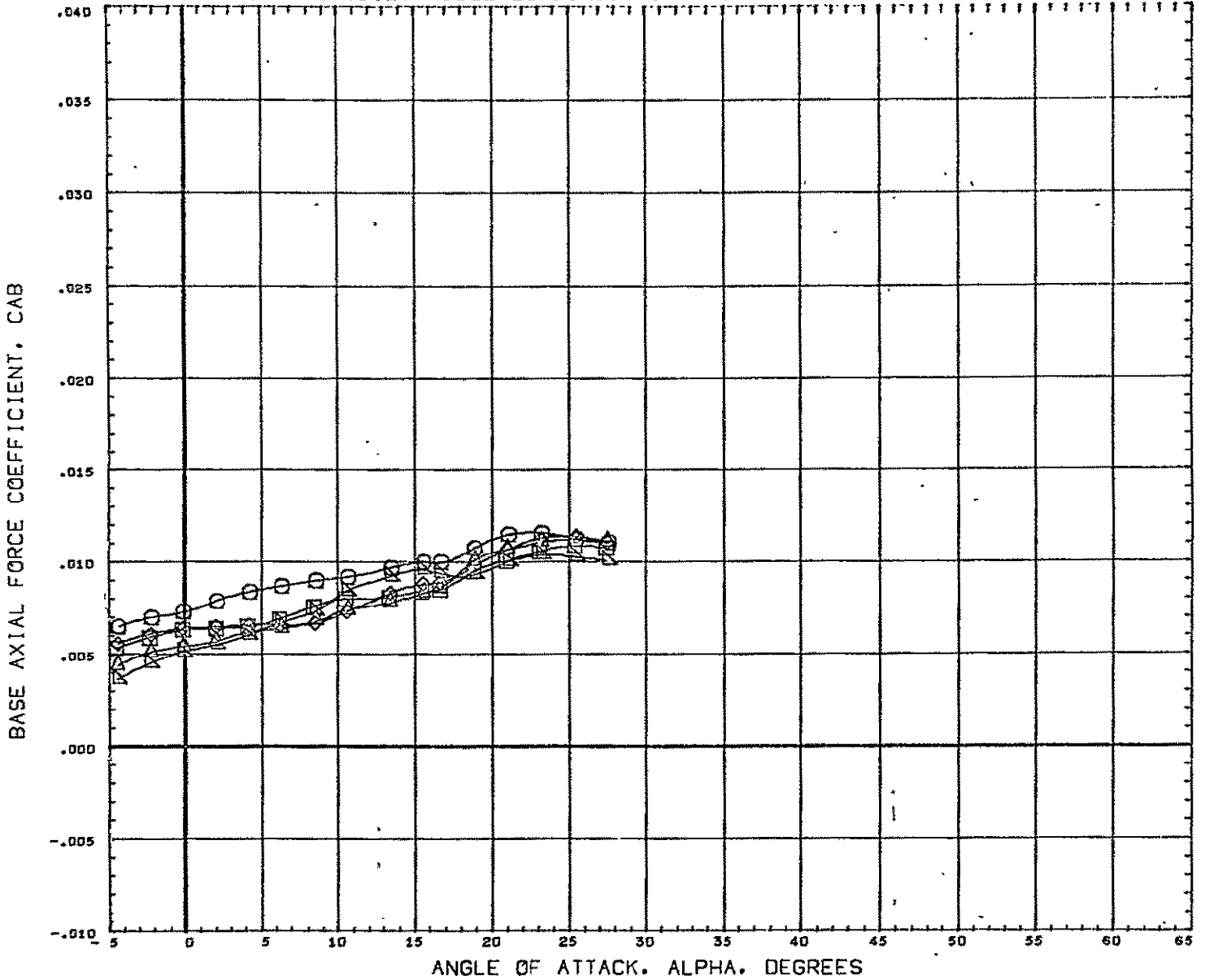
# LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, ELEVON EFFECTS



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN4	RUDER4	STING	BETA	REFERENCE INFORMATION
(D41S02)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	10.000	0.000	4.000	0.000	SREF 9.0250 SQ. IN
(D41T01)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D41S03)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D41S04)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	-20.000	0.000	4.000	0.000	XNRF 3.9950 INCHES
(D41S05)	DATA NOT AVAILABLE FOR ALL CONDITIONS	-30.000	0.000	4.000	0.000	YNRF 0.0000 INCHES ZNRF 0.1350 INCHES SCALE 0.0033 SCALE

MACH 1.093

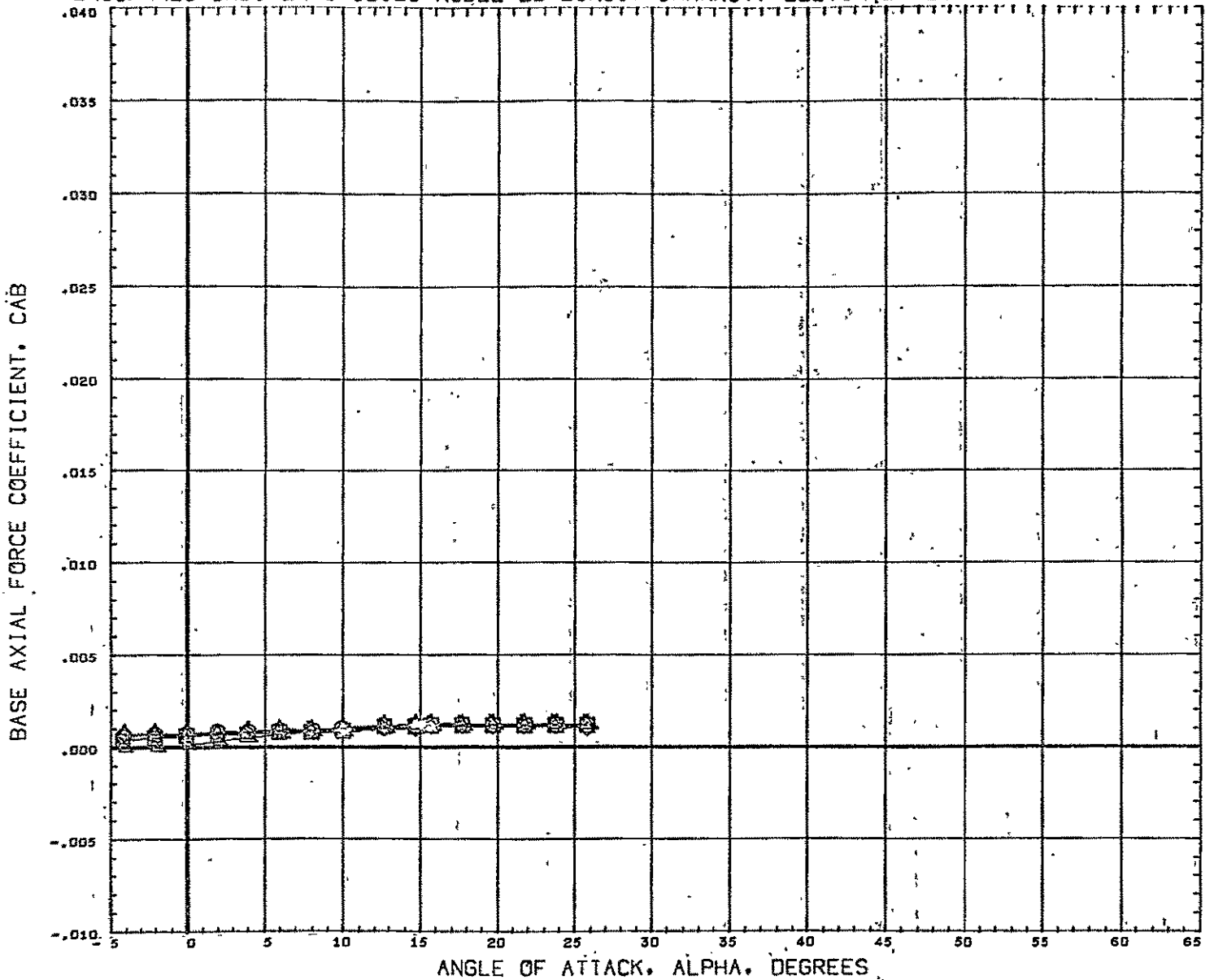
# LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, ELEVON EFFECTS



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN4	RUDER4	STING	BETA	REFERENCE INFORMATION
(D41S02)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	10.000	0.000	4.000	0.000	SREF 9.0250 SQ. IN
(D41S01)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D41S03)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D41S04)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	-20.000	0.000	4.000	0.000	XMRP 3.9950 INCHES
(D41S05)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	-30.000	0.000	4.000	0.000	YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0035 SCALE

MACH 1.960

MSFC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, ELEVON EFFECTS

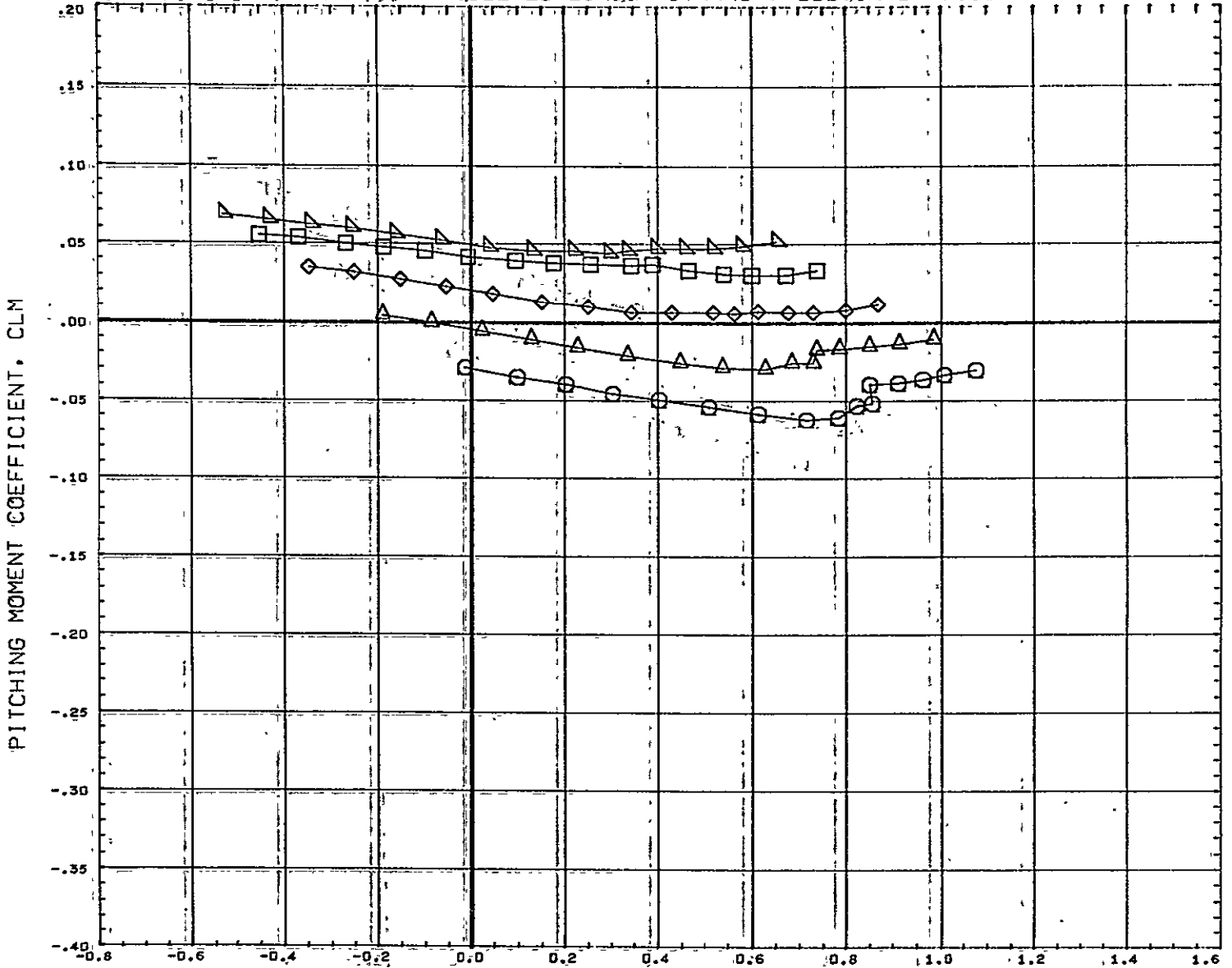


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN4	RUDER4	STING	BETA	REFERENCE INFORMATION
(D41SD2)	MSFC TWT 498 MSFC/HREC ORBITER	.B2W5V2E4R4	10.000	0.000	4.000	SREF 9.0250 SQ. IN
(D41TD1)	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4	0.000	0.000	4.000	LREF 6.1420 INCHES
(D41SD3)	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4	-15.000	0.000	4.000	BREF 6.1420 INCHES
(D41SD4)	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4	-20.000	0.000	4.000	XMRP 3.9950 INCHES
(D41SD5)	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4	-30.000	0.000	4.000	YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 4.960



MSFC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, ELEVON EFFECTS

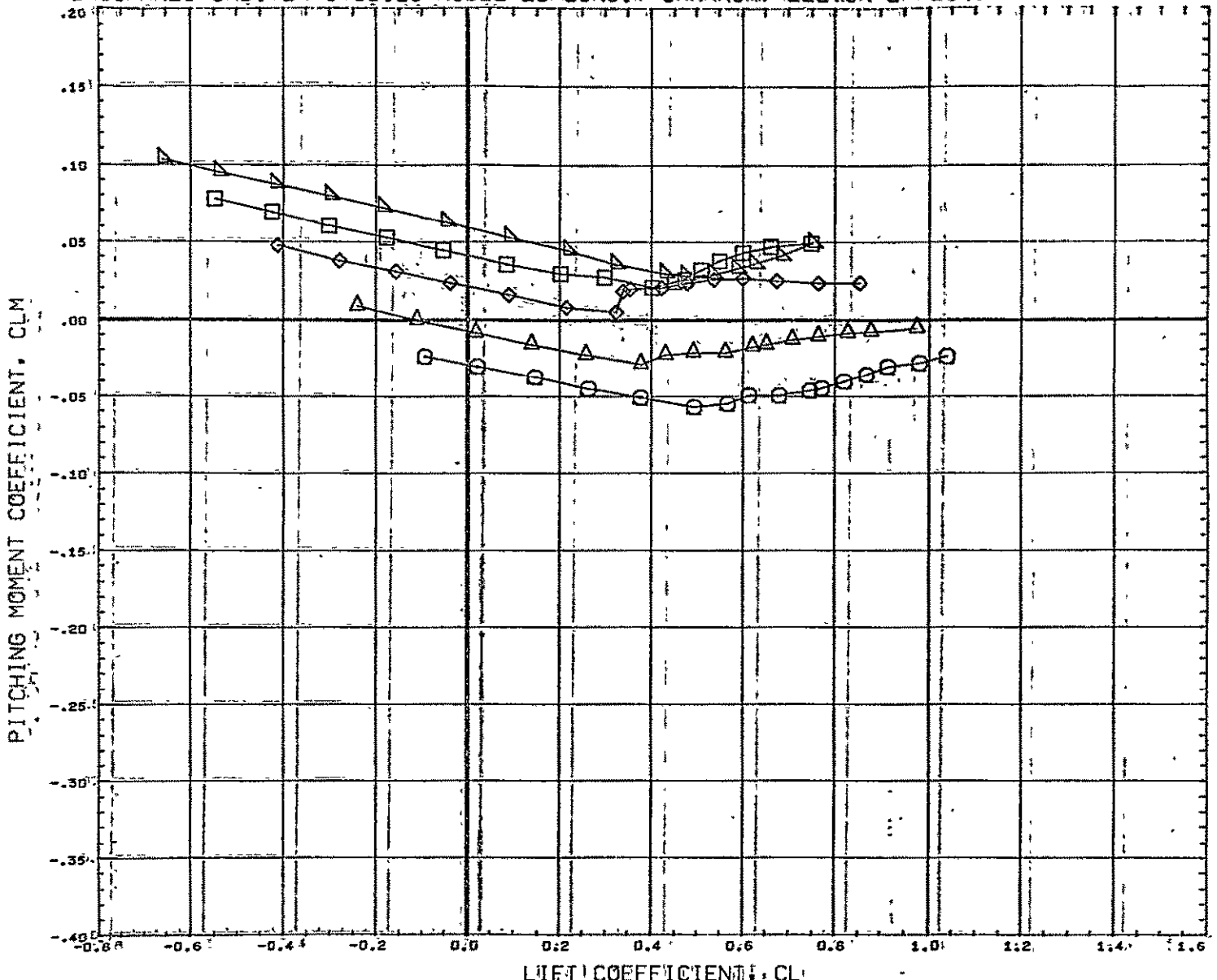


LIFT COEFFICIENT, CL

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN4	RUDER4	STING	BETA	REFERENCE INFORMATION
(D41S92)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	10.000	0.000	4.000	0.000	SREF 9.0250 SQ. IN
(D41S91)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D41S93)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D41S94)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	-20.000	0.000	4.000	0.000	XMRP 3.9950 INCHES
(D41S95)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4	-30.000	0.000	4.000	0.000	YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH .0596

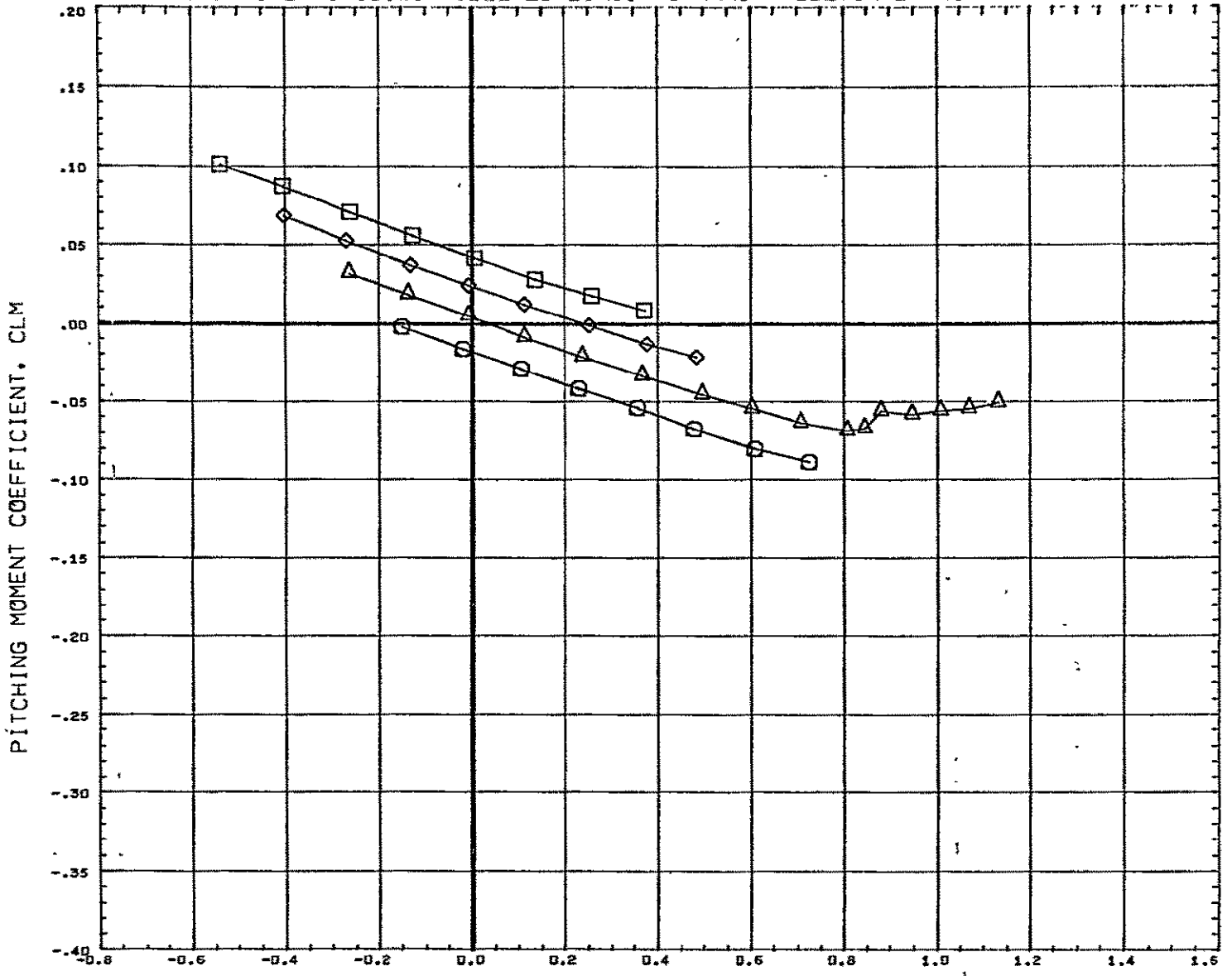
LMSC/HREC ORBITER STUDIES-MODEL 12B-LONGIT CHARACT. ELEVON EFFECTS



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVN4	RUDER4	STING	BETA	REFERENCE INFORMATION
(D41S02)	□	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4	10.000	0.000	4.000	SREF 9.0250 SQ. IN.
(D41T02)	◇	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4	0.000	0.000	4.000	LREF 6.1420 INCHES
(D41S03)	△	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4	-10.000	0.000	4.000	BREF 3.9950 INCHES
(D41S04)	○	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4	-20.000	0.000	4.000	XMRP 0.0000 INCHES
(D41S05)	□	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4	-30.000	0.000	4.000	ZMRP 0.1350 INCHES
							SCALE 0.0033 SCALE

MACH 0.990

# LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, ELEVON EFFECTS

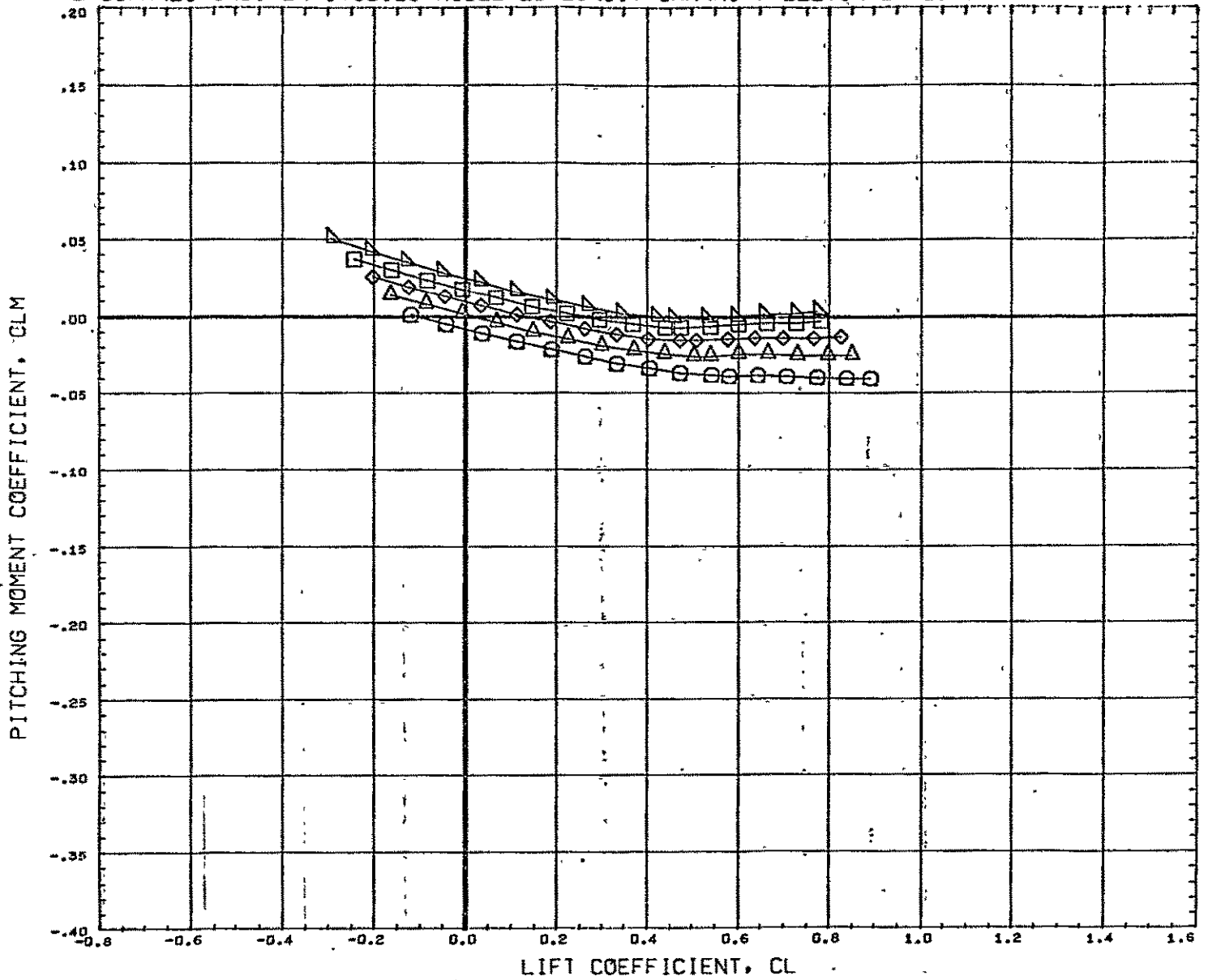


LIFT COEFFICIENT, CL

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN4	RUDER4	STING	BETA	REFERENCE INFORMATION
(D41S02)	MSFC TWT 498 MSFC/HREC ORBITER	10.000	0.000	4.000	0.000	SREF 9.0250 SQ. IN
(D41T01)	MSFC TWT 498 MSFC/HREC ORBITER	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D41S03)	MSFC TWT 498 MSFC/HREC ORBITER	-10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D41S04)	MSFC TWT 498 MSFC/HREC ORBITER	-20.000	0.000	4.000	0.000	XMRP 3.9950 INCHES
(D41S05)	DATA NOT AVAILABLE FOR ALL CONDITIONS	-30.000	0.000	4.000	0.000	YHRP 0.0000 INCHES ZHRP 0.1350 INCHES SCALE 0.0033 SCALE

MACH 1.093

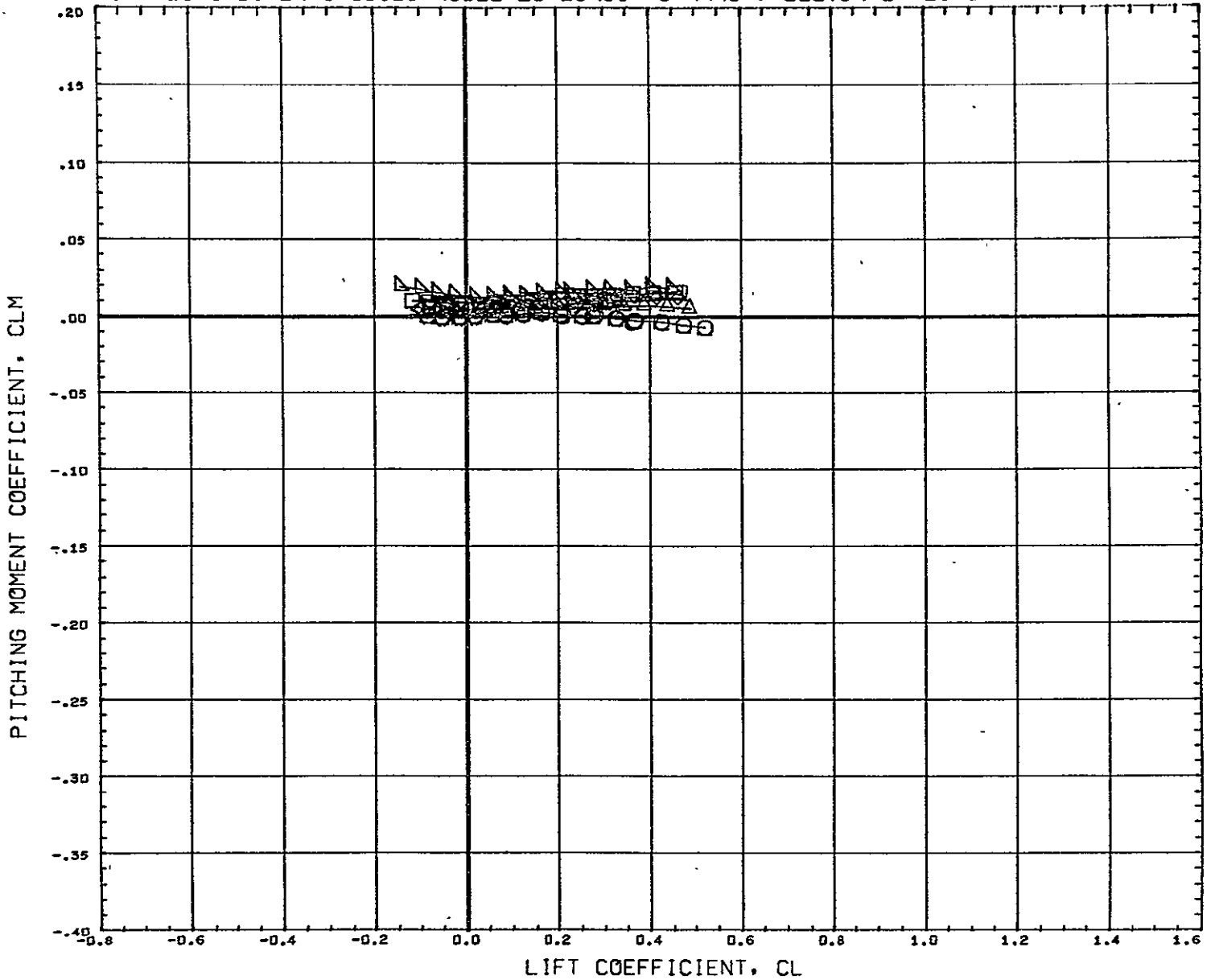
# LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, ELEVON EFFECTS



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN4	RUDER4	STING	BETA	REFERENCE INFORMATION
(D41502)	MSFC TWT 498 MSFC/HREC ORBITER	82W5V2E4R4	10.000	0.000	4.000	0.000 SREF 9.0250 SQ. IN
(D41501)	MSFC TWT 498 MSFC/HREC ORBITER	82W5V2E4R4	0.000	0.000	4.000	0.000 LREF 6.1420 INCHES
(D41503)	MSFC TWT 498 MSFC/HREC ORBITER	82W5V2E4R4	-10.000	0.000	4.000	0.000 BREF 6.1420 INCHES
(D41504)	MSFC TWT 498 MSFC/HREC ORBITER	82W5V2E4R4	-20.000	0.000	4.000	0.000 XMRP 3.9950 INCHES
(D41505)	MSFC TWT 498 MSFC/HREC ORBITER	82W5V2E4R4	-30.000	0.000	4.000	0.000 YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.960

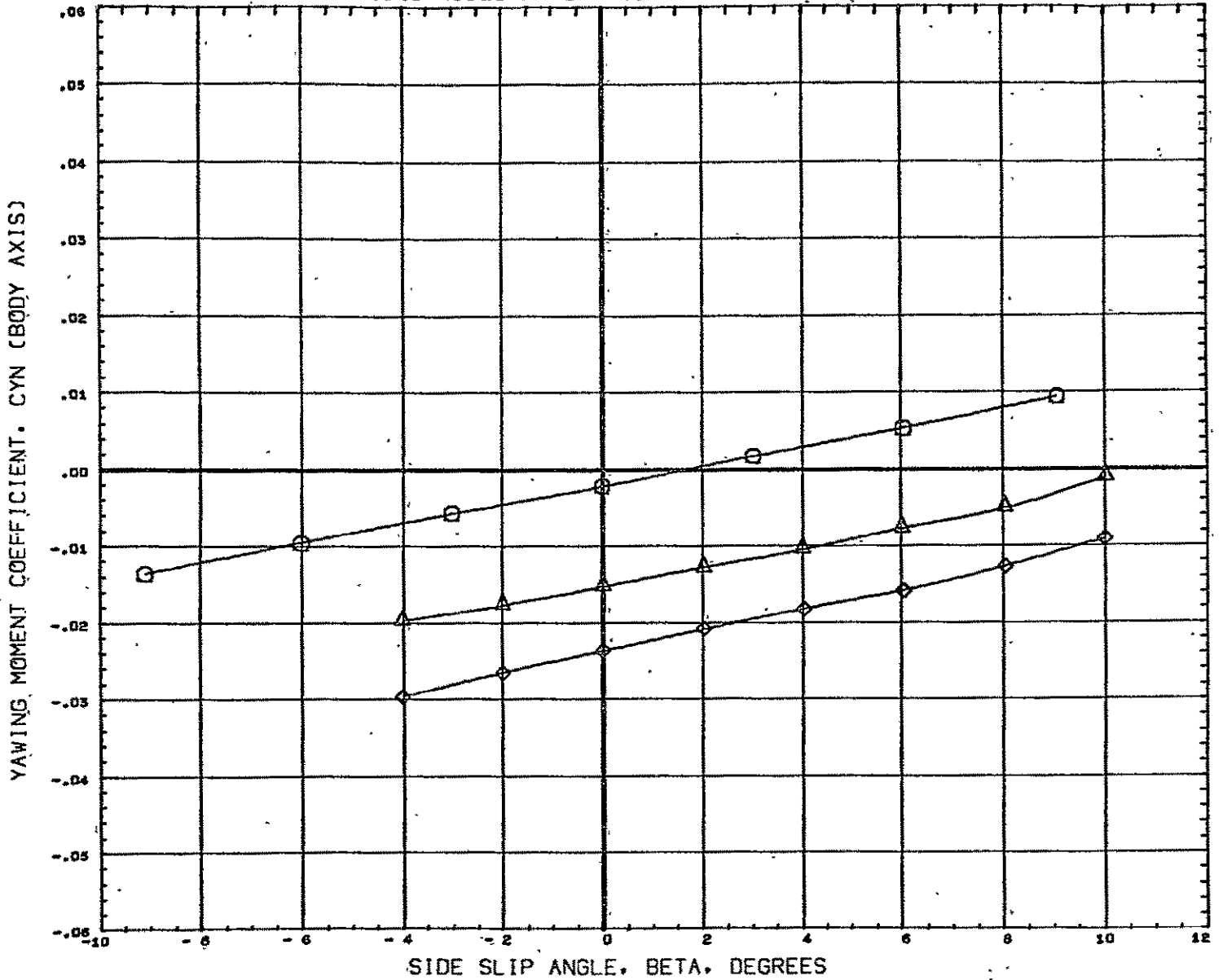
LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, ELEVON EFFECTS



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN4	RUDER4	STING	BETA	REFERENCE INFORMATION
(D41S02)	MSFC TWT 498 MSFC/HREC ORBITER	10.000	0.000	4.000	0.000	SREF 9.0250 SQ. IN
(D41T01)	MSFC TWT 498 MSFC/HREC ORBITER	0.000	0.000	4.000	0.000	LREF 6.1420 INCHES
(D41S03)	MSFC TWT 498 MSFC/HREC ORBITER	10.000	0.000	4.000	0.000	BREF 6.1420 INCHES
(D41S04)	MSFC TWT 498 MSFC/HREC ORBITER	-20.000	0.000	4.000	0.000	XMRP 3.9950 INCHES
(D41S05)	MSFC TWT 498 MSFC/HREC ORBITER	-30.000	0.000	4.000	0.000	YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 4.960

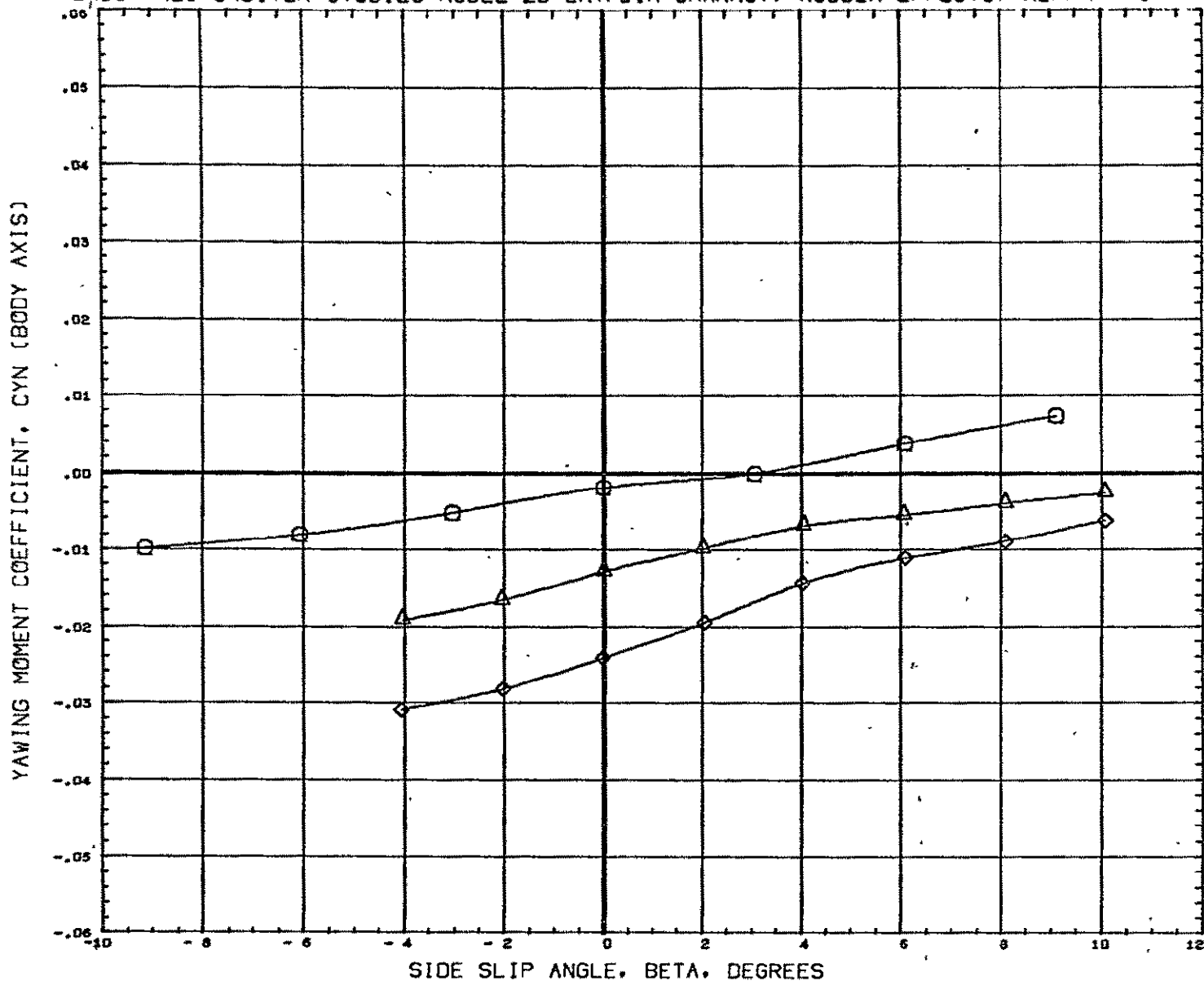
MSFC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT., RUDDER EFFECTS, ALPHA = 0



SYMBOL	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION		
	RUDER4	MACH	ALPHA	ALPHA	DATA SET	RUDER4	DATA SET	RUDER4	SREF	SG. IN
○	0.000	0.000	0.000	0.000	B41X01	0.000	A41X12	10.000	6.1420	INCHES
△	10.000	10.000	0.000	4.000	B41X01	0.000	A41X12	10.000	6.1420	INCHES
◇	20.000	20.000	0.000	4.000	A41X13	20.000			3.9950	INCHES
									0.0000	INCHES
									0.1350	INCHES
									0.0033	SCALE

DATA HIST. CODE \*A

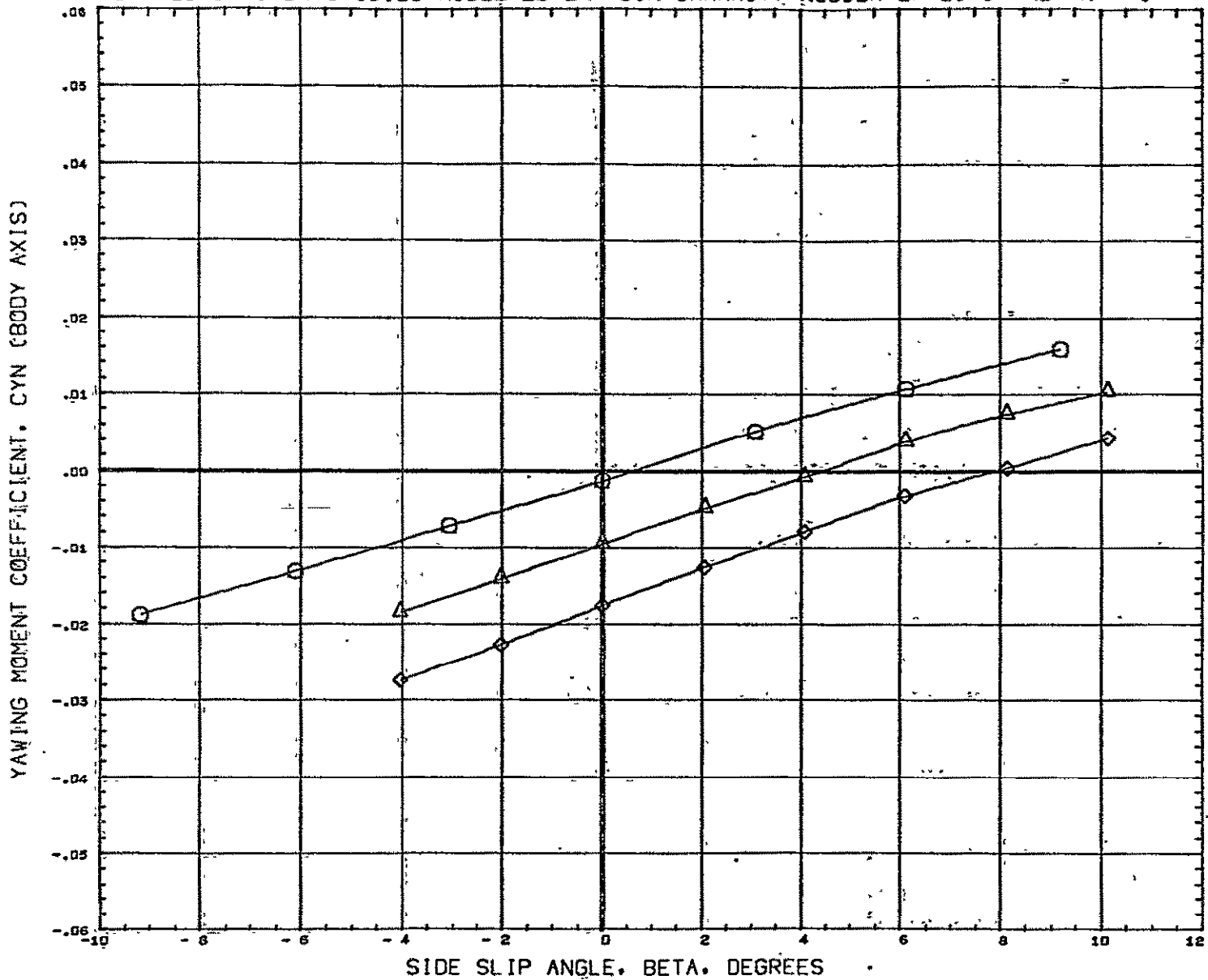
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, RUDDER EFFECTS, ALPHA = 0



SYMBOL	RUDER4	PARAMETRIC VALUES				DATA SOURCE				REFERENCE INFORMATION		
○	0.000	MACH	0.899	ALPHA	0.000	DATASET	RUDER4	DATASET	RUDER4	SREF	9.0250	50. IN
△	10.000	ELEVN4	0.000	STING	4.000	B41X01	0.000	A41X12	10.000	LREF	6.1420	INCHES
◇	20.000					A41X13	20.000			BREF	6.1420	INCHES
										XMRP	3.9950	INCHES
										YMRP	0.0000	INCHES
										ZMRP	0.1350	INCHES
										SCALE	0.0033	SCALE

DATA HIST. CODE \*A

LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT. RUDDER EFFECTS, ALPHA = 0

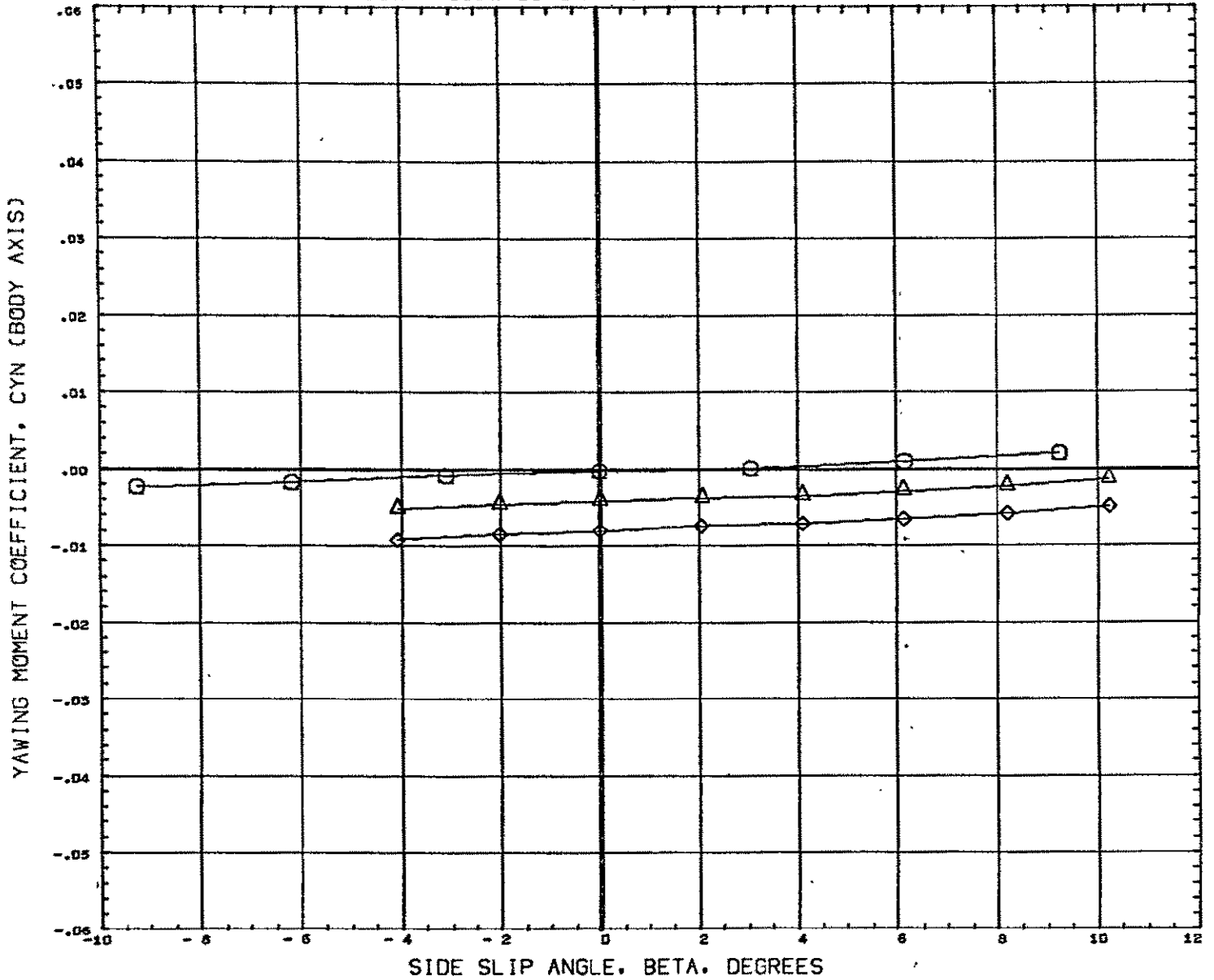


SYMBOL	RUDDER4	PARAMETRIC VALUES			DATA SOURCE			REFERENCE INFORMATION				
○	0.000	MACH	1.099	ALPHA	0.000	DATASET	RUDDER4	DATASET	RUDDER4	SREF	9.0250	58. IN
△	10.000	ELEVN4	0.000	STING	4.000	B41X01	0.000	A41X12	10.000	LREF	6.1420	INCHES
◇	20.000					A41X13	20.000			BREF	6.1420	INCHES
										XMRP	3.9950	INCHES
										YMRP	0.0000	INCHES
										ZMRP	0.1350	INCHES
										SCALE	0.0033	SCALE

DATA HIST. CODE \*A



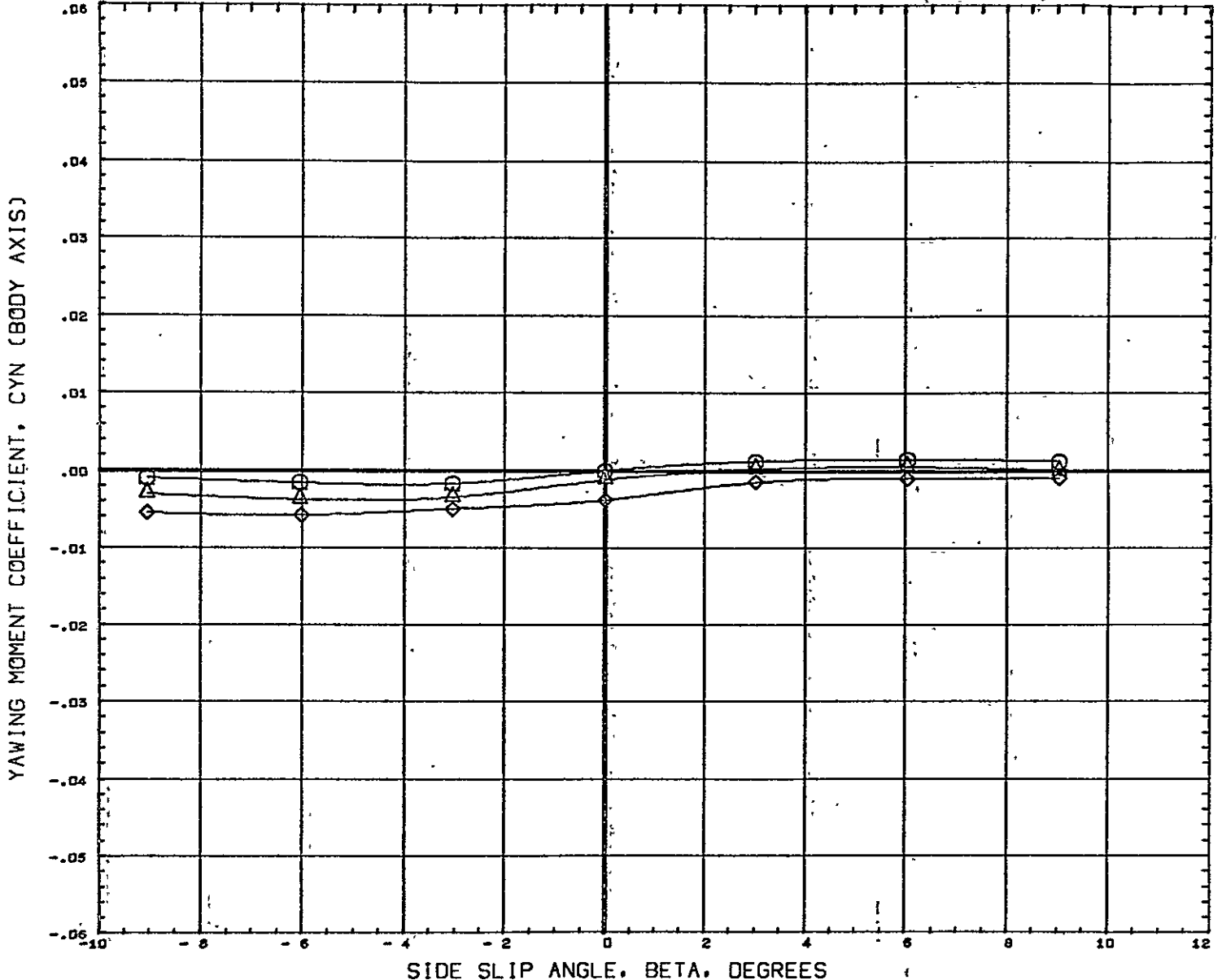
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, RUDDER EFFECTS, ALPHA = 0



SYMBOL	RUDER4	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
○	0.000	HACH 1.960 ALPHA 0.000	DATASET RUDER4 DATASET RUDER4	SREF 9.0250 SQ. IN.
△	10.000	ELEVN4 0.000 STING 4.000	DATASET B41X01 0.000 DATASET A41X12 10.000	LREF 6.1420 INCHES
◇	20.000		DATASET A41X13 20.000	BREF 6.1420 INCHES
				XMRP 3.9950 INCHES
				YMRP 0.0000 INCHES
				ZMRP 0.1350 INCHES
				SCALE 0.0033 SCALE

DATA HIST. CODE \*A

LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, RUDDER EFFECTS, ALPHA = 0



SYMBOL	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION		
	RUDER4	MACH	ALPHA	ALPHA	DATASET	RUDER4	DATASET	RUDER4	SREF	SQ. IN
○	0.000'	4.960	0.000	0.000	4.000	B41X01	0.000	A41X12	10.000	6.1420 INCHES
△	10.000'	4.960	0.000	0.000	4.000	B41X01	0.000	A41X12	10.000	6.1420 INCHES
◇	20.000'	4.960	0.000	0.000	4.000	B41X01	0.000	A41X12	10.000	6.1420 INCHES

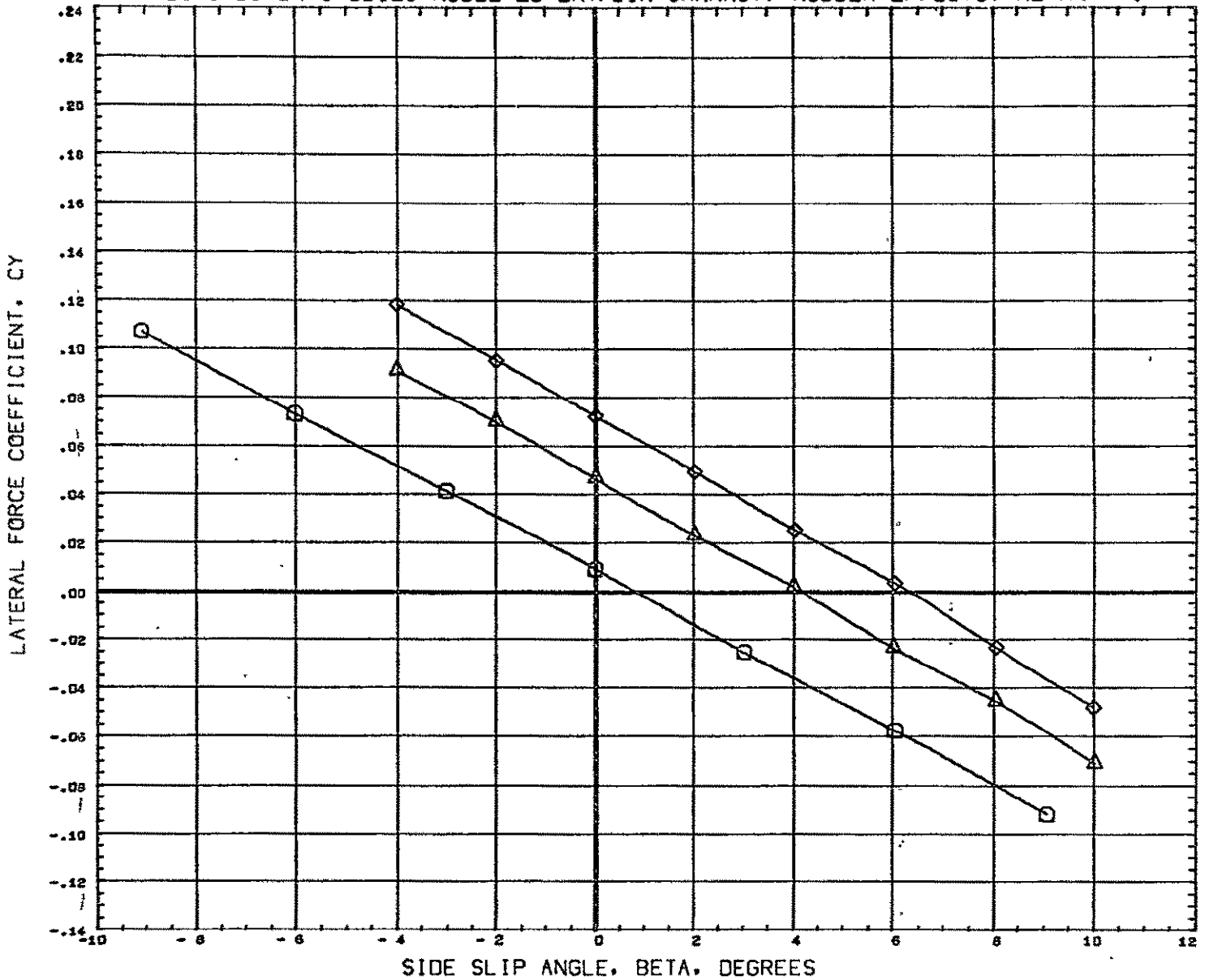
  

REFERENCE INFORMATION	
SREF	9.0250 SQ. IN
LREF	6.1420 INCHES
BREF	6.1420 INCHES
XMRP	3.9950 INCHES
YMRP	0.0000 INCHES
ZMRP	0.1350 INCHES
SCALE	0.0033 SCALE

DATA HIST. CODE	*A
MSFC TWT 498	MSFC/HREC ORBITER

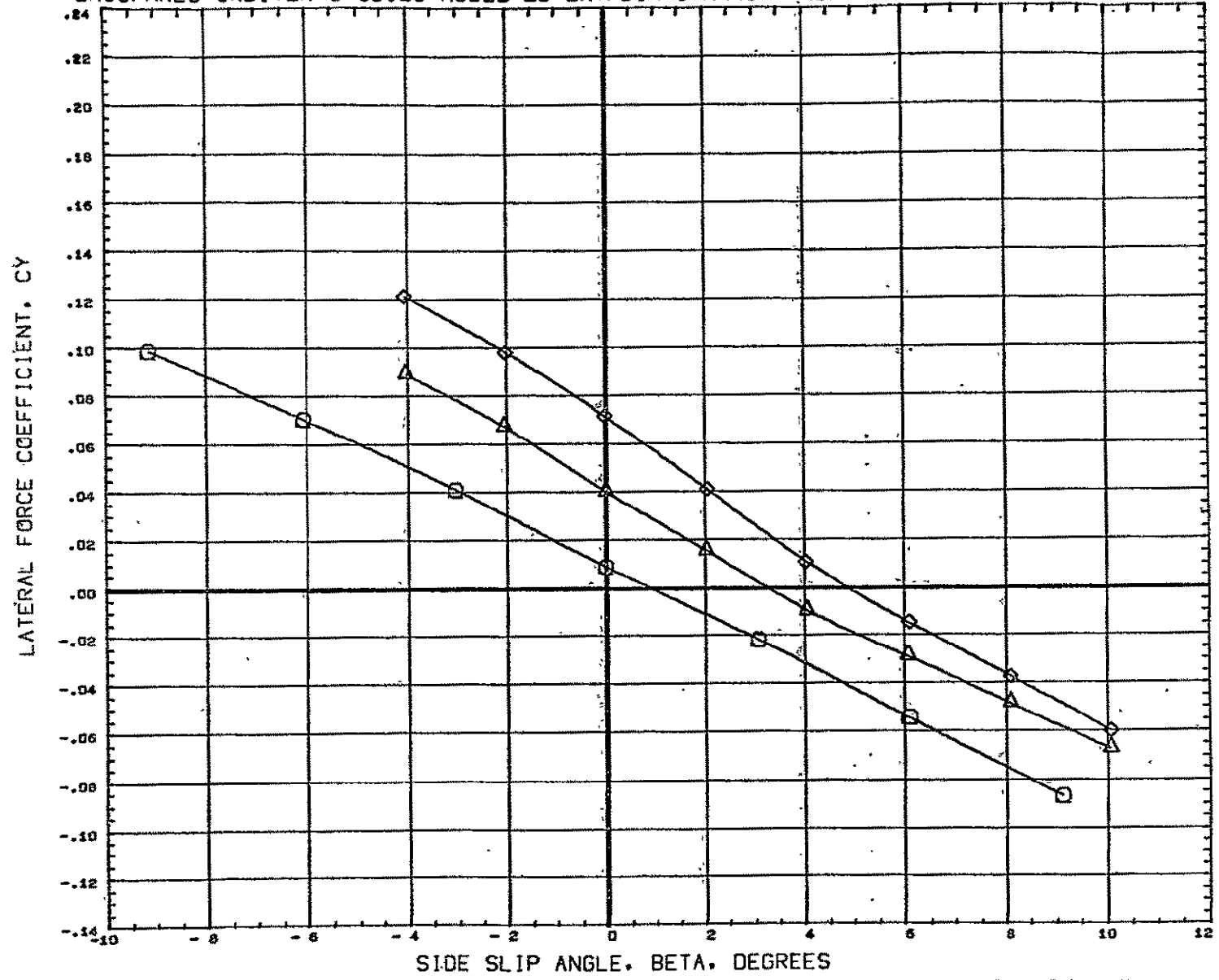
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, RUDDER EFFECTS, ALPHA = 0



SYMBOL	RUDER4	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
○	0.000	MACH 0.600 ALPHA 0.000	DATASET RUDER4 DATASET RUDER4	SREF 9.0250 SQ. IN
△	10.000	ELEVN4 0.000 STING 4.000	941X01 0.000 A41X12 10.000	LREF 6.1420 INCHES
◇	20.000		A41X13 20.000	BREF 6.1420 INCHES
				XHRP 3.9950 INCHES
				YHRP 0.0000 INCHES
				ZHRP 0.1330 INCHES
				SCALE 0.0033 SCALE

DATA HIST. CODE \*A

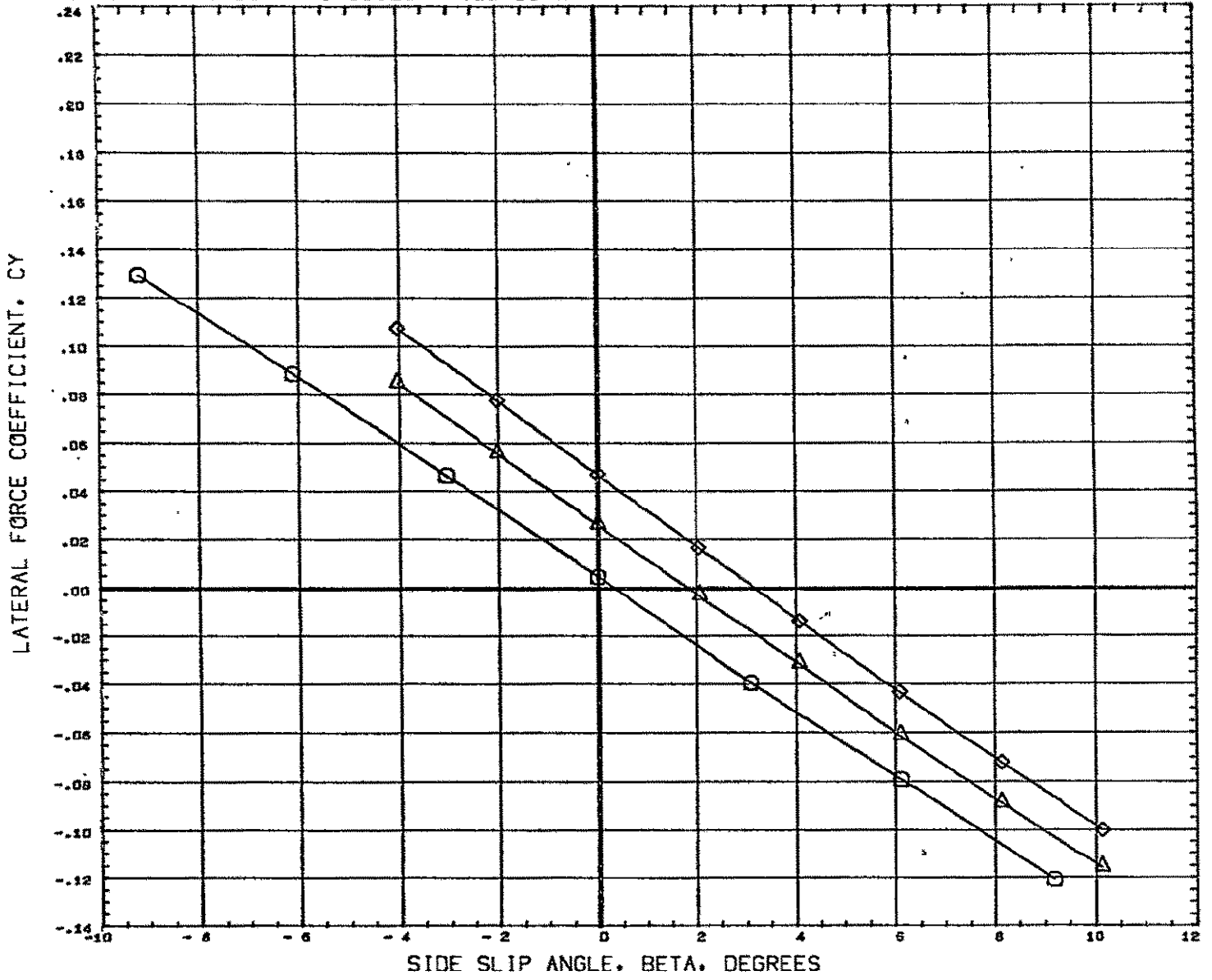
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, RUDDER EFFECTS, ALPHA = 0



SYMBOL	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION		
	RUDER4	MACH	ALPHA	STING	RUDER4	DATASET	RUDER4	SREF	INCHES	
○	0.000	0.899	0.000	4.000	0.000	B41X01	0.000	9.0250	9.0250	
◇	10.000	0.000	0.000	4.000	0.000	A41X12	10.000	6.1420	6.1420	
◇	20.000	0.000	0.000	4.000	20.000	A41X13	10.000	6.1420	6.1420	
								3.9950	3.9950	
								0.0000	0.0000	
								0.1350	0.1350	
								0.0033	0.0033	

DATA HIST. CODE #A

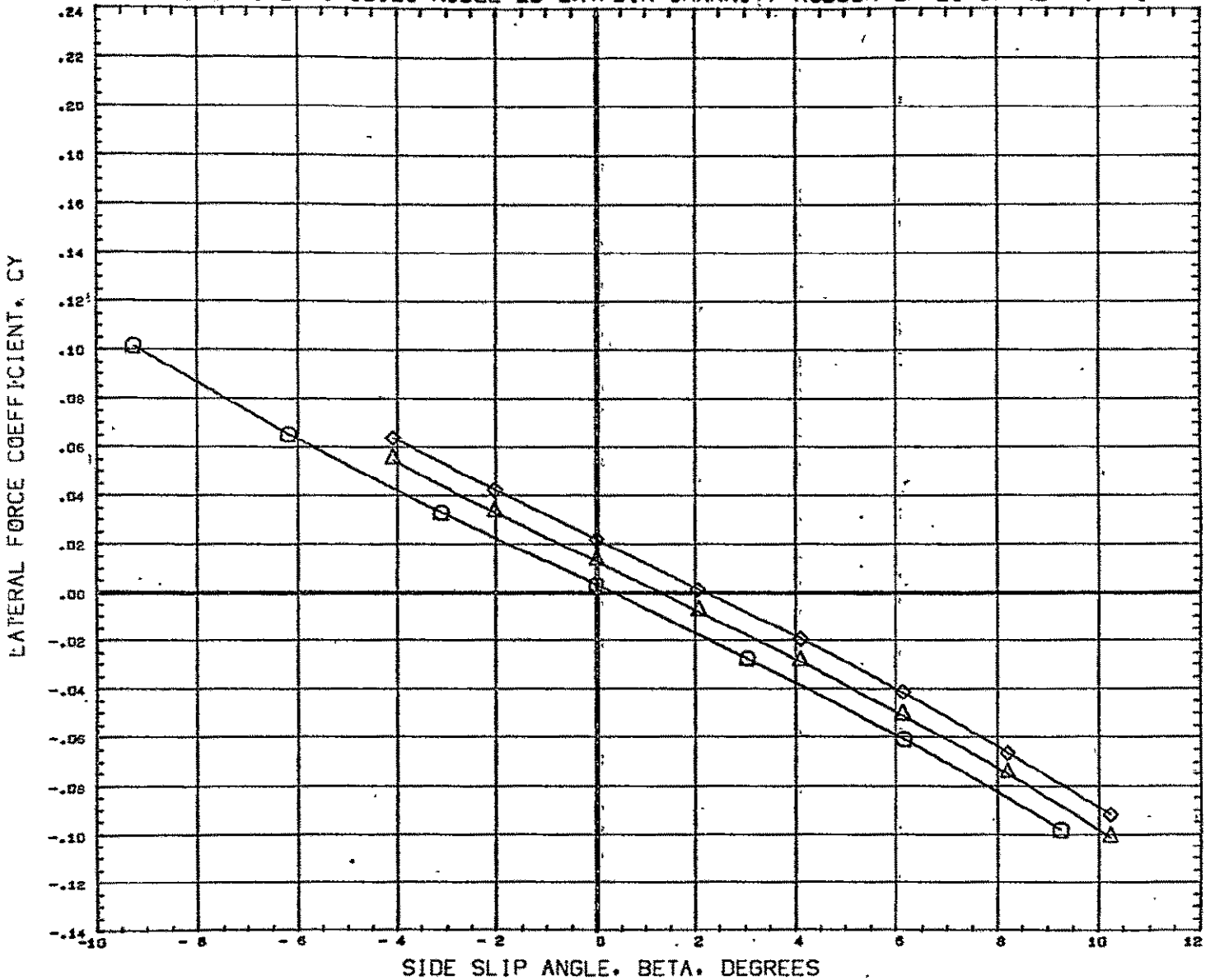
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT. RUDDER EFFECTS, ALPHA = 0



SYMBOL	RUDER4	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
○	0.000	MACH 1.099 ALPHA 0.000 DATASET RUDER4	9.0250 SQ.IN	
△	10.000	ELEVN4 0.000 STING 4.000 DATASET B41X01	6.1420 INCHES	
◇	20.000	A41X13 20.000 DATASET A41X12	6.1420 INCHES	
			3.9950 INCHES	
			0.0000 INCHES	
			0.1350 INCHES	
			0.0033 SCALE	

DATA HIST. CODE \*A

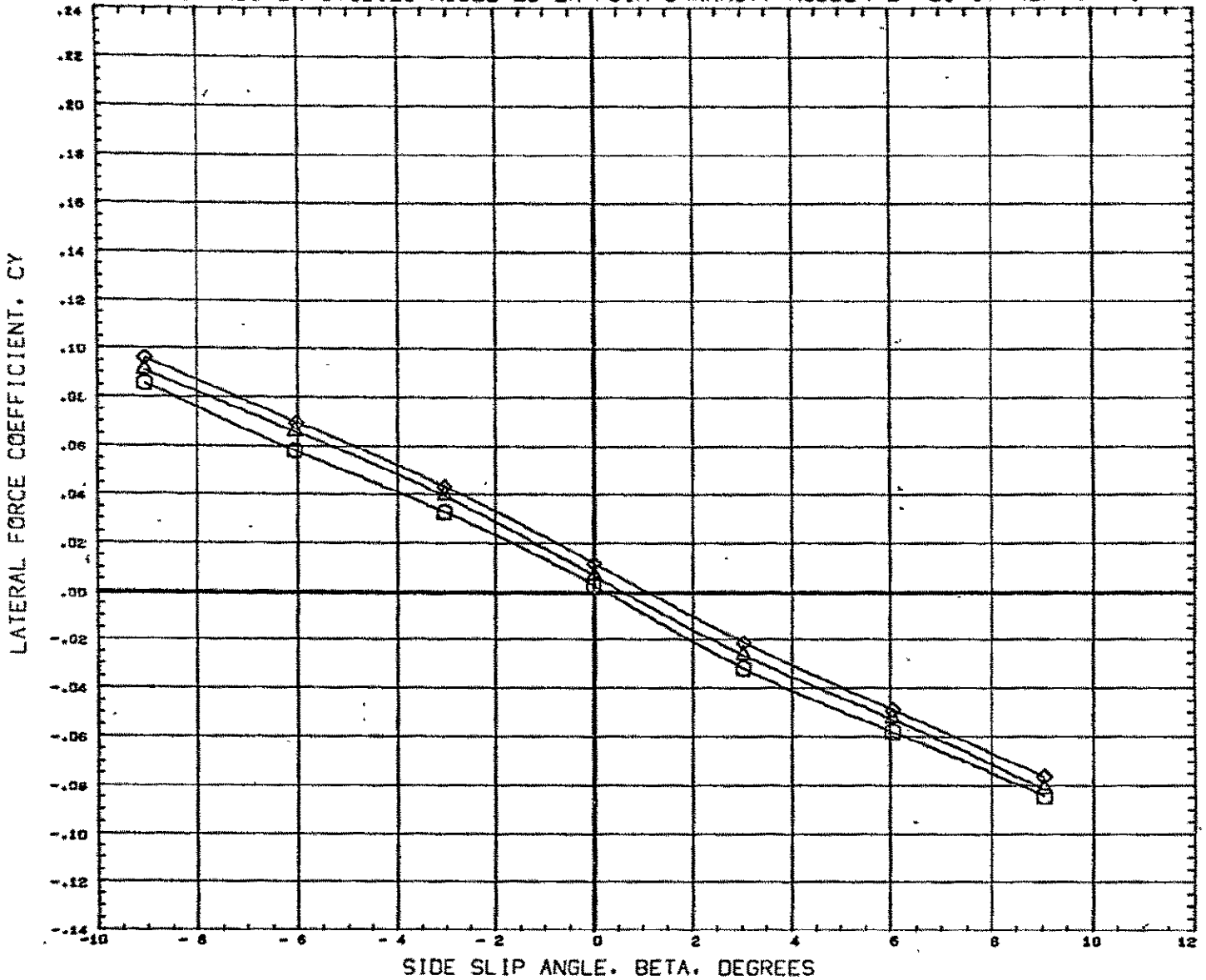
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, RUDDER EFFECTS, ALPHA = 0



SYMBOL	RUDDER4	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
○	0.000	MACH 1.960 ALPHA 0.000	DATASET RUDER4 DATASET RUDER4	SREF 9.0250 SQ.IN
△	10.000	ELEVN4 0.000 STING 4.000	B41X01 0.000 A41X12 10.000	LREF 6.1420 INCHES
◇	20.000		A41X13 20.000	BREF 6.1420 INCHES
				XHRF 3.9950 INCHES
				YHRF 0.0000 INCHES
				ZHRF 0.1350 INCHES
				SCALE 0.0033 SCALE

DATA HIST. CODE #A

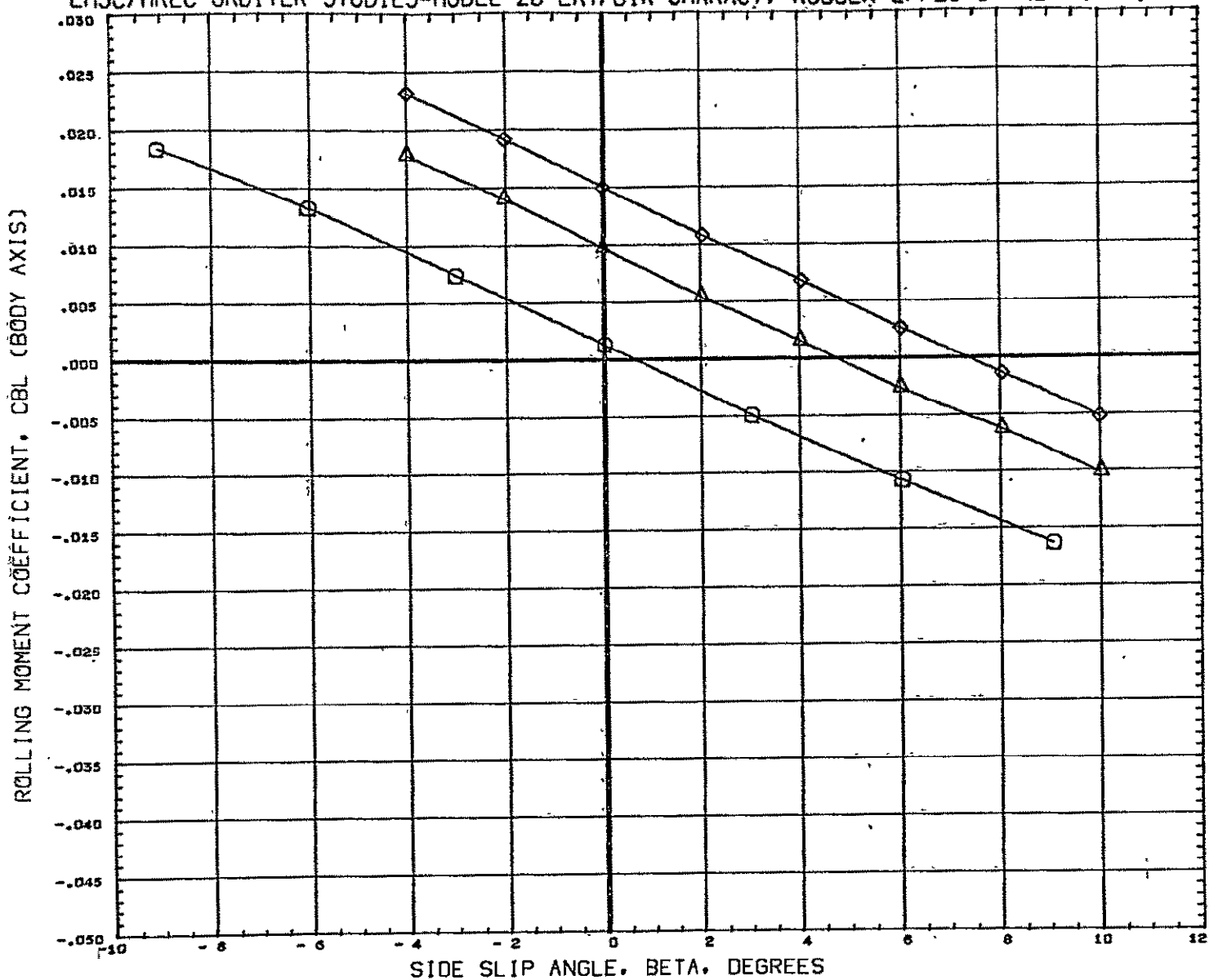
LMSC/HREC ORBITER STUDIES-MODEL 28-LAT/DIR CHARACT, RUDDER EFFECTS, ALPHA = 0



SYMBOL	RUDER4	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
○	0.000	MACH 4.960 ALPHA 0.000	DATASET RUDER4	SREF 9.0250 SQ. IN
△	10.000	ELEVN4 0.000 STING 4.000	B41X01 0.000 A41X12	LREF 6.1420 INCHES
◇	20.000		A41X13 20.000	SREF 6.1420 INCHES
				XMRP 3.9950 INCHES
				YMRP 0.0000 INCHES
				ZMRP 0.1350 INCHES
				SCALE 0.0033 SCALE

DATA HIST. CODE \*A

LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, RUDDER EFFECTS, ALPHA = 0

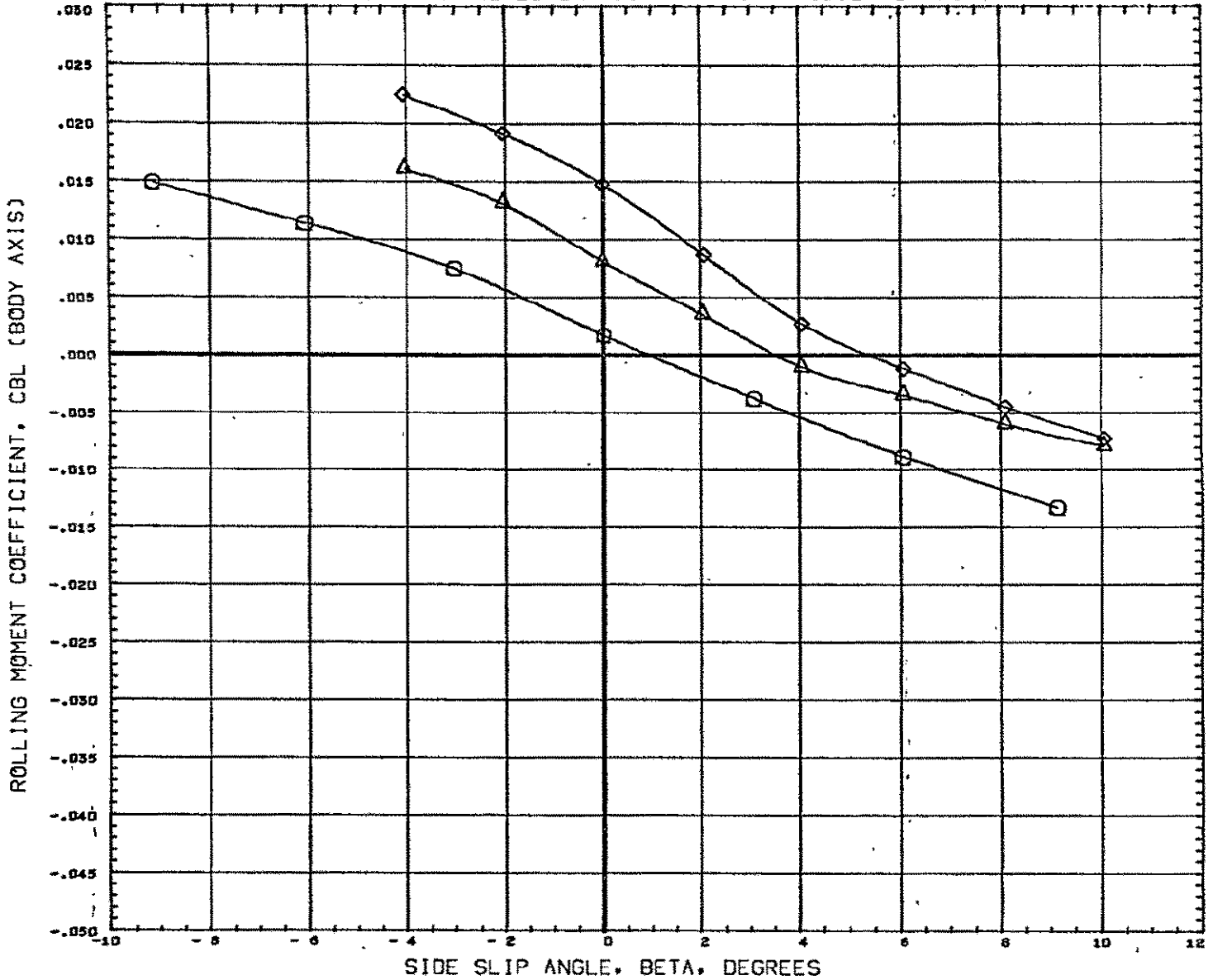


SYMBOL	RUDER 4	PARAMETRIC VALUES			DATA SOURCE			REFERENCE INFORMATION		
		MACH	ALPHA	STING	RUDER 4	DATASET	RUDER 4	SREF	INCHES	
○	0.000	0.600	0.000	0.000	B41X01	0.000	9.0250	90. IN		
△	10.000	0.600	0.000	4.000	B41X01	0.000	6.1420	INCHES		
◇	20.000	0.600	0.000	4.000	A41X13	20.000	6.1420	INCHES		
							3.9950	INCHES		
							0.0000	INCHES		
							0.1350	INCHES		
							0.0033	SCALE		

DATA HIST. CODE #A



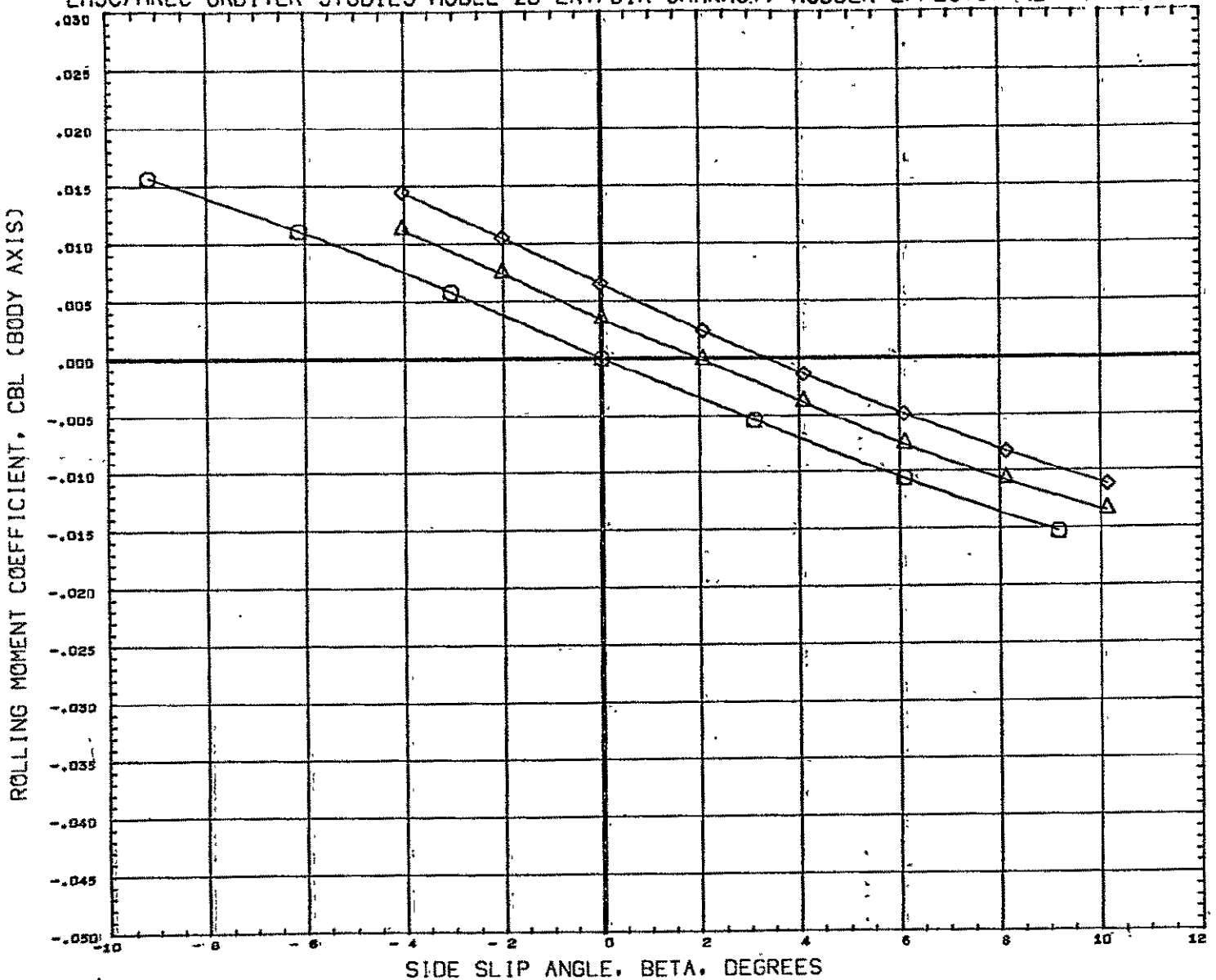
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT. RUDDER EFFECTS. ALPHA = 0



SYMBOL	RUDER4	PARAMETRIC VALUES			DATA SOURCE			REFERENCE INFORMATION		
○	0.000	MACH	0.899	ALPHA	0.000	DATASET	RUDER4	SREF	9.0250	58. IN
△	10.000	ELEVN4	0.000	STING	4.000	B41X01	0.000	LREF	6.1420	INCHES
◇	20.000					A41X13	20.000	BREF	6.1420	INCHES
								XMRP	3.9950	INCHES
								YMRP	0.0000	INCHES
								ZMRP	0.1350	INCHES
								SCALE	0.0033	SCALE

DATA HIST. CODE \*A

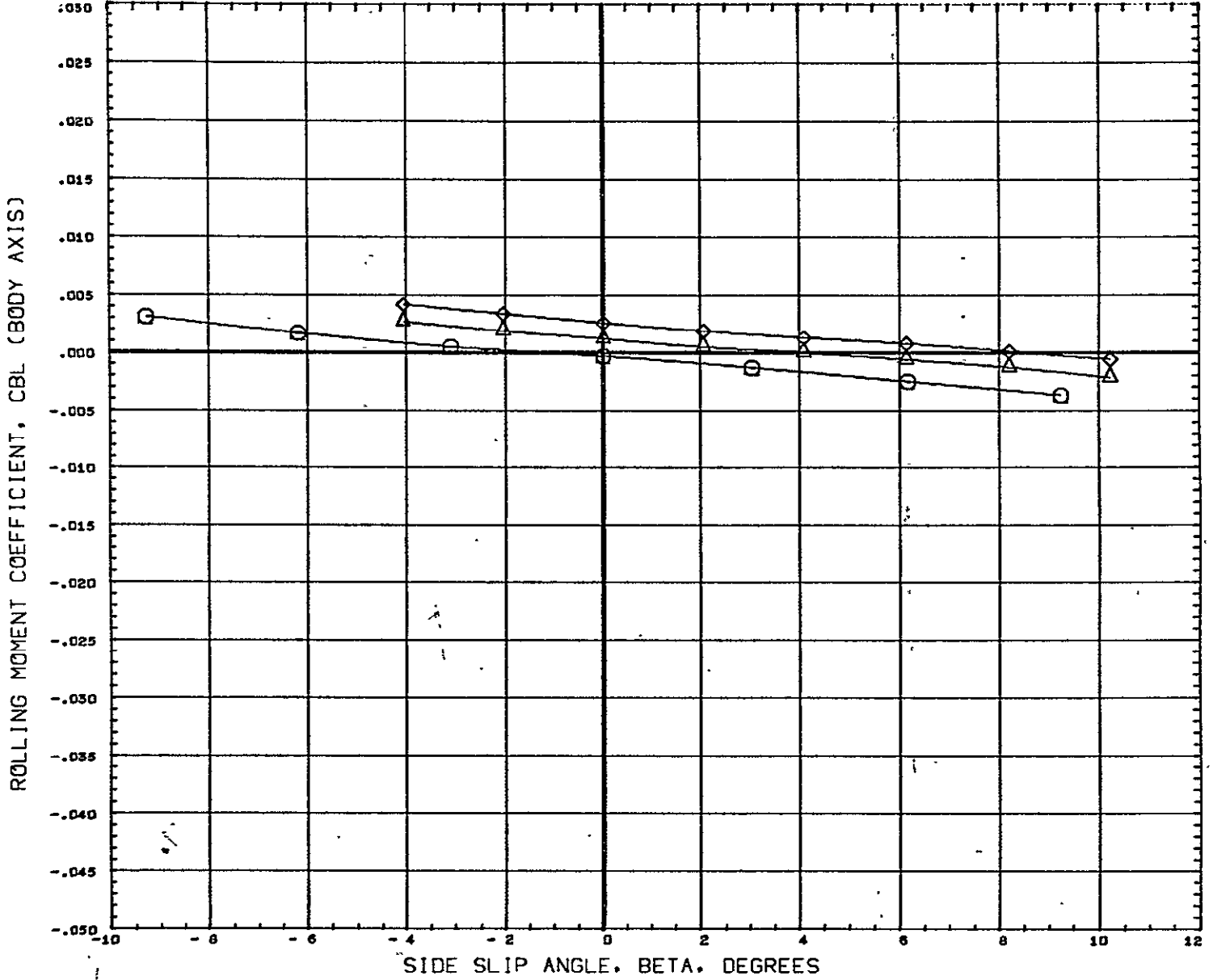
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, RUDDER EFFECTS, ALPHA = 0



SYMBOL	RUDER <sup>4</sup>	PARAMETRIC VALUES			DATA SOURCE			REFERENCE INFORMATION		
		MACH	ALPHA	STING	DATASET	RUDER <sup>4</sup>	DATASET	RUDER <sup>4</sup>	SREF	SCALE
○	0.000	1.099	0.000	4.000	B41X01	0.000	A41X12	10.000	9.0250	94.1M
△	10.000	0.000			A41X13	20.000			6.1420	INCHES
◇	20.000								6.1420	INCHES
									3.9950	INCHES
									0.0000	INCHES
									0.1350	INCHES
									0.0033	SCALE

DATA HIST. CODE #A

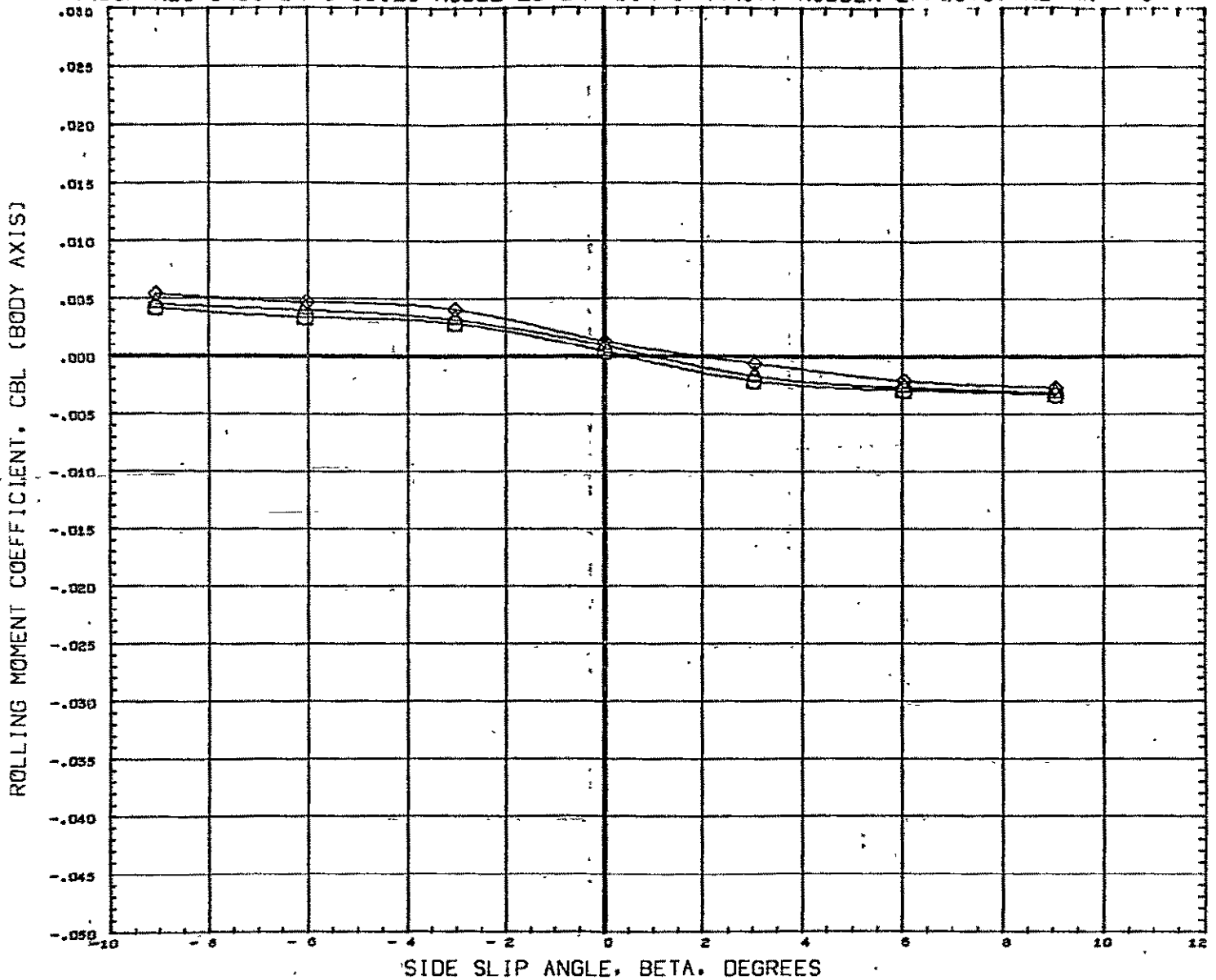
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, RUDDER EFFECTS, ALPHA = 0



SYMBOL	RUDER4	PARAMETRIC VALUES			DATA SOURCE			REFERENCE INFORMATION		
○	0.000	MACH	1.960	ALPHA	0.000	DATASET	RUDER4	SREF	9.0250	94. IN
△	10.000	ELEV4	0.000	STING	4.000	B41X01	0.000	LREF	6.1420	INCHES
◇	20.000					A41X13	20.000	BREF	6.1420	INCHES
								XMRP	3.9950	INCHES
								YMRP	0.0000	INCHES
								ZMRP	0.1350	INCHES
								SCALE	0.0033	SCALE

DATA HIST. CODE \*A

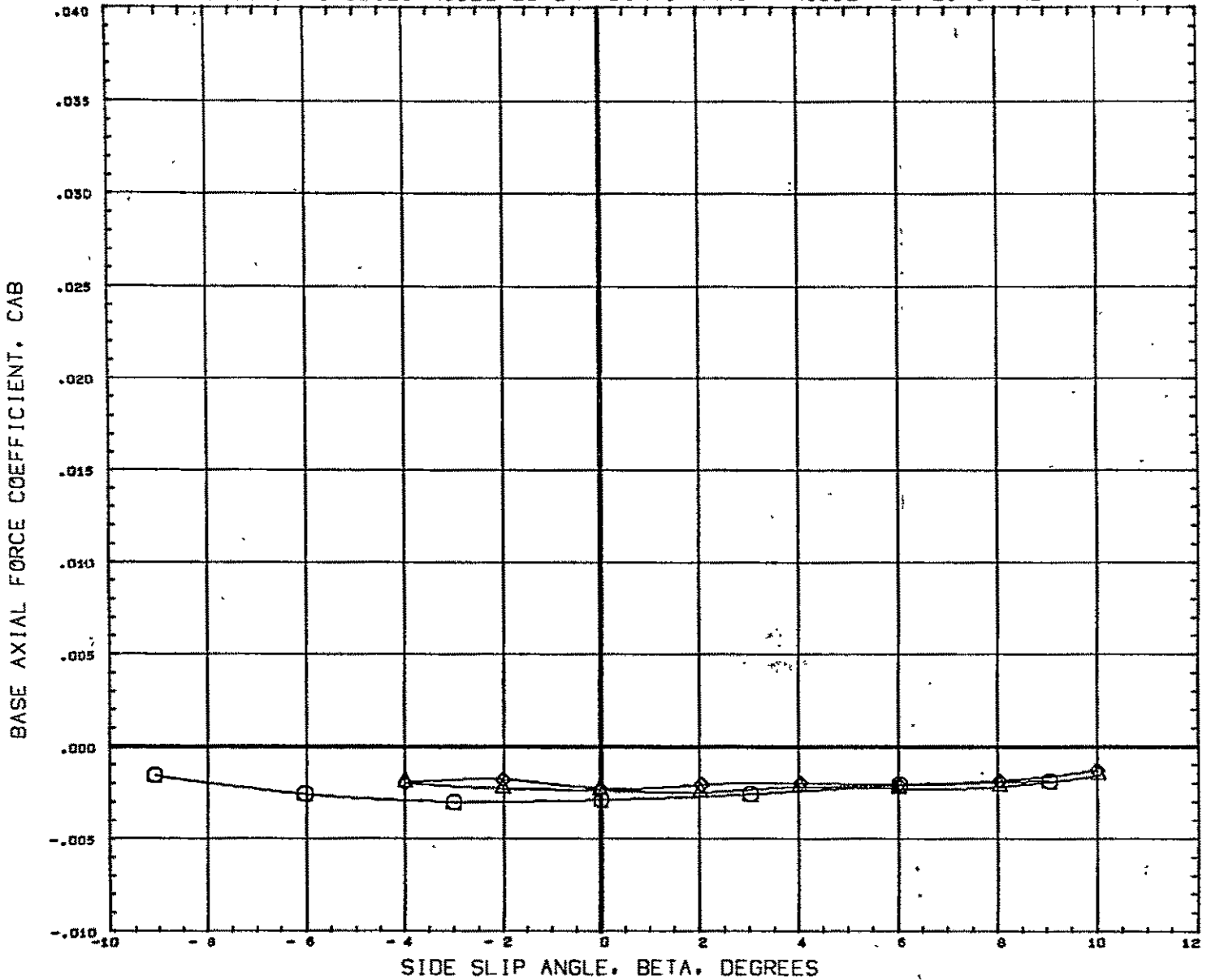
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, RUDDER EFFECTS, ALPHA = 0



SYMBOL	RUDER4	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION			
		MACH	ALPHA	STING	DATASET	RUDER4	DATASET	RUDER4	SREF	INCHES	SCALE	
○	0.000	4.960	0.000	4.000	B41X01	0.000	A41X12	10.000	9.0250	9.0250	9.0250	INCHES
△	10.000	4.960	0.000	4.000	B41X01	0.000	A41X12	10.000	6.1420	6.1420	6.1420	INCHES
◇	20.000	4.960	0.000	4.000	A41X15	20.000	A41X12	10.000	6.1420	3.9950	3.9950	INCHES
									YMRP	0.0000	0.0000	INCHES
									ZMRP	0.1350	0.1350	INCHES
									SCALE	0.0033	0.0033	SCALE

DATA HIST. CODE \*A

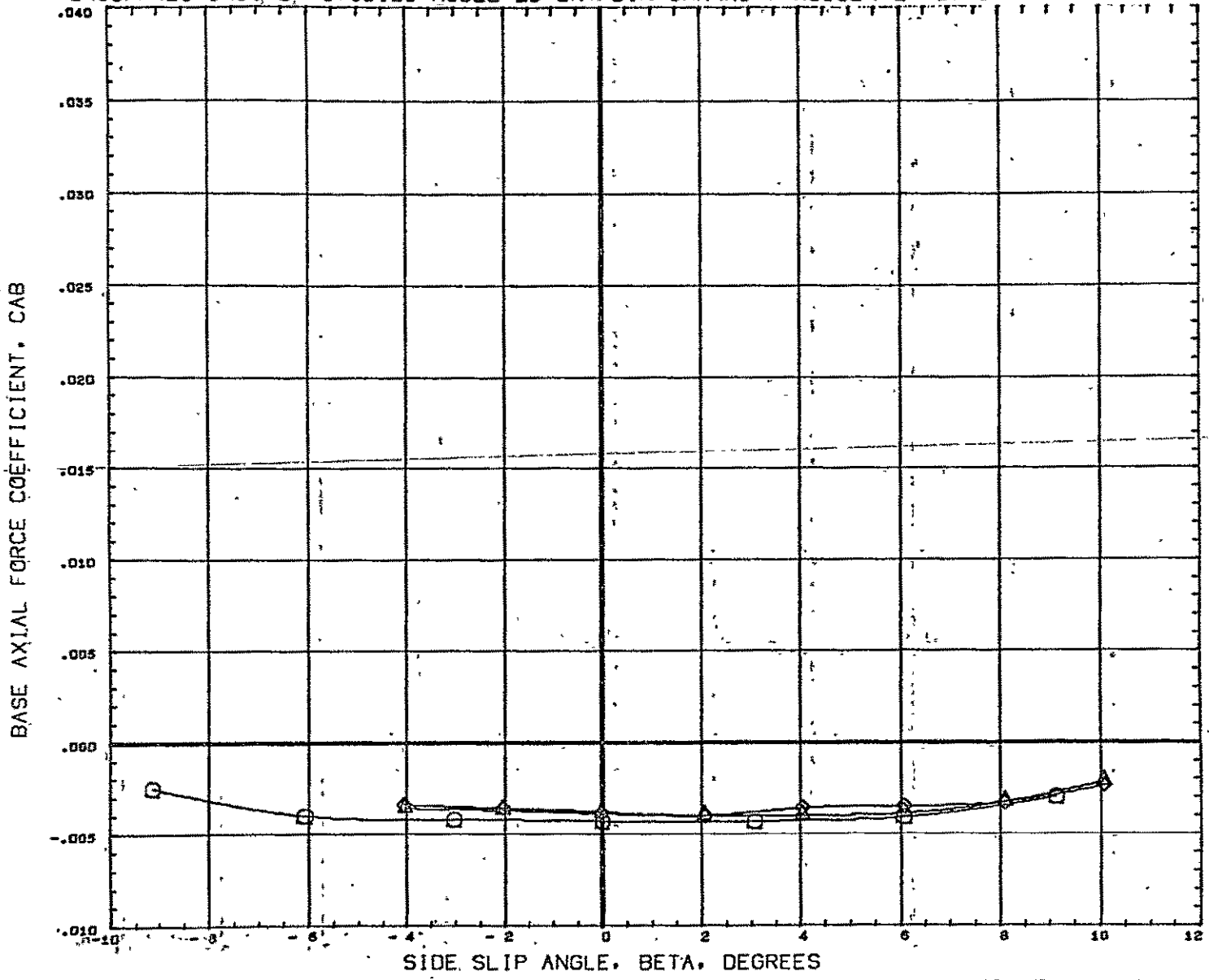
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, RUDDER EFFECTS, ALPHA = 0



SYMBOL	RUDER4	PARAMETRIC VALUES			DATA SOURCE			REFERENCE INFORMATION				
○	0.000	MACH	0.600	ALPHA	0.000	DATASET	RUDER4	DATASET	RUDER4	SREF	9.0250	sq. IN
△	10.000	ELEVN4	0.000	STING	4.000	B41X01	0.000	A41X12	10.000	LREF	6.1420	INCHES
◇	20.000					A41X13	20.000			BREF	6.1420	INCHES
										XMRP	3.9950	INCHES
										YMRP	0.0000	INCHES
										ZMRP	0.1350	INCHES
										SCALE	0.0033	SCALE

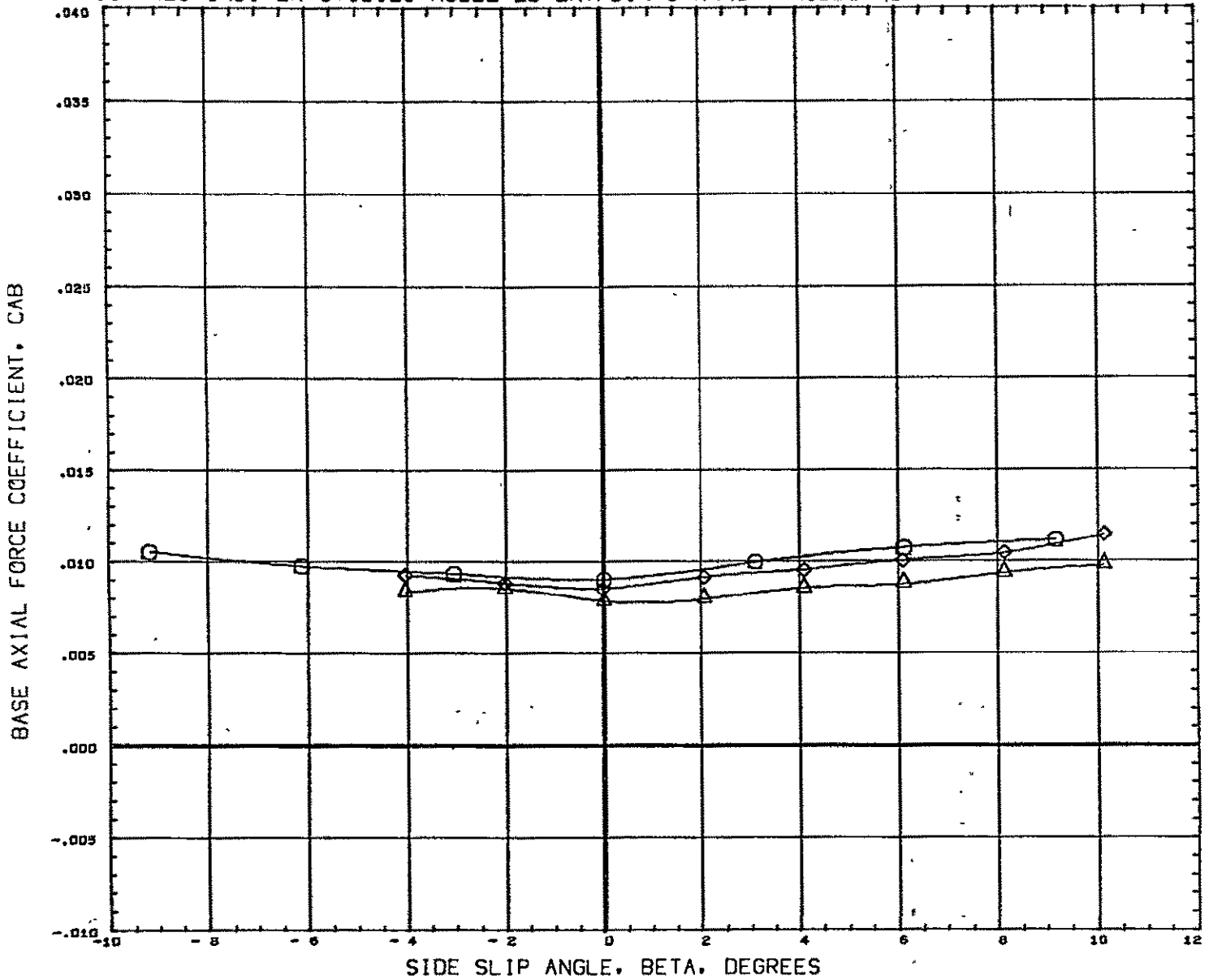
DATA HIST. CODE \*A

LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, RUDDER EFFECTS, ALPHA = 0



SYMBOL		PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION		
○	RUDER4	0.899	ALPHA	0.000	DATASET	RUDER4	DATASET	RUDER4	SREF	9.0250	SG, IN
△	10.000	0.000	STING	4.000	B41X01	0.000	A41X12	10.000	LREF	6.1420	INCHES
◇	20.000				A41X13	20.000			BREF	6.1420	INCHES
									XHRP	3.9950	INCHES
									YHRP	0.0000	INCHES
									ZHRP	0.1350	INCHES
									SCALE	0.0033	SCALE

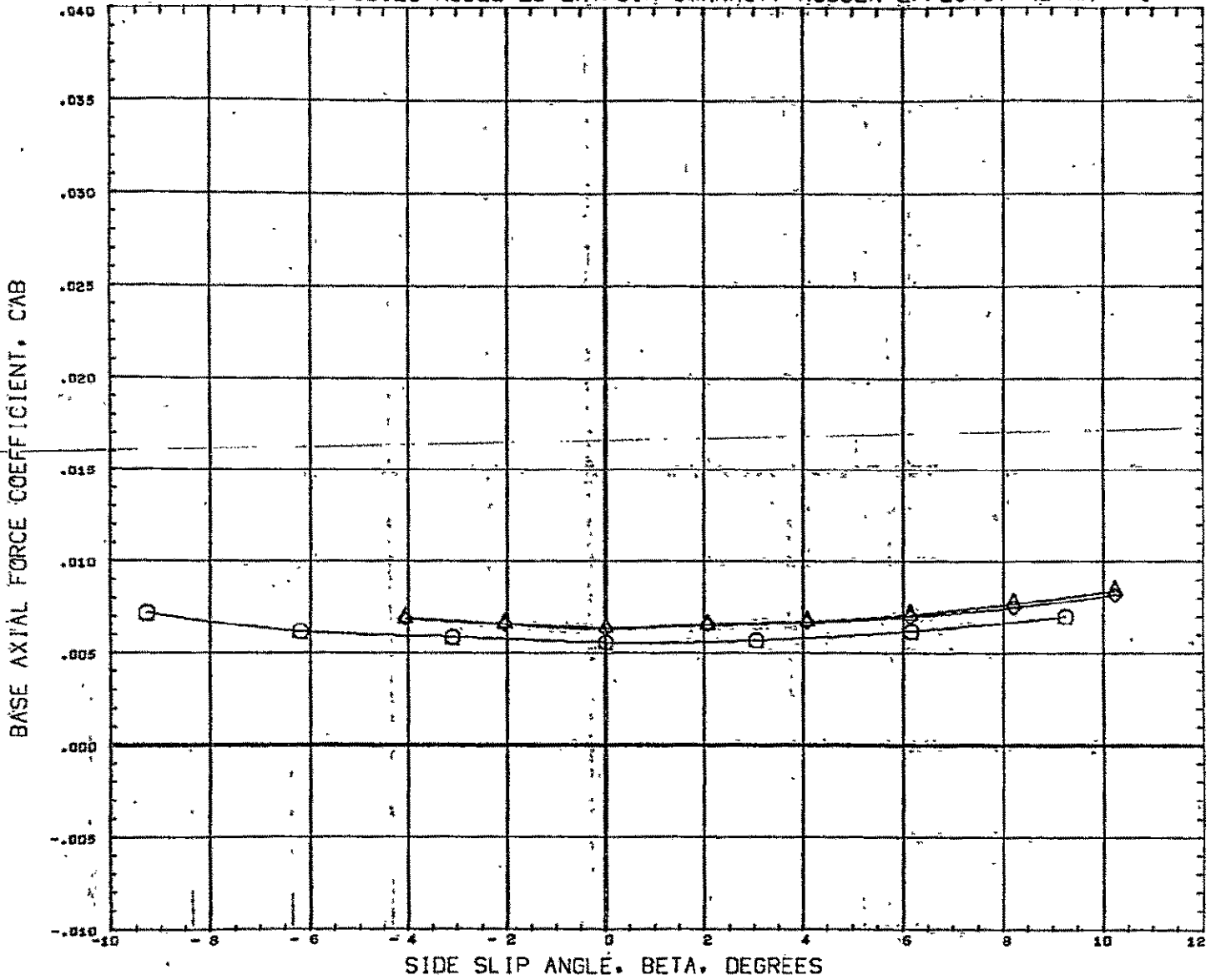
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, RUDDER EFFECTS, ALPHA = 0



SYMBOL	RUDER4	PARAMETRIC VALUES				DATA SOURCE				REFERENCE INFORMATION		
○	10.000	MACH	1.099	ALPHA	0.000	DATASET	RUDER4	DATASET	RUDER4	SREF	9.0250	SQ. IN
△	10.000	ELEVN4	0.000	STING	4.000	B41X01	0.000	A41X12	10.000	LREF	6.1420	INCHES
◇	20.000					A41X13	20.000			BREF	6.1420	INCHES
										XMRP	3.9950	INCHES
										YMRP	0.0000	INCHES
										ZMRP	0.1350	INCHES
										SCALE	0.0033	SCALE

DATA HIST. CODE \*A

LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT. RUDDER EFFECTS, ALPHA = 0

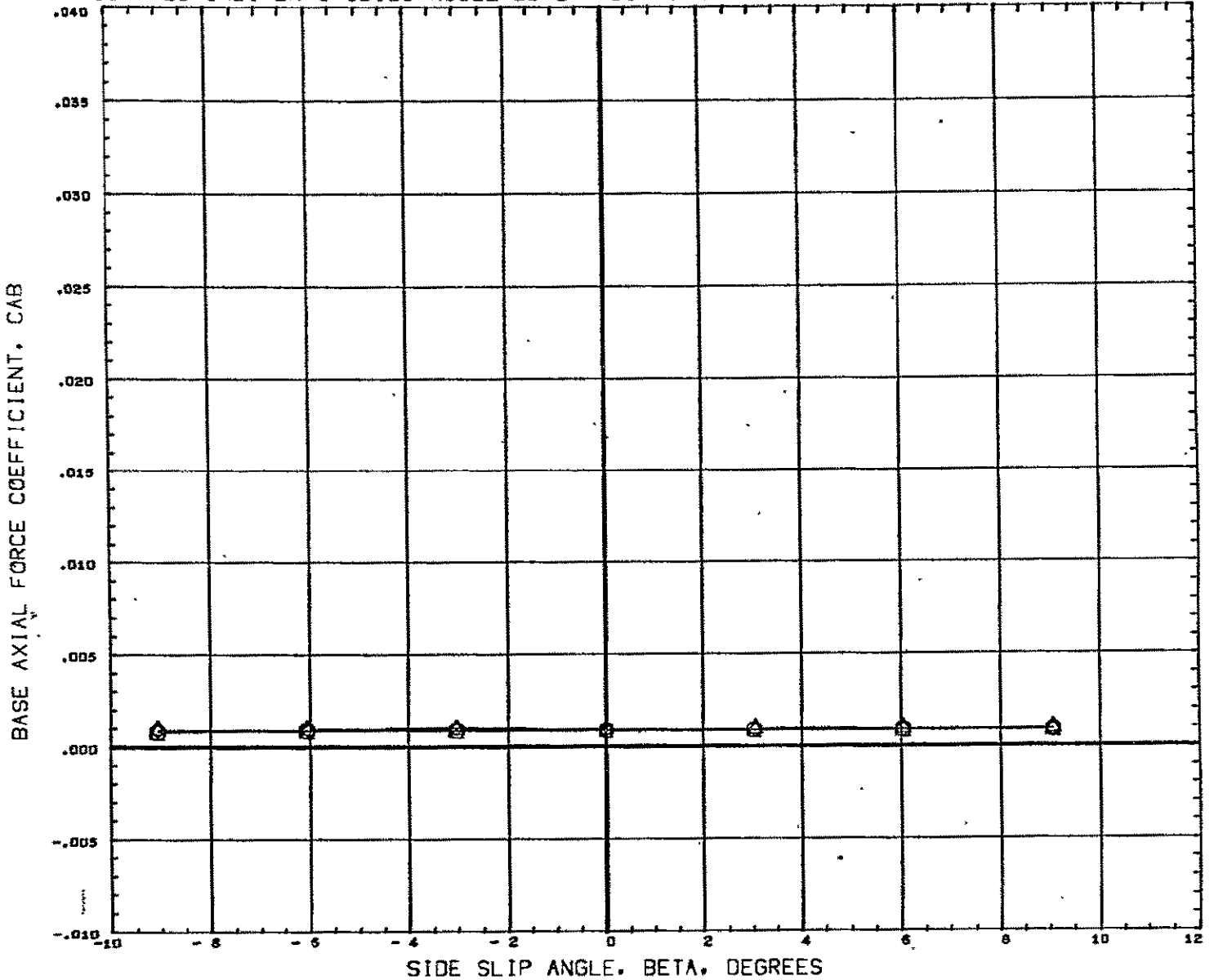


SYMBOL	RUDDER4	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
○	0.000	MACH 1.969 ALPHA 0.000 DATASET B41X01	RUDDER4 0.000 DATASET A41X12	SREF 9.0250 SQ. IN
◇	10.000	ELEVN4 0.000 STING 4.000 DATASET A41X13	RUDDER4 20.000 DATASET A41X12	LREF 6.1420 INCHES
	20.000			BREF 6.1420 INCHES
				XMRP 3.9950 INCHES
				YMRP 0.0000 INCHES
				ZMRP 0.1350 INCHES
				SCALE 0.0033 SCALE

DATA HIST. CODE



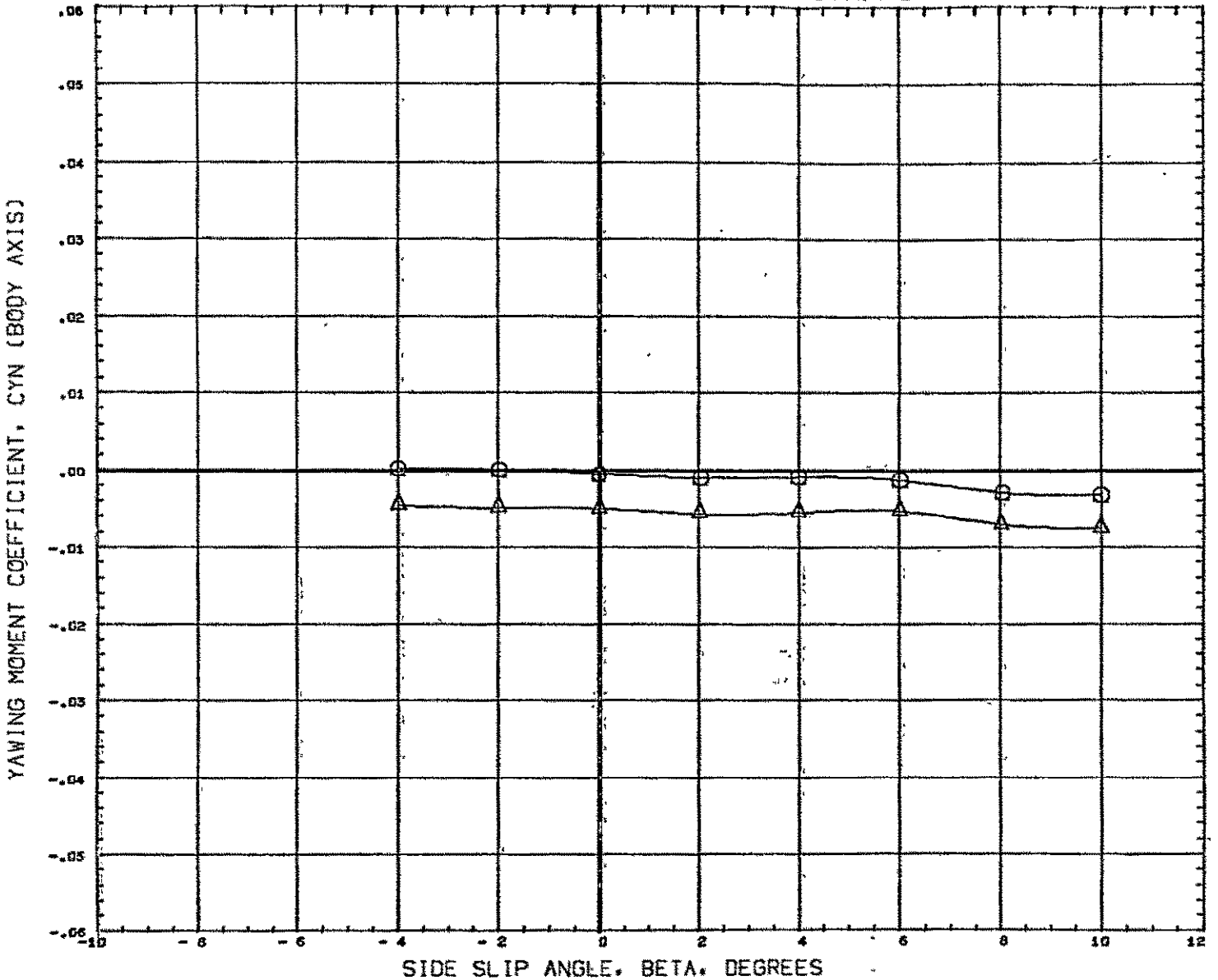
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, RUDDER EFFECTS, ALPHA = 0



SYMBOL	RUDDER4	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION			
○	0.000	MACH	4.960	ALPHA	0.000	DATASET	RUDDER4	DATASET	RUDDER4	SREF	9.0250	SG.IN
△	10.000	ELEVN4	0.000	STING	4.000	B41X01	0.000	A41X12	10.000	LREF	6.1420	INCHES
◇	20.000					A41X13	20.000			BREF	6.1420	INCHES
										XMRP	3.9950	INCHES
										YMRP	0.0000	INCHES
										ZMRP	0.1350	INCHES
										SCALE	0.0033	SCALE

DATA HIST. CODE \*A

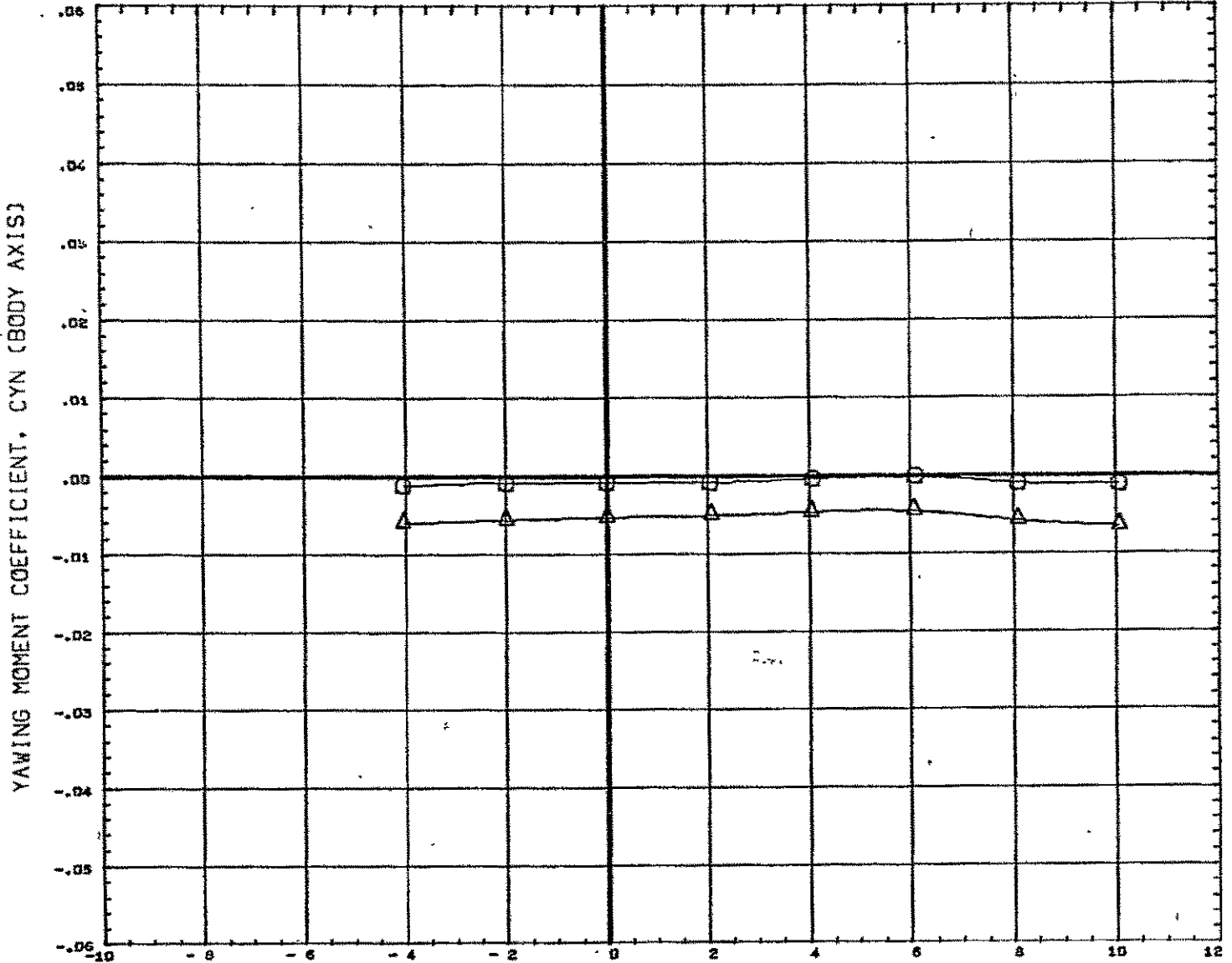
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, RUDDER EFFECTS, ALPHA = 15



SYMBOL	RUDDER4	MACH	PARAMETRIC VALUES			DATA SOURCE			REFERENCE INFORMATION		
○	0.000	0.596	ALPHA	15.000	DATASET	RUDDER4	DATASET	RUDDER4	SREF	9.0250	50. IN
△	10.000	0.000	STING	4.000	B41Z01	0.000	A41Z12	10.000	LREF	6.1420	INCHES
									OREF	6.1420	INCHES
									XMRP	3.9950	INCHES
									YMRP	0.0000	INCHES
									ZMRP	0.1350	INCHES
									SCALE	0.0033	SCALE

DATA HIST. CODE \*A

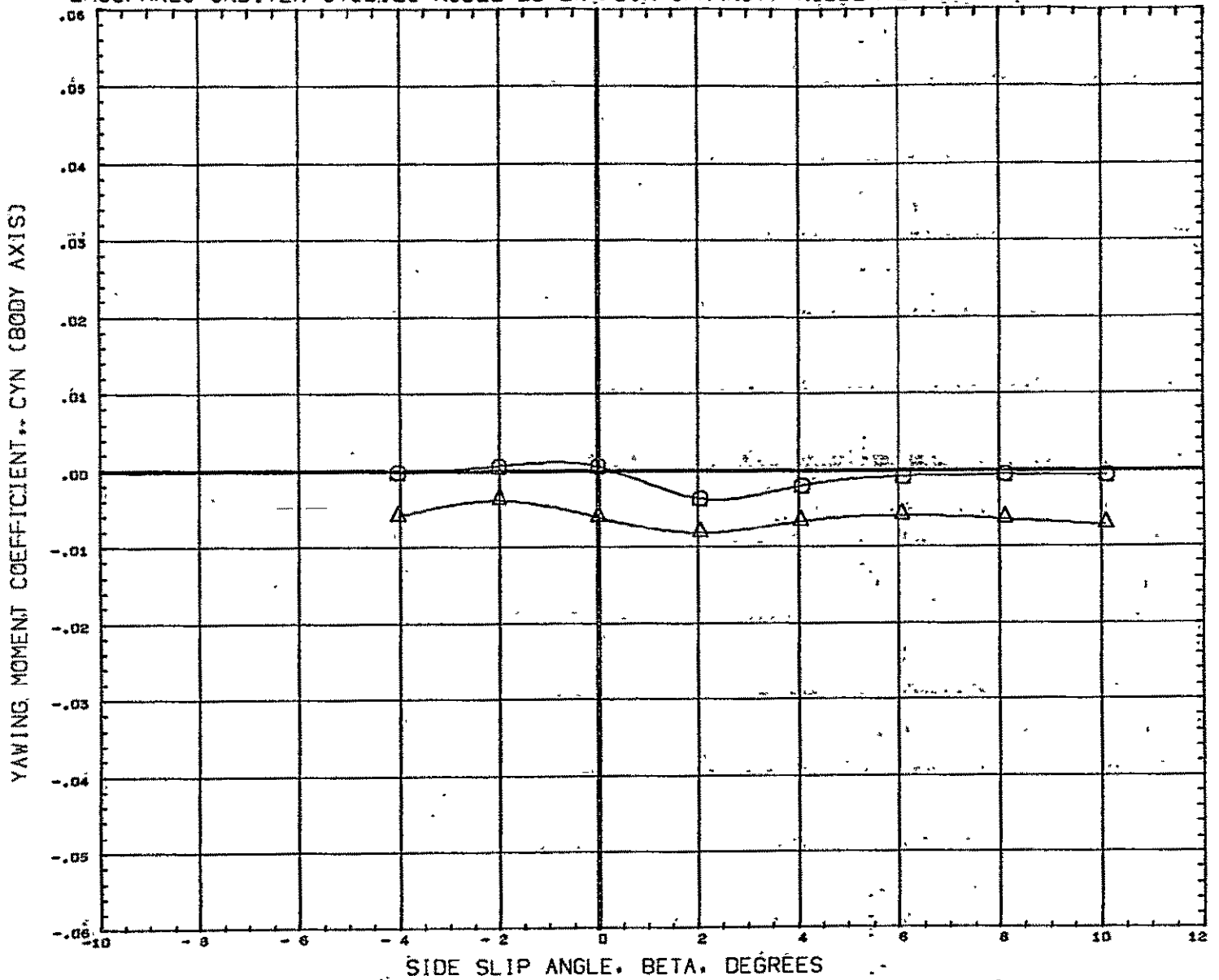
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, RUDDER EFFECTS, ALPHA = 15



SYMBOL	RUDDER4	MACH	PARAMETRIC VALUES			DATA SOURCE			REFERENCE INFORMATION		
○	0.000	10.000	0.899	ALPHA	15.000	RUDDER4	0.000	RUDDER4	9.0250	SQ. IN	
△	10.000	ELEV4	0.000	STING	4.000	B41Z01	0.000	A41Z12	6.1420	INCHES	
									6.1420	INCHES	
									3.9950	INCHES	
									0.0000	INCHES	
									0.1330	INCHES	
									0.0033	SCALE	

DATA HIST. CODE \*A'

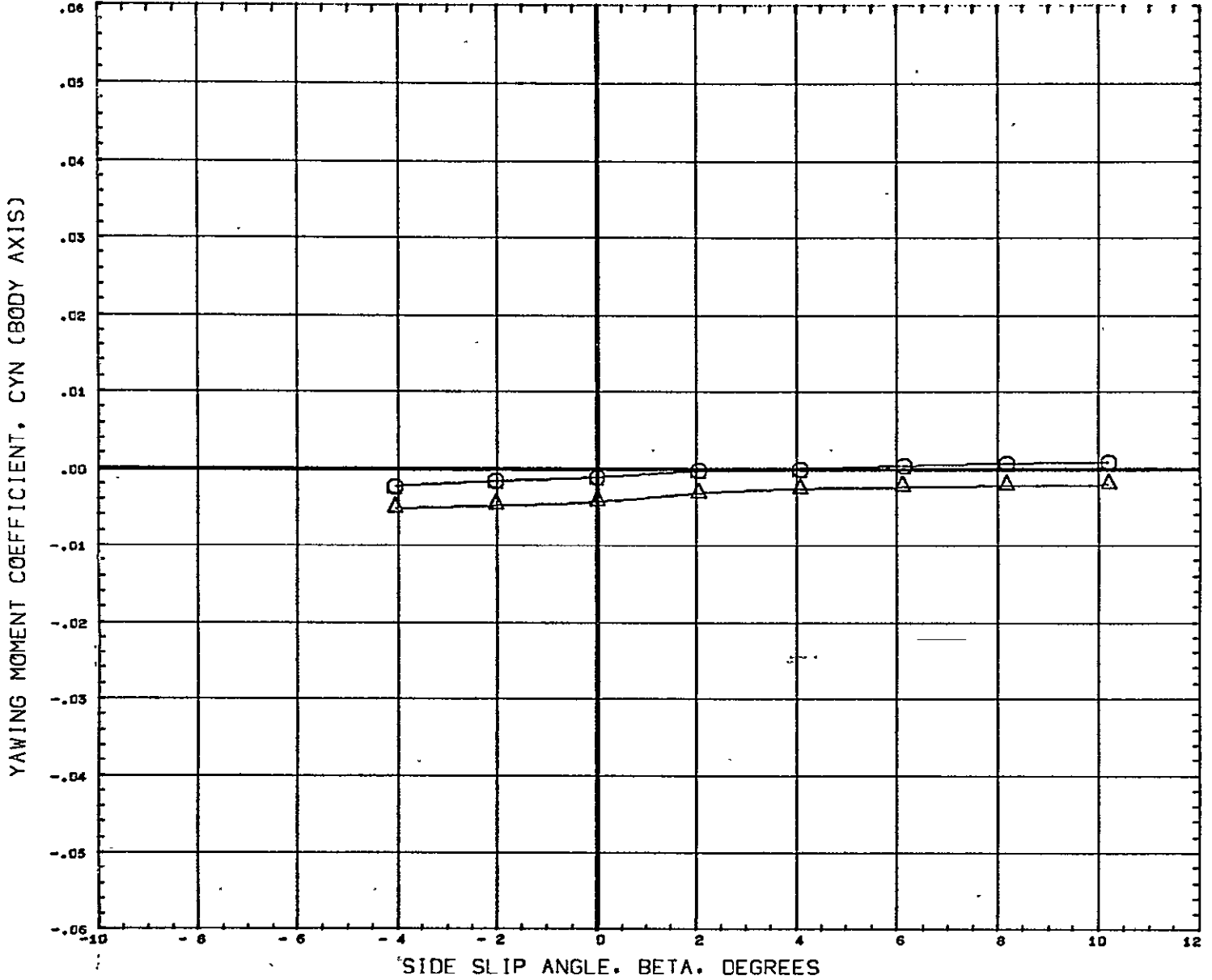
LMSC/HREC ORBITER STUDIES-MODEL 2B-LA7/DIR CHARACT, RUDDER EFFECTS, ALPHA = 15



SYMBOL		PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION				
○	RUDER4	0.000	MACH	1.103	ALPHA	15.000	DATASET	RUDER4	DATASET	RUDER4	SREF	9.0250	50. IN
△	ELEVN4	10.000	ELEVN4	0.000	STING	4.000	B41Z01	0.000	A41Z12	10.000	LREF	6.1420	INCHES
											SREF	6.1420	INCHES
											XMRP	3.9950	INCHES
											YMRP	0.0000	INCHES
											ZMRP	0.1330	INCHES
											SCALE	0.0033	SCALE

DATA HIST. CODE \*A

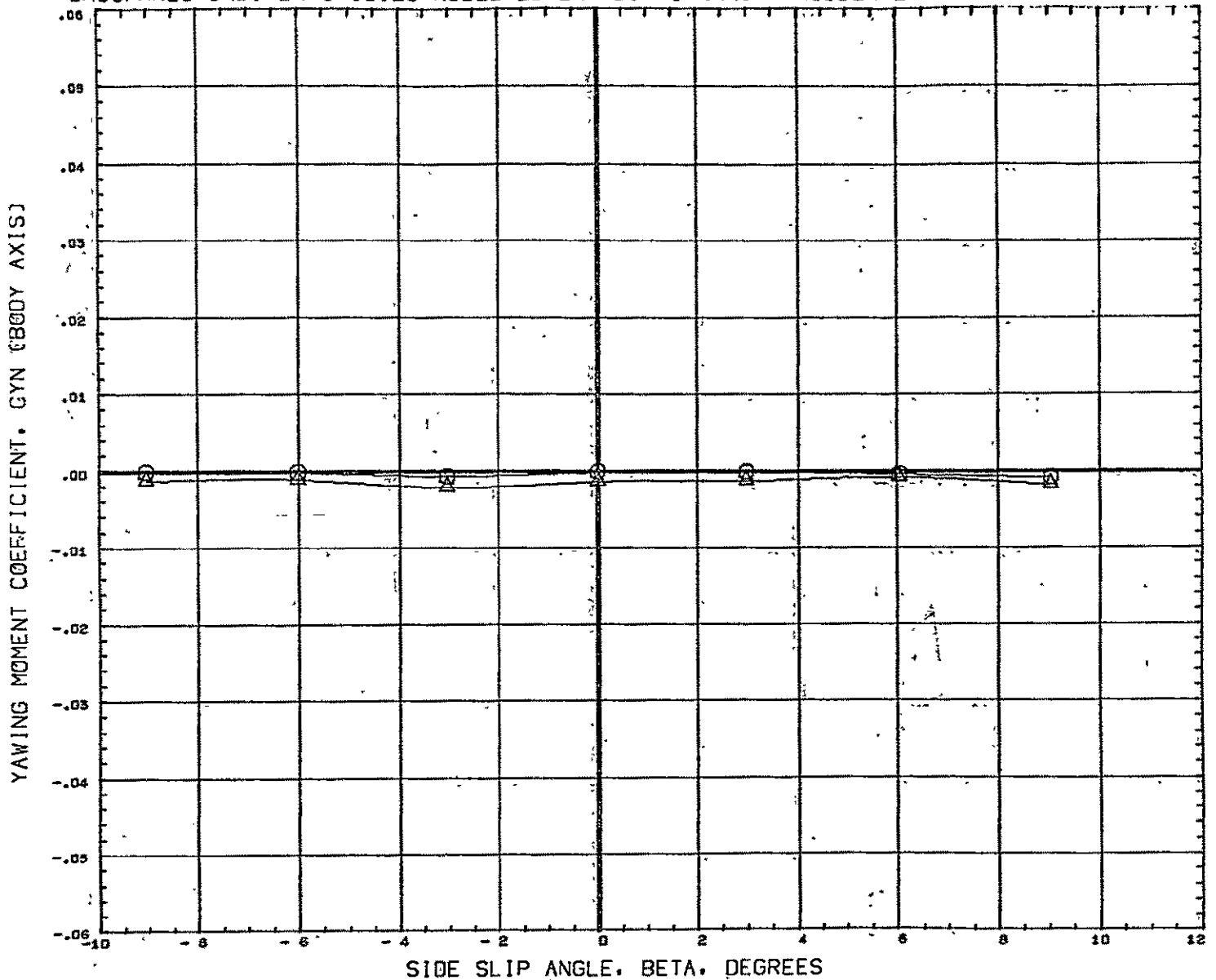
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, RUDDER EFFECTS, ALPHA = 15



SYMBOL	RUDER4	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
○	0.000	MACH 1.961 ALPHA 15.000 DATASET RUDER4	RUDER4	SREF 9.0250 SQ. IN
△	10.000	ELEVN4 0.000 STING 4.000 DATASET B41Z01	0.000 A41Z12 RUDER4 10.000	LREF 6.1420 INCHES BREF 6.1420 INCHES XMRP 3.9950 INCHES YMRP 0.0000 INCHES ZMRP 0.1350 INCHES SCALE 0.0033 SCALE

DATA HIST. CODE #A

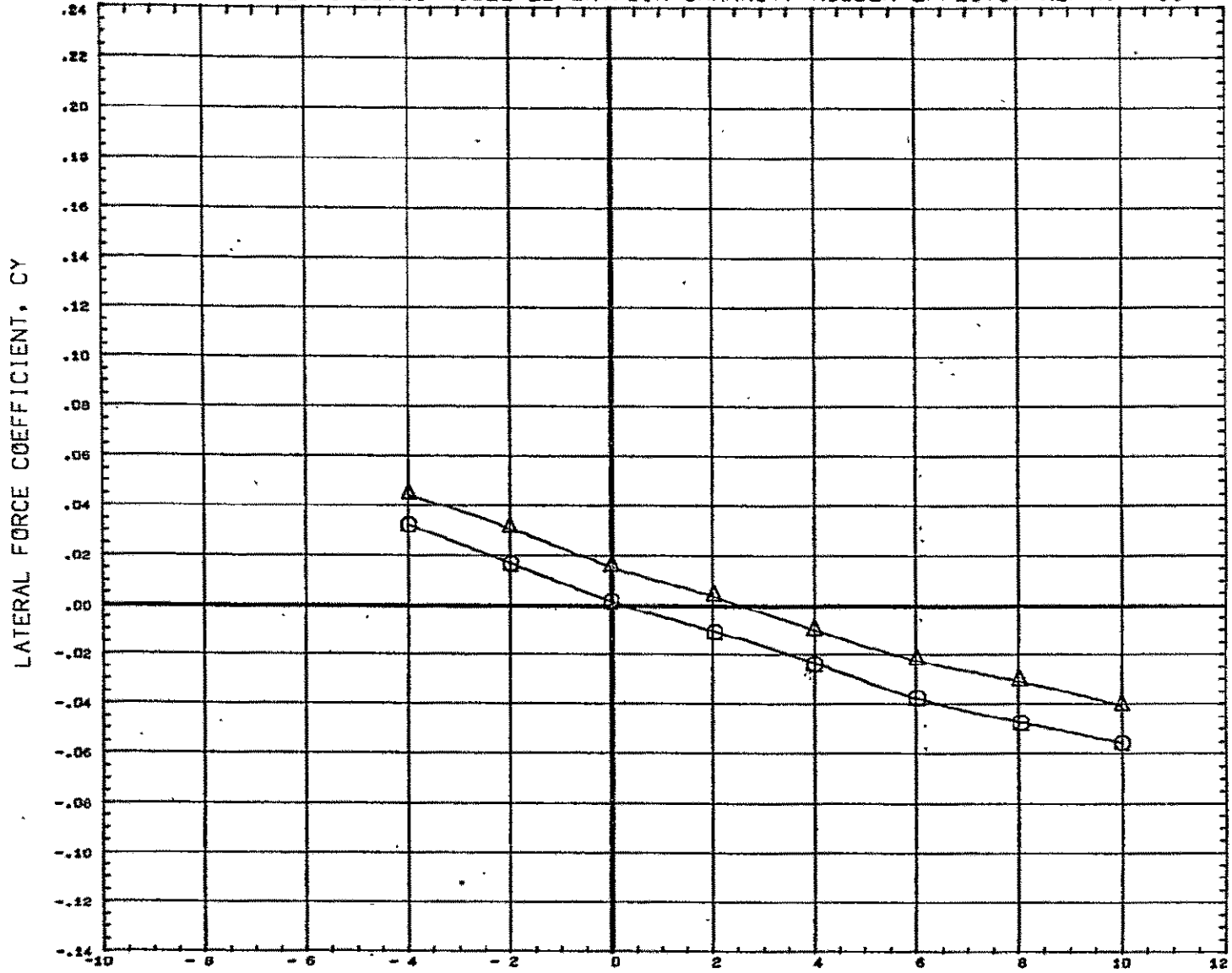
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, RUDDER EFFECTS. ALPHA = 15



SYMBOL	RUDER4	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION													
		MACH	ALPHA	STING	DATASET	RUDER4	DATASET	RUDER4	SREF	LREF	BREF	XMRP	YMRP	ZMRP	SCALE							
○	0.000	4.960	15.000	4.000	B41Z01	0.000	A41Z12	10.000	9.0250	6.1420	6.1420	3.9950	0.0000	0.1350	0.0033	SQ. IN	INCHES	INCHES	INCHES	INCHES	INCHES	SCALE
△	10.000	ELEVN4	0.000																			

DATA HIST. CODE #A

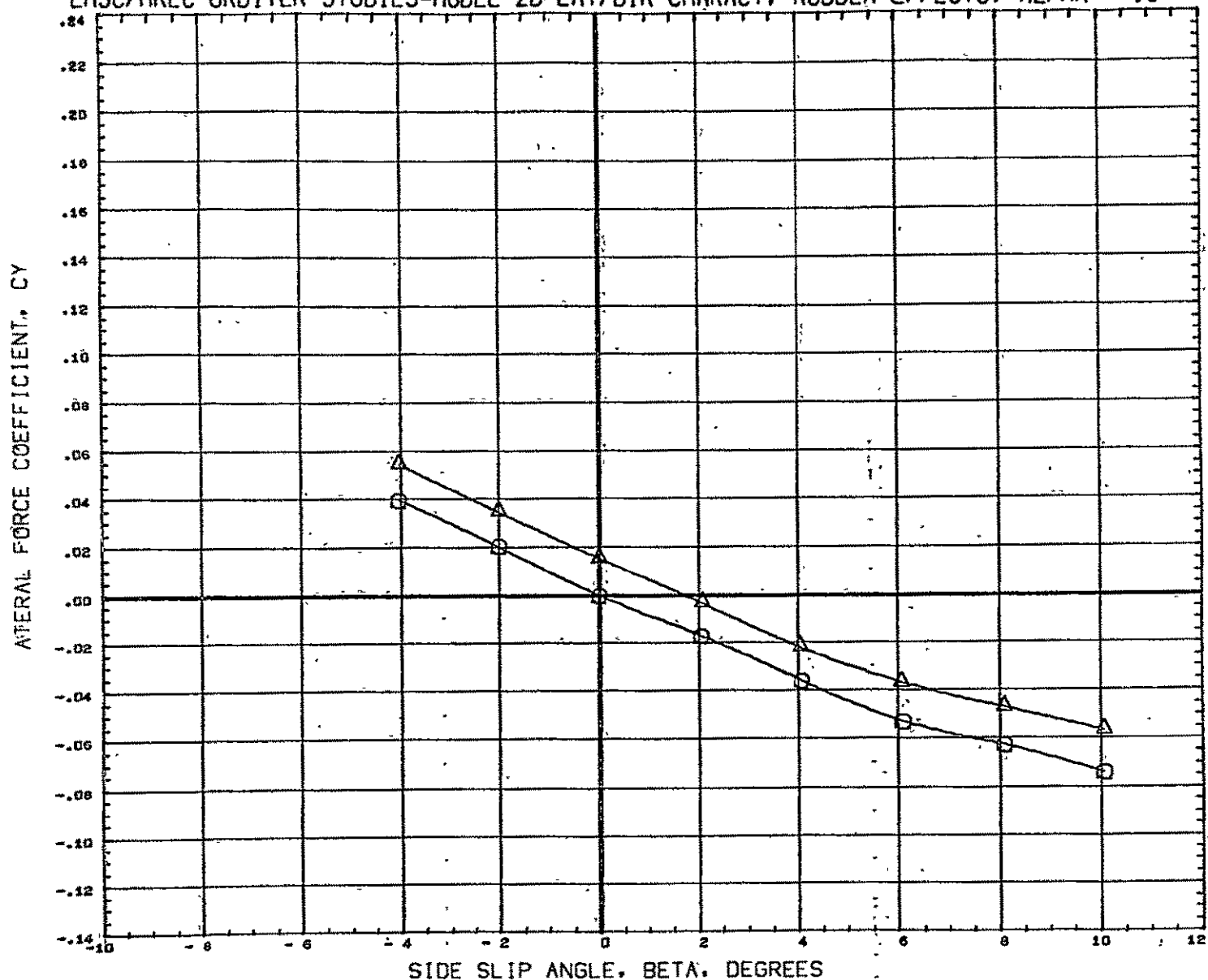
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, RUDDER EFFECTS, ALPHA = 15



SYMBOL	RUDER4	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
△	0.000	MACH 0.596 ALPHA 15.000 DATASET RUDER4	0.000	SREF 9.0250 SQ. IN
○	10.000	ELEVN4 0.000 STING 4.000 B41Z01	A41Z12 RUDER4 10.000	LREF 6.1420 INCHES
				BREF 6.1420 INCHES
				XHRP 3.9950 INCHES
				YHRP 0.0000 INCHES
				ZHRP 0.1350 INCHES
				SCALE 0.0033 SCALE

DATA HIST. CODE \*A

MSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, RUDDER EFFECTS, ALPHA = 15

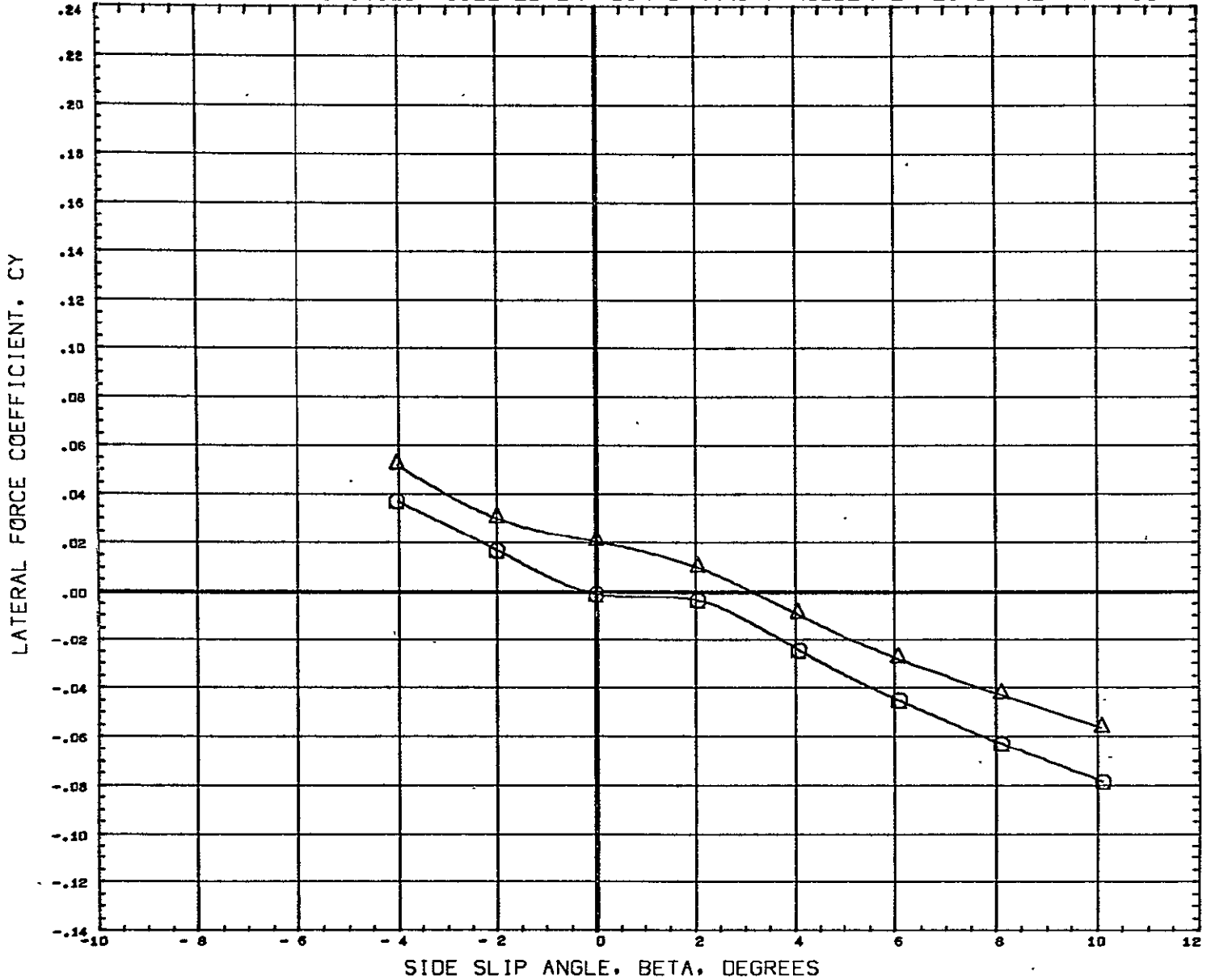


SYMBOL	RUDDER4	MACH	PARAMETRIC VALUES			DATA SOURCE			REFERENCE INFORMATION		
○	0.000	0.899	ALPHA	15.000	DATASET	RUDDER4	DATASET	RUDDER4	SREF	9.0250	94. IN
△	10.000	ELEVN4	0.000	STING	4.000	B41Z01	0.000	A41Z12	LREF	6.1420	INCHES
									SREF	6.1420	INCHES
									XMRP	3.9950	INCHES
									YMRP	0.0000	INCHES
									ZMRP	0.1350	INCHES
									SCALE	0.0035	SCALE

DATA HIST. CODE \*A



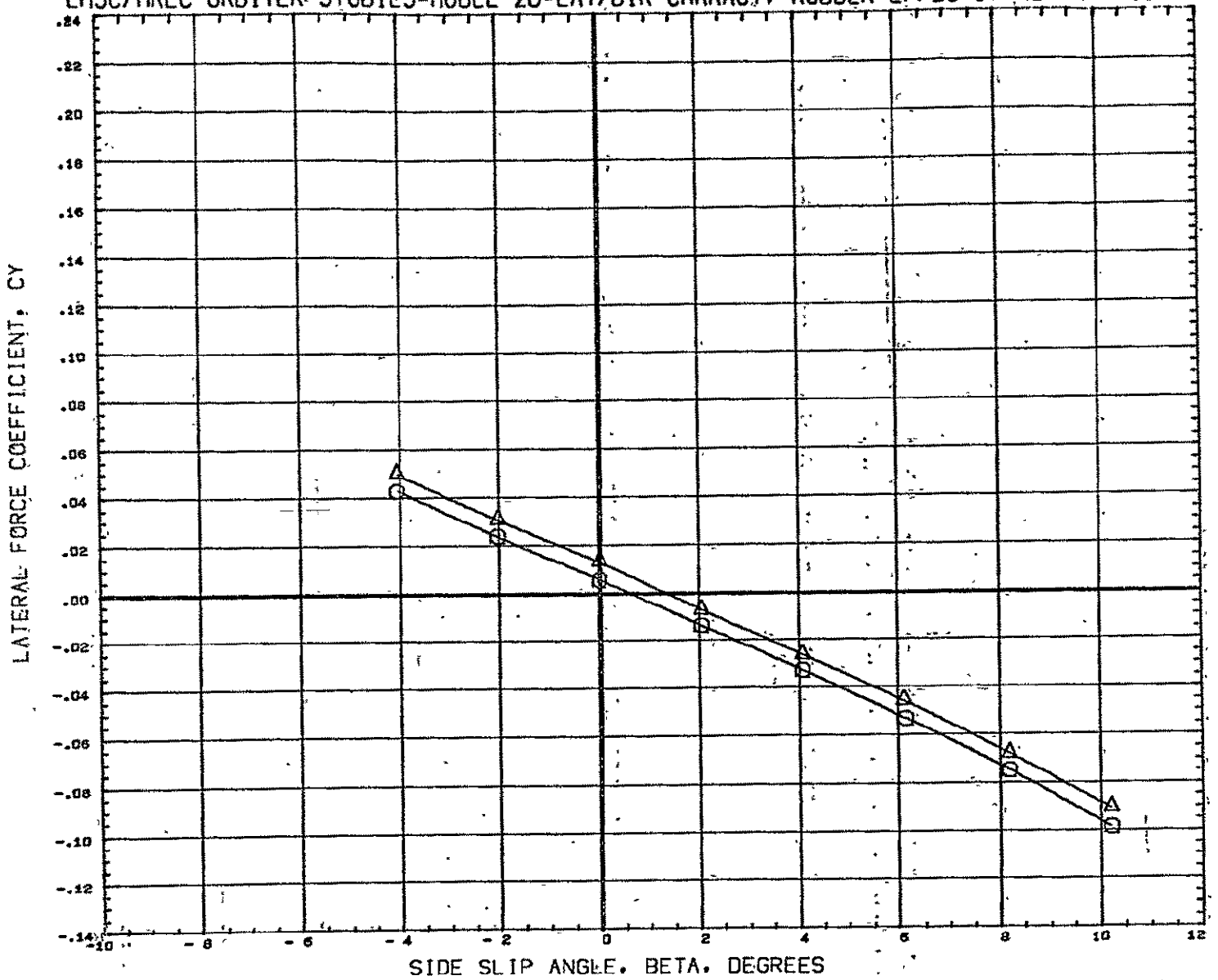
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, RUDDER EFFECTS, ALPHA = 15



SYMBOL	RUDER4	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
□	0.000	MACH 1.103 ALPHA 15.000 DATASET RUDER4	RUDER4	SREF 9.0250 SQ. IN
△	10.000	ELEVN4 0.000 STING 4.000 B41Z01	0.000 A41Z12 10.000	LREF 6.1420 INCHES
				BREF 6.1420 INCHES
				XMRP 3.9950 INCHES
				YMRP 0.0000 INCHES
				ZMRP 0.1350 INCHES
				SCALE 0.0033 SCALE

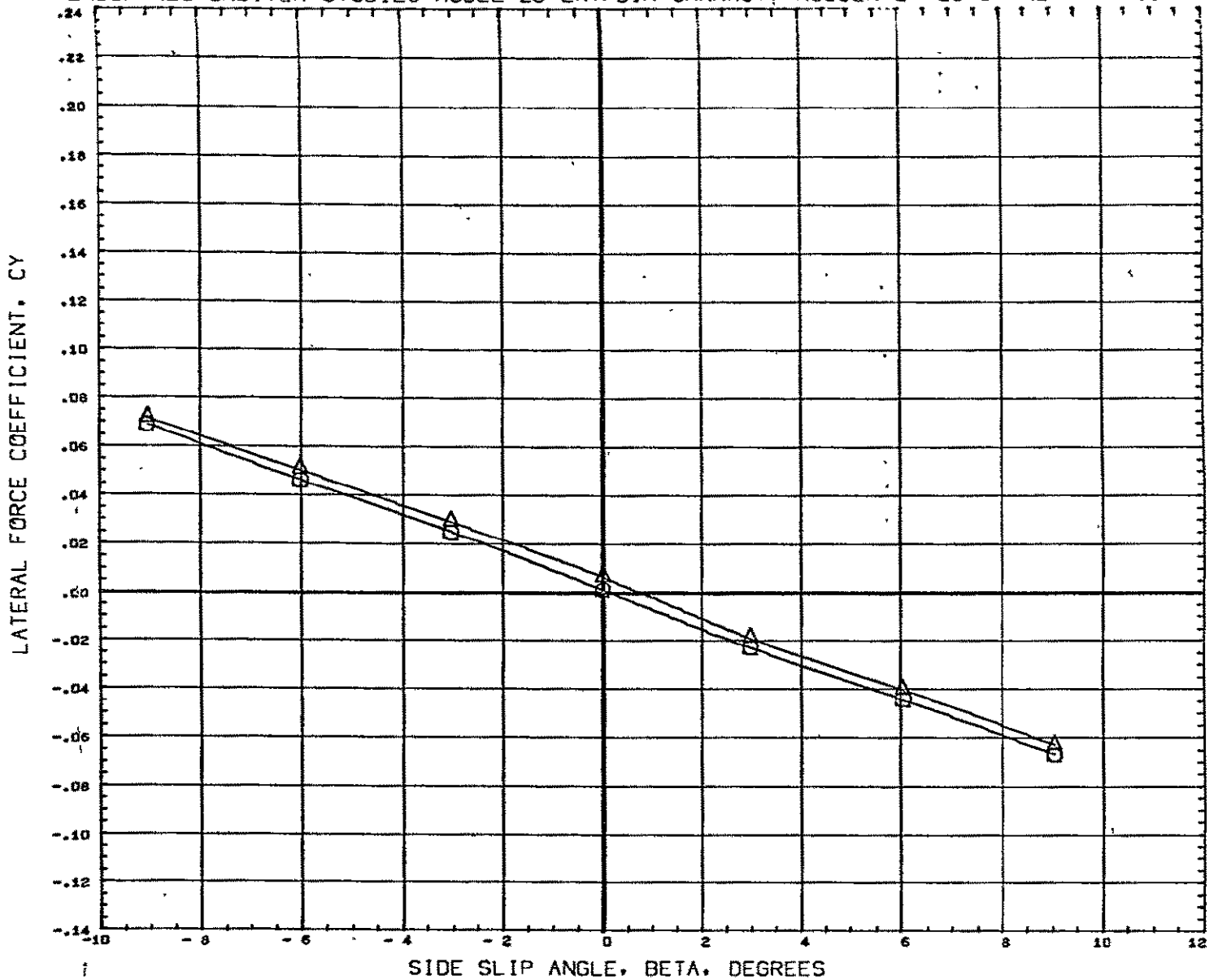
DATA HIST. CODE \*A

LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, RUDDER EFFECTS, ALPHA = 15



SYMBOL	RUDER4	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
○	0.000	MACH1 1.961 ALPHA 15.000 DATASET RUDER4 0.000 DATASET RUDER4 10.000	B41Z01	SREF 9.0250 SQ. IN
△	10.000	ELEVN4 0.000 STING 4.000	A41Z12	LREF 6.1420 INCHES
				BREF 6.1420 INCHES
				XHRP 3.9950 INCHES
				YHRP 0.0000 INCHES
				ZHRP 0.1350 INCHES
				SCALE 0.0033 SCALE

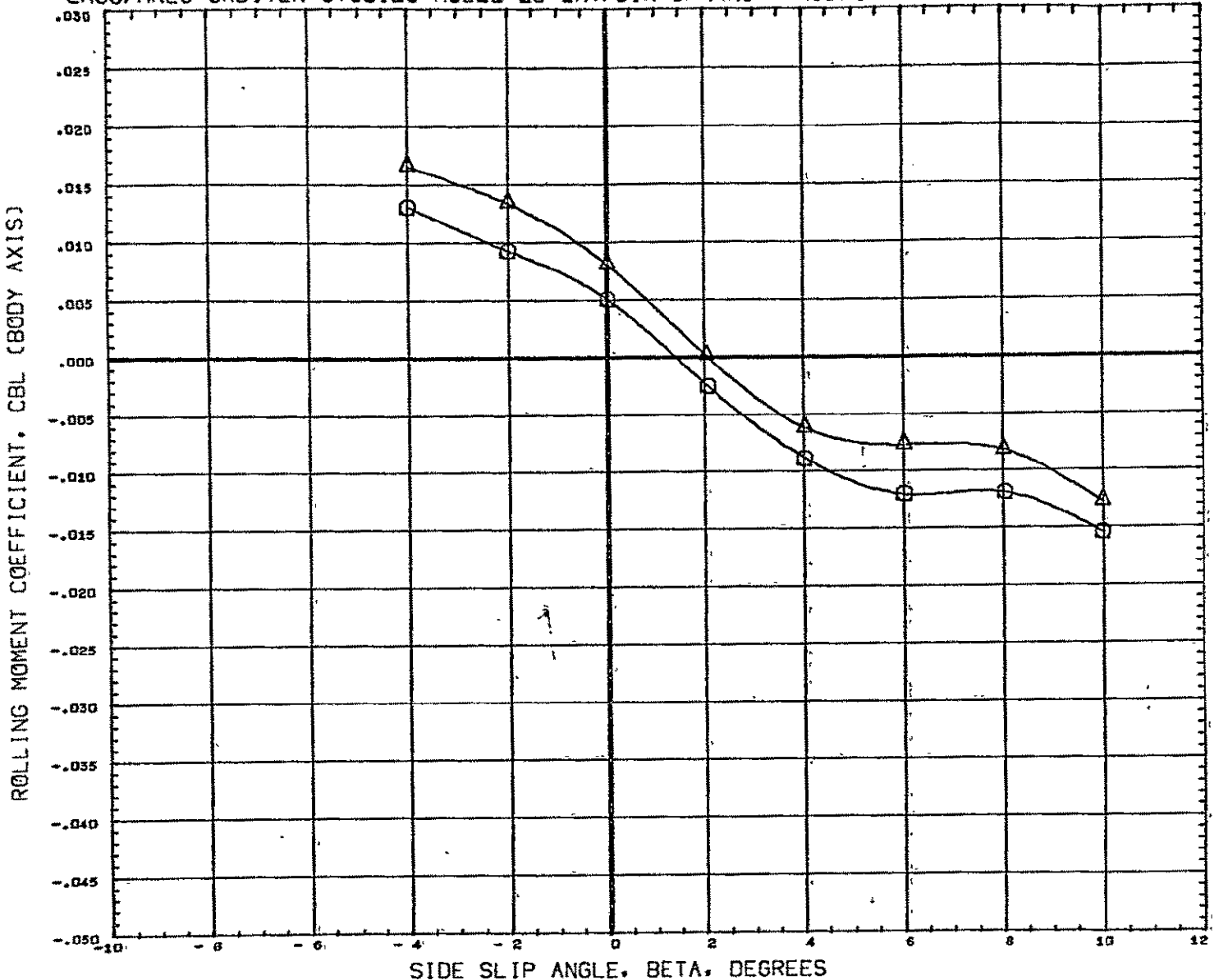
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, RUDDER EFFECTS, ALPHA = 15



SYMBOL	RUDER4	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION			
○	0.000	MACH	4.960	ALPHA	15.000	DATASET	RUDER4	DATASET	RUDER4	SREF	9.0250	SQ. IN
△	10.000	ELEVN4	0.000	STING	4.000	B41Z01	0.000	A41Z12	10.000	LREF	6.1420	INCHES
										BREF	6.1420	INCHES
										XMRP	3.9950	INCHES
										YMRP	0.0000	INCHES
										ZMRP	0.1350	INCHES
										SCALE	0.0033	SCALE

DATA HIST. CODE \*A

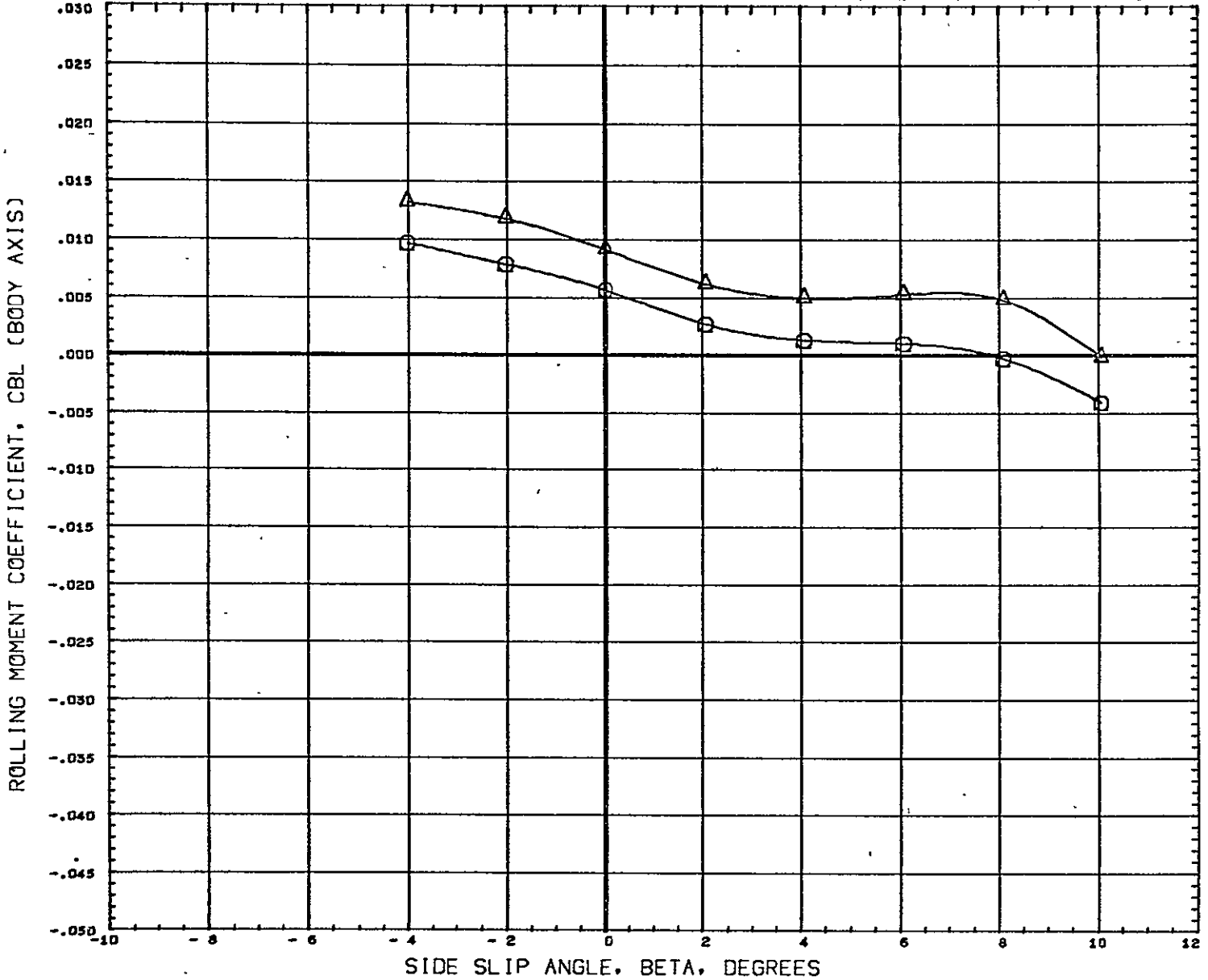
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, RUDDER EFFECTS, ALPHA = 15



SYMBOL	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION							
	RUDE4	MACH	ALPHA	STING	RUDE4	RUDE4	RUDE4	SREF	LREF	BREF	XMRP	YMRP	ZMRP	SCALE	
○	0.000	0.596	15.000	4.000	B41Z01	0.000	A41Z12	10.000	9.0250	6.1420	6.1420	3.9950	0.0000	0.1350	0.0033
△	10.000	ELEV4	0.000												

DATA HIST. CODE #A

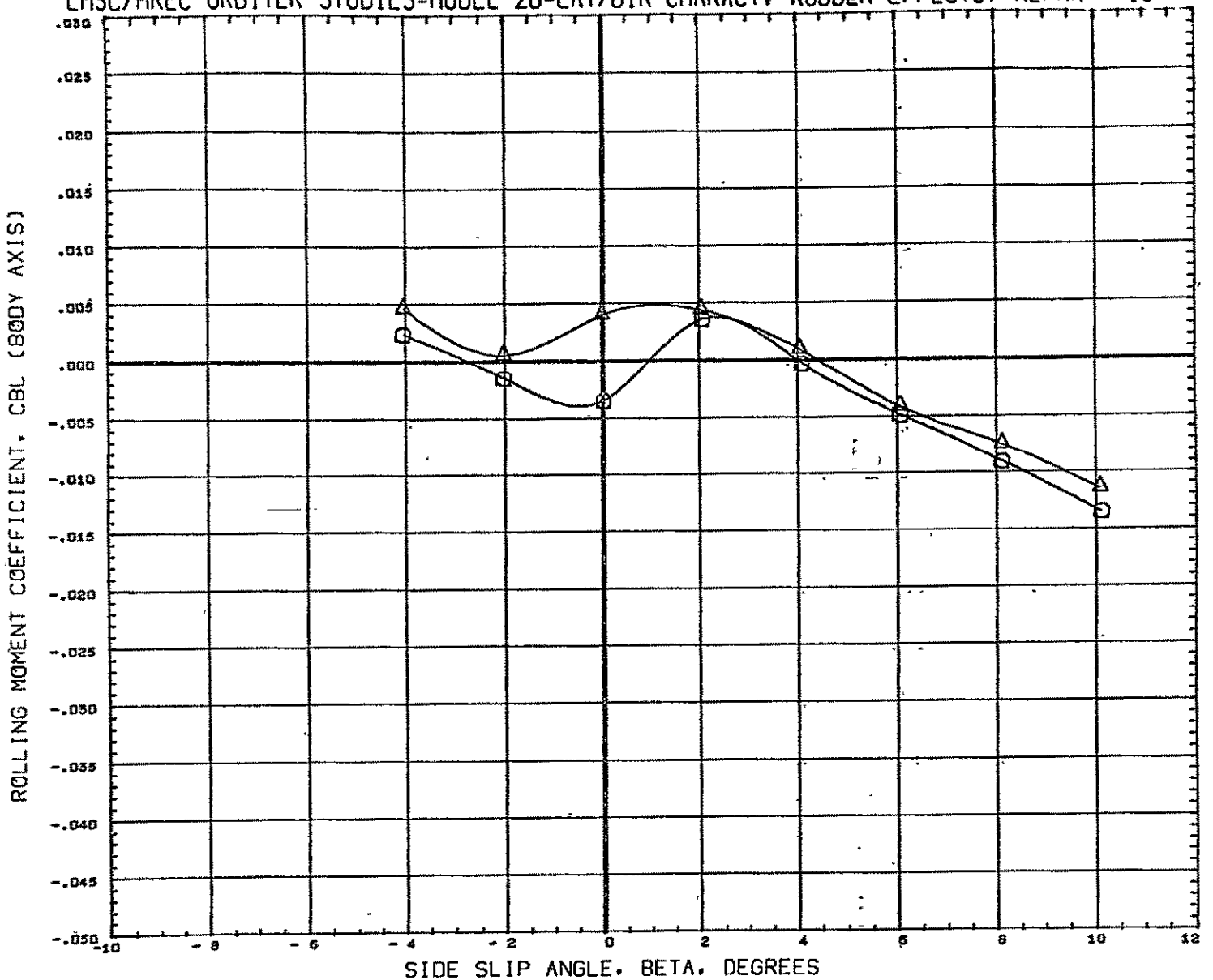
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, RUDDER EFFECTS, ALPHA = 15



SYMBOL	RUDDER4	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION			
○	10.000	MACH	0.899	ALPHA	15.000	DATASET	RUDDER4	DATASET	RUDDER4	SREF	9.0250	90. IN
△	10.000	ELEVN4	0.000	STING	4.000	B41Z01	0.000	A41Z12	10.000	LREF	6.1420	INCHES
										BREF	6.1420	INCHES
										XMRP	3.9950	INCHES
										YMRP	0.0000	INCHES
										ZMRP	0.1350	INCHES
										SCALE	0.0033	SCALE

DATA HIST. CODE \*A

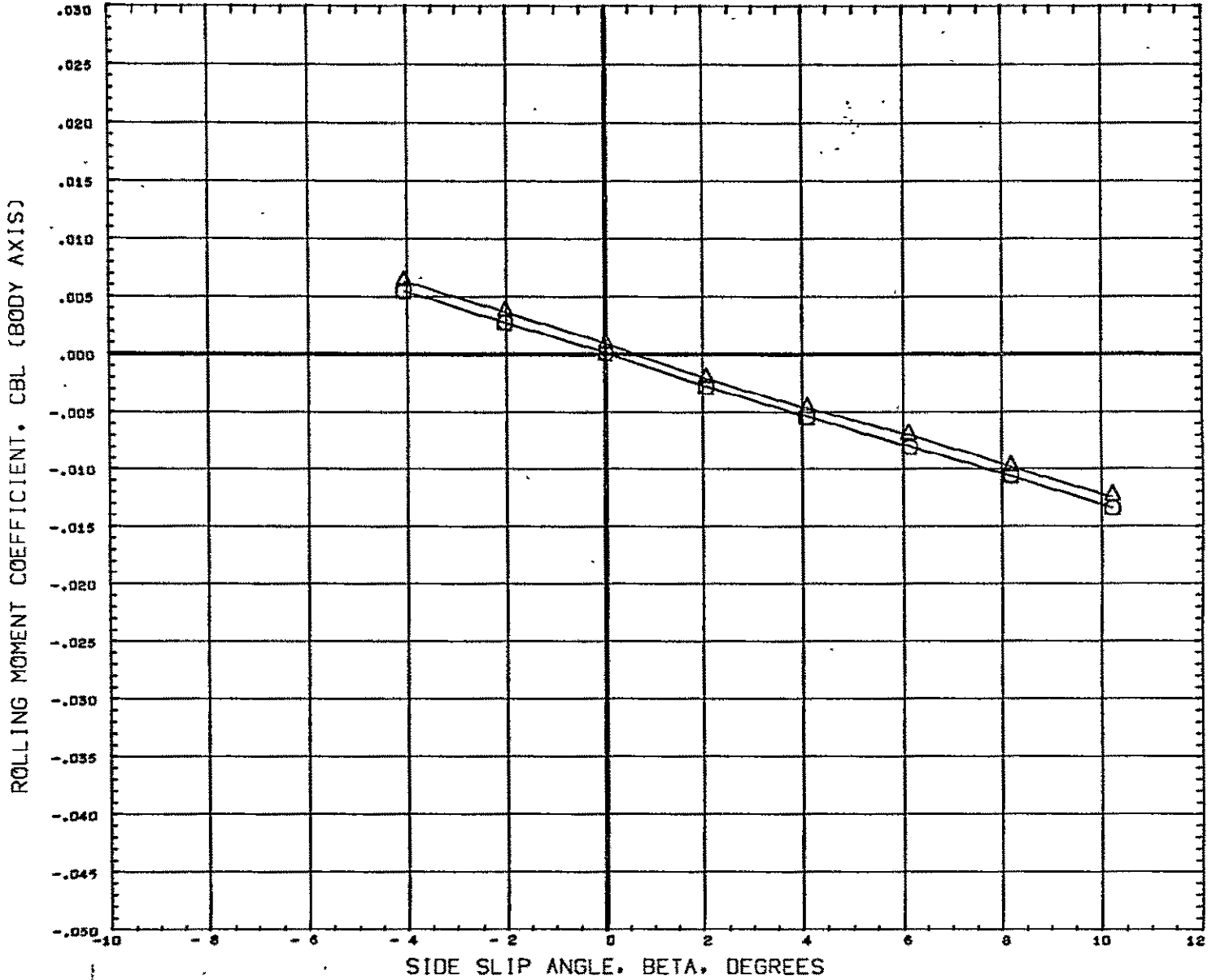
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, RUDDER EFFECTS, ALPHA = 15



SYMBOL	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION		
	RUDER4	MACH	ALPHA	ALPHA	DATASET	RUDER4	DATASET	RUDER4	SREF	SQ. IN
○	0.000	1.103	15.000	15.000	B41Z01	0.000	A41Z12	10.000	6.1420	INCHES
△	10.000	ELEVN4	0.000	4.000	4.000	0.000	A41Z12	10.000	6.1420	INCHES
									3.9950	INCHES
									0.0000	INCHES
									0.1350	INCHES
									0.0033	SCALE

DATA HIST. CODE #A

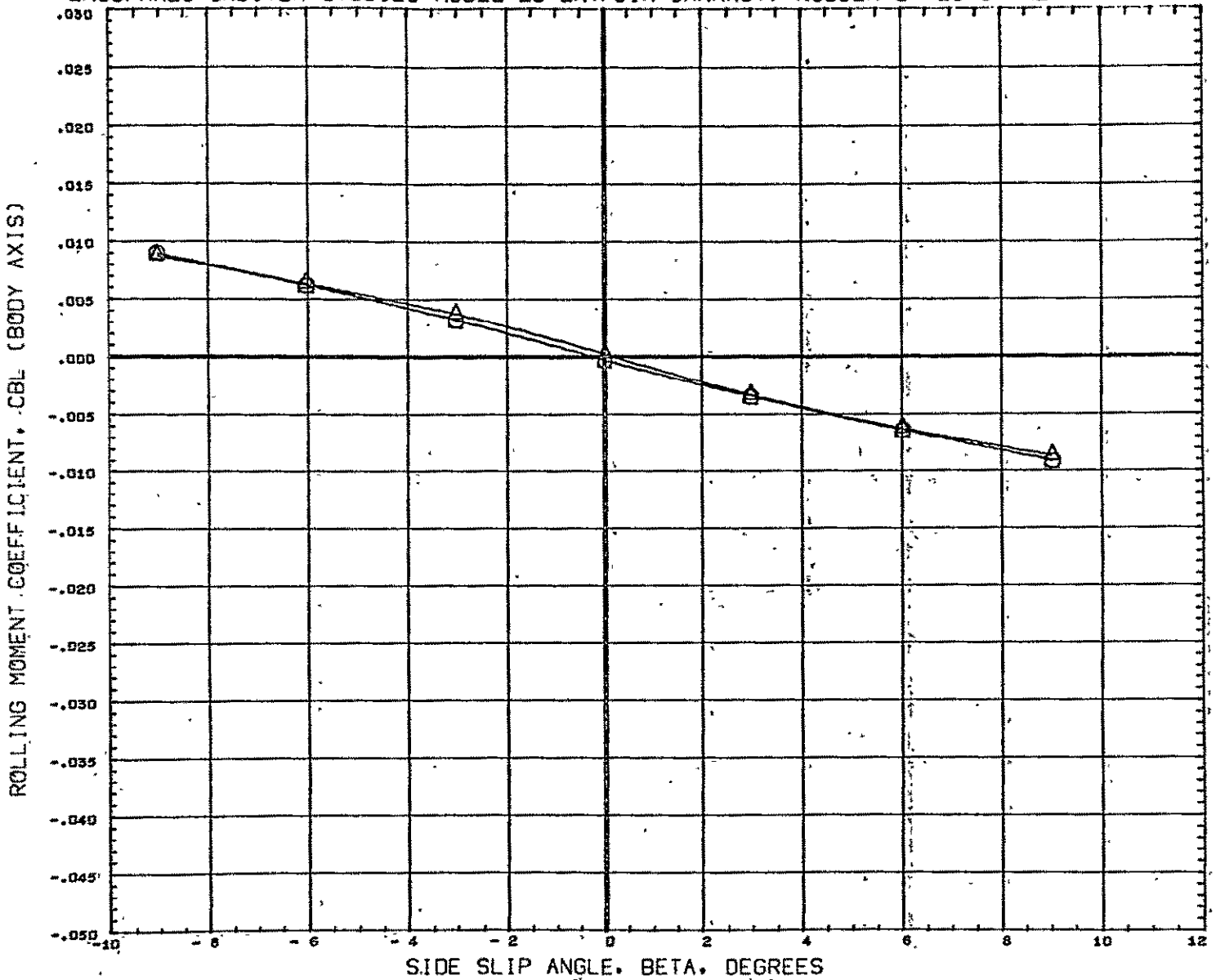
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, RUDDER EFFECTS, ALPHA = 15



SYMBOL	RUDER4	PARAMETRIC VALUES			DATA SOURCE			REFERENCE INFORMATION		
○	0.000	MACH	1.961	ALPHA	15.000	DATASET	RUDER4	SREF	9.0250	sq. IN
△	10.000	ELEVN4	0.000	STING	4.000	B41Z01	0.000	A41Z12	10.000	INCHES
								LREF	6.1420	INCHES
								BREF	6.1420	INCHES
								XMRP	3.9950	INCHES
								YMRP	0.0000	INCHES
								ZMRP	0.1330	INCHES
								SCALE	0.0033	SCALE

DATA HIST. CODE \*A

LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, RUDDER EFFECTS, ALPHA = 15

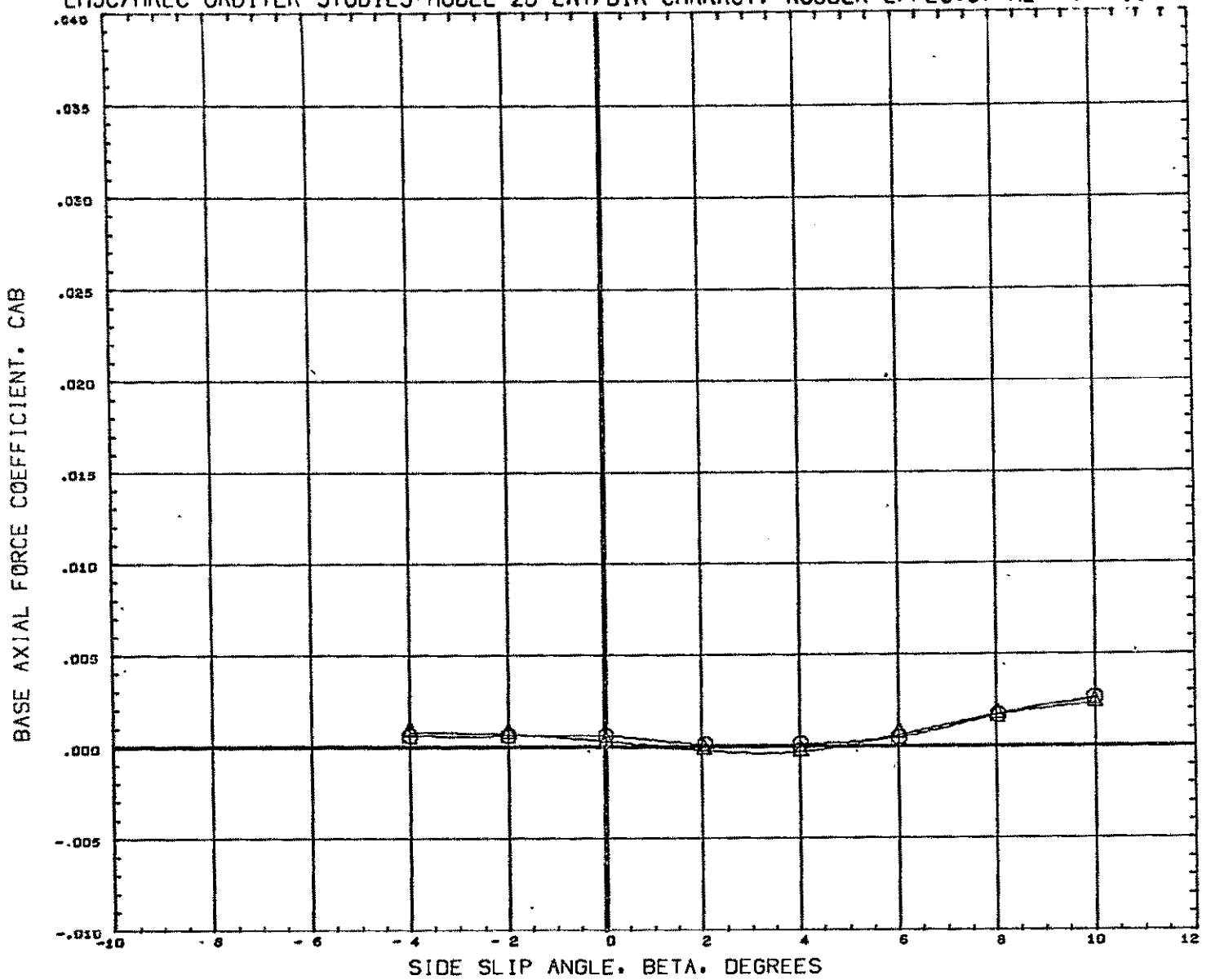


SYMBOL	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION		
	RUDER4	MACH	ALPHA	ALPHA	DATASET	RUDER4	DATASET	RUDER4	SREF	SQ. IN
△	0.000	4.960	15.000	15.000	B41Z01	0.000	A41Z12	10.000	6.1420	INCHES
	10.000	ELEVN4	0.000	STING	4.000				6.1420	INCHES
									3.9950	INCHES
									0.0000	INCHES
									0.1350	INCHES
									0.0033	SCALE

DATA HIST. CODE. \*A



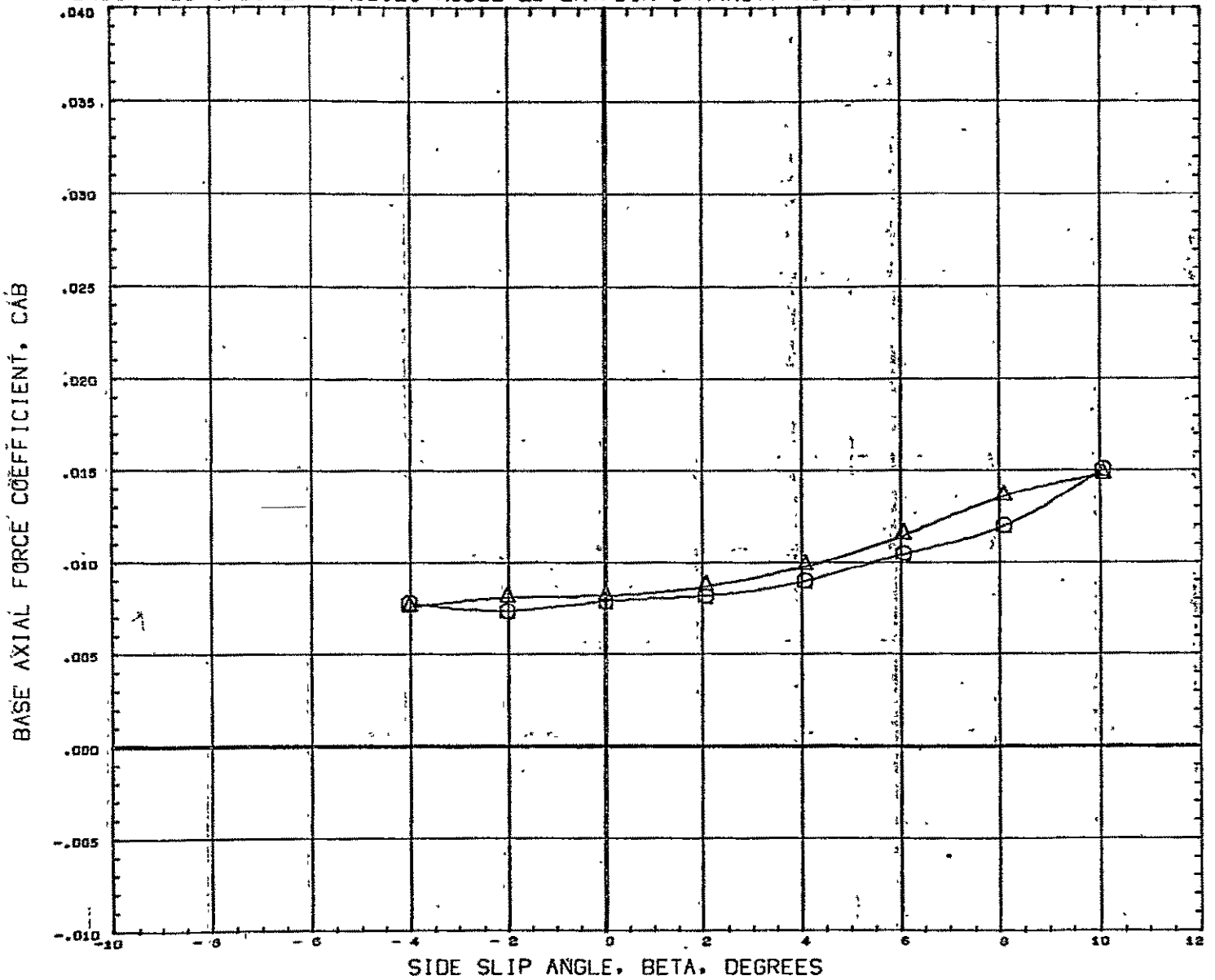
LMSC/HREC ORBITER STUDIES-MODEL 28-LAT/DIR CHARACT, RUDDER EFFECTS, ALPHA = 15



SYMBOL	RUDDER4	PARAMETRIC VALUES			DATA SOURCE			REFERENCE INFORMATION				
○	0.000	MACH	0.596	ALPHA	15.000	DATASET	RUDDER4	DATASET	RUDDER4	SREF	9.0250	50. IN
△	10.000	ELEVN4	0.000	STING	4.000	B41Z01	0.000	A41Z12	10.000	LREF	6.1420	INCHES
										BREF	6.1420	INCHES
										XMRP	3.9950	INCHES
										YMRP	0.0000	INCHES
										ZMRP	0.1350	INCHES
										SCALE	0.0033	SCALE

DATA HIST. CODE #A

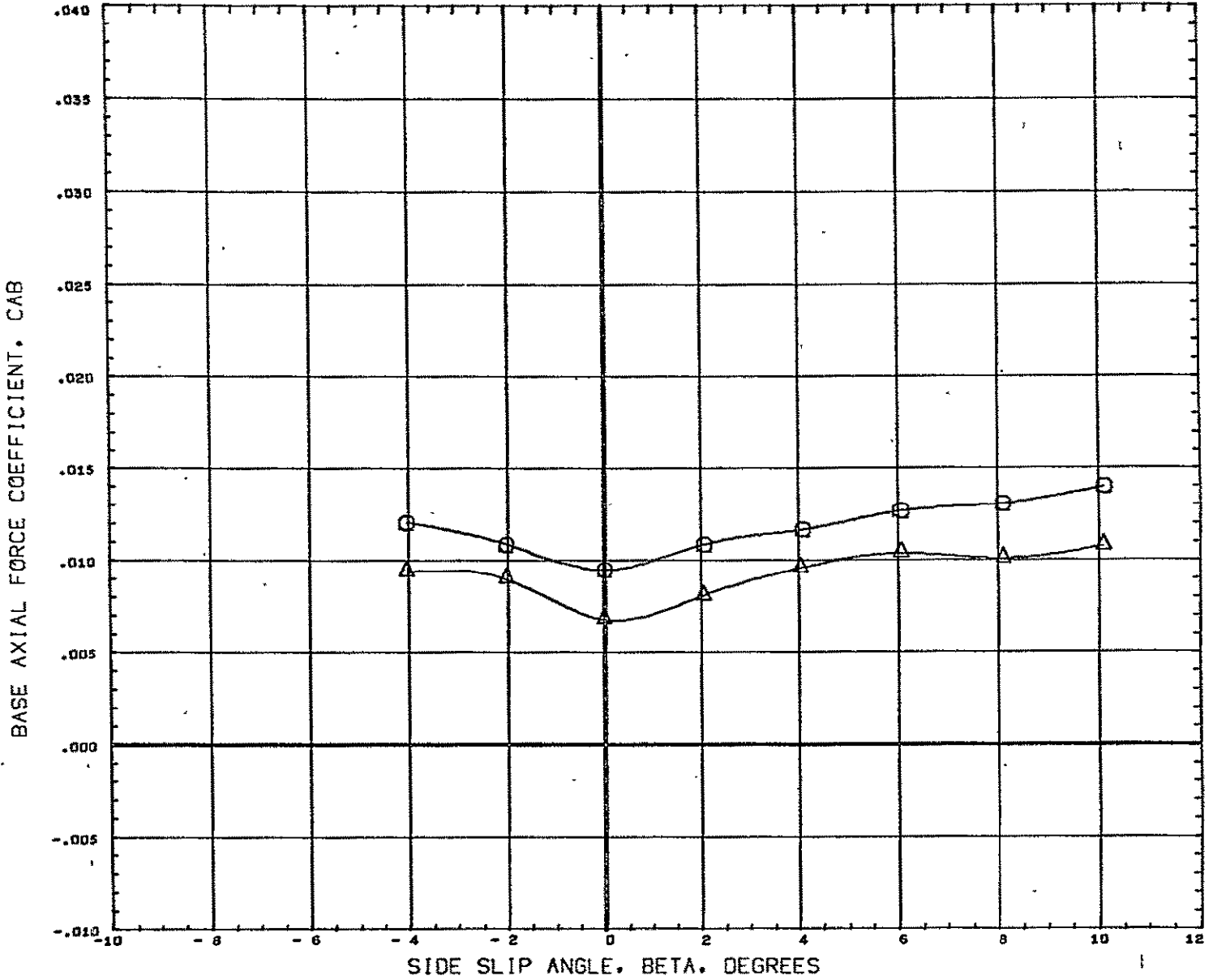
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, RUDDER EFFECTS, ALPHA = 15



SYMBOL	RUDER4	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION													
		MACH	ALPHA	STING	DATASET	RUDER4	DATASET	RUDER4	SREF	LREF	BREF	XMRP	YMRP	ZMRP	SCALE	SQ. IN	INCHES	INCHES	INCHES	INCHES	INCHES	SCALE
○	0.000	0.899	15.000	4.000	B41Z01	0.000	A41Z12	10.000	9.0250	6.1420	6.1420	3.9950	0.0000	0.1350	0.6033							
△	10.000	0.000																				

(DATA HIST. CODE) #A

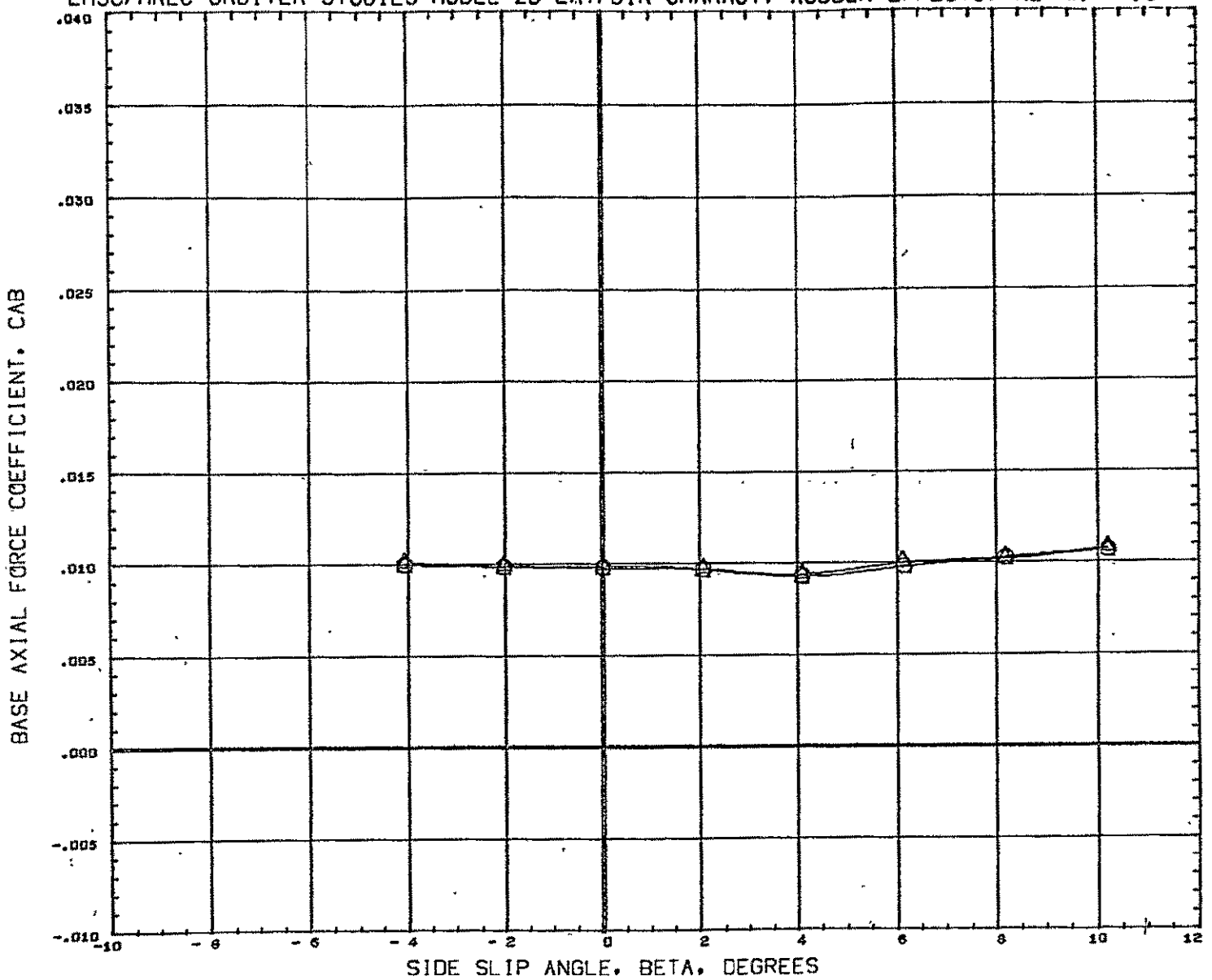
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, RUDDER EFFECTS, ALPHA = 15



SYMBOL	RUDER4	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION			
○	0.000	MACH	1.103	ALPHA	15.000	DATASET	RUDER4	DATASET	RUDER4	SREF	9.0250	sq. IN
△	10.000	ELEVN4	0.000	STING	4.000	B41Z01	0.000	A41Z12	10.000	LREF	6.1420	INCHES
										BREF	6.1420	INCHES
										XMRP	3.9950	INCHES
										YMRP	0.0000	INCHES
										ZMRP	0.1350	INCHES
										SCALE	0.0033	SCALE

DATA HIST. CODE #A

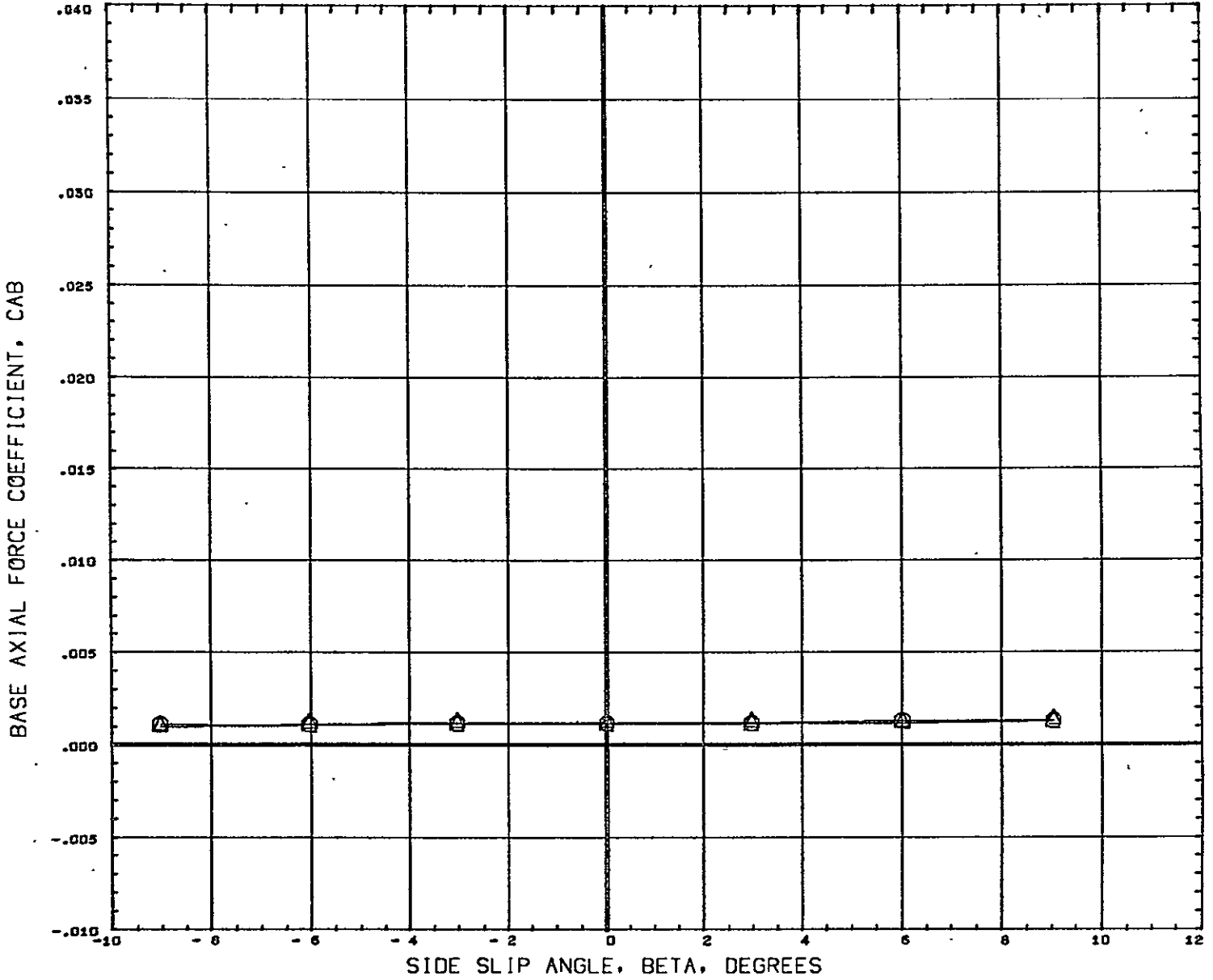
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, RUDDER EFFECTS, ALPHA = 15



SYMBOL	RUDER4	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION			
		HACH	1.961	ALPHA	15.000	DATASET	RUDER4	DATASET	RUDER4	SREF	9.0250	30.IN
○	0.000	ELEVN4	0.000	STING	4.000	B41Z01	0.000	A41Z12	10.000	LREF	6.1420	INCHES
△	10.000									SREF	6.1420	INCHES
										XMRP	3.9950	INCHES
										YMRP	0.0000	INCHES
										ZMRP	0.1350	INCHES
										SCALE	0.0033	SCALE

DATA HIST. CODE \*A

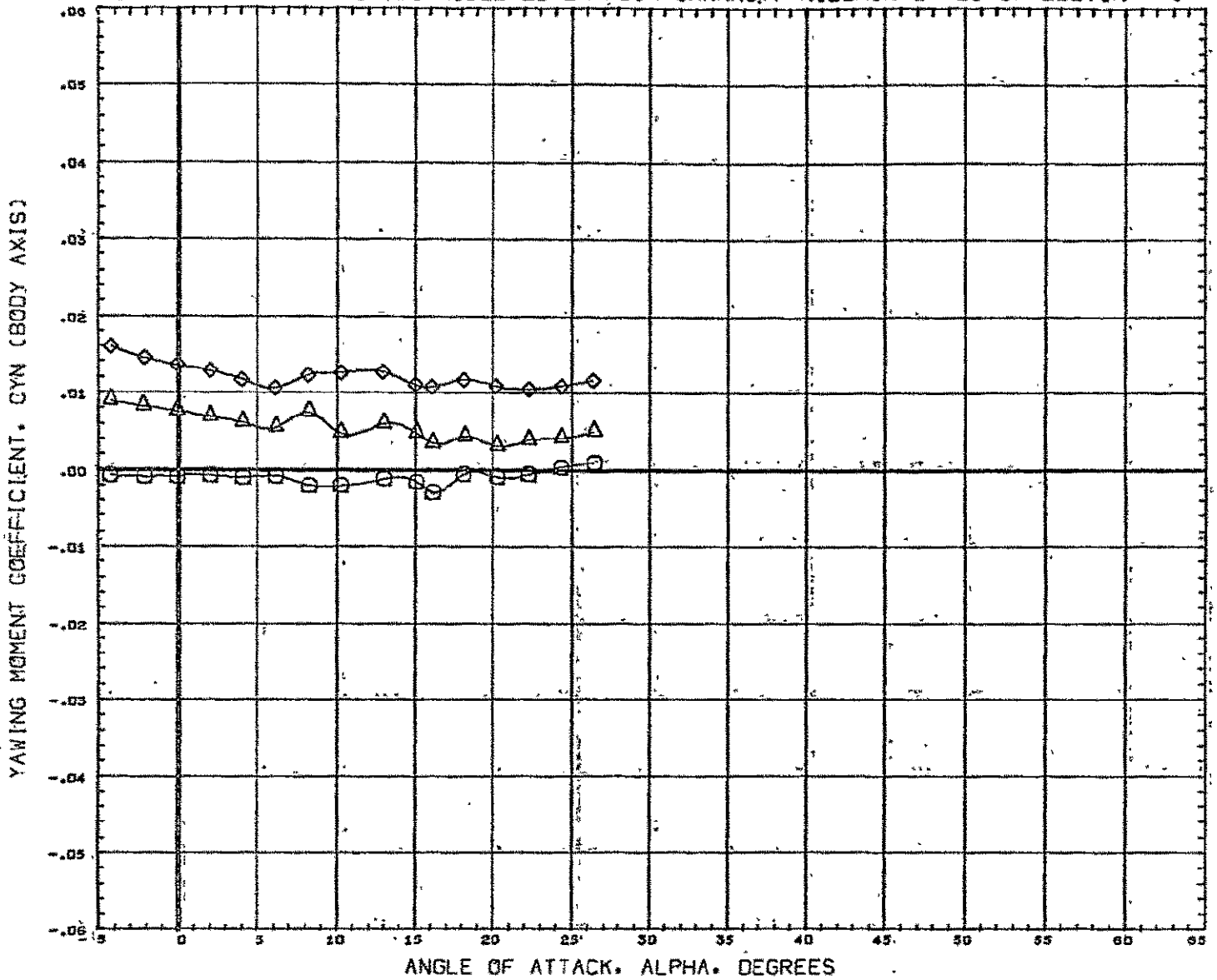
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, RUDDER EFFECTS, ALPHA = 15



SYMBOL	RUDDER4	PARAMETRIC VALUES			DATA SOURCE			REFERENCE INFORMATION				
○	0.000	MACH	4.960	ALPHA	15.000	DATASET	RUDDER4	DATASET	RUDDER4	SREF	9.0250	SQ.IN
△	10.000	ELEVN4	0.000	STING	4.000	B41Z01	0.000	A41Z12	10.000	LREF	6.1420	INCHES
										BREF	6.1420	INCHES
										XMRP	3.9950	INCHES
										YMRP	0.0000	INCHES
										ZMRP	0.1350	INCHES
										SCALE	0.0033	SCALE

DATA HIST. CODE #A

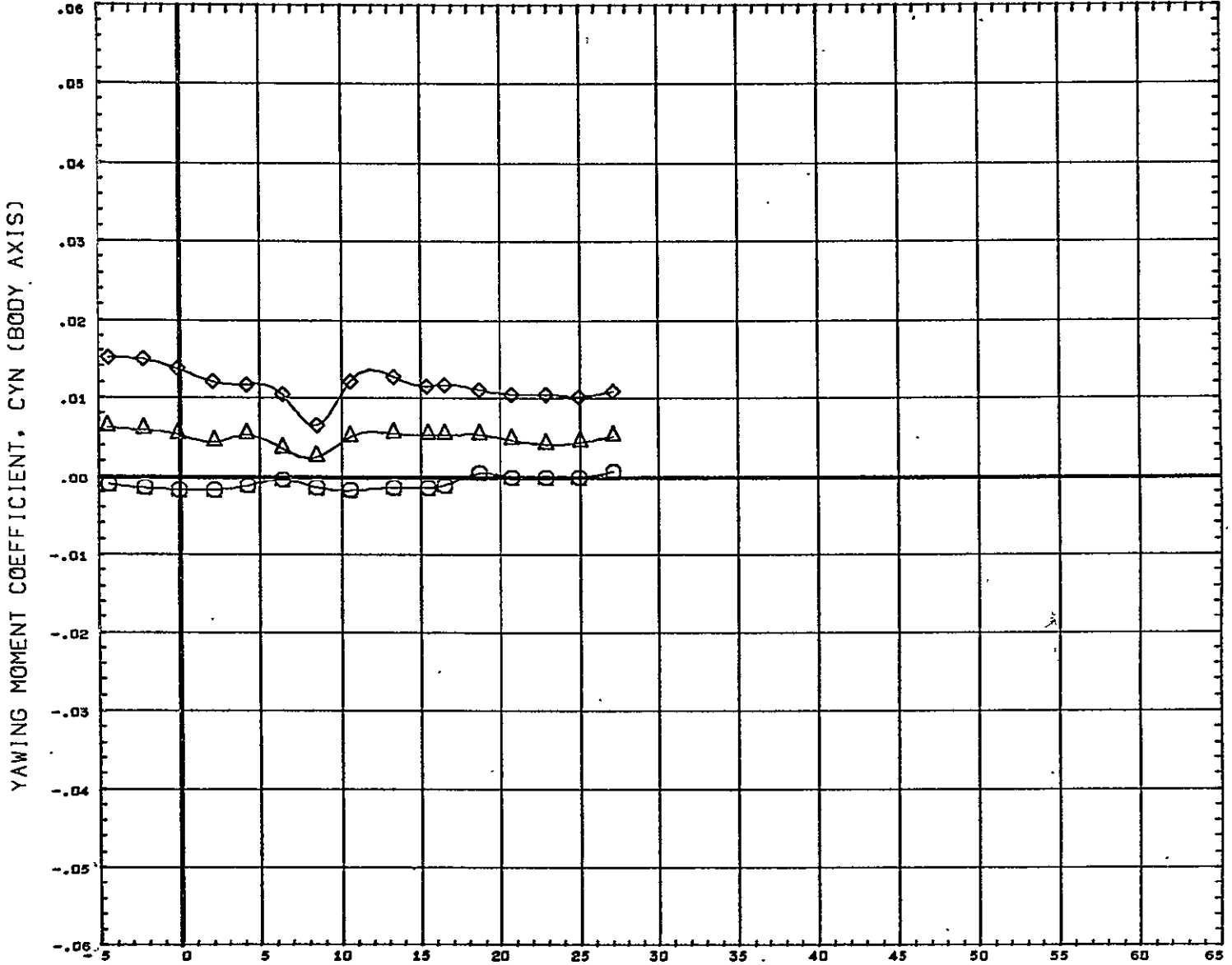
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON = 0



SYMBOL	AILRON	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
○	0.000	MACH 0.596 BETA 0.000	AILRON DATASET A41U01	SREF 9.0250 Sq. IN
△	-10.000	ELEVN4 0.000 RUDER4 0.000	AILRON DATASET A41U01	LREF 6.1420 INCHES
◇	-20.000	STING 4.000	AILRON DATASET A41SD7	BREF 6.1420 INCHES
				XMRP 3.9950 INCHES
				YMRP 0.0000 INCHES
				ZMRP 0.1350 INCHES
				SCALE 0.0033 SCALE

DATA HIST. CODE N#6

LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON = 0

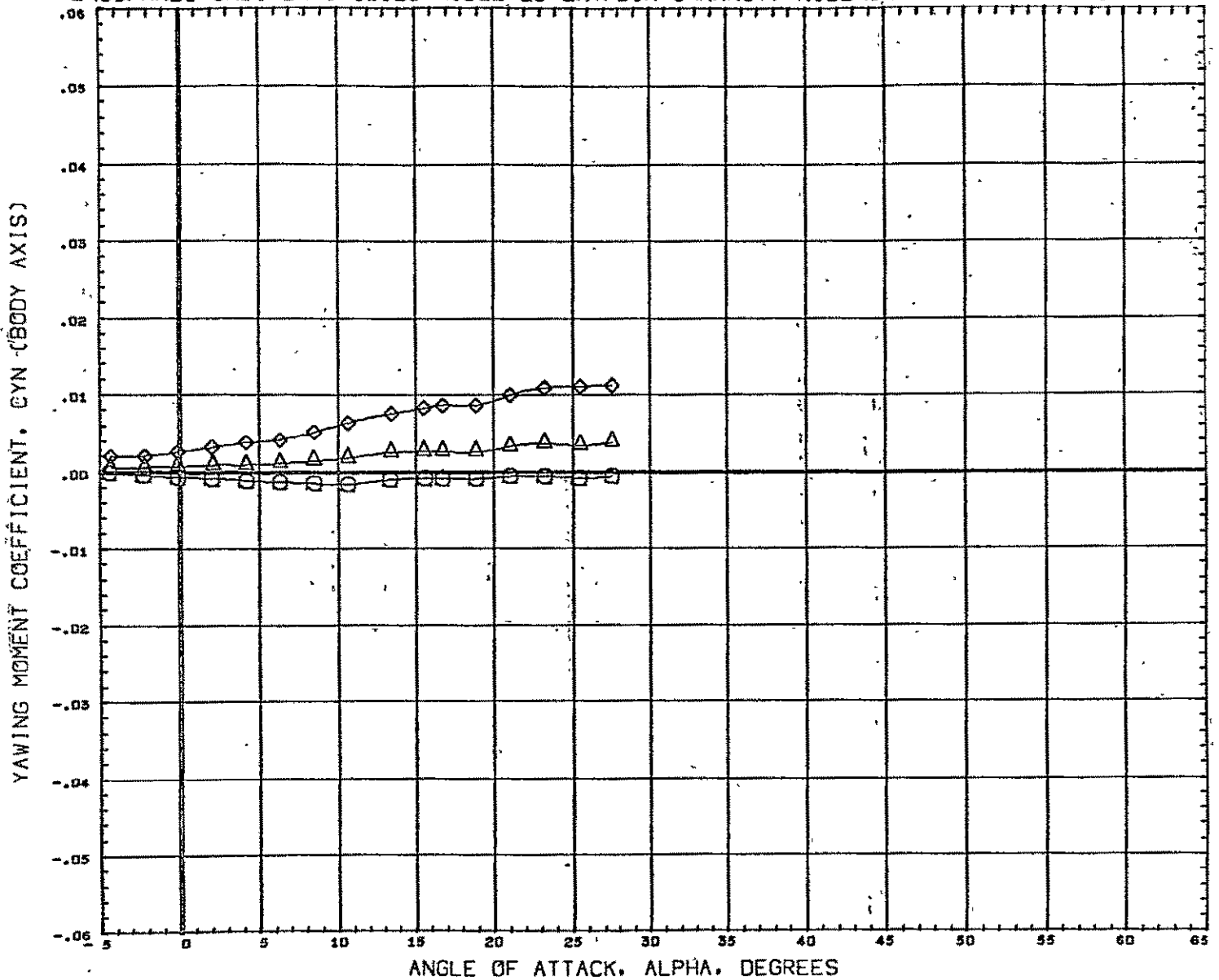


ANGLE OF ATTACK, ALPHA, DEGREES

SYMBOL	AILRON	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
○	0.000	MACH 0.900 BETA 0.000	DATA SOURCE AILRON DATASET AILRON	SREF 9.0250 SQ. IN
△	- 10.000	ELEVN4 0.000 RUDER4 0.000	A41U01 0.000 A41S06 - 10.000	LREF 6.1420 INCHES
◇	- 20.000	STING 4.000	A41S07 - 20.000	BREF 6.1420 INCHES
				XMRP 3.9950 INCHES
				YMRP 0.0000 INCHES
				ZMRP - 0.1350 INCHES
				SCALE 0.0033 SCALE

DATA HIST. CODE N#G

MSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON = 0

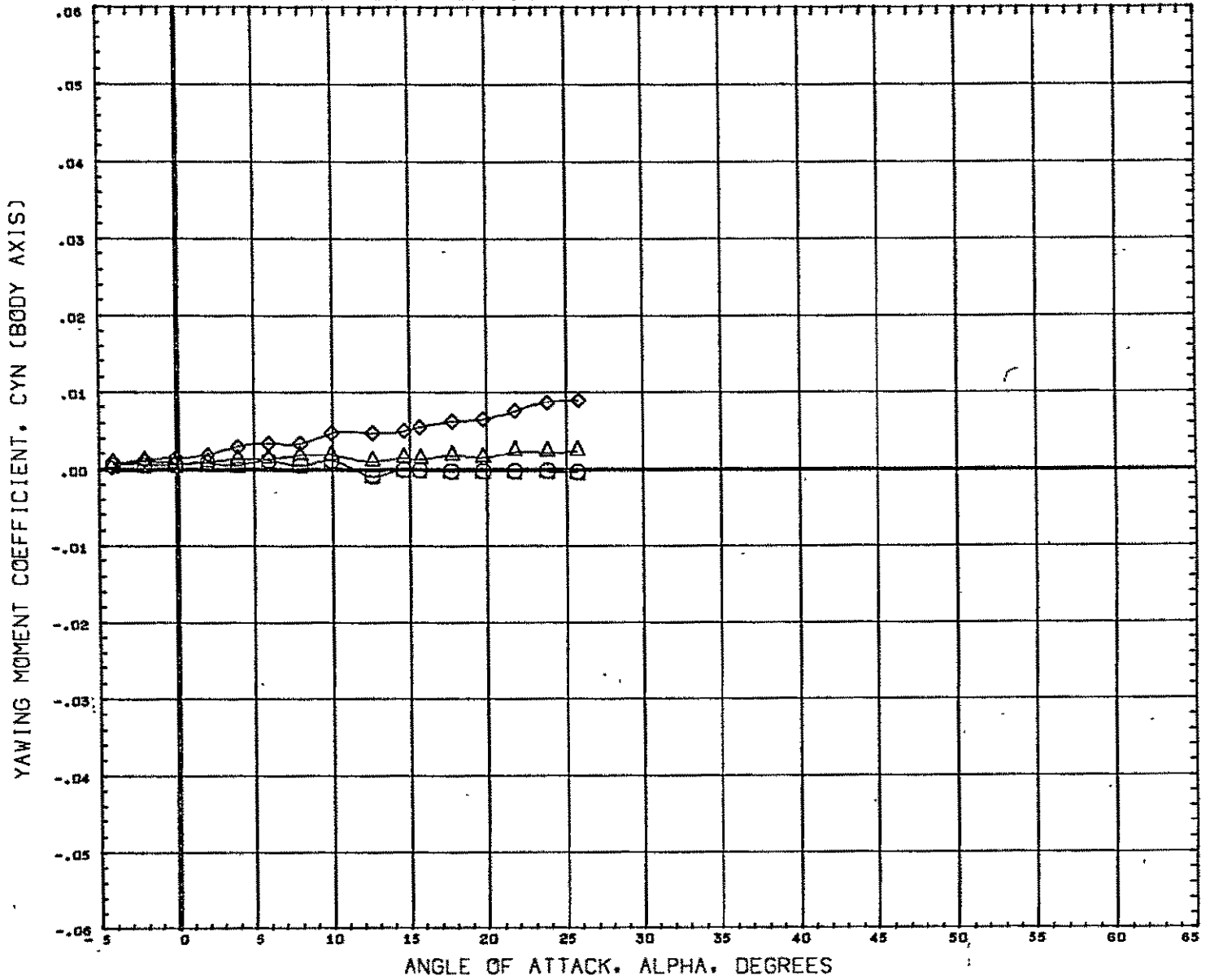


SYMBOL	AILRON	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION			
○	0.000	MACH	1.959	BETA	0.000	DATASET	AILRON	DATASET	AILRON	SREF	9.0250	90 IN
△	- 10.000	ELEVN4	0.000	RUDER4	0.000	A41U01	0.000	A41S06	- 10.000	LREF	6.1420	INCHES
◇	- 20.000	STING	4.000			A41S07	- 20.000			BREF	6.1420	INCHES
										XMRP	3.9950	INCHES
										YMRP	0.0000	INCHES
										ZMRP	0.1350	INCHES
										SCALE	0.0033	SCALE

DATA HIST. CODE M4G



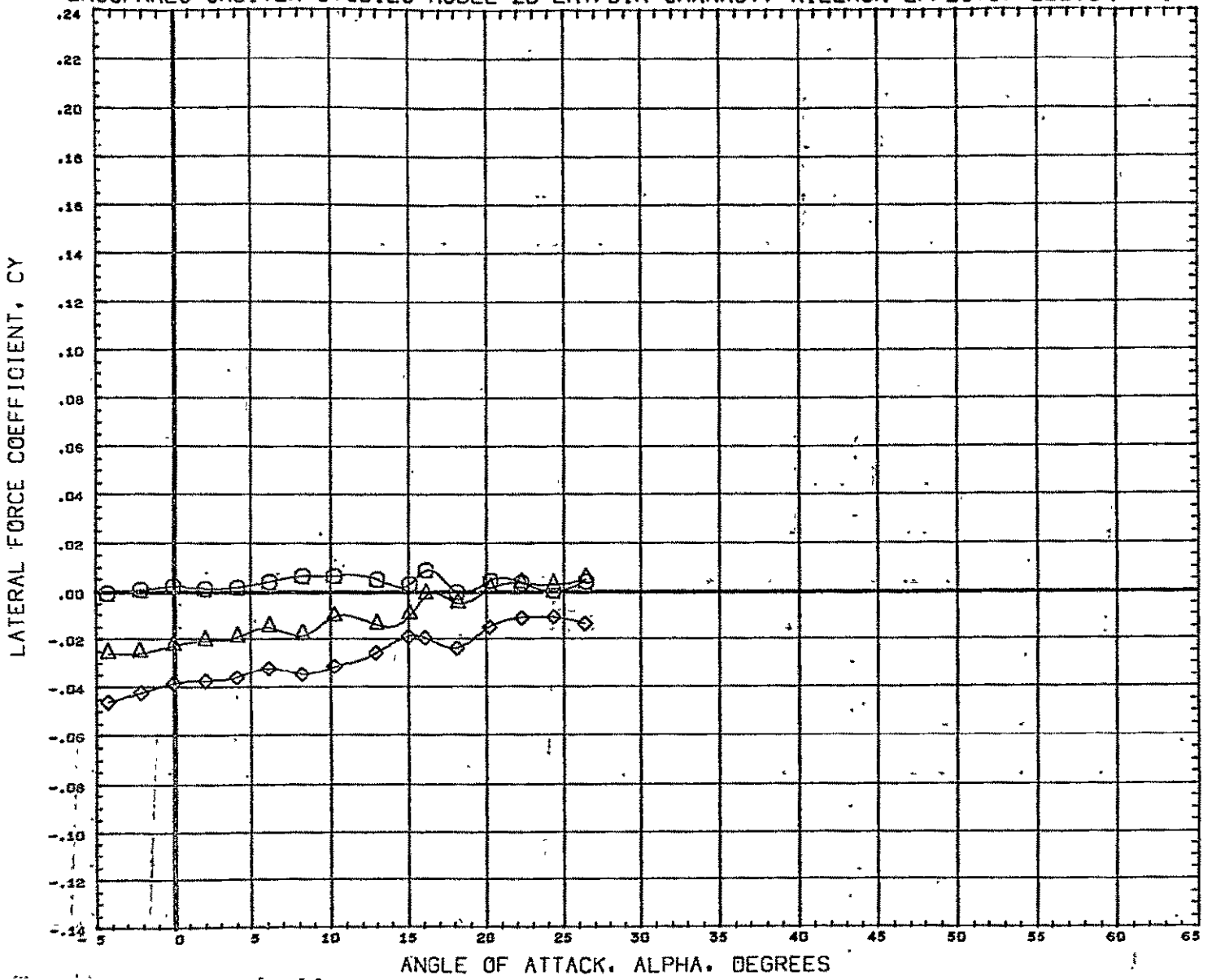
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON = 0



SYMBOL	AILRON	PARAMETRIC VALUES				DATA SOURCE				REFERENCE INFORMATION		
○	0.000	MACH	4.960	BETA	0.000	DATASET	AILRON	DATASET	AILRON	SREF	9.0250	SQ.IN
△	-12.000	ELEVN4	0.000	RUDER4	0.000	A41U01	0.000	A41S06	-10.000	LREF	6.1420	INCHES
◇	-20.000	STING	4.000			A41S07	-20.000			BREF	6.1420	INCHES
										XMRP	3.9950	INCHES
										YMRP	0.0000	INCHES
										ZMRP	0.1350	INCHES
										SCALE	0.0033	SCALE

DATA HIST. CODE    #46

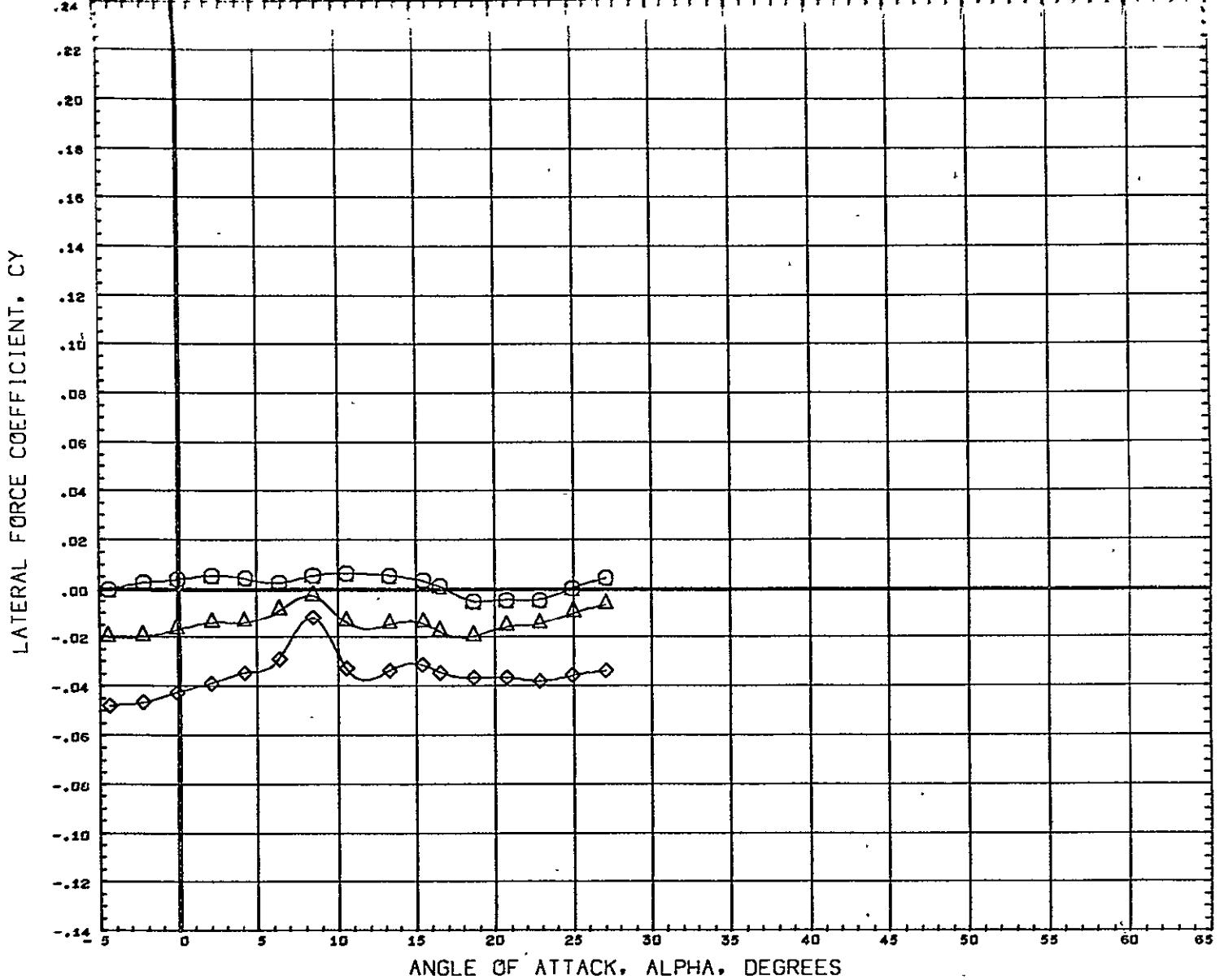
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT. AILERON EFFECTS, ELEVON = 0



SYMBOL		PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION		
○	AILRON 0.000	MACH 0.596	BETA 0.000	DATASET AILRON	DATASET AILRON	DATASET AILRON	SREF 9.0250	SQ.IN			
△	-10.000	ELEVN4 0.000	RUDER4 0.000	A41U01	0.000	A41SD6 - 10.000	LREF 6.1420	INCHES			
◇	-20.000	STING 4.000		A41SD7	- 20.000		BREF 6.1420	INCHES			
							XMRP 3.9950	INCHES			
							YMRP 0.0000	INCHES			
							ZMRP 0.1350	INCHES			
							SCALE 0.0033	SCALE			

DATA HIST. CODE H#G

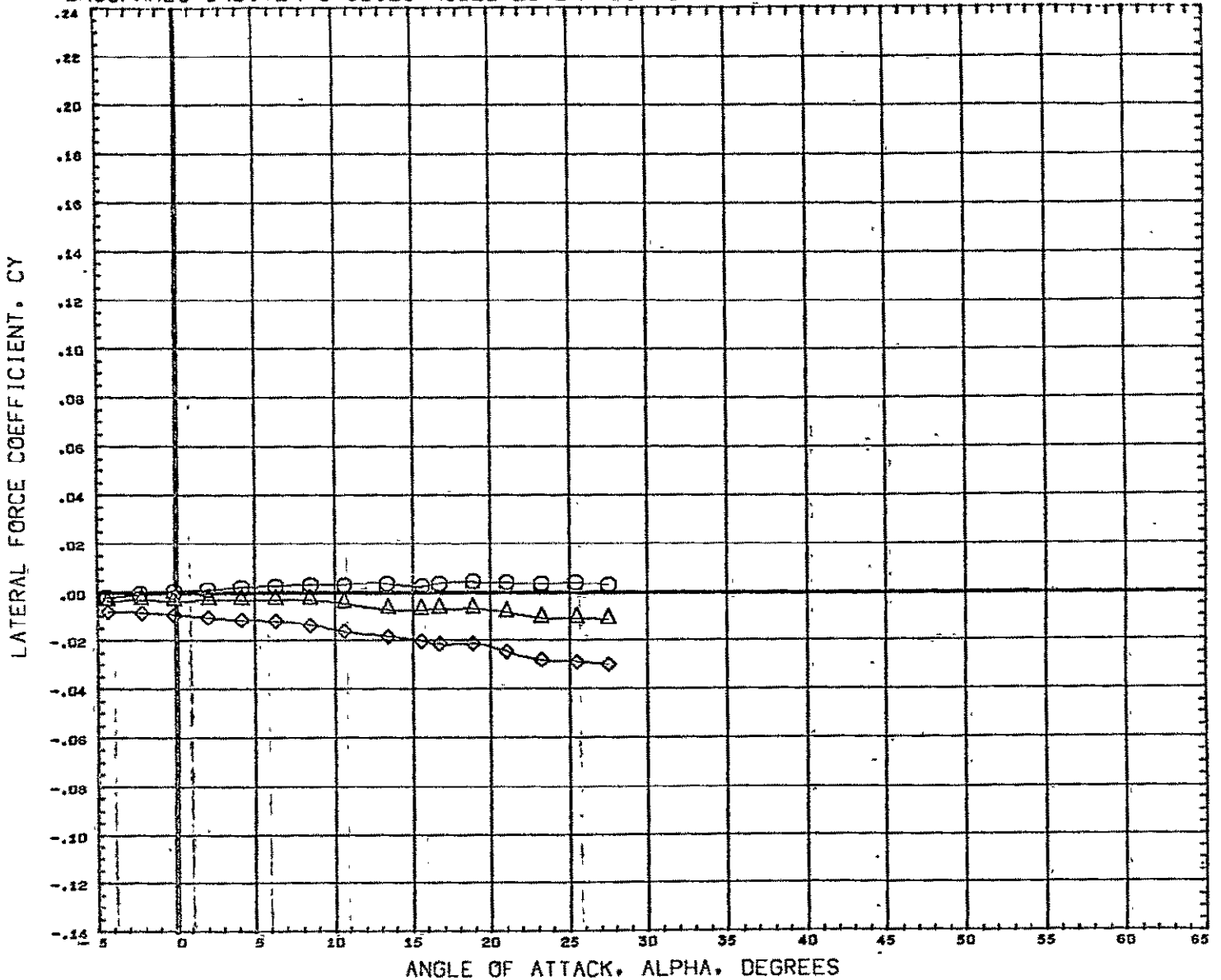
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON = 0



SYMBOL	AILRON	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION			
○	0.000	MACH	0.900	BETA	0.000	DATASET	AILRON	DATASET	AILRON	SREF	9.0250	50. IN
△	-10.000	ELEVN4	0.000	RUDER4	0.000	A41U01	0.000	A41S06	-10.000	LREF	6.1420	INCHES
◇	-20.000	STING	4.000			A41S07	-20.000			BREF	6.1420	INCHES
										XMRP	3.9950	INCHES
										YMRP	0.0000	INCHES
										ZMRP	0.1350	INCHES
										SCALE	0.0033	SCALE

DATA HIST. CODE M#G

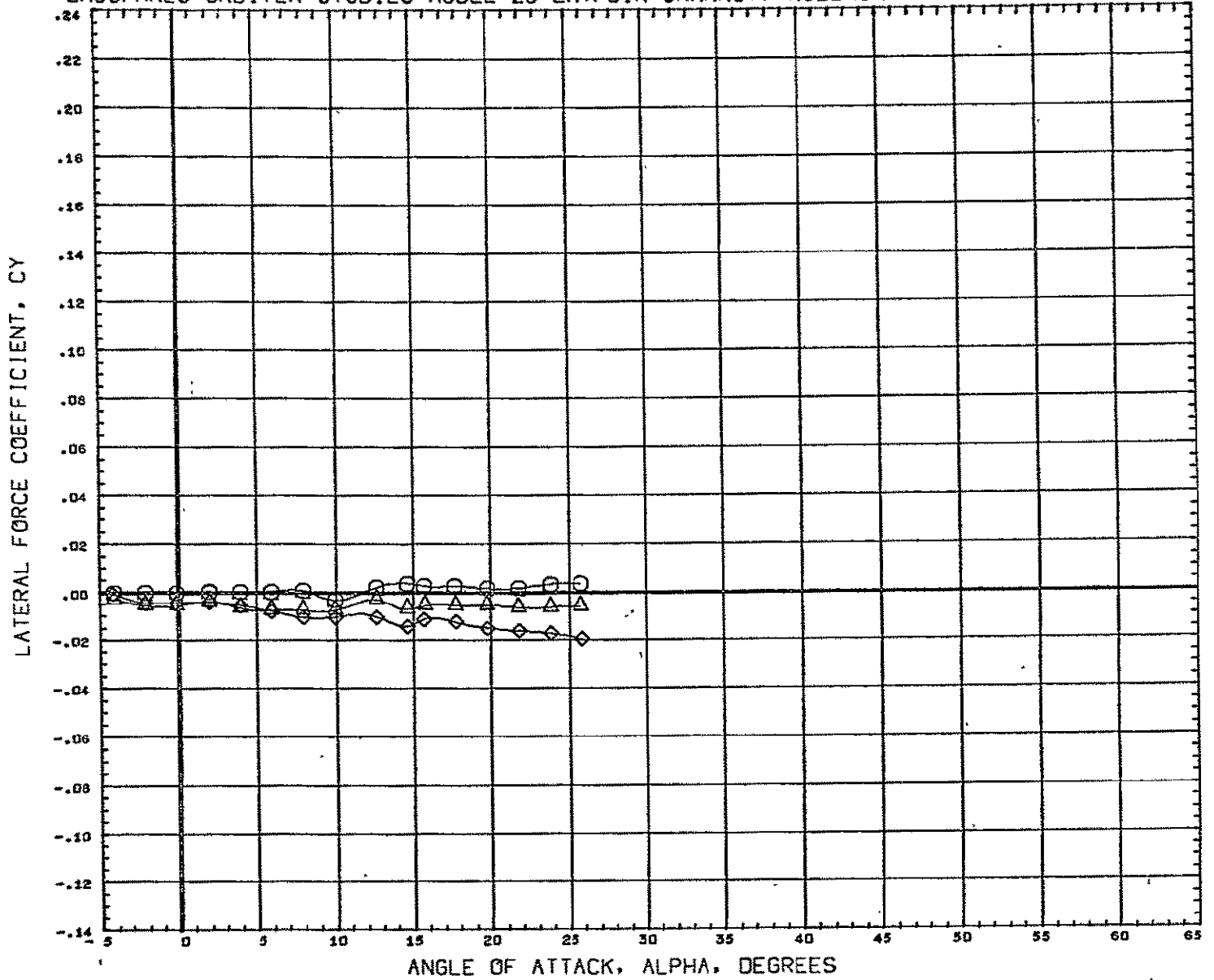
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT. AILERON EFFECTS. ELEVON = 0



SYMBOL	AILRON	MACH	PARAMETRIC VALUES			DATA SOURCE			REFERENCE INFORMATION		
○	0.000	1.959	BETA	0.000	DATASET	AILRON	DATASET	AILRON	SREF	9.0250	SQ.IN
△	-10.000	0.000	RUDER4	0.000	A41U01	0.000	A41S06	-10.000	LREF	6.1420	INCHES
◇	-20.000	4.000			A41S07	-20.000			BREF	6.1420	INCHES
									XHRP	3.9950	INCHES
									YHRP	0.0000	INCHES
									ZHRP	0.1350	INCHES
									SCALE	0.0033	SCALE

DATA HIST. CODE H4G

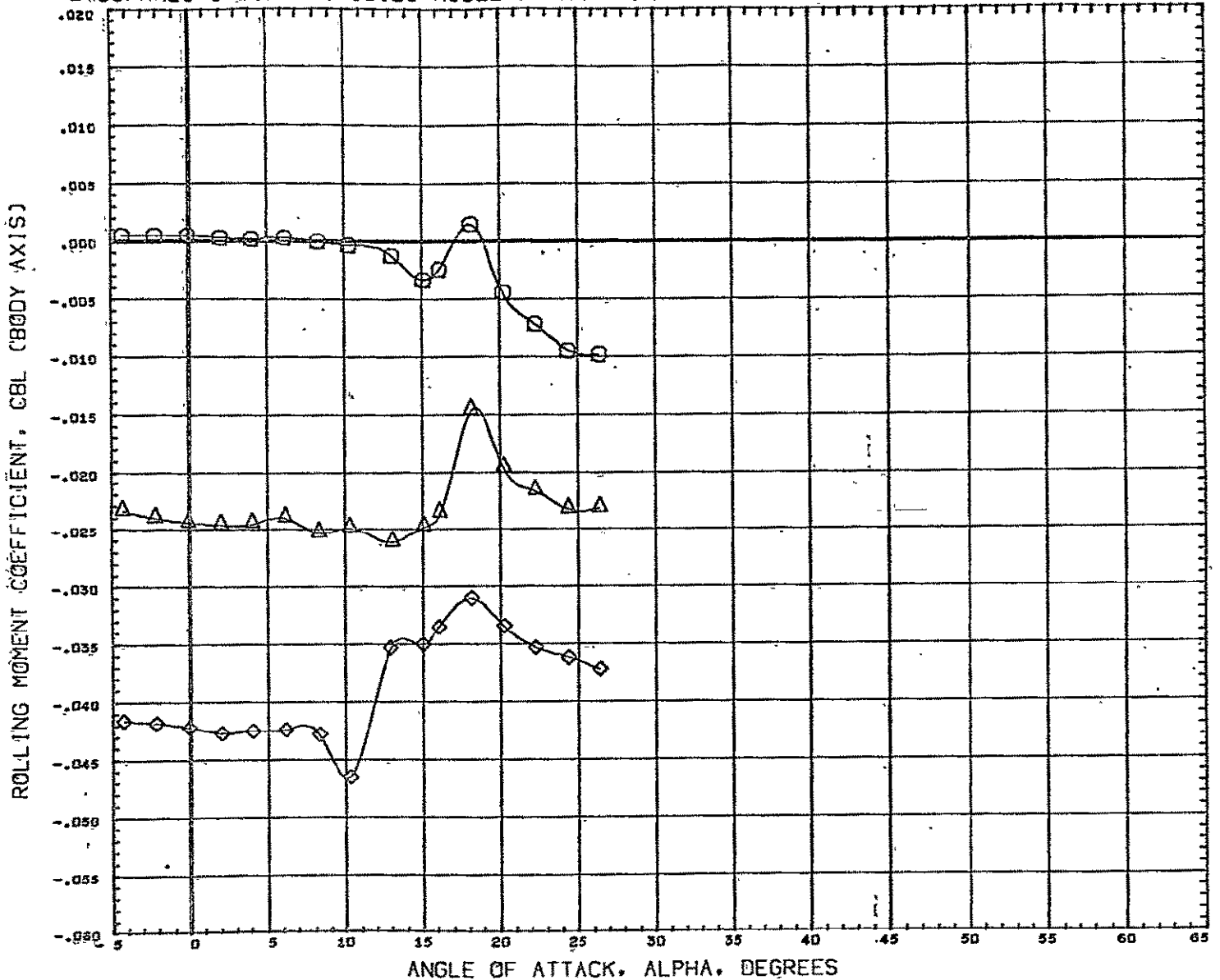
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON = 0



SYMBOL	AILRON	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION			
○	0.000	MACH	4.960	BETA	0.000	DATASET	AILRON	DATASET	AILRON	SREF	9.0250	50. IN
△	10.000	ELEVN4	0.000	RUDER4	0.000	A41U01	0.000	A41S06	- 10.000	LREF	6.1420	INCHES
◇	20.000	STING	4.000			A41S07	- 20.000			BREF	6.1420	INCHES
										XHRP	3.9950	INCHES
										YHRP	0.0000	INCHES
										ZHRP	0.1350	INCHES
										SCALE	0.0033	SCALE

DATA HIST. CODE M#6

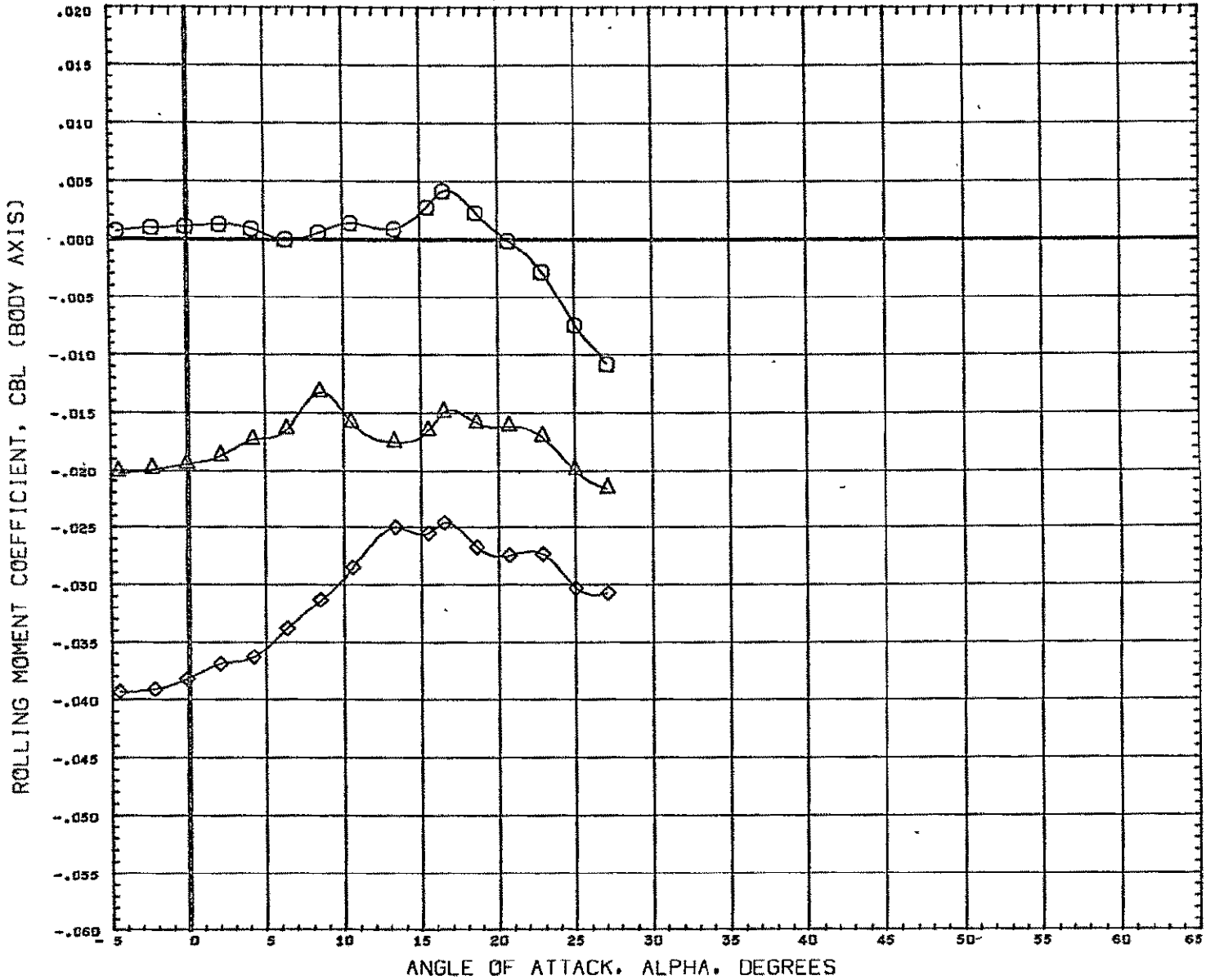
MSFC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON = 0



SYMBOL	AILRON	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
○	0.000	MACH 0.596	0.000 DATASET AILRON	SREF 9.0250 SG. IN
△	-10.000	ELEVON4 0.000	0.000 A41001 0.000	LREF 6.1420 INCHES
◇	-20.000	STING 4.000	A41807 -20.000	BREF 6.1420 INCHES
				XMRP 3.9950 INCHES
				YMRP 0.0000 INCHES
				ZMRP 0.1350 INCHES
				SCALE 0.0035 SCALE

DATA HIST. CODE H#G

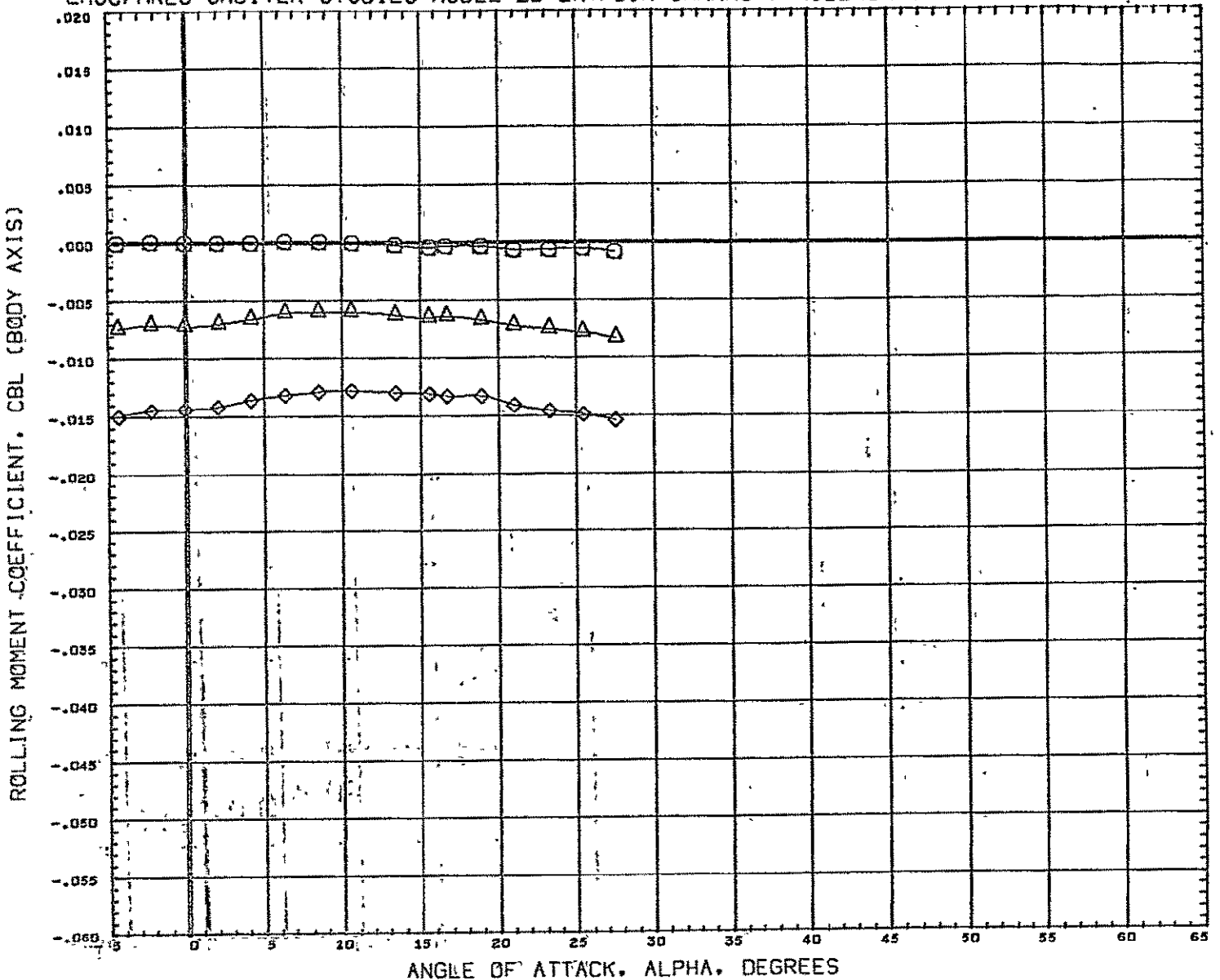
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON = 0



SYMBOL	AILRON	MACH	PARAMETRIC VALUES		DATA SOURCE			REFERENCE INFORMATION			
○	0.000	0.990	BETA	0.000	DATASET	AILRON	DATASET	AILRON	SREF	9.0250	Sq. IN
△	- 10.000	ELEVN4	RUDER4	0.000	A41U01	0.000	A41S06	- 10.000	LREF	6.1420	INCHES
◇	- 20.000	STING		4.000	A41S07	- 20.000			BREF	6.1420	INCHES
									XMRP	3.3950	INCHES
									YMRP	0.0000	INCHES
									ZMRP	0.1350	INCHES
									SCALE	0.0033	SCALE

DATA HIST. CODE H#G

LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON<sub>1</sub> = 0

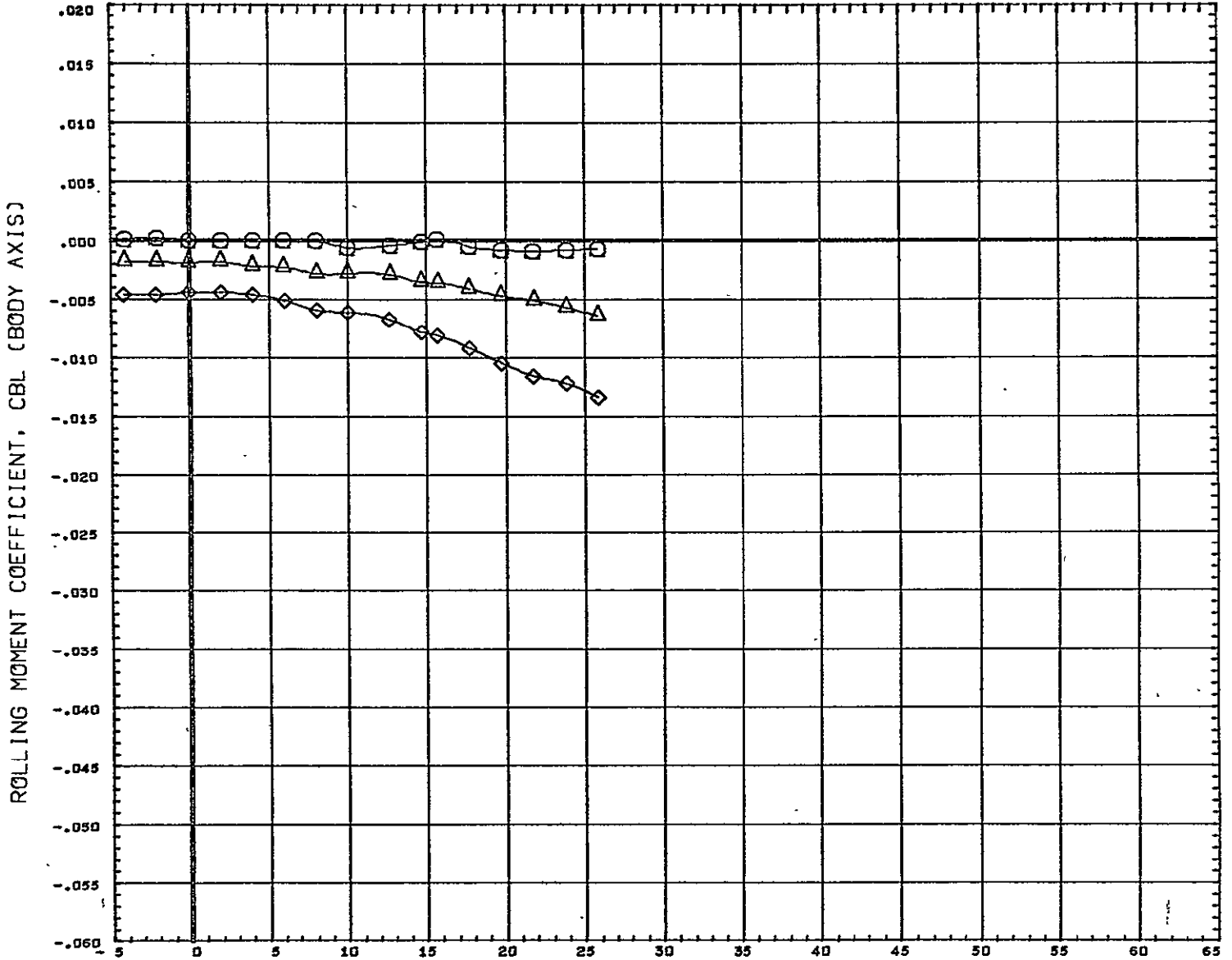


SYMBOL	AILRON	MACH	PARAMETRIC VALUES		DATA SOURCE			REFERENCE INFORMATION				
○	0.000	1.959	BETA	0.000	DATASET	AILRON	DATASET	AILRON	SREF	9.0250	60. IN	
△	10.000	ELEVN4	0.000	RUDER4	0.000	A41U01	0.000	A41S06	- 10.000	LREF	6.1420	INCHES
◇	20.000	STING11	4.000			A41S07	- 20.000			BREF	6.1420	INCHES
										XMRP	3.9950	INCHES
										YMRP	0.0000	INCHES
										ZMRP	0.1358	INCHES
										SCALE	0.0033	SCALE

DATA HIST. CODE : H001



LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON = 0

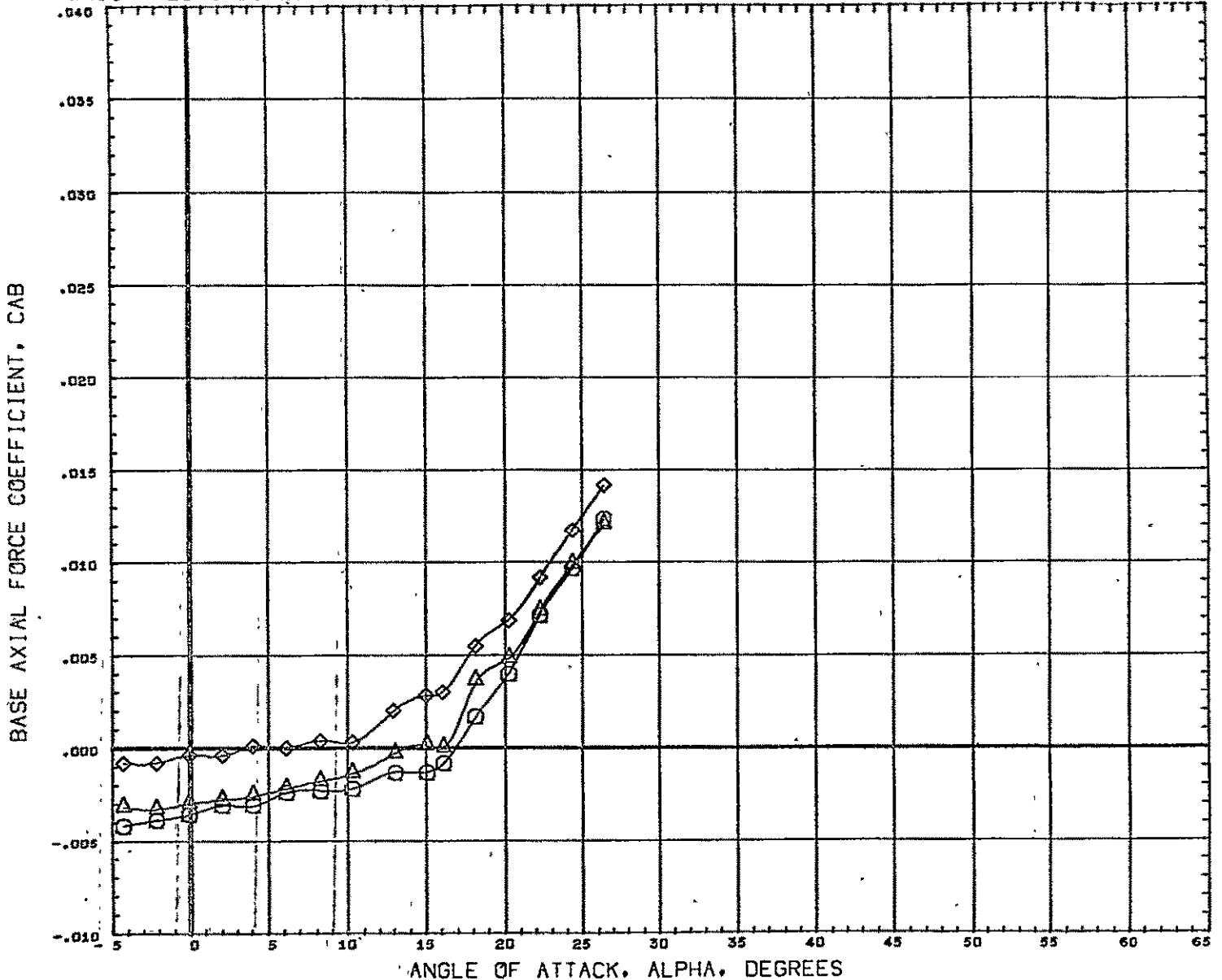


ANGLE OF ATTACK, ALPHA, DEGREES

SYMBOL	AILRON	PARAMETRIC VALUES				DATA SOURCE				REFERENCE INFORMATION		
○	0.000	MACH	4.960	BETA	0.000	DATASET	AILRON	DATASET	AILRON	SREF	9.0250	SQ. IN
△	- 10.000	ELEVN4	0.000	RUDER4	0.000	A41U01	0.000	A41S06	- 10.000	LREF	6.1420	INCHES
◇	- 20.000	STING	4.000			A41S07	- 20.000			BREF	6.1420	INCHES
										XMRP	3.9950	INCHES
										YMRP	0.0000	INCHES
										ZMRP	0.1350	INCHES
										SCALE	0.0033	SCALE

DATA HIST. CODE M#G

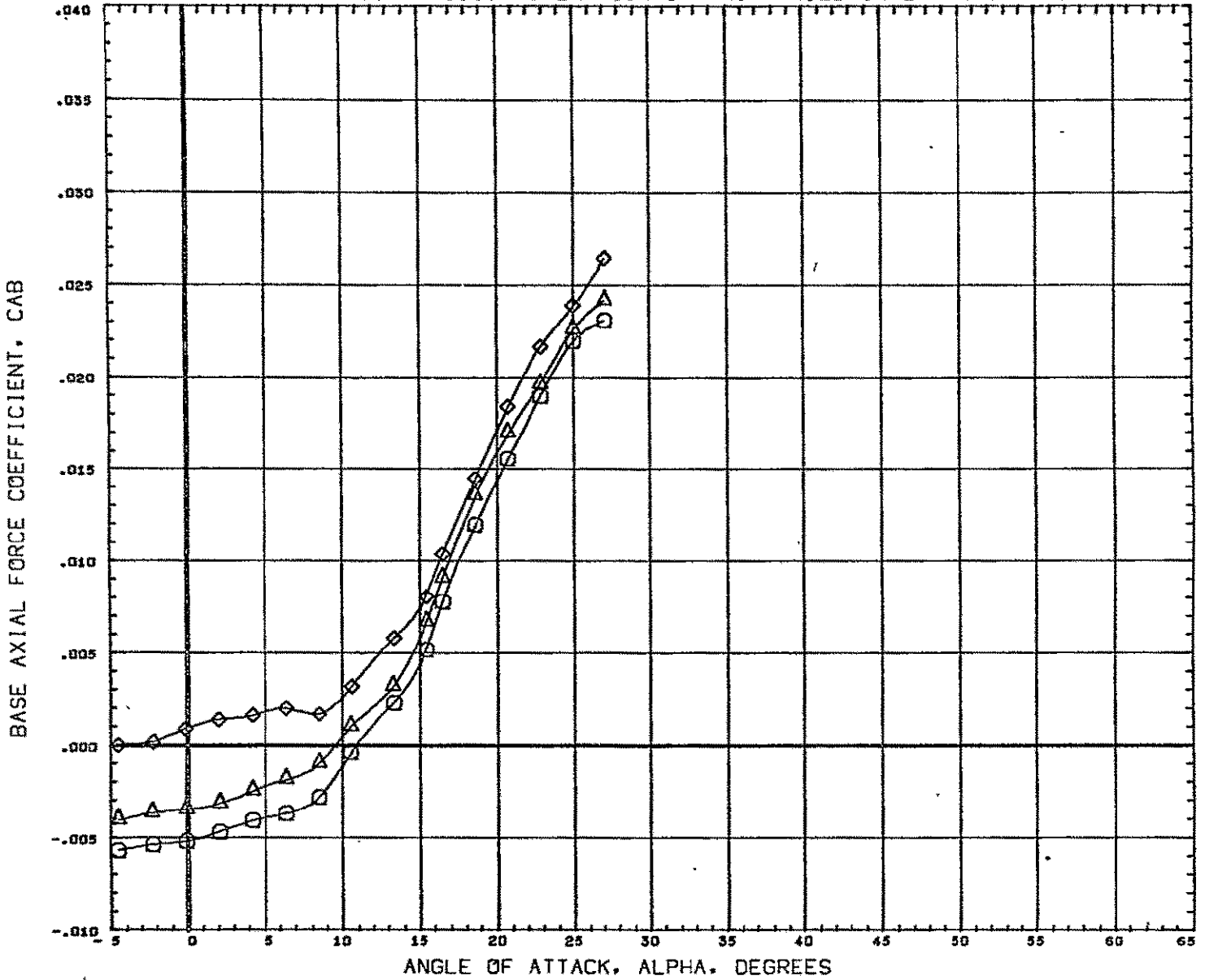
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON = 0



SYMBOL	AILRON	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION			
○	0.000	MACH	0.596	BETA	0.000	DATASET	AILRON	DATASET	AILRON	SREF	9.0250	SQ.IN
△	-10.000	ELEVN4	0.000	RUDER4	0.000	A41U01	0.000	A41S06	-10.000	LREF	6.1420	INCHES
◇	-20.000	STING	4.000			A41S07	-20.000			BREF	6.1420	INCHES
										XMRP	3.9950	INCHES
										YMRP	0.0000	INCHES
										ZMRP	0.1330	INCHES
										SCALE	0.0035	SCALE

DATA HIST. CODE M\*G

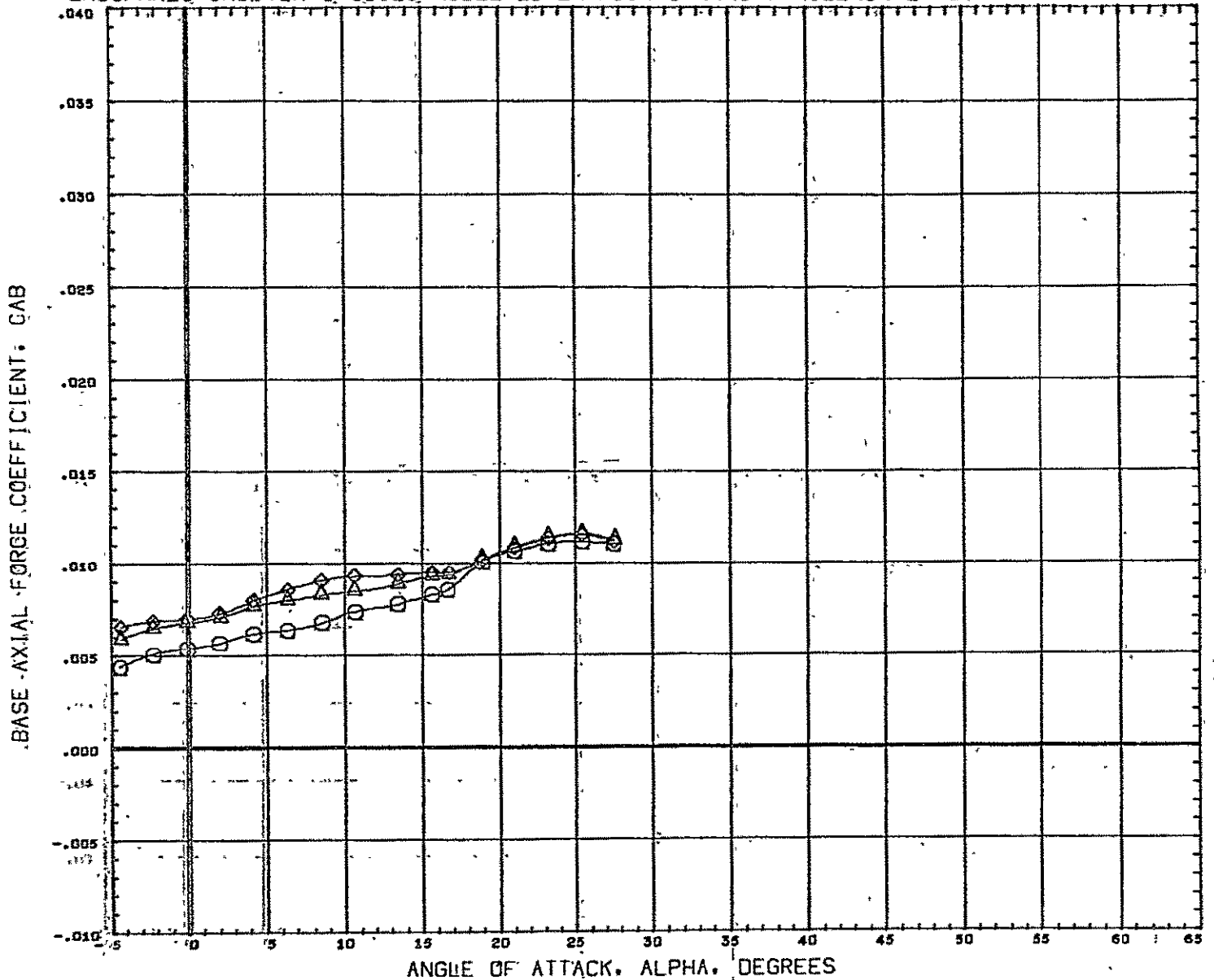
MSFC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON = 0



SYMBOL	AILRON	MACH	PARAMETRIC VALUES		DATA SOURCE			REFERENCE INFORMATION			
○	0.000	0.900	BETA	0.000	DATASET	AILRON	DATASET	AILRON	SREF	9.0250	SQ. IN
△	- 10.000	ELEVN4	RUDER4	0.000	A41U01	0.000	A41S06	- 10.000	LREF	6.1420	INCHES
◇	- 20.000	STING		4.000	A41S07	- 20.000			BREF	6.1420	INCHES
									XMRP	3.9950	INCHES
									YMRP	0.0000	INCHES
									ZMRP	0.1350	INCHES
									SCALE	0.0033	SCALE

DATA HIST. CODE M#6

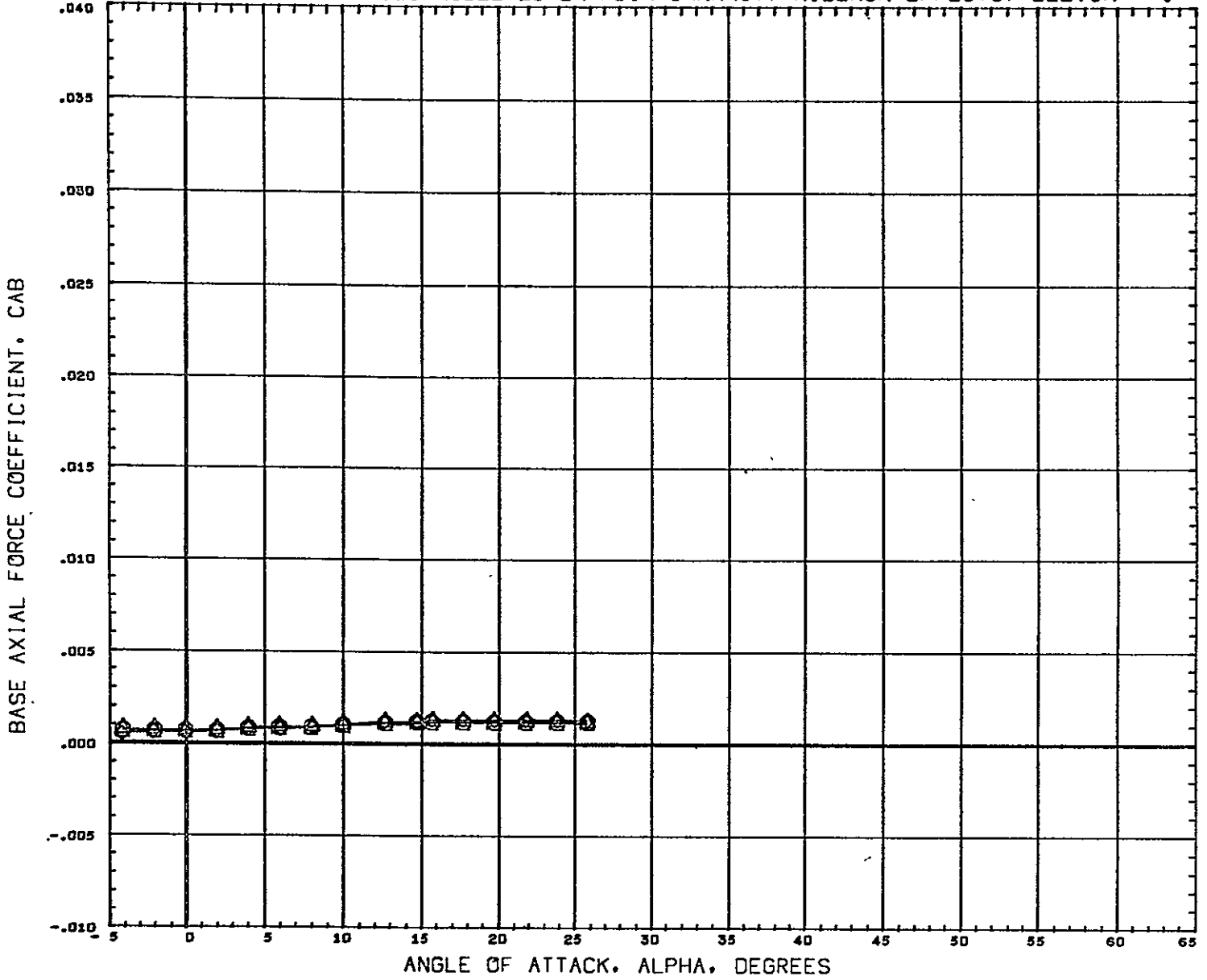
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON = 0



SYMBOL	AILRON	MACH	PARAMETRIC VALUES		DATA SOURCE			REFERENCE INFORMATION			
○	0.000	1.959	BETA	0.000	DATASET	AILRON	DATASET	AILRON	SREF	9.0250	SQ. IN
△	- 10.000	ELEVON	RUDER	0.000	A41U01	0.000	A41S06	- 10.000	LREF	6.1420	INCHES
◇	- 20.000	STING		4.000	A41S07	- 20.000			BREF	6.1420	INCHES
									XMRP	3.9950	INCHES
									YMRP	0.0000	INCHES
									ZMRP	0.1350	INCHES
									SCALE	0.0033	SCALE

DATA HIST. CODE: M40

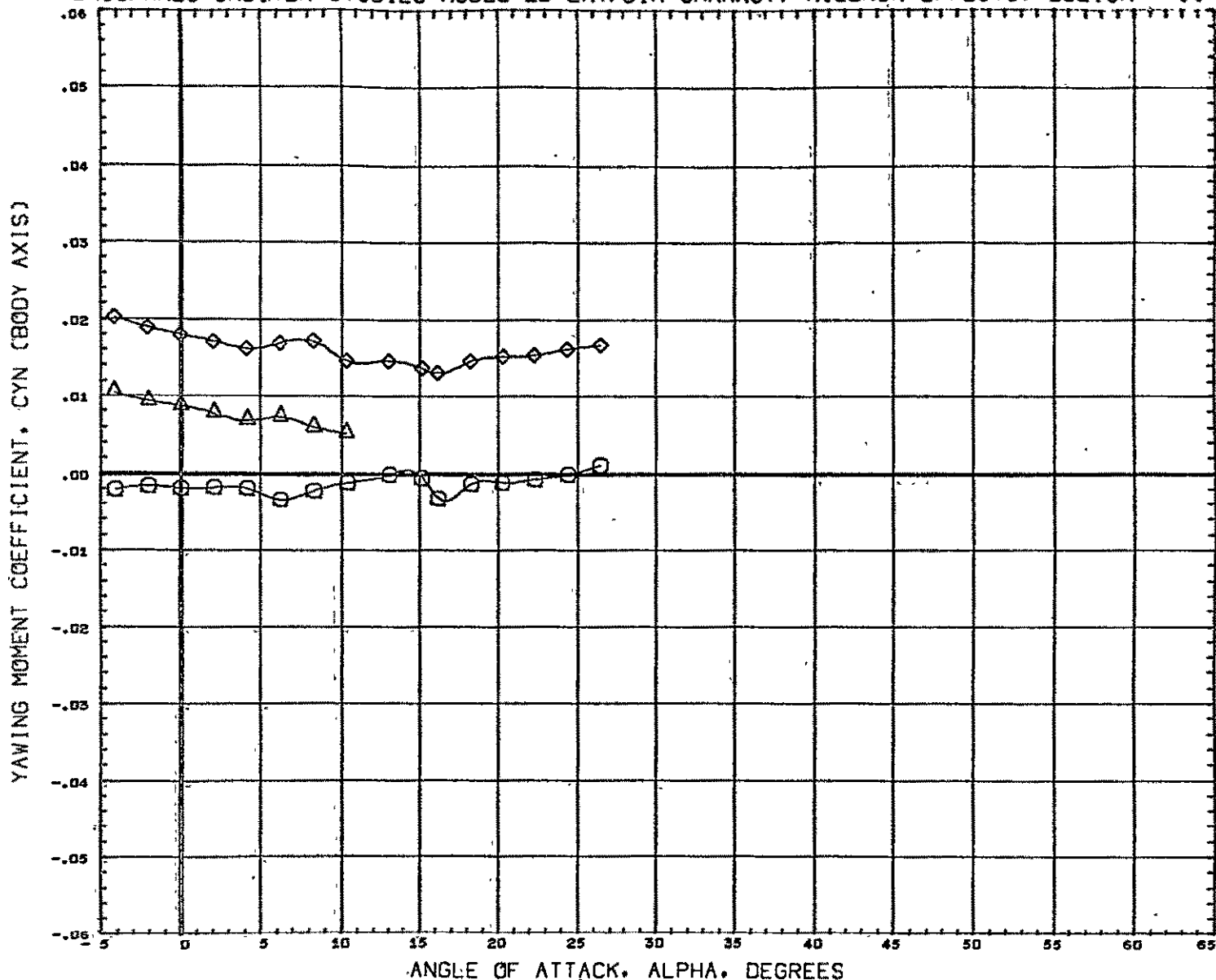
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON = 0



SYMBOL	AILRON	MACH	PARAMETRIC VALUES		DATA SOURCE			REFERENCE INFORMATION			
○	0.000	4.960	BETA	0.000	DATASET	AILRON	DATASET	AILRON	SREF	9.0250	SQ. IN
△	10.000	ELEVN4	RUDER4	0.000	A41U01	0.000	A41S06	- 10.000	LREF	6.1420	INCHES
◇	20.000	STING		4.000	A41S07	- 20.000			BREF	6.1420	INCHES
									XMRP	3.9950	INCHES
									YMRP	0.0000	INCHES
									ZMRP	0.1350	INCHES
									SCALE	0.0033	SCALE

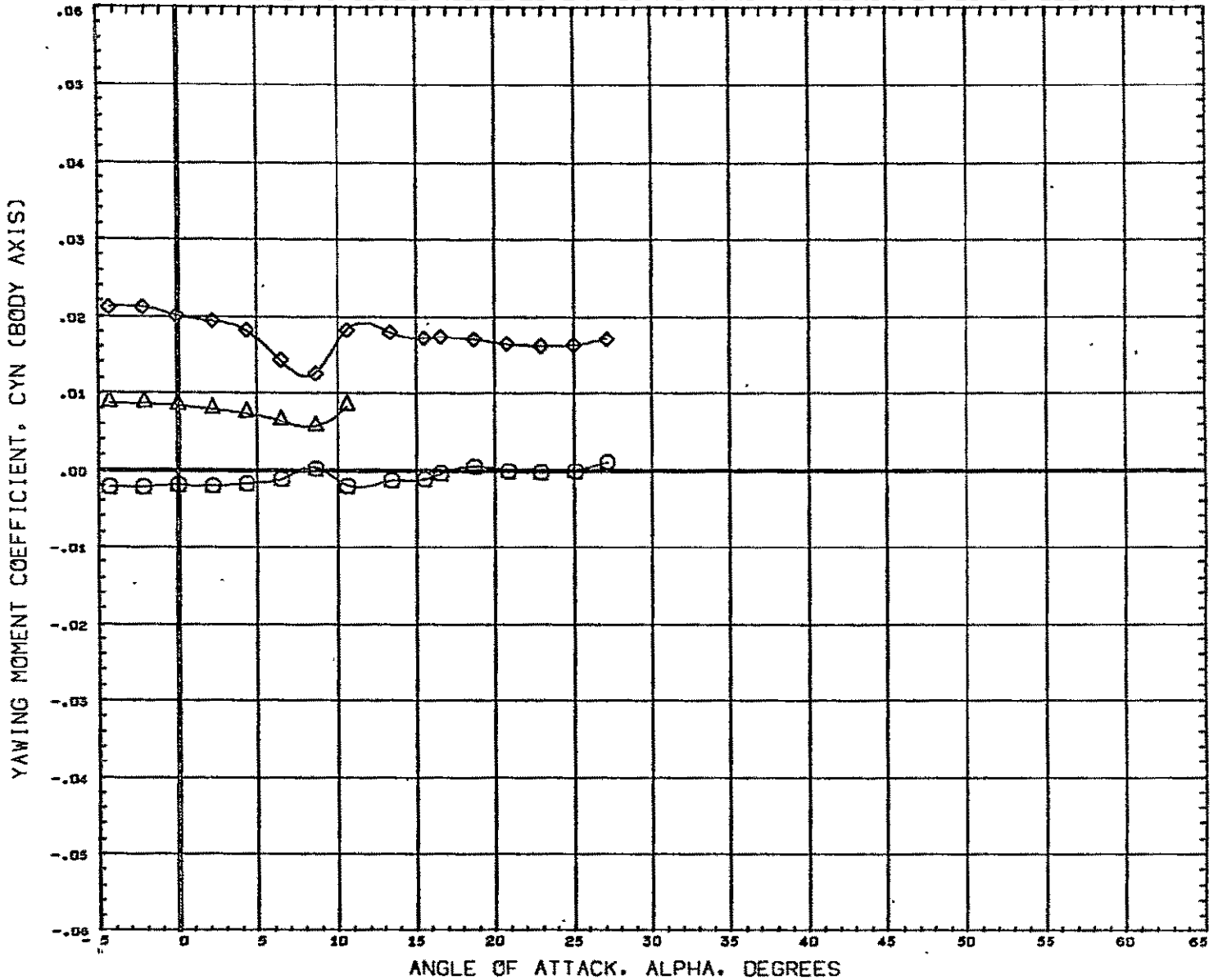
DATA HIST. CODE M#6

MSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON =+10



SYMBOL	AILRON	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
○	0.000	MACH 0.596 BETA 0.000	DATASET AILRON	SREF 9.0250 SQ.IN
△	-10.000	ELEVN4 10.000 RUDER4 0.000	A41T02 0.000	LREF 6.1420 INCHES
◇	-20.000	STING 4.000	A41S09 -20.000	BREF 6.1420 INCHES
				XMRP 3.9950 INCHES
				YMRP 0.0000 INCHES
				ZMRP - 0.1350 INCHES
				SCALE 0.0033 SCALE

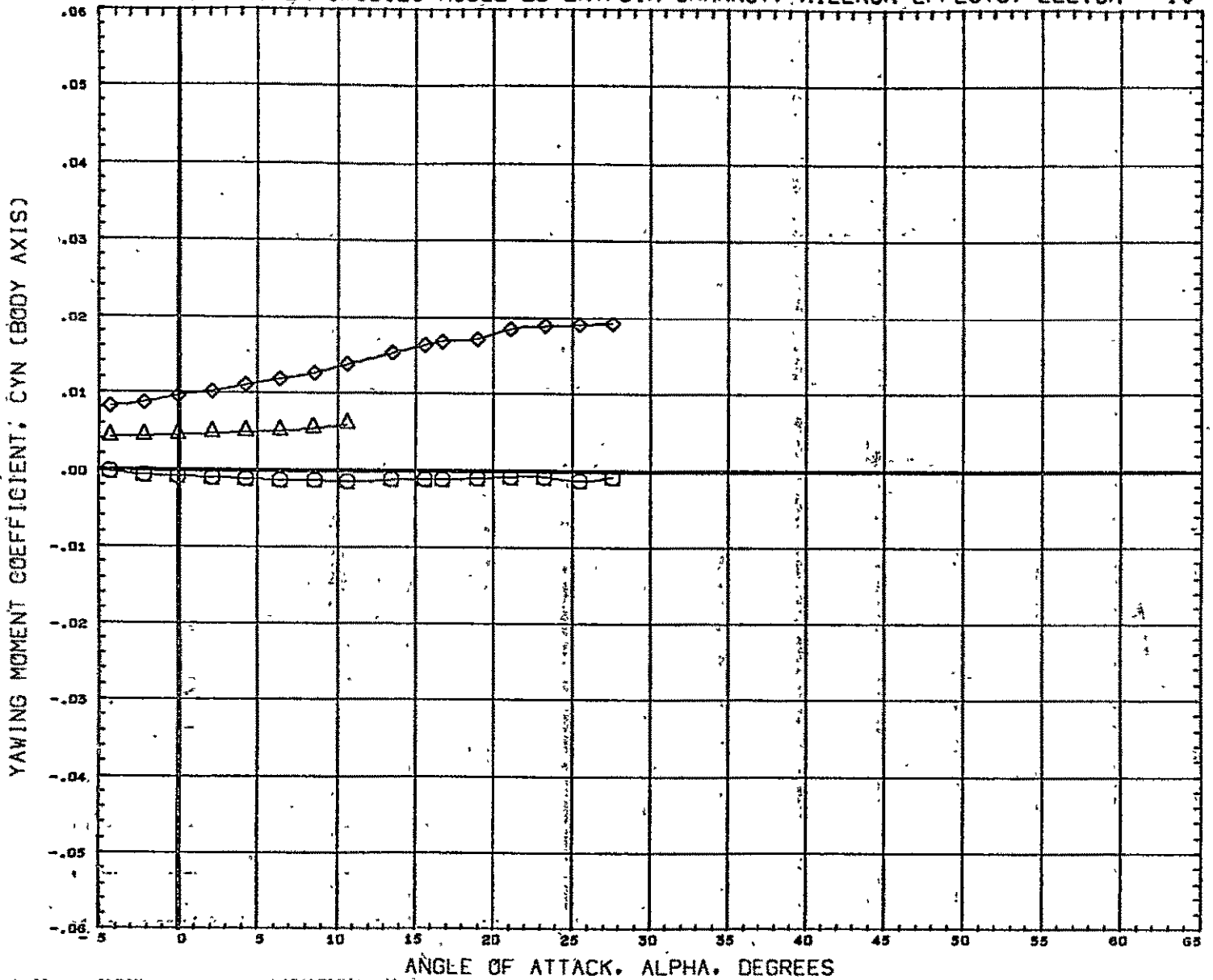
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON =+10



SYMBOL	AILRON	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION			
○	0.000	MACH	0.901	BETA	0.000	DATASET	AILRON	DATASET	AILRON	SREF	9.0250	SQ. IN
△	-10.000	ELEVN4	10.000	RUDER4	0.000	A41T02	0.000	A41S08	-10.000	LREF	6.1420	INCHES
◇	-20.000	STING	4.000			A41S09	-20.000			BREF	6.1420	INCHES
										XHRP	3.9950	INCHES
										YHRP	0.0000	INCHES
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										SCALE	0.0033	SCALE

DATA HIST. CODE M#6

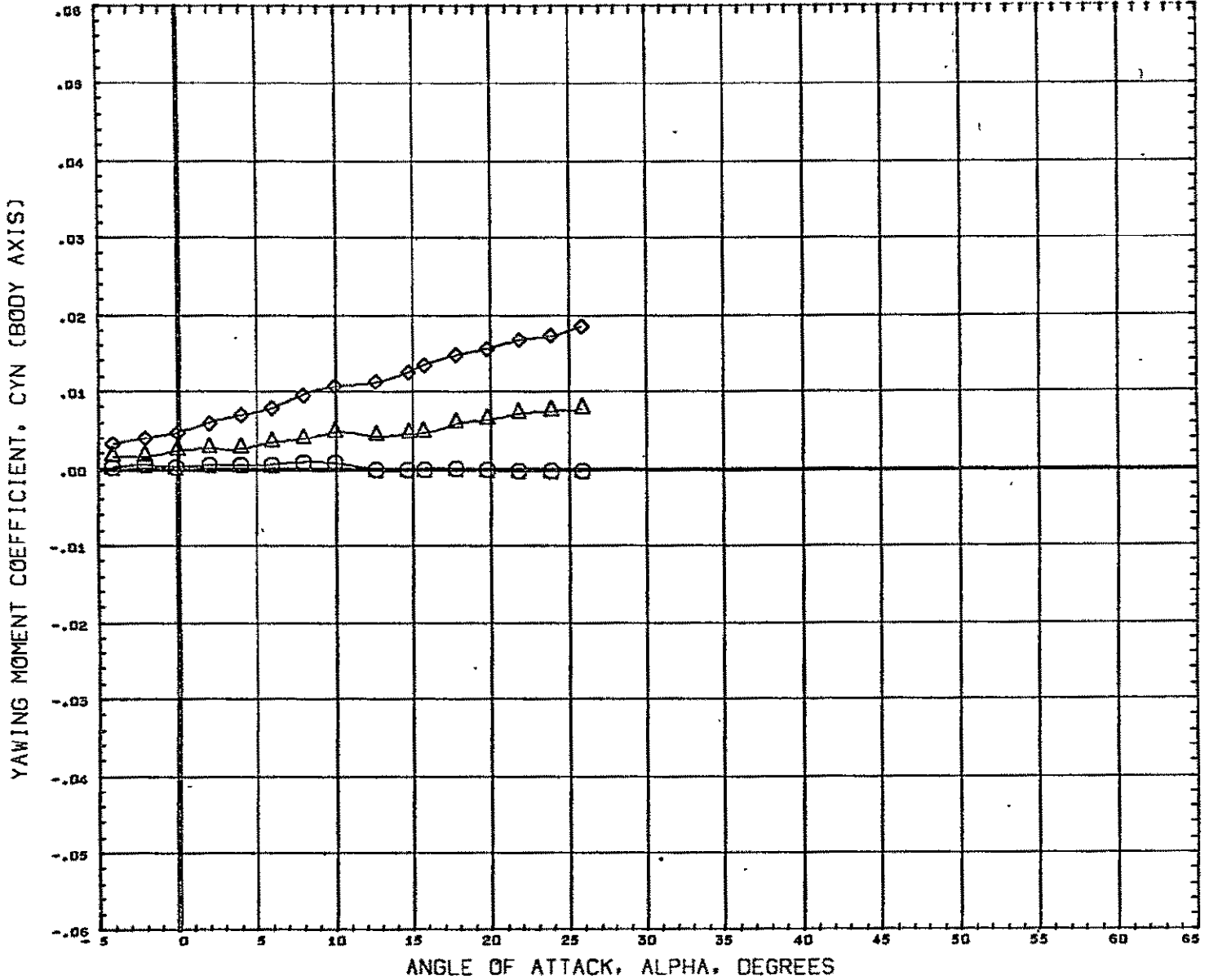
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT. AILERON EFFECTS, ELEVON =+10



SYMBOL	AILRON	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
◇	0.000	MACH 1.960 BETA 0.000	DATASET AILRON DATASET AILRON	SREF 9.0250 SQ.IN
△	-10.000	ELEVN4 10.000 RUDER4 0.000	A41T02 0.000 A41S08 - 10.000	LREF 6.1420 INCHES
□	-20.000	STING 4.000	A41S09 - 20.000	BREF 6.1420 INCHES
				XMRP 3.9950 INCHES
				YMRP 0.0000 INCHES
				ZMRP 0.1350 INCHES
				SCALE 0.0053 SCALE



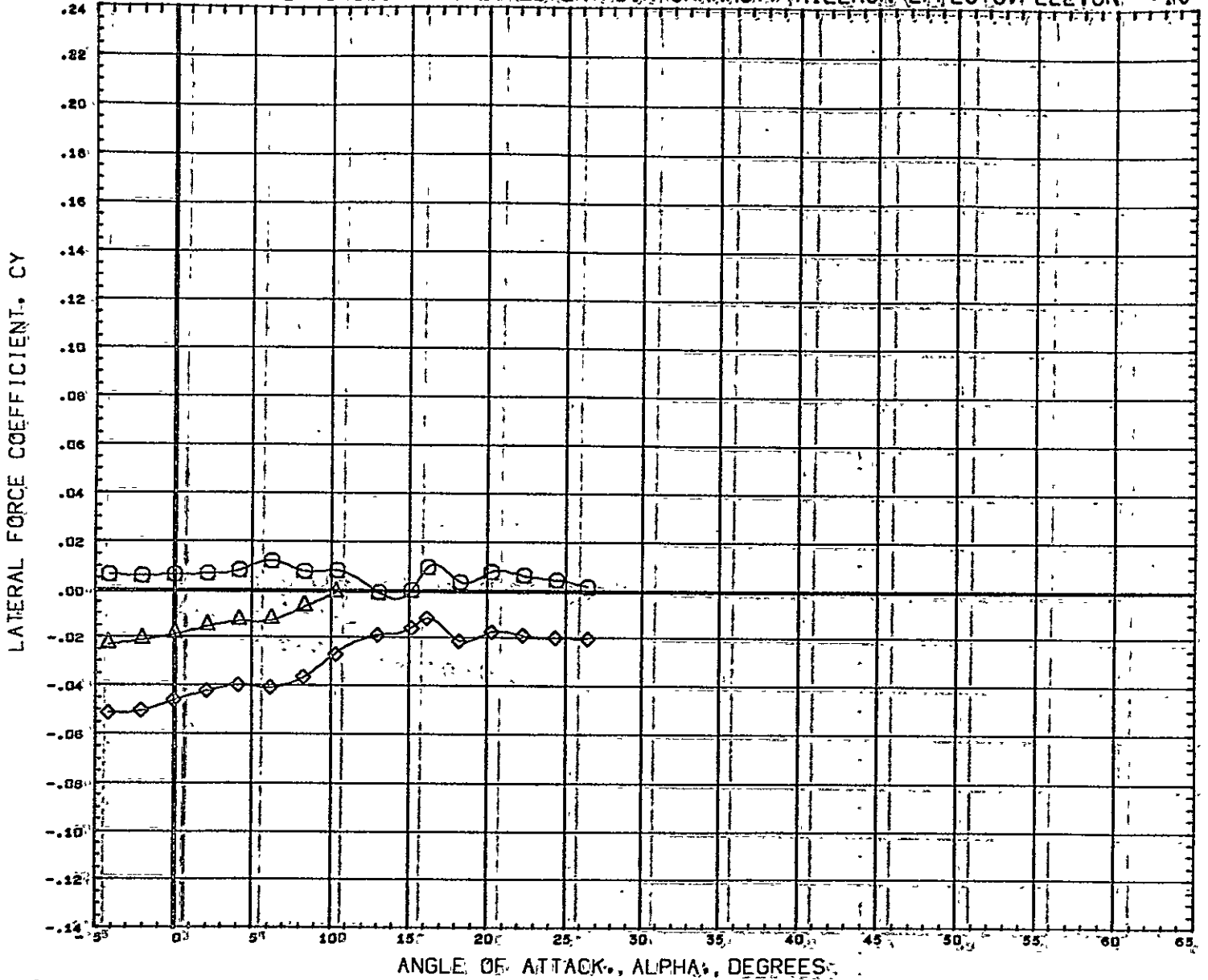
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON =+10



SYMBOL	AILRON	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
○	0.000	MACH 4.960 BETA 0.000	DATA SOURCE AILRON DATASET AILRON DATASET AILRON	SREF 9.0250 SQ. IN
△	-10.000	ELEVN4 10.000 RUDER4 0.000	A41T02 0.000 A41S08 -10.000	LREF 6.1420 INCHES
◇	-20.000	STING 4.000	A41S09 -20.000	BREF 6.1420 INCHES
				XMRP 3.9950 INCHES
				YMRP 0.0000 INCHES
				ZMRP 0.1350 INCHES
				SCALE 0.0033 SCALE

DATA HIST. CODE N#0

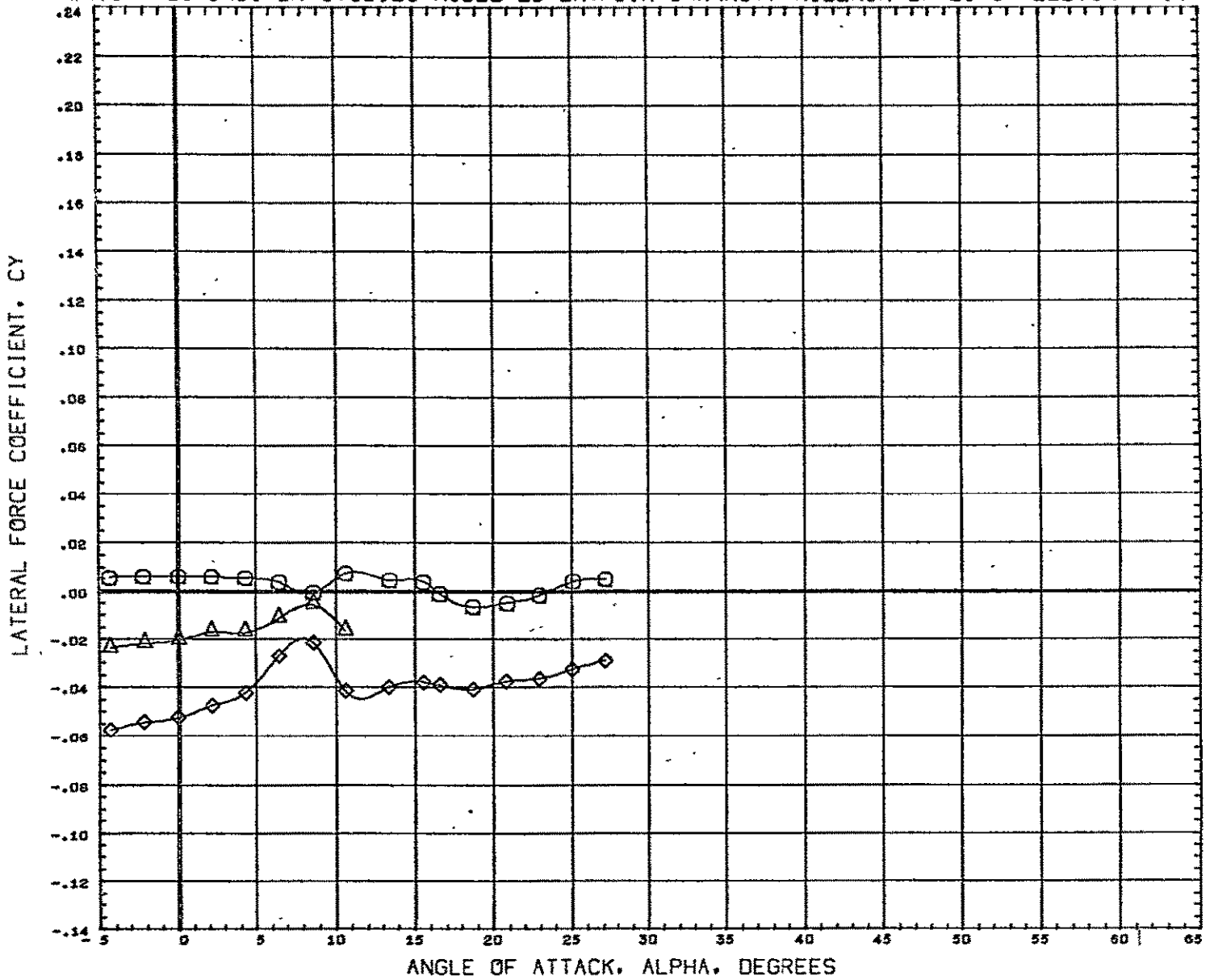
LMSC/HREC ORBITER STUDIES MODEL 12B-LAT/DIR CHARACT., AILERON EFFECTS, ELEVON = +1.0



SYMBOL	AILRON	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
○	0.000	MACH 0.596	DATA SET AILRON	SREF 9.0250 SQ. IN
△	-10.000	ELEVN 10.000	DATA SET AILRON	LREF 6.1420 INCHES
◇	-20.000	STING 4.000	DATA SET AILRON	BREF 6.1420 INCHES
			A41T02 0.000	XHRP 3.9950 INCHES
			A41S09 -20.000	YHRP 0.0000 INCHES
				ZHRP 0.1350 INCHES
				SCALE 0.0033 SCALE

DATA HIST. CODE- H9G.

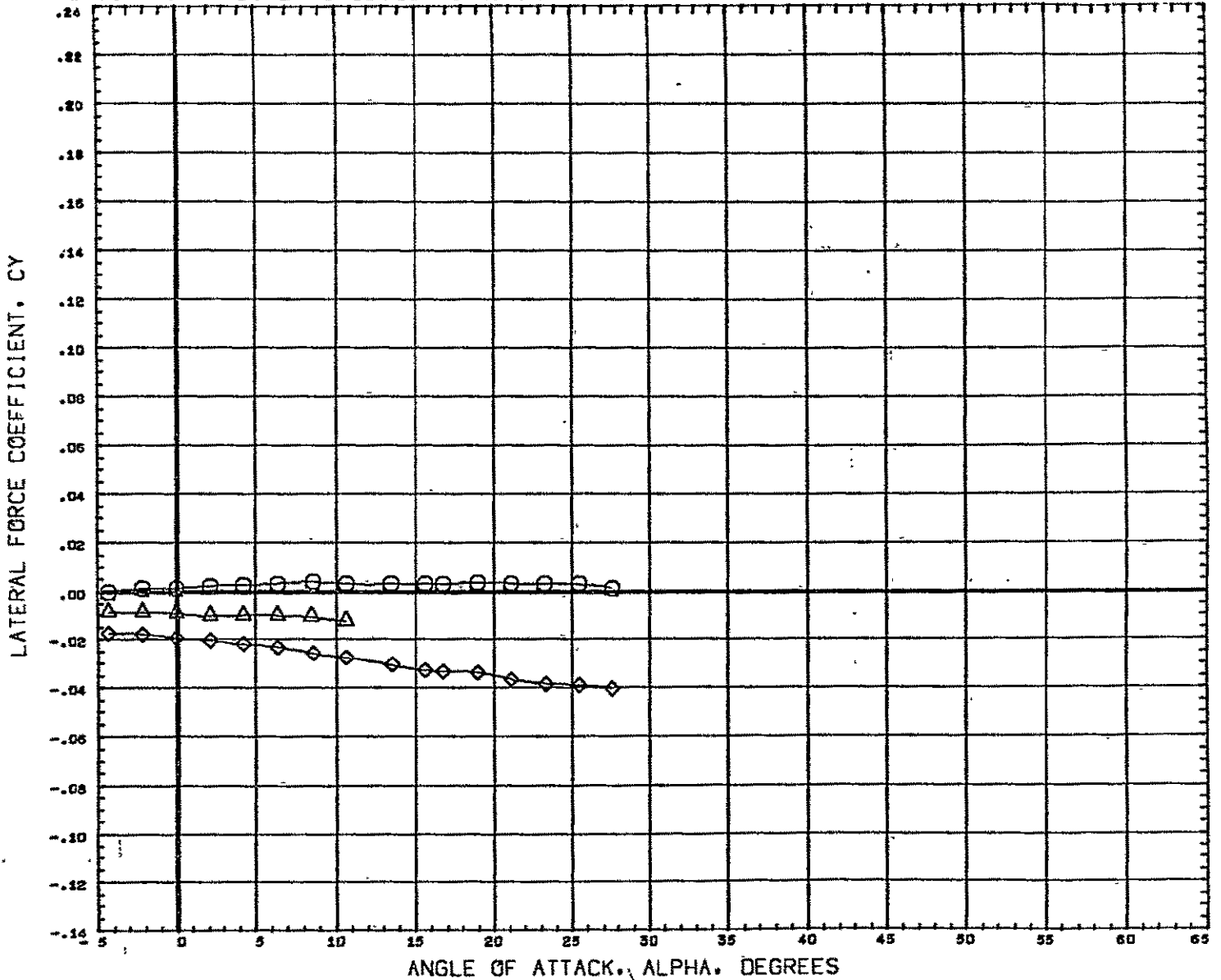
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON =+10



SYMBOL	AILRON	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION			
○	0.000	MACH	0.901	BETA	0.000	DATASET	AILRON	DATASET	AILRON	SREF	9.0250	90.IN
△	- 10.000	ELEVN4	10.000	RUDER4	0.000	A41T02	0.000	A41S08	- 10.000	LREF	6.1420	INCHES
◇	- 20.000	STING	4.000			A41S09	- 20.000			BREF	6.1420	INCHES
										XMRP	3.9950	INCHES
										YMRP	0.0000	INCHES
										ZMRP	0.1350	INCHES
										SCALE	0.0033	SCALE

DATA HIST. CODE H#G

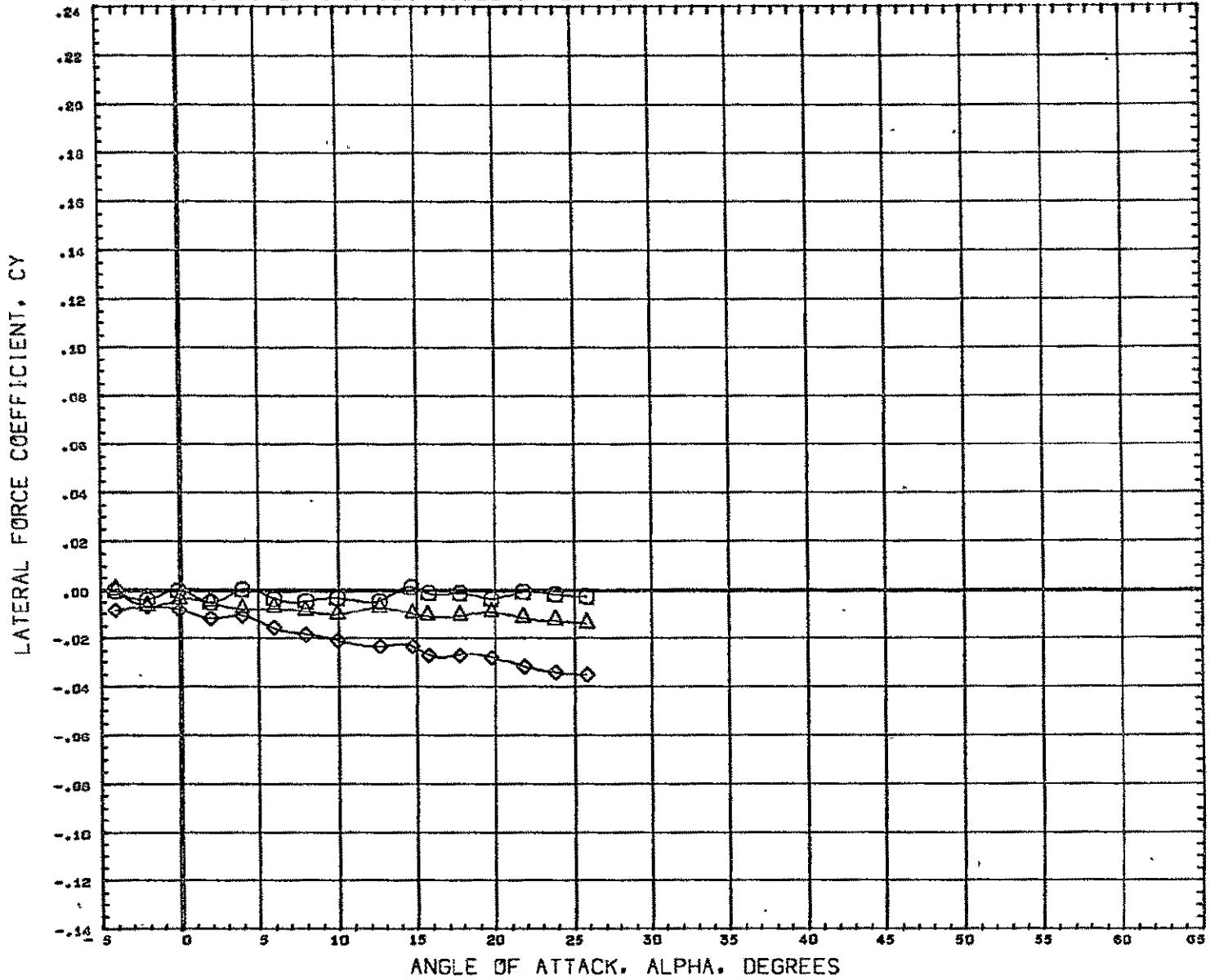
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON =+10



SYMBOL	AILRON	PARAMETRIC VALUES				DATA SOURCE				REFERENCE INFORMATION		
		MACH	BETA	RUDER4	DATASET	AILRON	DATASET	AILRON	SREF	SCALE		
○	0.000	1.960	0.000	0.000	A41T02	0.000	A41S08	10.000	9.0250	50. IN		
△	-10.000	10.000	0.000	0.000	A41T02	0.000	A41S08	10.000	6.1420	INCHES		
◇	-20.000	4.000	0.000	0.000	A41S09	-20.000			6.1420	INCHES		
									3.9950	INCHES		
									0.0000	INCHES		
									0.1350	INCHES		
									0.0033	SCALE		

DATA HIST. CODE M96

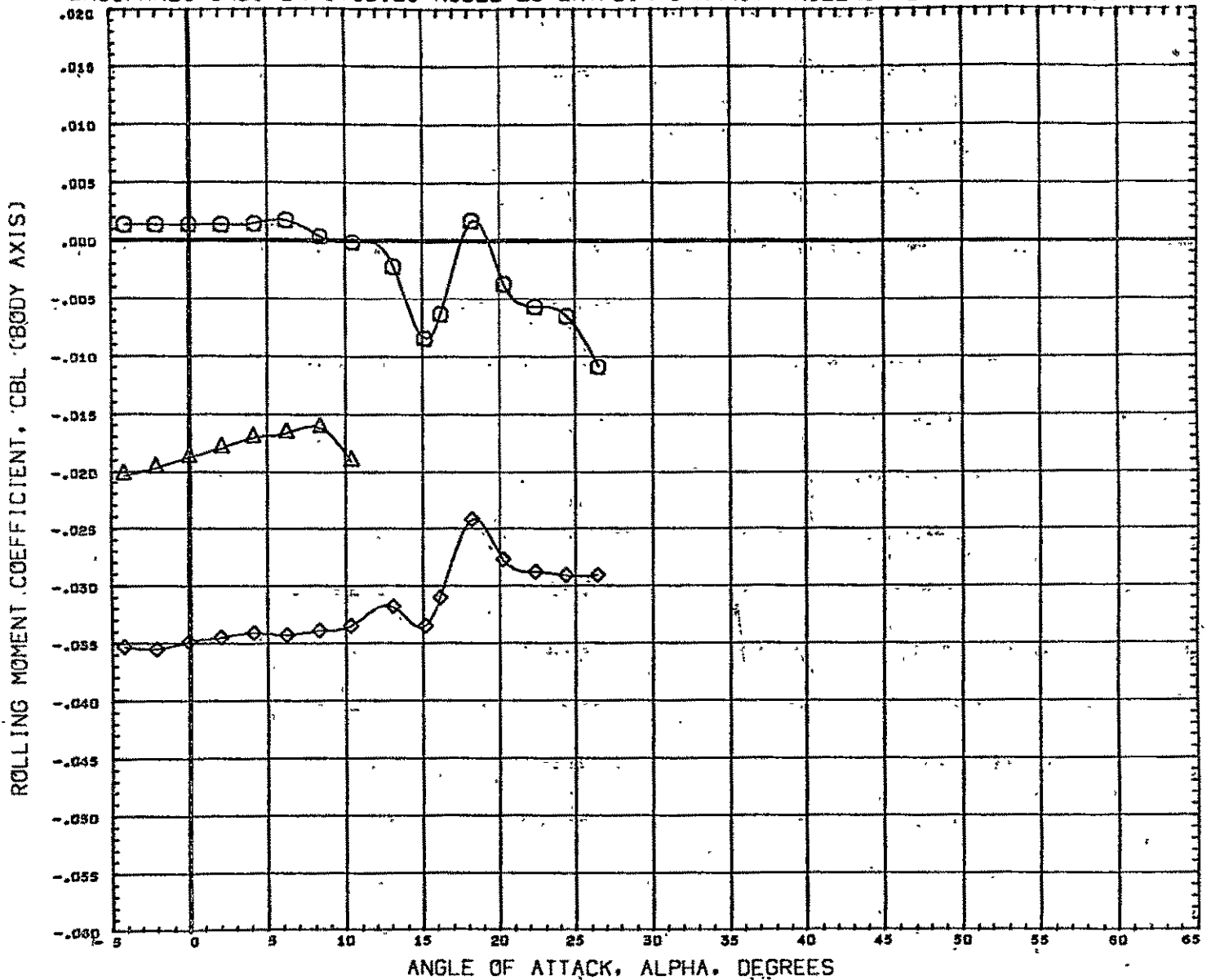
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR.CHARACT, AILERON EFFECTS, ELEVON =+10



SYMBOL	AILRON	MACH	PARAMETRIC VALUES		DATA SOURCE			REFERENCE INFORMATION				
○	0.000	4.960	BETA	0.000	DATASET	AILRON	DATASET	AILRON	SREF	9.0250	59.1 IN	
△	-10.000	ELEVN4	10.000	RUDER4	0.000	A41T02	0.000	A41S08	-10.000	6.1420	INCHES	
◇	-20.000	STING	4.000			A41S09	-20.000			6.1420	INCHES	
										3.9950	INCHES	
										0.0000	INCHES	
										ZMRP -	0.1350	INCHES
										SCALE	0.0033	SCALE

DATA HIST. CODE N#6

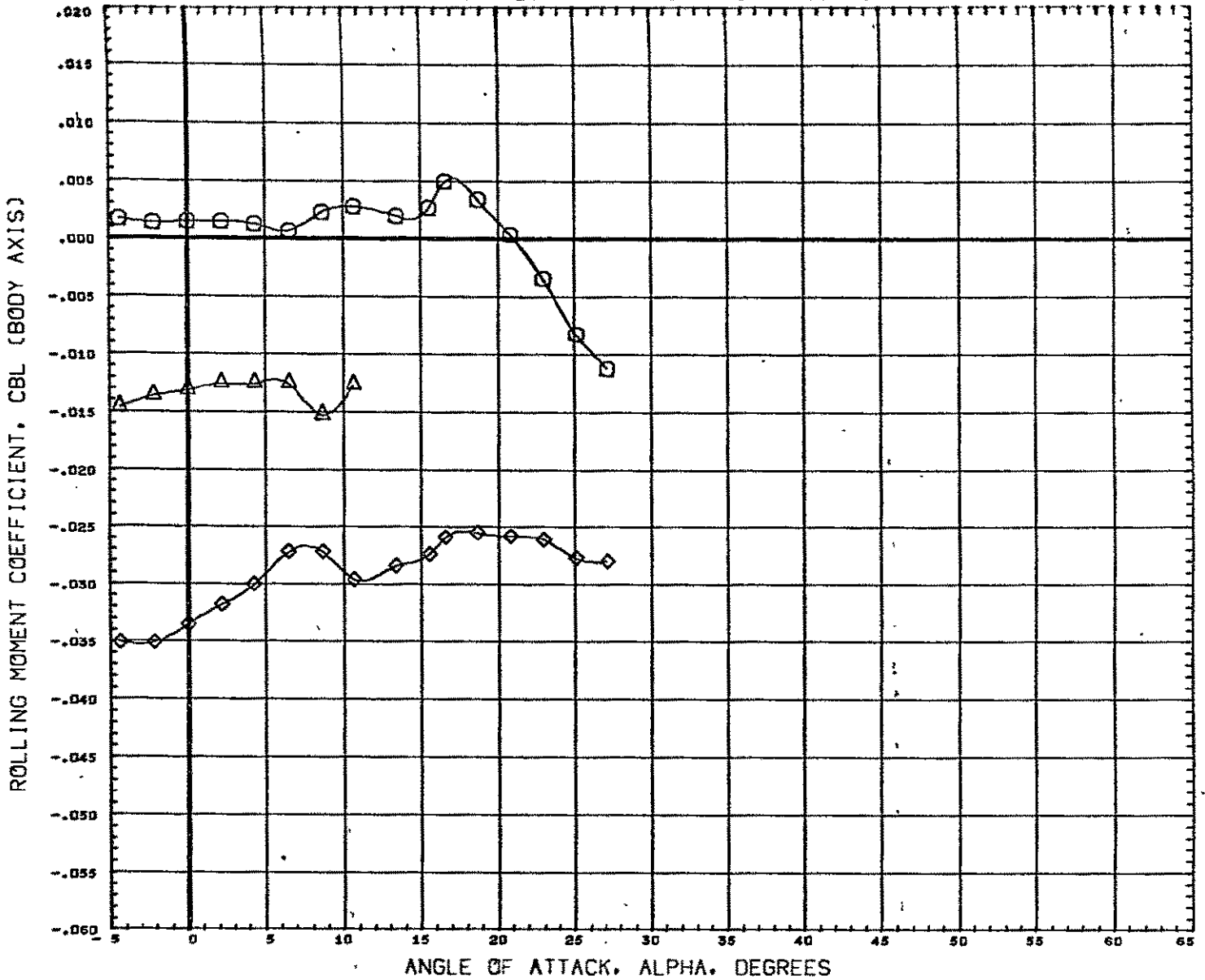
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, AILERON EFFECTS. ELEVON =+10



SYMBOL	AILRON	MACH	PARAMETRIC VALUES		BETA	DATA SOURCE			REFERENCE INFORMATION			
○	0.000	0.596	10.000	4.000	0.000	DATASET	AILRON	DATASET	AILRON	SREF	9.0250	90. IN
△	-10.000	ELEVN4	10.000	4.000	0.000	A41T02	0.000	A41S08	-10.000	LREF	6.1420	INCHES
◇	-20.000	STING	10.000	4.000	0.000	A41S09	-20.000			BREF	6.1420	INCHES
										XHRP	3.9950	INCHES
										YHRP	0.0000	INCHES
										ZHRP	0.1350	INCHES
										SCALE	0.0035	SCALE

DATA HIST. CODE M00

LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON =+10

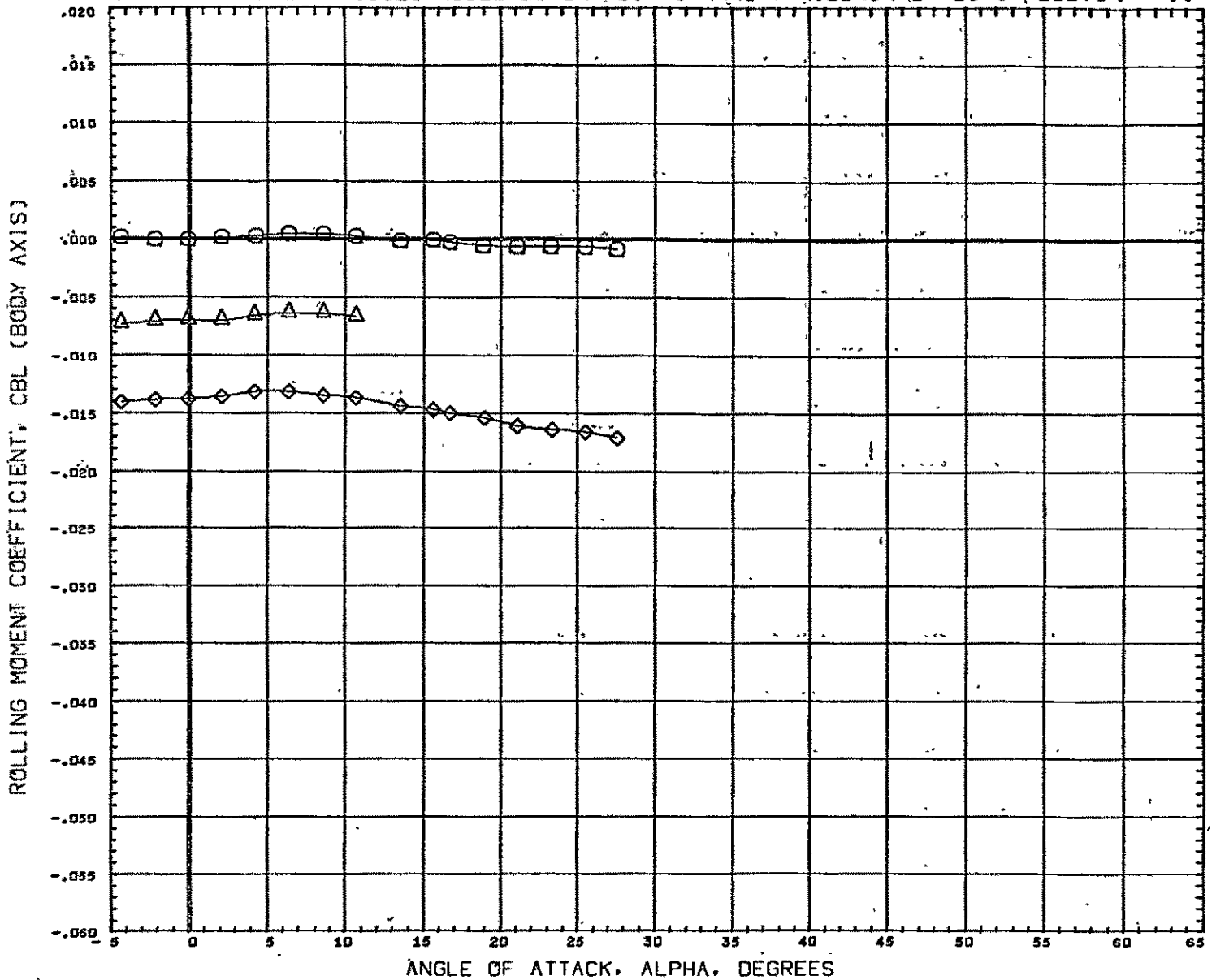


SYMBOL	AILRON	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
○	0.000	MACH 0.901 BETA 0.000	AILRON DATASET A41T02	SREF 9.0250 SQ. IN
△	-10.000	ELEVN4 10.000 RUDER4 0.000	AILRON DATASET A41S08	LREF 6.1420 INCHES
◇	-20.000	STING 4.000	AILRON DATASET A41S09	BREF 6.1420 INCHES
				XMRP 3.9950 INCHES
				YMRP 0.0000 INCHES
				ZMRP 0.1350 INCHES
				SCALE 0.0033 SCALE

DATA HIST. CODE M#G

C.11

MSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON =+10

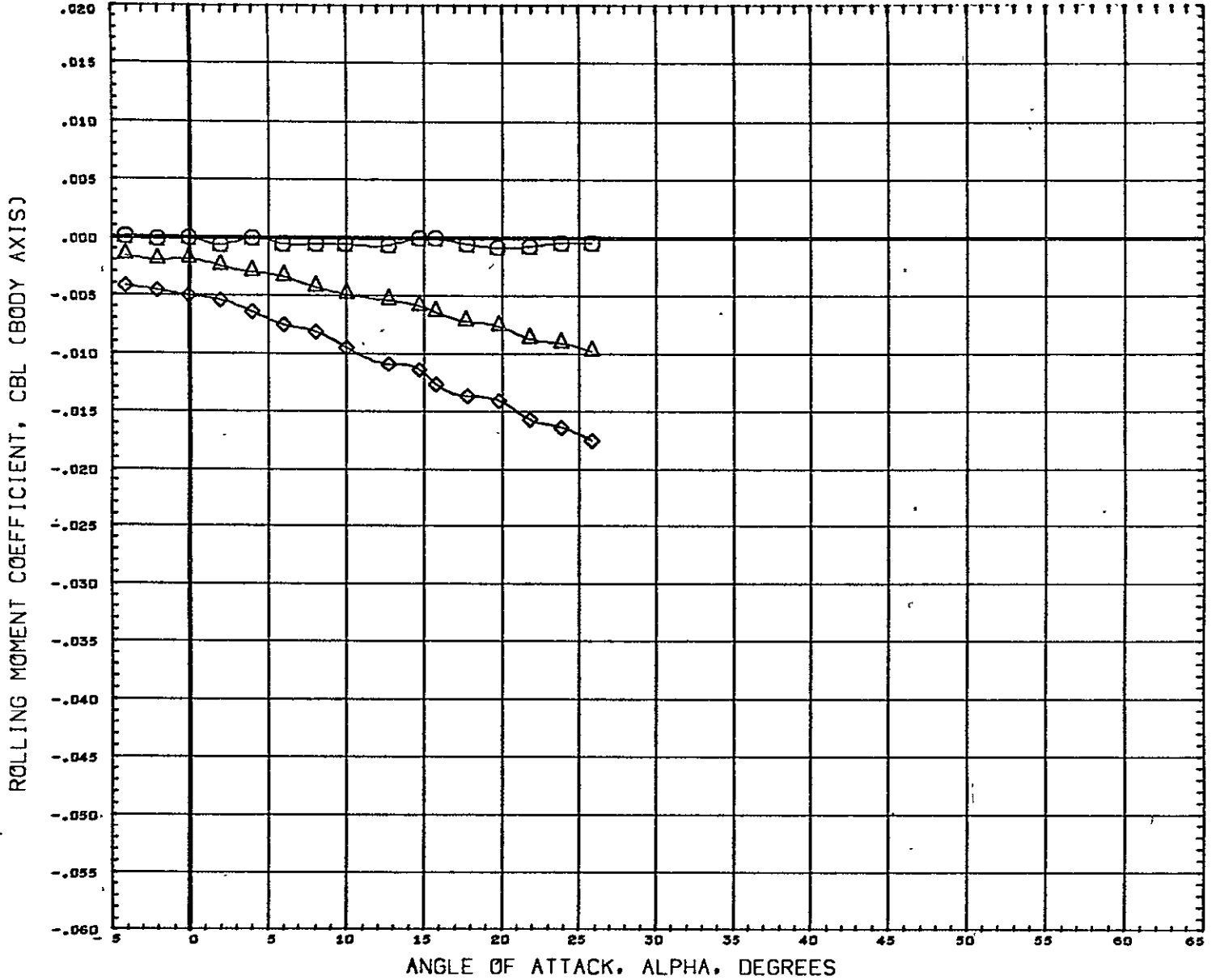


SYMBOL	AILRON	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
○	0.000	MACH 1.960	BETA 0.000	SRF 9.0250 SQ. IN
△	-10.000	ELEVN4 10.000	RUDER4 0.000	LREF 6.1420 INCHES
◇	-20.000	STING 4.000		BREF 6.1420 INCHES
				XMRP 3.9950 INCHES
				YMRP 0.0000 INCHES
				ZMRP 0.1350 INCHES
				SCALE 0.0033 SCALE

DATA HIST. CODE M#6



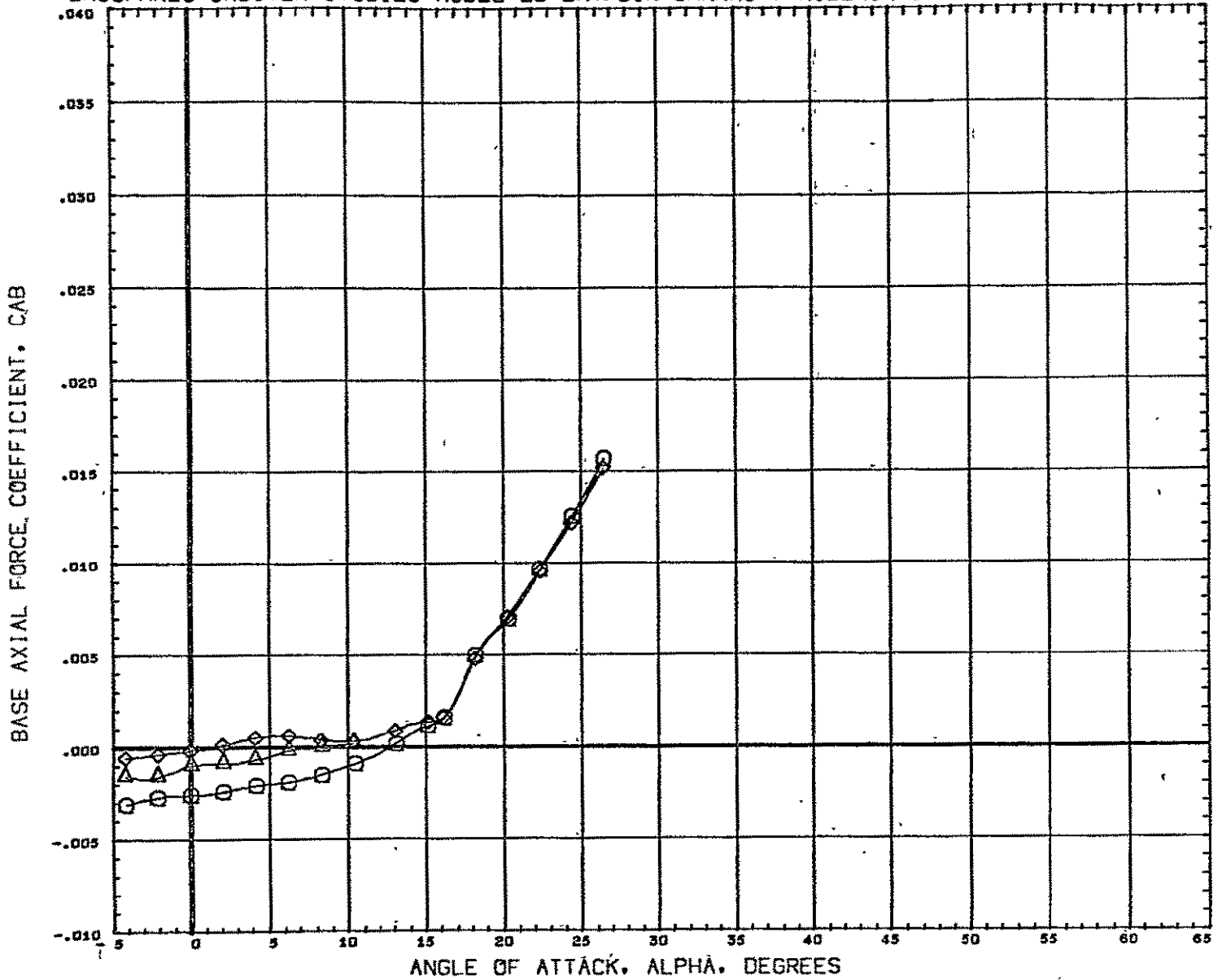
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON =+10



SYMBOL	AILRON	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION			
○	0.000	MACH	4.960	BETA	0.000	DATASET	AILRON	DATASET	AILRON	SREF	9.0250	90. IN
△	- 10.000	ELEVN4	10.000	RUDER4	0.000	A41T02	0.000	A41S08	- 10.000	LREF	6.1420	INCHES
◇	- 20.000	STING	4.000			A41S09	- 20.000			BREF	6.1420	INCHES
										XMRP	3.9950	INCHES
										YMRP	0.0000	INCHES
										ZMRP	0.1350	INCHES
										SCALE	0.0033	SCALE

DATA HIST. CODE M#G

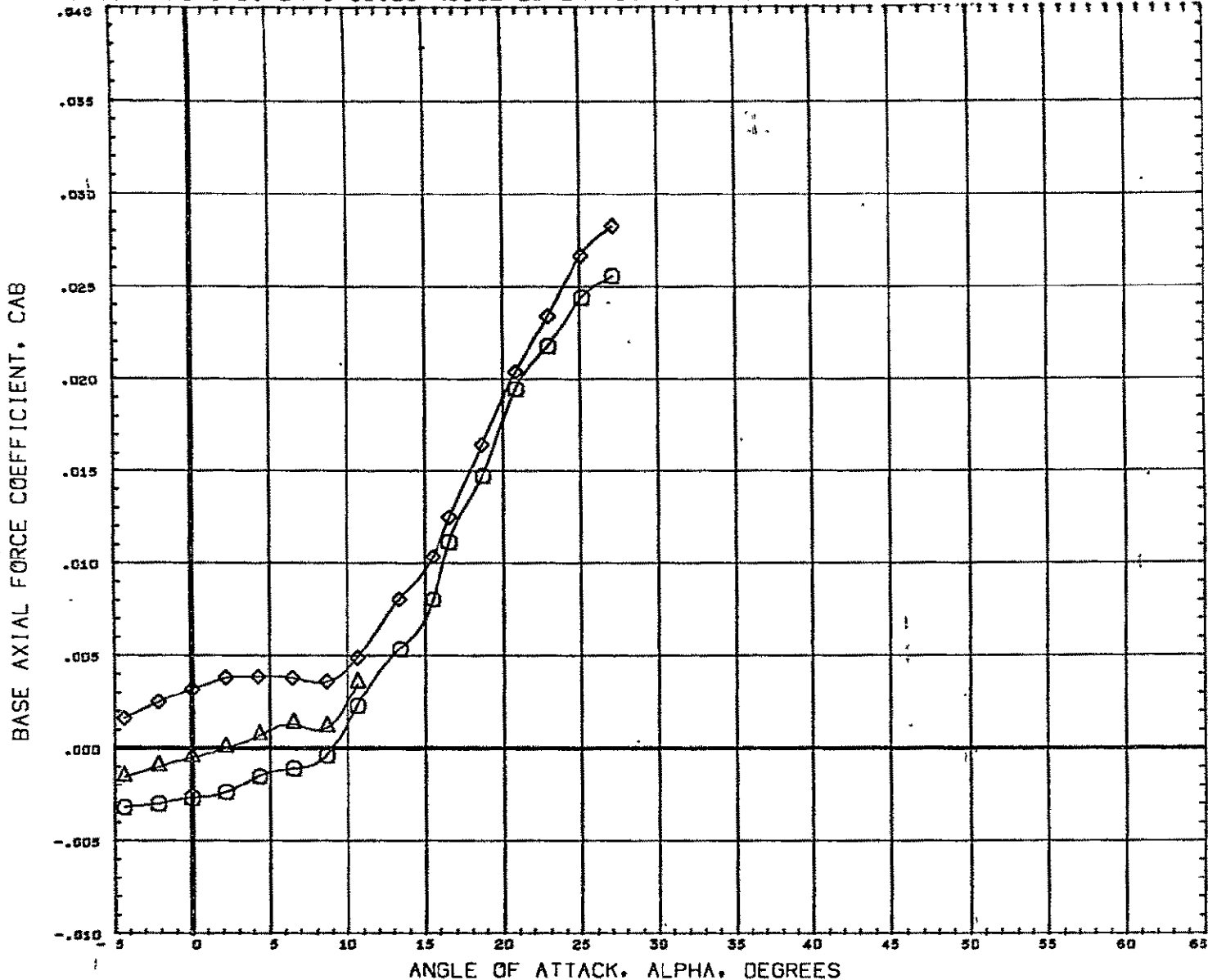
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT. AILERON EFFECTS. ELEVON =+10.



SYMBOL	AILRON	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION		
		MACH	BETA	RUDER4	DATASET	AILRON	DATASET	AILRON	SREF	INCHES	SCALE
○	0.000	0.596	0.000	0.000	A41T02	0.000	A41S08	-10.000	9.0250	6.1420	6.1420
△	-10.000	10.000	0.000	0.000	A41S09	-20.000			3.9950	0.0000	0.1350
◇	-20.000	4.000							0.0035		

DATA HIST. CODE H#C

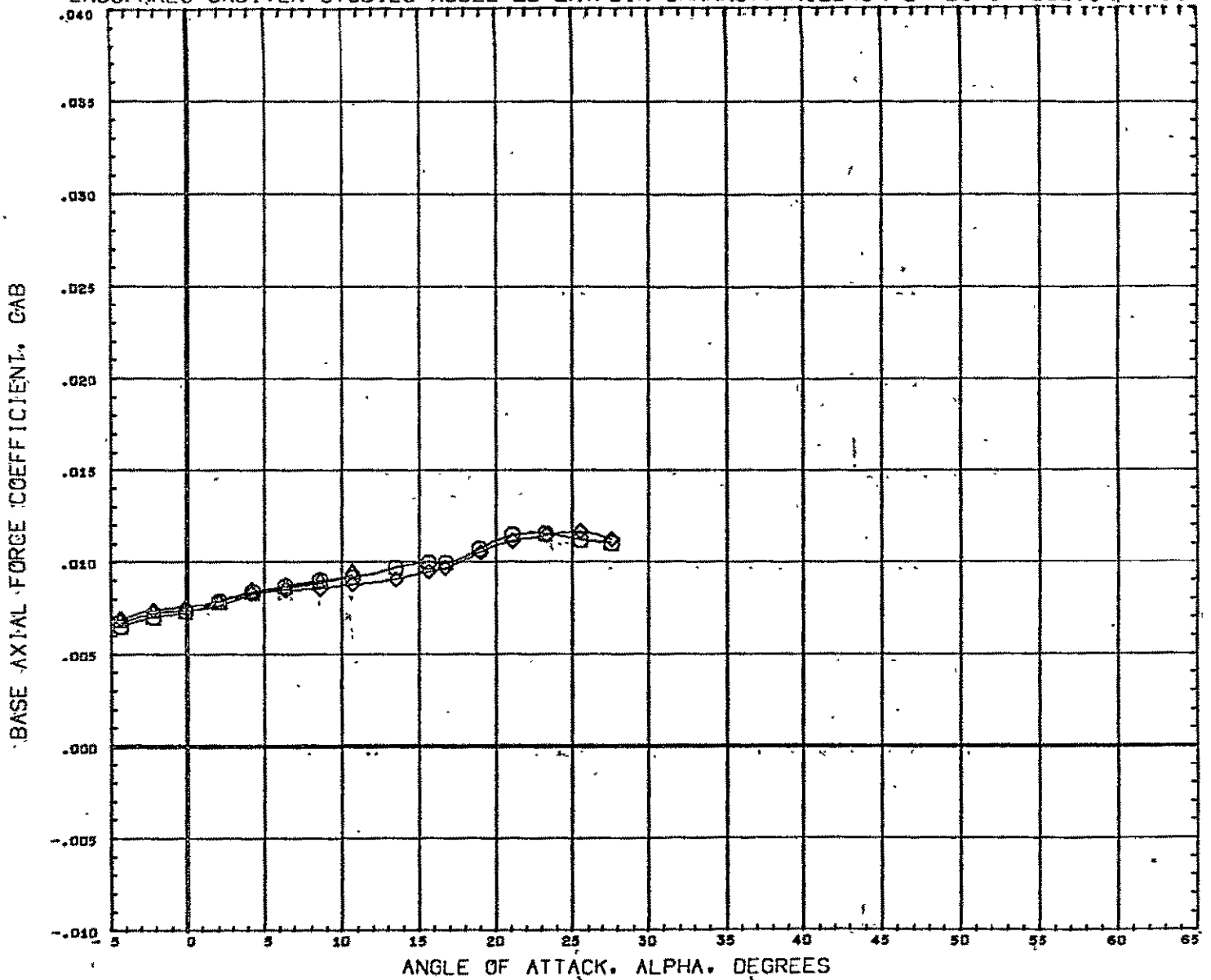
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT. AILERON EFFECTS, ELEVON =+10



SYMBOL	AILRON	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION			
○	0.000	MACH	0.901	BETA	0.000	DATASET	AILRON	DATASET	AILRON	SREF	9.0250	59.2 IN
△	-10.000	ELEVN4	10.000	RUDER4	0.000	A41T02	0.000	A41S08	-10.000	LREF	6.1420	INCHES
◇	-20.000	STING	4.000			A41S09	-20.000			BREF	6.1420	INCHES
										XMRP	3.9950	INCHES
										YMRP	0.0000	INCHES
										ZMRP	0.1350	INCHES
										SCALE	0.0033	SCALE

DATA HIST. CODE N#G

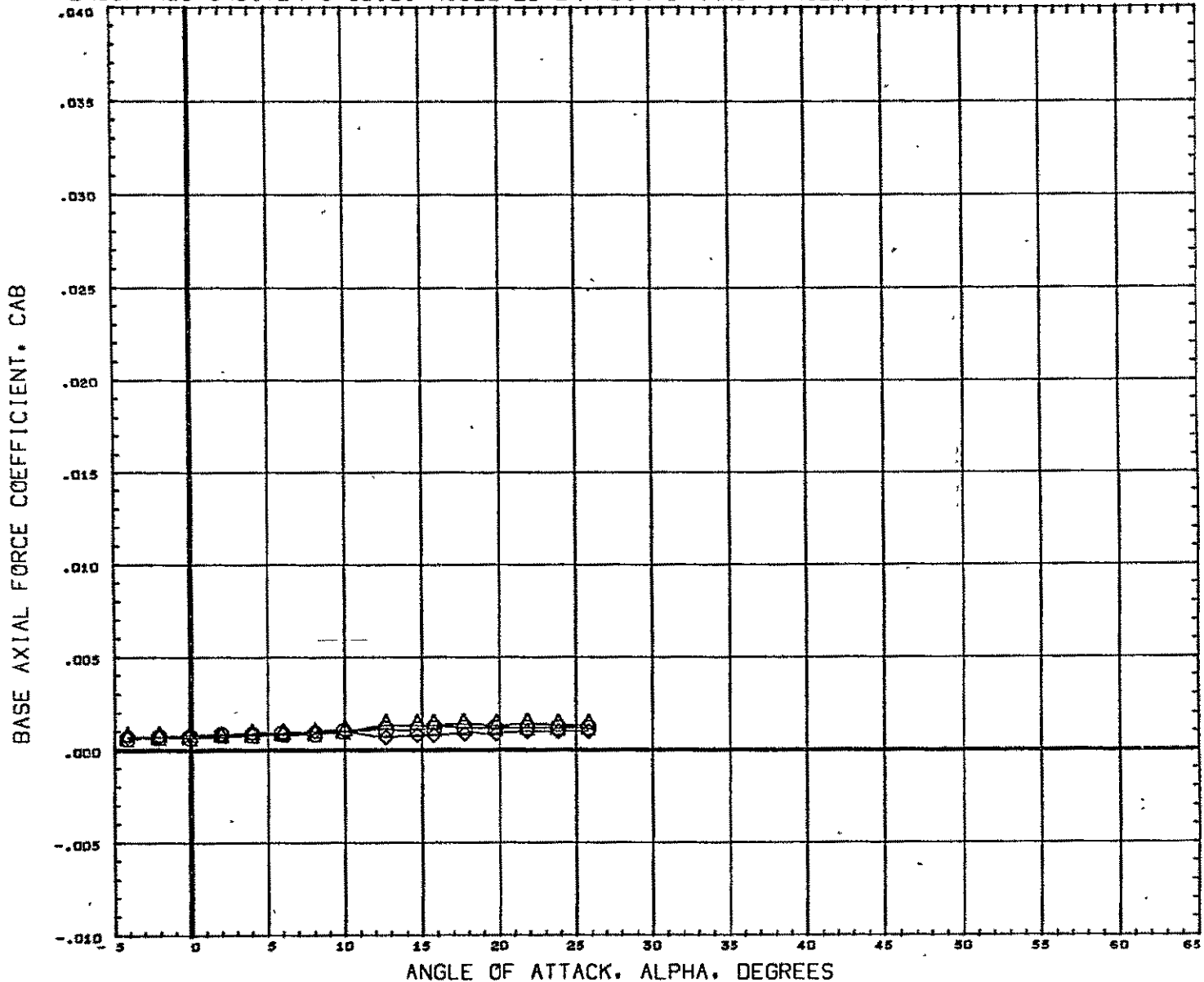
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON =+10



SYMBOL	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION		
	AILRON	MACH	BETA	0.000	DATASET	AILRON	DATASET	AILRON	SREF	INCHES
○	0.000	1.960	0.000	0.000	A41T02	0.000	A41S08	- 10.000	9.0250	6.1420
△	- 10.000	10.000	0.000	0.000	A41S09	- 20.000			6.1420	3.9950
◇	- 20.000	4.000							0.0000	0.1350
									SCALE	0.0033

DATA HIST. CODE N#G

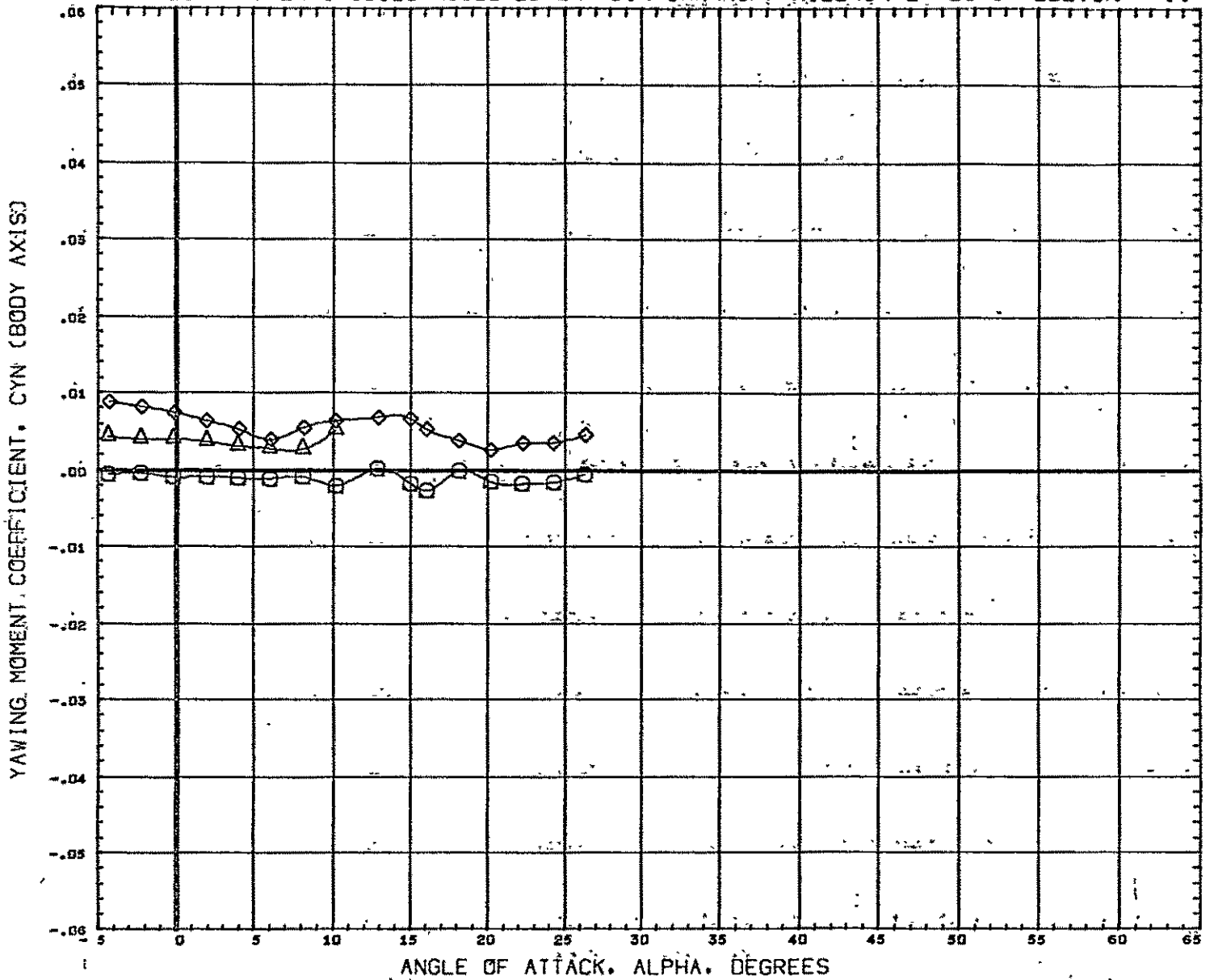
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON ±10



SYMBOL	AILRON	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
○	0.000	MACH 4.960 BETA 0.000	DATA SET AILRON 0.000	SREF 9.0250 SQ. IN
△	- 10.000	ELEVN4 10.000 RUDER4 0.000	A41T02 0.000	LREF 6.1420 INCHES
◇	- 20.000	STING 4.000	A41S08 - 20.000	BREF 6.1420 INCHES
				XMRP 3.9950 INCHES
				YMRP 0.0000 INCHES
				ZMRP 0.1350 INCHES
				SCALE 0.0033 SCALE

DATA HIST. CODE H#C

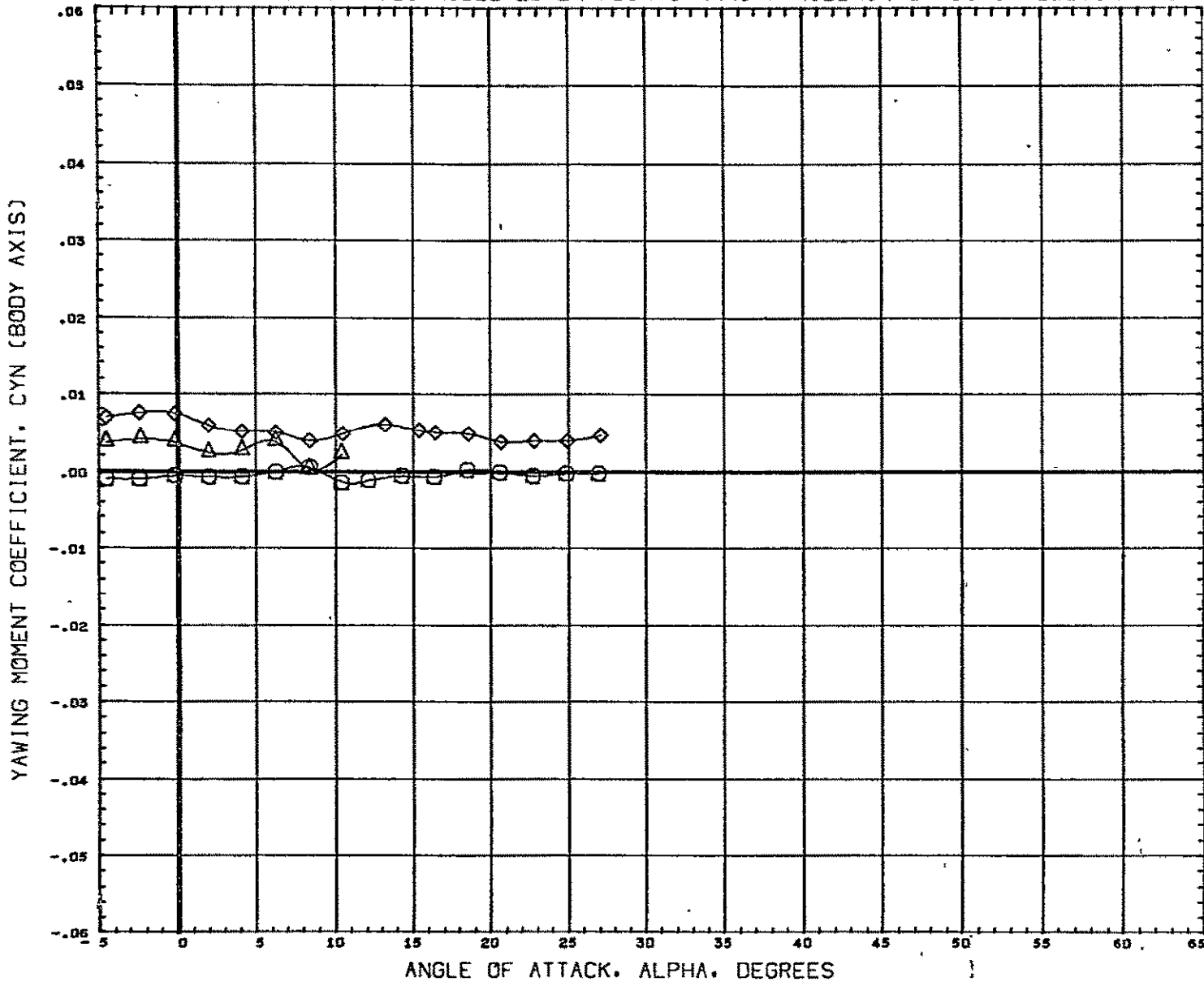
MSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON =-10



SYMBOL	AILRON	MACH	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION		
○	0.000	0.996	BETA	0.000	DATASET	AILRON	DATASET	AILRON	SREF	9.0250	90 IN	
△	-10.000	ELEVN4	-10.000	RUDER4	0.000	A41T03	0.000	A41S10	-10.000	LREF	6.1420	INCHES
◇	-20.000	STING	4.000			A41S11	-20.000			BREF	6.1420	INCHES
										YMRP	3.9950	INCHES
										YHRP	0.0000	INCHES
										ZHRP	0.1350	INCHES
										SCALE	0.0033	SCALE

DATA HIST. CODE H9G

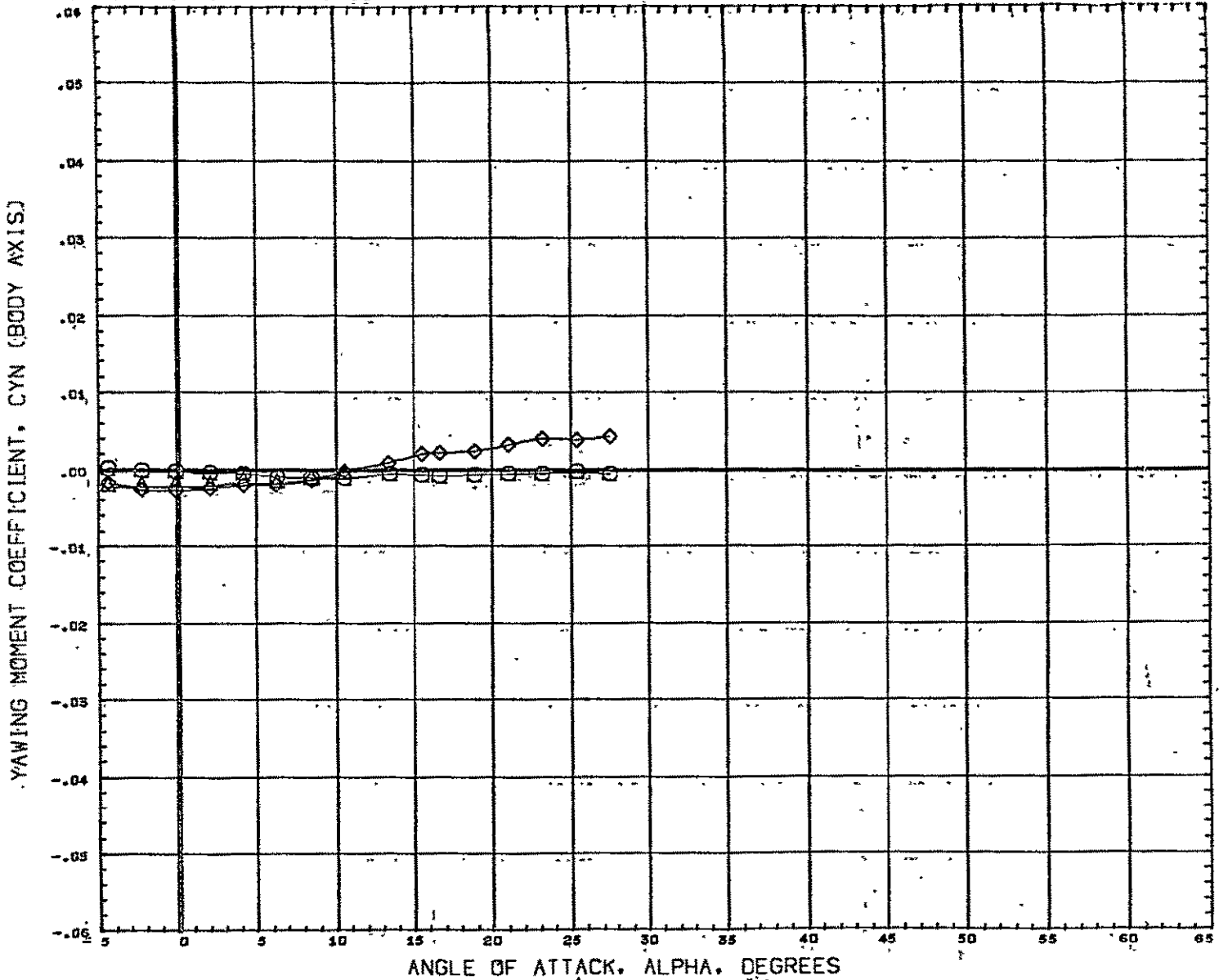
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON =-10



SYMBOL	AILRON	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION			
○	0.000	MACH	0.901	BETA	0.000	DATASET	AILRON	DATASET	AILRON	SREF	9.0250	89. IN
△	-10.000	ELEVN4	-10.000	RUDER4	0.000	A41T03	0.000	A41S10	-10.000	LREF	6.1420	INCHES
◇	-20.000	STING	4.000			A41S11	-20.000			BREF	6.1420	INCHES
										XHRP	3.9950	INCHES
										YHRP	0.0000	INCHES
										ZHRP	0.1350	INCHES
										SCALE	0.0033	SCALE

DATA HIST. CODE    N#G

LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT. AILERON EFFECTS, ELEVON = -10

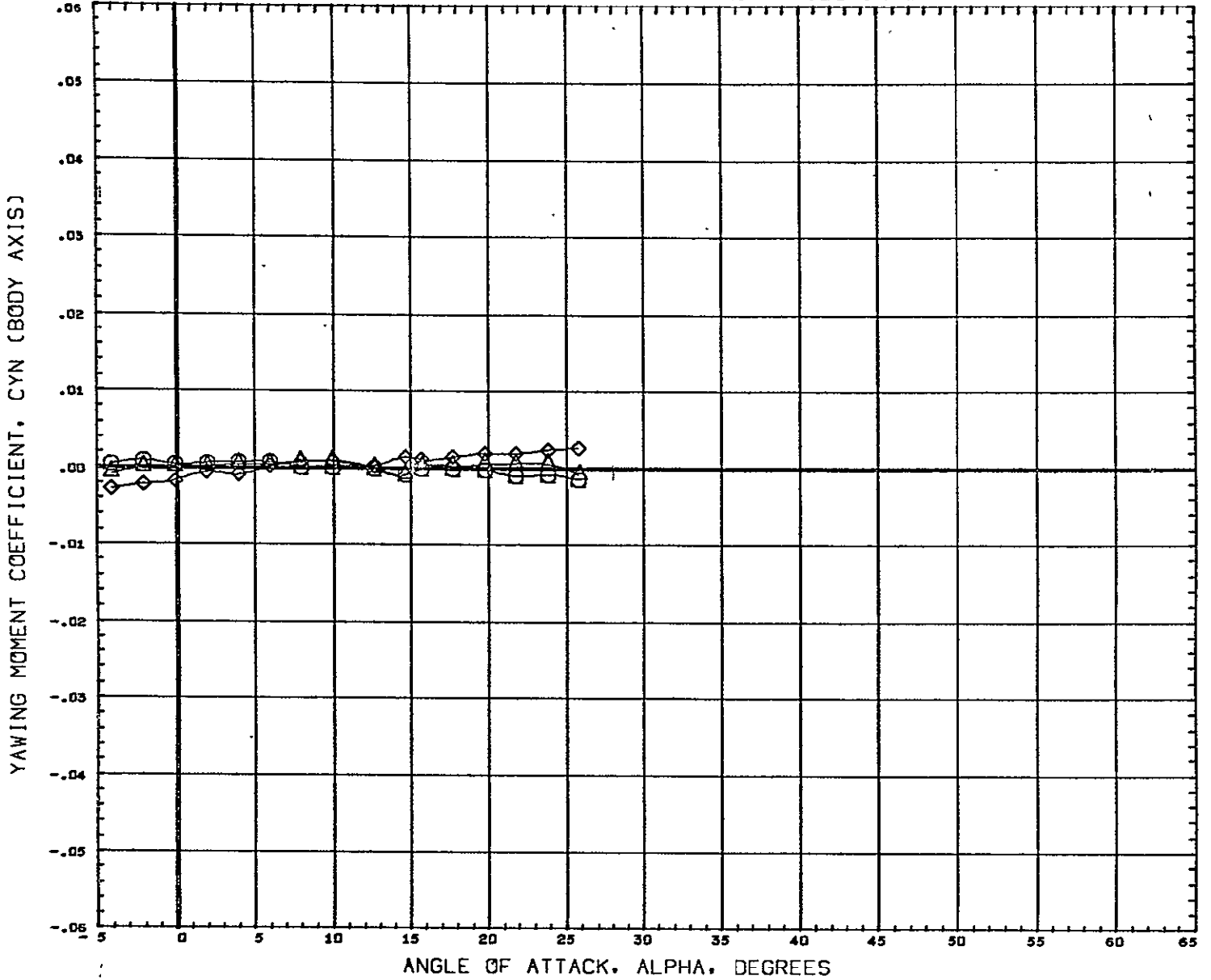


SYMBOL	AILRON	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION			
○	0.000	MACH	3.960	BETA	0.000	DATASET	AILRON	DATASET	AILRON	3REF	9.0250	39. IN
△	-10.000	ELEVN4	-10.000	RUDER4	0.000	A41T03	0.000	A41S10	-10.000	LREF	6.1420	INCHES
◇	-20.000	STING	4.000			A41S11	-20.000			BREF	6.1420	INCHES
										XNRP	3.9950	INCHES
										YNRP	0.0000	INCHES
										ZNRP	0.1350	INCHES
										SCALE	0.0033	-SCALE

DATA HIST. CODE M9C



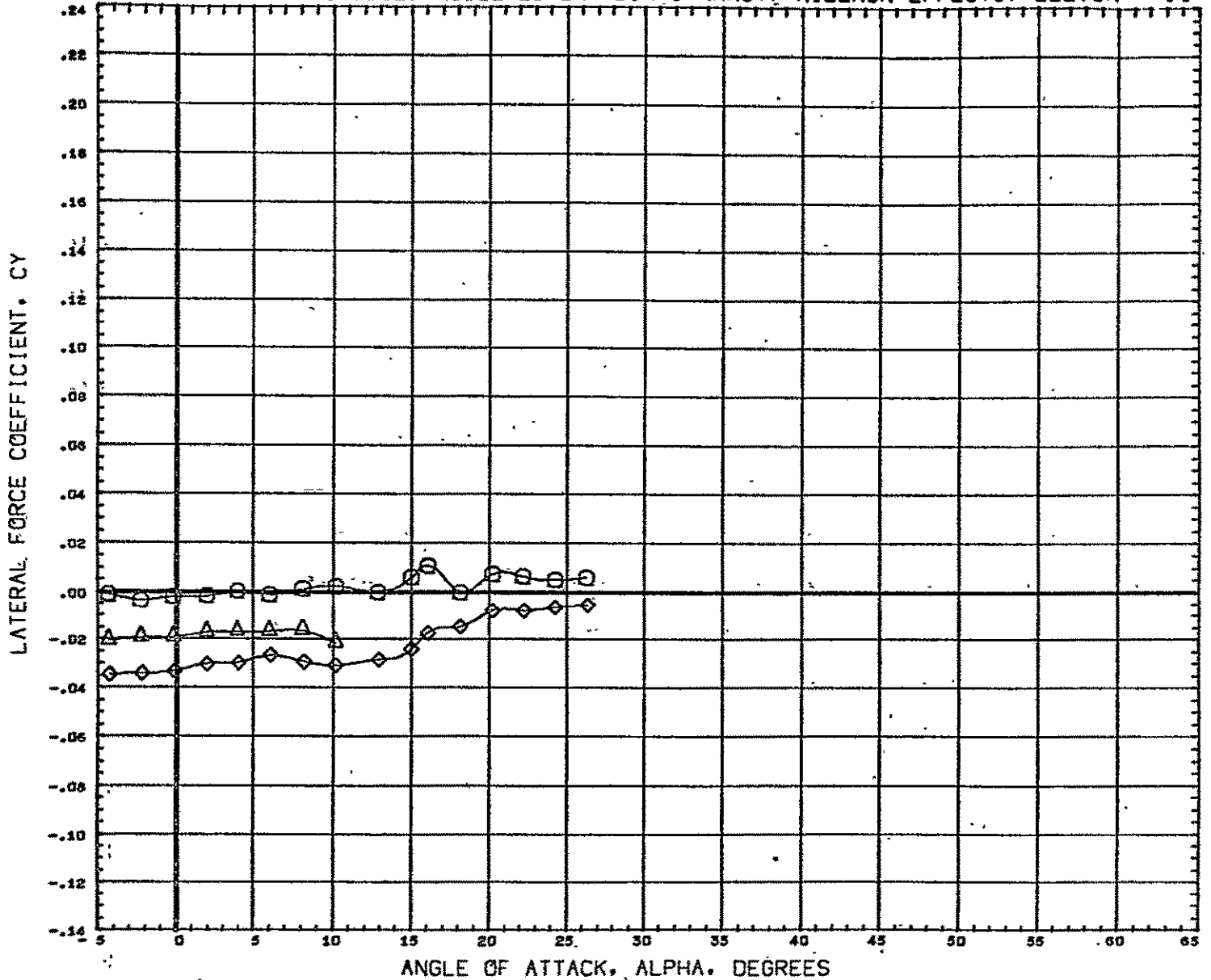
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON = -10



SYMBOL	AILRON	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION			
○	0.000	MACH	4.960	BETA	0.000	DATASET	AILRON	DATASET	AILRON	SREF	9.0250	SQ. IN
△	-10.000	ELEVN4	-10.000	RUDER4	0.000	A41T03	0.000	A41S10	-10.000	LREF	6.1420	INCHES
◇	-20.000	STING	4.000			A41S11	-20.000			BREF	6.1420	INCHES
										XMRP	3.9950	INCHES
										YMRP	0.0000	INCHES
										ZMRP	0.1350	INCHES
										SCALE	0.0033	SCALE

DATA HIST. CODE H\*G

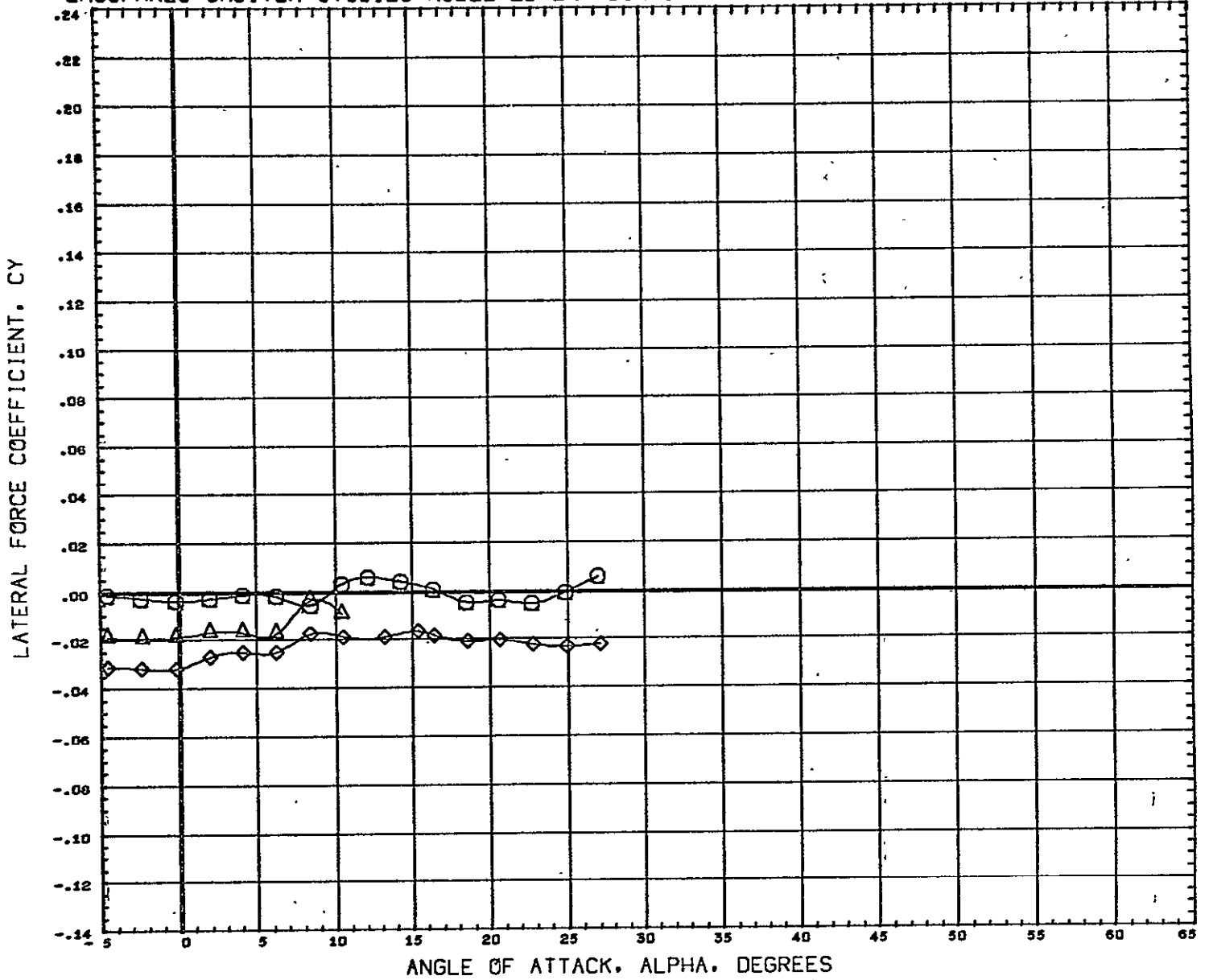
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON =-10



SYMBOL	AILRON	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION			
○	0.000	MACH	0.996	BETA	0.000	DATASET	AILRON	DATASET	AILRON	SREF	9.0250	59. IN
△	-10.000	ELEVN4	-10.000	RUDER4	0.000	A41T03	0.000	A41S1D	-10.000	LREF	6.1420	INCHES
◇	-20.000	STING	4.000			A41S11	-20.000			BREF	6.1420	INCHES
										XHRP	3.9950	INCHES
										YHRP	0.0000	INCHES
										ZHRP	0.1350	INCHES
										SCALE	0.0033	SCALE

DATA HIST. CODE M#G

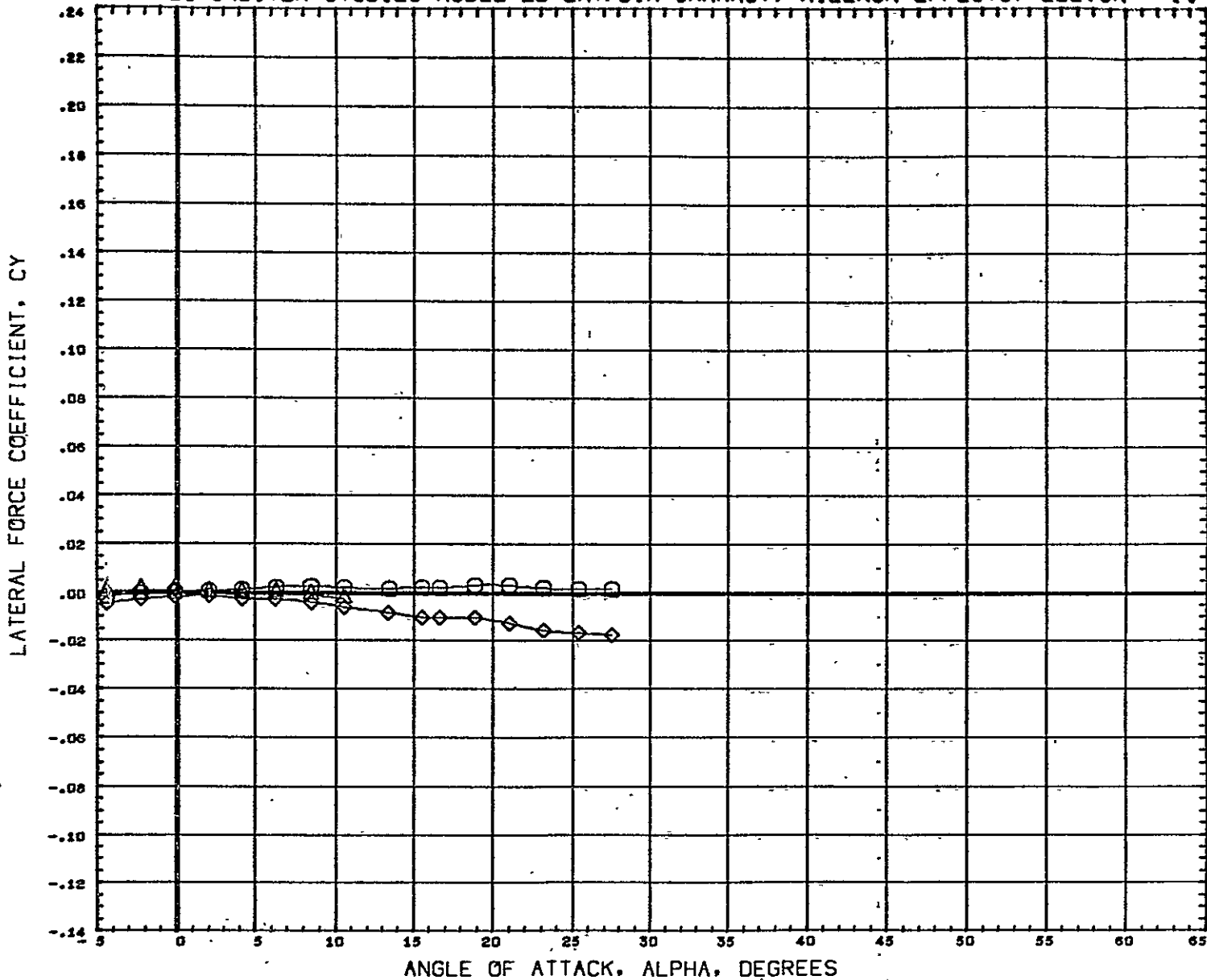
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON =-10



SYMBOL	AILRON	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
○	0.000	MACH 0.981 BETA 0.000 DATASET AILRON	9.0250 sq IN	
△	-10.000	ELEVN4 -10.000 RUDER4 0.000 DATASET AILRON	6.1420 INCHES	
◇	-20.000	STING 4.000 DATASET AILRON	6.1420 INCHES	
			3.9950 INCHES	
			0.0000 INCHES	
			0.1350 INCHES	
			0.0033 SCALE	

DATA HIST. CODE H#G

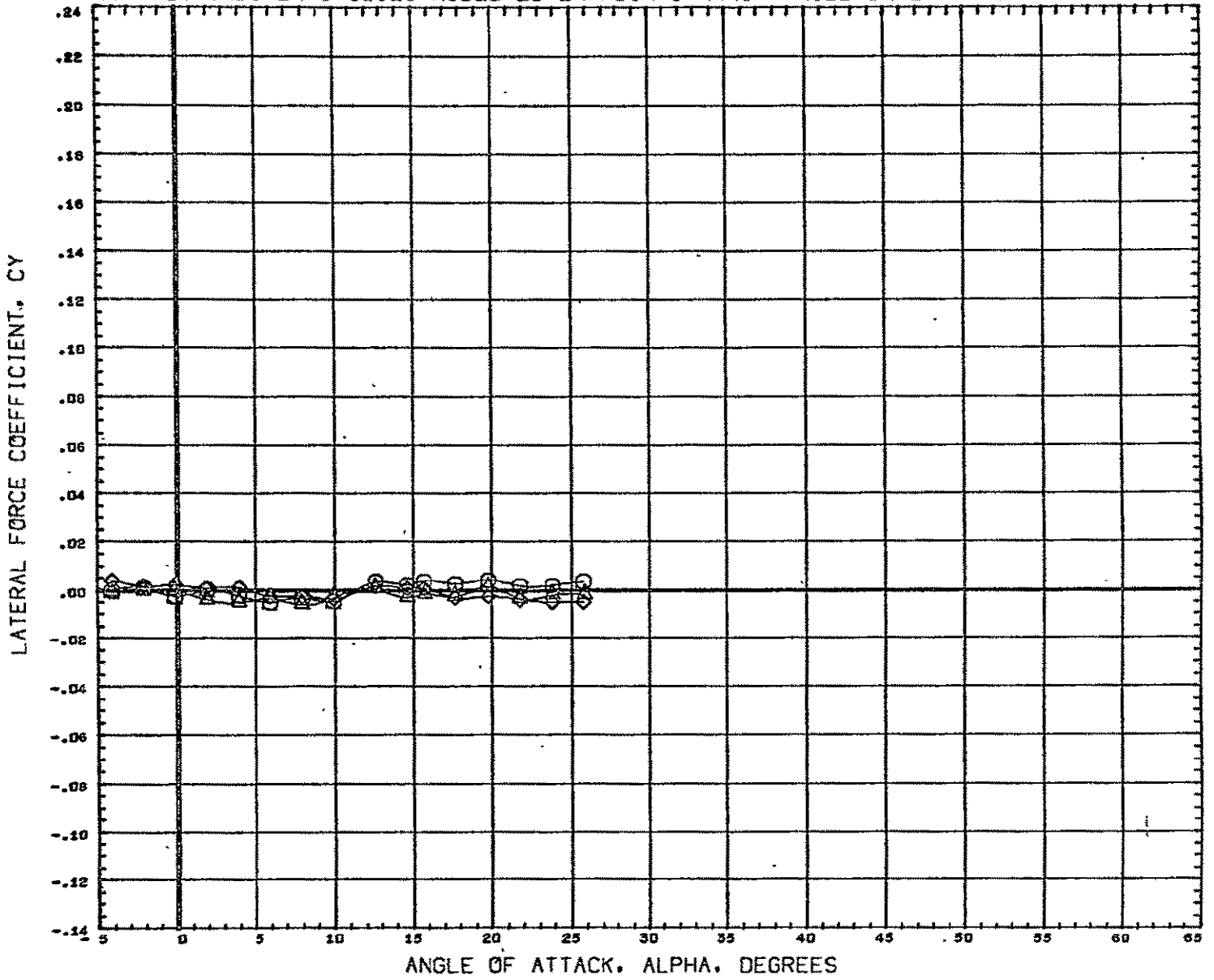
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON =-10



SYMBOL	AILRON	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION			
○	0.000	HACH	1.950	BETA	0.000	DATASET	AILRON	DATASET	AILRON	SREF	9.0250	88. IN
△	- 10.000	ELEVN4	- 10.000	RUDER4	0.000	A41T03	0.000	A41S10	- 10.000	LREF	6.1420	INCHES
◇	- 20.000	STING	4.000			A41S11	- 20.000			BREF	6.1420	INCHES
										XMRP	3.9950	INCHES
										YMRP	0.0000	INCHES
										ZMRP	0.1350	INCHES
										SCALE	0.0033	SCALE

DATA HIST. CODE H#6

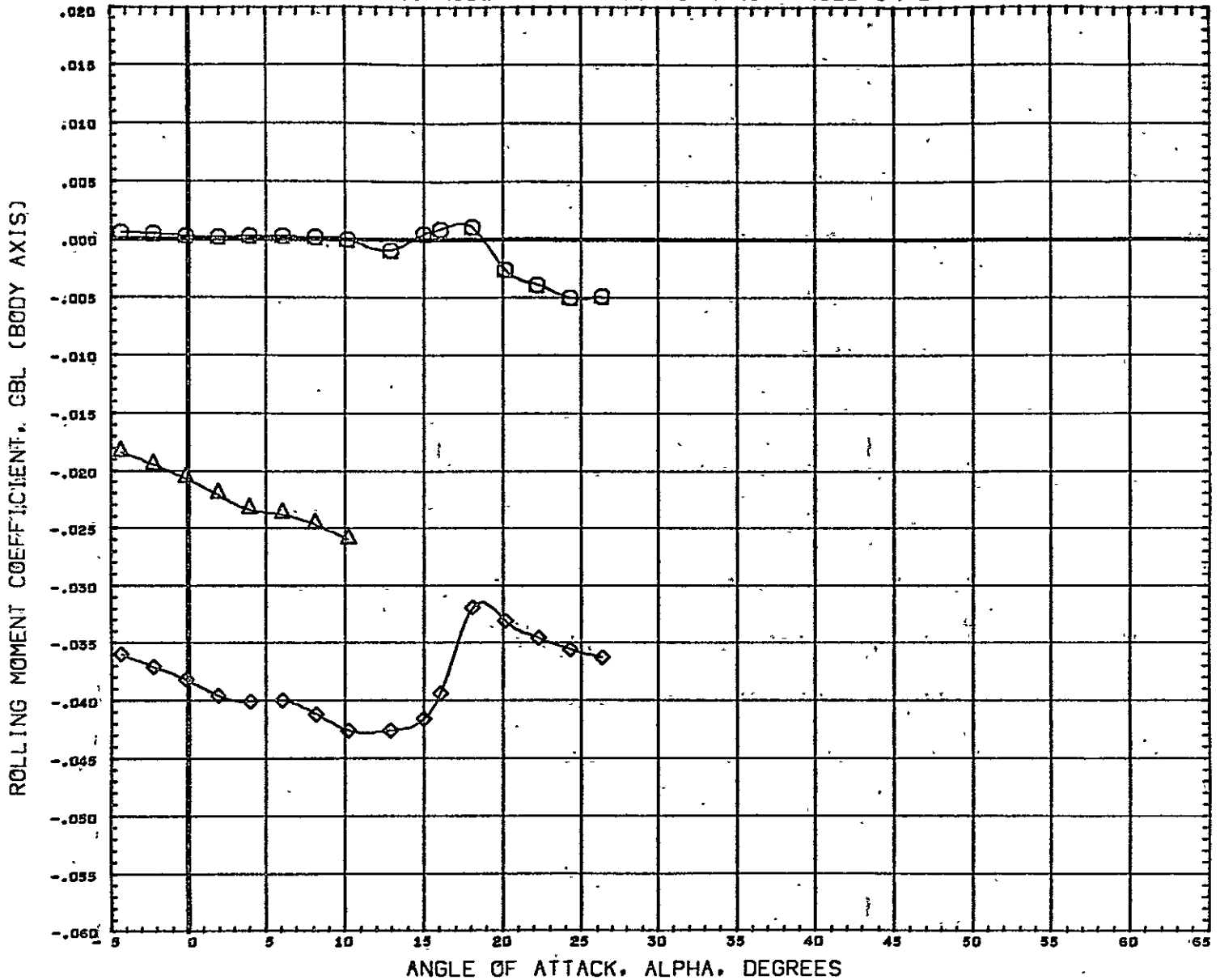
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON = -10



SYMBOL	AILRON	PARAMETRIC VALUES			DATA SOURCE			REFERENCE INFORMATION				
○	0.000	MACH	4.960	BETA	0.000	DATASET	AILRON	0.000	SREF	9.0250	SP.IN	
△	- 10.000	ELEVN4	- 10.000	RUDER4	0.000	A41T03	0.000	A41S10	- 10.000	LREF	6.1420	INCHES
◇	- 20.000	STING	4.000			A41S11	- 20.000			BREF	6.1420	INCHES
										XMRP	3.9950	INCHES
										YMRP	0.0000	INCHES
										ZMRP	0.1350	INCHES
										SCALE	0.0033	SCALE

DATA HIST. CODE M#G

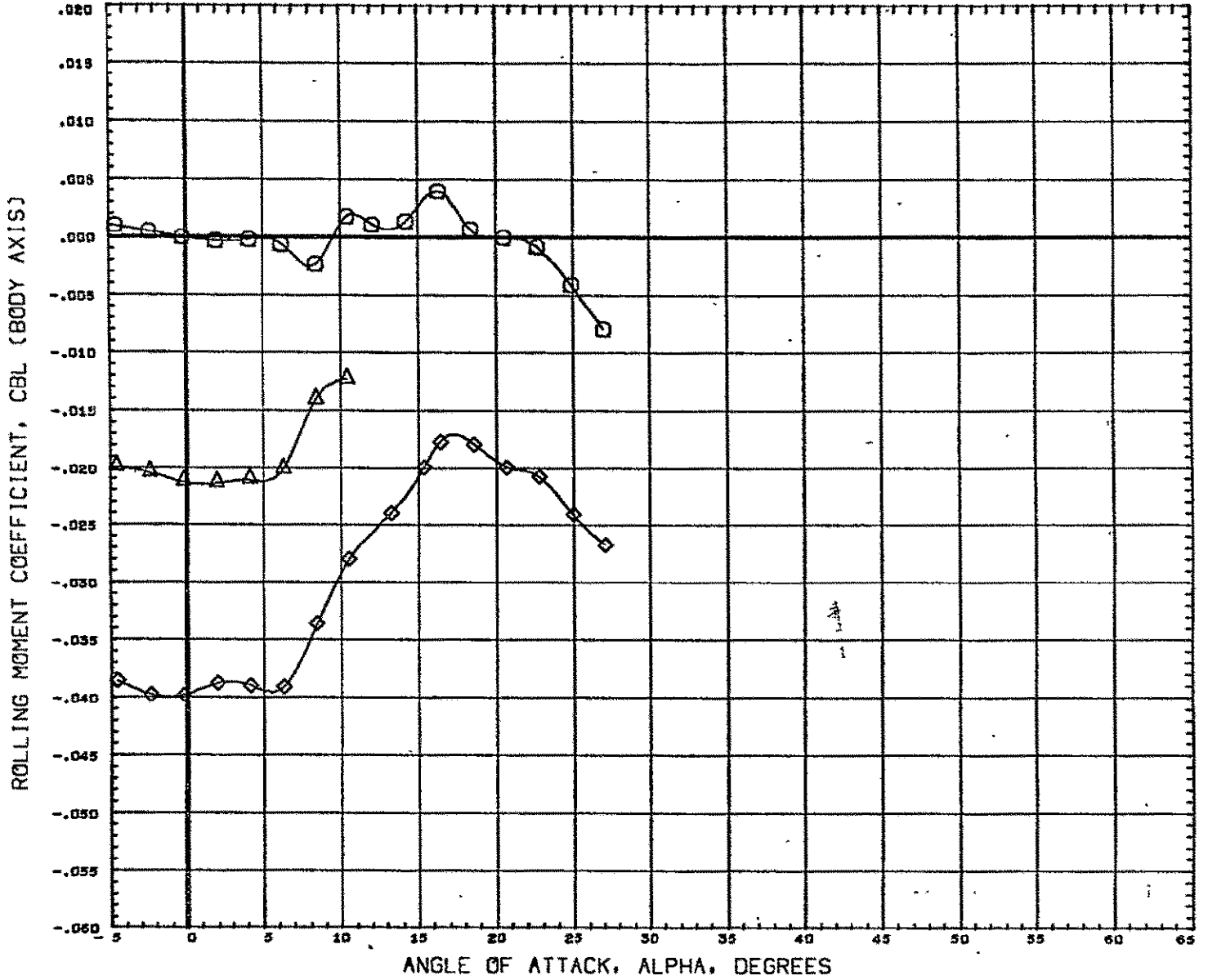
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON =-10



SYMBOL	AILRON	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION			
○	0.000	MACH	0.596	BETA	0.000	DATASET	AILRON	DATASET	AILRON	SREF	9.0250	sq. IN
△	-10.000	ELEVN4	-10.000	RUDER4	0.000	A41T03	0.000	A41S10	-10.000	LREF	6.1420	INCHES
◇	-20.000	STING	4.000			A41S11	-20.000			BREF	6.1420	INCHES
										XMRP	3.9950	INCHES
										YMRP	0.0000	INCHES
										ZMRP	0.1350	INCHES
										SCALE	0.0033	SCALE

DATA HIST. CODE H46

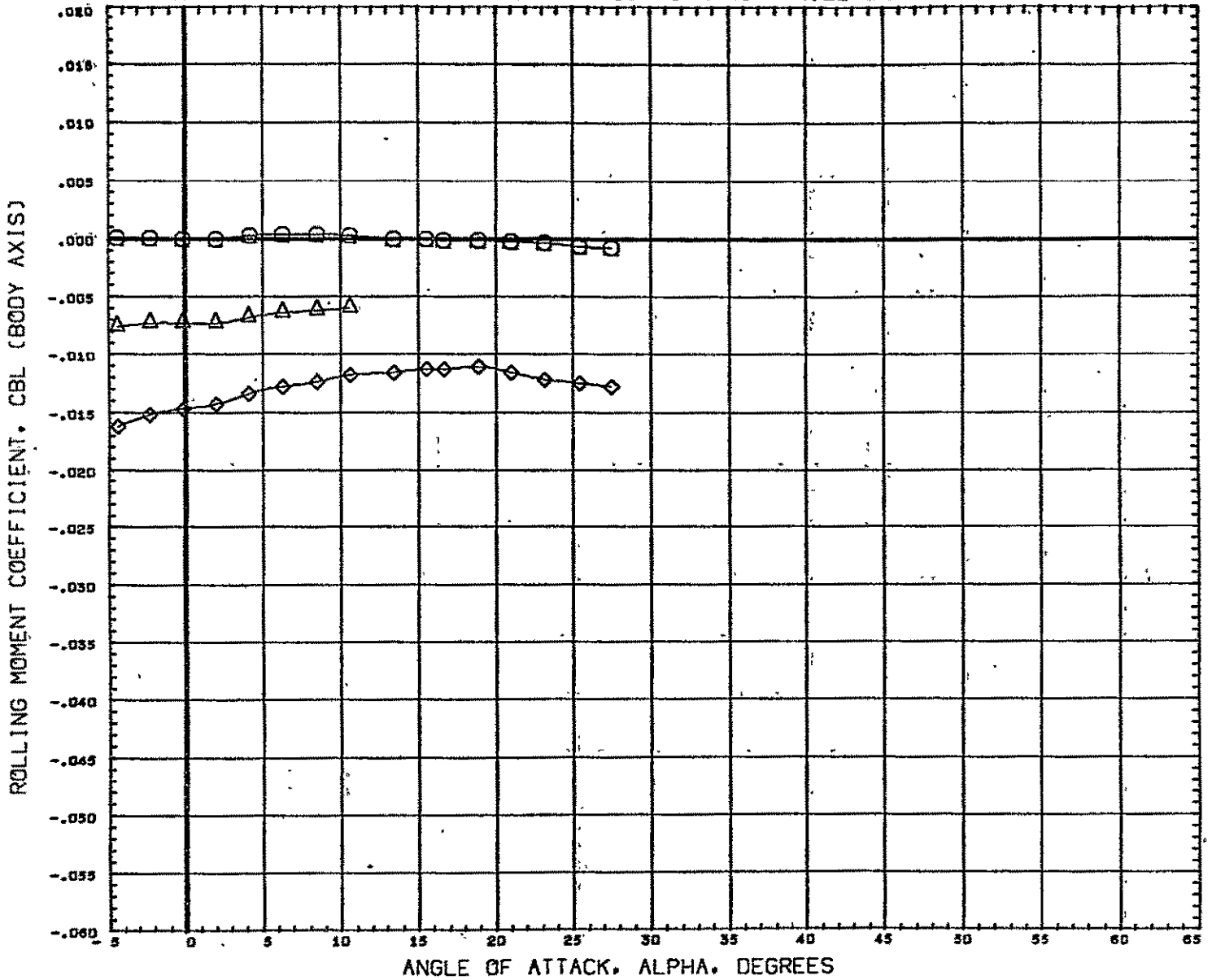
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON =-10



SYMBOL	AILRON	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION			
○	0.000	MACH	0.901	BETA	0.000	DATASET	AILRON	DATASET	AILRON	SREF	9.0250	50. IN
△	- 10.000	ELEVN4	- 10.000	RUDER4	0.000	A41T03	0.000	A41S10	- 10.000	LREF	6.1420	INCHES
◇	- 20.000	STING	4.000			A41S11	- 20.000			BREF	6.1420	INCHES
										XNRP	3.9950	INCHES
										YNRP	0.0000	INCHES
										ZNRP	0.1350	INCHES
										SCALE	0.0033	SCALE

DATA HIST. CODE H#C

LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON =-10

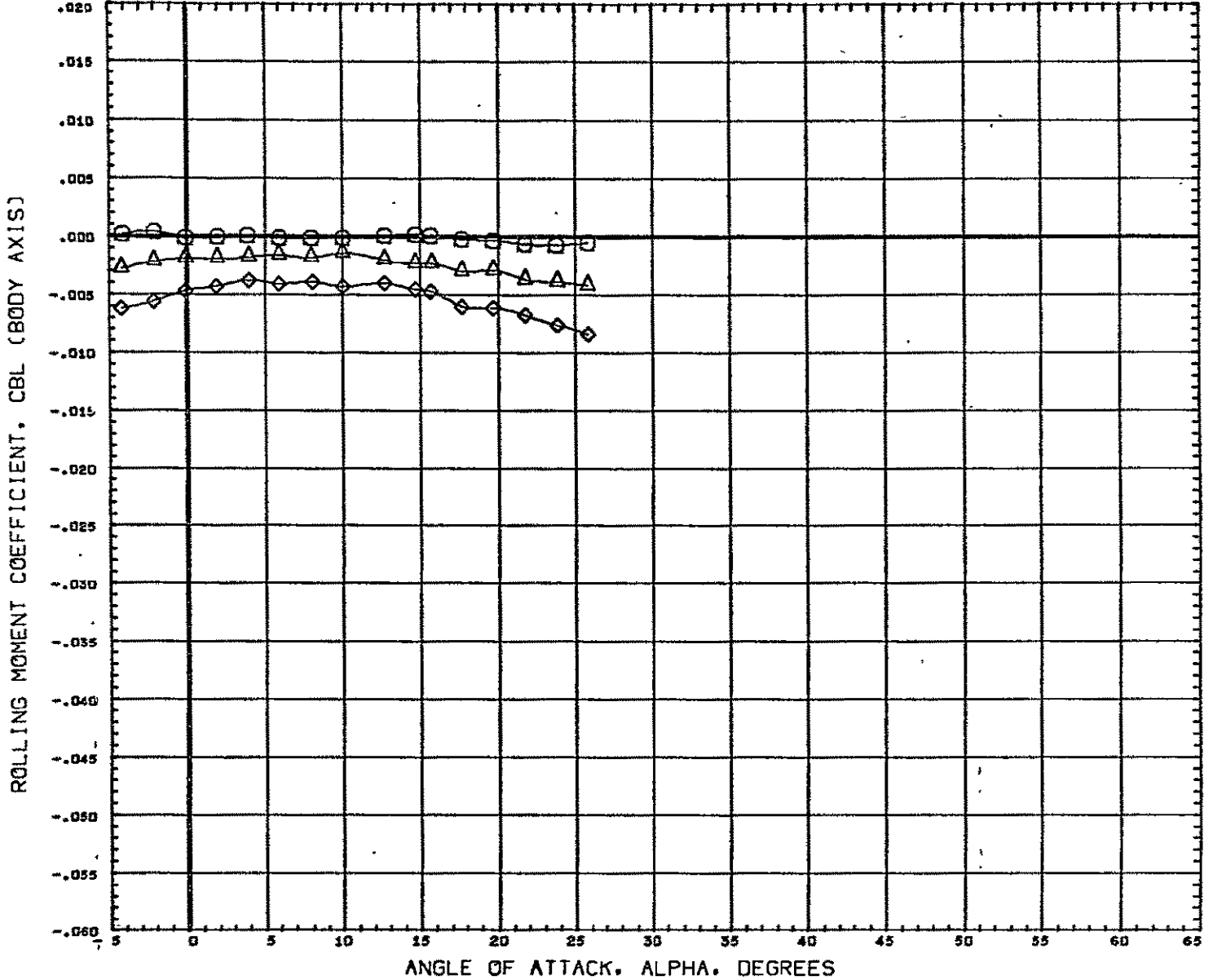


SYMBOL	AILRON	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION			
○	0.000	MACH	1.960	BETA	0.000	DATASET	AILRON	DATASET	AILRON	SREF	9.0250	sq. IN
△	10.000	ELEVN4	- 10.000	RUDER4	0.000	A41T03	0.000	A41S10	- 10.000	LREF	6.1420	INCHES
◇	20.000	STING	4.000			A41S11	- 20.000			BREF	6.1420	INCHES
										XHRP	3.9950	INCHES
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DATA HIST. CODE H#6



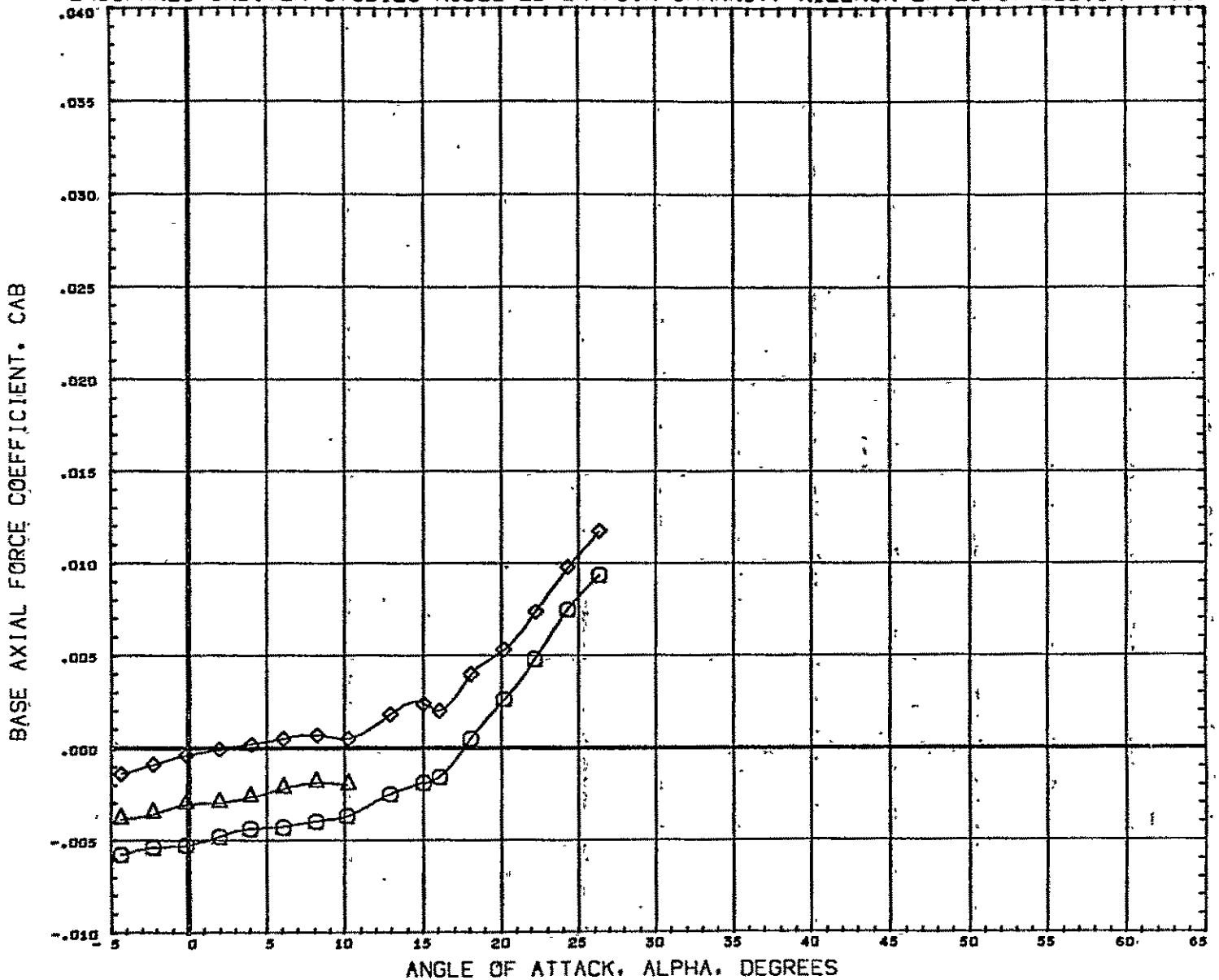
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON = -10



SYMBOL	AILRON	PARAMETRIC VALUES			DATA SOURCE			REFERENCE INFORMATION				
○	0.000	MACH	4.960	BETA	0.000	DATASET	AILRON	DATASET	AILRON	SREF	9.0250	sq.IN
△	-10.000	ELEVN4	-10.000	RUDER4	0.000	A41T03	0.000	A41S10	-10.000	LREF	6.1420	INCHES
◇	-20.000	STING	4.000			A41S11	-20.000			BREF	6.1420	INCHES
										XMRF	3.9950	INCHES
										YMRF	0.0000	INCHES
										ZMRF	0.1350	INCHES
										SCALE	0.0033	SCALE

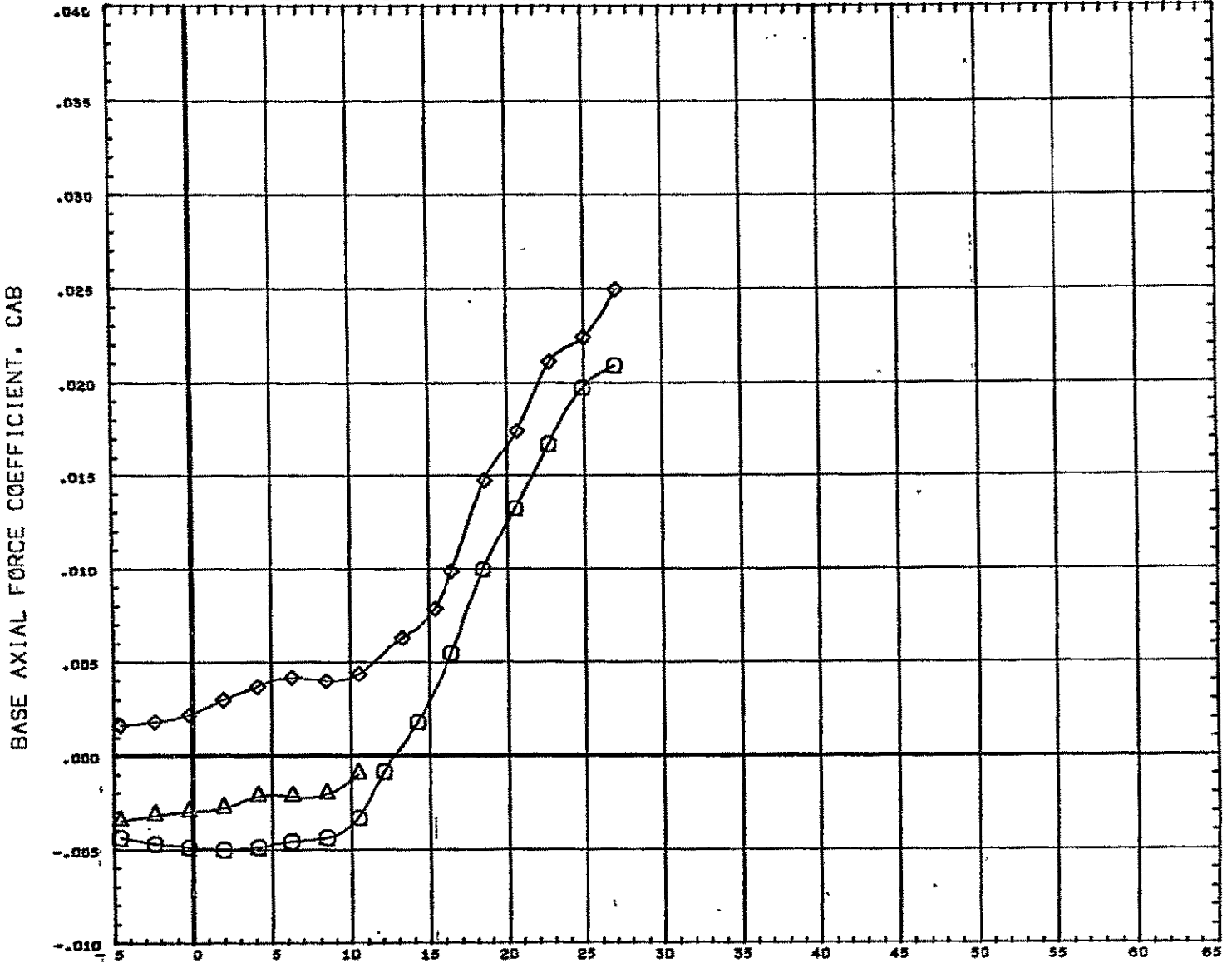
DATA HIST. CODE N#G

LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT. AILERON EFFECTS, ELEVON = -10



SYMBOL	AILRON	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION			
○	0.000	MACH	0.596	BETA	0.000	DATASET	AILRON	DATASET	AILRON	SREF	9.0250	59. IN
△	- 10.000	ELEVN4	- 10.000	RUDER4	0.000	A41T03	0.000	A41S10	- 10.000	LREF	6.1420	INCHES
◇	- 20.000	STING	4.000			A41S11	- 20.000			BREF	6.1420	INCHES
										XMRP	3.9950	INCHES
										YMRP	0.0000	INCHES
										ZMRP	0.1350	INCHES
										SCALE	0.0033	SCALE

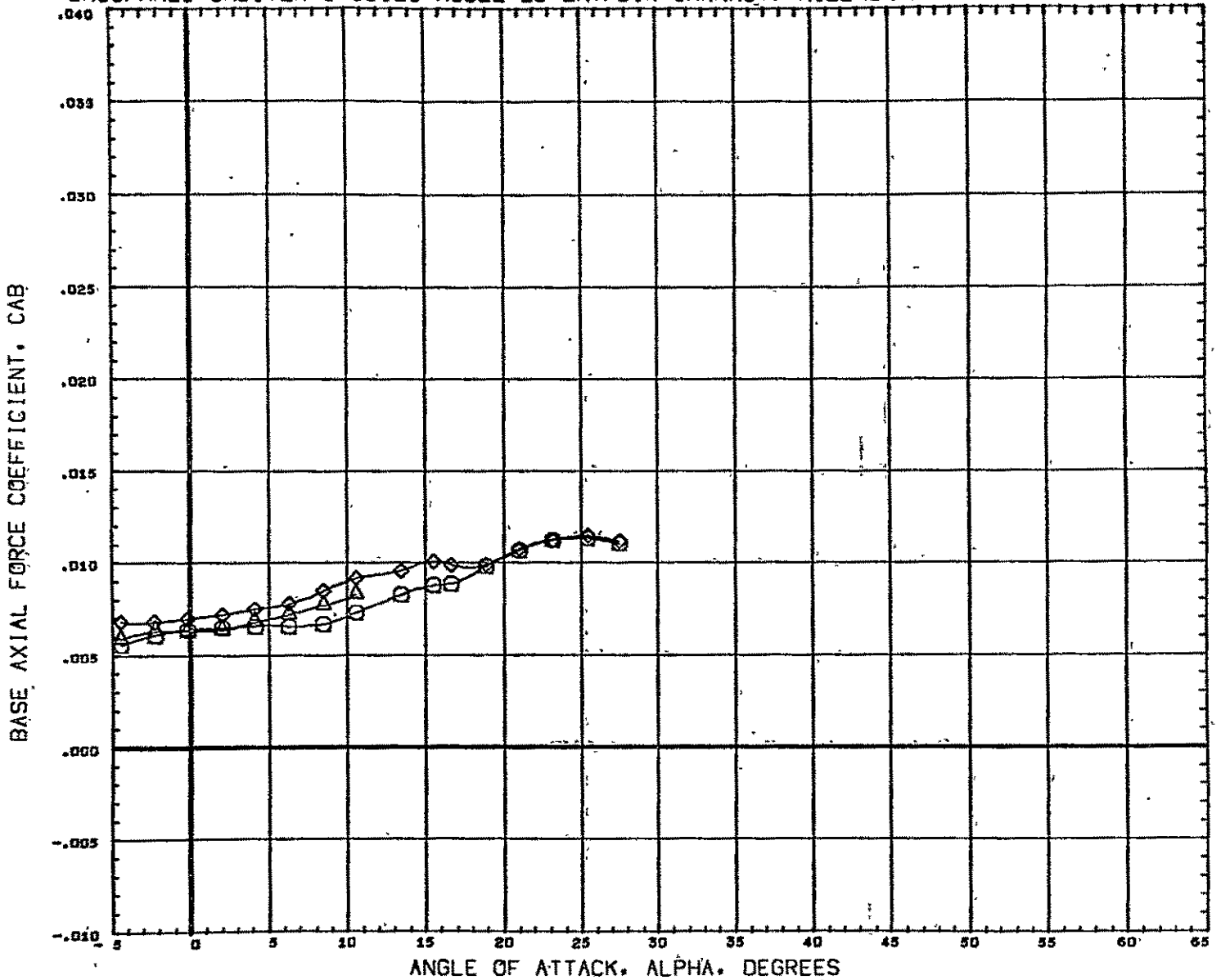
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON =-10



SYMBOL	AILRON	PARAMETRIC VALUES	DATA SOURCE	REFERENCE INFORMATION
○	0.000	MACH 0.901 BETA 0.000	0.000 DATASET AILRON DATASET AILRON	SREF 9.0250 SQ. IN
△	- 10.000	ELEVN# - 10.000 RUDER#	0.000 A41T03 0.000 A41S10 - 10.000	LREF 6.1420 INCHES
◇	- 20.000	STING 4.000	A41S11 - 20.000	BREF 6.1420 INCHES
				XMRP 3.9950 INCHES
				YMRP 0.0000 INCHES
				ZMRP 0.1350 INCHES
				SCALE 0.0033 SCALE

DATA HIST. CODE M#G

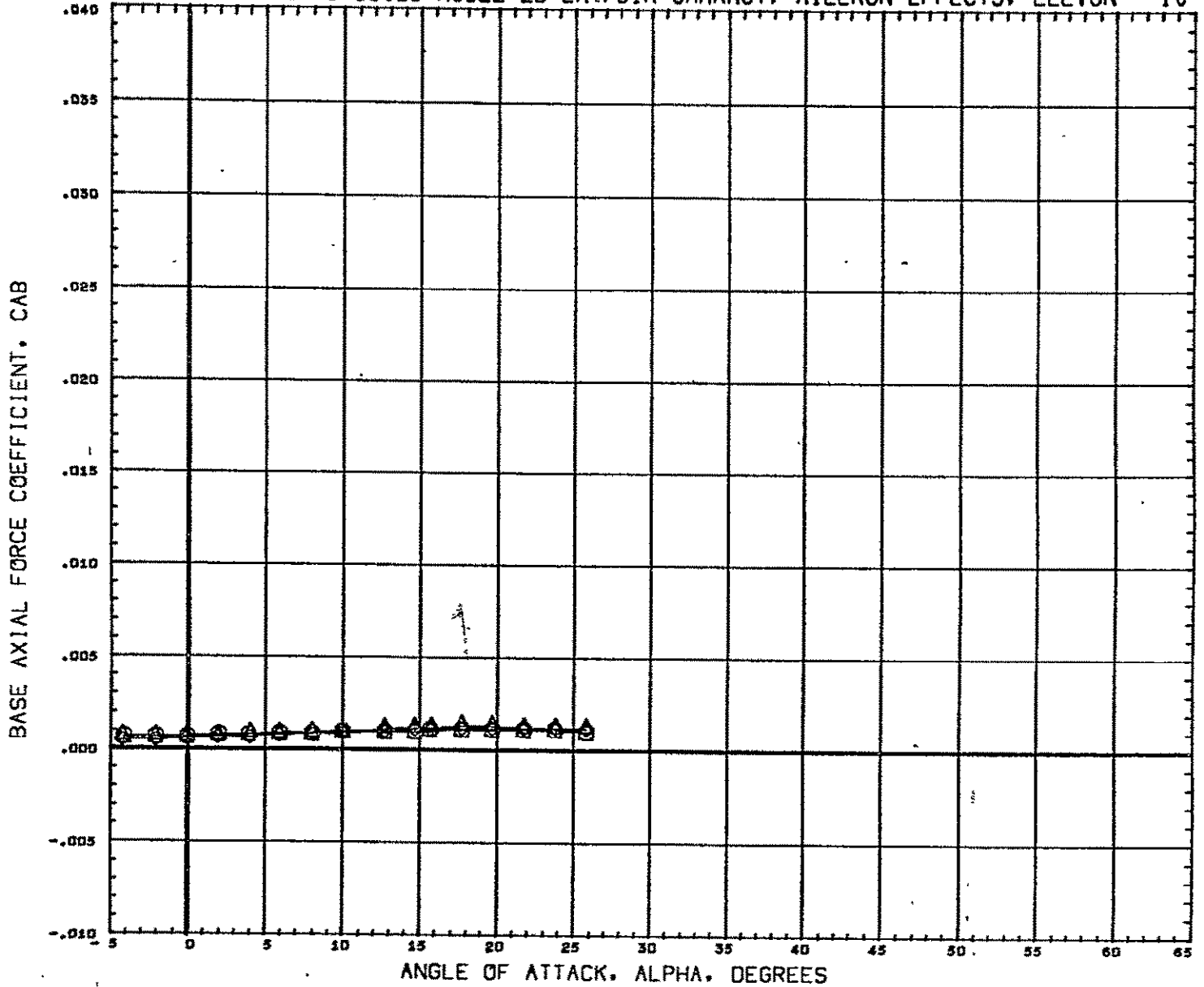
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON = -10



SYMBOL	AILRON	PARAMETRIC VALUES				DATA SOURCE			REFERENCE INFORMATION			
○	0.000	MACH	1.960	BETA	0.000	DATASET	AILRON	DATASET	AILRON	SREF	9.0250	50. IN
△	- 10.000	ELEVN4	- 10.000	RUDER4	0.000	A41T03	0.000	A41S10	- 10.000	LREF	6.1420	INCHES
◇	- 20.000	STING	4.000			A41S11	- 20.000			BREF	6.1420	INCHES
										XMRP	3.9950	INCHES
										YMRP	0.0000	INCHES
										ZMRP	0.1350	INCHES
										SCALE	0.0033	SCALE

DATA HIST. CODE N4C

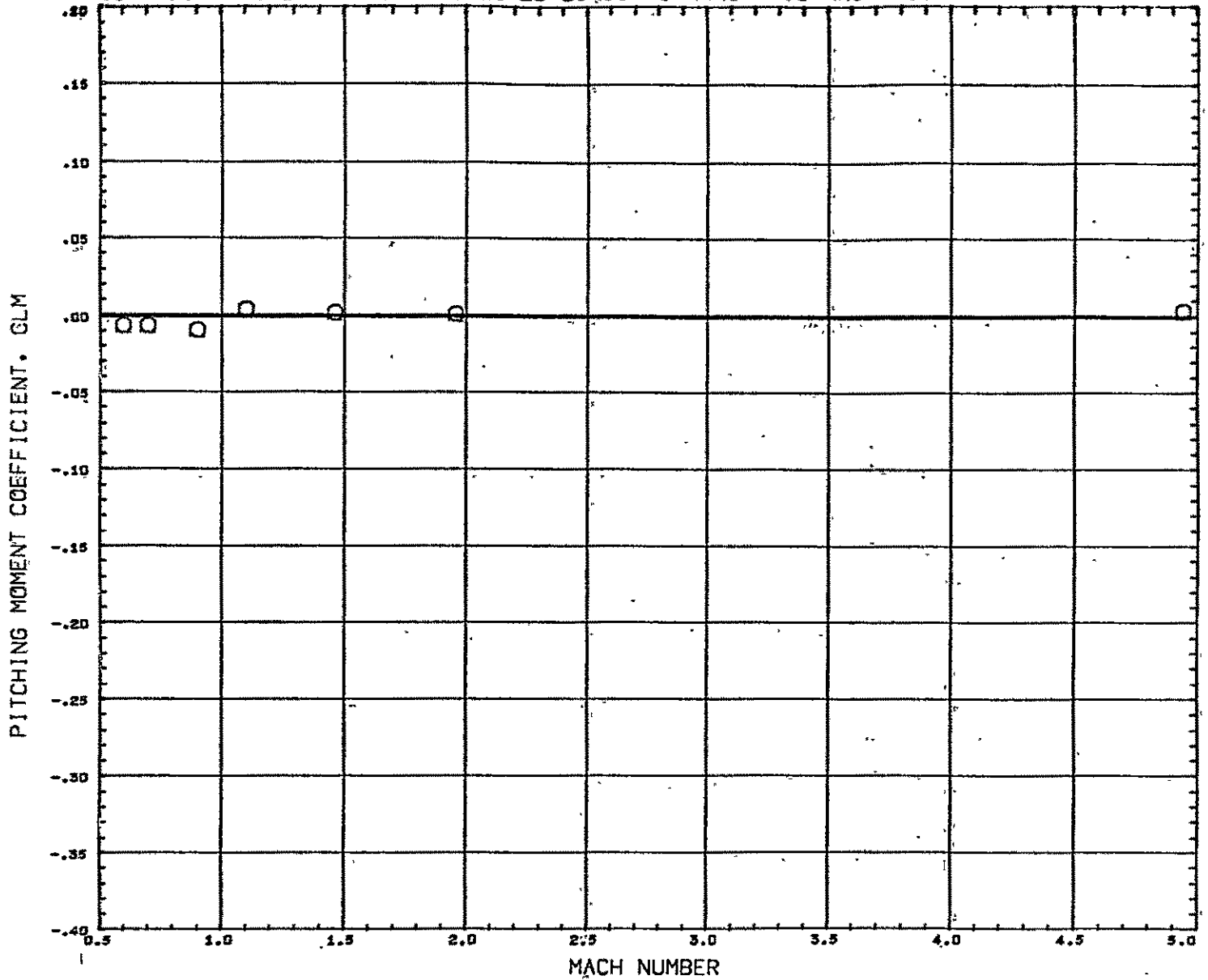
LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, AILERON EFFECTS, ELEVON =-10



SYMBOL	AILRON	PARAMETRIC VALUES			DATA SOURCE			REFERENCE INFORMATION		
○	0.000	MACH	4.960	BETA	0.000	DATASET	AILRON	SREF	9.0250	SG. IN
△	- 10.000	ELEVN4	- 10.000	RUDER4	0.000	A41T03	0.000	LREF	6.1420	INCHES
◇	- 20.000	STING	4.000			A41S11	- 20.000	BREF	6.1420	INCHES
								XMRP	3.9950	INCHES
								YMRP	0.0000	INCHES
								ZMRP	0.1350	INCHES
								SCALE	0.0033	SCALE

DATA HIST. CODE M+C

LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT. VS MACH NO.

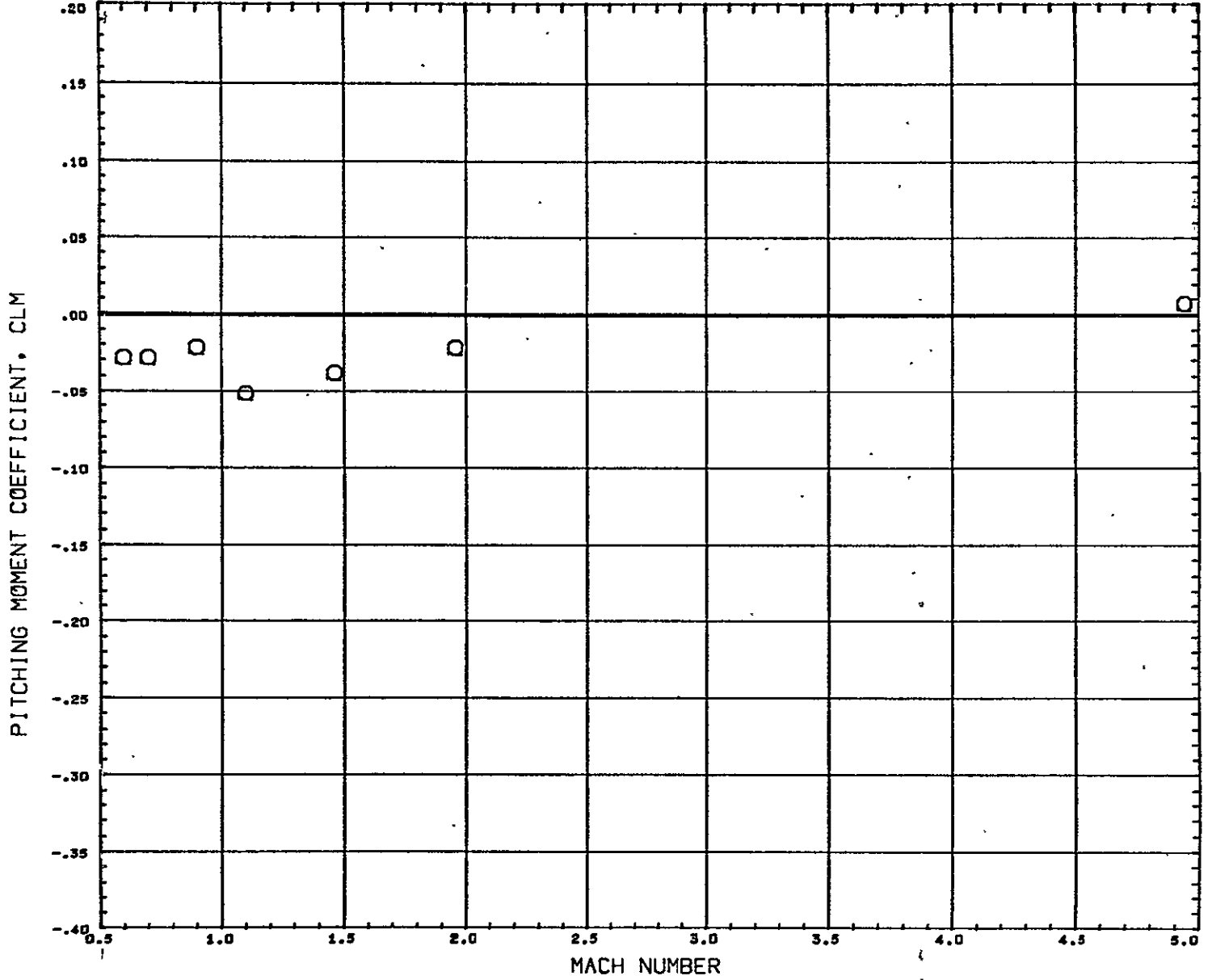


SYMBOL	ALPHA	PARAMETRIC VALUES			
○	0.000	BETA	0.000	ELEVN4	0.000
		RUDER4	0.000	STING	4.000

REFERENCE INFORMATION		
SREF	9.0250	sq. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE \*0\*E1

LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT. VS MACH NO.

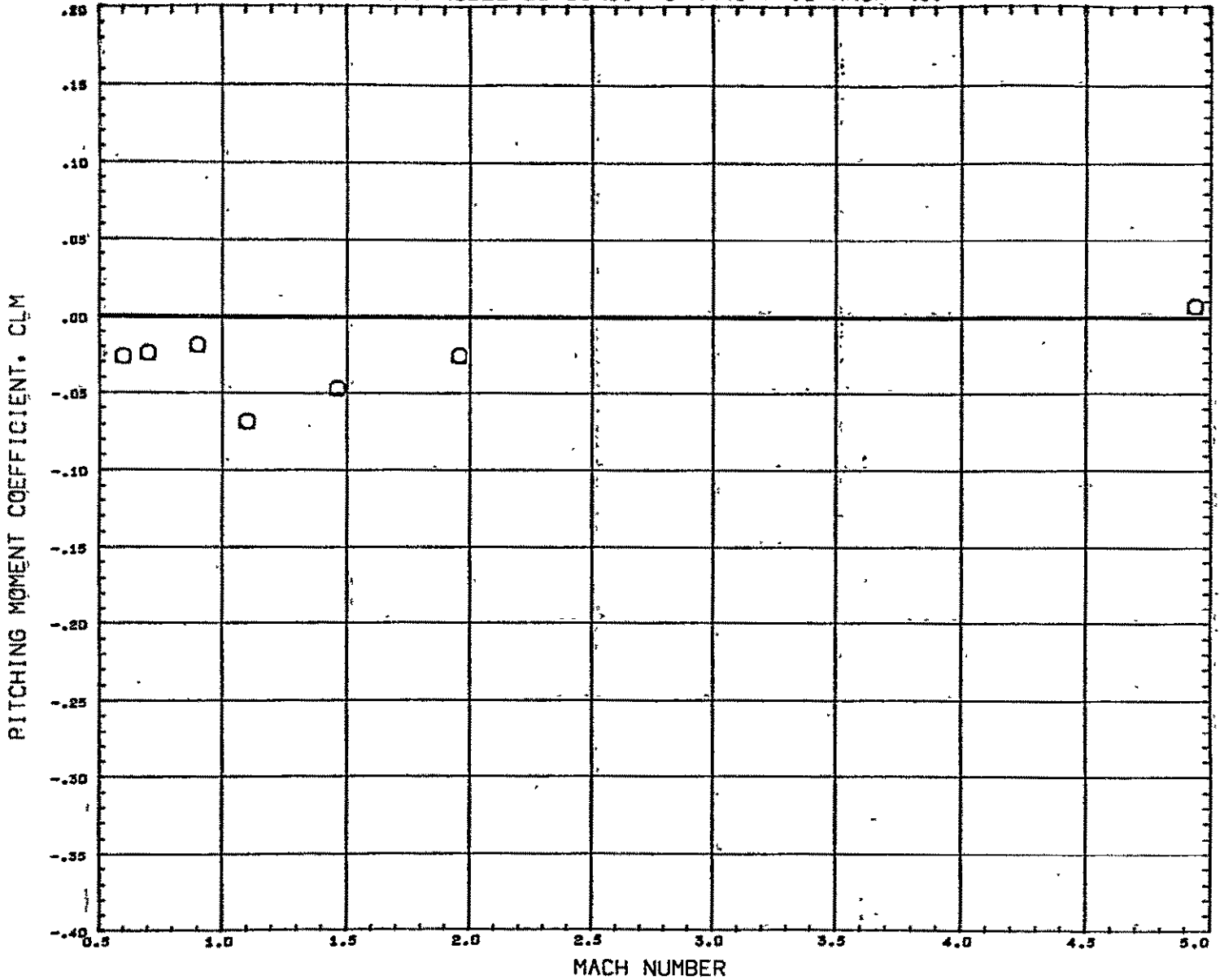


SYMBOL	ALPHA	PARAMETRIC VALUES			
○	10.000	BETA	0.000	ELEVN4	0.000
		RUDER4	0.000	STING	4.000

REFERENCE INFORMATION		
SREF	9.0250	90. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE #G4E1

LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, VS MACH NO.



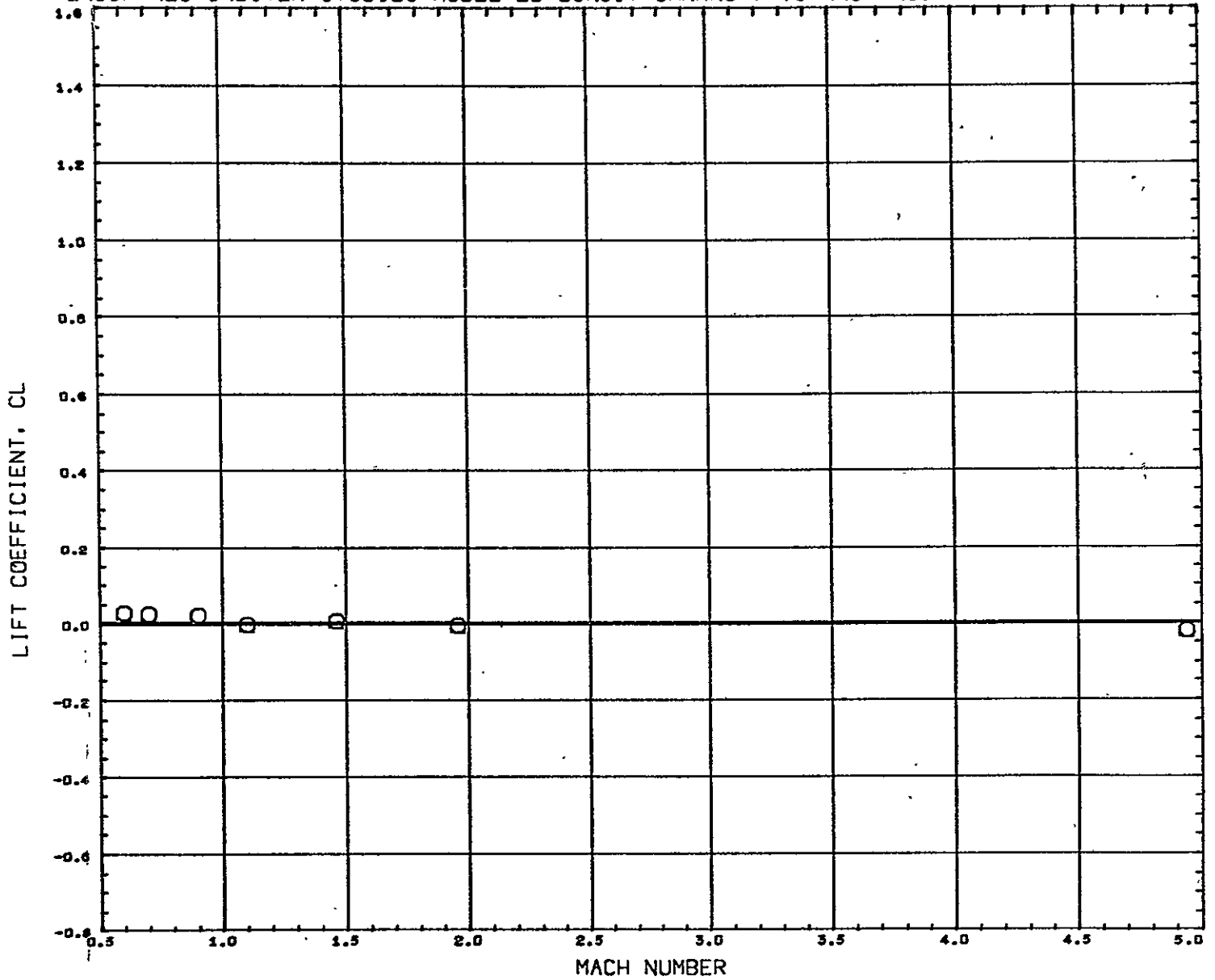
SYMBOL	ALPHA	PARAMETRIC VALUES			
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		RUDER4	0.000	STING	4.000

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XHRP	3.9950	INCHES
YHRP	0.0000	INCHES
ZHRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE \*0\*EI



LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, VS MACH NO.

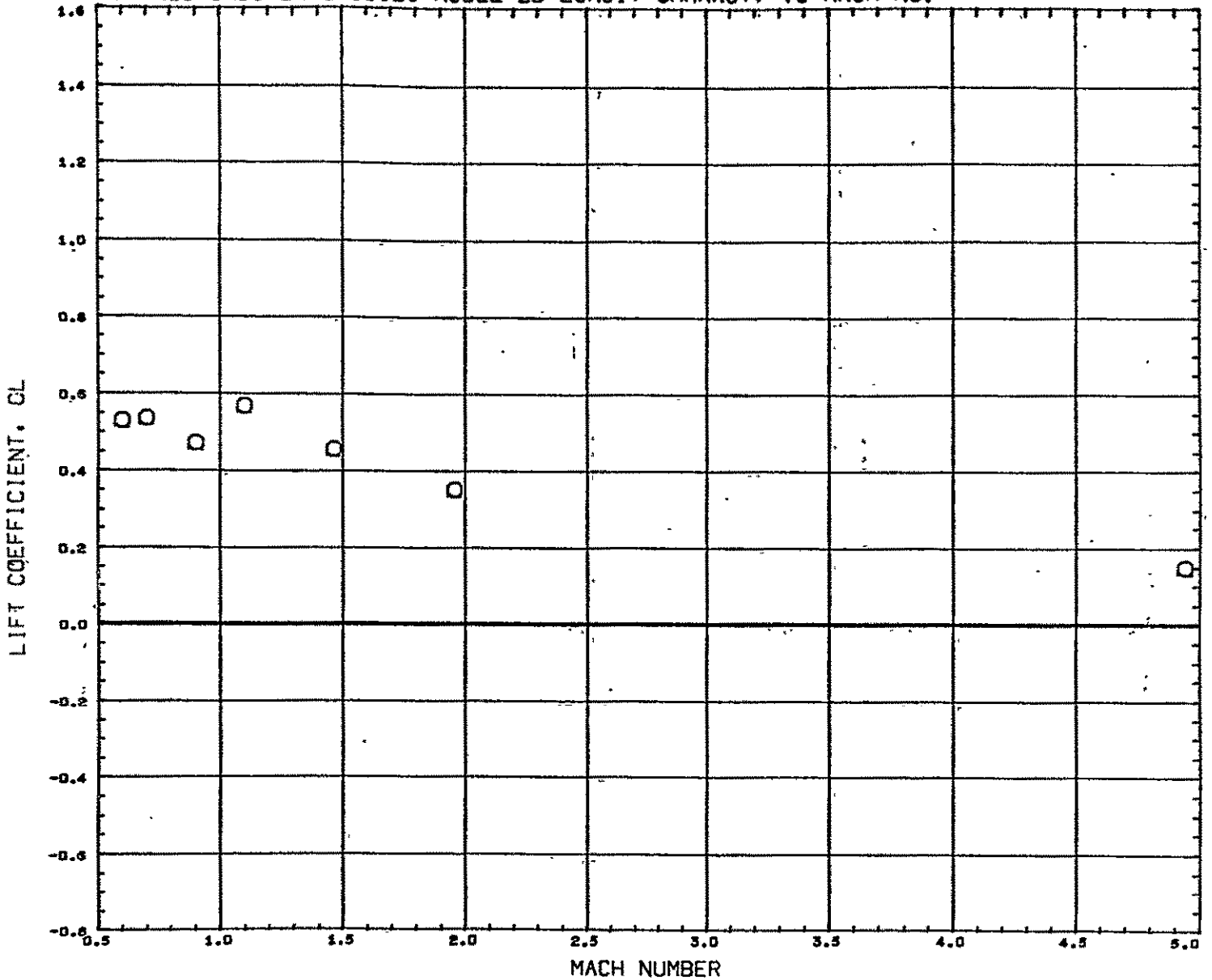


SYMBOL	ALPHA	PARAMETRIC VALUES			
○	0.000	BETA	0.000	ELEVN4	0.000
		RUDER4	0.000	STING	4.000

REFERENCE INFORMATION		
SREF	9.0250	SQ.IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE \*6#E1

LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, VS MACH NO.

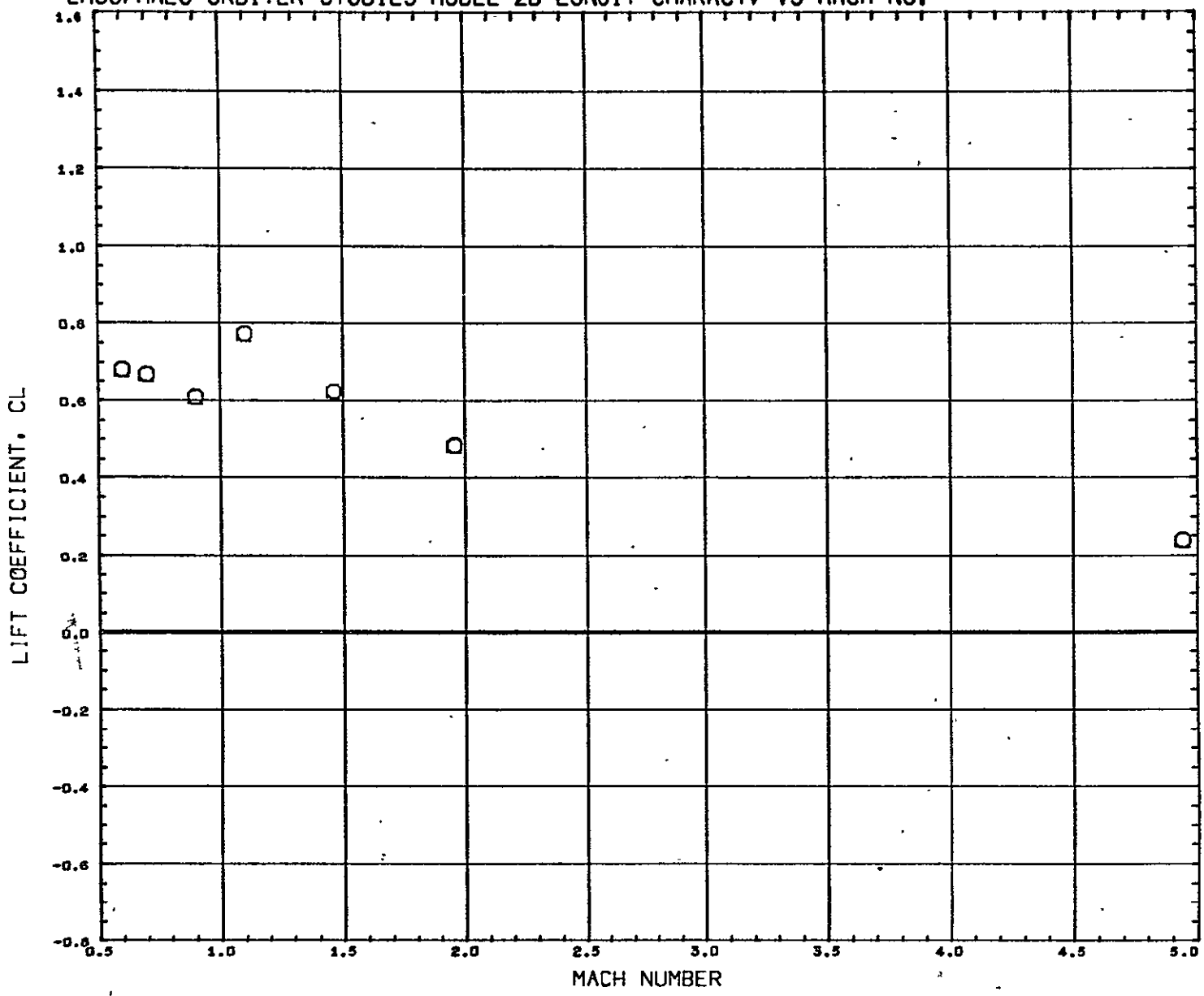


SYMBOL	ALPHA	PARAMETRIC VALUES			
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		RUDER4	0.000	STING	4.000

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SREF	9.0250	58. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE \*G4EI

LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, VS MACH NO:

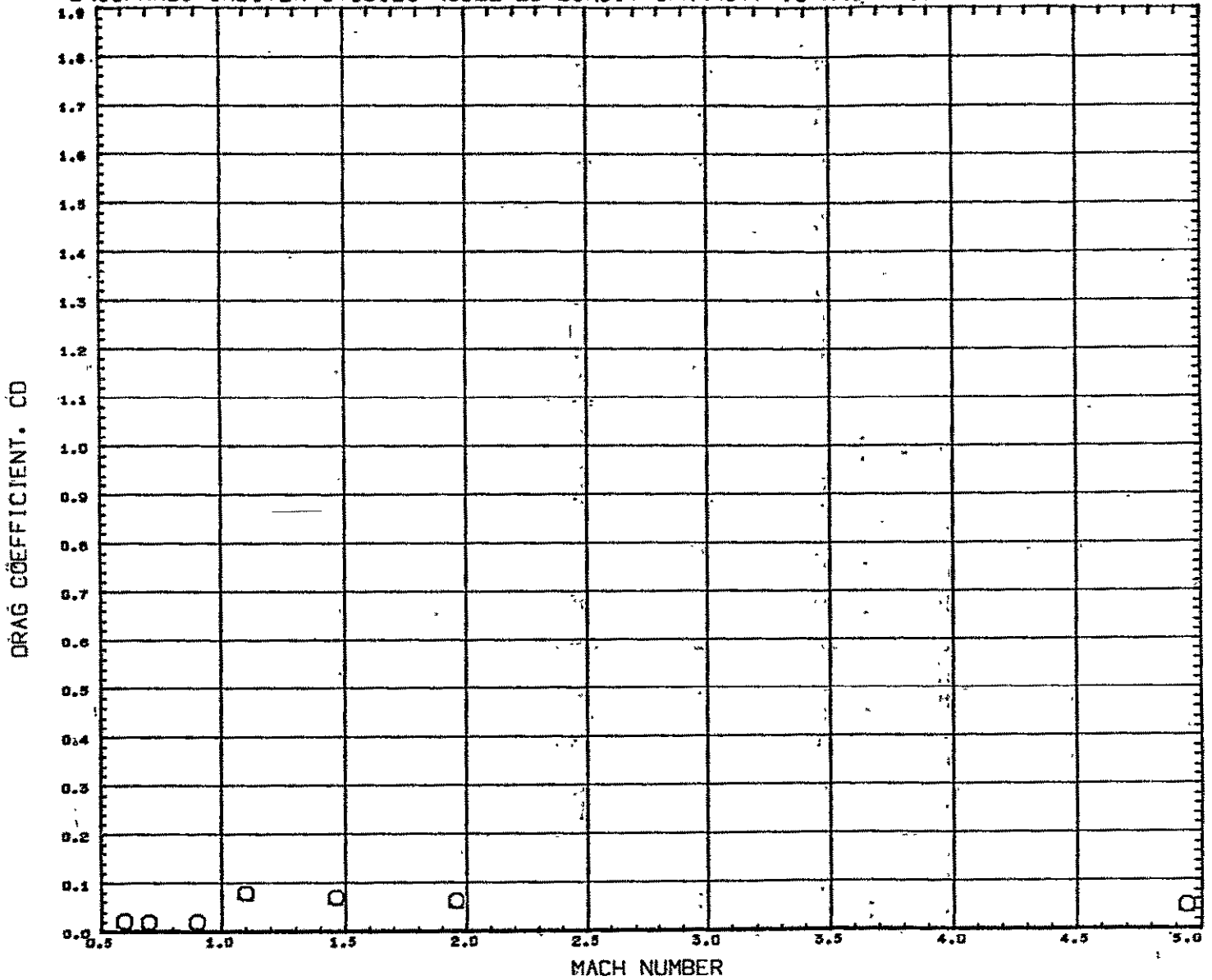


SYMBOL	ALPHA	PARAMETRIC VALUES			
○	15.000	BETA	0.000	ELEVN4	0.000
		RUDER4	0.000	STING	4.000

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE #G\*EI

LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, VS MACH NO.



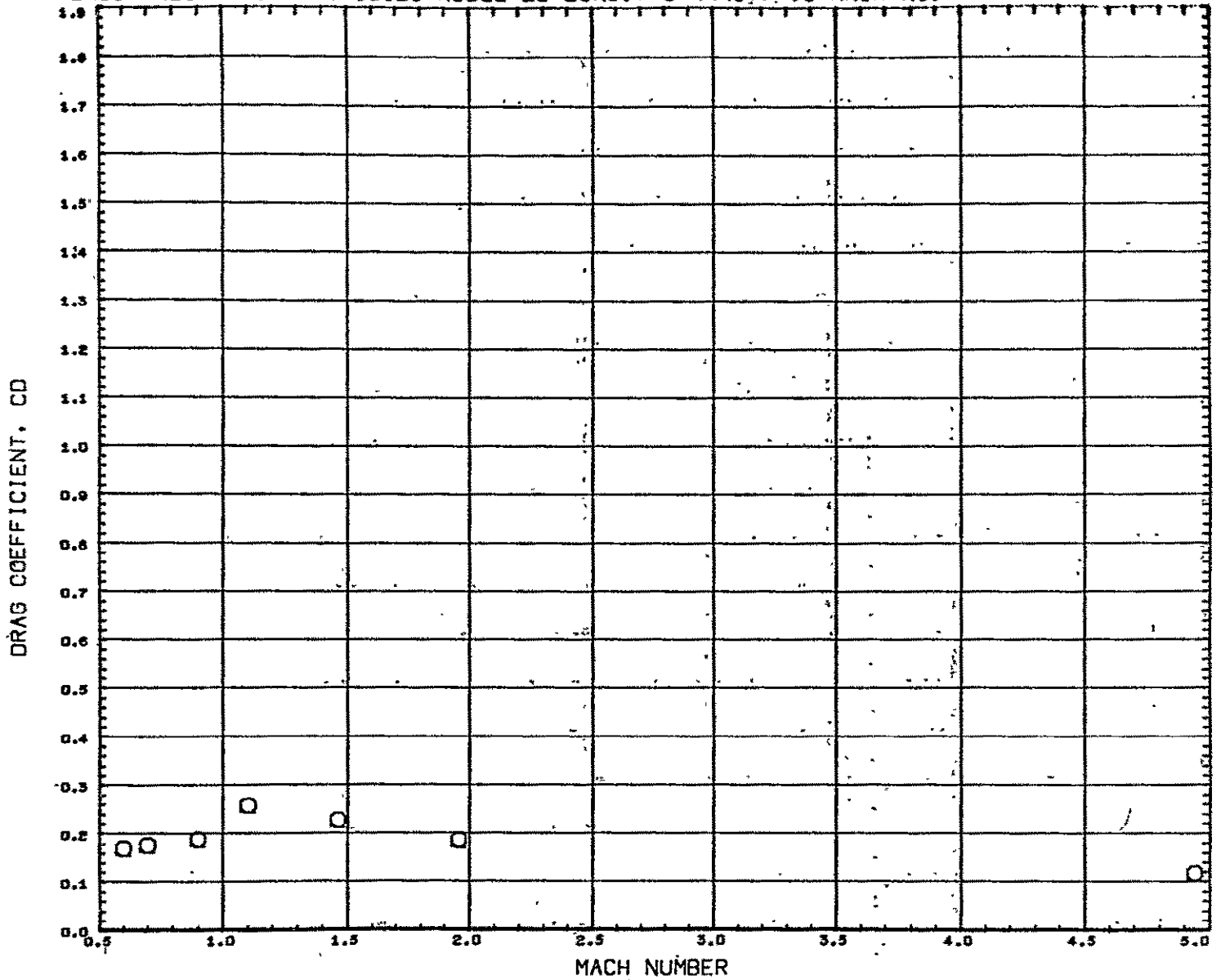
SYMBOL	ALPHA	PARAMETRIC VALUES			
○	0.000	BETA	0.000	ELEVN4	0.000
		RUDER4	0.000	STING	4.000

REFERENCE INFORMATION		
SREF	9.0250	90. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XHRP	3.9950	INCHES
YHRP	0.0000	INCHES
ZHRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE \*G\*EI



LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT. VS MACH NO.

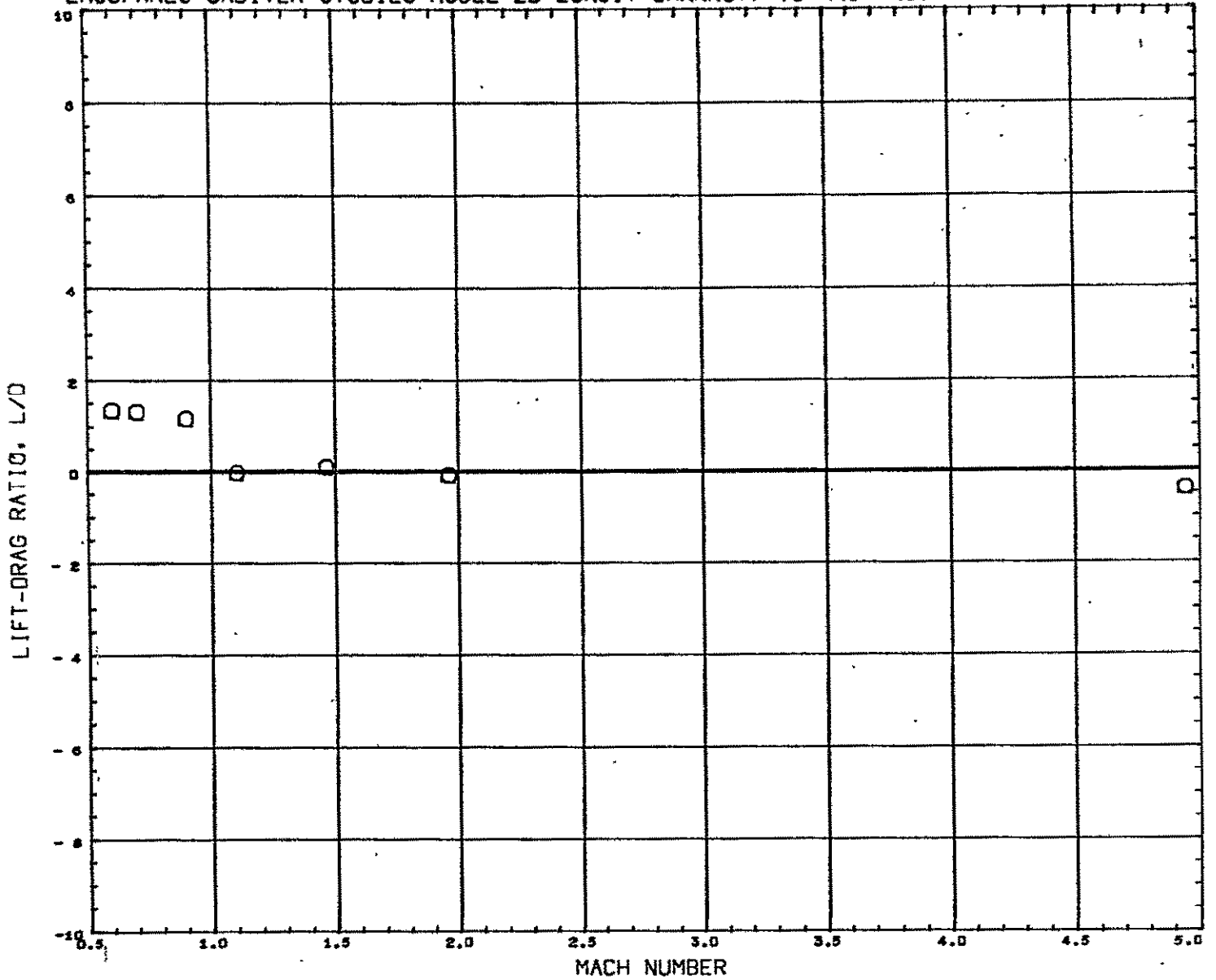


SYMBOL ○ ALPHA 15.000 BETA 0.000 ELEVN4 0.000  
 RUDER4 0.000 STING 4.000

REFERENCE INFORMATION  
 SREF 9.0250 SQ. IN  
 LREF 6.1420 INCHES  
 BREF 6.1420 INCHES  
 XMRP 3.9950 INCHES  
 YMRP 0.0000 INCHES  
 ZMRP 0.1350 INCHES  
 SCALE 0.0033 SCALE

DATA HIST. CODE #G#EI

LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, VS MACH NO.

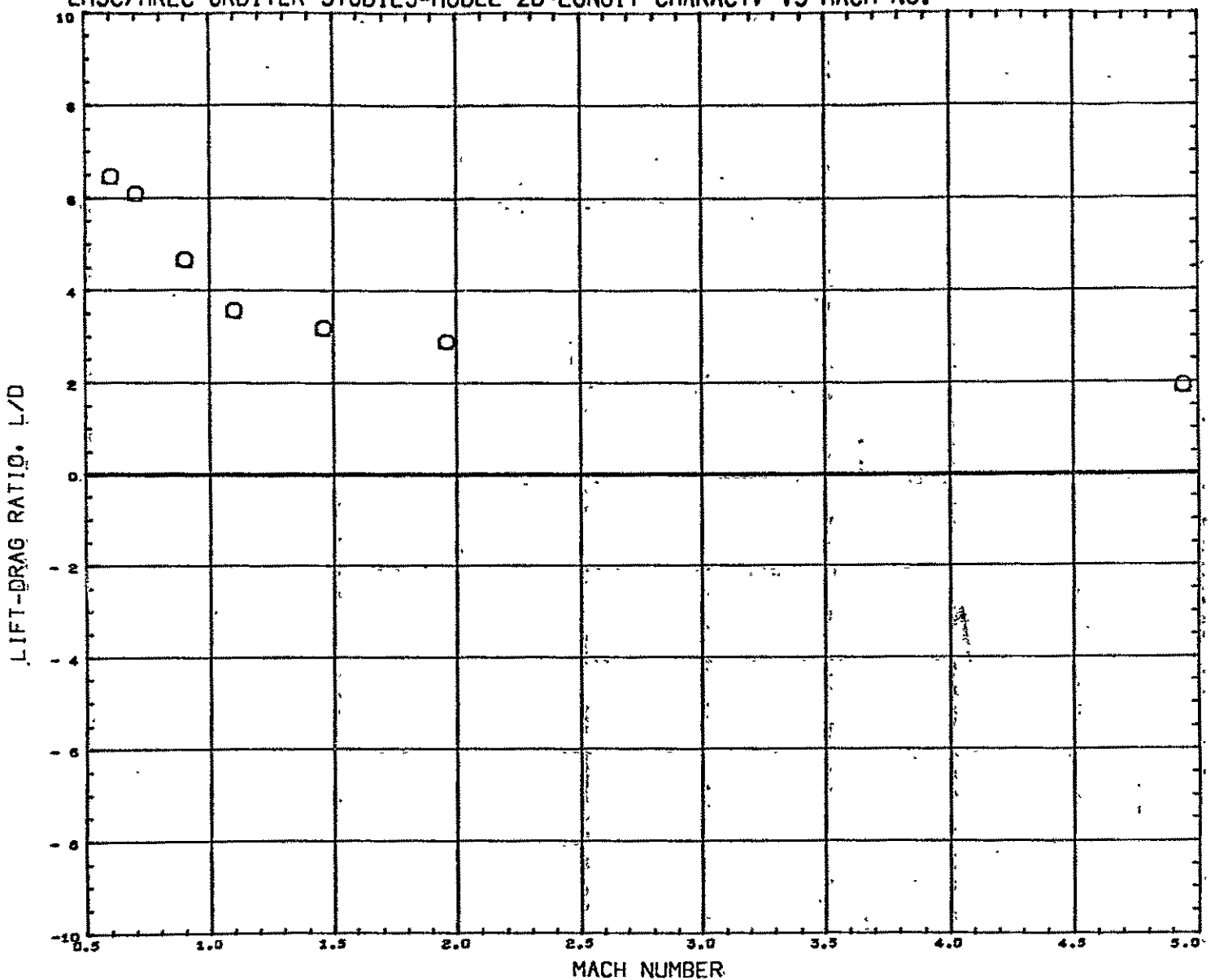


SYMBOL	ALPHA	PARAMETRIC VALUES			
○	0.000	BETA	0.000	ELEVN4	0.000
		RUDER4	0.000	STING	4.000

REFERENCE INFORMATION		
SREF	9.0250	88. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0055	SCALE

DATA HIST. CODE #0\*EI

LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT. VS MACH NO.



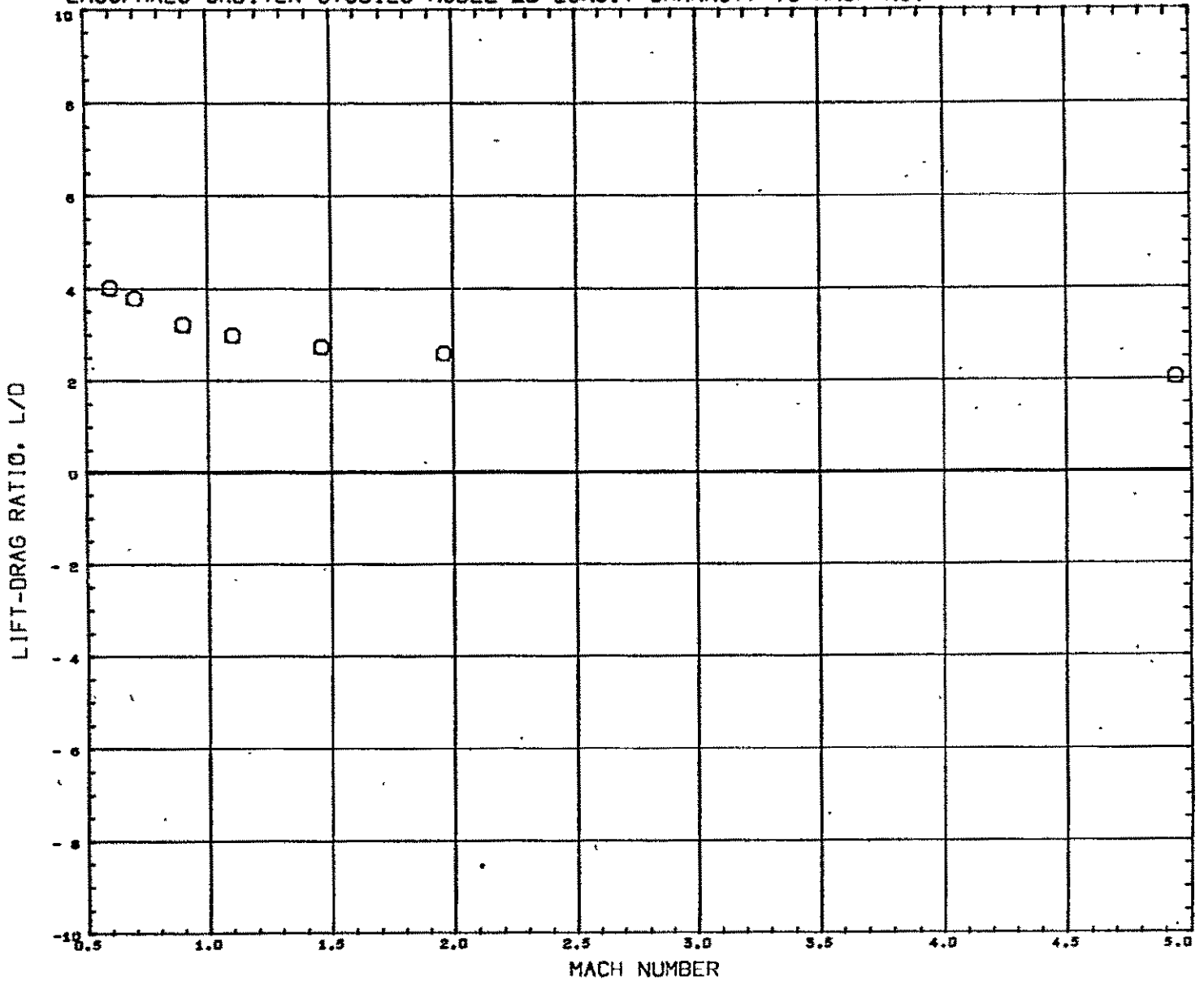
SYMBOL	ALPHA	PARAMETRIC VALUES			
○	10.000	BETA	0.000	ELEVN4	0.000
		RUDER4	0.000	STING	4.000

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XHRP	3.9950	INCHES
YHRP	0.0000	INCHES
ZHRP	0.1350	INCHES
SCALE	0.0035	SCALE

DATA HIST. CODE \*G\*E1



LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, VS MACH NO.

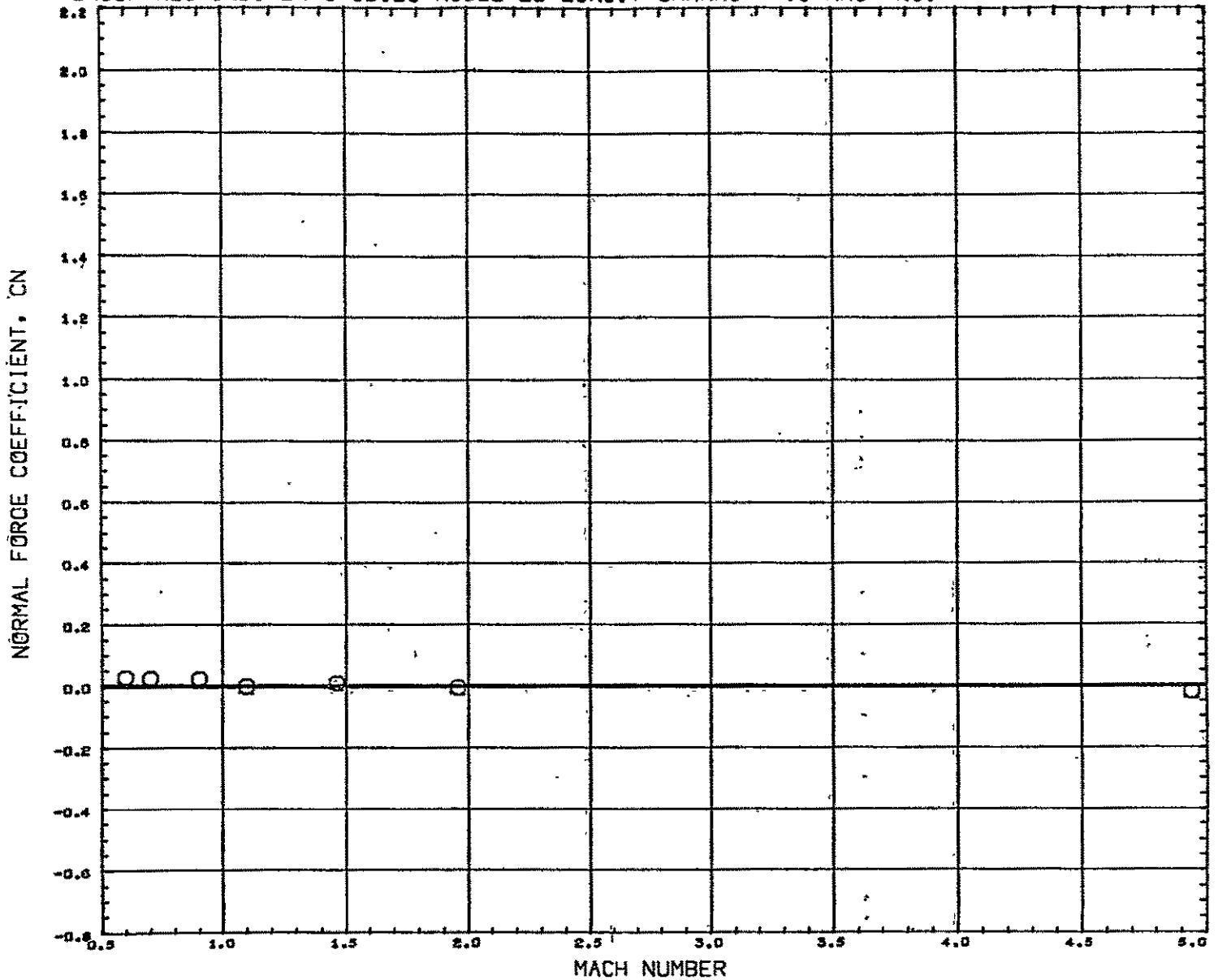


SYMBOL	ALPHA	PARAMETRIC VALUES:			
○	15.000	BETA	0.000	ELEVN4	0.000
		RUDER4	0.000	S <sup>TH</sup> MC	4.000

REFERENCE INFORMATION		
SREF	9.0250	98. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE #G#EI

MSFC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT. VS MACH NO.

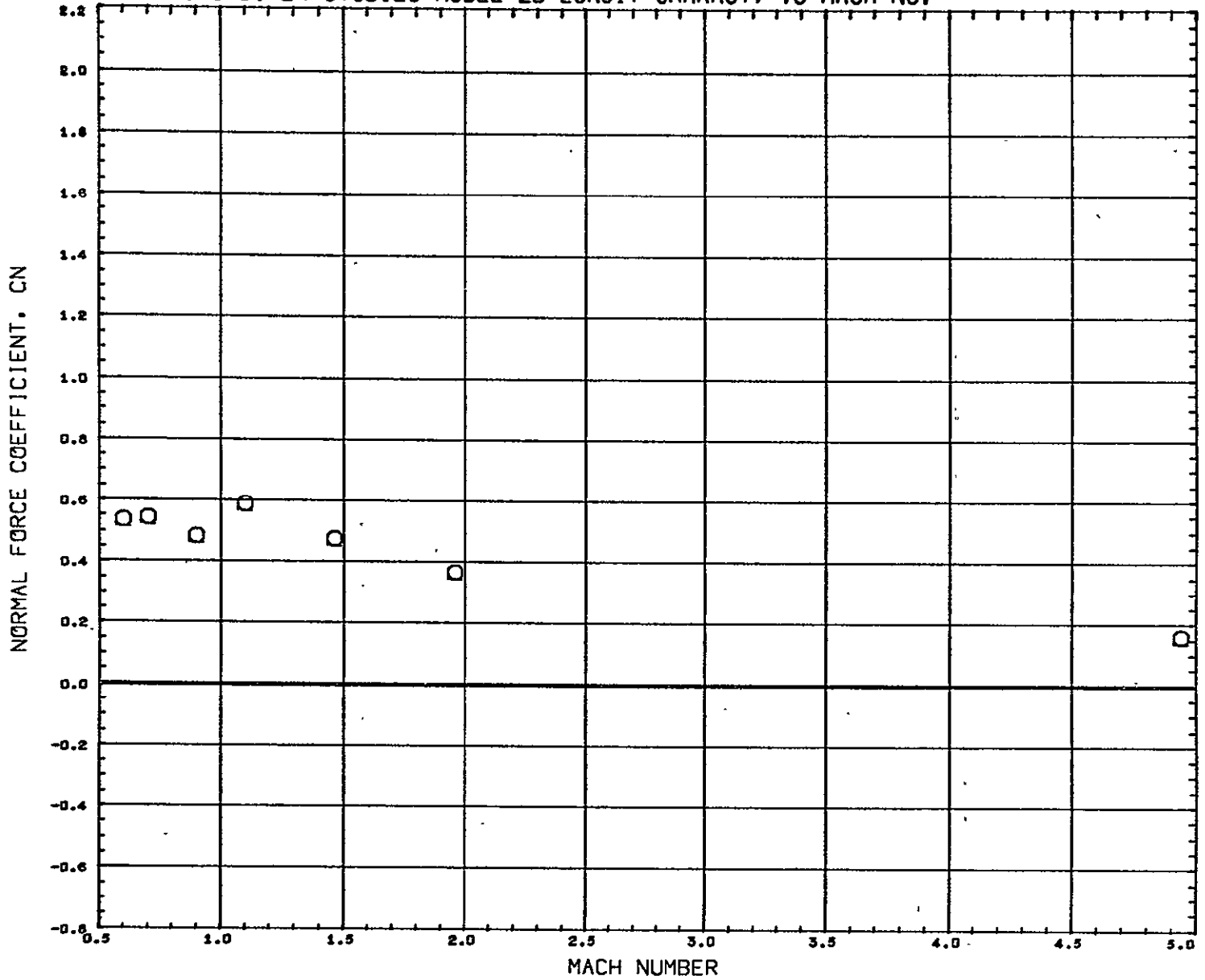


SYMBOL	ALPHA	PARAMETRIC VALUES			
○	0.000	BETA	0.000	ELEVN4	0.000
		RUDER4	0.000	STING	4.000

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XHRP	3.9950	INCHES
YHRP	0.0000	INCHES
ZHRP	0.1350	INCHES
SCALE	0.0035	SCALE

DATA HIST. CODE \*G\*E1

LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, VS MACH NO.

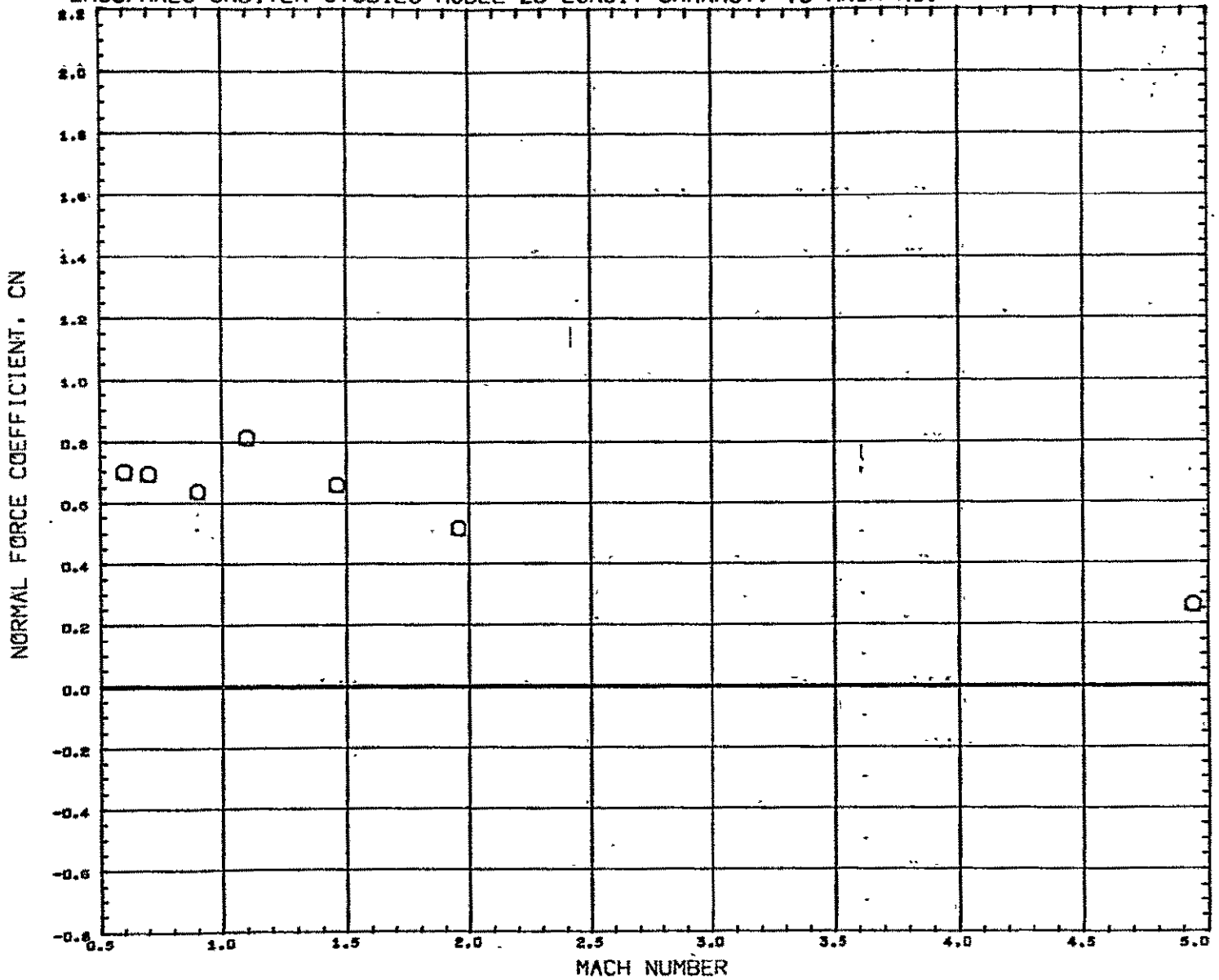


SYMBOL	ALPHA	PARAMETRIC VALUES			
○	10.000	BETA	0.000	ELEVN4	0.000
		RUDER4	0.000	STING	4.000

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE #6#EJ

LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT. VS MACH NO.

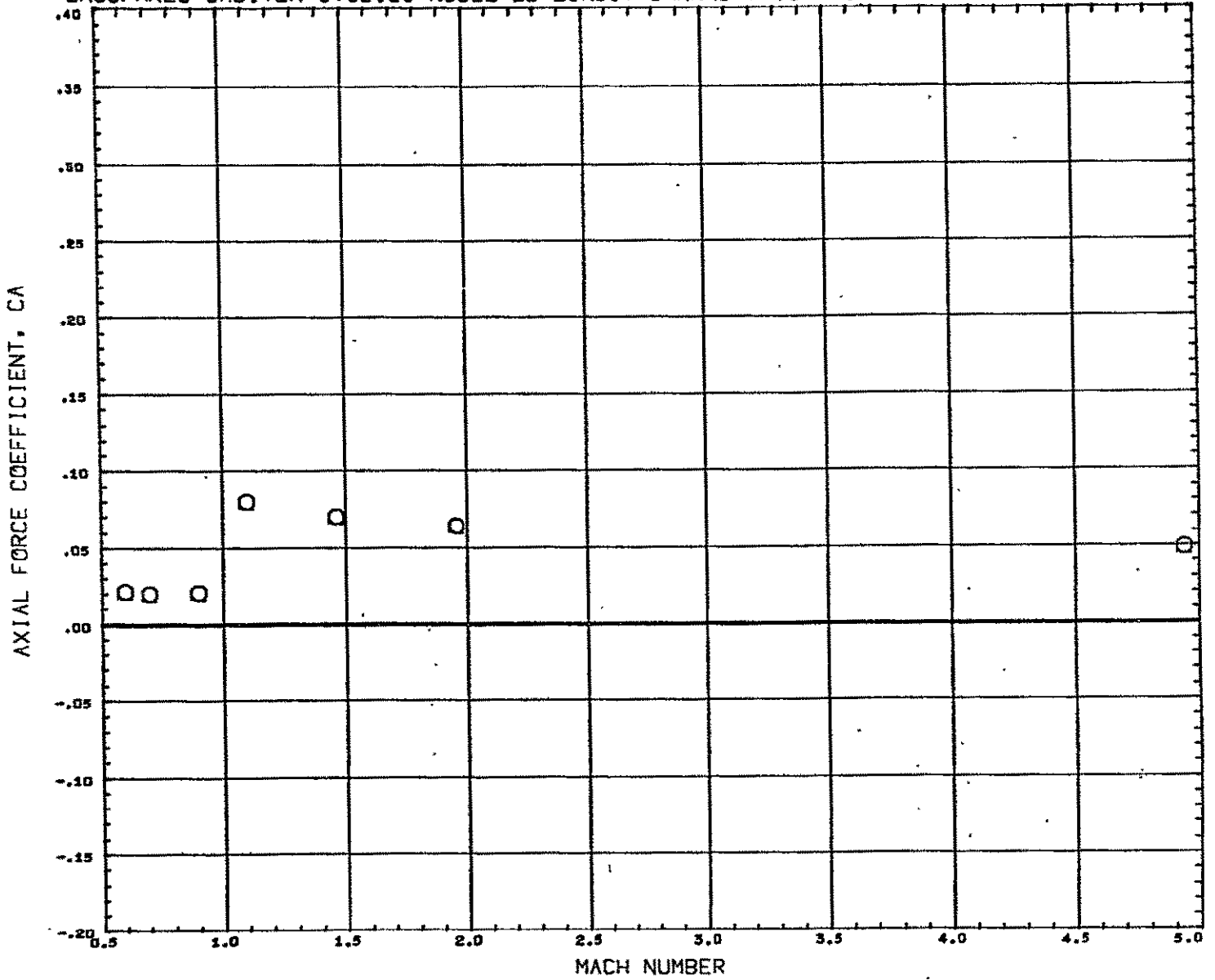


SYMBOL	ALPHA	PARAMETRIC VALUES			
○	15.000	BETA	0.000	ELEVH4	0.000
		RUDER4	0.000	STING	4.000

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE #G4E1

LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, VS MACH NO.

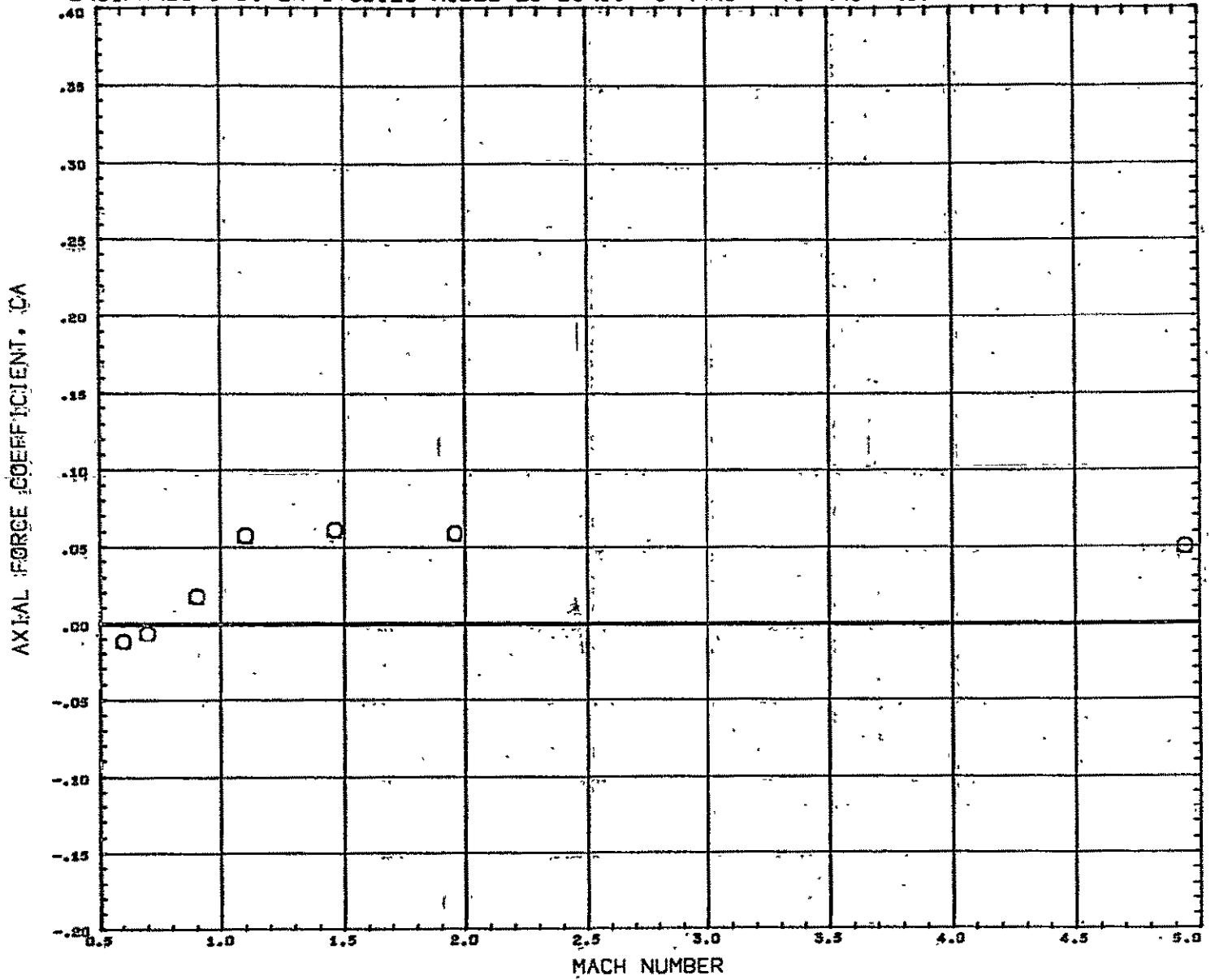


SYMBOL	ALPHA	PARAMETRIC VALUES			
○	0.000	BETA	0.000	ELEVN4	0.000
		RUDER4	0.000	STING	4.000

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XHRP	3.9950	INCHES
YHRP	0.0000	INCHES
ZHRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE \*0\*EI

LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, VS MACH NO.

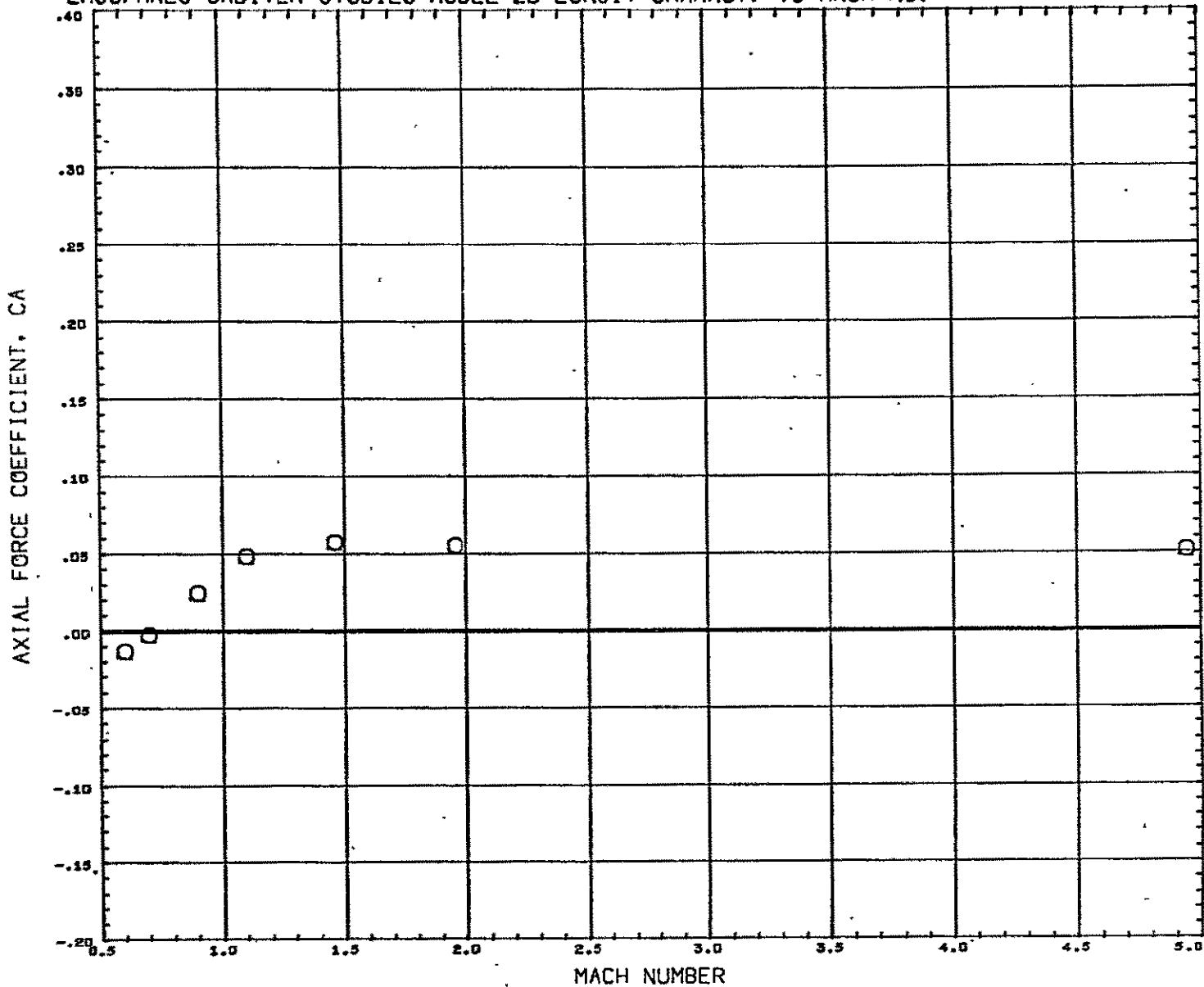


SYMBOL	ALPHA	PARAMETRIC VALUES			
○	10.000	BETA	0.000	ELEVN4	0.000
		RODER4	0.000	STING	4.000

REFERENCE INFORMATION		
SREF	9.0250	99. IN
LREF	0.1420	INCHES
BREF	0.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE #04E1

LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, VS MACH NO.

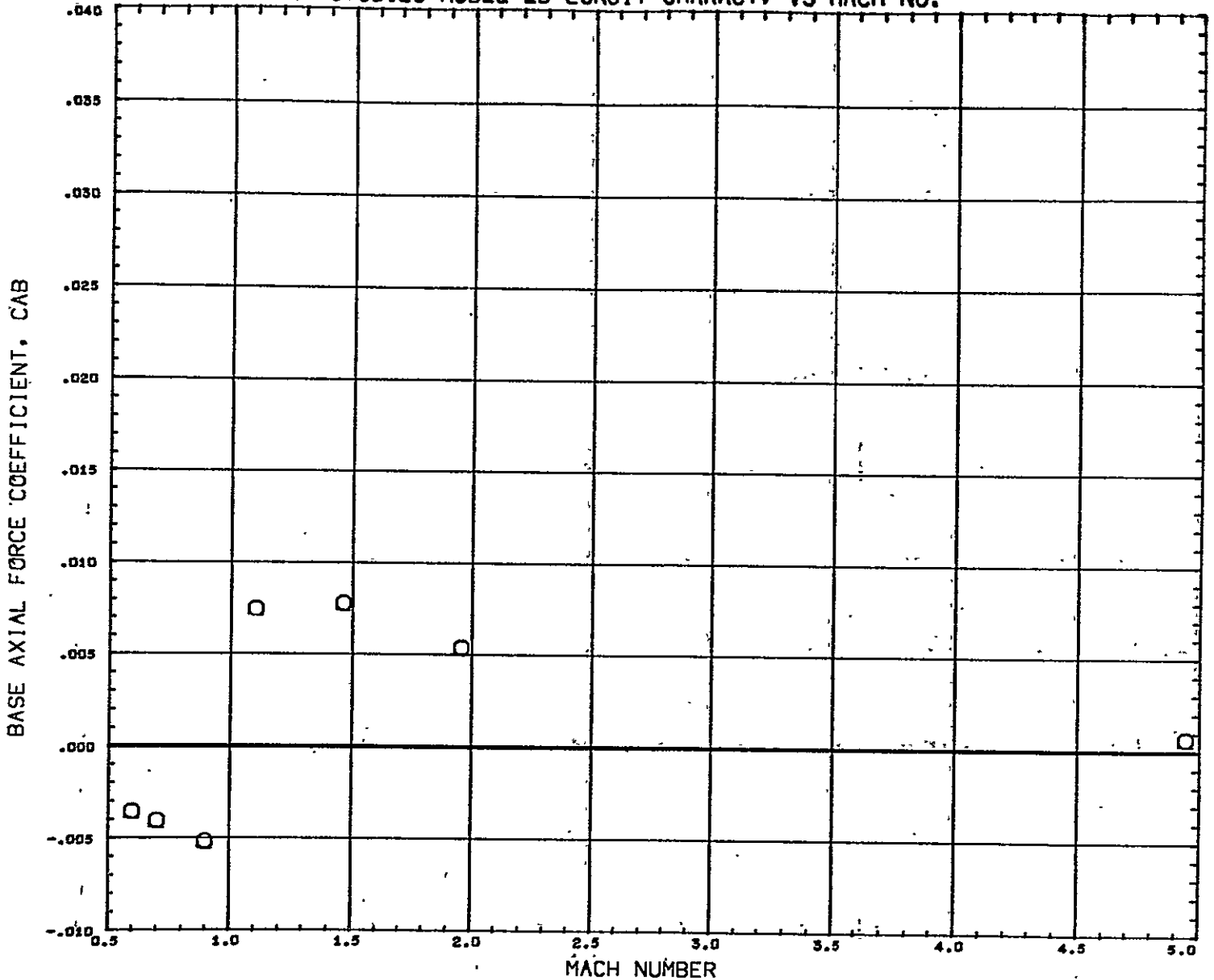


SYMBOL	ALPHA	PARAMETRIC VALUES			
○	15.000	BETA	0.000	ELEVN4	0.000
		RUDER4	0.000	STING	4.000

REFERENCE INFORMATION		
SREF	9.0250	99. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE \*6\*E1

LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, VS MACH NO.



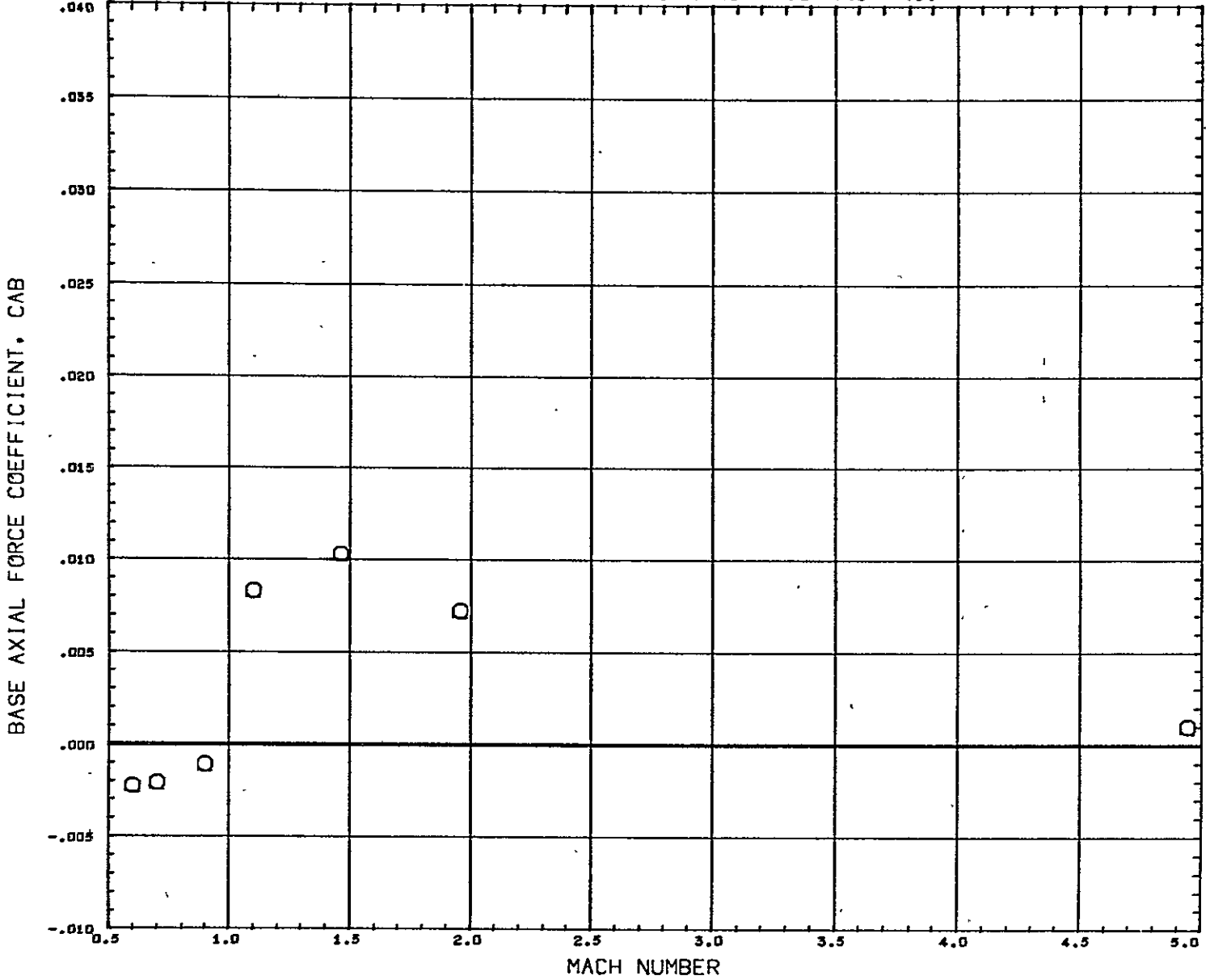
SYMBOL	ALPHA	PARAMETRIC VALUES			
○	0.000	BETA	0.000	ELEVN4	0.000
		RUDER4	0.000	STING	4.000

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE \*G\*EI



LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, VS MACH NO.

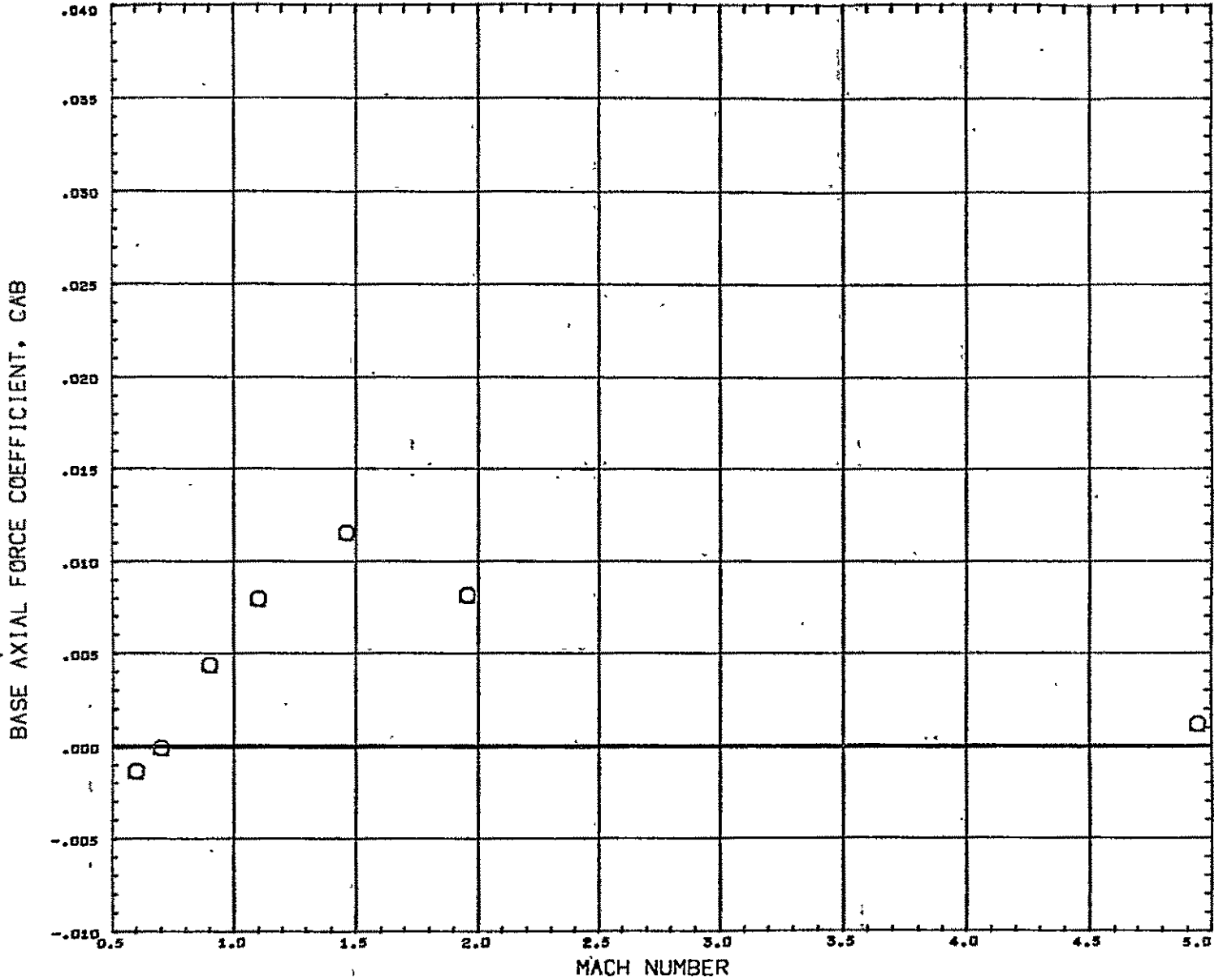


SYMBOL	ALPHA	PARAMETRIC VALUES			
○	10.000	BETA	0.000	ELEVN4	0.000
		RUDER4	0.000	STING	4.000

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE #0#EI

LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, VS MACH NO.



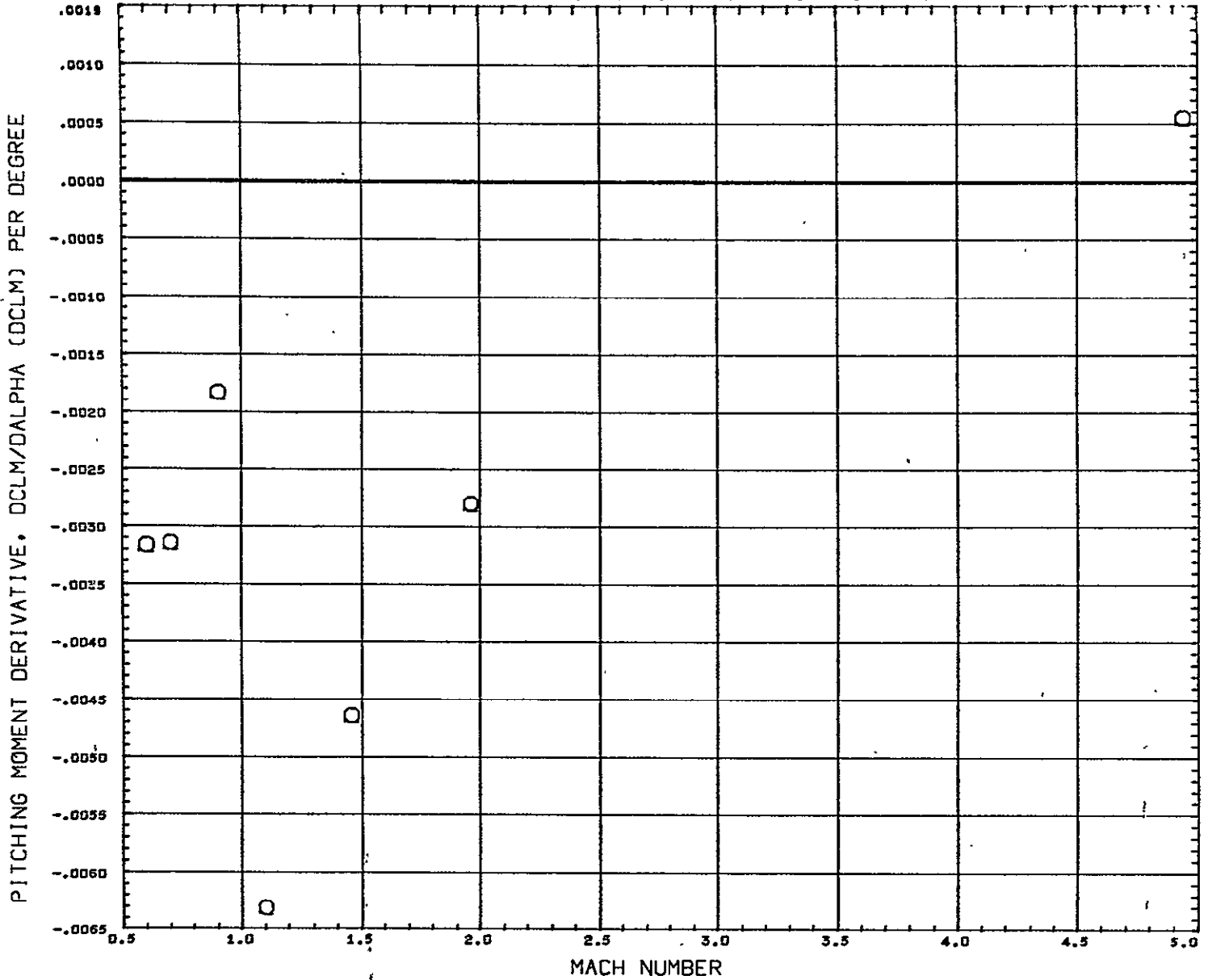
SYMBOL - ALPHA  
 O 15.000

PARAMETRIC VALUES  
 BETA 0.000 ELEVN4 0.000  
 RUDER4 0.000 STING 4.000

REFERENCE INFORMATION  
 SREF 9.0250 SQ. IN  
 LREF 6.1420 INCHES  
 BREF 6.1420 INCHES  
 XMRP 3.9950 INCHES  
 YMRP 0.0000 INCHES  
 ZMRP 0.1350 INCHES  
 SCALE 0.0033 SCALE

DATA HIST. CODE \*G\*EI

LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, VS MACH NO.

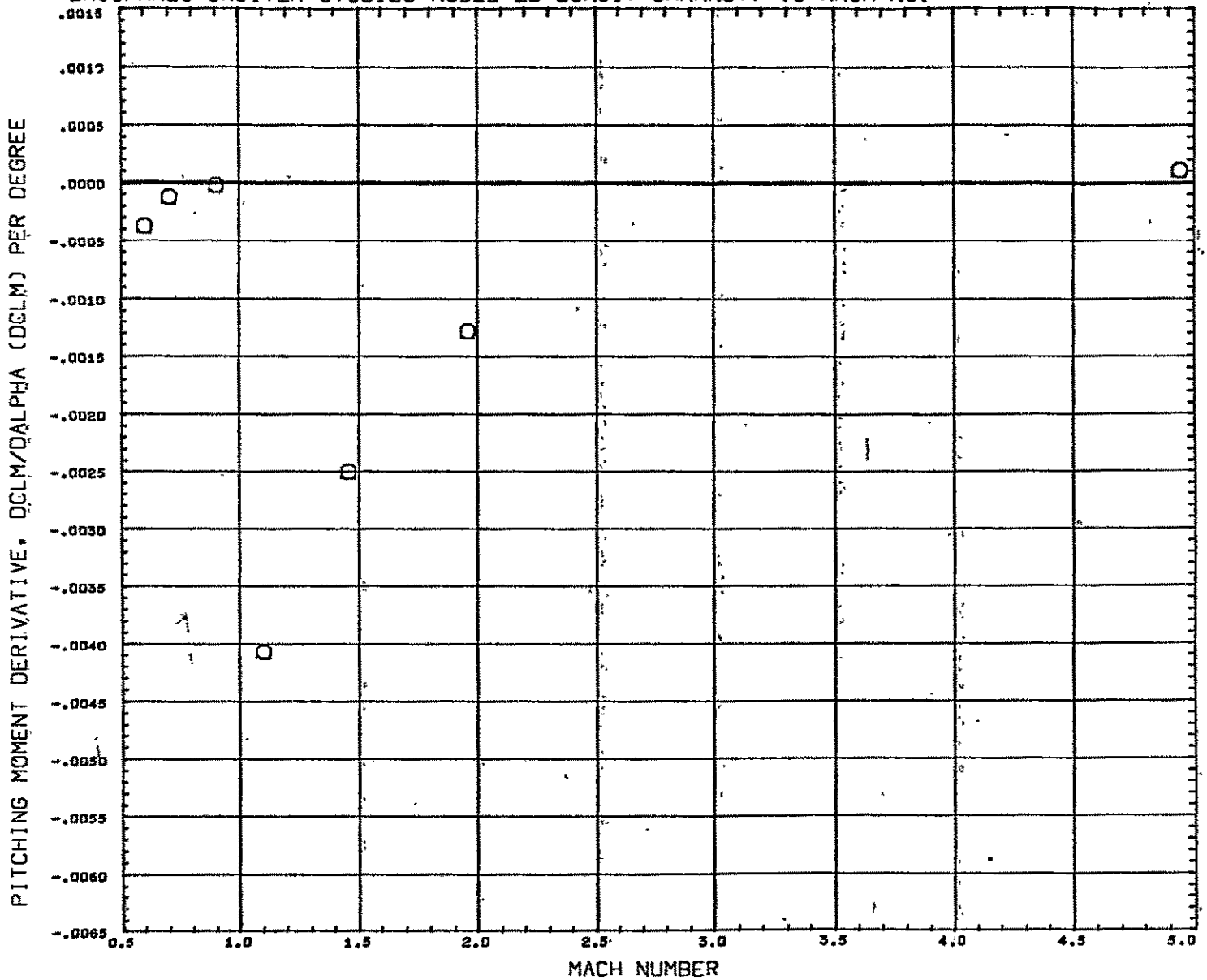


SYMBOL	ALPHA	PARAMETRIC VALUES			
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		RUDER4	0.000	STING	4.000

REFERENCE INFORMATION		
SREF	9.0250	sq. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE \*6\*EIG

MSFC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT. VS MACH NO.

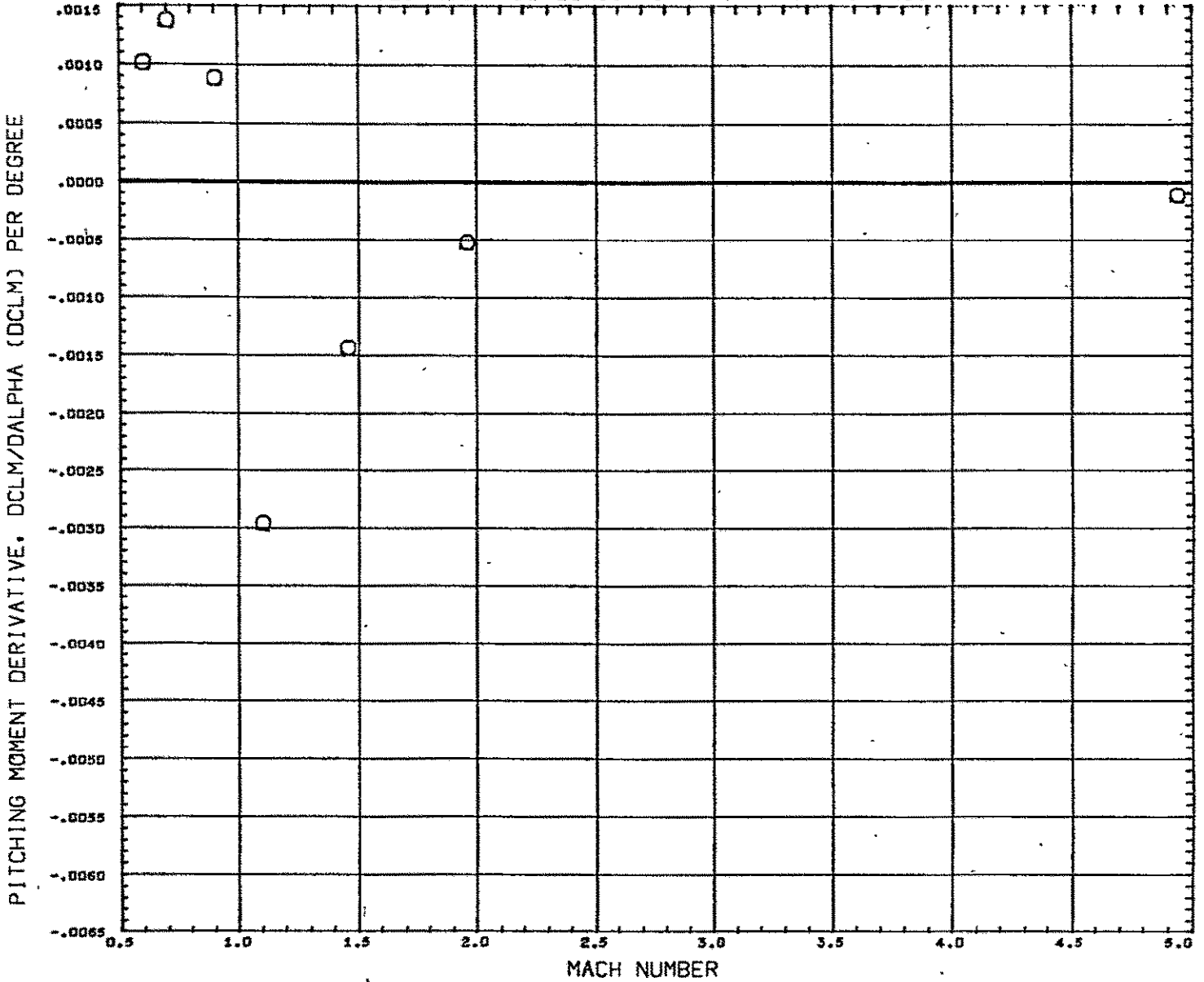


SYMBOL	ALPHA	PARAMETRIC VALUES			
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		RUDER4	0.000	STING	4.000

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9930	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE \*G\*EIG

MSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, VS MACH NO.

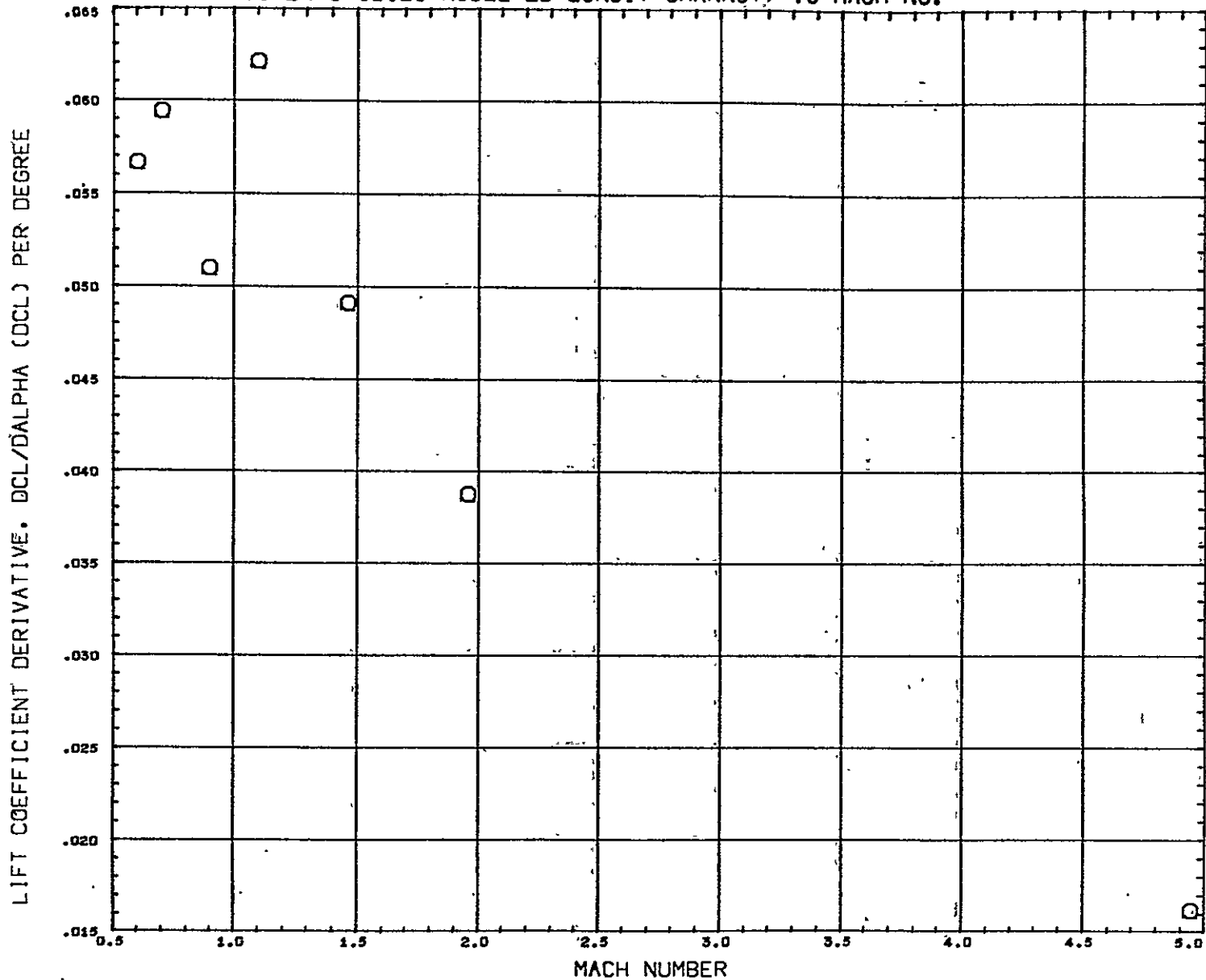


SYMBOL	ALPHA	PARAMETRIC VALUES			
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		RUDER4	0.000	STING	4.000

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE #6#EIG

LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, VS MACH NO.

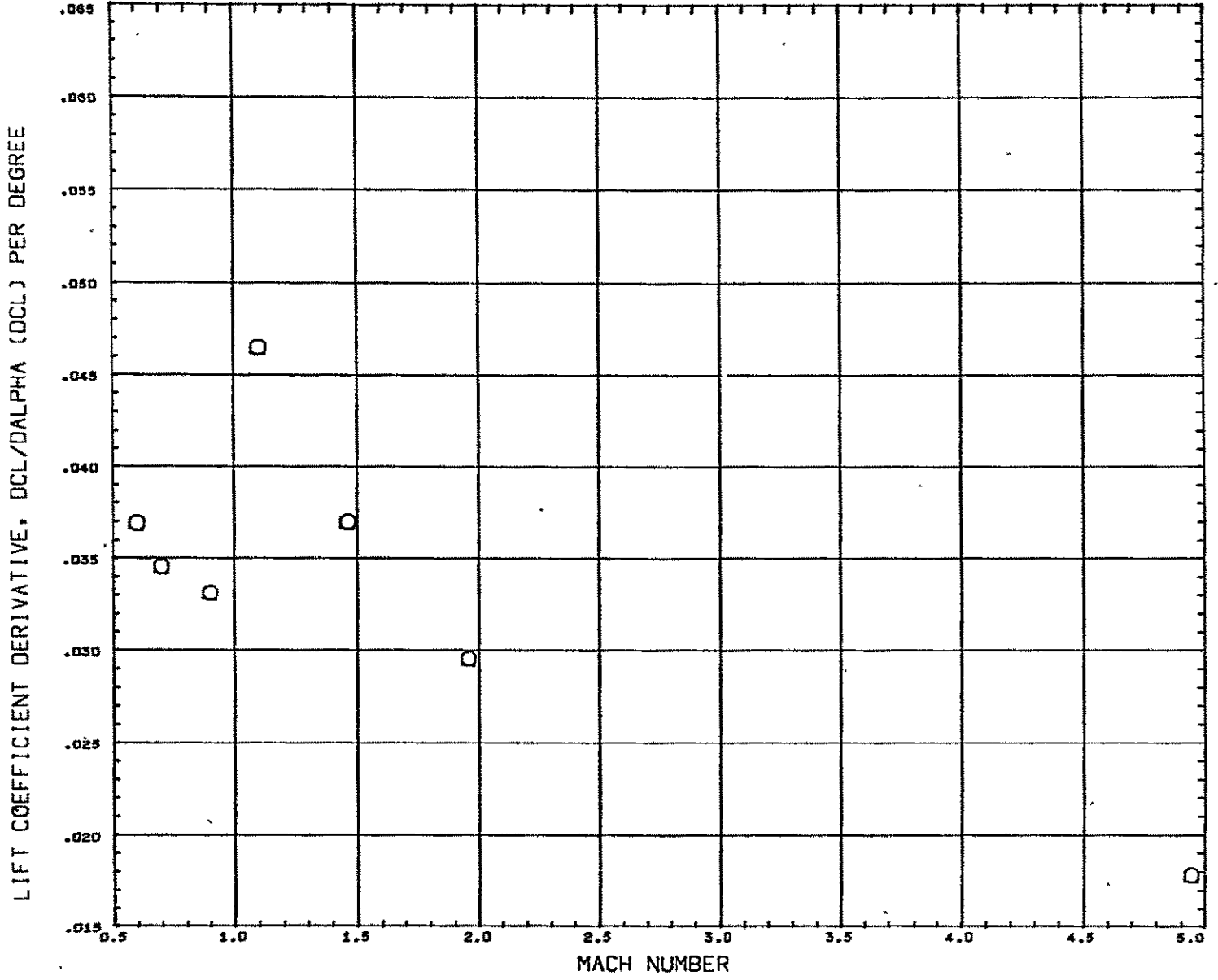


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 PARAMETRIC VALUES  
 BETA 0.000 ELEVN4 0.000  
 RUDER4 0.000 STING 4.000

REFERENCE INFORMATION  
 SREF 9.0250 SQ. IN  
 LREF 6.1420 INCHES  
 BREF 6.1420 INCHES  
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 YMRP 0.0000 INCHES  
 ZMRP 0.1350 INCHES  
 SCALE 0.0035 SCALE

DATA HIST. CODE \*G\*EIG

LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, VS MACH NO.

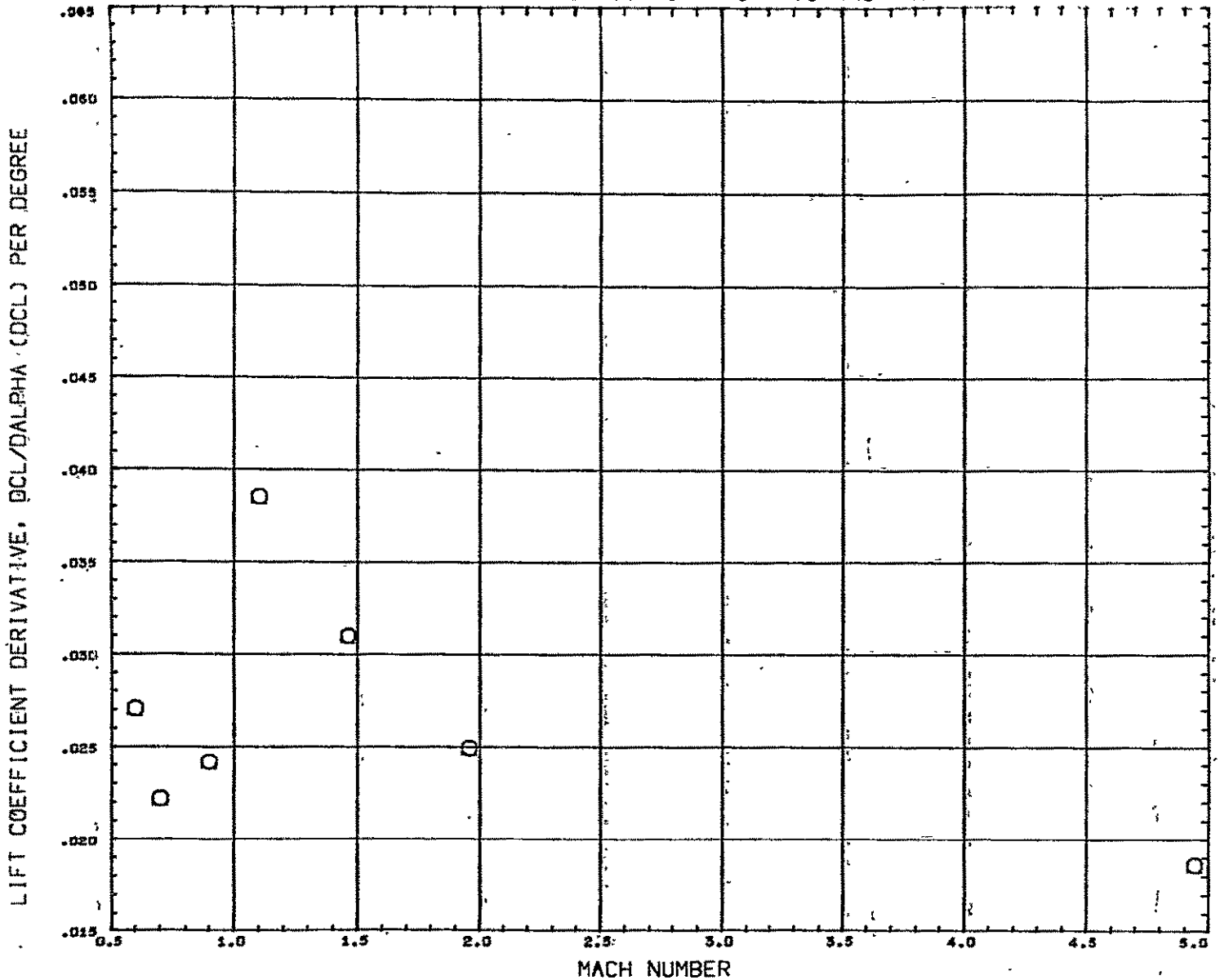


SYMBOL ○ ALPHA 10.000  
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 RUDER4 0.000 STING 4.000

REFERENCE INFORMATION  
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 LREF 6.1420 INCHES  
 BREF 6.1420 INCHES  
 XHRP 3.9950 INCHES  
 YHRP 0.0000 INCHES  
 ZHRP 0.1350 INCHES  
 SCALE 0.0033 SCALE

DATA HIST. CODE #0#EIG

LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, VS MACH NO.



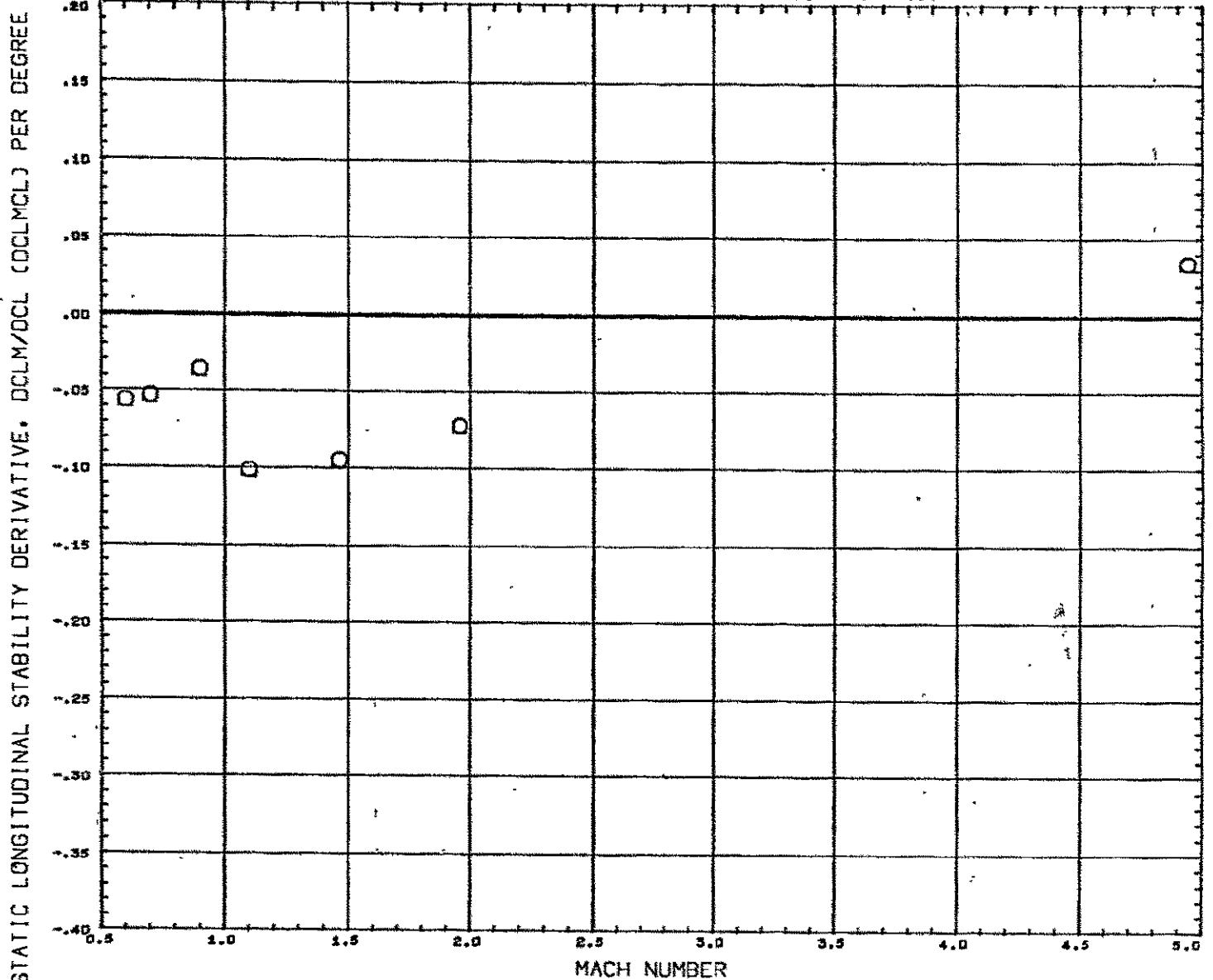
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 PARAMETRIC VALUES  
 BETA 0.000 ELEVN4 0.000  
 RUDER4 0.000 STING 4.000

REFERENCE INFORMATION  
 SREF 9.0250 SQ. IN  
 LREF 6.1420 INCHES  
 BREF 6.1420 INCHES  
 XMRP 3.9950 INCHES  
 YMRP 0.0000 INCHES  
 ZMRP 0.1350 INCHES  
 SCALE 0.0033 SCALE

DATA HIST. CODE \*0\*EIG



LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, VS MACH NO.

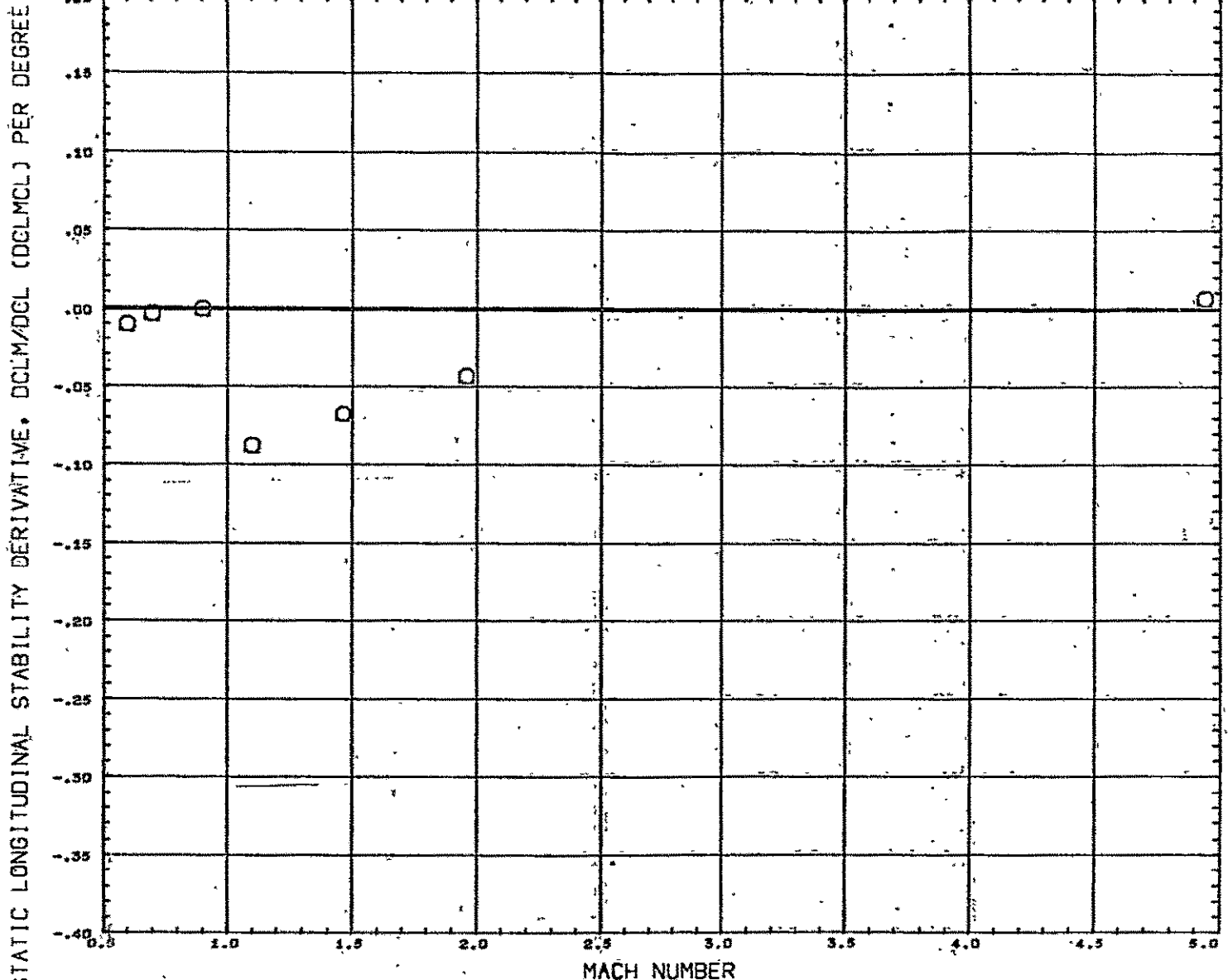


SYMBOL ○ ALPHA 0.000 BETA 0.000 ELEVN4 0.000  
 PARAMETRIC VALUES RUDCR4 0.000 STING 4.000

REFERENCE INFORMATION  
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 BREF 6.1420 INCHES  
 XMRP 3.9950 INCHES  
 YMRP 0.0000 INCHES  
 ZMRP 0.1550 INCHES  
 SCALE 0.0033 SCALE

DATA HIST. CODE #G#EIGR

LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT. VS MACH NO.

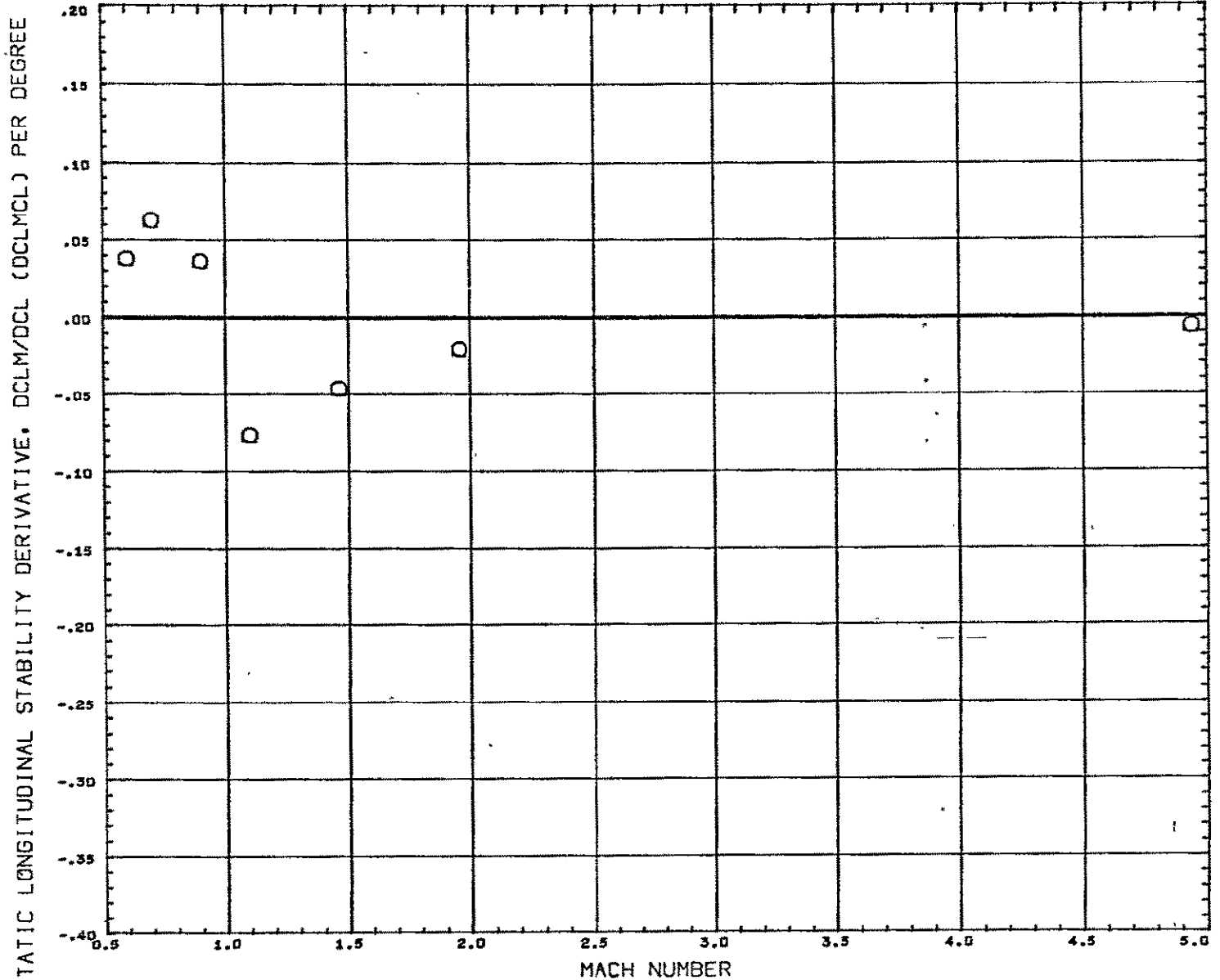


SYMBOL ○ ALPHA 10.000 BETA 0.000 ELEVN4 0.000  
 RUDER4 0.000 STING 4.000

REFERENCE INFORMATION  
 SREF 9.0250 SQ. IN  
 LREF 6.1420 INCHES  
 BREF 6.1420 INCHES  
 XMRP 3.9950 INCHES  
 YMRP 0.0000 INCHES  
 ZMRP 0.1350 INCHES  
 SCALE 0.0033 SCALE

DATA HIST. CODE \*6#EIGR

LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT. VS MACH NO.

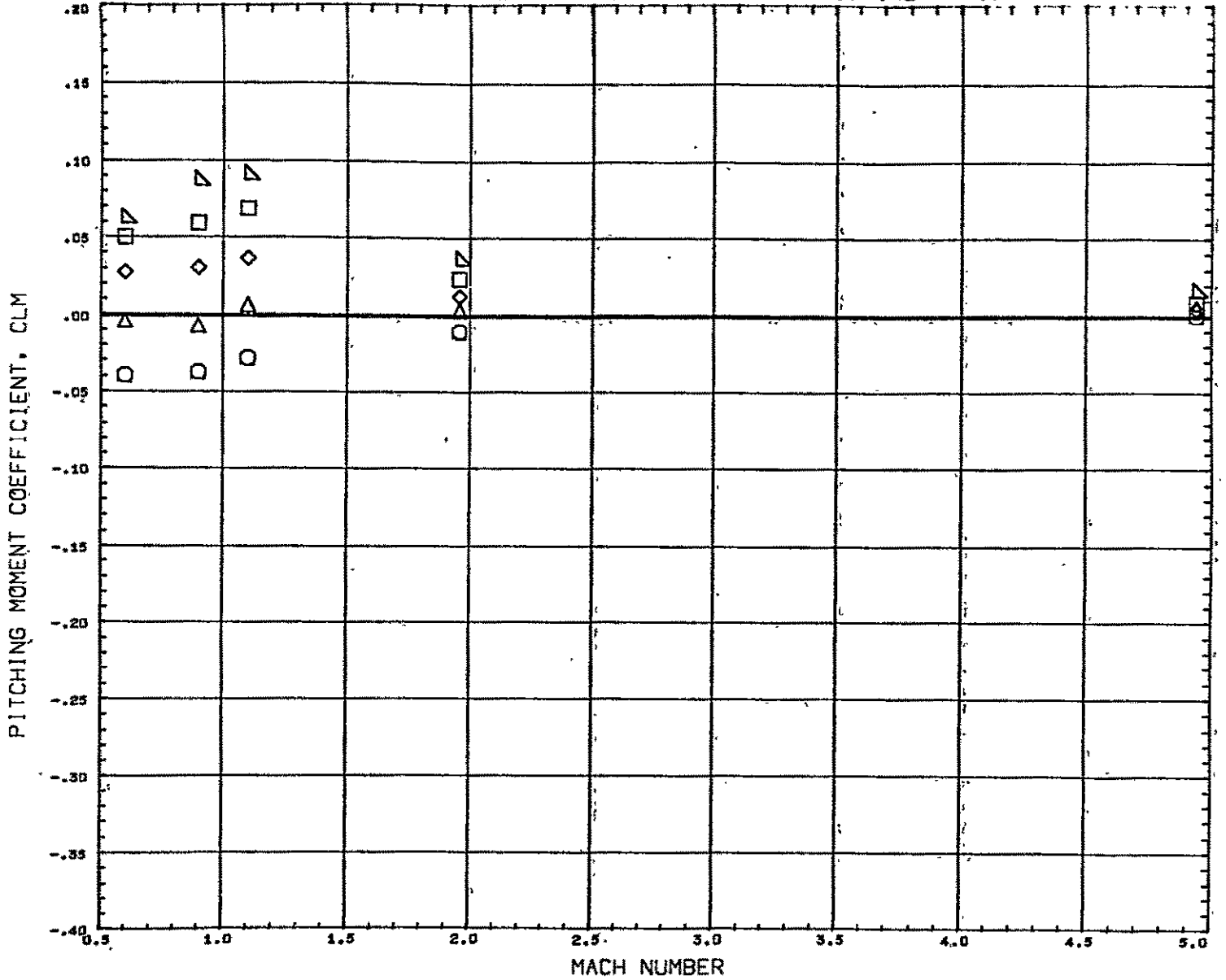


SYMBOL ○  
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 BETA 0.000  
 RUDER4 0.000  
 PARAMETRIC VALUES  
 ELEVN4 0.000  
 STING 4.000

REFERENCE INFORMATION  
 SREF 9.0250 SQ. IN  
 LREF 6.1420 INCHES  
 BREF 6.1420 INCHES  
 XMRP 3.9950 INCHES  
 YMRP 0.0000 INCHES  
 ZMRP 0.1350 INCHES  
 SCALE 0.0033 SCALE

DATA HIST. CODE #0#EIGR

LMSC/HREC ORBITER STUDIES-MODEL 2B-PITCH EFF VS MACH NO. (ALPHA=0)

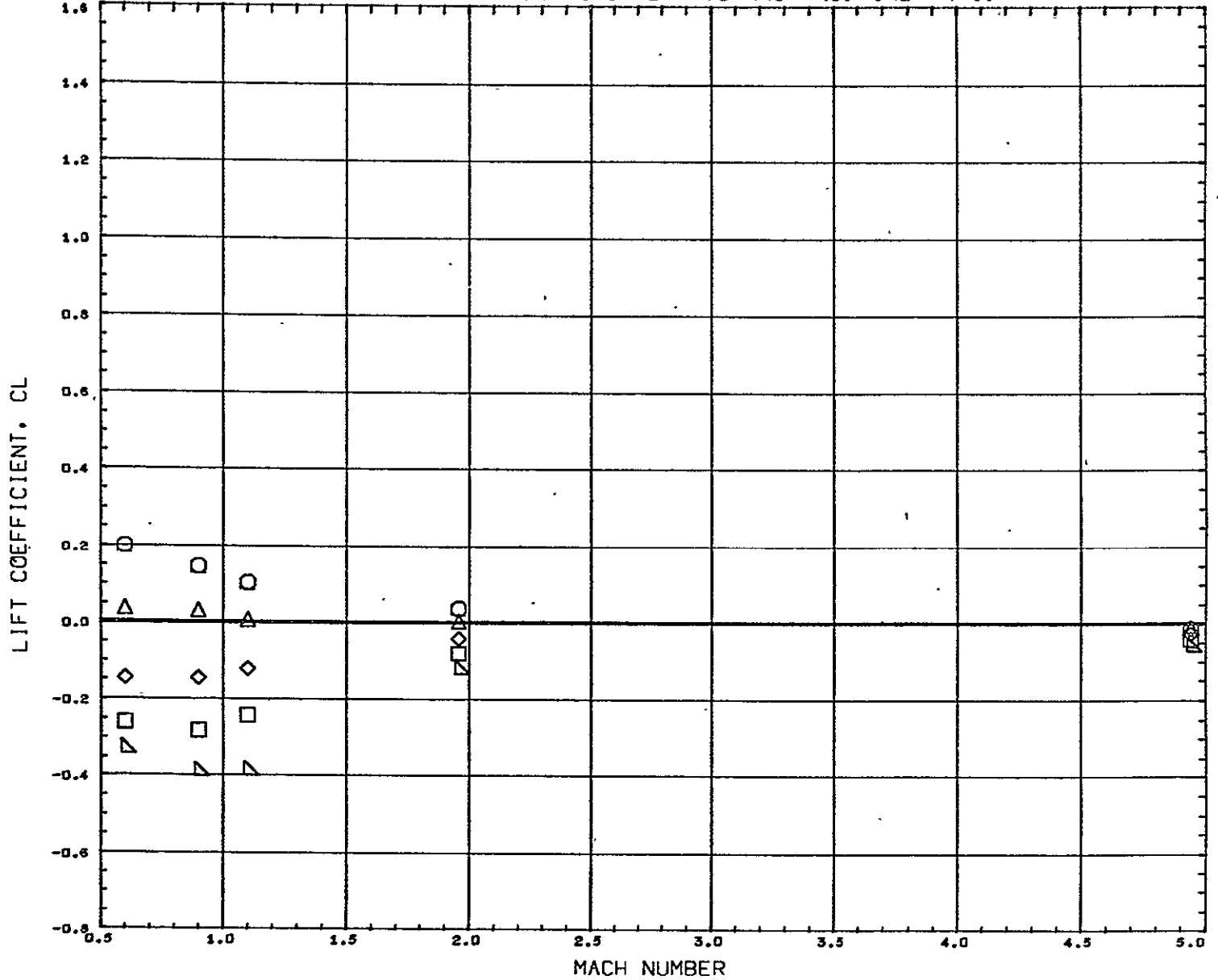


SYMBOL	ELEVN4	PARAMETRIC VALUES			
		BETA	ALPHA	STING.	
◇	10.000	0.000	0.000	4.000	
◇	0.000	0.000	0.000	4.000	
◇	-10.000				
◇	-20.000				
◇	-30.000				

DATA HIST. CODE \*G\*EI#B

REFERENCE INFORMATION		
SRF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

LMSC/HREC ORBITER STUDIES-MODEL 2B-PITCH EFF VS MACH NO. (ALPHA=0)

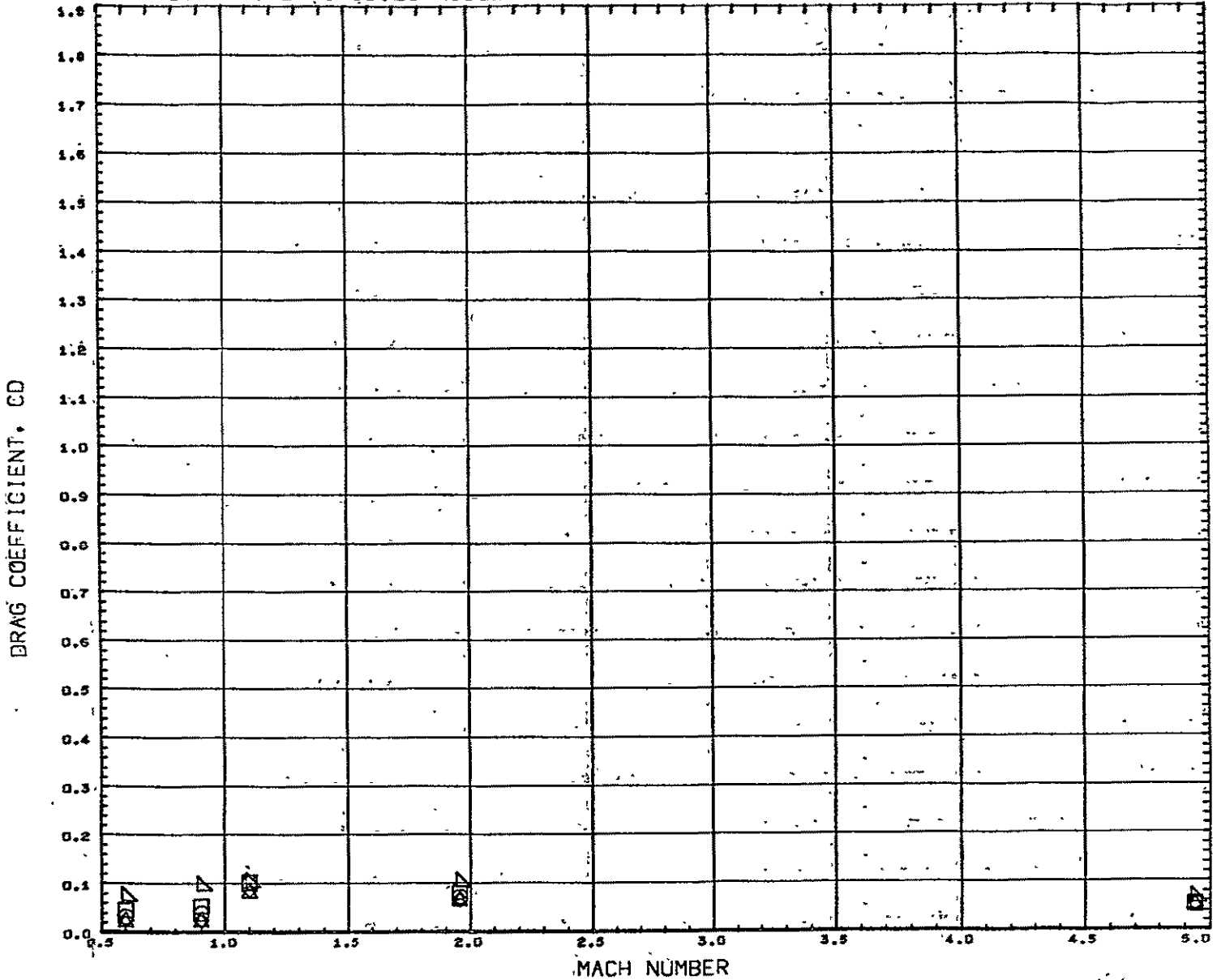


SYMBOL	ELEVN4	PARAMETRIC VALUES			
○	10.000	BETA	0.000	ALPHA	0.000
△	0.000	RUDER4	0.000	STING	4.000
◇	-10.000				
□	-20.000				
▽	-30.000				

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE #G#EI#B

LMSC/HREC ORBITER STUDIES-MODEL 2B-PITCH EFF VS MACH NO. (ALPHA=0)

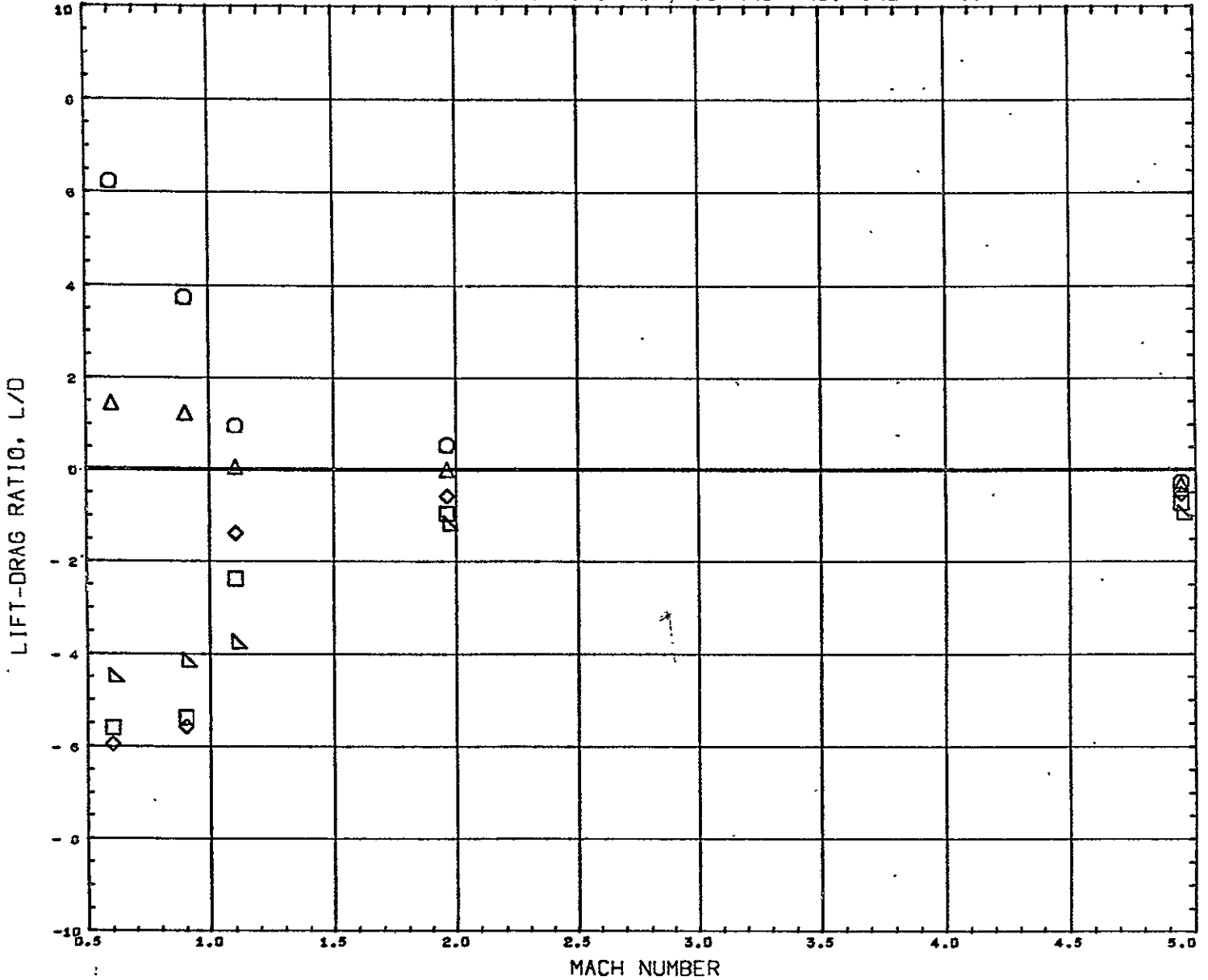


SYMBOL	ELEVN4	PARAMETRIC VALUES			
○	10.000	BETA	0.000	ALPHA	0.000
△	0.000	RUDER4	0.000	STING	4.000
◇	- 10.000				
□	- 20.000				
▽	- 30.000				

REFERENCE INFORMATION		
SREF	9.0250	SQ.IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XNRP	3.9950	INCHES
YNRP	0.0000	INCHES
ZNRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE #G4E148

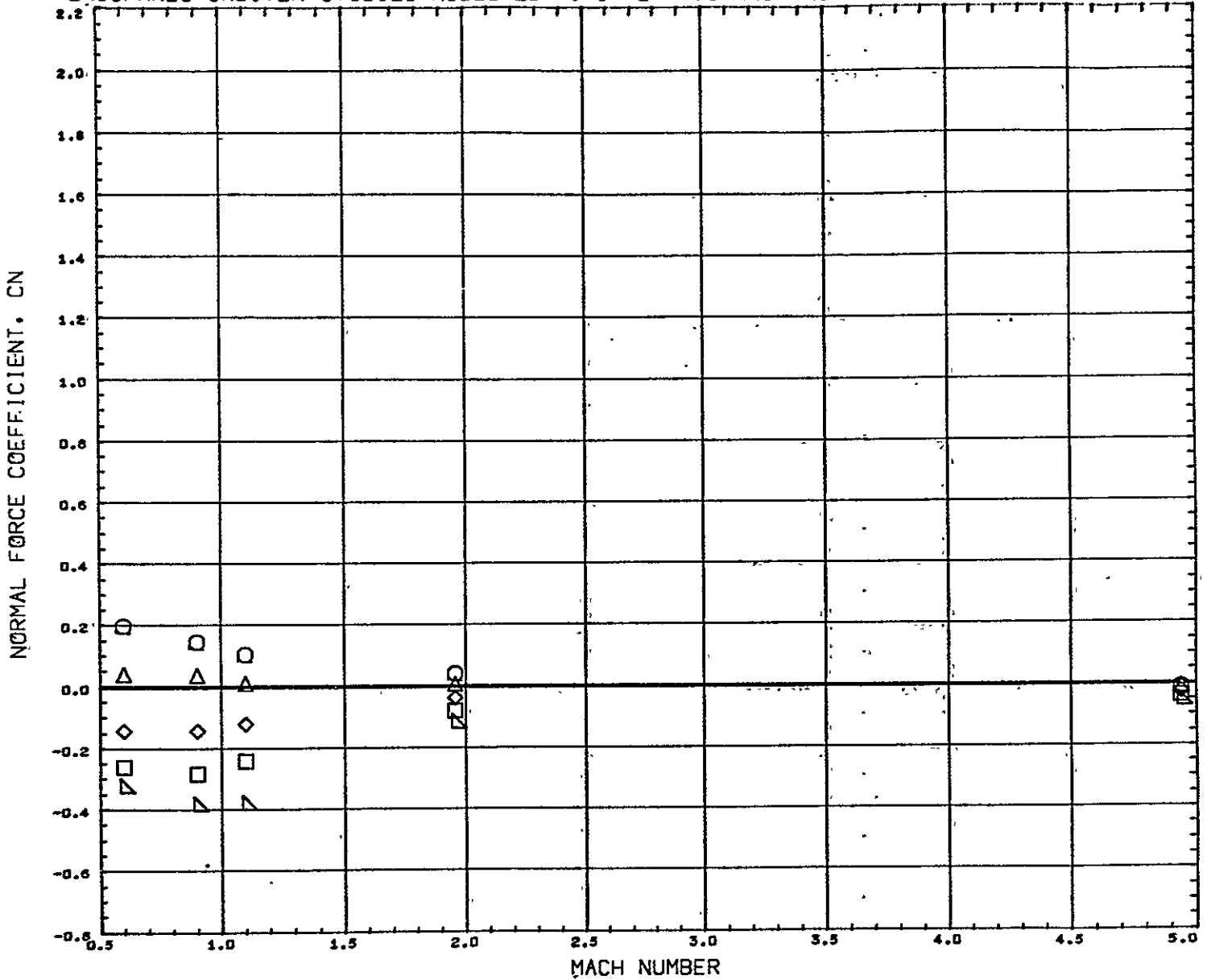
LMSC/HREC ORBITER STUDIES-MODEL 2B-PITCH EFF. VS MACH NO. (ALPHA=0)



SYMBOL	ELEVN4	PARAMETRIC VALUES			REFERENCE INFORMATION			
○	10.000	BETA	0.000	ALPHA	0.000	SREF	9.0250	SQ. IN
△	0.000	RUDER4	0.000	STING	4.000	LREF	6.1420	INCHES
◇	- 10.000					BREF	6.1420	INCHES
□	- 20.000					XHRP	3.9950	INCHES
▽	- 30.000					YHRP	0.0000	INCHES
						ZHRP	0.1350	INCHES
						SCALE	0.0033	SCALE

DATA HIST. CODE \*G\*E1\*8

LMSC/HREC ORBITER STUDIES-MODEL 2B-PITCH EFF VS MACH NO. (ALPHA=0)



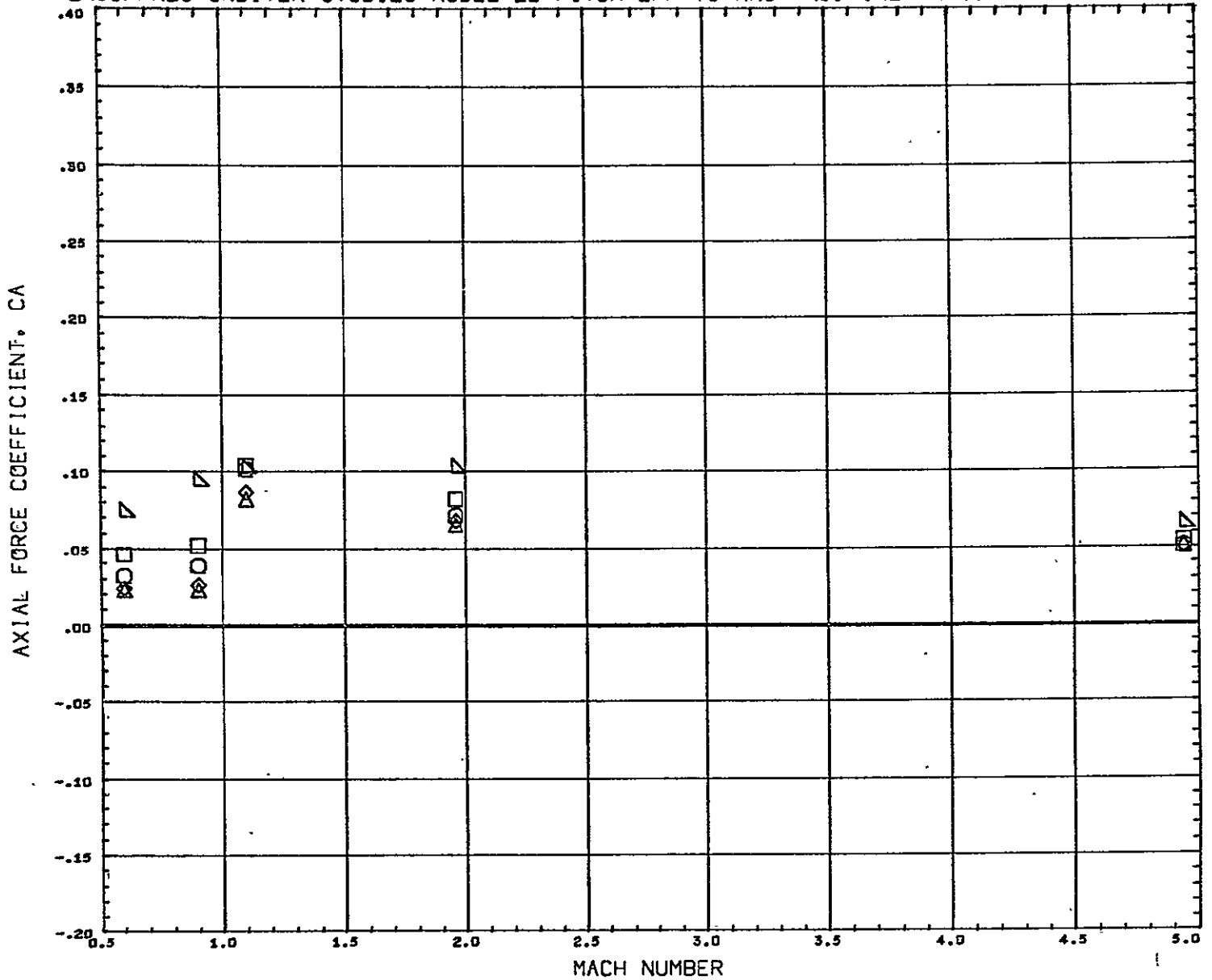
SYMBOL	ELEVN4	PARAMETRIC VALUES			
○	10.000	BETA	0.000	ALPHA	0.000
△	0.000	RUDER4	0.000	STING	4.000
◇	- 10.000				
□	- 20.000				
▽	- 30.000				

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE \*G\*EI#B



LMSC/HREC ORBITER STUDIES-MODEL 2B-PITCH EFF VS MACH NO. (ALPHA=0)

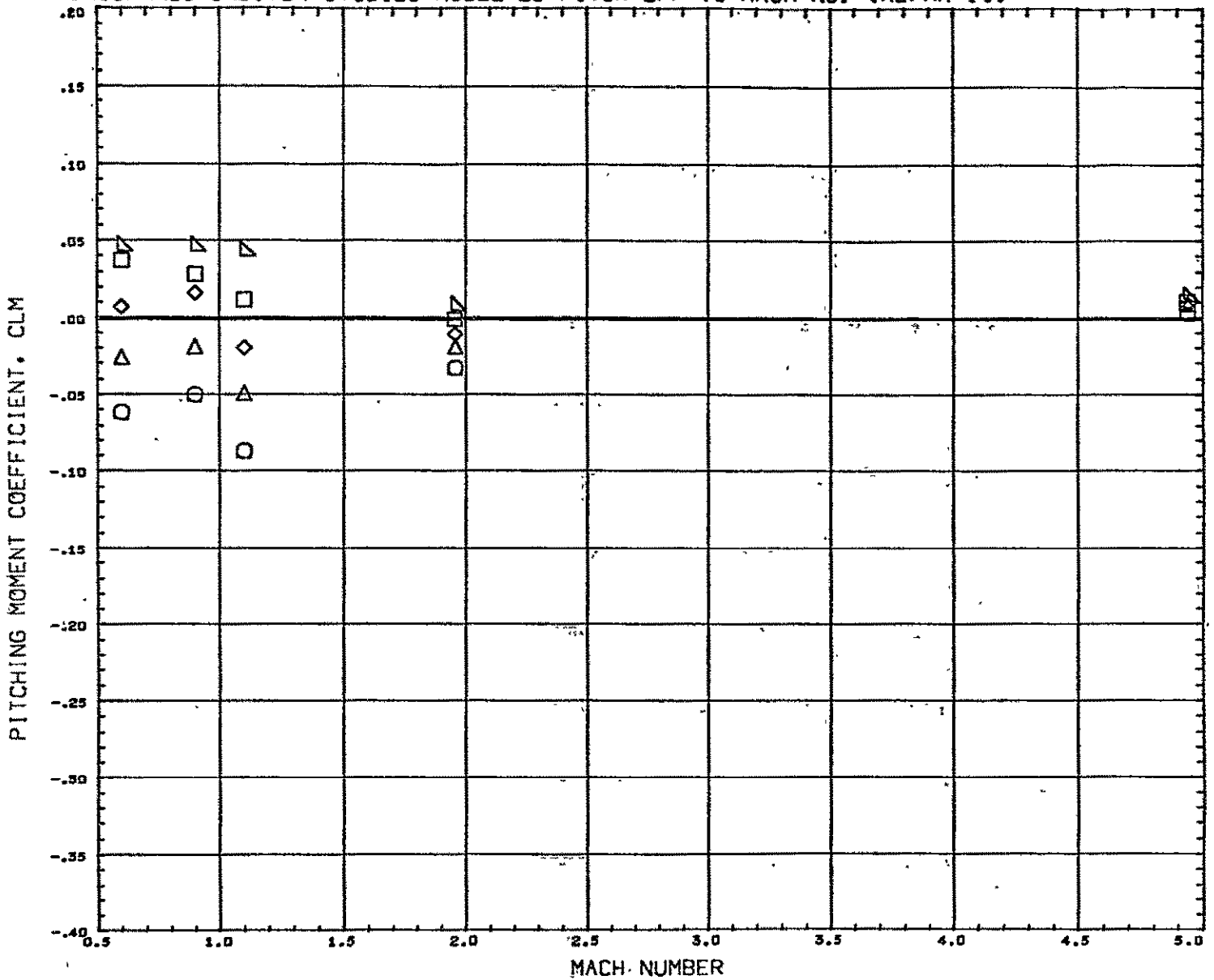


SYMBOL	ELEVN4	PARAMETRIC VALUES			
□	10.000	BETA	0.000	ALPHA	0.000
◇	0.000	RUDER4	0.000	STING	4.000
◇	- 10.000				
◇	- 20.000				
◇	- 30.000				

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XHRP	3.9950	INCHES
YHRP	0.0000	INCHES
ZHRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE #G\*EI\*B

LMSC/HREC ORBITER STUDIES-MODEL 2B-PITCH EFF VS MACH NO. (ALPHA=10)



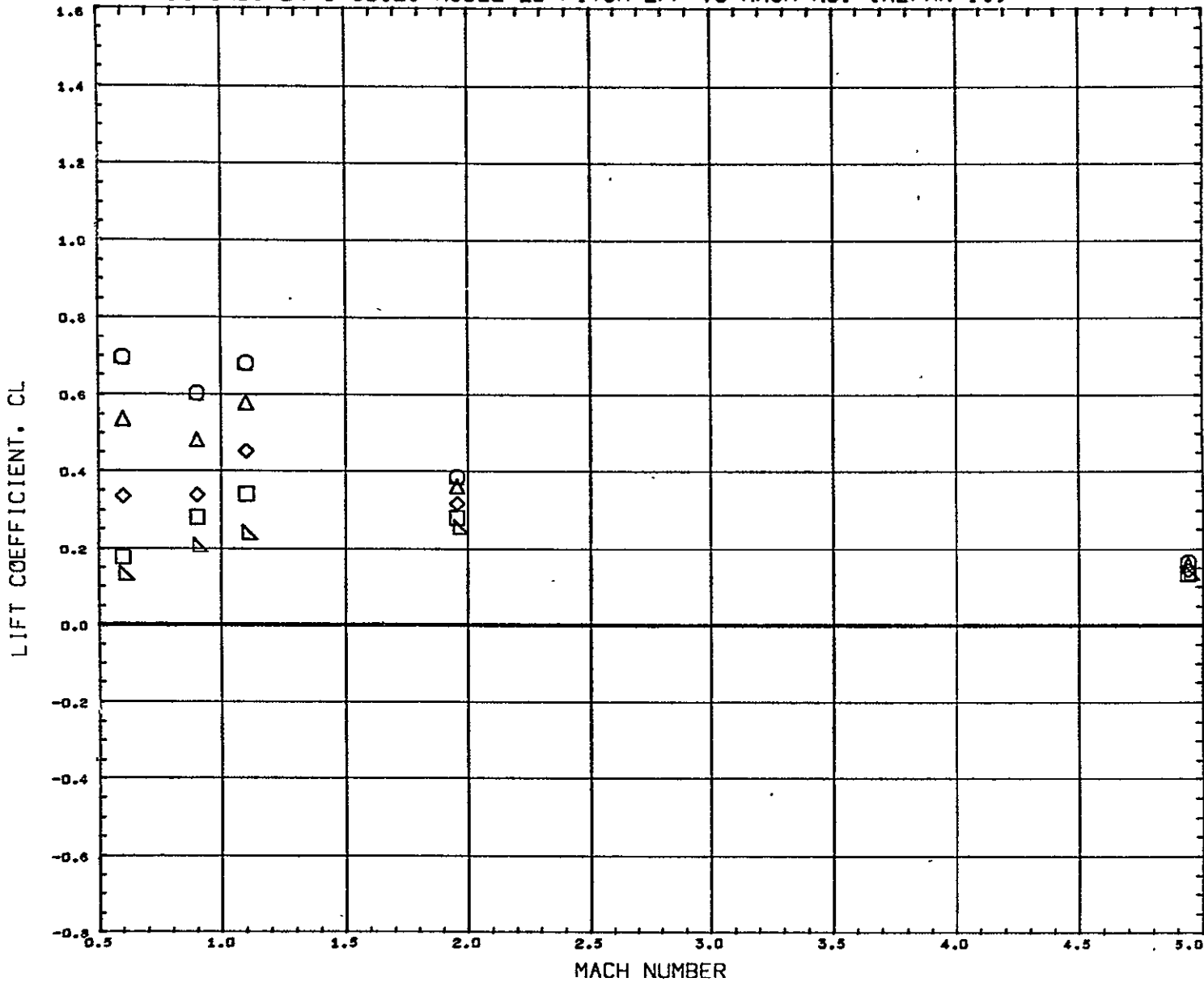
SYMBOL	ELEVATION	PARAMETRIC VALUES			
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△	0.000	RUDER4	0.000	STING	4.000
◇	-10.000				
□	-20.000				
▽	-30.000				

REFERENCE INFORMATION		
SREF	9.0250	50. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XHRP	3.9950	INCHES
YHRP	0.0000	INCHES
ZHRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE \*G\*EI\*8\*8

C.12

LMSC/HREC ORBITER STUDIES-MODEL 2B-PITCH EFF VS MACH NO. (ALPHA=10)

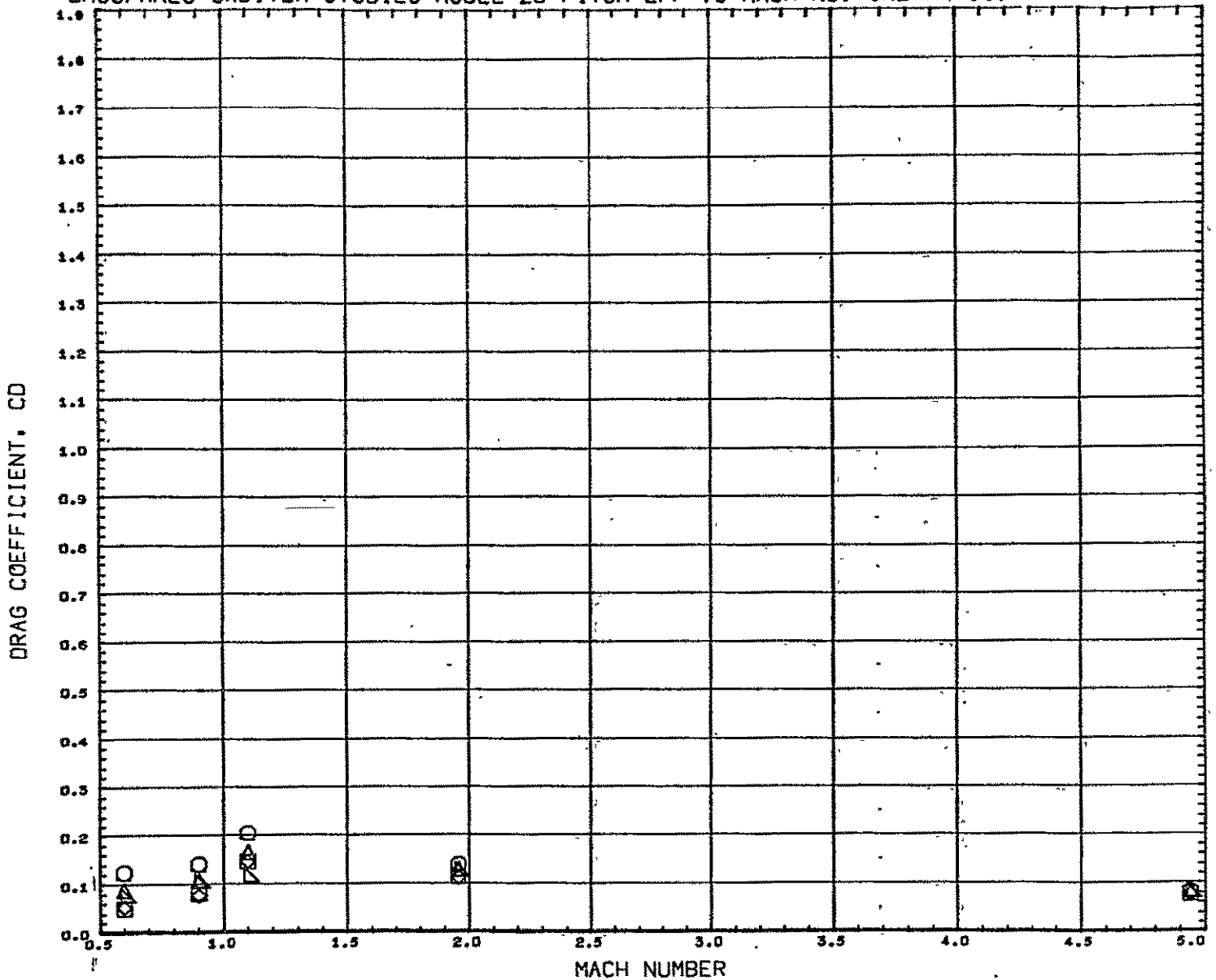


SYMBOL	ELEVN4	PARAMETRIC VALUES			
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△	0.000	RUDER4	0.000	STING	4.000
◇	- 10.000				
□	- 20.000				
▽	- 30.000				

REFERENCE INFORMATION		
SREF	9.0250	sq. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XHRP	3.9950	INCHES
YHRP	0.0000	INCHES
ZHRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE \*G\*EI#B\*B

LMSC/HREC ORBITER STUDIES-MODEL 2B-PITCH EFF VS MACH NO. (ALPHA=10)

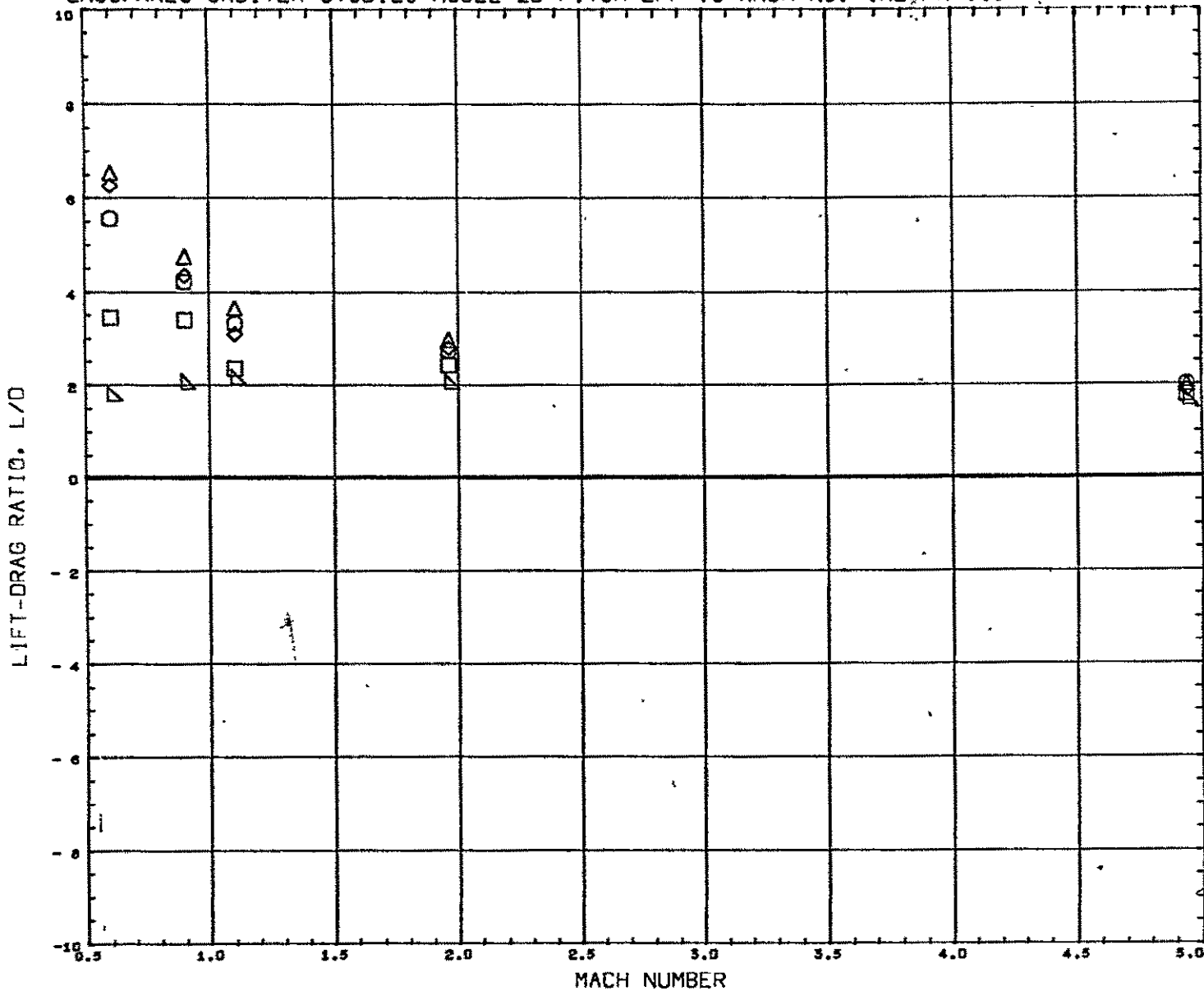


SYMBOL	ELEVN4	PARAMETRIC VALUES			
○	10.000	BETA	0.000	ALPHA	10.000
△	0.000	RUDER4	0.000	STING	4.000
◇	- 10.000				
□	- 20.000				
▽	- 30.000				

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE \*G\*EI\*B\*B

LMSC/HREC ORBITER STUDIES-MODEL 2B-PITCH EFF VS MACH NO. (ALPHA=10)

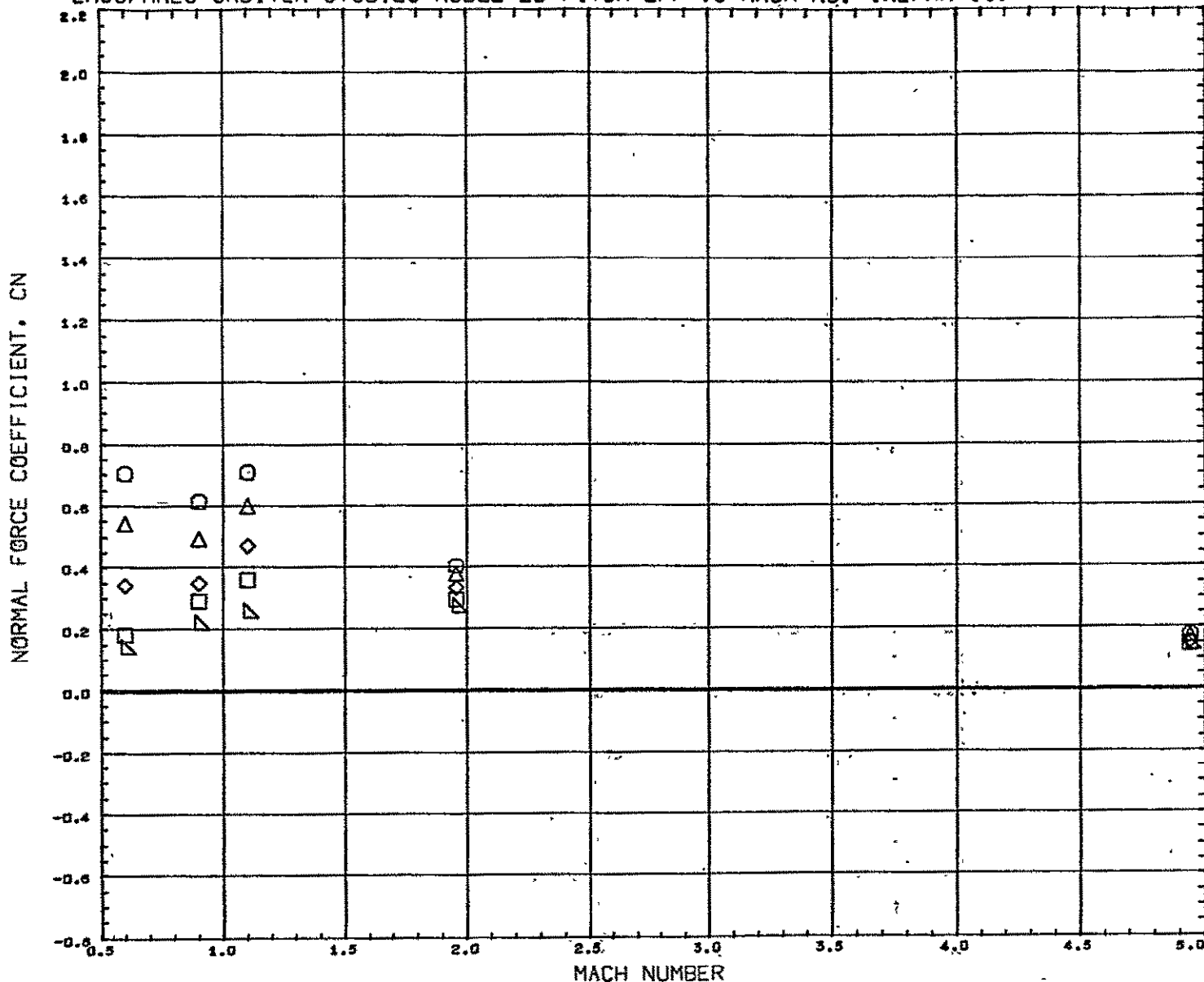


SYMBOL	ELEVN4	PARAMETRIC VALUES			
△	10.000	BETA	0.000	ALPHA	.10.000
○	0.000	RUDER4	0.000	STING	4.000
◇	- 10.000				
□	- 20.000				
▽	- 30.000				

REFERENCE INFORMATION		
SREF	9.0250	sq. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE #C\*EI\*8\*B

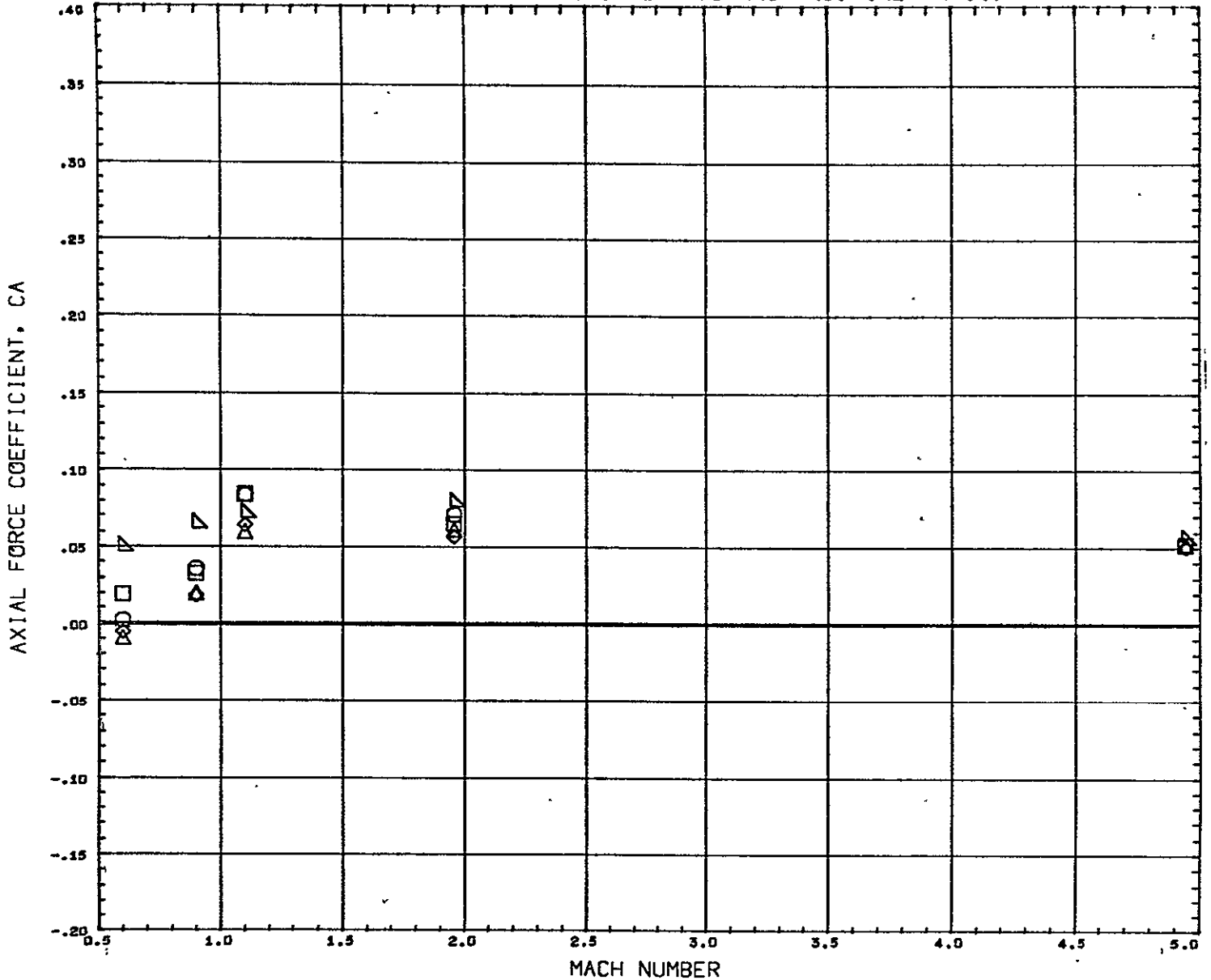
LMSC/HREC ORBITER STUDIES-MODEL 2B-PITCH EFF VS MACH NO. (ALPHA=10)



SYMBOL	ELEVN4	PARAMETRIC VALUES			
○	10.000	BETA	0.000	ALPHA	10.000
△	0.000	RUDER4	0.000	STING	4.000
◇	- 10.000				
□	- 20.000				
▽	- 30.000				
		DATA HIST. CODE	*G*EI*8*B		

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

LMSC/HREC ORBITER STUDIES-MODEL 2B-PITCH EFF VS MACH NO. (ALPHA=10)

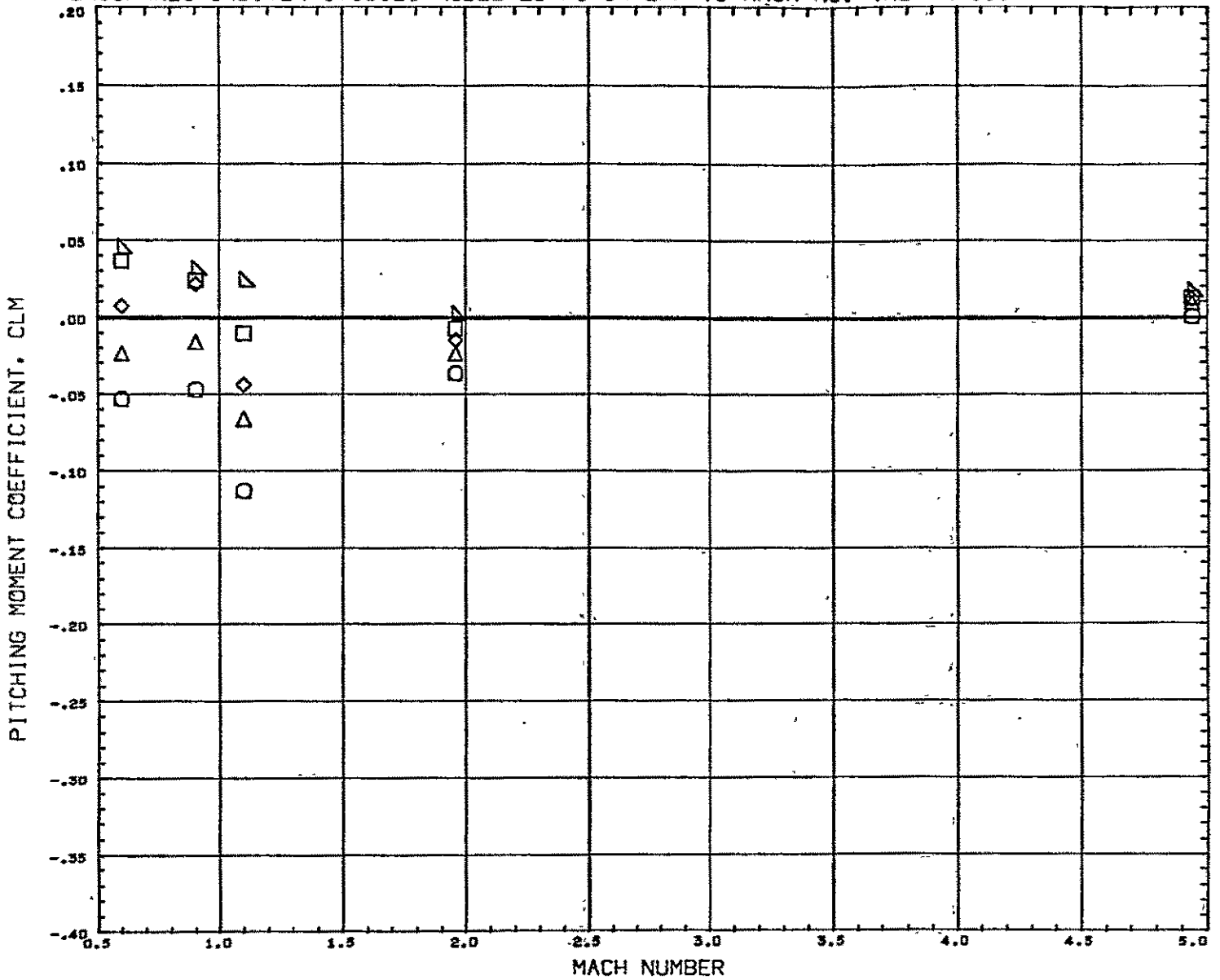


SYMBOL	ELEVN4	PARAMETRIC VALUES			
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◇	0.000	RUDE4	0.000	STING	4.000
△	- 10.000				
○	- 20.000				
	- 30.000				

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE \*C\*E1\*B\*B

LMSC/HREC ORBITER STUDIES-MODEL 2B-PITCH EFF VS MACH NO. (ALPHA=15)



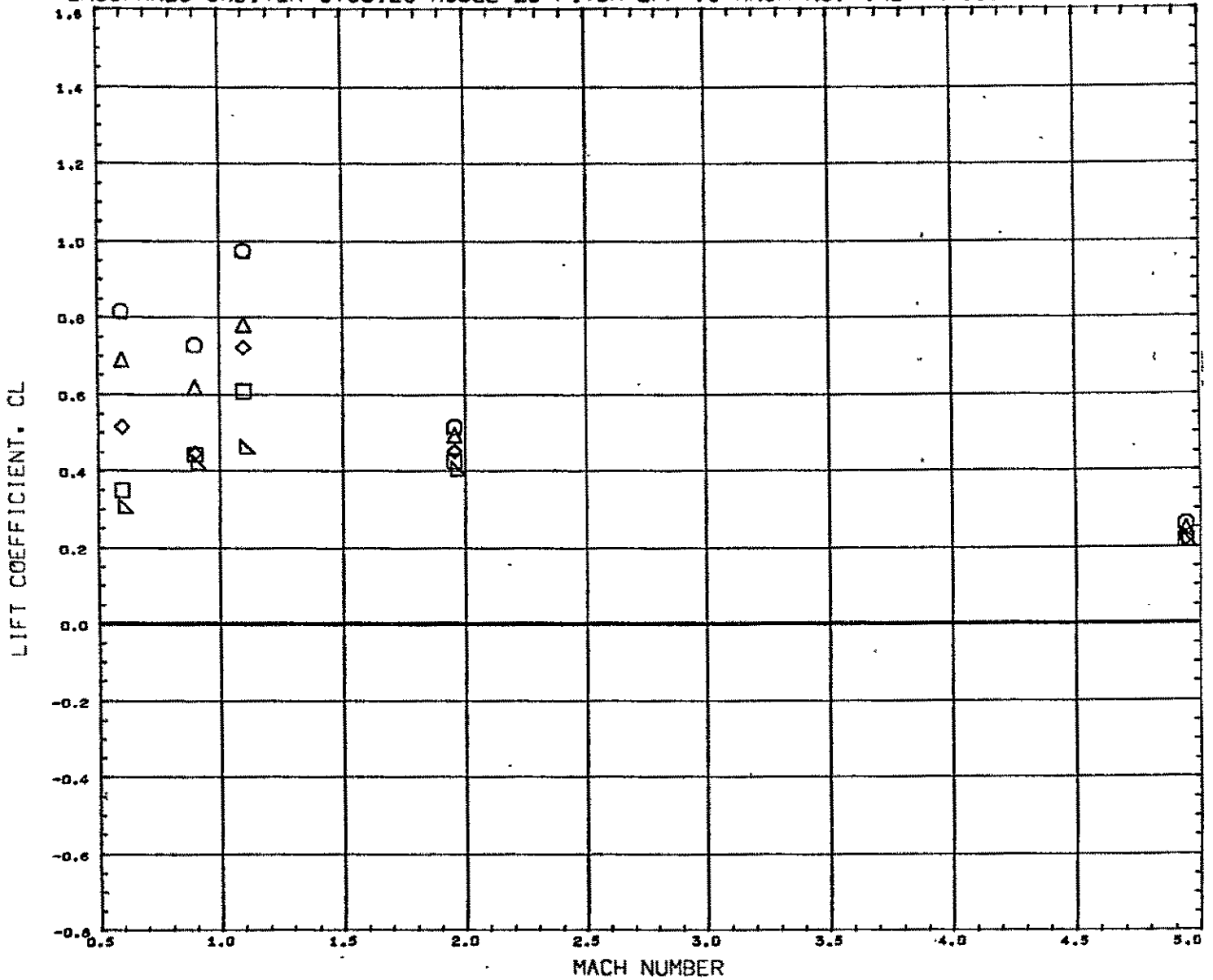
SYMBOL	ELEVN4	PARAMETRIC VALUES			
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◇	0.000	RUDER4	0.000	STING	4.000
△	-10.000				
○	-20.000				
	-30.000				

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE \*G\*E1\*B\*B\*B



LMSC/HREC ORBITER STUDIES-MODEL 2B-PITCH EFF VS MACH NO. (ALPHA=15)

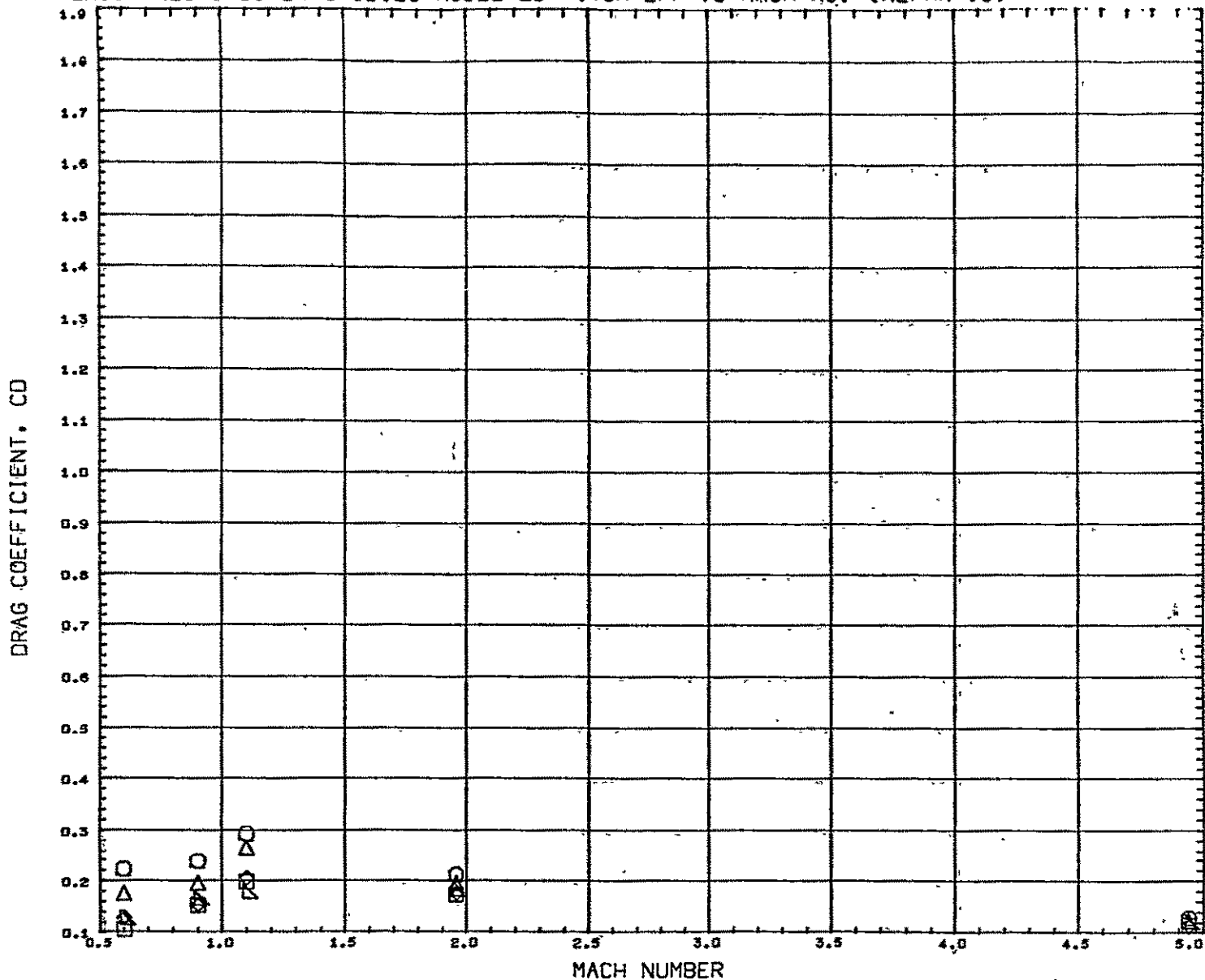


SYMBOL	ELEVN4	PARAMETRIC VALUES			
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△	0.000	RUDER4	0.000	STING	4.000
◇	- 10.000				
□	- 20.000				
▽	- 30.000				

REFERENCE INFORMATION		
SREF	9.0250	38. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE \*C\*E1\*B\*B\*B

LMSC/HREC ORBITER STUDIES-MODEL 2B-PITCH EFF VS MACH NO. (ALPHA=15)

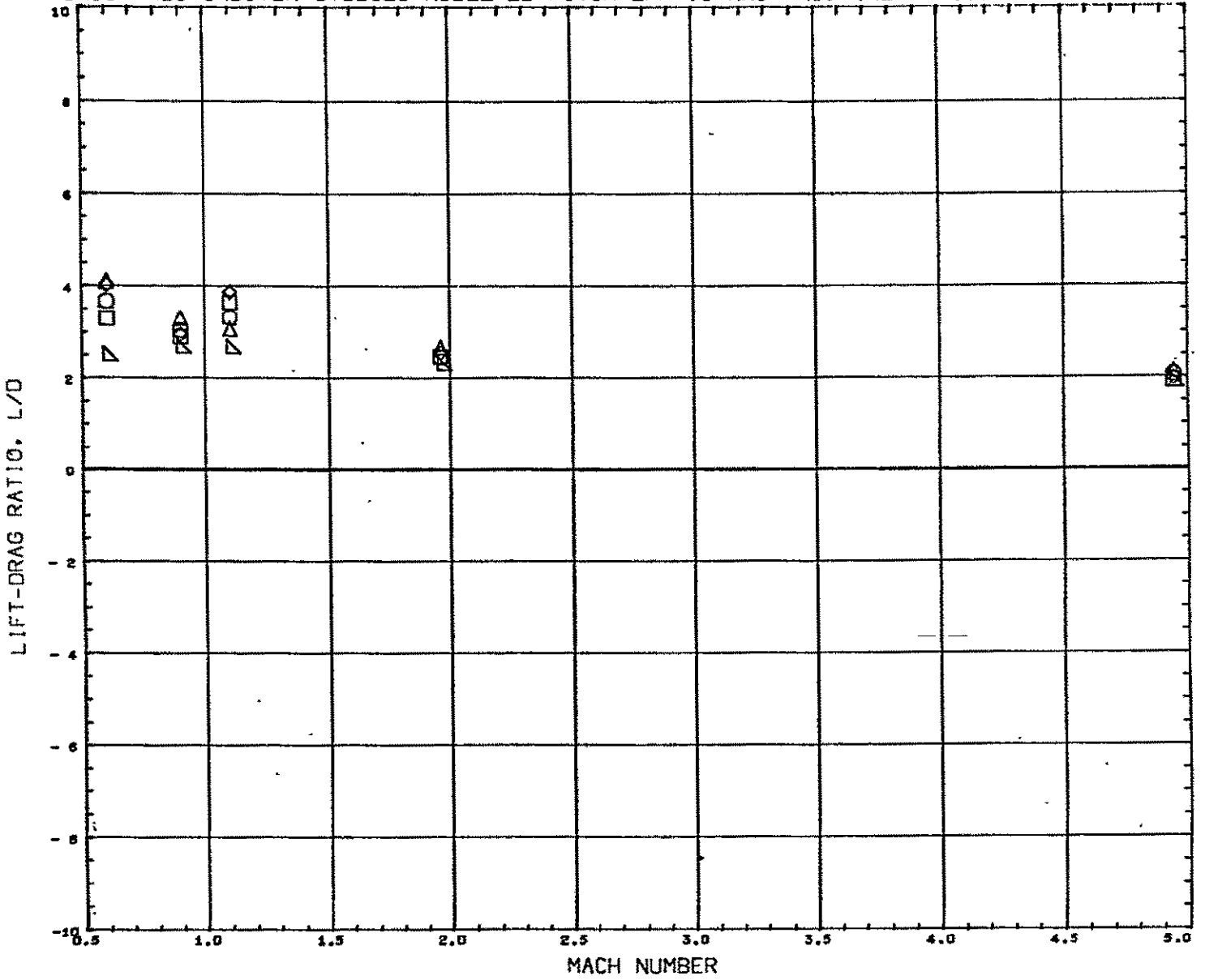


SYMBOL	ELEVN4	PARAMETRIC VALUES			
○	10.000	BETA	0.000	ALPHA	15.000
△	0.000	RUDER4	0.000	STING	4.000
◇	- 10.000				
□	- 20.000				
◻	- 30.000				

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XHRP	3.9950	INCHES
YHRP	0.0000	INCHES
ZHRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE \*G\*E1\*B\*B\*B

LMSC/HREC ORBITER STUDIES-MODEL 2B-PITCH EFF VS MACH NO. (ALPHA=15)

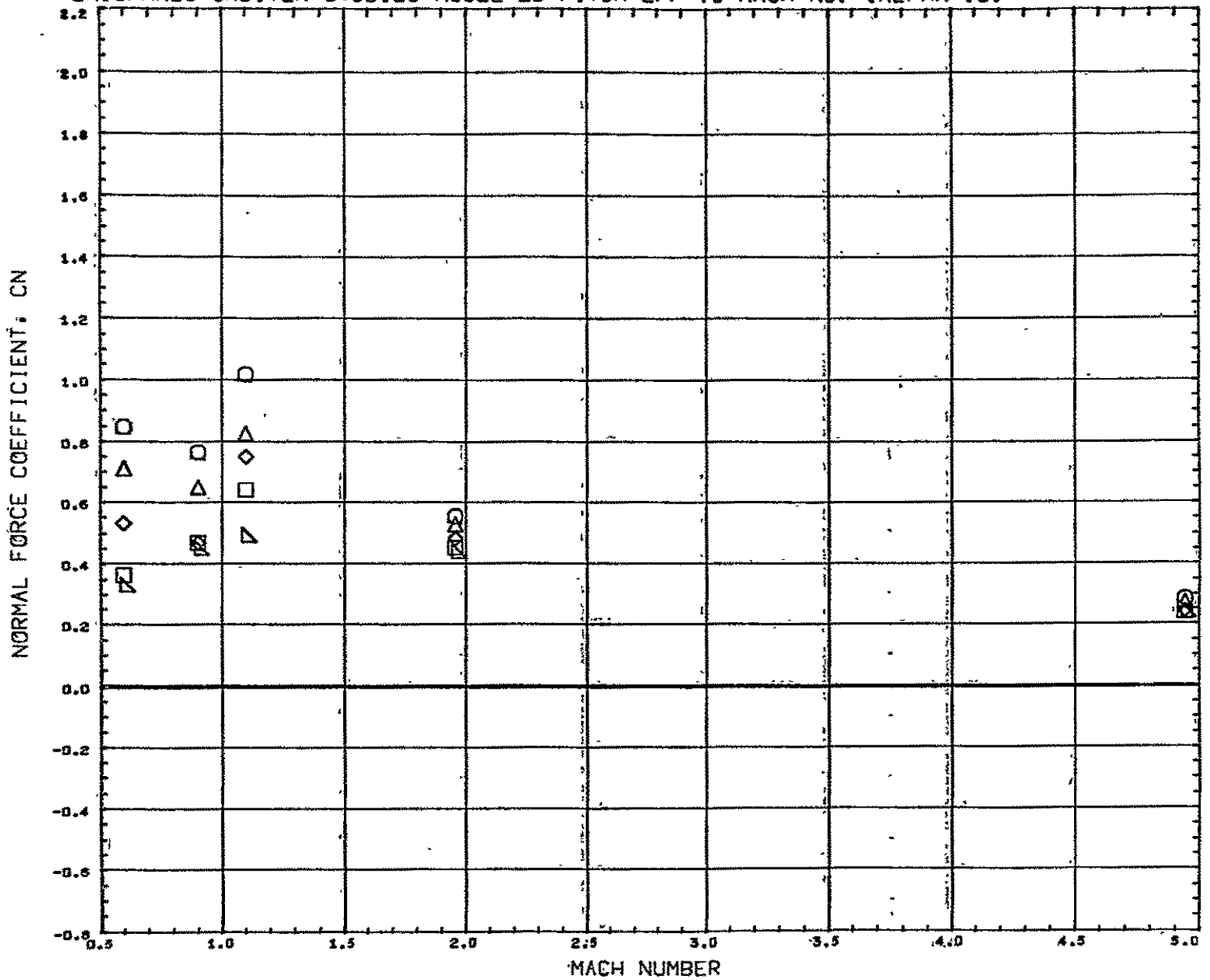


SYMBOL	ELEVN4	PARAMETRIC VALUES			
△	10.000	BETA	0.000	ALPHA	15.000
□	0.000	RUDER4	0.000	STING	4.000
◇	- 10.000				
○	- 20.000				
◊	- 30.000				

REFERENCE INFORMATION		
SREF	9.0250	90. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0035	SCALE

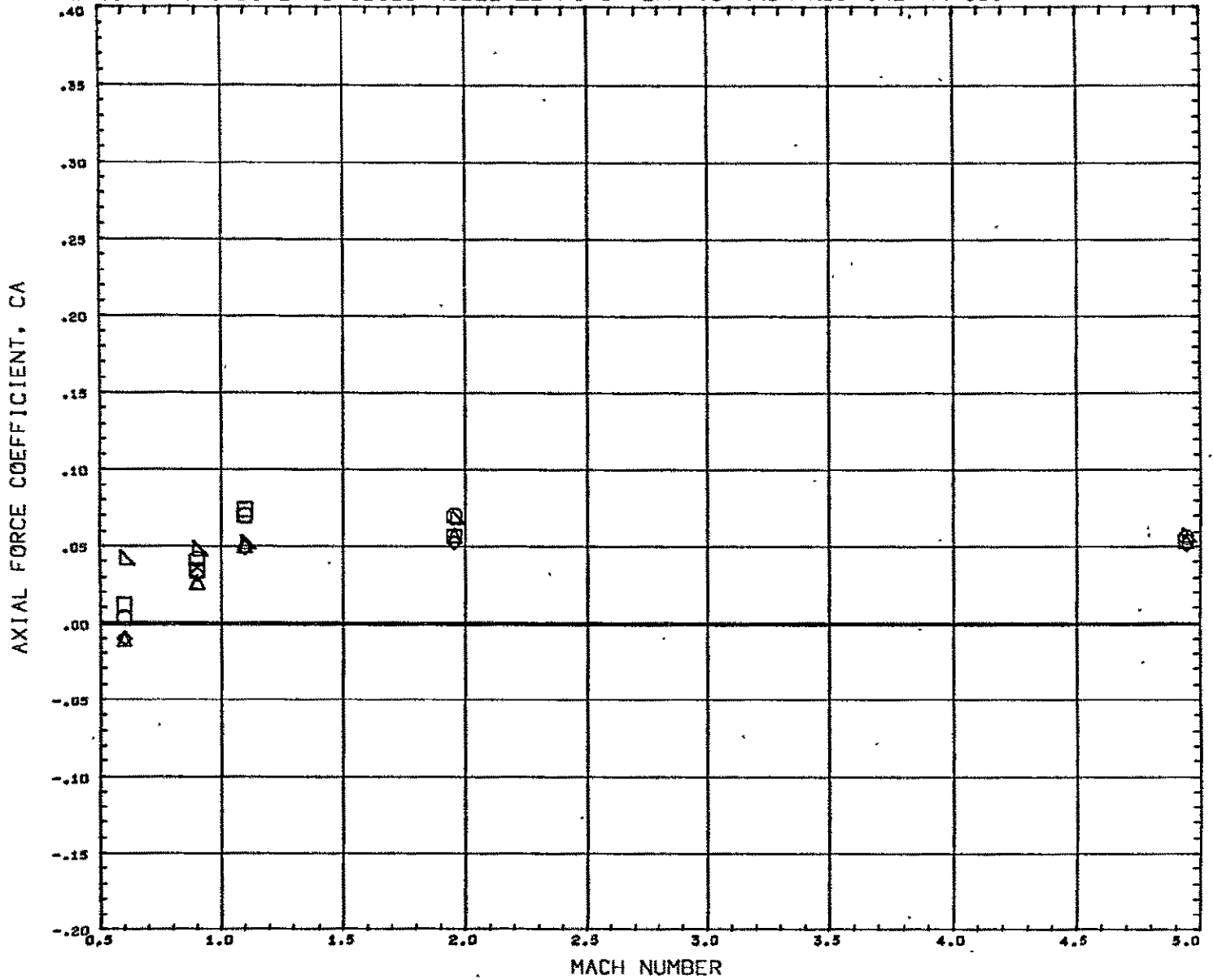
DATA HIST. CODE \*G\*EI\*B\*B\*B

LMSC/HREC ORBITER STUDIES-MODEL 2B-PITCH EFF VS MACH NO. (ALPHA=15)



SYMBOL	ELEVN4	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	10.000	BETA	0.000	ALPHA	15.000	SREF	9.0250	59. IN
△	0.000	RUDER4	0.000	STING	4.000	LREF	6.1420	INCHES
◇	- 10.000					BREF	6.1420	INCHES
□	- 20.000					XHRP	3.9950	INCHES
▽	- 30.000					YHRP	0.0000	INCHES
						ZHRP	0.1350	INCHES
						SCALE	0.0033	SCALE
		DATA HIST. CODE	#G#EI#B#B#B					

LMSC/HREC ORBITER STUDIES-MODEL 2B-PITCH EFF VS MACH NO. (ALPHA=15)

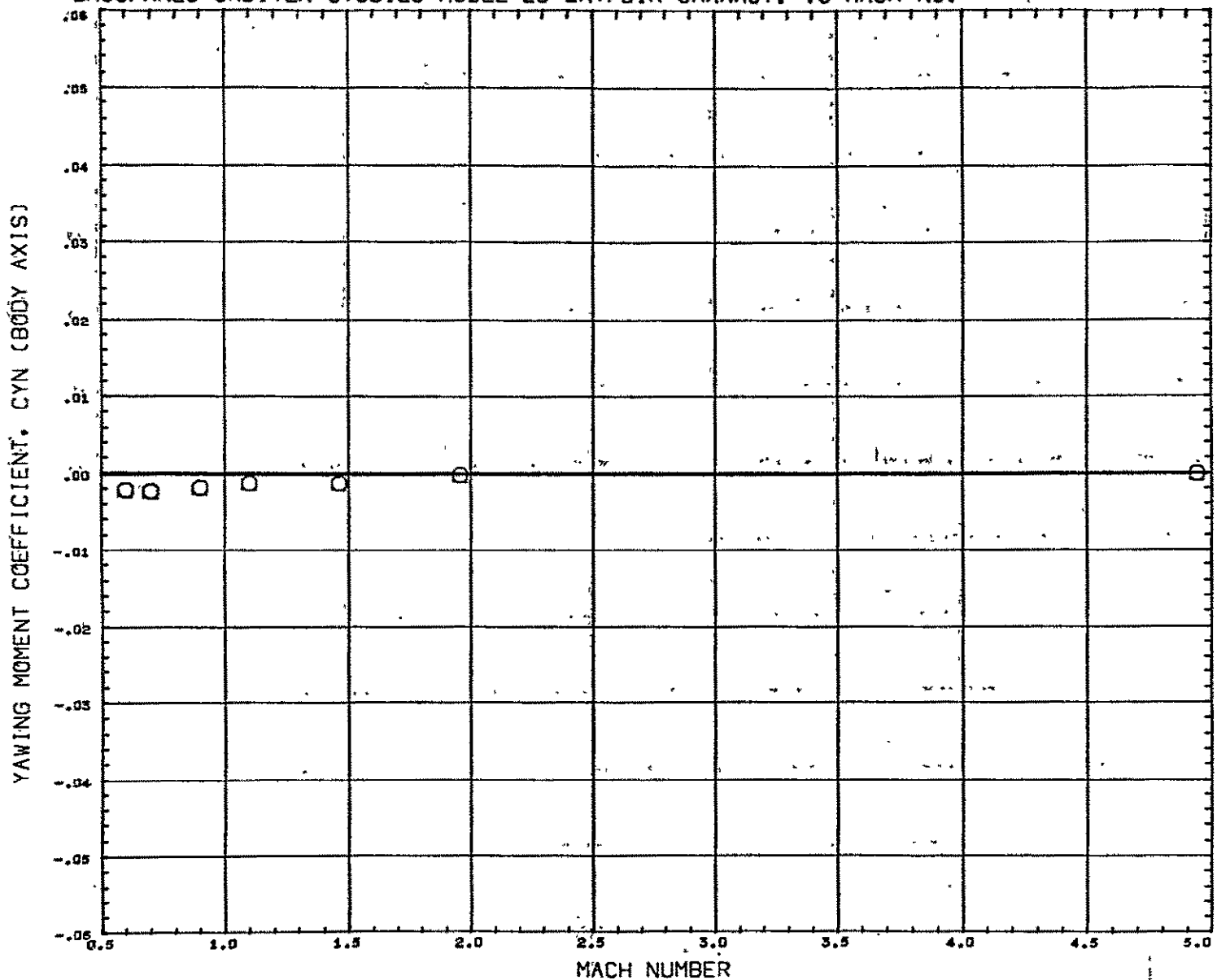


SYMBOL	ELEVN4	PARAMETRIC VALUES			
□	10.000	BETA	0.000	ALPHA	15.000
◇	0.000	RUDER4	0.000	STING	4.000
△	- 10.000				
○	- 20.000				
◊	- 30.000				

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE \*G\*EI\*B\*B\*B

MSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT. VS MACH NO.

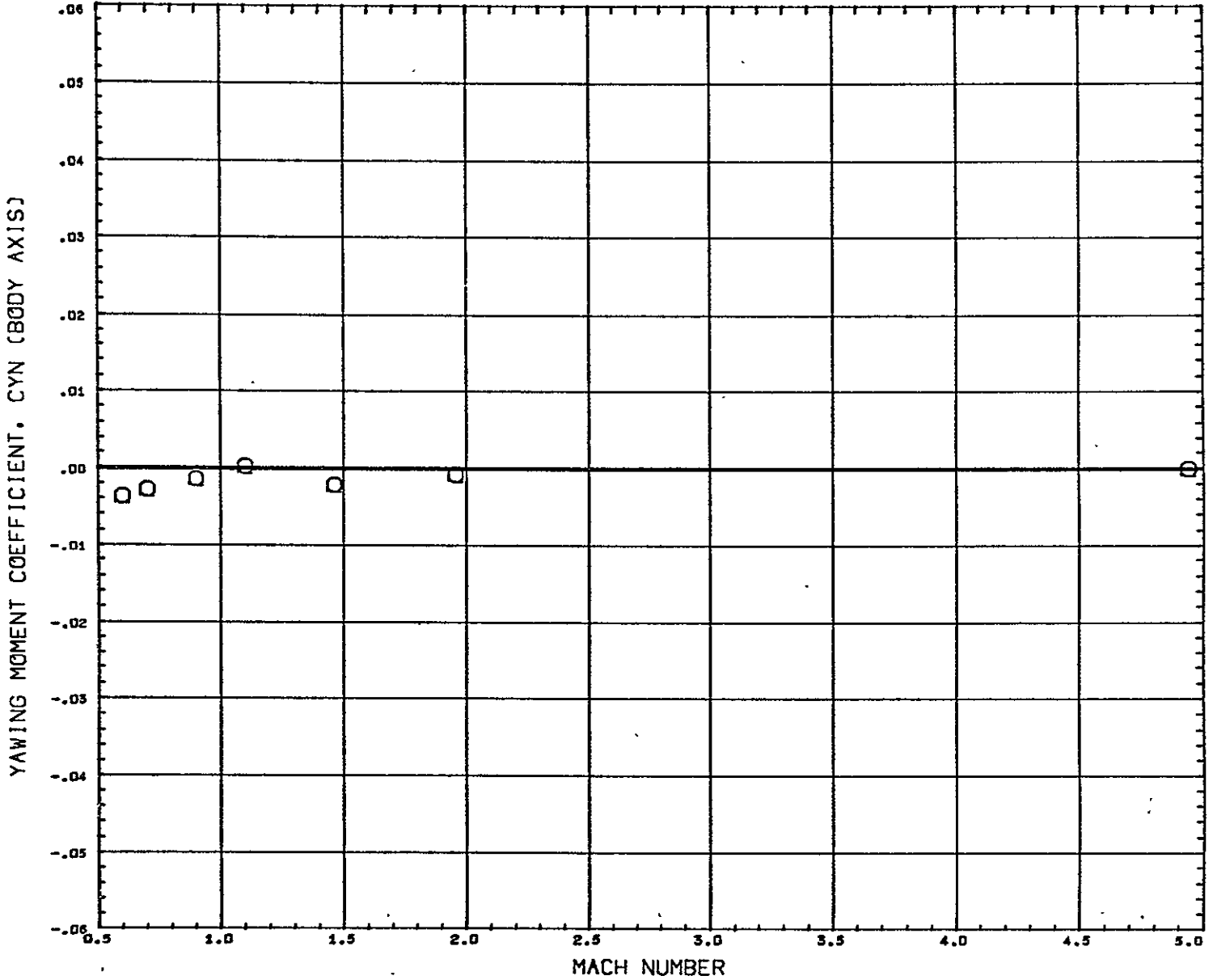


SYMBOL	ALPHA	PARAMETRIC VALUES			
○	0.000	BETA	0.000	ELEVN4	0.000
		RUDER4	0.000	STING	4.000

REFERENCE INFORMATION		
SREF	9.0250	sq. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE I#E#B

MSFC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT. VS MACH NO.

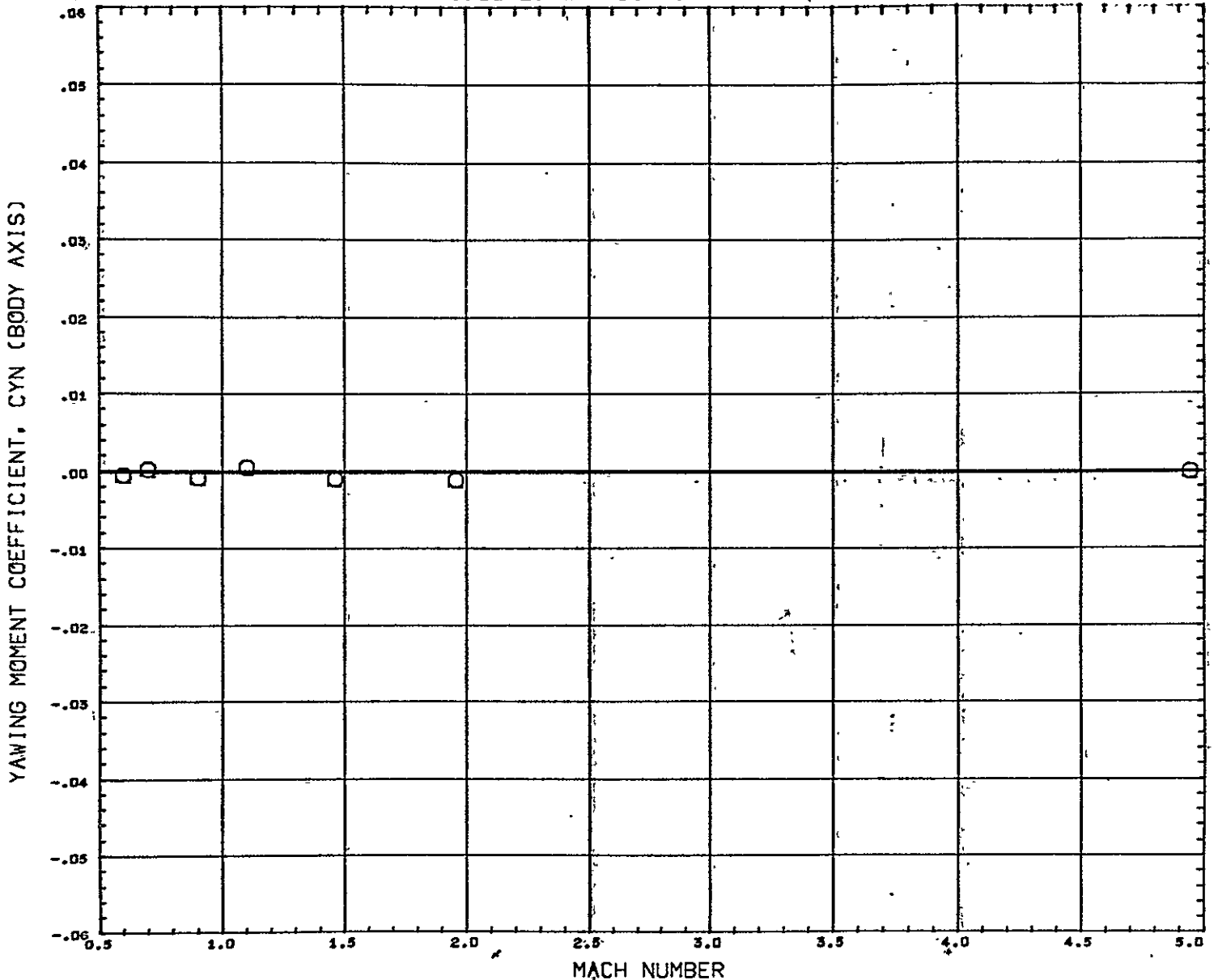


SYMBOL	ALPHA	PARAMETRIC VALUES			
○	10.000	BETA	0.000	ELEVN4	0.000
		RUDER4	0.000	STING	4.000

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE I#E#B

LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT. VS MACH NO.



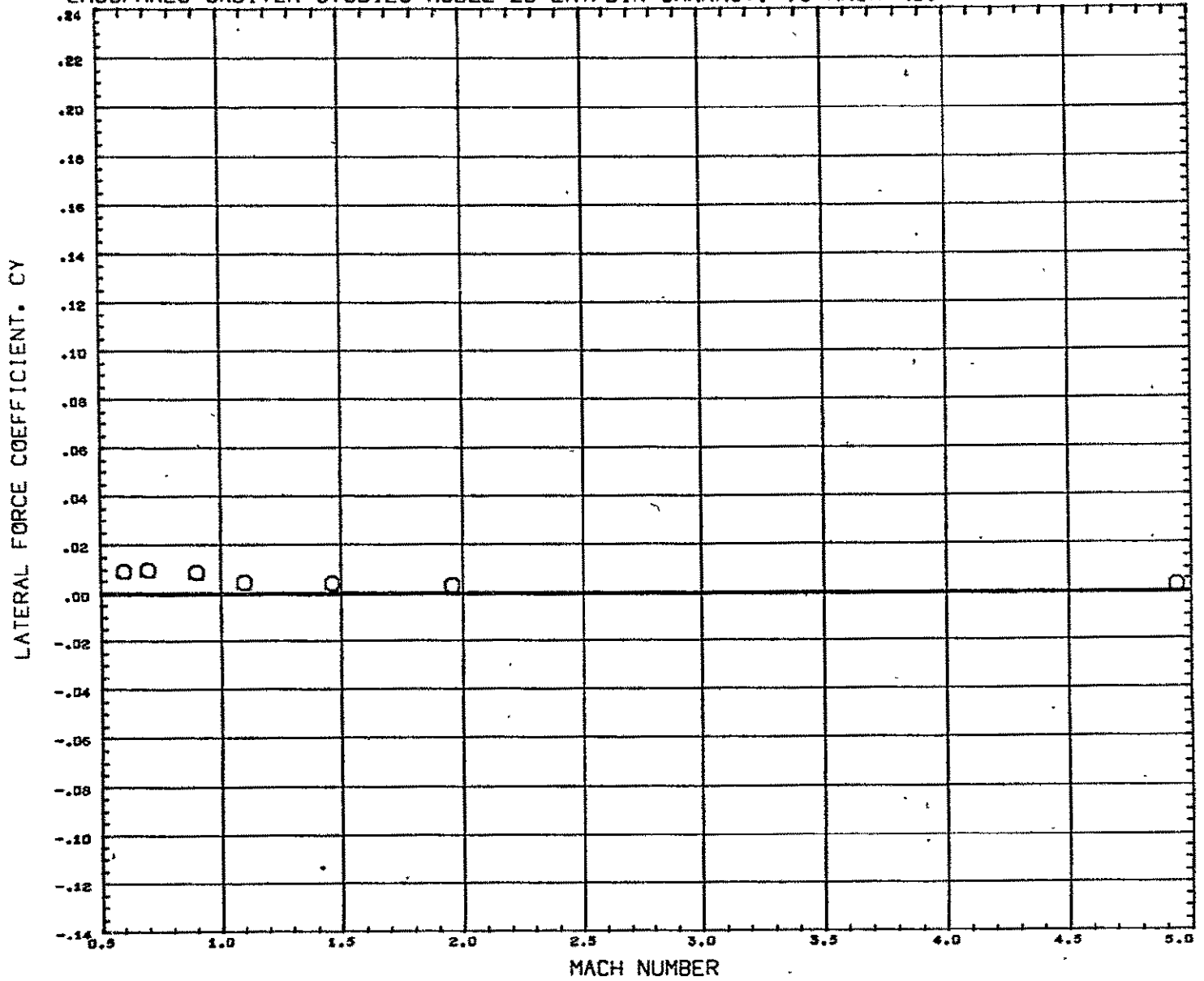
SYMBOL    ALPHA            PARAMETRIC VALUES  
 ○        15.000        BETA        0.000    ELEVN4    0.000  
                           RUDER4    0.000    STING      4.000

REFERENCE INFORMATION  
 SREF        9.0250        SQ. IN  
 LREF        6.1420        INCHES  
 BREF        6.1420        INCHES  
 XHRP        3.9950        INCHES  
 YHRP        0.0000        INCHES  
 ZHRP        0.1350        INCHES  
 SCALE       0.0033        SCALE

DATA HIST. CODE    I+E\*B



LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT. VS MACH NO.

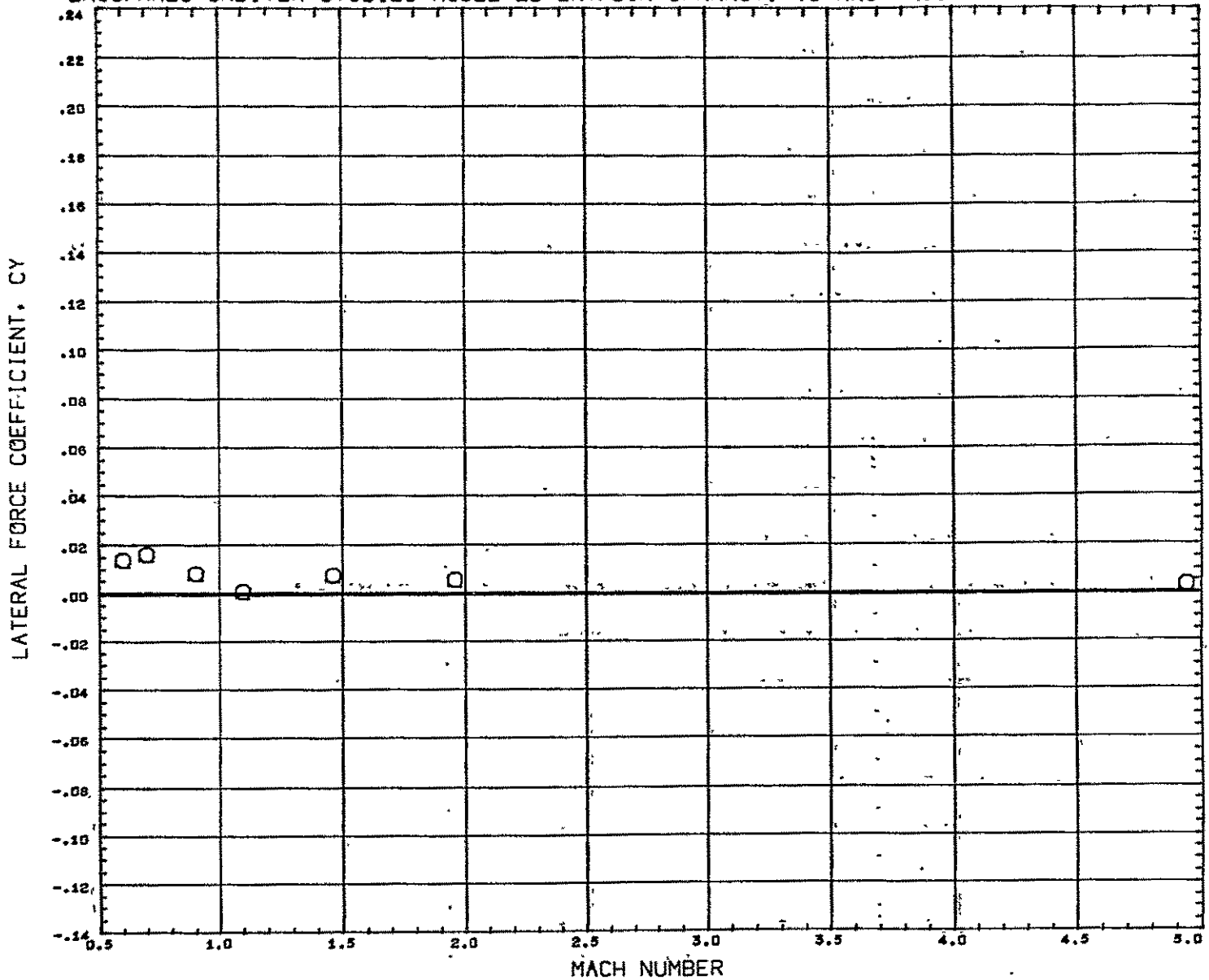


SYMBOL	ALPHA	PARAMETRIC VALUES			
○	0.000	BETA	0.000	ELEVN4	0.000
		RUDER4	0.000	STING	4.000

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE I\*E\*8

LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT. VS MACH NO.

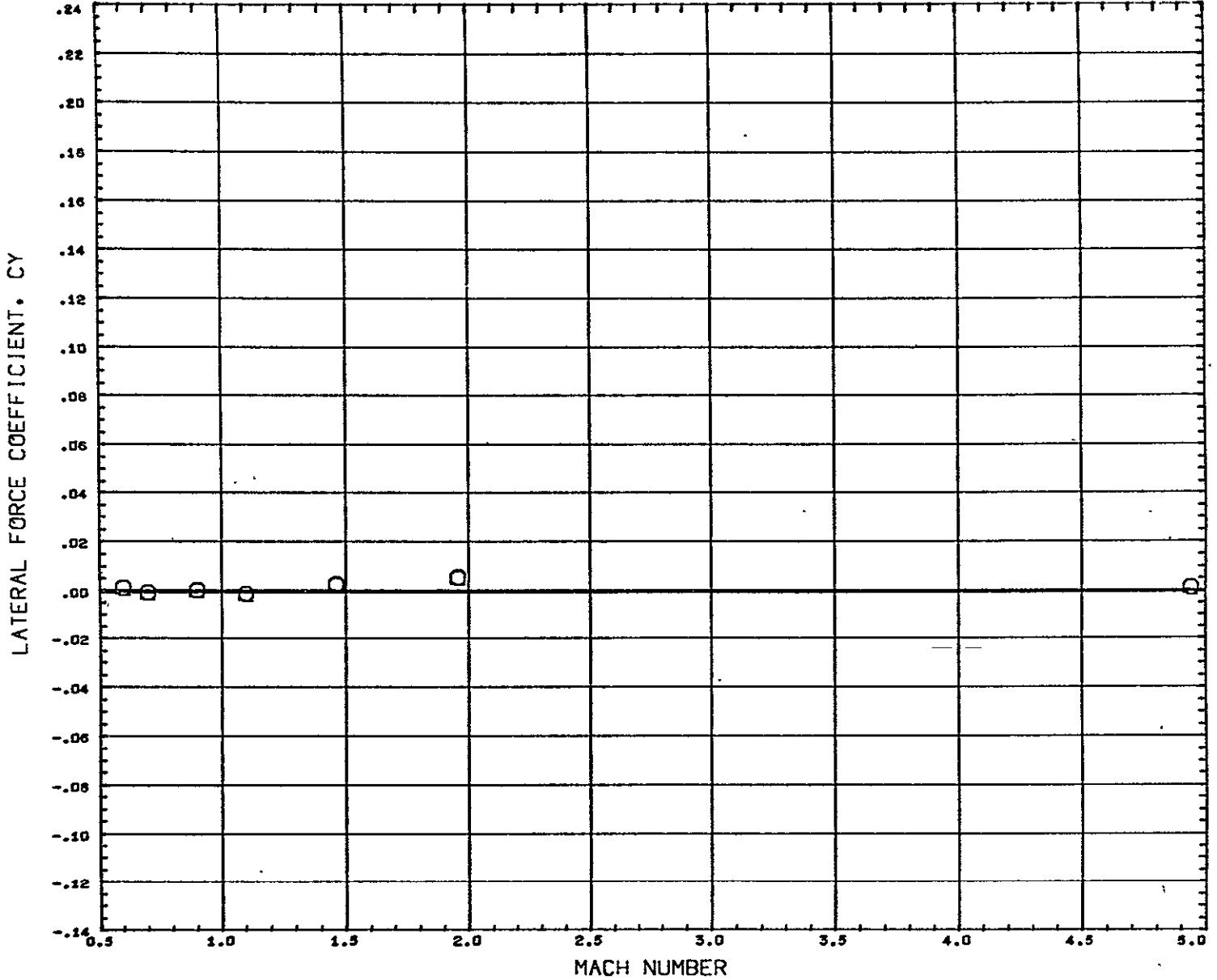


SYMBOL  $\square$  ALPHA 10.000 BETA RUDER4 0.000 PARAMETRIC VALUES ELEVN4 0.000 STING 4.000

REFERENCE INFORMATION  
 SREF 9.0250 SQ. IN  
 LREF 6.1420 INCHES  
 BREF 6.1420 INCHES  
 XHRP 3.9950 INCHES  
 YHRP 0.0000 INCHES  
 ZHRP 0.1350 INCHES  
 SCALE 0.0033 SCALE

DATA HIST. CODE I+E\*8

LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT. VS MACH NO.

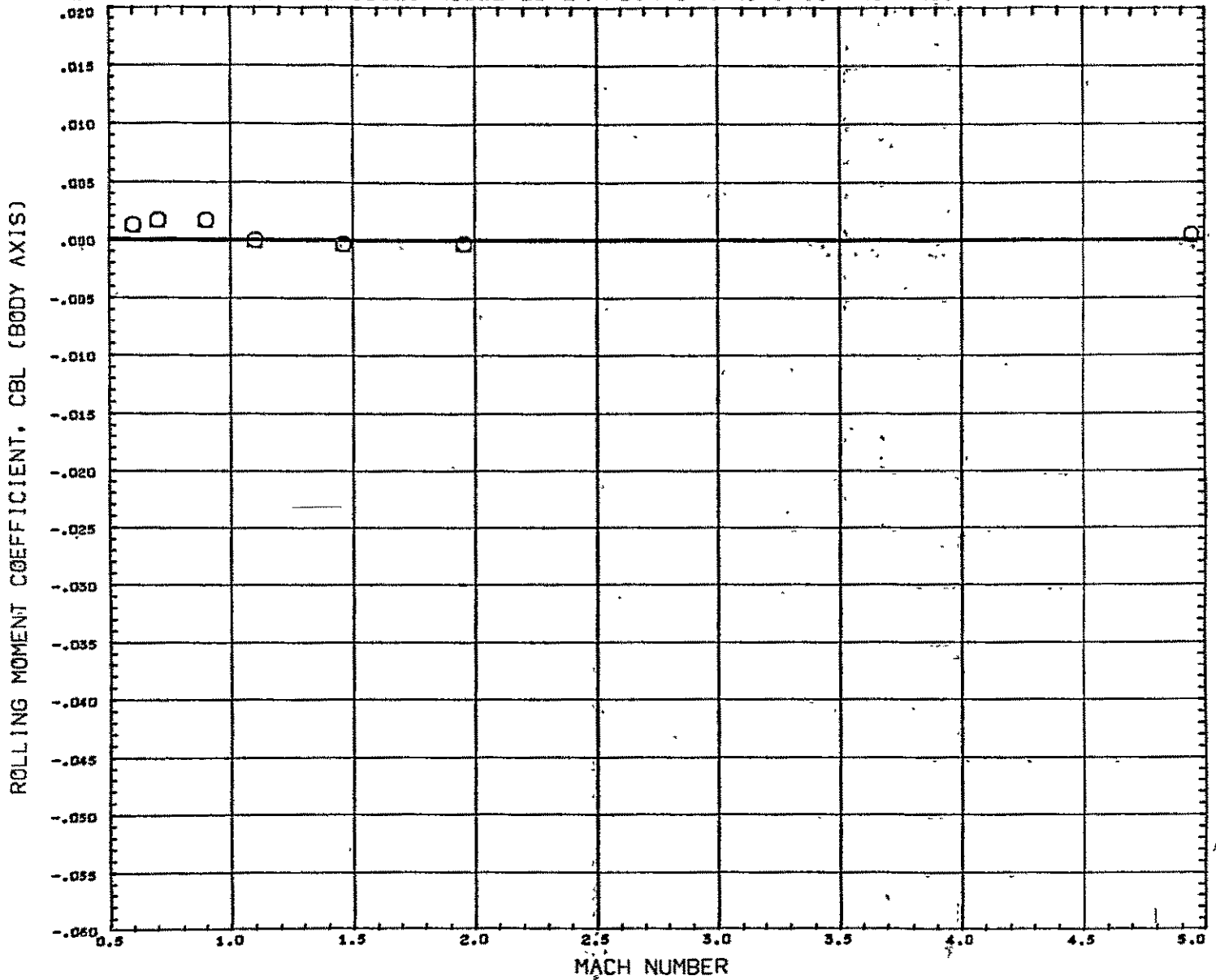


SYMBOL	ALPHA	PARAMETRIC VALUES			
○	15.000	BETA	0.000	ELEVN4	0.000
		RUDER4	0.000	STING	4.000

REFERENCE INFORMATION:		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE I#E#B

LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT. VS MACH NO.

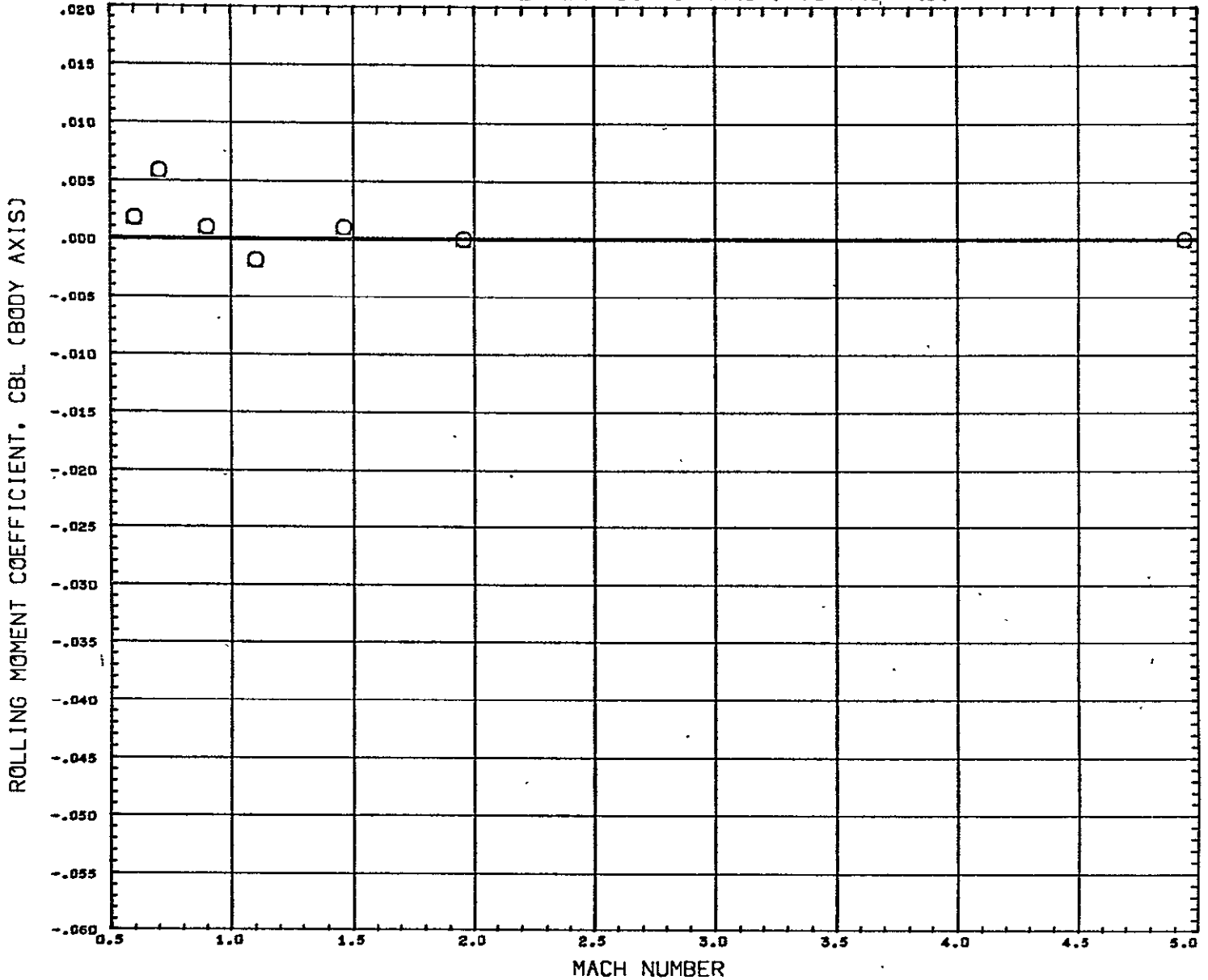


SYMBOL	ALPHA	BETA	PARAMETRIC VALUES	
	0.000		0.000	ELEVN4 0.000
		RUDER4	0.000	STING 4.000

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE I#E#8

LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT. VS MACH NO.

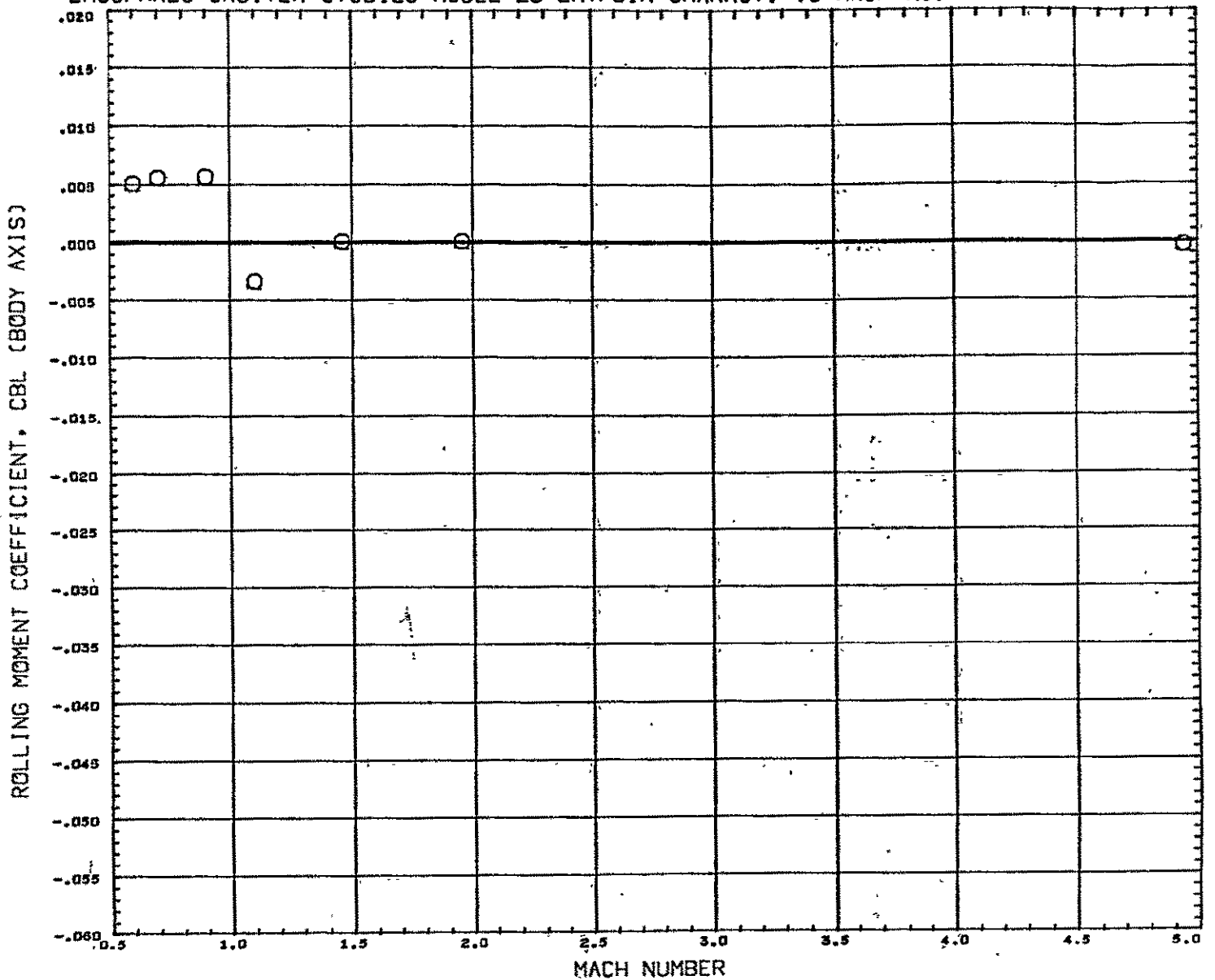


SYMBOL	ALPHA	PARAMETRIC VALUES			
○	10.000	BETA	0.000	ELEVN4	0.000
		RUDER4	0.000	STING	4.000

REFERENCE INFORMATION		
SREF	9.0250	SG. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE I+E+B

LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT. VS MACH NO.

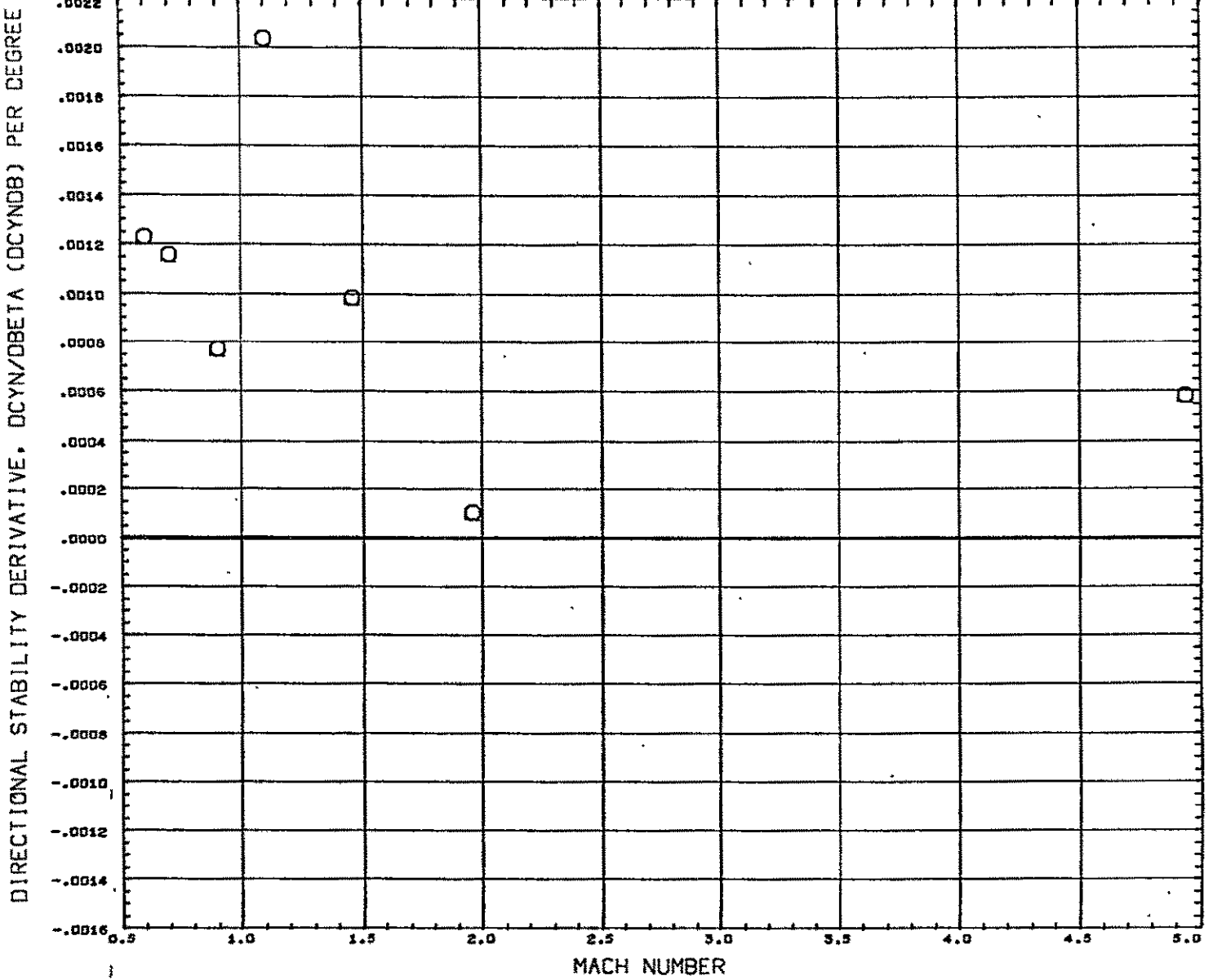


SYMBOL	ALPHA	PARAMETRIC VALUES			
○	15.000	BETA	0.000	ELEVN4	0.000
		RUDER4	0.000	STING	4.000

REFERENCE INFORMATION		
SREF	9.0250	50. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0035	SCALE

DATA HIST. CODE I#E#B

LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT. VS MACH NO.



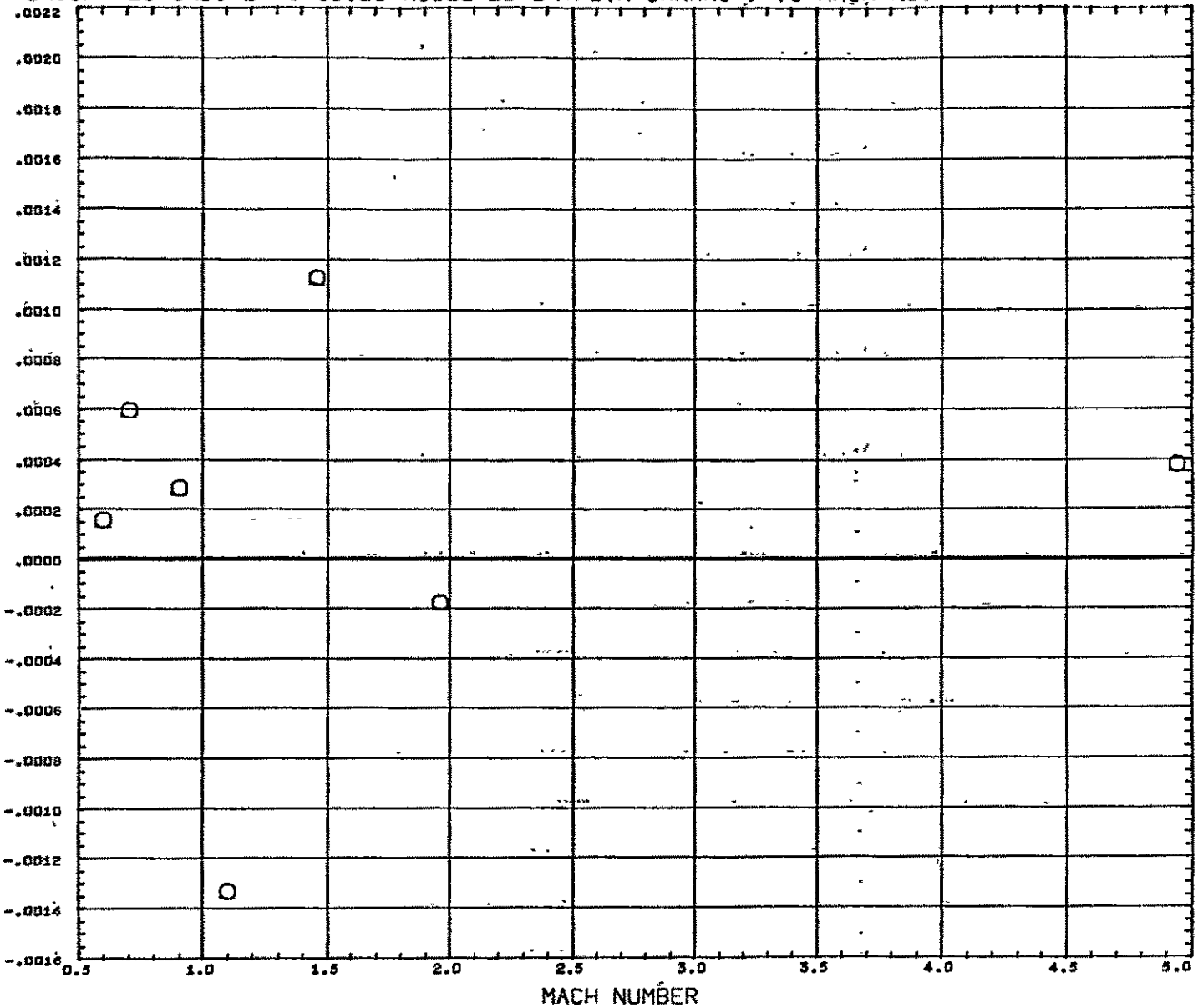
SYMBOL	ALPHA	PARAMETRIC VALUES			
○	0.000	BETA	0.000	ELEVN4	0.000
		RUDER4	0.000	STING	4.000

REFERENCE INFORMATION		
SREF	9.0250	sq. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE I#E#B

LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT. VS MACH NO.

DIRECTIONAL STABILITY DERIVATIVE, DCYN/DBETA (DCYNDB) PER DEGREE



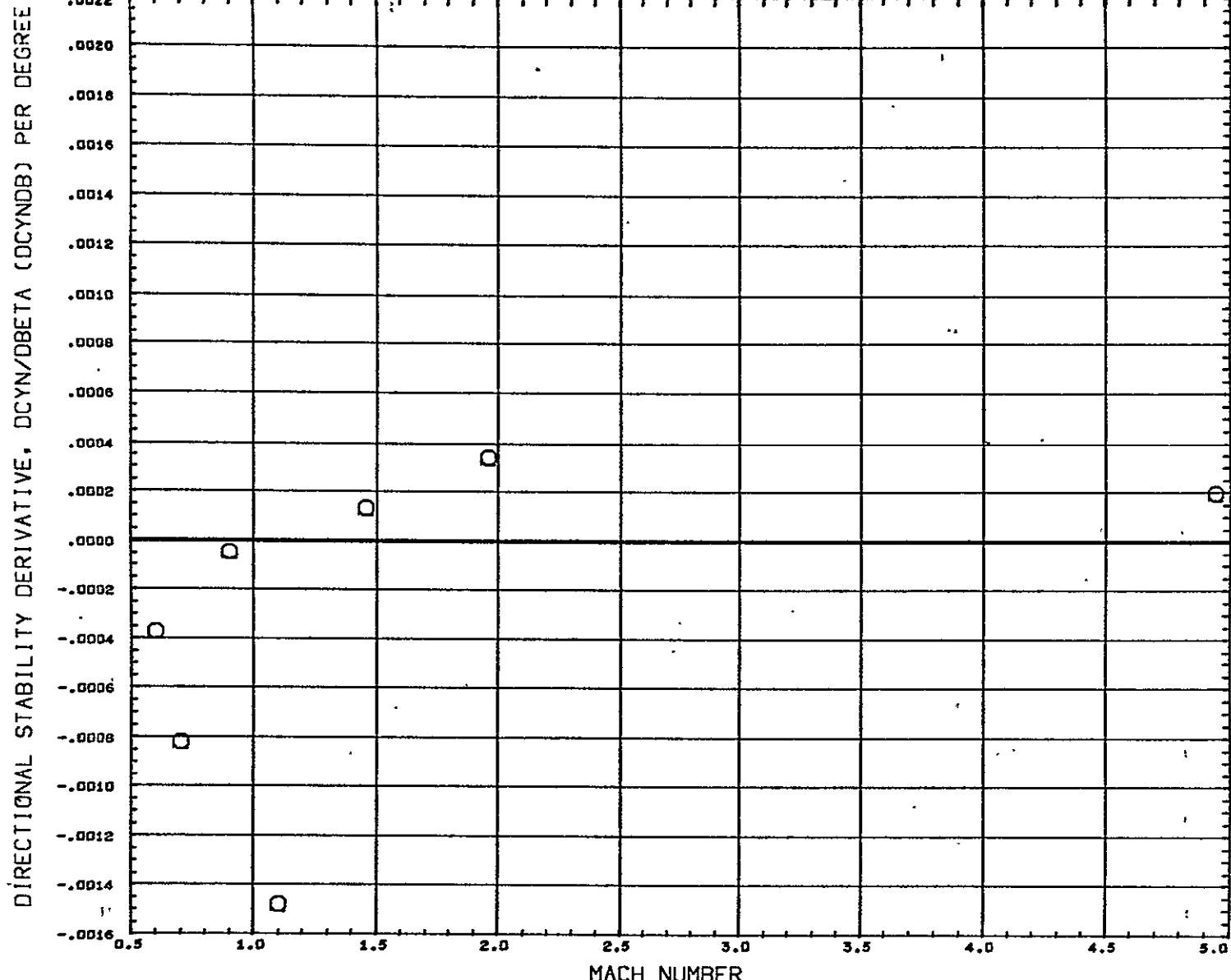
SYMBOL	ALPHA	PARAMETRIC VALUES			
○	10.000	BETA	0.000	ELEVN4	0.000
		RUDER4	0.000	STING	4.000

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XHRP	3.9950	INCHES
YHRP	0.0000	INCHES
ZHRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE I#E#B



LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT. VS MACH NO.

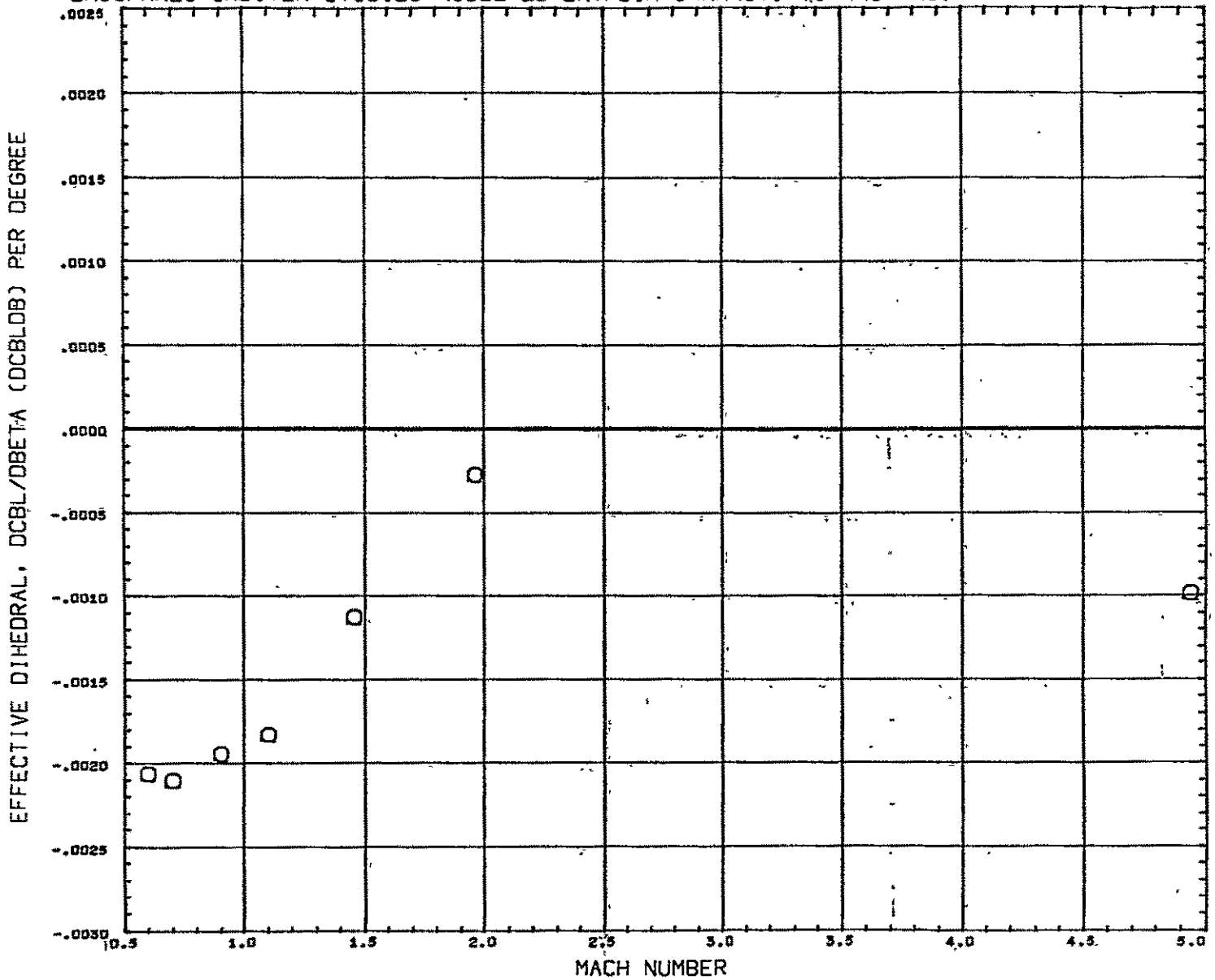


SYMBOL ○ ALPHA 15.000 BETA 0.000 ELEVN4 0.000  
 PARAMETRIC VALUES RUDER4 0.000 STING 4.000

REFERENCE INFORMATION.  
 SREF 9.0250 SQ. IN  
 LREF 6.1420 INCHES  
 BREF 6.1420 INCHES  
 XMRP 3.9950 INCHES  
 YMRP 0.0000 INCHES  
 ZMRP 0.1350 INCHES  
 SCALE 0.0033 SCALE

DATA HIST. CODE I#E#B

LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT. VS MACH NO.



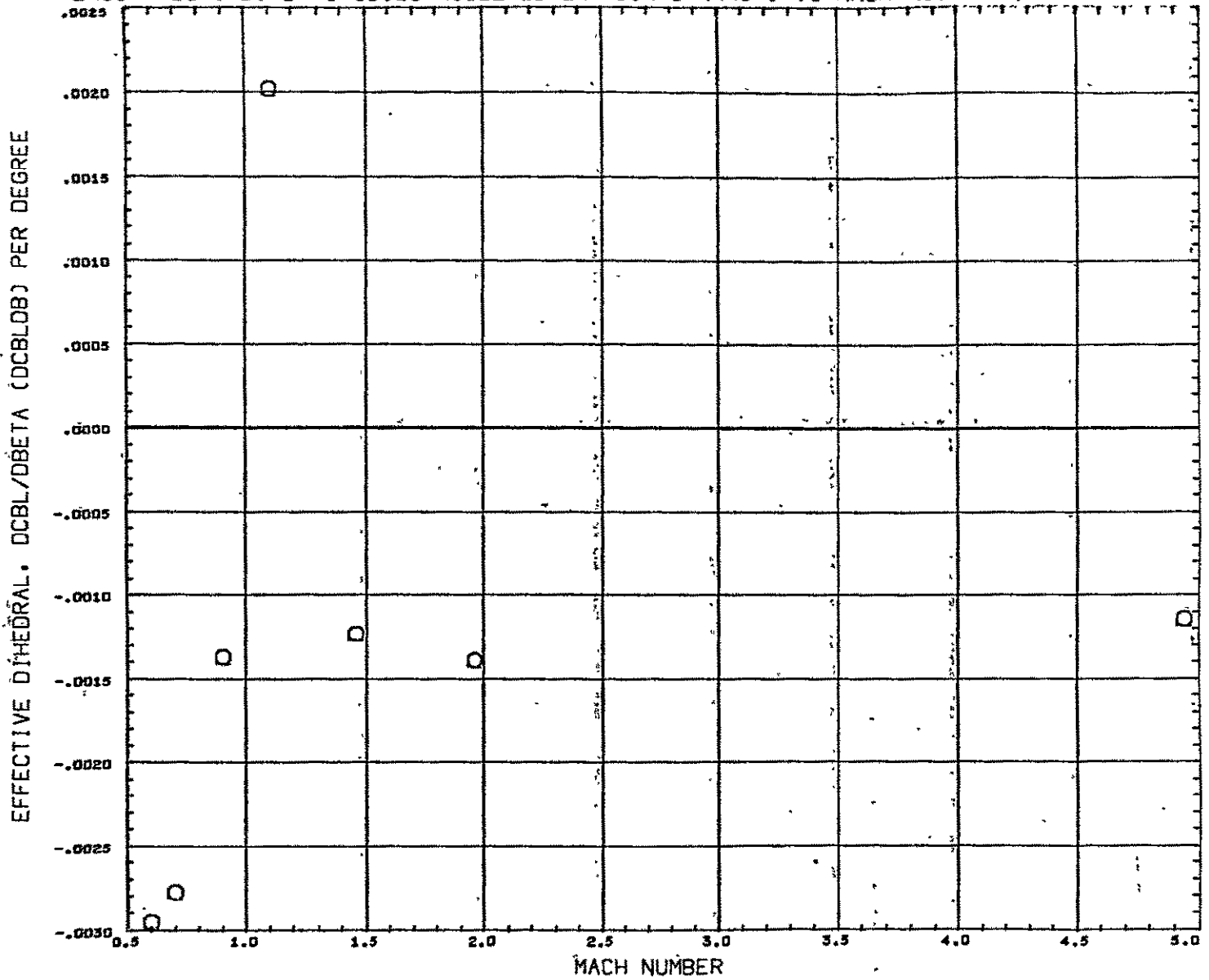
SYMBOL ALPHA PARAMETRIC VALUES  
 ○ 0.000 BETA 0.000 ELEVN4 0.000  
 RUDER4 0.000 STING 4.000

REFERENCE INFORMATION  
 SREF 9.0250 39. IN  
 LREF 6.1420 INCHES  
 BREF 6.1420 INCHES  
 XMRP 3.9950 INCHES  
 YMRP 0.0000 INCHES  
 ZMRP 0.1350 INCHES  
 SCALE 0.0033 SCALE.

DATA HIST. CODE I#E#B



LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT. VS MACH NO.

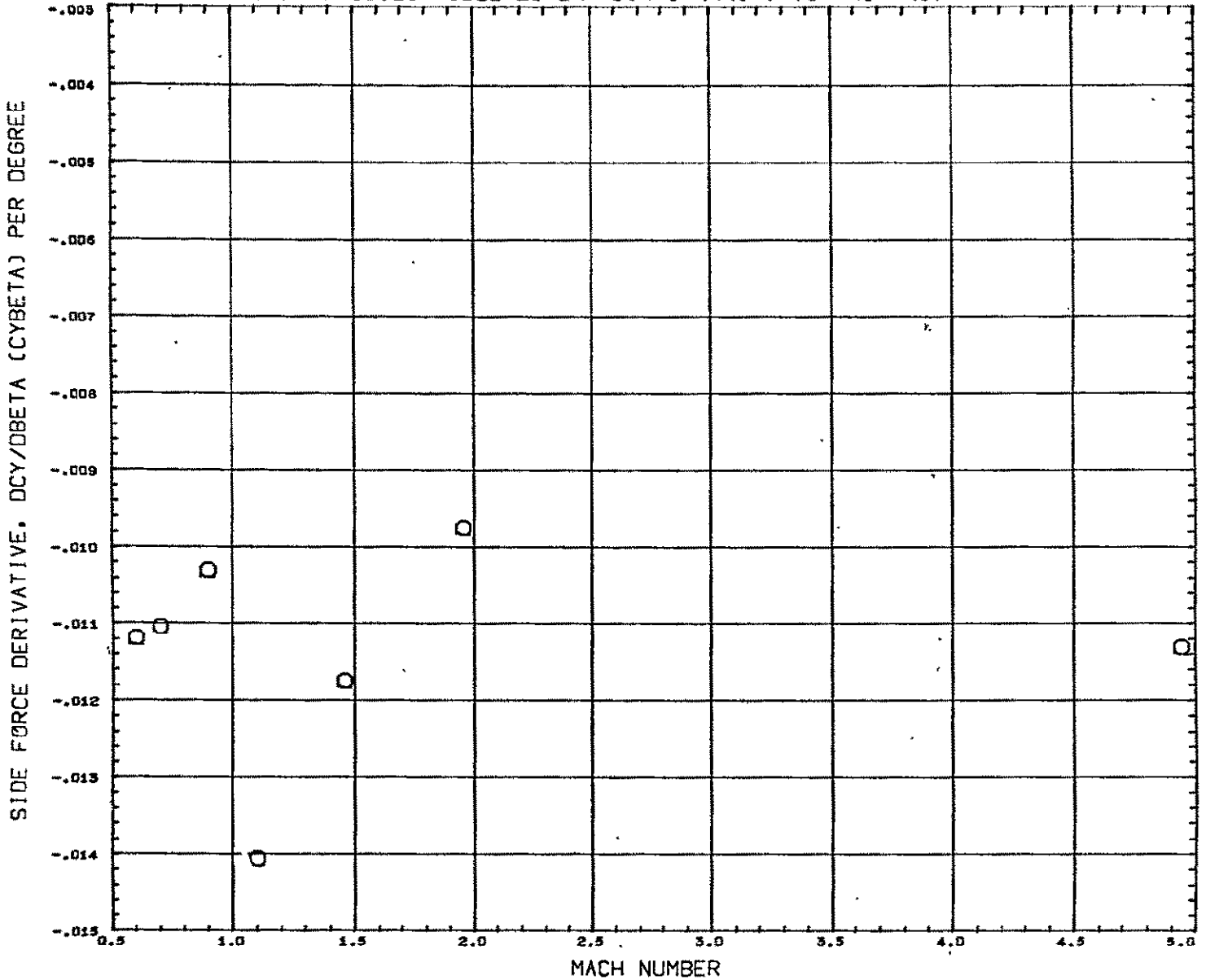


SYMBOL	ALPHA	PARAMETRIC VALUES			
○	15.000	BETA	0.000	ELEVN4	0.000
		RUDER4	0.000	STING	4.000

REFERENCE INFORMATION		
SREF	9.0250	SQ.IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE I#E#B

LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT. VS MACH NO.

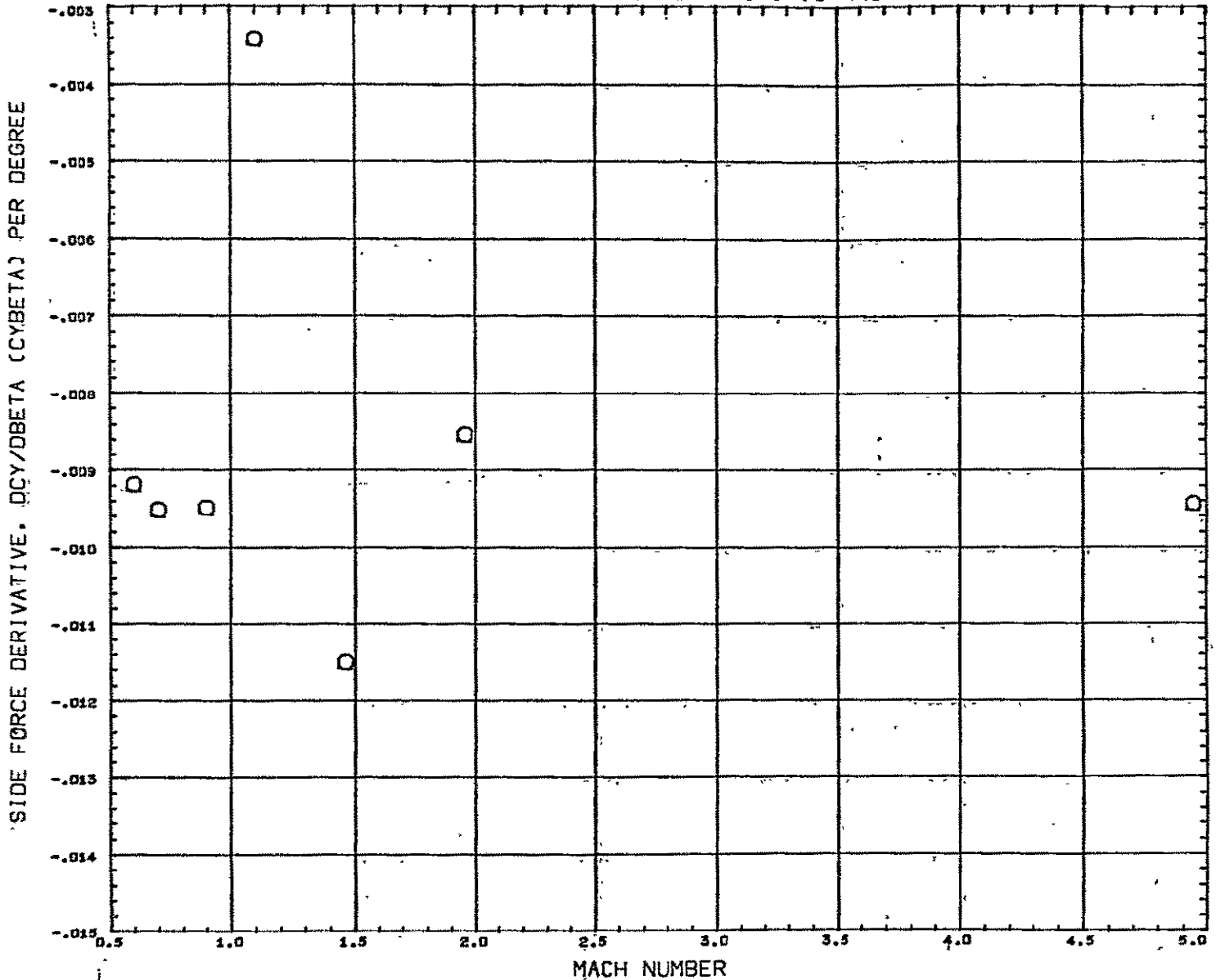


SYMBOL	ALPHA	PARAMETRIC VALUES			
○	0.000	BETA	0.000	ELEVN4	0.000
		RUDER4	0.000	STING	4.000

REFERENCE INFORMATION		
SREF	9.0250	SQ.IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE I#E#B

MSFC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT. VS MACH NO.

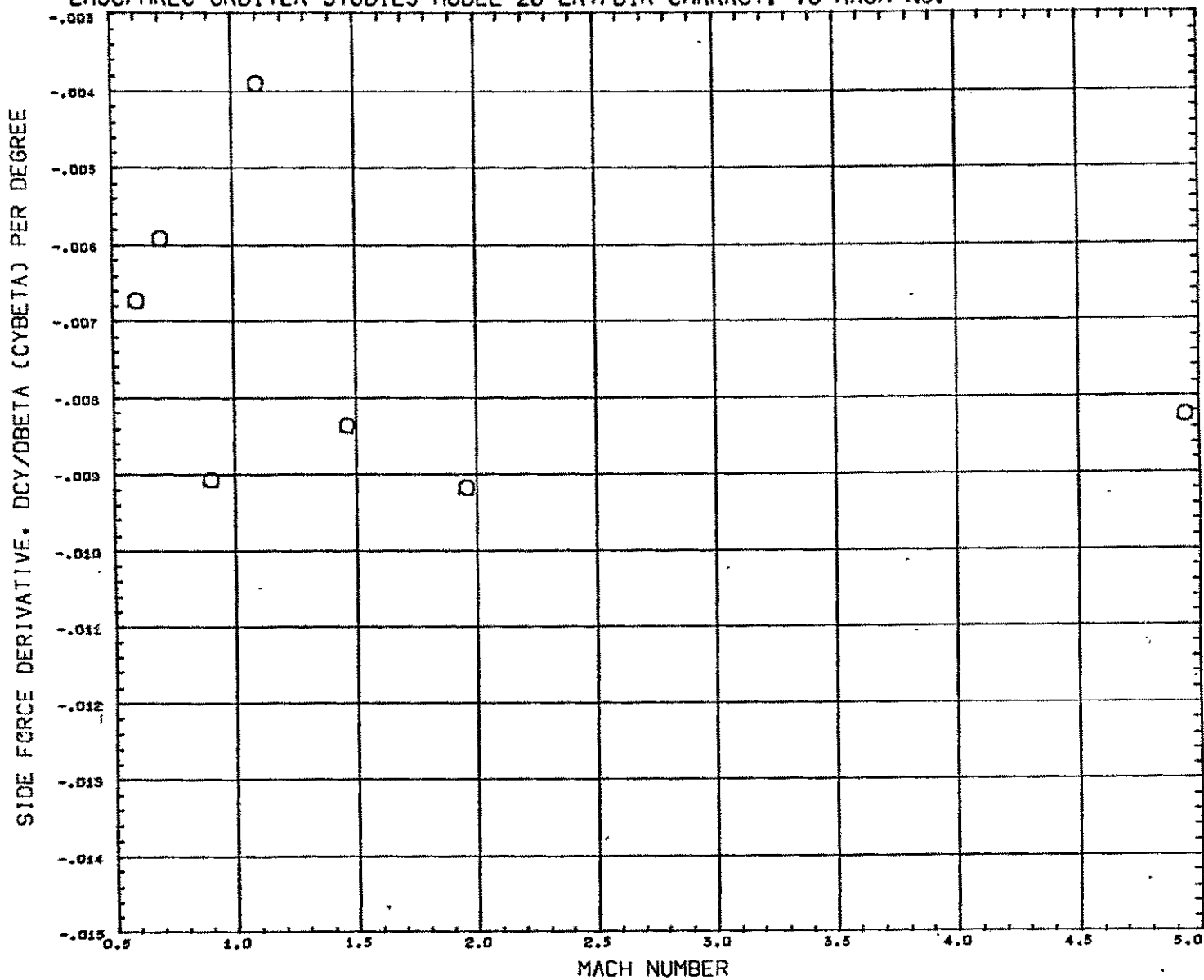


SYMBOL	ALPHA	PARAMETRIC VALUES			
○	10.000	BETA	0.000	ELEVN4	0.000
		RUDER4	0.000	STING	4.000

REFERENCE INFORMATION		
SREF	9.0250	88. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE I#E#B

LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT. VS MACH NO.

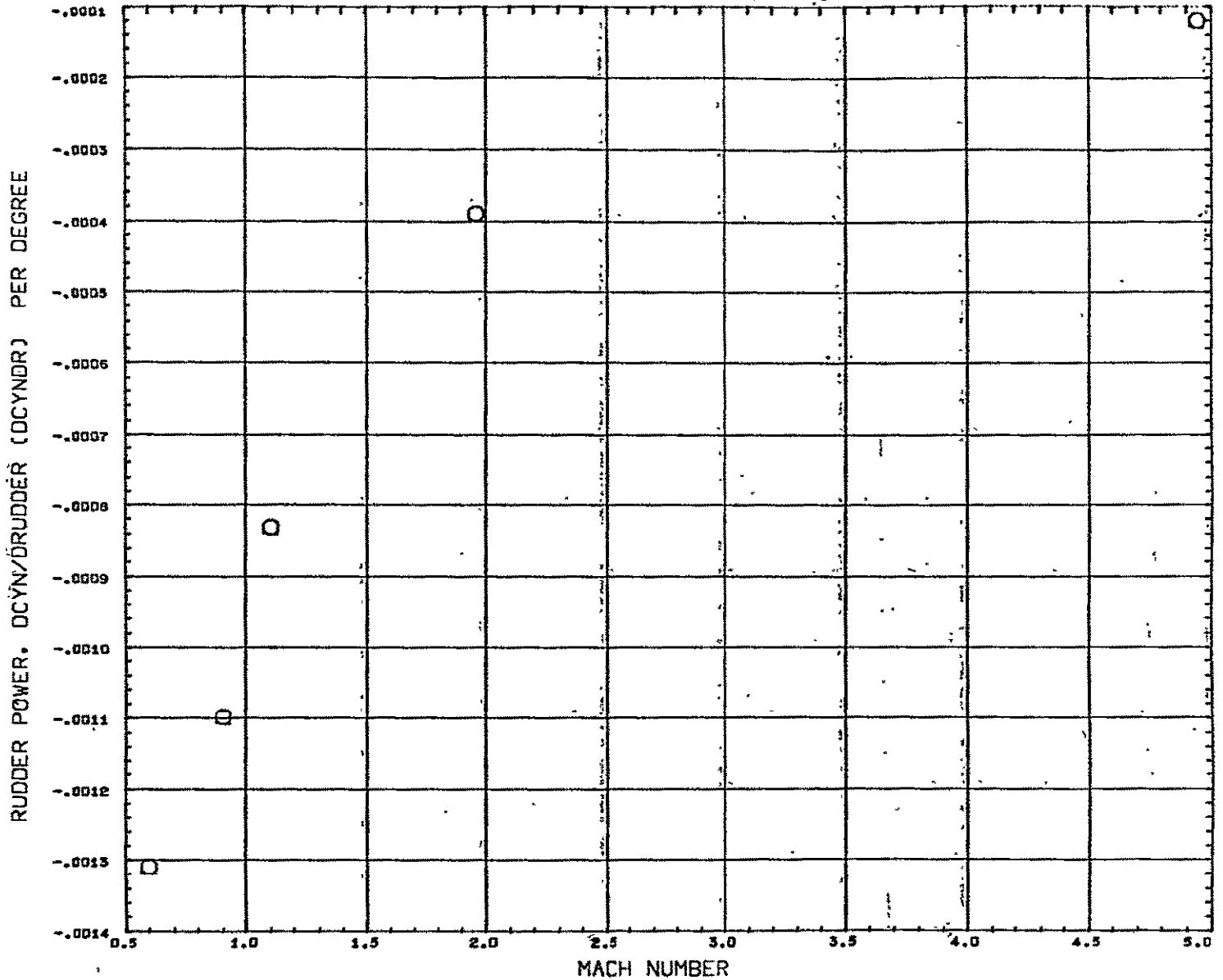


SYMBOL	ALPHA	PARAMETRIC VALUES			
○	15.000	BETA	0.000	ELEVN4	0.000
		RUDER4	0.000	STING	4.000

REFERENCE INFORMATION		
SREF	9.0250	50. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE I#E#8

MSFC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT. RUDDER EFF(CT) VS MACH NO.)



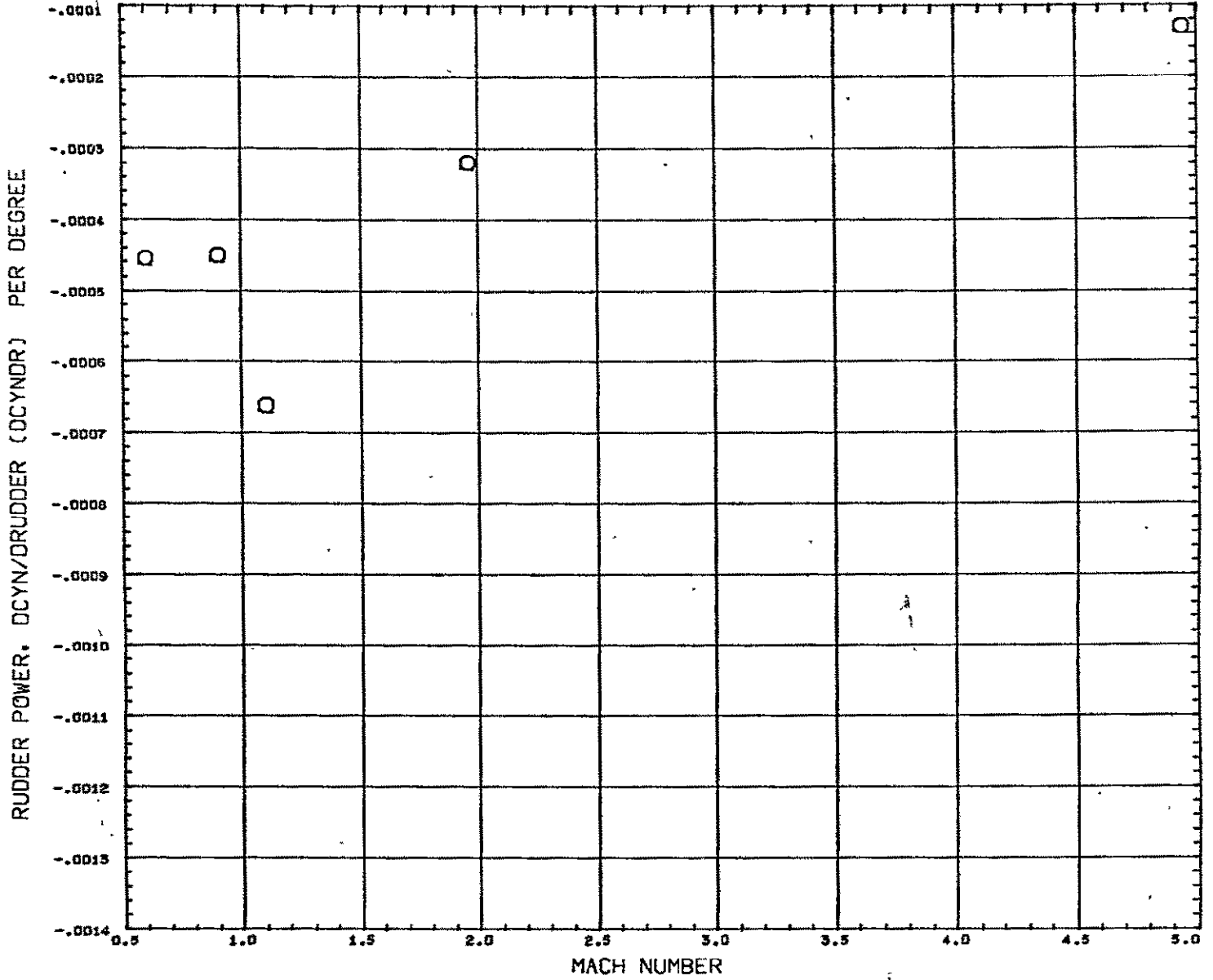
SYMBOL	ALPHA	PARAMETRIC VALUES			
○	0.000	BETA	0.000	ELEVN4	0.000
		RUDDER4	0.000	STING	4.000

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XHRP	3.9950	INCHES
YHRP	0.0000	INCHES
ZHRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE I#E#P#B



LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, RUDDER EFF( DER VS MACH NO.)

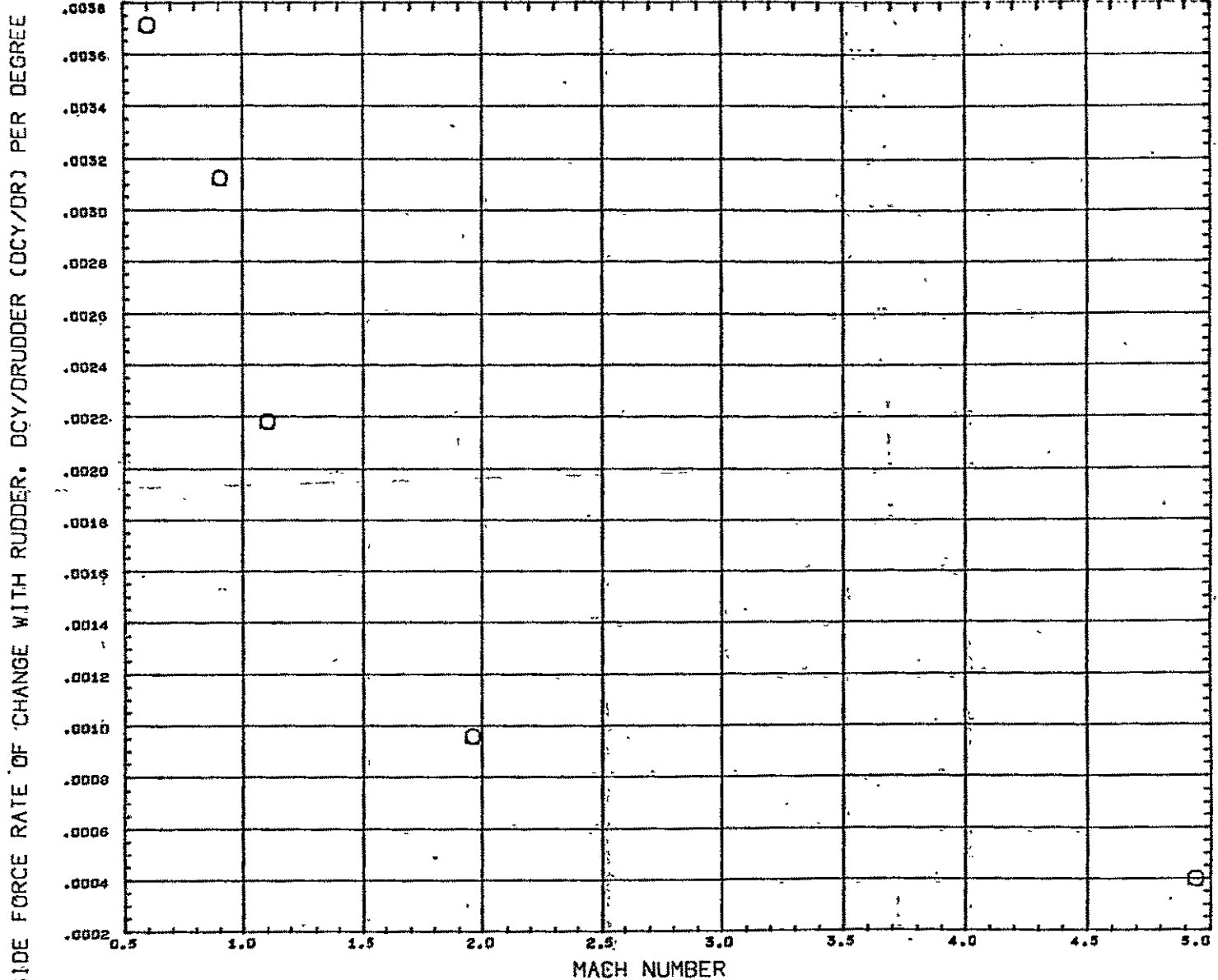


SYMBOL	ALPHA	PARAMETRIC VALUES			
○	15.000	BETA	0.000	ELEVN4	0.000
		RUDDER4	0.000	STING	4.000

REFERENCE INFORMATION		
SREF	9.0250	sq. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XHRP	3.9950	INCHES
YHRP	0.0000	INCHES
ZHRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE I#E#F#B

LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, RUDDER EFF( DER VS MACH NO.)

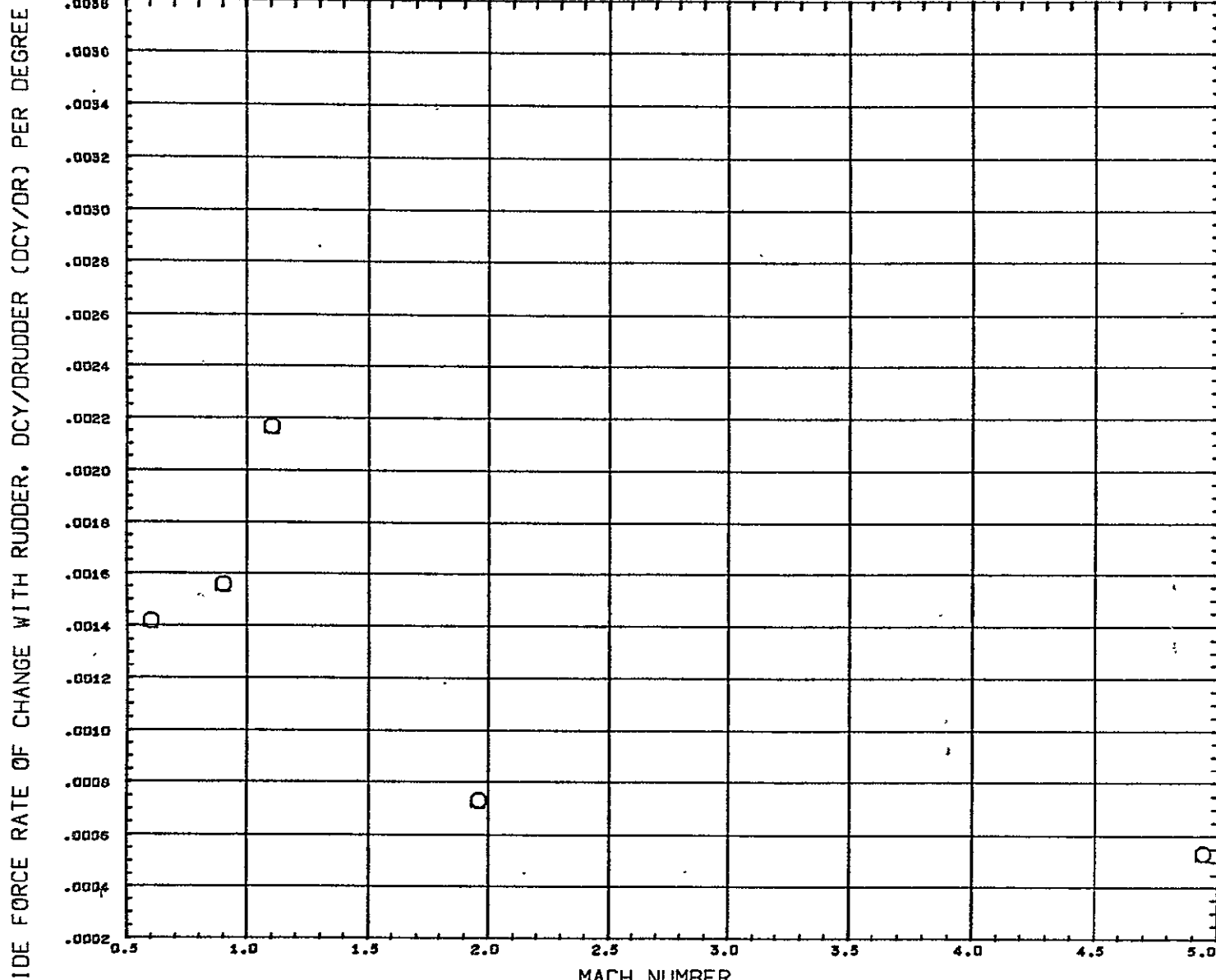


SYMBOL ○  
 ALPHA 0.000  
 BETA 0.000  
 RUDER4 0.000  
 PARAMETRIC VALUES  
 ELEVN4 0.000  
 STING -4.000

REFERENCE INFORMATION:  
 SREF 9.0250 90. IN  
 LREF 6.1420 INCHES  
 BREF 6.1420 INCHES  
 XMRP 3.9950 INCHES  
 YMRP 0.0000 INCHES  
 ZMRP 0.1350 INCHES  
 SCALE 0.0033 SCALE

DATA HIST. CODE I#E#P#8

LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, RUDDER EFF( DER VS MACH NO.)

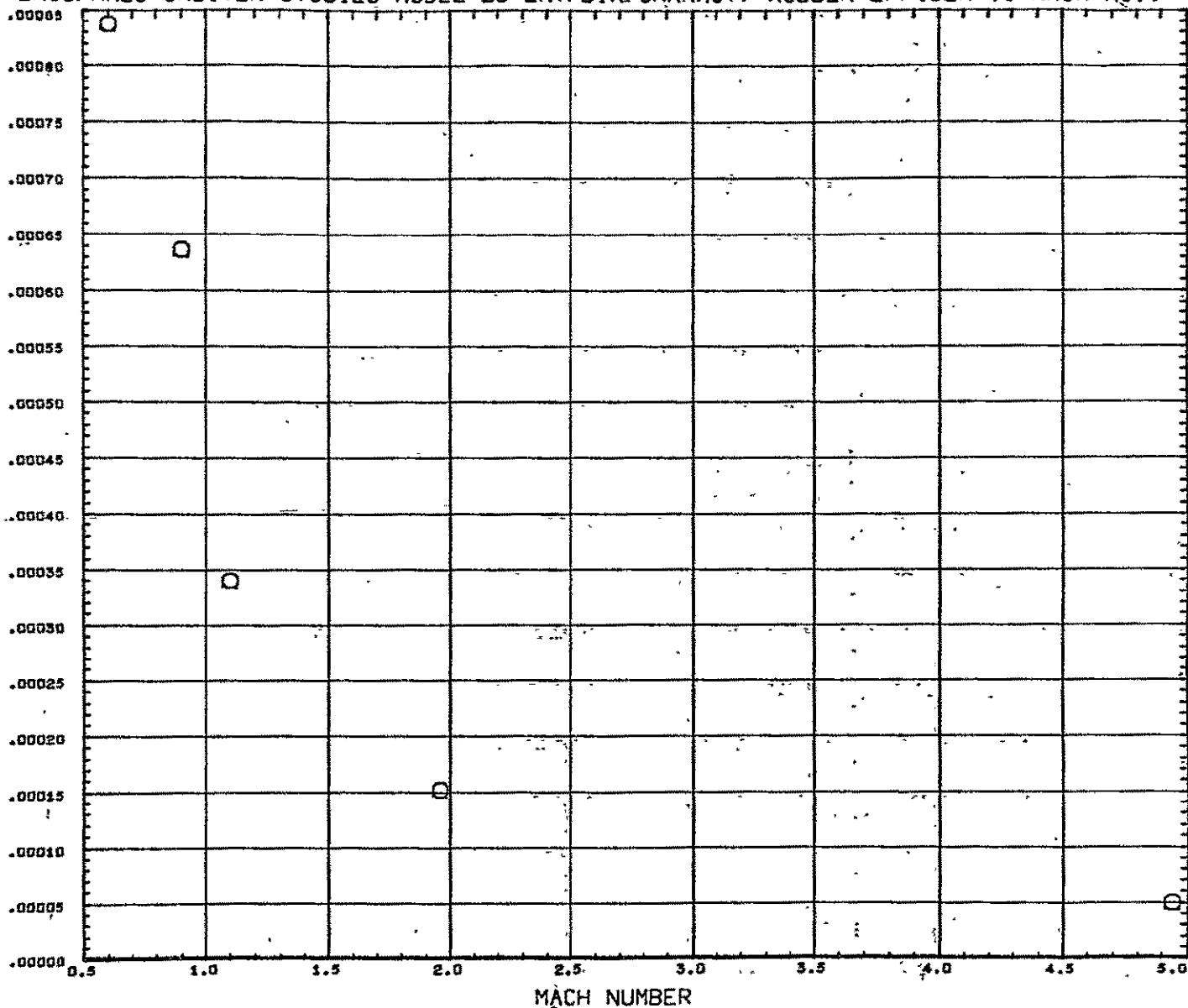


SYMBOL	ALPHA	PARAMETRIC VALUES			REFERENCE INFORMATION			
○	15.000	BETA	0.000	ELEVN4	0.000	SREF	9.0250	SQ. IN
		RUDDER4	0.000	STING	4.000	LREF	6.1420	INCHES
						BREF	6.1420	INCHES
						XMRP	3.9950	INCHES
						YMRP	0.0000	INCHES
						ZMRP	0.1350	INCHES
						SCALE	0.0033	SCALE

DATA HIST. CODE I#E#P#B

LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, RUDDER EFF(OR VS MACH NO.)

ROLLING MOMENT RATE DUE TO RUDDER, DCBL/DRUDDER (DCBLDR) PER DEGREE



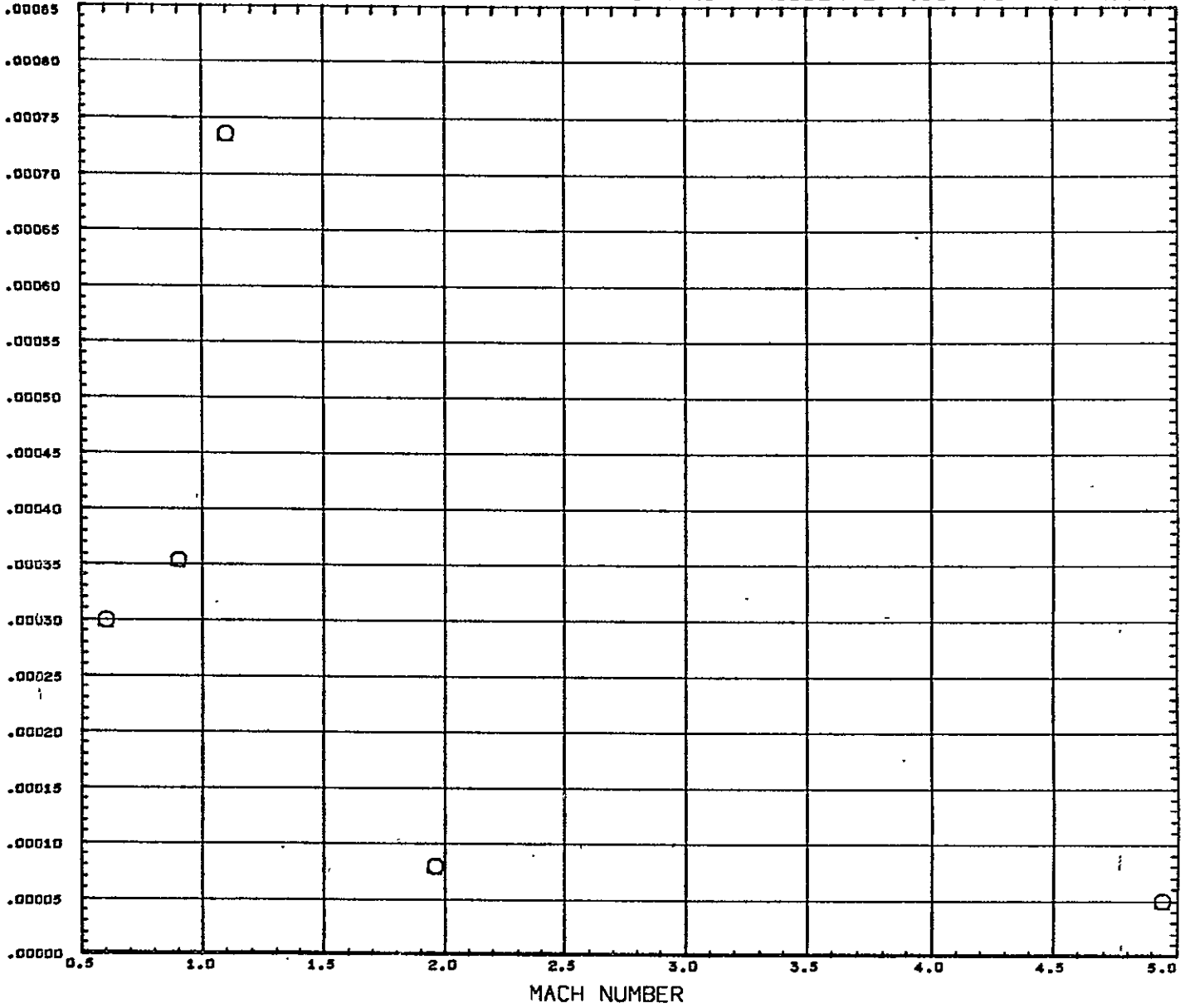
SYMBOL	ALPHA	PARAMETRIC VALUES			
○	0.000	BETA	0.000	ELEVN4	0.000
		RUDER4	0.000	STING	4.000

REFERENCE INFORMATION		
SREF	9.0250	SQ.IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE I#E#P#B

LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, RUDDER EFF(DER VS MACH NO.)

ROLLING MOMENT RATE DUE TO RUDDER, DCBL/DRUDDER (DCBLDR) PER DEGREE

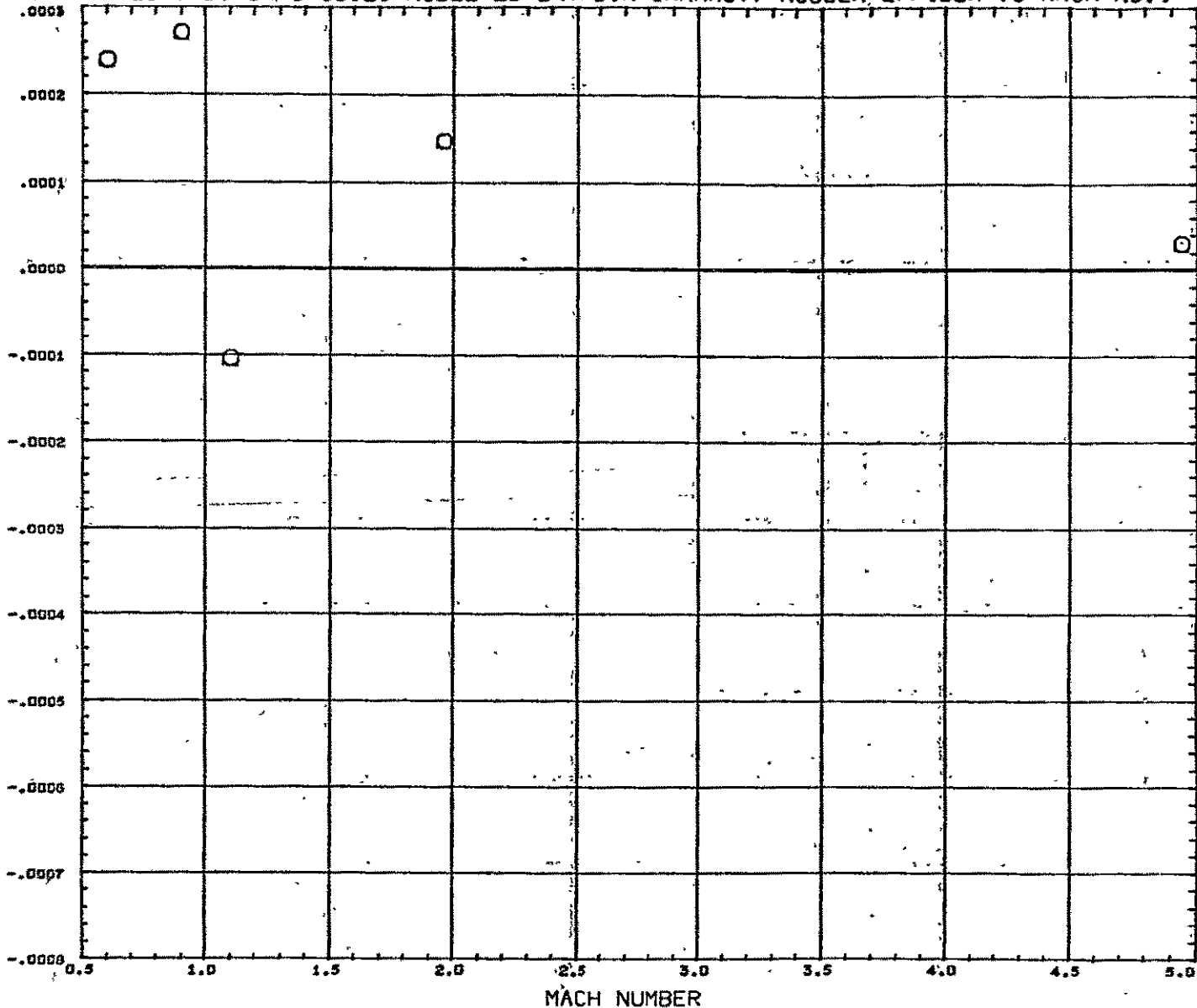


SYMBOL ○  
 ALPHA 15.000  
 BETA 0.000  
 RUDER4 0.000  
 PARAMETRIC VALUES  
 ELEVN4 0.000  
 STING 4.000

REFERENCE INFORMATION  
 SREF 9.0250 SQ. IN  
 LREF 6.1420 INCHES  
 BREF 6.1420 INCHES  
 XMRP 3.9950 INCHES  
 YMRP 0.0000 INCHES  
 ZMRP 0.1350 INCHES  
 SCALE 0.0033 SCALE

DATA HIST. CODE I#E#P#B

LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT. RUDDER EFF (DER VS MACH NO.)

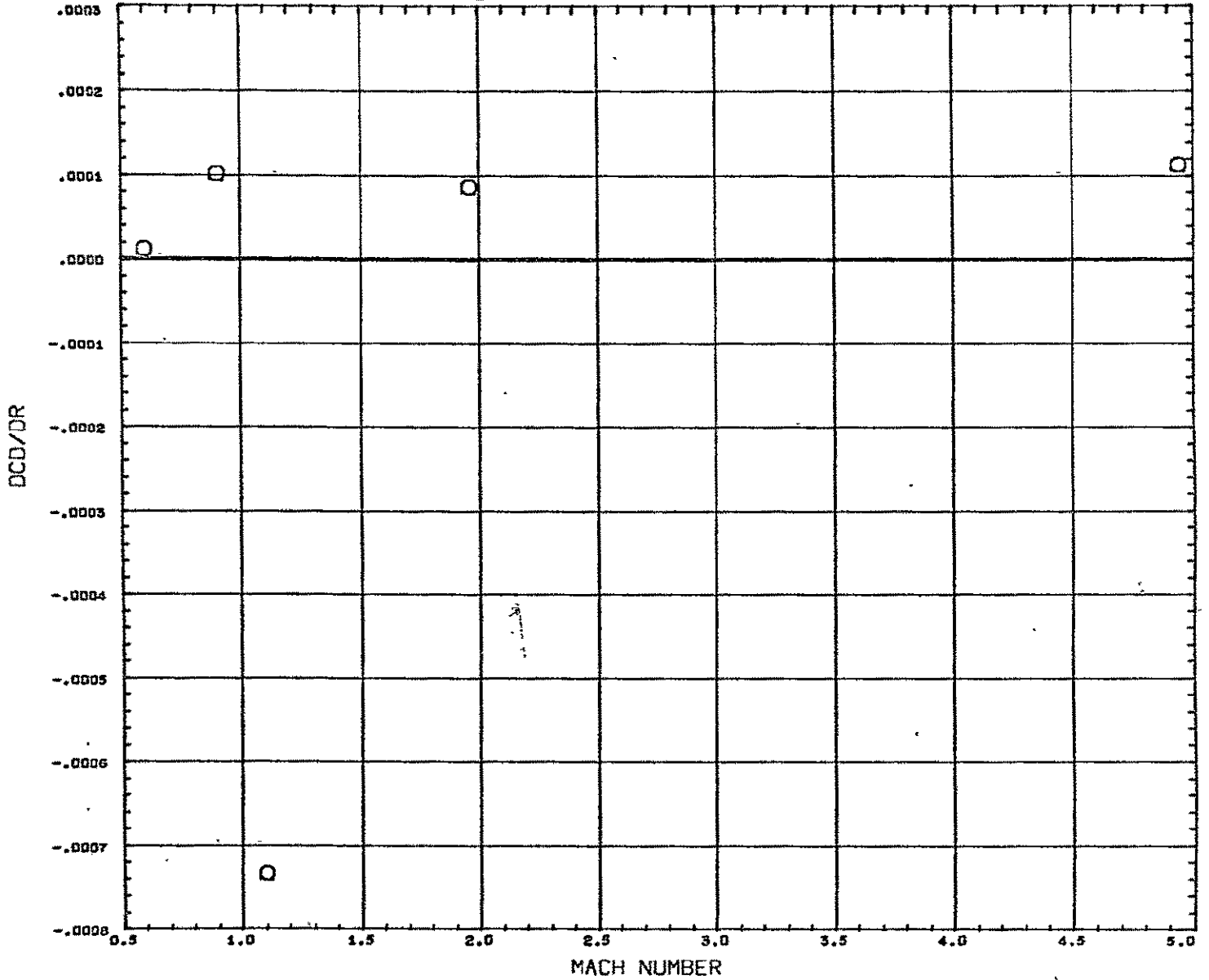


SYMBOL ALPHA PARAMETRIC VALUES  
 O 0.000 BETA 0.000 ELEVN4 0.000  
 RUDER4 0.000 STING 4.000

REFERENCE INFORMATION  
 SREF 9.0250 SQ. IN  
 LREF 6.1420 INCHES  
 BREF 6.1420 INCHES  
 XNRP 3.9950 INCHES  
 YNRP 0.0000 INCHES  
 ZMRP 0.1350 INCHES  
 SCALE 0.0033 SCALE

DATA HIST. CODE I\*E\*P\*B

LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, RUDDER EFF( DER VS MACH NO.)

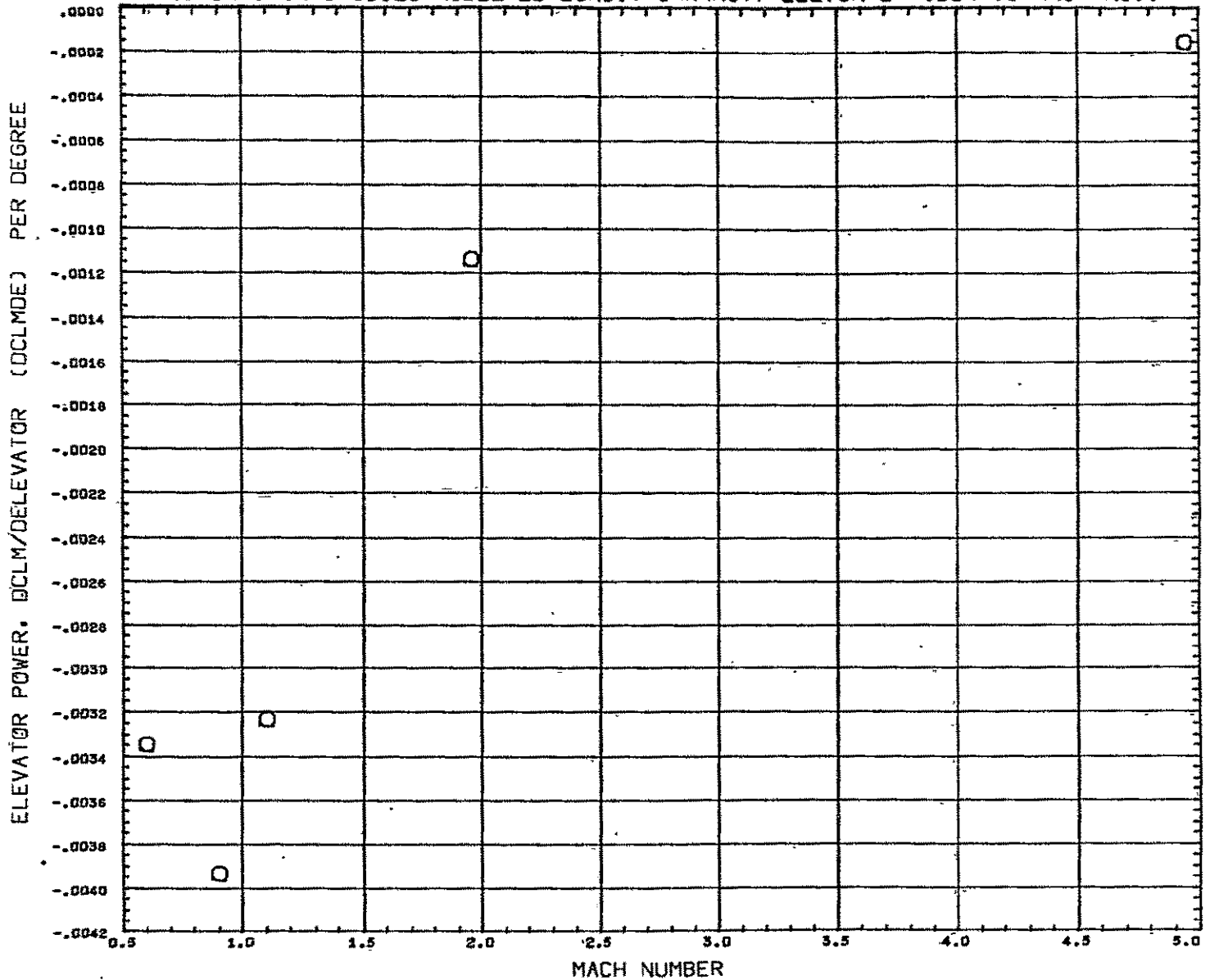


SYMBOL	ALPHA	PARAMETRIC VALUES			
○	15.000	BETA	0.000	ELEVN4	0.000
		RUDEA4	0.000	STING	4.000

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE I+E\*P+B

LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT. ELEVON EFF( DER VS MACH NO.)



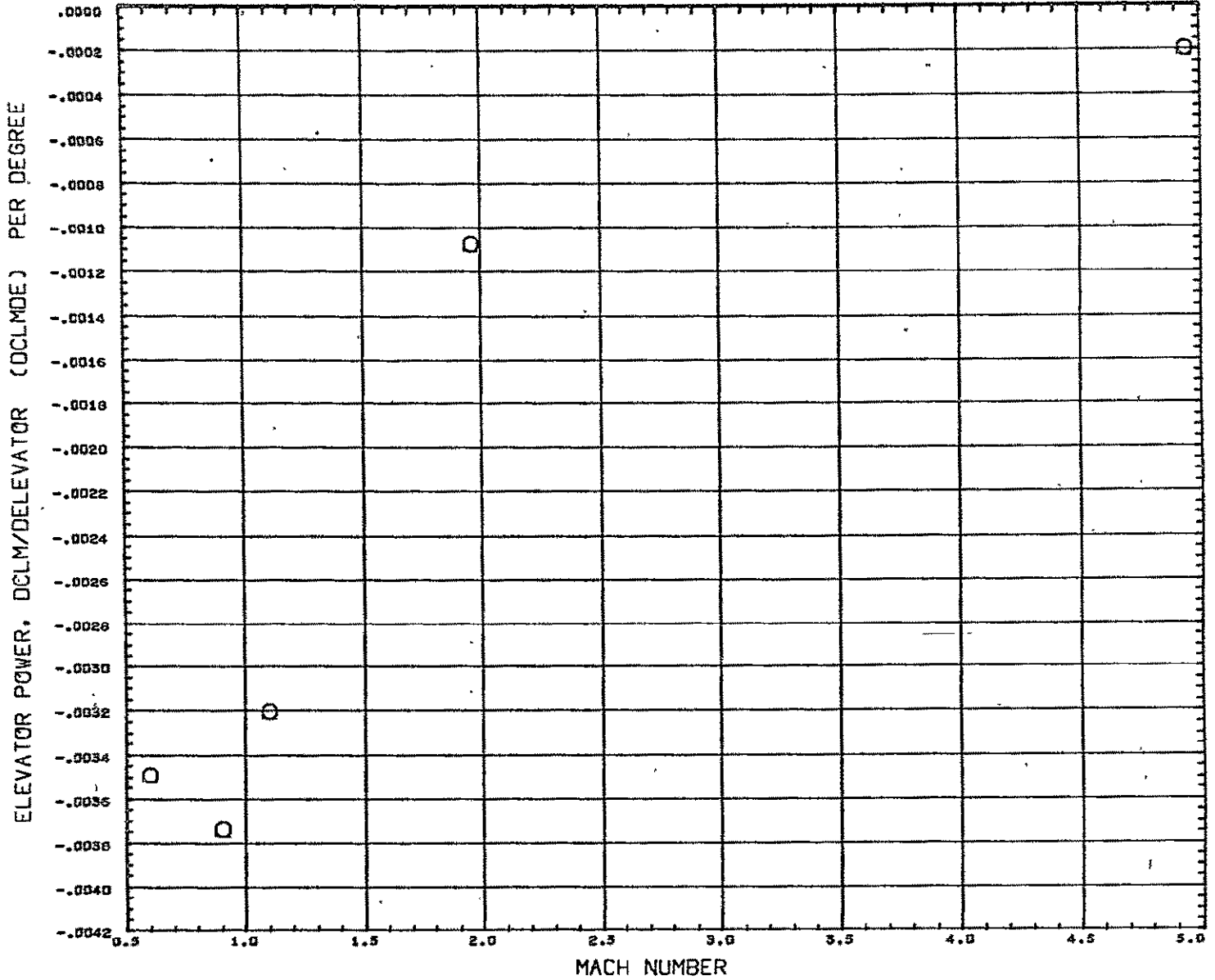
SYMBOL	ALPHA	PARAMETRIC VALUES			
○	0.000	BETA	0.000	ELEVN4	0.000
		RUDER4	0.000	STING	4.000

REFERENCE INFORMATION		
SREF	9.0250	60. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE #G4E1#P



LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT. ELEVON EFF(DER VS MACH NO.)

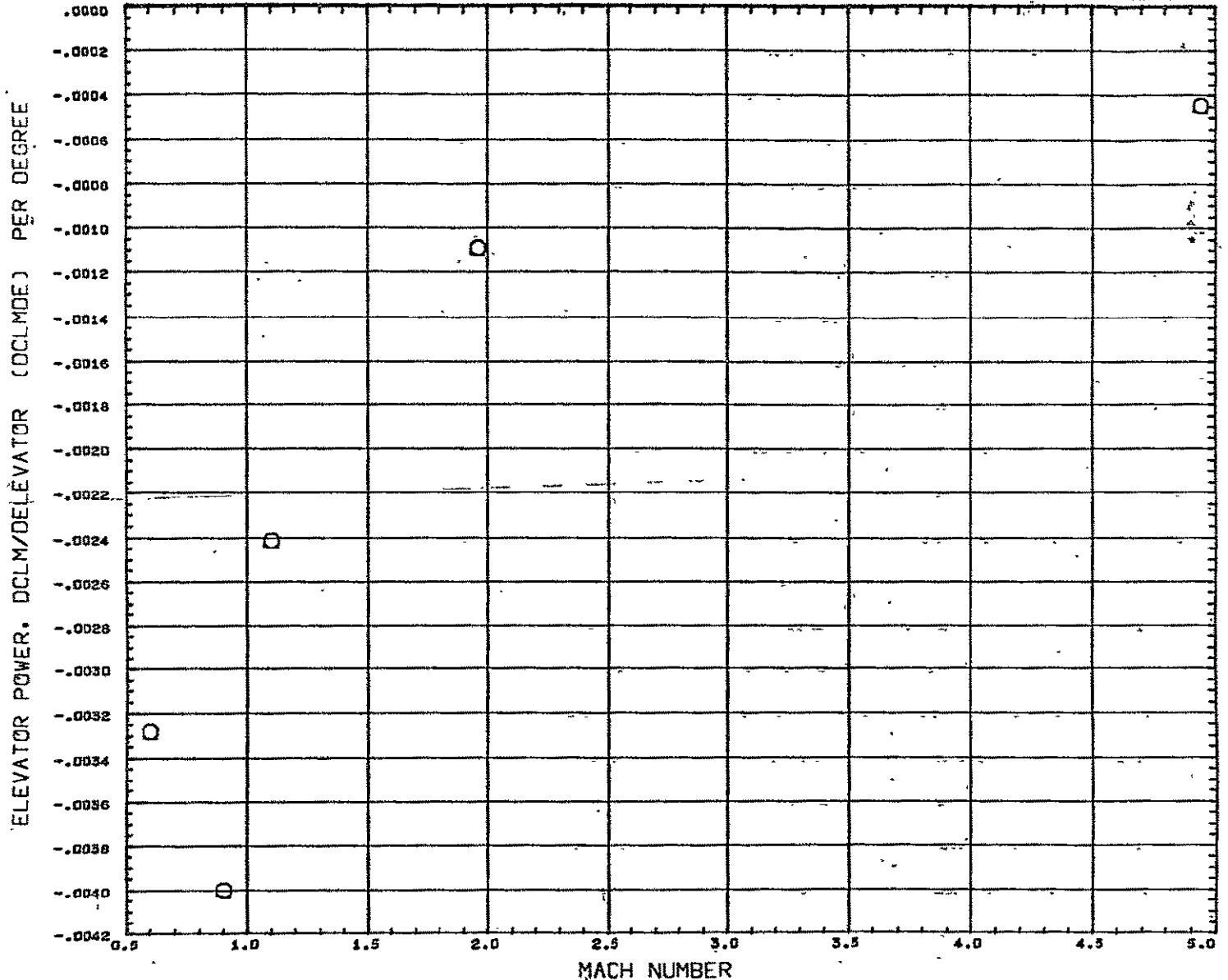


SYMBOL	ALPHA	PARAMETRIC VALUES			
○	10.000	BETA	0.000	ELEVN4	0.000
		RUDER4	0.000	STING	4.000

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE #G\*EI\*P

MSFC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, ELEVON EFF( DER VS MACH NO.)

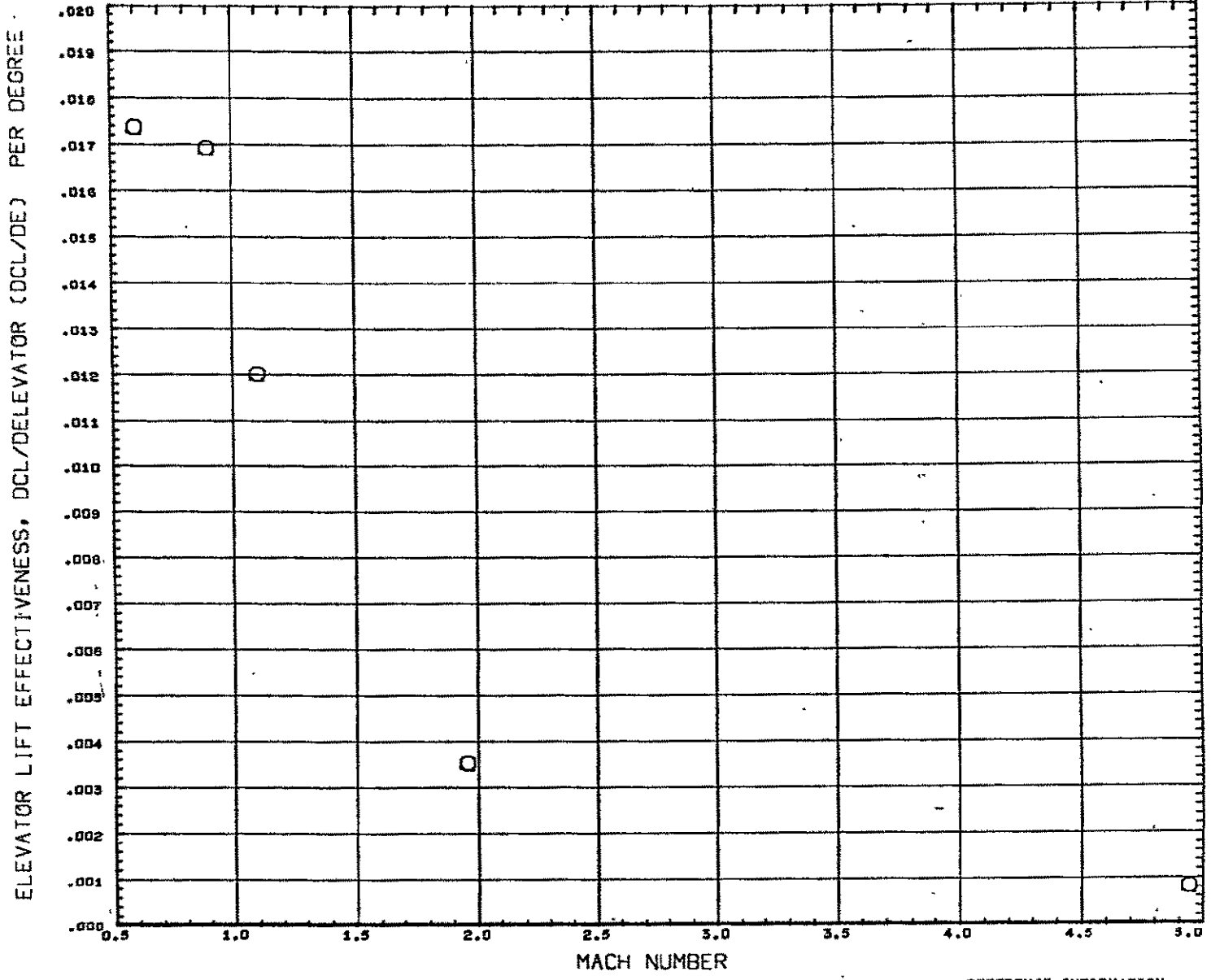


SYMBOL ○ ALPHA 15.000 BETA 0.000 RUDER4 0.000  
 PARAMETRIC VALUES ELEVN4 0.000 STING 4.000

REFERENCE INFORMATION  
 SREF 9.0250 SQ. IN  
 LREF 6.1420 INCHES  
 BREF 6.1420 INCHES  
 XHRP 3.9950 INCHES  
 YHRP 0.0000 INCHES  
 ZHRP 0.1350 INCHES  
 SCALE 0.0033 SCALE

DATA HIST. CODE #G\*EI#P

LMSC/HREC ORBITER STUDIES-MODEL 28-LONGIT CHARACT, ELEVON EFF( DER VS MACH NO.)

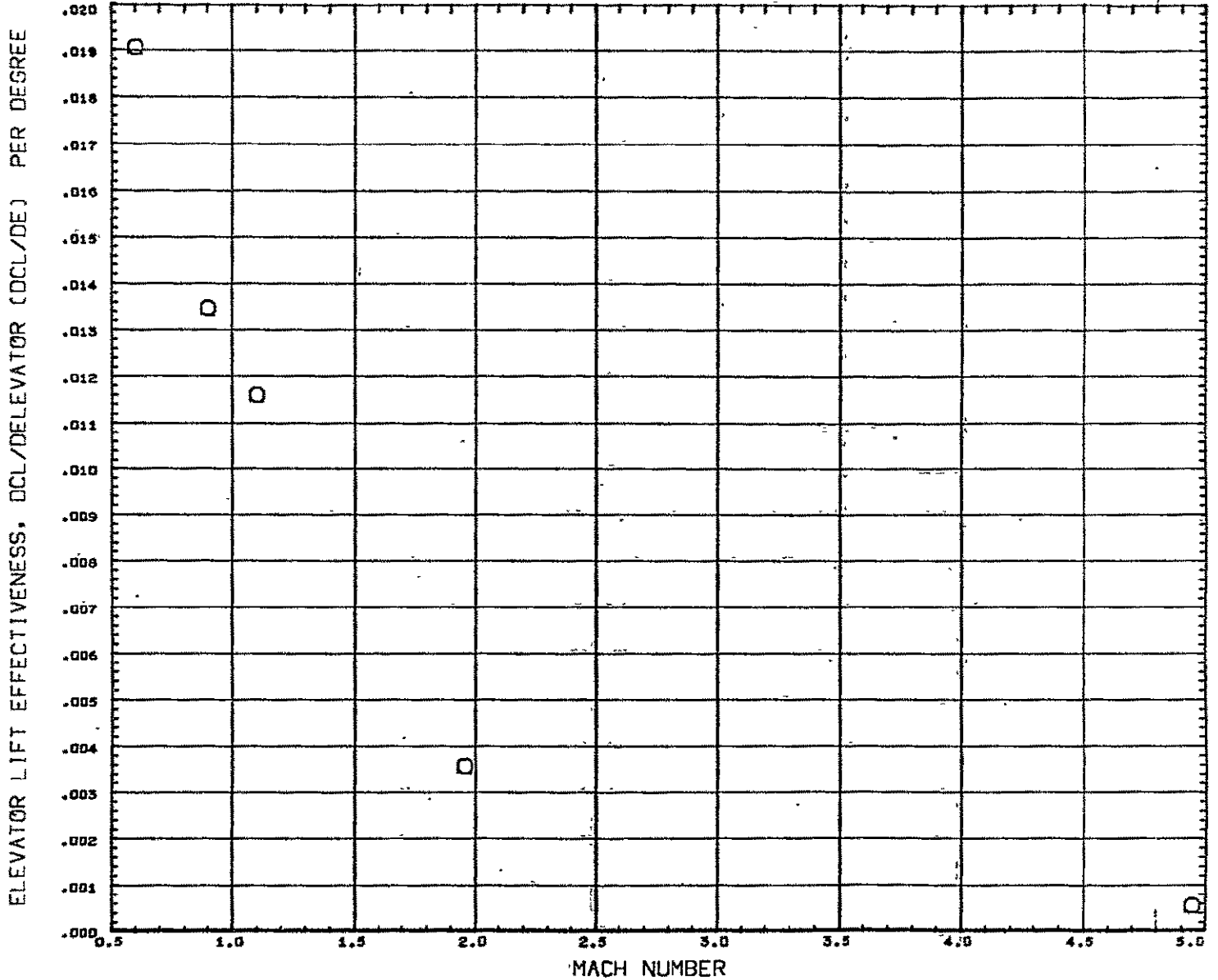


SYMBOL ○ ALPHA 0.000 BETA 0.000 RUDER4 0.000  
 PARAMETRIC VALUES ELEVN4 0.000 STING 4.000

REFERENCE INFORMATION  
 SREF 9.0250 SQ. IN  
 LREF 6.1420 INCHES  
 BREF 6.1420 INCHES  
 XMRP 3.9950 INCHES  
 YMRP 0.0000 INCHES  
 ZMRP 0.1350 INCHES  
 SCALE 0.0033 SCALE

DATA HIST. CODE \*G+EI\*P

LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, ELEVON EFF(OR VS MACH NO.)

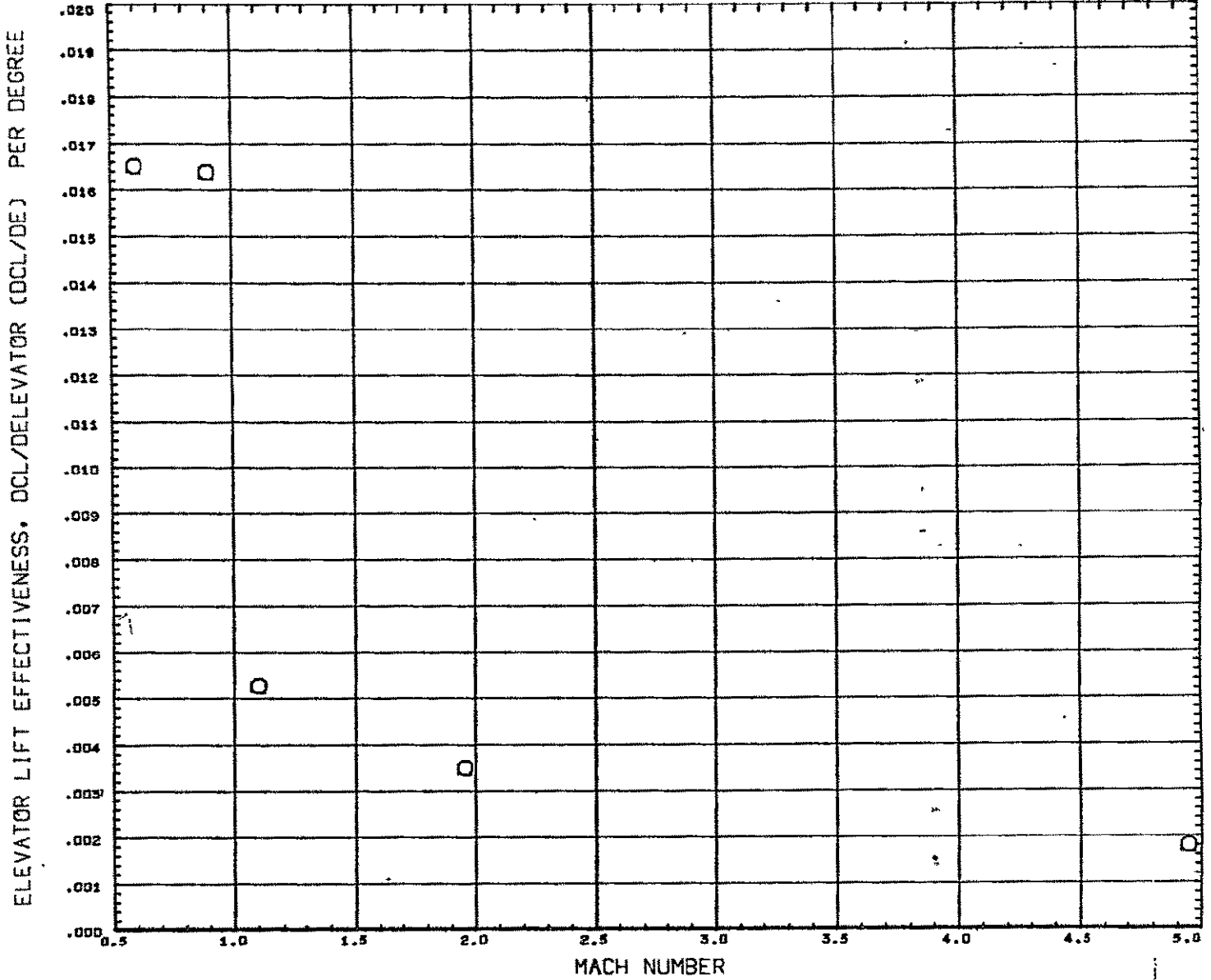


SYMBOL	ALPHA	BETA	PARAMETRIC VALUES		
○	10.000	RUDER4	0.000	ELEVN4	0.000
			0.000	STING	4.000

REFERENCE INFORMATION		
REF	9.0250	sq. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE #G#EI#P

LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, ELEVON EFF( DER VS MACH NO.)

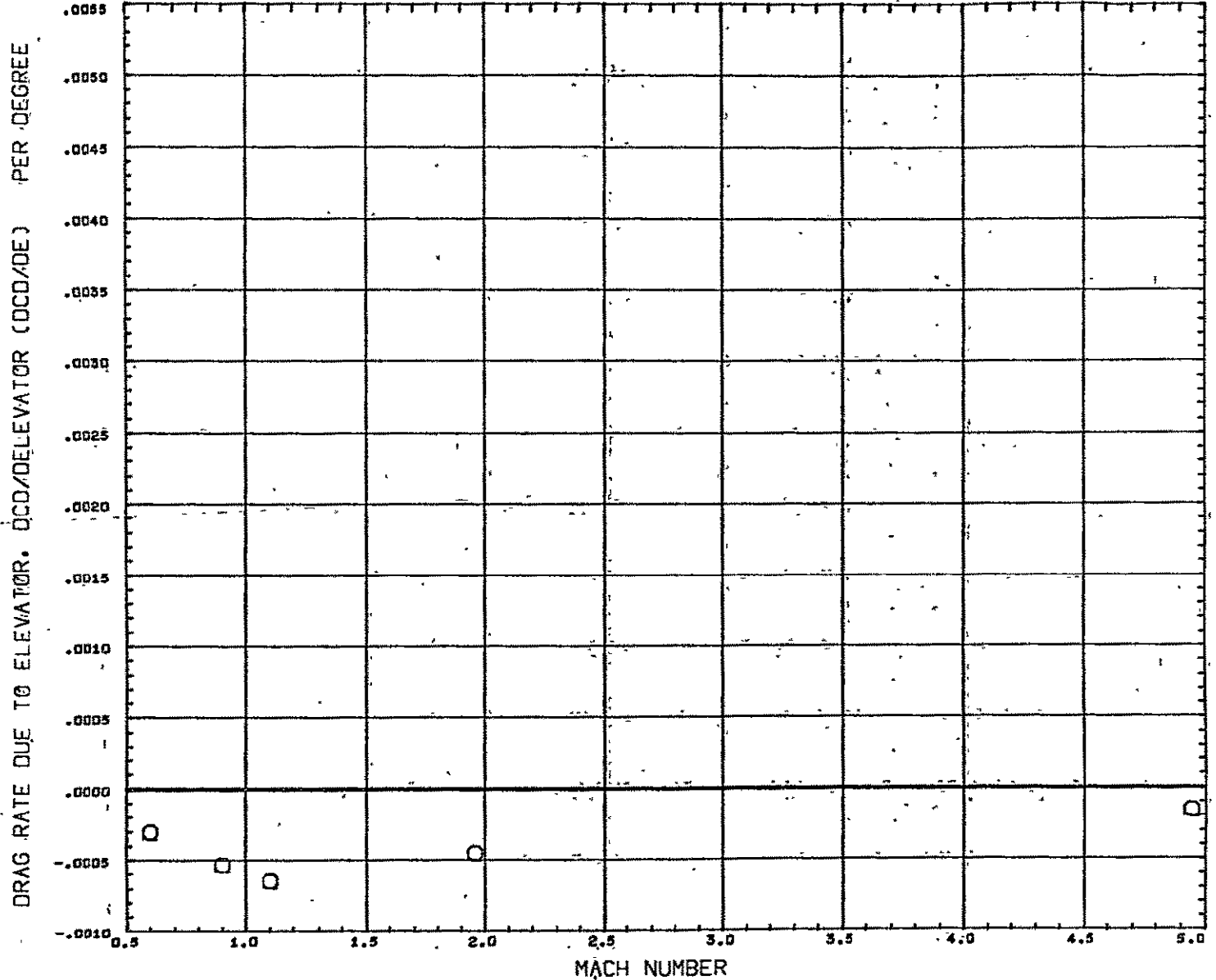


SYMBOL	ALPHA	PARAMETRIC VALUES			
○	15.000	BETA	0.000	ELEVN4	0.000
		RUDER4	0.000	STING	4.000

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE \*G\*EI\*P

LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, ELEVON EFF(DER VS MACH NO.)

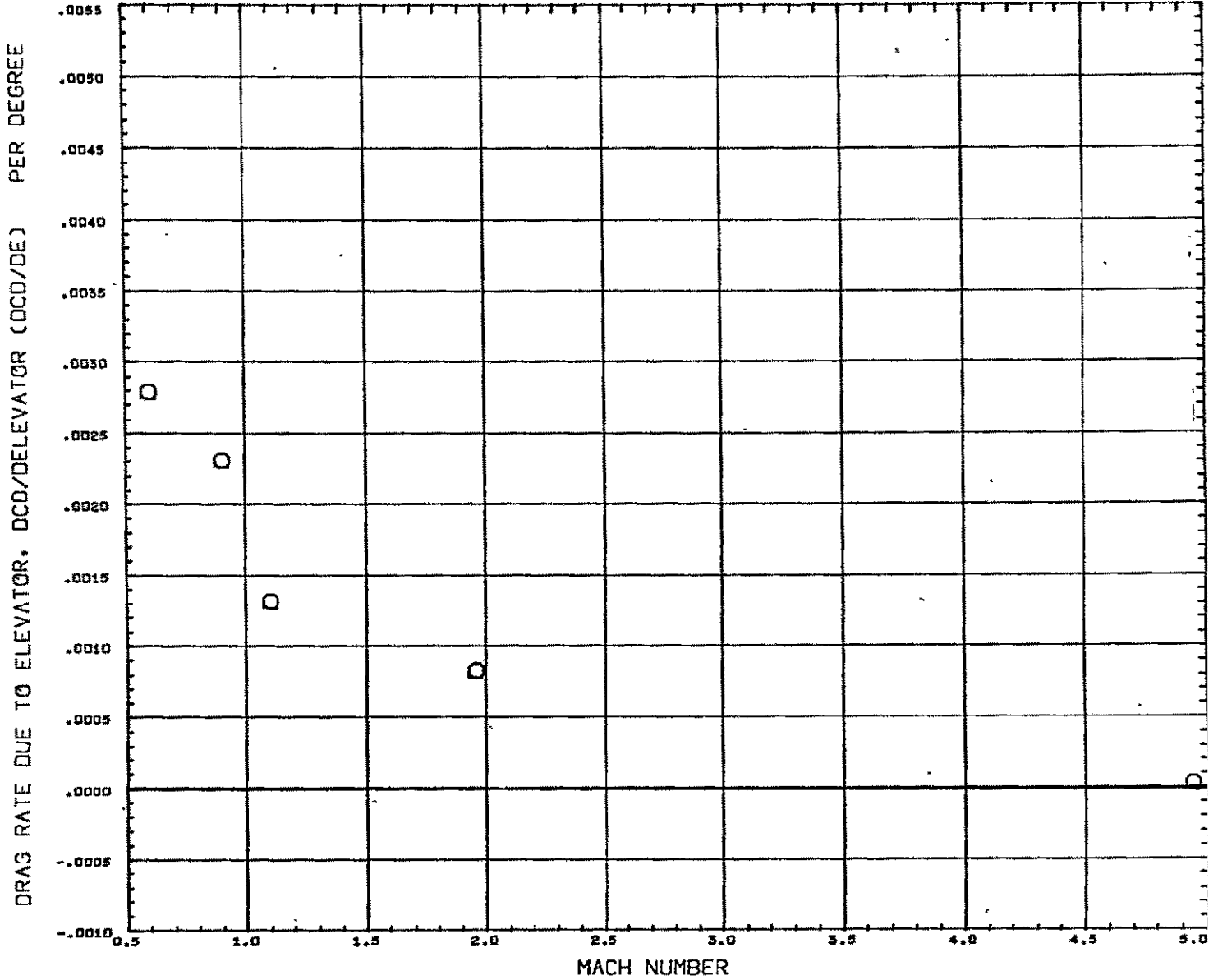


SYMBOL	ALPHA	PARAMETRIC VALUES			
	0.000	BETA	0.000	ELEVN4	0.000
		RUDER4	0.000	STING	4.000

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE #G#EI#P

LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, ELEVON EFF( DER VS MACH NO.)

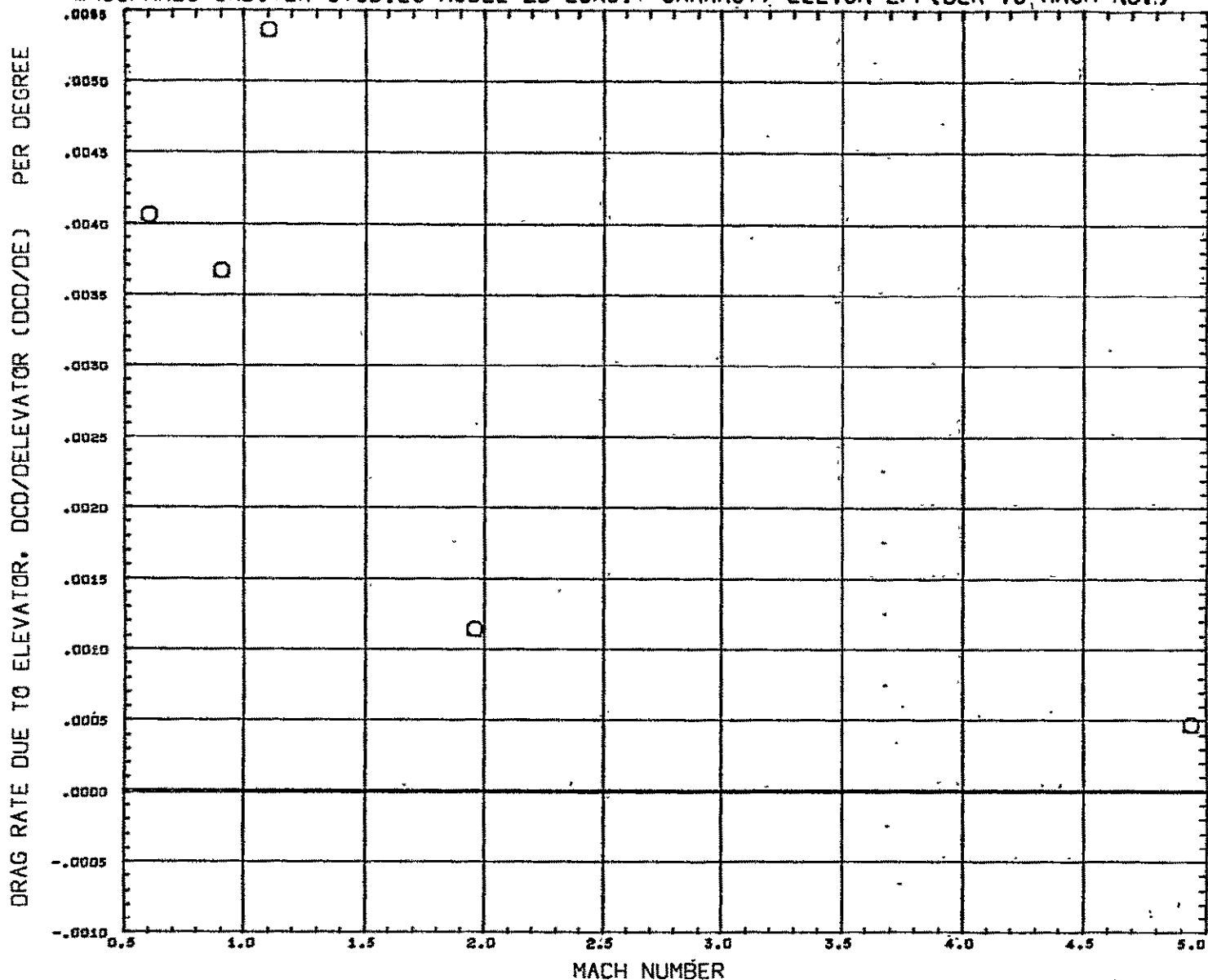


SYMBOL	ALPHA	BETA	PARAMETRIC VALUES		
○	10.000	RUDER4	0.000	ELEVN4	0.000
			0.000	STING	4.000

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE #0#E1#P

LMSC/HREC ORBITER STUDIES-MODEL 2B-LONGIT CHARACT, ELEVON EFF(DER VS MACH NO.)



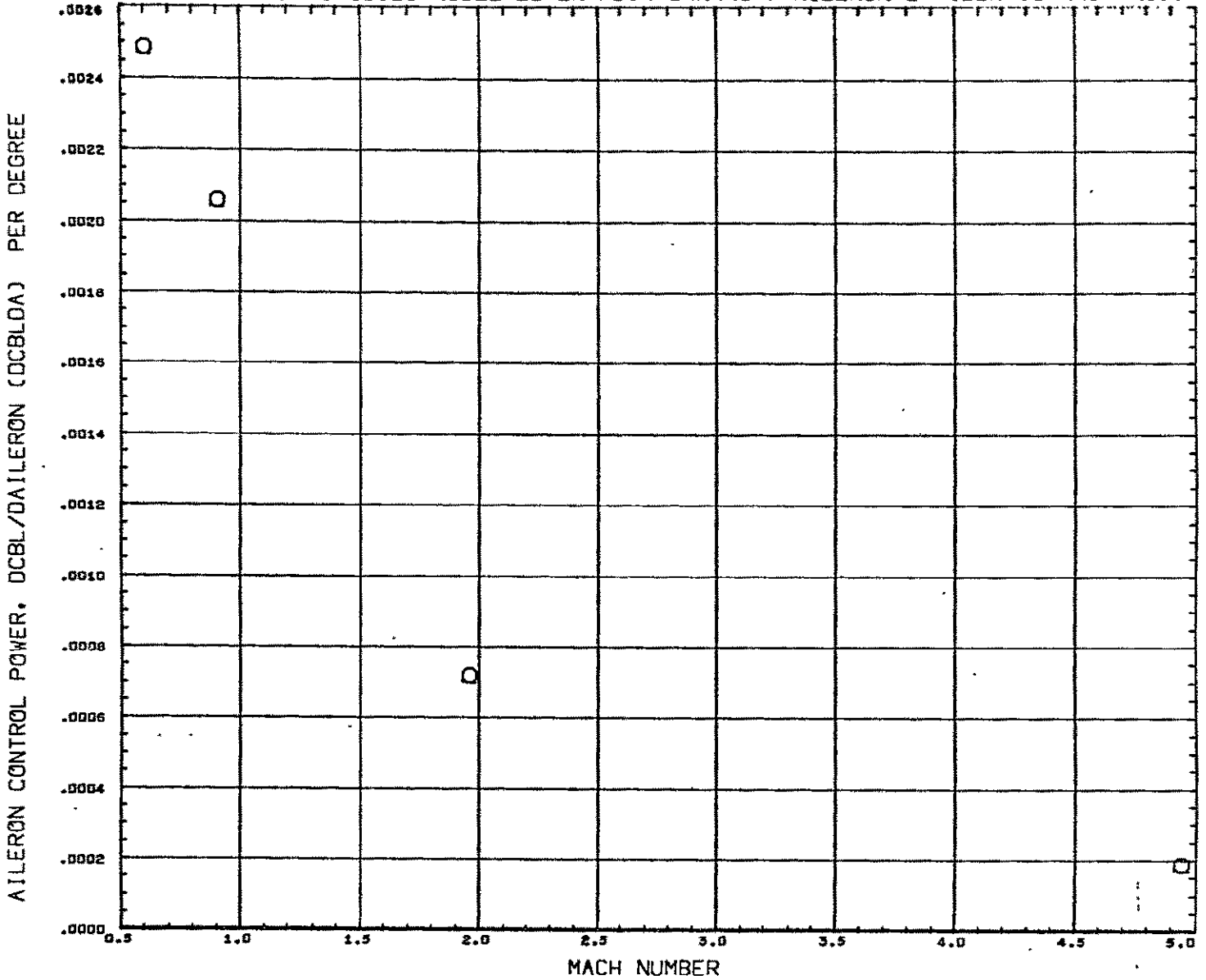
SYMBOL	ALPHA	PARAMETRIC VALUES			
○	15.000	BETA	0.000	ELEVN4	0.000
		RUDER4	0.000	STING	4.000

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE \*6\*E1#P



LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, AILERON EFF(DER VS MACH NO.)

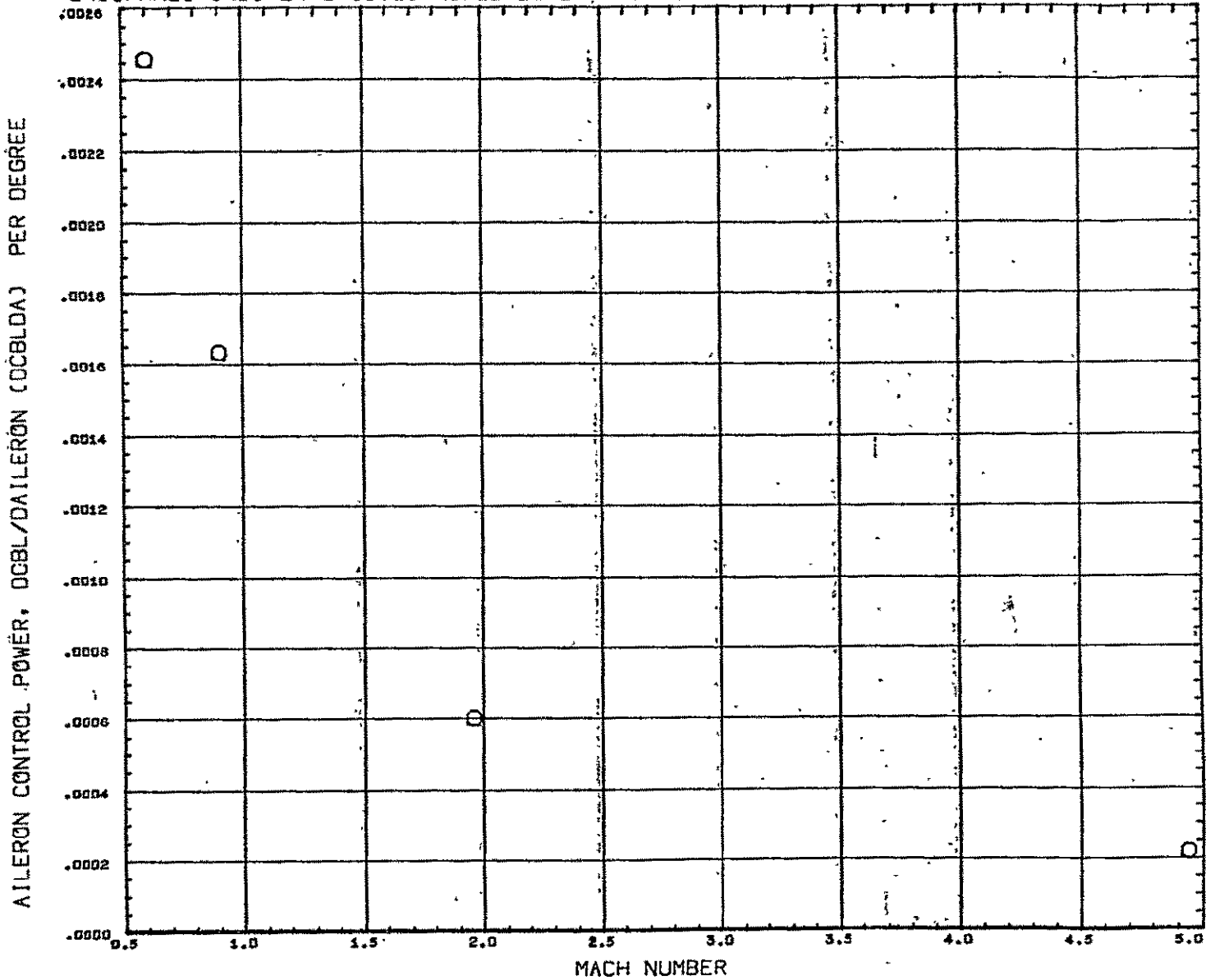


SYMBOL	ALPHA	PARAMETRIC VALUES			
○	0.000	BETA	0.000	ELEVN4	0.000
		RUDER4	0.000	STING	4.000
		AILRON	0.000		

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XHRP	3.9950	INCHES
YHRP	0.0000	INCHES
ZHRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE    N#G1#P

MSFC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, AILERON EFF (DER VS MACH NO.)

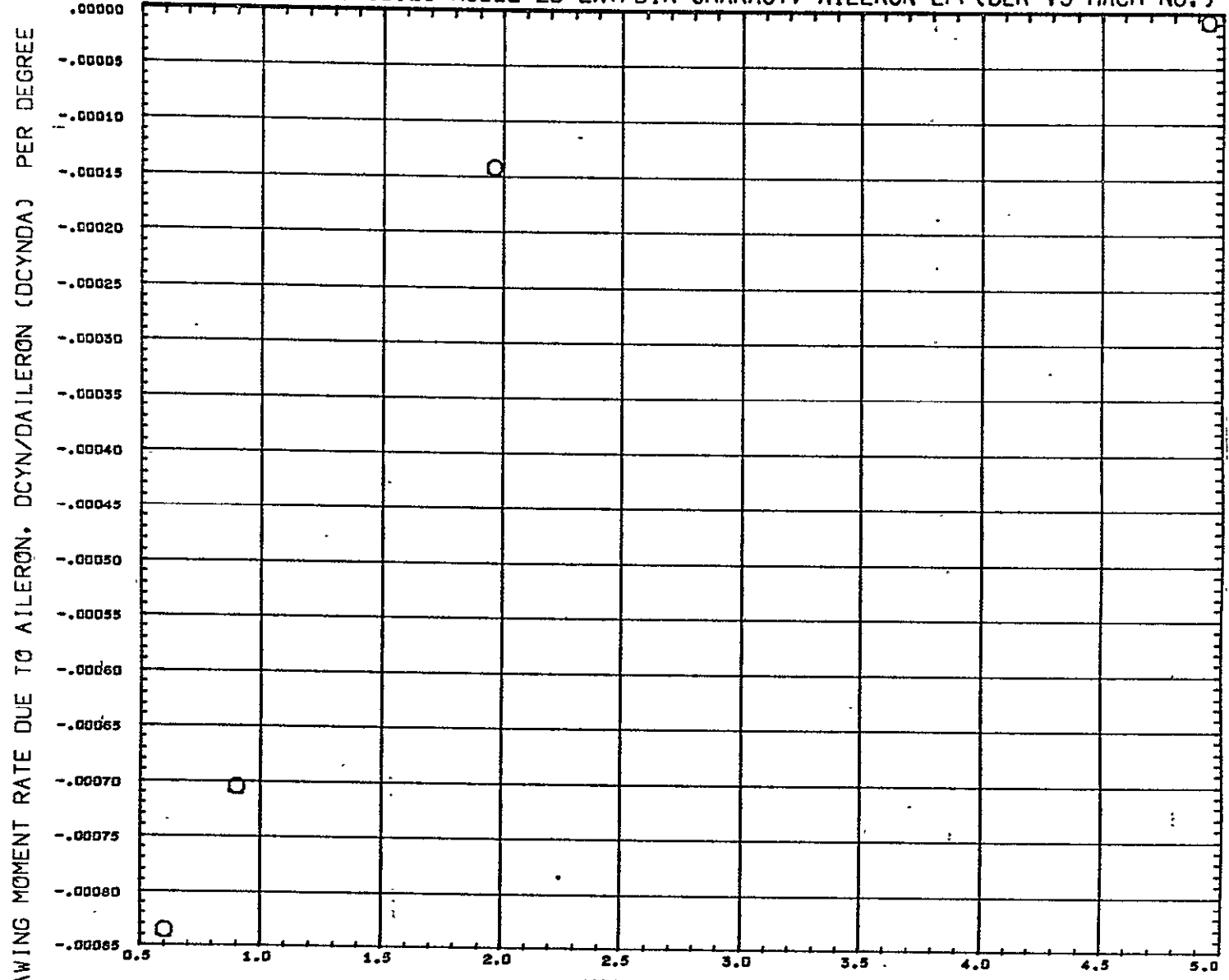


SYMBOL	ALPHA	PARAMETRIC VALUES			
○	10.000	BETA	0.000	ELEVN4	0.000
		RUDER4	0.000	STING	4.000
		AILRON	0.000		

REFERENCE INFORMATION		
SREF	9.0250	38. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE M#G10P

LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, AILERON EFF( DER VS MACH NO.)

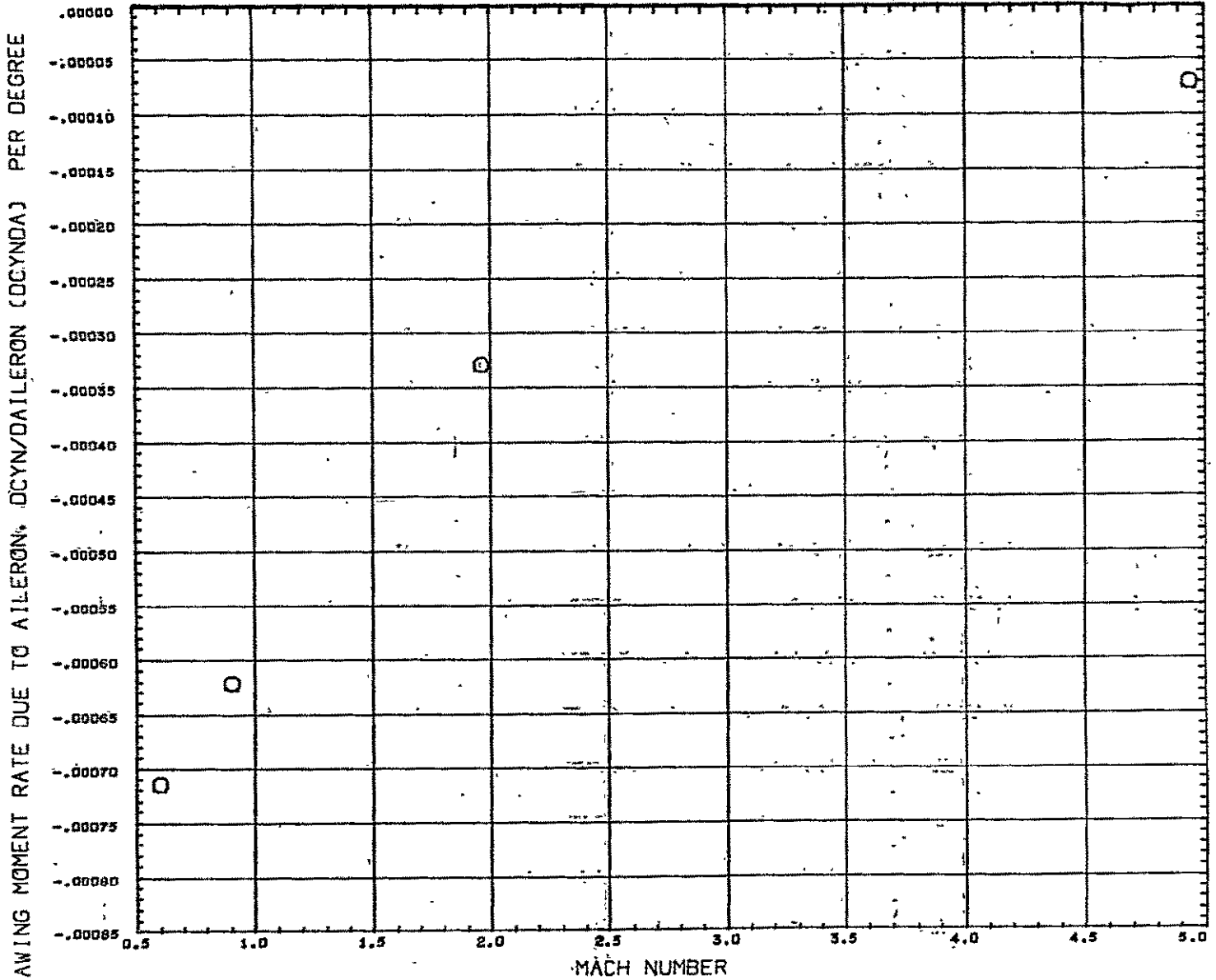


SYMBOL ○  
 ALPHA 0.000  
 BETA 0.000  
 RUDER4 0.000  
 AILERON 0.000  
 PARAMETRIC VALUES  
 ELEVN4 0.000  
 STING 4.000

REFERENCE INFORMATION  
 SREF 9.0250 SQ. IN  
 LREF 6.1420 INCHES  
 BREF 6.1420 INCHES  
 XHRP 3.9950 INCHES  
 YHRP 0.0000 INCHES  
 ZHRP 0.1350 INCHES  
 SCALE 0.0033 SCALE

DATA HIST. CODE M#GI#P

LMSC/HREC ORBITER STUDIES-MODEL 2B-LAT/DIR CHARACT, AILERON EFF.(DER VS MACH NO.)

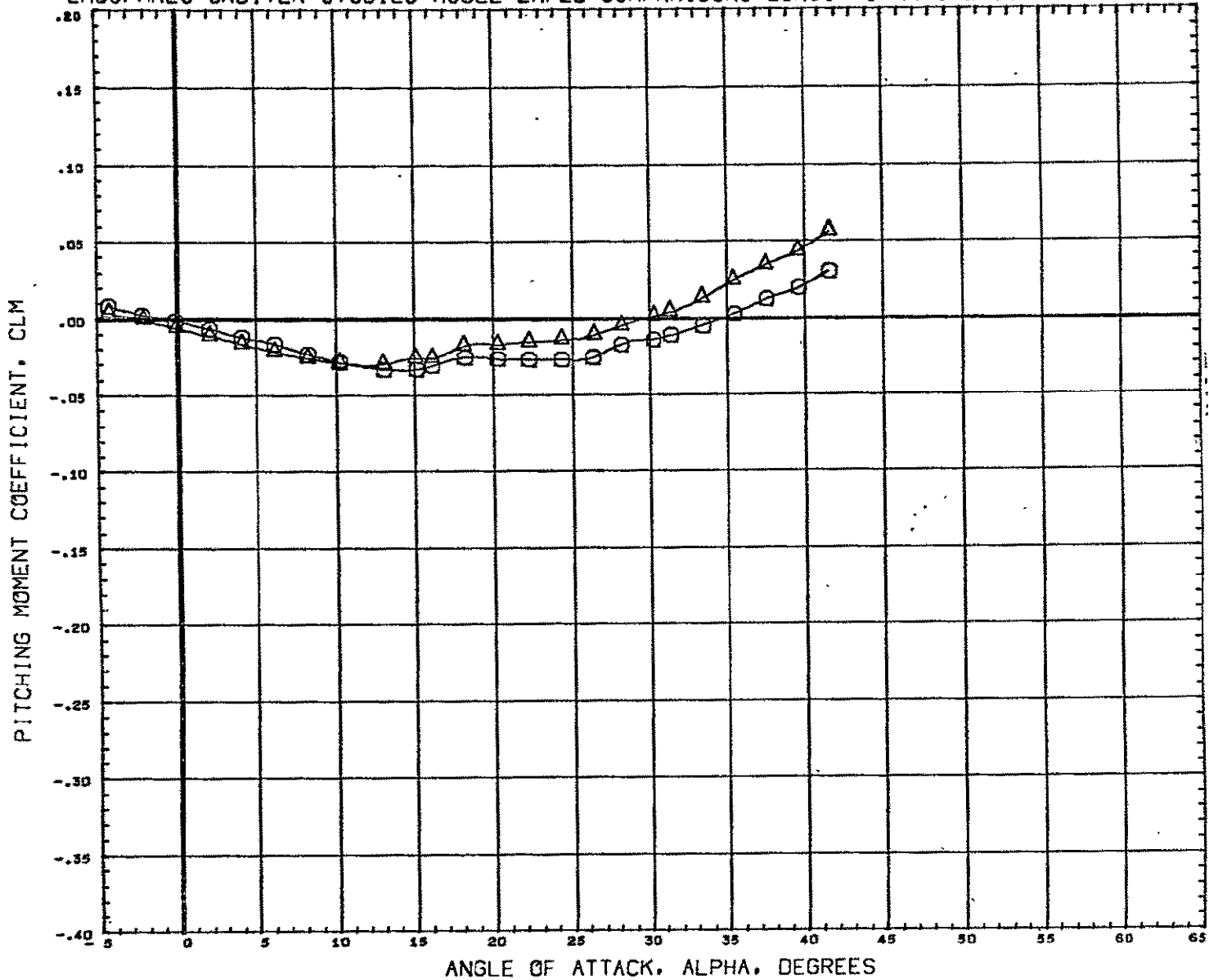


○	ALPHA	PARAMETRIC VALUES			
	10.000	BETA	0.000	ELEVN4	0.000
		RUDER4	0.000	STING	4.000
		AILRON	0.000		

REFERENCE INFORMATION		
SREF	9.0250	SR. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

DATA HIST. CODE H9GI#P

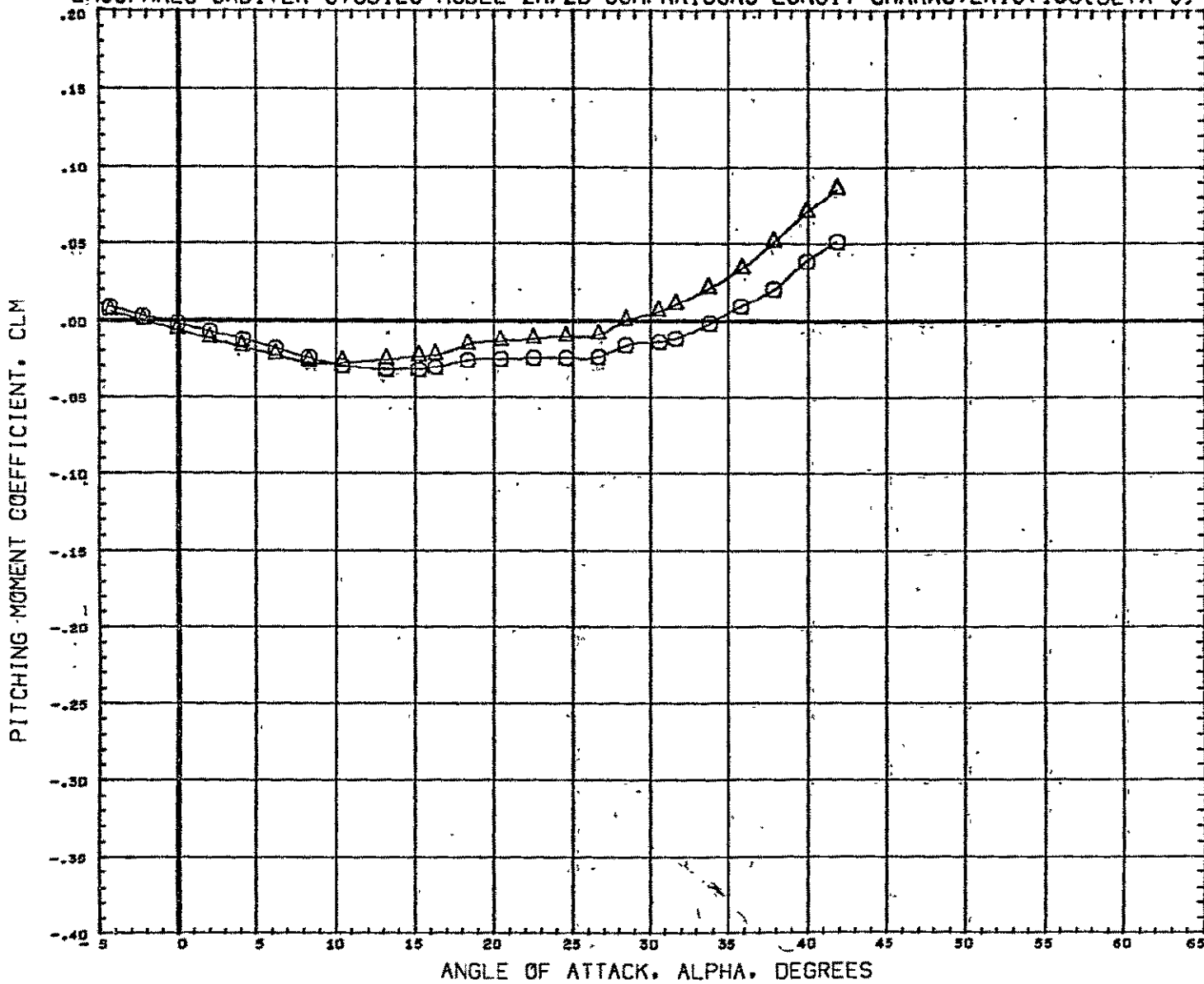
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(D41019)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(D41501)	MSFC TWT 498 MSFC/HREC ORBITER	B2W2V4D2E3R2		0.000	0.000	LREF 6.1420 INCHES
		B2W5V2E4R4				BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.597

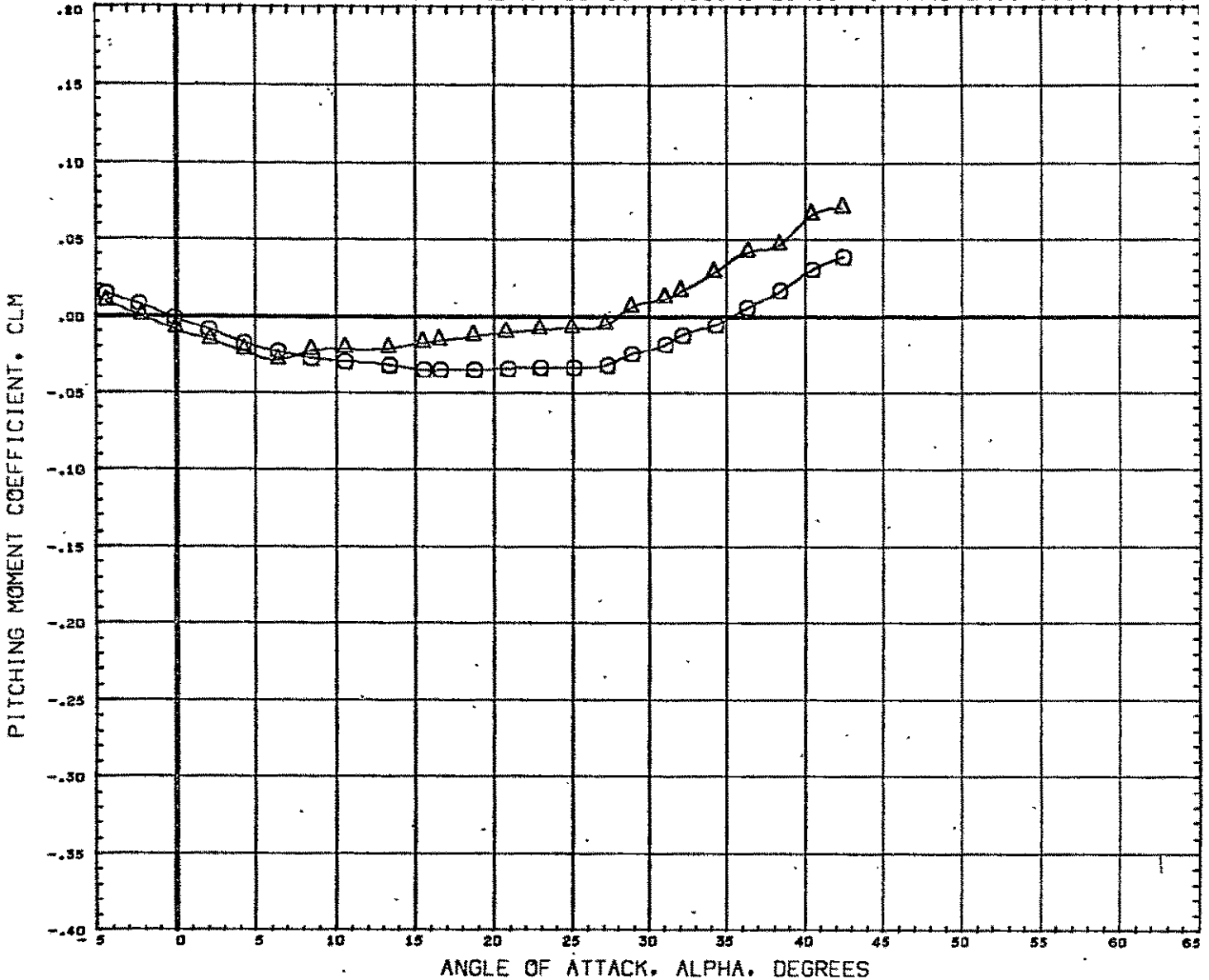
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION	
(D41013)	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	0.000	0.000		SREF	9.0250 SQ. IN
(D41501)	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4			0.000	LREF	6.1420 INCHES
						BREF	6.1420 INCHES
						XMRP	3.9950 INCHES
						YMRP	0.0000 INCHES
						ZMRP	0.1350 INCHES
						SCALE	0.0033 SCALE

MACH 0.701

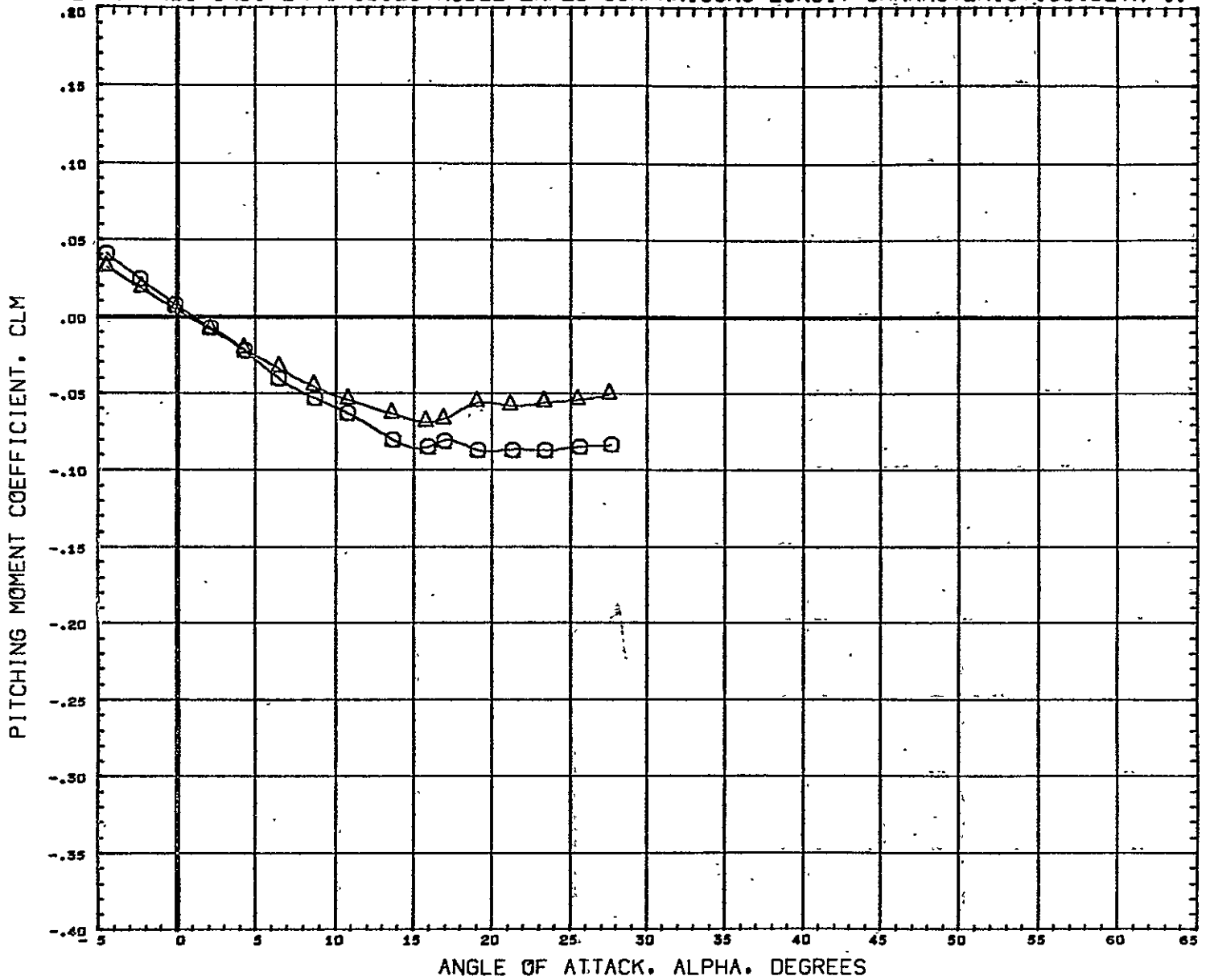
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(D41D1S)	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	0.000	0.000		SREF 9.0250 SQ.IN
(D41S01)	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4		0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XNRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1330 INCHES
						SCALE 0.0033 SCALE

MACH 0.902

LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)

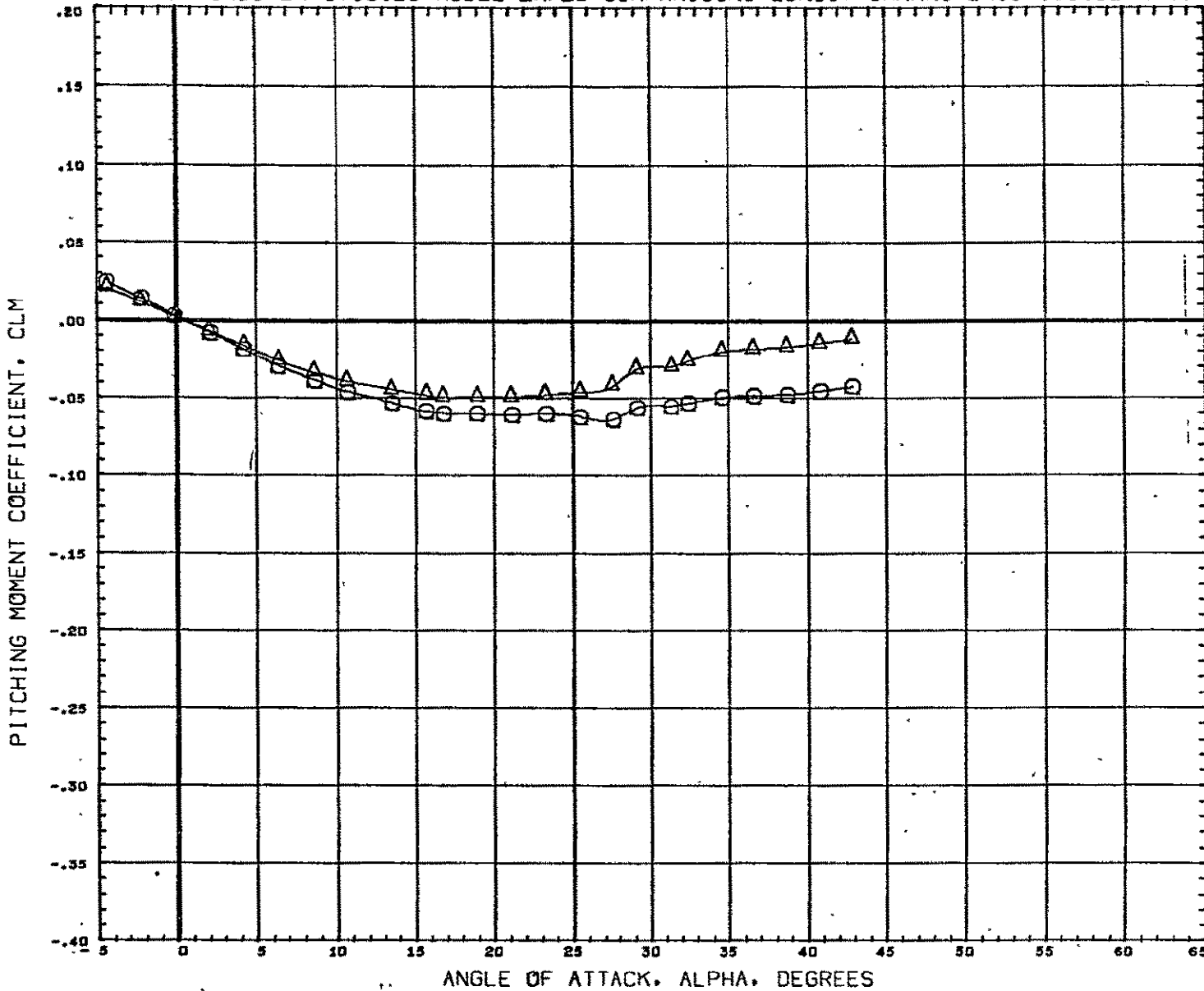


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(D4101S)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	0.000			SREF 9.0250 SQ.IN
(D41501)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4			0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0035 SCALE

MACH 1.105



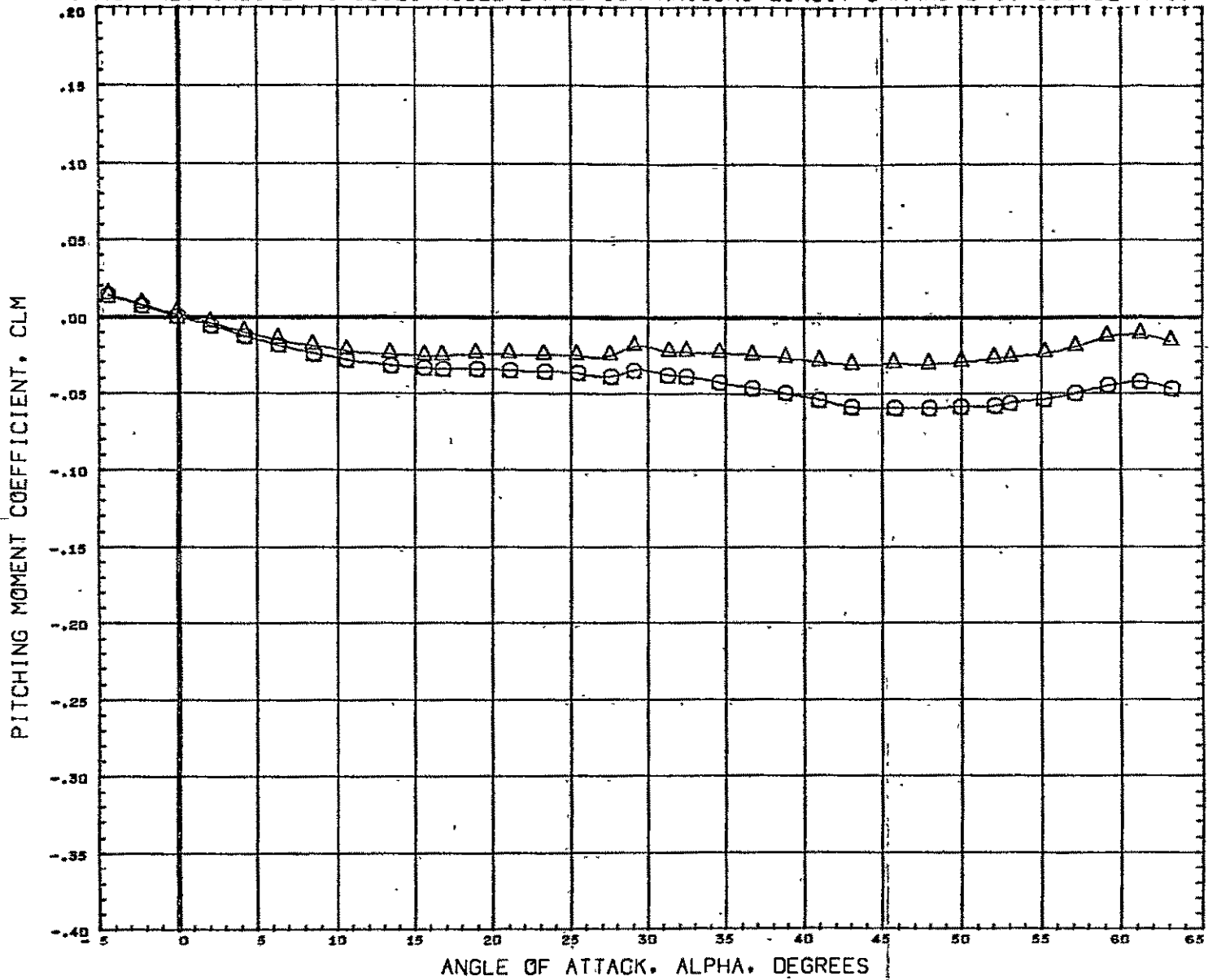
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(D41015)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(D41501)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.461

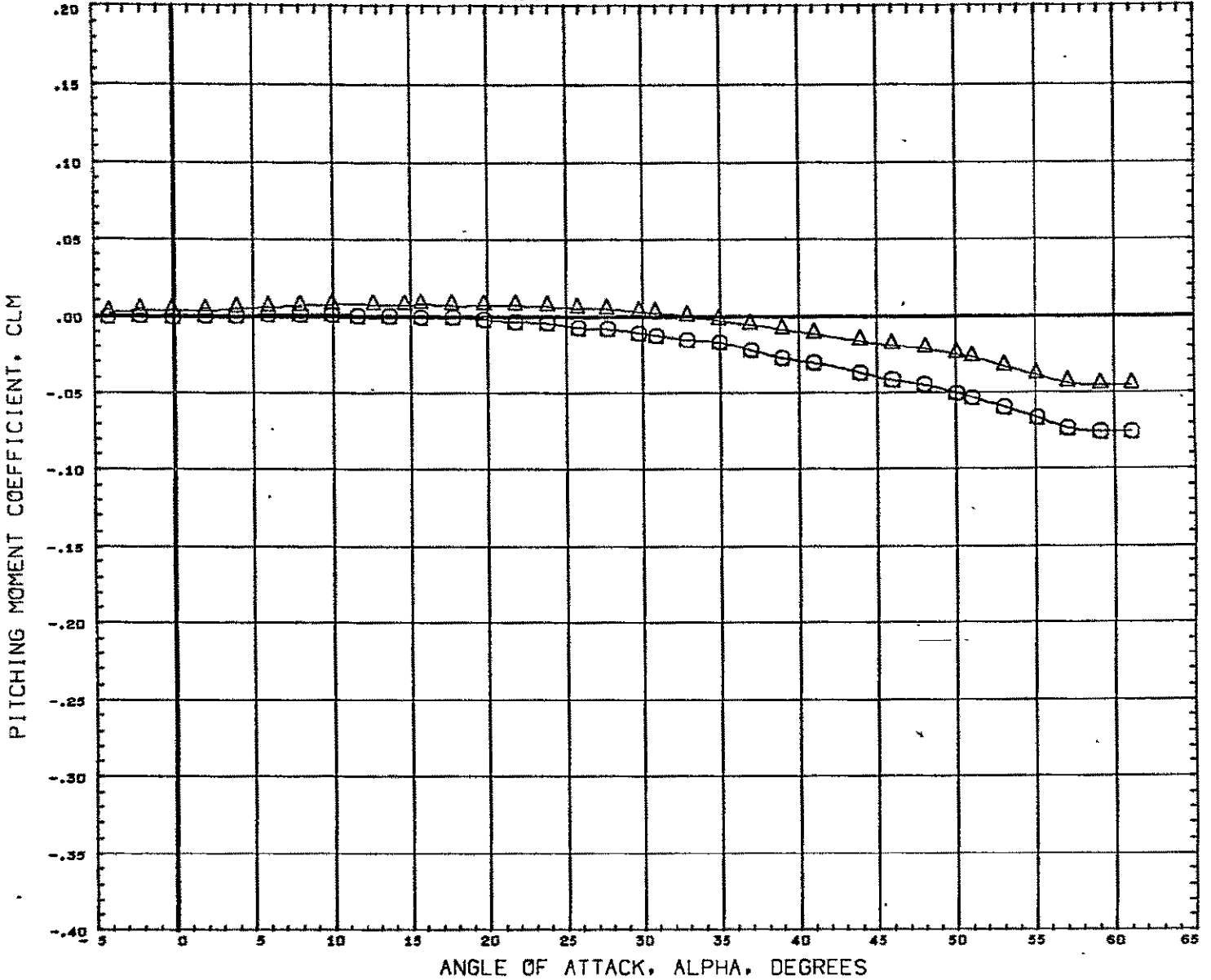
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEV3	RUDER2	ELEV4	RUDER4	REFERENCE INFORMATION	
(D41015)	NSFC TWT 498 NSFC/LHSC ORBITER	0.000	0.000			SREF	9.0250 SQ. IN
(D41901)	NSFC TWT 498 NSFC/HREC ORBITER			0.000	0.000	LREF	6.1420 INCHES
						BREF	6.1420 INCHES
						XMRP	3.9950 INCHES
						YMRP	0.0000 INCHES
						ZMRP	0.1350 INCHES
						SCALE	0.0033 SCALE

MACH 1.964

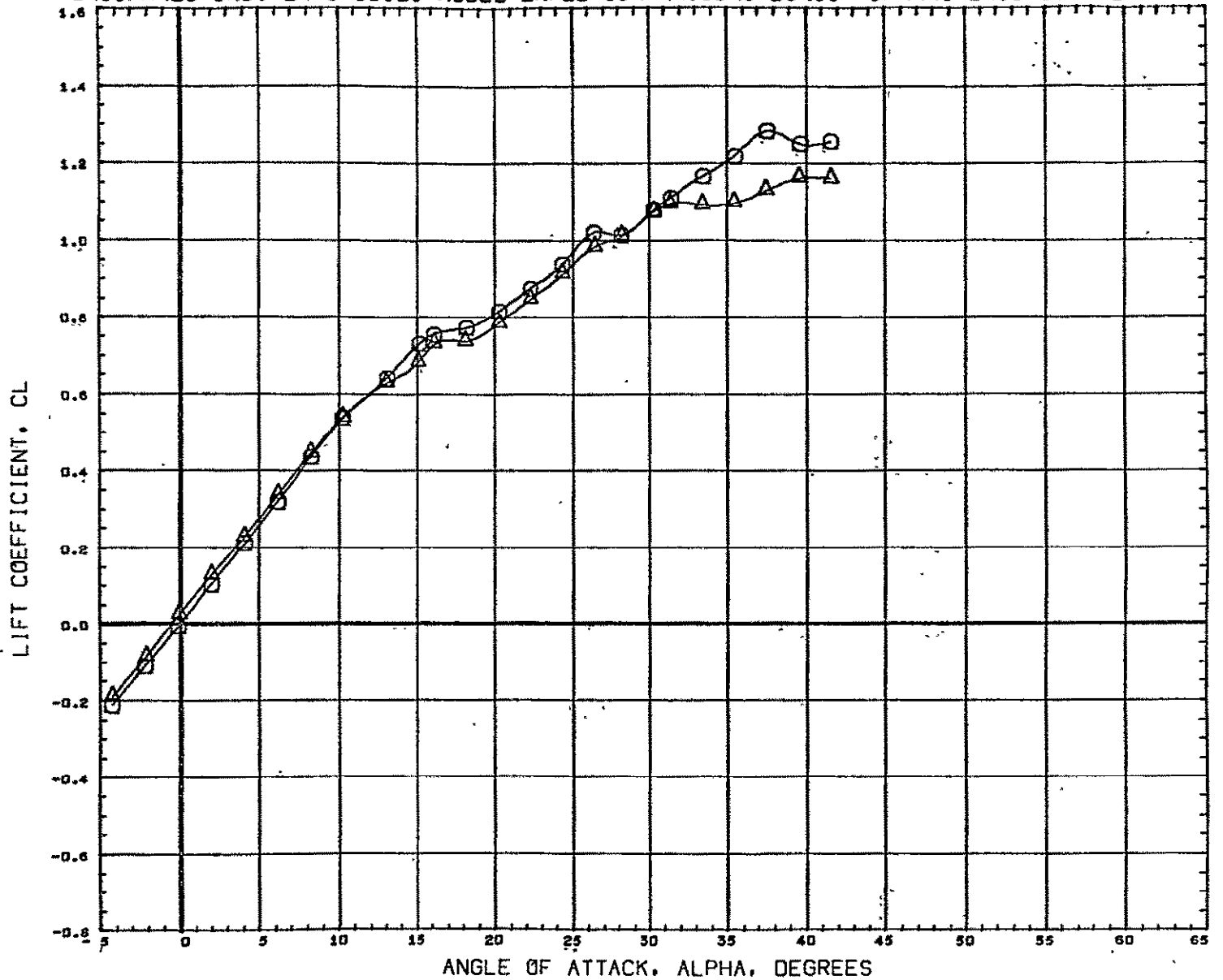
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEV3	RUDER2	ELEV4	RUDER4	REFERENCE INFORMATION
(D4101S)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(D41001)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 4.960

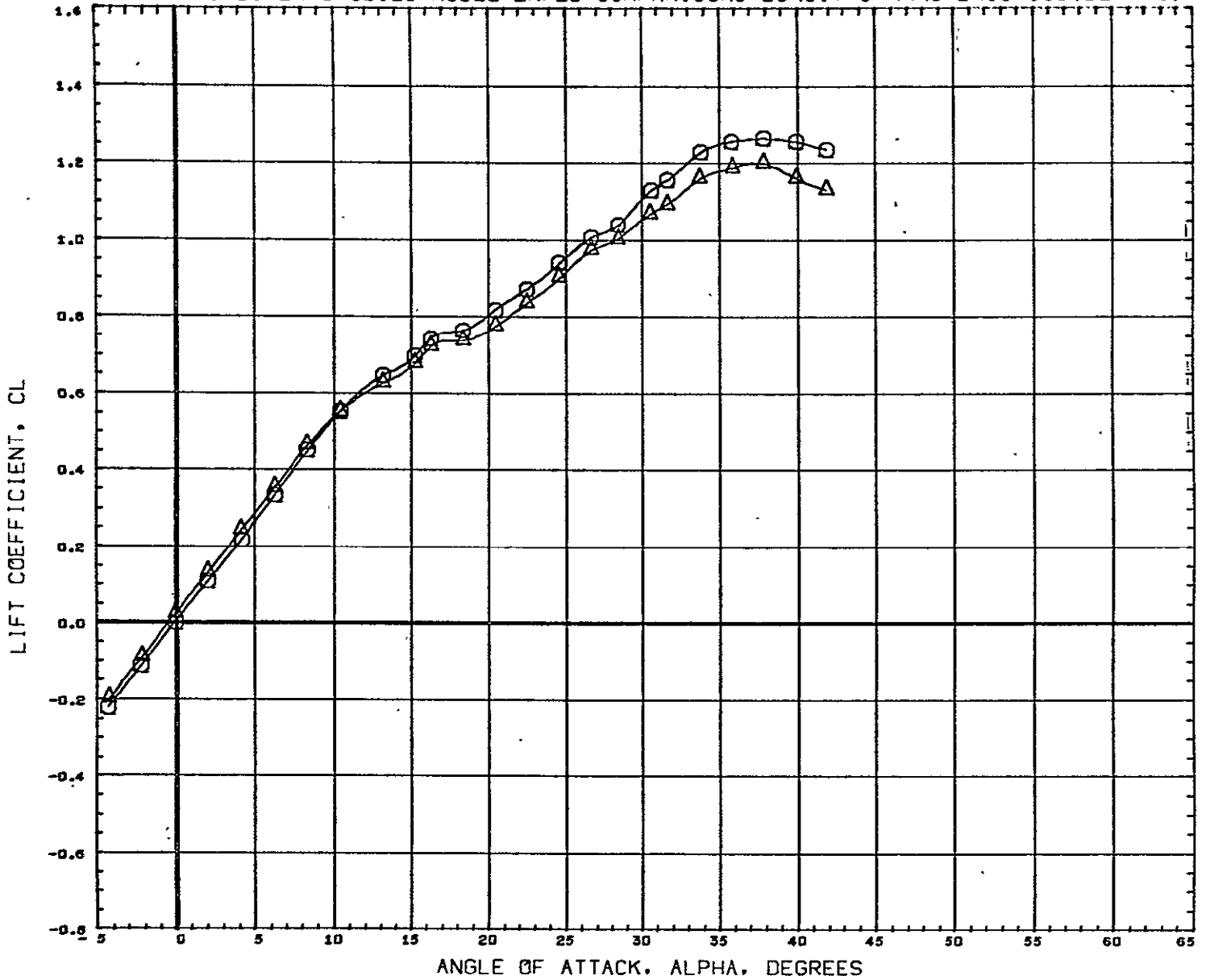
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(D41015)	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	0.000	0.000		SREF 9.0250 SQ.IN
(D41501)	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4			0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YNRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.597

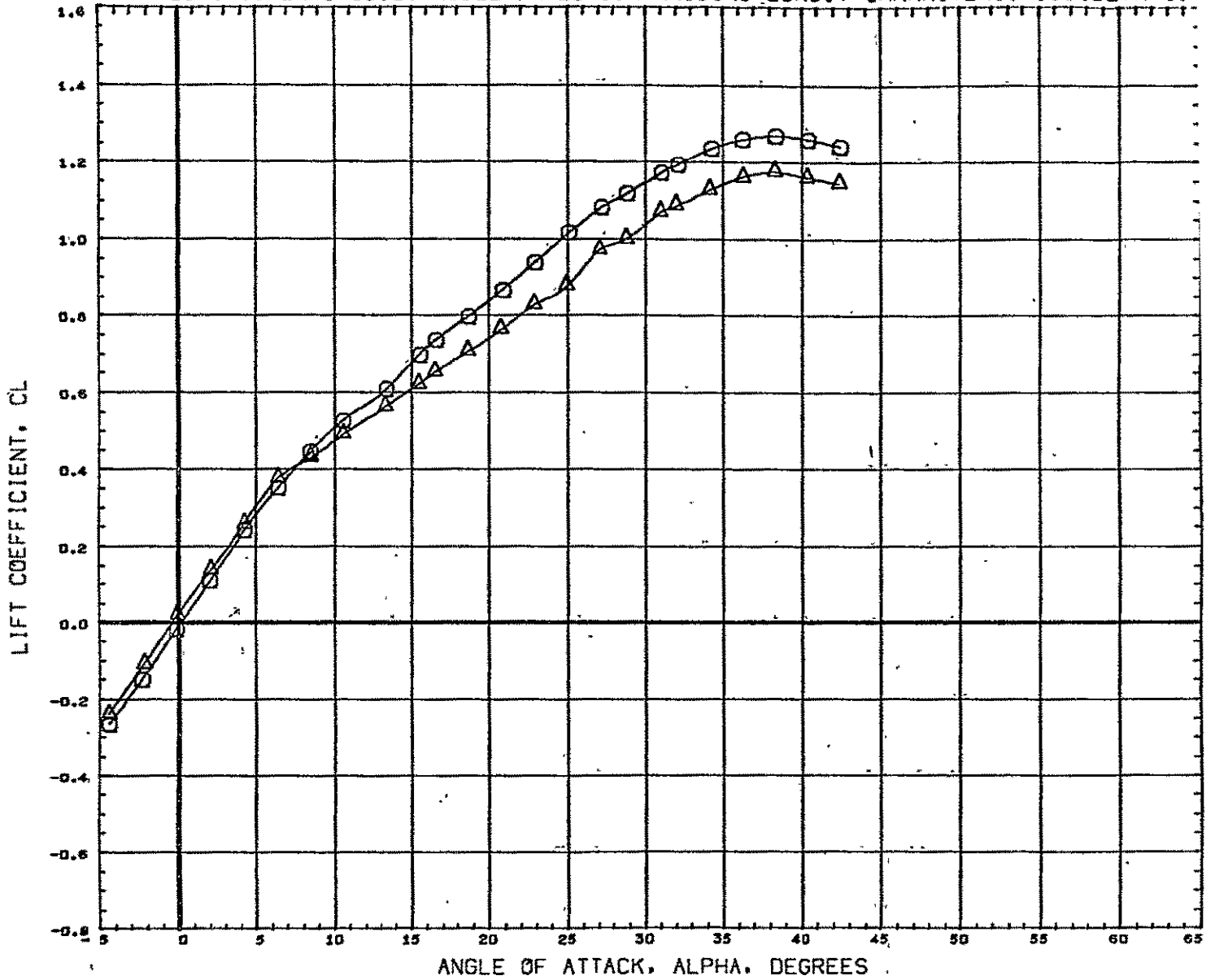
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION	
(D4101S)	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	0.000	0.000	0.000	0.000	SREF 9.0250 SQ. IN
(D41S01)	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4					LREF 6.1420 INCHES
							BREF 6.1420 INCHES
							XMRP 3.9950 INCHES
							YMRP 0.0000 INCHES
							ZMRP 0.1350 INCHES
							SCALE 0.0033 SCALE

MACH 0.701

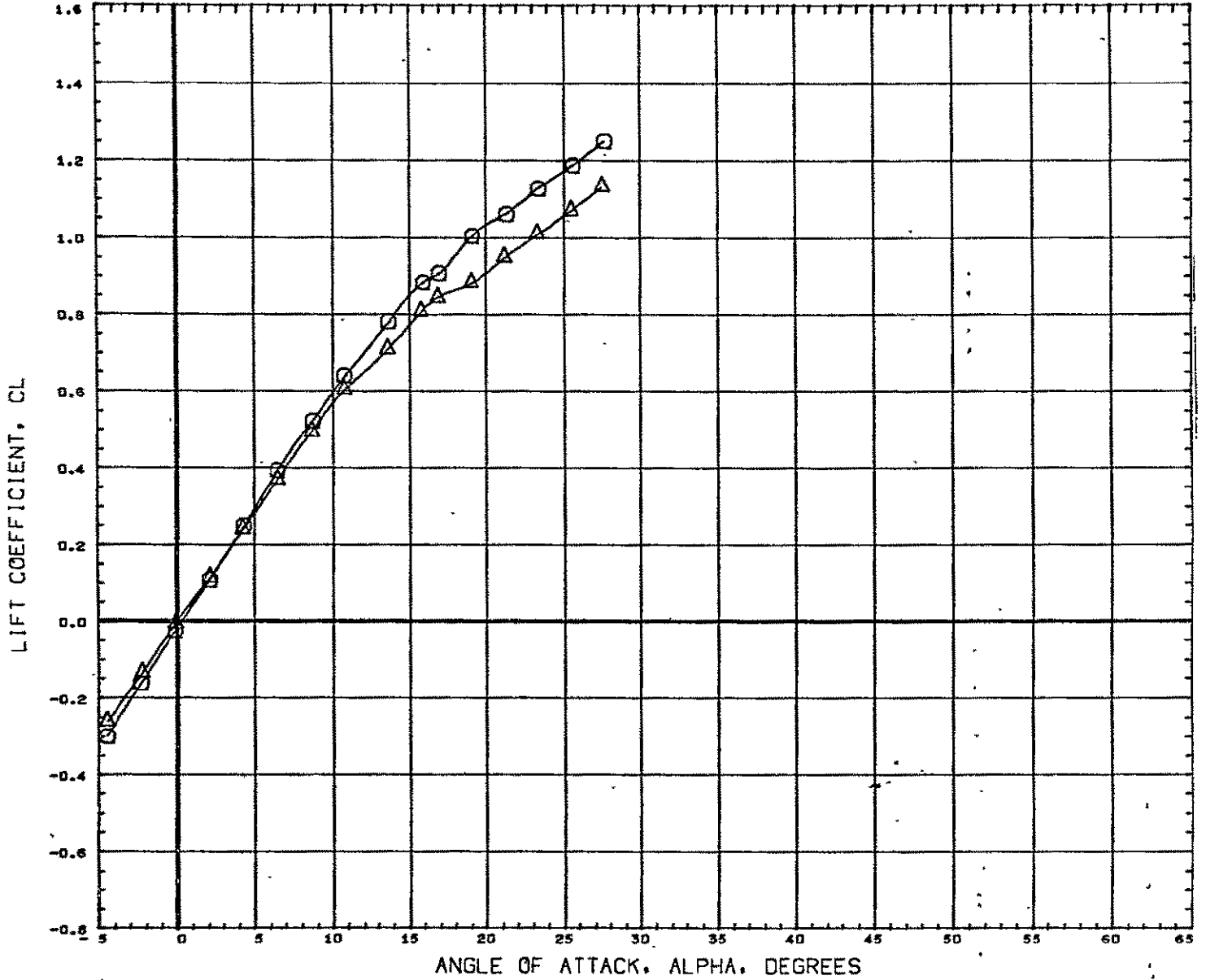
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDR2	ELEVN4	RUDR4	REFERENCE INFORMATION	
(D41019)	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	0.000	0.000	0.000	0.000	SREF 9.0250 SQ. IN
(D41501)	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4					LREF 6.1420 INCHES
							XMRP 3.9950 INCHES
							YMRP 0.0000 INCHES
							ZMRP 0.1350 INCHES
							SCALE 0.0033 SCALE

MACH 0.902

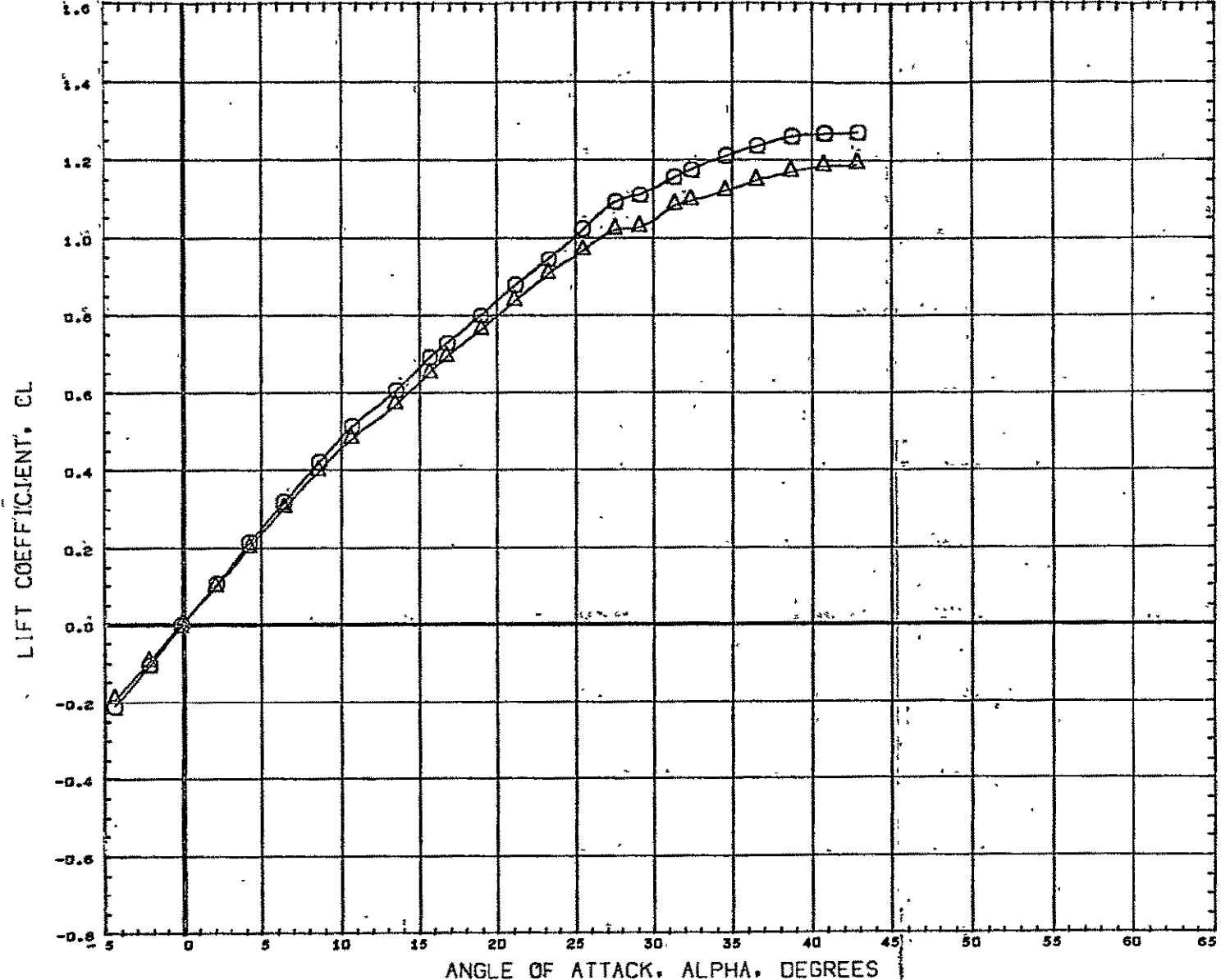
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION	
(D41D1S)	○	MSFC TWT 496 MSFC/LMSC ORBITER	0.000	0.000	0.000	0.000	SREF	9.0250 SQ.IN
(D41S01)	△	MSFC TWT 496 MSFC/HREC ORBITER	B2W2V4D2E3R2	B2W5V2E4R4			LREF	6.1420 INCHES
							BREF	6.1420 INCHES
							XMRP	3.9950 INCHES
							YMRP	0.0000 INCHES
							ZMRP	0.1350 INCHES
							SCALE	0.0033 SCALE

MACH 1.103

LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)



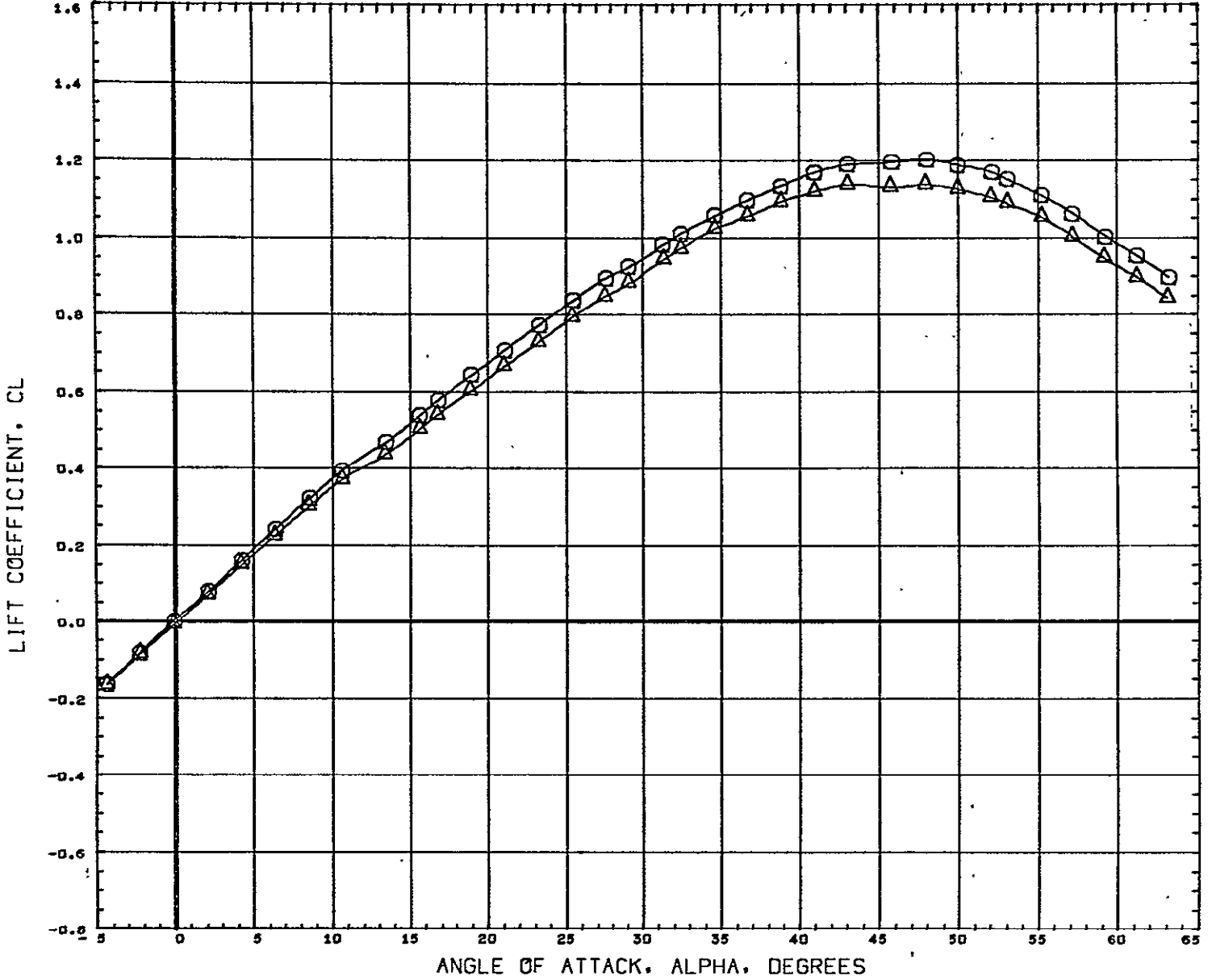
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEV3	RUDER2	ELEV4	RUDER4
(D41015)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000	0.000	0.000
(D41301)	MSFC TWT 498 MSFC/HREC ORBITER	0.000	0.000	0.000	0.000

REFERENCE INFORMATION		
SREF	9.0250	SQ. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1330	INCHES
SCALE	0.0033	SCALE

HACH 1.461



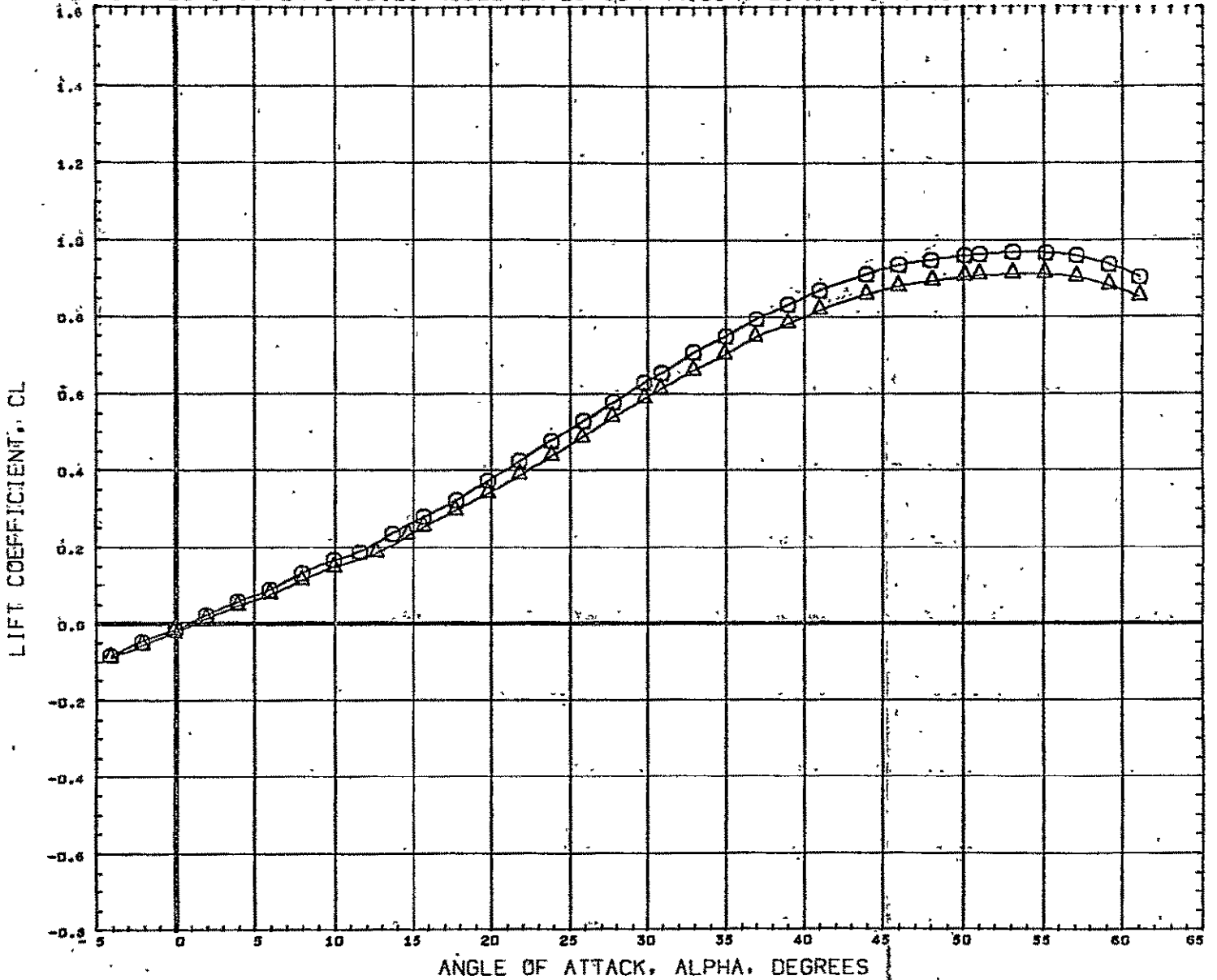
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION	
(D41D15)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF	9.0250 SQ. IN
(D41SD1)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF	6.1420 INCHES
						BREF	6.1420 INCHES
						XMRP	3.9950 INCHES
						YMRP	0.0000 INCHES
						ZMRP	0.1350 INCHES
						SCALE	0.0033 SCALE

MACH 1.964

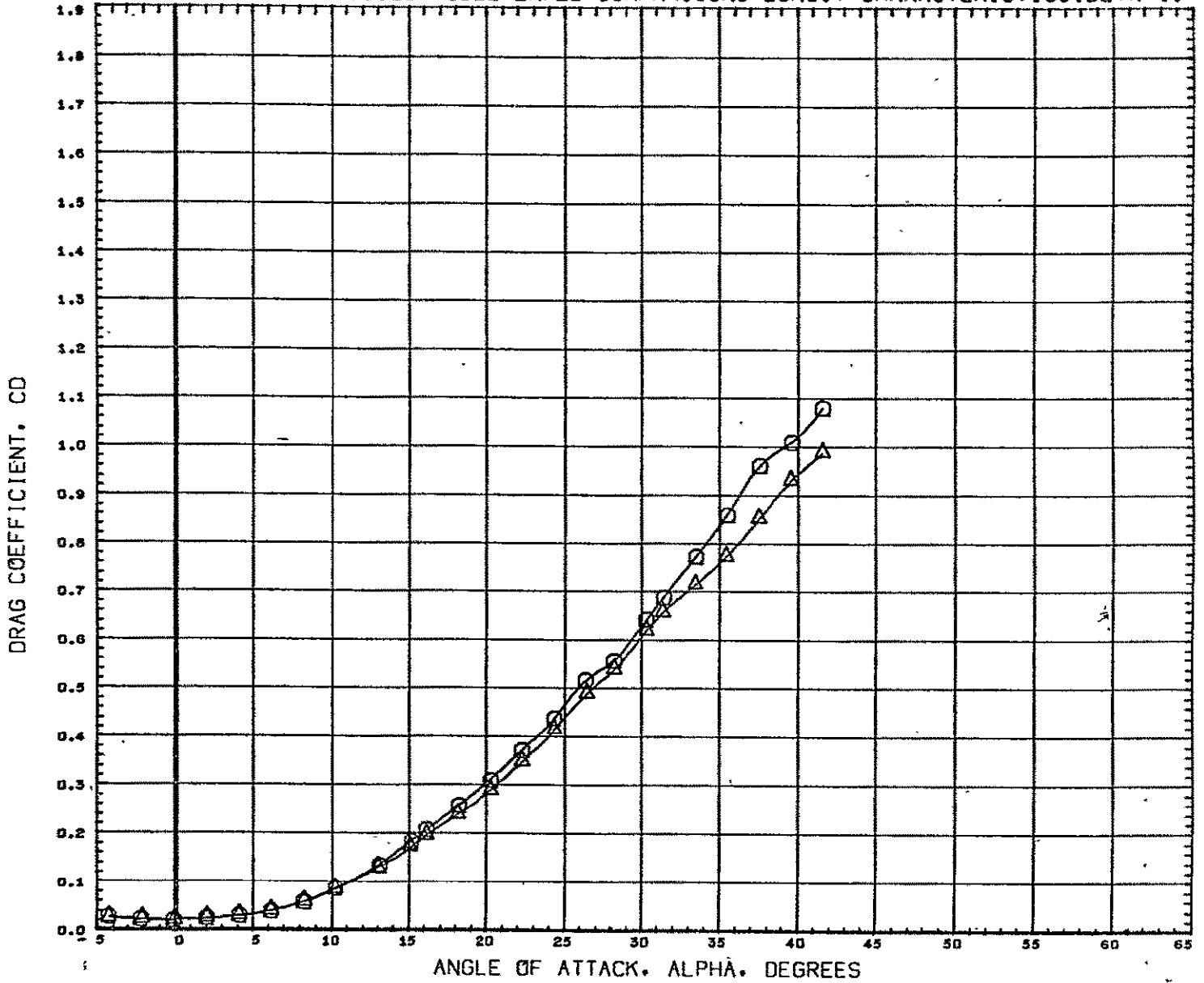
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEV3	RUDER2	ELEV4	RUDER4	REFERENCE INFORMATION
(D41015)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(D41501)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
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MACH 4.960

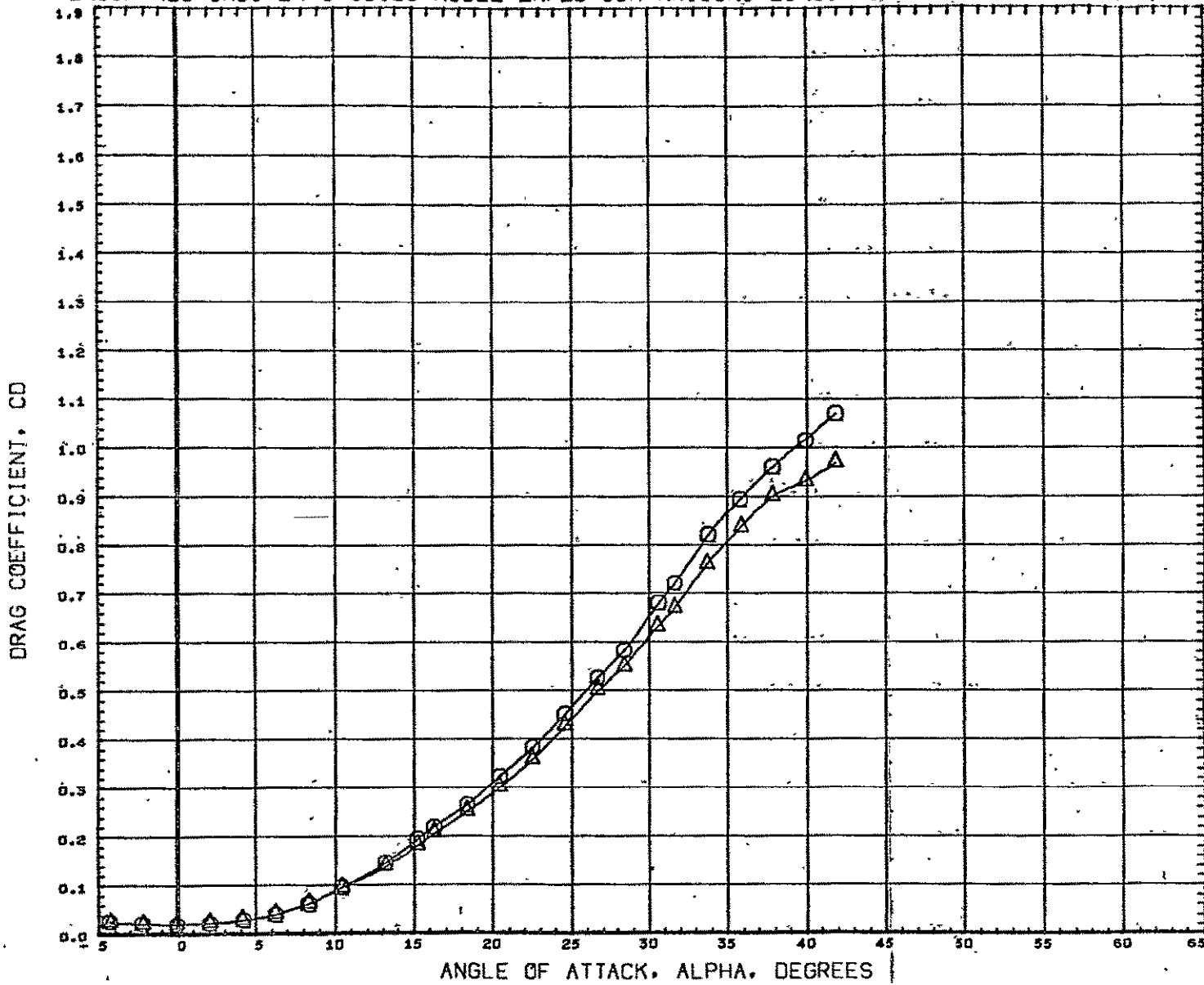
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(D41D15)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(D41S01)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XHRP 3.9950 INCHES
						YHRP 0.0000 INCHES
						ZHRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.597

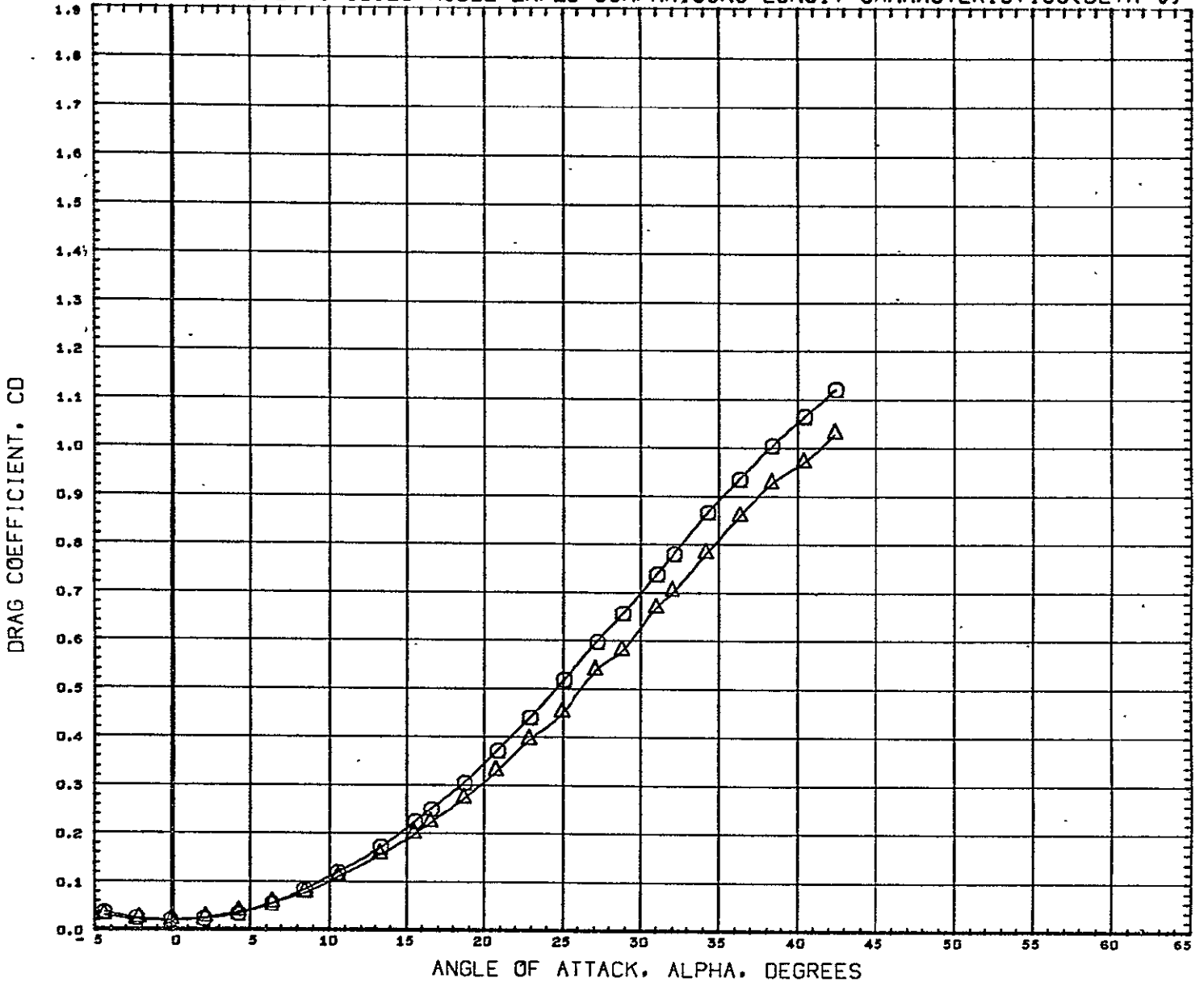
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEV3	RUDER2	ELEV4	RUDER4	REFERENCE INFORMATION	
(D4101S)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000	0.000	0.000	SREF	9.0250 SQ. IN
(D41S01)	MSFC TWT 498 MSFC/HREC ORBITER					LREF	6.1420 INCHES
						BREF	6.1420 INCHES
						XMRP	3.9950 INCHES
						YMRP	0.0000 INCHES
						ZMRP	0.1350 INCHES
						SCALE	0.0033 SCALE

MACH 0.701

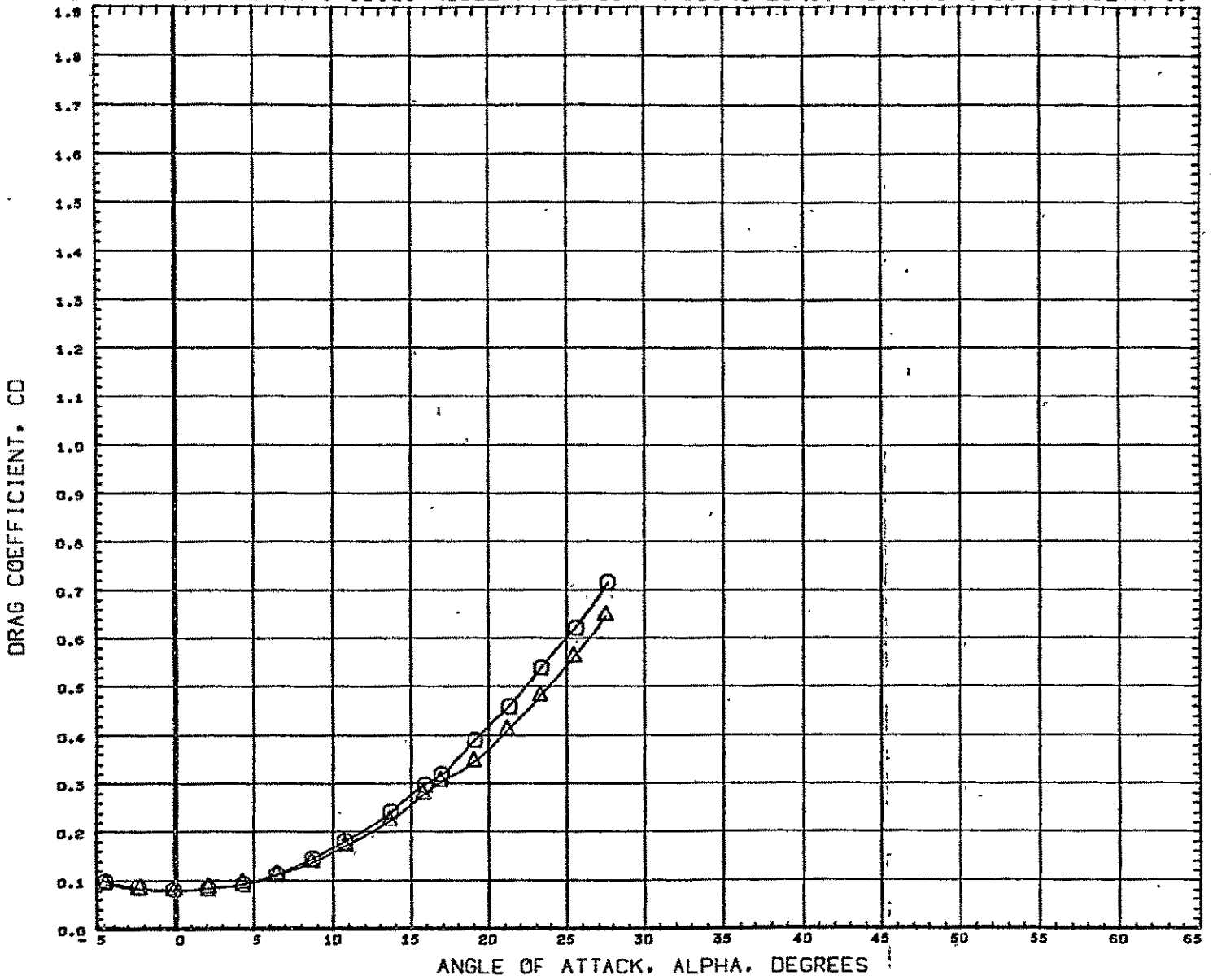
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVNS	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(D41018)	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	0.000	0.000		SREF 9.0250 SQ. IN
(D41501)	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4			0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.902

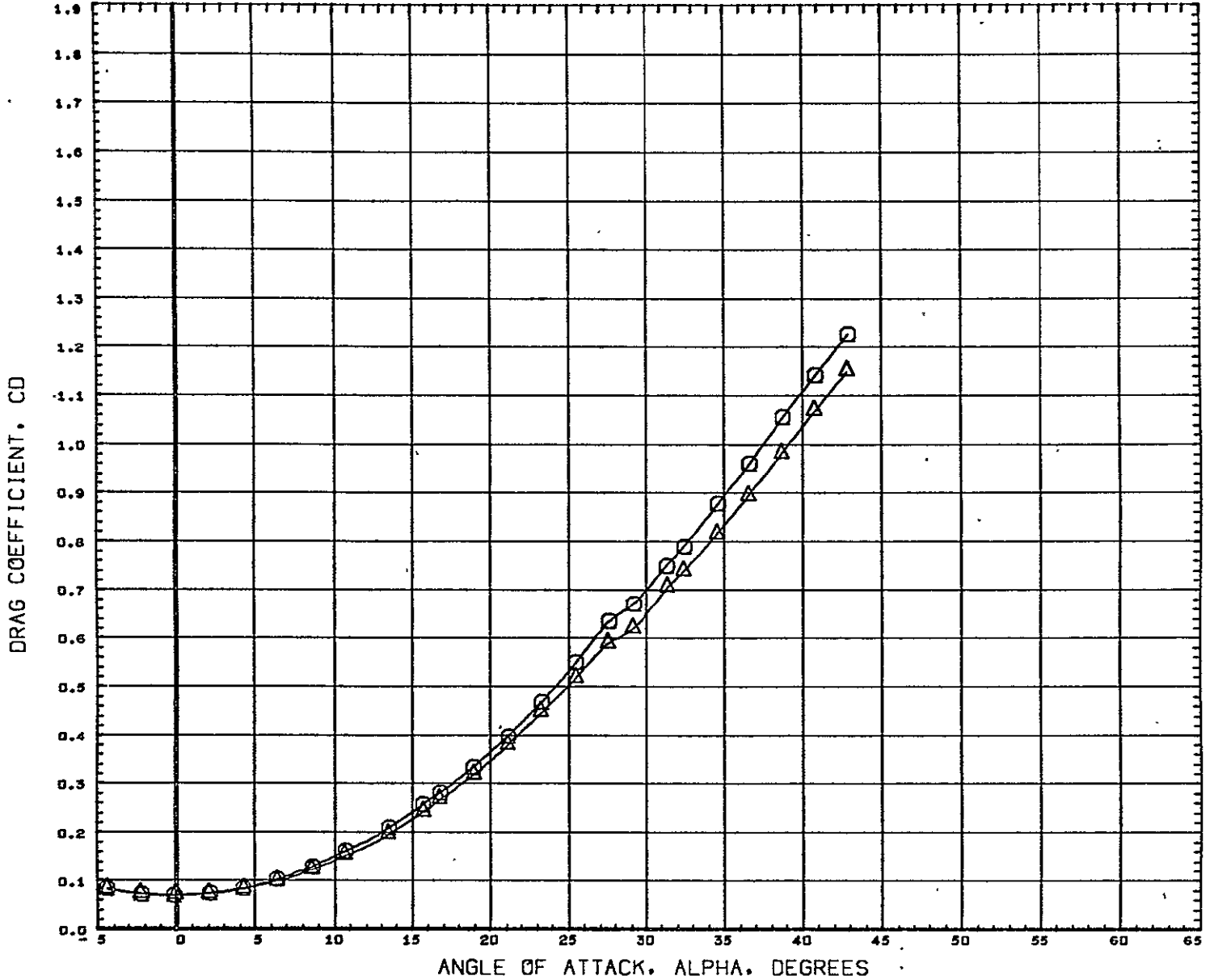
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(D4101S)	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	0.000	0.000	0.000	SREF 9.0250 SQ. IN
(D41501)	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4				LREF 6.1420 INCHES
						SREF 6.1420 INCHES
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						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0035 SCALE

MACH 1.103

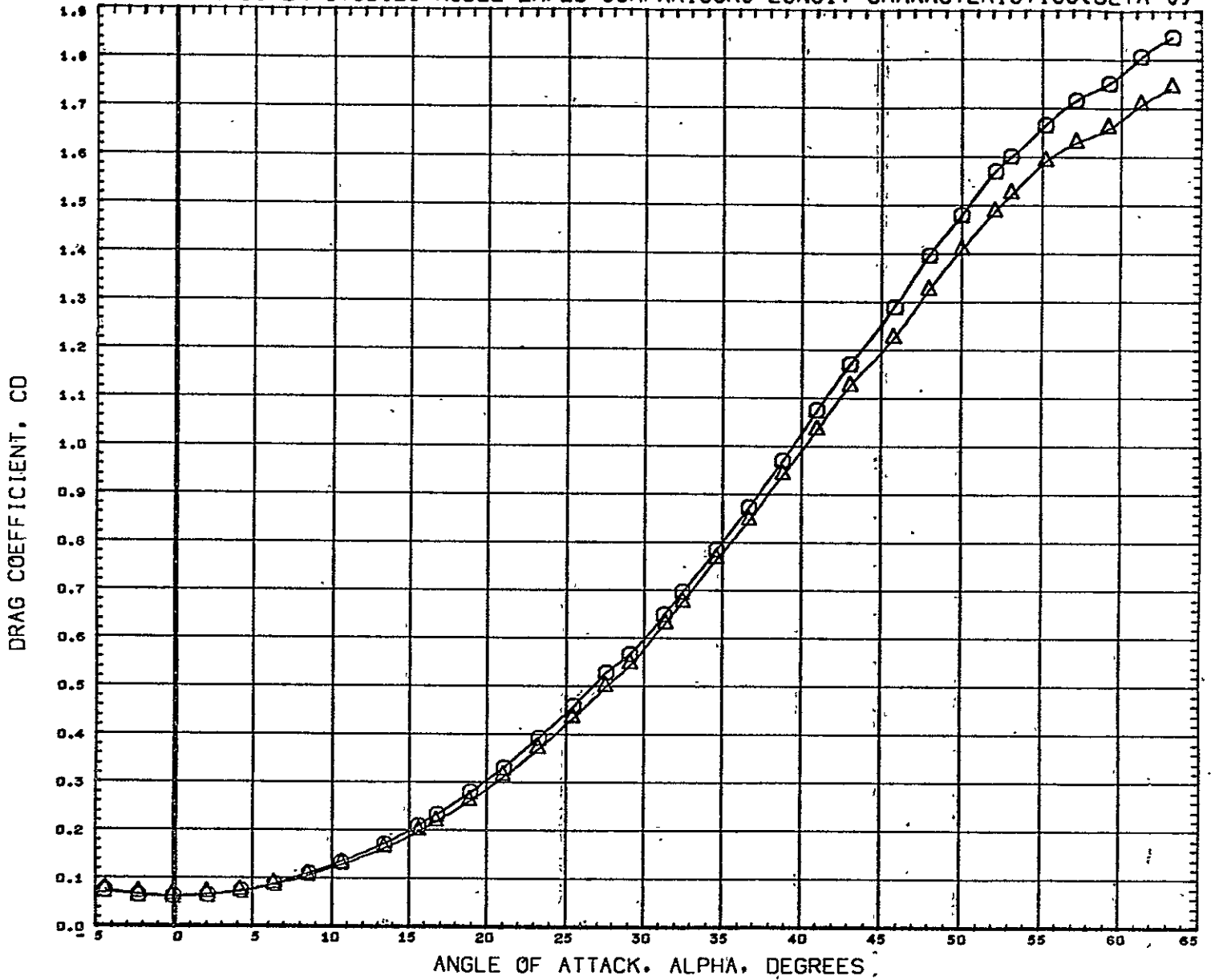
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION	
(D41D15)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF	9.0250 SQ.IN
(D41SD1)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF	6.1420 INCHES
						BREF	6.1420 INCHES
						XMRP	3.9950 INCHES
						YMRP	0.0000 INCHES
						ZMRP	0.1350 INCHES
						SCALE	0.0033 SCALE

MACH 1.461

LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)

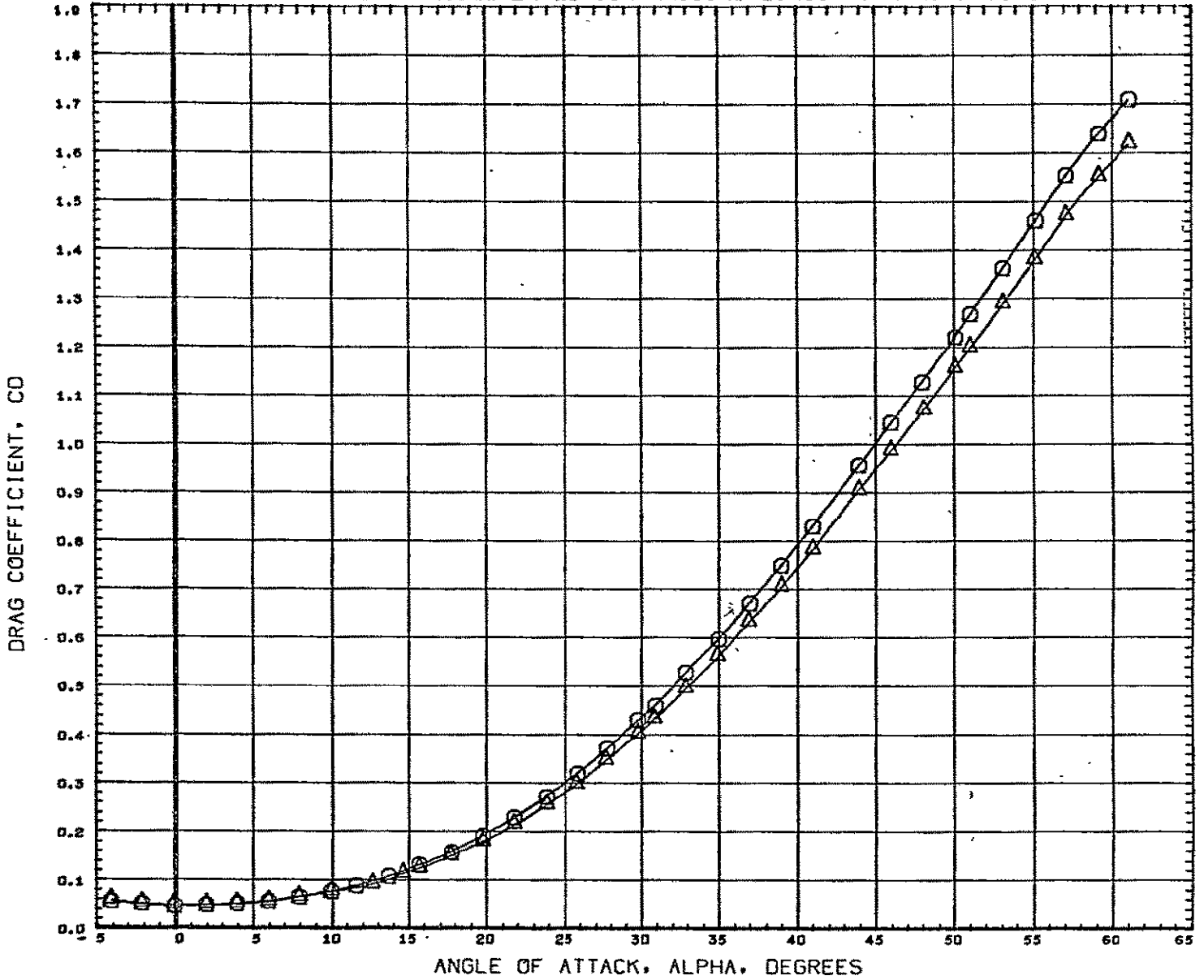


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION	
(D41015)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	0.000			SREF	9.0250 SQ. IN
(D41501)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4			0.000	0.000	LREF	6.1420 INCHES
						BREF	6.1420 INCHES
						XNRP	3.9950 INCHES
						YNRP	0.0000 INCHES
						ZNRP	0.1350 INCHES
						SCALE	0.0033 SCALE

MACH 1.964



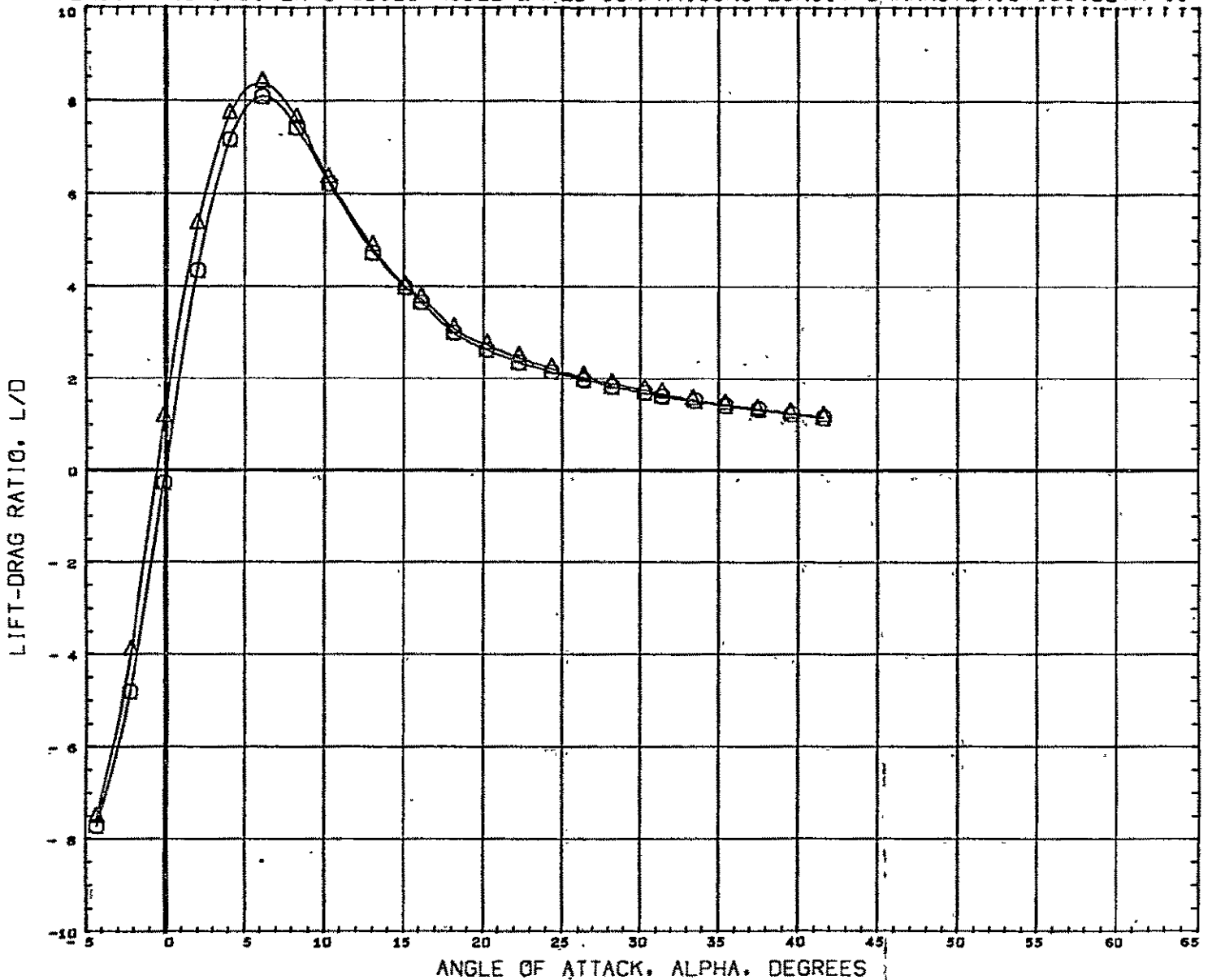
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION	
(D41015)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF	9.0250 SQ.IN
(D41301)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF	6.1420 INCHES
						BREF	6.1420 INCHES
						XMRP	3.9950 INCHES
						YMRP	0.0000 INCHES
						ZMRP	0.1350 INCHES
						SCALE	0.0033 SCALE

MACH 4.960

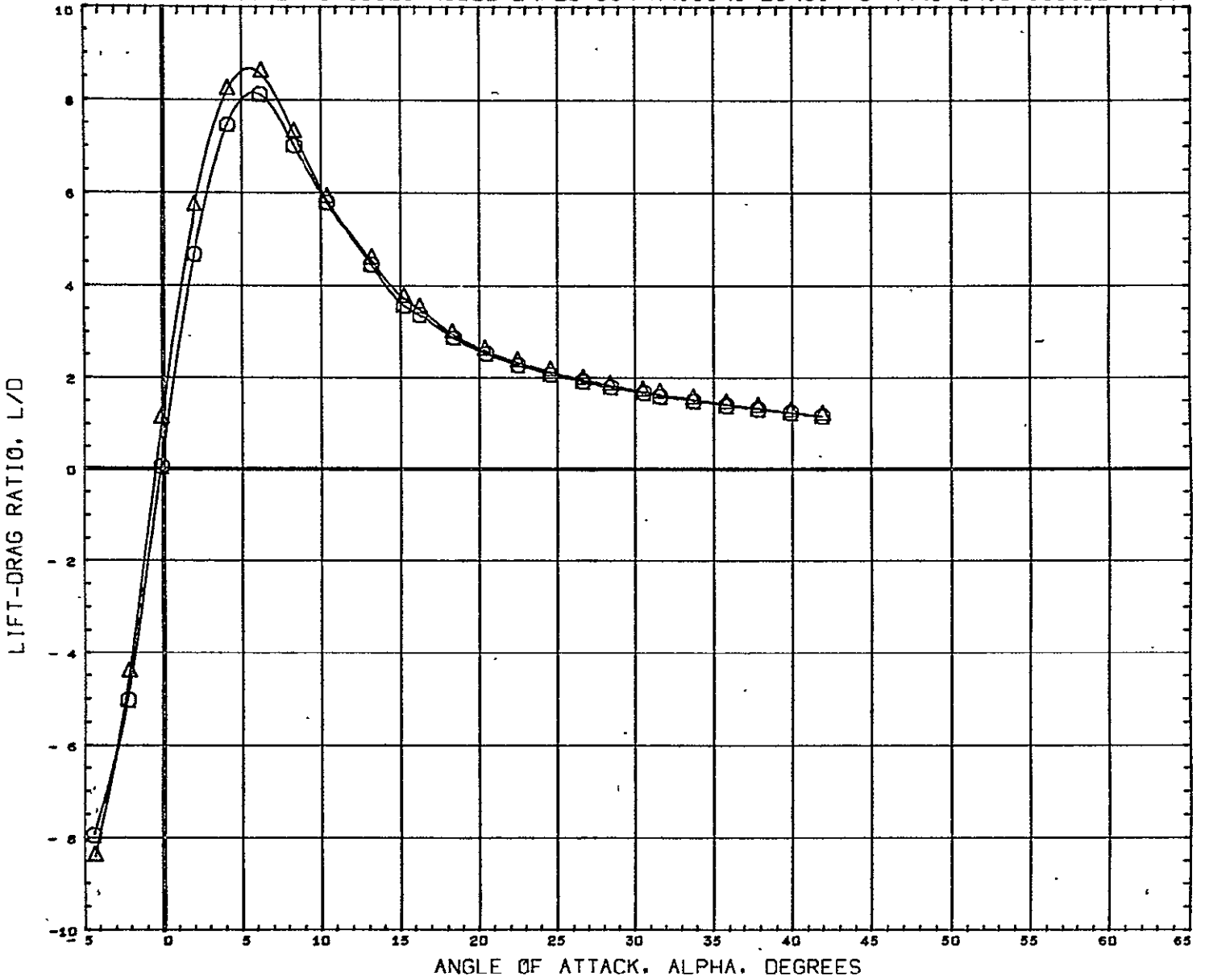
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(D4101S)	○	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	0.000	0.000		SREF 9.0250 36. IN
(D41801)	△	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4			0.000 0.000	LREF 6.1420 INCHES
							BREF 6.1420 INCHES
							XMRP 3.9950 INCHES
							YMRP 0.0000 INCHES
							ZMRP 0.1350 INCHES
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MACH 0.597

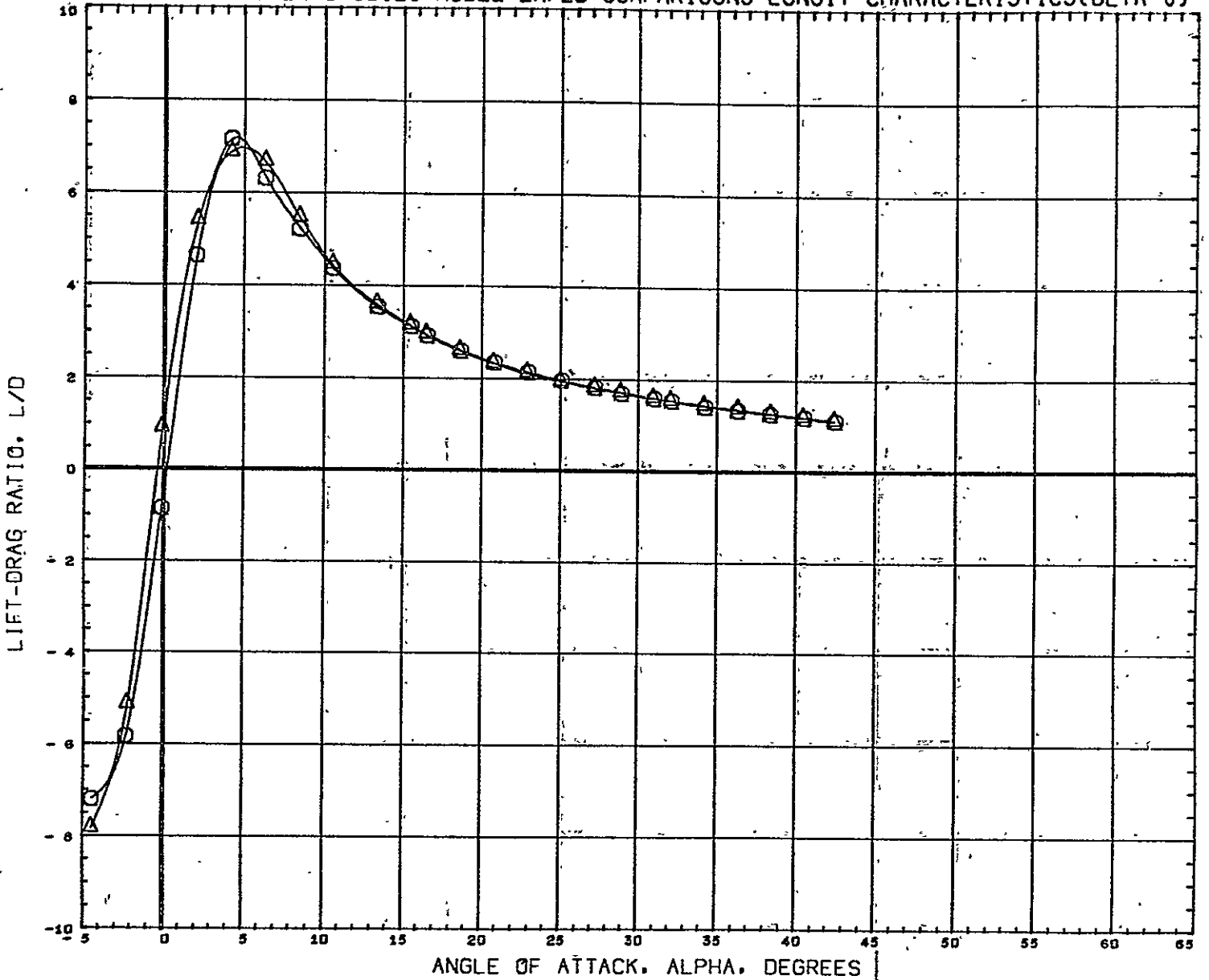
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEV3	RUDER2	ELEV4	RUDER4	REFERENCE INFORMATION	
(D4101S)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF	9.0250 SQ. IN
(D41501)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF	6.1420 INCHES
						BREF	6.1420 INCHES
						XHRP	3.9950 INCHES
						YMRP	0.0000 INCHES
						ZMRP	0.1350 INCHES
						SCALE	0.0033 SCALE

MACH 0.701

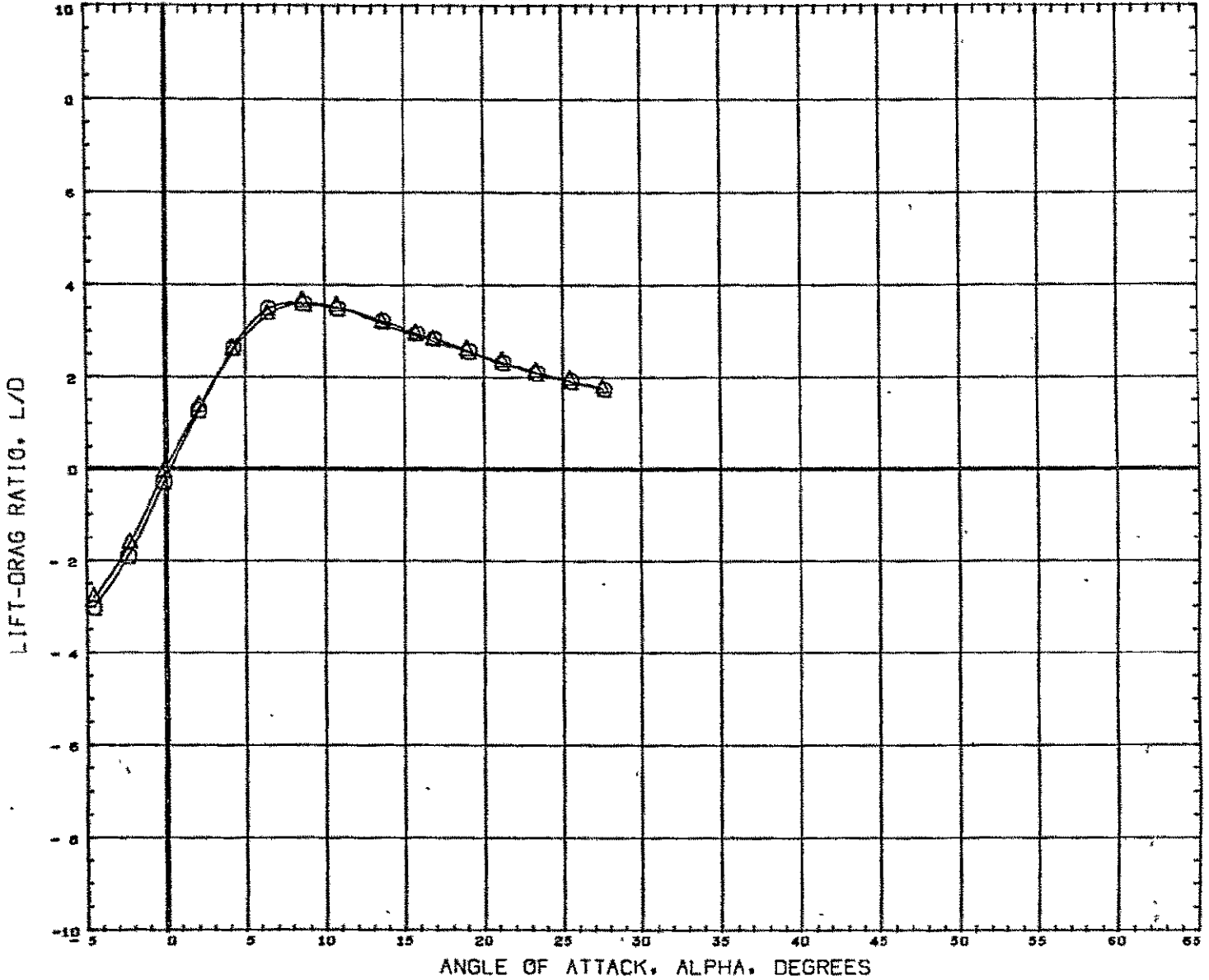
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS (BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(D4101S)	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	0.000	0.000		SREF 9.0250 SQ. IN
(D41901)	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4			0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.902

LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)

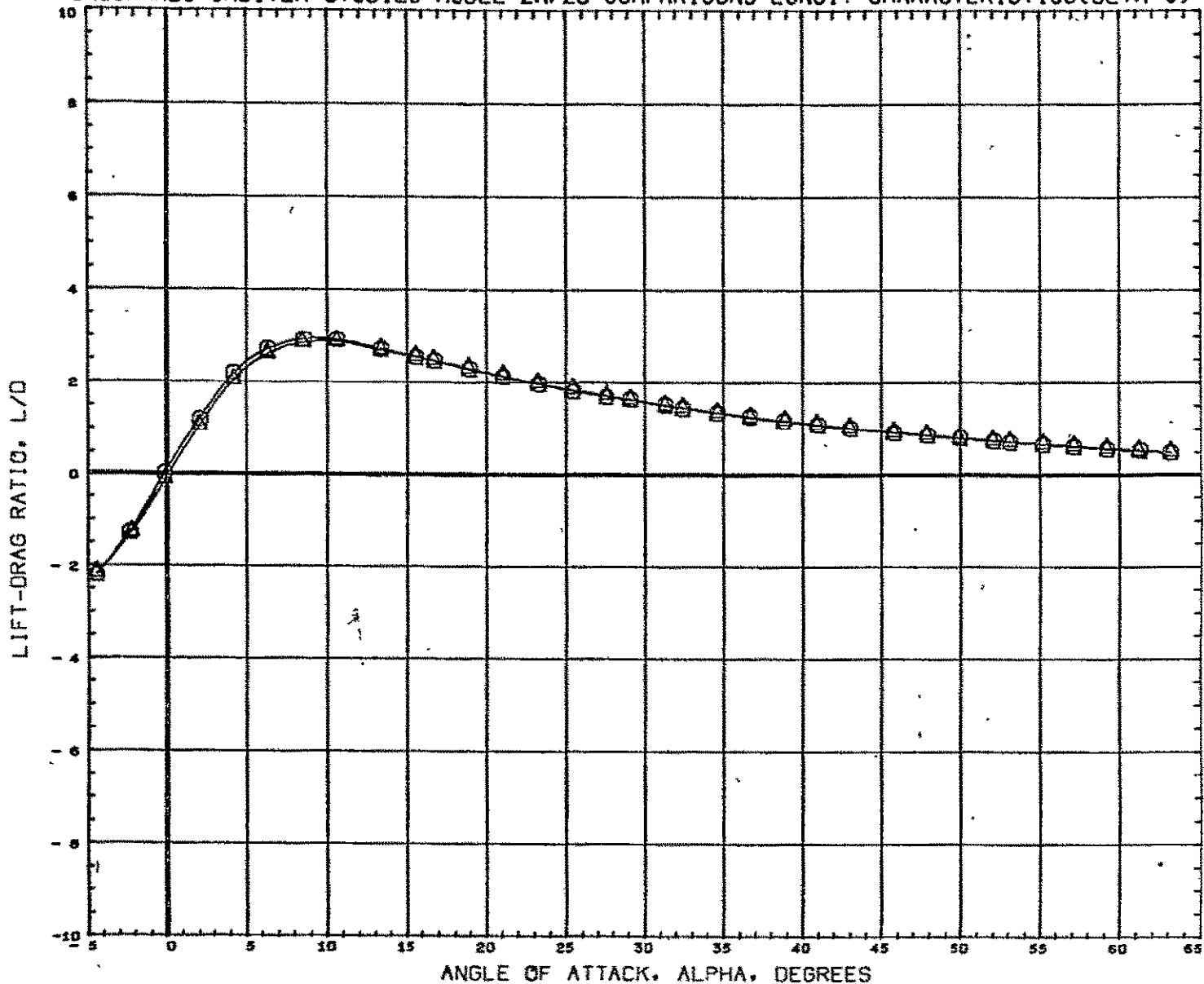


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(D4101S)	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	0.000	0.000		SREF 9.0250 30. IN
(D41SD1)	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4		0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						KHRP 3.9950 INCHES
						YHRP 0.0000 INCHES
						ZHRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.103



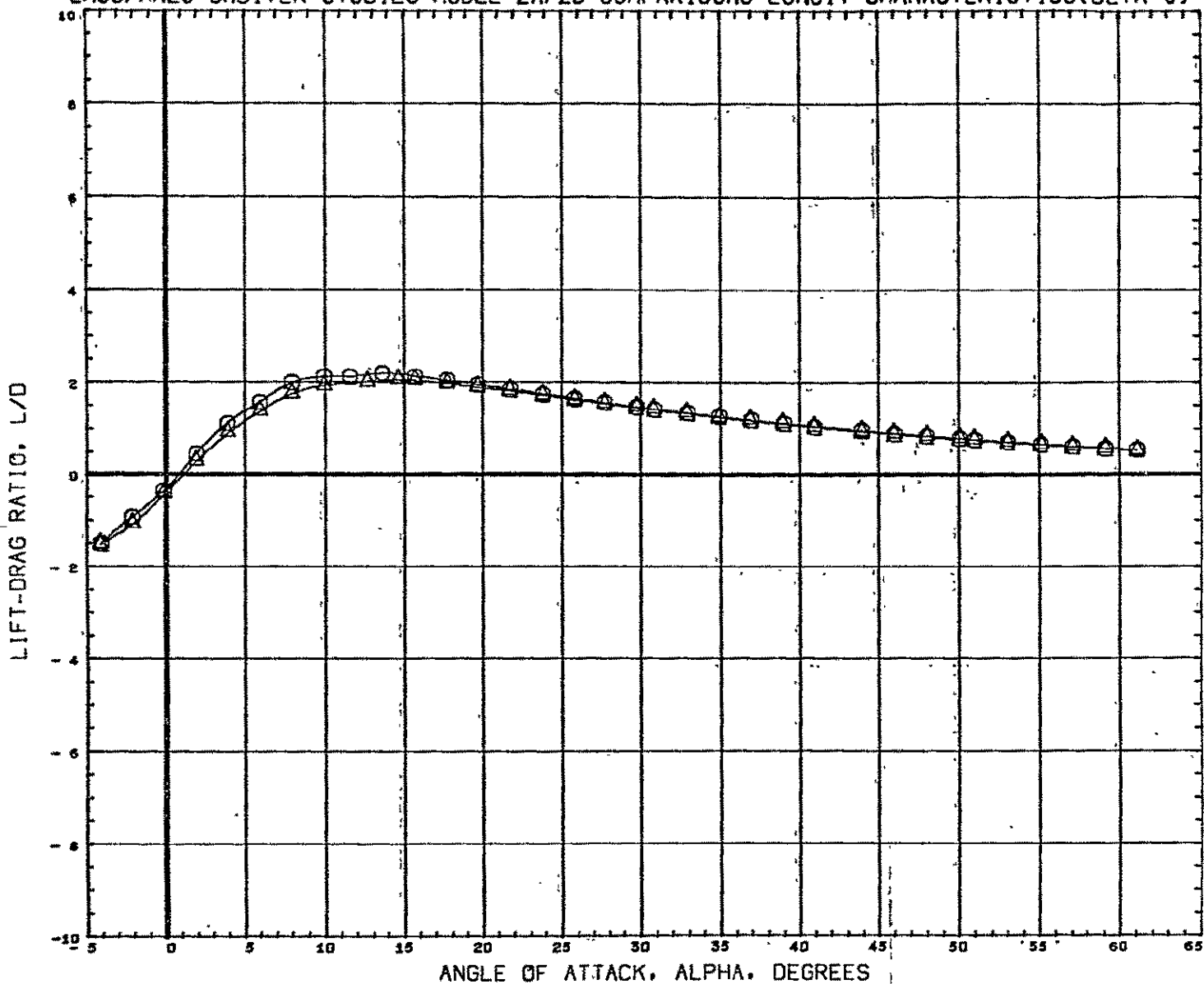
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVNS	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION	
(D41018)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF	9.0250 SQ.IN
(D419D1)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF	6.1420 INCHES
						BREF	6.1420 INCHES
						XMRP	3.9950 INCHES
						YMRP	0.0000 INCHES
						ZMRP	0.1350 INCHES
						SCALE	0.0033 SCALE

MACH 1.964

LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)

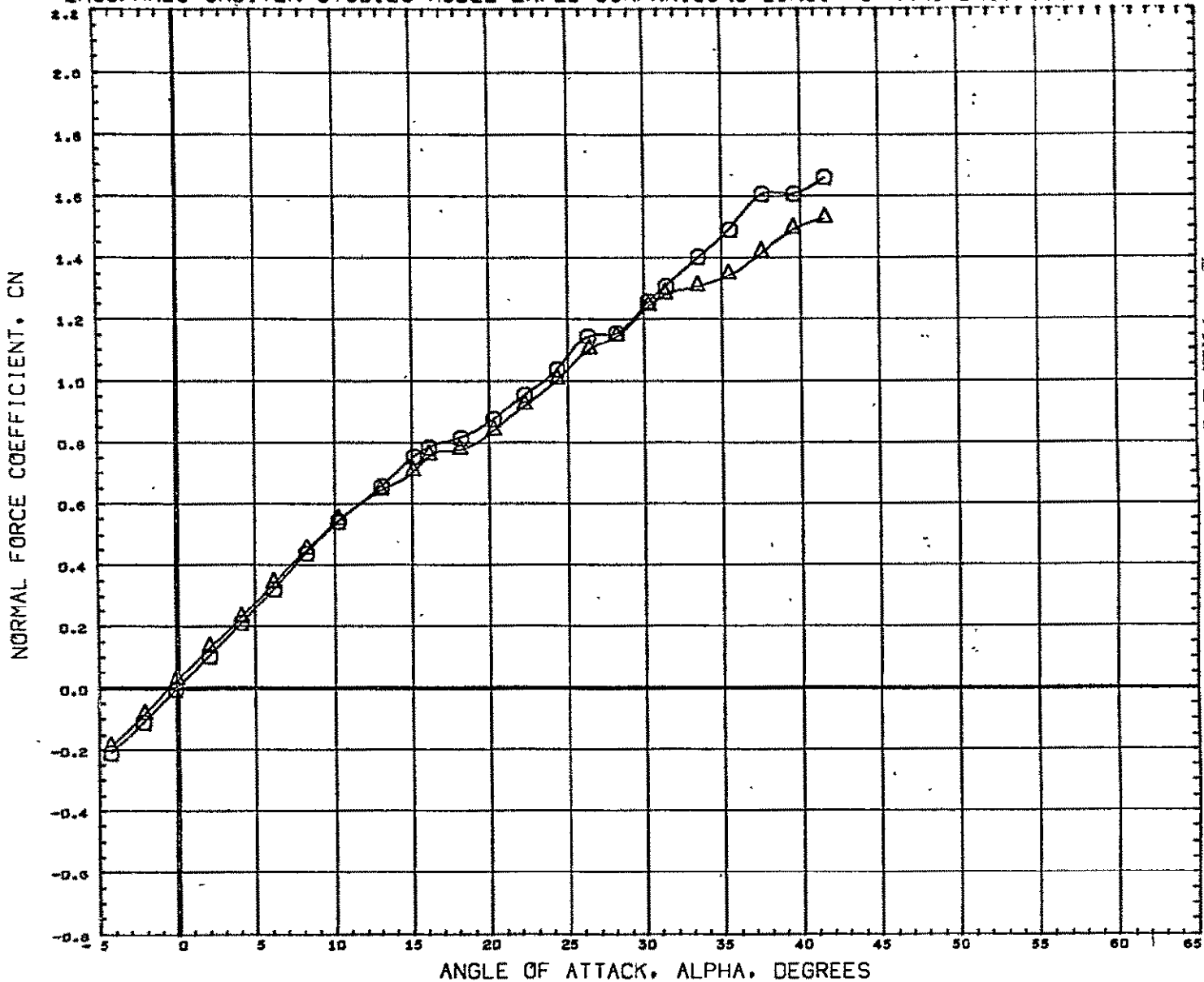


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION	
(D41018)	MSFC TWT 498 MSFC/LHSC ORBITER	0.000	0.000			SREF	9.0250 SQ. IN
(D41301)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF	6.1420 INCHES
						BREF	6.1420 INCHES
						XHRP	3.9950 INCHES
						YHRP	0.0000 INCHES
						ZHRP	0.1350 INCHES
						SCALE	0.0033 SCALE

MACH 4.960



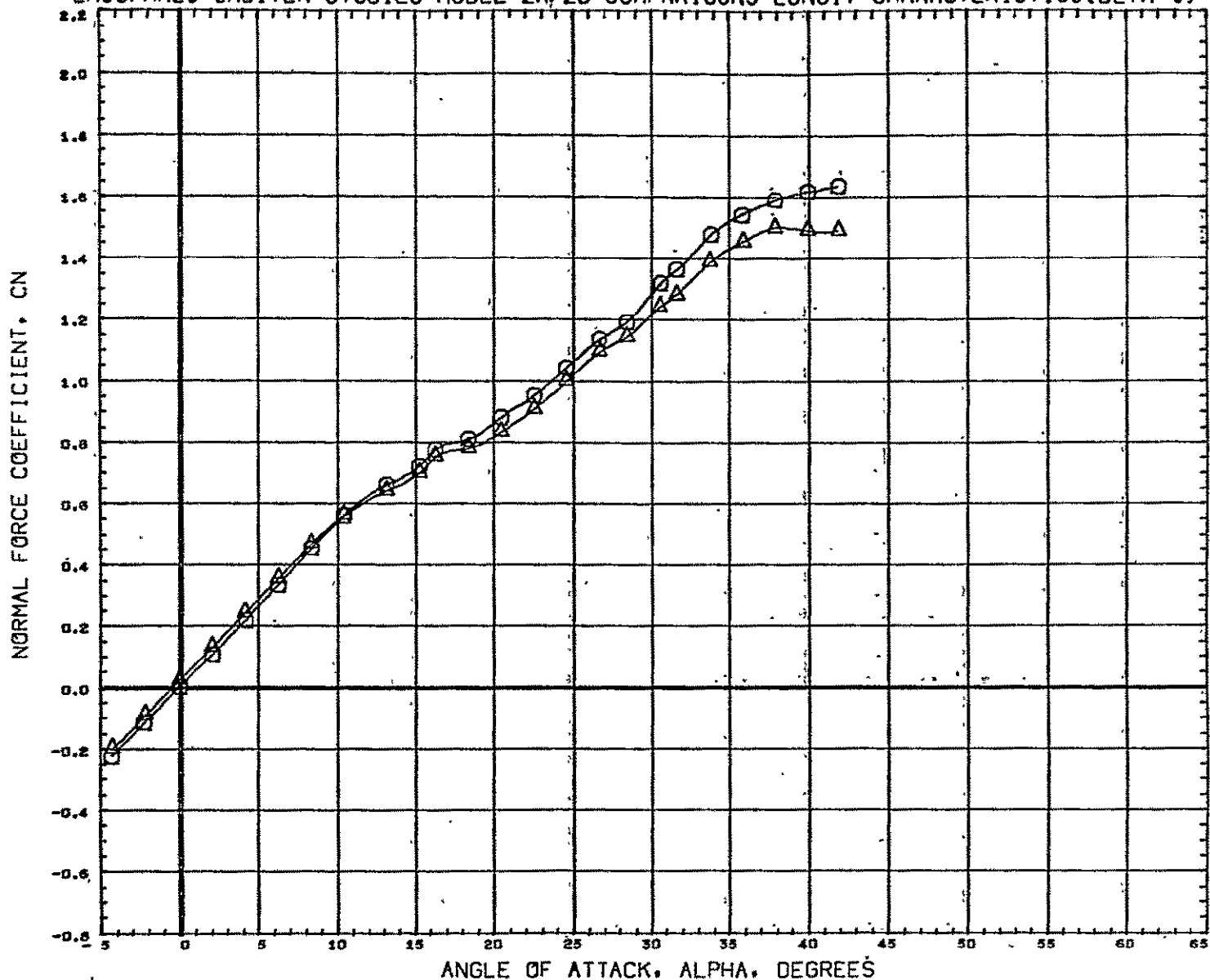
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(D41D15)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(D41SD1)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.597

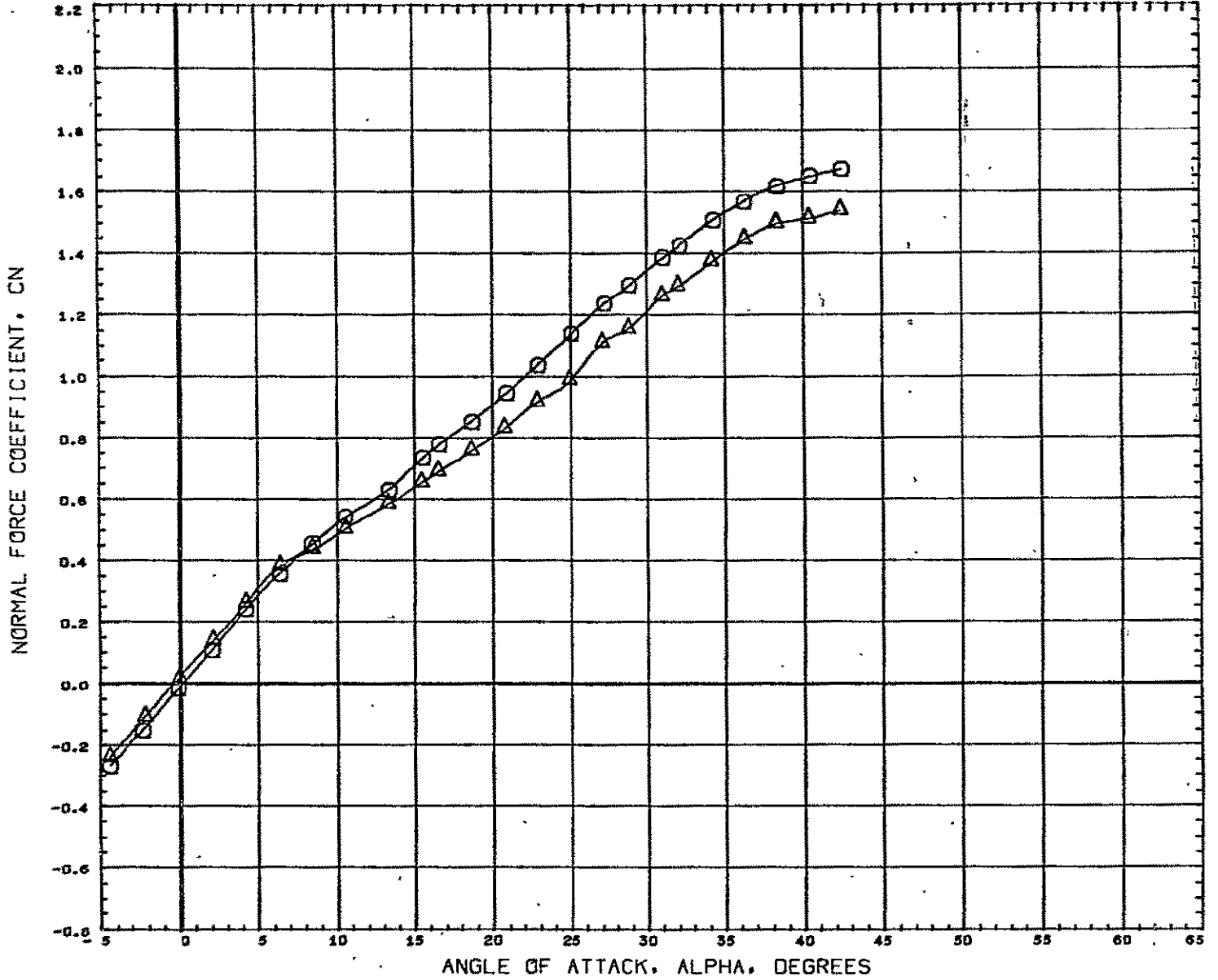
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVNS	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(D41015)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	0.000			SREF 9.0250 SQ. IN LREF 6.1420 INCHES BREF 6.1420 INCHES XMRP 3.9950 INCHES YMRP 0.0000 INCHES ZMRP 0.1350 INCHES SCALE 0.0033 SCALE
(D41501)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4			0.000	0.000	

MACH 0.701

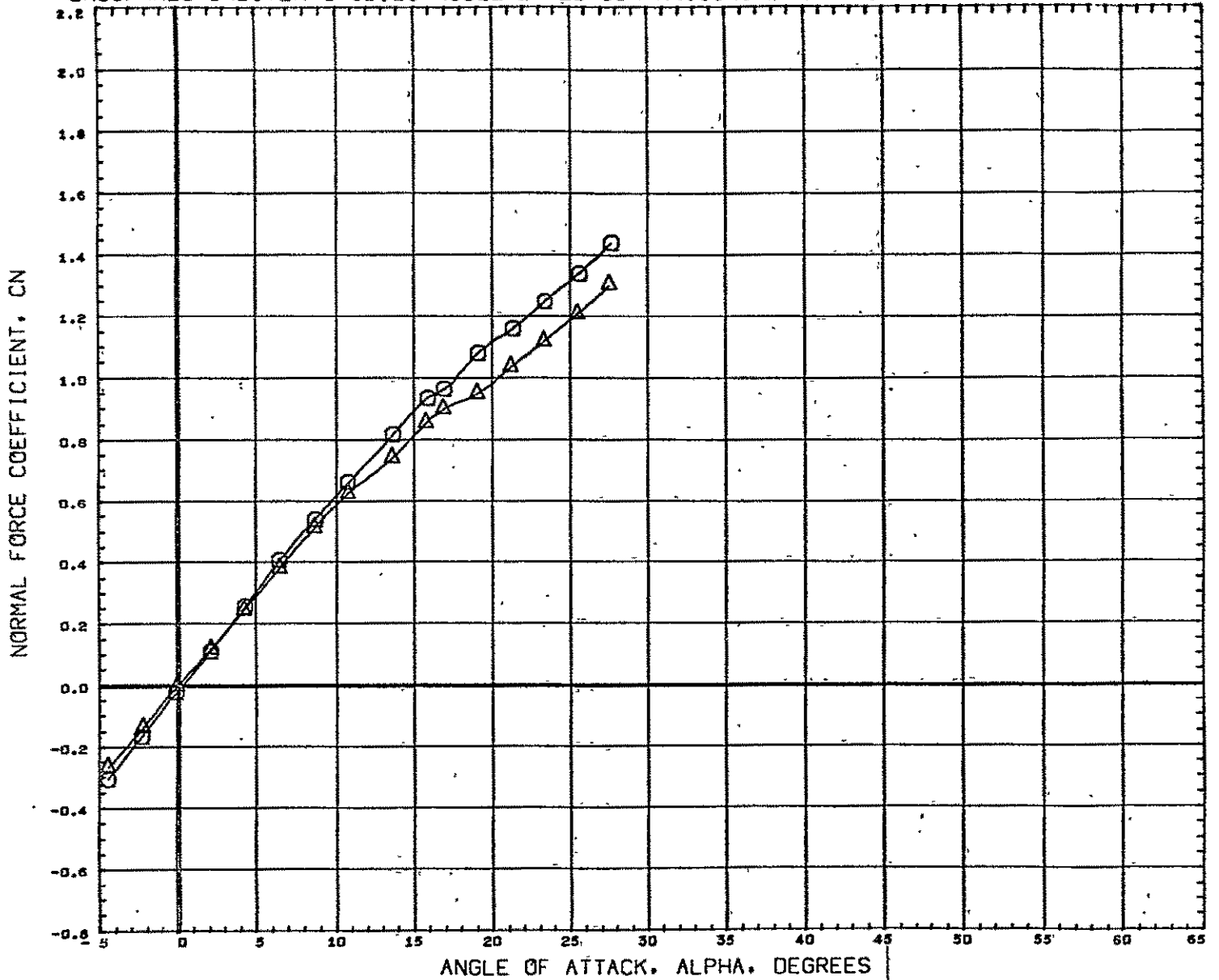
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(D4101S)	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	0.000	0.000		SREF 9.0250 SQ. IN
(D41801)	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4		0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
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						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.902

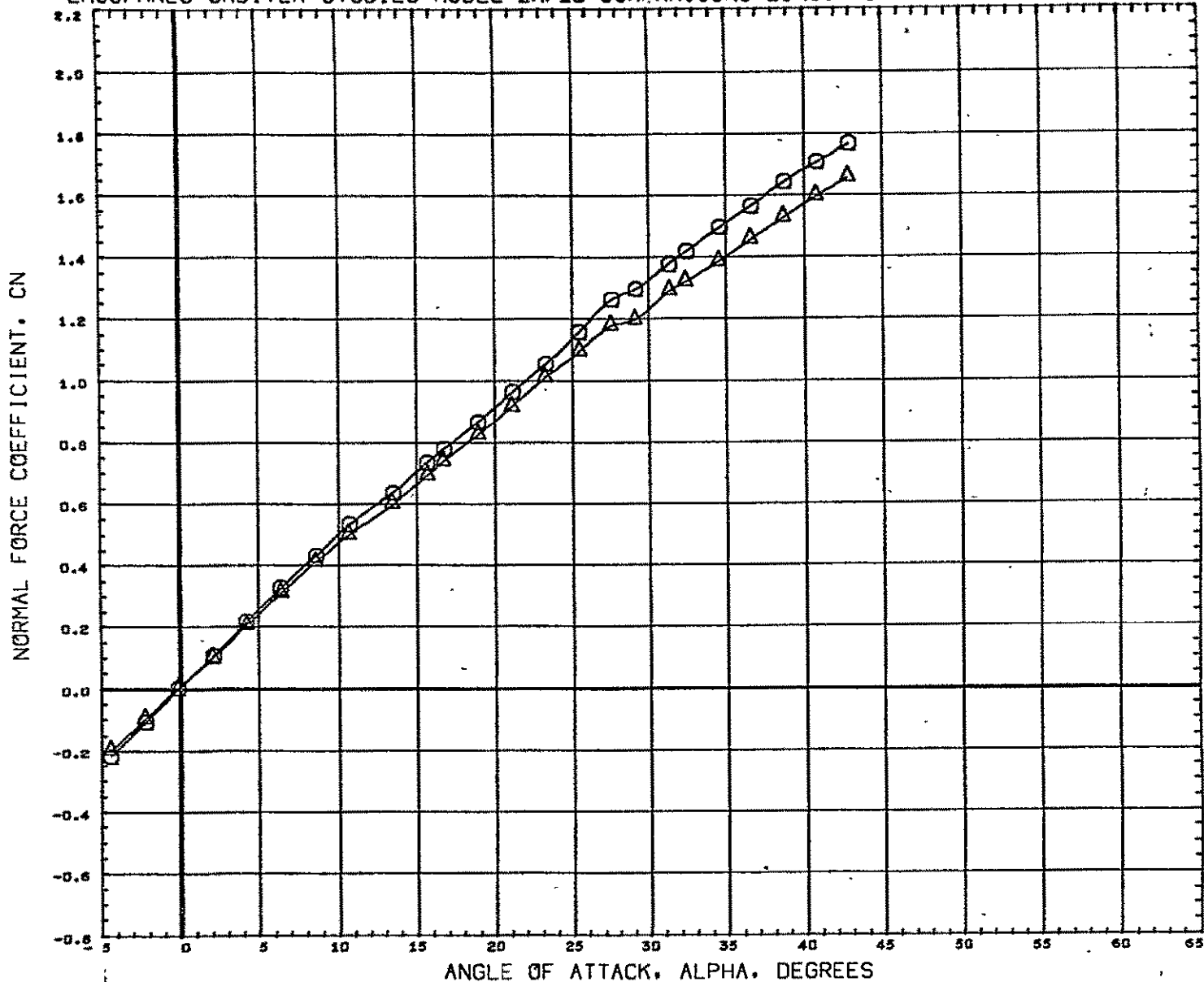
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(D41515)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(D41501)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.103

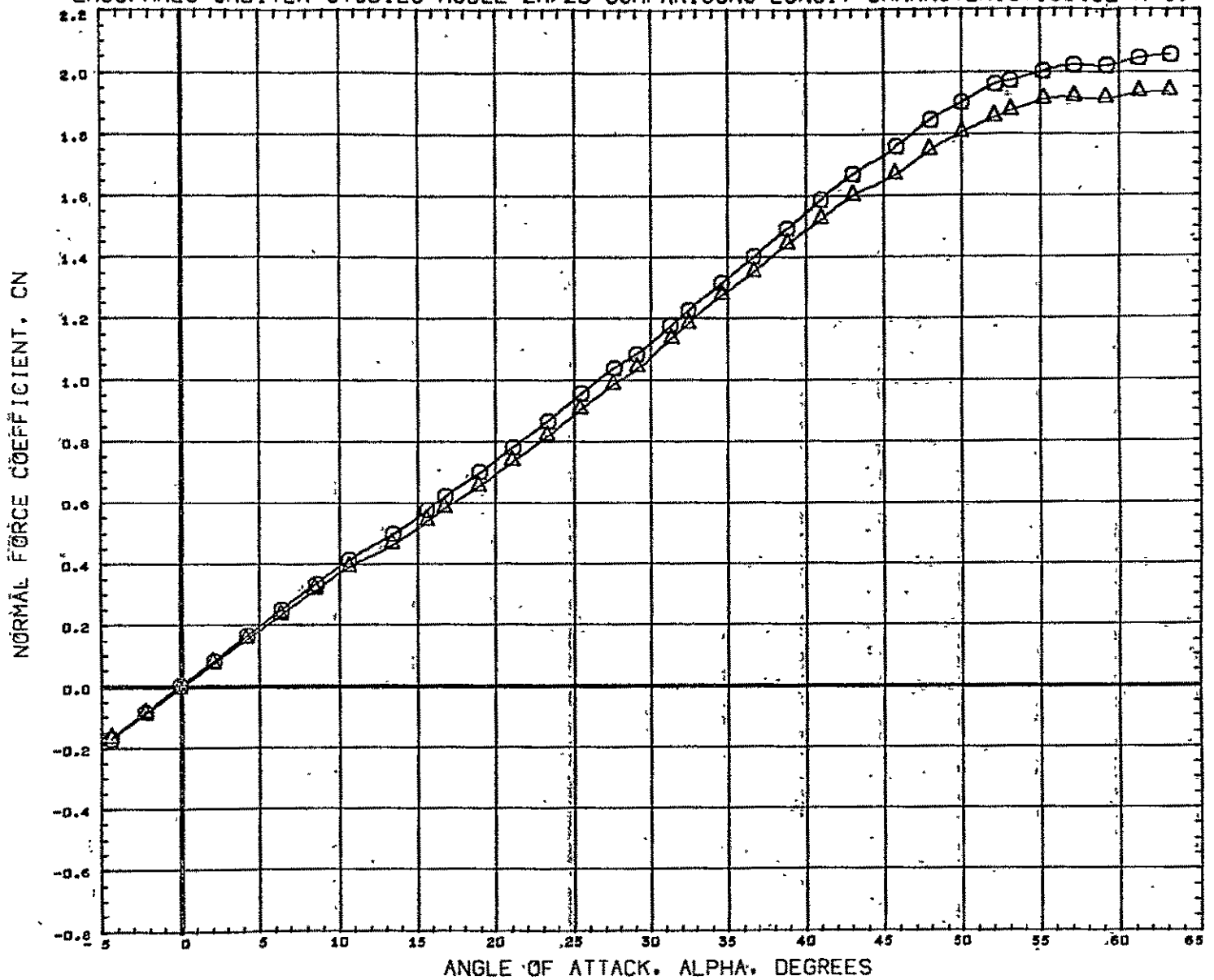
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEV3	RUDER2	ELEV4	RUDER4	REFERENCE INFORMATION
(04101S)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(041501)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
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						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
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MACH 1.461

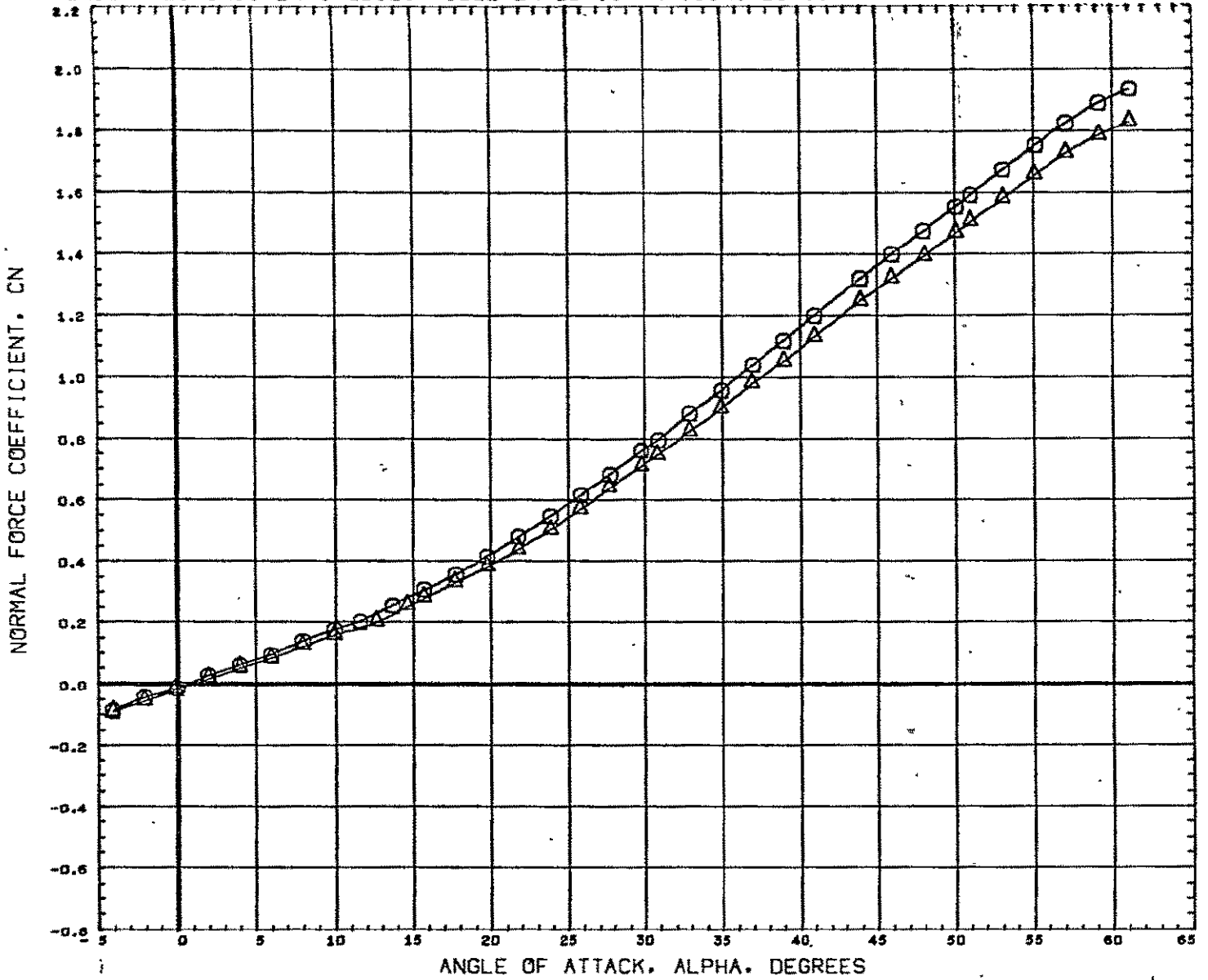
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION	
(D41013)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000	0.000	0.000	SREF	9.0250 SQ. IN
(D41501)	MSFC TWT 498 MSFC/HREC ORBITER					LREF	6.1420 INCHES
						BREF	6.1420 INCHES
						XMRP	3.9950 INCHES
						YMRP	0.0000 INCHES
						ZMRP	0.1350 INCHES
						SCALE	0.0033 SCALE

MACH 1.964

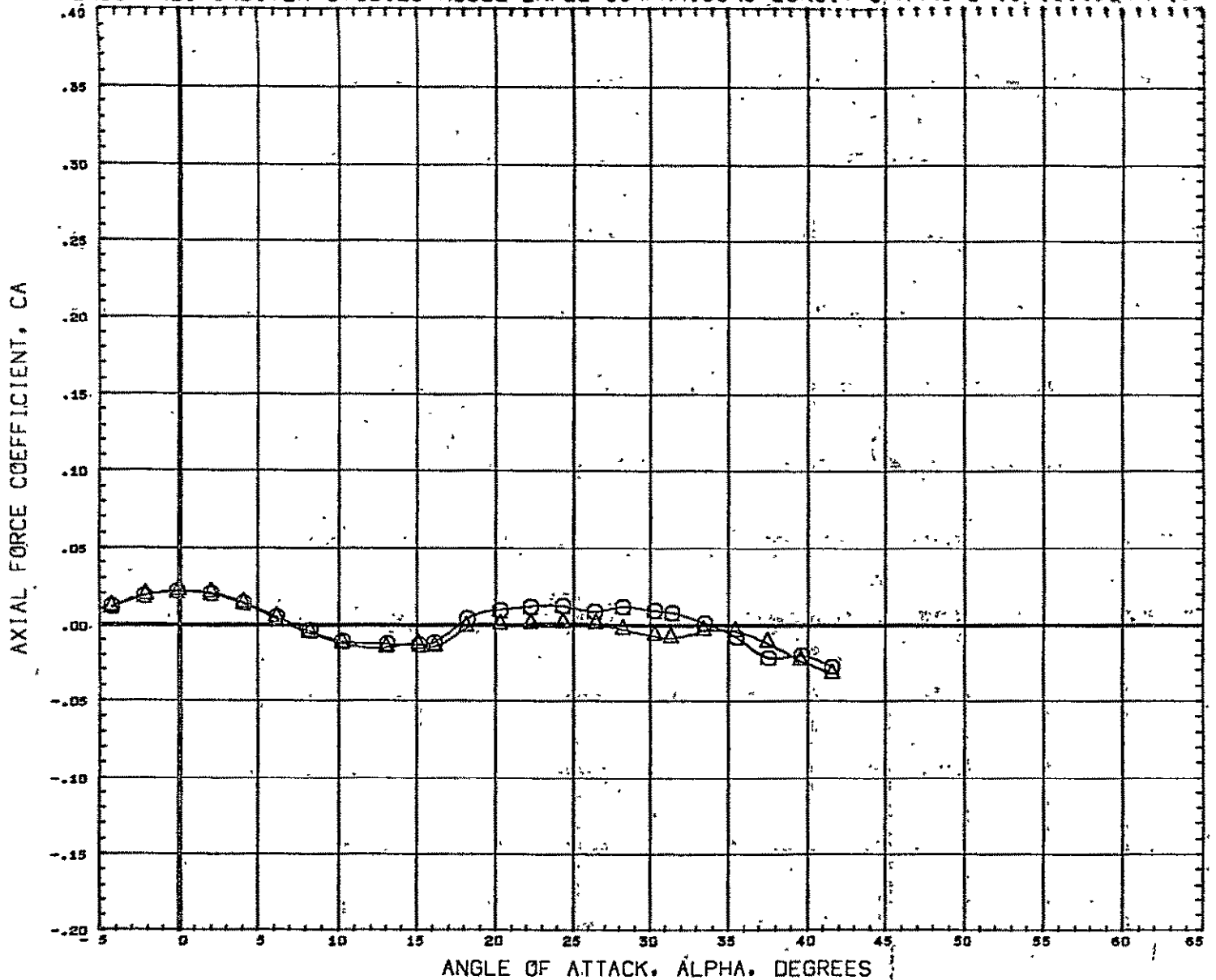
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(D41015)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	0.000			SREF 9.0250 SQ. IN LREF 6.1420 INCHES BREF 6.1420 INCHES XMRP 3.9950 INCHES YMRP 0.0000 INCHES ZMRP 0.1350 INCHES SCALE 0.0033 SCALE
(D41301)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4			0.000	0.000	

MACH 4.960

LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)

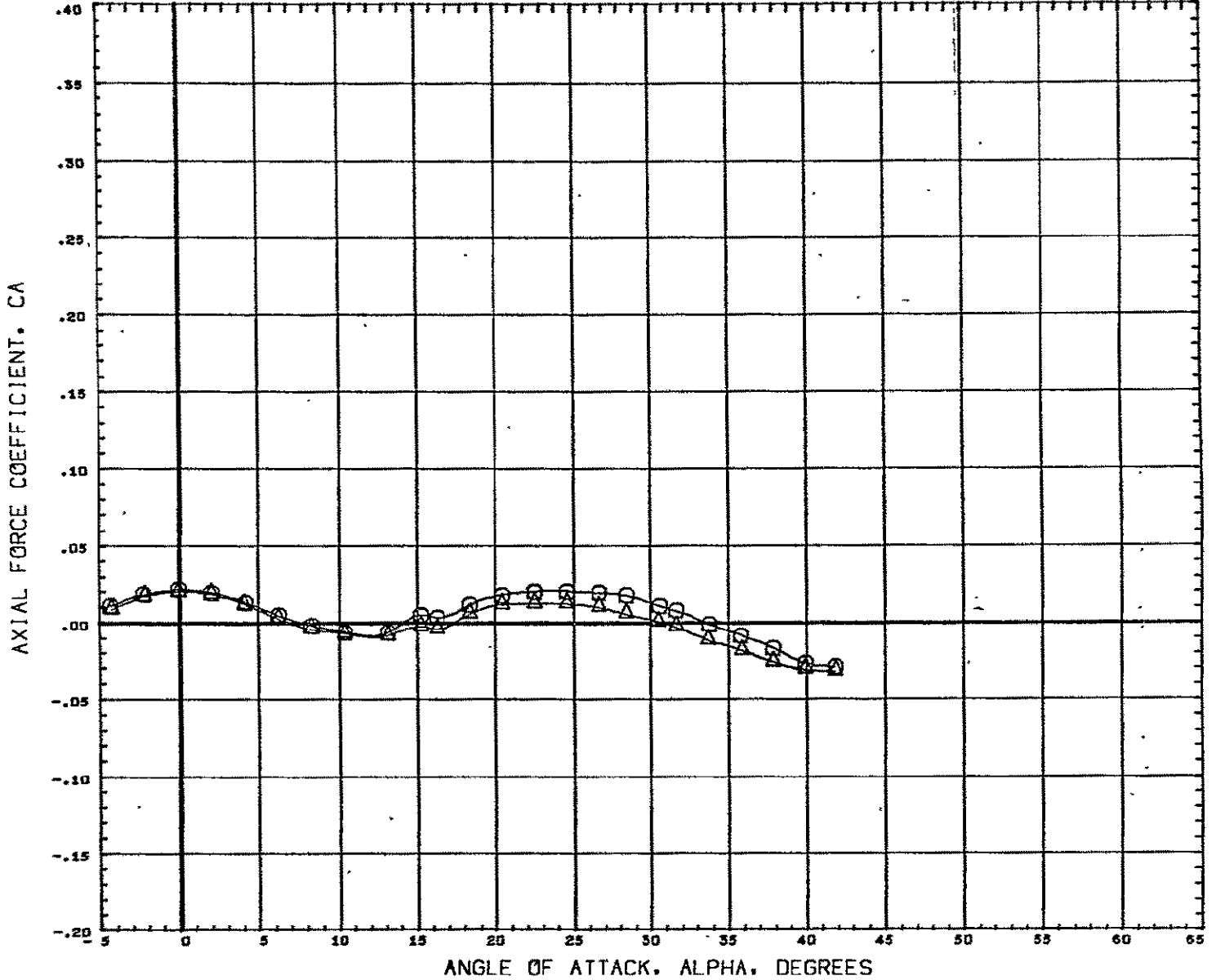


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVNS	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(D41915)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	0.000			SREF 9.0250 SQ. IN
(D41901)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4			0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.597



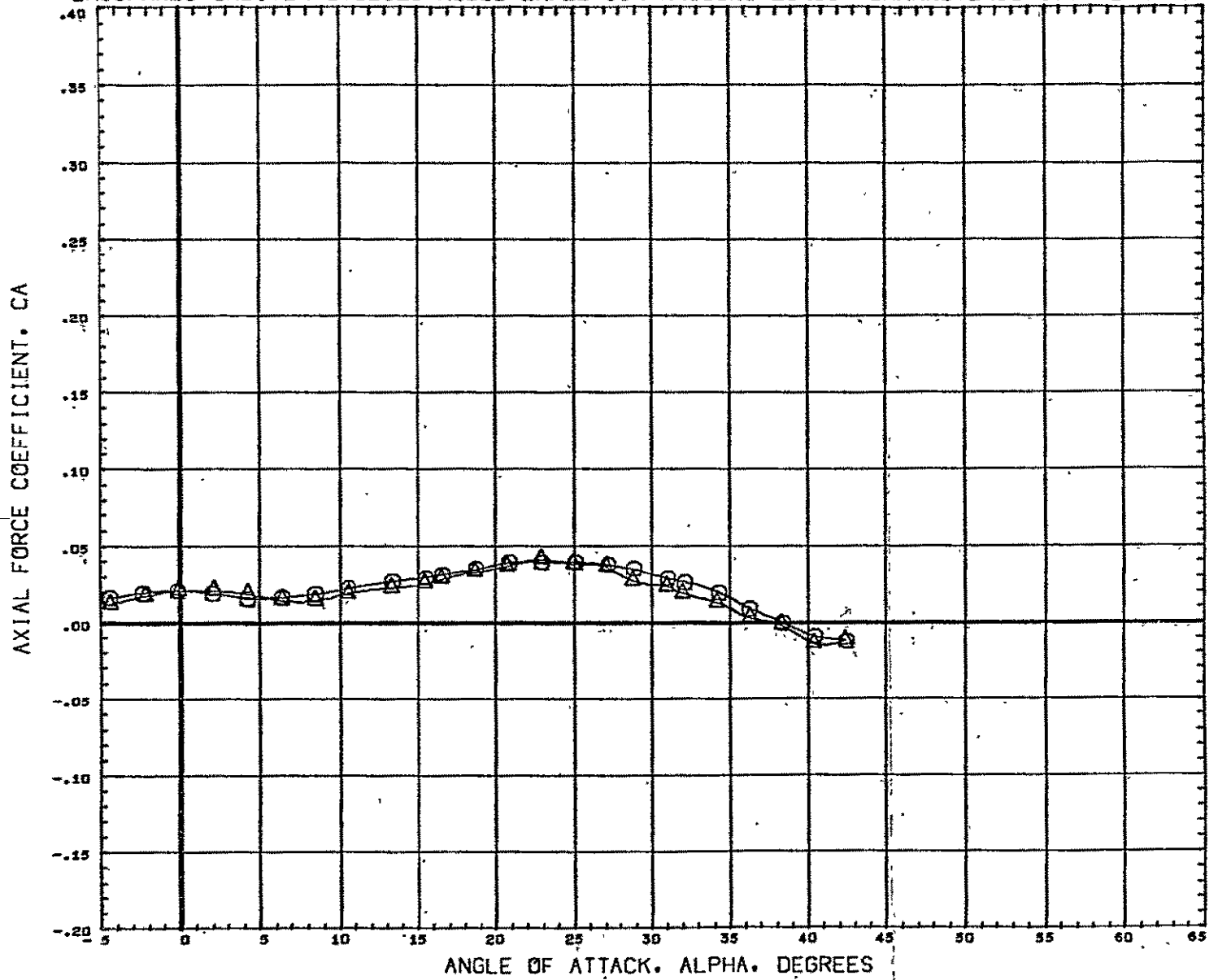
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(D41015)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(D41501)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XHRP -.9950 INCHES
						YHRP .0000 INCHES
						ZHRP .1550 INCHES
						SCALE 1.0033 SCALE

MACH 0.701

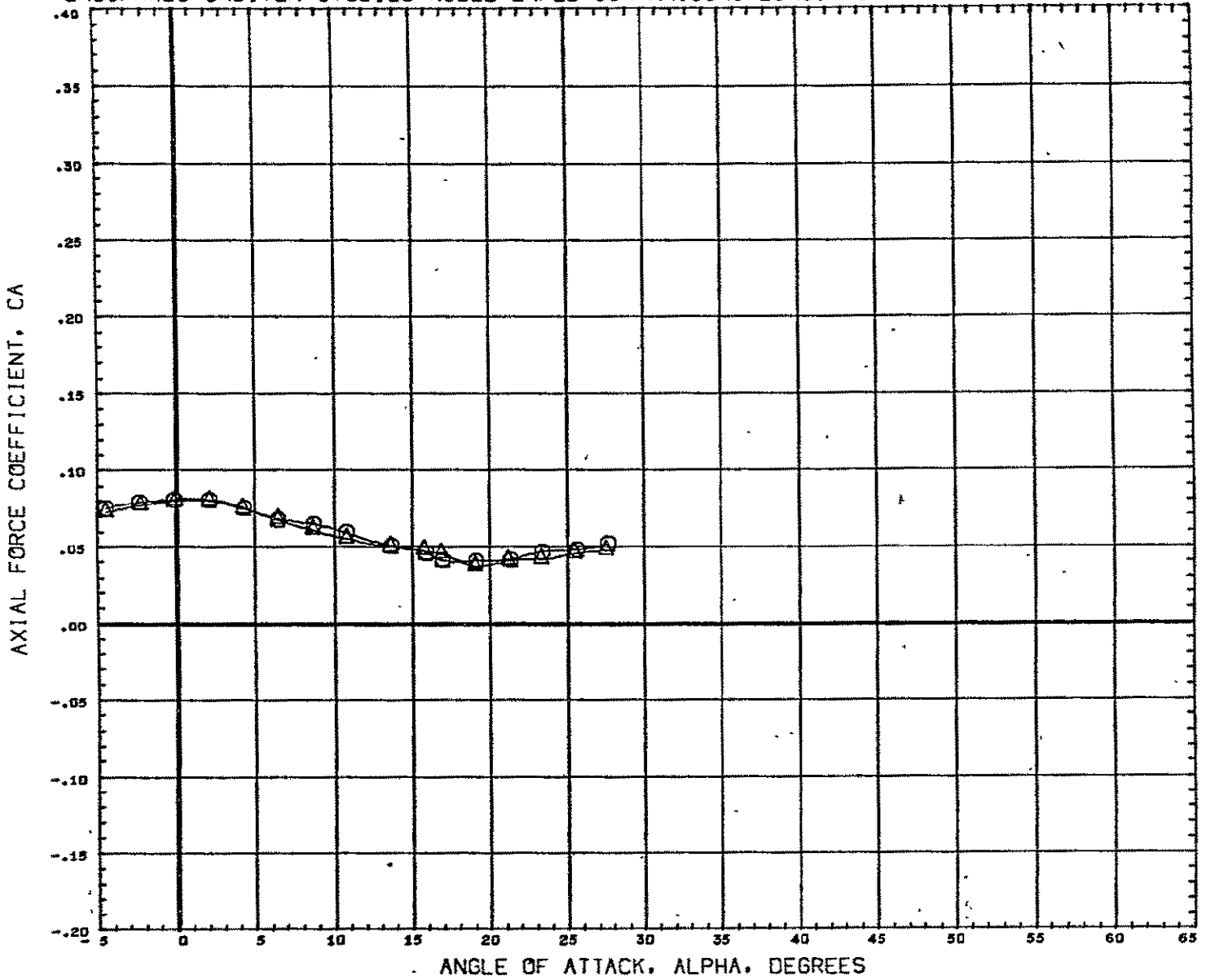
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEV3	RUDER2	ELEV4	RUDER4	REFERENCE INFORMATION	
(D41015)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000	0.000	0.000	SREF	9.0250 SQ. IN
(D41001)	MSFC TWT 498 MSFC/HREC ORBITER					LREF	6.1420 INCHES
						BREF	6.1420 INCHES
						XMRP	3.9930 INCHES
						YMRP	0.0000 INCHES
						ZMRP	0.1350 INCHES
						SCALE	0.0033 SCALE

MACH 0.902

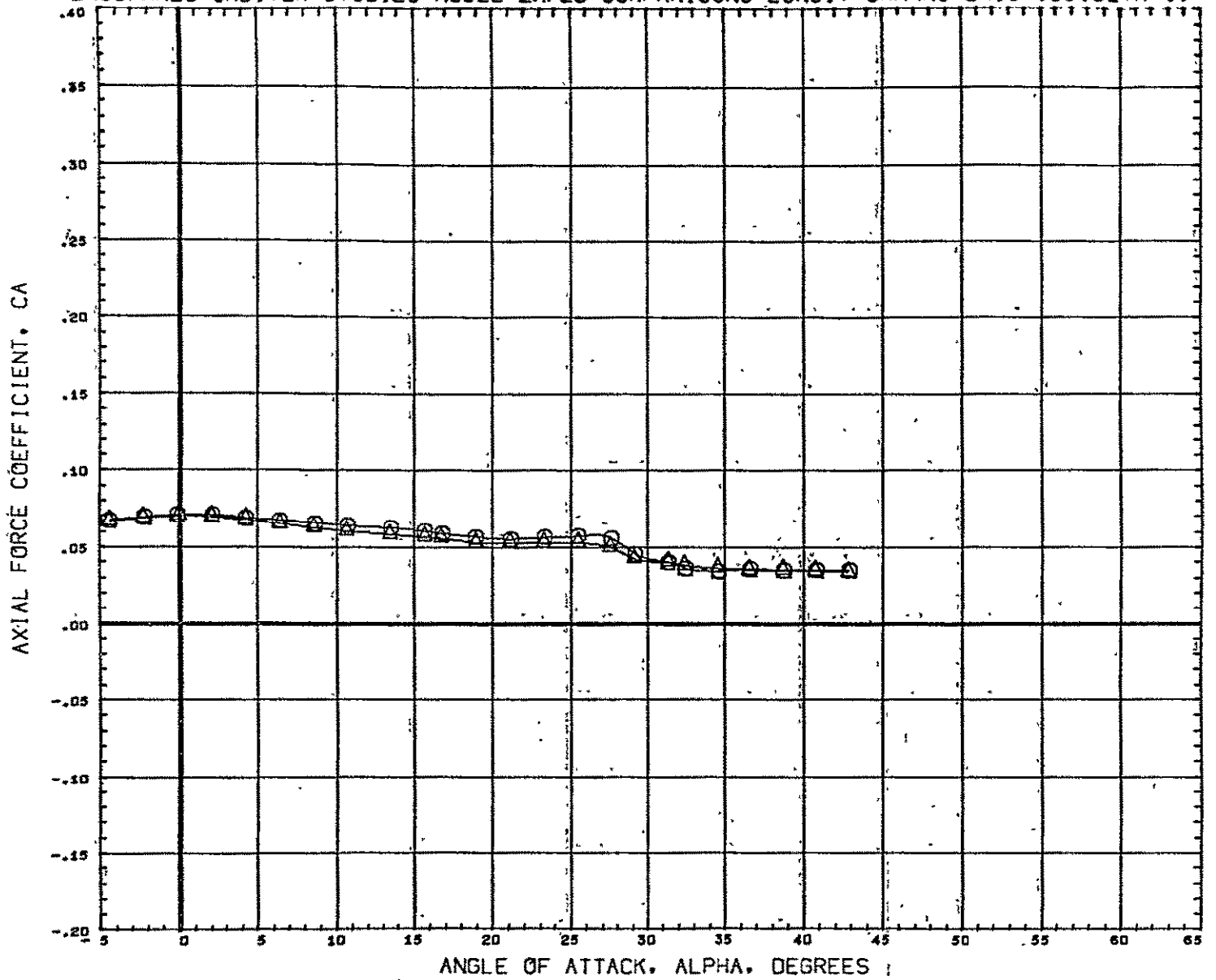
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(D4101S)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ.IN
(D41S01)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.103

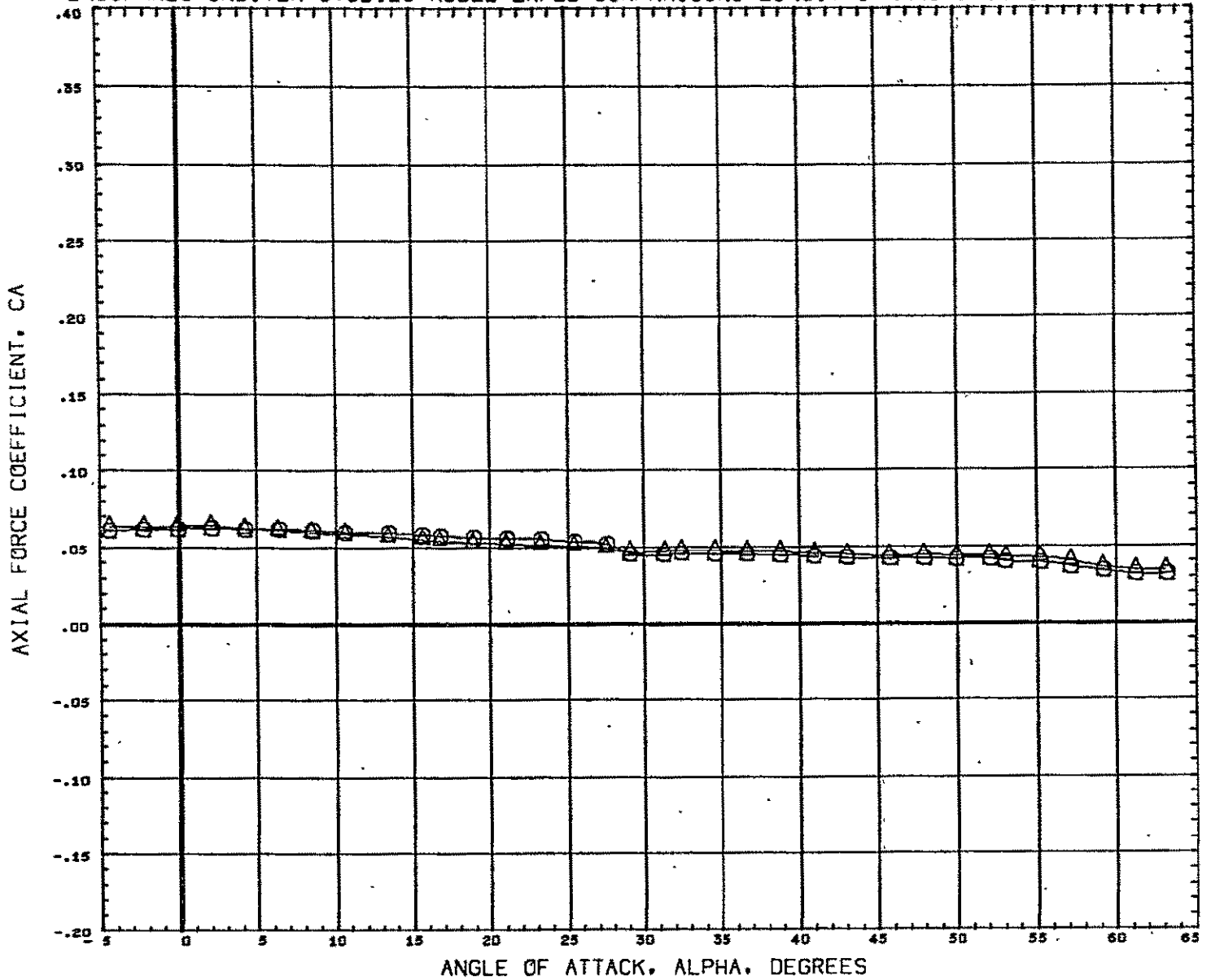
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(D41015)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(D41501)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.461

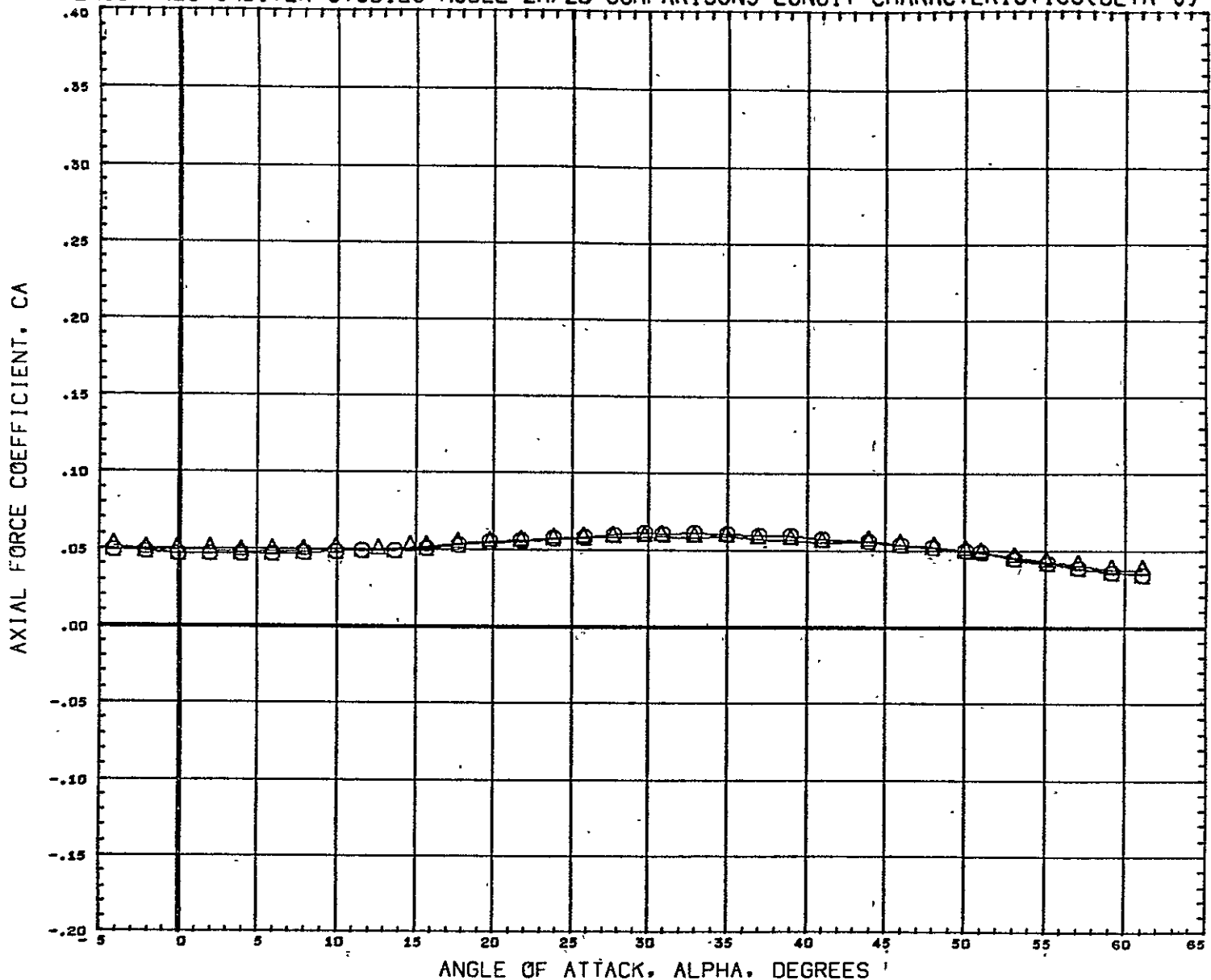
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(D4101S)	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	0.000	0.000		SREF 9.0250 SQ. IN
(D419D1)	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4			0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.964

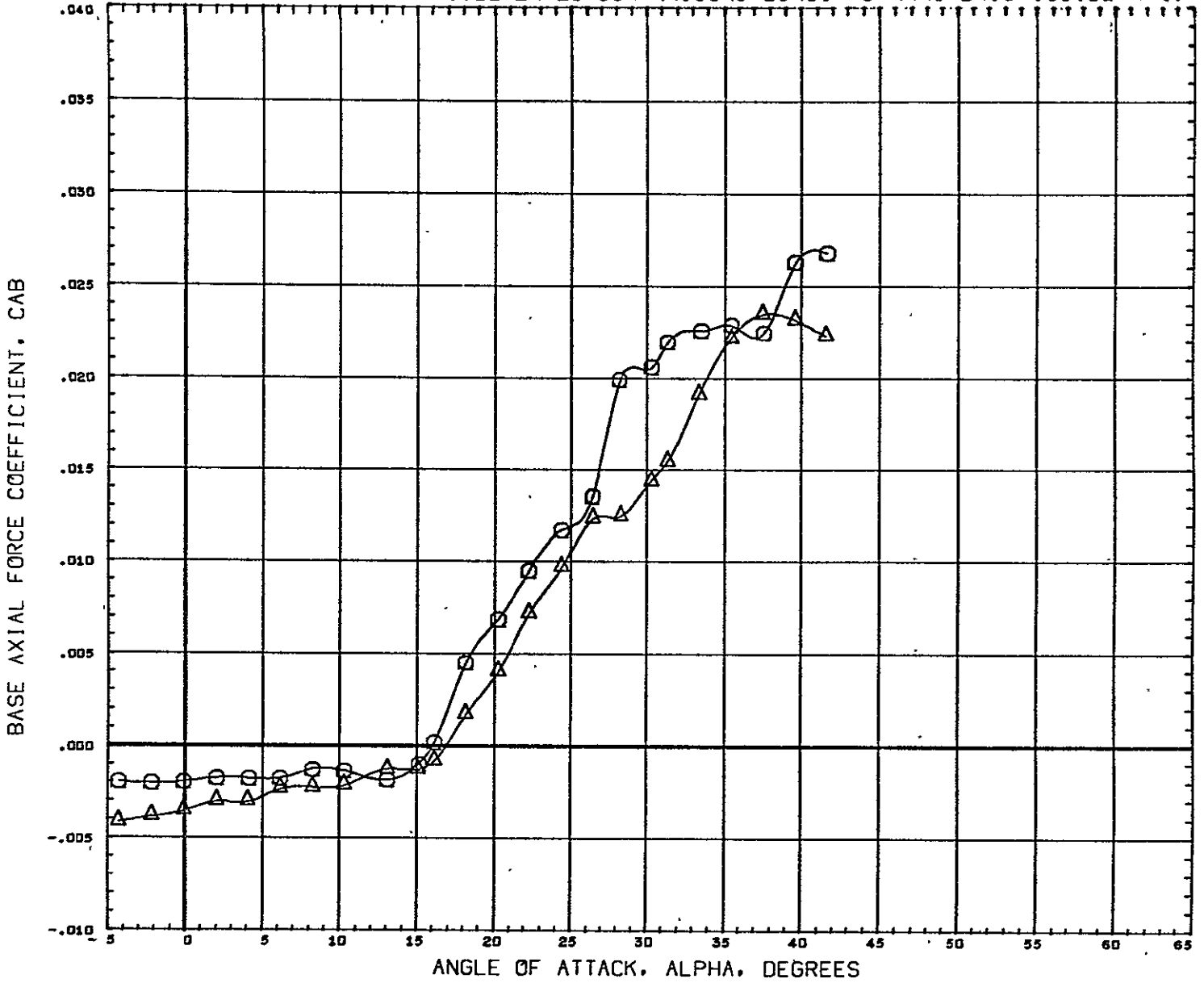
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(D4101S)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(D41S01)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XHRP 3.9950 INCHES
						YHRP 0.0000 INCHES
						ZHRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 4.960

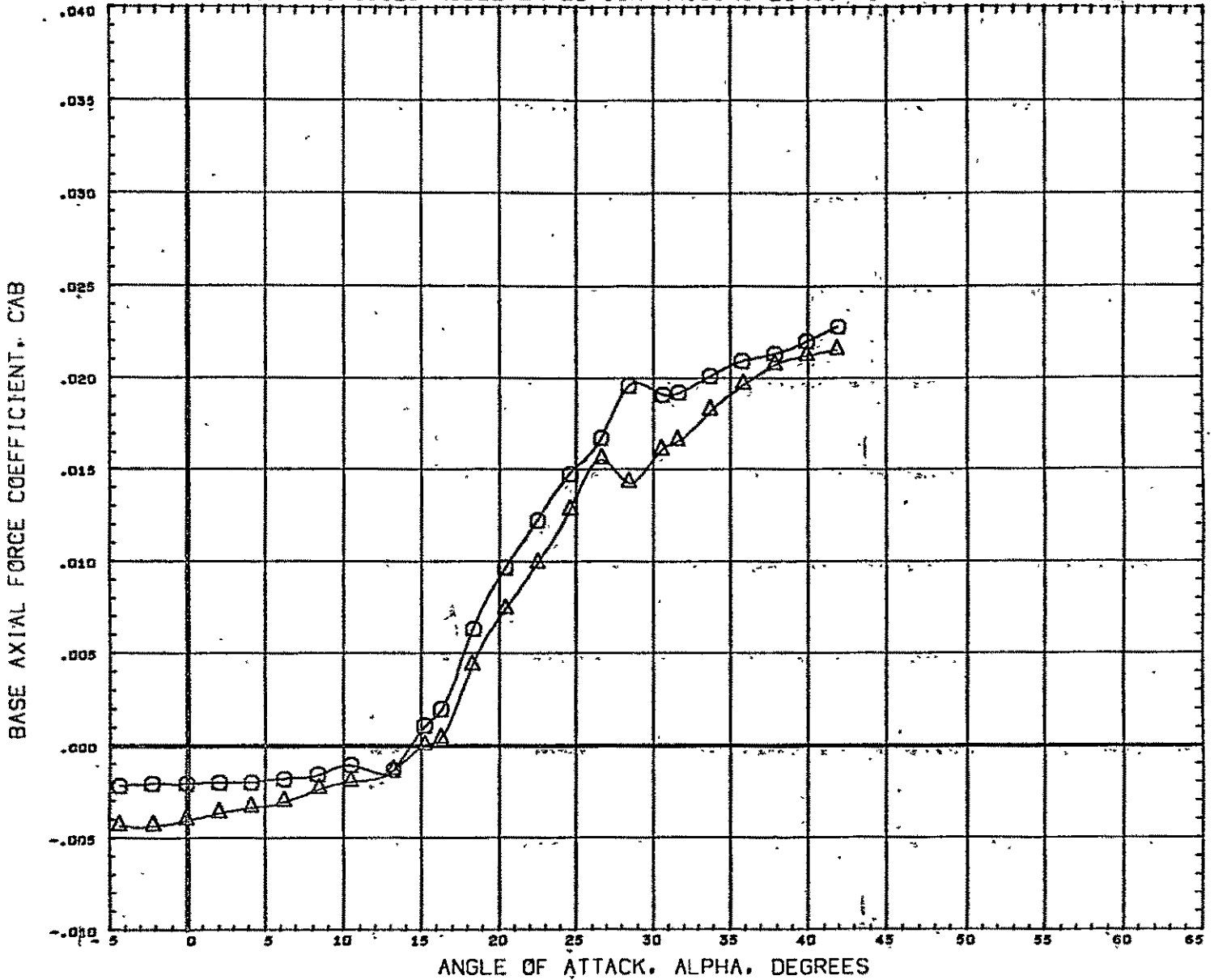
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(J41915)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(J41801)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						YMRP 3.9950 INCHES
						ZMRP 0.0000 INCHES
						ZMRP - 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.597

LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)

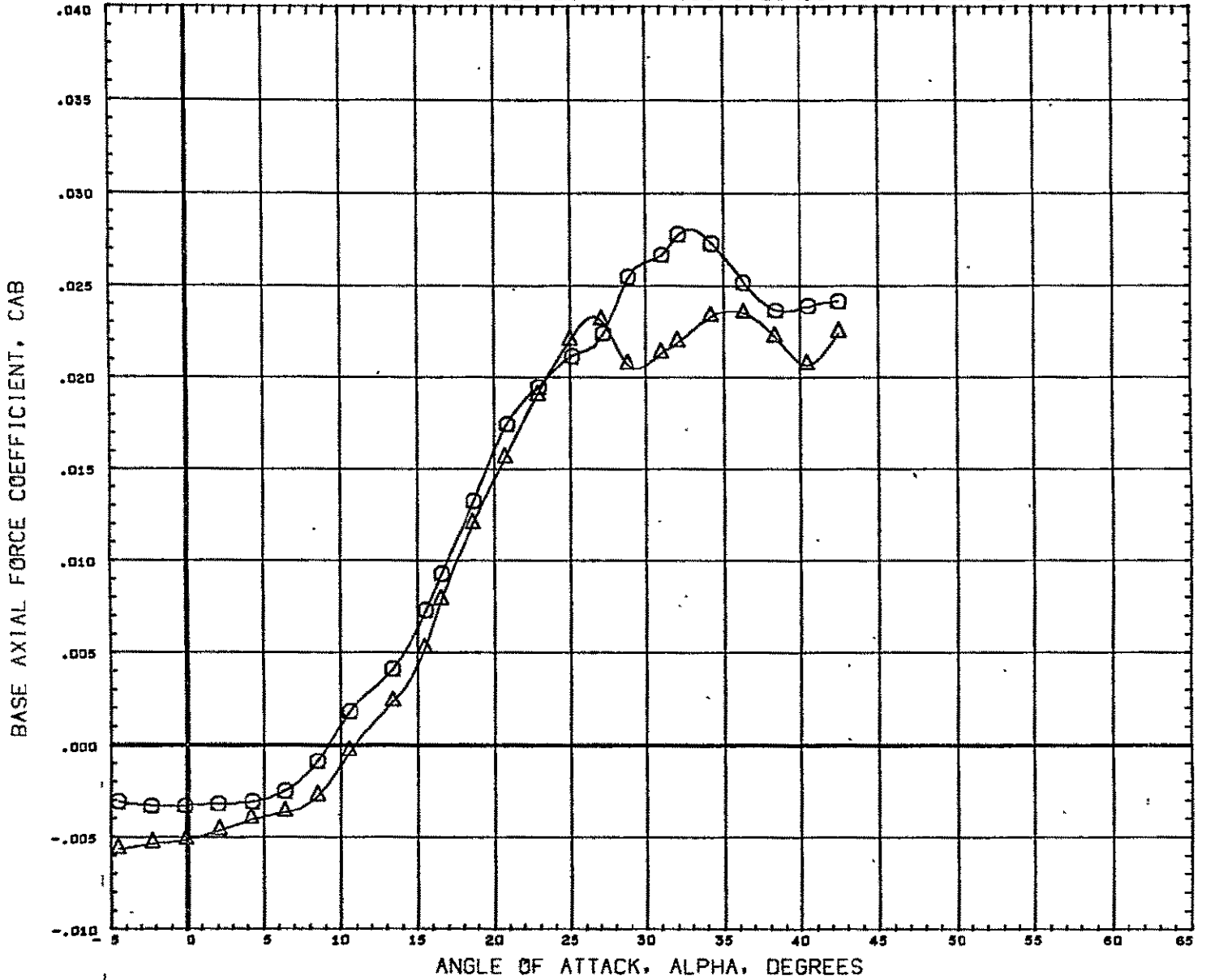


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVNS	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(J41D15)	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	0.000	0.000		SREF 9.0250 SQ. IN
(J41SD1)	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4			0.000 0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.701



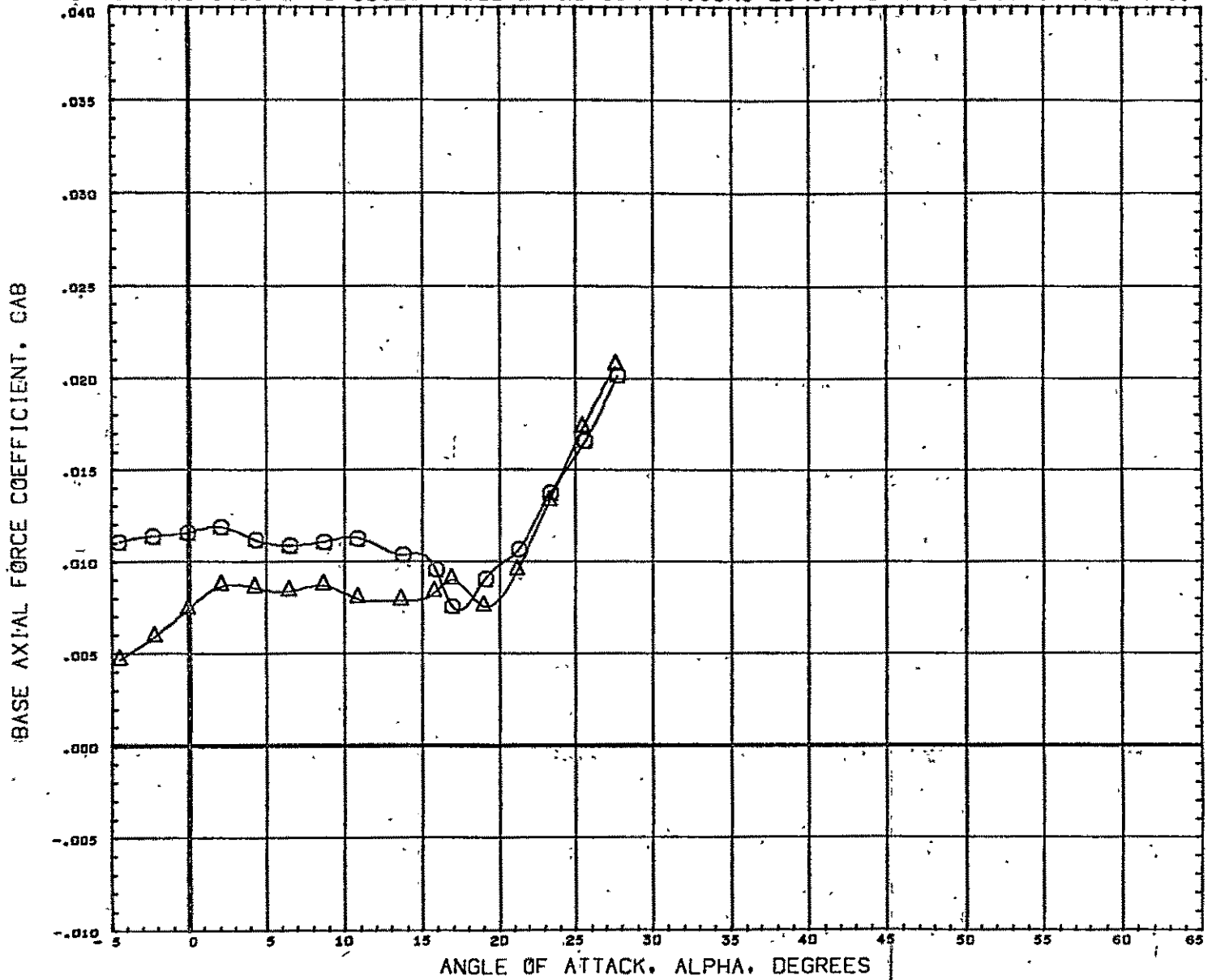
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(J4101S)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ.IN
(J41501)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.902

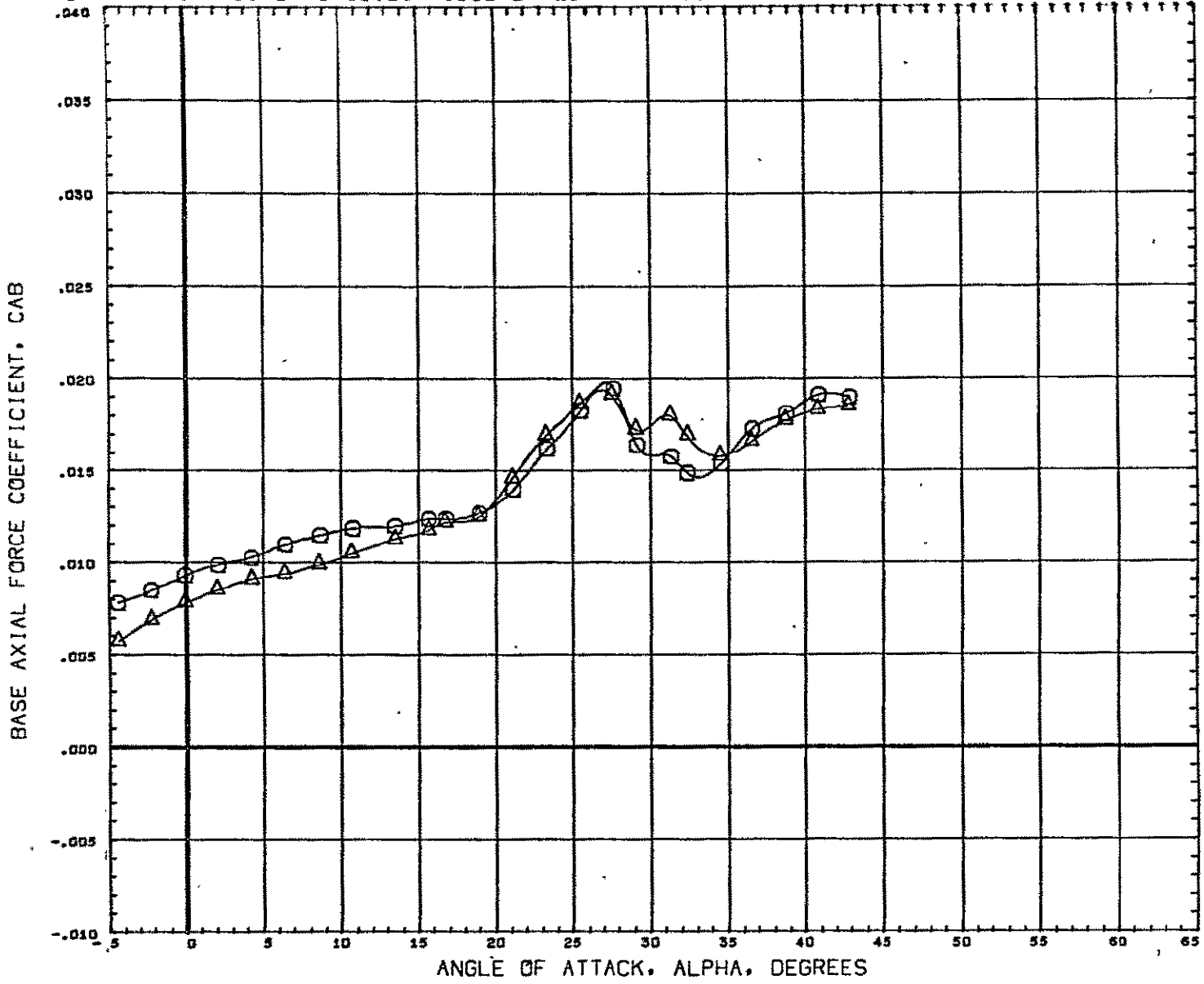
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(J41018)	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	0.000	0.000	0.000	SREF 9.0250 SQ. IN
(J41301)	MSFC TWT 498 MSFC/HREC ORBITER	B2W3V2E4R4	0.000	0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XNRP 3.9950 INCHES
						YNRP 0.0000 INCHES
						ZNRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.103

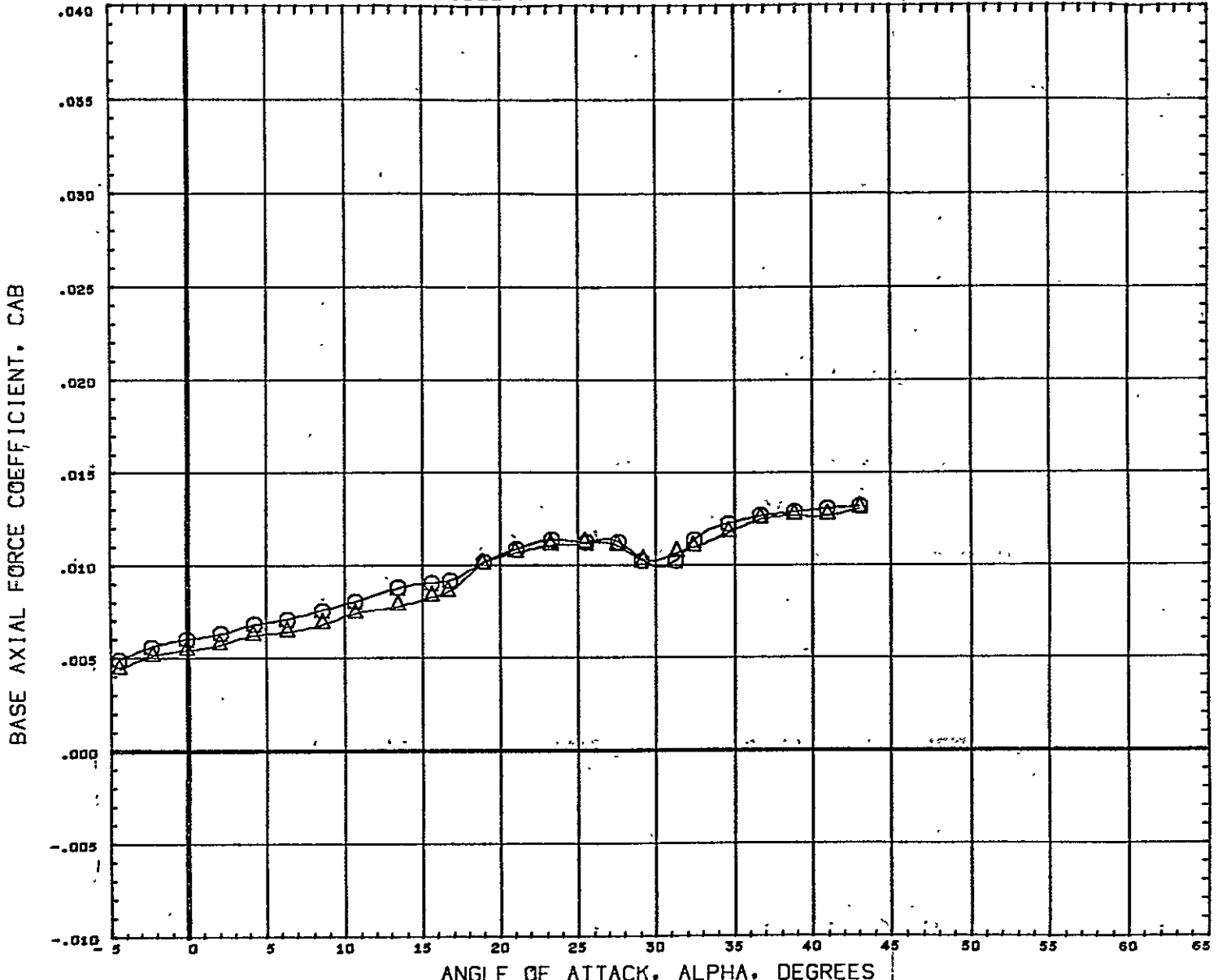
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(J4101S)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(J41301)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

NACH 1.461

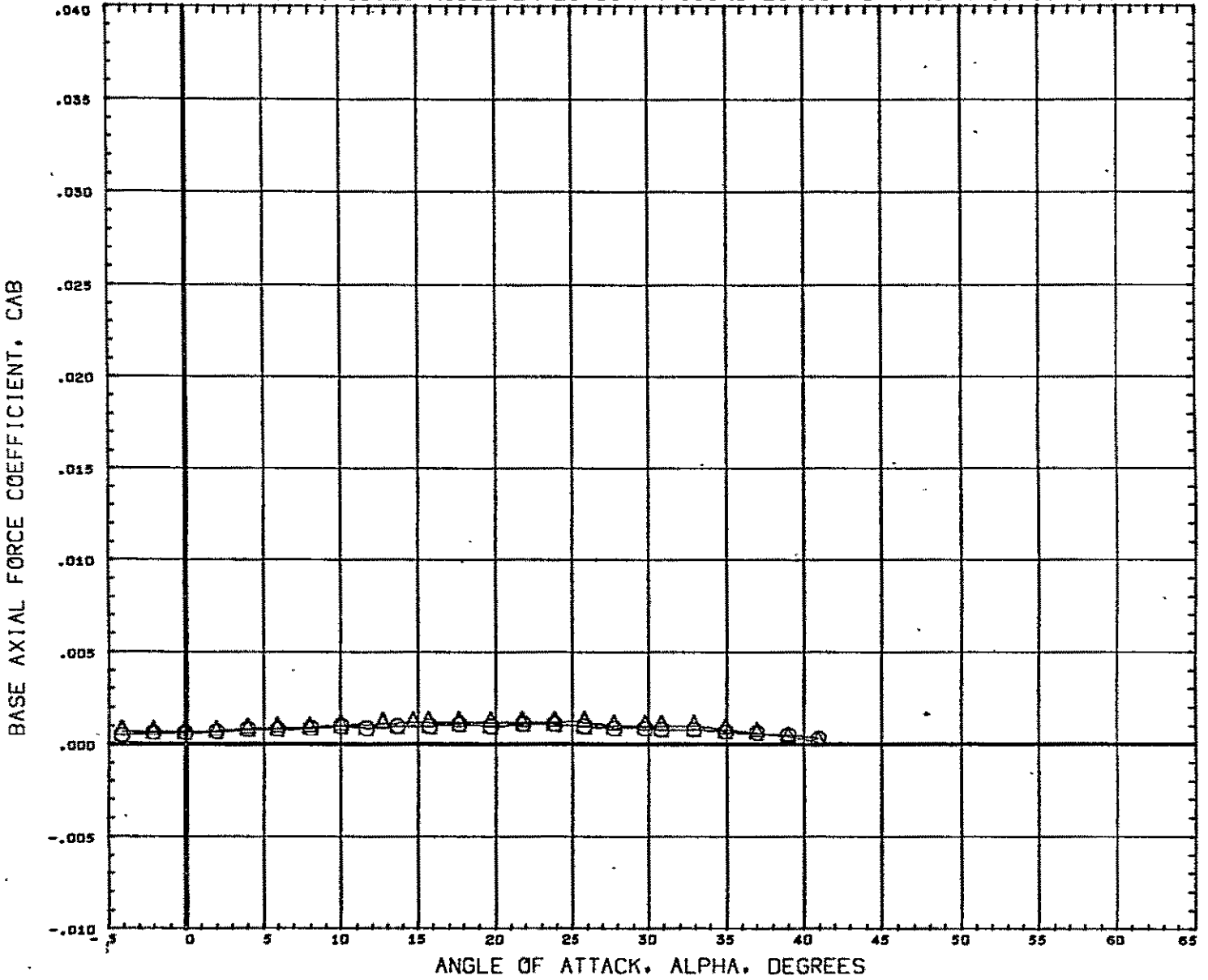
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVNS	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(J4101S)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ.IN
(J41301)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.964

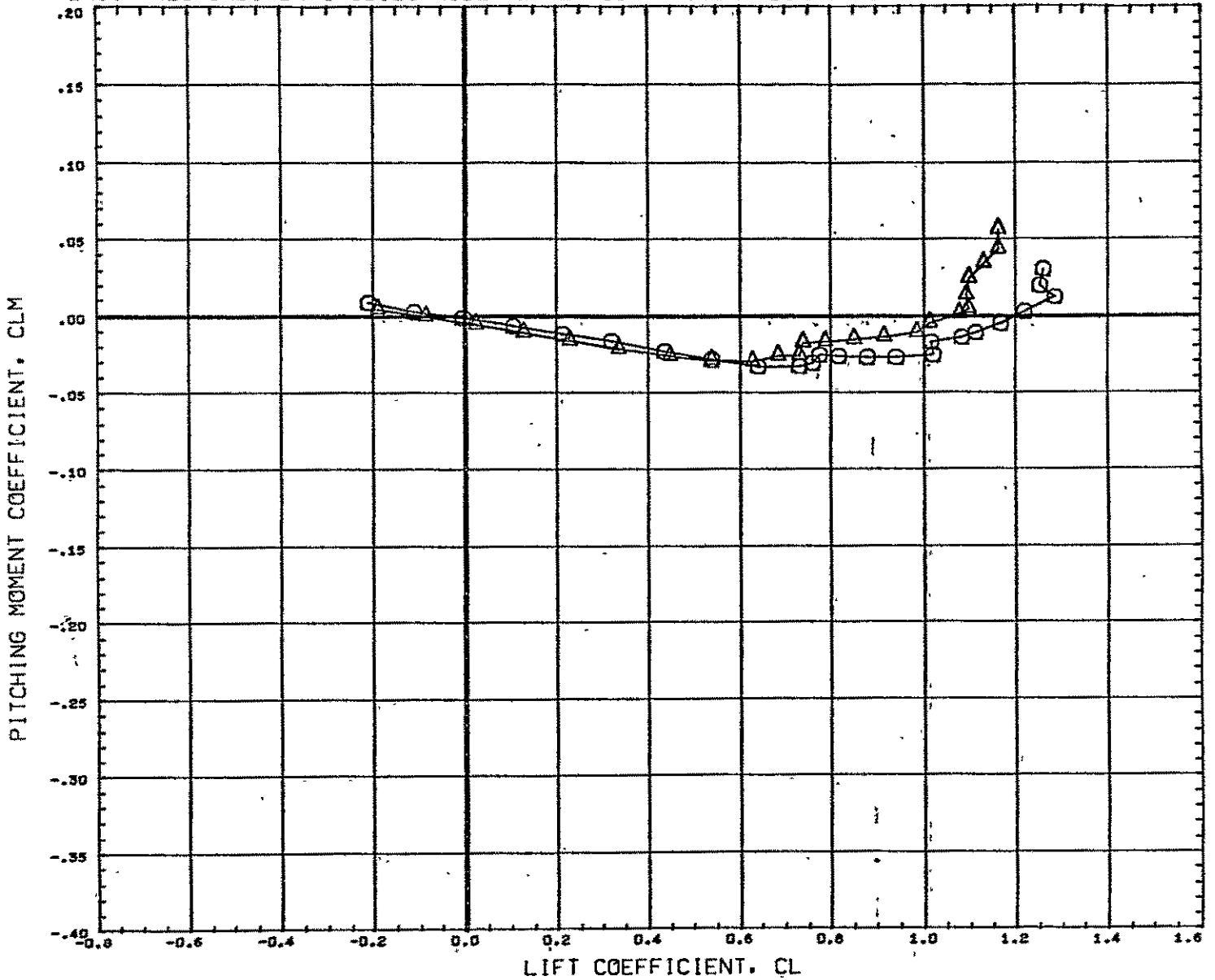
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(J41015)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(J41501)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 4.960

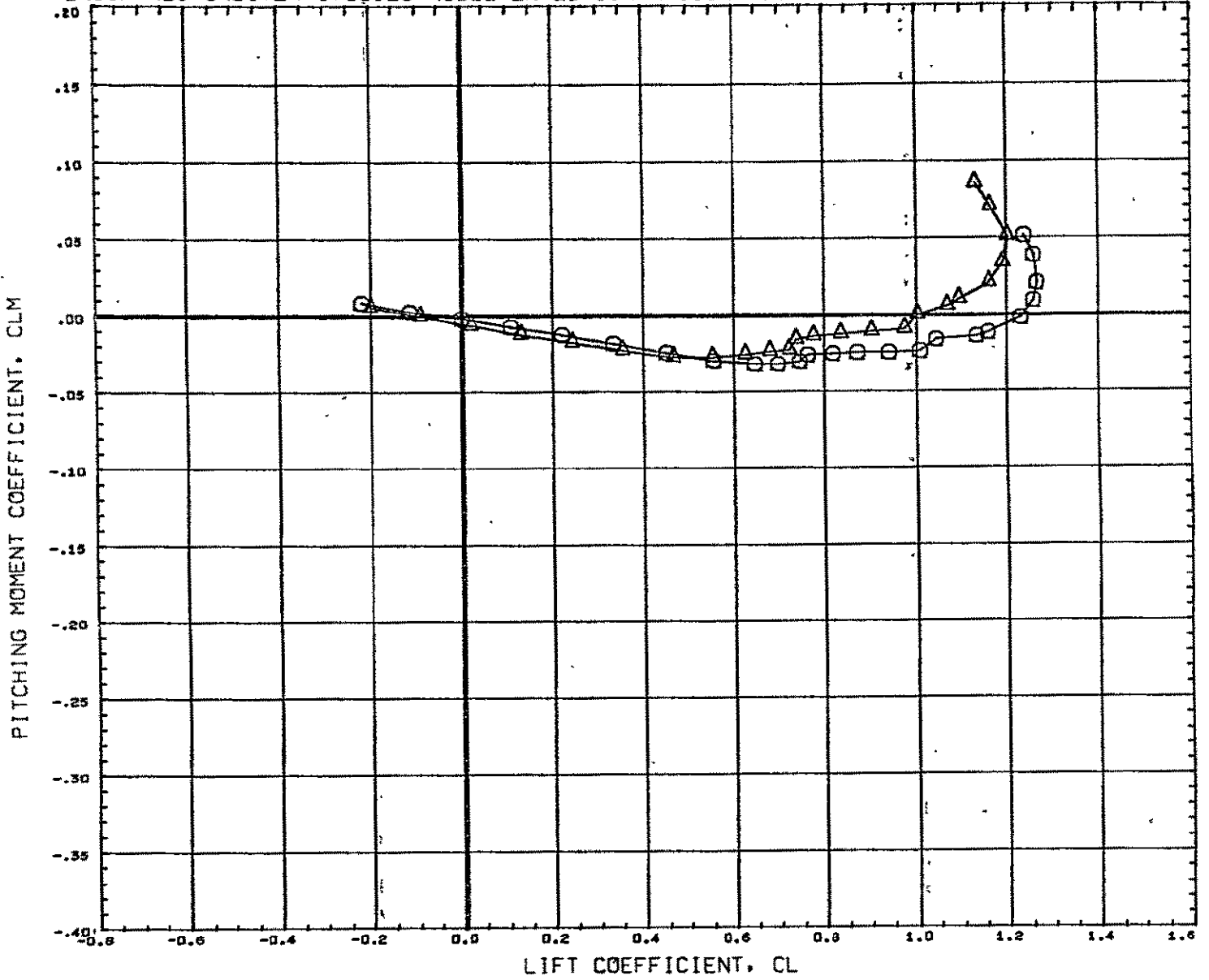
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	B2W2V4D2E3R2	ELEV3	RUDER2	ELEV4	RUDER4	REFERENCE INFORMATION	
(D41018)	○	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	0.000	0.000	0.000	0.000	SREF	9.0250 SQ. IN
(D41501)	△	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4					LREF	6.1420 INCHES
								BREF	6.1420 INCHES
								XMRP	3.9950 INCHES
								YMRP	0.0000 INCHES
								ZMRP	0.1350 INCHES
								SCALE	0.0033 SCALE

MACH 0.591

LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)

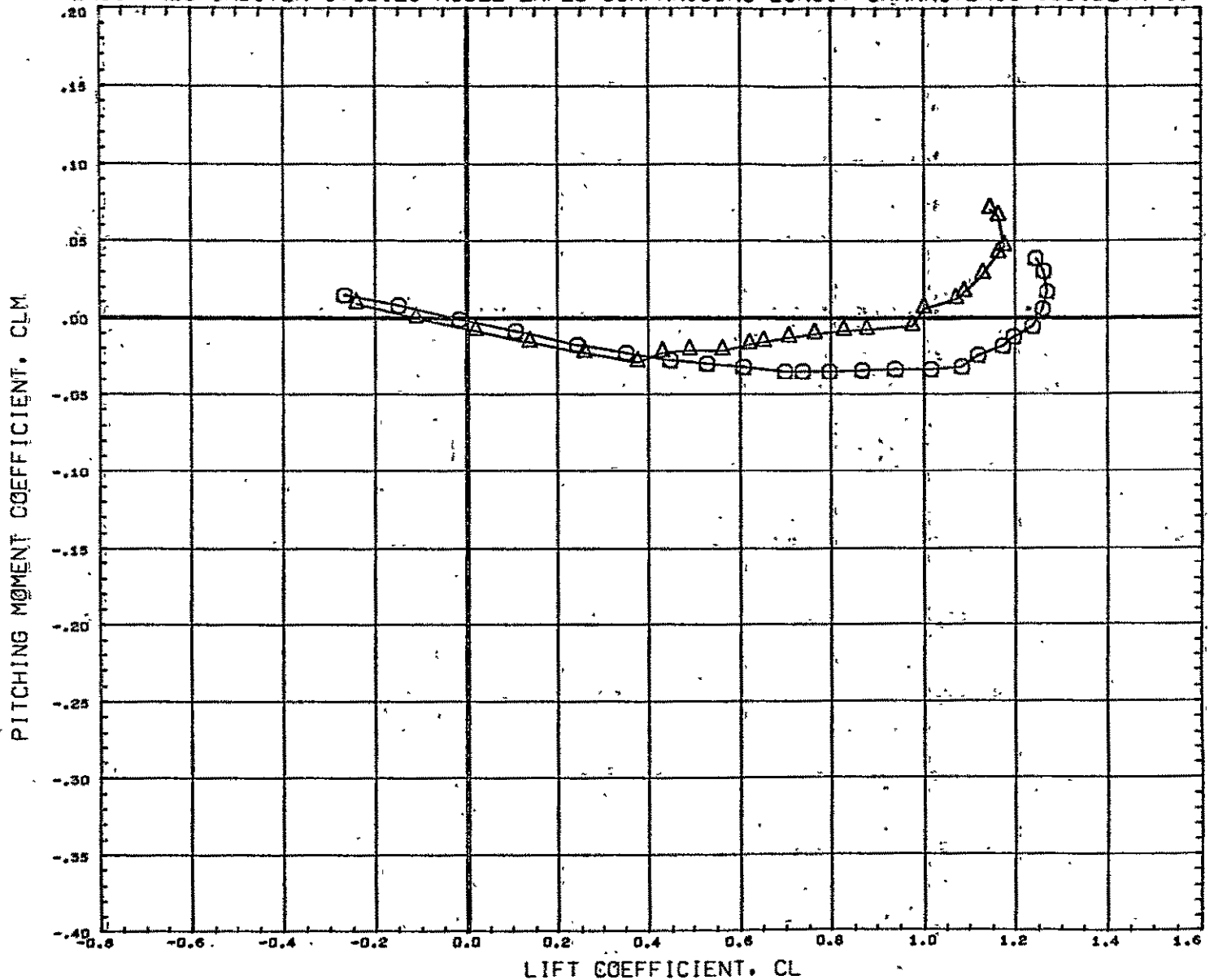


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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(D4101S)	MSFC TWT 498 MSFC/LMSC ORBITER	0.090	0.000			SREF 9.0250 SQ. IN
(D41001)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.701

LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)

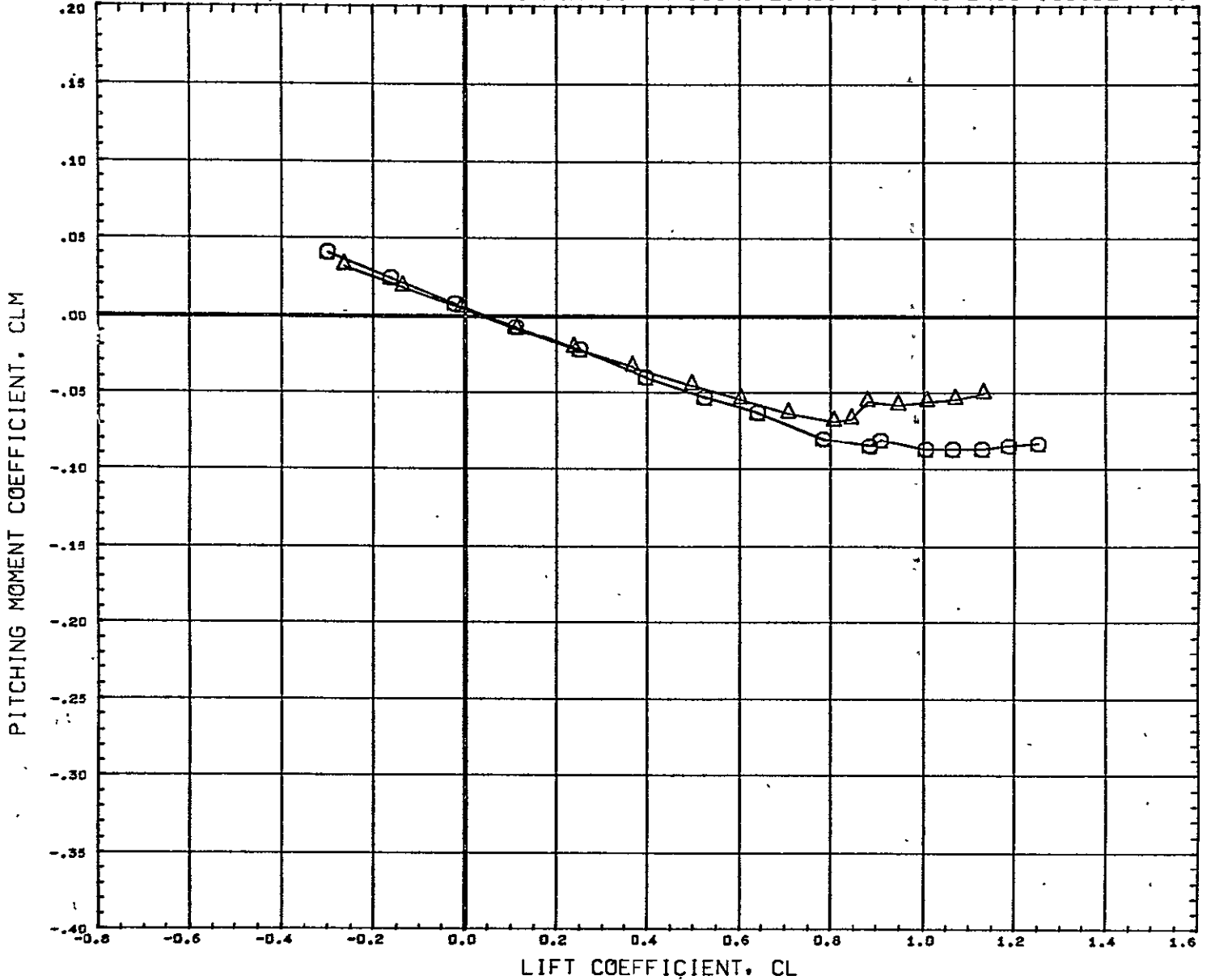


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION	
(D41035)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF	9.0250 SQ. IN
(D41501)	MSFC TWT 498 MSFC/HREC ORBITER	B2W2V4D2E3R2				LREF	6.1420 INCHES
		B2W3V2E4R4		0.000	0.000	BREF	6.1420 INCHES
						XMRP	3.9950 INCHES
						YMRP	0.0000 INCHES
						ZMRP	0.1350 INCHES
						SCALE	0.0033 SCALE

MACH 0.902



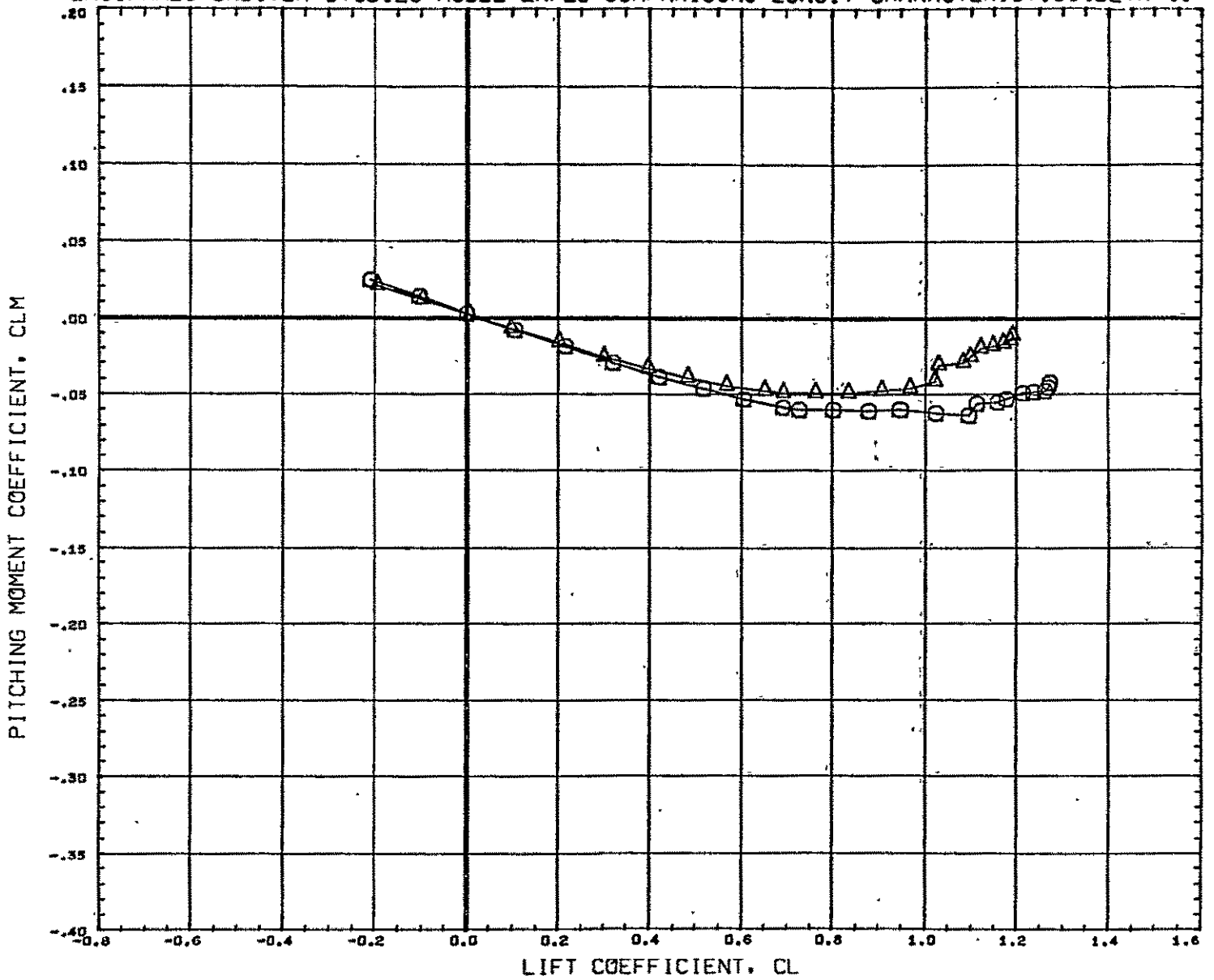
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(D41019)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(D41501)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
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						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.103

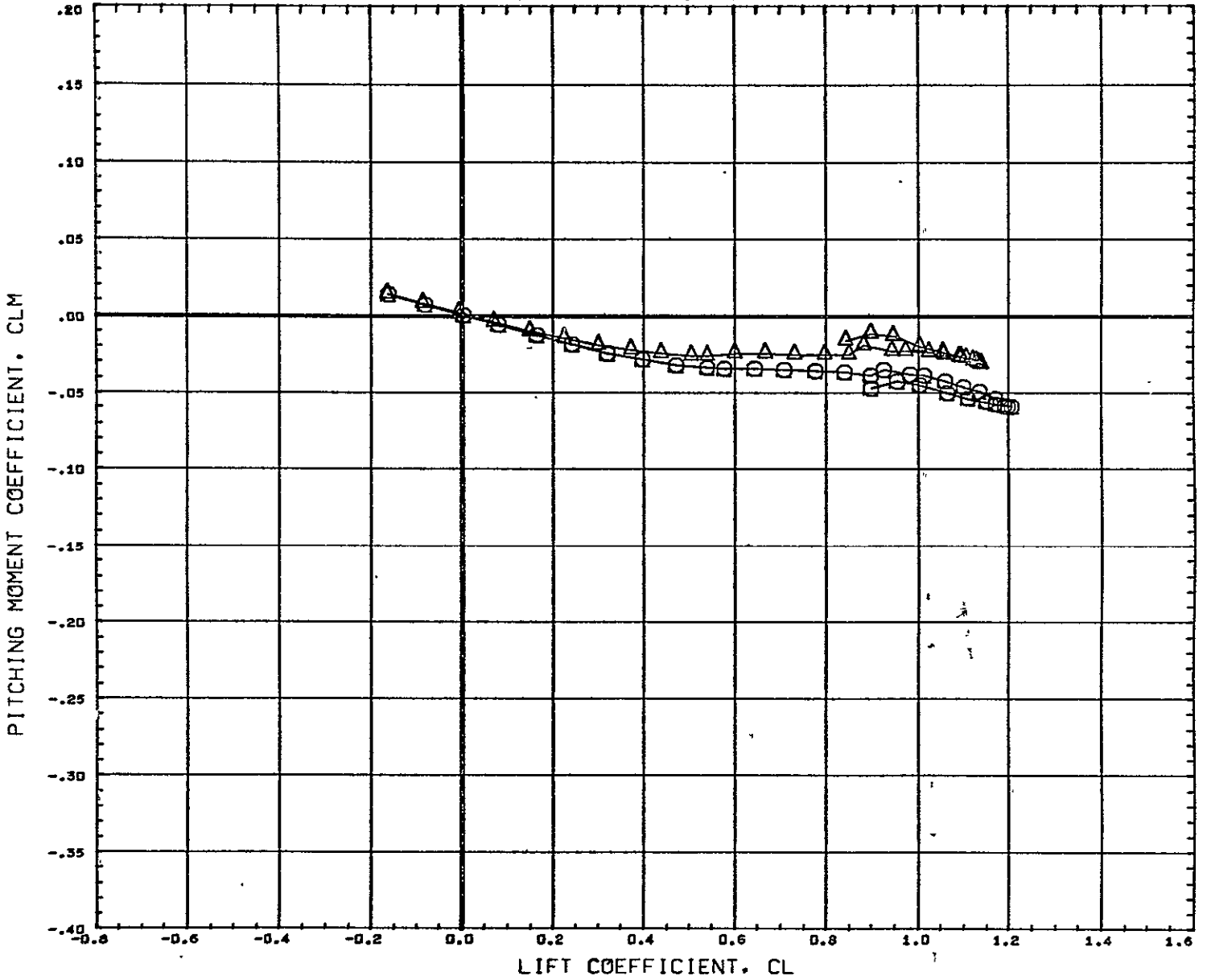
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVNS	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(D4101S)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ.IN
(D41501)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
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MACH 1.461

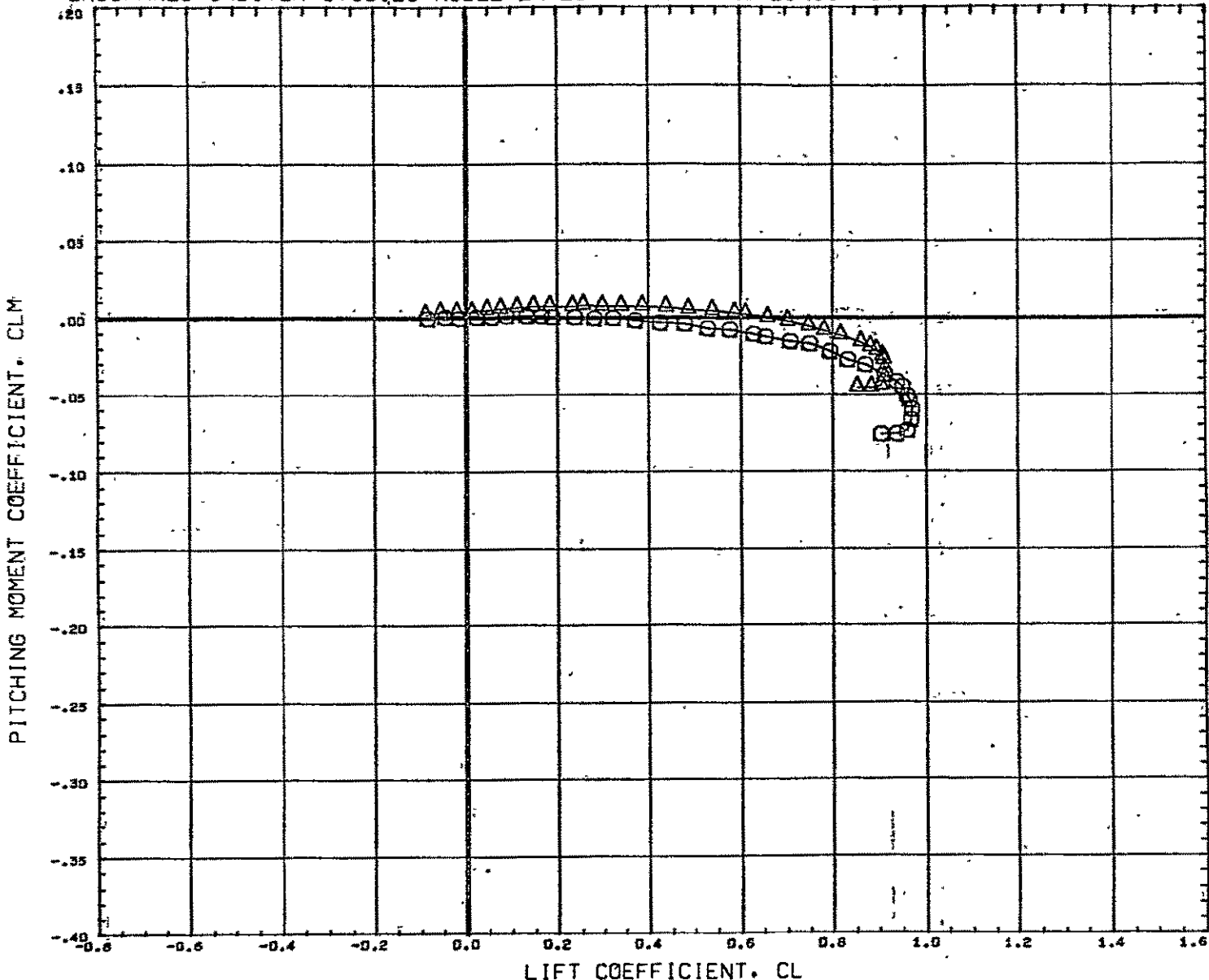
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(D4101S)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(D41S01)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
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MACH 1.964

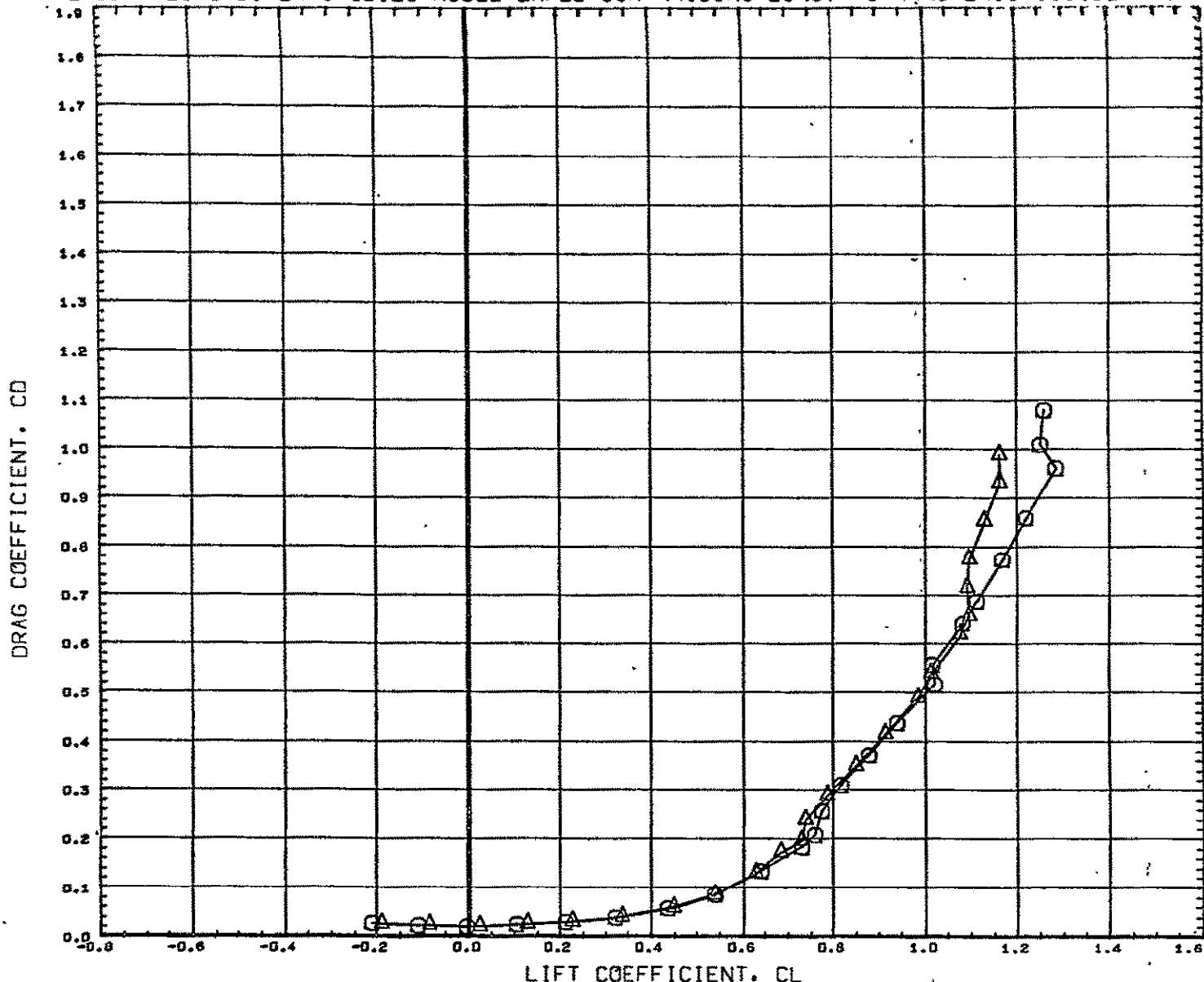
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVNS	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION	
(D41019)	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	0.000	0.000	0.000	0.000	SREF 9.0250 SQ. IN
(D41501)	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4					LREF 6.1420 INCHES
							BREF 6.1420 INCHES
							XMRP 3.9950 INCHES
							YMRP 0.0000 INCHES
							ZMRP 0.1350 INCHES
							SCALE 0.0033 SCALE

MACH 4.960

LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)



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DATA SET SYMBOL CONFIGURATION DESCRIPTION  
 (D41015) ○ MSFC TWT 498 MSFC/LMSC ORBITER  
 (D41801) △ MSFC TWT 498 MSFC/HREC ORBITER

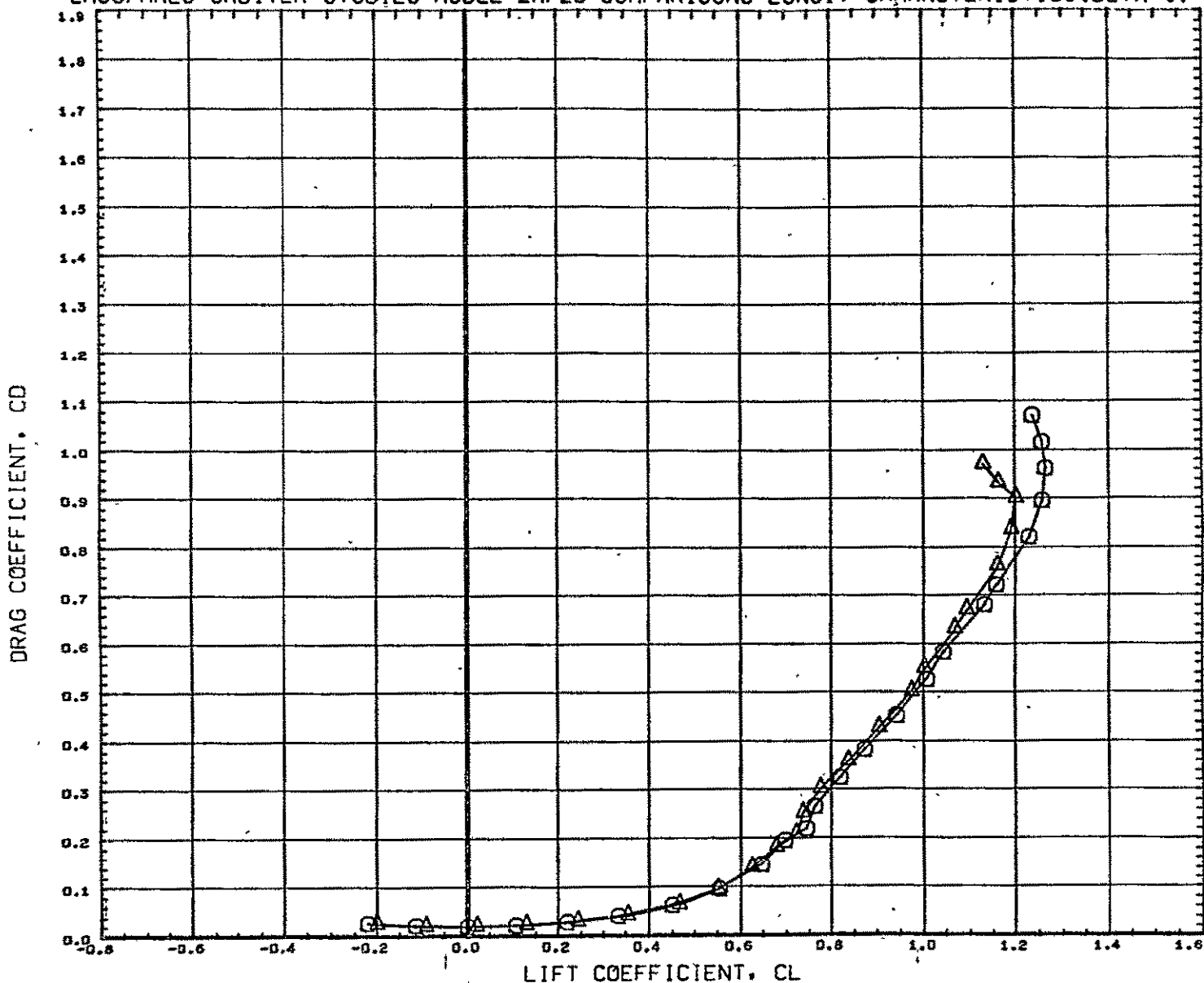
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 82W5V2E4R4

ELEVN3 RUDER2 ELEVN4 RUDER4  
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REFERENCE INFORMATION  
 SREF 9.0250 SQ. IN  
 LREF 6.1420 INCHES  
 BREF 6.1420 INCHES  
 XMRP 3.9950 INCHES  
 YMRP 0.0000 INCHES  
 ZMRP 0.1350 INCHES  
 SCALE 0.0033 SCALE

MACH 0.597

LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)



DATA SET SYMBOL    CONFIGURATION DESCRIPTION  
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 (D41501)    (A)    MSFC TWT 498 MSFC/HREC ORBITER

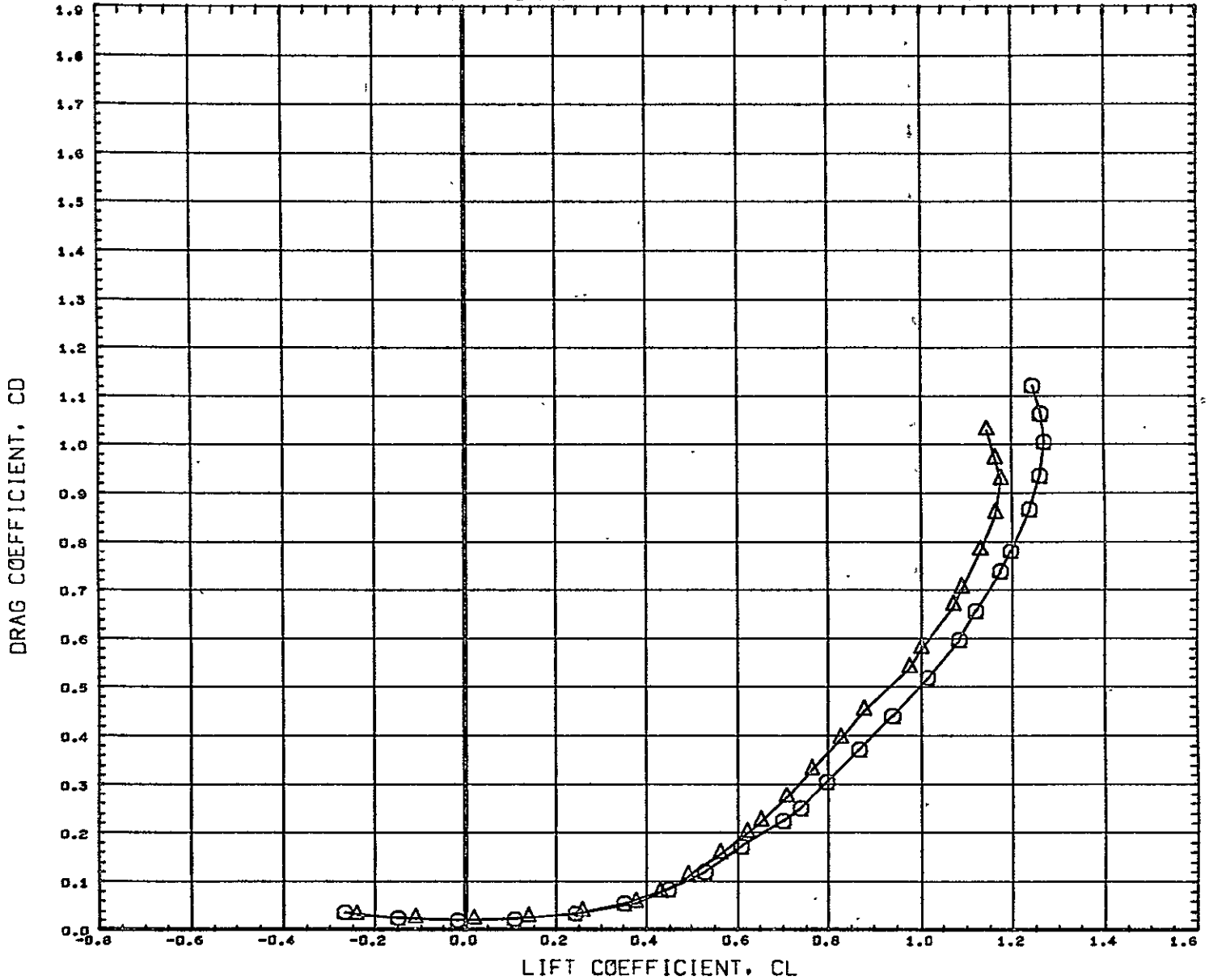
B2W2V4D2E3R2  
 B2W5V2E4R4

ELEV3    RUDER2    ELEV4    RUDER4  
 0.000    0.000    0.000    0.000

REFERENCE INFORMATION  
 SREF    9.0250    SQ.IN  
 LREF    6.1420    INCHES  
 BREF    6.1420    INCHES  
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 SCALE    0.0035    SCALE

MACH    0.701

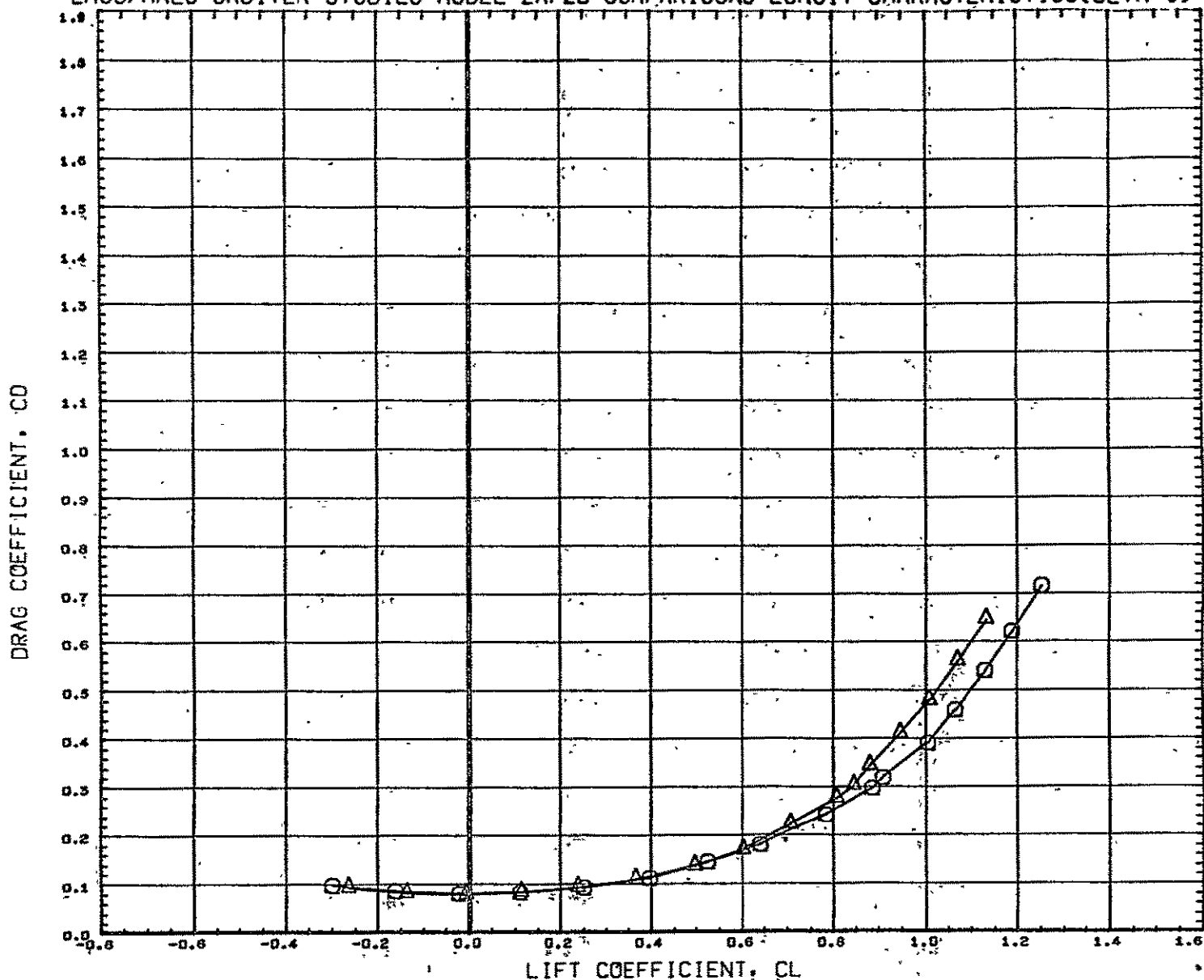
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION		
(041015)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF	9.0250	SQ. IN
(041991)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF	6.1420	INCHES
						BREF	6.1420	INCHES
						XNRP	3.9950	INCHES
						YNRP	0.0000	INCHES
						ZHRP	0.1350	INCHES
						SCALE	0.0033	SCALE

HACH 0.902

LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)

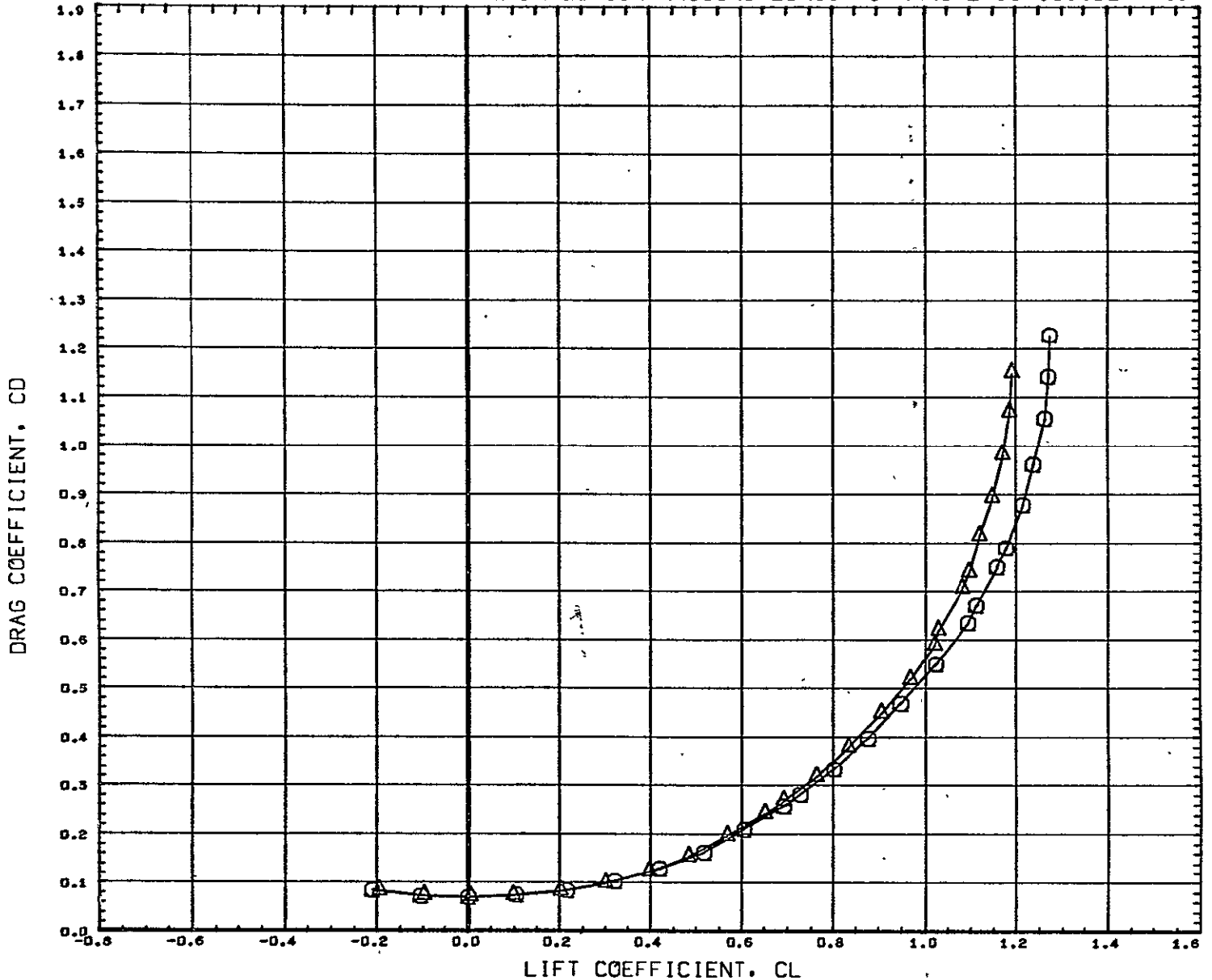


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(D41013)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(D41S01)	MSFC TWT 498 MSFC/HREC ORBITER	B2W2V4D2E3R2		0.000	0.000	LREF 6.1420 INCHES
		B2W5V2E4R4				SREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.103



LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)



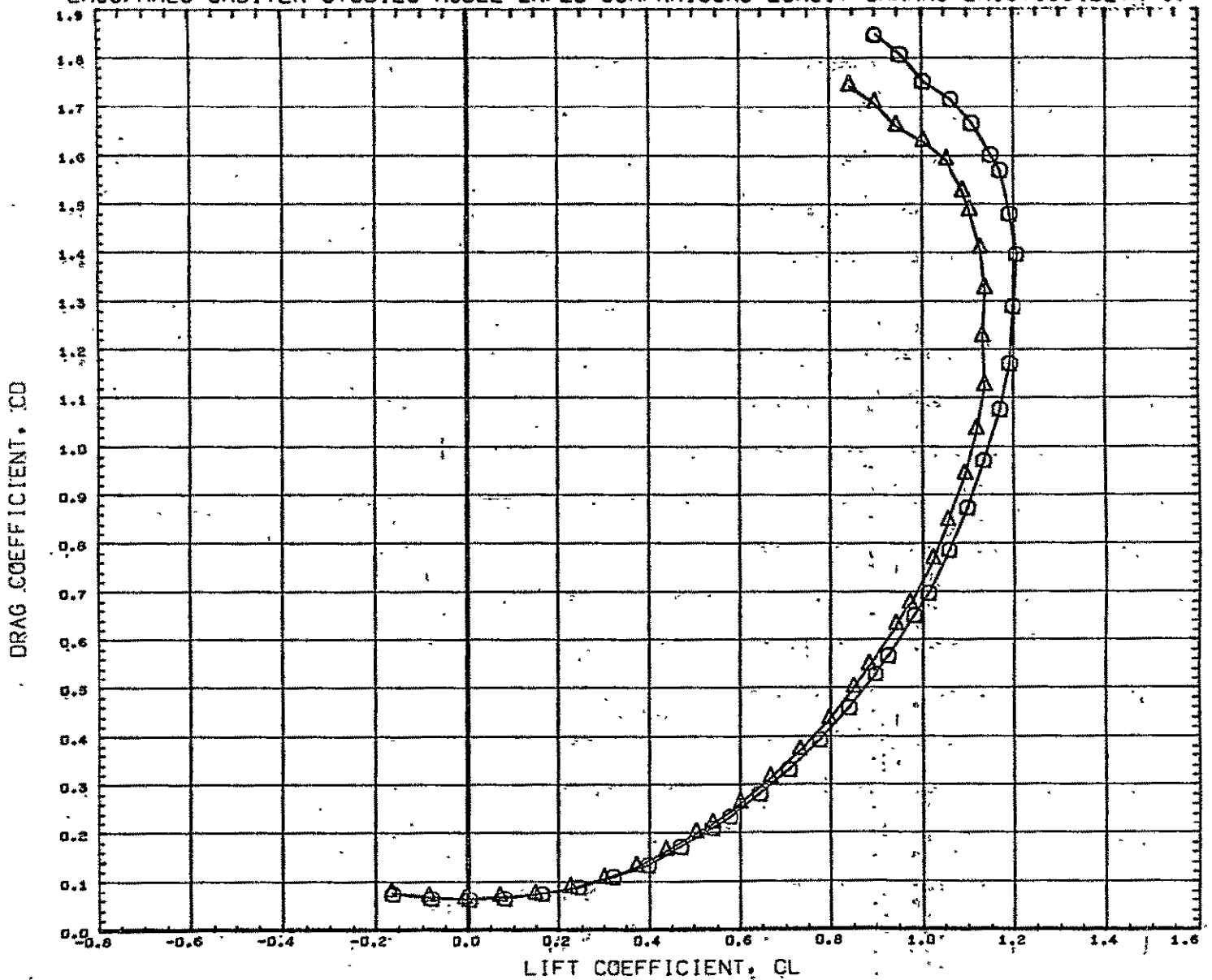
DATA SET SYMBOL    CONFIGURATION DESCRIPTION  
 (D41015)    ○    MSFC TWT 498 MSFC/LMSC ORBITER  
 (D41501)    △    MSFC TWT 498 MSFC/HREC ORBITER

ELEVN3    RUDER2    ELEVN4    RUDER4  
 B2W2V4D2E3R2    0.000    0.000  
 B2W5V2E4R4          0.000    0.000

REFERENCE INFORMATION  
 SREF    9.0250    SQ.IN  
 LREF    6.1420    INCHES  
 BREF    6.1420    INCHES  
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 SCALE    0.0033    SCALE

MACH    1.461

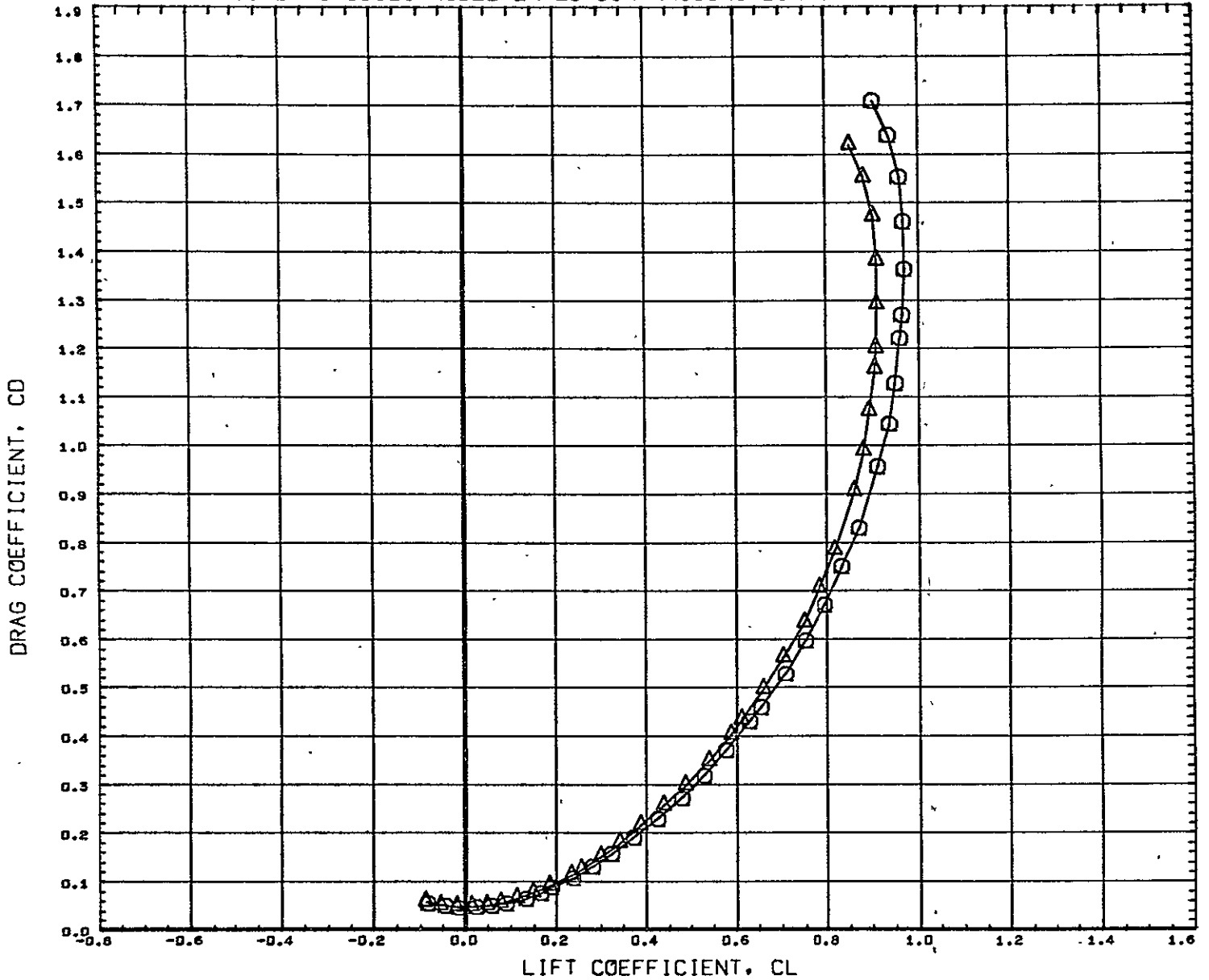
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEV3	RUDER2	ELEV4	RUDER4	REFERENCE INFORMATION
(D41015)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(D41501)	MSFC TWT 498 MSFC/HREC ORBITER	B2W2V4D2E3R2		B2W5V2E4R4	0.000, 0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.964

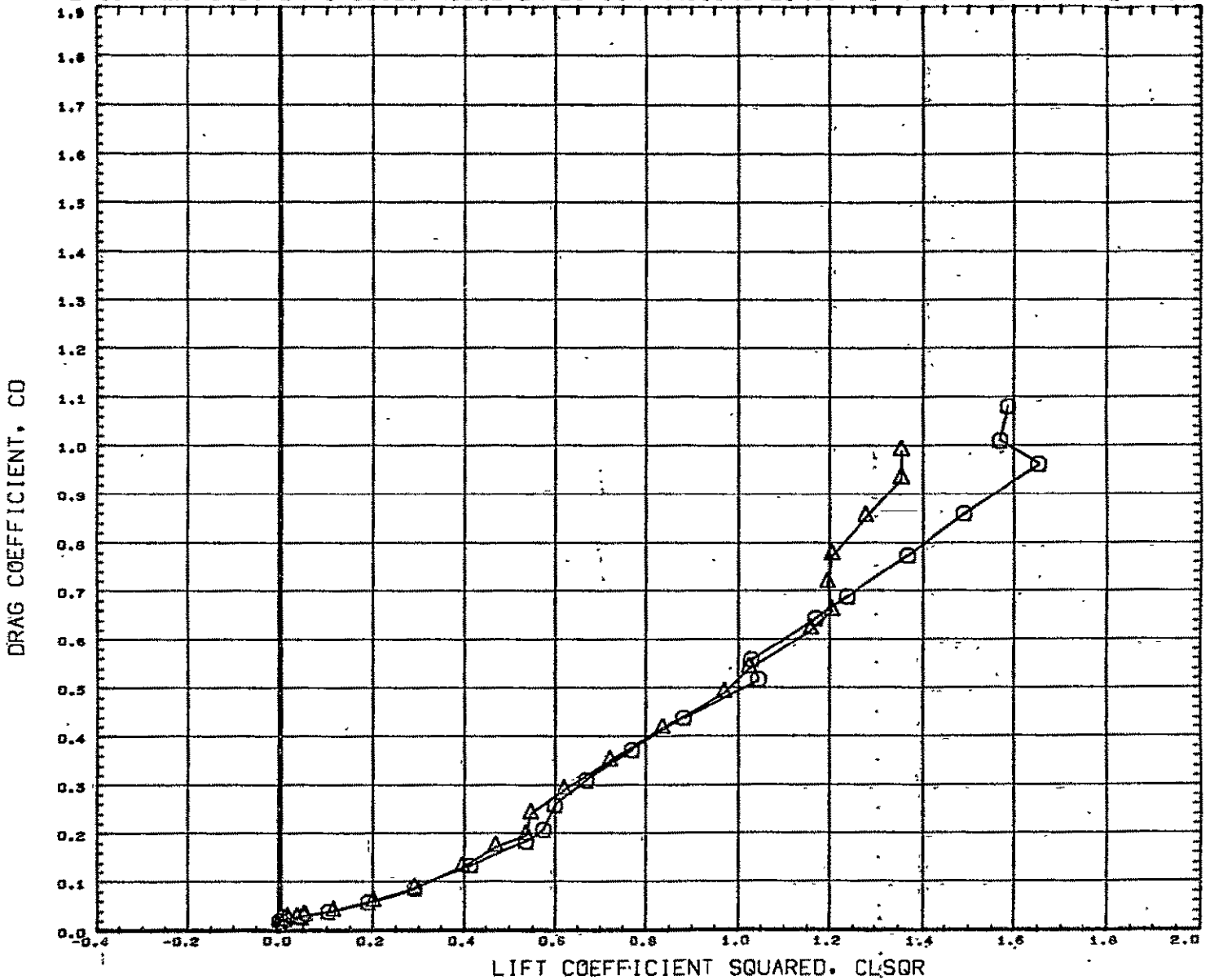
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(D4101S)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(D41S01)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 4.960

LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)



LIFT COEFFICIENT SQUARED, CL<sup>2</sup>

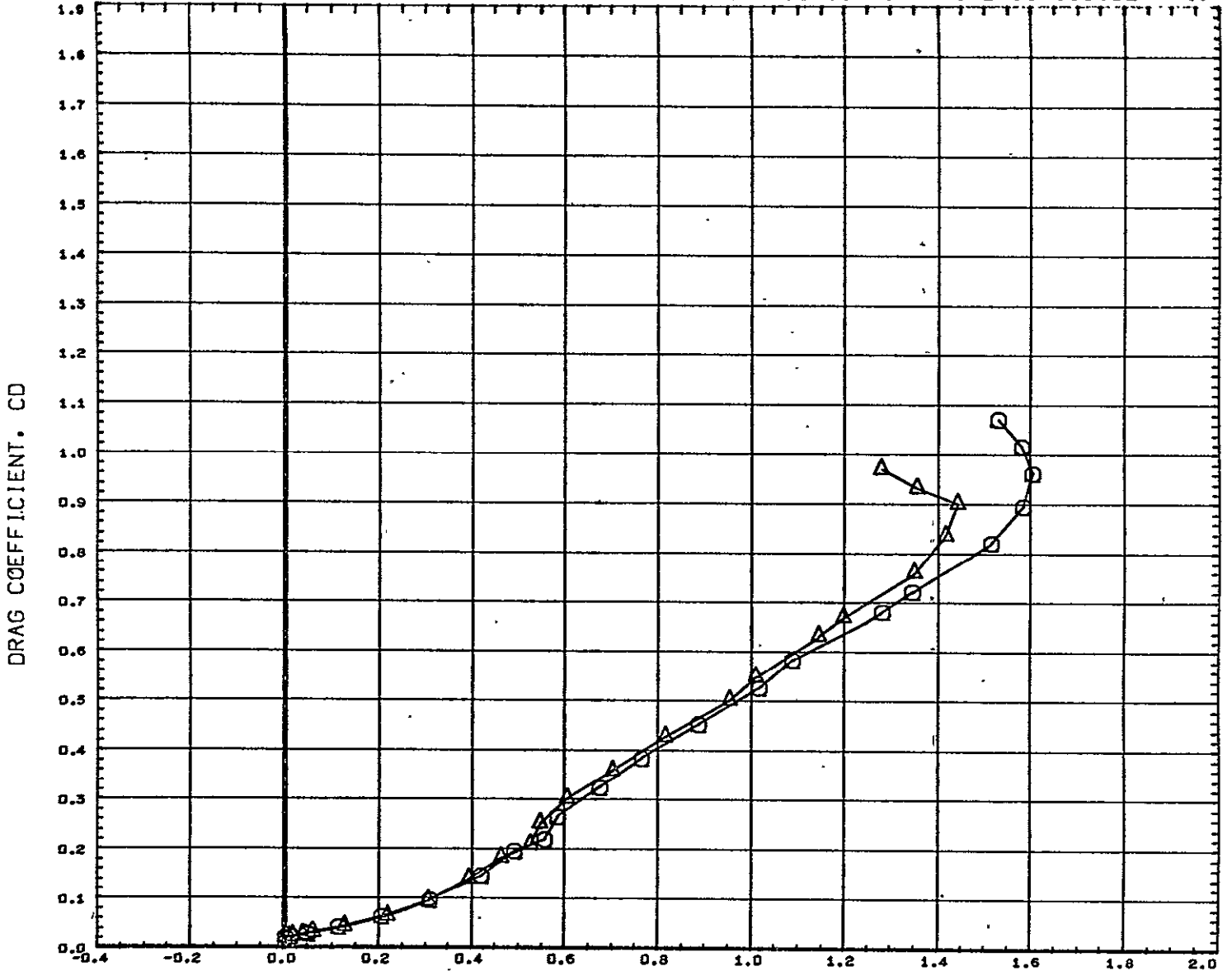
DATA SET SYMBOL    CONFIGURATION DESCRIPTION  
 (D41D13)    ○    MSFC TWT 498 MSFC/LMSC ORBITER  
 (D41S01)    △    MSFC TWT 498 MSFC/HREC ORBITER

ELEVN3    RUDER2    ELEVN4    RUDER4  
 B2W2V4D2E3R2    0.000    0.000    0.000    -0.000  
 B2W5V2E4R4

REFERENCE INFORMATION  
 SREF    9.0250    SQ. IN  
 LREF    6.1420    INCHES  
 BRFP    6.1420    INCHES  
 XMRP    3.9950    INCHES  
 YMRP    0.0000    INCHES  
 ZMRP    0.1350    INCHES  
 SCALE    0.0035    SCALE

MACH    0.597

LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)



LIFT COEFFICIENT SQUARED, CLSQR

DATA SET|SYMBOL CONFIGURATION DESCRIPTION  
 (D4101S) ○ MSFC TWT 498 MSFC/LMSC ORBITER  
 (D41S01) △ MSFC TWT 498 MSFC/HREC ORBITER

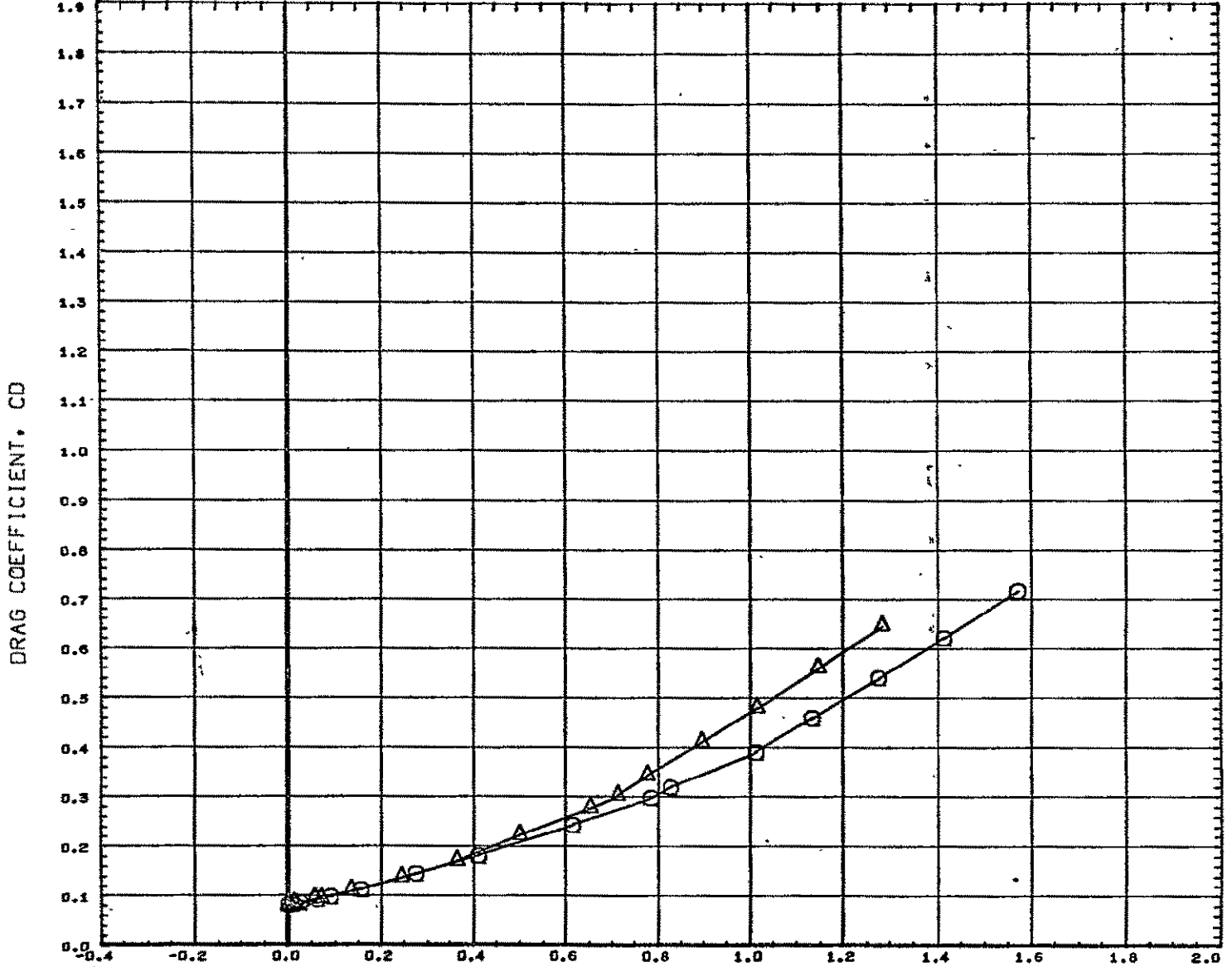
ELEVN3 RUDER2 ELEVN4 RUDER4  
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REFERENCE INFORMATION  
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 LREF 6.1420 INCHES  
 BREF 6.1420 INCHES  
 XMRP 3.9950 INCHES  
 YMRP 0.0000 INCHES  
 ZMRP 0.1350 INCHES  
 SCALE 0.0033 SCALE

MACH 0.701



LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)

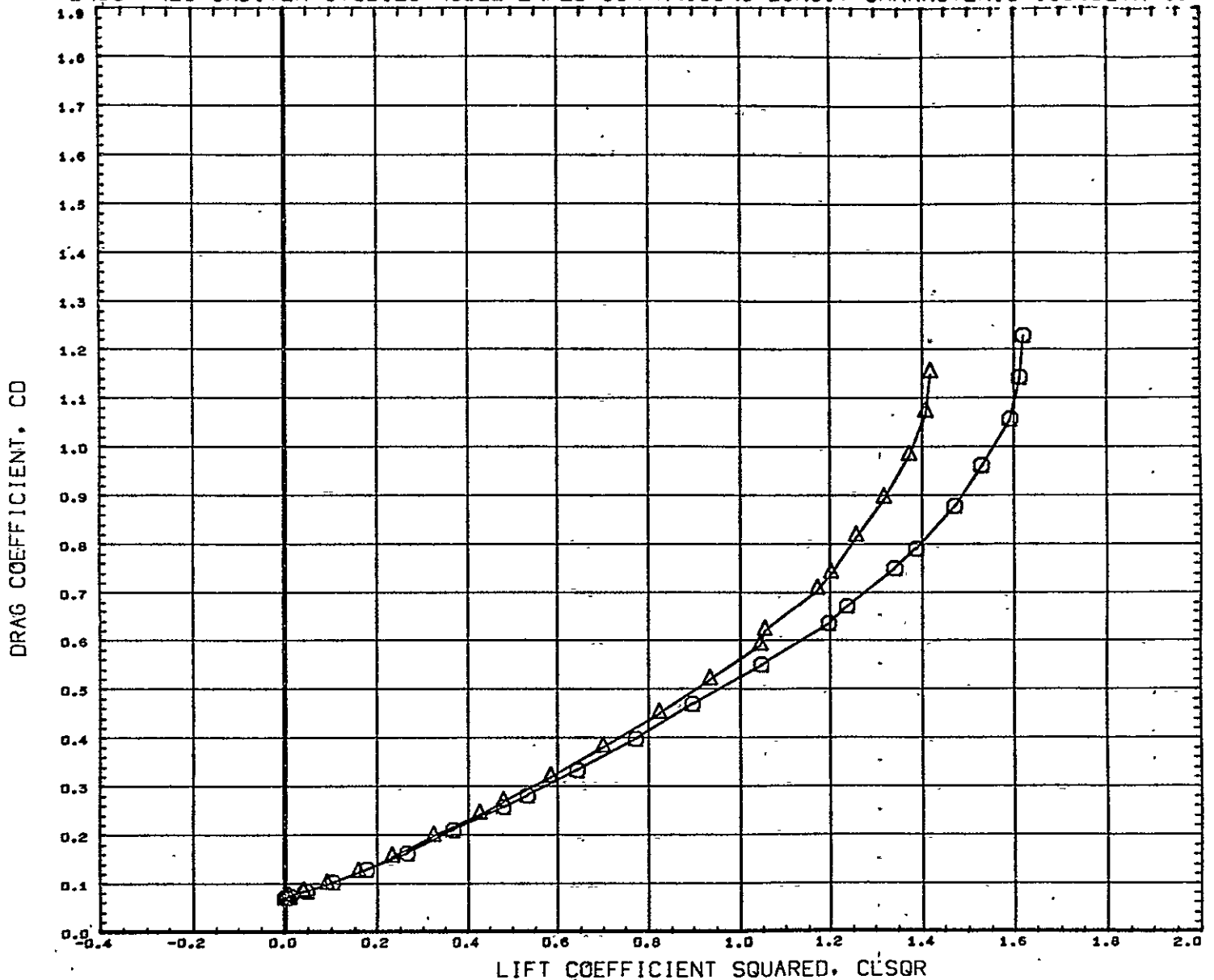


LIFT COEFFICIENT SQUARED, CLSQ

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	B2W2V4D2E3R2	ELEV3	RUDER2	ELEV4	RUDER4	REFERENCE INFORMATION
(D4101S)	MSFC TWT 498 MSFC/LMSC ORBITER	B2W5V2E4R4	0.000	0.000			SREF 9.0250 SQ. IN
(D41501)	MSFC TWT 498 MSFC/HREC ORBITER				0.000	0.000	LREF 6.1420 INCHES
							BREF 6.1420 INCHES
							XMRP 3.9950 INCHES
							YMRP 0.0000 INCHES
							ZMRP 0.1350 INCHES
							SCALE 0.0033 SCALE

MACH 1.103

LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)



LIFT COEFFICIENT SQUARED, CL<sup>2</sup>

DATA SET SYMBOL    CONFIGURATION DESCRIPTION  
 (D4101S)    ○    MSFC TWT 498 MSFC/LMSC ORBITER  
 (D41501)    △    MSFC TWT 498 MSFC/HREC ORBITER

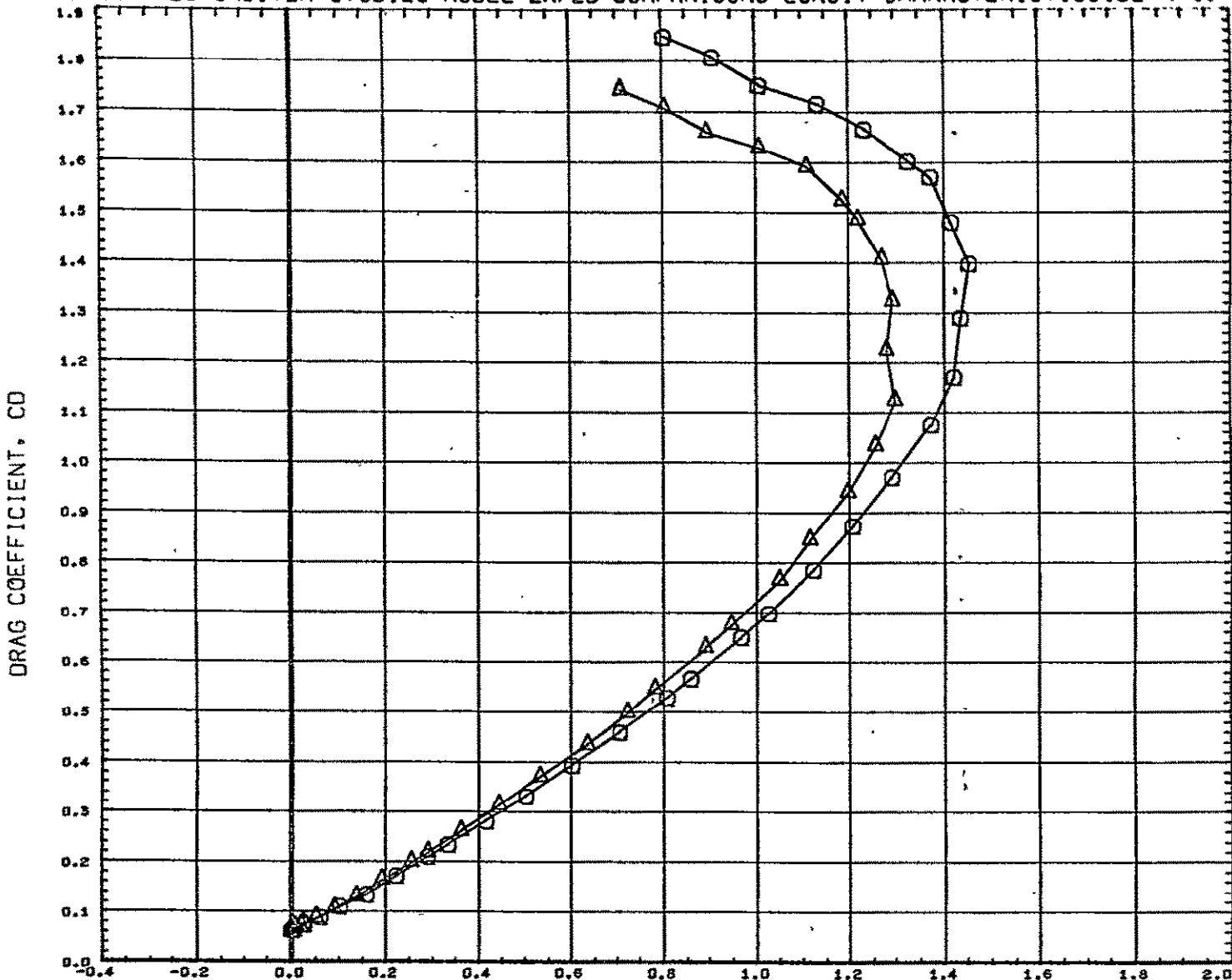
B2W2V4D2E3R2    ELEV3    RUDER2    ELEV4    RUDER4  
 B2W5V2E4R4    0.000    0.000    0.000    0.000

REFERENCE INFORMATION  
 SREF    9.0250    SQ. IN  
 LREF    6.1420    INCHES  
 BREF    6.1420    INCHES  
 XMRP    3.9950    INCHES  
 YMRP    0.0000    INCHES  
 ZMRP    0.1350    INCHES  
 SCALE    0.0033    SCALE

MACH    1.461



LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)



DATA SET SYMBOL    CONFIGURATION DESCRIPTION  
 (D41015)    ○    MSFC TWT 498 MSFC/LMSC ORBITER  
 (D41501)    △    MSFC TWT 498 MSFC/HREC ORBITER

LIFT COEFFICIENT SQUARED, CLSQ

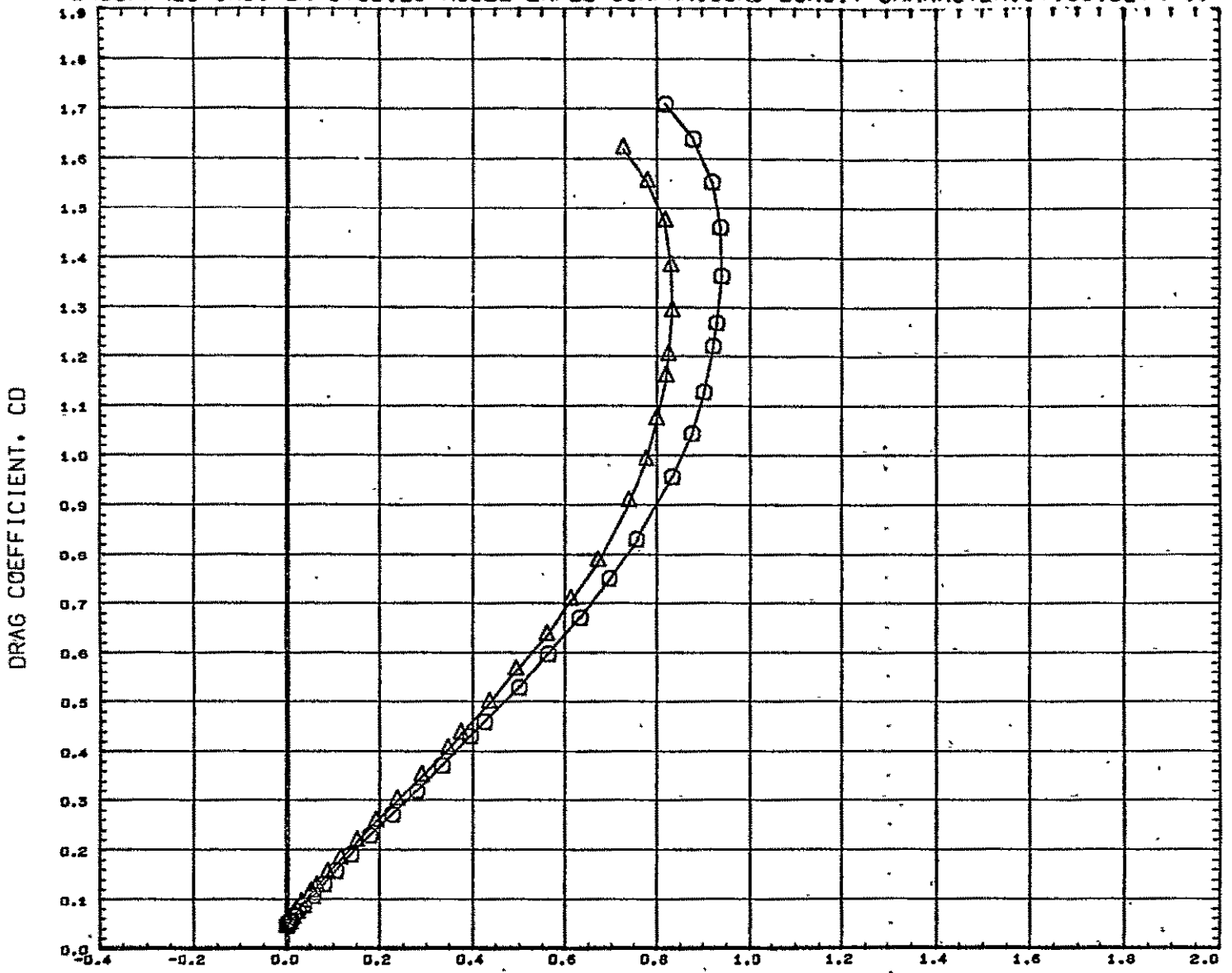
ELEVNS    RUDER2    ELEVN4    RUDER4

REFERENCE INFORMATION  
 SREF    9.0250    SQ. IN  
 LREF    6.1420    INCHES  
 BREF    6.1420    INCHES  
 XMRP    3.9950    INCHES  
 YMRP    0.0000    INCHES  
 ZMRP    0.1350    INCHES  
 SCALE    0.0033    SCALE

MACH            1.964

1/21

LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LONGIT CHARACTERISTICS(BETA=0)

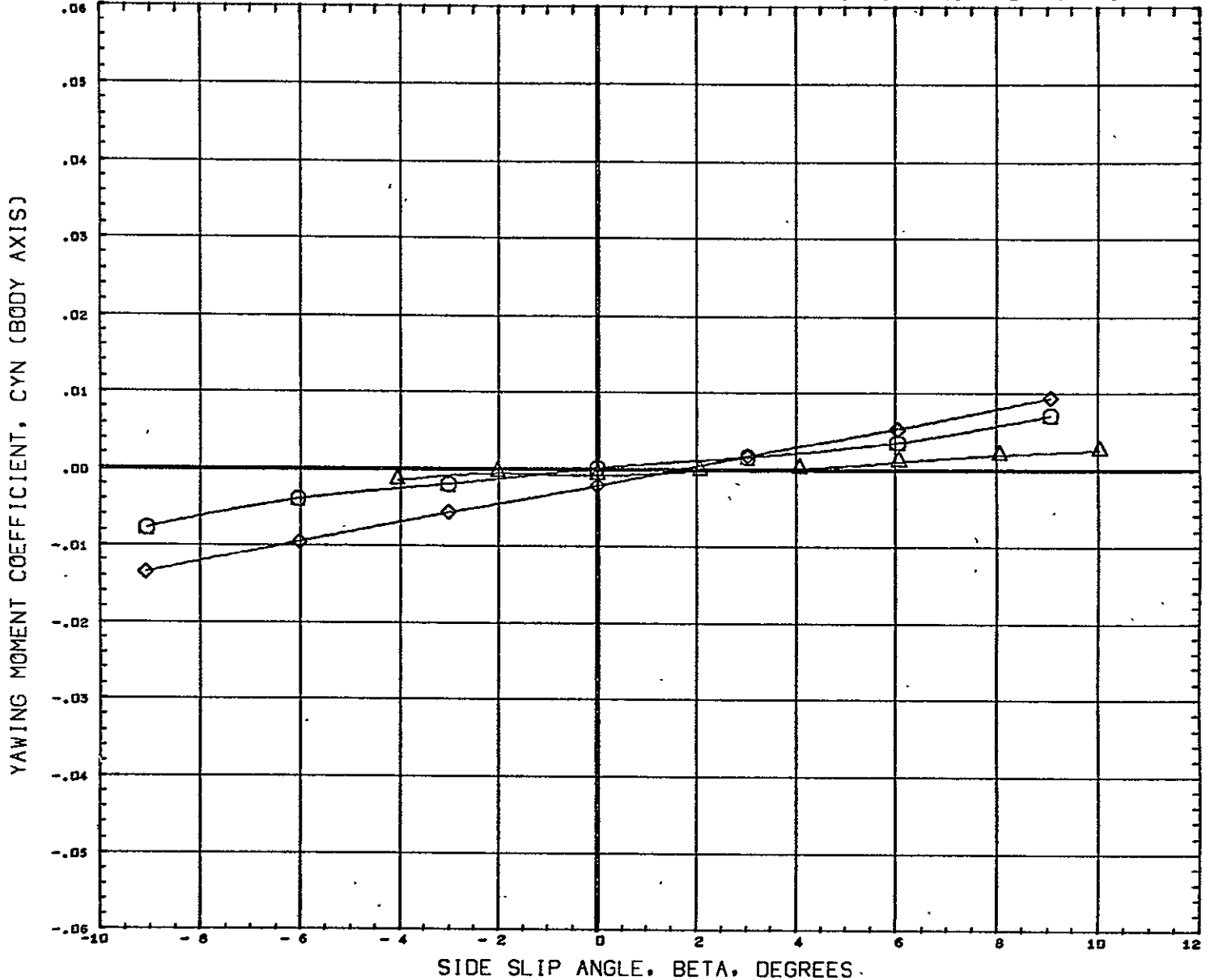


LIFT COEFFICIENT SQUARED, CLSQ

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	B2W2V4D2E3R2	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION	
(D41019)	○	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	0.000	0.000			SREF	9.0250 SQ. IN
(D41501)	△	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4			0.000	0.000	LREF	6.1420 INCHES
								BREF	6.1420 INCHES
								XMRP	3.9950 INCHES
								YMRP	0.0000 INCHES
								ZMRP	0.1350 INCHES
								SCALE	0.0033 SCALE

MACH 4.960

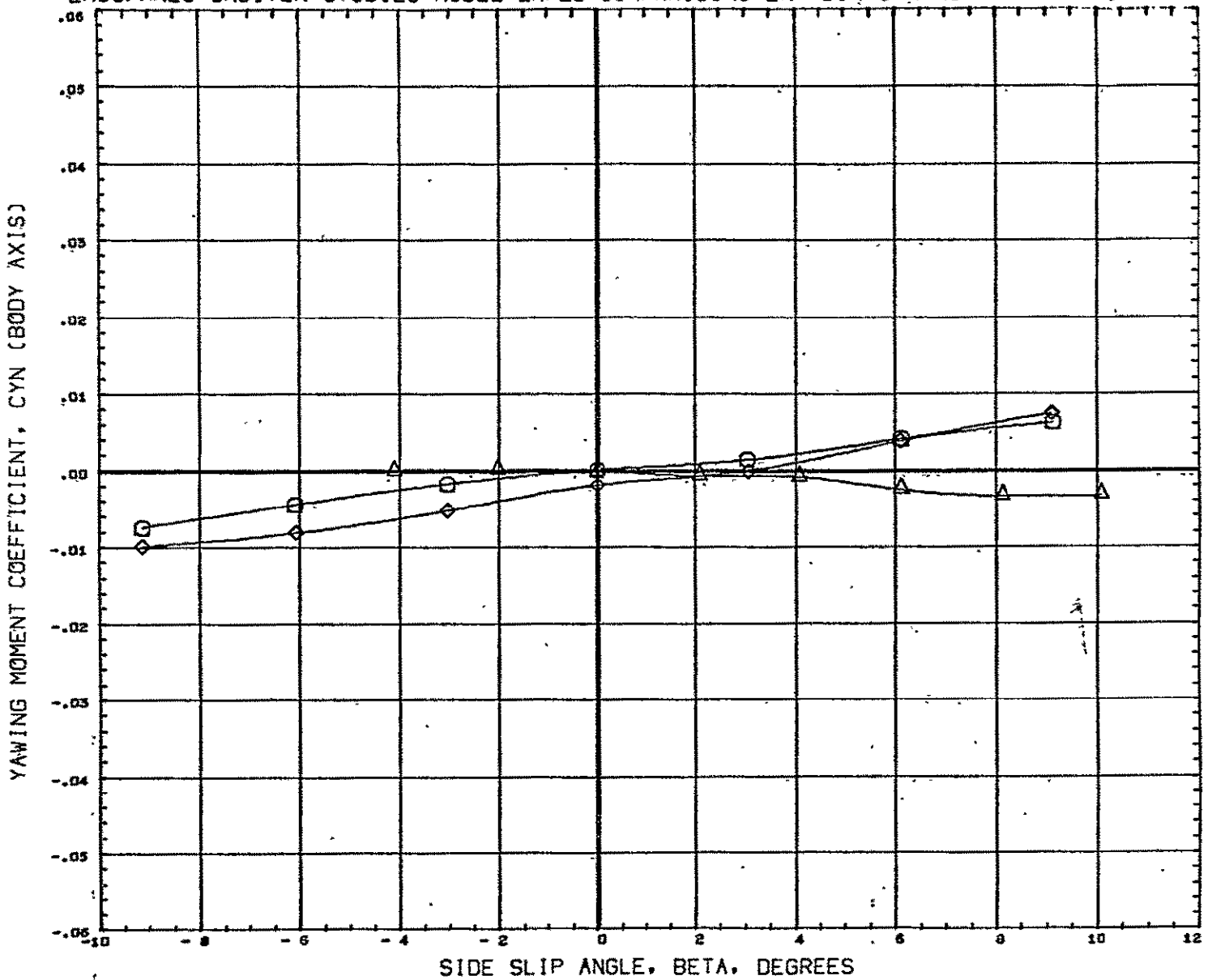
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 0



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(24101X)	○	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	0.000			SREF 9.0250 SQ. IN
(A4114X)	△	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	0.000				LREF 6.1420 INCHES
(241XD1)	◇	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4			0.000	0.000	BREF 6.1420 INCHES
							XHRP 3.9950 INCHES
							YHRP 0.0000 INCHES
							ZHRP 0.1350 INCHES
							SCALE 0.0033 SCALE

MACH 0.599

LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 0

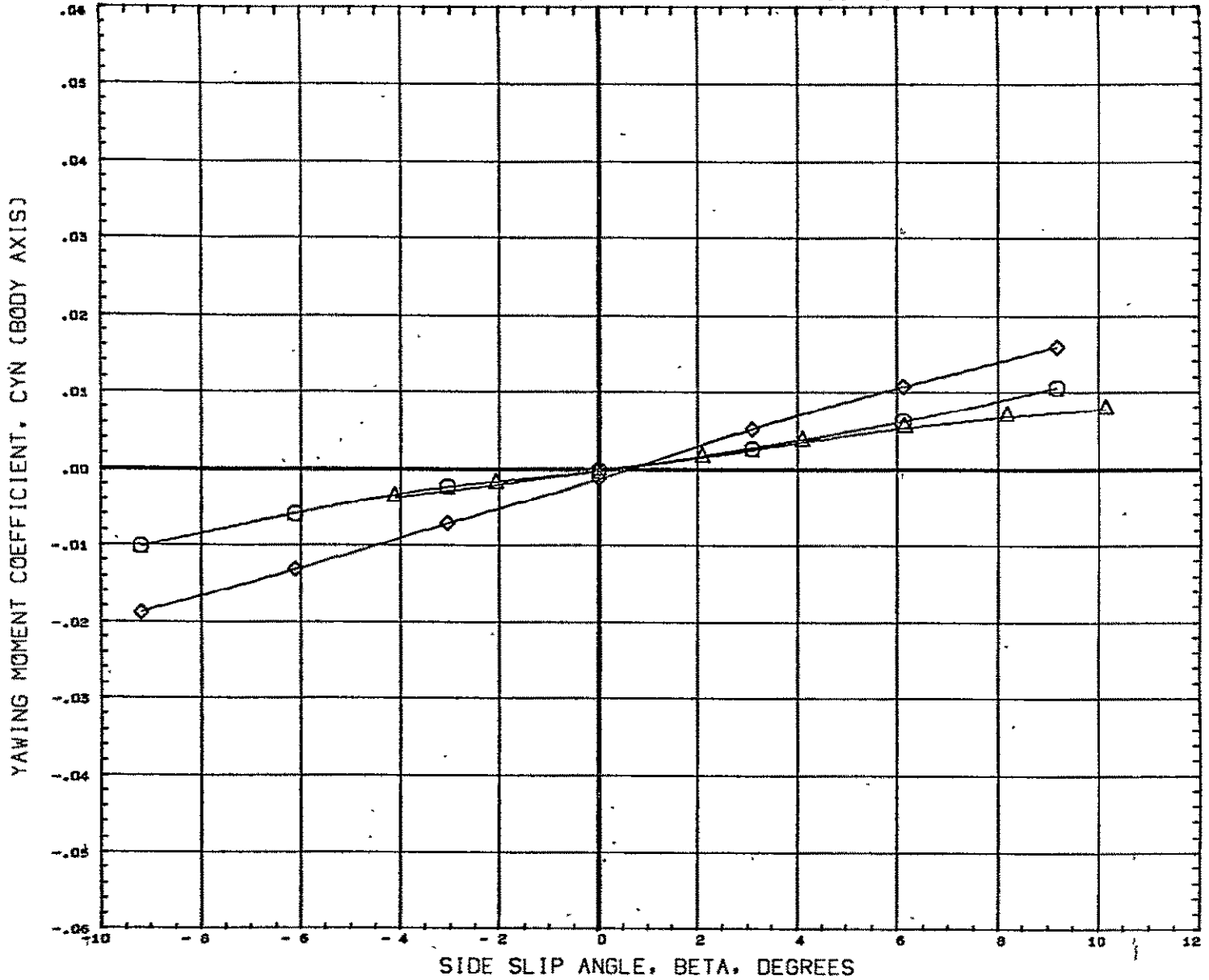


SIDE SLIP ANGLE, BETA, DEGREES

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(241D1X)	○	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	0.000			SREF 9.0250 SQ. IN
(A4114X)	△	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	0.000				LREF 6.1420 INCHES
(241X01)	◇	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4			0.000	0.000	BREF 6.1420 INCHES XMRP 3.9950 INCHES YMRP 0.0000 INCHES ZMRP 0.1350 INCHES SCALE 0.0033 SCALE

MACH 0.903

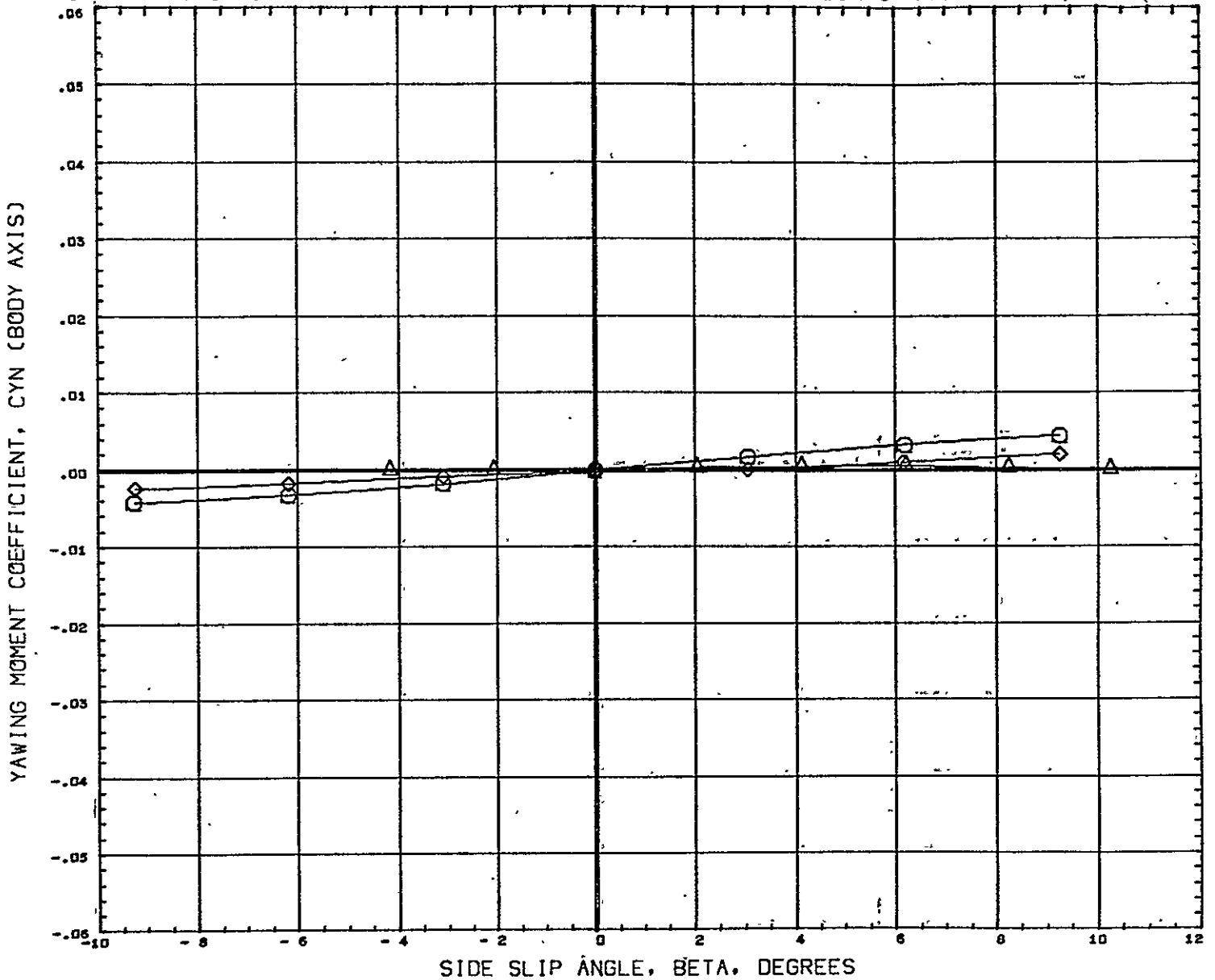
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 0



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(24101X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	0.000			SREF 9.0250 SQ.IN
(A4114X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	0.000				LREF 6.1420 INCHES
(241X01)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4			0.000	0.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.098

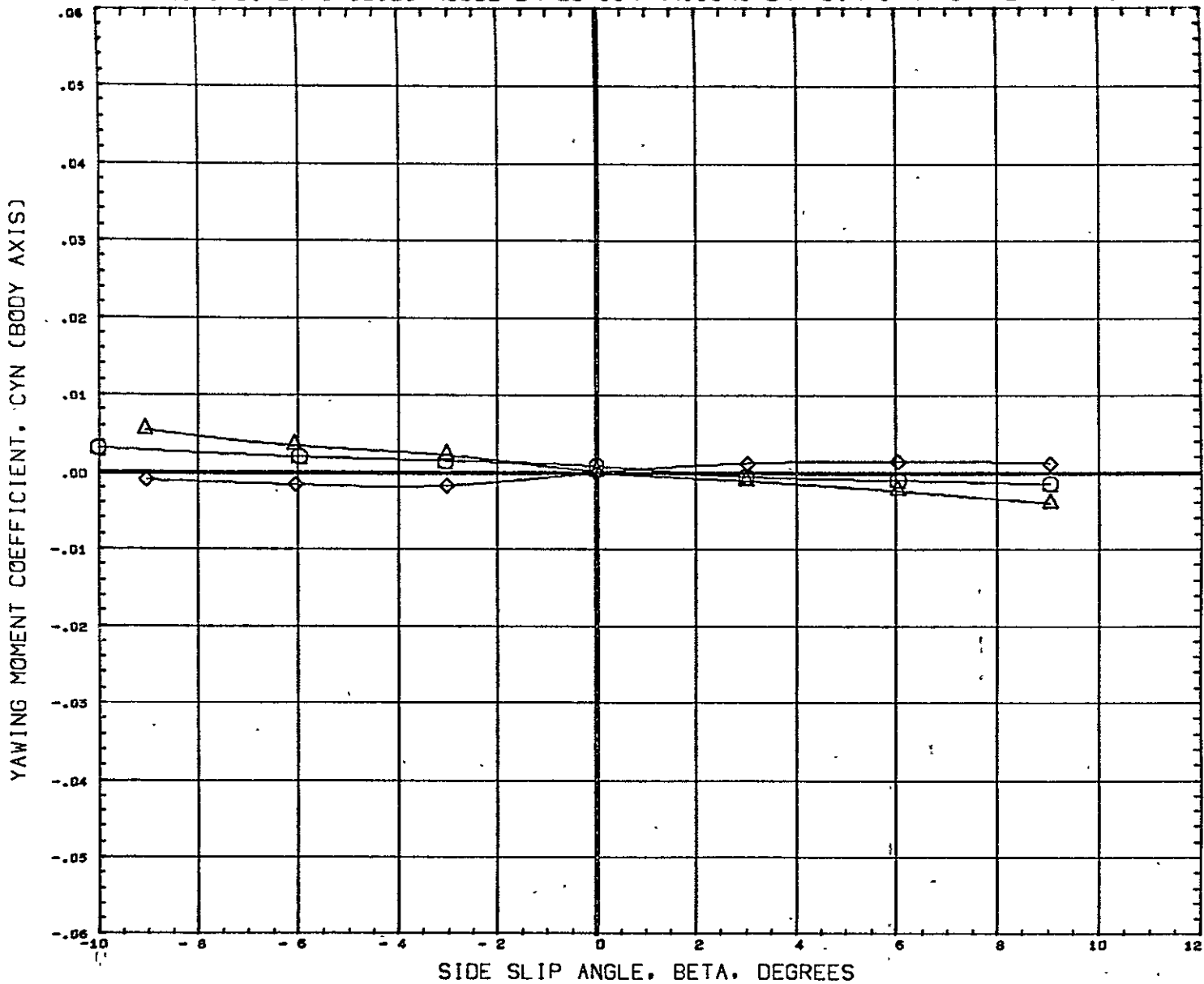
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 0



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(24101X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	0.000			SREF 9.0250 SQ. IN
(A4114X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	0.000				LREF 6.1420 INCHES
(241XD1)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4			0.000	0.000	BREF 6.1420 INCHES
						XHRP 3.9950 INCHES
						YHRP 0.0000 INCHES
						ZHRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.960

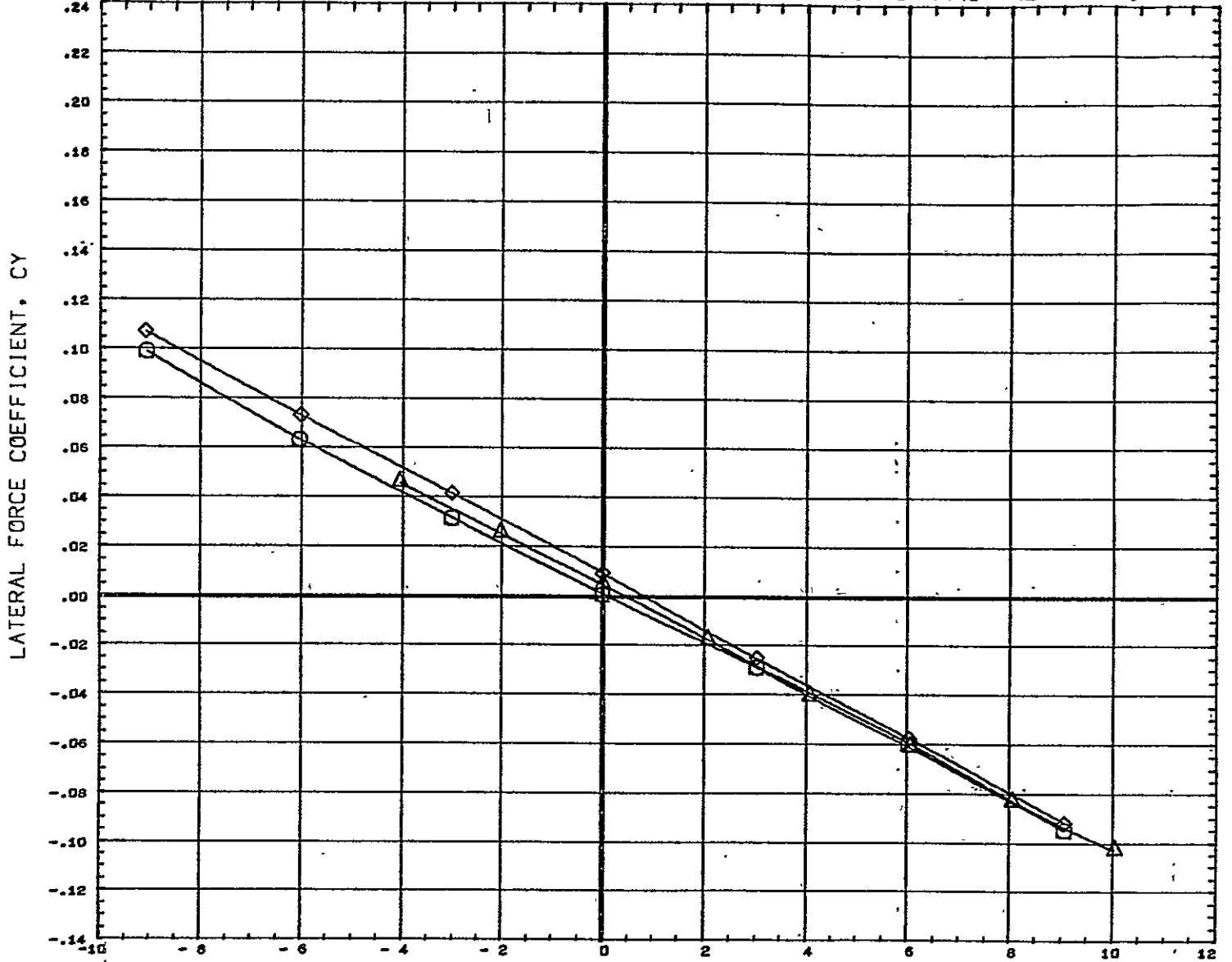
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 0



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(24101X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	0.000			SREF 9.0250 SQ. IN
(A4114X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	0.000				LREF 6.1420 INCHES
(241XD1)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4			0.000	0.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 4.960

LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 0

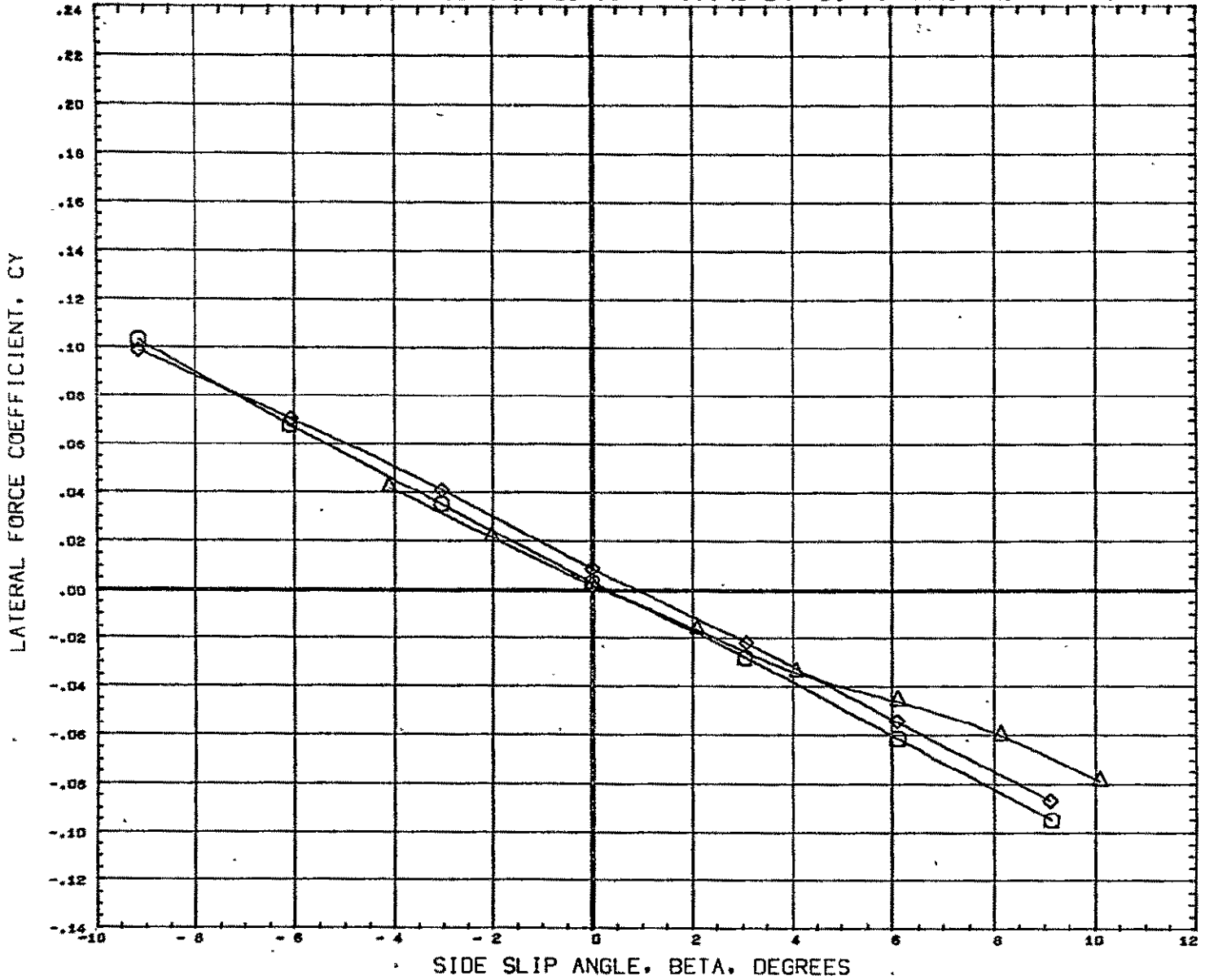


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(24101X)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(A4114X)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000				LREF 6.1420 INCHES
(241XD1)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.599



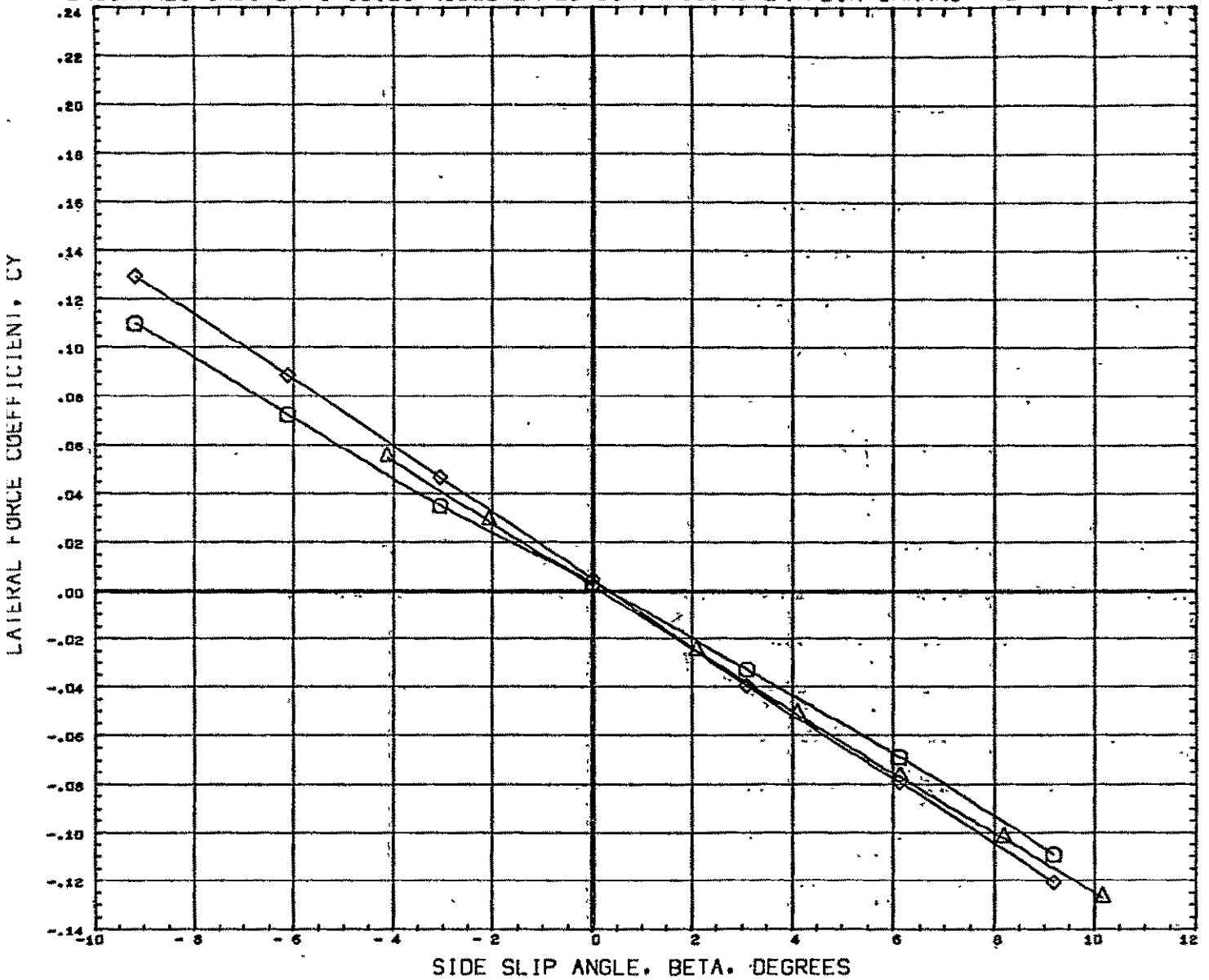
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 0



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEV3	RUDER2	ELEV4	RUDER4	REFERENCE INFORMATION
(24101X)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(A4114X)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000				LREF 6.1420 INCHES
(241X01)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	BREF 6.1420 INCHES
						XHRP 3.9950 INCHES
						YHRP 0.0000 INCHES
						ZHRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.903

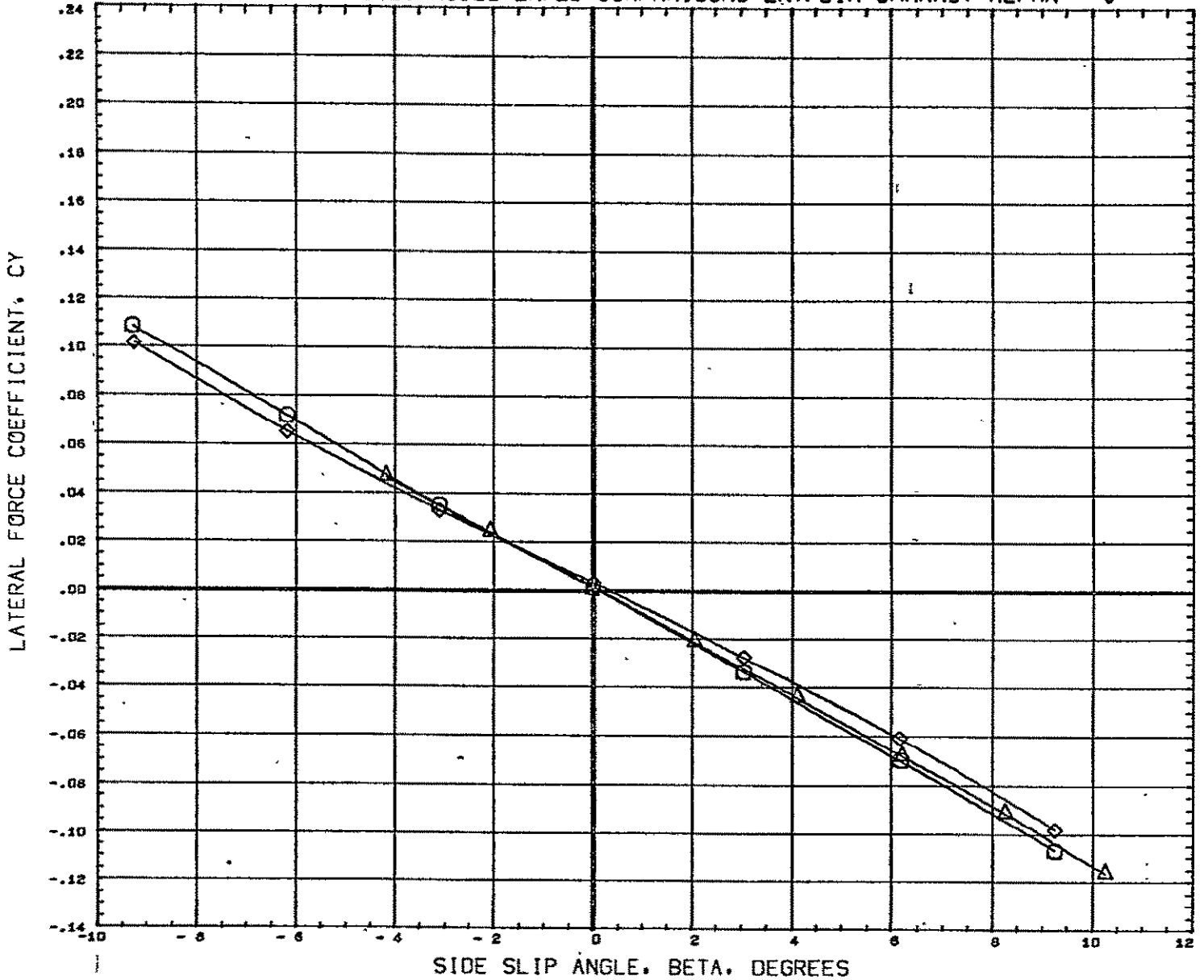
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 0



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(24101X)	○	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(A4114X)	△	MSFC TWT 498 MSFC/LMSC ORBITER	0.000				LREF 6.1420 INCHES
(241X01)	◇	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	BREF 6.1420 INCHES
							XMRP 3.9950 INCHES
							YMRP 0.0000 INCHES
							ZMRP 0.1350 INCHES
							SCALE 0.0033 SCALE

MACH 1.098

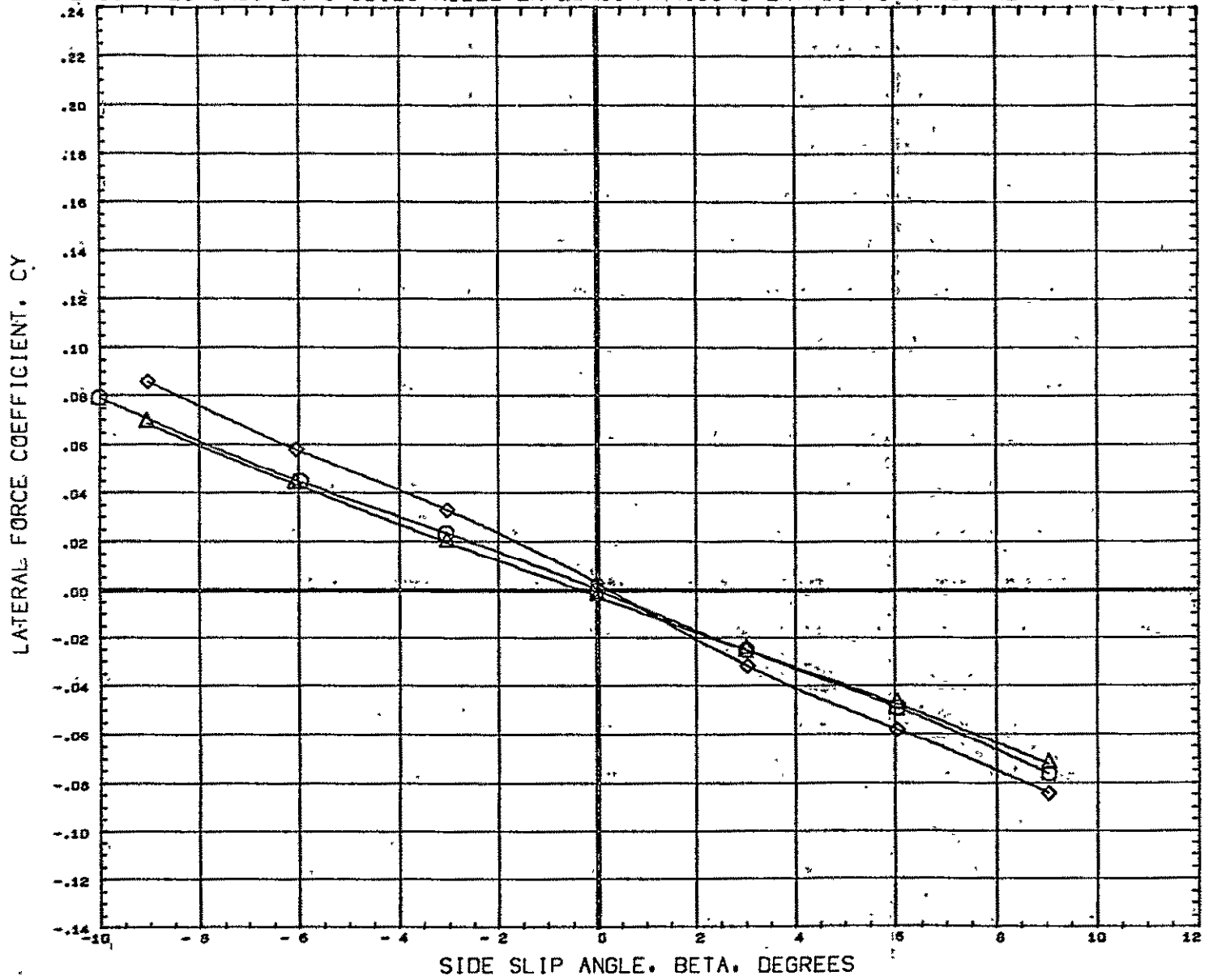
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 0



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION	
(24101X)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF	9.0250 SQ. IN
(A4114X)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			LREF	6.1420 INCHES
(241X01)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	BREF	6.1420 INCHES
						XMRP	3.9950 INCHES
						YMRP	0.0000 INCHES
						ZMRP	0.1350 INCHES
						SCALE	0.0033 SCALE

MACH 1.960

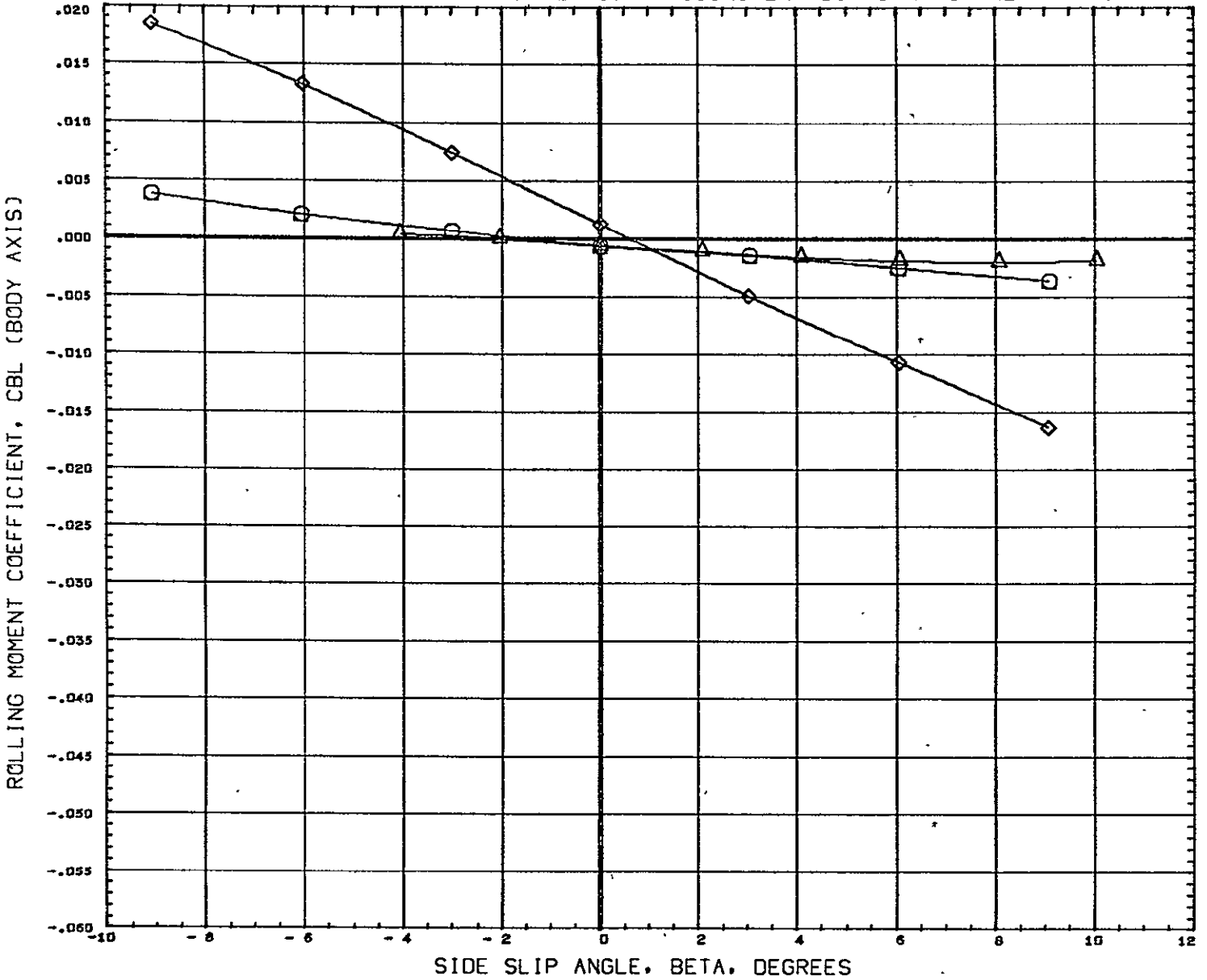
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 0



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEV3	RUDER2	ELEV4	RUDER4	REFERENCE INFORMATION
(24101X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	0.000			SREF 9.0250 SQ. IN
(A4114X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	0.000				LREF 6.1420 INCHES
(241X01)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4			0.000	0.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 4.960

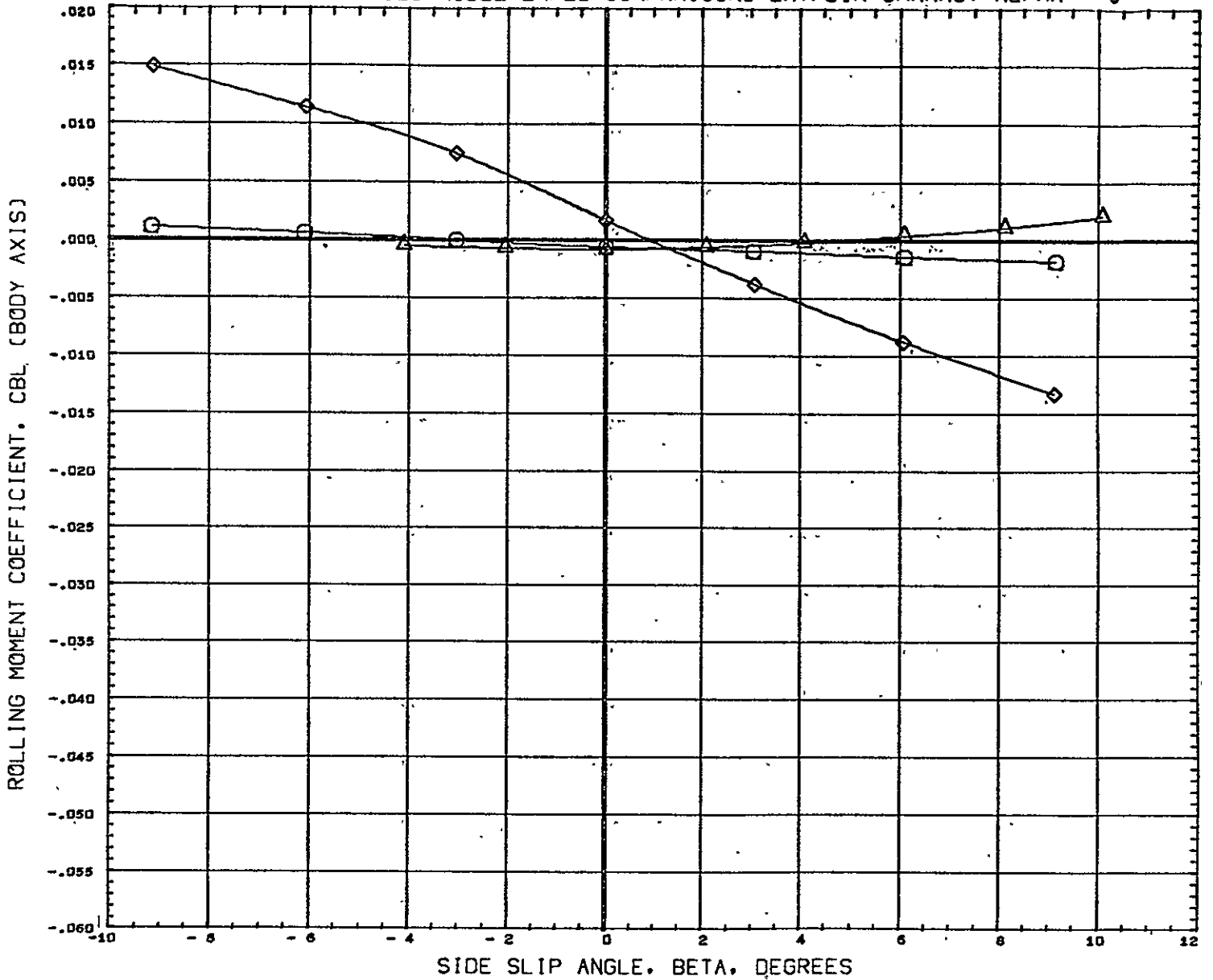
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 0



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(24101X)	○	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(A4114X)	△	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			LREF 6.1420 INCHES
(241X91)	◇	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	BREF 6.1420 INCHES
							XMRP 3.9950 INCHES
							YMRP 0.0000 INCHES
							ZMRP 0.1350 INCHES
							SCALE 0.0033 SCALE

MACH 0.599

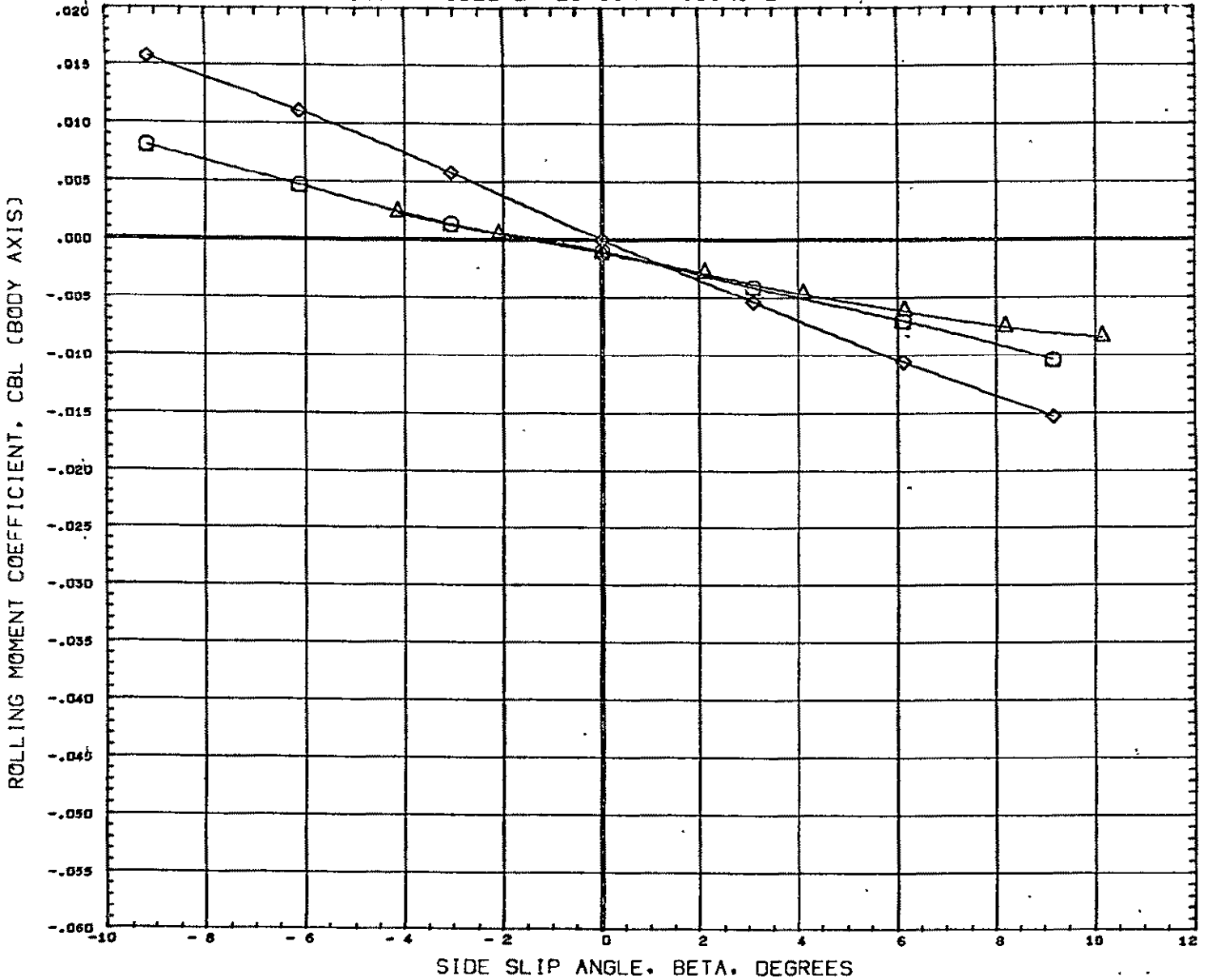
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 0



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(24101X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	0.000			SREF 9.0250 SQ. IN
(A4114X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	0.000				LREF 6.1420 INCHES
(241X01)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4			0.000	0.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.903

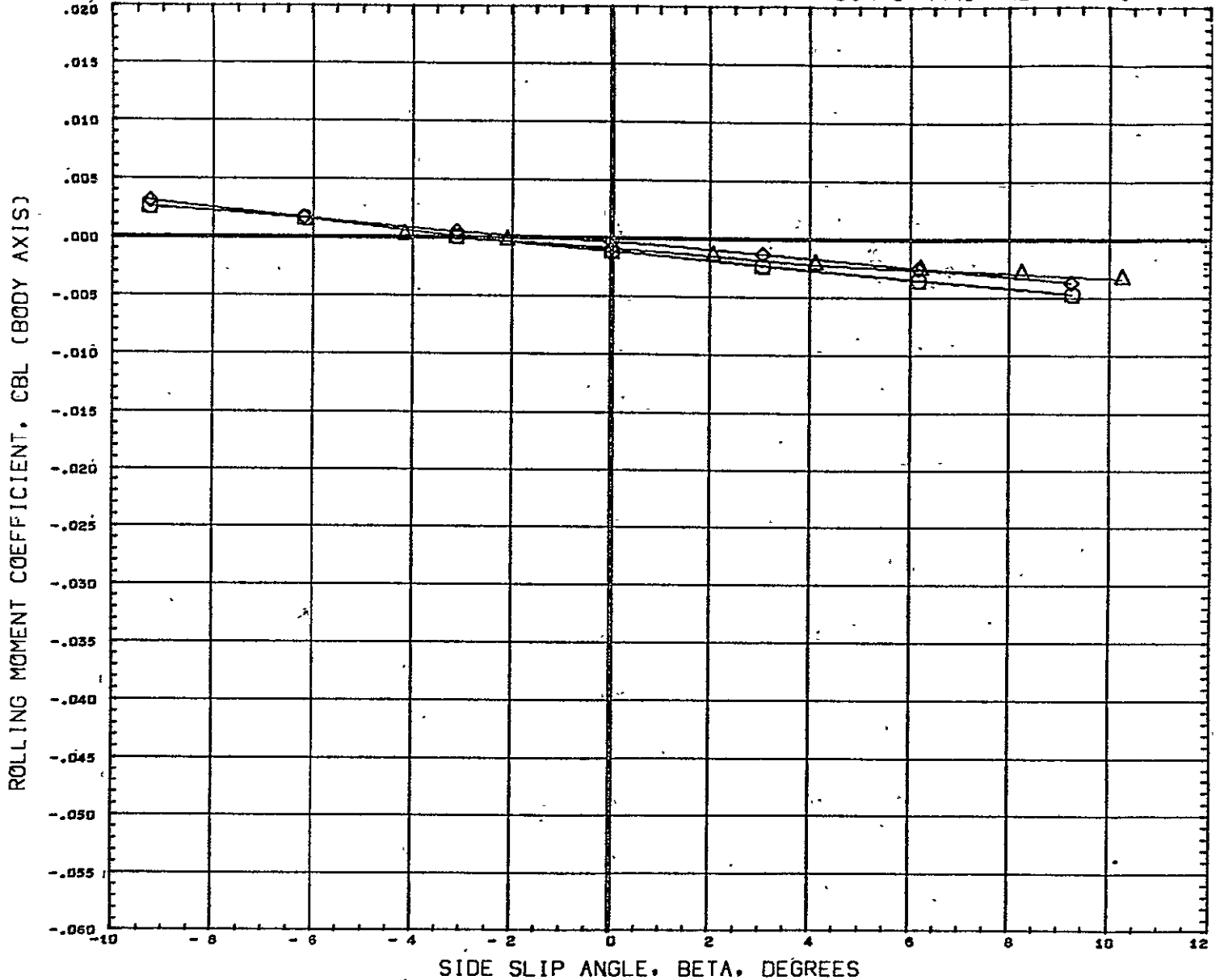
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 0



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEV3	RUDER2	ELEV4	RUDER4	REFERENCE INFORMATION
(24101X)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(A4114X)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			LREF 6.1420 INCHES
(241X01)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	BREF 6.1420 INCHES
						XNRP 3.9950 INCHES
						YNRP 0.0000 INCHES
						ZNRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.098

LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT. ALPHA = 0

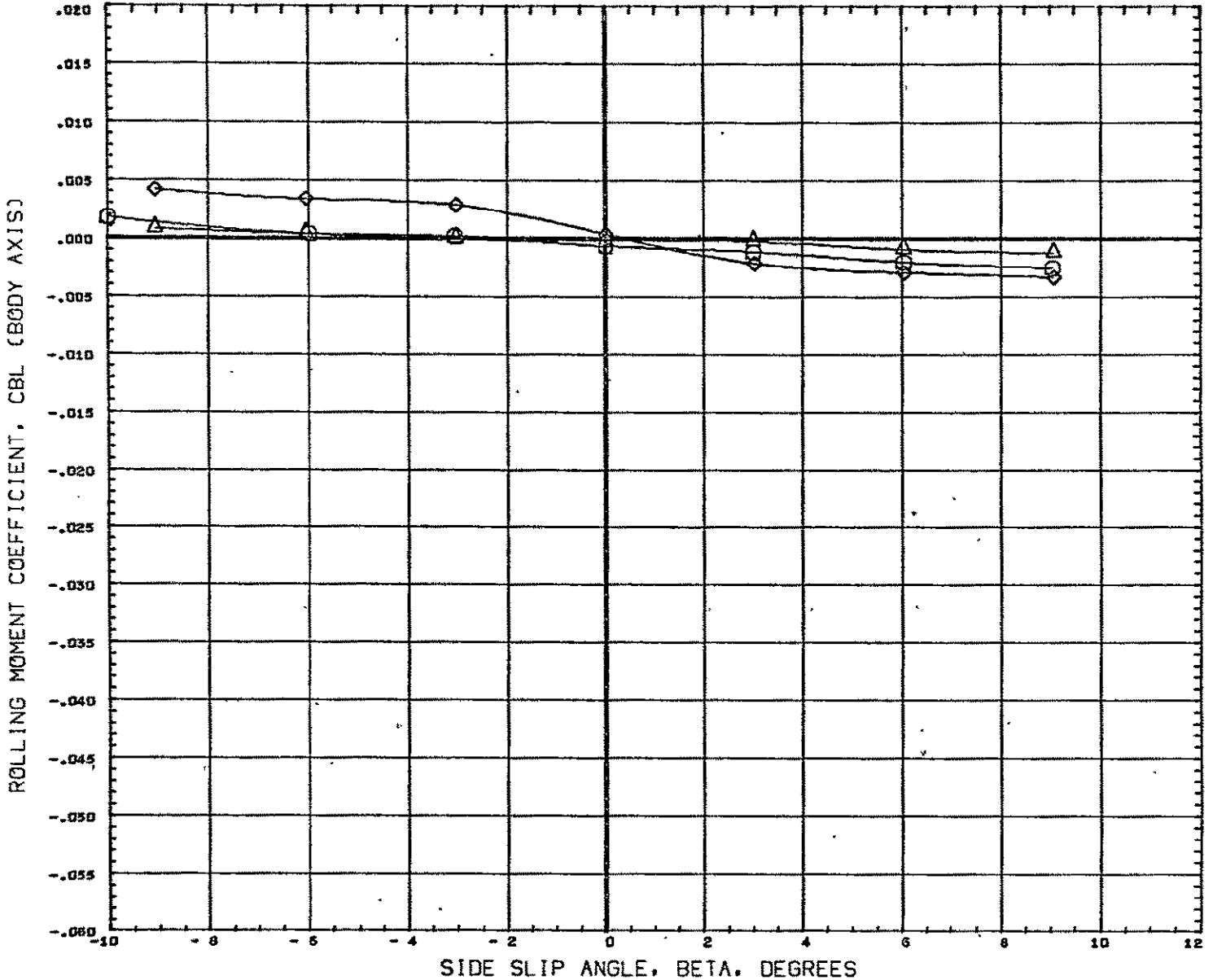


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(24101X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	0.000			SREF 9.0250 SQ. IN
(A4114X)	MSFC TWT 498 MSFC/LHSC ORBITER B2W2V4D1E3R1	0.000				LREF 6.1420 INCHES
(241X01)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4			0.000	0.000	BREF 6.1420 INCHES XMRP 3.9950 INCHES YMRP 0.0000 INCHES ZMRP 0.1350 INCHES SCALE 0.0033 SCALE

MACH 1.960



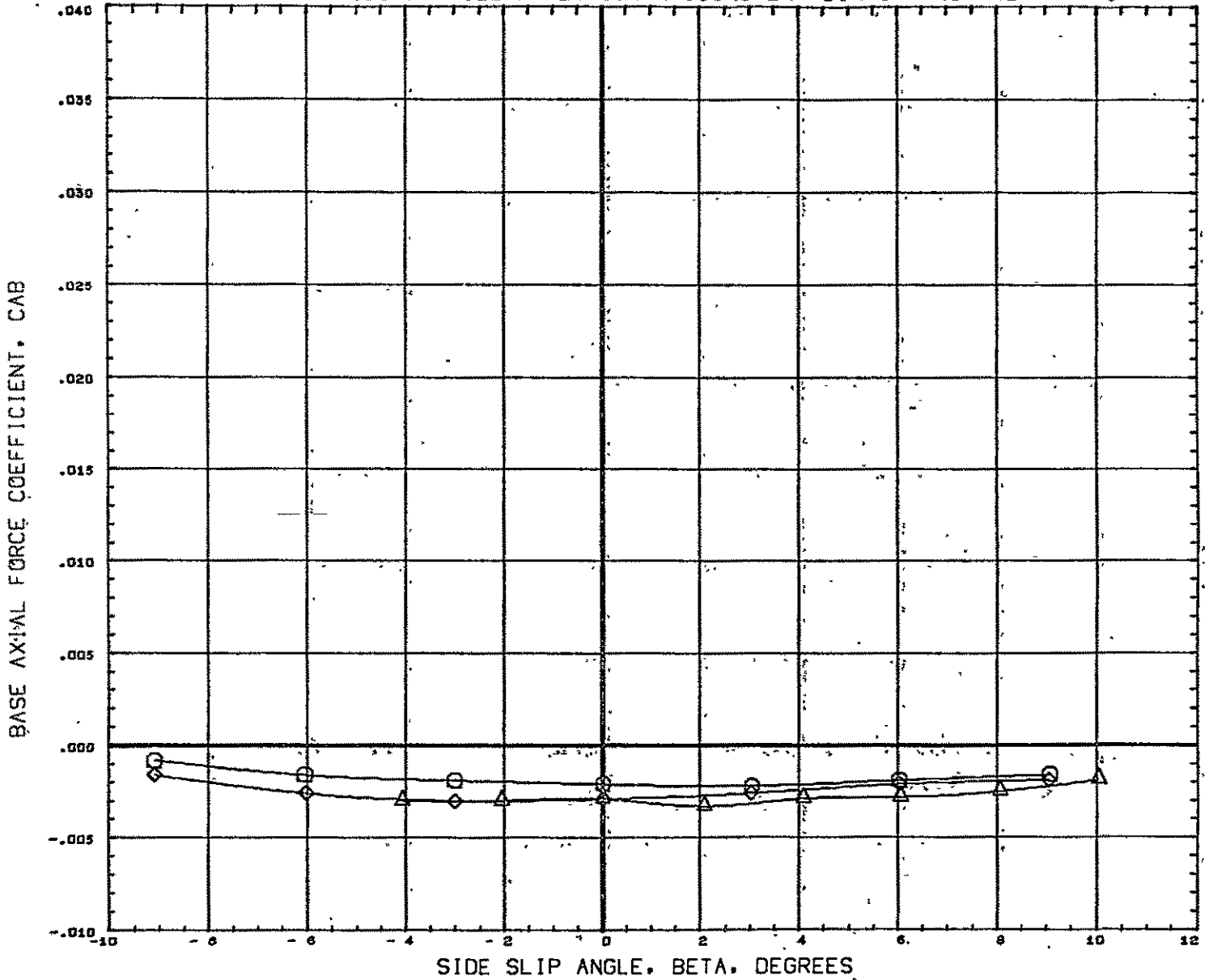
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 0



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(241D1X)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 34. IN
(A4114X)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000				LREF 6.1420 INCHES
(241X91)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 4.960

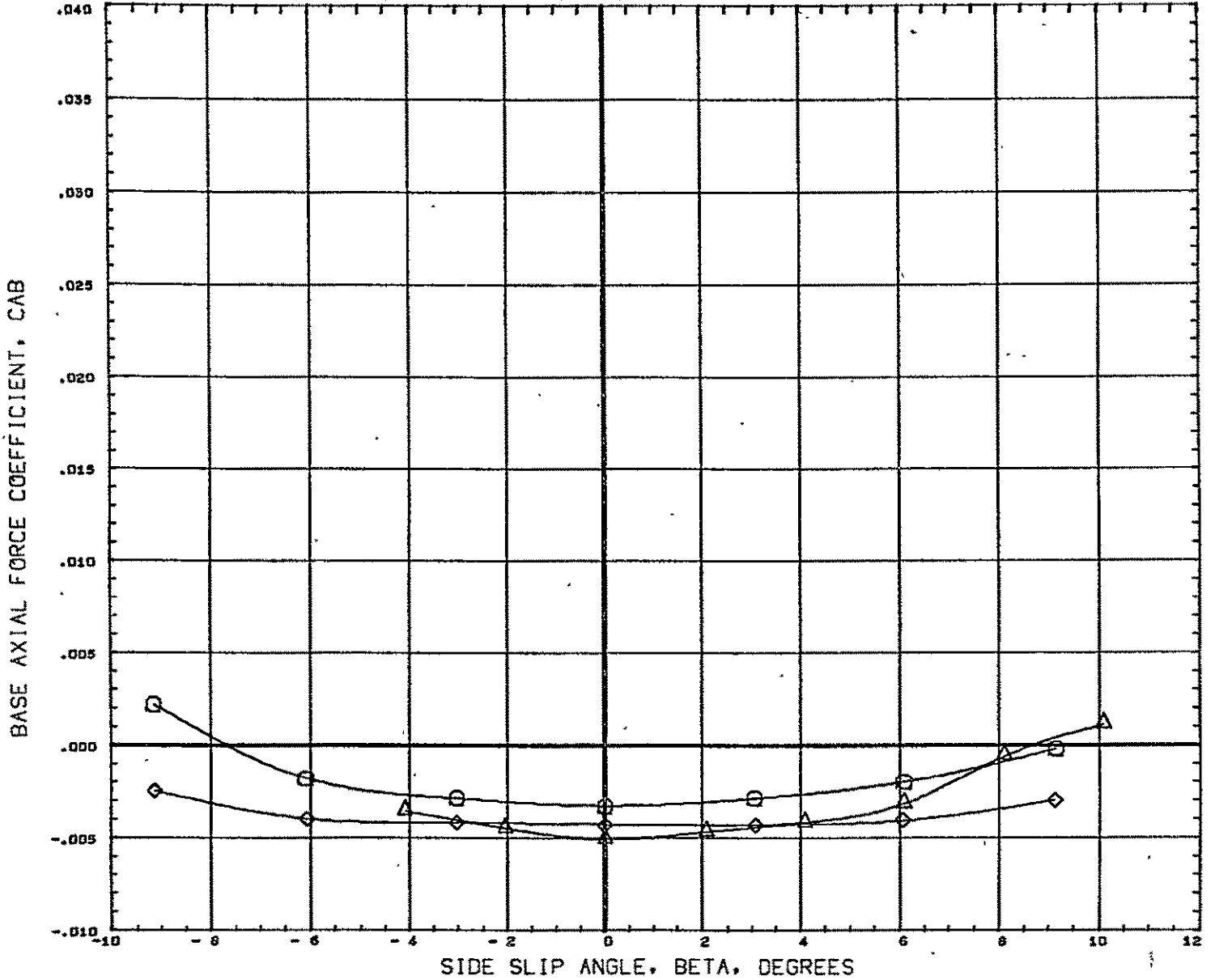
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 0.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(24101X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	0.000			SREF 9.0250 SQ. IN
(44114X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	0.000				LREF 6.1420 INCHES
(241X01)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4			0.000	0.000	BREF 6.1420 INCHES
						XHRP 3.9950 INCHES
						YHRP 0.0000 INCHES
						ZHRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.599

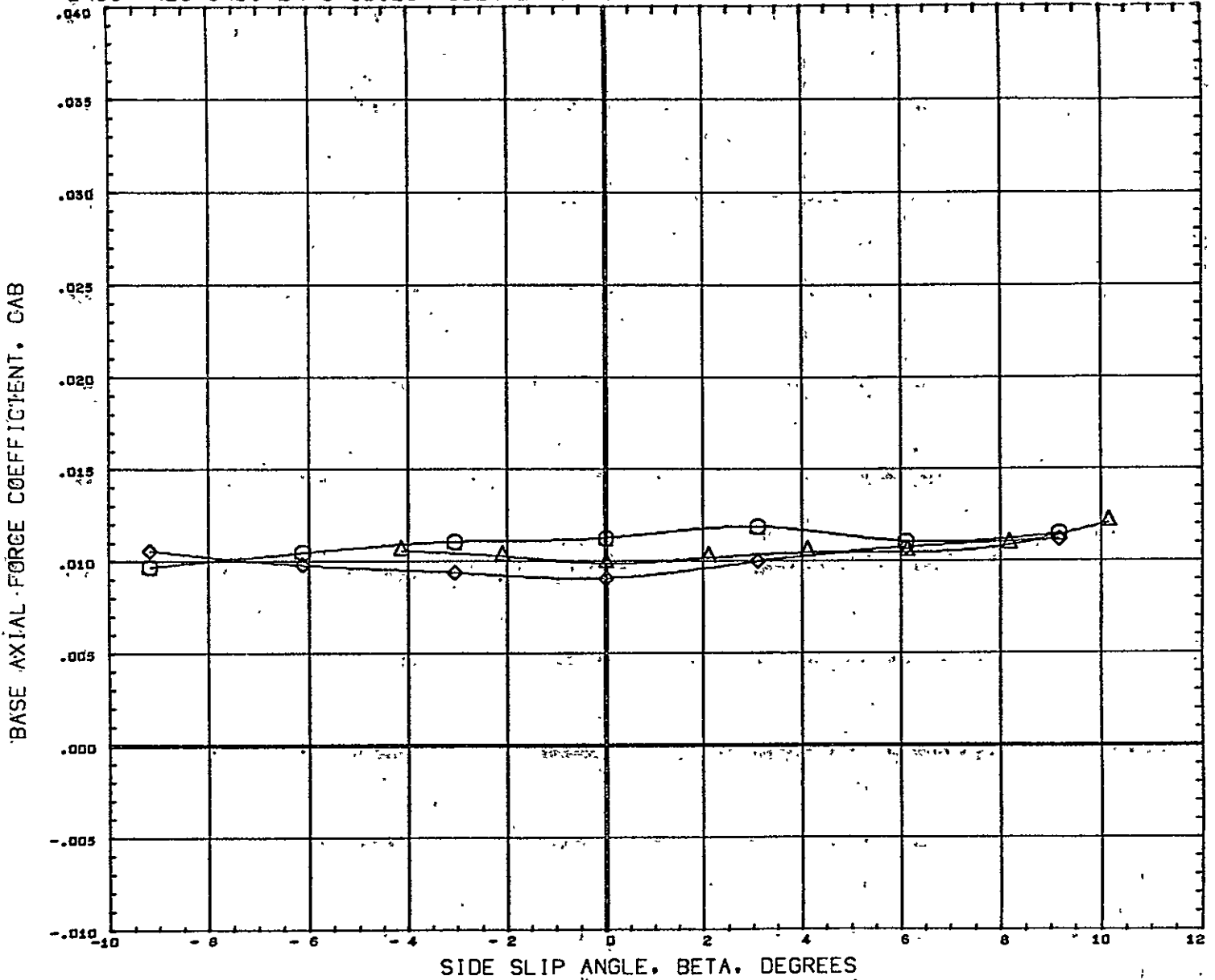
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 0



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(241D1X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	0.000			SREF 9.0250 SQ. IN
(A4114X)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	0.000				LREF 6.1420 INCHES
(241X01)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4			0.000	0.000	BREF 6.1420 INCHES
						XHRP 3.9950 INCHES
						YHRP 0.0000 INCHES
						ZHRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.903

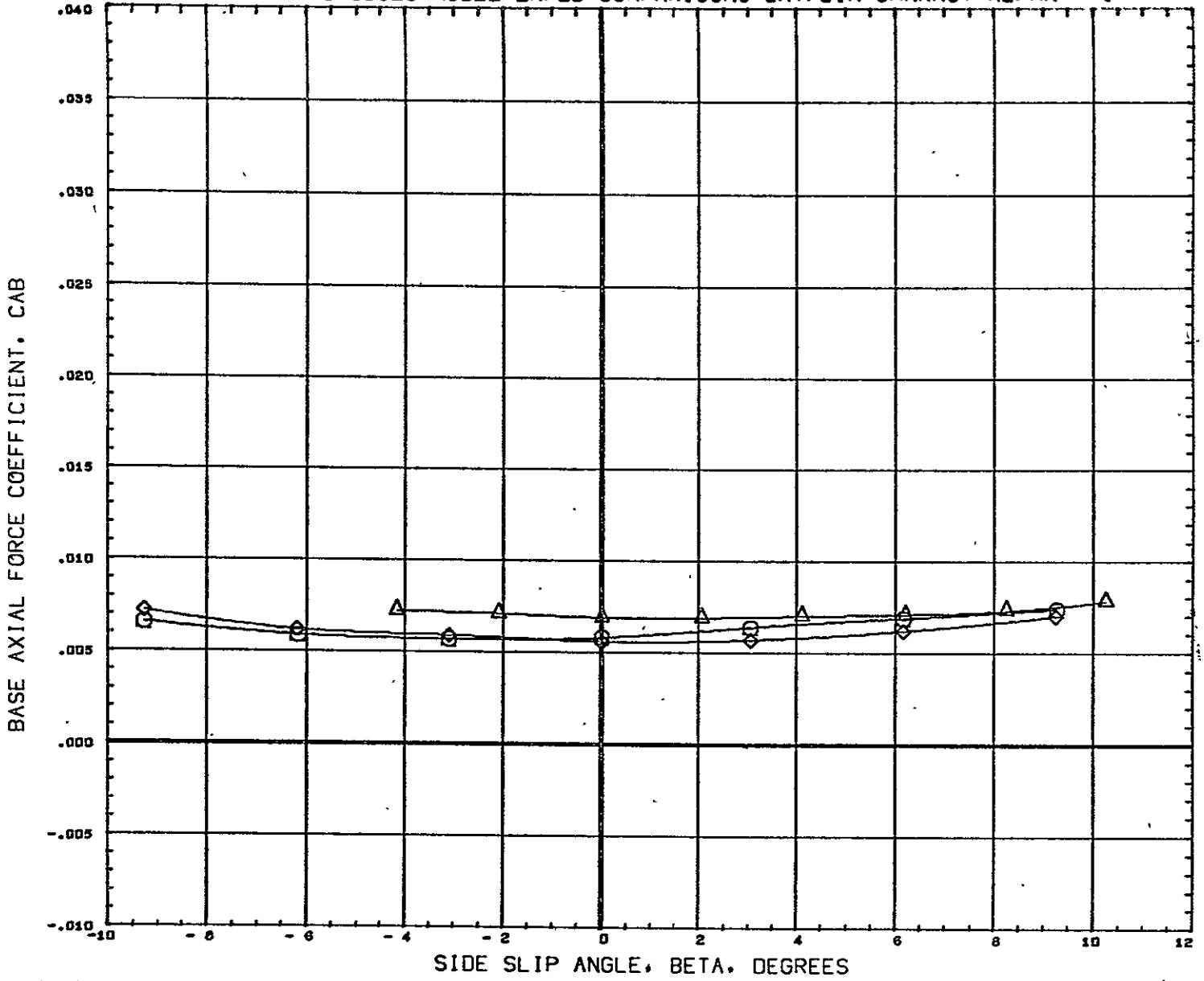
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 0



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION	
(24101X)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF	9.0250 SQ. IN
(A4114X)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000				LREF	6.1420 INCHES
(241X01)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	BREF	6.1420 INCHES
						XMRP	3.9950 INCHES
						YMRP	0.0000 INCHES
						ZMRP	0.1350 INCHES
						SCALE	0.0033 SCALE

HACH 1.098

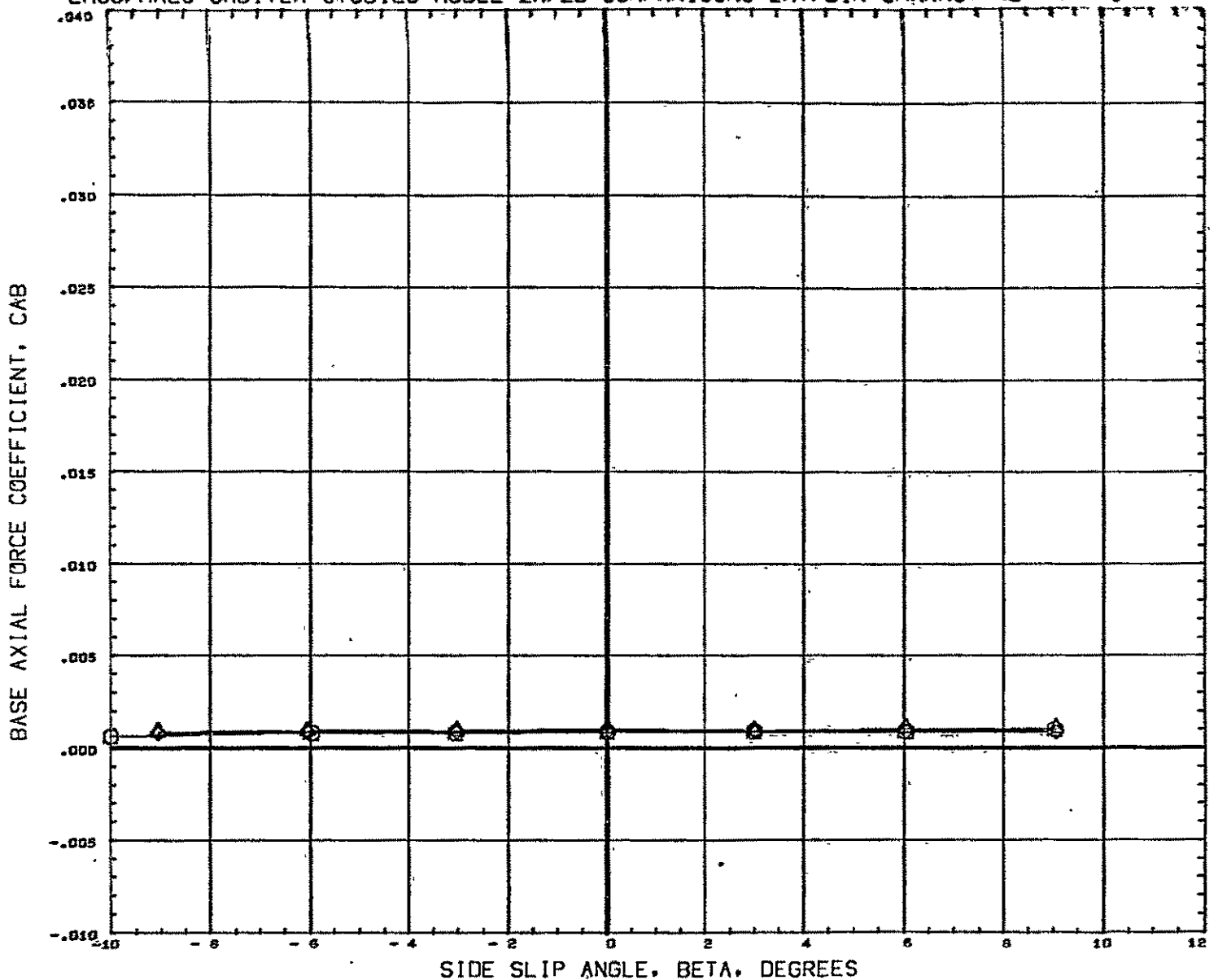
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 0



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(241D1X)	MSFC TWT 498 MSFC/LHSC ORBITER B2W2V4D2E3R2	0.000	0.000			SREF 9.0250 SQ.IN
(A4114X)	MSFC TWT 498 MSFC/LHSC ORBITER B2W2V4D1E3R1	0.000				LREF 6.1420 INCHES
(241XD1)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4			0.000	0.000	BREF 6.1420 INCHES
						XMRP 3.9930 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.960

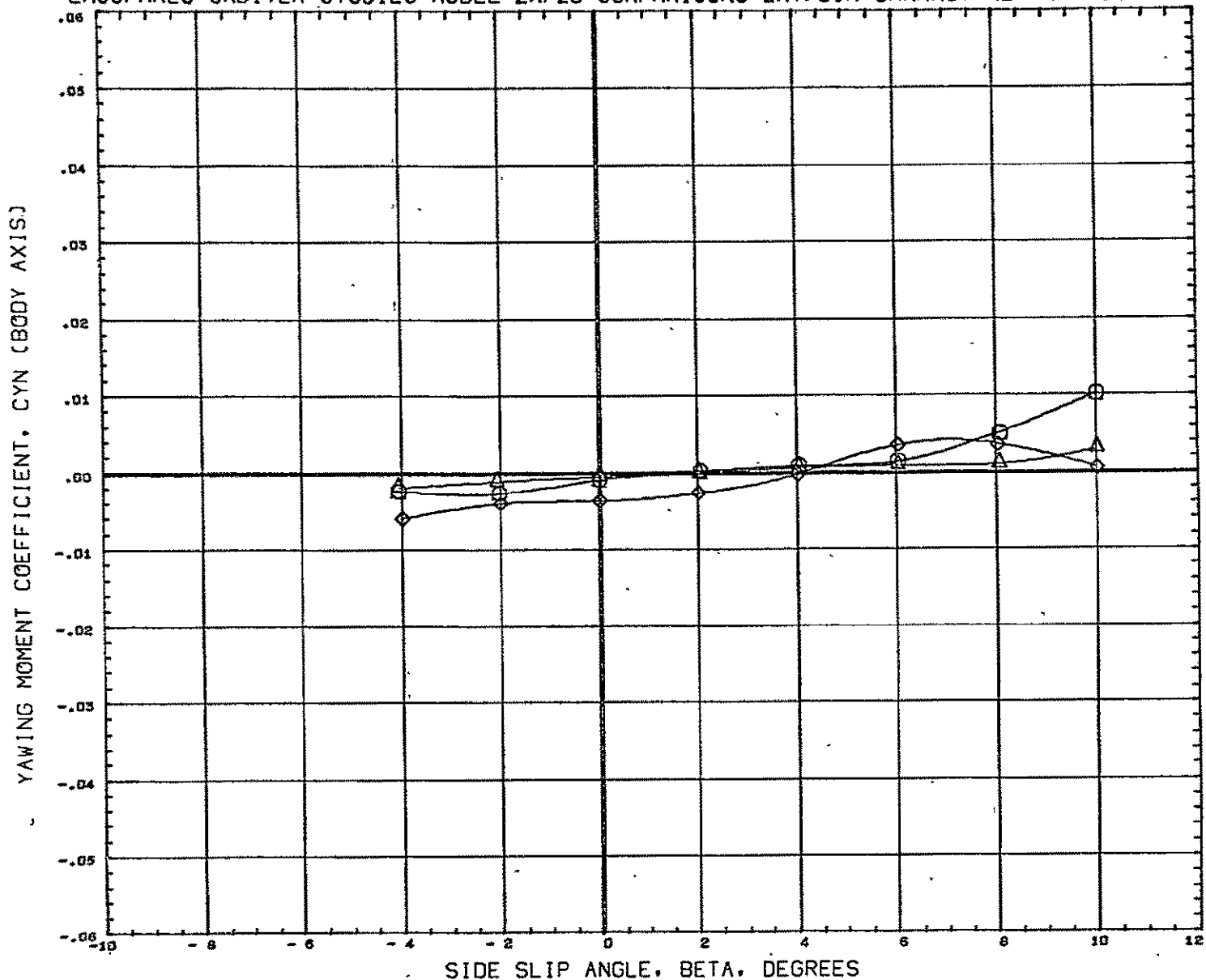
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 0



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(24101X)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(A4114X)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000				LREF 6.1420 INCHES
(241001)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 4.960

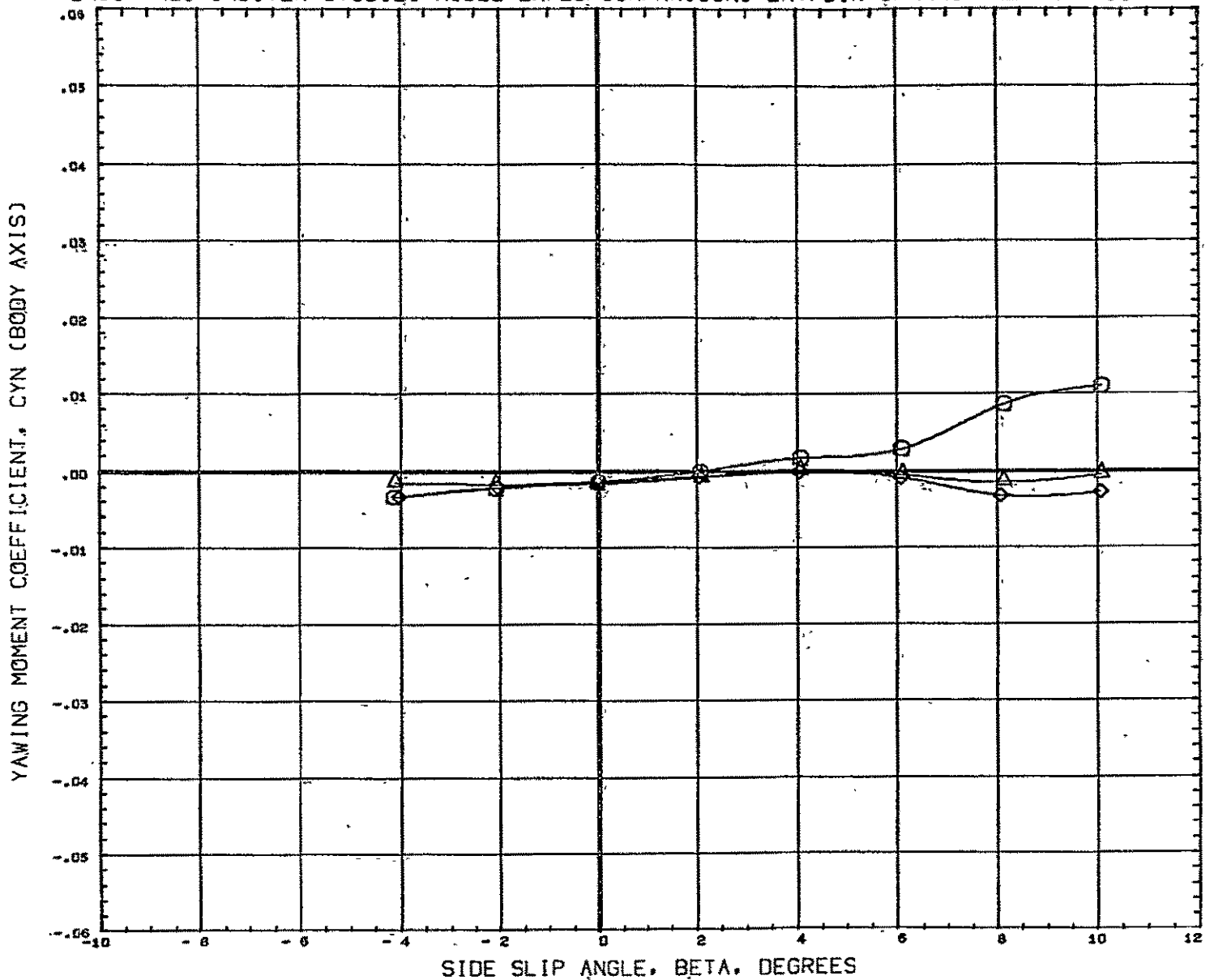
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 10



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEV3	RUDER2	ELEV4	RUDER4	REFERENCE INFORMATION
(24101Y)	MSFC TWT 498 MSFC/LMSC ORBITER	82W2V4D2E3R2	0.000	0.000		SREF 9.0250 58. IN
(A4114Y)	MSFC TWT 498 MSFC/LMSC ORBITER	82W2V4D1E3R1	0.000			LREF 6.1420 INCHES
(241Y01)	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4		0.000	0.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.595

LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 10

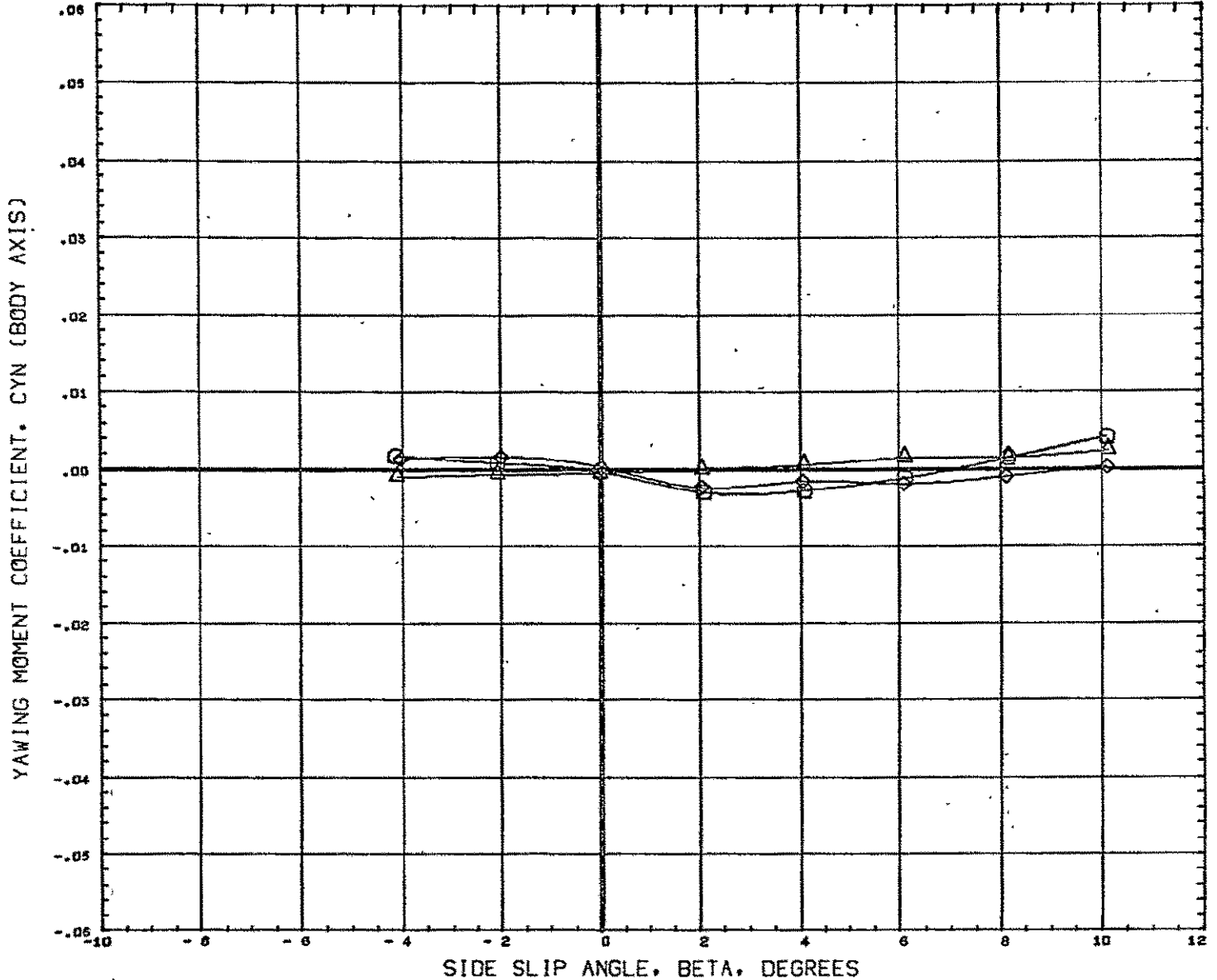


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION	
(24101Y)	○	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF	9.0250 SQ. IN
(A4114Y)	△	MSFC TWT 498 MSFC/LMSC ORBITER	0.000				LREF	6.1420 INCHES
(241Y01)	◇	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	BREF	6.1420 INCHES
							XMRP	3.9950 INCHES
							YMRP	0.0000 INCHES
							ZMRP	0.1350 INCHES
							SCALE	0.0033 SCALE

MACH 0.899



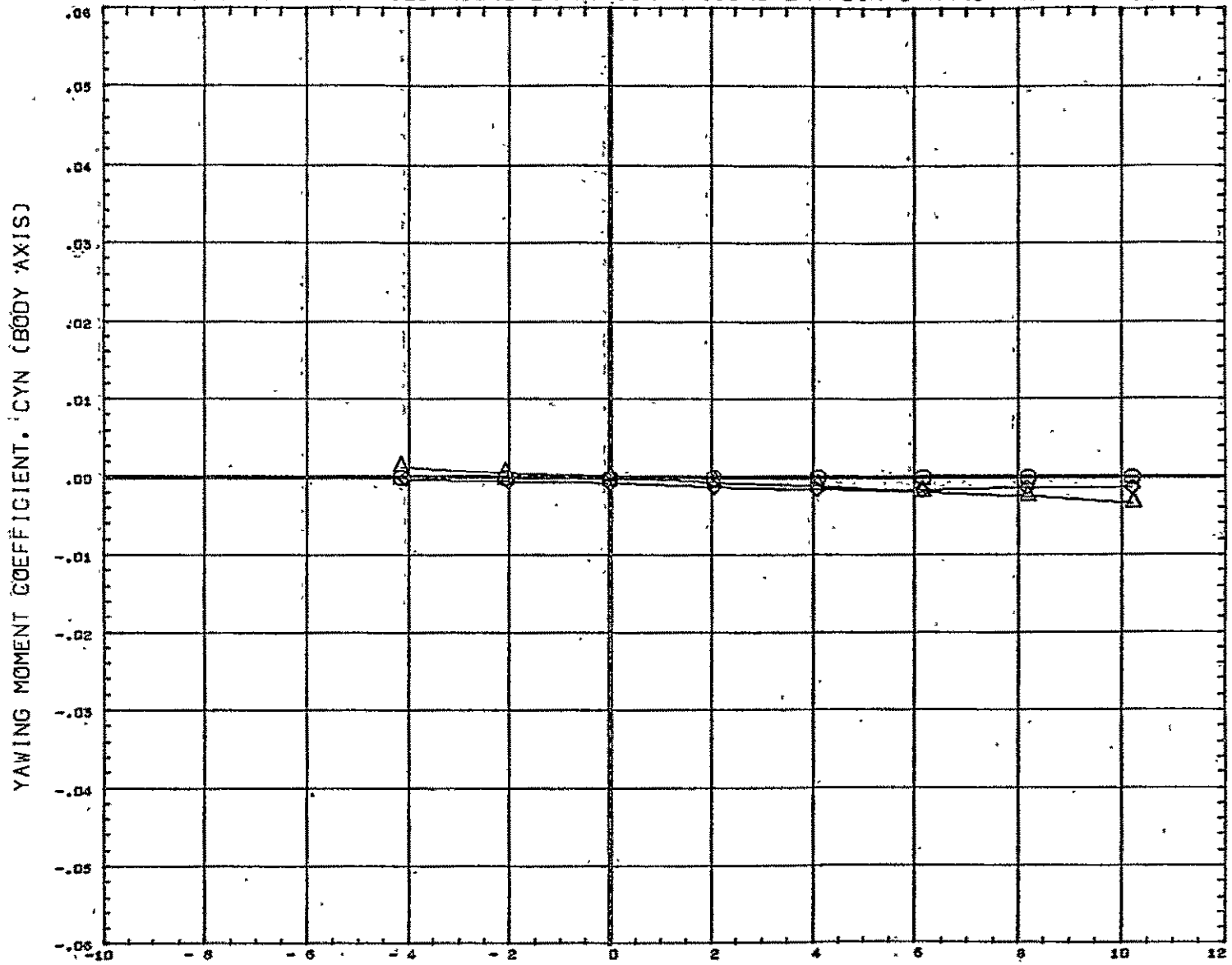
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 10



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(24101)	○	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	0.000	0.000		SREF 9.0250 SQ. IN
(A4114)	△	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D1E3R1	0.000			LREF 6.1420 INCHES
(24101)	◇	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4		0.000	0.000	BREF 6.1420 INCHES
							XMRP 3.9950 INCHES
							YMRP 0.0000 INCHES
							ZMRP 0.1350 INCHES
							SCALE 0.0033 SCALE

MACH 1.104

LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 10

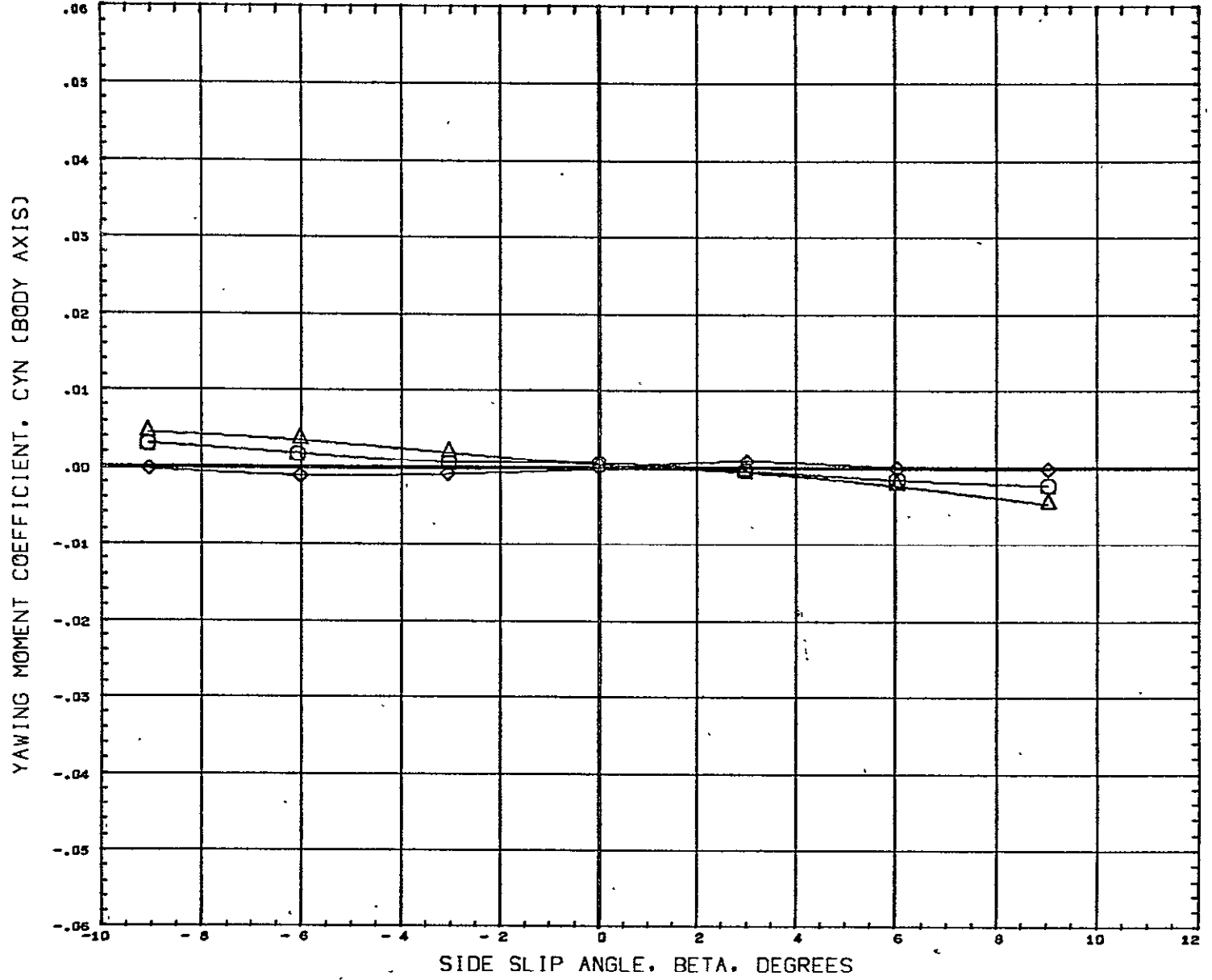


SIDE SLIP ANGLE, BETA, DEGREES

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION		
(24101Y)	○	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF	9.0250	SQ. IN
(A4114Y)	△	MSFC TWT 498 MSFC/LMSC ORBITER	0.000				LREF	6.1420	INCHES
(241Y01)	◇	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	BREF	6.1420	INCHES
							XMRP	3.9950	INCHES
							YMRP	0.0000	INCHES
							ZMRP	0.1350	INCHES
							SCALE	0.0033	SCALE

MACH 1.964

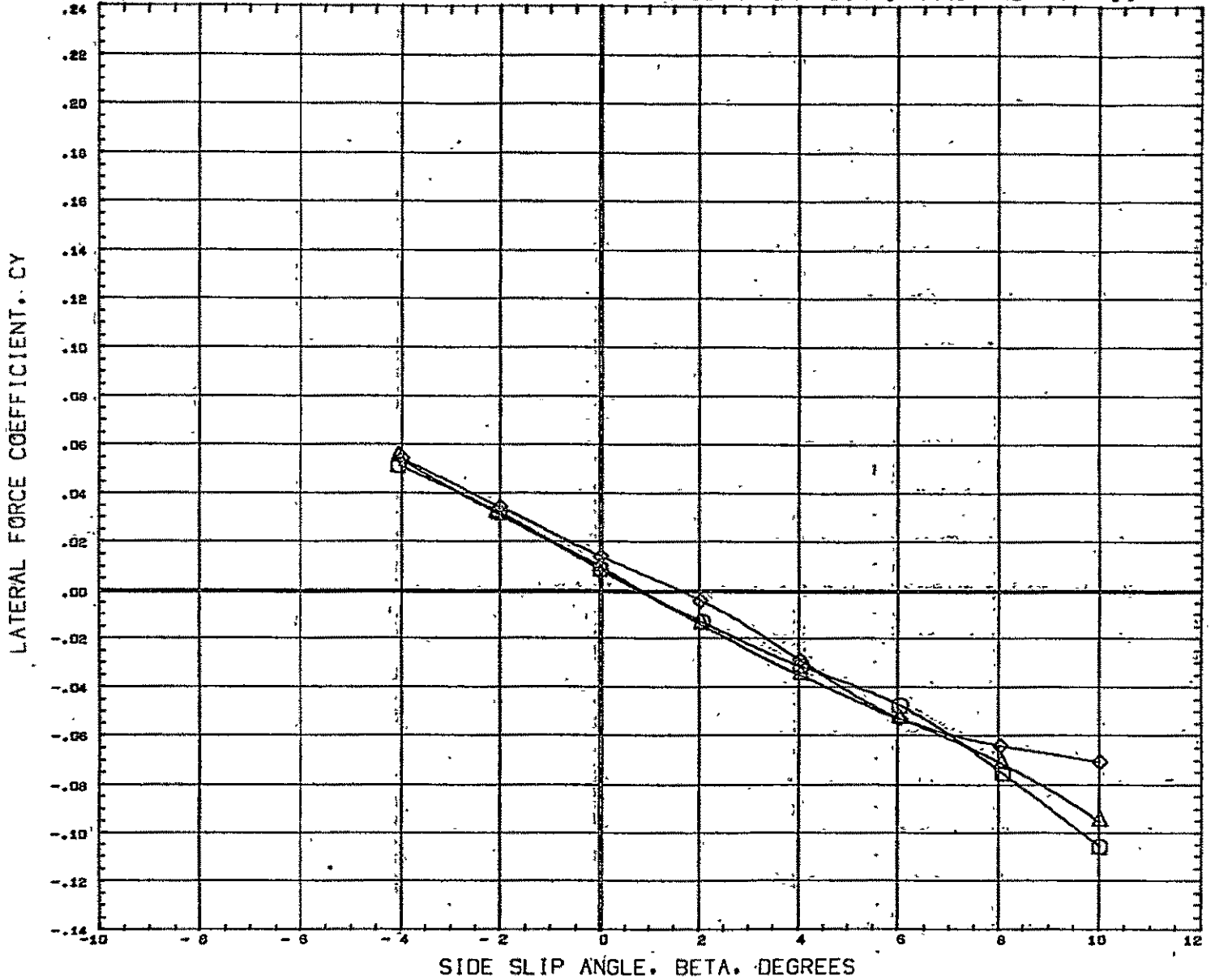
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 10



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3.	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(24101Y)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	0.000			SREF 9.0250 SQ. IN
(A4114Y)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	0.000				LREF 6.1420 INCHES
(241Y01)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4			0.000	0.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 4.960

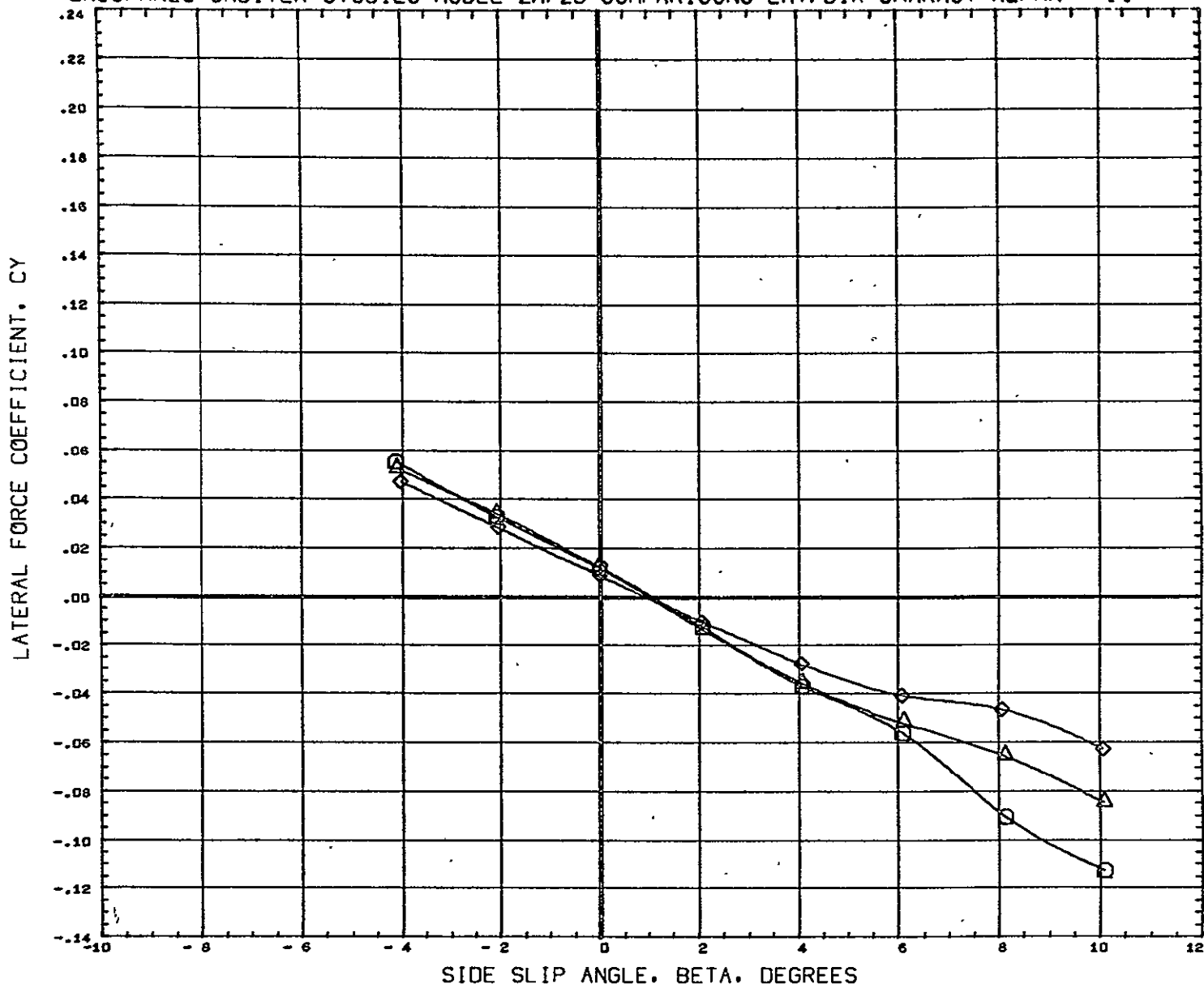
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 10



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(24101Y)	MSFC TWT 498 MSFC/LHSC ORBITER B2W2V402E3R2	0.000	0.000			SREF 9.0250 SQ. IN
(A4114Y)	MSFC TWT 498 MSFC/LHSC ORBITER B2W2V401E3R1	0.000				LREF 6.1420 INCHES
(241Y01)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4			0.000	0.000	SREF 6.1420 INCHES
						XHRP 3.9950 INCHES
						YHRP 0.0000 INCHES
						ZHRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.595

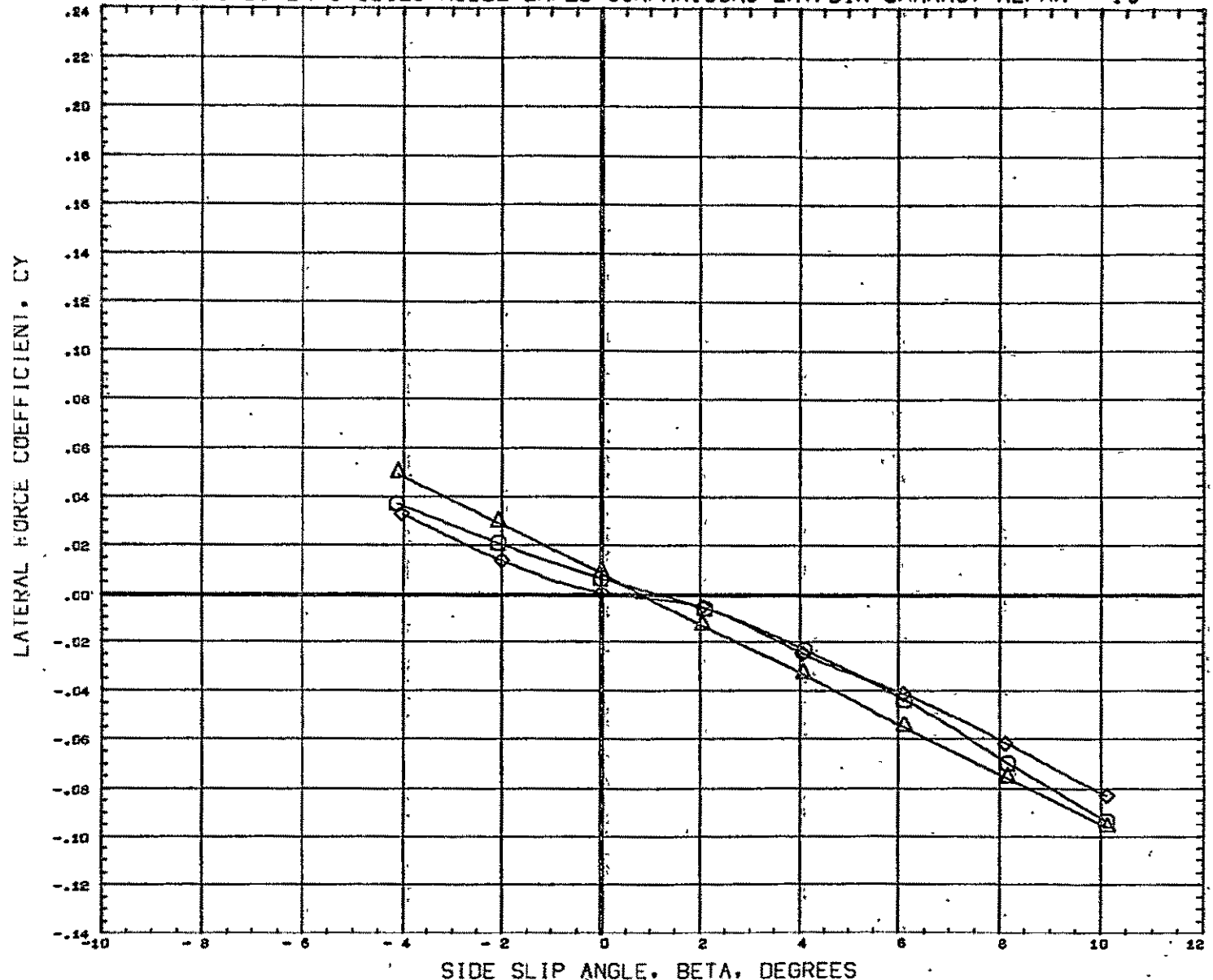
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 10



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(241D1Y)	○	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	0.000			SREF 9.0250 SQ. IN
(A4114Y)	△	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	0.000				LREF 6.1420 INCHES
(241YD1)	◇	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4			0.000	0.000	BREF 6.1420 INCHES
							XMRP 3.9950 INCHES
							YMRP 0.0000 INCHES
							ZMRP 0.1350 INCHES
							SCALE 0.0033 SCALE

MACH 0.899

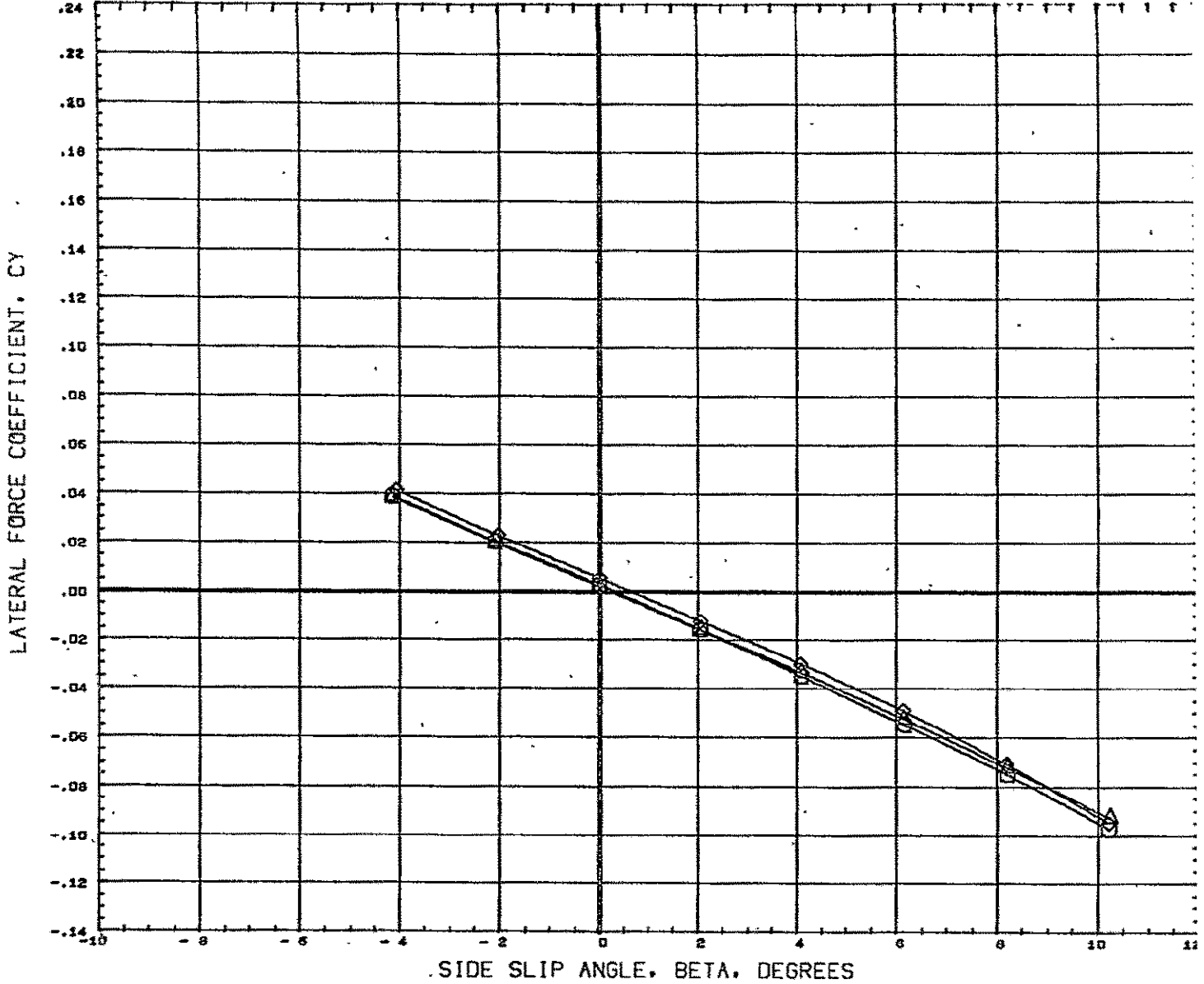
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 10



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(24101Y)	MSFC TWT 498 MSFC/LHSC ORBITER B2W2V4D2E3R2	0.000	0.000			SREF 9.0250 SQ. IN
(A4114Y)	MSFC TWT 498 MSFC/LHSC ORBITER B2W2V4D1E3R1	0.000				LREF 6.1420 INCHES
(241Y01)	MSFC TWT 498 MSFC/HREC ORBITER B2W3V2E4R4			0.000	0.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.104

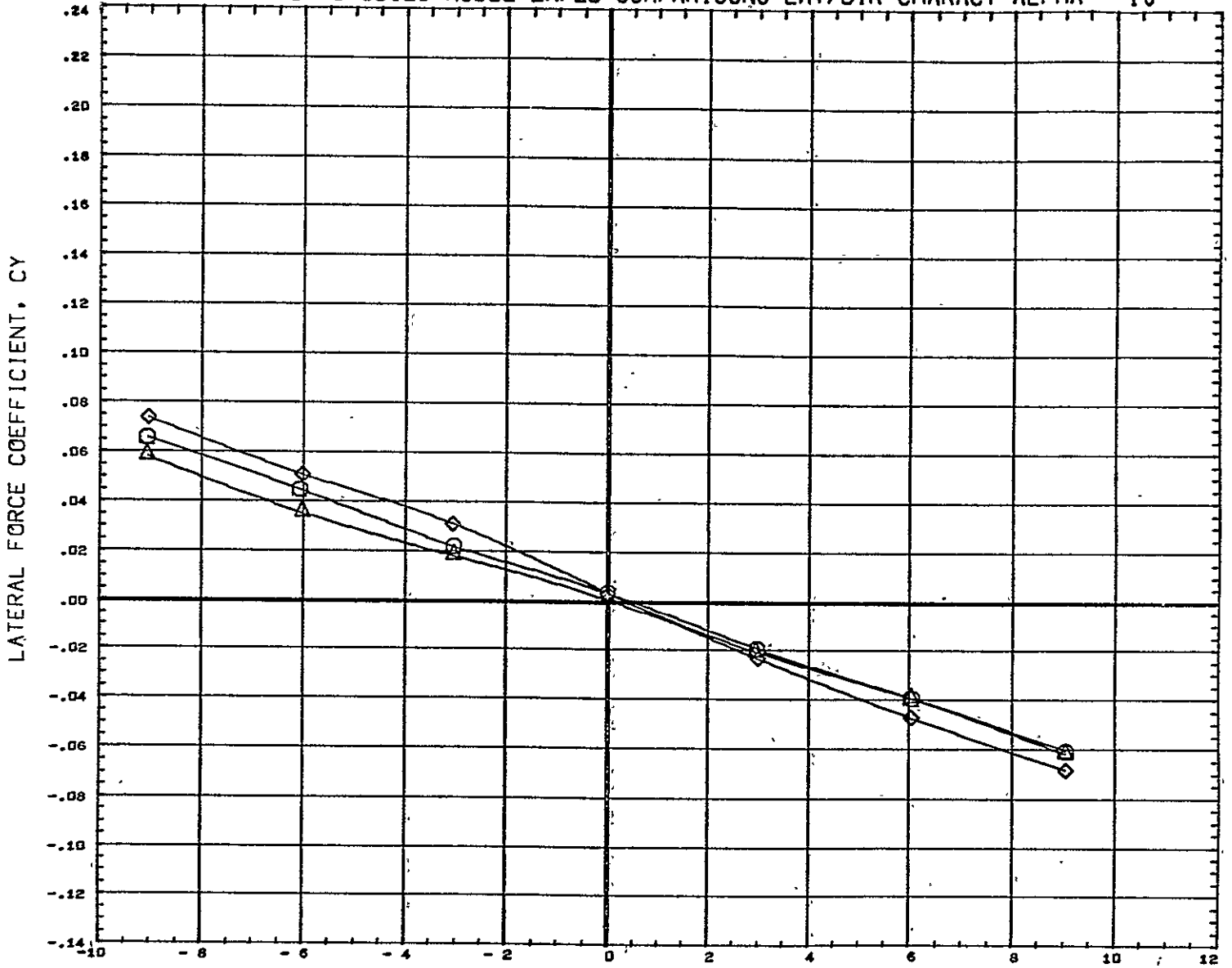
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 10



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(241D1Y)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	0.000			SREF 9.0250 SQ. IN
(A4114Y)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	0.000				LREF 6.1420 INCHES
(241YD1)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4			0.000	0.000	BREF 6.1420 INCHES
						XHRP 3.9950 INCHES
						YHRP 0.0000 INCHES
						ZHRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.964

LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 10

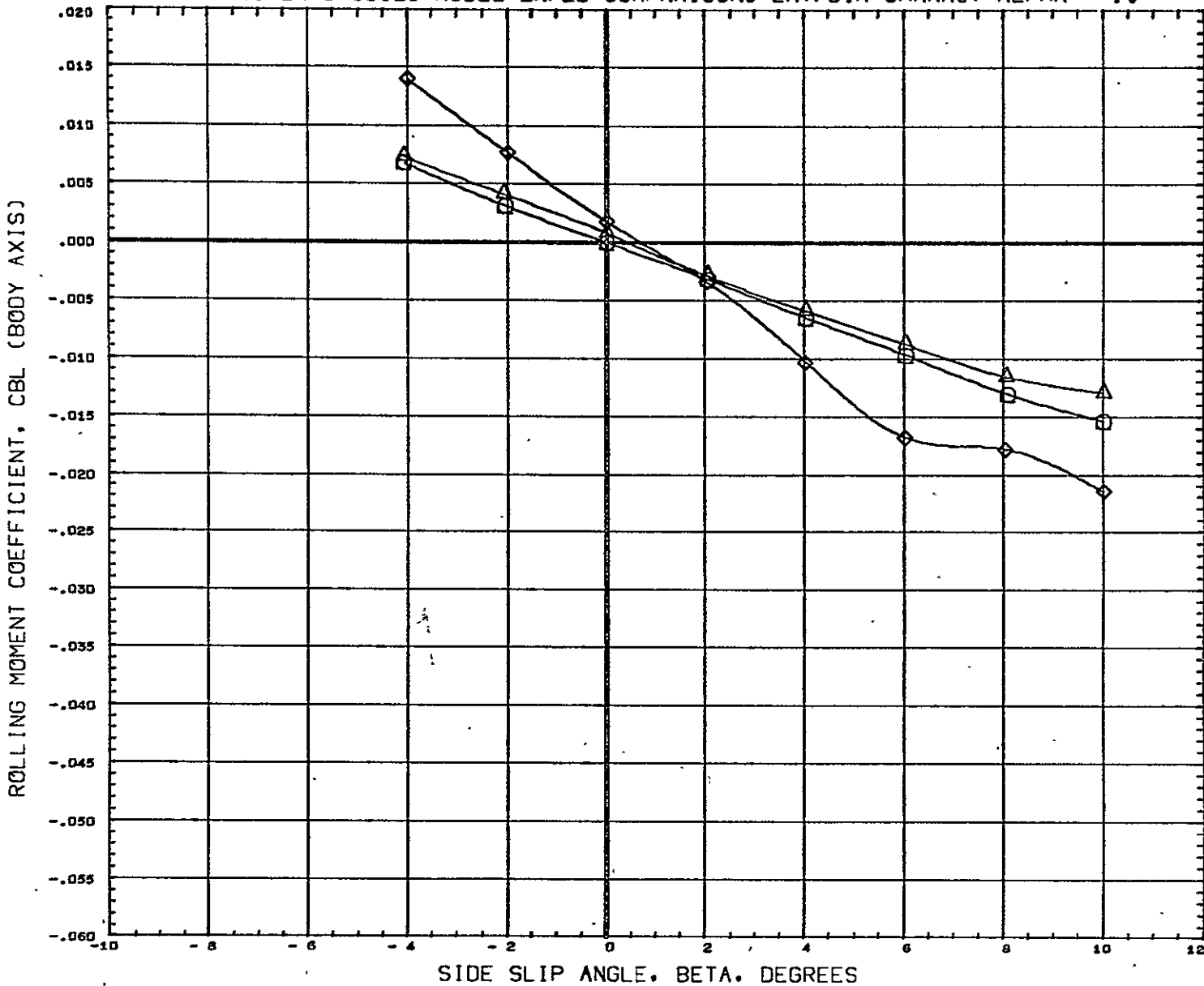


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(24101Y)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	0.000			SREF 9.0250 SQ. IN
(A4114Y)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	0.000				LREF 6.1420 INCHES
(241Y01)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4			0.000	0.000	BREF 6.1420 INCHES
						XHRP 3.9950 INCHES
						YHRP 0.0000 INCHES
						ZHRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 4.960



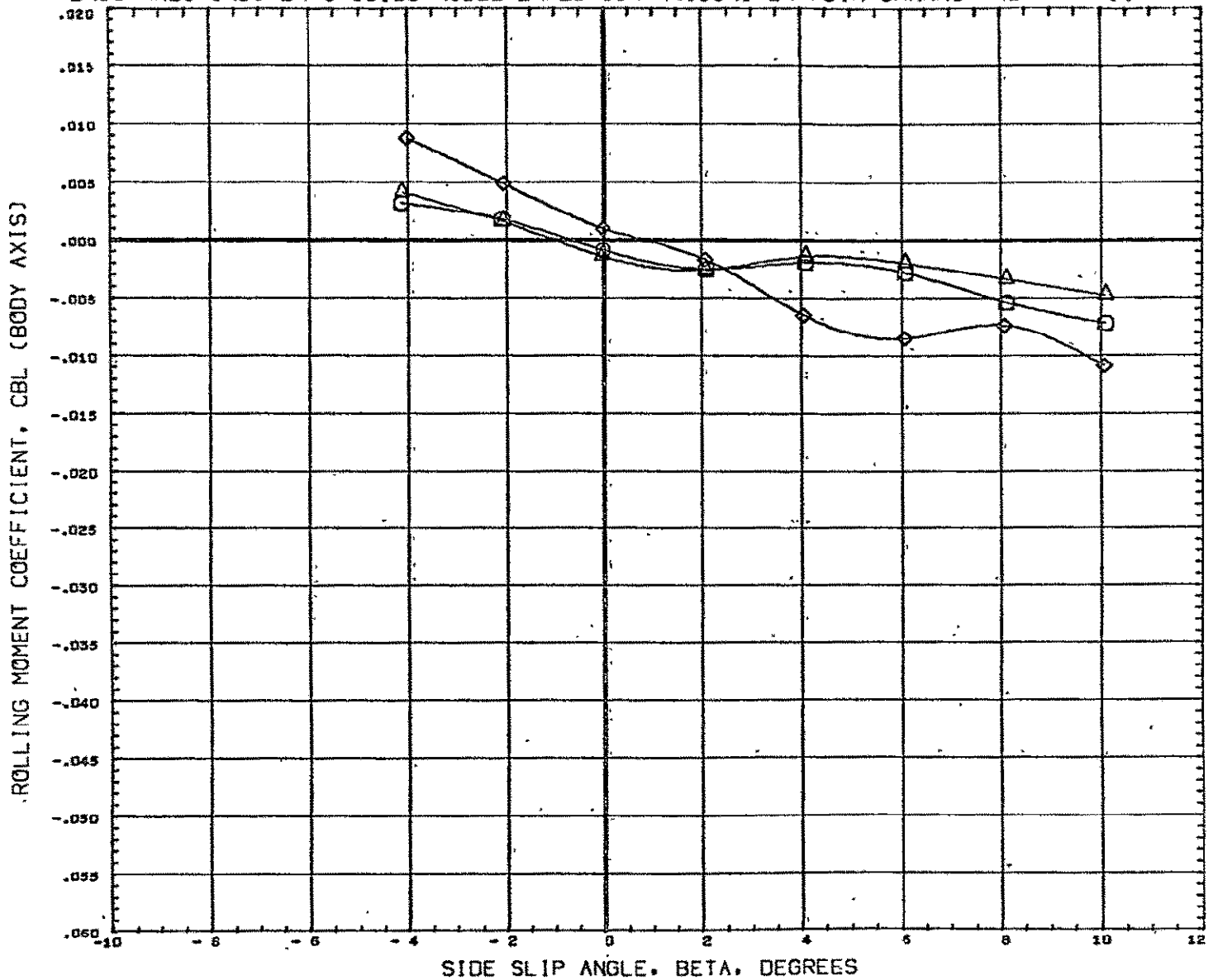
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 10



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION	
(241D1Y)	○	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF	9.0250 SQ. IN
(A4114Y)	△	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			LREF	6.1420 INCHES
(241YD1)	◇	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	BREF	6.1420 INCHES
							XMRP	3.9950 INCHES
							YMRP	0.0000 INCHES
							ZMRP	0.1350 INCHES
							SCALE	0.0033 SCALE

MACH 0.595

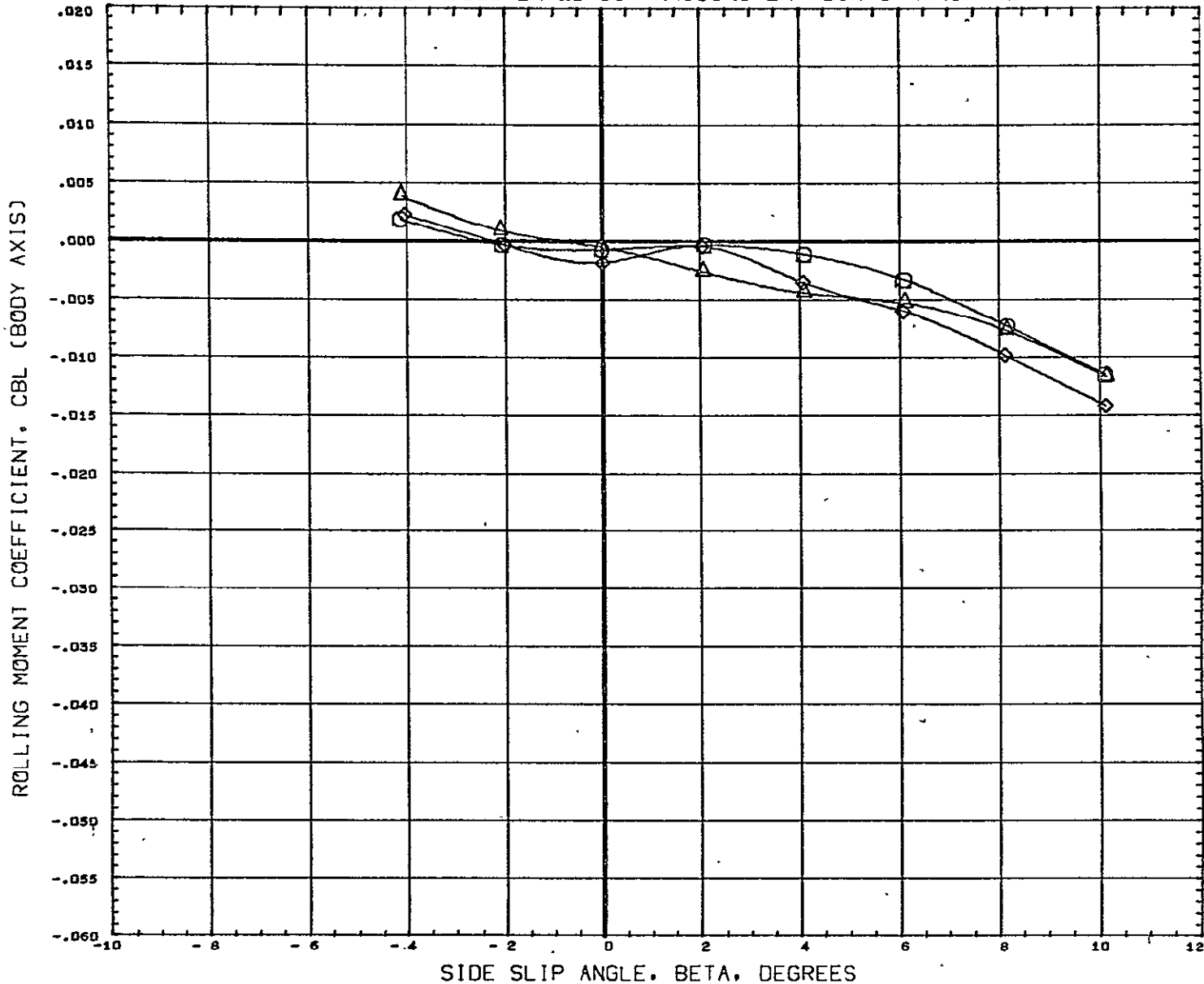
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 10



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEV3	RUDER2	ELEV4	RUDER4	REFERENCE INFORMATION
(24101Y)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	0.000			SREF 9.0250 SQ. IN
(24114Y)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	0.000				LREF 6.1420 INCHES
(24101)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4			3.000	0.000	BREF 6.1420 INCHES
						YMRP 3.9950 INCHES
						YWRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.899

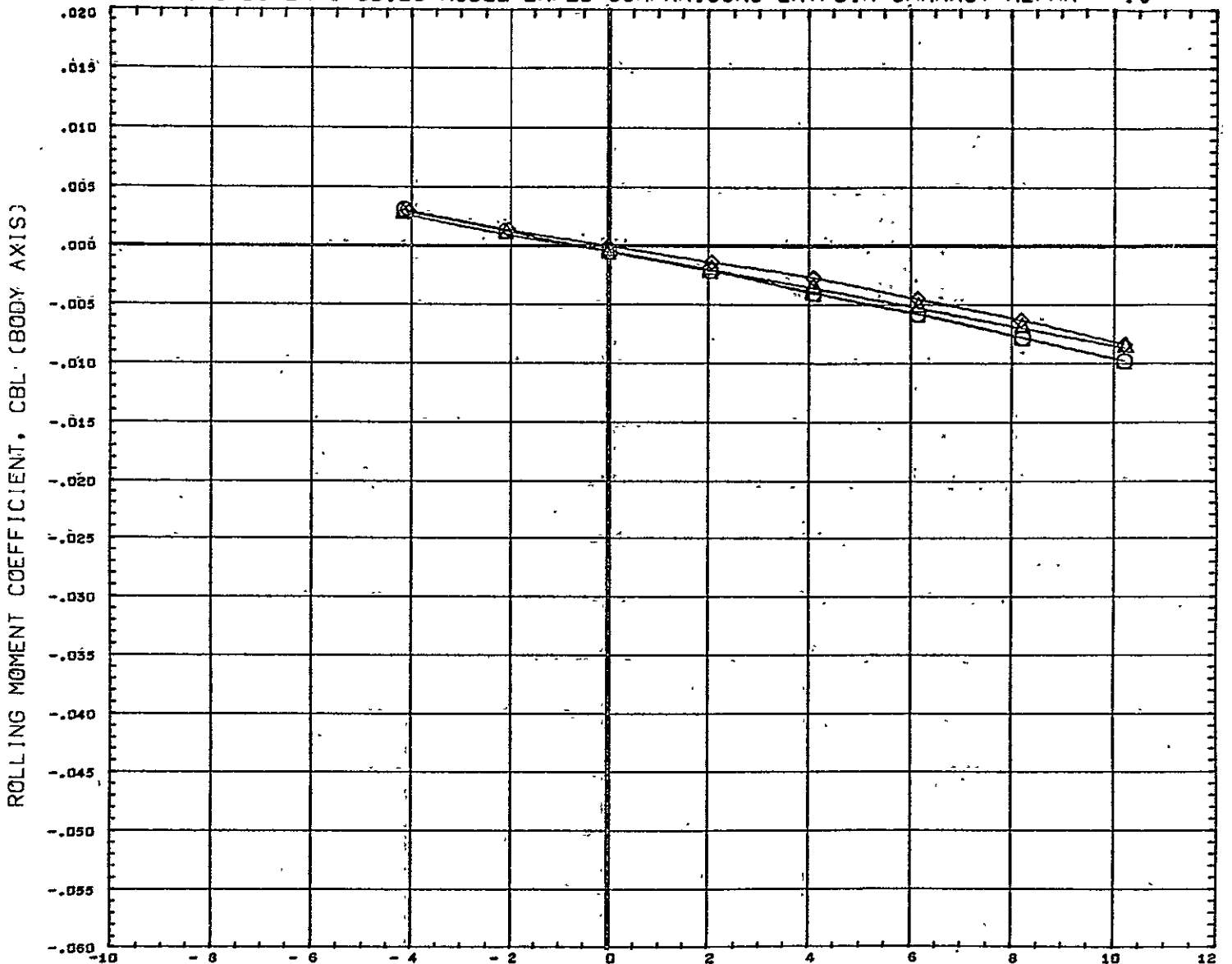
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 10



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(24101Y)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(A4114Y)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000				LREF 6.1420 INCHES
(241Y01)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.104

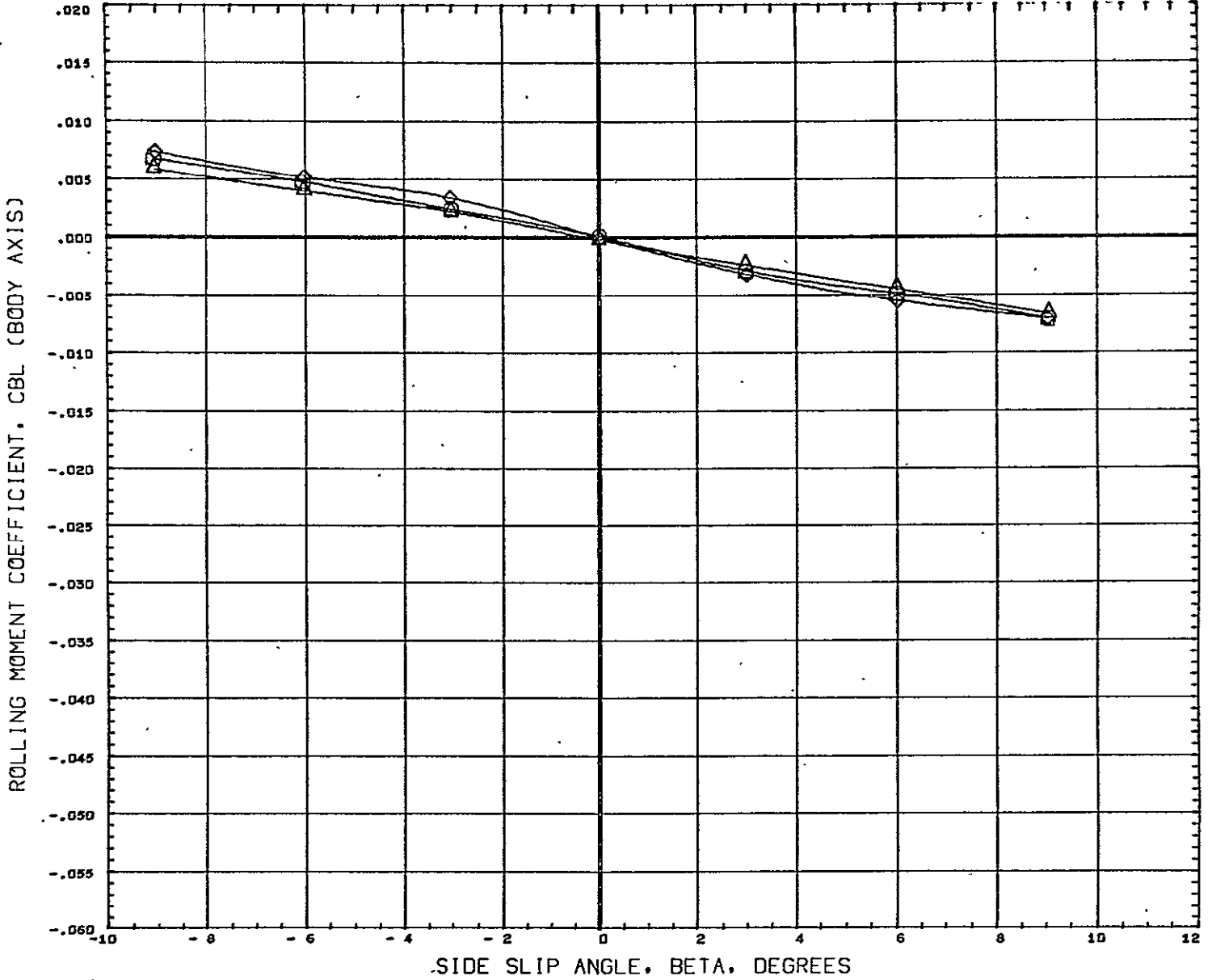
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 10



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(24101Y)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	0.000			SREF 9.0250 SQ, IN
(A4114Y)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	0.000				LREF 6.1420 INCHES
(241Y01)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4			0.000	0.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.964

LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 10

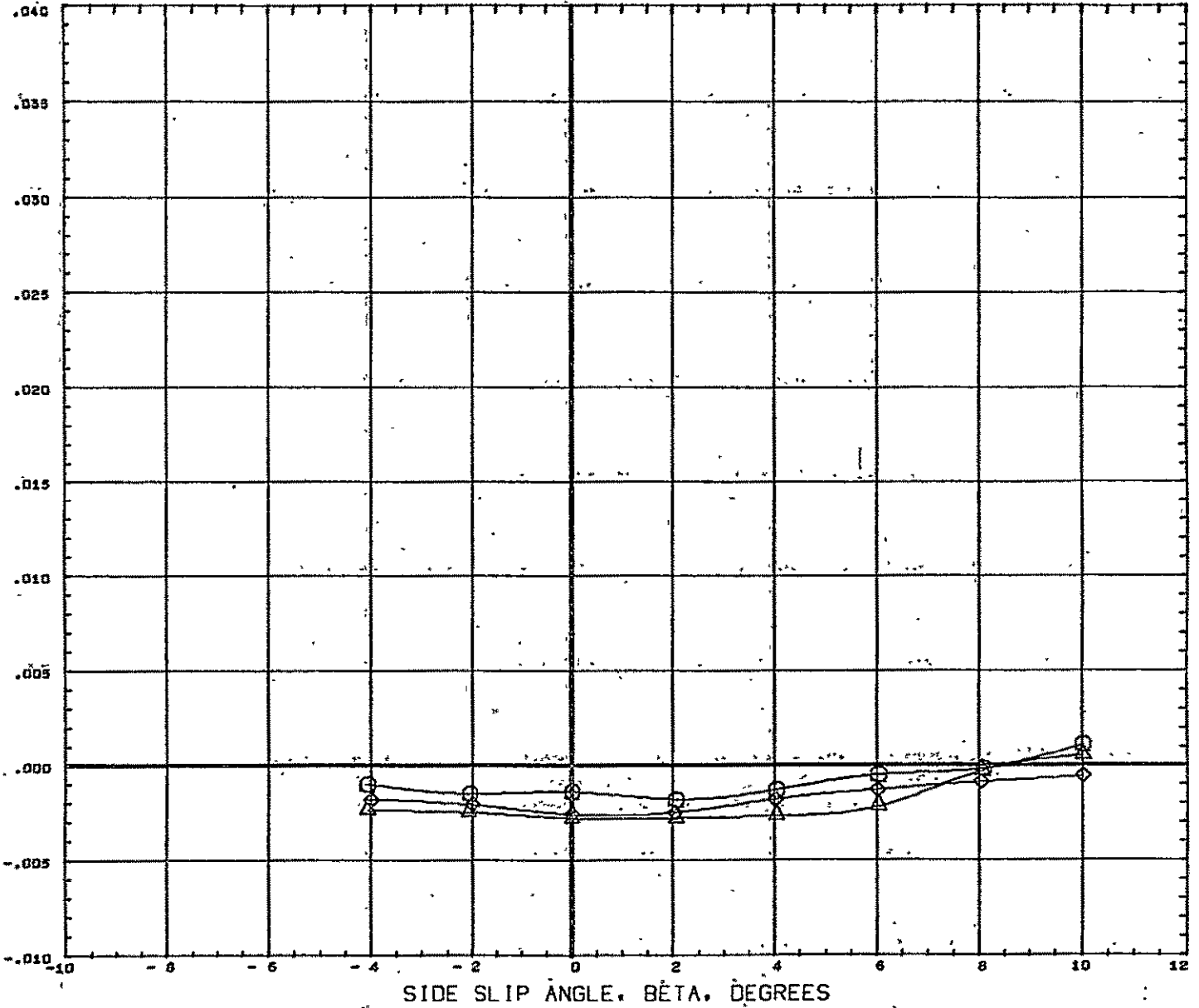


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(241D1Y)	○	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(A4114Y)	△	MSFC TWT 498 MSFC/LMSC ORBITER	0.000				LREF 6.1420 INCHES
(241YD1)	◇	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	BREF 6.1420 INCHES
							XMRP 3.9950 INCHES
							YMRP 0.0000 INCHES
							ZMRP 0.1350 INCHES
							SCALE 0.0033 SCALE

MACH 4.960

LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 1.0

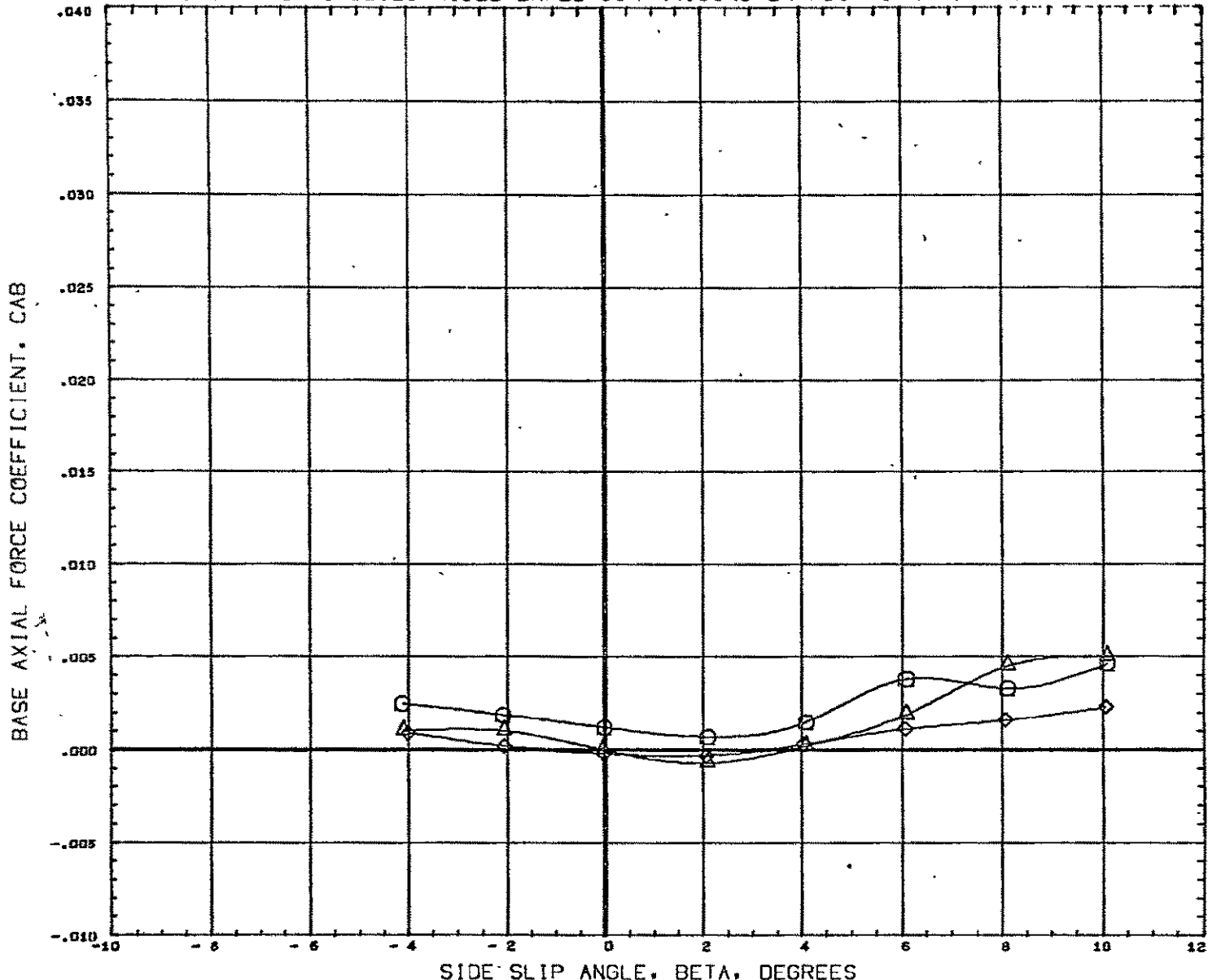
BASE AXIAL FORCE COEFFICIENT, CAB



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVNS	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION	
(241D1Y)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	0.000			SREF	9.0250 SQ. IN
(A41J4Y)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	0.000				LREF	6.1420 INCHES
(241YD1)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4			0.000	0.000	BREF	6.1420 INCHES
						XHRP	3.9950 INCHES
						YHRP	0.0000 INCHES
						ZMRP	0.1350 INCHES
						SCALE	0.0033 SCALE

MACH 0.595

LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 10

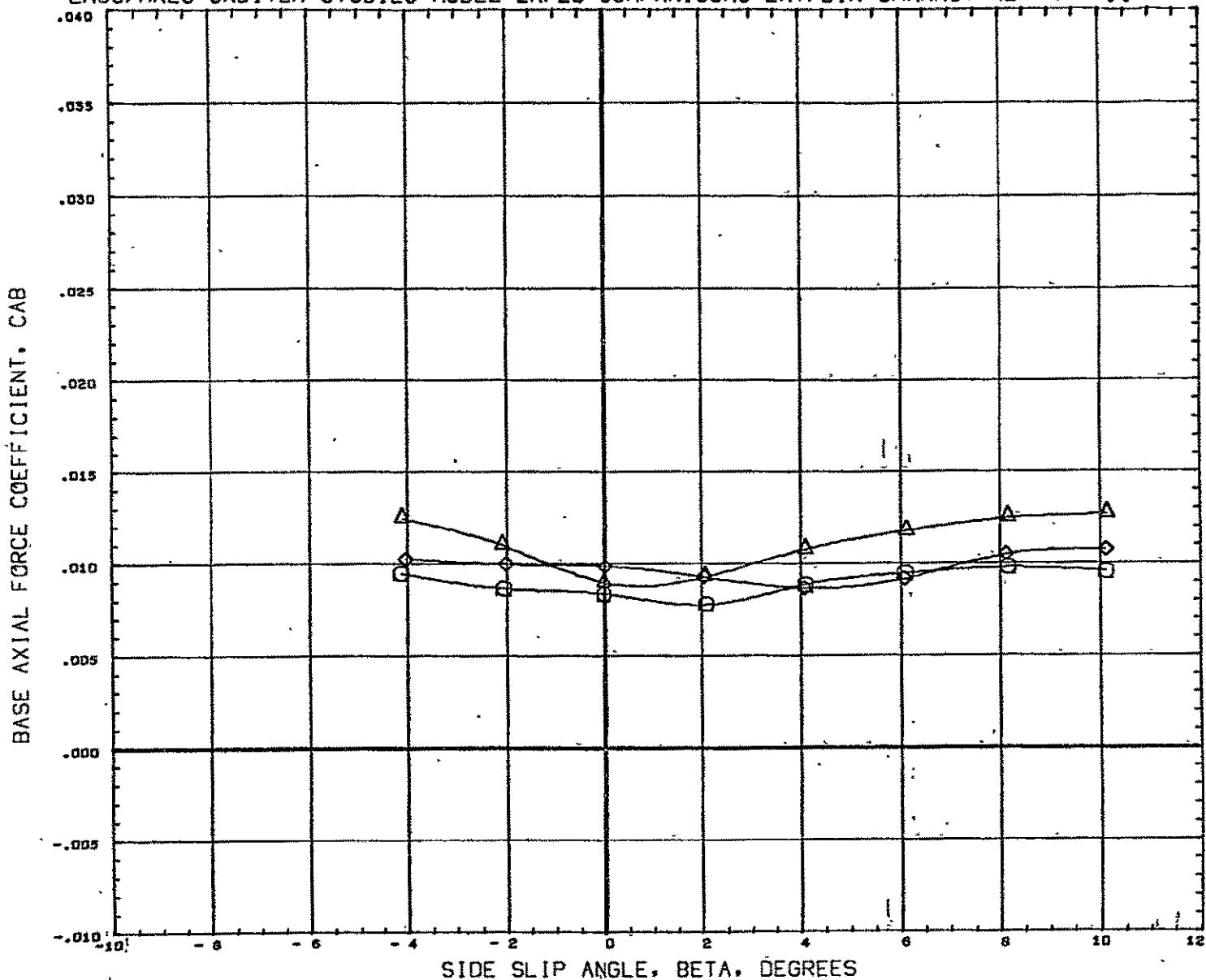


SIDE SLIP ANGLE, BETA, DEGREES

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(241D1Y)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	0.000			SREF 9.0250 SQ. IN
(A4114Y)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	0.000				LREF 6.1420 INCHES
(241D1)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4			0.000	0.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.899

LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 10

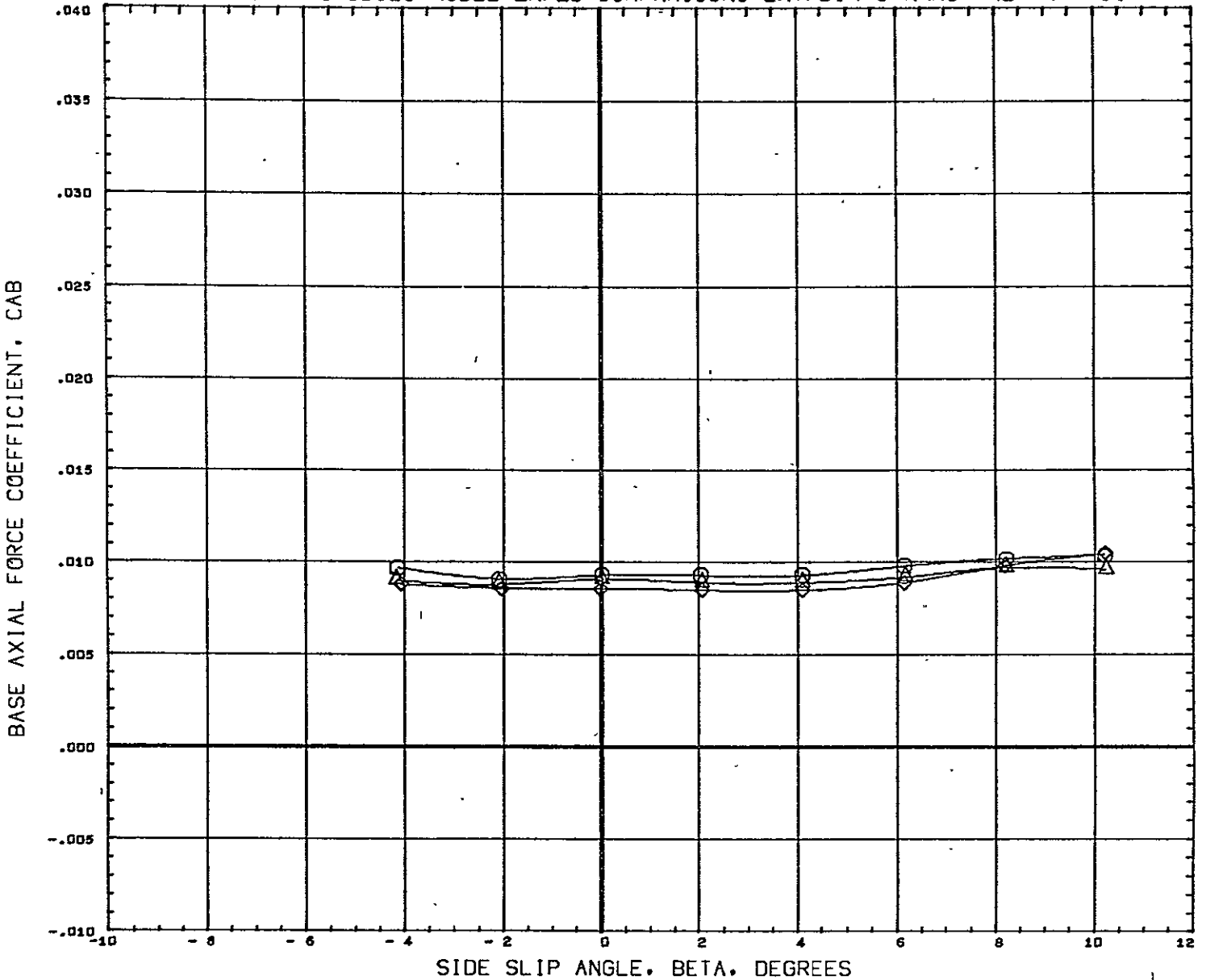


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEV3	RUDER2	ELEV4	RUDER4	REFERENCE INFORMATION	
(24101Y)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	0.000			SREF	9.0250 SQ. IN
(A4114Y)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	0.000				LREF	6.1420 INCHES
(241Y01)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4			0.000	0.000	BREF	6.1420 INCHES
						XMRP	3.9950 INCHES
						YMRP	0.0000 INCHES
						ZMRP	0.1350 INCHES
						SCALE	0.0033 SCALE

MACH 1.104



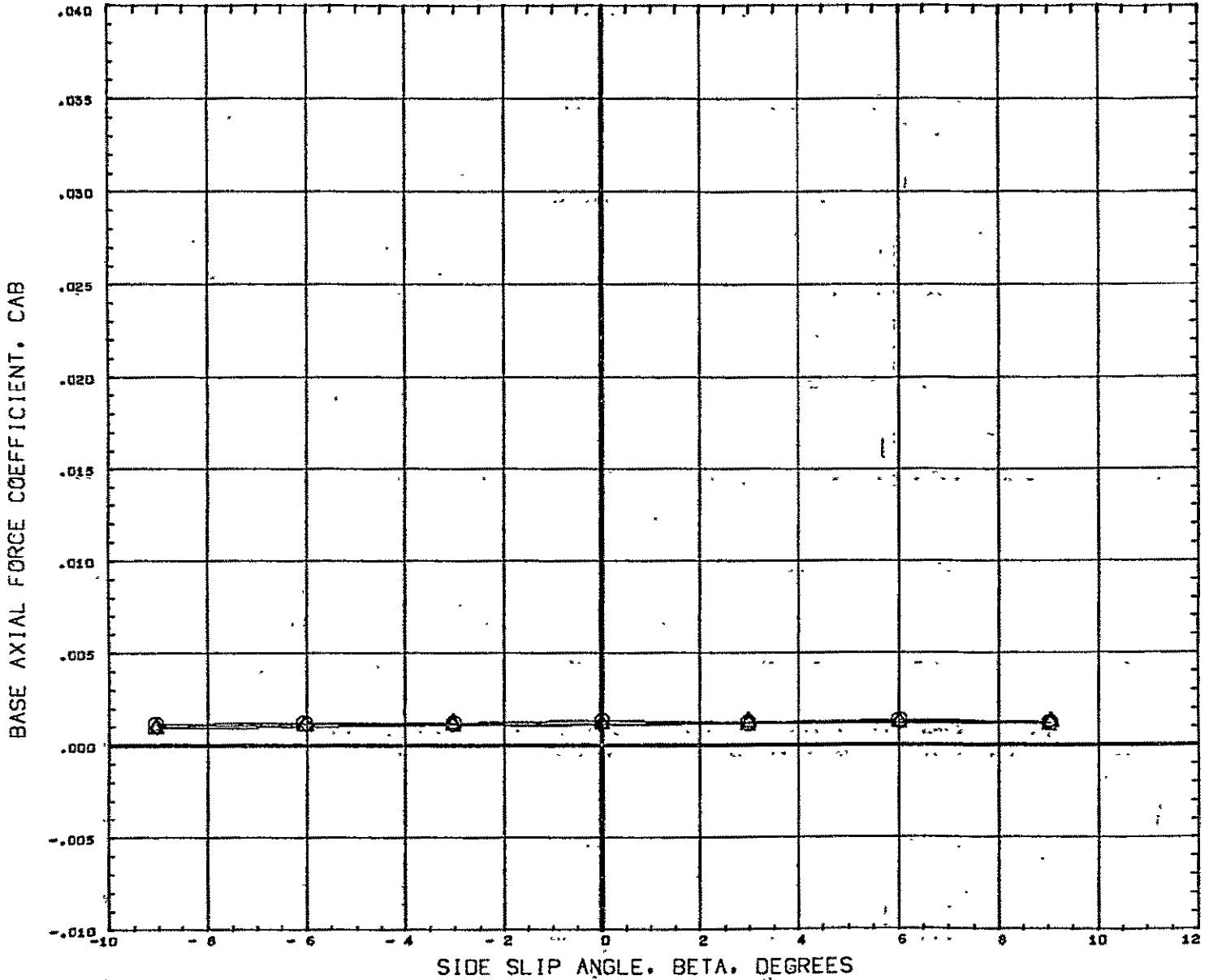
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 10



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(24101Y)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	0.000			SREF 9.0250 SQ. IN
(A4114Y)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	0.000				LREF 6.1420 INCHES
(241Y01)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4			0.000	0.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.964

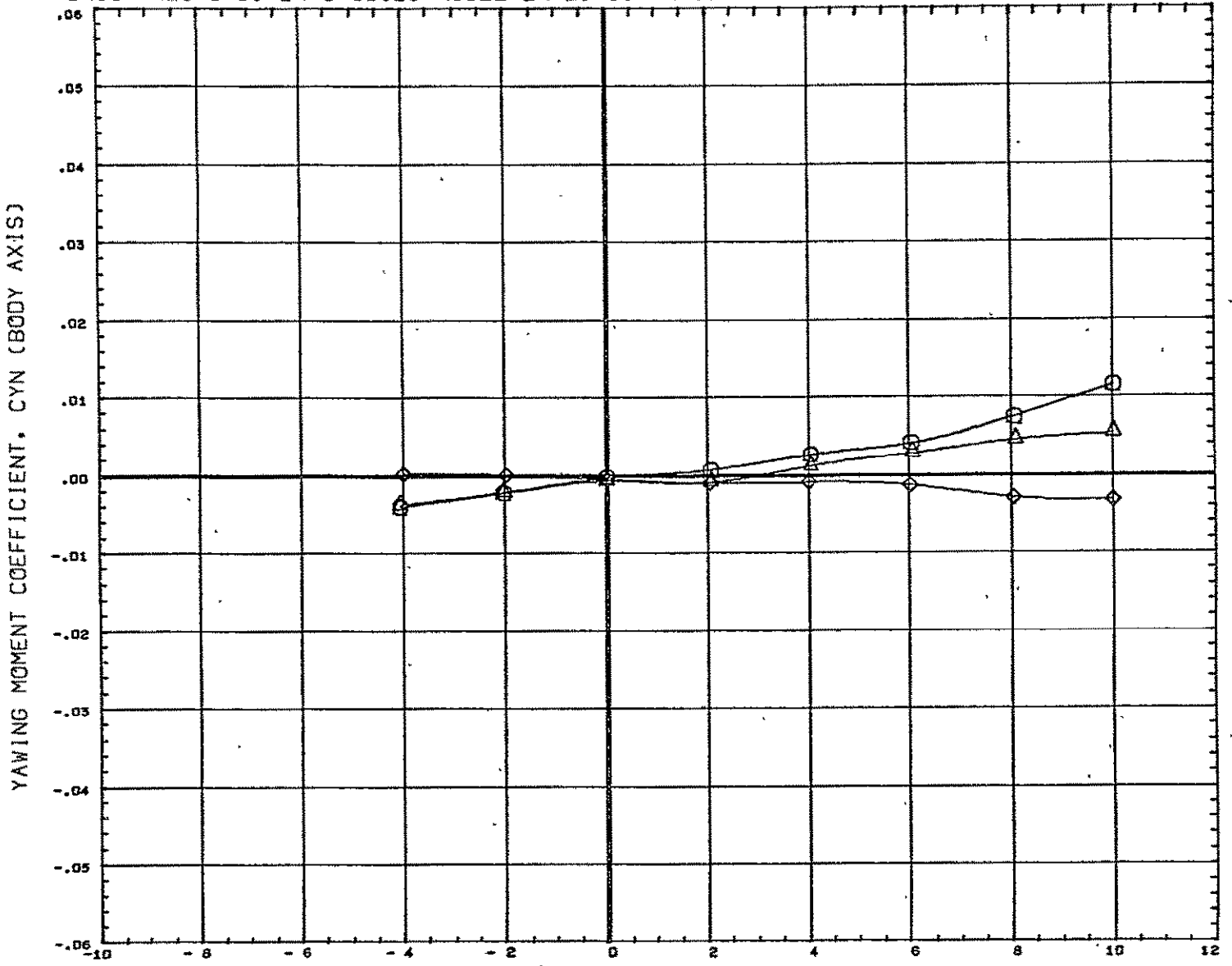
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 10



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(24101Y)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ.IN
(A4114Y)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000				LREF 6.1420 INCHES
(241Y01)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 4.960

LMSC/HREC ORBITER STUDIES--MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 15

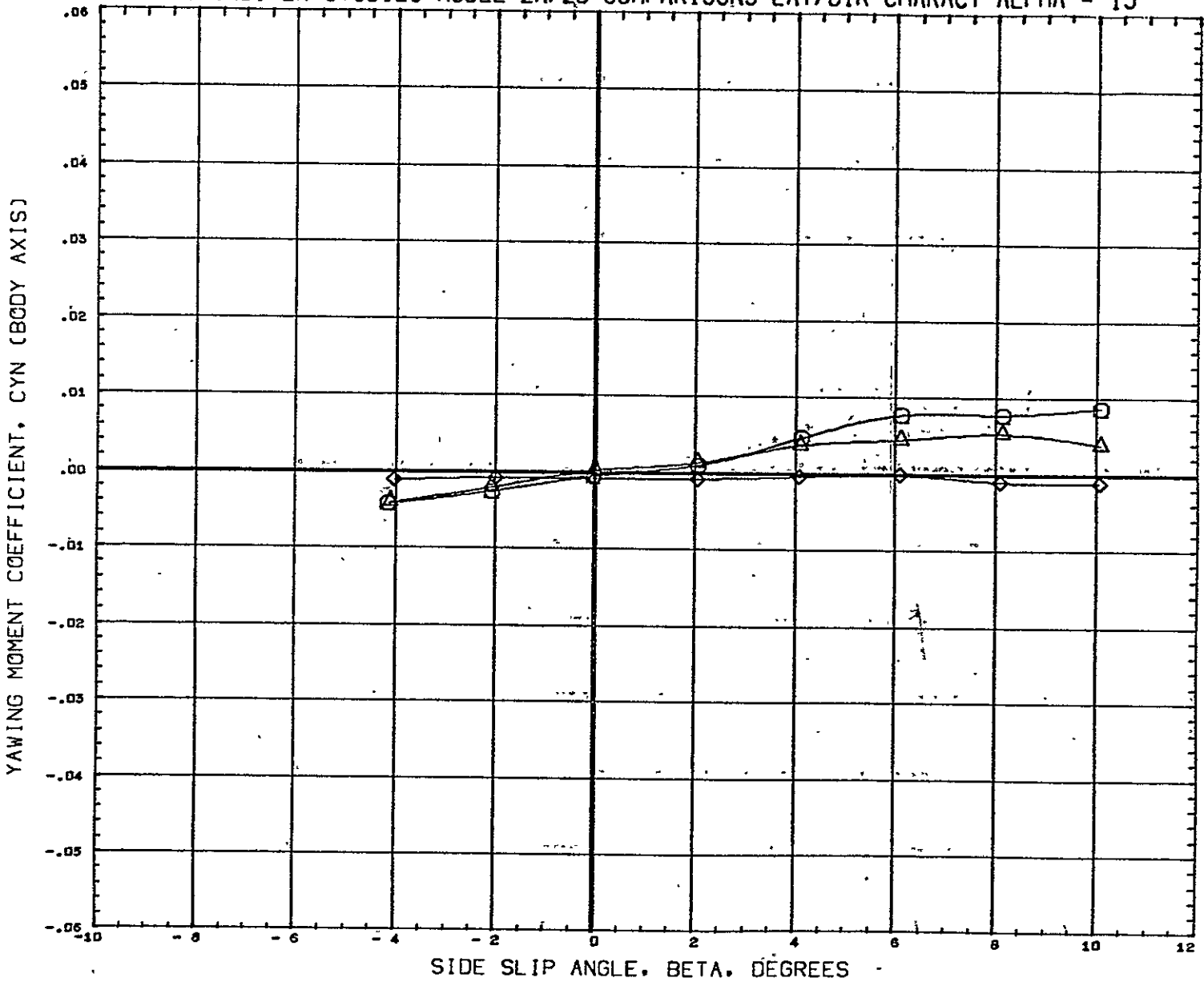


SIDE SLIP ANGLE, BETA, DEGREES

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(24101Z)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	0.000			SREF 9.0250 SQ. IN
(A4114Z)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	0.000				LREF 6.1420 INCHES
(2412D1)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4			0.000	-0.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.597

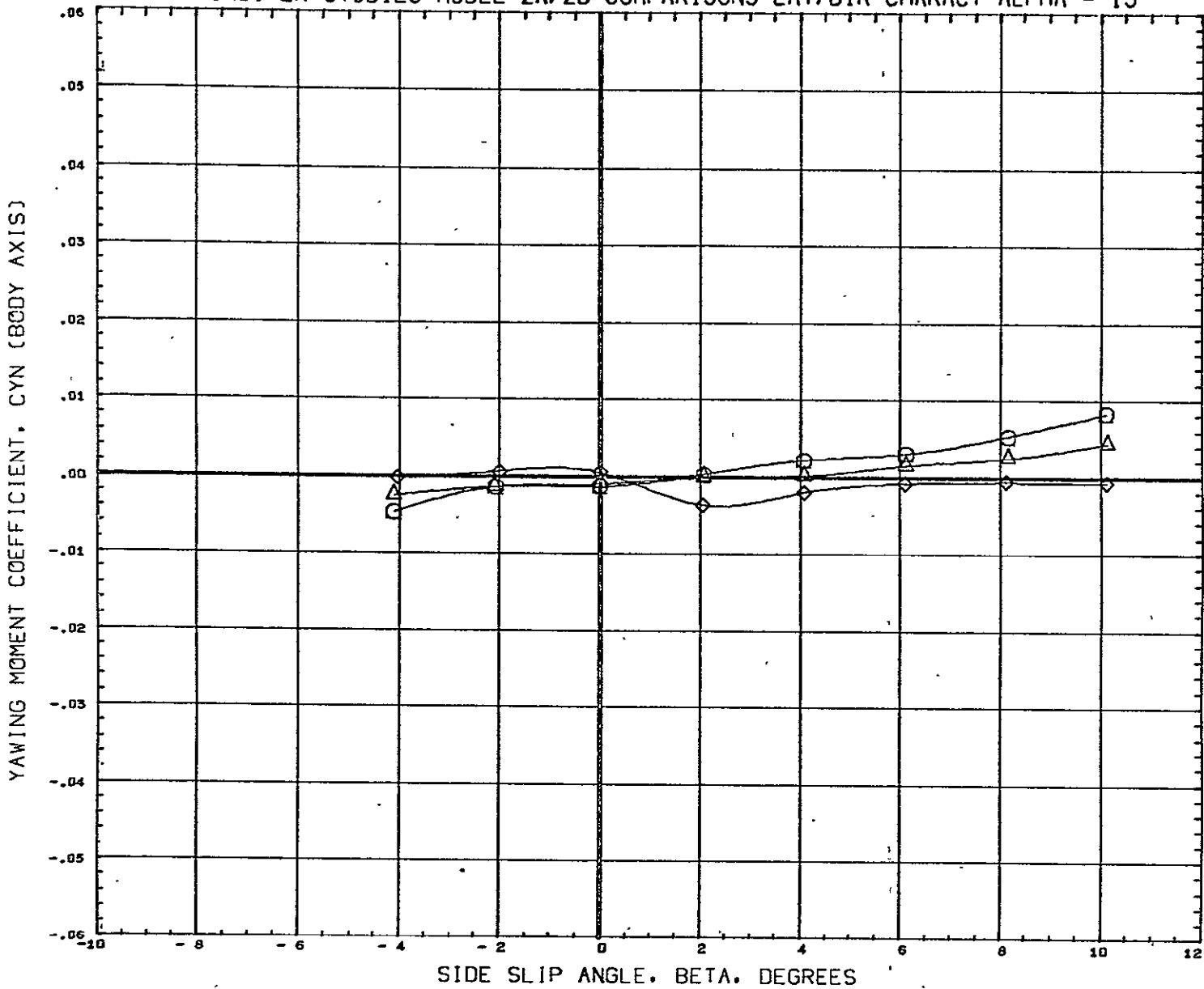
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 15



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(241012)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(A41142)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			LREF 6.1420 INCHES
(241201)	MSFC TWT 498 MSFC/HREC ORBITER	0.000		0.000	0.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.899

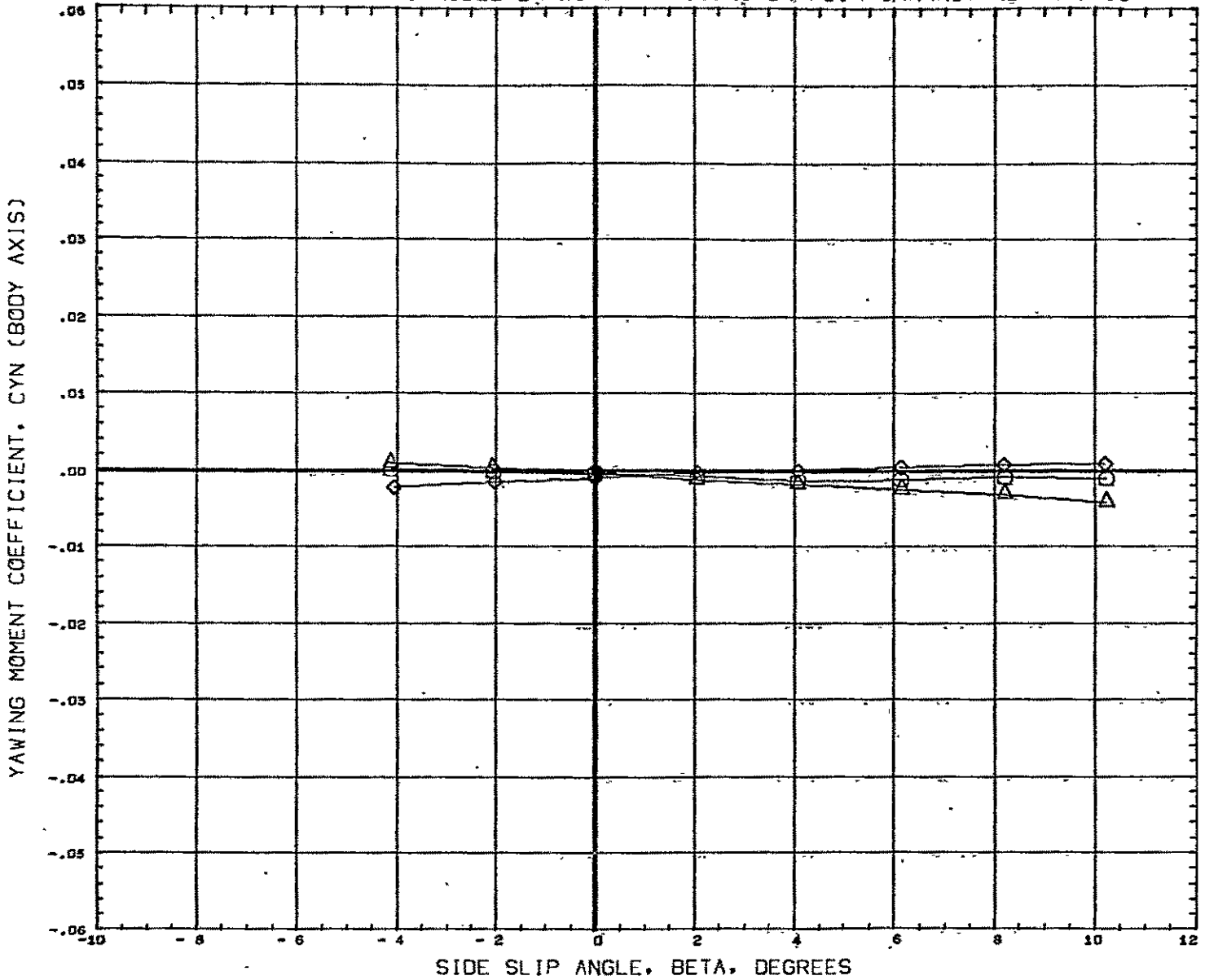
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 15



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(24101Z)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	0.000			SREF 9.0250 SQ. IN
(A4114Z)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	0.000				LREF 6.1420 INCHES
(241Z51)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4			0.000	0.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.098

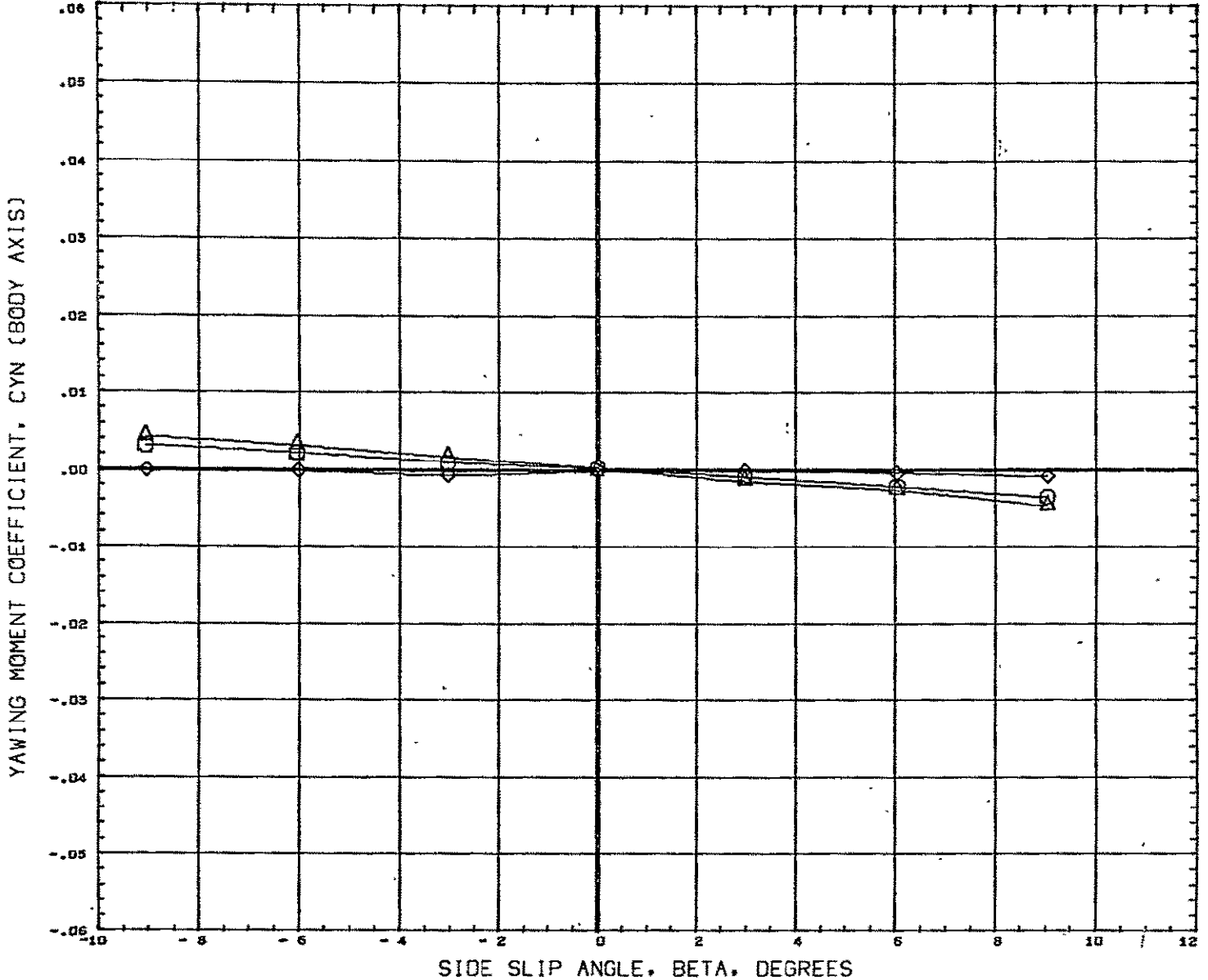
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 15



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(24101Z)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	0.000			SREF 9.0250 SQ. IN
(24114Z)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	0.000				LREF 6.1420 INCHES
(241201)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4			0.000	0.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.962

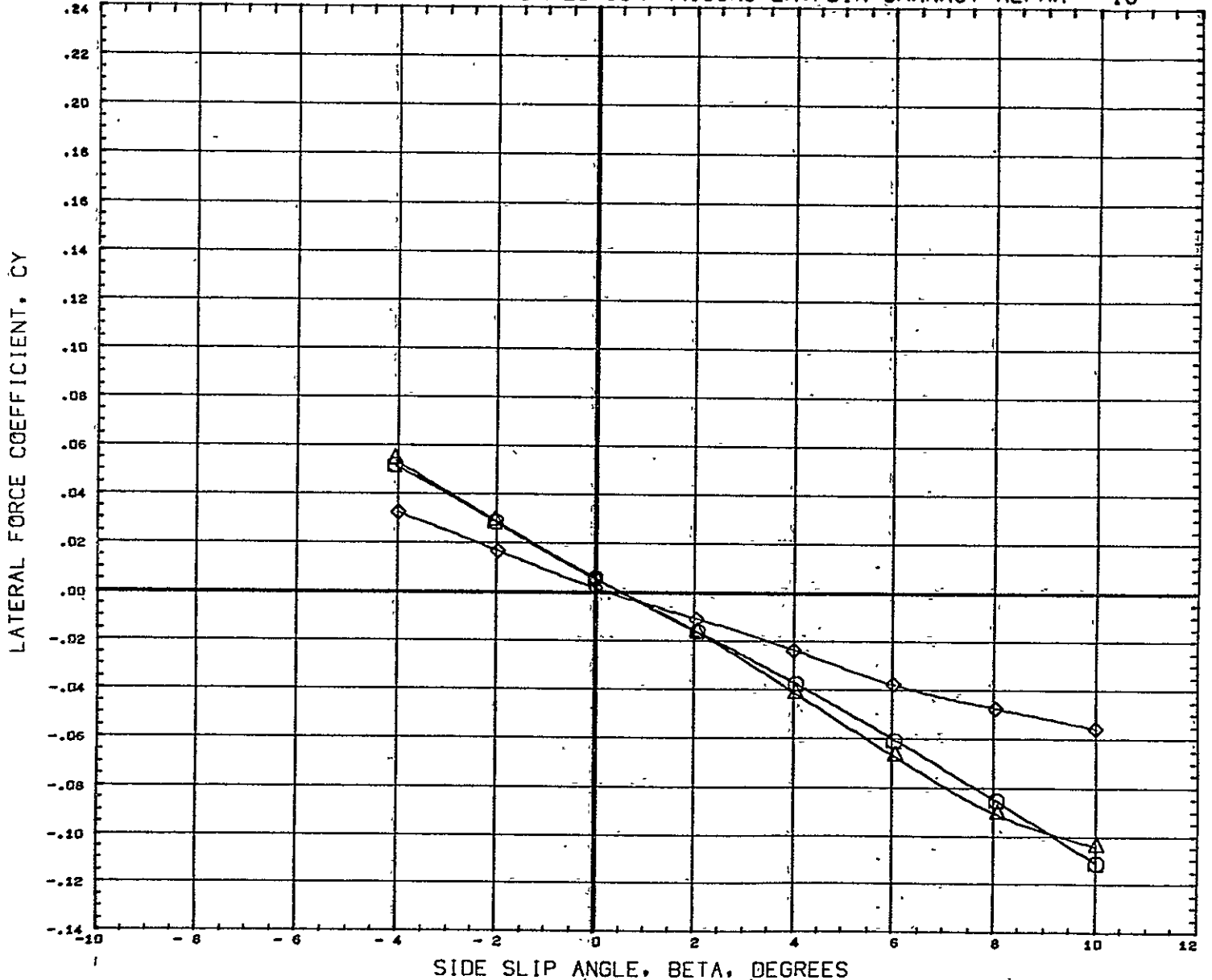
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 15



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(241012)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	0.000			SREF 9.0250 SQ. IN
(A41142)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	0.000				LREF 6.1420 INCHES
(241201)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4			0.000	0.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 4.960

LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 15

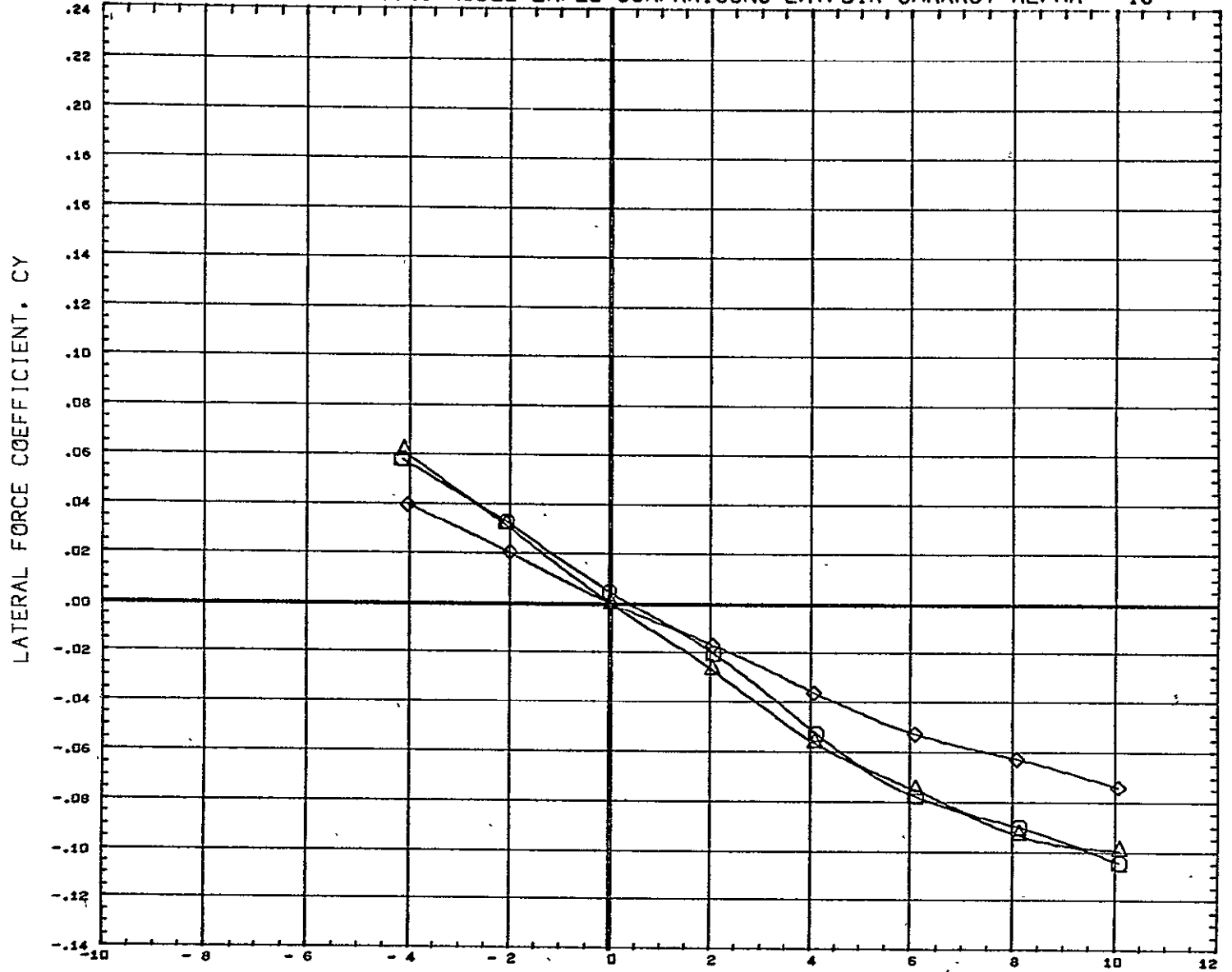


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(241D12)	○	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	0.000			SREF 9.0250 SQ. IN
(A4114Z)	△	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	0.000				LREF 6.1420 INCHES
(241ZD1)	◇	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4			0.000	0.000	BREF 6.1420 INCHES
							XMRP 3.9950 INCHES
							YMRP 0.0000 INCHES
							ZMRP 0.1350 INCHES
							SCALE 0.0033 SCALE

MACH 0.597



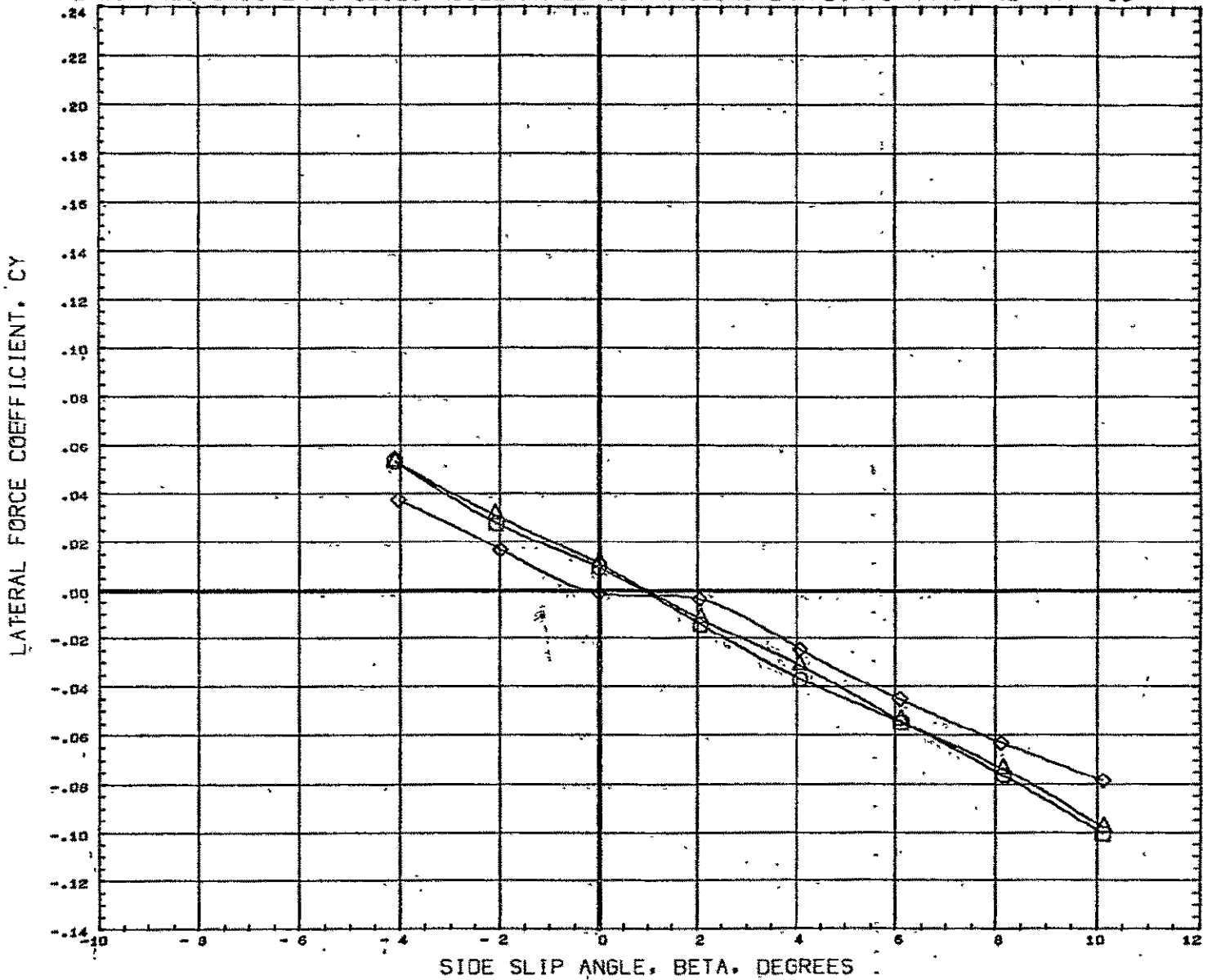
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 15



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(241D1Z)	○	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	0.000			SREF 9.0250 SQ. IN
(A4114Z)	△	MSFC TWT 498 MSFC/LHSC ORBITER B2W2V4D1E3R1	0.000				LREF 6.1420 INCHES
(241Z91)	◇	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4			0.000	0.000	BREF 6.1420 INCHES XMRP 3.9950 INCHES YMRP 0.0000 INCHES ZMRP 0.1350 INCHES SCALE 0.0033 SCALE

MACH 0.899

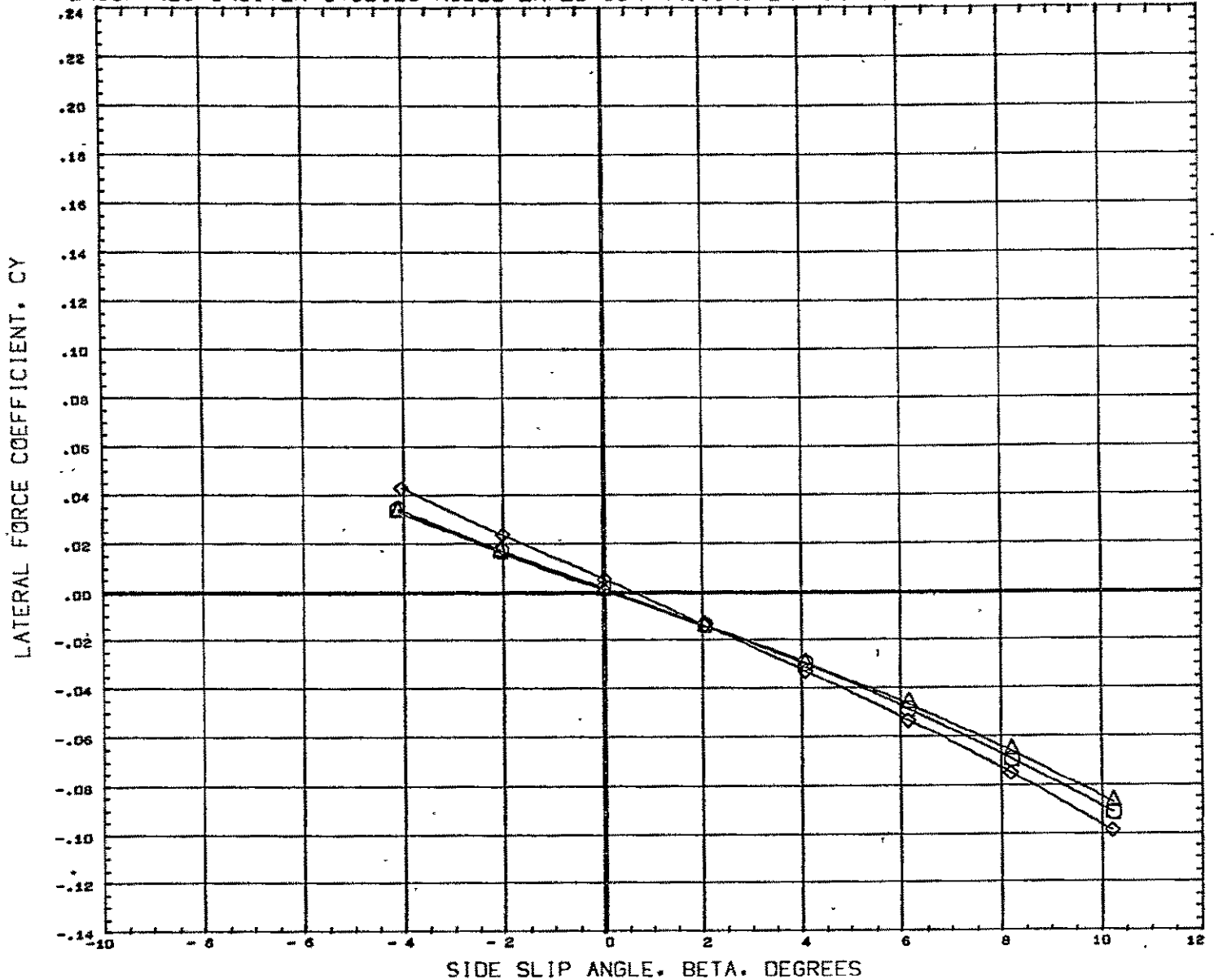
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 15



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEV3	RUDER2	ELEV4	RUDER4	REFERENCE INFORMATION
(24101Z)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(A4114Z)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000				LREF 6.1420 INCHES
(241Z01)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.098

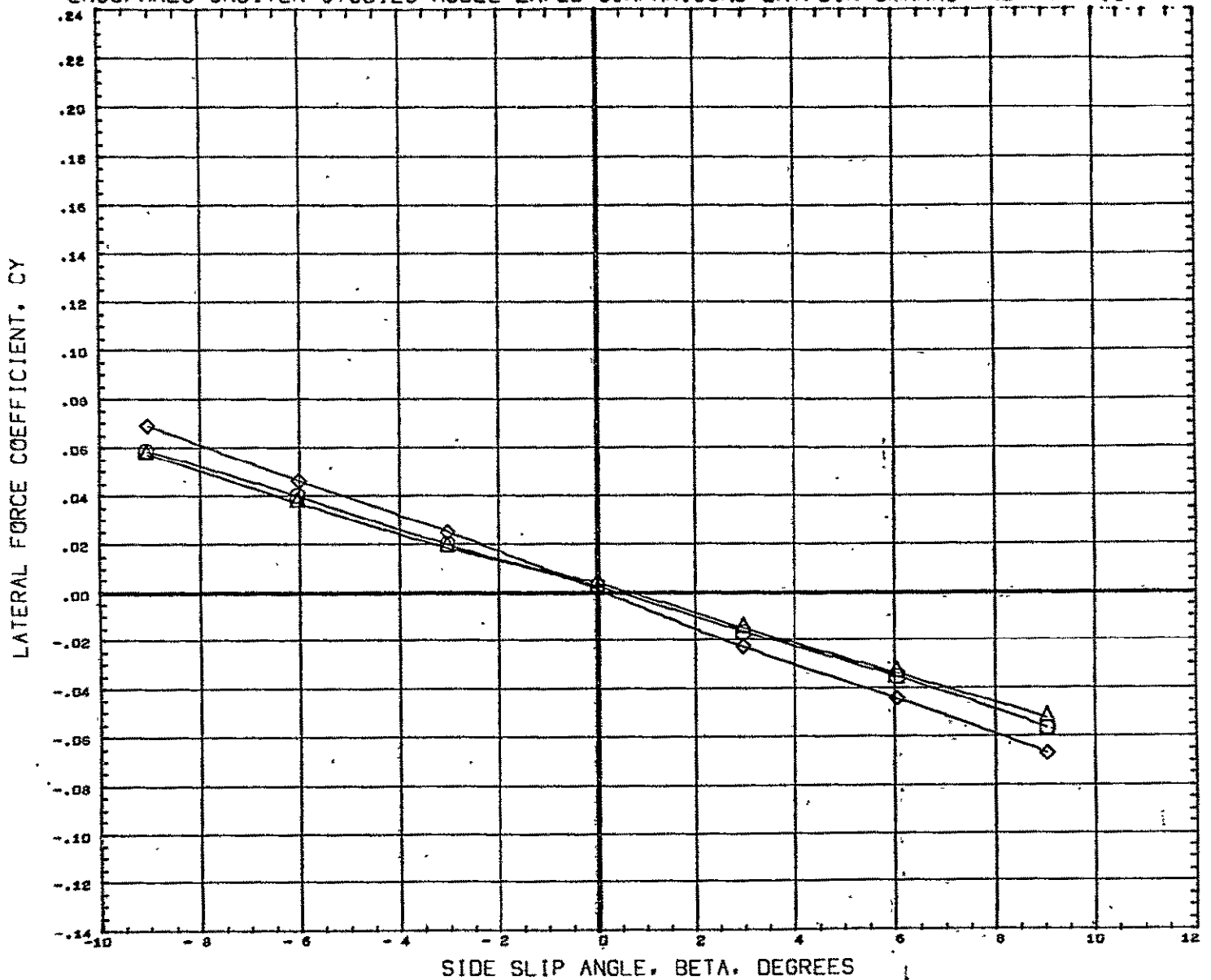
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 15



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(241012)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	0.000			SREF 9.0250 SQ. IN LREF 6.1420 INCHES
(A4114Z)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	0.000				BREF 6.1420 INCHES
(241201)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4			0.000	0.000	XMRP 3.9950 INCHES YMRP 0.0000 INCHES ZMRP 0.1350 INCHES SCALE 0.0033 SCALE

MACH 1.962

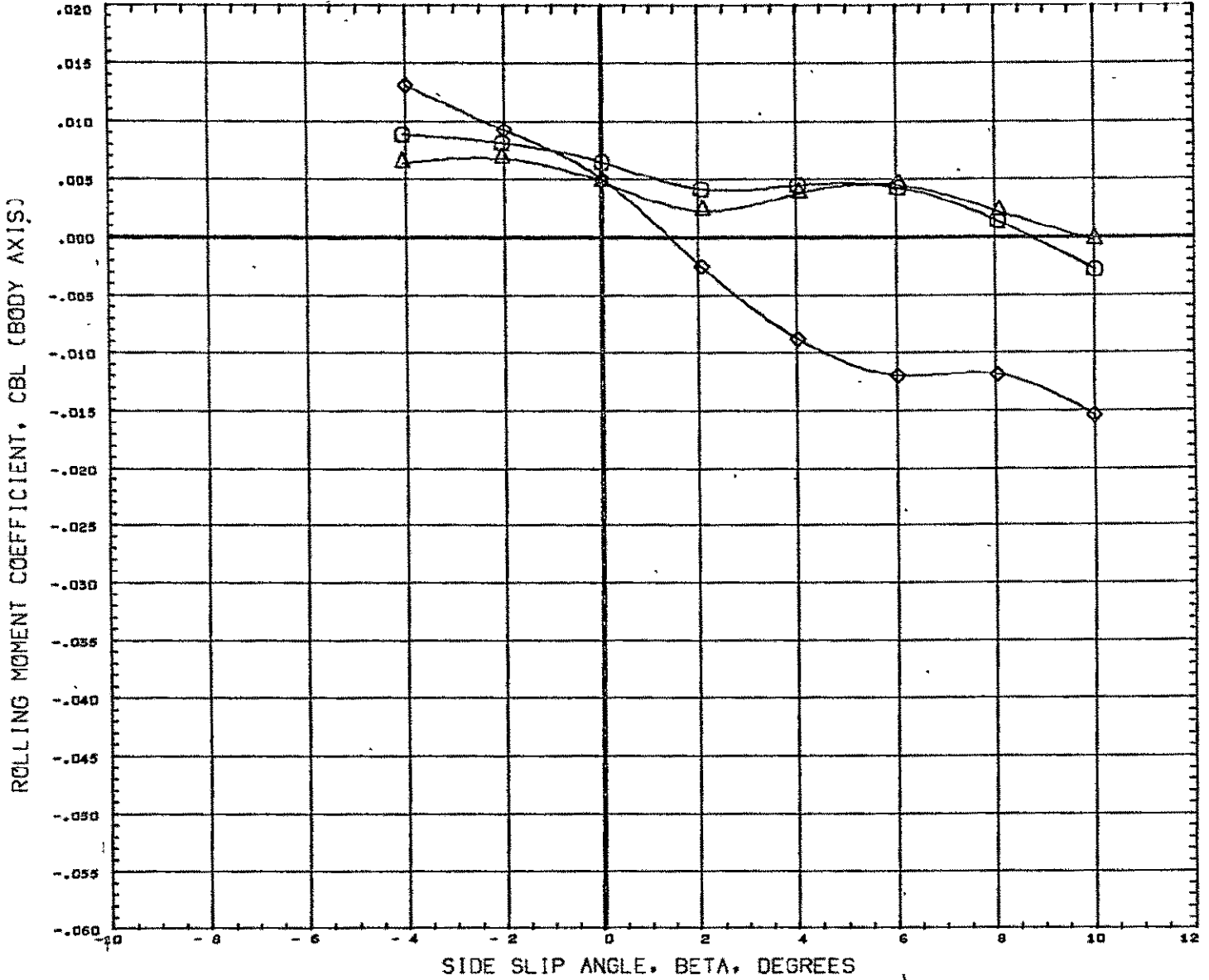
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 15



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(24101Z)	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	0.000	0.000		SREF 9.0250 SQ.IN
(A4114Z)	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D1E3R1	0.000			LREF 6.1420 INCHES
(241201)	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4		0.000	0.000	BREF 6.1420 INCHES
						XNRP 3.9950 INCHES
						YNRP 0.0000 INCHES
						ZNRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 4.960

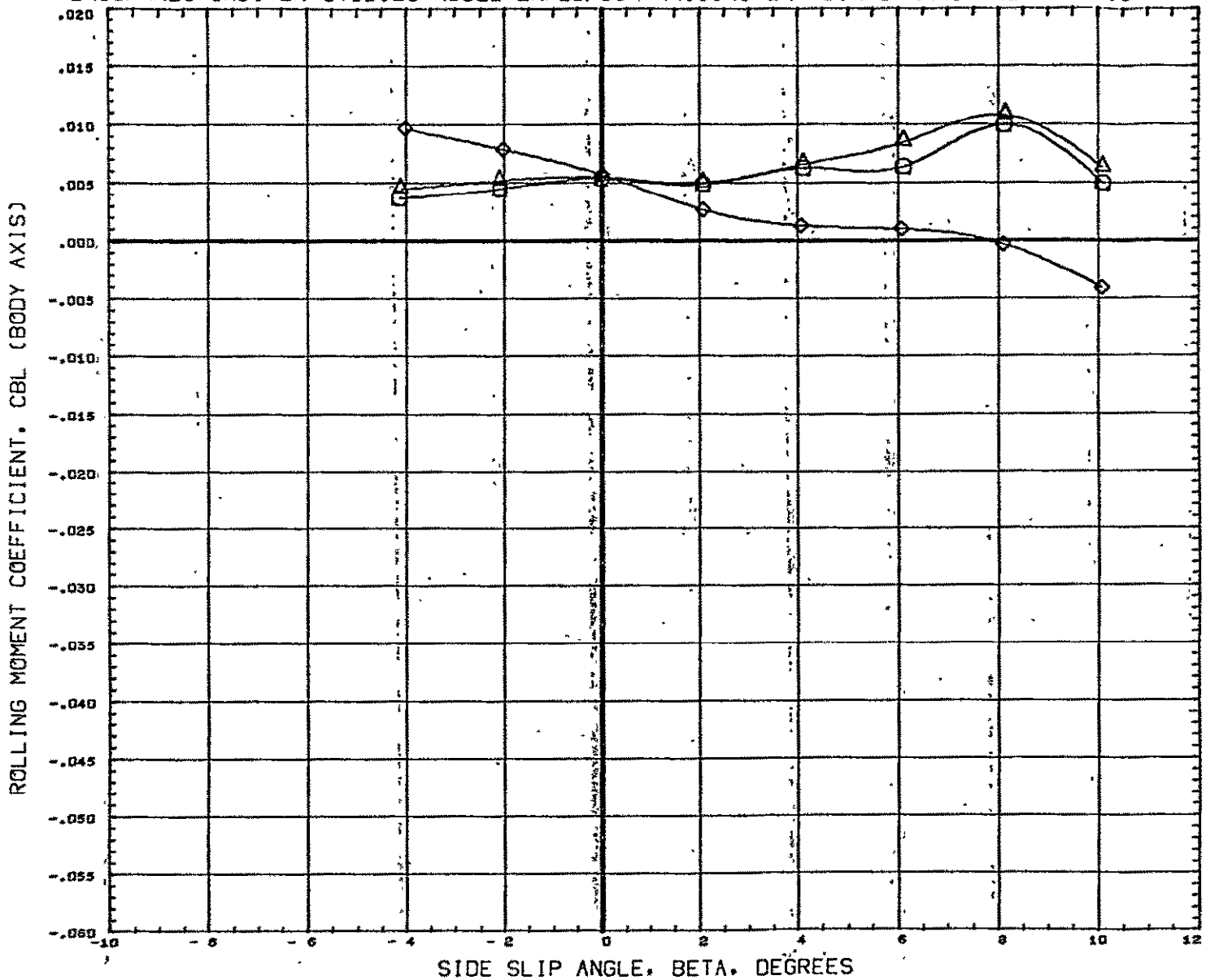
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 15



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVNS	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(24101Z)	○	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(A4114Z)	△	MSFC TWT 498 MSFC/LMSC ORBITER	0.000				LREF 6.1420 INCHES
(241201)	◇	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	BREF 6.1420 INCHES
							XMRP 3.9950 INCHES
							THRP 0.0000 INCHES
							ZHRP 0.1350 INCHES
							SCALE 0.0033 SCALE

MACH 0.597

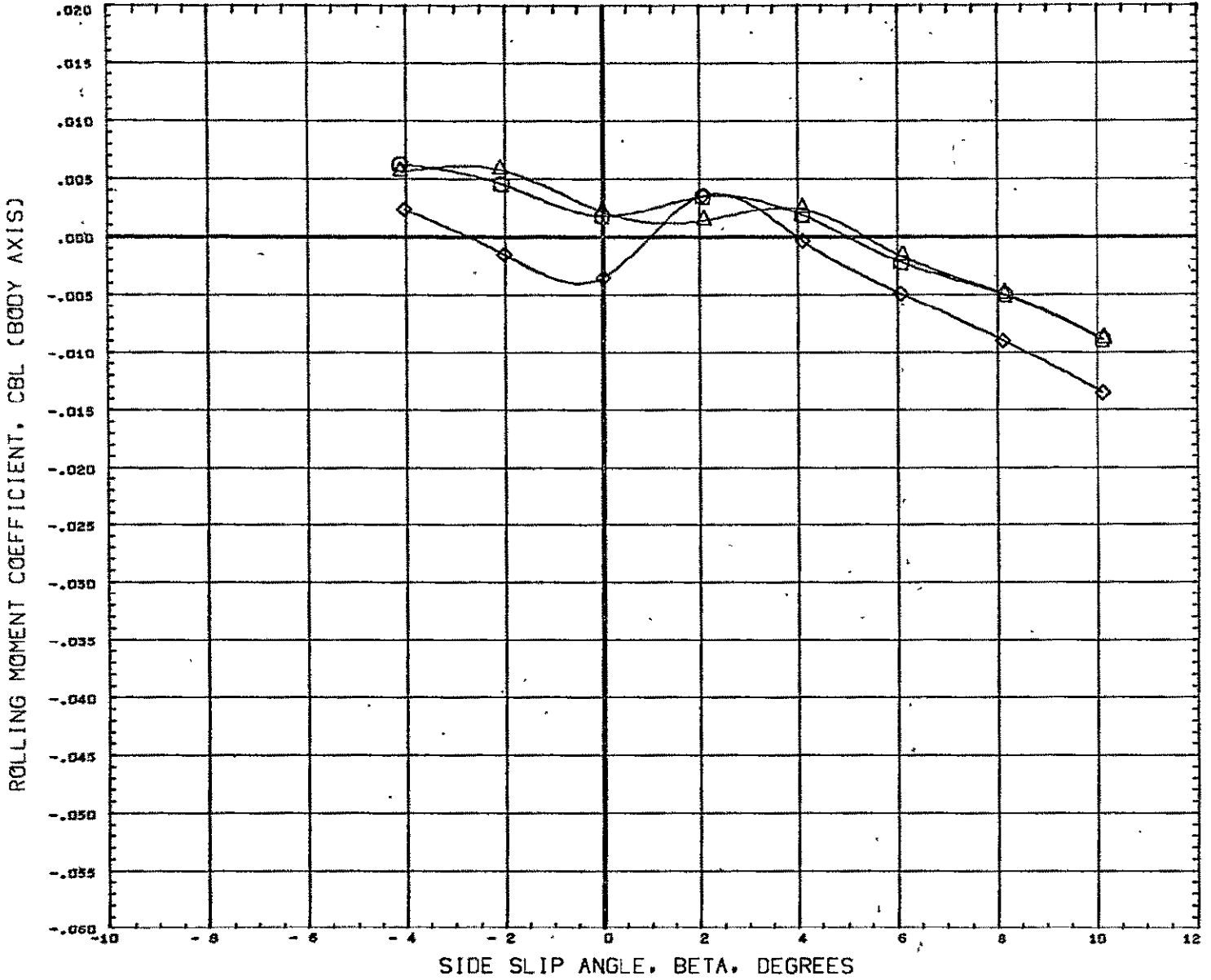
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 15



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEV3	RUDER2	ELEV4	RUDER4	REFERENCE INFORMATION
(241292)	○	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	0.000	0.000		SREF 9.0250 SQ.IN
(A41142)	△	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D1E3R1	0.000			LREF 6.1420 INCHES
(241291)	◇	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4		0.000	0.000	BREF 6.1420 INCHES
							XMRP 3.9950 INCHES
							YMRP 0.0000 INCHES
							ZMRP 0.1350 INCHES
							SCALE 0.0033 SCALE

MACH 0.899

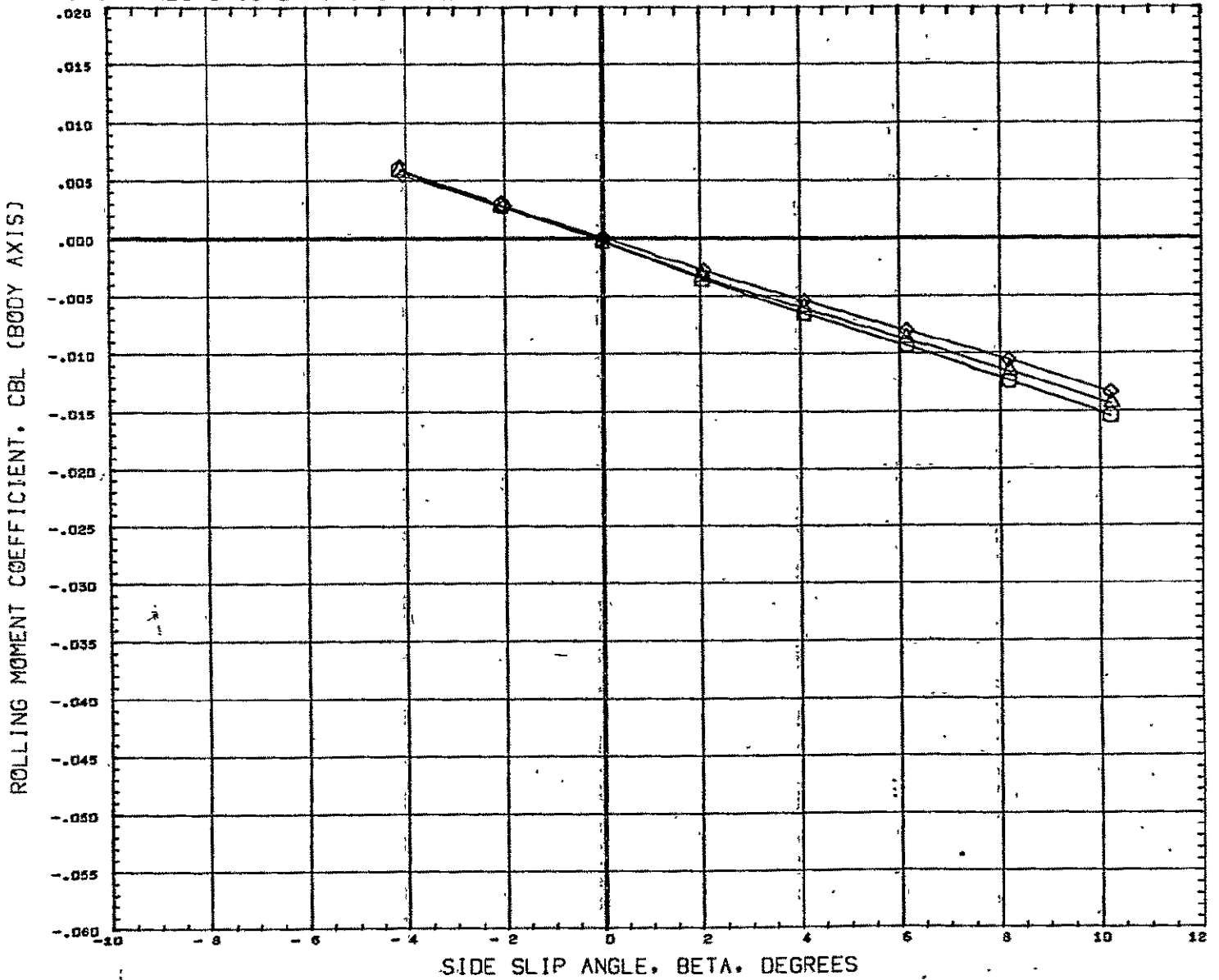
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 15



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEV3	RUDER2	ELEV4	RUDER4	REFERENCE INFORMATION
(24101Z)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	0.000			SREF 9.0250 SQ. IN
(A4114Z)	MSFC TWT 498 MSFC/LHSC ORBITER B2W2V4D1E3R1	0.000				LREF 6.1420 INCHES
(241Z01)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4			0.000	0.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.098

LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 15

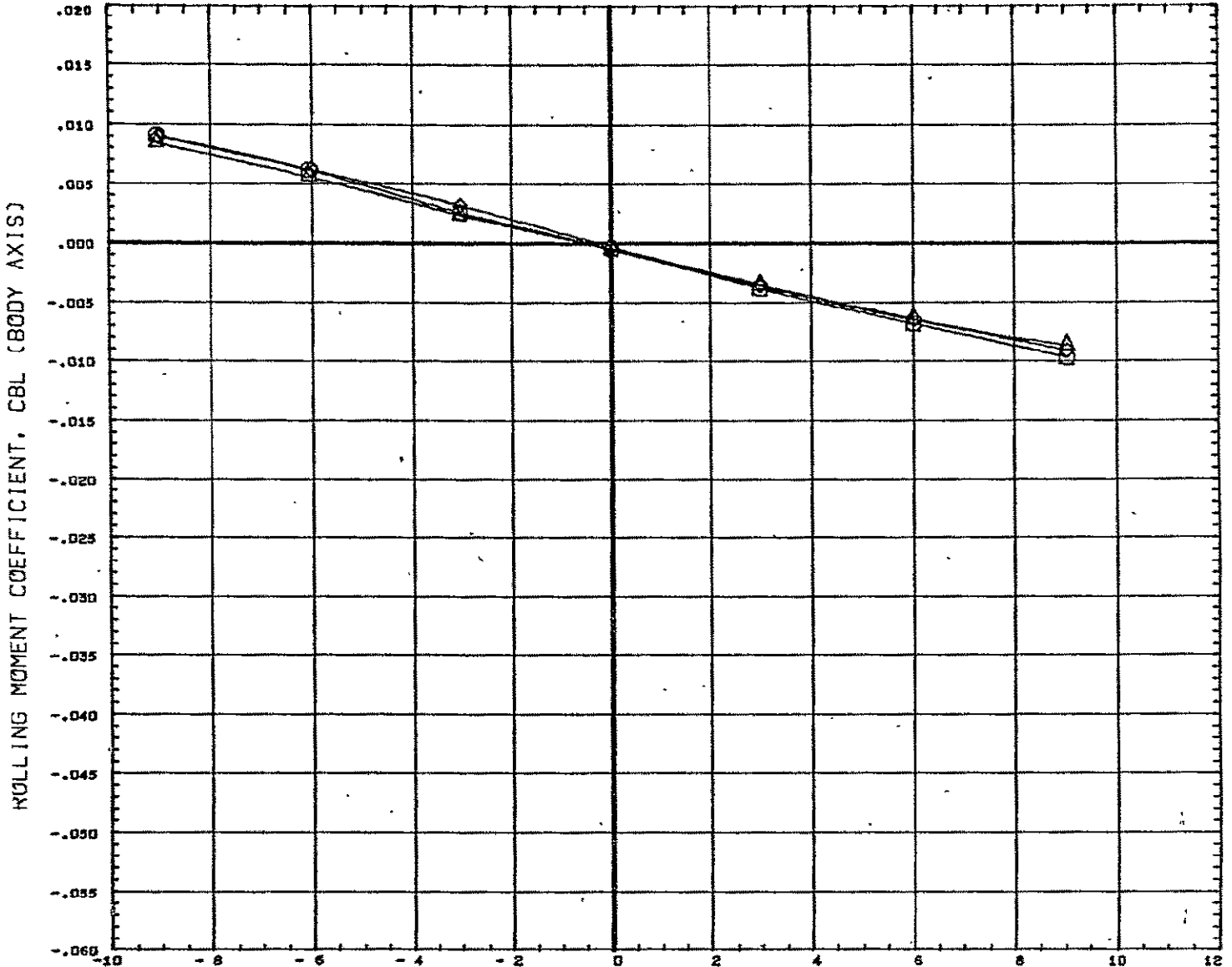


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEV3	RUDER2	ELEV4	RUDER4	REFERENCE INFORMATION	
(24101Z)	○	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	0.000	0.000		SREF	9.0250 SQ. IN
(A4114Z)	△	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D1E3R1	0.000			LREF	6.1420 INCHES
(241201)	◇	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4		0.000	0.000	BREF	6.1420 INCHES
							XHRP	3.9950 INCHES
							YHRP	0.0000 INCHES
							ZHRP	0.1350 INCHES
							SCALE	0.0033 SCALE

MACH 1.962



LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 15

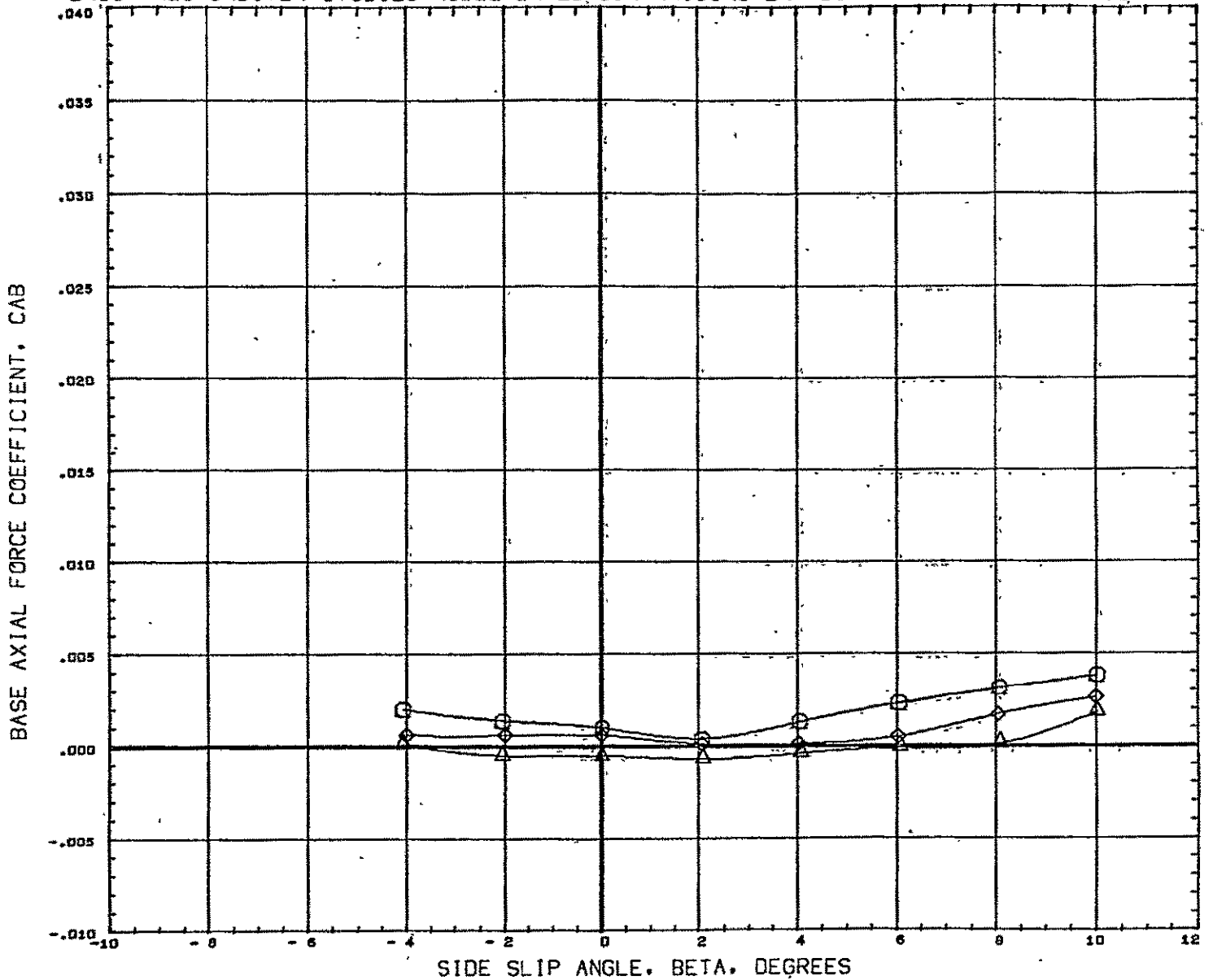


SIDE SLIP ANGLE, BETA, DEGREES

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(241012)	○	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000		1	SREF 9.0250 SQ. IN
(A4114Z)	△	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			LREF 6.1420 INCHES
(241201)	◇	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	BREF 6.1420 INCHES
							XMRP 3.9950 INCHES
							YMRP 0.0000 INCHES
							ZMRP 0.1350 INCHES
							SCALE 0.0053 SCALE

MACH 4.960

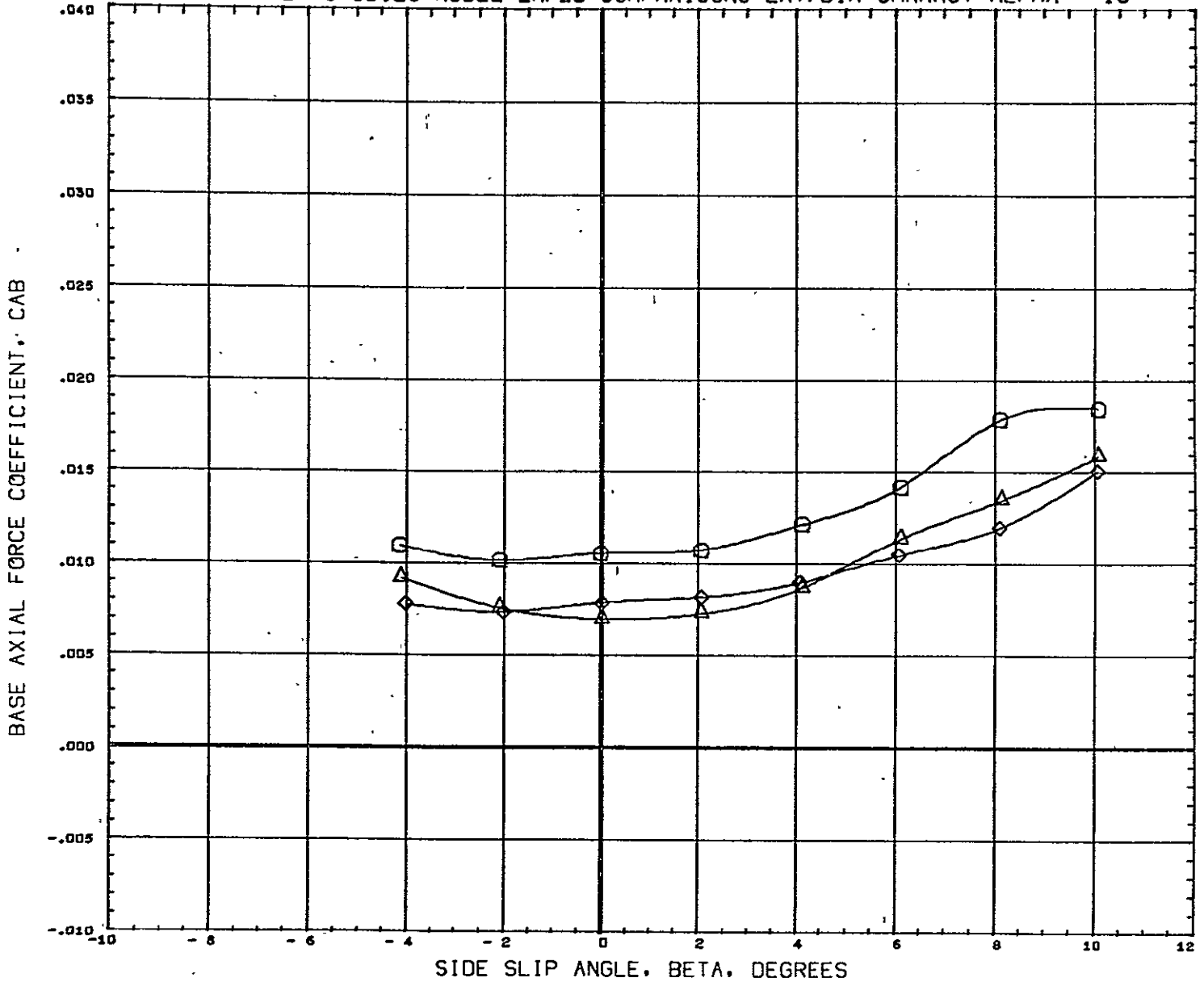
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 15



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEV3	RUDER2	ELEV4	RUDER4	REFERENCE INFORMATION
(241D1Z)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(A4114Z)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000				LREF 6.1420 INCHES
(241ZD1)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	BREF 6.1420 INCHES
						XHRP 3.9950 INCHES
						YHRP 0.0000 INCHES
						ZHRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.597

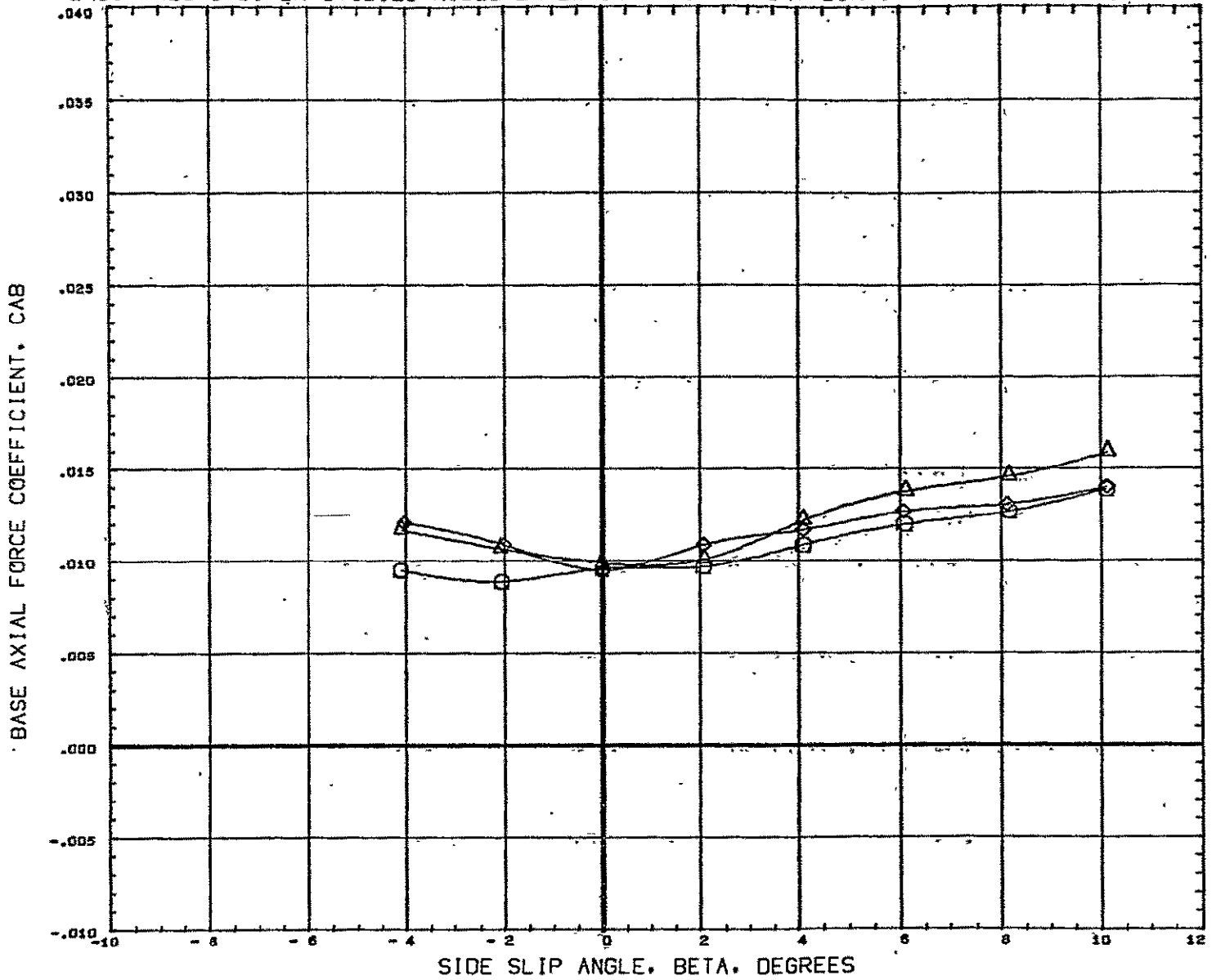
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 15



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(241D1Z)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	0.000			SREF 9.0250 SQ. IN
(A4114Z)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	0.000				LREF 6.1420 INCHES
(241ZD1)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4			0.000	0.000	BREF 6.1420 INCHES
						XHRP 3.9950 INCHES
						YHRP 0.0000 INCHES
						ZHRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 0.899

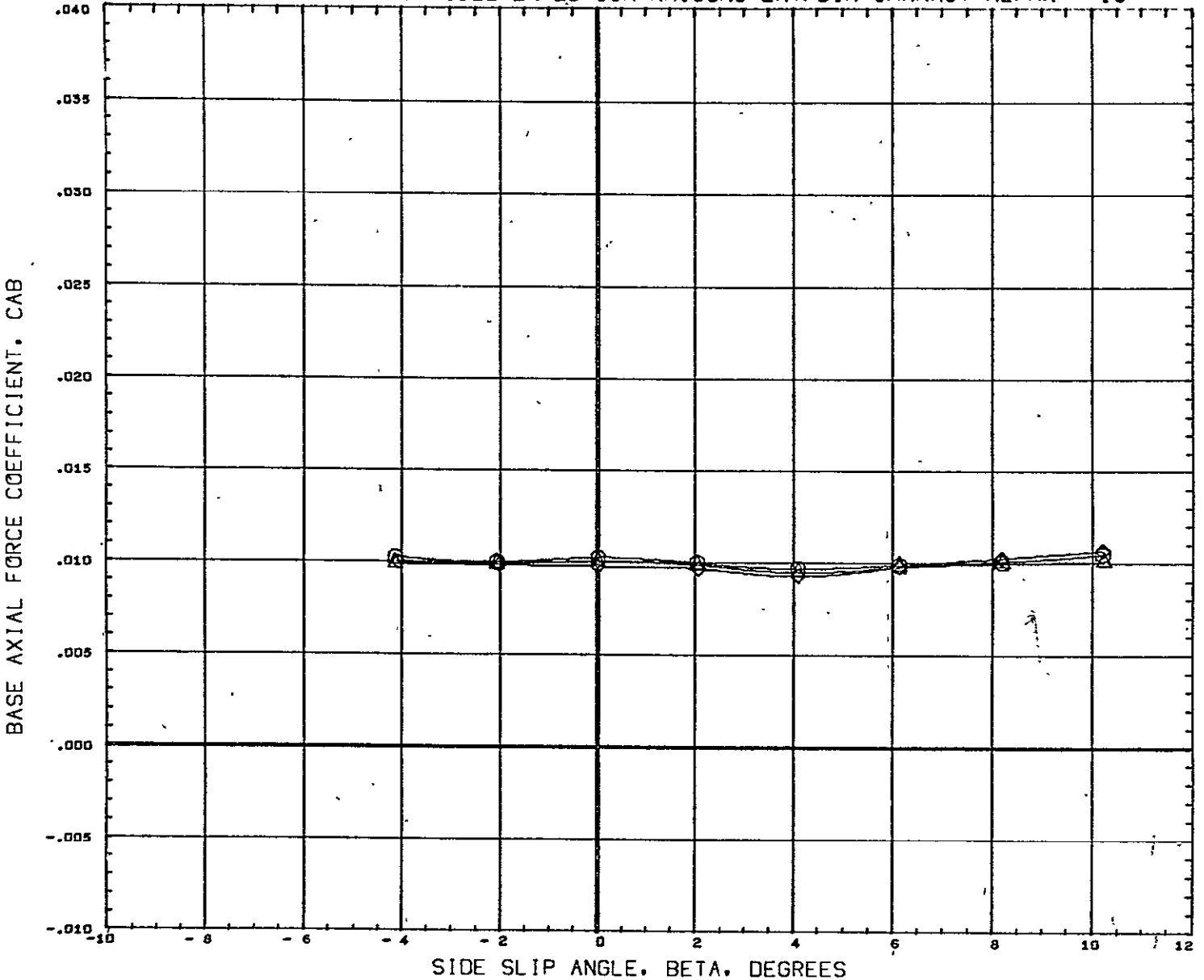
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 15



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(24101Z)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	0.000			SREF 9.0250 SQ. IN
(44114Z)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	0.000				LREF 6.1420 INCHES
(241201)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4			0.000	0.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.098

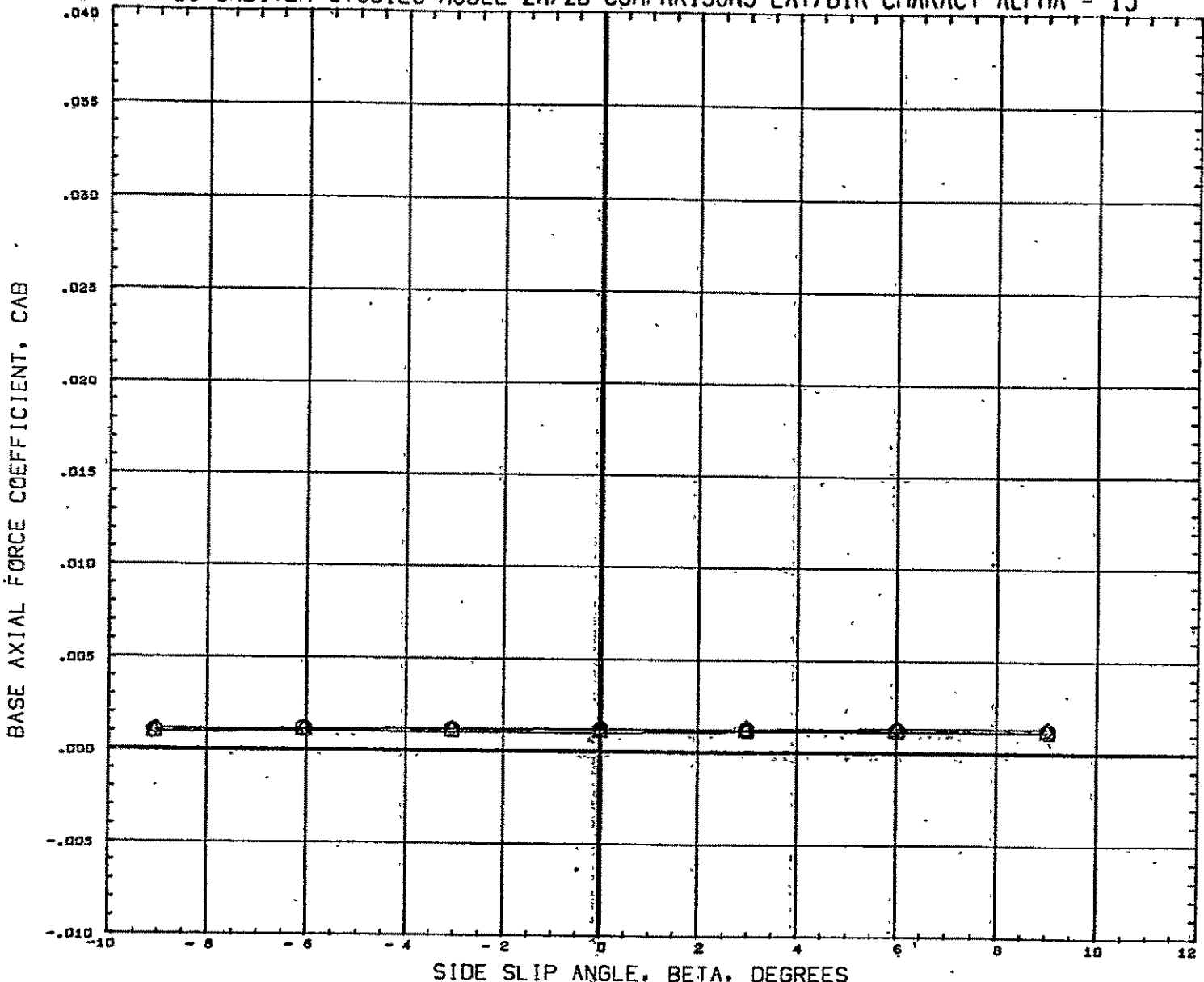
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 15



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(24101Z)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D2E3R2	0.000	0.000			SREF 9.0250 SQ. IN
(A4114Z)	MSFC TWT 498 MSFC/LMSC ORBITER B2W2V4D1E3R1	0.000				LREF 6.1420 INCHES
(241201)	MSFC TWT 498 MSFC/HREC ORBITER B2W5V2E4R4			0.000	0.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 1.962

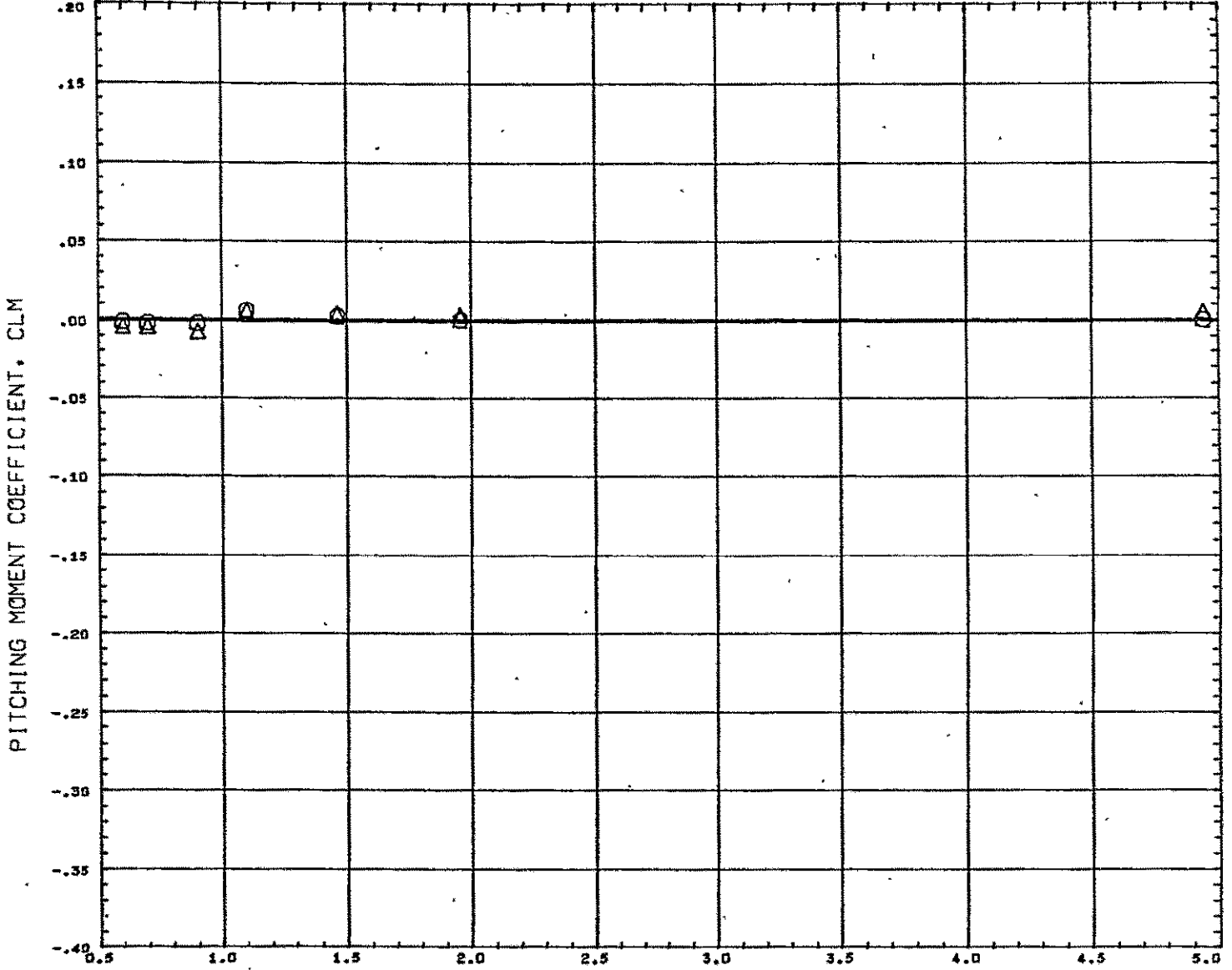
LMSC/HREC ORBITER STUDIES-MODEL 2A/2B COMPARISONS LAT/DIR CHARACT ALPHA = 15



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVNS	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(24101Z)	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	0.000			SREF 9.0250 SQ. IN
(A4114Z)	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D1E3R1	0.000			LREF 6.1420 INCHES
(241201)	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4		0.000	0.000	BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

MACH 4.960

LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-LONGIT CHARACT VS MACH NO. (BETA=0)

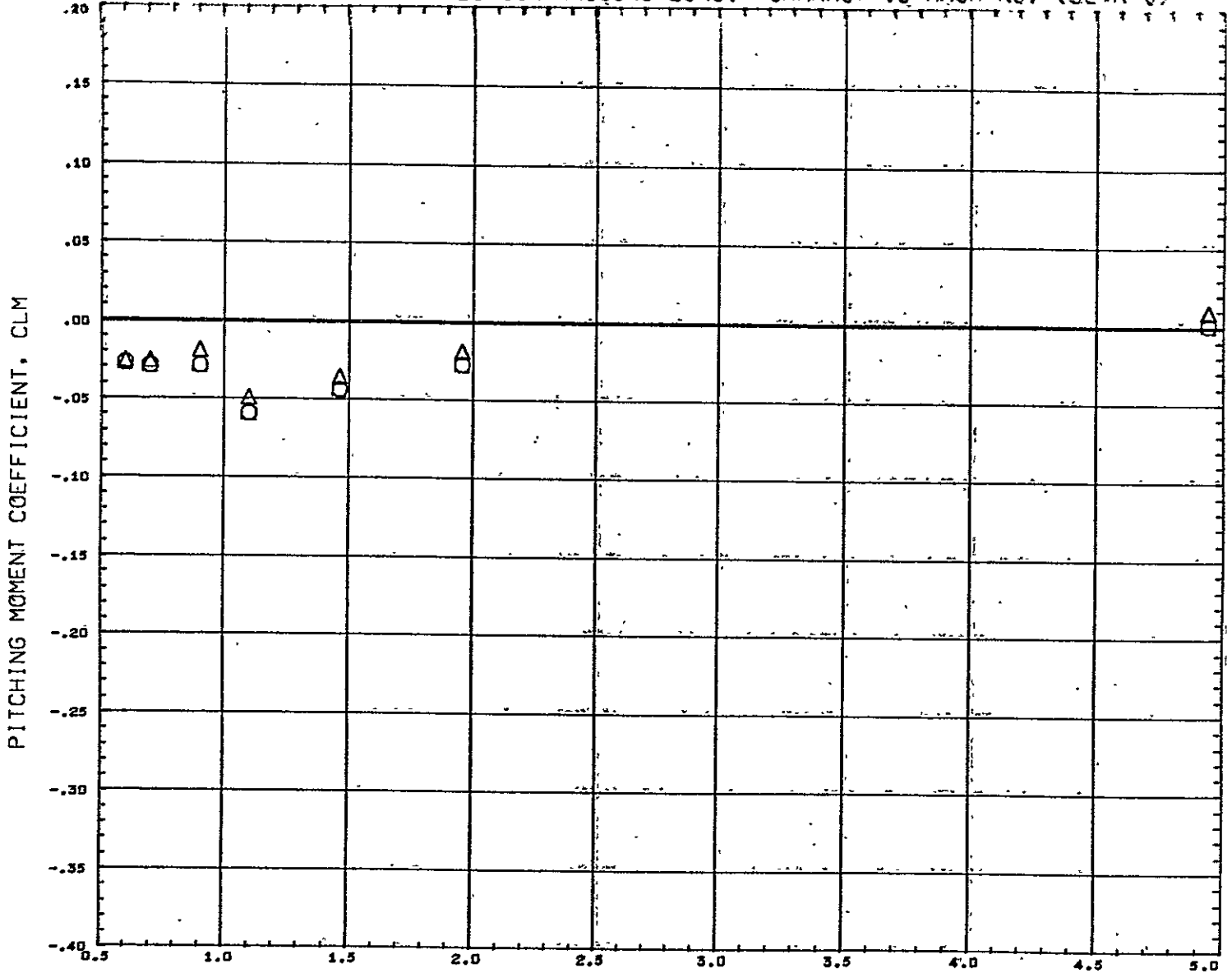


MACH NUMBER

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(E4101S)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(E41501)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

ALPHA 0.000

LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-LONGIT CHARACT VS MACH NO. (BETA=0)



DATA SET SYMBOL CONFIGURATION DESCRIPTION  
 (E41018)  $\odot$  MSFC TWT 498 MSFC/LMSC ORBITER  
 (E41501)  $\triangle$  MSFC TWT 498 MSFC/HREC ORBITER

B2W2V4D2E3R2  
 B2W5V2E4R4

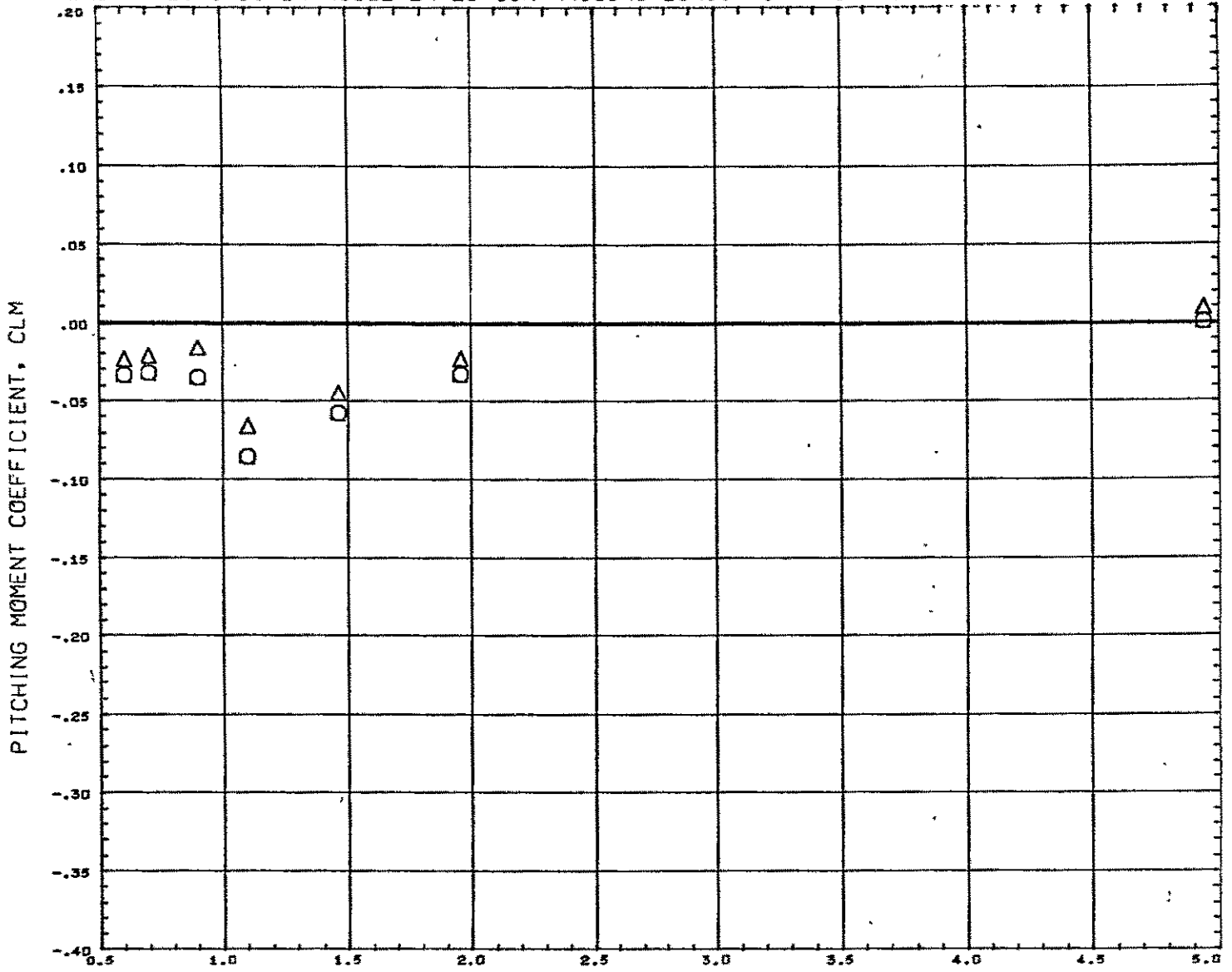
ELEVN3 RUDER2 ELEVN4 RUDER4  
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REFERENCE INFORMATION  
 SREF 9.0250 SQ. IN  
 LREF 6.1420 INCHES  
 BREF 6.1420 INCHES  
 XHRP 3.9950 INCHES  
 YHRP 0.0000 INCHES  
 ZHRP 0.1350 INCHES  
 SCALE 0.0033 SCALE

ALPHA 10.000



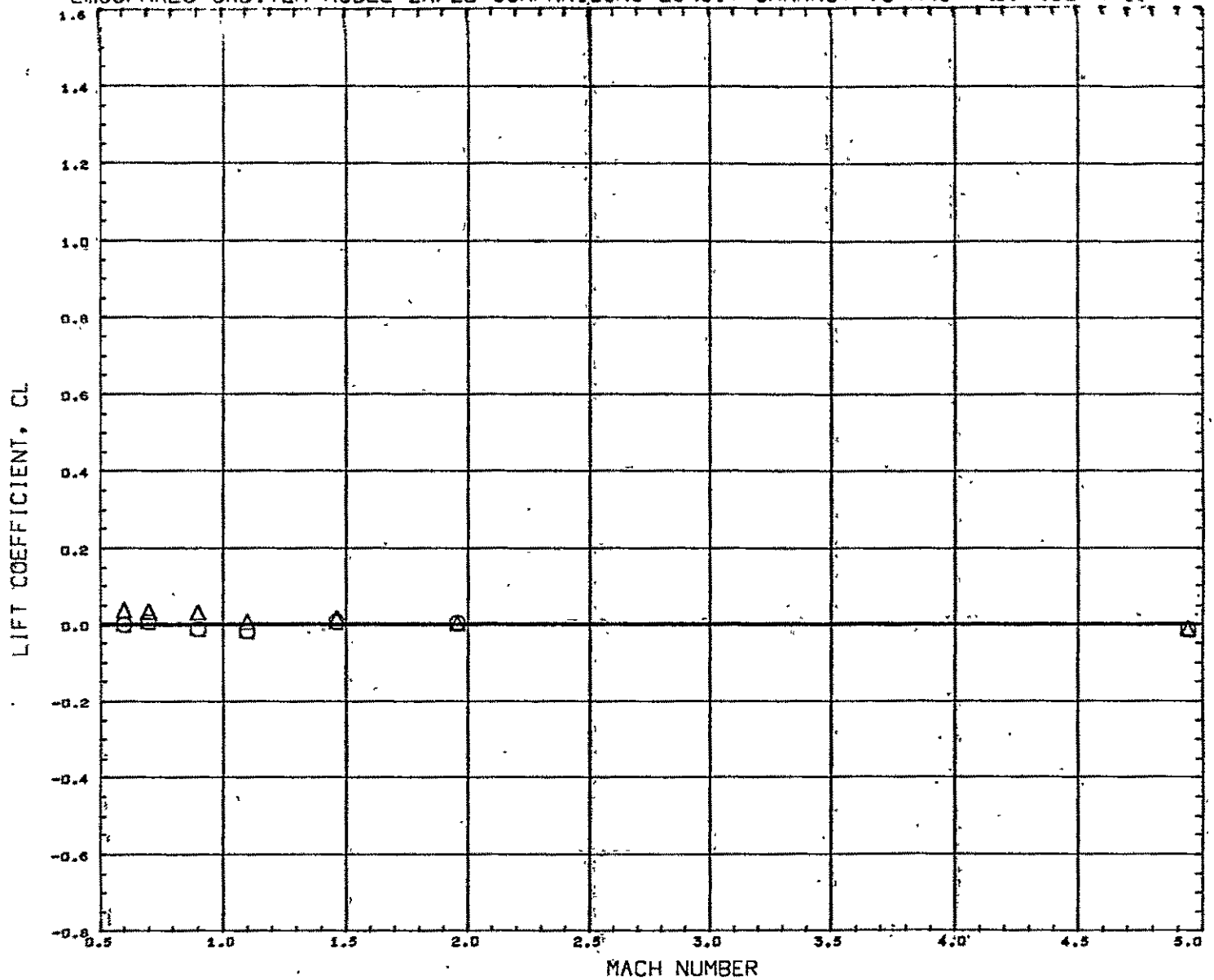
LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-LONGIT CHARACT VS MACH NO. (BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	B2W2V4D2E3R2	ELEV3	RUDER2	ELEV4	RUDER4	REFERENCE INFORMATION
(E41D1S)	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	0.000	0.000			SREF 9.0250 SQ. IN
(E41SD1)	MSFC TWT 498 MSFC/HREC ORBITER	B2W3V2E4R4			0.000	0.000	LREF 6.1420 INCHES
							BREF 6.1420 INCHES
							XMRP 3.9950 INCHES
							YMRP 0.0000 INCHES
							ZMRP 0.1350 INCHES
							SCALE 0.0033 SCALE

ALPHA 15.000

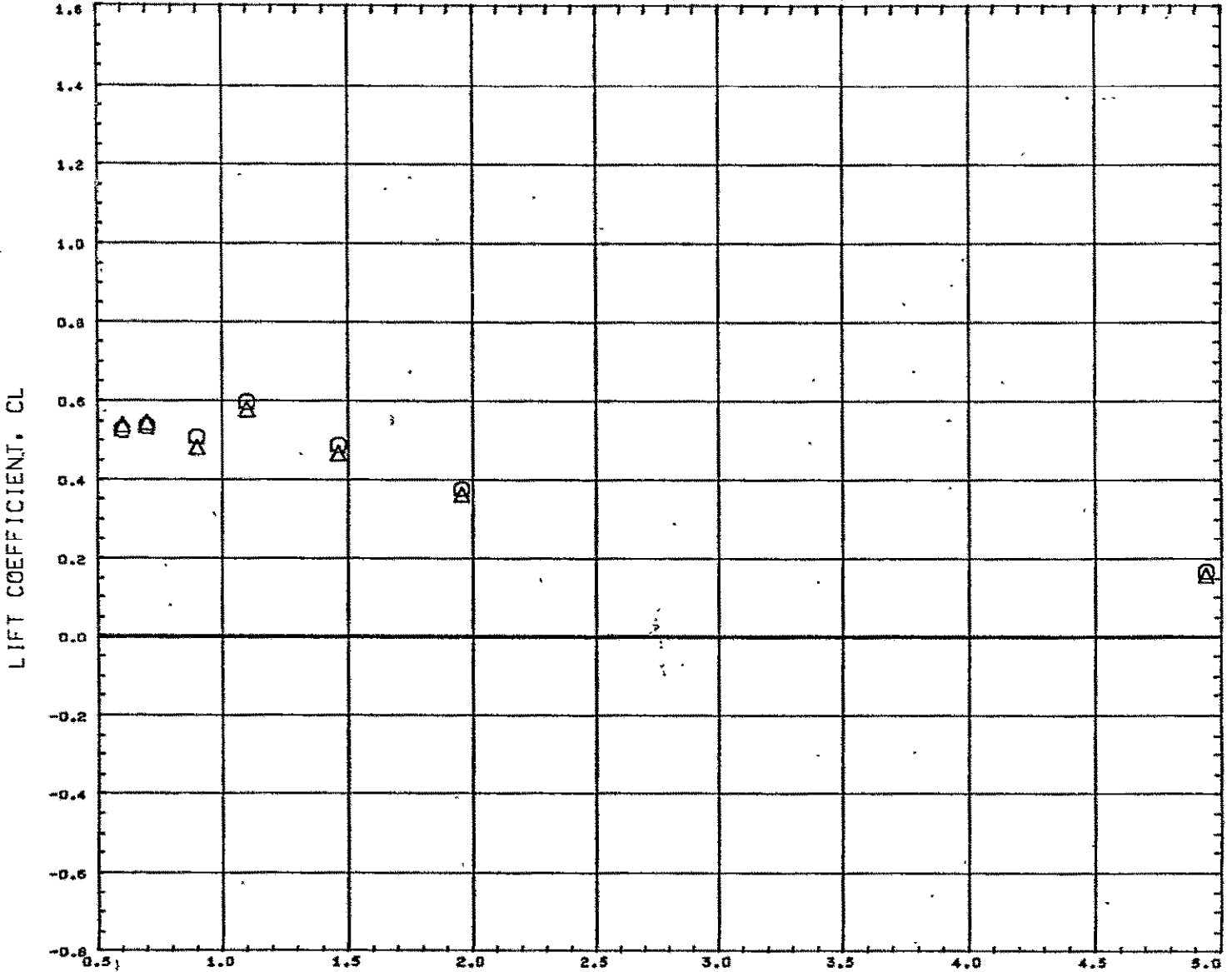
LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-LONGIT CHARACT VS MACH NO. (BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION	
(E41019)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF	9.0250 SQ. IN
(E41301)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF	6.1420 INCHES
						BREF	6.1420 INCHES
						XHRP	3.9950 INCHES
						YHRP	0.0000 INCHES
						ZHRP	0.1350 INCHES
						SCALE	0.0033 SCALE

ALPHA 0.000

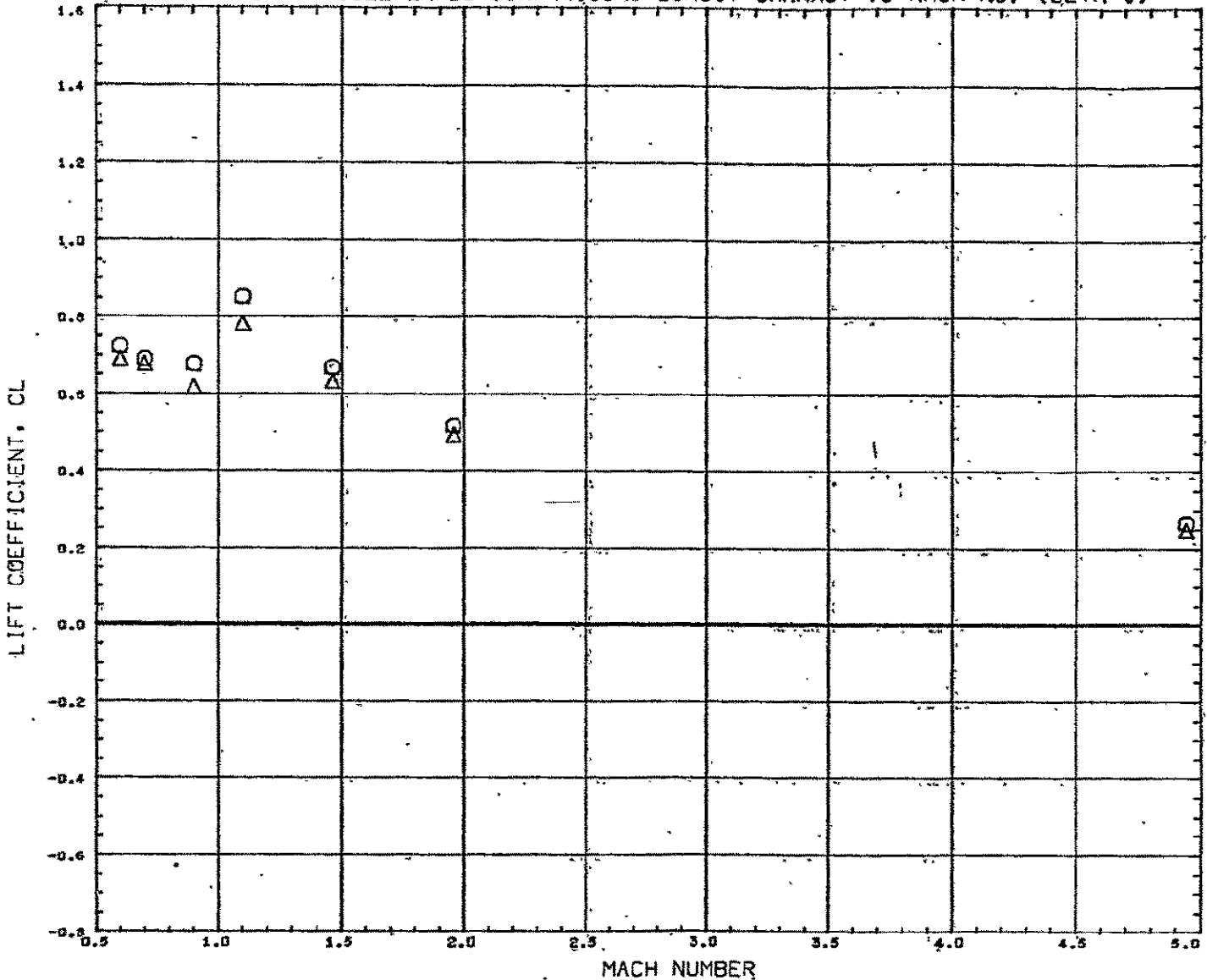
LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-LONGIT CHARACT VS MACH NO. (BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(E4101S)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ.IN
(E41501)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

ALPHA 10.000

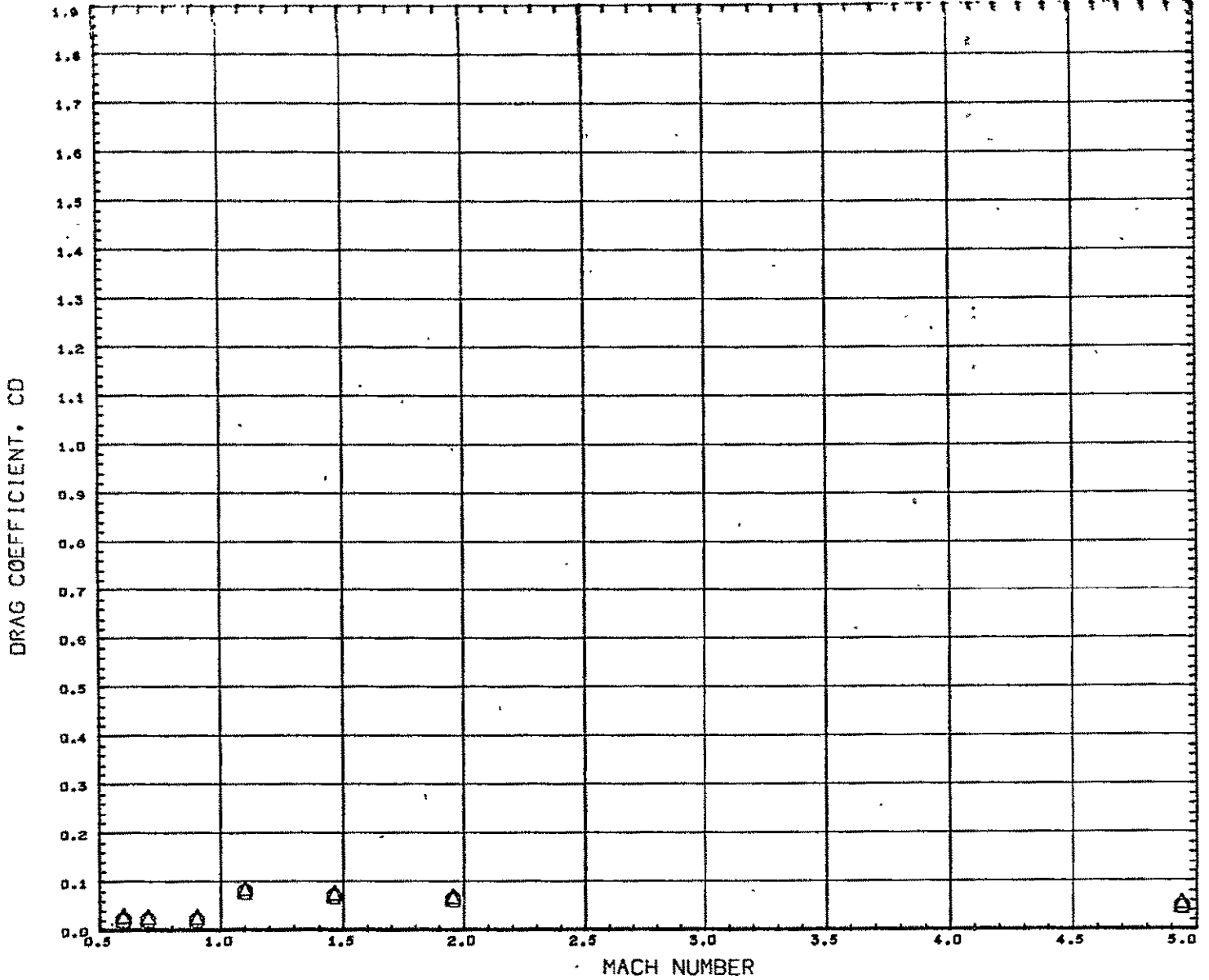
LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-LONGIT CHARACT VS MACH NO. (BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(E41015)	MSFC TWT 490 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(E41501)	MSFC TWT 490 MSFC/HREC ORBITER			0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

ALPHA 15.000

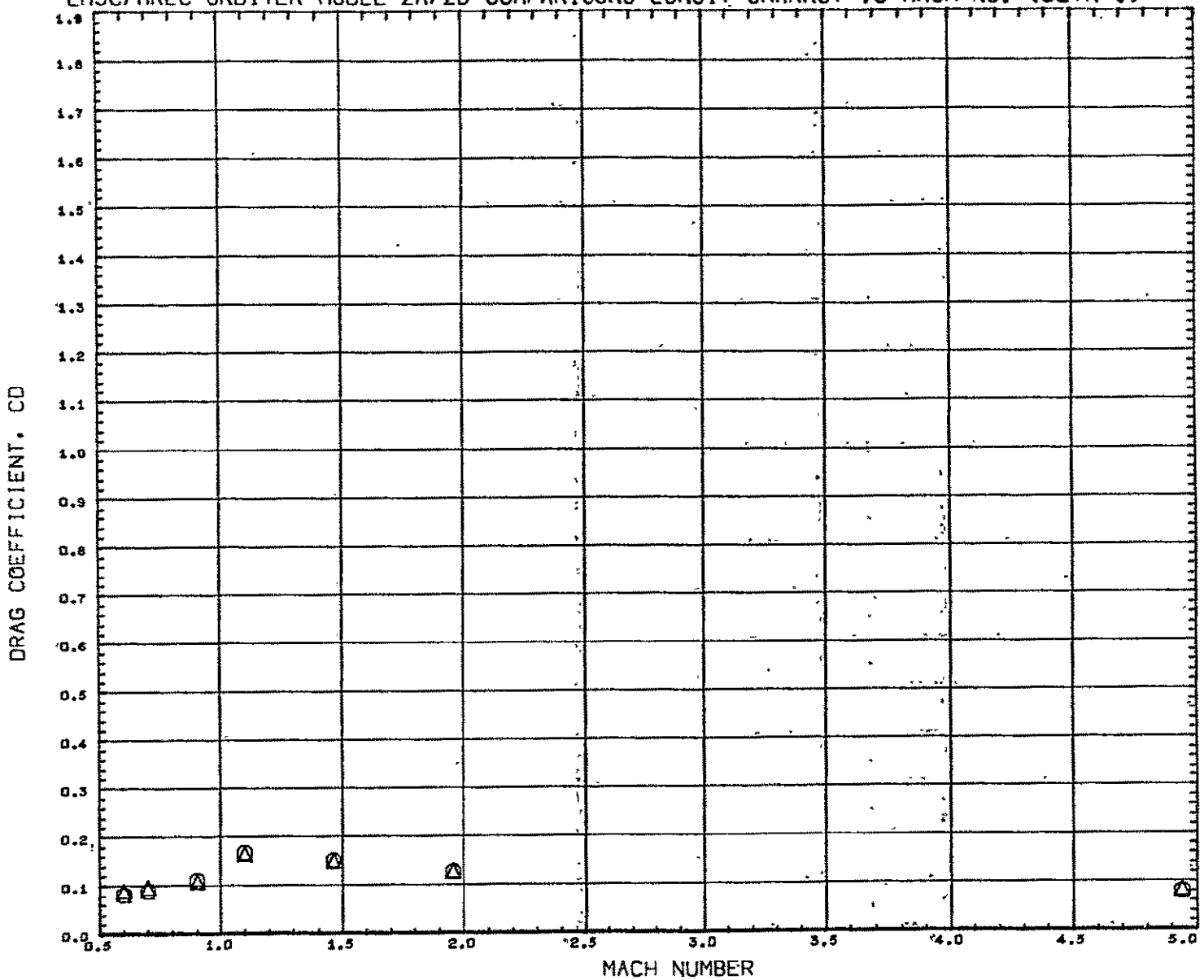
LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-LONGIT CHARACT VS MACH NO. (BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(E41D1S)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ.IN
(E41SD1)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

ALPHA 0.000

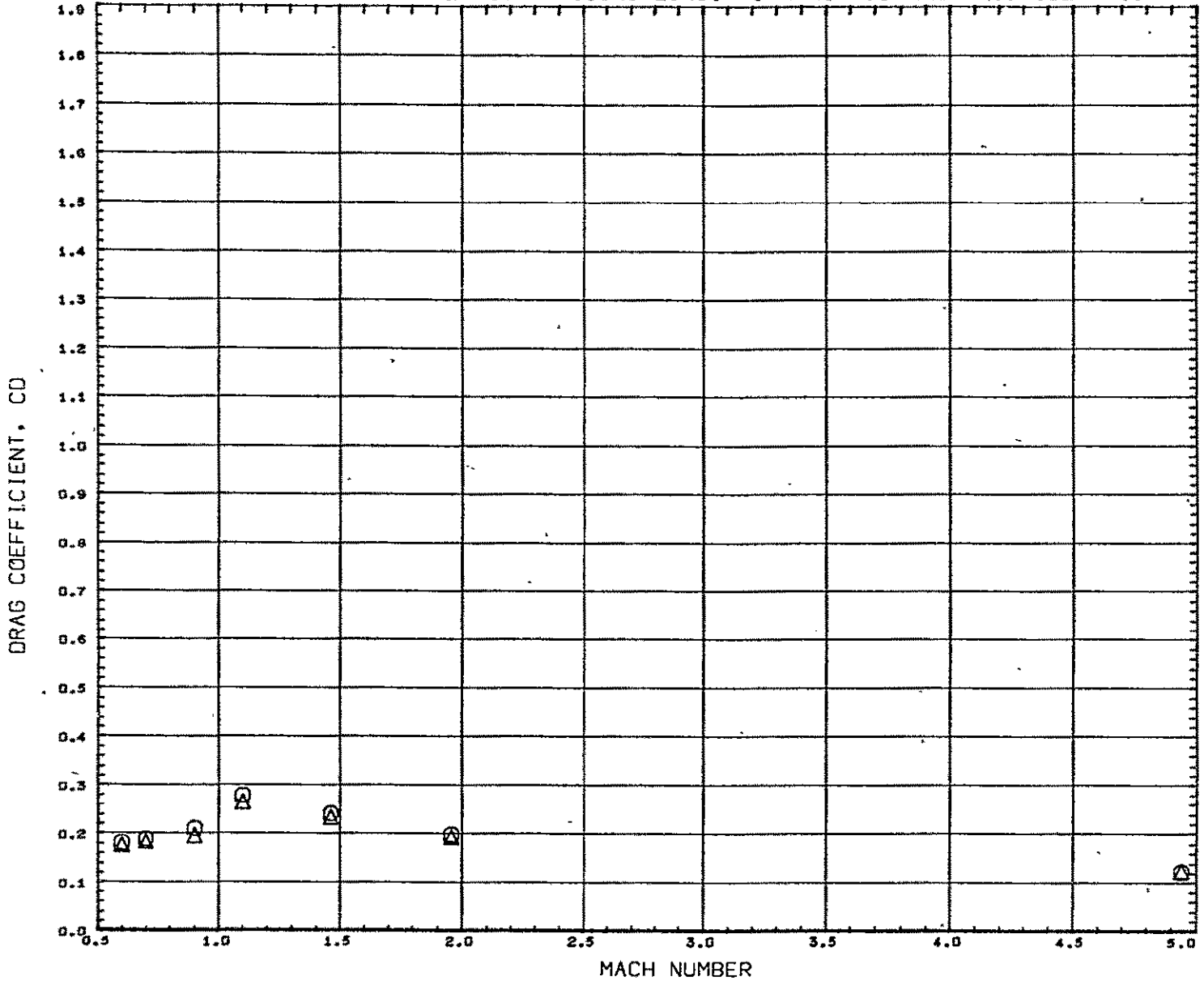
LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-LONGIT CHARACT VS MACH NO. (BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(E4101S)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ.IN
(E41501)	MSFC TWT 498 MSFC/HREC ORBITER	B2W2V402E3R2		0.000	0.000	LREF 6.1420 INCHES
		B2W3V2E4R4				BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0035 SCALE

ALPHA 10.000

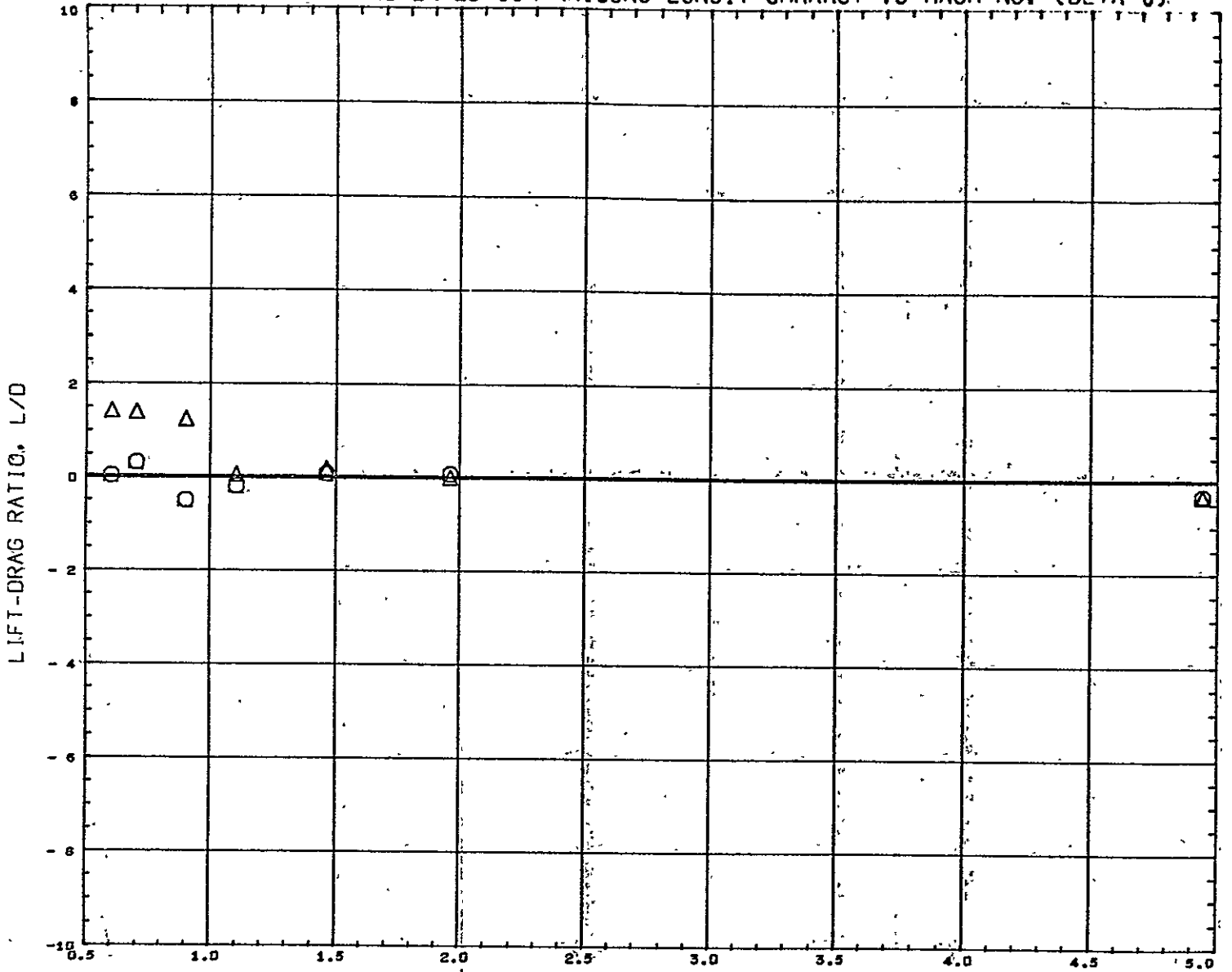
LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-LONGIT CHARACT VS MACH NO. (BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(E4181S)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(E41801)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

ALPHA 15.000

LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-LONGIT CHARACT VS MACH NO. (BETA=0)



DATA SET SYMBOL CONFIGURATION DESCRIPTION  
 (E41015)  $\circ$  MSFC TWT 498 MSFC/LMSC ORBITER  
 (E41501)  $\triangle$  MSFC TWT 498 MSFC/HREC ORBITER

B2W2V4D2E3R2  
 B2W5V2E4R4

MACH NUMBER

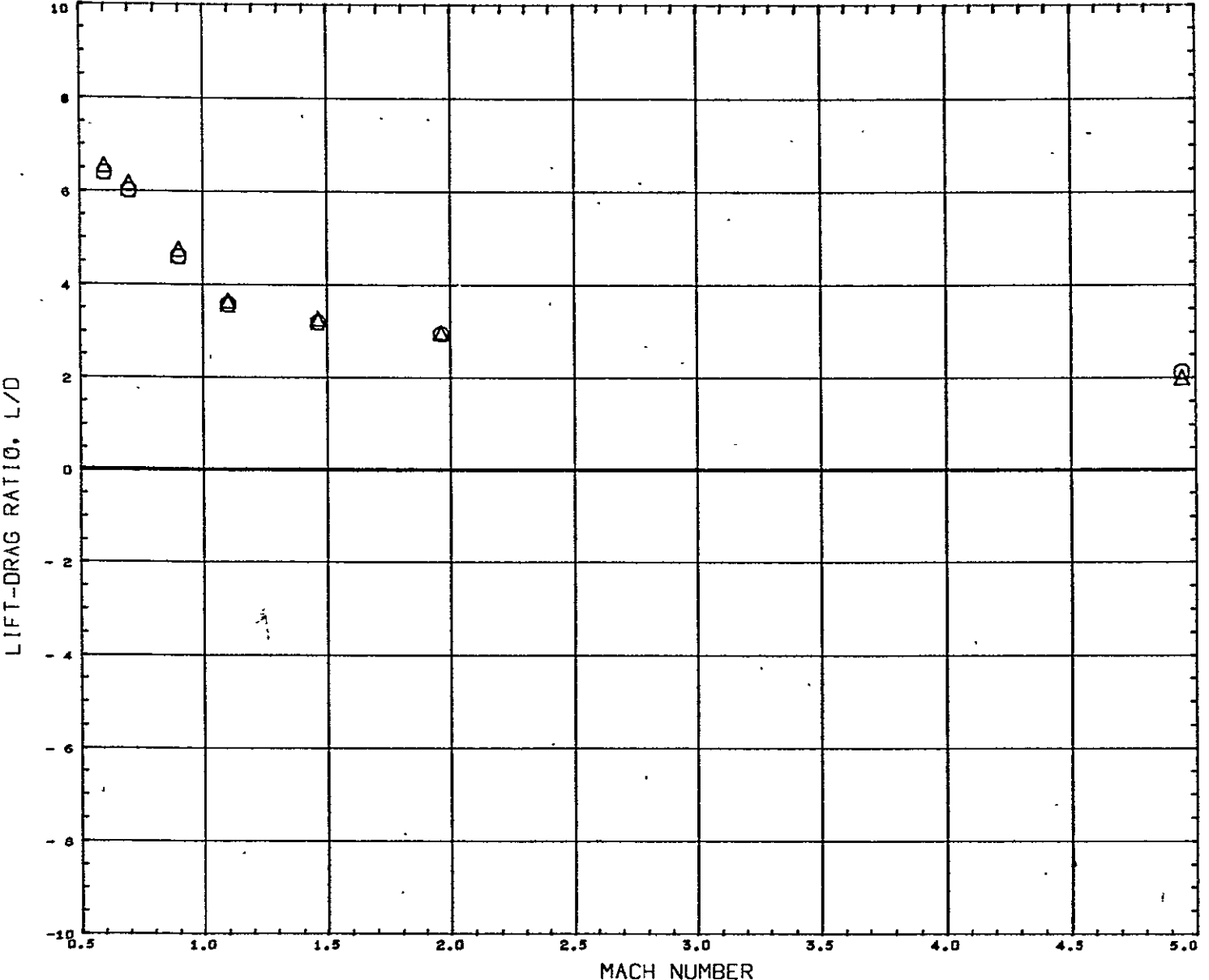
ELEVN3 RUDER2 ELEVN4 RUDER4  
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 0.000 0.000

REFERENCE INFORMATION  
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 LREF 6.1420 INCHES  
 BREF 6.1420 INCHES  
 XHRP 3.9950 INCHES  
 YHRP 0.0000 INCHES  
 ZHRP 0.1350 INCHES  
 SCALE 0.0033 SCALE

ALPHA 0.000



LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-LONGIT CHARACT VS MACH NO. (BETA=0)



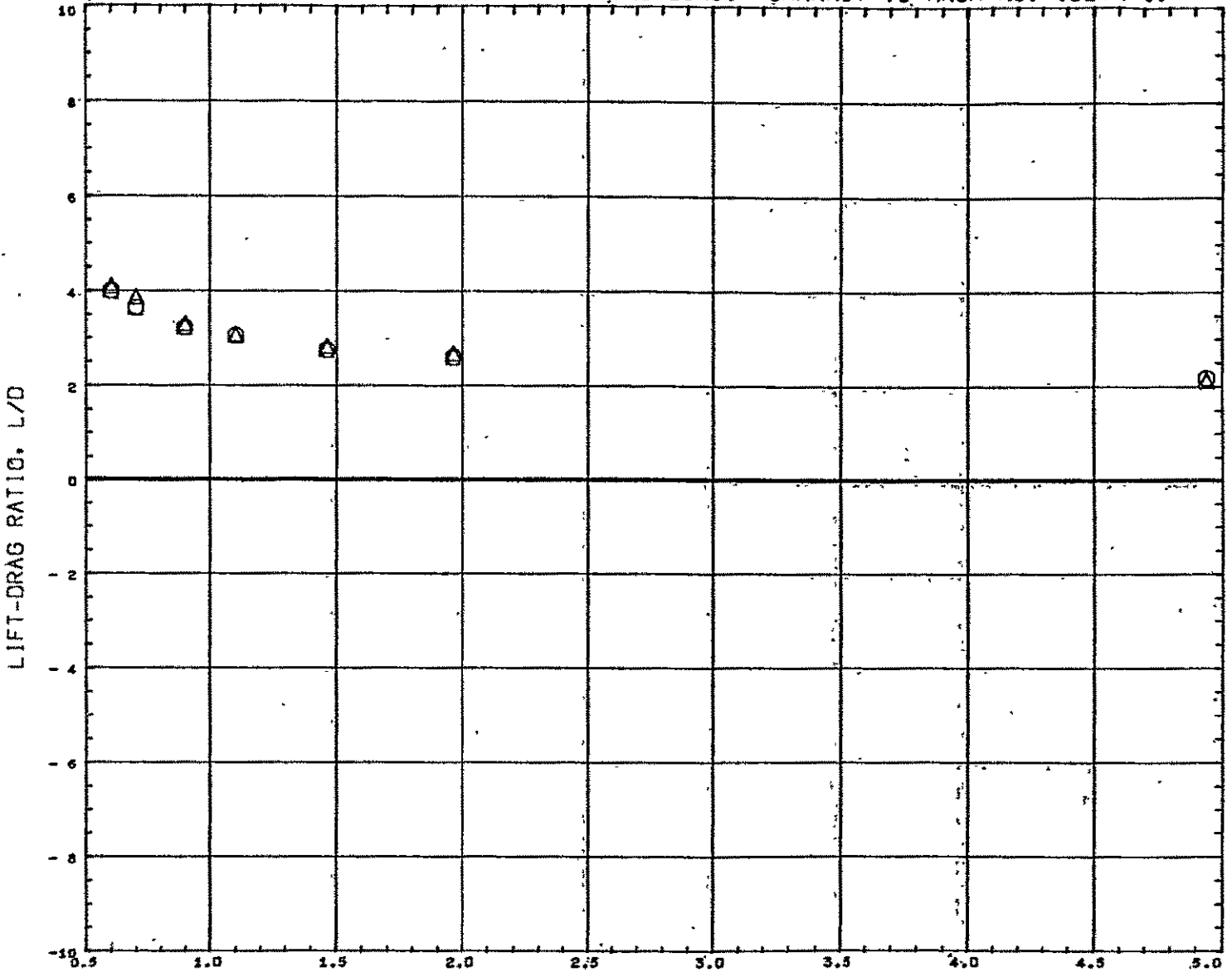
DATA SET SYMBOL CONFIGURATION DESCRIPTION  
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 (E41SD1)  $\Delta$  MSFC TWT 498 MSFC/HREC ORBITER

ELEVN3 RUDER2 ELEVN4 RUDER4  
 0.000 0.000 0.000 0.000

REFERENCE INFORMATION  
 SREF 9.0250 SQ. IN  
 LREF 6.1420 INCHES  
 BREF 6.1420 INCHES  
 XMRP 3.9950 INCHES  
 YMRP 0.0000 INCHES  
 ZMRP 0.1350 INCHES  
 SCALE 0.0033 SCALE

ALPHA 10.000

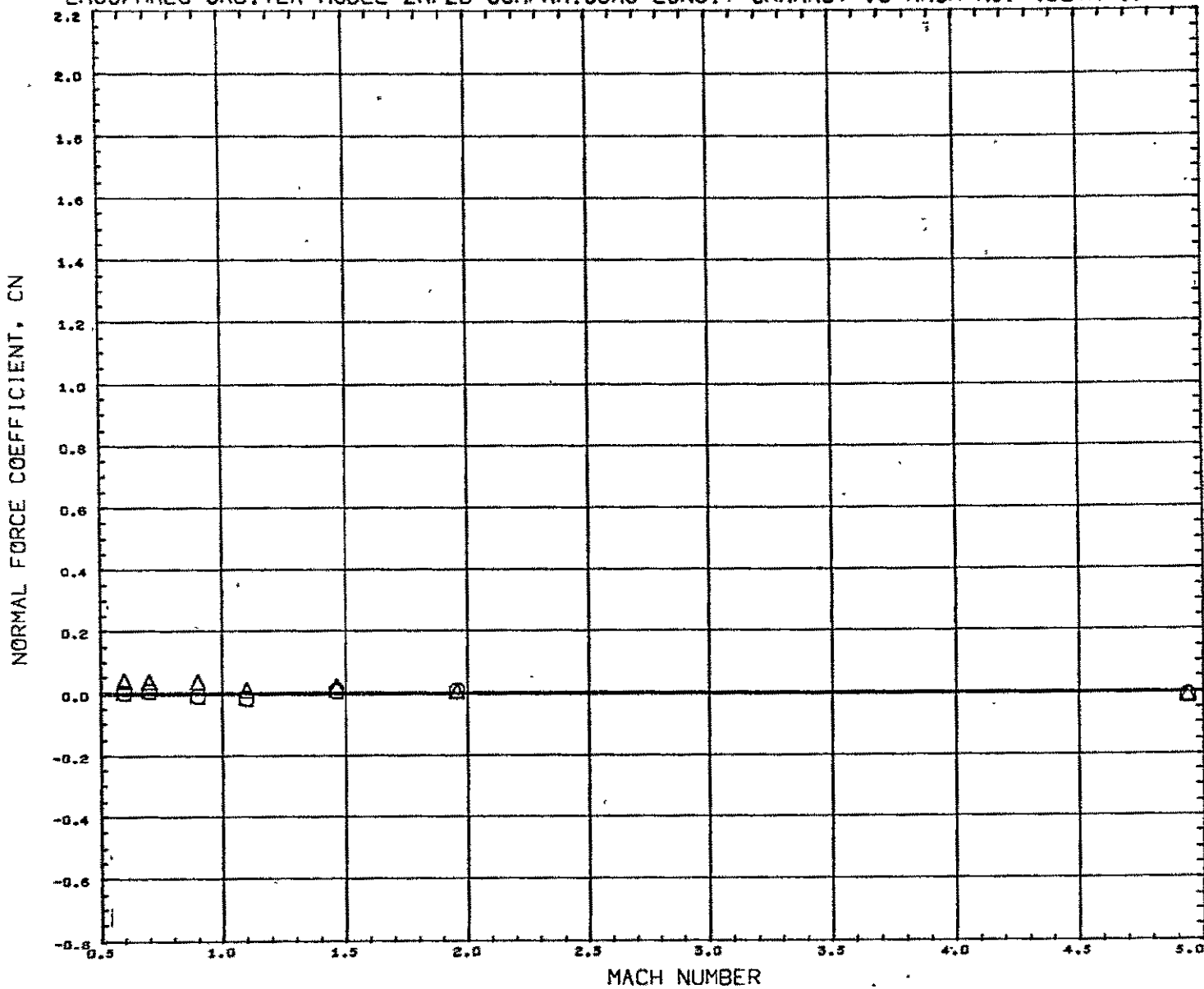
LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-LONGIT CHARACT VS MACH NO. (BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(E4191S)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(E41S01)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

ALPHA 15.000

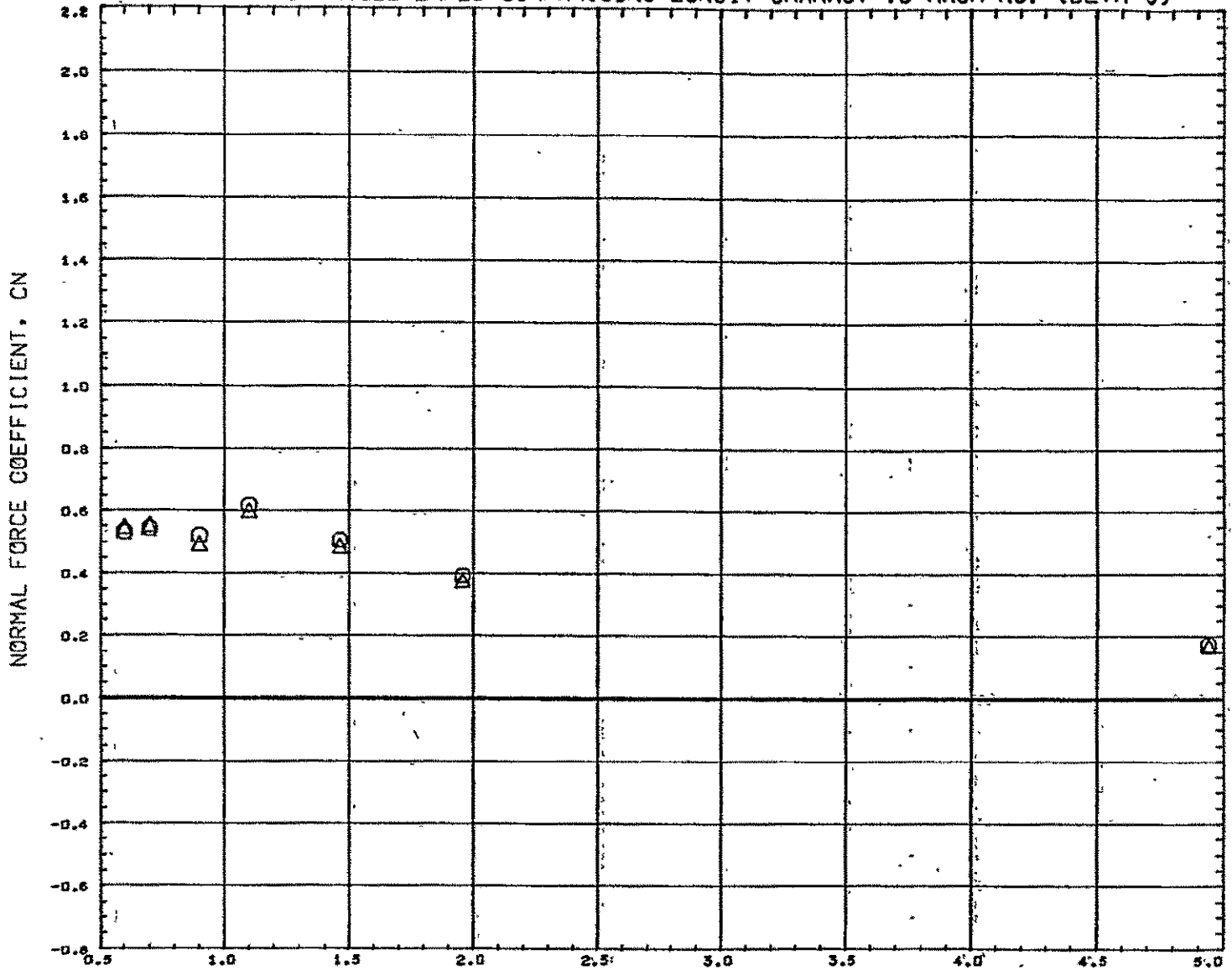
LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-LONGIT CHARACT VS MACH NO. (BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(E41015)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(E415D1)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

ALPHA 0.000

LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-LONGIT CHARACT VS MACH NO. (BETA=0)



DATA SET SYMBOL CONFIGURATION DESCRIPTION  
 (E41015)  $\Delta$  MSFC TWT 498 MSFC/LMSC ORBITER  
 (E41501)  $\circ$  MSFC TWT 498 MSFC/HREC ORBITER

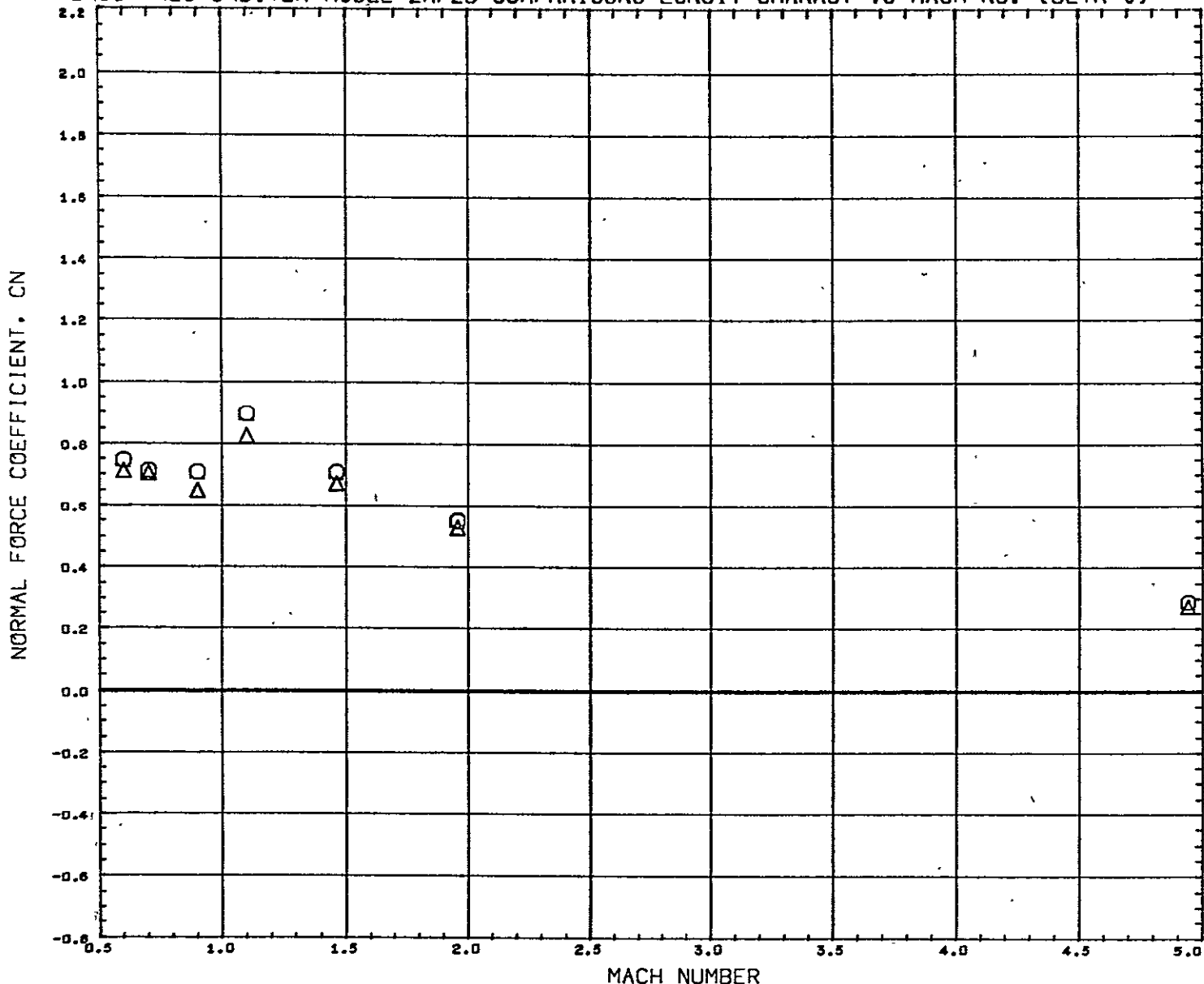
B2W2V4D2E3R2  
 B2W5V2E4R4

ELEVNS RUDER2 ELEVN4 RUDER4  
 0.000 0.000 0.000 0.000

REFERENCE INFORMATION  
 SREF 9.0250 SQ. IN  
 LREF 6.1420 INCHES  
 BREF 6.1420 INCHES  
 XMRP 3.9950 INCHES  
 YMRP 0.0000 INCHES  
 ZMRP 0.1350 INCHES  
 SCALE 0.0033 SCALE

ALPHA 10.000

LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-LONGIT CHARACT VS MACH NO. (BETA=0)



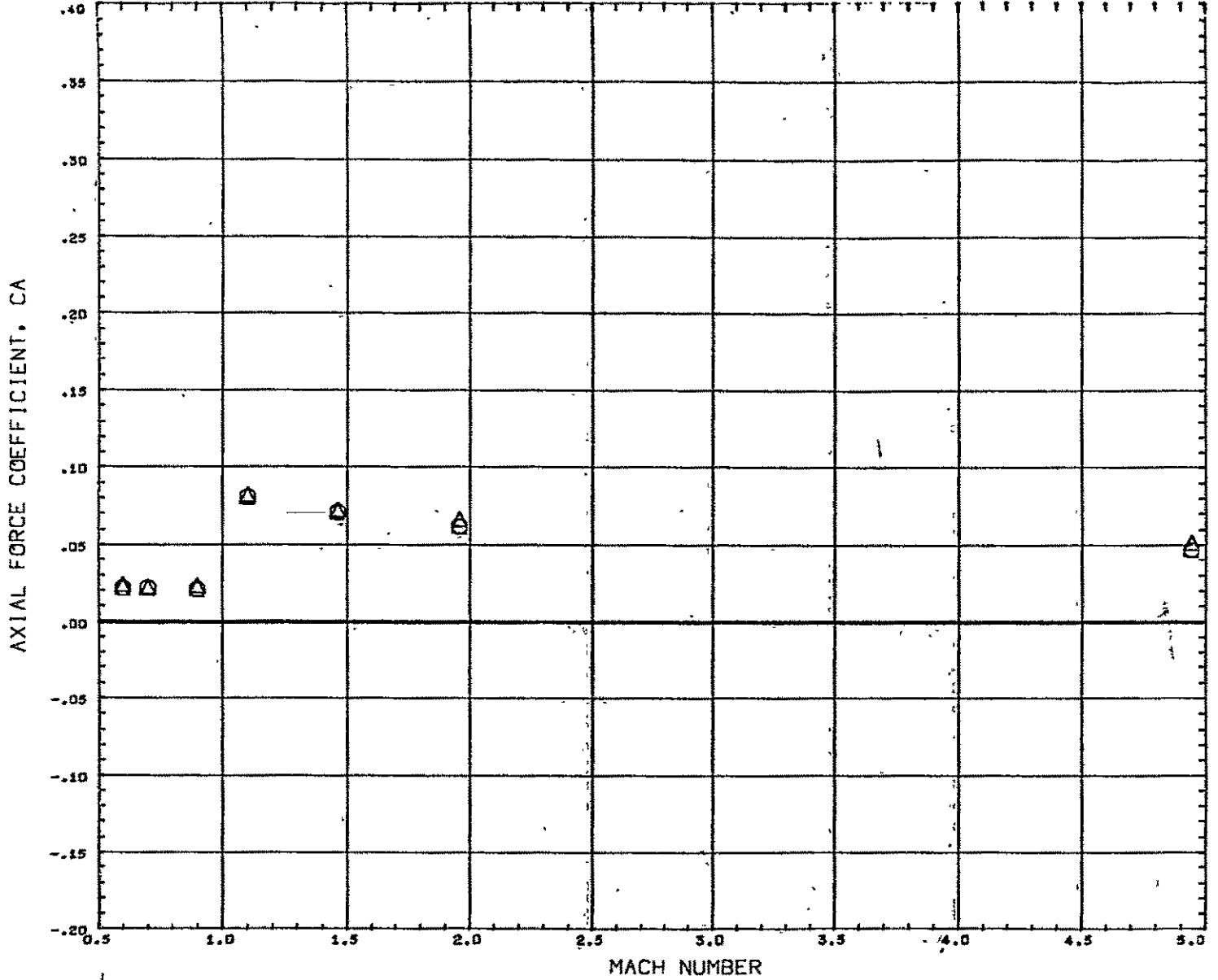
DATA SET SYMBOL CONFIGURATION DESCRIPTION  
 (E41D15) ○ MSFC TWT 498 MSFC/LMSC ORBITER  
 (E415D1) △ MSFC TWT 498 MSFC/HREC ORBITER

B2W2V4D2E3R2  
 B2W5V2E4R4  
 ELEVN3 RUDER2 ELEVN4 RUDER4  
 0.000 0.000 0.000 0.000

REFERENCE INFORMATION  
 SREF 9.0250 SQ. IN  
 LREF 6.1420 INCHES  
 BREF 6.1420 INCHES  
 XMRP 3.9950 INCHES  
 YMRP 0.0000 INCHES  
 ZMRP 0.1350 INCHES  
 SCALE 0.0033 SCALE

ALPHA 15.000

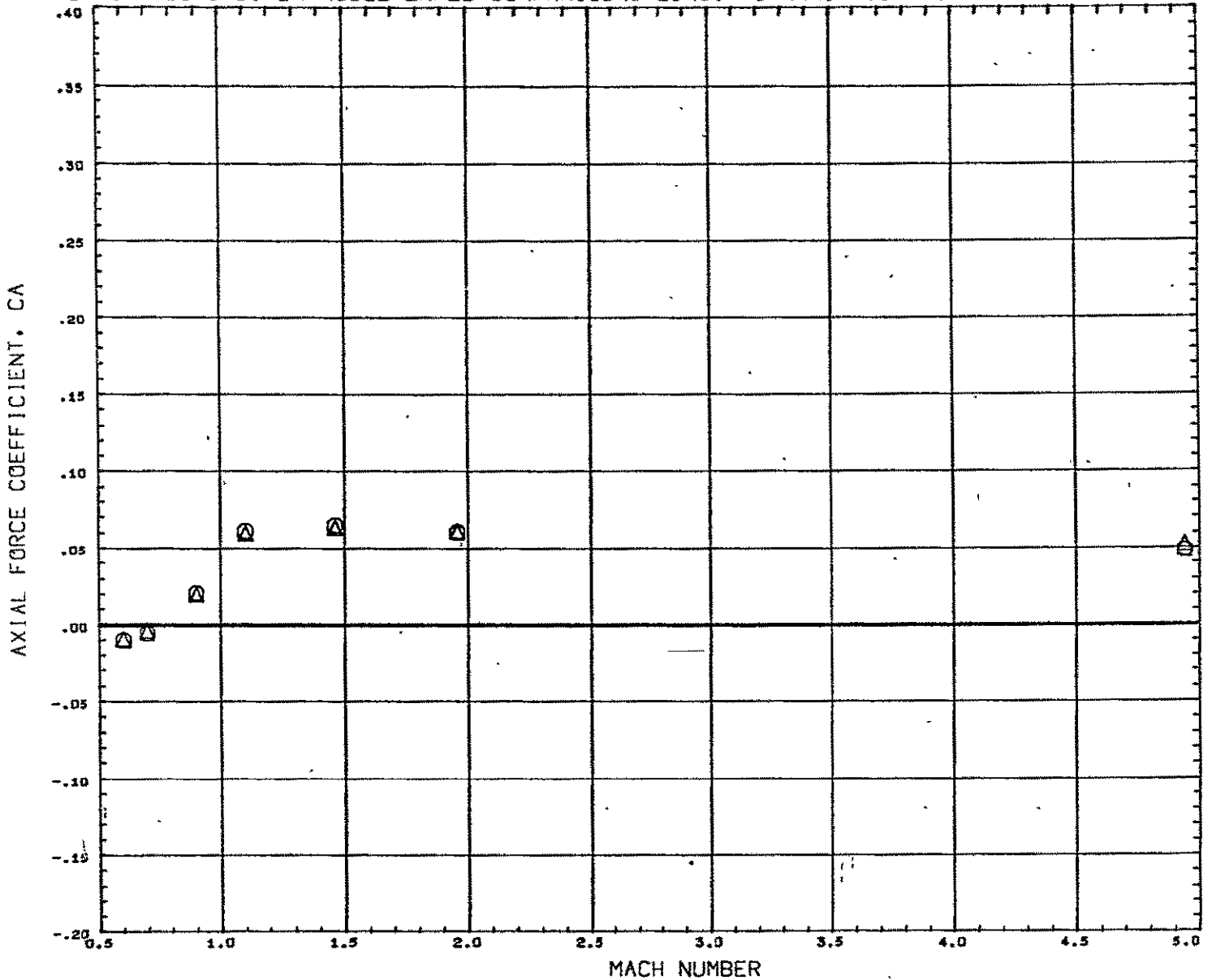
LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-LONGIT CHARACT VS MACH NO. (BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(E41015)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(E41501)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XHRP 3.9950 INCHES
						YHRP 0.0000 INCHES
						ZHRP 0.1350 INCHES
						SCALE 0.0035 SCALE

ALPHA 0.000

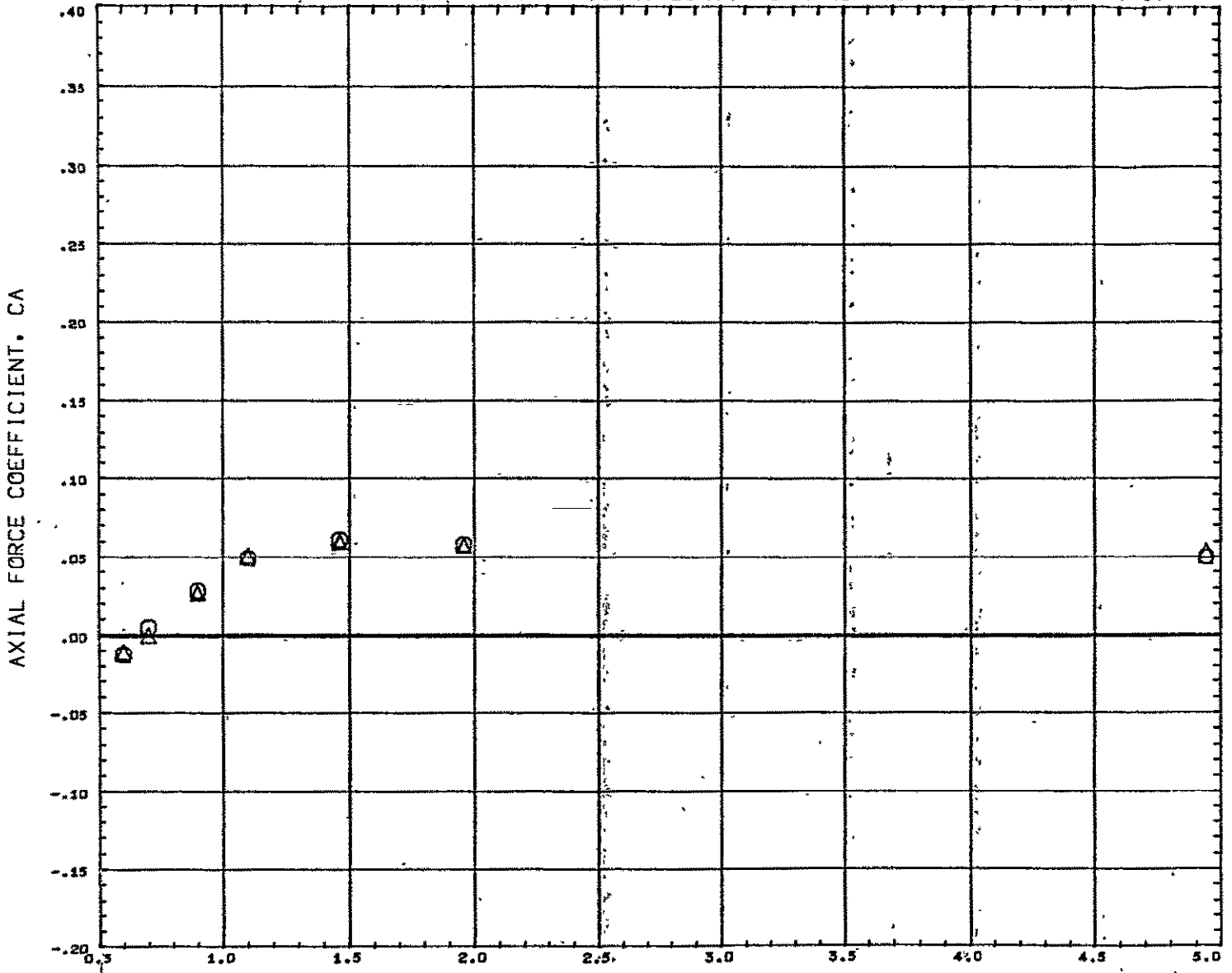
LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-LONGIT CHARACT VS MACH NO. (BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(E41015)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(E41501)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 8.0033 SCALE

ALPHA 10.000

LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-LONGIT CHARACT VS MACH NO. (BETA=0)

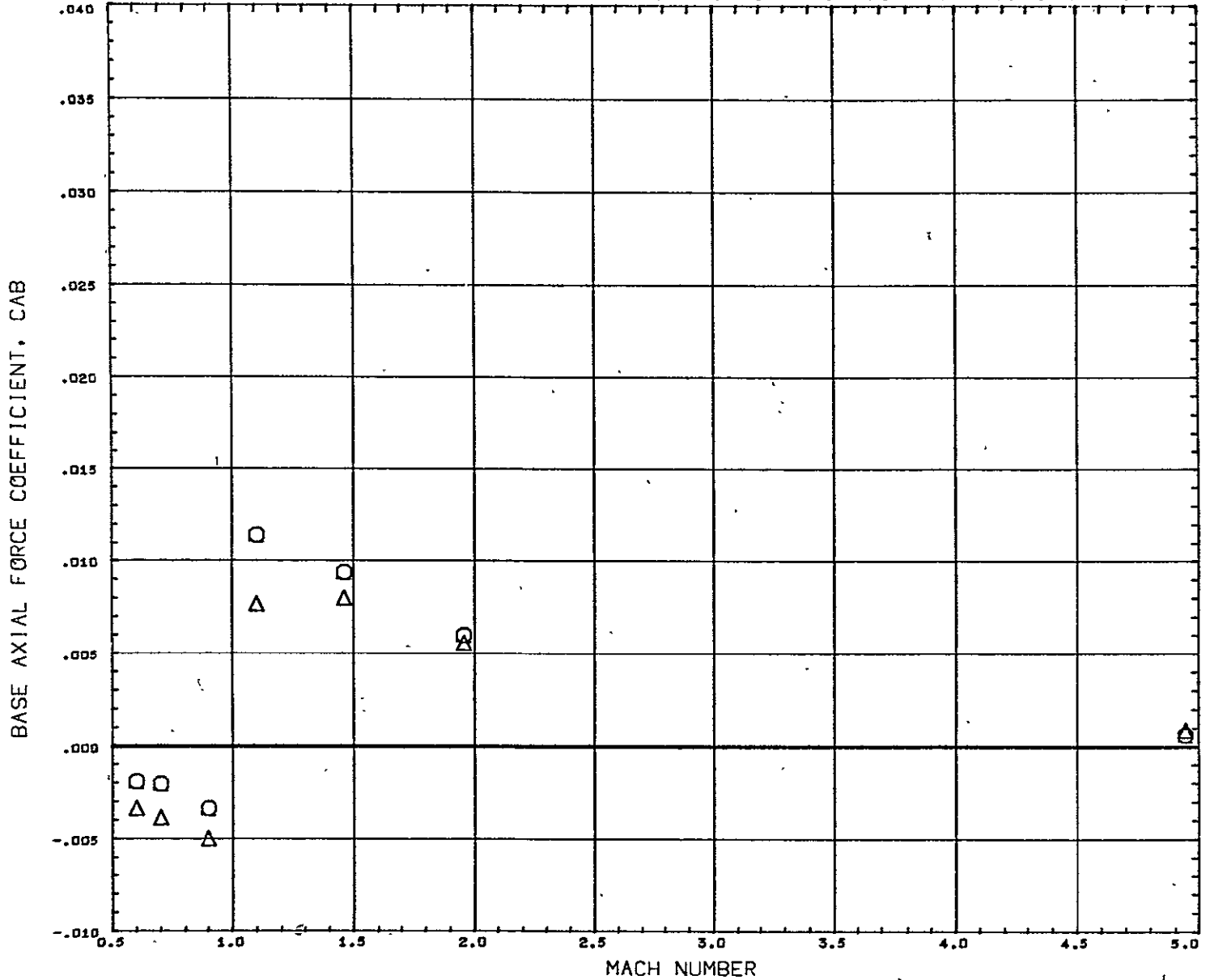


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	B2W2V4D2E3R2	ELEV3	RUDER2	ELEV4	RUDER4	REFERENCE INFORMATION	
(E4101S)	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	0.000	0.000			SREF	9.0250 SQ. IN
(E41001)	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4			0.000	0.000	LREF	6.1420 INCHES
							BREF	6.1420 INCHES
							XMRP	3.9950 INCHES
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							SCALE	0.0033 SCALE

ALPHA 15.000



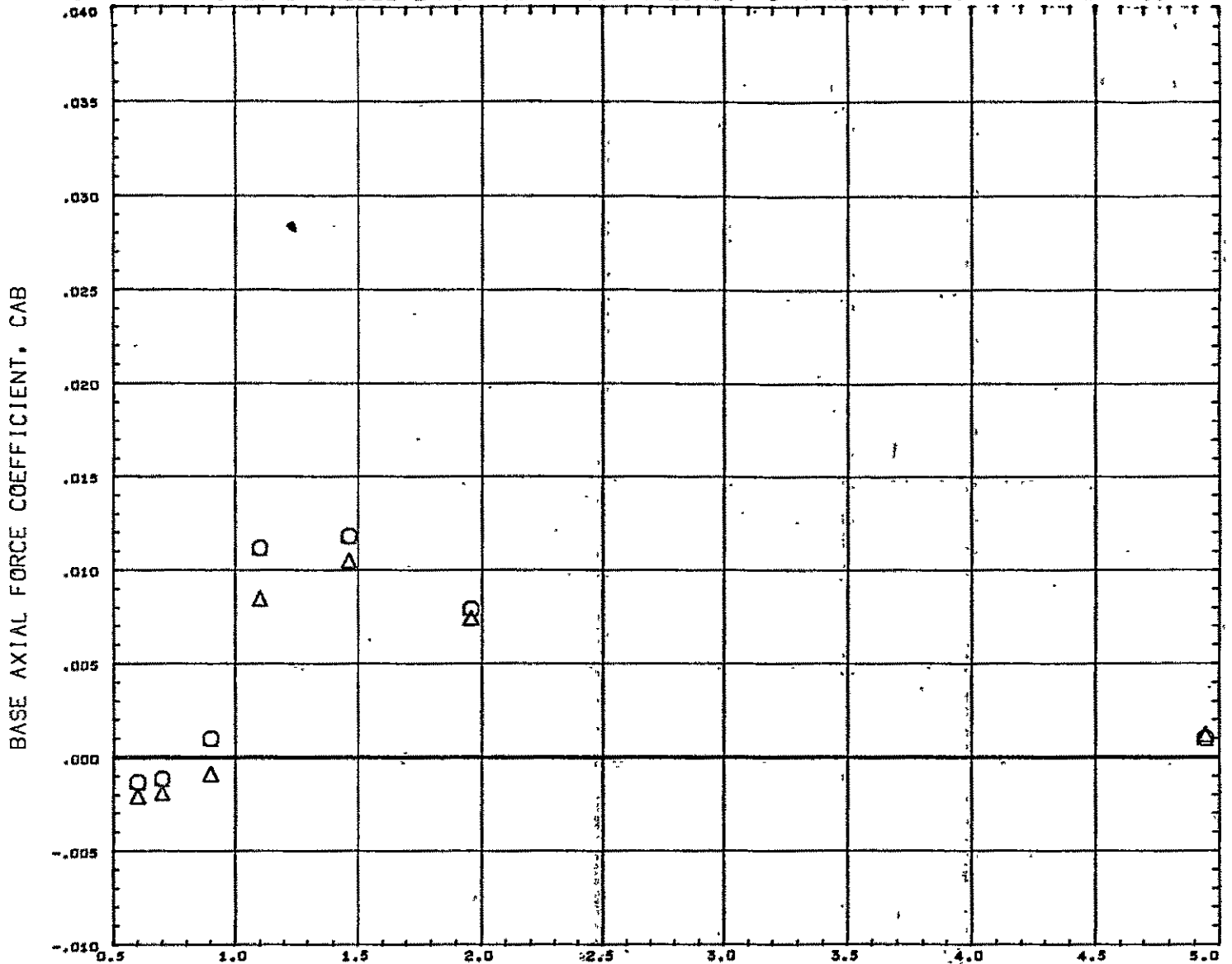
LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-LONGIT CHARACT VS MACH NO. (BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(E41015)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(E41501)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
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ALPHA 0.000

LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-LONGIT CHARACT VS MACH NO. (BETA=0)

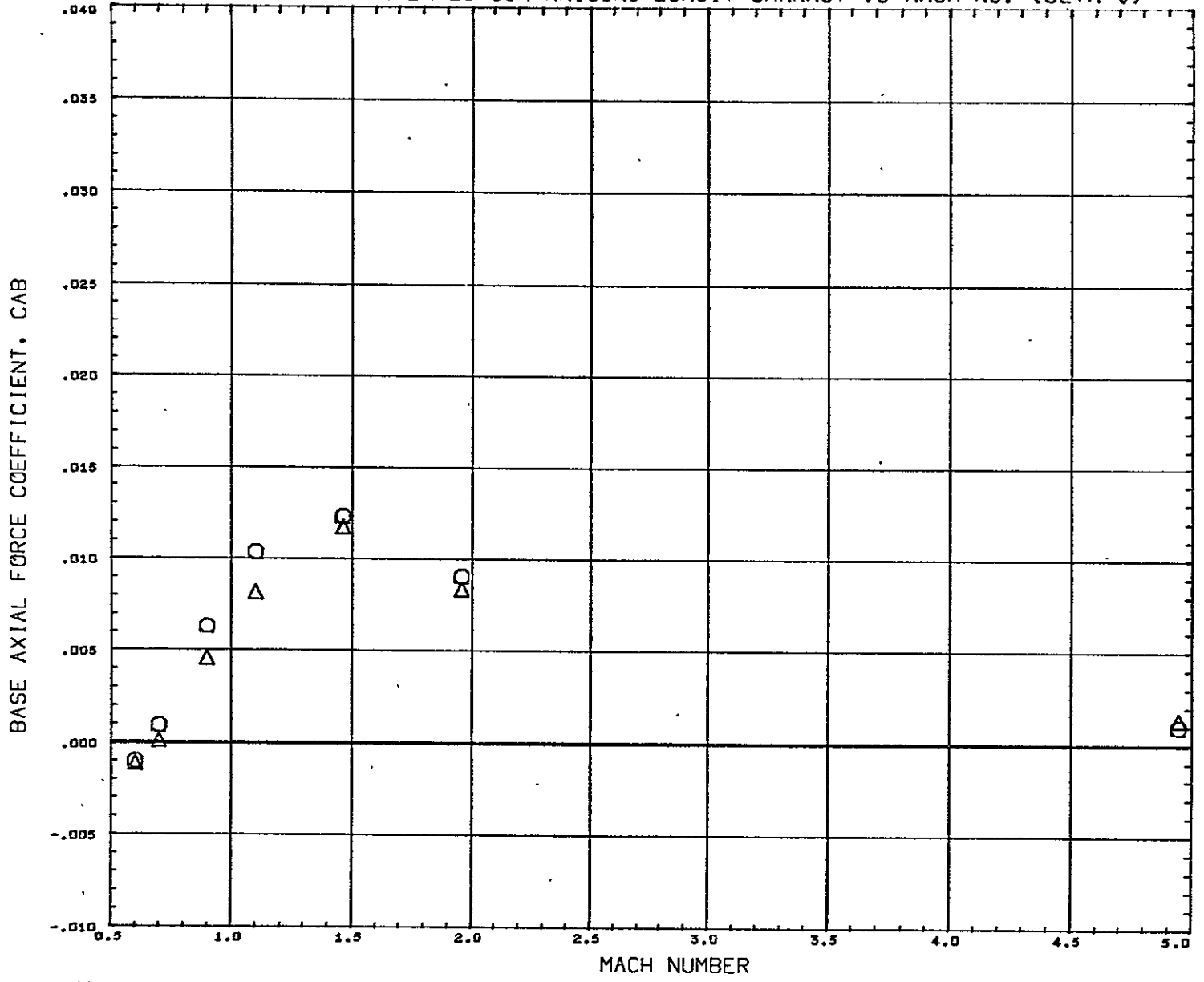


MACH NUMBER

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION		
(E41D1S)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF	9.0250	50. IN
(E41SD1)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF	6.1420	INCHES
						BREF	6.1420	INCHES
						XMRP	3.9950	INCHES
						YMRP	0.0000	INCHES
						ZMRP	0.1350	INCHES
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ALPHA 10.000

LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-LONGIT CHARACT VS MACH NO. (BETA=0)

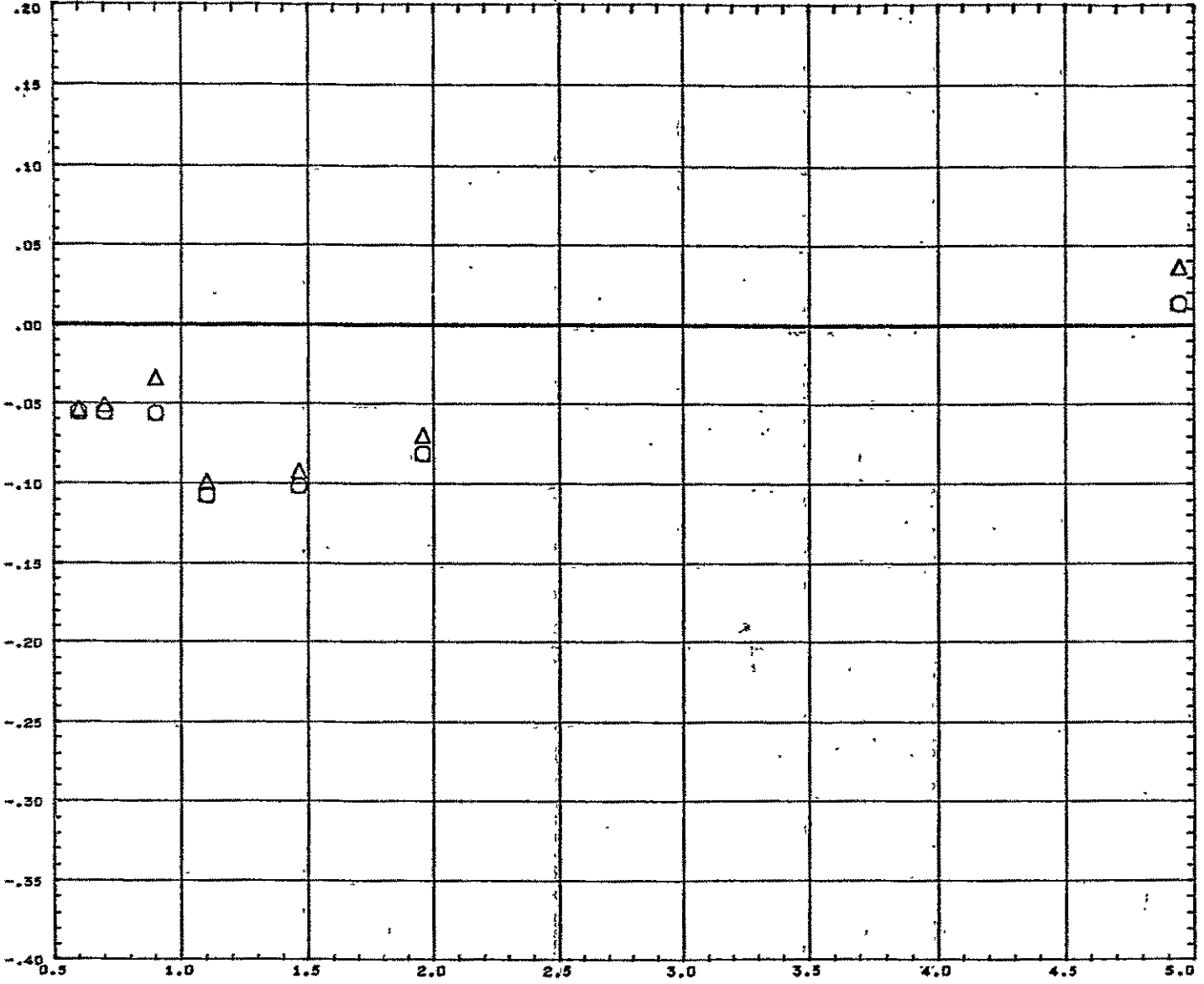


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION	
(E4101S)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF	9.0250 SQ.IN
(E41S01)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF	6.1420 INCHES
						BREF	6.1420 INCHES
						XMRP	3.9950 INCHES
						YMRP	0.0000 INCHES
						ZMRP	0.1350 INCHES
						SCALE	0.0033 SCALE

ALPHA 15.000

LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-LONGIT CHARACT VS MACH NO. (BETA=0)

STATIC LONGITUDINAL STABILITY DERIVATIVE, DCLM/DCL (DCLMCL) PER DEGREE



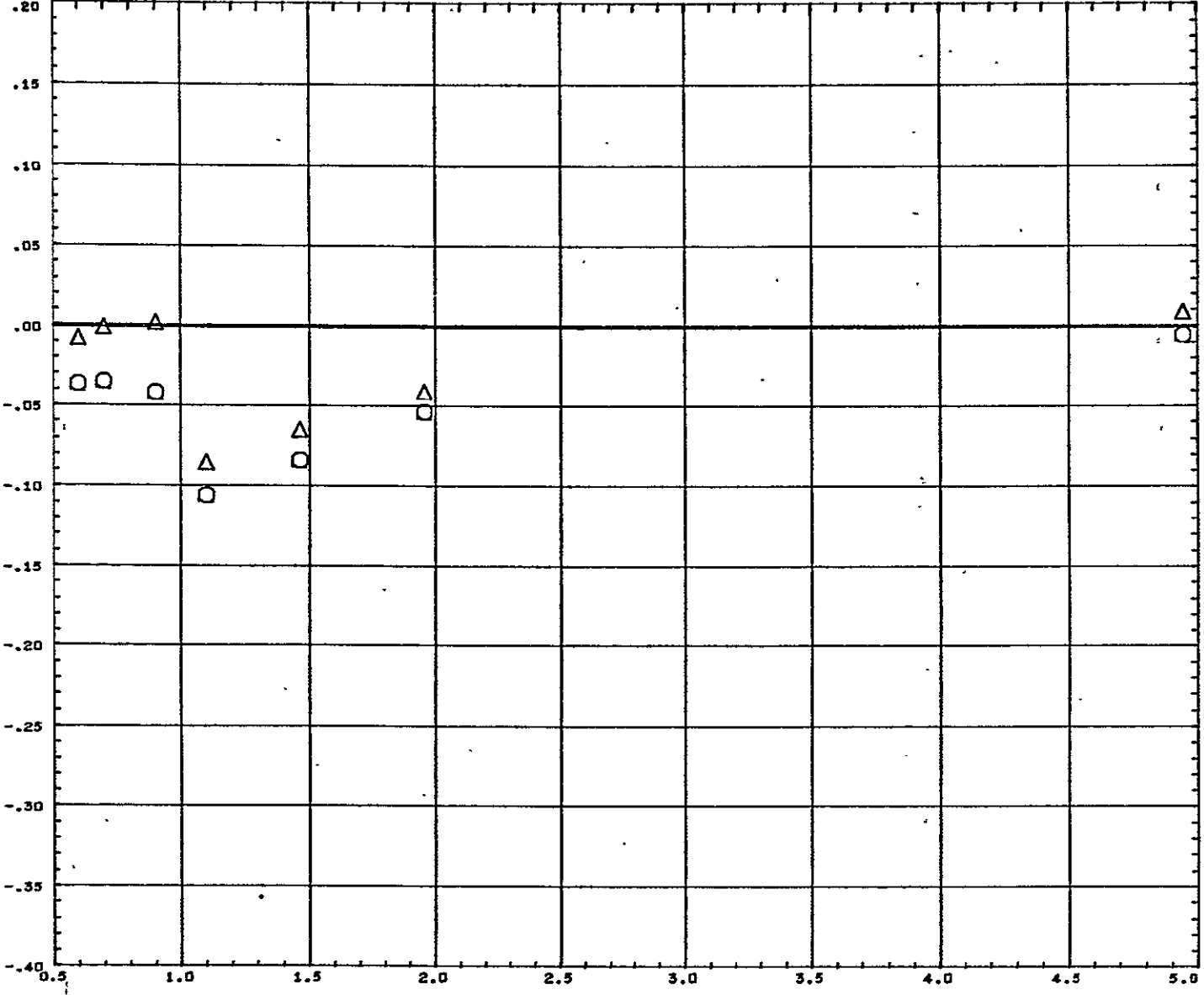
MACH NUMBER

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(C41515)	○	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(C41501)	△	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF 6.1420 INCHES
							BREF 6.1420 INCHES
							XMRP 3.9950 INCHES
							YMRP 0.0000 INCHES
							ZMRP 0.1350 INCHES
							SCALE 0.0033 SCALE

ALPHA 0.000

LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-LONGIT CHARACT VS MACH NO. (BETA=0)

STATIC LONGITUDINAL STABILITY DERIVATIVE, DCLM/DCL (DCLMCL) PER DEGREE

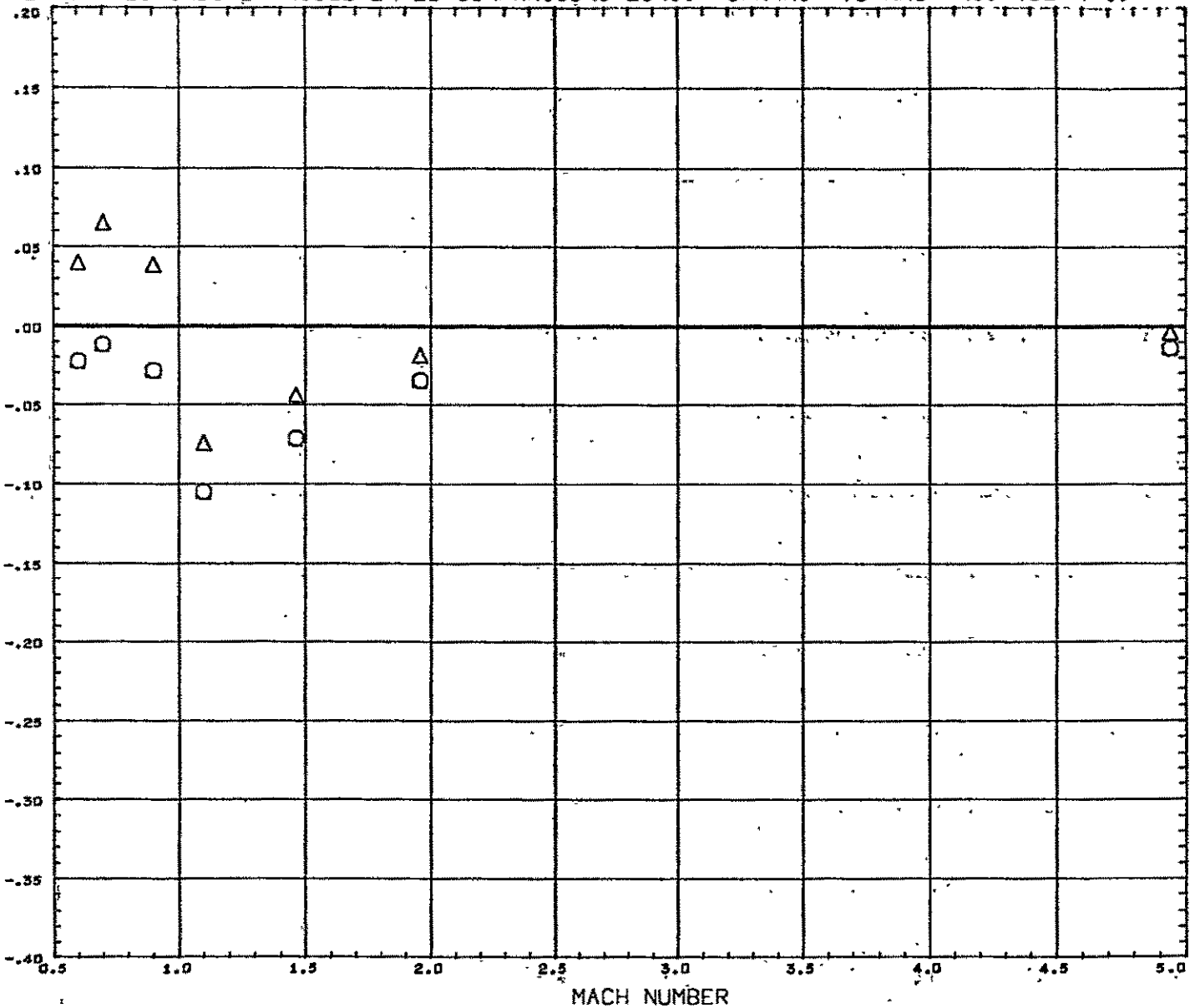


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(04101S)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(041S01)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

ALPHA 10.000

LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-LONGIT CHARACT VS MACH NO. (BETA=0)

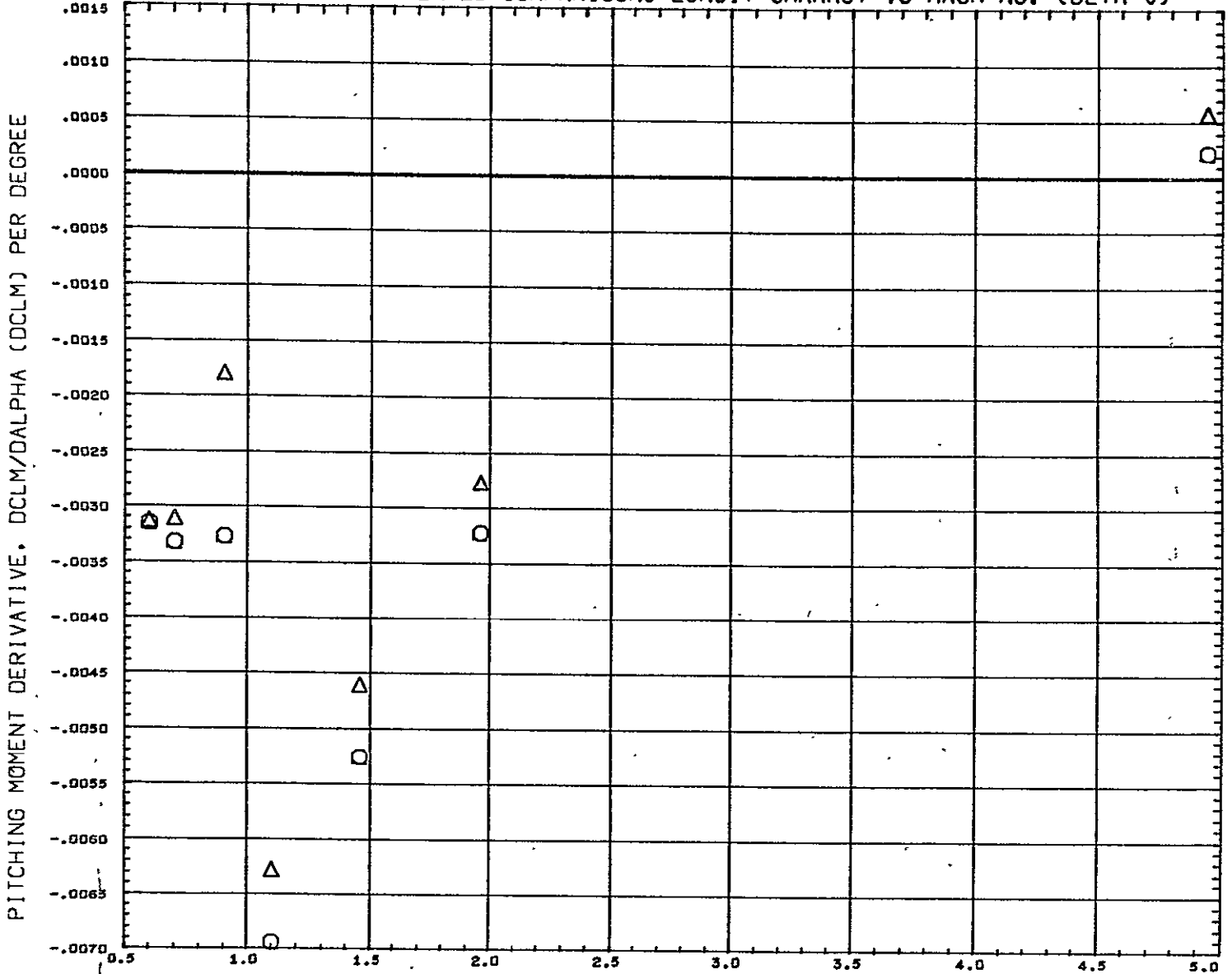
STATIC LONGITUDINAL STABILITY DERIVATIVE, DCLM/DCL (DCLMCL) PER DEGREE



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEV3	RUDER2	ELEV4	RUDER4	REFERENCE INFORMATION	
(041915)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF	9.0250 SQ. IN
(041501)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF	6.1420 INCHES
						BREF	6.1420 INCHES
						XMRP	3.9950 INCHES
						YMRP	0.0000 INCHES
						ZMRP	0.1350 INCHES
						SCALE	0.0033 SCALE

ALPHA 15.000

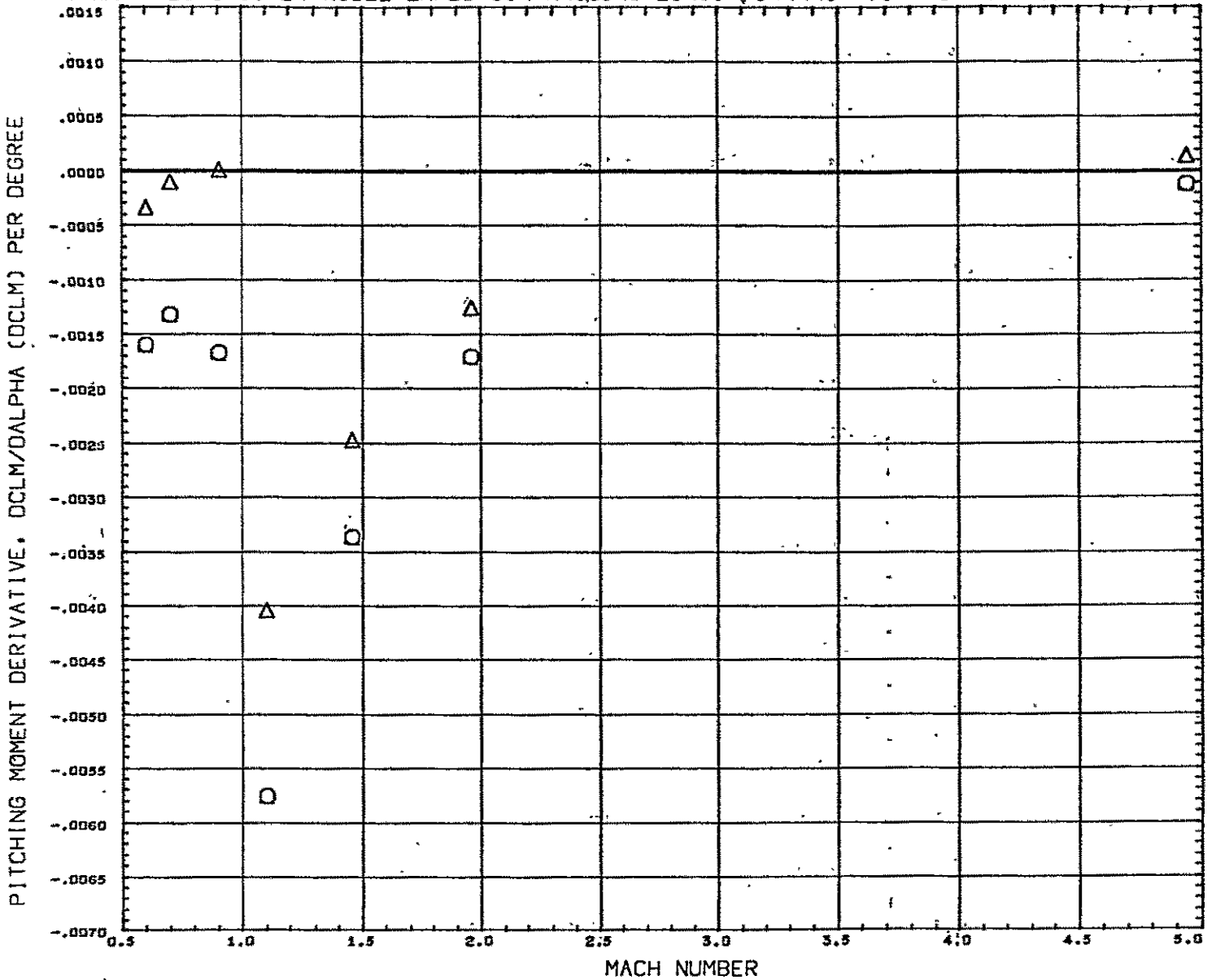
LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-LONGIT CHARACT VS MACH NO. (BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION	
(F4101S)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF	9.0250 SQ. IN
(F41891)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF	6.1420 INCHES
						BREF	6.1420 INCHES
						XMRP	3.9950 INCHES
						YMRP	0.0000 INCHES
						ZMRP	0.1350 INCHES
						SCALE	0.0033 SCALE

ALPHA 0.000

LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-LONGIT CHARACT VS MACH NO. (BETA=0)

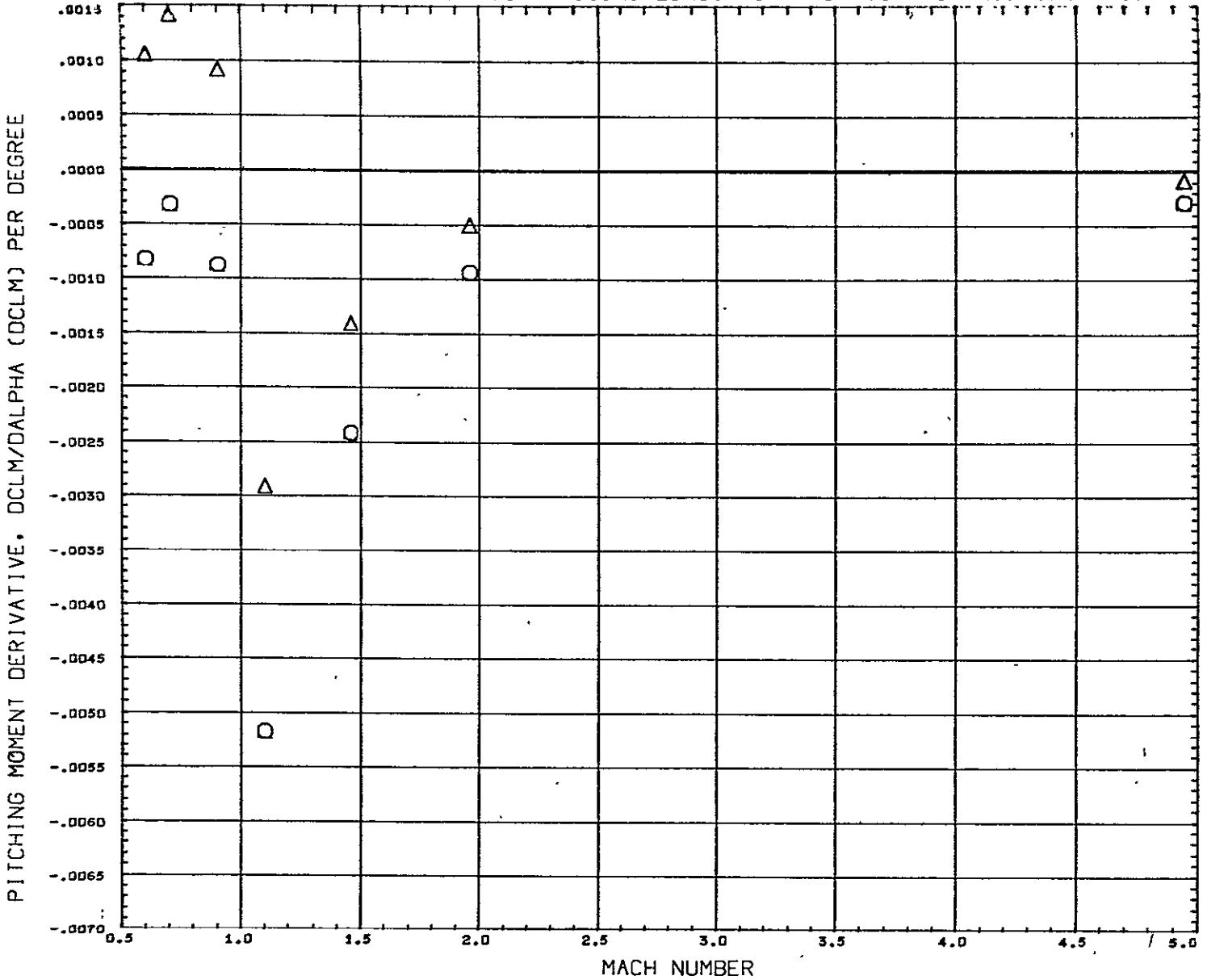


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEV3	RUDER2	ELEV4	RUDER4	REFERENCE INFORMATION	
(F41018)	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	0.000	0.000		SREF	9.0250 SQ. IN
(F41501)	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4			0.000	LREF	6.1420 INCHES
						BREF	6.1420 INCHES
						XMRP	3.9950 INCHES
						YMRP	0.0000 INCHES
						ZMRP	0.1350 INCHES
						SCALE	0.0033 SCALE

ALPHA 10.000



LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-LONGIT CHARACT VS MACH NO. (BETA=0)

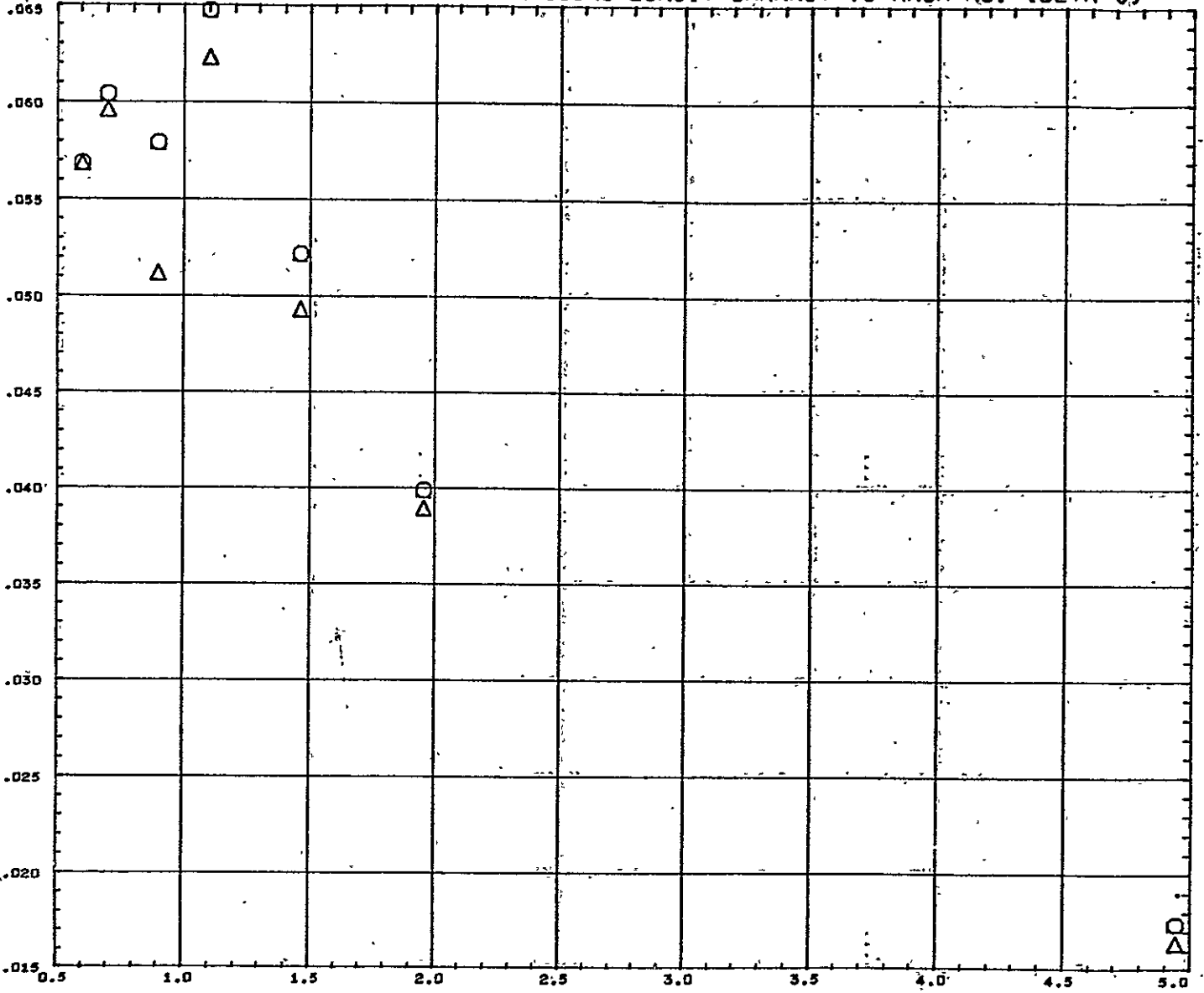


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(F4101S)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(F41501)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

ALPHA 15.000

LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-LONGIT CHARACT VS MACH NO. (BETA=0)

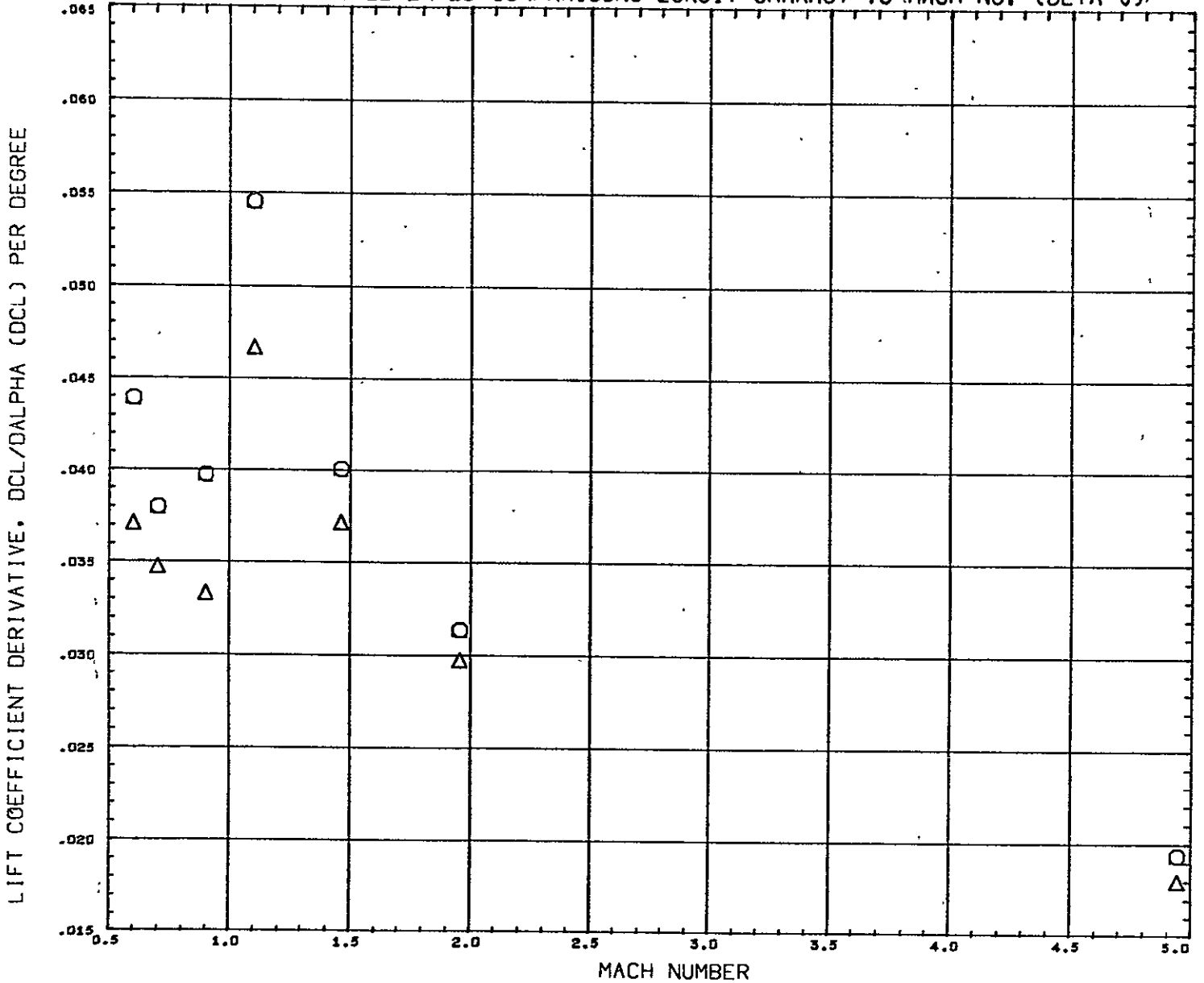
LIFT COEFFICIENT DERIVATIVE,  $dC_L/d\alpha$  (DCL) PER DEGREE



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEV3	RUDER2	ELEV4	RUDER4	REFERENCE INFORMATION	
(F41013)	MSFC TWT 498 MSFC/LHSC ORBITER	0.000	0.000			SREF	9.0250 SQ. IN
(F41501)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF	6.1420 INCHES
						BREF	6.1420 INCHES
						XMRF	3.9950 INCHES
						YMRF	0.0000 INCHES
						ZMRF	0.1350 INCHES
						SCALE	0.0033 SCALE

ALPHA 0.000

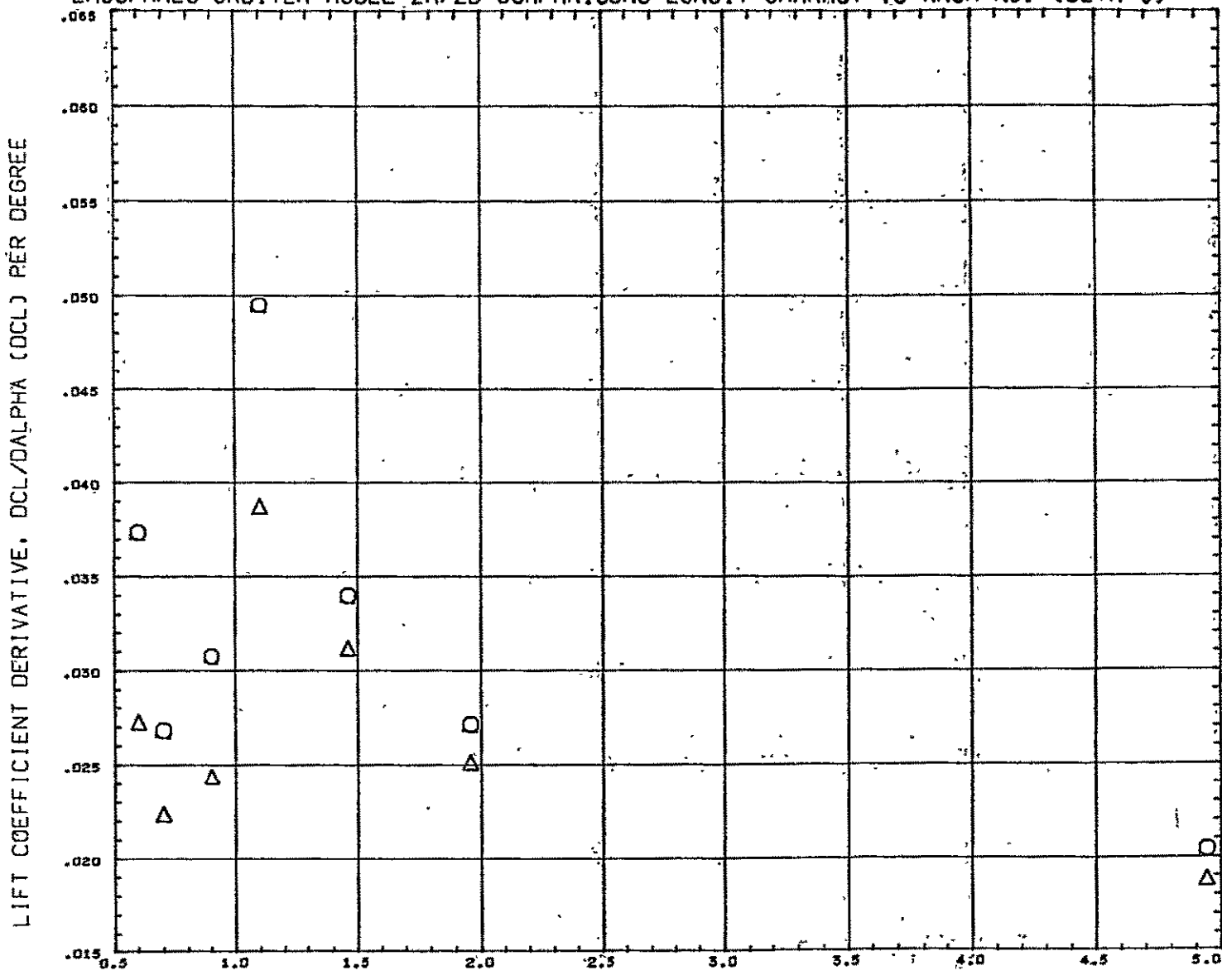
LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-LONGIT CHARACT VS MACH NO. (BETA=0);



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION	
(F4101S)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF	9.0250 SQ. IN
(F41S01)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF	6.1420 INCHES
						BREF	6.1420 INCHES
						XMRP	3.9950 INCHES
						YMRP	0.0000 INCHES
						ZMRP	0.1350 INCHES
						SCALE	0.0033 SCALE

ALPHA 10.000

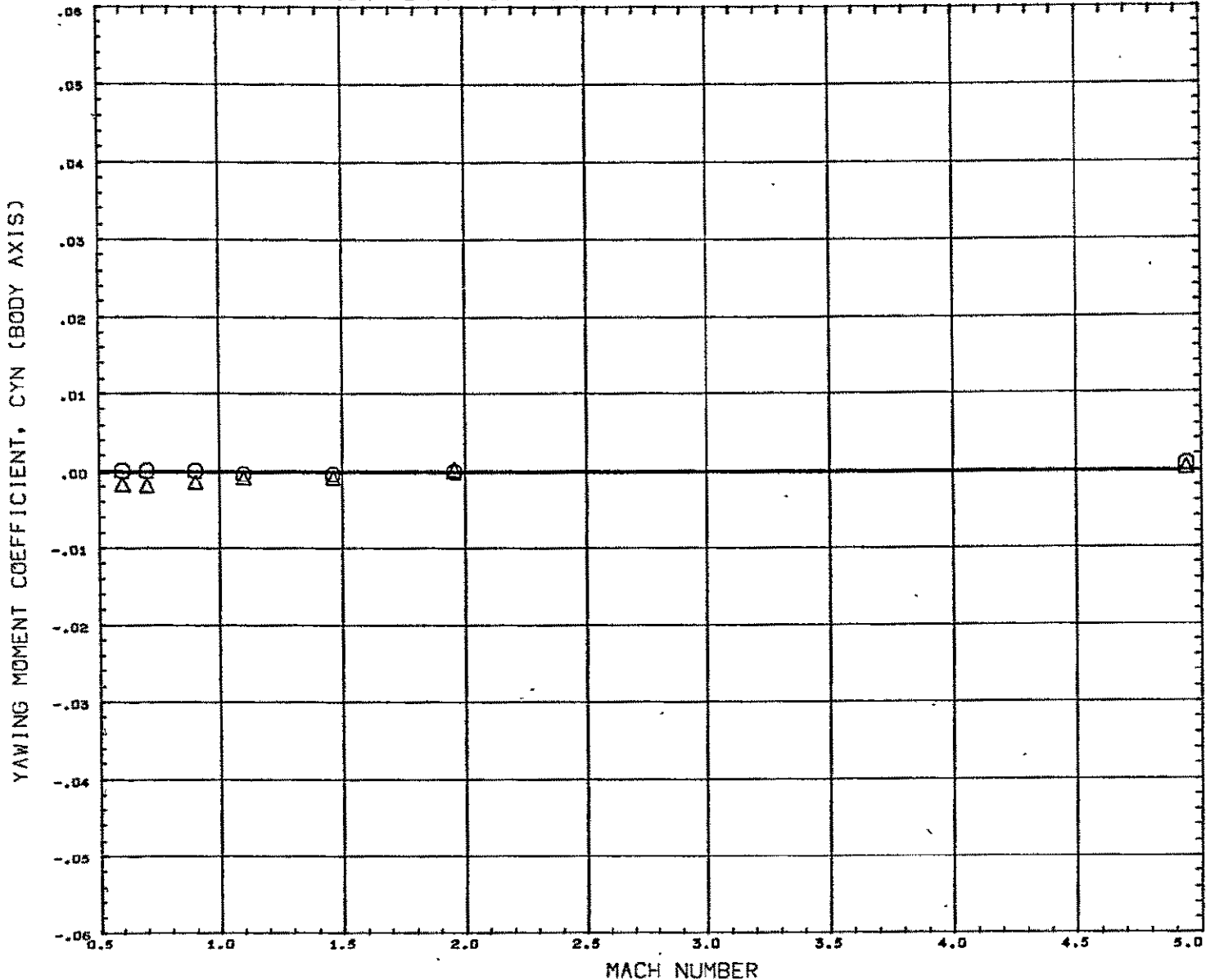
LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-LONGIT CHARACT VS MACH NO. (BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEV3	RUDER2	ELEV4	RUDER4	REFERENCE INFORMATION
(F41915)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(F41901)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

ALPHA 15.000

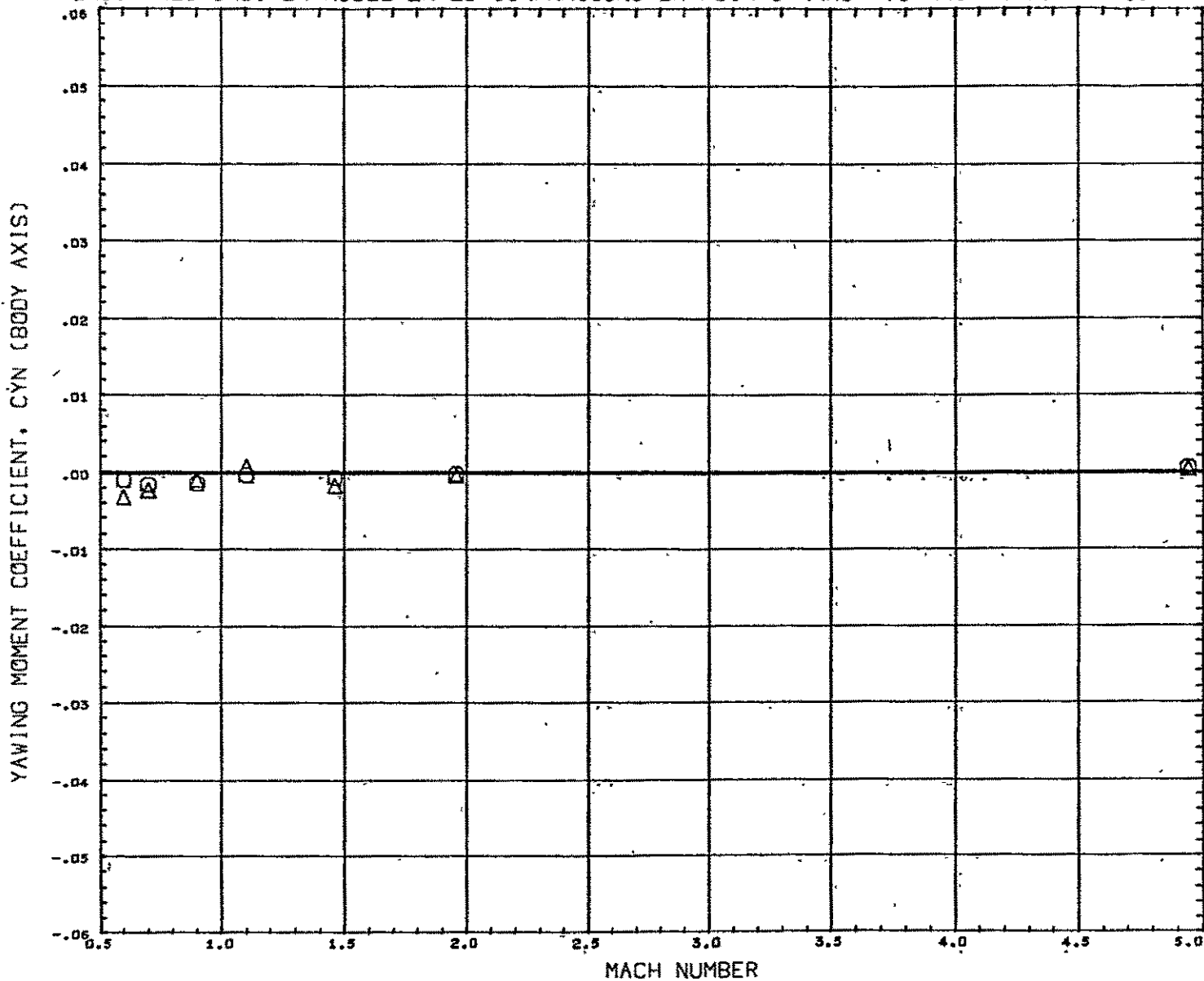
LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-LAT/DIR CHARACT VS MACH NO. (BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(D41D1J)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ.IN
(D41J01)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

ALPHA 0.000

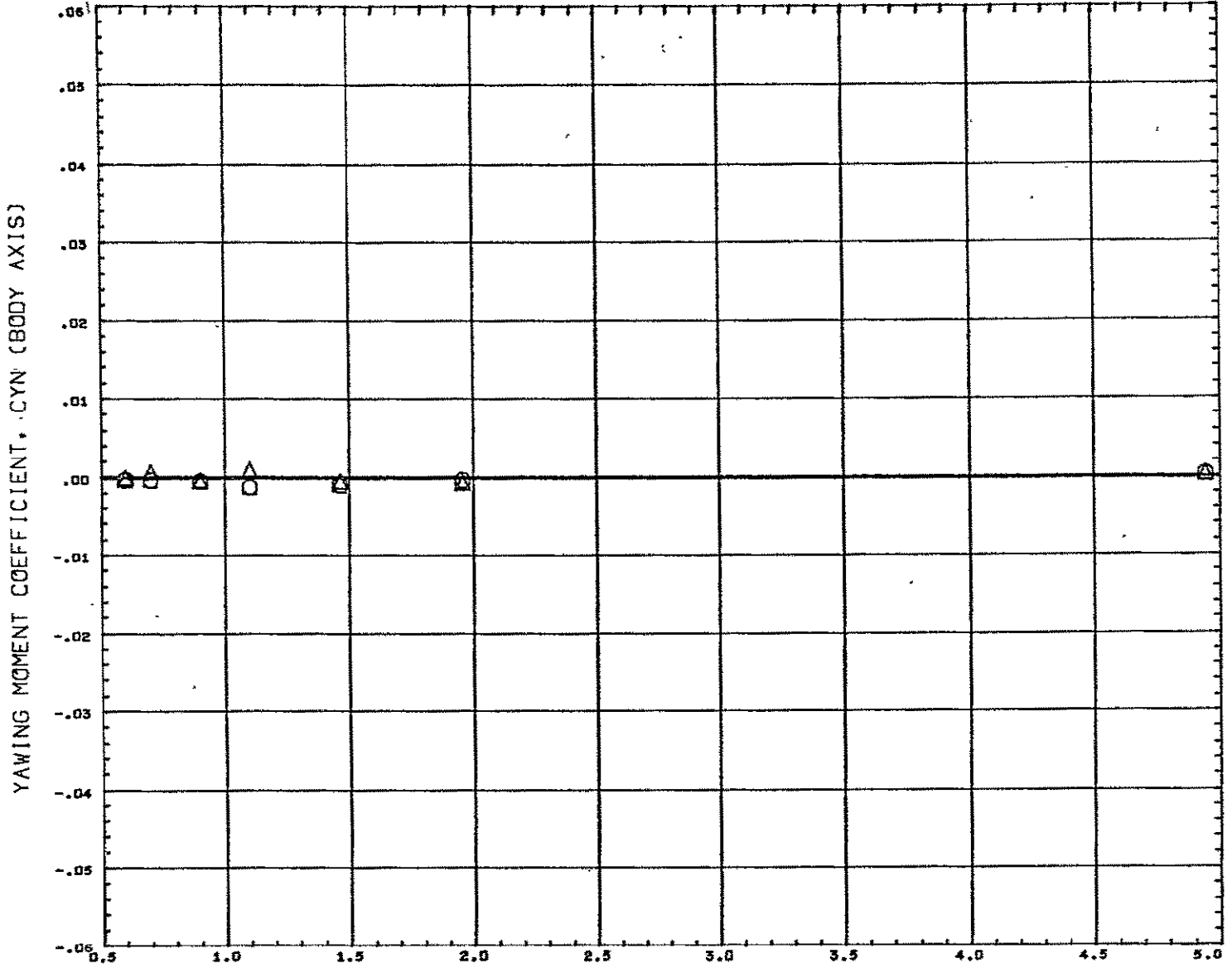
LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-LAT/DIR CHARACT VS MACH NO. (BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(D4101J)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(D41J01)	MSFC TWT 498 MSFC/HREC ORBITER	B2W2V4D2E3R2		0.000	0.000	LREF 6.1420 INCHES
		B2W5V2E4R4				BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

ALPHA 10.000

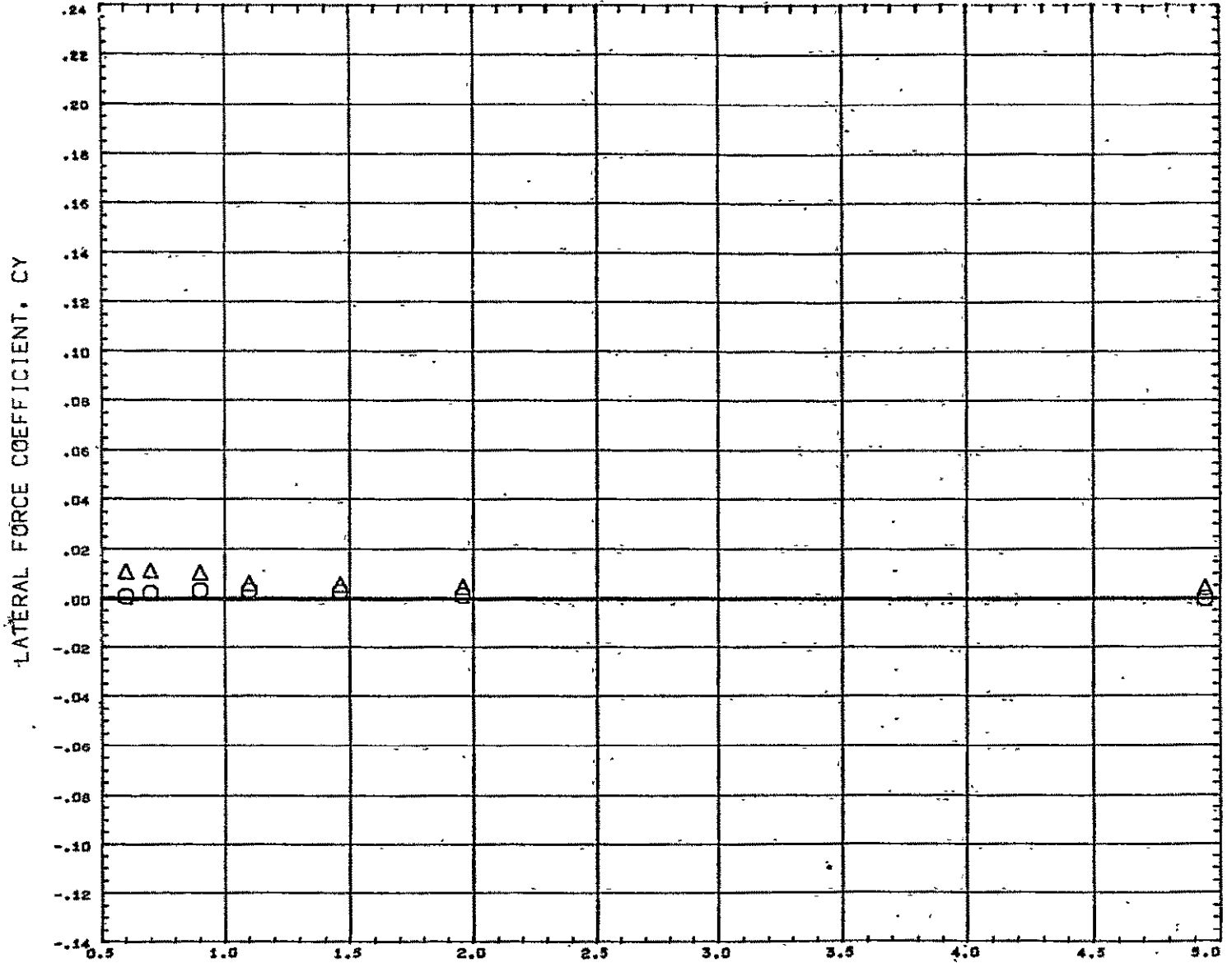
LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-LAT/DIR CHARACT VS MACH NO. (BETA=0)



A SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
101J)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
1J01)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

ALPHA 15.000

LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-LAT/DIR CHARACT VS MACH NO. (BETA=0)



DATA SET SYMBOL    CONFIGURATION DESCRIPTION  
 (D41J0J)    ○    MSFC TWT 498 MSFC/LMSC ORBITER  
 (D41J01)    △    MSFC TWT 498 MSFC/HREC ORBITER

B2W2V4D2E3R2  
 B2W5V2E4R4

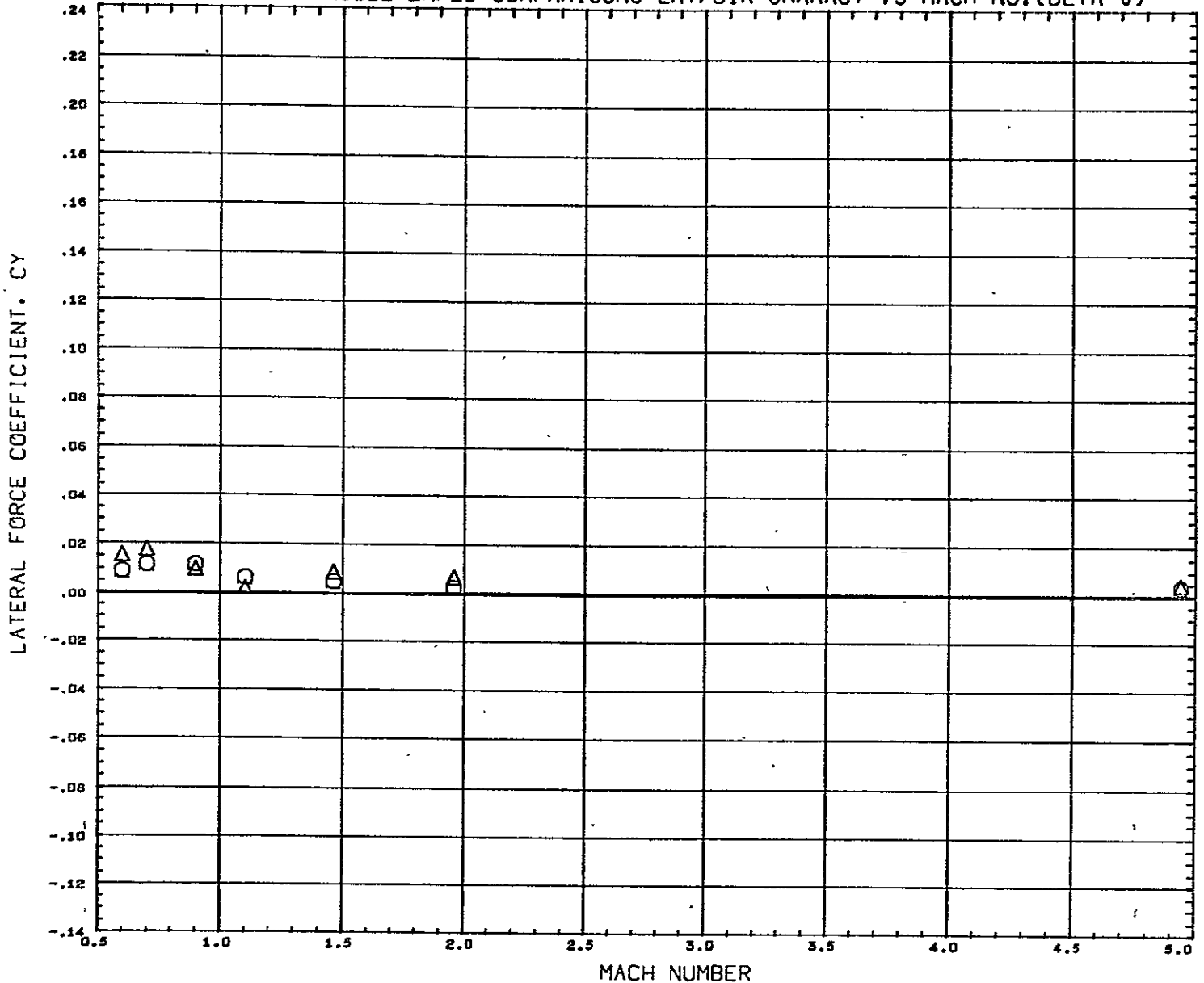
ELEVN3    RUDER2    ELEVN4    RUDER4  
 0.000    0.000    0.000    0.000

REFERENCE INFORMATION  
 SREF    9.0250    SQ. IN  
 LREF    6.1420    INCHES  
 BREF    6.1420    INCHES  
 XMRP    3.9950    INCHES  
 YMRP    0.0000    INCHES  
 ZMRP    0.1350    INCHES  
 SCALE    0.0033    SCALE

ALPHA    0.000



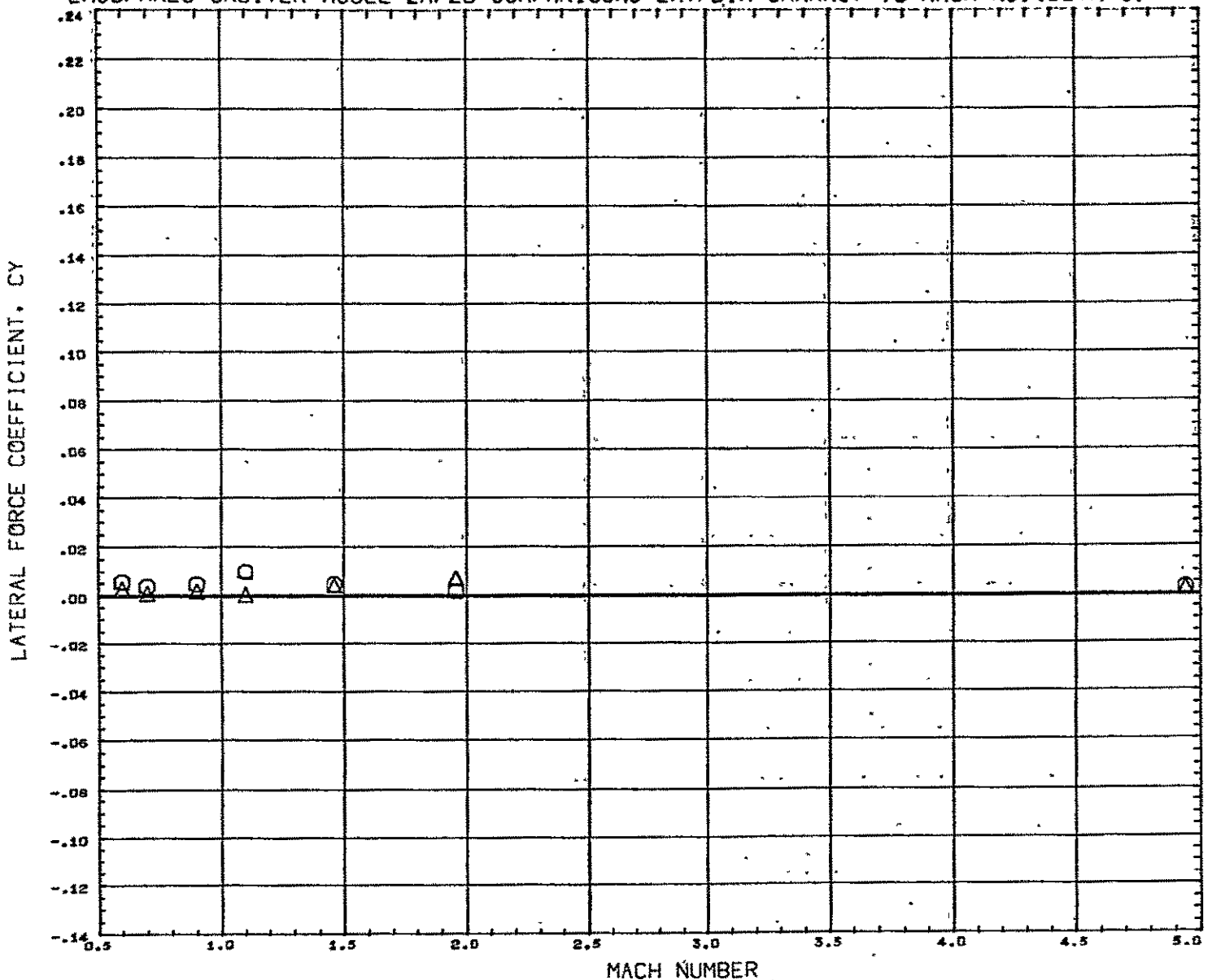
LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-LAT/DIR CHARACT VS MACH NO. (BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION	
(D41D1J)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF	9.0250 SQ. IN
(D41J91)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF	6.1420 INCHES
						BREF	6.1420 INCHES
						XMRP	3.9950 INCHES
						YMRP	0.0000 INCHES
						ZMRP	0.1350 INCHES
						SCALE	0.0033 SCALE

ALPHA 10.000

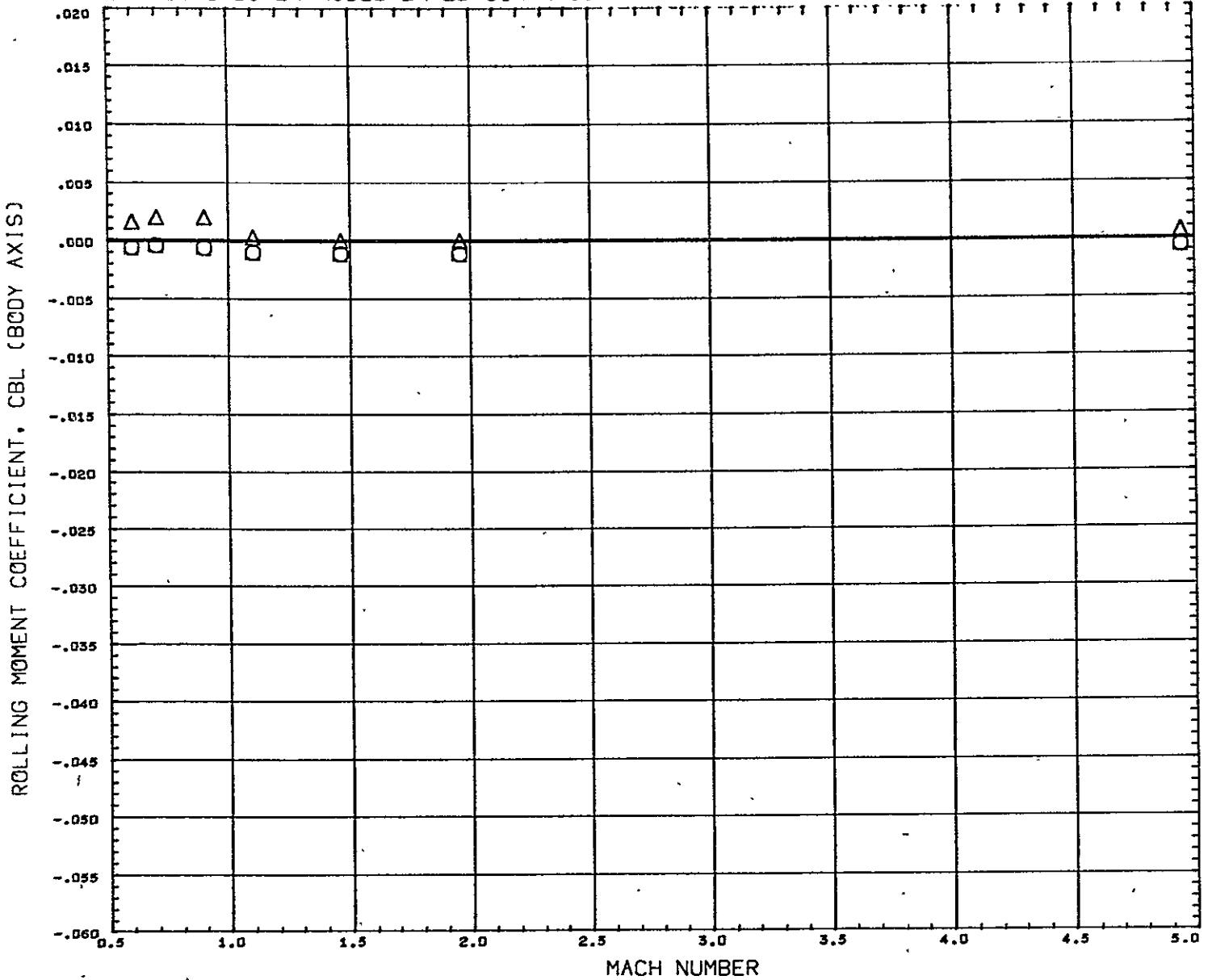
LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-LAT/DIR CHARACT VS MACH NO. (BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(04101J)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(041J01)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

ALPHA 15.000

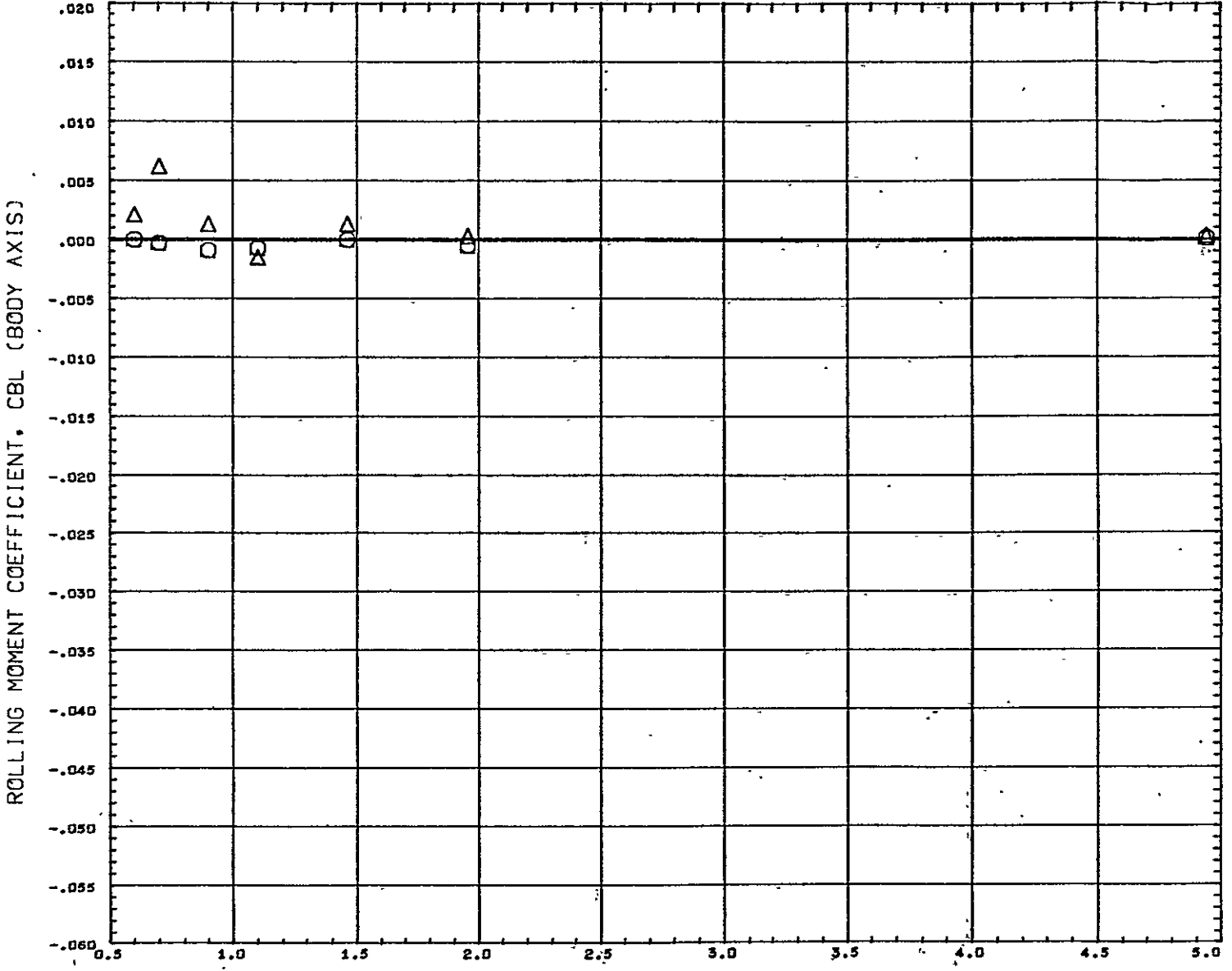
LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-LAT/DIR CHARACT VS MACH NO. (BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION	
(D4101J)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF	9.0250 SQ. IN
(D41J01)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF	6.1420 INCHES
						BREF	6.1420 INCHES
						XHRP	3.9950 INCHES
						YHRP	0.0000 INCHES
						ZHRP	0.1350 INCHES
						SCALE	0.0033 SCALE

ALPHA 0.000

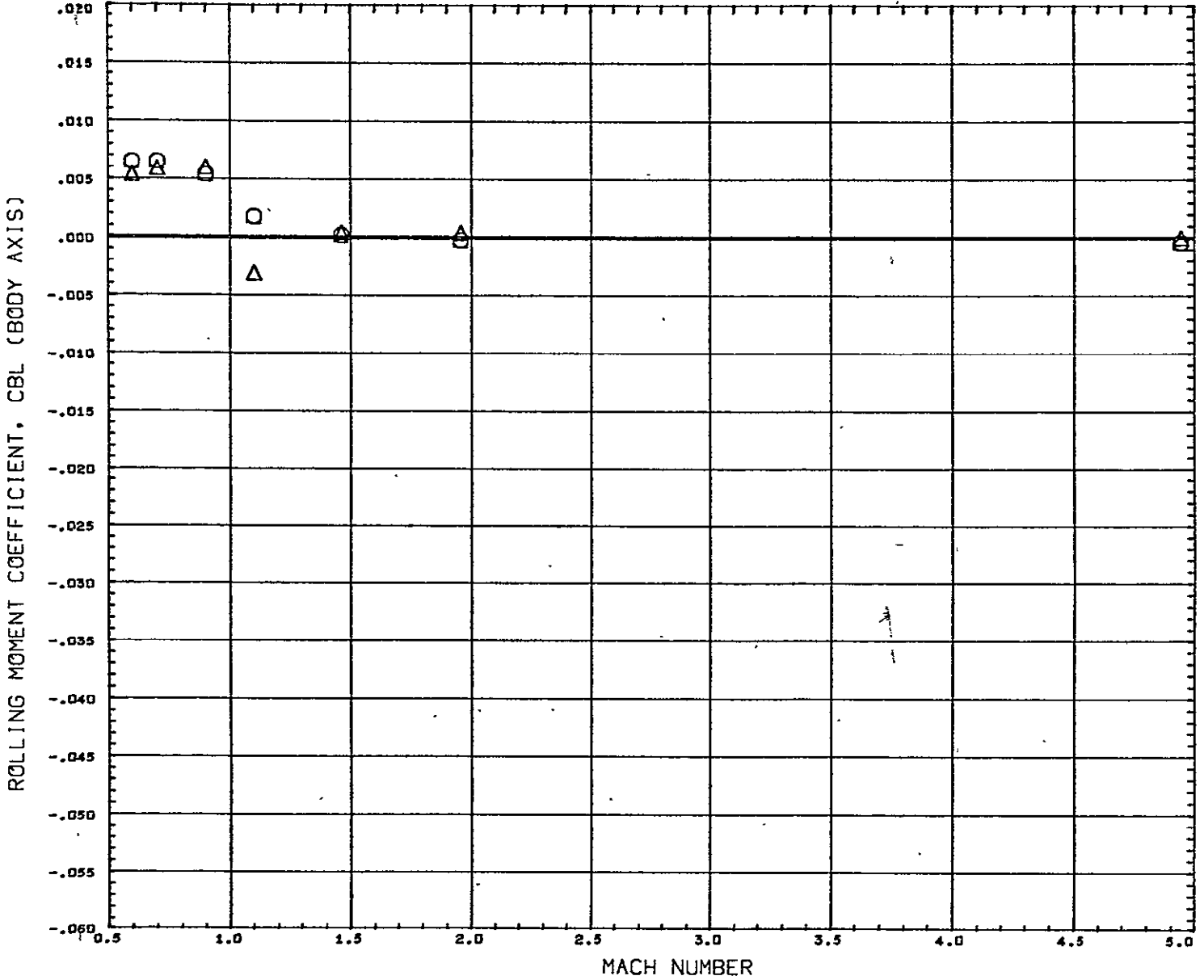
LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-LAT/DIR CHARACT VS MACH NO. (BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION	
(D4101J)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF	9.0250 SQ. IN
(D41J01)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF	6.1420 INCHES
						BREF	6.1420 INCHES
						XMRP	3.9950 INCHES
						YMRP	0.0000 INCHES
						ZMRP	0.1350 INCHES
						SCALE	0.0033 SCALE

ALPHA 10.000

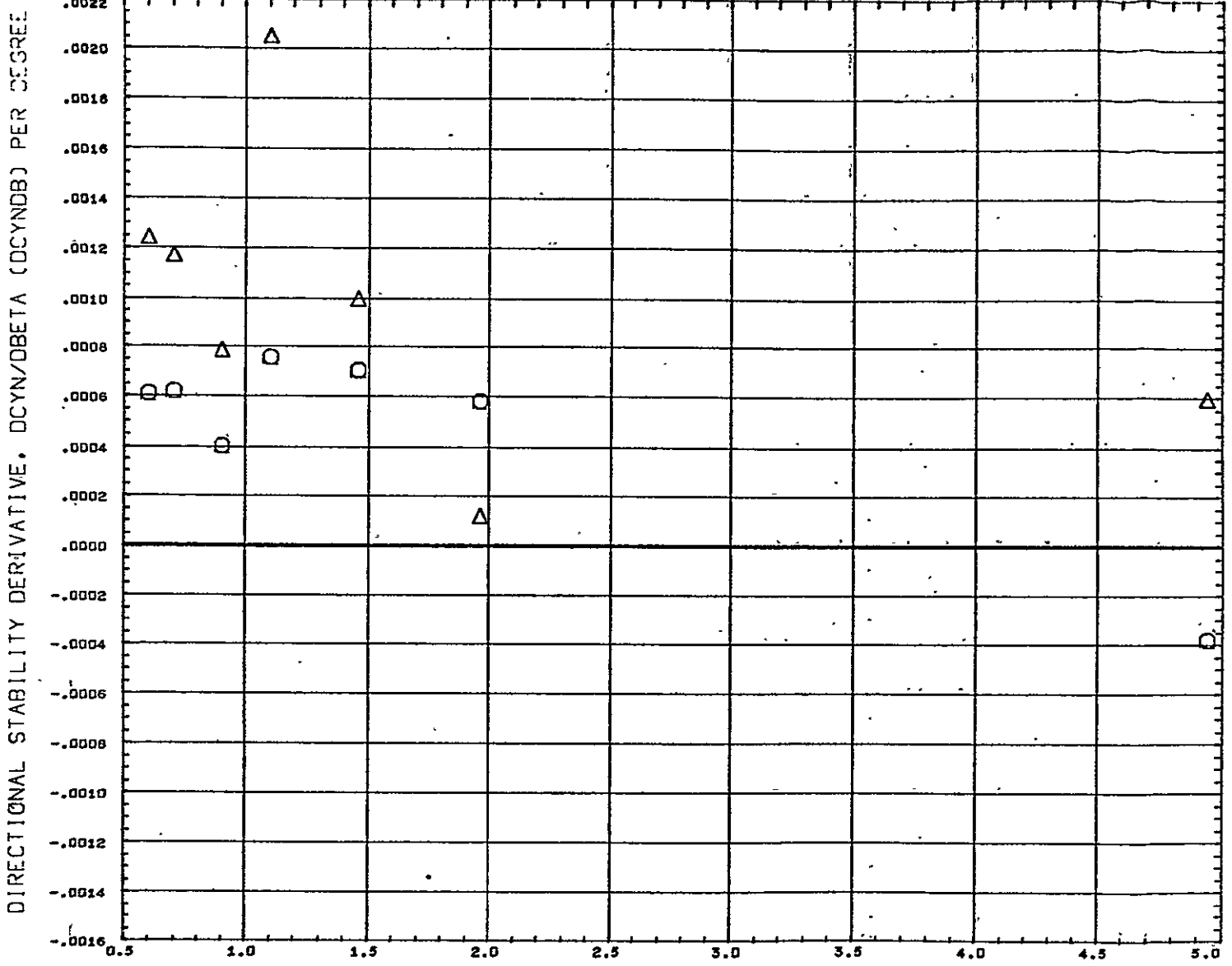
LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-LAT/DIR CHARACT VS MACH NO. (BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(D4101J)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(D41J01)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

ALPHA 15.000

LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-LAT/DIR CHARACT VS MACH NO. (BETA=0)

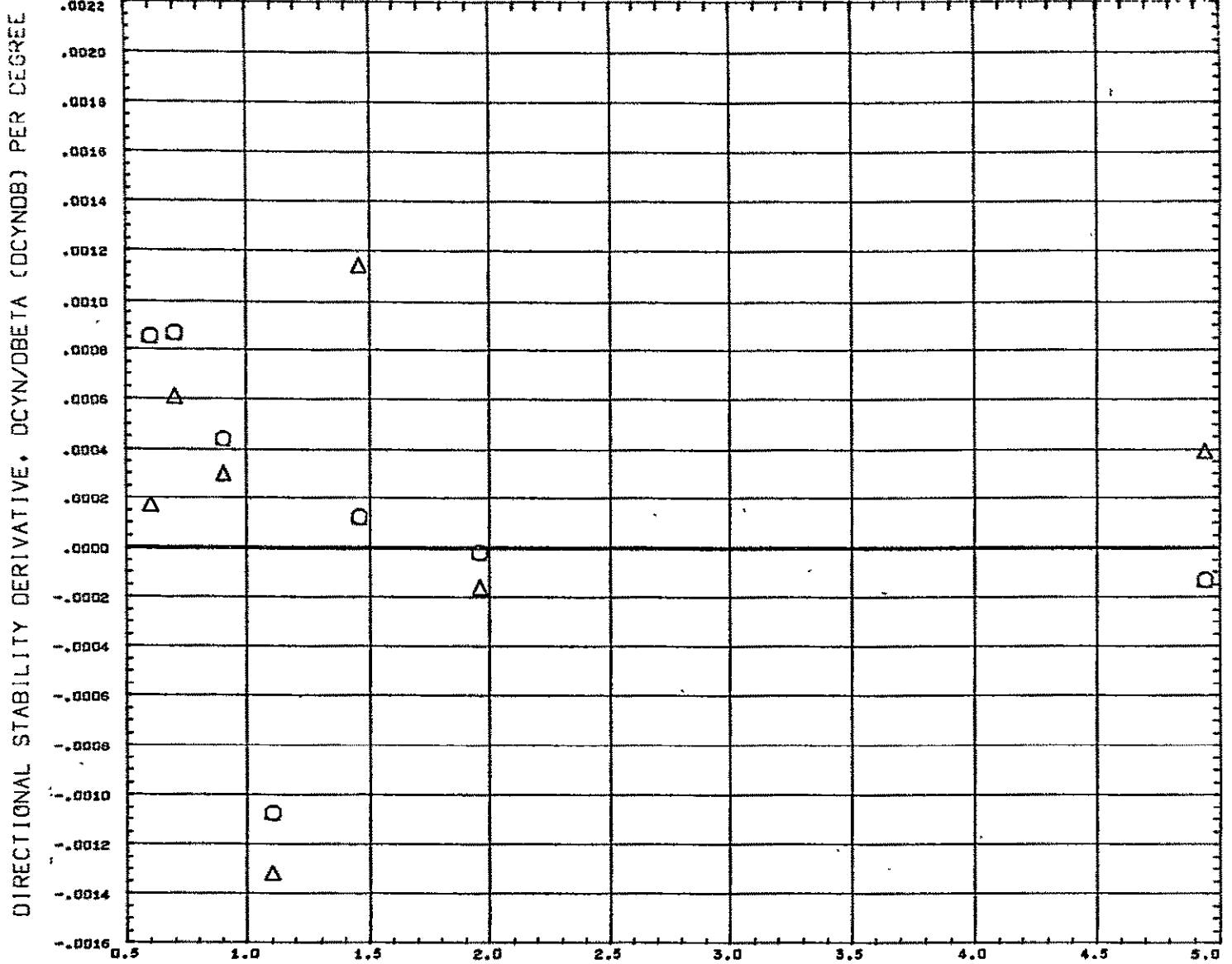


MACH NUMBER

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(D4101J)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(D41J01)	MSFC TWT 498 MSFC/HREC ORBITER	B2W2V402E3R2		0.000	0.000	LREF 6.1420 INCHES
		B2W5V2E4R4				BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

ALPHA 0.000

LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-LAT/DIR CHARACT VS MACH NO. (BETA=0)

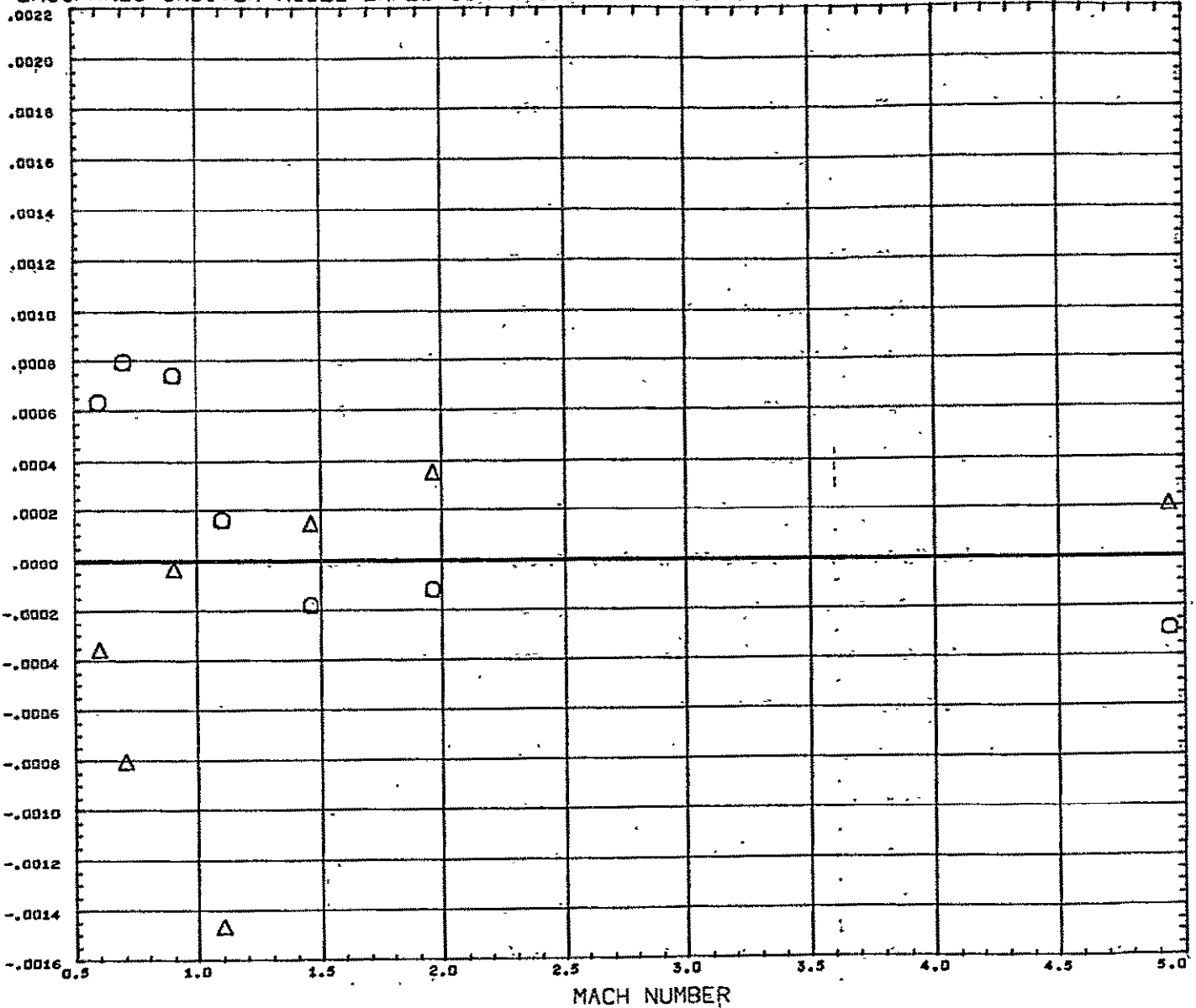


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(D41D1J)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(D41J01)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

ALPHA 10.000

LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-LAT/DIR CHARACT VS MACH NO. (BETA=0)

DIRECTIONAL STABILITY DERIVATIVE, DCYN/OBETA (DCYNDB) PER DEGREE

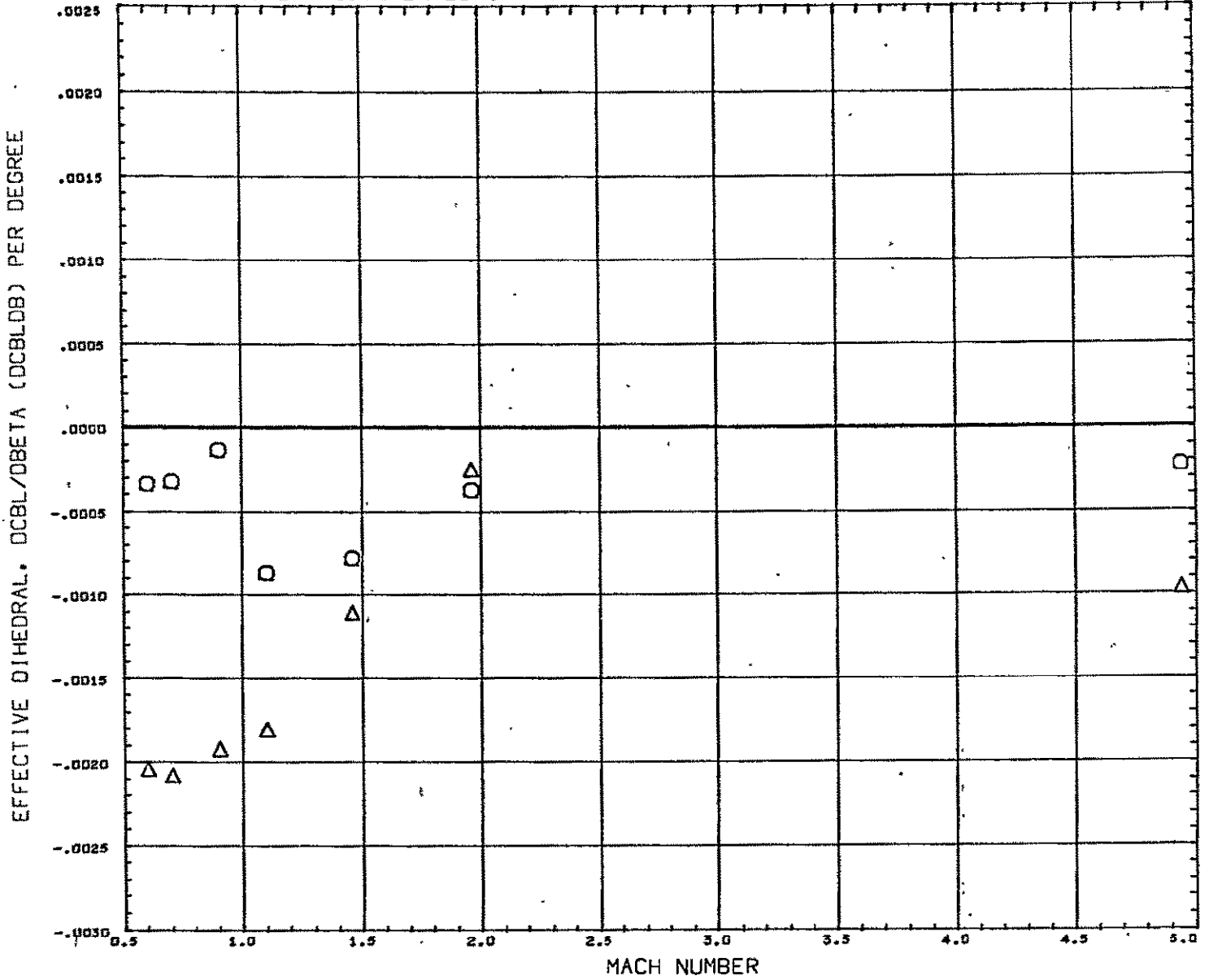


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	B2W2V4D2E3R2	ELEV3	RUDER2	B2W5V2E4R4	ELEV4	RUDER4	REFERENCE INFORMATION
(D4101)	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	0.000	0.000	B2W5V2E4R4	0.000	0.000	SREF 9.0250 SQ. IN LREF 6.1420 INCHES BREF 6.1420 INCHES XMRP 3.9950 INCHES YMRP 0.0000 INCHES ZMRP 0.1350 INCHES SCALE 0.0033 SCALE
(D4102)	MSFC TWT 498 MSFC/HREC ORBITER	B2W2V4D2E3R2	0.000	0.000	B2W5V2E4R4	0.000	0.000	

ALPHA 15.000



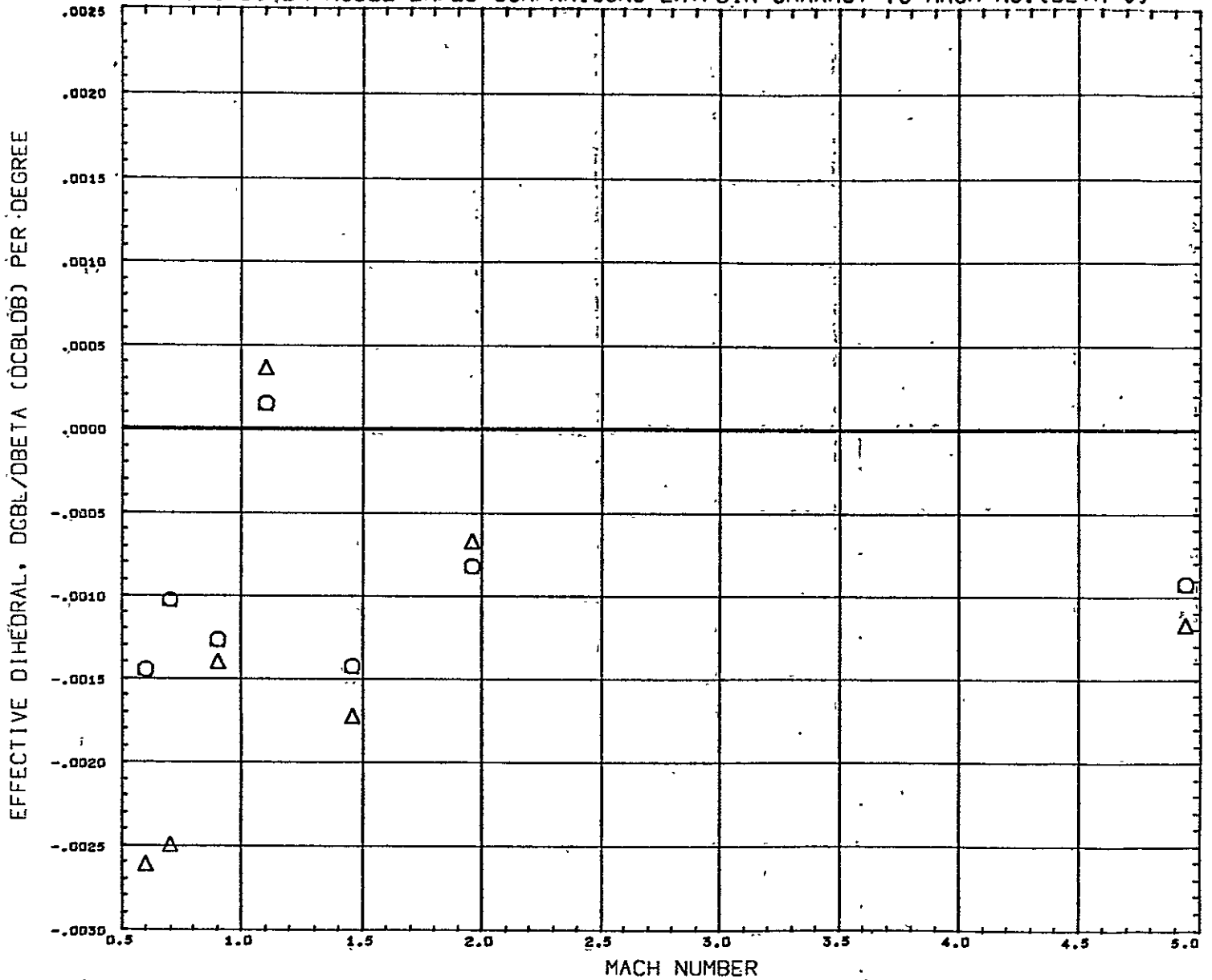
LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-LAT/DIR CHARACT VS MACH NO. (BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(D4101J)	MSFC TWI 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(D41J01)	MSFC TWI 498 MSFC/HREC ORBITER			0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XHRP 3.9950 INCHES
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						ZHRP 0.1350 INCHES
						SCALE 0.0033 SCALE

ALPHA 0.000

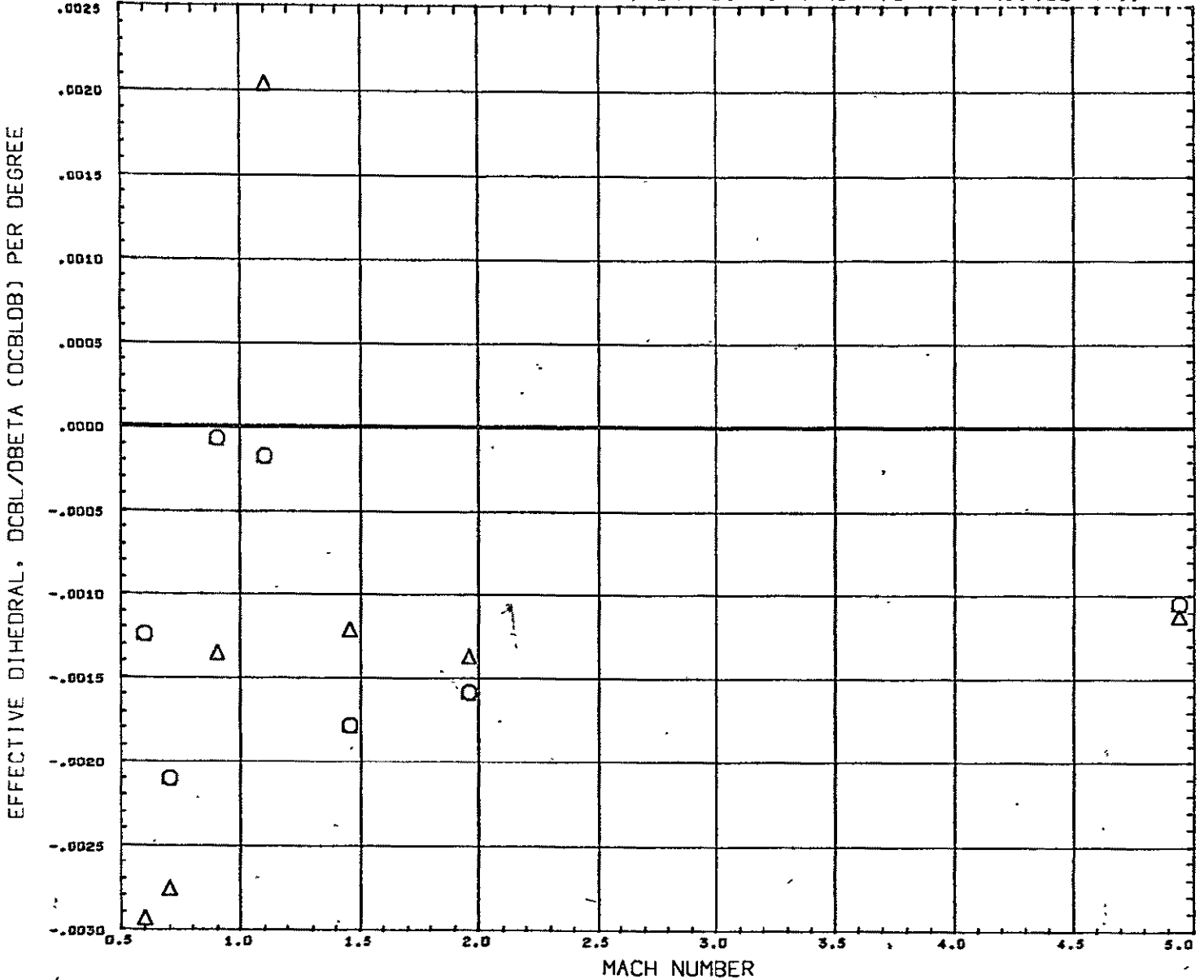
LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-LAT/DIR CHARACT VS MACH NO. (BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(D4101J)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(D41001)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

ALPHA 10.000

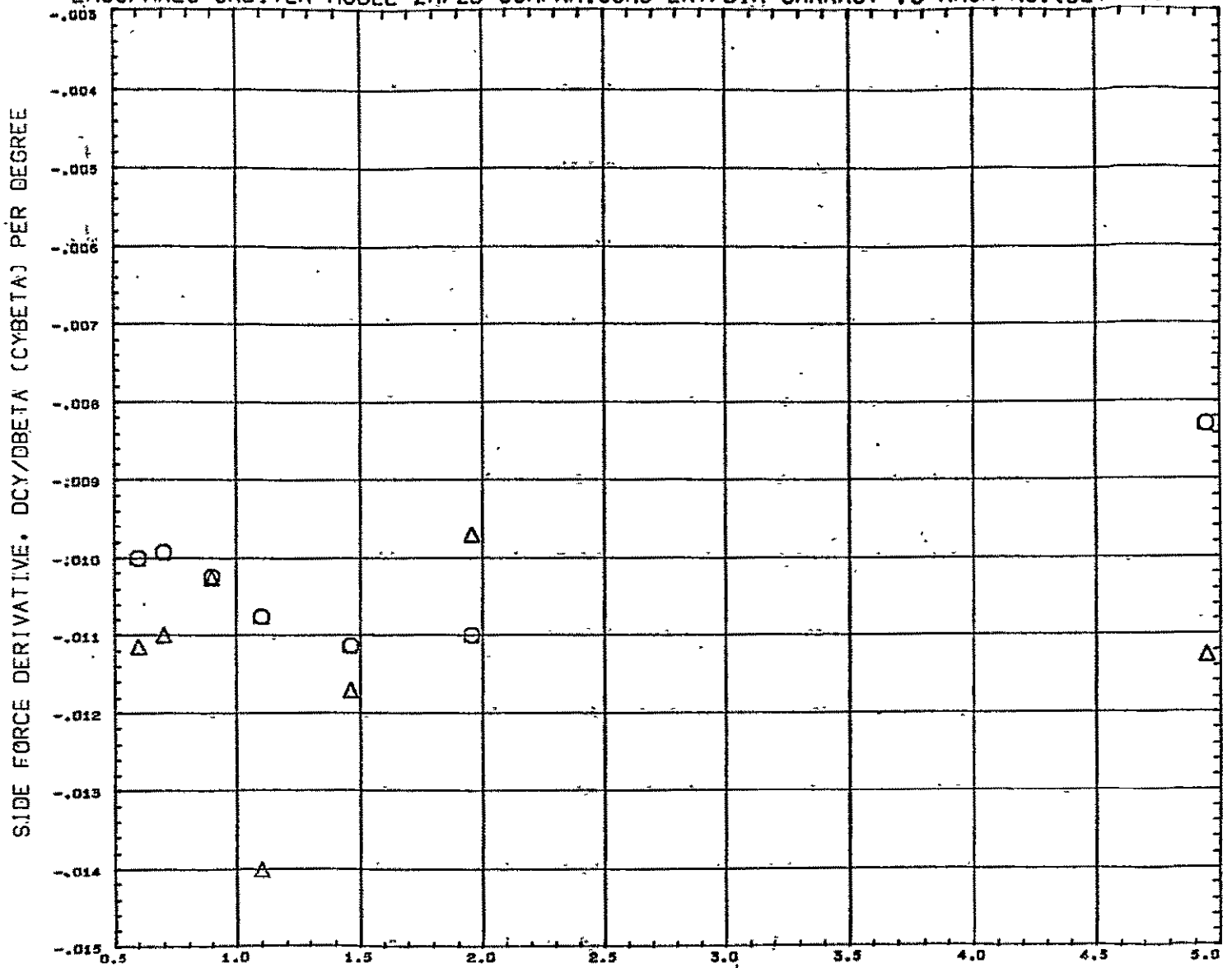
LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-LAT/DIR CHARACT VS MACH NO. (BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION	
(D4101J)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF	9.0250 SQ. IN
(D41J01)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF	6.1420 INCHES
						BREF	6.1420 INCHES
						XHRP	3.9950 INCHES
						YHRP	0.0000 INCHES
						ZHRP	0.1350 INCHES
						SCALE	0.0033 SCALE

ALPHA 15.000

LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-LAT/DIR CHARACT VS MACH NO. (BETA=0)



DATA SET: SYMBOL CONFIGURATION DESCRIPTION  
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 (D41J01) △ MSFC TWT 498 MSFC/HREC ORBITER

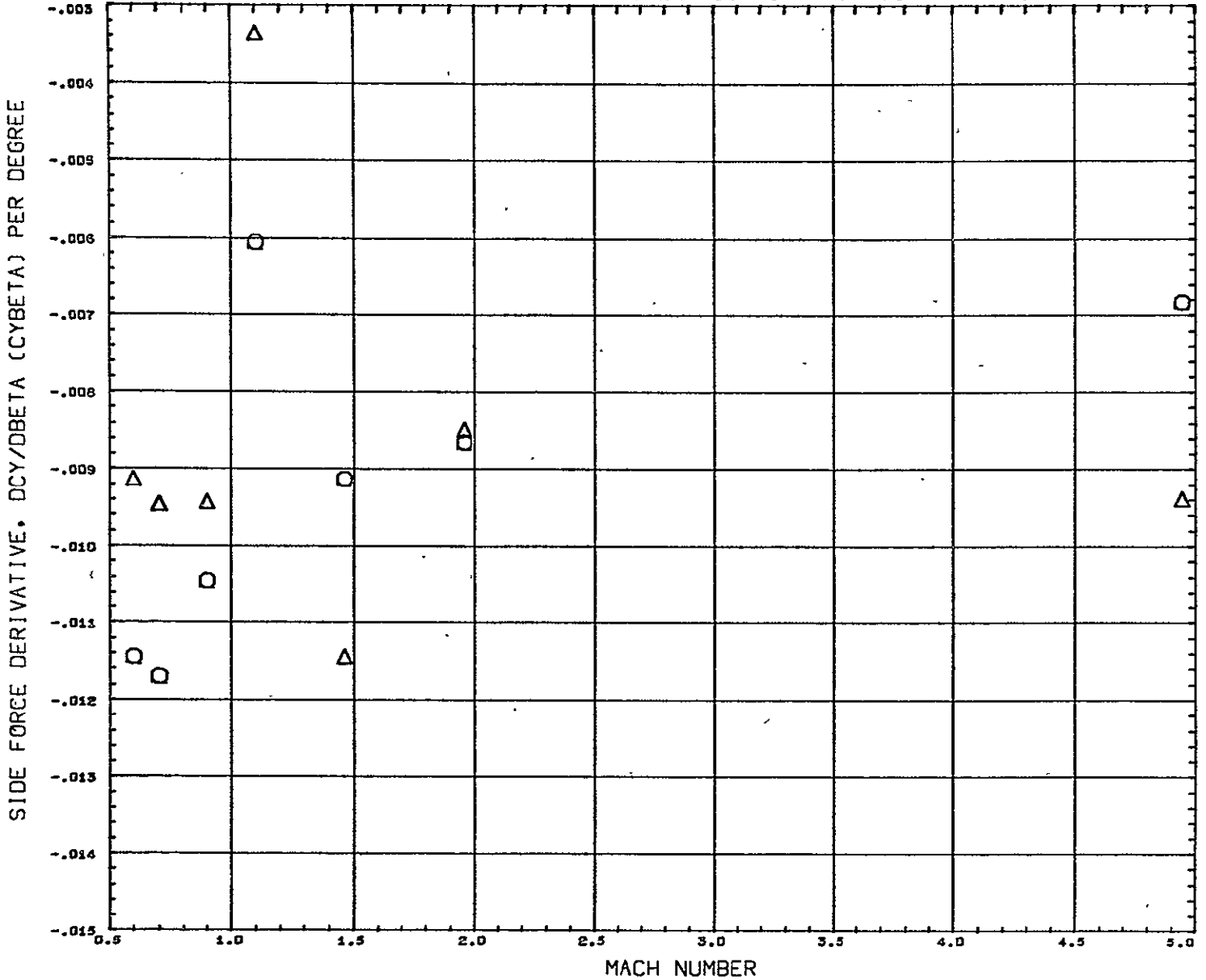
B2W2V4D2E3R2  
 B2W5V2E4R4

ELEVN3 RUDER2 ELEVN4 RUDER4  
 0.000 0.000 0.000 0.000

REFERENCE INFORMATION  
 SREF 9.0250 SQ. IN  
 LREF 6.1420 INCHES  
 BREF 6.1420 INCHES  
 XHRP 3.9950 INCHES  
 YHRP 0.0000 INCHES  
 ZHRP 0.1350 INCHES  
 SCALE 0.0033 SCALE

ALPHA 0.000

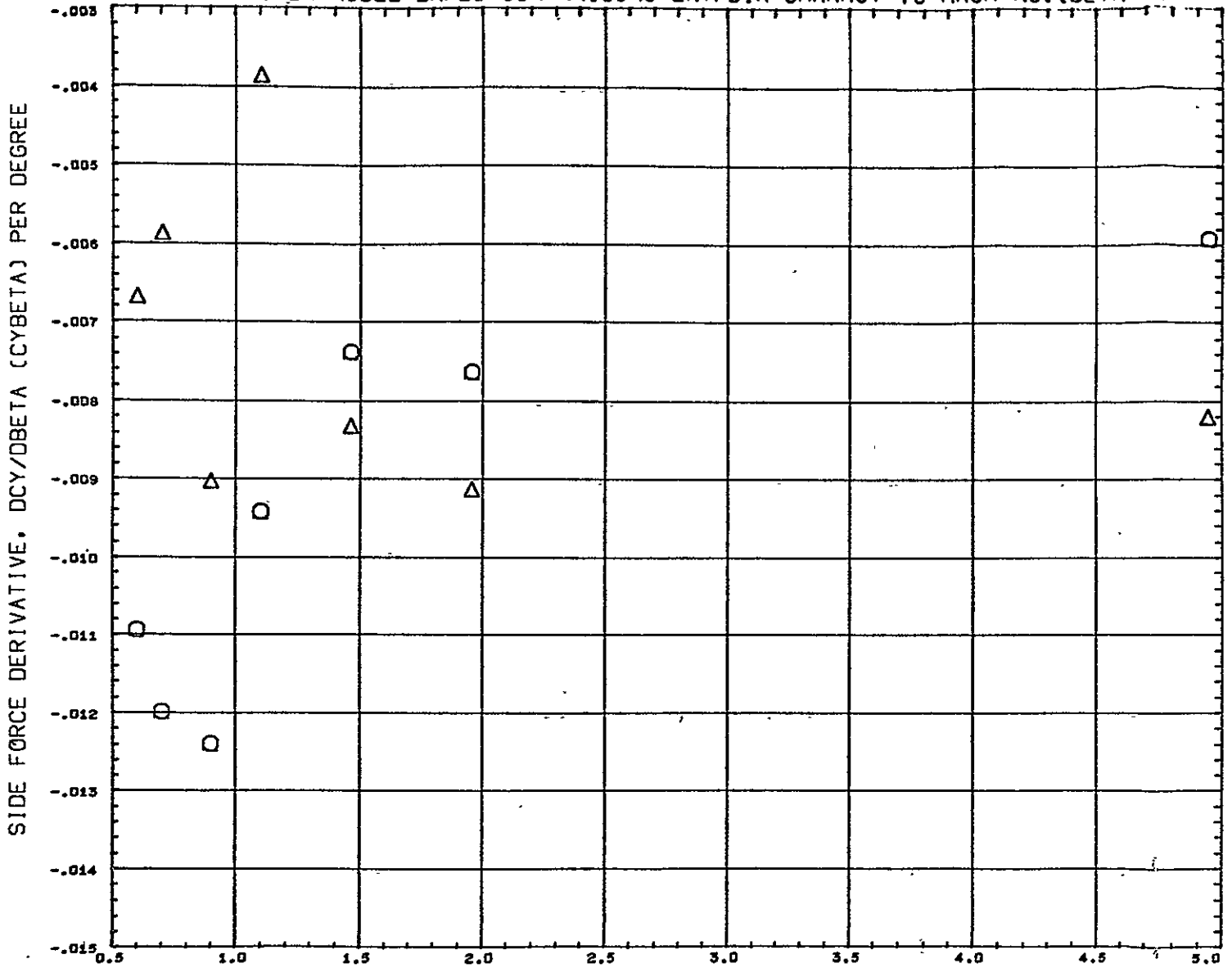
LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-LAT/DIR CHARACT VS MACH NO. (BETA=0)



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(D41D1J)	MSFC TWT 498 MSFC/LHSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(D41J01)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP - 0.1350 INCHES
						SCALE 0.0033 SCALE

ALPHA 10.000

LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-LAT/DIR CHARACT VS MACH NO. (BETA=0)

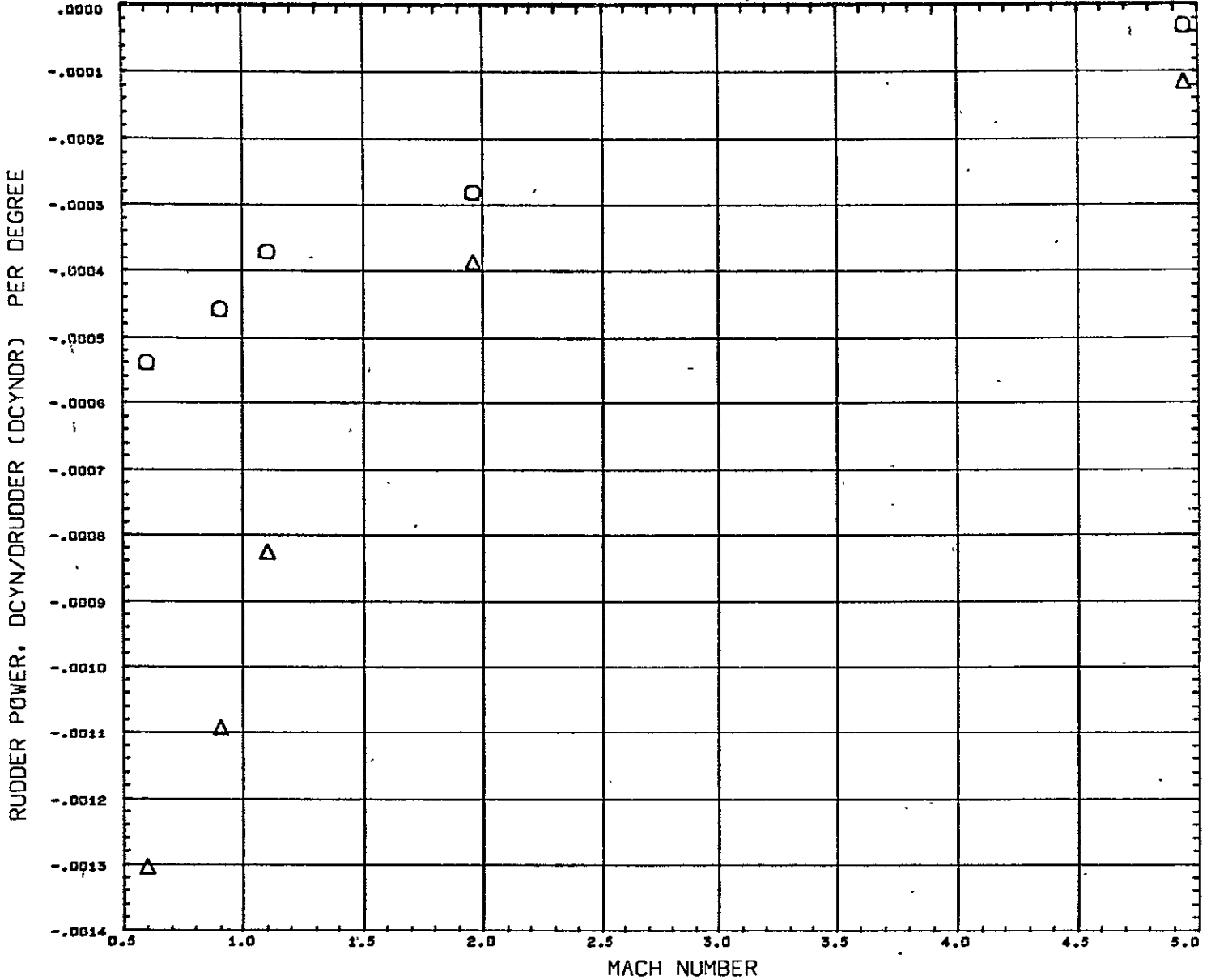


MACH NUMBER

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(04101J)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(041J01)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

ALPHA 15.000

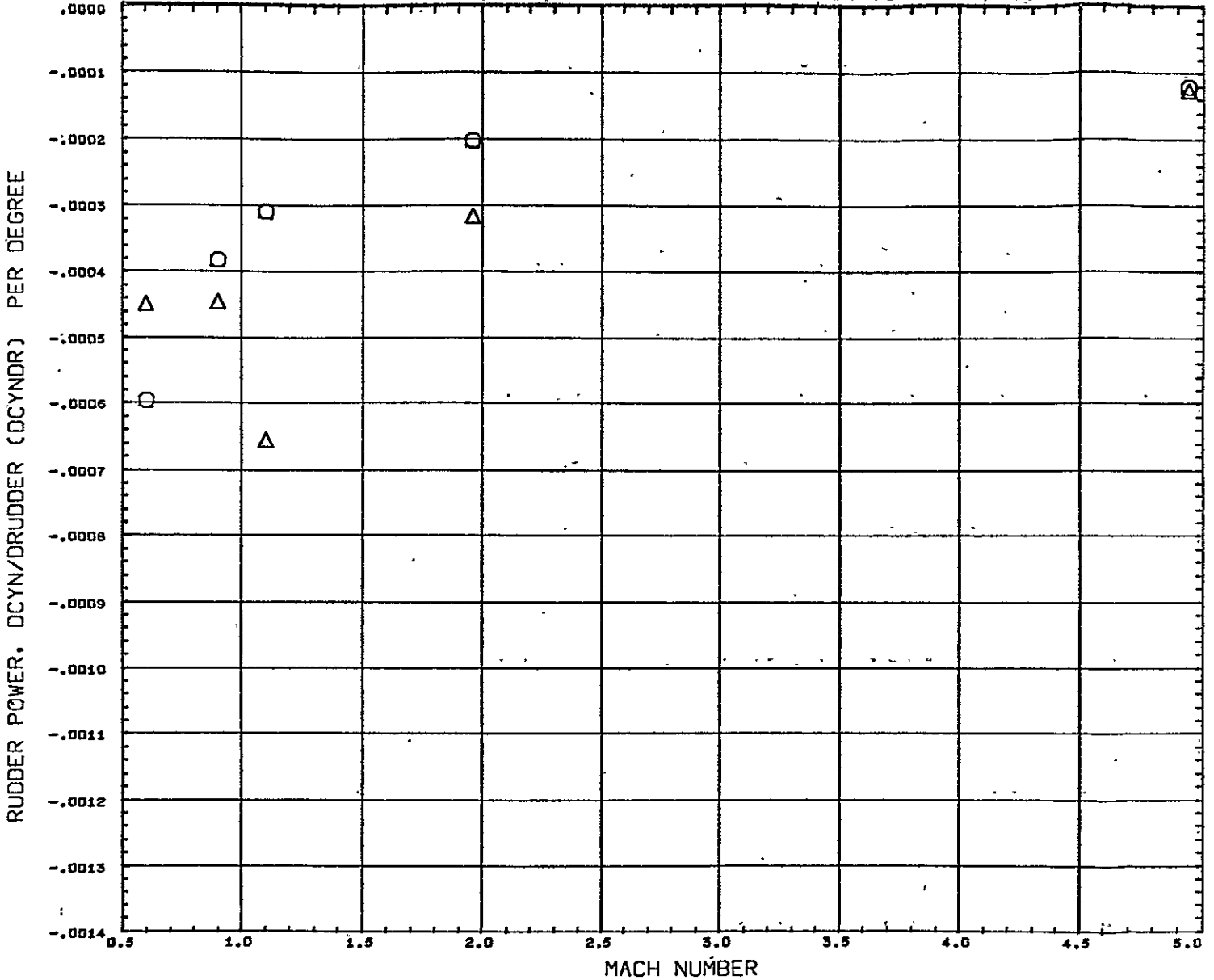
LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-RUDDER EFF(DER VS MACH NO.), BETA=0



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION	
(Q41D1J)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF	9.0250 SQ. IN
(Q41J01)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF	6.1420 INCHES
						BREF	6.1420 INCHES
						XMRP	3.9950 INCHES
						YMRP	0.0000 INCHES
						ZMRP	0.1350 INCHES
						SCALE	0.0033 SCALE

ALPHA 0.000

LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-RUDDER EFF( DER VS MACH NO.), BETA=0



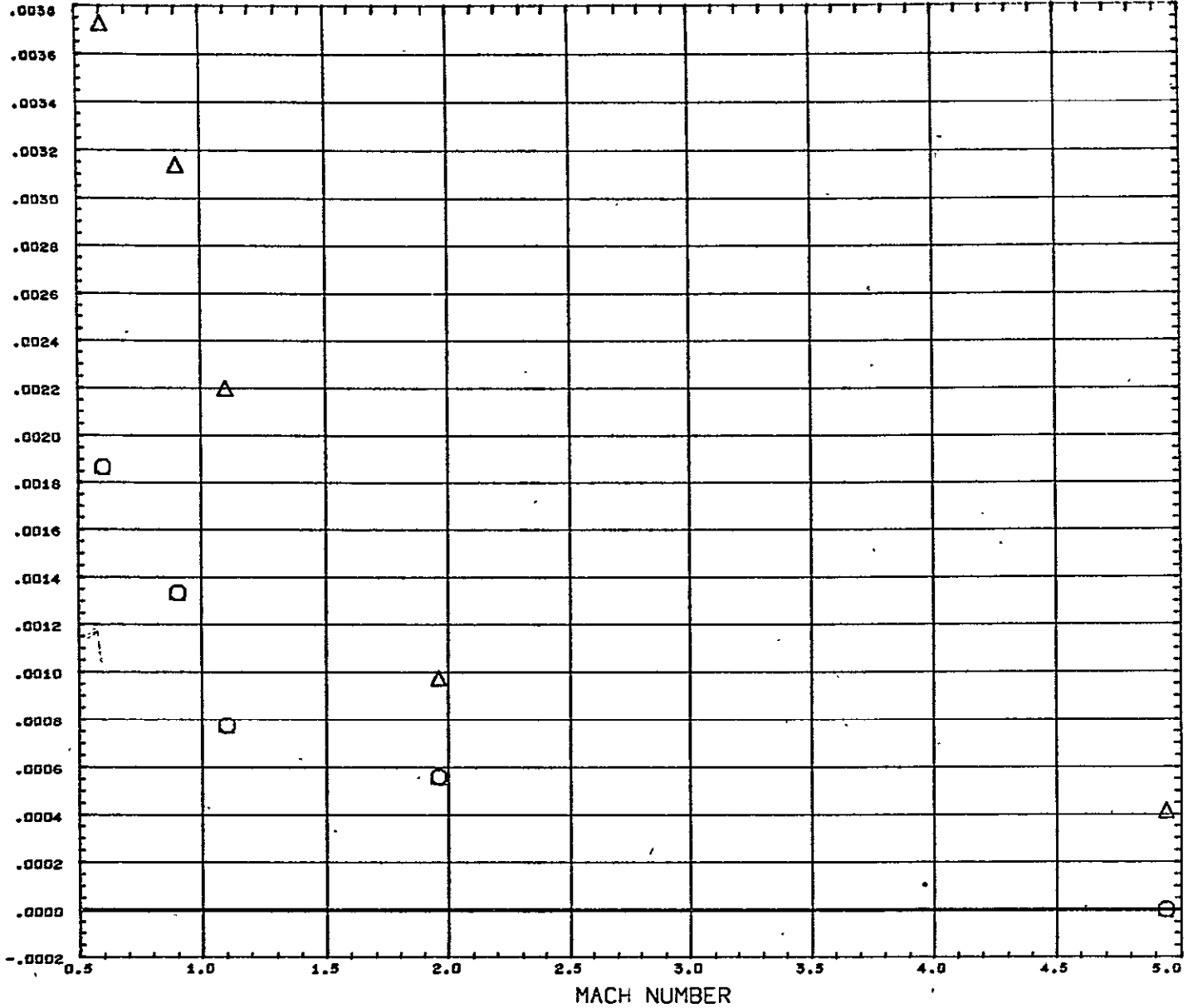
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(Q4101J)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(Q41J01)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

ALPHA 15.000



LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-RUDDER EFF( DER VS MACH NO.), BETA=0

SIDE FORCE RATE OF CHANGE WITH RUDDER, DCY/DRUDDER (DCY/DR) PER DEGREE

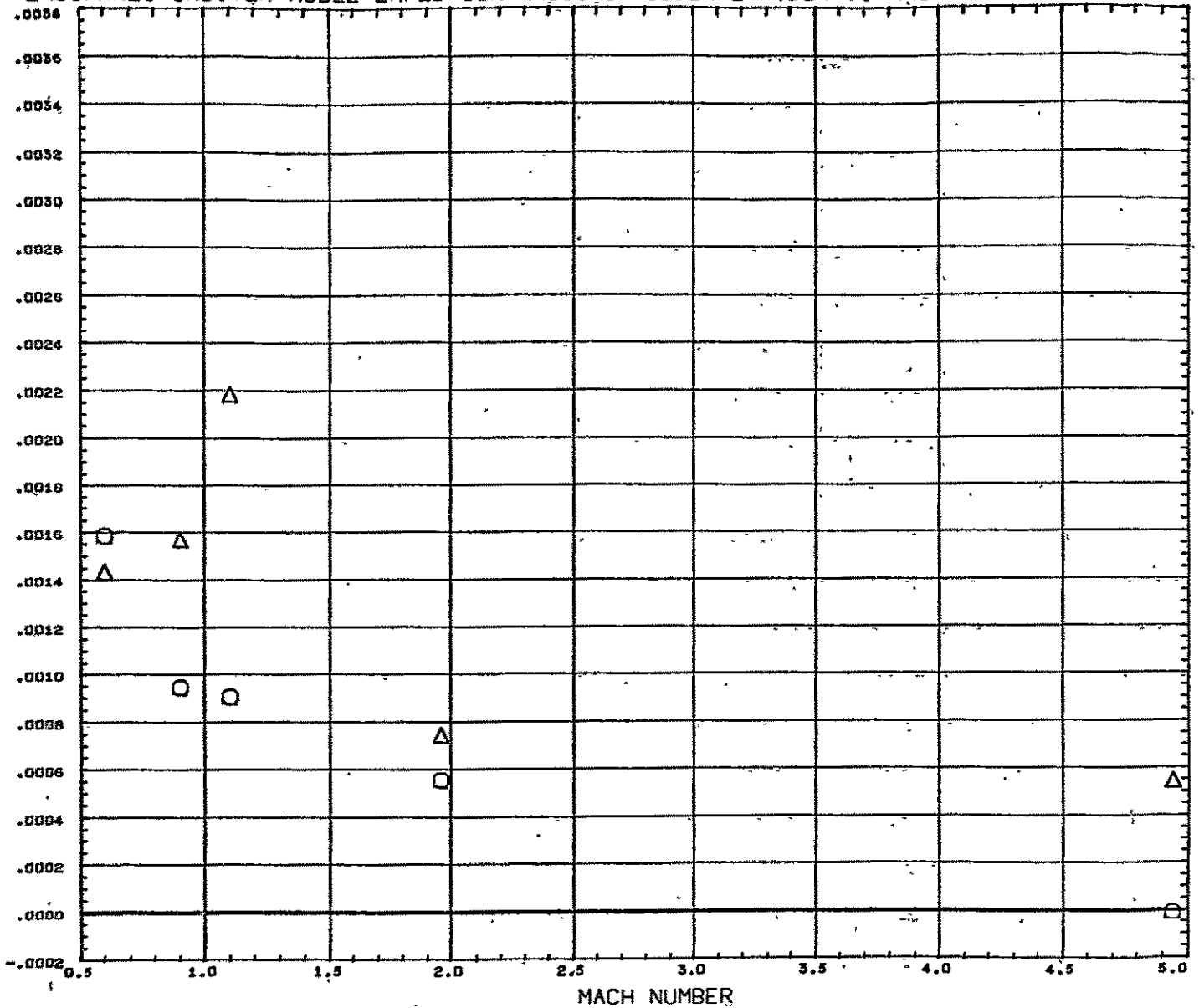


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION	
(Q4101J)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF	9.0250 SQ.IN
(Q41J01)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF	6.1420 INCHES
						BREF	6.1420 INCHES
						XMRP	3.9950 INCHES
						YMRP	0.0000 INCHES
						ZMRP	0.1350 INCHES
						SCALE	0.0033 SCALE

ALPHA 0.000

LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-RUDDER EFF(DER VS MACH NO.), BETA=0

SIDE FORCE RATE OF CHANGE WITH RUDDER, DCY/DRUDDER (DCY/DR) PER DEGREE

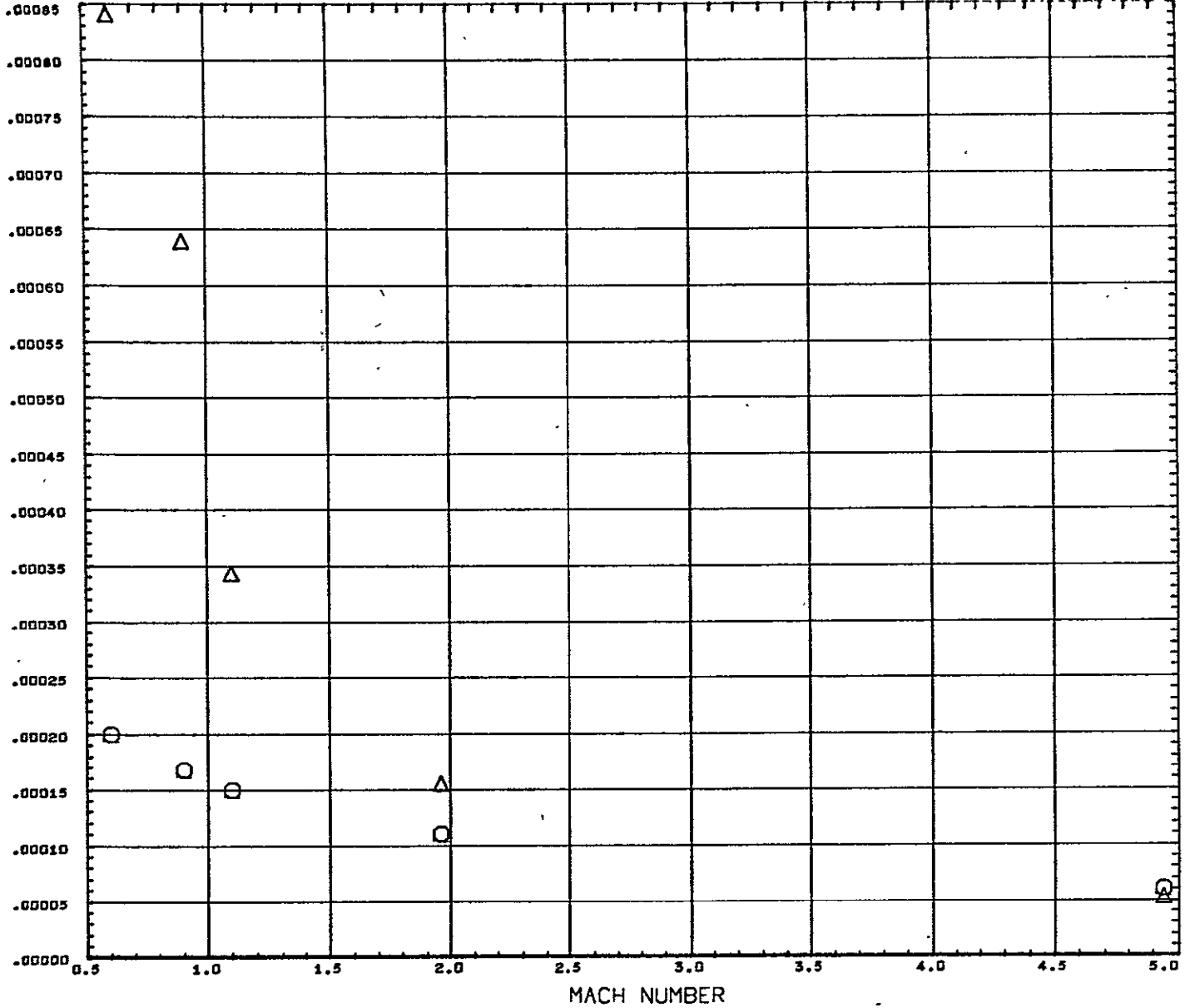


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(Q41D1J)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000	0.000	0.000	SREF 9.0250 SQ. IN
(Q41J01)	MSFC TWT 498 MSFC/HREC ORBITER					LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XHRP 3.9950 INCHES
						YHRP 0.0000 INCHES
						ZHRP 0.1350 INCHES
						SCALE 0.0033 SCALE

ALPHA 15.000

LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-RUDDER EFF( DER VS. MACH NO.), BETA=0

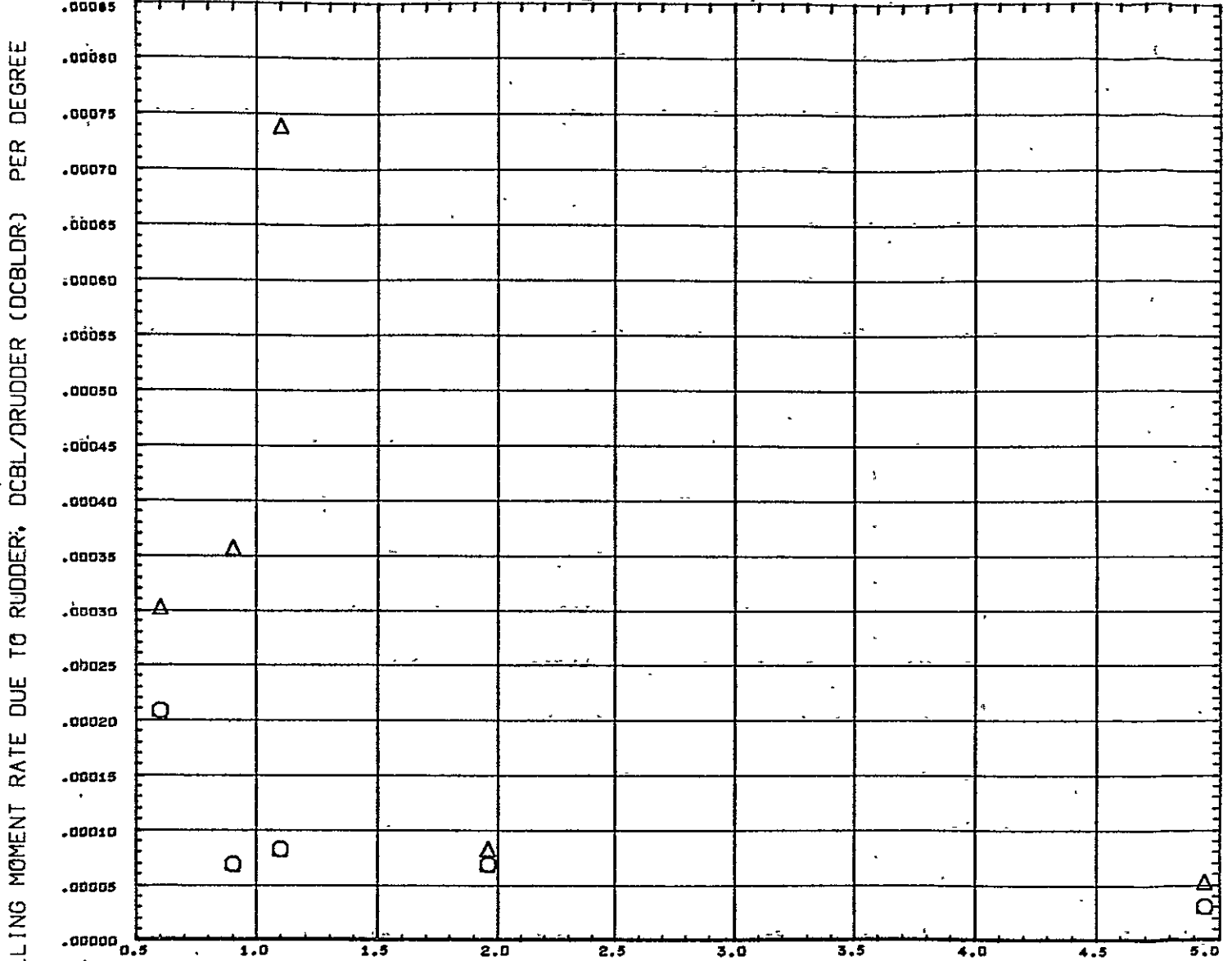
ROLLING MOMENT RATE DUE TO RUDDER, DCBL/DRUDDER (DCBLDR) PER DEGREE



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEV3	RUDER2	ELEV4	RUDER4	REFERENCE INFORMATION
(Q4101)	MSFC TWT 498 MSFC/LHSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(Q4101)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
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						YHRP 0.0000 INCHES
						ZHRP 0.1350 INCHES
						SCALE 0.0033 SCALE

ALPHA 0.000

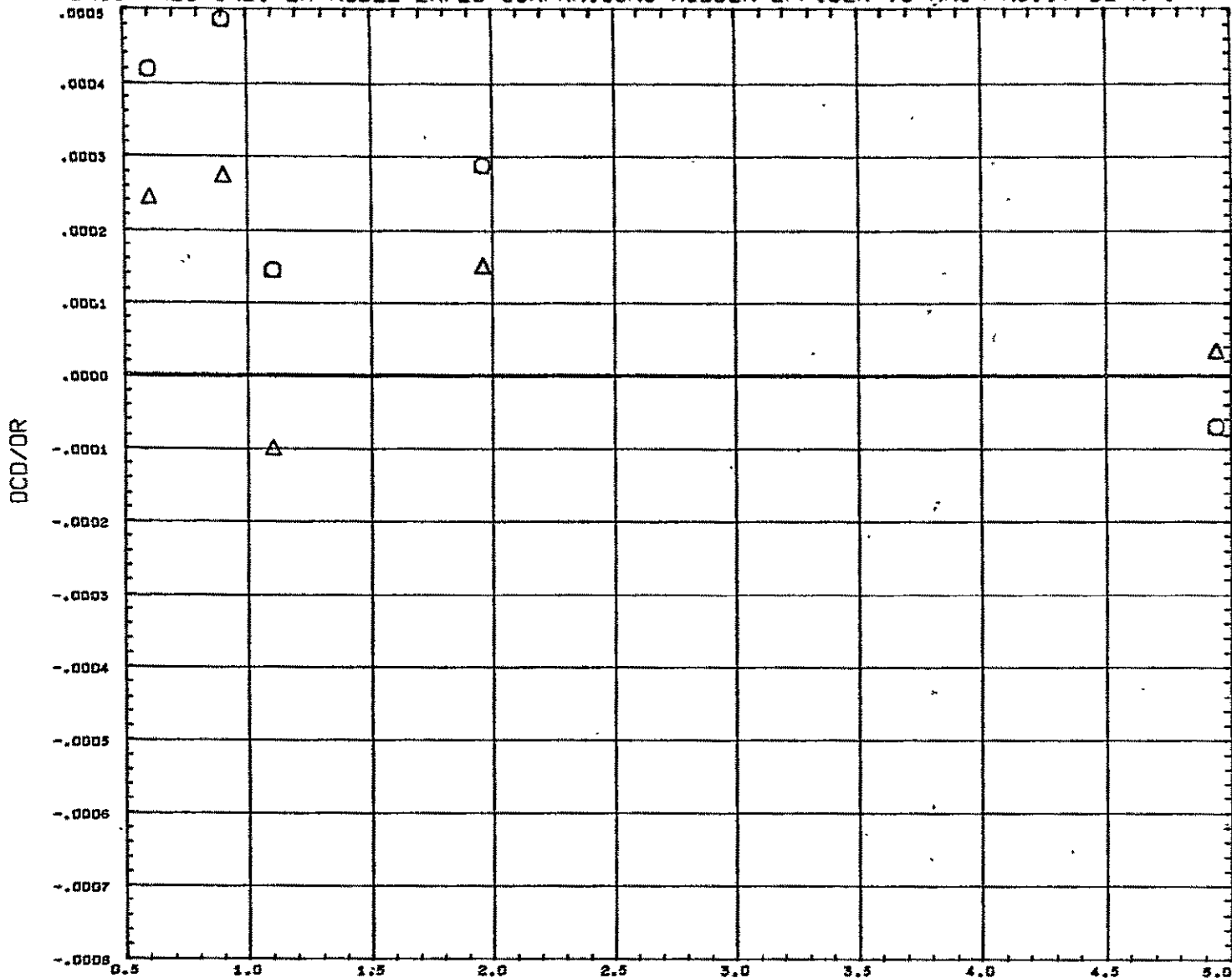
LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-RUDDER EFF( DER VS MACH NO. ), BETA=0



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEV3	RUDER2	ELEV4	RUDER4	REFERENCE INFORMATION
(Q4101J)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(Q4101J)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

ALPHA 15.000

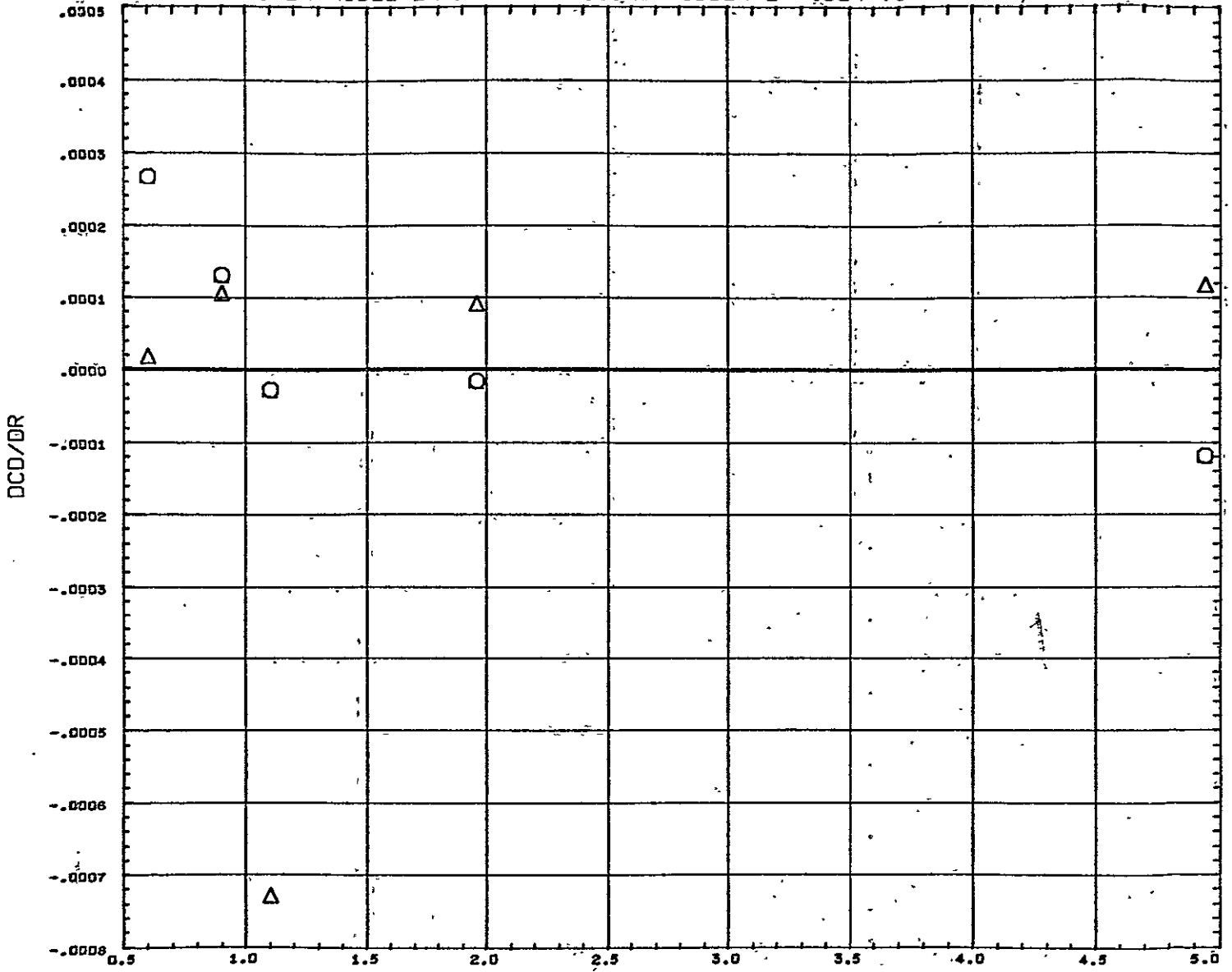
LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-RUDDER EFF(OR VS MACH NO.), BETA=0



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(04101J)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(04101)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

ALPHA 9.000

LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-RUDDER EFF(COR VS MACH NO.), BETA=0



DATA SET SYMBOL    CONFIGURATION DESCRIPTION  
 (Q41D1J)    ○    MSFC TWT 498 MSFC/LMSC ORBITER  
 (Q41J01)    △    MSFC TWT 498 MSFC/HREC ORBITER

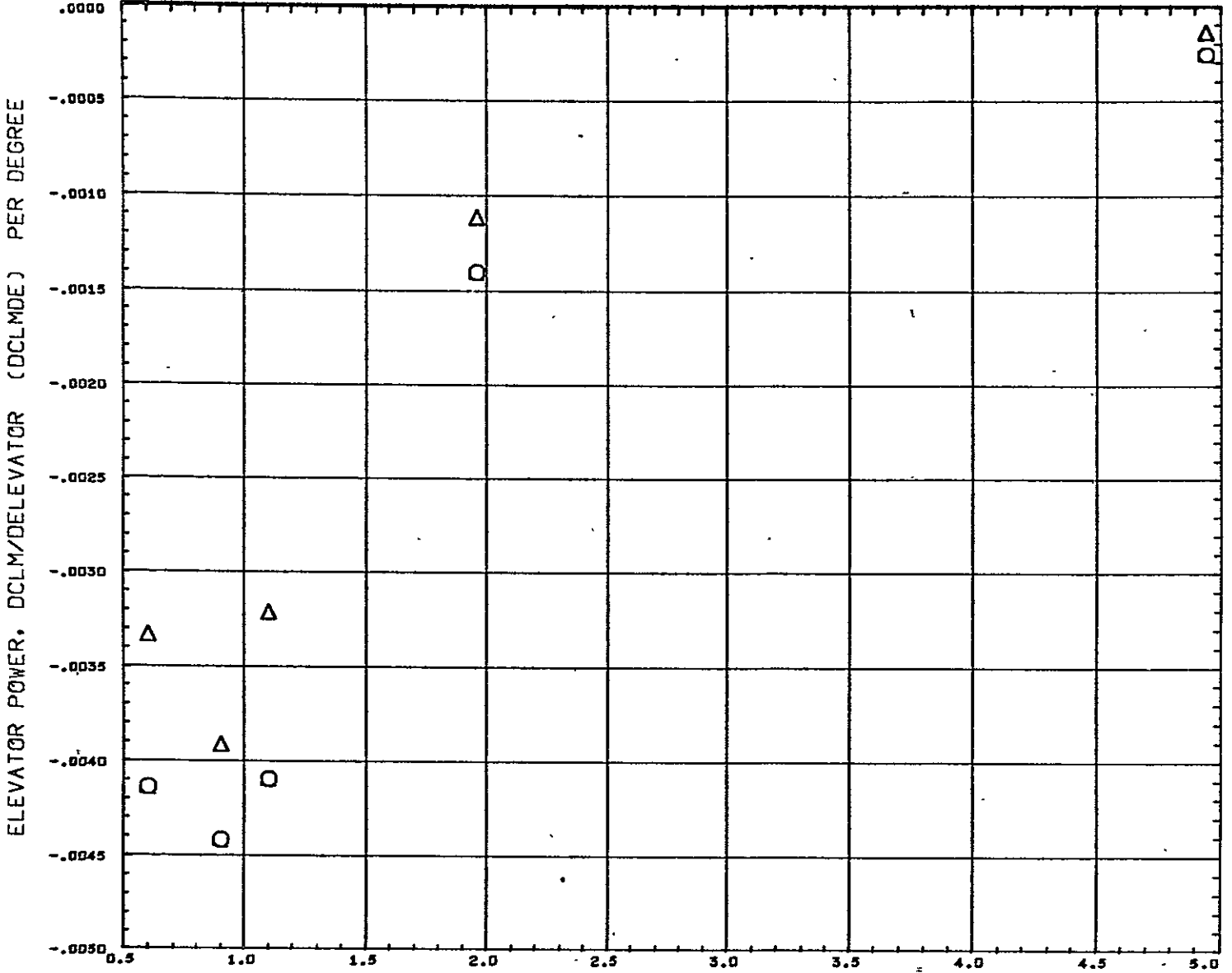
B2W2V4D2E3R2  
 B2W5V2E4R4

ELEVN3    RUDER2    ELEVN4    RUDER4  
 0.000    0.000    0.000    0.000

REFERENCE INFORMATION  
 SREF    9.0250    SQ. IN  
 LREF    6.1420    INCHES  
 BREF    6.1420    INCHES  
 XMRP    3.9950    INCHES  
 YMRP    0.0000    INCHES  
 ZMRP    0.1350    INCHES  
 SCALE    0.0033    SCALE

ALPHA    15.000

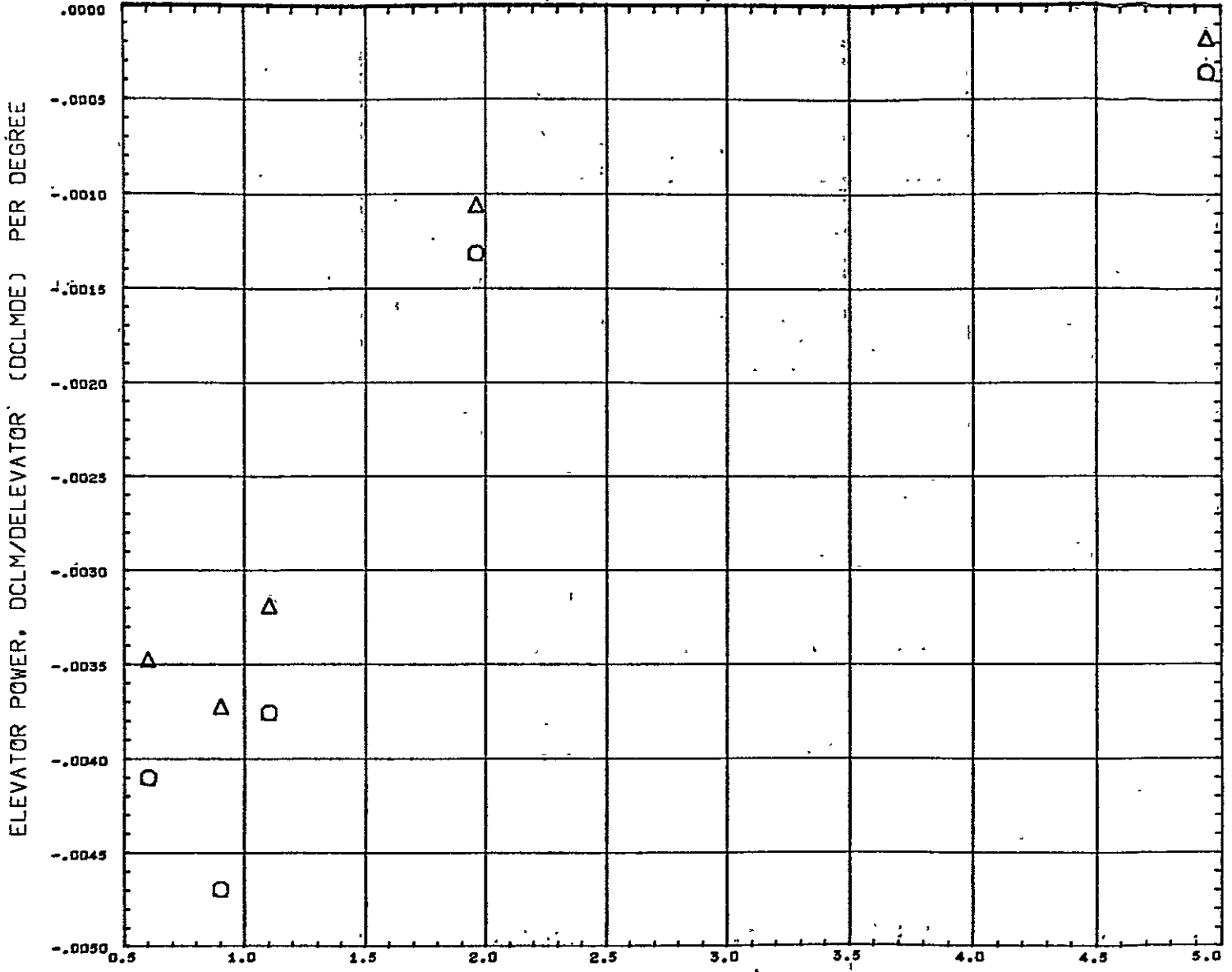
LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-ELEVON EFF( DER VS-MACH NO.), BETA=0



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(N41011)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(N4101)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

ALPHA 0.000

LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-ELEVON EFF( DER VS MACH NO.),  $\beta = 0$

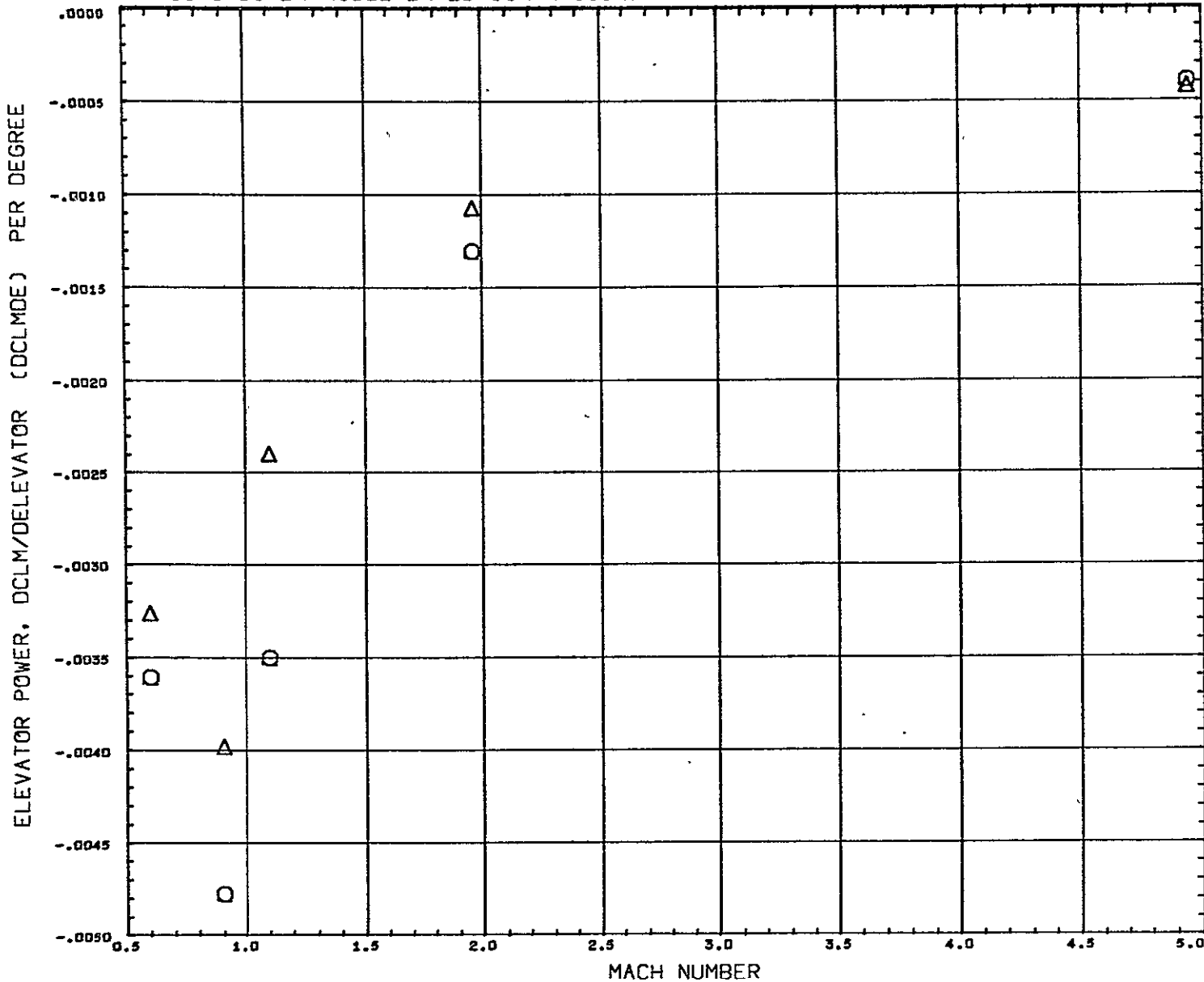


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEV3	RUDER2	ELEV4	RUDER4	REFERENCE INFORMATION
(H41011)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN *
(H4101)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

ALPHA 10.000



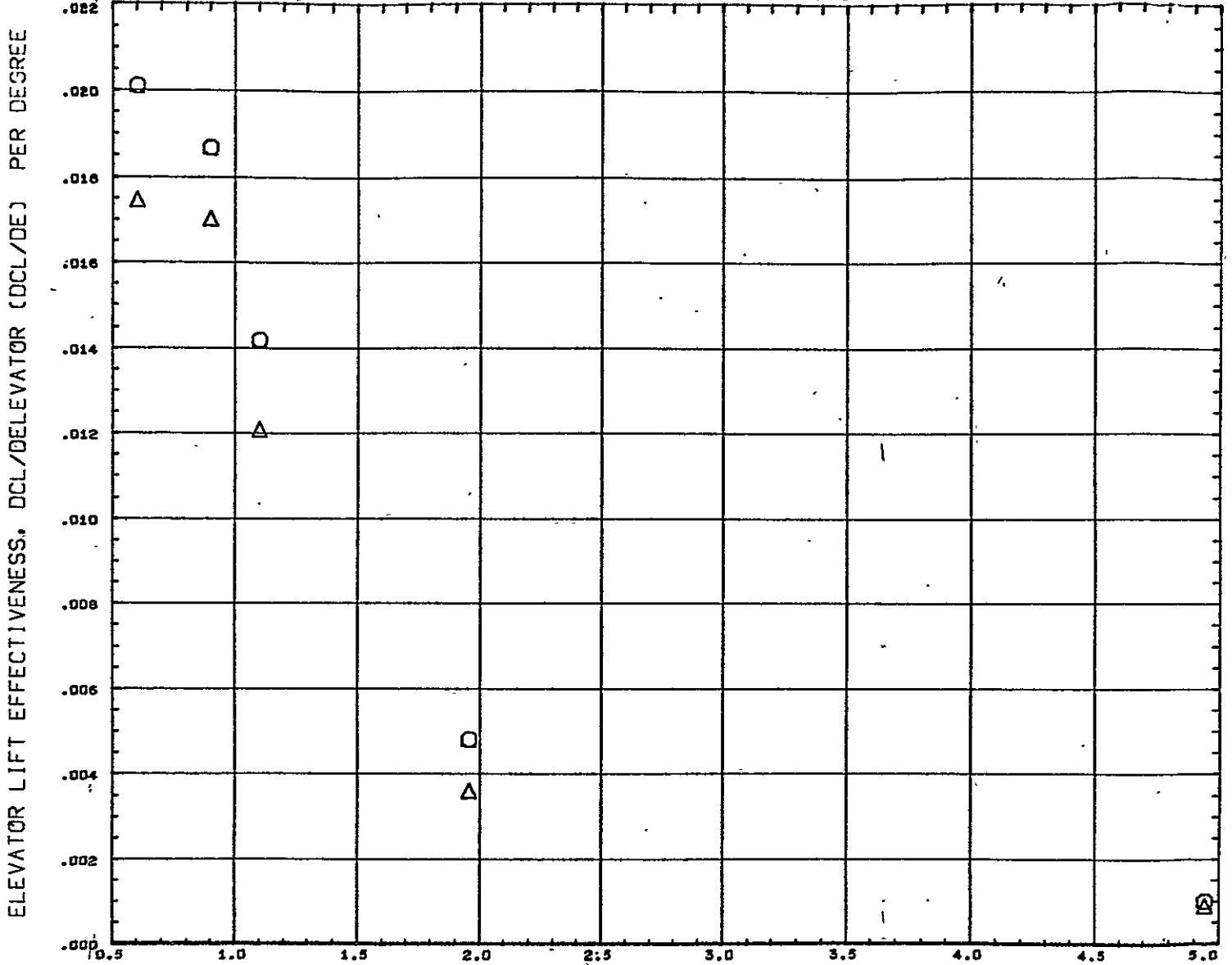
LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-ELEVON EFF( DER VS MACH NO.), BETA=0



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(H41011)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(H4101)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

ALPHA 15.000

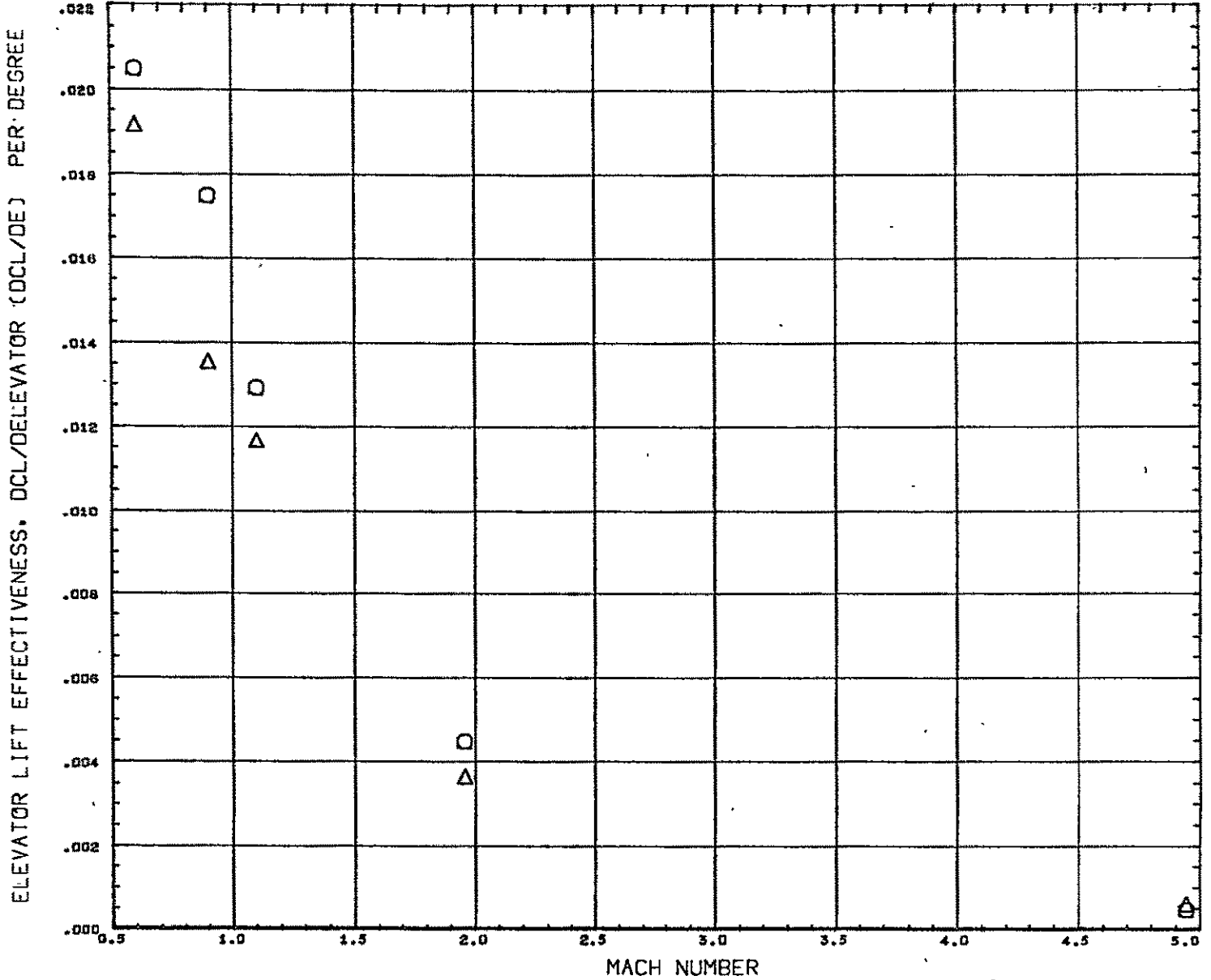
LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-ELEVON EFF( DER VS MACH NO.), BETA=0



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(H41D11)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(H41D11)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRF 3.9950 INCHES
						YMRF 0.0000 INCHES
						ZMRF 0.1350 INCHES
						SCALE 0.0033 SCALE

ALPHA 0.000

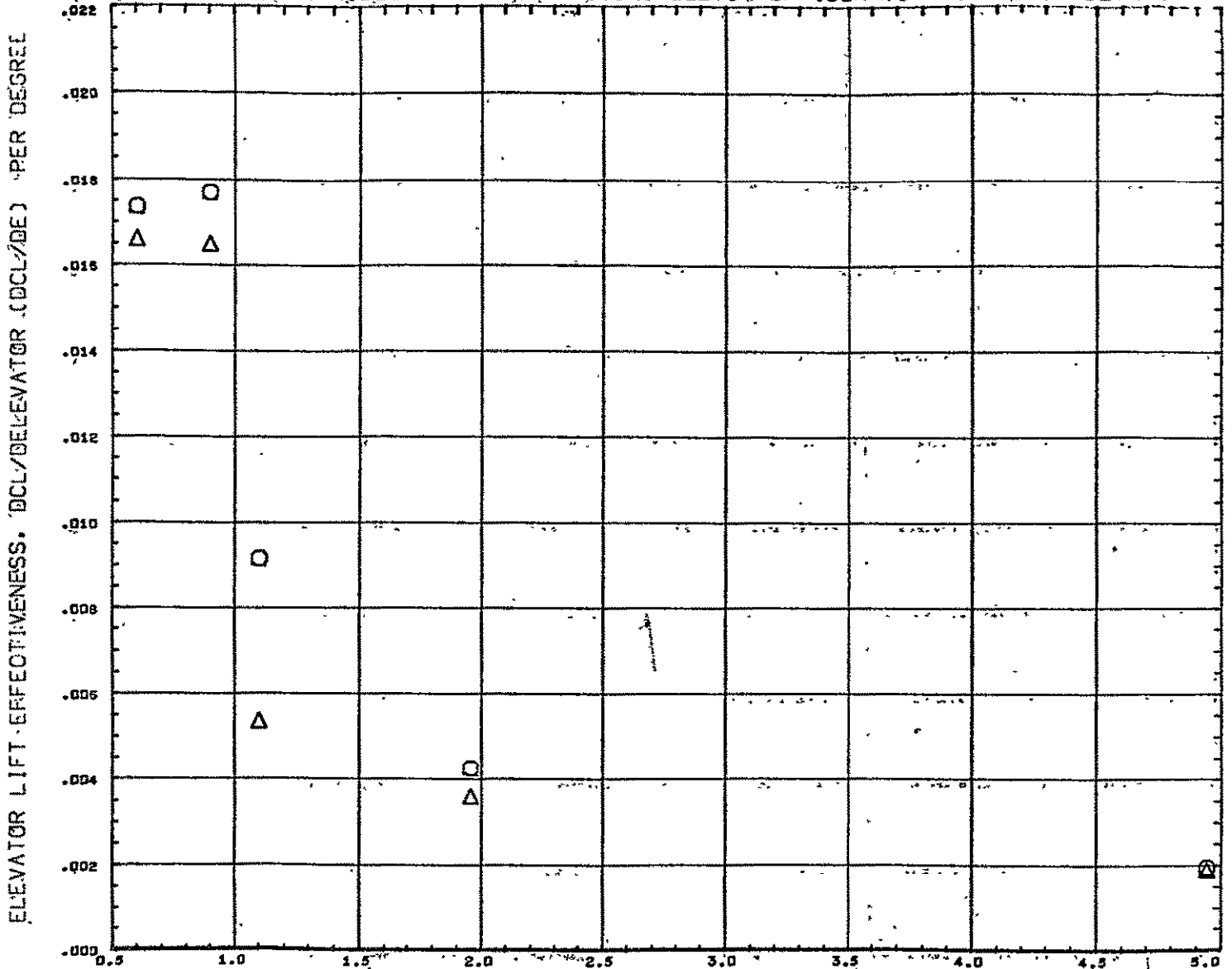
LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-ELEVON EFF( DER VS MACH NO.), BETA=0



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(H41011)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(H41T01)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0035 SCALE

ALPHA 10.000

LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-ELEVON EFF( DER VS MACH NO. ), BETA=0



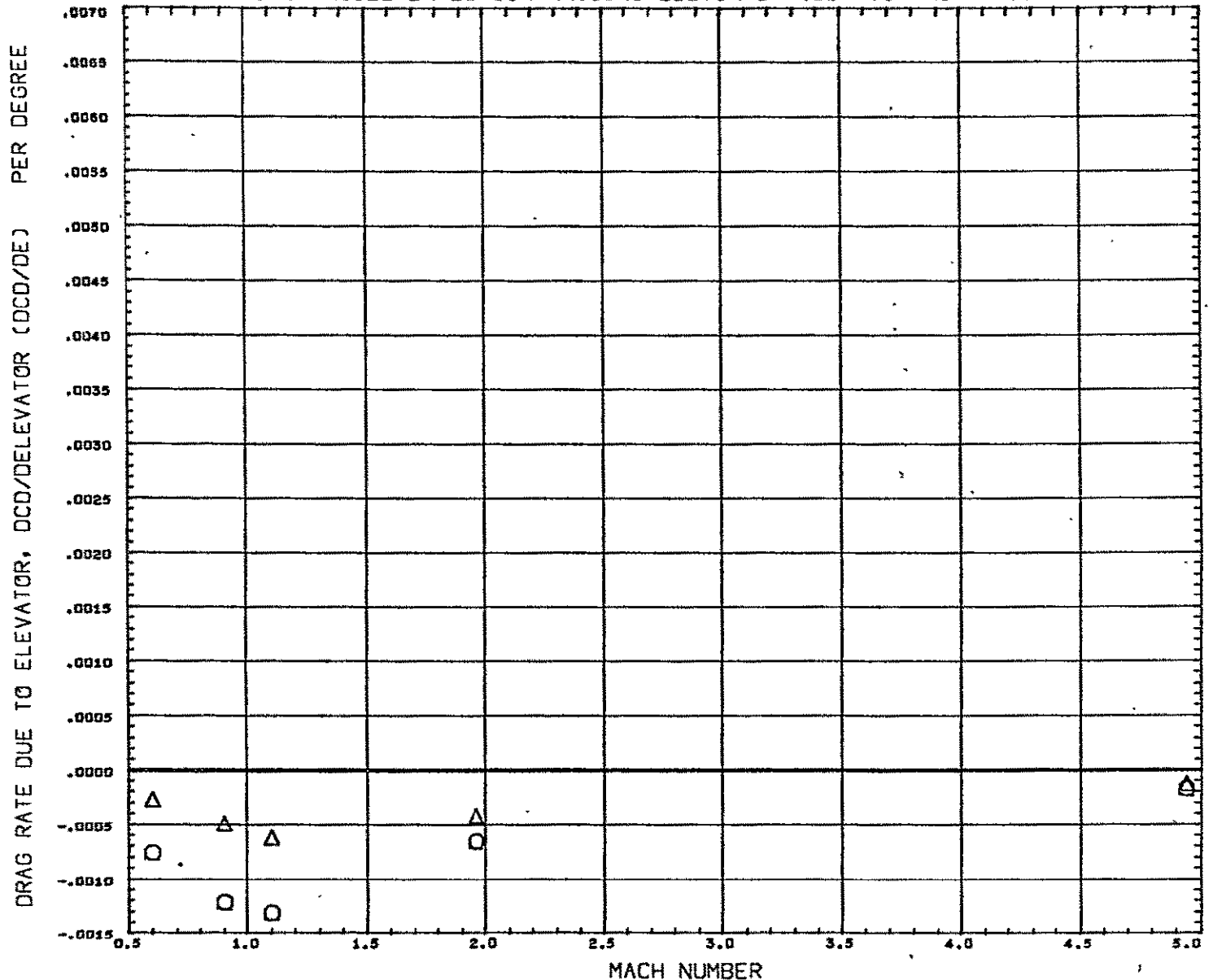
DATA SET SYMBOL    CONFIGURATION DESCRIPTION  
 (H41011)    ○    MSFC TWT 498 MSFC/LHSC ORBITER  
 (H41012)    △    MSFC TWT 498 MSFC/HREC ORBITER

ELEV3    RUDER2    ELEV4 : RUDER4  
 0.000    0.000    0.000    0.000

REFERENCE INFORMATION  
 SREF    9.0250    SQ. IN  
 LREF    6.1420    INCHES  
 BREF    6.1420    INCHES  
 XMRP    3.9950    INCHES  
 YMRP    0.0000    INCHES  
 ZMRP    0.1350    INCHES  
 SCALE    0.0033    SCALE

ALPHA    15.000

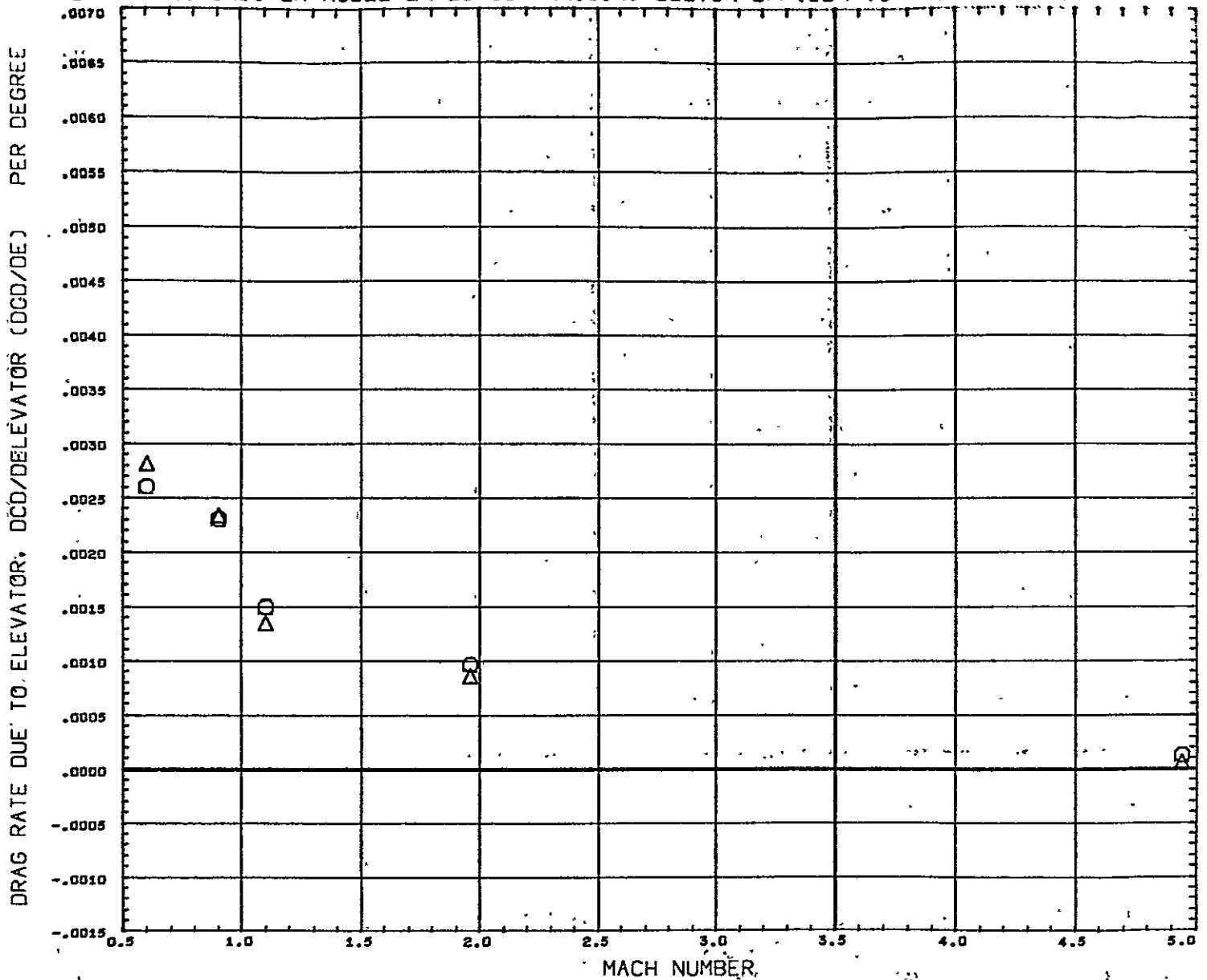
LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-ELEVON EFF( DER VS MACH NO.), BETA=0



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(N41011)	MSFC TWT 498 MSFC/LMSC ORBITER	B2W2V4D2E3R2	0.000	0.000		SREF 9.0250 SQ. IN LREF 6.1420 INCHES BREF 6.1420 INCHES XMRP 3.9950 INCHES YMRP 0.0000 INCHES ZMRP 0.1350 INCHES SCALE 0.0033 SCALE
(N41701)	MSFC TWT 498 MSFC/HREC ORBITER	B2W5V2E4R4			0.000 0.000	

ALPHA 6.000

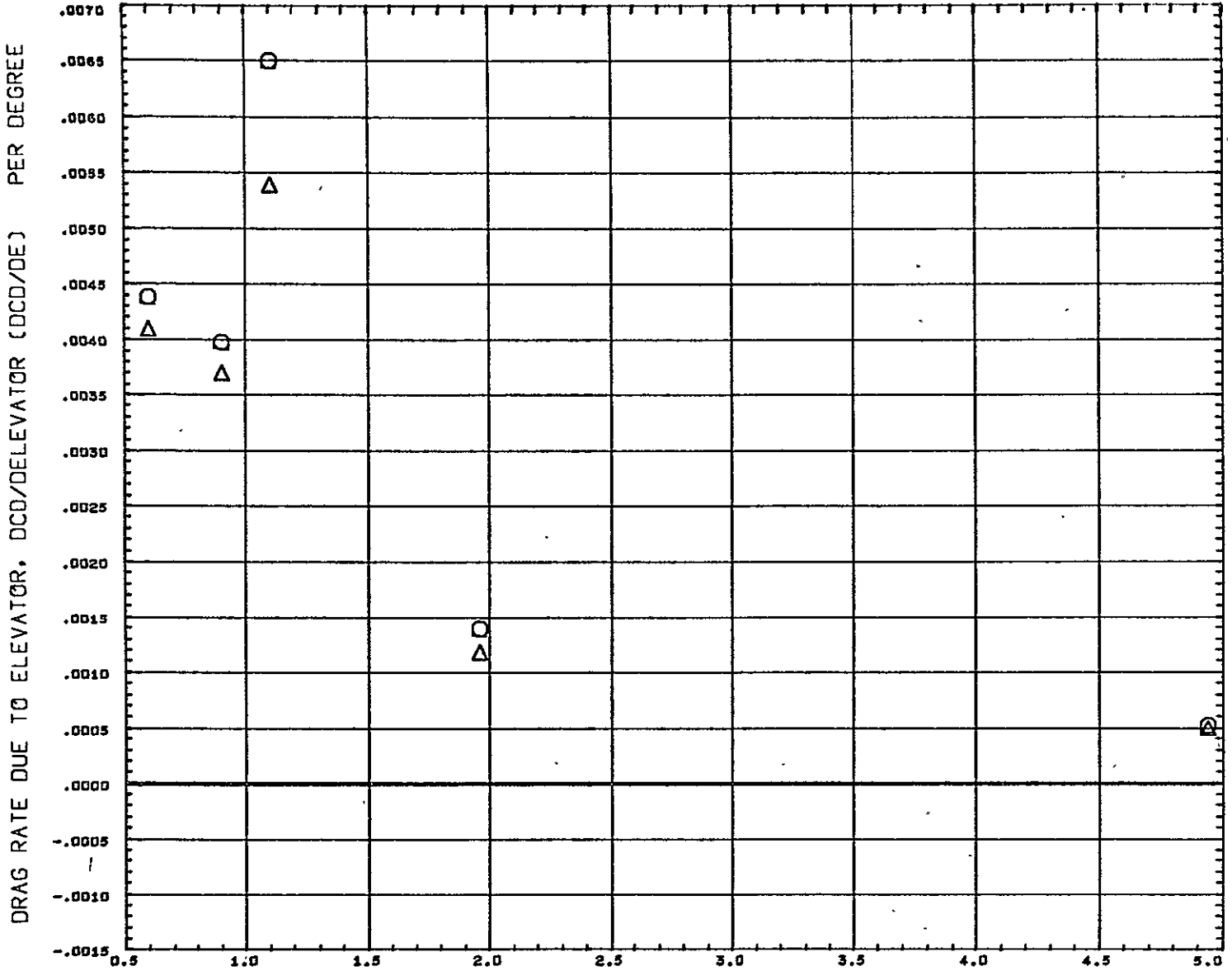
LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-ELEVON EFF(OR VS MACH NO.), BETA=0



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEV3	RUDER2	ELEV4	RUDER4	REFERENCE INFORMATION
(H41D11)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(H41T01)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XHRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

ALPHA 10.000

LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-ELEVON EFF(DER VS MACH NO.), BETA=0



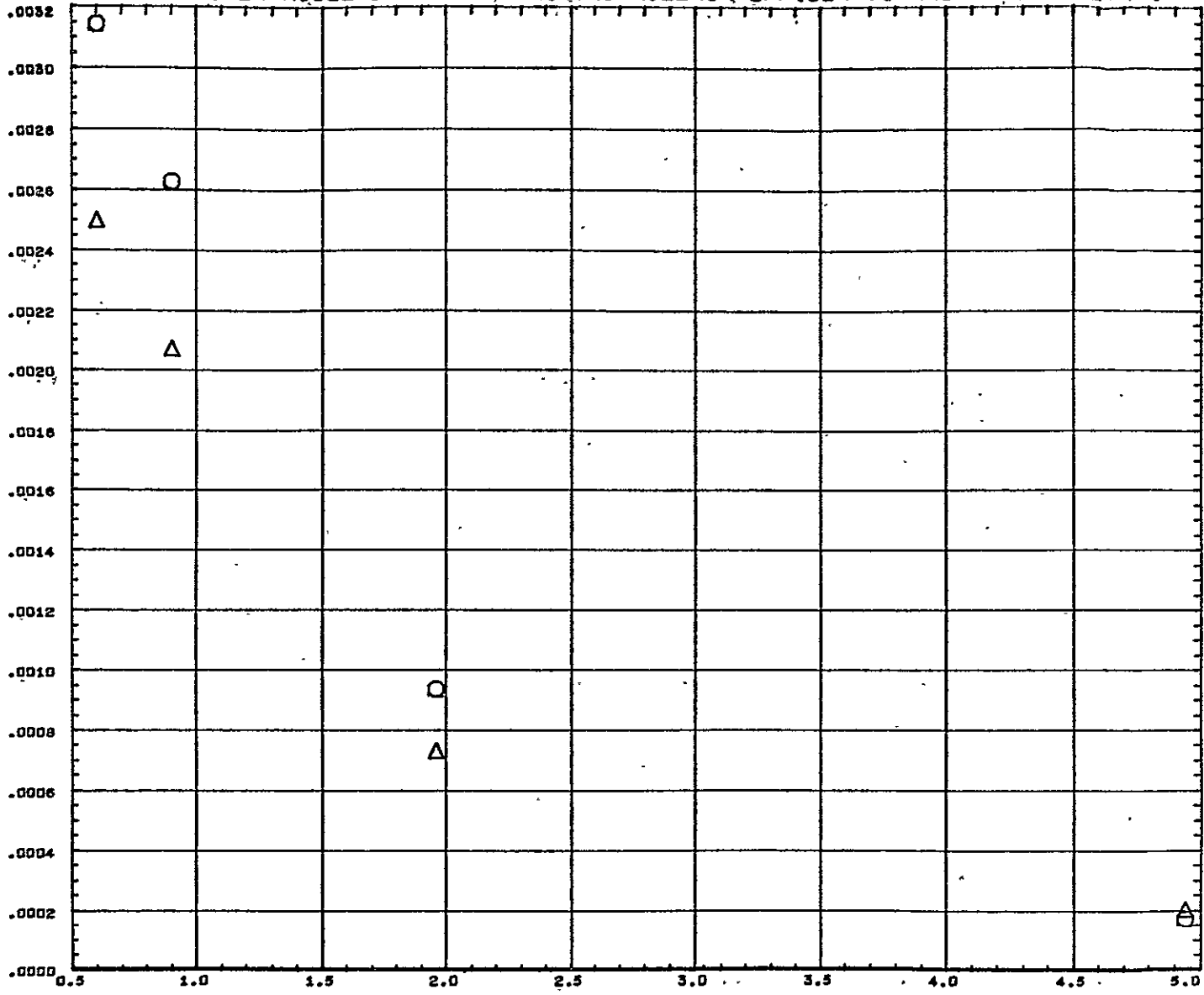
MACH NUMBER

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION
(H41011)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ.IN
(H4101)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

ALPHA 15.000

LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-AILERON EFF( DER VS MACH NO.), BETA=0

AILERON CONTROL POWER, DCBL/DAILERON (DCBLDA) PER DEGREE



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(C41063) ○	MSFC TWT 498 MSFC/LMSC ORBITER
(C41506) △	MSFC TWT 498 MSFC/HREC ORBITER

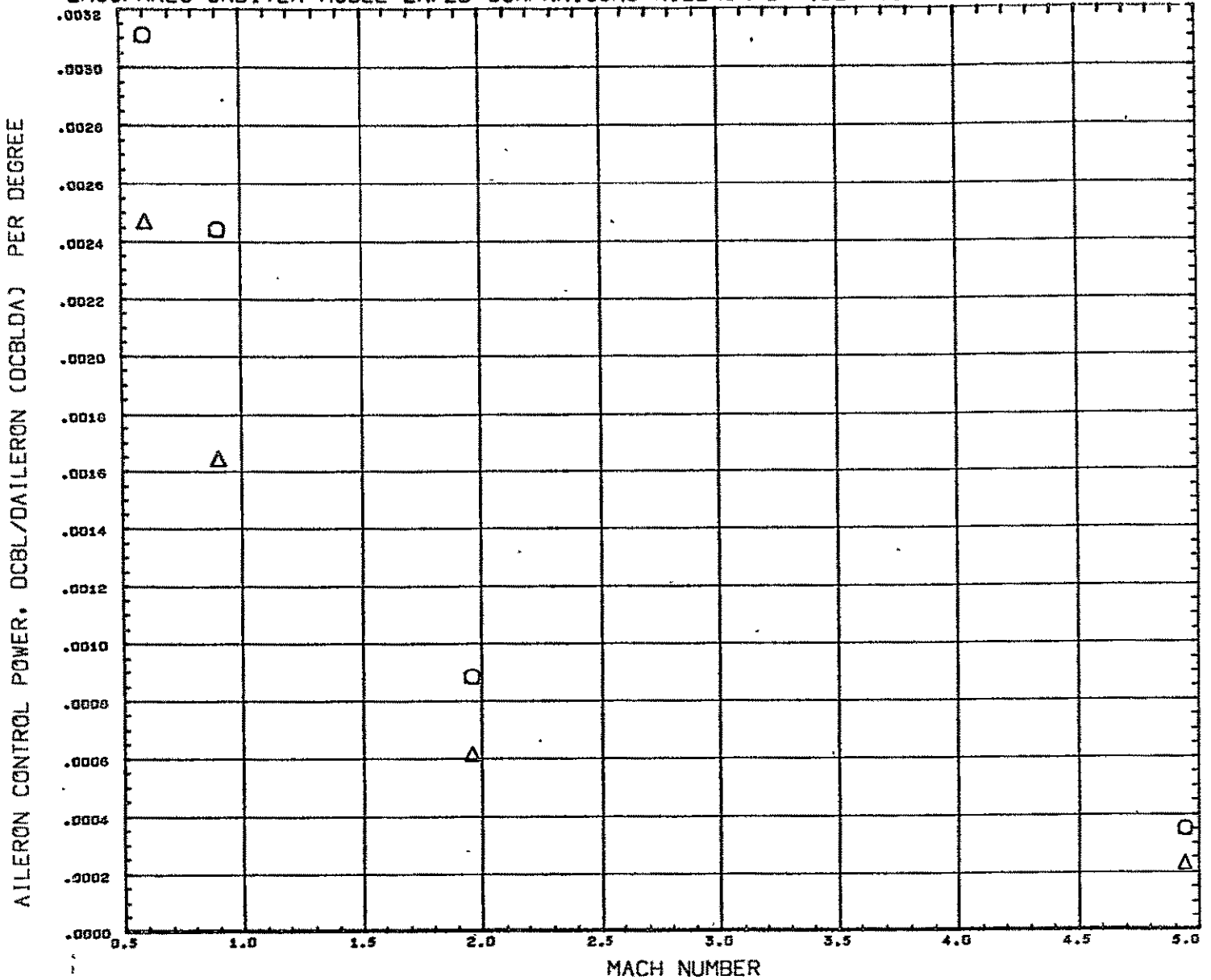
ELEVN3	RUDER2	ELEVN4	RUDER4
0.000	0.000	0.000	0.000

REFERENCE INFORMATION		
SREF	9.0250	sq. IN
LREF	6.1420	INCHES
BREF	6.1420	INCHES
XMRP	3.9950	INCHES
YMRP	0.0000	INCHES
ZMRP	0.1350	INCHES
SCALE	0.0033	SCALE

ALPHA 0.000



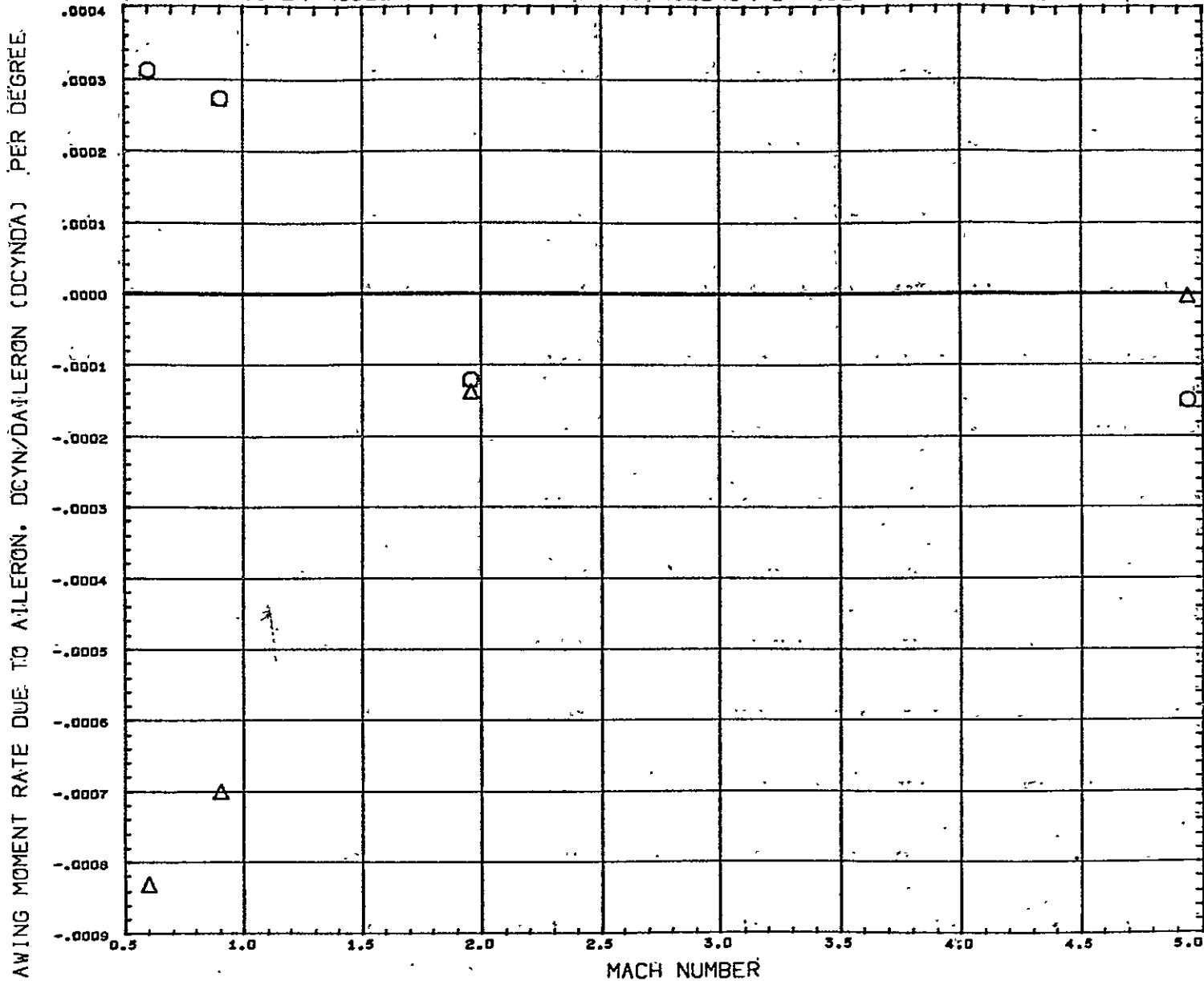
LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-AILERON EFF( DER VS MACH NO.), BETA=0



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEV3	RUDER2	ELEV4	RUDER4	REFERENCE INFORMATION
(C41069)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF 9.0250 SQ. IN
(C41906)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF 6.1420 INCHES
						BREF 6.1420 INCHES
						XMRP 3.9950 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

ALPHA 10.000

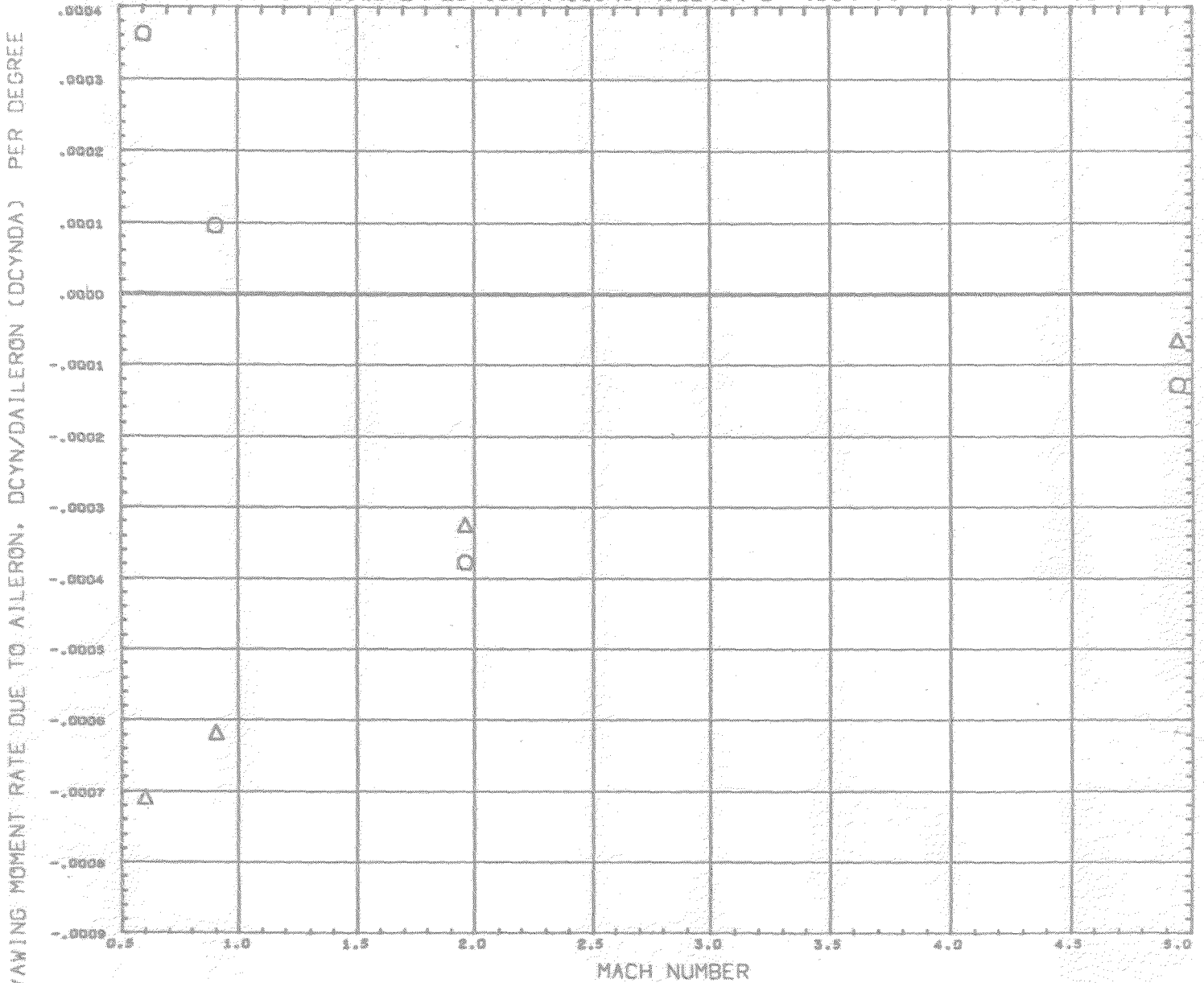
LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-AILERON EFF( DER VS MACH NO.), BETA=0



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVN3	RUDER2	ELEVN4	RUDER4	REFERENCE INFORMATION	
(C41069)	MSFC TWT 498 MSFC/LMSC ORBITER	0.000	0.000			SREF	9.0250 SQ. IN.
(C41306)	MSFC TWT 498 MSFC/HREC ORBITER			0.000	0.000	LREF	6.1420 INCHES
						BREF	6.1420 INCHES
						XMRP	3.9950 INCHES
						YMRP	0.0000 INCHES
						ZMRP	0.1350 INCHES
						SCALE	0.0033 SCALE

ALPHA 0.000

LMSC/HREC ORBITER MODEL 2A/2B COMPARISONS-AILERON EFF( DER VS MACH NO.), BETA=0



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEV3	RUDER2	ELEV4	RUDER4	REFERENCE INFORMATION
(C41068) ○	MSFC TWT 498 MSFC/LMSC ORBITER	82W2V402E3R2	0.000	0.000		SREF 9.0250 INCHES
(C41808) △	MSFC TWT 498 MSFC/HREC ORBITER	82W3V2E4R4			0.000	LREF 6.1420 INCHES
						SREF 6.1420 INCHES
						XMRP 3.9930 INCHES
						YMRP 0.0000 INCHES
						ZMRP 0.1350 INCHES
						SCALE 0.0033 SCALE

ALPHA 10.000