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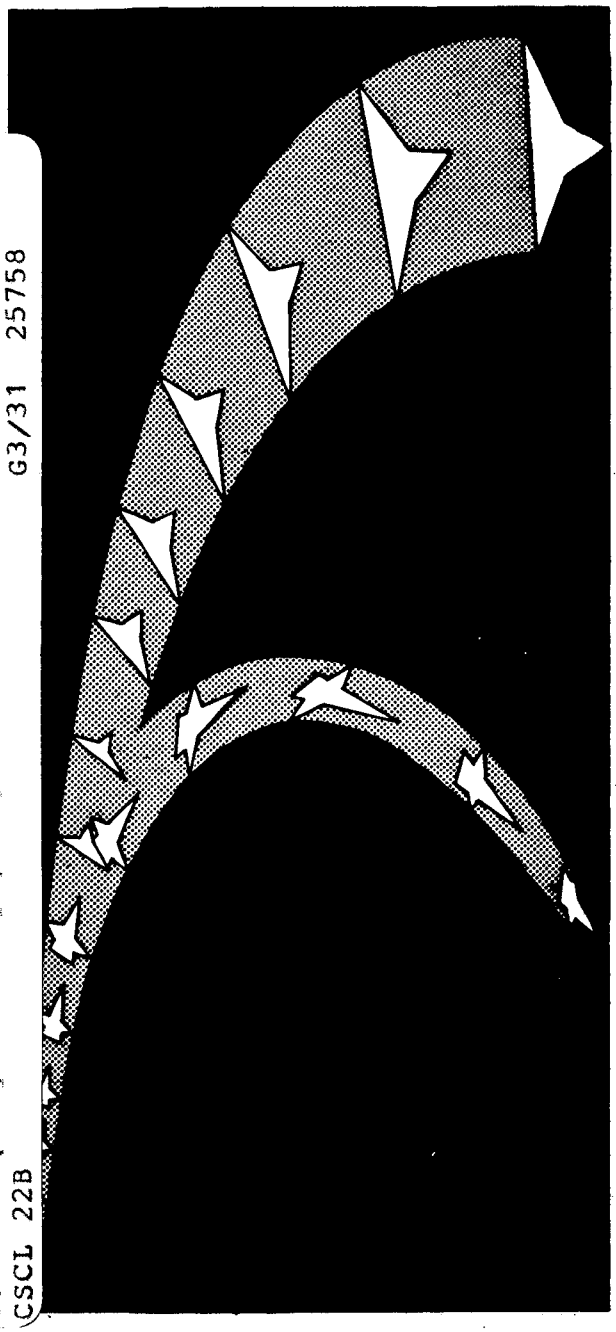

SADSAC SPACE SHUTTLE
AEROTHERMODYNAMIC
DATA MANAGEMENT SYSTEM

—SPACE SHUTTLE—

AERODYNAMIC STABILITY AND DRAG CHARACTERISTICS OF A PARALLEL BURN/SRM ASCENT CONFIGURATION (M=0.6 TO 4.96)

by

Frank Sims, NASA-MSFC

MAY 1972
RECEIVED
NASA STI FACILITY
INPUT BRANCH

MSFC 14-INCH
TRISONIC WIND TUNNEL

Marshall Space
Flight Center

N A S A

CONTRACT NAS8-4016
MARSHALL SPACE FLIGHT CENTER

SPACE DIVISION CHRYSLER CORPORATION

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SADSAC/SPACE SHUTTLE

WIND TUNNEL TEST DATA REPORT

CONFIGURATION: Space Shuttle/2-156 Inch Diameter SRM Parallel Burn Ascent Configuration

TEST PURPOSE: Aerodynamic Stability and Drag Characteristics of a Parallel Burn/SRM Ascent Configuration

TEST FACILITY: NASA/MSFC 14 x 14 Inch Trisonic Wind Tunnel

TESTING AGENCY: NASA/MSFC S&E - AERO - AAE

TEST NO. & DATE: MSFC TWT 538; April 14, 1972

FACILITY COORDINATOR: Mr. Jim Weaver - NASA/MSFC

PROJECT ENGINEER(S): Mr. Frank Sims - NASA/MSFC

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CONTRACT NAS 8-4016 AMENDMENT 158 DRL 297 - 84a

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AERODYNAMIC STABILITY AND DRAG CHARACTERISTICS OF A PARALLEL BURN/SRM ASCENT CONFIGURATION AT MACH NUMBERS FROM 0.6 TO 4.96

By J. Frank Sims

ABSTRACT

Experimental aerodynamic investigations were conducted in the NASA/MSFC 14-inch Trisonic Wind Tunnel during April 1972 on a 0.004-scale model of a solid rocket motor version of the Space Shuttle ascent configuration. The configuration consisted of a parallel burn solid rocket motor booster on an external HO centerline tank orbiter. Six component aerodynamic force and moment data were recorded over an angle of attack range from -10° to $+10^{\circ}$ at zero degrees sideslip and over a sideslip range from -10° to $+10^{\circ}$ at zero degrees angle of attack. Mach numbers ranged from 0.6 to 4.96.

The purpose of the test was to determine the performance and stability characteristics of the complete ascent configuration and buildup, and to determine the effects of variations in HO tank and SRM nose shaping, orbiter incidence and position, and position of the solid rocket motors.

NOMENCLATURE
General

SYMBOL	SADSAC SYMBOL	DEFINITION
a		speed of sound; m/sec, ft/sec
C_p	CP	pressure coefficient; $(p_l - p_\infty)/q$
M	MACH	Mach number; V/a
p		pressure; N/m^2, psf
q	Q(NSM) Q(PSF)	dynamic pressure; $1/2\rho V^2$, N/m^2, psf
RN/L	RN/L	unit Reynolds number; per m, per ft
V		velocity; m/sec, ft/sec
α	ALPHA	angle of attack, degrees
β	BETA	angle of sideslip, degrees
ψ	PSI	angle of yaw, degrees
ϕ	PHI	angle of roll, degrees
ρ		mass density; kg/m^3, $slugs/ft^3$
		Reference & C.G. Definitions
A_b		base area; m^2, ft^2
b	BREF	wing span or reference span; m, ft
c.g.		center of gravity
ℓ_{REF} $\bar{c}$	LREF	reference length or wing mean aerodynamic chord; m, ft
S	SREF	wing area or reference area; m^2, ft^2
	MRP	moment reference point
	XMRP	moment reference point on X axis
	YMRP	moment reference point on Y axis
	ZMRP	moment reference point on Z axis

SUBSCRIPTS

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

NOMENCLATURE (Continued)

Body-Axis System

SYMBOL	SADSAC SYMBOL	DEFINITION
C_N	CN	normal-force coefficient; $\frac{\text{normal force}}{qS}$
C_A	CA	axial-force coefficient; $\frac{\text{axial force}}{qS}$
C_Y	CY	side-force coefficient; $\frac{\text{side force}}{qS}$
C_{A_b}	CAB	base-force coefficient; $\frac{\text{base force}}{qS}$ $-A_b(p_b - p_\infty)/qS$
C_{A_f}	CAF	forebody axial force coefficient, $C_A - C_{A_b}$
C_m	CLM	pitching-moment coefficient; $\frac{\text{pitching moment}}{qS\ell_{REF}}$
C_n	CYN	yawing-moment coefficient; $\frac{\text{yawing moment}}{qSb}$
C_ℓ	CBL	rolling-moment coefficient; $\frac{\text{rolling moment}}{qSb}$
		Stability-Axis System
C_L	CL	lift coefficient; $\frac{\text{lift}}{qS}$
C_D	CD	drag coefficient; $\frac{\text{drag}}{qS}$
C_{D_b}	CDB	base-drag coefficient; $\frac{\text{base drag}}{qS}$
C_{D_f}	CDF	forebody drag coefficient; $C_D - C_{D_b}$
C_Y	CY	side-force coefficient; $\frac{\text{side force}}{qS}$
C_m	CLM	pitching-moment coefficient; $\frac{\text{pitching moment}}{qS\ell_{REF}}$
C_n	CLN	yawing-moment coefficient; $\frac{\text{yawing moment}}{qSb}$
C_ℓ	CSL	rolling-moment coefficient; $\frac{\text{rolling moment}}{qSb}$
L/D	L/D	lift-to-drag ratio; C_L/C_D

ADDITIONS TO NOMENCLATURE
FOR MSFC 538

SYMBOL	SADSAC SYMBOL	DEFINITION
i_{ORB}	ORBIN	orbiter incidence angle; degrees.
a.c.	XAC/L	longitudinal aerodynamic center, based on body length.
$C_{A_{F_{\alpha=0}}}$	CAFAFØ	forebody axial force at zero angle of attack.
$\left(C_{A_{B_{\alpha=0}}}\right)_{HØ}$	CABHØØ	base axial force coefficient of the HØ tank at alpha = 0.
$\left(C_{A_{B_{\alpha=0}}}\right)_{SRM}$	CABSAØ	base axial force coefficient of the SRM at alpha = 0.
$\left(C_{A_{B_{\alpha=0}}}\right)_{ØRB}$	CABØAØ	base axial for a coefficient of the orbiter at alpha = 0.
C_{y_β}	CYBETA	derivative of side-force coefficient with respect to beta (beta = $\pm 5^\circ$); per degree.
C_{n_β}	CYNBET	derivative of yawing moment coefficient with respect to beta (beta = $\pm 5^\circ$); per degree, body axis system.
C_{ℓ_β}	CBLBET	derivative of rolling moment coefficient with respect to beta (beta = $\pm 5^\circ$); per degree, body axis system.
a.c.	YAC/L	lateral aerodynamic center, based on body length.
C_{N_α}	CNALFA	derivative of normal force coefficient with respect to alpha, (alpha = $\pm 5^\circ$); per degree.
C_{m_α}	CLMALF	derivative of pitching moment coefficient with respect to alpha, (alpha = $\pm 5^\circ$); per degree.

CONFIGURATIONS INVESTIGATED

Components of the configurations investigated during the test consisted of:

SYMBOL	DESCRIPTION
O1	Baseline orbiter (located in baseline ascent configuration position).
O2	O1 moved forward 100 inches.
T1	346-inch diameter HO Tank with 23° conical nose.
T2	346-inch diameter HO Tank with 12.5°/25° generalized nose.
T4	346-inch diameter HO Tank with 20° conical nose.
S1	Baseline 156-inch diameter solid rocket motor with 17° conical nose.
S2	Baseline 156-inch diameter solid rocket motor with 12.5°/25° generalized nose.
S3	S1 moved aft 156 inches.
R1	Orbiter abort solid rocket motors.

The components which were utilized to form each configuration tested are shown in Table II entitled Data Set Collations.

TEST FACILITY DESCRIPTION

The MSFC 14 x 14 Inch Trisonic Wind Tunnel is an intermittent blowdown tunnel which operates by high pressure air flowing from storage to either vacuum or atmospheric conditions. A Mach number range from 0.2 to 5.85 is covered by utilizing two interchangeable test sections. The transonic section permits testing at Mach 2.75 to 5.85. Mach numbers between 0.2 and 0.9 are obtained by using a controllable diffuser. The range from 0.95 to 1.3 is achieved through the use of plenum suction and perforated walls. Mach numbers of 1.46, 1.96 and 2.48 are produced by interchangeable sets of fixed contour nozzle blocks. Above Mach 2.48 a set of fixed contour nozzle blocks are tilted and translated automatically to produce any desired Mach number in 0.25 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° (±10°). Sting offsets and extensions are available for obtaining various maximum angles of attack up to 90°.

DATA REDUCTION

Data for the test were reduced about the following reference conditions:

1. MOMENT REFERENCE CENTER

		FULL SCALE	MODEL SCALE
X	=	1037 in. (aft of HO tank nose)	4.148 in.
Y	=	0	0
Z	=	62 in. (Above HO tank centerline)	0.248 in.

2. REFERENCE DIMENSIONS

	FULL SCALE	MODEL SCALE
Reference Area (s)	3425.78 ft^2	7.890 in^2
Reference Length (b)	1115 in.	4.460 in.
Reference Length ($\bar{c}$)	836 in.	3.344 in.

3. MODEL BASE AREAS

Orbiter	0.794 in^2
Tank	1.504 in^2
SRM's (Total)	0.612 in^2

4. BASE AXIAL FORCE

$$C_{AF} = C_{AT} - C_{AB_O} - C_{AB_S} - C_{AB_{H-O}}$$

TABLE I.

TEST CONDITIONS

TEST TWT 538

MACH NUMBER	REYNOLDS NUMBER per unit length	DYNAMIC PRESSURE (pounds/sq. inch)	STAGNATION TEMPERATURE (degrees Fahrenheit)
0.6	4.5/FT	3.94	100
0.8	5.3	5.90	100
0.9	5.6	6.68	100
1.1	6.0	7.93	100
1.2	6.0	8.32	100
1.96	7.0	10.20	100
2.74	4.7	6.35	140
4.96	5.1	3.07	140

BALANCE UTILIZED: MSFC #232

	CAPACITY:	ACCURACY:	COEFFICIENT TOLERANCE:
NF	300#		
SF	140#		
AF	50#		
PM	400 in-#		
YM	192 in-#		
RM	100 in-#		

COMMENTS:

TABLE II.

TEST MSFC TWT 538 DATA SET COLLATION SHEET

☐ PRETEST
☒ POSTTEST

DATA SET IDENTIFIER	CONFIGURATION	SCHD. α	SCHD. β	PARAMETERS, VALUES i_b				NO. of RUNS	MACH NUMBERS (OR ALTERNATE INDEPENDENT VARIABLE) 0.6	0.8	0.9	1.1	1.2	1.96	2.74	4.96				
001	T1	A	0	—				8	1	2	3	4	5 S	126		163				
002	T1S1	A	0	—				8	10	9	8 S	7	6 S	108		162				
003	↓	0	B	—				8	11	12	13	15	14			161				
004	T101	A	0	-1.5				9	21	22	23 S	25	24 S		158	157				
005	↓	0	B	-1.5				8	20	19	18	16	17	128		160				
006	T101S1	A	0	-1.5				8	30	29	28 S	26	27 S	112 S	155	156				
007	↓	0	B	-1.5				8	31	32	33	35	34	113	154	153				
008	T101S1R1	A	0	-1.5				8	41	42	43	45	44	115	142	141				
009		0	B	-1.5				8	40	39	38	36		114	143	144				
010		A	0	-3				5	103		102		101	13		136				
011		0	B	-3				5	98		99		100	132		135				
012		A	0	0				5	92		93		94	130 1		137				
013	↓	0	B	0				5	97		96		95	129		139				
014	T101S2R1	A	0	-1.5				7	49	48	47	46	50	116		150				
015	↓	0	B	-1.5				4			52		51	117		145				
016	T201S1R1	A	0	-1.5				8	91	90	89	87	88	120		148				
017	↓	0	B	-1.5				8	82	83	84	86	85	121		147				
018	T201S2R1	A	0	-1.5				5	57		54		55	119		149				
019	↓	0	B	-1.5				4			53		54	118		146				
020	T101S3R1	A	0	-1.5				6	75		76	77	74	134		151				

1	7	13	19	25	31	37	43	49	55	61	67	75 76
CLM	CN	CY	CBL	CYN	CAF	CABHØ	CABS	CABØ	CAB			VO

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

α or β SCHEDULES

A: $\alpha = -10°$ TO $10°$ $\Delta\alpha = 2°$

B: $\beta = -10°$ TO $10°$ $\Delta\beta = 2°$

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TABLE II. (CONTINUED)

TEST MSFC TWT 538 DATA SET COLLATION SHEET

☐ PRETEST
☒ POSTTEST

DATA SET IDENTIFIER	CONFIGURATION	SCHD. α	SCHD. β	PARAMETERS/VALUES i°				NO. of RUNS	MACH NUMBERS (OR ALTERNATE INDEPENDENT VARIABLE) 0.6	0.8	0.9	1.1	1.2	1.96	2.74	4.96				
Rec 021	T101S3R1	0	B	-1.5				6	51		52	75	14	123		152				
022	T102S1R1	A	0	-1.5				6	63		62	65	64	124		142				
023	↓	0	B	-1.5				6	70	53	63	66	67	125		131				
024	T101S1R1(GF)*	A	0	-1.5				2			58		59							
025	T1S1 (GF)*	A	0	—				2			61		60							
026	T4	A	0	—				4	101		105		106	107						

*GAPS FILLED
S-SHADOWGRAPH

1	7	13	19	25	31	37	43	49	55	61	67	75 76
CLM	CN	CY	CBL	CYN	CAF	CABH	CABC	CABD	CAB			10

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

α or β SCHEDULES
A: $\alpha = -10°$ TO $10°$ $\Delta\alpha = 2°$
B: $\beta = -10°$ TO $10°$ $\Delta\alpha = 2°$

MSFC - Form 283-2 (February 1972)

TABLE III.

DIMENSIONAL DATA

MODEL COMPONENT: BODY - Orbiter 01

GENERAL DESCRIPTION: Orbiter Body

DRAWING NUMBER:

DIMENSIONS:	THEORETICAL FULL-SCALE	THEORETICAL MODEL SCALE	ACTUAL MEASURED MODEL SCALE
Length	1315 in.	5.26 in.	
Max. Width	220 in.	0.88 in.	
Max. Depth	235 in.	0.94 in.	
Fineness Ratio			
Area			
Max. Cross-Sectional			
Planform			
Wetted	6250 ft^2	14.4 in^2	
Base	344 ft^2	0.794 in^2	

MSFC - Form 263-6 (February 1972)

TABLE III. (CONTINUED)

MODEL COMPONENT: Wing 01

GENERAL DESCRIPTION: Orbiter Wing

DRAWING NUMBER:

DIMENSIONS:

TOTAL DATA	THEORETICAL FULL-SCALE	THEORETICAL MODEL SCALE	ACTUAL MEASURED MODEL SCALE
Area			
Planform	4607 ft^2	10.6 in^2	
Wetted	5744 ft^2	13.2 in^2	
Span (equivalent)	1115 in.	4.47 in.	
Aspect Ratio Basic/Glove	2.5/1.9	2.5/1.9	
Rate of Taper	- - -	- - -	
Taper Ratio Basic/Glove	0.20/0.10	0.20/0.10	
Diehedral Angle, degrees	7	7	
Incidence Angle, degrees	1.5	1.5	
Aerodynamic Twist, degrees	0	0	
Toe-In Angle	- - -	- - -	
Cant Angle	- - -	- - -	
Sweep Back Angles, degrees			
Leading Edge Basic/Glove	35/75	35/75	
Trailing Edge	-19.6	-19.6	
0.25 Element Line	- - -	- - -	
Chords:			
Root (Centerline)Basic/Glove	736/720 in.	3.94/3.88 in.	
Tip, (equivalent)	147 in.	0.588 in.	
MAC	836 in.	3.34 in.	
Fus. Sta. of .25 MAC			
W.P. of .25 MAC			
B.L. of .25 MAC			
Airfoil Section			
Root	0008-64	0008/64	
Tip	0008-64	0008/64	
EXPOSED DATA			
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			

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TABLE III. (CONTINUED)

MODEL COMPONENT: "V" Tail Stabilizer

GENERAL DESCRIPTION: Orbiter

(The following dimensions are representative of each of the two vertical stabilizers)

DRAWING NUMBER:

DIMENSIONS:	THEORETICAL		ACTUAL MEASURED
TOTAL DATA	FULL-SCALE	MODEL SCALE	MODEL SCALE
Area			
Planform			
Wetted	525 ft^2	1.21 in^2	
Span (equivalent)			
Aspect Ratio			
Rate of Taper			
Taper Ratio			
Diehedral Angle, degrees	75	75	
Incidence Angle, degrees	0	0	
Aerodynamic Twist, degrees	0	0	
Toe-In Angle	0	0	
Cant Angle	15	15	
Sweep Back Angles, degrees			
Leading Edge	45	45	
Trailing Edge	20	20	
0.25 Element Line			
Chords:			
Root (Wing Sta. 0.0)			
Tip, (equivalent)			
MAC			
Fus. Sta. of .25 MAC			
W.P. of .25 MAC			
B.L. of .25 MAC			
Airfoil Section			
Root	5^owedge (60/40)	5^owedge (60/40)	
Tip	5^owedge (60/40)	5^owedge (60/40)	
EXPOSED DATA			
Area	250 ft^2	0.576 in^2	
Span, (equivalent)	240 in.	0.96 in.	
Aspect Ratio	1.6	1.6	
Taper Ratio	0.35	0.35	
Chords			
Root	230 in.	0.920 in.	
Tip	80 in.	0.320 in.	
MAC	---		
Fus. Sta. of .25 MAC			
W.P. of .25 MAC			
B.L. of .25 MAC			

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TABLE III. (CONTINUED)

MODEL COMPONENT: BODY - T1

GENERAL DESCRIPTION: Hydrogen - Oxygen Tank

(T2 and T4 Same body with alternate nose)

DRAWING NUMBER:

DIMENSIONS:	THEORETICAL FULL-SCALE	THEORETICAL MODEL SCALE	ACTUAL MEASURED MODEL SCALE
Length	1876.75 in.	7.507 in.	
Max. Width	346 in.	1.384 in.	
Max. Depth	346 in.	1.384 in.	
Fineness Ratio	5.42	5.42	
Area			
Max. Cross-Sectional	652.95 ft^2	1.504 in^2	
Planform			
Wetted			
Base	652.95 ft^2	1.504 in^2	

MSFC - Form 263-6 (February 1972)

TABLE III. (CONTINUED)

MODEL COMPONENT: BODY - S1

GENERAL DESCRIPTION: Solid Rocket Motor

(S2 Same body with alternate nose)

DRAWING NUMBER:

DIMENSIONS:	THEORETICAL FULL-SCALE	THEORETICAL MODEL SCALE	ACTUAL MEASURED MODEL SCALE
Length	145.25 ft	6.972 in	
Max. Width	13 ft	0.624 in	
Max. Depth	13 ft	0.624 in	
Fineness Ratio	11.17	11.17	
Area			
Max. Cross-Sectional	132.5 ft^2	0.306 in^2	
Planform			
Wetted			
Base	132.5 ft^2	0.306 in^2	

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TABLE III. (CONTINUED)

MODEL COMPONENT: BODY - R1

GENERAL DESCRIPTION: Abort Solid Rocket Motor

DRAWING NUMBER:

DIMENSIONS:	THEORETICAL FULL-SCALE	THEORETICAL MODEL SCALE	ACTUAL MEASURED MODEL SCALE
Length	34.3 Ft	1.649 In.	
Max. Width	62 in.	0.248 in.	
Max. Depth	62 in.	0.248 in.	
Fineness Ratio	6.65	6.65	
Area			
Max. Cross-Sectional	20.9 ft^2	0.0484 in^2	
Planform			
Wetted			
Base	20.9 ft^2	0.0484 in^2	

TABLE IV. INDEX OF MODEL FIGURES

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PLOTTED COEFFICIENTS SCHEDULE:

(A) CLM, CN, CAF, CAB, & CA vs. Alpha

CN vs. CLM

(B) CY, CBL & CYN vs. Alpha

CY vs. CYN

(C) CLMALF, CNALFA, XAC/L & CAFAFØ vs. Mach

(D) CYBETA, CYNBET, CBLBET & YAC/L vs. Mach

(E) CABHØØ vs. Mach

(F) CABSAØ vs. Mach

(G) CABØAØ 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.

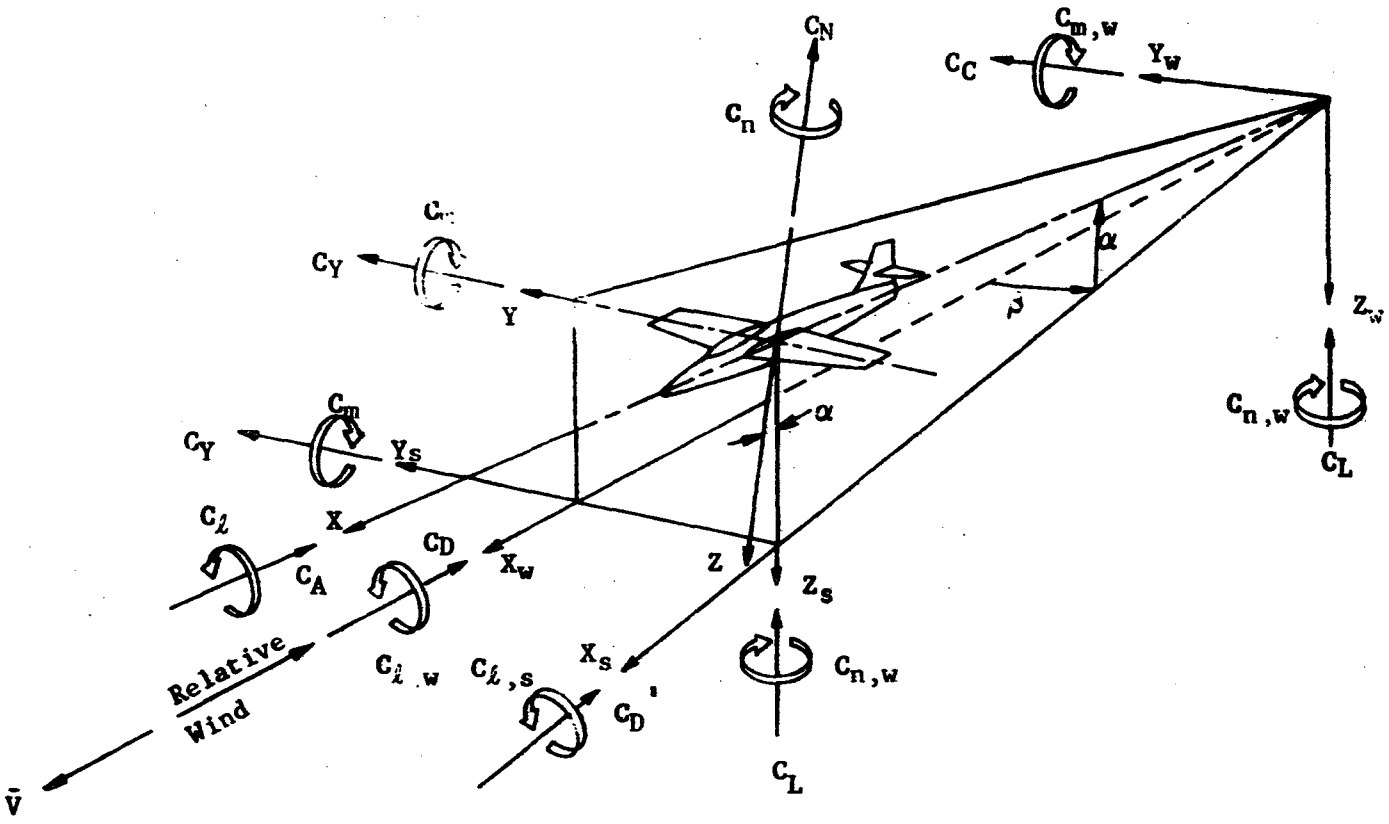

Figure 1. Axis systems, showing direction and sense of force and moment coefficients, angle of attack, and sideslip angle

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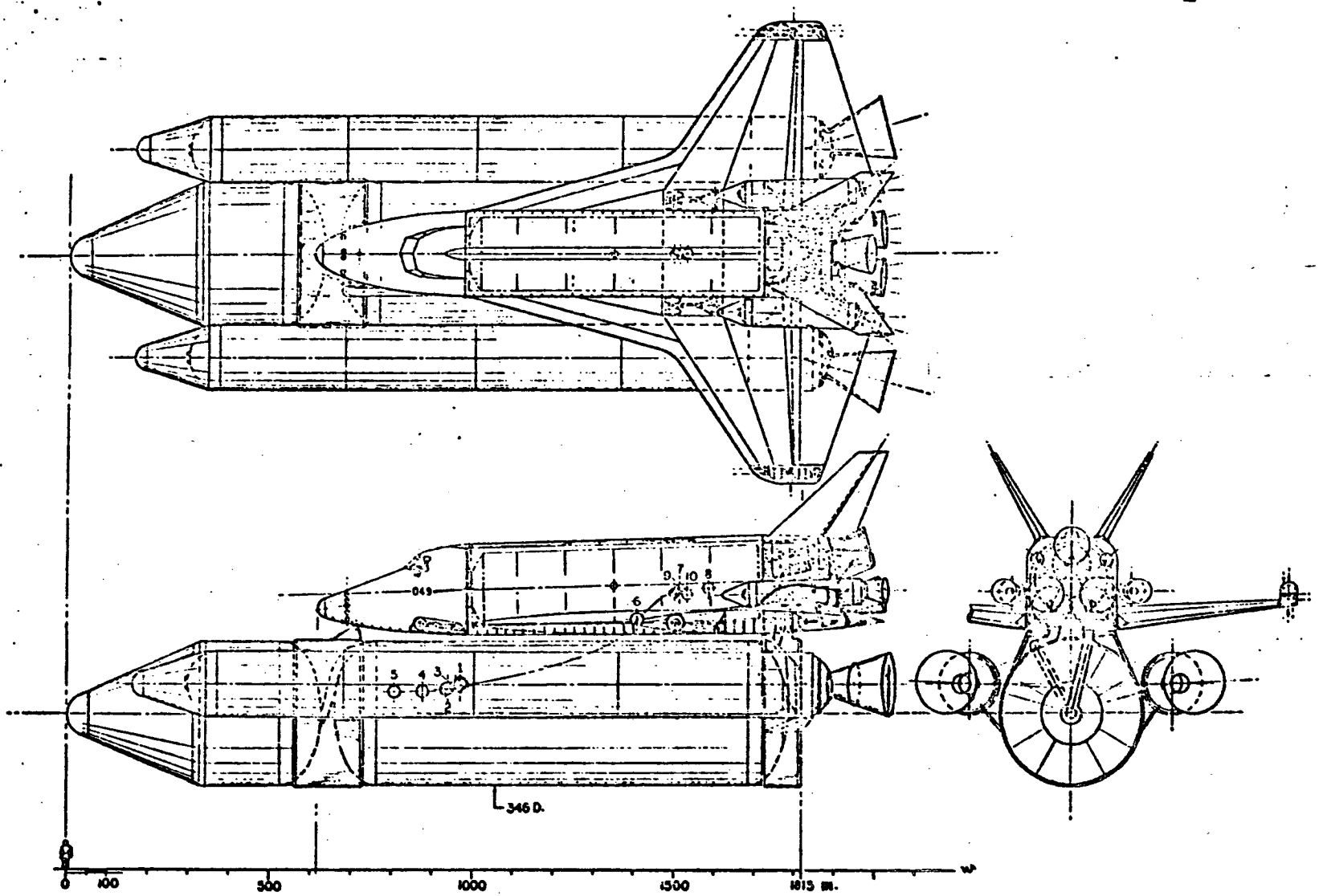

FIGURE 2. Orbiter Configuration With 156 SRM Parallel

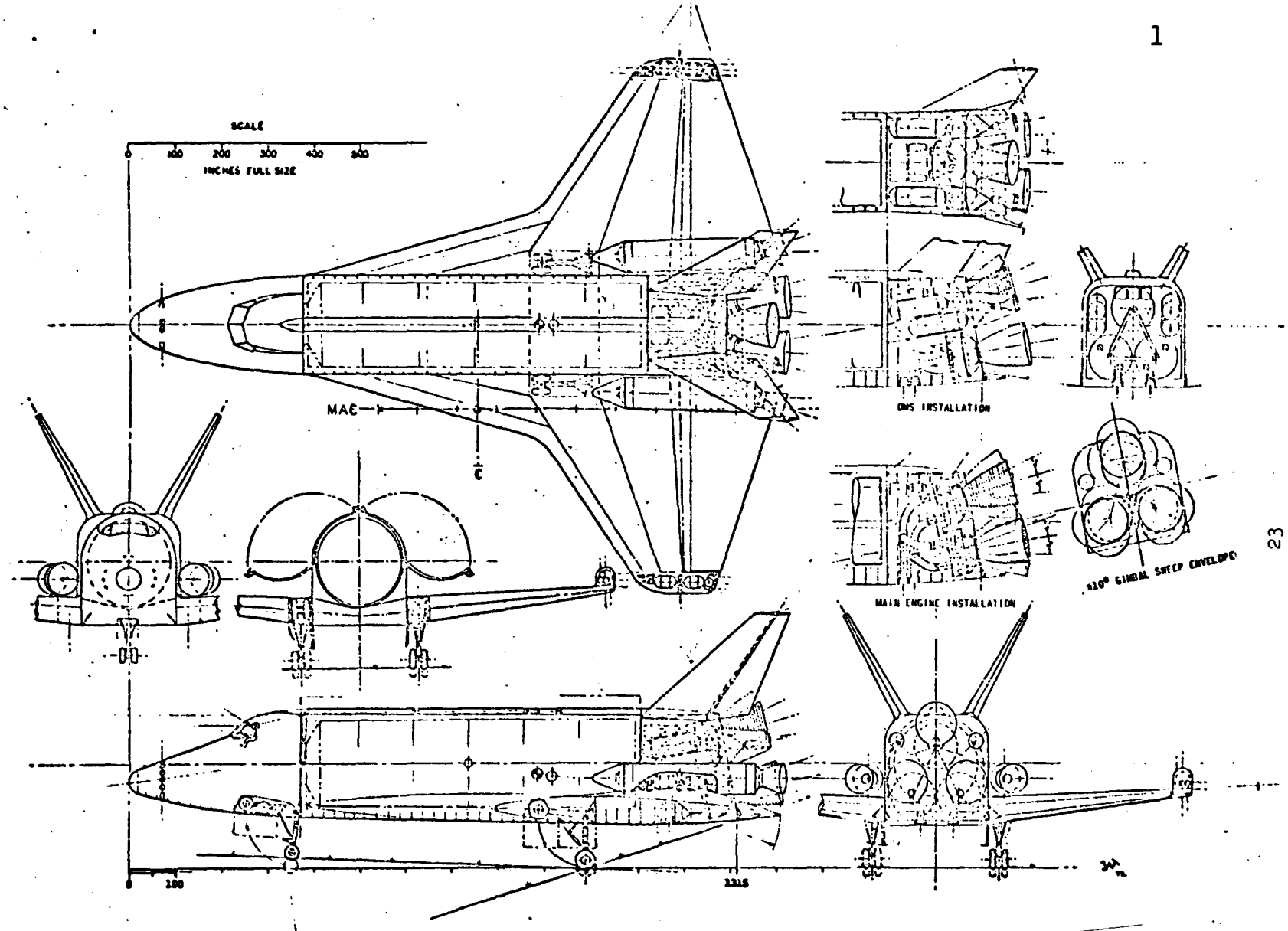

FIGURE 3. Orbiter Configuration

Reproduced from best available copy.

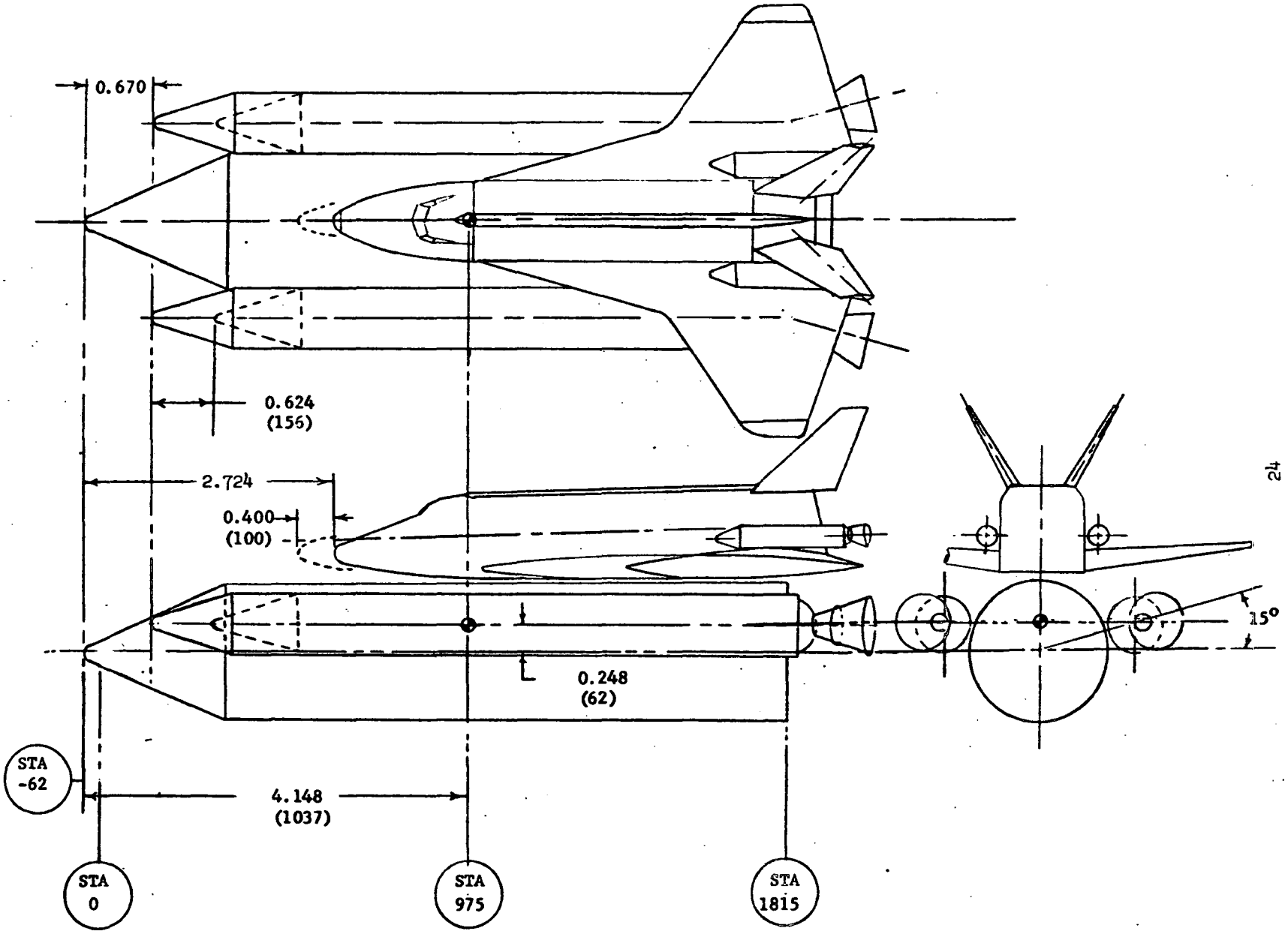

FIGURE 4. MOMENT REFERENCE CENTER AND LOCATIONS OF O1, O2, S1, S3

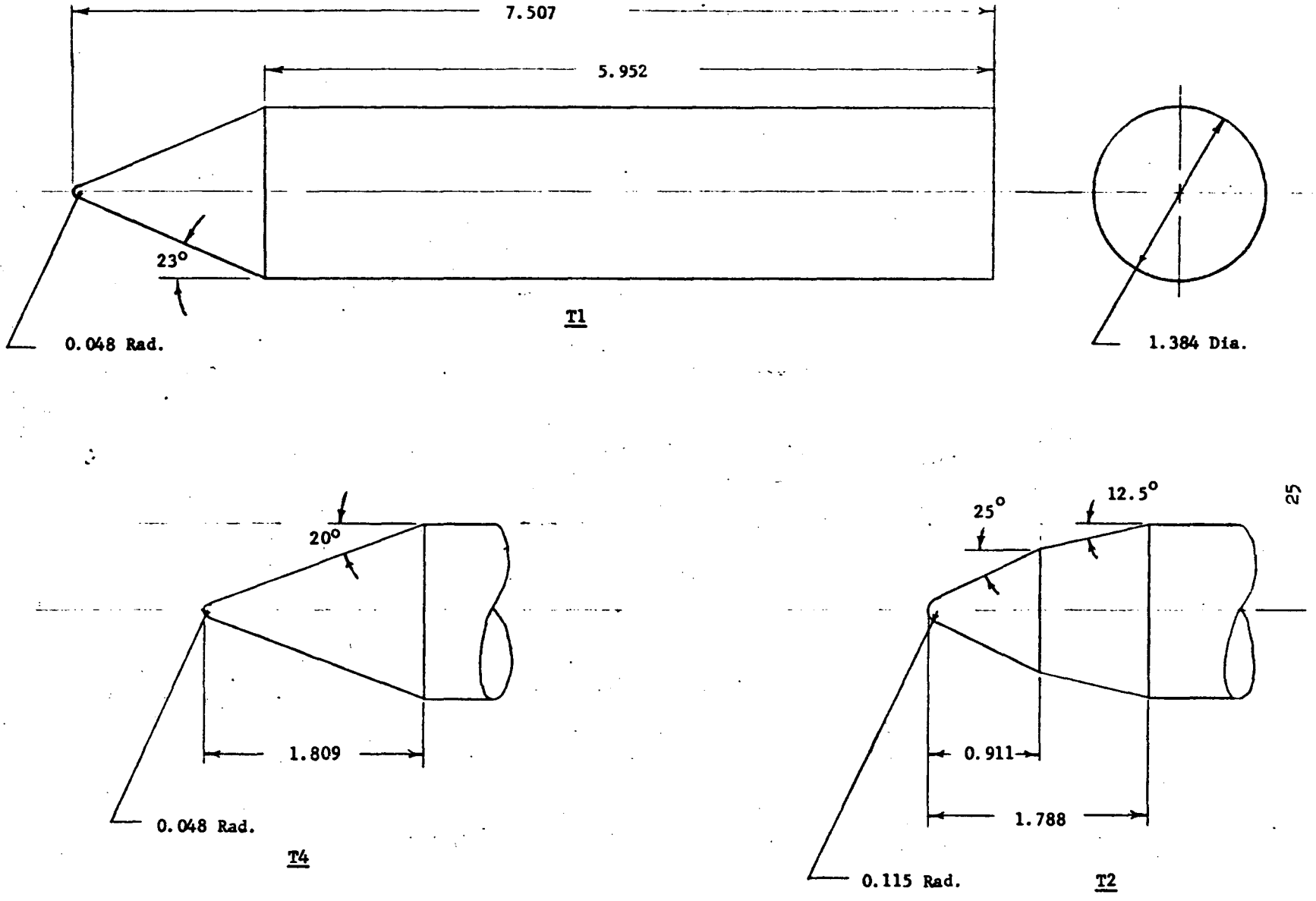

FIGURE 5. HYDROGEN - OXYGEN TANKS T1, T2, and T4

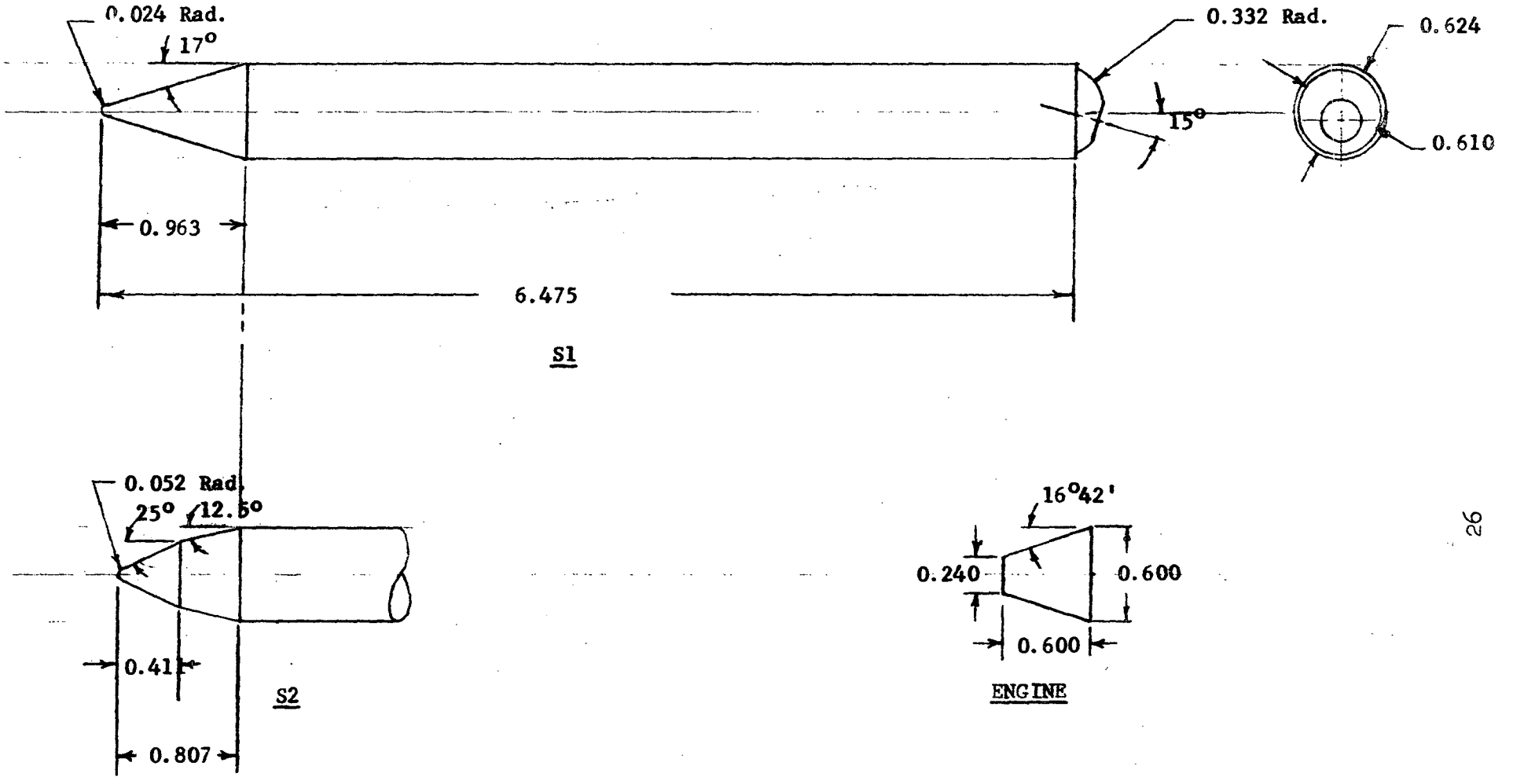

FIGURE 6. SOLID ROCKET MOTORS S1 and S2

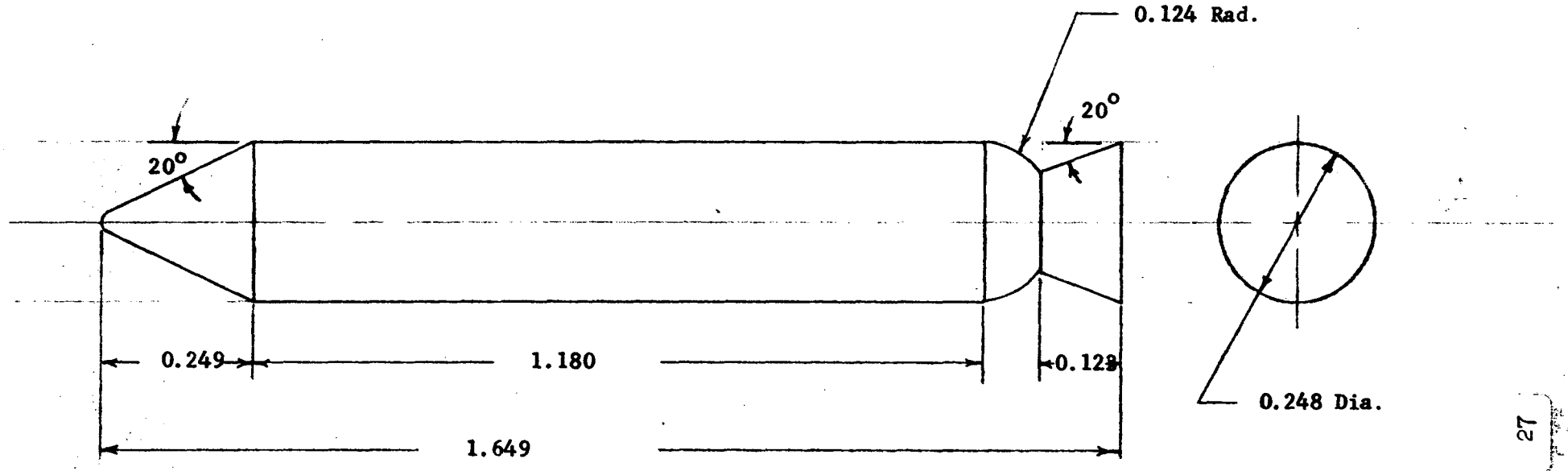

FIGURE 7. ABORT ROCKET MOTOR R1

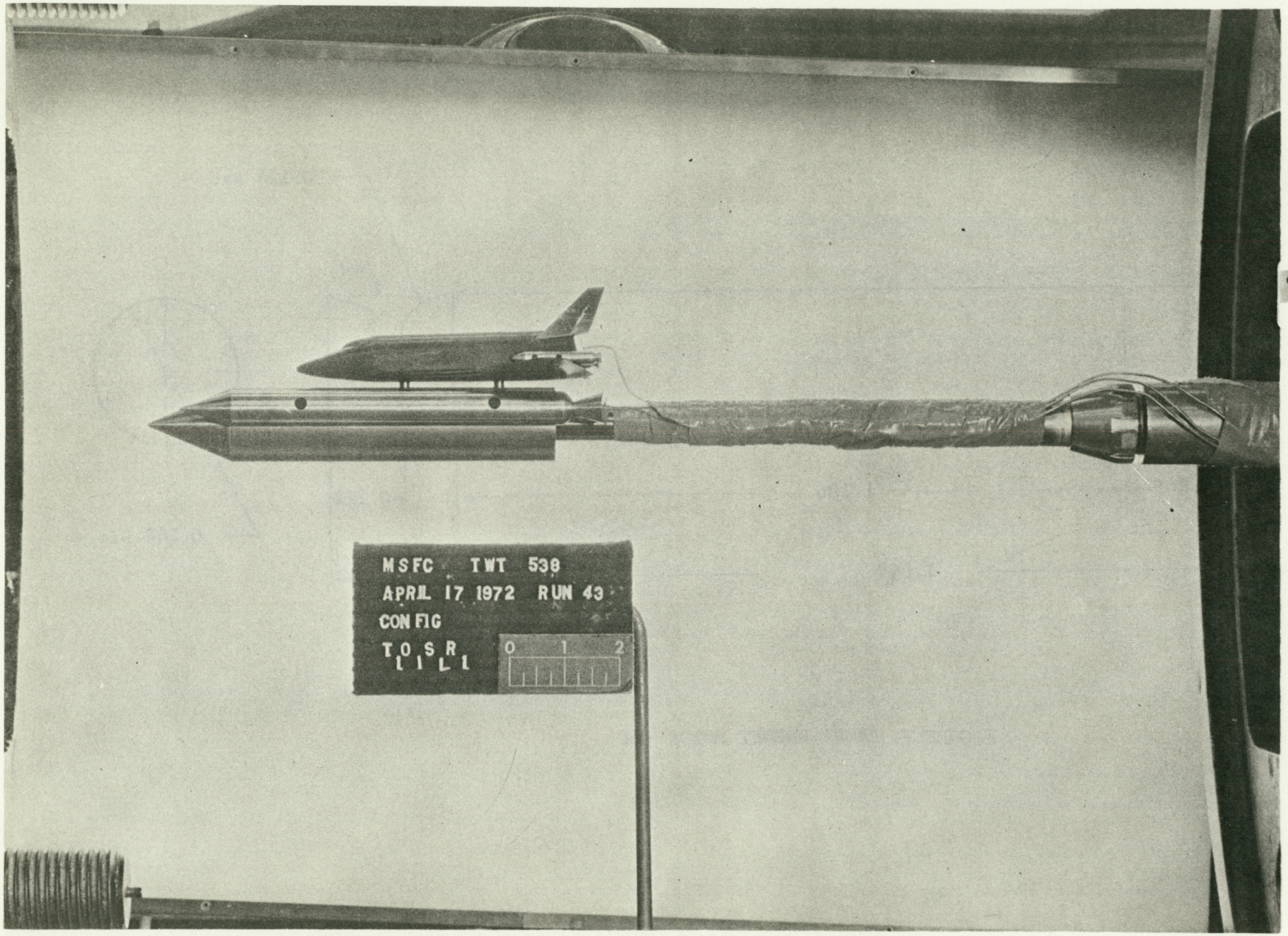

FIGURE 8. Photograph of Configuration T101S1R1 Installed in Tunnel

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S&E-Aero-AE

04-17-72

67- -72

FIGURE 9. Photograph at Side View of Configuration T101S1R1

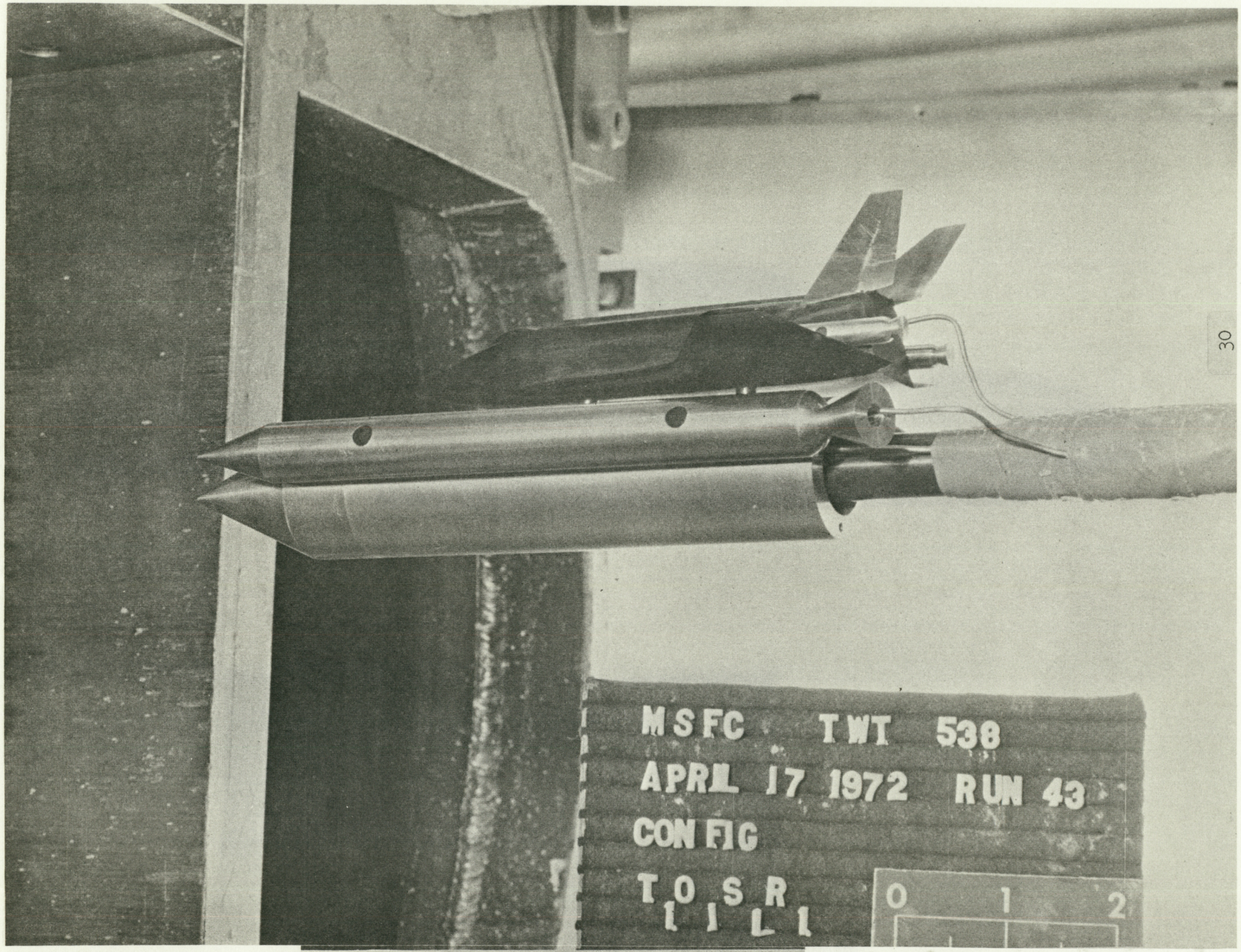

FIGURE 10. Photograph of Oblique Side and Rear View of Configuration T101S1R1

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S&E-Aero-AE

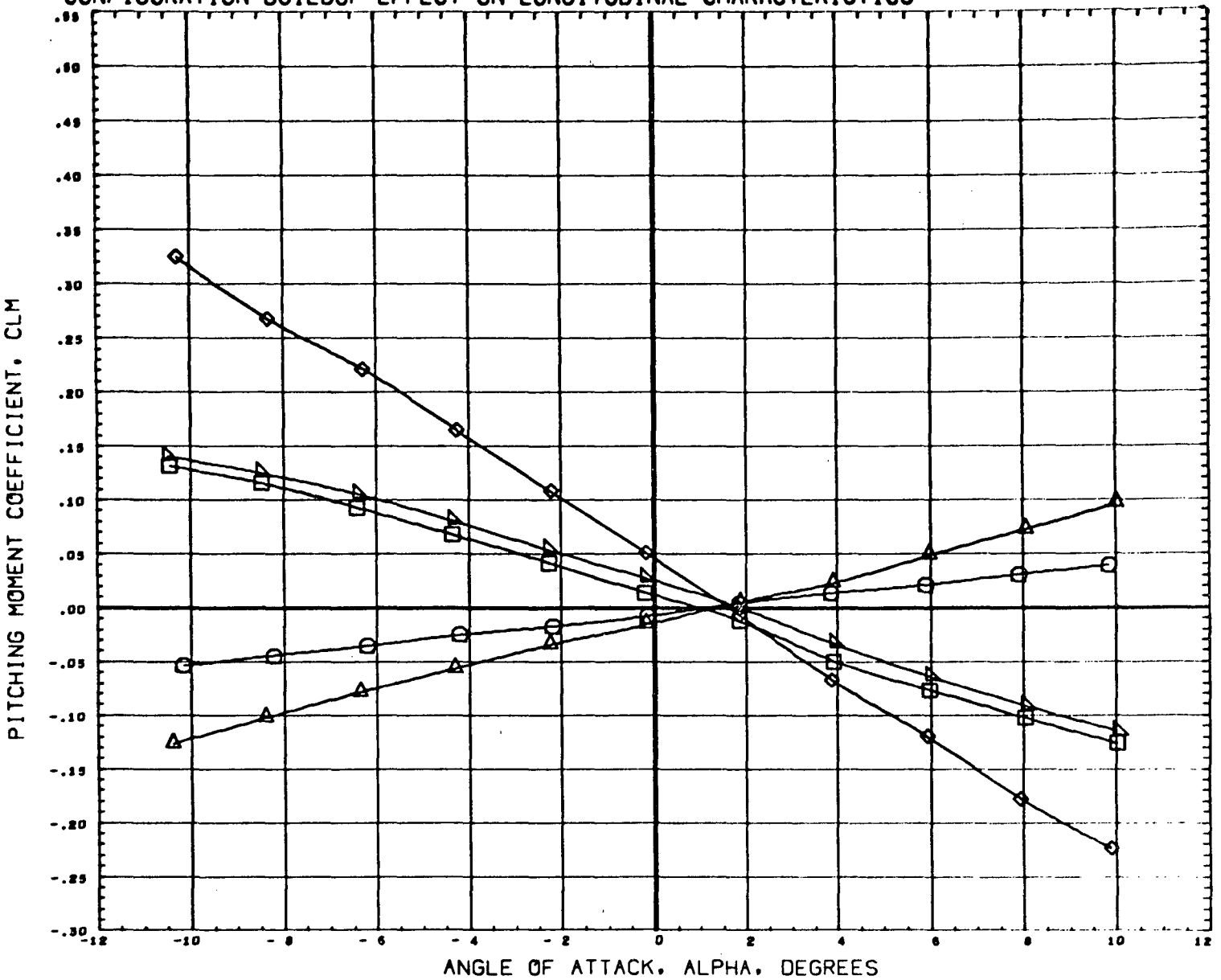
04-17-72

67-1-72

D A T A F I G U R E S

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

CONFIGURATION BUILDUP EFFECT ON LONGITUDINAL CHARACTERISTICS



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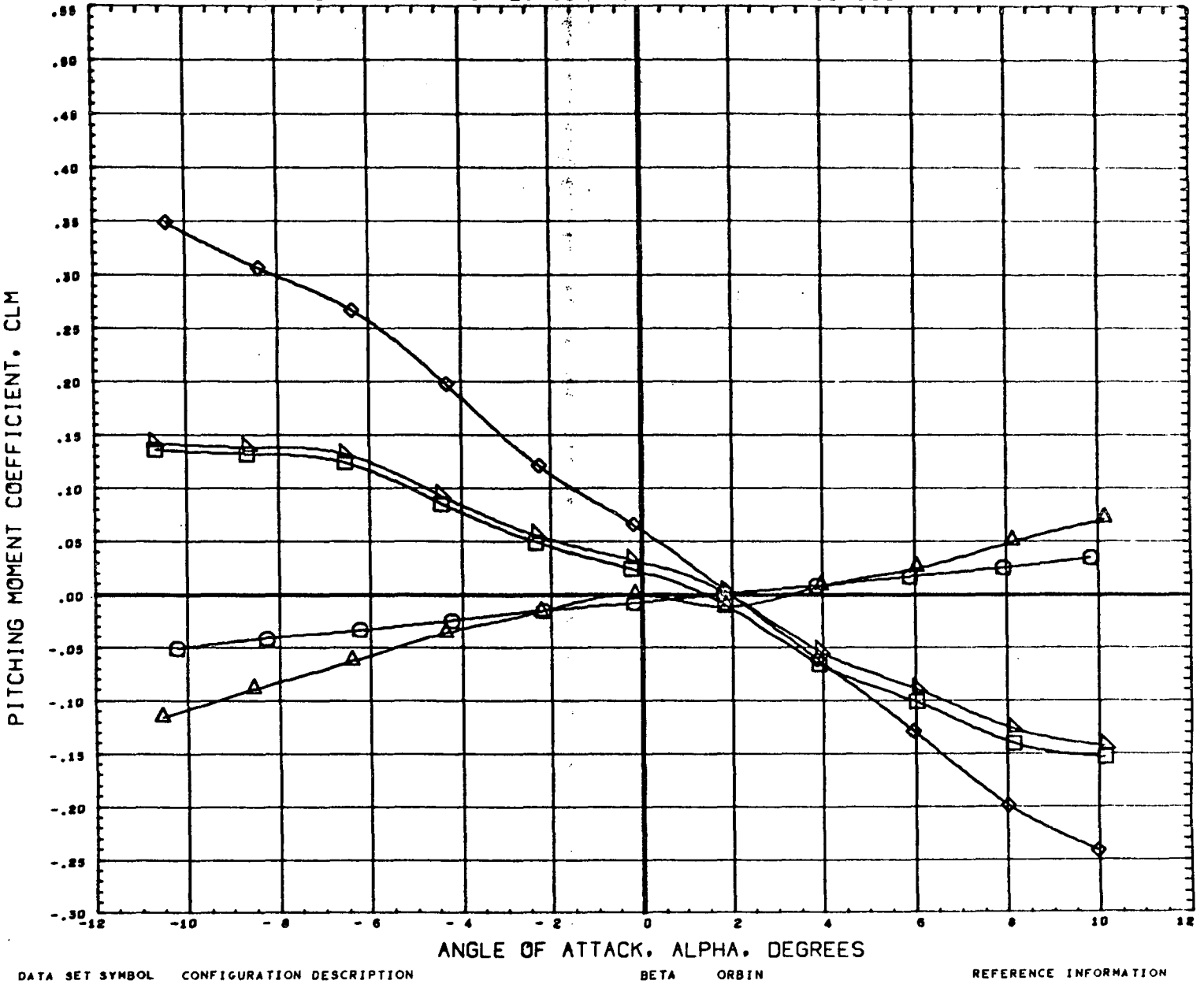
(B66002)	△	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(B66004)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T1O1	0.000	-1.500
(B66006)	□	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
(B66008)	▷	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1R1	0.000	-1.500

REFERENCE INFORMATION		
SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .60

CONFIGURATION BUILDUP EFFECT ON LONGITUDINAL CHARACTERISTICS



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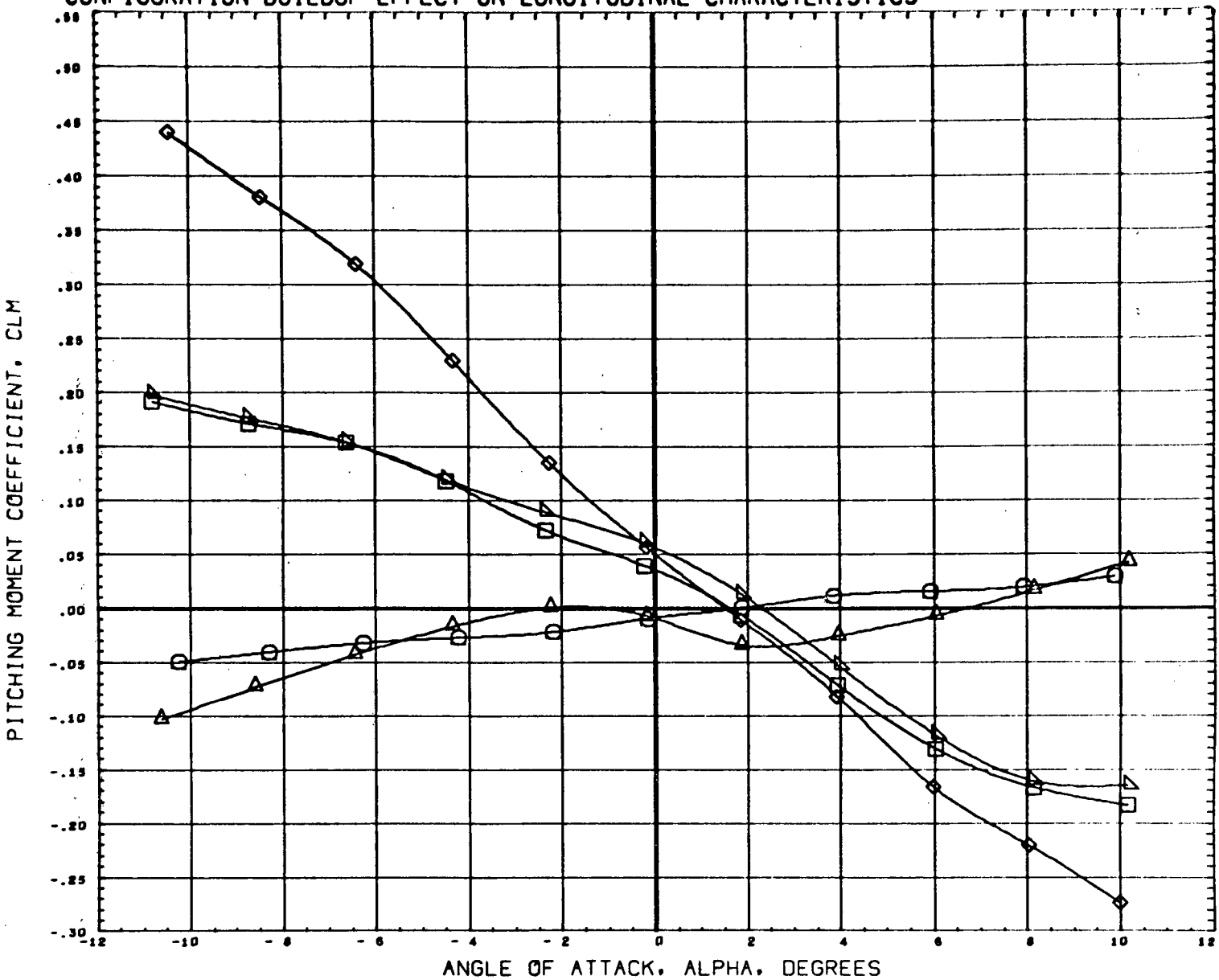
(866006)	□	MSFC TWT 538	SHUTTLE LAUNCH	T101S1	0.000	-1.500
(866008)	◺	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .80

CONFIGURATION BUILDUP EFFECT ON LONGITUDINAL CHARACTERISTICS



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
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(B66004)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T1O1	0.000	-1.500
(B66006)	□	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
(B66008)	◺	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1R1	0.000	-1.500

REFERENCE INFORMATION		
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BREF	4.4600	IN.
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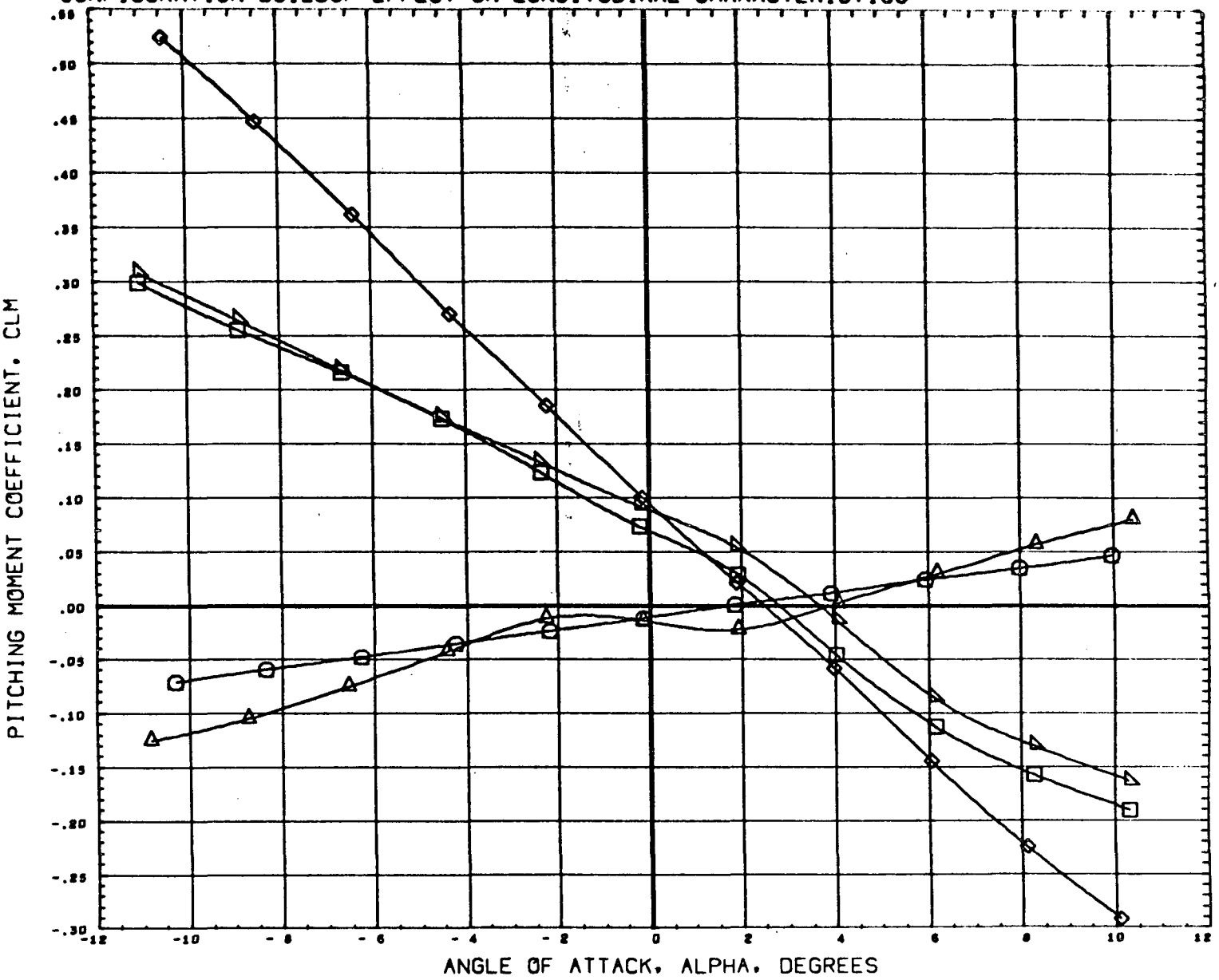
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .90

CONFIGURATION BUILDUP EFFECT ON LONGITUDINAL CHARACTERISTICS



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
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(B66006)	□	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
(B66008)	▷	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1R1	0.000	-1.500

REFERENCE INFORMATION

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XMRP	4.1480	IN.
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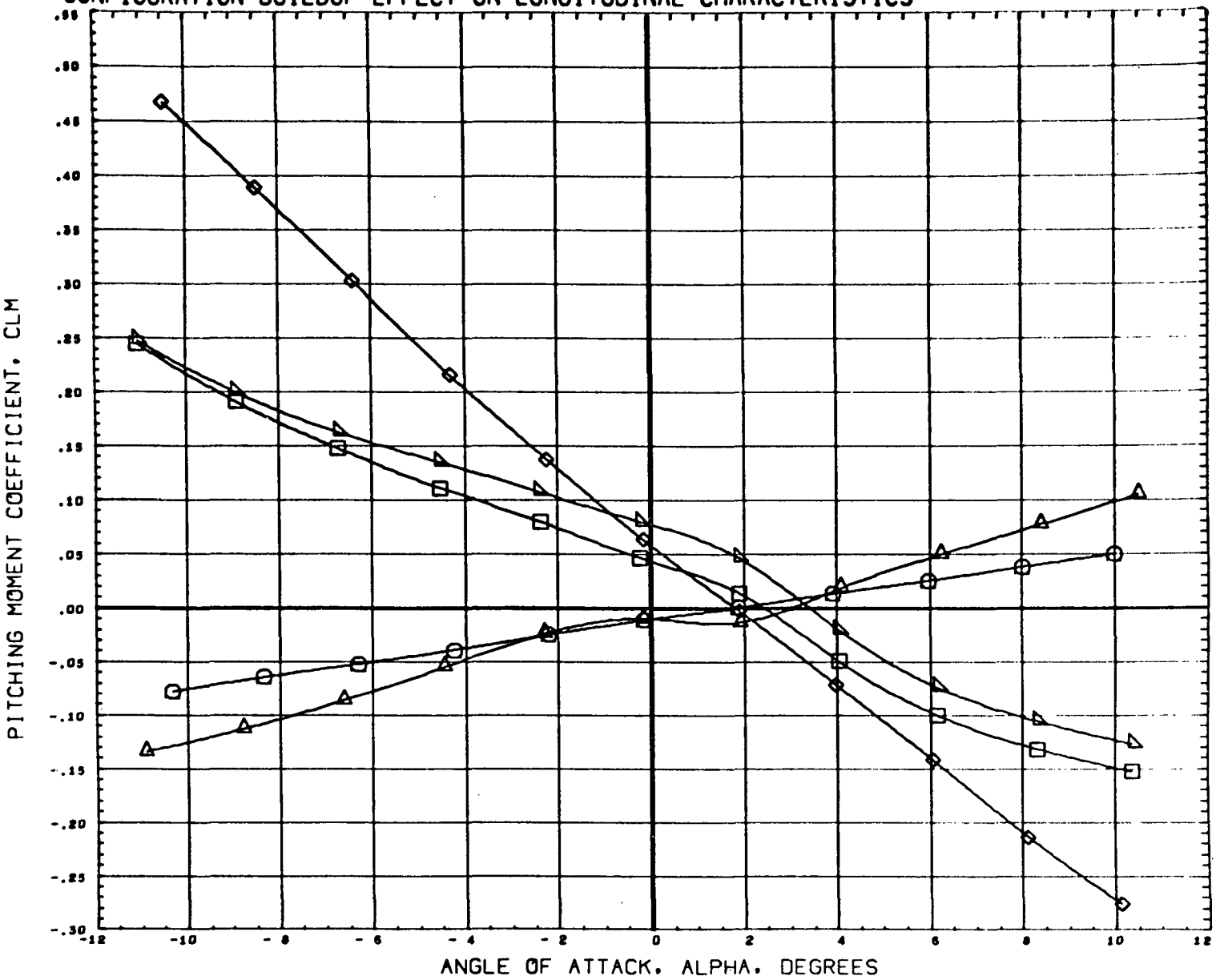
MACH 1.10

CONFIGURATION BUILDUP EFFECT ON LONGITUDINAL CHARACTERISTICS



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(B66006)	□	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
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REFERENCE INFORMATION		
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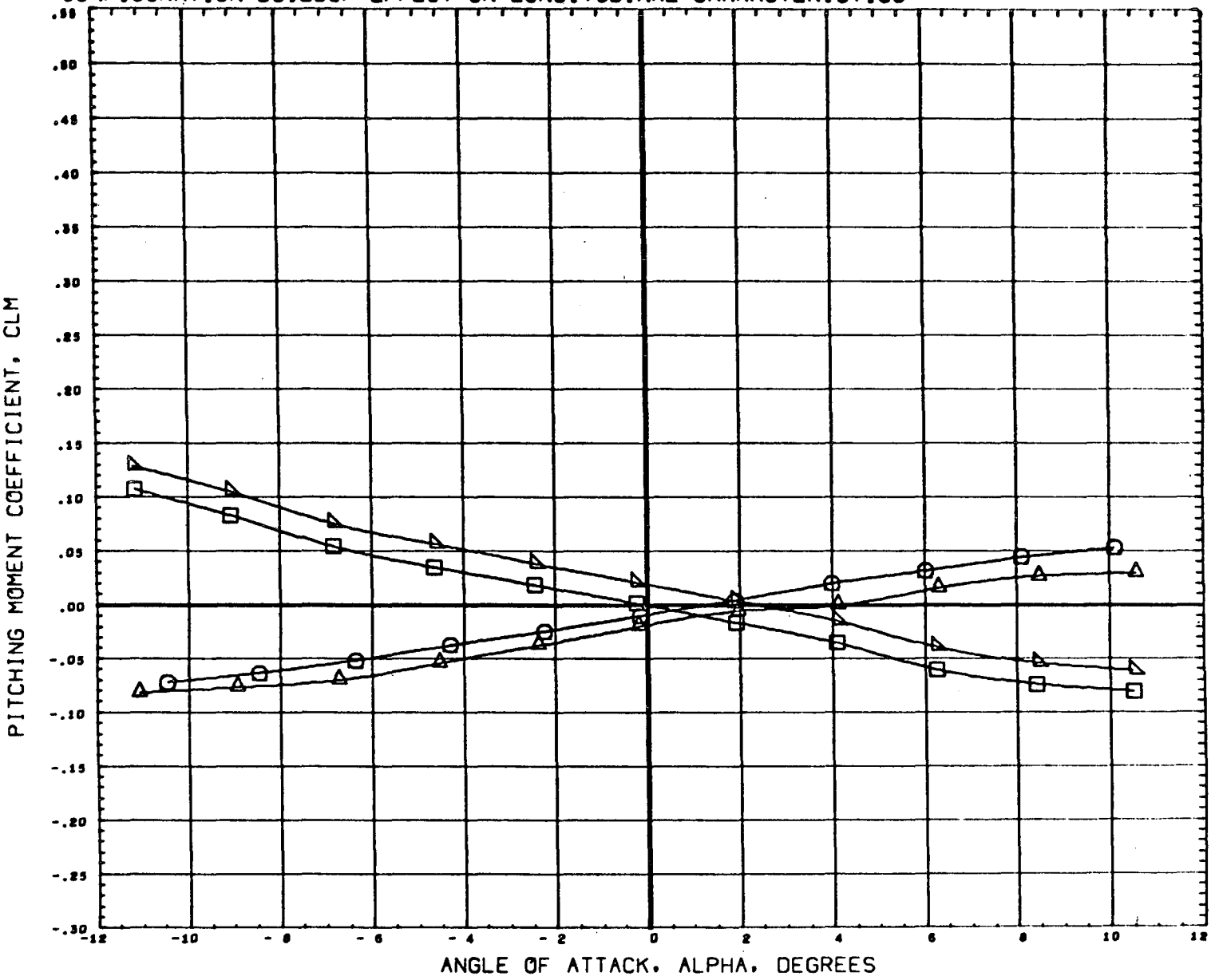
MACH 1.20

CONFIGURATION BUILDUP EFFECT ON LONGITUDINAL CHARACTERISTICS



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(B66006)	□	MSFC TWT 538 SHUTTLE LAUNCH T1O1S1	0.000	-1.500
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REFERENCE INFORMATION

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BREF	4.4600	IN.
XMRP	4.1480	IN.
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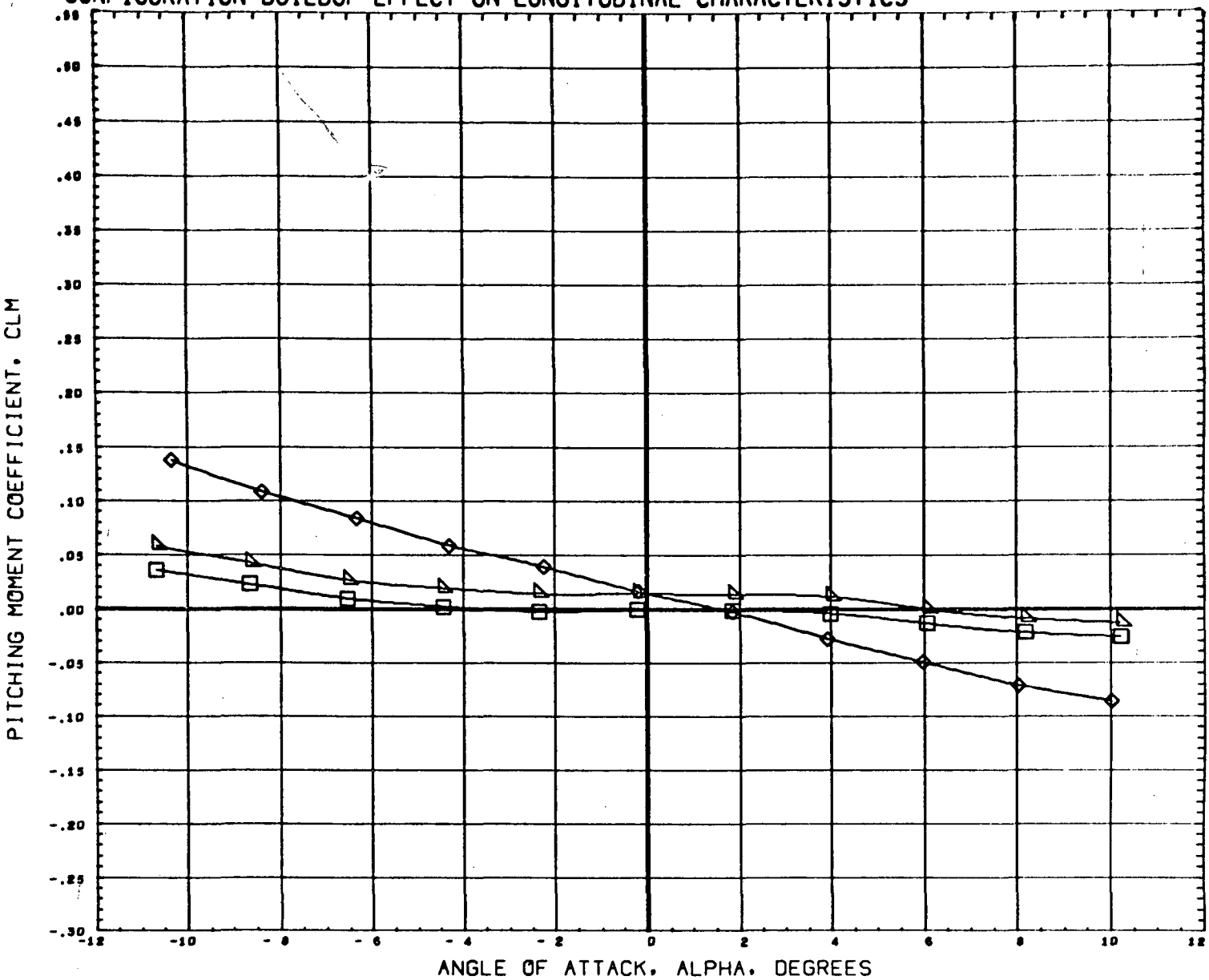
MACH 1.96

CONFIGURATION BUILDUP EFFECT ON LONGITUDINAL CHARACTERISTICS



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
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(B66002)	△	DATA NOT AVAILABLE FOR ALL CONDITIONS			0.000	
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(B66006)	□	MSFC TWT 538	SHUTTLE LAUNCH	T101S1	0.000	-1.500
(B66008)	◺	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500

REFERENCE INFORMATION

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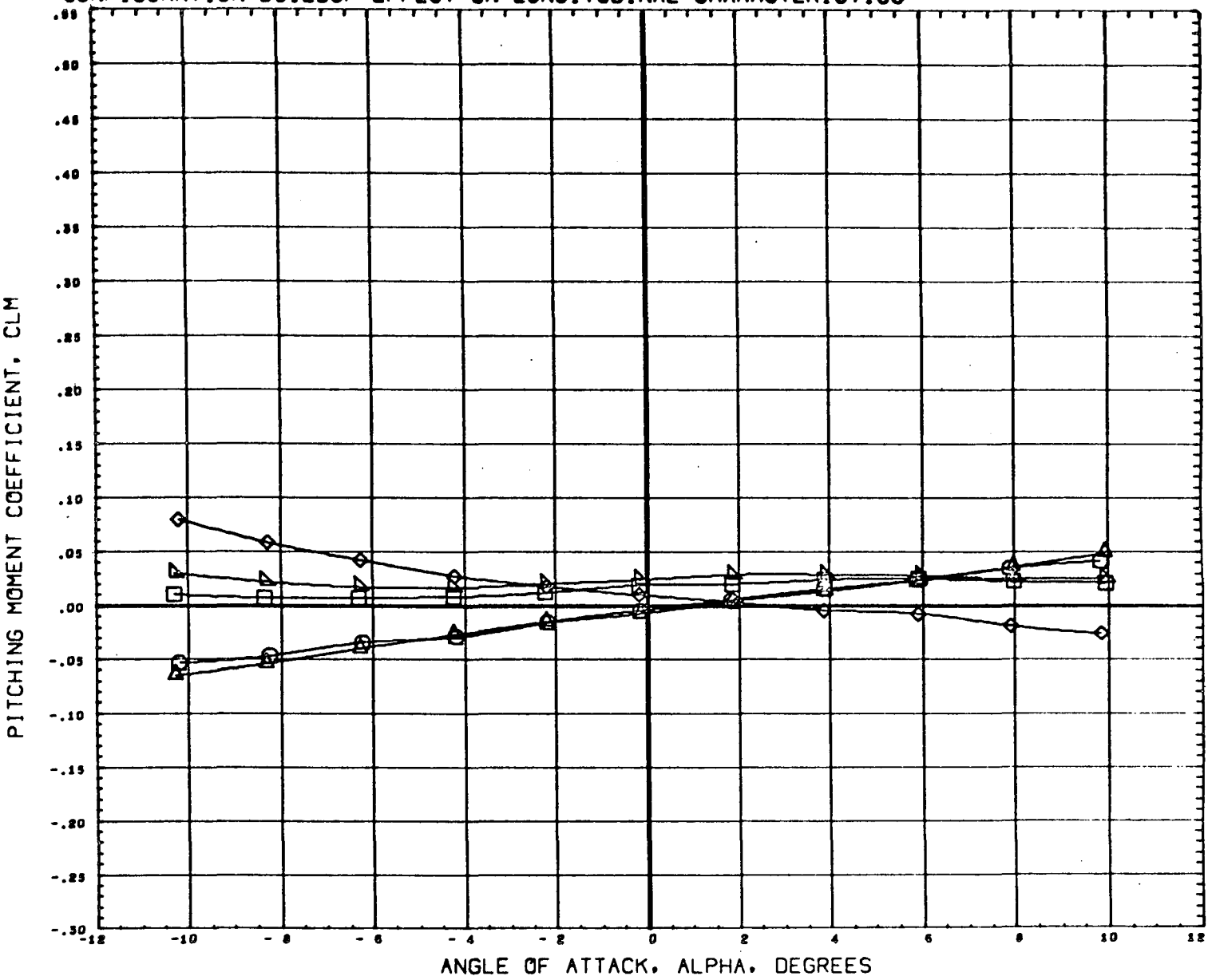
MACH 2.74

CONFIGURATION BUILDUP EFFECT ON LONGITUDINAL CHARACTERISTICS



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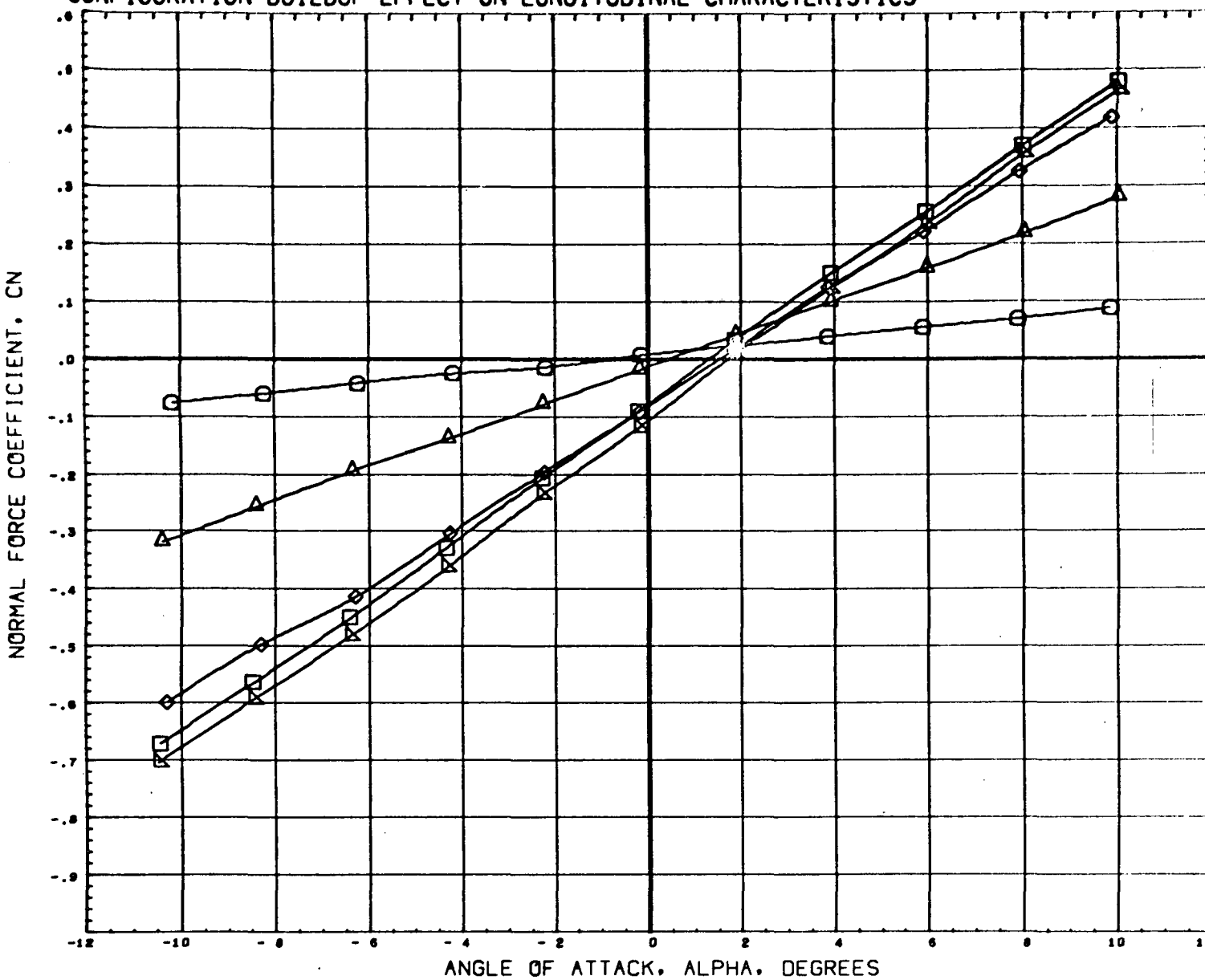
MACH 4.96

CONFIGURATION BUILDUP EFFECT ON LONGITUDINAL CHARACTERISTICS



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
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(B66006)	□	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
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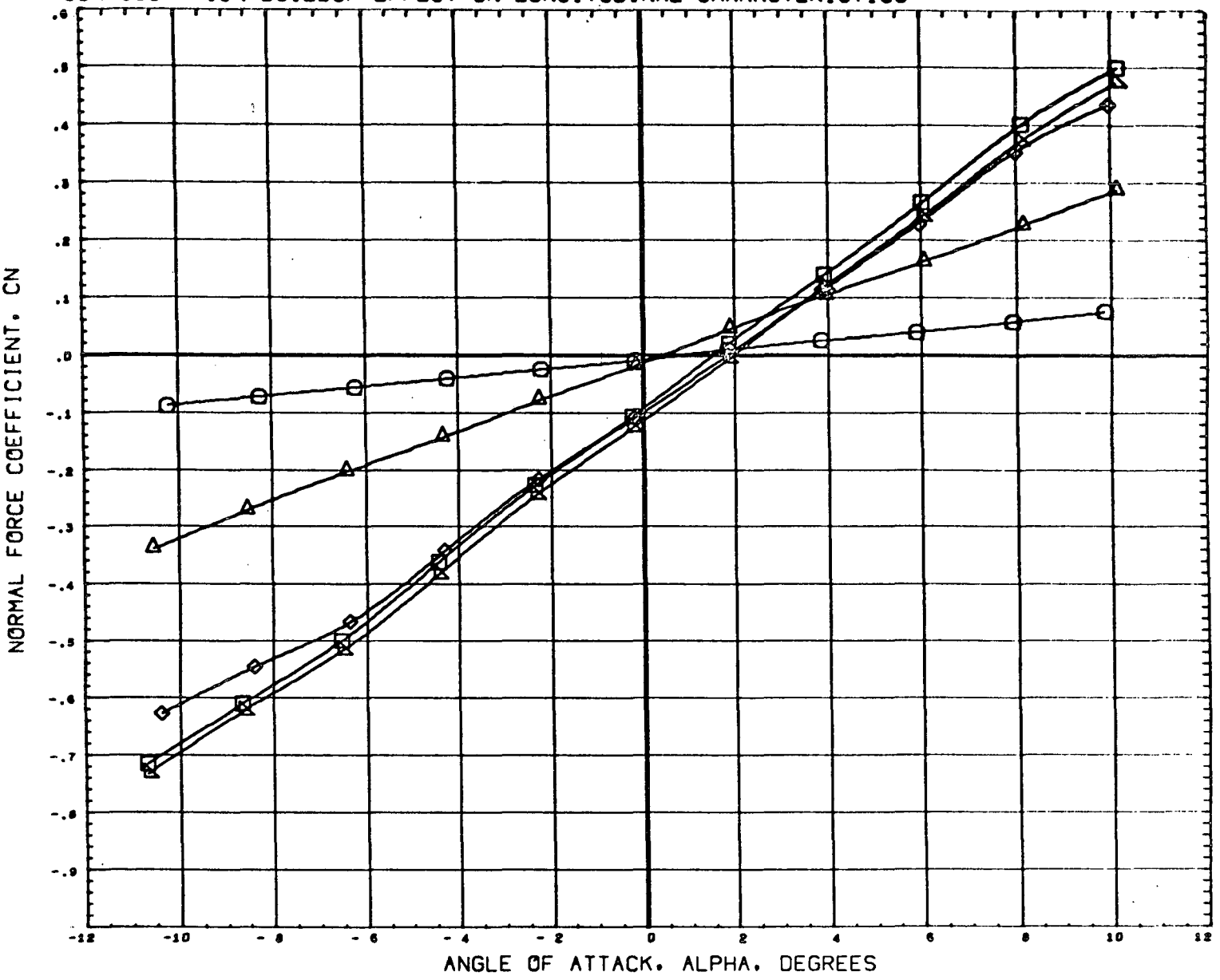
MACH .60

CONFIGURATION BUILDUP EFFECT ON LONGITUDINAL CHARACTERISTICS



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(B66002)	⊠	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(B66004)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T1O1	0.000	-1.500
(B66006)	□	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
(B66008)	⊠	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1R1	0.000	-1.500

REFERENCE INFORMATION		
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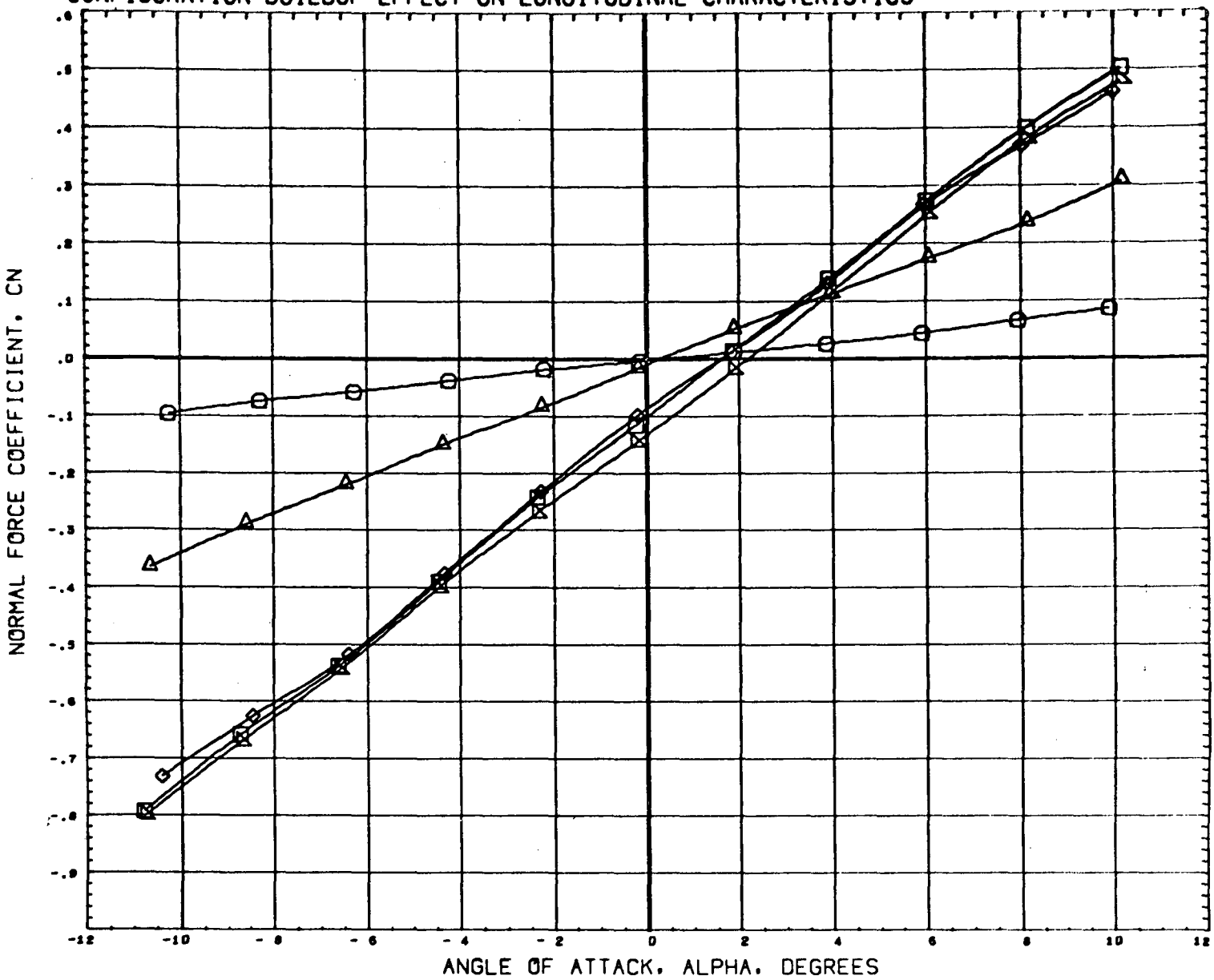
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .80

CONFIGURATION BUILDUP EFFECT ON LONGITUDINAL CHARACTERISTICS



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(B66002)	△	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(B66004)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T1O1	0.000	-1.500
(B66006)	□	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
(B66008)	⊠	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1R1	0.000	-1.500

REFERENCE INFORMATION		
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XMRP	4.1480	IN.
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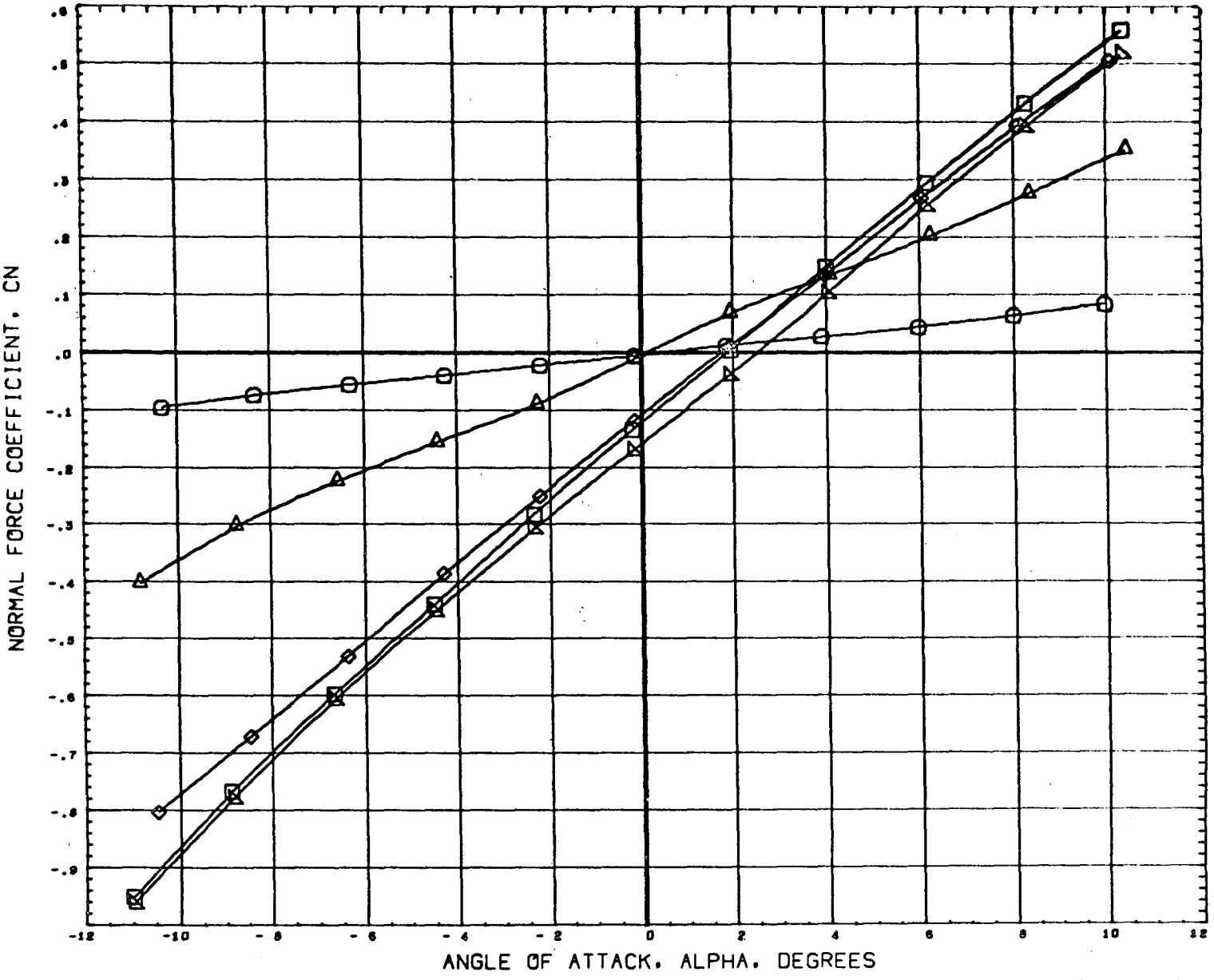
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .90

CONFIGURATION BUILDUP EFFECT ON LONGITUDINAL CHARACTERISTICS



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
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(B66002)	△	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(B66004)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T1O1	0.000	-1.500
(B66006)	□	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
(B66008)	◁	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1R1	0.000	-1.500

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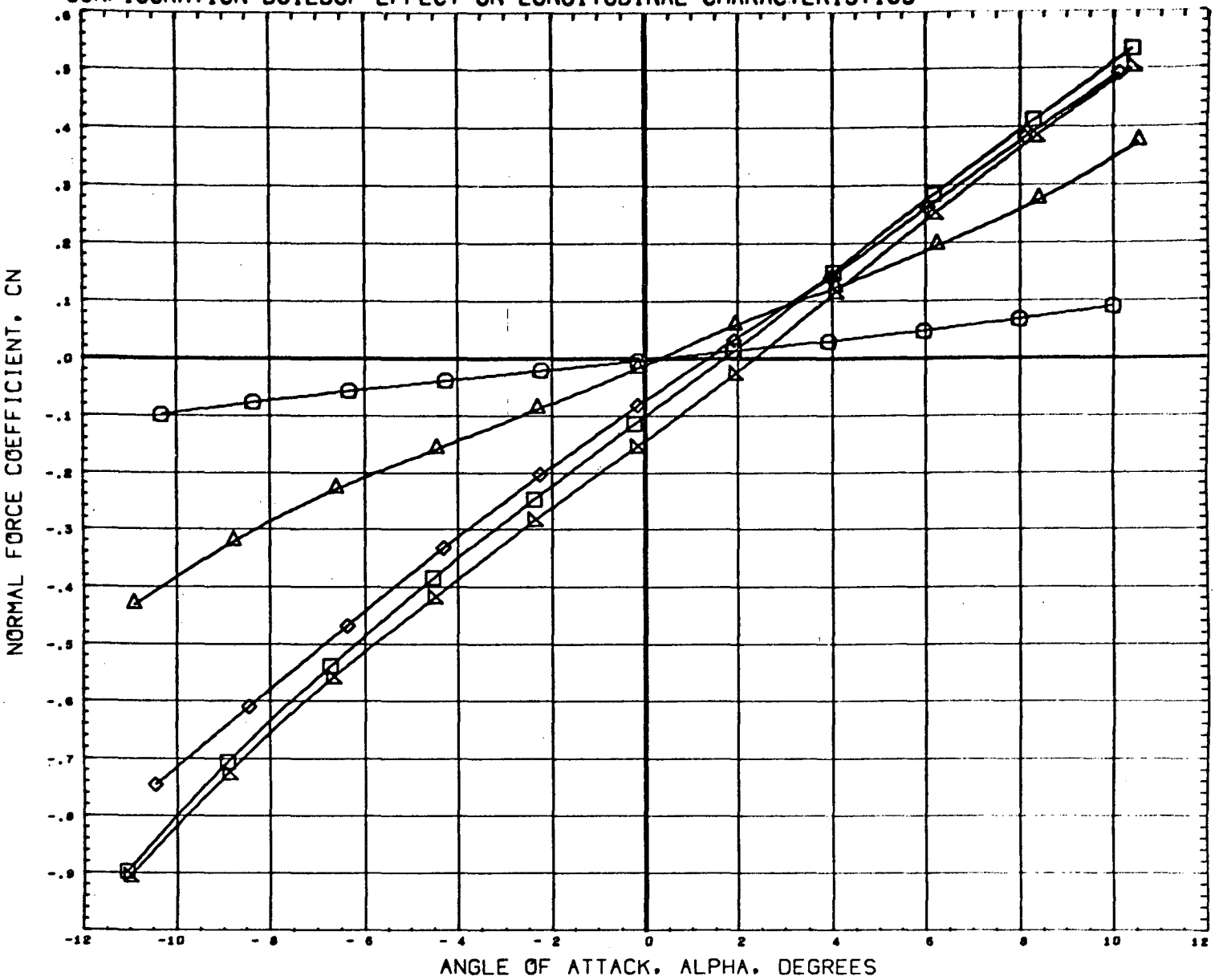
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.10

CONFIGURATION BUILDUP EFFECT ON LONGITUDINAL CHARACTERISTICS



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
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(B66002)	△	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(B66004)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T1O1	0.000	-1.500
(B66006)	□	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
(B66008)	⊠	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1R1	0.000	-1.500

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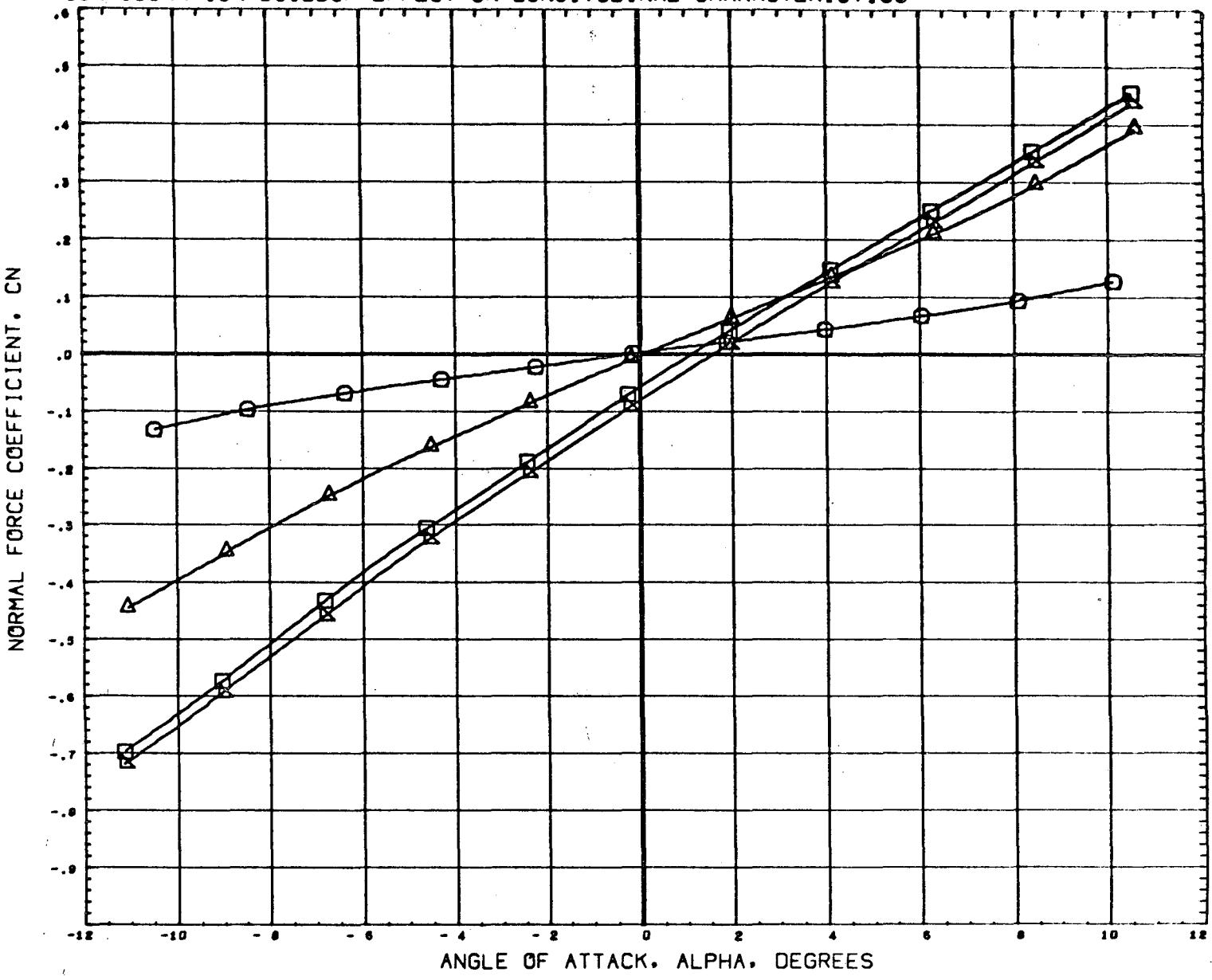
MACH 1.20

CONFIGURATION BUILDUP EFFECT ON LONGITUDINAL CHARACTERISTICS



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(B66002)	△	MSFC TWT 538 SHUTTLE LAUNCH	T1S1	0.000	
(B66004)	◇	DATA NOT AVAILABLE FOR ALL CONDITIONS		0.000	-1.500
(B66006)	☐	MSFC TWT 538 SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
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REFERENCE INFORMATION

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XMRP	4.1480	IN.
YMRP	0.0000	IN.
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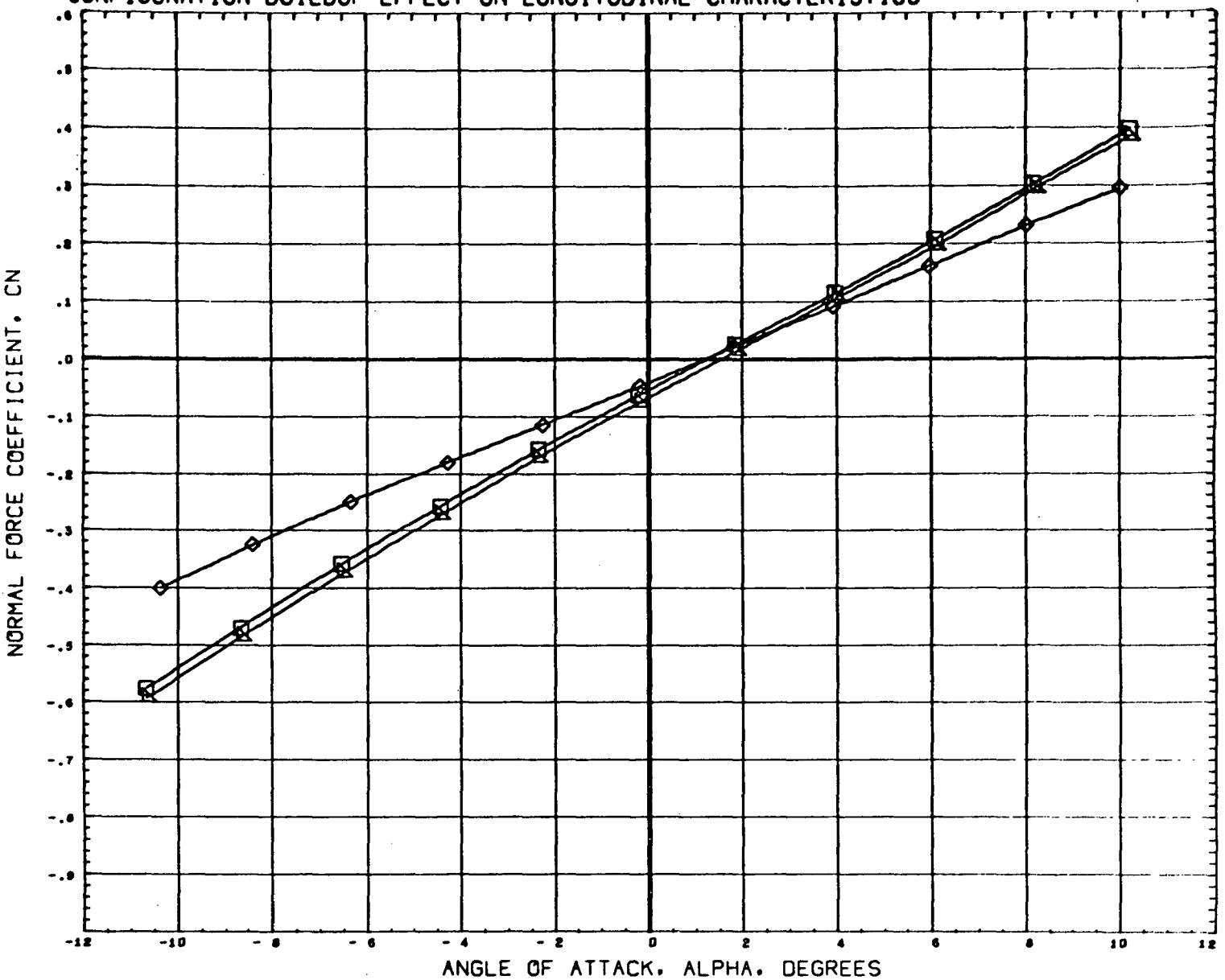
MACH 1.96

CONFIGURATION BUILDUP EFFECT ON LONGITUDINAL CHARACTERISTICS



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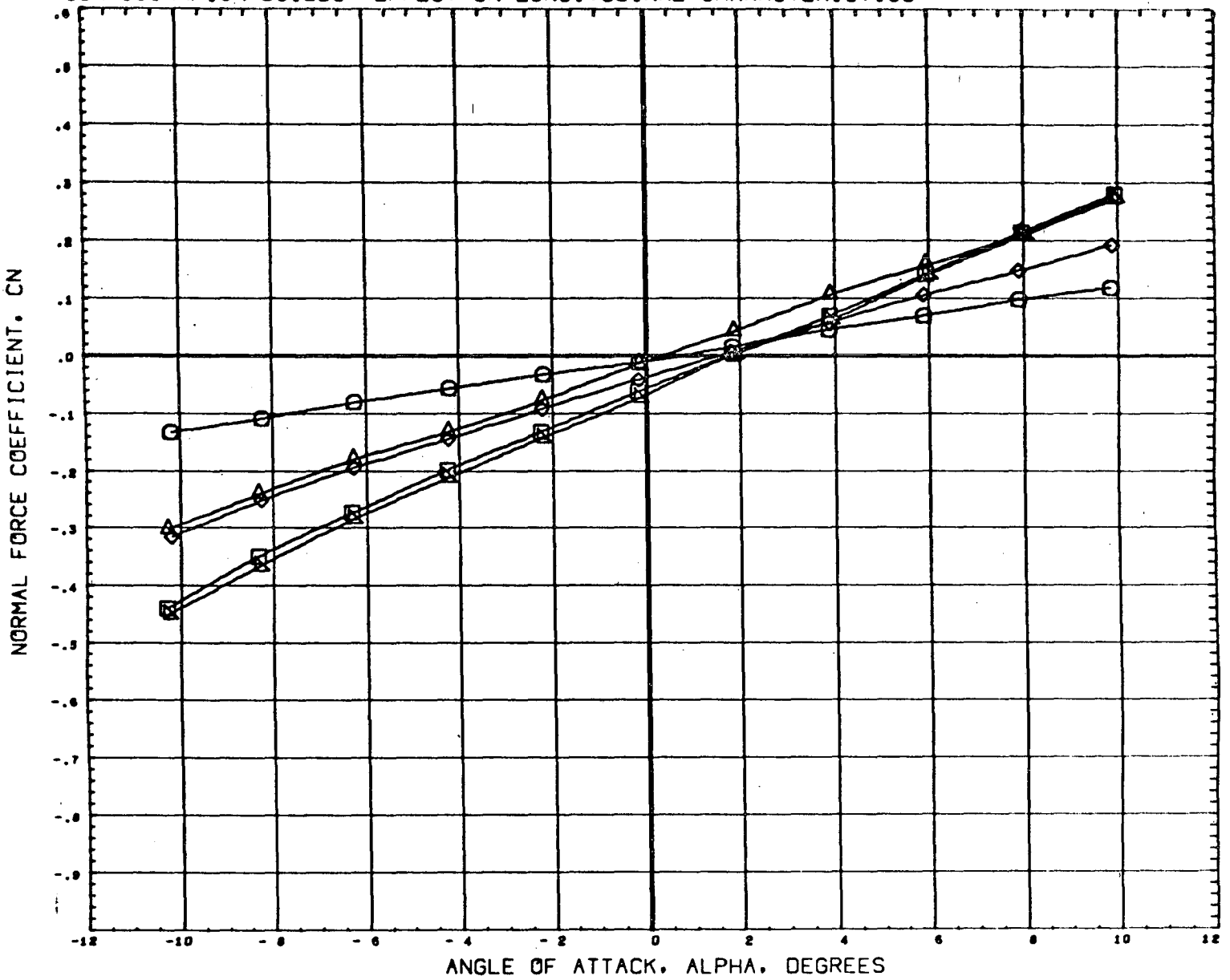
(B66006)	□	MSFC TWT 538	SHUTTLE LAUNCH	T101S1	0.000	-1.500
(B66008)	◺	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 2.74

CONFIGURATION BUILDUP EFFECT ON LONGITUDINAL CHARACTERISTICS



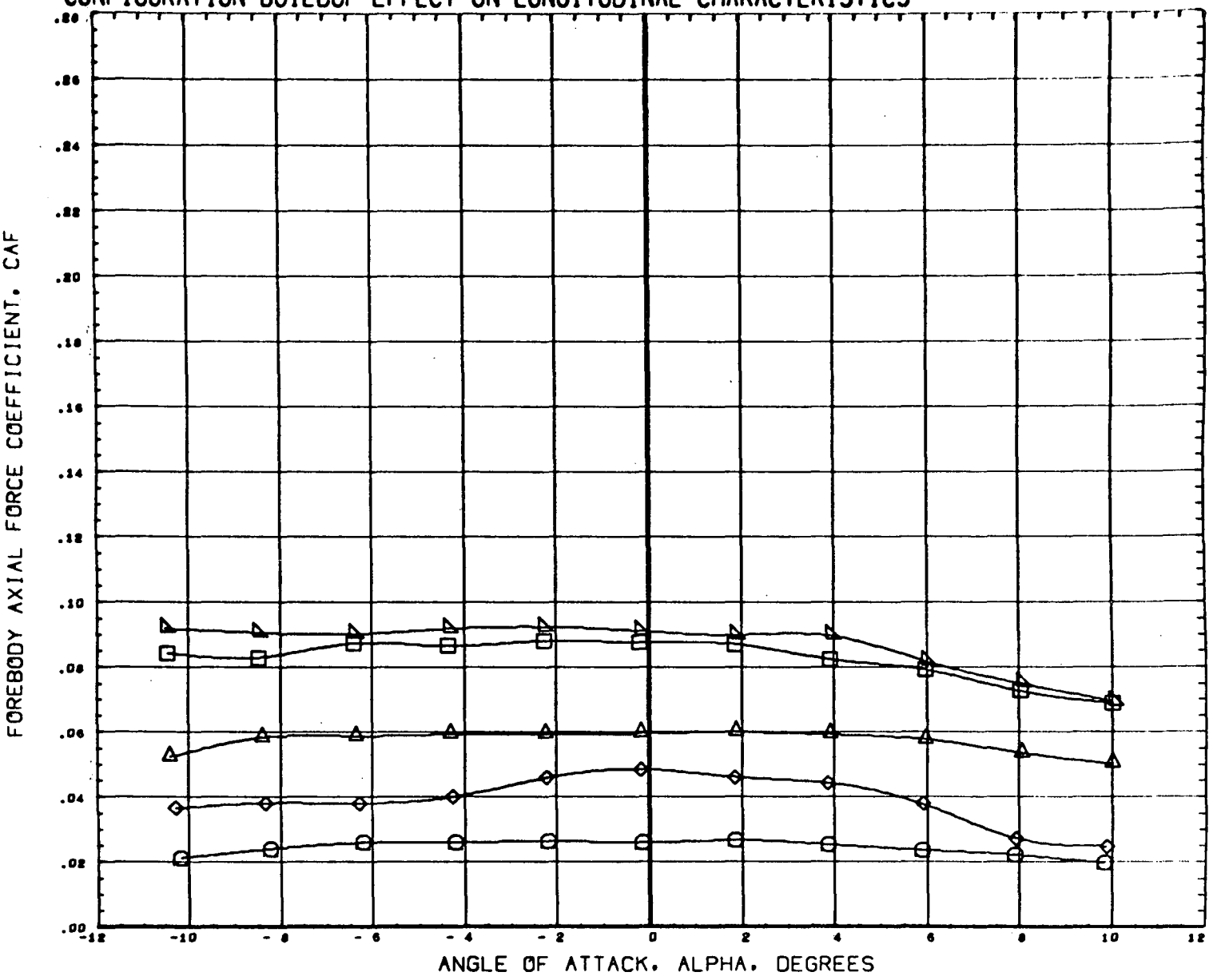
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66001)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1	0.000	
(B66002)	△	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(B66004)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T1O1	0.000	-1.500
(B66006)	□	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
(B66008)	⊠	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 4.96

CONFIGURATION BUILDUP EFFECT ON LONGITUDINAL CHARACTERISTICS

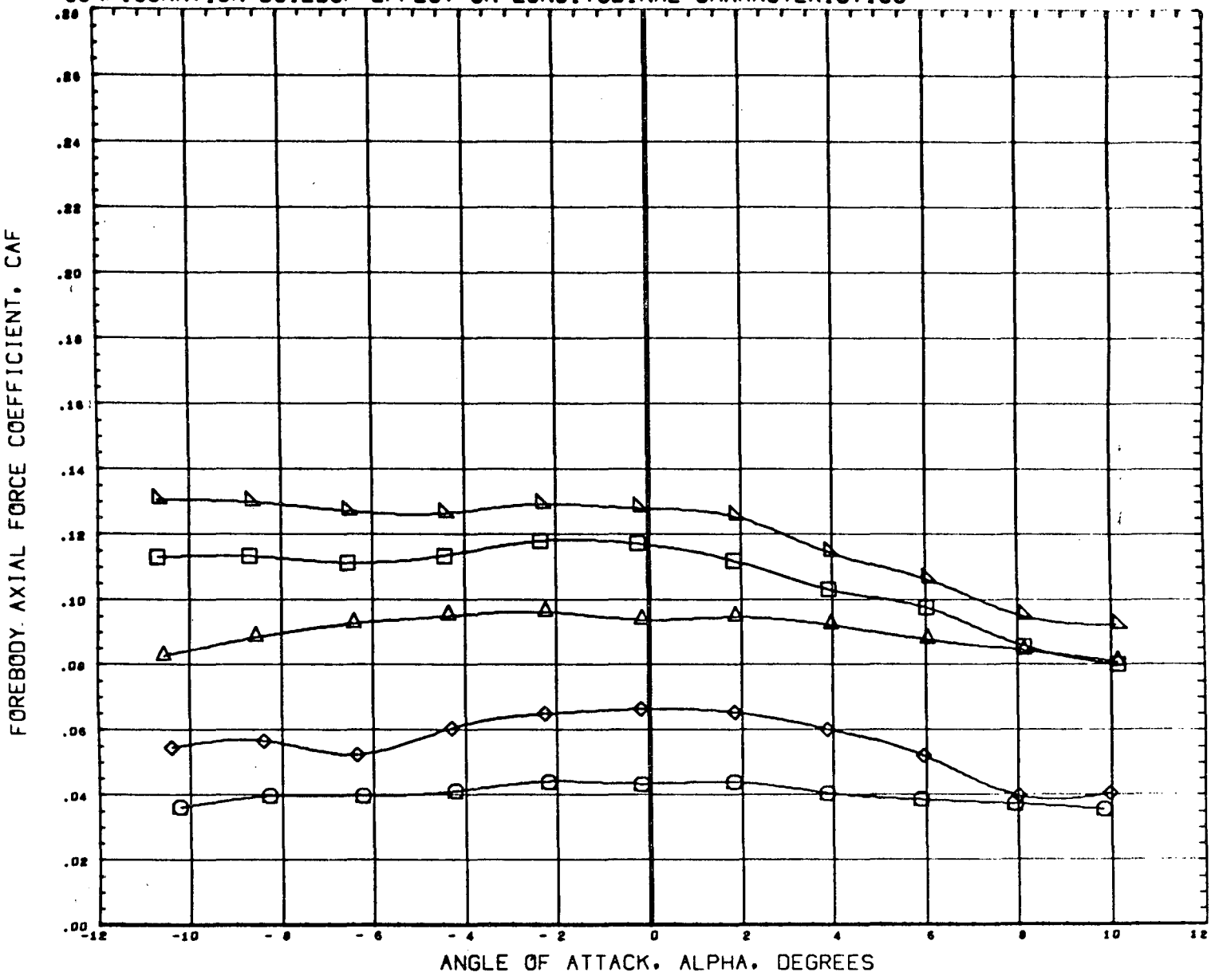


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(866001)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1	0.000	
(866002)	△	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(866004)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T1O1	0.000	-1.500
(866006)	□	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
(866008)	◺	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1R1	0.000	-1.500

REFERENCE INFORMATION		
SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .60

CONFIGURATION BUILDUP EFFECT ON LONGITUDINAL CHARACTERISTICS



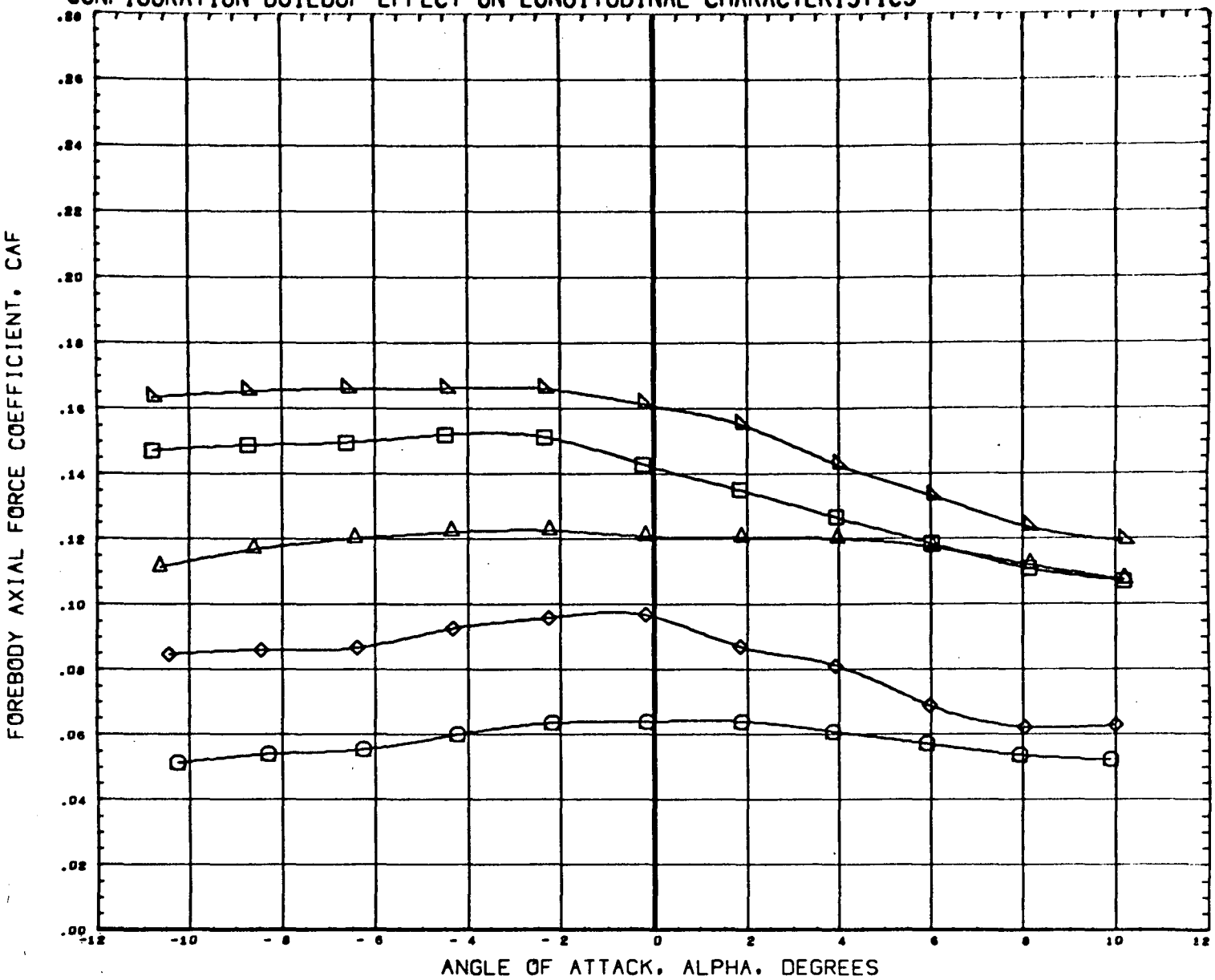
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66001)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1	0.000	
(B66002)	△	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(B66004)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T1O1	0.000	-1.500
(B66006)	□	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
(B66008)	◺	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .80

CONFIGURATION BUILDUP EFFECT ON LONGITUDINAL CHARACTERISTICS



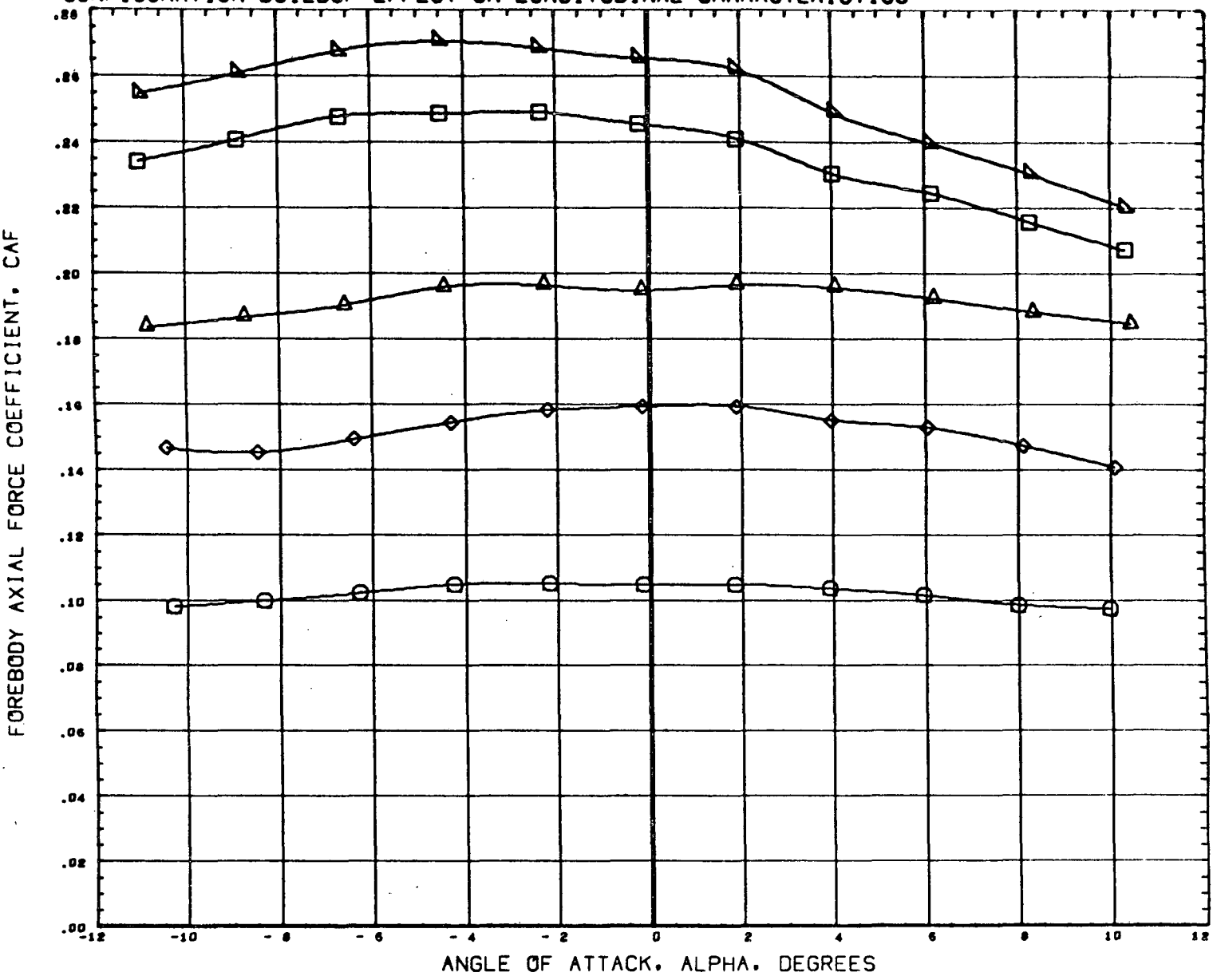
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(866001)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1	0.000	
(866002)	△	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(866004)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T1O1	0.000	-1.500
(866006)	□	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
(866008)	◺	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.0900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .90

CONFIGURATION BUILDUP EFFECT ON LONGITUDINAL CHARACTERISTICS



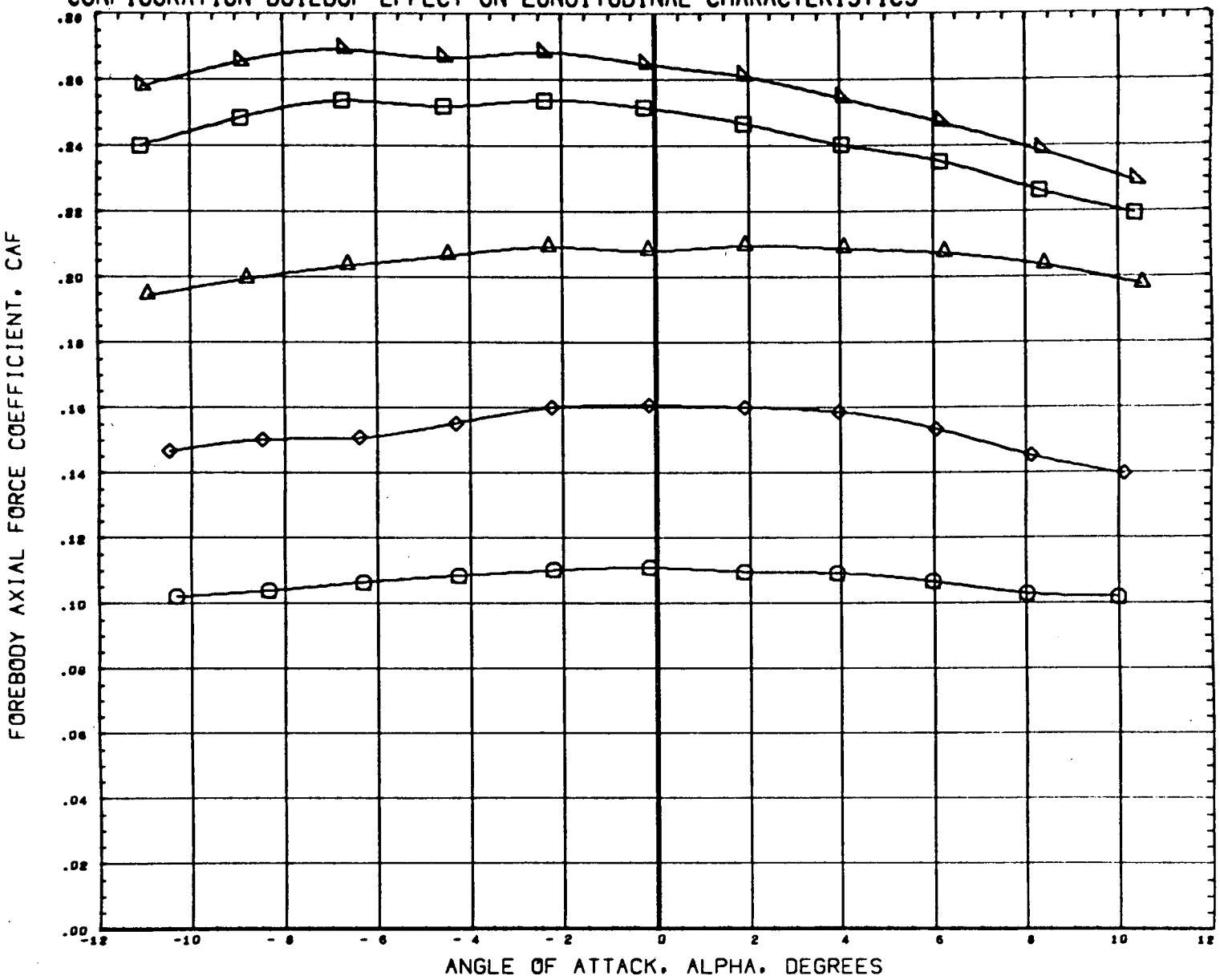
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66001)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1	0.000	
(B66002)	△	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(B66004)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T1O1	0.000	-1.500
(B66006)	□	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
(B66008)	◺	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.10

CONFIGURATION BUILDUP EFFECT ON LONGITUDINAL CHARACTERISTICS



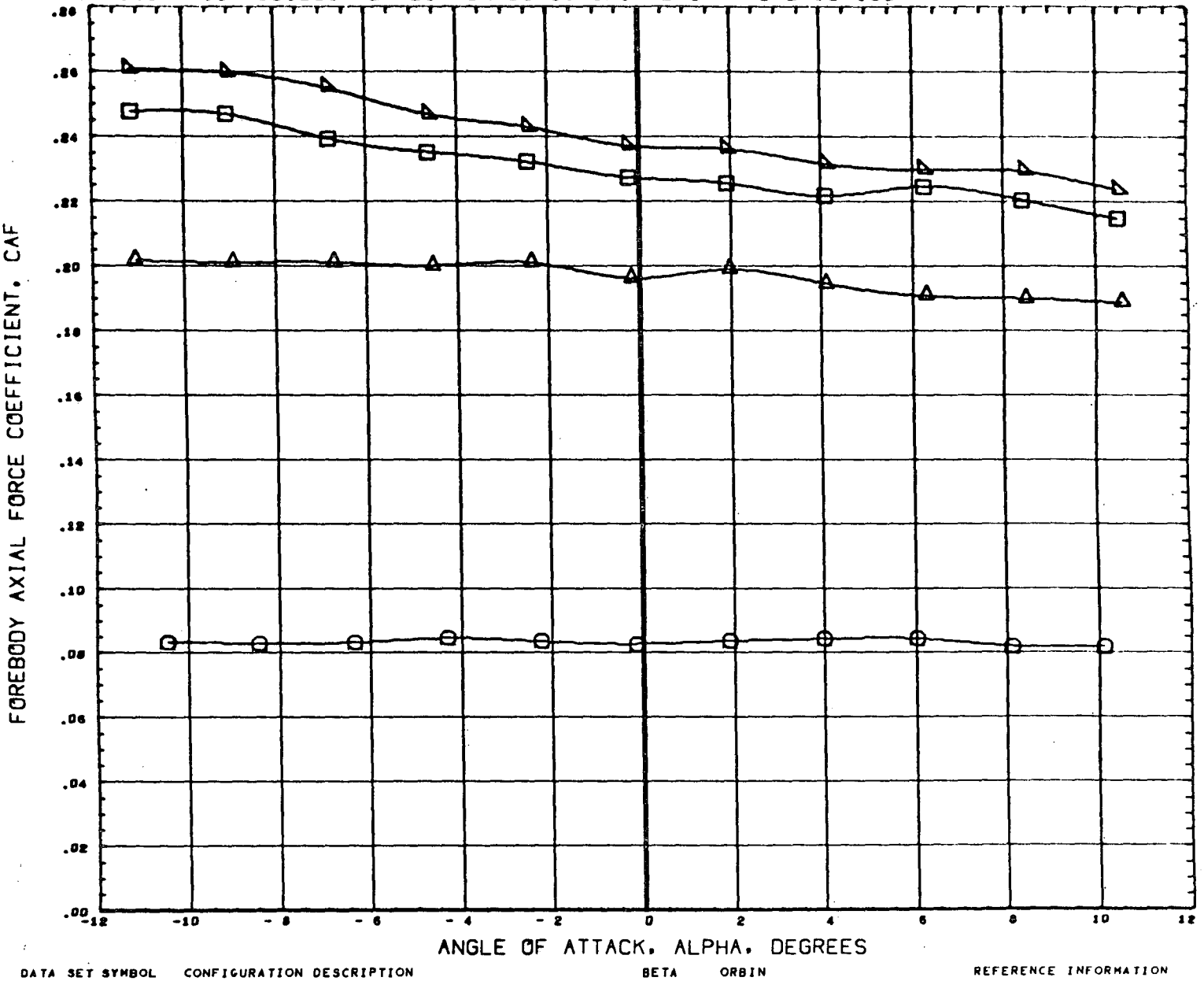
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66001)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1	0.000	
(B66002)	△	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(B66004)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T1O1	0.000	-1.500
(B66006)	□	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
(B66008)	⊘	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.20

CONFIGURATION BUILDUP EFFECT ON LONGITUDINAL CHARACTERISTICS



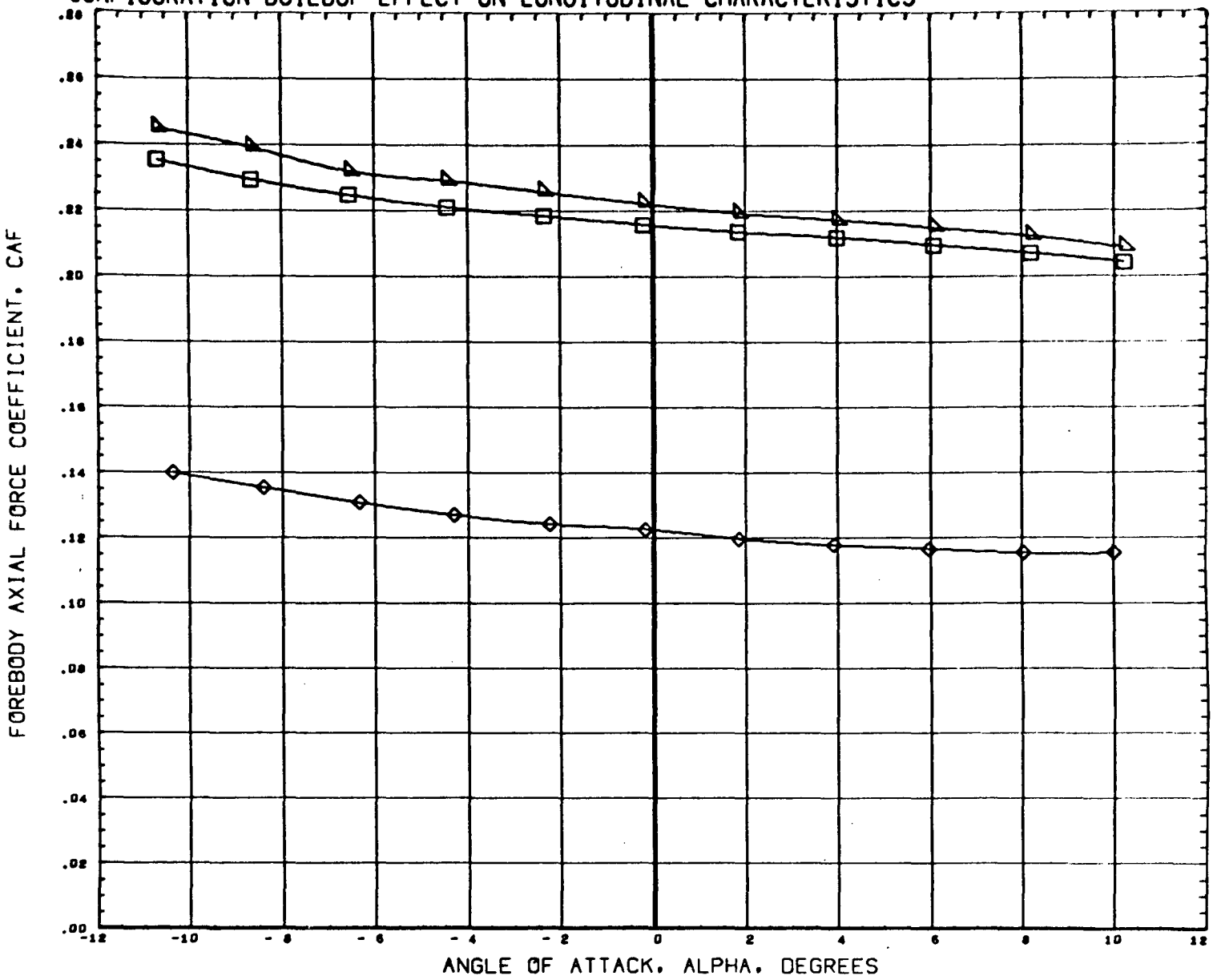
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		BETA	ORBIN
(B66001)	○	MSFC TWT 538 SHUTTLE LAUNCH	T1	0.000	
(B66002)	△	MSFC TWT 538 SHUTTLE LAUNCH	T1S1	0.000	
(B66004)	◇	DATA NOT AVAILABLE FOR ALL CONDITIONS		0.000	-1.500
(B66006)	□	MSFC TWT 538 SHUTTLE LAUNCH	T101S1	0.000	-1.500
(B66008)	◺	MSFC TWT 538 SHUTTLE LAUNCH	T101S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.96

CONFIGURATION BUILDUP EFFECT ON LONGITUDINAL CHARACTERISTICS



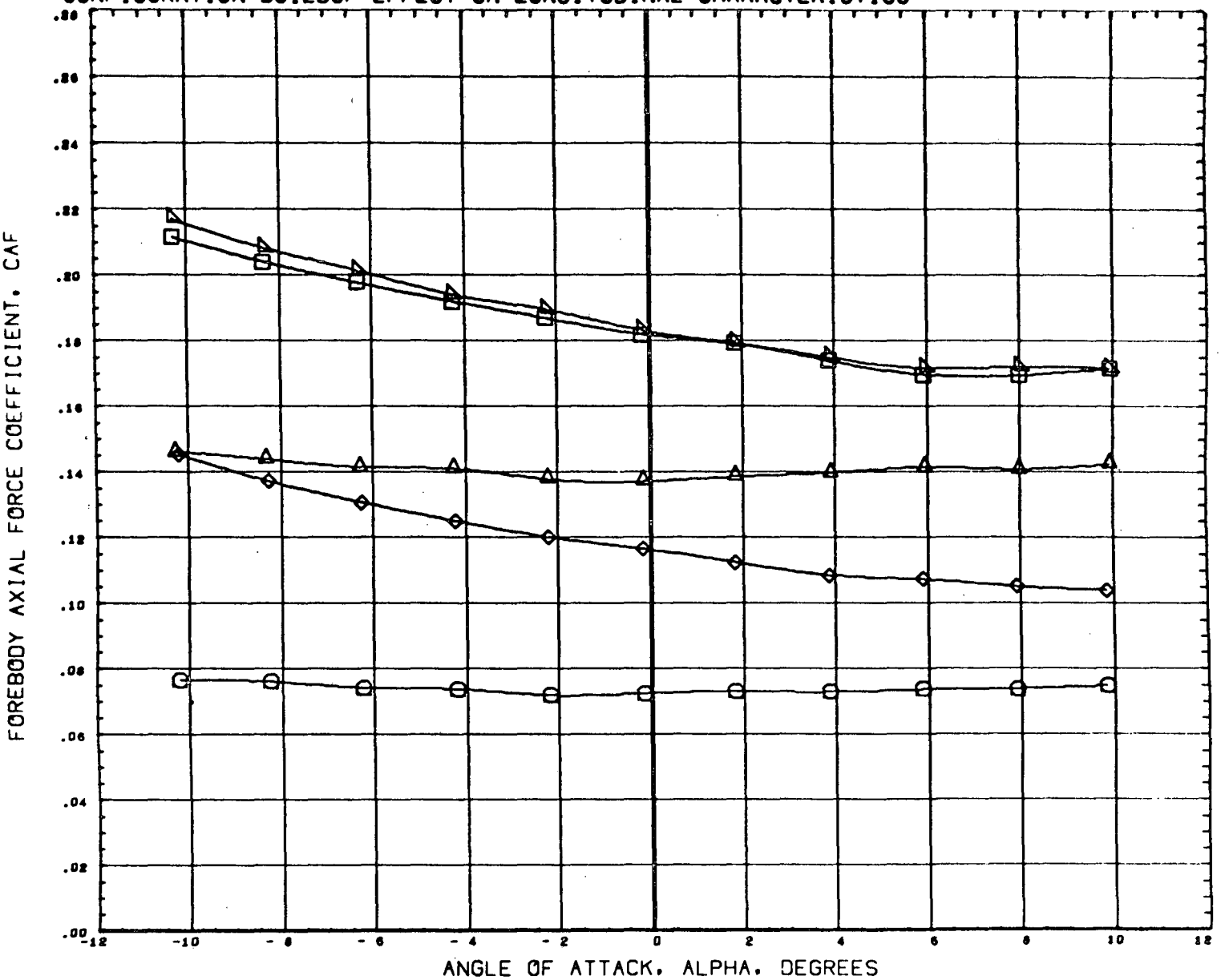
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ORBIN
(B66001)	○	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	
(B66002)	△	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	
(B66004)	◇	MSFC TWT 538 SHUTTLE LAUNCH T101	0.000	-1.500
(B66006)	□	MSFC TWT 538 SHUTTLE LAUNCH T101S1	0.000	-1.500
(B66008)	◺	MSFC TWT 538 SHUTTLE LAUNCH T101S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 2.74

CONFIGURATION BUILDUP EFFECT ON LONGITUDINAL CHARACTERISTICS

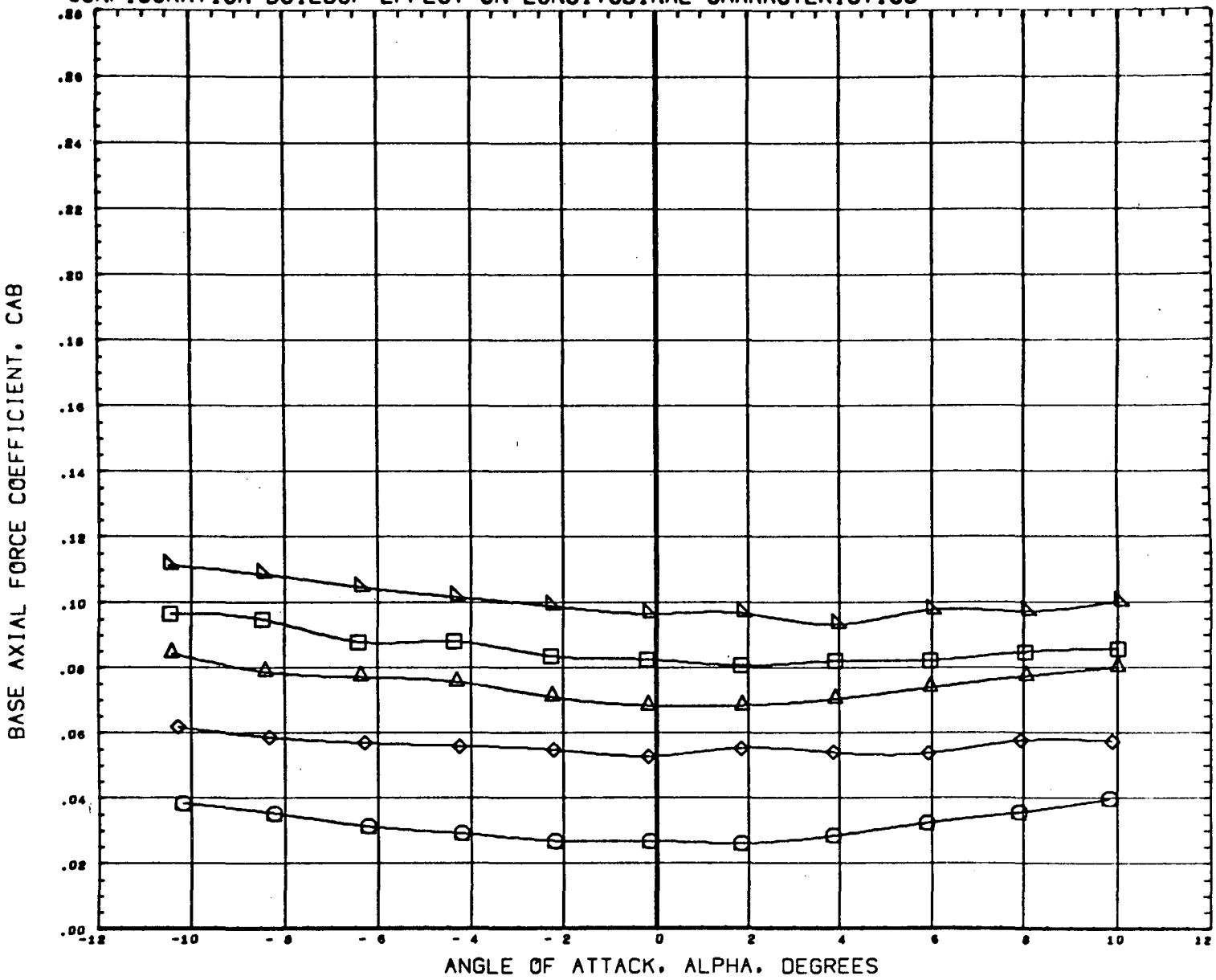


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66001)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1	0.000	
(B66002)	△	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(B66004)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T1O1	0.000	-1.500
(B66006)	□	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
(B66008)	◸	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1R1	0.000	-1.500

REFERENCE INFORMATION		
SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 4.96

CONFIGURATION BUILDUP EFFECT ON LONGITUDINAL CHARACTERISTICS



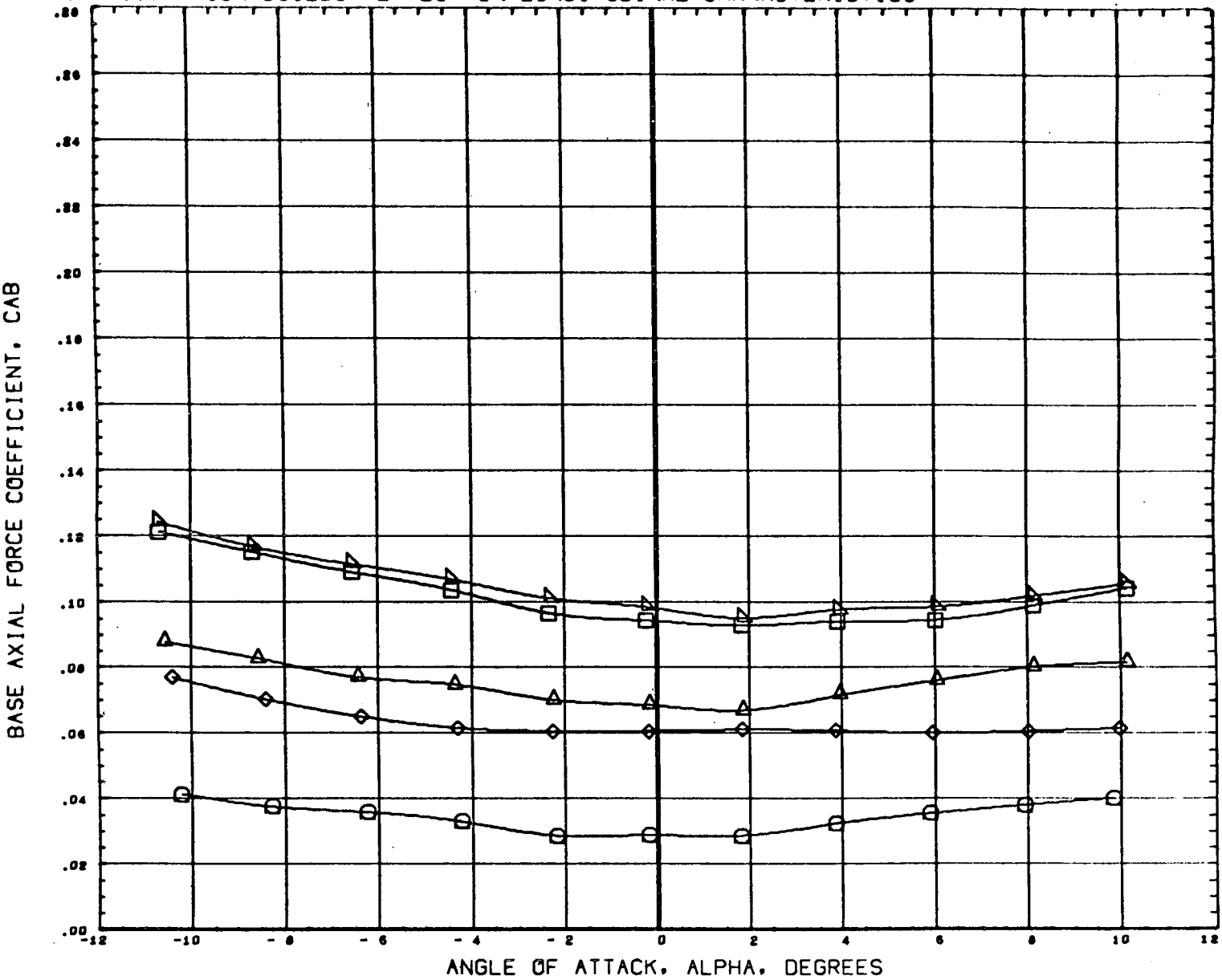
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(866001)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1	0.000	
(866002)	△	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(866004)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T1O1	0.000	-1.500
(866006)	□	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
(866008)	◺	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .60

CONFIGURATION BUILDUP EFFECT ON LONGITUDINAL CHARACTERISTICS



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66001)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1	0.000	
(B66002)	△	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(B66004)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T1O1	0.000	-1.500
(B66006)	□	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
(B66008)	◺	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1R1	0.000	-1.500

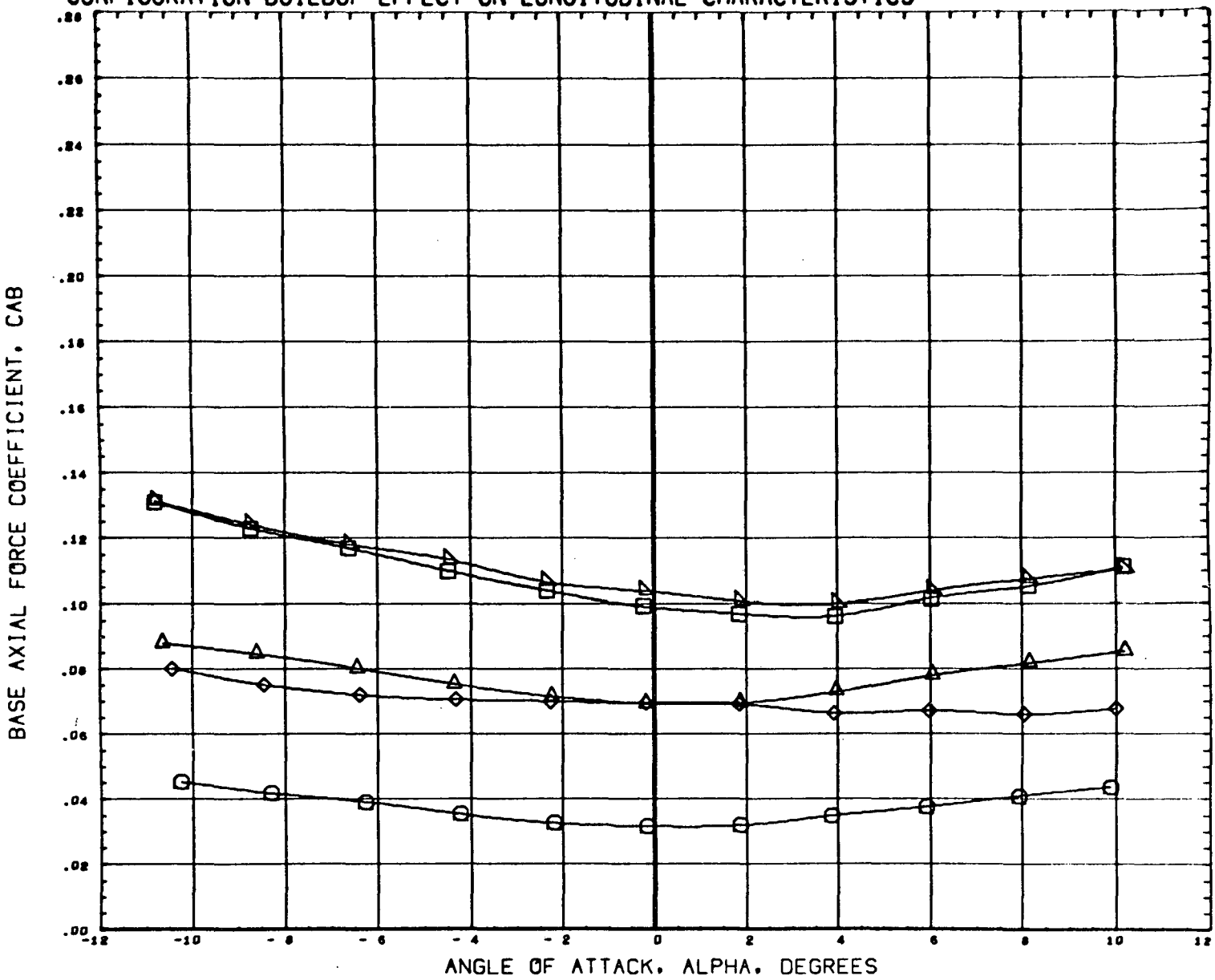
REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .80

C.2

CONFIGURATION BUILDUP EFFECT ON LONGITUDINAL CHARACTERISTICS



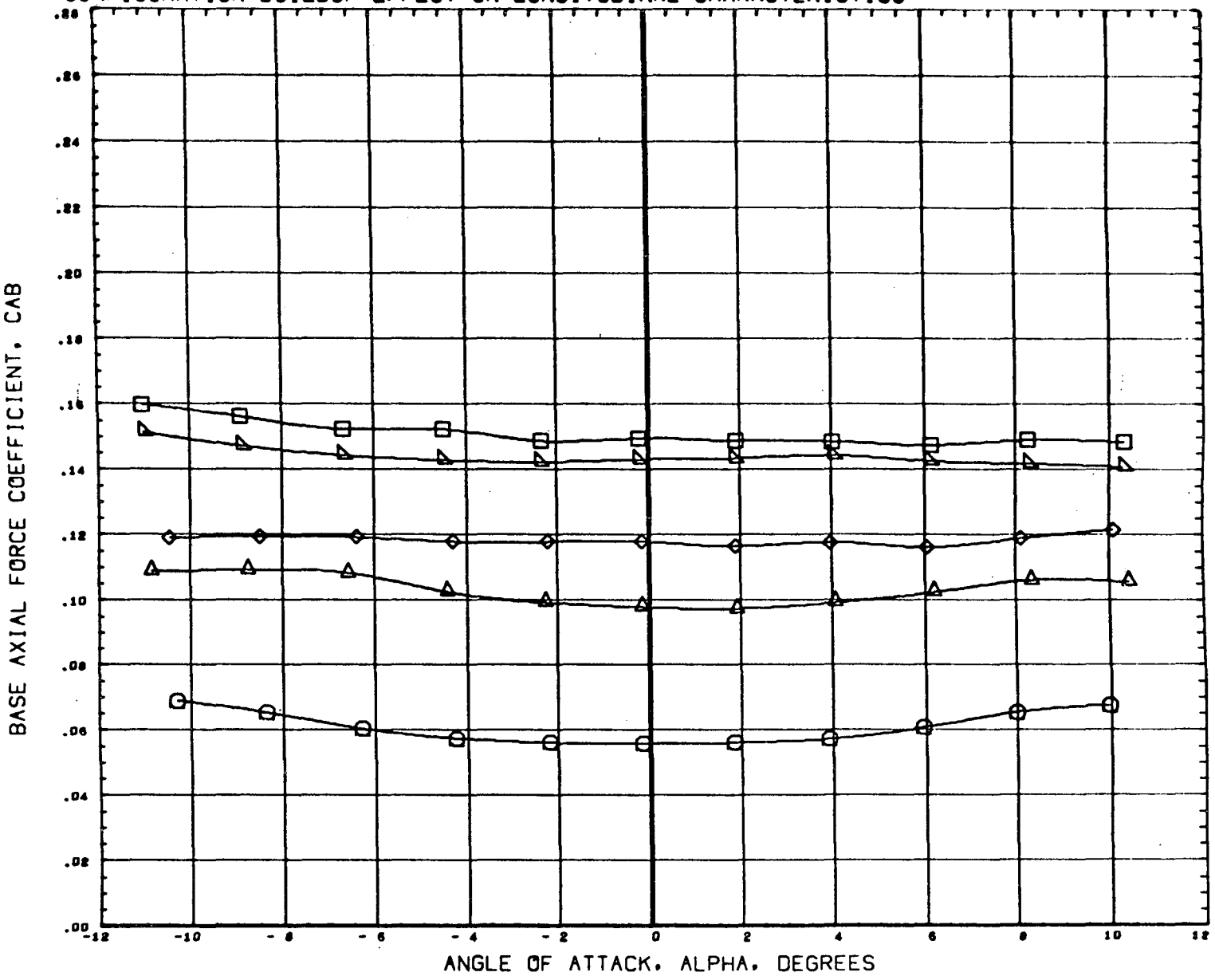
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66001)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1	0.000	
(B66002)	△	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(B66004)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T1O1	0.000	-1.500
(B66006)	□	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
(B66008)	◺	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .90

CONFIGURATION BUILDUP EFFECT ON LONGITUDINAL CHARACTERISTICS



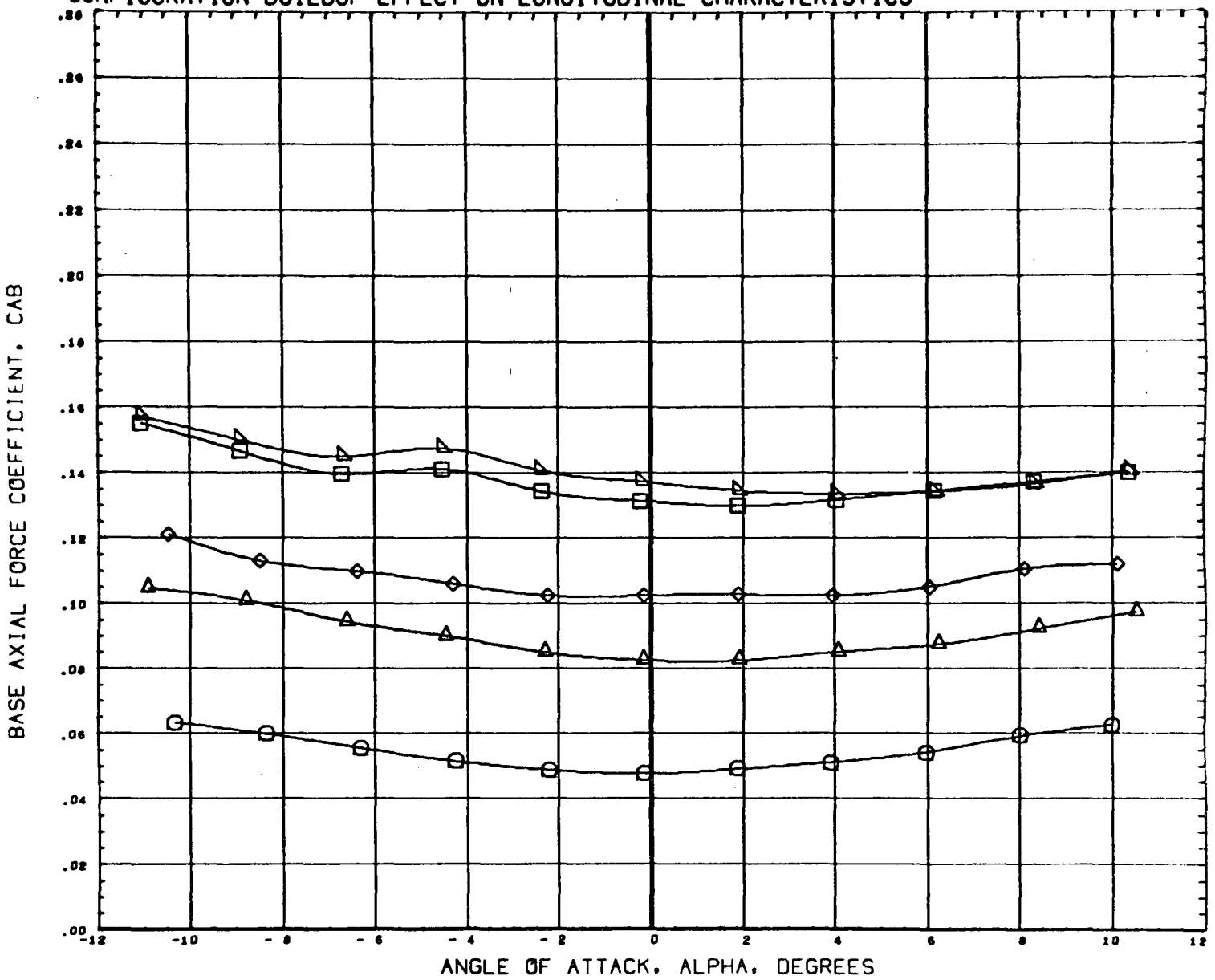
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66001)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1	0.000	
(B66002)	△	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(B66004)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T1O1	0.000	-1.500
(B66006)	□	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
(B66008)	◺	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.10

CONFIGURATION BUILDUP EFFECT ON LONGITUDINAL CHARACTERISTICS



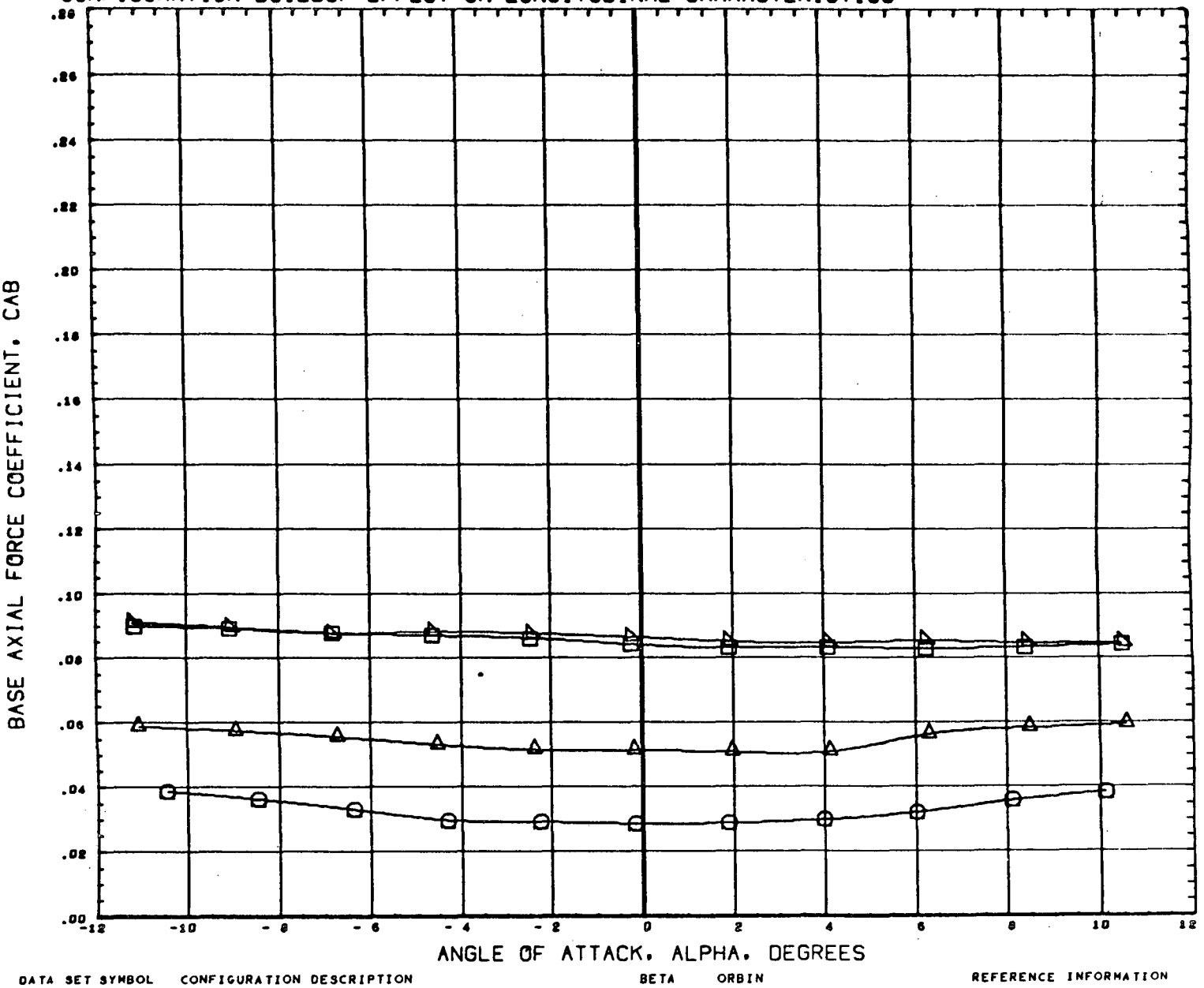
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66001)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1	0.000	
(B66002)	△	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(B66004)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T1O1	0.000	-1.500
(B66006)	□	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
(B66008)	◺	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.20

CONFIGURATION BUILDUP EFFECT ON LONGITUDINAL CHARACTERISTICS



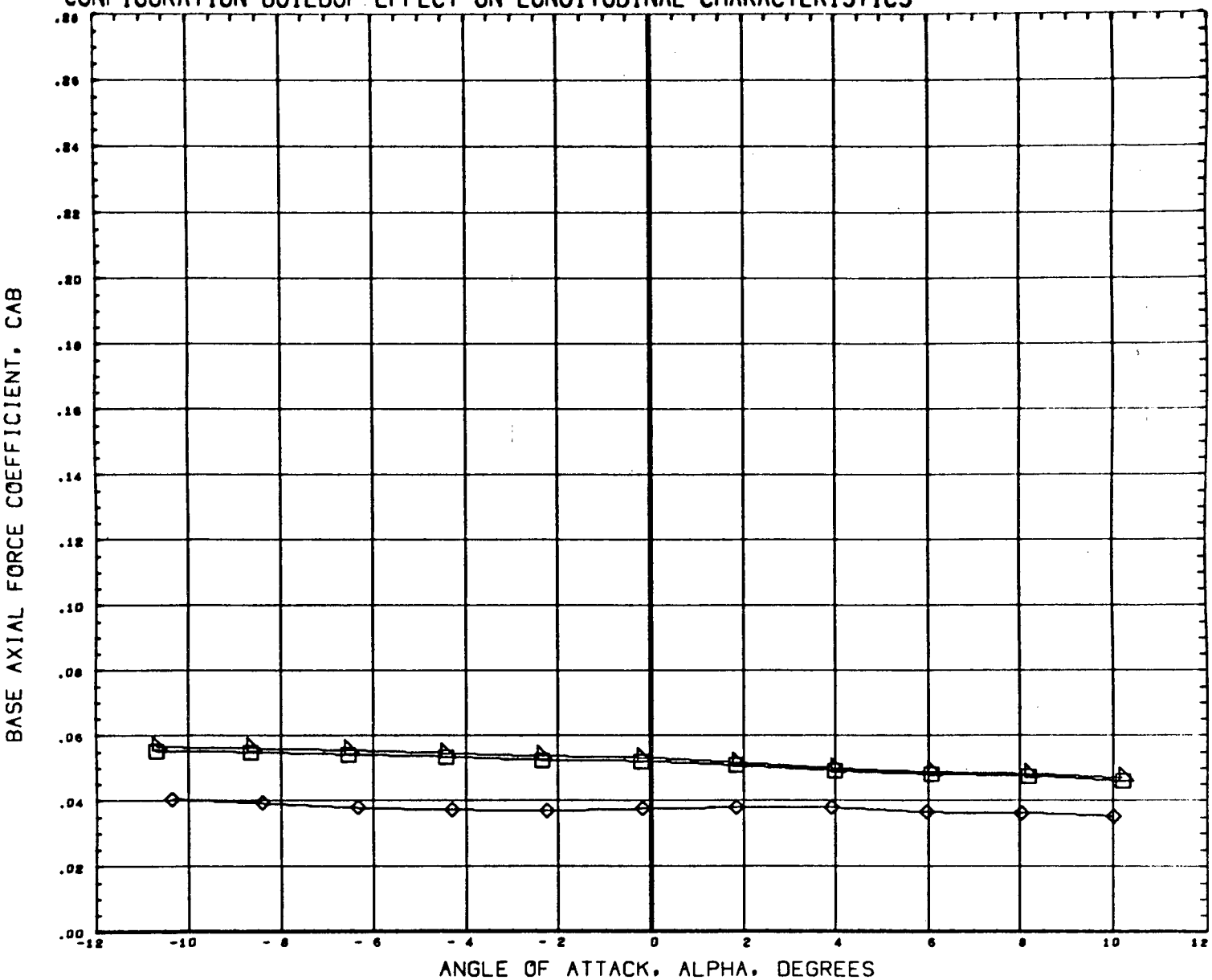
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(866001)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1	0.000	
(866002)	△	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(866004)	◇	DATA NOT AVAILABLE FOR ALL CONDITIONS			0.000	-1.500
(866006)	□	MSFC TWT 538	SHUTTLE LAUNCH	T101S1	0.000	-1.500
(866008)	◺	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP.	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.96

CONFIGURATION BUILDUP EFFECT ON LONGITUDINAL CHARACTERISTICS



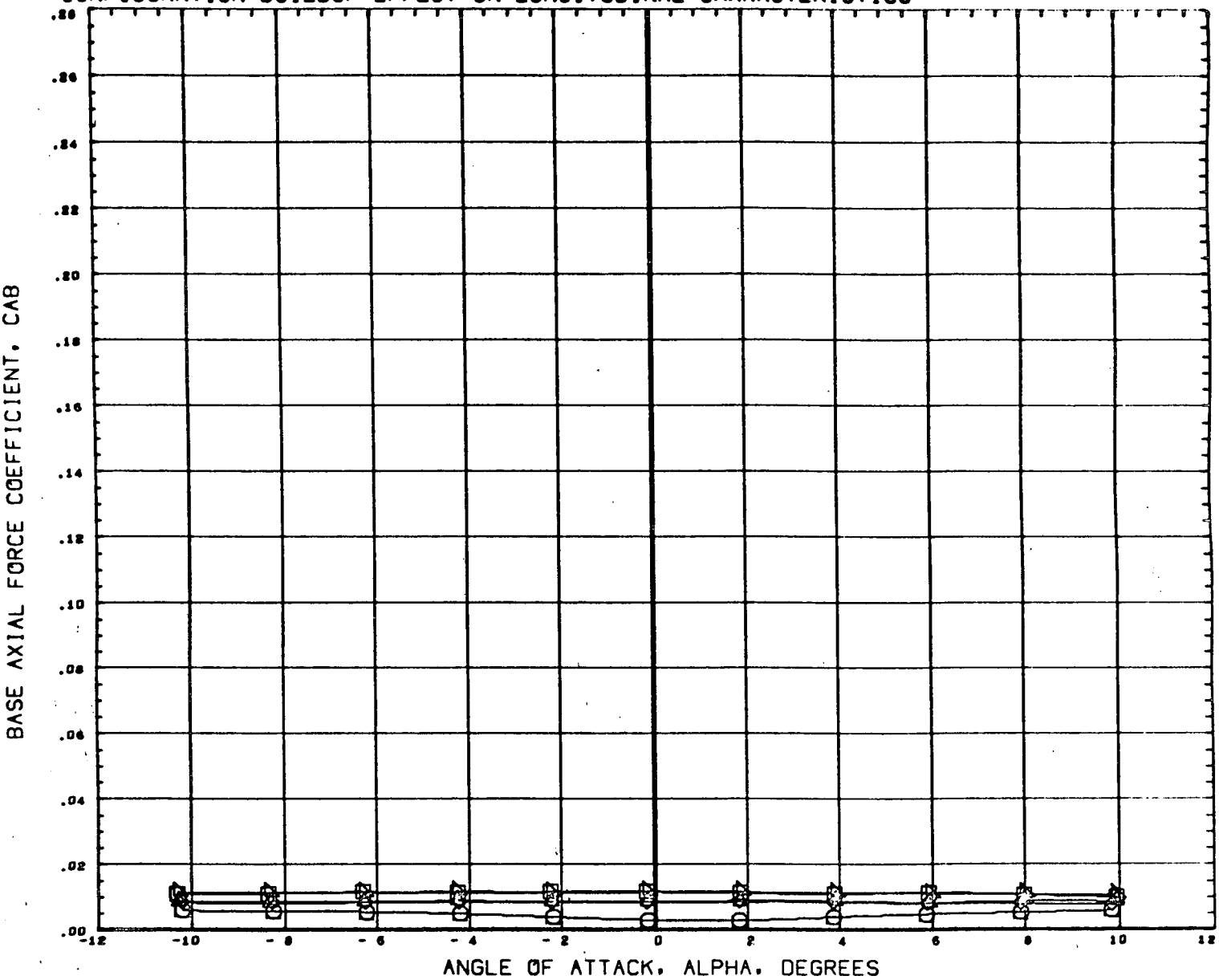
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66001)	○	DATA NOT AVAILABLE FOR ALL CONDITIONS			0.000	
(B66002)	△	DATA NOT AVAILABLE FOR ALL CONDITIONS			0.000	
(B66004)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101	0.000	-1.500
(B66006)	□	MSFC TWT 538	SHUTTLE LAUNCH	T101S1	0.000	-1.500
(B66008)	⊿	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 2.74

CONFIGURATION BUILDUP EFFECT ON LONGITUDINAL CHARACTERISTICS



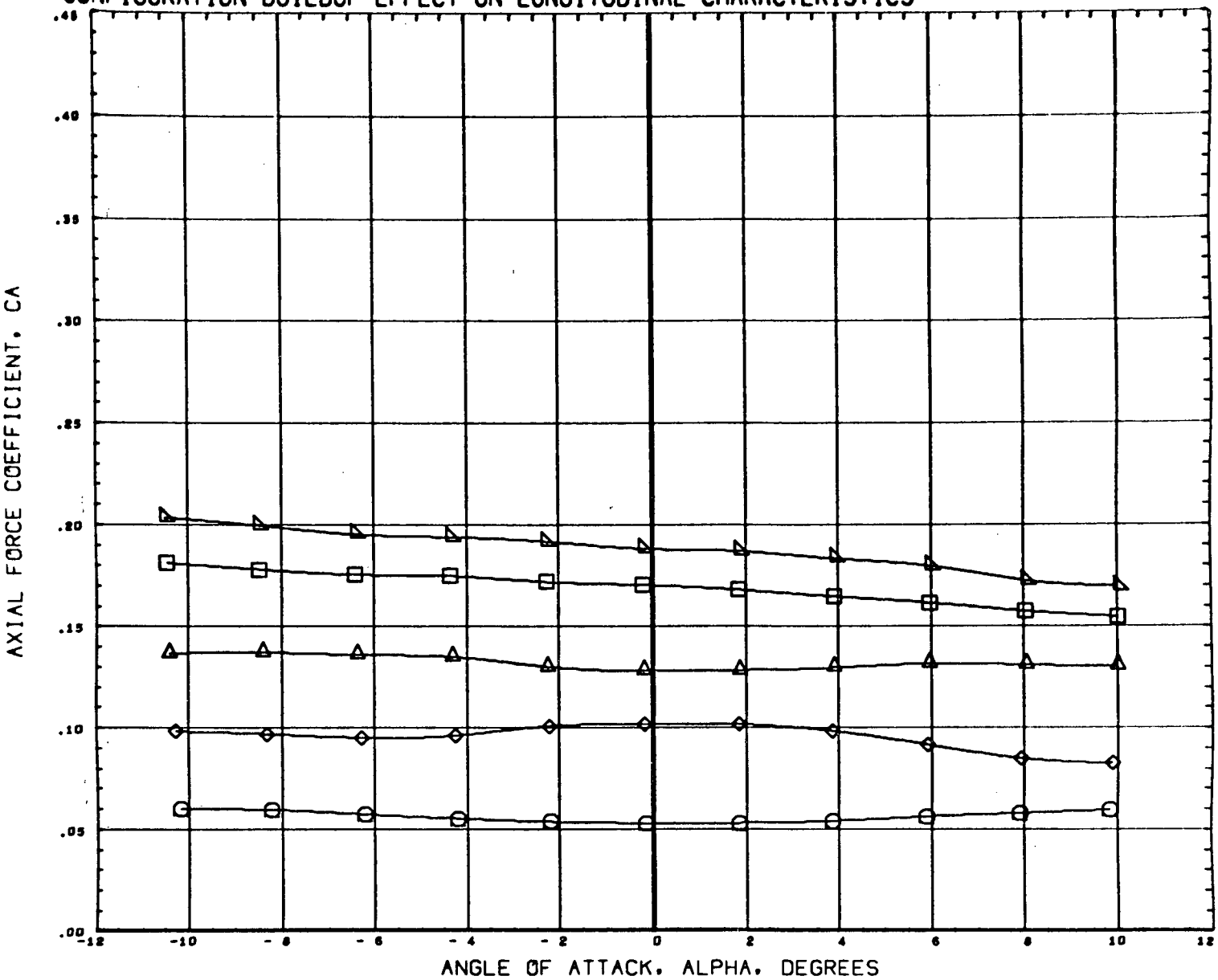
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66001)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1	0.000	
(B66002)	△	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(B66004)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T1O1	0.000	-1.500
(B66006)	□	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
(B66008)	◺	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 4.96

CONFIGURATION BUILDUP EFFECT ON LONGITUDINAL CHARACTERISTICS



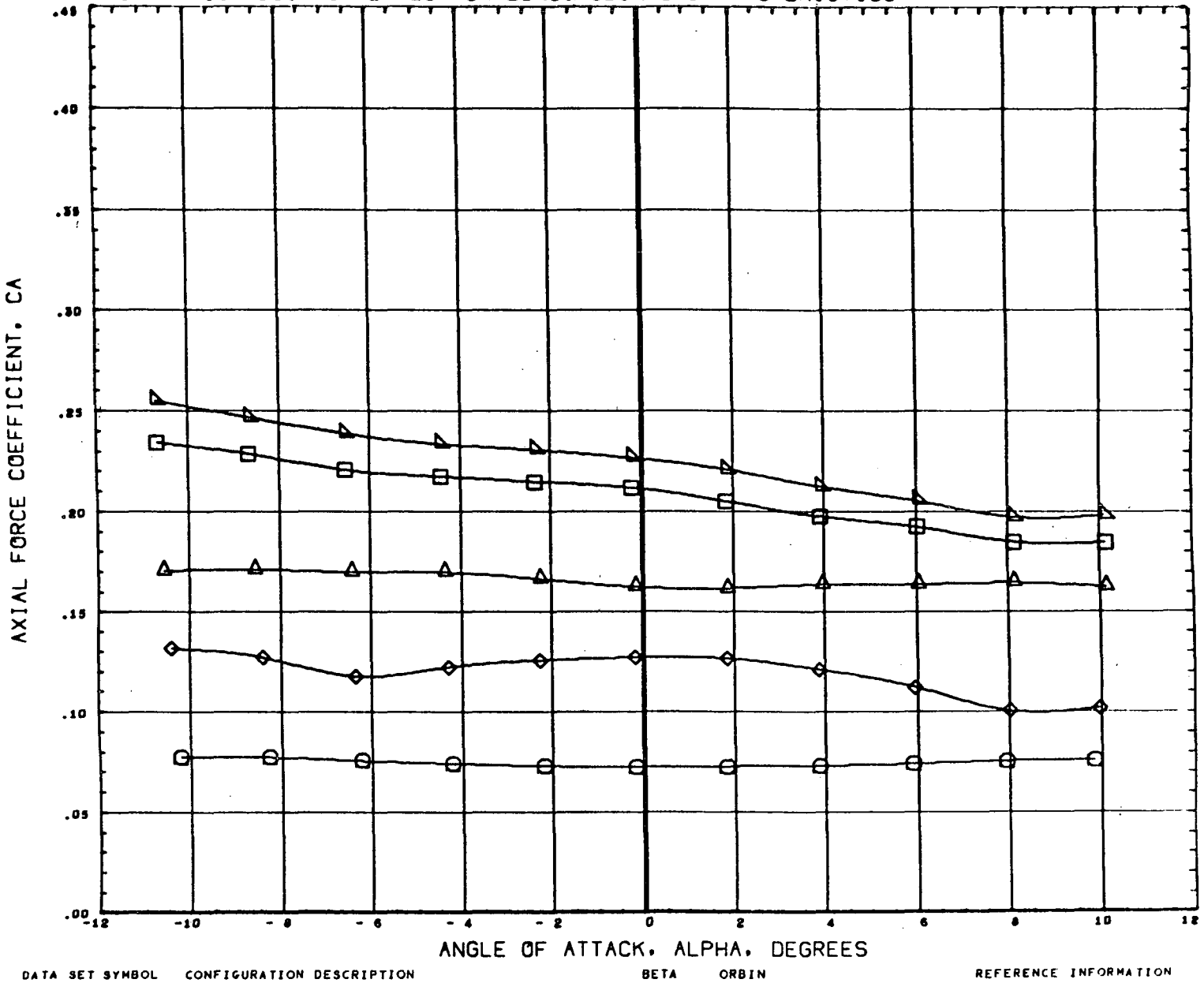
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66001)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1	0.000	
(B66002)	△	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(B66004)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T1O1	0.000	-1.500
(B66006)	□	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
(B66008)	⊘	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .60

CONFIGURATION BUILDUP EFFECT ON LONGITUDINAL CHARACTERISTICS



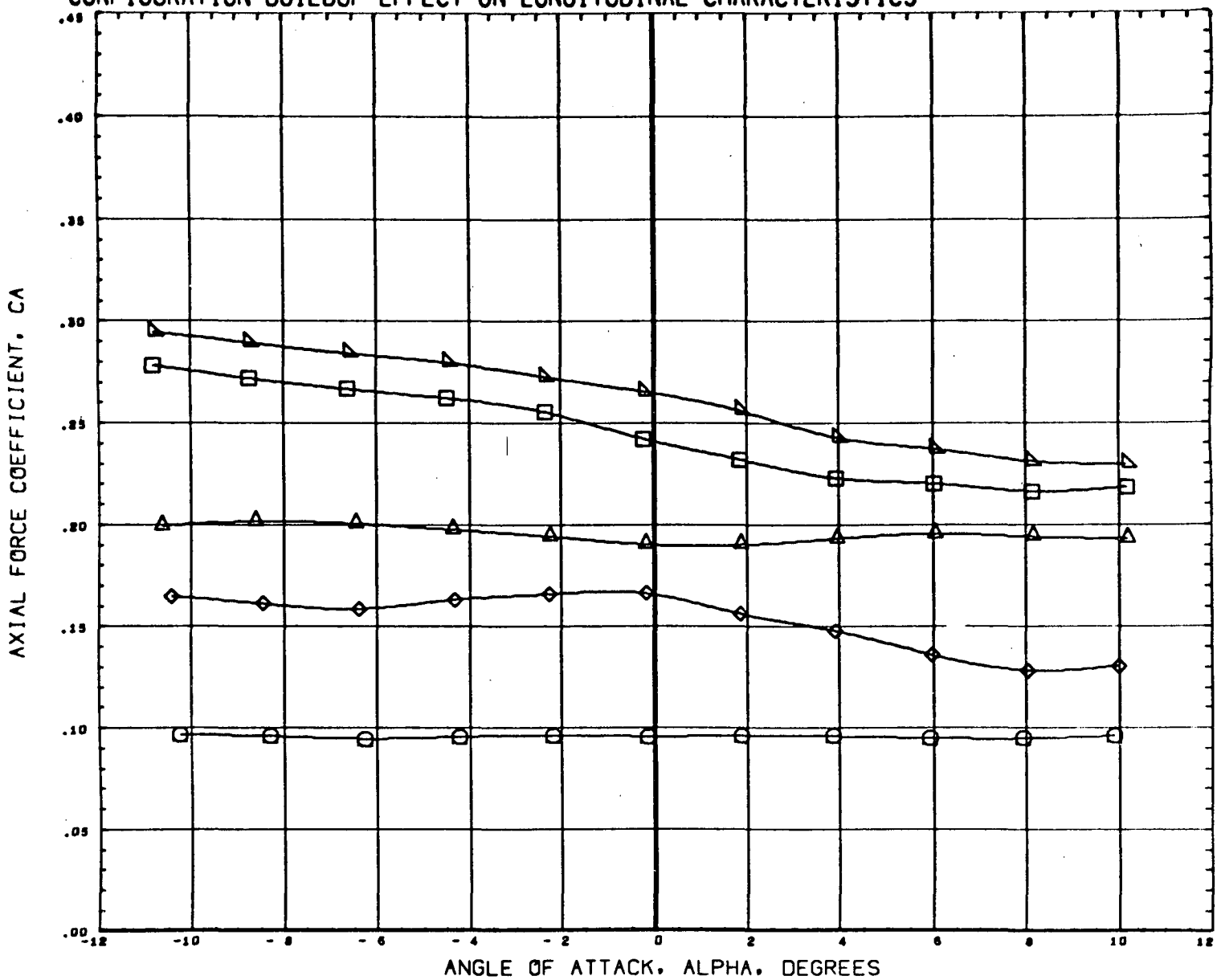
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66001)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1	0.000	
(B66002)	△	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(B66004)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T1O1	0.000	-1.500
(B66006)	□	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
(B66008)	◺	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .80

CONFIGURATION BUILDUP EFFECT ON LONGITUDINAL CHARACTERISTICS



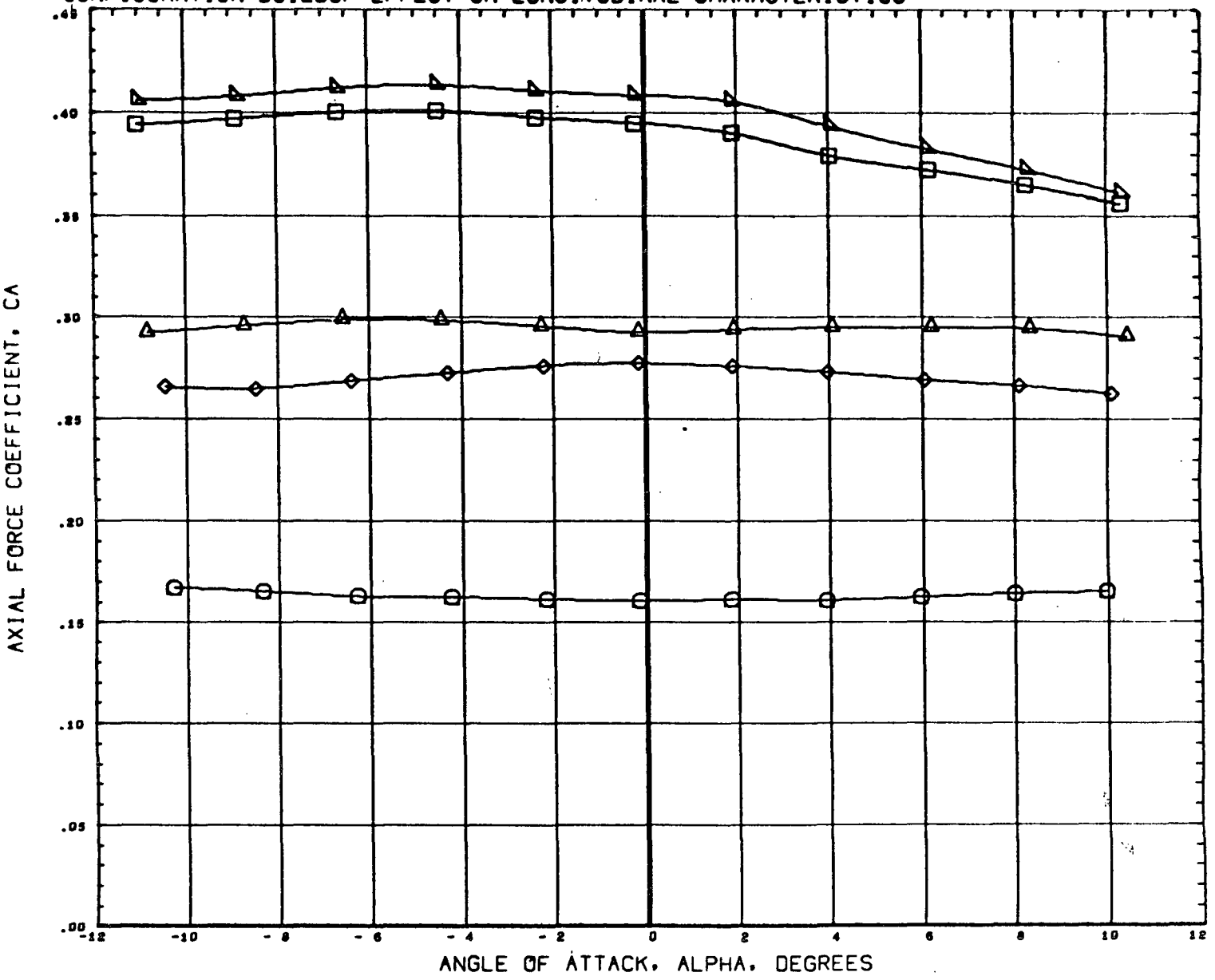
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66001)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1	0.000	
(B66002)	△	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(B66004)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T1O1	0.000	-1.500
(B66006)	□	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
(B66008)	◺	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .90

CONFIGURATION BUILDUP EFFECT ON LONGITUDINAL CHARACTERISTICS

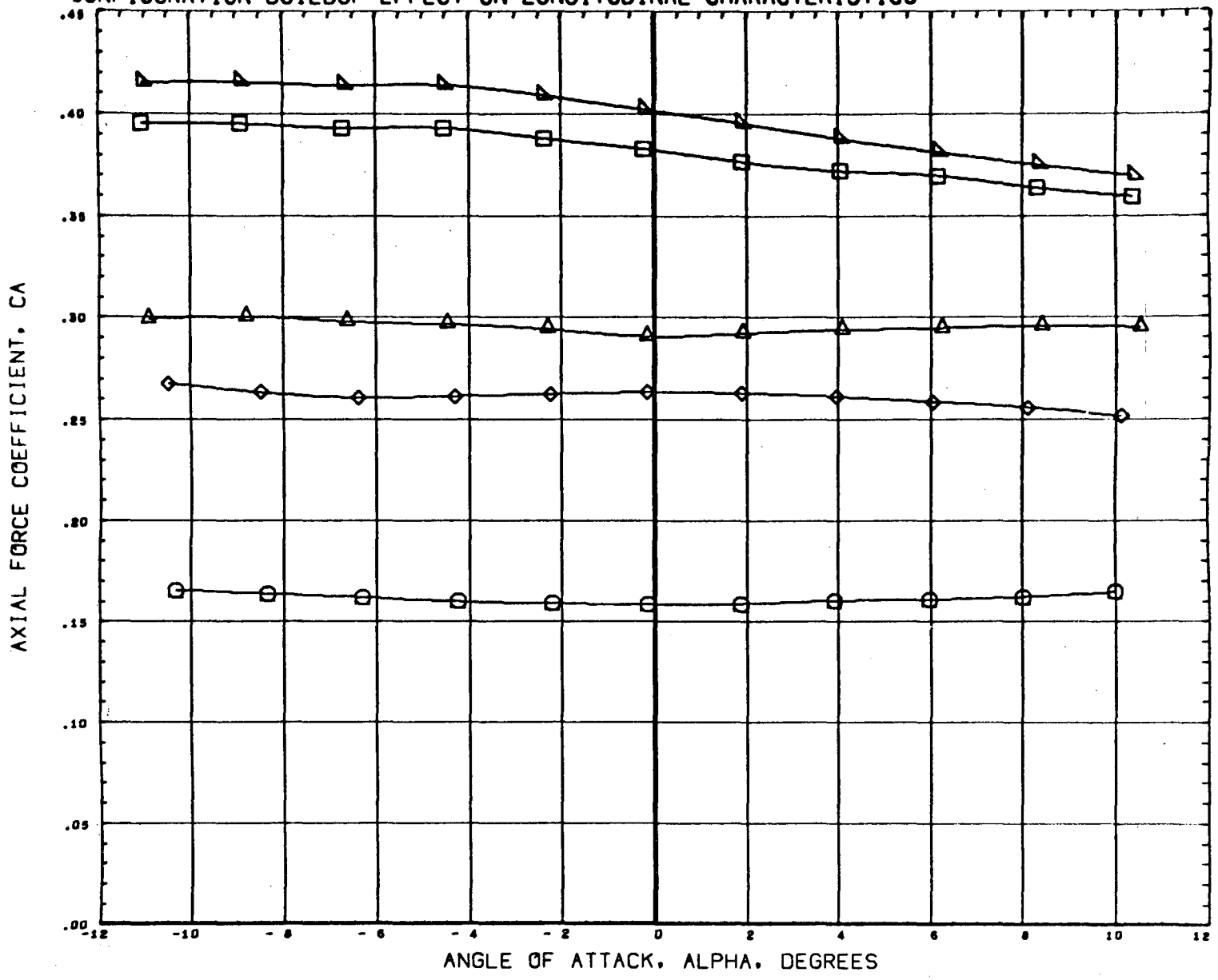


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66001)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1	0.000	
(B66002)	△	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(B66004)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T1O1	0.000	-1.500
(B66006)	□	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
(B66008)	⊿	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1R1	0.000	-1.500

REFERENCE INFORMATION		
SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.10

CONFIGURATION BUILDUP EFFECT ON LONGITUDINAL CHARACTERISTICS



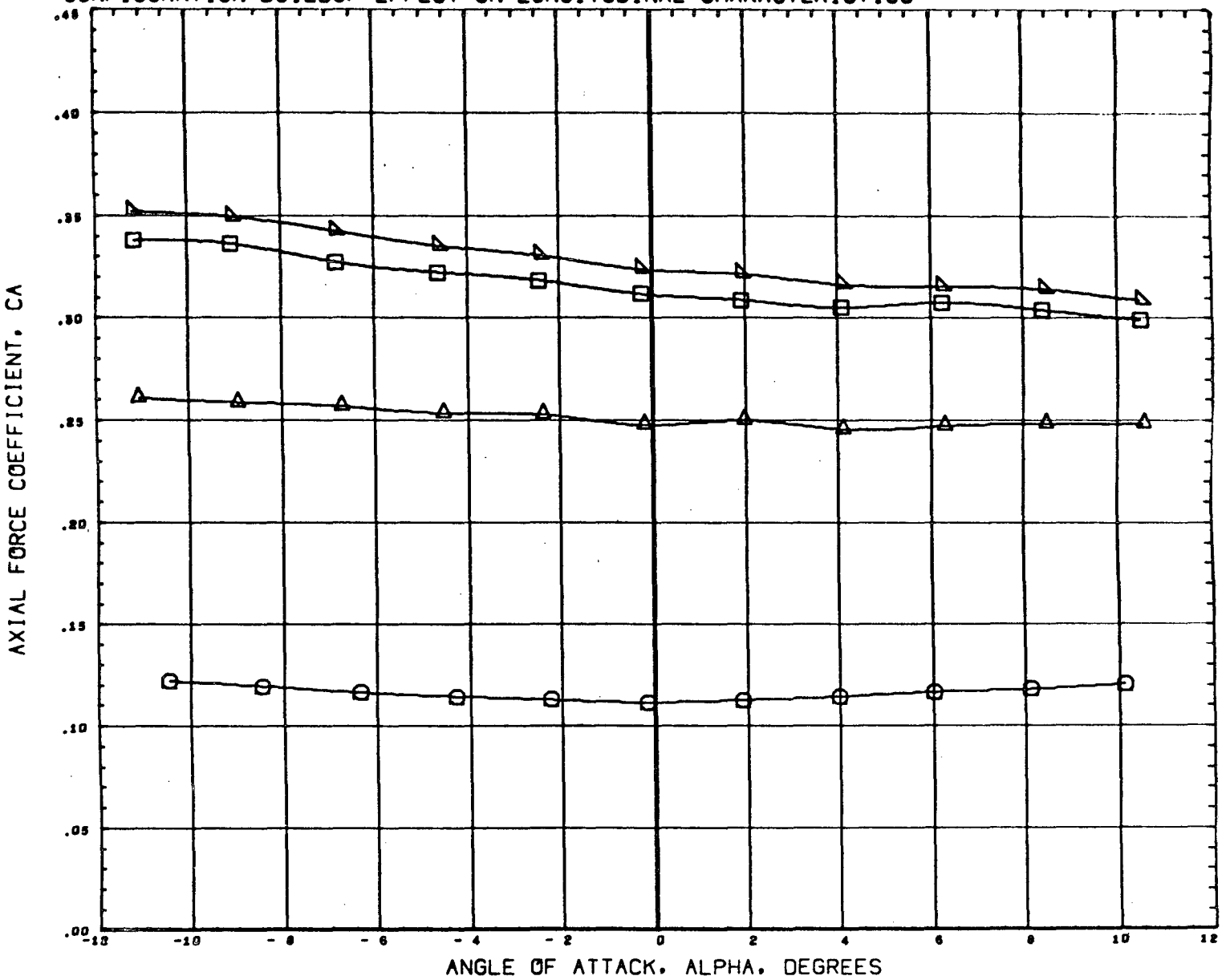
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66001)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1	0.000	
(B66002)	△	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(B66004)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T1O1	0.000	-1.500
(B66006)	□	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
(B66008)	◺	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.20

CONFIGURATION BUILDUP EFFECT ON LONGITUDINAL CHARACTERISTICS



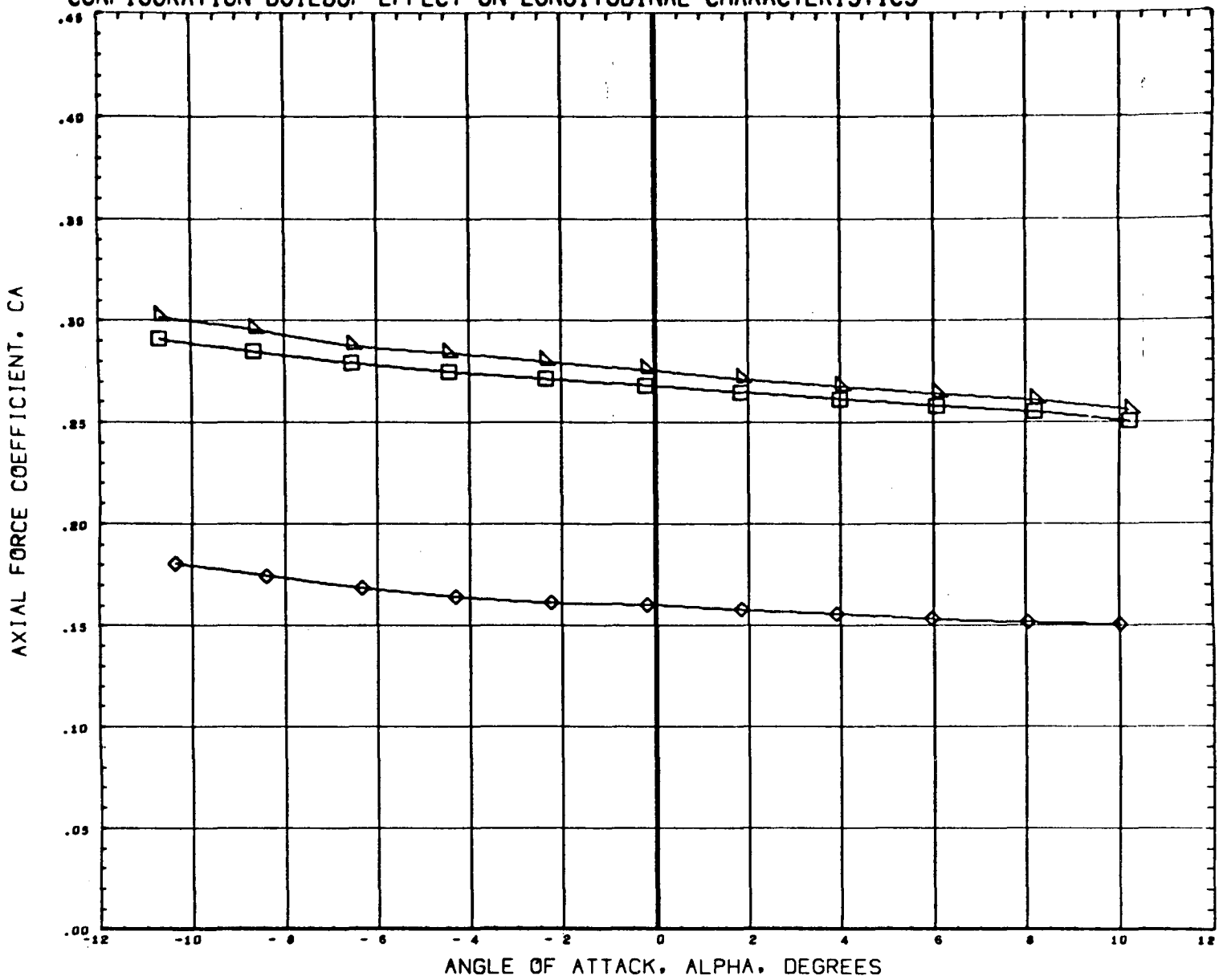
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66001)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1	0.000	
(B66002)	△	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(B66004)	◇	DATA NOT AVAILABLE FOR ALL CONDITIONS			0.000	-1.500
(B66006)	□	MSFC TWT 538	SHUTTLE LAUNCH	T101S1	0.000	-1.500
(B66008)	◪	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.96

CONFIGURATION BUILDUP EFFECT ON LONGITUDINAL CHARACTERISTICS



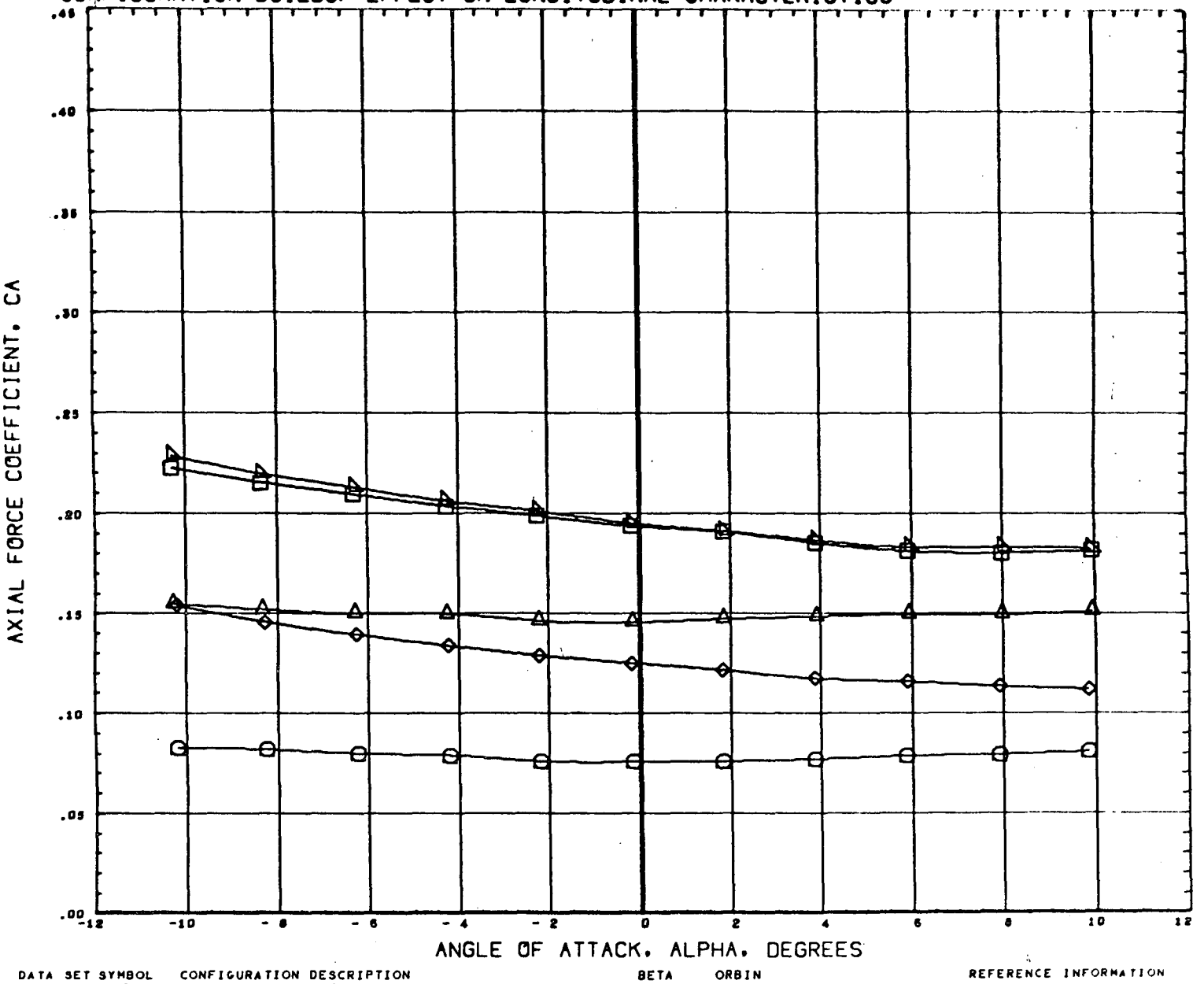
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ORBIN
(B66001)	○	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	
(B66002)	△	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	
(B66004)	◇	MSFC TWT 538 SHUTTLE LAUNCH T101	0.000	-1.500
(B66006)	□	MSFC TWT 538 SHUTTLE LAUNCH T101S1	0.000	-1.500
(B66008)	◺	MSFC TWT 538 SHUTTLE LAUNCH T101S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 2.74

CONFIGURATION BUILDUP EFFECT ON LONGITUDINAL CHARACTERISTICS



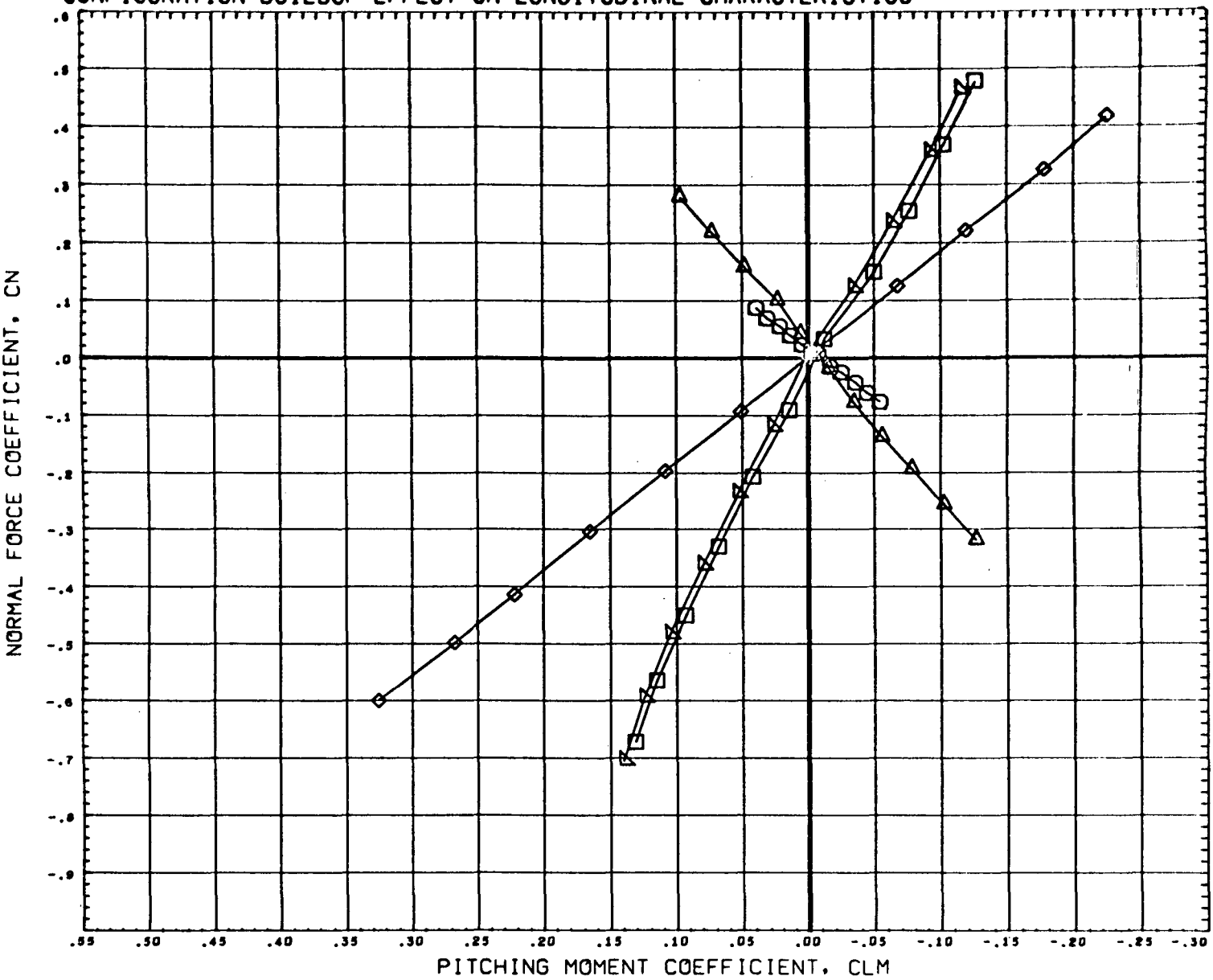
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66001)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1	0.000	
(B66002)	△	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(B66004)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T1O1	0.000	-1.500
(B66006)	□	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
(B66008)	◺	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 4.96

CONFIGURATION BUILDUP EFFECT ON LONGITUDINAL CHARACTERISTICS



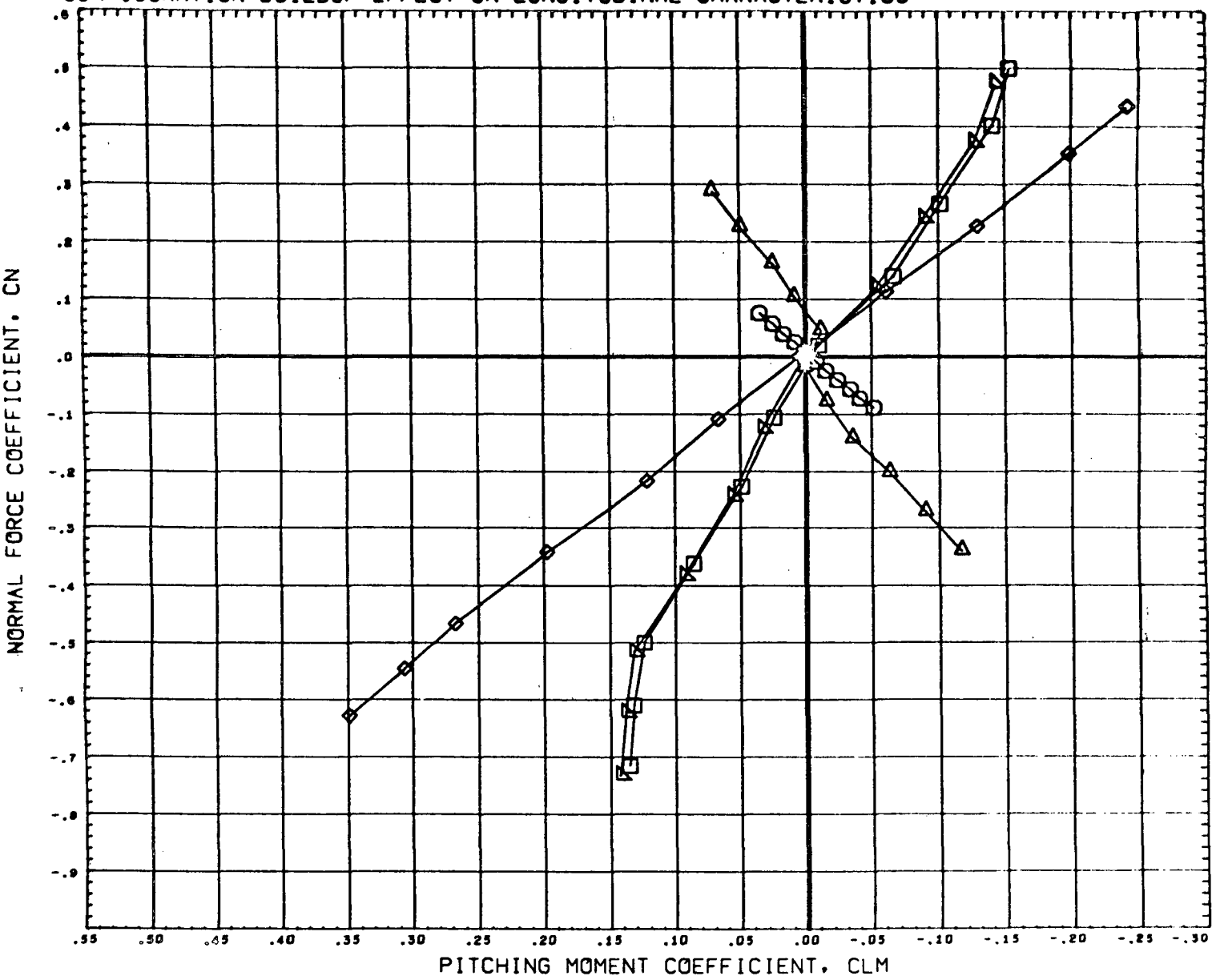
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66001)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1	0.000	
(B66002)	△	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(B66004)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T1O1	0.000	-1.500
(B66006)	□	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
(B66008)	◺	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .60

CONFIGURATION BUILDUP EFFECT ON LONGITUDINAL CHARACTERISTICS



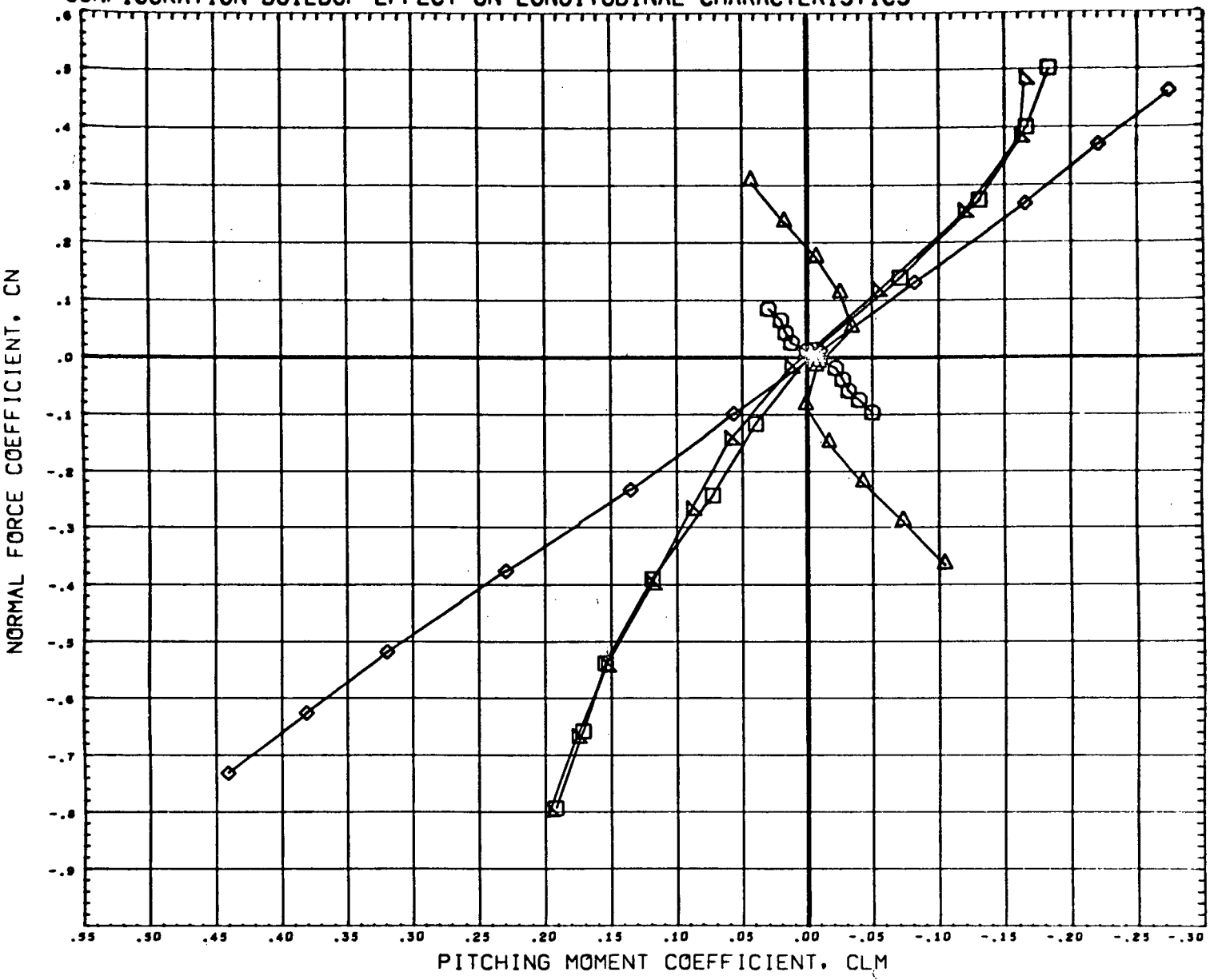
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66001)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1	0.000	
(B66002)	△	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(B66004)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T1O1	0.000	-1.500
(B66006)	□	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
(B66008)	◺	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .80

CONFIGURATION BUILDUP EFFECT ON LONGITUDINAL CHARACTERISTICS

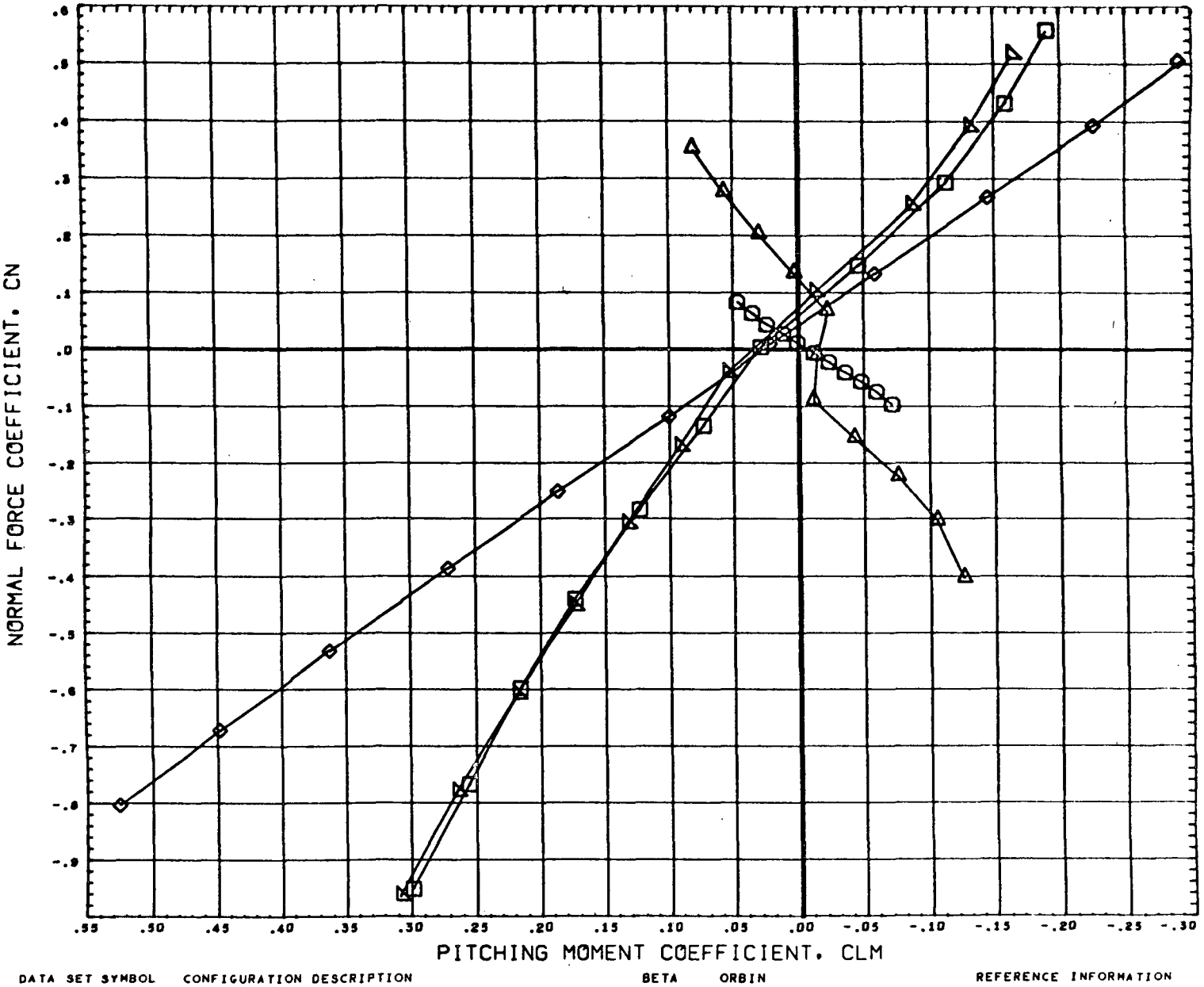


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66001)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1	0.000	
(B66002)	△	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(B66004)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T1O1	0.000	-1.500
(B66006)	□	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
(B66008)	◁	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1R1	0.000	-1.500

REFERENCE INFORMATION		
SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .90

CONFIGURATION BUILDUP EFFECT ON LONGITUDINAL CHARACTERISTICS



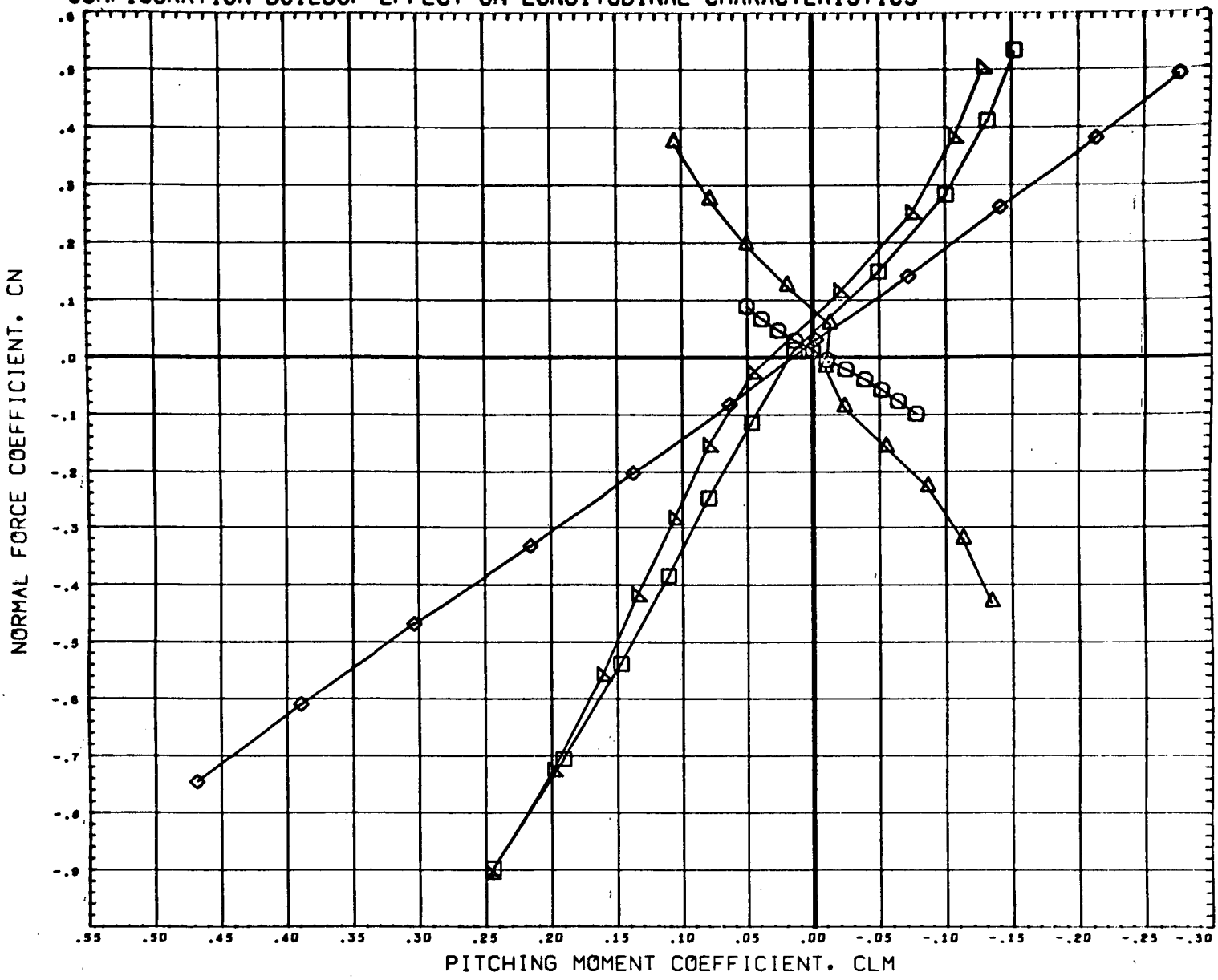
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66001)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1	0.000	
(B66002)	△	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(B66004)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T1O1	0.000	-1.500
(B66006)	□	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
(B66008)	◺	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.10

CONFIGURATION BUILDUP EFFECT ON LONGITUDINAL CHARACTERISTICS



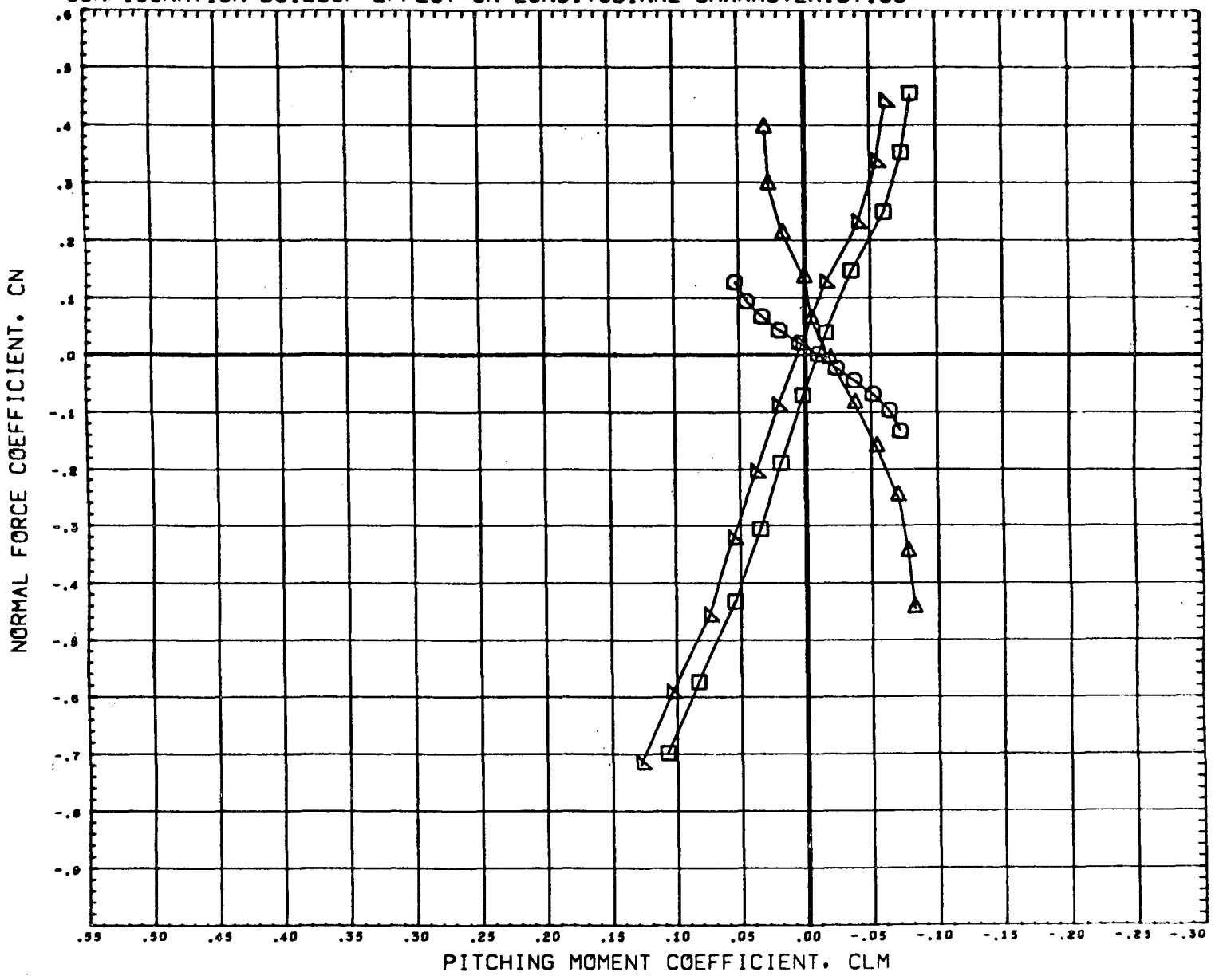
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66001)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1	0.000	
(B66002)	△	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(B66004)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T1O1	0.000	-1.500
(B66006)	□	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
(B66008)	◺	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.20

CONFIGURATION BUILDUP EFFECT ON LONGITUDINAL CHARACTERISTICS



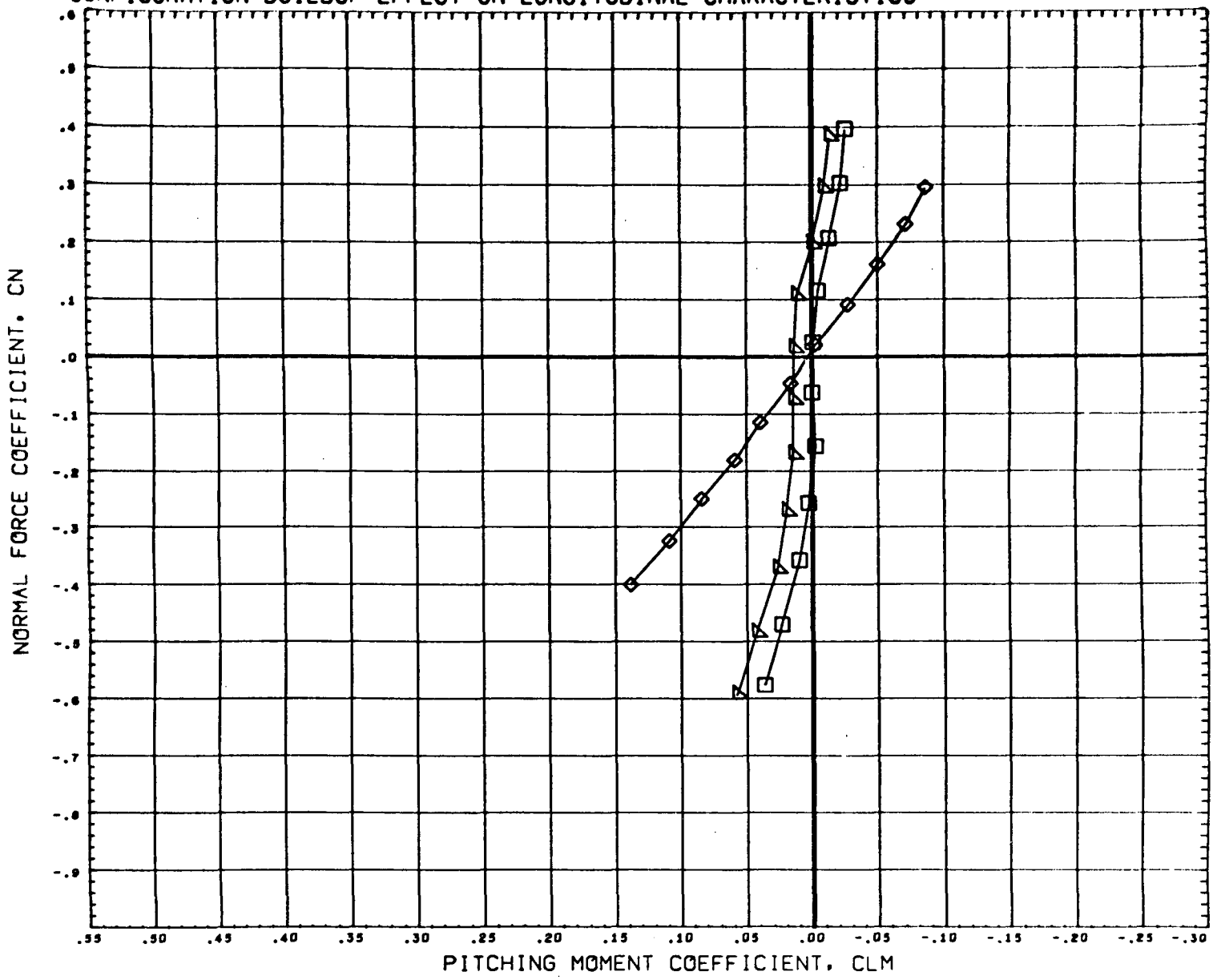
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		BETA	ORBIN
(B66001)	○	MSFC TWT 538 SHUTTLE LAUNCH	T1	0.000	
(B66002)	△	MSFC TWT 538 SHUTTLE LAUNCH	T1S1	0.000	
(B66004)	◇	DATA NOT AVAILABLE FOR ALL CONDITIONS		0.000	-1.500
(B66006)	□	MSFC TWT 538 SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
(B66008)	◺	MSFC TWT 538 SHUTTLE LAUNCH	T1O1S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.96

CONFIGURATION BUILDUP EFFECT ON LONGITUDINAL CHARACTERISTICS



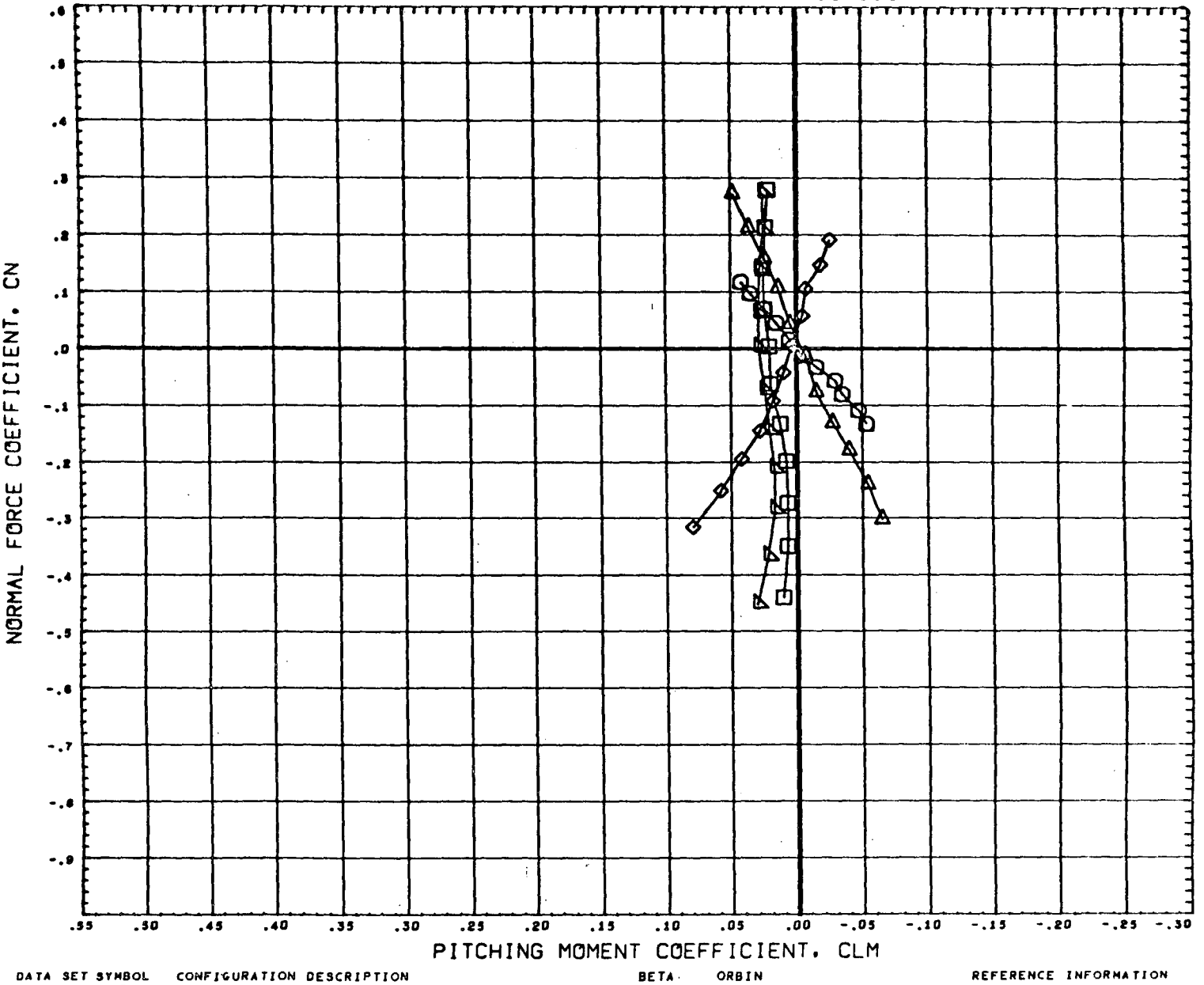
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(866001)	○	DATA NOT AVAILABLE FOR ALL CONDITIONS			0.000	
(866002)	△	DATA NOT AVAILABLE FOR ALL CONDITIONS			0.000	
(866004)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101	0.000	-1.500
(866006)	□	MSFC TWT 538	SHUTTLE LAUNCH	T101S1	0.000	-1.500
(866008)	◺	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 2.74

CONFIGURATION BUILDUP EFFECT ON LONGITUDINAL CHARACTERISTICS

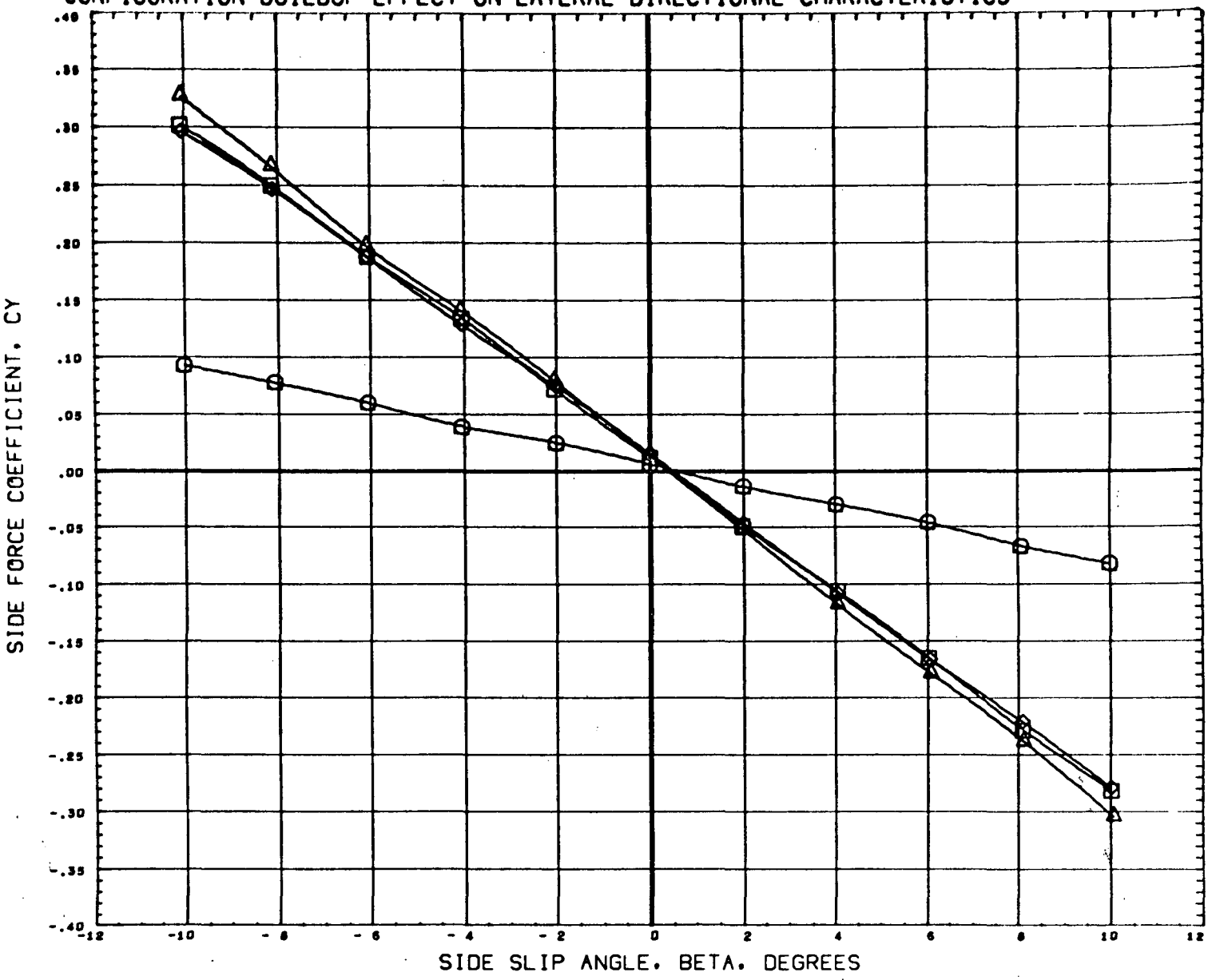


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66001)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1	0.000	
(B66002)	△	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(B66004)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T1O1	0.000	-1.500
(B66006)	□	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
(B66008)	⊿	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1R1	0.000	-1.500

REFERENCE INFORMATION		
SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2460	IN.
SCALE	0.0040	

MACH 4.96

CONFIGURATION BUILDUP EFFECT ON LATERAL DIRECTIONAL CHARACTERISTICS



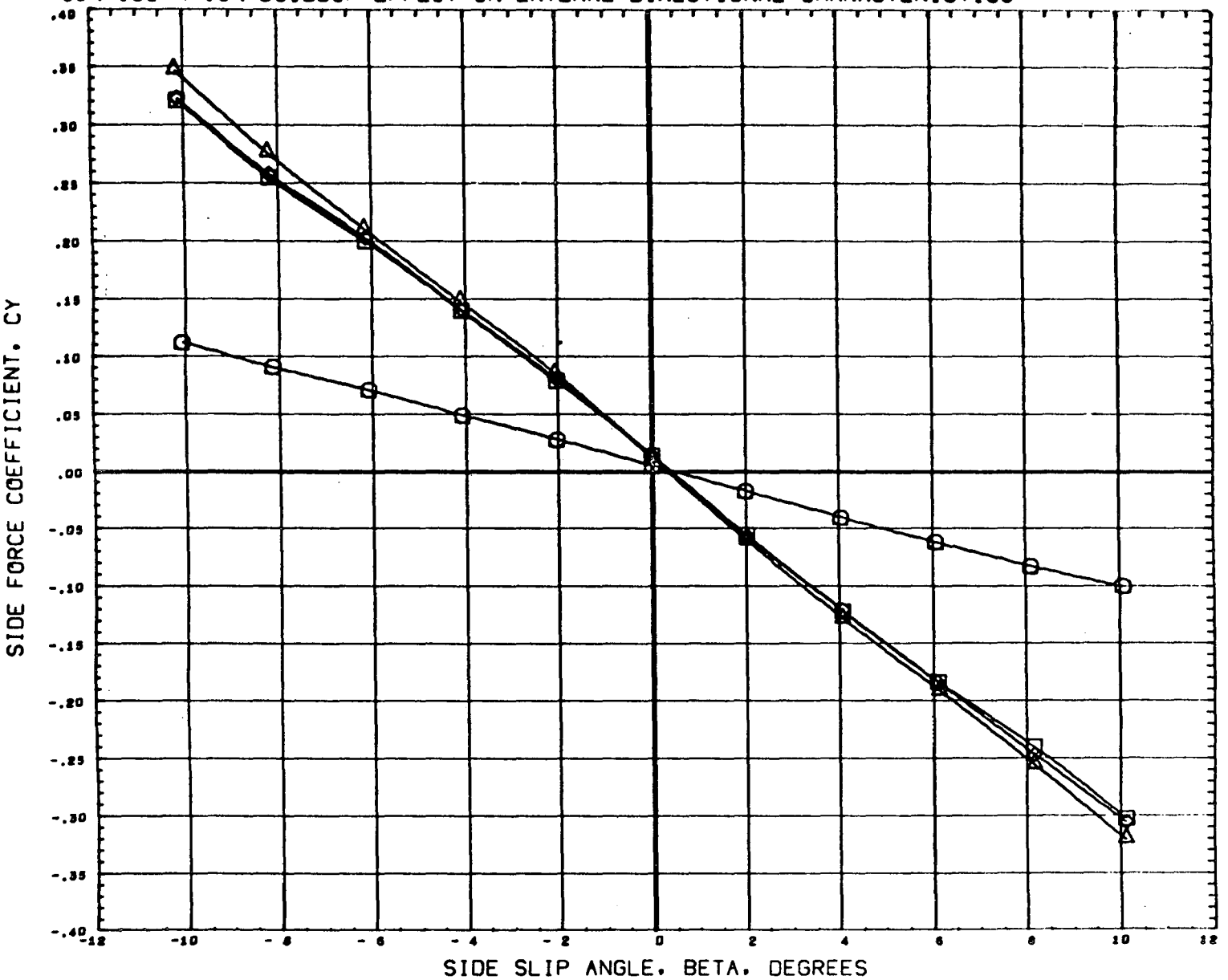
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66003)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(A66005)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101	0.000	-1.500
(A66007)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1	0.000	-1.500
(T66009)	□	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .60

CONFIGURATION BUILDUP EFFECT ON LATERAL DIRECTIONAL CHARACTERISTICS



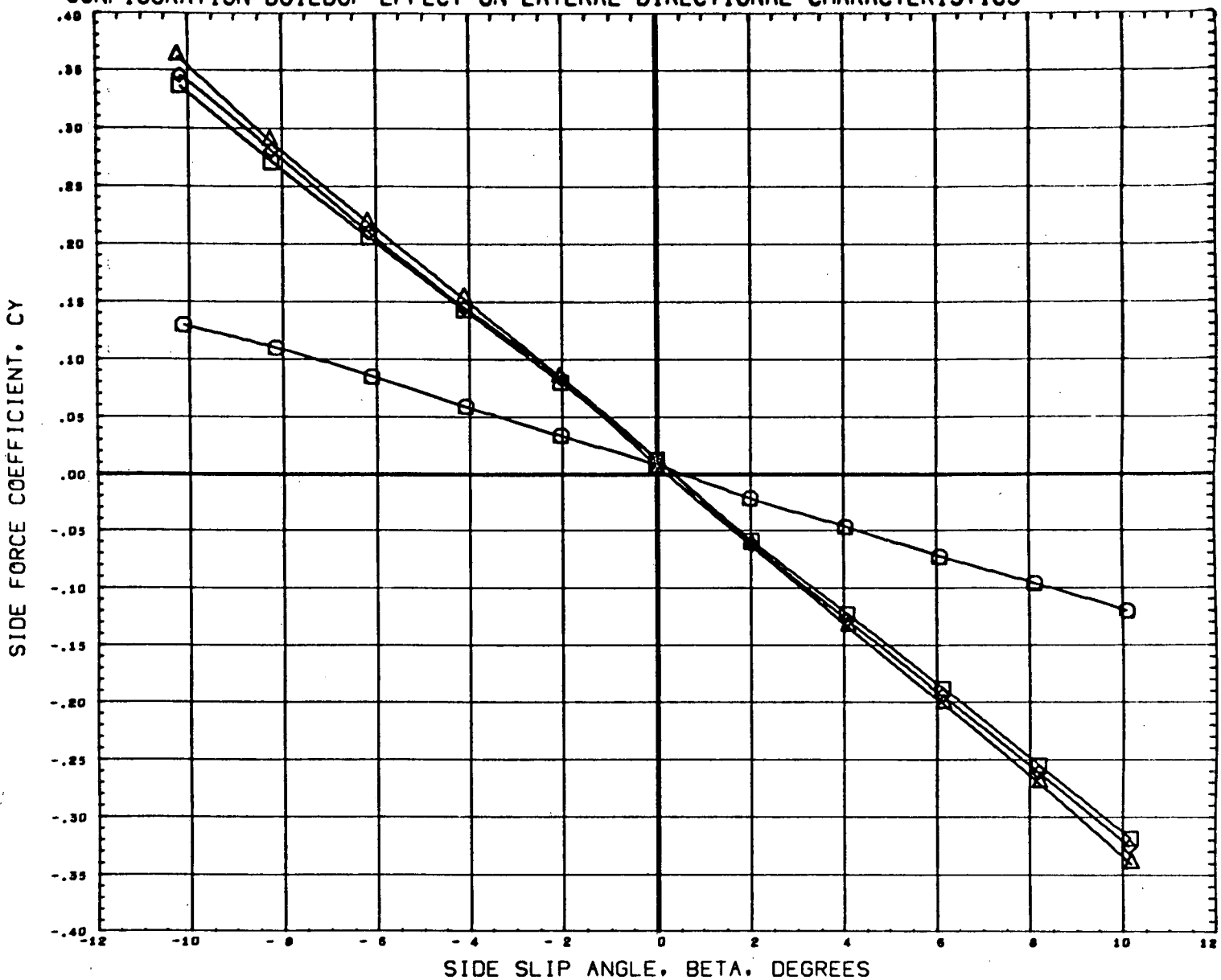
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66003)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(A66005)	△	MSFC TWT 538	SHUTTLE LAUNCH	T1O1	0.000	-1.500
(A66007)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
(T66009)	□	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .80

CONFIGURATION BUILDUP EFFECT ON LATERAL DIRECTIONAL CHARACTERISTICS



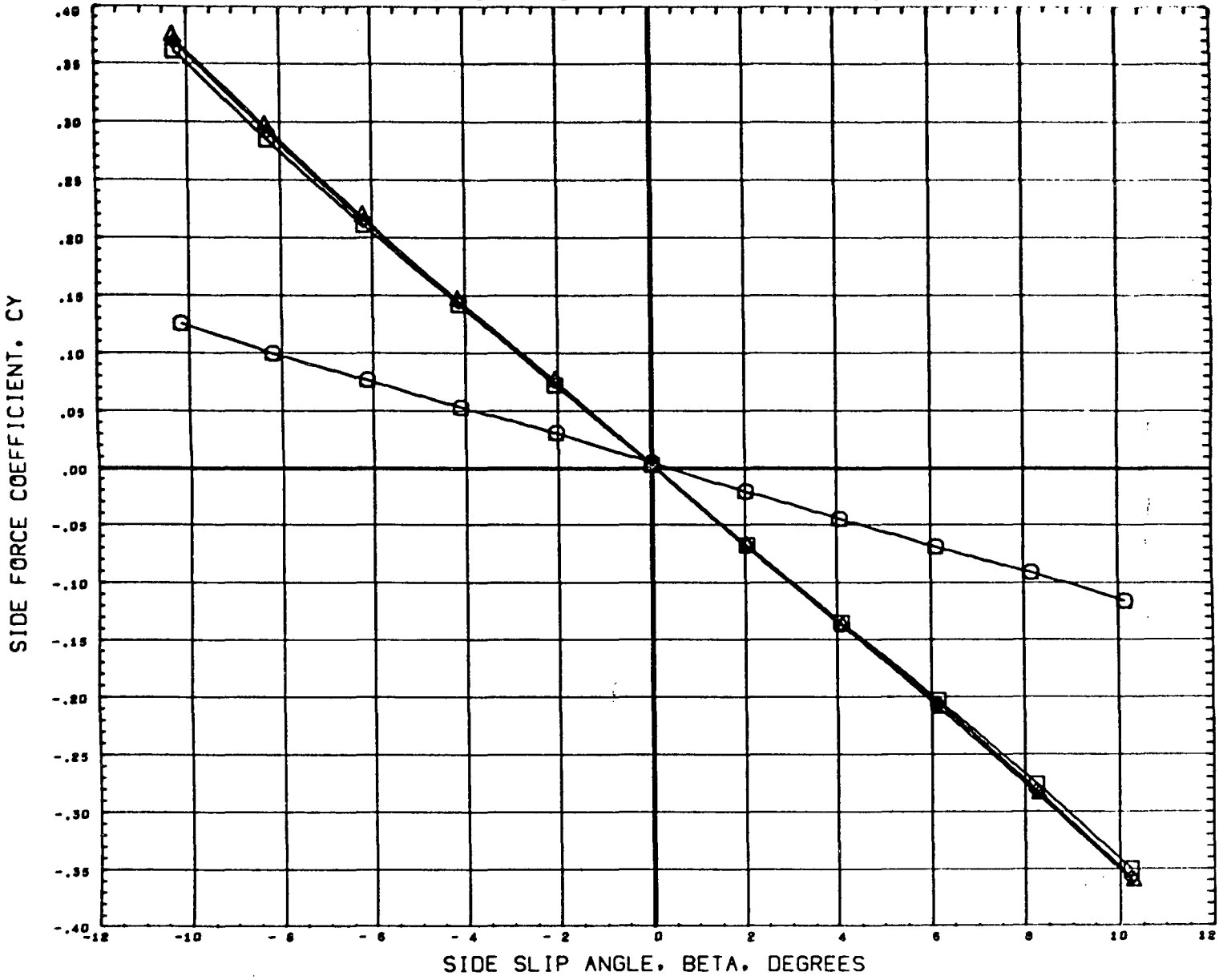
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66003)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(A66005)	△	MSFC TWT 538	SHUTTLE LAUNCH	T1O1	0.000	-1.500
(A66007)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
(T66009)	□	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .90

CONFIGURATION BUILDUP EFFECT ON LATERAL DIRECTIONAL CHARACTERISTICS



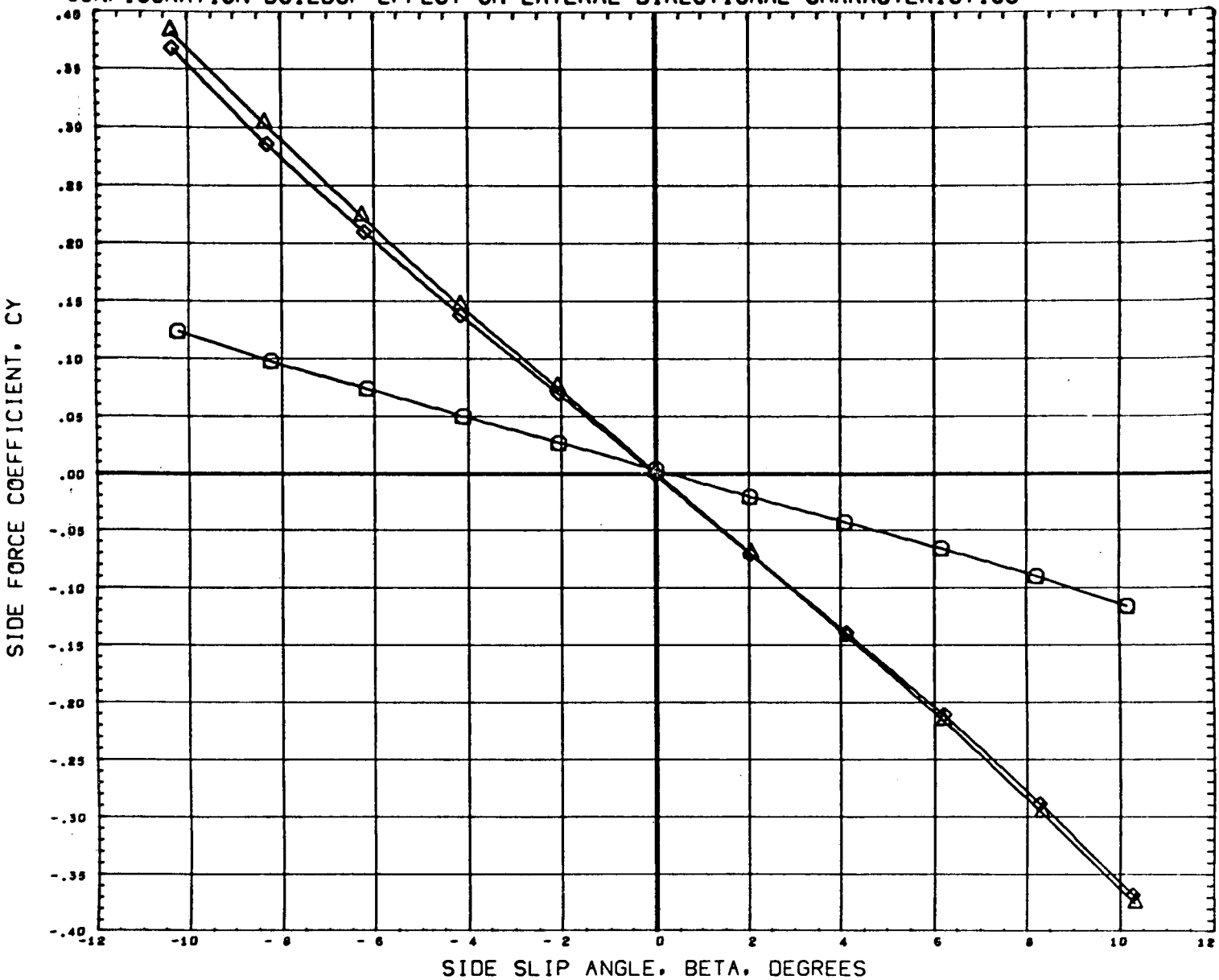
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66003)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(A66005)	△	MSFC TWT 538	SHUTTLE LAUNCH	T1O1	0.000	-1.500
(A66007)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
(T66009)	□	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.11

CONFIGURATION BUILDUP EFFECT ON LATERAL DIRECTIONAL CHARACTERISTICS



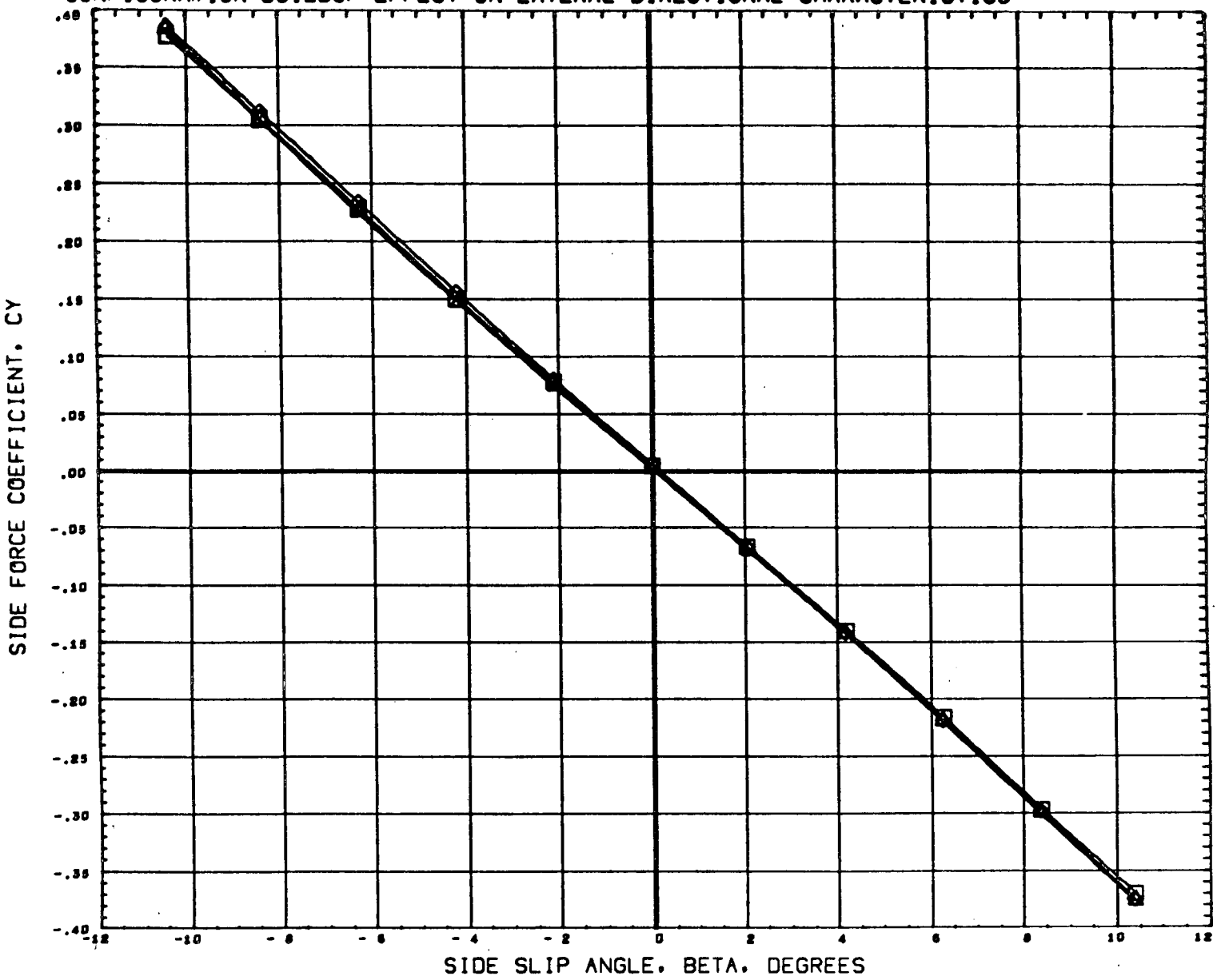
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66003)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(A66005)	△	MSFC TWT 538	SHUTTLE LAUNCH	T1O1	0.000	-1.500
(A66007)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
(T66009)	□	DATA NOT AVAILABLE FOR ALL CONDITIONS			0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.20

CONFIGURATION BUILDUP EFFECT ON LATERAL DIRECTIONAL CHARACTERISTICS



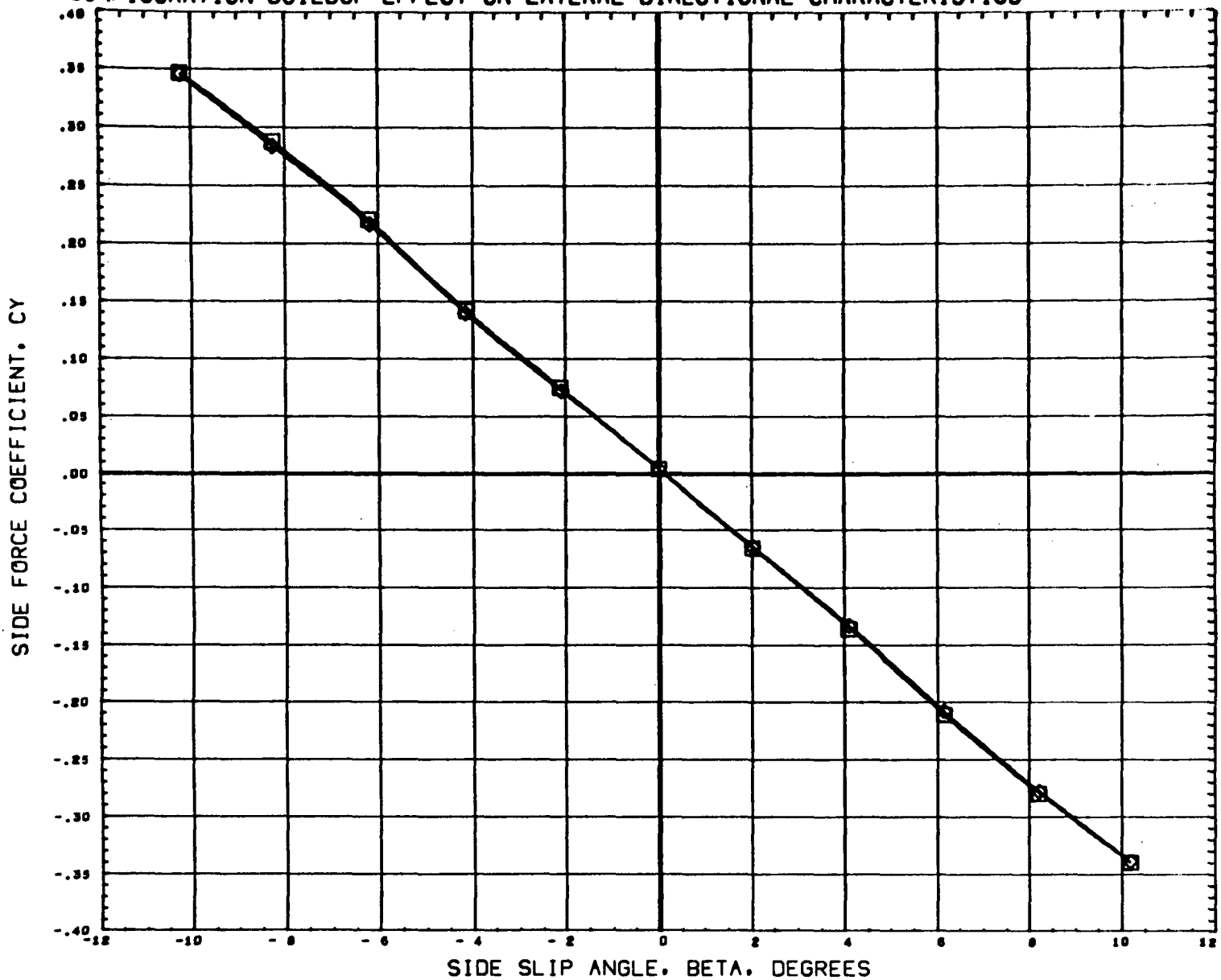
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66003)	○	DATA NOT AVAILABLE FOR ALL CONDITIONS			0.000	
(A66005)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101	0.000	-1.500
(A66007)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1	0.000	-1.500
(T66009)	□	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.97

CONFIGURATION BUILDUP EFFECT ON LATERAL DIRECTIONAL CHARACTERISTICS



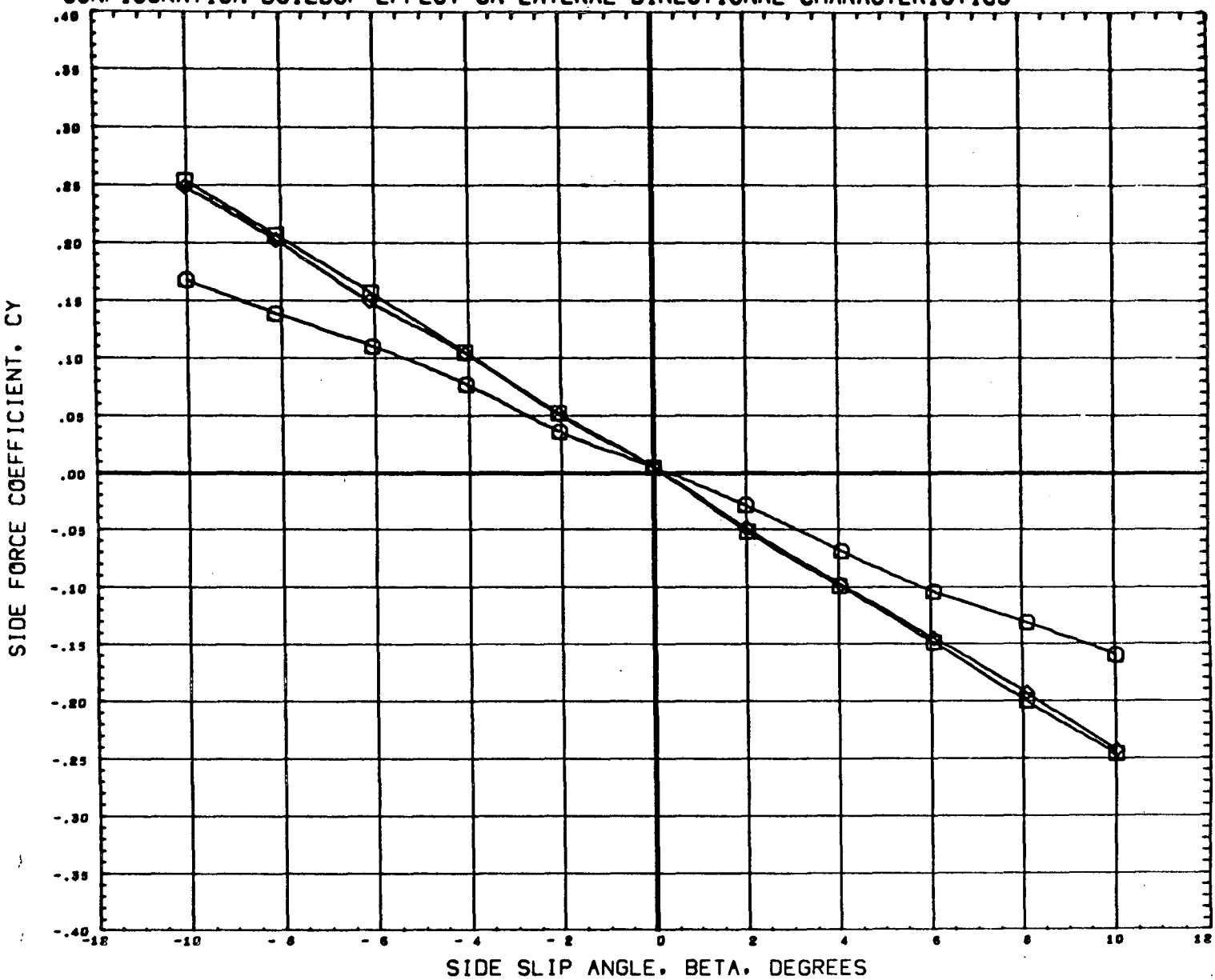
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66003)	○	DATA NOT AVAILABLE FOR ALL CONDITIONS			0.000	
(A66005)	△	DATA NOT AVAILABLE FOR ALL CONDITIONS			0.000	-1.500
(A66007)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1	0.000	-1.500
(T66009)	□	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 2.74

CONFIGURATION BUILDUP EFFECT ON LATERAL DIRECTIONAL CHARACTERISTICS



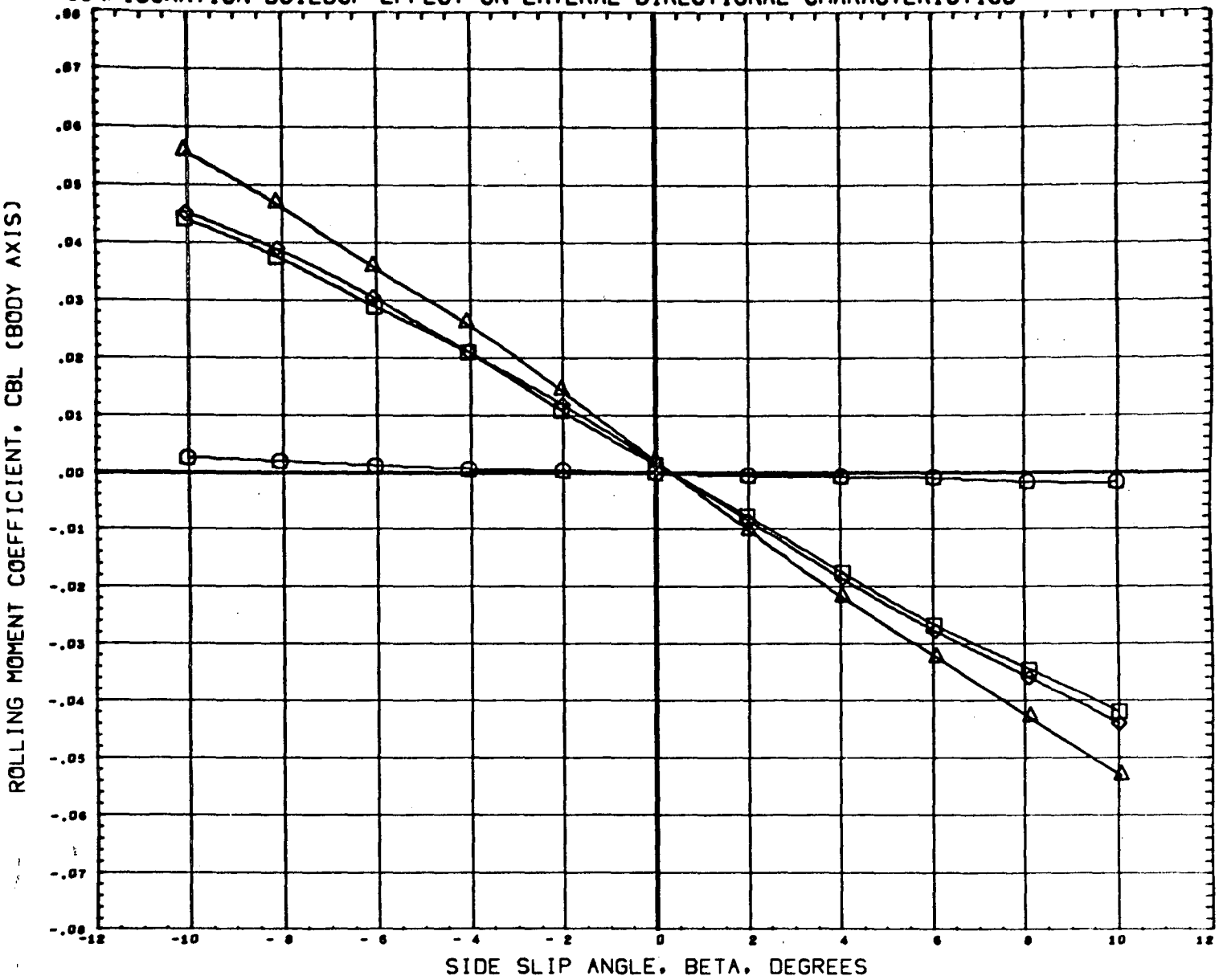
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ORBIN
(T66003)	○	MSFC TWT 538 SHUTTLE LAUNCH T1S1	0.000	
(A66005)	△	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500
(A66007)	◇	MSFC TWT 538 SHUTTLE LAUNCH T101S1	0.000	-1.500
(T66009)	□	MSFC TWT 538 SHUTTLE LAUNCH T101S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1460	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 4.96

CONFIGURATION BUILDUP EFFECT ON LATERAL DIRECTIONAL CHARACTERISTICS



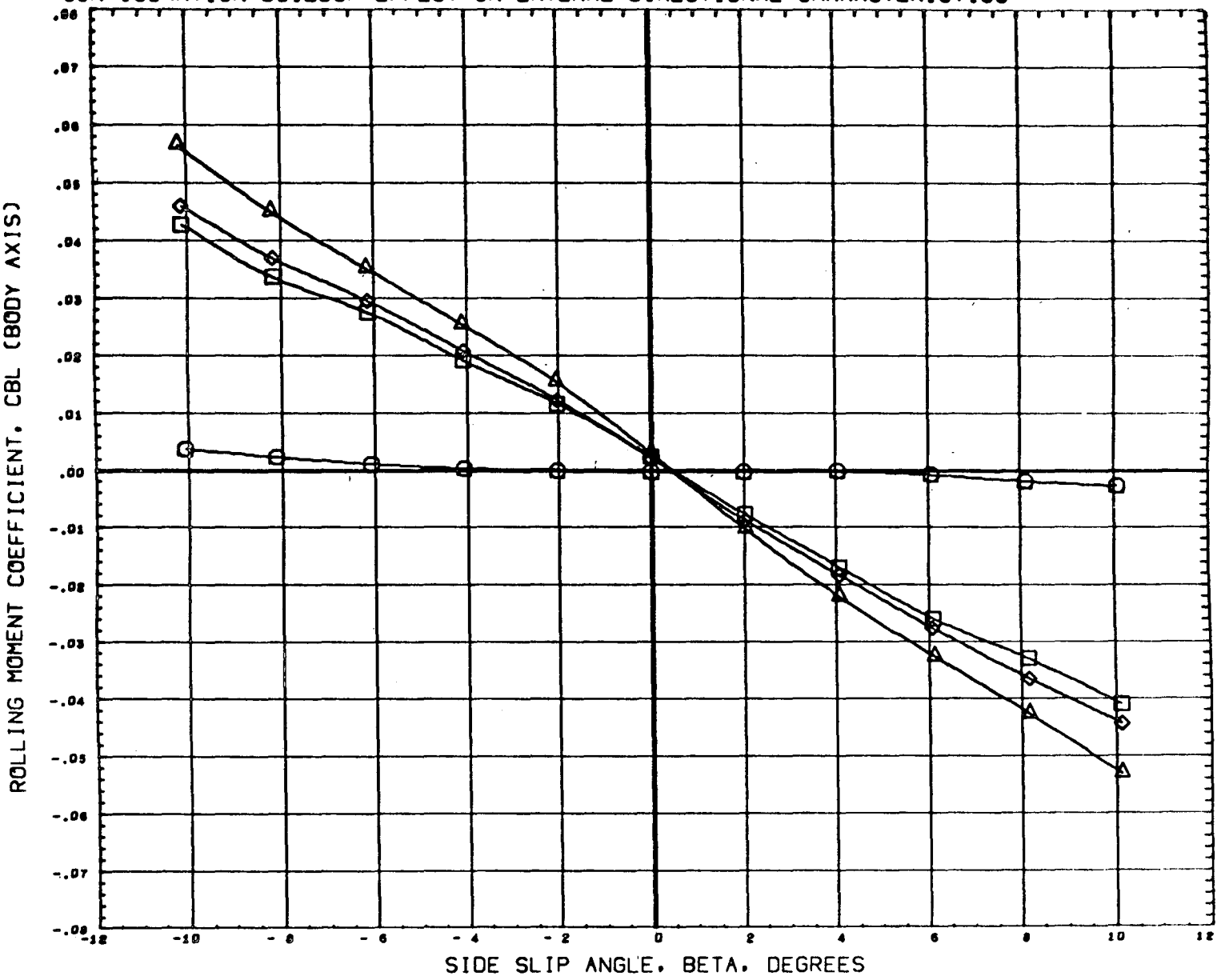
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66003)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(A66005)	△	MSFC TWT 538	SHUTTLE LAUNCH	T1O1	0.000	-1.500
(A66007)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
(T66009)	□	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .60

CONFIGURATION BUILDUP EFFECT ON LATERAL DIRECTIONAL CHARACTERISTICS



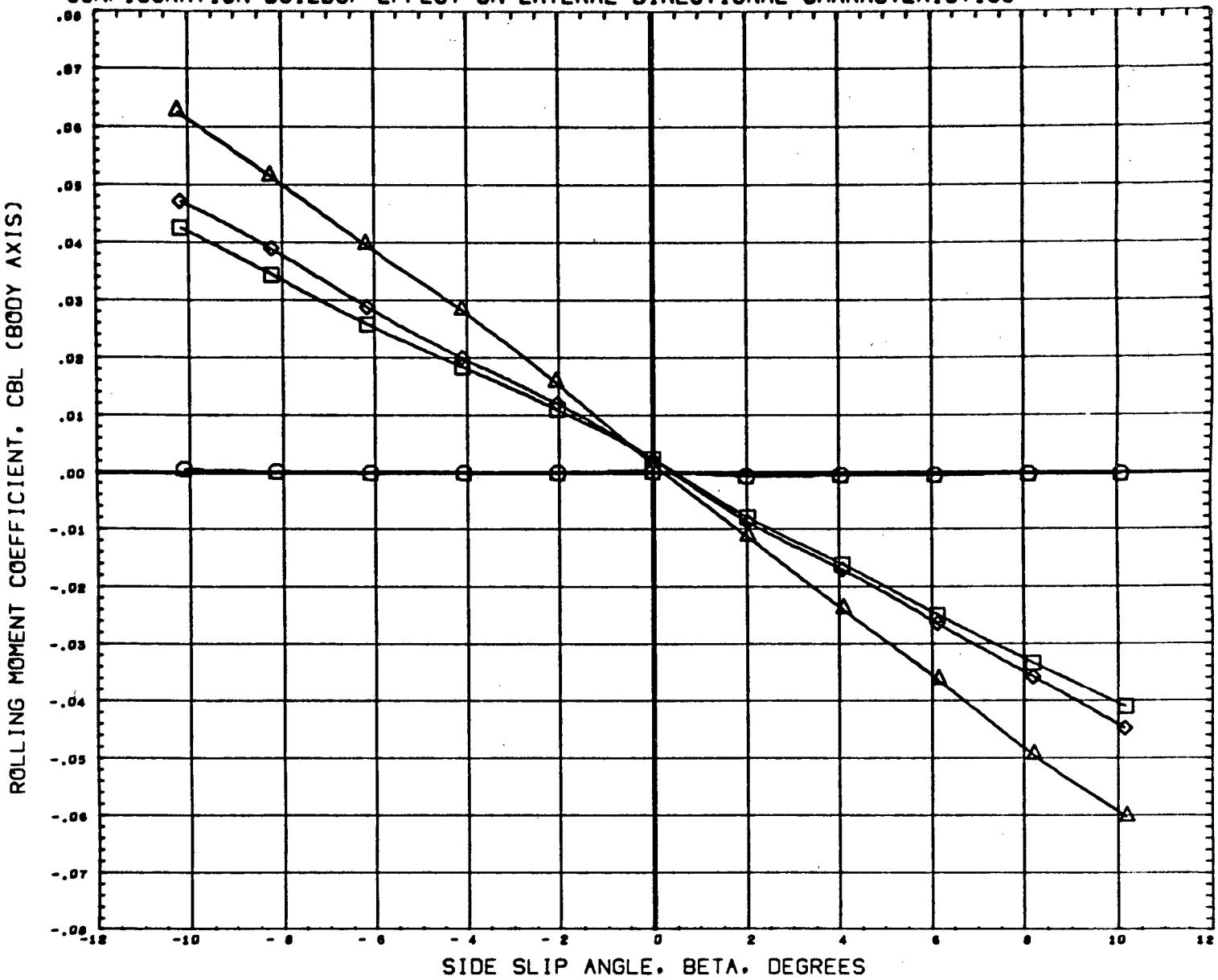
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66003)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(A66005)	△	MSFC TWT 538	SHUTTLE LAUNCH	T1O1	0.000	-1.500
(A66007)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
(T66009)	□	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .80

CONFIGURATION BUILDUP EFFECT ON LATERAL DIRECTIONAL CHARACTERISTICS



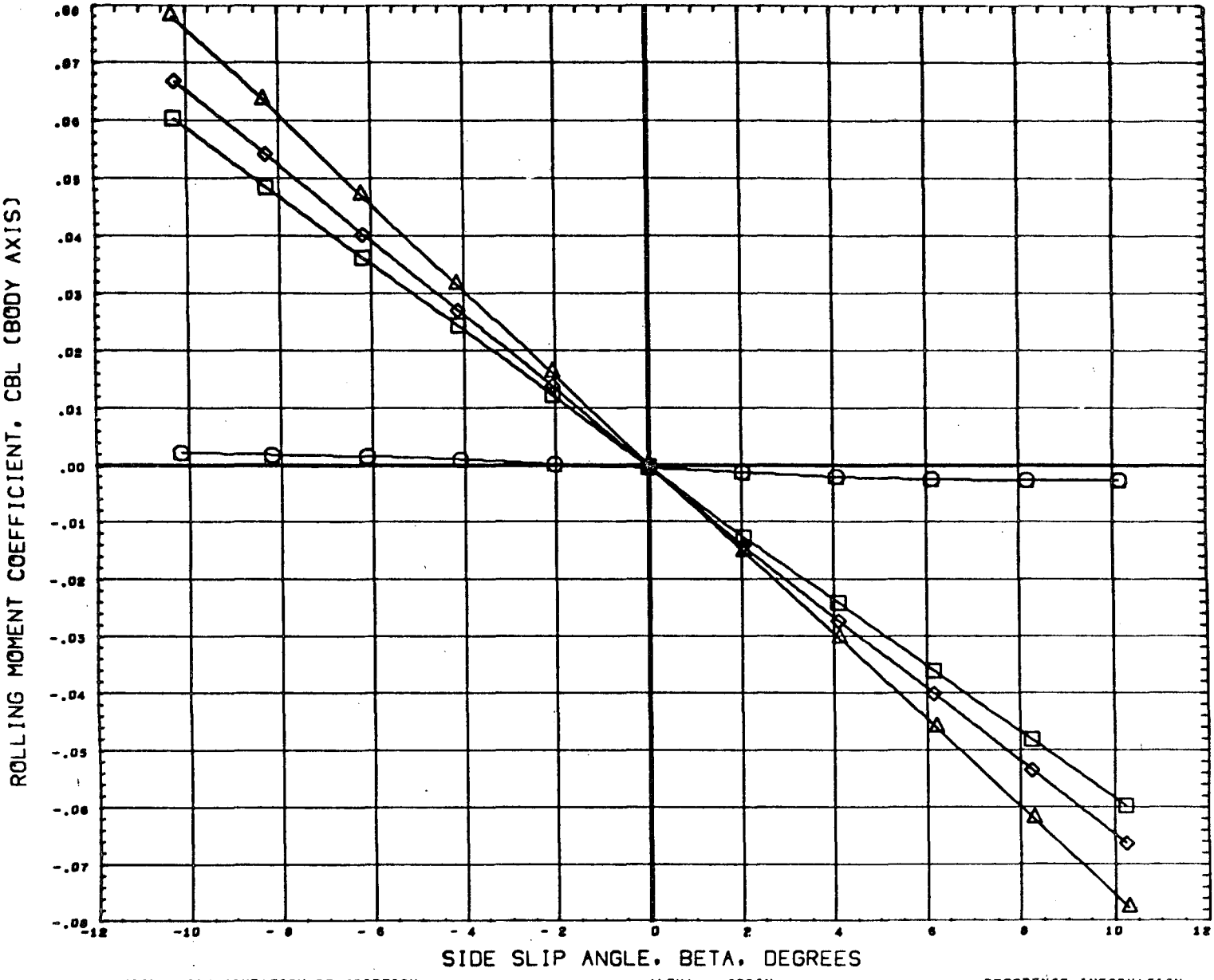
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66003)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(A66005)	△	MSFC TWT 538	SHUTTLE LAUNCH	T1O1	0.000	-1.500
(A66007)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
(T66009)	□	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .90

CONFIGURATION BUILDUP EFFECT ON LATERAL DIRECTIONAL CHARACTERISTICS



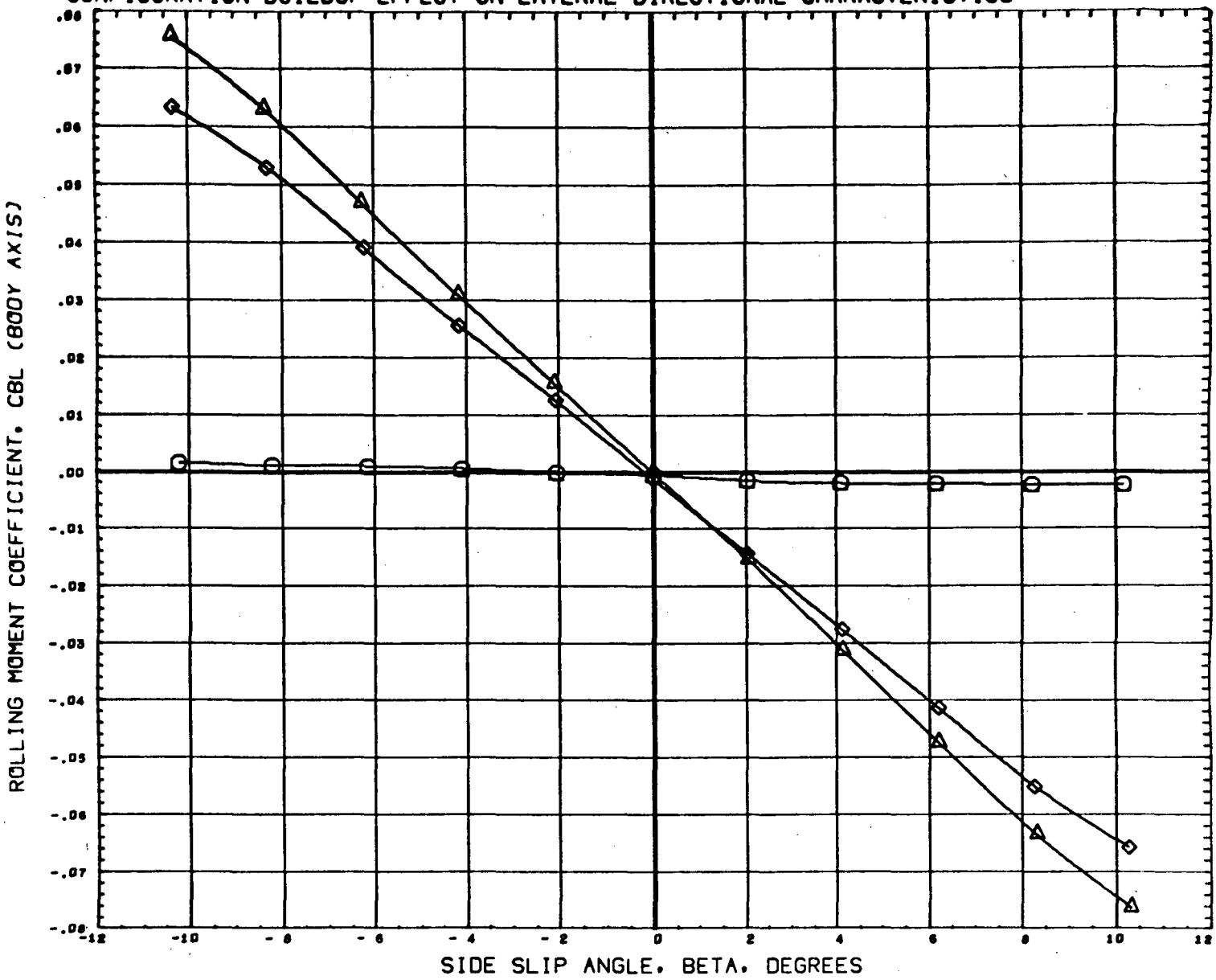
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66003)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(A66005)	△	MSFC TWT 538	SHUTTLE LAUNCH	T1O1	0.000	-1.500
(A66007)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
(T66009)	□	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.11

CONFIGURATION BUILDUP EFFECT ON LATERAL DIRECTIONAL CHARACTERISTICS



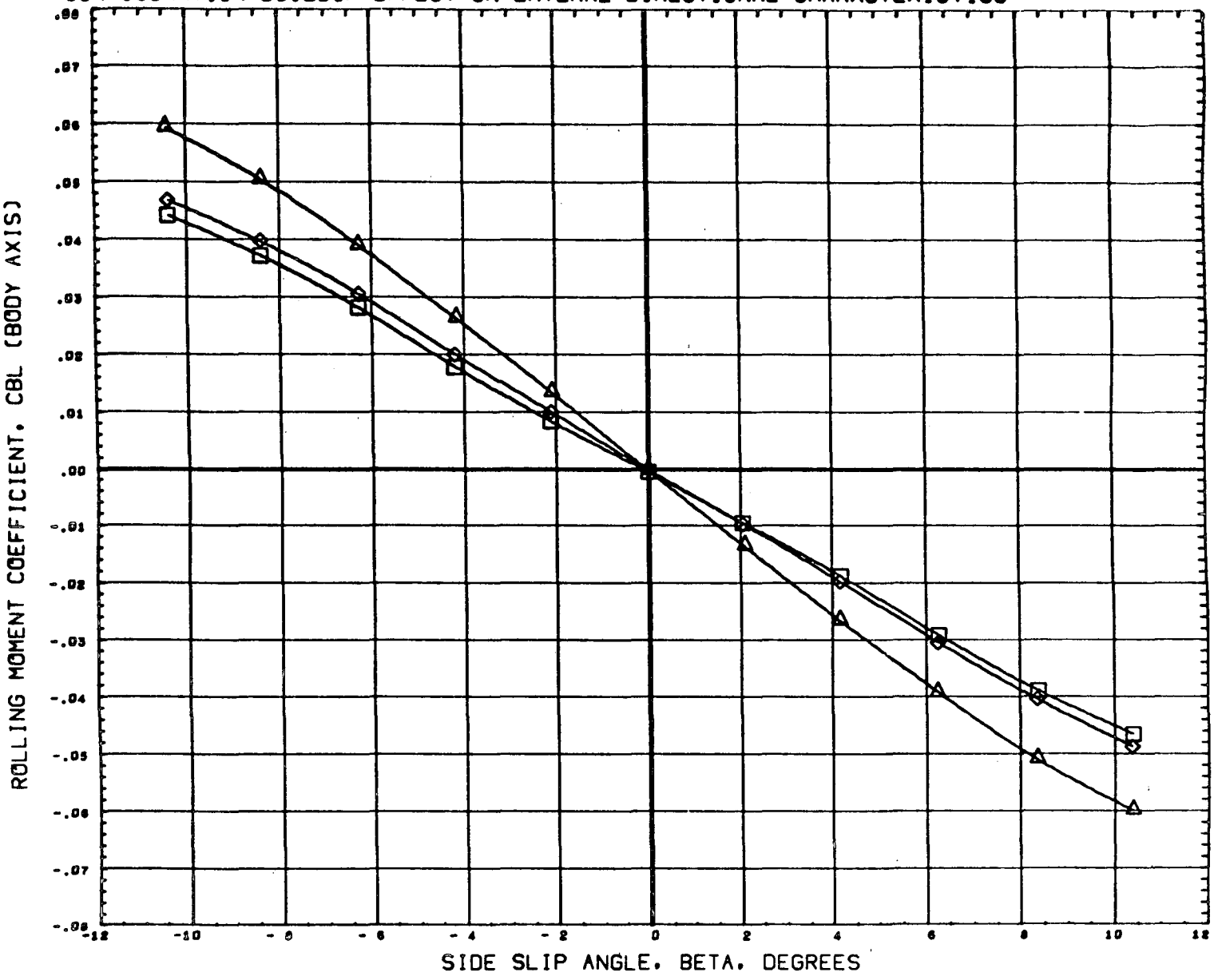
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66003)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(A66005)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101	0.000	-1.500
(A66007)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1	0.000	-1.500
(T66009)	□	DATA NOT AVAILABLE FOR ALL CONDITIONS			0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.20

CONFIGURATION BUILDUP EFFECT ON LATERAL DIRECTIONAL CHARACTERISTICS

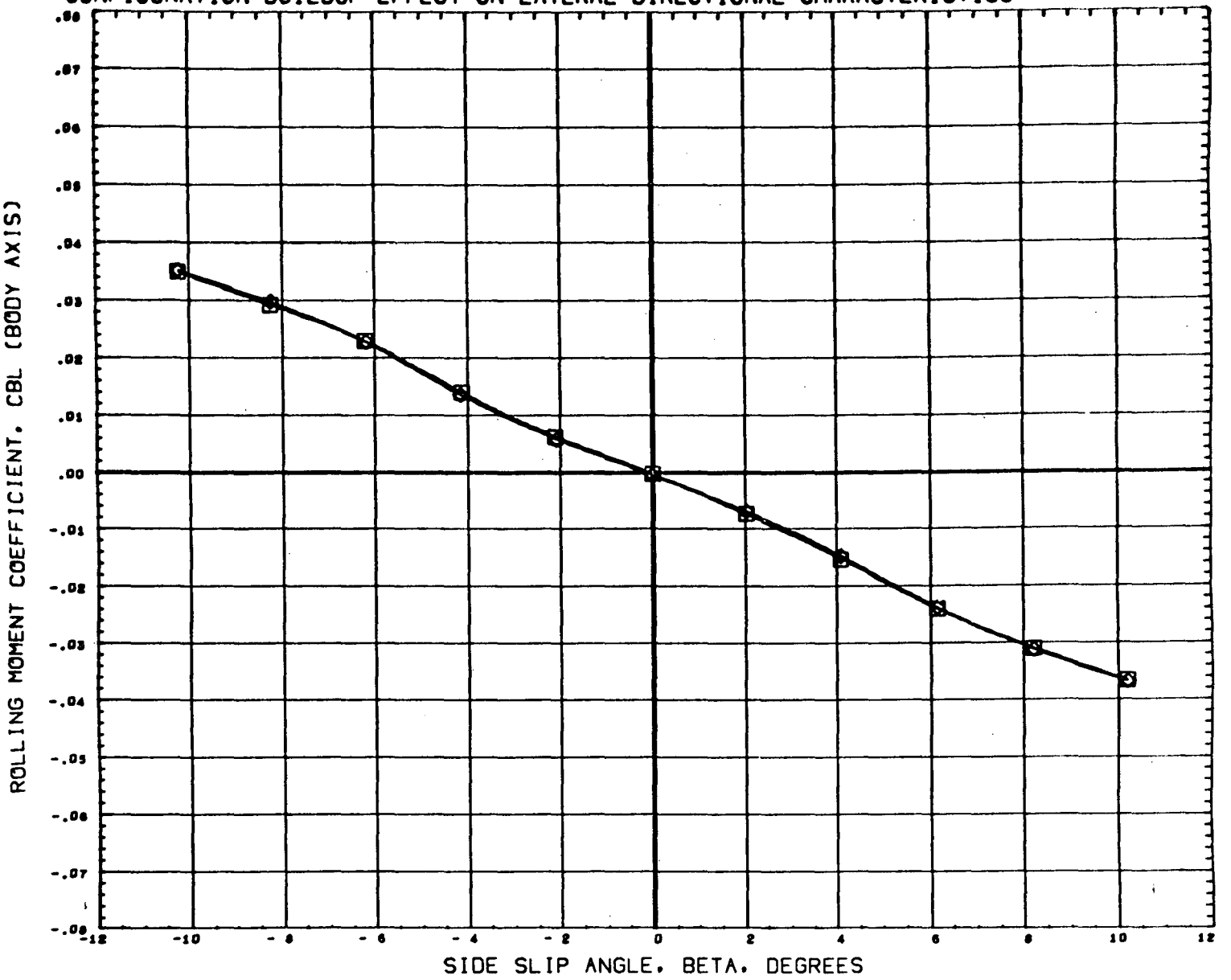


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66003)	○	DATA NOT AVAILABLE FOR ALL CONDITIONS			0.000	
(A66005)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101	0.000	-1.500
(A66007)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1	0.000	-1.500
(T66009)	□	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500

REFERENCE INFORMATION		
SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.97

CONFIGURATION BUILDUP EFFECT ON LATERAL DIRECTIONAL CHARACTERISTICS



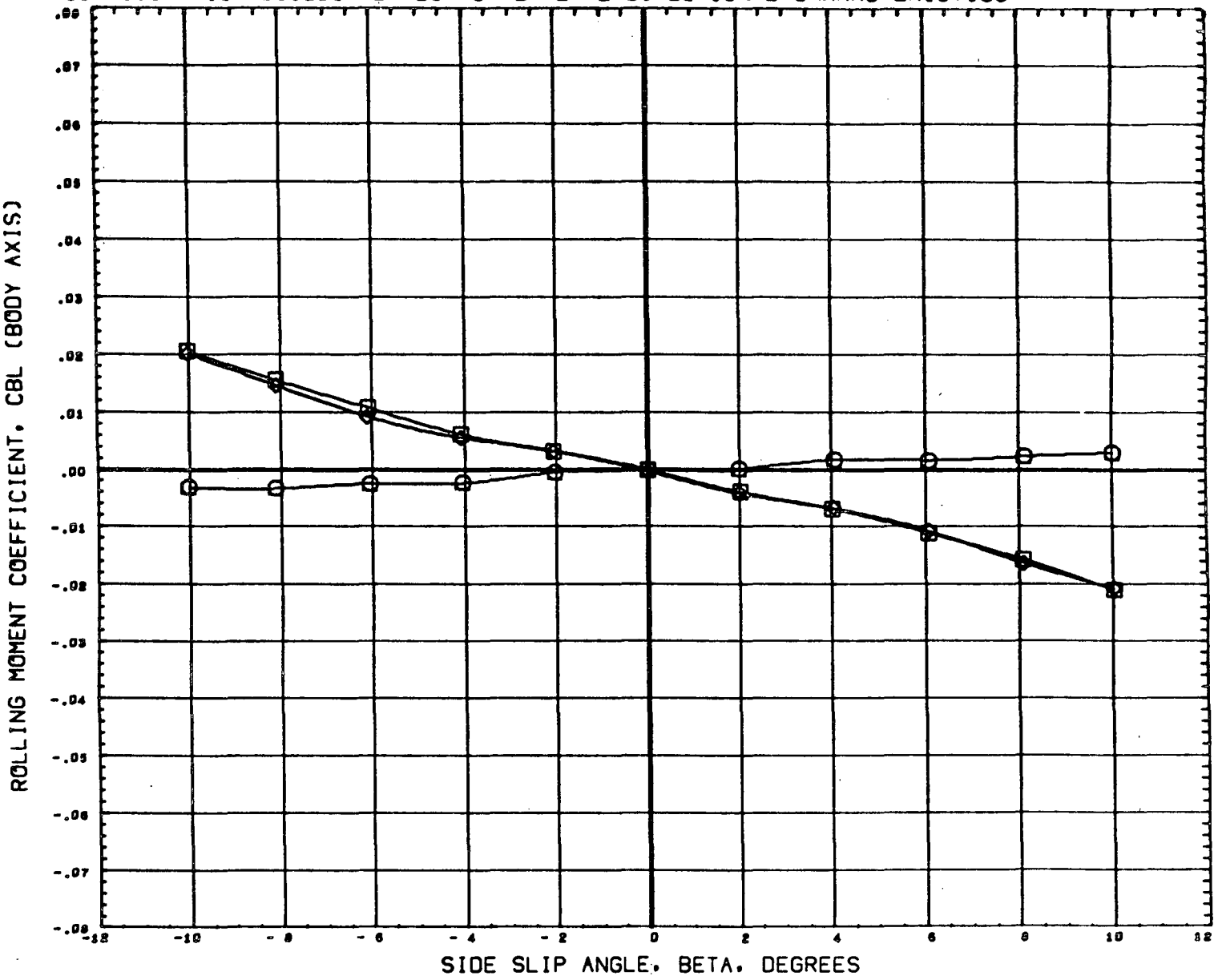
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ORBIN
(T66003)	○	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	
(A66005)	△	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500
(A66007)	◇	MSFC TWT 538 SHUTTLE LAUNCH T101S1	0.000	-1.500
(T66009)	□	MSFC TWT 538 SHUTTLE LAUNCH T101S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 2.74

CONFIGURATION BUILDUP EFFECT ON LATERAL DIRECTIONAL CHARACTERISTICS



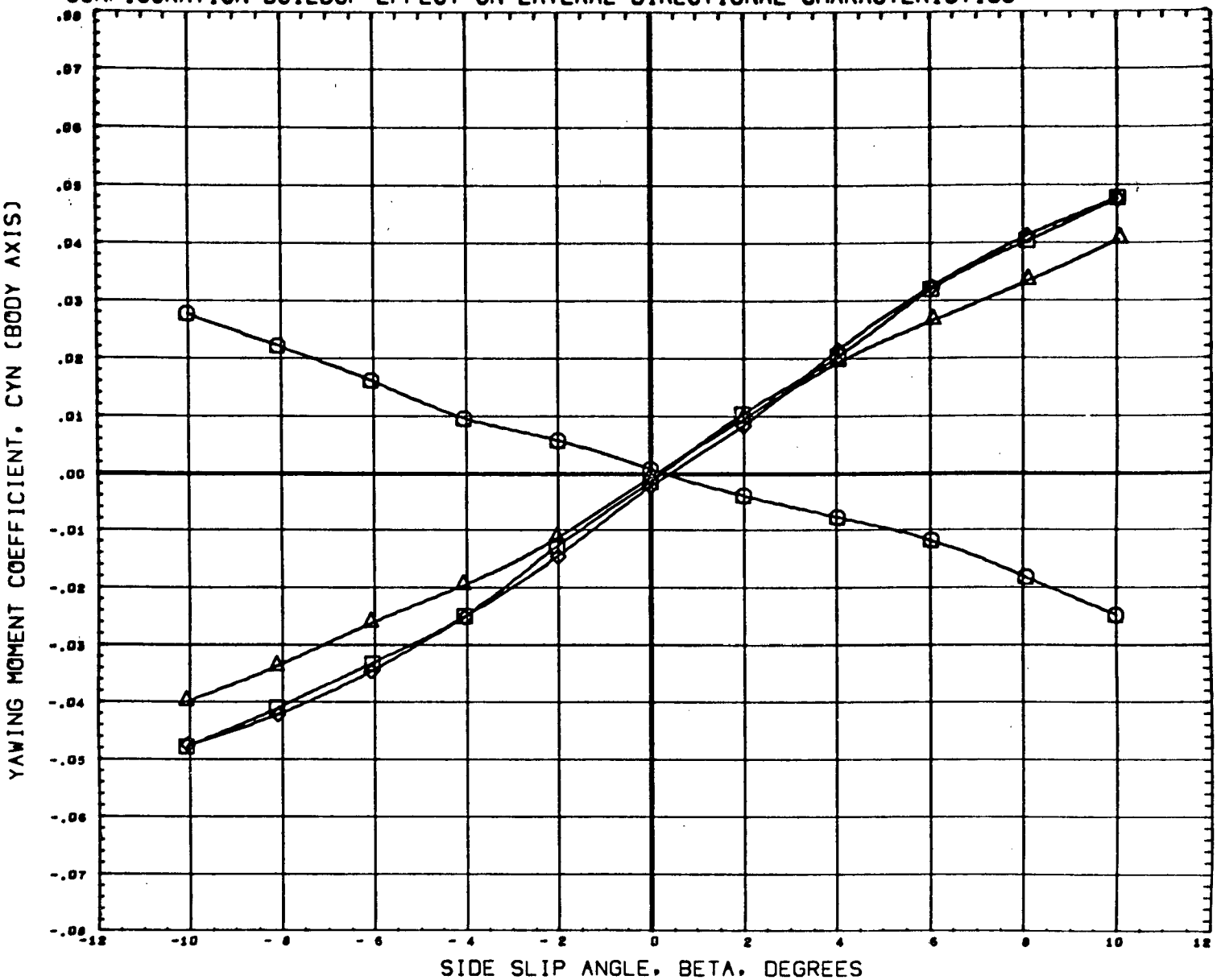
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ORBIN
(T66003)	○	MSFC TWT 538 SHUTTLE LAUNCH T1S1	0.000	
(A66005)	△	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500
(A66007)	◇	MSFC TWT 538 SHUTTLE LAUNCH T101S1	0.000	-1.500
(T66009)	□	MSFC TWT 538 SHUTTLE LAUNCH T101S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2460	IN.
SCALE	0.0040	

MACH 4.96

CONFIGURATION BUILDUP EFFECT ON LATERAL DIRECTIONAL CHARACTERISTICS



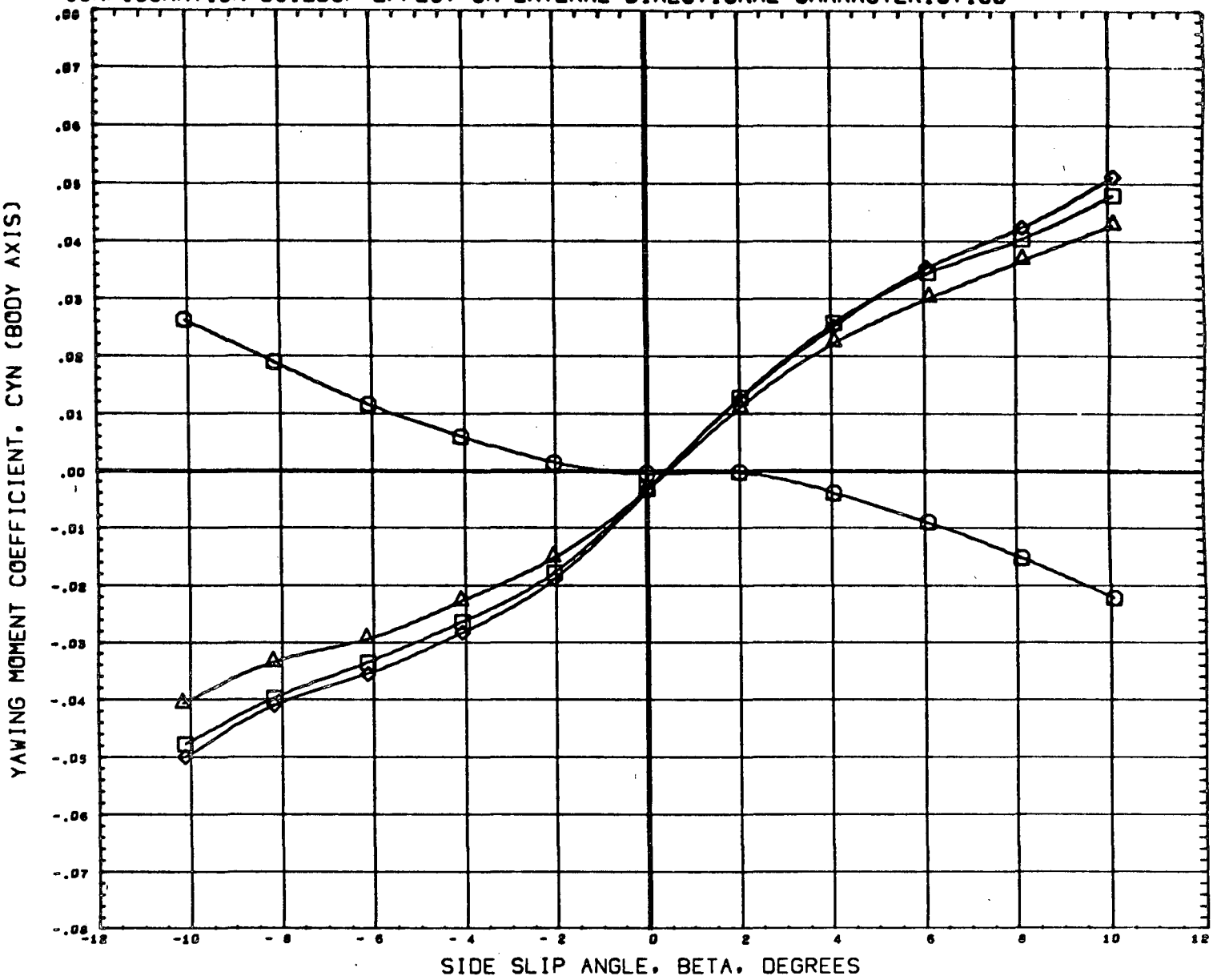
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66003)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(A66005)	△	MSFC TWT 538	SHUTTLE LAUNCH	T1O1	0.000	-1.500
(A66007)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
(T66009)	□	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .60

CONFIGURATION BUILDUP EFFECT ON LATERAL DIRECTIONAL CHARACTERISTICS



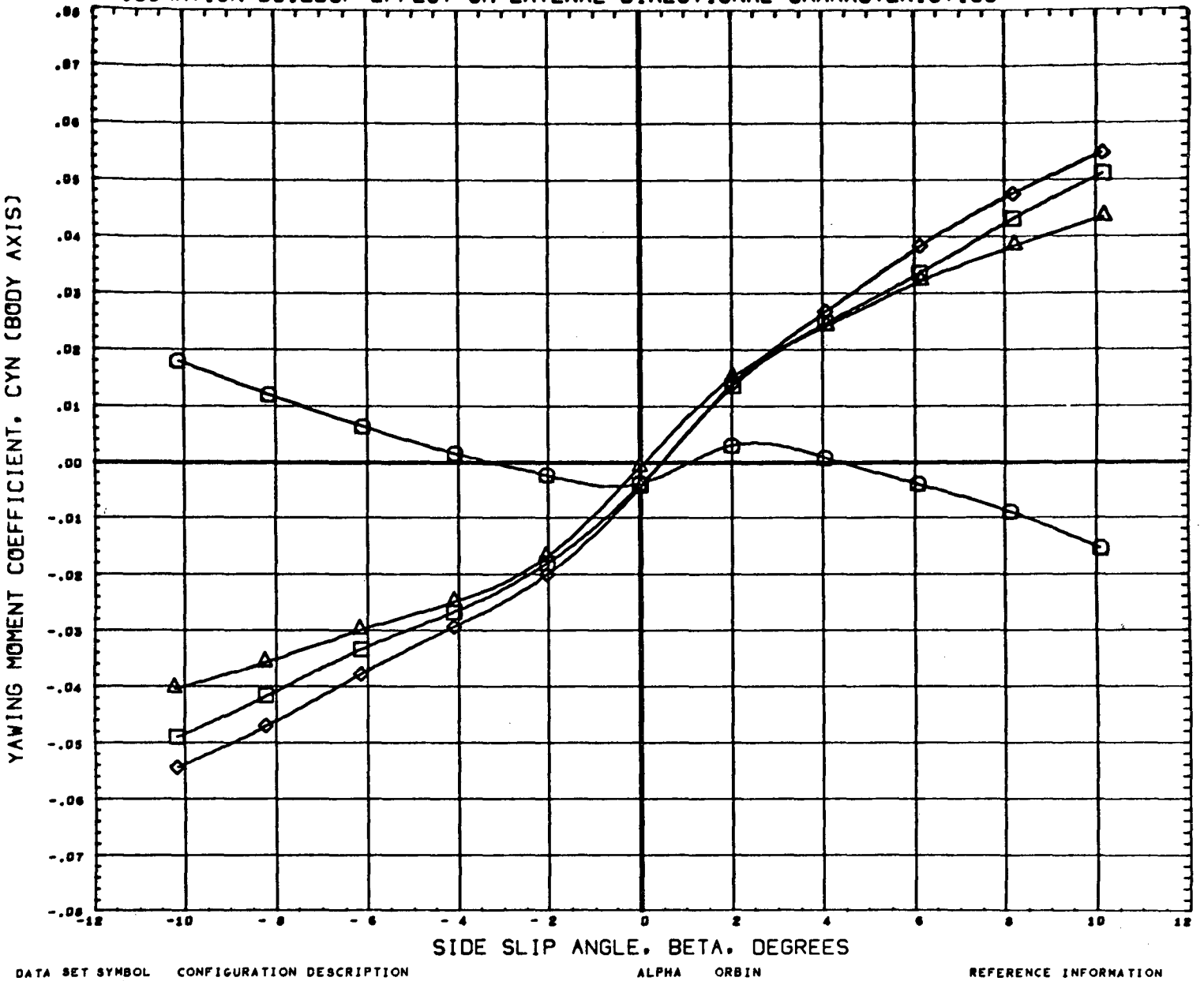
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66003)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(A66005)	△	MSFC TWT 538	SHUTTLE LAUNCH	T1O1	0.000	-1.500
(A66007)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
(T66009)	□	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .80

CONFIGURATION BUILDUP EFFECT ON LATERAL DIRECTIONAL CHARACTERISTICS



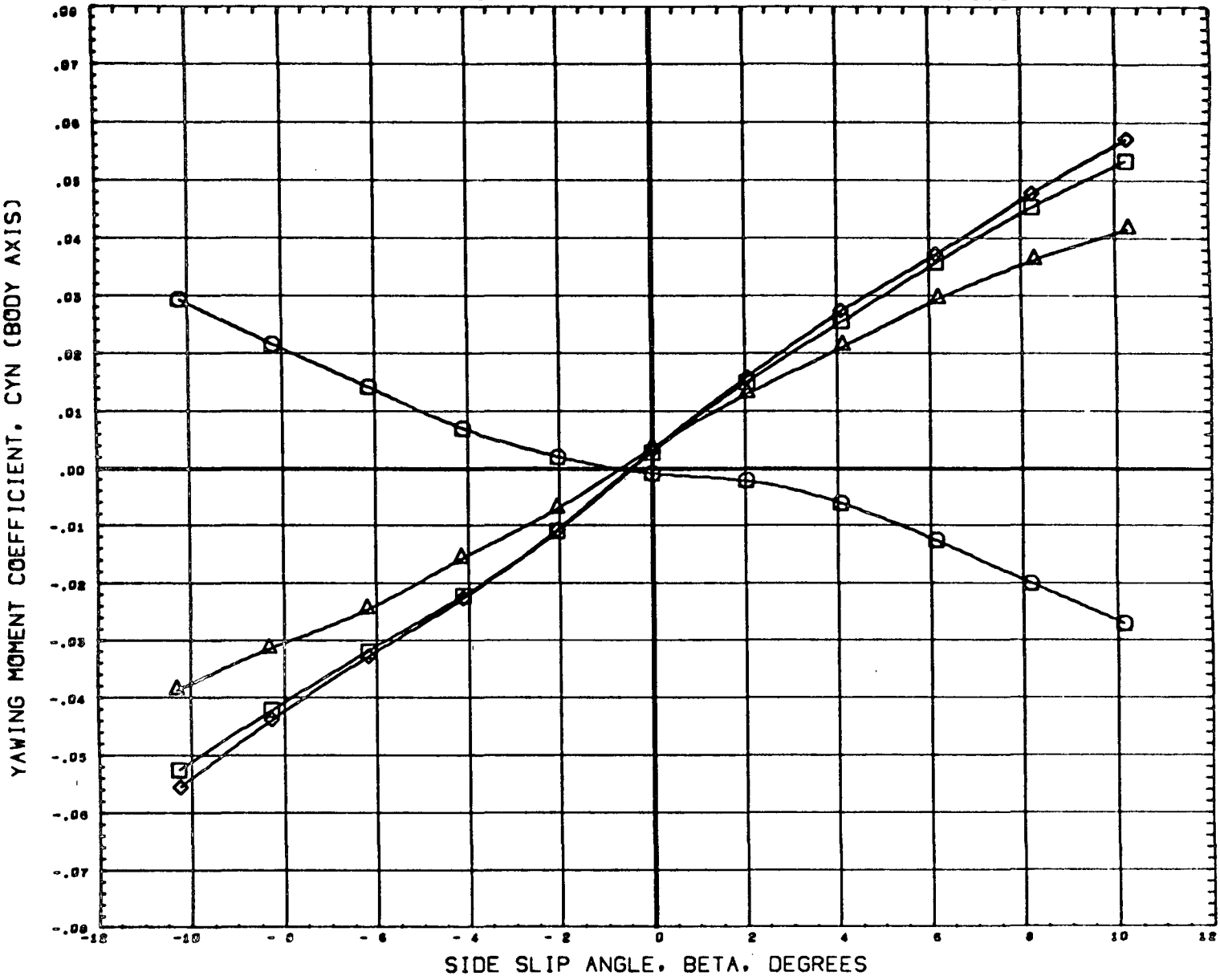
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66003)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(A66005)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101	0.000	-1.500
(A66007)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1	0.000	-1.500
(T66009)	□	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .90

CONFIGURATION BUILDUP EFFECT ON LATERAL DIRECTIONAL CHARACTERISTICS



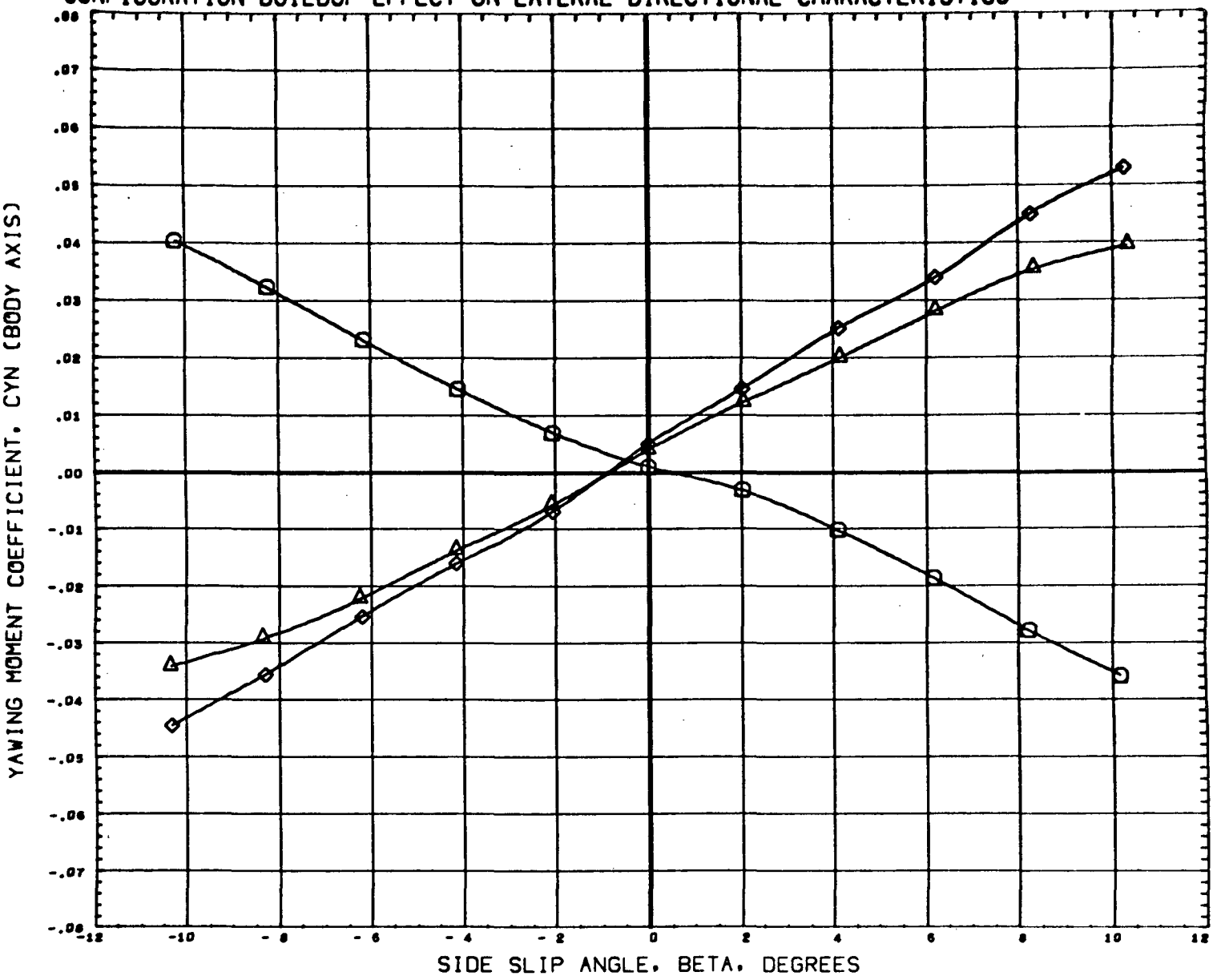
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66003)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(A66005)	△	MSFC TWT 538	SHUTTLE LAUNCH	T1O1	0.000	-1.500
(A66007)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
(T66009)	□	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.11

CONFIGURATION BUILDUP EFFECT ON LATERAL DIRECTIONAL CHARACTERISTICS



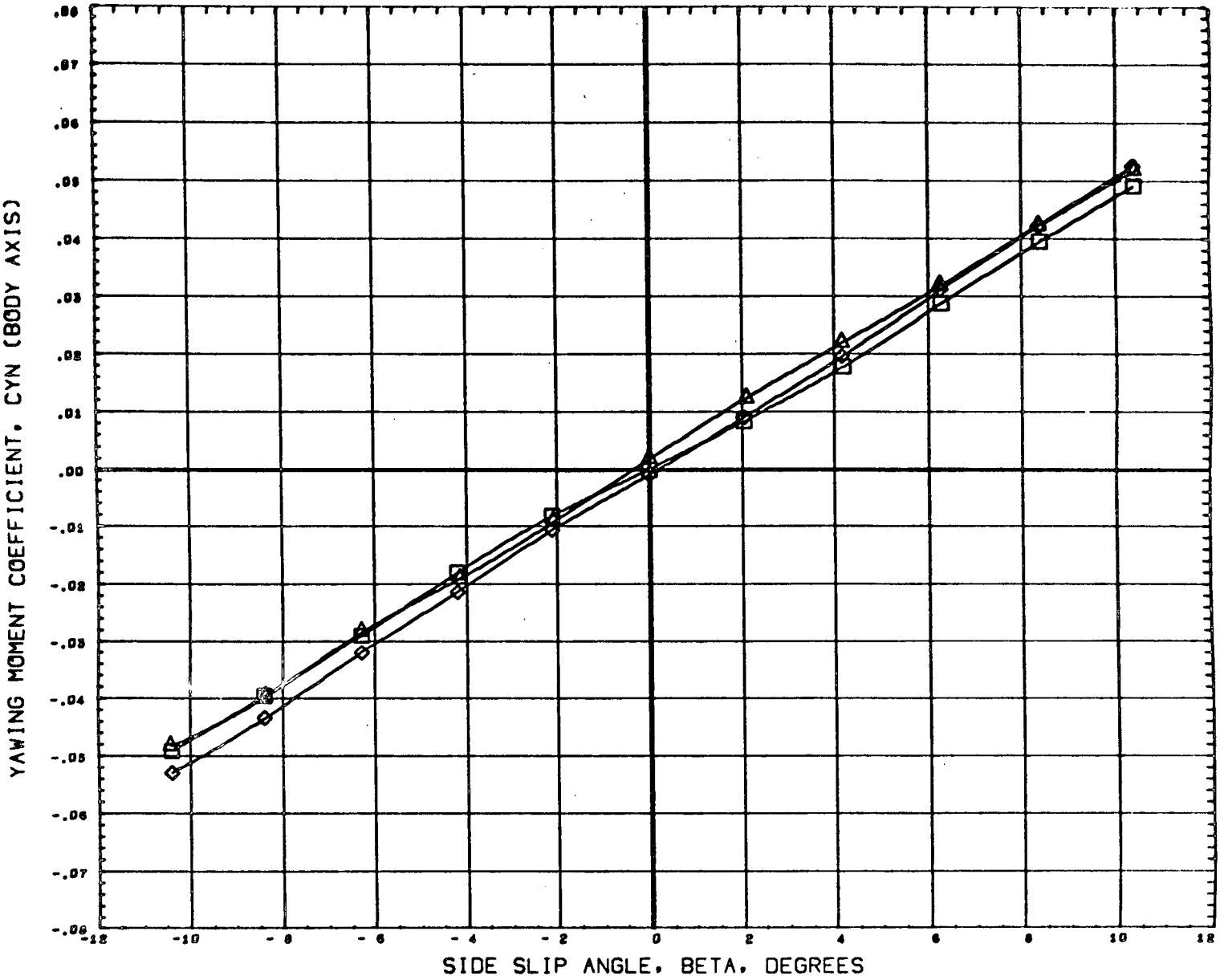
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66003)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(A66005)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101	0.000	-1.500
(A66007)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1	0.000	-1.500
(T66009)	□	DATA NOT AVAILABLE FOR ALL CONDITIONS			0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.20

CONFIGURATION BUILDUP EFFECT ON LATERAL DIRECTIONAL CHARACTERISTICS



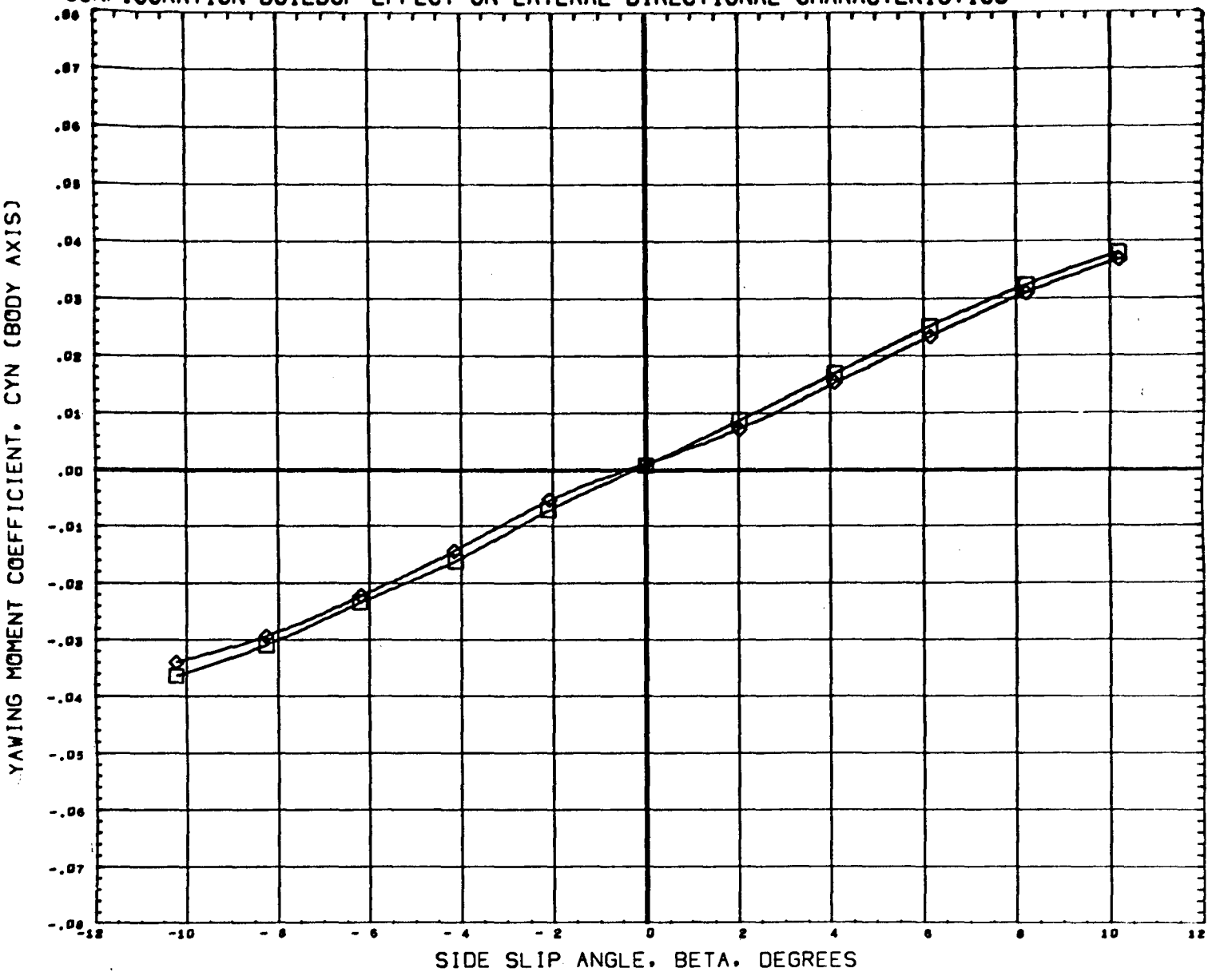
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66003)	○	DATA NOT AVAILABLE FOR ALL CONDITIONS			0.000	
(A66005)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101	0.000	-1.500
(A66007)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1	0.000	-1.500
(T66009)	□	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.97

CONFIGURATION BUILDUP EFFECT ON LATERAL DIRECTIONAL CHARACTERISTICS



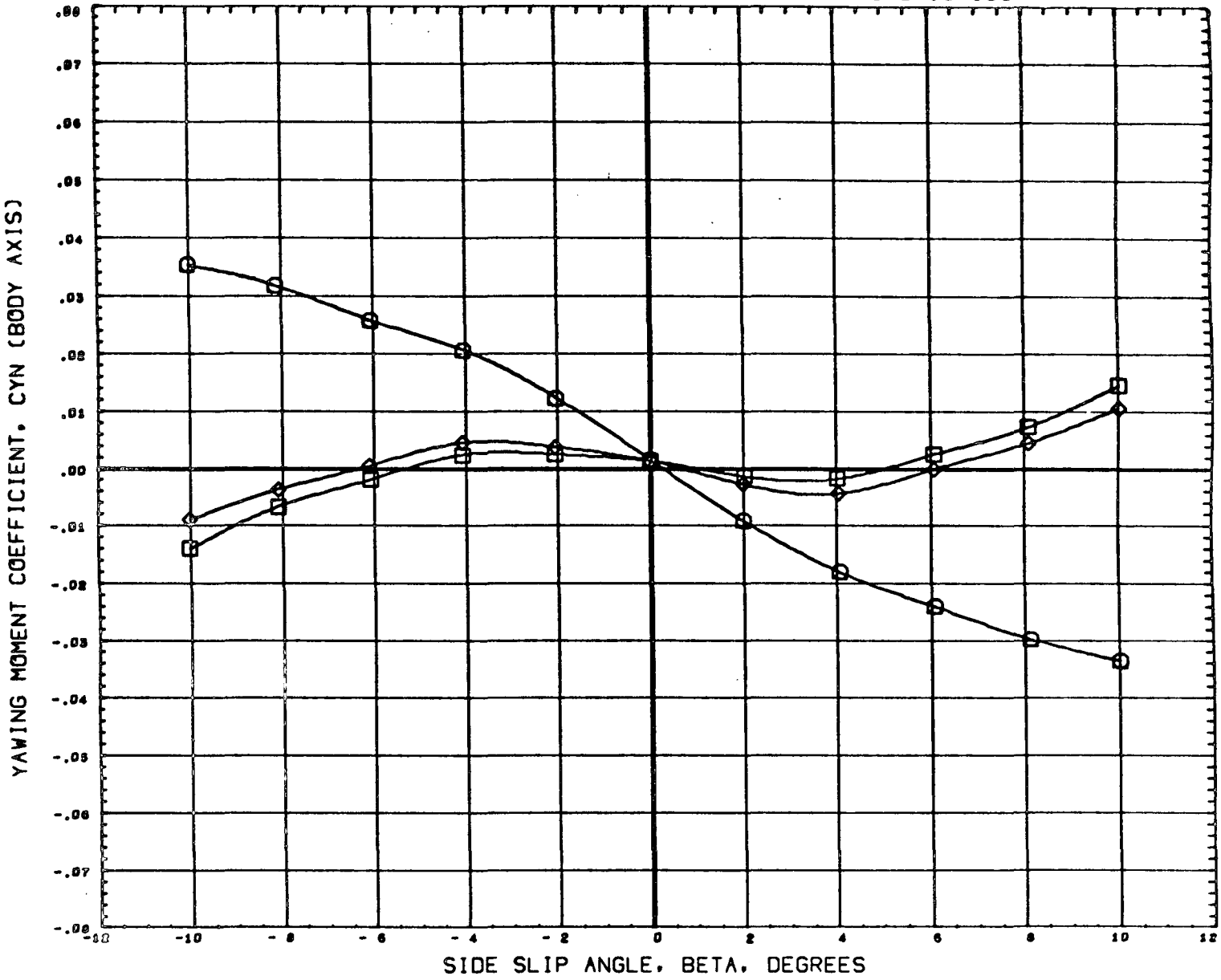
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66003)	○	DATA NOT AVAILABLE FOR ALL CONDITIONS			0.000	
(A66005)	△	DATA NOT AVAILABLE FOR ALL CONDITIONS			0.000	-1.500
(A66007)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1	0.000	-1.500
(T66009)	□	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 2.74

CONFIGURATION BUILDUP EFFECT ON LATERAL DIRECTIONAL CHARACTERISTICS



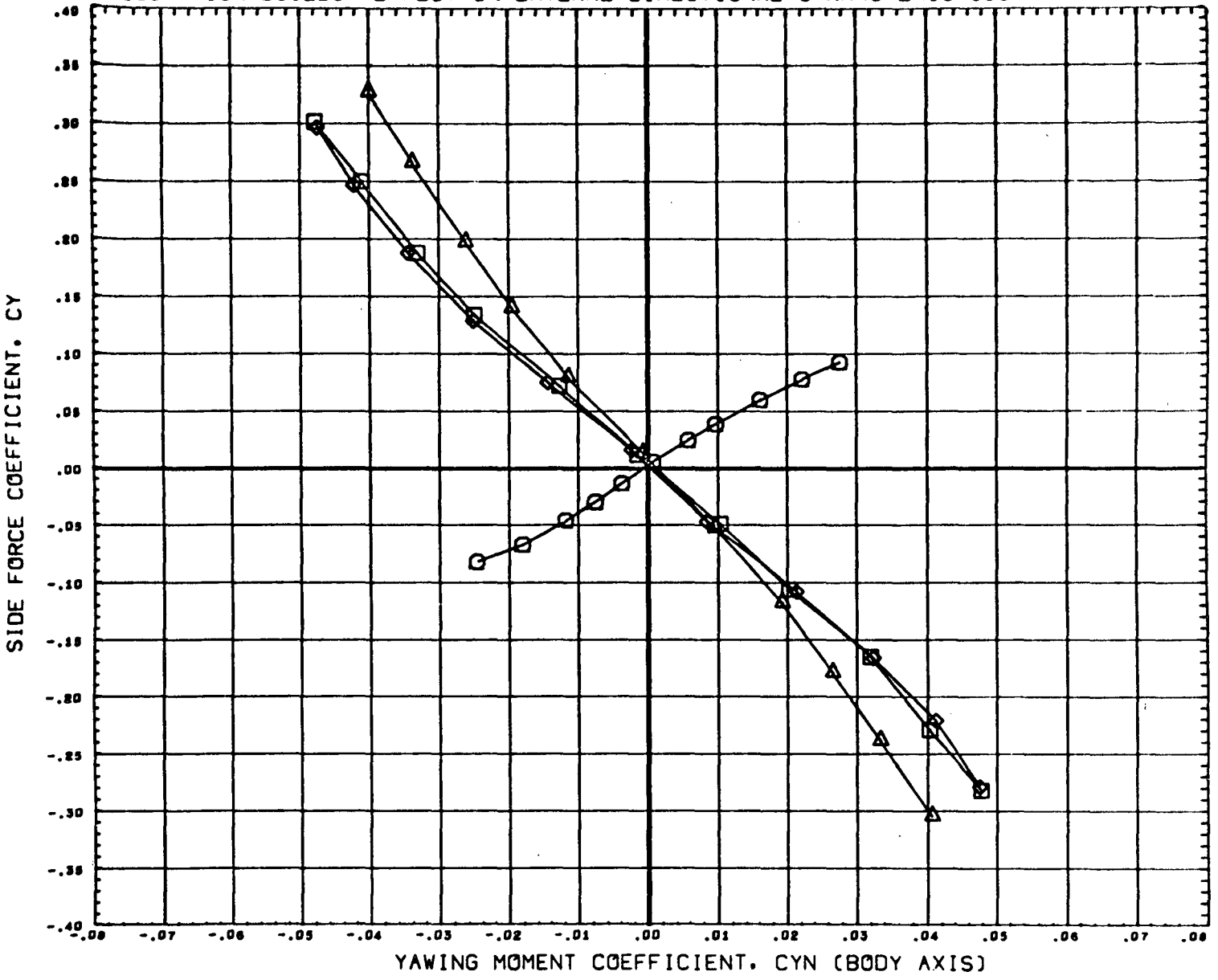
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ORBIN
(TG6003)	○	MSFC TWT 538 SHUTTLE LAUNCH T1S1	0.000	
(AG6005)	△	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500
(AG6007)	◇	MSFC TWT 538 SHUTTLE LAUNCH T101S1	0.000	-1.500
(TG6009)	□	MSFC TWT 538 SHUTTLE LAUNCH T101S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 4.96

CONFIGURATION BUILDUP EFFECT ON LATERAL DIRECTIONAL CHARACTERISTICS



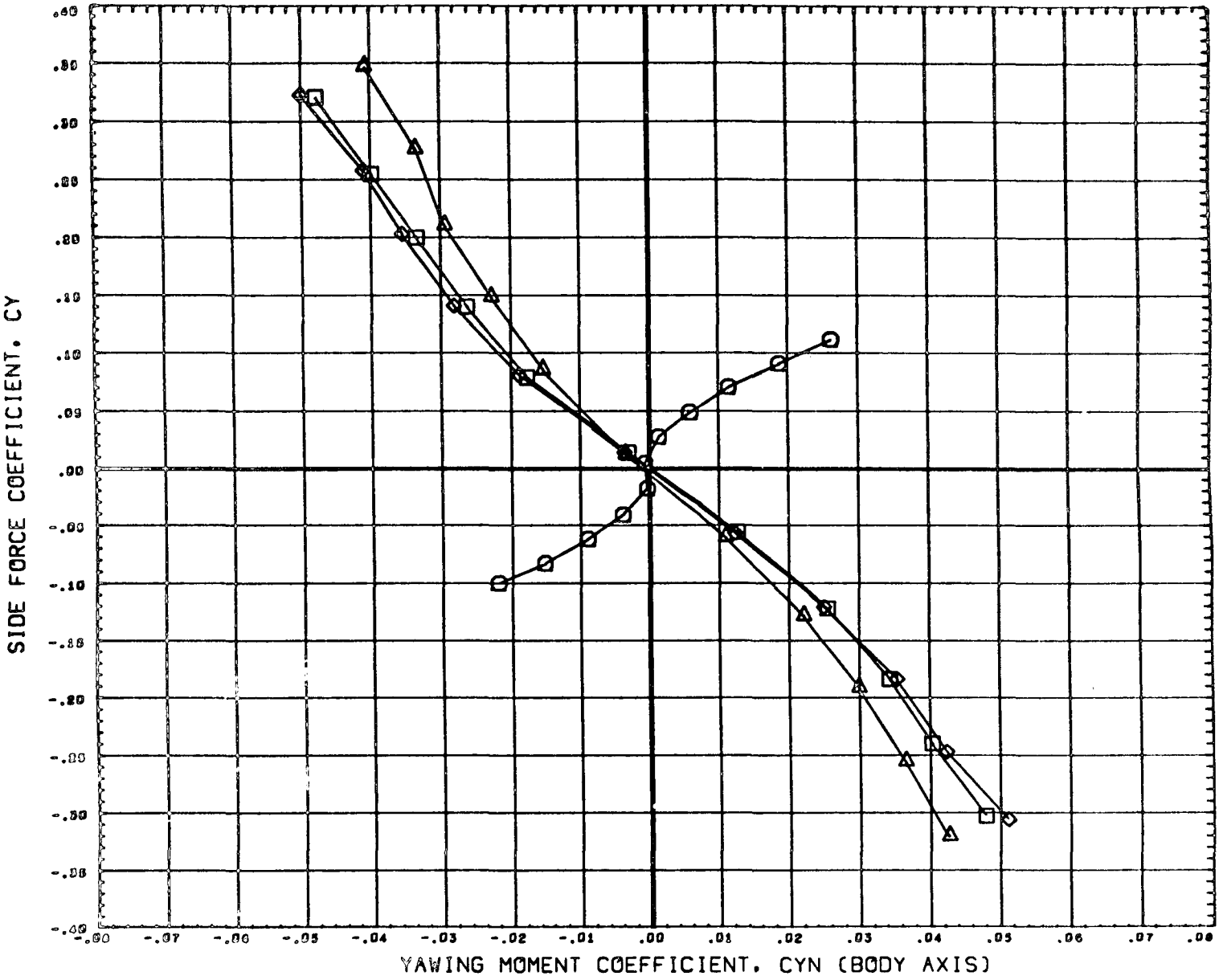
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66003)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(A66005)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101	0.000	-1.500
(A66007)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1	0.000	-1.500
(T66009)	□	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .60

CONFIGURATION BUILDUP EFFECT ON LATERAL DIRECTIONAL CHARACTERISTICS



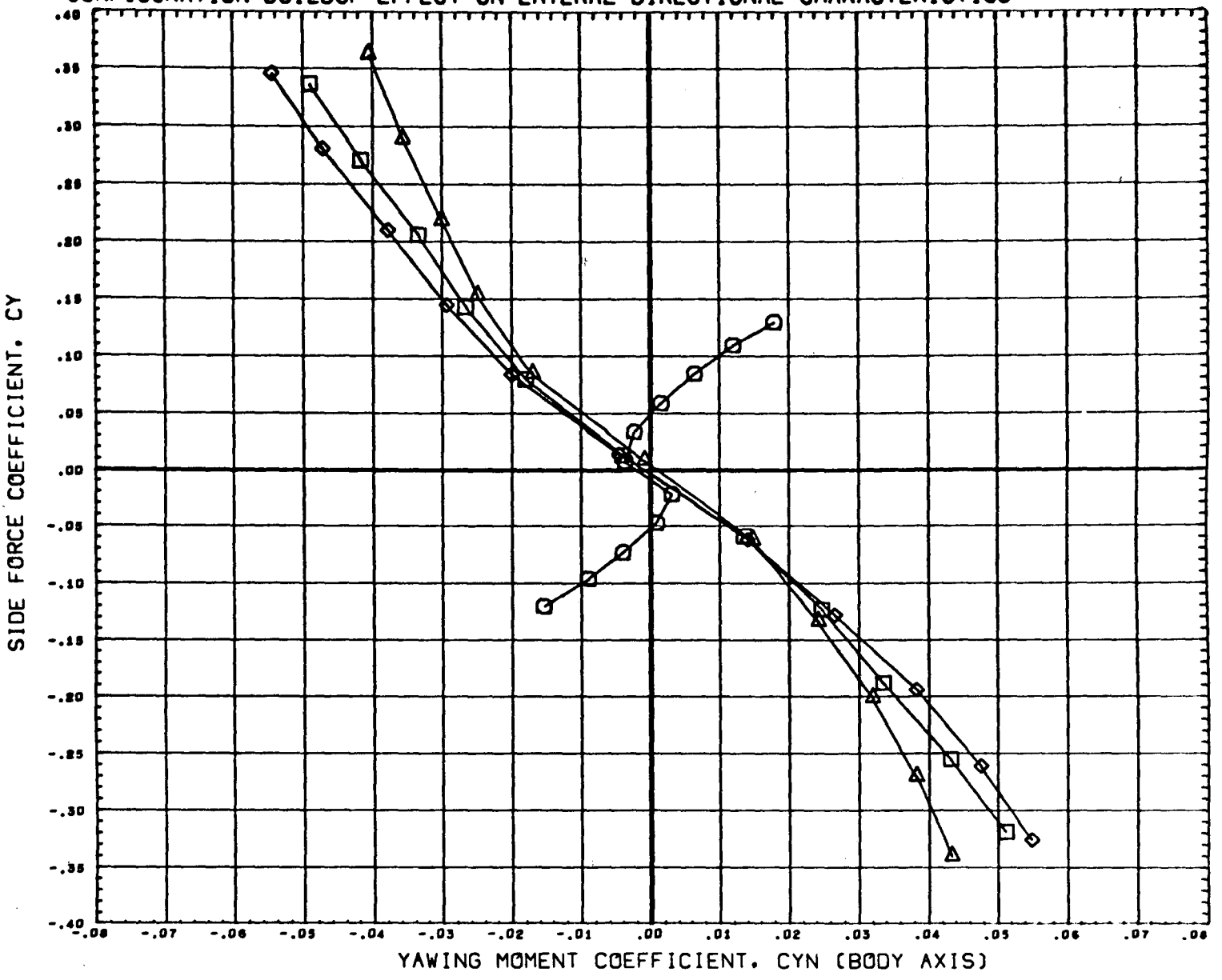
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T60003)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(A60005)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101	0.000	-1.500
(A60007)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1	0.000	-1.500
(T60008)	□	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1460	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .80

CONFIGURATION BUILDUP EFFECT ON LATERAL DIRECTIONAL CHARACTERISTICS



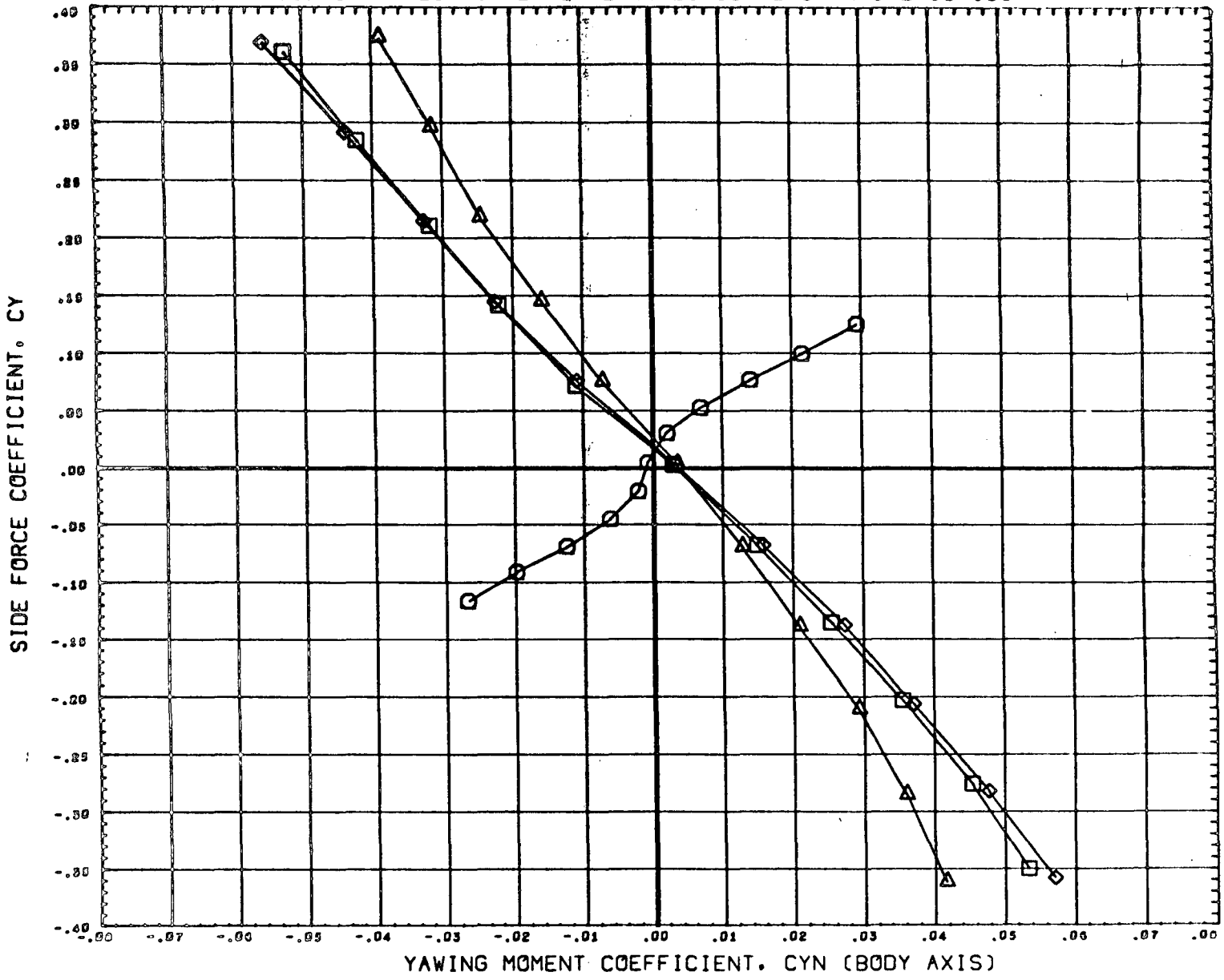
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66003)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(A66005)	△	MSFC TWT 538	SHUTTLE LAUNCH	T1O1	0.000	-1.500
(A66007)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
(T66009)	□	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1460	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .90

CONFIGURATION BUILDUP EFFECT ON LATERAL DIRECTIONAL CHARACTERISTICS



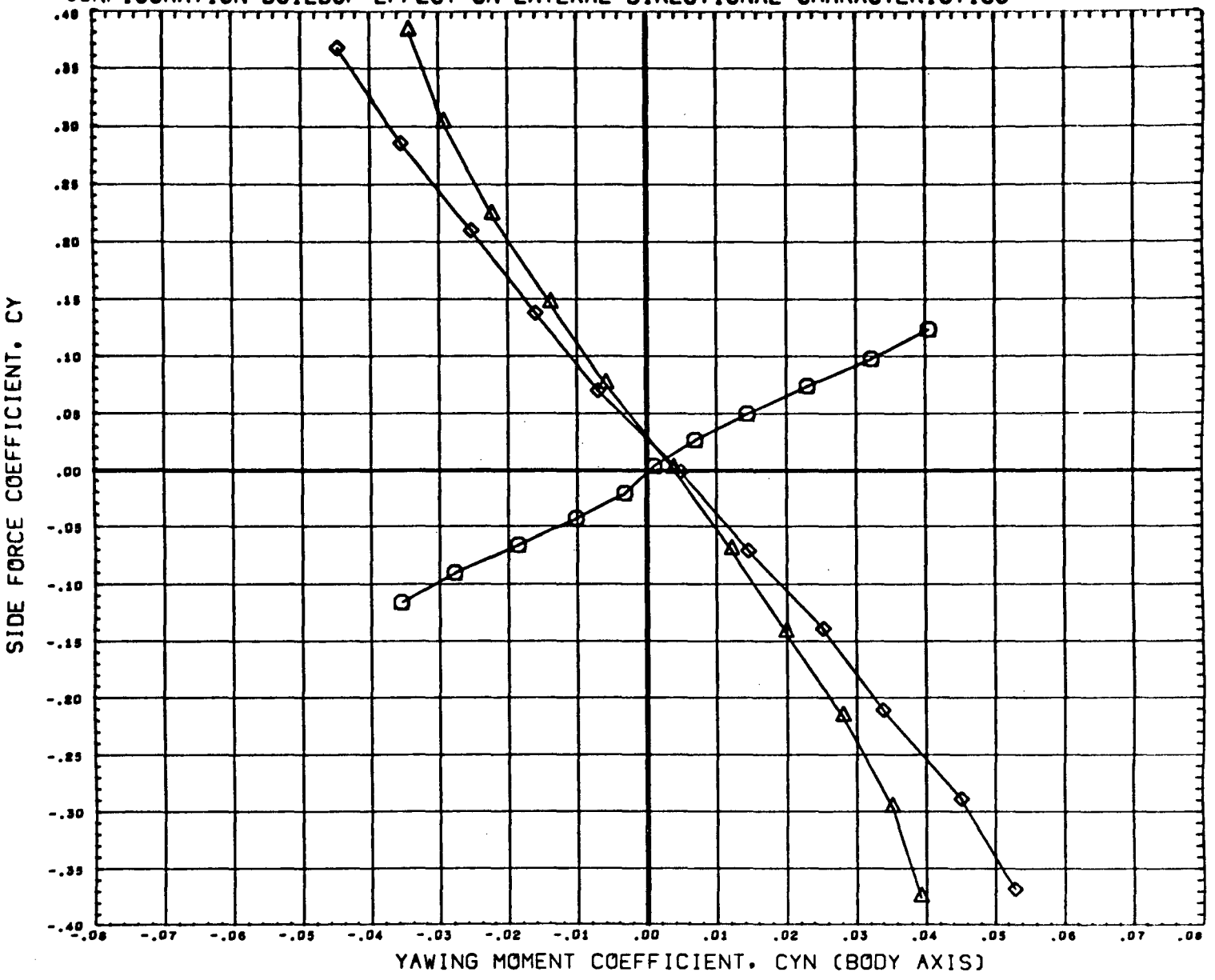
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66003)	○	MSFC TWT 930	SHUTTLE LAUNCH	T1S1	0.000	
(A66005)	△	MSFC TWT 930	SHUTTLE LAUNCH	T1O1	0.000	-1.500
(A66007)	◇	MSFC TWT 930	SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
(T66005)	□	MSFC TWT 930	SHUTTLE LAUNCH	T1O1S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1460	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.11

CONFIGURATION BUILDUP EFFECT ON LATERAL DIRECTIONAL CHARACTERISTICS



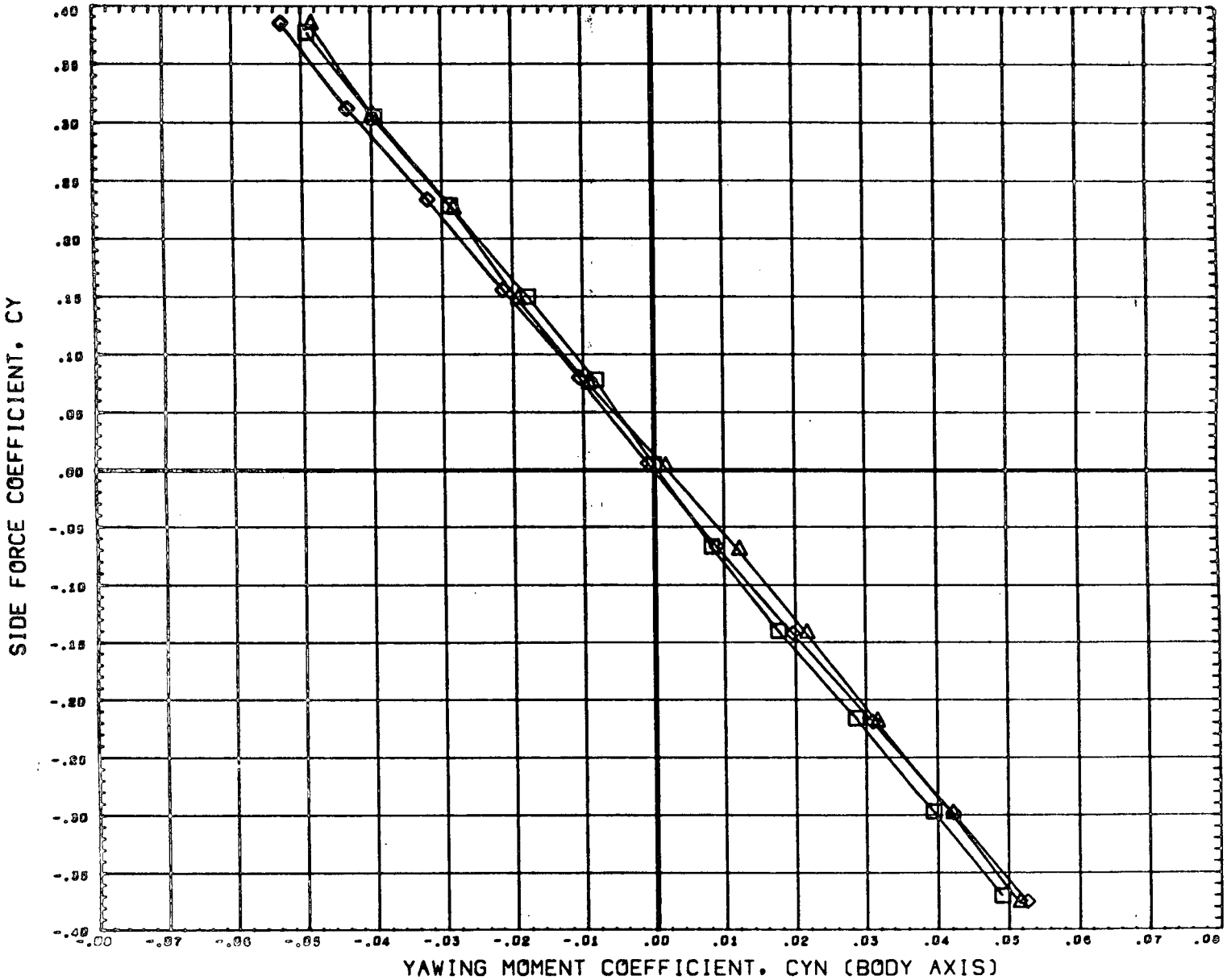
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66003)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(A66005)	△	MSFC TWT 538	SHUTTLE LAUNCH	T1O1	0.000	-1.500
(A66007)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
(T66009)	□	DATA NOT AVAILABLE FOR ALL CONDITIONS			0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.20

CONFIGURATION BUILDUP EFFECT ON LATERAL DIRECTIONAL CHARACTERISTICS



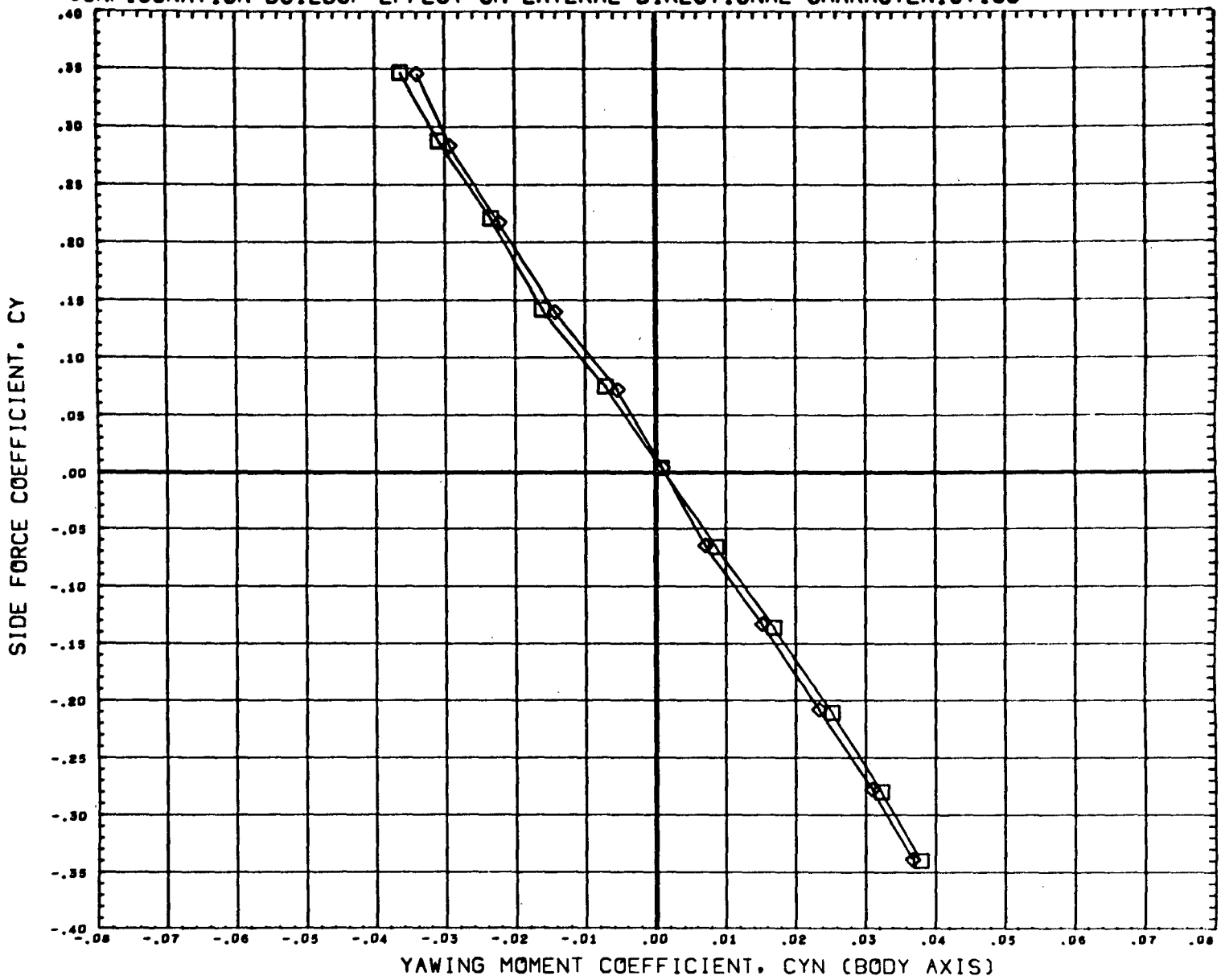
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66003)	○	DATA NOT AVAILABLE FOR ALL CONDITIONS			0.000	
(A66005)	△	MSFC TWT 930	SHUTTLE LAUNCH	T101	0.000	-1.500
(A66007)	◇	MSFC TWT 930	SHUTTLE LAUNCH	T101S1	0.000	-1.500
(T00000)	□	MSFC TWT 930	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.97

CONFIGURATION BUILDUP EFFECT ON LATERAL DIRECTIONAL CHARACTERISTICS



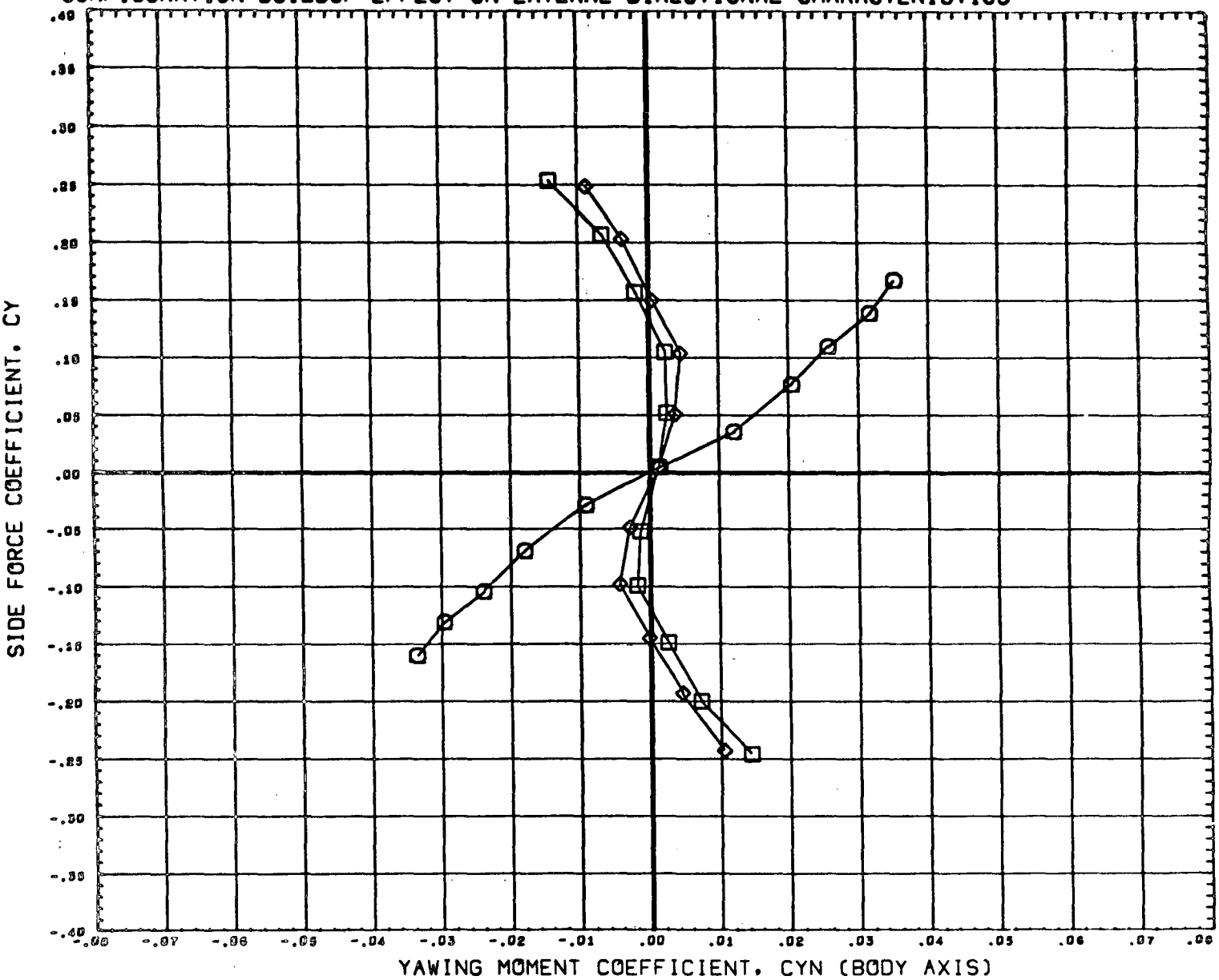
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ORBIN
(T66003)	○	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	
(A66005)	△	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500
(A66007)	◇	MSFC TWT 538 SHUTTLE LAUNCH T101S1	0.000	-1.500
(T66009)	□	MSFC TWT 538 SHUTTLE LAUNCH T101S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 2.74

CONFIGURATION BUILDUP EFFECT ON LATERAL DIRECTIONAL CHARACTERISTICS



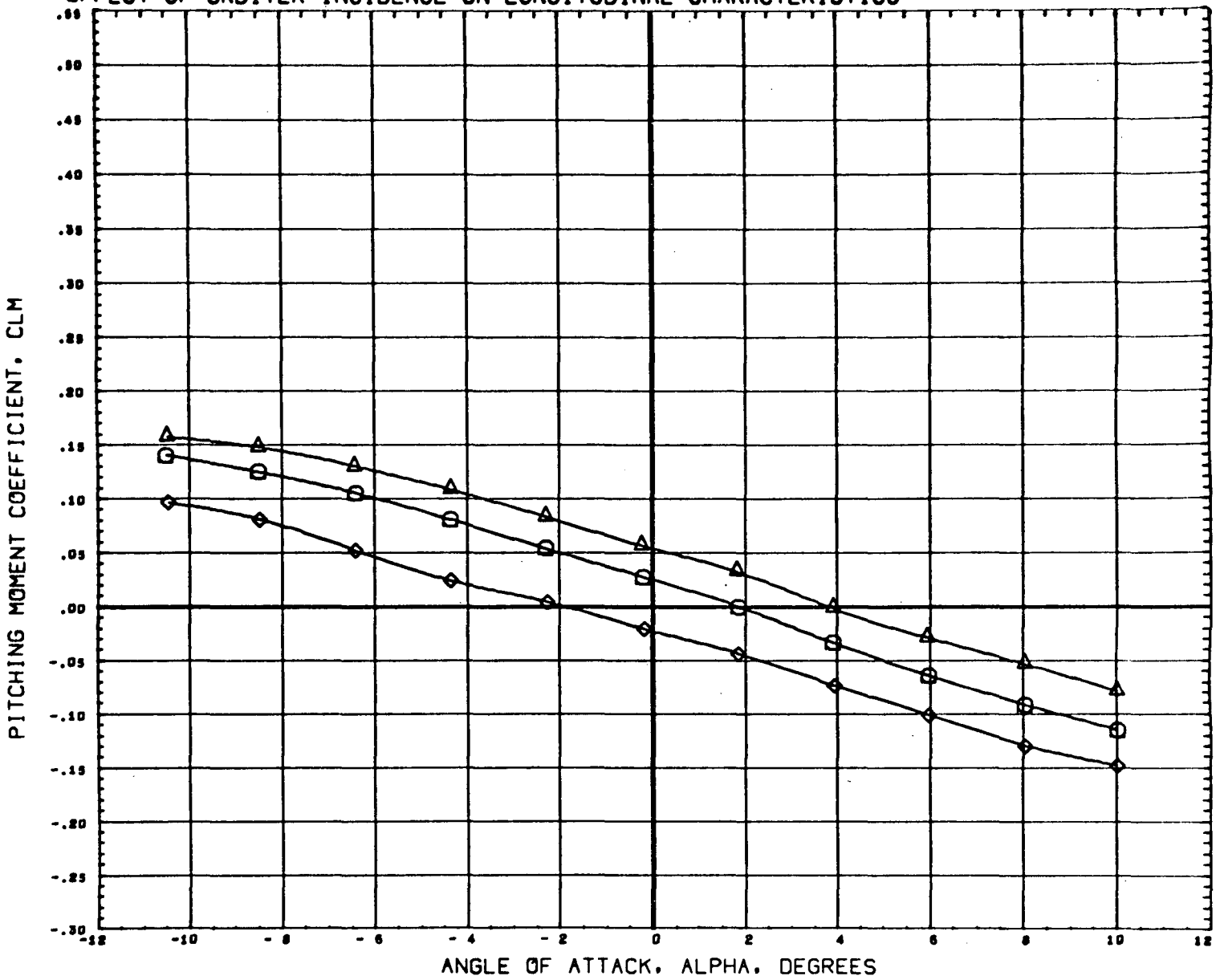
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		ALPHA	ORBIN
(T66003)	○	MSFC TWT 538 SHUTTLE LAUNCH	T1S1	0.000	
(A66005)	△	DATA NOT AVAILABLE FOR ALL CONDITIONS		0.000	-1.500
(AG6007)	◇	MSFC TWT 538 SHUTTLE LAUNCH	T101S1	0.000	-1.500
(T06000)	□	MSFC TWT 538 SHUTTLE LAUNCH	T101S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1400	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 4.96

EFFECT OF ORBITER INCIDENCE ON LONGITUDINAL CHARACTERISTICS



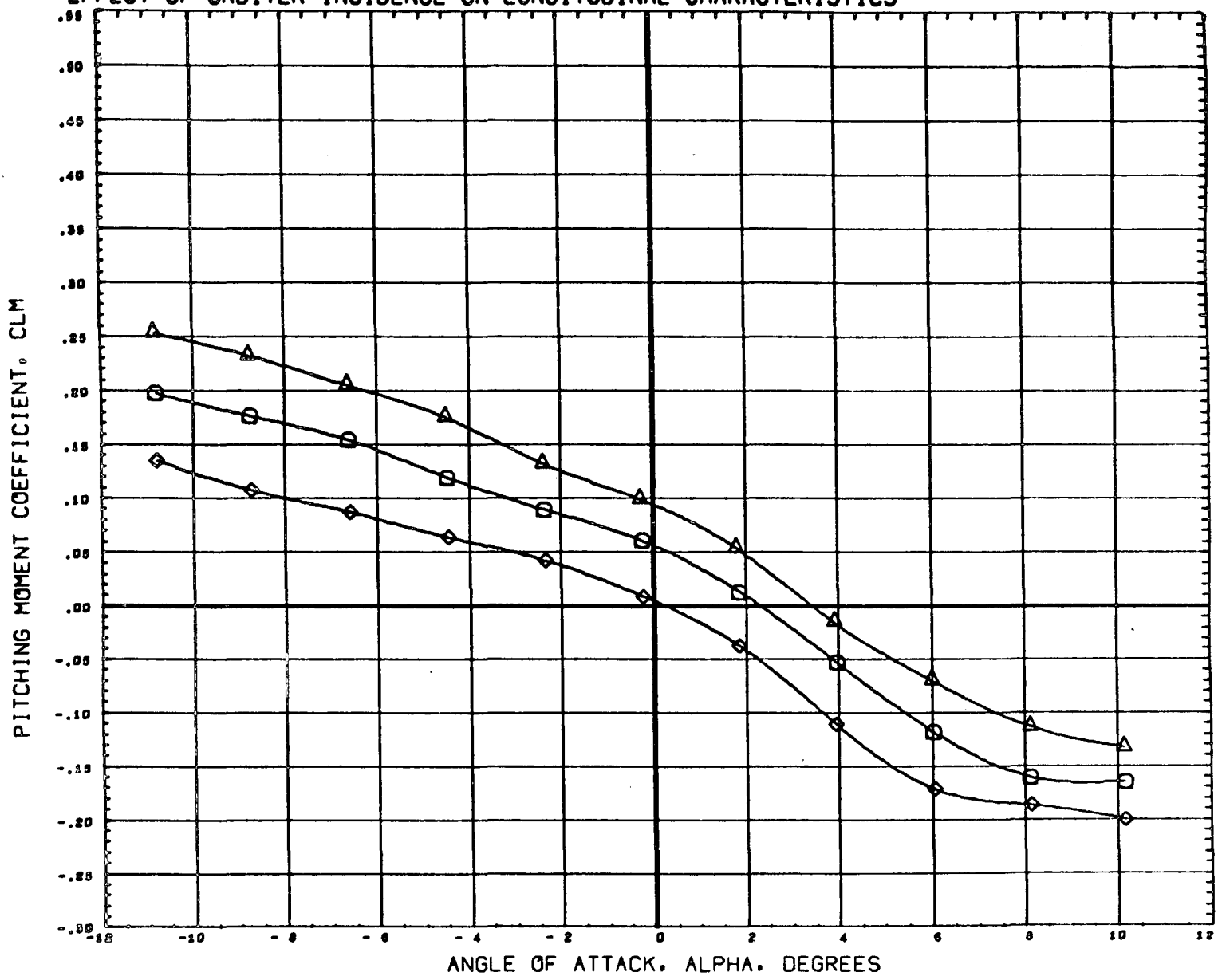
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66010)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-3.000
(B66012)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	0.000

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .60

EFFECT OF ORBITER INCIDENCE ON LONGITUDINAL CHARACTERISTICS



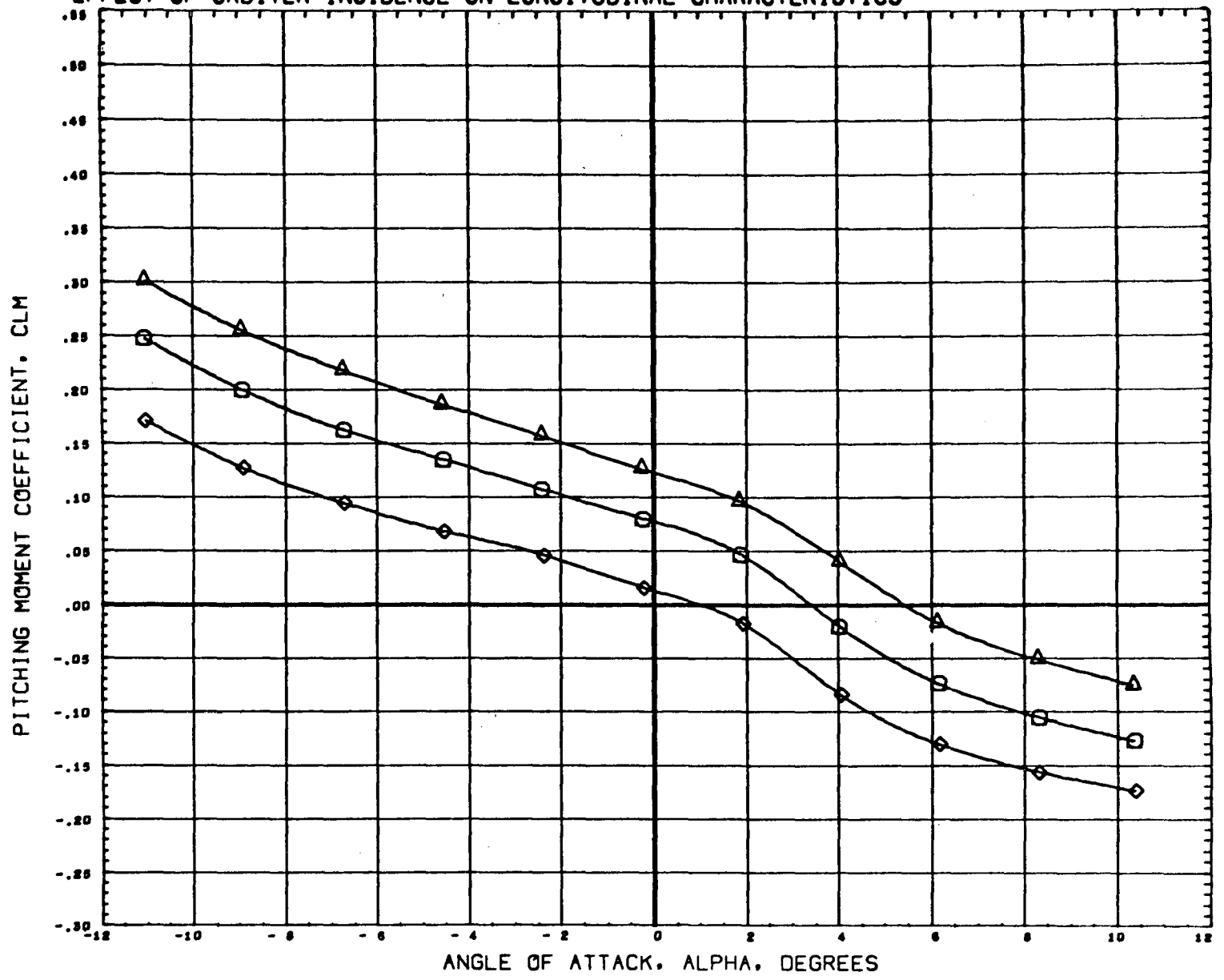
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66010)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-3.000
(B66012)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	0.000

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .91

EFFECT OF ORBITER INCIDENCE ON LONGITUDINAL CHARACTERISTICS



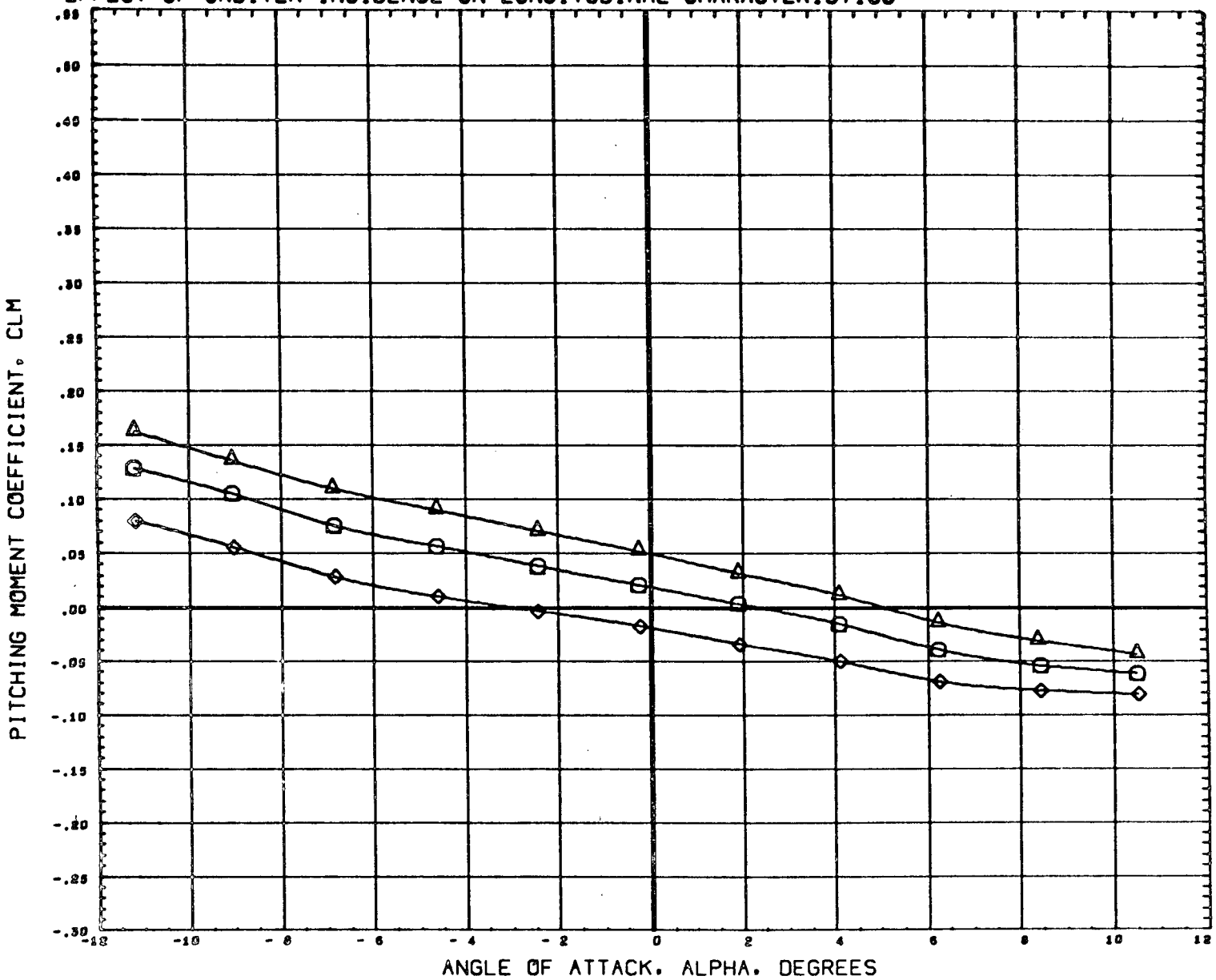
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(866008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(866010)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-3.000
(866012)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	0.000

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.19

EFFECT OF ORBITER INCIDENCE ON LONGITUDINAL CHARACTERISTICS



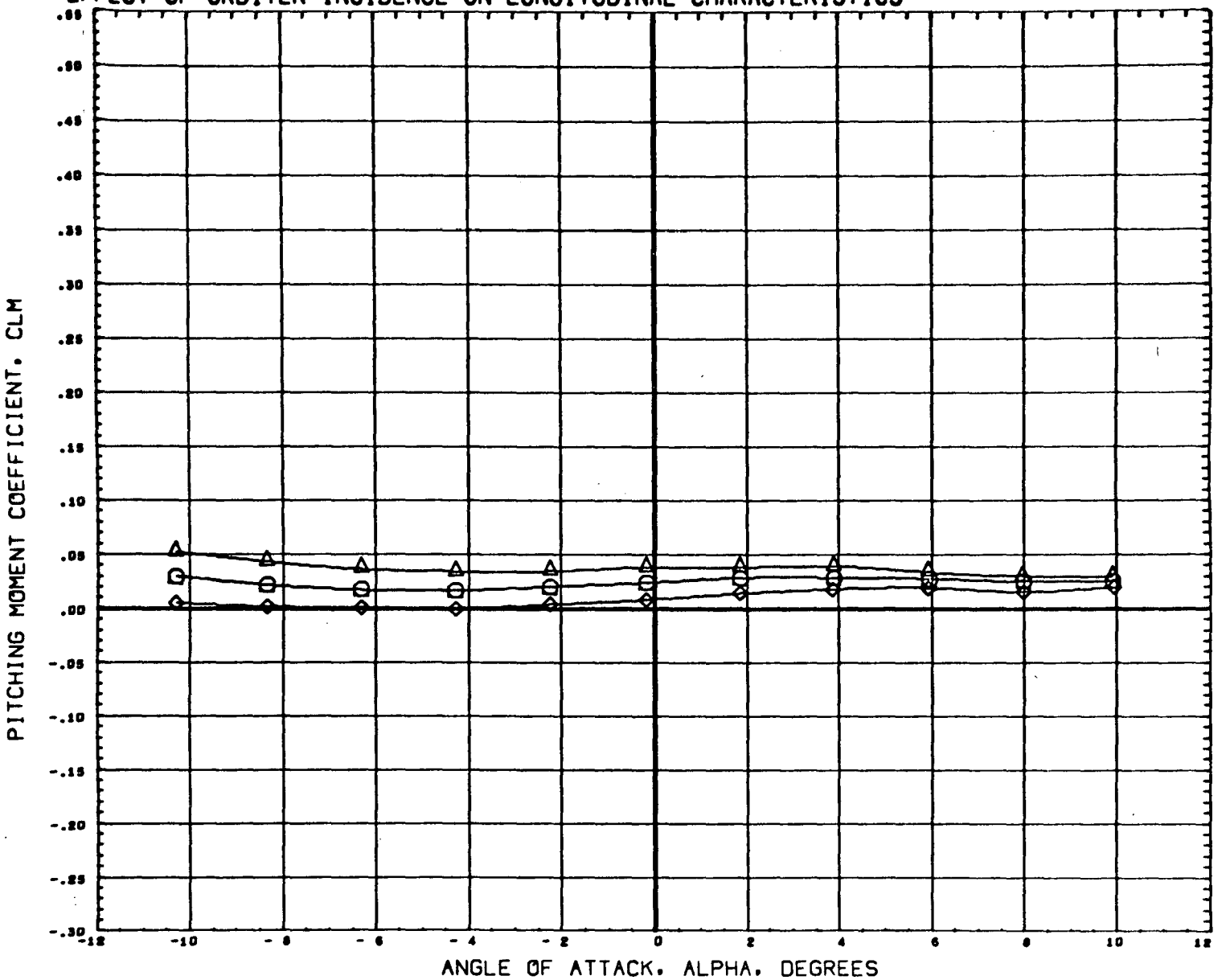
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66009)	○	MSFC TWT 530	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66010)	△	MSFC TWT 530	SHUTTLE LAUNCH	T101S1R1	0.000	-3.000
(B66012)	◇	MSFC TWT 530	SHUTTLE LAUNCH	T101S1R1	0.000	0.000

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1490	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.97

EFFECT OF ORBITER INCIDENCE ON LONGITUDINAL CHARACTERISTICS



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66010)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-3.000
(B66012)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	0.000

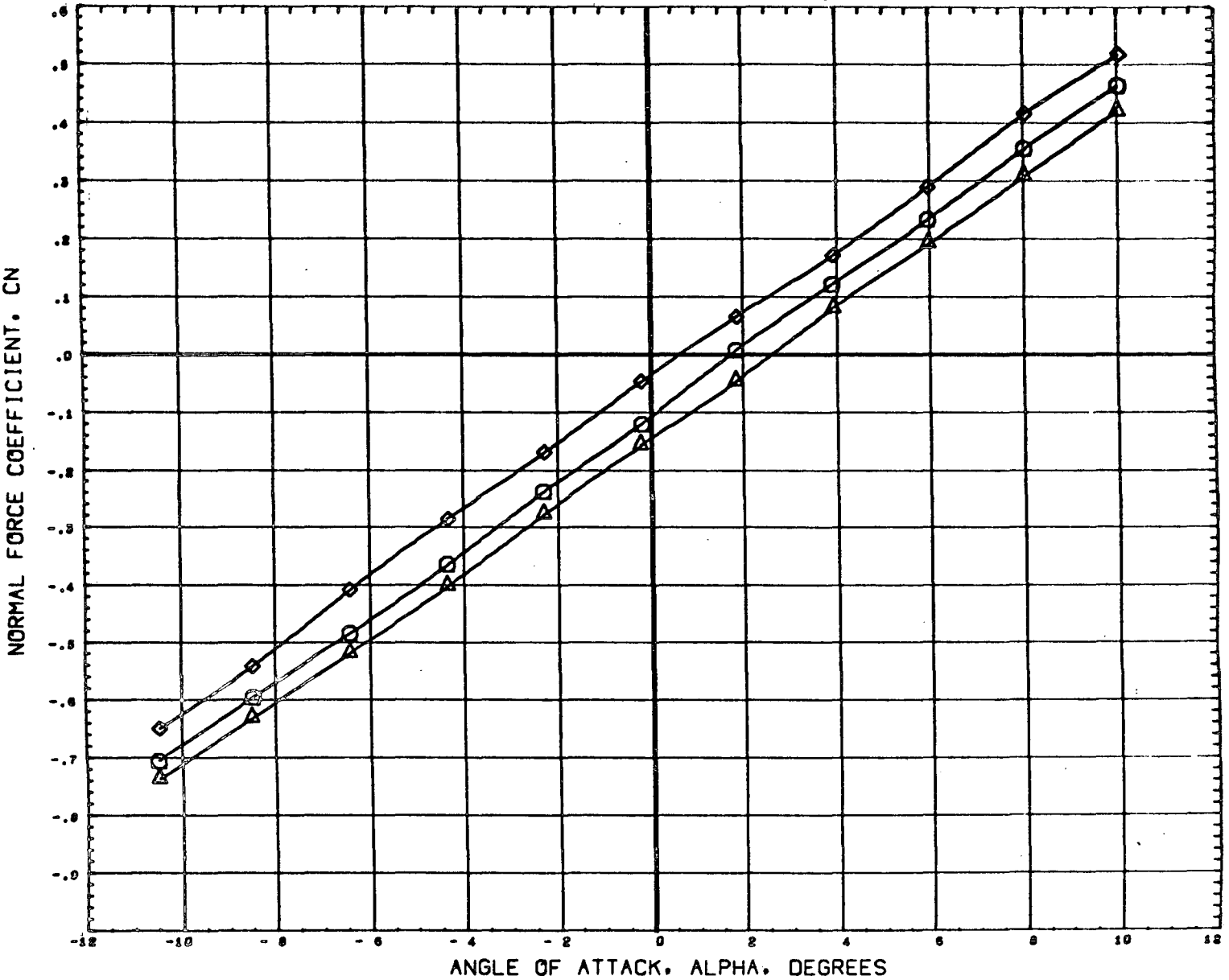
REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH = 4.96

C.3

EFFECT OF ORBITER INCIDENCE ON LONGITUDINAL CHARACTERISTICS



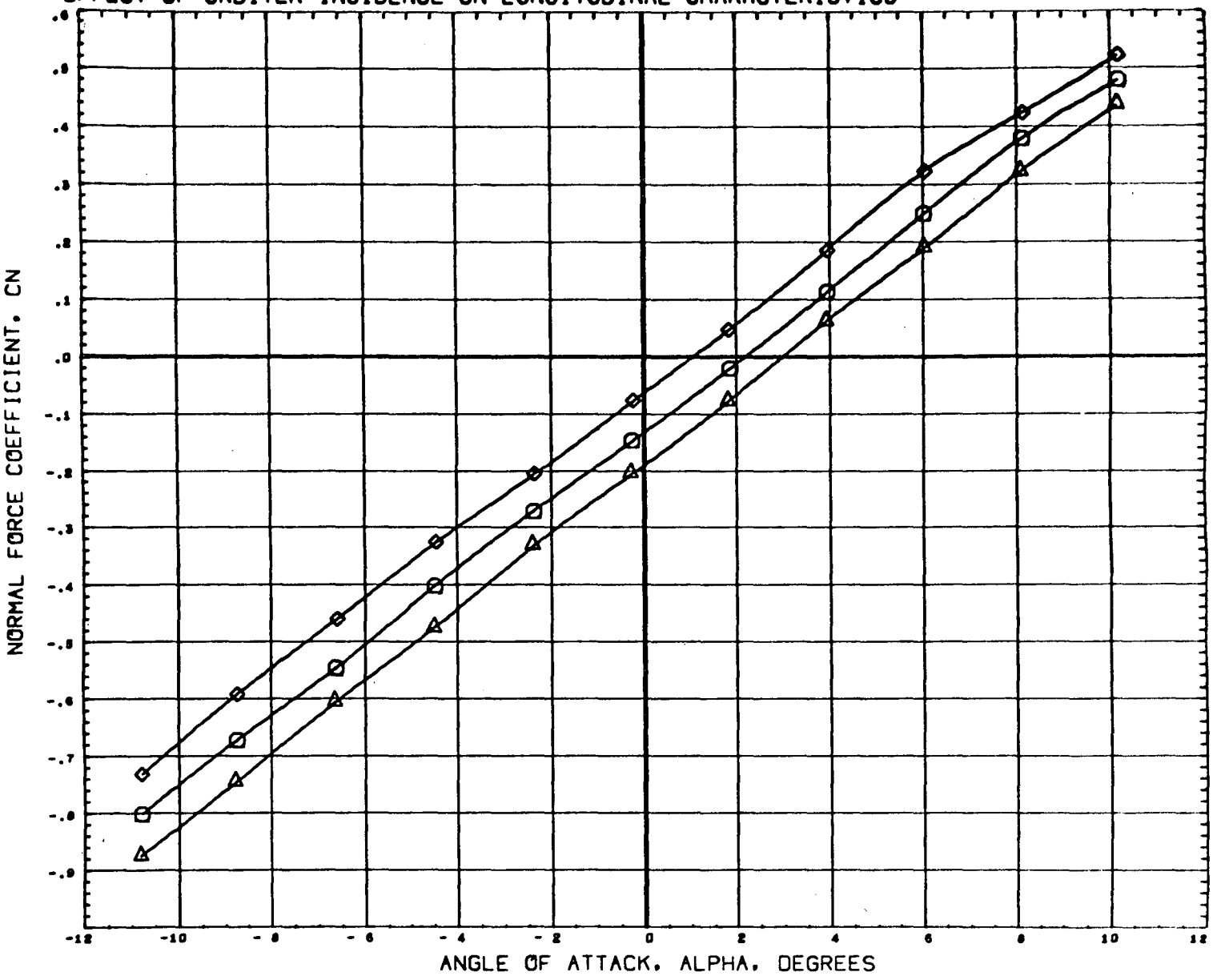
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 530	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66010)	△	MSFC TWT 530	SHUTTLE LAUNCH	T101S1R1	0.000	-3.000
(B66012)	◇	MSFC TWT 530	SHUTTLE LAUNCH	T101S1R1	0.000	0.000

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .60

EFFECT OF ORBITER INCIDENCE ON LONGITUDINAL CHARACTERISTICS



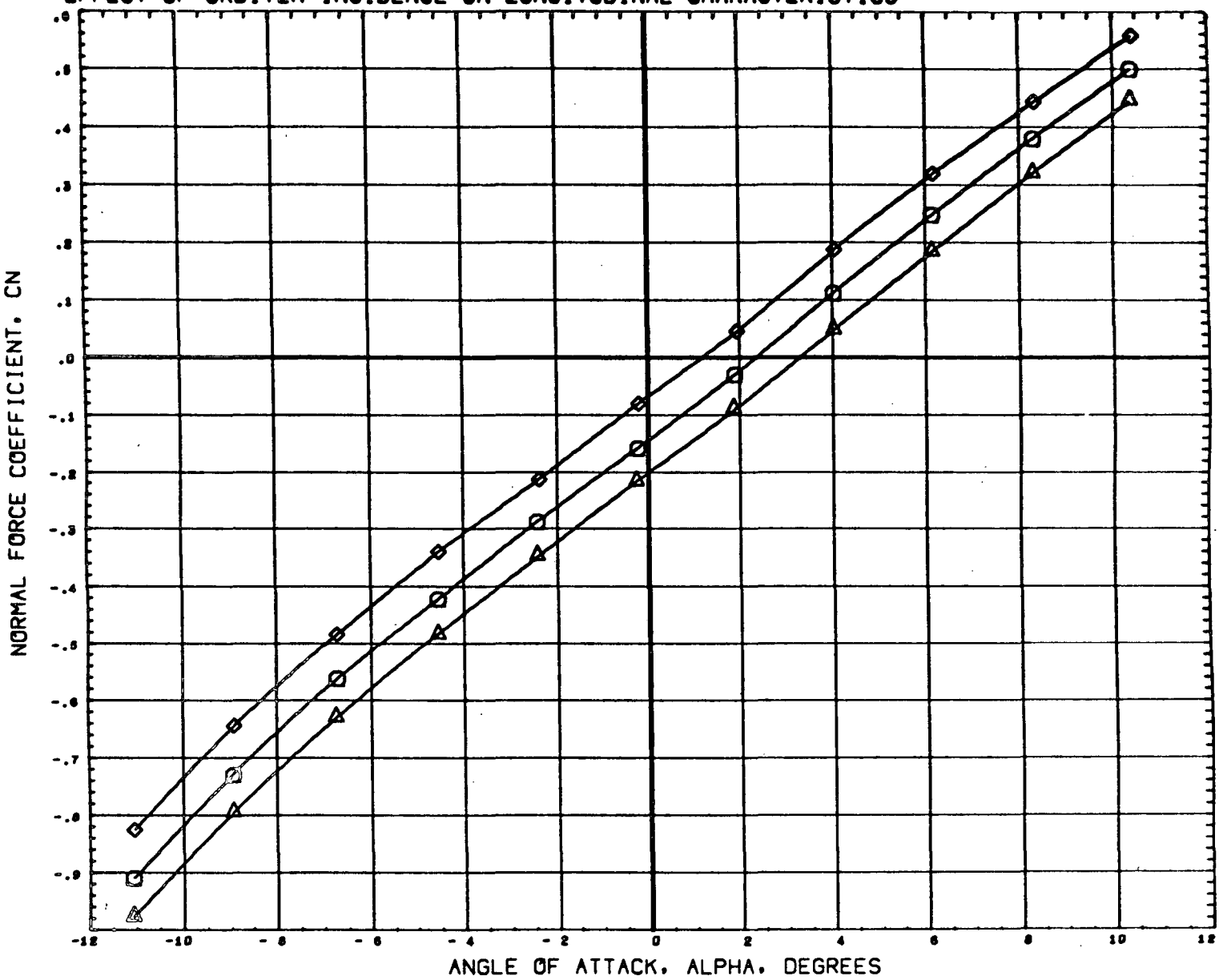
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66010)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-3.000
(B66012)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	0.000

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .91

EFFECT OF ORBITER INCIDENCE ON LONGITUDINAL CHARACTERISTICS



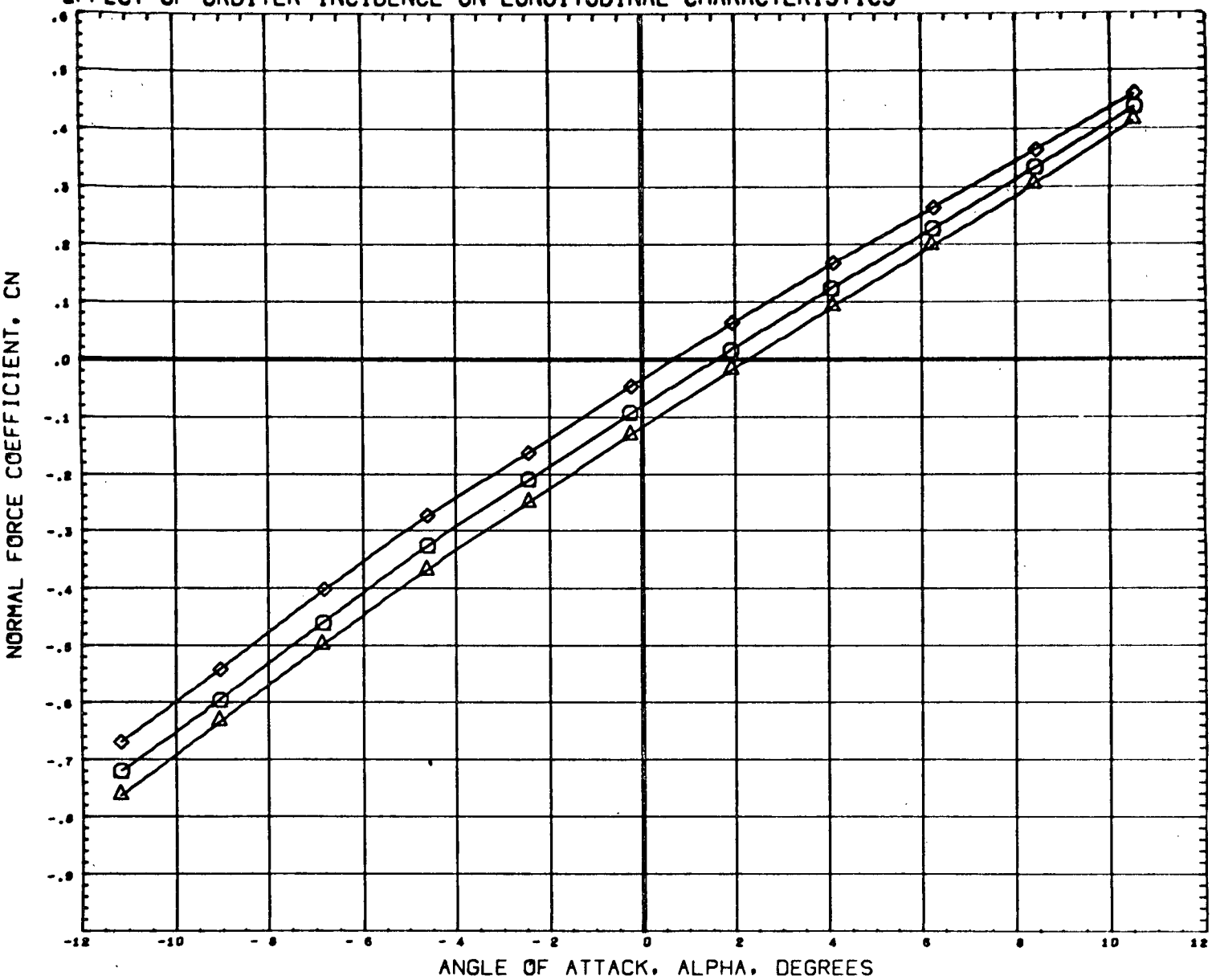
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66000)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66010)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-3.000
(B66012)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	0.000

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.19

EFFECT OF ORBITER INCIDENCE ON LONGITUDINAL CHARACTERISTICS



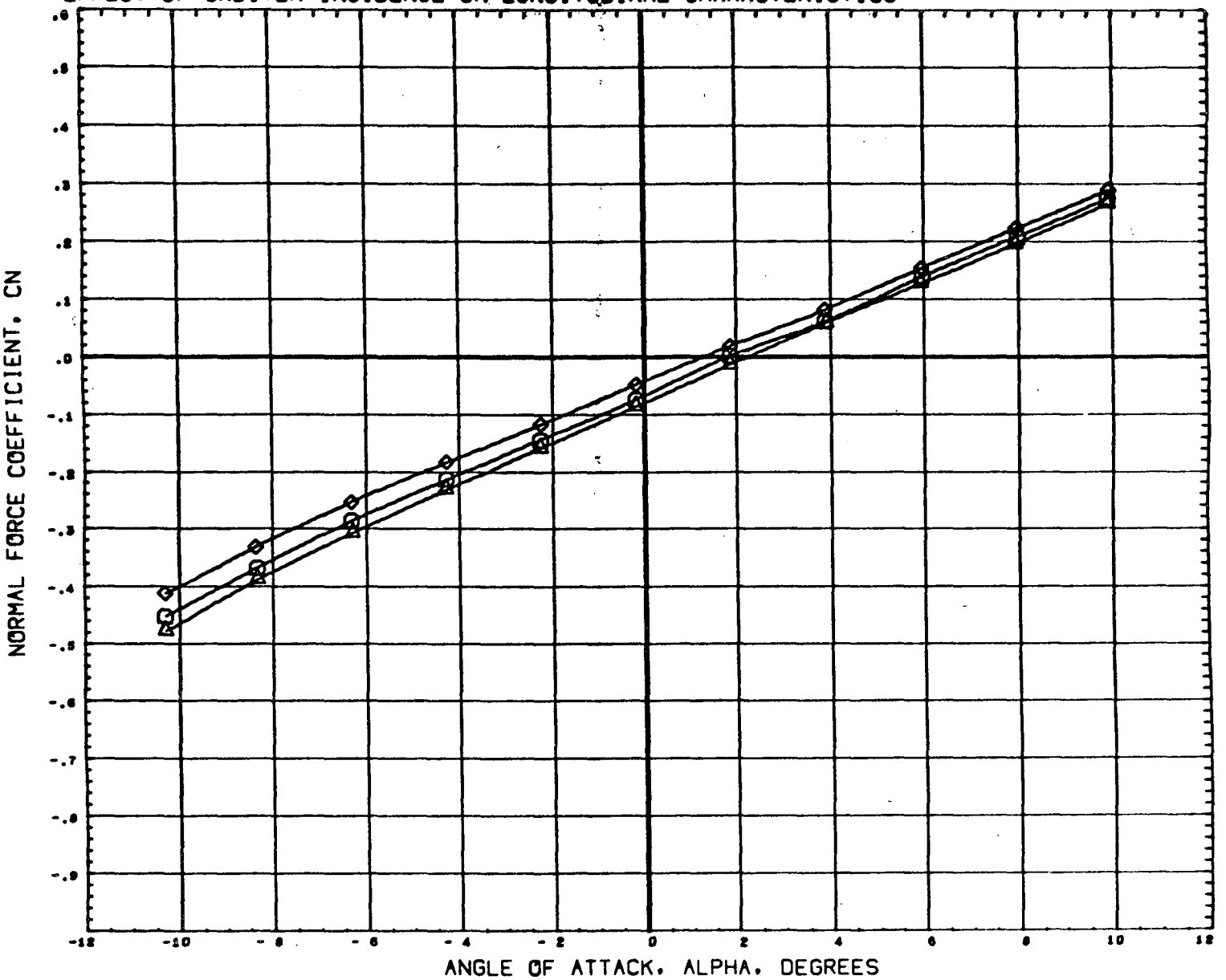
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66010)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-3.000
(B66012)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	0.000

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.97

EFFECT OF ORBITER INCIDENCE ON LONGITUDINAL CHARACTERISTICS



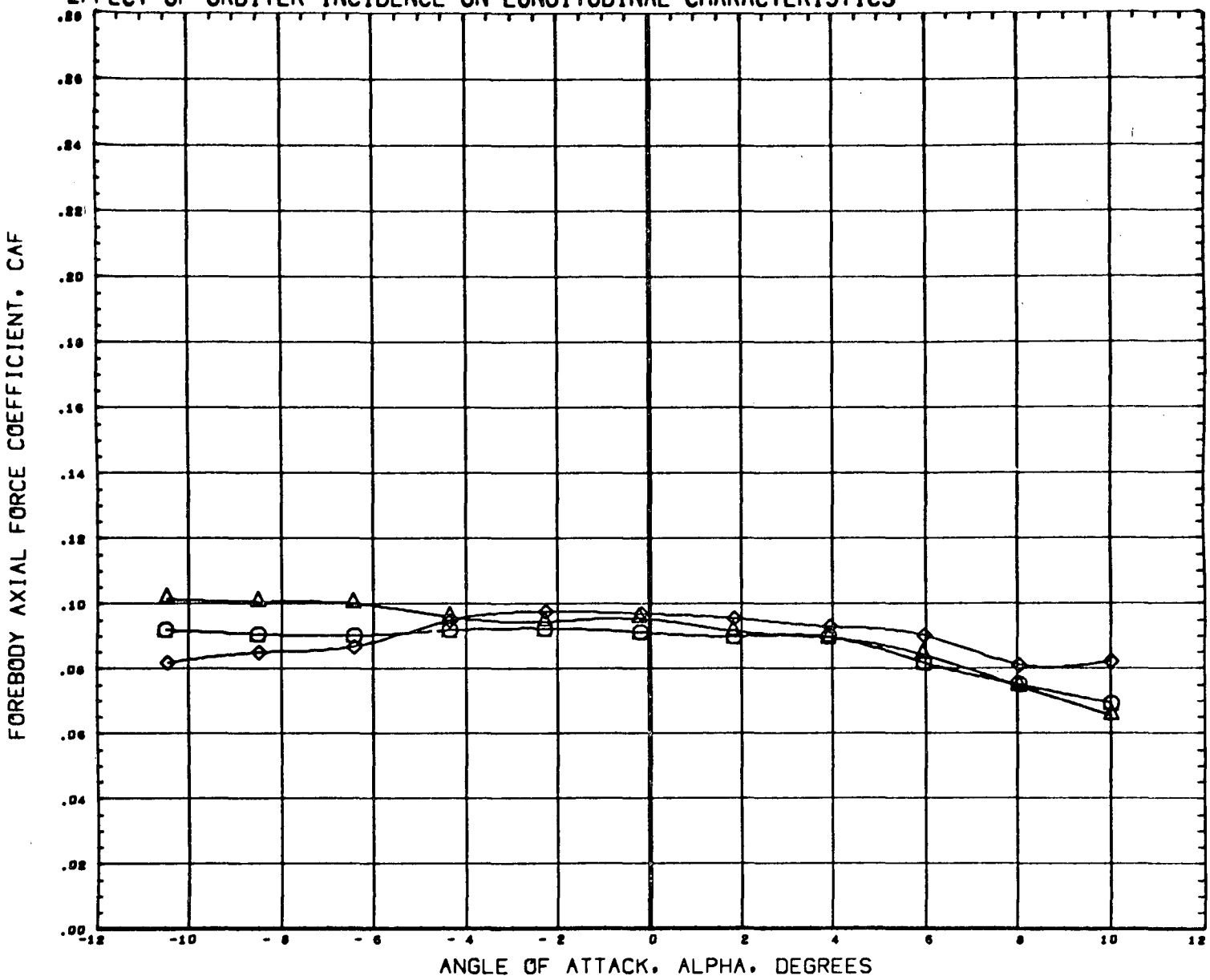
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66010)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-3.000
(B66012)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	0.000

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 4.96

EFFECT OF ORBITER INCIDENCE ON LONGITUDINAL CHARACTERISTICS



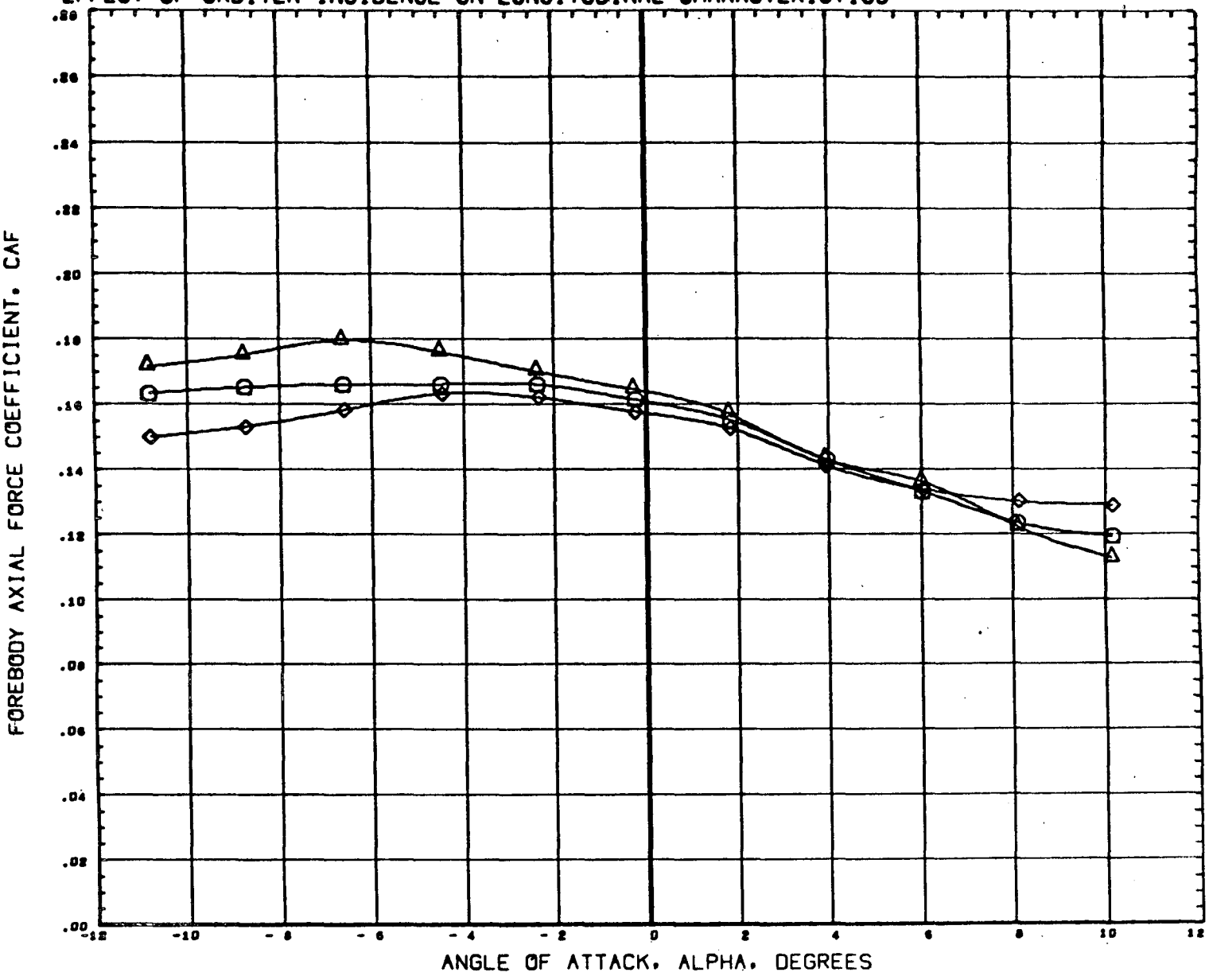
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66010)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-3.000
(B66012)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	0.000

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .60

EFFECT OF ORBITER INCIDENCE ON LONGITUDINAL CHARACTERISTICS



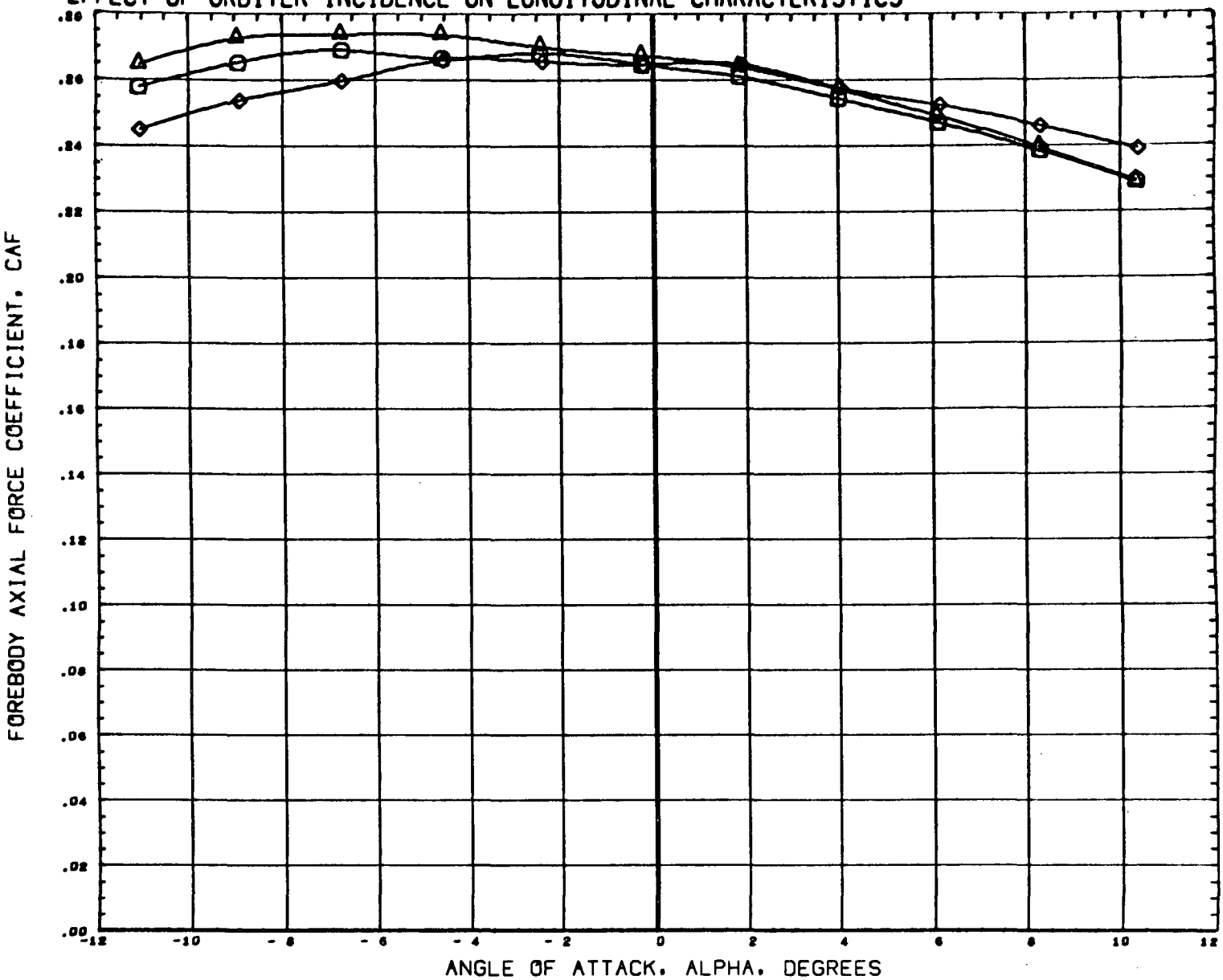
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66010)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-3.000
(B66012)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	0.000

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .91

EFFECT OF ORBITER INCIDENCE ON LONGITUDINAL CHARACTERISTICS



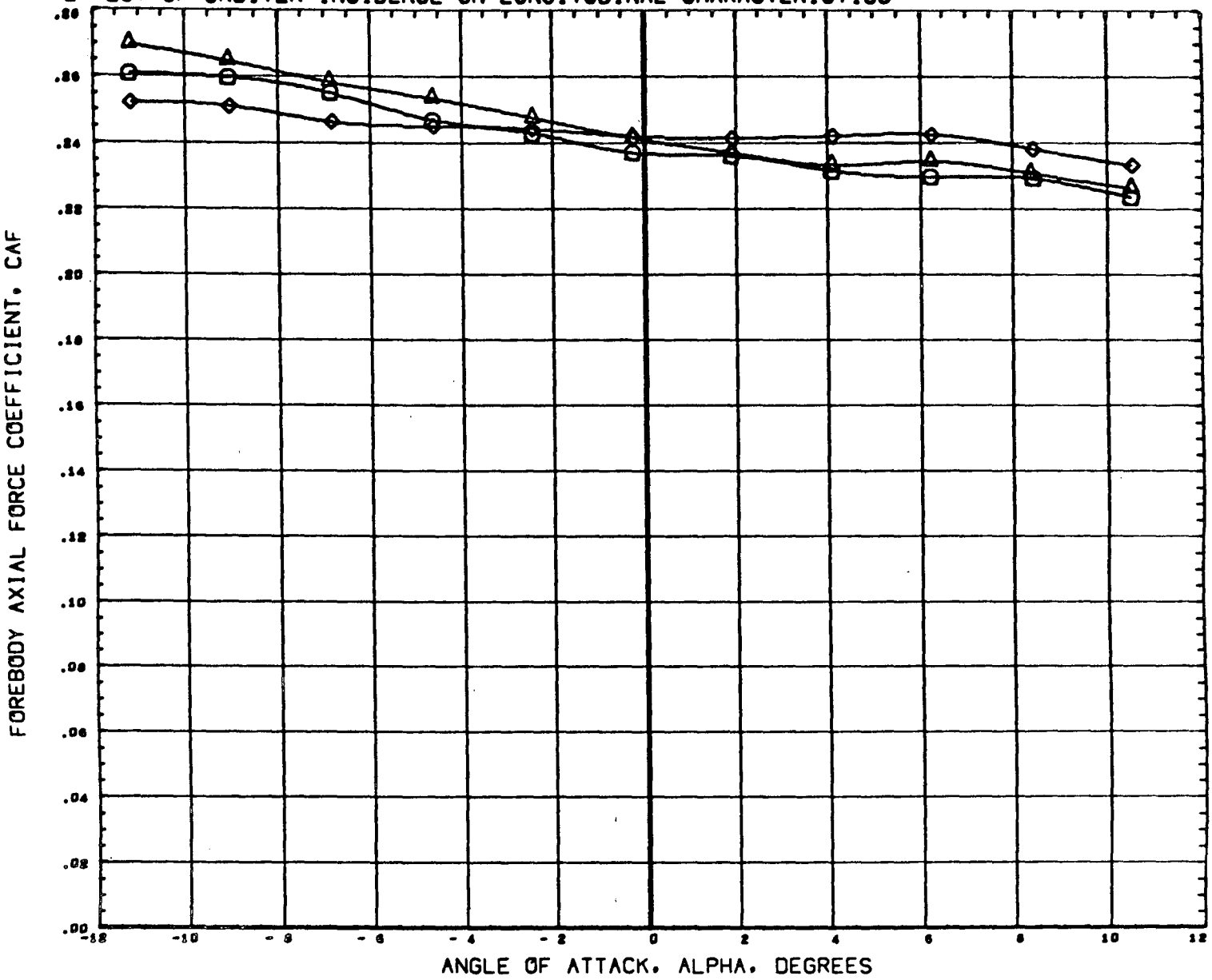
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66010)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-3.000
(B66012)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	0.000

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.19

EFFECT OF ORBITER INCIDENCE ON LONGITUDINAL CHARACTERISTICS

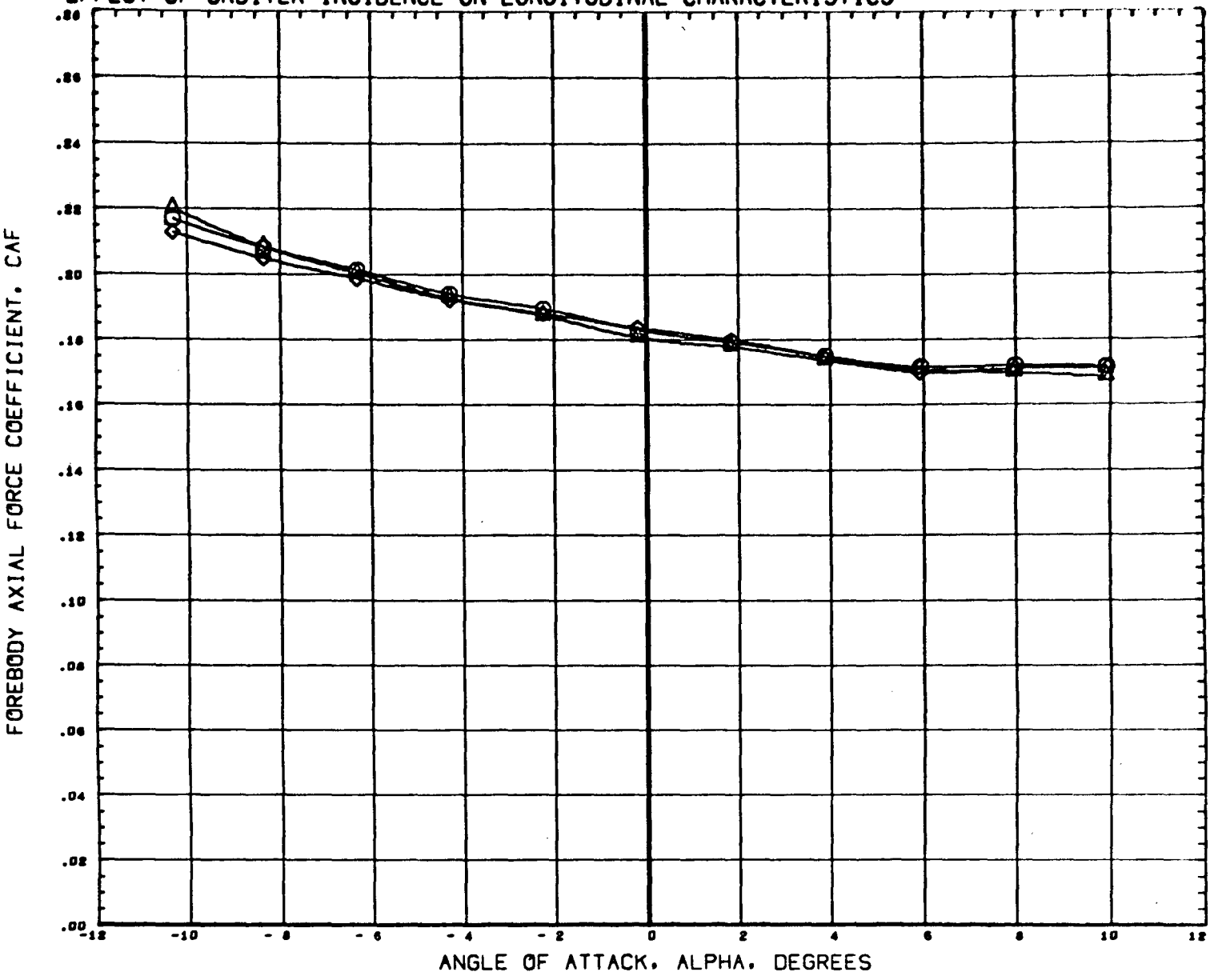


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66010)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-3.000
(B66012)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	0.000

REFERENCE INFORMATION		
SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.97

EFFECT OF ORBITER INCIDENCE ON LONGITUDINAL CHARACTERISTICS



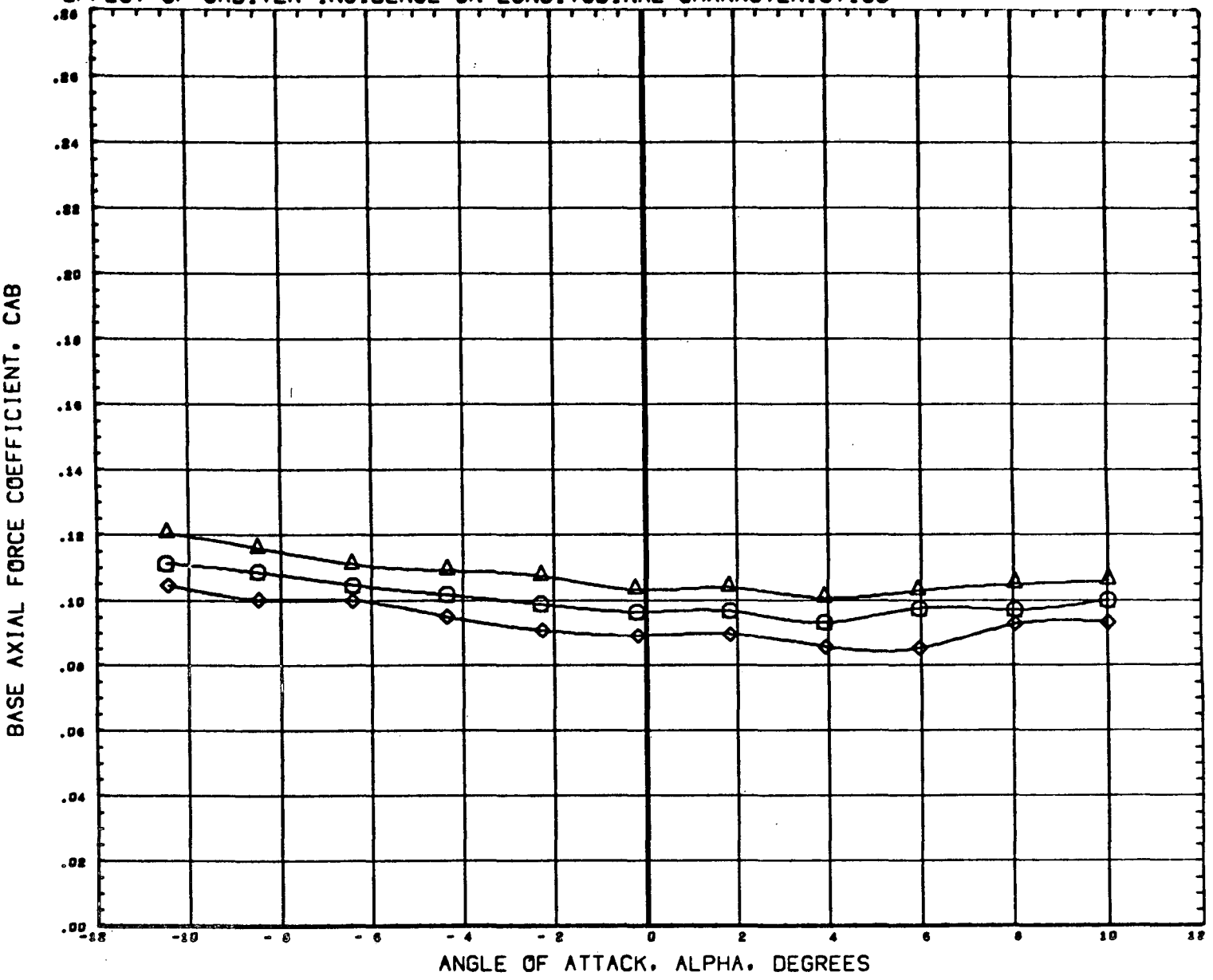
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66010)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-3.000
(B66012)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	0.000

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 4.96

EFFECT OF ORBITER INCIDENCE ON LONGITUDINAL CHARACTERISTICS



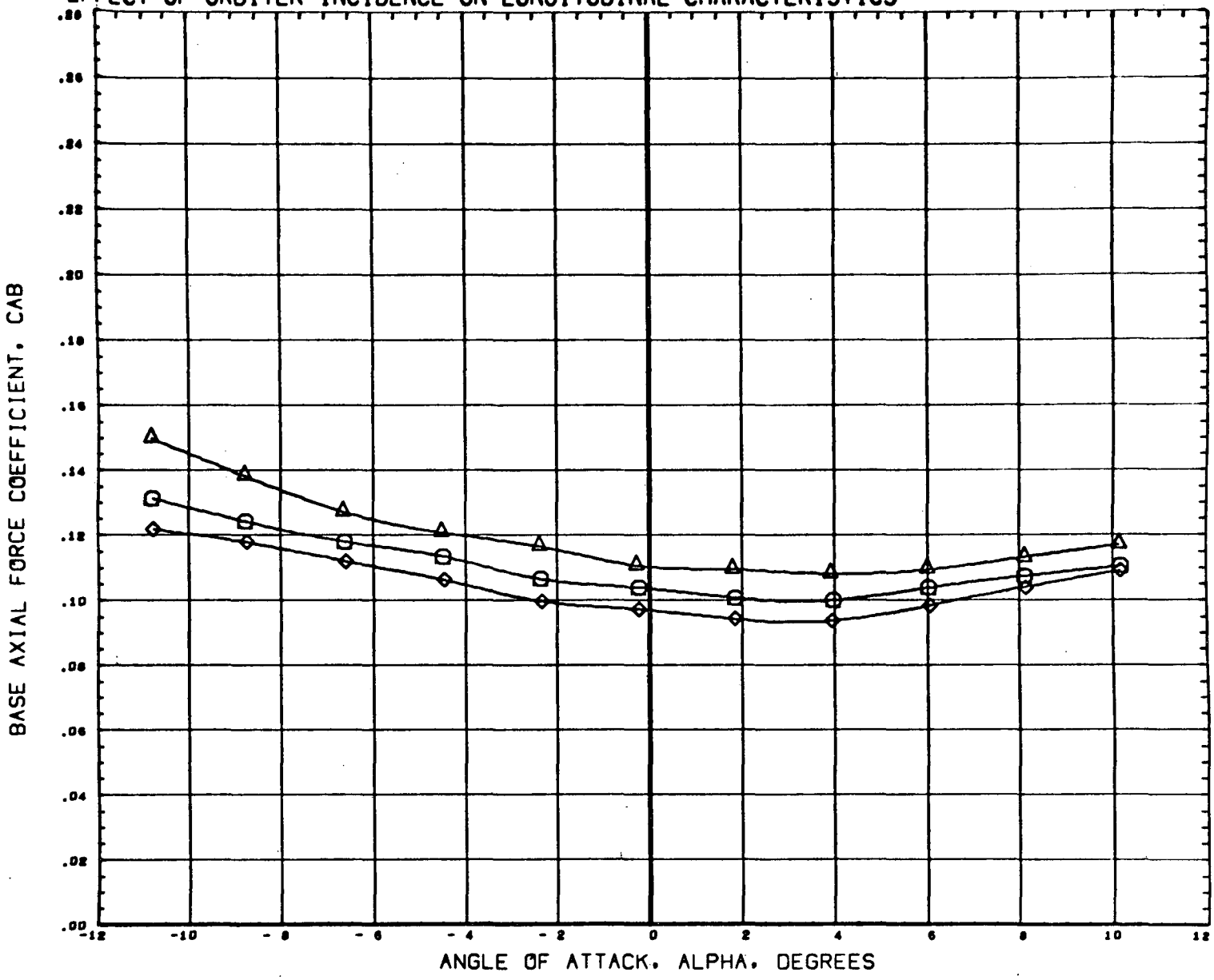
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66010)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-3.000
(B66012)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	0.000

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .60

EFFECT OF ORBITER INCIDENCE ON LONGITUDINAL CHARACTERISTICS



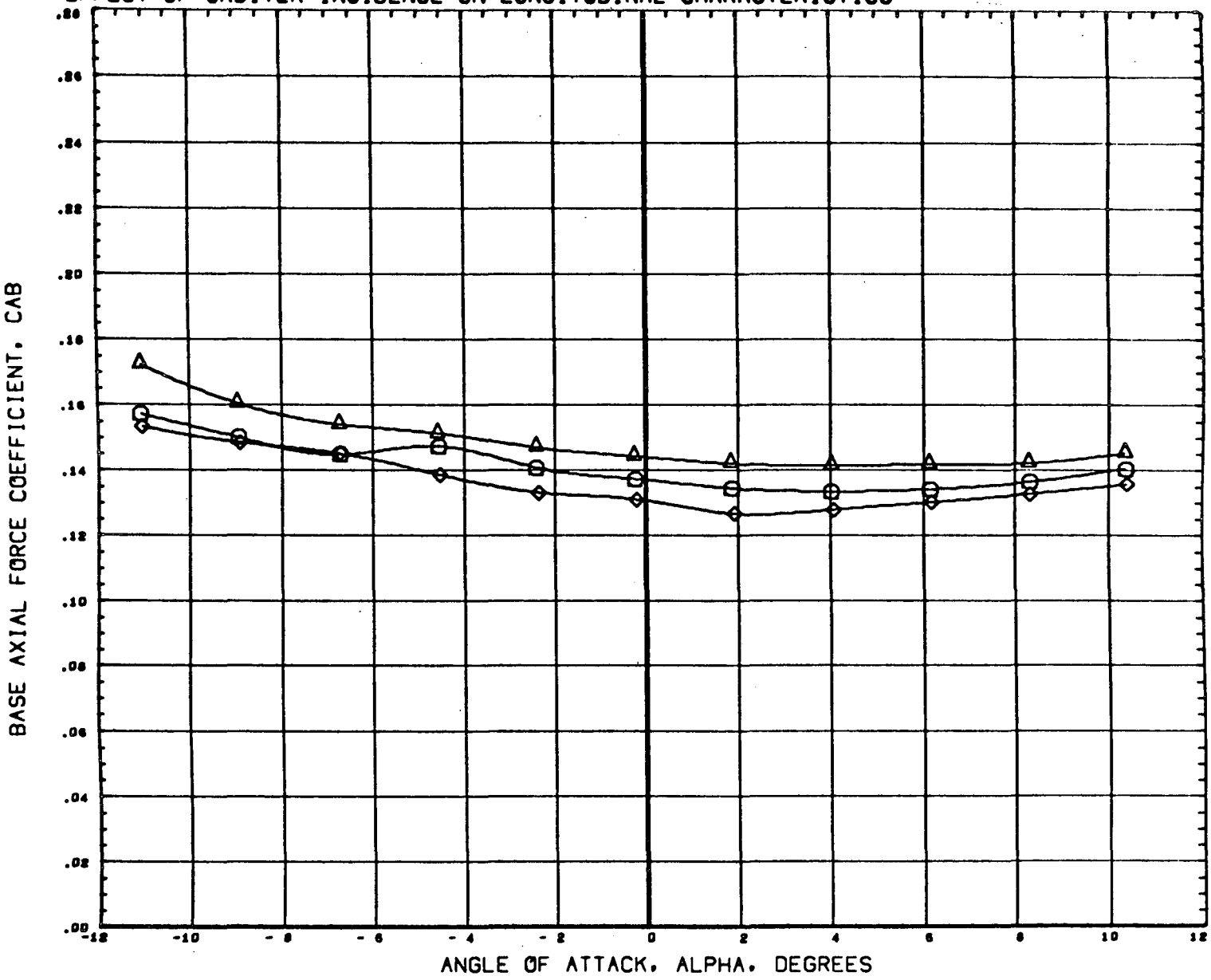
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66010)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-3.000
(B66012)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	0.000

REFERENCE INFORMATION

SREF	7.0900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .91

EFFECT OF ORBITER INCIDENCE ON LONGITUDINAL CHARACTERISTICS



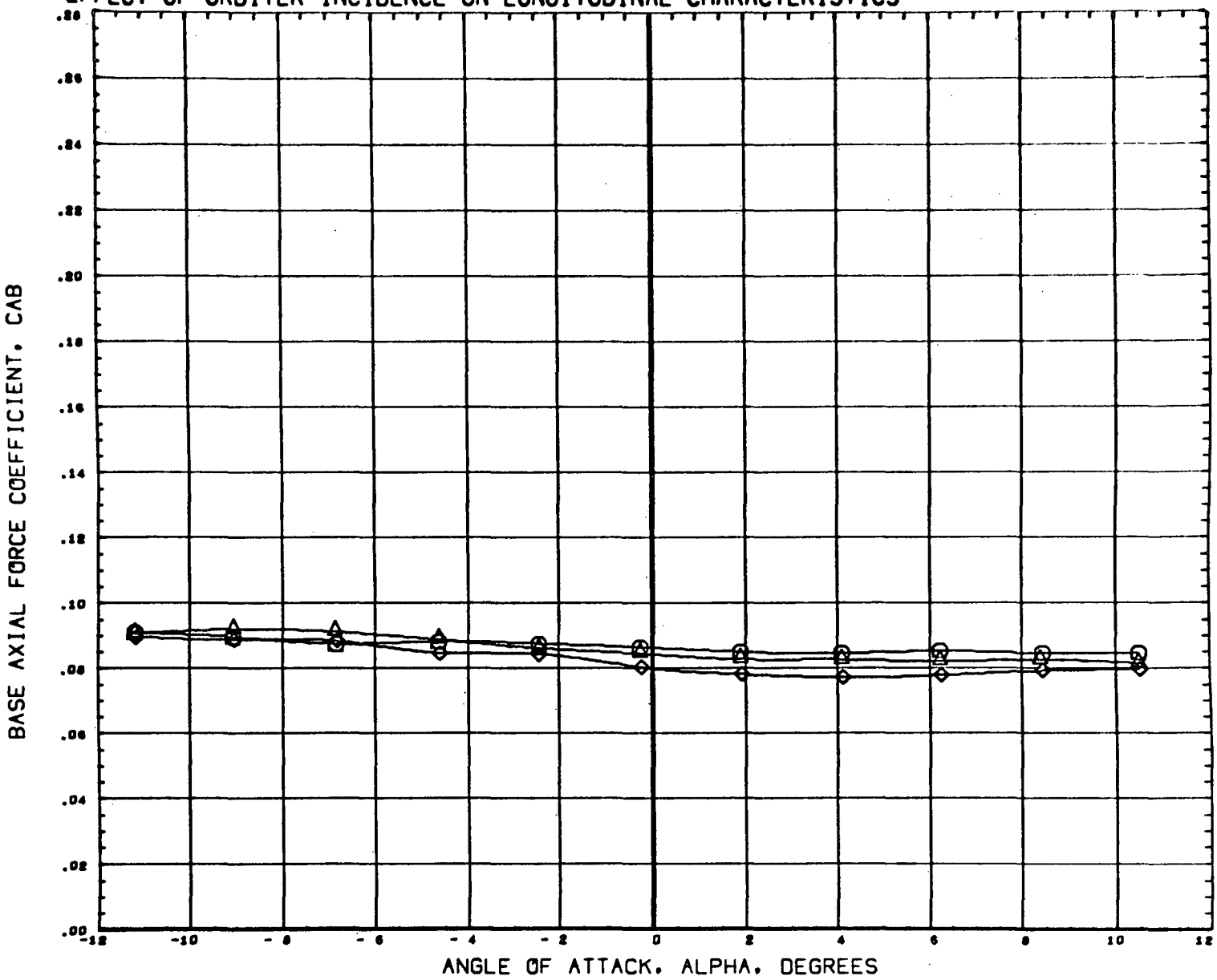
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66010)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-3.000
(B66012)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	0.000

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.19

EFFECT OF ORBITER INCIDENCE ON LONGITUDINAL CHARACTERISTICS



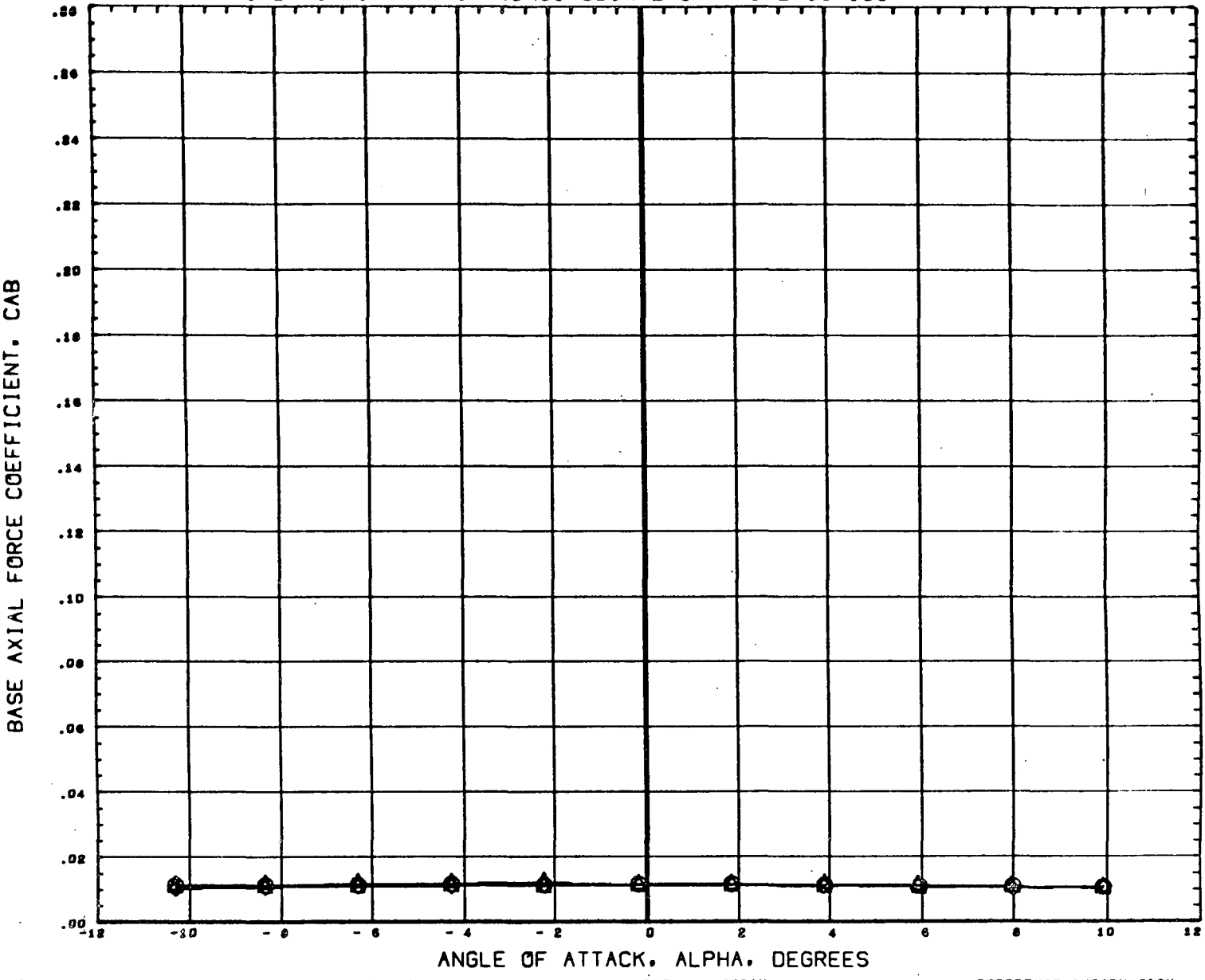
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(866008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(866010)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-3.000
(866012)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	0.000

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.97

EFFECT OF ORBITER INCIDENCE ON LONGITUDINAL CHARACTERISTICS



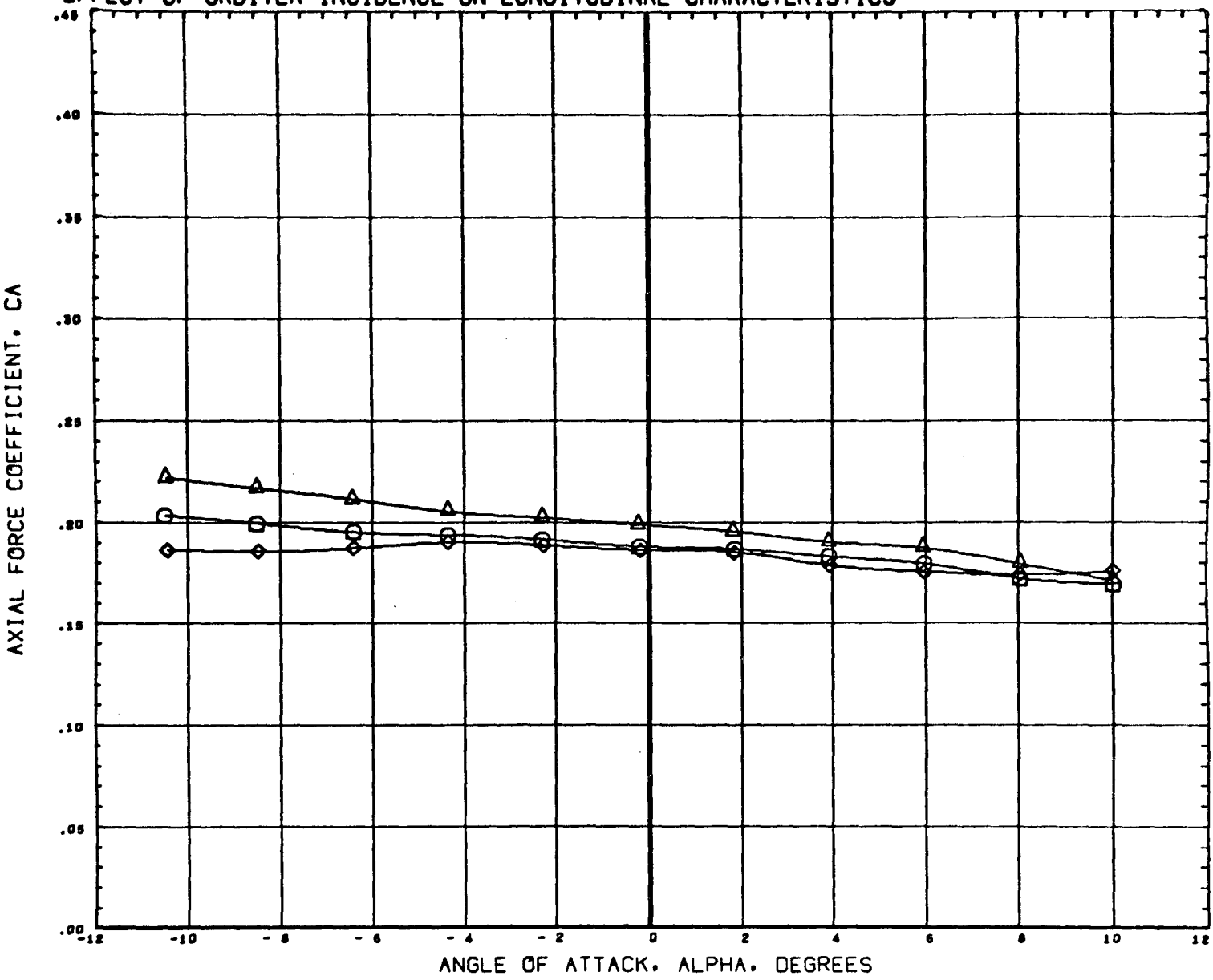
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66010)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-3.000
(B66012)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	0.000

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 4.96

EFFECT OF ORBITER INCIDENCE ON LONGITUDINAL CHARACTERISTICS



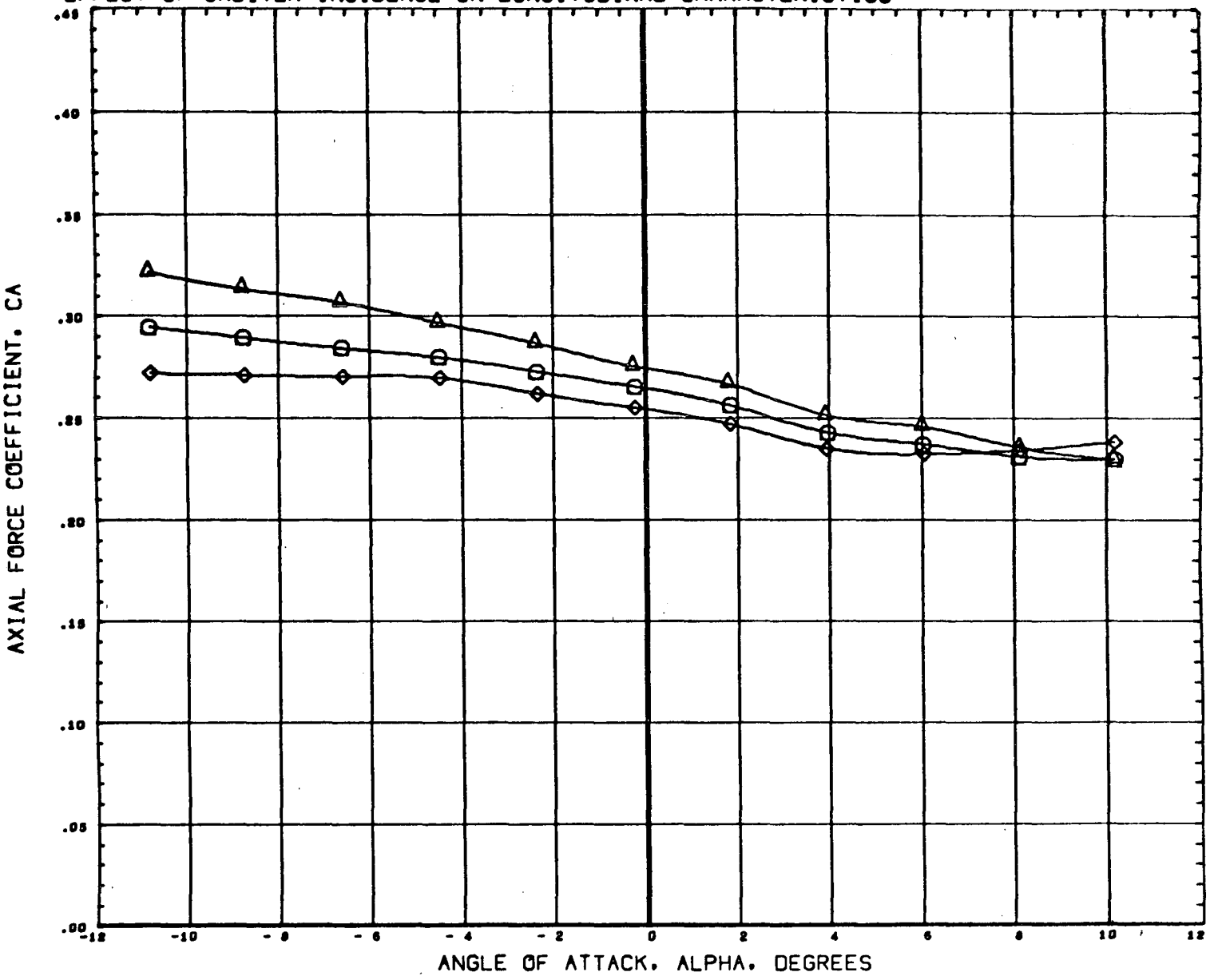
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66010)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-3.000
(B66012)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	0.000

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .60

EFFECT OF ORBITER INCIDENCE ON LONGITUDINAL CHARACTERISTICS



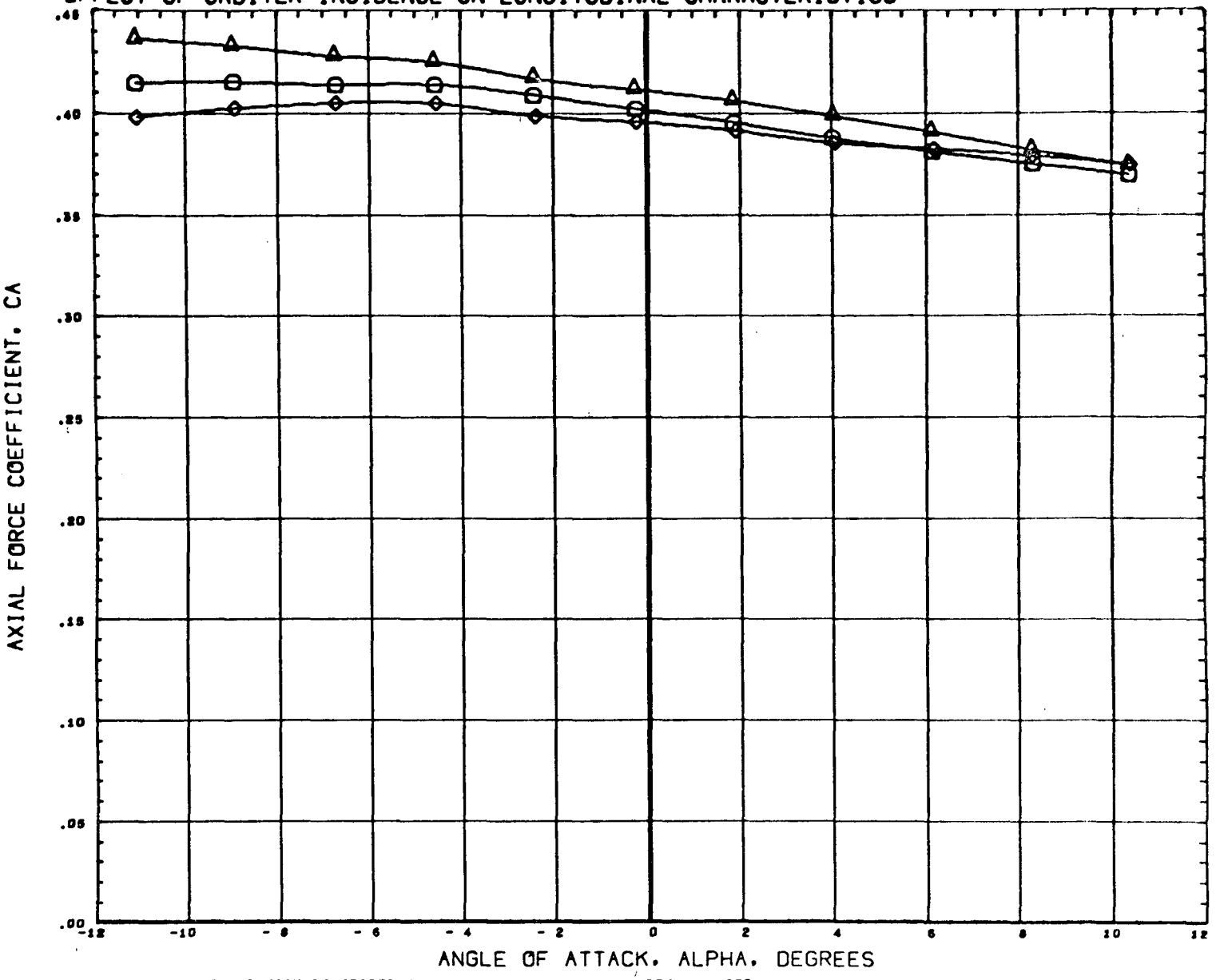
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66010)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-3.000
(B66012)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	0.000

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .91

EFFECT OF ORBITER INCIDENCE ON LONGITUDINAL CHARACTERISTICS



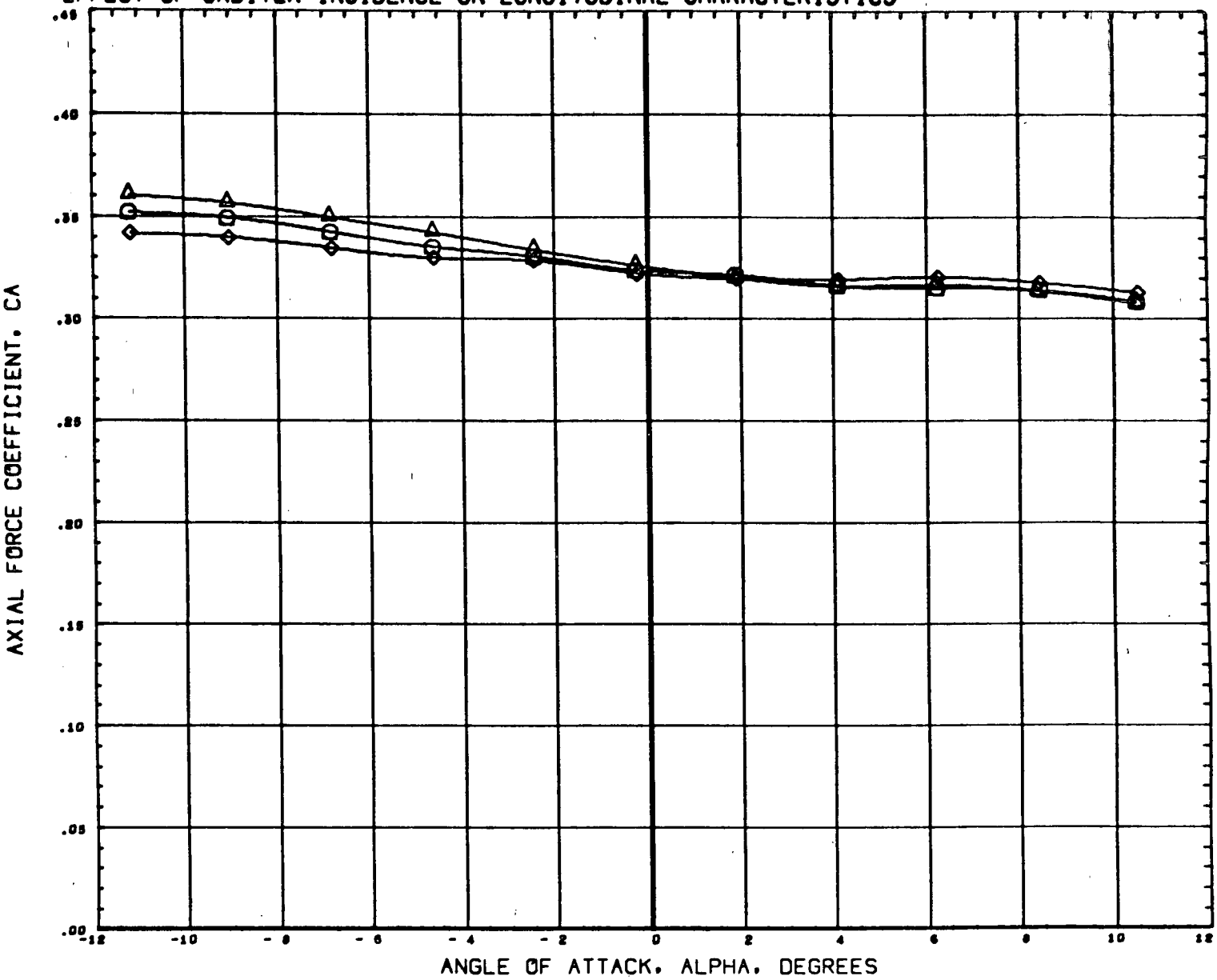
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66010)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-3.000
(B66012)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	0.000

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.19

EFFECT OF ORBITER INCIDENCE ON LONGITUDINAL CHARACTERISTICS



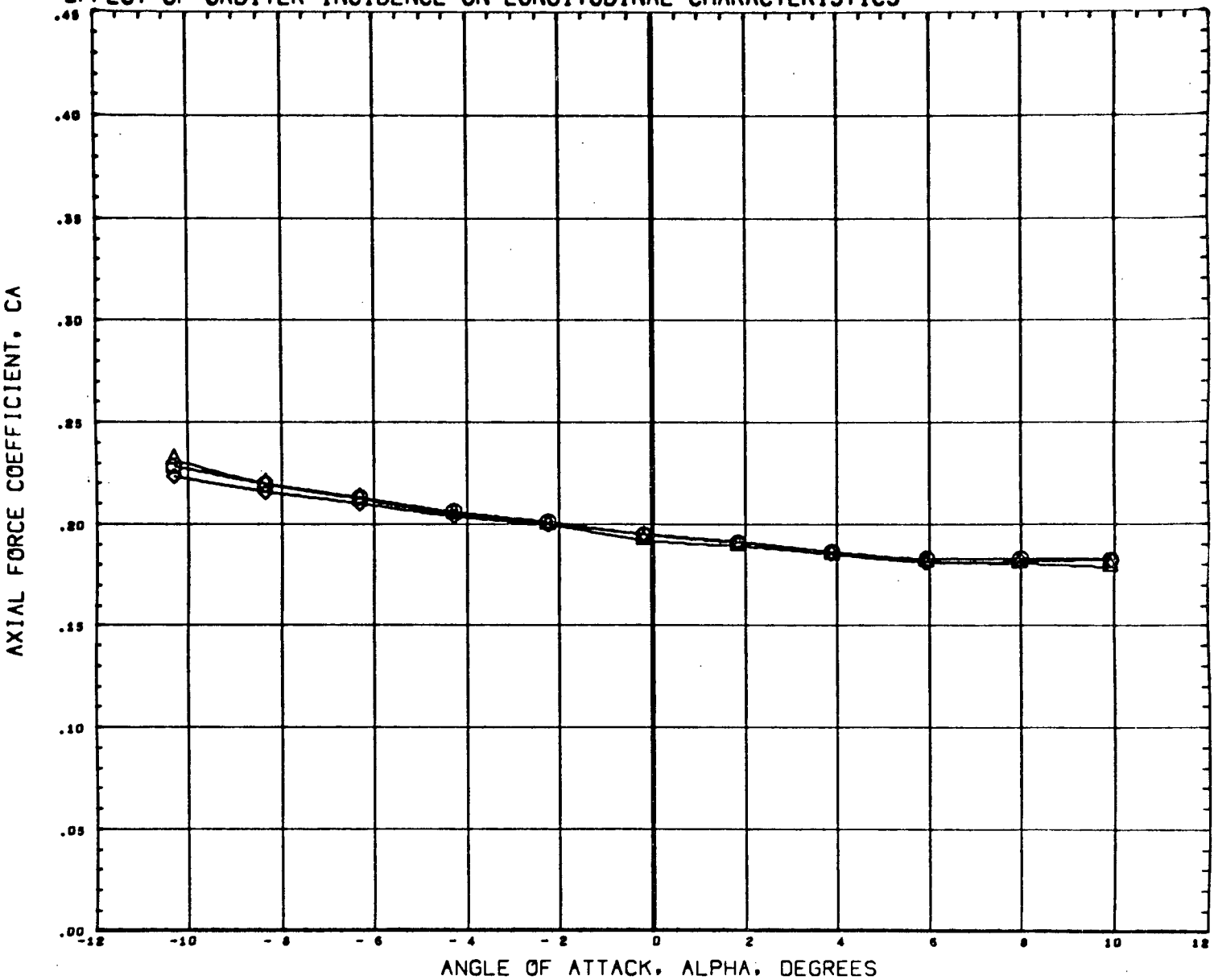
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66010)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-3.000
(B66012)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	0.000

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.97

EFFECT OF ORBITER INCIDENCE ON LONGITUDINAL CHARACTERISTICS



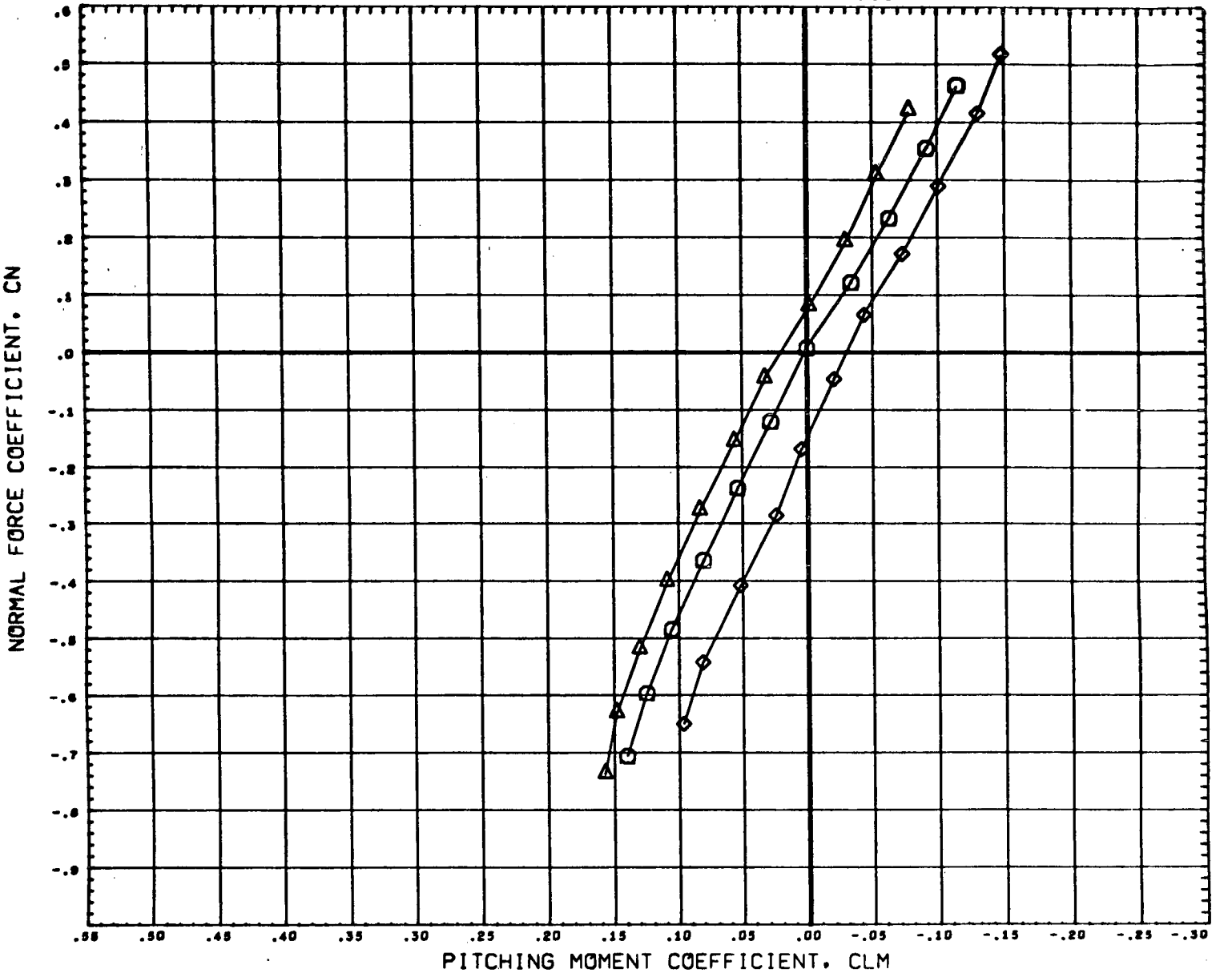
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66010)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-3.000
(B66012)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	0.000

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 4.96

EFFECT OF ORBITER INCIDENCE ON LONGITUDINAL CHARACTERISTICS



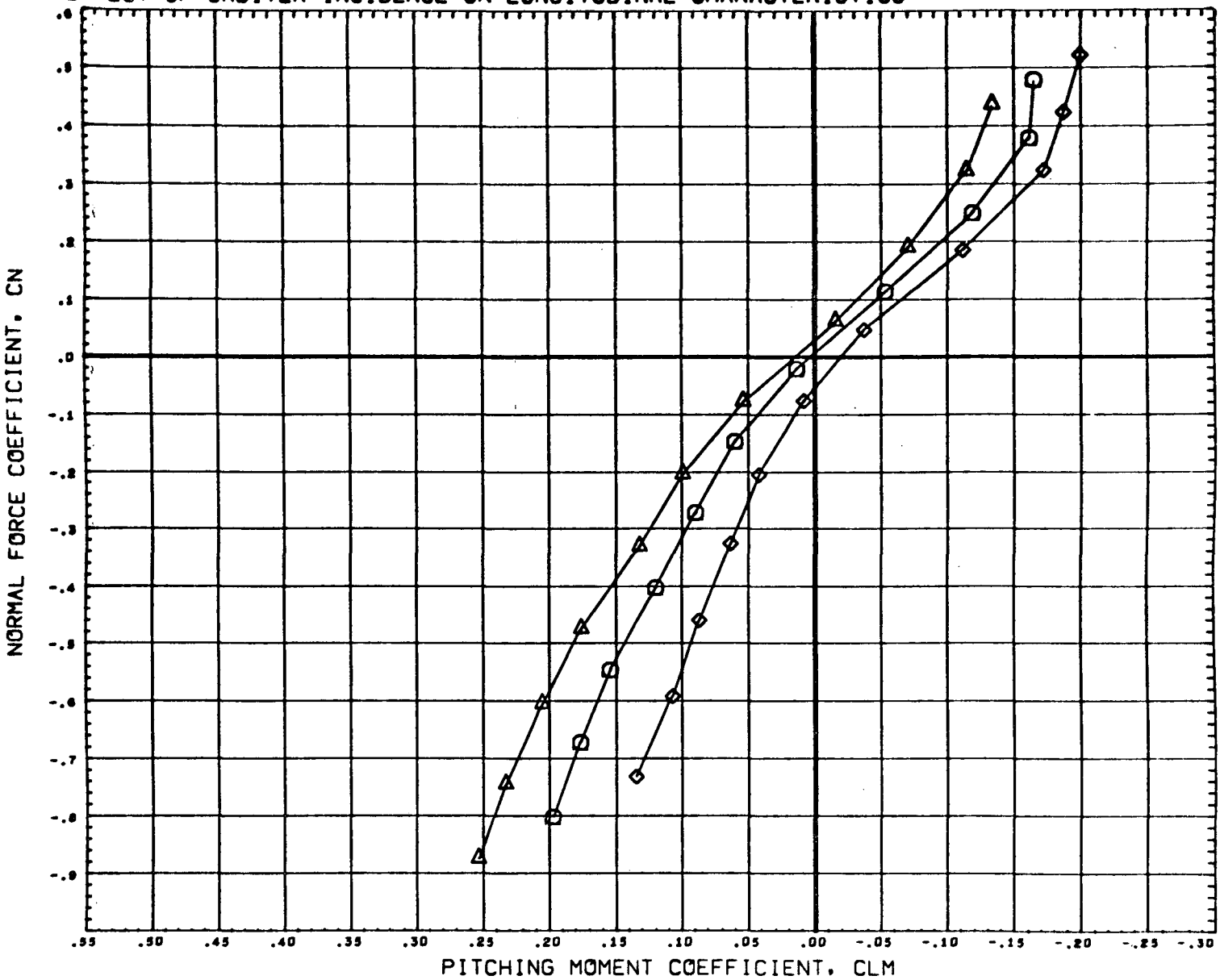
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66010)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-3.000
(B66012)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	0.000

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .60

EFFECT OF ORBITER INCIDENCE ON LONGITUDINAL CHARACTERISTICS



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66010)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-3.000
(B66012)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	0.000

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
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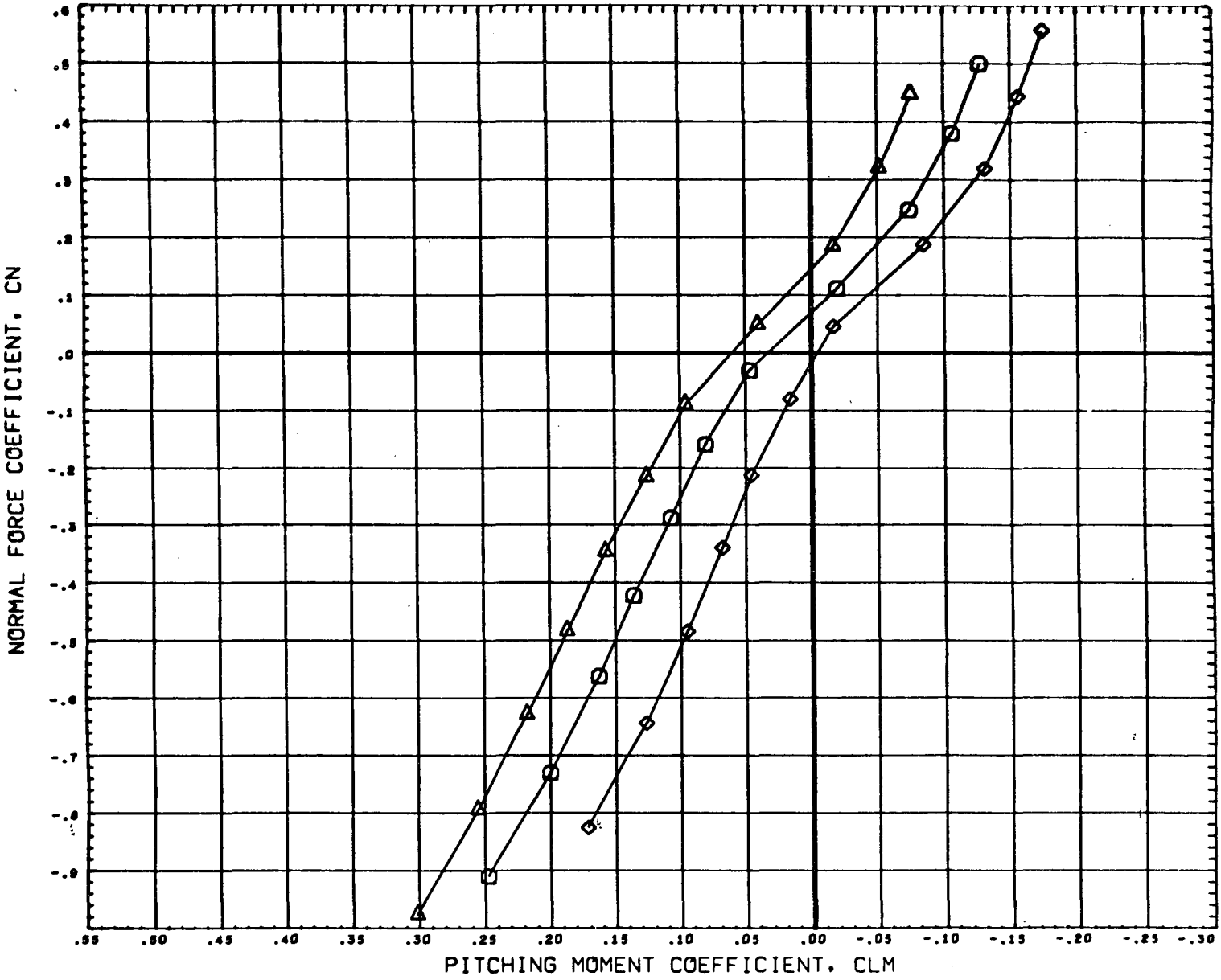
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .91

EFFECT OF ORBITER INCIDENCE ON LONGITUDINAL CHARACTERISTICS



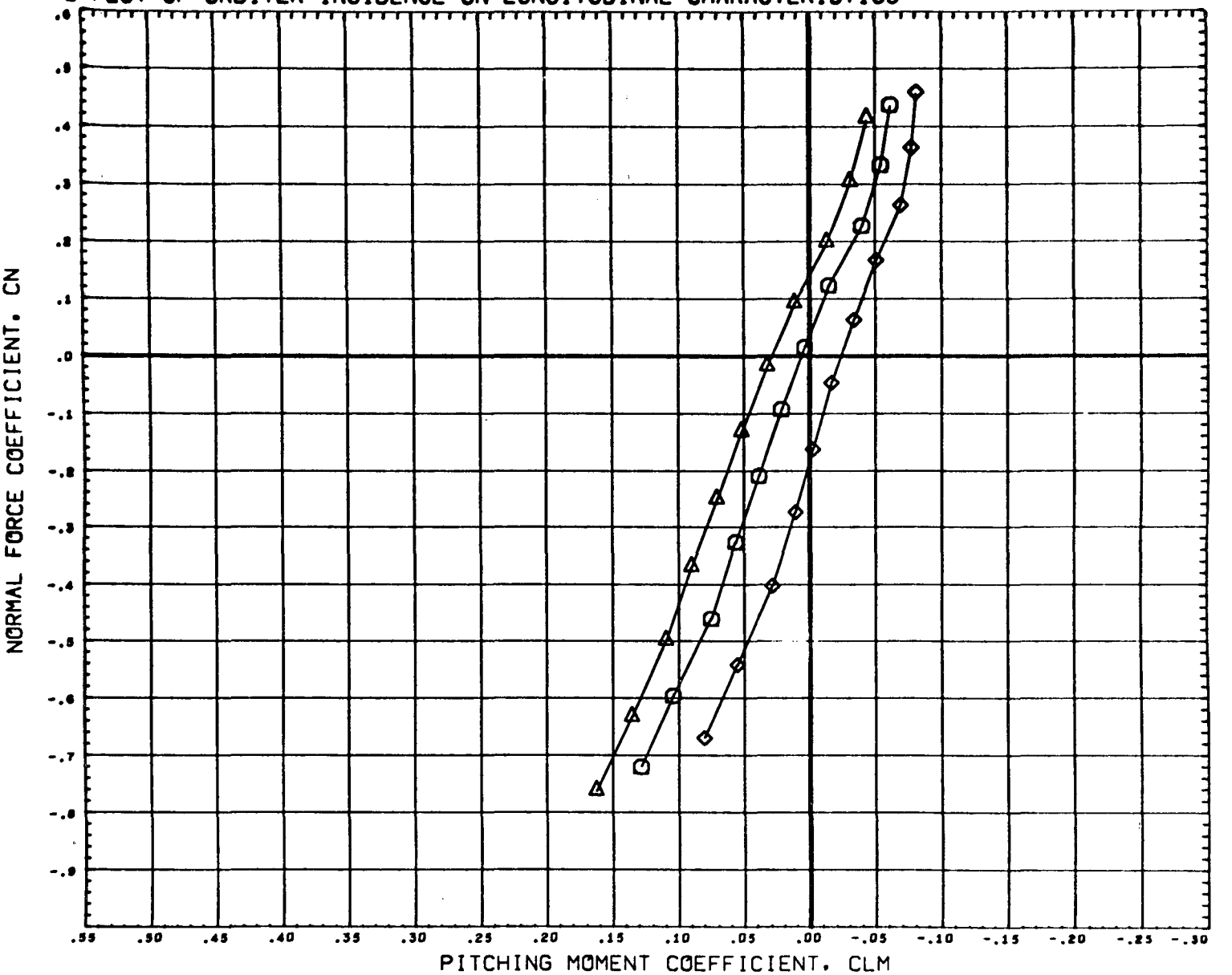
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66010)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-3.000
(B66012)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	0.000

REFERENCE INFORMATION

SREF	7.0900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.19

EFFECT OF ORBITER INCIDENCE ON LONGITUDINAL CHARACTERISTICS



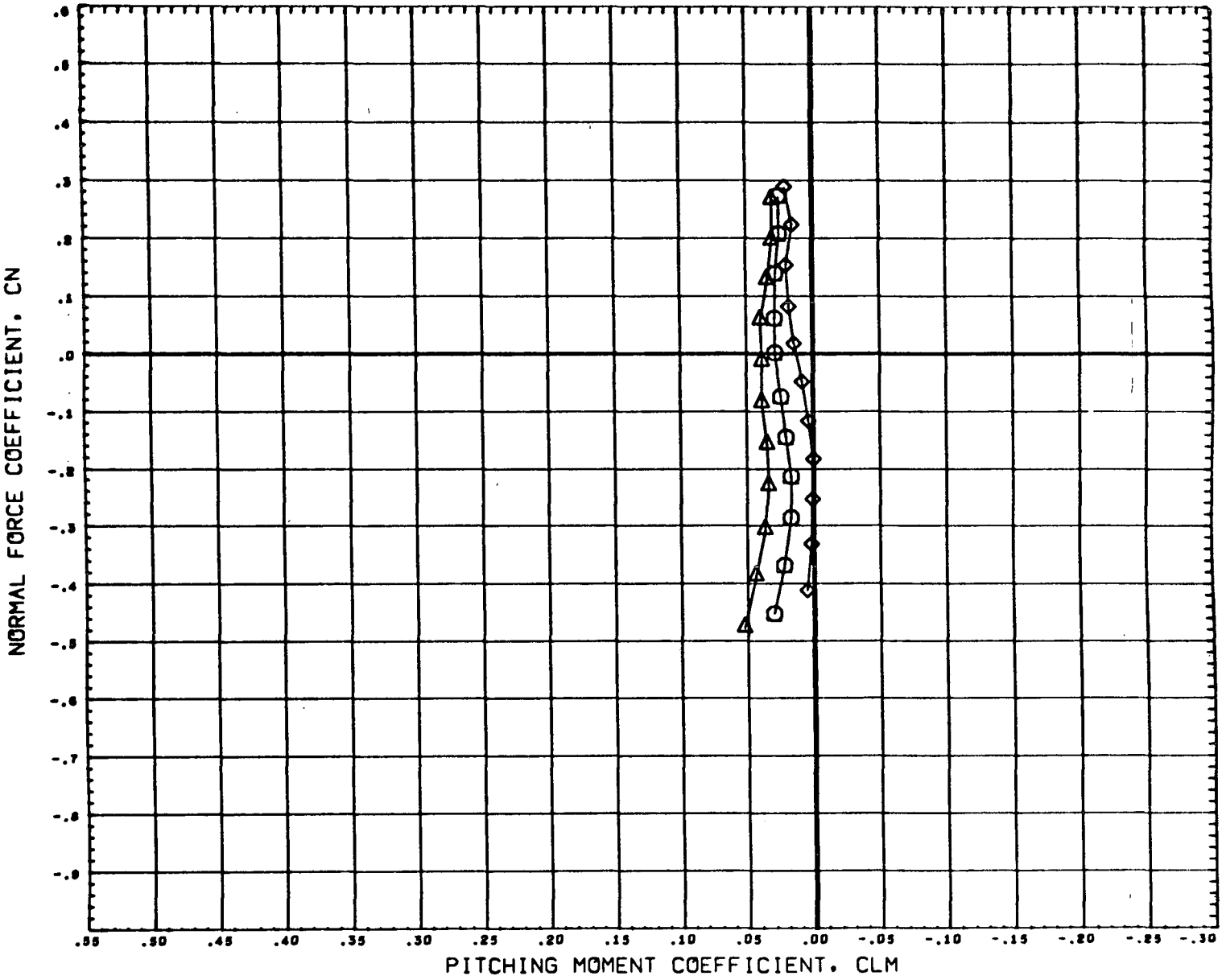
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66010)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-3.000
(B66012)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	0.000

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.97

EFFECT OF ORBITER INCIDENCE ON LONGITUDINAL CHARACTERISTICS



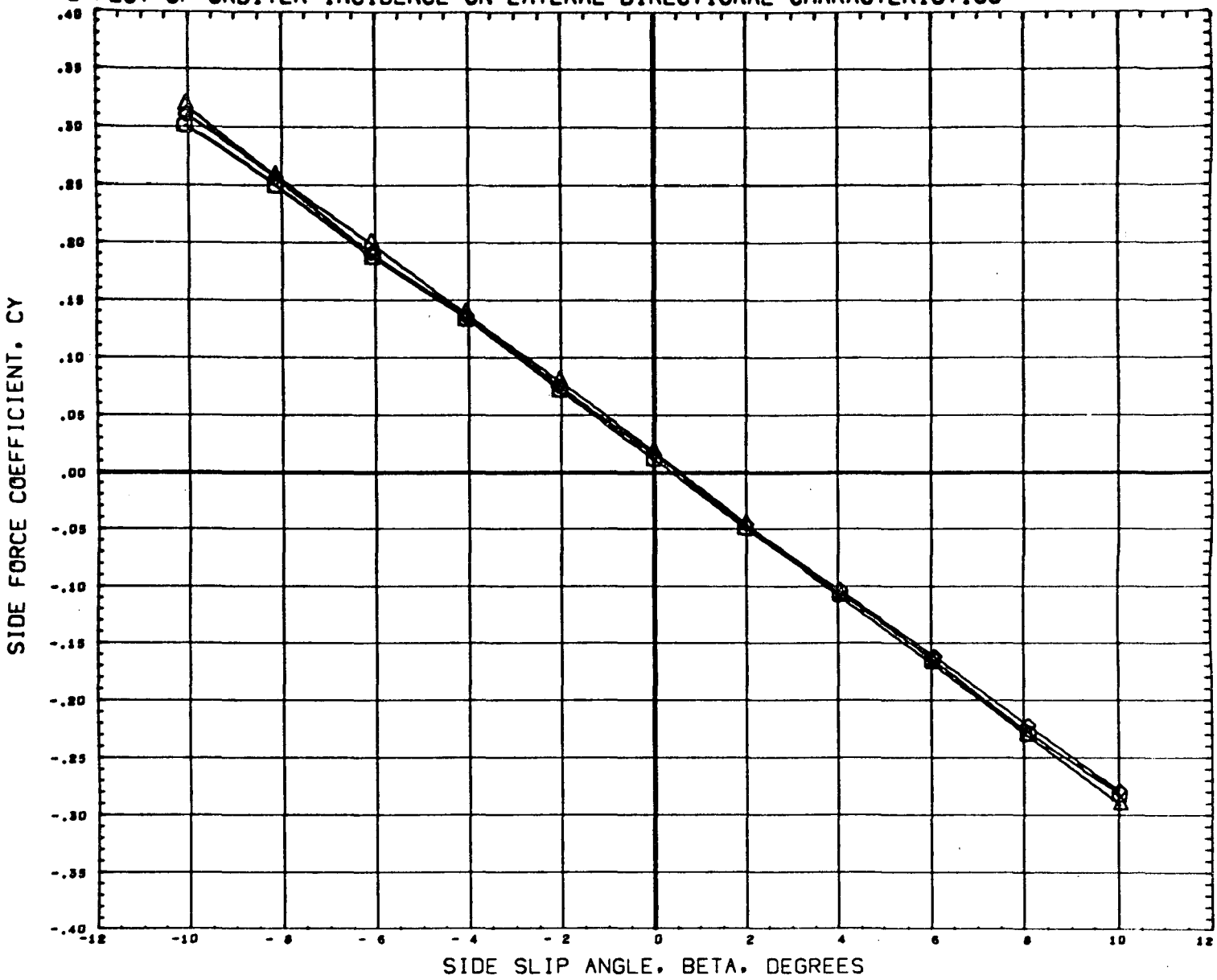
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66010)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-3.000
(B66012)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	0.000

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 4.96

EFFECT OF ORBITER INCIDENCE ON LATERAL DIRECTIONAL CHARACTERISTICS



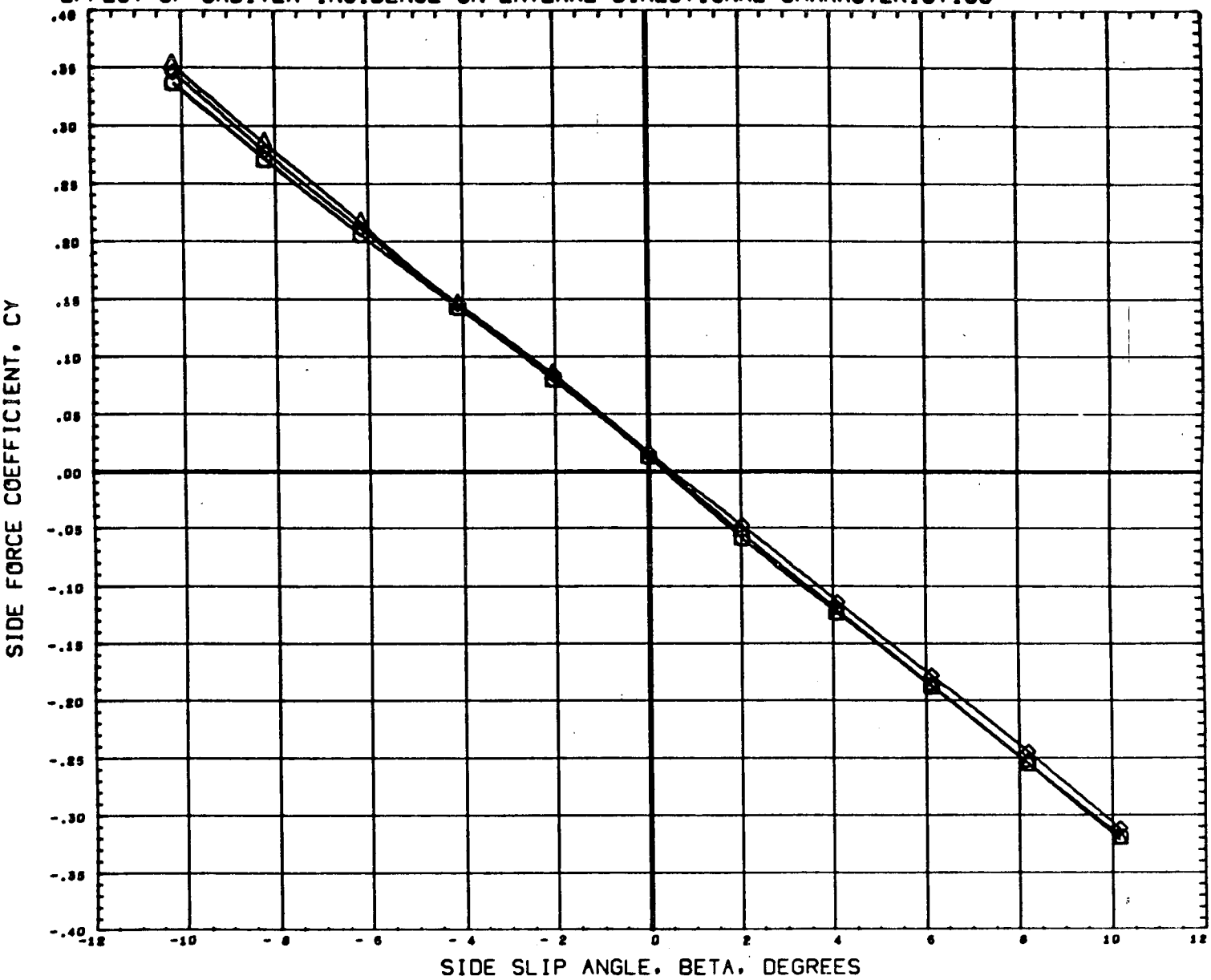
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(U66011)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-3.000
(A66013)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	0.000

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .60

EFFECT OF ORBITER INCIDENCE ON LATERAL DIRECTIONAL CHARACTERISTICS



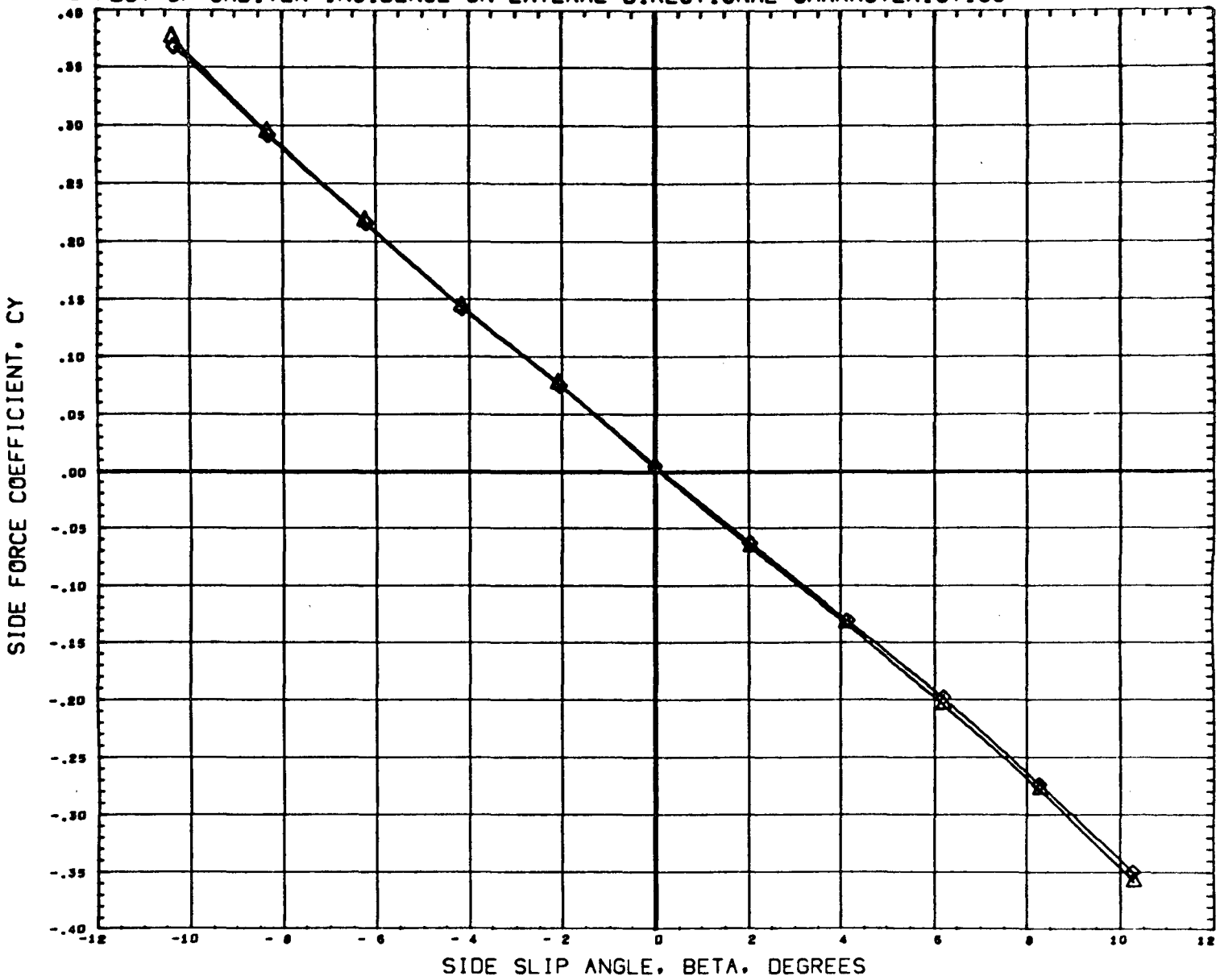
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(U66011)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-3.000
(A66013)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	0.000

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .90

EFFECT OF ORBITER INCIDENCE ON LATERAL DIRECTIONAL CHARACTERISTICS



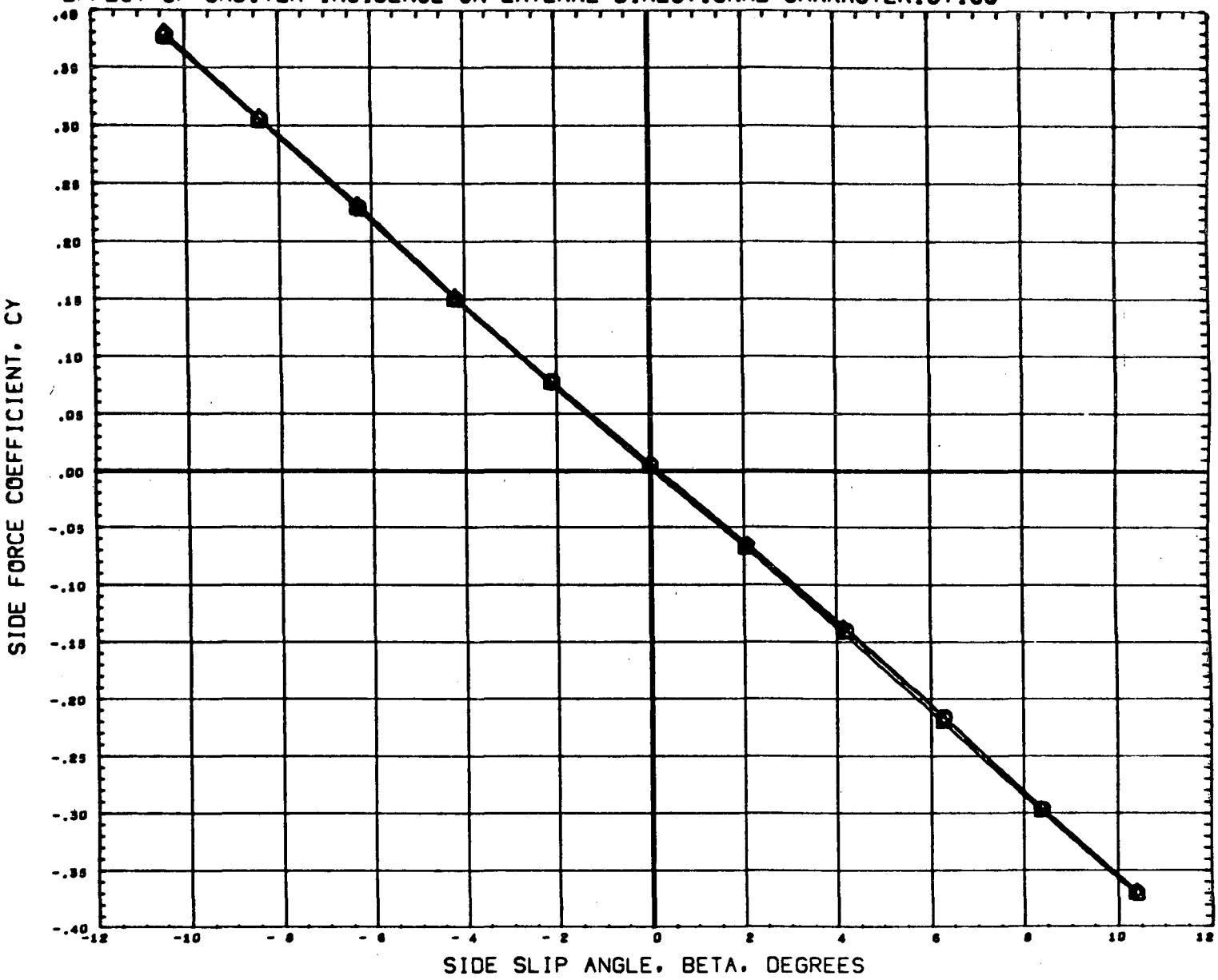
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	DATA NOT AVAILABLE FOR ALL CONDITIONS			0.000	-1.500
(U66011)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-3.000
(A66013)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	0.000

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.19

EFFECT OF ORBITER INCIDENCE ON LATERAL DIRECTIONAL CHARACTERISTICS



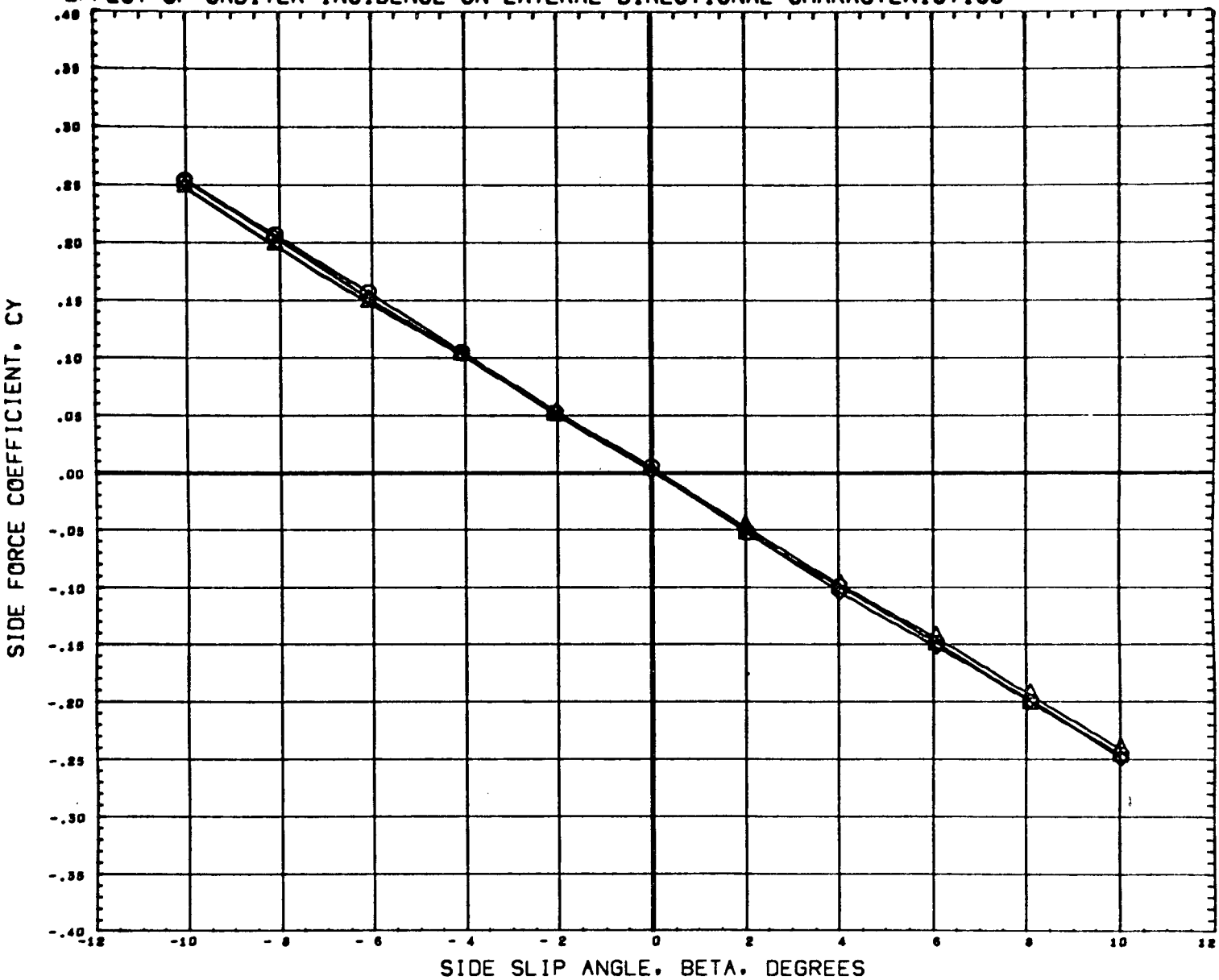
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(U66011)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-3.000
(A66013)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	0.000

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.97

EFFECT OF ORBITER INCIDENCE ON LATERAL DIRECTIONAL CHARACTERISTICS



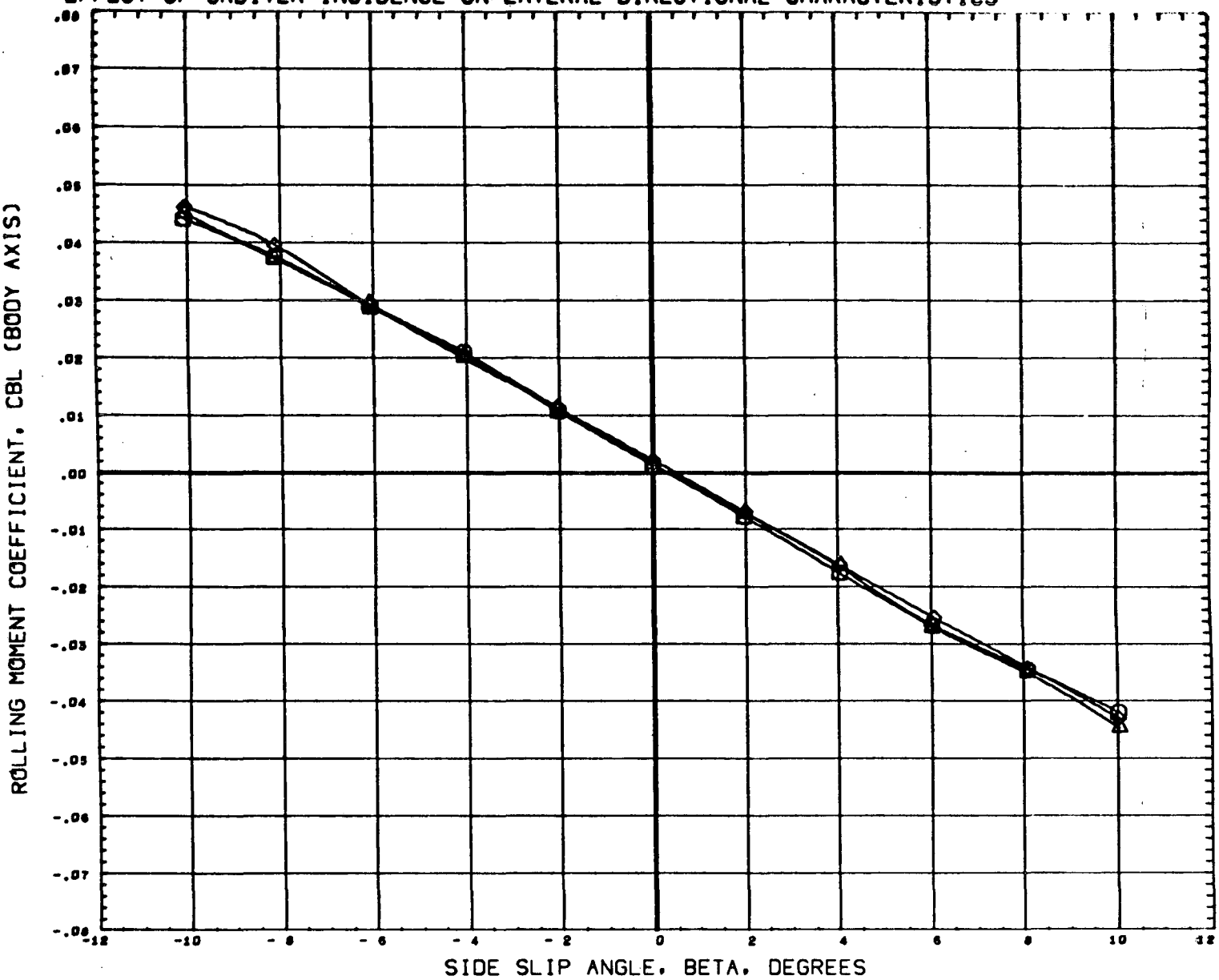
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(U66011)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-3.000
(A66013)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	0.000

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 4.96

EFFECT OF ORBITER INCIDENCE ON LATERAL DIRECTIONAL CHARACTERISTICS



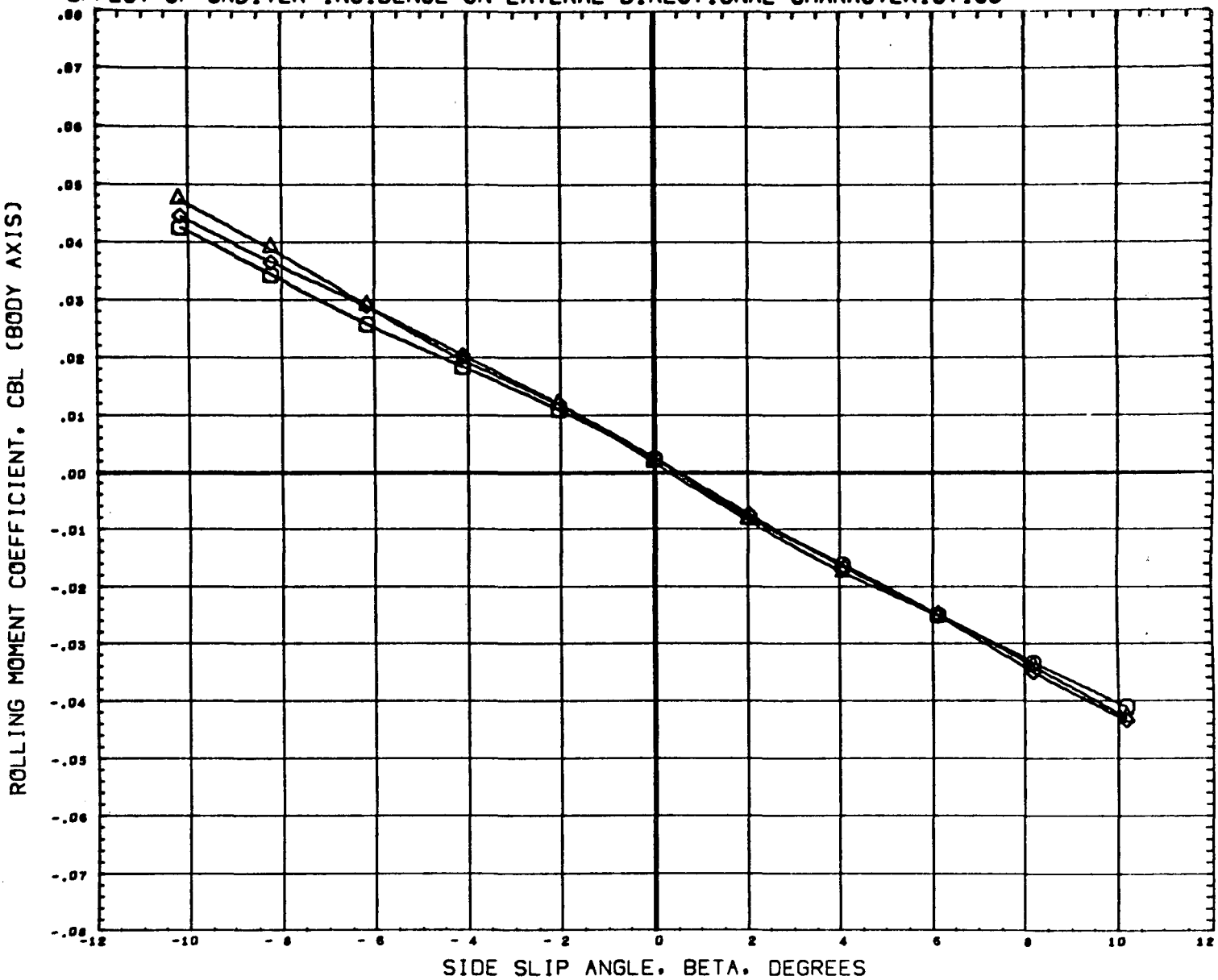
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(U66011)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-3.000
(A66013)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	0.000

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .60

EFFECT OF ORBITER INCIDENCE ON LATERAL DIRECTIONAL CHARACTERISTICS



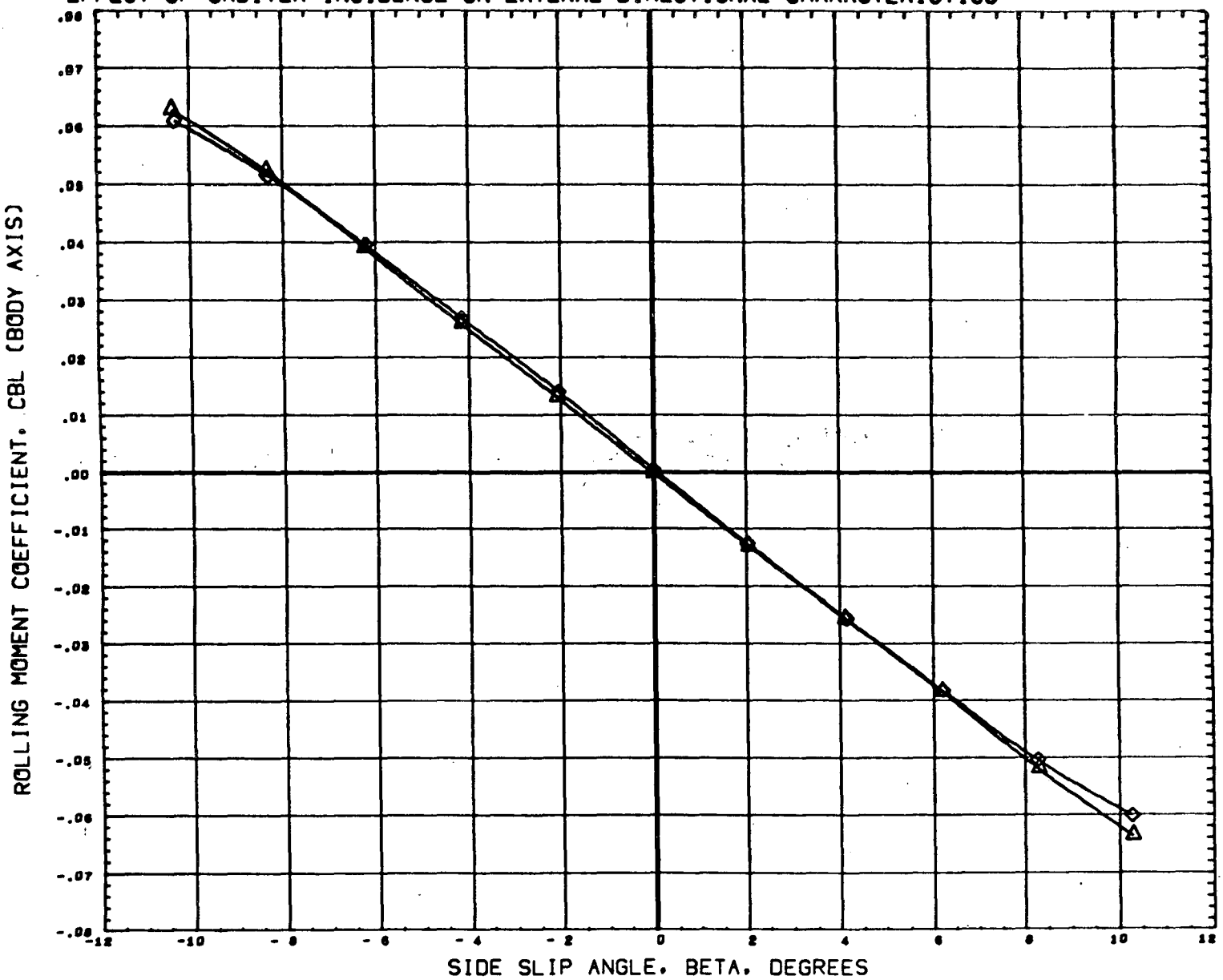
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(U66011)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-3.000
(A66013)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	0.000

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .90

EFFECT OF ORBITER INCIDENCE ON LATERAL DIRECTIONAL CHARACTERISTICS



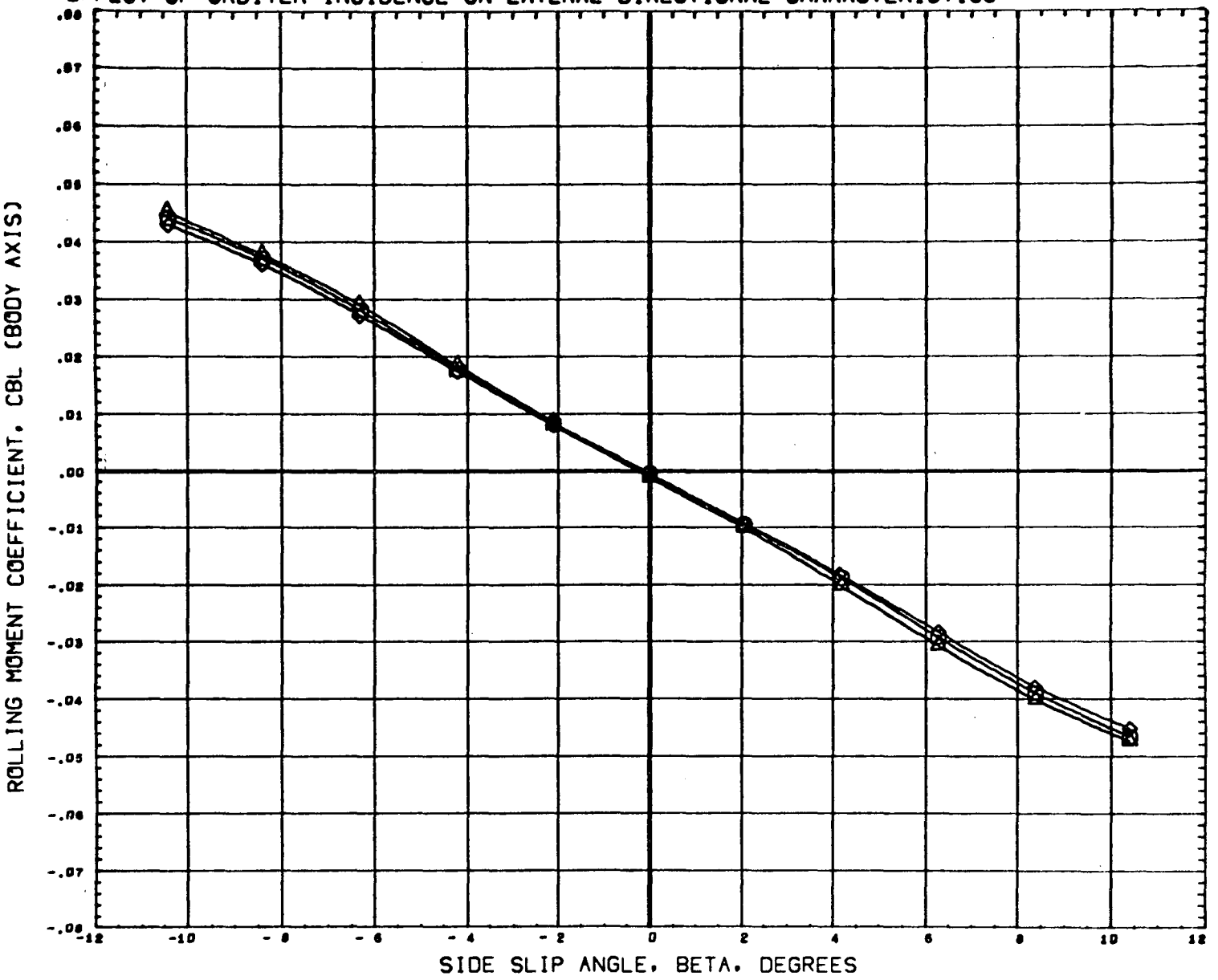
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	DATA NOT AVAILABLE FOR ALL CONDITIONS			0.000	-1.500
(U66011)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-3.000
(A66013)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	0.000

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.19

EFFECT OF ORBITER INCIDENCE ON LATERAL DIRECTIONAL CHARACTERISTICS



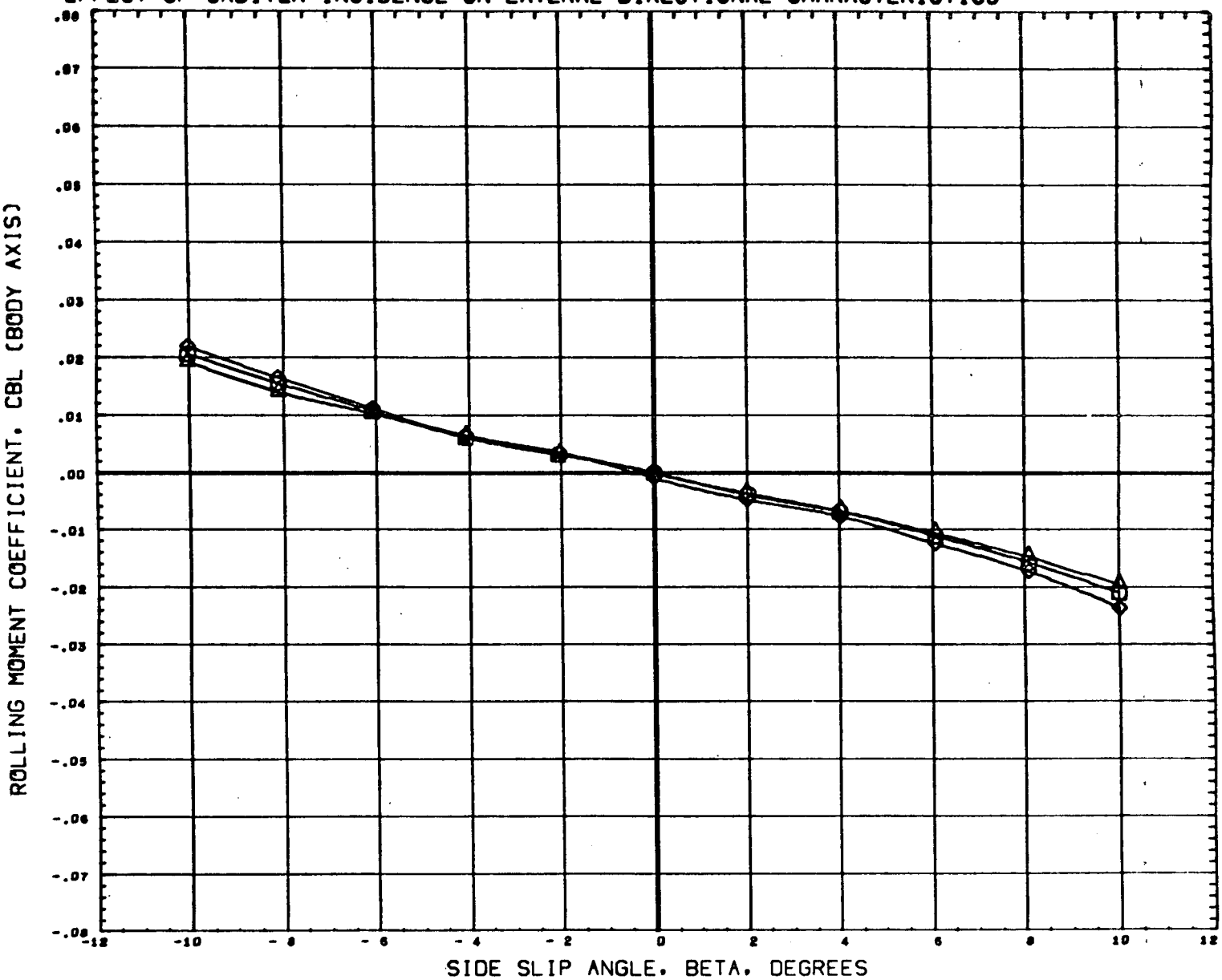
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(U66011)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-3.000
(A66013)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	0.000

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.97

EFFECT OF ORBITER INCIDENCE ON LATERAL DIRECTIONAL CHARACTERISTICS



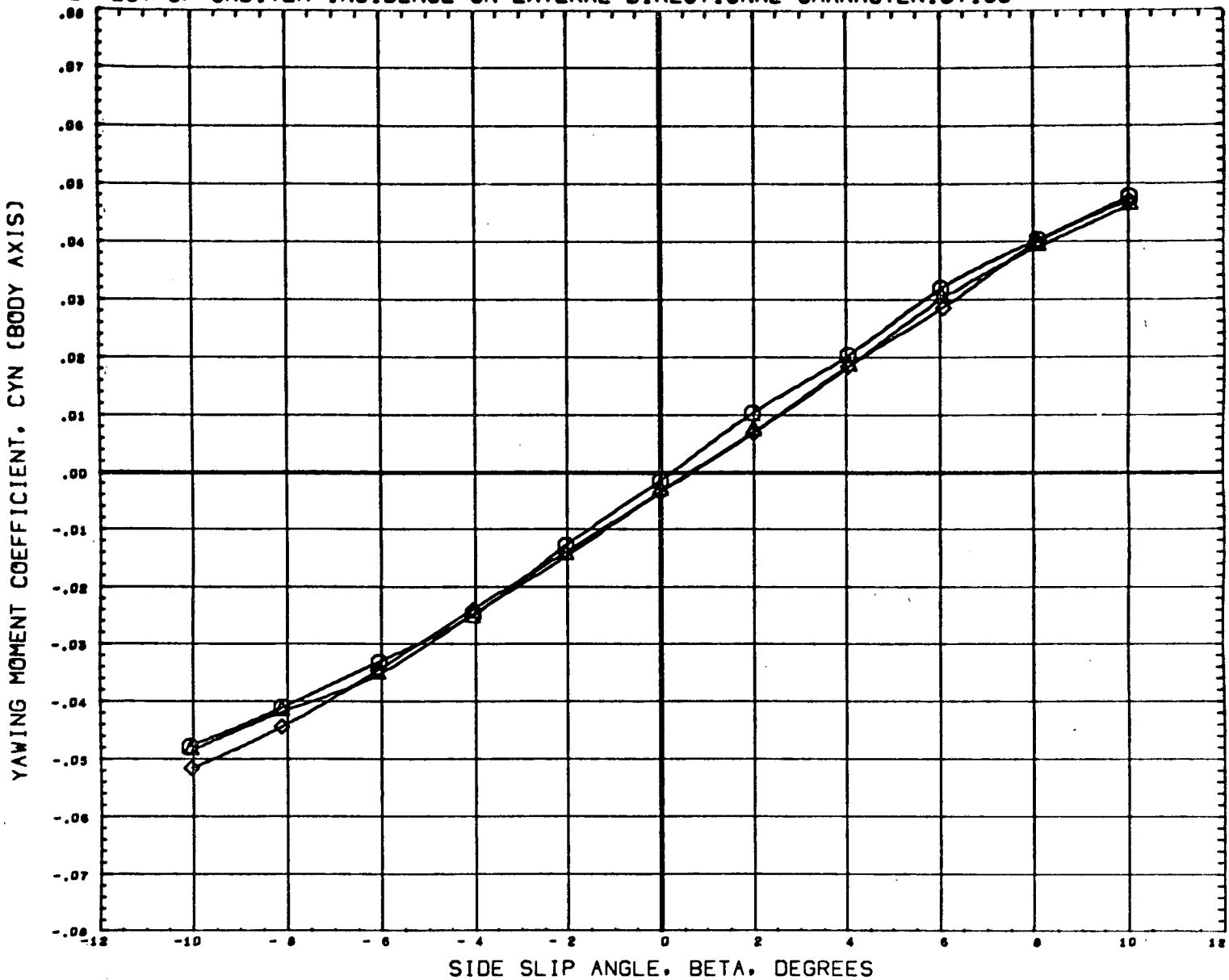
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(U66011)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-3.000
(A66013)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	0.000

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 4.96

EFFECT OF ORBITER INCIDENCE ON LATERAL DIRECTIONAL CHARACTERISTICS



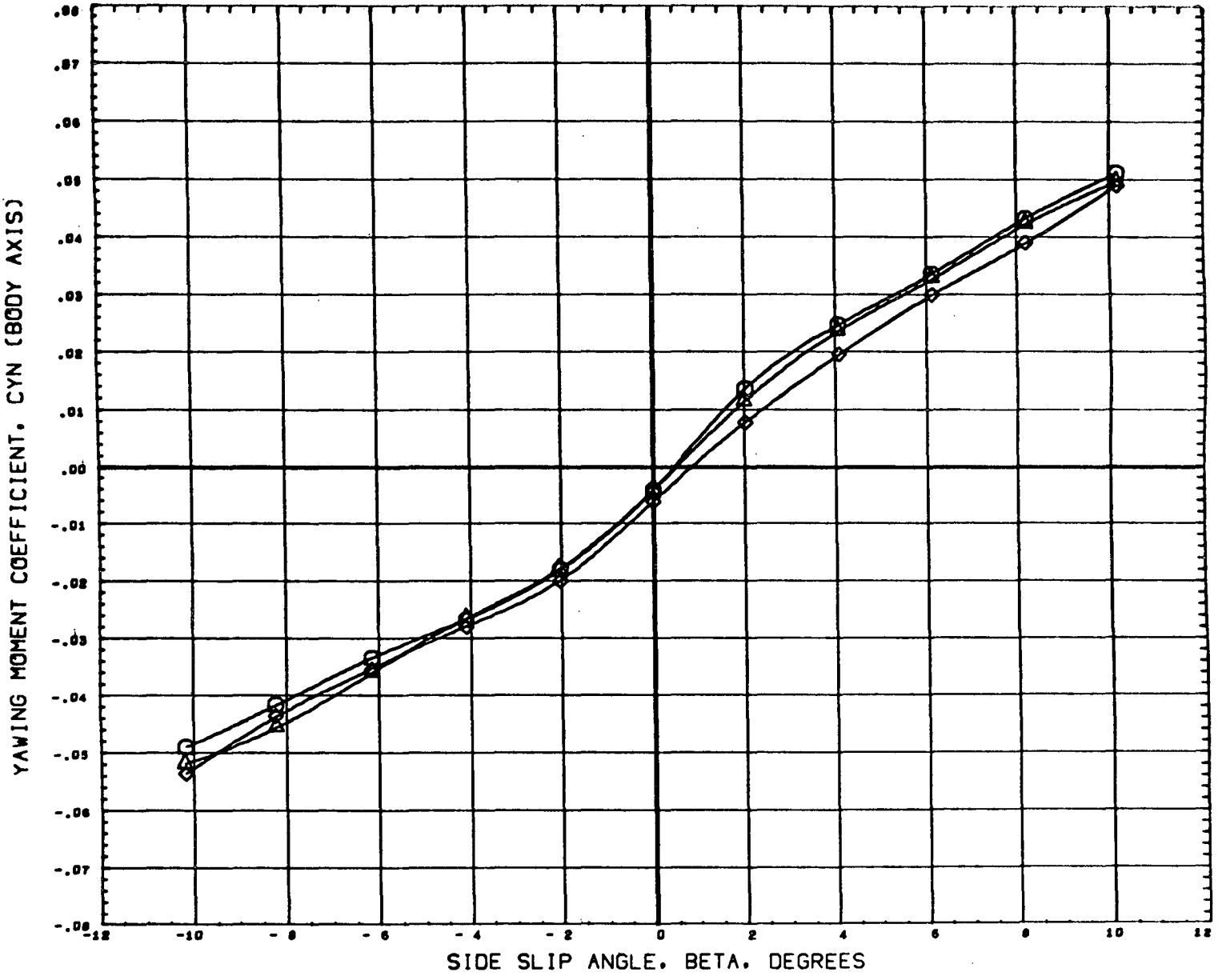
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(U66011)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-3.000
(A66013)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	0.000

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .60

EFFECT OF ORBITER INCIDENCE ON LATERAL DIRECTIONAL CHARACTERISTICS



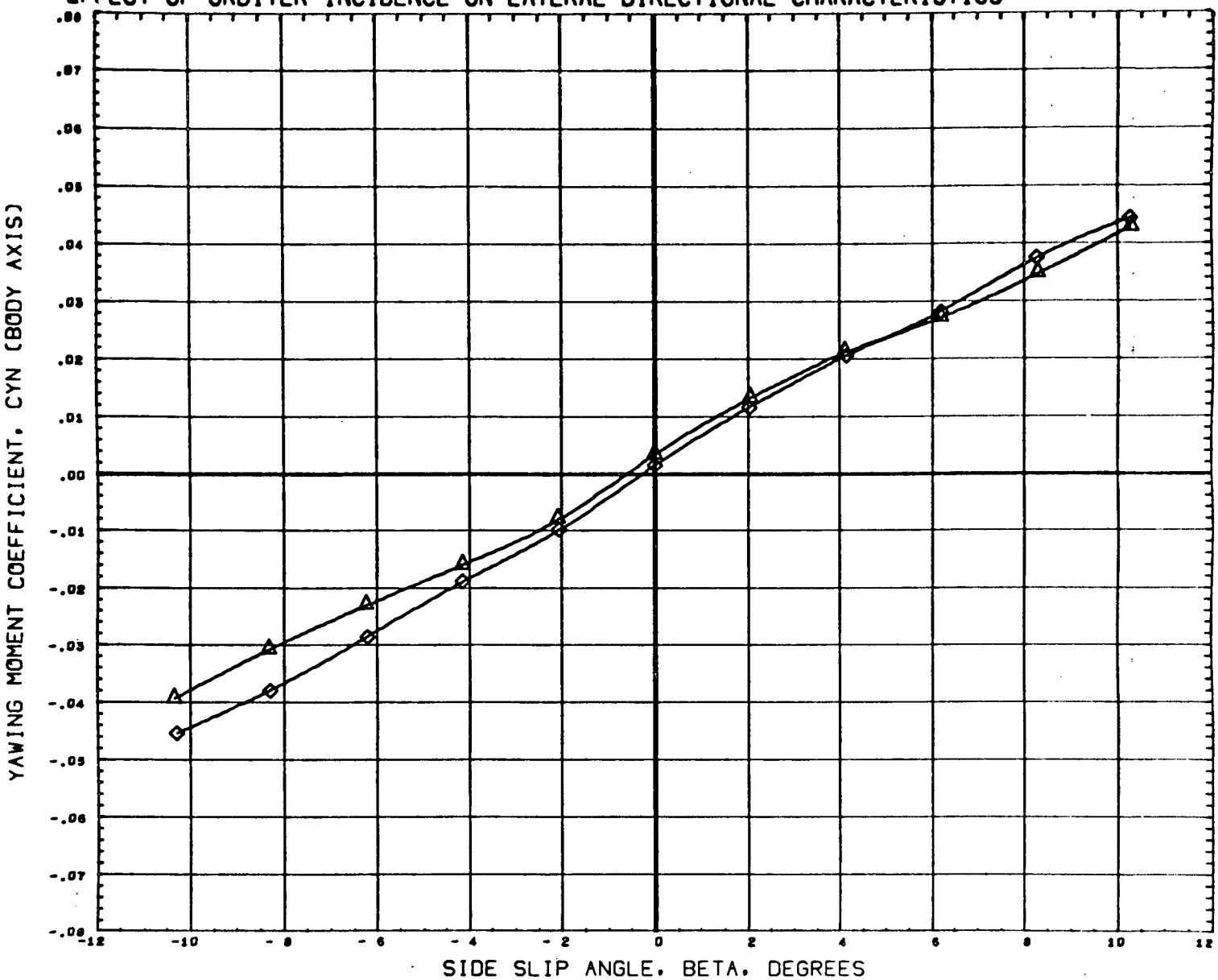
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(U66011)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-3.000
(A66013)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	0.000

REFERENCE INFORMATION

SREF	7.6900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .90

EFFECT OF ORBITER INCIDENCE ON LATERAL DIRECTIONAL CHARACTERISTICS



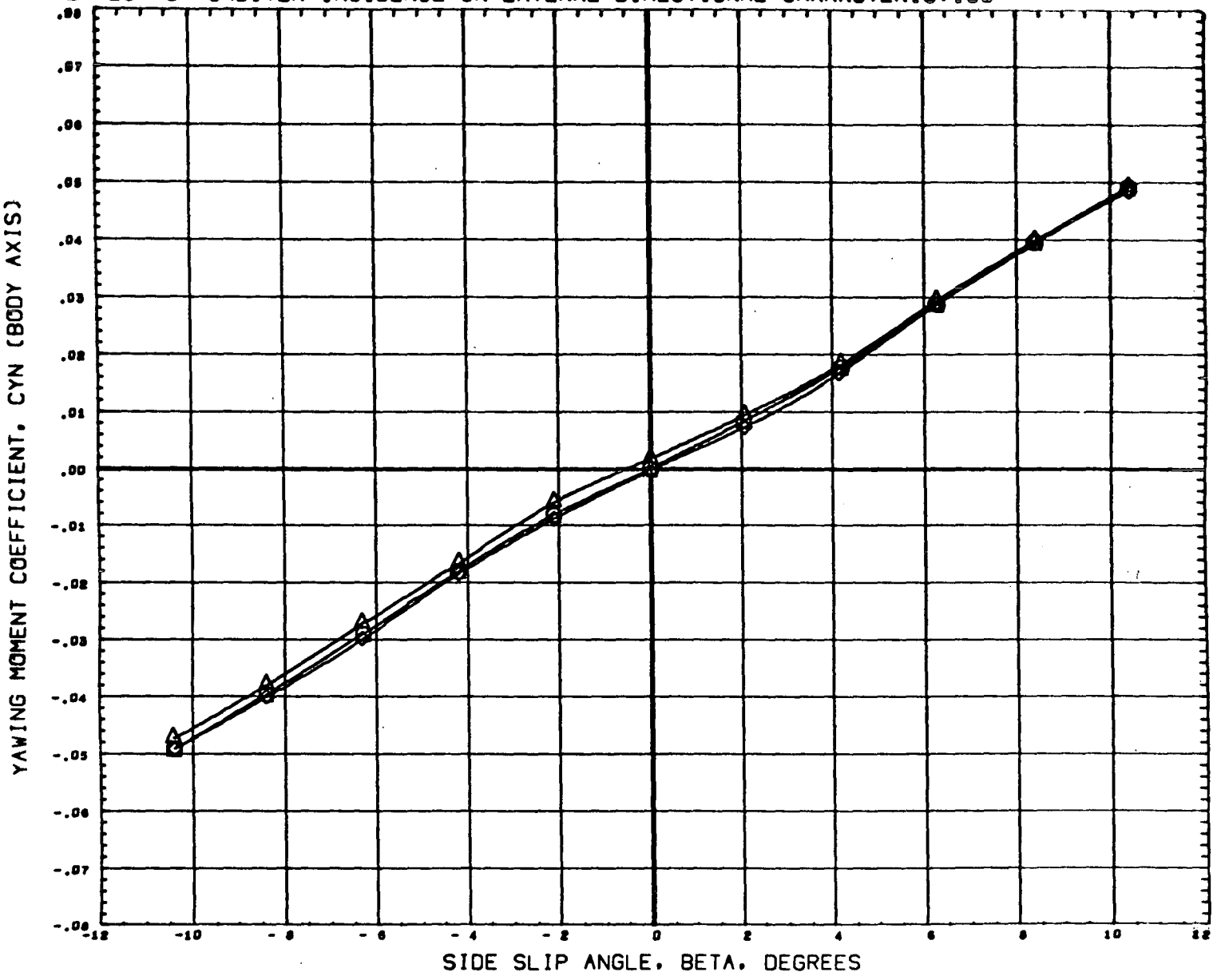
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	DATA NOT AVAILABLE FOR ALL CONDITIONS			0.000	-1.500
(U66011)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-3.000
(A66013)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	0.000

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.19

EFFECT OF ORBITER INCIDENCE ON LATERAL DIRECTIONAL CHARACTERISTICS



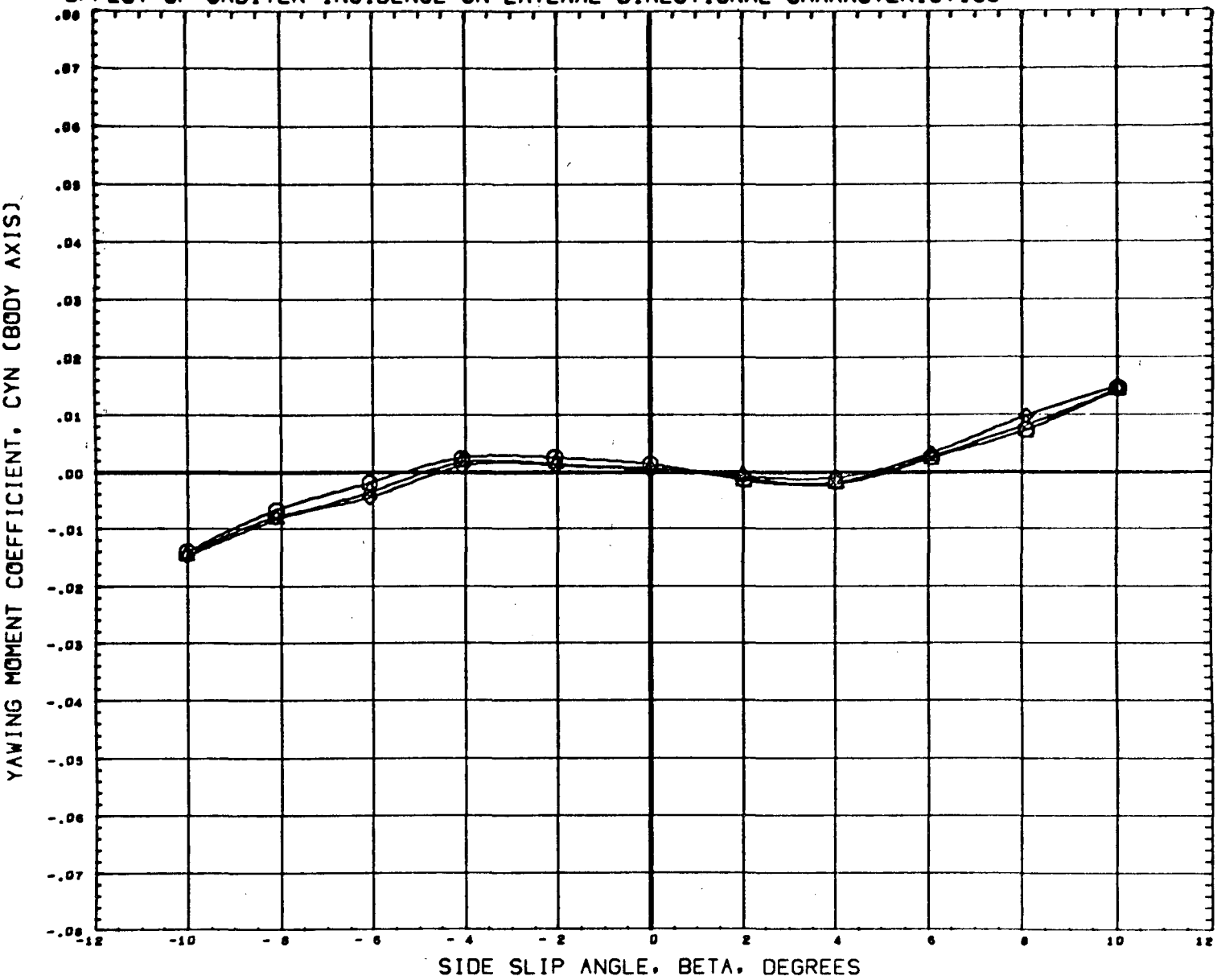
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(U66011)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-3.000
(A66013)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	0.000

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1460	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.97

EFFECT OF ORBITER INCIDENCE ON LATERAL DIRECTIONAL CHARACTERISTICS



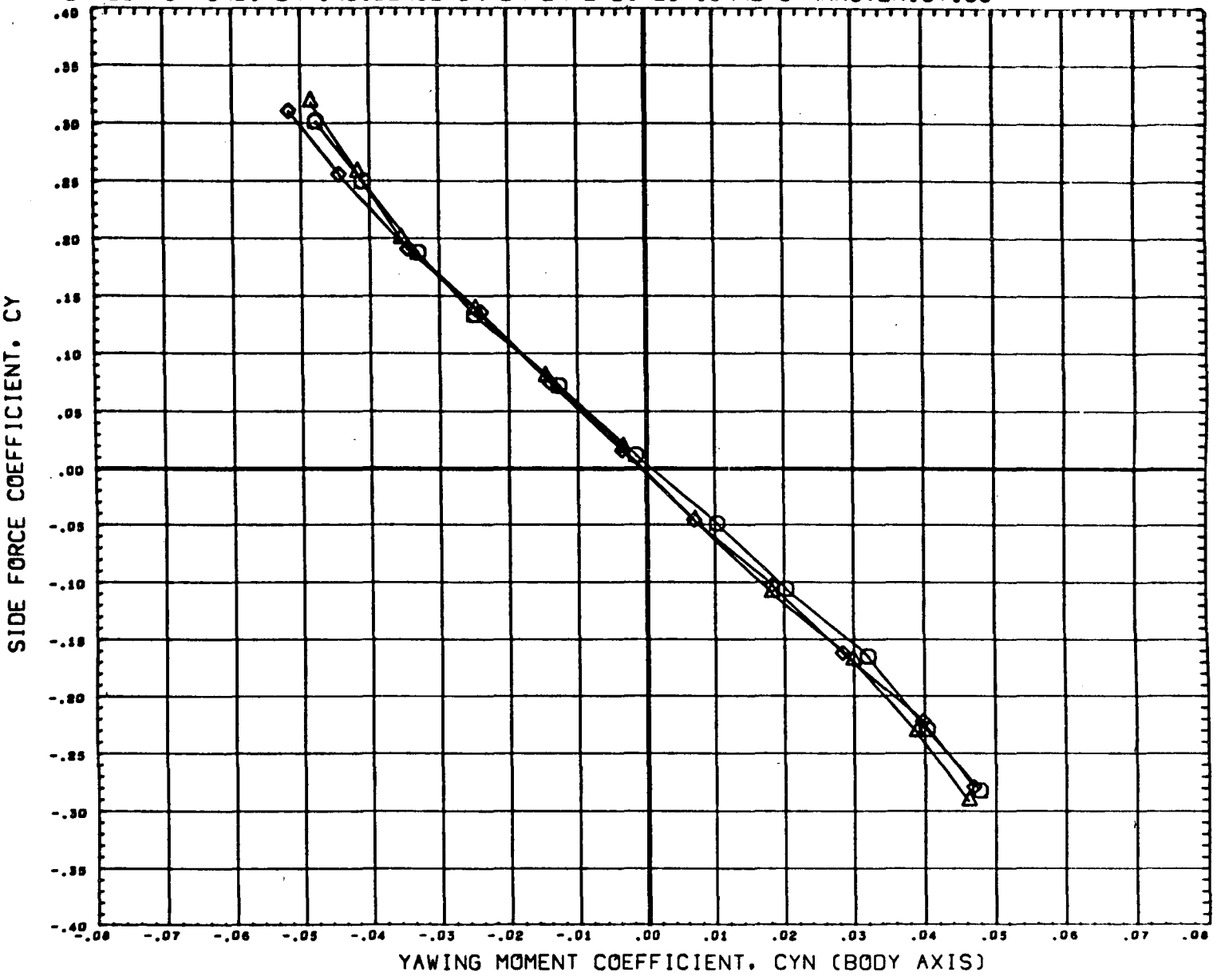
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(U66011)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-3.000
(A66013)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	0.000

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 4.96

EFFECT OF ORBITER INCIDENCE ON LATERAL DIRECTIONAL CHARACTERISTICS



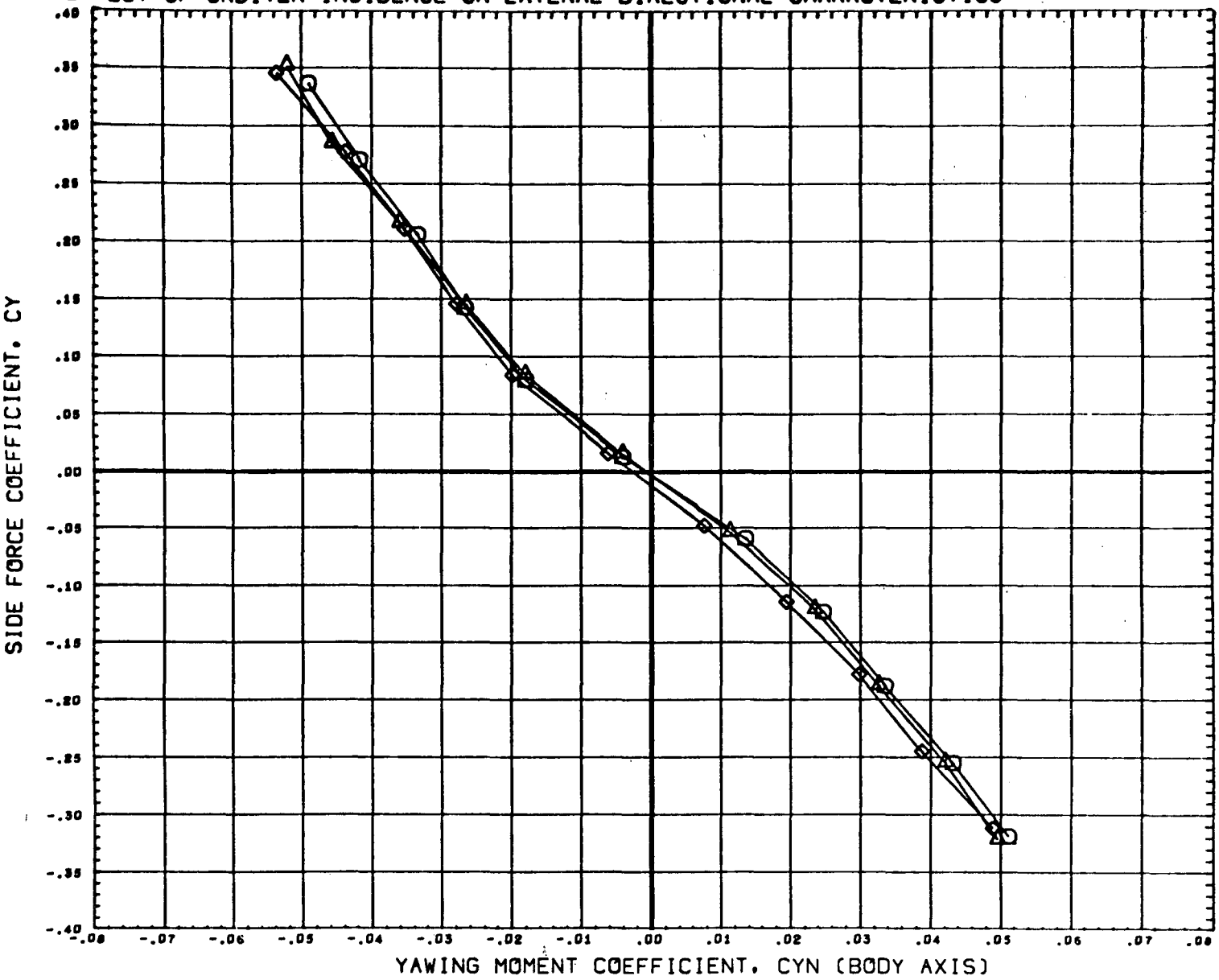
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(U66011)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-3.000
(A66013)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	0.000

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .60

EFFECT OF ORBITER INCIDENCE ON LATERAL DIRECTIONAL CHARACTERISTICS



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(U66011)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-3.000
(A66013)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	0.000

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
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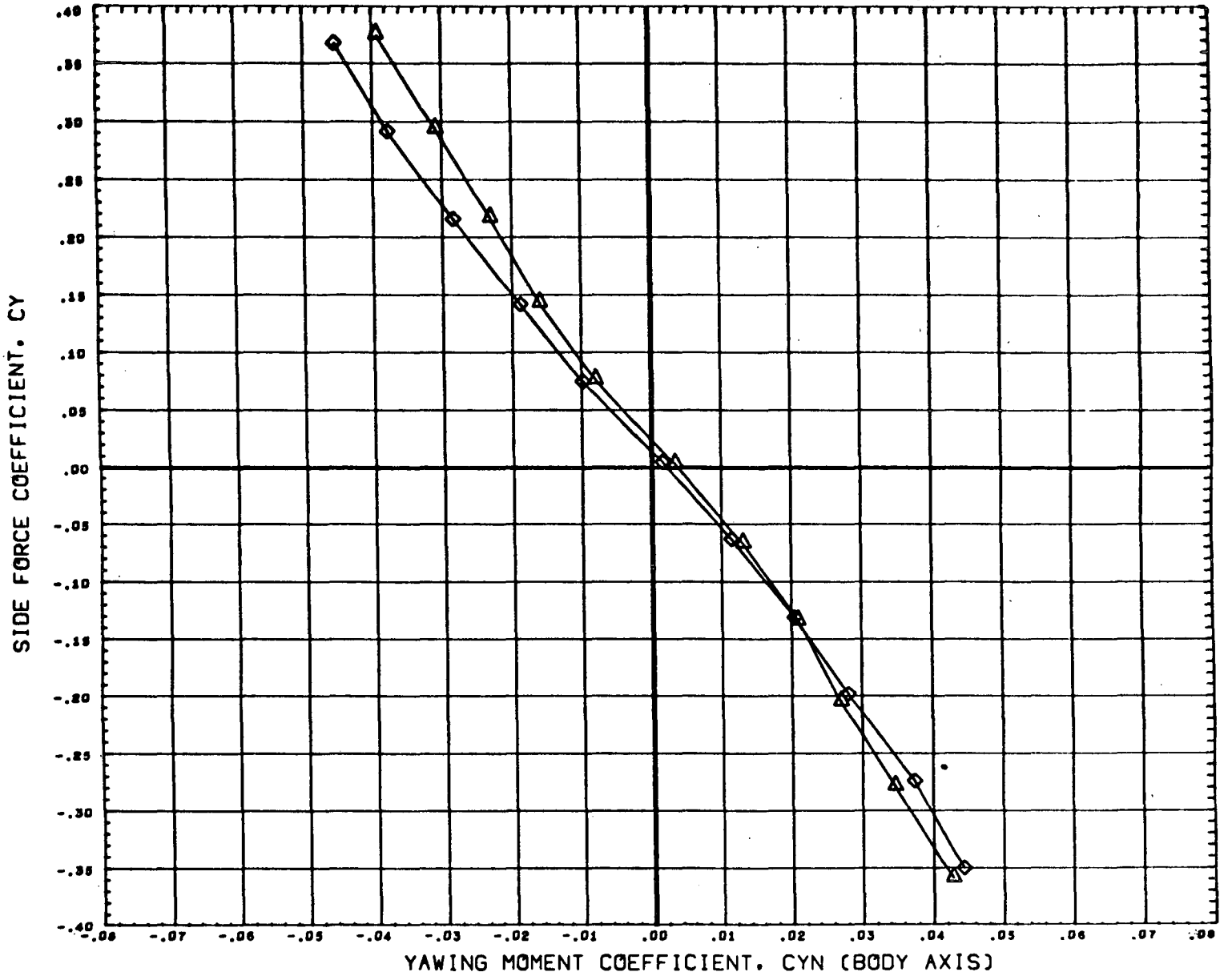
SCALE	0.0040	

MACH .90

EFFECT OF ORBITER INCIDENCE ON LATERAL DIRECTIONAL CHARACTERISTICS



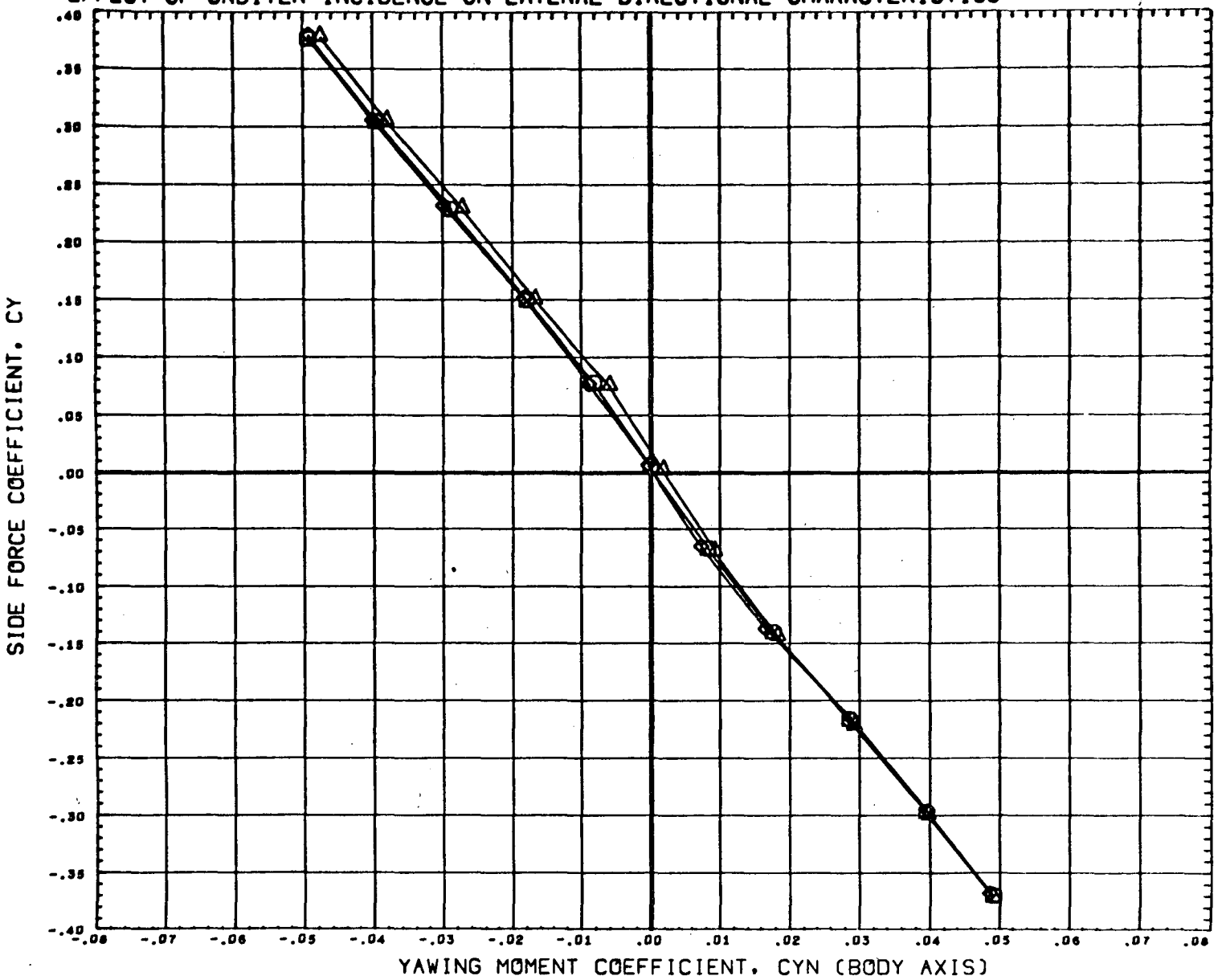
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	DATA NOT AVAILABLE FOR ALL CONDITIONS			0.000	-1.500
(U66011)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-3.000
(A66013)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	0.000

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.19

EFFECT OF ORBITER INCIDENCE ON LATERAL DIRECTIONAL CHARACTERISTICS



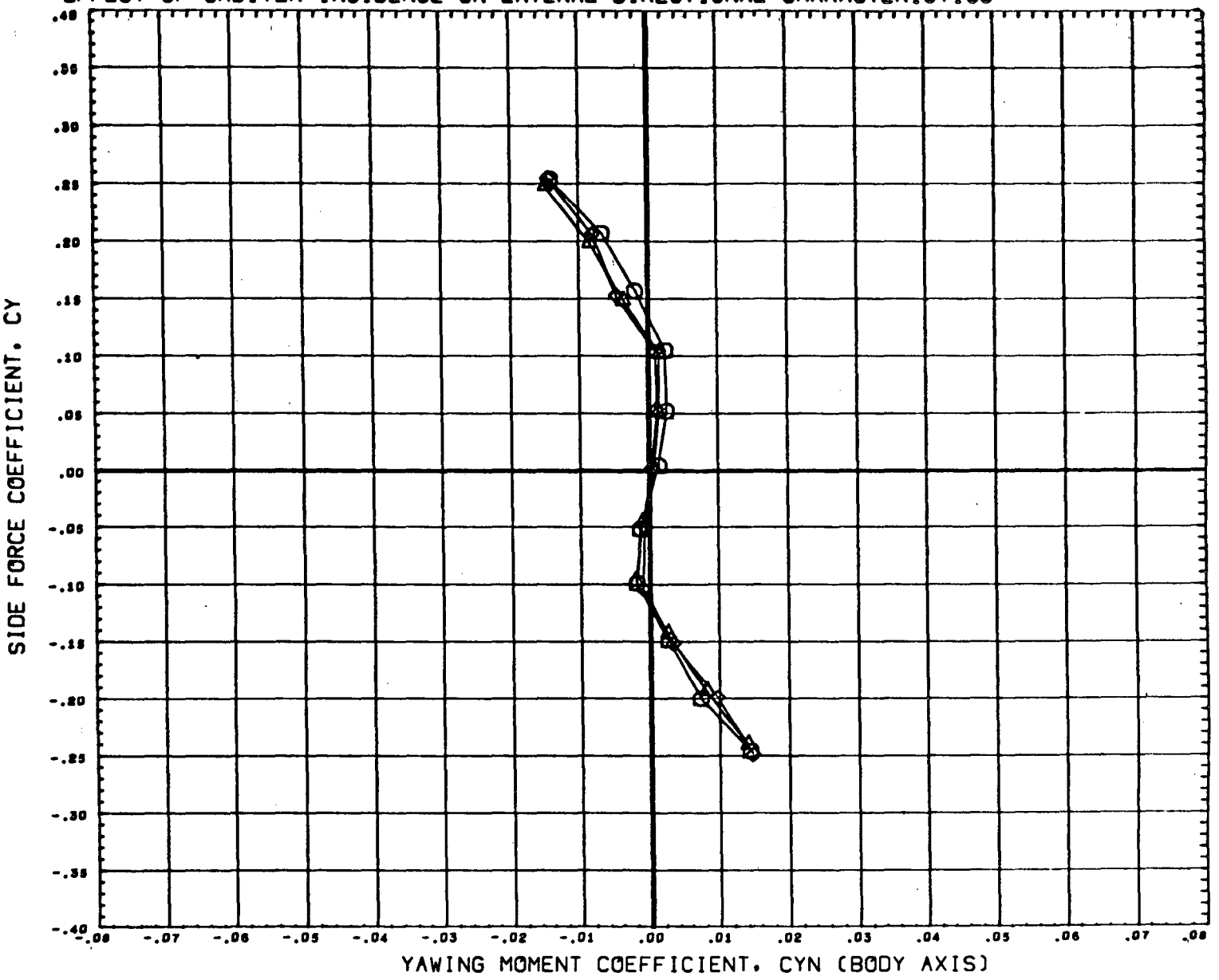
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(U66011)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-3.000
(A66013)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	0.000

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.97

EFFECT OF ORBITER INCIDENCE ON LATERAL DIRECTIONAL CHARACTERISTICS



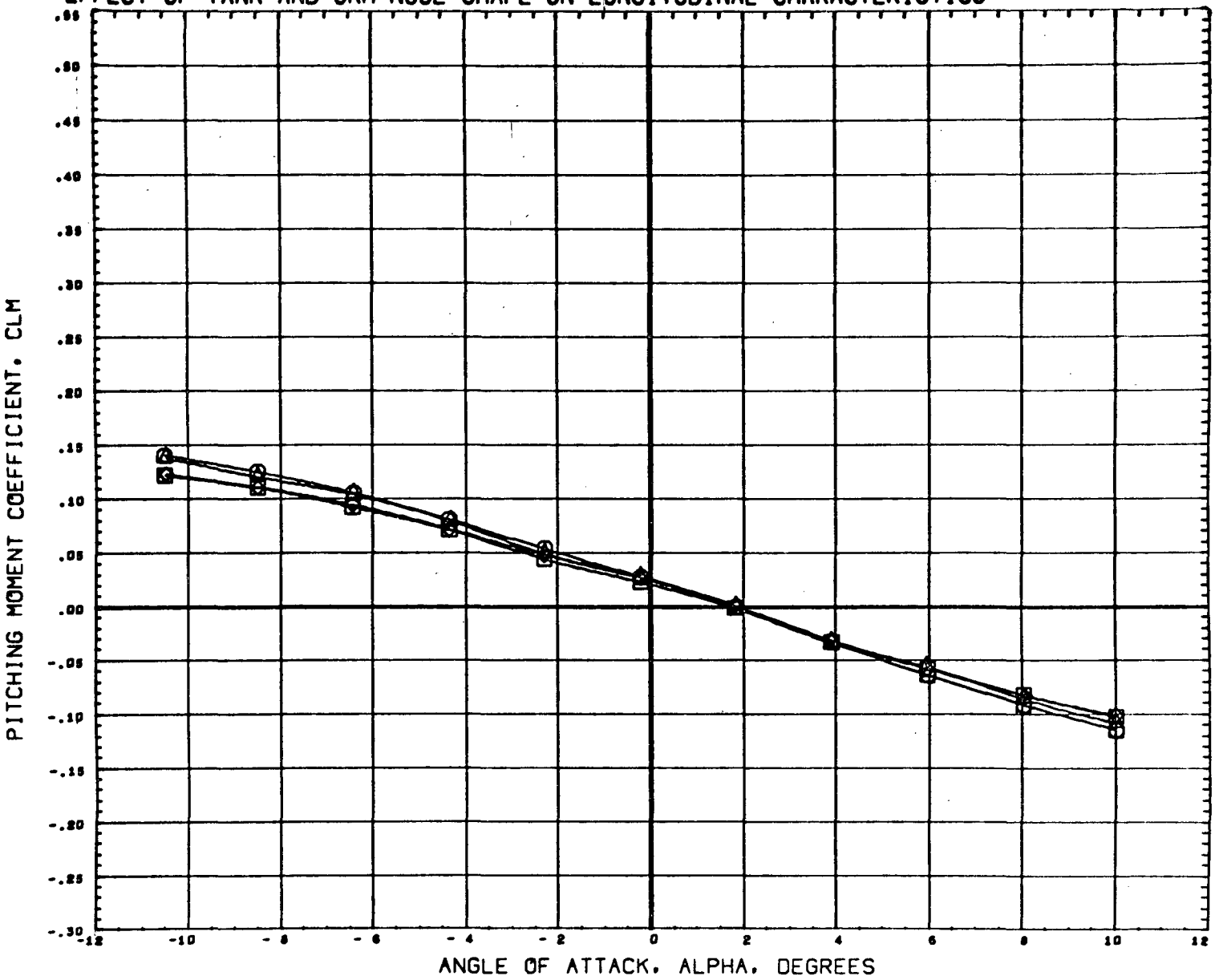
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(U66011)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-3.000
(A66013)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	0.000

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 4.96

EFFECT OF TANK AND SRM NOSE SHAPE ON LONGITUDINAL CHARACTERISTICS



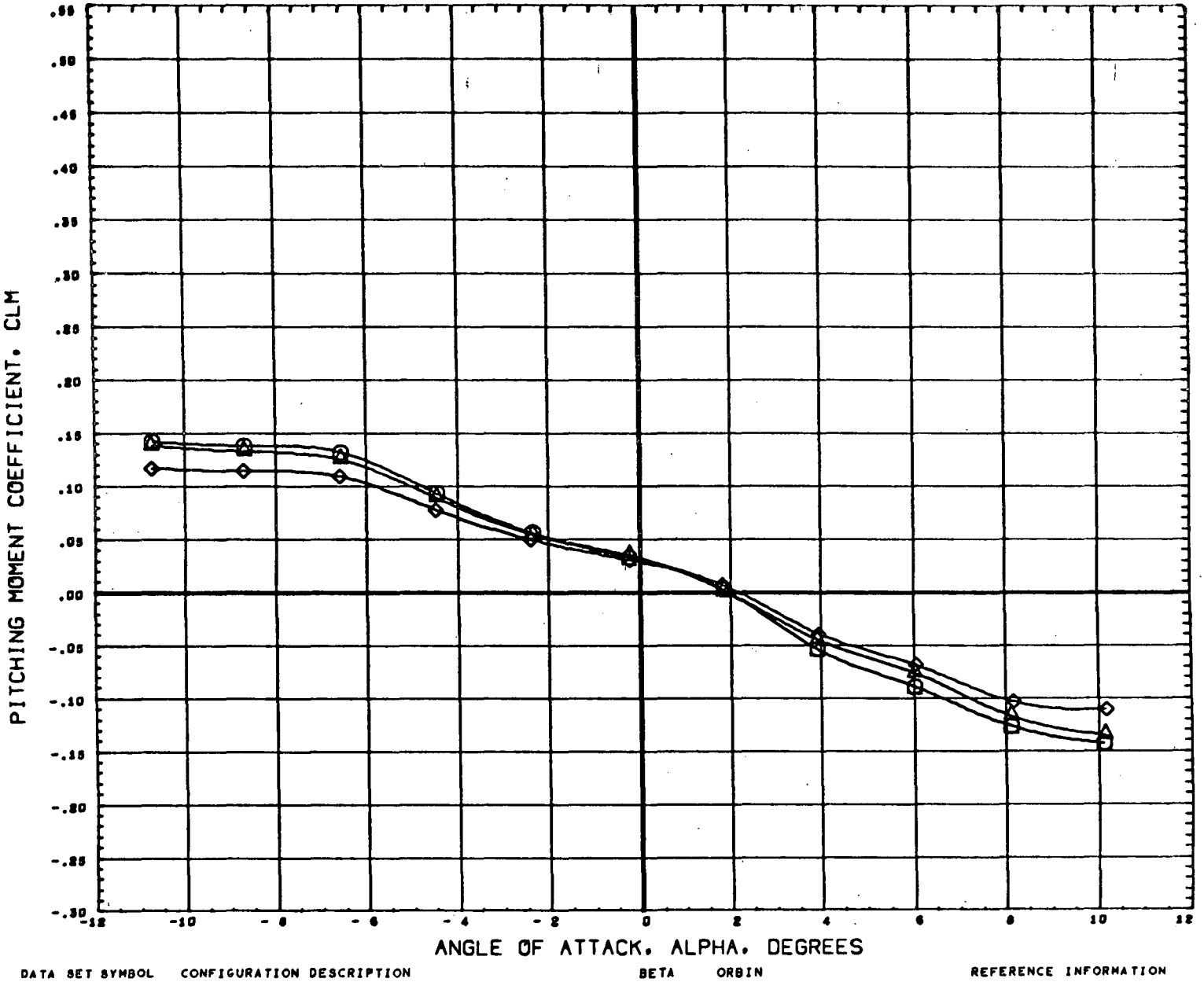
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(866008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(866014)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S2R1	0.000	-1.500
(866016)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T201S1R1	0.000	-1.500
(866018)	□	MSFC TWT 538	SHUTTLE LAUNCH	T201S2R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .60

EFFECT OF TANK AND SRM NOSE SHAPE ON LONGITUDINAL CHARACTERISTICS



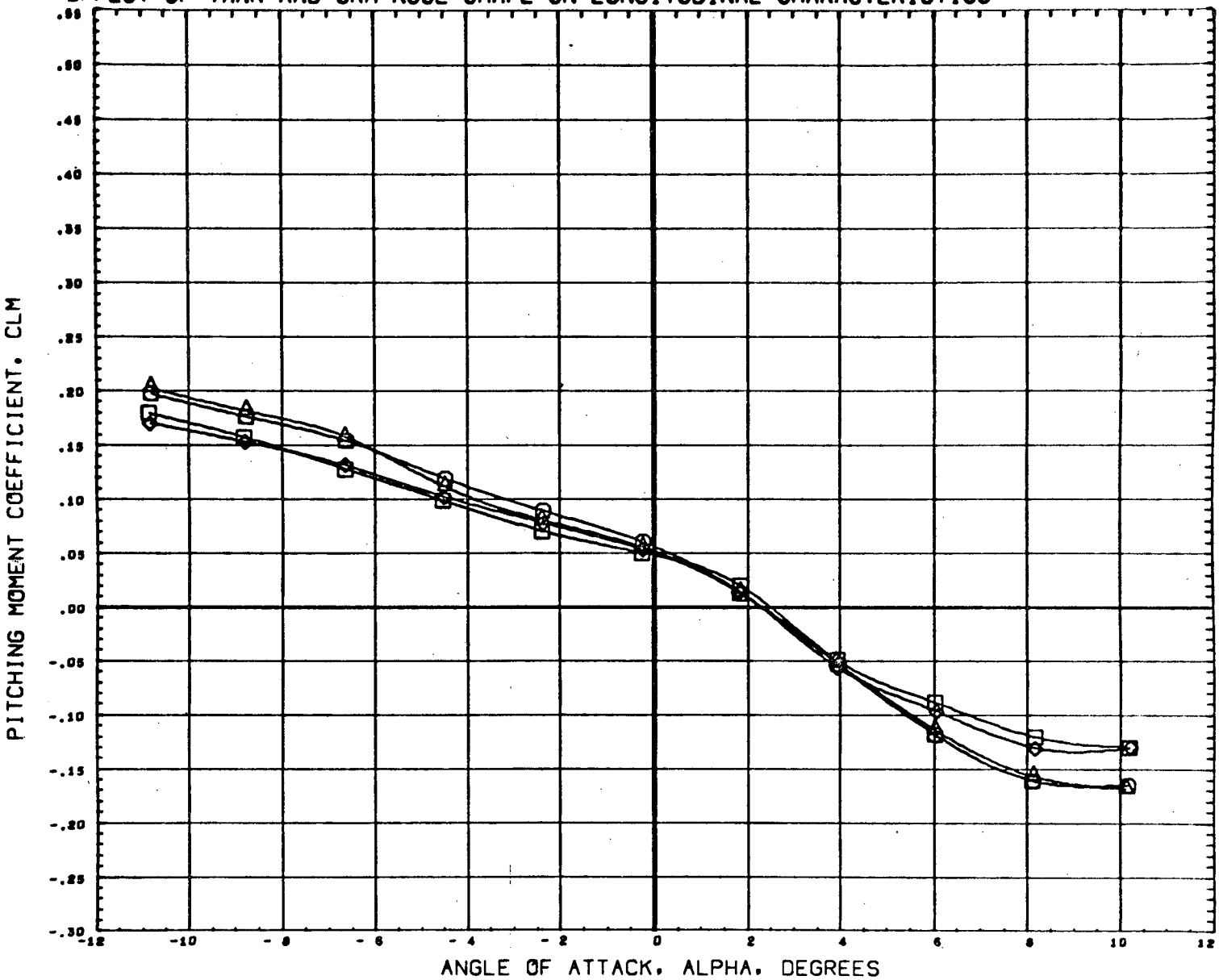
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(866008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(866014)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S2R1	0.000	-1.500
(866016)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T201S1R1	0.000	-1.500
(866018)	□	DATA NOT AVAILABLE FOR ALL CONDITIONS			0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN.
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .80

EFFECT OF TANK AND SRM NOSE SHAPE ON LONGITUDINAL CHARACTERISTICS



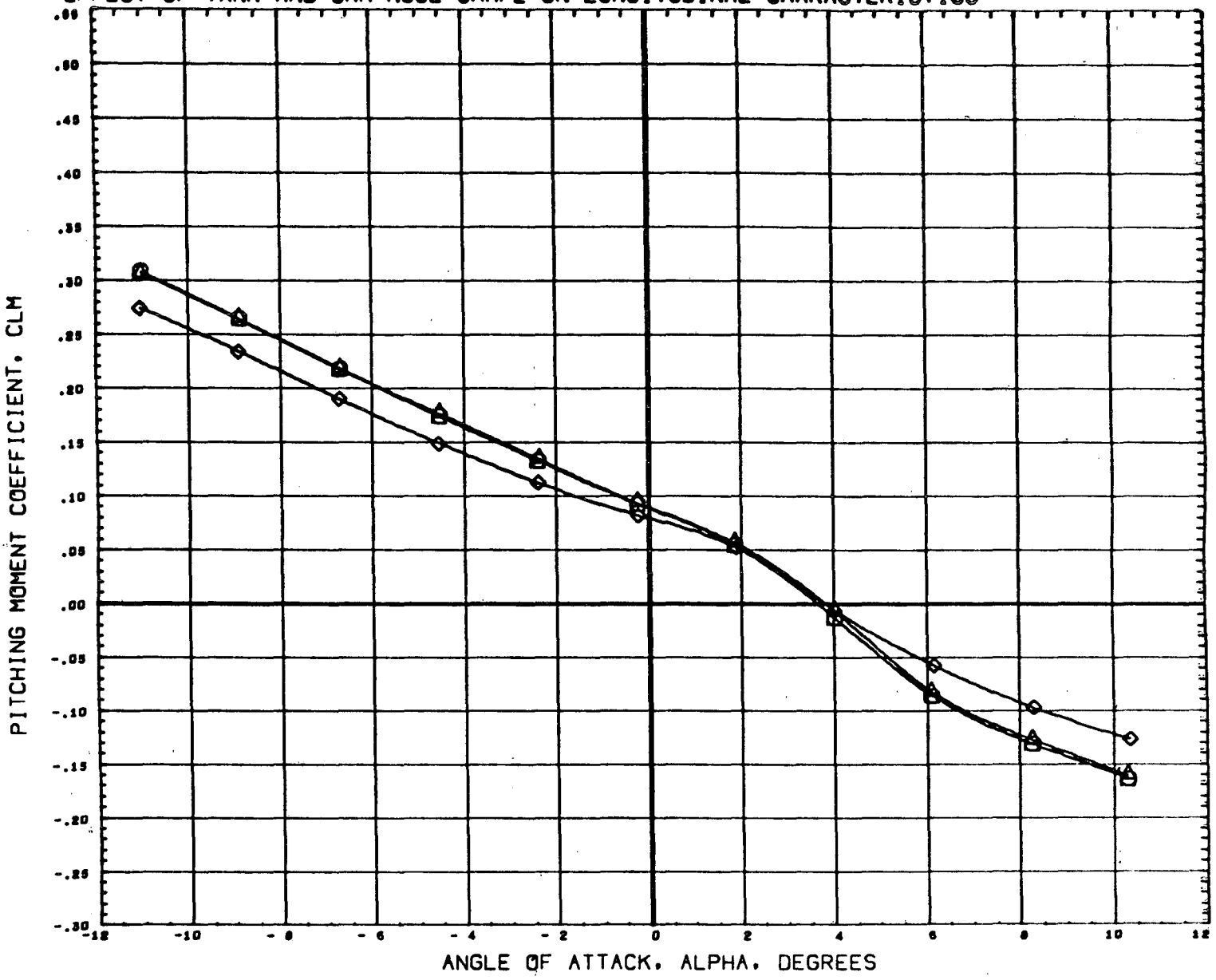
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66014)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S2R1	0.000	-1.500
(B66016)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T201S1R1	0.000	-1.500
(B66018)	□	MSFC TWT 538	SHUTTLE LAUNCH	T201S2R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .91

EFFECT OF TANK AND SRM NOSE SHAPE ON LONGITUDINAL CHARACTERISTICS



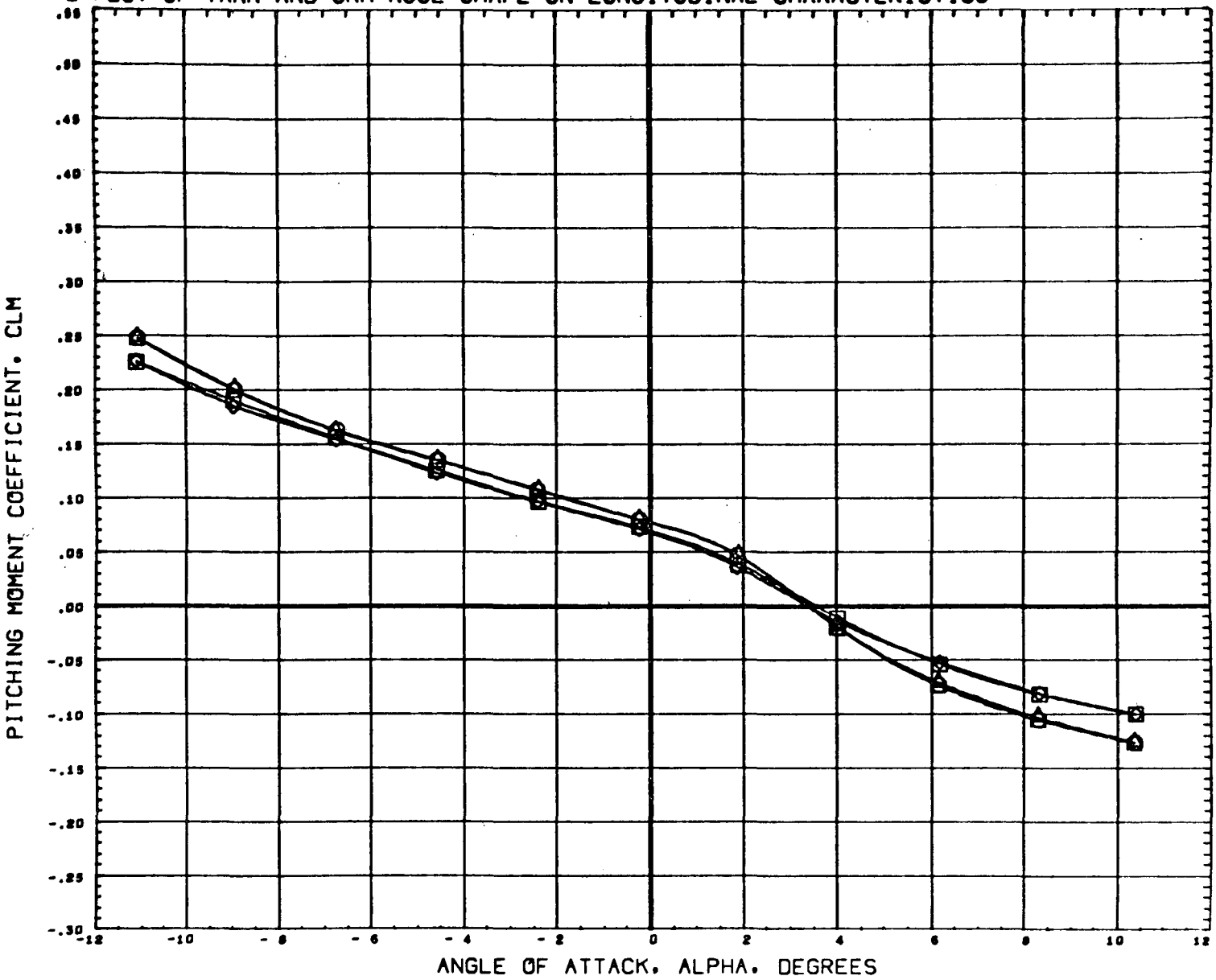
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66014)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S2R1	0.000	-1.500
(B66016)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T201S1R1	0.000	-1.500
(B66018)	□	DATA NOT AVAILABLE FOR ALL CONDITIONS			0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.11

EFFECT OF TANK AND SRM NOSE SHAPE ON LONGITUDINAL CHARACTERISTICS

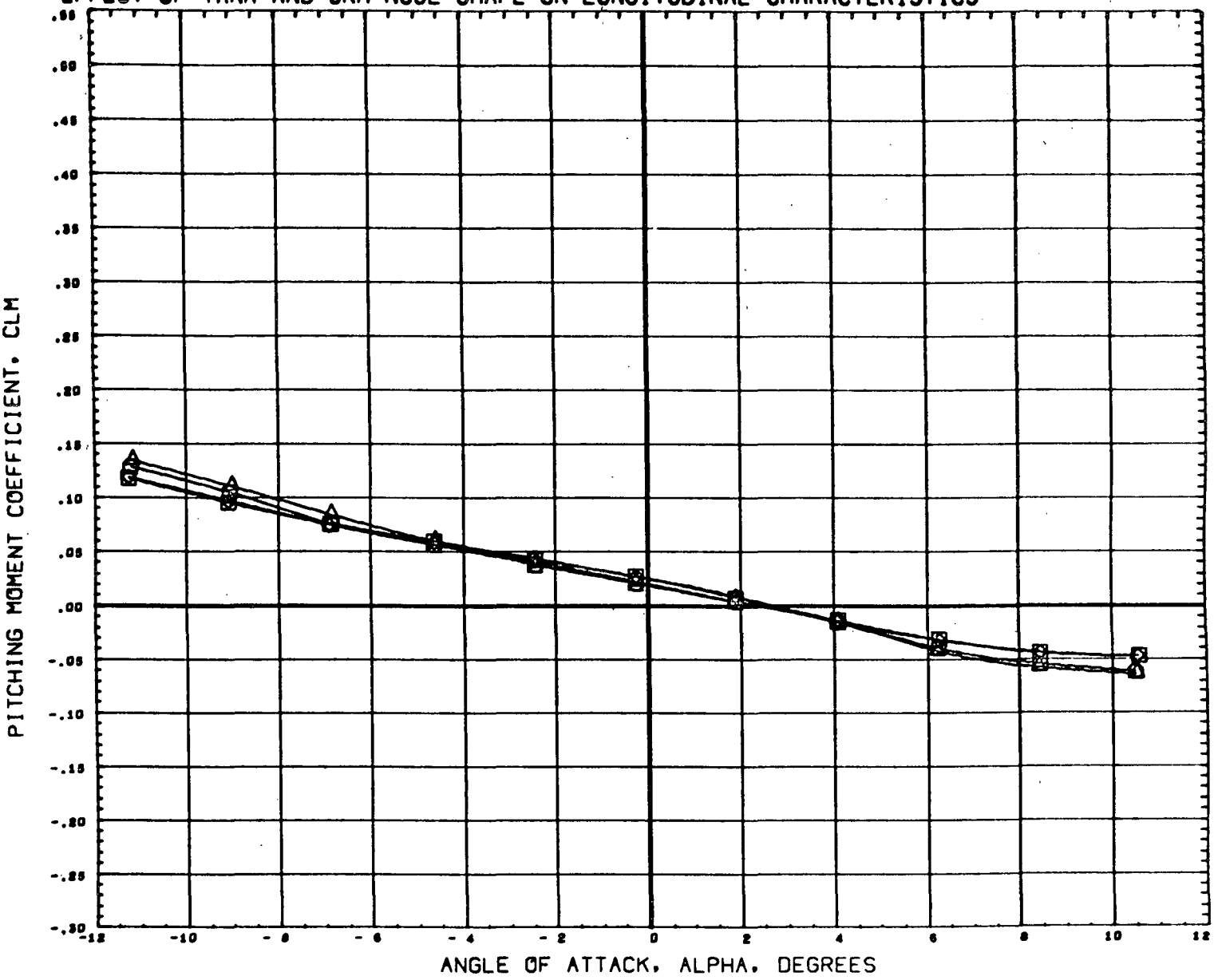


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66014)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S2R1	0.000	-1.500
(B66016)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T201S1R1	0.000	-1.500
(B66018)	□	MSFC TWT 538	SHUTTLE LAUNCH	T201S2R1	0.000	-1.500

REFERENCE INFORMATION		
SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.19

EFFECT OF TANK AND SRM NOSE SHAPE ON LONGITUDINAL CHARACTERISTICS



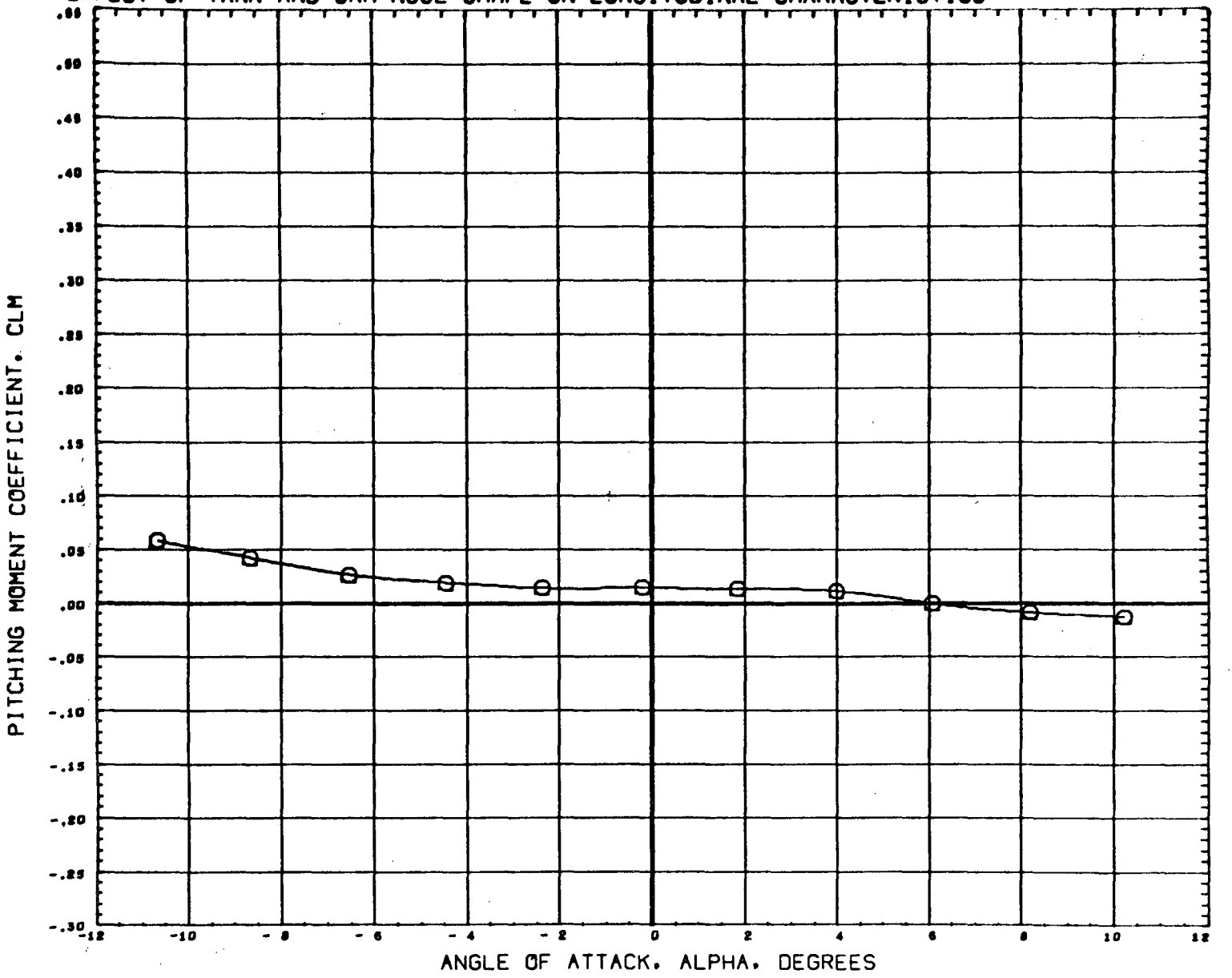
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66014)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S2R1	0.000	-1.500
(B66016)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T201S1R1	0.000	-1.500
(B66018)	□	MSFC TWT 538	SHUTTLE LAUNCH	T201S2R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.97

EFFECT OF TANK AND SRM NOSE SHAPE ON LONGITUDINAL CHARACTERISTICS



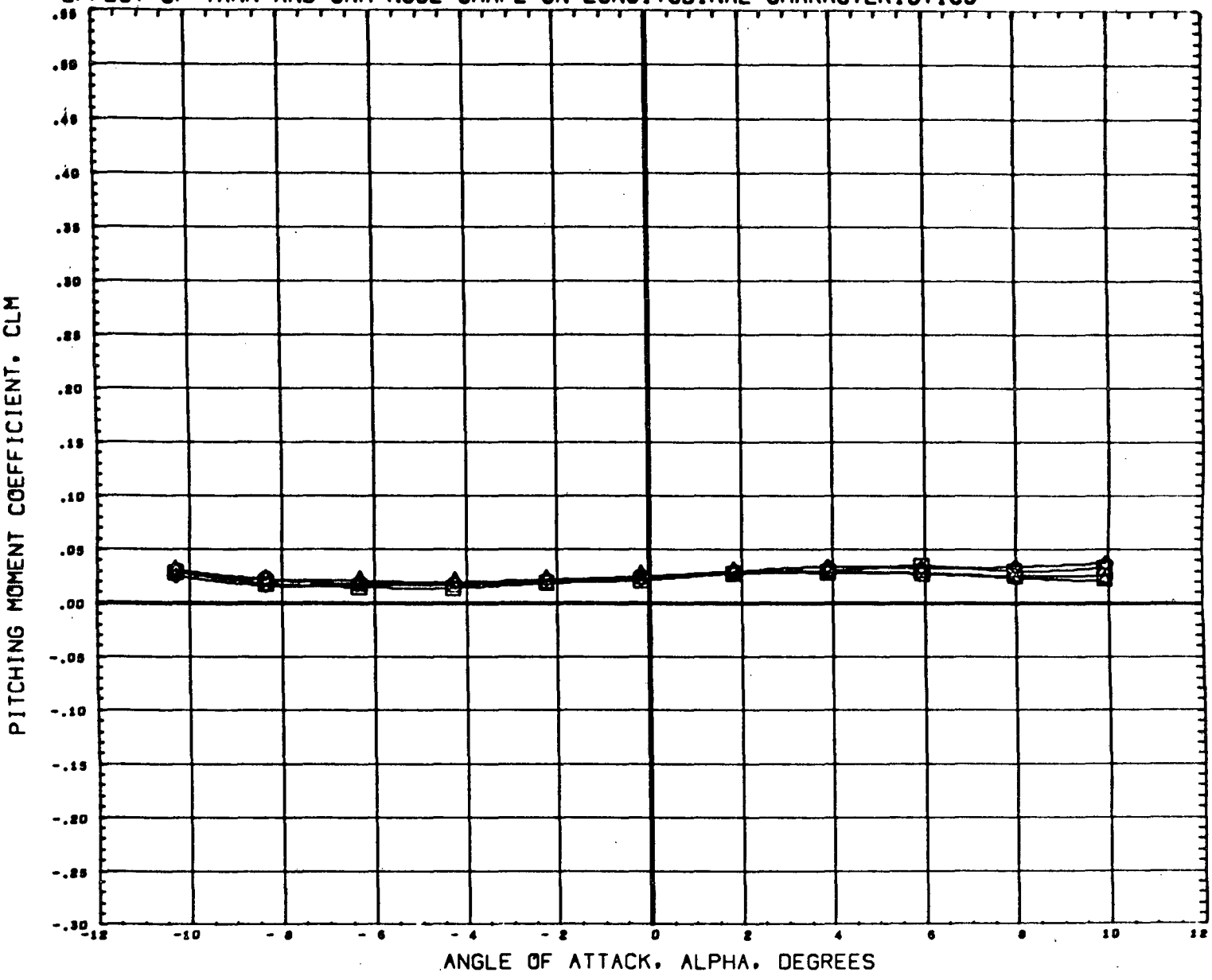
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ORBIN
(B66008)	○	MSFC TWT 538 SHUTTLE LAUNCH T101S1R1	0.000	-1.500
(B66014)	△	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500
(B66016)	◇	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500
(B66018)	□	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 2.74

EFFECT OF TANK AND SRM NOSE SHAPE ON LONGITUDINAL CHARACTERISTICS

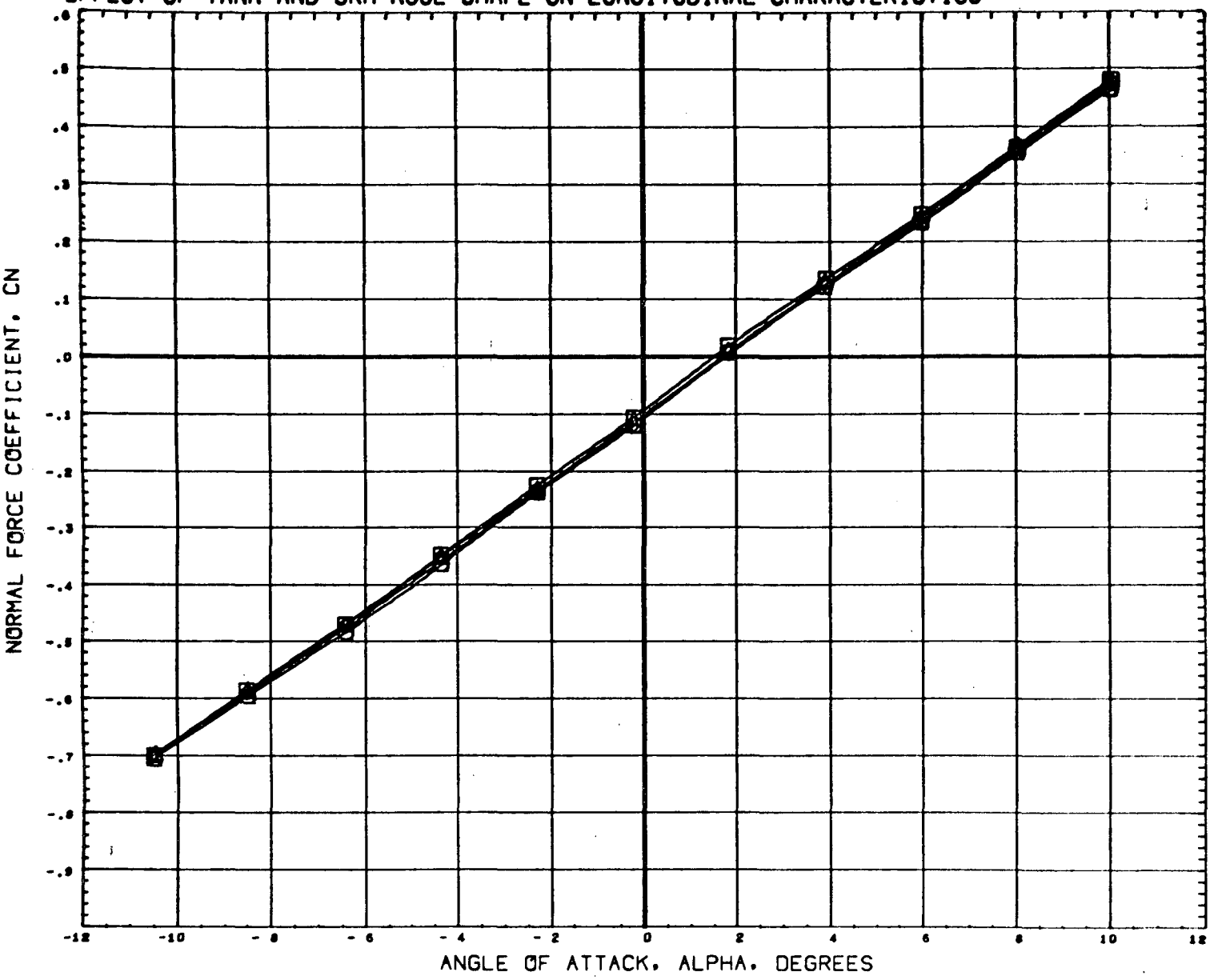


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66014)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S2R1	0.000	-1.500
(B66016)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T201S1R1	0.000	-1.500
(B66018)	□	MSFC TWT 538	SHUTTLE LAUNCH	T201S2R1	0.000	-1.500

REFERENCE INFORMATION		
SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 4.96

EFFECT OF TANK AND SRM NOSE SHAPE ON LONGITUDINAL CHARACTERISTICS



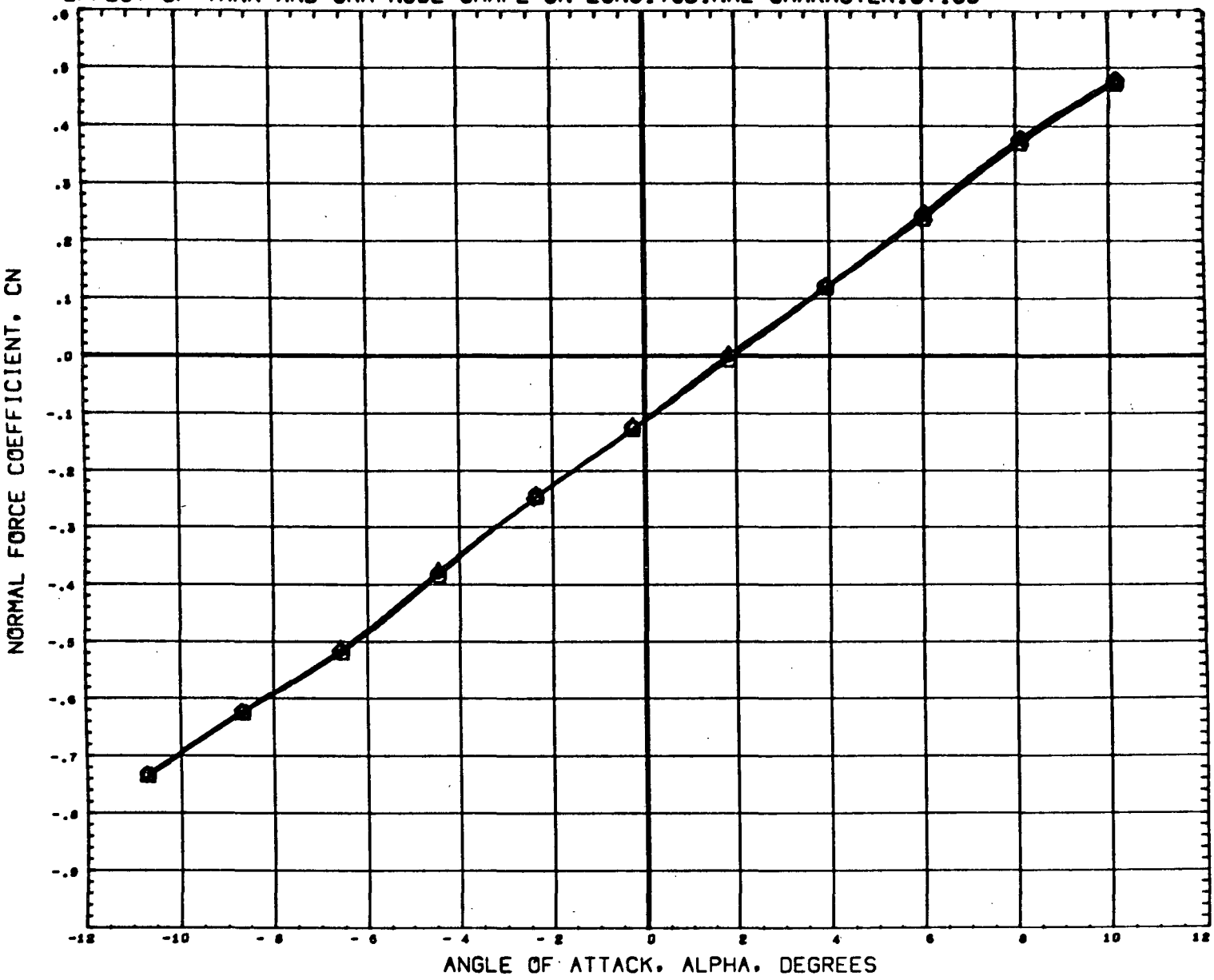
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66014)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S2R1	0.000	-1.500
(B66016)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T201S1R1	0.000	-1.500
(B66018)	□	MSFC TWT 538	SHUTTLE LAUNCH	T201S2R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .60

EFFECT OF TANK AND SRM NOSE SHAPE ON LONGITUDINAL CHARACTERISTICS



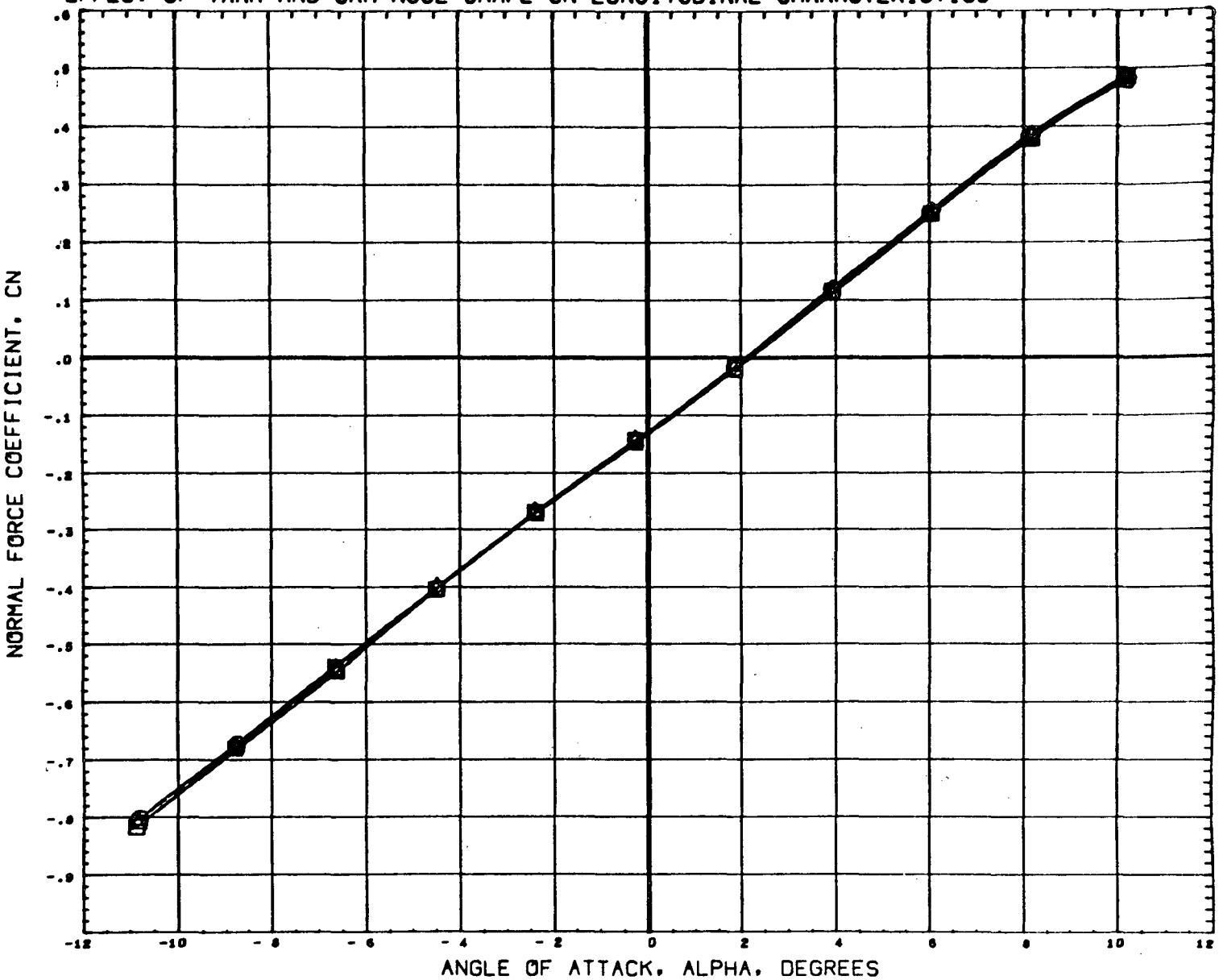
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1R1	0.000	-1.500
(B66014)	△	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S2R1	0.000	-1.500
(B66016)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T2O1S1R1	0.000	-1.500
(B66018)	□	DATA NOT AVAILABLE FOR ALL CONDITIONS			0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .80

EFFECT OF TANK AND SRM NOSE SHAPE ON LONGITUDINAL CHARACTERISTICS



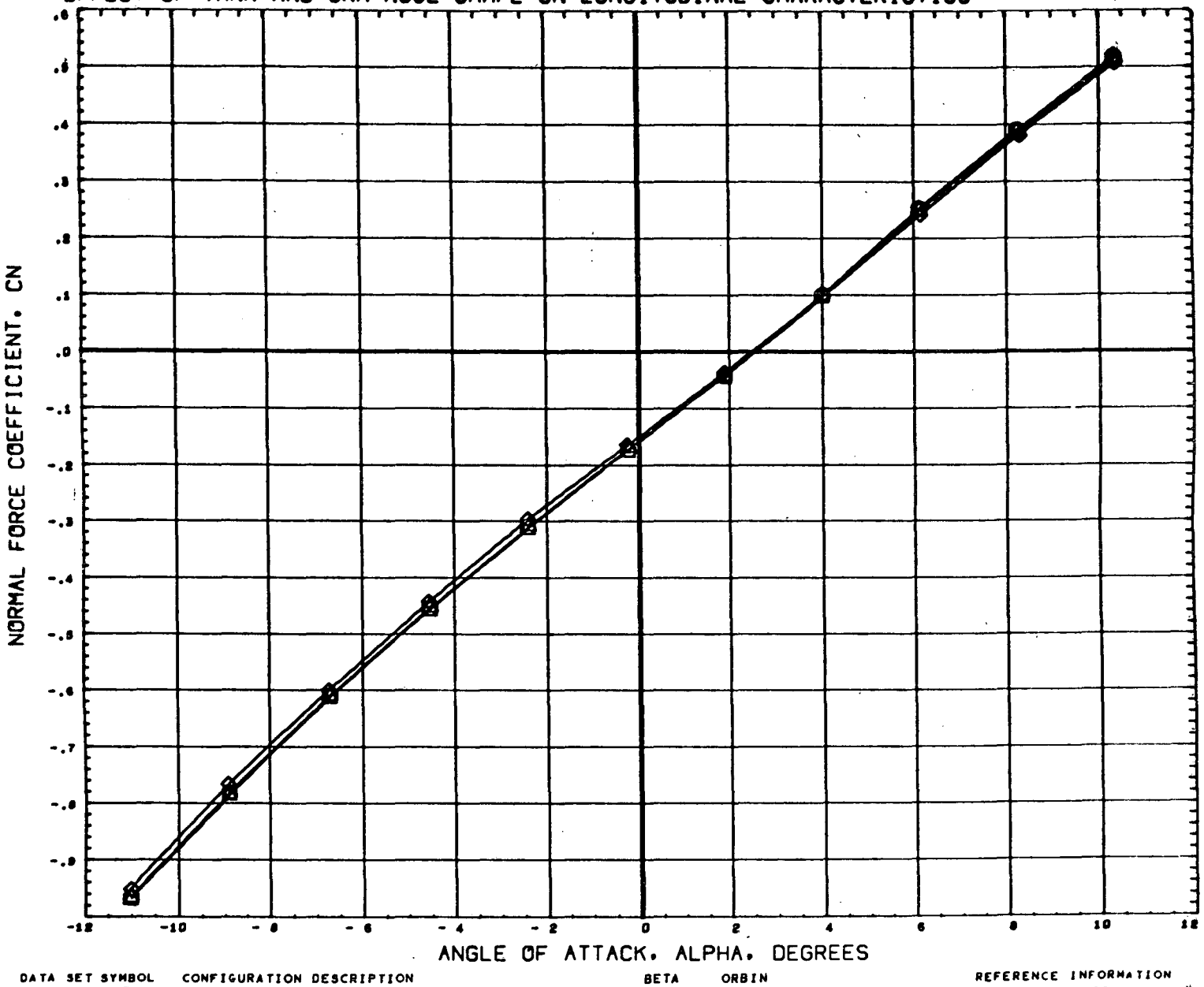
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66014)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S2R1	0.000	-1.500
(B66016)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T201S1R1	0.000	-1.500
(B66018)	□	MSFC TWT 538	SHUTTLE LAUNCH	T201S2R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2460	IN.
SCALE	0.0040	

MACH .91

EFFECT OF TANK AND SRM NOSE SHAPE ON LONGITUDINAL CHARACTERISTICS



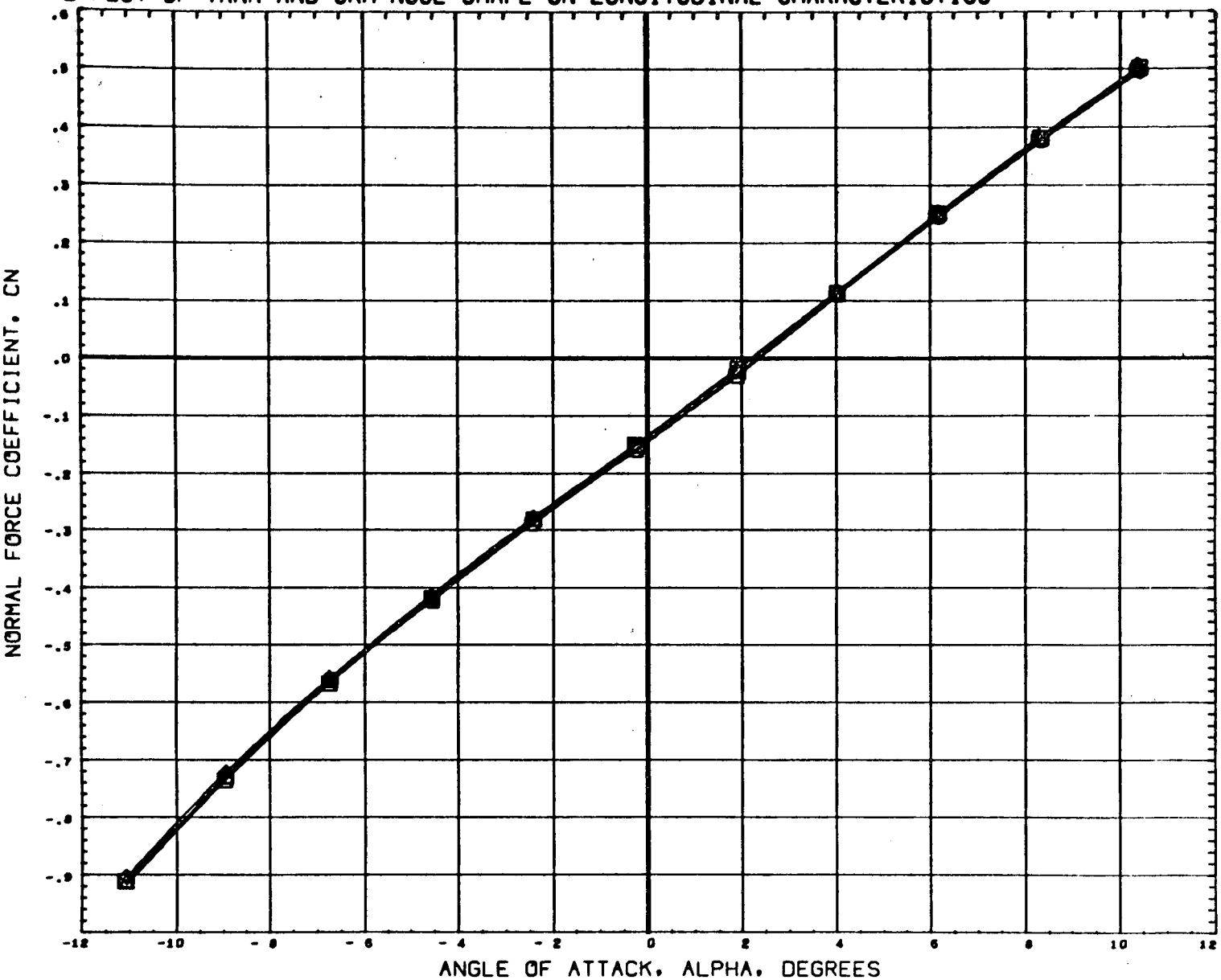
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66014)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S2R1	0.000	-1.500
(B66016)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T201S1R1	0.000	-1.500
(B66018)	□	DATA NOT AVAILABLE FOR ALL CONDITIONS			0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.11

EFFECT OF TANK AND SRM NOSE SHAPE ON LONGITUDINAL CHARACTERISTICS



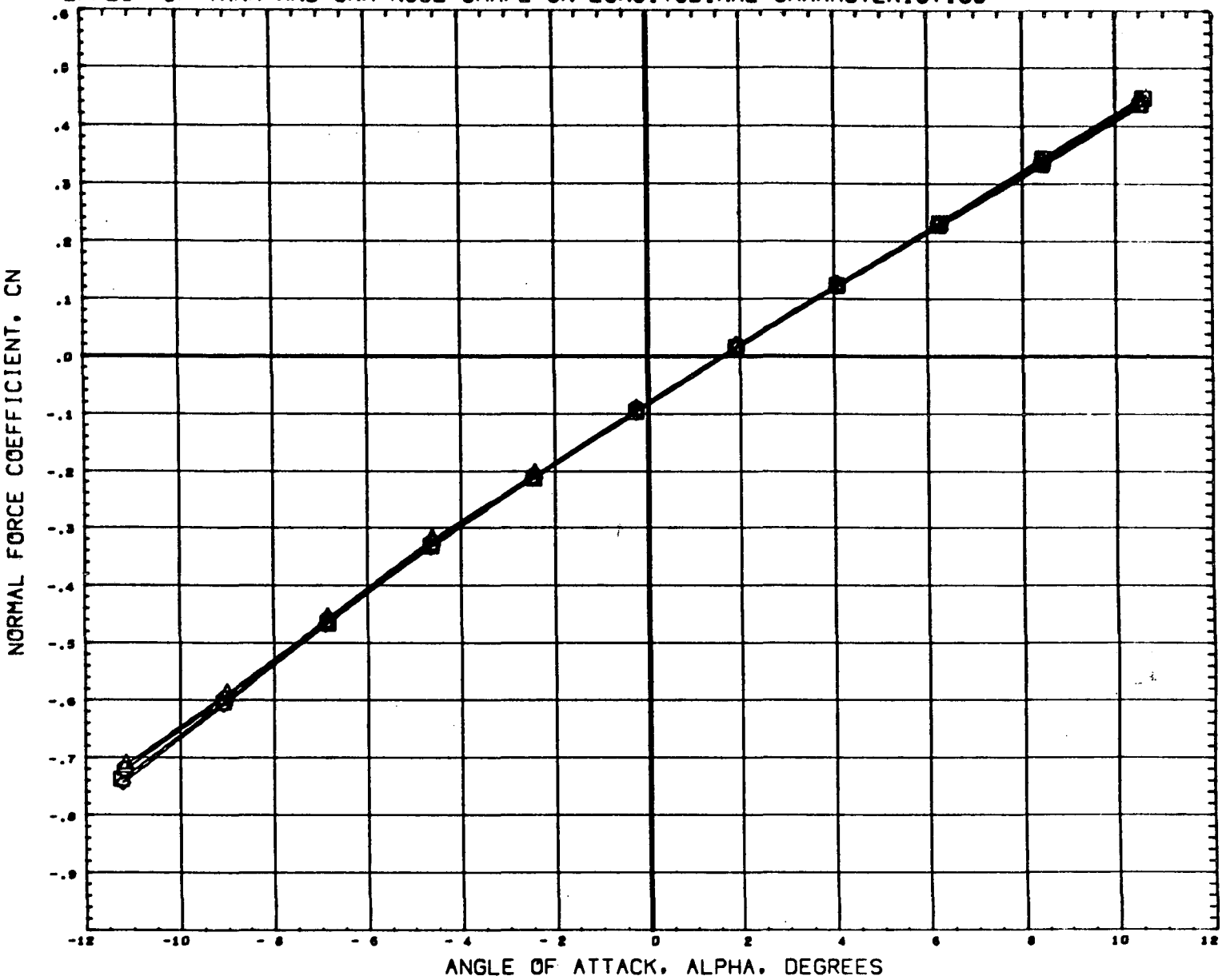
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(866008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(866014)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S2R1	0.000	-1.500
(866016)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T201S1R1	0.000	-1.500
(866018)	□	MSFC TWT 538	SHUTTLE LAUNCH	T201S2R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.19

EFFECT OF TANK AND SRM NOSE SHAPE ON LONGITUDINAL CHARACTERISTICS



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66014)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S2R1	0.000	-1.500
(B66016)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T201S1R1	0.000	-1.500
(B66018)	□	MSFC TWT 538	SHUTTLE LAUNCH	T201S2R1	0.000	-1.500

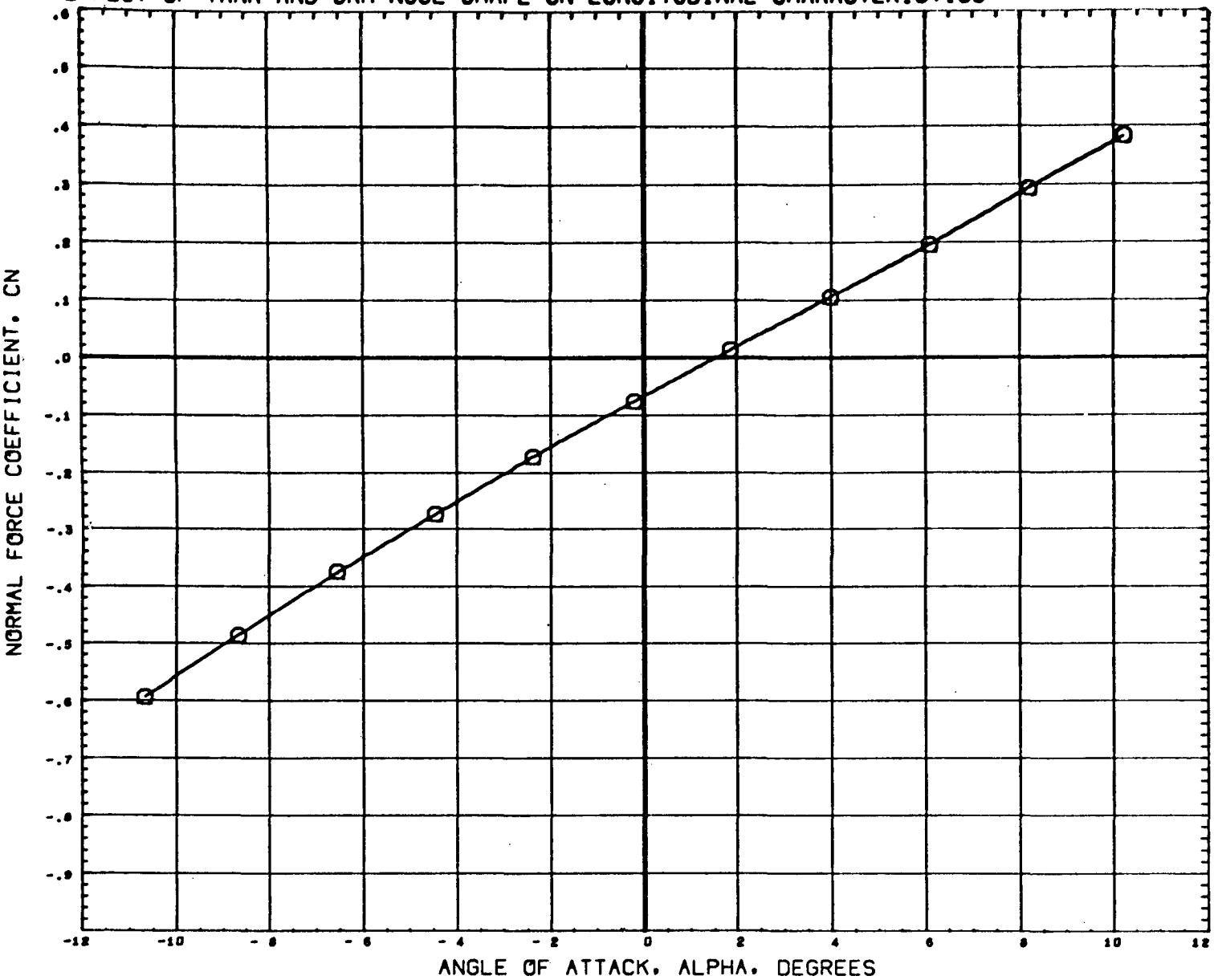
REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.97

C.4

EFFECT OF TANK AND SRM NOSE SHAPE ON LONGITUDINAL CHARACTERISTICS



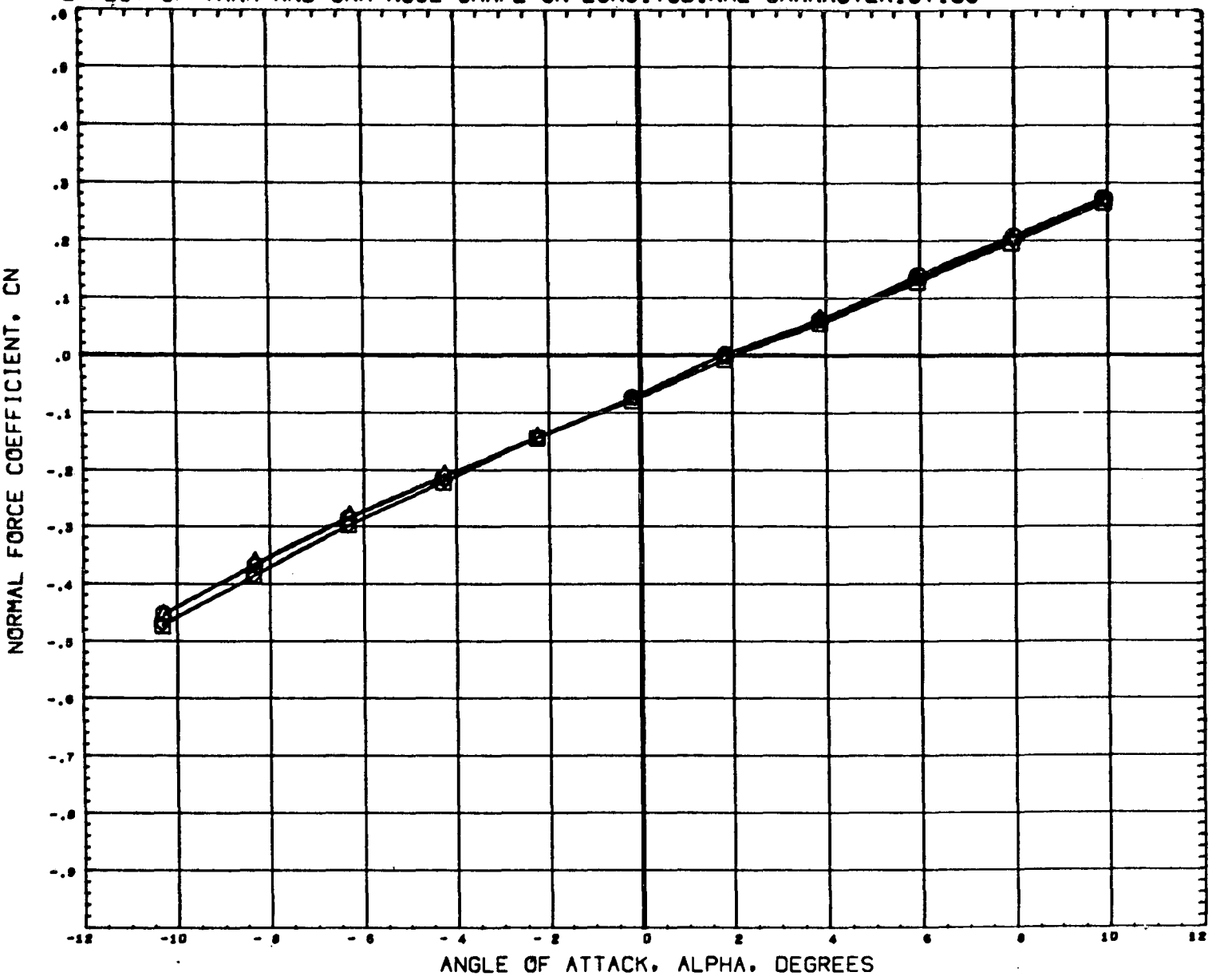
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ORBIN
(B66008)	○	MSFC TWT 538 SHUTTLE LAUNCH T101S1R1	0.000	-1.500
(B66014)	△	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500
(B66016)	◇	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500
(B66018)	□	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 2.74

EFFECT OF TANK AND SRM NOSE SHAPE ON LONGITUDINAL CHARACTERISTICS



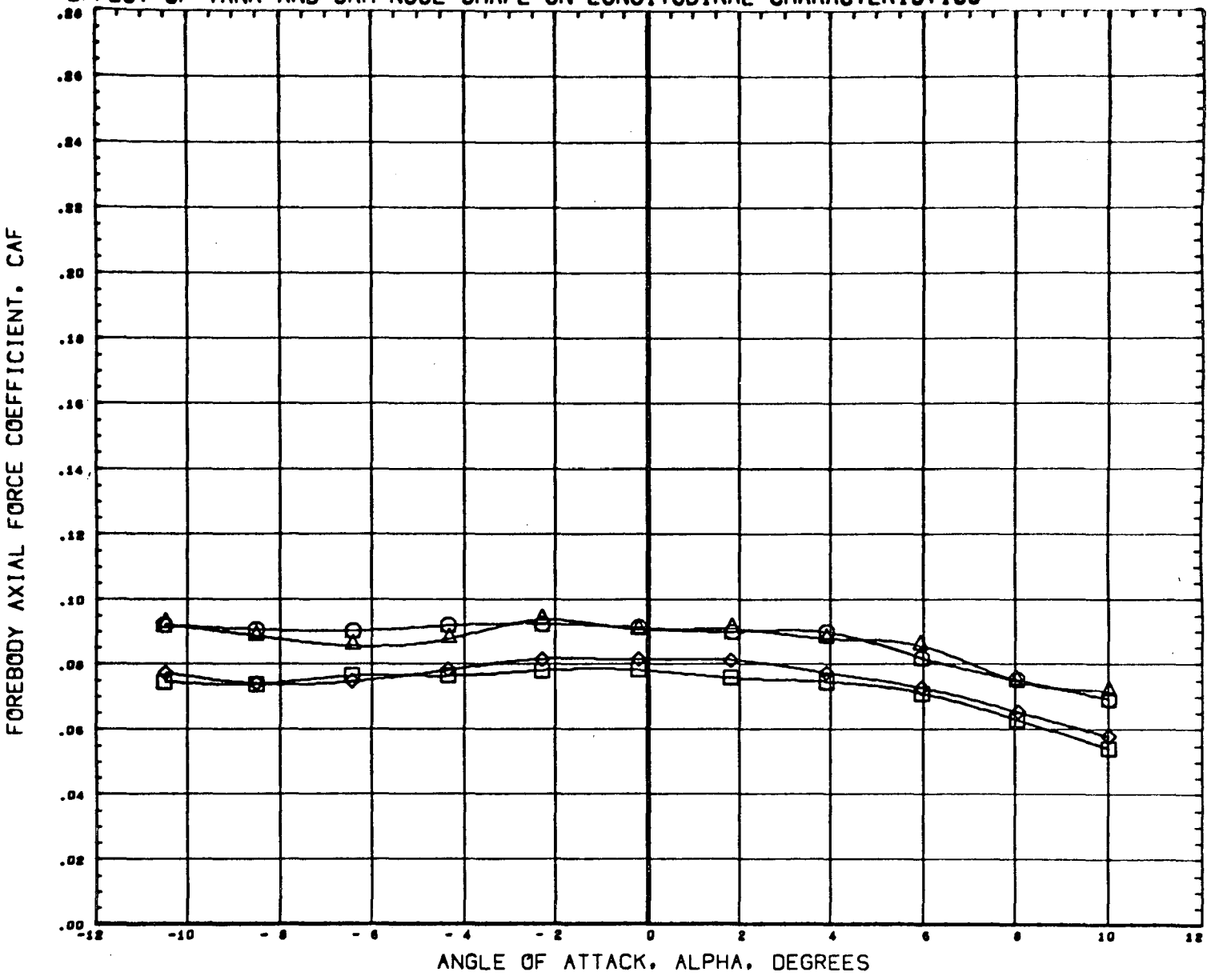
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66014)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S2R1	0.000	-1.500
(B66016)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T201S1R1	0.000	-1.500
(B66018)	□	MSFC TWT 538	SHUTTLE LAUNCH	T201S2R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 4.96

EFFECT OF TANK AND SRM NOSE SHAPE ON LONGITUDINAL CHARACTERISTICS



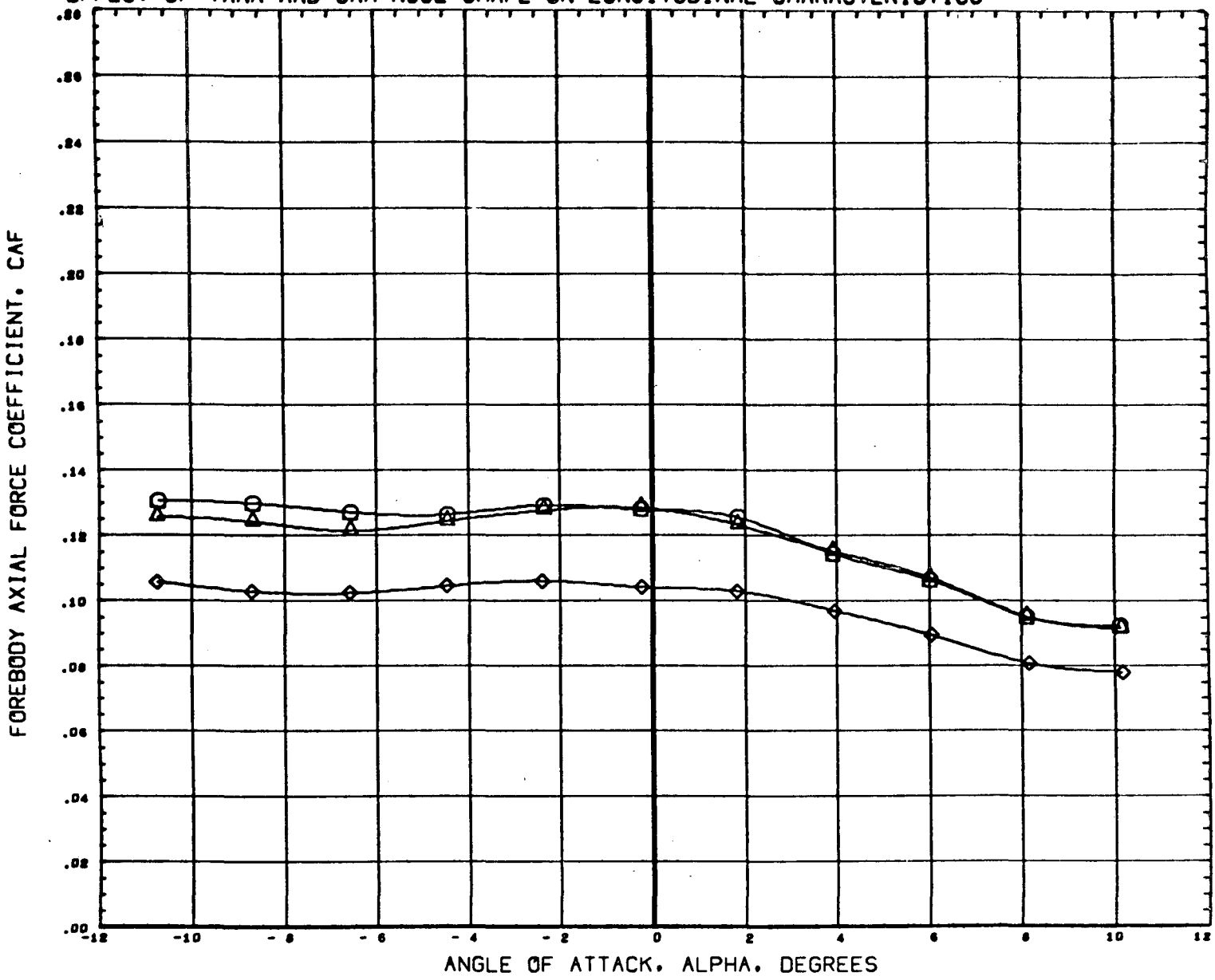
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(866008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(866014)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S2R1	0.000	-1.500
(866016)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T201S1R1	0.000	-1.500
(866018)	□	MSFC TWT 538	SHUTTLE LAUNCH	T201S2R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .60

EFFECT OF TANK AND SRM NOSE SHAPE ON LONGITUDINAL CHARACTERISTICS



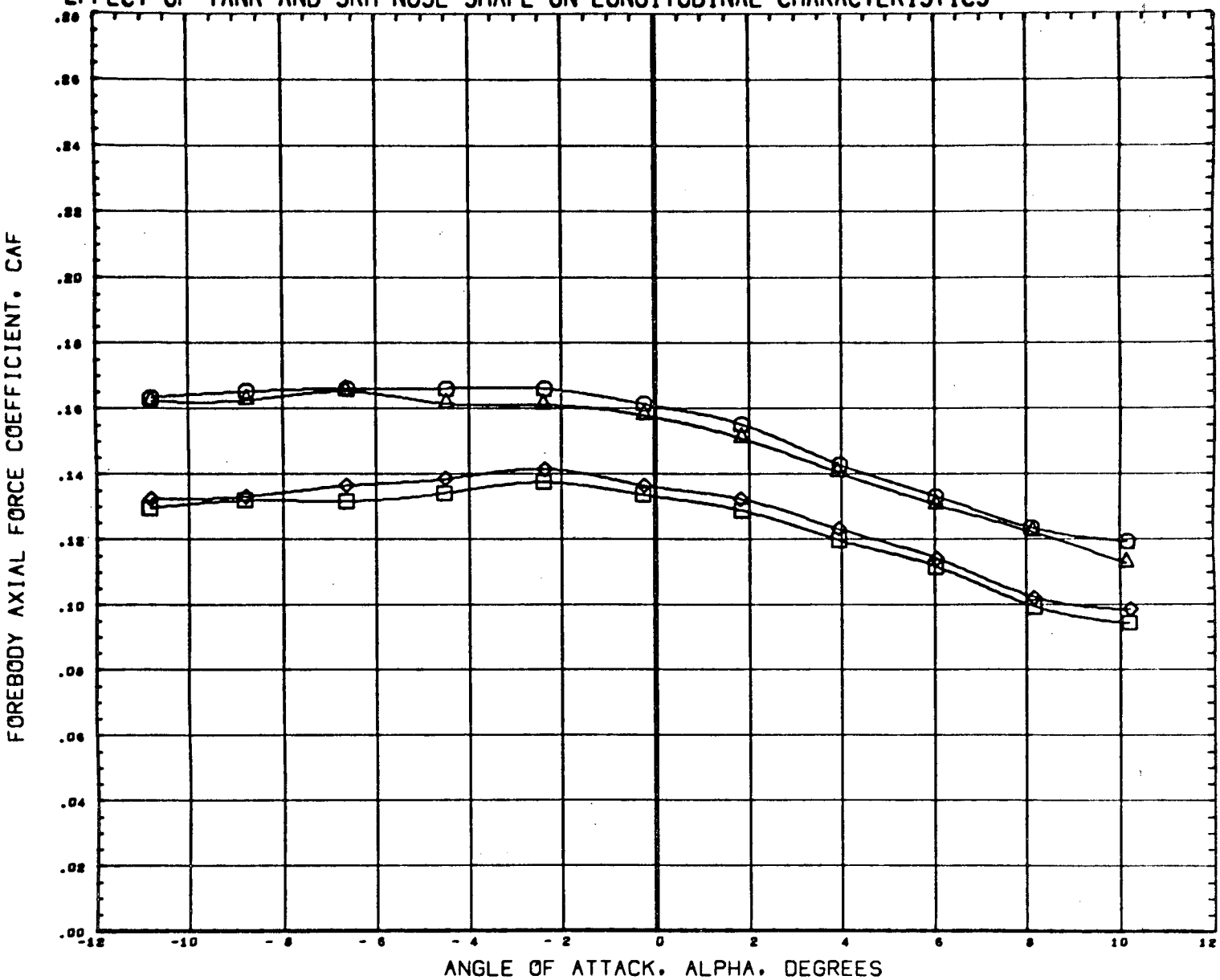
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66014)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S2R1	0.000	-1.500
(B66016)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T201S1R1	0.000	-1.500
(B66018)	□	DATA NOT AVAILABLE FOR ALL CONDITIONS			0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .80

EFFECT OF TANK AND SRM NOSE SHAPE ON LONGITUDINAL CHARACTERISTICS



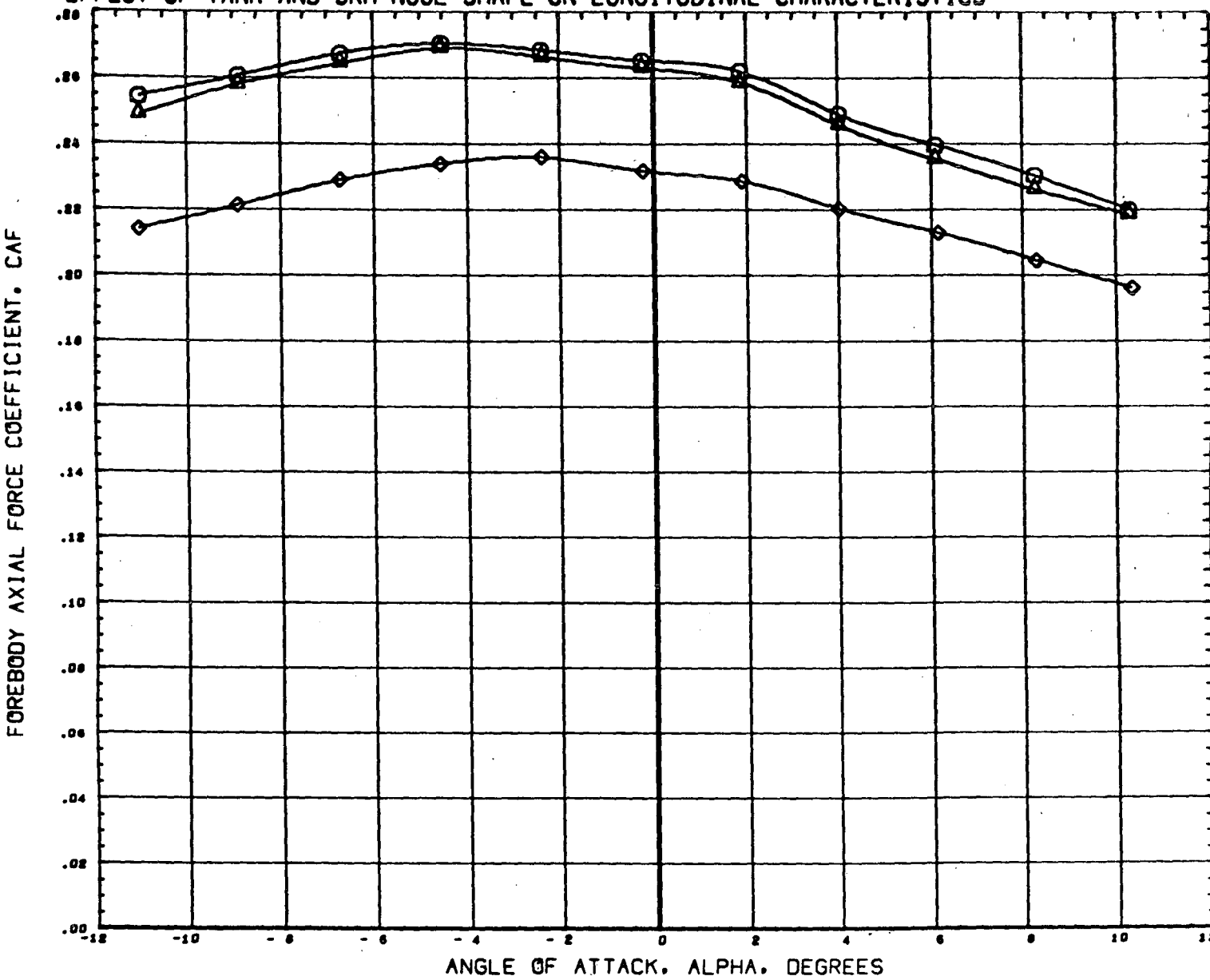
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66014)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S2R1	0.000	-1.500
(B66016)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T201S1R1	0.000	-1.500
(B66018)	□	MSFC TWT 538	SHUTTLE LAUNCH	T201S2R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .91

EFFECT OF TANK AND SRM NOSE SHAPE ON LONGITUDINAL CHARACTERISTICS



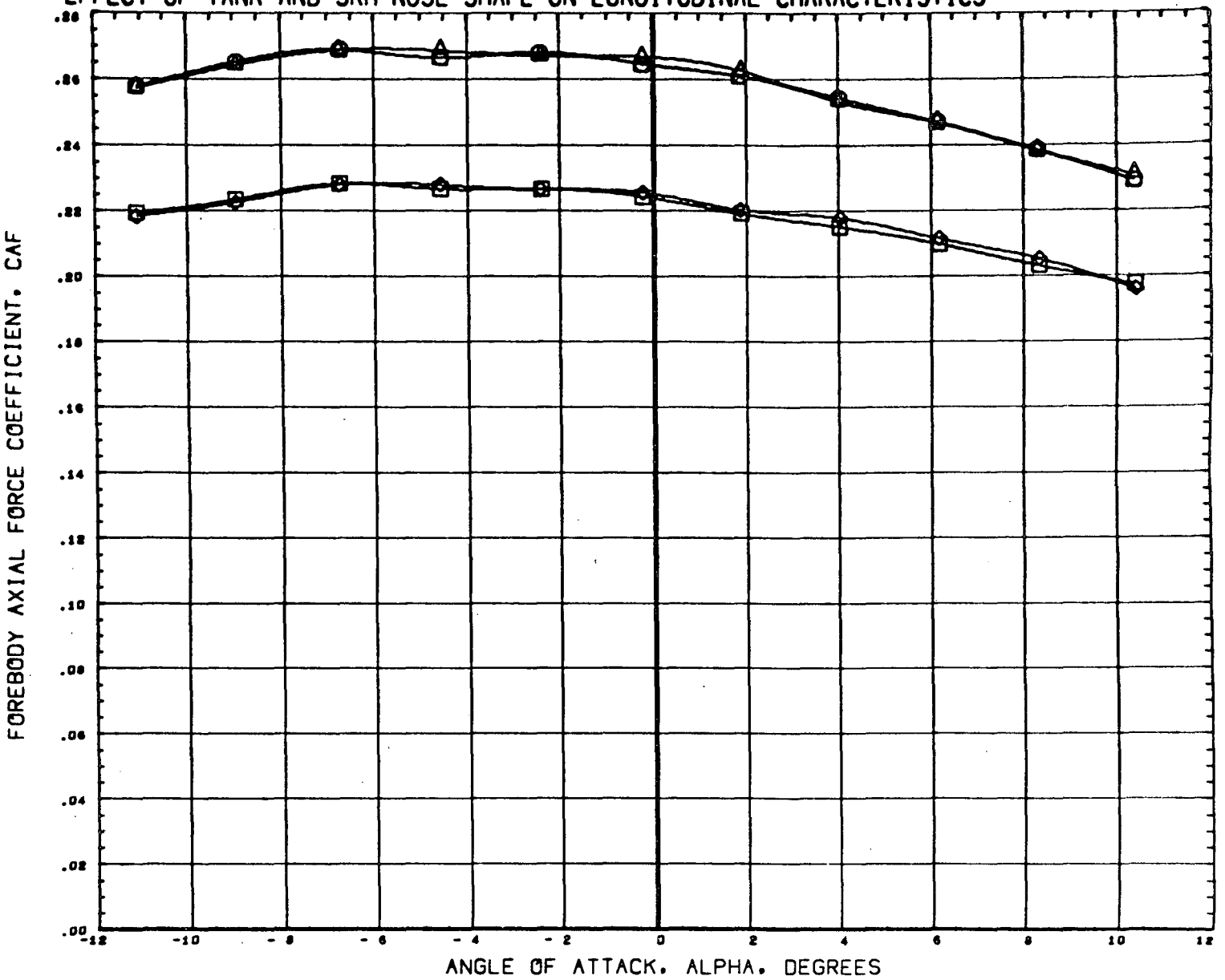
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(866008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(866014)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S2R1	0.000	-1.500
(866016)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T201S1R1	0.000	-1.500
(866018)	□	DATA NOT AVAILABLE FOR ALL CONDITIONS			0.000	-1.500

REFERENCE INFORMATION

SREF	7.0900	SQ. IN.
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.11

EFFECT OF TANK AND SRM NOSE SHAPE ON LONGITUDINAL CHARACTERISTICS



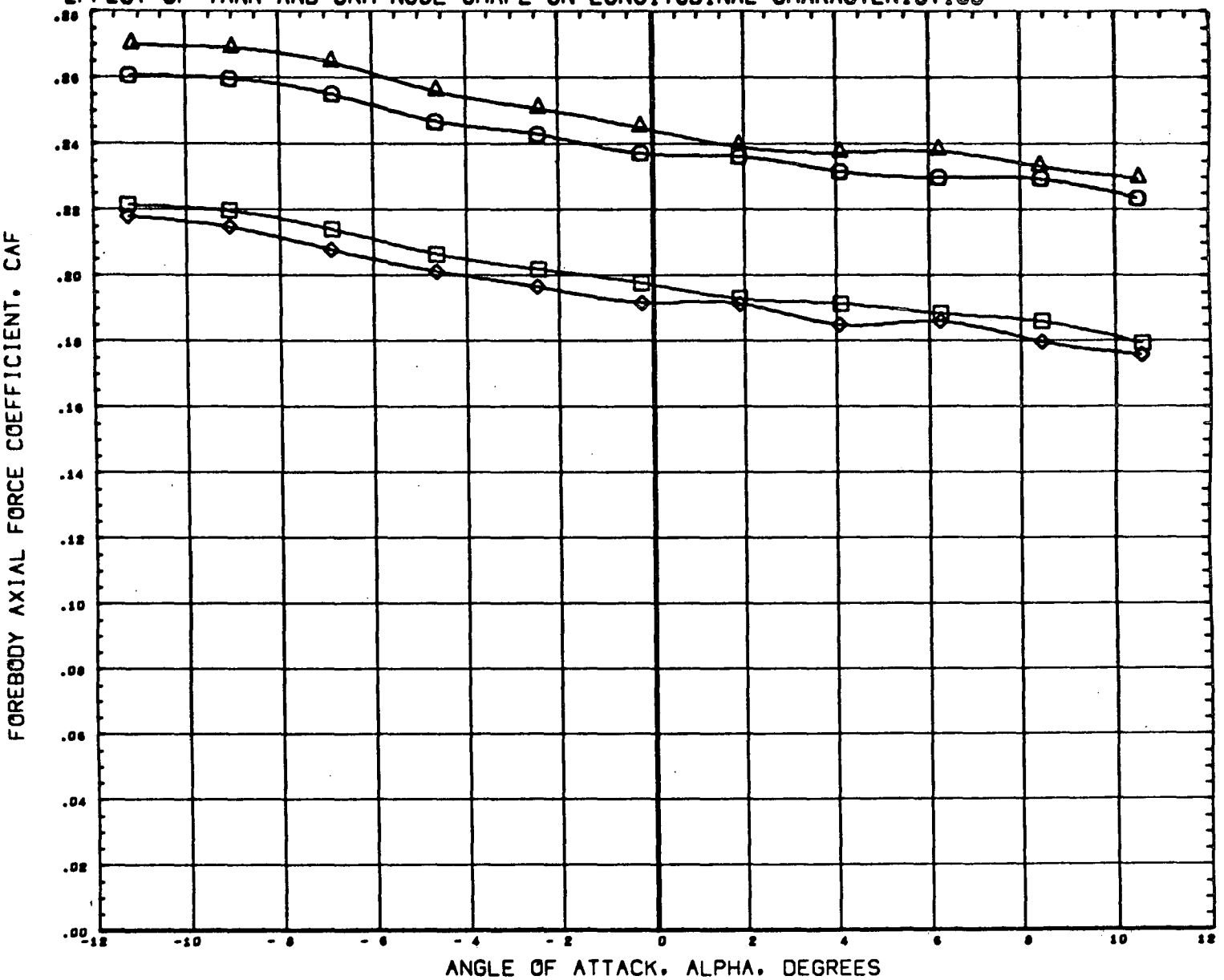
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(866008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(866014)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S2R1	0.000	-1.500
(866016)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T201S1R1	0.000	-1.500
(866018)	□	MSFC TWT 538	SHUTTLE LAUNCH	T201S2R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.19

EFFECT OF TANK AND SRM NOSE SHAPE ON LONGITUDINAL CHARACTERISTICS



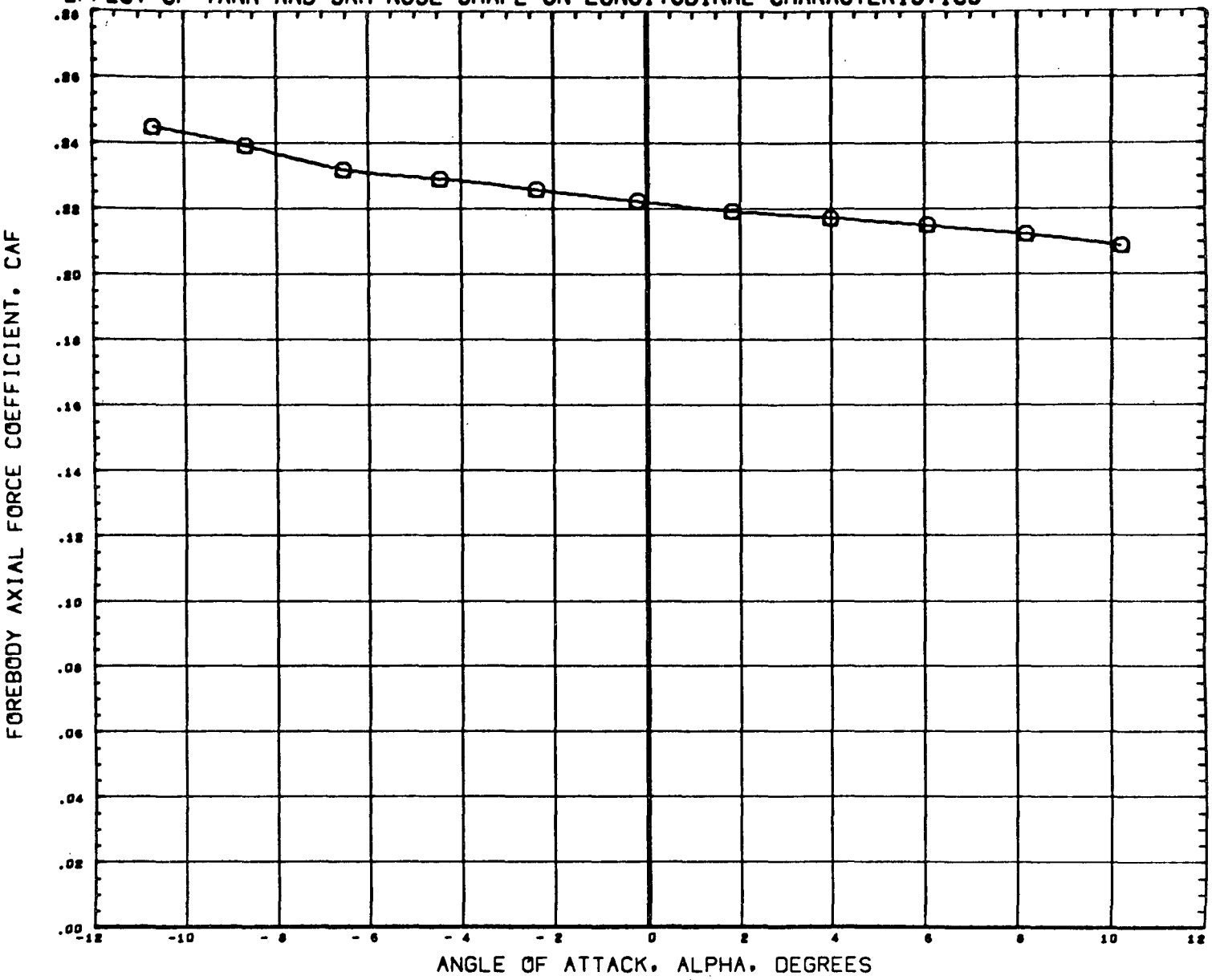
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(866008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(866014)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S2R1	0.000	-1.500
(866016)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T201S1R1	0.000	-1.500
(866018)	□	MSFC TWT 538	SHUTTLE LAUNCH	T201S2R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.97

EFFECT OF TANK AND SRM NOSE SHAPE ON LONGITUDINAL CHARACTERISTICS



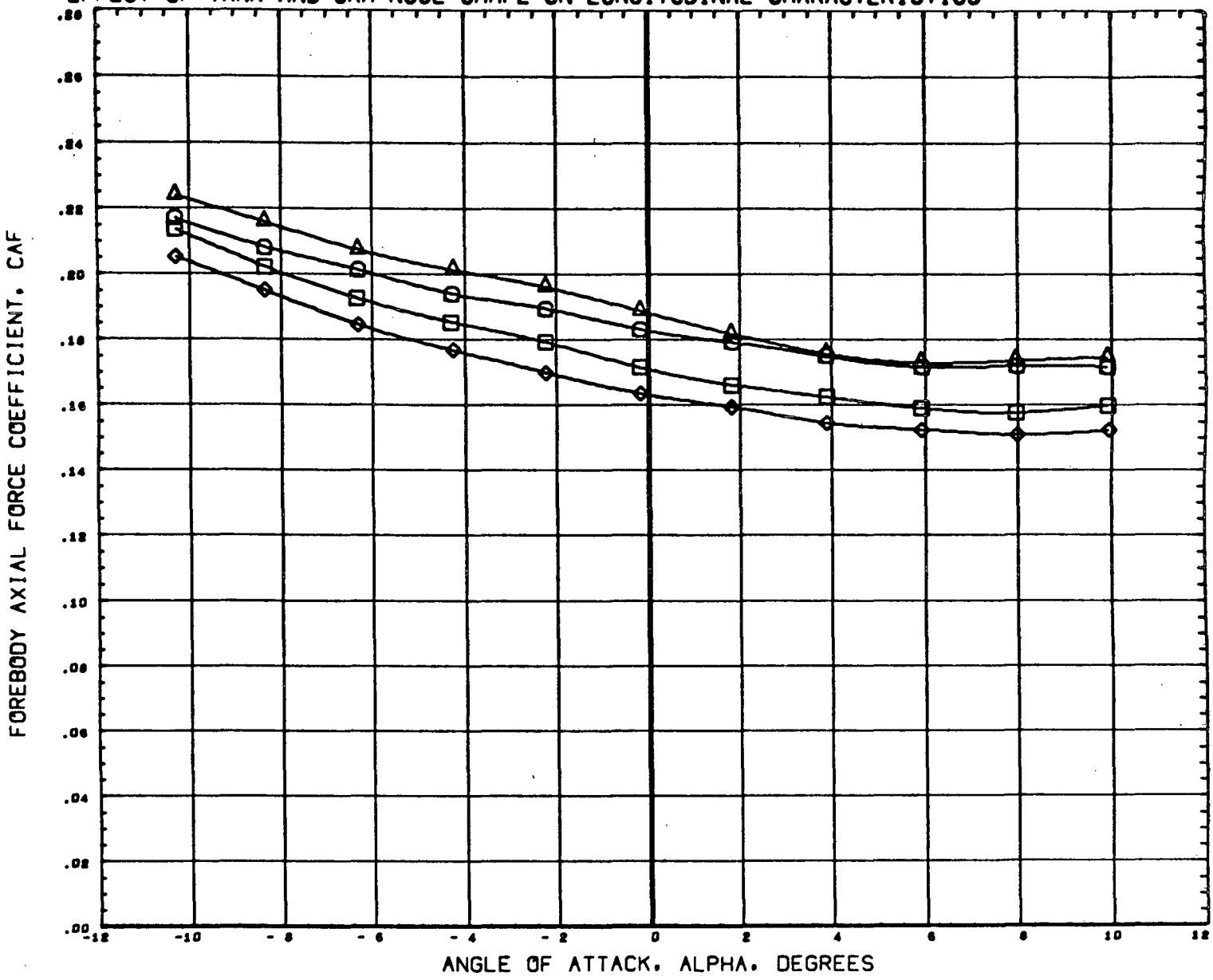
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ORBIN
(B66008)	○	MSFC TWT 538 SHUTTLE LAUNCH T101S1R1	0.000	-1.500
(B66014)	△	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500
(B66016)	◇	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500
(B66018)	□	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 2.74

EFFECT OF TANK AND SRM NOSE SHAPE ON LONGITUDINAL CHARACTERISTICS



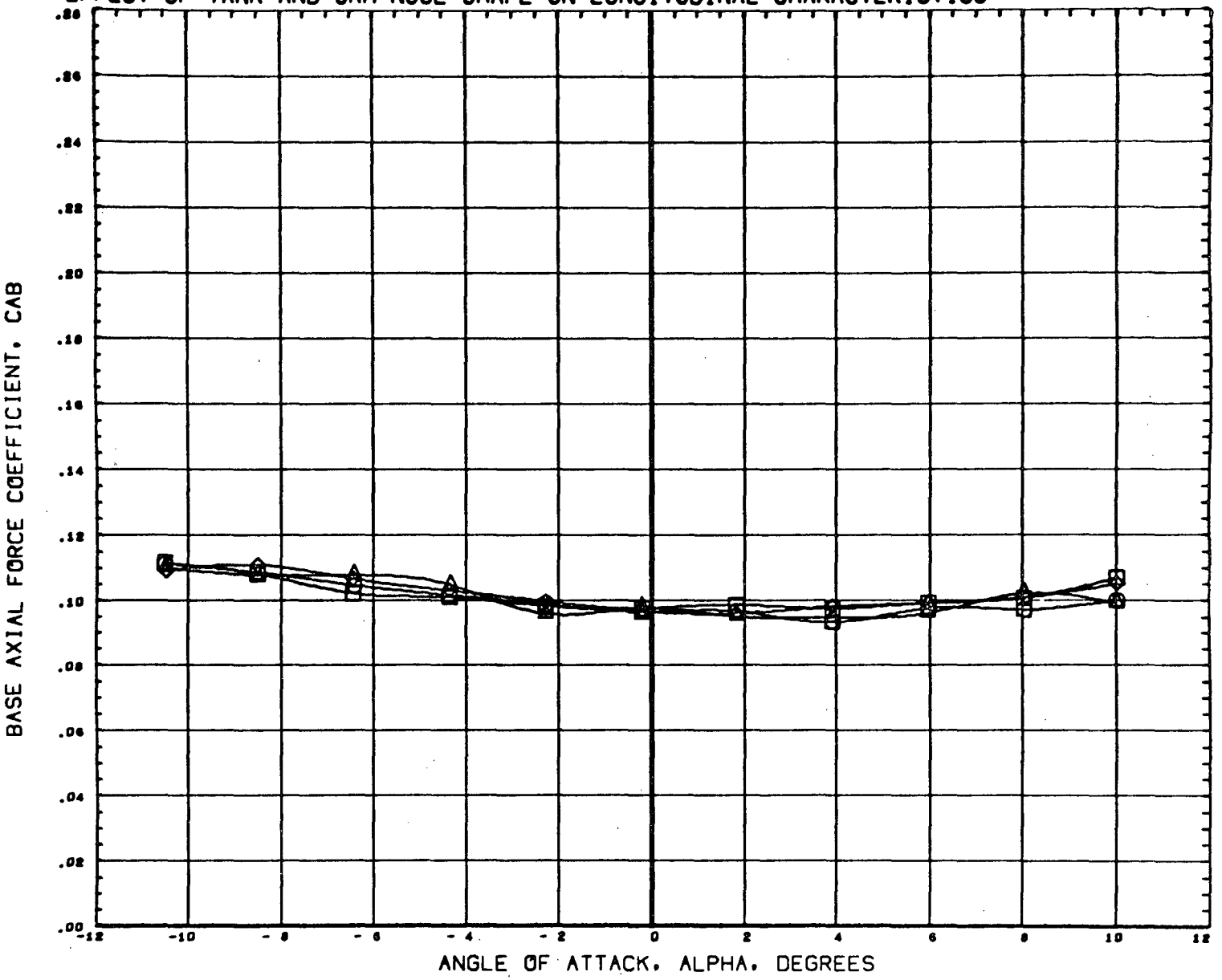
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66014)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S2R1	0.000	-1.500
(B66016)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T201S1R1	0.000	-1.500
(B66018)	□	MSFC TWT 538	SHUTTLE LAUNCH	T201S2R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 4.96

EFFECT OF TANK AND SRM NOSE SHAPE ON LONGITUDINAL CHARACTERISTICS



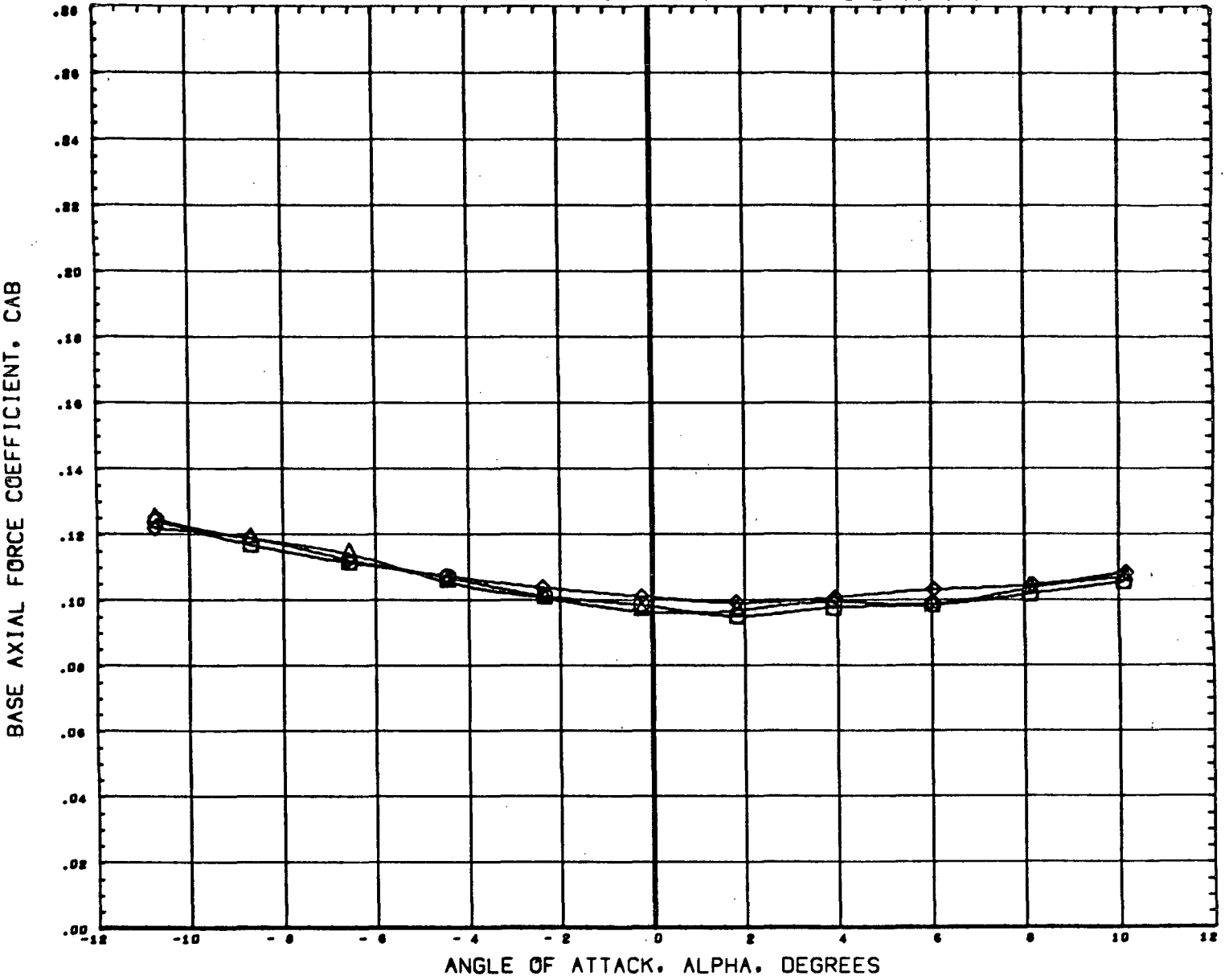
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66014)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S2R1	0.000	-1.500
(B66016)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T201S1R1	0.000	-1.500
(B66018)	□	MSFC TWT 538	SHUTTLE LAUNCH	T201S2R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .60

EFFECT OF TANK AND SRM NOSE SHAPE ON LONGITUDINAL CHARACTERISTICS



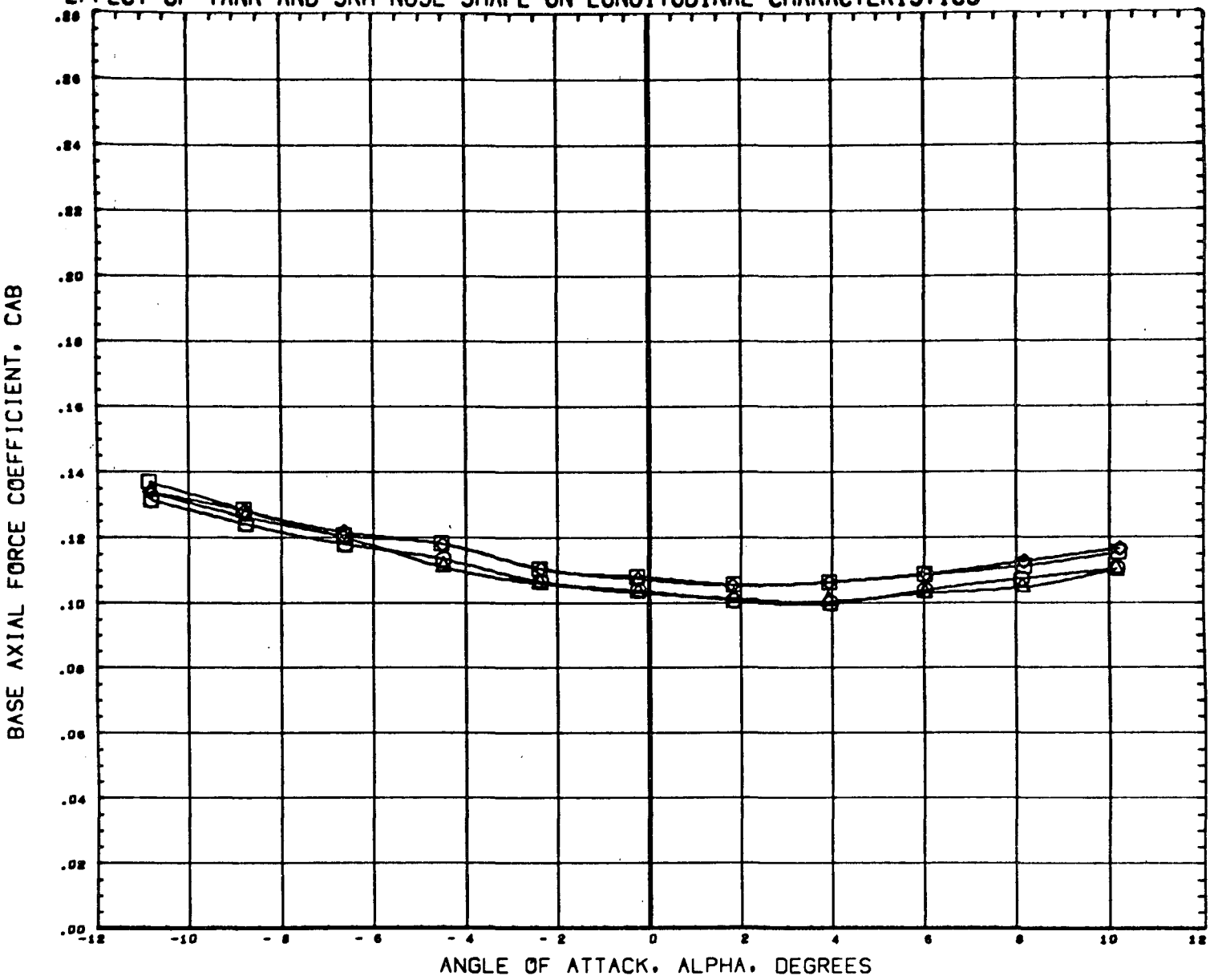
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66014)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S2R1	0.000	-1.500
(B66016)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T201S1R1	0.000	-1.500
(B66018)	□	DATA NOT AVAILABLE FOR ALL CONDITIONS			0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .80

EFFECT OF TANK AND SRM NOSE SHAPE ON LONGITUDINAL CHARACTERISTICS



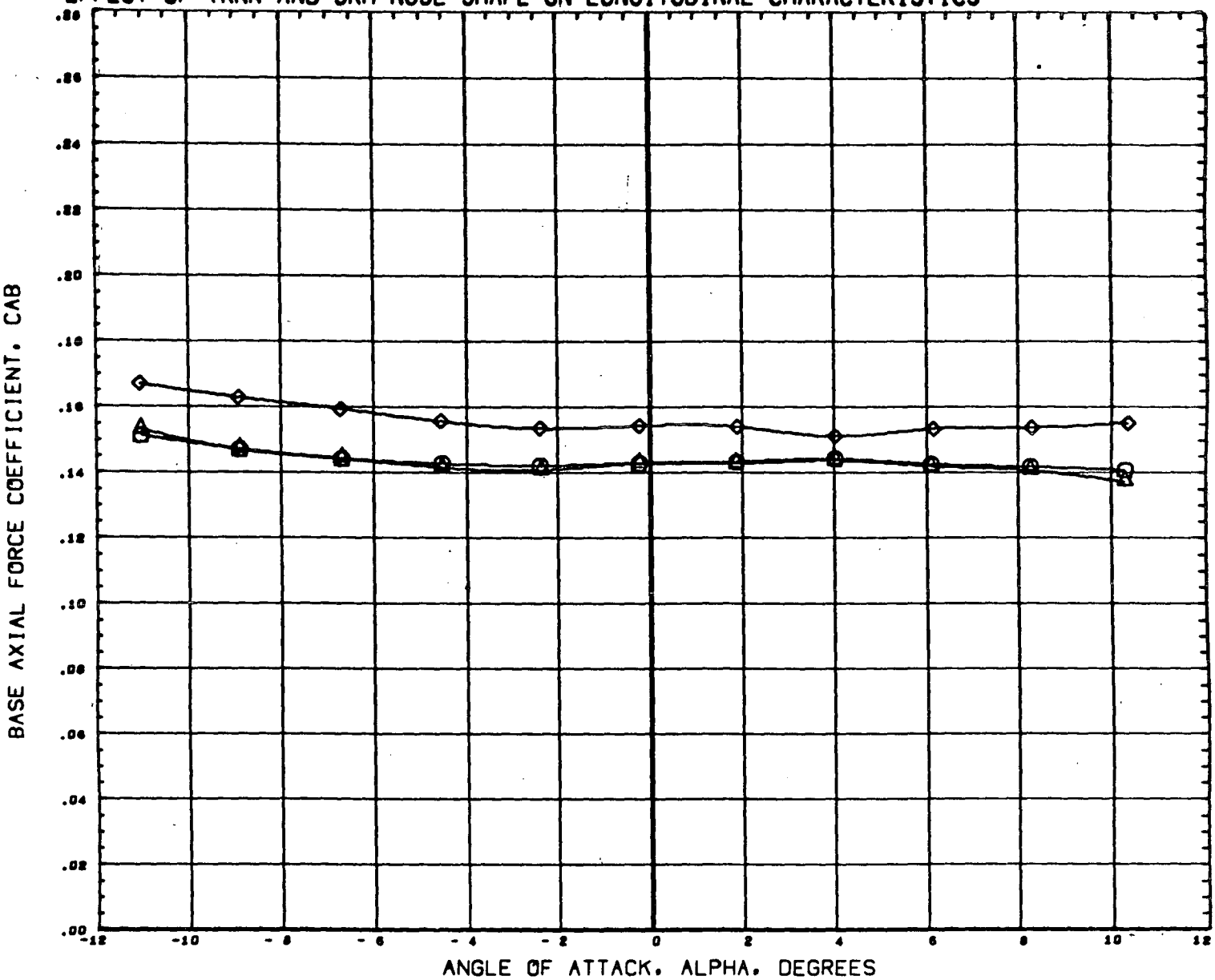
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66014)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S2R1	0.000	-1.500
(B66016)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T201S1R1	0.000	-1.500
(B66018)	□	MSFC TWT 538	SHUTTLE LAUNCH	T201S2R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .91

EFFECT OF TANK AND SRM NOSE SHAPE ON LONGITUDINAL CHARACTERISTICS

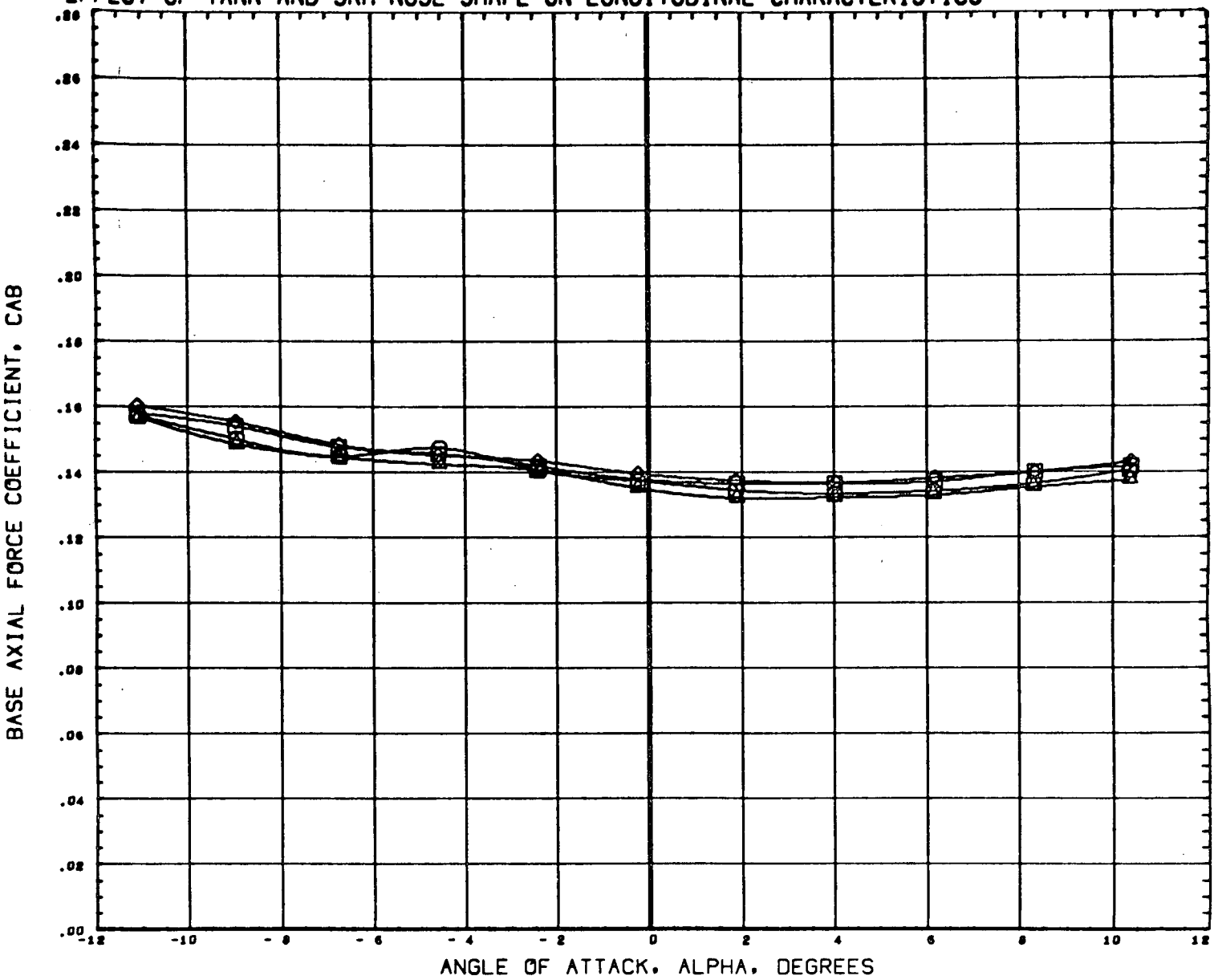


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66014)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S2R1	0.000	-1.500
(B66016)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T201S1R1	0.000	-1.500
(B66018)	□	DATA NOT AVAILABLE FOR ALL CONDITIONS			0.000	-1.500

REFERENCE INFORMATION		
SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.11

EFFECT OF TANK AND SRM NOSE SHAPE ON LONGITUDINAL CHARACTERISTICS



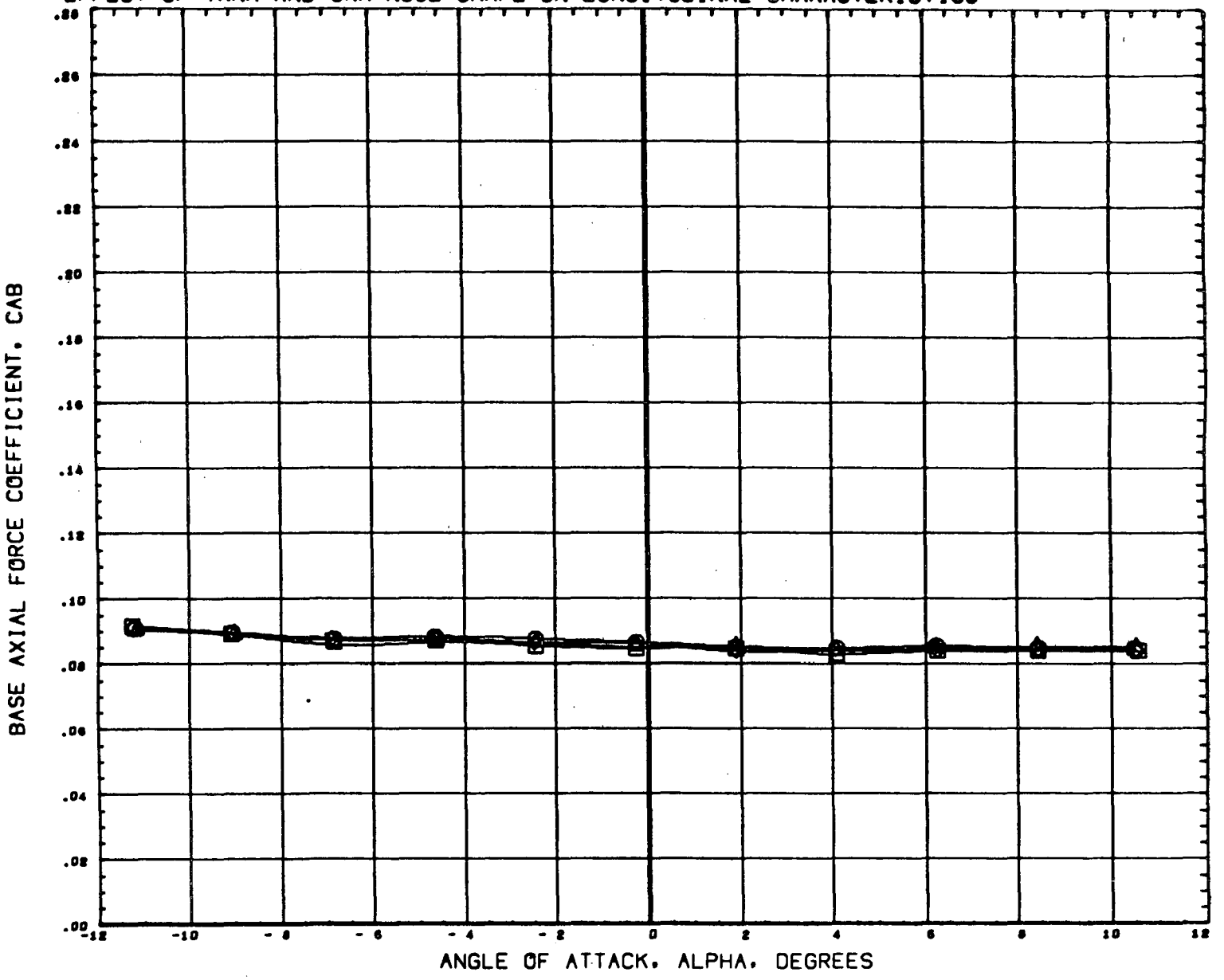
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(866008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(866014)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S2R1	0.000	-1.500
(866016)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T201S1R1	0.000	-1.500
(866018)	□	MSFC TWT 538	SHUTTLE LAUNCH	T201S2R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.19

EFFECT OF TANK AND SRM NOSE SHAPE ON LONGITUDINAL CHARACTERISTICS



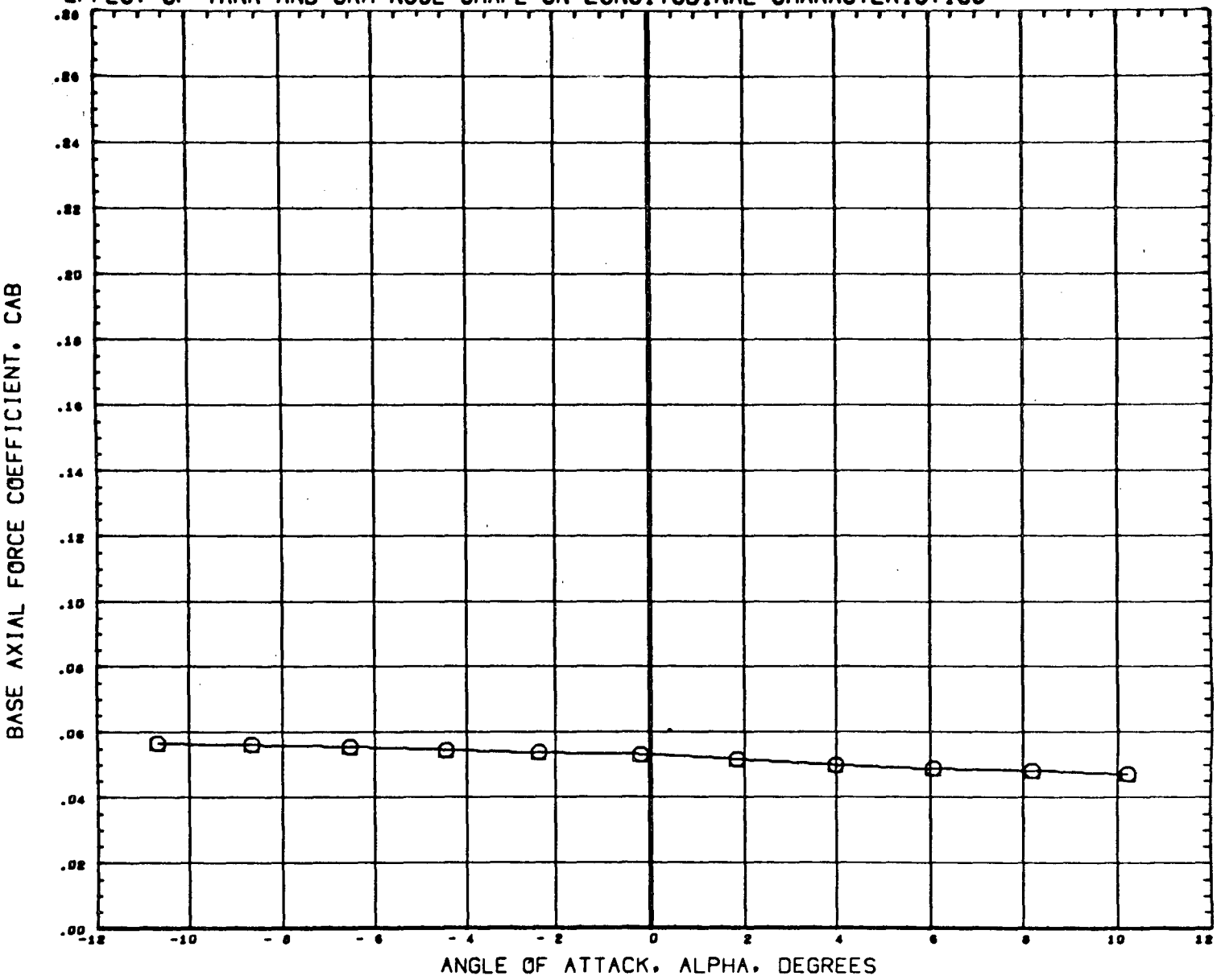
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66014)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S2R1	0.000	-1.500
(B66016)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T201S1R1	0.000	-1.500
(B66018)	□	MSFC TWT 538	SHUTTLE LAUNCH	T201S2R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.97

EFFECT OF TANK AND SRM NOSE SHAPE ON LONGITUDINAL CHARACTERISTICS



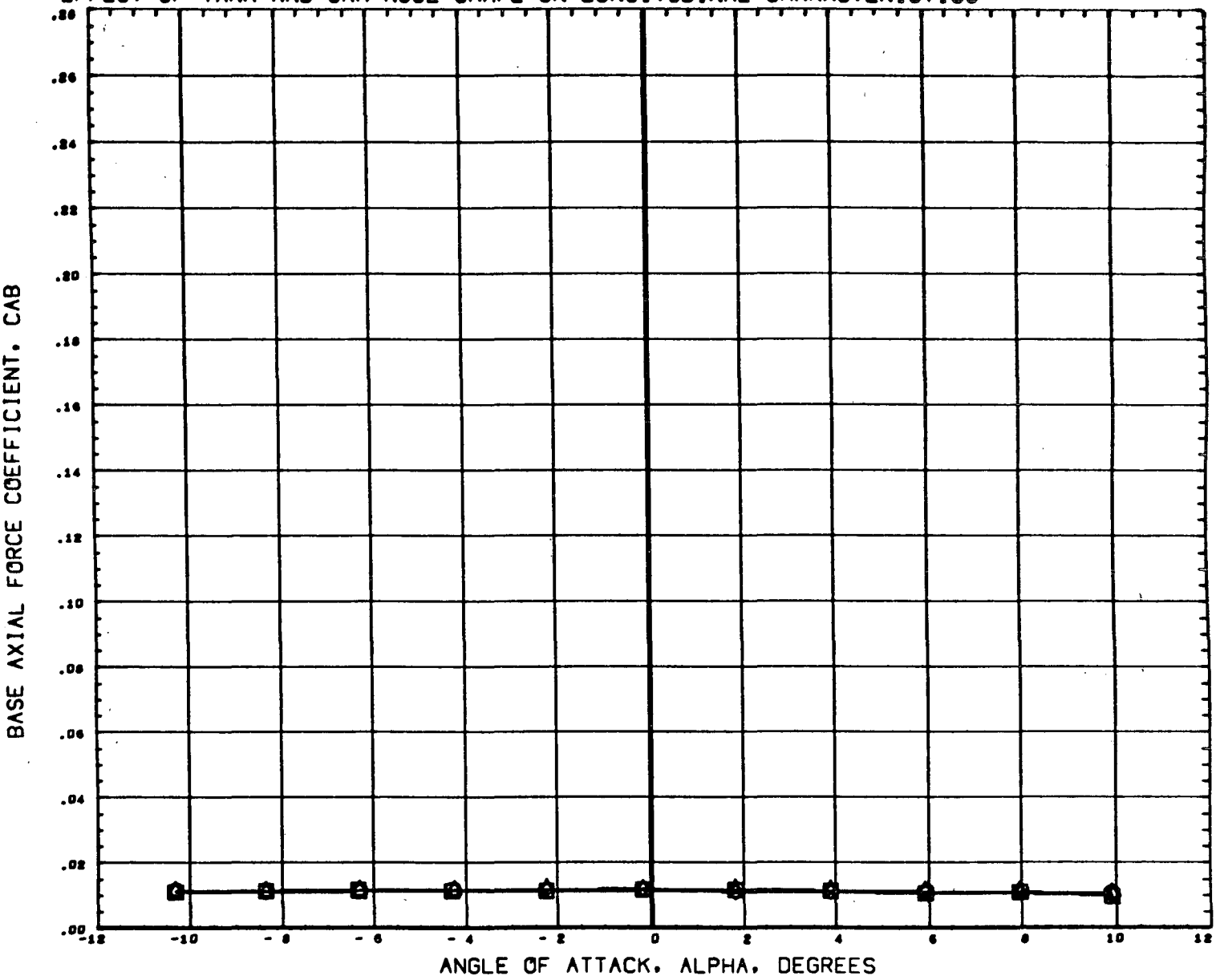
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ORBIN
(B66008)	○	MSFC TWT 538 SHUTTLE LAUNCH T101S1R1	0.000	-1.500
(B66014)	△	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500
(B66016)	◇	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500
(B66018)	□	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 2.74

EFFECT OF TANK AND SRM NOSE SHAPE ON LONGITUDINAL CHARACTERISTICS



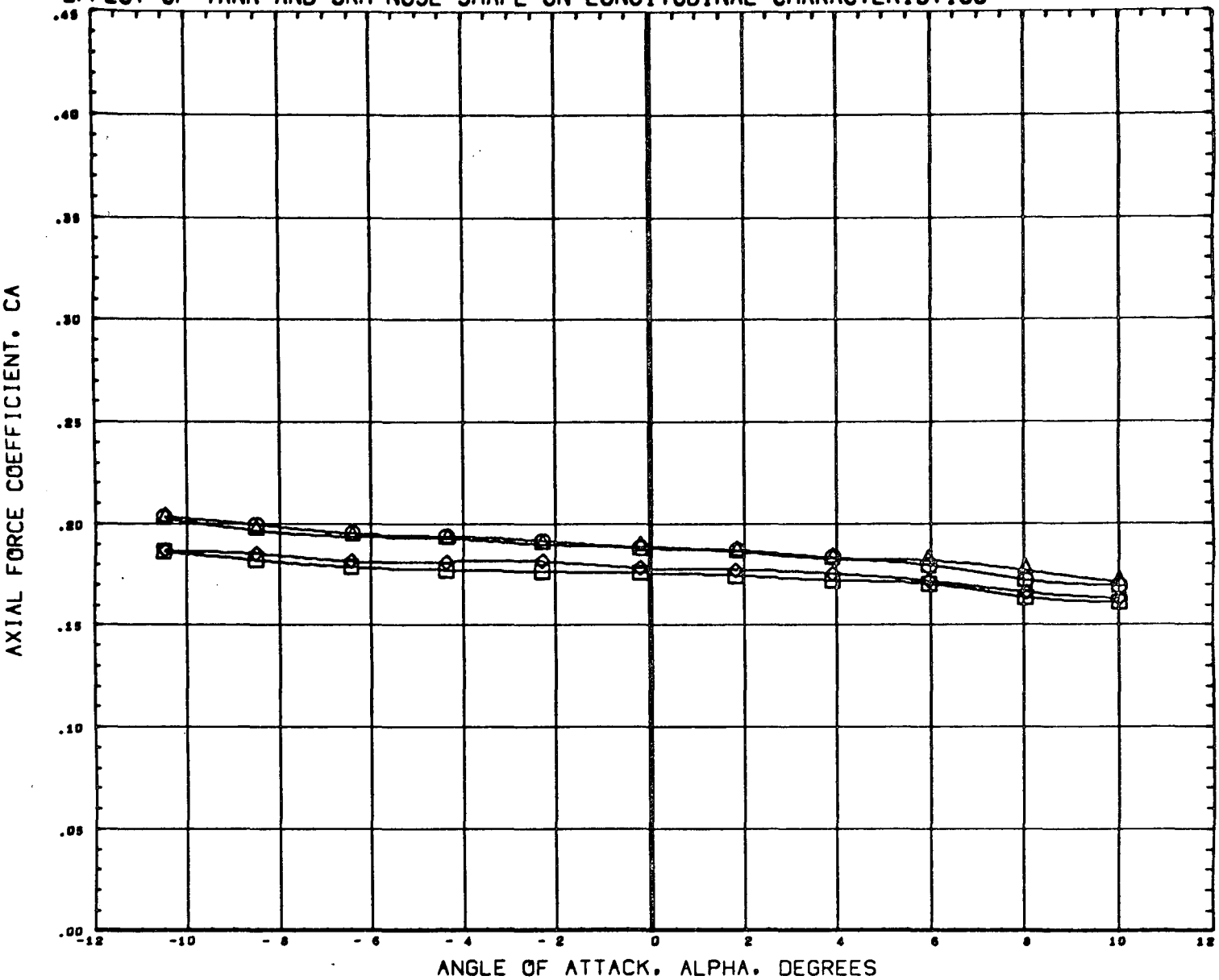
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66014)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S2R1	0.000	-1.500
(B66016)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T201S1R1	0.000	-1.500
(B66018)	□	MSFC TWT 538	SHUTTLE LAUNCH	T201S2R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 4.96

EFFECT OF TANK AND SRM NOSE SHAPE ON LONGITUDINAL CHARACTERISTICS



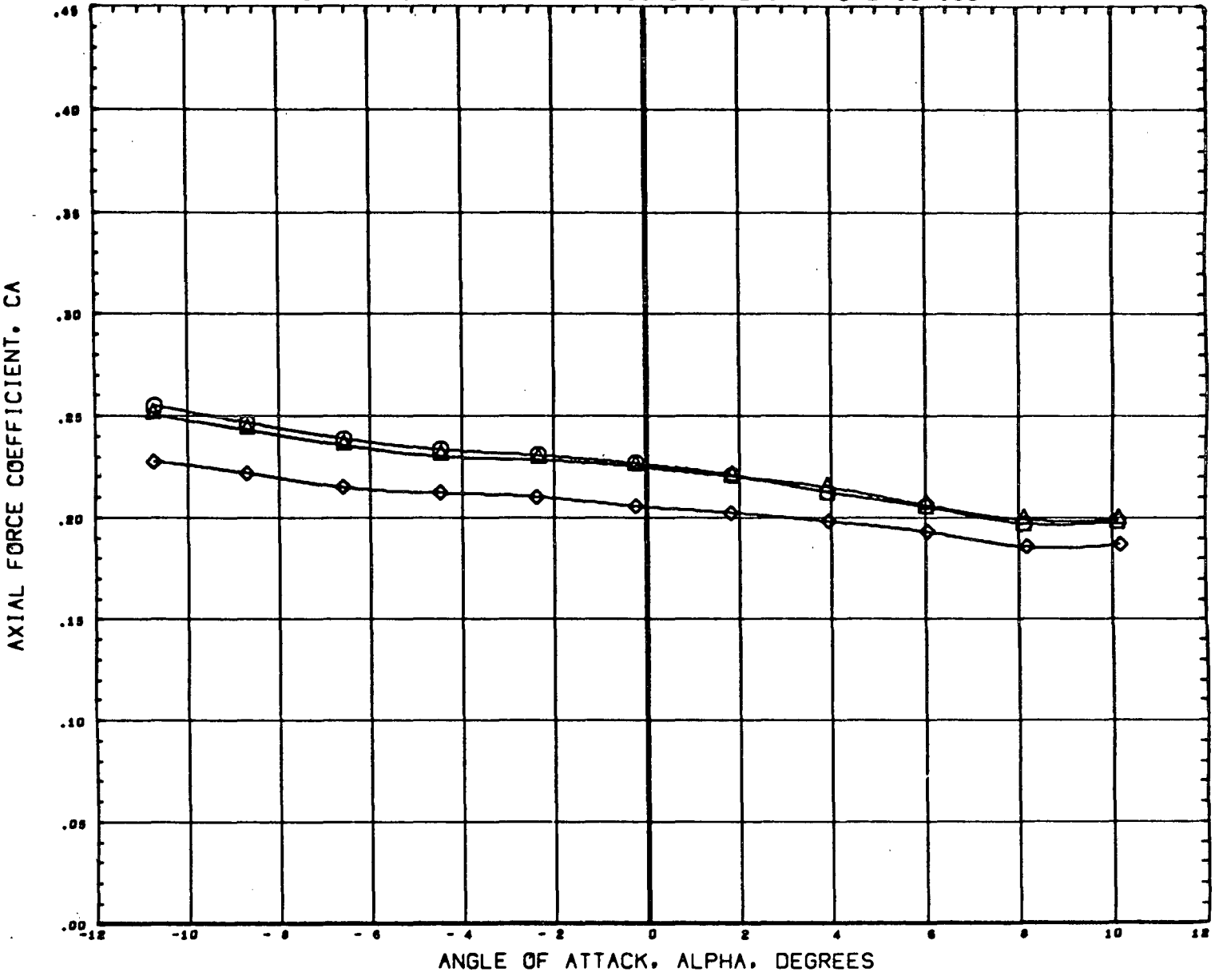
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66014)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S2R1	0.000	-1.500
(B66016)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T201S1R1	0.000	-1.500
(B66018)	□	MSFC TWT 538	SHUTTLE LAUNCH	T201S2R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.0900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .60

EFFECT OF TANK AND SRM NOSE SHAPE ON LONGITUDINAL CHARACTERISTICS



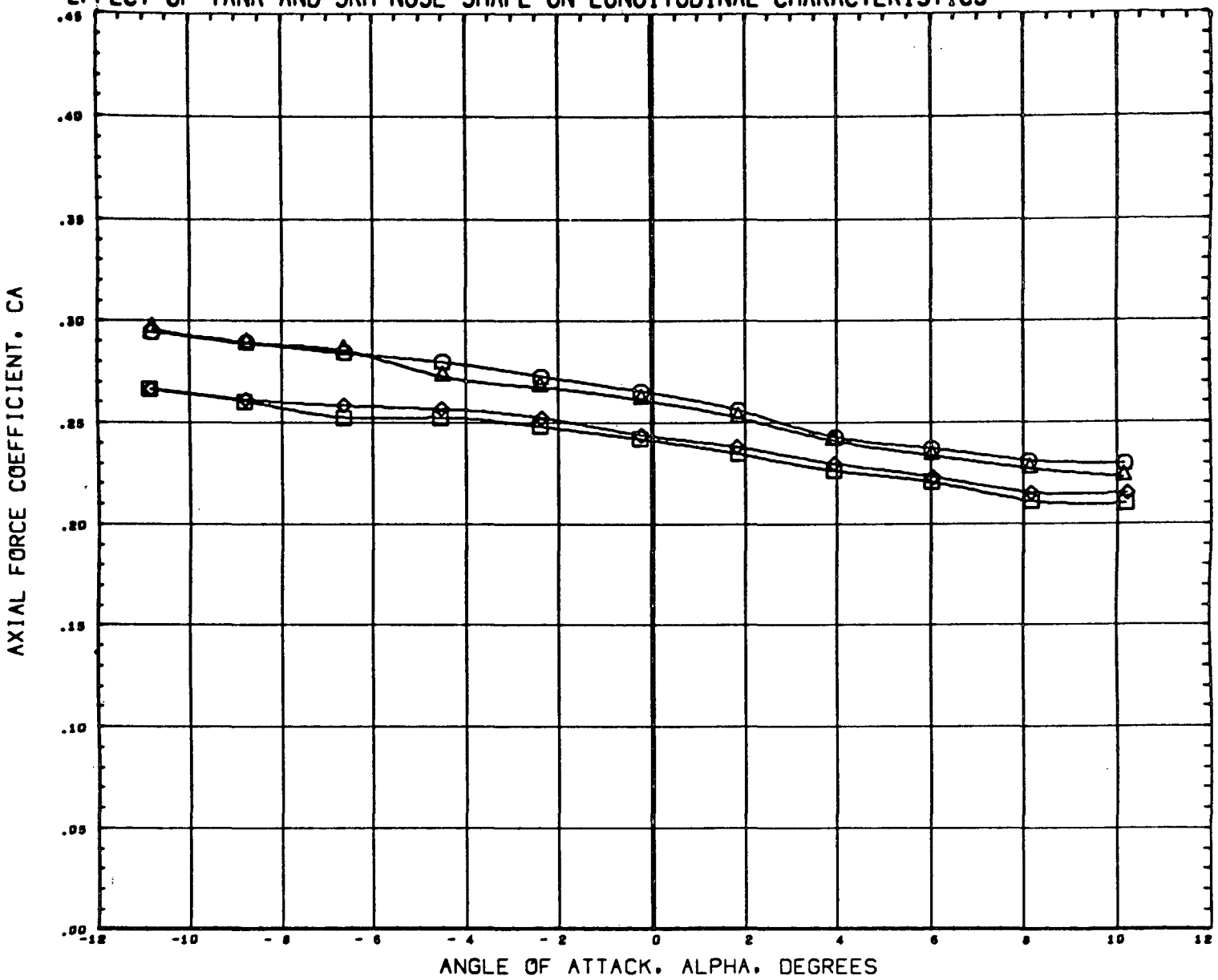
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(866008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(866014)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S2R1	0.000	-1.500
(866016)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T201S1R1	0.000	-1.500
(866018)	□	DATA NOT AVAILABLE FOR ALL CONDITIONS			0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .80

EFFECT OF TANK AND SRM NOSE SHAPE ON LONGITUDINAL CHARACTERISTICS

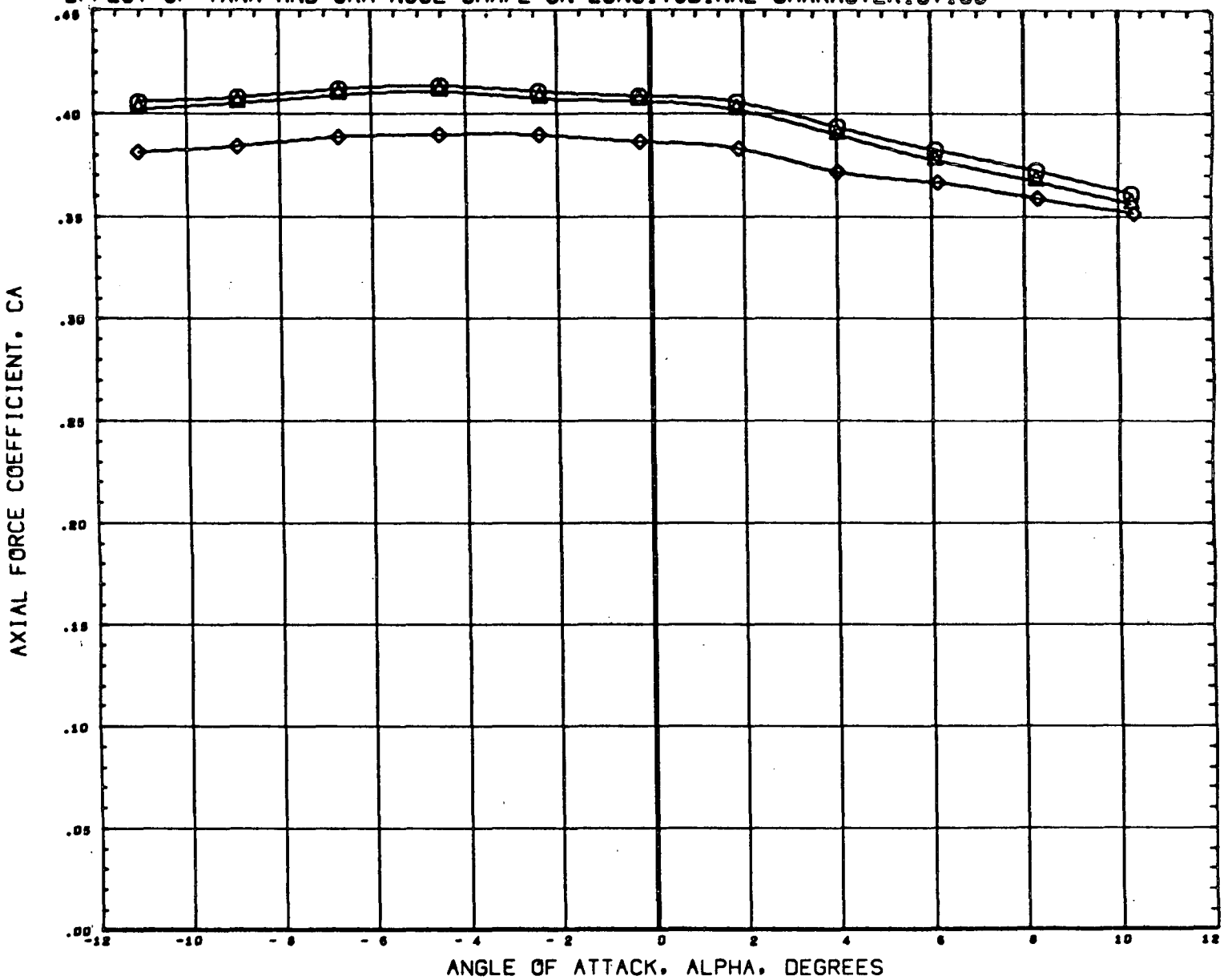


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66014)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S2R1	0.000	-1.500
(B66016)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T201S1R1	0.000	-1.500
(B66018)	□	MSFC TWT 538	SHUTTLE LAUNCH	T201S2R1	0.000	-1.500

REFERENCE INFORMATION		
SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .91

EFFECT OF TANK AND SRM NOSE SHAPE ON LONGITUDINAL CHARACTERISTICS



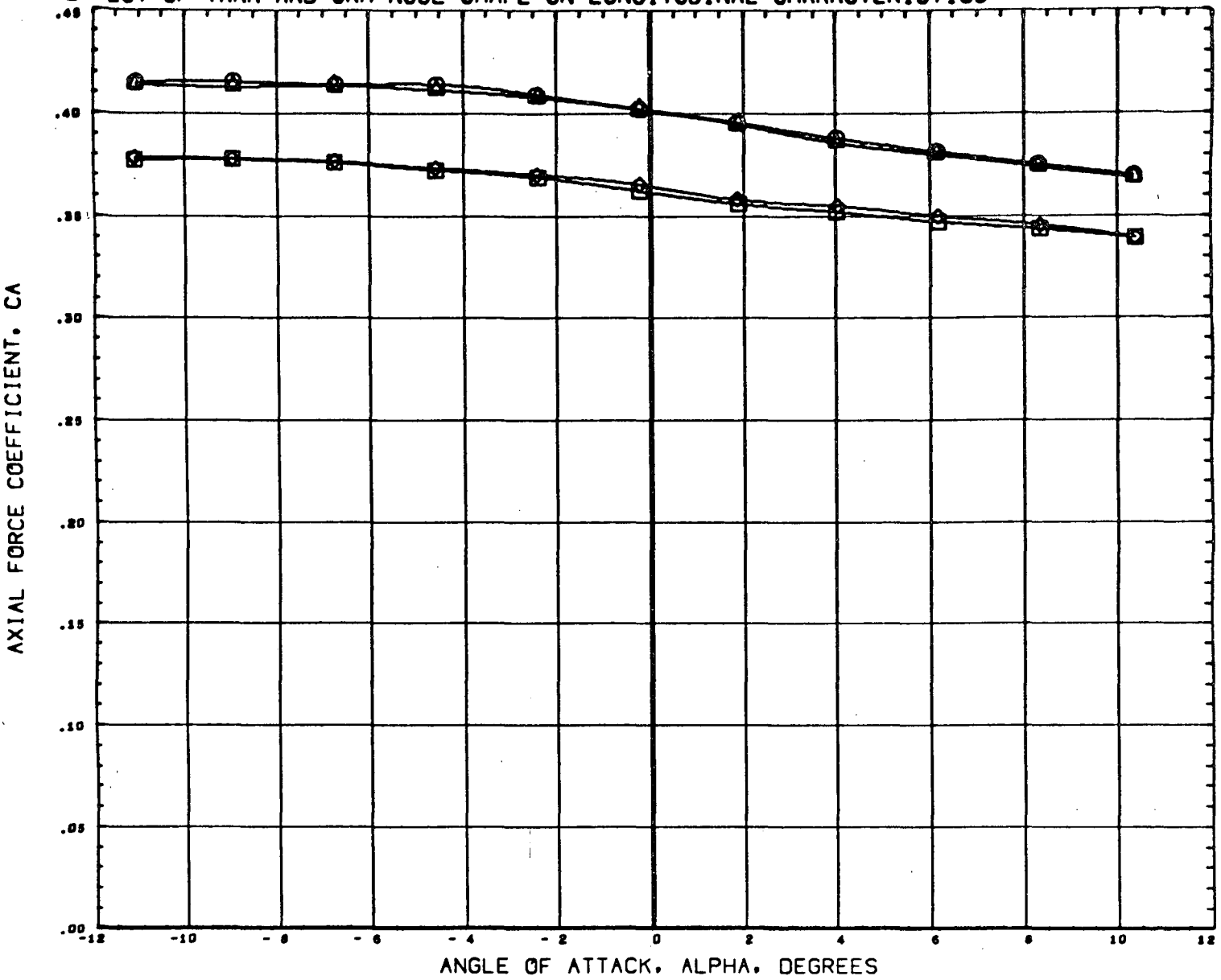
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66014)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S2R1	0.000	-1.500
(B66016)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T201S1R1	0.000	-1.500
(B66018)	□	DATA NOT AVAILABLE FOR ALL CONDITIONS			0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.11

EFFECT OF TANK AND SRM NOSE SHAPE ON LONGITUDINAL CHARACTERISTICS



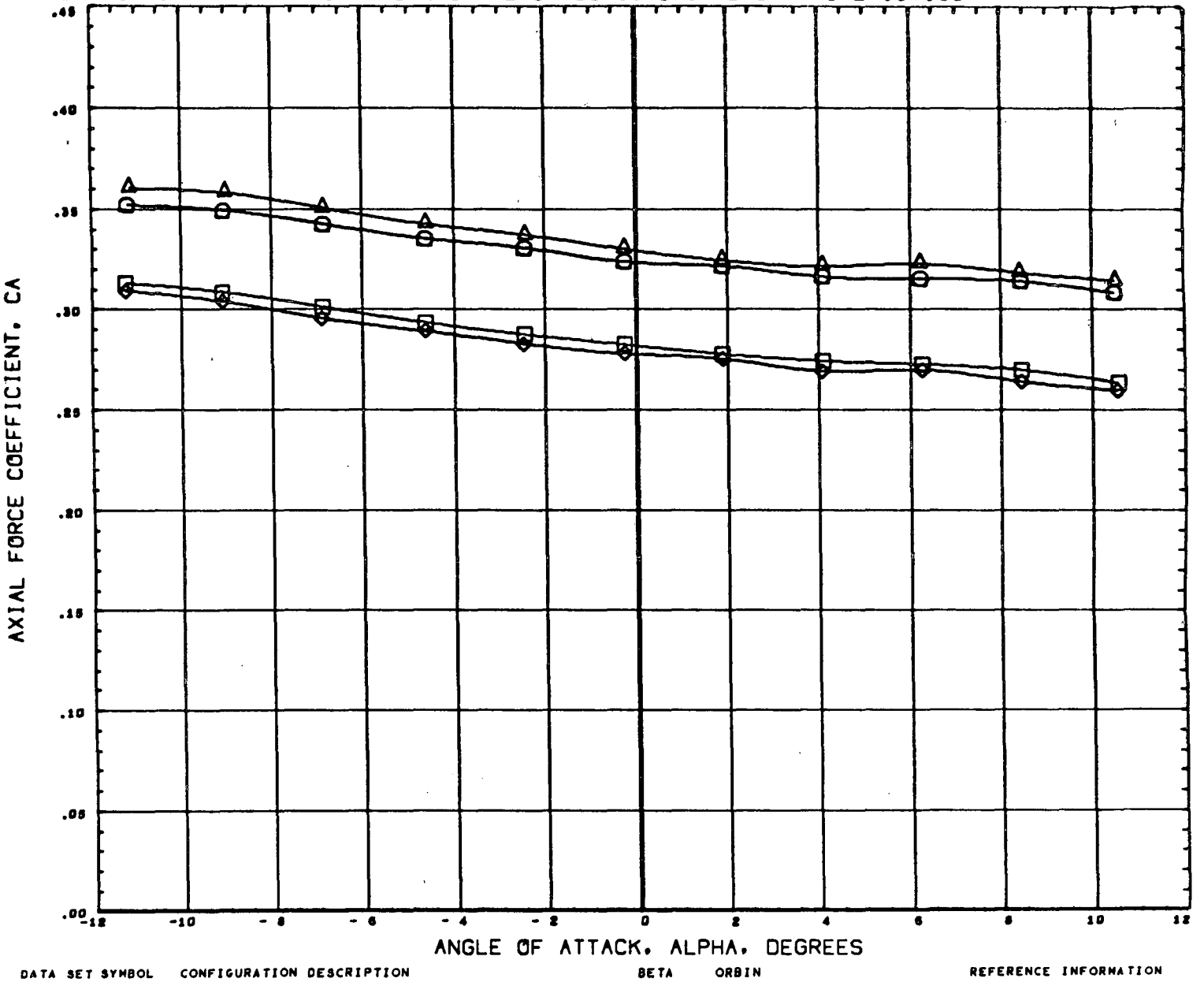
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66006)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66014)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S2R1	0.000	-1.500
(B66016)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T201S1R1	0.000	-1.500
(B66018)	□	MSFC TWT 538	SHUTTLE LAUNCH	T201S2R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.19

EFFECT OF TANK AND SRM NOSE SHAPE ON LONGITUDINAL CHARACTERISTICS



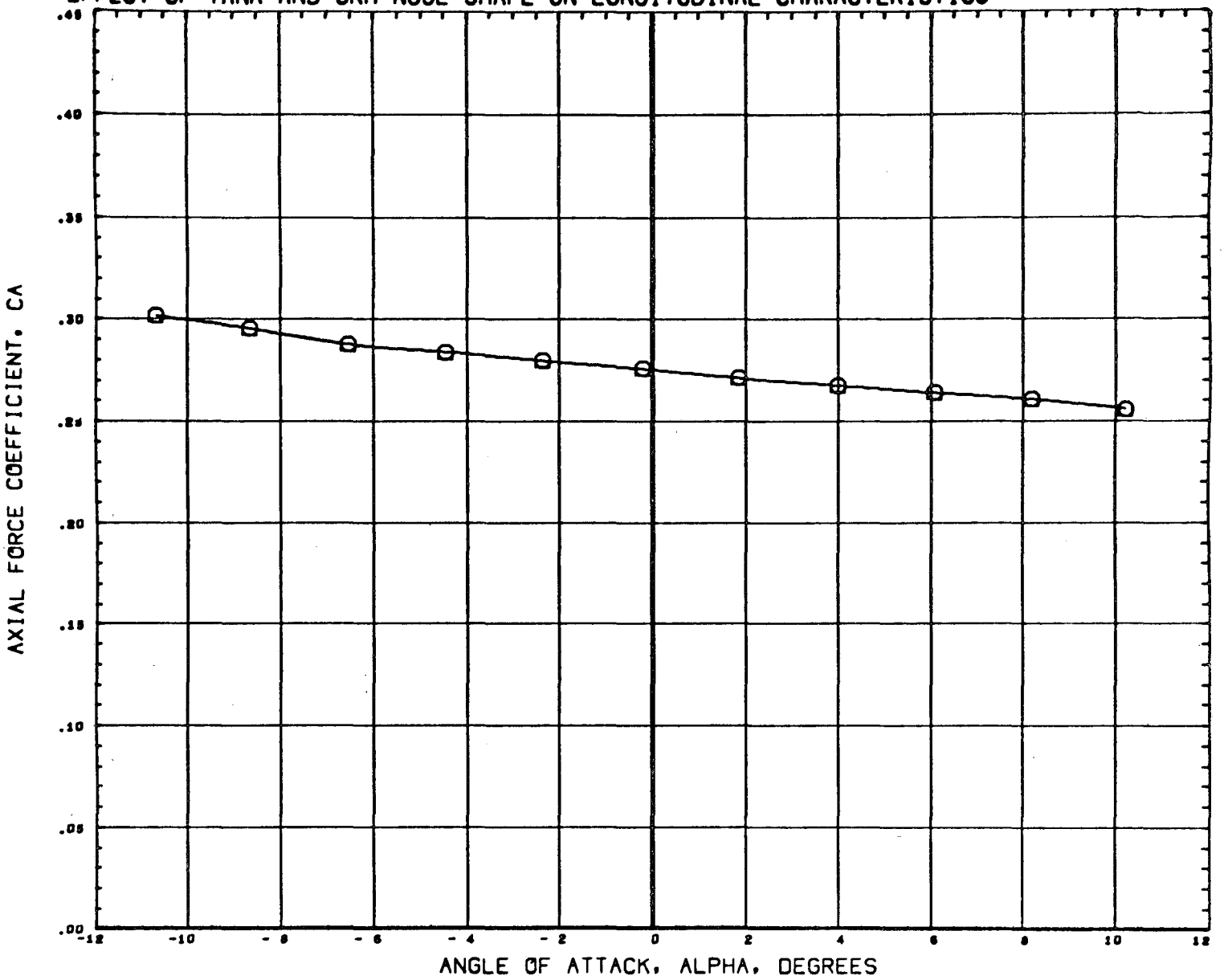
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66014)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S2R1	0.000	-1.500
(B66016)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T201S1R1	0.000	-1.500
(B66018)	□	MSFC TWT 538	SHUTTLE LAUNCH	T201S2R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.97

EFFECT OF TANK AND SRM NOSE SHAPE ON LONGITUDINAL CHARACTERISTICS



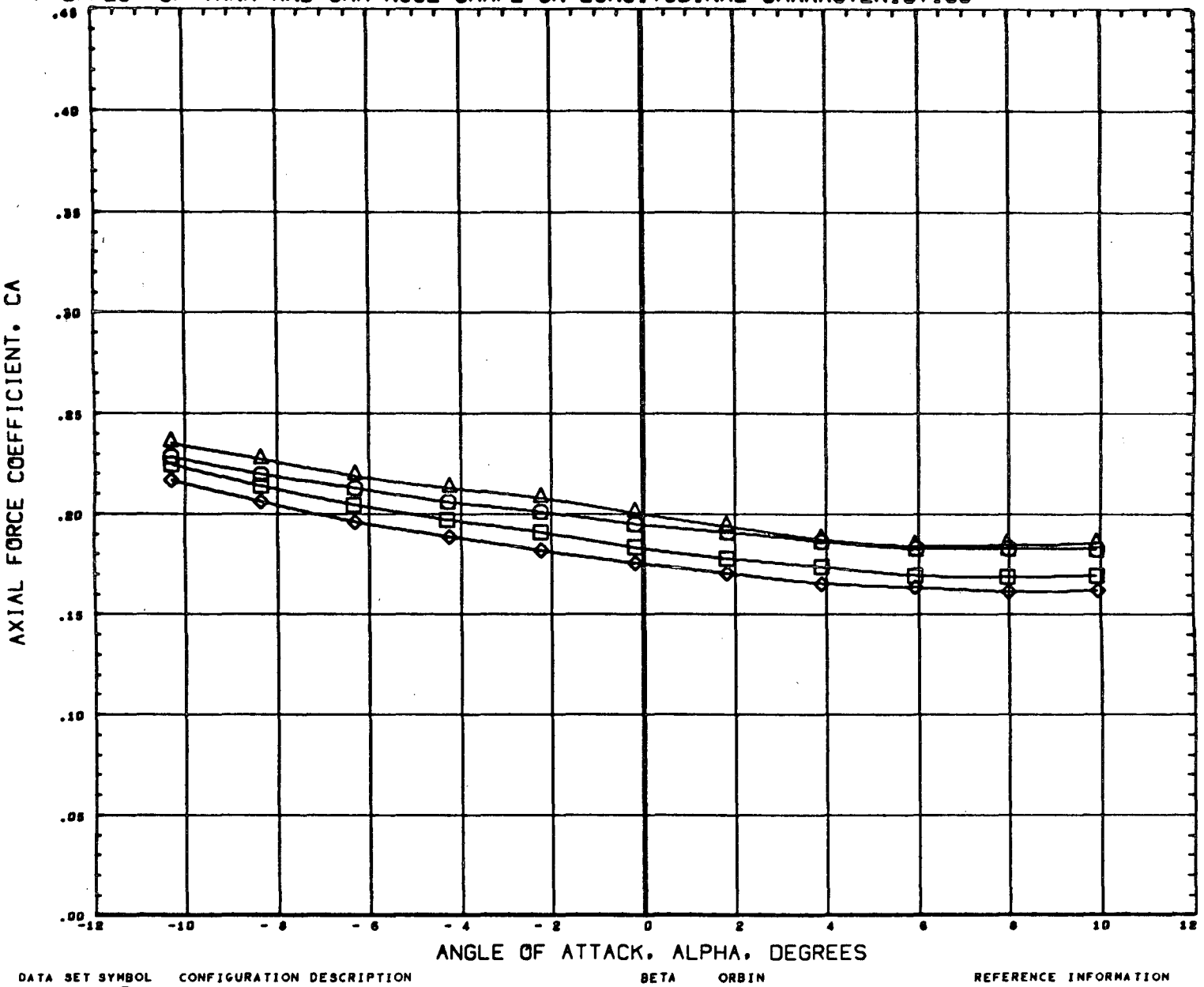
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ORBIN
(B66D08)	○	MSFC TWT 538 SHUTTLE LAUNCH T101S1R1	0.000	-1.500
(B66D14)	△	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500
(B66D16)	◇	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500
(B66D18)	□	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 2.74

EFFECT OF TANK AND SRM NOSE SHAPE ON LONGITUDINAL CHARACTERISTICS



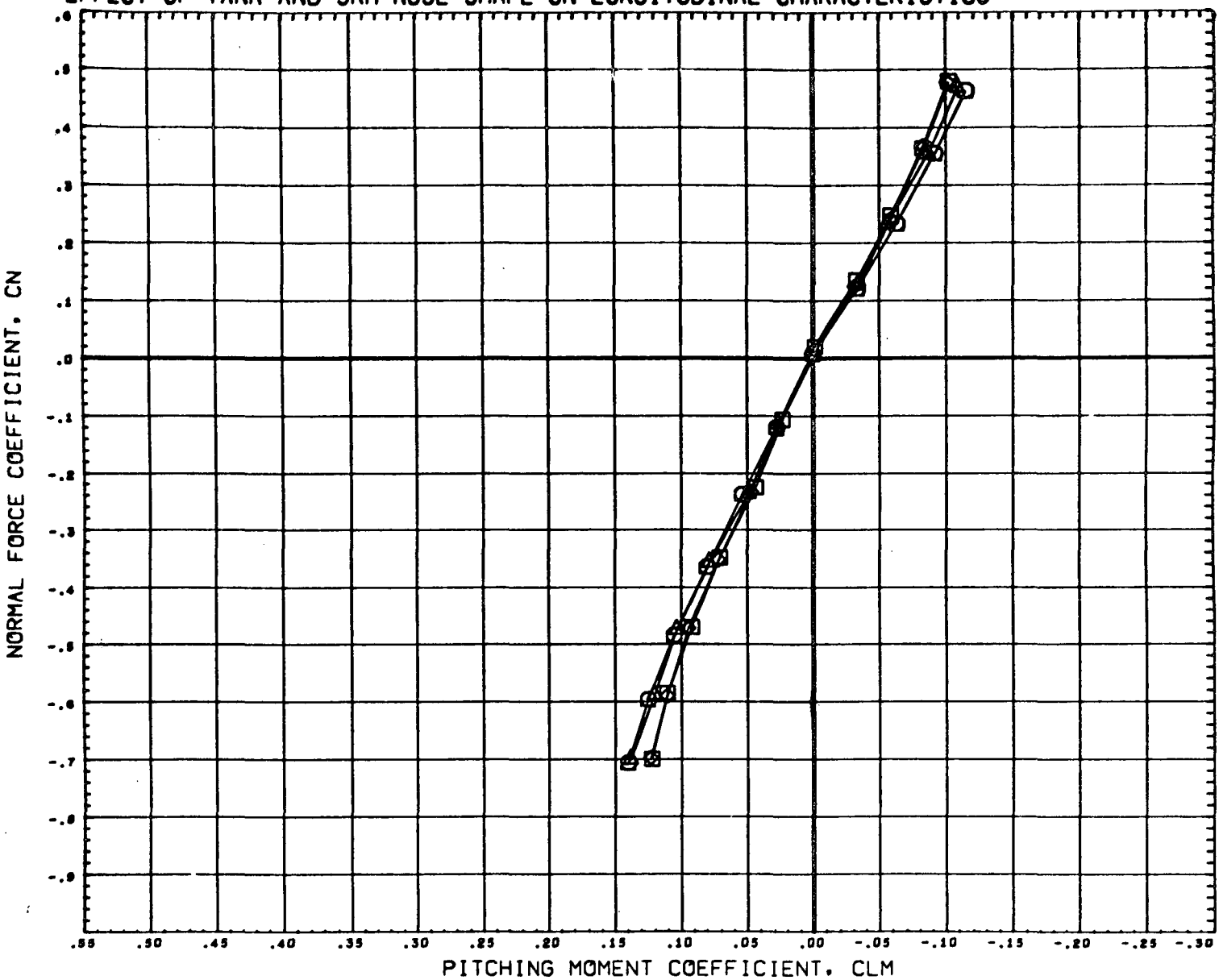
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66014)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S2R1	0.000	-1.500
(B66016)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T201S1R1	0.000	-1.500
(B66018)	□	MSFC TWT 538	SHUTTLE LAUNCH	T201S2R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.6900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 4.96

EFFECT OF TANK AND SRM NOSE SHAPE ON LONGITUDINAL CHARACTERISTICS



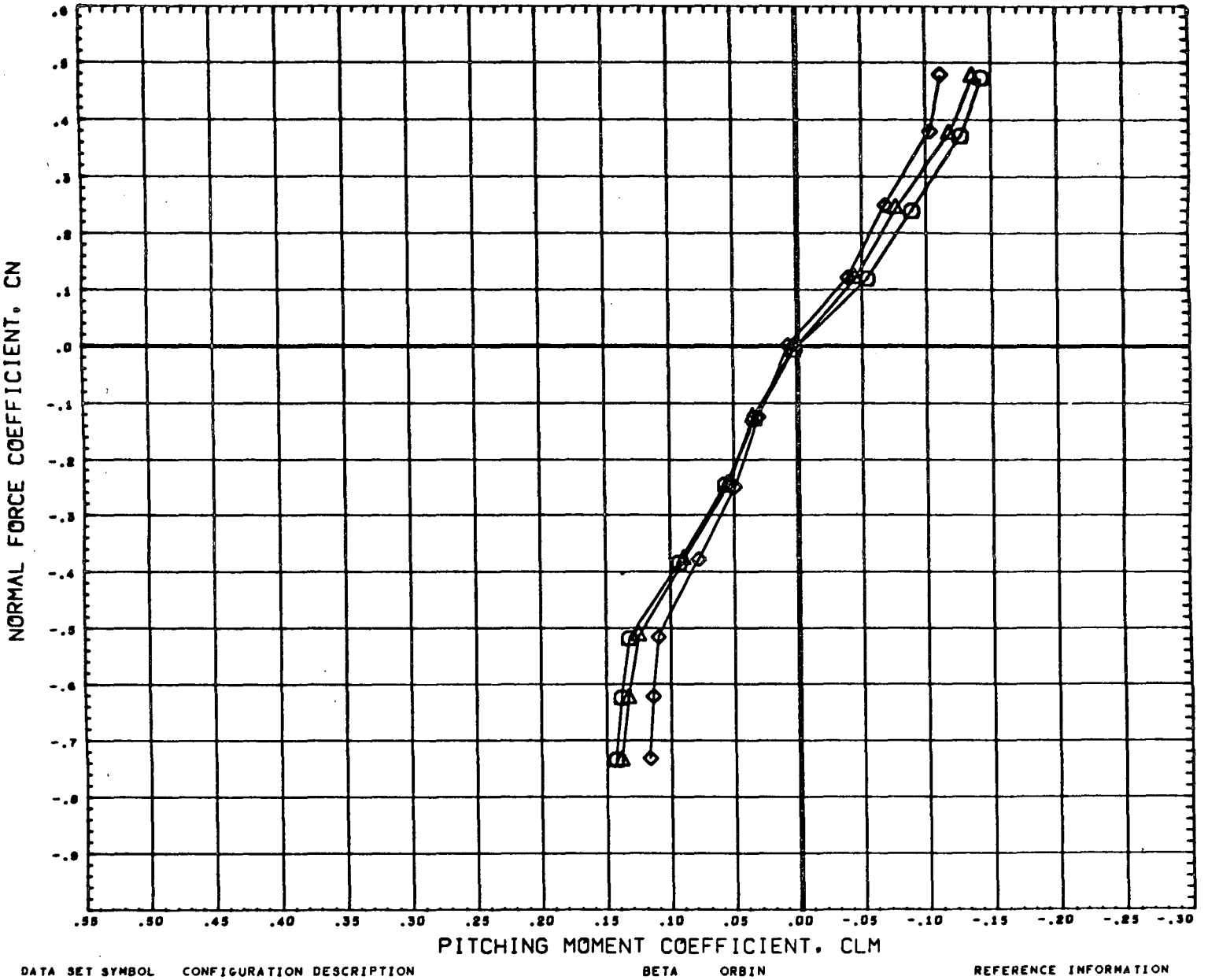
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66D08)	○	MSFC TWT 538	SHUTTLE LAUNCH	T10151R1	0.000	-1.500
(B66D14)	△	MSFC TWT 538	SHUTTLE LAUNCH	T10152R1	0.000	-1.500
(B66D16)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T20151R1	0.000	-1.500
(B66D18)	□	MSFC TWT 538	SHUTTLE LAUNCH	T20152R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1460	IN.
YMRP	0.0000	IN.
ZMRP	0.2460	IN.
SCALE	0.0040	

MACH .60

EFFECT OF TANK AND SRM NOSE SHAPE ON LONGITUDINAL CHARACTERISTICS



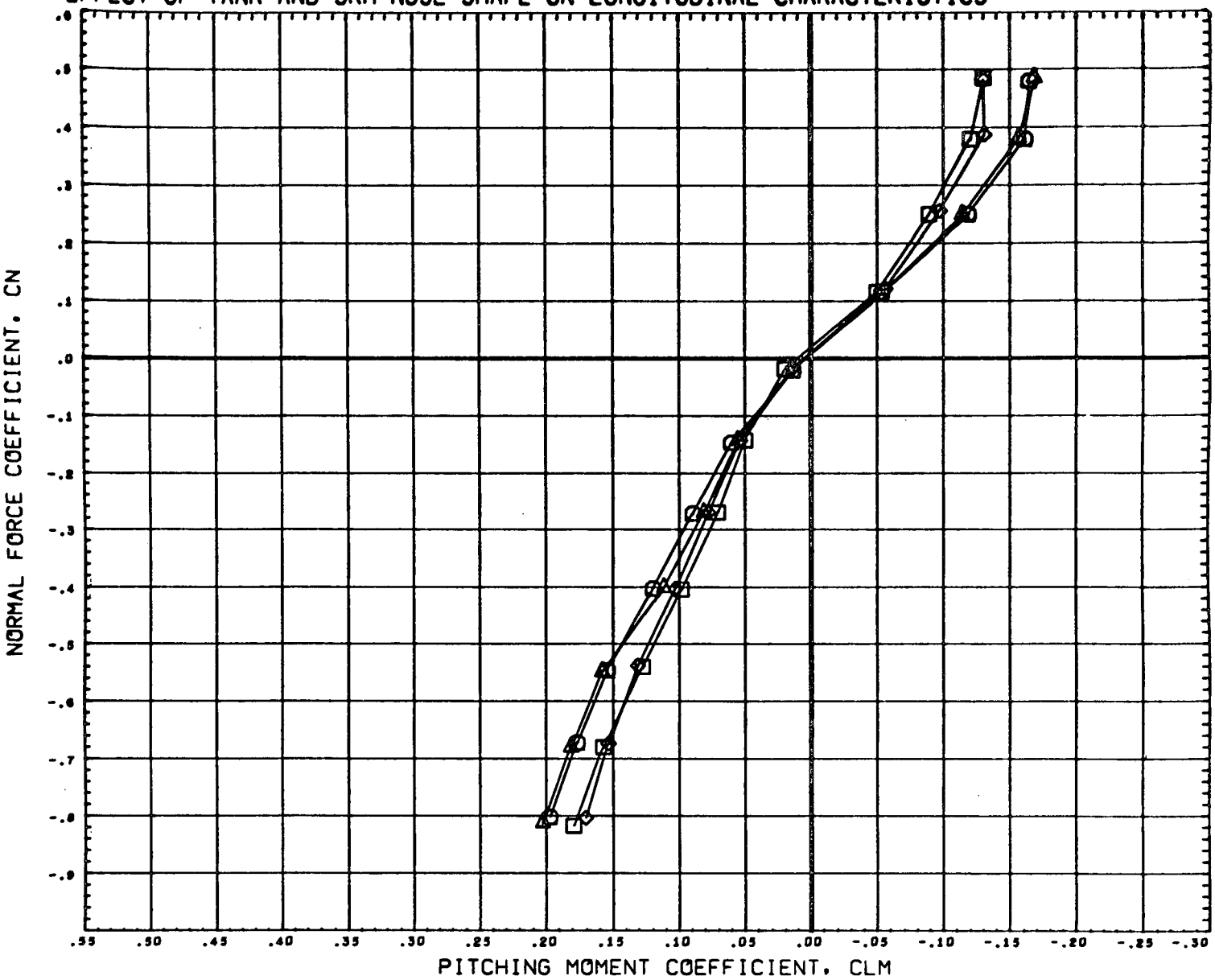
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66014)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S2R1	0.000	-1.500
(B66016)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T201S1R1	0.000	-1.500
(B66018)	□	DATA NOT AVAILABLE FOR ALL CONDITIONS			0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .80

EFFECT OF TANK AND SRM NOSE SHAPE ON LONGITUDINAL CHARACTERISTICS



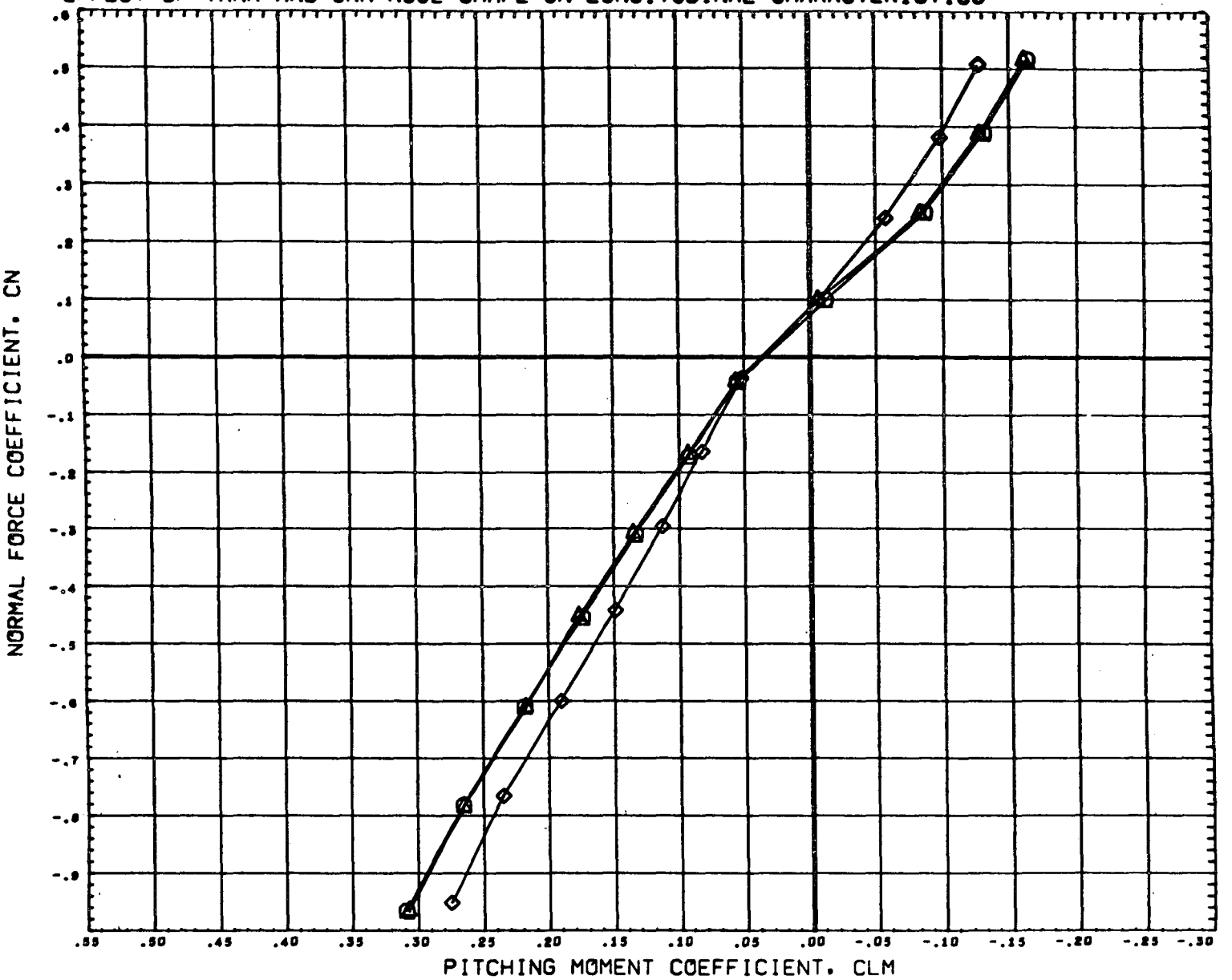
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66014)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S2R1	0.000	-1.500
(B66016)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T201S1R1	0.000	-1.500
(B66018)	□	MSFC TWT 538	SHUTTLE LAUNCH	T201S2R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .91

EFFECT OF TANK AND SRM NOSE SHAPE ON LONGITUDINAL CHARACTERISTICS



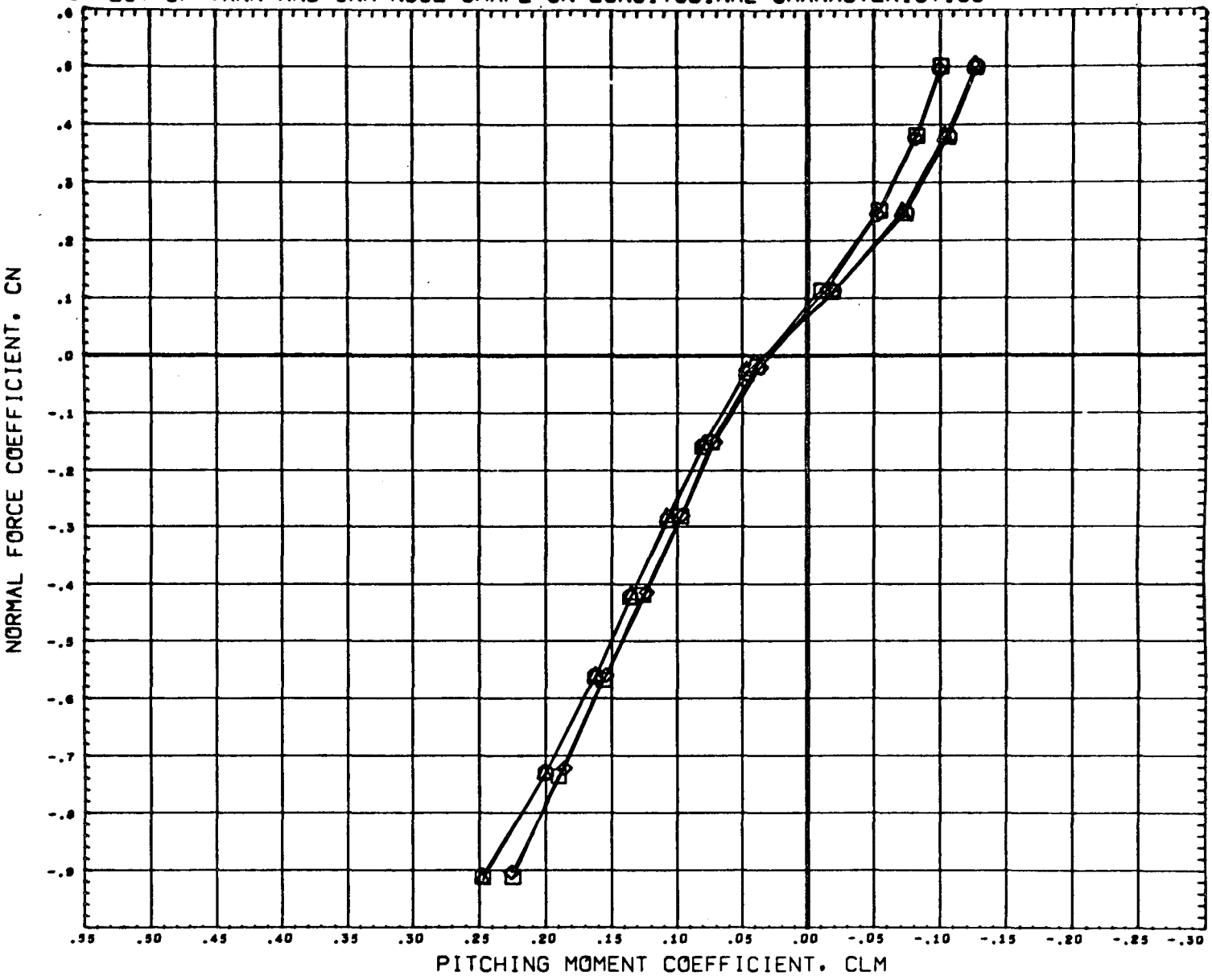
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66014)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S2R1	0.000	-1.500
(B66016)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T201S1R1	0.000	-1.500
(B66018)	□	DATA NOT AVAILABLE FOR ALL CONDITIONS			0.000	-1.500

REFERENCE INFORMATION

SREF	7.0900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.11

EFFECT OF TANK AND SRM NOSE SHAPE ON LONGITUDINAL CHARACTERISTICS



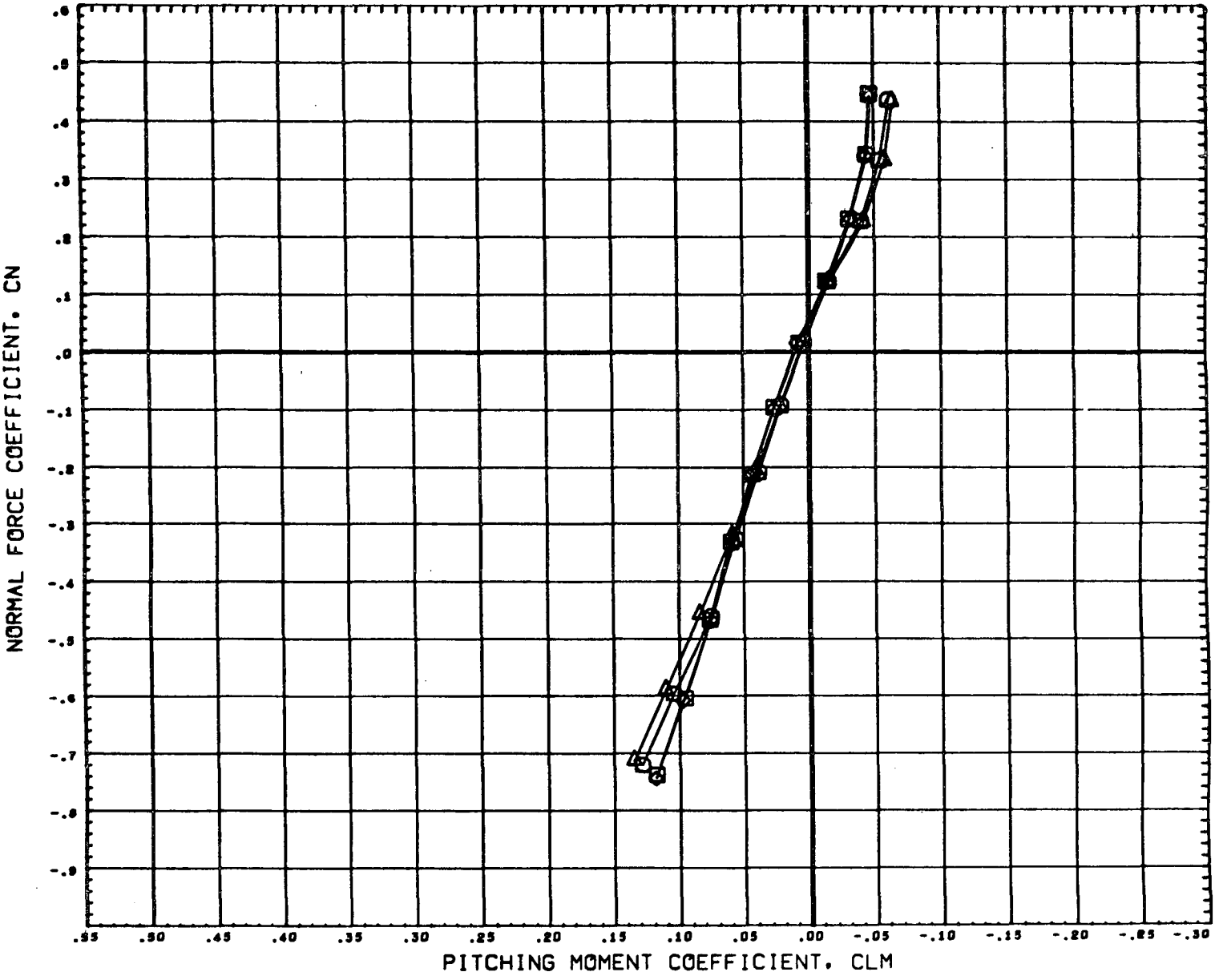
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66014)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S2R1	0.000	-1.500
(B66016)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T201S1R1	0.000	-1.500
(B66018)	□	MSFC TWT 538	SHUTTLE LAUNCH	T201S2R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.19

EFFECT OF TANK AND SRM NOSE SHAPE ON LONGITUDINAL CHARACTERISTICS



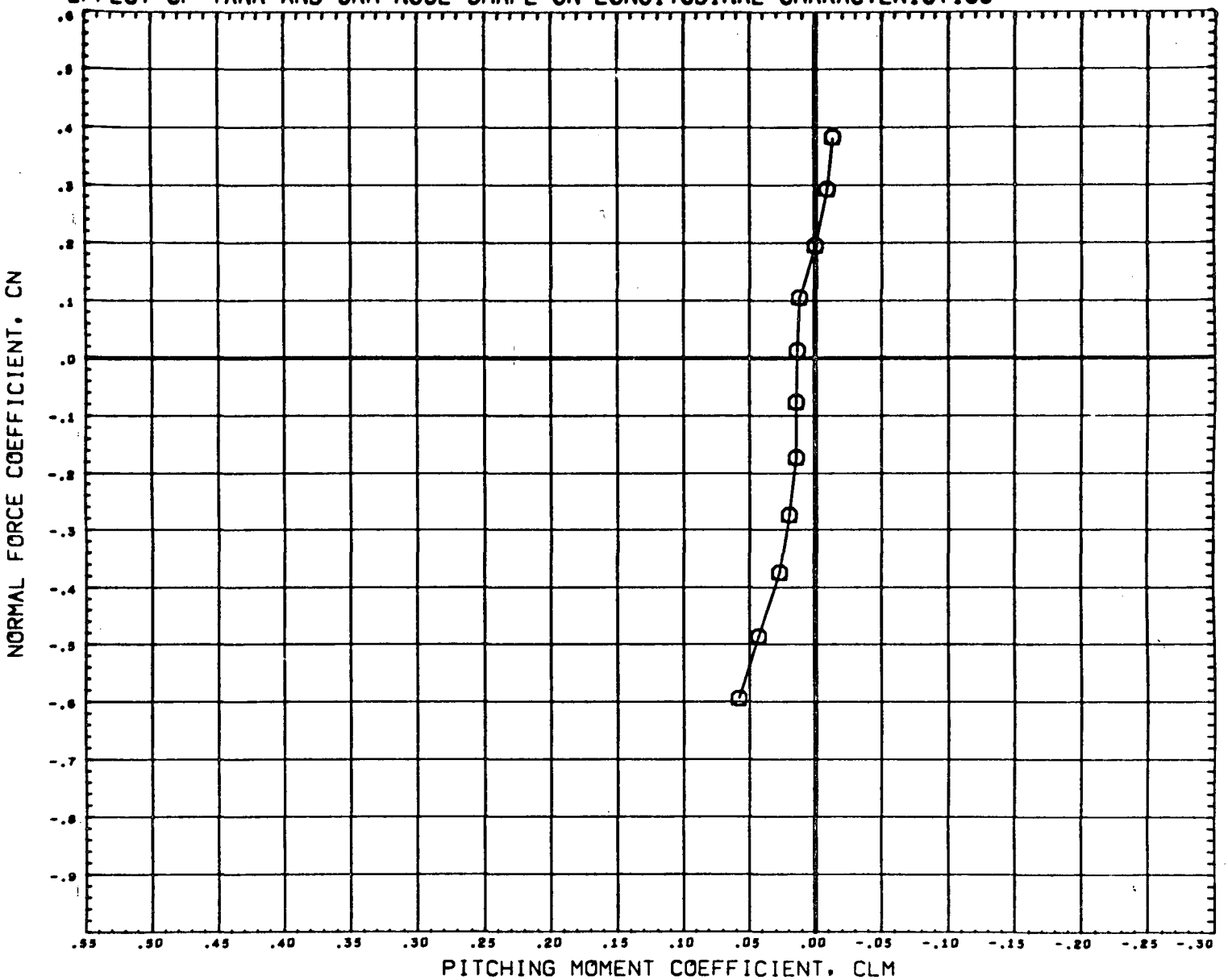
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66014)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S2R1	0.000	-1.500
(B66016)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T201S1R1	0.000	-1.500
(B66018)	□	MSFC TWT 538	SHUTTLE LAUNCH	T201S2R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.97

EFFECT OF TANK AND SRM NOSE SHAPE ON LONGITUDINAL CHARACTERISTICS



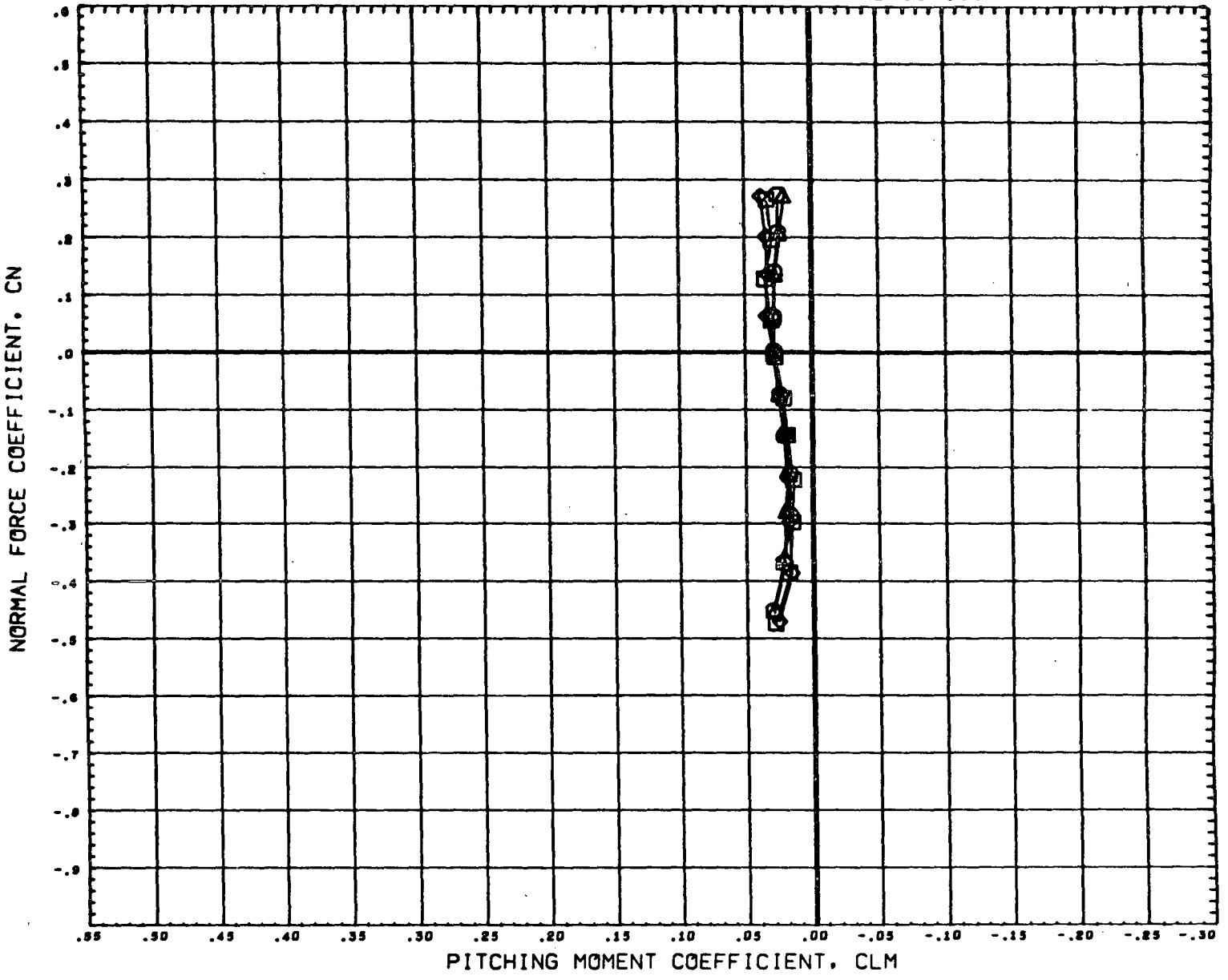
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ORBIN
(B66008)	○	MSFC TWT 538 SHUTTLE LAUNCH T101S1R1	0.000	-1.500
(B66014)	△	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500
(B66016)	◇	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500
(B66018)	□	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 2.74

EFFECT OF TANK AND SRM NOSE SHAPE ON LONGITUDINAL CHARACTERISTICS



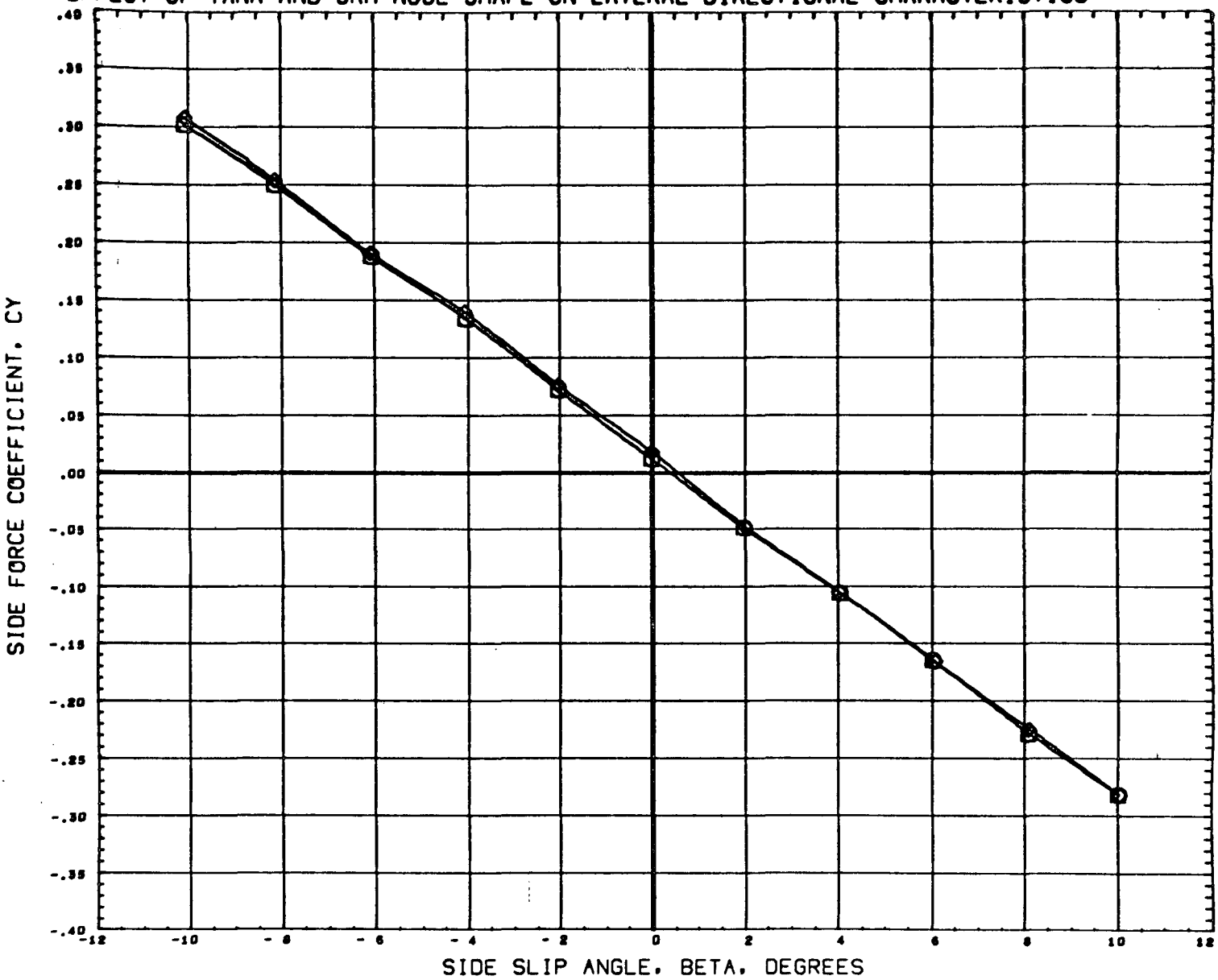
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(866008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(866014)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S2R1	0.000	-1.500
(866016)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T201S1R1	0.000	-1.500
(866018)	□	MSFC TWT 538	SHUTTLE LAUNCH	T201S2R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 4.96

EFFECT OF TANK AND SRM NOSE SHAPE ON LATERAL DIRECTIONAL CHARACTERISTICS



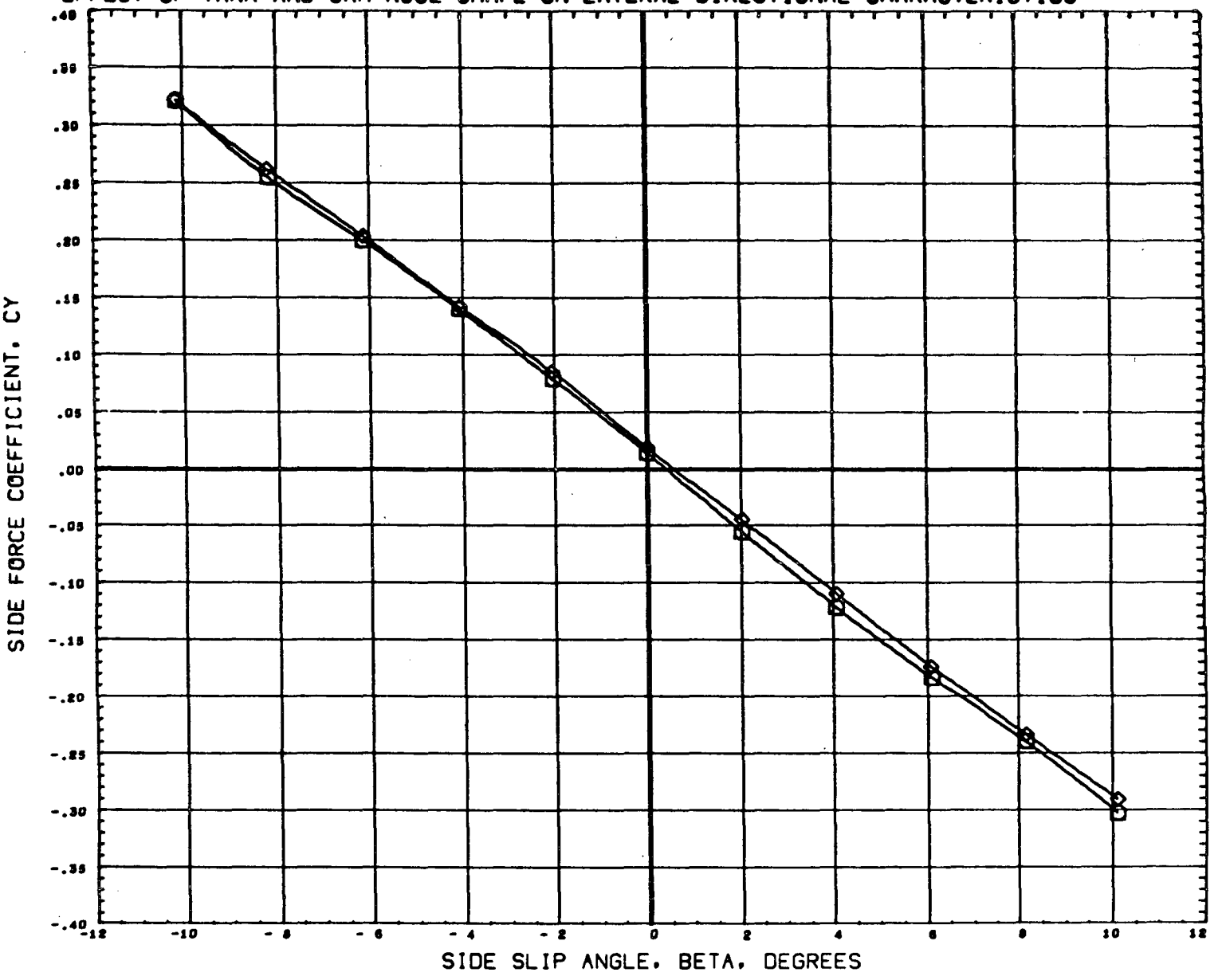
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ORBIN
(T66009)	○	MSFC TWT 538 SHUTTLE LAUNCH T101S1R1	0.000	-1.500
(A66015)	△	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500
(A66017)	◇	MSFC TWT 538 SHUTTLE LAUNCH T201S1R1	0.000	-1.500
(A66019)	□	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2460	IN.
SCALE	0.0040	

MACH .60

EFFECT OF TANK AND SRM NOSE SHAPE ON LATERAL DIRECTIONAL CHARACTERISTICS



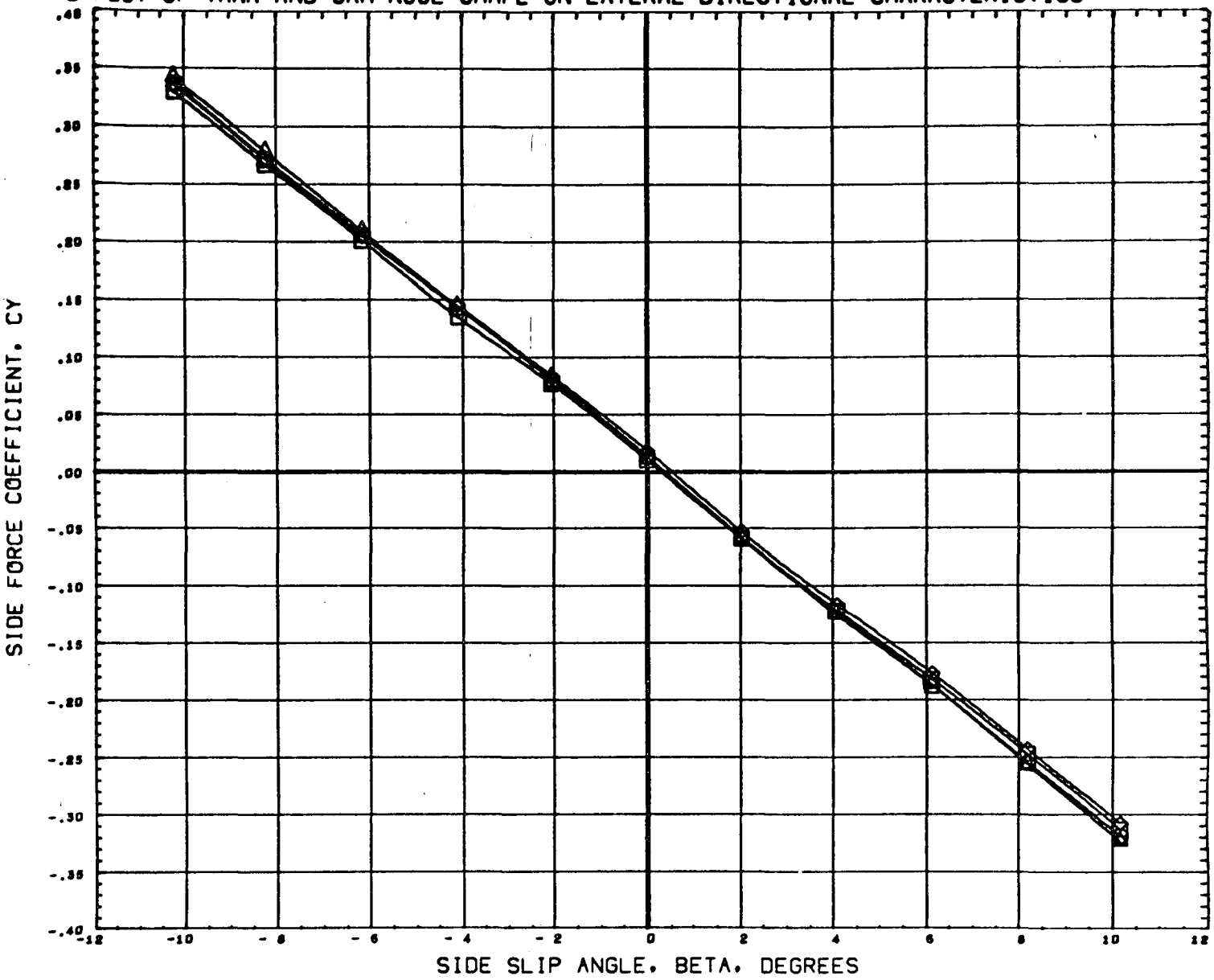
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ORBIN
(T66009)	○	MSFC TWT 538 SHUTTLE LAUNCH T101S1R1	0.000	-1.500
(A66015)	△	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500
(A66017)	◇	MSFC TWT 538 SHUTTLE LAUNCH T201S1R1	0.000	-1.500
(A66019)	□	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .80

EFFECT OF TANK AND SRM NOSE SHAPE ON LATERAL DIRECTIONAL CHARACTERISTICS



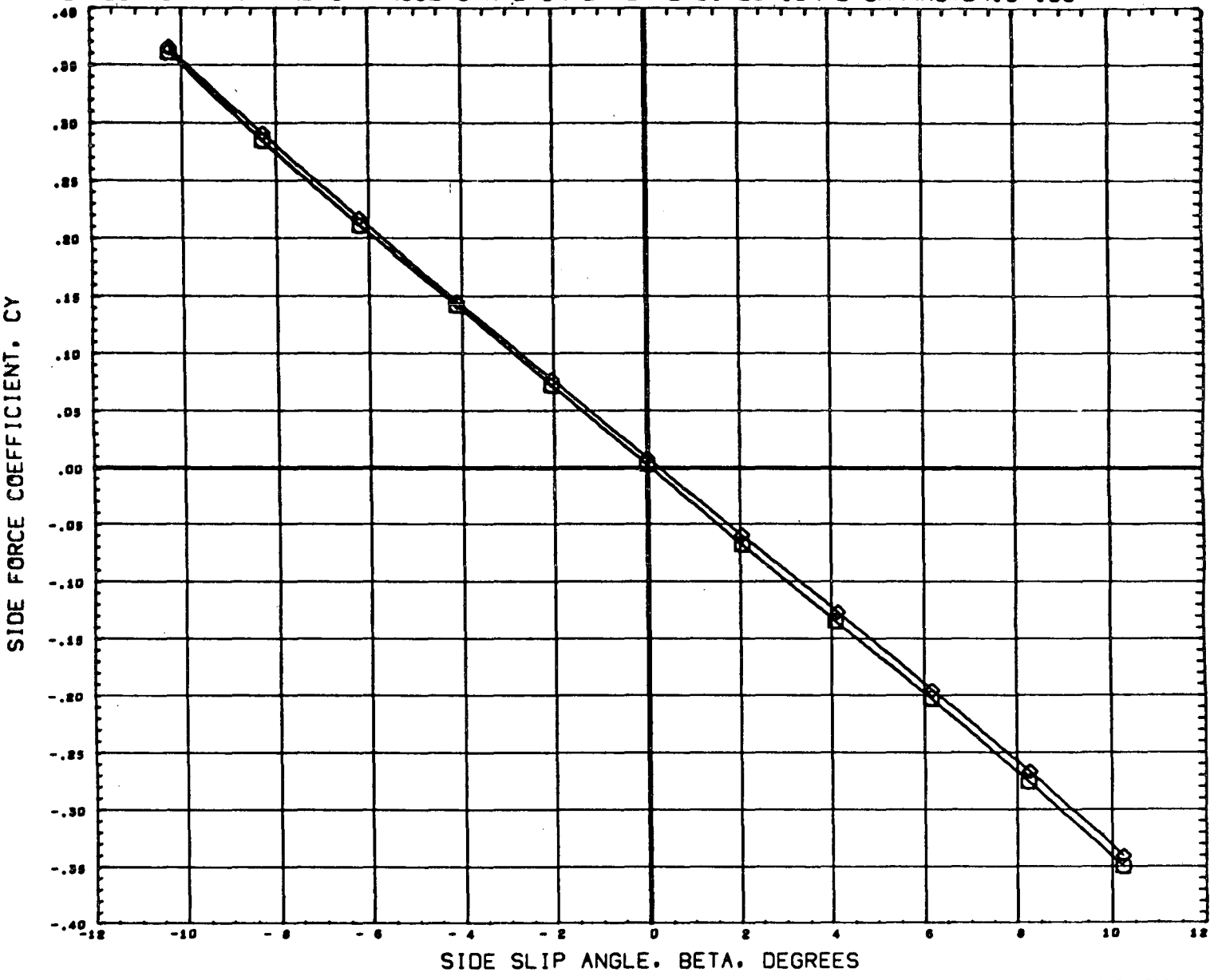
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(A66015)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S2R1	0.000	-1.500
(A66017)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T201S1R1	0.000	-1.500
(A66019)	□	MSFC TWT 538	SHUTTLE LAUNCH	T201S2R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .90

EFFECT OF TANK AND SRM NOSE SHAPE ON LATERAL DIRECTIONAL CHARACTERISTICS



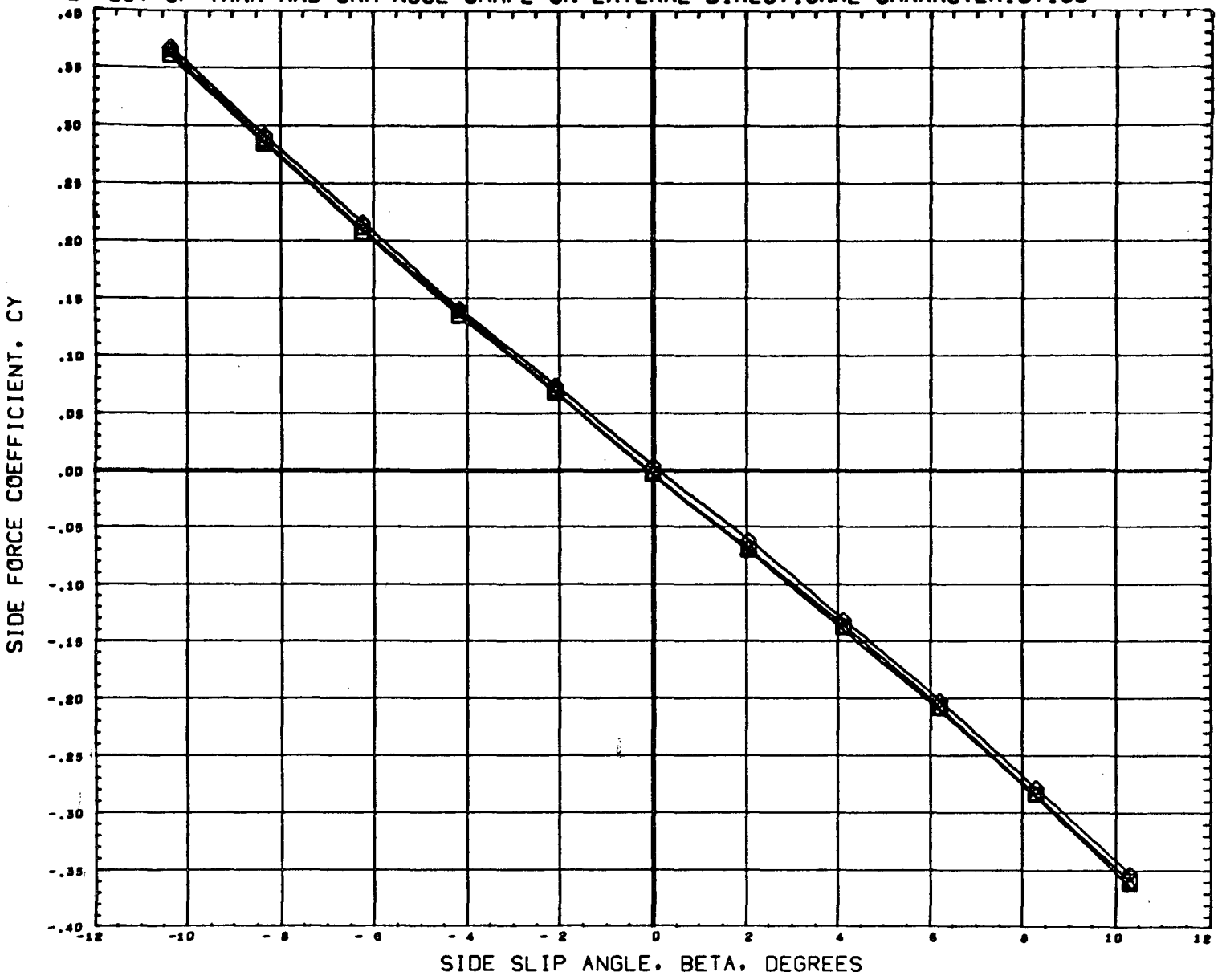
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ORBIN
(T66009)	○	MSFC TWT 538 SHUTTLE LAUNCH T101S1R1	0.000	-1.500
(A66015)	△	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500
(A66017)	◇	MSFC TWT 538 SHUTTLE LAUNCH T201S1R1	0.000	-1.500
(A66019)	□	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH • 1.10

EFFECT OF TANK AND SRM NOSE SHAPE ON LATERAL DIRECTIONAL CHARACTERISTICS



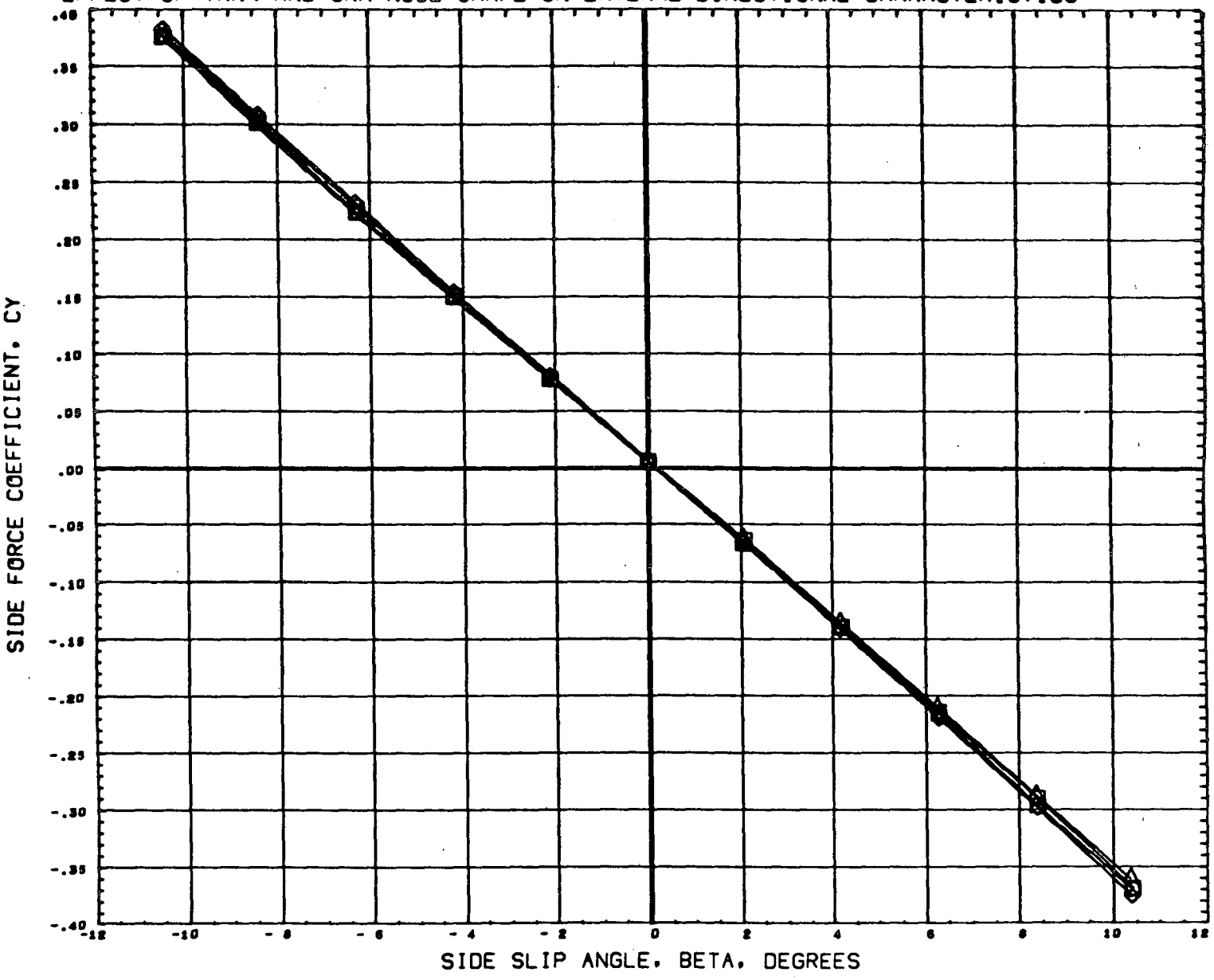
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	DATA NOT AVAILABLE FOR ALL CONDITIONS			0.000	-1.500
(A66015)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S2R1	0.000	-1.500
(A66017)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T201S1R1	0.000	-1.500
(A66019)	□	MSFC TWT 538	SHUTTLE LAUNCH	T201S2R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.19

EFFECT OF TANK AND SRM NOSE SHAPE ON LATERAL DIRECTIONAL CHARACTERISTICS



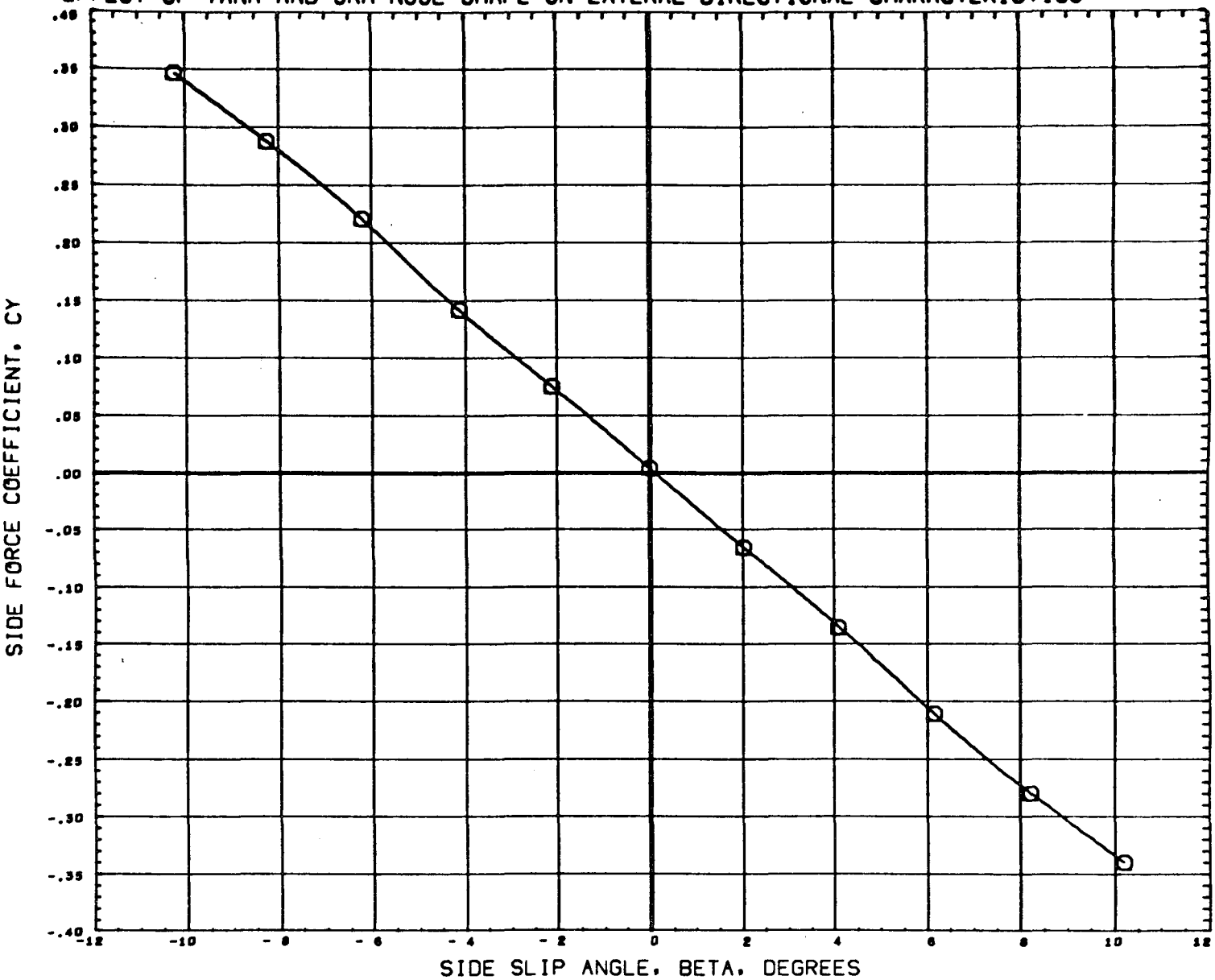
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(A66015)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S2R1	0.000	-1.500
(A66017)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T201S1R1	0.000	-1.500
(A66019)	□	MSFC TWT 538	SHUTTLE LAUNCH	T201S2R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.97

EFFECT OF TANK AND SRM NOSE SHAPE ON LATERAL DIRECTIONAL CHARACTERISTICS



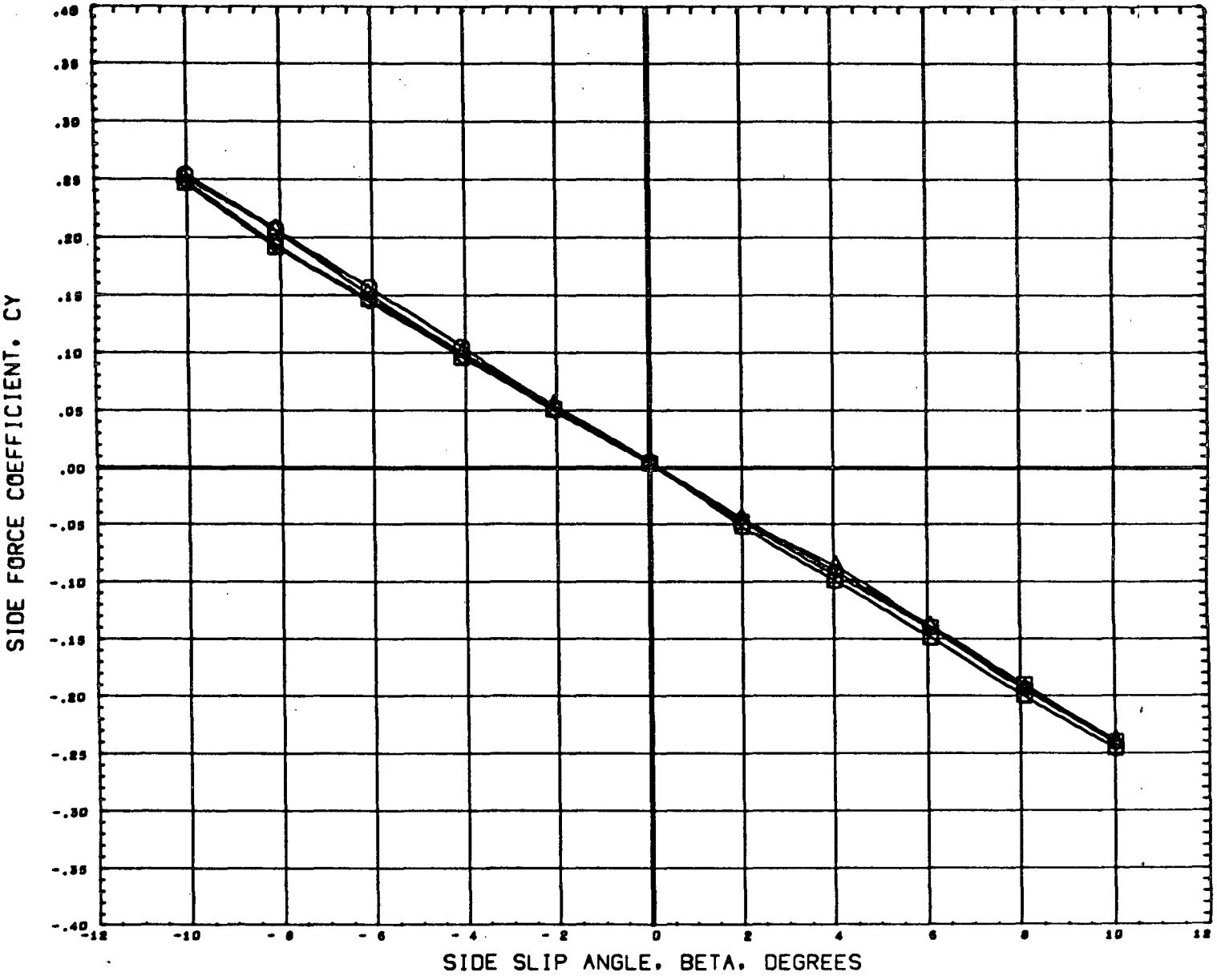
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ORBIN
(T66009)	○	MSFC TWT 538 SHUTTLE LAUNCH T101S1R1	0.000	-1.500
(A66015)	△	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500
(A66017)	◇	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500
(A66019)	□	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 2.74

EFFECT OF TANK AND SRM NOSE SHAPE ON LATERAL DIRECTIONAL CHARACTERISTICS



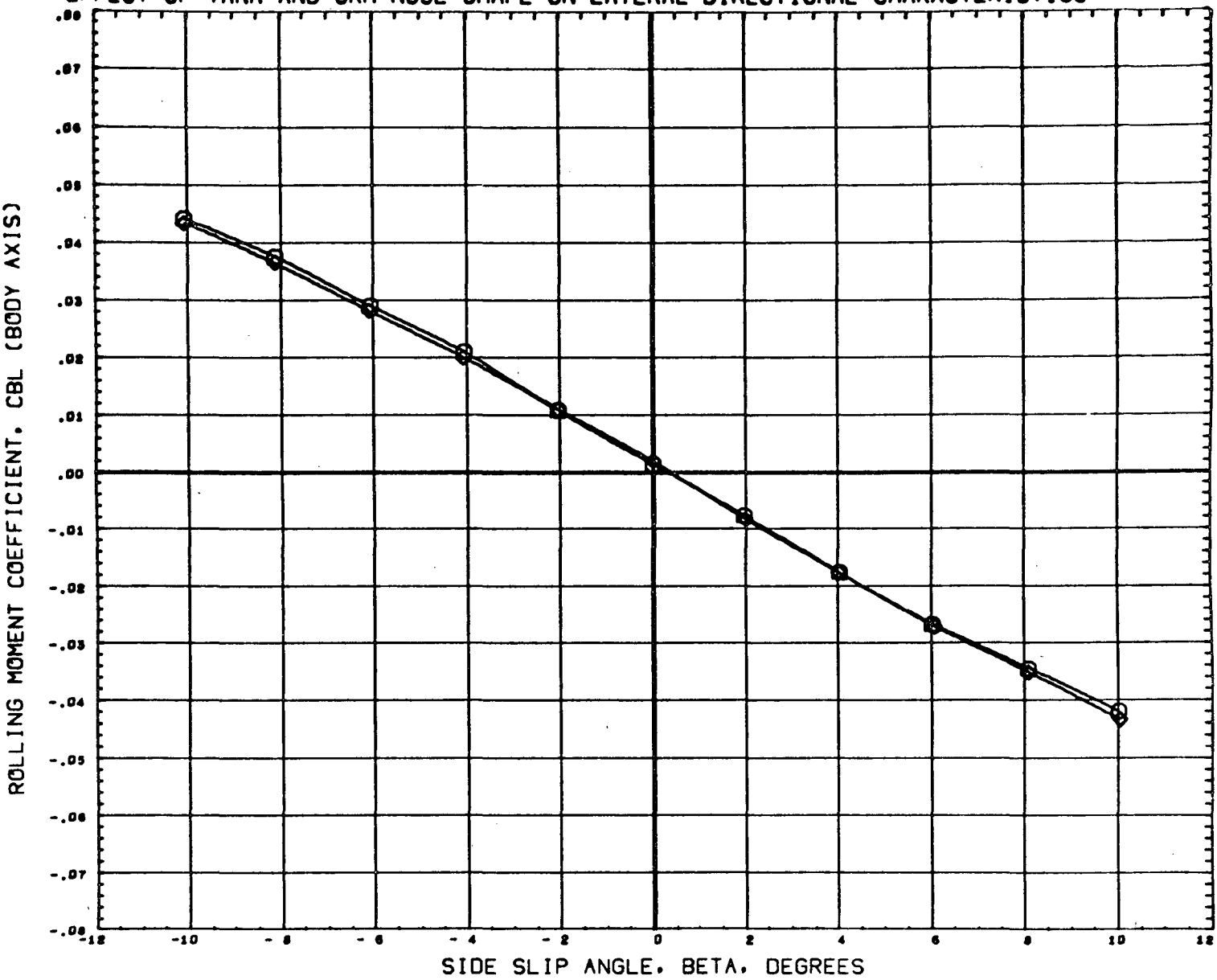
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T10151R1	0.000	-1.500
(A66015)	☆	MSFC TWT 538	SHUTTLE LAUNCH	T10152R1	0.000	-1.500
(A66017)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T20151R1	0.000	-1.500
(A66019)	□	MSFC TWT 538	SHUTTLE LAUNCH	T20152R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 4.96

EFFECT OF TANK AND SRM NOSE SHAPE ON LATERAL DIRECTIONAL CHARACTERISTICS



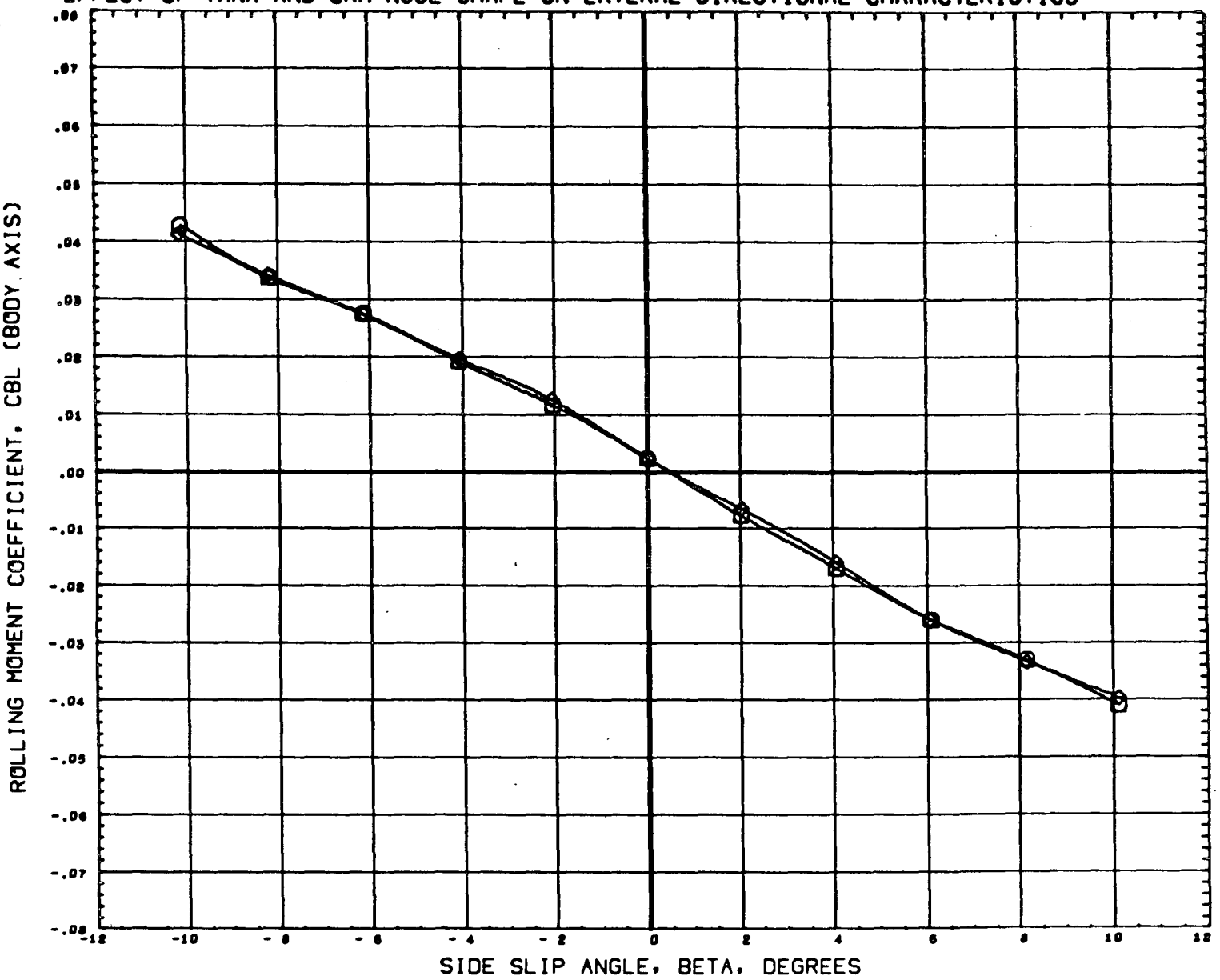
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ORBIN
(T66009)	○	MSFC TWT 538 SHUTTLE LAUNCH T101S1R1	0.000	-1.500
(A66015)	△	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500
(A66017)	◇	MSFC TWT 538 SHUTTLE LAUNCH T201S1R1	0.000	-1.500
(A66019)	□	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .60

EFFECT OF TANK AND SRM NOSE SHAPE ON LATERAL DIRECTIONAL CHARACTERISTICS



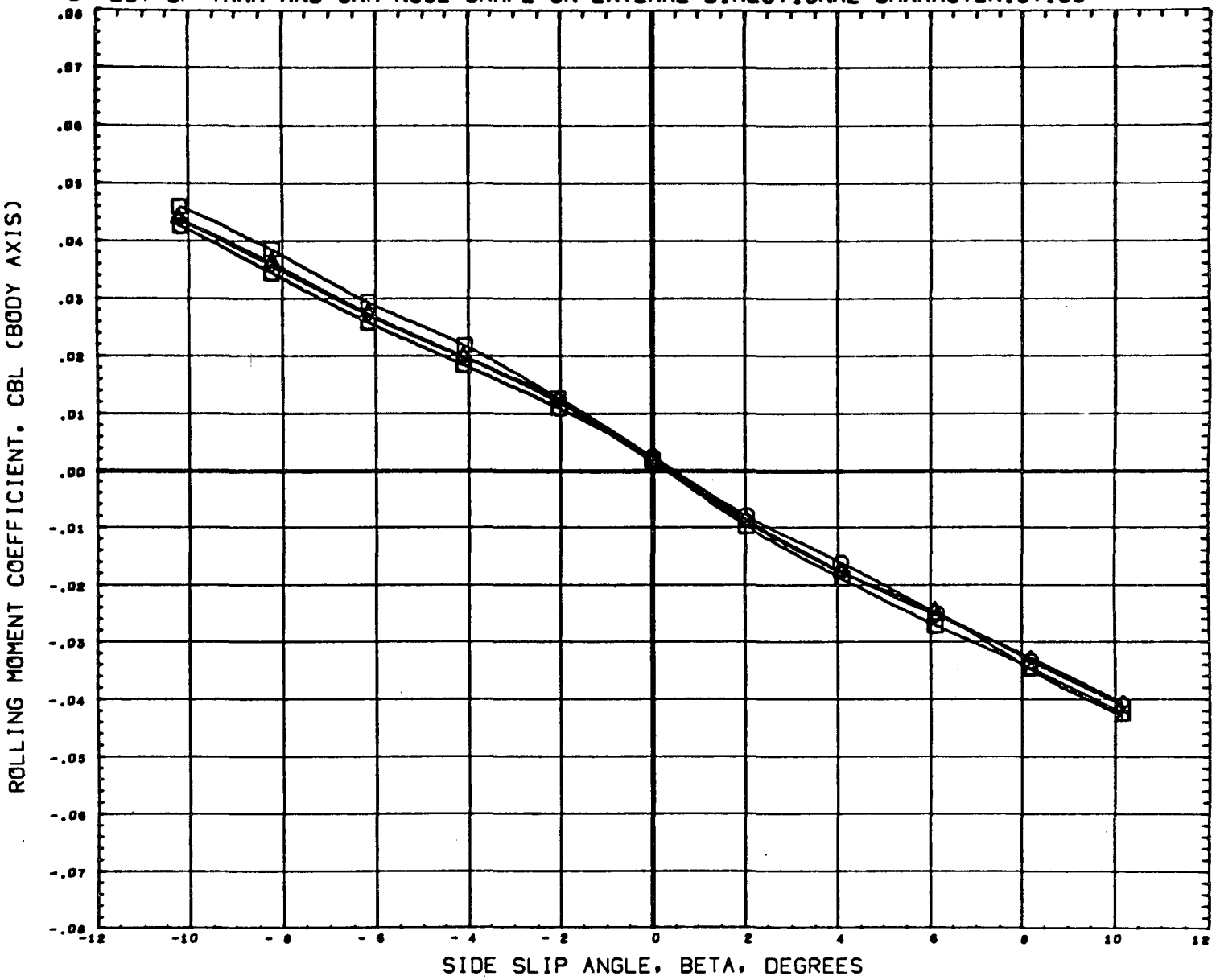
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ORBIN
(T66009)	○	MSFC TWT 538 SHUTTLE LAUNCH T101S1R1	0.000	-1.500
(A66015)	△	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500
(A66017)	◇	MSFC TWT 538 SHUTTLE LAUNCH T201S1R1	0.000	-1.500
(A66019)	□	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .80

EFFECT OF TANK AND SRM NOSE SHAPE ON LATERAL DIRECTIONAL CHARACTERISTICS



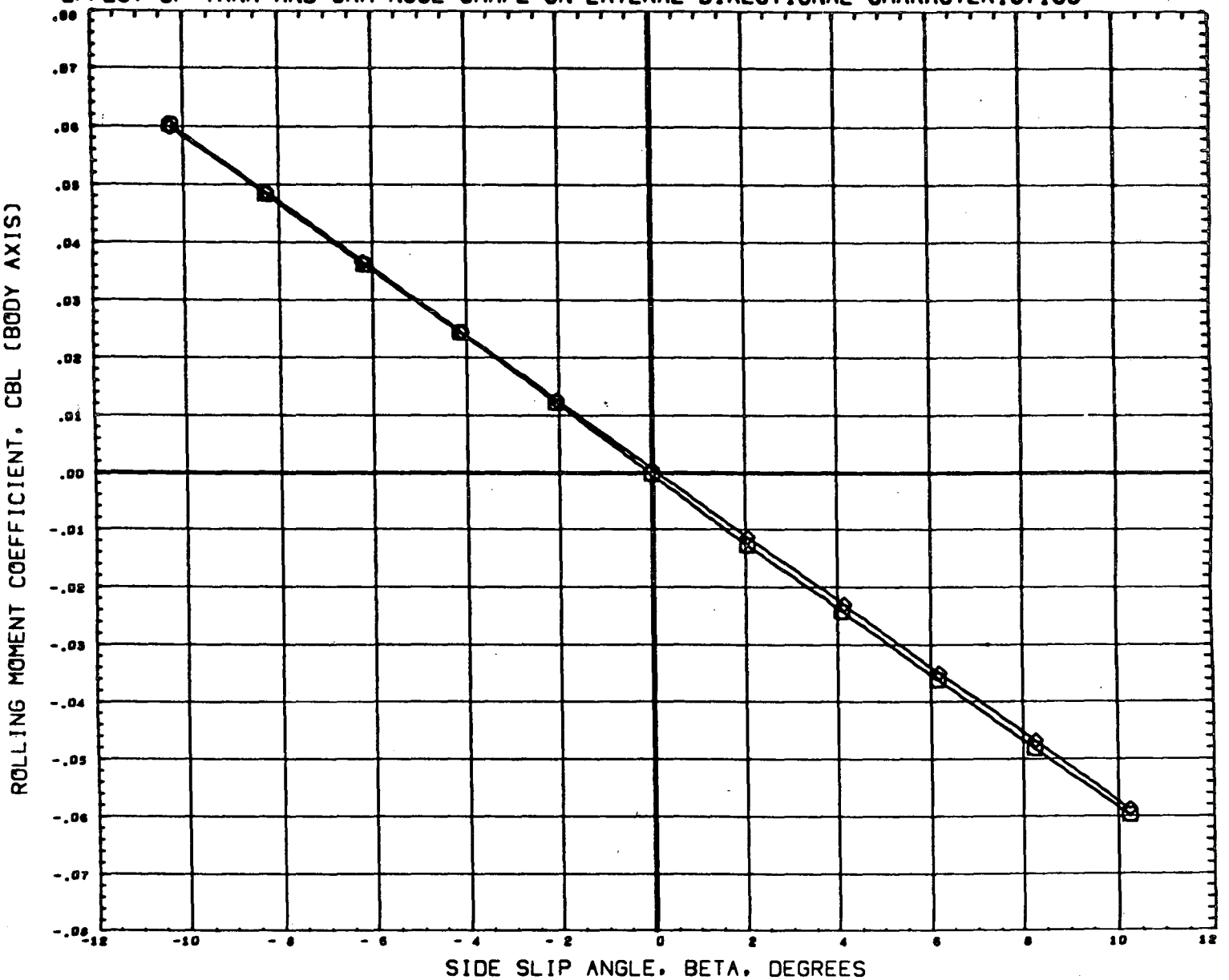
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(A66015)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S2R1	0.000	-1.500
(A66017)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T201S1R1	0.000	-1.500
(A66019)	□	MSFC TWT 538	SHUTTLE LAUNCH	T201S2R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .90

EFFECT OF TANK AND SRM NOSE SHAPE ON LATERAL DIRECTIONAL CHARACTERISTICS



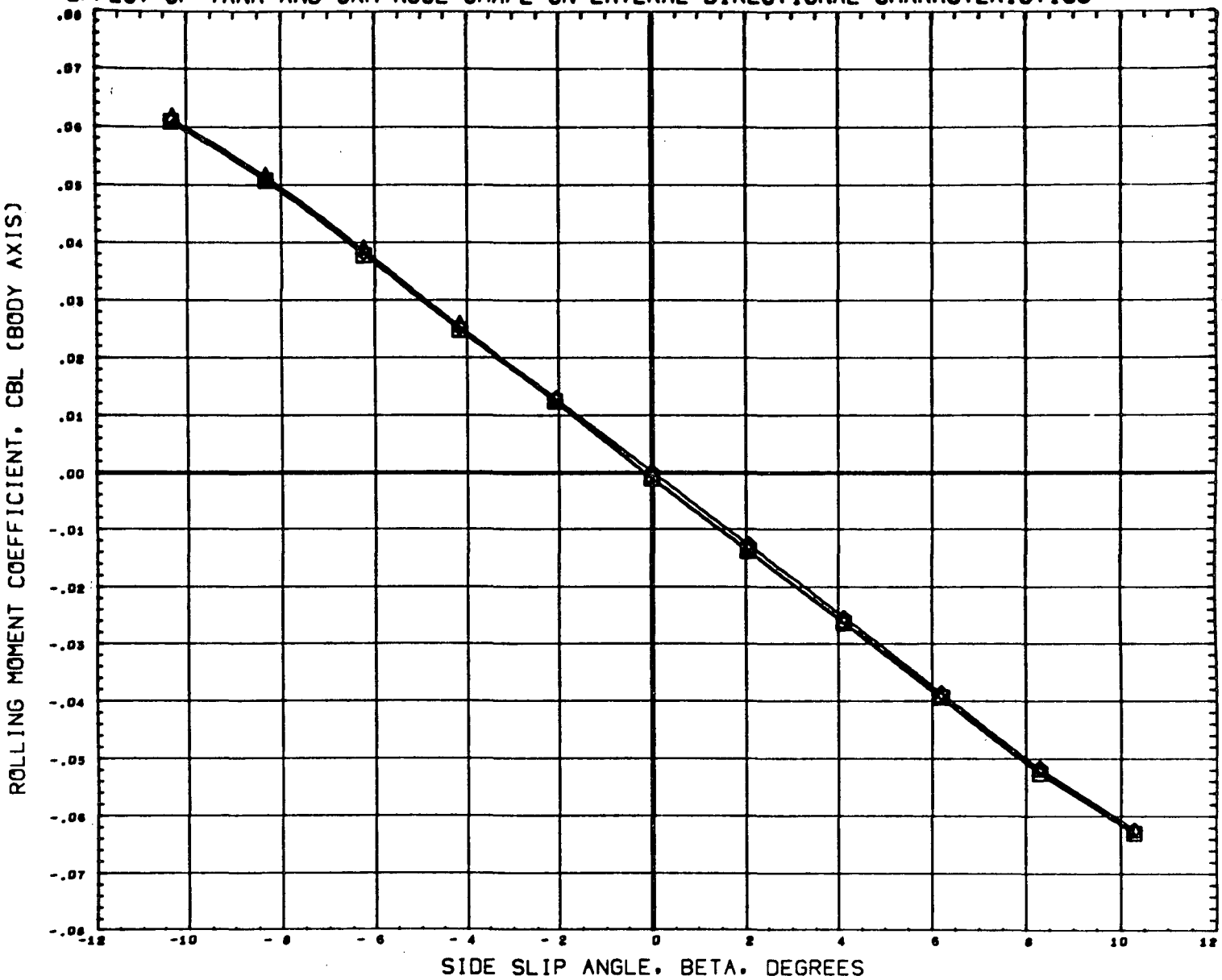
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ORBIN
(T66009)	○	MSFC TWT 538 SHUTTLE LAUNCH T101S1R1	0.000	-1.500
(A66015)	△	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500
(A66017)	◇	MSFC TWT 538 SHUTTLE LAUNCH T201S1R1	0.000	-1.500
(A66019)	□	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.10

EFFECT OF TANK AND SRM NOSE SHAPE ON LATERAL DIRECTIONAL CHARACTERISTICS



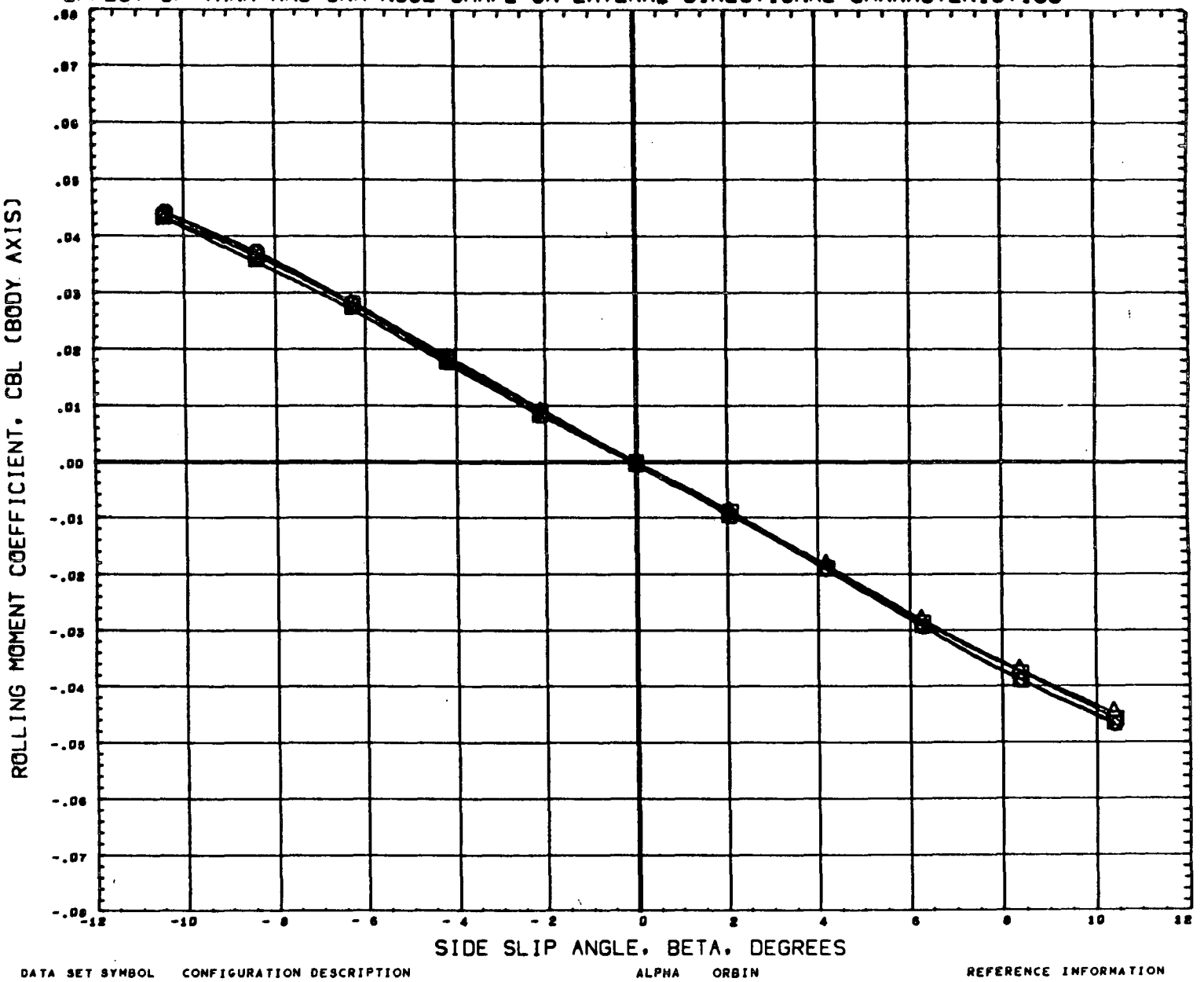
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	DATA NOT AVAILABLE FOR ALL CONDITIONS			0.000	-1.500
(A66015)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S2R1	0.000	-1.500
(A66017)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T201S1R1	0.000	-1.500
(A66019)	□	MSFC TWT 538	SHUTTLE LAUNCH	T201S2R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.19

EFFECT OF TANK AND SRM NOSE SHAPE ON LATERAL DIRECTIONAL CHARACTERISTICS



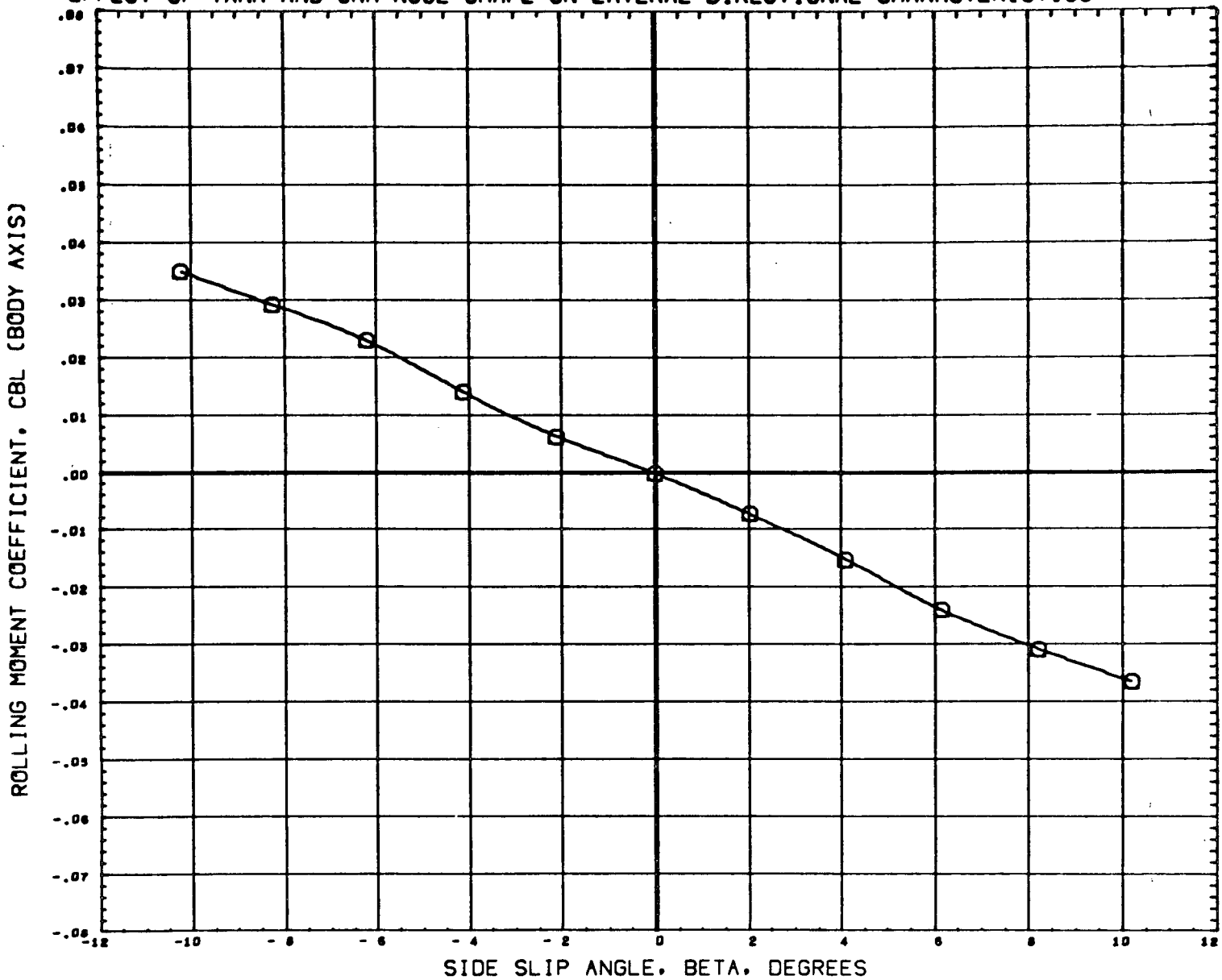
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(A66015)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S2R1	0.000	-1.500
(A66017)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T201S1R1	0.000	-1.500
(A66019)	□	MSFC TWT 538	SHUTTLE LAUNCH	T201S2R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.97

EFFECT OF TANK AND SRM NOSE SHAPE ON LATERAL DIRECTIONAL CHARACTERISTICS



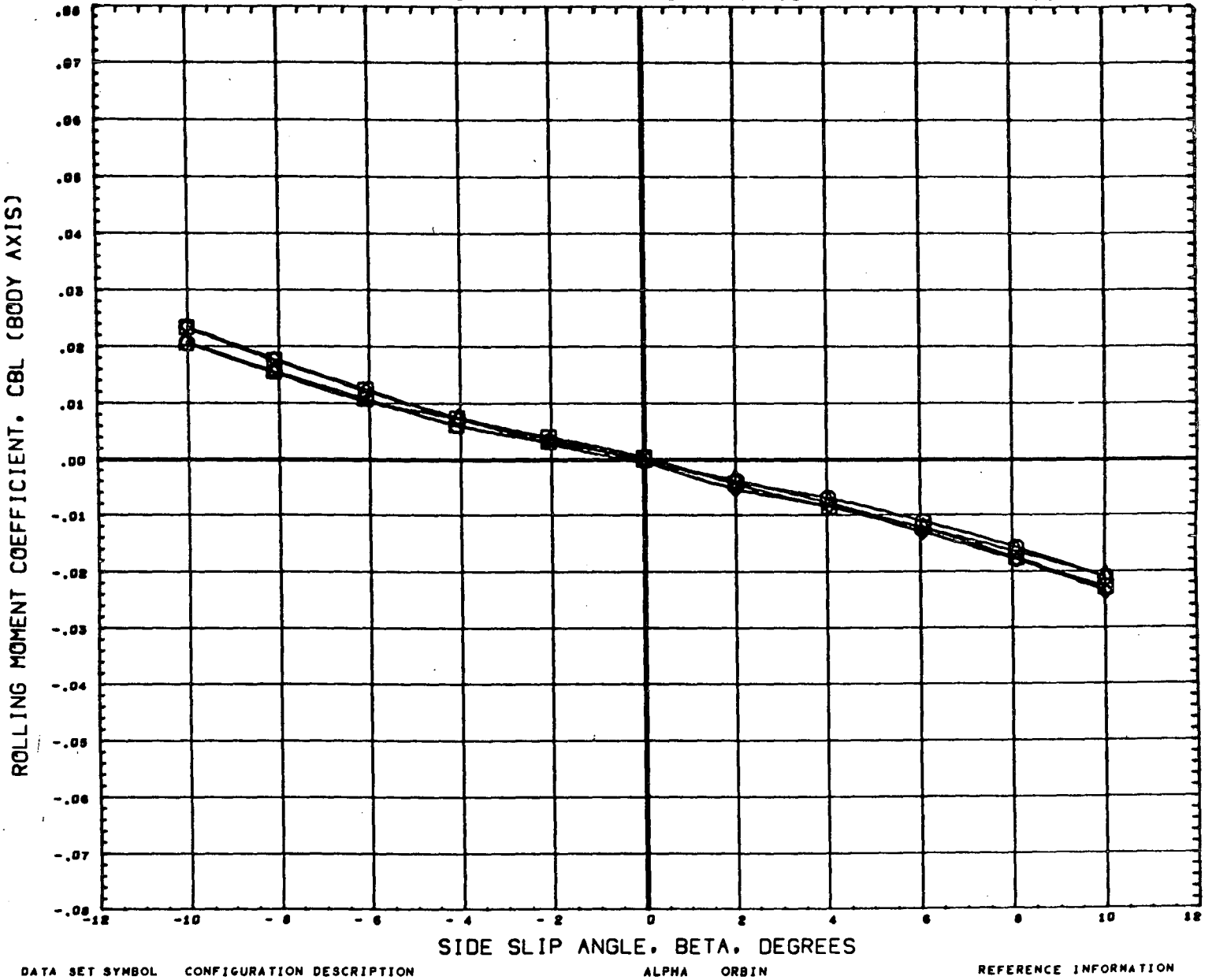
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ORBIN
(T66009)	○	MSFC TWT 538 SHUTTLE LAUNCH T101S1R1	0.000	-1.500
(A66015)	△	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500
(A66017)	◇	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500
(A66019)	□	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 2.74

EFFECT OF TANK AND SRM NOSE SHAPE ON LATERAL DIRECTIONAL CHARACTERISTICS



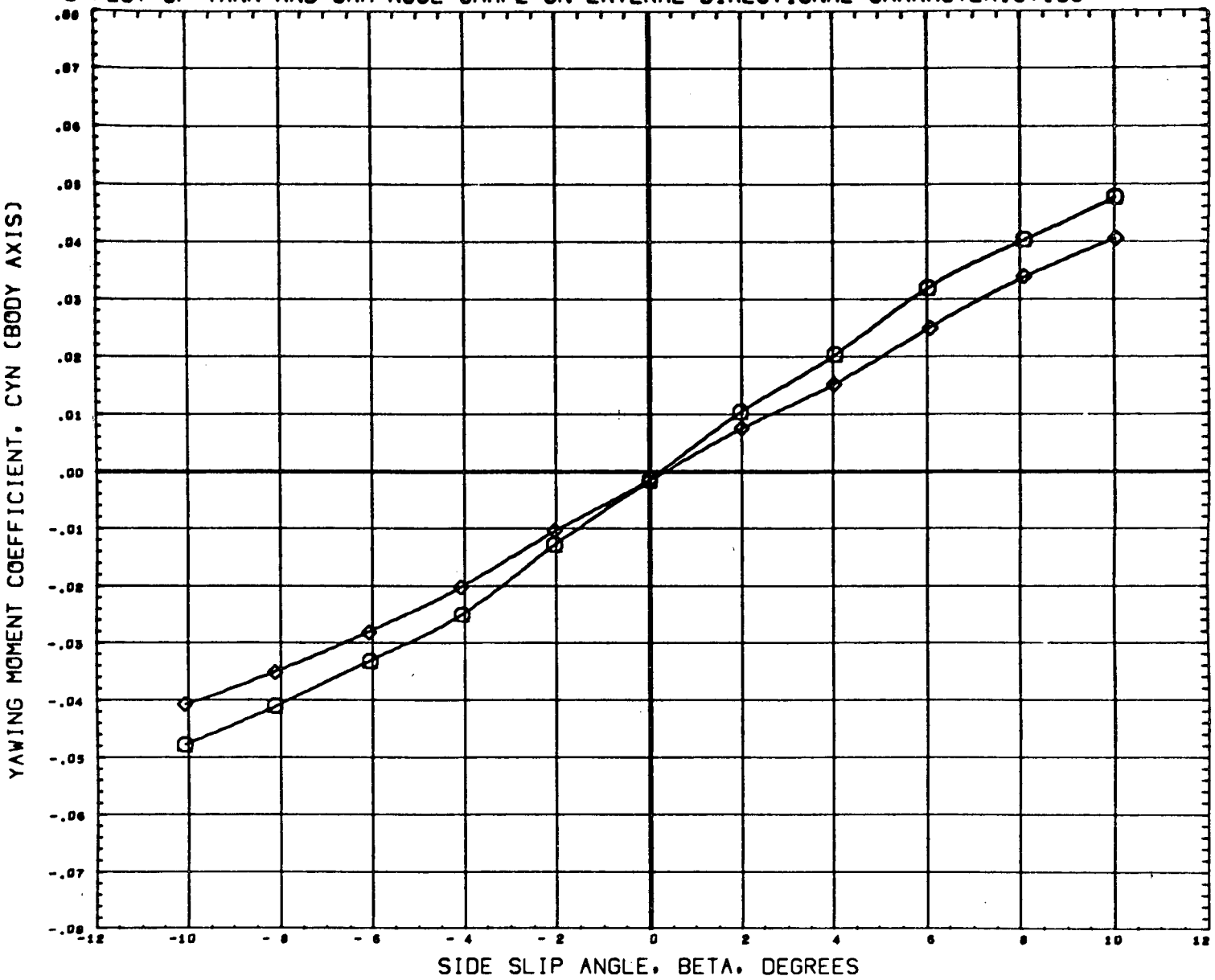
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(A66015)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S2R1	0.000	-1.500
(A66017)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T201S1R1	0.000	-1.500
(A66019)	□	MSFC TWT 538	SHUTTLE LAUNCH	T201S2R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 4.96

EFFECT OF TANK AND SRM NOSE SHAPE ON LATERAL DIRECTIONAL CHARACTERISTICS



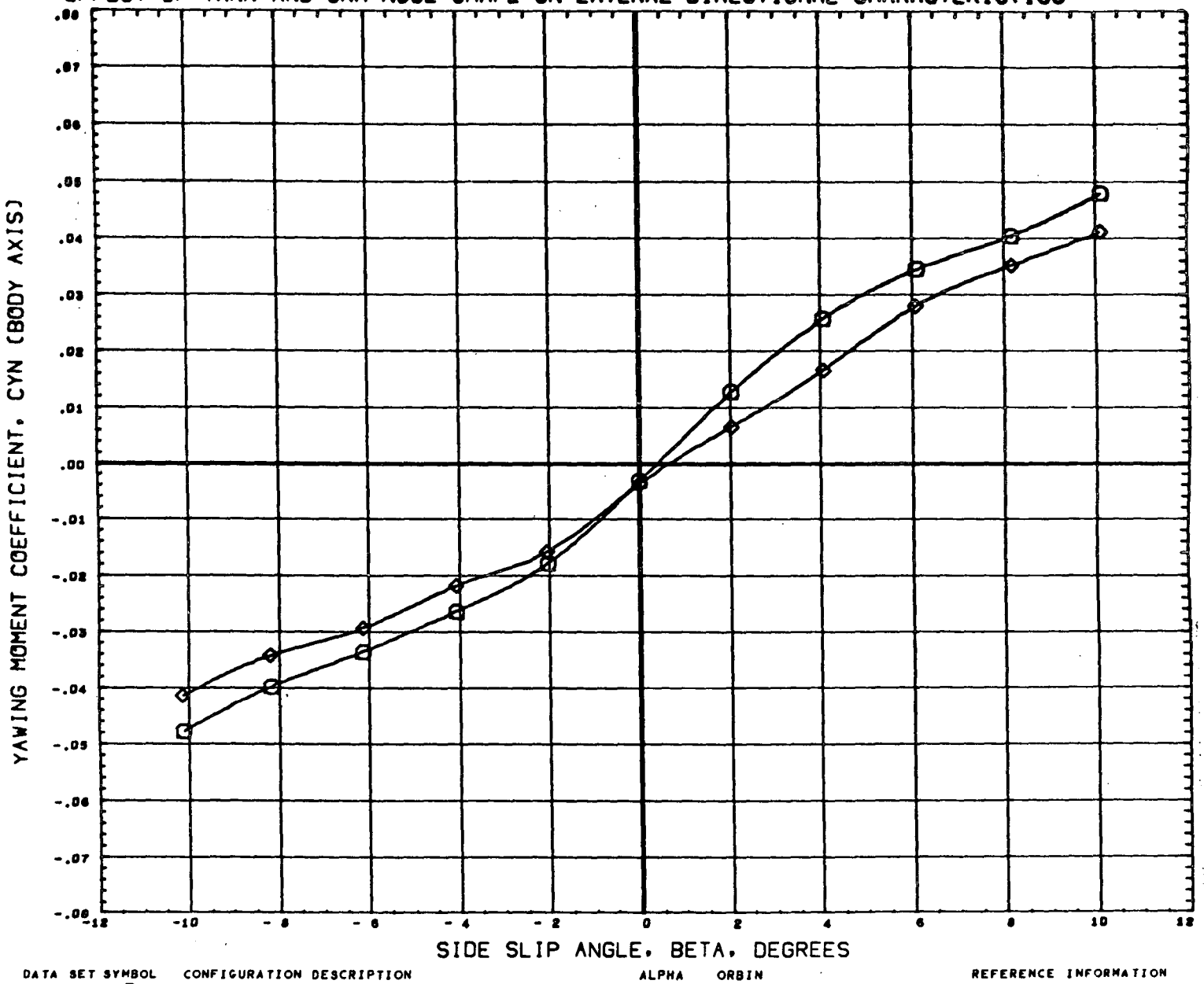
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ORBIN
(T66009)	○	MSFC TWT 538 SHUTTLE LAUNCH T101S1R1	0.000	-1.500
(A66015)	△	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500
(A66017)	◇	MSFC TWT 538 SHUTTLE LAUNCH T201S1R1	0.000	-1.500
(A66019)	□	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .60

EFFECT OF TANK AND SRM NOSE SHAPE ON LATERAL DIRECTIONAL CHARACTERISTICS



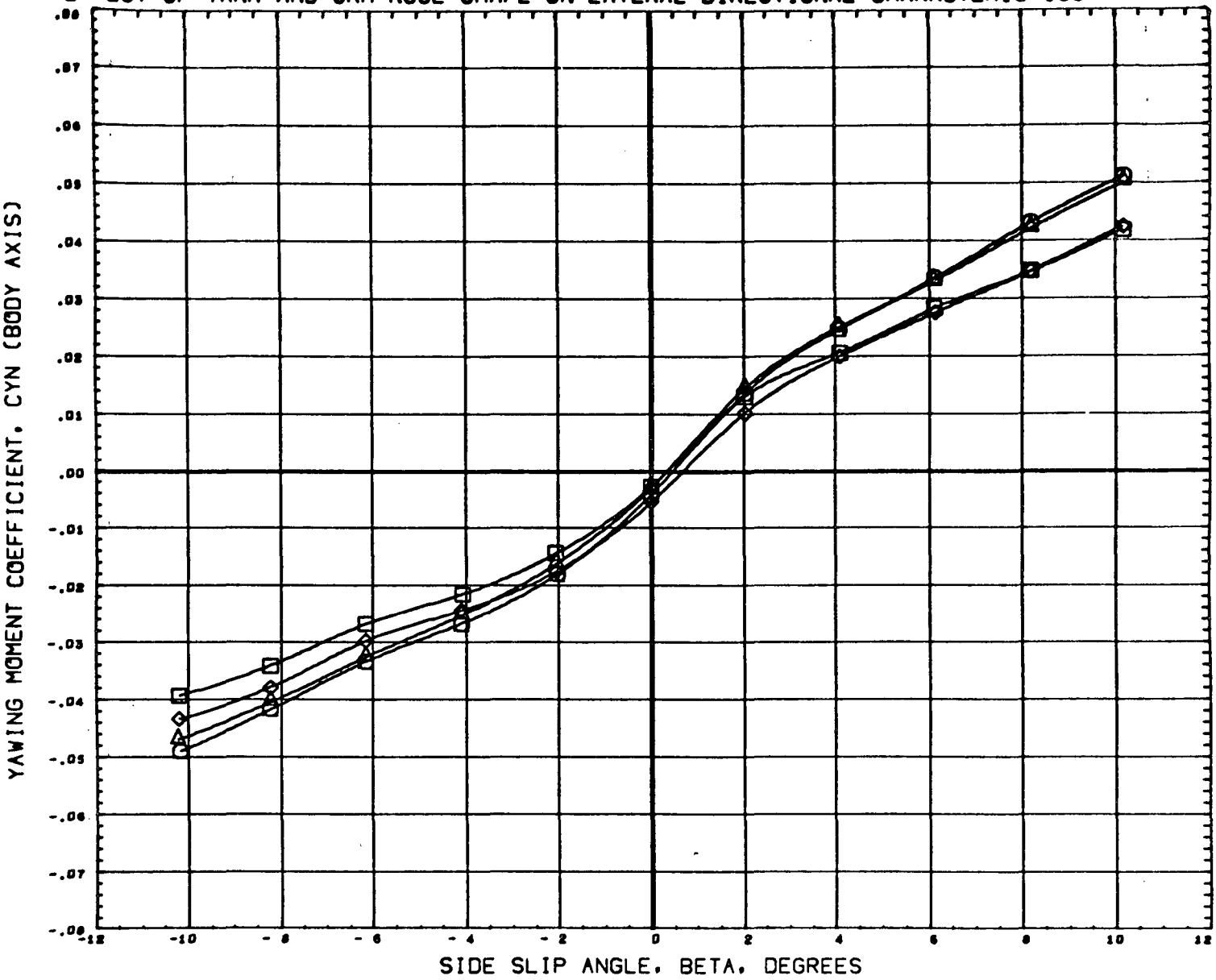
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ORBIN
(T66009)	○	MSFC TWT 538 SHUTTLE LAUNCH T101S1R1	0.000	-1.500
(A66015)	△	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500
(A66017)	◇	MSFC TWT 538 SHUTTLE LAUNCH T201S1R1	0.000	-1.500
(A66019)	□	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN.
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .80

EFFECT OF TANK AND SRM NOSE SHAPE ON LATERAL DIRECTIONAL CHARACTERISTICS



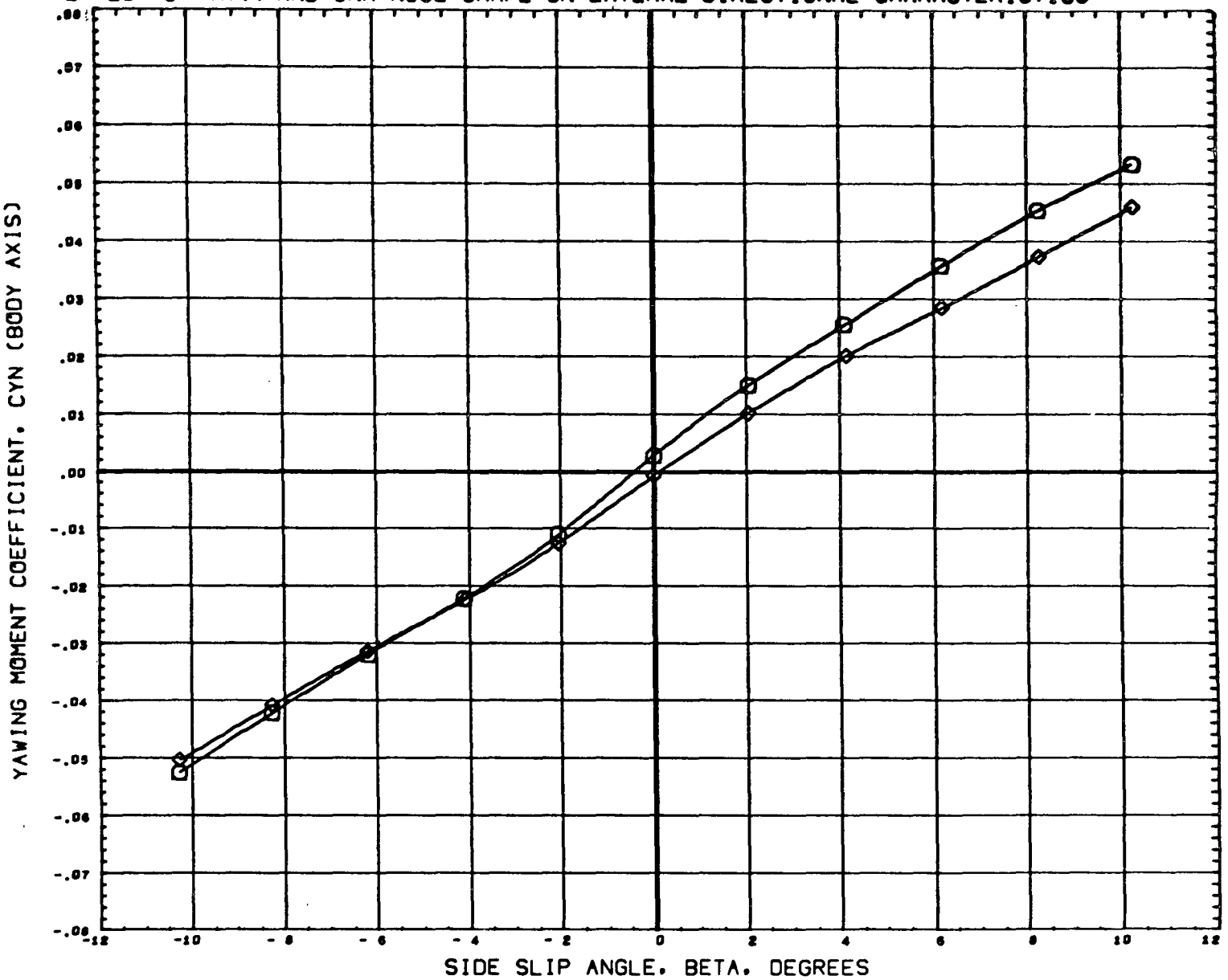
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(A66015)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S2R1	0.000	-1.500
(A66017)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T201S1R1	0.000	-1.500
(A66019)	□	MSFC TWT 538	SHUTTLE LAUNCH	T201S2R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .90

EFFECT OF TANK AND SRM NOSE SHAPE ON LATERAL DIRECTIONAL CHARACTERISTICS

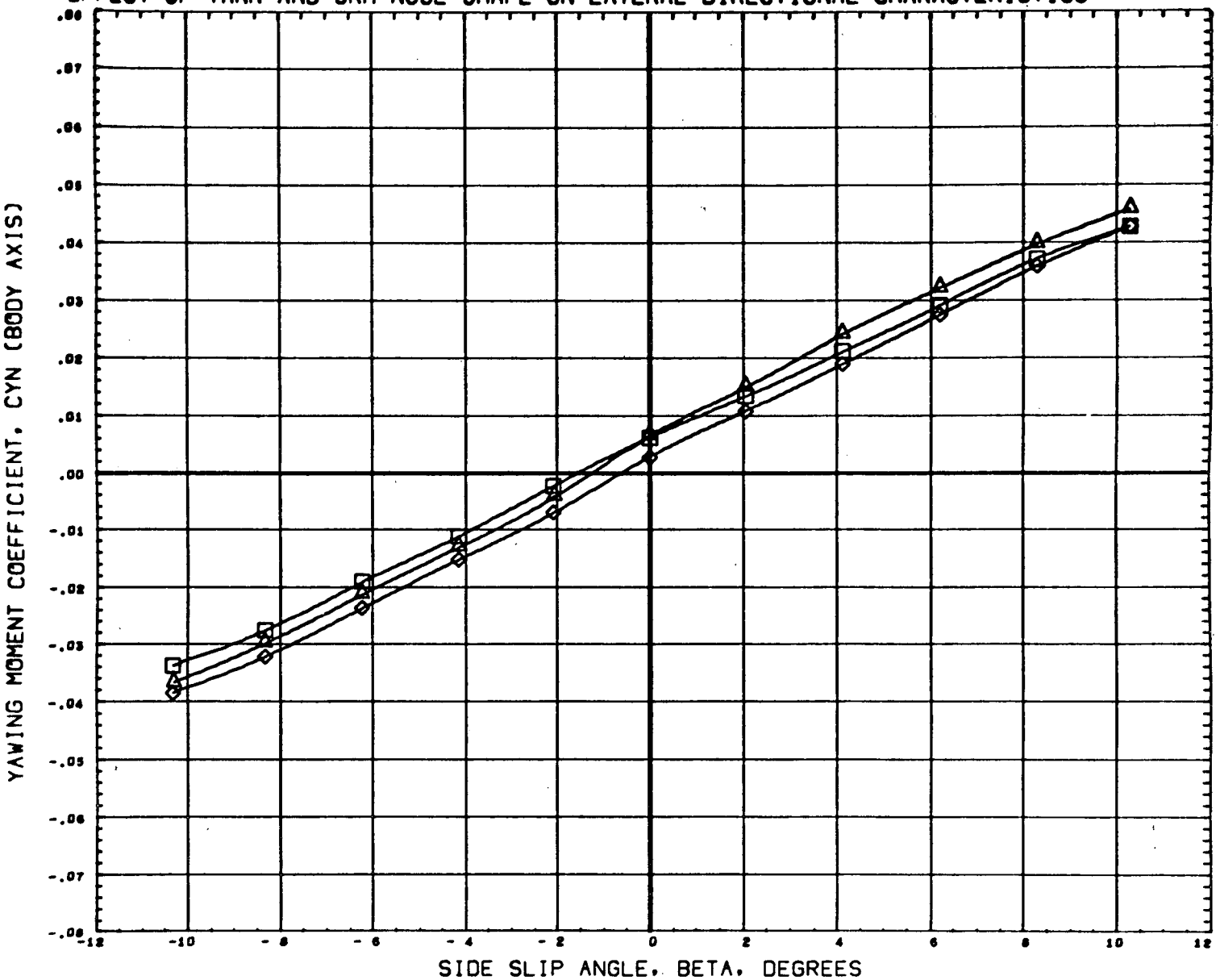


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ORBIN
(T66009)	○	MSFC TWT 538 SHUTTLE LAUNCH T101S1R1	0.000	-1.500
(A66015)	△	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500
(A66017)	◇	MSFC TWT 538 SHUTTLE LAUNCH T201S1R1	0.000	-1.500
(A66019)	□	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500

REFERENCE INFORMATION		
SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1460	IN.
YMRP	0.0000	IN.
ZMRP	0.2460	IN.
SCALE	0.0040	

MACH 1.10

EFFECT OF TANK AND SRM NOSE SHAPE ON LATERAL DIRECTIONAL CHARACTERISTICS



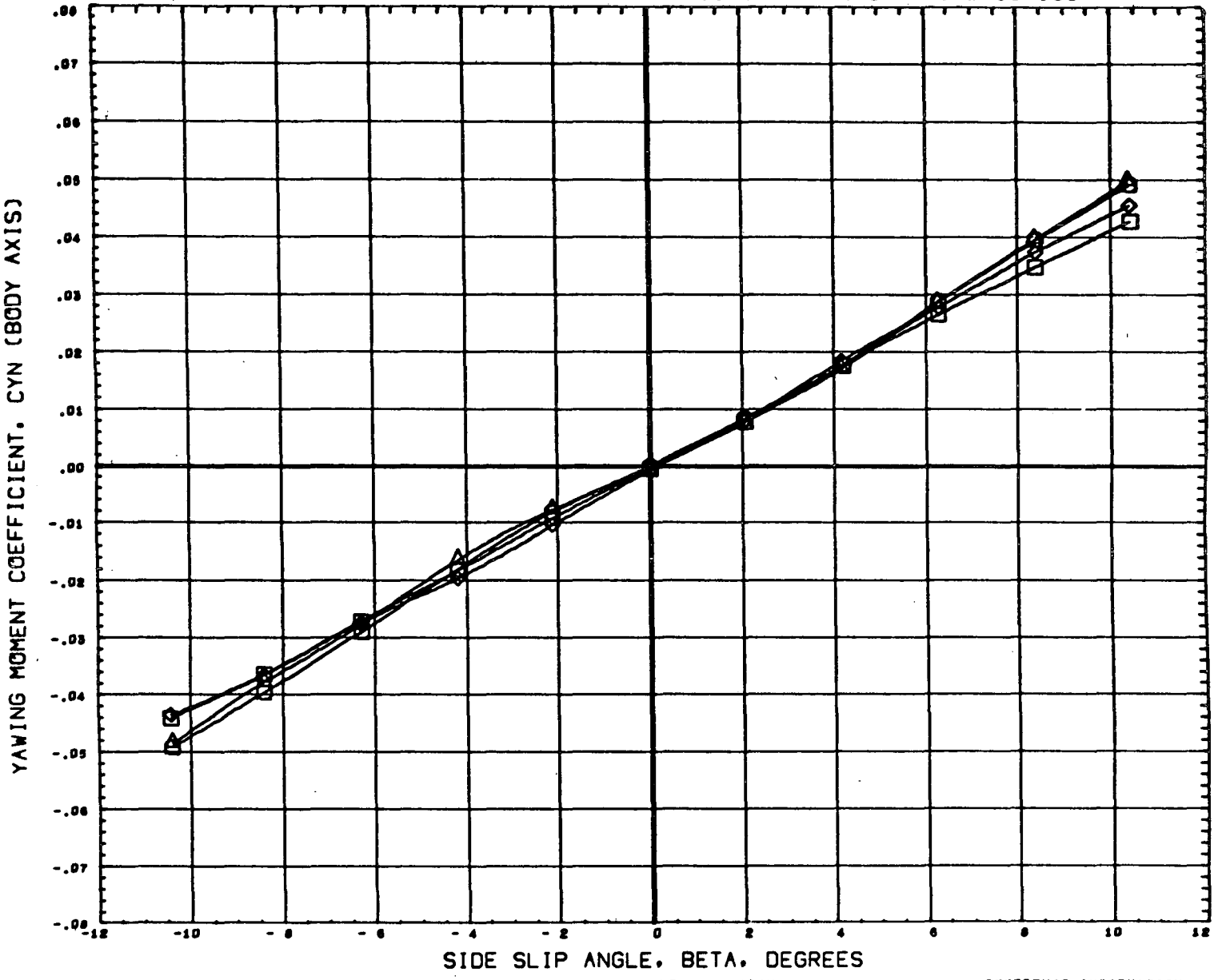
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	DATA NOT AVAILABLE FOR ALL CONDITIONS			0.000	-1.500
(A66015)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S2R1	0.000	-1.500
(A66017)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T201S1R1	0.000	-1.500
(A66019)	□	MSFC TWT 538	SHUTTLE LAUNCH	T201S2R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.19

EFFECT OF TANK AND SRM NOSE SHAPE ON LATERAL DIRECTIONAL CHARACTERISTICS



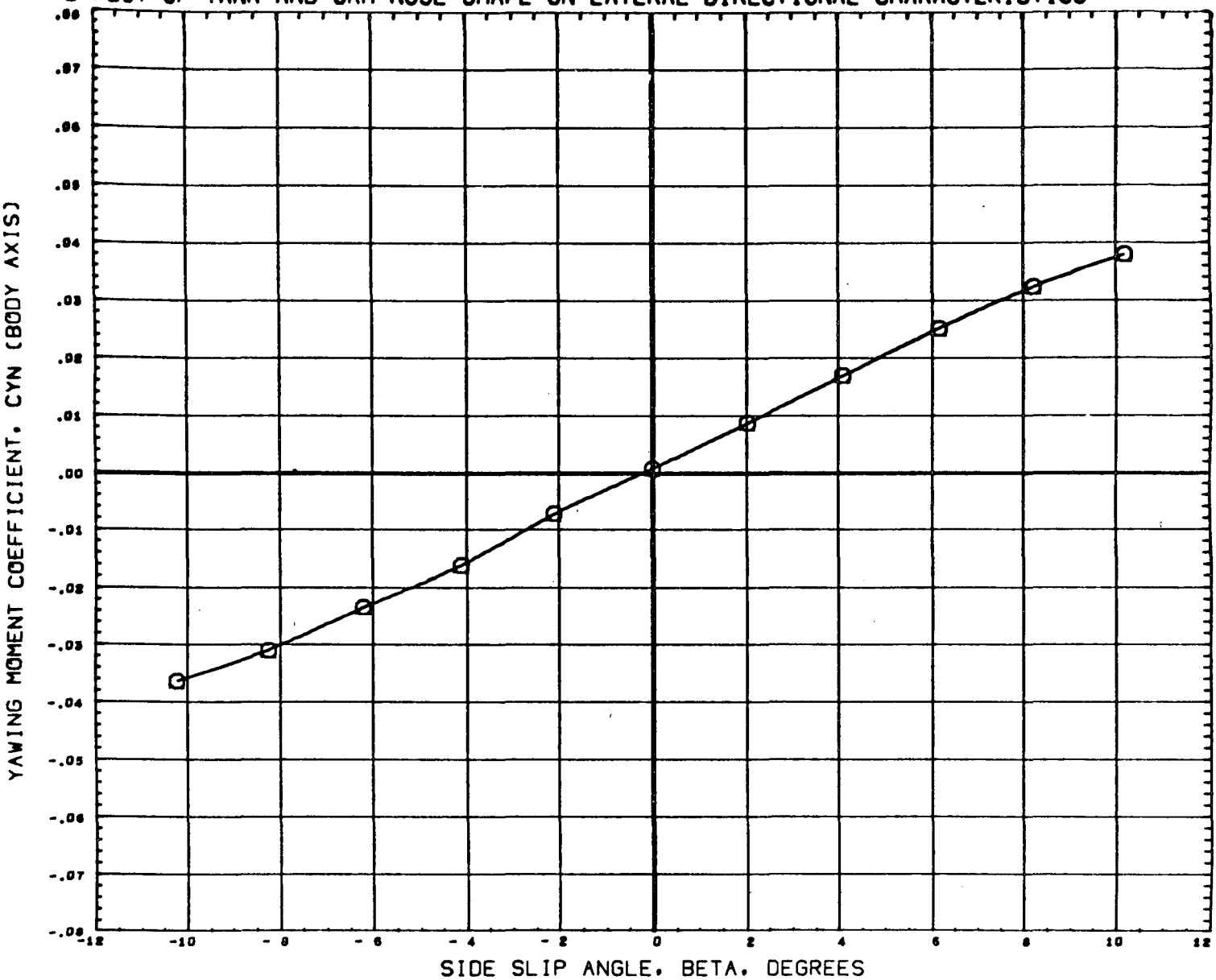
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(A66015)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S2R1	0.000	-1.500
(A66017)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T201S1R1	0.000	-1.500
(A66019)	□	MSFC TWT 538	SHUTTLE LAUNCH	T201S2R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1460	IN.
YMRP	0.0000	IN.
ZMRP	0.2460	IN.
SCALE	0.0040	

MACH 1.97

EFFECT OF TANK AND SRM NOSE SHAPE ON LATERAL DIRECTIONAL CHARACTERISTICS



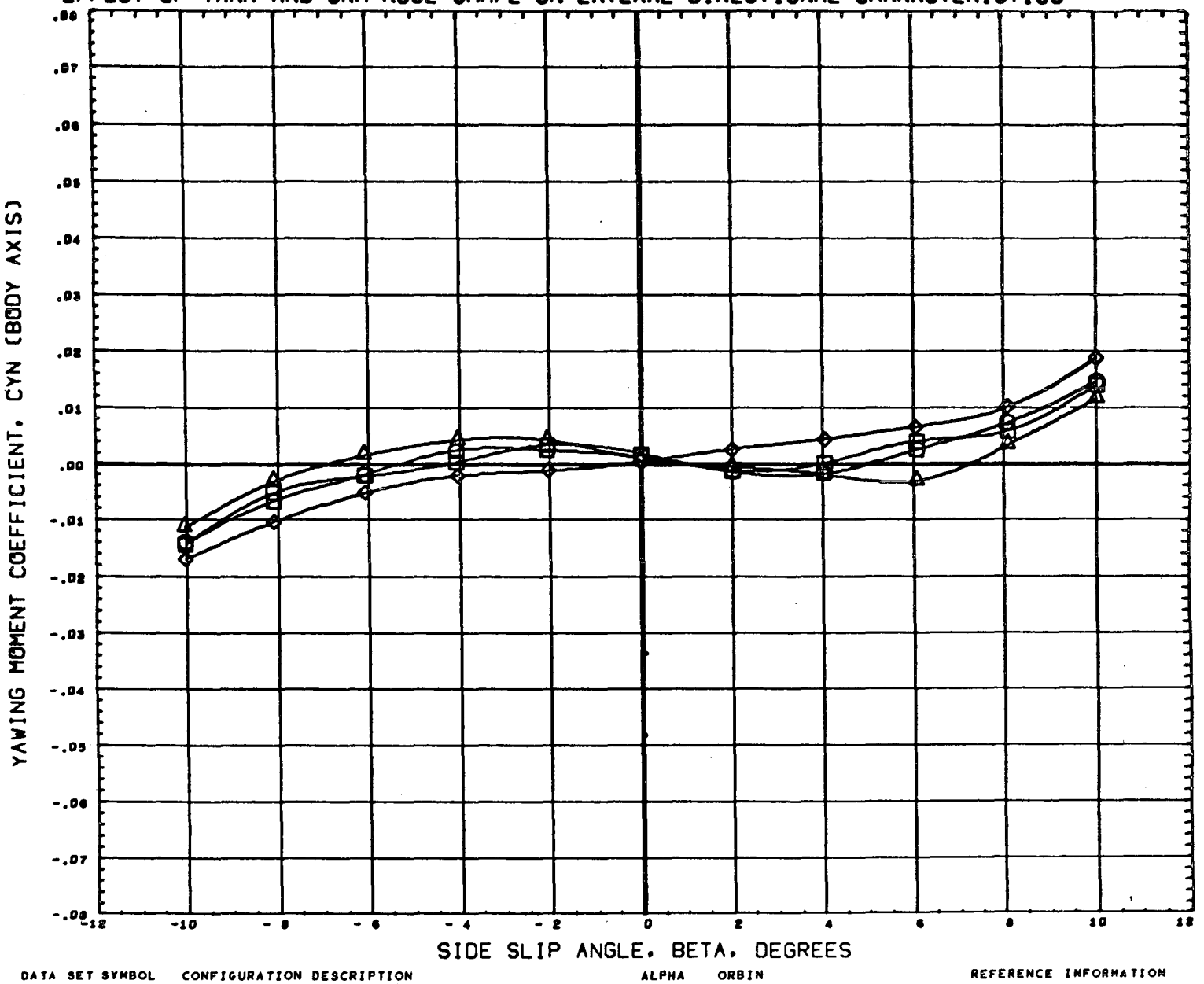
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ORBIN
(T66009)	○	MSFC TWT 538 SHUTTLE LAUNCH T101S1R1	0.000	-1.500
(A66015)	△	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500
(A66017)	◇	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500
(A66019)	□	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 2.74

EFFECT OF TANK AND SRM NOSE SHAPE ON LATERAL DIRECTIONAL CHARACTERISTICS



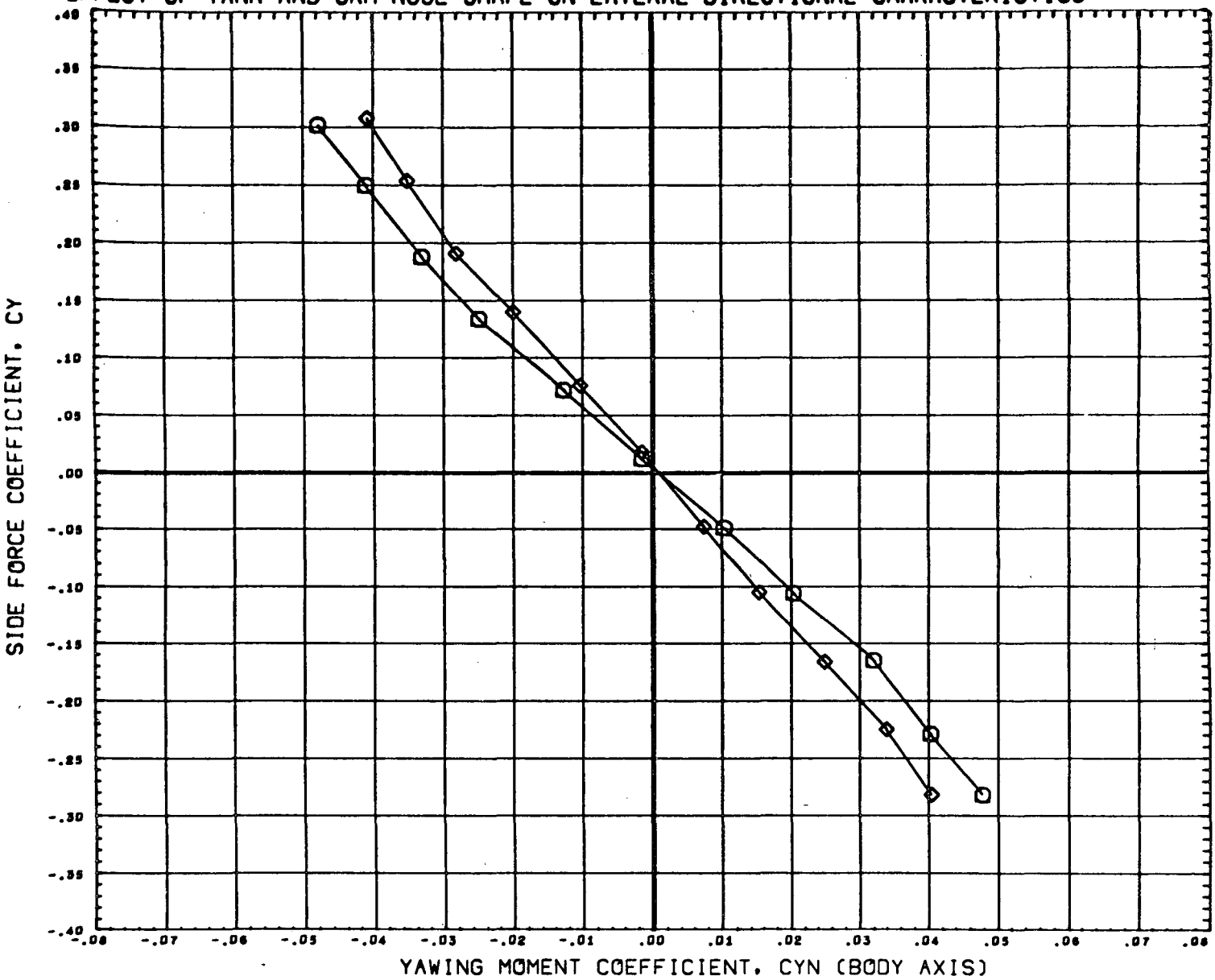
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(A66015)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S2R1	0.000	-1.500
(A66017)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T201S1R1	0.000	-1.500
(A66019)	□	MSFC TWT 538	SHUTTLE LAUNCH	T201S2R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 4.96

EFFECT OF TANK AND SRM NOSE SHAPE ON LATERAL DIRECTIONAL CHARACTERISTICS



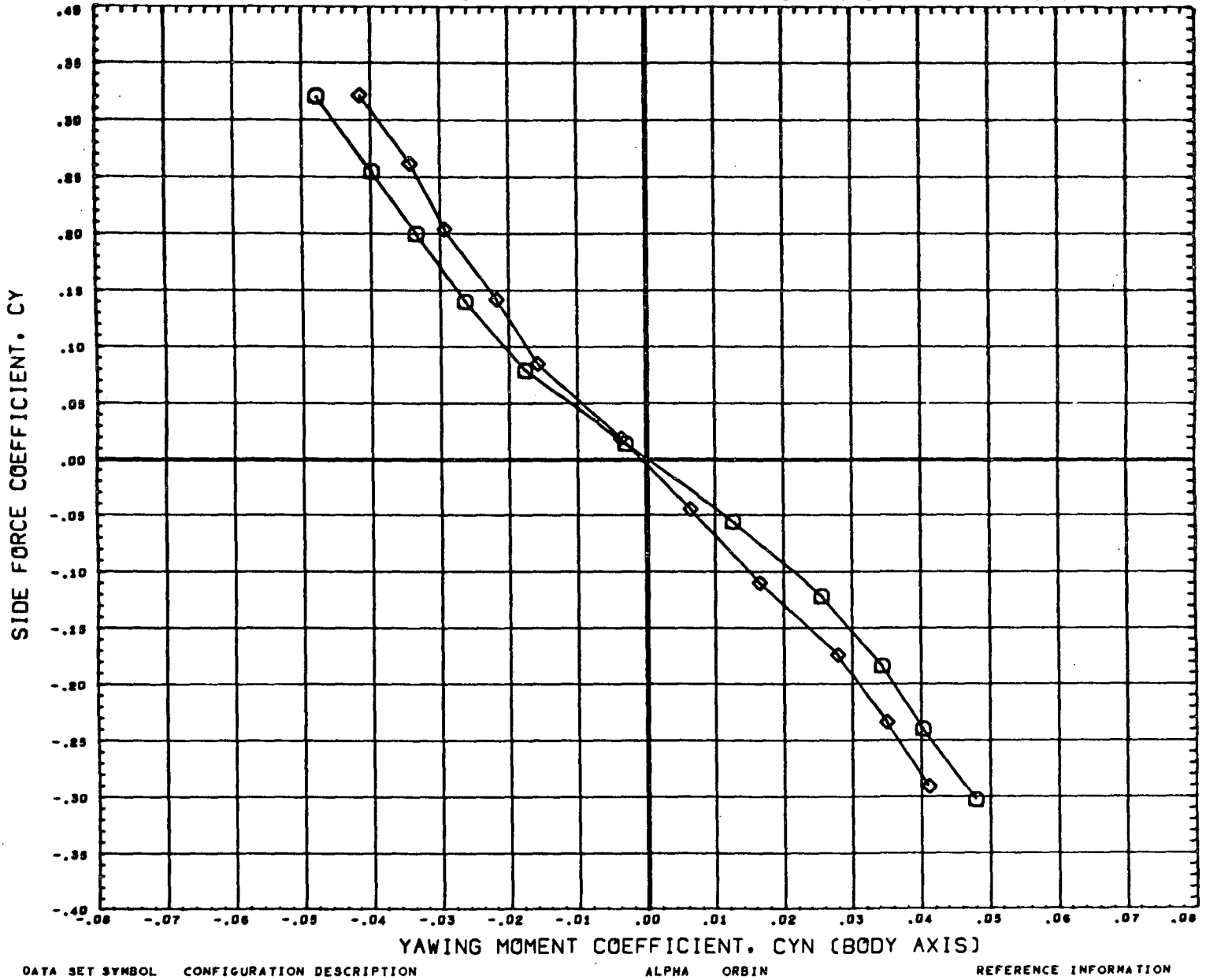
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ORBIN
(T66009)	○	MSFC TWT 538 SHUTTLE LAUNCH T101S1R1	0.000	-1.500
(A66015)	△	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500
(A66017)	◇	MSFC TWT 538 SHUTTLE LAUNCH T201S1R1	0.000	-1.500
(A66019)	□	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500

REFERENCE INFORMATION		
SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .60

C.5

EFFECT OF TANK AND SRM NOSE SHAPE ON LATERAL DIRECTIONAL CHARACTERISTICS



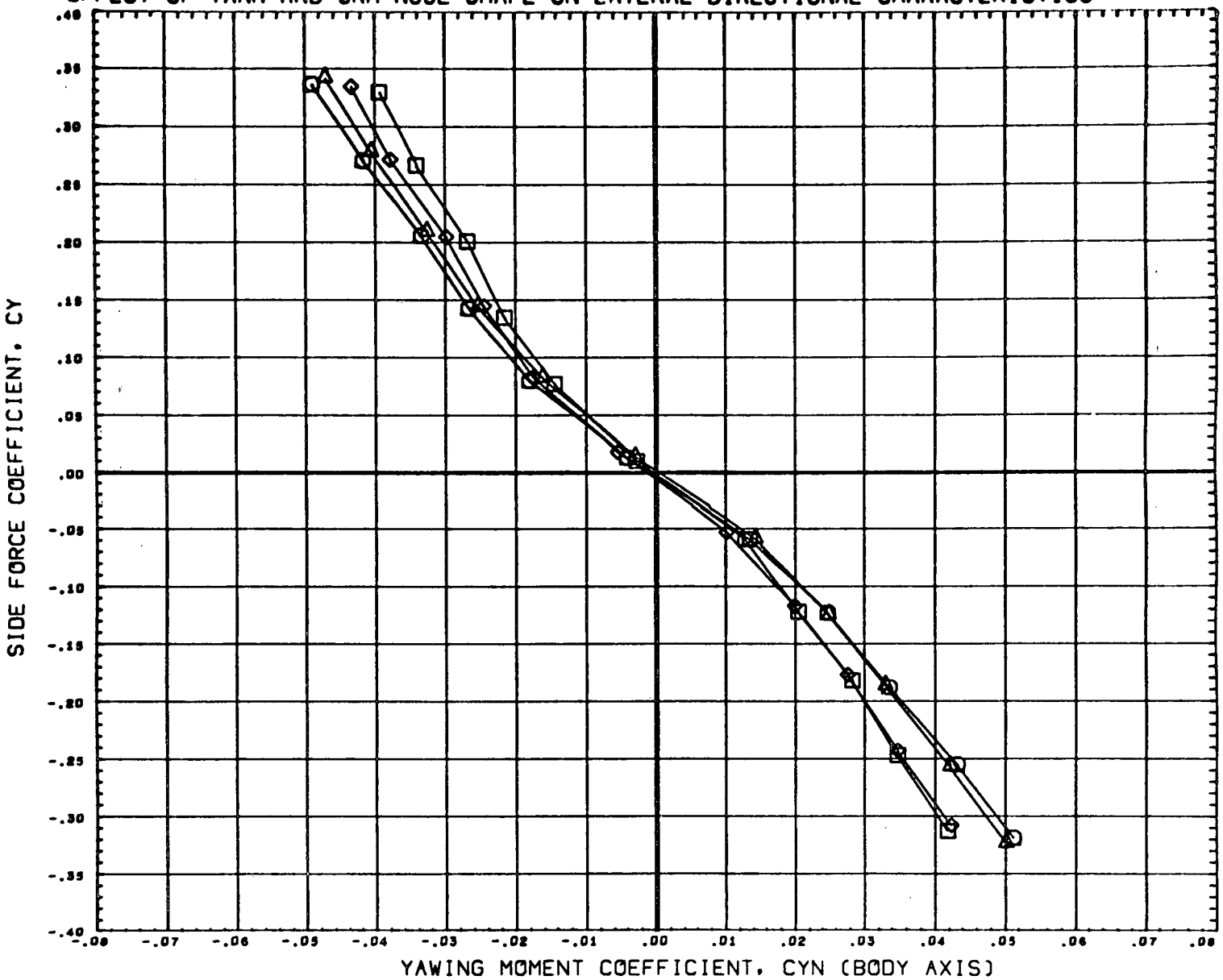
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ORBIN
(T6G009)	○	MSFC TWT 538 SHUTTLE LAUNCH T101S1R1	0.000	-1.500
(A66015)	△	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500
(A66017)	◇	MSFC TWT 538 SHUTTLE LAUNCH T201S1R1	0.000	-1.500
(A66019)	□	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1400	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .80

EFFECT OF TANK AND SRM NOSE SHAPE ON LATERAL DIRECTIONAL CHARACTERISTICS

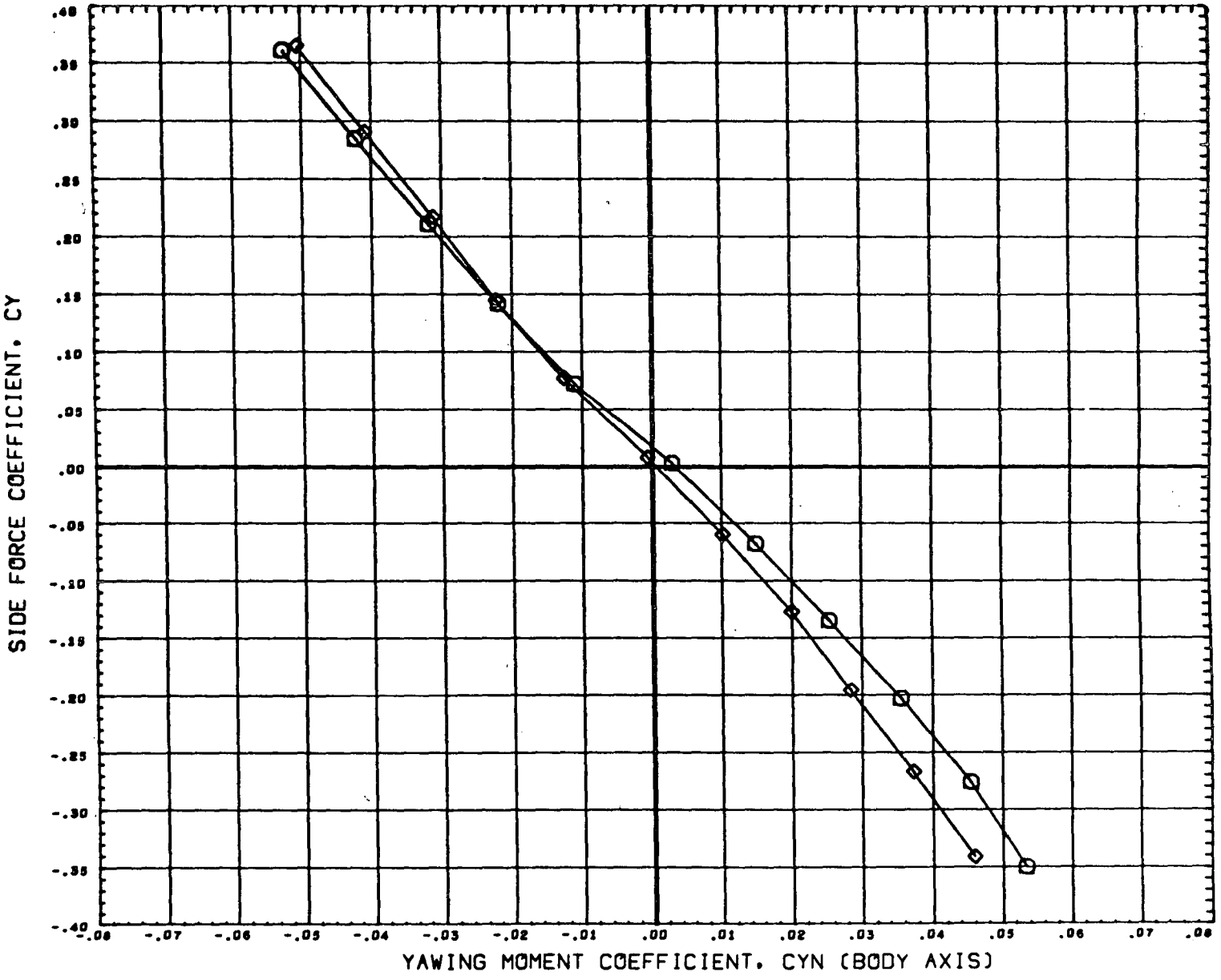


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(A66015)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S2R1	0.000	-1.500
(A66017)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T201S1R1	0.000	-1.500
(A66019)	□	MSFC TWT 538	SHUTTLE LAUNCH	T201S2R1	0.000	-1.500

REFERENCE INFORMATION		
SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .90

EFFECT OF TANK AND SRM NOSE SHAPE ON LATERAL DIRECTIONAL CHARACTERISTICS



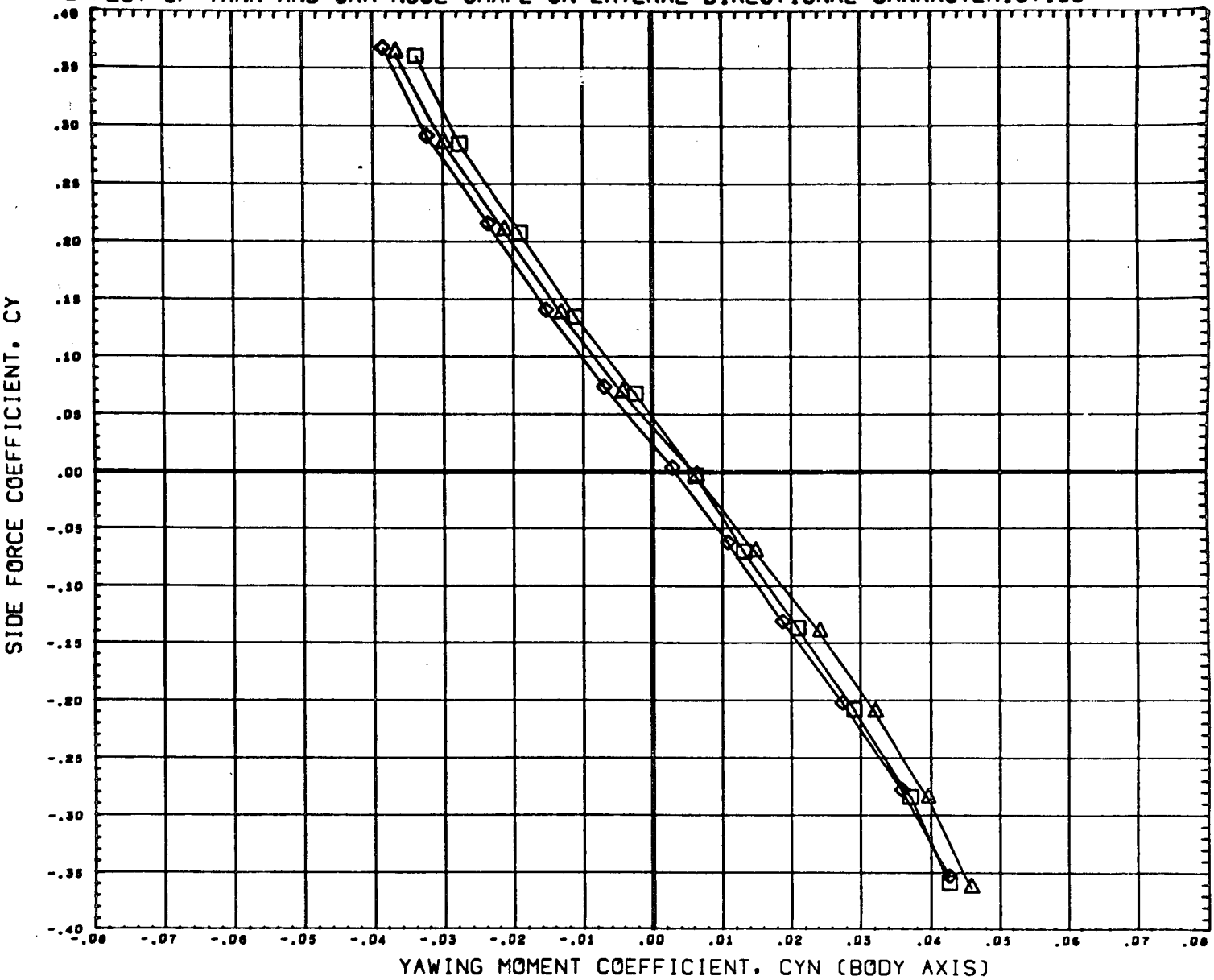
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ORBIN
(T66009)	○	MSFC TWT 538 SHUTTLE LAUNCH T101S1R1	0.000	-1.500
(A66015)	△	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500
(A66017)	◇	MSFC TWT 538 SHUTTLE LAUNCH T201S1R1	0.000	-1.500
(A66019)	□	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.10

EFFECT OF TANK AND SRM NOSE SHAPE ON LATERAL DIRECTIONAL CHARACTERISTICS



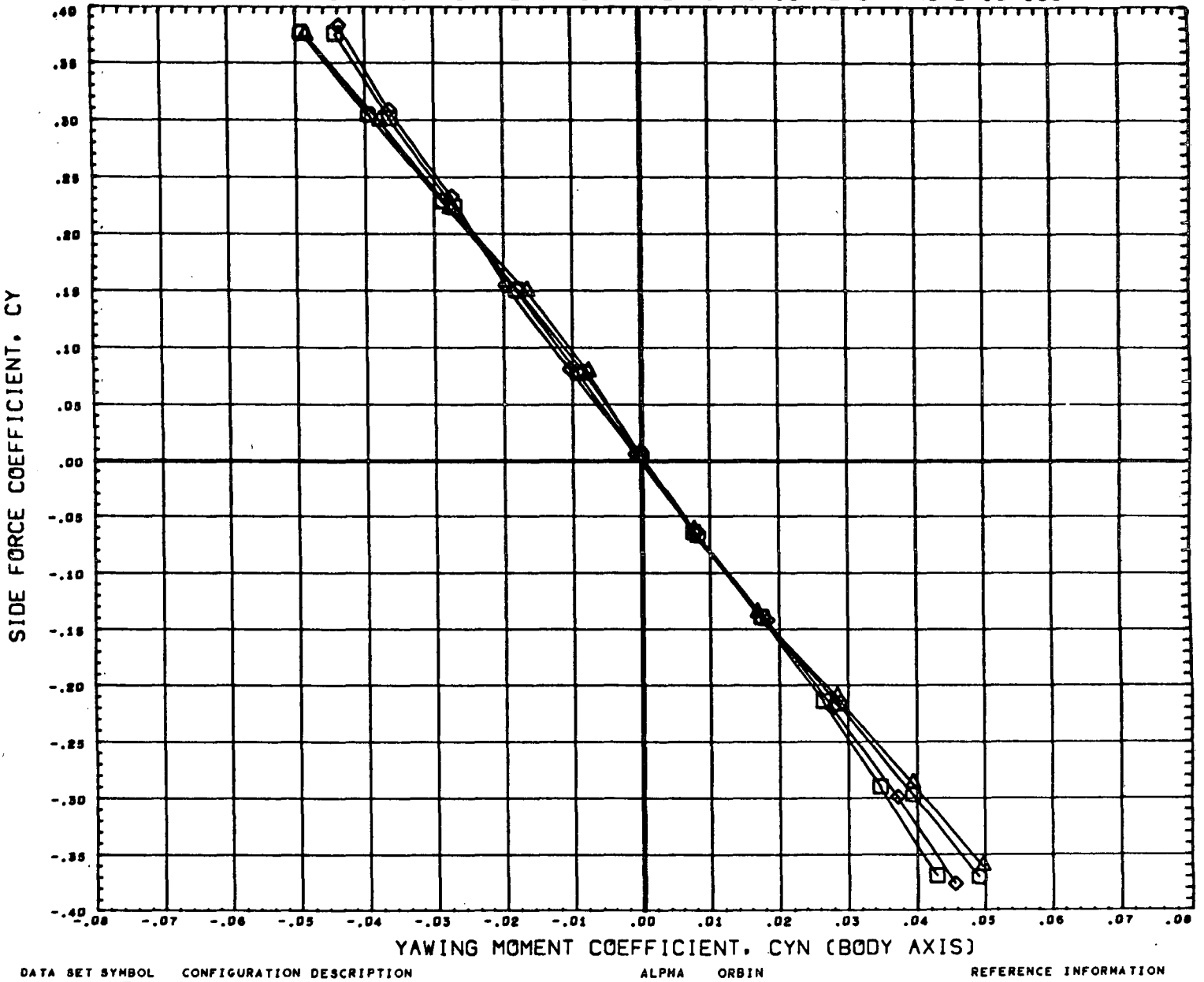
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	DATA NOT AVAILABLE FOR ALL CONDITIONS			0.000	-1.500
(A66015)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S2R1	0.000	-1.500
(A66017)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T201S1R1	0.000	-1.500
(A66019)	□	MSFC TWT 538	SHUTTLE LAUNCH	T201S2R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.19

EFFECT OF TANK AND SRM NOSE SHAPE ON LATERAL DIRECTIONAL CHARACTERISTICS



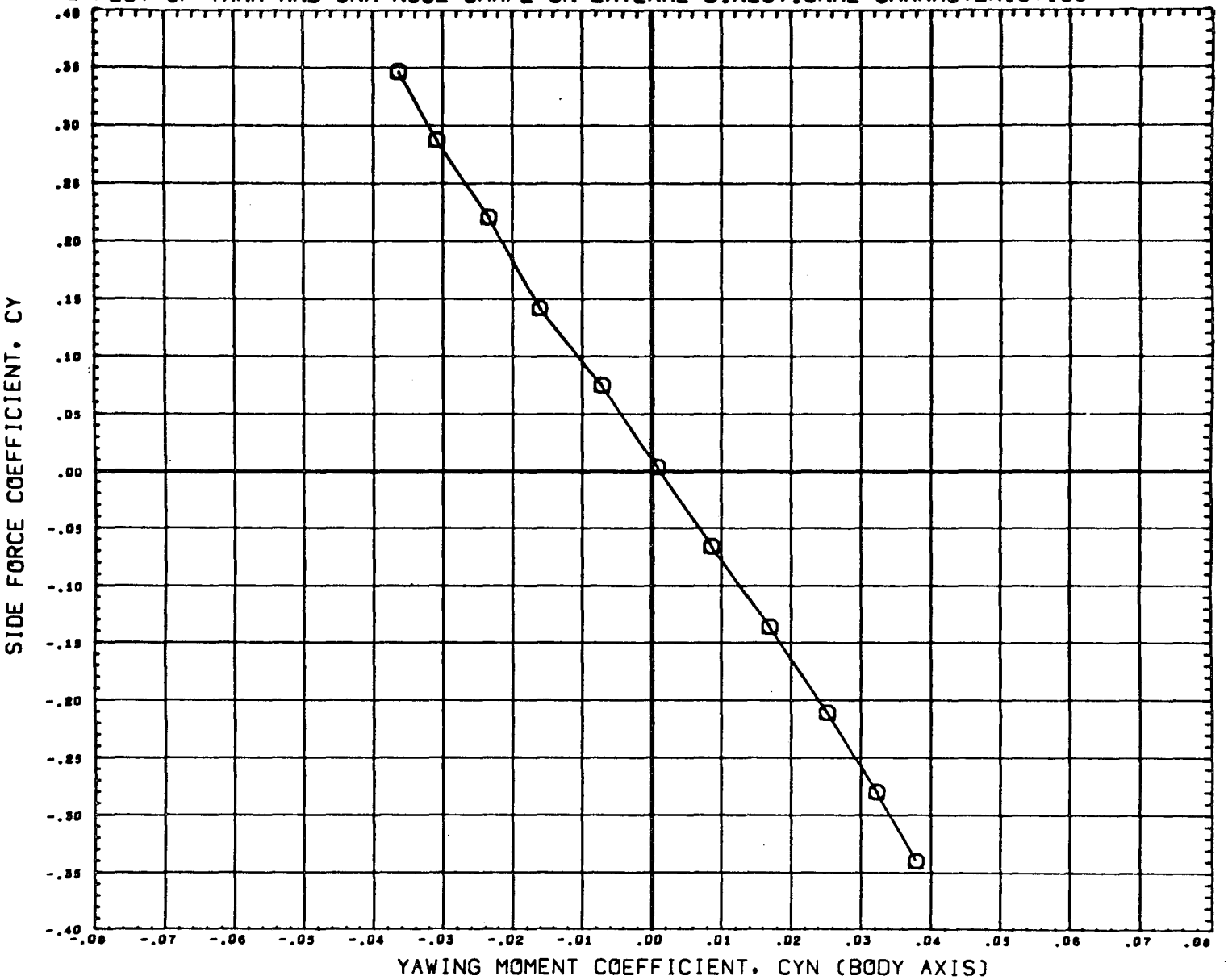
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(A66015)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S2R1	0.000	-1.500
(A66017)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T201S1R1	0.000	-1.500
(A66019)	□	MSFC TWT 538	SHUTTLE LAUNCH	T201S2R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.97

EFFECT OF TANK AND SRM NOSE SHAPE ON LATERAL DIRECTIONAL CHARACTERISTICS



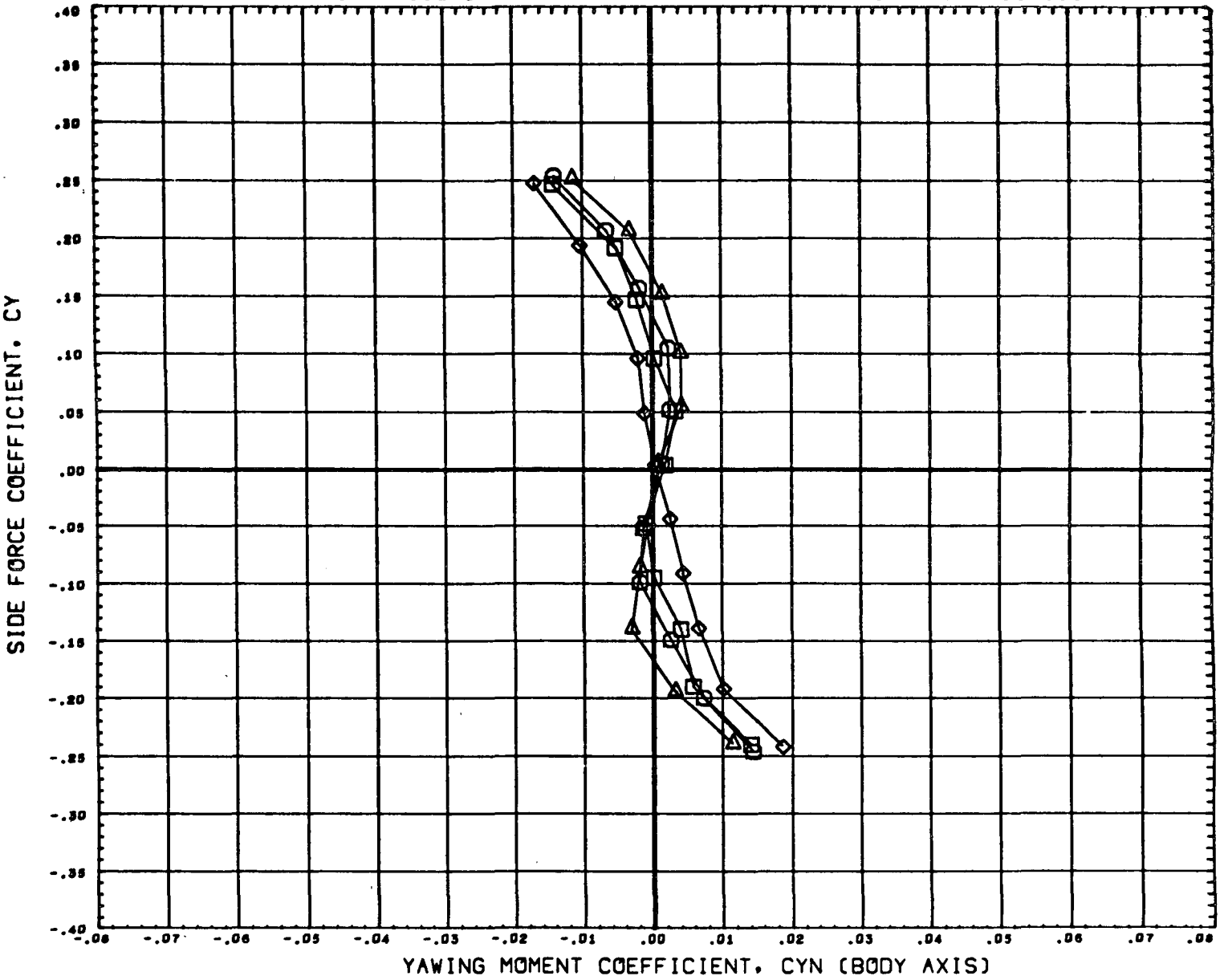
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ORBIN
(T66009)	○	MSFC TWT 538 SHUTTLE LAUNCH T101S1R1	0.000	-1.500
(A66015)	△	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500
(A66017)	◇	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500
(A66019)	□	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 2.74

EFFECT OF TANK AND SRM NOSE SHAPE ON LATERAL DIRECTIONAL CHARACTERISTICS



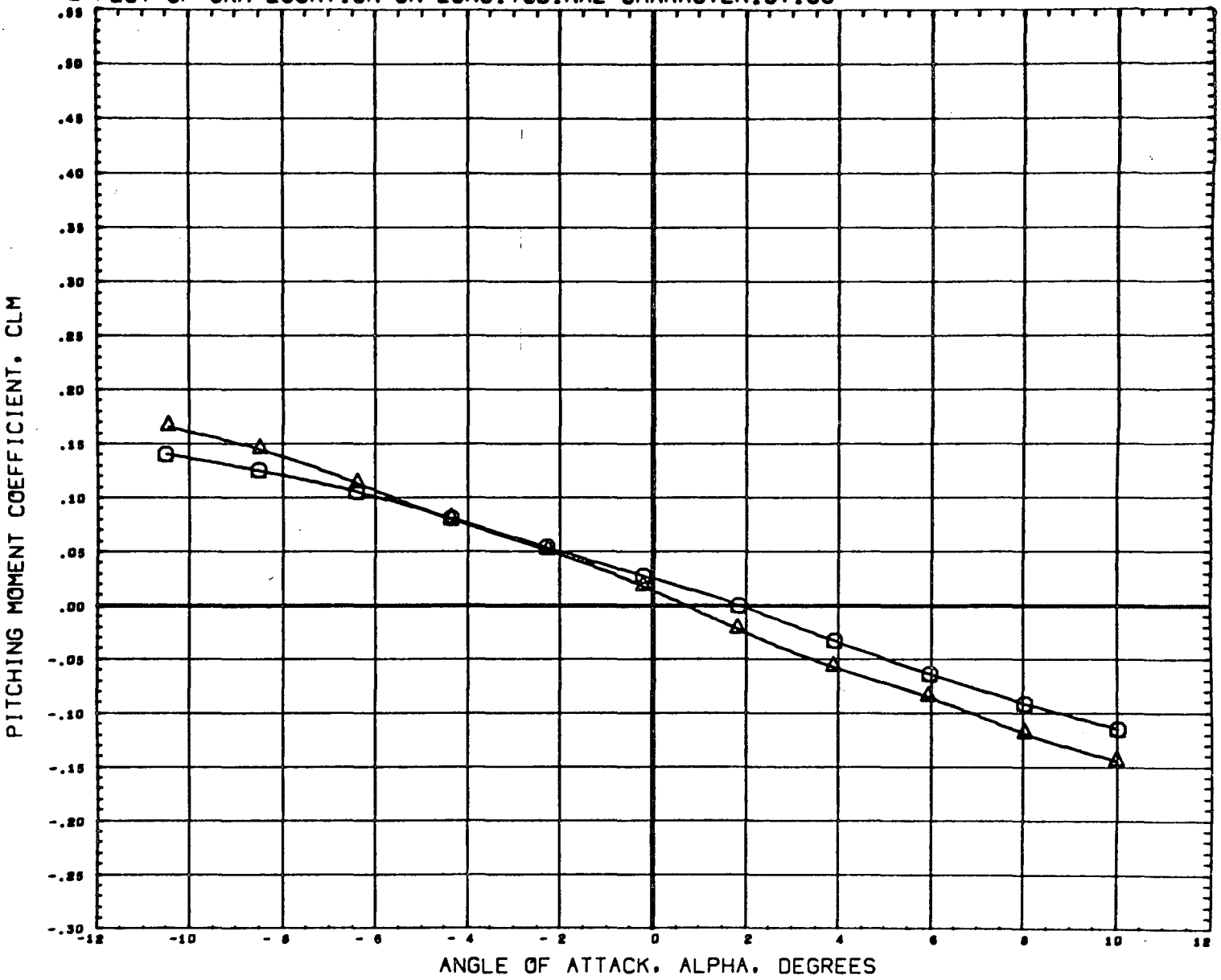
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(A66015)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S2R1	0.000	-1.500
(A66017)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T201S1R1	0.000	-1.500
(A66019)	□	MSFC TWT 538	SHUTTLE LAUNCH	T201S2R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.6900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 4.96

EFFECT OF SRM LOCATION ON LONGITUDINAL CHARACTERISTICS



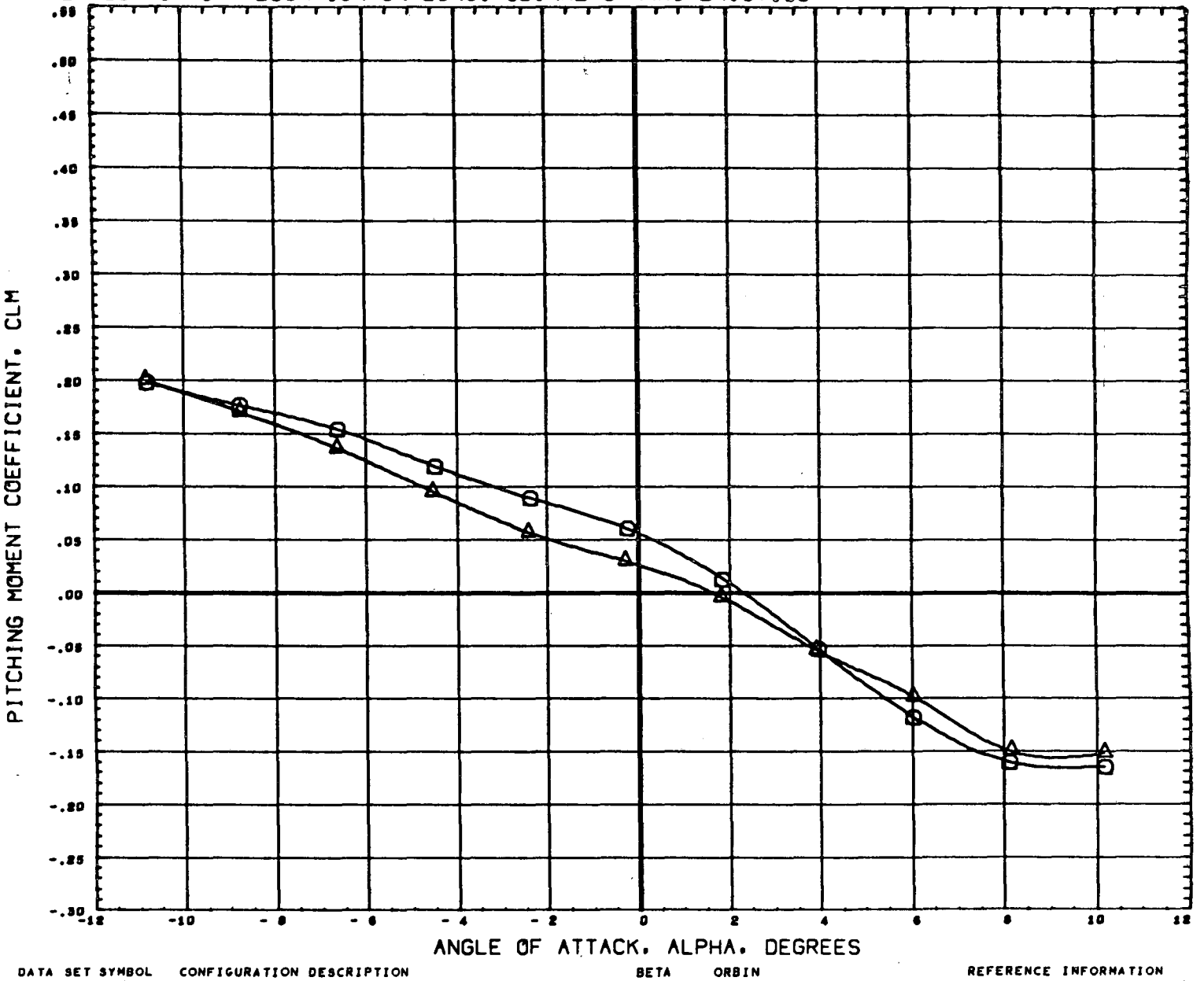
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66020)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S3R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .60

EFFECT OF SRM LOCATION ON LONGITUDINAL CHARACTERISTICS



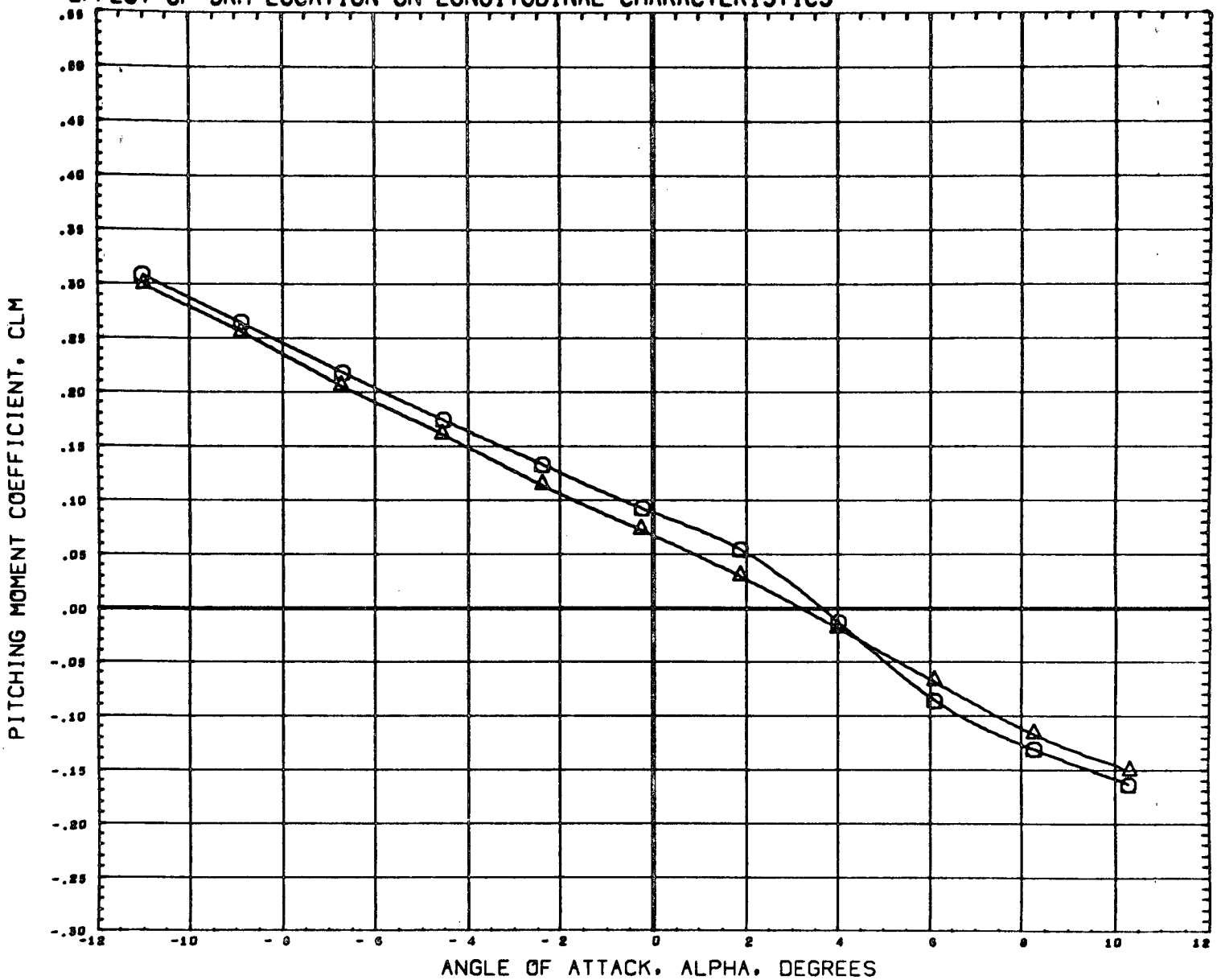
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66020)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S3R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .91

EFFECT OF SRM LOCATION ON LONGITUDINAL CHARACTERISTICS



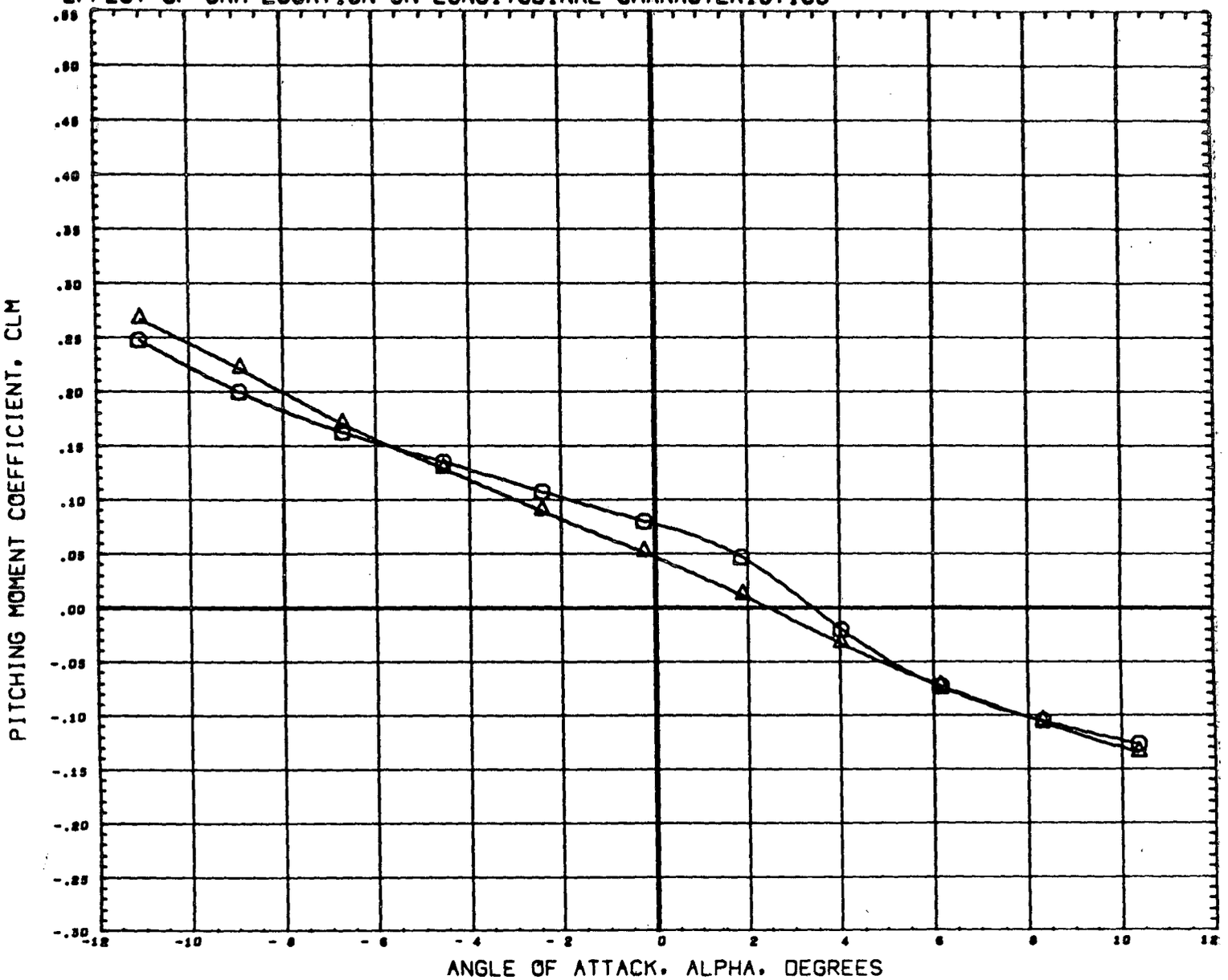
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66020)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S3R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.11

EFFECT OF SRM LOCATION ON LONGITUDINAL CHARACTERISTICS



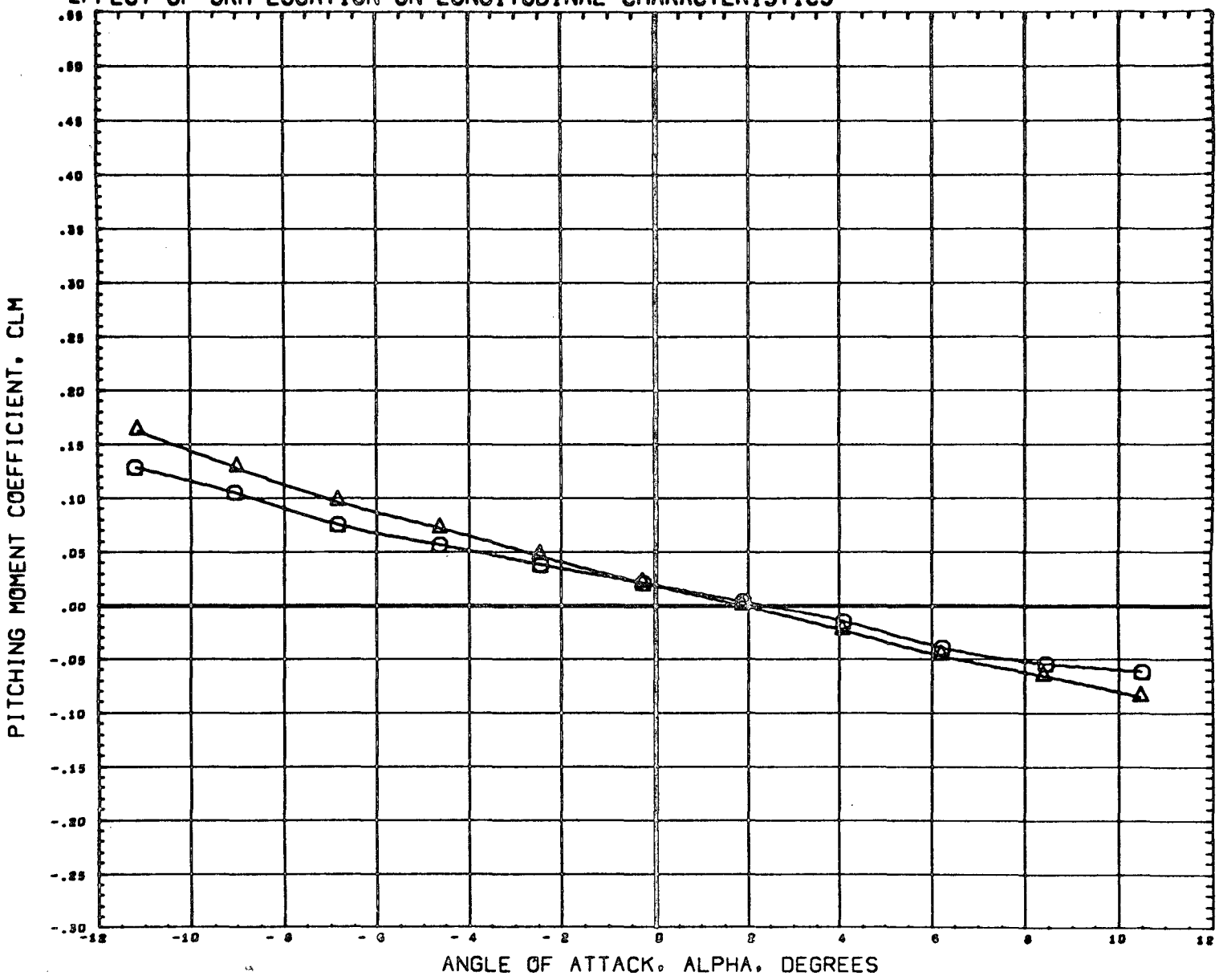
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66020)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S3R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.19

EFFECT OF SRM LOCATION ON LONGITUDINAL CHARACTERISTICS



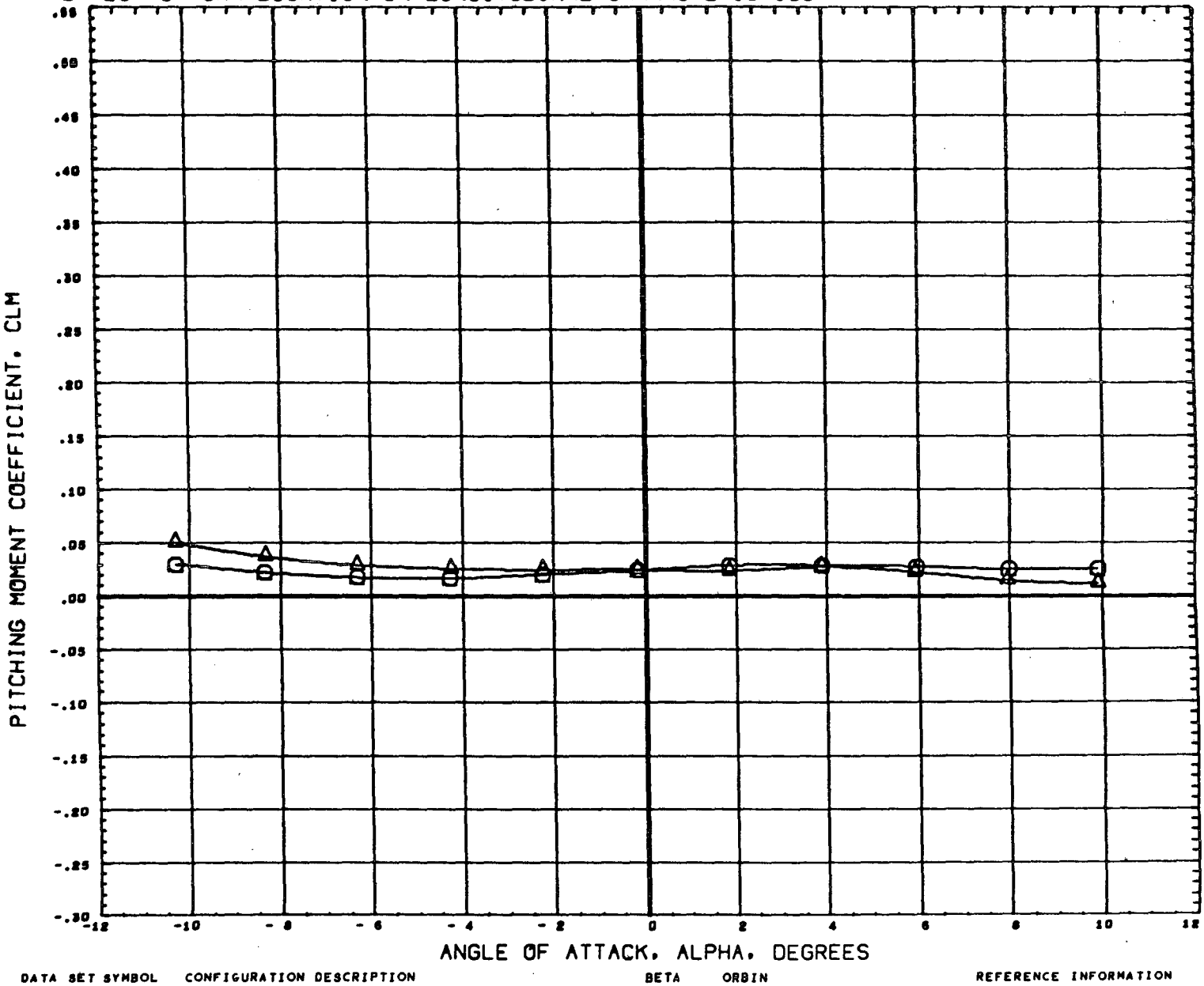
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(866008)	○	MSFC TWT 530	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(866020)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S3R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.97

EFFECT OF SRM LOCATION ON LONGITUDINAL CHARACTERISTICS



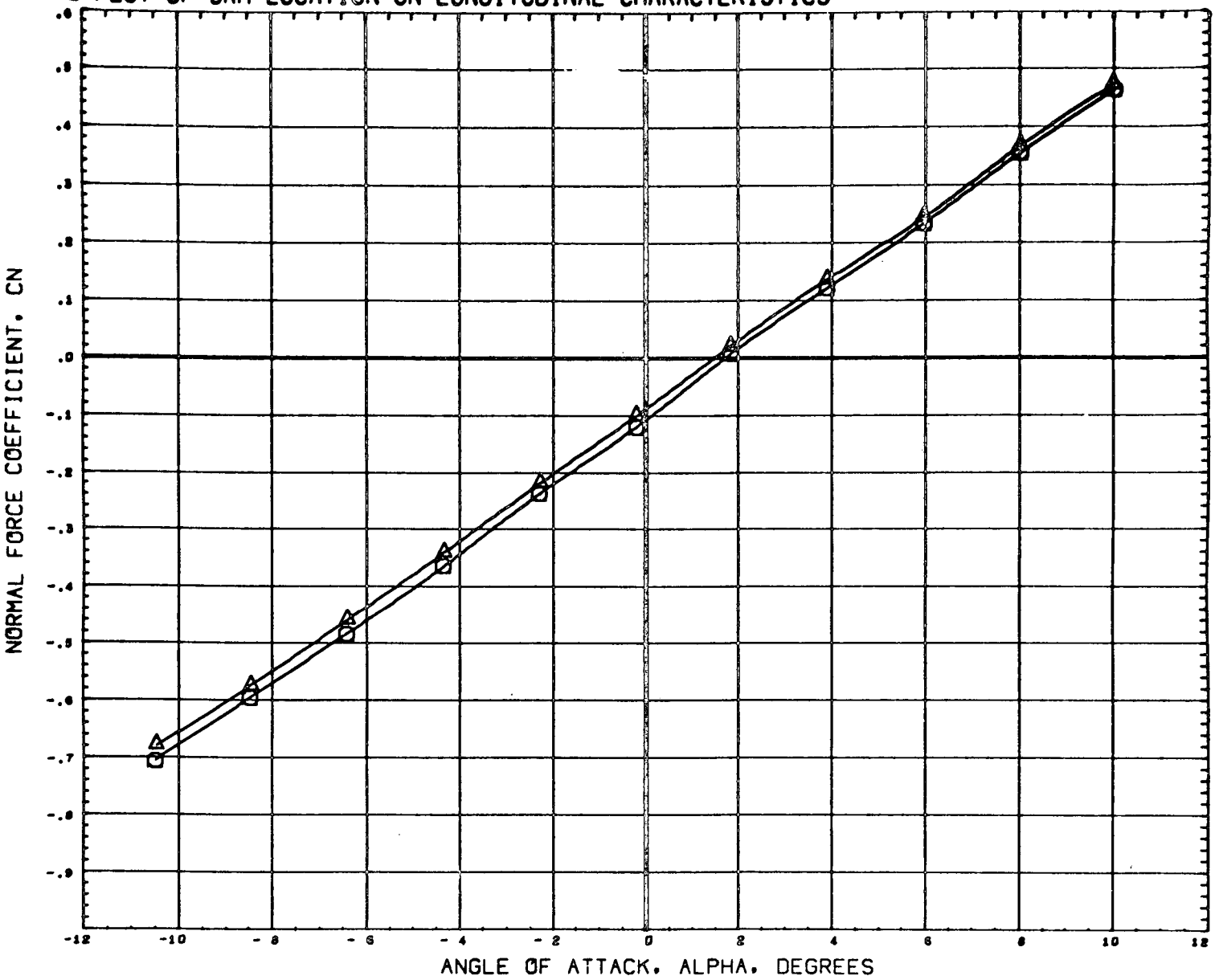
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66020)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S3R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 4.96

EFFECT OF SRM LOCATION ON LONGITUDINAL CHARACTERISTICS



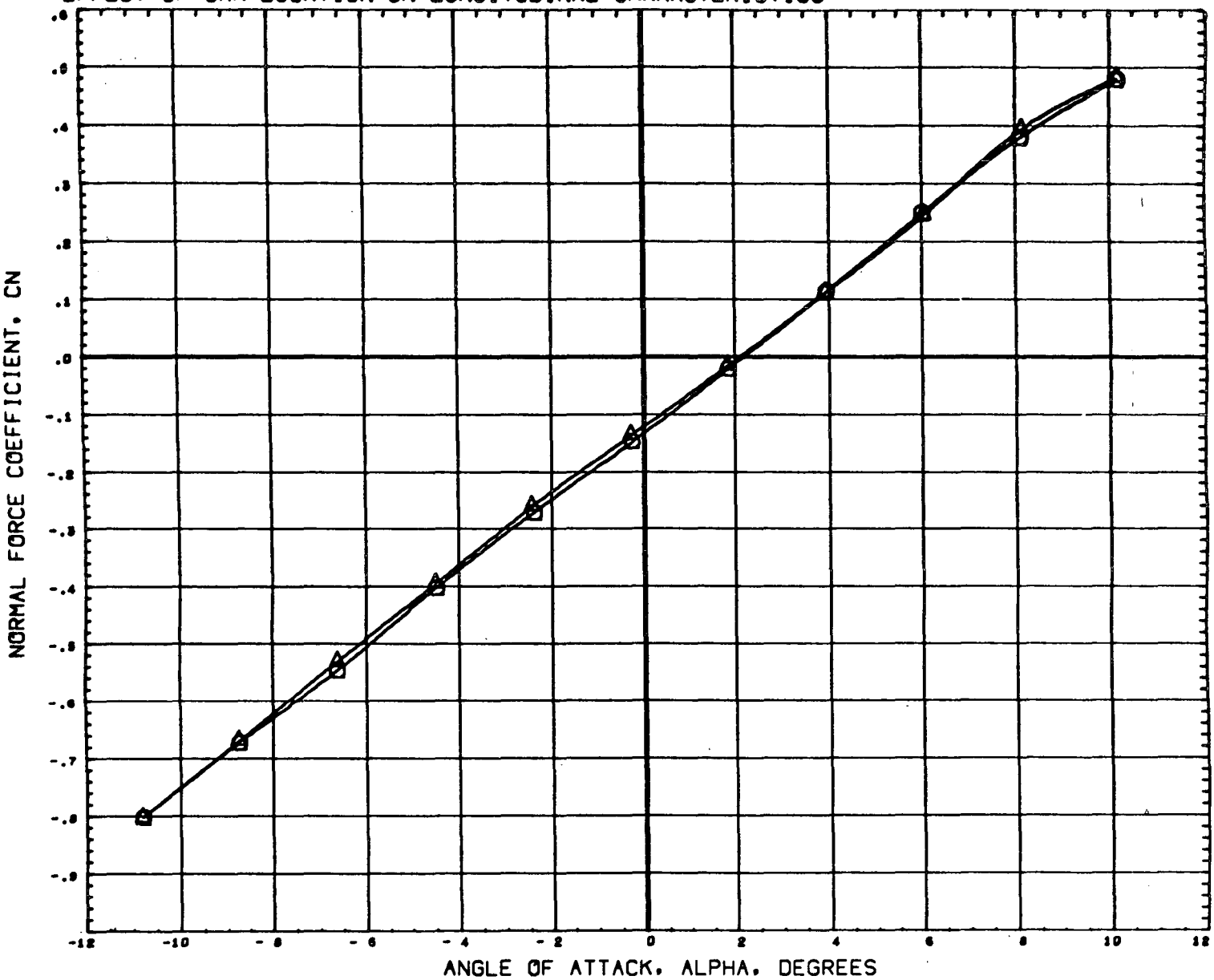
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 530	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66020)	△	MSFC TWT 530	SHUTTLE LAUNCH	T101S3R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .60

EFFECT OF SRM LOCATION ON LONGITUDINAL CHARACTERISTICS



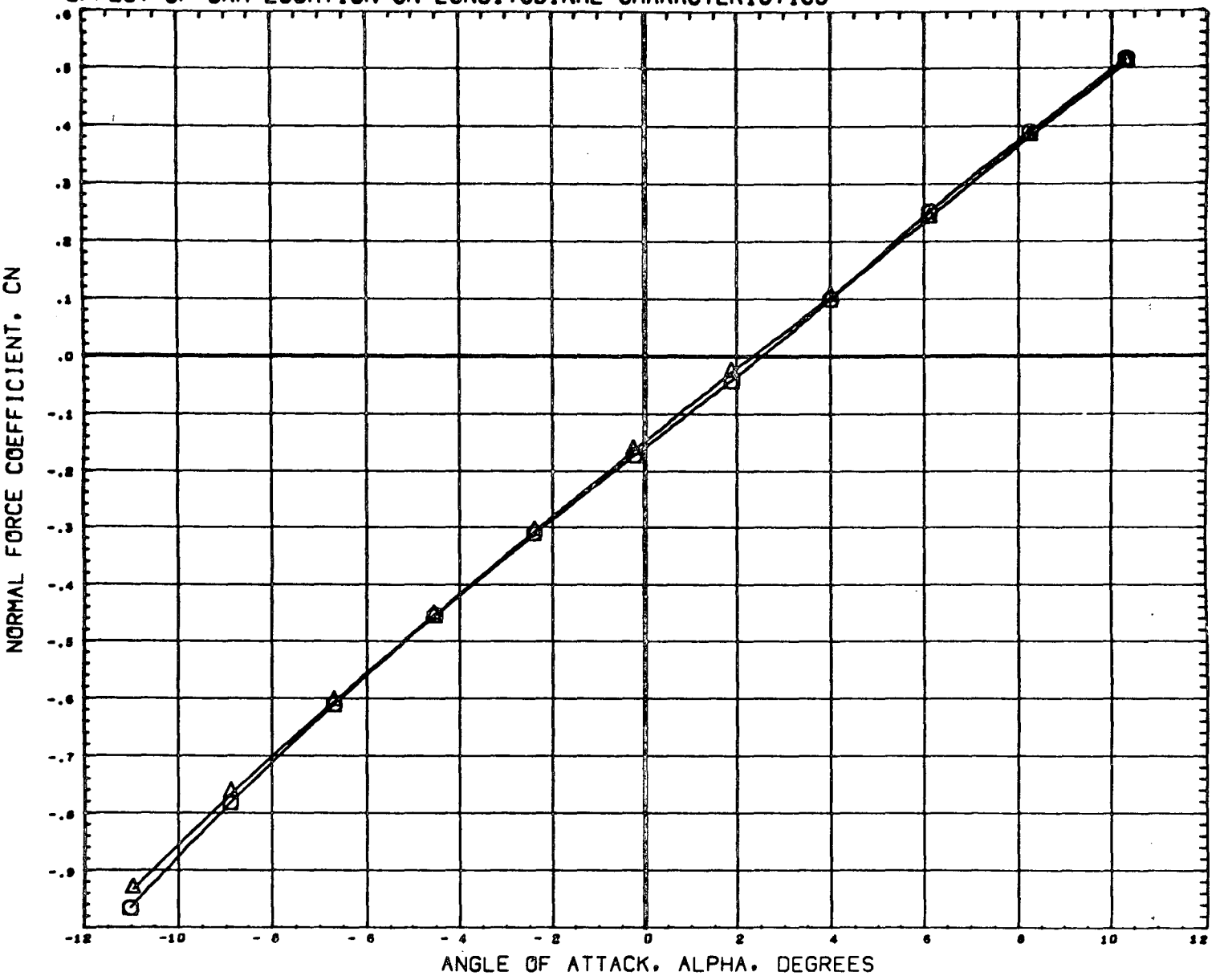
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66020)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S3R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .91

EFFECT OF SRM LOCATION ON LONGITUDINAL CHARACTERISTICS



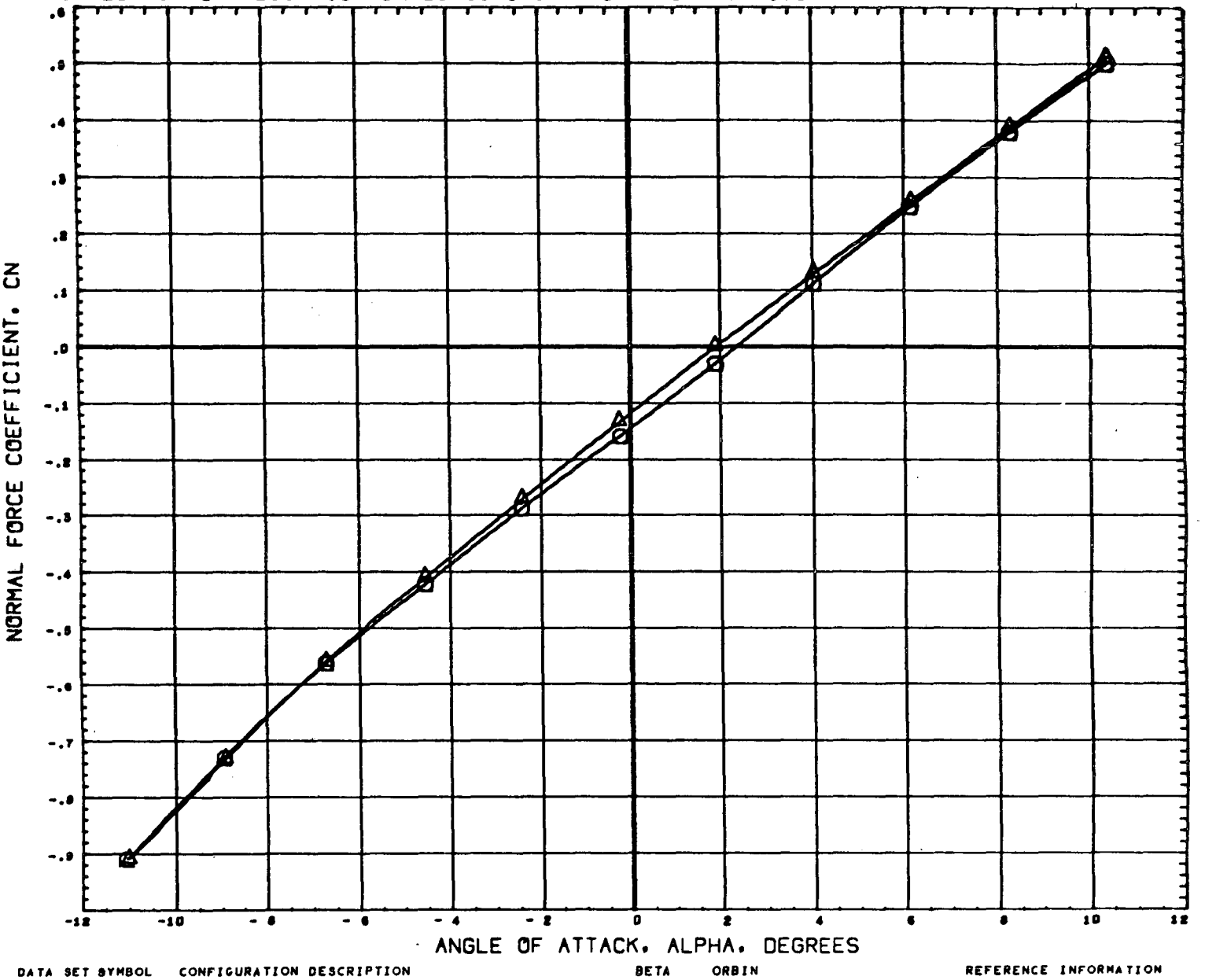
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66020)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S3R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.11

EFFECT OF SRM LOCATION ON LONGITUDINAL CHARACTERISTICS



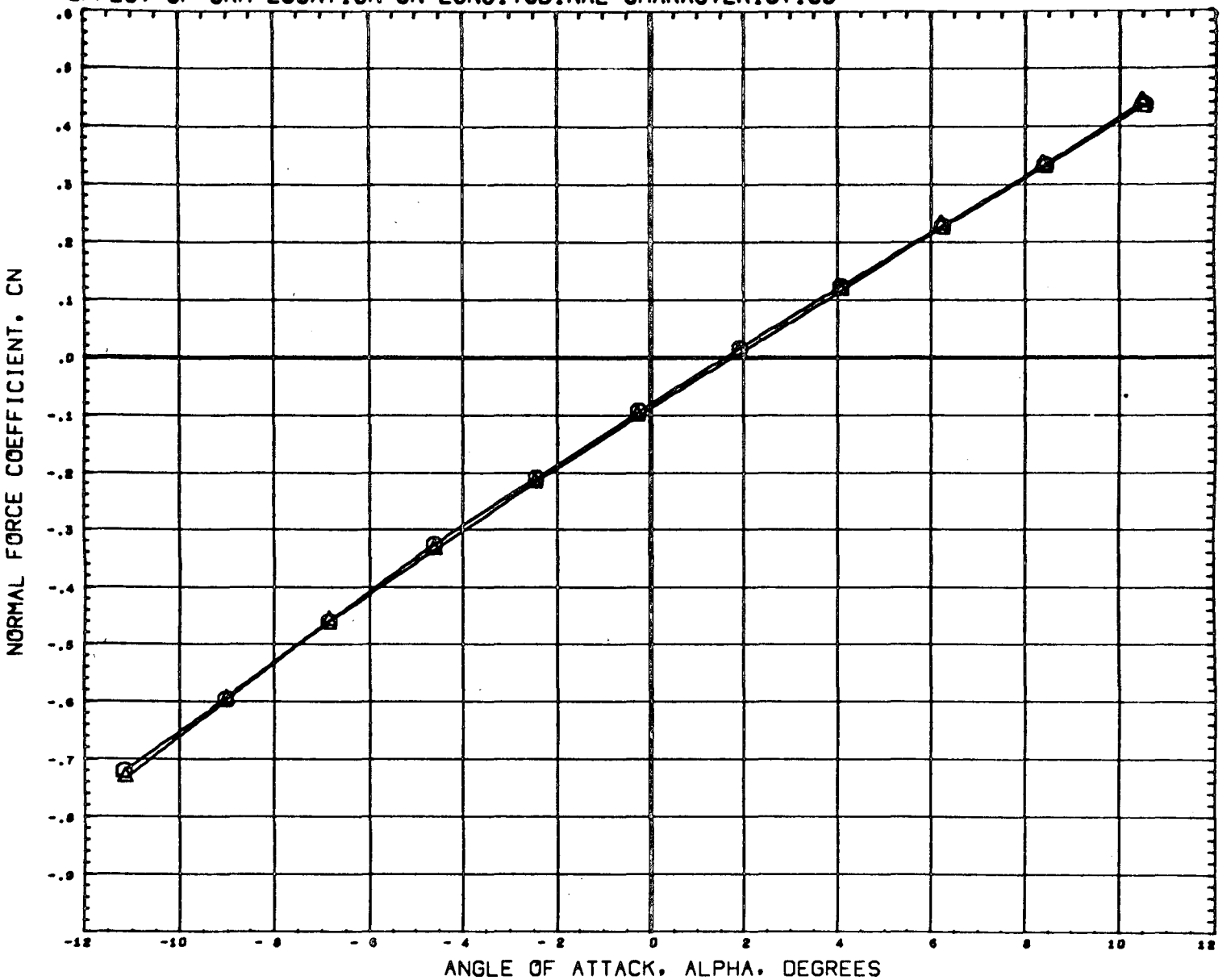
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66020)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S3R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3540	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.19

EFFECT OF SRM LOCATION ON LONGITUDINAL CHARACTERISTICS



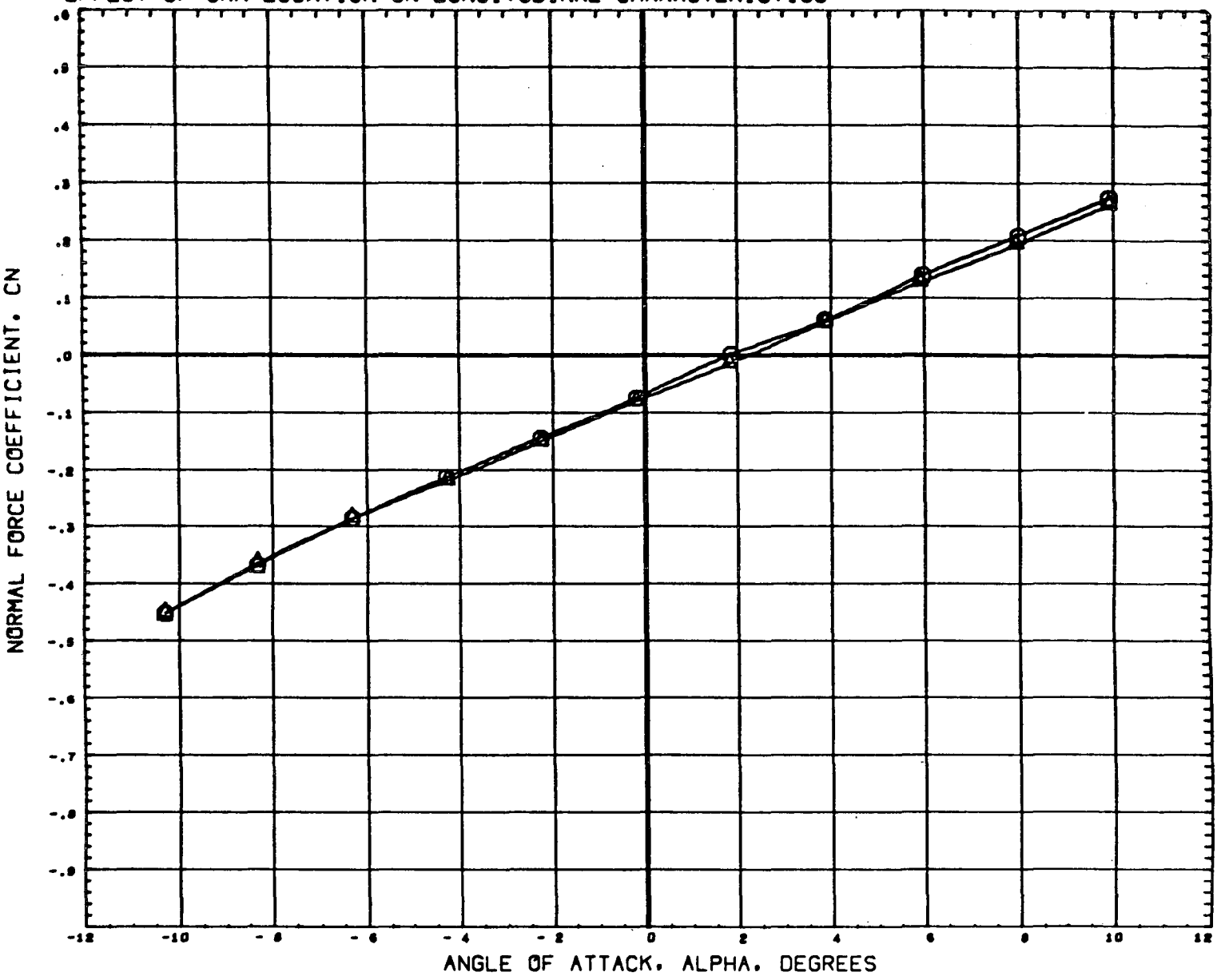
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B6600B)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B6602D)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S3R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.0900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.97

EFFECT OF SRM LOCATION ON LONGITUDINAL CHARACTERISTICS



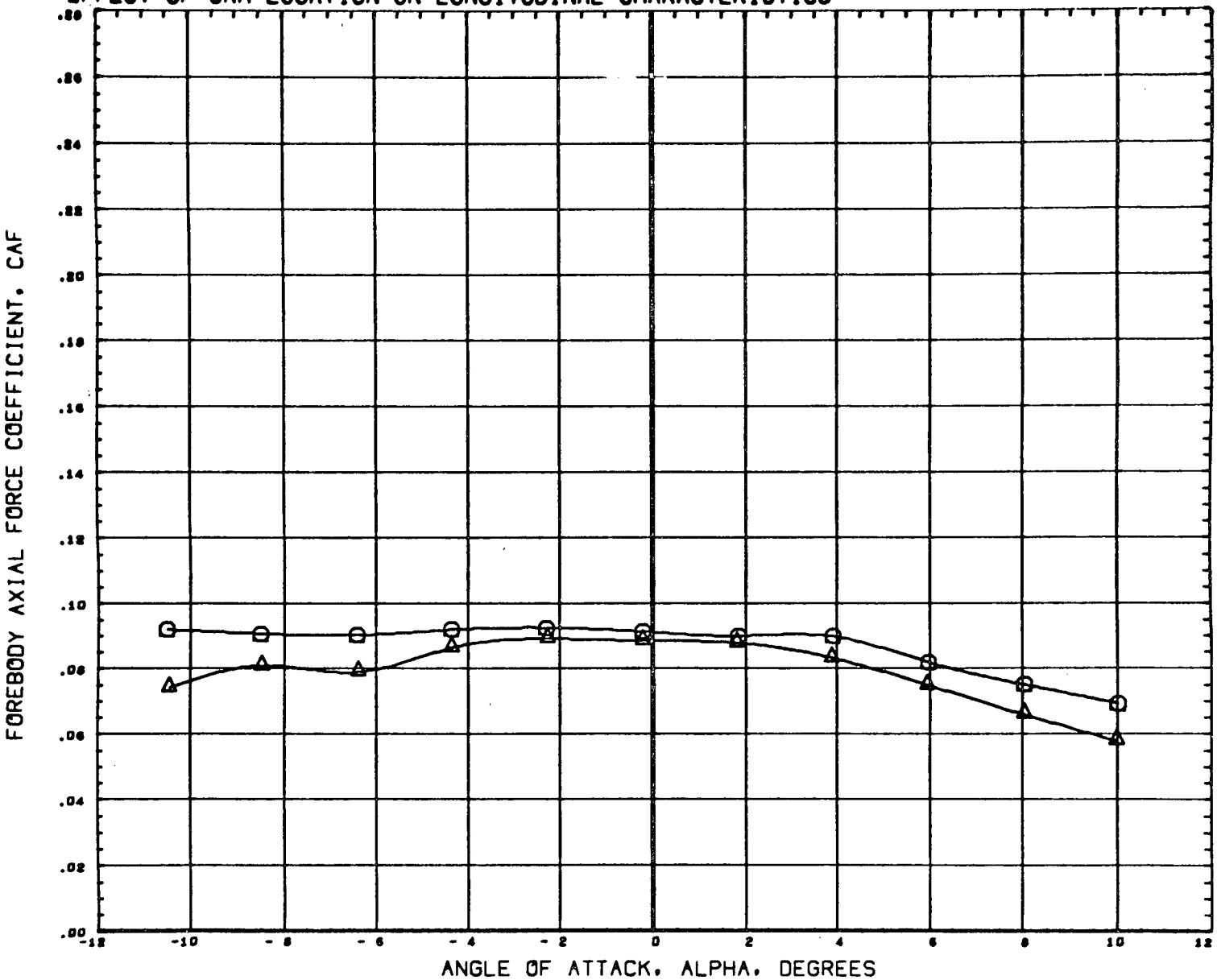
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(866006)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(866020)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S3R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 4.96

EFFECT OF SRM LOCATION ON LONGITUDINAL CHARACTERISTICS



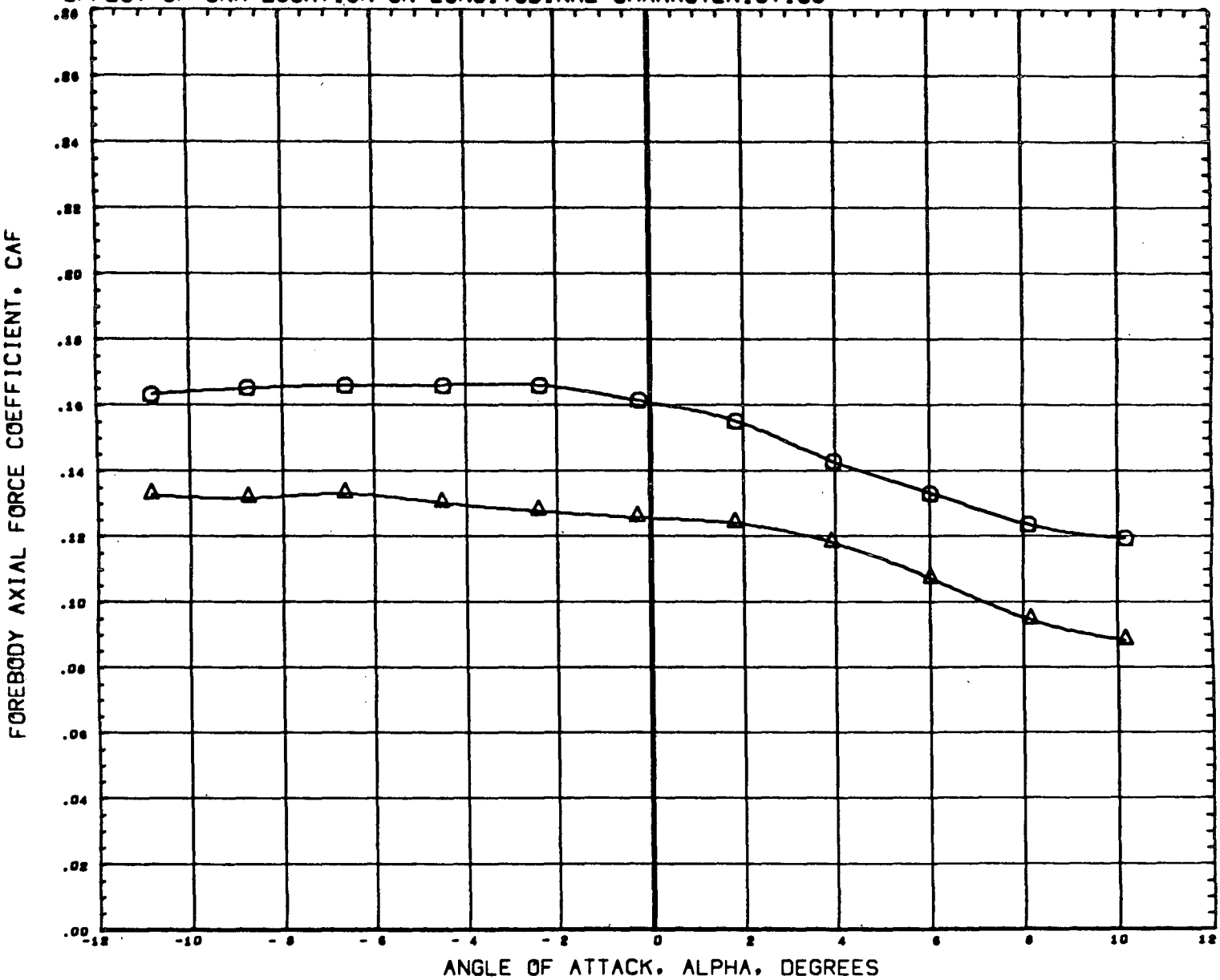
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66020)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S3R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.6900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .60

EFFECT OF SRM LOCATION ON LONGITUDINAL CHARACTERISTICS



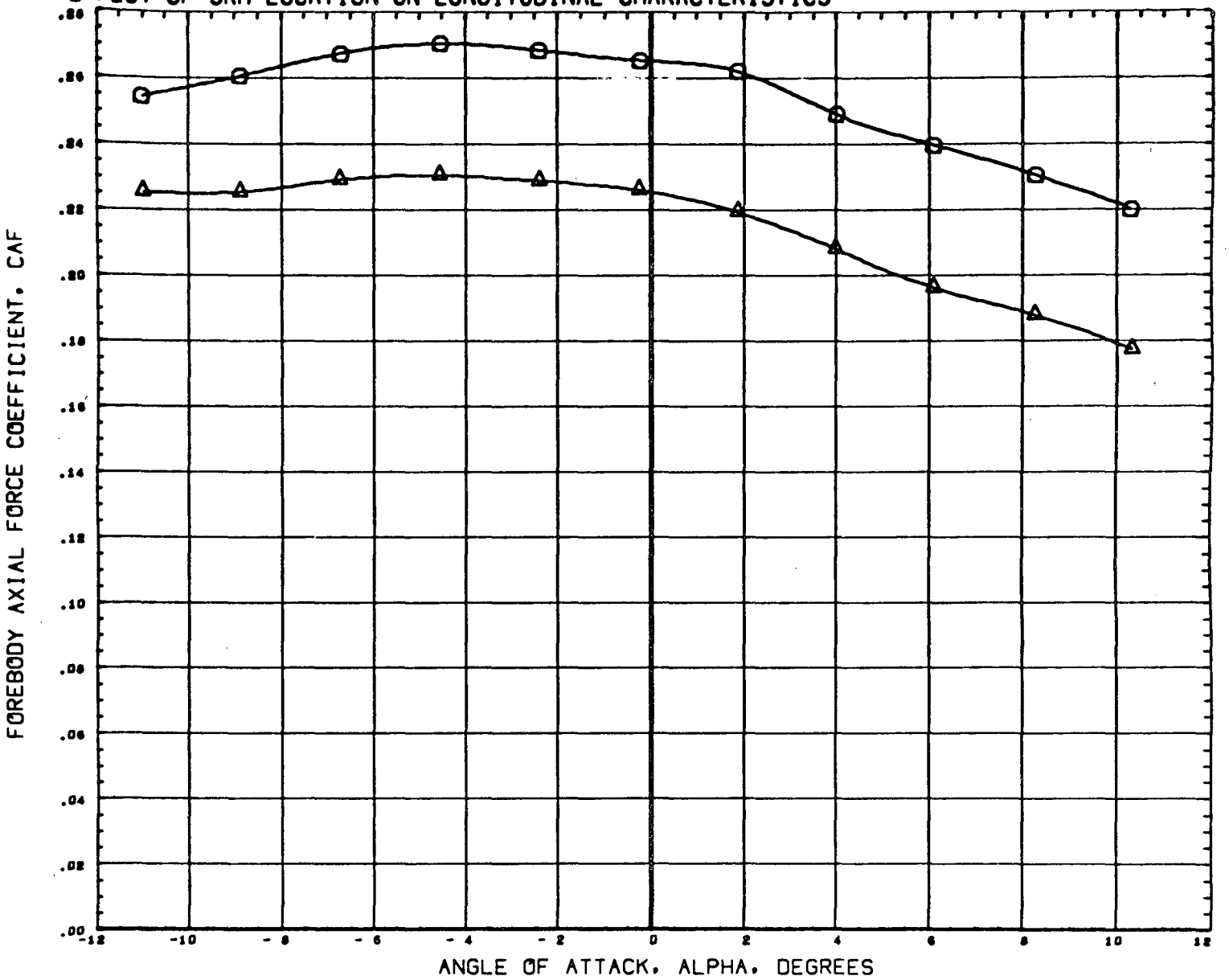
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1013IR1	0.000	-1.500
(B66020)	△	MSFC TWT 538	SHUTTLE LAUNCH	T1013JR1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1460	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .91

EFFECT OF SRM LOCATION ON LONGITUDINAL CHARACTERISTICS



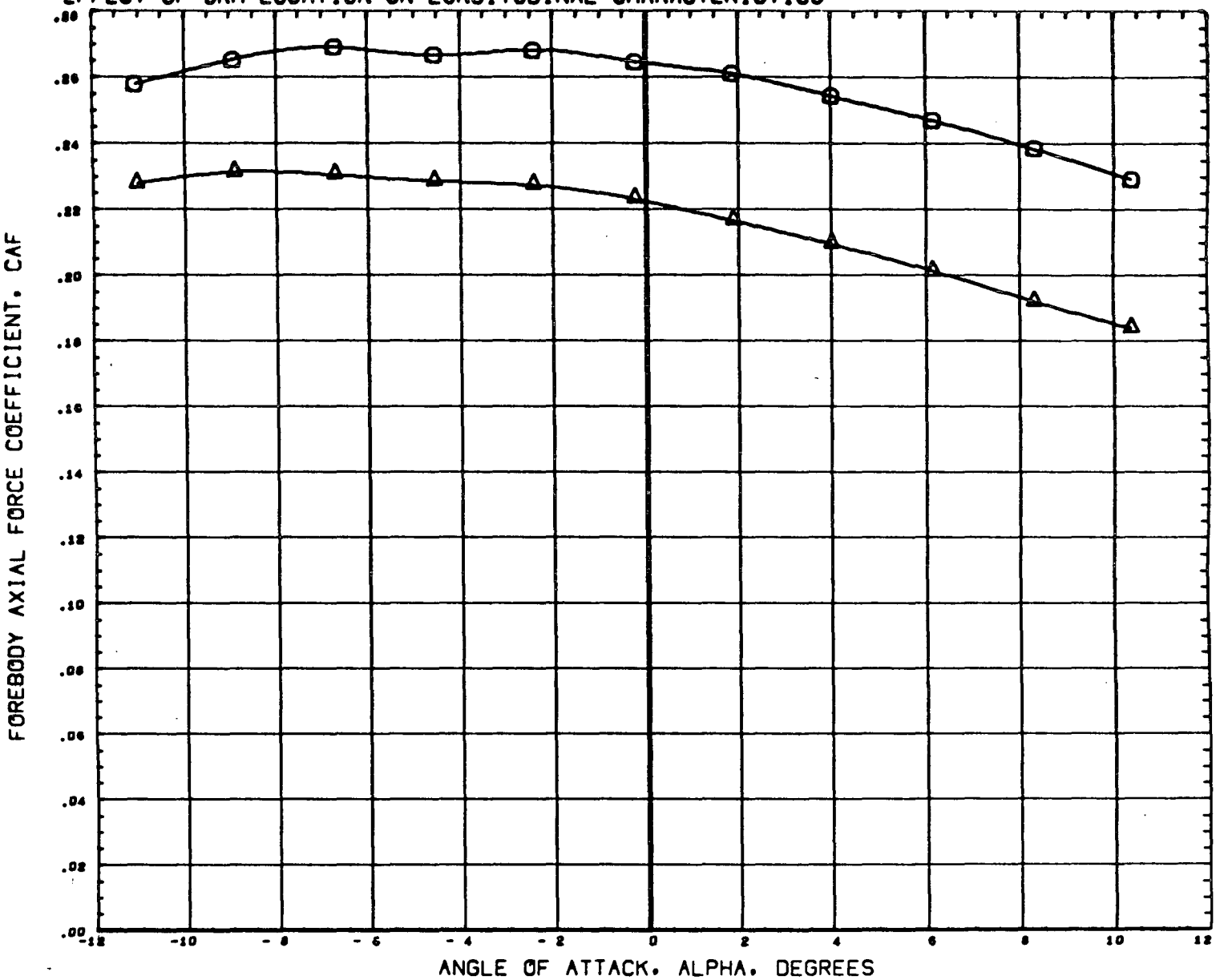
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66020)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S3R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.11

EFFECT OF SRM LOCATION ON LONGITUDINAL CHARACTERISTICS



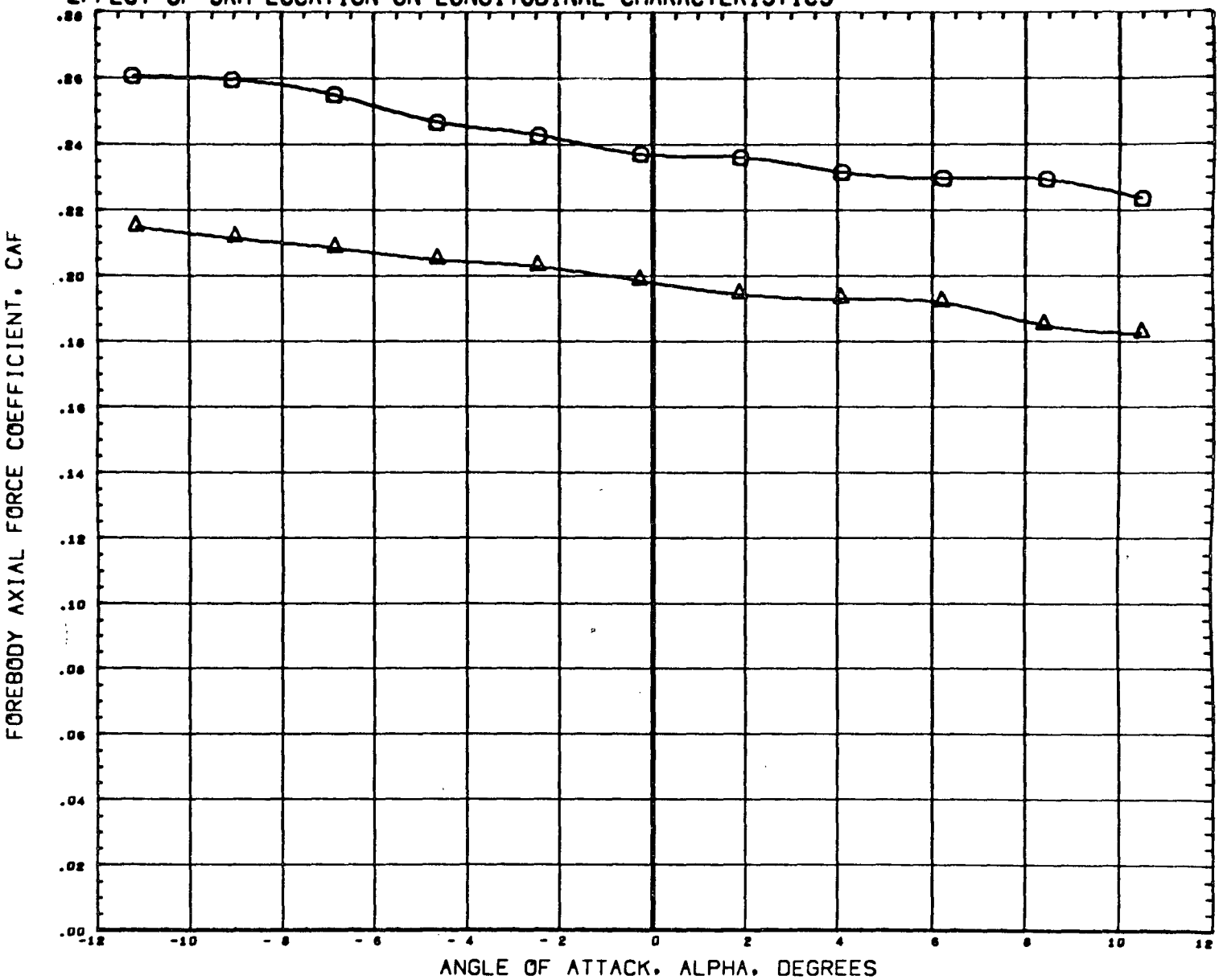
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(866008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(866020)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S3R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.19

EFFECT OF SRM LOCATION ON LONGITUDINAL CHARACTERISTICS



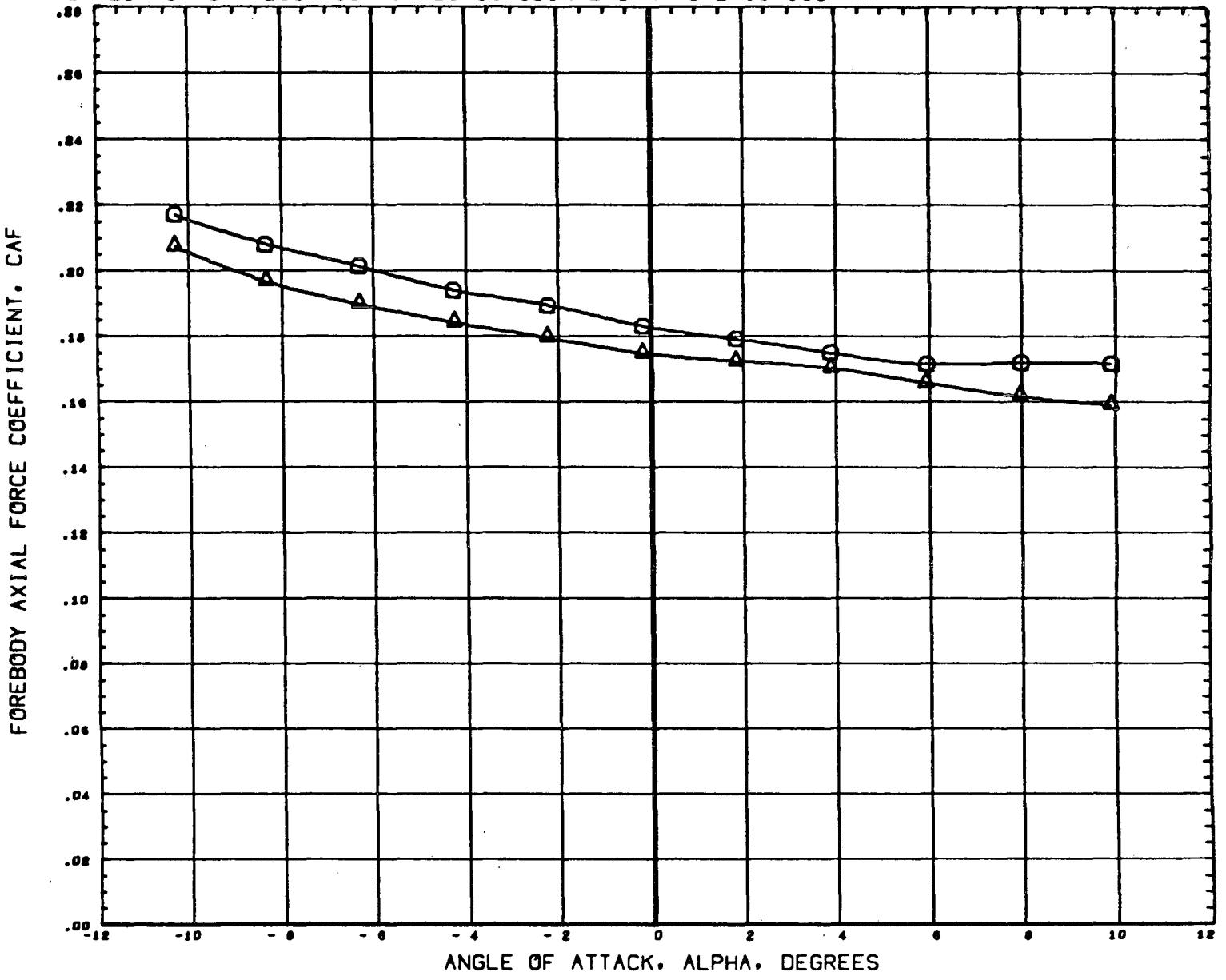
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66020)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S3R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.97

EFFECT OF SRM LOCATION ON LONGITUDINAL CHARACTERISTICS



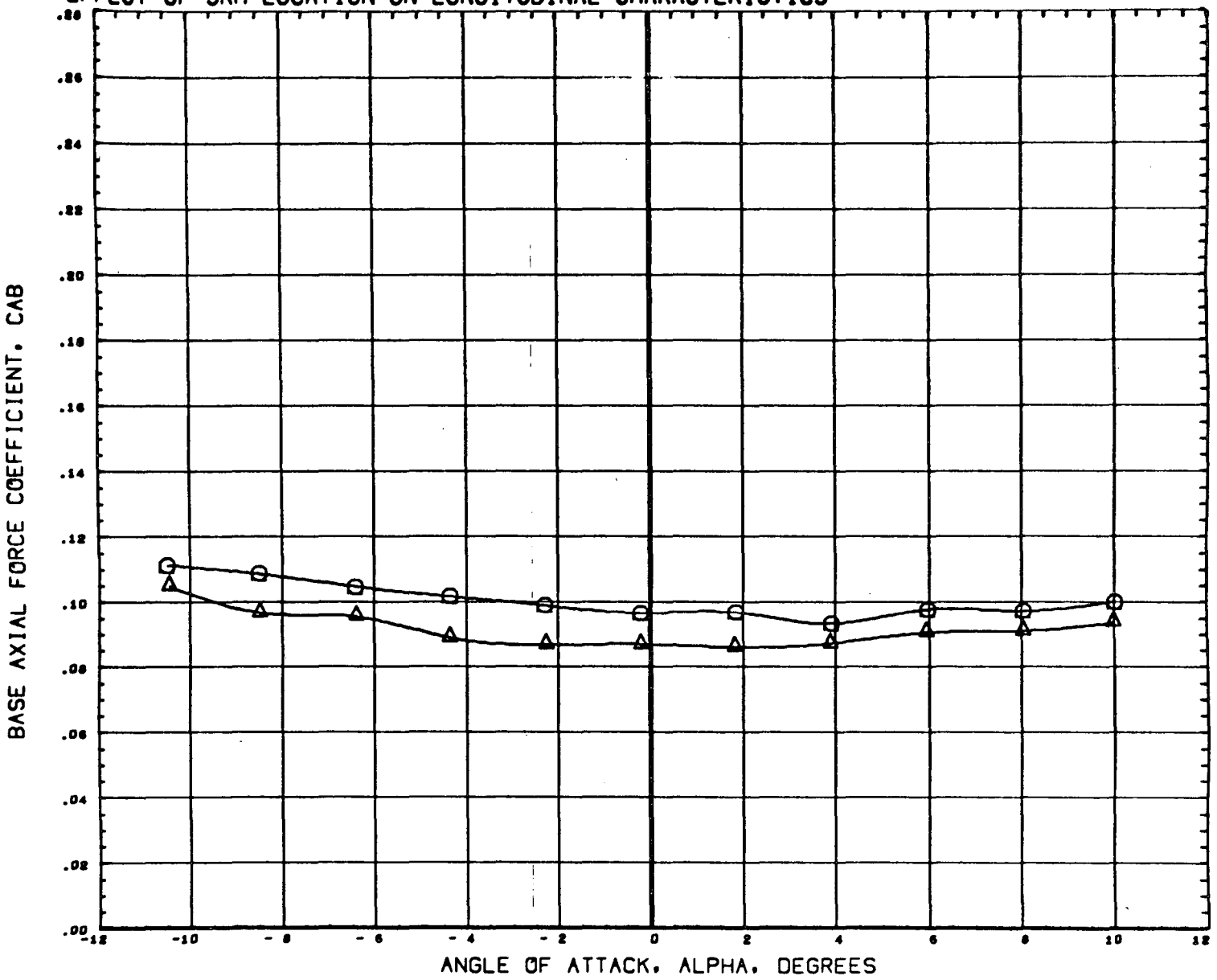
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(866008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(866020)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S3R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 4.96

EFFECT OF SRM LOCATION ON LONGITUDINAL CHARACTERISTICS



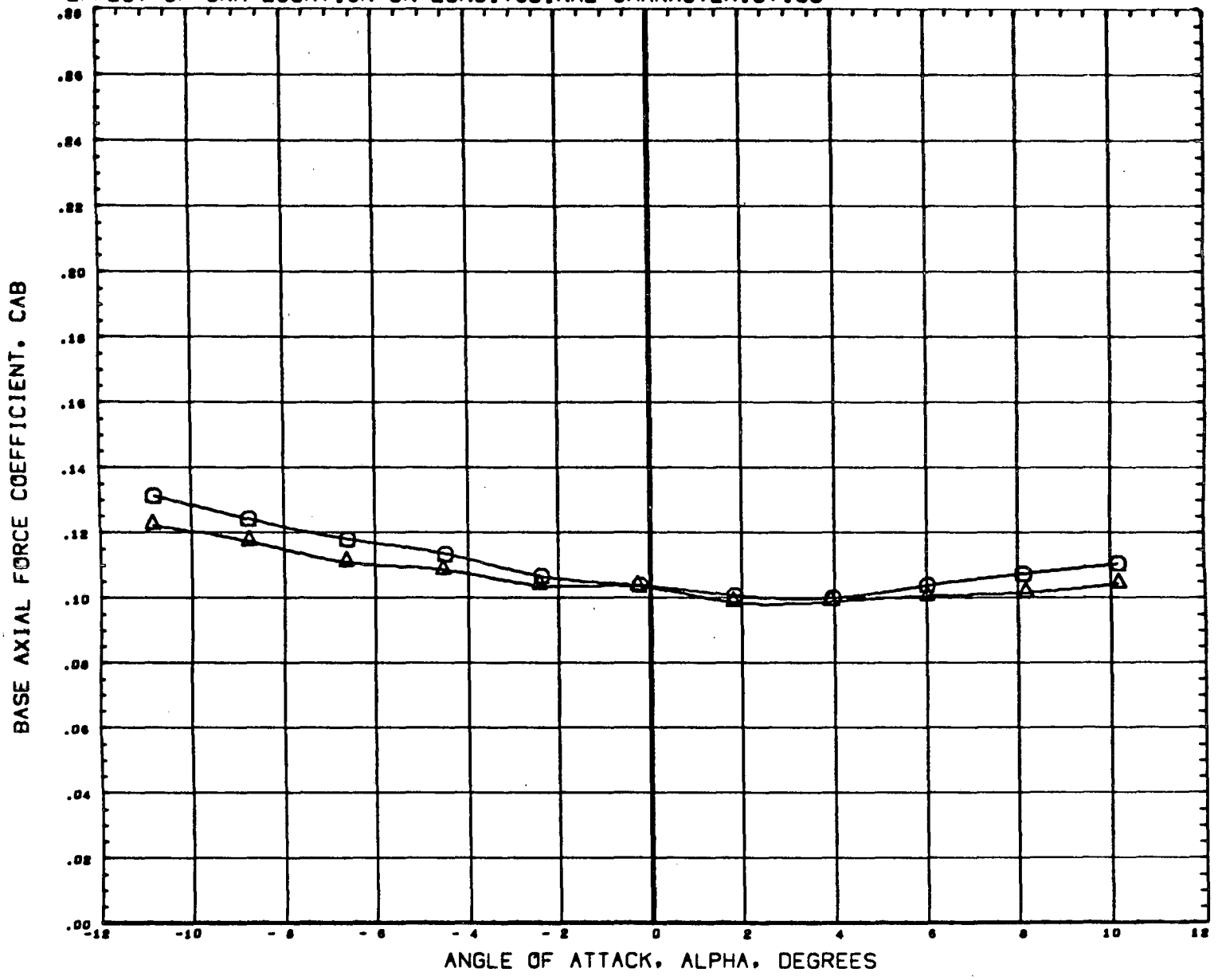
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66020)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S3R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .60

EFFECT OF SRM LOCATION ON LONGITUDINAL CHARACTERISTICS



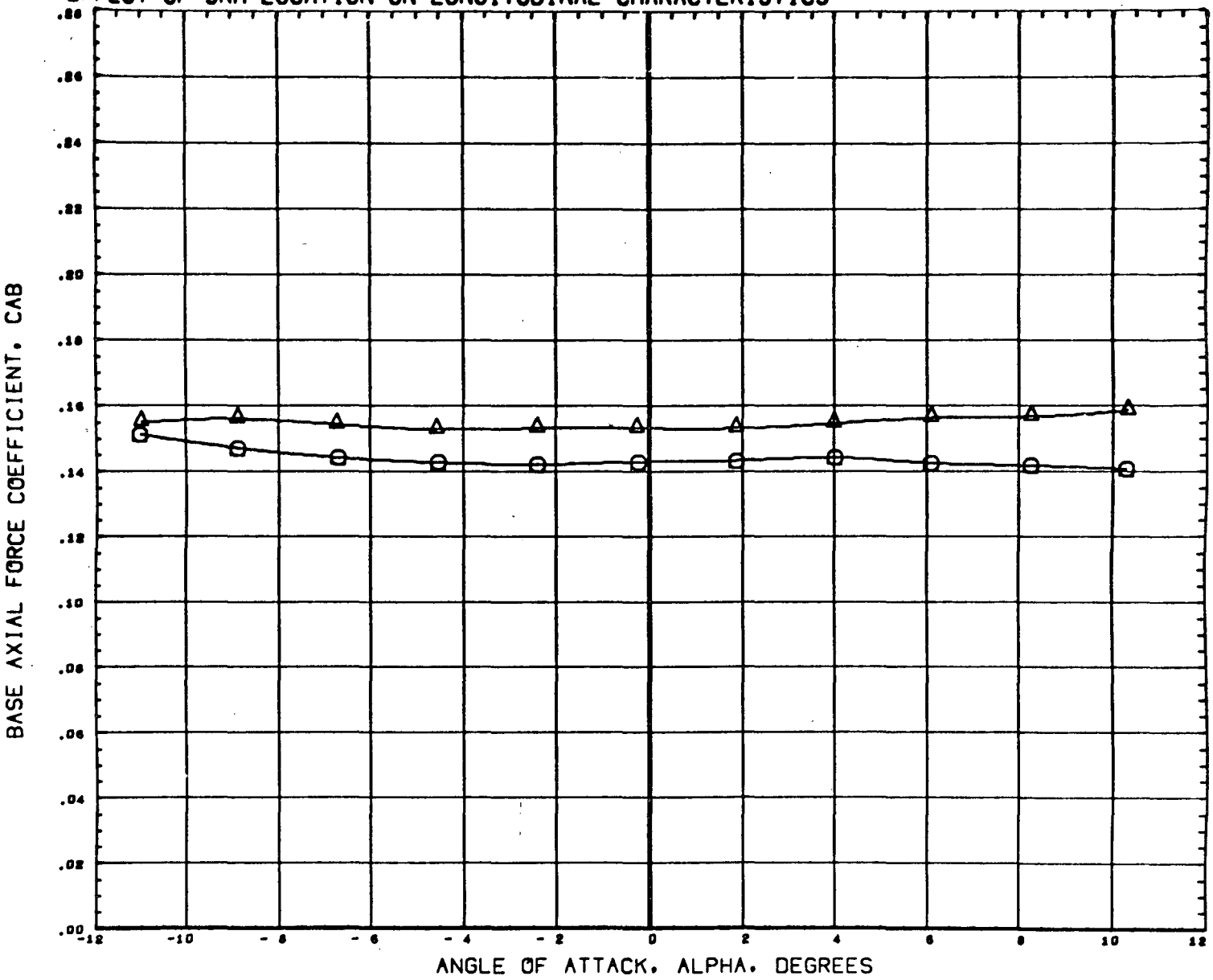
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(866008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(866020)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S3R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .91

EFFECT OF SRM LOCATION ON LONGITUDINAL CHARACTERISTICS



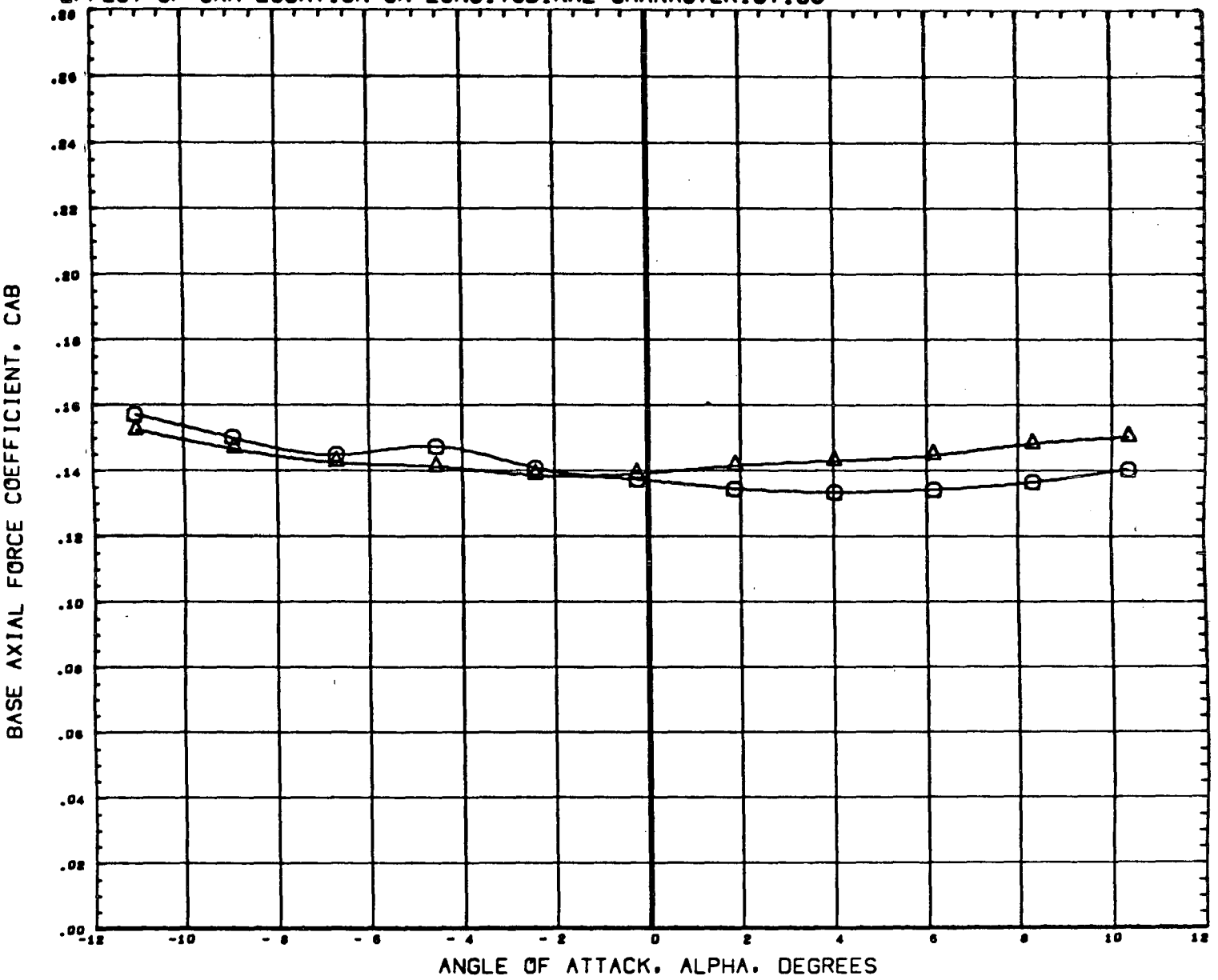
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66020)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S3R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1460	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.11

EFFECT OF SRM LOCATION ON LONGITUDINAL CHARACTERISTICS



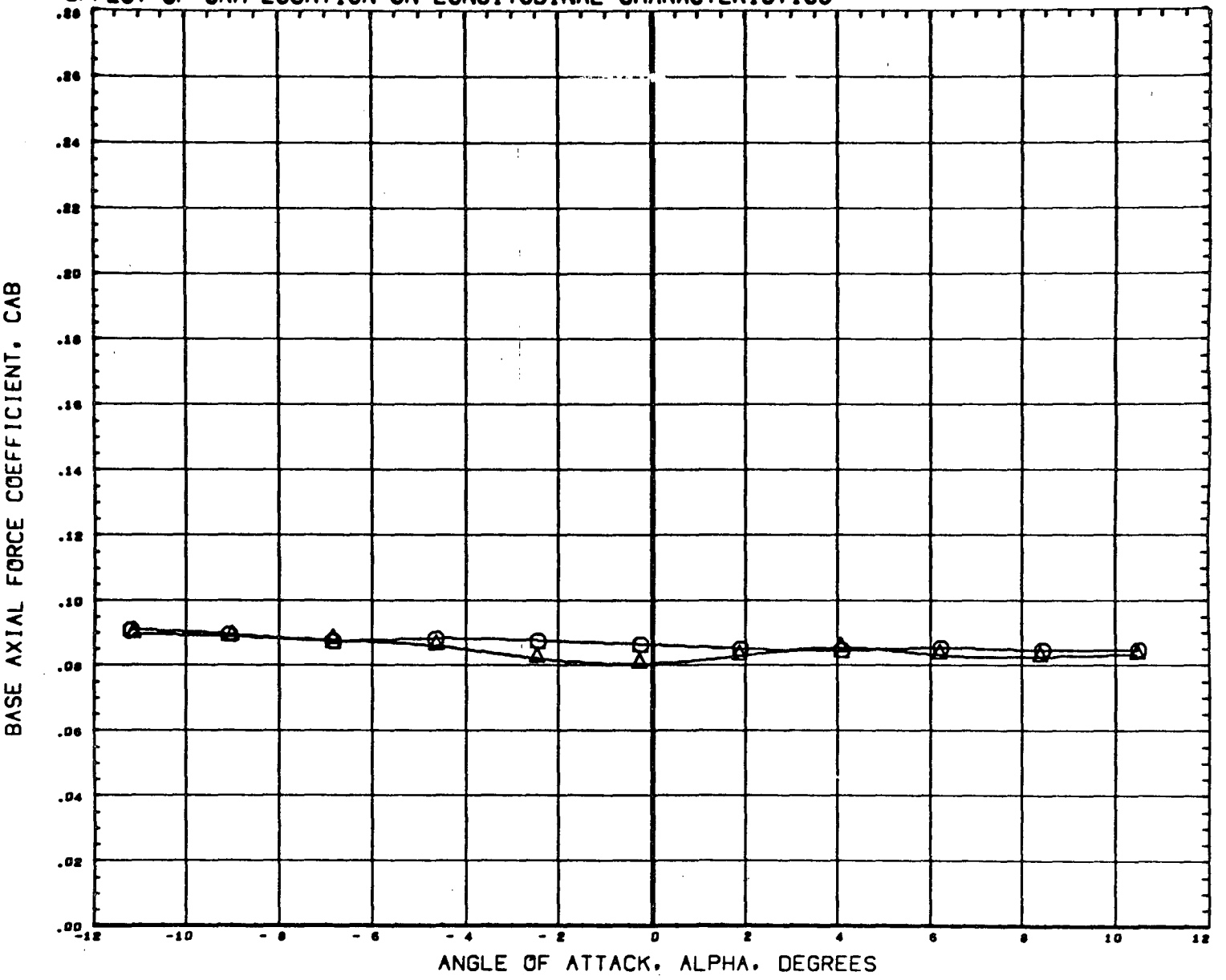
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(866008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(866020)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S3R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1460	IN.
YMRP	0.0000	IN.
ZMRP	0.2460	IN.
SCALE	0.0040	

MACH 1.19

EFFECT OF SRM LOCATION ON LONGITUDINAL CHARACTERISTICS



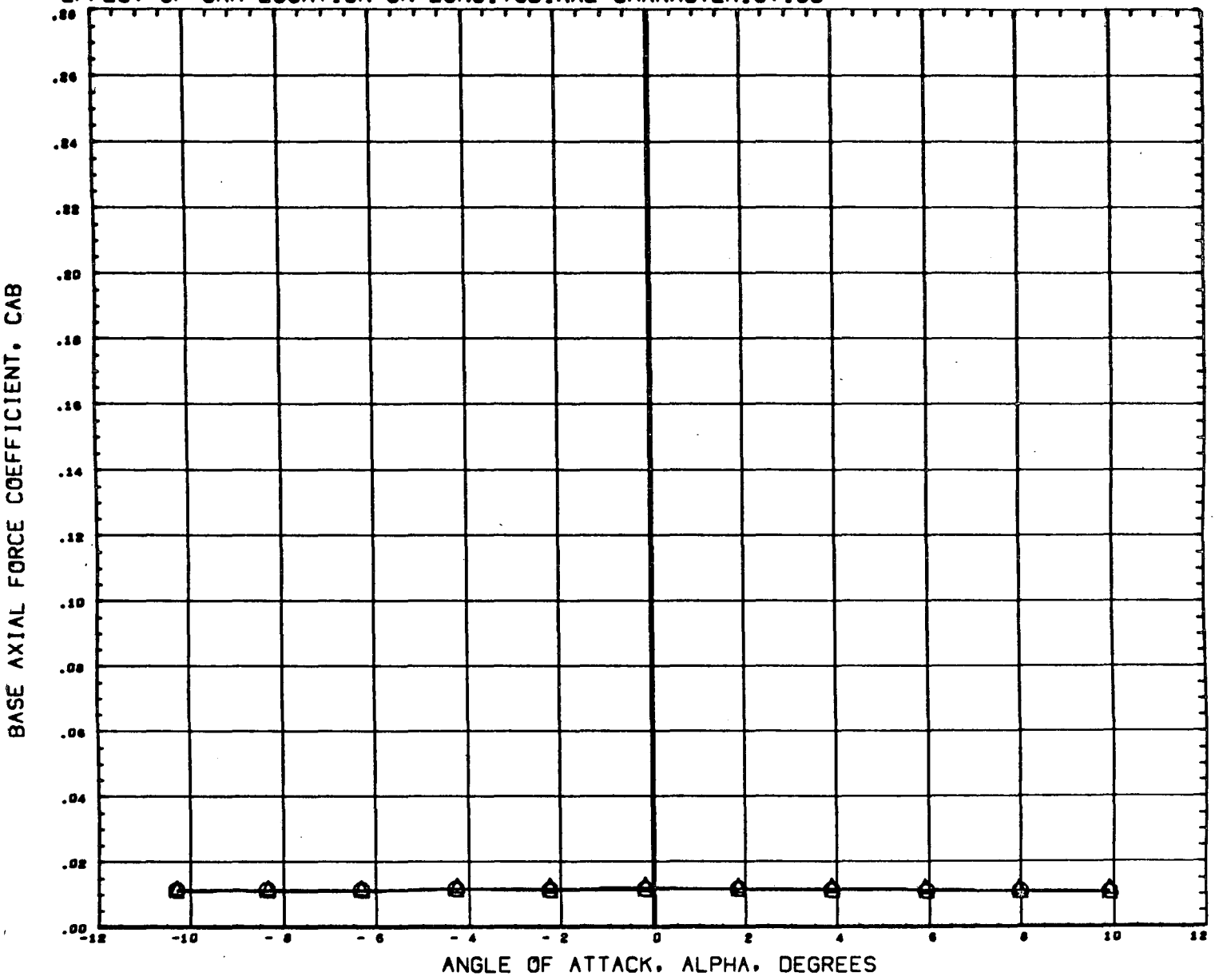
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66020)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S3R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.97

EFFECT OF SRM LOCATION ON LONGITUDINAL CHARACTERISTICS



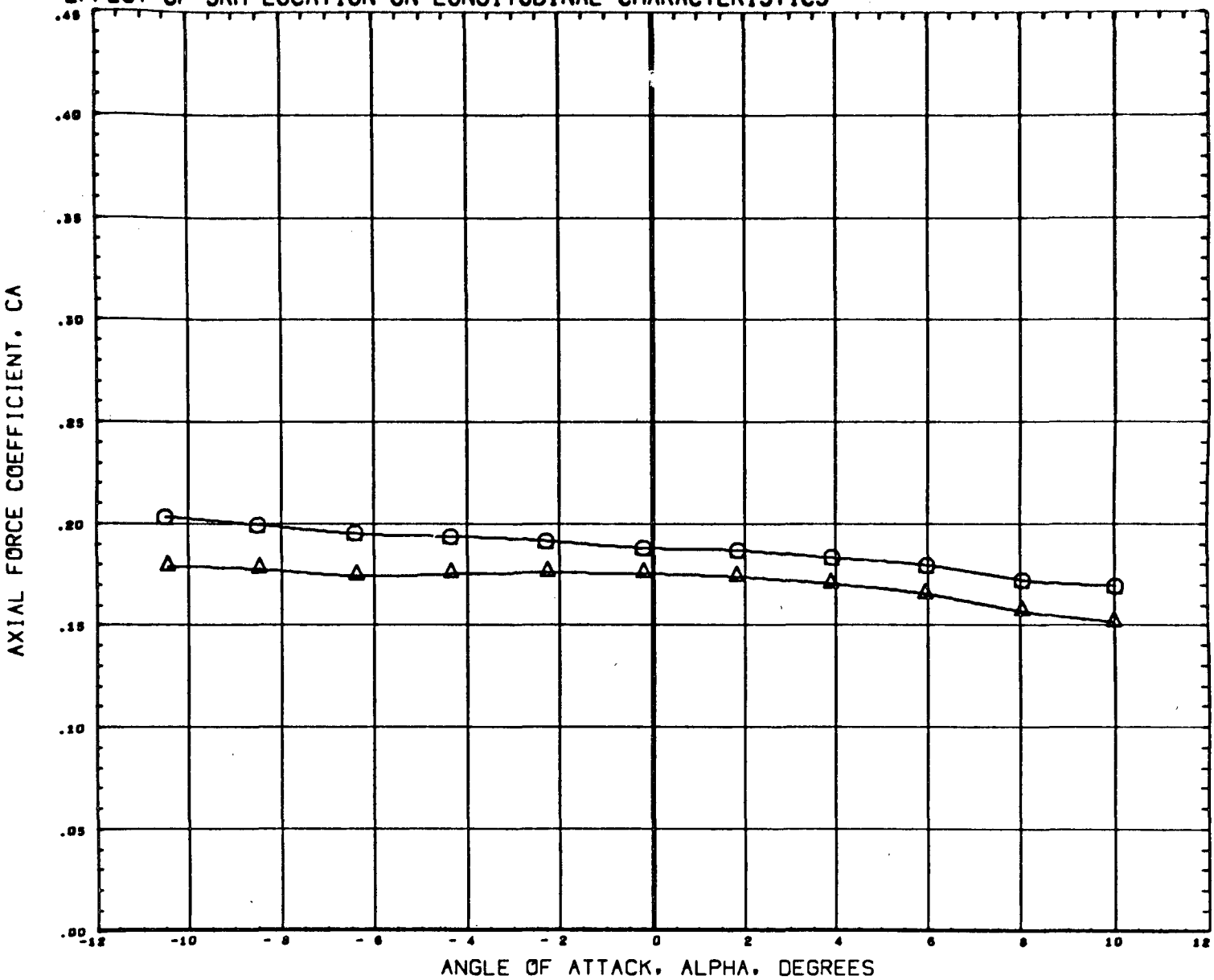
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66020)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S3R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 4.96

EFFECT OF SRM LOCATION ON LONGITUDINAL CHARACTERISTICS



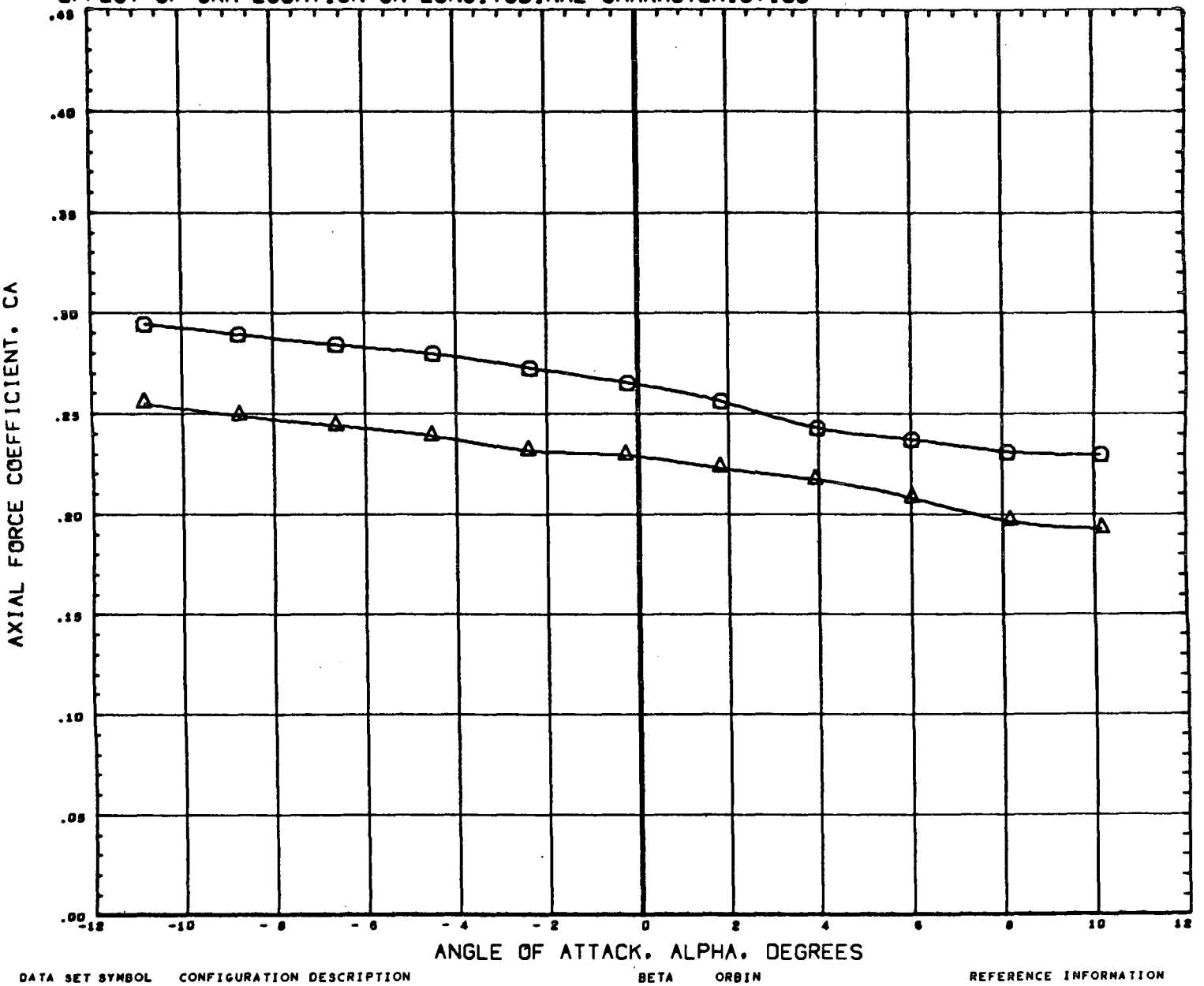
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(866008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(866020)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S3R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .60

EFFECT OF SRM LOCATION ON LONGITUDINAL CHARACTERISTICS



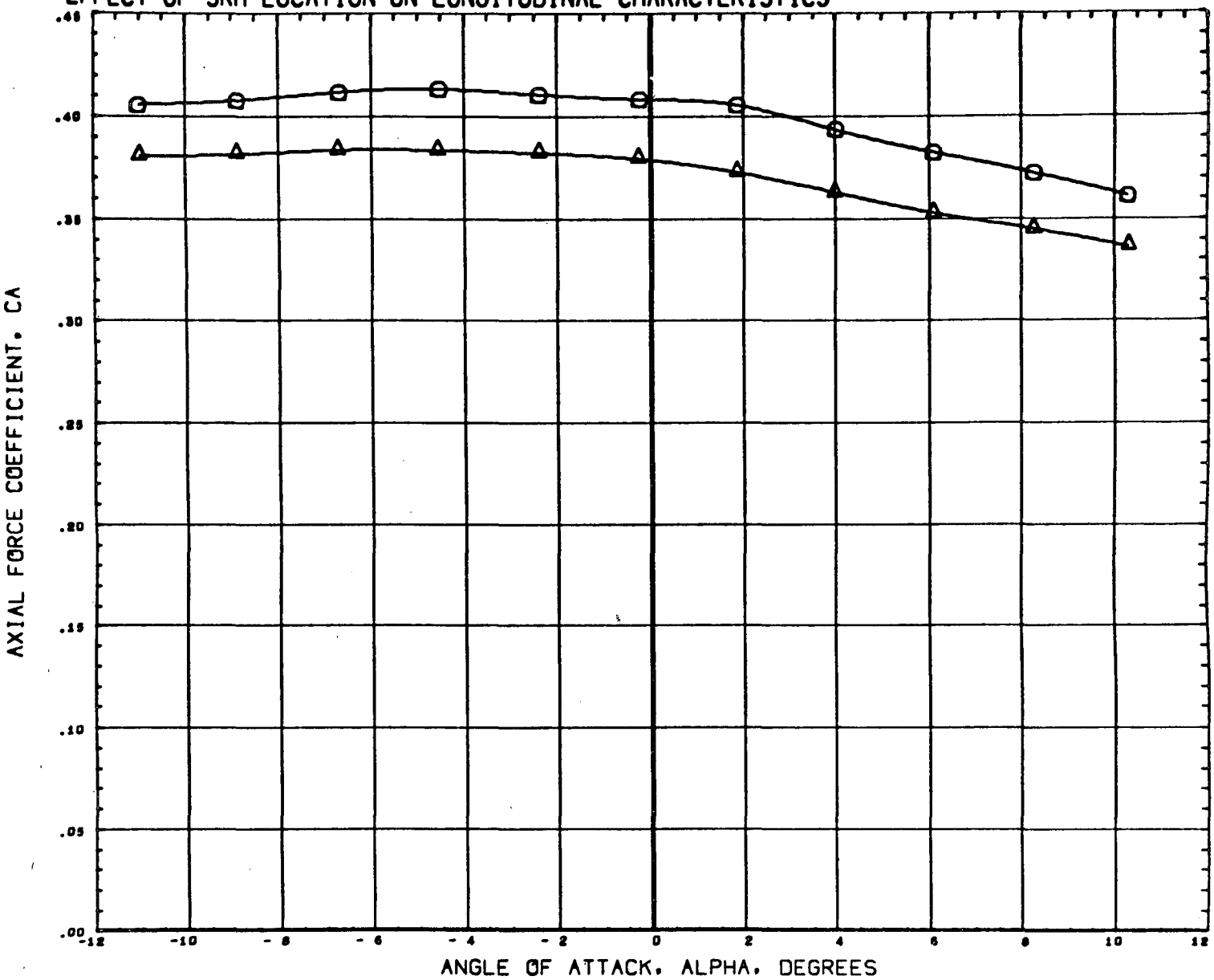
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(866008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(866020)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S3R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.0900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .91

EFFECT OF SRM LOCATION ON LONGITUDINAL CHARACTERISTICS

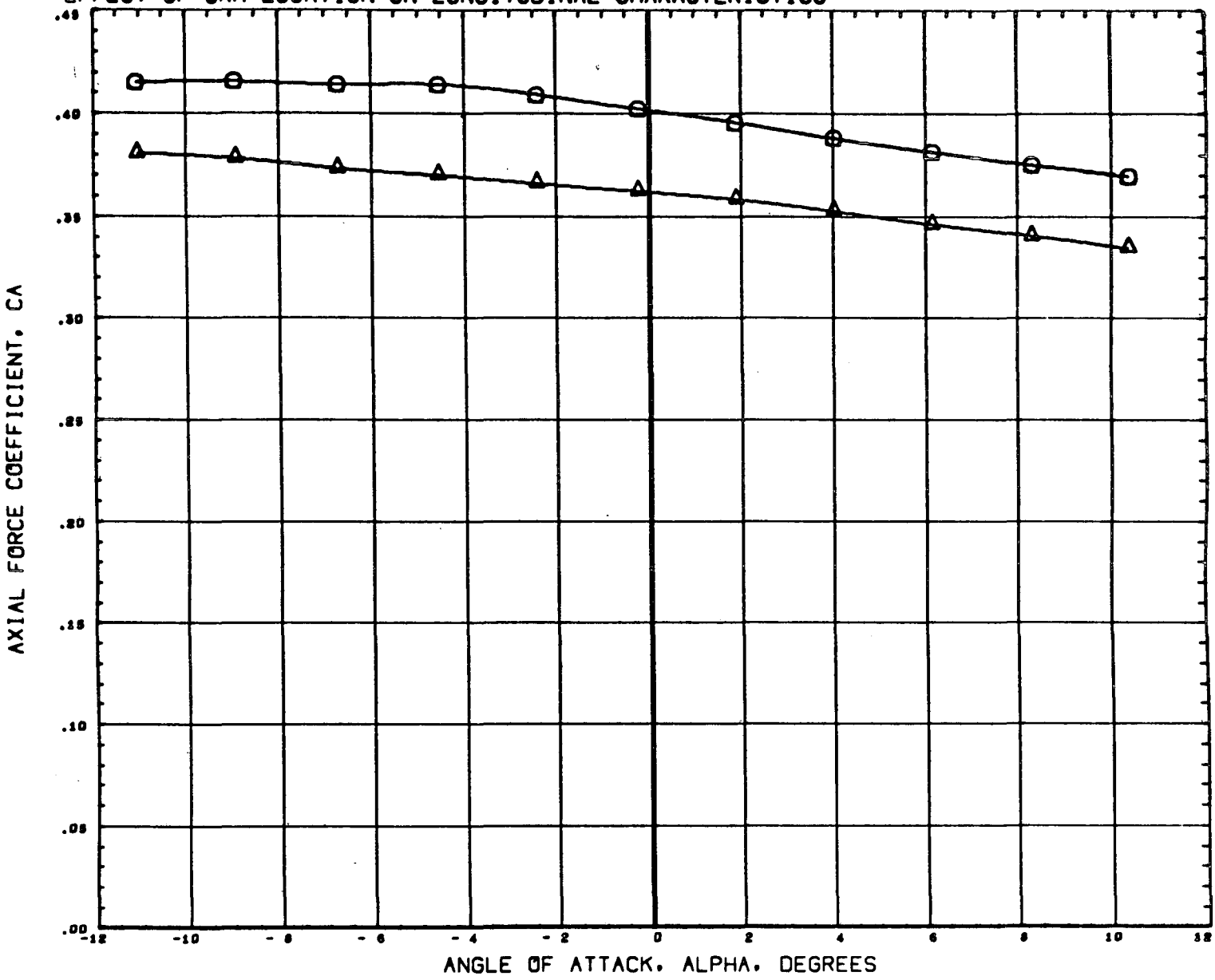


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66020)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S3R1	0.000	-1.500

REFERENCE INFORMATION		
SREF	7.8900	SQ. IN.
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.11

EFFECT OF SRM LOCATION ON LONGITUDINAL CHARACTERISTICS



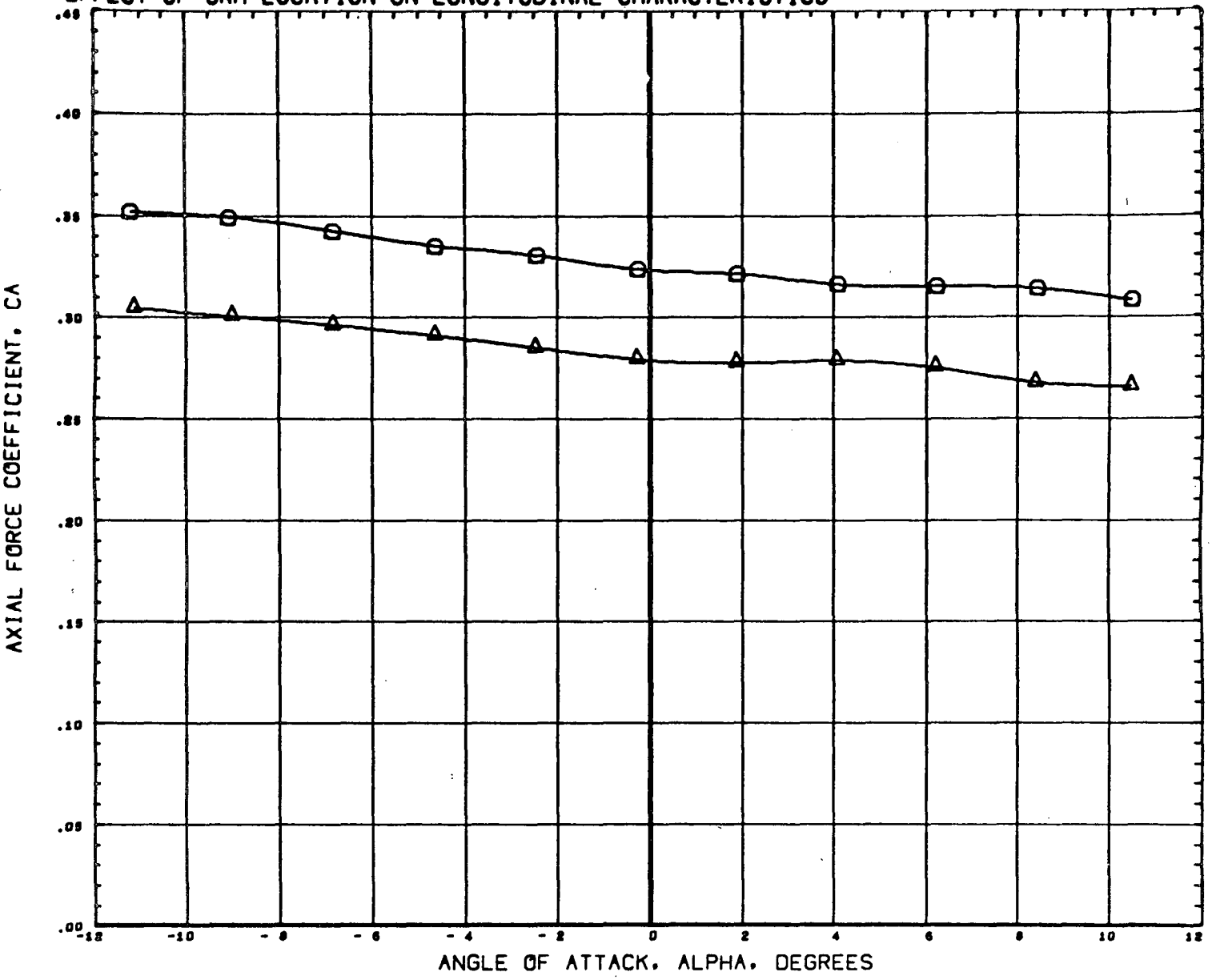
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66020)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S3R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.19

EFFECT OF SRM LOCATION ON LONGITUDINAL CHARACTERISTICS



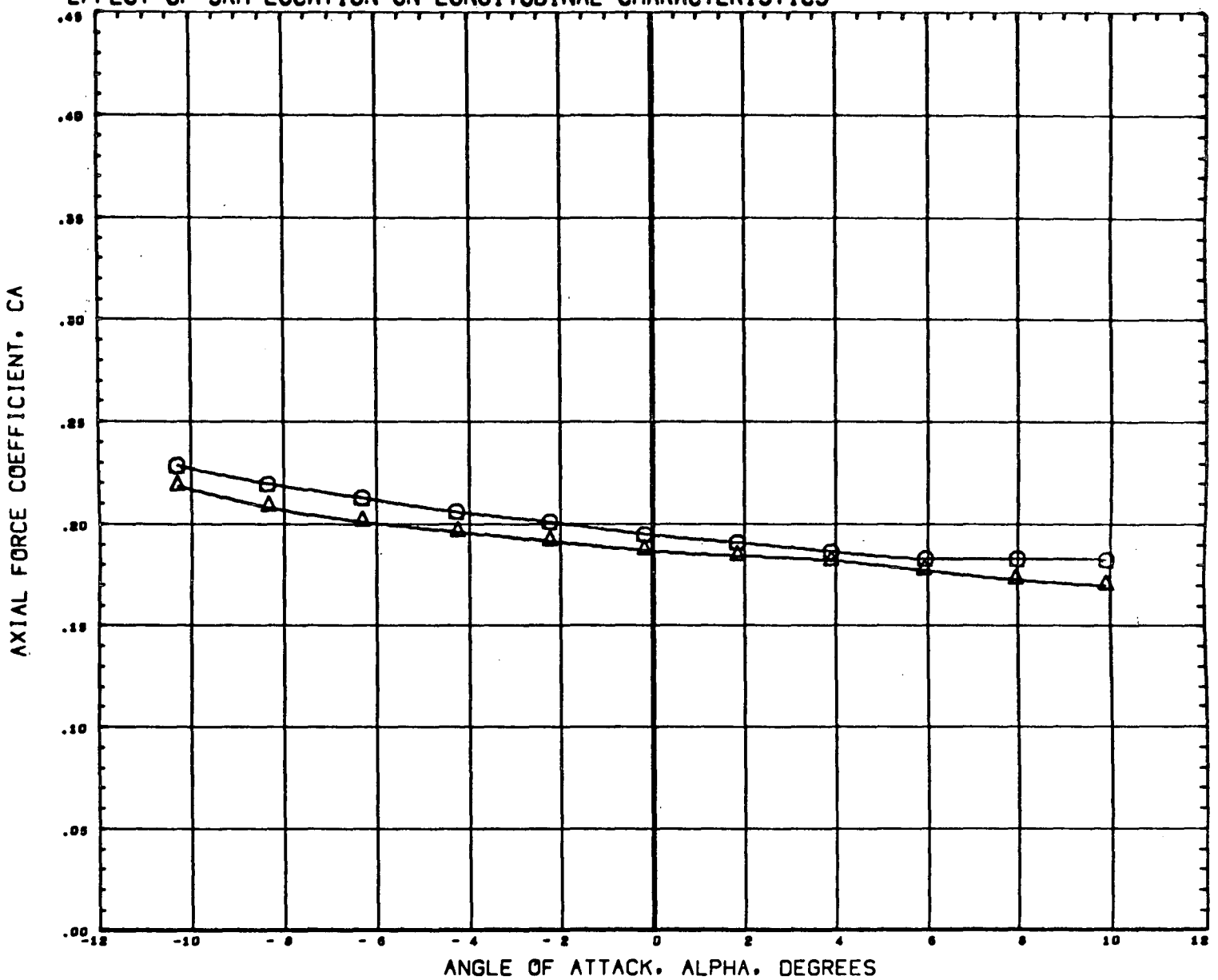
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66020)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S3R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.97

EFFECT OF SRM LOCATION ON LONGITUDINAL CHARACTERISTICS



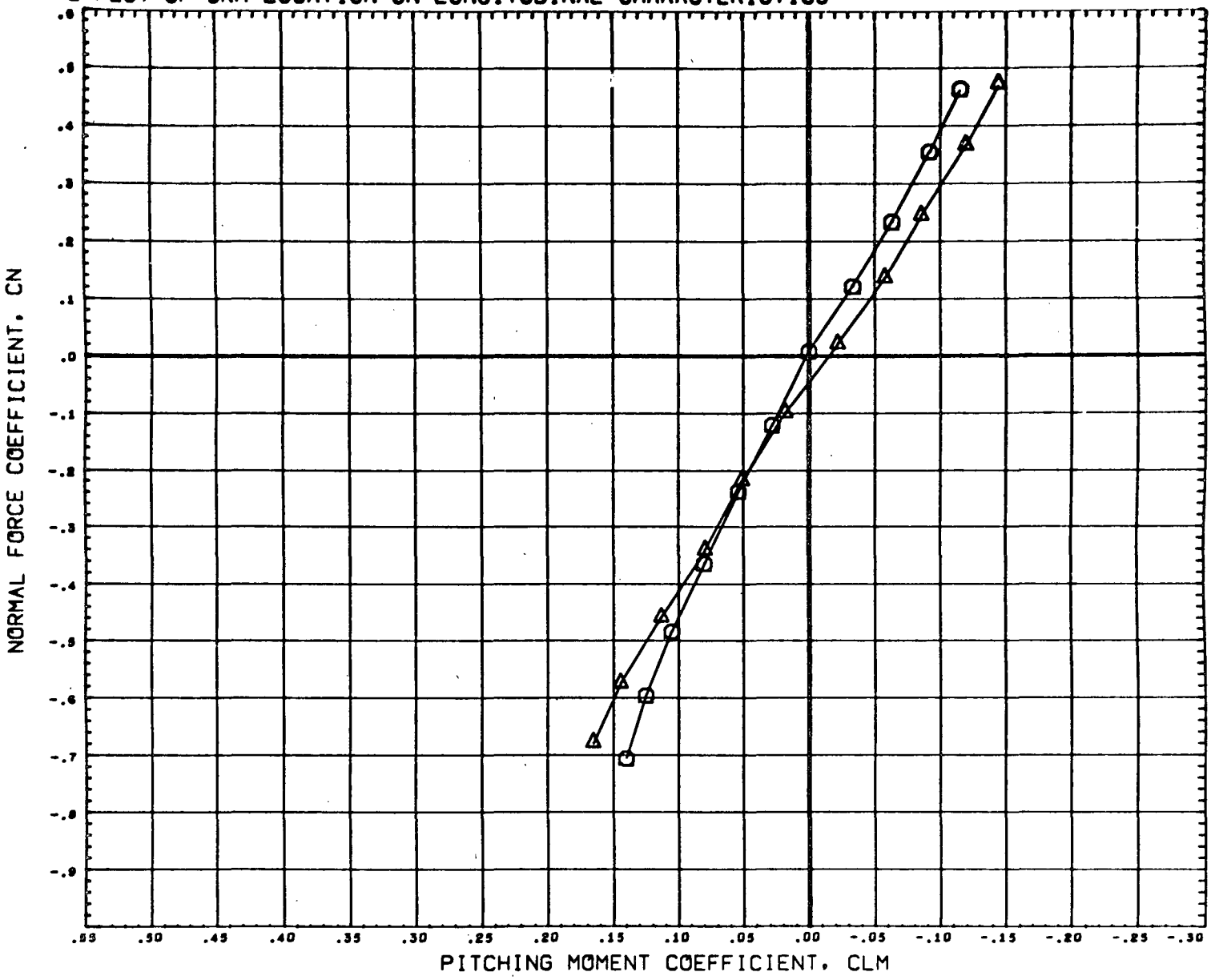
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66020)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S3R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 4.96

EFFECT OF SRM LOCATION ON LONGITUDINAL CHARACTERISTICS



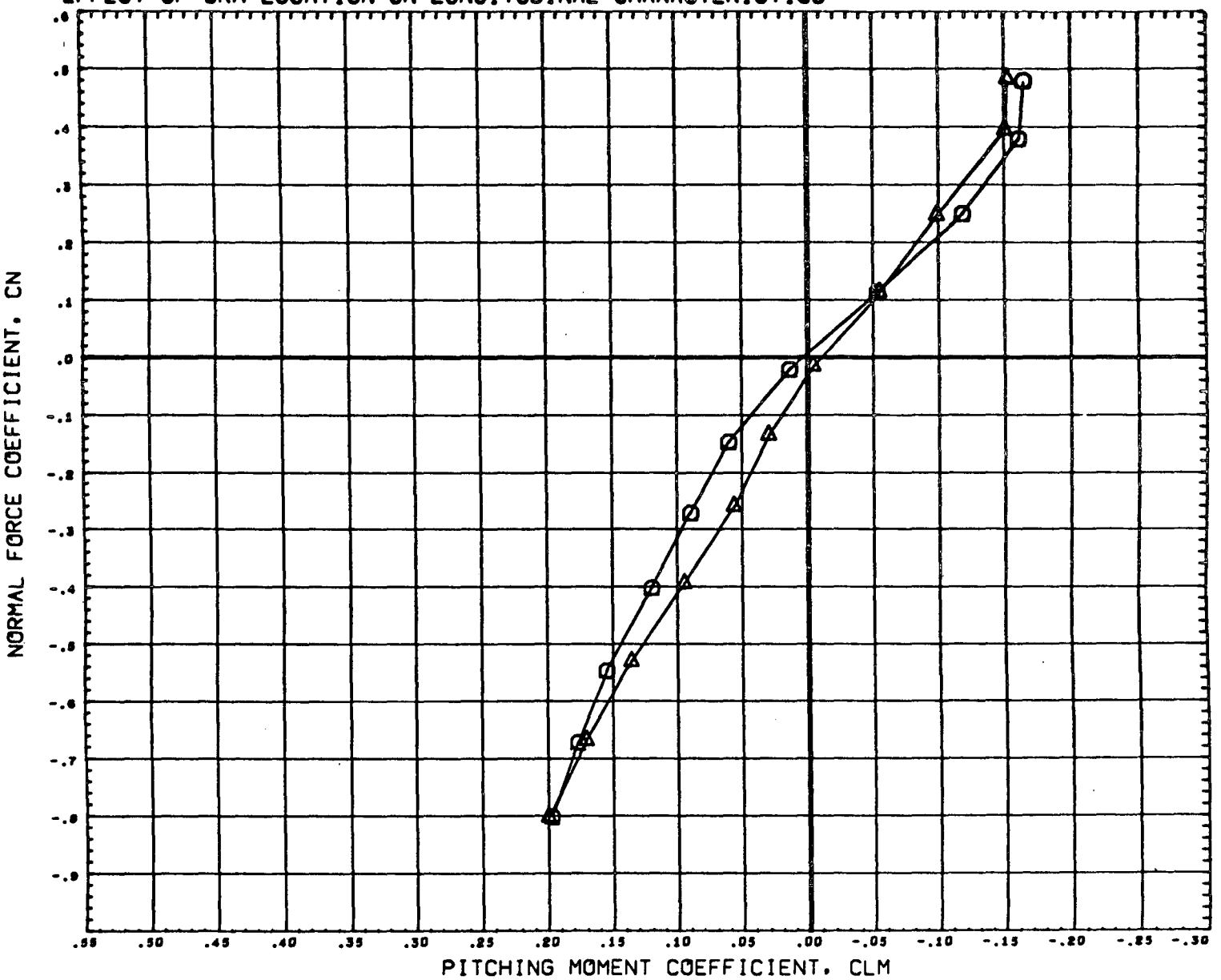
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66020)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S3R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .60

EFFECT OF SRM LOCATION ON LONGITUDINAL CHARACTERISTICS



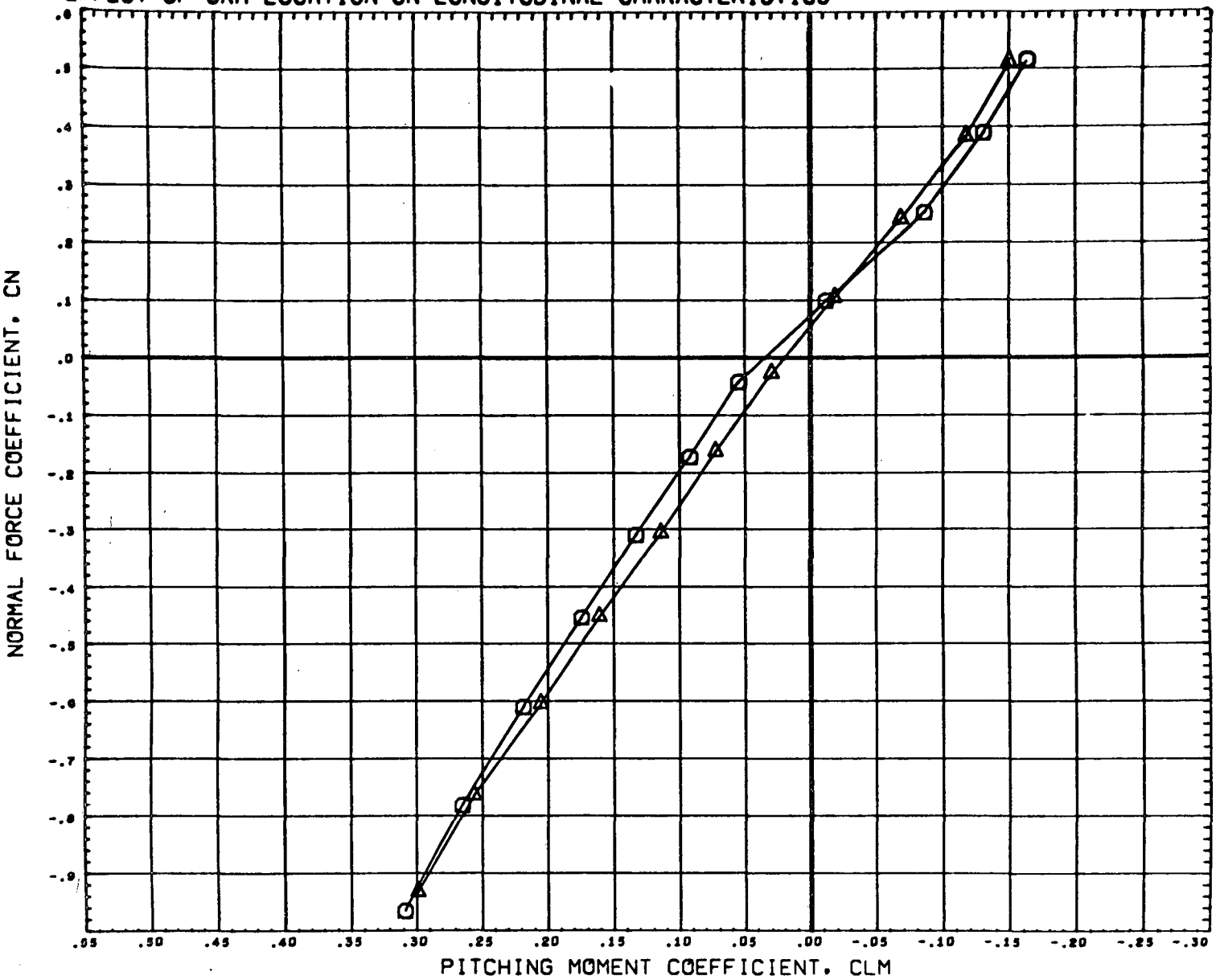
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66020)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S3R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .91

EFFECT OF SRM LOCATION ON LONGITUDINAL CHARACTERISTICS



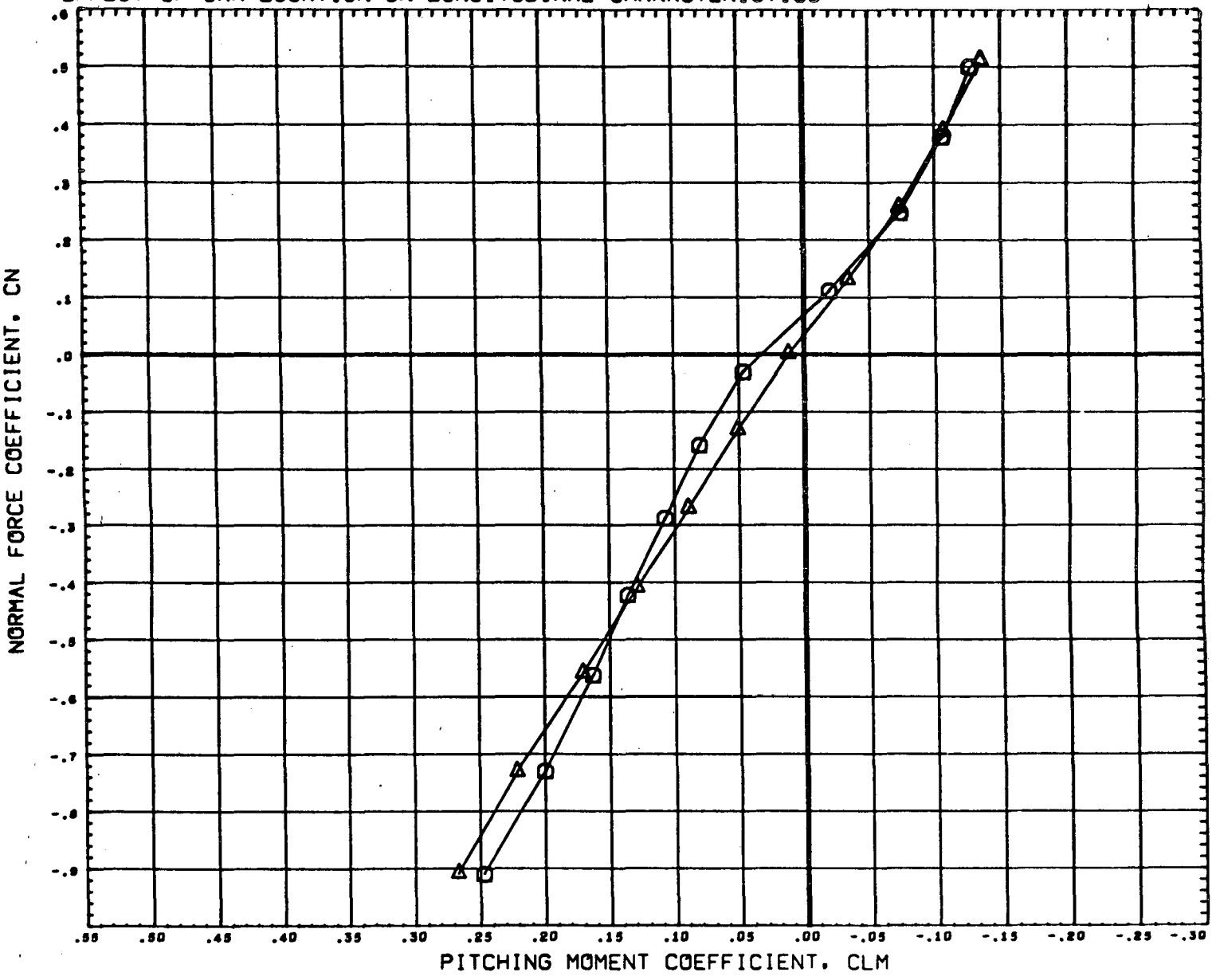
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66020)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S3R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.11

EFFECT OF SRM LOCATION ON LONGITUDINAL CHARACTERISTICS



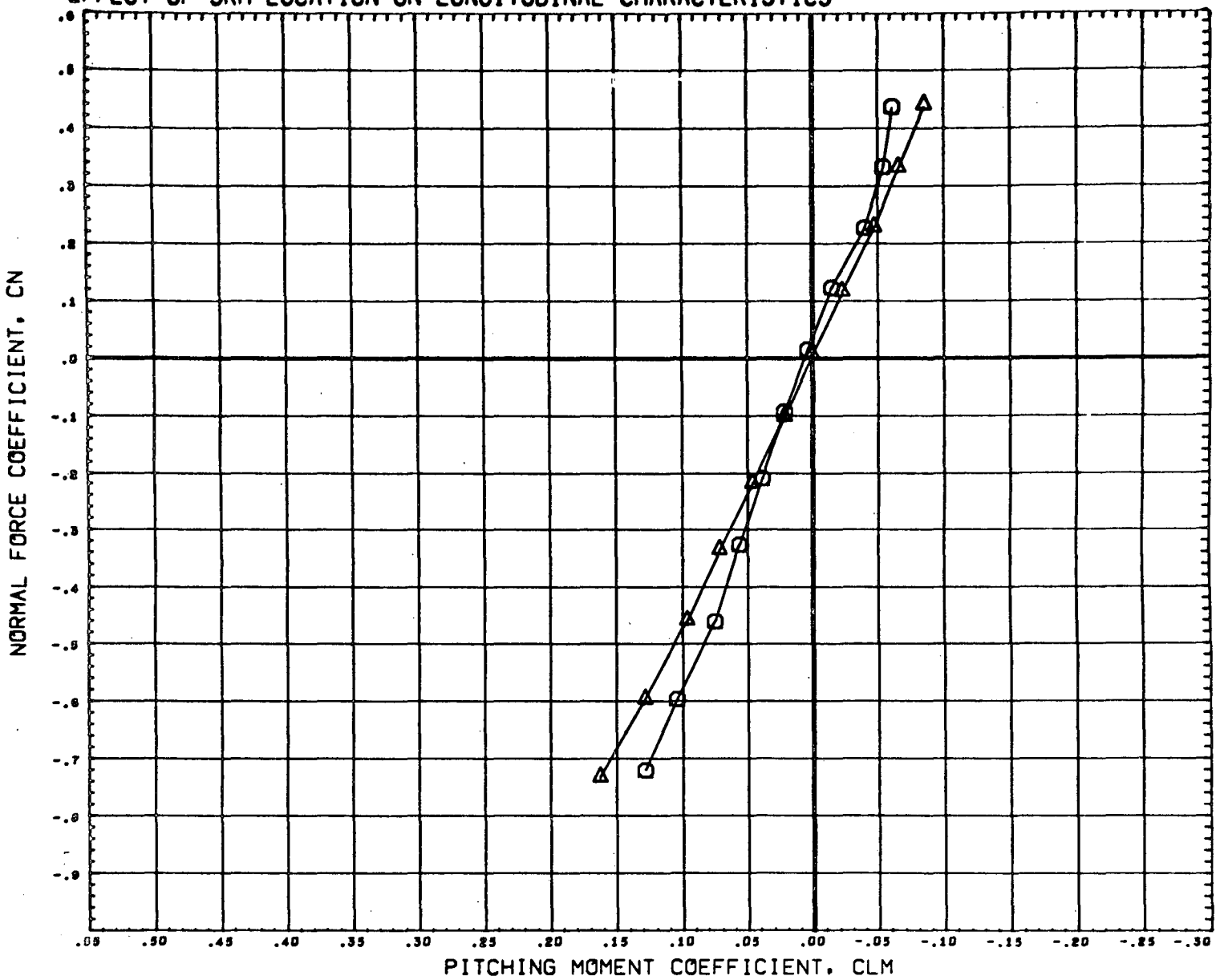
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(866008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(866020)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S3R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.19

EFFECT OF SRM LOCATION ON LONGITUDINAL CHARACTERISTICS



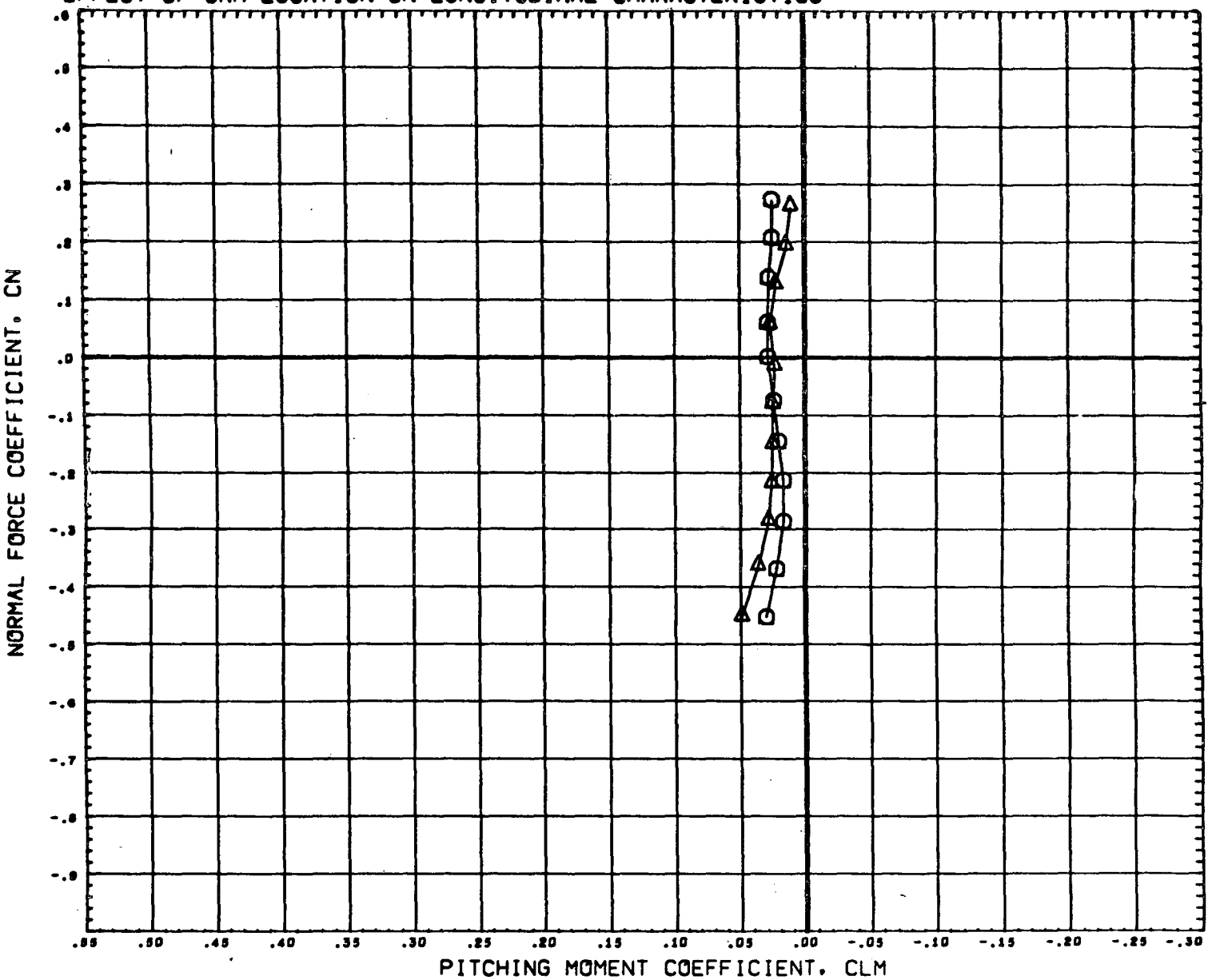
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66020)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S3R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.97

EFFECT OF SRM LOCATION ON LONGITUDINAL CHARACTERISTICS



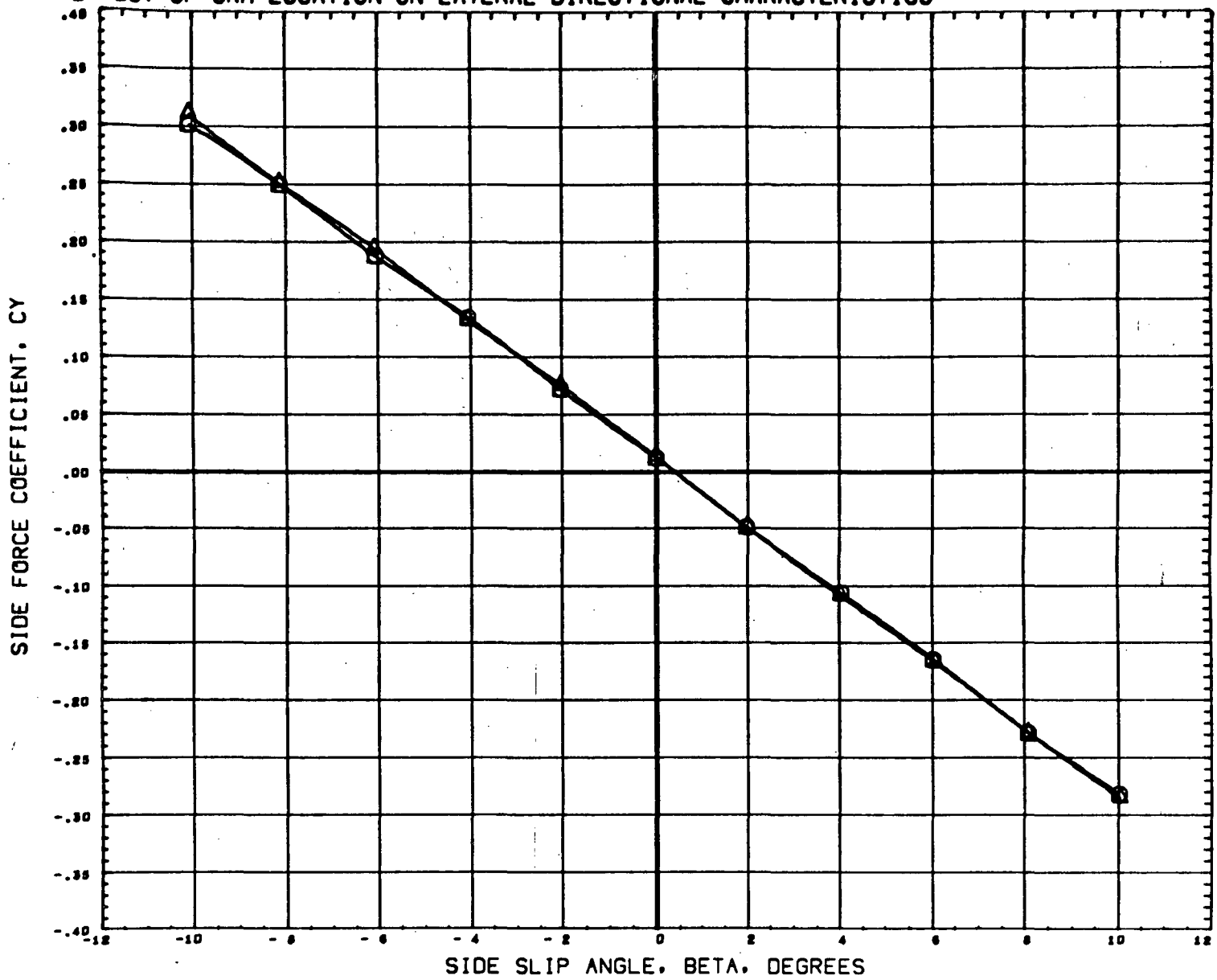
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66006)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66020)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S3R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 4.96

EFFECT OF SRM LOCATION ON LATERAL DIRECTIONAL CHARACTERISTICS

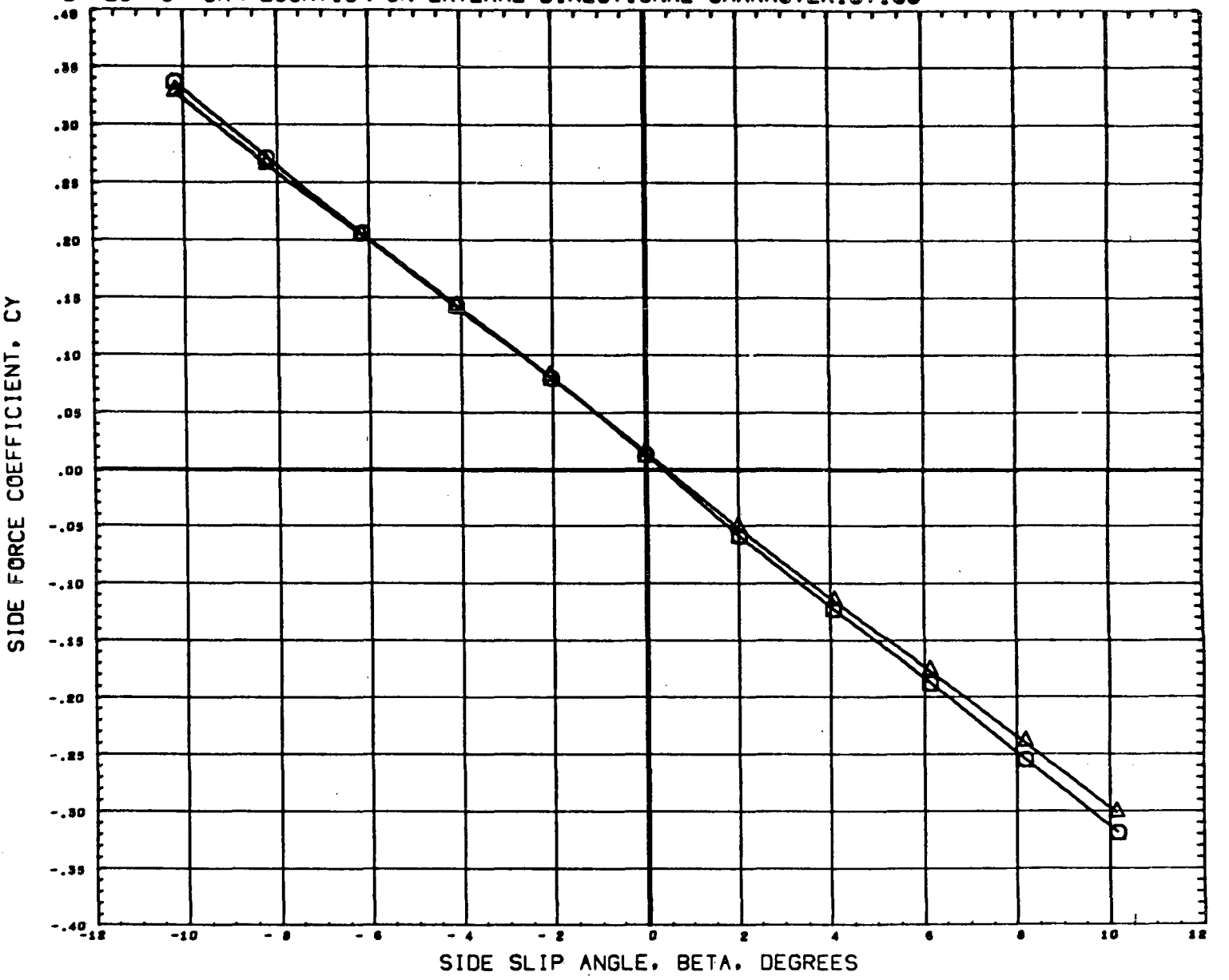


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T10131R1	0.000	-1.500
(A66021)	△	MSFC TWT 538	SHUTTLE LAUNCH	T10133R1	0.000	-1.500

REFERENCE INFORMATION		
SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .60

EFFECT OF SRM LOCATION ON LATERAL DIRECTIONAL CHARACTERISTICS



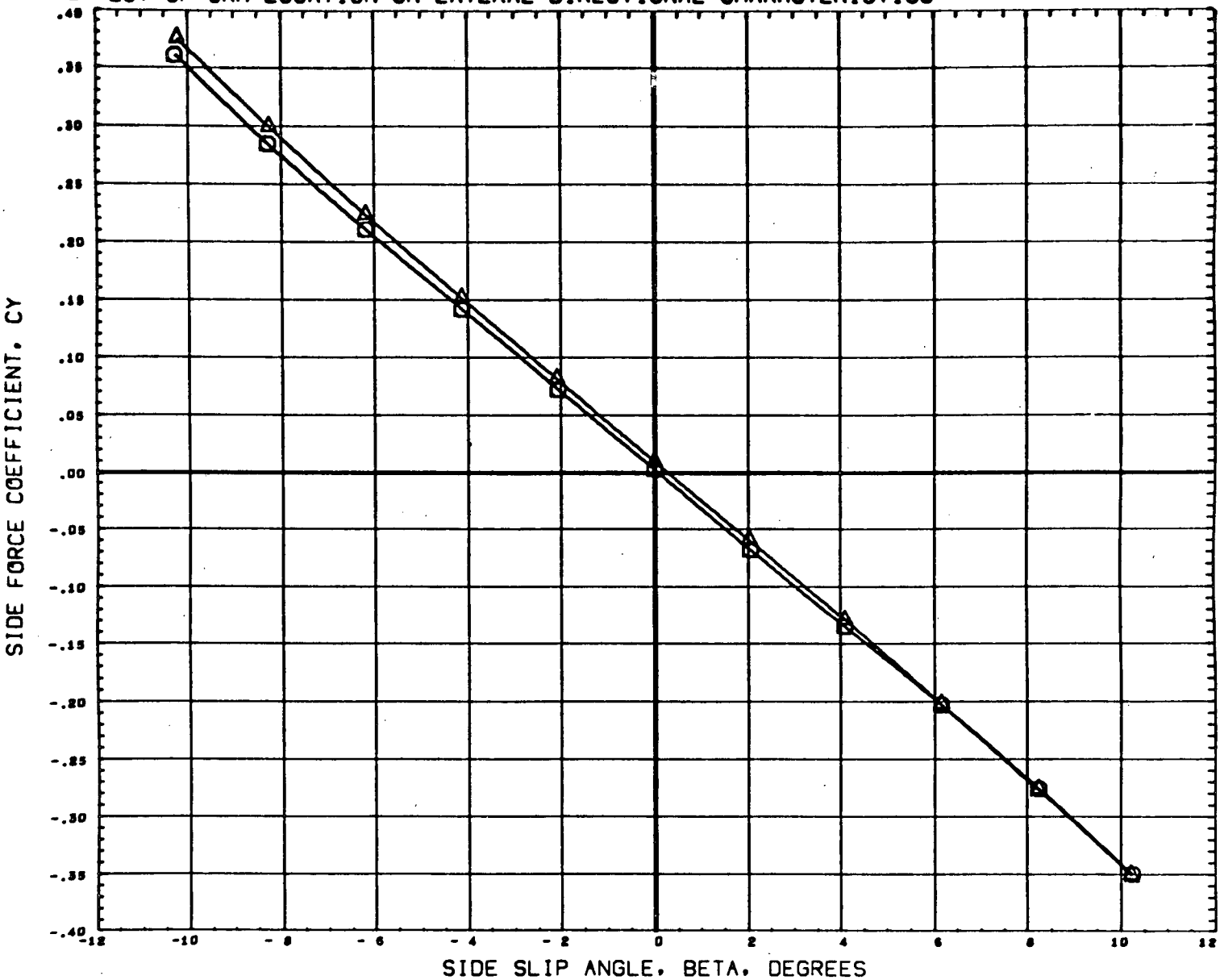
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(766009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(A66021)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S3R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1460	IN.
YMRP	0.0000	IN.
ZMRP	0.2460	IN.
SCALE	0.0040	

MACH .90

EFFECT OF SRM LOCATION ON LATERAL DIRECTIONAL CHARACTERISTICS



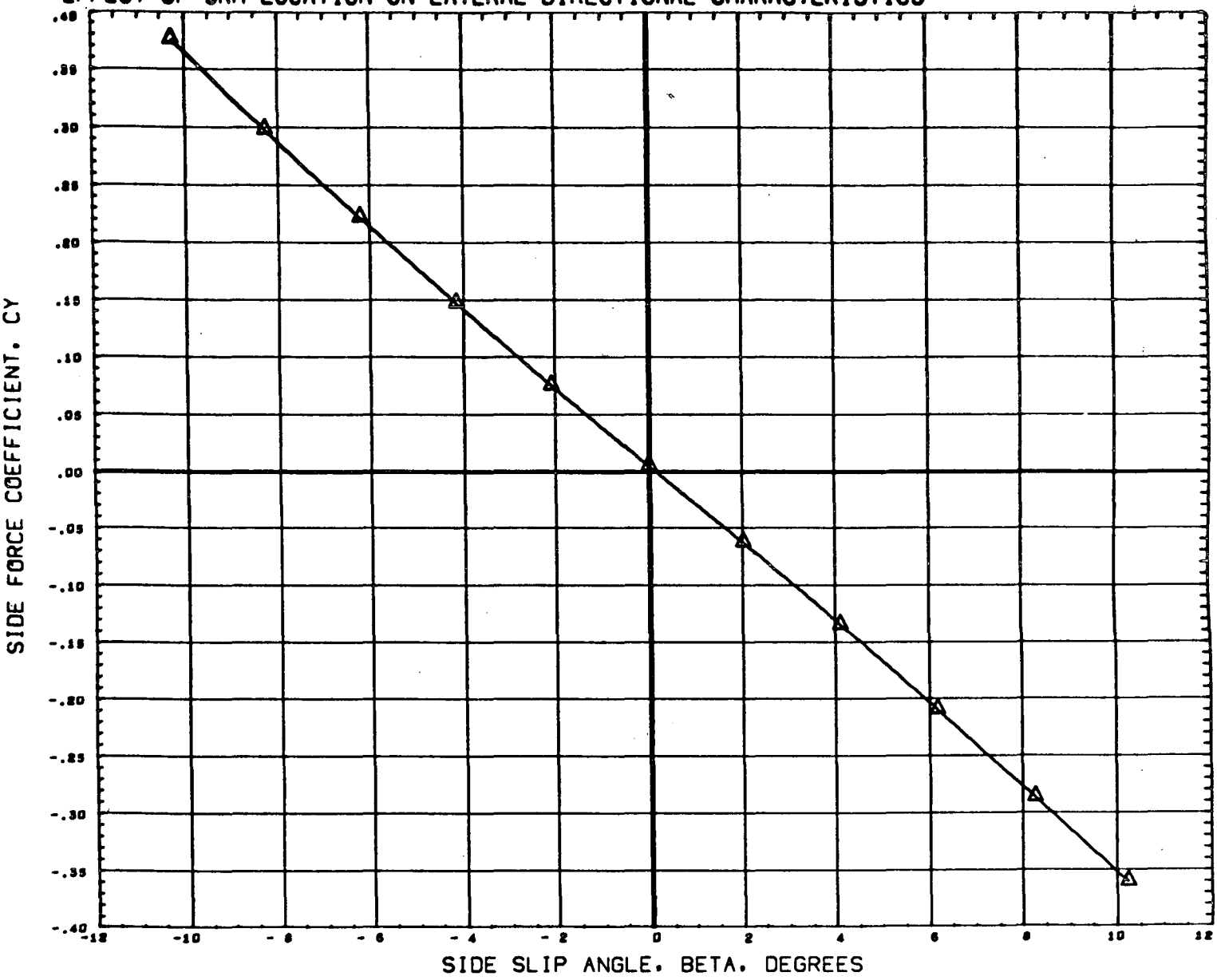
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(A66021)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S3R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.10

EFFECT OF SRM LOCATION ON LATERAL DIRECTIONAL CHARACTERISTICS



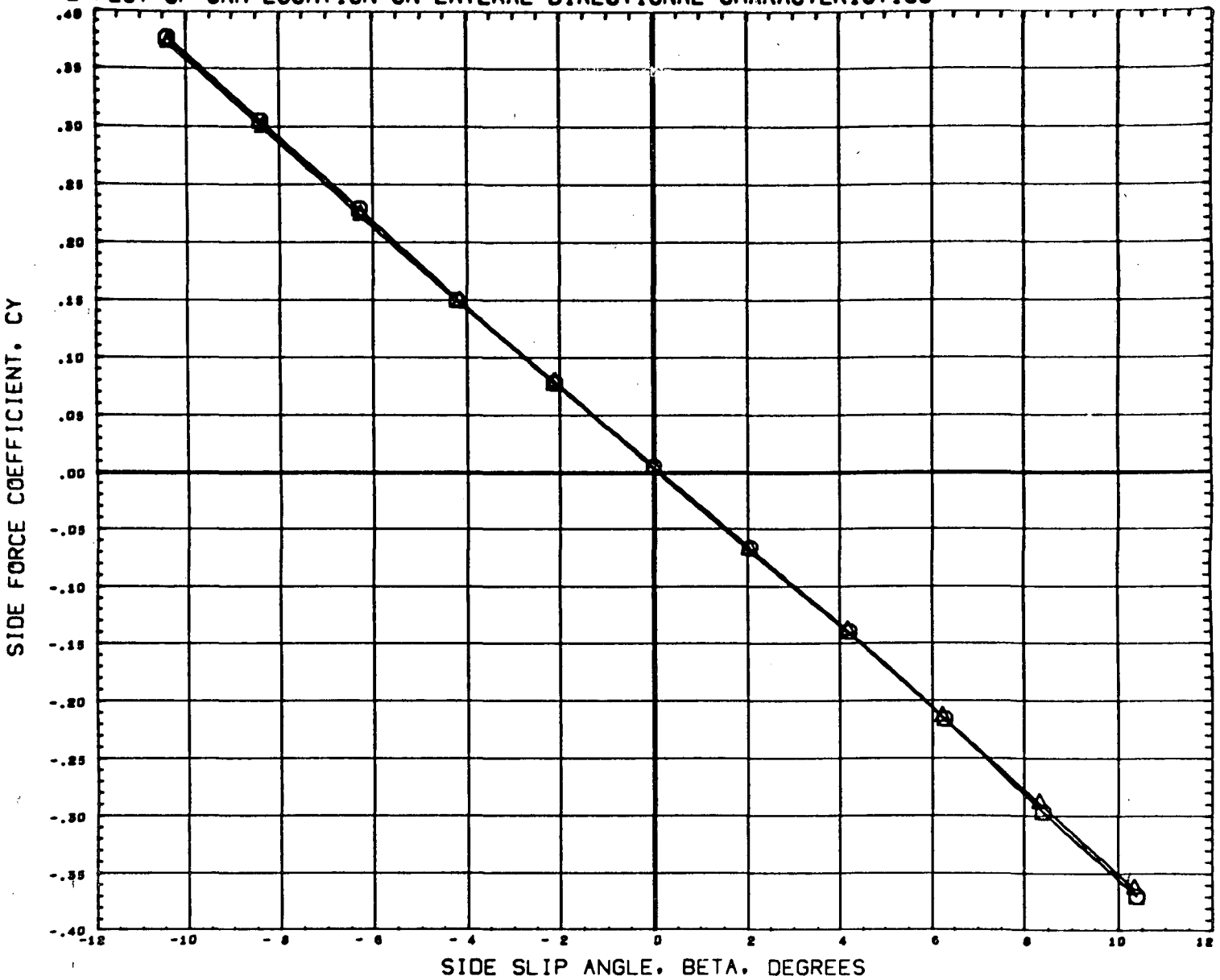
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ORBIN
(T66009)	○	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500
(A66021)	△	MSFC TWT 538 SHUTTLE LAUNCH T101S3R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1460	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.20

EFFECT OF SRM LOCATION ON LATERAL DIRECTIONAL CHARACTERISTICS



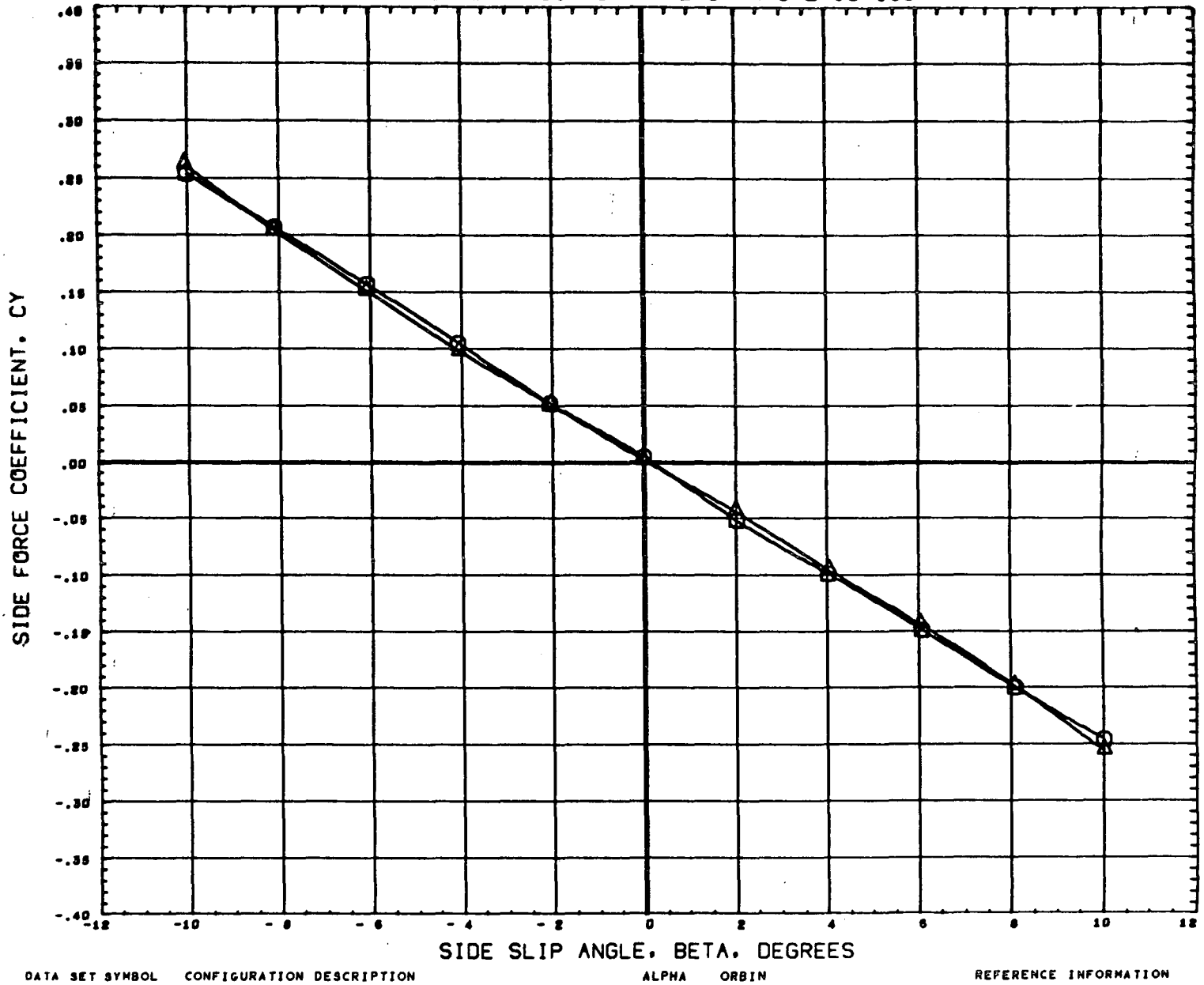
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(A66021)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S3R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.97

EFFECT OF SRM LOCATION ON LATERAL DIRECTIONAL CHARACTERISTICS



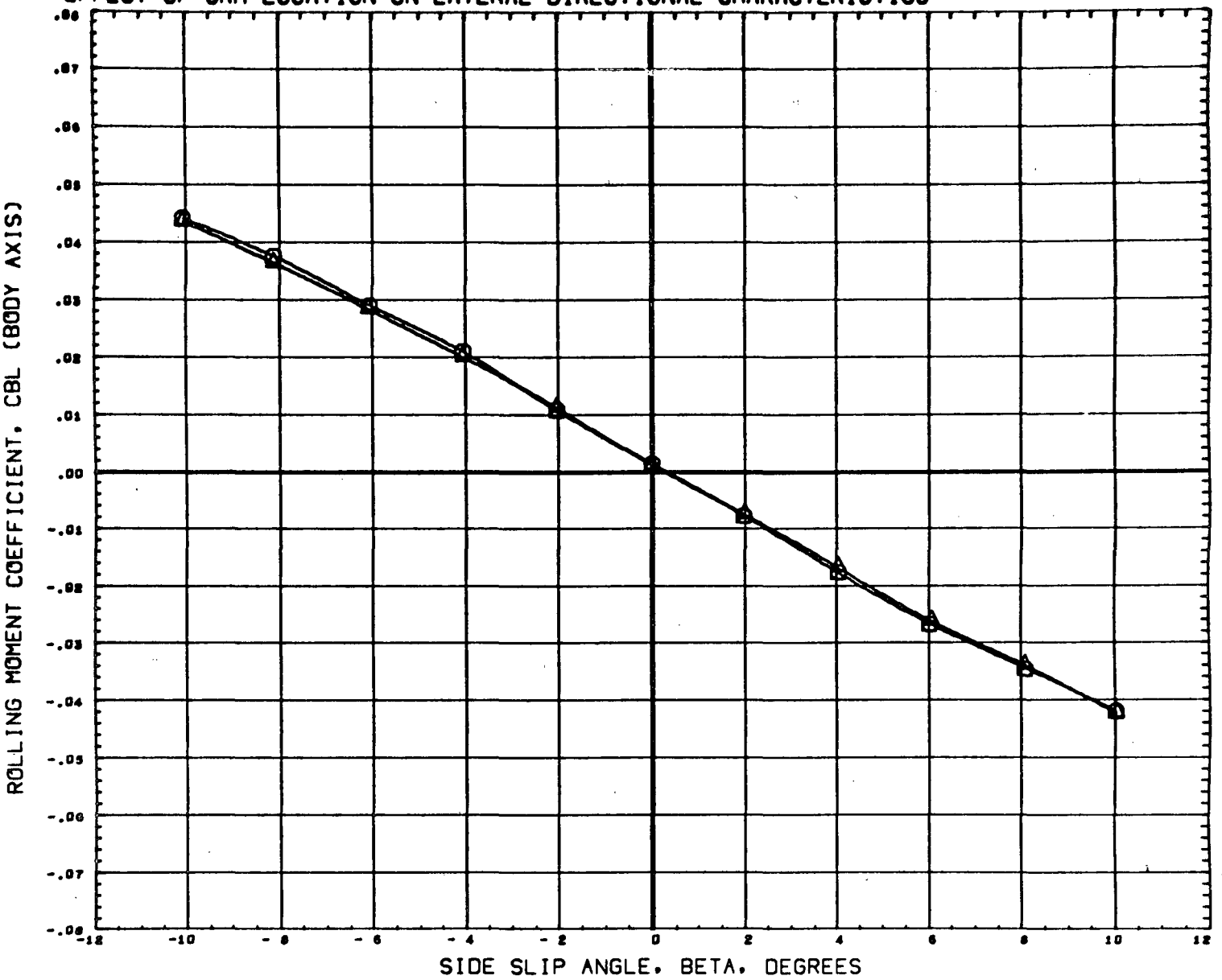
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(A66021)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S3R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 4.96

EFFECT OF SRM LOCATION ON LATERAL DIRECTIONAL CHARACTERISTICS



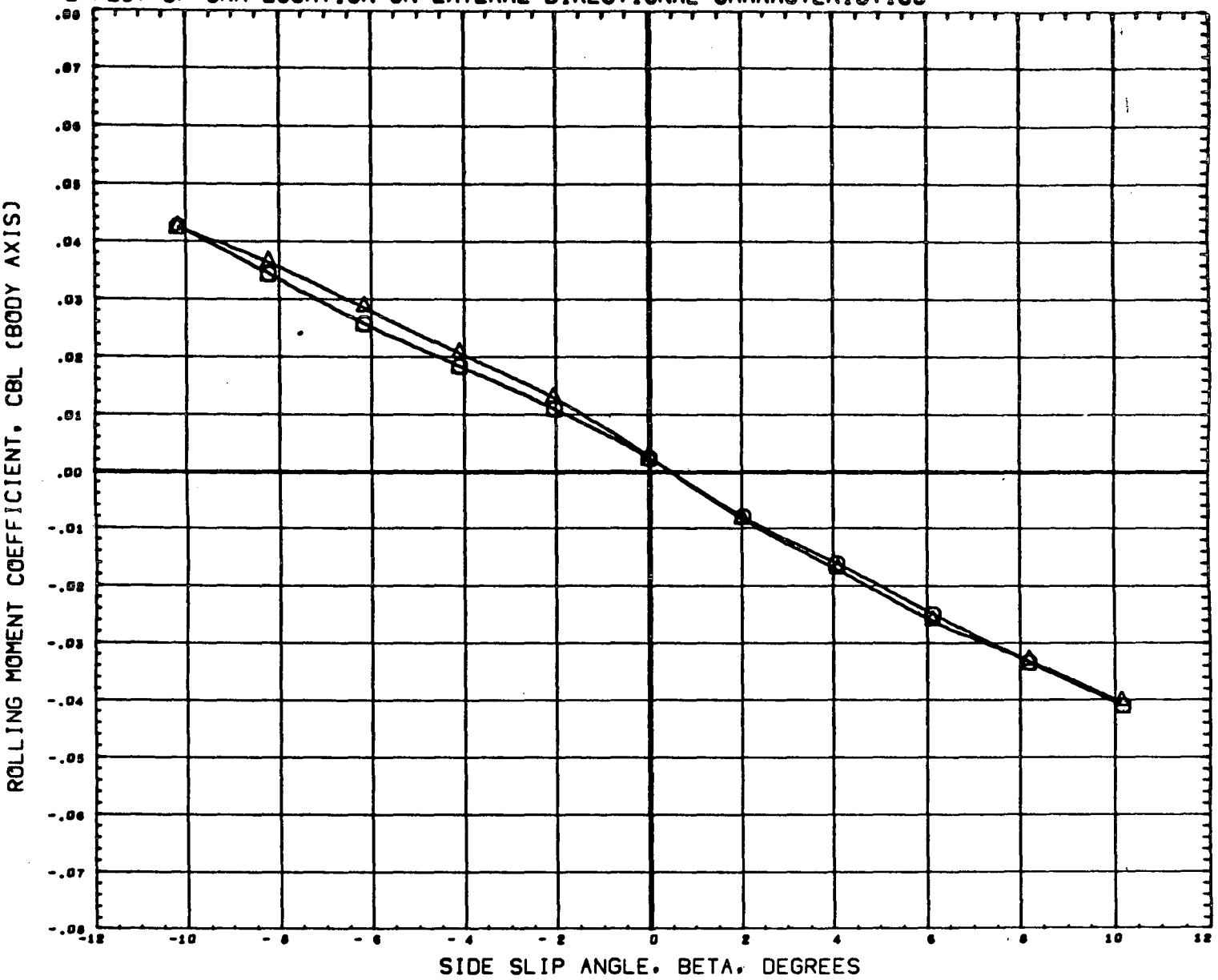
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(A66021)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S3R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .60

EFFECT OF SRM LOCATION ON LATERAL DIRECTIONAL CHARACTERISTICS



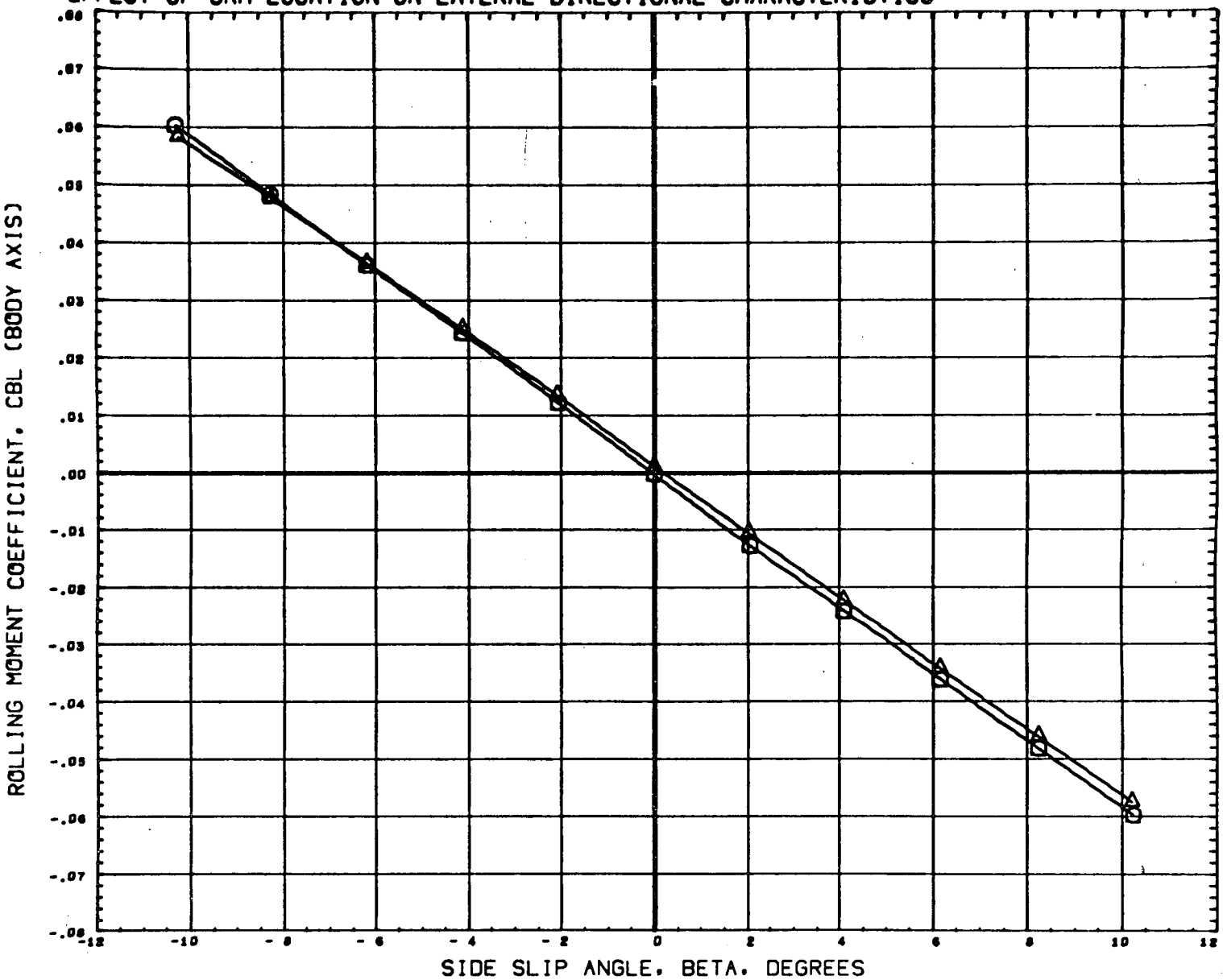
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(A66021)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S3R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .90

EFFECT OF SRM LOCATION ON LATERAL DIRECTIONAL CHARACTERISTICS



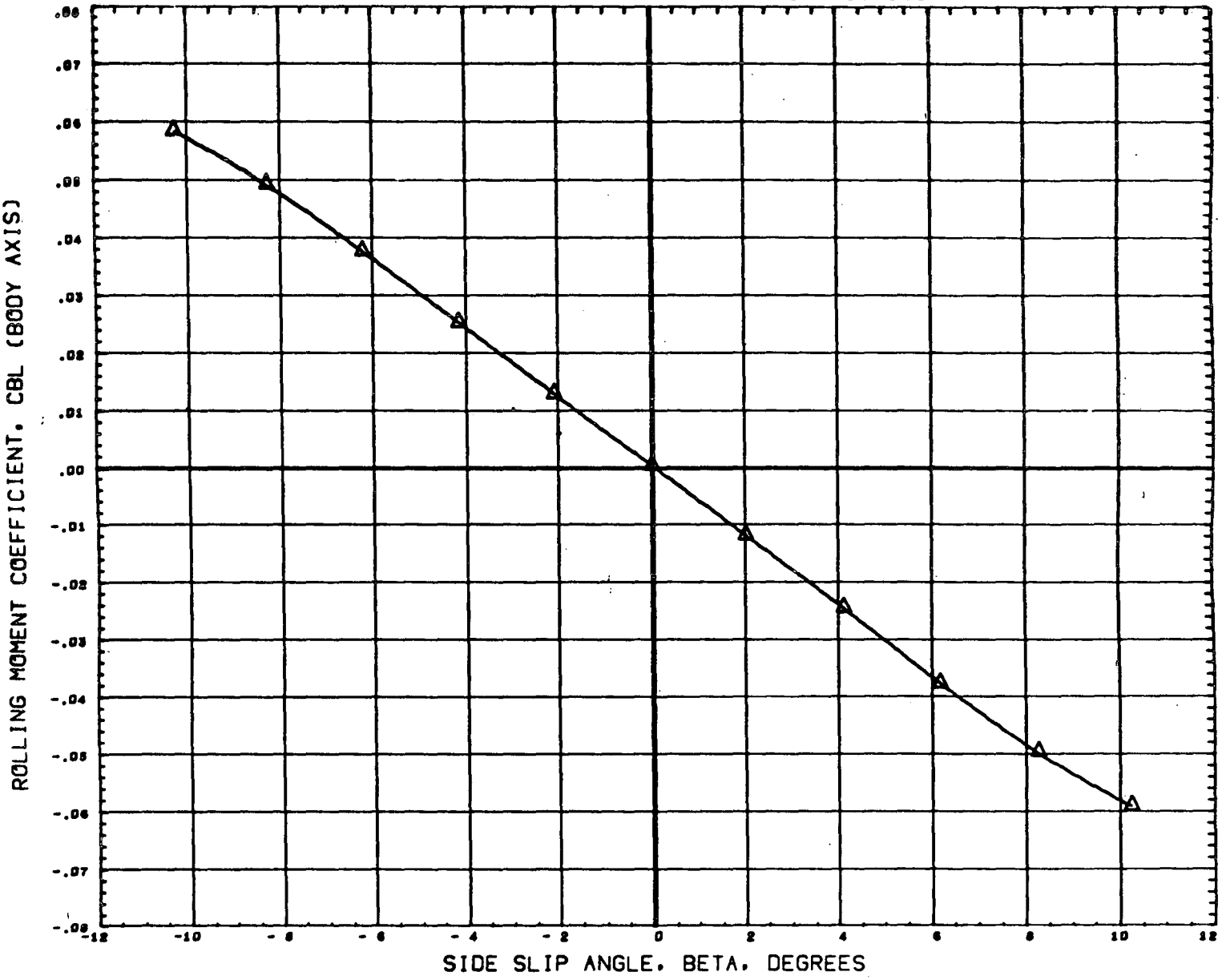
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(A66021)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S3R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.10

EFFECT OF SRM LOCATION ON LATERAL DIRECTIONAL CHARACTERISTICS



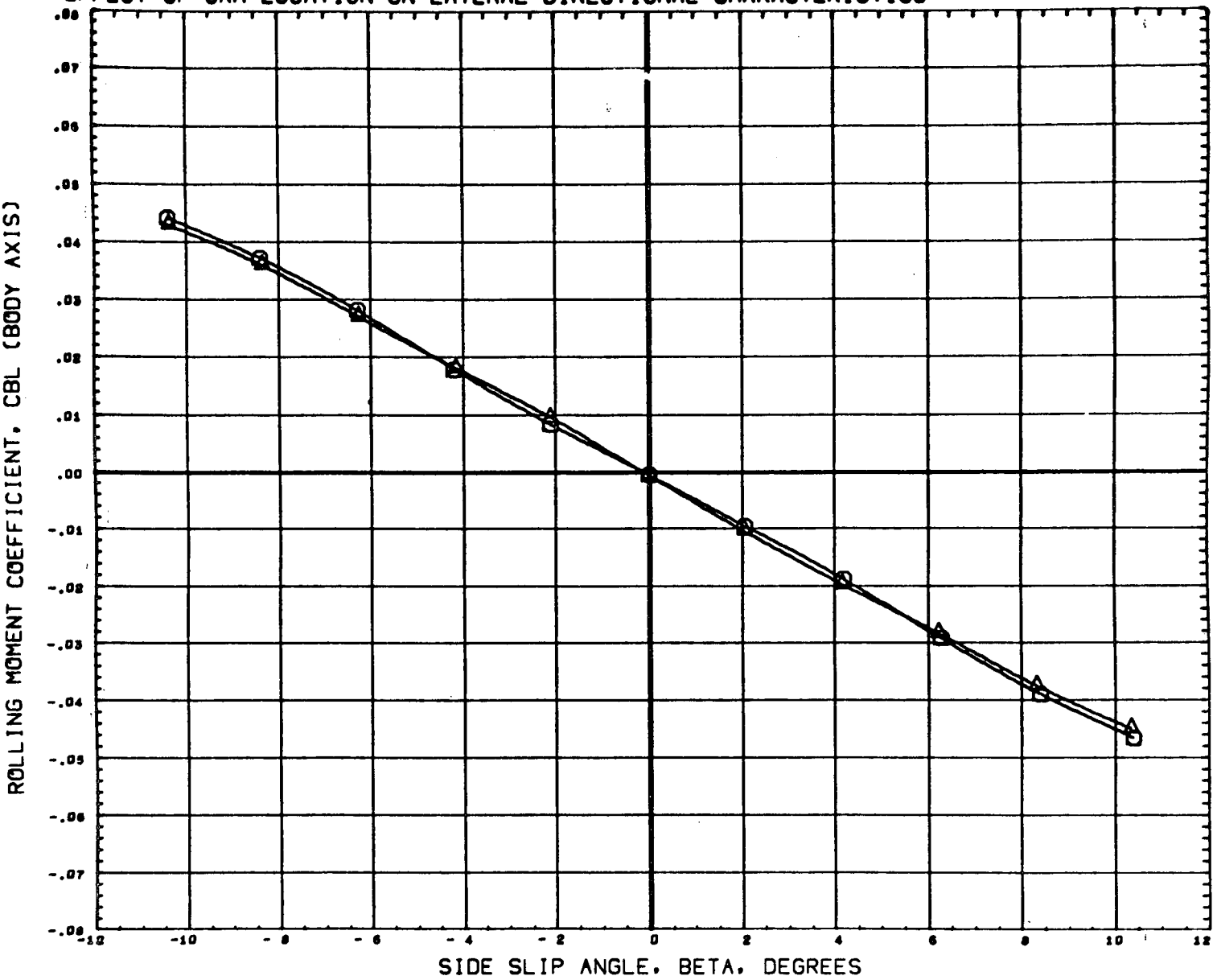
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ORBIN
(T66009)	○	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500
(A66021)	△	MSFC TWT 538 SHUTTLE LAUNCH T10133R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.20

EFFECT OF SRM LOCATION ON LATERAL DIRECTIONAL CHARACTERISTICS



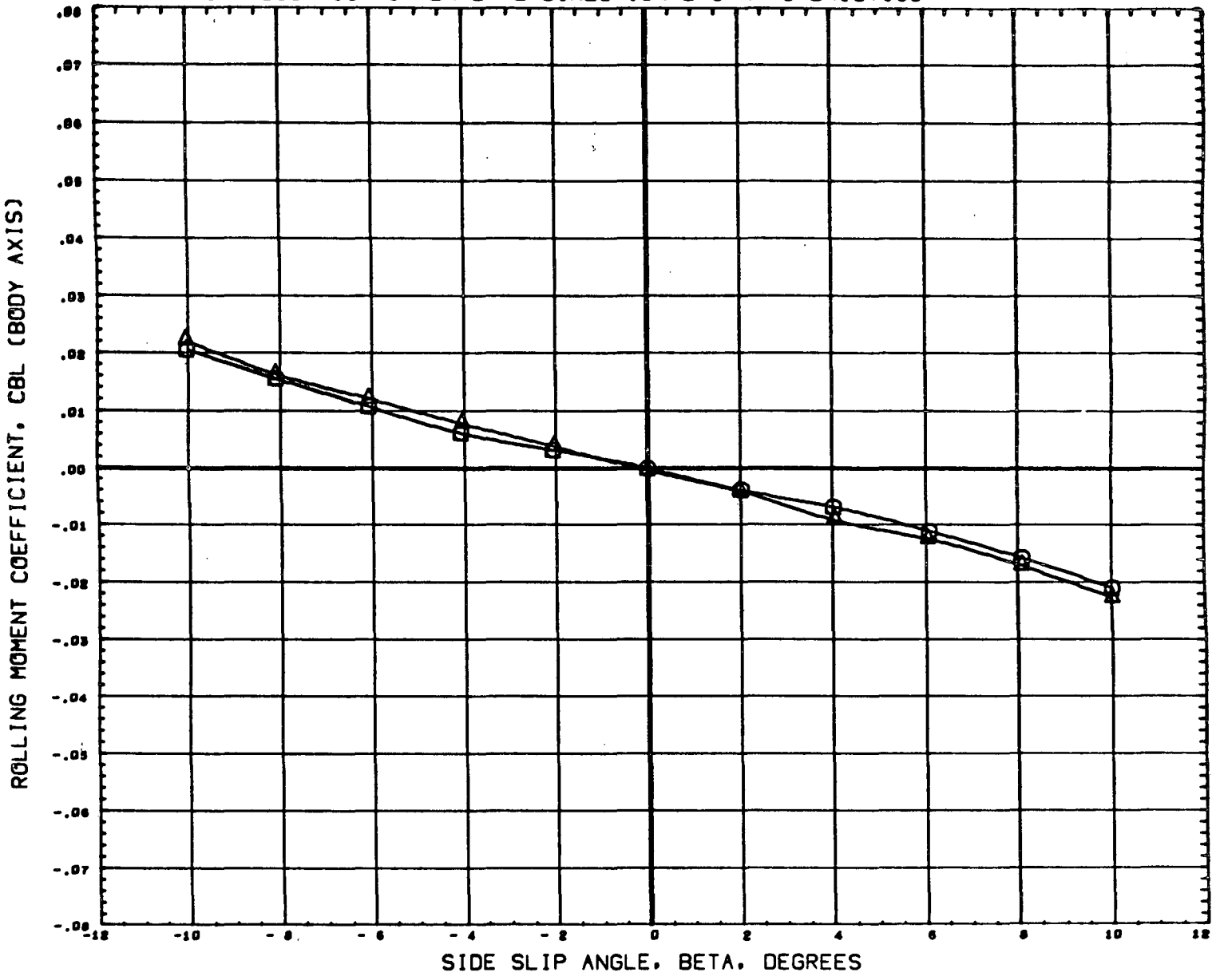
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(A66021)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S3R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.97

EFFECT OF SRM LOCATION ON LATERAL DIRECTIONAL CHARACTERISTICS



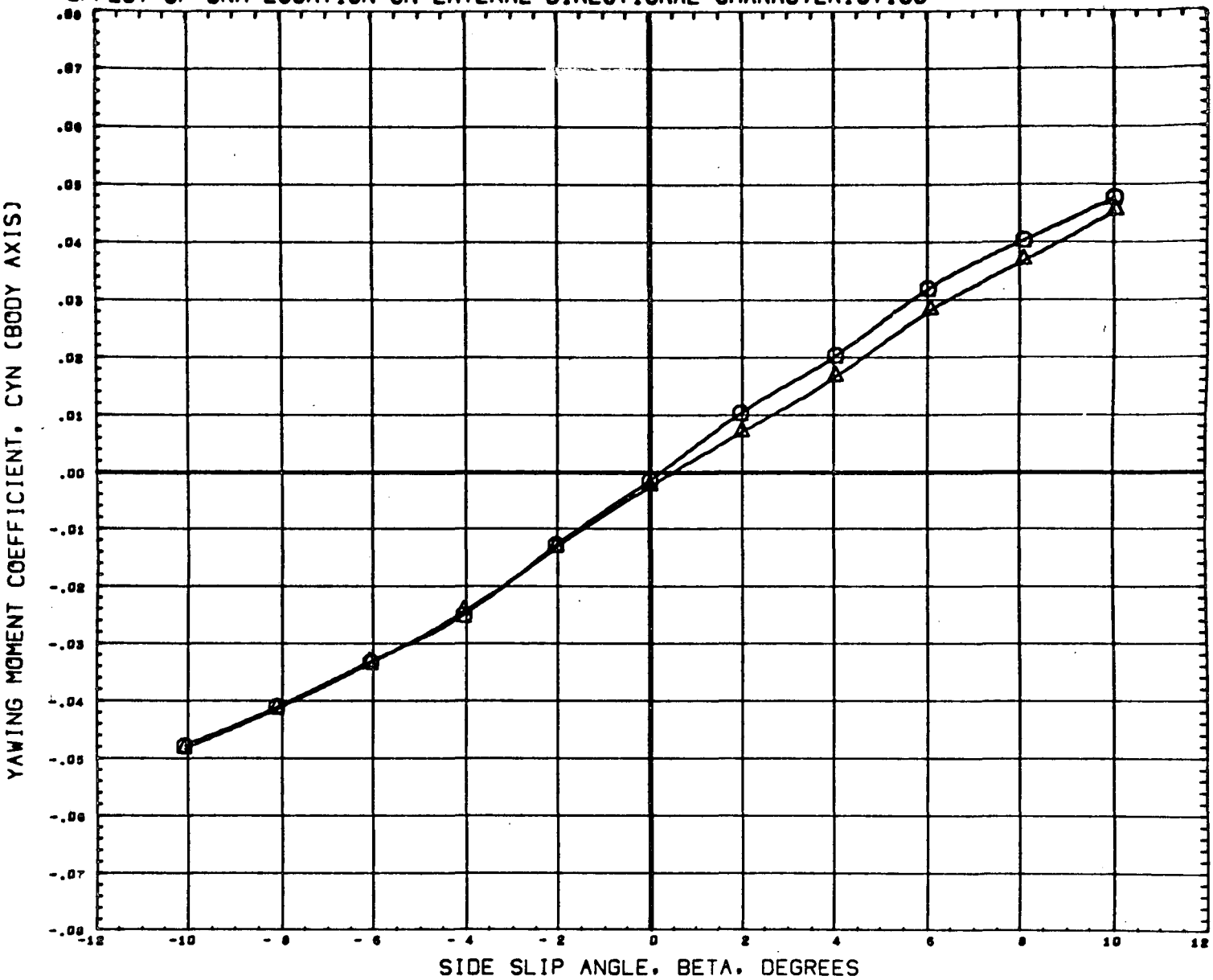
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(A66021)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S3R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 4.96

EFFECT OF SRM LOCATION ON LATERAL DIRECTIONAL CHARACTERISTICS



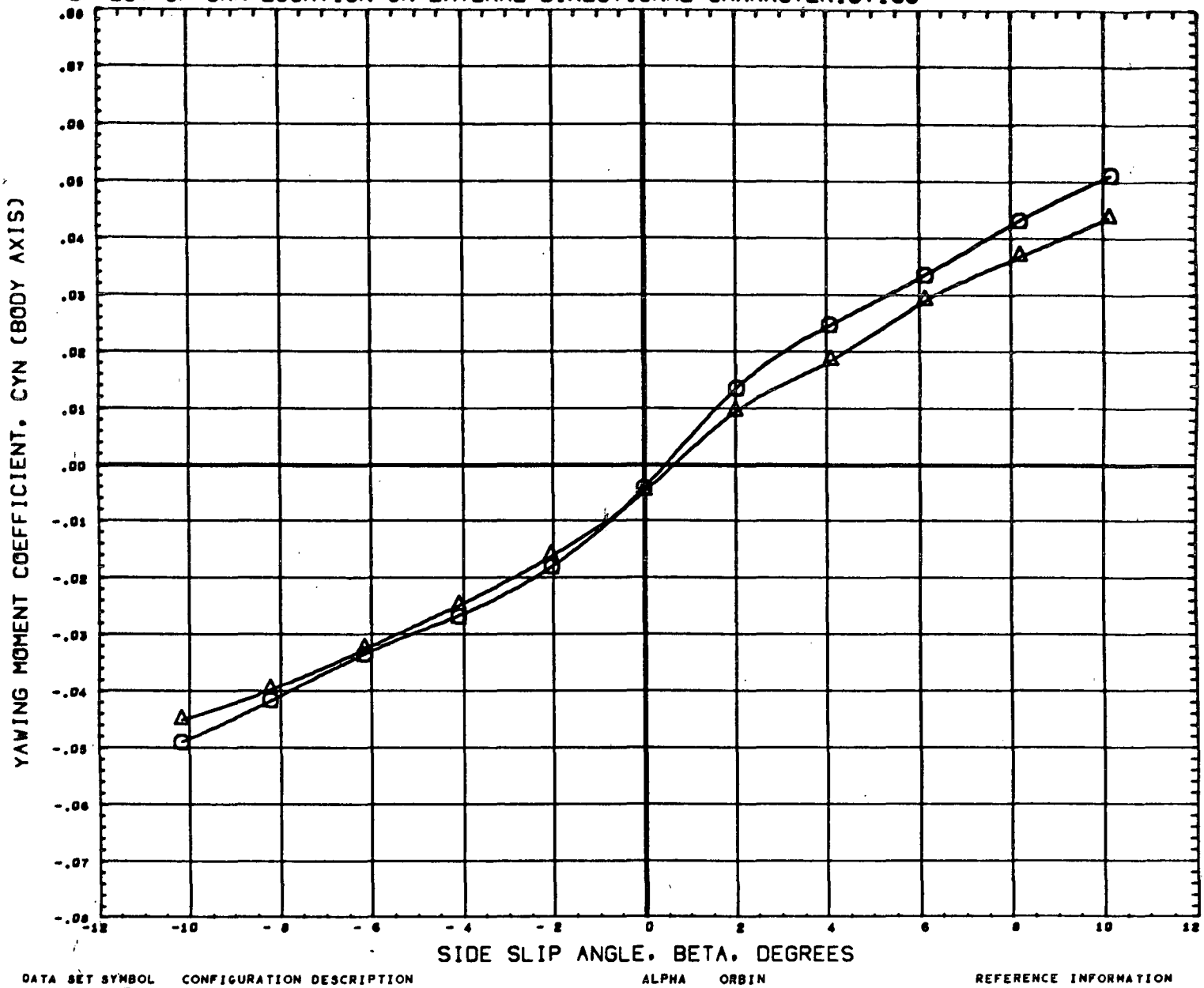
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(A66021)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S3R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .60

EFFECT OF SRM LOCATION ON LATERAL DIRECTIONAL CHARACTERISTICS



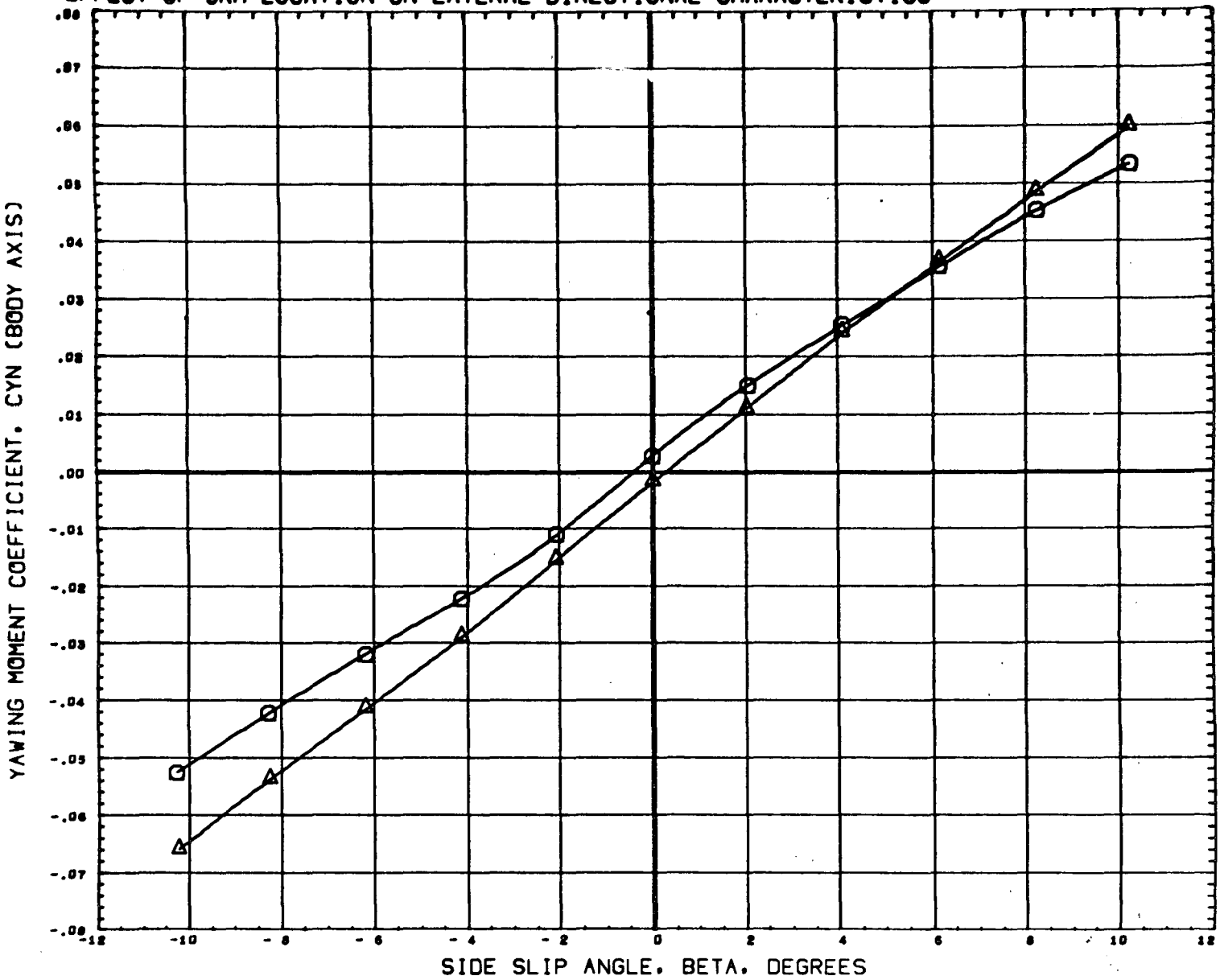
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T10181R1	0.000	-1.500
(A66021)	△	MSFC TWT 538	SHUTTLE LAUNCH	T10183R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .90

EFFECT OF SRM LOCATION ON LATERAL DIRECTIONAL CHARACTERISTICS



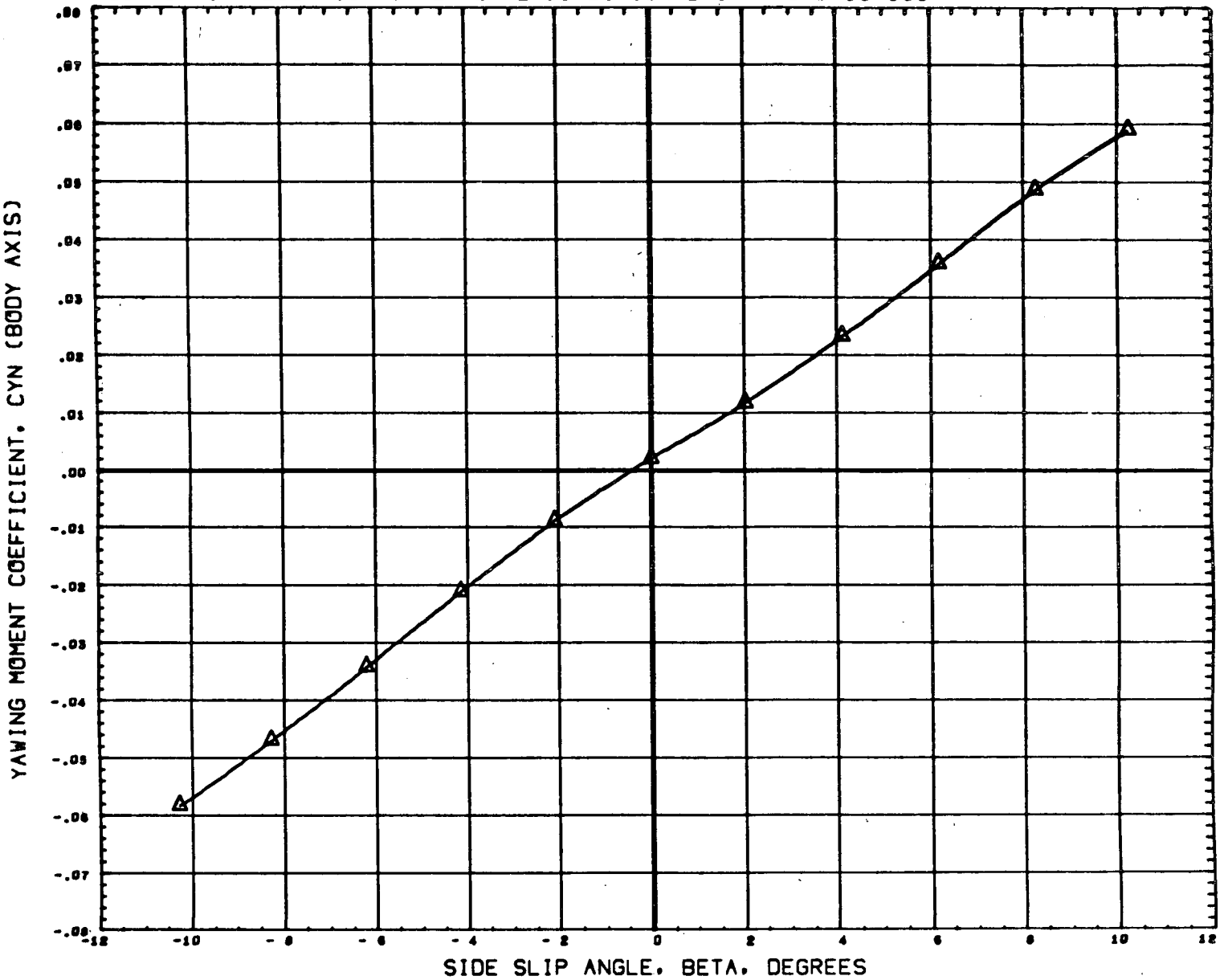
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T10131R1	0.000	-1.500
(A66021)	△	MSFC TWT 538	SHUTTLE LAUNCH	T10133R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.10

EFFECT OF SRM LOCATION ON LATERAL DIRECTIONAL CHARACTERISTICS



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ORBIN
(T66009)	○	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500
(A66021)	△	MSFC TWT 538 SHUTTLE LAUNCH T101S3R1	0.000	-1.500

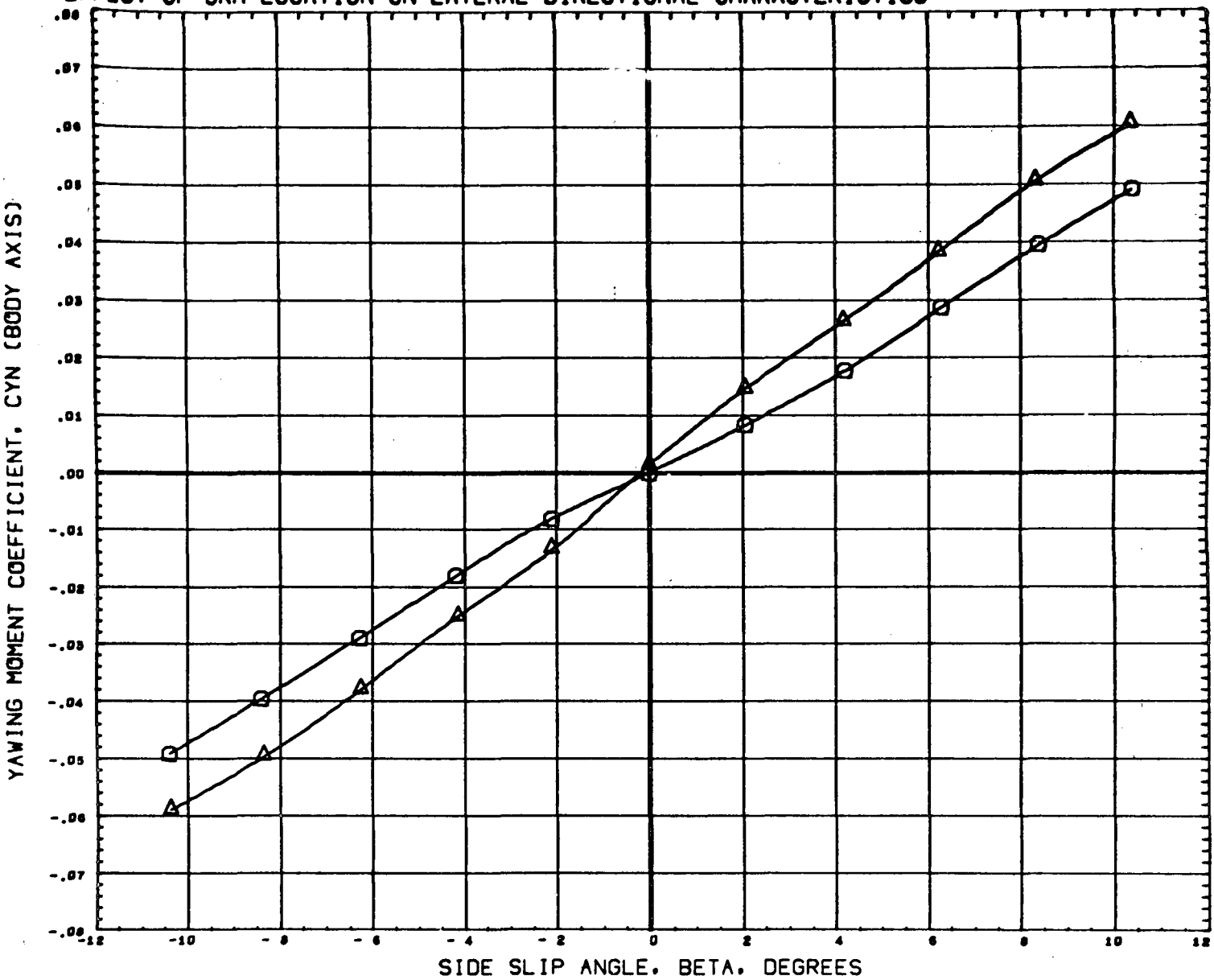
REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.20

C.6

EFFECT OF SRM LOCATION ON LATERAL DIRECTIONAL CHARACTERISTICS



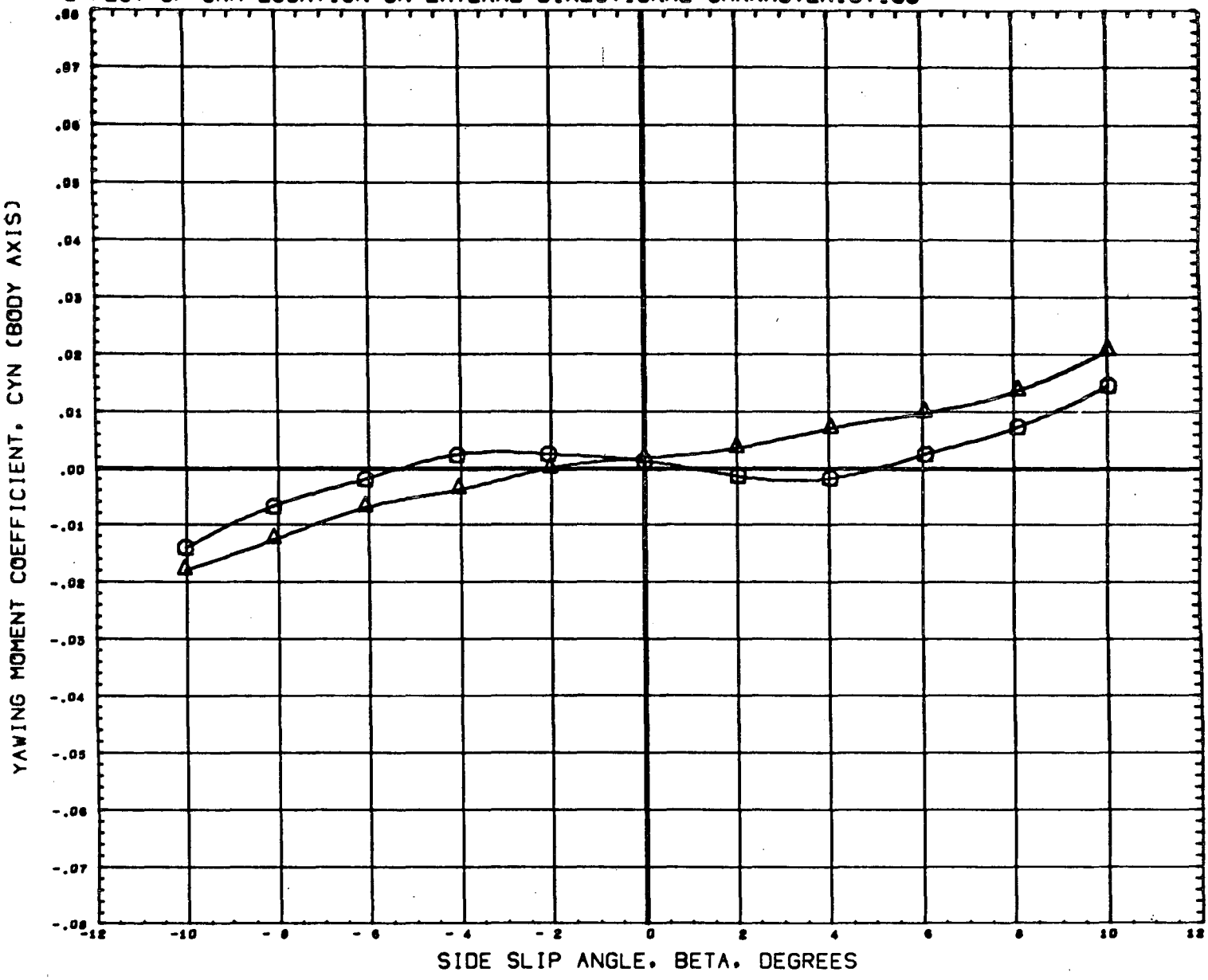
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(A66021)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S3R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.97

EFFECT OF SRM LOCATION ON LATERAL DIRECTIONAL CHARACTERISTICS



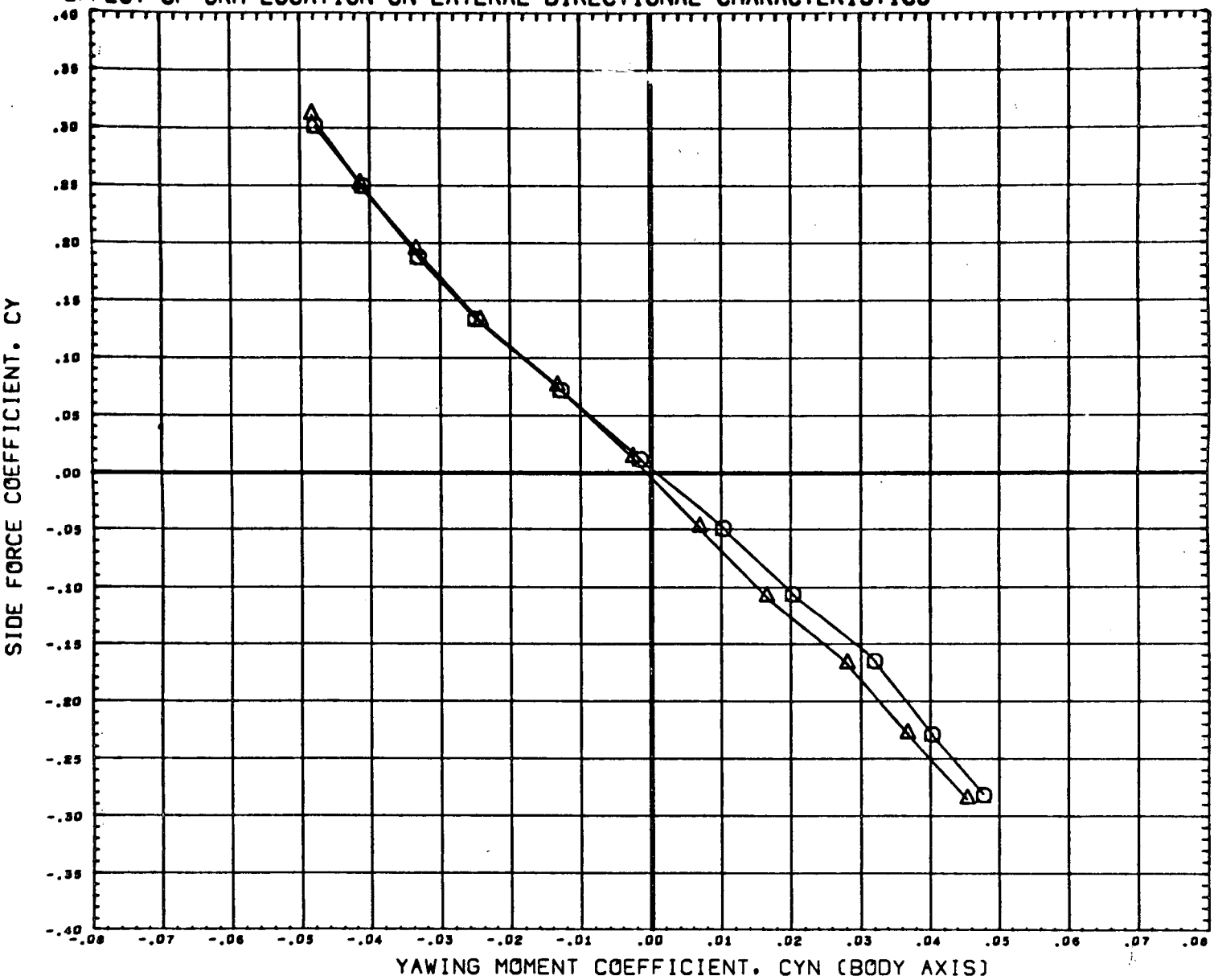
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1013IR1	0.000	-1.500
(A66021)	△	MSFC TWT 538	SHUTTLE LAUNCH	T1013SR1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 4.96

EFFECT OF SRM LOCATION ON LATERAL DIRECTIONAL CHARACTERISTICS



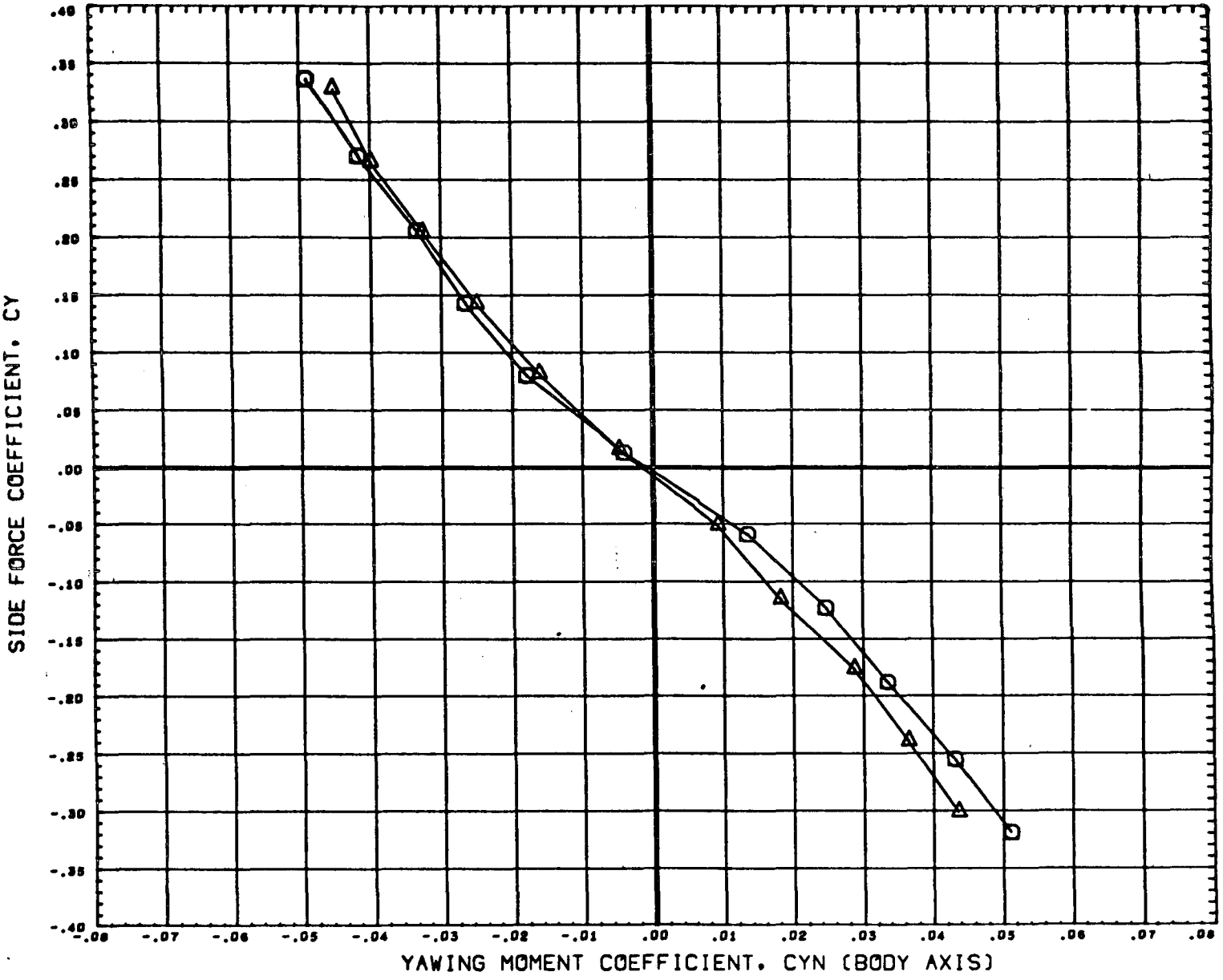
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(A66021)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S3R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .60

EFFECT OF SRM LOCATION ON LATERAL DIRECTIONAL CHARACTERISTICS



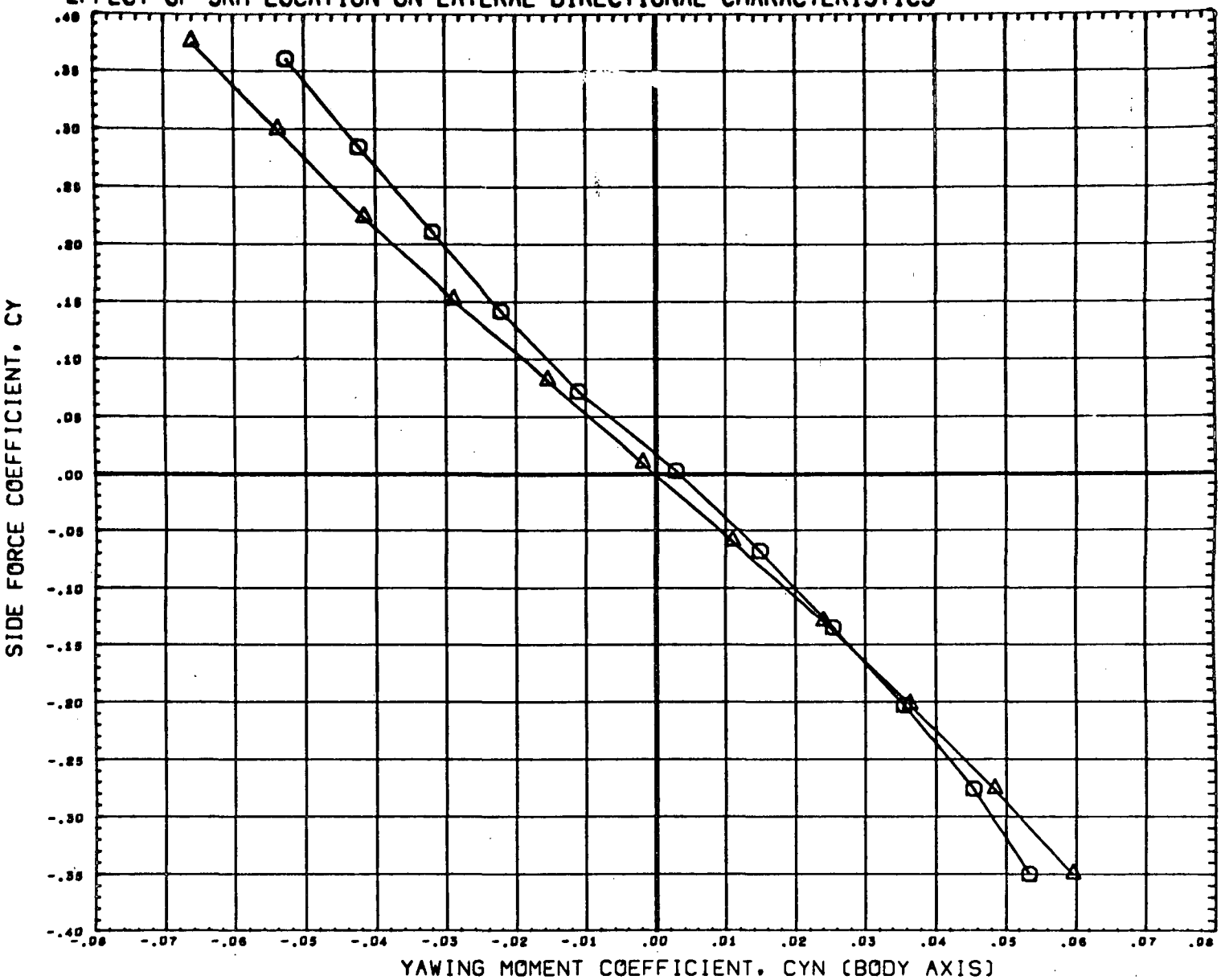
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(A66021)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S3R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .90

EFFECT OF SRM LOCATION ON LATERAL DIRECTIONAL CHARACTERISTICS



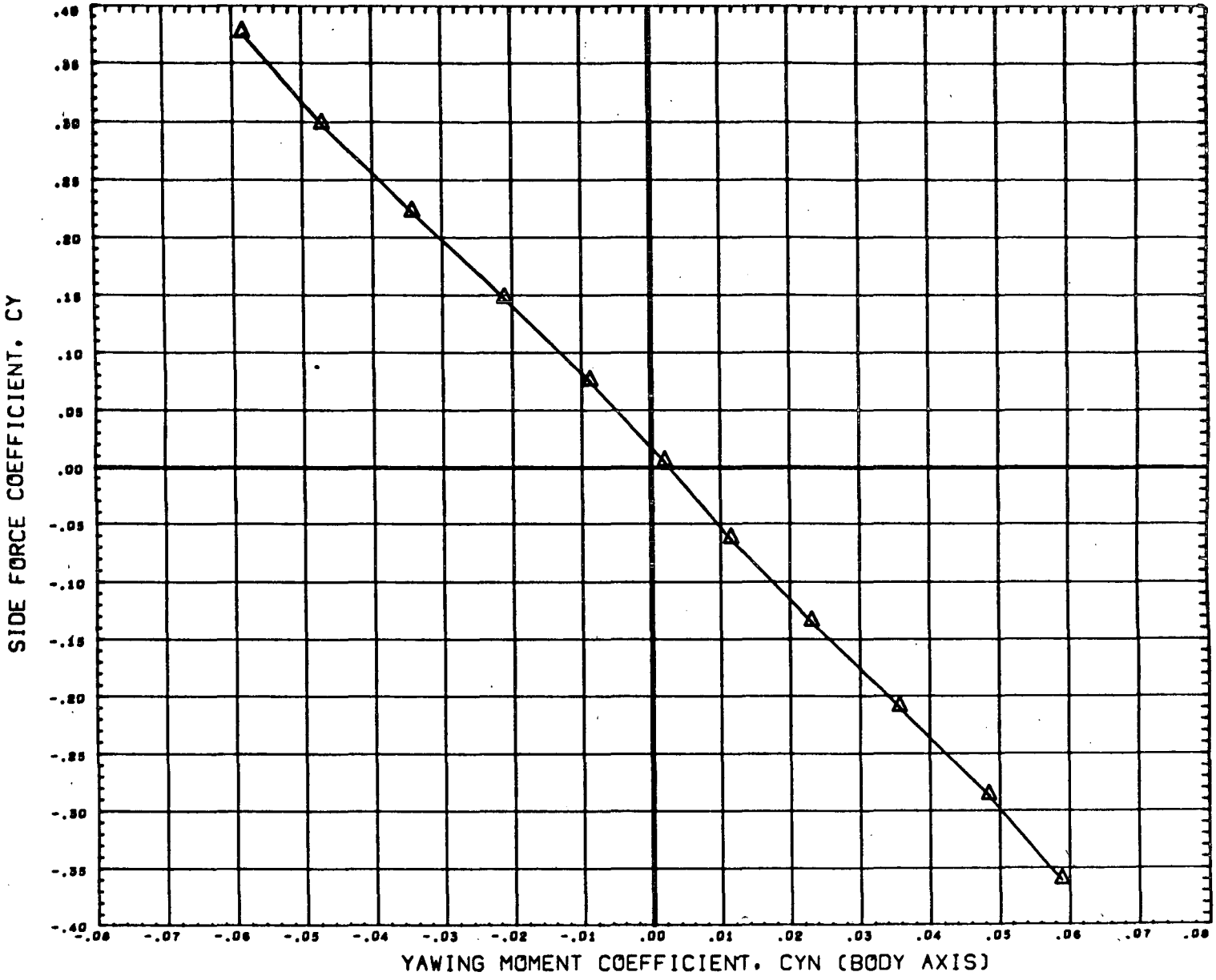
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(A66021)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S3R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.10

EFFECT OF SRM LOCATION ON LATERAL DIRECTIONAL CHARACTERISTICS



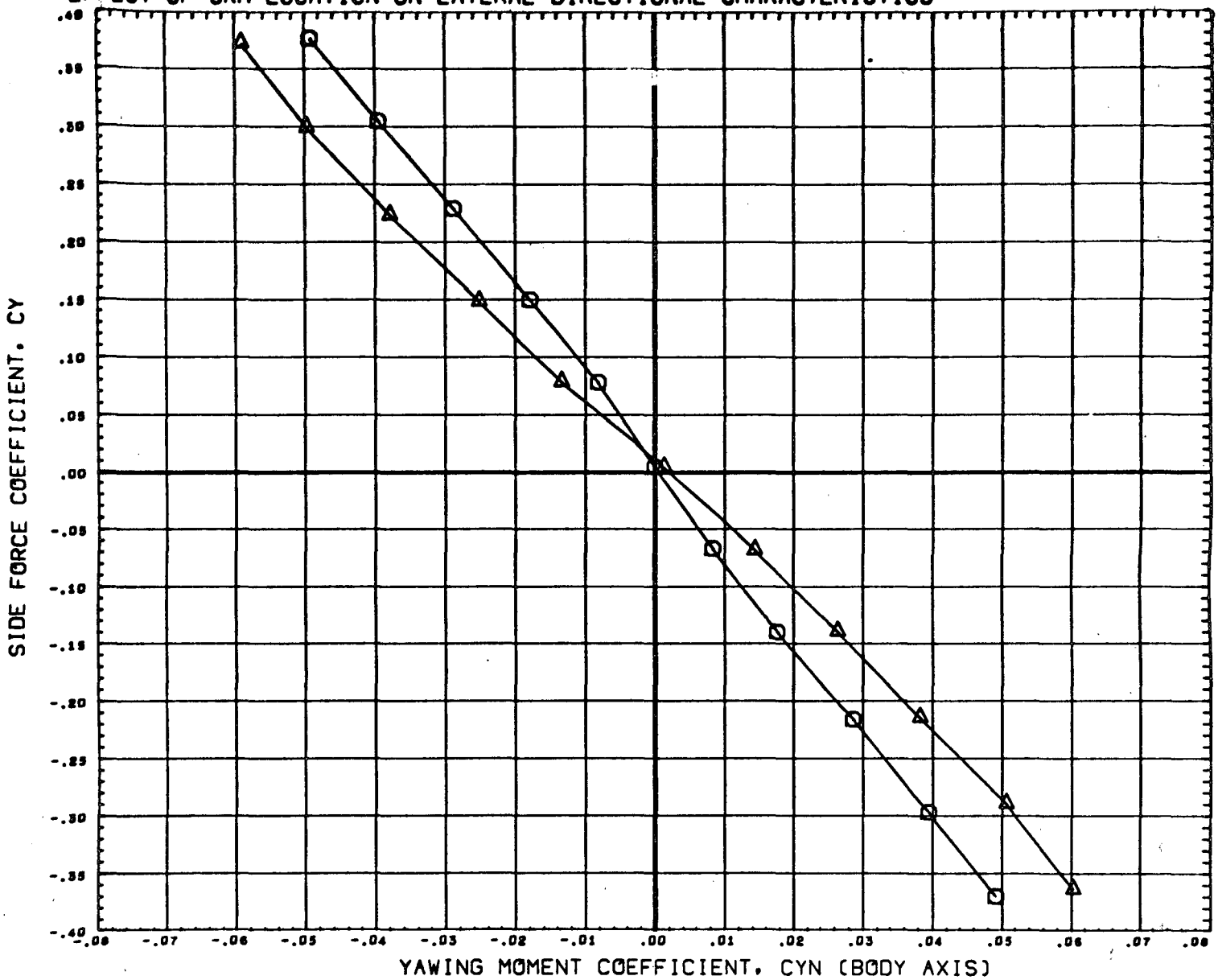
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ORBIN
(T66009)	○	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500
(A66021)	△	MSFC TWT 538 SHUTTLE LAUNCH T101S3R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.20

EFFECT OF SRM LOCATION ON LATERAL DIRECTIONAL CHARACTERISTICS



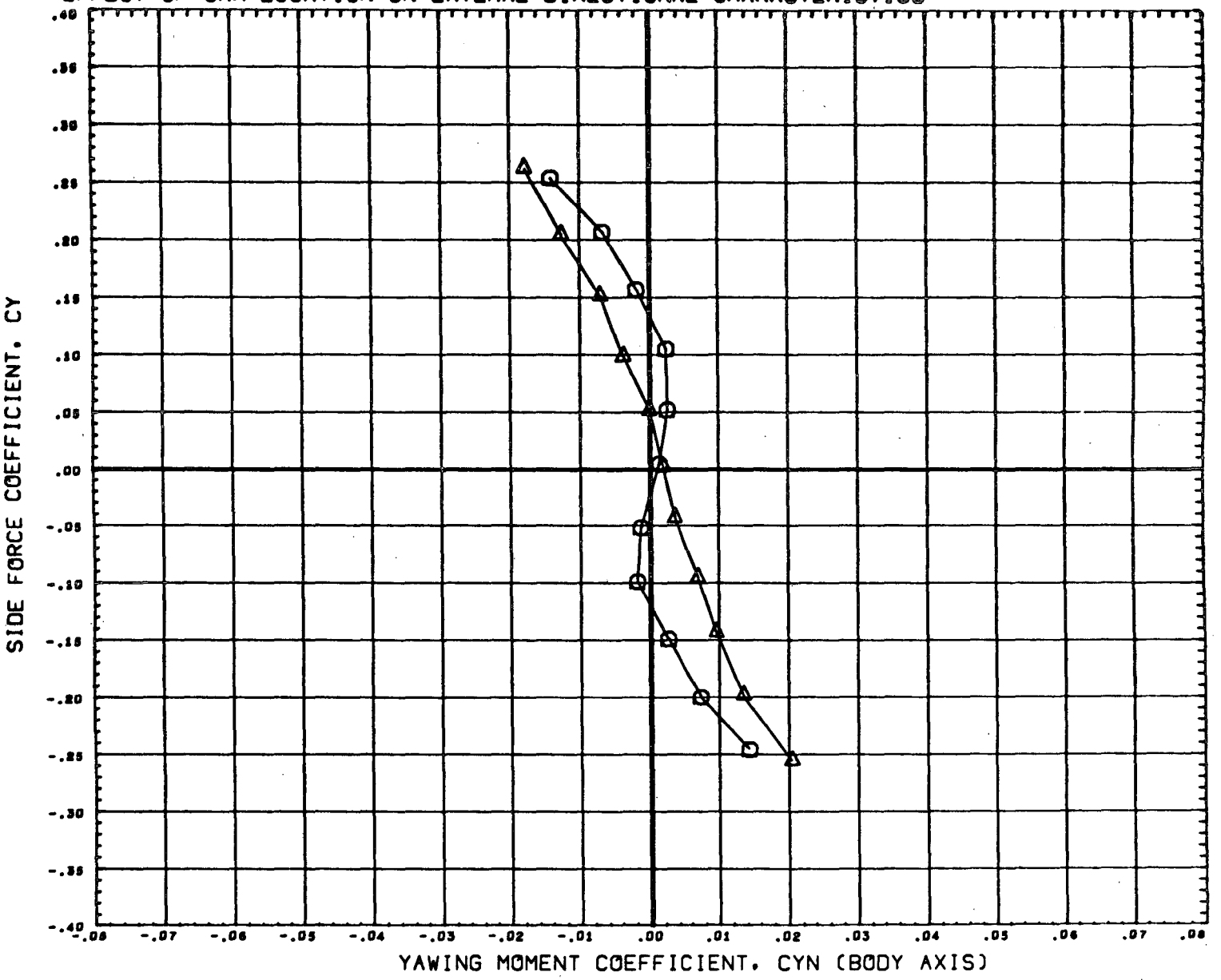
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(A66021)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S3R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.97

EFFECT OF SRM LOCATION ON LATERAL DIRECTIONAL CHARACTERISTICS



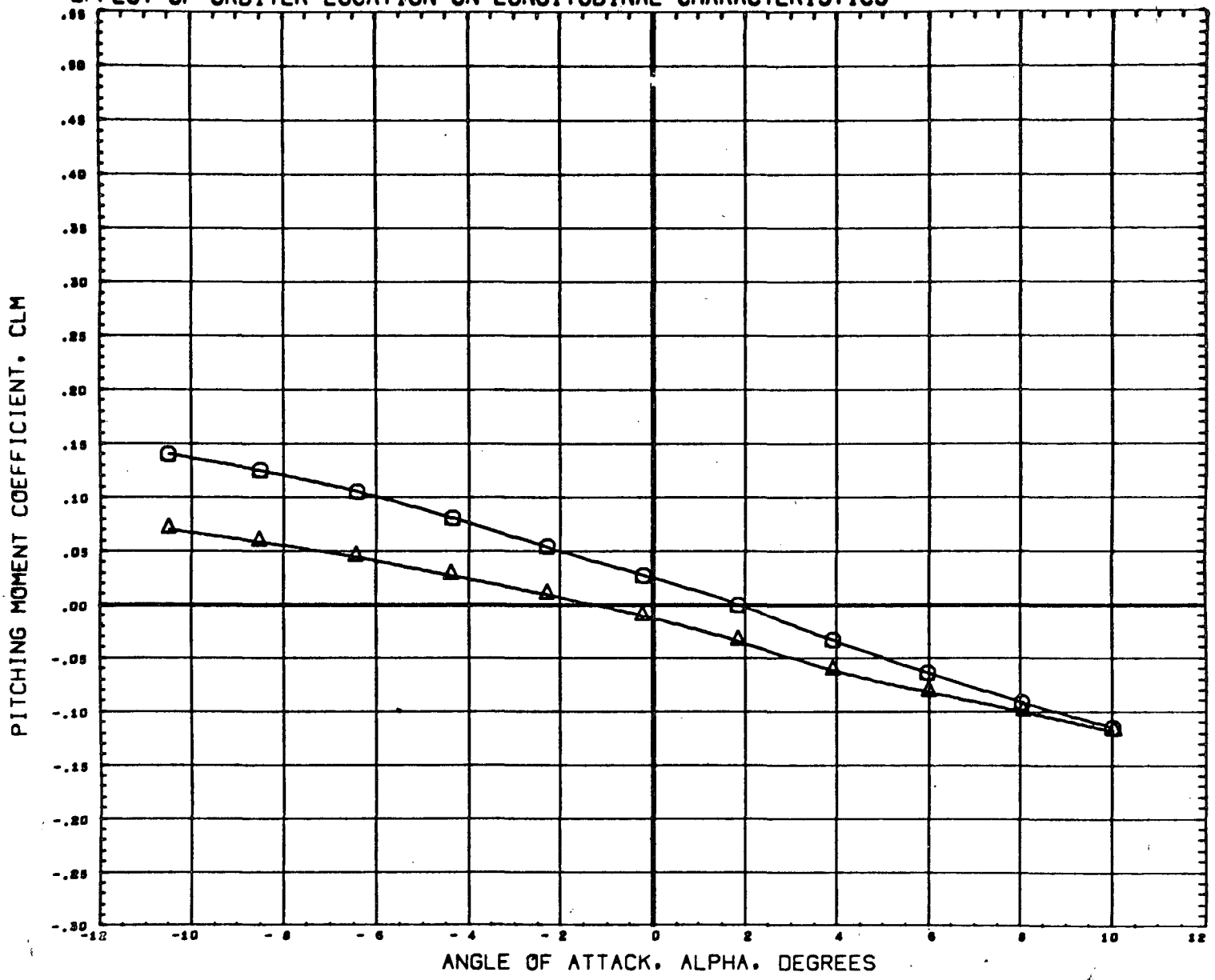
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(A66021)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S3R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.0900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 4.96

EFFECT OF ORBITER LOCATION ON LONGITUDINAL CHARACTERISTICS



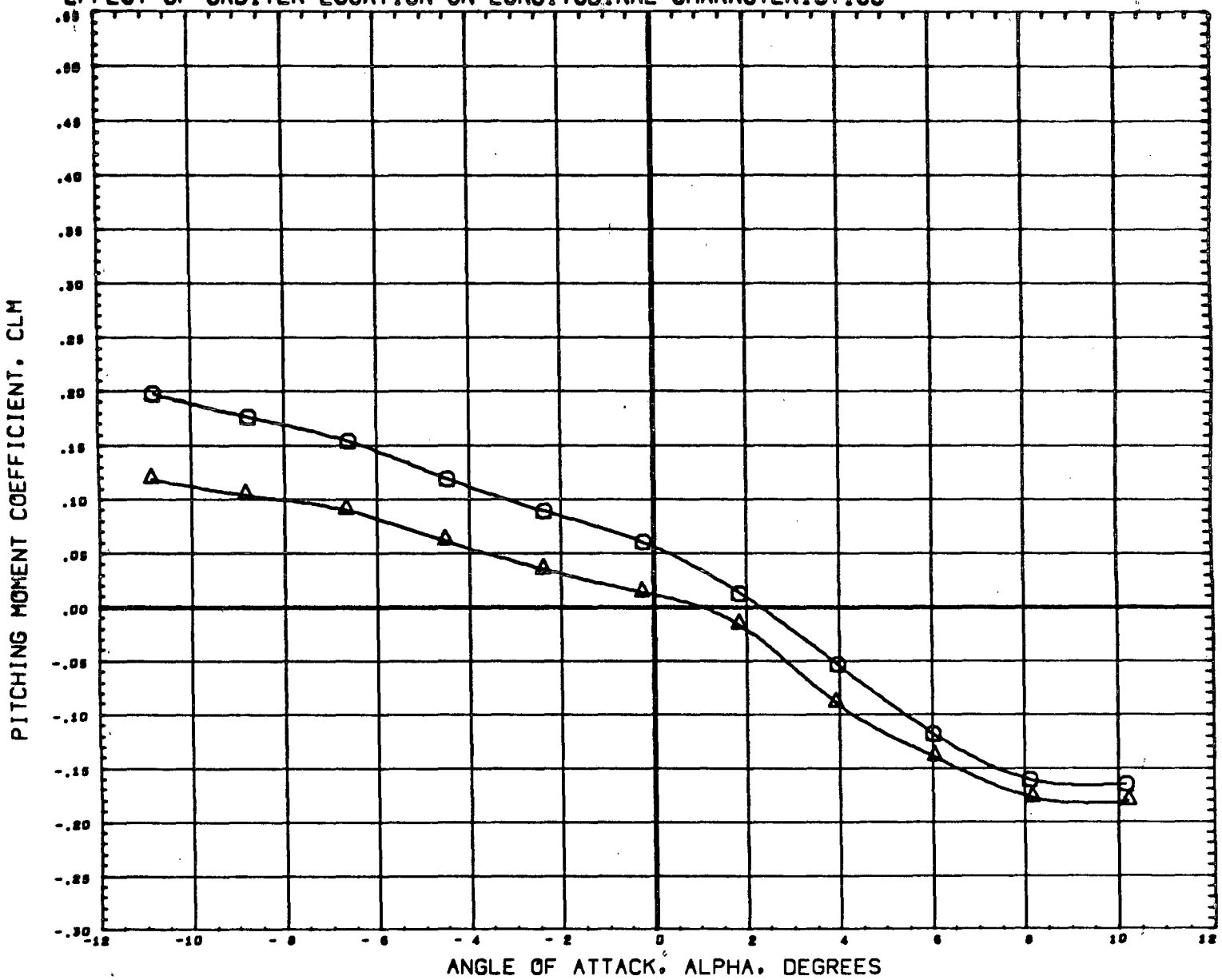
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66022)	△	MSFC TWT 538	SHUTTLE LAUNCH	T102S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .60

EFFECT OF ORBITER LOCATION ON LONGITUDINAL CHARACTERISTICS



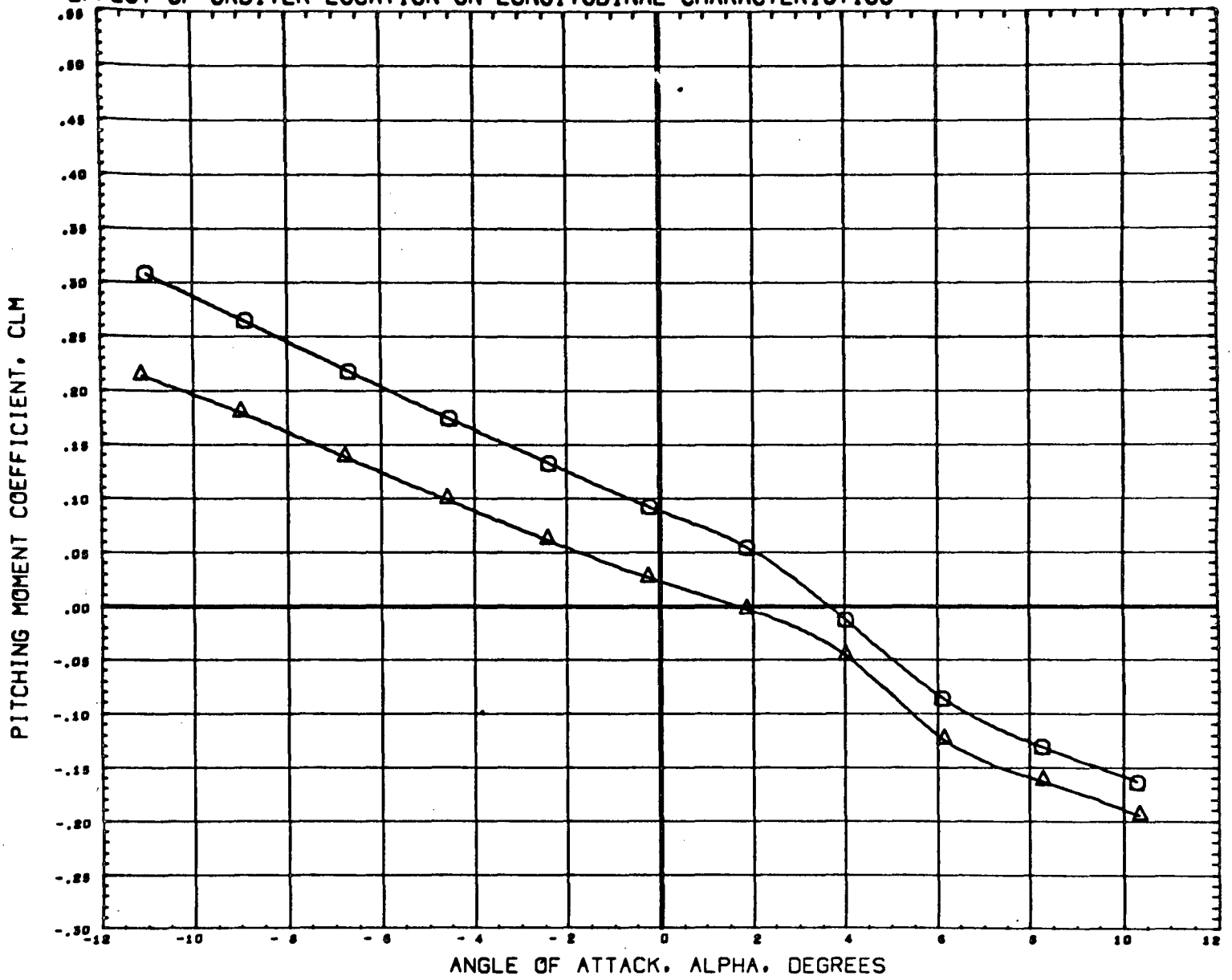
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T10131R1	0.000	-1.500
(B66022)	△	MSFC TWT 538	SHUTTLE LAUNCH	T10231R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .91

EFFECT OF ORBITER LOCATION ON LONGITUDINAL CHARACTERISTICS



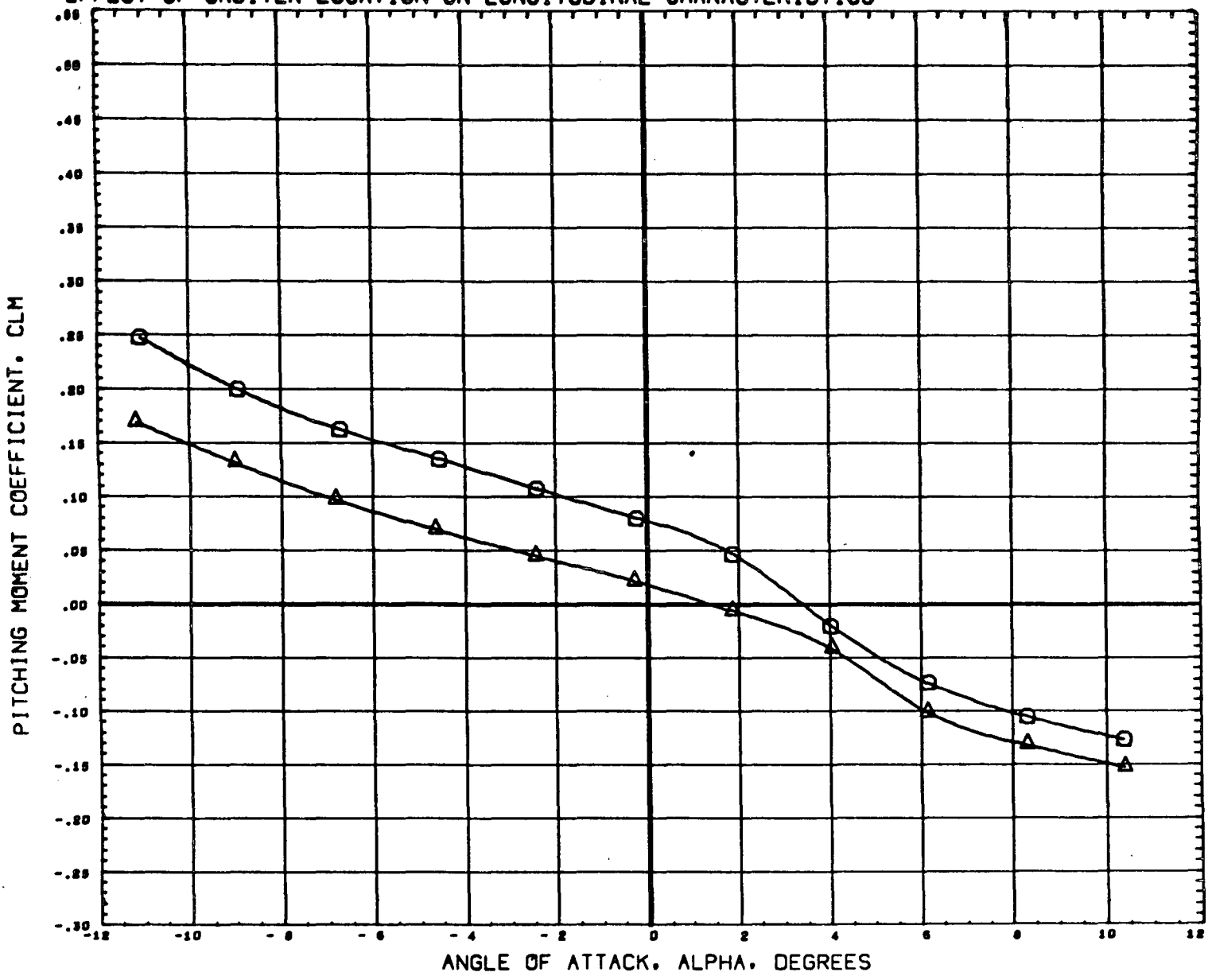
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66022)	△	MSFC TWT 538	SHUTTLE LAUNCH	T102S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.11

EFFECT OF ORBITER LOCATION ON LONGITUDINAL CHARACTERISTICS

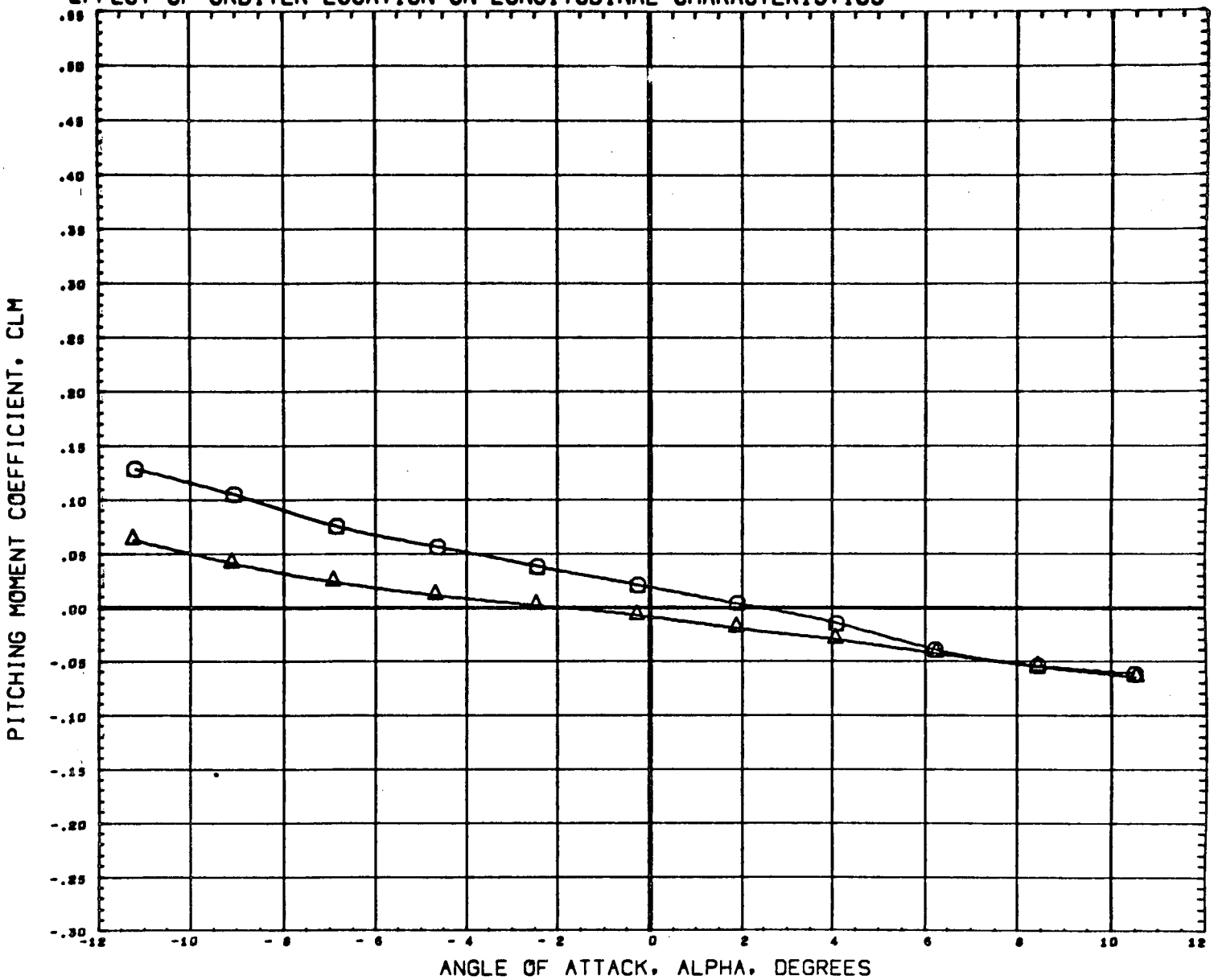


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(866008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(866022)	△	MSFC TWT 538	SHUTTLE LAUNCH	T102S1R1	0.000	-1.500

REFERENCE INFORMATION		
SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.19

EFFECT OF ORBITER LOCATION ON LONGITUDINAL CHARACTERISTICS



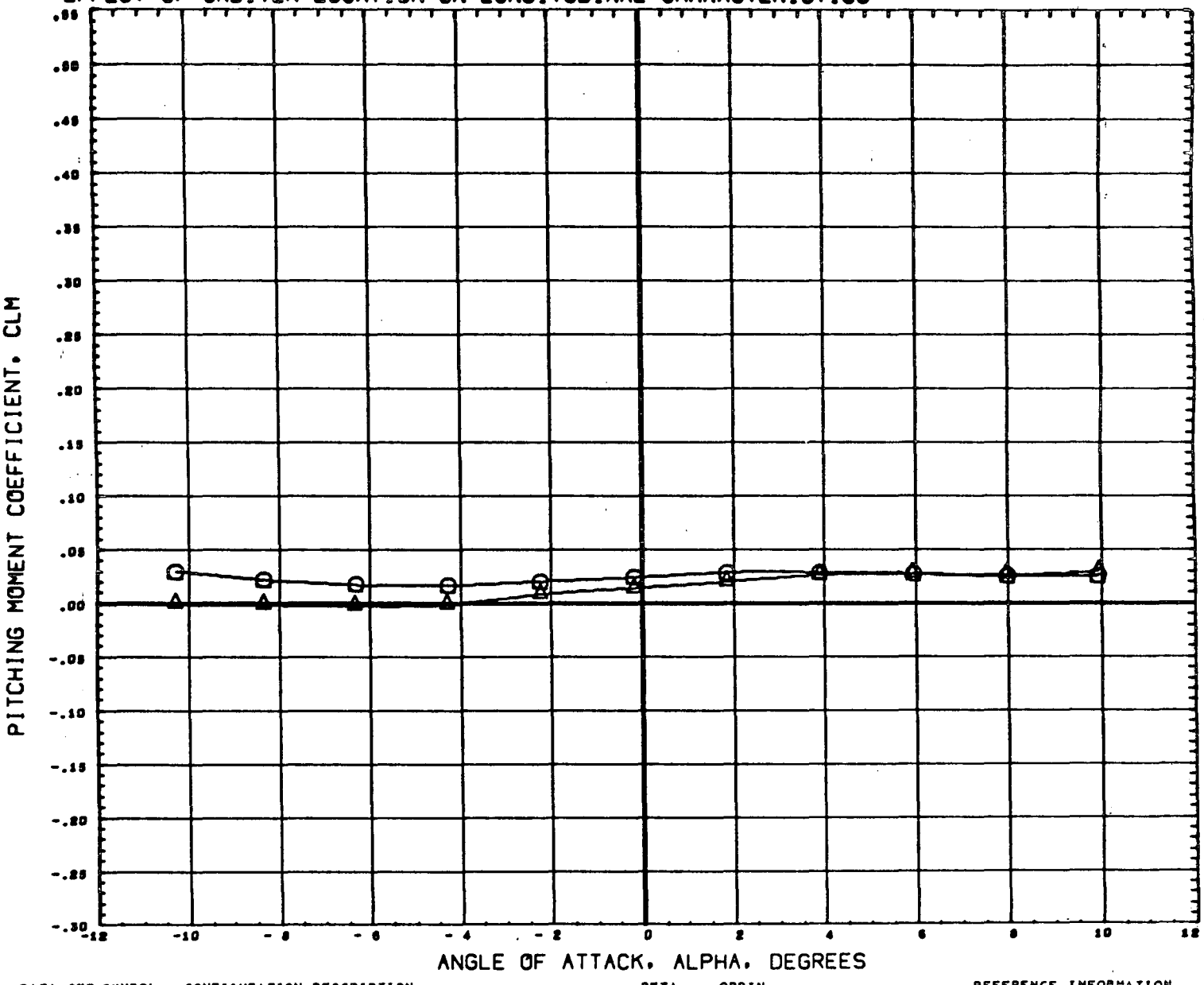
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(866008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(866022)	△	MSFC TWT 538	SHUTTLE LAUNCH	T102S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2460	IN.
SCALE	0.0040	

MACH 1.97

EFFECT OF ORBITER LOCATION ON LONGITUDINAL CHARACTERISTICS



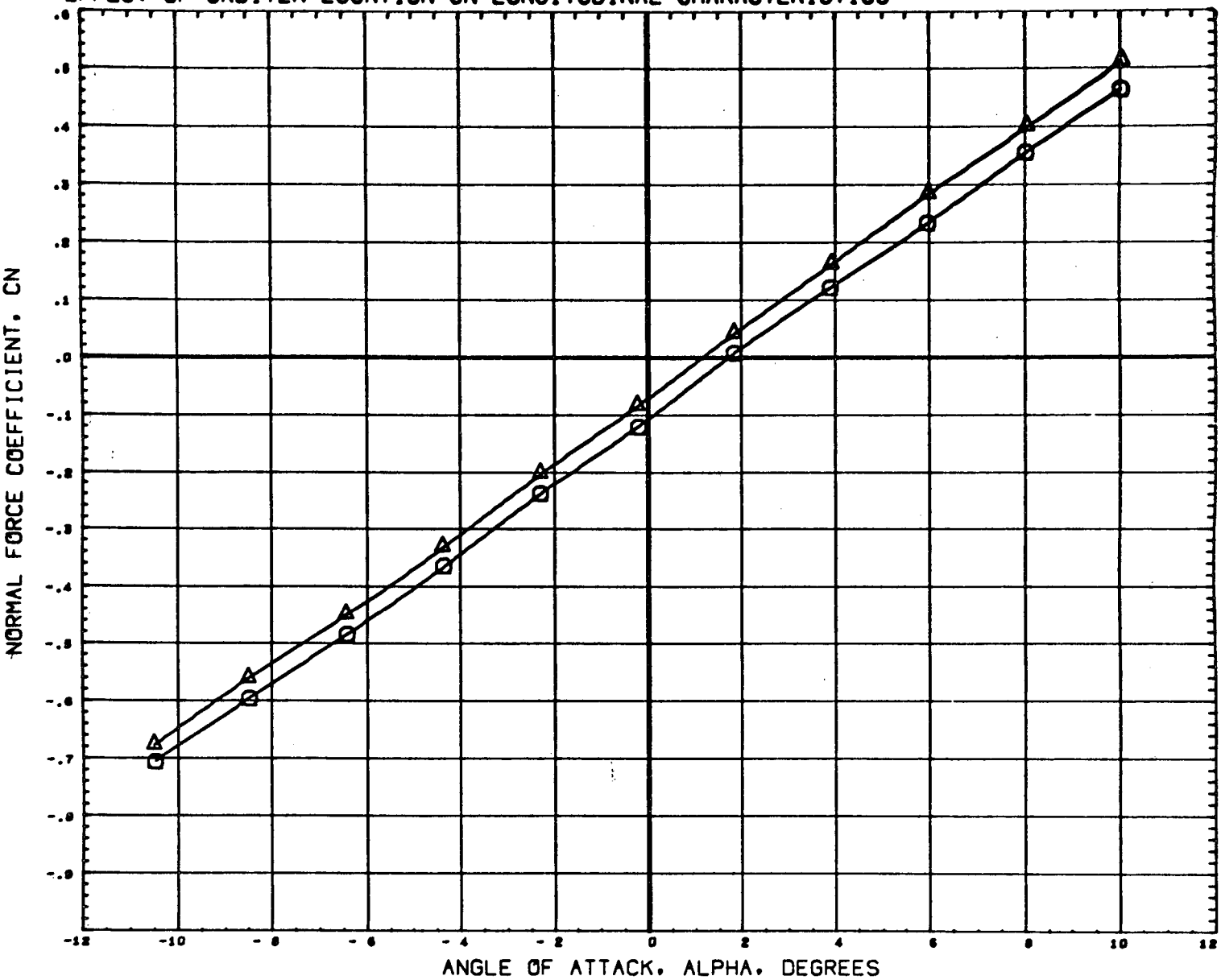
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66022)	△	MSFC TWT 538	SHUTTLE LAUNCH	T102S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 4.96

EFFECT OF ORBITER LOCATION ON LONGITUDINAL CHARACTERISTICS



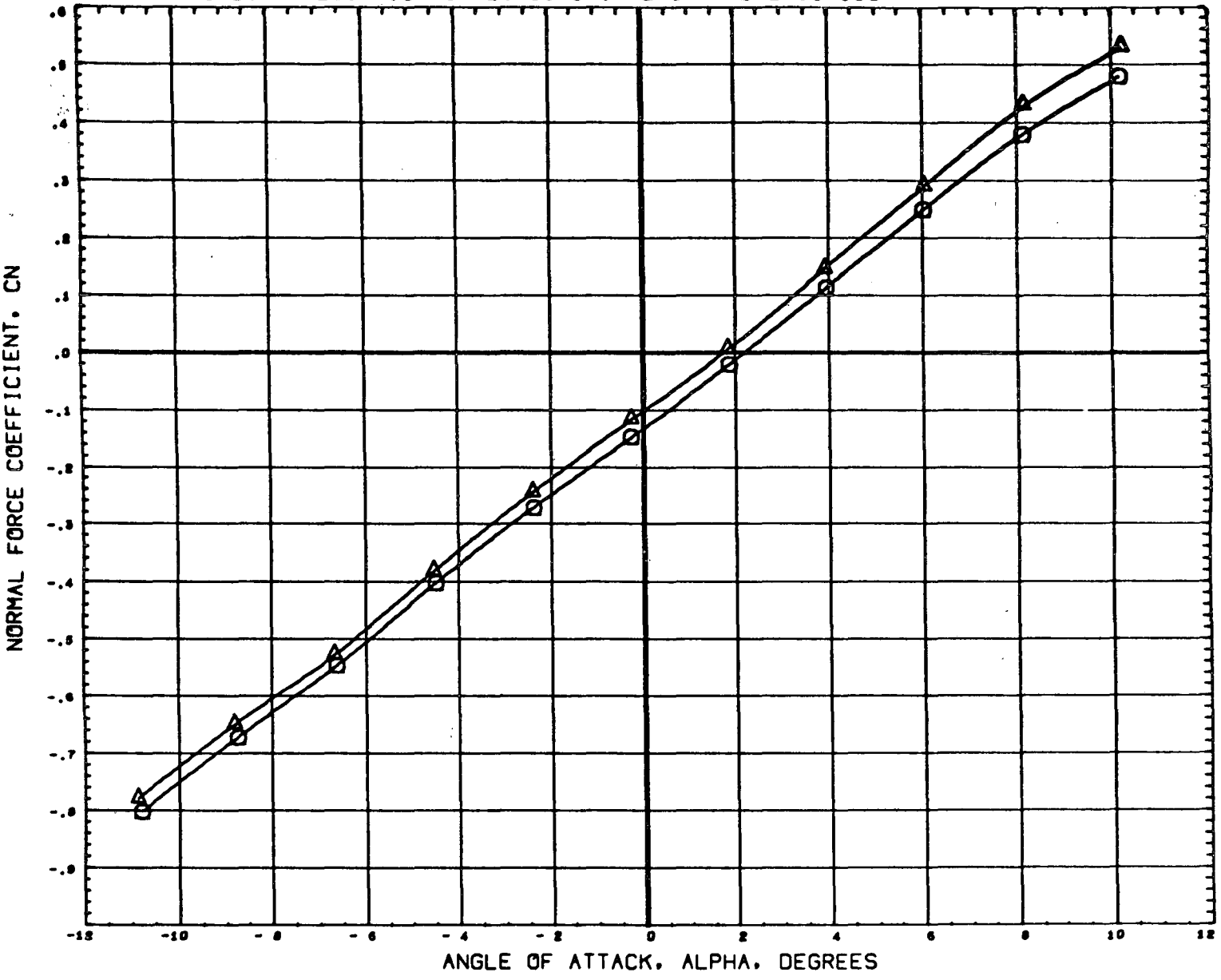
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(866008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(866022)	△	MSFC TWT 538	SHUTTLE LAUNCH	T102S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.6900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1460	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .60

EFFECT OF ORBITER LOCATION ON LONGITUDINAL CHARACTERISTICS



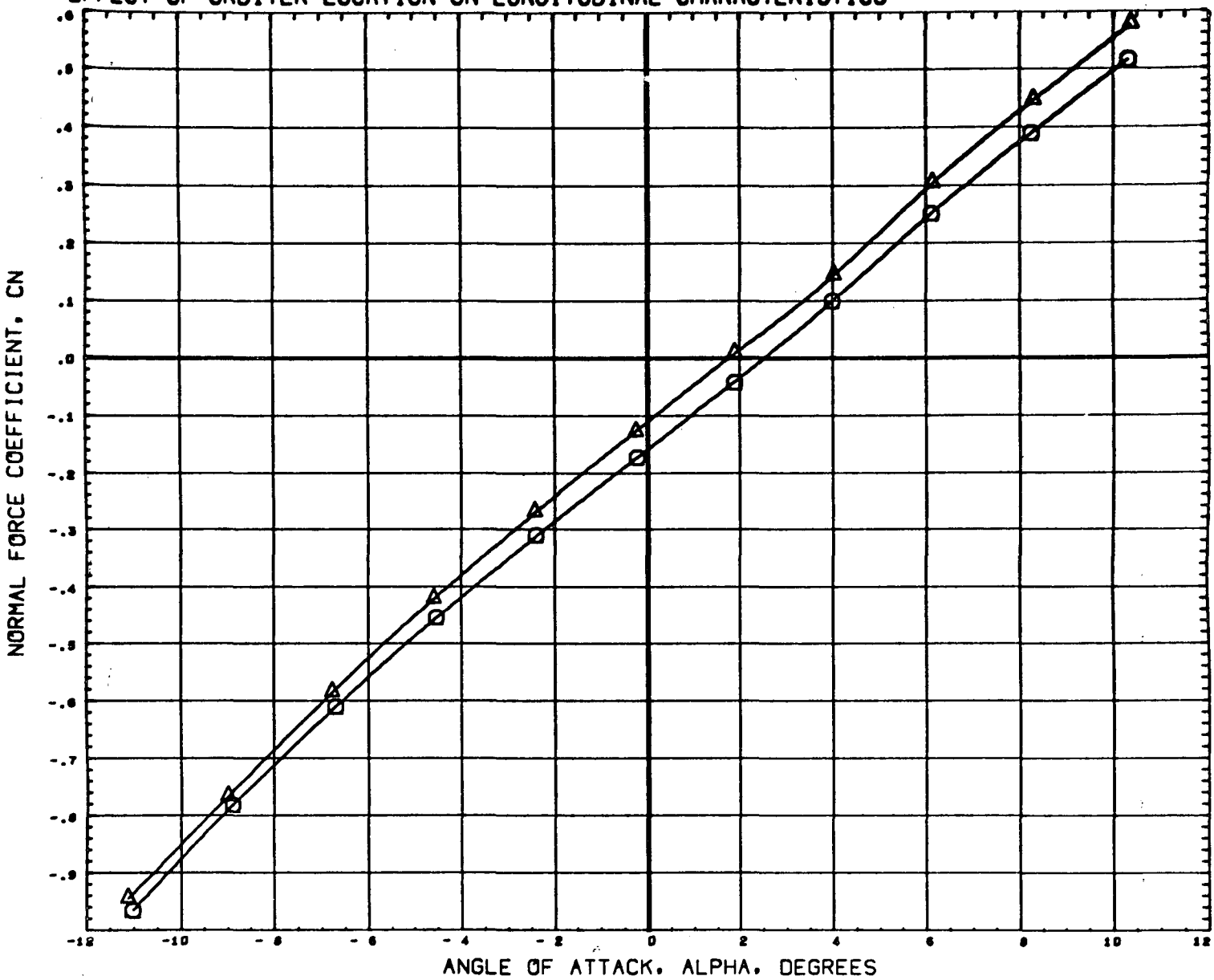
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66022)	△	MSFC TWT 538	SHUTTLE LAUNCH	T102S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .91

EFFECT OF ORBITER LOCATION ON LONGITUDINAL CHARACTERISTICS



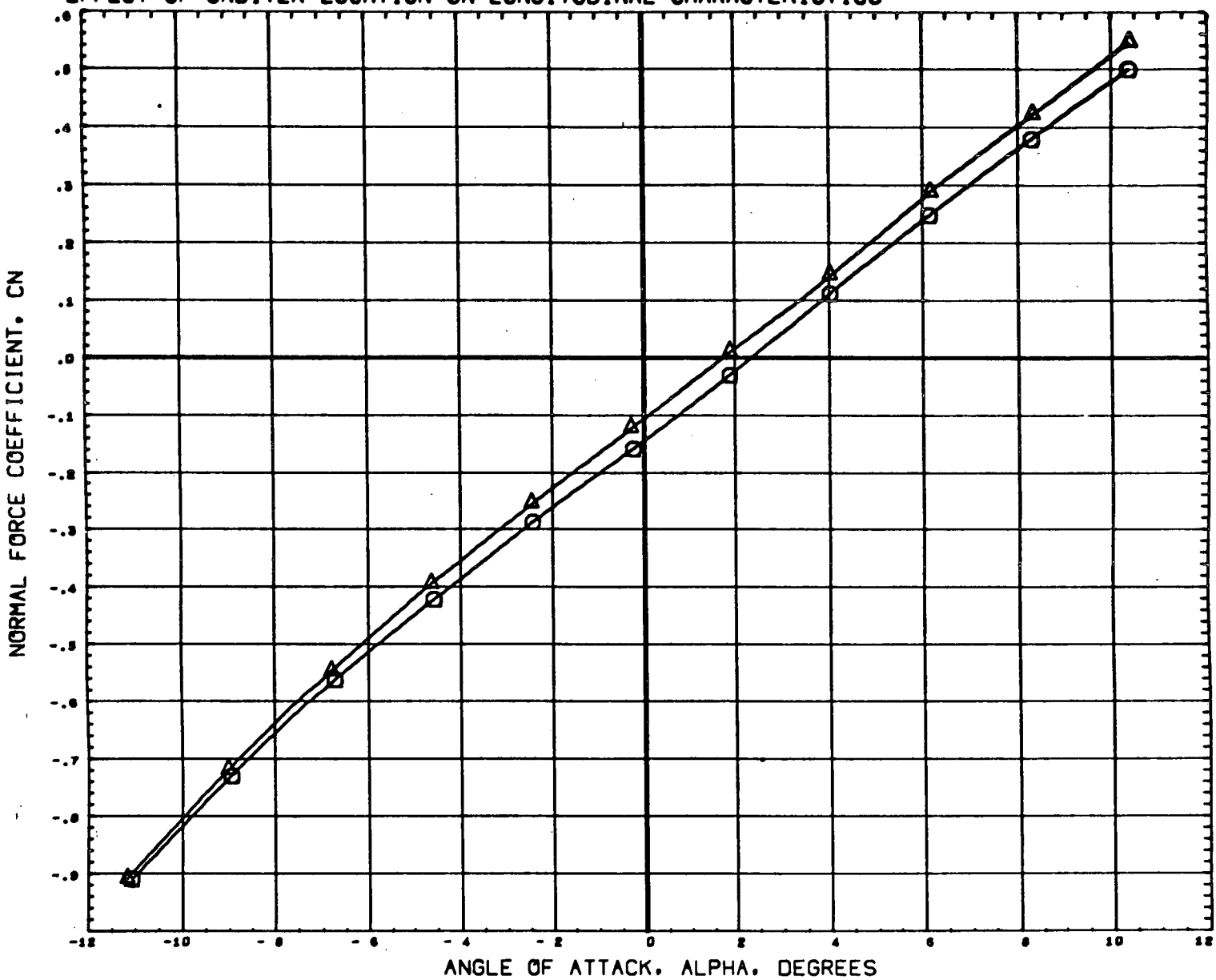
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(866008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(866022)	△	MSFC TWT 538	SHUTTLE LAUNCH	T102S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.11

EFFECT OF ORBITER LOCATION ON LONGITUDINAL CHARACTERISTICS



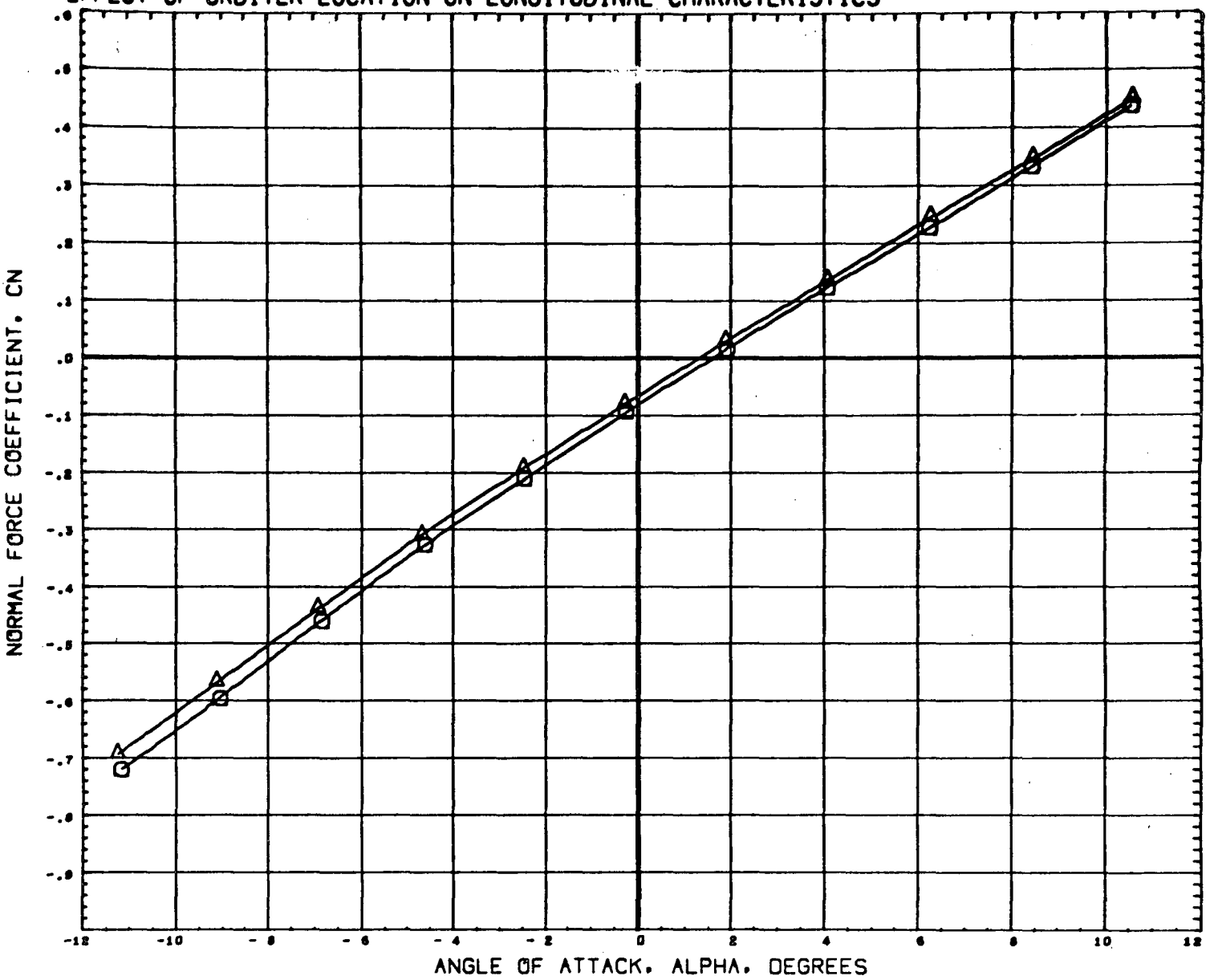
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66022)	△	MSFC TWT 538	SHUTTLE LAUNCH	T102S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.0900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.19

EFFECT OF ORBITER LOCATION ON LONGITUDINAL CHARACTERISTICS



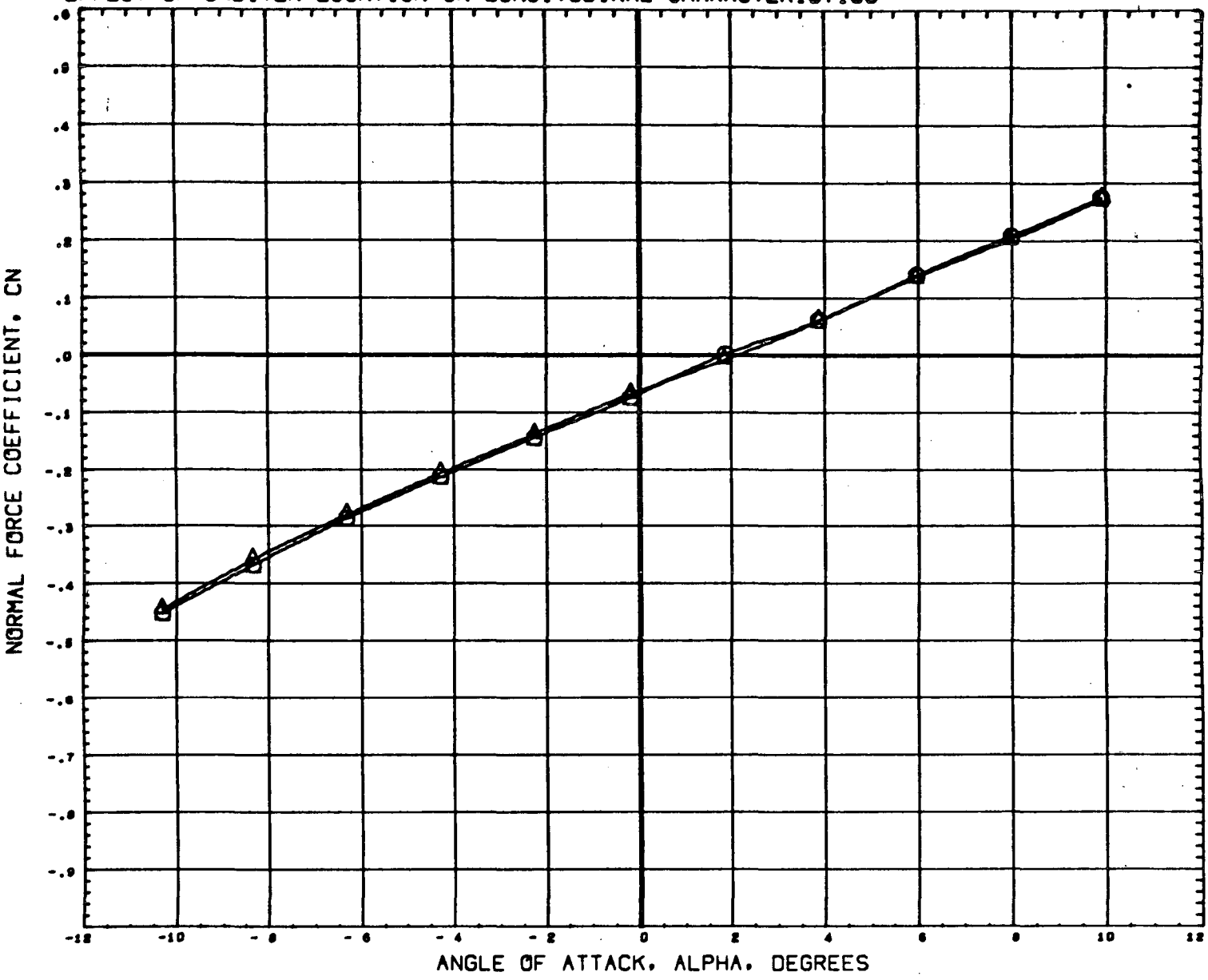
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(866008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(866022)	△	MSFC TWT 538	SHUTTLE LAUNCH	T102S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.97

EFFECT OF ORBITER LOCATION ON LONGITUDINAL CHARACTERISTICS



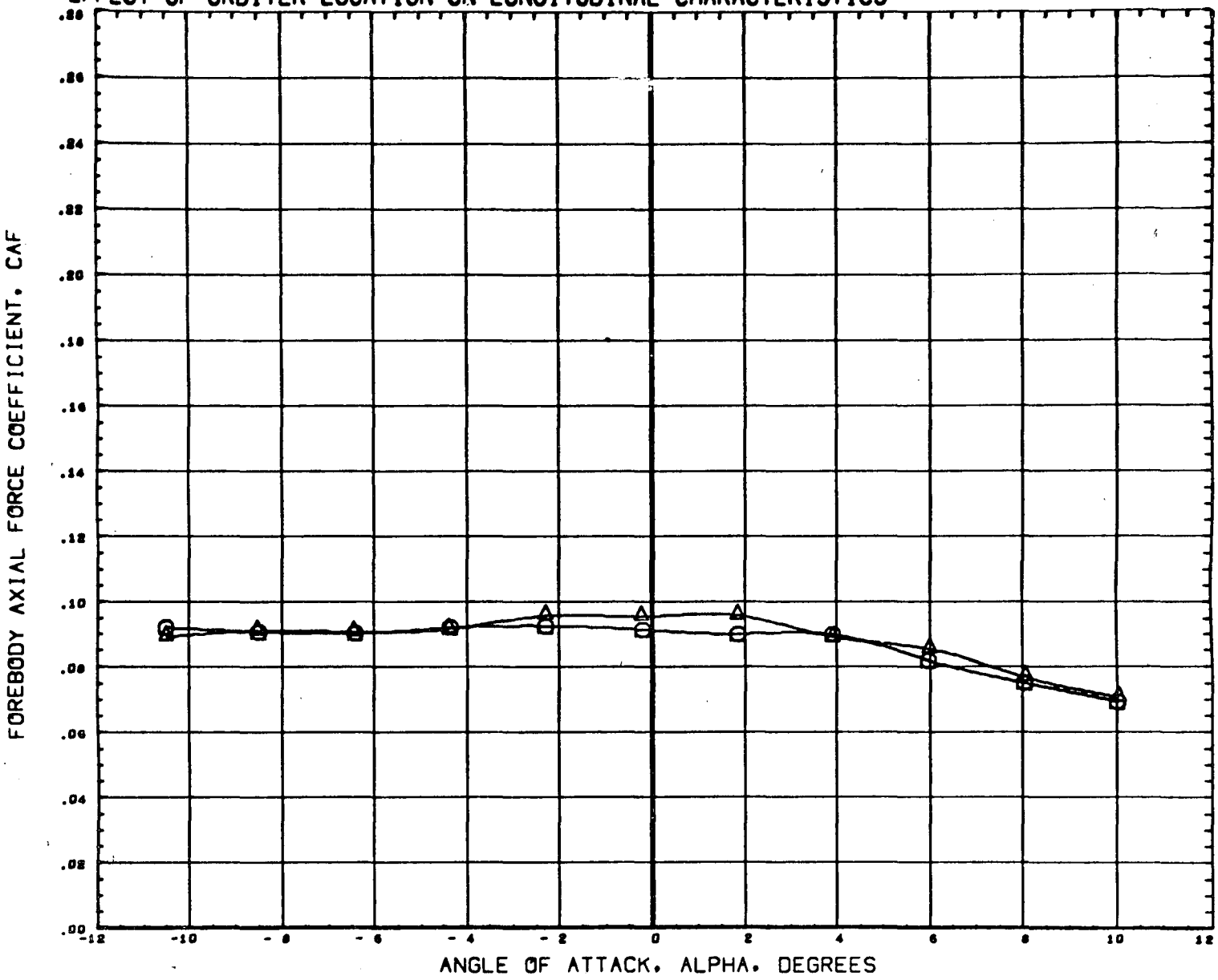
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(866008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(866022)	△	MSFC TWT 538	SHUTTLE LAUNCH	T102S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 4.96

EFFECT OF ORBITER LOCATION ON LONGITUDINAL CHARACTERISTICS



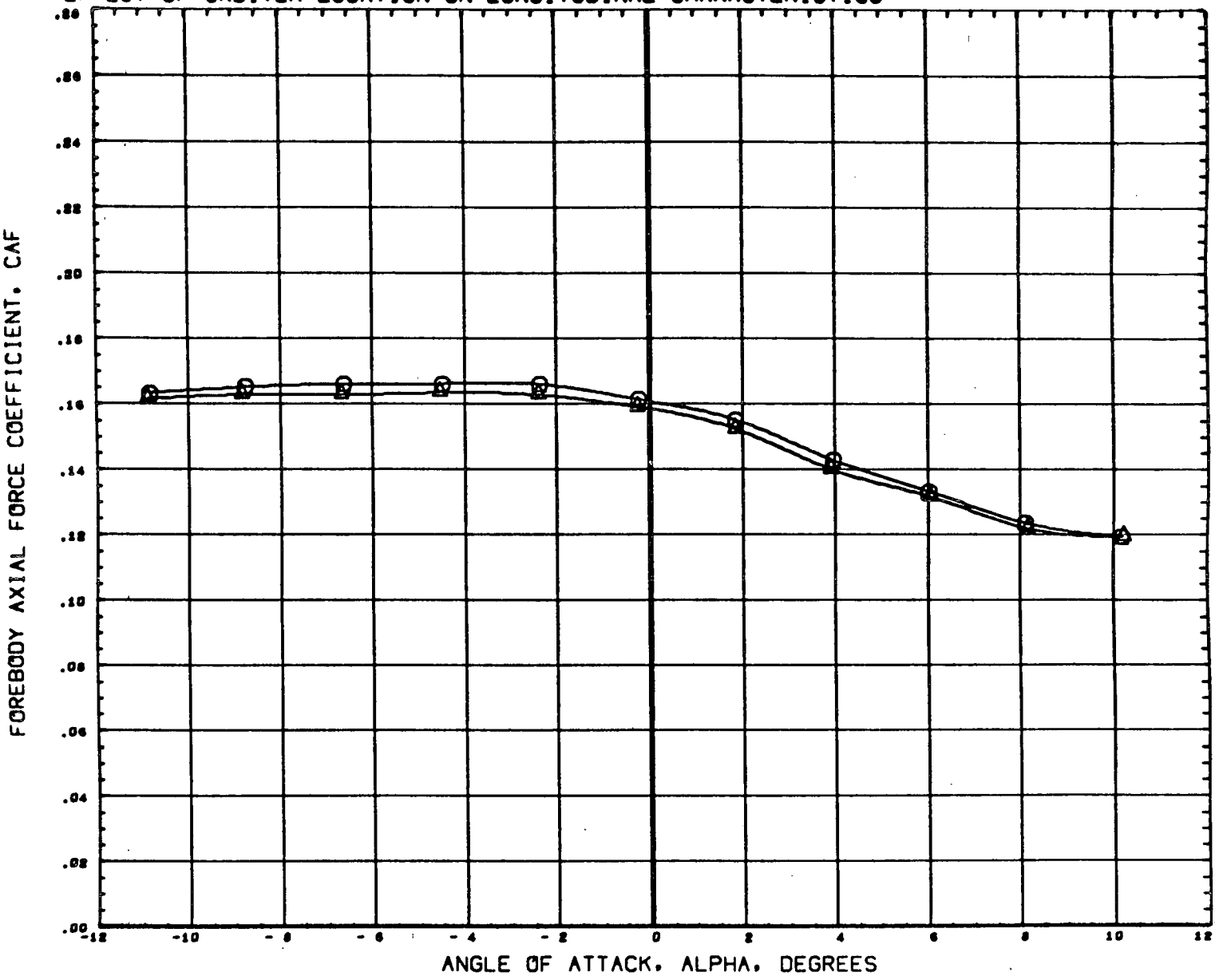
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66022)	△	MSFC TWT 538	SHUTTLE LAUNCH	T102S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .60

EFFECT OF ORBITER LOCATION ON LONGITUDINAL CHARACTERISTICS



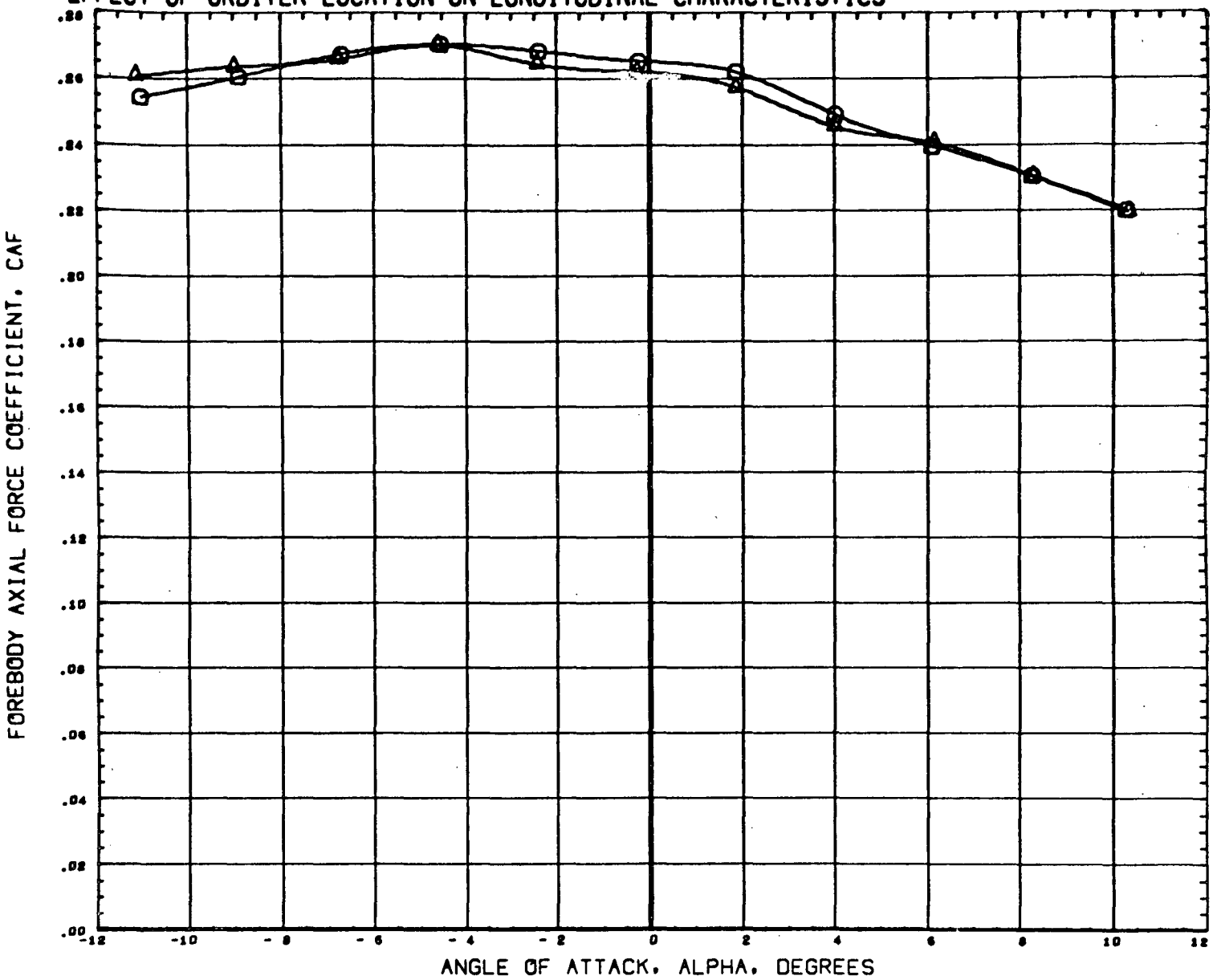
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(066000)	○	MSFC TWT 538	SHUTTLE LAUNCH	T10151R1	0.000	-1.500
(066022)	△	MSFC TWT 538	SHUTTLE LAUNCH	T10251R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .91

EFFECT OF ORBITER LOCATION ON LONGITUDINAL CHARACTERISTICS



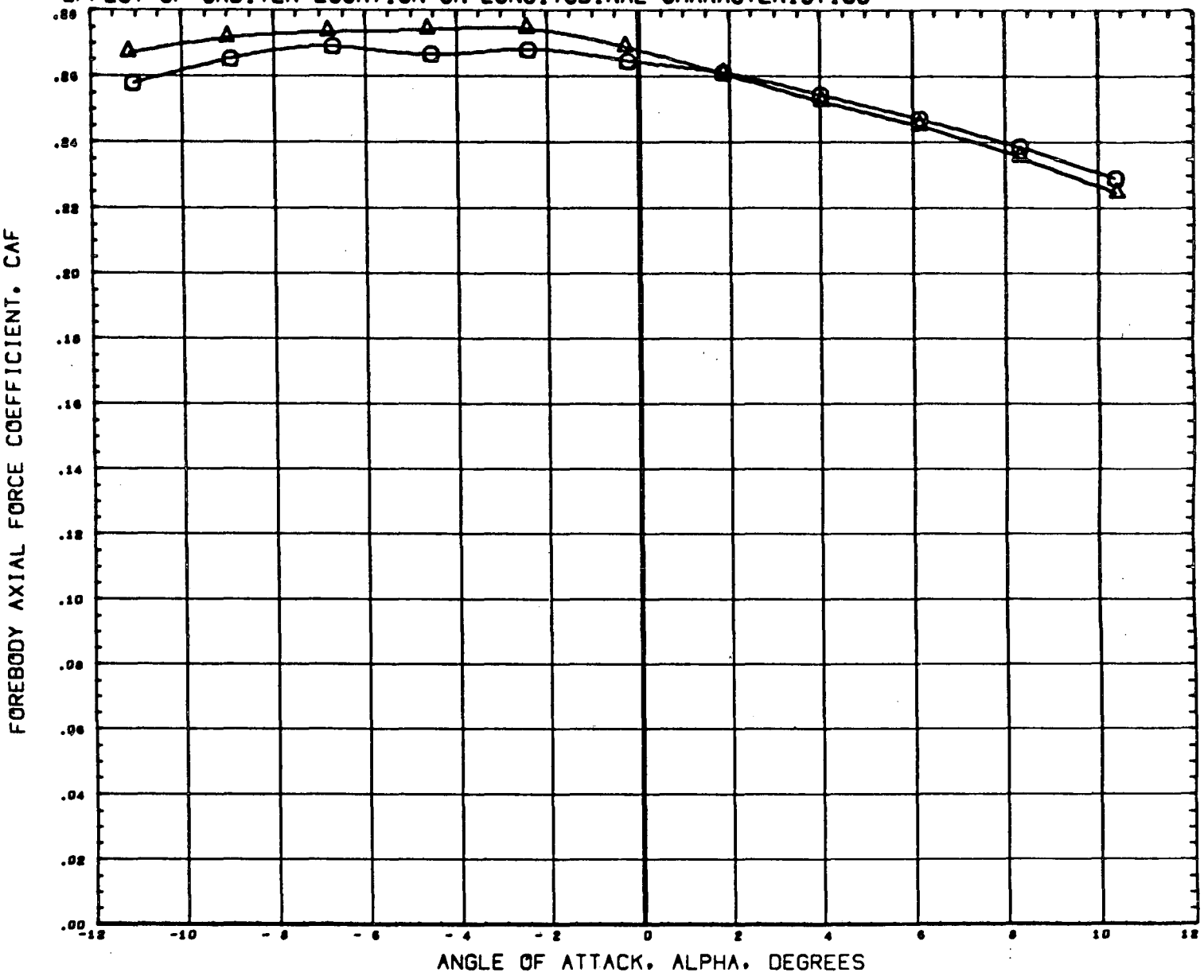
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(866008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(866022)	△	MSFC TWT 538	SHUTTLE LAUNCH	T102S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.11

EFFECT OF ORBITER LOCATION ON LONGITUDINAL CHARACTERISTICS

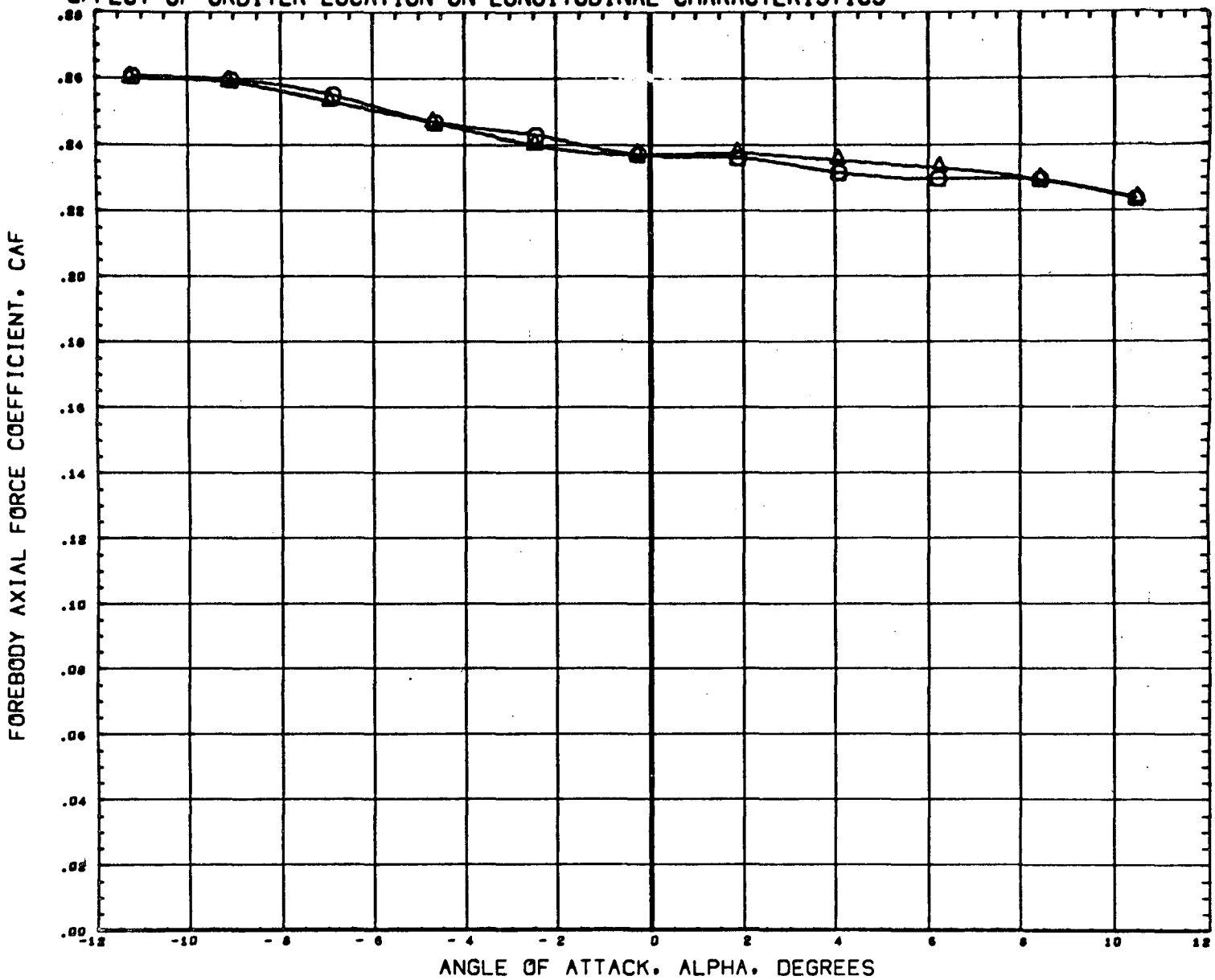


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66022)	△	MSFC TWT 538	SHUTTLE LAUNCH	T102S1R1	0.000	-1.500

REFERENCE INFORMATION		
SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.19

EFFECT OF ORBITER LOCATION ON LONGITUDINAL CHARACTERISTICS



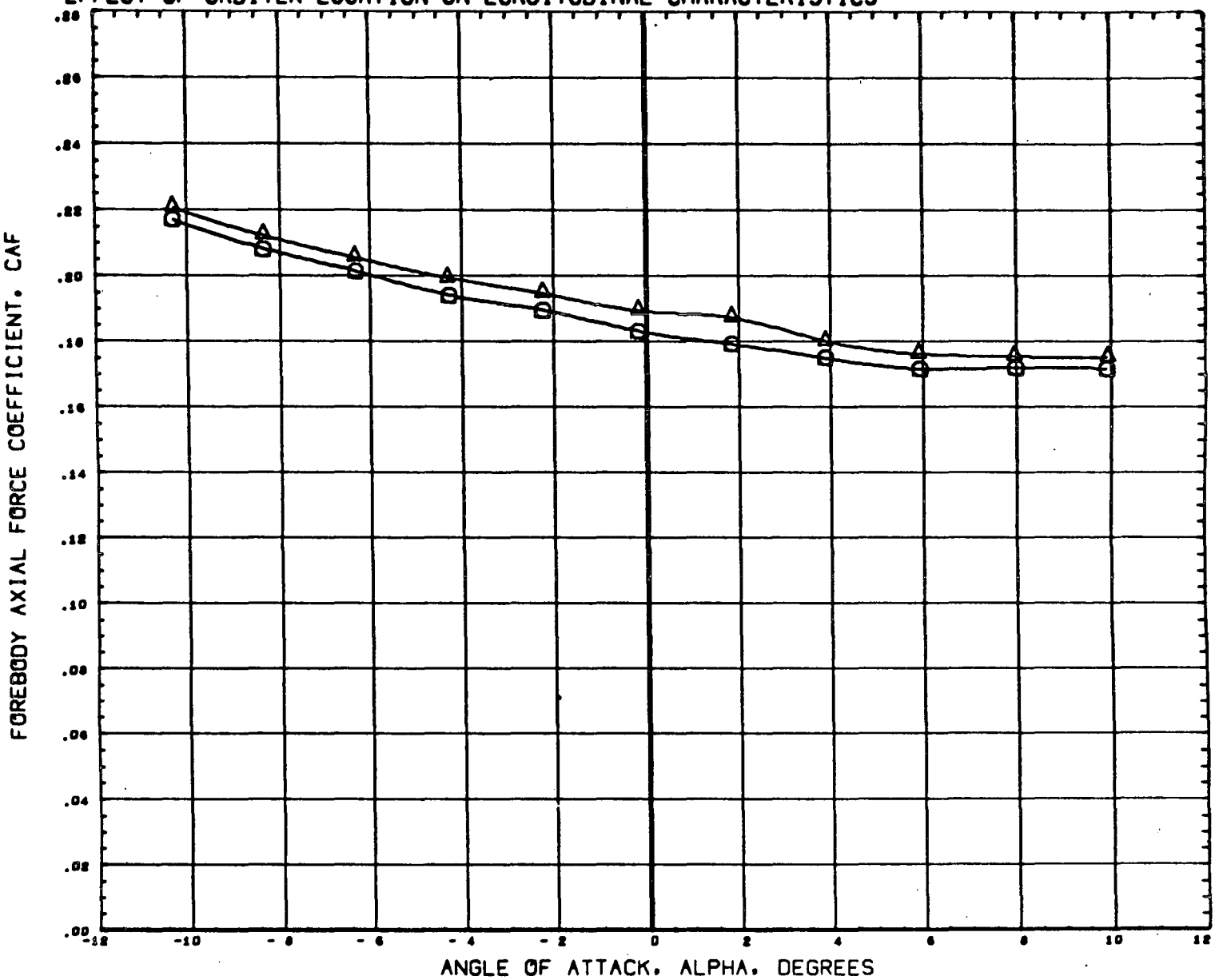
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66022)	△	MSFC TWT 538	SHUTTLE LAUNCH	T102S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.97

EFFECT OF ORBITER LOCATION ON LONGITUDINAL CHARACTERISTICS



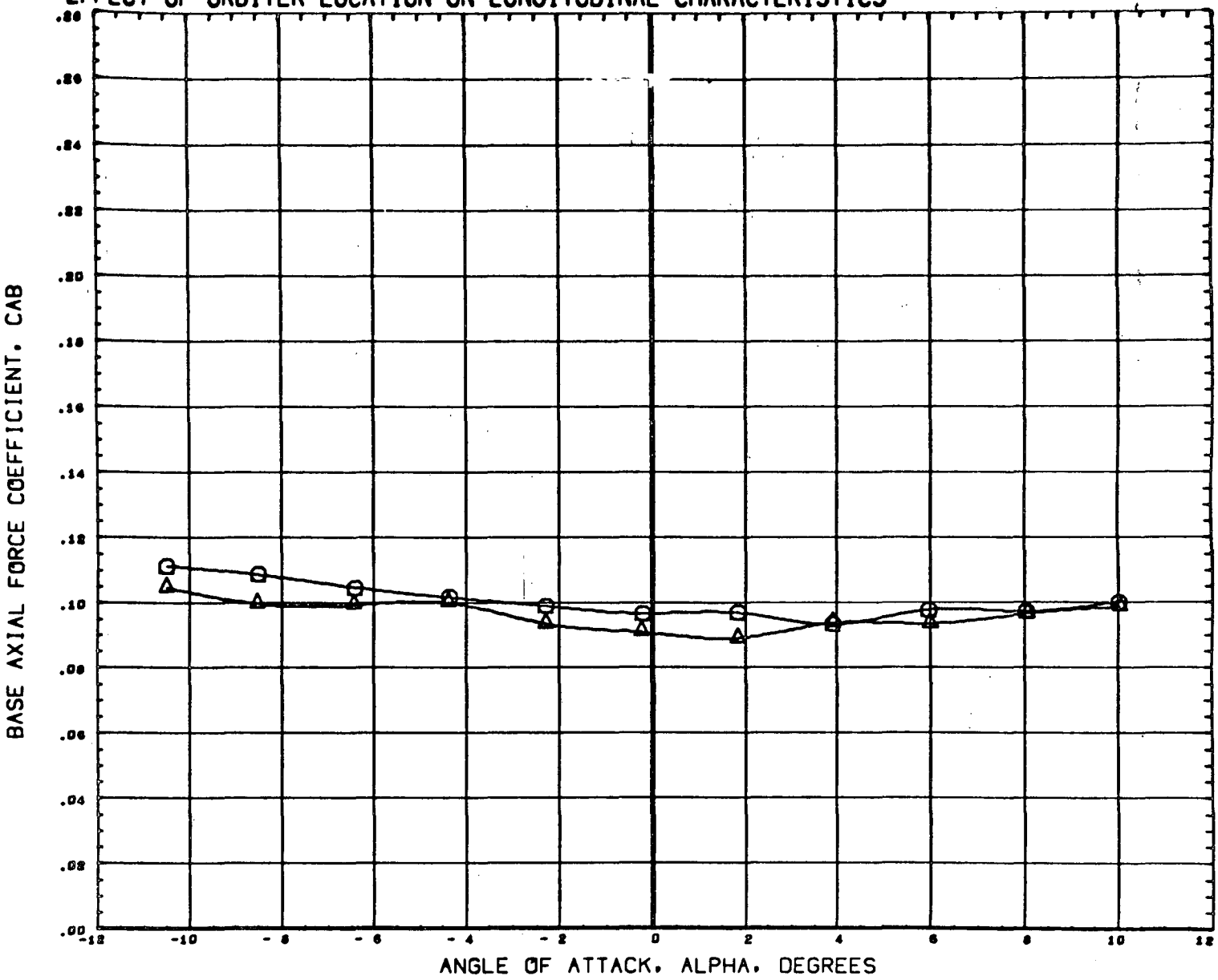
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66022)	△	MSFC TWT 538	SHUTTLE LAUNCH	T102S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 4.96

EFFECT OF ORBITER LOCATION ON LONGITUDINAL CHARACTERISTICS



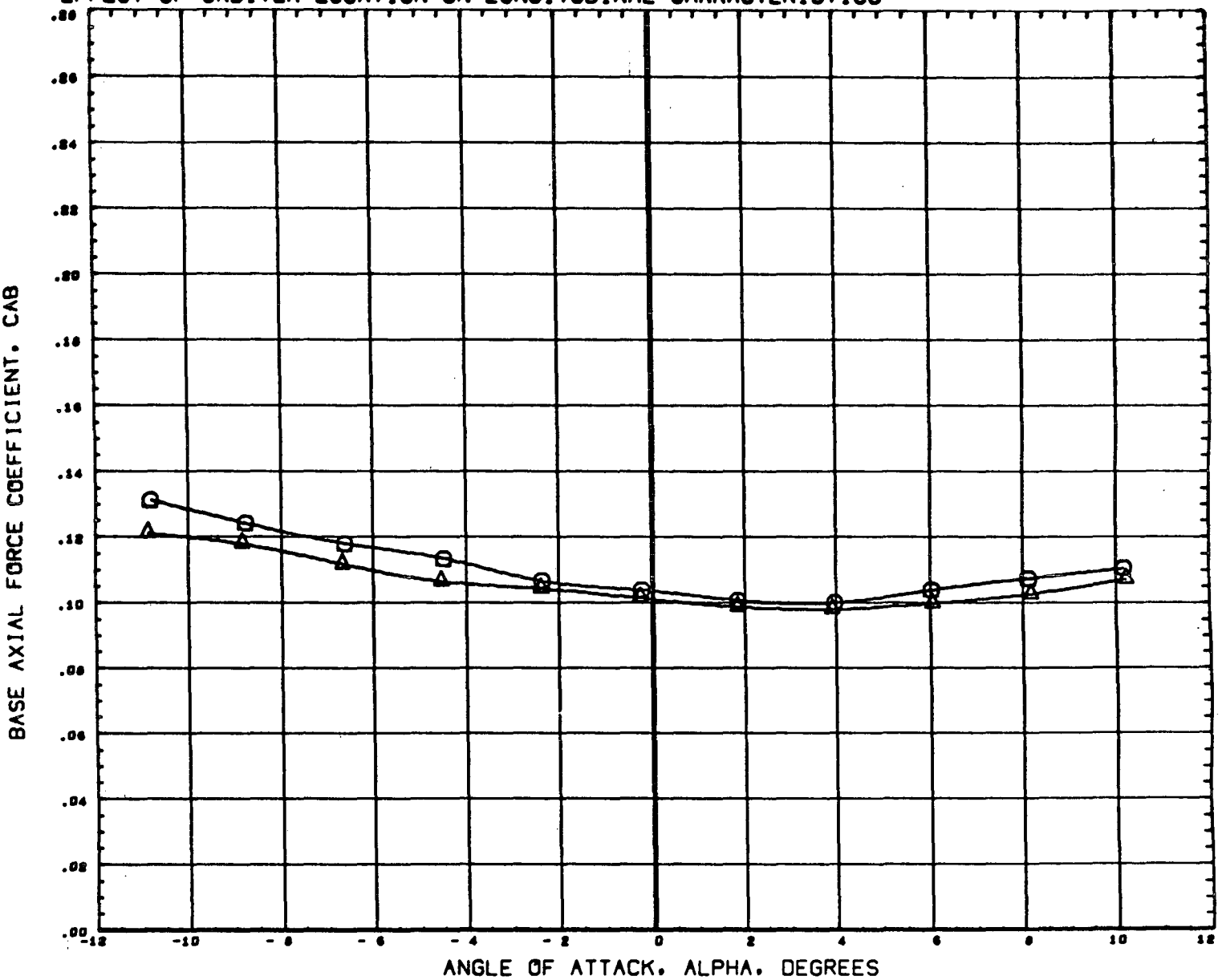
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66022)	△	MSFC TWT 538	SHUTTLE LAUNCH	T102S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1460	IN.
YMRP	0.0000	IN.
ZMRP	0.2460	IN.
SCALE	0.0040	

MACH .60

EFFECT OF ORBITER LOCATION ON LONGITUDINAL CHARACTERISTICS



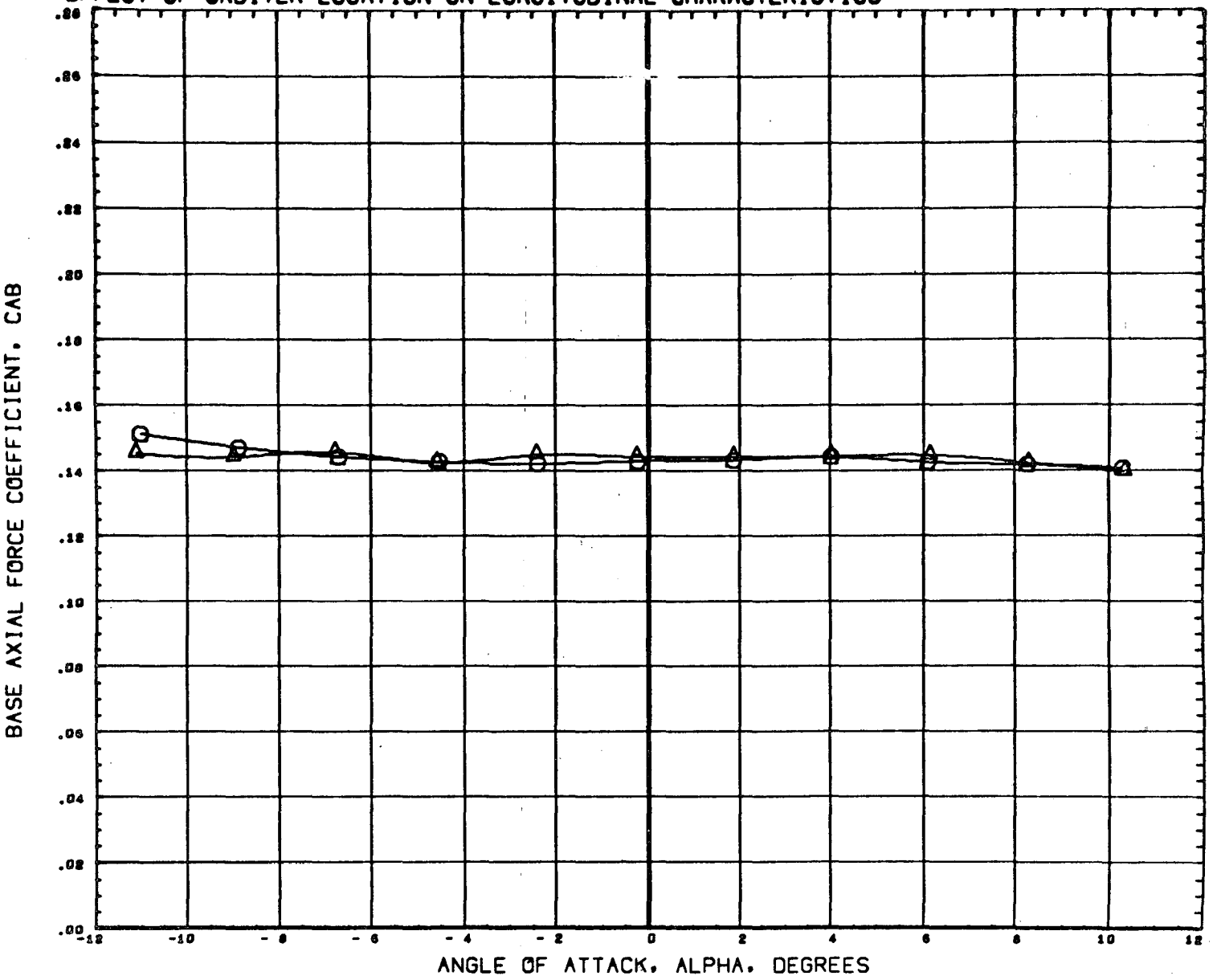
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66022)	△	MSFC TWT 538	SHUTTLE LAUNCH	T102S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .91

EFFECT OF ORBITER LOCATION ON LONGITUDINAL CHARACTERISTICS



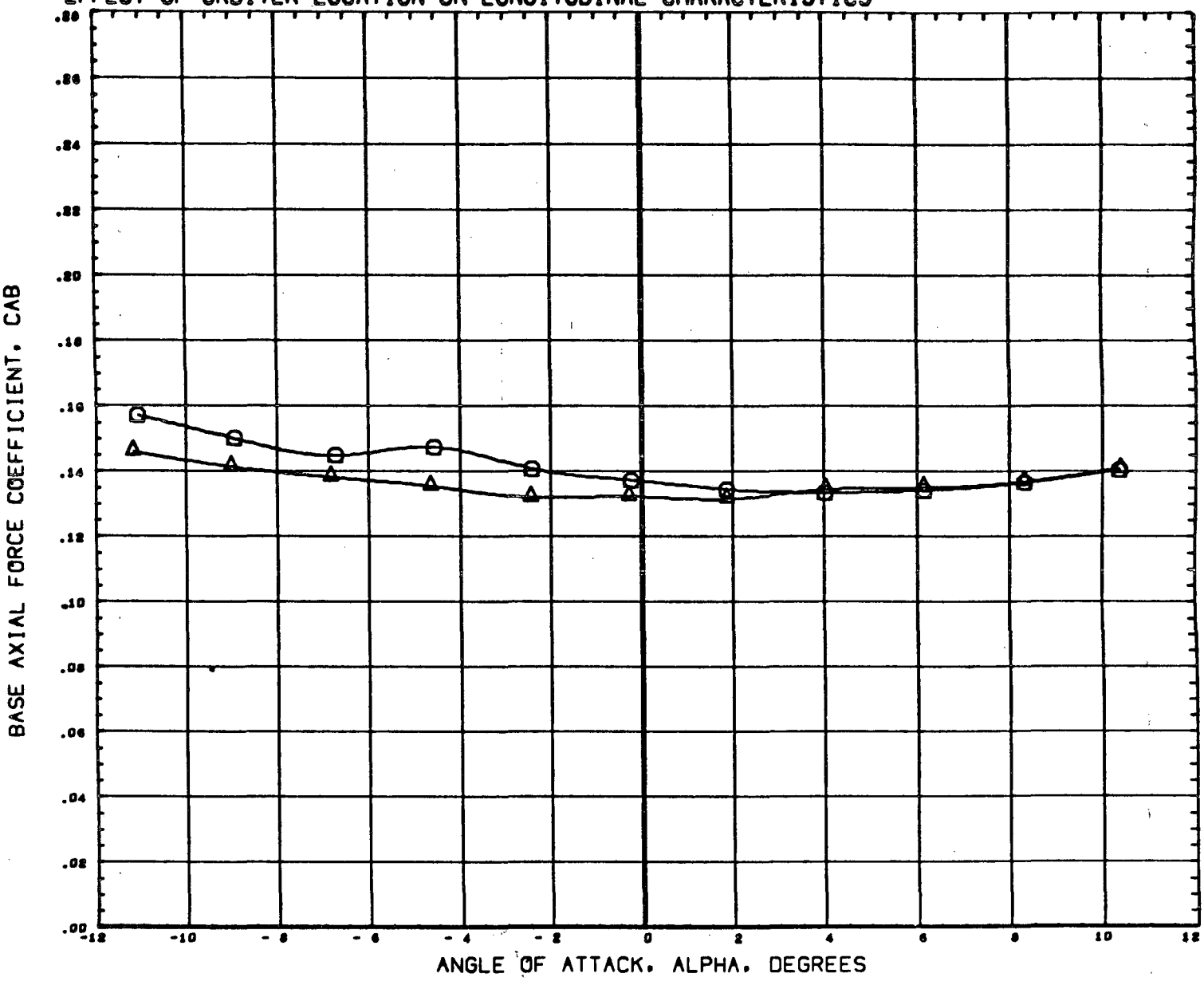
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(866008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(866022)	△	MSFC TWT 538	SHUTTLE LAUNCH	T102S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.11

EFFECT OF ORBITER LOCATION ON LONGITUDINAL CHARACTERISTICS



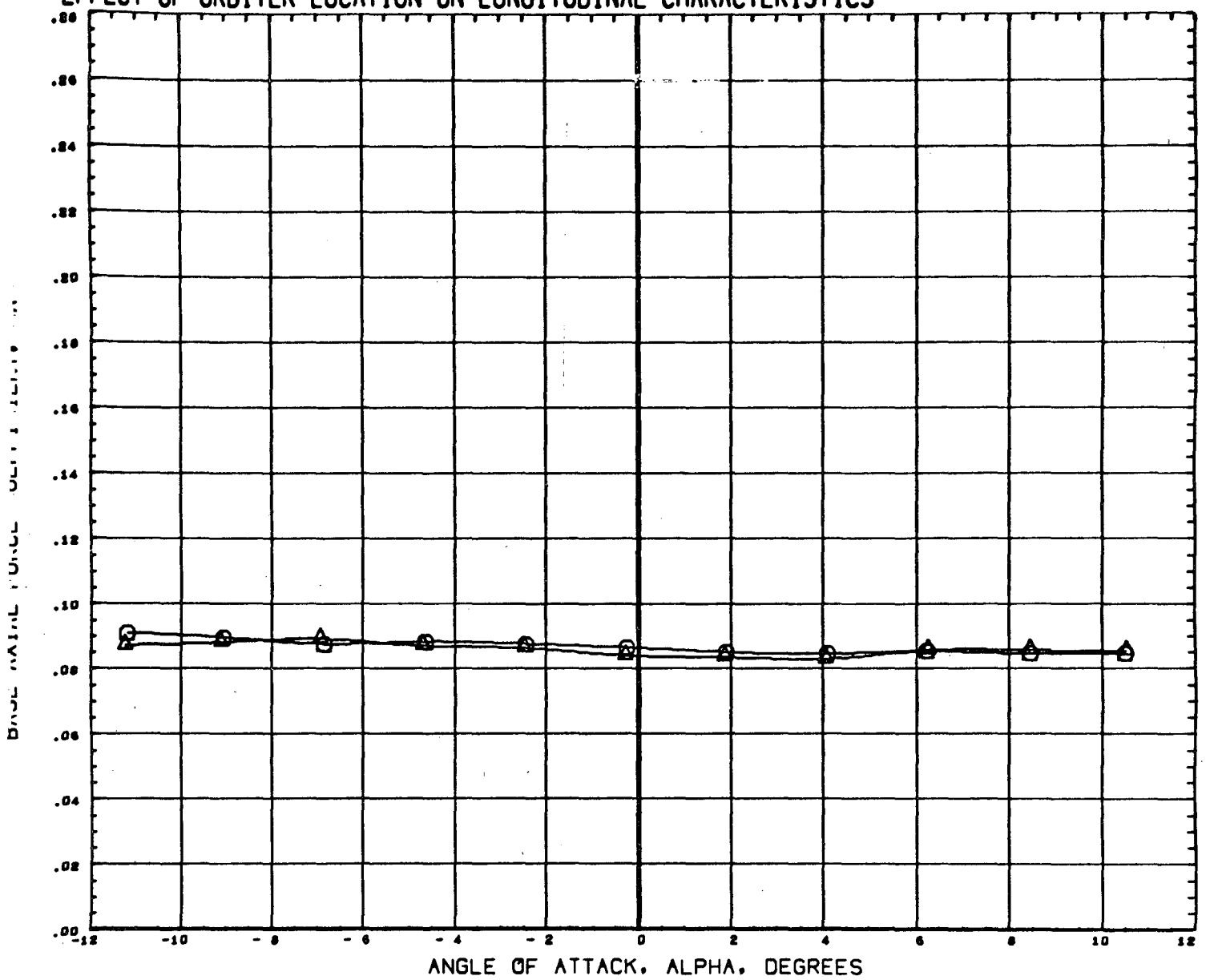
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(866008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(866022)	△	MSFC TWT 538	SHUTTLE LAUNCH	T102S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.19

EFFECT OF ORBITER LOCATION ON LONGITUDINAL CHARACTERISTICS



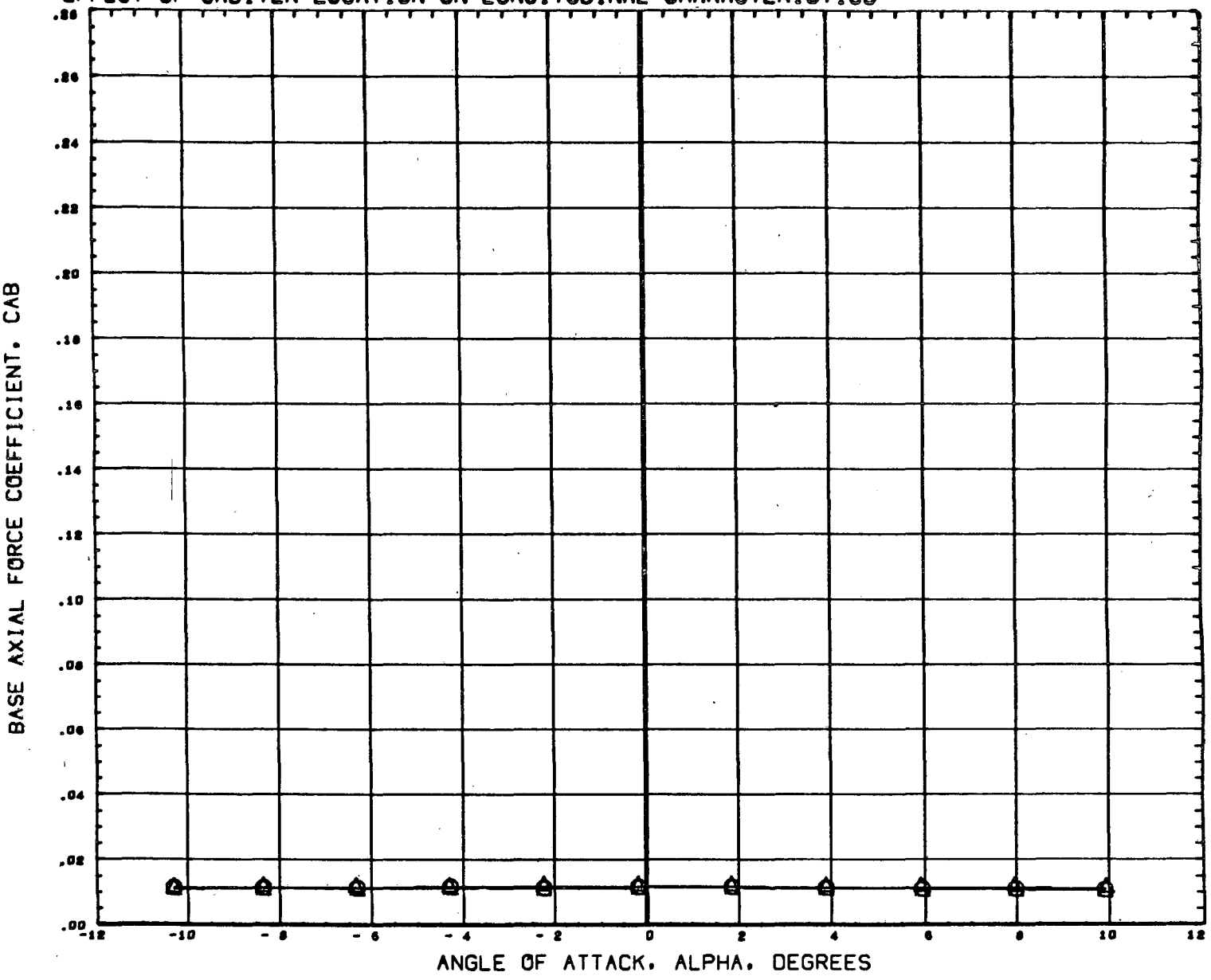
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66022)	△	MSFC TWT 538	SHUTTLE LAUNCH	T102S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.97

EFFECT OF ORBITER LOCATION ON LONGITUDINAL CHARACTERISTICS



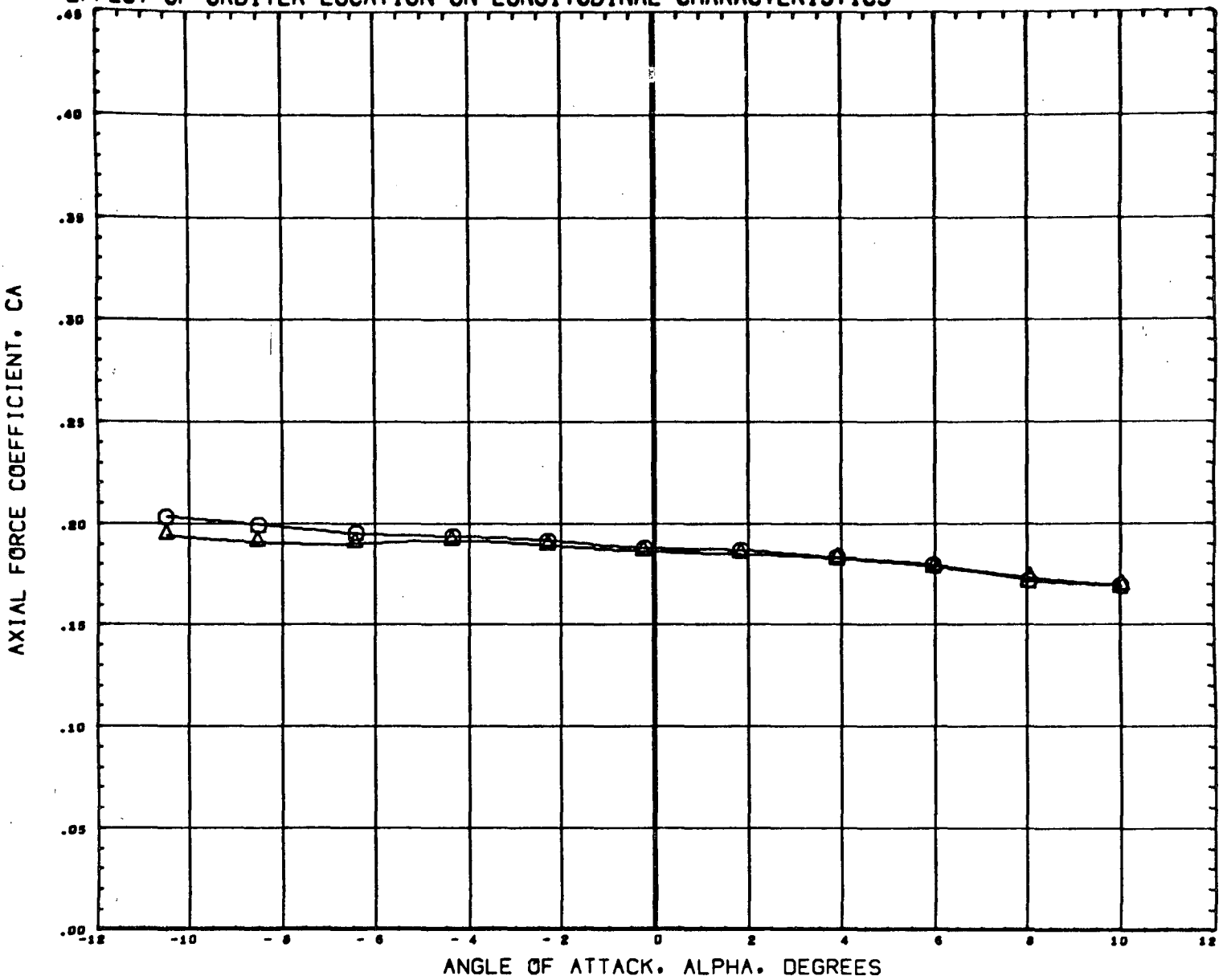
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(866008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(866022)	△	MSFC TWT 538	SHUTTLE LAUNCH	T102S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 4.96

EFFECT OF ORBITER LOCATION ON LONGITUDINAL CHARACTERISTICS



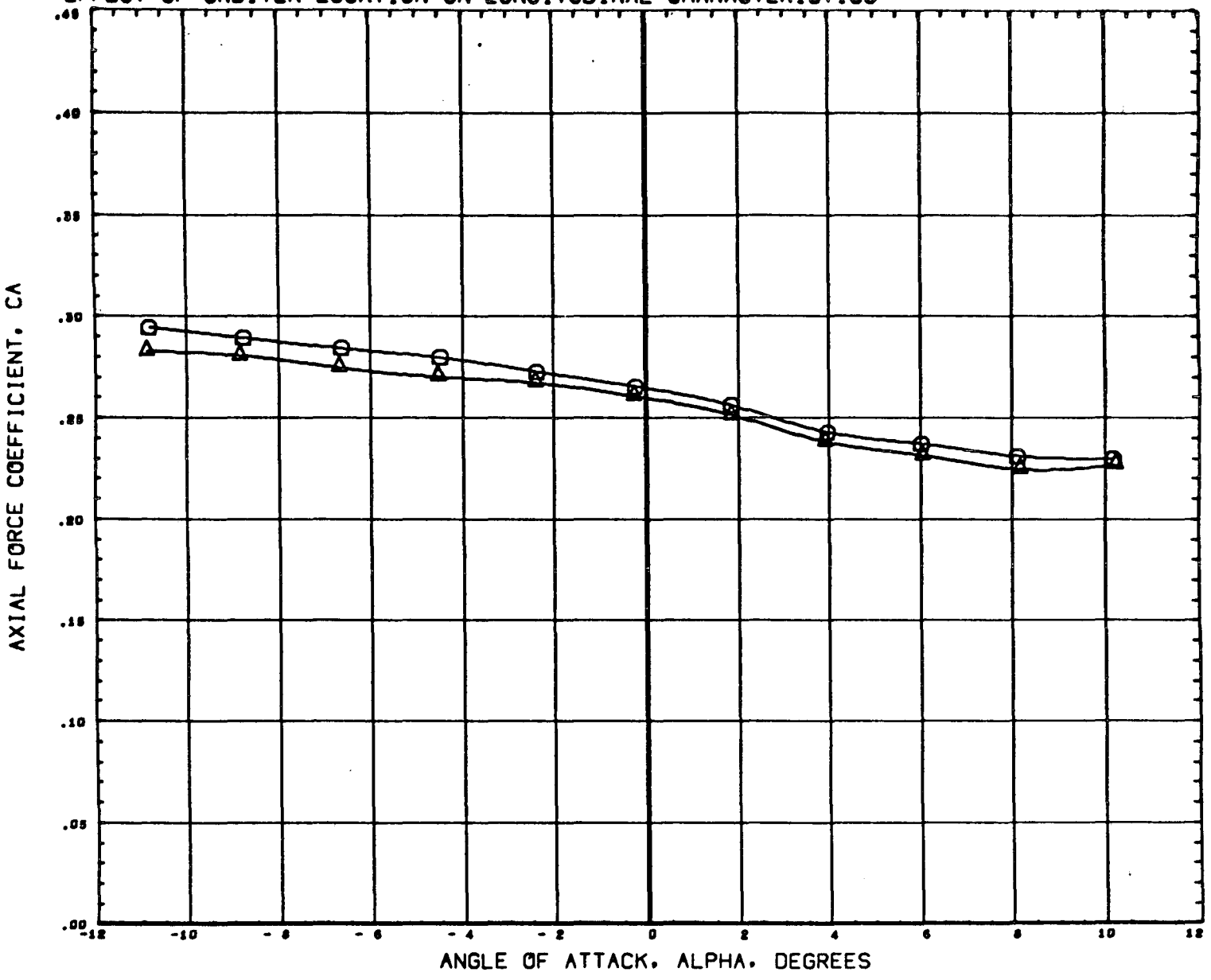
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66022)	△	MSFC TWT 538	SHUTTLE LAUNCH	T102S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .60

EFFECT OF ORBITER LOCATION ON LONGITUDINAL CHARACTERISTICS



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(866008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T10181R1	0.000	-1.500
(866022)	△	MSFC TWT 538	SHUTTLE LAUNCH	T10231R1	0.000	-1.500

REFERENCE INFORMATION		
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LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1460	IN.
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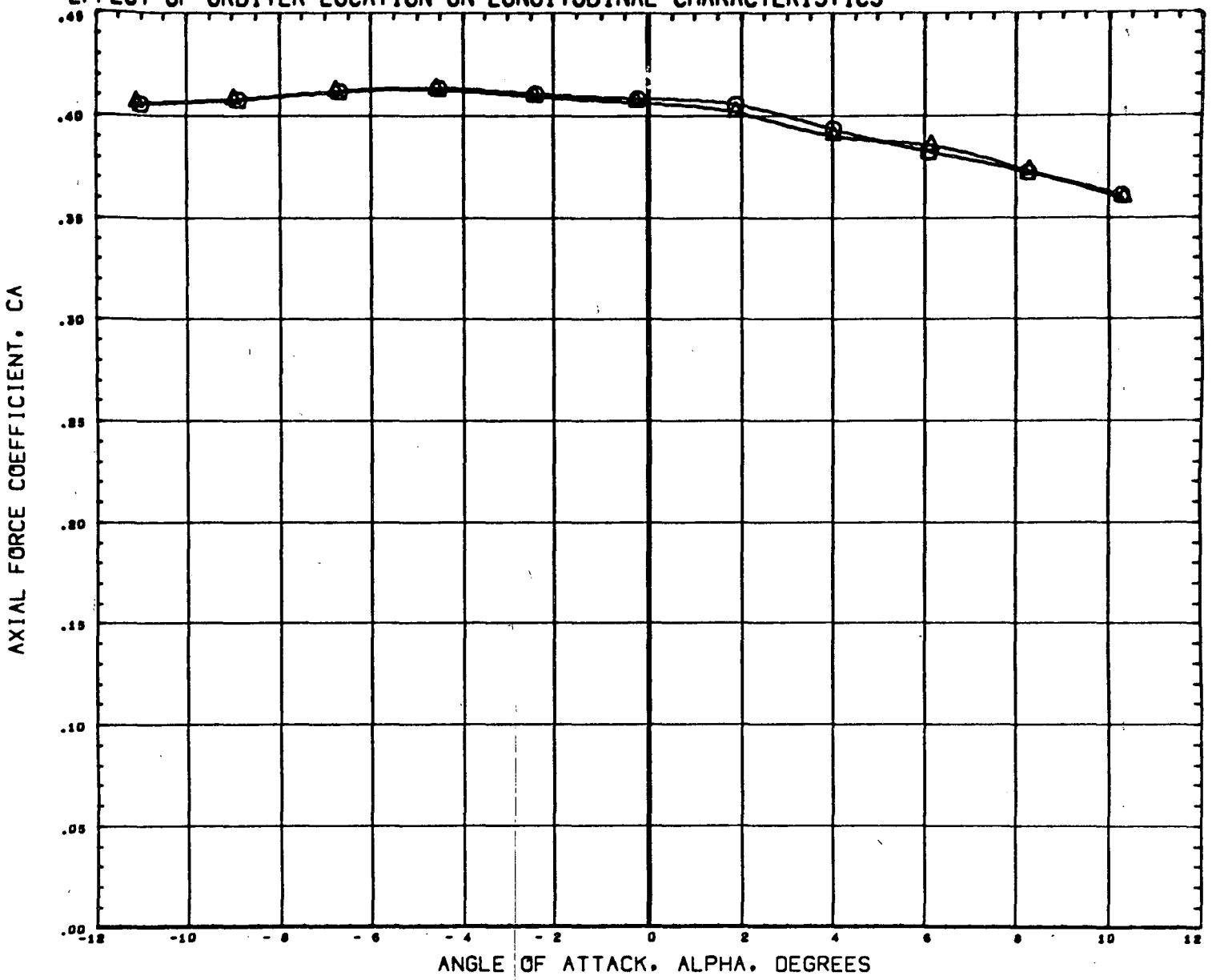
ZMRP	0.2460	IN.
SCALE	0.0040	

MACH .91

EFFECT OF ORBITER LOCATION ON LONGITUDINAL CHARACTERISTICS



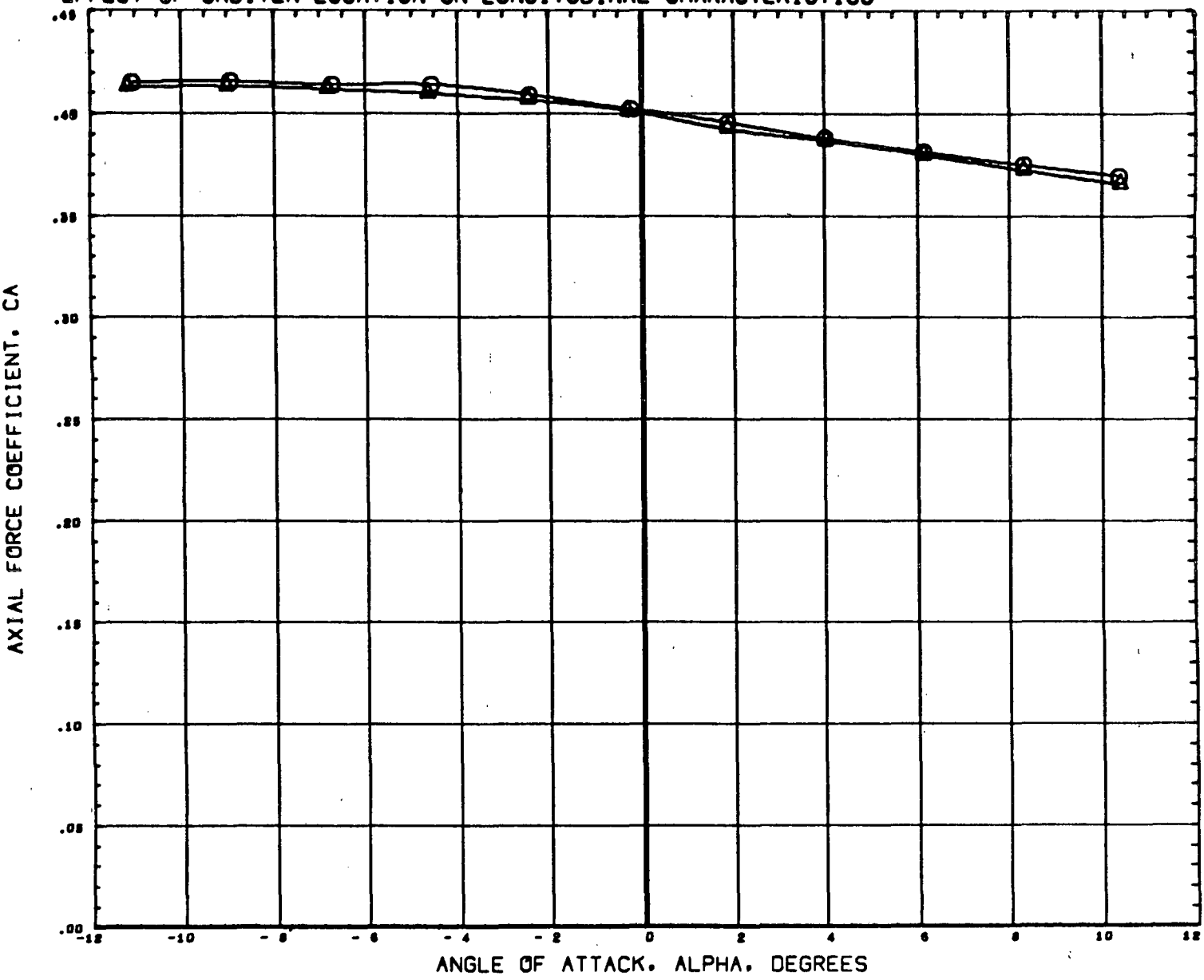
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66022)	△	MSFC TWT 538	SHUTTLE LAUNCH	T102S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.11

EFFECT OF ORBITER LOCATION ON LONGITUDINAL CHARACTERISTICS



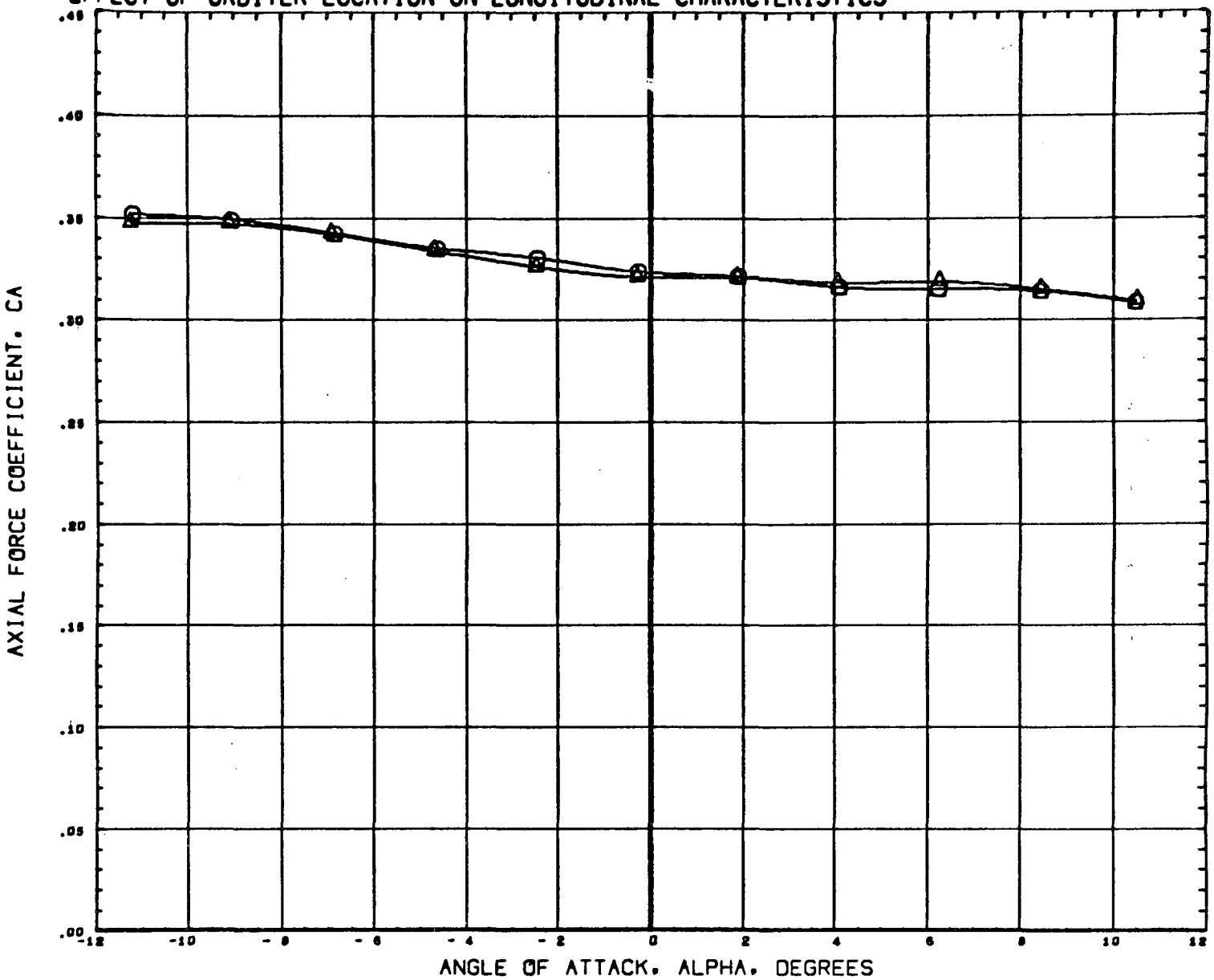
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(866008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(866022)	△	MSFC TWT 538	SHUTTLE LAUNCH	T102S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.19

EFFECT OF ORBITER LOCATION ON LONGITUDINAL CHARACTERISTICS



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66022)	△	MSFC TWT 538	SHUTTLE LAUNCH	T102S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
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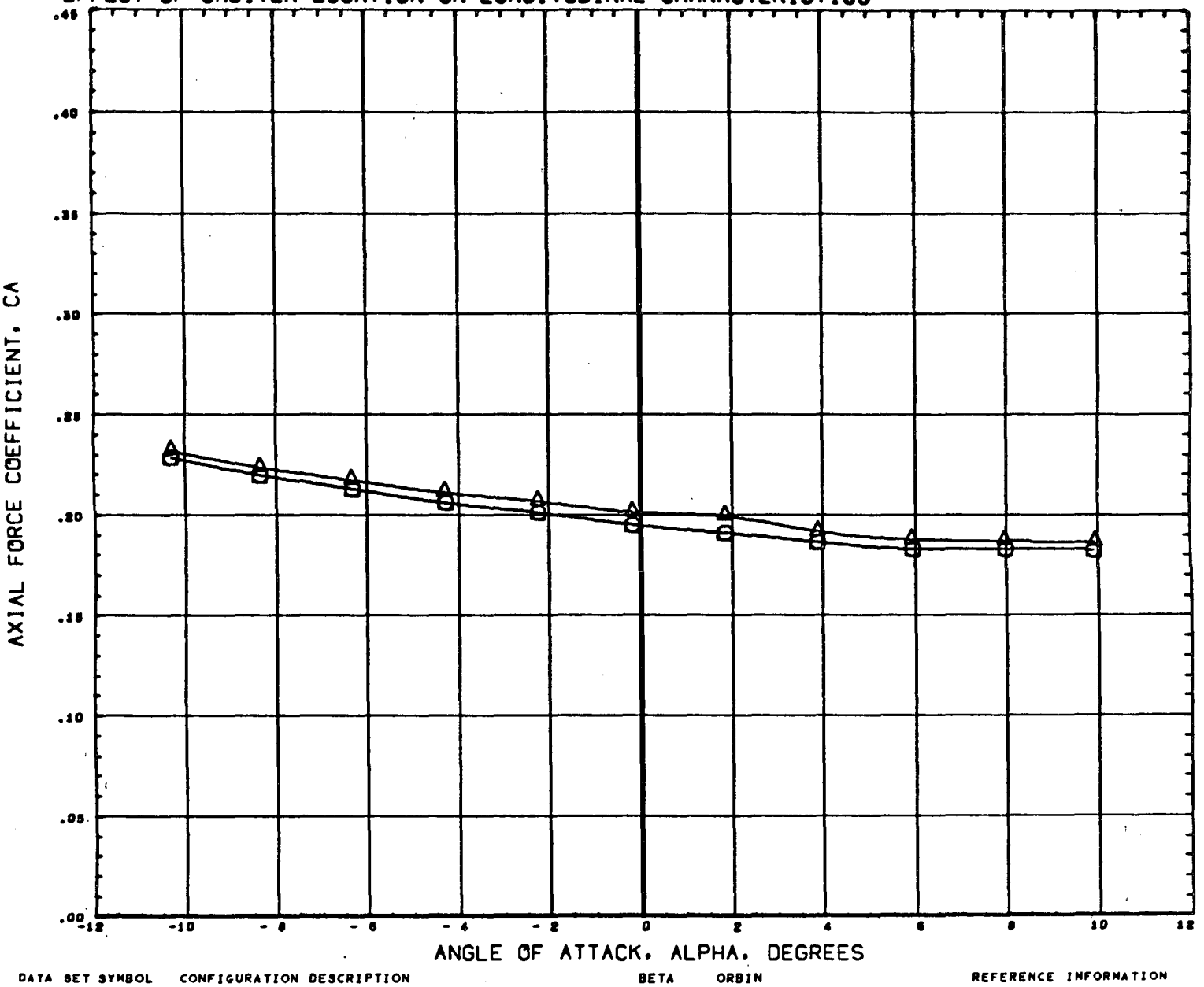
SCALE	0.0040	

MACH 1.97

EFFECT OF ORBITER LOCATION ON LONGITUDINAL CHARACTERISTICS



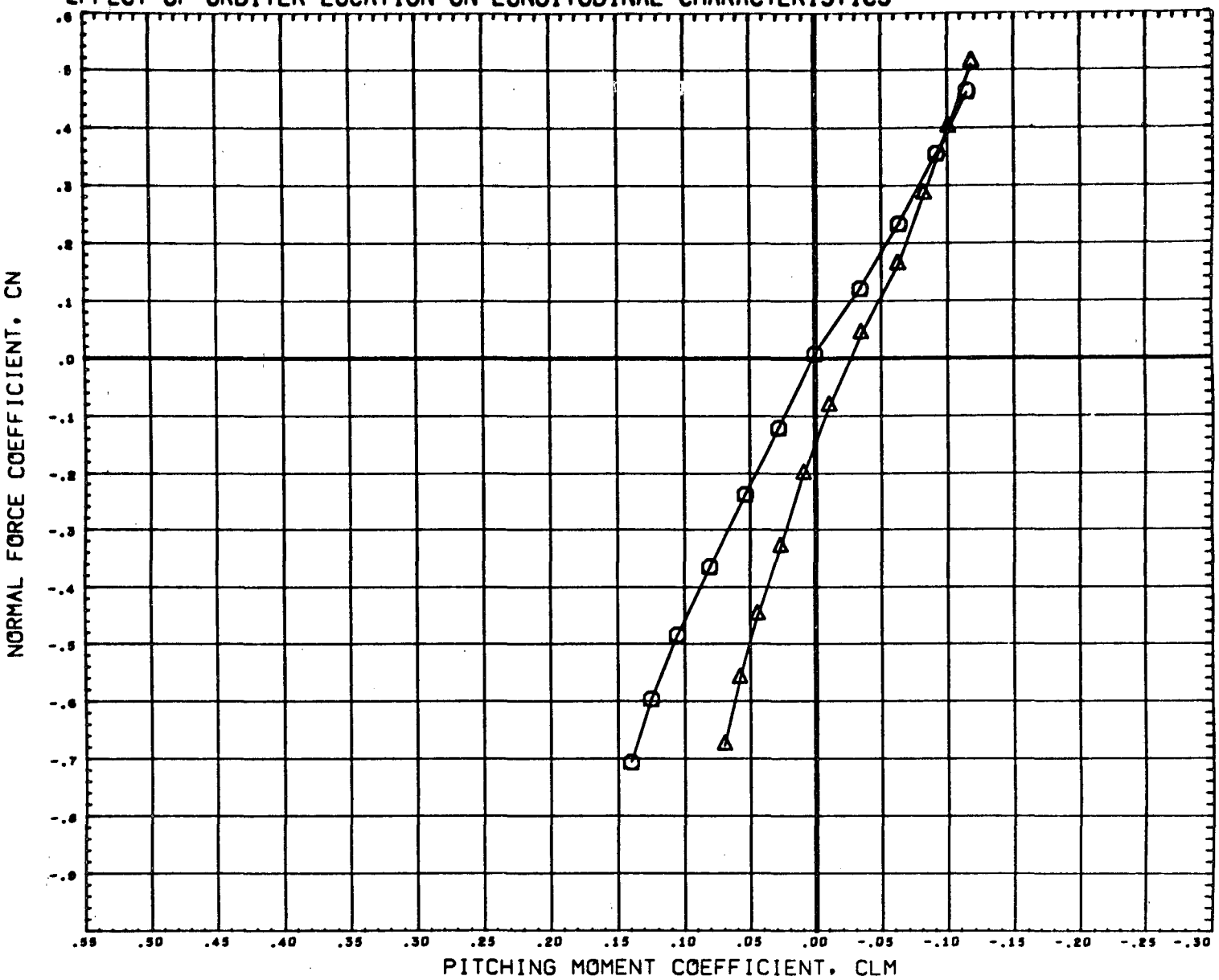
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T10151R1	0.000	-1.500
(B66022)	△	MSFC TWT 538	SHUTTLE LAUNCH	T10251R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 4.96

EFFECT OF ORBITER LOCATION ON LONGITUDINAL CHARACTERISTICS



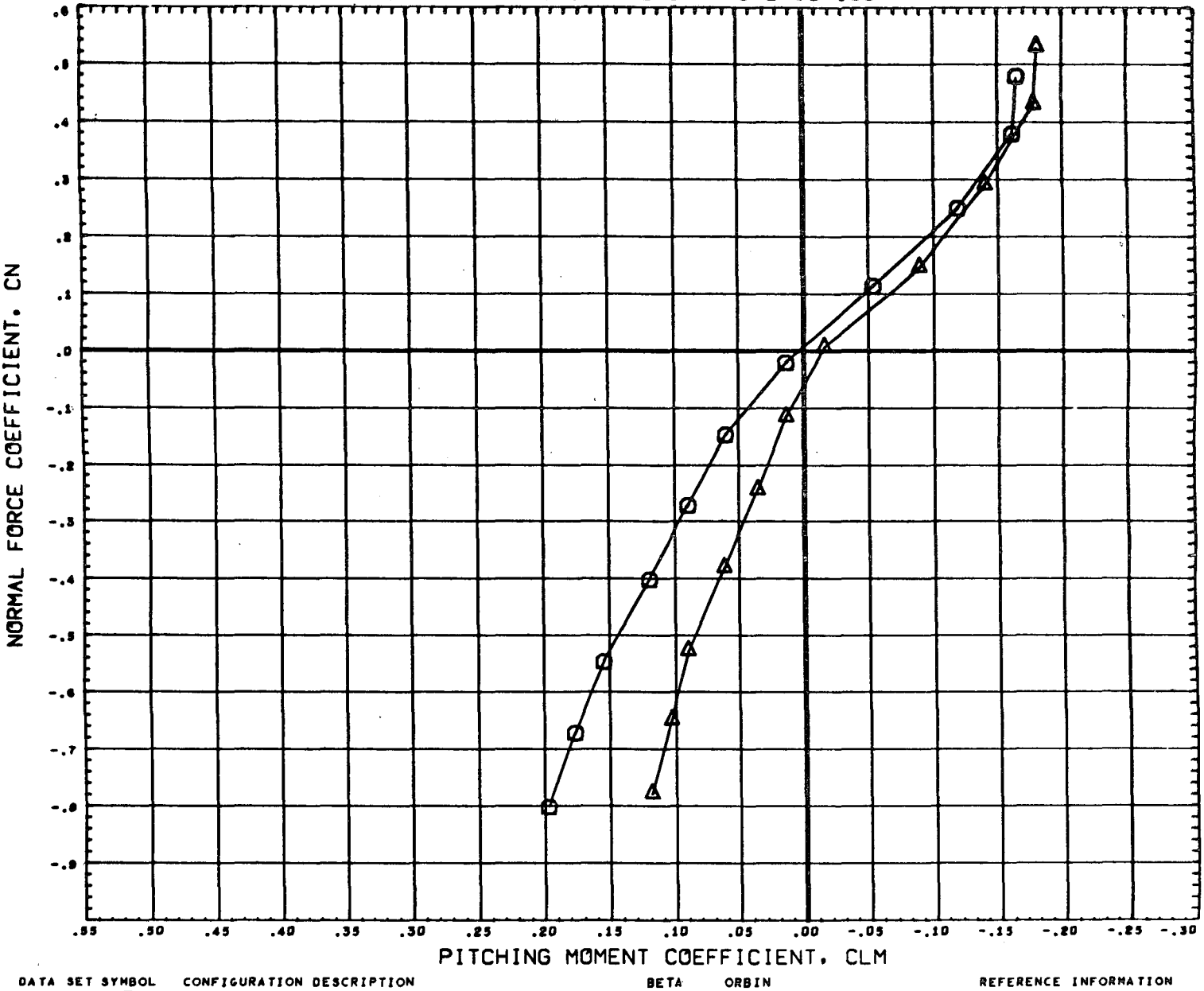
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(866008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(866022)	△	MSFC TWT 538	SHUTTLE LAUNCH	T102S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .60

EFFECT OF ORBITER LOCATION ON LONGITUDINAL CHARACTERISTICS



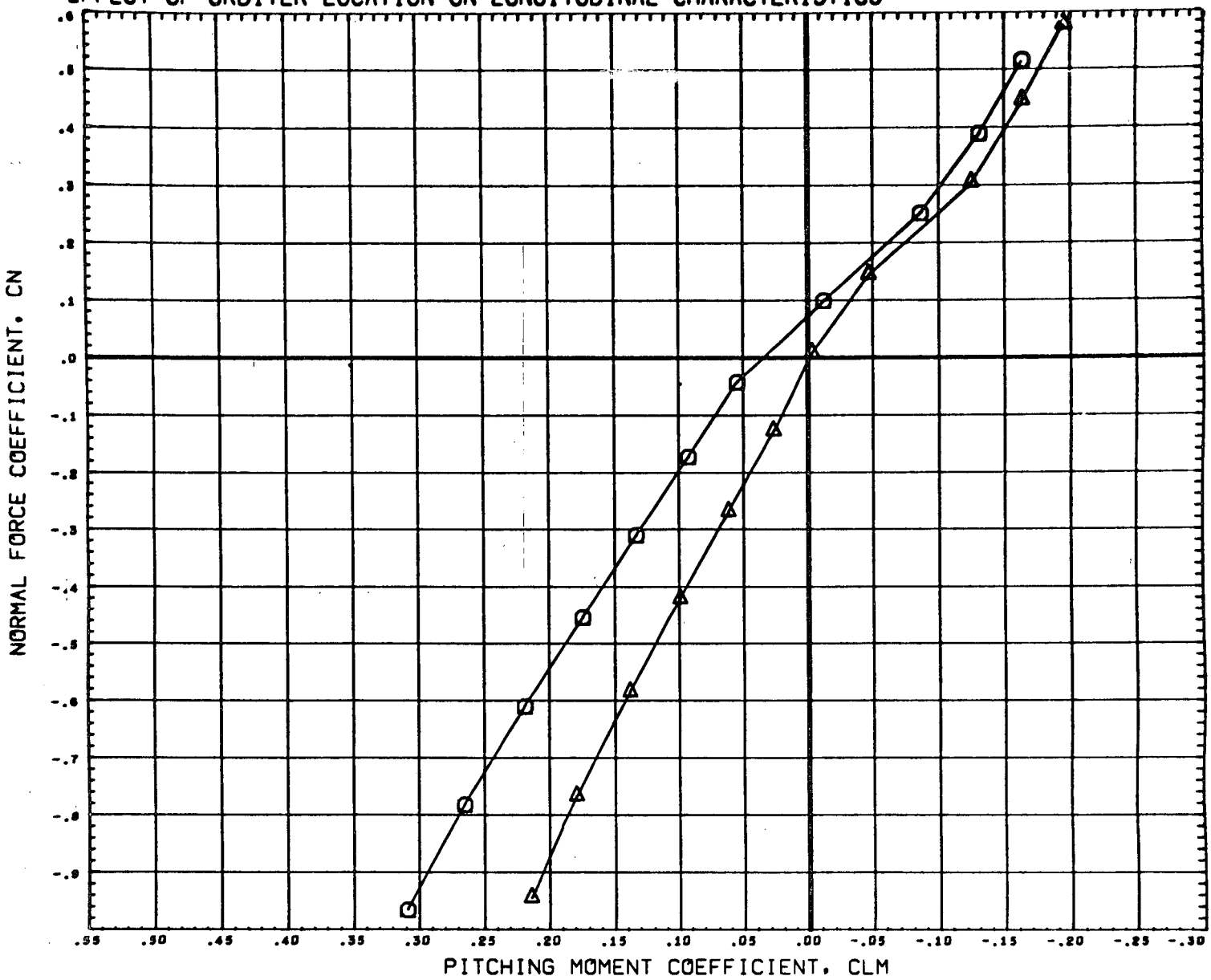
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66022)	△	MSFC TWT 538	SHUTTLE LAUNCH	T102S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .91

EFFECT OF ORBITER LOCATION ON LONGITUDINAL CHARACTERISTICS



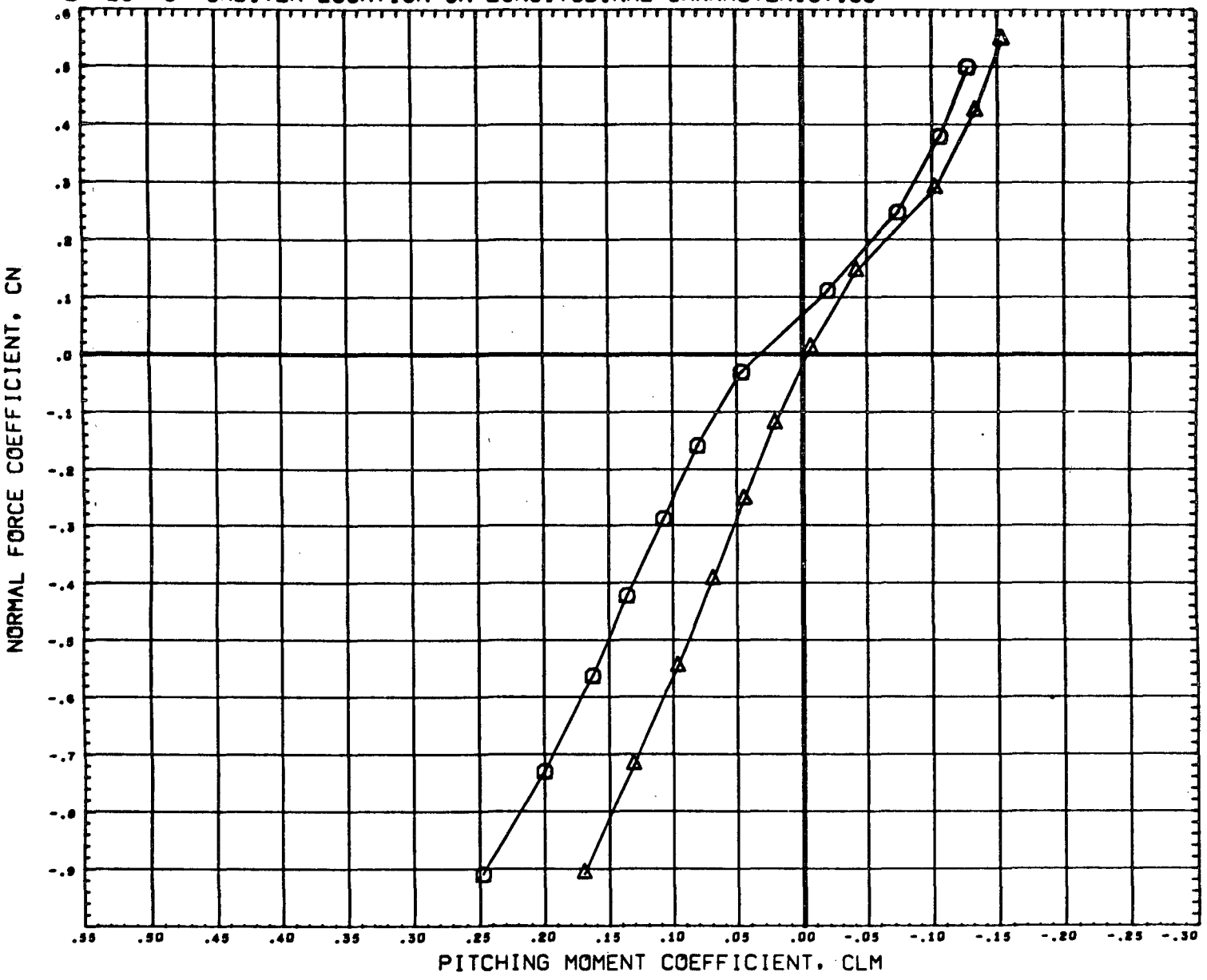
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66022)	△	MSFC TWT 538	SHUTTLE LAUNCH	T102S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.11

EFFECT OF ORBITER LOCATION ON LONGITUDINAL CHARACTERISTICS



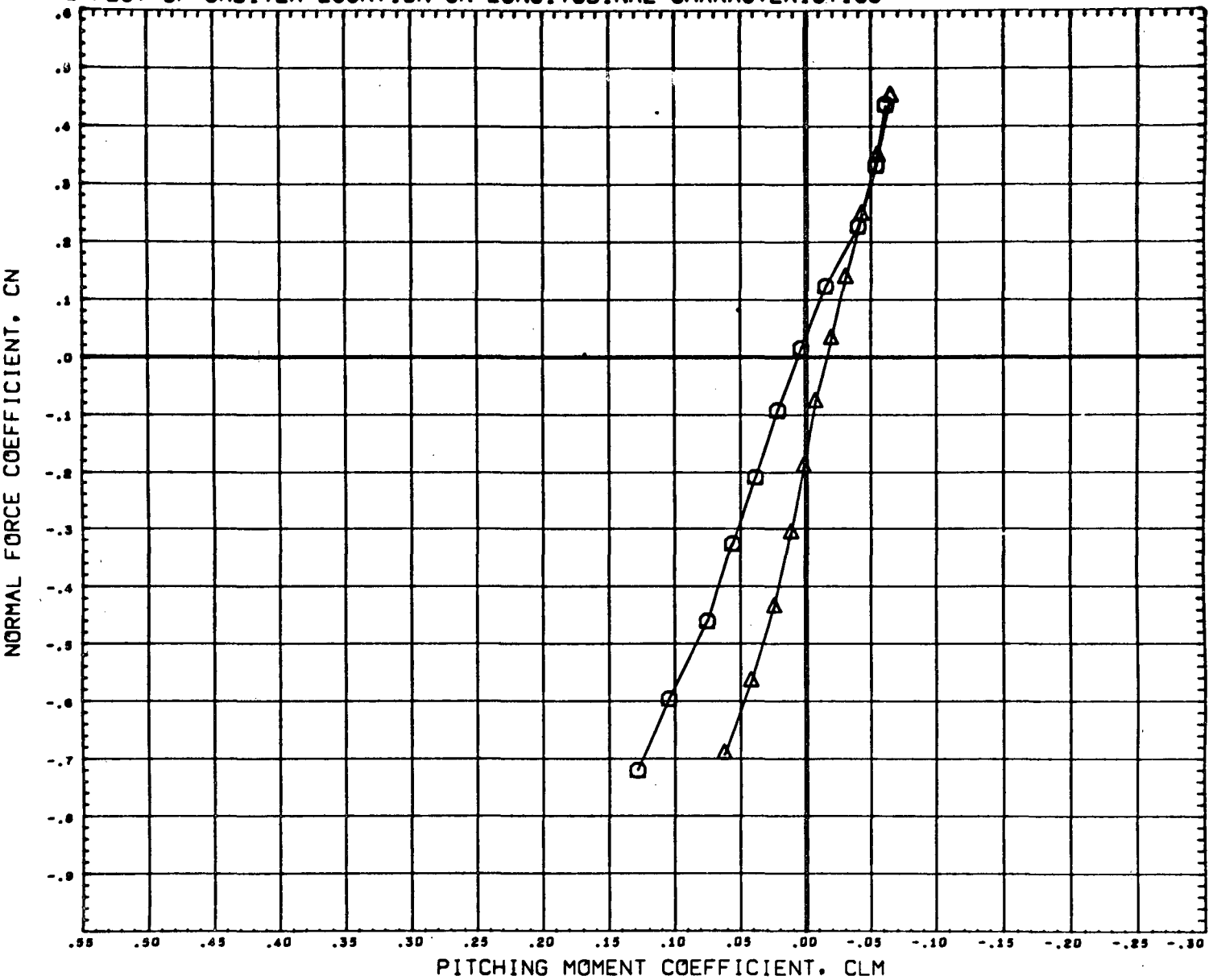
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(866098)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(866022)	△	MSFC TWT 538	SHUTTLE LAUNCH	T102S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.19

EFFECT OF ORBITER LOCATION ON LONGITUDINAL CHARACTERISTICS



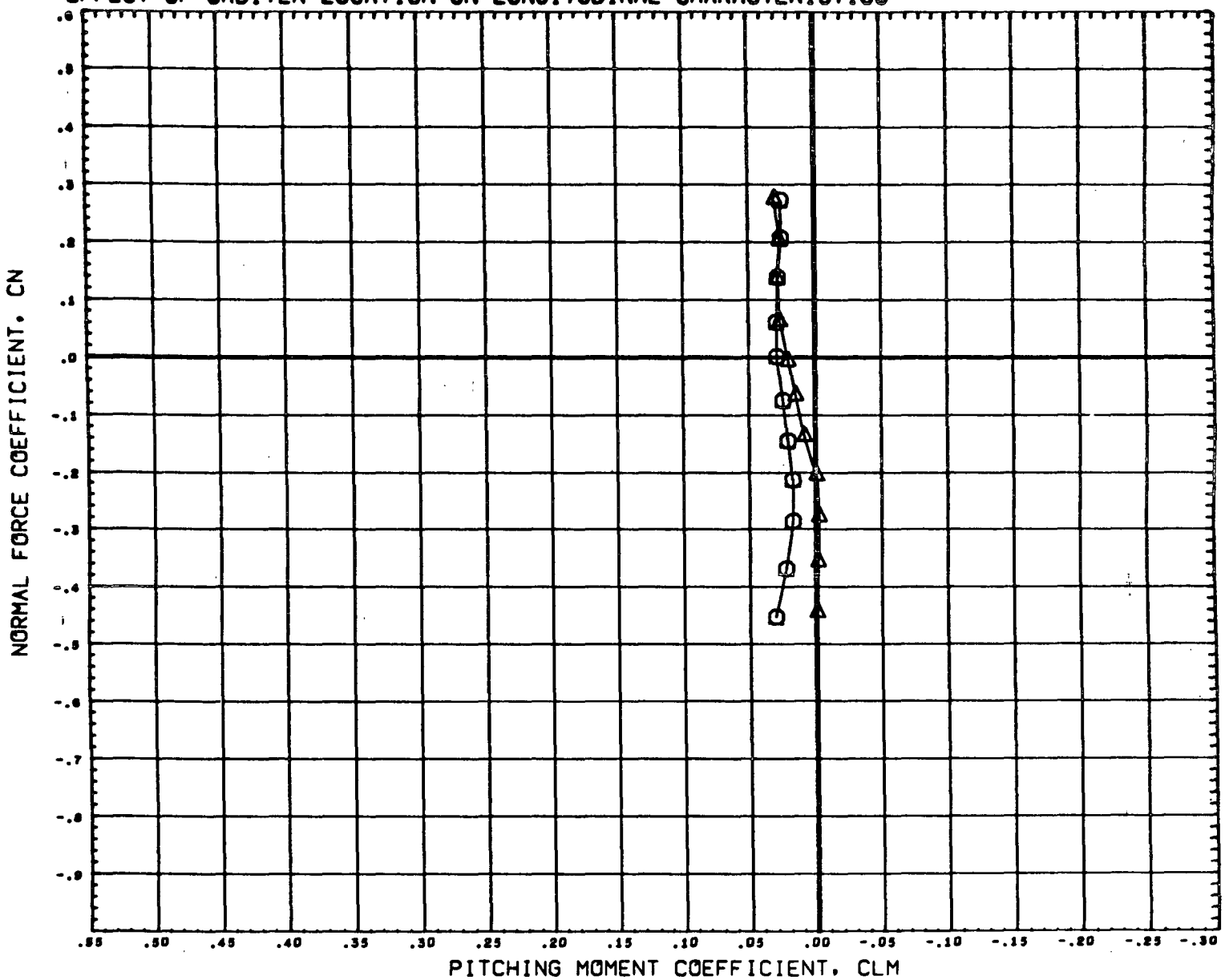
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(866008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(866022)	△	MSFC TWT 538	SHUTTLE LAUNCH	T102S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.97

EFFECT OF ORBITER LOCATION ON LONGITUDINAL CHARACTERISTICS



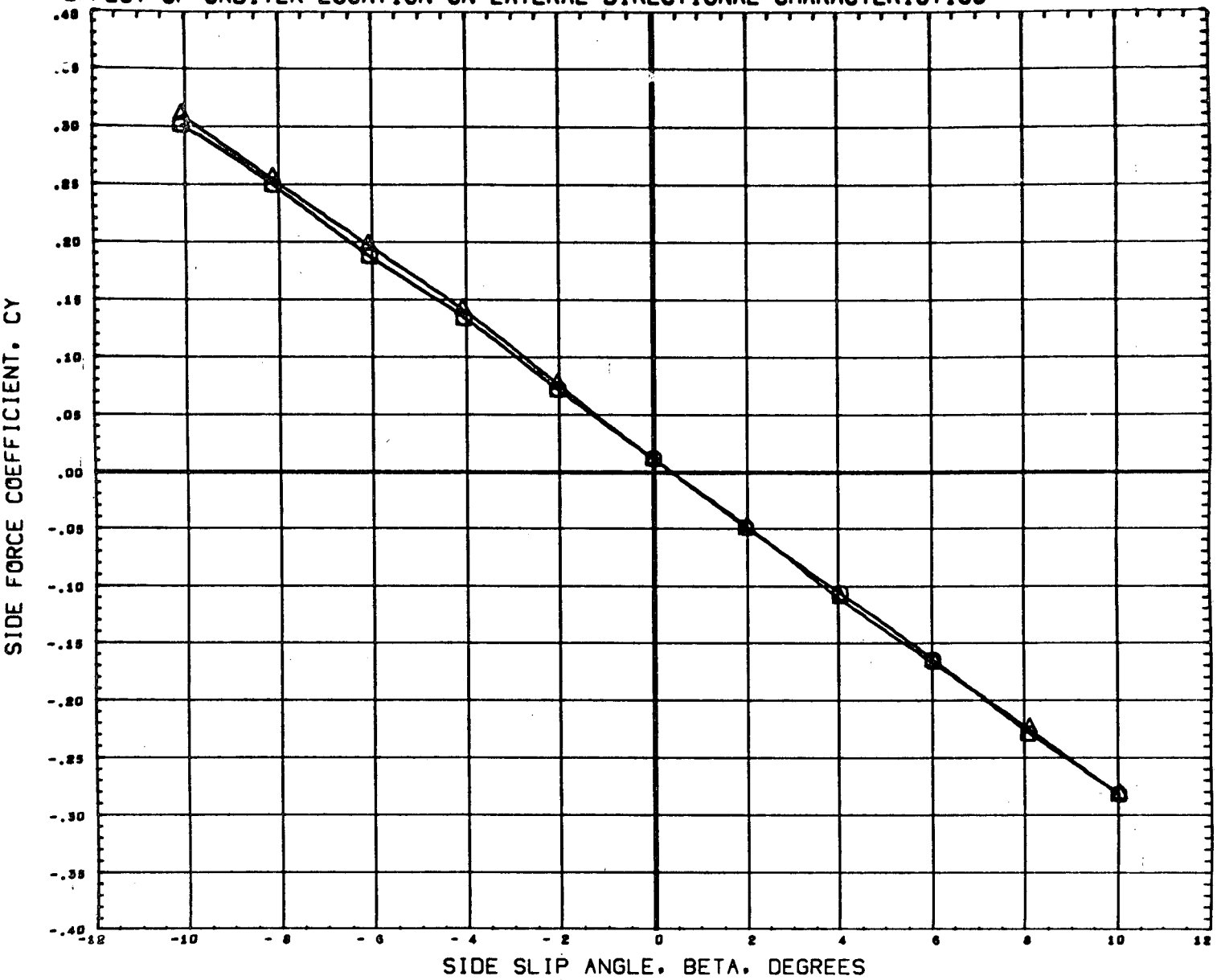
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66008)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(B66022)	△	MSFC TWT 538	SHUTTLE LAUNCH	T102S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 4.96

EFFECT OF ORBITER LOCATION ON LATERAL DIRECTIONAL CHARACTERISTICS



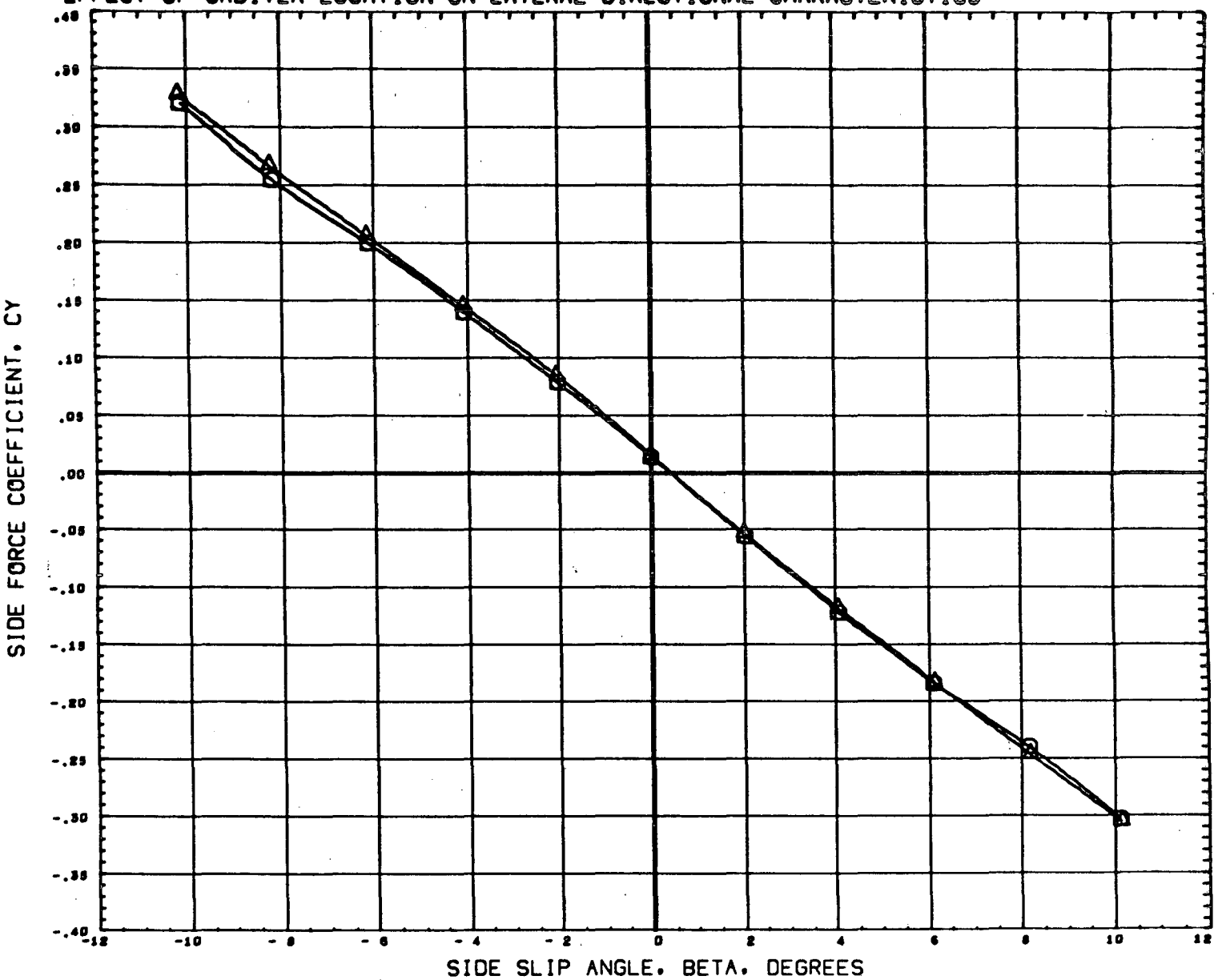
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(A66023)	△	MSFC TWT 538	SHUTTLE LAUNCH	T102S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .60

EFFECT OF ORBITER LOCATION ON LATERAL DIRECTIONAL CHARACTERISTICS



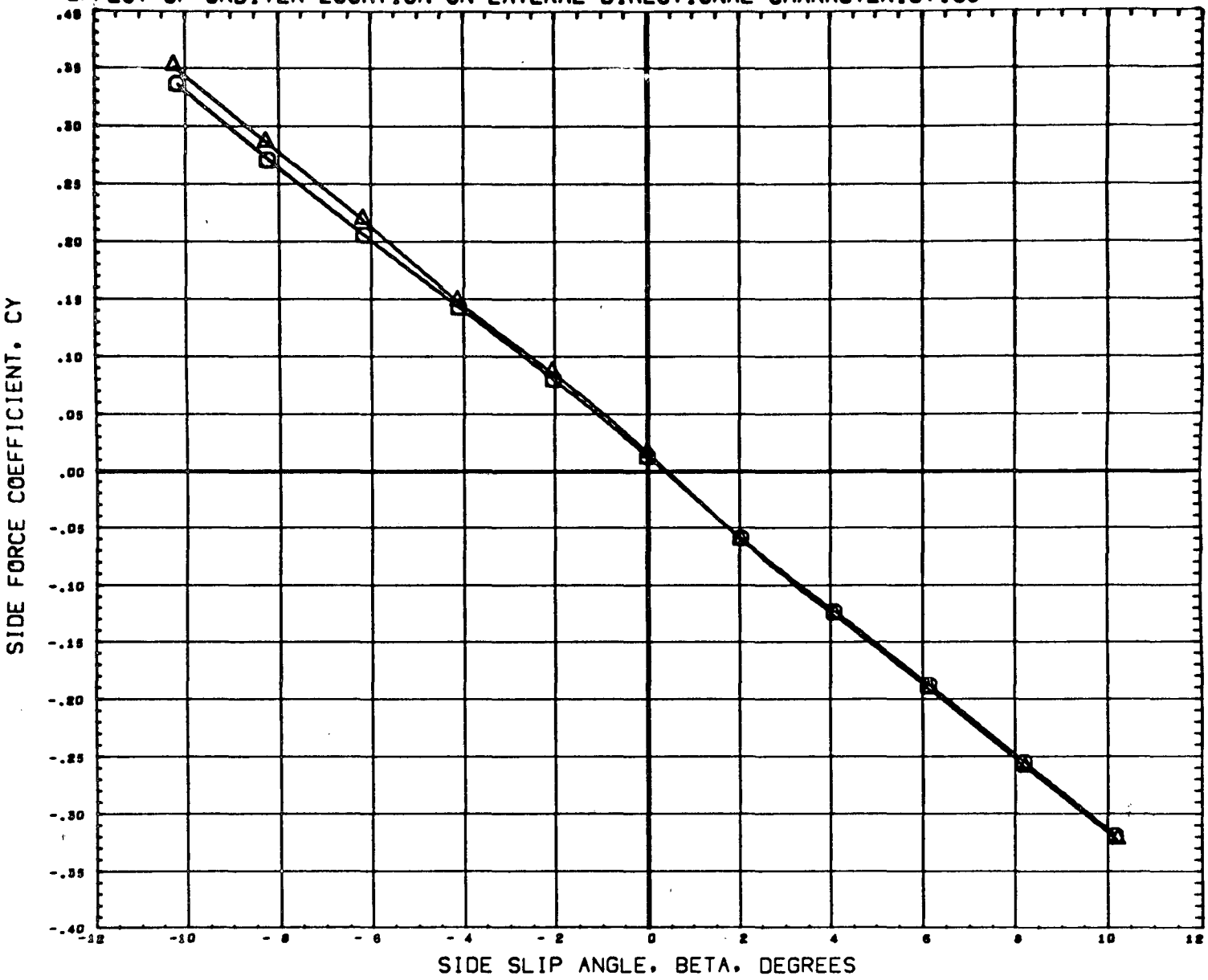
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(A66023)	△	MSFC TWT 538	SHUTTLE LAUNCH	T102S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .80

EFFECT OF ORBITER LOCATION ON LATERAL DIRECTIONAL CHARACTERISTICS



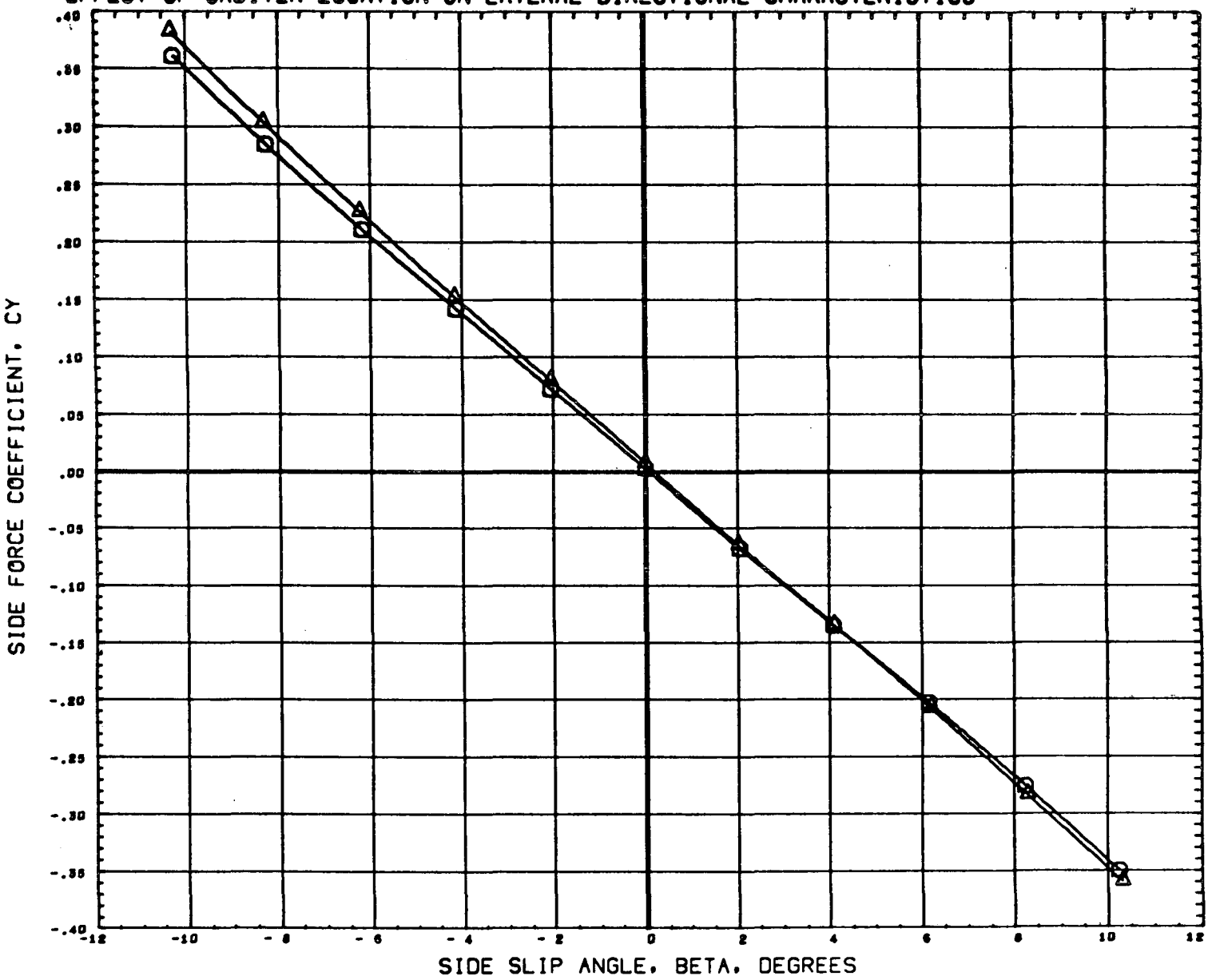
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(A66023)	△	MSFC TWT 538	SHUTTLE LAUNCH	T102S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2460	IN.
SCALE	0.0040	

MACH .90

EFFECT OF ORBITER LOCATION ON LATERAL DIRECTIONAL CHARACTERISTICS



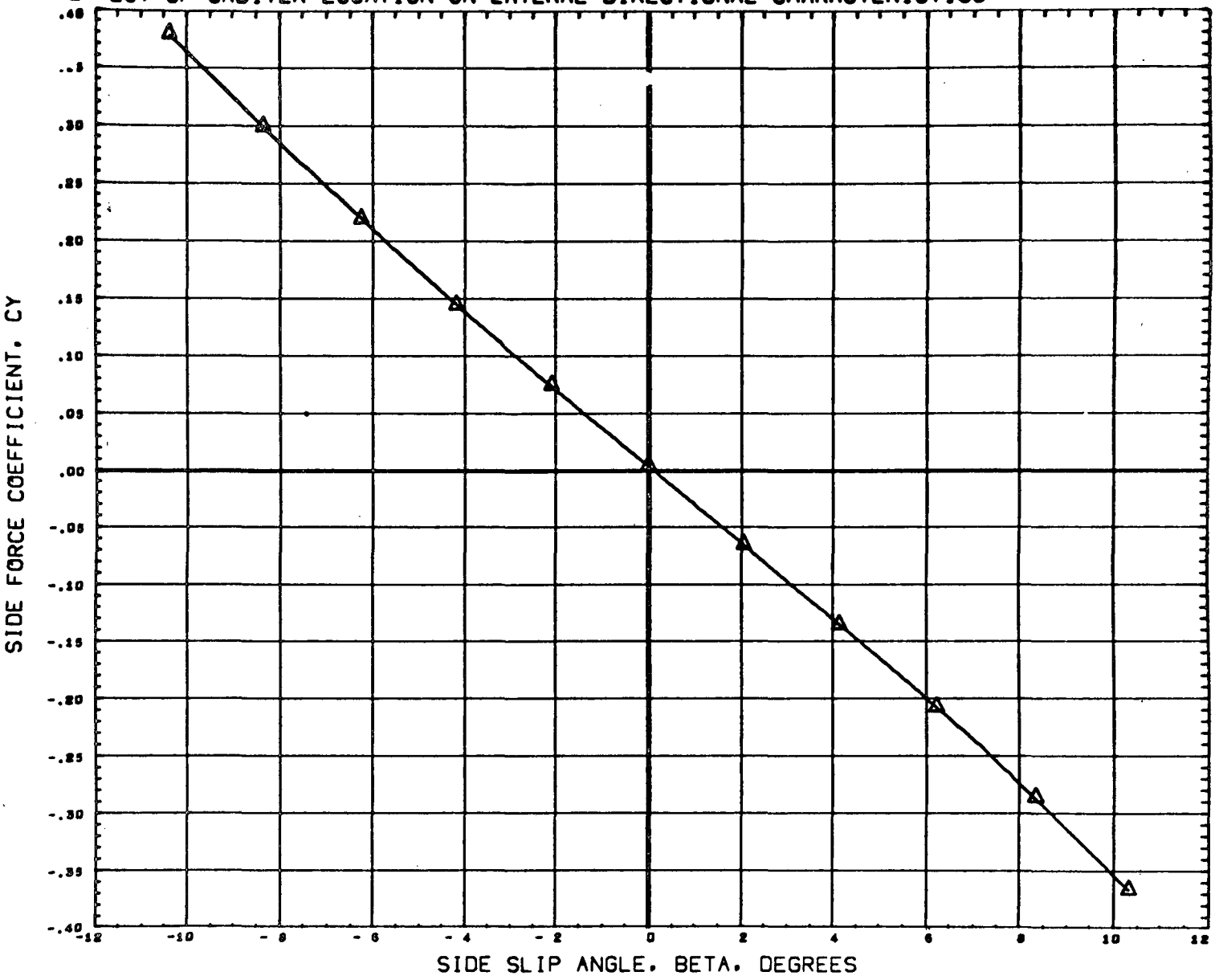
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(A66023)	△	MSFC TWT 538	SHUTTLE LAUNCH	T102S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1460	IN.
YMRP	0.0000	IN.
ZMRP	0.2460	IN.
SCALE	0.0040	

MACH 1.10

EFFECT OF ORBITER LOCATION ON LATERAL DIRECTIONAL CHARACTERISTICS



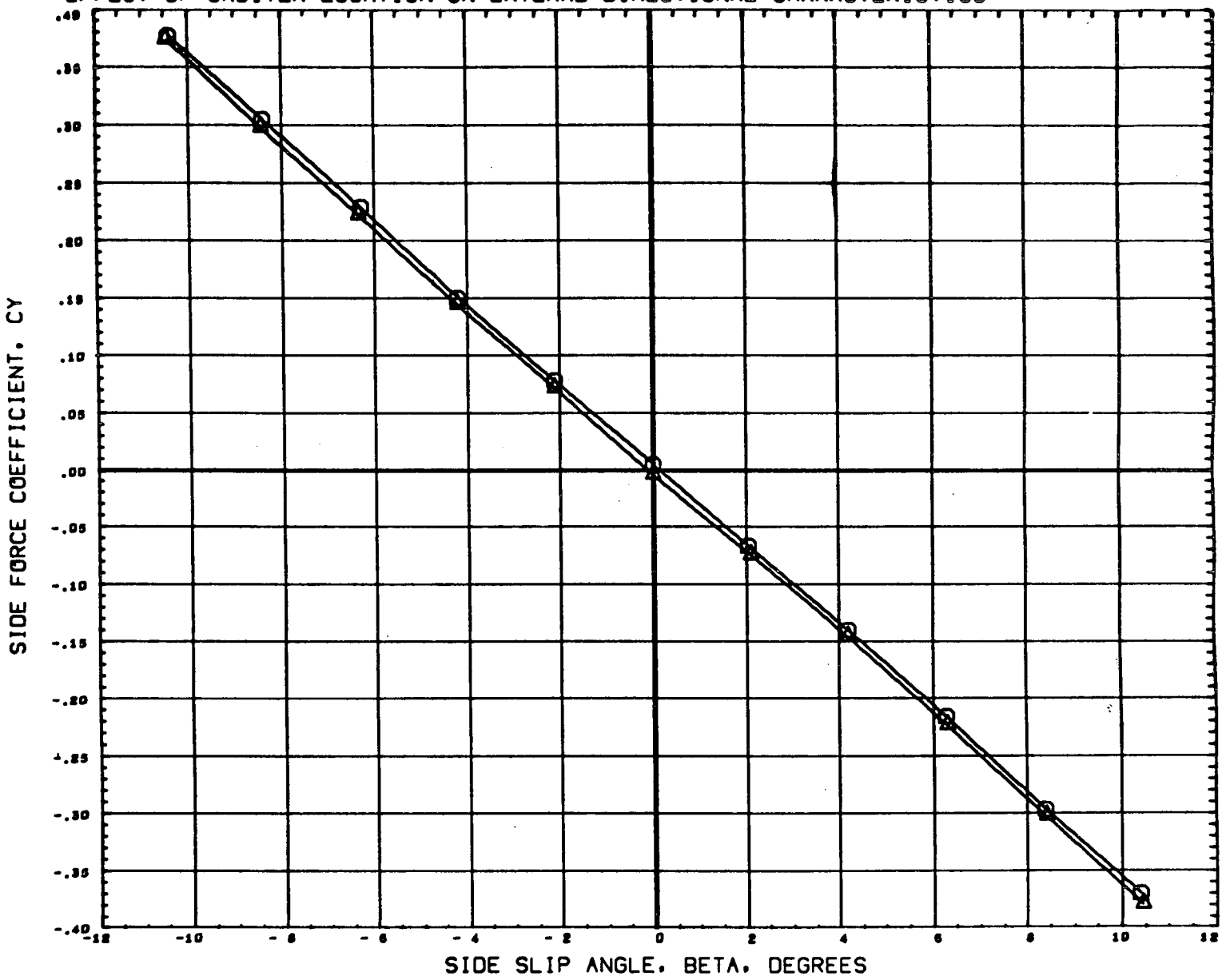
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ORBIN
(T66009)	○	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500
(A66023)	△	MSFC TWT 938 SHUTTLE LAUNCH T10251R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.19

EFFECT OF ORBITER LOCATION ON LATERAL DIRECTIONAL CHARACTERISTICS



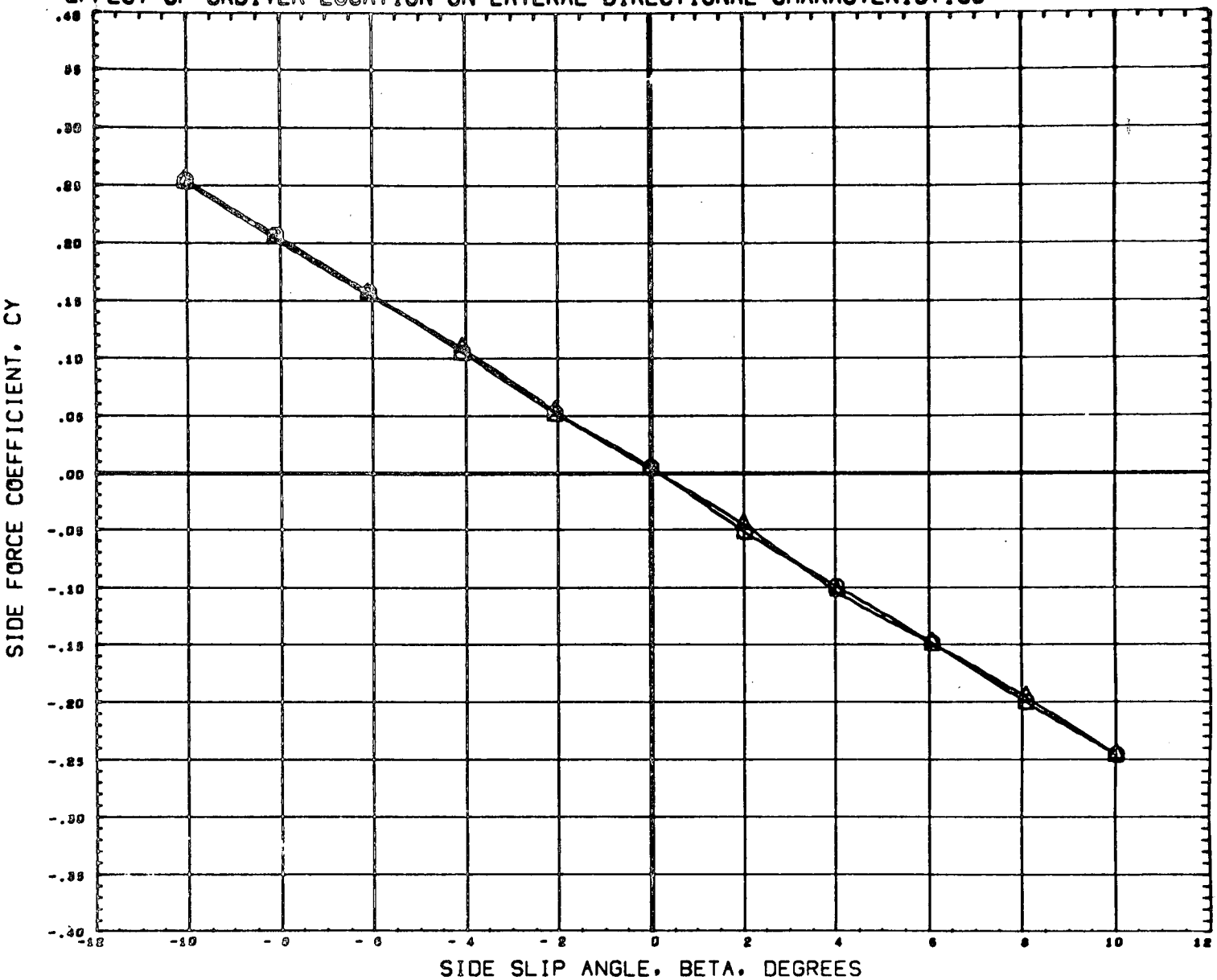
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(A66023)	△	MSFC TWT 538	SHUTTLE LAUNCH	T102S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.97

EFFECT OF ORBITER LOCATION ON LATERAL DIRECTIONAL CHARACTERISTICS

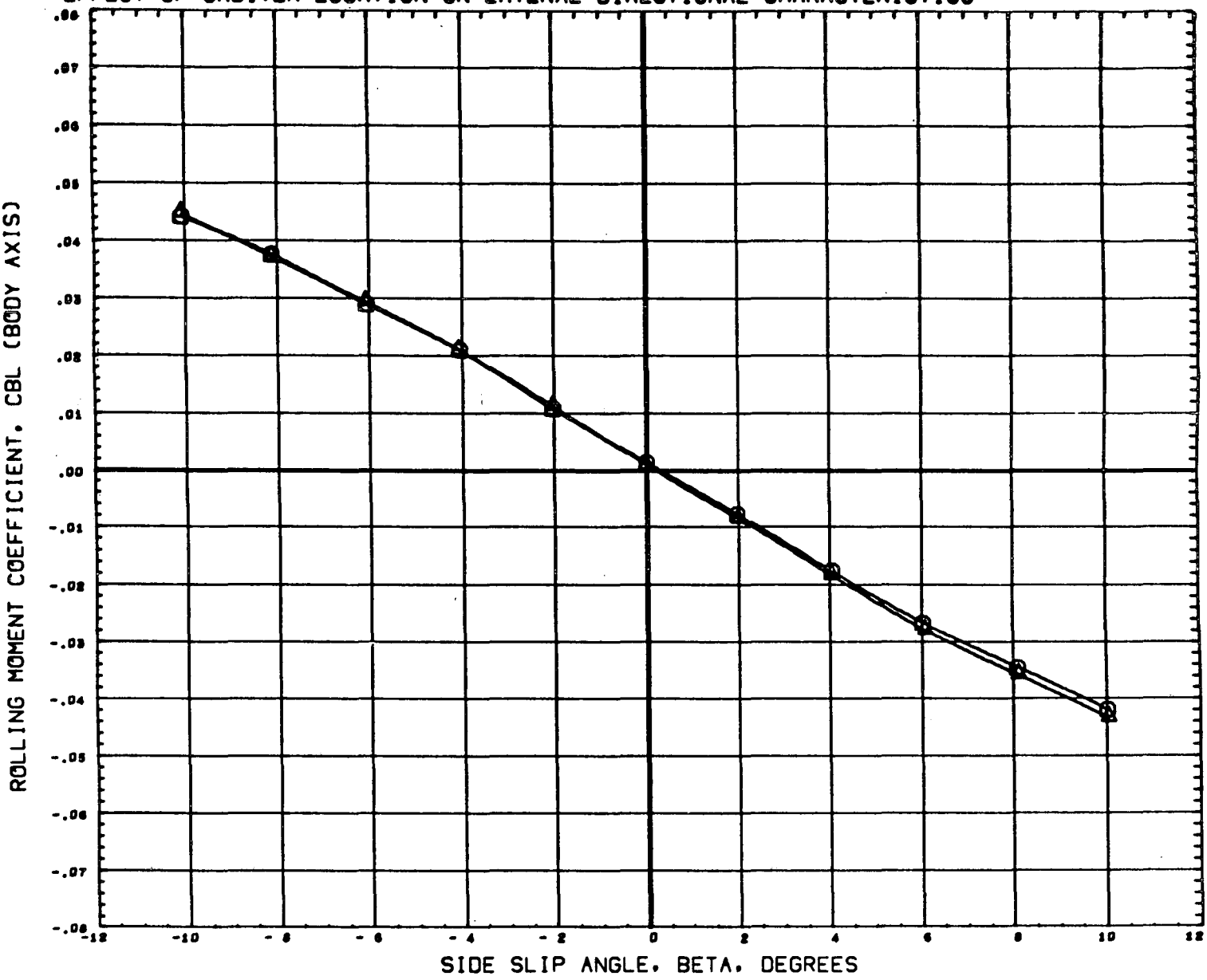


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T10191R1	0.000	-1.500
(A60023)	△	MSFC TWT 538	SHUTTLE LAUNCH	T10291R1	0.000	-1.500

REFERENCE INFORMATION		
SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 4.96

EFFECT OF ORBITER LOCATION ON LATERAL DIRECTIONAL CHARACTERISTICS



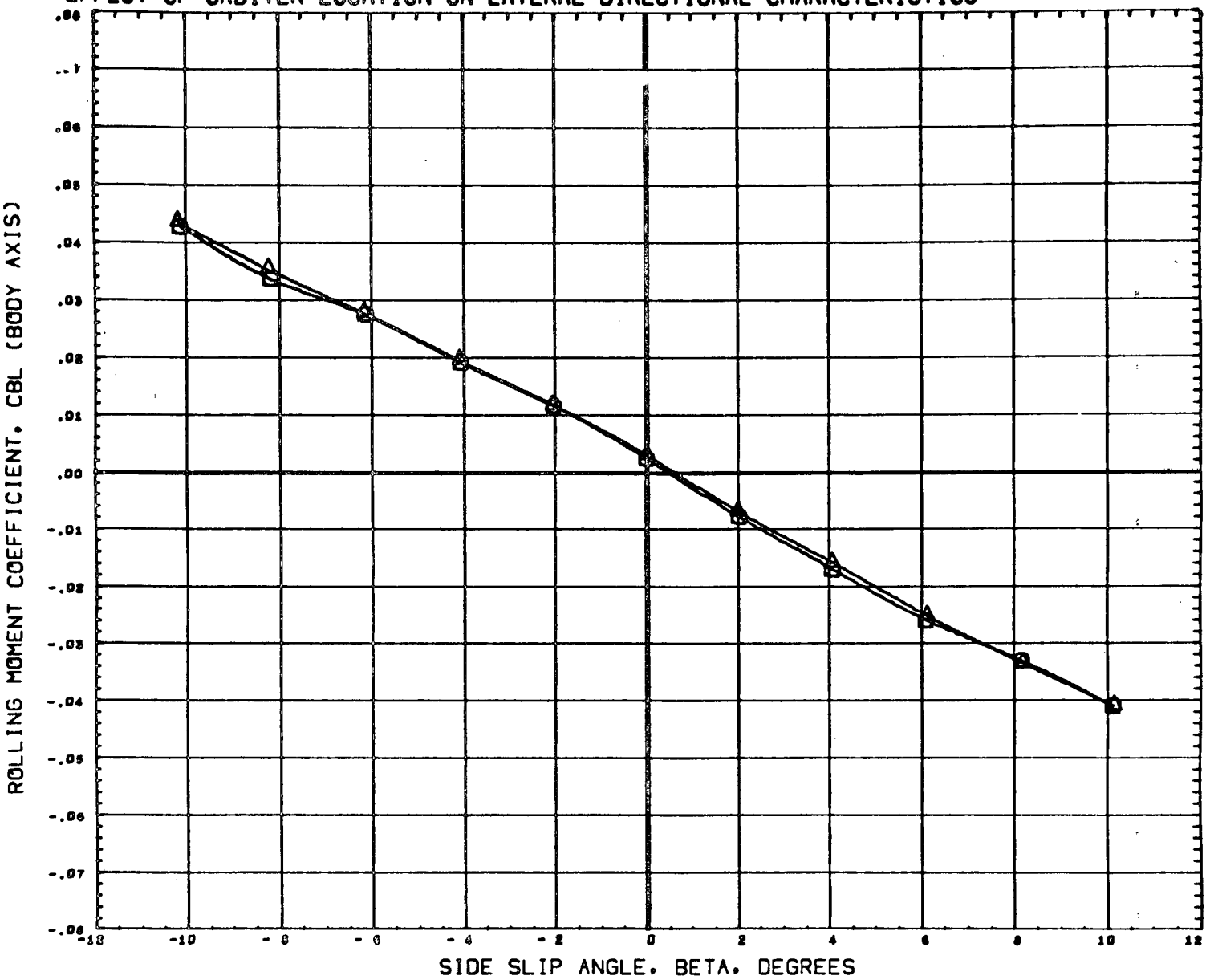
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(A66023)	△	MSFC TWT 538	SHUTTLE LAUNCH	T102S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .60

EFFECT OF ORBITER LOCATION ON LATERAL DIRECTIONAL CHARACTERISTICS



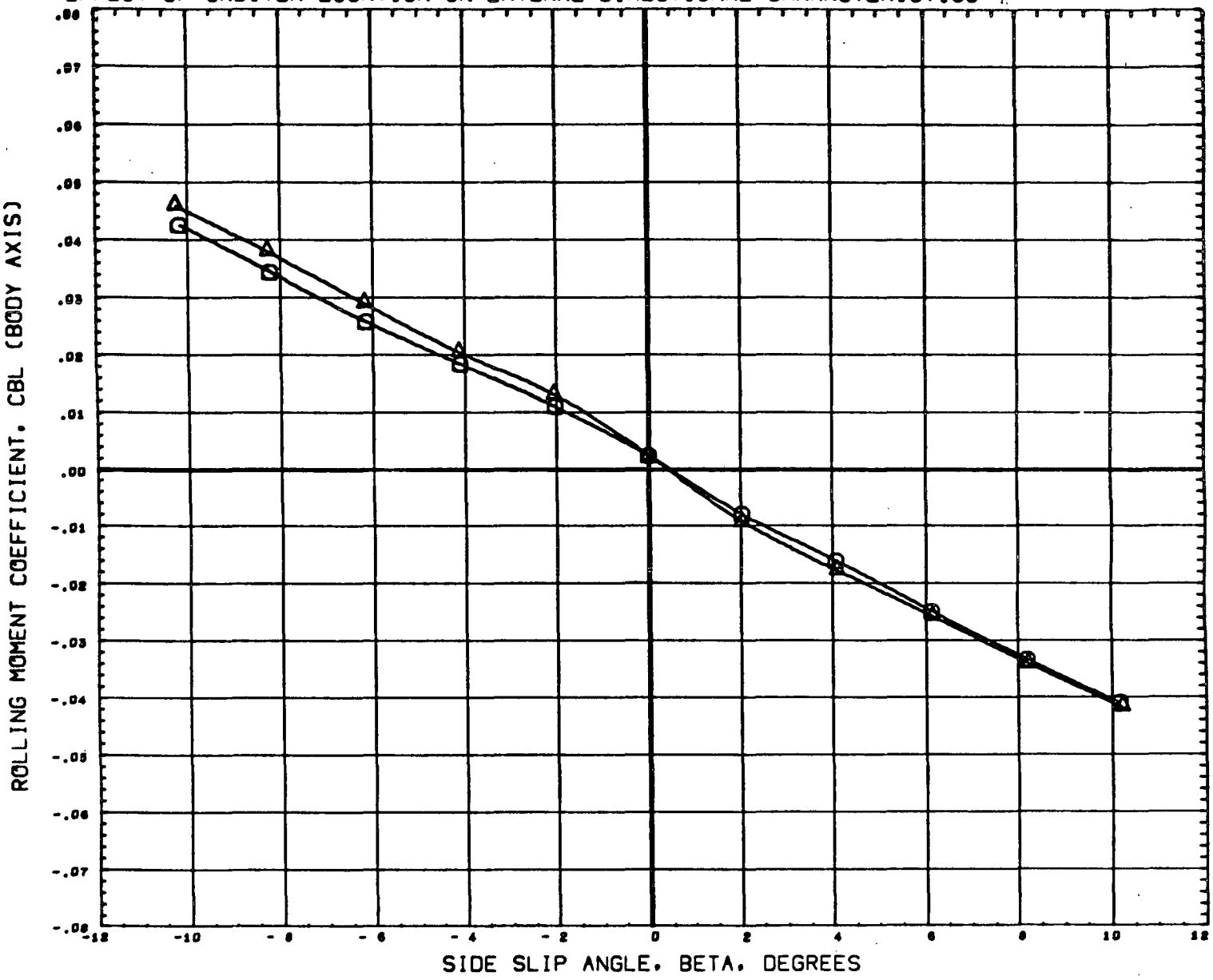
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(A60023)	△	MSFC TWT 538	SHUTTLE LAUNCH	T102S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .80

EFFECT OF ORBITER LOCATION ON LATERAL DIRECTIONAL CHARACTERISTICS



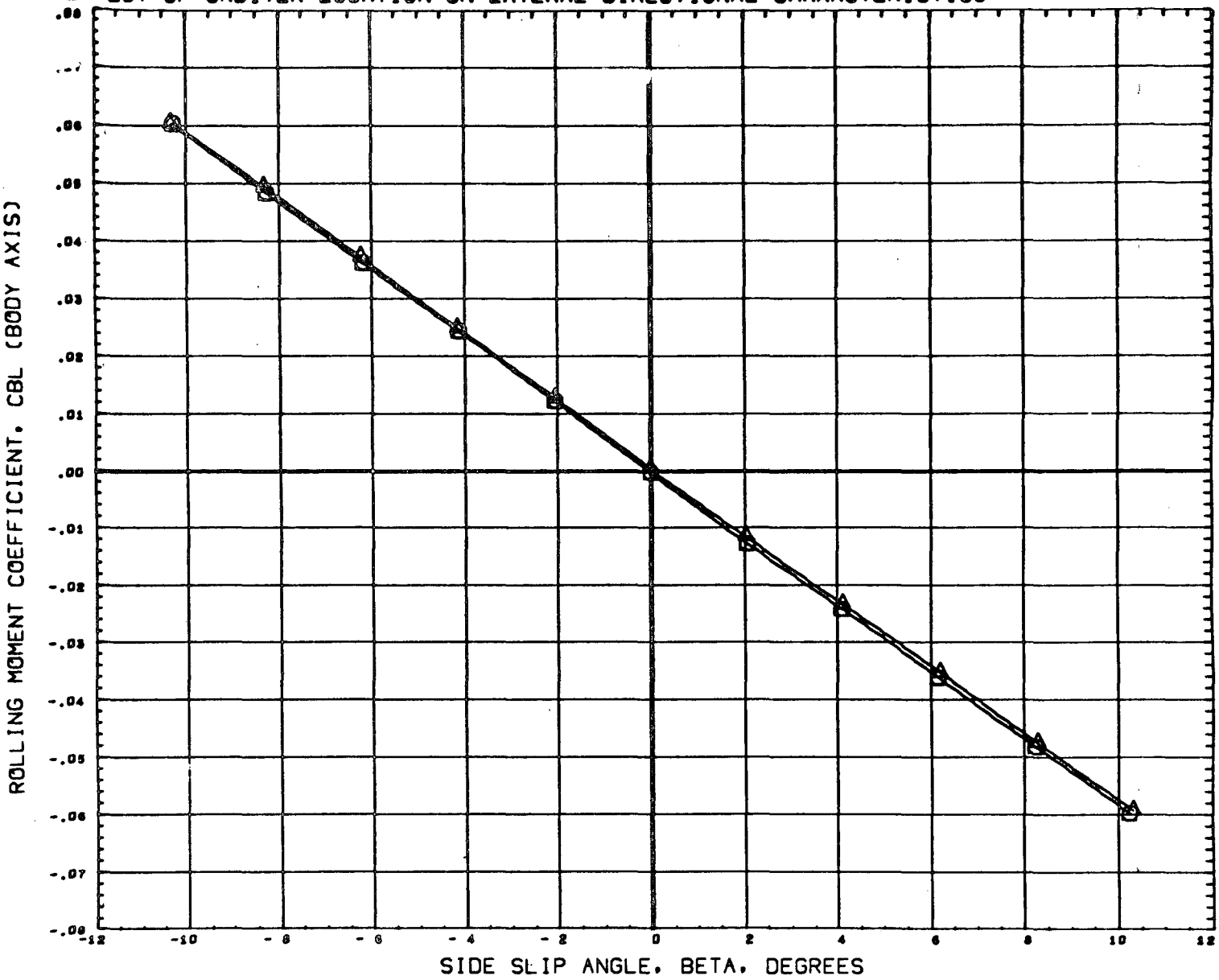
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(766009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(A66023)	△	MSFC TWT 538	SHUTTLE LAUNCH	T102S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2460	IN.
SCALE	0.0040	

MACH .90

EFFECT OF ORBITER LOCATION ON LATERAL DIRECTIONAL CHARACTERISTICS



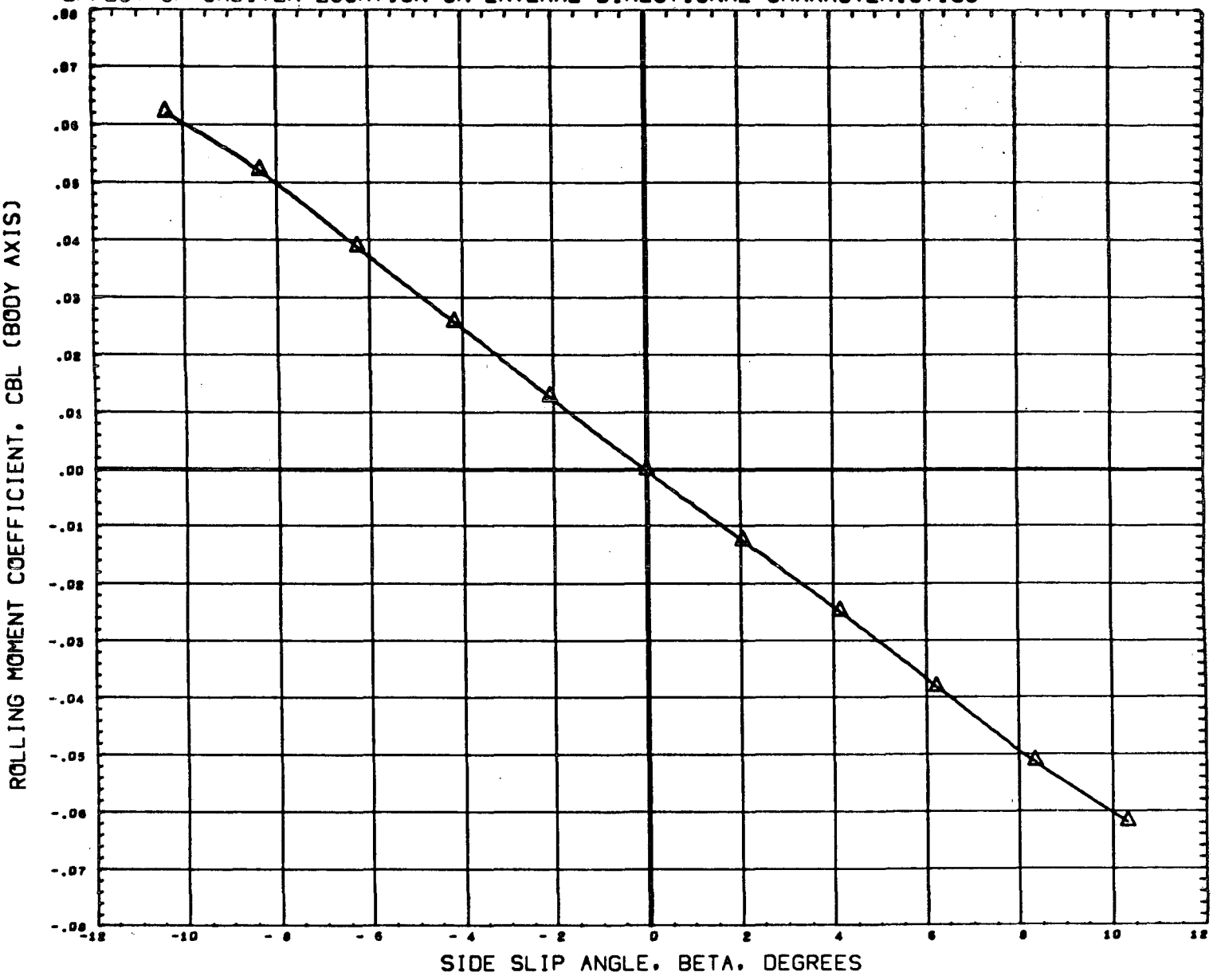
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(A66023)	△	MSFC TWT 538	SHUTTLE LAUNCH	T102S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.10

EFFECT OF ORBITER LOCATION ON LATERAL DIRECTIONAL CHARACTERISTICS



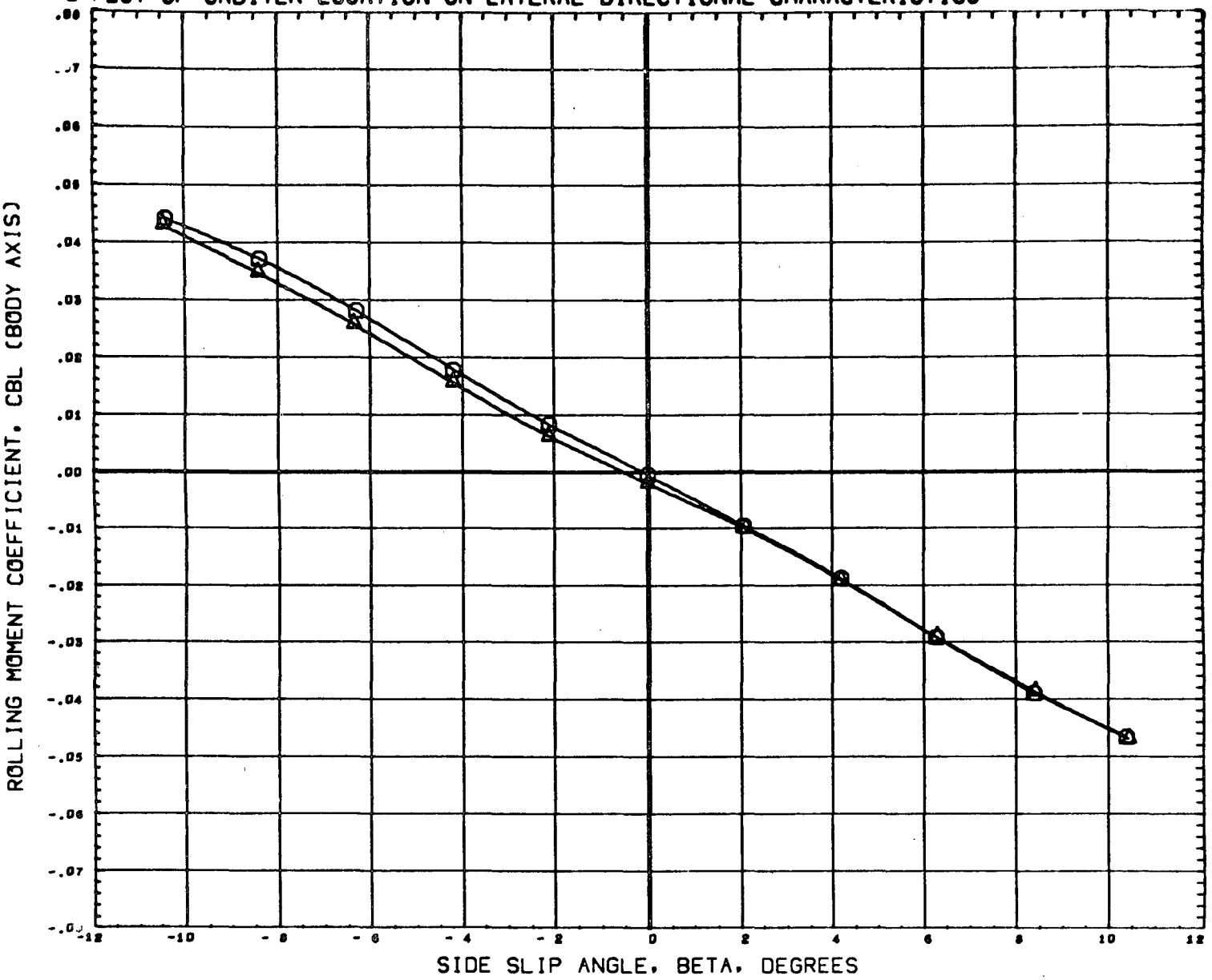
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ORBIN
(T66009)	○	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500
(A66023)	△	MSFC TWT 530 SHUTTLE LAUNCH T102S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.19

EFFECT OF ORBITER LOCATION ON LATERAL DIRECTIONAL CHARACTERISTICS



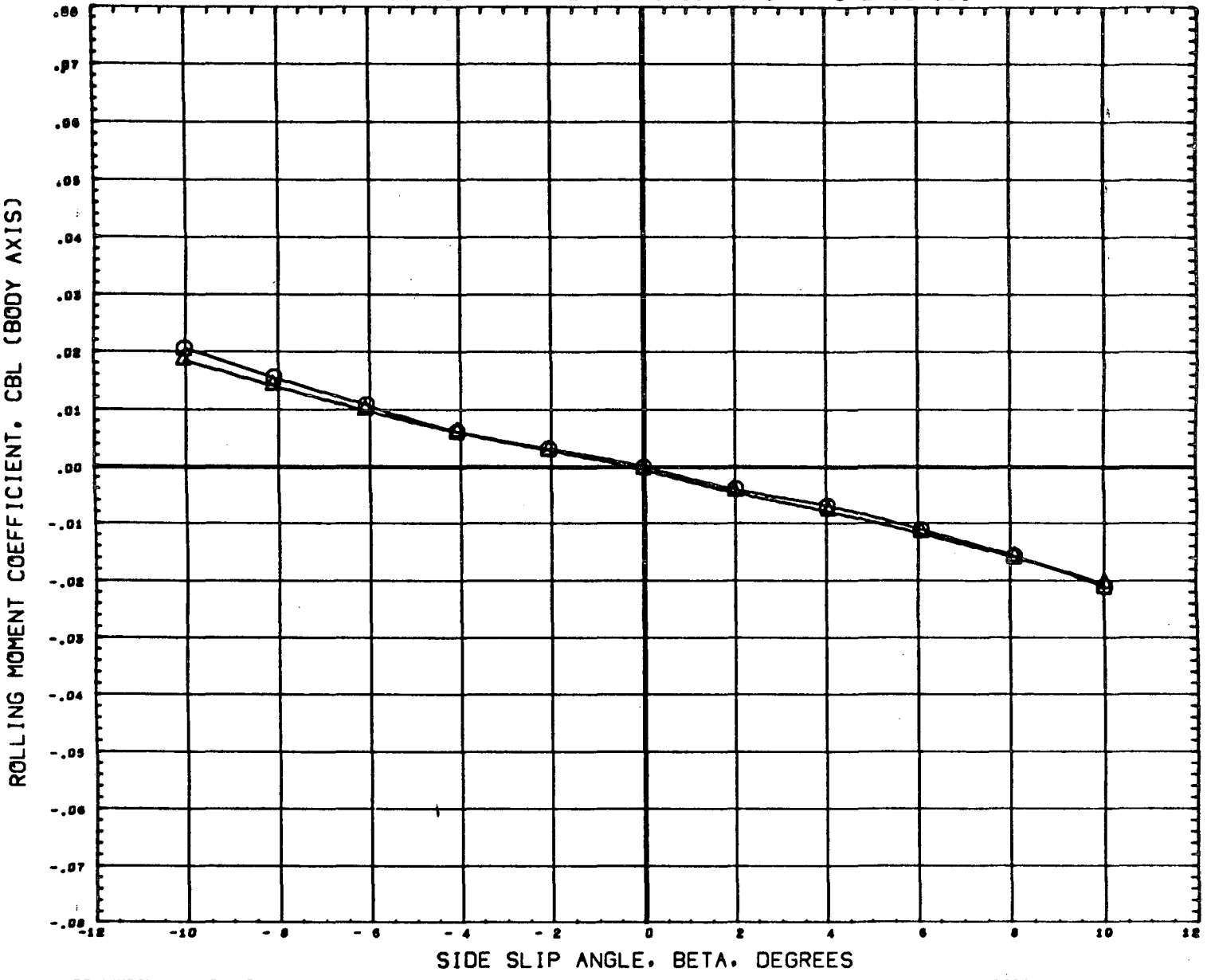
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(AG6023)	△	MSFC TWT 538	SHUTTLE LAUNCH	T102S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.97

EFFECT OF ORBITER LOCATION ON LATERAL DIRECTIONAL CHARACTERISTICS



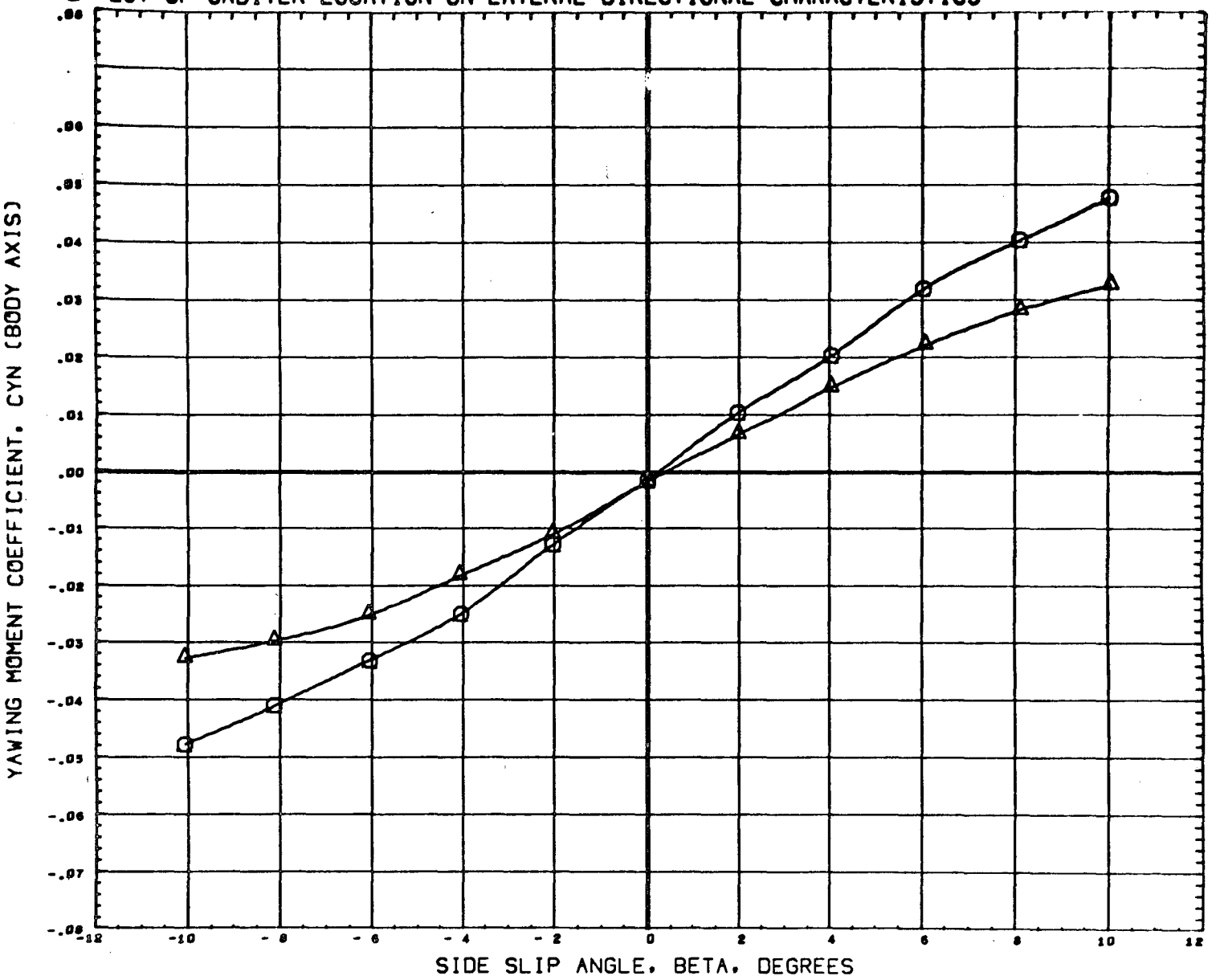
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(A66023)	△	MSFC TWT 538	SHUTTLE LAUNCH	T102S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.0900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 4.96

EFFECT OF ORBITER LOCATION ON LATERAL DIRECTIONAL CHARACTERISTICS



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(AG6023)	△	MSFC TWT 538	SHUTTLE LAUNCH	T102S1R1	0.000	-1.500

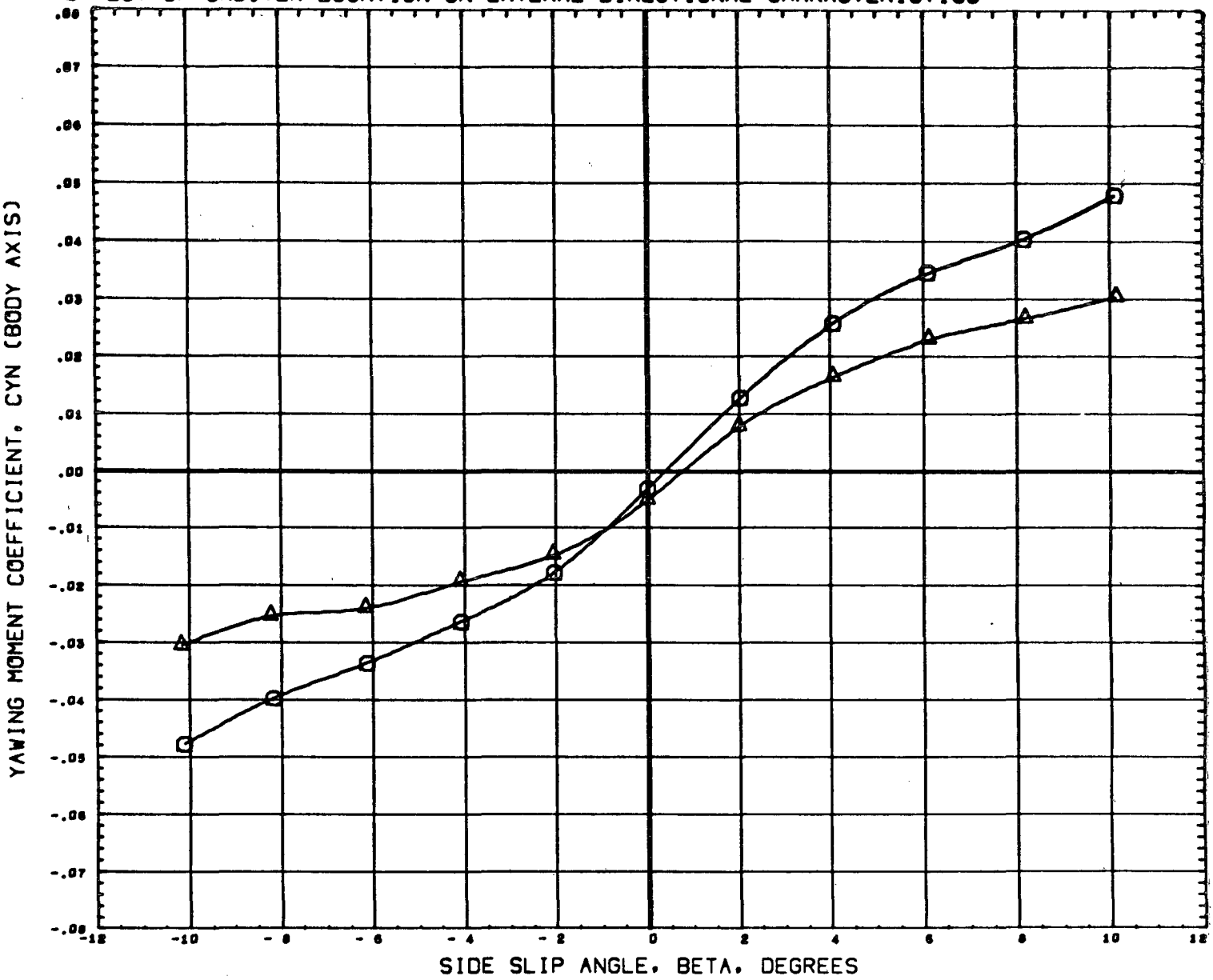
REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .60

C.7

EFFECT OF ORBITER LOCATION ON LATERAL DIRECTIONAL CHARACTERISTICS



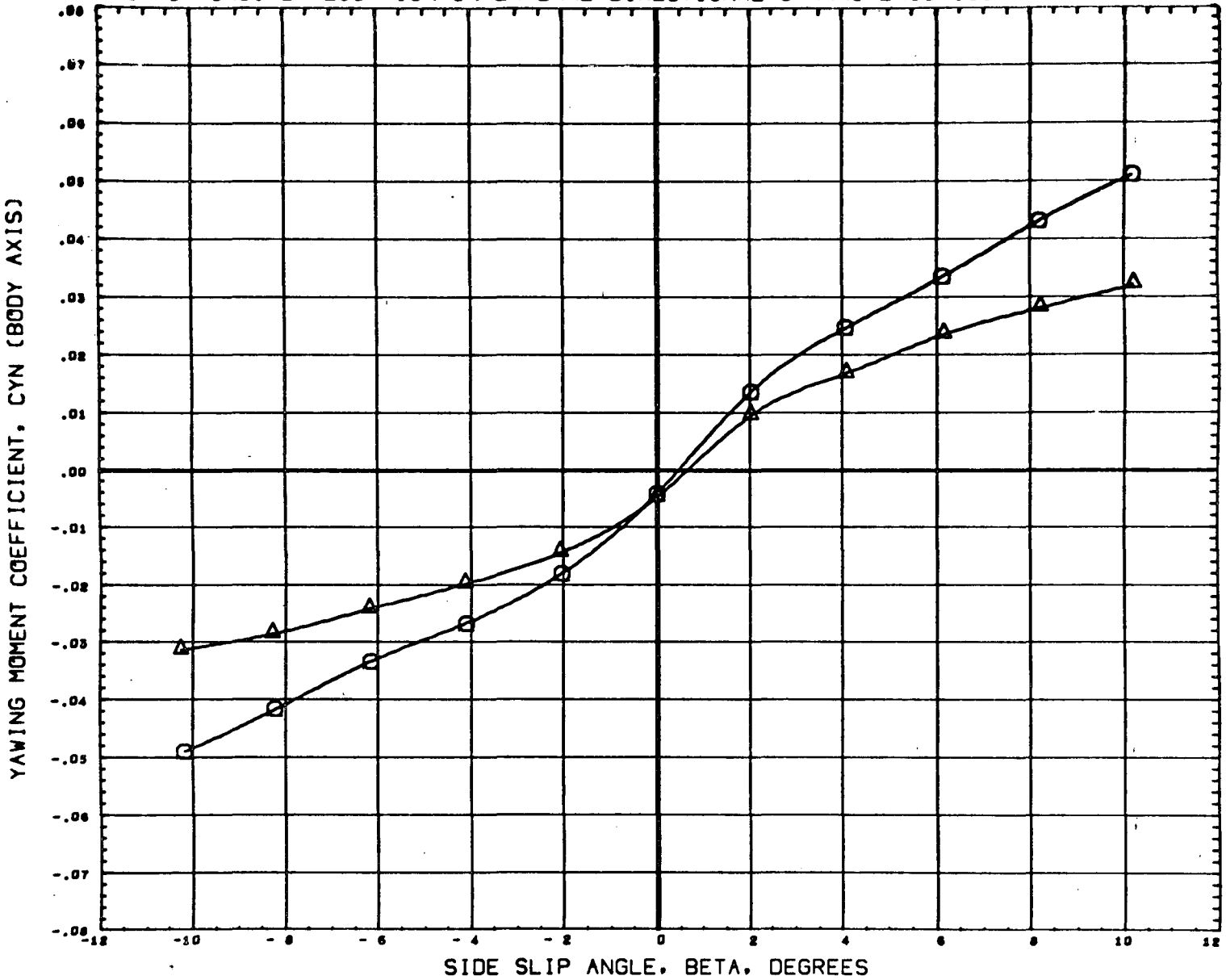
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(A66023)	△	MSFC TWT 538	SHUTTLE LAUNCH	T102S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .80

EFFECT OF ORBITER LOCATION ON LATERAL DIRECTIONAL CHARACTERISTICS



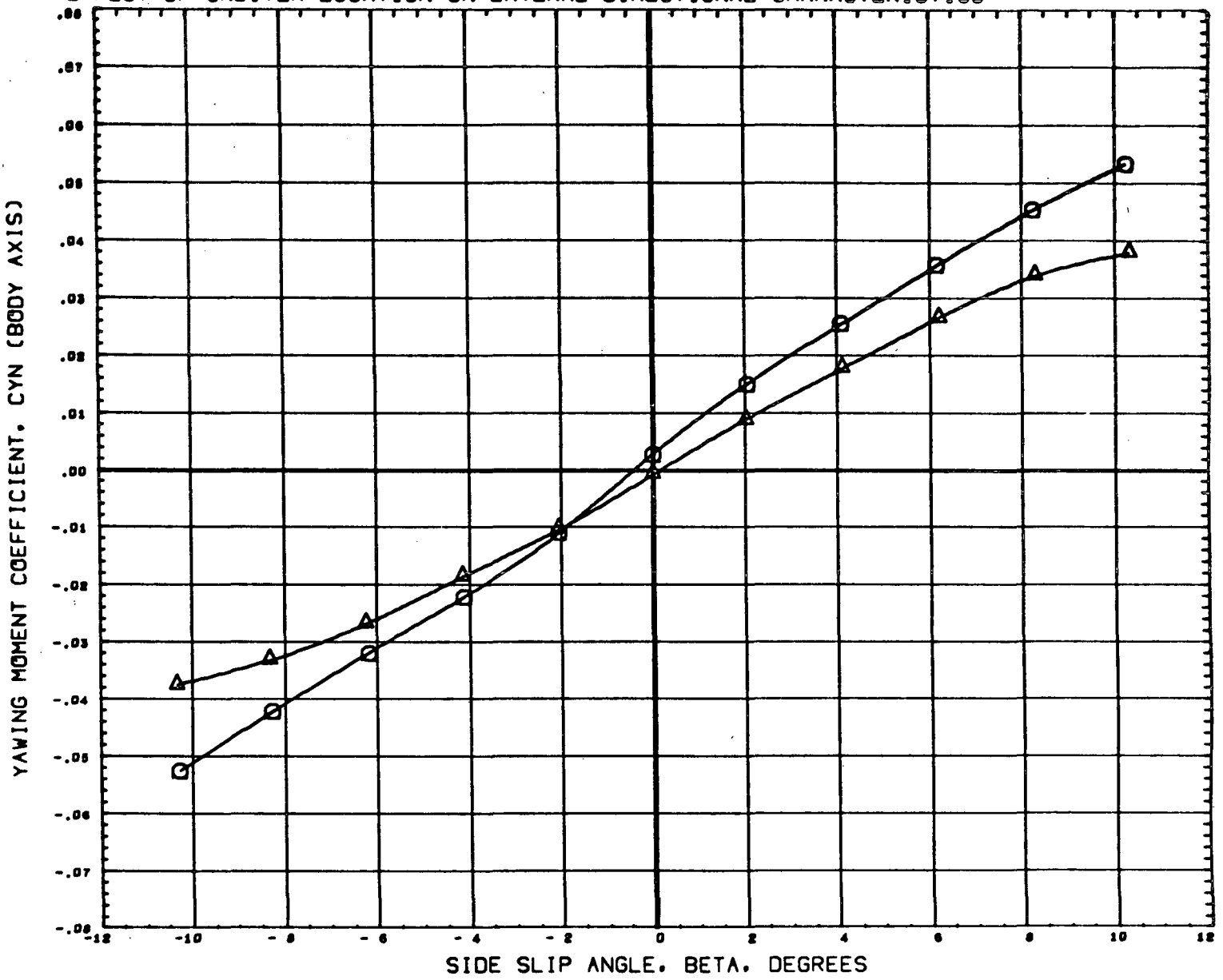
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(A66023)	△	MSFC TWT 538	SHUTTLE LAUNCH	T102S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .90

EFFECT OF ORBITER LOCATION ON LATERAL DIRECTIONAL CHARACTERISTICS



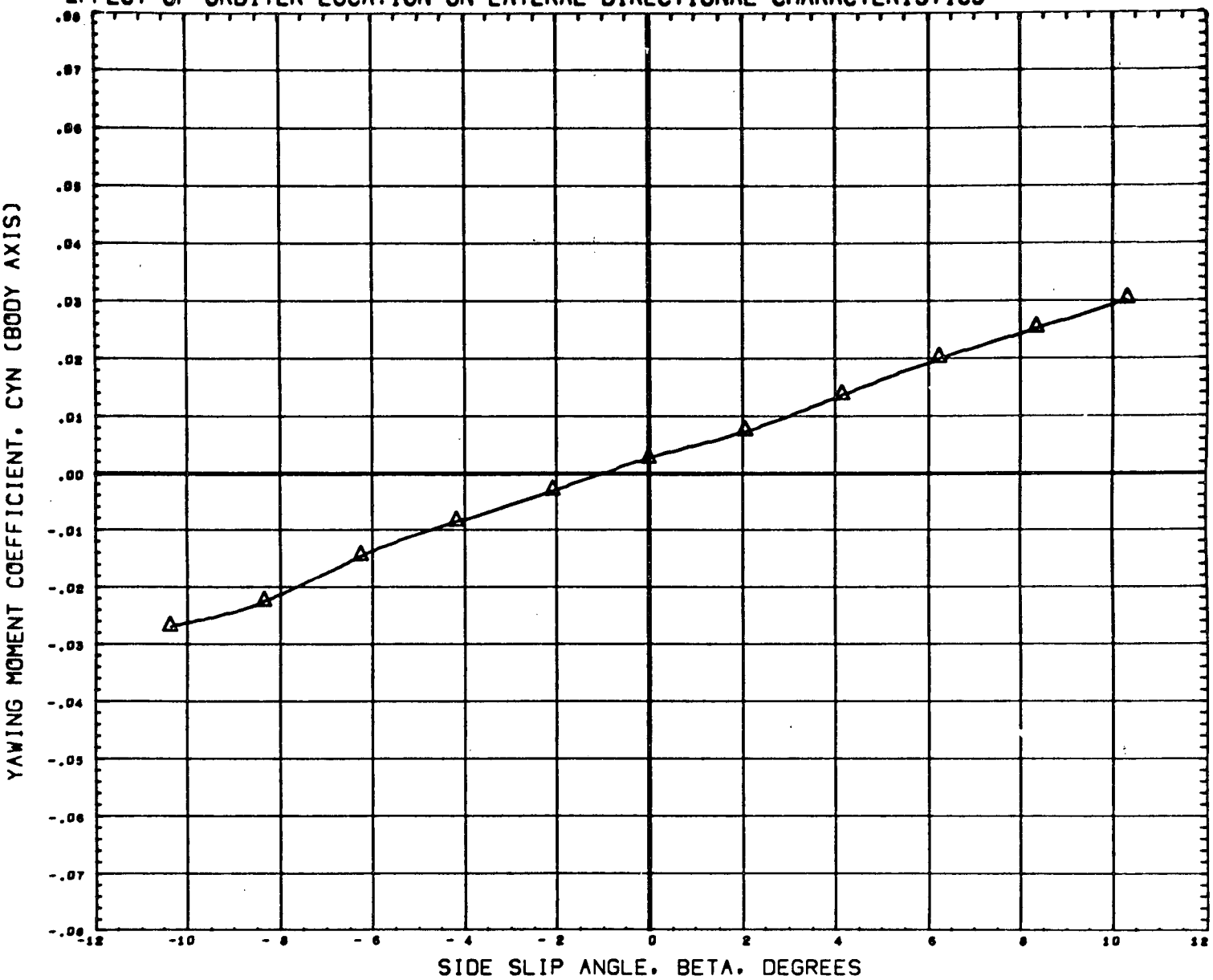
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T10131R1	0.000	-1.500
(A66023)	△	MSFC TWT 538	SHUTTLE LAUNCH	T10231R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.0900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.10

EFFECT OF ORBITER LOCATION ON LATERAL DIRECTIONAL CHARACTERISTICS



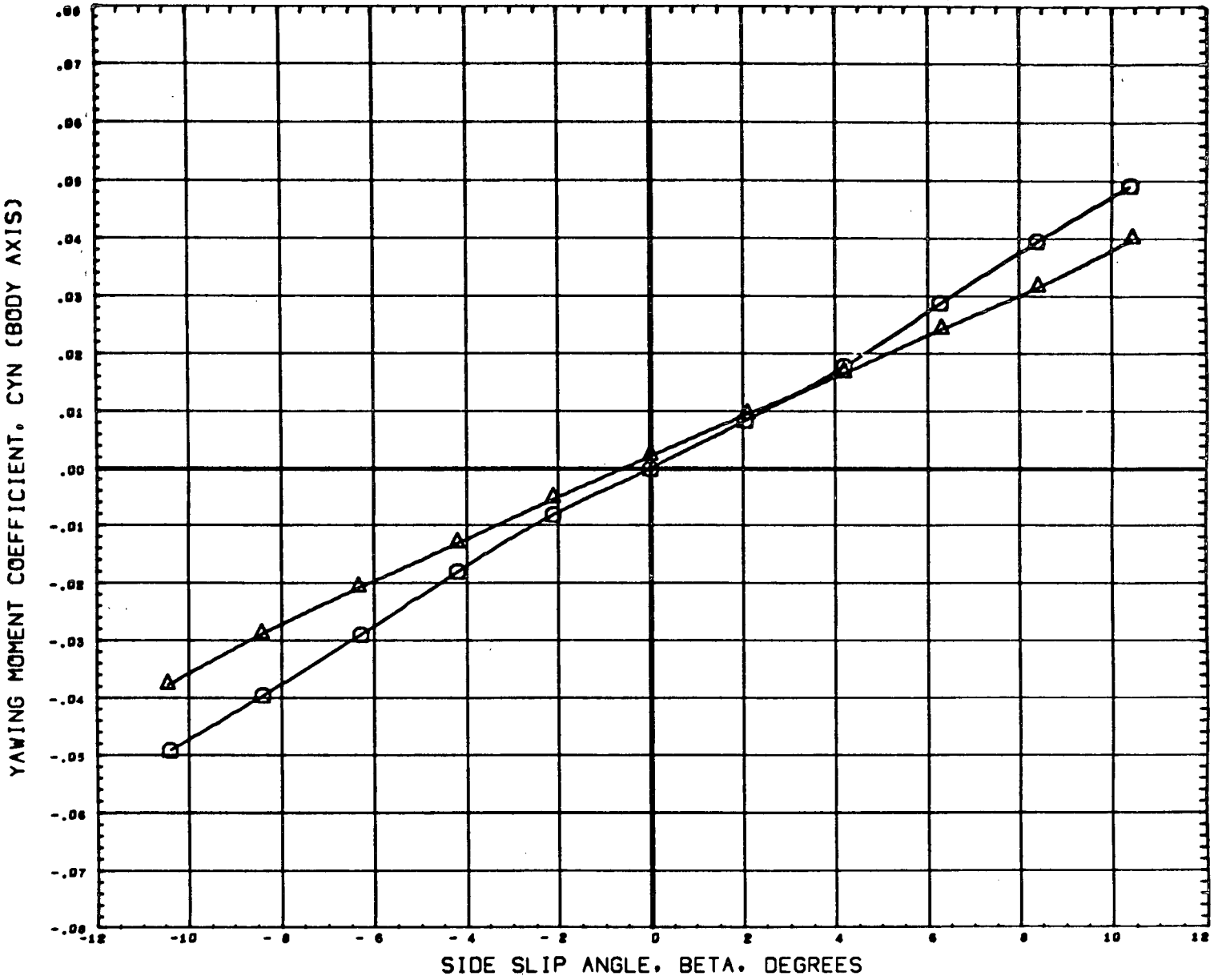
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ORBIN
(T66009)	○	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500
(A66023)	△	MSFC TWT 538 SHUTTLE LAUNCH T102S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.19

EFFECT OF ORBITER LOCATION ON LATERAL DIRECTIONAL CHARACTERISTICS



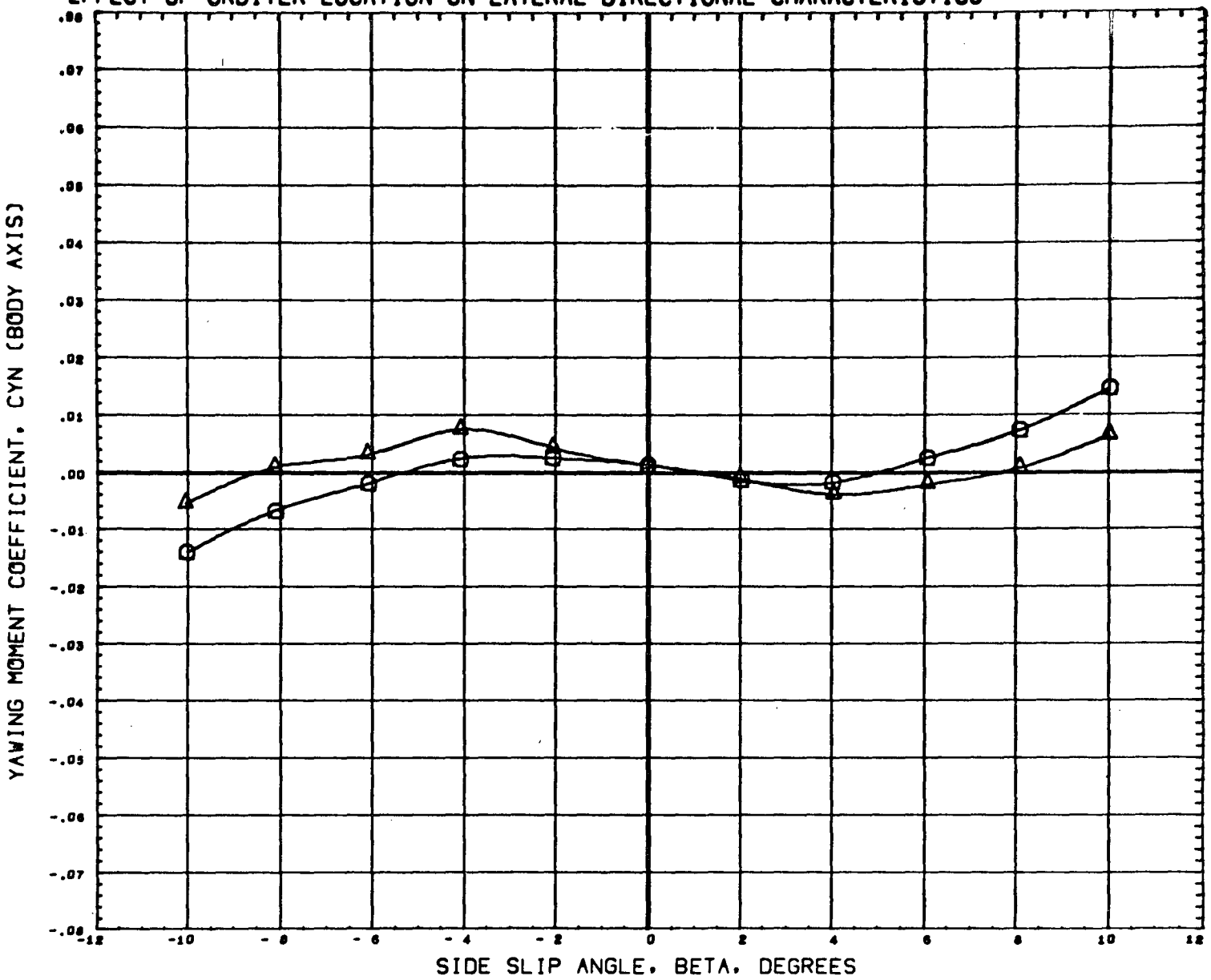
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(A66023)	△	MSFC TWT 538	SHUTTLE LAUNCH	T102S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2460	IN.
SCALE	0.0040	

MACH 1.97

EFFECT OF ORBITER LOCATION ON LATERAL DIRECTIONAL CHARACTERISTICS



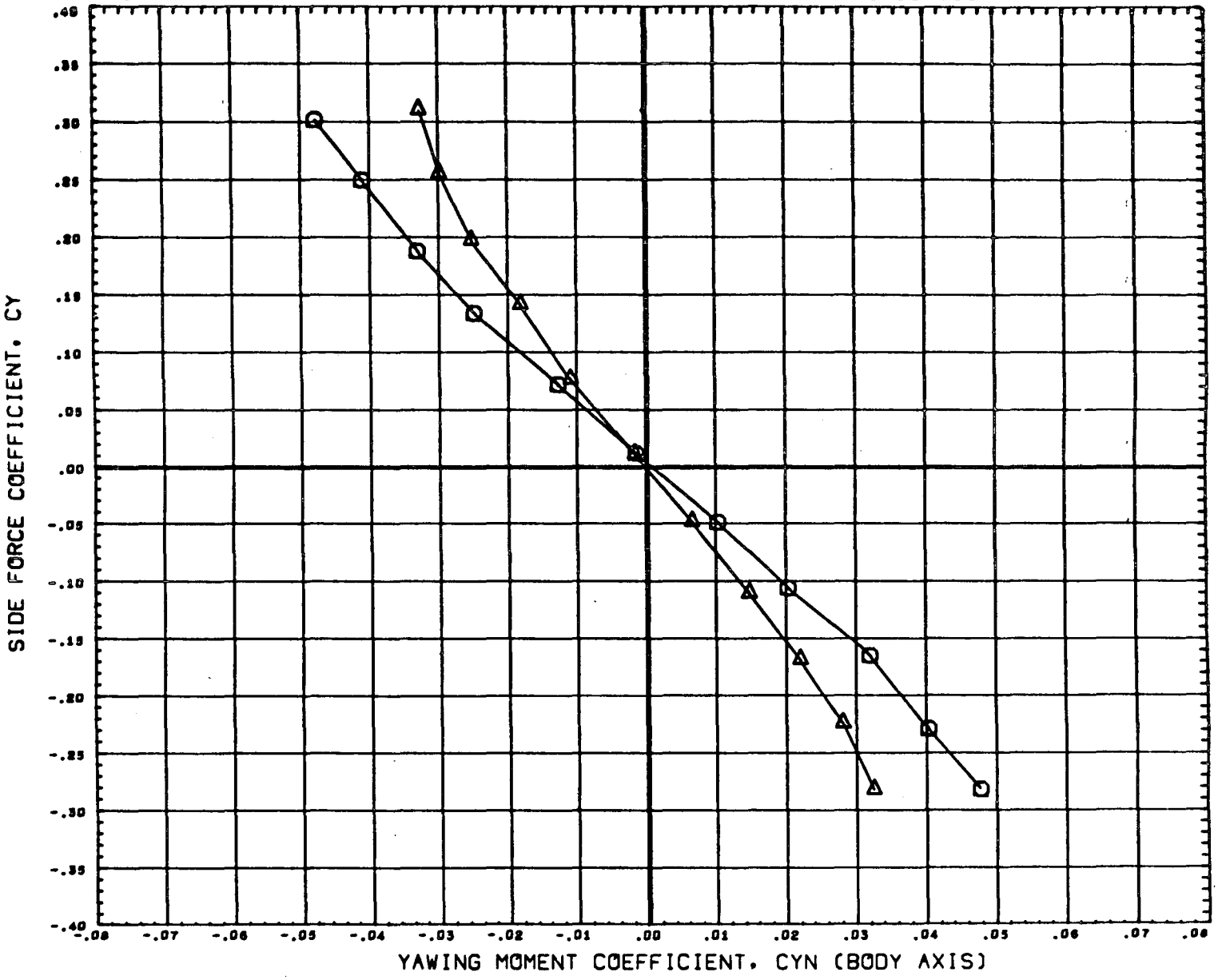
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(A66023)	△	MSFC TWT 538	SHUTTLE LAUNCH	T102S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 4.96

EFFECT OF ORBITER LOCATION ON LATERAL DIRECTIONAL CHARACTERISTICS



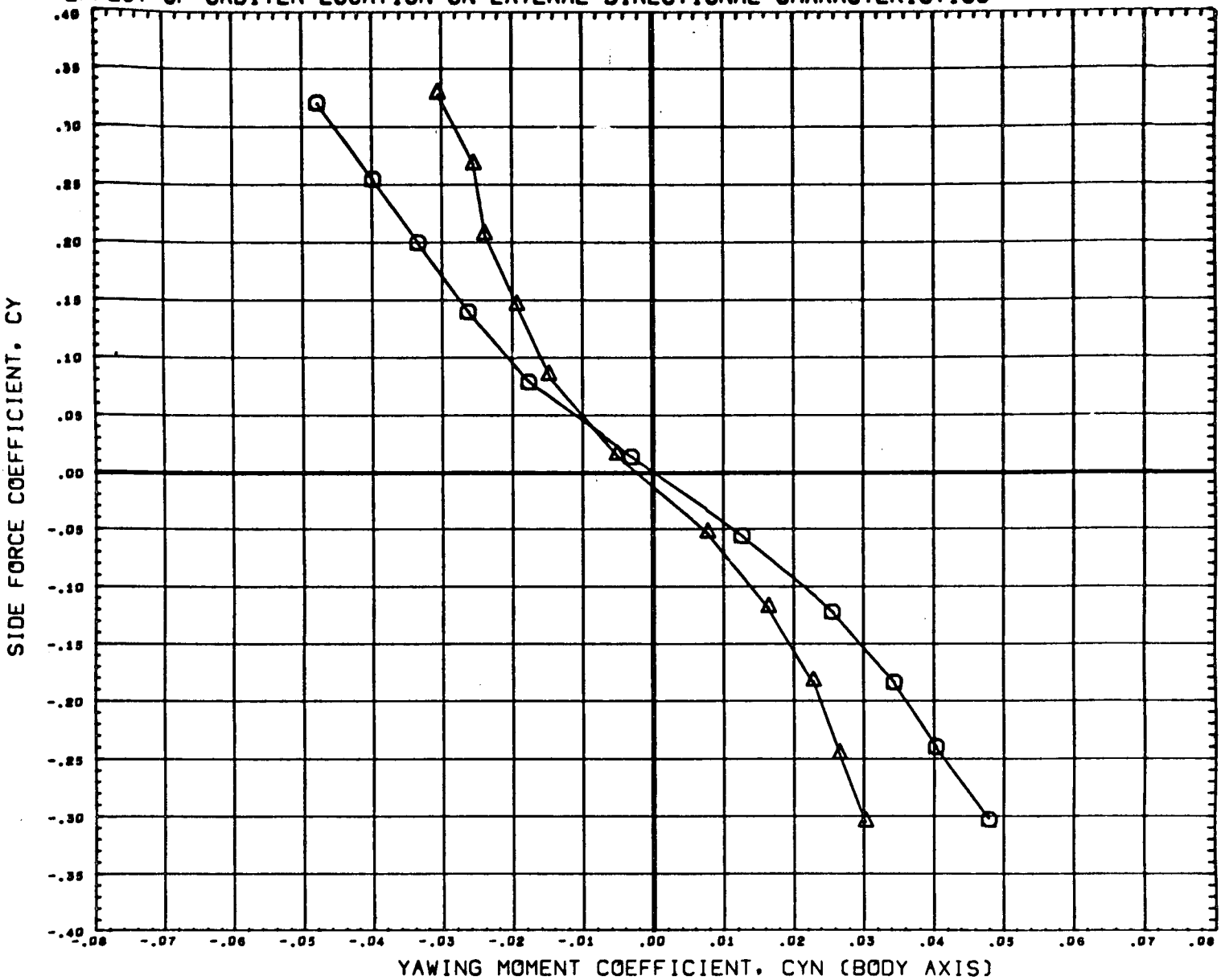
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(A66023)	△	MSFC TWT 538	SHUTTLE LAUNCH	T102S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .60

EFFECT OF ORBITER LOCATION ON LATERAL DIRECTIONAL CHARACTERISTICS



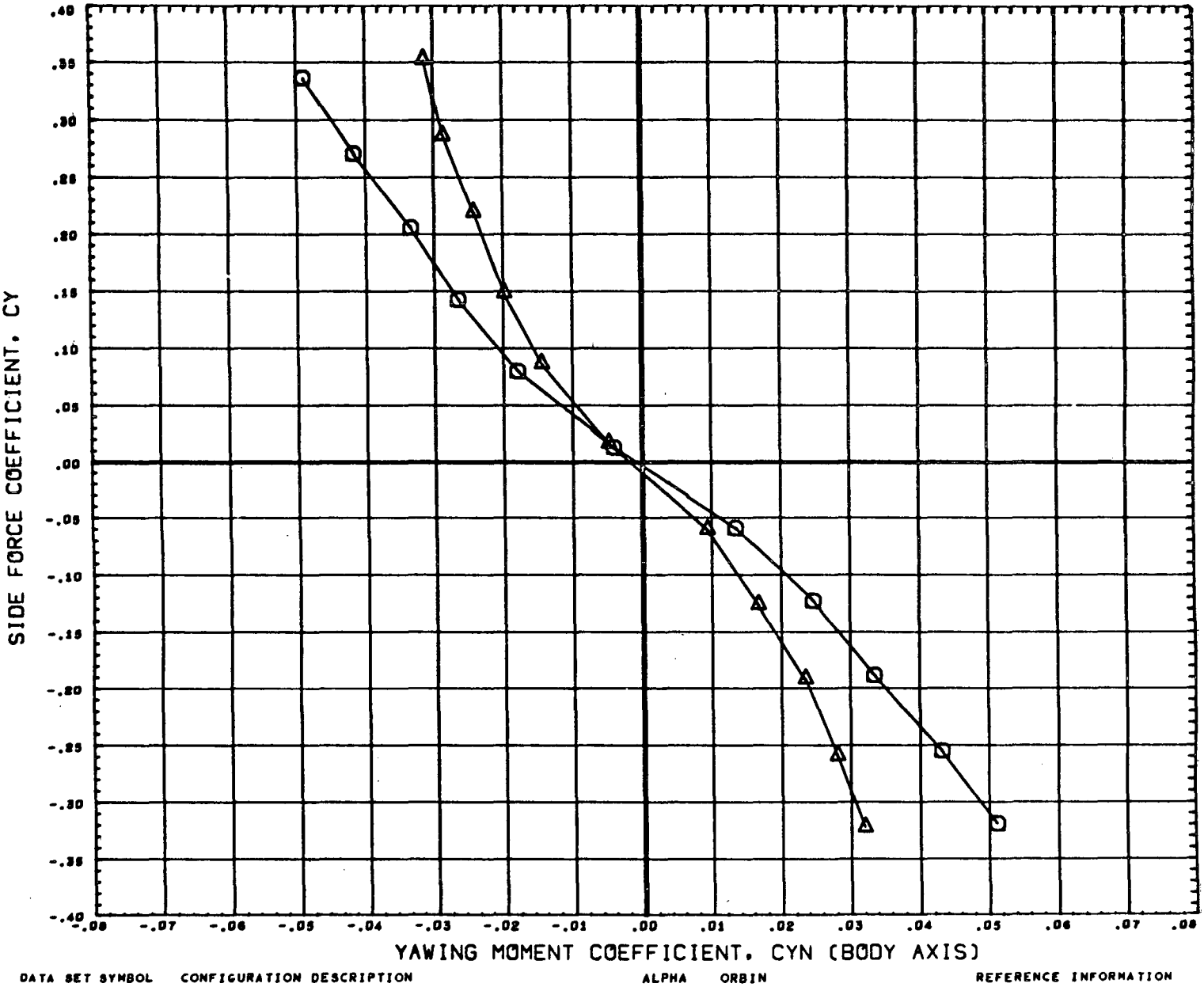
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(A66023)	△	MSFC TWT 538	SHUTTLE LAUNCH	T102S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .80

EFFECT OF ORBITER LOCATION ON LATERAL DIRECTIONAL CHARACTERISTICS



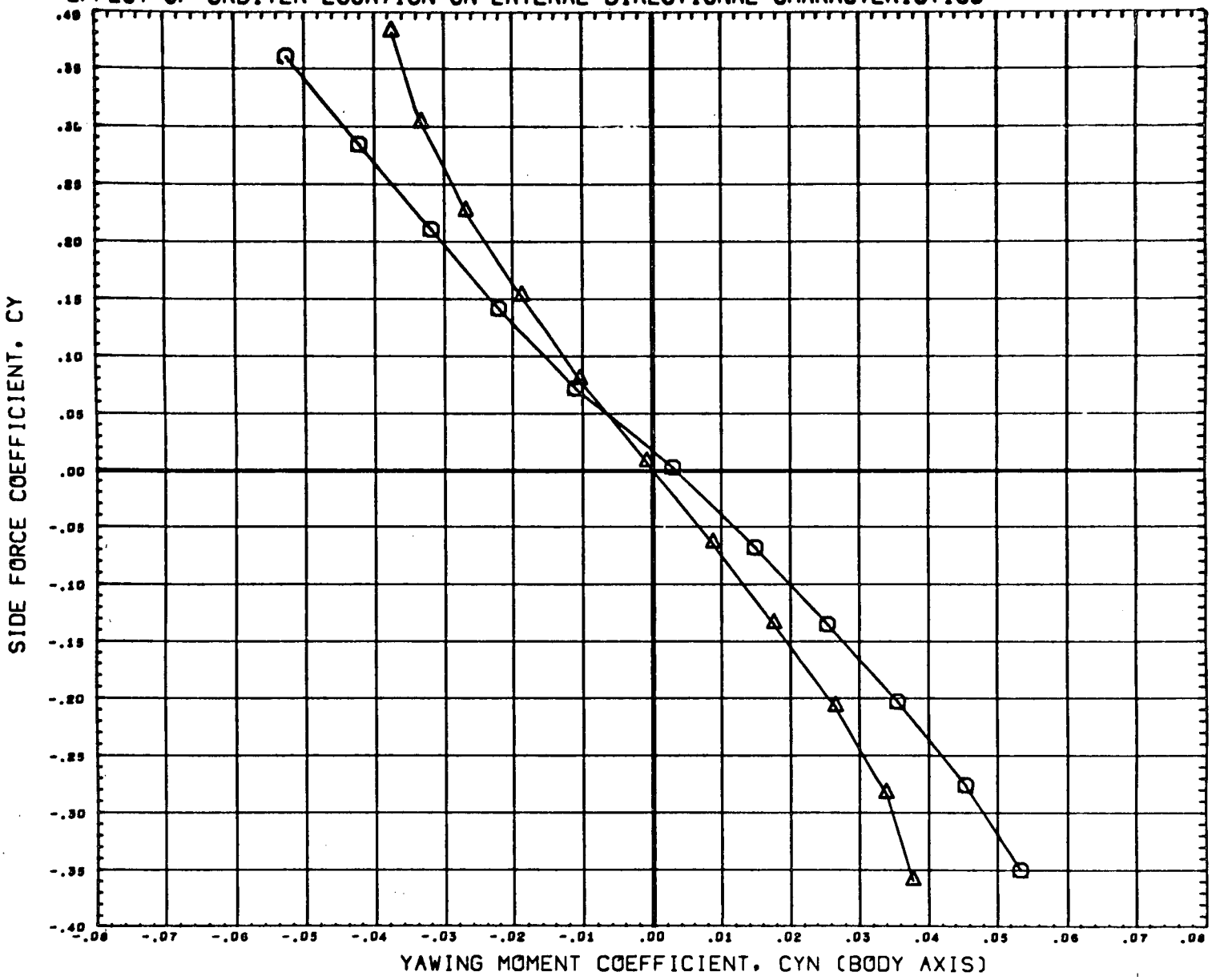
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(A66023)	△	MSFC TWT 538	SHUTTLE LAUNCH	T102S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH .90

EFFECT OF ORBITER LOCATION ON LATERAL DIRECTIONAL CHARACTERISTICS



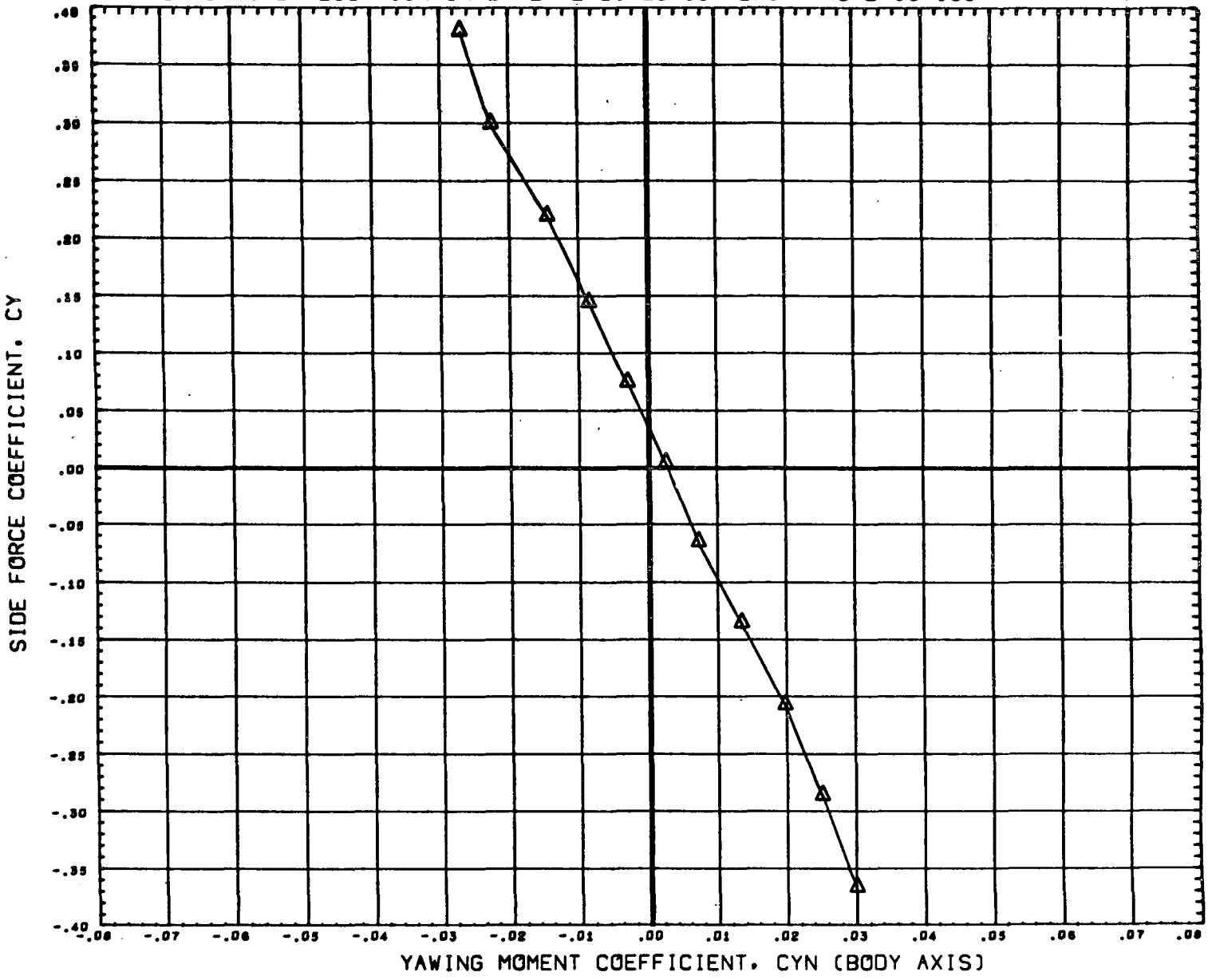
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(A66023)	△	MSFC TWT 538	SHUTTLE LAUNCH	T102S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.10

EFFECT OF ORBITER LOCATION ON LATERAL DIRECTIONAL CHARACTERISTICS



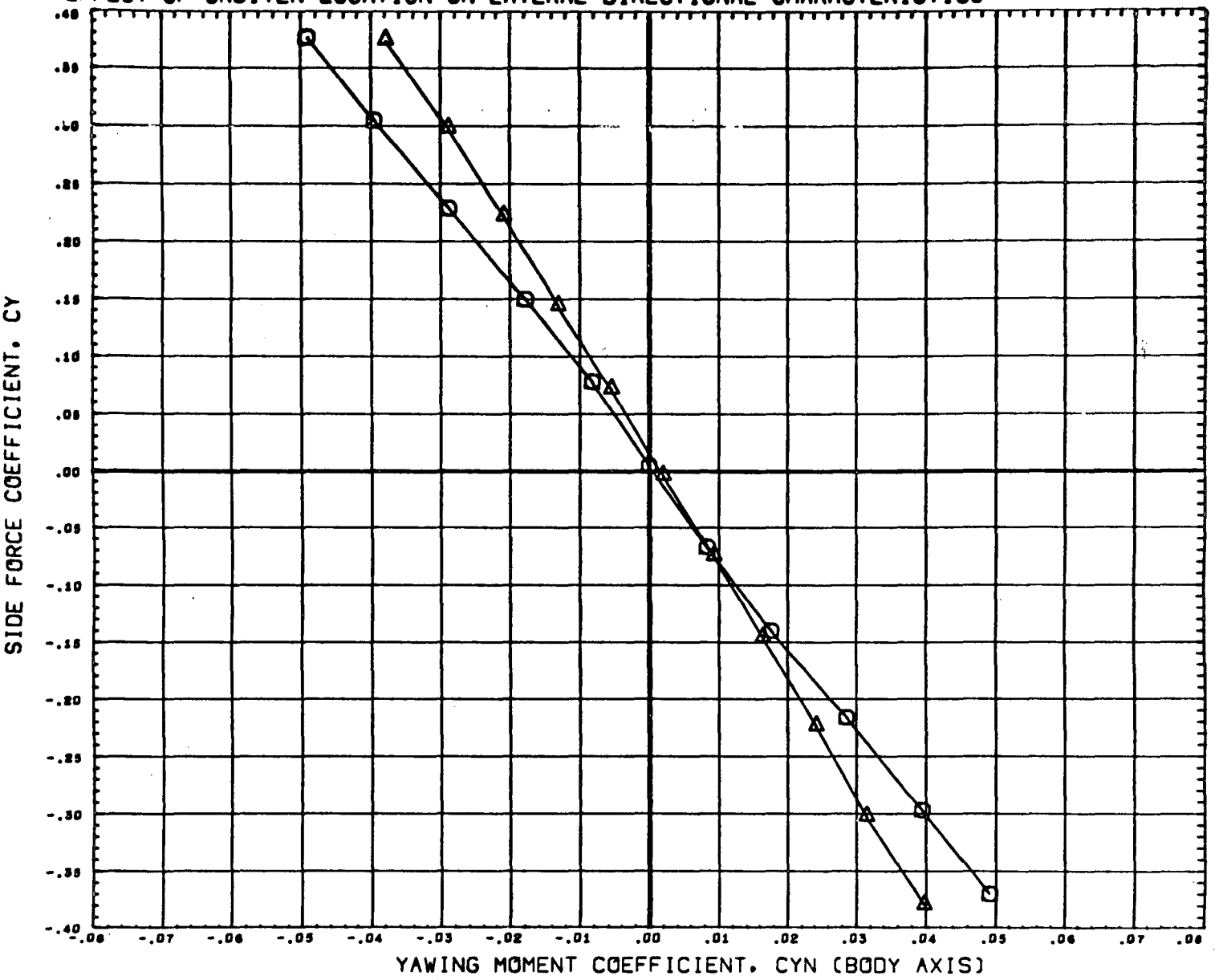
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ORBIN
(T66009)	○	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	-1.500
(A66023)	△	MSFC TWT 538 SHUTTLE LAUNCH T102S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1400	IN.
YMRP	0.0000	IN.
ZMRP	0.2400	IN.
SCALE	0.0040	

MACH 1.19

EFFECT OF ORBITER LOCATION ON LATERAL DIRECTIONAL CHARACTERISTICS



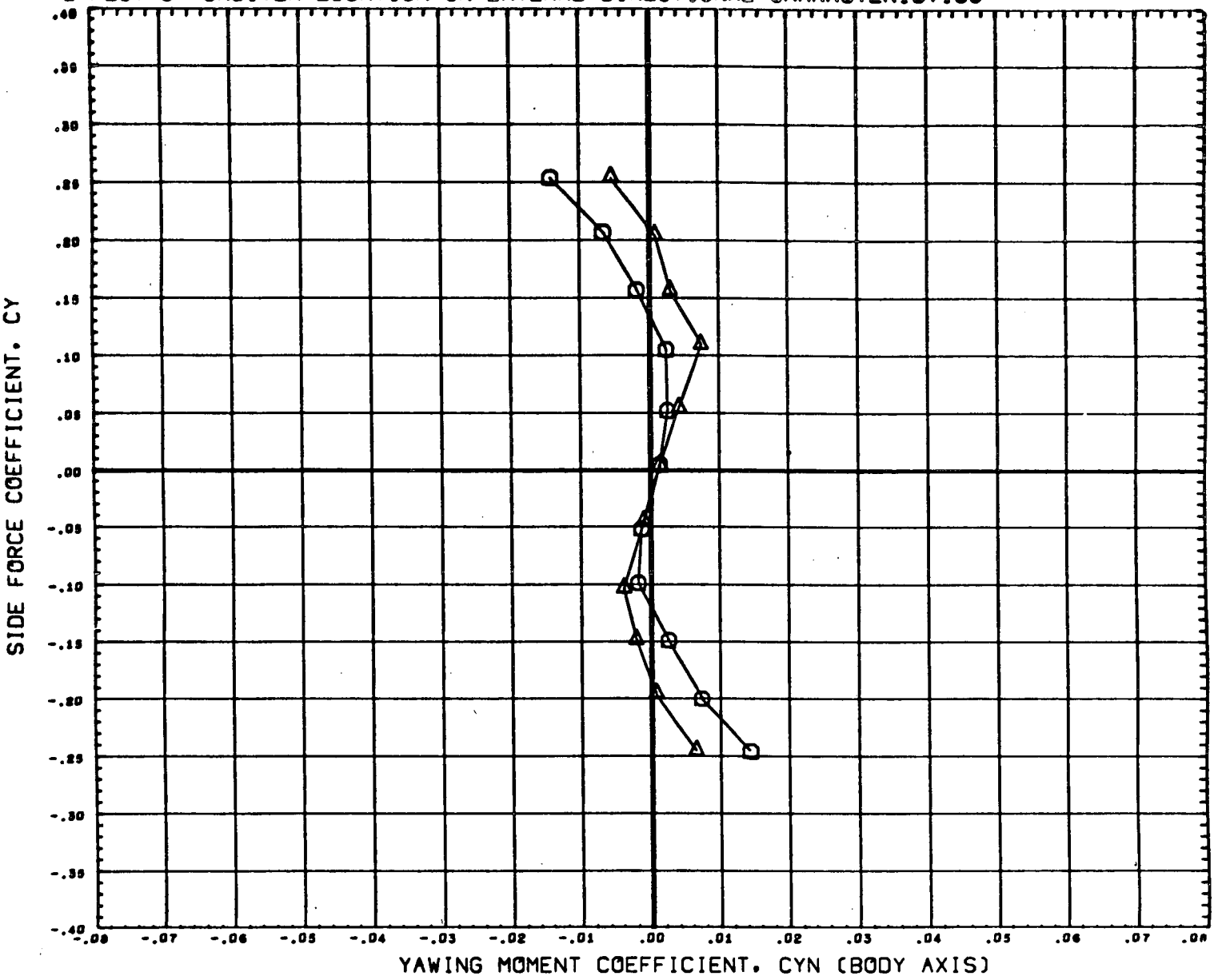
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(A66023)	△	MSFC TWT 538	SHUTTLE LAUNCH	T102S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 1.97

EFFECT OF ORBITER LOCATION ON LATERAL DIRECTIONAL CHARACTERISTICS



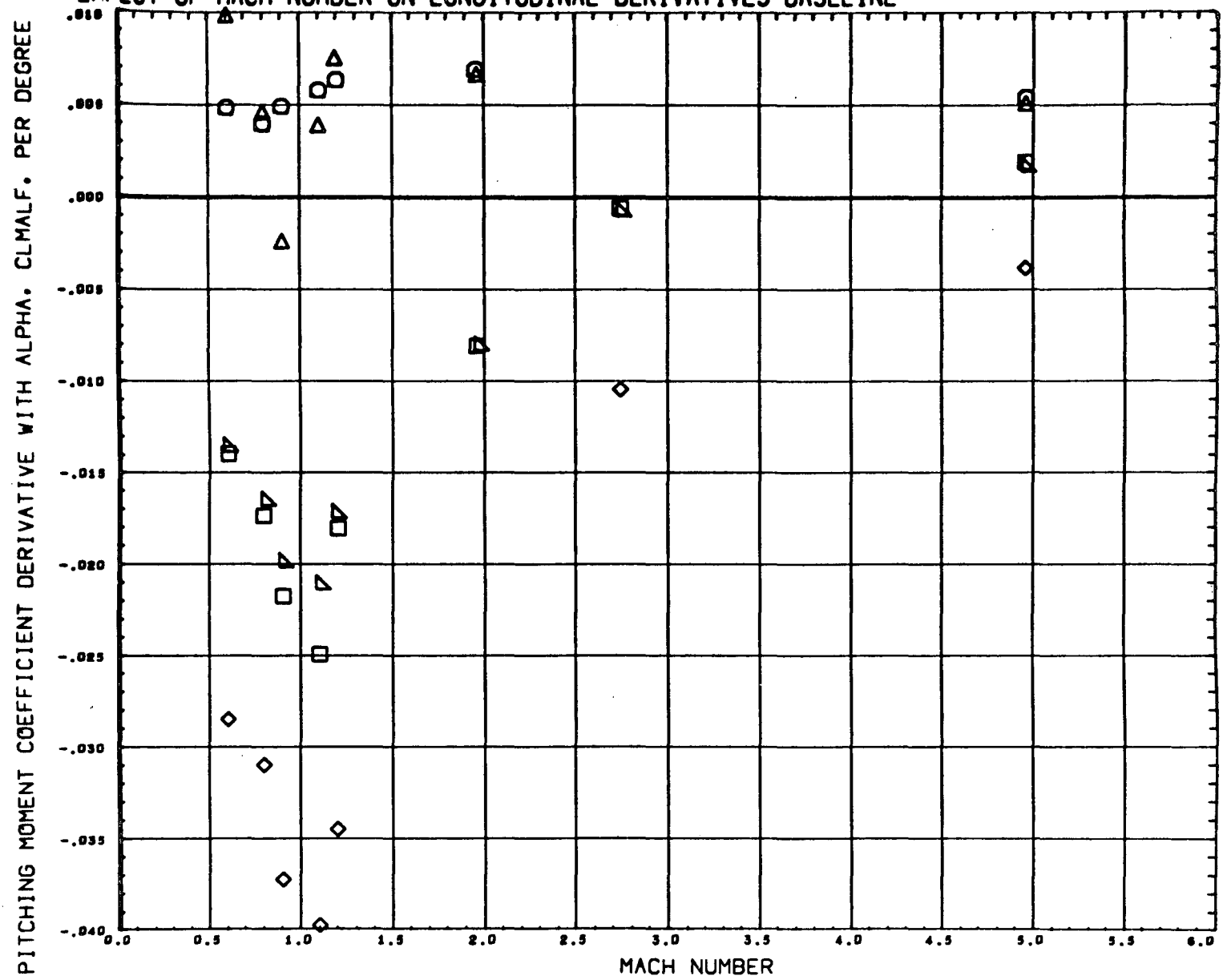
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(T66009)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500
(A66023)	△	MSFC TWT 538	SHUTTLE LAUNCH	T102S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

MACH 4.96

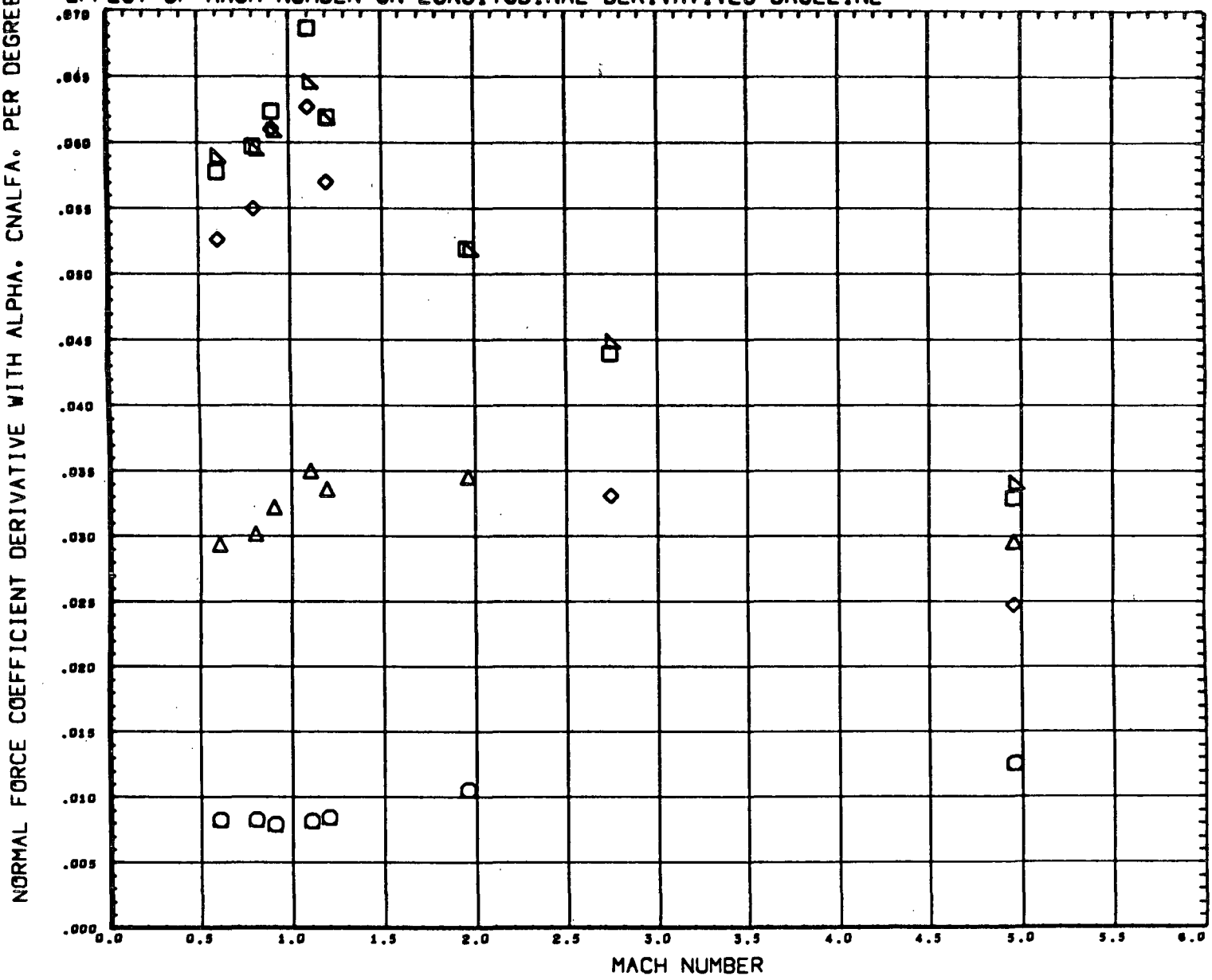
EFFECT OF MACH NUMBER ON LONGITUDINAL DERIVATIVES BASELINE



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66001)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1	0.000	
(B66002)	△	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(B66004)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T1O1	0.000	-1.500
(B66006)	□	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
(B66008)	◁	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1R1	0.000	-1.500

REFERENCE INFORMATION		
SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

EFFECT OF MACH NUMBER ON LONGITUDINAL DERIVATIVES BASELINE

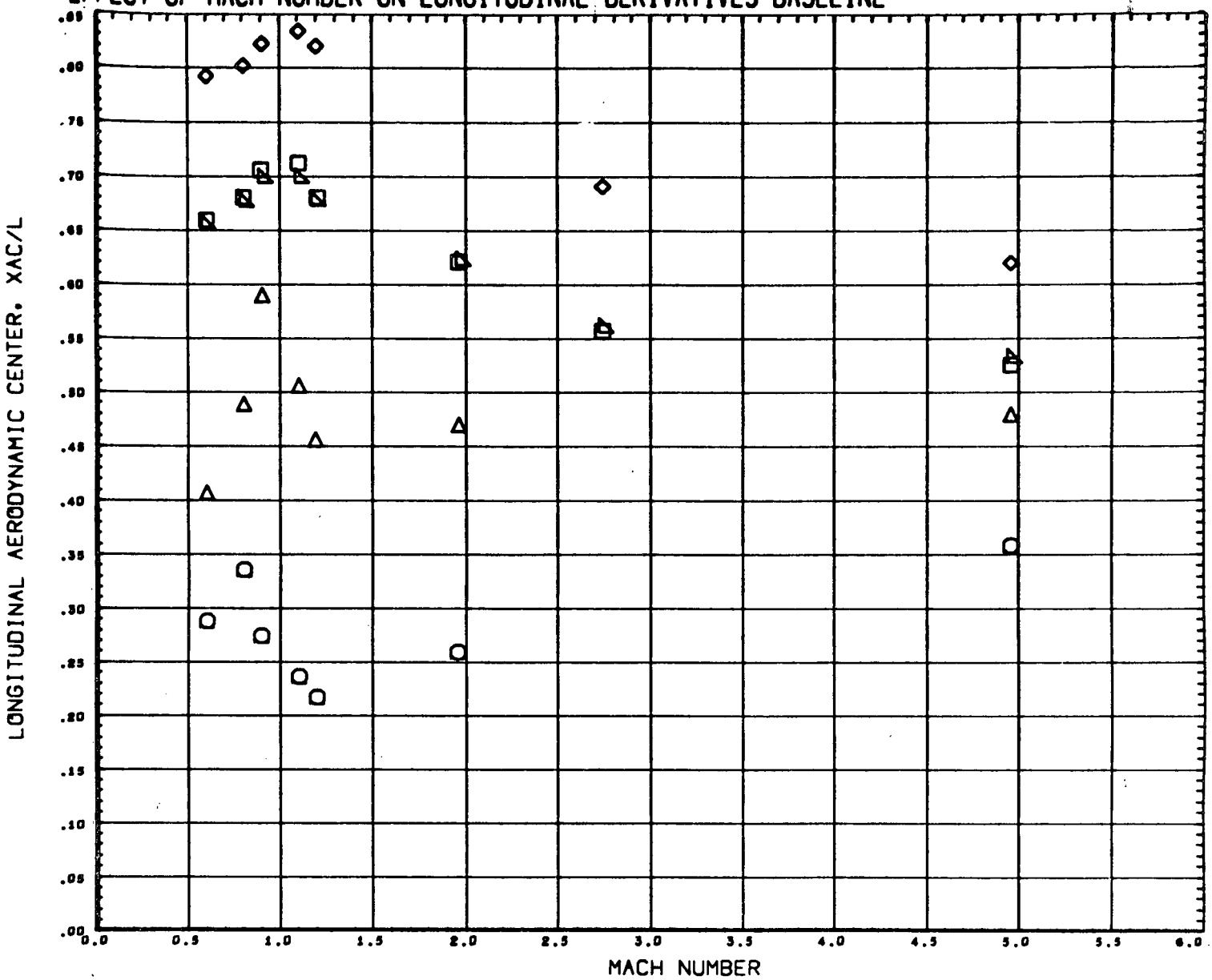


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(866001)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1	0.000	
(866002)	△	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(866004)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T1O1	0.000	-1.500
(866006)	□	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
(866008)	◺	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

EFFECT OF MACH NUMBER ON LONGITUDINAL DERIVATIVES BASELINE

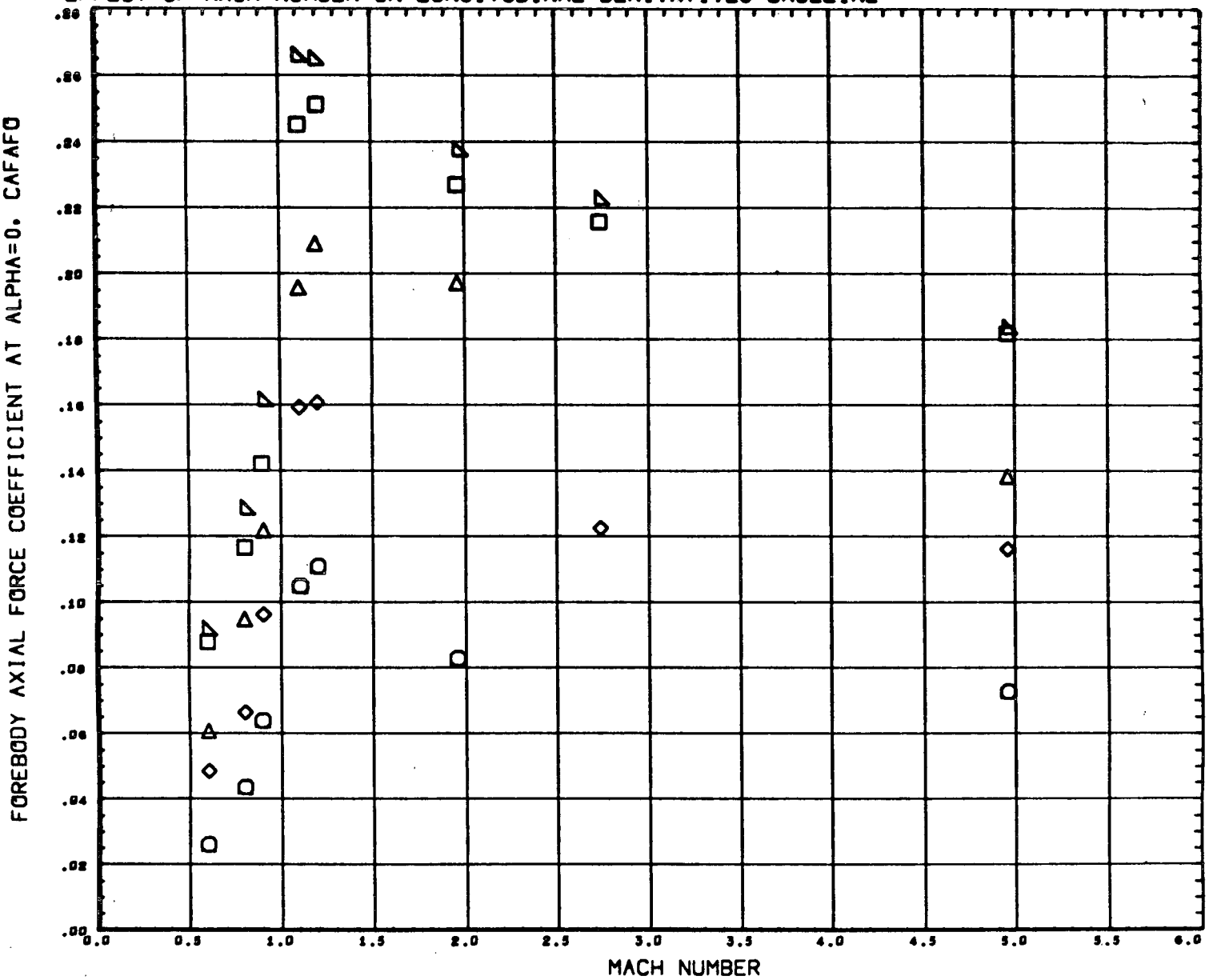


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66001)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1	0.000	
(B66002)	△	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(B66004)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T1O1	0.000	-1.500
(B66006)	⊡	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
(B66008)	⊠	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

EFFECT OF MACH NUMBER ON LONGITUDINAL DERIVATIVES BASELINE

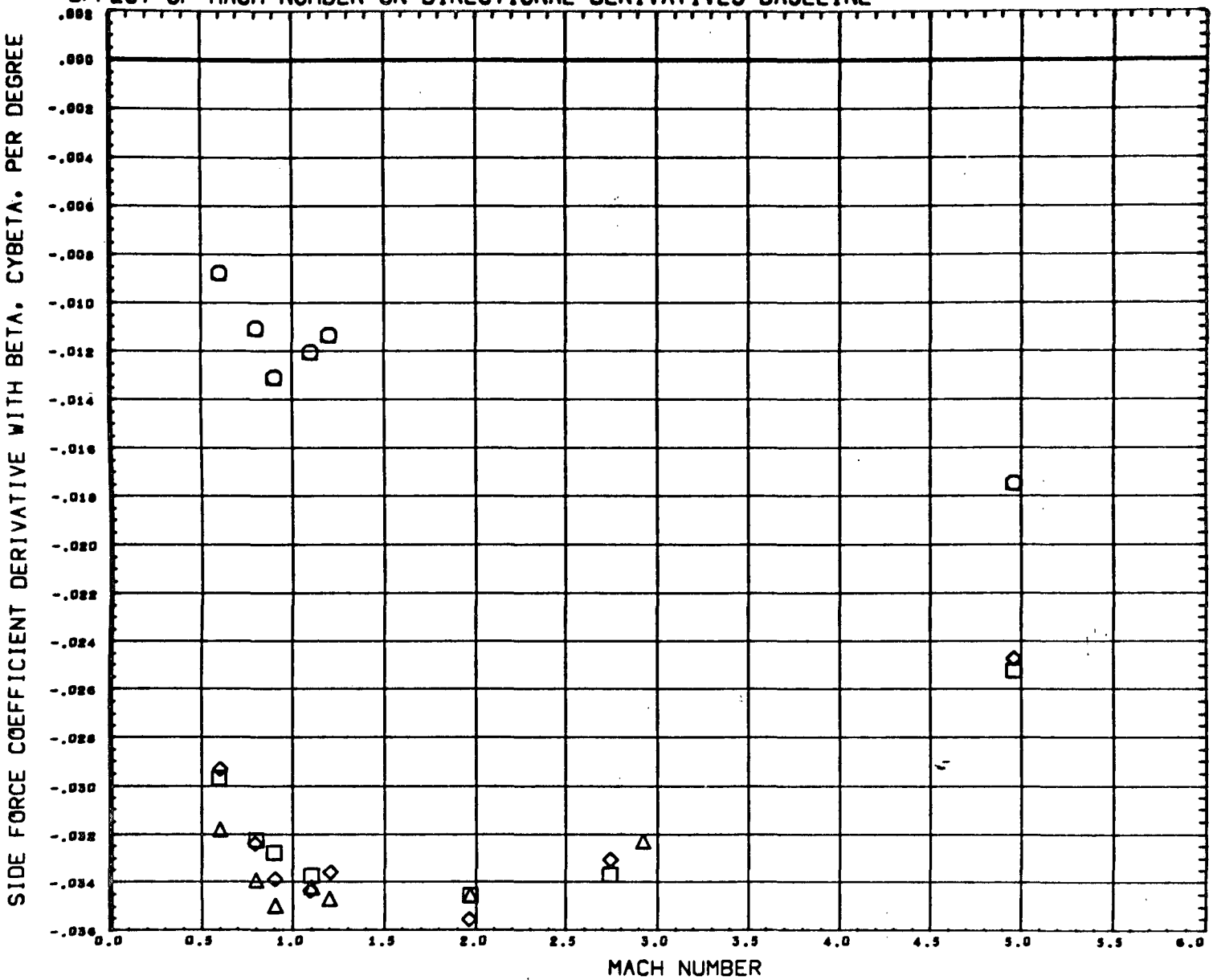


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66001)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1	0.000	
(B66002)	△	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(B66004)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T1O1	0.000	-1.500
(B66006)	□	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
(B66008)	◺	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN.
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

EFFECT OF MACH NUMBER ON DIRECTIONAL DERIVATIVES BASELINE

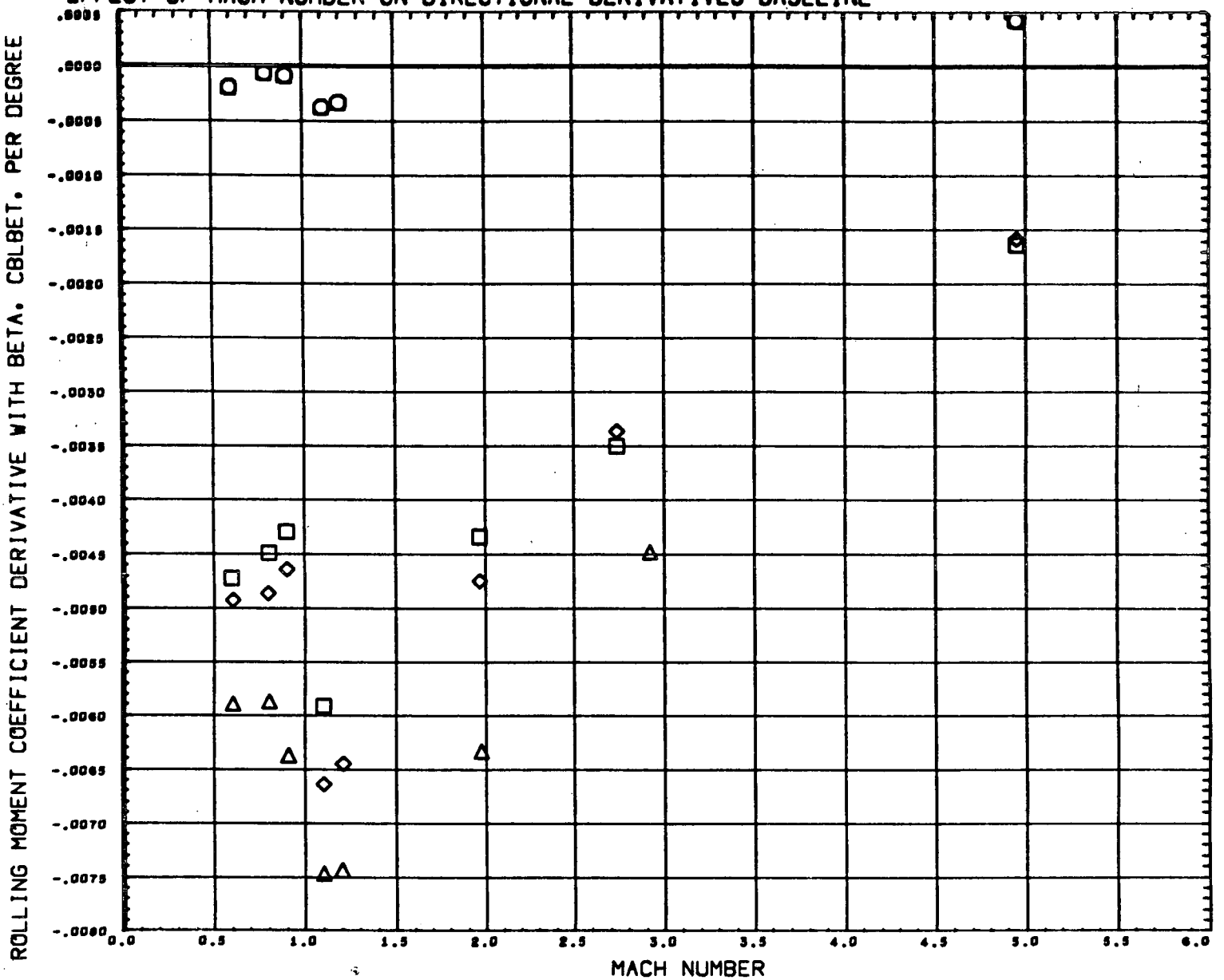


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(866003)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(866005)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101	0.000	-1.500
(866007)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1	0.000	-1.500
(866009)	□	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.0900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

EFFECT OF MACH NUMBER ON DIRECTIONAL DERIVATIVES BASELINE

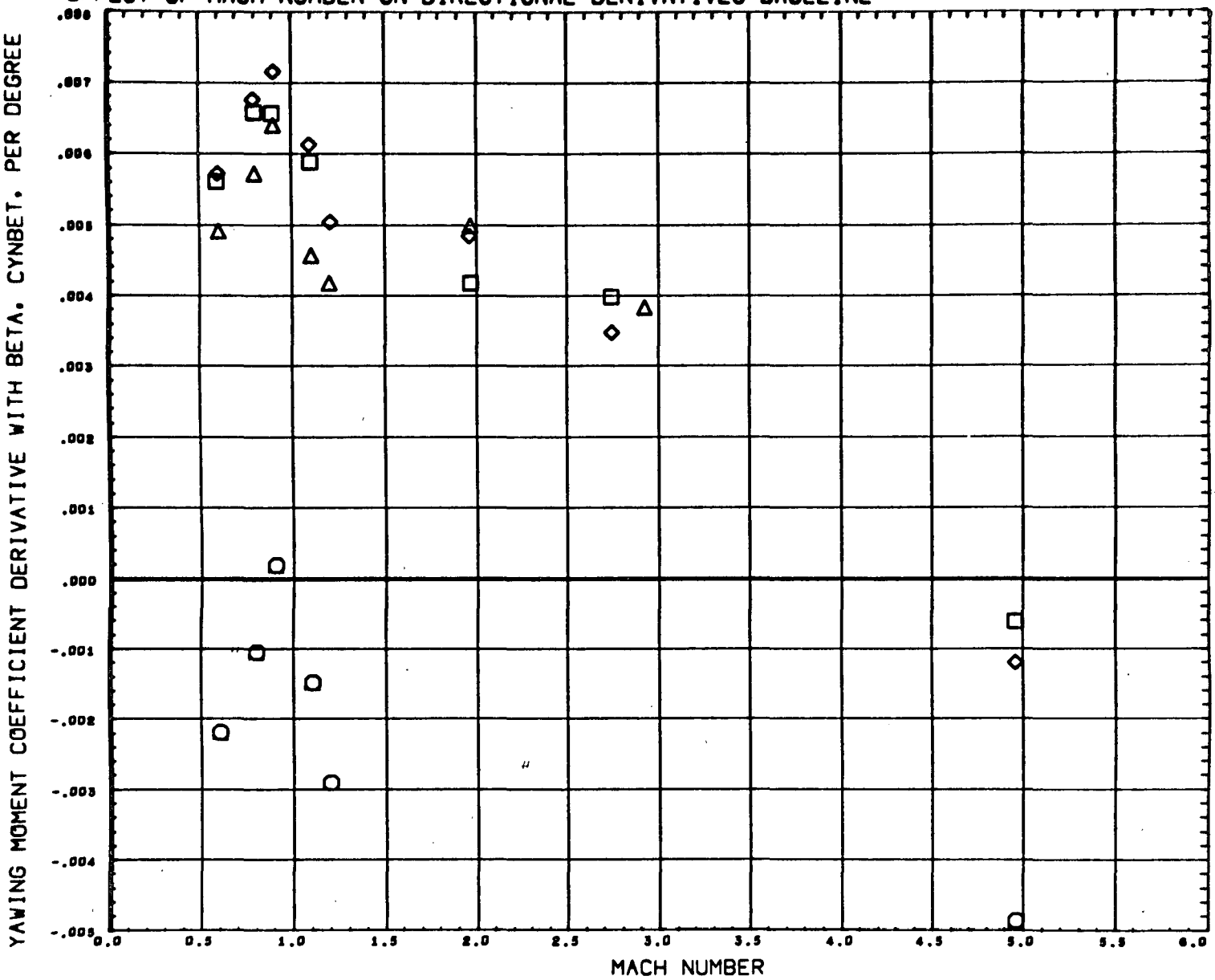


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(B66003)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(B66005)	△	MSFC TWT 538	SHUTTLE LAUNCH	T1O1	0.000	-1.500
(B66007)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
(B66009)	□	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1460	IN.
YMRP	0.0000	IN.
ZMRP	0.2460	IN.
SCALE	0.0040	

EFFECT OF MACH NUMBER ON DIRECTIONAL DERIVATIVES BASELINE

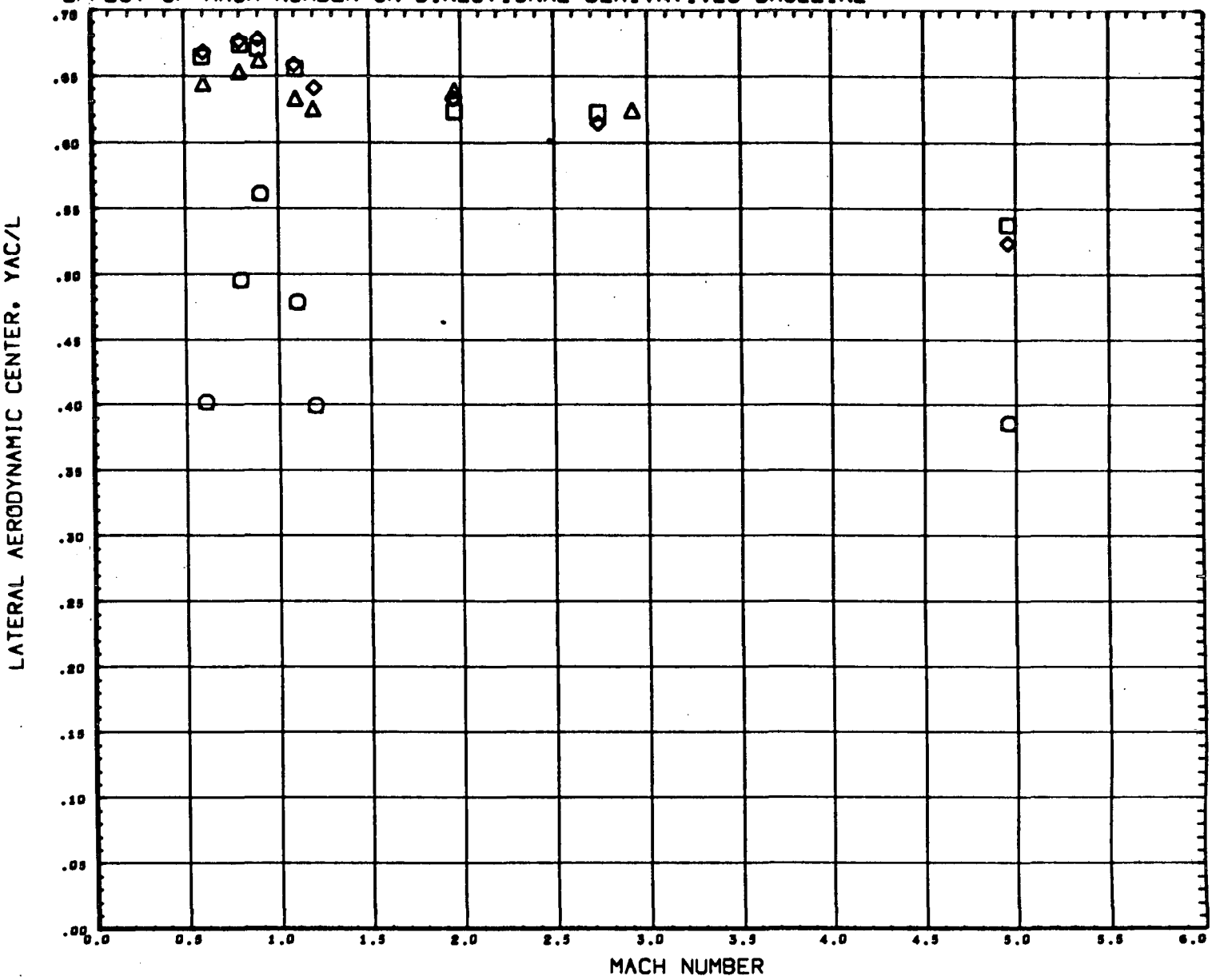


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(B66003)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(B66005)	△	MSFC TWT 538	SHUTTLE LAUNCH	T1O1	0.000	-1.500
(B66007)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
(B66009)	□	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

EFFECT OF MACH NUMBER ON DIRECTIONAL DERIVATIVES BASELINE

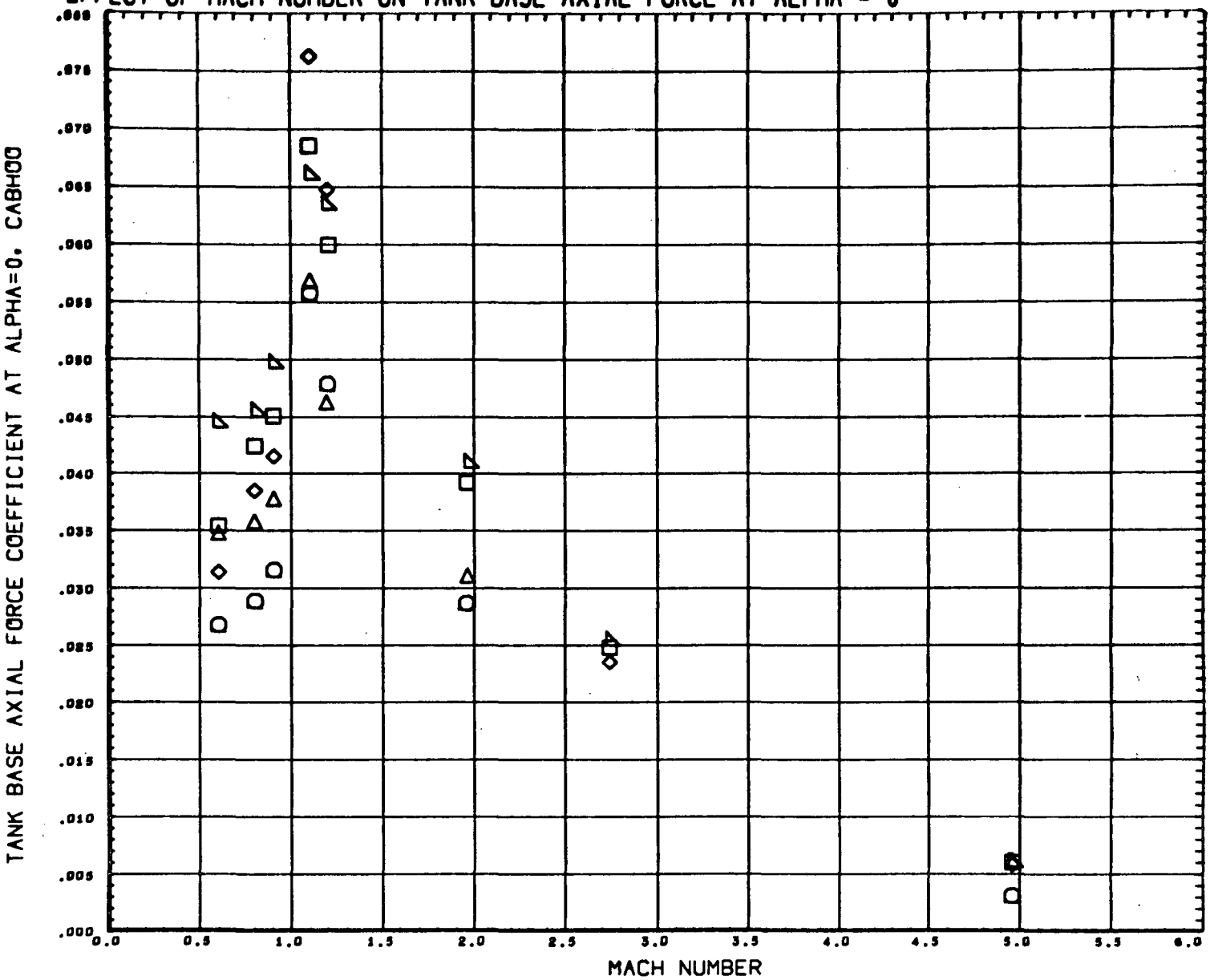


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			ALPHA	ORBIN
(866003)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(866005)	△	MSFC TWT 538	SHUTTLE LAUNCH	T1O1	0.000	-1.500
(866007)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
(866009)	□	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

EFFECT OF MACH NUMBER ON TANK BASE AXIAL FORCE AT ALPHA = 0

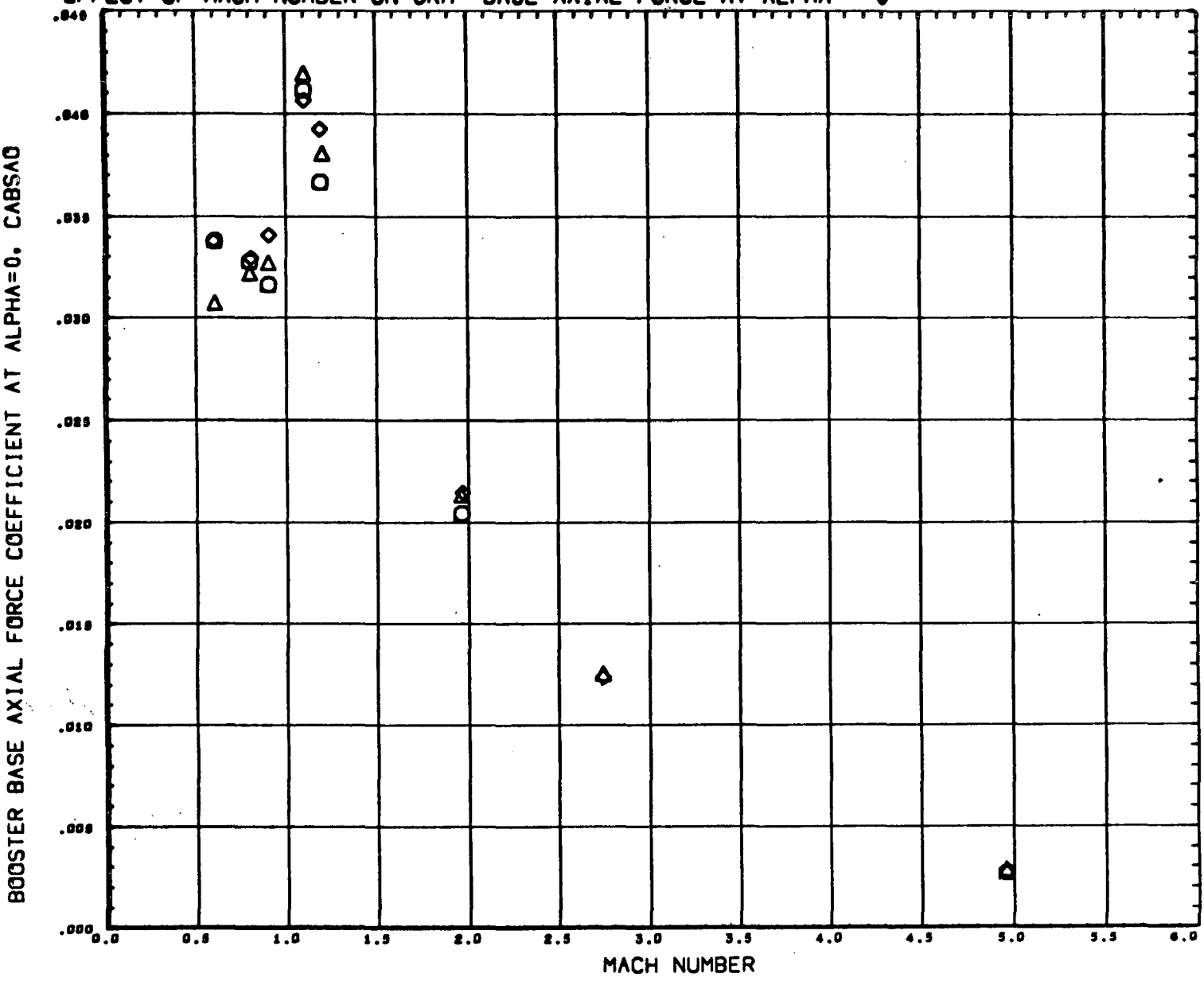


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66001)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1	0.000	
(B66002)	△	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(B66004)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T1O1	0.000	-1.500
(B66006)	□	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1	0.000	-1.500
(B66008)	◺	MSFC TWT 538	SHUTTLE LAUNCH	T1O1S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

EFFECT OF MACH NUMBER ON SRM BASE AXIAL FORCE AT ALPHA = 0

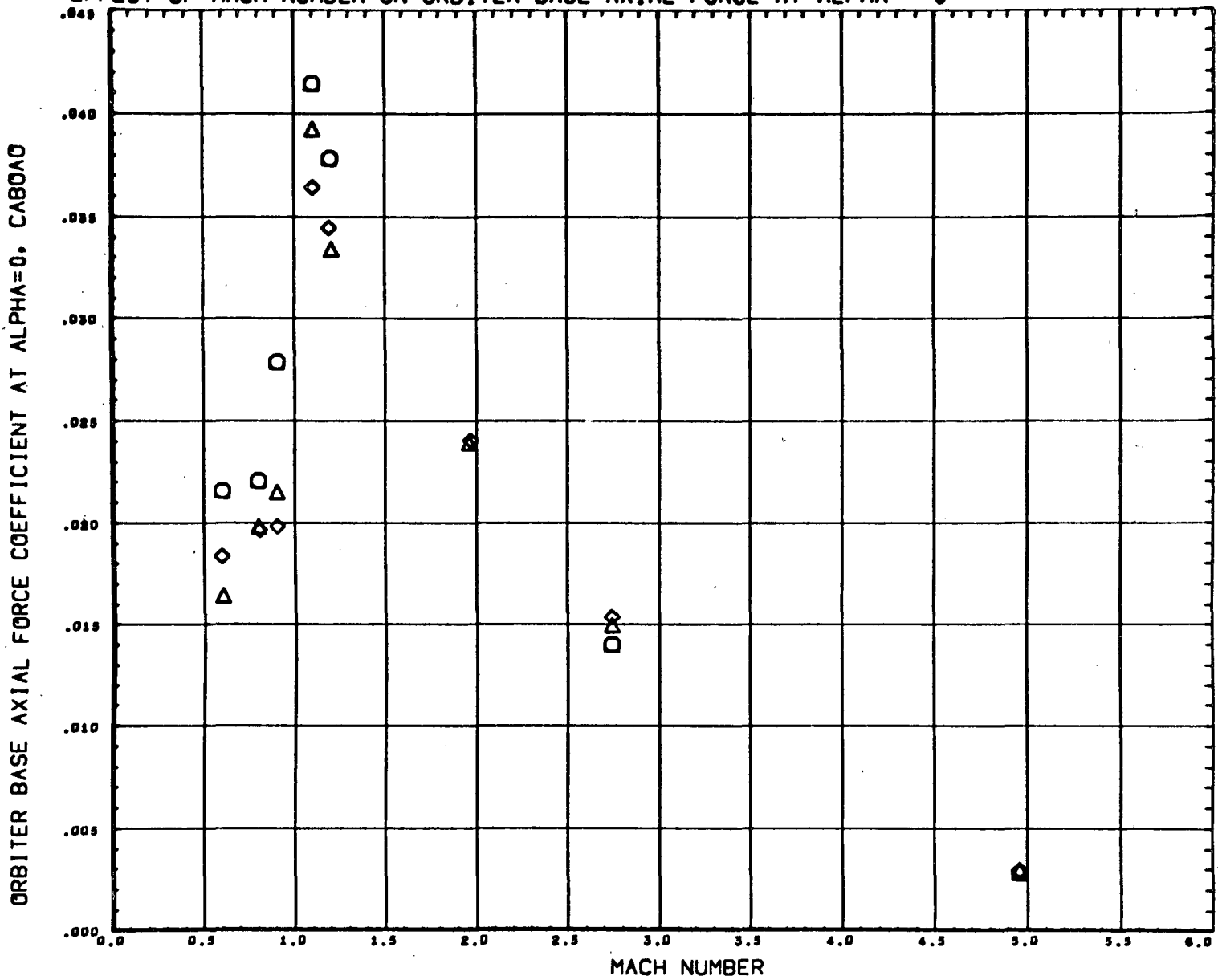


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(B66002)	○	MSFC TWT 538	SHUTTLE LAUNCH	T1S1	0.000	
(B66006)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S1	0.000	-1.500
(B66008)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

EFFECT OF MACH NUMBER ON ORBITER BASE AXIAL FORCE AT ALPHA = 0



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION			BETA	ORBIN
(866004)	○	MSFC TWT 538	SHUTTLE LAUNCH	T101	0.000	-1.500
(866006)	△	MSFC TWT 538	SHUTTLE LAUNCH	T101S1	0.000	-1.500
(866008)	◇	MSFC TWT 538	SHUTTLE LAUNCH	T101S1R1	0.000	-1.500

REFERENCE INFORMATION

SREF	7.8900	SQ. IN
LREF	3.3440	IN.
BREF	4.4600	IN.
XMRP	4.1480	IN.
YMRP	0.0000	IN.
ZMRP	0.2480	IN.
SCALE	0.0040	

A P P E N D I X

PARTIAL TABULATED DATA LISTING

MSFC TWT 538 SHUTTLE LAUNCH T1 (A66001) (21 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

BETA = .000

RUN NO. 1/ 0 RN/L = 4.46 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
.604	-10.170	-.05390	-.07680	-.00020	.00000	.00000	.02130	.00000	.00000	.03850	.03850
.604	-8.230	-.04440	-.06060	.00090	.00000	.00030	.02410	.00000	.00000	.03540	.03540
.604	-6.210	-.03540	-.04170	-.00360	-.00050	.00000	.02600	.00000	.00000	.03130	.03130
.604	-4.190	-.02500	-.02550	.00000	-.00010	.00030	.02600	.00000	.00000	.02920	.02920
.604	-2.180	-.01710	-.01410	-.00340	.00000	.00000	.02660	.00000	.00000	.02700	.02700
.604	-.150	-.00760	.00670	-.00210	.00000	.00000	.02600	.00000	.00000	.02690	.02690
.604	1.860	.00440	.02310	.00020	.00000	.00070	.02680	.00000	.00000	.02620	.02620
.604	3.860	.01380	.03940	.00020	-.00010	.00110	.02550	.00000	.00000	.02850	.02850
.604	5.900	.02130	.05550	-.00190	.00010	.00110	.02380	.00000	.00000	.03240	.03240
.604	7.910	.03100	.06980	-.00300	.00000	.00150	.02230	.00000	.00000	.03560	.03560
.604	9.850	.03920	.08810	.00050	-.00010	.00080	.01970	.00000	.00000	.03980	.03980
	GRADIENT	.00492	.00829	.00020	.00000	.00011	-.00004	.00000	.00000	-.00011	-.00011

RUN NO. 2/ 0 RN/L = 5.30 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
.802	-10.220	-.05130	-.08830	-.00030	-.00020	-.00130	.03620	.00000	.00000	.04140	.04140
.802	-8.270	-.04130	-.07240	.00050	-.00050	-.00060	.03970	.00000	.00000	.03760	.03760
.802	-6.230	-.03360	-.05660	-.00020	-.00050	-.00100	.03970	.00000	.00000	.03590	.03590
.802	-4.220	-.02420	-.04100	-.00170	-.00040	-.00100	.04120	.00000	.00000	.03300	.03300
.802	-2.190	-.01460	-.02510	.00000	-.00050	-.00030	.04420	.00000	.00000	.02870	.02870
.802	-.170	-.00770	-.00950	.00000	-.00060	-.00070	.04350	.00000	.00000	.02890	.02890
.802	1.830	.00090	.00940	.00090	-.00050	.00010	.04400	.00000	.00000	.02870	.02870
.802	3.860	.00840	.02500	.00010	-.00040	-.00050	.04070	.00000	.00000	.03240	.03240
.802	5.900	.01730	.03960	.00110	-.00010	.00060	.03860	.00000	.00000	.03550	.03550
.802	7.930	.02540	.05700	.00030	-.00070	-.00020	.03740	.00000	.00000	.03810	.03810
.802	9.860	.03490	.07470	.00120	-.00040	-.00040	.03570	.00000	.00000	.04030	.04030
	GRADIENT	.00400	.00825	.00022	-.00000	.00007	-.00006	.00000	.00000	-.00006	-.00006

MSFC TWT 538 SHUTTLE LAUNCH T1 (A66001) (21 APR 72)

REFERENCE DATA

SREF = 7.6900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

BETA = .000

RUN NO. 3/ 0 RN/L = 5.61 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
.902	-10.250	-.04960	-.09690	-.00240	-.00010	-.00100	.05130	.00000	.00000	.04540	.04540
.902	-8.290	-.04040	-.07490	-.00160	-.00020	-.00140	.05410	.00000	.00000	.04190	.04190
.902	-6.260	-.03210	-.05820	-.00360	-.00050	-.00270	.05550	.00000	.00000	.03920	.03920
.902	-4.230	-.02720	-.03890	-.00210	-.00050	-.00140	.06010	.00000	.00000	.03550	.03550
.902	-2.200	-.02180	-.01950	-.00270	-.00050	-.00100	.06360	.00000	.00000	.03270	.03270
.902	-.160	-.00930	-.00420	.00000	-.00050	-.00060	.06410	.00000	.00000	.03170	.03170
.902	1.880	.00040	.01080	-.00260	-.00050	-.00050	.06410	.00000	.00000	.03200	.03200
.902	3.870	.01180	.02620	-.00110	-.00050	-.00010	.06100	.00000	.00000	.03490	.03490
.902	5.920	.01590	.04430	-.00310	-.00040	-.00030	.05730	.00000	.00000	.03770	.03770
.902	7.950	.01960	.06600	-.00230	-.00050	.00020	.05380	.00000	.00000	.04100	.04100
.902	9.910	.02940	.08580	.00050	-.00050	.00040	.05230	.00000	.00000	.04380	.04380
	GRADIENT	.00494	.00791	.00010	.00000	.00015	.00012	.00000	.00000	-.00010	-.00010

RUN NO. 4/ 0 RN/L = 5.99 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.101	-10.320	-.07140	-.09610	.00150	-.00050	.00000	.09830	.00000	.00000	.06910	.06910
1.101	-8.340	-.05960	-.07520	.00210	-.00050	.00000	.10010	.00000	.00000	.06540	.06540
1.101	-6.290	-.04810	-.05650	.00100	-.00040	-.00050	.10250	.00000	.00000	.06050	.06050
1.101	-4.250	-.03530	-.03990	.00170	-.00070	.00010	.10510	.00000	.00000	.05750	.05750
1.101	-2.200	-.02340	-.02220	.00240	-.00030	.00030	.10540	.00000	.00000	.05620	.05620
1.101	-.160	-.01150	-.00590	.00130	-.00040	-.00020	.10510	.00000	.00000	.05580	.05580
1.101	1.870	.00110	.01180	.00200	-.00050	.00060	.10520	.00000	.00000	.05620	.05620
1.101	3.910	.01190	.02680	.00090	-.00040	.00030	.10390	.00000	.00000	.05730	.05730
1.101	5.960	.02450	.04450	.00160	-.00040	.00060	.10180	.00000	.00000	.06080	.06080
1.101	8.000	.03480	.06430	.00110	-.00040	.00080	.09890	.00000	.00000	.06560	.06560
1.101	9.970	.04630	.08400	.00120	-.00040	.00070	.09770	.00000	.00000	.06770	.06770
	GRADIENT	.00583	.00821	-.00010	.00002	.00003	-.00013	.00000	.00000	-.00002	-.00002

MSFC TWT 538 SHUTTLE LAUNCH T1 (A66001) (21 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

BETA = .000

RUN NO. 5/ 0 RN/L = 6.00 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.198	-10.330	-.07750	-.09850	.00020	-.00030	-.00040	.10220	.00000	.00000	.06350	.06350
1.198	-8.360	-.06450	-.07740	.00030	-.00070	-.00050	.10400	.00000	.00000	.06000	.06000
1.198	-6.310	-.05190	-.05720	.00000	-.00040	-.00030	.10660	.00000	.00000	.05560	.05560
1.198	-4.260	-.03910	-.03920	-.00160	-.00020	-.00020	.10860	.00000	.00000	.05160	.05160
1.198	-2.210	-.02480	-.02130	-.00100	-.00050	.00000	.11020	.00000	.00000	.04900	.04900
1.198	-.160	-.01100	-.00440	.00020	-.00030	.00050	.11100	.00000	.00000	.04780	.04780
1.198	1.880	.00050	.01330	-.00190	-.00060	.00030	.10980	.00000	.00000	.04920	.04920
1.198	3.920	.01350	.03020	-.00060	-.00030	.00050	.10930	.00000	.00000	.05120	.05120
1.198	5.970	.02560	.04810	-.00060	-.00060	.00000	.10680	.00000	.00000	.05430	.05430
1.198	8.020	.03840	.06840	-.00100	-.00040	.00040	.10310	.00000	.00000	.05930	.05930
1.198	9.990	.05000	.08990	-.00090	-.00050	.00070	.10210	.00000	.00000	.06270	.06270
	GRADIENT	.00638	.00848	.00005	-.00001	.00008	.00005	.00000	.00000	-.00003	-.00003

RUN NO. 126/ 0 RN/L = 7.11 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.956	-10.470	-.07220	-.13200	-.00040	-.00050	-.00020	.08320	.00000	.00000	.03880	.03880
1.956	-8.450	-.06370	-.09740	-.00030	-.00050	-.00070	.08310	.00000	.00000	.03630	.03630
1.956	-6.370	-.05200	-.06910	-.00110	-.00050	-.00040	.08330	.00000	.00000	.03310	.03310
1.956	-4.300	-.03770	-.04460	.00000	-.00060	.00000	.08460	.00000	.00000	.02980	.02980
1.956	-2.230	-.02430	-.02260	.00000	-.00050	.00010	.08360	.00000	.00000	.02920	.02920
1.956	-.160	-.00980	.00080	.00050	-.00050	.00010	.08280	.00000	.00000	.02870	.02870
1.956	1.900	.00430	.02080	.00020	-.00060	.00040	.08370	.00000	.00000	.02890	.02890
1.956	3.990	.02000	.04340	.00170	-.00040	.00060	.08430	.00000	.00000	.02990	.02990
1.956	6.040	.03210	.06680	.00090	-.00060	.00060	.08440	.00000	.00000	.03220	.03220
1.956	8.120	.04420	.09430	.00240	-.00050	.00110	.08210	.00000	.00000	.03580	.03580
1.956	10.120	.05260	.12800	.00300	-.00060	.00090	.08200	.00000	.00000	.03850	.03850
	GRADIENT	.00695	.01059	.00017	.00001	.00007	-.00002	.00000	.00000	-.00000	-.00000

MSFC TWT 530 SHUTTLE LAUNCH T1 (A66D01) (21 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

BETA = .000

RUN NO. 163/ 0 RN/L = 4.88 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
4.959	-10.200	-.05380	-.13330	-.00040	.00000	-.00070	.07670	.00000	.00000	.00600	.00600
4.959	-8.240	-.04720	-.10900	-.00030	.00000	.00000	.07620	.00000	.00000	.00580	.00580
4.959	-6.240	-.03460	-.08150	.00280	-.00010	.00130	.07430	.00000	.00000	.00560	.00560
4.959	-4.200	-.02920	-.05750	-.00010	-.00020	.00050	.07390	.00000	.00000	.00500	.00500
4.959	-2.200	-.01540	-.03300	.00300	.00000	.00170	.07200	.00000	.00000	.00400	.00400
4.959	-.160	-.00420	-.01180	.00460	-.00020	.00130	.07260	.00000	.00000	.00310	.00310
4.959	1.830	.00570	.01530	.00330	.00010	.00180	.07310	.00000	.00000	.00290	.00290
4.959	3.870	.01550	.04560	.00490	-.00020	.00130	.07300	.00000	.00000	.00400	.00400
4.959	5.890	.02420	.06970	.00200	.00000	.00140	.07370	.00000	.00000	.00490	.00490
4.959	7.910	.03530	.09700	.00510	.00020	.00140	.07400	.00000	.00000	.00540	.00540
4.959	9.850	.04170	.11810	.00370	-.00030	.00100	.07490	.00000	.00000	.00600	.00600
	GRADIENT	.00548	.01262	.00051	.00000	.00008	-.00003	.00000	.00000	-.00015	-.00015

MSFC TWT 538 SHUTTLE LAUNCH T151 (A66002) (21 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

BETA = .000

RUN NO. 10/ 0 RN/L = 4.58 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
.600	-10.400	-.12640	-.32030	-.00120	-.00020	-.00120	.05240	.00000	.03710	.04720	.08440
.600	-8.410	-.10280	-.25800	.00010	-.00020	-.00150	.05840	.00000	.03620	.04260	.07890
.600	-6.350	-.07870	-.19470	-.00070	-.00030	-.00080	.05890	.00000	.03600	.04110	.07720
.600	-4.290	-.05630	-.13860	.00060	-.00040	-.00210	.05940	.00000	.03530	.04030	.07570
.600	-2.230	-.03430	-.07940	-.00010	.00070	-.00070	.05930	.00000	.03420	.03670	.07090
.600	-.170	-.01550	-.01870	.00010	.00000	.00020	.05970	.00000	.03380	.03460	.06840
.600	1.880	.00570	.04200	.00040	.00000	.00120	.06010	.00000	.03390	.03440	.06840
.600	3.930	.02340	.10050	-.00280	-.00010	.00120	.05940	.00000	.03400	.03640	.07040
.600	5.990	.04870	.15800	.00090	-.00030	.00190	.05780	.00000	.03530	.03870	.07400
.600	8.060	.07260	.21830	-.00100	-.00010	.00200	.05360	.00000	.03590	.04150	.07750
.600	10.040	.09630	.28040	.00150	-.00030	.00260	.05020	.00000	.03650	.04370	.08020
	GRADIENT	.00970	.02918	-.00031	-.00000	.00041	.00004	.00000	-.00014	-.00049	-.00064

RUN NO. 9/ 0 RN/L = 5.46 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
.803	-10.560	-.11650	-.34020	.00030	.00000	-.00110	.08280	.00000	.03740	.05030	.08780
.803	-8.540	-.08960	-.27100	-.00010	-.00010	-.00100	.08860	.00000	.03640	.04630	.08270
.803	-6.420	-.06310	-.20370	.00010	-.00020	-.00100	.09290	.00000	.03500	.04190	.07700
.803	-4.340	-.03590	-.14370	-.00030	-.00010	-.00140	.09510	.00000	.03490	.03970	.07470
.803	-2.250	-.01580	-.07960	.00000	-.00030	-.00090	.09640	.00000	.03340	.03670	.07010
.803	-.160	.00010	-.01850	.00090	.00000	-.00010	.09400	.00000	.03280	.03570	.06850
.803	1.890	-.01120	.04500	.00120	-.00010	.00060	.09480	.00000	.03250	.03450	.06700
.803	3.970	.00790	.10470	.00150	-.00020	.00170	.09230	.00000	.03350	.03800	.07160
.803	6.060	.02490	.16270	.00090	-.00040	.00150	.08780	.00000	.03450	.04150	.07610
.803	8.150	.04940	.22560	.00200	-.00030	.00220	.08450	.00000	.03550	.04460	.08020
.803	10.160	.07070	.28830	.00380	-.00070	.00180	.08090	.00000	.03560	.04610	.08170
	GRADIENT	.00445	.02993	.00023	.00000	.00037	-.00035	.00000	-.00018	-.00027	-.00045

MSFC TWT 538 SHUTTLE LAUNCH T1S1 (A66002) (21 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

BETA = .000

RUN NO. 8/ 0 RN/L = 5.74 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
.906	-10.650	-.10400	-.36470	-.00470	.00000	-.00190	.11150	.00000	.03670	.05120	.08800
.906	-8.590	-.07300	-.29020	-.00020	-.00020	-.00150	.11690	.00000	.03650	.04820	.08470
.906	-6.450	-.04290	-.22140	-.00050	-.00010	-.00100	.12020	.00000	.03620	.04410	.08030
.906	-4.350	-.01660	-.15020	.00040	.00000	-.00040	.12220	.00000	.03470	.04070	.07540
.906	-2.240	.00070	-.08560	.00000	.00000	.00000	.12270	.00000	.03340	.03810	.07150
.906	-.170	-.00710	-.01620	.00020	.00000	.00050	.12090	.00000	.03170	.03760	.06940
.906	1.880	-.03430	.05110	.00040	-.00040	-.00040	.12050	.00000	.03240	.03720	.06960
.906	3.960	-.02570	.11260	.00130	-.00040	.00040	.12020	.00000	.03400	.03900	.07300
.906	6.060	-.00700	.17400	.00160	-.00060	.00080	.11750	.00000	.03530	.04270	.07810
.906	8.170	.01670	.23650	.00460	-.00070	.00100	.11210	.00000	.03530	.04650	.08190
.906	10.210	.04270	.30820	.00640	-.00070	.00160	.10760	.00000	.03640	.04920	.08560
	GRADIENT	-.00255	.03193	.00011	-.00006	.00006	-.00030	.00000	-.00012	-.00021	-.00033

RUN NO. 7/ 0 RN/L = 6.01 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.105	-10.830	-.12580	-.40320	-.00420	-.00070	-.00040	.18360	.00000	.04470	.06430	.10900
1.105	-8.730	-.10540	-.30380	-.00090	-.00100	-.00100	.18670	.00000	.04440	.06490	.10930
1.105	-6.570	-.07580	-.22460	.00110	-.00110	-.00030	.19050	.00000	.04400	.06440	.10840
1.105	-4.420	-.04260	-.15650	.00090	-.00100	-.00010	.19610	.00000	.04240	.06010	.10250
1.105	-2.270	-.01190	-.09010	.00180	-.00060	.00010	.19650	.00000	.04140	.05780	.09930
1.105	-.160	-.01380	-.01150	.00390	-.00040	-.00010	.19500	.00000	.04120	.05670	.09790
1.105	1.940	-.02210	.06710	.00420	-.00070	.00140	.19660	.00000	.04170	.05570	.09750
1.105	4.070	.00240	.13360	.00390	-.00070	.00260	.19580	.00000	.04210	.05720	.09930
1.105	6.210	.02940	.20160	.00310	-.00080	.00320	.19250	.00000	.04280	.05960	.10250
1.105	8.360	.05670	.27610	.00520	-.00080	.00390	.18840	.00000	.04370	.06250	.10630
1.105	10.430	.08000	.35290	.00610	-.00090	.00400	.18490	.00000	.04310	.06260	.10570
	GRADIENT	.00378	.03480	.00040	.00002	.00032	-.00002	.00000	-.00001	-.00037	-.00039

MSFC TWT 538 SHUTTLE LAUNCH T1S1 (A66002) (21 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

BETA = .000

RUN NO. 6/ 0 RN/L = 6.07 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.195	-10.920	-.13420	-.43060	-.00640	-.00020	-.00190	.19440	.00000	.04240	.06240	.10480
1.195	-8.790	-.11290	-.32170	-.00210	-.00040	-.00270	.19950	.00000	.04090	.06010	.10100
1.195	-6.610	-.08610	-.22980	.00040	-.00070	-.00280	.20360	.00000	.03930	.05520	.09450
1.195	-4.450	-.05480	-.15830	.00190	-.00070	-.00200	.20670	.00000	.03840	.05170	.09010
1.195	-2.300	-.02380	-.08910	.00330	-.00070	-.00160	.20930	.00000	.03730	.04770	.08510
1.195	-.160	-.00960	-.01780	.00310	-.00080	-.00140	.20820	.00000	.03670	.04600	.08270
1.195	1.940	-.01300	.05860	.00390	-.00070	-.00100	.20970	.00000	.03690	.04560	.08260
1.195	4.090	.01860	.12370	.00480	-.00090	-.00030	.20880	.00000	.03760	.04750	.08520
1.195	6.250	.04980	.19510	.00520	-.00090	.00140	.20740	.00000	.03770	.04980	.08750
1.195	8.420	.07740	.27450	.00610	-.00140	.00130	.20370	.00000	.03870	.05360	.09230
1.195	10.540	.10560	.37400	.00930	-.00150	.00150	.19780	.00000	.03990	.05760	.09750
	GRADIENT	.00740	.03338	.00030	-.00002	.00019	.00022	.00000	-.00009	-.00049	-.00058

RUN NO. 108/ 0 RN/L = 7.06 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.963	-11.070	-.08230	-.44550	-.00270	-.00010	-.00030	.20190	.00000	.02020	.03870	.05890
1.963	-8.930	-.07710	-.34740	-.00230	-.00030	-.00050	.20130	.00000	.01990	.03760	.05750
1.963	-6.730	-.07050	-.24940	-.00020	-.00060	-.00080	.20130	.00000	.01980	.03570	.05560
1.963	-4.540	-.05470	-.16350	-.00030	-.00060	-.00050	.20030	.00000	.01930	.03380	.05320
1.963	-2.360	-.03780	-.08580	.00000	-.00080	-.00060	.20120	.00000	.01960	.03190	.05160
1.963	-.170	-.01980	-.00910	.00160	-.00060	.00000	.19640	.00000	.02040	.03080	.05130
1.963	1.980	-.00540	.06240	.00150	-.00060	.00070	.19910	.00000	.02010	.03080	.05090
1.963	4.130	-.00010	.13450	.00180	-.00050	.00080	.19470	.00000	.01980	.03120	.05100
1.963	6.300	.01590	.21010	.00210	-.00060	.00110	.19090	.00000	.02100	.03530	.05640
1.963	8.490	.02700	.29620	.00430	-.00050	.00110	.19010	.00000	.02060	.03770	.05840
1.963	10.600	.02950	.39360	.00510	-.00050	.00120	.18880	.00000	.02020	.03930	.05950
	GRADIENT	.00654	.03433	.00026	.00002	.00018	-.00061	.00000	.00007	-.00029	-.00024

MSFC TWT 538 SHUTTLE LAUNCH T1S1 (A66002) (21 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

BETA = .000

RUN NO. 162/ 0 RN/L = 4.88 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
4.959	-10.280	-.06520	-.30230	.00200	.00010	-.00050	.14630	.00000	.00250	.00600	.00850
4.959	-8.320	-.05440	-.24150	.00070	-.00040	.00070	.14400	.00000	.00250	.00560	.00820
4.959	-6.280	-.04030	-.18110	-.00040	-.00030	.00070	.14160	.00000	.00260	.00590	.00850
4.959	-4.240	-.02720	-.13260	.00120	-.00040	.00110	.14110	.00000	.00260	.00610	.00880
4.959	-2.220	-.01520	-.07820	.00290	-.00050	.00190	.13790	.00000	.00260	.00600	.00860
4.959	-.160	-.00710	-.01490	.00170	.00020	.00150	.13720	.00000	.00270	.00590	.00860
4.959	1.870	.00440	.04250	.00500	-.00010	.00230	.13870	.00000	.00270	.00600	.00870
4.959	3.910	.01350	.10580	.00370	-.00030	.00140	.13990	.00000	.00270	.00610	.00880
4.959	5.950	.02410	.15710	.00390	-.00030	.00230	.14160	.00000	.00260	.00560	.00830
4.959	7.980	.03590	.21150	.00570	-.00040	.00220	.14100	.00000	.00280	.00600	.00880
4.959	9.950	.04860	.27210	.00900	-.00010	.00350	.14250	.00000	.00270	.00600	.00870
	GRADIENT	.00495	.02930	.00035	.00003	.00005	-.00008	.00000	.00001	-.00000	.00000

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REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

ALPHA = .000

RUN NO. 0/ 0 RN/L = 6.09 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.201	-10.220	-.01100	-.00570	.12400	.00160	.04050	.20040	.00000	.03870	.05290	.09160
1.201	-8.230	-.01200	-.00590	.09760	.00110	.03230	.20350	.00000	.03850	.05020	.08880
1.201	-6.170	-.01300	-.00510	.07370	.00100	.02310	.20450	.00000	.03790	.04900	.08700
1.201	-4.110	-.01350	-.00420	.04990	.00060	.01450	.20430	.00000	.03750	.04880	.08640
1.201	-2.050	-.01570	-.00770	.02680	.00000	.00690	.20630	.00000	.03720	.04730	.08450
1.201	.000	-.01430	-.00980	.00320	-.00050	.00100	.20720	.00000	.03660	.04580	.08240
1.201	2.040	-.01470	-.00850	-.02030	-.00150	-.00320	.20990	.00000	.03520	.04590	.08120
1.201	4.090	-.01440	-.00860	-.04240	-.00200	-.01020	.20980	.00000	.03360	.04840	.08200
1.201	6.150	-.01450	-.00880	-.06590	-.00210	-.01860	.20940	.00000	.03170	.05120	.08300
1.201	8.210	-.01420	-.01020	-.08960	-.00230	-.02780	.20800	.00000	.03020	.05350	.08380
1.201	10.190	-.01380	-.01260	-.11600	-.00230	-.03570	.20610	.00000	.02920	.05540	.08460
	GRADIENT	-.00004	-.00047	-.01131	-.00033	-.00290	.00071	.00000	-.00048	-.00011	-.00059

RUN NO. 0/ 0 RN/L = 4.88 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
4.959	-10.040	-.01450	.00060	.16790	-.00320	.03530	.15640	.00000	.00220	.00540	.00770
4.959	-8.110	-.01330	-.00020	.13890	-.00340	.03180	.15220	.00000	.00240	.00570	.00820
4.959	-6.060	-.00860	-.00430	.11000	-.00250	.02580	.14680	.00000	.00240	.00560	.00810
4.959	-4.040	-.00860	-.01150	.07640	-.00240	.02060	.14380	.00000	.00240	.00560	.00810
4.959	-2.030	-.00670	-.00710	.03540	-.00050	.01220	.13970	.00000	.00250	.00550	.00810
4.959	.000	-.00600	-.00880	.00480	.00000	.00150	.13780	.00000	.00250	.00570	.00830
4.959	2.020	-.00570	-.00150	-.02880	.00010	-.00920	.13780	.00000	.00260	.00570	.00830
4.959	4.070	-.00560	.00280	-.06830	.00170	-.01800	.14200	.00000	.00260	.00580	.00850
4.959	6.080	-.00990	.00440	-.10330	.00160	-.02400	.14600	.00000	.00270	.00580	.00850
4.959	8.120	-.00820	.00340	-.13060	.00230	-.02970	.14940	.00000	.00270	.00590	.00870
4.959	10.040	-.01130	.01440	-.15940	.00290	-.03360	.15210	.00000	.00270	.00590	.00870
	GRADIENT	.00034	.00169	-.01744	.00043	-.00486	-.00027	.00000	.00002	.00003	.00005

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

BETA = .000 ORBIN = -3.300

RUN NO. 0/ 0 RN/L = 4.53 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
.600	-10.290	.32540	-.60000	-.00920	.00100	.00520	.03650	.01910	.00000	.04260	.06180
.600	-8.320	.26790	-.49810	-.00790	.00030	.00340	.03820	.01990	.00000	.03870	.05870
.600	-6.290	.22190	-.41370	-.00890	-.00020	.00340	.03810	.02020	.00000	.03680	.05700
.600	-4.250	.16490	-.30390	-.00510	.00030	.00230	.04010	.02150	.00000	.03460	.05610
.600	-2.220	.10800	-.19620	-.00020	.00000	.00190	.04600	.02180	.00000	.03310	.05490
.600	-.180	.05070	-.09220	-.00470	-.00080	.00050	.04870	.02160	.00000	.03130	.05290
.600	1.850	-.00700	.01630	.00020	-.00020	.00040	.04630	.02160	.00000	.03380	.05540
.600	3.880	-.06760	.12500	.00040	-.00090	.00030	.04440	.02210	.00000	.03190	.05410
.600	5.920	-.11970	.22250	.00170	-.00160	.00020	.03790	.02240	.00000	.03140	.05380
.600	7.950	-.17800	.32590	.00190	-.00200	-.00040	.02730	.02220	.00000	.03530	.05760
.600	9.900	-.22420	.41950	.00210	-.00230	-.00010	.02490	.02220	.00000	.03530	.05750
	GRADIENT	-.02853	.05265	.00056	-.00013	-.00027	.00044	.00005	.00000	-.00023	-.00017

RUN NO. 0/ 0 RN/L = 5.43 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
.803	-10.400	.34880	-.62870	-.01040	.00170	.00320	.05470	.02230	.00000	.05460	.07690
.803	-8.410	.30640	-.54620	-.00710	.00210	.00240	.05680	.02030	.00000	.05000	.07030
.803	-6.370	.26750	-.46660	-.00860	.00020	.00280	.05250	.01920	.00000	.04580	.06510
.803	-4.310	.19750	-.34220	-.00430	.00210	.00050	.06060	.01990	.00000	.04170	.06160
.803	-2.270	.12120	-.21630	-.00170	.00210	-.00150	.06500	.02100	.00000	.03950	.06060
.803	-.190	.06570	-.10960	-.00150	.00100	-.00230	.06640	.02200	.00000	.03860	.06070
.803	1.850	.00420	.00150	-.00290	-.00060	-.00030	.06550	.02290	.00000	.03810	.06110
.803	3.880	-.06160	.11300	-.00110	-.00030	-.00100	.06030	.02330	.00000	.03750	.06080
.803	5.960	-.12910	.22880	.00060	.00000	-.00260	.05210	.02310	.00000	.03700	.06010
.803	8.020	-.19890	.35480	.00310	-.00130	-.00340	.03980	.02300	.00000	.03770	.06070
.803	9.980	-.24170	.43640	.00330	-.00190	-.00210	.04040	.02310	.00000	.03840	.06160
	GRADIENT	-.03098	.05503	.00025	-.00037	-.00009	-.00000	.00042	.00000	-.00048	-.00005

MSFC TWT 538 SHUTTLE LAUNCH T101 (T66004) (24 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

BETA = .000 ORBIN = -1.500

RUN NO. 0/ 0 RN/L = 5.75 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
.905	-10.430	.44050	-.73200	-.01200	.00350	.00190	.08470	.02350	.00000	.05670	.08030
.905	-8.450	.38100	-.62520	-.01170	.00370	.00210	.08610	.02430	.00000	.05080	.07520
.905	-6.390	.31920	-.51730	-.01090	.00180	.00200	.08680	.02510	.00000	.04690	.07200
.905	-4.330	.22950	-.37570	-.00930	.00090	.00270	.09280	.02580	.00000	.04480	.07060
.905	-2.270	.13500	-.23380	-.00700	.00020	.00070	.09600	.02680	.00000	.04320	.07010
.905	-.190	.05630	-.09870	-.00470	-.00080	.00010	.09690	.02790	.00000	.04150	.06950
.905	1.850	-.01050	.01190	-.00390	-.00080	-.00100	.08710	.02740	.00000	.04180	.06930
.905	3.910	-.08180	.13100	-.00220	-.00040	-.00080	.08140	.02740	.00000	.03920	.06660
.905	5.980	-.16620	.26780	.00140	-.00030	-.00080	.06890	.02630	.00000	.04080	.06720
.905	8.040	-.22070	.36980	.00230	-.00140	-.00200	.06240	.02580	.00000	.04020	.06610
.905	10.010	-.27370	.46270	.00550	-.00420	-.00620	.06300	.02470	.00000	.04300	.06780
	GRADIENT	-.03729	.06113	.00084	-.00018	-.00042	-.00154	.00018	.00000	-.00061	-.00043

RUN NO. 0/ 0 RN/L = 6.10 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.103	-10.470	.52550	-.80390	-.01180	.00240	.01090	.14670	.04470	.00000	.07430	.11910
1.103	-8.470	.44750	-.67160	-.00980	.00210	.00970	.14540	.04360	.00000	.07590	.11960
1.103	-6.380	.36230	-.53100	-.00660	.00130	.00870	.14950	.04290	.00000	.07640	.11930
1.103	-4.300	.27070	-.38560	-.00460	.00070	.00760	.15470	.04220	.00000	.07560	.11790
1.103	-2.220	.18540	-.25050	-.00200	.00040	.00620	.15840	.04200	.00000	.07580	.11790
1.103	-.150	.10030	-.11830	-.00070	-.00100	.00550	.15950	.04150	.00000	.07640	.11800
1.103	1.910	.02140	.00900	.00230	-.00160	.00530	.15960	.04110	.00000	.07540	.11650
1.103	3.980	-.05910	.13380	.00140	-.00200	.00500	.15540	.04160	.00000	.07610	.11780
1.103	6.050	-.14520	.26830	.00390	-.00200	.00290	.15310	.04230	.00000	.07400	.11630
1.103	8.120	-.22540	.39500	.00530	-.00300	.00130	.14760	.04360	.00000	.07540	.11900
1.103	10.110	-.29210	.50680	.00550	-.00340	.00050	.14090	.04560	.00000	.07600	.12160
	GRADIENT	-.03981	.06275	.00079	-.00036	-.00030	.00013	-.00010	.00000	.00003	-.00008

MSFC TWT 538 SHUTTLE LAUNCH T101 (T66004) (24 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

BETA = .000 ORBIN = -1.500

RUN NO. 0/ 0 RN/L = 6.14 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.198	-10.480	.46870	-.74690	-.01430	.00130	.00710	.14670	.04470	.00000	.07630	.12110
1.198	-8.470	.38930	-.61020	-.01230	.00050	.00630	.15030	.04210	.00000	.07100	.11310
1.198	-6.380	.30300	-.46720	-.01040	-.00010	.00620	.15090	.03990	.00000	.07000	.11000
1.198	-4.310	.21560	-.33100	-.01070	-.00060	.00590	.15540	.03840	.00000	.06770	.10620
1.198	-2.230	.13740	-.20360	-.00760	-.00120	.00520	.16010	.03790	.00000	.06460	.10260
1.198	-.160	.06330	-.08290	-.00690	-.00170	.00410	.16090	.03790	.00000	.06470	.10260
1.198	1.910	-.00270	.03130	-.00440	-.00210	.00370	.16020	.03750	.00000	.06530	.10290
1.198	3.980	-.07190	.14240	-.00310	-.00210	.00220	.15880	.03770	.00000	.06490	.10260
1.198	6.050	-.14190	.26180	-.00070	-.00240	.00070	.15360	.03880	.00000	.06630	.10520
1.198	8.130	-.21420	.38190	.00000	-.00260	-.00030	.14530	.04060	.00000	.07010	.11070
1.198	10.130	-.27630	.49310	.00190	-.00280	-.00130	.13970	.04210	.00000	.06990	.11200
	GRADIENT	-.03451	.05703	.00089	-.00019	-.00043	.00033	-.00009	.00000	-.00024	-.00033

RUN NO. 0/ 0 RN/L = 4.65 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
2.740	-10.370	.13810	-.39990	-.00890	-.00130	.00290	.14020	.01420	.00000	.02620	.04050
2.740	-8.400	.10870	-.32410	-.00860	-.00100	.00250	.13550	.01390	.00000	.02530	.03930
2.740	-6.340	.08400	-.24880	-.00620	-.00110	.00250	.13090	.01370	.00000	.02420	.03790
2.740	-4.290	.05870	-.18060	-.00600	-.00100	.00230	.12710	.01360	.00000	.02360	.03730
2.740	-2.250	.03910	-.11410	-.00440	-.00090	.00210	.12440	.01370	.00000	.02330	.03700
2.740	-.180	.01640	-.04760	-.00500	-.00130	.00210	.12280	.01400	.00000	.02350	.03760
2.740	1.850	-.00270	.02190	-.00180	-.00120	.00210	.11990	.01430	.00000	.02370	.03800
2.740	3.920	-.02760	.09130	-.00240	-.00120	.00150	.11790	.01440	.00000	.02350	.03800
2.740	5.980	-.04960	.16240	.00210	-.00130	.00140	.11680	.01430	.00000	.02220	.03660
2.740	8.040	-.07110	.23170	.00160	-.00150	.00100	.11550	.01440	.00000	.02190	.03630
2.740	10.020	-.08630	.29550	.00320	-.00170	.00150	.11550	.01470	.00000	.02060	.03530
	GRADIENT	-.01045	.03313	.00048	-.00003	-.00008	-.00112	.00011	.00000	.00001	.00012

MSFC TWT 538 SHUTTLE LAUNCH T101 (T66004) (24 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

BETA = .000 ORBIN = -1.500

RUN NO. 0/ 0 RN/L = 4.90 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
4.959	-10.200	.07990	-.31540	-.00520	-.00080	.00280	.14530	.00260	.00000	.00600	.00870
4.959	-8.260	.05620	-.25210	-.00500	-.00040	.00300	.13730	.00260	.00000	.00600	.00870
4.959	-6.260	.04240	-.19500	-.00330	-.00070	.00280	.13080	.00260	.00000	.00590	.00860
4.959	-4.220	.02770	-.14400	-.00470	-.00090	.00180	.12510	.00270	.00000	.00580	.00860
4.959	-2.210	.01780	-.09290	-.00450	-.00070	.00210	.12020	.00280	.00000	.00580	.00870
4.959	-.170	.01010	-.04170	.00010	-.00020	.00200	.11660	.00280	.00000	.00570	.00850
4.959	1.830	.00360	.00630	.00180	-.00030	.00230	.11260	.00280	.00000	.00600	.00880
4.959	3.870	-.00400	.05730	.00040	-.00030	.00180	.10870	.00290	.00000	.00570	.00860
4.959	5.900	-.00720	.10550	.00360	-.00050	.00210	.10740	.00290	.00000	.00540	.00830
4.959	7.910	-.01830	.14750	.00370	-.00050	.00200	.10530	.00300	.00000	.00510	.00810
4.959	9.860	-.02610	.19270	.00230	-.00140	.00280	.10420	.00300	.00000	.00480	.00790
	GRADIENT	-.00384	.02482	.00082	.00008	.00001	-.00200	.00002	.00000	-.00000	.00000

MSFC TWT 538 SHUTTLE LAUNCH T101 (A66005) (21 APR 72)

REFERENCE DATA

SREF = 7.6900 SQ. IN XMRP = 4.1460 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

ALPHA = .000 ORBIN = -1.500

RUN NO. 20/ 0 RN/L = 4.56 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
.604	-10.080	.02530	-.06190	.32690	.05590	-.04000	.02140	.02180	.00000	.05080	.07270
.604	-8.130	.02420	-.06260	.26600	.04680	-.03370	.03080	.02090	.00000	.04480	.06570
.604	-6.090	.02740	-.06520	.19740	.03580	-.02620	.03670	.02020	.00000	.04080	.06100
.604	-4.060	.02700	-.06340	.14030	.02590	-.01950	.04220	.02120	.00000	.03580	.05710
.604	-2.030	.02950	-.06150	.07850	.01410	-.01130	.04480	.02250	.00000	.03260	.05510
.604	.000	.03210	-.06400	.01290	.00190	-.00060	.04490	.02210	.00000	.03370	.05580
.604	2.020	.03200	-.06440	-.05290	-.01030	.00960	.04680	.02200	.00000	.03370	.05580
.604	4.050	.03360	-.06440	-.11820	-.02200	.01930	.04330	.02190	.00000	.03610	.05800
.604	6.080	.03440	-.06920	-.17890	-.03250	.02660	.03940	.02130	.00000	.03950	.06090
.604	8.110	.03520	-.06540	-.23860	-.04310	.03340	.03400	.02170	.00000	.04420	.06590
.604	10.070	.03350	-.06850	-.30540	-.05330	.04070	.02810	.02260	.00000	.04830	.07100
	GRADIENT	.00077	-.00024	-.03199	-.00593	.00486	.00021	.00004	.00000	.00008	.00012

RUN NO. 19/ 0 RN/L = 5.42 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
.801	-10.180	.03470	-.06450	.34730	.05660	-.04080	.03860	.02510	.00000	.05450	.07970
.801	-8.200	.03540	-.06670	.27630	.04500	-.03350	.04670	.02420	.00000	.05070	.07500
.801	-6.150	.03800	-.07050	.21050	.03510	-.02940	.05720	.02330	.00000	.04210	.06550
.801	-4.100	.04250	-.07700	.14740	.02540	-.02270	.06100	.02340	.00000	.03930	.06280
.801	-2.050	.04530	-.07750	.08490	.01530	-.01520	.06390	.02460	.00000	.03760	.06230
.801	.000	.05210	-.08850	.01190	.00290	-.00340	.06440	.02170	.00000	.03960	.06130
.801	2.030	.04840	-.08230	-.06020	-.01030	.01100	.06180	.02440	.00000	.04080	.06520
.801	4.080	.04680	-.08130	-.12840	-.02220	.02230	.06070	.02390	.00000	.04170	.06570
.801	6.130	.04560	-.07890	-.19150	-.03270	.03010	.05700	.02350	.00000	.04490	.06840
.801	8.180	.04120	-.07250	-.25650	-.04280	.03670	.05240	.02350	.00000	.04890	.07240
.801	10.130	.03980	-.07160	-.32180	-.05330	.04280	.04680	.02450	.00000	.05180	.07630
	GRADIENT	.00057	-.00066	-.03408	-.00591	.00568	-.00013	.00004	.00000	.00039	.00042

MSFC TWT 538 SHUTTLE LAUNCH T101 (A66005) (21 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

ALPHA = .000 ORBIN = -1.500

RUN NO. 18/ 0 RN/L = 5.72 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
.904	-10.240	.06430	-.08440	.36280	.06270	-.04050	.06330	.02680	.00000	.05580	.08260
.904	-8.240	.06610	-.08770	.28930	.05150	-.03570	.07120	.02640	.00000	.05270	.07920
.904	-6.180	.06480	-.09110	.21850	.03950	-.03000	.08180	.02570	.00000	.04700	.07280
.904	-4.110	.06170	-.09190	.15240	.02820	-.02490	.08710	.02650	.00000	.04390	.07050
.904	-2.050	.05500	-.08980	.08410	.01550	-.01700	.08770	.02790	.00000	.04170	.06960
.904	.000	.05520	-.08950	.00770	.00150	-.00090	.08700	.02630	.00000	.04210	.06840
.904	2.030	.04970	-.08490	-.06280	-.01130	.01500	.08590	.02750	.00000	.04390	.07150
.904	4.090	.06010	-.08950	-.13380	-.02400	.02420	.08620	.02670	.00000	.04610	.07280
.904	6.150	.06590	-.09310	-.20160	-.03640	.03210	.08080	.02580	.00000	.04900	.07480
.904	8.220	.06470	-.08760	-.27150	-.04960	.03830	.07820	.02610	.00000	.05260	.07870
.904	10.210	.06550	-.08330	-.34170	-.06050	.04350	.07030	.02660	.00000	.05510	.08180
	GRADIENT	-.00041	.00047	-.03512	-.00641	.00636	-.00018	-.00000	.00000	.00032	.00032

RUN NO. 16/ 0 RN/L = 6.05 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.102	-10.310	.05630	-.07830	.37340	.07810	-.03880	.13540	.04000	.00000	.08070	.12070
1.102	-8.310	.07360	-.09080	.29600	.06350	-.03150	.14210	.04110	.00000	.07870	.11990
1.102	-6.220	.08090	-.09600	.21800	.04700	-.02460	.14760	.04090	.00000	.07810	.11900
1.102	-4.140	.08520	-.09990	.14440	.03140	-.01570	.15320	.04030	.00000	.07750	.11790
1.102	-2.070	.08710	-.09900	.07430	.01590	-.00710	.15470	.04150	.00000	.07820	.11980
1.102	.000	.09050	-.09930	.00220	.00000	.00350	.15650	.04140	.00000	.07860	.12010
1.102	2.060	.08950	-.09980	-.06950	-.01530	.01290	.15360	.04190	.00000	.08090	.12280
1.102	4.130	.08950	-.09970	-.13870	-.03060	.02110	.15350	.04160	.00000	.07990	.12160
1.102	6.200	.08810	-.09950	-.21090	-.04620	.02940	.14960	.04180	.00000	.07980	.12160
1.102	8.290	.07970	-.09560	-.28640	-.06230	.03620	.14480	.04150	.00000	.08130	.12280
1.102	10.300	.06810	-.08490	-.36240	-.07780	.04170	.13600	.04340	.00000	.08270	.12620
	GRADIENT	.00053	-.00002	-.03435	-.00751	.00453	-.00002	.00015	.00000	.00036	.00050

MSFC TWT 538 SHUTTLE LAUNCH T101 (A66005) (21 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

ALPHA = .000 ORBIN = -1.500

RUN NO. 17/ 0 RN/L = 6.09 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.199	-10.360	.00470	-.03150	.38270	.07560	-.03420	.13860	.04000	.00000	.07940	.11940
1.199	-8.340	.01700	-.03690	.30330	.06300	-.02920	.14740	.04000	.00000	.07420	.11420
1.199	-6.250	.02810	-.04640	.22290	.04680	-.02220	.15260	.03940	.00000	.07170	.11120
1.199	-4.160	.03590	-.05340	.14610	.03080	-.01380	.15750	.03820	.00000	.06910	.10740
1.199	-2.080	.03810	-.05390	.07430	.01530	-.00580	.15720	.03870	.00000	.06830	.10700
1.199	-.010	.04130	-.05430	.00100	-.00020	.00390	.15890	.03860	.00000	.06680	.10540
1.199	2.060	.04020	-.05270	-.07080	-.01540	.01220	.15530	.03860	.00000	.07070	.10940
1.199	4.140	.04110	-.05440	-.14240	-.03130	.02000	.15560	.03940	.00000	.07210	.11150
1.199	6.220	.03590	-.05060	-.21710	-.04770	.02810	.15130	.04050	.00000	.07390	.11450
1.199	8.320	.02560	-.04380	-.29720	-.06370	.03530	.14810	.04000	.00000	.07630	.11640
1.199	10.340	.01530	-.03720	-.37640	-.07650	.03940	.13970	.04300	.00000	.07800	.12110
	GRADIENT	.00060	-.00004	-.03482	-.00747	.00413	-.00027	.00011	.00000	.00040	.00051

RUN NO. 128/ 0 RN/L = 7.05 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.972	-10.430	.01620	-.05540	.38320	.05940	-.04850	.11940	.02470	.00000	.04400	.06870
1.972	-8.380	.02120	-.05440	.30490	.05050	-.03980	.12110	.02400	.00000	.04220	.06630
1.972	-6.280	.02290	-.05160	.22460	.03900	-.02840	.12220	.02390	.00000	.04140	.06540
1.972	-4.160	.02480	-.05150	.14730	.02630	-.01910	.12320	.02360	.00000	.03840	.06200
1.972	-2.090	.02390	-.04900	.07350	.01330	-.00920	.12280	.02330	.00000	.03720	.06060
1.972	.000	.02450	-.04740	.00160	-.00030	.00170	.12220	.02250	.00000	.03600	.05860
1.972	2.100	.02390	-.04680	-.07030	-.01360	.01220	.12340	.02290	.00000	.03680	.05970
1.972	4.170	.02220	-.04730	-.14250	-.02660	.02180	.12240	.02360	.00000	.03860	.06220
1.972	6.270	.02040	-.04680	-.22010	-.03930	.03180	.12300	.02380	.00000	.04000	.06380
1.972	8.370	.01750	-.04900	-.30050	-.05110	.04220	.12330	.02500	.00000	.04160	.06660
1.972	10.420	.01190	-.04670	-.37770	-.06010	.05180	.12160	.02630	.00000	.04360	.06990
	GRADIENT	-.00025	.00051	-.03469	-.00636	.00495	-.00005	-.00002	.00000	.00000	-.00002

MSFC TWT 538 SHUTTLE LAUNCH T101 (A66005) (21 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

ALPHA = .000 ORBIN = -1.500

RUN NO. 160/ 0 RN/L = 4.32 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
2.925	-10.230	.01390	-.05250	.34810	.04360	-.03910	.12250	.01420	.00000	.02400	.03820
2.925	-8.230	.01780	-.05290	.27820	.03640	-.03090	.12230	.01390	.00000	.02390	.03780
2.925	-6.170	.01870	-.05200	.20650	.02790	-.02340	.12220	.01350	.00000	.02420	.03780
2.925	-4.110	.01980	-.05230	.13560	.01840	-.01450	.12160	.01340	.00000	.02410	.03750
2.925	-2.070	.01960	-.05140	.06860	.00890	-.00670	.12260	.01370	.00000	.02290	.03660
2.925	.000	.02220	-.04880	.00230	-.00010	.00160	.12120	.01400	.00000	.02370	.03770
2.925	2.030	.02070	-.04650	-.06320	-.00950	.00880	.12270	.01410	.00000	.02400	.03810
2.925	4.100	.01980	-.04260	-.13170	-.01870	.01660	.12320	.01390	.00000	.02460	.03850
2.925	6.160	.01850	-.04300	-.19930	-.02840	.02500	.12380	.01430	.00000	.02480	.03910
2.925	8.220	.01530	-.04360	-.26990	-.03700	.03270	.12520	.01450	.00000	.02520	.03970
2.925	10.200	.01060	-.04430	-.34040	-.04450	.04020	.12570	.01460	.00000	.02580	.04040
	GRADIENT	.00005	.00118	-.03248	-.00451	.00379	.00016	.00007	.00000	.00010	.00017

MSFC TWT 538 SHUTTLE LAUNCH T10131 (A66006) (21 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

BETA = .000 ORBIN = -1.500

RUN NO. 30/ 0 RN/L = 4.54 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
.599	-10.460	.13150	-.67190	-.01000	.00060	.00180	.08450	.01670	.03300	.04690	.09670
.599	-8.480	.11560	-.56460	-.01080	.00000	.00260	.08310	.01670	.03400	.04410	.09500
.599	-6.410	.09270	-.45050	-.01160	-.00030	.00270	.08750	.01550	.03310	.03930	.08800
.599	-4.340	.06760	-.32880	-.00650	.00000	.00170	.08670	.01630	.03260	.03920	.08820
.599	-2.270	.04170	-.20670	-.00260	-.00070	.00210	.08830	.01540	.03160	.03650	.08370
.599	-.200	.01420	-.09080	-.00350	-.00090	.00110	.08780	.01620	.03070	.03560	.08270
.599	1.860	-.01230	.03270	-.00190	-.00030	.00190	.08730	.01700	.02950	.03420	.08080
.599	3.920	-.04970	.14890	-.00280	-.00140	.00090	.08260	.01870	.02930	.03410	.08220
.599	5.980	-.07690	.25610	.00090	-.00130	.00020	.07940	.01950	.03030	.03250	.08230
.599	8.040	-.10270	.37140	.00240	-.00160	-.00030	.07270	.01910	.03030	.03540	.08490
.599	10.030	-.12630	.48100	.00270	-.00290	.00100	.06890	.02010	.03010	.03560	.08590
	GRADIENT	-.01397	.05786	.00039	-.00012	-.00009	-.00044	.00031	-.00042	-.00061	-.00072

RUN NO. 29/ 0 RN/L = 5.42 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
.802	-10.700	.13600	-.71620	-.01200	.00090	.00090	.11310	.02590	.03510	.06020	.12130
.802	-8.670	.13240	-.61100	-.00760	.00140	.00100	.11340	.02320	.03600	.05590	.11520
.802	-6.550	.12420	-.49990	-.00720	.00140	.00080	.11150	.02080	.03650	.05180	.10920
.802	-4.440	.08550	-.36180	-.00610	.00130	.00040	.11360	.02030	.03560	.04780	.10380
.802	-2.340	.04910	-.22780	-.00250	.00120	-.00050	.11810	.01880	.03400	.04390	.09670
.802	-.230	.02400	-.10720	-.00230	.00080	-.00190	.11720	.01950	.03220	.04270	.09450
.802	1.860	-.00980	.02010	-.00110	-.00040	.00030	.11200	.02060	.03170	.04050	.09300
.802	3.930	-.06660	.13970	-.00160	-.00050	.00010	.10320	.02120	.03250	.04040	.09430
.802	6.030	-.10180	.26640	.00330	.00000	-.00310	.09760	.02160	.03270	.04030	.09470
.802	8.140	-.14070	.40230	.00520	-.00080	-.00350	.08580	.02230	.03300	.04370	.09910
.802	10.150	-.15350	.50070	.00400	-.00180	-.00210	.08010	.02450	.03360	.04630	.10450
	GRADIENT	-.01733	.05974	.00050	-.00025	.00001	-.00128	.00017	-.00041	-.00087	-.00109

MSFC TWT 538 SHUTTLE LAUNCH T101S1 (A66006) (21 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

BETA = .000 ORBIN = -1.500

RUN NO. 28/ 0 RN/L = 5.76 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
.901	-10.810	.19180	-.79410	-.01130	.00370	-.00010	.14730	.03030	.03410	.06660	.13110
.901	-8.740	.17170	-.65830	-.01230	.00250	.00150	.14890	.02690	.03600	.06010	.12310
.901	-6.620	.15410	-.53730	-.01050	.00200	.00090	.14980	.02380	.03750	.05570	.11700
.901	-4.470	.11840	-.38950	-.01090	.00020	.00160	.15220	.02230	.03680	.05090	.11010
.901	-2.350	.07230	-.24310	-.00840	-.00060	.00230	.15150	.02210	.03440	.04750	.10410
.901	-.230	.03970	-.11610	-.00330	.00040	-.00070	.14310	.02140	.03270	.04520	.09930
.901	1.870	-.00610	.01360	.00040	.00010	-.00050	.13510	.02130	.03170	.04390	.09710
.901	3.940	-.07130	.13910	-.00130	-.00040	-.00140	.12670	.02210	.03220	.04200	.09640
.901	6.020	-.13080	.27340	-.00110	-.00150	-.00090	.11860	.02330	.03450	.04380	.10170
.901	8.150	-.16710	.40130	.00200	-.00090	-.00080	.11100	.02460	.03340	.04730	.10540
.901	10.180	-.18360	.50340	.00220	-.00270	-.00110	.10730	.02650	.03350	.05110	.11130
	GRADIENT	-.02175	.06245	.00133	-.00002	-.00042	-.00320	-.00006	-.00057	-.00102	-.00164

RUN NO. 26/ 0 RN/L = 6.07 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.102	-11.010	.29920	-.95360	-.01410	.00060	.00680	.23430	.04130	.04240	.07610	.15990
1.102	-8.880	.25540	-.76790	-.01170	.00050	.00680	.24090	.03960	.04280	.07390	.15630
1.102	-6.680	.21620	-.59760	-.00830	.00000	.00770	.24800	.03850	.04300	.07080	.15240
1.102	-4.510	.17300	-.44000	-.00610	-.00060	.00670	.24880	.03900	.04350	.06980	.15240
1.102	-2.350	.12290	-.28330	-.00450	-.00020	.00660	.24930	.03900	.04250	.06720	.14880
1.102	-.210	.07290	-.13560	-.00180	-.00140	.00630	.24570	.03910	.04190	.06850	.14960
1.102	1.930	.02900	.00340	-.00030	-.00180	.00640	.24140	.03940	.04080	.06870	.14890
1.102	4.010	-.04620	.14880	.00170	-.00200	.00590	.23070	.04020	.04150	.06690	.14870
1.102	6.150	-.11310	.29360	.00030	-.00250	.00570	.22470	.04030	.04190	.06530	.14760
1.102	8.280	-.15820	.43270	.00240	-.00300	.00560	.21590	.04120	.04190	.06610	.14920
1.102	10.340	-.19050	.55860	.00390	-.00370	.00510	.20740	.04200	.04150	.06490	.14850
	GRADIENT	-.02495	.06868	.00093	-.00021	-.00008	-.00206	.00013	-.00027	-.00020	-.00034

MSFC TWT 538 SHUTTLE LAUNCH T101S1 (A66006) (21 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1460 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

BETA = .000 ORBIN = -1.500

RUN NO. 87/ 0 RN/L = 6.12 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.203	-11.070	.24480	-.89920	-.01420	.00060	.00150	.24020	.03870	.04030	.07620	.15530
1.203	-8.920	.19110	-.70690	-.01140	.00000	.00180	.24860	.03560	.04000	.07110	.14680
1.203	-6.720	.14770	-.53770	-.00980	-.00060	.00140	.25370	.03340	.03950	.06670	.13970
1.203	-4.540	.11100	-.38430	-.00660	-.00100	.00130	.25210	.03390	.04010	.06720	.14130
1.203	-2.370	.07980	-.24750	-.00460	-.00180	.00110	.25390	.03320	.03890	.06220	.13440
1.203	-.220	.04620	-.11420	-.00310	-.00240	.00170	.25170	.03320	.03800	.06020	.13150
1.203	1.920	.01370	.01360	-.00150	-.00210	.00150	.24690	.03390	.03720	.05870	.12990
1.203	4.040	-.04960	.15020	.00150	-.00210	.00070	.24040	.03480	.03780	.05910	.13180
1.203	6.170	-.10050	.28420	.00290	-.00210	-.00070	.23540	.03590	.03870	.05980	.13450
1.203	8.320	-.13180	.41240	.00550	-.00280	-.00130	.22650	.03740	.03890	.06090	.13730
1.203	10.390	-.15280	.53450	.00700	-.00310	-.00060	.21960	.03900	.03890	.06200	.14010
	GRADIENT	-.01804	.06201	.00090	-.00012	-.00004	-.00141	.00012	-.00029	-.00092	-.00110

RUN NO. 112/ 0 RN/L = 7.04 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.966	-11.160	.10720	-.69740	-.00440	-.00030	-.00020	.24790	.02440	.01760	.04600	.09010
1.966	-9.050	.08280	-.57410	-.00450	-.00020	-.00050	.24710	.02410	.01920	.04590	.08940
1.966	-6.830	.05420	-.43170	-.00270	-.00010	-.00060	.23960	.02440	.02010	.04350	.08800
1.966	-4.630	.03510	-.30500	.00040	.00000	-.00110	.23540	.02400	.01990	.04310	.08710
1.966	-2.440	.01860	-.18960	.00210	.00000	-.00150	.23240	.02400	.02100	.04110	.08620
1.966	-.240	.00170	-.07060	.00340	.00000	-.00150	.22760	.02380	.02120	.03930	.08430
1.966	1.930	-.01610	.04060	.00420	.00000	-.00090	.22580	.02370	.02060	.03890	.08320
1.966	4.110	-.03580	.14750	.00500	-.00020	-.00080	.22180	.02410	.02070	.03840	.08340
1.966	6.250	-.06050	.25110	.00580	-.00020	-.00080	.22480	.02420	.02190	.03690	.08300
1.966	8.420	-.07420	.35340	.00570	-.00030	-.00080	.22070	.02420	.02280	.03630	.08350
1.966	10.520	-.08100	.45650	.00740	-.00030	-.00020	.21490	.02430	.02370	.03620	.08430
	GRADIENT	-.00808	.05196	.00052	-.00002	.00005	-.00155	-.00000	.00006	-.00053	-.00048

MSFC TWT 538 SHUTTLE LAUNCH T10131 (A66006) (21 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

BETA = .000 ORBIN = -1.500

RUN NO. 155/ 0 RN/L = 4.65 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
2.740	-10.690	.03640	-.57620	-.00960	-.00140	.00190	.23560	.01520	.01140	.02860	.05540
2.740	-8.660	.02290	-.46880	-.00630	-.00130	.00200	.22980	.01530	.01160	.02800	.05500
2.740	-6.550	.00980	-.35800	-.00440	-.00110	.00180	.22500	.01520	.01200	.02700	.05430
2.740	-4.430	.00240	-.25650	-.00260	-.00130	.00160	.22130	.01510	.01240	.02590	.05360
2.740	-2.340	-.00210	-.15780	-.00160	-.00180	.00130	.21870	.01500	.01240	.02510	.05260
2.740	-.210	-.00030	-.06360	-.00120	-.00120	.00180	.21610	.01480	.01240	.02490	.05220
2.740	1.870	-.00080	.02630	-.00090	-.00130	.00190	.21380	.01450	.01220	.02420	.05100
2.740	3.990	-.00390	.11490	.00080	-.00190	.00270	.21220	.01410	.01190	.02340	.04940
2.740	6.090	-.01340	.20760	.00260	-.00150	.00220	.20980	.01400	.01180	.02240	.04830
2.740	8.190	-.02180	.30340	.00290	-.00170	.00280	.20730	.01360	.01180	.02220	.04770
2.740	10.220	-.02570	.39770	.00390	-.00180	.00250	.20450	.01290	.01200	.02100	.04610
	GRADIENT	-.00054	.04403	.00036	-.00003	.00013	-.00110	-.00012	-.00006	-.00028	-.00047

RUN NO. 156/ 0 RN/L = 4.91 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
4.959	-10.310	.01060	-.43990	-.00420	-.00130	.00140	.21170	.00230	.00260	.00600	.01100
4.959	-8.340	.00710	-.34930	.00060	-.00040	.00210	.20420	.00250	.00270	.00600	.01120
4.959	-6.320	.00720	-.27380	.00080	-.00120	.00200	.19790	.00270	.00270	.00600	.01160
4.959	-4.260	.00840	-.19840	.00110	-.00050	.00190	.19220	.00270	.00270	.00580	.01130
4.959	-2.240	.01220	-.13210	.00000	-.00040	.00180	.18710	.00280	.00270	.00600	.01160
4.959	-.170	.01940	-.06260	.00170	-.00050	.00260	.18210	.00280	.00270	.00600	.01160
4.959	1.860	.02050	.00350	.00030	-.00110	.00170	.17940	.00280	.00260	.00580	.01140
4.959	3.900	.02430	.06980	.00060	-.00040	.00200	.17410	.00280	.00260	.00560	.01110
4.959	5.940	.02550	.14210	.00240	-.00050	.00190	.16980	.00290	.00270	.00570	.01140
4.959	7.980	.02300	.21450	.00420	-.00040	.00270	.16960	.00290	.00260	.00530	.01080
4.959	9.940	.02160	.28070	.00290	-.00060	.00300	.17160	.00270	.00260	.00470	.01000
	GRADIENT	.00196	.03291	-.00003	-.00002	.00001	-.00215	.00001	-.00001	-.00003	-.00003

MSFC TWT 538 SHUTTLE LAUNCH T10181 (A66007) (21 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

ALPHA = .000 ORBIN = -1.500

RUN NO. 31/ 0 RN/L = 4.54 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
.600	-10.050	-.02180	-.05060	.29710	.04530	-.04750	.06120	.02400	.03280	.04420	.10110
.600	-8.100	-.01670	-.05120	.24750	.03890	-.04220	.06600	.02300	.03310	.04210	.09840
.600	-6.070	-.01500	-.05110	.18820	.03050	-.03450	.07140	.02160	.03340	.03830	.09340
.600	-4.050	-.00790	-.05830	.12850	.02110	-.02510	.08080	.01860	.03320	.03490	.08680
.600	-2.020	-.00270	-.06090	.07470	.01180	-.01450	.08910	.01640	.03310	.03250	.08210
.600	.000	.00460	-.06530	.01540	.00180	-.00230	.08970	.01450	.03290	.03450	.08210
.600	2.020	.00080	-.06320	-.04630	-.00850	.00840	.09040	.01650	.03130	.03550	.08340
.600	4.040	-.00450	-.05570	-.10730	-.01860	.02140	.09210	.01910	.02890	.03140	.07950
.600	6.060	-.01150	-.05580	-.16620	-.02780	.03240	.08630	.02110	.02580	.03660	.08350
.600	8.090	-.01690	-.05620	-.22120	-.03590	.04120	.08400	.02270	.02340	.03900	.08520
.600	10.040	-.02350	-.04980	-.27960	-.04400	.04770	.07810	.02560	.02300	.04190	.09070
	GRADIENT	.00051	.00014	-.02931	-.00493	.00573	.00118	.00005	-.00051	-.00020	-.00066

RUN NO. 32/ 0 RN/L = 5.43 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
.797	-10.140	-.00960	-.05110	.32300	.04610	-.05010	.08010	.03160	.03740	.05180	.12090
.797	-8.170	-.00480	-.05750	.25830	.03700	-.04110	.08880	.02780	.03750	.04830	.11370
.797	-6.130	.00700	-.06870	.20270	.02950	-.03550	.09970	.02370	.03670	.04490	.10540
.797	-4.080	.00930	-.07570	.14040	.02080	-.02820	.10670	.02160	.03660	.04340	.10170
.797	-2.040	.01420	-.08350	.08040	.01220	-.01880	.11130	.01930	.03610	.04300	.09850
.797	.000	.01560	-.08770	.01350	.00200	-.00350	.11290	.01940	.03430	.04250	.09620
.797	2.030	.01390	-.08460	-.05650	-.00870	.01240	.11560	.02060	.03290	.04280	.09640
.797	4.070	.00920	-.08000	-.12120	-.01830	.02510	.11430	.02090	.03080	.04360	.09540
.797	6.090	.00540	-.07110	-.18370	-.02760	.03540	.11140	.02370	.02910	.04530	.09820
.797	8.160	-.00070	-.06680	-.24690	-.03650	.04240	.10900	.02670	.02700	.04400	.09780
.797	10.120	-.00930	-.06080	-.30620	-.04440	.05120	.10010	.03090	.02580	.04820	.10500
	GRADIENT	-.00002	-.00048	-.03240	-.00486	.00676	.00096	-.00001	-.00073	.00001	-.00072

MSFC TWT 538 SHUTTLE LAUNCH T101S1 (A66007) (21 APR 72)

REFERENCE DATA

SREF = 7.6900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

ALPHA = .000 ORBIN = -1.500

RUN NO. 33/ 0 RN/L = 5.76 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
.903	-10.190	.01830	-.06860	.34670	.04730	-.05440	.11090	.03280	.03670	.05410	.12370
.903	-8.210	.02380	-.07990	.28160	.03890	-.04710	.12190	.02930	.03680	.05040	.11650
.903	-6.150	.02730	-.08960	.21010	.02880	-.03780	.12890	.02550	.03710	.04870	.11140
.903	-4.090	.03050	-.09830	.14480	.01990	-.02930	.13550	.02280	.03710	.04780	.10780
.903	-2.040	.03200	-.09860	.08380	.01190	-.02000	.13970	.02130	.03640	.04710	.10480
.903	.000	.03480	-.10090	.01320	.00220	-.00450	.14250	.02110	.03450	.04650	.10220
.903	2.040	.02800	-.09350	-.06190	-.00880	.01400	.14570	.02140	.03230	.04550	.09930
.903	4.060	.02610	-.09640	-.12780	-.01700	.02670	.14600	.02200	.03040	.04680	.09940
.903	6.130	.02490	-.09410	-.19430	-.02640	.03830	.14250	.02430	.02870	.04690	.10000
.903	8.190	.01850	-.08240	-.26110	-.03570	.04760	.13630	.02700	.02750	.04810	.10270
.903	10.160	.01360	-.07340	-.32600	-.04490	.05490	.12640	.03150	.02660	.05190	.11020
	GRADIENT	-.00063	.00044	-.03390	-.00464	.00716	.00133	-.00007	-.00086	-.00018	-.00109

RUN NO. 35/ 0 RN/L = 6.14 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.099	-10.260	.02720	-.08410	.36990	.06690	-.05560	.20800	.04120	.04330	.07510	.15980
1.099	-8.270	.04190	-.09590	.29180	.05420	-.04390	.21330	.04100	.04390	.07400	.15910
1.099	-6.190	.05090	-.10530	.21490	.04030	-.03280	.22520	.03930	.04360	.07040	.15340
1.099	-4.120	.05840	-.11480	.14450	.02700	-.02260	.23510	.03830	.04320	.06910	.15070
1.099	-2.060	.06330	-.11810	.07530	.01370	-.01080	.23820	.03910	.04330	.06920	.15170
1.099	.000	.06590	-.12030	.00340	-.00040	.00310	.24050	.03870	.04320	.06940	.15140
1.099	2.050	.06340	-.11950	-.06800	-.01420	.01570	.23920	.03960	.04260	.06890	.15120
1.099	4.110	.06180	-.11900	-.13720	-.02740	.02730	.23850	.03890	.04070	.06750	.14720
1.099	6.170	.05540	-.11340	-.20630	-.04020	.03720	.23370	.03990	.03950	.06840	.14790
1.099	8.250	.04400	-.10460	-.28220	-.05360	.04780	.22930	.04180	.03840	.06920	.14950
1.099	10.250	.03350	-.09460	-.35820	-.06640	.05720	.22360	.04270	.03790	.07060	.15120
	GRADIENT	.00034	-.00048	-.03436	-.00665	.00614	.00038	.00008	-.00028	-.00017	-.00036

MSFC TWT 538 SHUTTLE LAUNCH T10131 (A66007) (21 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

ALPHA = .000 ORBIN = -1.500

RUN NO. 34/ 0 RN/L = 6.16 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.206	-10.330	-.01340	-.05960	.36840	.06340	-.04460	.22470	.03790	.03900	.06750	.14450
1.206	-8.300	.00210	-.06880	.28600	.05310	-.03550	.22950	.03860	.03890	.06500	.14260
1.206	-6.220	.01380	-.07680	.21050	.03920	-.02530	.23790	.03650	.03850	.06190	.13700
1.206	-4.140	.02120	-.08470	.13760	.02550	-.01600	.24340	.03440	.03840	.06140	.13420
1.206	-2.070	.02690	-.08830	.06960	.01250	-.00690	.24620	.03340	.03820	.06160	.13350
1.206	.000	.02840	-.09050	-.00170	-.00130	.00500	.25020	.03300	.03800	.05990	.13100
1.206	2.040	.02620	-.08890	-.07040	-.01430	.01460	.24720	.03340	.03750	.06290	.13390
1.206	4.120	.02390	-.08590	-.13910	-.02760	.02520	.24630	.03380	.03660	.06410	.13460
1.206	6.200	.01860	-.08320	-.21110	-.04140	.03390	.24400	.03600	.03550	.06420	.13580
1.206	8.280	.00590	-.07390	-.28880	-.05520	.04510	.23970	.03800	.03490	.06540	.13840
1.206	10.290	-.00660	-.06700	-.36890	-.06590	.05300	.23600	.03830	.03450	.06670	.13950
	GRADIENT	.00023	-.00015	-.03361	-.00645	.00504	.00033	-.00006	-.00021	.00031	.00006

RUN NO. 113/ 0 RN/L = 7.04 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.965	-10.420	-.00340	-.07480	.38520	.04680	-.05300	.22930	.02400	.02050	.04300	.08760
1.965	-8.390	-.00070	-.07190	.31200	.03970	-.04350	.23140	.02360	.02090	.04170	.08630
1.965	-6.290	-.00140	-.07000	.23430	.03060	-.03200	.23360	.02410	.02180	.04030	.08640
1.965	-4.190	-.00010	-.06950	.15590	.02000	-.02130	.23040	.02400	.02230	.03940	.08580
1.965	-2.100	.00000	-.06870	.07960	.00990	-.01050	.22900	.02430	.02190	.03950	.08580
1.965	.000	.00030	-.06630	.00520	-.00020	-.00090	.22700	.02440	.02150	.03940	.08540
1.965	2.060	-.00010	-.06640	-.06680	-.00970	.00900	.22960	.02370	.02050	.03750	.08180
1.965	4.180	-.00150	-.06550	-.14230	-.01980	.01960	.23280	.02410	.02040	.03660	.08120
1.965	6.270	-.00260	-.06400	-.21930	-.03050	.03110	.23560	.02410	.01980	.03820	.08220
1.965	8.380	-.00280	-.06480	-.29840	-.04050	.04220	.23310	.02460	.02010	.04060	.08540
1.965	10.390	-.00450	-.06460	-.37500	-.04880	.05270	.23550	.02430	.01950	.04270	.08660
	GRADIENT	-.00014	.00049	-.03554	-.00475	.00485	.00026	-.00002	-.00025	-.00036	-.00063

MSFC TWT 538 SHUTTLE LAUNCH T101S1 (A66007) (21 APR 72)

REFERENCE DATA

SREF = 7.0900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

ALPHA = .000 ORBIN = -1.500

RUN NO. 154/ 0 RN/L = 4.65 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
2.740	-10.220	.00950	-.06790	.34600	.03520	-.03390	.21690	.01370	.01190	.02580	.05150
2.740	-8.240	.00870	-.06710	.28450	.02970	-.02930	.21750	.01340	.01200	.02540	.05080
2.740	-6.180	.00910	-.06760	.21690	.02270	-.02220	.21730	.01320	.01210	.02540	.05080
2.740	-4.140	.00740	-.06830	.13970	.01350	-.01430	.21640	.01310	.01210	.02520	.05050
2.740	-2.080	.00660	-.06570	.07130	.00580	-.00540	.21580	.01380	.01220	.02520	.05130
2.740	.000	.00410	-.06350	.00380	-.00060	.00110	.21660	.01420	.01240	.02510	.05180
2.740	2.030	.00390	-.06270	-.06430	-.00690	.00720	.21700	.01390	.01240	.02490	.05140
2.740	4.110	.00590	-.06170	-.13330	-.01480	.01530	.21820	.01340	.01230	.02570	.05150
2.740	6.170	.00890	-.06080	-.20820	-.02380	.02340	.22100	.01380	.01200	.02510	.05100
2.740	8.230	.00740	-.05840	-.27770	-.03120	.03100	.22220	.01420	.01200	.02540	.05170
2.740	10.210	.00720	-.05750	-.33920	-.03680	.03680	.22250	.01450	.01170	.02550	.05180
	GRADIENT	-.00028	.00079	-.03307	-.00336	.00348	.00023	.00003	.00003	.00003	.00010

RUN NO. 153/ 0 RN/L = 4.90 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
4.959	-10.040	.00290	-.04130	.24870	.02010	-.00890	.19470	.00260	.00200	.00590	.01060
4.959	-8.100	.00420	-.04460	.20290	.01460	-.00370	.19300	.00260	.00210	.00550	.01030
4.959	-6.100	.00440	-.05420	.14940	.00920	.00050	.18980	.00260	.00220	.00550	.01050
4.959	-4.060	.01030	-.06060	.10370	.00550	.00450	.18810	.00270	.00240	.00570	.01090
4.959	-2.050	.01750	-.06460	.05050	.00320	.00380	.18190	.00290	.00250	.00640	.01190
4.959	.000	.01710	-.06570	.00460	-.00040	.00130	.18110	.00270	.00260	.00590	.01140
4.959	2.020	.01520	-.06420	-.04870	-.00420	-.00280	.18220	.00280	.00270	.00610	.01170
4.959	4.050	.01180	-.05330	-.09740	-.00680	-.00440	.18860	.00290	.00280	.00650	.01230
4.959	6.070	.00780	-.04770	-.14450	-.01070	-.00010	.19260	.00290	.00290	.00600	.01180
4.959	8.090	.00490	-.03920	-.19320	-.01630	.00450	.19680	.00270	.00270	.00540	.01090
4.959	10.030	.00450	-.03650	-.24320	-.02070	.01060	.19960	.00290	.00270	.00580	.01150
	GRADIENT	.00003	.00074	-.02471	-.00158	-.00120	.00006	.00001	.00005	.00006	.00013

MSFC TWT 538 SHUTTLE LAUNCH T101S1R1 (A66008) (21 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

BETA = .000 ORBIN = -1.300

RUN NO. 41/ 0 RN/L = 4.52 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
.598	-10.500	.14060	-.70540	-.01240	.00070	.00130	.09200	.01930	.03650	.05560	.11150
.598	-8.490	.12520	-.59610	-.01450	-.00010	.00210	.09080	.02000	.03640	.05230	.10880
.598	-6.420	.10550	-.48300	-.01280	-.00020	.00390	.09030	.01830	.03660	.04990	.10490
.598	-4.350	.08070	-.36440	-.01010	-.00040	.00260	.09200	.01830	.03590	.04750	.10180
.598	-2.300	.05370	-.23770	-.00740	-.00060	.00330	.09260	.01820	.03540	.04550	.09910
.598	-.210	.02790	-.12080	-.00710	-.00090	.00170	.09140	.01820	.03390	.04440	.09670
.598	1.850	.00030	.00720	-.00190	-.00070	.00200	.09010	.02000	.03320	.04360	.09690
.598	3.910	-.03340	.12140	.00060	-.00050	.00100	.08990	.01970	.03200	.04160	.09340
.598	5.970	-.06360	.23380	-.00380	-.00160	.00010	.08200	.02150	.03310	.04320	.09760
.598	8.040	-.09160	.35630	-.00110	-.00220	-.00050	.07510	.02050	.03320	.04360	.09740
.598	10.020	-.11470	.46390	.00150	-.00310	.00140	.06940	.02110	.03320	.04590	.10030
	GRADIENT	-.01362	.05885	.00130	-.00001	-.00022	-.00032	.00022	-.00048	-.00066	-.00092

RUN NO. 42/ 0 RN/L = 5.42 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
.804	-10.710	.14240	-.73380	-.01210	.00100	-.00020	.13080	.02460	.03450	.06510	.12430
.804	-8.670	.13860	-.62370	-.00830	.00150	.00200	.13000	.02260	.03570	.05840	.11690
.804	-6.560	.13240	-.51850	-.00720	.00150	.00200	.12730	.02100	.03670	.05380	.11160
.804	-4.460	.09330	-.38340	-.00840	.00110	.00030	.12650	.02000	.03600	.05100	.10710
.804	-2.350	.05600	-.24610	-.00260	.00100	-.00060	.12940	.01890	.03530	.04690	.10130
.804	-.240	.03290	-.12710	-.00310	.00050	-.00090	.12810	.01960	.03320	.04560	.09860
.804	1.850	.00260	-.00600	-.00350	-.00100	.00110	.12570	.02010	.03240	.04270	.09530
.804	3.930	-.05390	.11920	-.00400	-.00090	.00070	.11460	.02090	.03360	.04330	.09780
.804	6.020	-.08920	.24070	.00090	-.00020	-.00160	.10660	.02050	.03340	.04460	.09870
.804	8.120	-.12680	.37290	.00360	-.00080	-.00270	.09520	.02100	.03390	.04700	.10200
.804	10.140	-.14300	.47560	.00150	-.00230	-.00090	.09240	.02200	.03400	.04960	.10570
	GRADIENT	-.01657	.05936	.00038	-.00029	.00012	-.00131	.00014	-.00037	-.00094	-.00117

MSFC TWT 538 SHUTTLE LAUNCH T101S1R1 (A66008) (21 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

BETA = .000 ORBIN = -1.500

RUN NO. 43/ 0 RN/L = 5.71 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
.905	-10.810	.19750	-.80250	-.01000	.00300	.00080	.16350	.02910	.03400	.06820	.13140
.905	-8.750	.17650	-.67190	-.01090	.00230	.00140	.16530	.02670	.03590	.06160	.12430
.905	-6.620	.15430	-.54510	-.00860	.00020	.00020	.16620	.02370	.03790	.05650	.11810
.905	-4.490	.11960	-.40230	-.00820	.00050	.00030	.16630	.02130	.03760	.05450	.11360
.905	-2.360	.08920	-.27070	-.00700	.00000	.00190	.16620	.01980	.03580	.05100	.10670
.905	-.240	.06030	-.14770	-.00340	-.00010	-.00090	.16150	.01980	.03430	.04970	.10400
.905	1.870	.01310	-.02040	-.00240	.00000	-.00220	.15520	.02020	.03300	.04760	.10090
.905	3.960	-.05350	.11390	-.00070	-.00060	-.00140	.14290	.02120	.03390	.04490	.10010
.905	6.030	-.11840	.25040	.00160	-.00130	-.00120	.13330	.02150	.03540	.04710	.10400
.905	8.130	-.16100	.38110	-.00180	.00110	.00100	.12360	.02220	.03470	.05060	.10760
.905	10.170	-.16480	.47970	.00490	-.00330	-.00080	.11940	.02360	.03410	.05280	.11060
	GRADIENT	-.01997	.06070	.00093	-.00010	-.00036	-.00273	.00001	-.00048	-.00107	-.00155

RUN NO. 45/ 0 RN/L = 6.02 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.106	-11.020	.30840	-.96680	-.01350	.00100	.00630	.25460	.04000	.03970	.07160	.15140
1.106	-8.890	.26460	-.78340	-.01170	.00060	.00700	.26080	.03820	.03980	.06920	.14730
1.106	-6.700	.21830	-.61070	-.00830	.00000	.00640	.26770	.03710	.04040	.06680	.14440
1.106	-4.530	.17410	-.45390	-.00670	-.00080	.00600	.27070	.03630	.04100	.06550	.14290
1.106	-2.380	.13320	-.31010	-.00450	.00010	.00540	.26870	.03650	.04090	.06470	.14230
1.106	-.230	.09240	-.17220	-.00310	-.00130	.00500	.26560	.03650	.04080	.06580	.14310
1.106	1.880	.05450	-.04250	-.00040	-.00140	.00510	.26230	.03620	.03960	.06760	.14350
1.106	4.010	-.01270	.10000	.00100	-.00170	.00380	.24930	.03750	.04040	.06640	.14440
1.106	6.120	-.08650	.25200	.00010	-.00280	.00490	.23990	.03770	.04020	.06470	.14270
1.106	8.260	-.13130	.39050	.00280	-.00290	.00450	.23060	.03790	.03970	.06410	.14190
1.106	10.320	-.16370	.51700	.00490	-.00340	.00390	.22030	.03860	.03970	.06250	.14090
	GRADIENT	-.02119	.06445	.00091	-.00015	-.00022	-.00230	.00010	-.00012	.00022	.00020

MSFC TWT 538 SHUTTLE LAUNCH T10131R1 (A66008) (21 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

BETA = .000 ORBIN = -1.500

RUN NO. 44/ 0 RN/L = 6.07 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.192	-11.070	.24750	-.91170	-.01640	.00030	.00180	.25800	.04060	.04010	.07640	.15730
1.192	-8.940	.20020	-.73000	-.01310	-.00030	.00220	.26550	.03740	.04020	.07250	.15020
1.192	-6.730	.16280	-.56270	-.01090	-.00060	.00180	.26920	.03540	.04020	.06920	.14500
1.192	-4.560	.13530	-.42210	-.00720	-.00120	.00200	.26670	.03570	.04110	.07070	.14760
1.192	-2.410	.10740	-.28710	-.00570	-.00100	.00100	.26840	.03490	.04030	.06570	.14090
1.192	-.230	.08020	-.15830	-.00470	-.00170	.00230	.26490	.03450	.03940	.06350	.13750
1.192	1.890	.04680	-.03020	-.00160	-.00160	.00140	.26120	.03430	.03800	.06220	.13460
1.192	4.020	-.01990	.11120	.00320	-.00110	-.00040	.25450	.03460	.03750	.06140	.13360
1.192	6.150	-.07410	.24870	.00400	-.00170	-.00120	.24720	.03520	.03800	.06110	.13430
1.192	8.310	-.10580	.38140	.00660	-.00220	-.00110	.23860	.03660	.03810	.06180	.13660
1.192	10.380	-.12730	.50050	.00640	-.00280	-.00100	.22920	.03860	.03870	.06340	.14070
	GRADIENT	-.01727	.06167	.00116	-.00002	-.00020	-.00147	-.00013	-.00044	-.00103	-.00160

RUN NO. 115/ 0 RN/L = 7.03 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.968	-11.190	.12870	-.72070	-.00530	-.00090	.00110	.26090	.02460	.01760	.04890	.09120
1.968	-9.050	.10480	-.59540	-.00450	-.00090	.00110	.25990	.02440	.01950	.04570	.08970
1.968	-6.840	.07530	-.45900	-.00360	-.00090	.00050	.25510	.02450	.02000	.04310	.08770
1.968	-4.620	.05630	-.32630	.00000	-.00060	.00000	.24700	.02420	.02050	.04360	.08840
1.968	-2.440	.03840	-.20980	.00120	-.00070	-.00020	.24310	.02430	.02140	.04190	.08770
1.968	-.250	.02130	-.09370	.00150	-.00070	-.00020	.23730	.02410	.02150	.04090	.08660
1.968	1.920	.00380	.01650	.00280	-.00080	.00010	.23640	.02370	.02080	.04060	.08520
1.968	4.090	-.01480	.12410	.00410	-.00090	.00050	.23180	.02410	.02110	.03940	.08470
1.968	6.240	-.03960	.22740	.00390	-.00100	.00040	.23000	.02450	.02250	.03830	.08540
1.968	8.440	-.05430	.33440	.00520	-.00100	.00040	.22950	.02440	.02320	.03700	.08470
1.968	10.520	-.06160	.43820	.00690	-.00080	.00070	.22370	.02440	.02380	.03660	.08490
	GRADIENT	-.00812	.05175	.00045	-.00003	.00006	-.00170	-.00004	.00003	-.00045	-.00045

REFERENCE DATA

SREF =	7.8900 SQ. IN	XMRP =	4.1480 IN.		
LREF =	3.3440 IN.	YMRP =	.0000 IN.		
BREF =	4.4600 IN.	ZMRP =	.2480 IN.		
SCALE =	.0040				

PARAMETRIC DATA

BETA = .000 ORBIN = -1.500

RUN NO. 142/ 0 RN/L = 4.68 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
2.740	-10.680	.05800	-.59340	-.00300	-.00130	.00090	.24520	.01570	.01170	.02910	.05660
2.740	-8.660	.04270	-.48490	-.00330	-.00100	.00150	.23950	.01570	.01210	.02820	.05620
2.740	-6.540	.02690	-.37440	-.00300	-.00140	.00110	.23220	.01550	.01260	.02730	.05560
2.740	-4.450	.01950	-.27270	-.00050	-.00130	.00130	.22940	.01540	.01270	.02650	.05470
2.740	-2.360	.01440	-.17250	-.00010	-.00140	.00090	.22600	.01540	.01250	.02590	.05380
2.740	-.200	.01450	-.07650	-.00120	-.00110	.00130	.22250	.01540	.01240	.02540	.05330
2.740	1.870	.01350	.01340	.00120	-.00140	.00150	.21950	.01490	.01230	.02450	.05180
2.740	4.000	.01150	.10650	.00230	-.00150	.00300	.21750	.01440	.01190	.02380	.05010
2.740	6.090	-.00020	.19630	.00110	-.00150	.00180	.21510	.01400	.01190	.02290	.04890
2.740	8.200	-.00870	.29470	.00510	-.00130	.00120	.21240	.01360	.01200	.02260	.04830
2.740	10.220	-.01290	.38440	.00250	-.00190	.00250	.20890	.01320	.01210	.02170	.04710
	GRADIENT	-.00080	.04469	.00033	-.00002	.00019	-.00143	-.00012	-.00009	-.00032	-.00053

RUN NO. 141/ 0 RN/L = 4.99 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
4.959	-10.310	.03020	-.45130	.00030	-.00090	.00150	.21720	.00250	.00260	.00610	.01130
4.959	-8.340	.02220	-.36680	.00060	-.00040	.00130	.20840	.00260	.00270	.00610	.01150
4.959	-6.320	.01750	-.28550	-.00060	-.00110	.00080	.20160	.00270	.00270	.00590	.01130
4.959	-4.280	.01670	-.21330	-.00030	-.00040	.00110	.19430	.00280	.00280	.00600	.01170
4.959	-2.240	.02030	-.14400	-.00010	-.00040	.00150	.18970	.00280	.00270	.00570	.01130
4.959	-.180	.02410	-.07470	.00010	-.00040	.00140	.18340	.00290	.00270	.00590	.01160
4.959	1.860	.02880	.00070	.00340	-.00030	.00210	.17930	.00290	.00270	.00590	.01160
4.959	3.890	.02900	.06080	.00060	-.00040	.00170	.17510	.00290	.00270	.00580	.01140
4.959	5.960	.02780	.13900	-.00200	-.00030	.00240	.17170	.00290	.00260	.00550	.01120
4.959	8.000	.02520	.20820	.00270	-.00010	.00270	.17220	.00290	.00270	.00520	.01090
4.959	9.930	.02510	.27440	.00290	-.00030	.00220	.17180	.00290	.00270	.00520	.01080
	GRADIENT	.00162	.03390	.00026	.00000	.00009	-.00239	.00001	-.00001	-.00001	-.00001

MSFC TWT 538 SHUTTLE LAUNCH T101S1R1 (T66009) (24 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

ALPHA = .000 ORBIN = -1.500

RUN NO. 0/ 0 RN/L = 4.52 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
.598	-10.070	-.01010	-.06950	.30250	.04420	-.04780	.06520	.02520	.03540	.05360	.11430
.598	-8.110	-.00570	-.07000	.25000	.03760	-.04110	.07240	.02380	.03530	.04910	.10830
.598	-6.060	.00050	-.07950	.18770	.02900	-.03310	.07620	.02260	.03600	.04640	.10500
.598	-4.050	.00490	-.08200	.13420	.02090	-.02490	.08650	.02090	.03560	.04090	.09750
.598	-2.040	.01210	-.08420	.07130	.01070	-.01270	.09330	.01950	.03480	.03800	.09240
.598	.000	.01580	-.09330	.01180	.00140	-.00150	.09430	.01860	.03490	.03990	.09350
.598	1.990	.01660	-.09110	-.04860	-.00770	.01030	.09380	.02040	.03380	.04140	.09570
.598	4.040	.00750	-.08420	-.10570	-.01760	.02030	.09050	.02240	.03180	.04290	.09720
.598	6.040	.00320	-.08000	-.16490	-.02670	.03200	.09020	.02270	.02880	.04440	.09600
.598	8.100	-.00420	-.07930	-.22860	-.03450	.04040	.08780	.02480	.02700	.04570	.09750
.598	10.040	-.01250	-.07280	-.28210	-.04210	.04780	.08100	.02640	.02650	.05210	.10500
	GRADIENT	.00048	-.00056	-.02967	-.00472	.00561	.00042	.00019	-.00043	.00037	.00013

RUN NO. 0/ 0 RN/L = 5.43 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
.802	-10.140	.00060	-.07280	.32160	.04290	-.04780	.09650	.02770	.03760	.05380	.11910
.802	-8.170	.00390	-.07710	.25510	.03370	-.03980	.10360	.02540	.03760	.05090	.11400
.802	-6.130	.01710	-.08990	.20000	.02750	-.03350	.11190	.02290	.03710	.04960	.10970
.802	-4.080	.02110	-.09650	.13980	.01910	-.02630	.11860	.02150	.03750	.04580	.10490
.802	-2.040	.02360	-.10470	.07830	.01160	-.01770	.12290	.02080	.03620	.04430	.10140
.802	.000	.02690	-.10930	.01350	.00230	-.00310	.12520	.02000	.03510	.04540	.10050
.802	2.030	.02330	-.10570	-.05590	-.00780	.01270	.12710	.02100	.03340	.04470	.09920
.802	4.070	.02090	-.09930	-.12150	-.01690	.02570	.12810	.02080	.03090	.04580	.09760
.802	6.110	.01610	-.09360	-.18360	-.02590	.03450	.12460	.02240	.02960	.04650	.09870
.802	8.160	.00920	-.08310	-.24040	-.03300	.04040	.12170	.02550	.02790	.04650	.10000
.802	10.130	-.00050	-.07760	-.30310	-.04110	.04800	.11530	.02840	.02600	.05010	.10460
	GRADIENT	-.00003	-.00032	-.03224	-.00449	.00660	.00114	-.00006	-.00079	.00002	-.00082

MSFC TWT 538 SHUTTLE LAUNCH T101S1R1 (T66009) (24 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

ALPHA = .000 ORBIN = -1.500

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

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
.898	-10.190	.01910	-.07980	.33700	.04270	-.04910	.12560	.02730	.03760	.05530	.12030
.898	-8.210	.02680	-.09250	.27160	.03440	-.04170	.13200	.02590	.03790	.05410	.11810
.898	-6.150	.03530	-.10380	.20600	.02580	-.03340	.14190	.02310	.03750	.05040	.11110
.898	-4.100	.04060	-.11680	.14320	.01840	-.02670	.14640	.02070	.03770	.04990	.10840
.898	-2.040	.04210	-.11960	.08010	.01090	-.01800	.14960	.01950	.03610	.04970	.10540
.898	.000	.04340	-.12100	.01260	.00230	-.00410	.15490	.01920	.03480	.04680	.10090
.898	2.030	.04090	-.11780	-.05840	-.00790	.01350	.15660	.01910	.03270	.04770	.09960
.898	4.080	.03730	-.11800	-.12270	-.01610	.02470	.15620	.01930	.03050	.04970	.09950
.898	6.140	.03340	-.10930	-.18780	-.02490	.03360	.15610	.02170	.02940	.05010	.10130
.898	8.190	.02710	-.09790	-.25510	-.03330	.04320	.15110	.02460	.02740	.05160	.10370
.898	10.170	.02070	-.08470	-.31900	-.04110	.05120	.14350	.02770	.02660	.05330	.10770
	GRADIENT	-.00038	-.00003	-.03281	-.00430	.00657	.00130	-.00016	-.00087	-.00012	-.00116

RUN NO. 0/ 0 RN/L = 6.18 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.102	-10.280	.04570	-.11210	.36190	.06050	-.05260	.22910	.03900	.04330	.07580	.15830
1.102	-8.260	.06350	-.12770	.28480	.04840	-.04220	.23620	.04020	.04380	.07430	.15830
1.102	-6.190	.07520	-.13950	.21110	.03620	-.03190	.24460	.03910	.04410	.07300	.15640
1.102	-4.120	.08260	-.14640	.14200	.02430	-.02210	.25450	.03810	.04370	.07110	.15300
1.102	-2.060	.08440	-.14980	.07190	.01210	-.01100	.25700	.03870	.04370	.07150	.15400
1.102	.000	.08620	-.15100	.00210	-.00040	.00280	.25950	.03840	.04340	.07210	.15400
1.102	2.050	.08410	-.15010	-.06780	-.01270	.01500	.25680	.03960	.04290	.07230	.15490
1.102	4.110	.08070	-.14860	-.13530	-.02420	.02550	.25730	.03880	.04080	.07040	.15020
1.102	6.160	.07630	-.14370	-.20350	-.03620	.03570	.25270	.03960	.03970	.07010	.14950
1.102	8.250	.06560	-.13450	-.27630	-.04830	.04540	.24550	.04210	.03920	.07190	.15330
1.102	10.250	.05280	-.12360	-.35070	-.05990	.05350	.24210	.04250	.03790	.07200	.15250
	GRADIENT	-.00020	-.00023	-.03375	-.00592	.00589	.00026	.00011	-.00032	-.00003	-.00023

MSFC TWT 530 SHUTTLE LAUNCH T10151R1 (T66009) (24 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

ALPHA = .000 ORBIN = -1.500

RUN NO. 0/ 0 RN/L = 7.03 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.969	-10.400	.01850	-.09870	.37780	.04420	-.04920	.23650	.02420	.02120	.04380	.08930
1.969	-8.390	.02190	-.09500	.30530	.03720	-.03960	.23920	.02380	.02170	.04310	.08870
1.969	-6.290	.02020	-.09390	.22890	.02810	-.02890	.24330	.02430	.02240	.04220	.08690
1.969	-4.190	.02120	-.09190	.15030	.01780	-.01790	.24040	.02410	.02260	.04150	.08820
1.969	-2.120	.02250	-.09040	.07730	.00830	-.00810	.23980	.02410	.02170	.04240	.08830
1.969	.000	.02280	-.08980	.00480	-.00060	.00000	.24130	.02430	.02150	.04190	.08770
1.969	2.070	.02190	-.08930	-.06670	-.00950	.00830	.24080	.02360	.02070	.04080	.08510
1.969	4.200	.02030	-.08730	-.14010	-.01880	.01770	.24210	.02410	.02080	.04030	.08520
1.969	6.280	.01950	-.08550	-.21630	-.02920	.02870	.24190	.02440	.02040	.04180	.08670
1.969	8.400	.02030	-.08770	-.29710	-.03900	.03950	.24450	.02450	.02020	.04210	.08680
1.969	10.400	.01700	-.08700	-.37010	-.04660	.04920	.24210	.02460	.02010	.04410	.08890
	GRADIENT	-.00012	.00049	-.03456	-.00434	.00418	.00021	-.00002	-.00022	-.00019	-.00044

RUN NO. 0/ 0 RN/L = 4.69 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
2.740	-10.220	.02650	-.08540	.34730	.03500	-.03630	.22450	.01490	.01190	.02600	.05280
2.740	-8.240	.02810	-.08580	.28820	.02920	-.03090	.22440	.01440	.01200	.02570	.05230
2.740	-6.200	.02800	-.08490	.22070	.02290	-.02340	.22410	.01430	.01210	.02570	.05220
2.740	-4.130	.02210	-.07980	.14170	.01400	-.01610	.22280	.01420	.01210	.02550	.05190
2.740	-2.100	.02190	-.07730	.07420	.00620	-.00720	.22240	.01480	.01220	.02530	.05240
2.740	.000	.01890	-.07500	.00310	-.00030	.00080	.22300	.01500	.01230	.02540	.05280
2.740	2.030	.02040	-.07550	-.06580	-.00740	.00870	.22480	.01490	.01250	.02510	.05270
2.740	4.110	.02140	-.07740	-.13560	-.01530	.01700	.22590	.01430	.01250	.02580	.05270
2.740	6.170	.02550	-.07650	-.21120	-.02400	.02520	.22830	.01460	.01220	.02540	.05230
2.740	8.230	.02530	-.07550	-.27980	-.03090	.03240	.22850	.01460	.01210	.02540	.05220
2.740	10.210	.02500	-.07320	-.34060	-.03660	.03800	.23010	.01470	.01160	.02540	.05180
	GRADIENT	-.00014	.00032	-.03370	-.00350	.00398	.00042	.00001	.00005	.00002	.00009

MSFC TWT 538 SHUTTLE LAUNCH T101S1R1 (T66009) (24 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

ALPHA = .000 ORBIN = -1.300

RUN NO. 0/ 0 RN/L = 4.97 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
4.959	-10.040	.01070	-.05060	.25450	.02050	-.01400	.19910	.00260	.00200	.00550	.01020
4.959	-8.100	.01330	-.05370	.20730	.01550	-.00670	.19630	.00280	.00210	.00570	.01070
4.959	-6.080	.01590	-.05710	.15700	.01070	-.00190	.19220	.00290	.00230	.00570	.01090
4.959	-4.070	.01720	-.06670	.10520	.00610	.00240	.19090	.00280	.00230	.00550	.01070
4.959	-2.050	.02190	-.06760	.05190	.00310	.00250	.18530	.00290	.00230	.00570	.01100
4.959	.000	.02510	-.06560	.00470	.00000	.00130	.18280	.00280	.00250	.00590	.01140
4.959	2.030	.02210	-.06700	-.05160	-.00400	-.00140	.18490	.00280	.00270	.00590	.01150
4.959	4.030	.02000	-.06490	-.09880	-.00690	-.00180	.19190	.00300	.00280	.00620	.01200
4.959	6.090	.01590	-.05040	-.14890	-.01110	.00250	.19580	.00290	.00270	.00580	.01150
4.959	8.100	.01190	-.04800	-.20050	-.01570	.00730	.20000	.00290	.00270	.00560	.01130
4.959	10.030	.01150	-.04210	-.24610	-.02100	.01450	.20340	.00310	.00280	.00610	.01200
	GRADIENT	.00029	.00021	-.02522	-.00163	-.00061	.00008	.00001	.00007	.00008	.00015

MSFC TWT 538 SHUTTLE LAUNCH T101S1R1 (A66010) (21 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

BETA = .000 ORBIN = -3.000

RUN NO. 103/ 0 RN/L = 4.51 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
.596	-10.490	.15750	-.73610	.00150	.00010	-.00200	.10150	.02620	.03410	.06010	.12060
.596	-8.500	.14810	-.63180	.00190	-.00020	-.00120	.10070	.02540	.03570	.05490	.11610
.596	-6.430	.13030	-.51960	-.00020	-.00120	-.00170	.10020	.02470	.03640	.05000	.11120
.596	-4.360	.10850	-.40240	.00250	-.00090	-.00130	.09610	.02430	.03680	.04800	.10920
.596	-2.290	.08330	-.27730	.00300	-.00020	-.00090	.09460	.02490	.03660	.04600	.10760
.596	-.220	.05640	-.15700	.00570	-.00030	-.00120	.09560	.02530	.03530	.04260	.10330
.596	1.840	.03260	-.04680	.00380	.00080	-.00210	.09170	.02620	.03500	.04260	.10390
.596	3.920	-.00150	.07960	.00530	.00120	-.00270	.08960	.02370	.03410	.04300	.10080
.596	5.960	-.02890	.19100	.00690	.00140	-.00230	.08440	.02420	.03410	.04460	.10300
.596	8.030	-.05330	.30750	.00610	.00160	-.00120	.07460	.02430	.03470	.04590	.10500
.596	10.020	-.07850	.42130	.00530	.00160	-.00150	.06560	.02280	.03400	.04920	.10600
	GRADIENT	-.01308	.05773	.00031	.00025	-.00019	-.00077	.00000	-.00034	-.00065	-.00099

RUN NO. 102/ 0 RN/L = 5.71 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
.905	-10.830	.25360	-.87700	.00000	.00130	-.00450	.17170	.03580	.03380	.08020	.14990
.905	-8.780	.23250	-.74700	.00100	.00050	-.00300	.17520	.03440	.03640	.06740	.13840
.905	-6.640	.20520	-.60630	.00220	.00240	-.00360	.17970	.03100	.03690	.05930	.12730
.905	-4.510	.17550	-.47500	-.00010	.00110	-.00300	.17620	.02690	.03850	.05540	.12090
.905	-2.380	.13220	-.33220	.00020	-.00010	-.00150	.17020	.02450	.03760	.05440	.11660
.905	-.270	.09870	-.20590	.00190	.00030	-.00300	.16470	.02270	.03550	.05250	.11080
.905	1.810	.05360	-.07860	.00500	.00080	-.00340	.15720	.02400	.03530	.05020	.10960
.905	3.920	-.01560	.06230	.00540	.00160	-.00570	.14320	.02440	.03530	.04840	.10830
.905	6.010	-.07070	.18930	.00300	.00120	-.00350	.13640	.02420	.03620	.04900	.10950
.905	8.120	-.11360	.32310	.00490	.00200	-.00200	.12240	.02420	.03570	.05330	.11330
.905	10.160	-.13330	.43600	.00530	.00290	-.00200	.11270	.02480	.03580	.05640	.11710
	GRADIENT	-.02189	.06310	.00075	.00009	-.00035	-.00375	-.00026	-.00041	-.00086	-.00153

C.8

MSFC TWT 538 SHUTTLE LAUNCH T1O1S1R1 (A66010) (21 APR 72)

REFERENCE DATA

SREF = 7.6900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

BETA = .000 ORBIN = -3.000

RUN NO. 101/ 0 RN/L = 6.07 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.198	-11.080	.30180	-.97840	-.00070	-.00170	-.00370	.26460	.04390	.04110	.08710	.17230
1.198	-8.950	.25540	-.79710	-.00010	-.00180	-.00270	.27280	.04070	.04020	.07950	.16050
1.198	-6.750	.21810	-.63060	.00140	-.00150	-.00280	.27400	.03840	.04070	.07510	.15420
1.198	-4.570	.18630	-.48280	.00420	-.00160	-.00190	.27380	.03760	.04150	.07230	.15150
1.198	-2.410	.15700	-.34800	.00460	-.00070	-.00260	.27020	.03670	.04140	.06900	.14710
1.198	-.250	.12610	-.21620	.00560	-.00060	-.00220	.26750	.03590	.04130	.06710	.14440
1.198	1.870	.09580	-.09170	.00710	-.00020	-.00230	.26410	.03530	.04070	.06620	.14220
1.198	4.020	.04010	.04710	.00760	.00030	-.00200	.25730	.03620	.04060	.06470	.14150
1.198	6.140	-.01700	.18440	.00920	.00140	-.00260	.24920	.03650	.04000	.06530	.14190
1.198	8.300	-.05140	.32110	.01070	.00180	-.00270	.23970	.03770	.03930	.06520	.14230
1.198	10.370	-.07580	.44570	.01230	.00220	-.00220	.22890	.03910	.03950	.06660	.14530
	GRADIENT	-.01647	.06133	.00043	.00020	.00000	-.00182	-.00020	-.00012	-.00084	-.00116

RUN NO. 131/ 0 RN/L = 7.05 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.959	-11.210	.16270	-.76470	-.00730	-.00170	.00240	.26970	.02760	.01610	.04690	.09070
1.959	-9.070	.13600	-.63490	-.00720	-.00140	.00210	.26480	.02720	.01900	.04590	.09210
1.959	-6.880	.10990	-.49920	-.00420	-.00160	.00140	.25850	.02690	.01990	.04450	.09140
1.959	-4.640	.08990	-.36860	-.00280	-.00150	.00120	.25350	.02640	.01970	.04260	.08890
1.959	-2.450	.07060	-.25030	-.00250	-.00130	.00080	.24770	.02550	.02080	.04000	.08630
1.959	-.260	.05170	-.13250	.00010	-.00140	.00060	.24170	.02470	.02120	.03860	.08460
1.959	1.910	.03200	-.01920	.00090	-.00130	.00100	.23720	.02460	.02110	.03710	.08290
1.959	4.100	.01200	.09170	.00220	-.00140	.00140	.23350	.02440	.02170	.03670	.08280
1.959	6.230	-.01360	.19740	.00250	-.00140	.00150	.23460	.02370	.02230	.03610	.08220
1.959	8.410	-.03090	.30440	.00330	-.00160	.00180	.23110	.02350	.02290	.03620	.08270
1.959	10.510	-.04390	.41480	.00460	-.00160	.00120	.22640	.02330	.02260	.03570	.08160
	GRADIENT	-.00890	.05273	.00061	.00001	.00003	-.00231	-.00022	.00020	-.00067	-.00071

MSFC TWT 538 SHUTTLE LAUNCH T101S1R1 (A66010) (21 APR 72)

REFERENCE DATA

SREF = 7.6900 SQ. IN XMRP = 4.1460 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

BETA = .000 ORBIN = -3.000

RUN NO. 136/ 0 RN/L = 5.15 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
4.959	-10.310	.05250	-.47820	.00010	-.00130	-.00090	.22030	.00250	.00230	.00620	.01120
4.959	-8.340	.04340	-.38770	.00040	-.00110	-.00060	.20860	.00260	.00250	.00610	.01130
4.959	-6.300	.03660	-.30640	.00070	-.00110	-.00030	.20050	.00280	.00250	.00630	.01170
4.959	-4.280	.03440	-.23130	.00090	-.00140	-.00090	.19300	.00290	.00260	.00630	.01180
4.959	-2.240	.03460	-.15880	.00280	-.00050	.00060	.18770	.00300	.00260	.00630	.01210
4.959	-.170	.03840	-.08650	.00300	-.00100	.00050	.18090	.00280	.00260	.00570	.01130
4.959	1.860	.03840	-.01420	.00640	-.00050	.00130	.17790	.00290	.00270	.00570	.01140
4.959	3.900	.03960	.05790	.00660	-.00050	.00160	.17380	.00300	.00270	.00560	.01140
4.959	5.940	.03380	.12690	.00380	-.00060	.00110	.17090	.00290	.00250	.00530	.01090
4.959	7.970	.03020	.19610	.00560	-.00070	.00060	.16990	.00300	.00260	.00520	.01080
4.959	9.930	.03020	.26530	.00590	-.00050	.00130	.16860	.00290	.00270	.00480	.01040
	GRADIENT	.00069	.03534	.00073	.00009	.00028	-.00236	.00000	.00001	-.00010	-.00007

MSFC TWT 538 SHUTTLE LAUNCH T101S1R1 (U66011) (24 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

ALPHA = .000 ORBIN = -3.000

RUN NO. 0/ 0 RN/L = 4.51 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
.597	-10.060	.03520	-.13520	.31860	.04510	-.04860	.06620	.02690	.03780	.05700	.12170
.597	-8.110	.03660	-.13490	.25750	.03720	-.04180	.07390	.02570	.03700	.05220	.11510
.597	-6.080	.04200	-.13630	.19910	.02920	-.03540	.08310	.02410	.03660	.04700	.10780
.597	-4.050	.04910	-.14060	.13810	.01990	-.02480	.08740	.02420	.03700	.04580	.10710
.597	-2.030	.04880	-.14060	.07850	.01100	-.01460	.09250	.02440	.03660	.04450	.10550
.597	.000	.04870	-.14030	.01760	.00140	-.00340	.08990	.02550	.03640	.04620	.10820
.597	2.020	.04760	-.13570	-.04640	-.00740	.00710	.09620	.02450	.03380	.04460	.10300
.597	4.060	.04580	-.13560	-.10930	-.01660	.01830	.09310	.02470	.03270	.04730	.10490
.597	6.050	.04240	-.12860	-.16880	-.02700	.03010	.08790	.02680	.03070	.04860	.10630
.597	8.100	.03440	-.12720	-.23160	-.03520	.03910	.08310	.02760	.02930	.05330	.11040
.597	10.050	.02790	-.11600	-.29180	-.04480	.04630	.08230	.02850	.02690	.05330	.10870
	GRADIENT	-.00039	.00073	-.03057	-.00451	.00532	.00074	.00005	-.00056	.00015	-.00034

RUN NO. 0/ 0 RN/L = 5.70 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
.902	-10.200	.06880	-.15430	.35280	.04740	-.05210	.13380	.02990	.03890	.05780	.12670
.902	-8.220	.07600	-.16650	.28530	.03890	-.04570	.14370	.02750	.03860	.05610	.12240
.902	-6.160	.08230	-.17910	.21610	.02900	-.03600	.15110	.02560	.03880	.05400	.11850
.902	-4.100	.08360	-.18730	.14440	.01950	-.02650	.15540	.02330	.03820	.05430	.11590
.902	-2.070	.08930	-.18890	.08420	.01180	-.01800	.15730	.02300	.03830	.05380	.11520
.902	.000	.09180	-.18840	.01440	.00160	-.00410	.16250	.02270	.03610	.05180	.11070
.902	2.010	.08850	-.18300	-.05390	-.00840	.01130	.16680	.02320	.03450	.05040	.10820
.902	4.080	.08250	-.18130	-.12080	-.01750	.02360	.16340	.02430	.03310	.05340	.11090
.902	6.140	.07360	-.16890	-.18770	-.02510	.03270	.15450	.02640	.03220	.05450	.11310
.902	8.190	.06960	-.16000	-.25550	-.03400	.04220	.14780	.02920	.03080	.05550	.11550
.902	10.170	.06050	-.14570	-.32200	-.04300	.04970	.14130	.03170	.02890	.05680	.11760
	GRADIENT	-.00016	.00087	-.03271	-.00461	.00634	.00125	.00011	-.00069	-.00025	-.00083

MSFC TWT 538 SHUTTLE LAUNCH T1O1S1R1 (U66011) (24 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

ALPHA = .000 ORBIN = -3.000

RUN NO. 0/ 0 RN/L = 6.07 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.194	-10.350	.06760	-.16150	.37590	.06280	-.03940	.24810	.03830	.04060	.07160	.15080
1.194	-8.320	.08230	-.17410	.29450	.05230	-.03080	.25040	.04160	.04060	.07080	.15310
1.194	-6.230	.09590	-.18320	.21670	.03900	-.02300	.25980	.03940	.04050	.06750	.14760
1.194	-4.150	.10450	-.19150	.14320	.02570	-.01590	.26560	.03770	.04040	.06600	.14420
1.194	-2.080	.11070	-.19420	.07590	.01290	-.00800	.26710	.03660	.04030	.06720	.14420
1.194	.000	.11330	-.19670	.00250	-.00040	.00340	.26990	.03600	.03990	.06550	.14150
1.194	2.060	.11080	-.19340	-.06660	-.01310	.01320	.26640	.03670	.03920	.06800	.14400
1.194	4.130	.10620	-.18800	-.13400	-.02570	.02110	.26570	.03760	.03850	.06920	.14530
1.194	6.210	.09600	-.18000	-.20490	-.03860	.02710	.26140	.03820	.03730	.07080	.14640
1.194	8.300	.08290	-.16630	-.27940	-.05210	.03470	.25670	.03960	.03650	.07240	.14860
1.194	10.310	.06820	-.15390	-.35900	-.06390	.04290	.25190	.04140	.03560	.07250	.14970
	GRADIENT	.00017	.00036	-.03368	-.00622	.00460	-.00002	-.00001	-.00024	.00035	.00010

RUN NO. 0/ 0 RN/L = 7.05 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.959	-10.430	.04820	-.13270	.37840	.04520	-.04750	.24130	.02510	.01910	.04190	.08620
1.959	-8.390	.05170	-.13290	.30570	.03780	-.03800	.24480	.02520	.02130	.04020	.08670
1.959	-6.300	.05050	-.13250	.22900	.02900	-.02720	.25060	.02520	.02220	.03890	.08640
1.959	-4.200	.05100	-.12930	.15010	.01840	-.01660	.24530	.02520	.02300	.03880	.08700
1.959	-2.120	.05260	-.12970	.07500	.00840	-.00600	.24610	.02580	.02250	.03900	.08740
1.959	.000	.05280	-.12780	.00150	-.00130	.00180	.24550	.02420	.02160	.03860	.08450
1.959	2.090	.05210	-.12660	-.06920	-.01020	.00940	.24730	.02380	.02080	.03950	.08410
1.959	4.190	.04900	-.12530	-.14420	-.02020	.01830	.24860	.02450	.02020	.03930	.08410
1.959	6.290	.04740	-.12450	-.22180	-.03080	.02940	.25130	.02480	.01990	.04090	.08560
1.959	8.410	.04870	-.12510	-.30070	-.04020	.03980	.25420	.02540	.02010	.04160	.08730
1.959	10.400	.04410	-.12300	-.37200	-.04750	.04920	.24280	.02570	.01950	.04140	.08670
	GRADIENT	-.00021	.00053	-.03491	-.00456	.00406	.00037	-.00016	-.00035	.00007	-.00043

MSFC TWT 538 SHUTTLE LAUNCH T101181R1 (U66011) (24 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

ALPHA = .000 ORBIN = -3.000

RUN NO. 0/ 0 RN/L = 5.35 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
4.959	-10.030	.02620	-.05950	.24770	.01920	-.01470	.19360	.00290	.00240	.00600	.01130
4.959	-8.090	.02420	-.06580	.19750	.01390	-.00830	.19060	.00290	.00230	.00600	.01130
4.959	-6.070	.02690	-.07230	.14760	.01020	-.00350	.18630	.00300	.00250	.00630	.01190
4.959	-4.070	.02940	-.08170	.10200	.00630	.00160	.18590	.00280	.00250	.00560	.01100
4.959	-2.040	.03520	-.07960	.05030	.00320	.00130	.18040	.00280	.00250	.00550	.01100
4.959	.000	.03740	-.08360	.00160	-.00020	.00060	.17840	.00280	.00260	.00570	.01120
4.959	2.020	.03440	-.07870	-.04700	-.00370	-.00100	.18050	.00290	.00270	.00560	.01130
4.959	4.050	.03230	-.07680	-.09730	-.00680	-.00210	.18780	.00290	.00270	.00570	.01150
4.959	6.070	.02700	-.06820	-.14430	-.01060	.00250	.19190	.00300	.00270	.00560	.01140
4.959	8.090	.02440	-.06260	-.19430	-.01480	.00810	.19390	.00310	.00270	.00580	.01170
4.959	10.030	.02510	-.05690	-.24140	-.01960	.01410	.19790	.00300	.00250	.00540	.01100
	GRADIENT	.00025	.00053	-.02443	-.00163	-.00048	.00019	.00001	.00003	.00001	.00006

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

BETA = .000 ORBIN = .000

RUN NO. 92/ 0 RN/L = 4.51 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
.597	-10.470	.09630	-.64950	-.00430	-.00190	-.00040	.08190	.01620	.03500	.05340	.10470
.597	-8.480	.08120	-.54120	-.00630	-.00180	.00030	.08510	.01630	.03500	.04920	.10060
.597	-6.410	.05210	-.40740	-.00460	-.00090	.00140	.08700	.01590	.03620	.04800	.10030
.597	-4.340	.02410	-.28450	-.00430	-.00160	.00080	.09500	.01500	.03560	.04450	.09520
.597	-2.270	.00450	-.16890	-.00270	-.00150	.00000	.09780	.01440	.03410	.04250	.09110
.597	-.190	-.02030	-.04700	.00000	-.00010	-.00030	.09710	.01410	.03320	.04190	.08940
.597	1.860	-.04350	.06550	.00050	.00030	.00000	.09570	.01450	.03250	.04270	.08980
.597	3.940	-.07330	.17270	.00310	.00080	-.00180	.09310	.01380	.03140	.04060	.08590
.597	5.980	-.10110	.29120	.00360	.00180	-.00010	.09040	.01430	.03200	.03910	.08540
.597	8.050	-.12970	.41630	.00520	.00140	.00020	.08130	.01560	.03350	.04380	.09300
.597	10.040	-.14800	.51840	.00310	.00110	-.00060	.08240	.01600	.03340	.04400	.09360
	GRADIENT	-.01174	.05552	.00087	.00032	-.00025	-.00028	-.00011	-.00048	-.00037	-.00096

RUN NO. 93/ 0 RN/L = 5.70 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
.902	-10.800	.13480	-.73300	-.00900	-.00310	-.00020	.15010	.02360	.03620	.06200	.12180
.902	-8.740	.10730	-.59220	-.00350	.00020	-.00230	.15330	.02290	.03670	.05810	.11790
.902	-6.600	.08690	-.45960	-.00310	-.00020	-.00150	.15840	.01970	.03750	.05480	.11210
.902	-4.460	.06350	-.32590	-.00070	-.00130	-.00190	.16340	.01750	.03810	.05070	.10640
.902	-2.340	.04200	-.20550	.00310	.00080	-.00450	.16220	.01650	.03550	.04770	.09980
.902	-.220	.00860	-.07700	.00280	.00110	-.00500	.15780	.01600	.03410	.04710	.09730
.902	1.850	-.03720	.04860	.00250	.00110	-.00360	.15270	.01600	.03310	.04520	.09440
.902	3.950	-.11120	.18650	.00300	.00170	-.00200	.14130	.01600	.03370	.04390	.09380
.902	6.050	-.17190	.32470	.00350	.00380	-.00220	.13390	.01640	.03570	.04630	.09850
.902	8.150	-.18700	.42420	.00380	.00260	-.00220	.13020	.01780	.03540	.05080	.10420
.902	10.180	-.19990	.52310	.00480	.00240	-.00140	.12910	.01970	.03580	.05370	.10930
	GRADIENT	-.02038	.06087	.00032	.00030	.00003	-.00255	-.00017	-.00053	-.00077	-.00146

REFERENCE DATA

BREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

BETA = .000 ORBIN = .000

RUN NO. 94/ 0 RN/L = 6.07 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.199	-11.050	.17120	-.82660	-.00390	-.00330	-.00090	.24520	.03680	.04030	.07630	.15340
1.199	-8.920	.12720	-.64500	-.00230	.00870	-.00110	.25400	.03340	.04010	.07510	.14870
1.199	-6.720	.09430	-.48310	-.00050	-.00260	-.00200	.25990	.03150	.04080	.07280	.14530
1.199	-4.530	.06810	-.33940	.00270	-.00170	-.00250	.26620	.03010	.04030	.06830	.13880
1.199	-2.370	.04600	-.21280	.00200	-.00150	-.00220	.26590	.02870	.03960	.06500	.13330
1.199	-.210	.01580	-.08050	.00420	-.00080	-.00140	.26490	.02840	.03940	.06330	.13120
1.199	1.930	-.01720	.04510	.00410	.00000	-.00200	.26490	.02760	.03770	.06140	.12680
1.199	4.060	-.08460	.18770	.00730	.00130	-.00290	.25780	.02830	.03840	.06120	.12800
1.199	6.180	-.13060	.32040	.00830	.00170	-.00350	.25250	.02880	.03890	.06250	.13030
1.199	8.330	-.15640	.44370	.01150	.00220	-.00340	.24620	.02980	.03890	.06410	.13290
1.199	10.420	-.17430	.55980	.01190	.00260	-.00410	.23910	.03100	.03910	.06560	.13580
	GRADIENT	-.01715	.06108	.00053	.00035	-.00003	-.00083	-.00022	-.00027	-.00083	-.00131

RUN NO. 130/ 1 RN/L = 7.03 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.965	-11.180	.08000	-.66970	-.00540	-.00160	.00080	.25200	.02680	.01770	.04520	.08980
1.965	-9.040	.05550	-.54100	-.00490	-.00140	.00080	.25120	.02620	.01880	.04370	.08880
1.965	-6.830	.02860	-.40240	-.00180	-.00120	.00020	.24640	.02510	.02040	.04290	.08850
1.965	-4.610	.01040	-.27370	.00000	-.00090	-.00050	.24520	.02370	.02020	.04080	.08480
1.965	-2.450	-.00290	-.16300	.00160	-.00080	-.00120	.24430	.02190	.02150	.04100	.08450
1.965	-.230	-.01700	-.04630	.00340	-.00050	-.00090	.24210	.01960	.02040	.04030	.08040
1.965	1.940	-.03380	.06290	.00470	-.00040	-.00090	.24160	.01910	.02000	.03900	.07830
1.965	4.130	-.05060	.16840	.00550	-.00030	-.00030	.24220	.01920	.02000	.03790	.07730
1.965	6.260	-.06940	.26490	.00500	.00000	-.00040	.24270	.01940	.02060	.03790	.07800
1.965	8.450	-.07750	.36490	.00630	.00010	.00040	.23850	.01950	.02170	.03790	.07930
1.965	10.530	-.08130	.46110	.00710	.00020	.00060	.23340	.01950	.02290	.03740	.07980
	GRADIENT	-.00699	.05076	.00064	.00007	.00003	-.00040	-.00054	-.00009	-.00036	-.00097

MSFC TWT 538 SHUTTLE LAUNCH T10151R1 (A66012) (21 APR 72)

REFERENCE DATA

BREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

BETA = .000 ORBIN = .000

RUN NO. 137/ 0 RN/L = 5.11 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
4.959	-10.300	.00530	-.41240	.00020	-.00180	.00080	.21320	.00210	.00250	.00570	.01040
4.959	-8.350	.00190	-.33080	.00050	-.00190	.00160	.20510	.00220	.00260	.00590	.01080
4.959	-6.310	.00080	-.25250	.00080	-.00190	.00150	.19890	.00240	.00270	.00590	.01110
4.959	-4.270	.00000	-.18340	.00110	-.00170	.00090	.19250	.00250	.00280	.00580	.01120
4.959	-2.230	.00360	-.11700	.00430	-.00180	.00120	.18830	.00280	.00280	.00580	.01150
4.959	-.170	.00830	-.04780	.00300	-.00170	.00030	.18390	.00270	.00270	.00570	.01130
4.959	1.860	.01430	.01840	.00190	-.00100	.00120	.18010	.00280	.00260	.00580	.01130
4.959	3.880	.01810	.08170	.00510	-.00070	.00110	.17480	.00280	.00260	.00570	.01120
4.959	5.940	.01940	.15400	.00540	-.00070	.00180	.17010	.00280	.00260	.00580	.01130
4.959	7.980	.01570	.22320	.00570	-.00070	.00300	.17130	.00280	.00260	.00500	.01050
4.959	9.940	.02020	.28950	.00750	-.00080	.00250	.17130	.00280	.00270	.00530	.01090
	GRADIENT	.00230	.03264	.00027	.00014	.00002	-.00214	.00003	-.00003	-.00001	-.00001

MSFC TWT 538 SHUTTLE LAUNCH T10131R1 (A66D13) (21 APR 72)

REFERENCE DATA

BREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

ALPHA = .000 ORBIN = .000

RUN NO. 97/ 0 RN/L = 4.51 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
.597	-10.050	-.05800	-.01420	.31150	.04630	-.05170	.07260	.02070	.03740	.05130	.10950
.597	-8.110	-.04790	-.01430	.25620	.03960	-.04440	.07130	.01970	.03780	.05190	.10950
.597	-6.080	-.04330	-.01910	.19080	.02930	-.03460	.07810	.01800	.03670	.04900	.10380
.597	-4.050	-.03640	-.01440	.13590	.02060	-.02390	.08460	.01640	.03660	.04670	.09980
.597	-2.050	-.03450	-.02610	.07490	.01130	-.01400	.09200	.01560	.03570	.04340	.09470
.597	.000	-.03280	-.02150	.01550	.00220	-.00350	.09200	.01630	.03520	.04480	.09640
.597	2.020	-.03090	-.02390	-.04600	-.00700	.00690	.09280	.01630	.03380	.04550	.09570
.597	4.040	-.03270	-.02150	-.10320	-.01620	.01840	.09410	.01590	.03140	.04600	.09340
.597	6.070	-.03670	-.01700	-.16160	-.02530	.02850	.06040	.01650	.02890	.04830	.09370
.597	8.090	-.04550	-.01480	-.22200	-.03410	.03990	.08870	.01830	.02750	.05000	.09590
.597	10.040	-.04830	-.01280	-.27940	-.04300	.04700	.08750	.01860	.02640	.05110	.09630
	GRADIENT	.00054	-.00059	-.02958	-.00454	.00521	.00098	-.00001	-.00061	.00004	-.00058

RUN NO. 96/ 0 RN/L = 5.72 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
.907	-10.190	-.02060	-.03050	.34660	.04460	-.05360	.12770	.02150	.03880	.05940	.11980
.907	-8.210	-.01110	-.04290	.27800	.03660	-.04370	.13600	.01960	.03840	.05720	.11530
.907	-6.160	-.00490	-.05420	.21130	.02890	-.03530	.14370	.01870	.03830	.05410	.11120
.907	-4.100	-.00230	-.06290	.14610	.02040	-.02790	.14670	.01800	.03820	.05240	.10880
.907	-2.040	.00000	-.06160	.08410	.01190	-.01990	.15290	.01690	.03650	.04980	.10330
.907	.000	.00650	-.06700	.01600	.00250	-.00610	.15720	.01730	.03500	.04880	.10110
.907	2.030	.00280	-.06000	-.04750	-.00730	.00770	.16000	.01690	.03270	.04830	.09790
.907	4.100	-.00270	-.05740	-.11370	-.01660	.01950	.15790	.01720	.03120	.04960	.09810
.907	6.130	-.00750	-.05110	-.17830	-.02520	.02990	.15610	.01800	.03030	.05070	.09920
.907	8.190	-.01220	-.03880	-.24480	-.03500	.03890	.15160	.01850	.02930	.05540	.10340
.907	10.170	-.01860	-.02960	-.31260	-.04350	.04900	.14440	.01980	.02900	.05980	.10880
	GRADIENT	.00010	.00062	-.03181	-.00455	.00598	.00144	-.00008	-.00087	-.00035	-.00131

MSFC TWT 538 SHUTTLE LAUNCH T101S1R1 (A66013) (21 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

ALPHA = .000 ORBIN = .000

RUN NO. 95/ 0 RN/L = 6.07 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.197	-10.310	-.04550	-.02580	.36870	.06100	-.04540	.24220	.03230	.04090	.07030	.14360
1.197	-8.300	-.03140	-.03410	.29230	.05150	-.03790	.24710	.03460	.04060	.06890	.14420
1.197	-6.220	-.01910	-.04110	.21640	.03950	-.02850	.25350	.03330	.04010	.06600	.13940
1.197	-4.140	-.01150	-.04910	.14220	.02670	-.01880	.25930	.03150	.03940	.06390	.13480
1.197	-2.070	-.00560	-.05270	.07500	.01400	-.00980	.26050	.03060	.03900	.06430	.13410
1.197	.000	-.00240	-.05620	.00450	.00040	.00150	.26360	.02930	.03890	.06420	.13250
1.197	2.030	-.00370	-.05420	-.06260	-.01260	.01160	.26460	.02850	.03790	.06370	.13020
1.197	4.140	-.00830	-.05030	-.13070	-.02560	.02050	.26140	.02910	.03720	.06710	.13350
1.197	6.200	-.01980	-.04310	-.19840	-.03820	.02820	.26200	.03010	.03650	.06490	.13170
1.197	8.280	-.03080	-.03370	-.27380	-.05050	.03750	.25800	.03080	.03600	.06690	.13390
1.197	10.290	-.04220	-.02580	-.34990	-.06030	.04450	.25490	.03110	.03560	.06770	.13450
	GRADIENT	.00040	-.00019	-.03308	-.00635	.00484	.00040	-.00033	-.00027	.00028	-.00031

RUN NO. 129/ 0 RN/L = 7.06 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.957	-10.410	-.01920	-.05000	.38000	.04310	-.04920	.24150	.02040	.02040	.04310	.08400
1.957	-8.390	-.01850	-.04610	.30600	.03610	-.04010	.24180	.02130	.02080	.04370	.08590
1.957	-6.300	-.01970	-.04260	.23190	.02720	-.02980	.24610	.02140	.02160	.04420	.08730
1.957	-4.200	-.01910	-.04230	.15210	.01730	-.01840	.24490	.02060	.02150	.04180	.08400
1.957	-2.100	-.01780	-.04260	.07710	.00790	-.00880	.24280	.02150	.02130	.04320	.08610
1.957	.000	-.01730	-.04150	.00620	-.00070	-.00030	.24440	.02070	.02100	.04260	.08440
1.957	2.090	-.01820	-.04110	-.06450	-.00930	.00730	.24640	.01980	.02100	.04160	.08260
1.957	4.160	-.02020	-.03870	-.13640	-.01820	.01670	.24730	.02010	.02060	.04250	.08340
1.957	6.280	-.02140	-.03810	-.21560	-.02830	.02900	.24760	.02070	.02080	.04330	.08500
1.957	8.380	-.02020	-.04090	-.29580	-.03790	.03970	.25180	.02200	.02090	.04370	.08670
1.957	10.400	-.02150	-.04150	-.36870	-.04520	.04870	.25130	.02140	.02060	.04400	.08600
	GRADIENT	-.00012	.00042	-.03437	-.00422	.00413	.00040	-.00013	-.00010	-.00001	-.00022

MSFC TWT 538 SHUTTLE LAUNCH T101S1R1 (A66013) (21 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

ALPHA = .000 ORBIN = .000

RUN NO. 138/ 0 RN/L = 5.10 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
4.959	-10.040	-.00010	-.02970	.25470	.02190	-.01450	.19910	.00260	.00190	.00550	.01010
4.959	-8.120	.00120	-.03290	.20570	.01650	-.00800	.19610	.00270	.00210	.00560	.01040
4.959	-6.090	.00130	-.03960	.15240	.01110	-.00450	.19320	.00260	.00210	.00560	.01050
4.959	-4.070	.00270	-.04590	.10360	.00640	.00100	.19100	.00270	.00220	.00550	.01050
4.959	-2.040	.00970	-.04680	.05350	.00350	.00120	.18590	.00270	.00240	.00570	.01100
4.959	.000	.00830	-.04790	.00160	-.00100	.00040	.18460	.00280	.00250	.00570	.01110
4.959	2.020	.00900	-.04900	-.05010	-.00480	-.00070	.18560	.00280	.00260	.00570	.01120
4.959	4.030	.00440	-.04100	-.10330	-.00770	-.00100	.19290	.00270	.00270	.00570	.01120
4.959	6.070	.00270	-.03250	-.15190	-.01240	.00320	.19640	.00280	.00280	.00570	.01140
4.959	8.090	.00100	-.02670	-.19890	-.01720	.00970	.20060	.00280	.00270	.00570	.01130
4.959	10.030	-.00170	-.02120	-.24910	-.02360	.01480	.20450	.00290	.00270	.00560	.01130
	GRADIENT	.00014	.00037	-.02554	-.00180	-.00029	.00017	.00000	.00006	.00002	.00008

MSFC TWT 538 SHUTTLE LAUNCH T101S2R1 (A66014) (21 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

BETA = .000 ORBIN = -1.500

RUN NO. 49/ 0 RN/L = 4.51 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
.599	-10.480	.13810	-.70190	-.00880	.00100	.00130	.09230	.01980	.03550	.05480	.11020
.599	-8.490	.12060	-.59080	-.00960	.00030	.00170	.08870	.01960	.03620	.05210	.10790
.599	-6.420	.10370	-.47600	-.00810	.00020	.00280	.08570	.01960	.03680	.05150	.10800
.599	-4.330	.07890	-.35750	-.00540	.00000	.00250	.08790	.01970	.03670	.04840	.10490
.599	-2.300	.04900	-.23680	-.00510	-.00060	.00120	.09380	.01780	.03420	.04390	.09610
.599	-.210	.02710	-.11430	-.00470	-.00070	.00200	.09080	.01860	.03470	.04450	.09790
.599	1.850	-.00060	.00470	-.00550	-.00100	.00130	.09100	.01960	.03230	.04330	.09530
.599	3.910	-.03350	.12540	-.00290	-.00110	-.00120	.08790	.02010	.03180	.04280	.09490
.599	5.960	-.05650	.23300	.00090	-.00060	-.00310	.08570	.02070	.03220	.04330	.09630
.599	8.040	-.08610	.35370	.00120	-.00070	-.00350	.07480	.02250	.03320	.04650	.10230
.599	10.030	-.10860	.46940	-.00200	-.00160	-.00370	.07190	.02230	.03260	.04430	.09930
	GRADIENT	-.01330	.05852	.00022	-.00013	-.00035	-.00014	.00013	-.00057	-.00057	-.00101

RUN NO. 48/ 0 RN/L = 5.42 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
.803	-10.740	.13870	-.73900	-.00810	.00100	-.00030	.12590	.02440	.03490	.06520	.12470
.803	-8.680	.13320	-.62710	-.00530	.00140	.00060	.12430	.02320	.03610	.05950	.11880
.803	-6.570	.12520	-.51510	-.00100	.00140	.00060	.12150	.02150	.03720	.05530	.11410
.803	-4.460	.08890	-.37960	-.00530	.00140	.00000	.12450	.02010	.03650	.04900	.10560
.803	-2.350	.05440	-.24650	-.00180	.00150	-.00130	.12780	.01880	.03510	.04660	.10060
.803	-.240	.03510	-.12740	.00010	.00150	.00000	.12850	.01960	.03370	.04320	.09670
.803	1.850	.00220	-.00260	-.00340	-.00060	.00440	.12340	.02100	.03330	.04250	.09690
.803	3.930	-.04490	.11690	-.00230	-.00070	.00430	.11520	.02210	.03360	.04380	.09960
.803	6.040	-.07660	.24290	.00350	-.00080	.00430	.10720	.02120	.03230	.04520	.09880
.803	8.130	-.11760	.37350	.00930	-.00200	.00390	.09520	.02200	.03410	.04770	.10380
.803	10.150	-.13550	.47510	.00870	-.00420	.00610	.09160	.02230	.03410	.05070	.10720
	GRADIENT	-.01524	.05896	.00021	-.00030	.00068	-.00109	.00029	-.00036	-.00069	-.00075

MSFC TWT 538 SHUTTLE LAUNCH T10152R1 (A66014) (21 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

BETA = .000 ORBIN = -1.500

RUN NO. 47/ 0 RN/L = 5.70 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
.900	-10.820	.20290	-.81410	-.01200	.00280	.00010	.16230	.02950	.03470	.06950	.13380
.900	-8.760	.18150	-.68320	-.01450	.00050	.00310	.16260	.02650	.03720	.06260	.12640
.900	-6.630	.15780	-.54900	-.01050	.00130	.00130	.16530	.02440	.03790	.05760	.12010
.900	-4.490	.11140	-.40100	-.00820	.00080	.00040	.16160	.02120	.03700	.05280	.11110
.900	-2.390	.08090	-.27070	-.00580	.00010	.00050	.16120	.02030	.03610	.04980	.10630
.900	-.240	.05550	-.14510	-.00340	.00000	-.00030	.15810	.01910	.03460	.04950	.10330
.900	1.860	.01350	-.01630	-.00160	.00000	-.00070	.15100	.02010	.03360	.04770	.10150
.900	3.930	-.05160	.11030	.00110	-.00060	-.00540	.14060	.02120	.03440	.04500	.10060
.900	6.030	-.11420	.24840	.00160	-.00080	-.00230	.13070	.02130	.03530	.04640	.10310
.900	8.140	-.15690	.38110	.00150	.00130	-.00030	.12230	.02150	.03370	.04960	.10490
.900	10.150	-.16830	.48510	.00230	-.00210	-.00040	.11270	.02300	.03420	.05310	.11040
	GRADIENT	-.01863	.06055	.00108	-.00014	-.00060	-.00247	-.00001	-.00037	-.00084	-.00122

RUN NO. 46/ 0 RN/L = 6.01 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.100	-11.020	.30710	-.96880	-.01470	.00080	.00680	.24900	.04060	.04020	.07230	.15320
1.100	-8.890	.26460	-.78740	-.01180	.00030	.00740	.25820	.03830	.03970	.06900	.14710
1.100	-6.700	.21780	-.61230	-.00960	-.00020	.00660	.26460	.03710	.04020	.06690	.14440
1.100	-4.530	.17650	-.45460	-.00560	-.00090	.00650	.26920	.03630	.04100	.06430	.14170
1.100	-2.370	.13450	-.31010	-.00400	-.00040	.00570	.26660	.03630	.04090	.06360	.14090
1.100	-.230	.09320	-.17180	-.00190	-.00130	.00570	.26320	.03630	.04090	.06580	.14300
1.100	1.880	.05640	-.04380	-.00040	-.00210	.00510	.25890	.03610	.03970	.06710	.14300
1.100	4.010	-.00640	.09700	.00160	-.00170	.00500	.24600	.03730	.04030	.06620	.14390
1.100	6.120	-.08300	.24820	.00010	-.00300	.00540	.23550	.03720	.04040	.06430	.14210
1.100	8.260	-.12750	.38730	.00220	-.00320	.00470	.22640	.03750	.03960	.06360	.14080
1.100	10.320	-.16120	.51480	.00550	-.00380	.00480	.21870	.03770	.03880	.06070	.13720
	GRADIENT	-.02081	.06421	.00084	-.00015	-.00017	-.00253	.00008	-.00012	.00034	.00030

MSFC TWT 538 SHUTTLE LAUNCH T10152R1 (A66014) (21 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

BETA = .000 ORBIN = -1.500

RUN NO. 50/ 0 RN/L = 6.06 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.197	-11.080	.24750	-.91880	-.01090	.00060	.00060	.25740	.04050	.04010	.07600	.15680
1.197	-8.940	.20070	-.73350	-.01250	-.00010	.00190	.26450	.03690	.03980	.07190	.14870
1.197	-6.740	.16220	-.56420	-.00980	-.00070	.00180	.26910	.03520	.04020	.06920	.14470
1.197	-4.560	.13460	-.42010	-.00660	-.00100	.00100	.26890	.03470	.04010	.06770	.14260
1.197	-2.390	.10780	-.28580	-.00460	-.00140	.00070	.26730	.03480	.04020	.06560	.14070
1.197	-.230	.07990	-.15860	-.00370	-.00200	.00100	.26700	.03390	.03900	.06220	.13520
1.197	1.910	.04640	-.02800	-.00100	-.00180	.00130	.26280	.03370	.03770	.06070	.13210
1.197	4.020	-.01980	.10980	.00250	-.00140	-.00060	.25340	.03430	.03760	.06040	.13240
1.197	6.160	-.07140	.24860	.00570	-.00190	-.00110	.24710	.03500	.03760	.06020	.13300
1.197	8.310	-.10350	.37820	.00660	-.00220	-.00140	.23850	.03610	.03780	.06150	.13550
1.197	10.380	-.12670	.50050	.00640	-.00280	-.00130	.23100	.03780	.03790	.06180	.13760
	GRADIENT	-.01723	.06139	.00101	-.00006	-.00012	-.00165	-.00009	-.00035	-.00091	-.00135

RUN NO. 116/ 0 RN/L = 7.04 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.965	-11.160	.13440	-.71340	-.00710	-.00100	.00120	.26990	.02460	.01780	.04810	.09050
1.965	-9.020	.11050	-.58930	-.00530	-.00080	.00130	.26910	.02450	.01960	.04500	.08910
1.965	-6.840	.08370	-.45700	-.00490	-.00070	.00080	.26470	.02440	.01920	.04210	.08590
1.965	-4.610	.05940	-.32210	.00000	-.00060	.00000	.25590	.02440	.01990	.04240	.08670
1.965	-2.430	.04060	-.20770	.00070	-.00070	-.00030	.25080	.02430	.02100	.04100	.08640
1.965	-.250	.02260	-.09470	.00110	-.00080	-.00030	.24500	.02410	.02100	.03990	.08510
1.965	1.920	.00420	.01550	.00240	-.00080	.00000	.23930	.02420	.02090	.04000	.08510
1.965	4.090	-.01520	.12200	.00410	-.00100	.00040	.23750	.02420	.02090	.03890	.08410
1.965	6.230	-.04220	.22530	.00440	-.00100	.00020	.23790	.02460	.02240	.03760	.08480
1.965	8.430	-.05790	.33150	.00470	-.00110	.00070	.23330	.02480	.02340	.03680	.08510
1.965	10.530	-.06410	.43500	.00650	-.00080	.00070	.22970	.02450	.02380	.03650	.08490
	GRADIENT	-.00853	.05110	.00046	-.00004	.00005	-.00222	-.00002	.00009	-.00037	-.00030

MSFC TWT 538 SHUTTLE LAUNCH T1O1S2R1 (A66D14) (21 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

BETA = .000 ORBIN = -1.500

RUN NO. 150/ 0 RN/L = 4.92 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
4.959	-10.310	.02990	-.45470	-.00560	-.00010	.00240	.22410	.00250	.00250	.00600	.01110
4.959	-8.340	.02160	-.36440	-.00690	-.00080	.00140	.21600	.00260	.00260	.00590	.01120
4.959	-6.300	.02060	-.28260	-.00050	-.00040	.00210	.20760	.00260	.00270	.00590	.01130
4.959	-4.260	.01850	-.21040	-.00030	-.00110	.00200	.20150	.00270	.00270	.00580	.01130
4.959	-2.240	.02110	-.14390	.00000	.00020	.00240	.19630	.00280	.00270	.00600	.01160
4.959	-.180	.02490	-.07770	.00010	-.00040	.00180	.18900	.00280	.00270	.00580	.01130
4.959	1.830	.02870	-.00840	-.00270	-.00140	.00180	.18200	.00290	.00270	.00610	.01180
4.959	3.890	.02900	.06070	-.00230	-.00030	.00170	.17580	.00290	.00270	.00580	.01150
4.959	5.930	.02780	.13000	.00080	-.00090	.00150	.17300	.00290	.00260	.00550	.01110
4.959	7.970	.02400	.20220	.00110	-.00050	.00150	.17370	.00280	.00270	.00530	.01090
4.959	9.930	.02040	.26850	.00130	-.00100	.00220	.17470	.00280	.00260	.00500	.01040
	GRADIENT	.00140	.03327	-.00033	.00000	-.00006	-.00323	.00002	.00000	.00000	.00003

MSFC TWT 538 SHUTTLE LAUNCH T10182R1 (A66015) (21 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

ALPHA = .000 ORBIN = -1.500

RUN NO. 52/ 0 RN/L = 5.69 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
.900	-10.220	.02320	-.08600	.34230	.04390	-.04710	.12530	.02770	.03850	.05760	.12390
.900	-8.220	.03150	-.09760	.27860	.03620	-.04050	.13530	.02600	.03810	.05500	.11930
.900	-6.160	.03760	-.10990	.20900	.02730	-.03260	.14410	.02300	.03770	.05130	.11210
.900	-4.100	.04230	-.12000	.14390	.01980	-.02520	.14670	.02180	.03850	.05150	.11190
.900	-2.050	.04840	-.13000	.08150	.01190	-.01620	.15050	.02020	.03750	.05050	.10830
.900	.000	.04940	-.12850	.01250	.00160	-.00290	.15580	.01930	.03580	.04940	.10470
.900	2.030	.04520	-.12260	-.05820	-.00900	.01440	.15820	.01970	.03340	.04900	.10220
.900	4.080	.04200	-.12150	-.12500	-.01770	.02500	.15750	.02040	.03190	.05050	.10290
.900	6.120	.03640	-.11010	-.18700	-.02480	.03310	.15180	.02280	.03040	.05220	.10540
.900	8.200	.02810	-.09890	-.25690	-.03490	.04220	.15230	.02520	.02880	.05270	.10680
.900	10.170	.02230	-.08460	-.32390	-.04300	.05020	.14470	.02750	.02780	.05560	.11100
	GRADIENT	-.00018	.00021	-.03314	-.00469	.00641	.00143	-.00016	-.00085	-.00017	-.00118

RUN NO. 51/ 0 RN/L = 6.06 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.187	-10.320	.02010	-.09670	.36340	.06140	-.03670	.23940	.03920	.04070	.07170	.15170
1.187	-8.310	.03570	-.10950	.28570	.05130	-.02980	.24600	.04000	.04020	.06900	.14930
1.187	-6.230	.04870	-.11980	.20950	.03850	-.02120	.25490	.03730	.04000	.06580	.14310
1.187	-4.150	.05830	-.12900	.13690	.02530	-.01300	.25870	.03520	.03970	.06630	.14130
1.187	-2.070	.06370	-.13490	.06720	.01230	-.00420	.26010	.03430	.03930	.06690	.14060
1.187	.000	.06610	-.13740	-.00450	-.00110	.00650	.26280	.03490	.03980	.06540	.14030
1.187	2.060	.06420	-.13360	-.07090	-.01370	.01490	.26000	.03540	.03930	.06840	.14330
1.187	4.130	.05750	-.12950	-.14060	-.02650	.02420	.26060	.03560	.03740	.06820	.14130
1.187	6.200	.04840	-.12270	-.21100	-.03960	.03220	.25880	.03760	.03610	.06770	.14150
1.187	8.290	.03500	-.11010	-.28650	-.05240	.03970	.25310	.04050	.03570	.06850	.14480
1.187	10.300	.02140	-.10020	-.36470	-.06300	.04590	.24870	.04090	.03520	.07010	.14630
	GRADIENT	-.00005	.00001	-.03350	-.00626	.00452	.00018	.00009	-.00022	.00026	.00013

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

ALPHA = .000 ORBIN = -1.500

RUN NO. 117/ 0 RN/L = 7.08 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.951	-10.420	.00950	-.08890	.37460	.04310	-.04860	.24730	.02360	.02180	.04290	.08840
1.951	-8.390	.01210	-.08840	.29890	.03540	-.03780	.24970	.02370	.02180	.04230	.08790
1.951	-6.290	.01440	-.08900	.22240	.02700	-.02770	.25390	.02420	.02170	.04050	.08650
1.951	-4.200	.01730	-.08910	.14850	.01740	-.01640	.25470	.02450	.02230	.04030	.08720
1.951	-2.100	.01880	-.08830	.07780	.00850	-.00770	.25380	.02370	.02160	.04190	.08740
1.951	.000	.02000	-.08630	.00520	-.00030	-.00020	.25030	.02380	.02140	.04140	.08660
1.951	2.060	.01800	-.08310	-.06270	-.00910	.00780	.25250	.02350	.02050	.04040	.08450
1.951	4.180	.01620	-.08260	-.13550	-.01830	.01700	.25440	.02480	.02070	.03950	.08510
1.951	6.270	.01350	-.07940	-.21080	-.02810	.02850	.25280	.02460	.02010	.04080	.08560
1.951	8.370	.01070	-.07890	-.28780	-.03710	.03950	.25550	.02500	.01980	.04210	.08710
1.951	10.380	.00630	-.07680	-.36180	-.04490	.04980	.25400	.02470	.01980	.04310	.08770
	GRADIENT	-.00014	.00087	-.03387	-.00425	.00393	-.00009	.00002	-.00021	-.00015	-.00034

RUN NO. 145/ 0 RN/L = 4.96 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
4.959	-10.060	.01310	-.05640	.25160	.02070	-.01140	.20170	.00270	.00210	.00560	.01050
4.959	-8.100	.01580	-.05940	.20580	.01540	-.00320	.19800	.00270	.00220	.00580	.01080
4.959	-6.100	.01700	-.06290	.15100	.01030	.00150	.19540	.00270	.00220	.00580	.01080
4.959	-4.050	.02420	-.06650	.09930	.00720	.00420	.19070	.00290	.00230	.00610	.01140
4.959	-2.050	.02650	-.06740	.05350	.00280	.00420	.18770	.00280	.00240	.00580	.01100
4.959	.000	.02490	-.06860	.00460	-.00060	.00090	.18630	.00280	.00240	.00590	.01120
4.959	2.020	.02550	-.06980	-.04700	-.00380	-.00060	.18880	.00280	.00270	.00570	.01130
4.959	4.040	.02360	-.06770	-.08680	-.00780	-.00190	.19260	.00290	.00280	.00600	.01170
4.959	6.070	.02040	-.06280	-.14010	-.01230	-.00310	.19670	.00290	.00280	.00580	.01160
4.959	8.100	.01530	-.05720	-.19470	-.01640	.00330	.20070	.00300	.00270	.00590	.01180
4.959	10.030	.01500	-.05120	-.24010	-.02080	.01150	.20470	.00300	.00270	.00590	.01180
	GRADIENT	-.00011	-.00024	-.02334	-.00181	-.00084	.00024	.00000	.00006	-.00001	.00004

MSFC TWT 538 SHUTTLE LAUNCH T201S1R1 (A66016) (21 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

BETA = .000 ORBIN = -1.500

RUN NO. 91/ 0 RN/L = 4.53 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
.601	-10.490	.12300	-.69850	-.00210	-.00140	-.00090	.07740	.01980	.03540	.05400	.10930
.601	-8.500	.11060	-.58910	-.00400	-.00170	.00000	.07410	.01900	.03670	.05530	.11110
.601	-6.430	.09430	-.47150	.00100	-.00090	.00060	.07480	.01760	.03680	.05240	.10680
.601	-4.350	.07170	-.35080	.00020	-.00130	.00100	.07830	.01780	.03690	.04840	.10320
.601	-2.280	.04770	-.23250	.00060	-.00100	-.00010	.08170	.01720	.03550	.04710	.09990
.601	-.210	.02670	-.11840	.00100	-.00040	-.00070	.08150	.01760	.03400	.04520	.09690
.601	1.830	.00090	.00710	.00510	.00070	.00030	.08140	.01870	.03390	.04360	.09620
.601	3.910	-.03190	.12530	.00190	.00100	.00000	.07740	.01940	.03410	.04460	.09830
.601	5.980	-.05830	.24190	.00940	.00200	-.00020	.07270	.02010	.03390	.04520	.09930
.601	8.060	-.08290	.36750	.00860	.00140	-.00020	.06530	.02150	.03370	.04570	.10110
.601	10.040	-.10150	.47920	.00780	.00140	.00000	.05790	.02250	.03390	.04870	.10530
	GRADIENT	-.01231	.05777	.00038	.00031	-.00008	-.00010	.00023	-.00035	-.00052	-.00065

RUN NO. 90/ 0 RN/L = 5.42 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
.804	-10.740	.11740	-.73330	-.00140	-.00080	-.00300	.10590	.02430	.03540	.06210	.12190
.804	-8.700	.11460	-.62280	-.00480	-.00030	-.00130	.10300	.02240	.03680	.05960	.11900
.804	-6.590	.10970	-.51490	-.00130	.00070	-.00300	.10250	.01990	.03710	.05530	.11240
.804	-4.470	.07780	-.37740	-.00090	-.00010	-.00270	.10460	.01880	.03750	.05110	.10750
.804	-2.380	.04960	-.24940	.00020	.00040	-.00300	.10630	.01840	.03590	.04950	.10390
.804	-.240	.03080	-.12580	.00390	.00150	-.00320	.10430	.01850	.03470	.04800	.10130
.804	1.840	.00700	.00150	.00430	.00120	-.00220	.10310	.01890	.03380	.04650	.09930
.804	3.940	-.03920	.12110	.00630	.00300	-.00450	.09710	.01910	.03480	.04690	.10090
.804	6.050	-.06870	.24970	.00830	.00310	-.00380	.08960	.02070	.03530	.04720	.10330
.804	8.160	-.10360	.38110	.00550	.00300	-.00380	.08090	.02160	.03480	.04810	.10470
.804	10.180	-.11120	.48050	.00740	.00200	-.00250	.07820	.02150	.03480	.05220	.10860
	GRADIENT	-.01314	.05931	.00088	.00033	-.00013	-.00086	.00005	-.00036	-.00054	-.00085

MSFC TWT 538 SHUTTLE LAUNCH T201S1R1 (A66016) (21 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

BETA = .000 ORBIN = -1.500

RUN NO. 89/ 0 RN/L = 5.71 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
.904	-10.850	.17070	-.80510	-.00210	.00040	-.00300	.13250	.03000	.03600	.06790	.13390
.904	-8.790	.15340	-.67480	-.00590	-.00160	-.00080	.13320	.02630	.03830	.06360	.12820
.904	-6.640	.13150	-.53720	-.00460	.00060	-.00240	.13660	.02220	.03830	.06120	.12180
.904	-4.510	.10250	-.40190	.00110	.00000	-.00220	.13860	.02100	.03940	.05760	.11810
.904	-2.370	.07810	-.26890	.00160	-.00020	-.00170	.14170	.01960	.03800	.05310	.11080
.904	-.240	.05340	-.14270	.00400	.00050	-.00390	.13660	.01900	.03570	.05270	.10750
.904	1.840	.01380	-.01640	.00440	.00110	-.00450	.13240	.01960	.03490	.05090	.10560
.904	3.940	-.05620	.12180	.00620	.00190	-.00300	.12320	.02170	.03610	.04870	.10660
.904	6.060	-.09690	.25680	.00460	.00190	-.00220	.11420	.02200	.03700	.04990	.10900
.904	8.180	-.13070	.38880	.00540	.00590	-.00110	.10240	.02210	.03610	.05460	.11290
.904	10.220	-.13050	.48510	.00800	.00090	-.00410	.09860	.02330	.03620	.05710	.11670
	GRADIENT	-.01806	.06157	.00062	.00024	-.00021	-.00189	.00006	-.00046	-.00095	-.00134

RUN NO. 87/ 0 RN/L = 6.01 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.098	-11.040	.27510	-.95210	-.00520	-.00310	.00390	.21430	.04390	.04340	.07970	.16710
1.098	-8.910	.23470	-.76690	-.00170	-.00300	.00360	.22150	.04190	.04360	.07740	.16300
1.098	-6.720	.19020	-.59920	-.00230	-.00260	.00430	.22930	.04040	.04430	.07480	.15960
1.098	-4.550	.14930	-.44200	.00000	-.00210	.00440	.23430	.03940	.04430	.07210	.15580
1.098	-2.390	.11240	-.29600	.00220	-.00060	.00350	.23620	.03900	.04480	.06990	.15370
1.098	-.240	.08210	-.16530	.00440	-.00060	.00300	.23210	.03910	.04470	.07060	.15450
1.098	1.900	.05210	-.03700	.00480	-.00010	.00380	.22900	.03880	.04340	.07180	.15420
1.098	4.030	-.00680	.09960	.00410	.00040	.00450	.22050	.03840	.04320	.06960	.15130
1.098	6.150	-.05760	.24250	.00510	.00070	.00440	.21320	.03960	.04370	.07030	.15360
1.098	8.300	-.09760	.38280	.00730	.00110	.00380	.20490	.04020	.04300	.07060	.15400
1.098	10.360	-.12720	.50950	.00650	.00140	.00390	.19640	.04140	.04260	.07130	.15540
	GRADIENT	-.01736	.06258	.00050	.00026	.00002	-.00162	-.00010	-.00017	-.00014	-.00040

MSFC TWT 538 SHUTTLE LAUNCH T201S1R1 (A66016) (21 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

BETA = .000 ORBIN = -1.500

RUN NO. 88/ 0 RN/L = 6.06 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.200	-11.090	.22620	-.90510	-.00120	-.00230	-.00220	.21850	.04180	.04020	.07830	.16040
1.200	-8.950	.18560	-.72200	-.00120	-.00190	-.00150	.22270	.03890	.04040	.07600	.15550
1.200	-6.750	.15450	-.56050	-.00060	-.00180	-.00070	.22820	.03720	.04100	.07030	.14860
1.200	-4.570	.12340	-.41360	-.00010	-.00140	-.00150	.22810	.03600	.04160	.06770	.14540
1.200	-2.420	.09670	-.27970	.00190	-.00090	-.00200	.22680	.03590	.04150	.06610	.14360
1.200	-.240	.07100	-.15090	.00340	-.00070	-.00230	.22580	.03490	.04070	.06390	.13970
1.200	1.880	.03620	-.02050	.00390	-.00030	-.00160	.22050	.03470	.03980	.06310	.13760
1.200	4.040	-.01500	.11620	.00600	.00050	-.00170	.21800	.03420	.03960	.06310	.13690
1.200	6.180	-.05210	.24680	.00700	.00110	-.00240	.21160	.03520	.03920	.06380	.13830
1.200	8.340	-.08120	.37810	.00910	.00150	-.00320	.20540	.03630	.03900	.06470	.14010
1.200	10.420	-.09990	.49740	.01060	.00210	-.00290	.19620	.03800	.03900	.06610	.14320
	GRADIENT	-.01567	.06128	.00066	.00020	-.00000	-.00123	-.00022	-.00026	-.00057	-.00107

RUN NO. 120/ 0 RN/L = 7.04 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.962	-11.240	.11900	-.74490	-.00510	-.00040	.00050	.21810	.02470	.01790	.04870	.09140
1.962	-9.090	.09730	-.60780	-.00230	-.00020	.00020	.21480	.02470	.01950	.04520	.08950
1.962	-6.890	.07490	-.46670	-.00370	-.00020	.00060	.20790	.02480	.02010	.04300	.08800
1.962	-4.640	.05810	-.33380	-.00060	-.00040	-.00030	.20130	.02460	.02010	.04310	.08800
1.962	-2.460	.04350	-.21340	.00150	-.00040	-.00050	.19660	.02420	.02120	.04090	.08640
1.962	-.250	.02730	-.09780	.00190	-.00050	-.00060	.19190	.02450	.02130	.04030	.08620
1.962	1.920	.00900	.01460	.00280	-.00040	-.00030	.19150	.02410	.02070	.03900	.08390
1.962	4.080	-.01480	.12250	.00350	-.00060	.00000	.18510	.02450	.02070	.03900	.08430
1.962	6.260	-.03170	.23220	.00570	-.00050	.00000	.18600	.02450	.02190	.03730	.08390
1.962	8.450	-.04330	.34230	.00650	-.00040	.00020	.17990	.02460	.02310	.03650	.08430
1.962	10.560	-.04750	.44760	.00690	-.00040	.00070	.17590	.02460	.02360	.03560	.08390
	GRADIENT	-.00826	.05228	.00044	-.00002	.00004	-.00172	-.00001	.00003	-.00046	-.00045

MSFC TWT 538 SHUTTLE LAUNCH T201S1R1 (A66D16) (21 APR 72)

REFERENCE DATA

SREF = 7.6900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

BETA = .000 ORBIN = -1.500

RUN NO. 148/ 0 RN/L = 4.95 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
4.959	-10.320	.02560	-.47000	.00010	-.00040	-.00060	.20550	.00250	.00260	.00610	.01130
4.959	-8.360	.01650	-.38570	-.00410	-.00060	-.00110	.19520	.00250	.00260	.00590	.01100
4.959	-6.310	.01790	-.29790	-.00070	-.00080	.00000	.18480	.00260	.00270	.00590	.01130
4.959	-4.260	.01930	-.21940	-.00340	-.00020	.00110	.17690	.00280	.00280	.00620	.01180
4.959	-2.240	.02180	-.14410	-.00310	-.00060	.00150	.17010	.00280	.00270	.00610	.01170
4.959	-.180	.02320	-.07490	.00000	-.00080	.00050	.16360	.00290	.00270	.00630	.01200
4.959	1.840	.02910	.00060	.00190	-.00020	.00170	.15950	.00280	.00260	.00560	.01110
4.959	3.900	.03410	.06390	.00060	-.00040	.00160	.15460	.00280	.00260	.00550	.01110
4.959	5.940	.03280	.13620	.00240	-.00020	.00190	.15260	.00290	.00260	.00540	.01100
4.959	7.980	.03390	.20230	.00100	-.00090	.00100	.15110	.00280	.00270	.00510	.01060
4.959	9.940	.03720	.27170	.00590	-.00040	.00130	.15230	.00260	.00260	.00460	.00990
	GRADIENT	.00181	.03486	.00064	-.00000	.00006	-.00271	.00000	-.00002	-.00009	-.00010

MSFC TWT 538 SHUTTLE LAUNCH T2013IR1 (A66017) (21 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

ALPHA = .000 ORBIN = -1.500

RUN NO. 82/ 0 RN/L = 4.52 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
.598	-10.090	-.01060	-.07820	.30810	.04350	-.04090	.06240	.02350	.03440	.04890	.10690
.598	-8.120	-.00540	-.07860	.25440	.03650	-.03510	.06460	.02230	.03460	.04850	.10550
.598	-6.090	-.00200	-.07890	.19110	.02820	-.02810	.07250	.02120	.03510	.04220	.09870
.598	-4.060	.00600	-.08400	.13940	.02000	-.02010	.07760	.02090	.03520	.04030	.09650
.598	-2.030	.01120	-.08580	.07570	.01100	-.01040	.08070	.01920	.03450	.04000	.09390
.598	.000	.01840	-.09070	.01770	.00190	-.00160	.08190	.01710	.03380	.04310	.09400
.598	2.020	.01090	-.08690	-.04760	-.00830	.00750	.08350	.01960	.03320	.04180	.09470
.598	4.030	.00430	-.07540	-.10470	-.01760	.01520	.08400	.02030	.03220	.03950	.09210
.598	6.070	.00000	-.07550	-.16640	-.02710	.02500	.08300	.02210	.03010	.03890	.09120
.598	8.100	-.00560	-.06880	-.22470	-.03520	.03390	.07850	.02400	.02910	.04190	.09500
.598	10.050	-.00940	-.06500	-.28230	-.04350	.04060	.07750	.02330	.02750	.04520	.09610
	GRADIENT	-.00018	.00079	-.03023	-.00467	.00437	.00077	-.00004	-.00036	.00001	-.00040

RUN NO. 83/ 0 RN/L = 5.41 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
.802	-10.160	-.00960	-.07830	.32230	.04130	-.04150	.07890	.02620	.03700	.05360	.11700
.802	-8.190	-.00440	-.07710	.26180	.03410	-.03420	.08530	.02440	.03720	.05010	.11180
.802	-6.140	.00380	-.08350	.20370	.02730	-.02930	.09330	.02090	.03730	.04740	.10570
.802	-4.070	.01280	-.09450	.14150	.01950	-.02170	.10020	.01950	.03630	.04430	.10030
.802	-2.050	.01750	-.09680	.08490	.01250	-.01570	.10330	.01920	.03550	.04480	.09970
.802	.000	.02480	-.10470	.01820	.00230	-.00370	.10880	.01770	.03420	.04350	.09550
.802	2.030	.02160	-.09990	-.04500	-.00650	.00650	.10930	.01930	.03270	.04310	.09520
.802	4.070	.01560	-.09550	-.10930	-.01590	.01660	.10580	.02020	.03150	.04510	.09690
.802	6.090	.00660	-.09120	-.17380	-.02590	.02800	.10540	.02130	.02970	.04460	.09570
.802	8.160	-.00210	-.07750	-.23390	-.03330	.03520	.10210	.02350	.02900	.04500	.09760
.802	10.130	-.00820	-.07800	-.29140	-.03980	.04120	.09700	.02650	.02730	.04730	.10120
	GRADIENT	.00048	-.00025	-.03102	-.00441	.00485	.00084	.00007	-.00061	-.00001	-.00056

MSFC TWT 538 SHUTTLE LAUNCH T2O1S1R1 (A66017) (21 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

ALPHA = .000 ORBIN = -1.500

RUN NO. 84/ 0 RN/L = 5.69 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
.896	-10.200	.01810	-.09860	.33580	.04380	-.04350	.10760	.02620	.03760	.05410	.11800
.896	-8.220	.02520	-.10750	.27240	.03570	-.03790	.11470	.02410	.03770	.05330	.11520
.896	-6.160	.03290	-.11830	.20550	.02710	-.02980	.12260	.02140	.03800	.05090	.11040
.896	-4.100	.03860	-.12330	.14450	.01970	-.02440	.12620	.01930	.03760	.05210	.10910
.896	-2.050	.04380	-.12650	.08310	.01250	-.01750	.12930	.01900	.03660	.05140	.10710
.896	.000	.04350	-.12340	.01800	.00220	-.00540	.13370	.01870	.03560	.04950	.10390
.896	2.030	.04110	-.12230	-.05310	-.00860	.01020	.13830	.01850	.03380	.04840	.10080
.896	4.100	.03950	-.11820	-.11660	-.01770	.02000	.13610	.01870	.03250	.04980	.10110
.896	6.140	.03330	-.11220	-.17740	-.02540	.02760	.13180	.02060	.03130	.04980	.10180
.896	8.190	.02320	-.10220	-.24350	-.03280	.03480	.12480	.02270	.03100	.05110	.10480
.896	10.170	.01400	-.09310	-.30800	-.04070	.04250	.11810	.02540	.03020	.05280	.10850
	GRADIENT	-.00004	.00070	-.03215	-.00468	.00569	.00140	-.00008	-.00063	-.00037	-.00109

RUN NO. 86/ 0 RN/L = 6.02 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.099	-10.290	.04440	-.12610	.36510	.06000	-.05050	.20410	.03940	.04410	.07670	.16030
1.099	-8.270	.06030	-.13720	.29080	.04870	-.04090	.21220	.04050	.04430	.07450	.15940
1.099	-6.200	.06960	-.14330	.21700	.03660	-.03130	.22260	.03940	.04440	.07240	.15640
1.099	-4.110	.07380	-.14810	.14520	.02440	-.02240	.23030	.03900	.04430	.07210	.15550
1.099	-2.060	.07610	-.14830	.07690	.01260	-.01250	.23320	.03980	.04430	.07200	.15610
1.099	.000	.07670	-.14800	.00790	.00060	-.00070	.23420	.03970	.04410	.07040	.15440
1.099	2.050	.07550	-.14510	-.05980	-.01130	.01010	.23600	.04000	.04310	.06870	.15190
1.099	4.140	.07460	-.14360	-.12690	-.02300	.02010	.23260	.03920	.04220	.07100	.15250
1.099	6.190	.06850	-.14240	-.19590	-.03500	.02850	.22660	.03910	.04090	.07200	.15210
1.099	8.260	.05960	-.13560	-.26720	-.04690	.03740	.21880	.04080	.04030	.07500	.15620
1.099	10.250	.04830	-.12590	-.34090	-.05890	.04600	.21230	.04170	.03940	.07690	.15800
	GRADIENT	.00005	.00059	-.03304	-.00576	.00522	.00036	.00003	-.00026	-.00027	-.00049

MSFC TWT 538 SHUTTLE LAUNCH T20131R1 (A66017) (21 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

ALPHA = .000 ORBIN = -1.300

RUN NO. 85/ 0 RN/L = 6.07 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.195	-10.330	.01220	-.09900	.36870	.06120	-.03850	.20740	.03840	.04050	.07050	.14950
1.195	-8.320	.02550	-.10600	.29180	.05110	-.03220	.21360	.03880	.04010	.06770	.14670
1.195	-6.230	.03720	-.11540	.21560	.03820	-.02360	.22080	.03710	.04000	.06570	.14290
1.195	-4.150	.04500	-.12110	.14130	.02520	-.01520	.22480	.03480	.03980	.06570	.14050
1.195	-2.080	.05080	-.12480	.07360	.01280	-.00700	.22680	.03430	.03950	.06430	.13820
1.195	-.010	.05320	-.12410	.00370	.00010	.00280	.23030	.03520	.03920	.06140	.13590
1.195	2.050	.05070	-.11910	-.06120	-.01260	.01080	.22940	.03550	.03870	.06330	.13770
1.195	4.130	.04560	-.11630	-.13070	-.02530	.01890	.23220	.03480	.03760	.06370	.13620
1.195	6.200	.03950	-.11080	-.20180	-.03860	.02750	.23010	.03670	.03700	.06490	.13870
1.195	8.290	.02620	-.10130	-.27840	-.05170	.03590	.22320	.03840	.03640	.06660	.14160
1.195	10.300	.01320	-.09330	-.35310	-.06240	.04280	.21530	.03940	.03620	.06970	.14540
	GRADIENT	.00005	.00074	-.03281	-.00611	.00416	.00084	.00006	-.00025	-.00024	-.00044

RUN NO. 121/ 0 RN/L = 7.03 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.966	-10.430	.01350	-.09480	.38350	.04410	-.04370	.19660	.02370	.02150	.04240	.08770
1.966	-8.410	.01790	-.09560	.30880	.03710	-.03650	.19750	.02320	.02140	.04280	.08740
1.966	-6.310	.02160	-.09360	.23270	.02840	-.02750	.19930	.02450	.02170	.04120	.08740
1.966	-4.200	.02340	-.09340	.15470	.01880	-.01960	.19510	.02490	.02160	.04090	.08750
1.966	-2.100	.02500	-.09370	.08090	.00940	-.01040	.19430	.02400	.02110	.04220	.08730
1.966	.000	.02690	-.09360	.00600	-.00030	-.00080	.19510	.02400	.02090	.04120	.08620
1.966	2.060	.02610	-.08950	-.06490	-.00920	.00790	.19370	.02390	.02060	.04060	.08520
1.966	4.180	.02330	-.08880	-.14150	-.01910	.01840	.19580	.02520	.02070	.03940	.08540
1.966	6.290	.02070	-.08750	-.21960	-.02930	.02780	.19910	.02490	.02000	.04030	.08580
1.966	8.410	.01730	-.08810	-.29930	-.03890	.03740	.20060	.02490	.02000	.04150	.08650
1.966	10.420	.01250	-.08710	-.37620	-.04690	.04560	.20150	.02450	.01980	.04280	.08720
	GRADIENT	.00004	.00064	-.03529	-.00451	.00451	.00004	.00002	-.00011	-.00022	-.00030

MSFC TWT 538 SHUTTLE LAUNCH T201S1R1 (A66017) (21 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

ALPHA = .000 ORBIN = -1.500

RUN NO. 147/ 0 RN/L = 4.96 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
4.959	-10.030	.01960	-.06000	.24860	.02350	-.01690	.17570	.00270	.00200	.00560	.01040
4.959	-8.090	.01970	-.06330	.19370	.01770	-.01030	.17300	.00280	.00200	.00580	.01070
4.959	-6.090	.02220	-.06060	.14480	.01210	-.00520	.16870	.00270	.00210	.00550	.01050
4.959	-4.040	.02450	-.06120	.09610	.00740	-.00210	.16640	.00290	.00230	.00580	.01110
4.959	-2.040	.02430	-.06200	.04880	.00350	-.00120	.16530	.00290	.00250	.00590	.01140
4.959	.000	.02430	-.06570	.00310	-.00050	.00040	.16230	.00290	.00260	.00580	.01140
4.959	2.000	.02260	-.06040	-.04410	-.00530	.00260	.16530	.00270	.00250	.00550	.01090
4.959	4.040	.02200	-.06110	-.09120	-.00840	.00440	.16960	.00300	.00270	.00590	.01160
4.959	6.060	.02380	-.05880	-.13840	-.01300	.00660	.17270	.00300	.00270	.00600	.01170
4.959	8.090	.02090	-.05640	-.19160	-.01790	.01010	.17680	.00290	.00270	.00580	.01140
4.959	10.040	.02060	-.05050	-.24170	-.02350	.01870	.18100	.00290	.00270	.00570	.01130
	GRADIENT	-.00033	.00009	-.02314	-.00200	.00083	.00032	.00000	.00004	-.00001	.00002

MSFC TWT 538 SHUTTLE LAUNCH T20152R1 (A66018) (23 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

BETA = .000 ORBIN = -1.500

RUN NO. 57/ 0 RN/L = 4.52 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
.601	-10.510	.12200	-.70020	-.01360	.00020	.00090	.07470	.01960	.03580	.05620	.11160
.601	-8.500	.11060	-.58550	-.01200	.00010	.00200	.07390	.01940	.03640	.05240	.10830
.601	-6.430	.09220	-.46870	-.01040	.00030	.00240	.07650	.01770	.03670	.04790	.10240
.601	-4.350	.07100	-.34770	-.00890	-.00050	.00310	.07650	.01810	.03610	.04680	.10110
.601	-2.280	.04410	-.22420	-.00740	-.00120	.00250	.07820	.01840	.03550	.04450	.09850
.601	-.210	.02300	-.10640	-.00460	-.00060	.00160	.07830	.01900	.03410	.04450	.09770
.601	1.840	-.00170	.01890	.00040	-.00040	.00220	.07590	.01960	.03330	.04580	.09890
.601	3.920	-.03270	.13500	.00310	-.00030	.00190	.07470	.02100	.03390	.04280	.09770
.601	5.990	-.05830	.24910	.00330	-.00120	.00130	.07110	.02160	.03350	.04430	.09950
.601	8.050	-.08260	.36420	.00240	-.00180	-.00020	.06300	.02180	.03280	.04620	.10100
.601	10.040	-.10250	.48060	.00280	-.00310	.00250	.05430	.02380	.03420	.04900	.10710
	GRADIENT	-.01226	.05849	.00154	.00006	-.00013	-.00029	.00034	-.00032	-.00032	-.00031

RUN NO. 56/ 0 RN/L = 5.70 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
.903	-10.880	.17970	-.81830	-.01350	.00210	.00170	.12960	.03020	.03780	.06890	.13700
.903	-8.800	.15740	-.68050	-.01530	-.00040	.00310	.13200	.02750	.03800	.06290	.12850
.903	-6.650	.12810	-.54050	-.01210	.00100	.00150	.13180	.02390	.03820	.05860	.12080
.903	-4.520	.09840	-.40450	-.01030	.00040	.00110	.13430	.02230	.03870	.05720	.11830
.903	-2.380	.07030	-.26960	-.01000	-.00060	.00120	.13760	.02140	.03740	.05160	.11060
.903	-.250	.05030	-.14320	-.00480	-.00060	.00010	.13370	.02110	.03560	.05140	.10830
.903	1.860	.01970	-.01900	-.00170	-.00010	-.00110	.12890	.02110	.03420	.05040	.10580
.903	3.940	-.04960	.11580	-.00210	-.00090	.00000	.11980	.02220	.03520	.04910	.10660
.903	6.040	-.08890	.24970	-.00030	-.00120	-.00080	.11180	.02270	.03620	.04980	.10880
.903	8.180	-.12070	.38040	.00150	.00120	-.00110	.09960	.02320	.03530	.05290	.11150
.903	10.200	-.12990	.48600	.00520	-.00090	-.00120	.09440	.02320	.03560	.05650	.11550
	GRADIENT	-.01636	.06102	.00117	-.00010	-.00021	-.00178	-.00002	-.00048	-.00082	-.00134

MSFC TWT 538 SHUTTLE LAUNCH T201S2R1 (A66018) (21 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

BETA = .000 ORBIN = -1.500

RUN NO. 55/ 0 RN/L = 6.06 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.195	-11.100	.22520	-.91370	-.01490	.00010	.00190	.21940	.04100	.03970	.07740	.15820
1.195	-8.960	.19030	-.73680	-.01050	-.00020	.00160	.22370	.03880	.04050	.07480	.15420
1.195	-6.750	.15600	-.56710	-.00940	-.00050	.00190	.22850	.03640	.04060	.07080	.14790
1.195	-4.570	.12550	-.41810	-.00840	-.00090	.00140	.22680	.03600	.04100	.06880	.14580
1.195	-2.400	.09700	-.28080	-.00580	-.00140	.00120	.22700	.03580	.04090	.06520	.14200
1.195	-.240	.07290	-.15130	-.00370	-.00190	.00200	.22450	.03510	.03970	.06290	.13790
1.195	1.910	.03870	-.01910	-.00160	-.00200	.00190	.21930	.03550	.03890	.06220	.13670
1.195	4.020	-.01080	.11460	.00140	-.00200	.00120	.21530	.03540	.03890	.06240	.13670
1.195	6.180	-.05420	.25160	.00400	-.00220	-.00020	.21000	.03560	.03870	.06280	.13720
1.195	8.340	-.08210	.38330	.00610	-.00230	-.00070	.20330	.03730	.03870	.06420	.14020
1.195	10.420	-.10070	.50180	.00810	-.00280	.00000	.19760	.03860	.03860	.06440	.14180
	GRADIENT	-.01539	.06175	.00111	-.00013	.00001	-.00143	-.00007	-.00029	-.00074	-.00110

RUN NO. 119/ 0 RN/L = 7.04 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.965	-11.250	.11830	-.73930	-.00550	-.00100	.00060	.22150	.02470	.01820	.04880	.09180
1.965	-9.090	.09550	-.60440	-.00460	-.00080	.00070	.21970	.02460	.01940	.04520	.08930
1.965	-6.860	.07550	-.46580	-.00280	-.00070	.00090	.21410	.02450	.01990	.04280	.08730
1.965	-4.630	.05950	-.33050	-.00050	-.00060	.00030	.20660	.02430	.01980	.04280	.08710
1.965	-2.440	.04290	-.21210	.00060	-.00080	-.00030	.20200	.02410	.02090	.04050	.08560
1.965	-.250	.02730	-.09660	.00150	-.00070	-.00030	.19780	.02400	.02100	.03960	.08480
1.965	1.920	.00770	.01460	.00270	-.00070	.00010	.19300	.02440	.02090	.03940	.08480
1.965	4.090	-.01340	.12400	.00360	-.00090	.00070	.19150	.02410	.02030	.03850	.08300
1.965	6.260	-.03150	.23180	.00480	-.00090	.00050	.18850	.02460	.02200	.03750	.08420
1.965	8.450	-.04410	.34400	.00520	-.00080	.00070	.18600	.02450	.02310	.03620	.08400
1.965	10.590	-.04750	.44820	.00600	-.00090	.00080	.17940	.02470	.02370	.03570	.08420
	GRADIENT	-.00830	.05210	.00047	-.00002	.00005	-.00180	-.00000	.00005	-.00045	-.00041

MSFC TWT 538 SHUTTLE LAUNCH T20152R1 (A66D18) (21 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

BETA = .000 ORBIN = -1.500

RUN NO. 149/ 0 RN/L = 4.93 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
4.959	-10.320	.02860	-.47280	.00020	-.00110	.00150	.21390	.00250	.00250	.00580	.01090
4.959	-8.360	.01830	-.38530	-.00100	-.00100	.00090	.20240	.00260	.00270	.00610	.01150
4.959	-6.330	.01490	-.29790	-.00370	-.00090	.00120	.19280	.00280	.00270	.00620	.01180
4.959	-4.290	.01400	-.22260	-.00490	-.00080	.00160	.18560	.00270	.00270	.00590	.01150
4.959	-2.240	.01880	-.14400	-.00010	-.00110	.00180	.17940	.00280	.00270	.00580	.01140
4.959	-.180	.02160	-.08080	-.00440	-.00080	.00180	.17160	.00290	.00270	.00600	.01170
4.959	1.830	.02760	-.00840	.00030	-.00040	.00170	.16630	.00290	.00270	.00600	.01170
4.959	3.890	.03010	.05470	-.00700	-.00120	.00210	.16250	.00290	.00260	.00570	.01130
4.959	5.940	.03480	.12710	-.00210	.00000	.00160	.15910	.00280	.00250	.00520	.01060
4.959	7.970	.03000	.19630	-.00190	-.00120	.00190	.15780	.00290	.00270	.00540	.01100
4.959	9.930	.03320	.26560	.00580	-.00140	.00220	.15990	.00270	.00250	.00460	.00980
	GRADIENT	.00201	.03378	-.00019	-.00001	.00004	-.00290	.00002	-.00001	-.00001	-.00000

MSFC TWT 538 SHUTTLE LAUNCH T2013S2R1 (A66019) (21 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

ALPHA = .000 ORBIN = -1.500

RUN NO. 53/ 0 RN/L = 5.69 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
.903	-10.200	.02410	-.10540	.33000	.04610	-.03940	.10620	.02790	.03840	.05820	.12450
.903	-8.220	.03100	-.11260	.26730	.03850	-.03410	.11550	.02640	.03830	.05580	.12070
.903	-6.160	.03660	-.11760	.20150	.02930	-.02680	.12020	.02460	.03900	.05510	.11890
.903	-4.080	.04310	-.12800	.13440	.02180	-.02150	.12370	.02260	.03890	.05390	.11550
.903	-2.050	.04510	-.13110	.07650	.01250	-.01440	.12740	.02150	.03750	.05320	.11220
.903	.000	.04360	-.12680	.00970	.00180	-.00270	.13300	.02120	.03650	.05050	.10830
.903	2.030	.04270	-.12250	-.05890	-.00970	.01290	.13200	.02220	.03510	.05300	.11040
.903	4.090	.04080	-.12260	-.12180	-.01880	.02060	.13170	.02140	.03370	.05400	.10930
.903	6.120	.03370	-.11280	-.18180	-.02710	.02830	.12640	.02340	.03260	.05560	.11160
.903	8.200	.02190	-.10400	-.24740	-.03460	.03470	.12250	.02480	.03090	.05580	.11160
.903	10.180	.01670	-.09820	-.31320	-.04250	.04190	.11550	.02790	.02990	.05760	.11550
	GRADIENT	-.00034	.00095	-.03172	-.00506	.00546	.00101	-.00008	-.00063	.00000	-.00070

RUN NO. 54/ 0 RN/L = 6.06 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.189	-10.330	.01130	-.09540	.36130	.06100	-.03370	.20070	.04040	.04100	.07230	.15370
1.189	-8.320	.02720	-.10270	.28570	.05080	-.02760	.20760	.04010	.04100	.06990	.15120
1.189	-6.230	.03940	-.11310	.20840	.03780	-.01900	.21570	.03810	.04070	.06690	.14590
1.189	-4.150	.04890	-.12020	.13530	.02480	-.01110	.22110	.03610	.04040	.06650	.14310
1.189	-2.080	.05660	-.12600	.06790	.01230	-.00230	.22140	.03570	.04030	.06720	.14340
1.189	.000	.05840	-.12860	-.00400	-.00110	.00620	.22250	.03550	.04020	.06680	.14260
1.189	2.060	.05630	-.12370	-.06930	-.01370	.01330	.22140	.03690	.04000	.06850	.14550
1.189	4.130	.05170	-.12230	-.13650	-.02630	.02110	.22310	.03660	.03890	.06970	.14530
1.189	6.210	.04340	-.11530	-.20840	-.03940	.02920	.21960	.03860	.03810	.07000	.14670
1.189	8.300	.02680	-.10350	-.28470	-.05260	.03720	.21600	.04040	.03720	.06970	.14750
1.189	10.310	.01370	-.09560	-.35970	-.06300	.04280	.21290	.04110	.03640	.06880	.14640
	GRADIENT	.00026	-.00009	-.03289	-.00619	.00386	.00019	.00011	-.00016	.00037	.00031

MSFC TWT 538 SHUTTLE LAUNCH T20152R1 (A66019) (21 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

ALPHA = .000 ORBIN = -1.300

RUN NO. 118/ 0 RN/L = 7.05 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.960	-10.440	.01240	-.09400	.37670	.04340	-.04420	.19950	.02350	.02140	.04320	.08610
1.960	-8.390	.01800	-.09480	.30180	.03640	-.03640	.20160	.02310	.02140	.04180	.08640
1.960	-6.290	.02040	-.09470	.22420	.02790	-.02710	.20140	.02400	.02150	.04080	.08640
1.960	-4.190	.02330	-.09370	.15080	.01830	-.01820	.20160	.02440	.02120	.04000	.08570
1.960	-2.100	.02470	-.09240	.07800	.00900	-.00910	.19780	.02370	.02100	.04250	.08720
1.960	.000	.02620	-.09260	.00560	-.00010	-.00050	.19920	.02330	.02100	.04110	.08560
1.960	2.080	.02430	-.08830	-.06330	-.00890	.00770	.19760	.02360	.02070	.04090	.08530
1.960	4.200	.02220	-.08700	-.13920	-.01900	.01750	.20030	.02510	.02090	.03940	.08550
1.960	6.280	.01750	-.08540	-.21420	-.02860	.02650	.20200	.02460	.02020	.04050	.08540
1.960	8.390	.01520	-.08700	-.29060	-.03750	.03480	.20520	.02500	.02040	.04170	.08730
1.960	10.430	.00960	-.08590	-.36920	-.04590	.04290	.21270	.02470	.02010	.04350	.08840
	GRADIENT	-.00012	.00083	-.03441	-.00441	.00421	-.00013	.00006	-.00004	-.00013	-.00011

RUN NO. 146/ 0 RN/L = 4.95 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
4.959	-10.030	.01910	-.05670	.24720	.02330	-.01430	.18300	.00260	.00210	.00540	.01010
4.959	-8.090	.01850	-.06280	.19230	.01750	-.00520	.17780	.00260	.00210	.00550	.01040
4.959	-6.090	.02200	-.06030	.14650	.01240	-.00220	.17370	.00280	.00220	.00580	.01100
4.959	-4.070	.01960	-.06400	.09610	.00740	.00030	.17140	.00290	.00230	.00590	.01120
4.959	-2.050	.02190	-.06760	.05050	.00390	.00340	.17060	.00290	.00240	.00590	.01120
4.959	.000	.02500	-.06560	.00320	.00030	.00180	.16990	.00280	.00250	.00560	.01100
4.959	2.020	.02330	-.06690	-.04720	-.00440	-.00110	.17030	.00300	.00260	.00610	.01180
4.959	4.050	.02040	-.06470	-.09440	-.00850	.00010	.17410	.00290	.00260	.00560	.01120
4.959	6.070	.02210	-.05610	-.13990	-.01220	.00400	.17740	.00290	.00280	.00570	.01150
4.959	8.090	.02040	-.05680	-.19020	-.01750	.00580	.18110	.00300	.00280	.00610	.01190
4.959	10.030	.01880	-.05400	-.24030	-.02270	.01400	.18710	.00290	.00270	.00560	.01130
	GRADIENT	.00015	-.00003	-.02357	-.00197	-.00024	.00025	.00000	.00004	-.00002	.00003

MSFC TWT 538 SHUTTLE LAUNCH T10153R1 (A66020) (21 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

BETA = .000 ORBIN = -1.500

RUN NO. 75/ 0 RN/L = 4.56 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
.602	-10.470	.16550	-.68080	.00140	-.00130	-.00270	.07420	.01850	.03470	.05170	.10500
.602	-8.470	.14460	-.57500	.00180	-.00090	-.00190	.08100	.01880	.03270	.04510	.09670
.602	-6.400	.11310	-.45930	.00220	-.00020	-.00250	.07900	.01930	.03270	.04340	.09550
.602	-4.340	.07930	-.34130	.00140	-.00010	-.00180	.08650	.01810	.03240	.03830	.08890
.602	-2.270	.05090	-.21900	.00410	.00000	-.00240	.08920	.01810	.03180	.03680	.08680
.602	-.210	.01810	-.10120	.00340	.00010	-.00170	.08860	.01790	.03130	.03770	.08700
.602	1.840	-.02250	.02040	.00380	.00110	-.00210	.08790	.01860	.03000	.03740	.08610
.602	3.900	-.05770	.13580	.00650	.00140	-.00170	.08330	.01910	.03040	.03770	.08730
.602	5.960	-.08560	.24320	.00810	.00220	-.00100	.07500	.02020	.03030	.03990	.09060
.602	8.030	-.11910	.36660	.00610	.00220	-.00130	.06600	.02080	.03010	.04020	.09110
.602	10.010	-.14470	.47330	.00540	.00190	.00100	.05790	.02220	.03090	.04050	.09370
	GRADIENT	-.01687	.05797	.00048	.00020	.00002	-.00037	.00012	-.00028	-.00003	-.00019

RUN NO. 76/ 0 RN/L = 5.71 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
.902	-10.830	.19970	-.80400	-.00560	-.00130	-.00110	.13270	.02830	.03230	.06160	.12220
.902	-8.760	.17070	-.67020	-.00380	-.00130	-.00180	.13180	.02590	.03440	.05700	.11740
.902	-6.630	.13610	-.53140	-.00060	.00050	-.00360	.13310	.02420	.03540	.05130	.11100
.902	-4.520	.09510	-.39620	.00110	-.00010	-.00300	.13030	.02300	.03530	.05020	.10870
.902	-2.410	.05650	-.26080	.00010	-.00030	-.00240	.12780	.02090	.03440	.04850	.10390
.902	-.270	.02990	-.13710	.00260	.00000	-.00350	.12580	.02110	.03340	.04900	.10360
.902	1.830	-.00390	-.01680	.00430	.00100	-.00460	.12410	.02030	.03210	.04620	.09880
.902	3.930	-.05480	.11150	.00610	.00140	-.00360	.11810	.02090	.03320	.04490	.09900
.902	6.040	-.09910	.24540	.00450	.00160	-.00280	.10720	.02140	.03340	.04580	.10070
.902	8.160	-.15080	.39400	.00640	.00240	-.00290	.09470	.02200	.03240	.04730	.10170
.902	10.180	-.15240	.48200	.00880	.00230	-.00360	.08820	.02290	.03140	.05000	.10440
	GRADIENT	-.01703	.05957	.00067	.00020	-.00016	-.00133	-.00023	-.00031	-.00061	-.00116

MSFC TWT 538 SHUTTLE LAUNCH T10153R1 (A66020) (21 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

BETA = .000 ORBIN = -1.500

RUN NO. 77/ 0 RN/L = 6.04 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.103	-10.990	.29890	-.93550	-.00330	-.00270	.00270	.22560	.03880	.04050	.07580	.15510
1.103	-8.880	.25590	-.76720	-.00050	-.00240	.00270	.22560	.03910	.04270	.07430	.15620
1.103	-6.710	.20560	-.60610	-.00050	-.00220	.00270	.22940	.03870	.04280	.07290	.15450
1.103	-4.550	.16110	-.45360	.00160	-.00180	.00290	.23070	.03800	.04290	.07210	.15310
1.103	-2.400	.11400	-.30760	.00390	-.00060	.00270	.22910	.03760	.04300	.07270	.15340
1.103	-.250	.07210	-.16510	.00610	-.00030	.00250	.22620	.03870	.04200	.07260	.15340
1.103	1.880	.02960	-.02810	.00710	.00010	.00260	.21950	.03890	.04010	.07440	.15340
1.103	4.000	-.01890	.10360	.00580	.00060	.00260	.20820	.03860	.04000	.07600	.15480
1.103	6.110	-.06880	.24100	.00560	.00080	.00350	.19640	.03910	.03990	.07740	.15650
1.103	8.270	-.11740	.38320	.00600	.00120	.00290	.18800	.04010	.03960	.07710	.15690
1.103	10.330	-.15100	.50990	.00760	.00140	.00210	.17750	.04270	.03870	.07730	.15870
	GRADIENT	-.02078	.06520	.00054	.00026	-.00003	-.00255	.00012	-.00041	.00044	.00016

RUN NO. 74/ 0 RN/L = 6.12 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.196	-11.040	.26700	-.91070	-.00510	-.00230	-.00230	.22800	.03950	.03870	.07430	.15260
1.196	-8.910	.22100	-.73280	-.00390	-.00210	-.00180	.23150	.03840	.03900	.06920	.14670
1.196	-6.720	.17040	-.55890	-.00120	-.00200	-.00180	.23060	.03760	.03840	.06660	.14260
1.196	-4.550	.12850	-.40980	.00090	-.00130	-.00200	.22870	.03670	.03810	.06640	.14130
1.196	-2.420	.08890	-.27150	.00130	-.00120	-.00250	.22740	.03600	.03780	.06480	.13870
1.196	-.240	.05070	-.13330	.00290	-.00040	-.00190	.22320	.03590	.03790	.06530	.13920
1.196	1.900	.01150	.00000	.00330	.00000	-.00220	.21660	.03630	.03670	.06860	.14160
1.196	4.030	-.03360	.12960	.00600	.00100	-.00290	.20950	.03660	.03630	.07010	.14310
1.196	6.160	-.07330	.25650	.00810	.00180	-.00380	.20140	.03710	.03610	.07160	.14480
1.196	8.310	-.10700	.38830	.01020	.00220	-.00410	.19220	.03850	.03550	.07430	.14840
1.196	10.380	-.13580	.51120	.01170	.00260	-.00450	.18400	.04030	.03550	.07450	.15040
	GRADIENT	-.01869	.06286	.00057	.00027	-.00007	-.00229	.00000	-.00022	.00052	.00030

MSFC TWT 538 SHUTTLE LAUNCH T101S3R1 (A66020) (21 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

BETA = .000 ORBIN = -1.500

RUN NO. 134/ 0 RN/L = 7.06 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.957	-11.150	.16270	-.73440	-.00370	-.00230	.00100	.21500	.02750	.01600	.04620	.08980
1.957	-9.020	.12820	-.59770	-.00410	-.00200	.00230	.21160	.02750	.01730	.04400	.08900
1.957	-6.840	.09650	-.45970	-.00360	-.00160	.00290	.20860	.02740	.01740	.04290	.08780
1.957	-4.620	.07170	-.33540	-.00240	-.00140	.00180	.20510	.02680	.01680	.04230	.08600
1.957	-2.470	.04640	-.21890	-.00020	-.00130	.00110	.20300	.02560	.01690	.03960	.08220
1.957	-.270	.02120	-.10250	.00050	-.00110	.00070	.19870	.02480	.01670	.03890	.08060
1.957	1.890	-.00010	.00640	.00310	-.00060	-.00020	.19460	.02520	.01670	.04080	.08290
1.957	4.080	-.02340	.11640	.00300	-.00070	-.00050	.19310	.02530	.01710	.04300	.08560
1.957	6.220	-.04730	.22780	.00430	-.00080	.00010	.19200	.02480	.01730	.04110	.08320
1.957	8.390	-.06570	.33180	.00380	-.00060	.00150	.18510	.02460	.01760	.04050	.08270
1.957	10.480	-.08570	.43980	.00680	-.00060	.00090	.18250	.02410	.01870	.04050	.08340
	GRADIENT	-.01088	.05188	.00065	.00010	-.00027	-.00149	-.00016	.00002	.00012	-.00000

RUN NO. 151/ 0 RN/L = 4.90 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
4.959	-10.300	.04960	-.45150	-.00120	-.00120	.00110	.20750	.00240	.00240	.00630	.01120
4.959	-8.330	.03700	-.36390	-.00080	-.00030	.00140	.19690	.00240	.00240	.00630	.01120
4.959	-6.310	.02900	-.28550	.00080	-.00090	.00120	.19000	.00250	.00240	.00600	.01110
4.959	-4.260	.02570	-.21920	.00110	-.00040	.00150	.18440	.00270	.00260	.00630	.01170
4.959	-2.240	.02470	-.15000	-.00010	-.00080	.00150	.17970	.00280	.00260	.00630	.01180
4.959	-.180	.02480	-.08070	.00160	-.00050	.00180	.17500	.00290	.00260	.00640	.01200
4.959	1.850	.02370	-.01440	.00330	-.00060	.00170	.17260	.00290	.00270	.00610	.01170
4.959	3.890	.02710	.05780	.00210	-.00050	.00250	.17040	.00290	.00270	.00600	.01170
4.959	5.930	.02260	.12700	.00230	-.00050	.00240	.16590	.00300	.00270	.00570	.01150
4.959	7.960	.01460	.19310	.00100	-.00090	.00220	.16180	.00290	.00260	.00530	.01100
4.959	9.920	.01120	.26250	.00440	-.00040	.00340	.15910	.00300	.00270	.00520	.01090
	GRADIENT	.00009	.03382	.00027	.00000	.00011	-.00172	.00002	.00001	-.00004	-.00000

MSFC TWT 538 SHUTTLE LAUNCH T10133R1 (A66021) (21 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

ALPHA = .000 ORBIN = -1.500

RUN NO. 81/ 0 RN/L = 4.52 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
.597	-10.080	-.00860	-.07440	.31090	.04370	-.04840	.05910	.02430	.03310	.05610	.11350
.597	-8.110	-.01160	-.07000	.25070	.03640	-.04140	.06400	.02230	.03330	.05340	.10910
.597	-6.080	-.00540	-.07280	.19440	.02830	-.03340	.07190	.02180	.03360	.04770	.10320
.597	-4.050	-.00180	-.07490	.13160	.01990	-.02430	.07680	.02280	.03350	.04220	.09860
.597	-2.030	.00160	-.07270	.07500	.01110	-.01320	.08570	.02190	.03250	.03820	.09280
.597	.000	.00900	-.07970	.01300	.00120	-.00260	.08860	.01940	.03240	.03720	.08910
.597	2.000	.00420	-.07560	-.04890	-.00750	.00690	.08900	.02160	.03160	.03790	.09120
.597	4.050	-.00040	-.06810	-.10900	-.01680	.01660	.08570	.02290	.03010	.03990	.09300
.597	6.070	-.00310	-.06130	-.16750	-.02620	.02810	.08450	.02380	.02810	.04070	.09270
.597	8.100	-.00860	-.06200	-.22940	-.03400	.03680	.08170	.02430	.02710	.04470	.09620
.597	10.050	-.01140	-.05760	-.28640	-.04250	.04550	.07630	.02650	.02560	.04820	.10050
	GRADIENT	.00027	.00053	-.02991	-.00455	.00504	.00104	-.00000	-.00038	-.00024	-.00063

RUN NO. 80/ 0 RN/L = 5.71 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
.901	-10.190	.00230	-.10960	.32840	.04240	-.04530	.09670	.02770	.03650	.06070	.12500
.901	-8.210	.00660	-.10830	.26540	.03640	-.03980	.10420	.02660	.03590	.05770	.12040
.901	-6.150	.01310	-.11280	.20440	.02850	-.03260	.11540	.02450	.03500	.05410	.11370
.901	-4.100	.01660	-.11200	.14160	.02060	-.02490	.12170	.02410	.03480	.04970	.10870
.901	-2.050	.02310	-.12010	.08030	.01280	-.01620	.12510	.02230	.03440	.04770	.10460
.901	.000	.02570	-.11760	.01450	.00250	-.00480	.12620	.02240	.03410	.04770	.10430
.901	2.010	.02360	-.11460	-.05190	-.00830	.00940	.12770	.02270	.03260	.04730	.10270
.901	4.090	.01820	-.10970	-.11600	-.01720	.01840	.12830	.02390	.03070	.04750	.10220
.901	6.130	.01520	-.10620	-.17710	-.02610	.02890	.12580	.02490	.02950	.04780	.10240
.901	8.190	.00790	-.10030	-.24040	-.03310	.03670	.12130	.02670	.02710	.05050	.10440
.901	10.160	.00140	-.09530	-.30210	-.04050	.04370	.11640	.02900	.02480	.05260	.10650
	GRADIENT	.00018	.00049	-.03167	-.00473	.00549	.00077	.00000	-.00049	-.00023	-.00073

MSFC TWT 538 SHUTTLE LAUNCH T10183R1 (A66021) (21 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

ALPHA = .000 ORBIN = -1.500

RUN NO. 78/ 0 RN/L = 6.04 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.101	-10.240	.02260	-.12340	.37560	.05840	-.06600	.19540	.03880	.04200	.08230	.16320
1.101	-8.250	.03780	-.13280	.29960	.04770	-.05380	.19940	.04120	.04230	.07990	.16350
1.101	-6.180	.04960	-.13830	.22310	.03640	-.04150	.20470	.04050	.04240	.07780	.16090
1.101	-4.120	.05750	-.14430	.15100	.02490	-.02890	.21420	.03930	.04190	.07560	.15700
1.101	-2.080	.06220	-.14430	.08040	.01330	-.01540	.21820	.03960	.04200	.07550	.15720
1.101	.000	.06290	-.14410	.00900	.00100	-.00180	.22190	.03920	.04150	.07400	.15480
1.101	2.030	.06170	-.14190	-.05980	-.01060	.01100	.22070	.03990	.04140	.07470	.15600
1.101	4.110	.05810	-.13980	-.12960	-.02240	.02410	.21770	.03900	.03960	.07510	.15390
1.101	6.170	.05100	-.13610	-.20340	-.03440	.03650	.21790	.03950	.03710	.07700	.15370
1.101	8.240	.03890	-.12830	-.27740	-.04620	.04860	.21240	.04110	.03640	.07870	.15630
1.101	10.230	.02680	-.11830	-.35090	-.05760	.05980	.20790	.04160	.03540	.08050	.15770
	GRADIENT	.00003	.00055	-.03410	-.00576	.00644	.00046	-.00001	-.00025	-.00009	-.00036

RUN NO. 79/ 0 RN/L = 6.09 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.198	-10.280	-.01270	-.08760	.37680	.05850	-.05850	.20130	.04060	.04050	.07460	.15580
1.198	-8.280	-.00210	-.09210	.29840	.04920	-.04710	.20650	.04070	.04030	.07170	.15280
1.198	-6.210	.01020	-.09760	.22160	.03760	-.03420	.21270	.03930	.04010	.06860	.14810
1.198	-4.140	.02220	-.10320	.14690	.02520	-.02110	.21910	.03730	.04010	.06610	.14360
1.198	-2.090	.02750	-.10430	.07480	.01280	-.00890	.22170	.03640	.03970	.06330	.13950
1.198	.000	.02860	-.10560	.00430	.00030	.00200	.22330	.03570	.03960	.06300	.13840
1.198	2.030	.03010	-.10260	-.06280	-.01190	.01160	.22380	.03540	.03820	.06500	.13870
1.198	4.120	.02650	-.10180	-.13450	-.02460	.02320	.22320	.03570	.03650	.06820	.14030
1.198	6.190	.01740	-.09550	-.21030	-.03770	.03580	.22160	.03800	.03440	.06910	.14150
1.198	8.260	.00530	-.08810	-.28680	-.04990	.04860	.21730	.03980	.03320	.07120	.14430
1.198	10.260	-.01020	-.08080	-.36170	-.05930	.05910	.21360	.04090	.03320	.07220	.14630
	GRADIENT	.00054	.00022	-.03393	-.00602	.00529	.00050	-.00020	-.00042	.00027	-.00036

MSFC TWT 538 SHUTTLE LAUNCH T101S3R1 (A66021) (21 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

ALPHA = .000 ORBIN = -1.500

RUN NO. 133/ 0 RN/L = 7.06 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.957	-10.380	.01690	-.10010	.37250	.04300	-.05910	.19340	.02450	.01690	.04610	.08760
1.957	-8.340	.01960	-.10270	.29970	.03590	-.04970	.19660	.02420	.01700	.04530	.08660
1.957	-6.250	.01920	-.10200	.22260	.02690	-.03790	.19820	.02430	.01750	.04440	.08620
1.957	-4.160	.02110	-.10020	.14760	.01800	-.02510	.20030	.02590	.01740	.04180	.08530
1.957	-2.100	.02140	-.10090	.07770	.00940	-.01340	.20050	.02560	.01710	.04190	.08470
1.957	.000	.02120	-.09900	.00330	-.00060	.00130	.19740	.02570	.01700	.04090	.08380
1.957	2.050	.02010	-.09910	-.06840	-.01040	.01450	.19780	.02570	.01640	.04220	.08430
1.957	4.170	.01900	-.09690	-.14030	-.01970	.02640	.20070	.02600	.01620	.04190	.08420
1.957	6.240	.01720	-.09630	-.21500	-.02840	.03840	.20160	.02470	.01670	.04350	.08500
1.957	8.330	.01740	-.09440	-.29010	-.03760	.05070	.19710	.02380	.01640	.04410	.08450
1.957	10.350	.01580	-.09380	-.36410	-.04510	.06040	.19580	.02460	.01720	.04590	.08760
	GRADIENT	-.00026	.00040	-.03469	-.00457	.00629	-.00009	.00001	-.00015	.00002	-.00012

RUN NO. 152/ 0 RN/L = 4.89 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
4.959	-10.060	.01770	-.05980	.26210	.02210	-.01790	.18460	.00280	.00230	.00560	.01070
4.959	-8.090	.01900	-.06340	.20410	.01620	-.01260	.18100	.00280	.00230	.00560	.01090
4.959	-6.070	.01920	-.06680	.15080	.01200	-.00690	.17830	.00290	.00240	.00560	.01100
4.959	-4.040	.02030	-.07050	.09750	.00770	-.00380	.17720	.00290	.00250	.00570	.01110
4.959	-2.040	.02380	-.07090	.05040	.00370	.00000	.17490	.00290	.00260	.00590	.01150
4.959	.000	.02240	-.07170	.00160	-.00050	.00180	.17460	.00290	.00260	.00610	.01170
4.959	2.000	.02320	-.06940	-.04400	-.00420	.00350	.17610	.00300	.00260	.00620	.01190
4.959	4.040	.02020	-.06090	-.09560	-.00920	.00700	.17920	.00300	.00270	.00620	.01190
4.959	6.060	.02080	-.05560	-.14420	-.01250	.00970	.18240	.00300	.00270	.00630	.01200
4.959	8.090	.01910	-.05320	-.19890	-.01710	.01360	.18660	.00310	.00260	.00630	.01200
4.959	10.030	.01770	-.05360	-.25660	-.02270	.02060	.18950	.00310	.00250	.00610	.01180
	GRADIENT	-.00004	.00103	-.02379	-.00206	.00124	.00026	.00001	.00002	.00006	.00010

MSFC TWT 538 SHUTTLE LAUNCH T1C2S1R1 (A66022) (21 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

BETA = .000 ORBIN = -1.500

RUN NO. 63/ 0 RN/L = 4.53 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
.602	-10.520	.07000	-.67840	-.00890	.00040	.00160	.08920	.02270	.03530	.04680	.10490
.602	-8.520	.05830	-.56200	-.01080	-.00050	.00140	.09100	.02050	.03530	.04390	.09980
.602	-6.450	.04470	-.45050	-.00810	.00010	.00120	.09070	.02010	.03570	.04360	.09940
.602	-4.370	.02710	-.33140	-.00540	.00000	.00090	.09160	.02160	.03540	.04300	.10010
.602	-2.290	.00940	-.20350	.00070	-.00010	.00000	.09580	.02040	.03360	.03940	.09350
.602	-.220	-.01060	-.08570	-.00230	.00000	-.00080	.09560	.02100	.03220	.03750	.09090
.602	1.850	-.03450	.04140	.00040	.00000	.00040	.09590	.02270	.03140	.03490	.08910
.602	3.920	-.06190	.16180	.00190	-.00060	.00010	.08910	.02530	.03200	.03640	.09380
.602	6.000	-.08230	.28510	.00460	.00020	-.00270	.08540	.02510	.03230	.03610	.09360
.602	8.070	-.10040	.40080	.00610	.00100	-.00420	.07690	.02580	.03290	.03790	.09670
.602	10.060	-.11860	.51270	-.00040	.00060	-.00370	.07070	.02590	.03320	.03960	.09870
	GRADIENT	-.01071	.05943	.00069	-.00005	-.00006	-.00024	.00047	-.00043	-.00085	-.00082

RUN NO. 62/ 0 RN/L = 5.69 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
.902	-10.880	.11910	-.77970	-.01090	.00270	-.00070	.16170	.03070	.03310	.05730	.12120
.902	-8.820	.10390	-.65010	-.00840	.00200	-.00030	.16290	.02810	.03520	.05450	.11790
.902	-6.680	.09010	-.52780	-.00800	.00220	-.00170	.16290	.02560	.03630	.04990	.11190
.902	-4.540	.06140	-.38220	-.00760	.00050	-.00070	.16360	.02490	.03560	.04600	.10660
.902	-2.400	.03540	-.24530	-.00440	.00040	-.00080	.16290	.02460	.03500	.04470	.10440
.902	-.260	.01380	-.11740	-.00130	.00040	-.00130	.15920	.02350	.03350	.04440	.10150
.902	1.850	-.01600	.00640	.00380	.00090	-.00310	.15260	.02350	.03260	.04270	.09890
.902	3.930	-.08940	.14650	.00130	.00010	-.00260	.14010	.02420	.03310	.04070	.09810
.902	6.050	-.14000	.29070	.00310	.00020	-.00480	.13170	.02490	.03400	.04090	.09990
.902	8.170	-.17790	.42980	.00590	.00370	-.00280	.12190	.02540	.03420	.04310	.10280
.902	10.220	-.18130	.53000	.00920	-.00200	-.00350	.11940	.02630	.03400	.04690	.10730
	GRADIENT	-.01663	.06177	.00123	-.00001	-.00029	-.00270	-.00012	-.00035	-.00059	-.00106

MSFC TWT 538 SHUTTLE LAUNCH T1C281R1 (A66022) (21 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

BETA = .000 ORBIN = -1.500

RUN NO. 65/ 0 RN/L = 6.01 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.104	-11.130	.21400	-.94650	-.01210	-.00060	.00330	.26090	.03770	.03970	.06790	.14530
1.104	-8.990	.17970	-.76750	-.01030	-.00030	.00360	.26380	.03780	.03950	.06690	.14430
1.104	-6.780	.13880	-.58540	-.00560	-.00030	.00350	.26600	.03870	.04040	.06660	.14580
1.104	-4.590	.09880	-.42070	-.00400	-.00070	.00360	.27030	.03790	.04080	.06380	.14260
1.104	-2.420	.06130	-.26980	-.00120	-.00010	.00290	.26460	.03950	.04160	.06390	.14500
1.104	-.260	.02670	-.12790	.00260	-.00040	.00150	.26240	.04010	.04100	.06320	.14440
1.104	1.890	-.00330	.00720	.00600	-.00040	.00110	.25750	.04090	.04040	.06300	.14440
1.104	4.020	-.04680	.14410	.00810	-.00030	.00020	.24570	.04130	.04020	.06300	.14460
1.104	6.150	-.12500	.30500	.01020	-.00050	.00100	.24080	.04260	.04050	.06160	.14480
1.104	8.300	-.16360	.44640	.01240	-.00050	.00070	.23050	.04140	.03940	.06150	.14240
1.104	10.370	-.19540	.57700	.01210	-.00060	.00040	.21950	.04030	.03850	.06090	.13980
	GRADIENT	-.01652	.06534	.00146	.00002	-.00040	-.00261	.00038	-.00011	-.00012	.00016

RUN NO. 64/ 0 RN/L = 6.06 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.196	-11.180	.16930	-.91040	-.01290	-.00080	-.00030	.26710	.03870	.03900	.06810	.14600
1.196	-9.020	.13140	-.72010	-.00840	-.00100	-.00060	.27180	.03730	.03950	.06450	.14150
1.196	-6.810	.09650	-.54730	-.00780	-.00100	-.00070	.27360	.03620	.03930	.06270	.13830
1.196	-4.620	.06900	-.39470	-.00620	-.00110	-.00040	.27430	.03580	.03920	.06030	.13550
1.196	-2.440	.04480	-.25530	-.00020	-.00110	-.00100	.27460	.03550	.03930	.05720	.13210
1.196	-.270	.02140	-.12250	.00070	-.00150	-.00090	.26900	.03690	.03830	.05710	.13240
1.196	1.890	-.00630	.00990	.00170	-.00130	-.00080	.26090	.03690	.03780	.05670	.13160
1.196	4.040	-.04210	.14390	.00710	-.00100	-.00190	.25250	.03820	.03780	.05840	.13450
1.196	6.170	-.10230	.28910	.00970	-.00040	-.00300	.24500	.03900	.03760	.05840	.13510
1.196	8.330	-.13260	.42160	.01180	-.00040	-.00350	.23550	.03940	.03740	.06020	.13700
1.196	10.410	-.15360	.54780	.01330	-.00040	-.00340	.22480	.04030	.03820	.06240	.14100
	GRADIENT	-.01262	.06201	.00132	-.00000	-.00013	-.00264	.00029	-.00020	-.00020	-.00012

MSFC TWT 538 SHUTTLE LAUNCH T1O2S1R1 (A66022) (21 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

BETA = .000 ORBIN = -1.500

RUN NO. 124/ 0 RN/L = 7.03 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.965	-11.260	.06280	-.69420	-.01360	-.00230	.00330	.26010	.02750	.01650	.04320	.08730
1.965	-9.120	.04180	-.56860	-.01280	-.00250	.00300	.25920	.02730	.01840	.04240	.08820
1.965	-6.920	.02410	-.43800	-.01150	-.00260	.00250	.25320	.02660	.01990	.04260	.08920
1.965	-4.680	.01160	-.30840	-.00970	-.00230	.00210	.24690	.02570	.02020	.04110	.08710
1.965	-2.470	.00210	-.19290	-.00750	-.00220	.00190	.24010	.02550	.02060	.04010	.08640
1.965	-.280	-.00740	-.08110	-.00570	-.00220	.00220	.23720	.02500	.02130	.03780	.08410
1.965	1.880	-.01950	.02890	-.00530	-.00230	.00240	.23770	.02520	.02120	.03710	.08360
1.965	4.080	-.03030	.13670	-.00450	-.00260	.00320	.23550	.02520	.02160	.03620	.08310
1.965	6.270	-.04300	.24530	-.00330	-.00310	.00270	.23320	.02540	.02200	.03810	.08570
1.965	8.460	-.05530	.34770	-.00290	-.00310	.00290	.22950	.02550	.02300	.03710	.08570
1.965	10.540	-.06500	.45020	-.00120	-.00300	.00260	.22380	.02530	.02380	.03650	.08560
	GRADIENT	-.00482	.05085	.00058	-.00003	.00012	-.00115	-.00006	.00016	-.00059	-.00049

RUN NO. 140/ 0 RN/L = 5.02 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
4.959	-10.320	-.00050	-.44610	-.00430	-.00090	-.00020	.22080	.00230	.00250	.00610	.01110
4.959	-8.350	-.00150	-.35830	-.00090	-.00090	.00120	.21240	.00250	.00260	.00620	.01140
4.959	-6.330	-.00260	-.27990	-.00370	-.00120	.00070	.20570	.00260	.00270	.00610	.01150
4.959	-4.290	-.00120	-.20760	-.00490	-.00090	.00110	.19950	.00270	.00270	.00600	.01150
4.959	-2.240	.00820	-.13800	.00000	.00000	.00180	.19480	.00280	.00280	.00620	.01180
4.959	-.180	.01420	-.06870	.00160	-.00050	.00170	.18950	.00280	.00280	.00610	.01180
4.959	1.850	.02010	-.00840	.00030	-.00110	.00210	.18750	.00280	.00280	.00600	.01170
4.959	3.890	.02640	.06090	.00210	-.00050	.00290	.18030	.00290	.00270	.00570	.01140
4.959	5.940	.02740	.13600	.00090	-.00050	.00200	.17630	.00290	.00260	.00580	.01140
4.959	7.970	.02620	.20210	.00110	-.00050	.00150	.17550	.00290	.00270	.00550	.01130
4.959	9.940	.02950	.27450	.00290	-.00060	.00220	.17510	.00300	.00260	.00550	.01110
	GRADIENT	.00328	.03260	.00070	-.00001	.00019	-.00223	.00002	.00000	-.00004	-.00001

MSFC TWT 538 SHUTTLE LAUNCH T1C2S1R1 (A66023) (21 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

ALPHA = .000 ORBIN = -1.500

RUN NO. 70/ 0 RN/L = 4.55 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
.600	-10.080	-.04210	-.02820	.31050	.04480	-.03280	.06860	.02940	.03600	.03960	.10500
.600	-8.130	-.04270	-.02900	.25490	.03720	-.02980	.07370	.02790	.03510	.03820	.10140
.600	-6.090	-.03560	-.03180	.19740	.02940	-.02520	.07940	.02690	.03470	.03500	.09660
.600	-4.060	-.02780	-.03940	.14050	.02090	-.01820	.08510	.02600	.03540	.03260	.09400
.600	-2.030	-.02440	-.04430	.07580	.01110	-.01090	.08830	.02470	.03480	.03300	.09260
.600	.000	-.02180	-.05150	.01060	.00090	-.00170	.09180	.02300	.03290	.03480	.09080
.600	2.020	-.02020	-.04470	-.04840	-.00860	.00660	.09410	.02380	.03210	.03250	.08850
.600	4.050	-.02660	-.03810	-.11090	-.01830	.01470	.09040	.02660	.03030	.03320	.09030
.600	6.080	-.03030	-.03400	-.16850	-.02790	.02210	.08540	.02930	.02710	.03650	.09300
.600	8.110	-.03690	-.02750	-.22530	-.03580	.02820	.08500	.03020	.02470	.03770	.09270
.600	10.060	-.04250	-.03050	-.28370	-.04350	.03260	.08040	.03110	.02470	.04170	.09760
	GRADIENT	.00033	.00011	-.03093	-.00484	.00411	.00081	.00001	-.00064	.00003	-.00057

RUN NO. 69/ 0 RN/L = 5.42 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
.803	-10.190	-.02820	-.04520	.32810	.04360	-.03050	.09570	.03270	.03600	.04710	.11590
.803	-8.220	-.02390	-.04760	.26700	.03530	-.02540	.10500	.03060	.03590	.04310	.10970
.803	-6.160	-.02190	-.05480	.20630	.02770	-.02400	.11270	.02810	.03580	.03960	.10360
.803	-4.100	-.01490	-.06480	.14530	.01950	-.01940	.11800	.02530	.03590	.03930	.10060
.803	-2.050	-.01230	-.06670	.08410	.01160	-.01480	.12070	.02490	.03500	.04060	.10060
.803	.000	-.01460	-.07500	.01500	.00290	-.00510	.12360	.02350	.03350	.04040	.09760
.803	2.020	-.01350	-.07030	-.05410	-.00690	.00780	.12600	.02640	.03200	.03770	.09610
.803	4.080	-.01300	-.07120	-.11890	-.01590	.01640	.12570	.02580	.03040	.04020	.09640
.803	6.140	-.01980	-.06080	-.18400	-.02520	.02290	.12240	.02830	.02800	.04000	.09640
.803	8.190	-.02510	-.05090	-.24680	-.03350	.02660	.11620	.03210	.02630	.04150	.10000
.803	10.160	-.02720	-.04710	-.30620	-.04110	.03040	.11330	.03390	.02400	.04310	.10110
	GRADIENT	.00013	-.00080	-.03263	-.00437	.00461	.00101	.00012	-.00069	-.00005	-.00063

MSFC TWT 538 SHUTTLE LAUNCH T102S1R1 (A66023) (21 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

ALPHA = .000 ORBIN = -1.500

RUN NO. 68/ 0 RN/L = 5.69 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
.903	-10.250	-.01130	-.06230	.35220	.04600	-.03140	.12800	.03410	.03700	.04840	.11970
.903	-8.260	-.00610	-.07010	.28650	.03790	-.02860	.13590	.03300	.03700	.04660	.11670
.903	-6.190	.00200	-.08310	.21870	.02890	-.02420	.14460	.02840	.03680	.04560	.11090
.903	-4.120	.00610	-.09460	.14820	.02040	-.01980	.14970	.02490	.03590	.04460	.10550
.903	-2.060	.01180	-.10230	.08540	.01300	-.01440	.15170	.02440	.03570	.04510	.10540
.903	.000	.00900	-.10530	.01590	.00240	-.00470	.15620	.02480	.03430	.04290	.10210
.903	2.040	.00940	-.10000	-.06030	-.00930	.00950	.16000	.02460	.03220	.04260	.09950
.903	4.110	.00650	-.09330	-.12720	-.01780	.01680	.15910	.02510	.03050	.04260	.09830
.903	6.160	-.00140	-.08480	-.19170	-.02580	.02350	.15380	.02760	.02910	.04400	.10080
.903	8.230	-.00590	-.07090	-.26020	-.03410	.02810	.14760	.03170	.02690	.04530	.10410
.903	10.220	-.01100	-.05960	-.32360	-.04190	.03210	.14070	.03510	.02530	.04670	.10720
	GRADIENT	-.00008	.00024	-.03387	-.00480	.00472	.00132	.00003	-.00070	-.00032	-.00099

RUN NO. 66/ 0 RN/L = 6.00 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.097	-10.330	-.00660	-.08040	.38210	.06040	-.03750	.23080	.04080	.04020	.06370	.14480
1.097	-8.310	.00610	-.08960	.30360	.04940	-.03320	.23300	.04360	.04170	.06380	.14920
1.097	-6.230	.01350	-.09950	.22620	.03710	-.02680	.24050	.04220	.04280	.06330	.14840
1.097	-4.150	.01660	-.10350	.15200	.02480	-.01860	.24670	.04100	.04320	.06210	.14630
1.097	-2.070	.01920	-.10630	.07900	.01260	-.01040	.25210	.04120	.04300	.06190	.14620
1.097	.000	.02100	-.10890	.00680	.00030	-.00080	.25750	.04070	.04170	.06230	.14490
1.097	2.040	.02050	-.10840	-.06490	-.01160	.00880	.26010	.04130	.03990	.06000	.14130
1.097	4.130	.02040	-.10620	-.13510	-.02340	.01770	.26180	.04130	.03940	.06140	.14220
1.097	6.210	.01700	-.10320	-.20830	-.03530	.02660	.25450	.04240	.03810	.06190	.14240
1.097	8.290	.01150	-.09700	-.28410	-.04760	.03390	.24880	.04400	.03740	.06220	.14380
1.097	10.330	.00050	-.08640	-.36070	-.05940	.03790	.24430	.04390	.03620	.06170	.14190
	GRADIENT	.00043	-.00036	-.03474	-.00583	.00444	.00185	.00003	-.00052	-.00016	-.00063

MSFC TWT 538 SHUTTLE LAUNCH T1C251R1 (A66023) (21 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

ALPHA = .000 ORBIN = -1.300

RUN NO. 67/ 0 RN/L = 6.06 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.195	-10.380	-.03350	-.06360	.37980	.06210	-.02690	.23760	.04280	.04040	.06710	.15040
1.195	-8.350	-.02160	-.07000	.29920	.05200	-.02250	.24130	.04430	.04110	.06430	.14980
1.195	-6.260	-.00960	-.07720	.21950	.03870	-.01450	.24930	.04190	.04150	.06170	.14530
1.195	-4.170	-.00130	-.08670	.14410	.02560	-.00850	.25700	.03930	.04080	.05870	.13890
1.195	-2.090	.00380	-.09090	.07340	.01260	-.00310	.26020	.03800	.04020	.05910	.13730
1.195	-.010	.00670	-.09280	.00380	-.00030	.00260	.26360	.03790	.03900	.05990	.13690
1.195	2.070	.00490	-.09130	-.06580	-.01270	.00730	.26530	.03790	.03750	.06040	.13580
1.195	4.150	.00190	-.08770	-.13550	-.02500	.01360	.26260	.03890	.03650	.06250	.13810
1.195	6.240	-.00560	-.08180	-.20850	-.03830	.01990	.26090	.03970	.03560	.06180	.13710
1.195	8.340	-.01600	-.07170	-.28740	-.05140	.02510	.25540	.04200	.03510	.06250	.13970
1.195	10.340	-.02790	-.06280	-.36730	-.06200	.03020	.24980	.04280	.03460	.06480	.14220
	GRADIENT	.00036	-.00012	-.03358	-.00608	.00262	.00078	-.00004	-.00054	.00043	-.00015

RUN NO. 125/ 0 RN/L = 7.03 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.968	-10.460	-.00290	-.09020	.37460	.04300	-.03780	.23770	.02630	.02120	.03860	.08620
1.968	-8.430	-.00520	-.08440	.29790	.03470	-.02890	.23840	.02630	.02190	.03710	.08530
1.968	-6.330	-.00760	-.07990	.22190	.02570	-.02080	.24140	.02660	.02230	.03680	.08580
1.968	-4.200	-.01040	-.07650	.14380	.01550	-.01310	.23830	.02540	.02220	.03720	.08480
1.968	-2.100	-.00880	-.07680	.07060	.00620	-.00540	.23820	.02490	.02220	.03720	.08440
1.968	.000	-.00860	-.07740	-.00430	-.00210	.00210	.23700	.02520	.02160	.03810	.08500
1.968	2.110	-.00900	-.07480	-.07420	-.01010	.00940	.24070	.02600	.02080	.03690	.08380
1.968	4.200	-.01150	-.07250	-.14630	-.01910	.01650	.24300	.02540	.02030	.03720	.08310
1.968	6.310	-.01030	-.07210	-.22400	-.02920	.02420	.24480	.02550	.02070	.03800	.08440
1.968	8.420	-.00770	-.07740	-.30350	-.03870	.03150	.24600	.02580	.02060	.03820	.08460
1.968	10.470	-.00790	-.07950	-.38000	-.04710	.03990	.24480	.02600	.02020	.03910	.08540
	GRADIENT	-.00011	.00048	-.03451	-.00407	.00352	.00057	.00005	-.00025	-.00001	-.00019

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

ALPHA = .000 ORBIN = -1.500

RUN NO. 139/ 0 RN/L = 5.08 GRADIENT INTERVAL = -5.00/ 5.00

MACH	BETA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
4.959	-10.050	.00620	-.05280	.25450	.01840	-.00550	.20190	.00270	.00220	.00580	.01080
4.959	-8.110	.00520	-.05300	.20420	.01400	.00090	.19930	.00280	.00230	.00600	.01120
4.959	-6.100	.00650	-.05980	.15550	.00980	.00310	.19550	.00280	.00240	.00600	.01130
4.959	-4.080	.00780	-.06320	.10830	.00600	.00740	.19310	.00300	.00250	.00600	.01150
4.959	-2.050	.01340	-.06150	.05350	.00280	.00420	.18850	.00300	.00260	.00600	.01160
4.959	.000	.01180	-.06270	.00310	-.00060	.00130	.18840	.00300	.00260	.00590	.01150
4.959	2.020	.01370	-.06390	-.04560	-.00460	-.00110	.18800	.00300	.00270	.00610	.01190
4.959	4.040	.00790	-.05930	-.10340	-.00790	-.00390	.19510	.00300	.00270	.00590	.01170
4.959	6.080	.00720	-.05100	-.14910	-.01180	-.00220	.19810	.00310	.00280	.00620	.01210
4.959	8.100	.00660	-.04860	-.19620	-.01590	.00070	.20340	.00310	.00280	.00600	.01190
4.959	10.040	.00500	-.04300	-.24630	-.02050	.00640	.20660	.00300	.00280	.00600	.01190
	GRADIENT	.00003	.00027	-.02573	-.00173	-.00137	.00017	.00000	.00002	-.00000	.00003

MSFC TWT 538 SHUTTLE LAUNCH T101S1R1 (A66024) (21 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1480 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

BETA = .000 ORBIN = -1.300

RUN NO. 58/ 0 RN/L = 5.71 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
.905	-10.870	.15360	-.80270	-.02480	.00000	-.00110	.15540	.02510	.03450	.06730	.12710
.905	-8.800	.13000	-.66000	-.02360	-.00020	-.00060	.15690	.02310	.03580	.06180	.12080
.905	-6.670	.10280	-.52720	-.01840	-.00030	-.00220	.15740	.02130	.03700	.05700	.11530
.905	-4.540	.07180	-.39060	-.01380	-.00030	-.00120	.15900	.01860	.03650	.05240	.10760
.905	-2.430	.04010	-.26110	-.00860	.00070	-.00230	.16470	.01690	.03570	.04900	.10170
.905	-.280	.00830	-.12710	-.00540	.00050	-.00170	.15670	.01690	.03580	.04910	.10200
.905	1.830	-.02600	-.00030	-.00440	-.00030	-.00030	.15160	.01780	.03540	.04800	.10130
.905	3.930	-.06100	.12120	-.00540	-.00140	.00300	.14530	.01830	.03430	.04630	.09890
.905	6.030	-.11210	.26130	-.00650	-.00230	.00350	.13290	.01900	.03570	.04640	.10110
.905	8.160	-.14940	.38930	-.00720	-.00010	.00560	.12190	.01990	.03620	.04870	.10490
.905	10.190	-.15840	.48480	-.00380	-.00400	.00410	.11980	.02170	.03540	.05350	.11080
	GRADIENT	-.01564	.06059	.00099	-.00015	.00049	-.00191	.00001	-.00022	-.00062	-.00084

RUN NO. 59/ 0 RN/L = 6.06 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.196	-11.160	.21290	-.93790	-.02060	-.00160	.00610	.26080	.03840	.03780	.07850	.15480
1.196	-9.010	.17300	-.75150	-.01840	-.00260	.00720	.26390	.03580	.03820	.07590	.15000
1.196	-6.800	.12930	-.57050	-.01720	-.00330	.00770	.26660	.03420	.03720	.07210	.14360
1.196	-4.610	.08880	-.41000	-.01450	-.00290	.00710	.27190	.03290	.03660	.06830	.13790
1.196	-2.440	.05680	-.26690	-.01180	-.00240	.00660	.27350	.03200	.03770	.06660	.13640
1.196	-.280	.02740	-.13530	-.01030	-.00270	.00540	.27390	.03050	.03820	.06660	.13540
1.196	1.860	-.00070	-.01060	-.00830	-.00300	.00510	.27350	.03080	.03670	.06580	.13350
1.196	4.010	-.03660	.12100	-.00510	-.00220	.00330	.26580	.03070	.03790	.06850	.13720
1.196	6.160	-.07210	.25320	-.00200	-.00230	.00170	.25540	.03200	.03850	.06970	.14020
1.196	8.320	-.09710	.38110	.00000	-.00260	.00180	.24770	.03270	.03780	.07010	.14070
1.196	10.390	-.11400	.49600	-.00070	-.00290	.00240	.23760	.03390	.03780	.07120	.14310
	GRADIENT	-.01431	.06121	.00104	.00004	-.00042	-.00056	-.00026	.00007	-.00002	-.00020

MSFC TWT 538 SHUTTLE LAUNCH T181 (A66025) (21 APR 72)

REFERENCE DATA

SREF = 7.8900 SQ. IN XMRP = 4.1400 IN.
LREF = 3.3440 IN. YMRP = .0000 IN.
BREF = 4.4600 IN. ZMRP = .2480 IN.
SCALE = .0040

PARAMETRIC DATA

BETA = .000

RUN NO. 61/ 0 RN/L = 5.69 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
.903	-10.670	-.13060	-.36390	-.01460	.00020	-.00760	.10880	.00000	.03420	.04570	.08000
.903	-8.630	-.10540	-.28860	-.01280	.00020	-.00640	.11530	.00000	.03350	.04120	.07480
.903	-6.510	-.08050	-.21450	-.00760	.00050	-.00510	.11920	.00000	.03290	.03890	.07180
.903	-4.390	-.05670	-.14500	-.00310	.00050	-.00390	.12230	.00000	.03200	.03680	.06890
.903	-2.280	-.03780	-.07600	-.00270	.00050	-.00180	.12430	.00000	.03100	.03540	.06640
.903	-.170	-.02200	-.00700	.00020	.00010	.00020	.12370	.00000	.03020	.03460	.06480
.903	1.910	-.00830	.05730	.00120	-.00020	.00100	.12270	.00000	.02950	.03410	.06370
.903	4.020	.00740	.12220	.00350	-.00060	.00190	.11880	.00000	.03060	.03640	.06710
.903	6.100	.01980	.19040	.00180	-.00040	.00210	.11840	.00000	.03200	.03800	.07000
.903	8.230	.03630	.26160	.00000	-.00060	.00170	.11300	.00000	.03270	.04110	.07390
.903	10.260	.05590	.33230	.00240	-.00030	.00170	.10750	.00000	.03280	.04410	.07700
	GRADIENT	.00751	.03178	.00081	-.00014	.00069	-.00041	.00000	-.00020	-.00010	-.00030

RUN NO. 60/ 0 RN/L = 6.06 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CN	CY	CBL	CYN	CAF	CABO	CABS	CABHO	CAB
1.194	-11.000	-.17060	-.43720	-.00490	.00000	-.00310	.19990	.00000	.03690	.06020	.09720
1.194	-8.850	-.14710	-.32280	-.00100	-.00010	-.00250	.20710	.00000	.03610	.05670	.09290
1.194	-6.650	-.11900	-.22370	.00050	.00000	-.00190	.21010	.00000	.03720	.05150	.08880
1.194	-4.480	-.08830	-.14440	.00140	.00000	-.00170	.21550	.00000	.03620	.04580	.08210
1.194	-2.320	-.05560	-.07390	.00230	.00000	-.00070	.21820	.00000	.03550	.04220	.07780
1.194	-.170	-.02160	-.00780	.00260	-.00020	.00040	.21850	.00000	.03490	.04140	.07630
1.194	1.970	.00710	.06030	.00360	.00000	.00090	.21680	.00000	.03510	.04290	.07800
1.194	4.130	.04110	.12560	.00500	-.00030	.00130	.21400	.00000	.03580	.04620	.08200
1.194	6.290	.07650	.19560	.00420	-.00030	.00250	.21240	.00000	.03520	.04790	.08310
1.194	8.480	.10910	.26380	.00580	-.00050	.00360	.20770	.00000	.03680	.05100	.08780
1.194	10.600	.13560	.38690	.00780	-.00120	.00390	.20170	.00000	.03810	.05520	.09330
	GRADIENT	.01495	.03134	.00040	-.00003	.00035	-.00020	.00000	-.00006	.00007	-.00000