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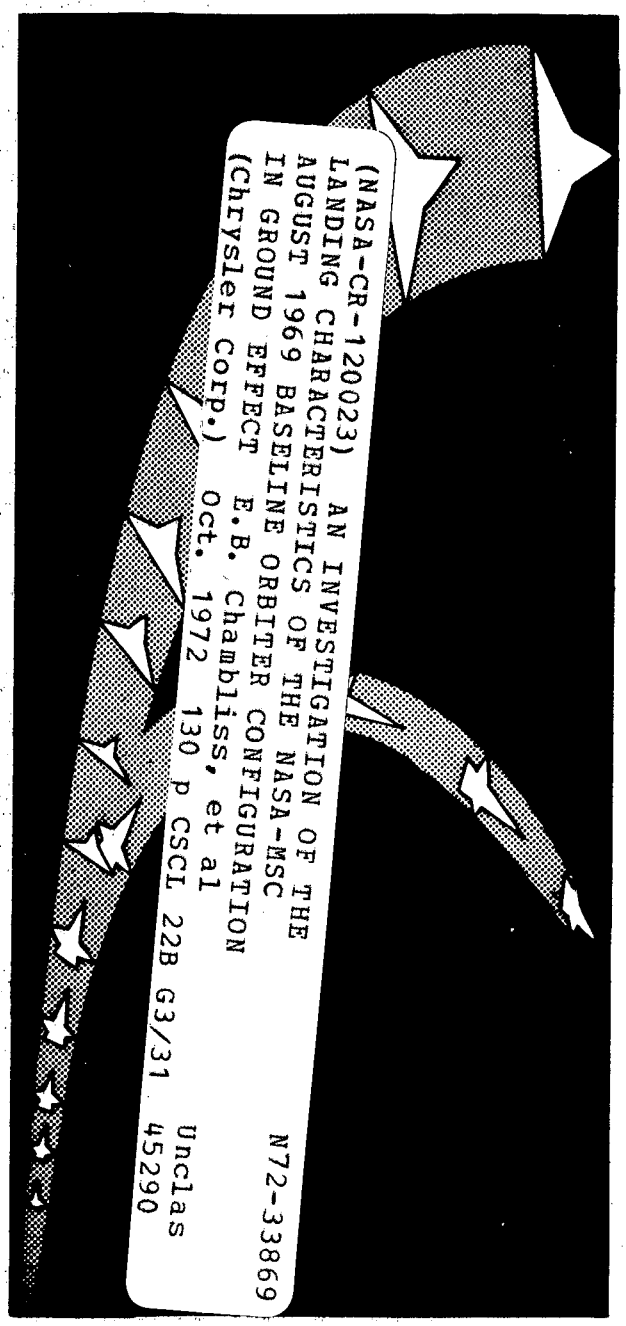

—SPACE SHUTTLE—

AN INVESTIGATION OF THE LANDING CHARACTERISTICS OF THE NASA-MSC AUGUST 1969 BASELINE ORBITER CONFIGURATION IN GROUND EFFECT

by

Edmond B. Chambliss, MSC
David Millikan, T A&M

TEXAS A&M LOW SPEED WIND TUNNEL

SADSAC SPACE SHUTTLE
AEROTHERMODYNAMIC
DATA MANAGEMENT SYSTEM

CONTRACT NAS8-4016
MARSHALL SPACE FLIGHT CENTER

SPACE DIVISION CHRYSLER CORPORATION

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SADSAC/SPACE SHUTTLE

WIND TUNNEL TEST DATA REPORT

CONFIGURATION: NASA-MSC Test Series S-VIII - Phase 2
NASA-MSC August 1969 Baseline Orbiter Model S-4

TEST PURPOSE: Define the landing aerodynamic characteristics of the NASA-MSC August 1969 Baseline Orbiter Configuration in ground effect

TEST FACILITY: Texas A&M University Low Speed Wind Tunnel

TESTING AGENCY: NASA-MSC

TEST NO. & DATE: NASA-MSC Test S-VIII - Phase 2 - August 1970

FACILITY COORDINATOR: NASA-MSC --- Ray Nelson

PROJECT ENGINEER(S): NASA-MSC --- Edmond B. Chambliss
Texas A&M -- David Millikan

Model Scale: 0.05
Mach Number: 0.25

DATA MANAGEMENT SERVICES

LIAISON: H C Zimmerle for V. W. Sparks

DATA OPERATIONS: H C Zimmerle H. C. Zimmerle

RELEASE APPROVAL: J. T. Glyn FOR N. D. Kemp, Supervisor
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CONTRACT NAS8-4016 AMENDMENT 174 DRL 297-84a

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TABLE OF CONTENTS

AN INVESTIGATION OF THE LANDING CHARACTERISTICS OF THE NASA-MSC AUGUST 1969 BASELINE ORBITER CONFIGURATION IN GROUND EFFECT

By

Edmond B. Chambliss and David Milliken

SUMMARY

A 0.05 scale model of the NASA-MSC August 1969 Baseline Shuttle Craft was tested in Texas A&M University's 7- x 10-foot Low Speed Wind Tunnel Facility. The purpose of the test was to determine the landing aerodynamic characteristics of the shuttle craft vehicle in ground effect and to evaluate control surface hinge moments experienced in the cruise and landing operational phases of flight. Analysis of the final data will allow evaluation of vehicle flight stability in ground effect and estimation of vehicle control surface power system requirements.

This test was a continuation of NASA-MSC Test Series VIII - Phase 1. The Phase 1 test results are presented in DMS-DR-1060.

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

NOMENCLATURE (Continued)

Surface Definitions

SYMBOL	SADSAC SYMBOL	DEFINITION
i_t	HORIZT	horizontal tail incidence, positive when trailing edge down; degrees
δ_a	AILRON	aileron, total aileron deflection angle, degrees, (left aileron-right aileron)/2
δ_e	ELEVTR	elevator, surface deflection angle, positive deflection, trailing edge down; degrees
δ_r	RUDDER	rudder, surface deflection angle, positive deflection, trailing edge to the left; degrees
δ_{a_L}	AIL-L	left aileron, surface deflection angle, positive deflection, trailing edge down; degrees
δ_{a_R}	AIL-R	right aileron, surface deflection angle, positive deflection, trailing edge down; degrees

ADDITIONS TO SADSAC NOMENCLATURE
FOR
MSC-S-VIII PHASE 2

SYMBOL	SADSAC SYMBOL	DEFINITION
δ_f	FLAP	flap, surface deflection angle and configuration. A parameter value of 15.0 denotes 15° deflection of full exposed span flaps, and a value of 15.6 denotes 15° deflection of 60% exposed span flaps. Positive deflection is trailing edge down.
$\frac{h}{b}$	H/B	ground plane distance measured to the quarter-chord of the wing m.a.c. at zero angle of attack, divided by the reference span.
C_{h_e}	CHE	elevator hinge moment coefficient based on elevator area and m.a.c., $C_{h_e} = \frac{\text{elevator hinge moment}}{q \; S_e \; \bar{c}_e}$
C_{h_r}	CHR	rudder hinge moment coefficient based upon rudder area and m.a.c., $C_{h_r} = \frac{\text{rudder hinge moment}}{q \; S_r \; \bar{c}_r}$

CONFIGURATIONS INVESTIGATED

Shuttle Craft Model S-4 is a 0.05 scale model of the MSC Orbiter Shuttle configuration as of August 13, 1969.

Components

B_1	0.05 Scale Model of NASA-MSC August 1969 Baseline Orbiter Fuselage
W_2	MSC Orbiter S-4 Wing
H6	MSC Orbiter S-4 Horizontal Tail
V_3	MSC Orbiter S-4 Vertical Stabilizer
$S_{X.Y}$	spoilers, subscript denotes spoiler configuration and chordwise location on the wing. For example, $S_{10.15}$ is spoiler configuration 10 located at X/C = .15.
R_1	rocket nozzle
T	transition strips, #80 grit on wing, horizontal tail, and vertical tail, located at X/C = .10.

Combinations of the component parts used to form the configurations investigated are shown in Table I. Figures 2 through 13 present the complete model geometry and various model component geometries. The model components are identical to those used for NASA-MSC Test Series VIII-Phase 1 except that different spoilers were used for this test. The spoiler configurations presented in Figures 8 and 9 are comprehensive for Phase 1 and 2.

TEST FACILITY DESCRIPTION

The Texas A&M University Low Speed Wind Tunnel is a continuous closed circuit horizontal single return facility. The overall circuit length is 397.5 feet; the tunnel is constructed of steel supported above the ground on concrete pillars. The rectangular 7 foot by 10 foot test section is 16 feet long, and it is operated at atmospheric pressure through a speed range from zero to 300 feet per second. The tunnel is powered by a 1250 KVA synchronous electric motor which drives a 12 1/2-foot diameter Curtiss Electric propeller; the controls for the motor and its auxiliaries are located in the control room. Cooling of the tunnel circuit during warm weather is accomplished by spraying the outside of the tunnel shell with water; this keeps the tunnel circuit temperature within $10^{o}F$ of ambient temperatures to protect models and to maintain tolerable test section working conditions for model configuration changes. The 7 x 10 test section incorporates an external pyramid balance system which separates and independently measures the aerodynamic components.

The external balance used in the test was a Dynametrics, Inc., pyramid balance located on the first floor of the tunnel facility and was directly beneath the test section turntable. With the model mounted on the single strut, Figure 14, the model pitch mechanism rotation center was located over the external balance center.

A ground plane was installed at an arbitrary, pre-determined height and supported rigidly with extra support posts and interlacing guy wires in addition to adjustable corner posts. Figure 15 presents a stream wise view of ground plane installation in the tunnel.

For a more detailed description of this tunnel refer to the Low Speed Wind Tunnel Facility Handbook published by the Space Technology Division, Texas A&M University, College Station, Texas.

DATA REDUCTION

Longitudinal and lateral-directional aerodynamic coefficients were measured with the externally mounted Dynametrics, Inc., pyramid balance of the facility. The aerodyanmic forces acting of the model were resolved by the balance into three-force and three-moment components measured along and about a wind axis system having its origin at the model trunnion position.

Moments were taken about two reference C.G. locations: 50% body length and 60% body length. The following data were used in the data reduction:

Model Trunnion Position:

Fuselage Station	37.468 in.
Body Line	0.0 in.
Water Line	2.927 in.

Aerodynamic Reference Position

(60% ℓ_B, 50% $Z_{B_{max}}$)

S_{REF}	2.3 ft^2
L_{REF}	0.6121 ft
B_{REF}	3.9946 ft
XMRP	41.396 in.
YMRP	0.0
ZMRP	6.396 in. (W. L.)

Hinge Moment Reference Data

Elevator Area (Total)	78.592 in^2
Elevator Mean Aerodynamic Chord	3.298 in.
Rudder Area	26.046 in^2
Rudder Mean Aerodynamic Chord	2.937 in.

TABLE I. NASA--MSC TEST SVIII – Phase 2 DATA SET COLLATION SHEET

☐ PRETEST
☒ POSTTEST

DATA SET IDENTIFIER	CONFIGURATION	SCHD. α	SCHD. β	MACH/RUN NOS. 0.25		NO. of RUNS	PARAMETERS / VALUES δ_e	δ_f	δ_r	i_t	h/b	H.M.
RG9001	$B_1W_2H_6V_3S_{5.7}$	A_1	0	1	(Part A)		0	0	0	0	—	No
002	↓	0	B_1	2			↓	↓	↓	↓	—	↓
003	$B_1W_2H_6V_3$	A_1	0	3			↓	↓	↓	↓	—	Yes
004	↓	0	B_1	4			↓	↓	↓	↓	—	↓
005	↓	A_1	0	5			+5	↓	↓	↓	—	↓
006	↓	↓	↓	6			-5	↓	↓	↓	—	↓
007	↓	↓	↓	7			-15	↓	↓	↓	—	↓
008	↓	↓	↓	8			-25	↓	↓	↓	—	↓
009	↓	↓	↓	9			+15	↓	↓	↓	—	↓
010	↓	↓	↓	10			+25	↓	↓	↓	—	↓
011	↓	↓	↓	11			+30	↓	↓	↓	—	↓
012	↓	0	B_1	12			0	↓	-20	↓	—	↓
013	↓	↓	↓	13			↓	↓	-15	↓	—	↓
014	↓	↓	↓	14			↓	↓	-5	↓	—	↓
015	↓	↓	↓	15			↓	↓	-10	↓	—	↓
016	$B_1W_2H_6V_3L$	A_1	0	16			↓	45.6	↓	↓	—	↓
017	↓	0	B_1	17			↓	↓	↓	↓	—	↓
018	↓	A_1	0	18			+5	↓	↓	↓	—	↓
019	↓	0	B_1	19			↓	↓	↓	↓	—	↓
020	↓	A_1	0	20	↓		-5	↓	↓	↓	—	↓

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

CN , CA , CLM , CY , CYN , CBL CPBASE CHE , CHR ,

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

α or β SCHEDULES

$\alpha, A_1 \rightarrow$ 0, -14, -10, -8, -6, -4, -2, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 14, 16, 20, 25, 0

$\beta, B_1 \rightarrow$ 0, -15, -10, -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5, 10, 15, 0

TABLE I. NASA--MSC TEST SVIII - Phase 2 DATA SET COLLATION SHEET (Continued)

☐ PRETEST
☒ POSTTEST

DATA SET IDENTIFIER	CONFIGURATION	SCHD. α	SCHD. β	MACH/RUN NOS. 0.25			NO. of RUNS	PARAMETERS/VALUES δe	δf	δr	i_t	h/b	H.M.
RG9021	$B_1 W_2 H_6 V_3 L$	0	B_1	21	(Part A)			-5	45,6	-10	0	—	Yes
022		A_1	0	22				+15				—	
023		0	B_1	23								—	
024		A_1	0	24						-20		—	
025		0	B_1	25								—	
026		A_1	0	26				-25				—	
027		0	B_1	27								—	
028		A_1	0	28						-10		—	
029		0	B_1	29								—	
030		A_4	0	30				-15				—	
031		0	B_1	31								—	
032		A_1	0	32						-20		—	
033		0	B_1	33								—	
034		A_1	0	34				0	0	0		—	No
035	$B_1 W_2 H_6 V_3$			35							-6	—	Yes
036				36				+5				—	
037				37				+15				—	
038				38				+25				—	
039				39				+30				—	
040				40				-5				—	

11

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

CN | CA | CLM | CY | CYN | CBL | CPBASE CHE | CHR | IDPVAR(1) | IDPVAR(2) | NDV

COEFFICIENTS:
α or β SCHEDULES

$\alpha, A_4 \rightarrow$ 0, -14, -10, -9.5, -9.0, -8.5, -8.0, -7.5, -7.0, -6.5, -6.0, -4, -2, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 14, 16, 20, 25, 0

TABLE I. NASA--MSC TEST SVIII - Phase 2 DATA SET COLLATION SHEET (Continued)

☐ PRETEST
☒ POSTTEST

DATA SET IDENTIFIER	CONFIGURATION	SCHD. α	SCHD. β	MACH/RUN NOS. 0.25		NO. of RUNS	PARAMETERS / VALUES δe	δf	δr	iτ	h/b	H.M.
RG9 041	B, W2 H6 V3	A,	0	41	(Part A)		-15	0	0	-6	—	Yes
042	↓	↓	↓	42	↓		-25	↓	↓	↓	—	↓
043	↓	↓	↓	43	↓		-30	↓	↓	↓	—	↓
044	B, W2 H6 V3 L	↓	↓	44	↓		↓	45.0	↓	↓	—	↓
045	↓	↓	↓	45	↓		-25	↓	↓	↓	—	↓
046	↓	↓	↓	46	↓		-15	↓	↓	↓	—	↓
047	↓	↓	↓	47	↓		-5	↓	↓	↓	—	↓
048	↓	↓	↓	48	↓		0	↓	↓	↓	—	↓
049	↓	↓	↓	49	↓		5	↓	↓	↓	—	↓
050	↓	↓	↓	50	↓		↓	↓	↓	0	—	↓
051	B, W2 H6 V3	↓	↓	51	↓		0	↓	↓	↓	—	↓
052	↓	↓	↓	52	↓		-5	↓	↓	↓	—	↓
053	↓	↓	↓	53	↓		-15	↓	↓	↓	—	↓
054	↓	↓	↓	54	↓		-25	↓	↓	↓	—	↓
055	↓	↓	↓	55	↓		-30	↓	↓	↓	—	↓
056	↓	↓	↓	56	↓		↓	0	↓	↓	—	↓
057	↓	↓	↓	57	↓		0	↓	↓	-4	—	No
058	↓	0	B,	58	↓		↓	↓	↓	↓	—	↓
059	↓	As	0	1	(Part B-		-2.5	↓	↓	0	.15	Yes
060	↓	↓	↓	2	Sect. 1)		+2.5	↓	↓	↓	↓	↓

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

CN | CA | CLM | CY | CYN | CBL | CPBASE | CHE | CHR | IDPVAR(1) | IDPVAR(2) | NDV

COEFFICIENTS: α, A5 → 0, -12, -8, -6, -4, -2, 0, 2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 0

α or β SCHEDULES

TABLE I. NASA--MSC TEST SVIII - Phase 2 DATA SET COLLATION SHEET (Continued)

☐ PRETEST
☒ POSTTEST

DATA SET IDENTIFIER	CONFIGURATION	SCHD. α	SCHD. β	MACH/RUN NOS. 0.25		NO. of RUNS	PARAMETERS / VALUES δe	δf	δr	i_t	h/b	H.M.
RG9 061	$B_1W_2H_6V_3$	A_5	0	3	(Part B		-5	0	0	0	.15	Yes
062				4	- Sect. 1)		+5					
063				5			-10					
064				6			-15					
065				7			-25					
066				10			0	25.0				
067				11				15.6				
068				12				15.0				
069				13				45.6				
070				15				0		-4		
071				17								
072				18						-6		
073	$B_1W_2H_6V_3L$	A_6		19				45.6				
074				20				45.0				
075				21			-5					
076				22				45.6				
077				26			-25					
078				28			-30	45.0				
079				29				15.6				
080				30				15.0				

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

CN | CA | CLM | CY | CYN | CBL | CPBASE | CHE | CHR | IDPVAR(1) | IDPVAR(2) | NDV

COEFFICIENTS: α, A_6 → 0, -8, -6, -4, -2, 0, 2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 0

α or β SCHEDULES

13

TABLE I. NASA--MSC TEST SVIII-Phase 2 DATA SET COLLATION SHEET (Continued)

☐ PRETEST
☒ POSTTEST

DATA SET IDENTIFIER	CONFIGURATION	SCHED. α	SCHED. β	MACH/RUN NOS.	NO. of RUNS	PARAMETERS/VALUES δe	δf	δr	i_t	h/b	H.M.
RG9081	$B_1W_2H_6V_3L$	A_6	0	31 (Part B		-25	15.0	0	-6	0.15	Yes
082				32 - Sect. 1)		↓	15.6				
083				33		-15	↓				
084				34		↓	15.0				
085				35		-5	↓				
086				36		↓	15.6				
087				37		0	↓				
088				38		↓	15.0		↓		
089				44		-15	↓		0		
090				45		↓	15.6				
091				53		-25	45.6				
092				54		-15	↓				
093				55		↓	45.0				
094				56		-5	↓				
095				57		↓	45.6				
096				58		0	↓				
097	↓	↓		59			45.0				
098	$B_1W_2H_6V_3$	A_5		60			↓				
099				61		↓	25.6				
100	↓	↓	↓	63		-30	0	↓	↓	↓	↓

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

CN | CA | CLM | CY | CYN | CBL | CPBASE | CHE | CHR |

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

α or β SCHEDULES

TABLE I. NASA--MSC TEST SVIII-Phase 2 DATA SET COLLATION SHEET (Continued)

☐ PRETEST
☒ POSTTEST

DATA SET IDENTIFIER	CONFIGURATION	SCHD. α	SCHD. β	MACH/RUN NOS. 0.25	NO. of RUNS	PARAMETERS/VALUES δe	δf	δr	i±	w/b	H.M.
RG9 101	$B_1 W_2 H_6 V_3$	A_5	0	64 (Part B	-	0	0	0	-2	.15	Yes
102	$B_1 W_2 H_6 V_3 L$	A_6		65 - Sect. 1)		-15	45.6		-6		
103				66		↓	45.0				
104				67		-25	↓				
105				68		-30	45.6		↓		
106	$B_1 W_2 V_3$	A_5		69		—	↓		—		
107				70		—	45.0		—		
108				71		—	15.0		—		
109				72		—	15.6		—		
110				73		—	0		—		
111	$B_1 V_3$			74		—	↓		—		
112	$B_1 W_2 V_3 H_6 L$	A_6		75		-30	15.0		0		
113				76		↓	15.6				
114				80		-25	↓				
115				81		↓	15.0				
116				82		-5	↓				
117				83		↓	15.6				
118				84		0	↓				
119				85		↓	15.0				
120				86		-30	45.0				

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

CN | CA | CLM | CY | CYN | CBL | CPBASE | CHE | CHR

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

α or β SCHEDULES

TABLE I. NASA--MSC TEST SVIII-Phase - DATA SET COLLATION SHEET (Continued)

☐ PRETEST
☒ POSTTEST

DATA SET IDENTIFIER	CONFIGURATION	SCHED. α	SCHED. β	MACH/RUN NOS. 0.25	NO. of RUNS	PARAMETERS / VALUES δe	δf	δr	i±	h/b	H.M.
RG9 121	$B_1 W_2 H_6 V_3 L$	A_6	0	87 (Part B		-30	45.6	0	0	.15	Yes
122		↓		88 - Sect. 1)		-25	45.0			↓	
123		A_5		1 (Part B		↓	↓			.20	
124				2 - Sect. 2)		↓	45.6			↓	
125				3		-30	↓				
126				4		↓	45.0				
127				5		-15	↓				
128				6		↓	45.6				
129				7		-5	↓				
130				8		↓	45.0				
131				9		0	↓				
132				10		↓	45.6				
133				11		↓	15.6				
134				12		↓	15.0				
135				13		-5	↓				
136				14		↓	15.6				
137				15		-15	↓				
138				16		↓	15.0				
139				17		-25	↓				
140		↓	↓	18		↓	15.6	↓	↓	↓	↓

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

CN | CA | CLM | CY | CYN | CBL | CPBASE | CHE | CHR |

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

α or β SCHEDULES

TABLE I. NASA--MSC TEST SVIII-Phase 2 DATA SET COLLATION SHEET (Continued)

☐ PRETEST
☒ POSTTEST

DATA SET IDENTIFIER	CONFIGURATION	SCHD. α	SCHD. β	MACH/RUN NOS. Q25		NO. of RUNS	PARAMETERS / VALUES δe	δ+	δr	i+	h/b	H.M.
RG9 141	B,W2H6V3L	A5	0	19	(Part B,	-	-30	15.6	0	0	.20	Yes
142		↓	↓	20	-Sect.2)		↓	15.0	↓	↓	↓	↓
143		A2		1	(Part B		↓	↓	↓	↓	.30	↓
144		↓	↓	2	-Sect.3)		↓	15.6	↓	↓	↓	↓
145		↓	↓	3			-25	↓	↓	↓	↓	↓
146		↓	↓	4			↓	15.0	↓	↓	↓	↓
147		↓	↓	5			-15	↓	↓	↓	↓	↓
148		↓	↓	6			↓	15.6	↓	↓	↓	↓
149		↓	↓	7			-5	↓	↓	↓	↓	↓
150		↓	↓	8			↓	15.0	↓	↓	↓	↓
151		↓	↓	9			0	↓	↓	↓	↓	↓
152		↓	↓	10			↓	15.6	↓	↓	↓	↓
153		↓	↓	11			↓	45.6	↓	↓	↓	↓
154		↓	↓	12			↓	45.0	↓	↓	↓	↓
155		↓	↓	13			-5	↓	↓	↓	↓	↓
156		↓	↓	14			↓	45.6	↓	↓	↓	↓
157		↓	↓	15			-15	↓	↓	↓	↓	↓
158		↓	↓	16			↓	45.0	↓	↓	↓	↓
159		↓	↓	17			-25	↓	↓	↓	↓	↓
160		↓	↓	18			↓	45.6	↓	↓	↓	↓

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

CN | CA | CLM | CY | CYN | CBL | CPBASE | CHE | CHR | IDPVAR(1) | IDPVAR(2) | NDV

COEFFICIENTS:
α or β
SCHEDULES

α, Az → 0, -12, -8, -6, -4, -2, 0, 2, 4, 5,
6, 7, 8, 9, 10, 11, 12, 14, 16, 0

TABLE I. NASA--MSC TEST SVIII-Phase 2 DATA SET COLLATION SHEET (Concluded)

☐ PRETEST
☒ POSTTEST

DATA SET IDENTIFIER	CONFIGURATION	SCHD. α	SCHD. β	MACH/RUN NOS. 025	NO. of RUNS	PARAMETERS/VALUES δe	δf	δr	it	h/b	H.M.
RG9 161	B, W2 V3 H6 L	A2	0	19 (Part B		-30	45.6	0	0	.30	Yes
162	↓	↓	↓	20 - Sect. 3)		↓	45.0			↓	↓
163	B, W2 H6 V3 S11.15	A10	-5	41 (Part C)		0	0			—	No
164	(I)		-1	42						—	
165	↓		0	43						—	
166			1	44						—	
167	↓		5	45						—	
168	B, W2 H6 V3 S10.15		5	46						—	
169	(I)		1	47						—	
170	↓		0	48						—	
171			-1	49						—	
172	↓	↓	-5	50						—	
173	B, W2 H6 V3 T (I)	A9	0	51						—	
174	B, H6 V3 T (I)			52						—	
175	B, W2 H6 T (I)			53						—	
176	B, W2 T (I)	↓		54						—	↓
177	B, W2 H6 V3 T	A8		55						—	Yes
178	B, W2 H6 V3 R1 T			57						—	
179	B, W2 H6 V3 R1			58						—	
180	B, W2 H6 V3	↓	↓	59		↓	↓	↓	↓	—	↓

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

CN	CA	CLM	CY	CYN	CBL	CPBASE	CHE	CHR			

COEFFICIENTS: α or β SCHEDULES

α, A8 → 0, -12, -8, -6, -4, -2, 0, 2, 4, 5, 6, 7, 8, 9, 10, 12, 0 → IDPVAR(1) | IDPVAR(2) | NDV

α, A9 → 0, -20, -16, -12, -8, -6, -4, -2, 0, 2, 4, 5, 6, 7, 8, 9, 10, 12, 14, 18, 0

α, A10 → 0, -10, -8, -6, -4, -2, 0, 2, 4, 5, 6, 6.5, 7, 7.5, 8, 8.5, 9, 10, 12, 0

NOTE: (I) Indicates model inverted

TABLE II

TEST CONDITIONS

TEST S-VIII Phase 2

MACH NUMBER	REYNOLDS NUMBER per unit length	DYNAMIC PRESSURE ~~(pounds/sq. inch)~~	STAGNATION TEMPERATURE (degrees Fahrenheit)
0.25	1.7×10^6/ft	70.0 psf	95.0

BALANCE UTILIZED: Dynametrics Inc. - External Pyramid Balance

	CAPACITY:	ACCURACY:	COEFFICIENT TOLERANCE:
LF	-1000 to 3000 lb	±0.1 lb	±0.008
SF	-1000 to 1000 lb	±0.1 lb	±0.002
DF	-1000 to 1000 lb	±0.1 lb	±0.0021
PM	-2000 to 2000 ft-lb	±0.1 ft-lb	±0.041
YM	-1000 to 1000 ft-lb	±0.1 ft-lb	±0.002
RM	-2000 to 2000 ft-lb	±0.1 ft-lb	±0.016

MODEL COMPONENT: BODY - B_1

GENERAL DESCRIPTION: 0.05 Scale Model of NASA - MSC August 1969 Baseline Orbiter Fuselage

DRAWING NUMBER: Texas A and M Research and Instrument Shops Drawing Number Orbiter - 1

DIMENSIONS:

	FULL-SCALE	MODEL SCALE
Length	1380 in.	69.0 in.
Max. Width	229.92 in.	11.496 in.
Max. Depth	255.84 in.	12.792 in.
Fineness Ratio (total length to max. width)	6.002	6.002
Area		
Max. Cross-Sectional	324.0 ft^2.	0.810 ft^2.
Planform	1919.6 ft^2.	4.799 ft^2.
Wetted	--------	---------
Base (Horizontal Tail Off)	158.4 ft^2.	0.396 ft^2.
(Horizontal Tail On)	146.0 ft^2	0.365 ft^2

TABLE III (CONTINUED)

MODEL COMPONENTS DESCRIPTIONS

MODEL COMPONENT- WING (W2)

GENERAL DESCRIPTION- MSC ORBITER S-4, 0.05 SCALE

DRAWING NUMBER- ORBITER-7 TEXAS A+M UNIV

DIMENSIONS

TOTAL DATA	FULL SCALE (FT)	MODEL (IN)
AREA	920.0	331.200
SPAN (EQUIVALENT)	80.00	48.000
ASPECT RATIO	6.957	6.957
TAPER RATIO	0.353	0.353
DIEHEDRAL ANGLE,DEG	7.000	7.000
INCIDENCE ANGLE,DEG	4.000	4.000
SWEEP BACK ANGLE, DEG		
LEADING EDGE	14.000	14.000
TRAILING EDGE	-1.400	-1.400
0.25 ELEMENT LINE	9.262	9.262
CHORDS		
ROOT (WING STA. 0.0)	17.00	10.200
TIP, (EQUIVALENT)	6.00	3.600
MEAN AERODYNAMIC	12.38	7.430
.25 MAC COORDINATES		
X (FROM BODY NOSE)	61.82	37.092
Y (FROM BODY CL)	16.81	10.087
AIRFOIL SECTION		
ROOT	NACA 0014-64	
TIP	NACA 0010-64	

EXPOSED DATA		
AREA	619.9	223.156
SPAN (EQUIVALENT)	60.84	36.504
ASPECT RATIO	5.971	5.971
TAPER RATIO	0.417	0.417
CHORDS		
ROOT (WING STA. 0.0)	14.38	8.626
TIP, (EQUIVALENT)	6.00	3.600
MEAN AERODYNAMIC	10.77	6.461
.25 MAC COORDINATES		
X (FROM BODY NOSE)	62.89	37.732
Y (FROM BODY CL)	22.71	13.623

DIMENSIONS OBTAINED FROM MODEL DRAWINGS

TABLE III (CONTINUED)
MODEL COMPONENTS DESCRIPTIONS

MODEL COMPONENT- HORIZONTAL TAIL (H6)

GENERAL DESCRIPTION- MSC ORBITER S-4, 0.05 SCALE

DRAWING NUMBER- ORBITER-4 TEXAS A+M UNIV

DIMENSIONS

TOTAL DATA	FULL SCALE (FT)	MODEL (IN)
AREA	390.4	140.562
SPAN (EQUIVALENT)	42.75	25.650
ASPECT RATIO	4.681	4.681
TAPER RATIO	0.353	0.353
DIEHEDRAL ANGLE, DEG	0.000	0.000
INCIDENCE ANGLE, DEG	0.000	0.000
SWEEP BACK ANGLE, DEG		
LEADING EDGE	10.200	10.200
TRAILING EDGE	-12.900	-12.900
0.25 ELEMENT LINE	2.962	2.962
CHORDS		
ROOT (WING STA. 0.0)	13.50	8.100
TIP, (EQUIVALENT)	4.77	2.860
MEAN AERODYNAMIC	9.83	5.900
.25 MAC COORDINATES		
X (FROM BODY NOSE)	113.09	67.855
Y (FROM BODY CL)	8.98	5.391
AIRFOIL SECTION		
ROOT	NACA 0012-64	
TIP	NACA 0012-64	

EXPOSED DATA		
AREA	239.5	86.203
SPAN (EQUIVALENT)	30.42	18.250
ASPECT RATIO	3.864	3.864
TAPER RATIO	0.434	0.434
CHORDS		
ROOT (WING STA. 0.0)	10.98	6.587
TIP, (EQUIVALENT)	4.77	2.860
MEAN AERODYNAMIC	8.28	4.971
.25 MAC COORDINATES		
X (FROM BODY NOSE)	113.39	68.031
Y (FROM BODY CL)	12.77	7.663

DIMENSIONS OBTAINED FROM MODEL DRAWINGS

TABLE III (CONTINUED)

MODEL COMPONENTS DESCRIPTIONS

MODEL COMPONENT- VERTICAL STABLIZER (V3)

GENERAL DESCRIPTION- MSC ORBITER S-4, 0.05 SCALE

DRAWING NUMBER- ORBITER-6 TEXAS A+M UNIV

DIMENSIONS

EXPOSED DATA	FULL SCALE (FT)	MODEL (IN)
AREA	241.2	86.821
SPAN (EQUIVALENT)	15.42	9.250
ASPECT RATIO	0.986	0.986
TAPER RATIO	0.470	0.470
DIEHEDRAL ANGLE, DEG	0.000	0.000
INCIDENCE ANGLE, DEG	0.000	0.000
SWEEP BACK ANGLE, DEG		
LEADING EDGE	45.000	45.000
TRAILING EDGE	14.997	14.997
0.25 ELEMENT LINE	34.822	34.822
CHORDS		
ROOT (WING STA. 0.0)	21.29	12.772
TIP, (EQUIVALENT)	10.00	6.000
MEAN AERODYNAMIC	16.33	9.796
.25 MAC COORDINATES		
X (FROM BODY NOSE)	106.70	64.018
Z (FROM EXPOSED ROOT CHORD)	6.78	4.069
AIRFOIL SECTION		
ROOT	NACA 0012-64	
TIP	NACA 0012-64	

DIMENSIONS OBTAINED FROM MODEL DRAWINGS

TABLE IV. INDEX OF MODEL FIGURES

TABLE V. INDEX OF DATA FIGURES

TITLE	PLOTTED COEFFICIENTS SCHEDULE	CONDITIONS VARYING	PAGES
Elevator Effectiveness	A	ELEVTR	1-7
Rudder Effectiveness	B	RUDDER	8-12
Effect of Landing Gear	C	Configuration	13-16
Effect of Horizontal Tail Incidence	A	HORIZT	17-23
Elevator Effectiveness with Flaps, Horizontal Tail Incidence, and Landing Gear	A	ELEVTR	24-30
Elevator Effectiveness with Flaps	A	ELEVTR	31-37
Elevator Effectiveness in Ground Effect	A	ELEVTR	38-44
Flap Effectiveness in Ground Effect (Full Exposed Span)	A	FLAP	45-51
Flap Effectiveness in Ground Effect (60% Exposed Span)	A	FLAP	52-58
Effect of Horizontal Tail Incidence in Ground Effect	A	HORIZT	59-65
Elevator Effectiveness with Maximum Flaps and Horizontal Tail Incidence in Ground Effect	A	ELEVTR, Flap Span	66-72
Elevator Effectiveness with Minimum Flaps and Horizontal Tail Incidence in Ground Effect	A	ELEVTR, Flap Span	73-79
Elevator Effectiveness with Maximum Flaps in Ground Effect	A	ELEVTR, Flap Span	80-86
Elevator Effectiveness with Minimum Flaps in Ground Effect	A	ELEVTR, Flap Span	87-93
Component Build-up in Ground Effect	C	Configuration	94-97

TABLE V. (CONTINUED)

TITLE	PLOTTED COEFFICIENTS SCHEDULE	CONDITIONS VARYING	PAGES
Ground Effect with Maximum Flap Deflection	A	ELEVTR, H/B	98-104
Ground Effect with Minimum Flap Deflection	A	ELEVTR, H/B	105-111
Spoiler Effect	D	BETA, Configuration	112-119
Component Build-up with Transition Strips	C	Configuration	120-123
Effect of Transition Strips	C	Configuration	124-127

PLOTTED COEFFICIENTS SCHEDULE

Note: Moment reference point (c.g.) is at 60% body length unless otherwise noted.
On the plots, the 50% c.g. data is denoted in the titles.

(A) CN, CA, CLM vs. ALPHA
CLM vs. CN
CHE vs. ALPHA
CLM vs. ALPHA, CN, c.g. at 50% body length

(B) CY, CYN, CBL, CHR vs. BETA
CYN vs. BETA, c.g. at 50% body length

(C) CN, CA, CLM vs. ALPHA
CLM vs. ALPHA, c.g. at 50% body length

(D) CN, CA, CLM, CY, CYN, CBL vs. ALPHA
CLM, CYN vs. ALPHA, c.g. at 50% body length.

MODEL FIGURES

Notes:

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

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

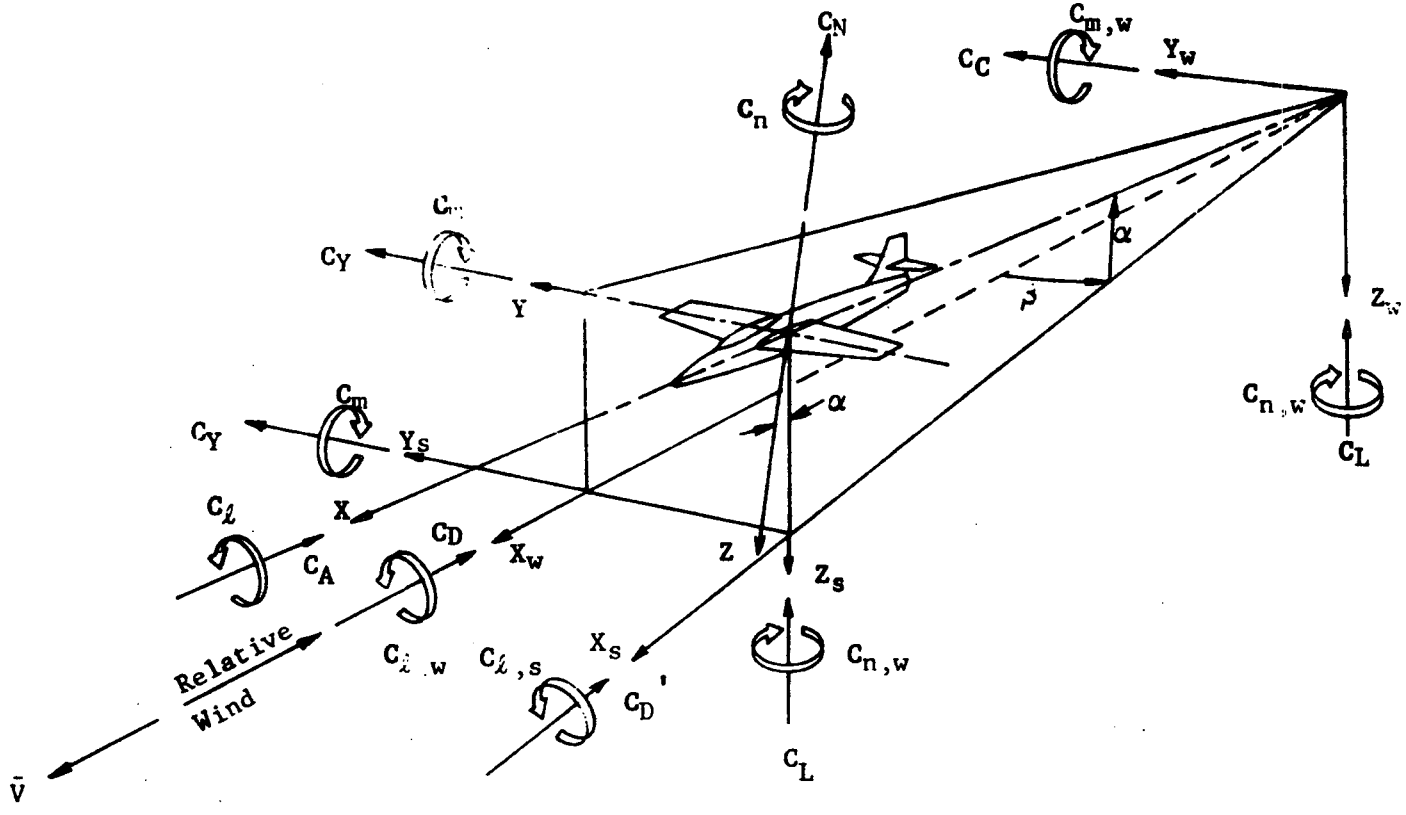


Figure 1. Axis systems, showing direction and sense of force and moment coefficients, angle of attack, and sideslip angle

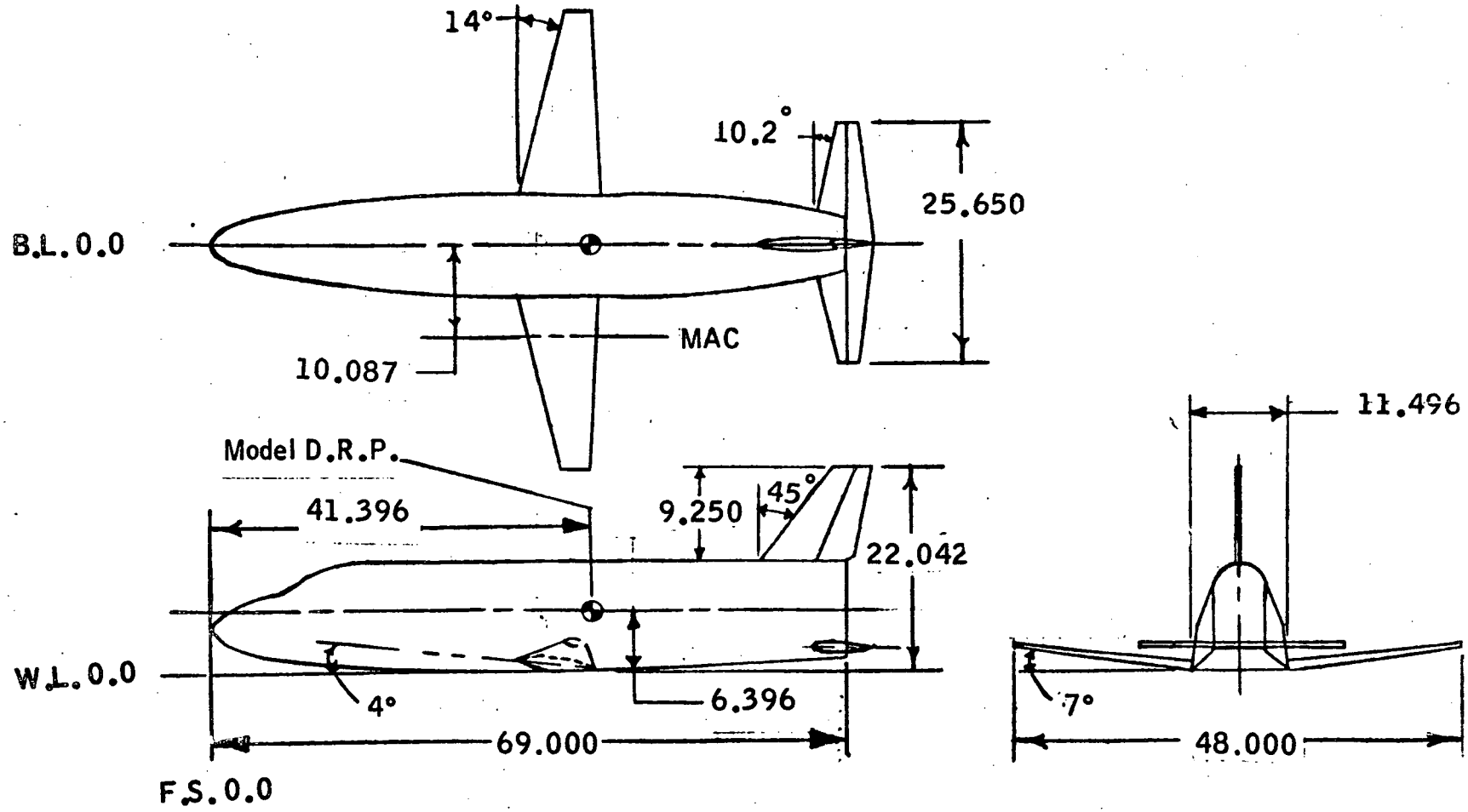


Figure 2. - Model geometry. Configuration $B_1W_2H_6V_3$ (all dimensions in inches)

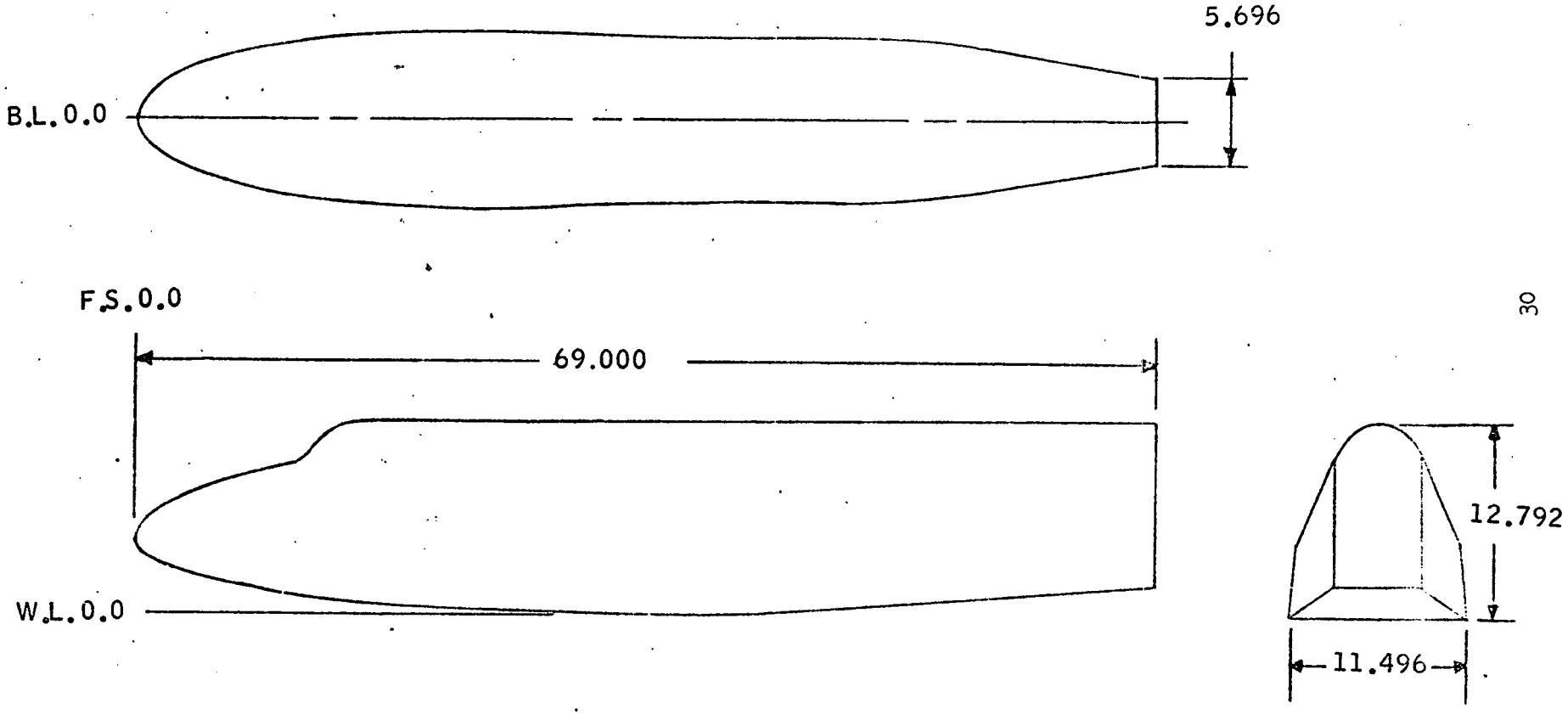


Figure 3. - Fuselage B_1 (all dimensions in inches)

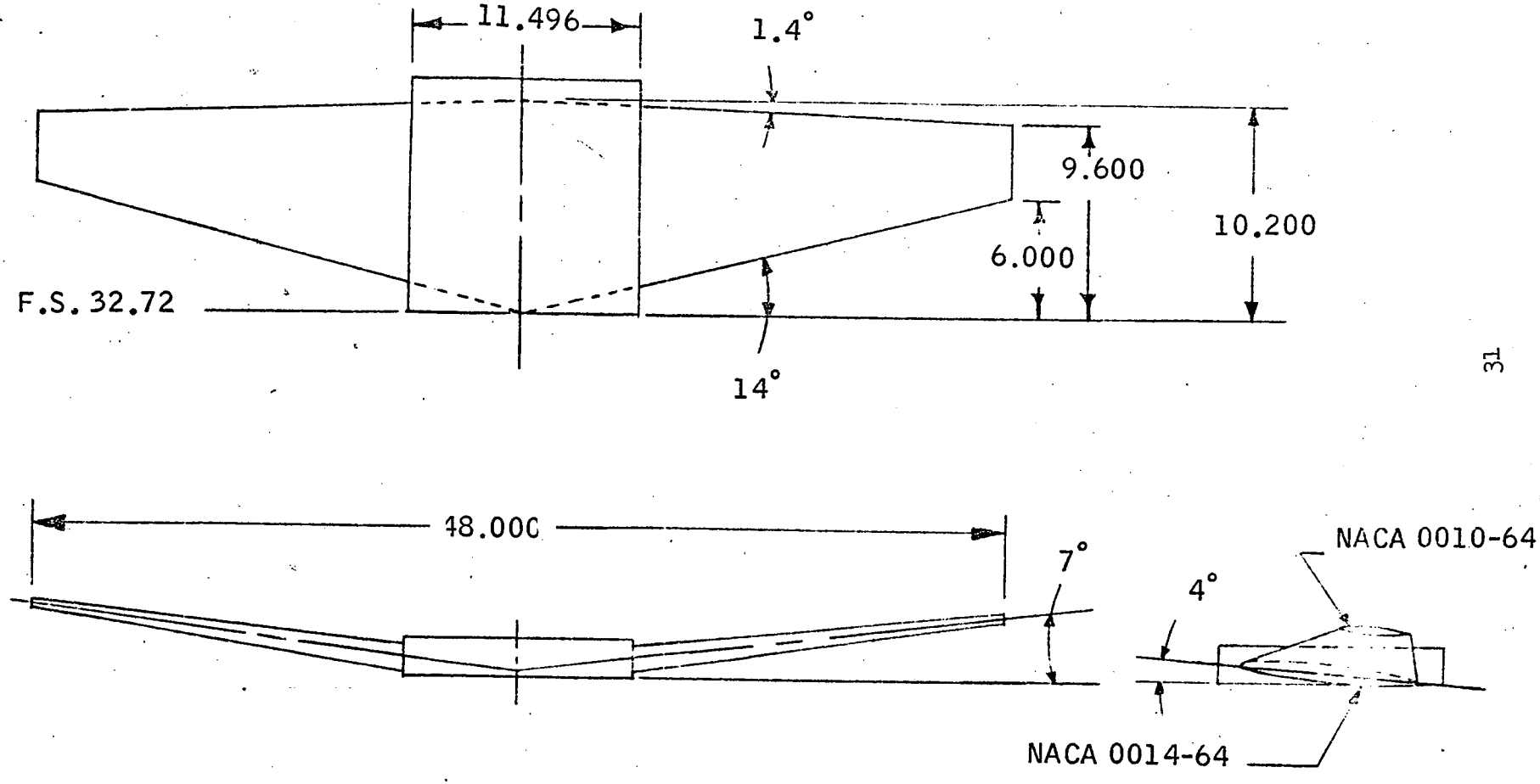


Figure 4. - Wing W_2 (all dimensions in inches)

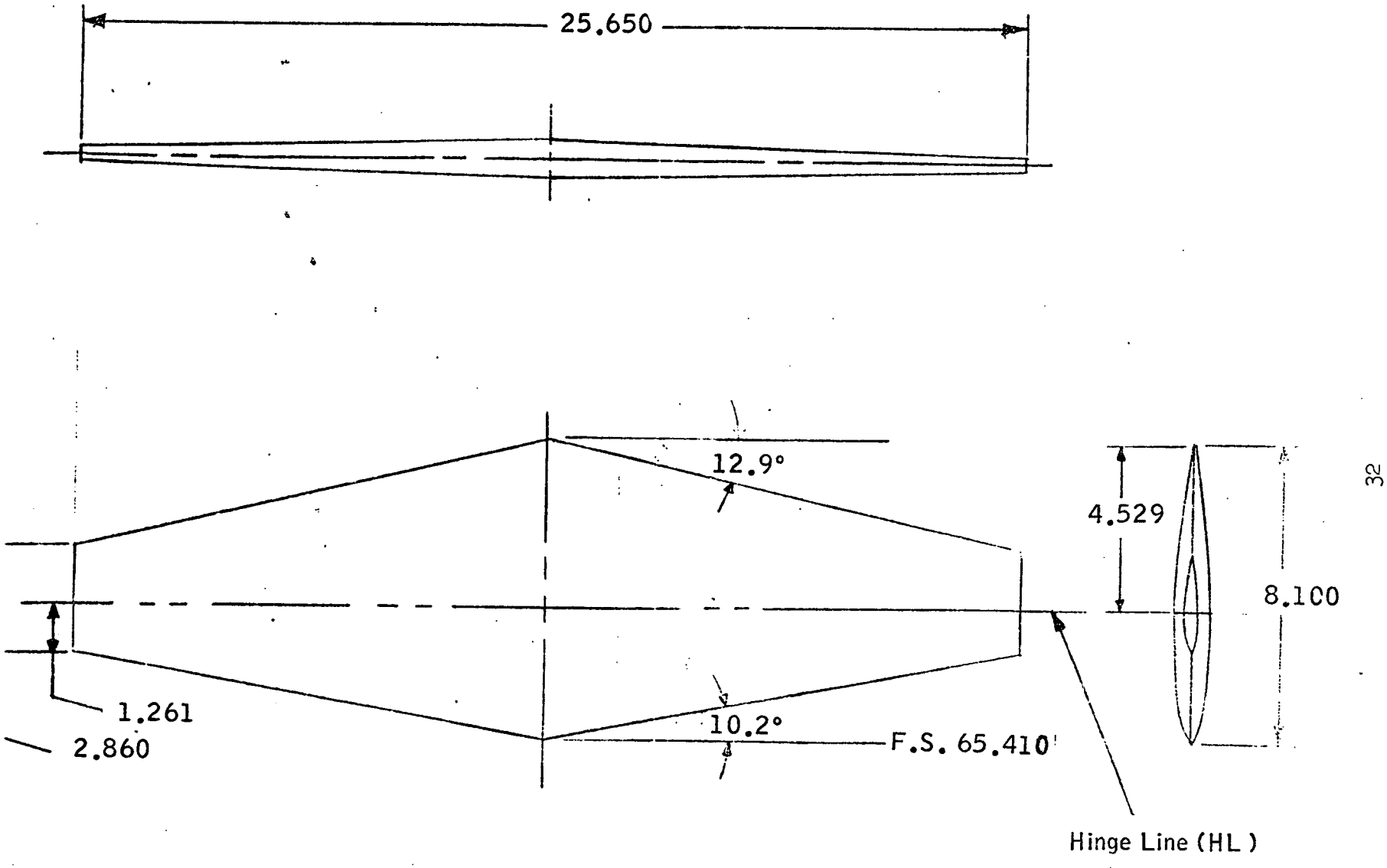


Figure 5. - Horizontal tail H_6 (all dimensions in inches)

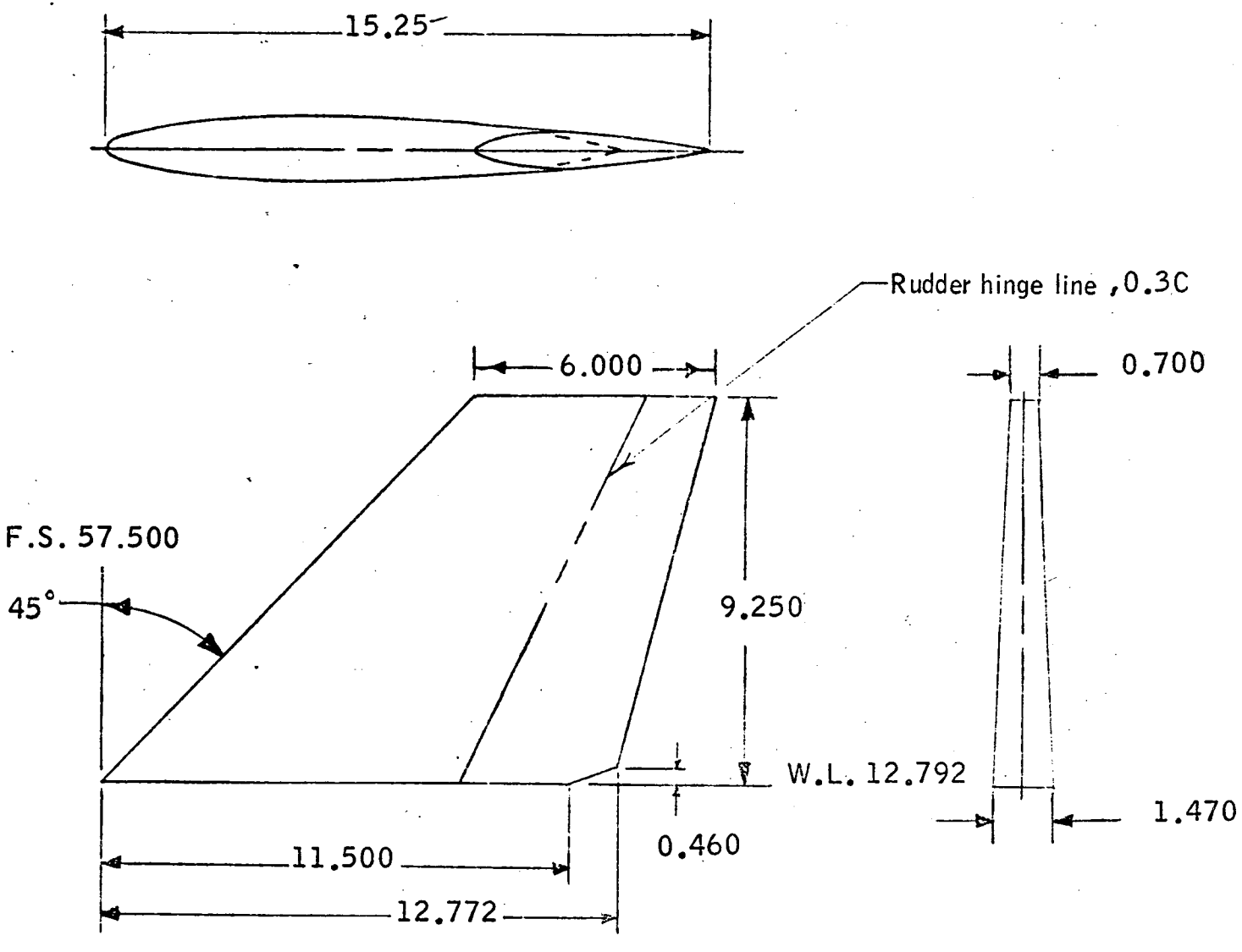
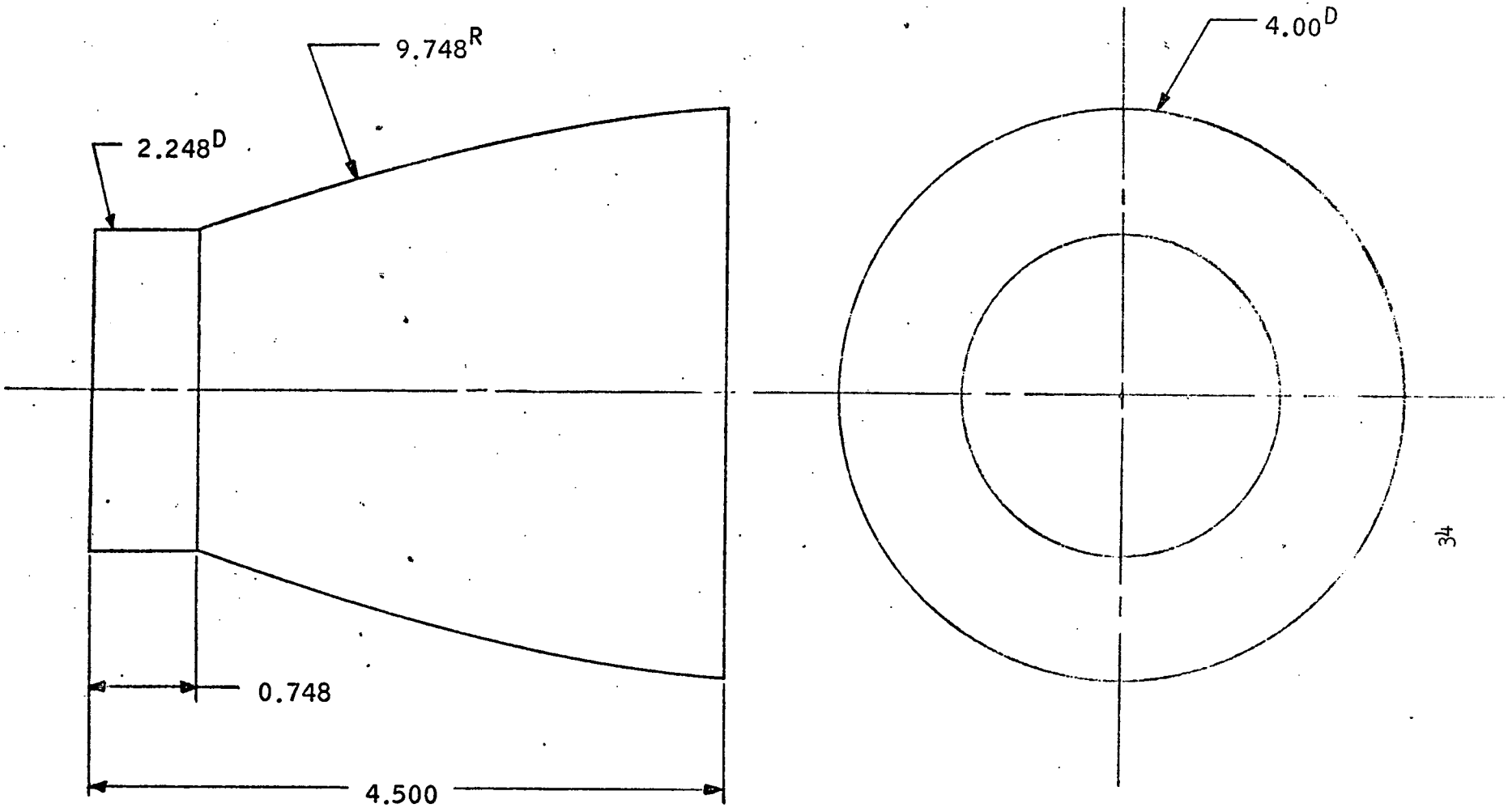
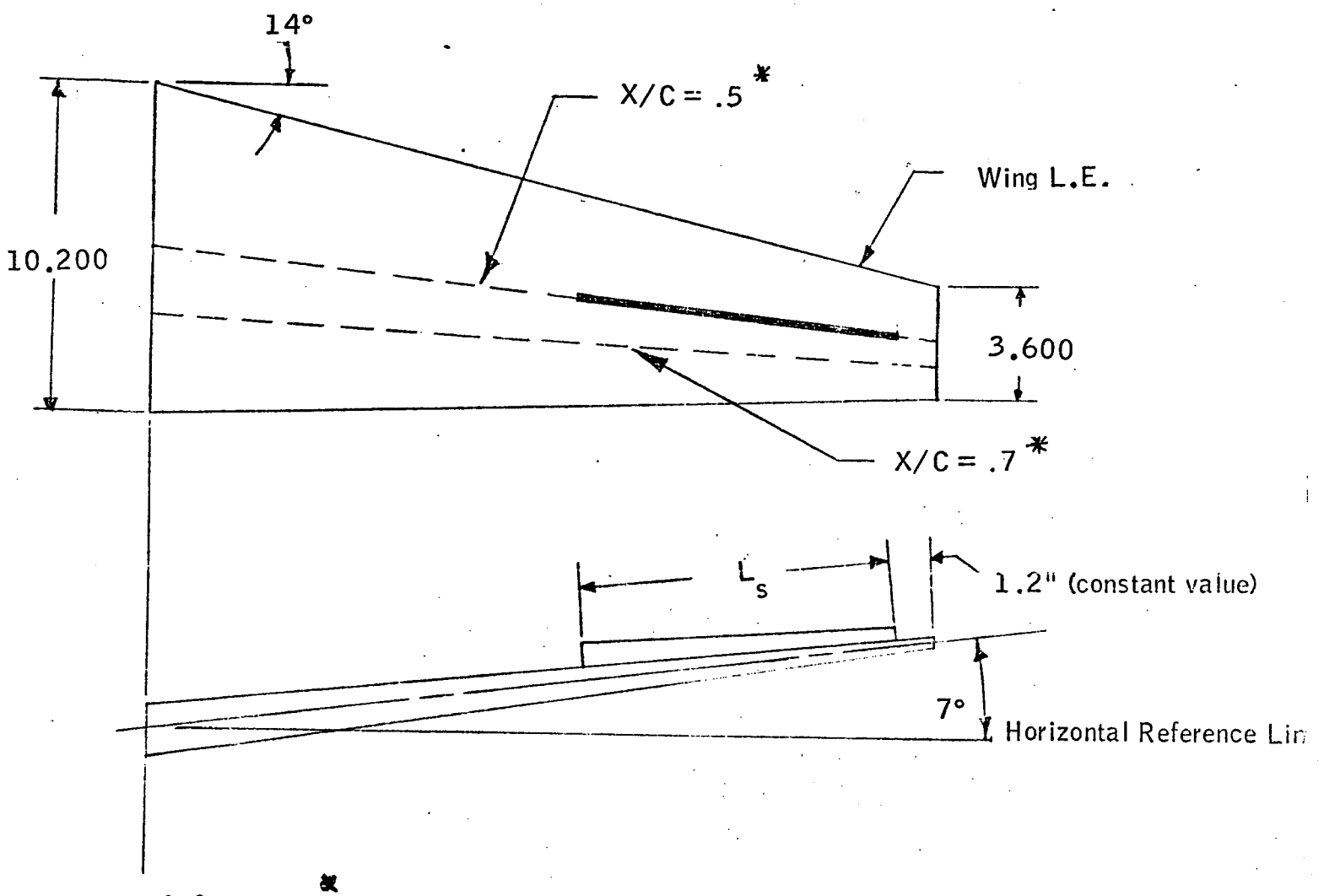


Figure 6. - Vertical Tail V_3 (all dimensions in inches)



	Lower Rocket Nozzle (centerline position)	Upper Rocket Nozzle (centerline position)
B.L.	0.0	0.0
W.L.	6.252	11.0

Figure 7. - Model Rocket Engine Nozzle R_1 (all dimensions in inches)



* $Spoilers_{1-9}$ will be positioned at X/C = 0.5 and 0.7 and mounted perpendicular to wing chord plane

Figure 8. - Spoiler configuration. (all dimensions in inches)

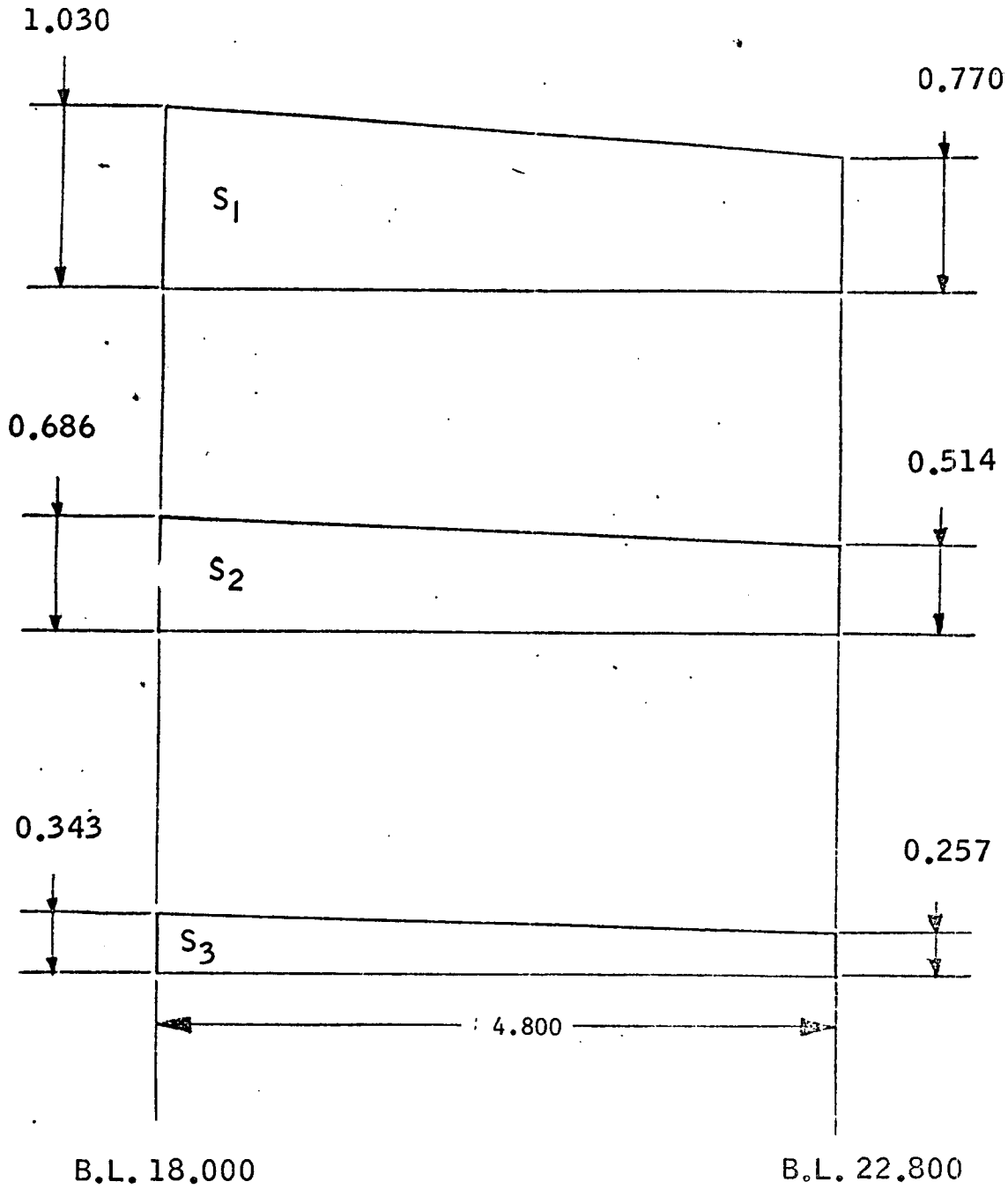


Figure 9. - Model Spoilers (all dimensions in inches)

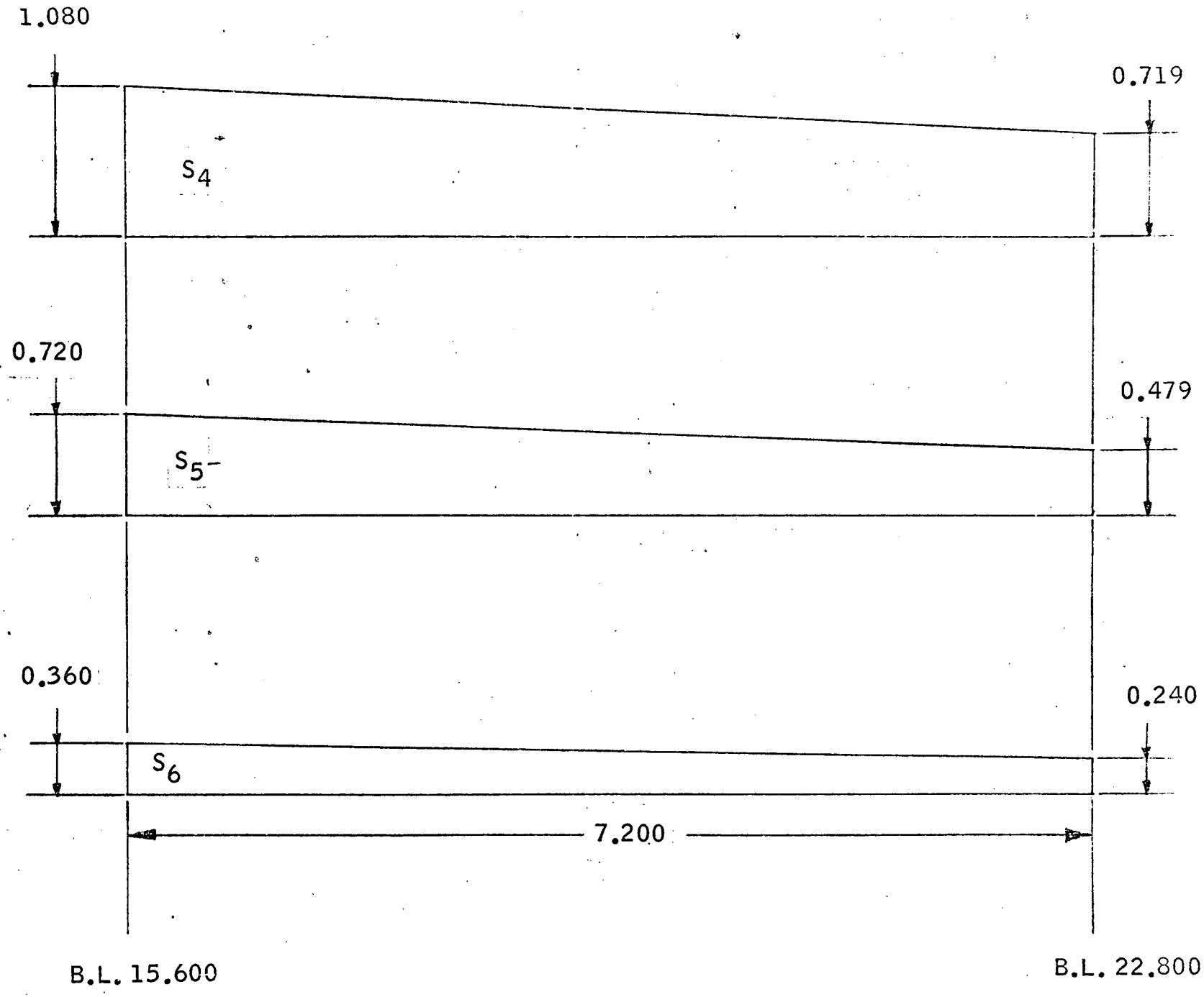


Figure 9. - Continued.

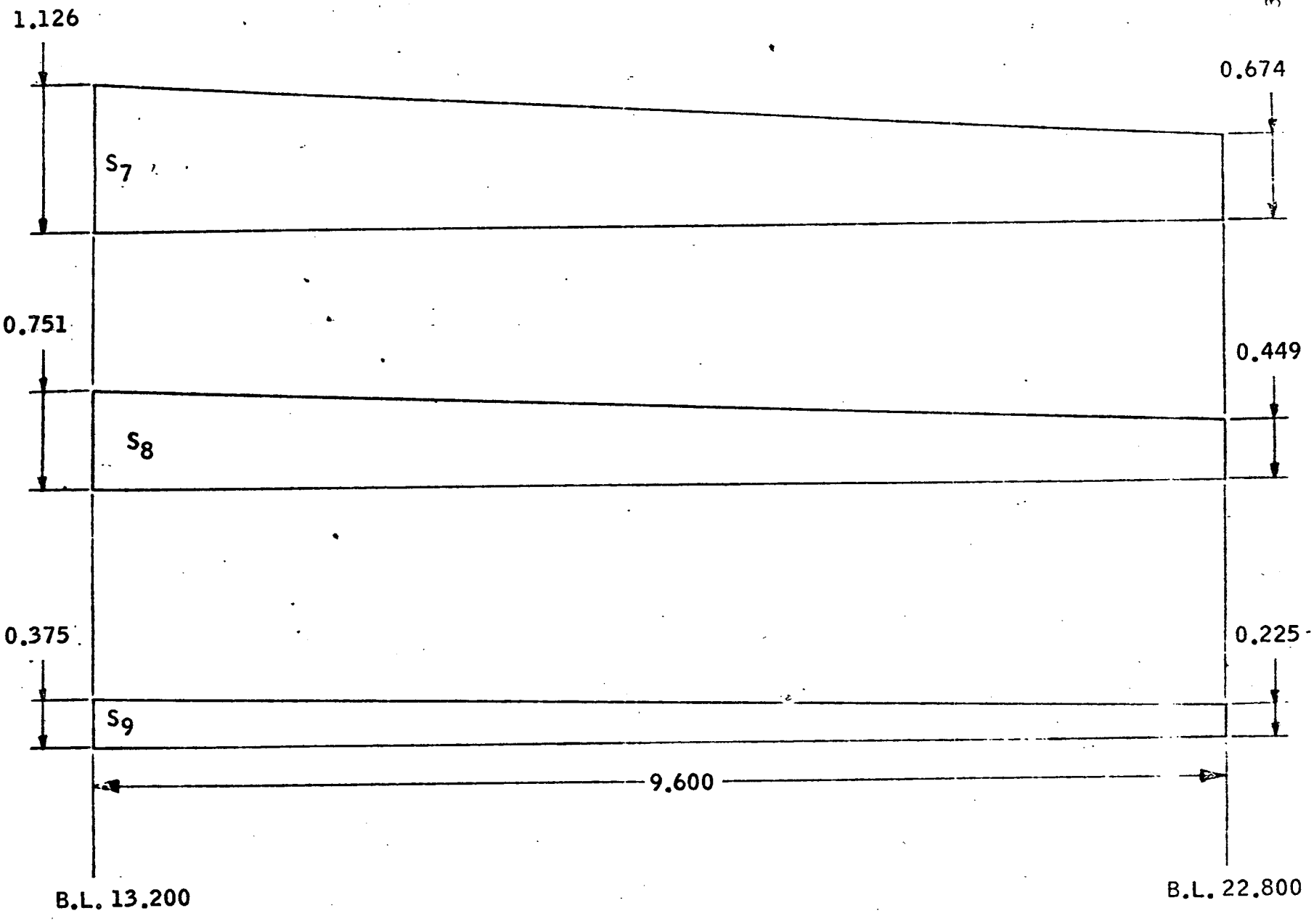
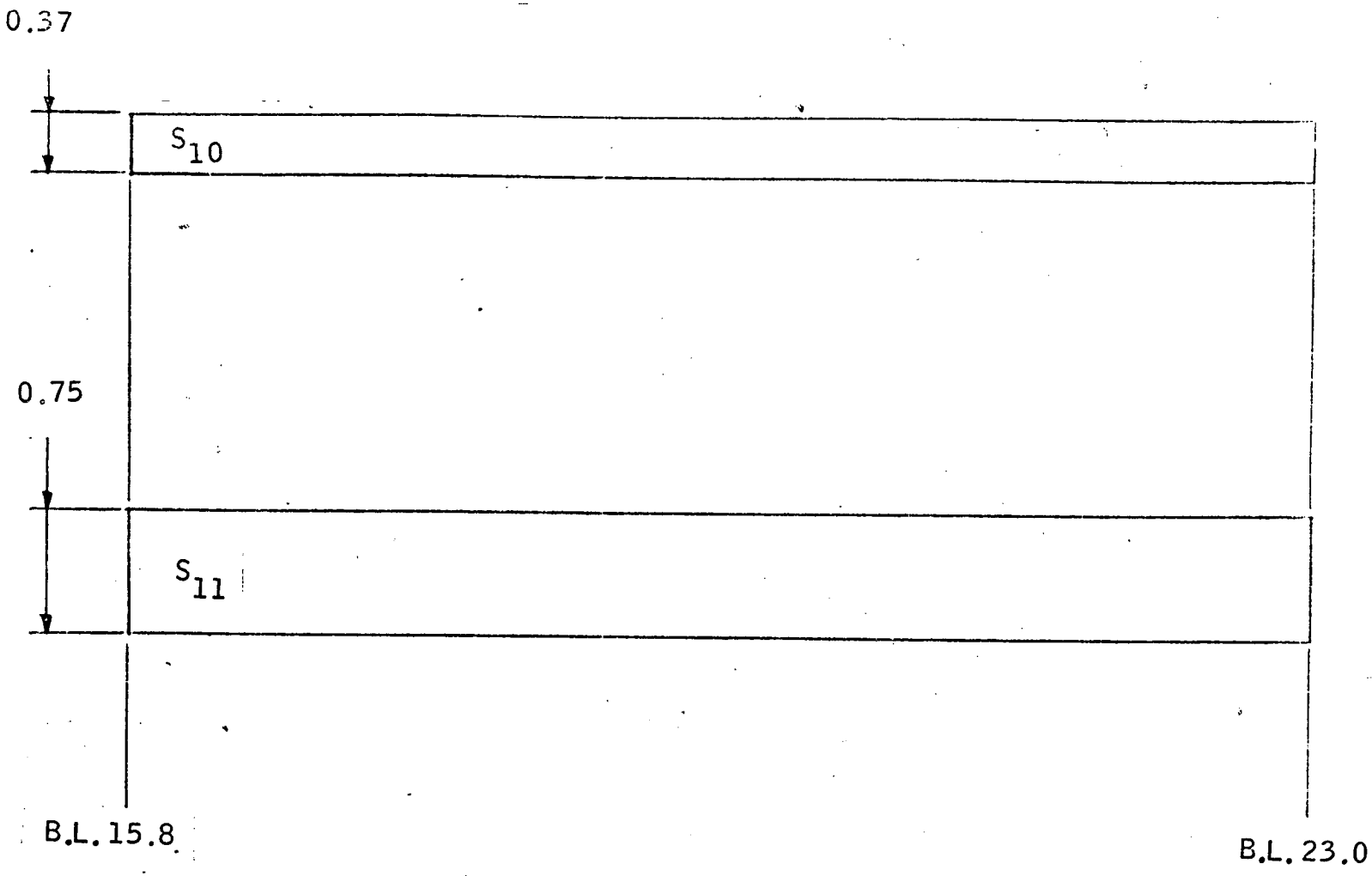


Figure 9. - Continued.



* The outboard edge of Spoilers$_{10\text{-}11}$ is located a constant 1.00 inches inboard of the wing tip while each is mounted perpendicular to the wing chord plane at $x/c = 0.15$

Figure 9. - Concluded.

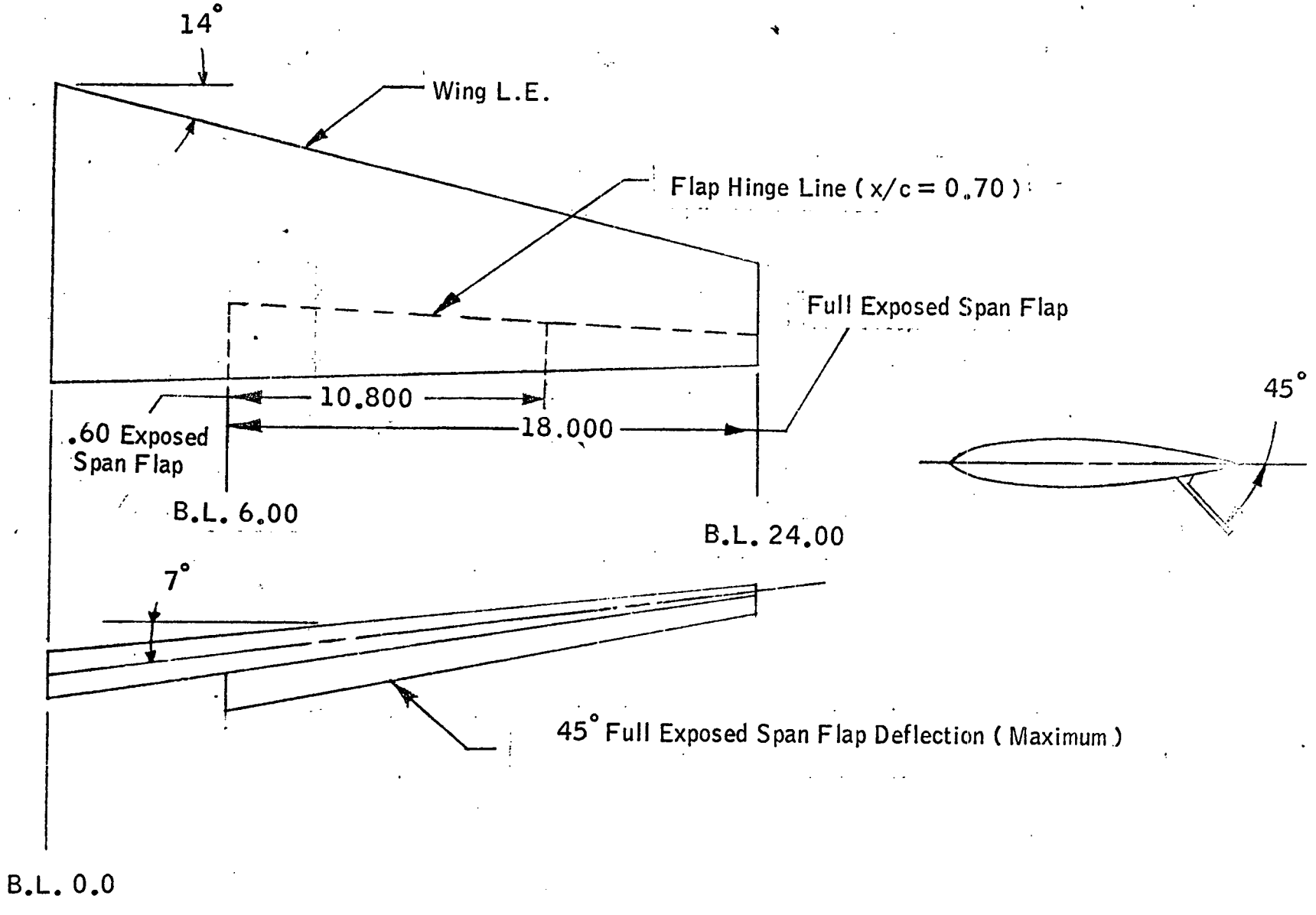


Figure 10. - Flap configuration. (all dimensions in inches)

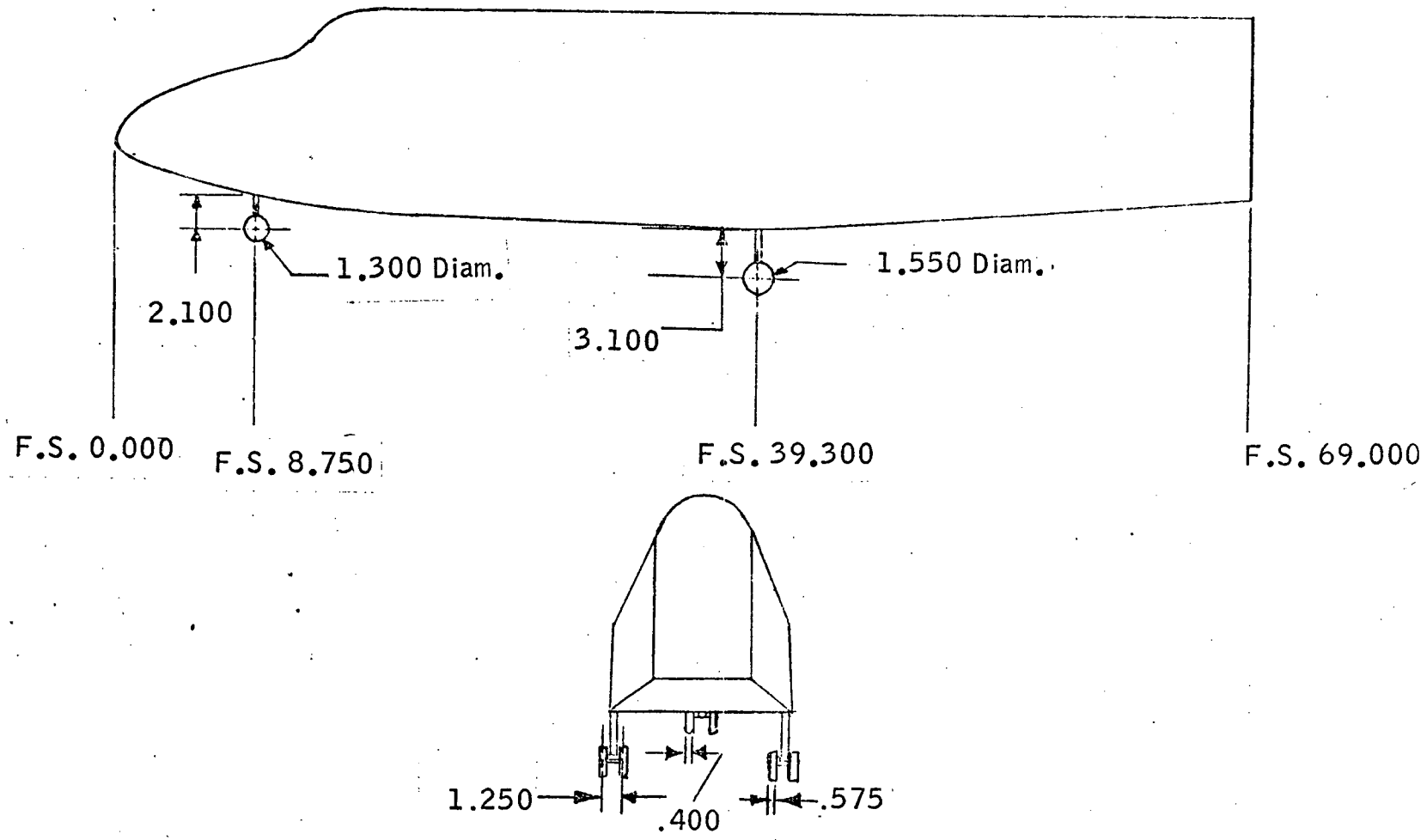


Figure 11. - Landing gear configuration. (all dimensions in inches)

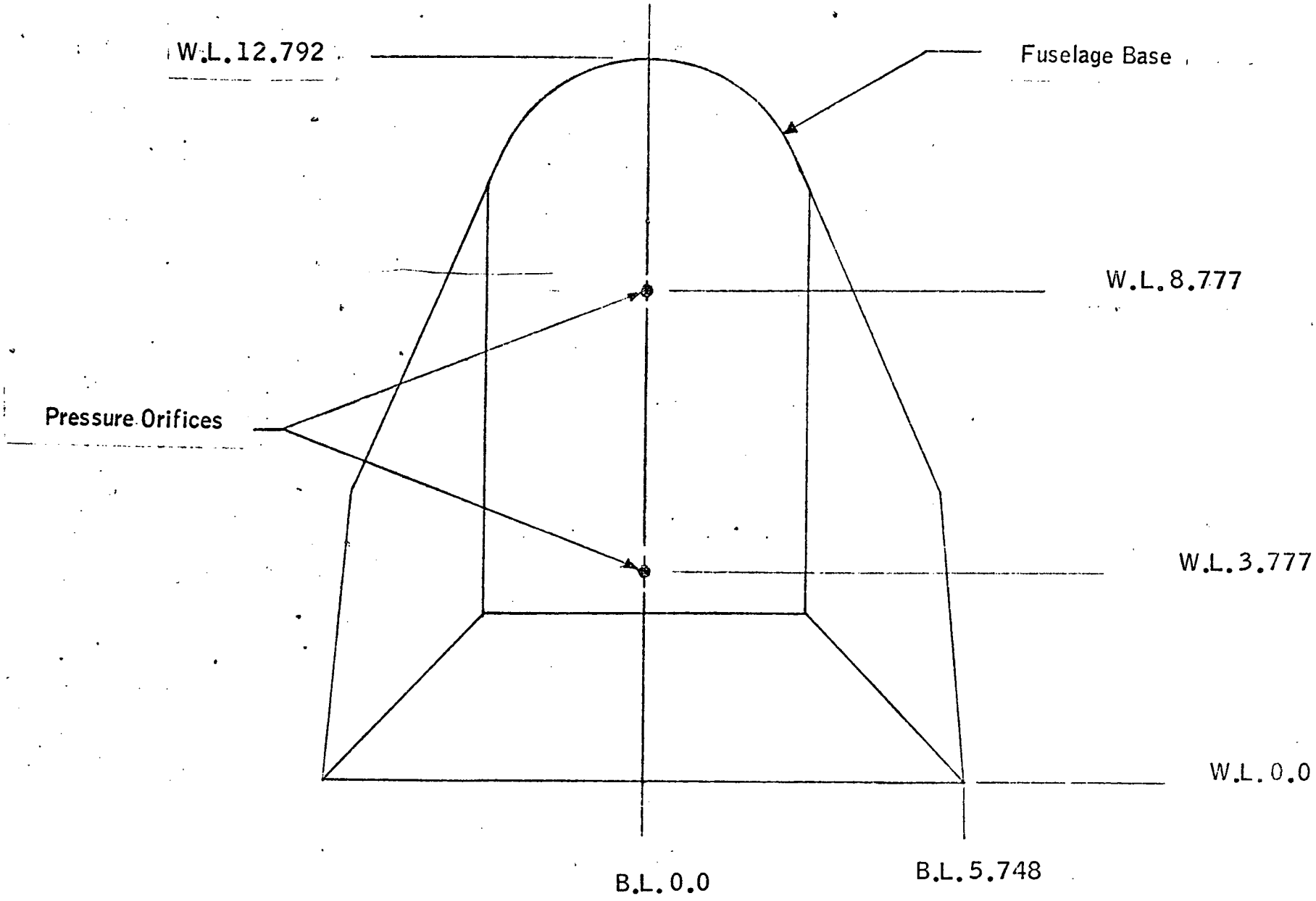


Figure 12. - Model Pressure Orifices (all dimensions in inches)

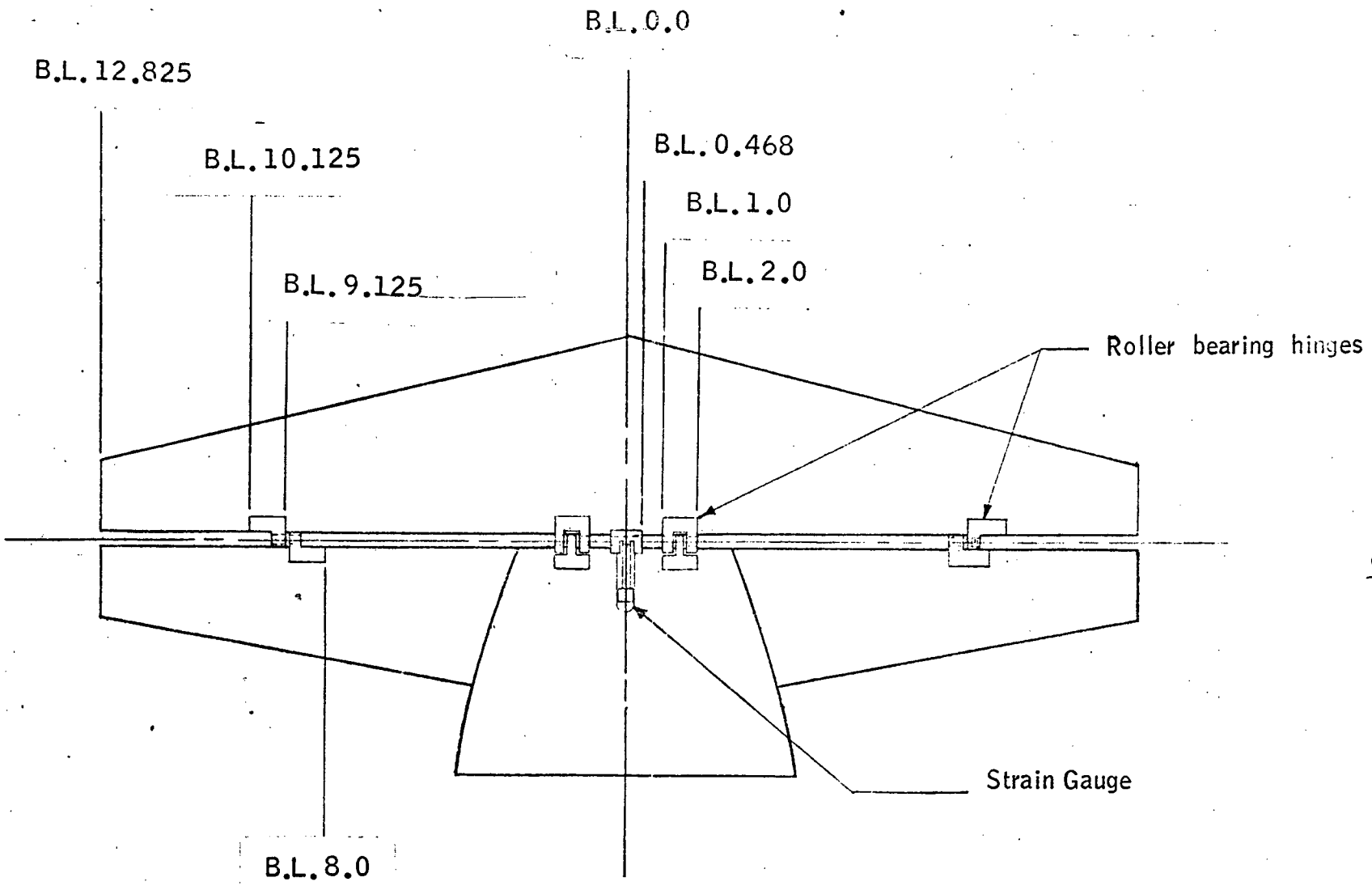


Figure 13. - Hinge Moment Instrumentation (all dimensions in inches)

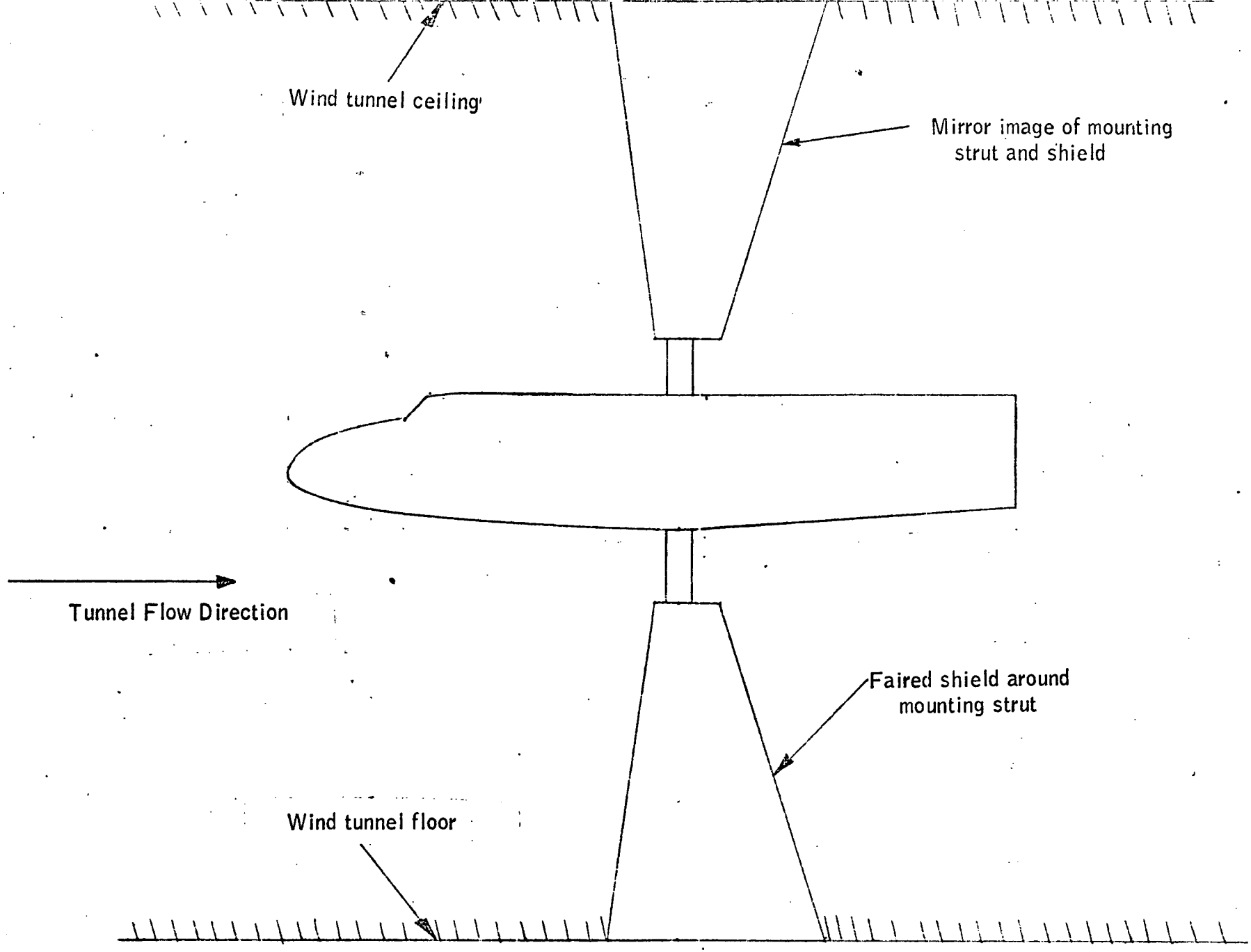


Figure 14. Configuration mounted on single strut with mirror image system.

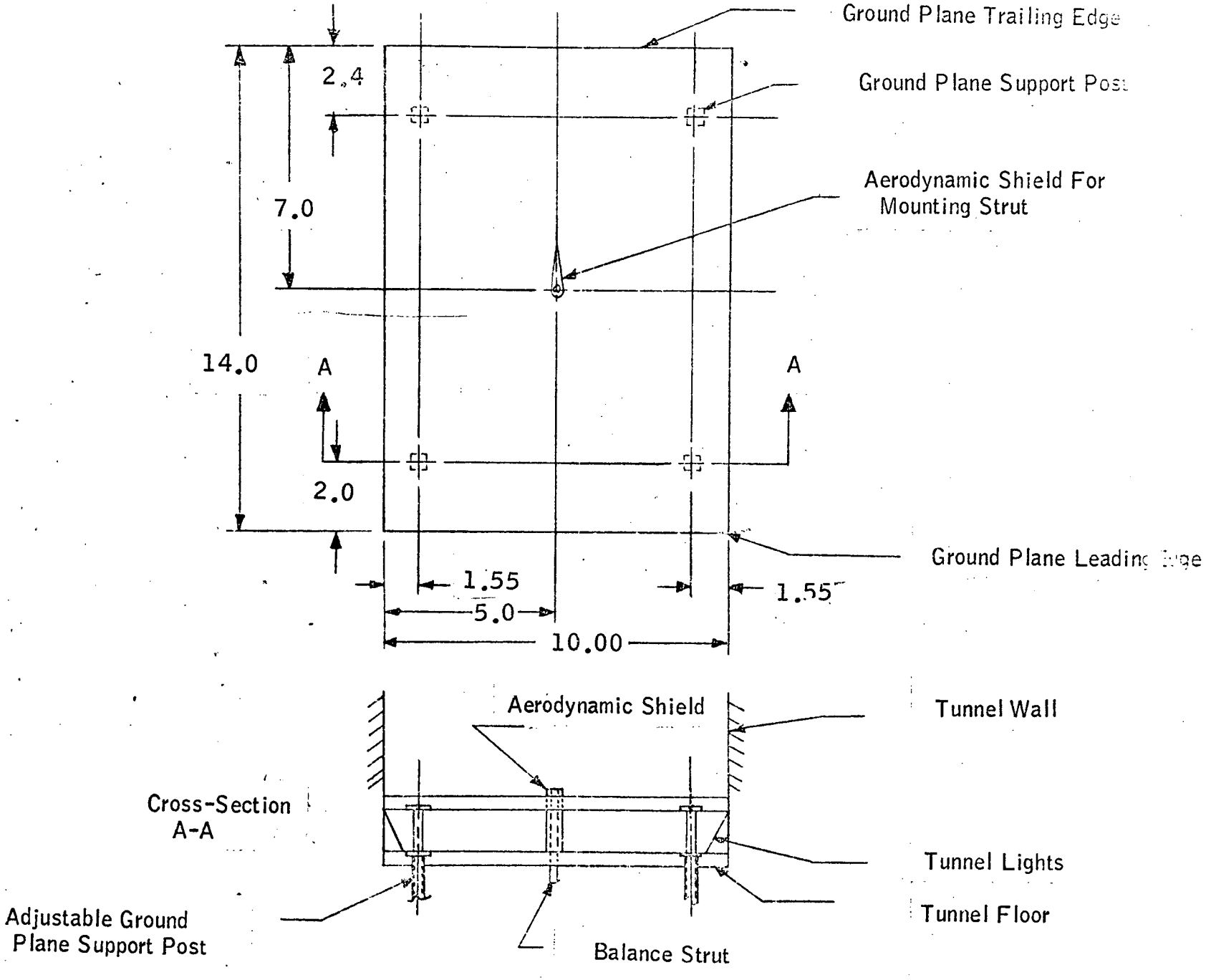
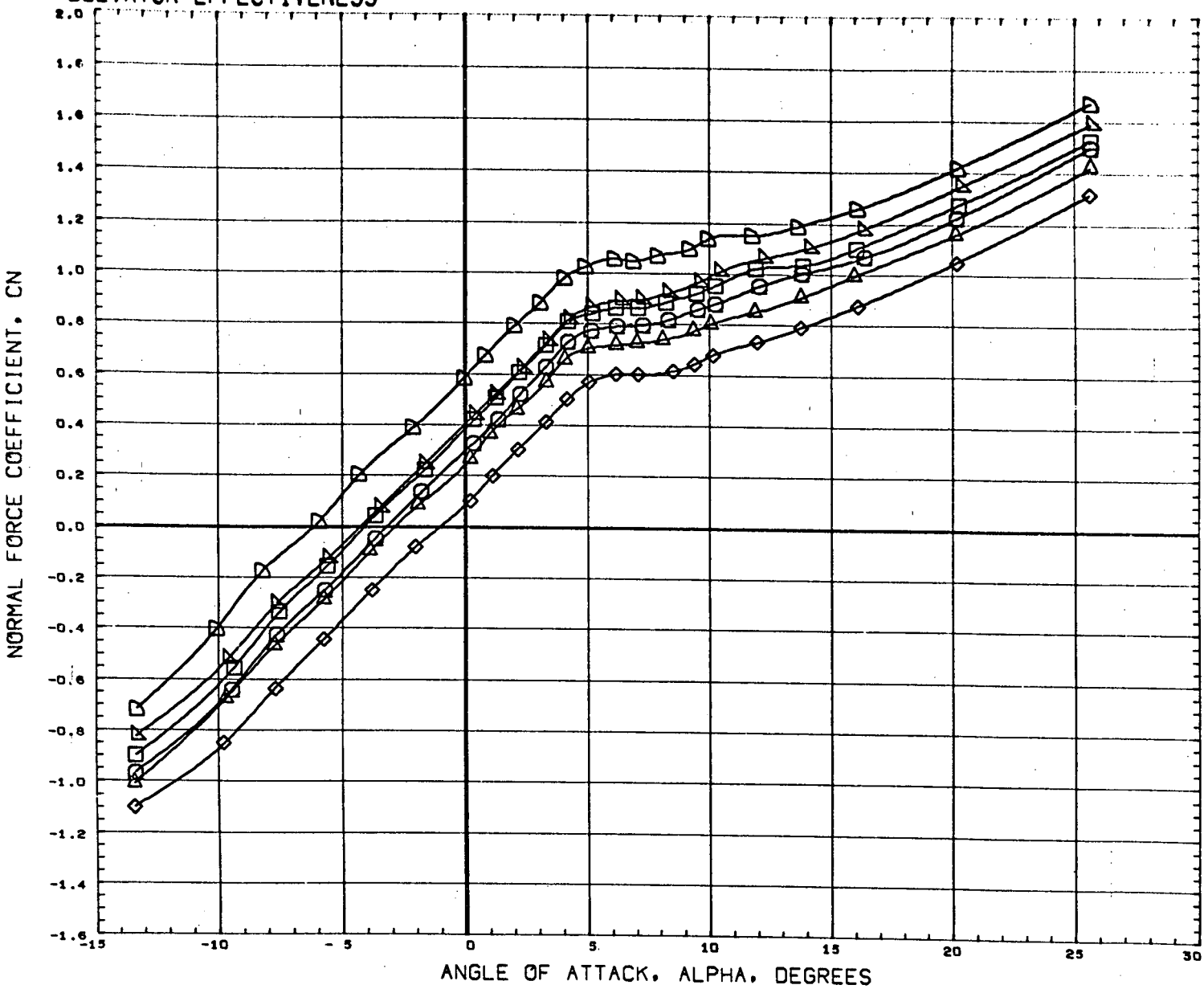


Figure 15. - Ground Plane Dimensions and Installation (all dimensions in feet)

DATA FIGURES

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

ELEVATOR EFFECTIVENESS



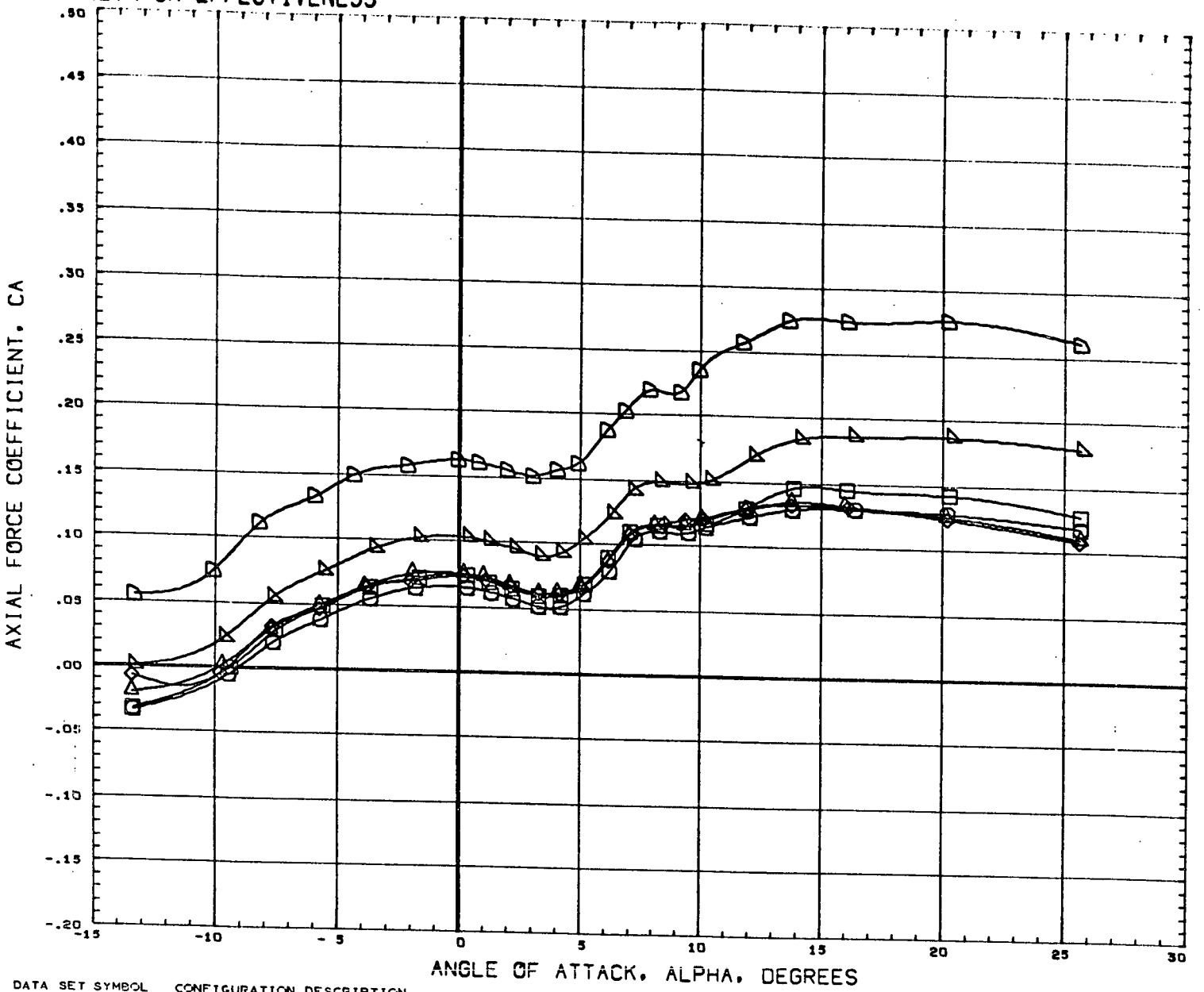
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION
(RG9003)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3
(RG9006)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3
(RG9007)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3
(RG9005)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3
(RG9009)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3
(RG9011)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3

ELEVTR	FLAP	RUDDER	HORIZT
0.000	0.000	0.000	0.000
-5.000	0.000	0.000	0.000
-15.000	0.000	0.000	0.000
5.000	0.000	0.000	0.000
15.000	0.000	0.000	0.000
30.000	0.000	0.000	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

ELEVATOR EFFECTIVENESS



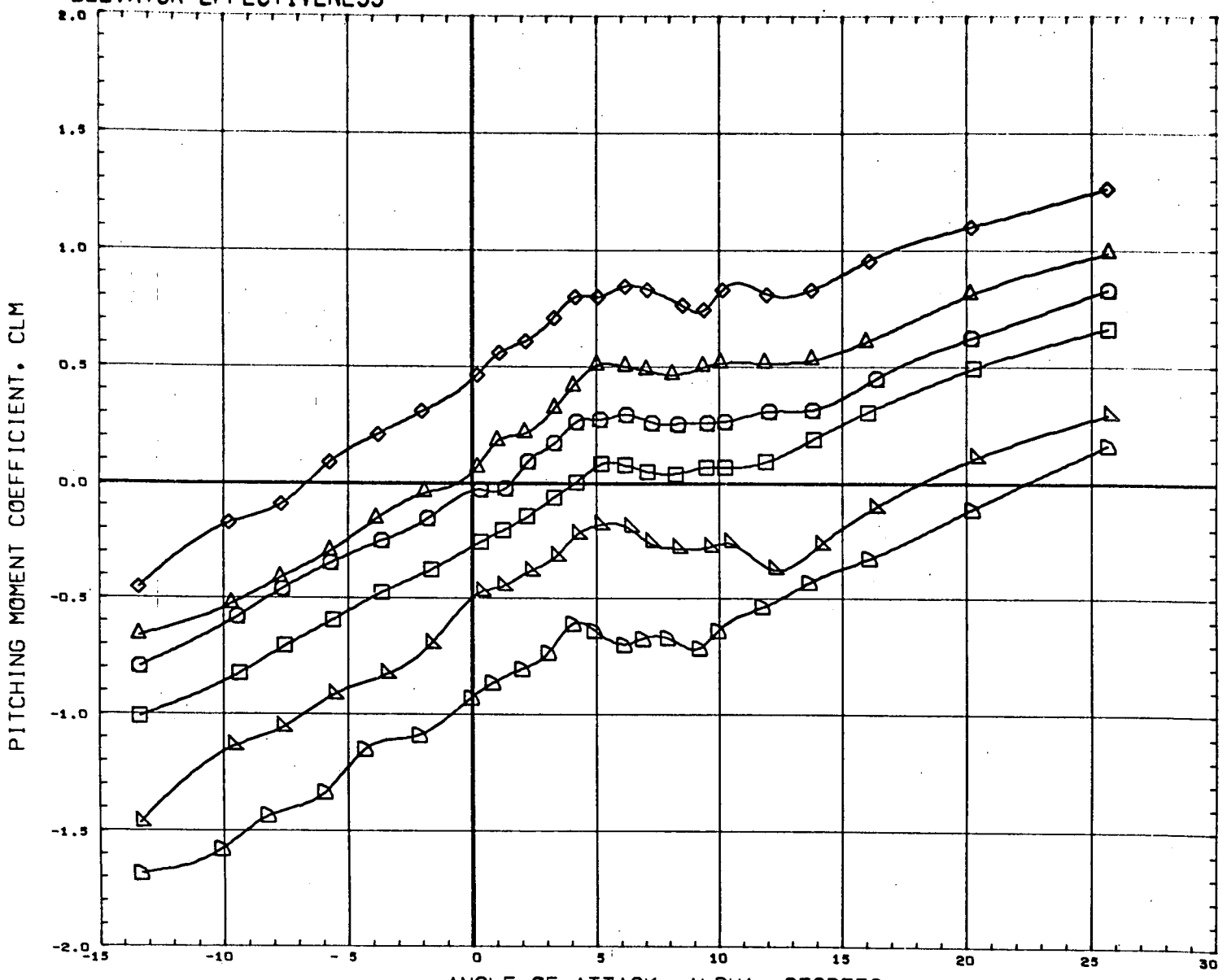
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION
(RG9003)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3
(RG9006)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3
(RG9007)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3
(RG9005)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3
(RG9009)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3
(RG9011)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3

ELEVTR	FLAP	RUDDER	HORIZT
0.000	0.000	0.000	0.000
-5.000	0.000	0.000	0.000
-15.000	0.000	0.000	0.000
5.000	0.000	0.000	0.000
15.000	0.000	0.000	0.000
30.000	0.000	0.000	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

ELEVATOR EFFECTIVENESS

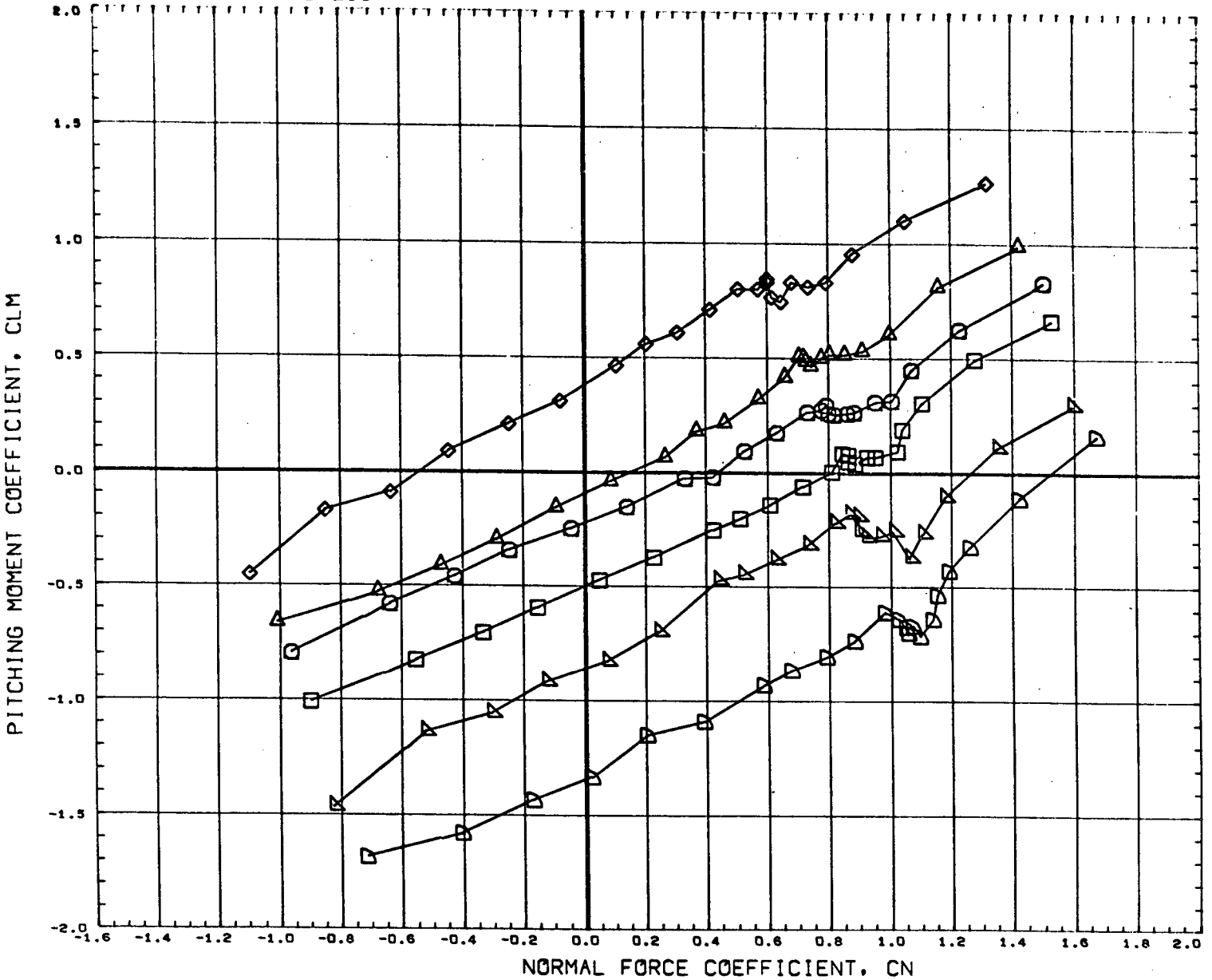


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	RUDDER	HORIZT
(RG9003)	◇	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	0.000	0.000	0.000	0.000
(RG9006)	△	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	-5.000	0.000	0.000	0.000
(RG9007)	○	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	-15.000	0.000	0.000	0.000
(RG9005)	□	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	5.000	0.000	0.000	0.000
(RG9009)	▷	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	15.000	0.000	0.000	0.000
(RG9011)	▽	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	30.000	0.000	0.000	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

ELEVATOR EFFECTIVENESS

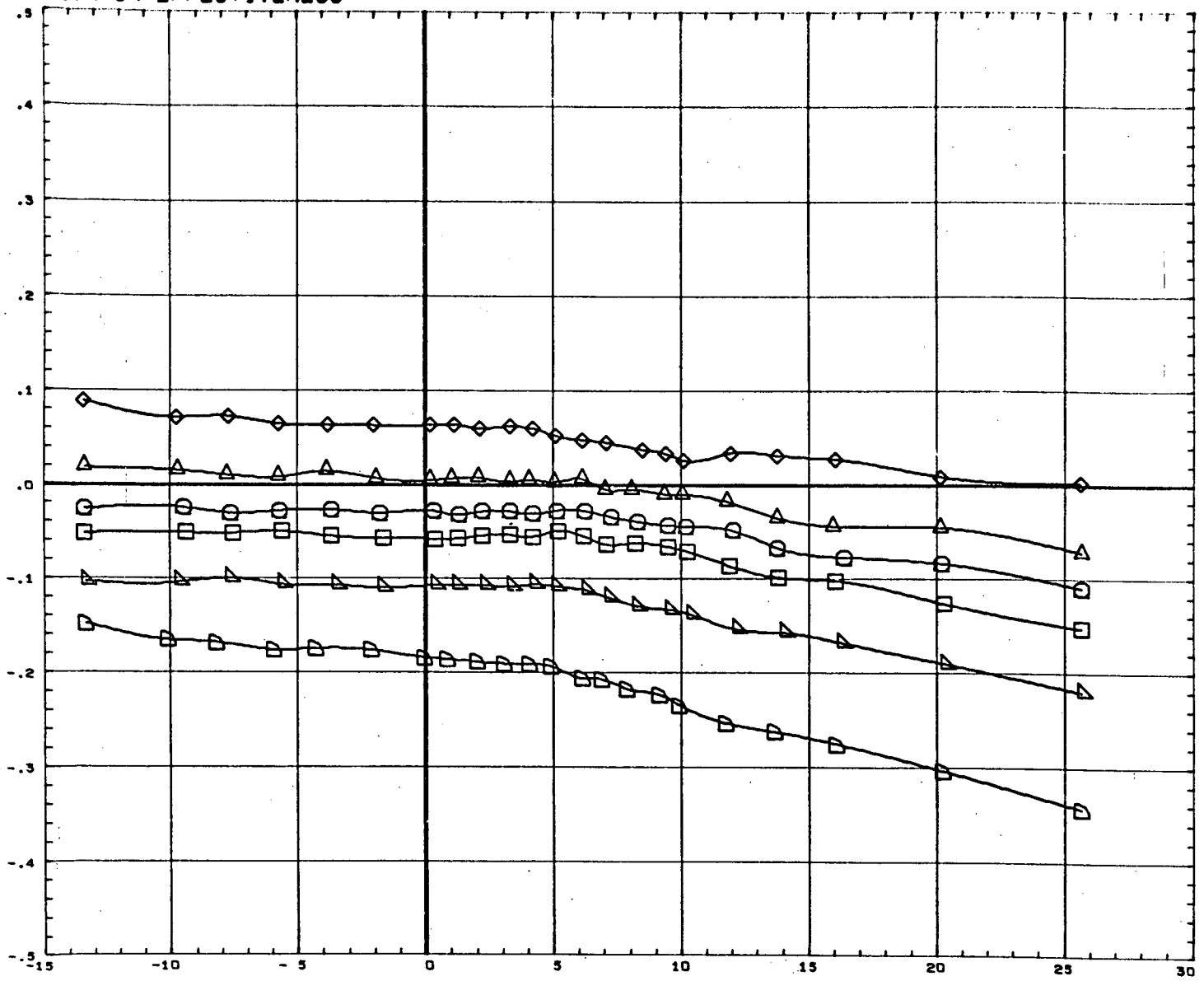


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	RUDDER	HORIZT
(RG9003)	○	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	0.000	0.000	0.000	0.000
(RG9006)	◇	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	-5.000	0.000	0.000	0.000
(RG9007)	△	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	-15.000	0.000	0.000	0.000
(RG9005)	□	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	5.000	0.000	0.000	0.000
(RG9009)	▷	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	15.000	0.000	0.000	0.000
(RG9011)	▽	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	30.000	0.000	0.000	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

ELEVATOR EFFECTIVENESS

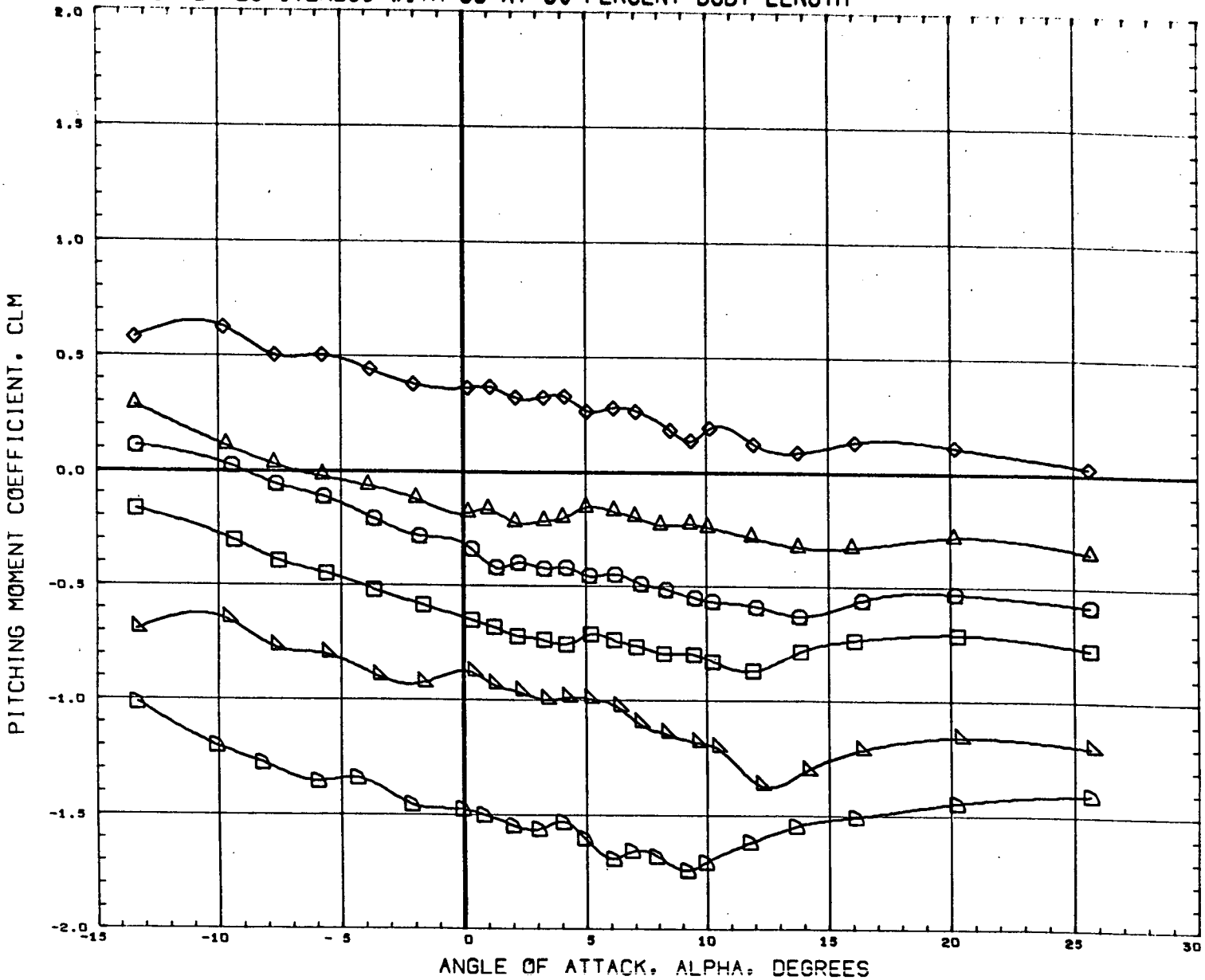


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	RUDDER	HORIZT
(RG9003)	◇	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	0.000	0.000	0.000	0.000
(RG9006)	△	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	-5.000	0.000	0.000	0.000
(RG9007)	○	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	-15.000	0.000	0.000	0.000
(RG9005)	□	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	5.000	0.000	0.000	0.000
(RG9009)	◁	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	15.000	0.000	0.000	0.000
(RG9011)	▷	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	30.000	0.000	0.000	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

ELEVATOR EFFECTIVENESS WITH CG AT 50 PERCENT BODY LENGTH

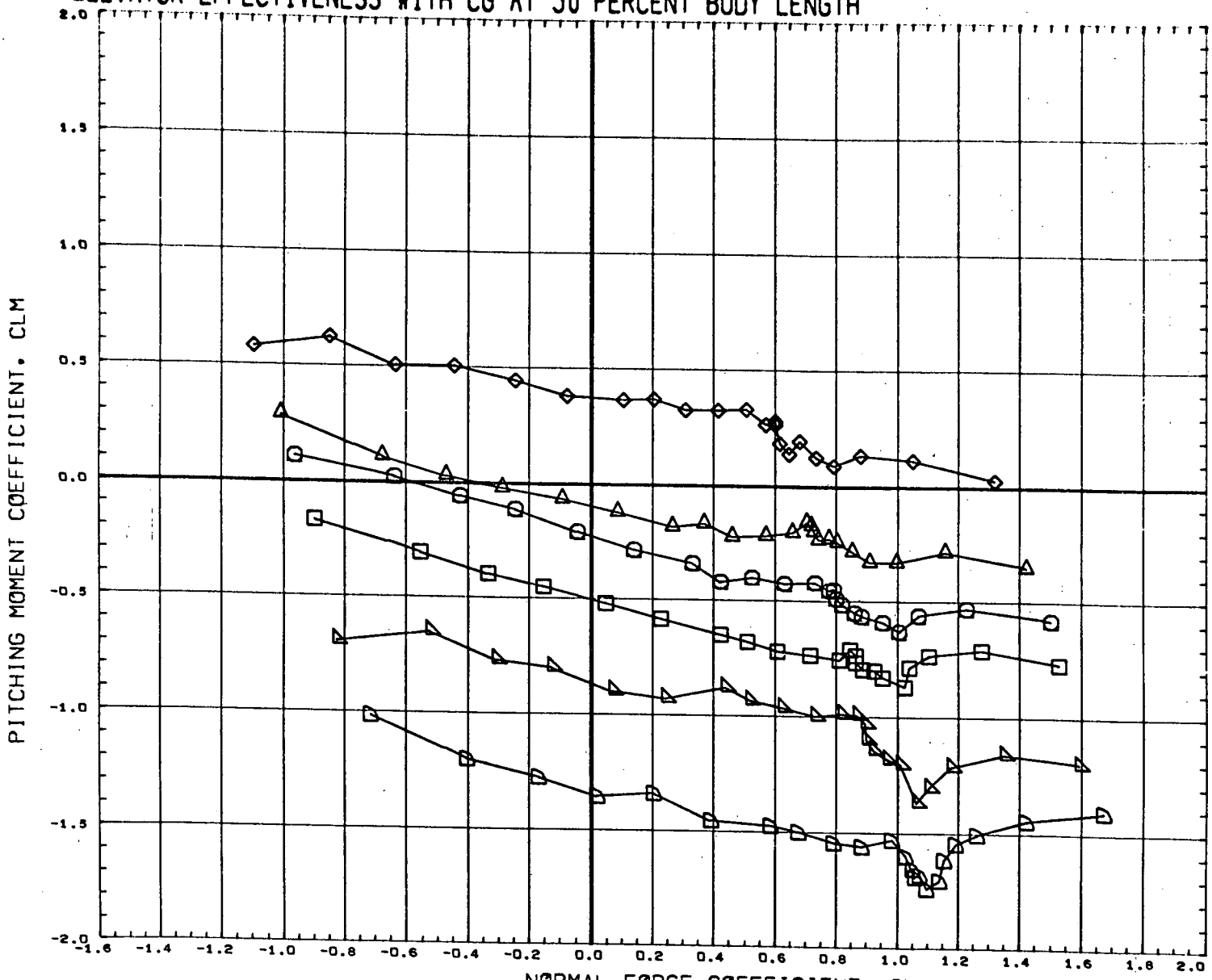


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	RUDDER	HORIZT
(AG9003)	◇	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	0.000	0.000	0.000	0.000
(AG9006)	△	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	-5.000	0.000	0.000	0.000
(AG9007)	○	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	-15.000	0.000	0.000	0.000
(AG9005)	□	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	5.000	0.000	0.000	0.000
(AG9009)	◁	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	15.000	0.000	0.000	0.000
(AG9011)	▷	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	30.000	0.000	0.000	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	34.5000	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

ELEVATOR EFFECTIVENESS WITH CG AT 50 PERCENT BODY LENGTH



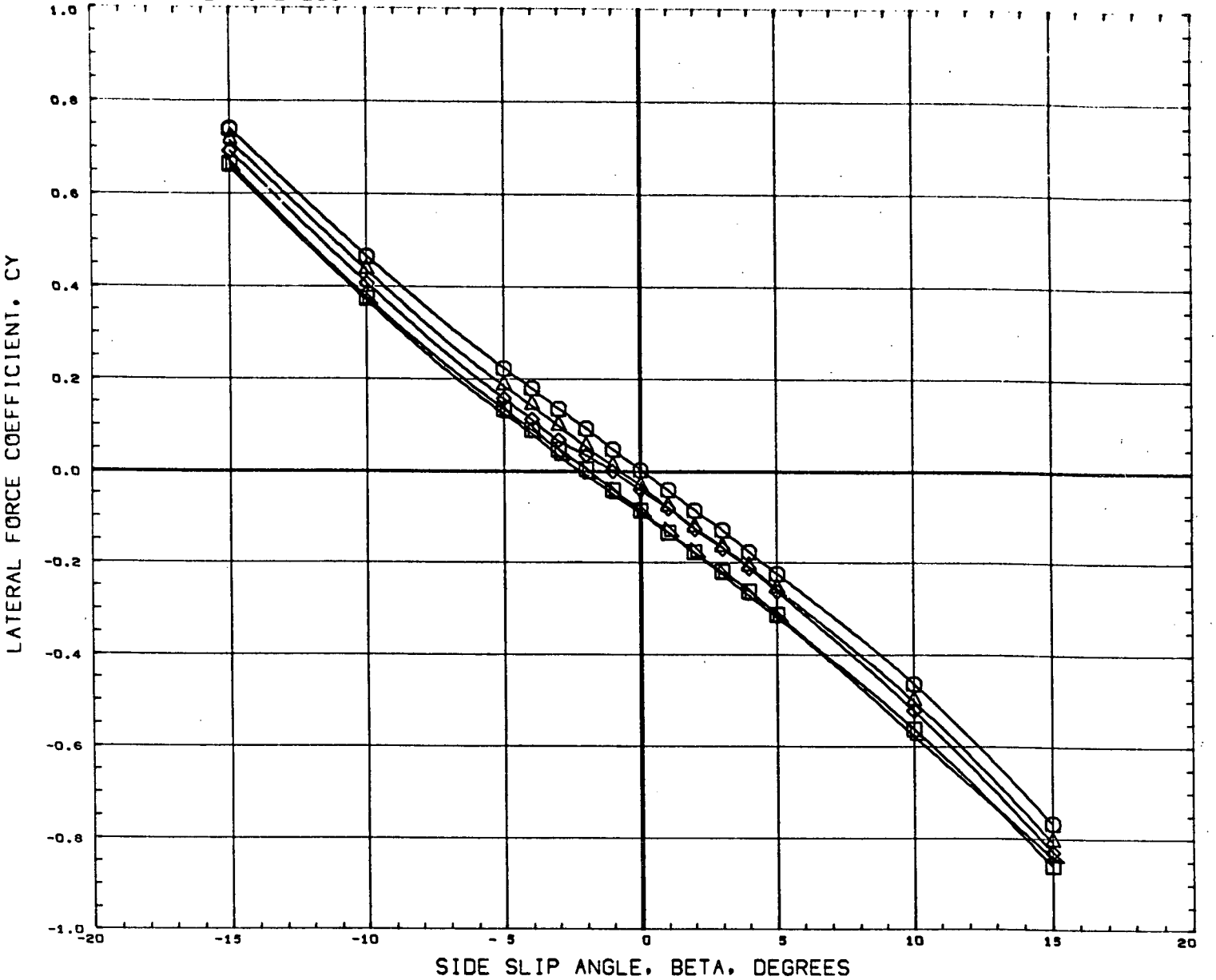
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION
(AG9003)	○	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3
(AG9006)	△	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3
(AG9007)	□	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3
(AG9005)	◇	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3
(AG9009)	▷	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3
(AG9011)	⬠	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3

ELEVTR	FLAP	RUDDER	HORIZT
0.000	0.000	0.000	0.000
-5.000	0.000	0.000	0.000
-15.000	0.000	0.000	0.000
5.000	0.000	0.000	0.000
15.000	0.000	0.000	0.000
30.000	0.000	0.000	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	34.5000	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

RUDDER EFFECTIVENESS

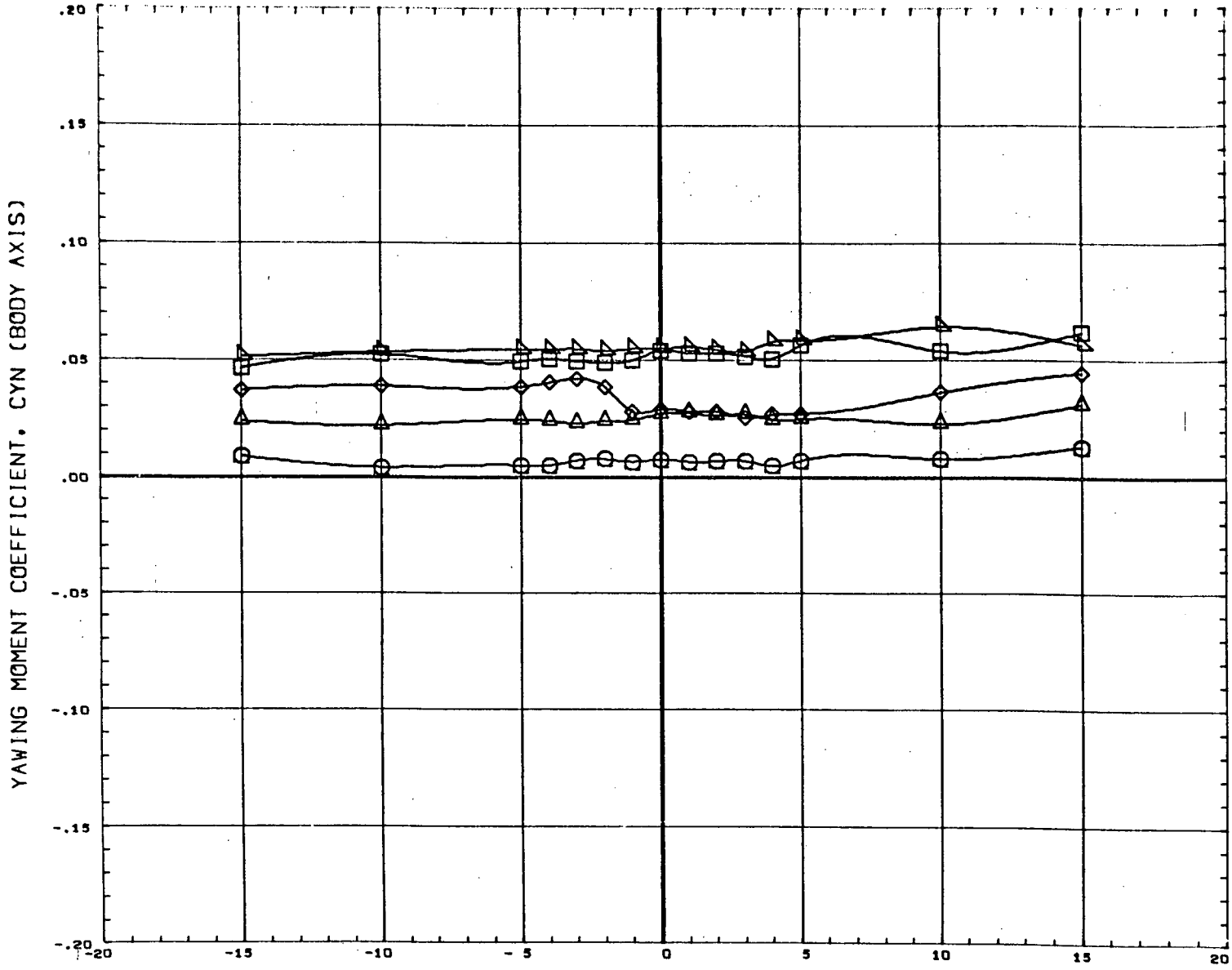


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	RUDDER	HORIZT
(RG9004)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	0.000	0.000	0.000	0.000
(RG9014)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	0.000	0.000	-5.000	0.000
(RG9015)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	0.000	0.000	-10.000	0.000
(RG9013)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	0.000	0.000	-15.000	0.000
(RG9012)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	0.000	0.000	-20.000	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

RUDDER EFFECTIVENESS

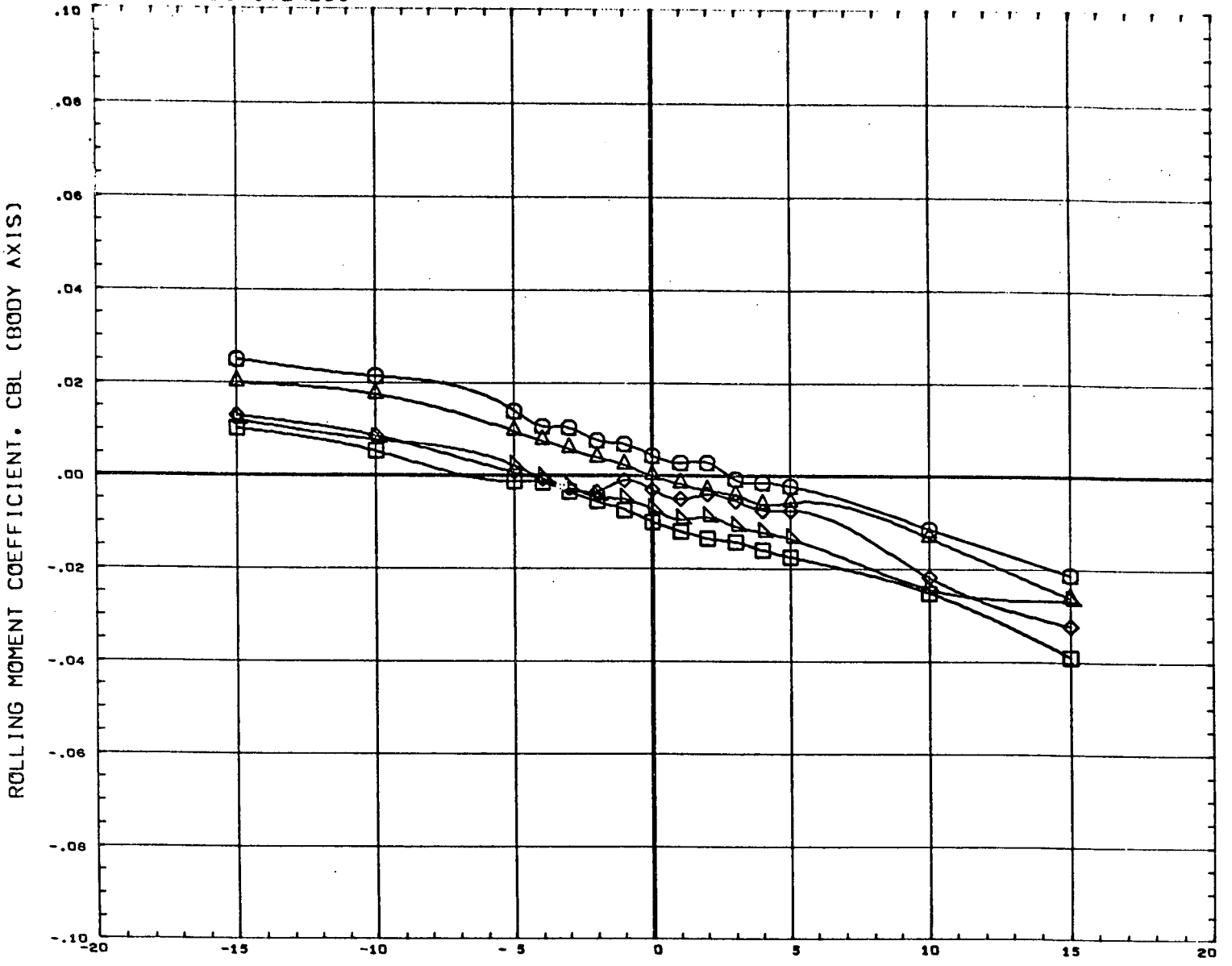


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	RUDDER	HORIZT
(RG9004)	○	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	0.000	0.000	0.000	0.000
(RG9014)	△	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	0.000	0.000	-5.000	0.000
(RG9015)	◇	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	0.000	0.000	-10.000	0.000
(RG9013)	□	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	0.000	0.000	-15.000	0.000
(RG9012)	▷	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	0.000	0.000	-20.000	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

RUDDER EFFECTIVENESS

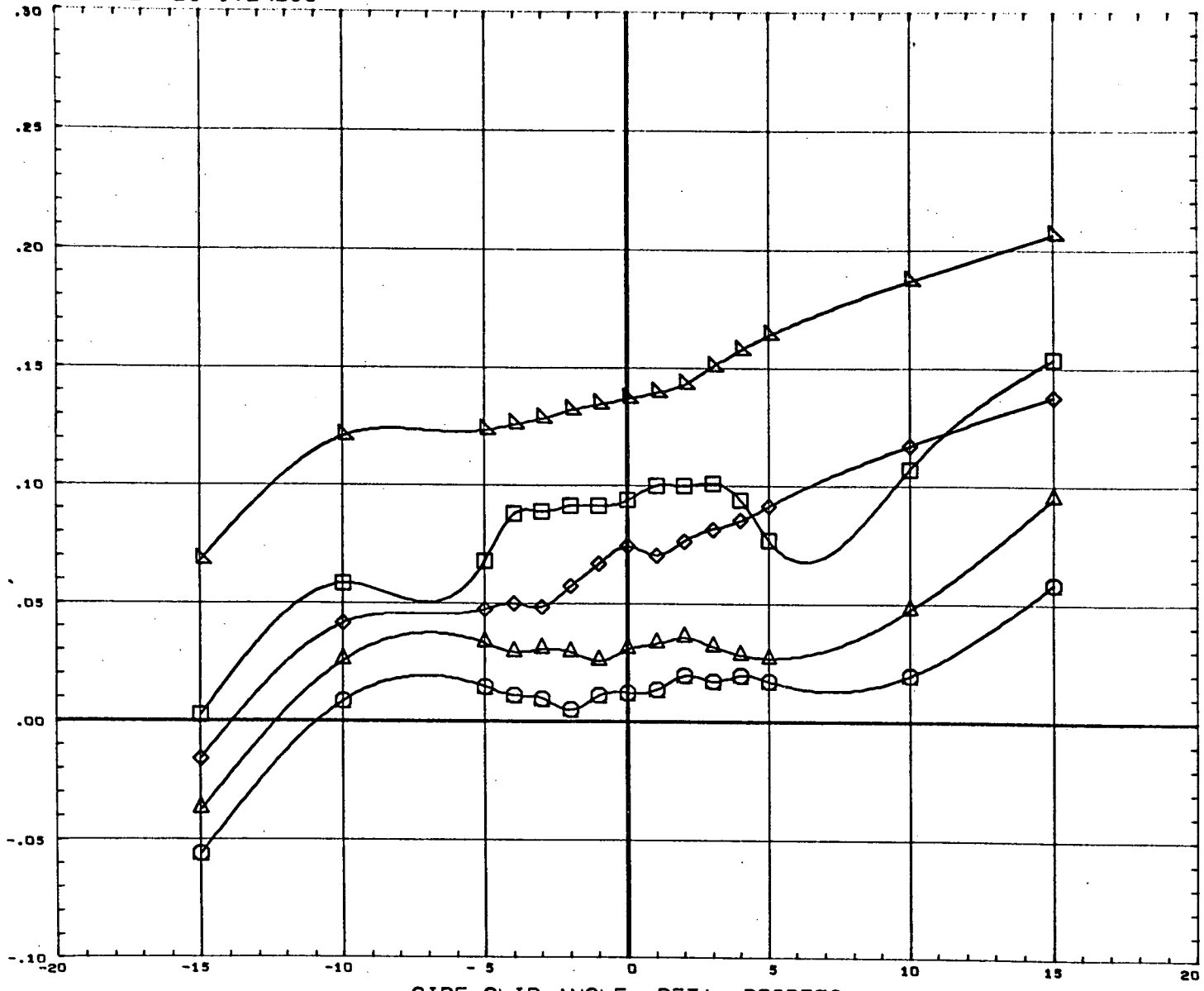


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	RUDDER	HORIZT
(RG9004)	○	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	0.000	0.000	0.000	0.000
(RG9014)	△	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	0.000	0.000	-5.000	0.000
(RG9015)	◇	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	0.000	0.000	-10.000	0.000
(RG9013)	□	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	0.000	0.000	-15.000	0.000
(RG9012)	▷	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	0.000	0.000	-20.000	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

RUDDER EFFECTIVENESS



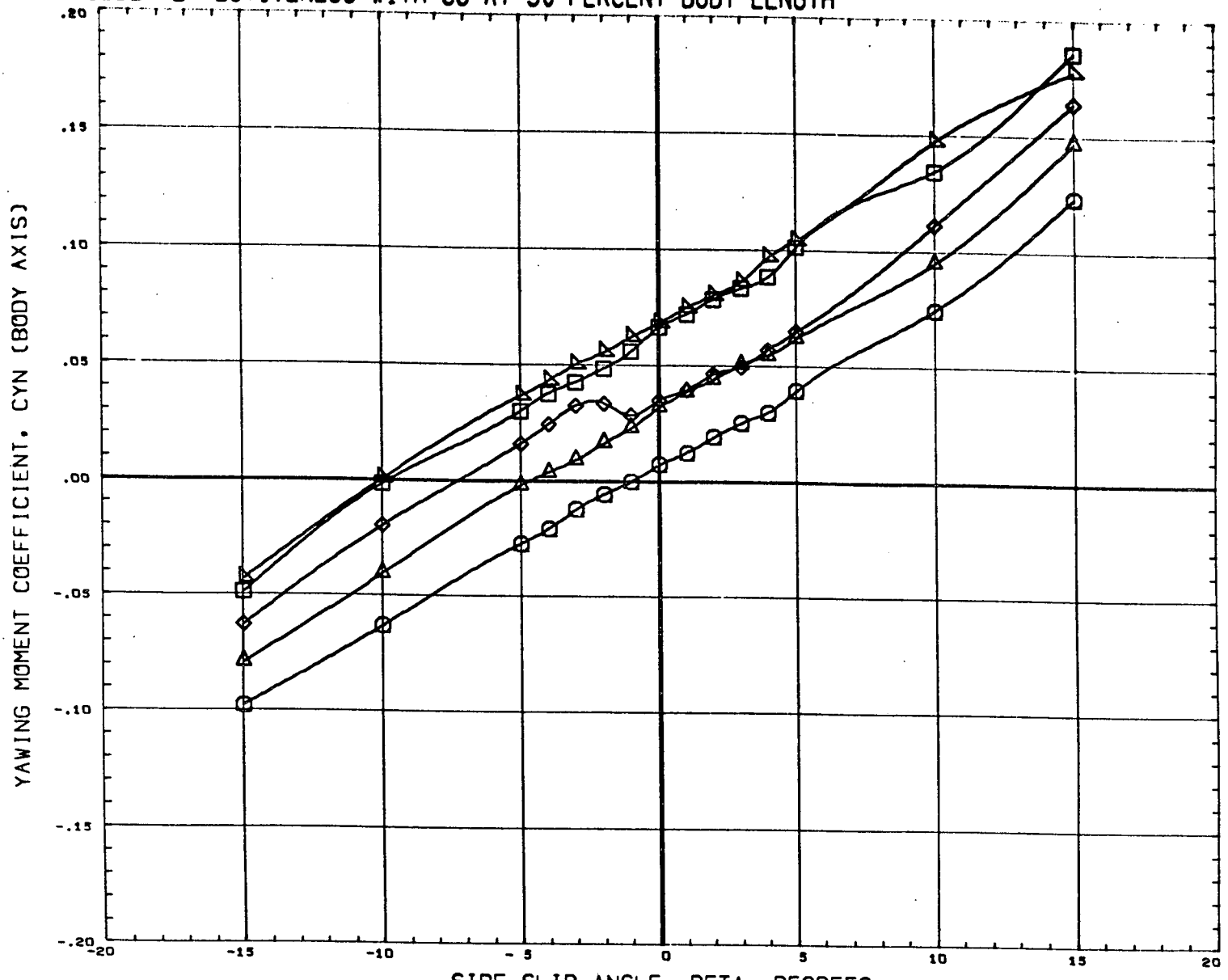
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	RUDDER	HORIZT
(RG9004)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	0.000	0.000	0.000	0.000
(RG9014)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	0.000	0.000	-5.000	0.000
(RG9015)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	0.000	0.000	-10.000	0.000
(RG9013)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	0.000	0.000	-15.000	0.000
(RG9012)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	0.000	0.000	-20.000	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

C-2

RUDDER EFFECTIVENESS WITH CG AT 50 PERCENT BODY LENGTH

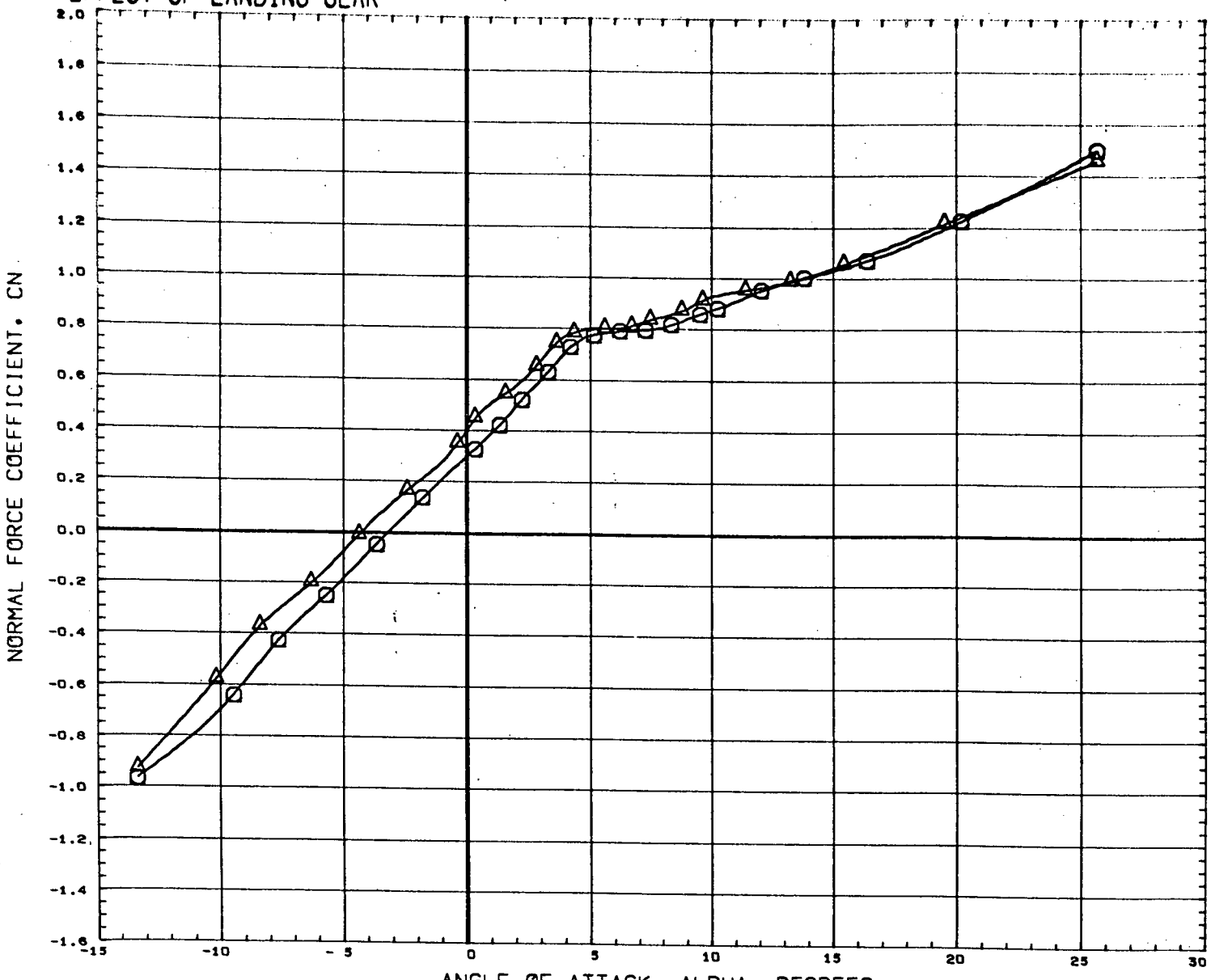


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	RUDDER	HORIZT
(AG9004)	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	0.000	0.000	0.000	0.000
(AG9014)	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	0.000	0.000	-5.000	0.000
(AG9015)	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	0.000	0.000	-10.000	0.000
(AG9013)	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	0.000	0.000	-15.000	0.000
(AG9012)	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	0.000	0.000	-20.000	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	34.5000	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

EFFECT OF LANDING GEAR



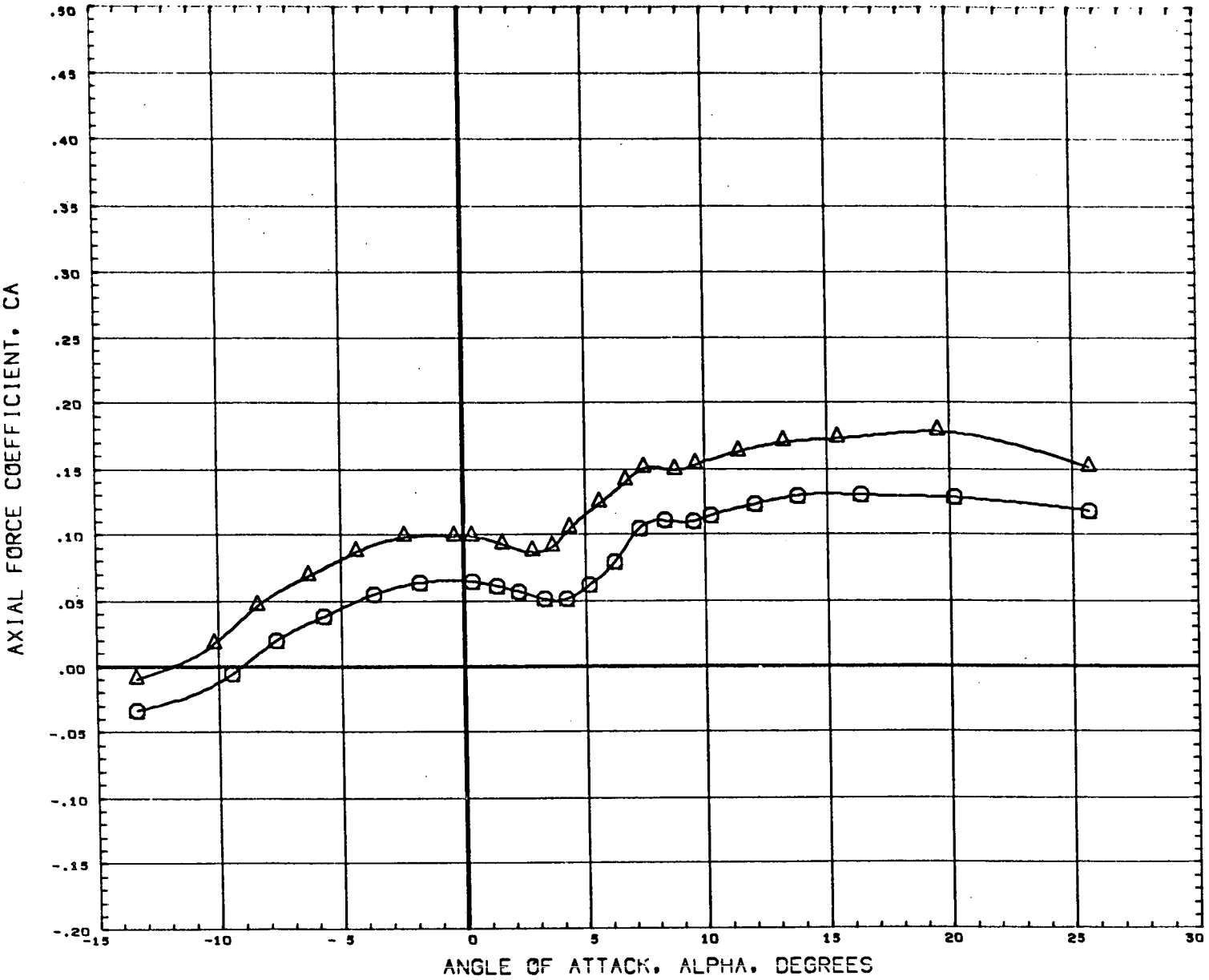
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION
(RG9003)	○	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3
(RG9034)	△	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L

ELEVTR	FLAP	RUDDER	HORIZT
0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

EFFECT OF LANDING GEAR

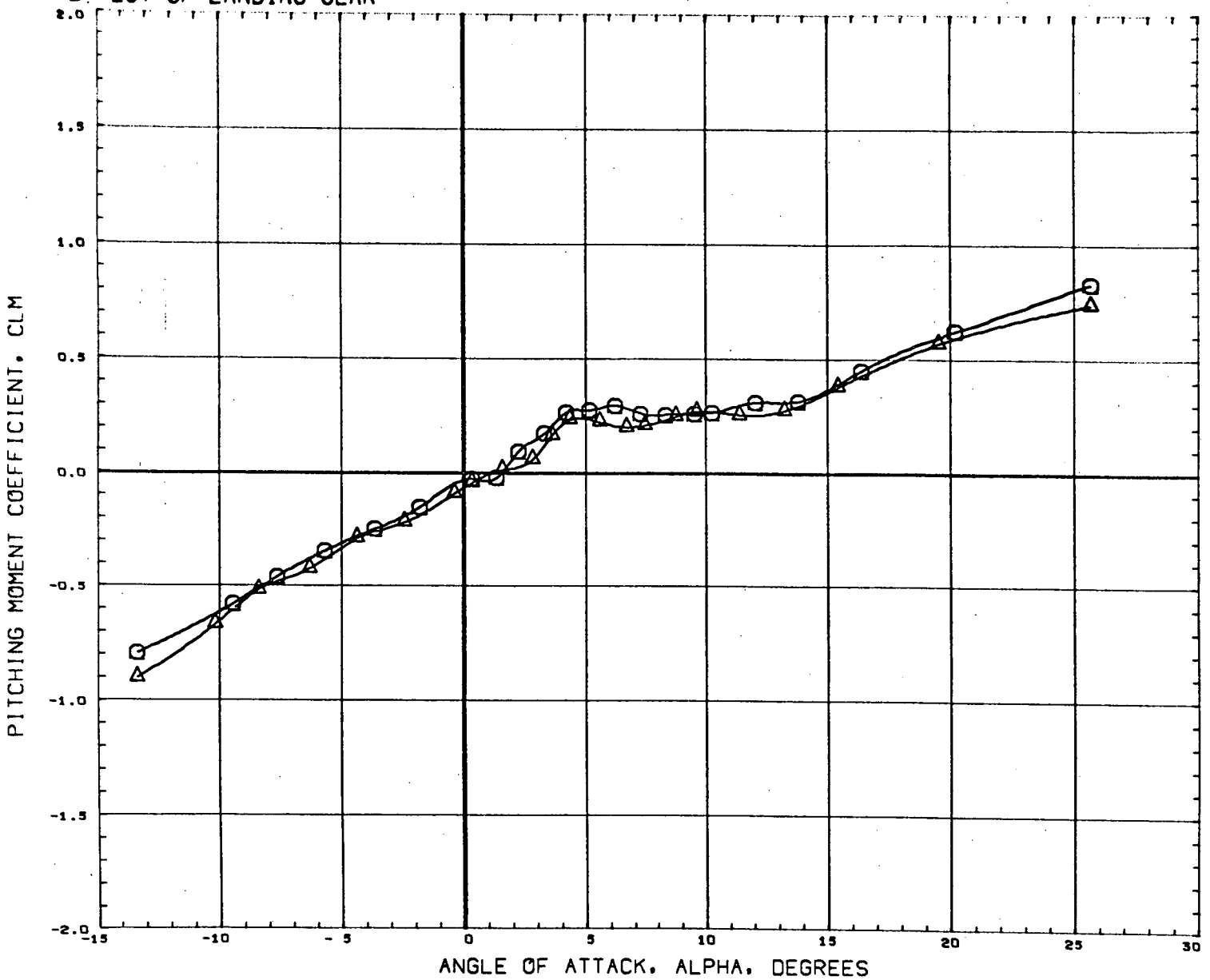


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	RUDDER	HORIZT
(RG9003)	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	0.000	0.000	0.000	0.000
(RG9034)	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	0.000	0.000	0.000	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

EFFECT OF LANDING GEAR

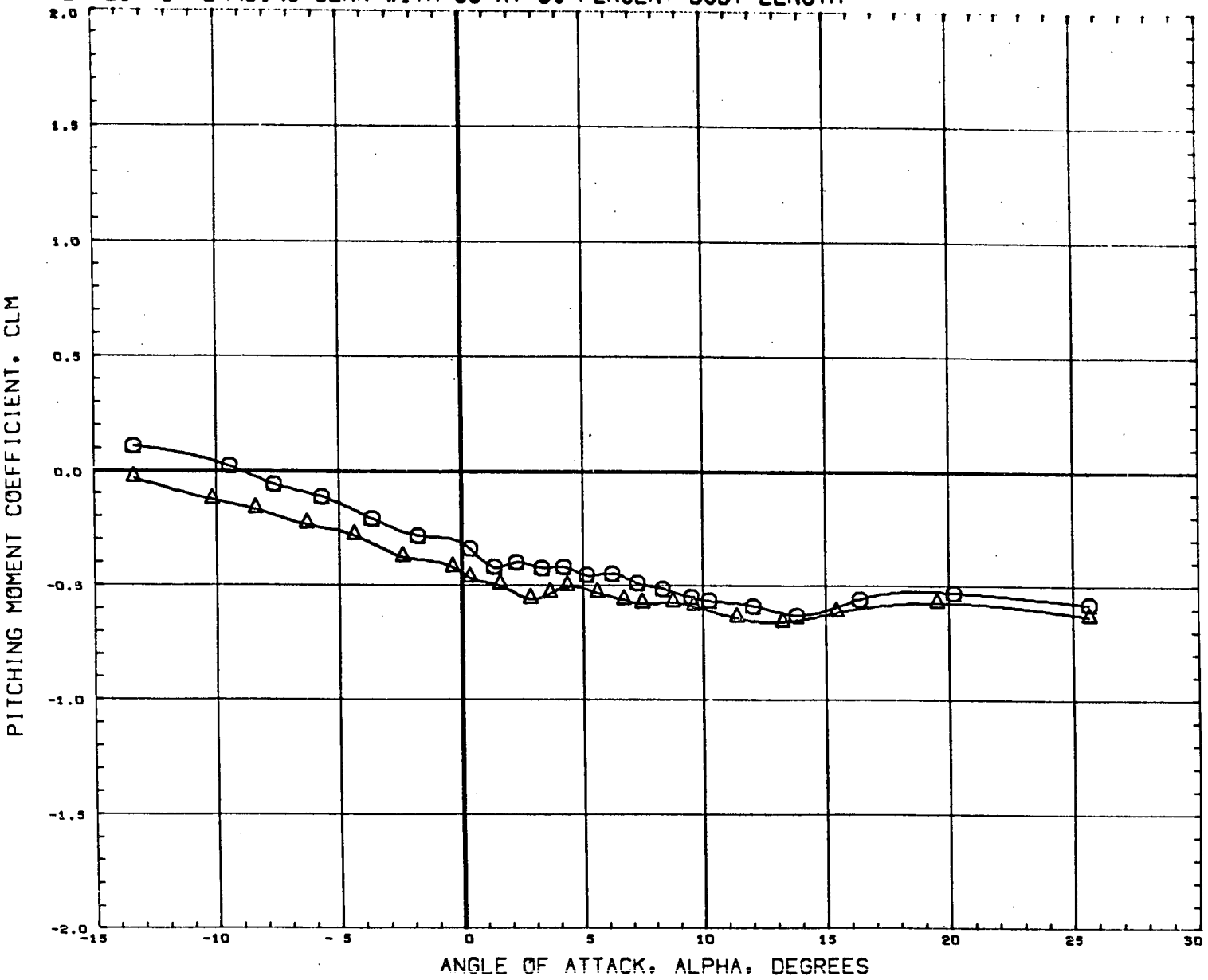


DATA SET SYMBOL		CONFIGURATION DESCRIPTION	ELEVTR	FLAP	RUDDER	HORIZT
(RG9003)	○	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	0.000	0.000	0.000	0.000
(RG9034)	△	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	0.000	0.000	0.000	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

EFFECT OF LANDING GEAR WITH CG AT 50 PERCENT BODY LENGTH

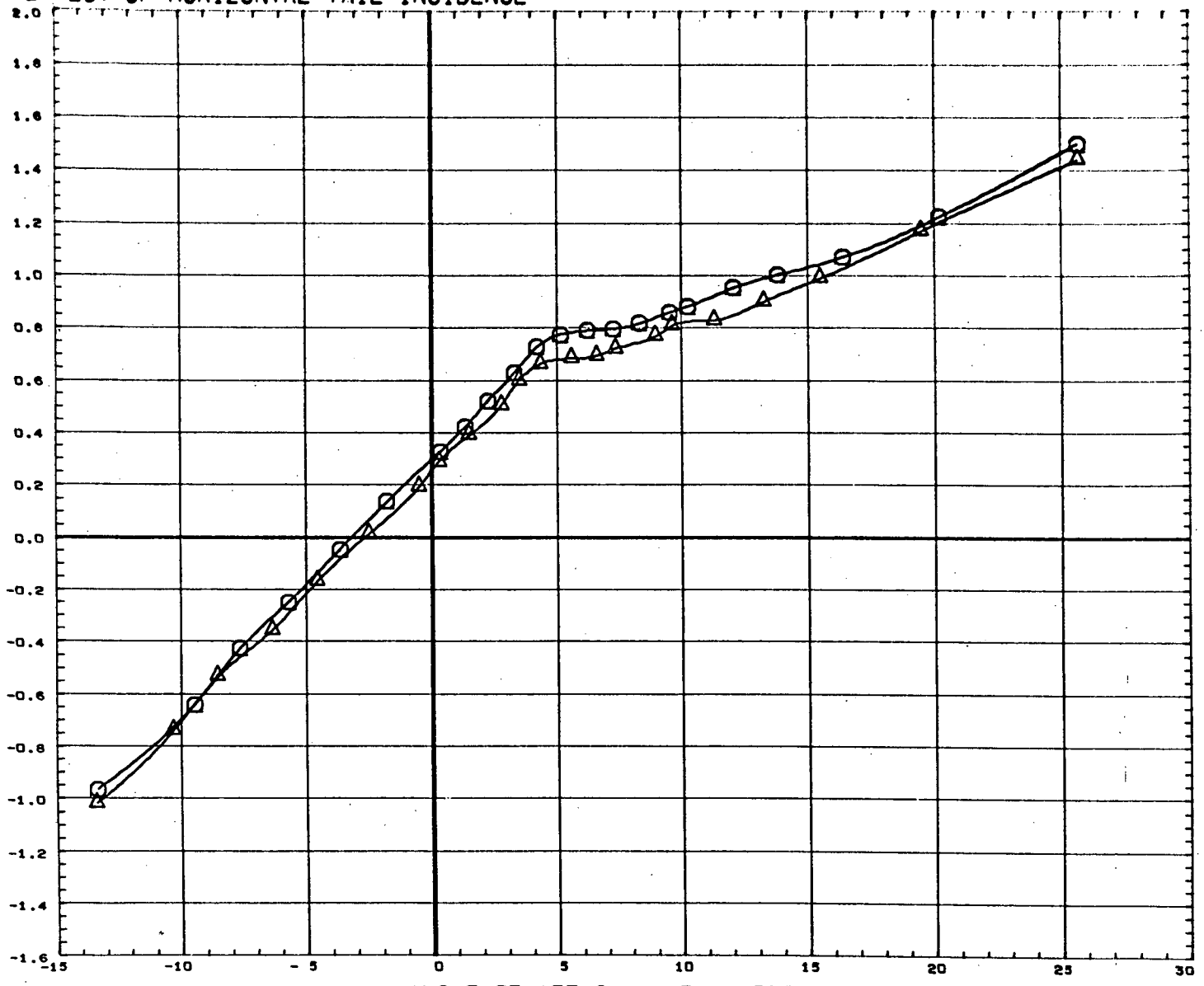


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	RUDDER	HORIZT
(AG9003)	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	0.000	0.000	0.000	0.000
(AG9034)	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	0.000	0.000	0.000	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	34.5000	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

EFFECT OF HORIZONTAL TAIL INCIDENCE

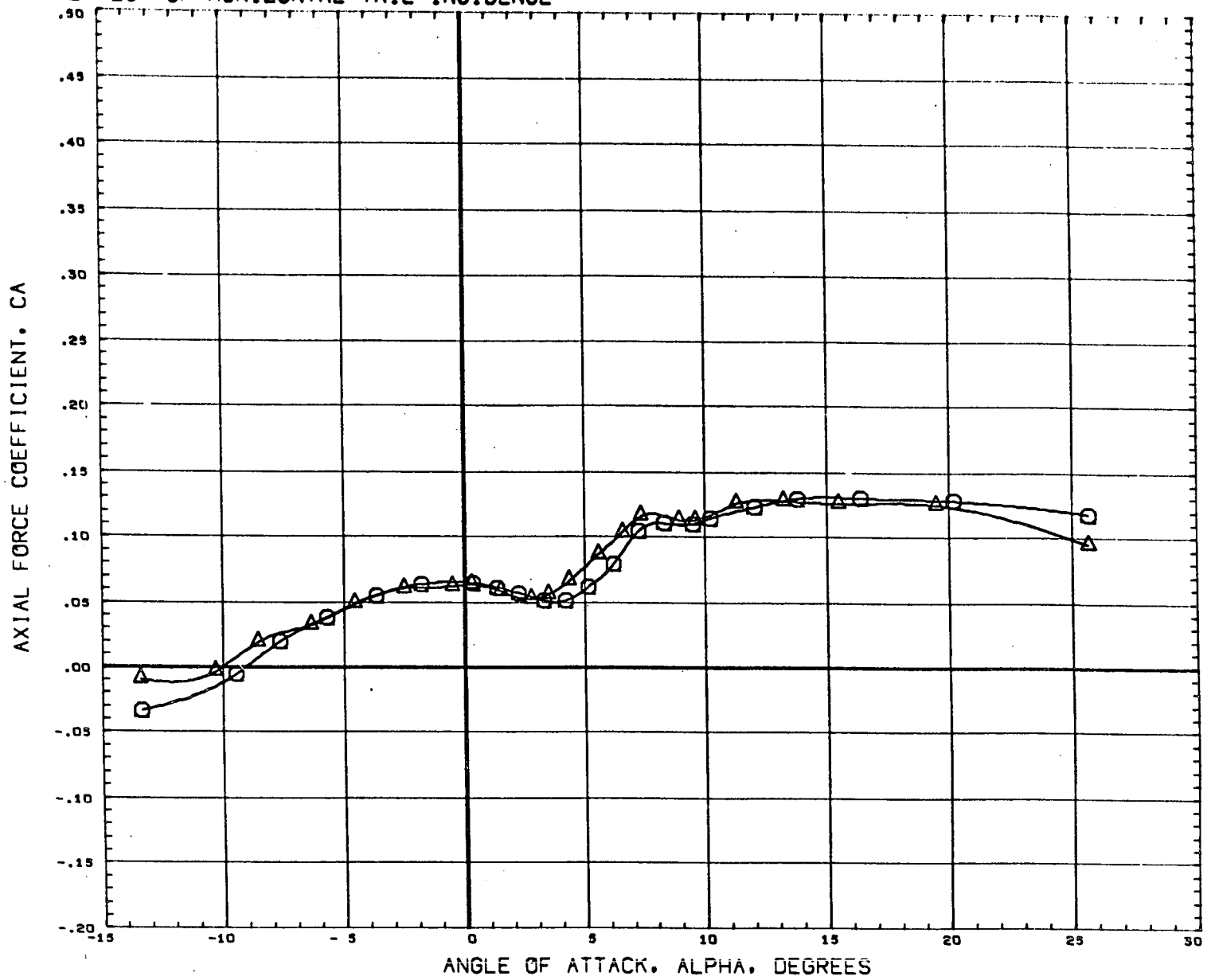


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	RUDDER	HORIZT
(RG9003)	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	0.000	0.000	0.000	0.000
(RG9035)	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.000	-6.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

EFFECT OF HORIZONTAL TAIL INCIDENCE

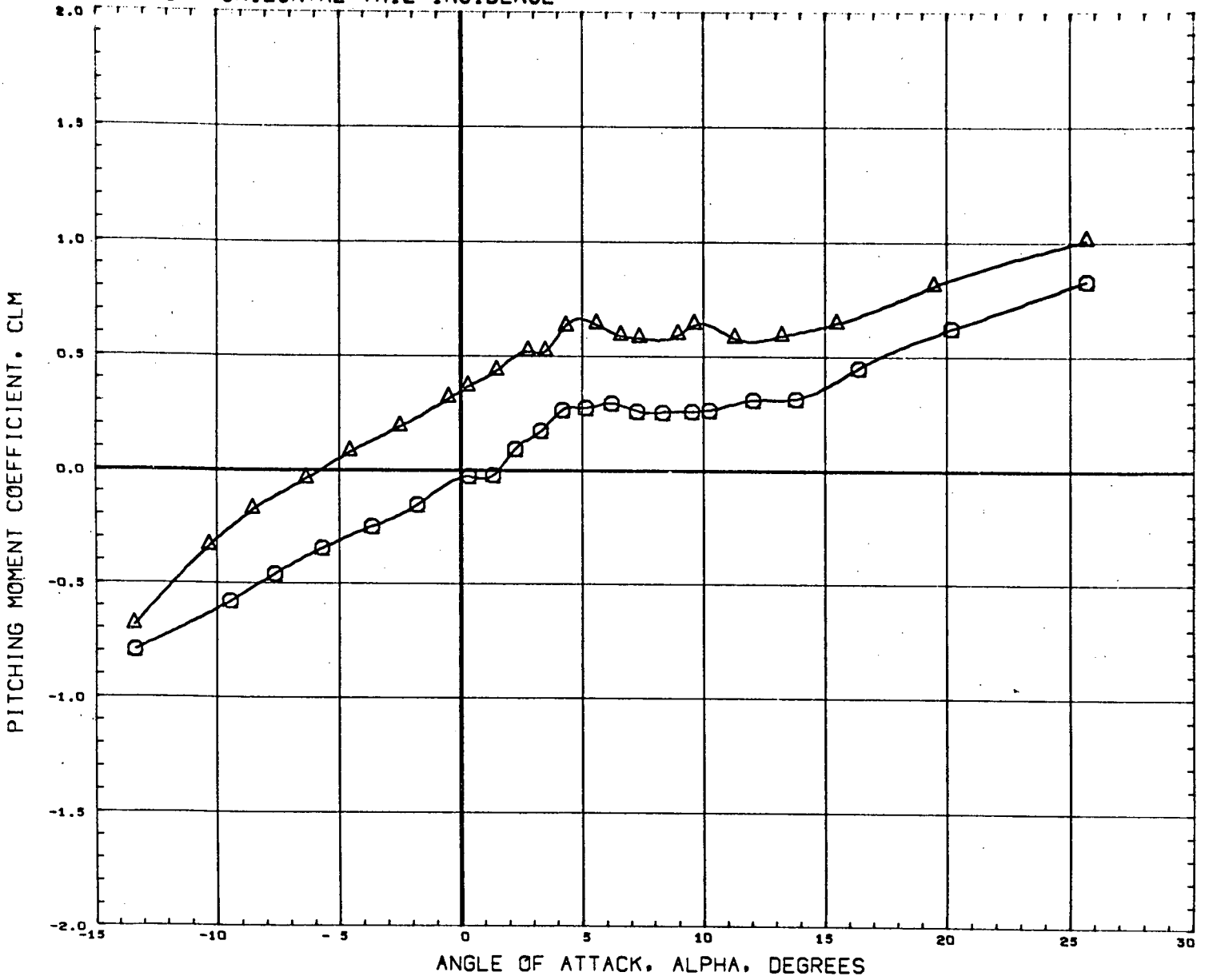


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	RUDDER	HORIZT
(RG9003)	○	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	0.000	0.000	0.000	0.000
(RG9035)	△	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.000	-6.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

EFFECT OF HORIZONTAL TAIL INCIDENCE

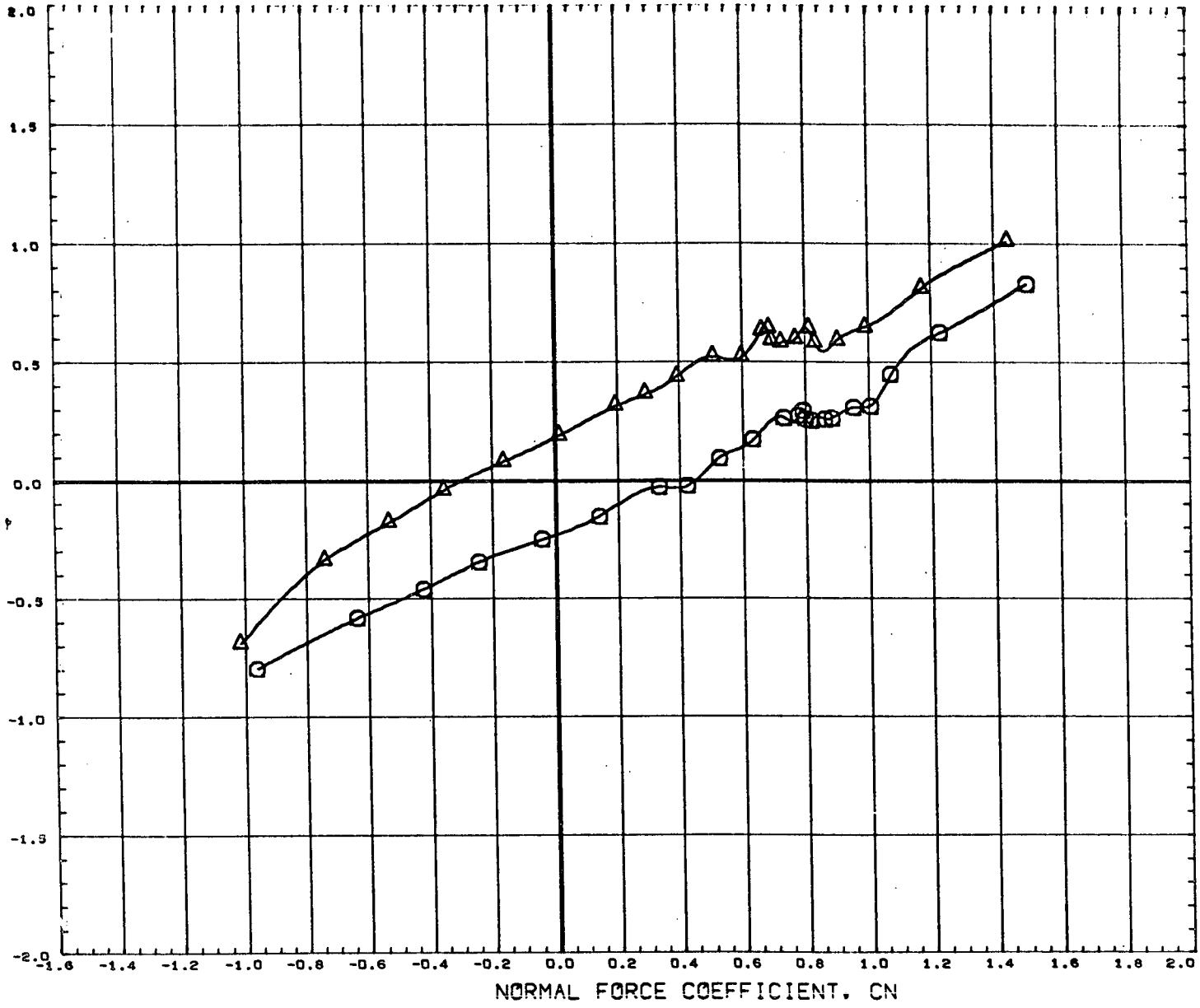


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	RUDDER	HORIZT
(RG9003)	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	0.000	0.000	0.000	0.000
(RG9035)	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.000	-6.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

EFFECT OF HORIZONTAL TAIL INCIDENCE

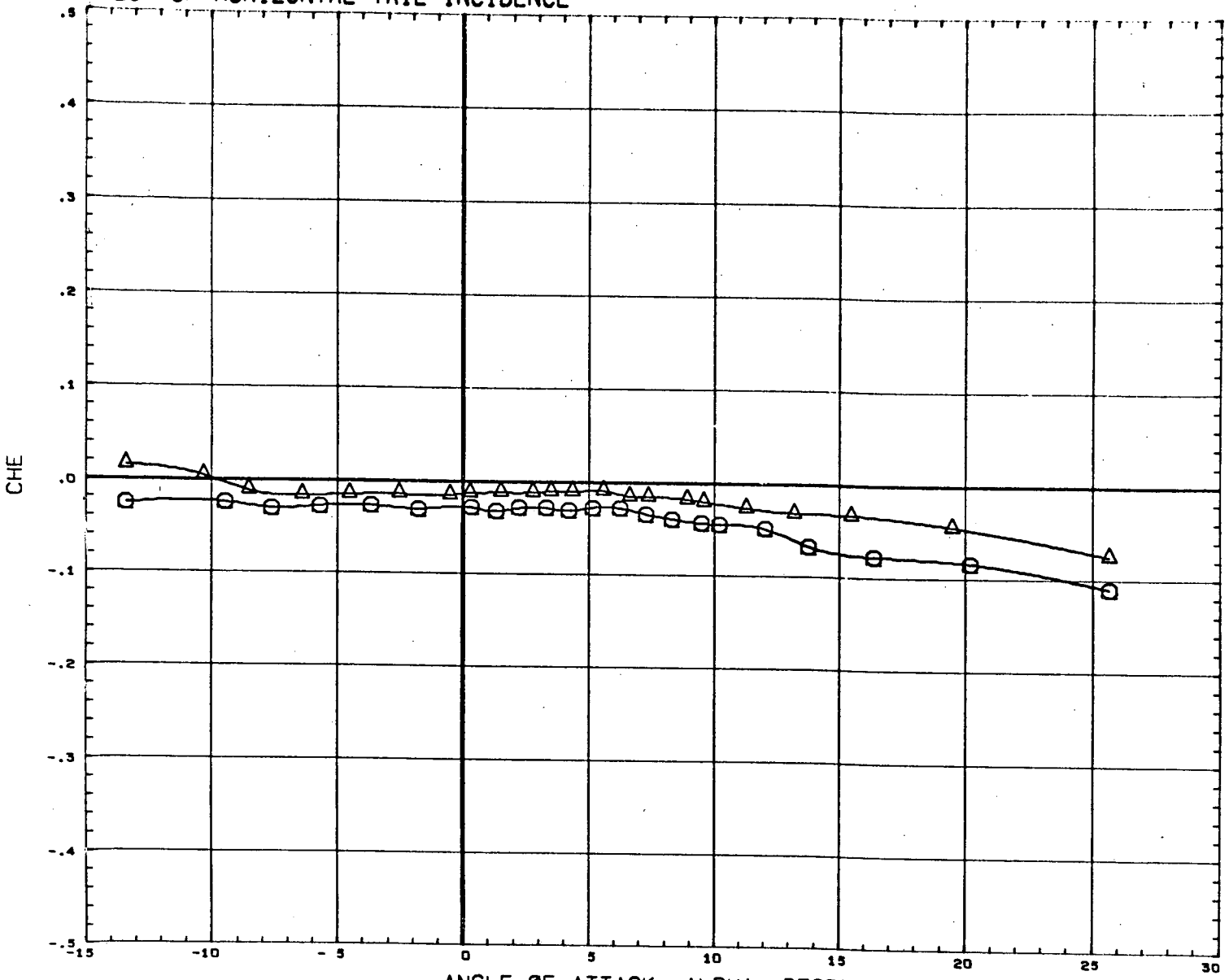


DATA SET SYMBOL		CONFIGURATION DESCRIPTION	ELEVTR	FLAP	RUDDER	HORIZT
(RG9003)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	0.000	0.000	0.000	0.000
(RG9035)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.000	-6.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

EFFECT OF HORIZONTAL TAIL INCIDENCE

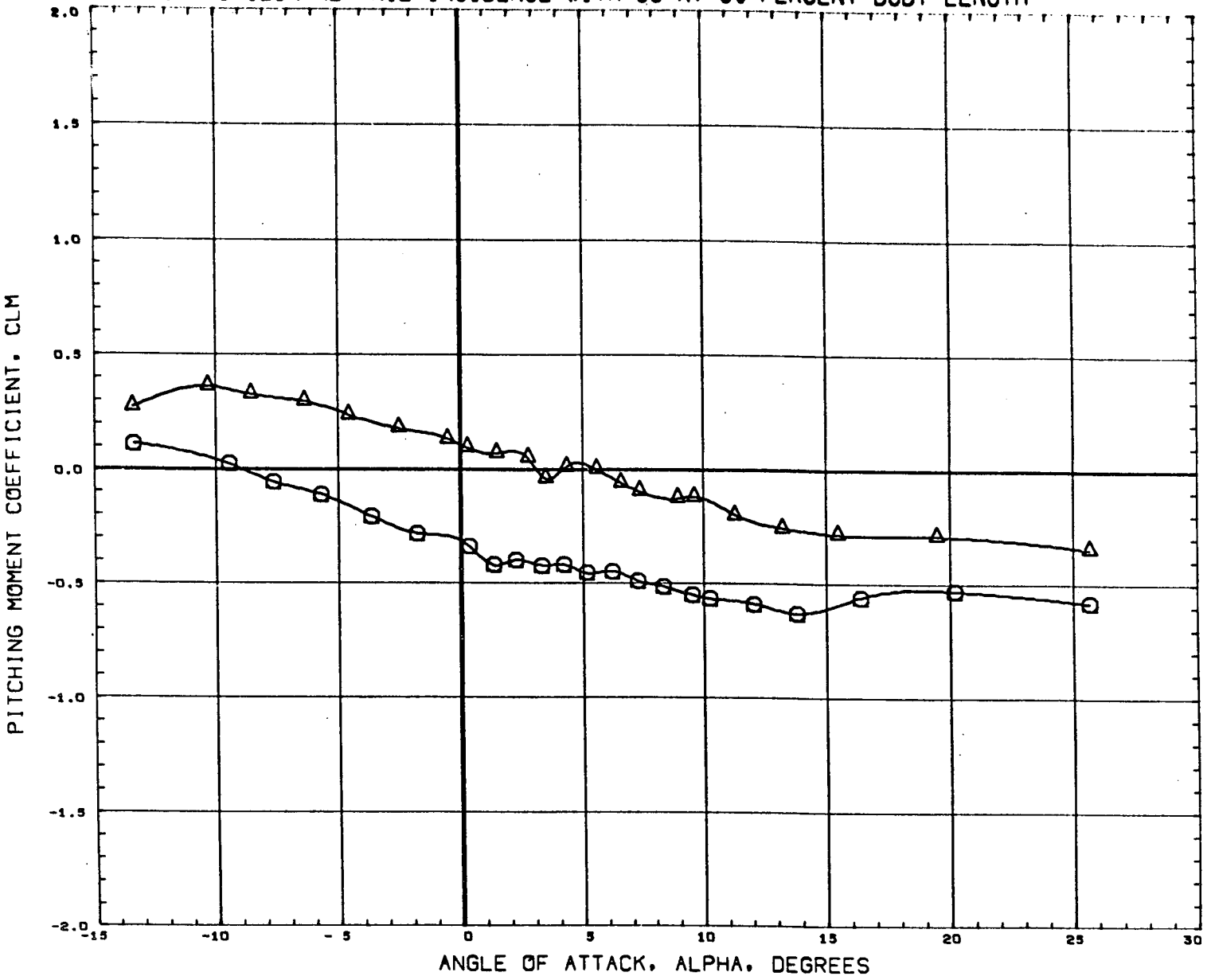


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	RUDDER	HORIZT
(RG9003)	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	0.000	0.000	0.000	0.000
(RG9035)	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.000	-6.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

EFFECT OF HORIZONTAL TAIL INCIDENCE WITH CG AT 50 PERCENT BODY LENGTH

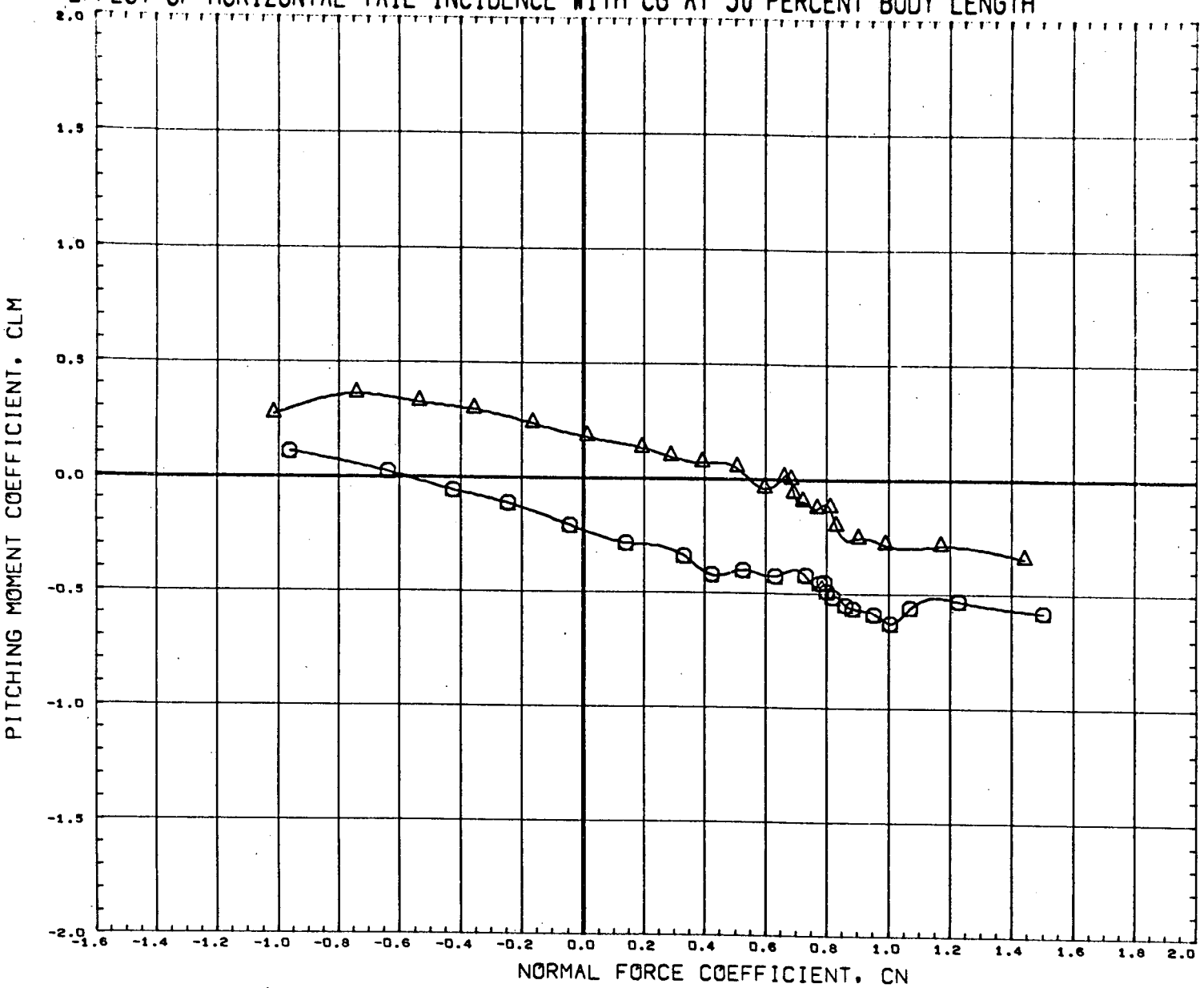


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	RUDDER	HORIZT
(AG9003)	○	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3	0.000	0.000	0.000	0.000
(AG9035)	△	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.000	-6.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	34.3000	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

EFFECT OF HORIZONTAL TAIL INCIDENCE WITH CG AT 50 PERCENT BODY LENGTH



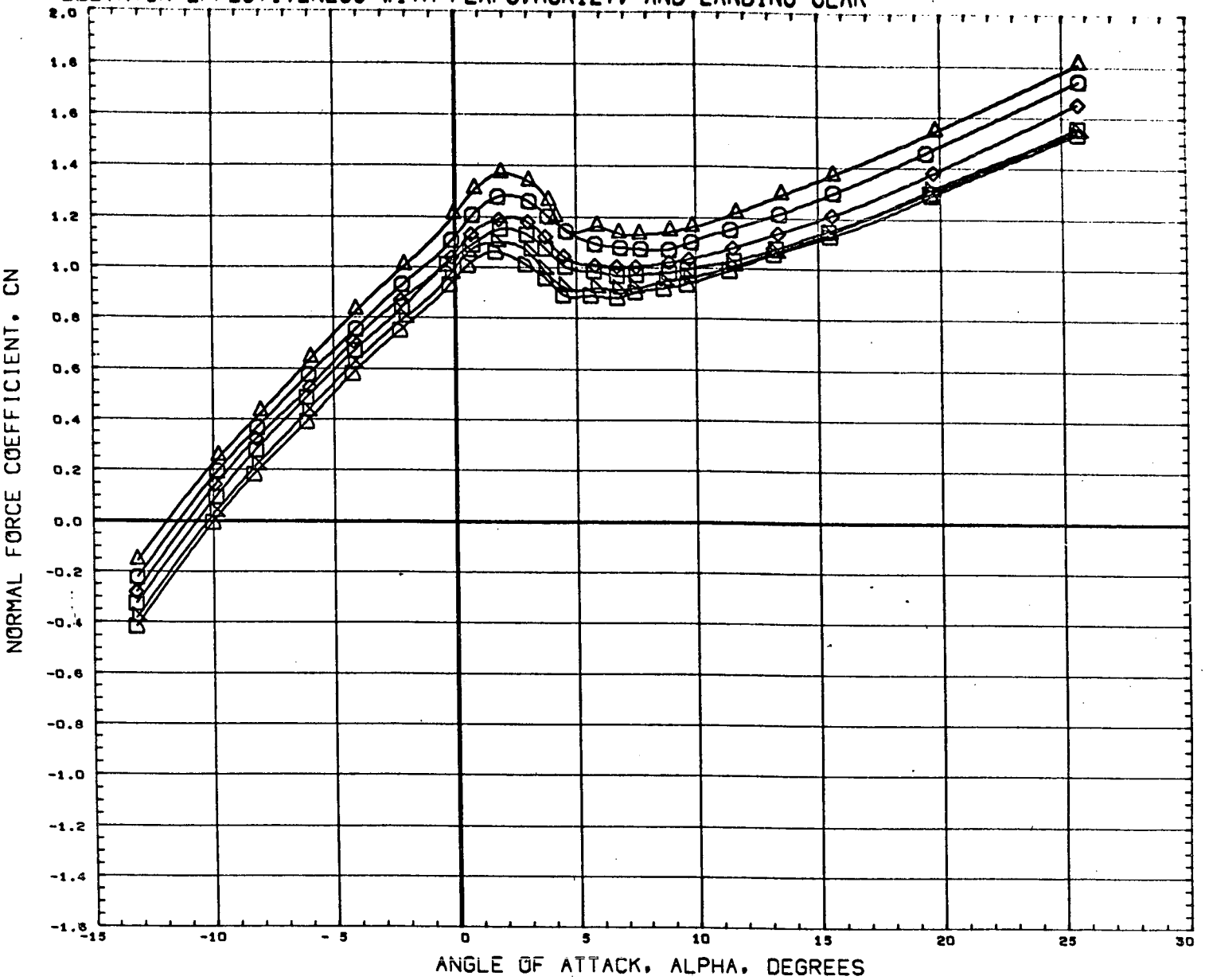
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION
(AG9003)	○	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2H6V3
(AG9035)	△	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3

ELEVTR	FLAP	RUDDER	HORIZT
0.000	0.000	0.000	0.000
0.000	0.000	0.000	-6.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	34.5000	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

ELEVATOR EFFECTIVENESS WITH FLAPS, HORIZT, AND LANDING GEAR

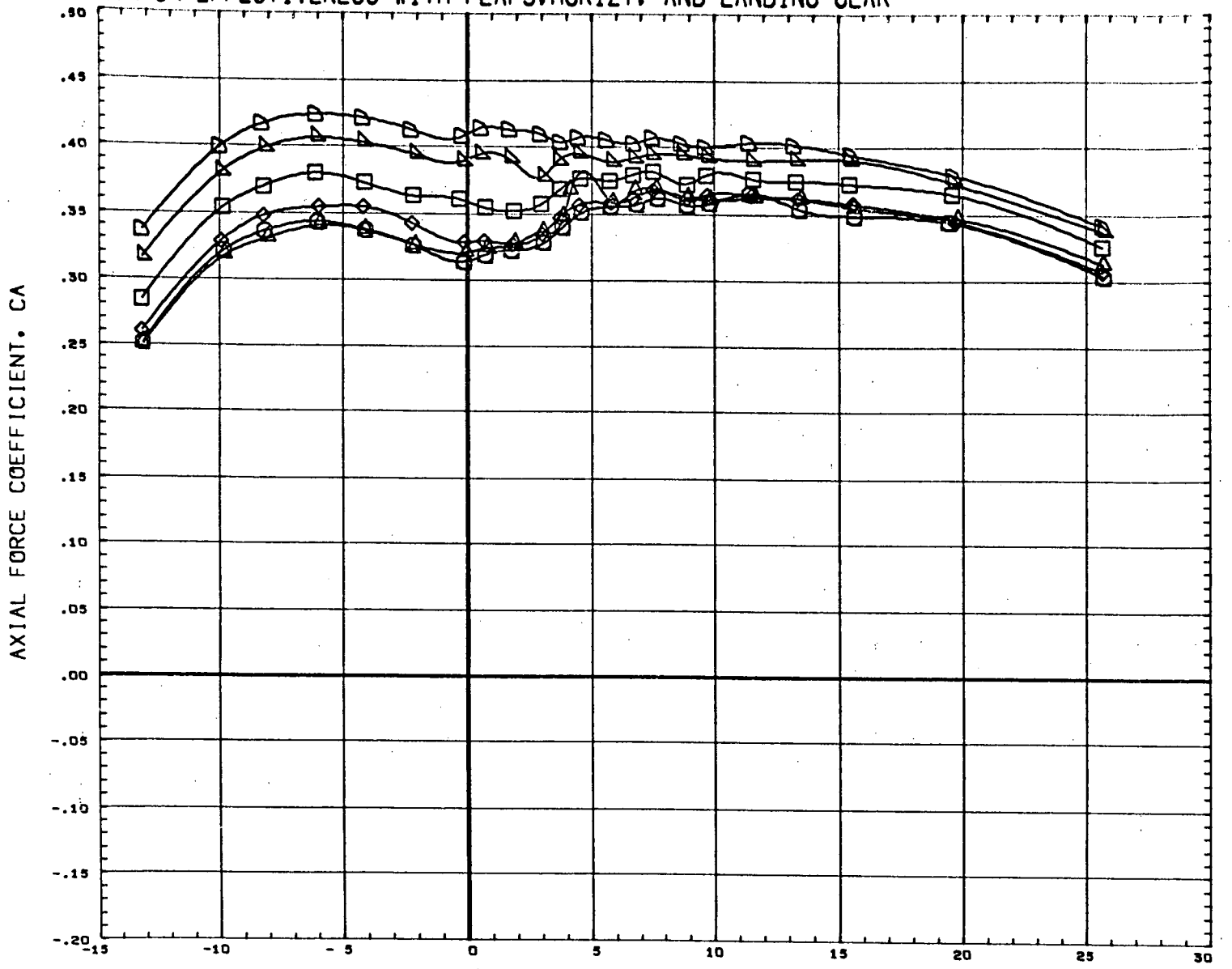


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	RUDDER	HORIZT
(RG9048)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	0.000	45.000	0.000	-6.000
(RG9049)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	5.000	45.000	0.000	-6.000
(RG9047)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-5.000	45.000	0.000	-6.000
(RG9046)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	45.000	0.000	-6.000
(RG9045)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-25.000	45.000	0.000	-6.000
(RG9044)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-30.000	45.000	0.000	-6.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

ELEVATOR EFFECTIVENESS WITH FLAPS, HORIZT, AND LANDING GEAR

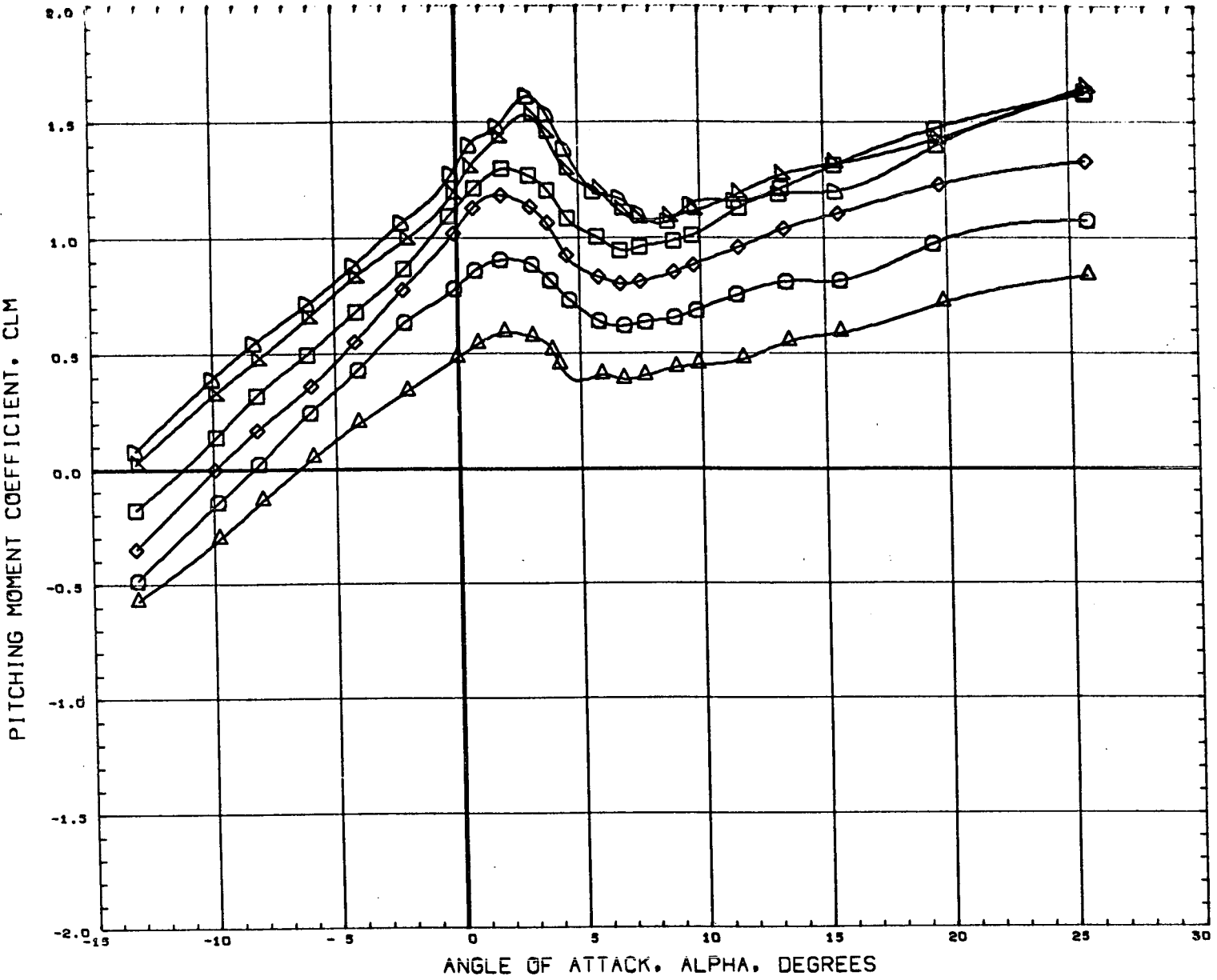


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	RUDDER	HORIZT
(RG9048)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	0.000	45.000	0.000	-6.000
(RG9049)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	5.000	45.000	0.000	-6.000
(RG9047)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-5.000	45.000	0.000	-6.000
(RG9046)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	45.000	0.000	-6.000
(RG9045)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-25.000	45.000	0.000	-6.000
(RG9044)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-30.000	45.000	0.000	-6.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

ELEVATOR EFFECTIVENESS WITH FLAPS, HORIZT, AND LANDING GEAR

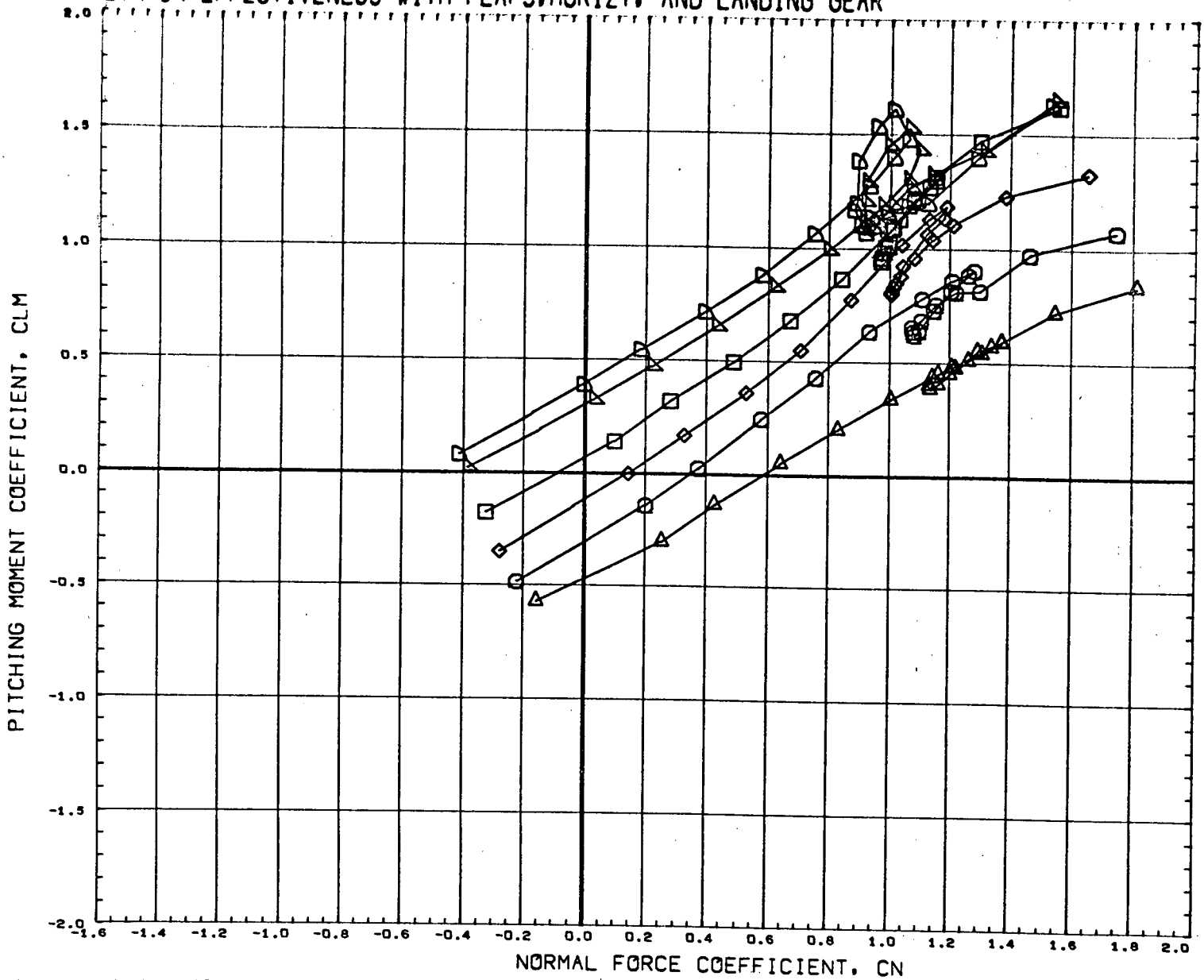


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	RUDDER	HORIZT
(RG9048)	□	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	0.000	45.000	0.000	-6.000
(RG9049)	△	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	5.000	45.000	0.000	-6.000
(RG9047)	◇	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-5.000	45.000	0.000	-6.000
(RG9046)	○	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	45.000	0.000	-6.000
(RG9045)	▽	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-25.000	45.000	0.000	-6.000
(RG9044)	▷	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-30.000	45.000	0.000	-6.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

ELEVATOR EFFECTIVENESS WITH FLAPS, HORIZT, AND LANDING GEAR



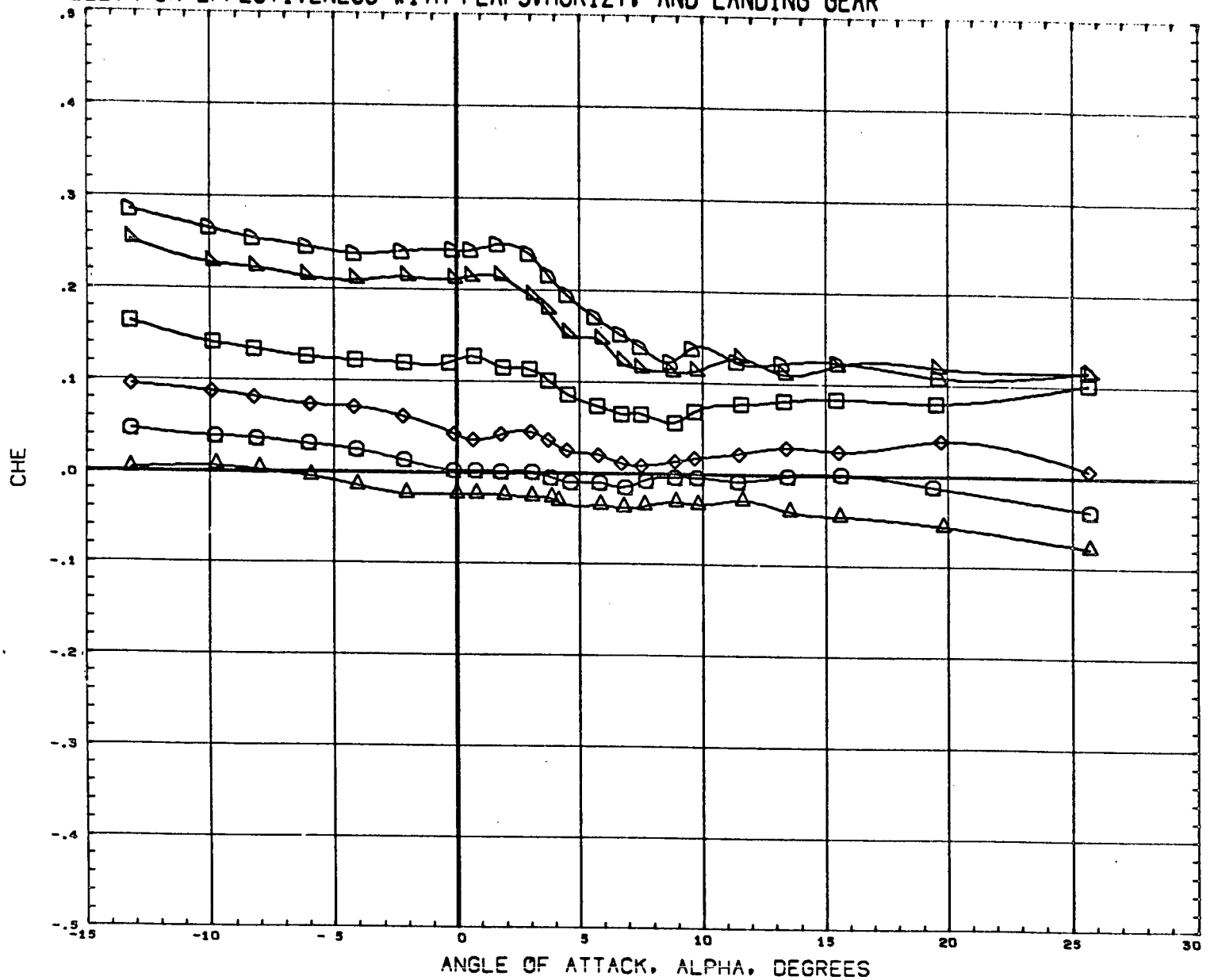
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION
(RG9048)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L
(RG9049)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L
(RG9047)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L
(RG9046)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L
(RG9045)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L
(RG9044)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L

ELEVTR	FLAP	RUDDER	HORIZT
0.000	45.000	0.000	-6.000
5.000	45.000	0.000	-6.000
-5.000	45.000	0.000	-6.000
-15.000	45.000	0.000	-6.000
-25.000	45.000	0.000	-6.000
-30.000	45.000	0.000	-6.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

ELEVATOR EFFECTIVENESS WITH FLAPS, HORIZT, AND LANDING GEAR

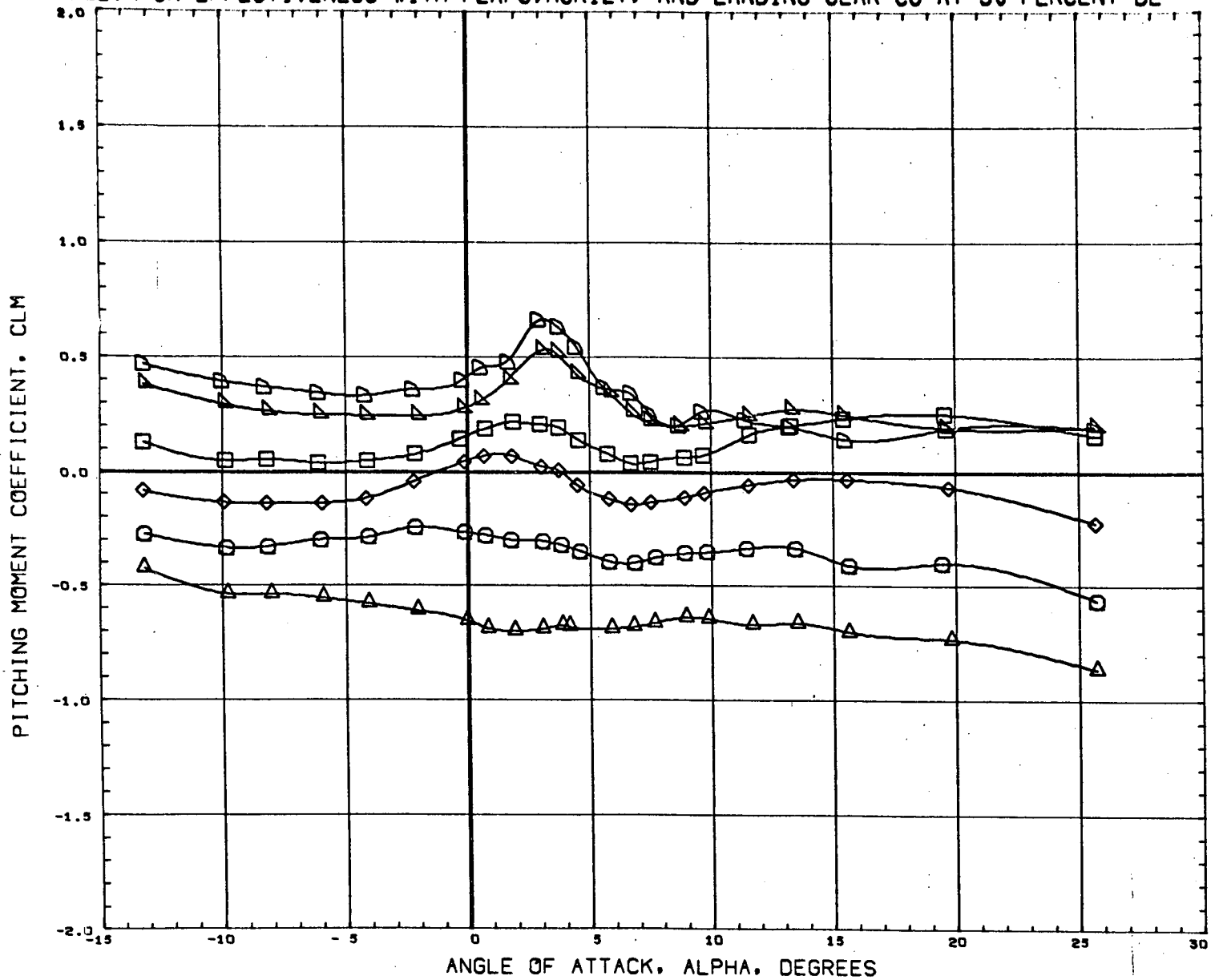


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	RUDDER	HORIZT
(RG9048)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	0.000	45.000	0.000	-6.000
(RG9049)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	5.000	45.000	0.000	-6.000
(RG9047)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-5.000	45.000	0.000	-6.000
(RG9046)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	45.000	0.000	-6.000
(RG9045)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-25.000	45.000	0.000	-6.000
(RG9044)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-30.000	45.000	0.000	-6.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

ELEVATOR EFFECTIVENESS WITH FLAPS, HORIZT, AND LANDING GEAR CG AT 50 PERCENT BL

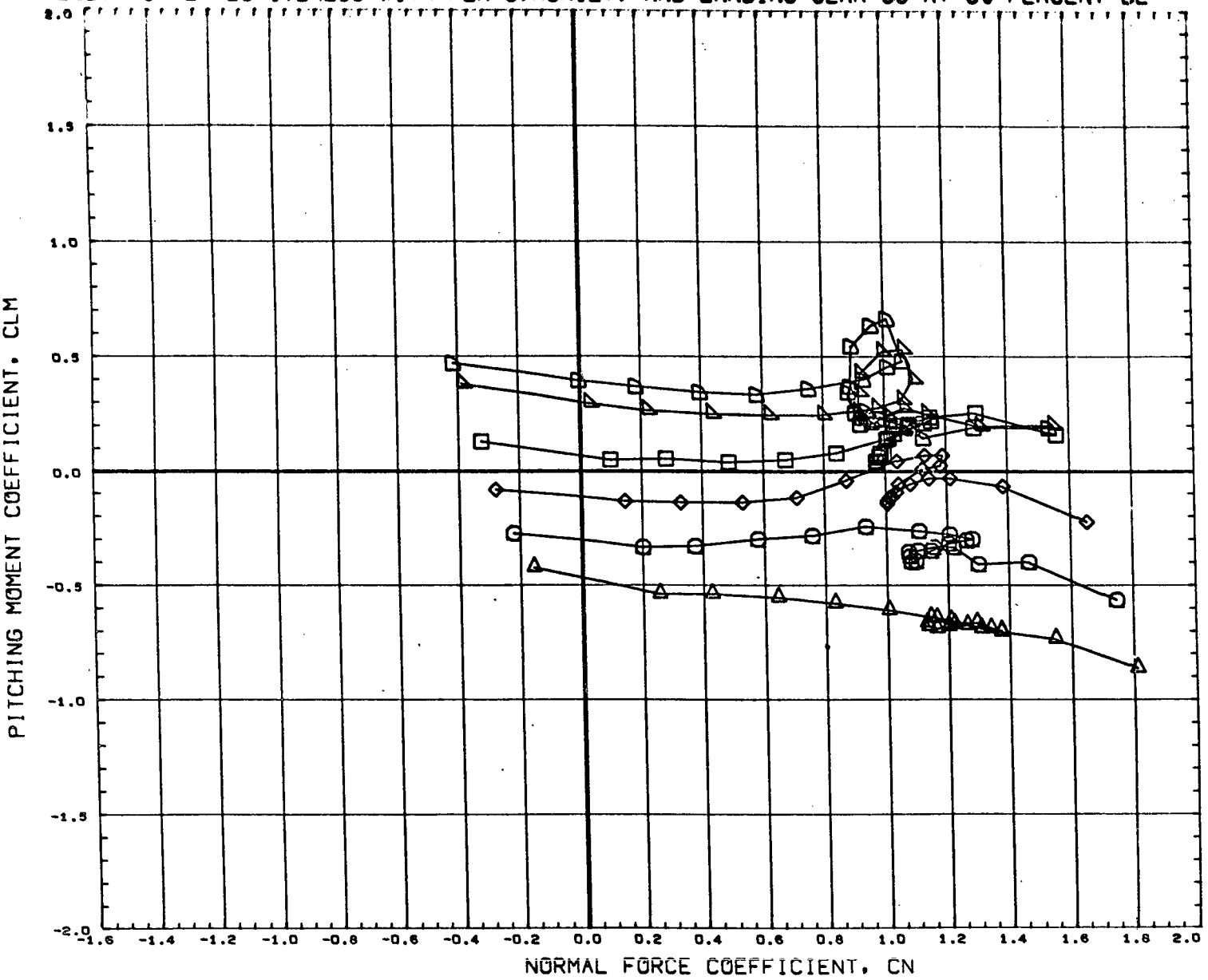


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	RUDDER	HORIZT
(AG9048)	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	0.000	45.000	0.000	-6.000
(AG9049)	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	5.000	45.000	0.000	-6.000
(AG9047)	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-5.000	45.000	0.000	-6.000
(AG9046)	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	45.000	0.000	-6.000
(AG9045)	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-25.000	45.000	0.000	-6.000
(AG9044)	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-30.000	45.000	0.000	-6.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	34.5000	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

ELEVATOR EFFECTIVENESS WITH FLAPS, HORIZT, AND LANDING GEAR CG AT 50 PERCENT BL

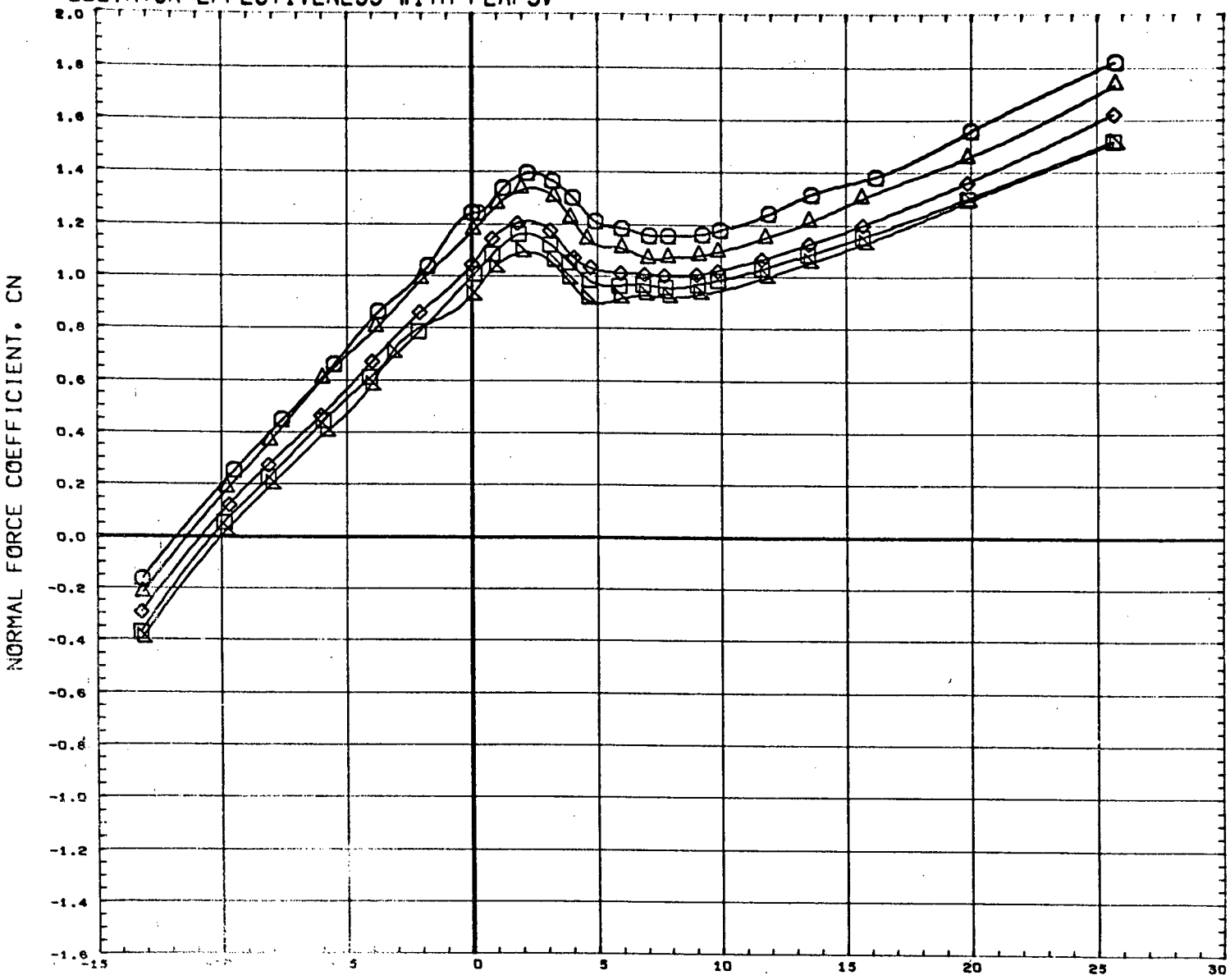


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	RUDDER	HORIZT
(AG9048)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	0.000	45.000	0.000	-6.000
(AG9049)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	5.000	45.000	0.000	-6.000
(AG9047)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-5.000	45.000	0.000	-6.000
(AG9046)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	45.000	0.000	-6.000
(AG9045)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-25.000	45.000	0.000	-6.000
(AG9044)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-30.000	45.000	0.000	-6.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	34.5000	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

ELEVATOR EFFECTIVENESS WITH FLAPS.

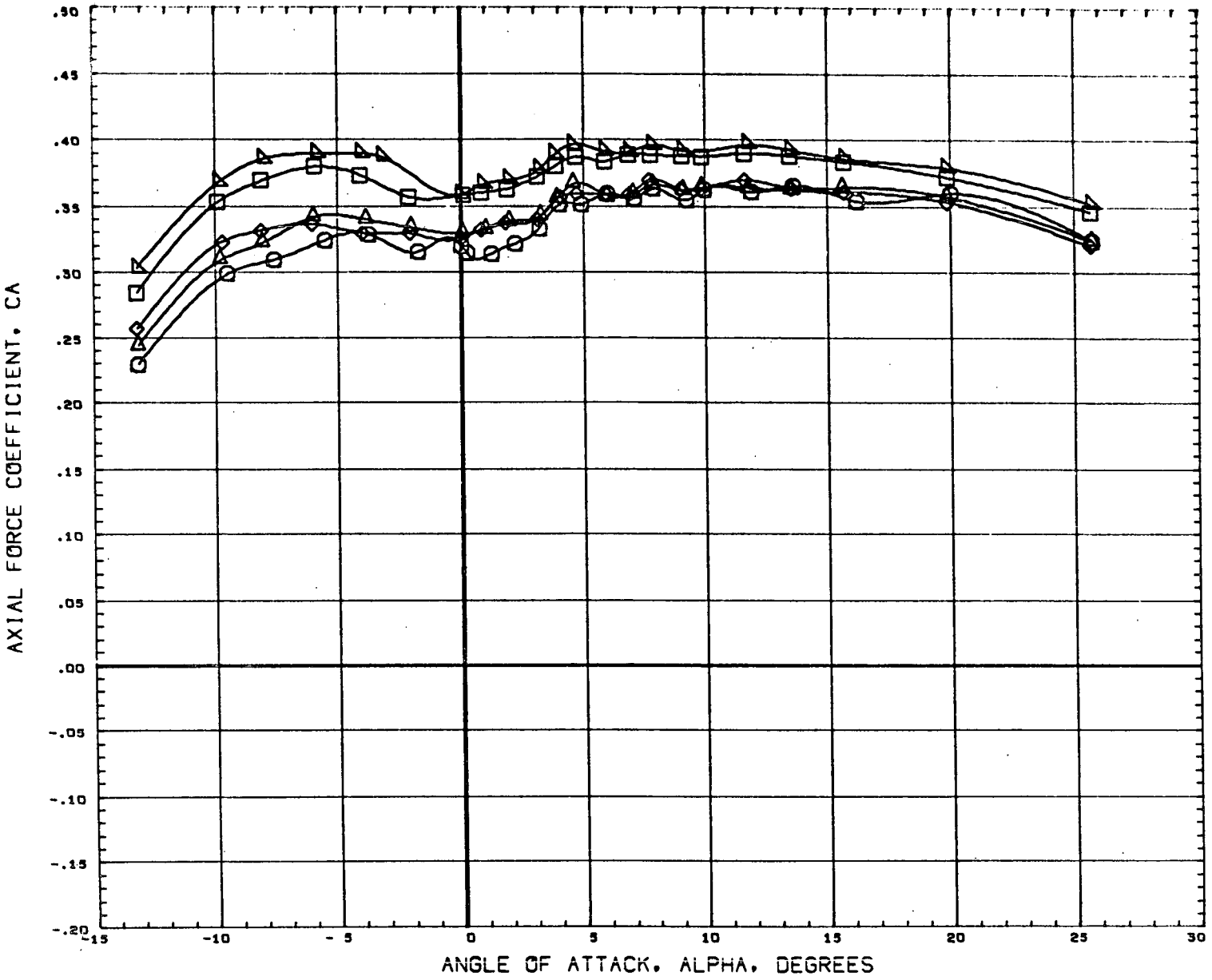


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	RUDDER	HORIZT
(RG9051)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	45.000	0.000	0.000
(RG9052)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	-5.000	45.000	0.000	0.000
(RG9053)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	-15.000	45.000	0.000	0.000
(RG9054)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	-25.000	45.000	0.000	0.000
(RG9055)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	-30.000	45.000	0.000	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

ELEVATOR EFFECTIVENESS WITH FLAPS.

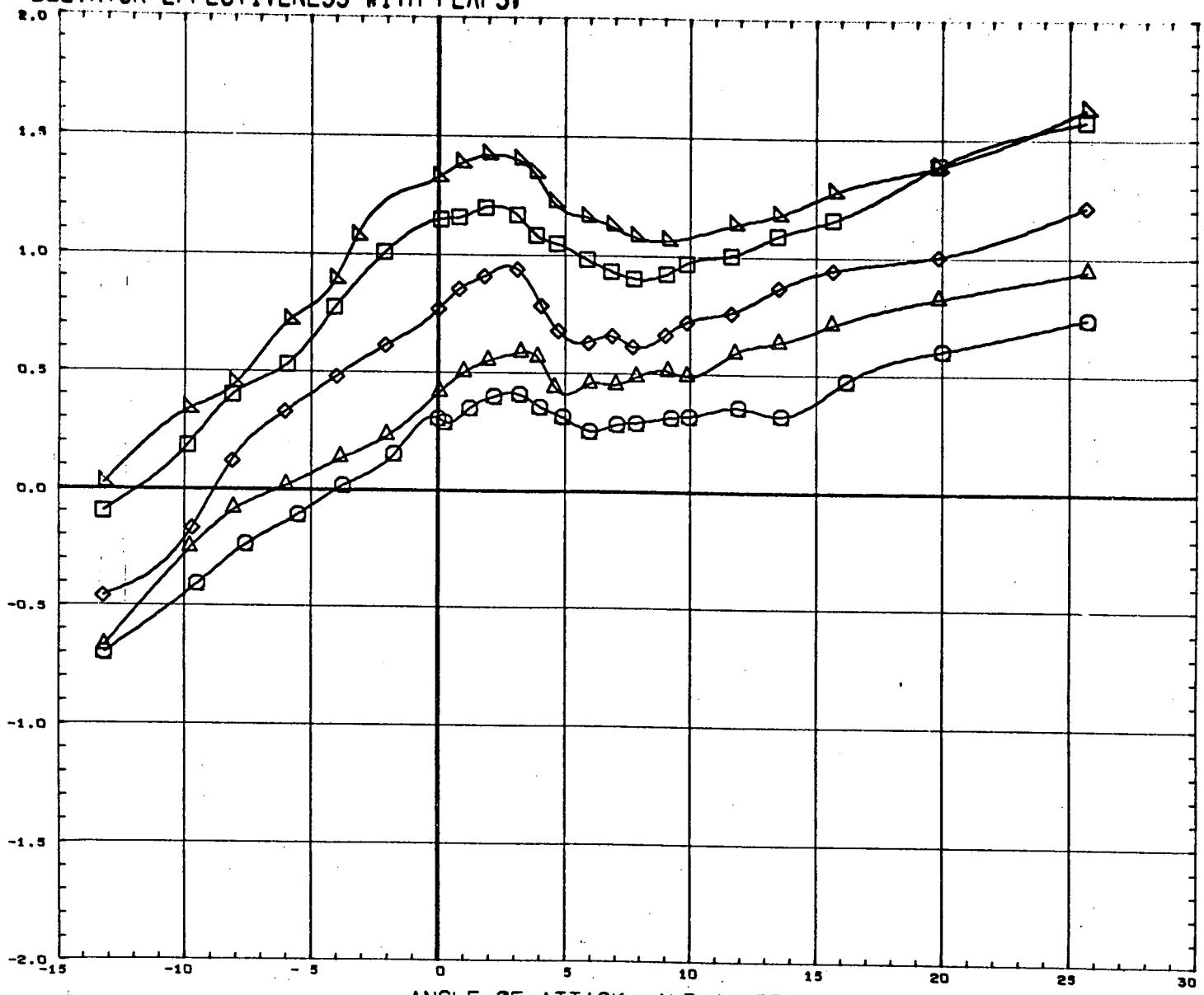


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	RUDDER	HORIZT
(RG9051)	○	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	45.000	0.000	0.000
(RG9052)	△	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	-5.000	45.000	0.000	0.000
(RG9053)	◇	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	-15.000	45.000	0.000	0.000
(RG9054)	□	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	-25.000	45.000	0.000	0.000
(RG9055)	▷	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	-30.000	45.000	0.000	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

ELEVATOR EFFECTIVENESS WITH FLAPS.



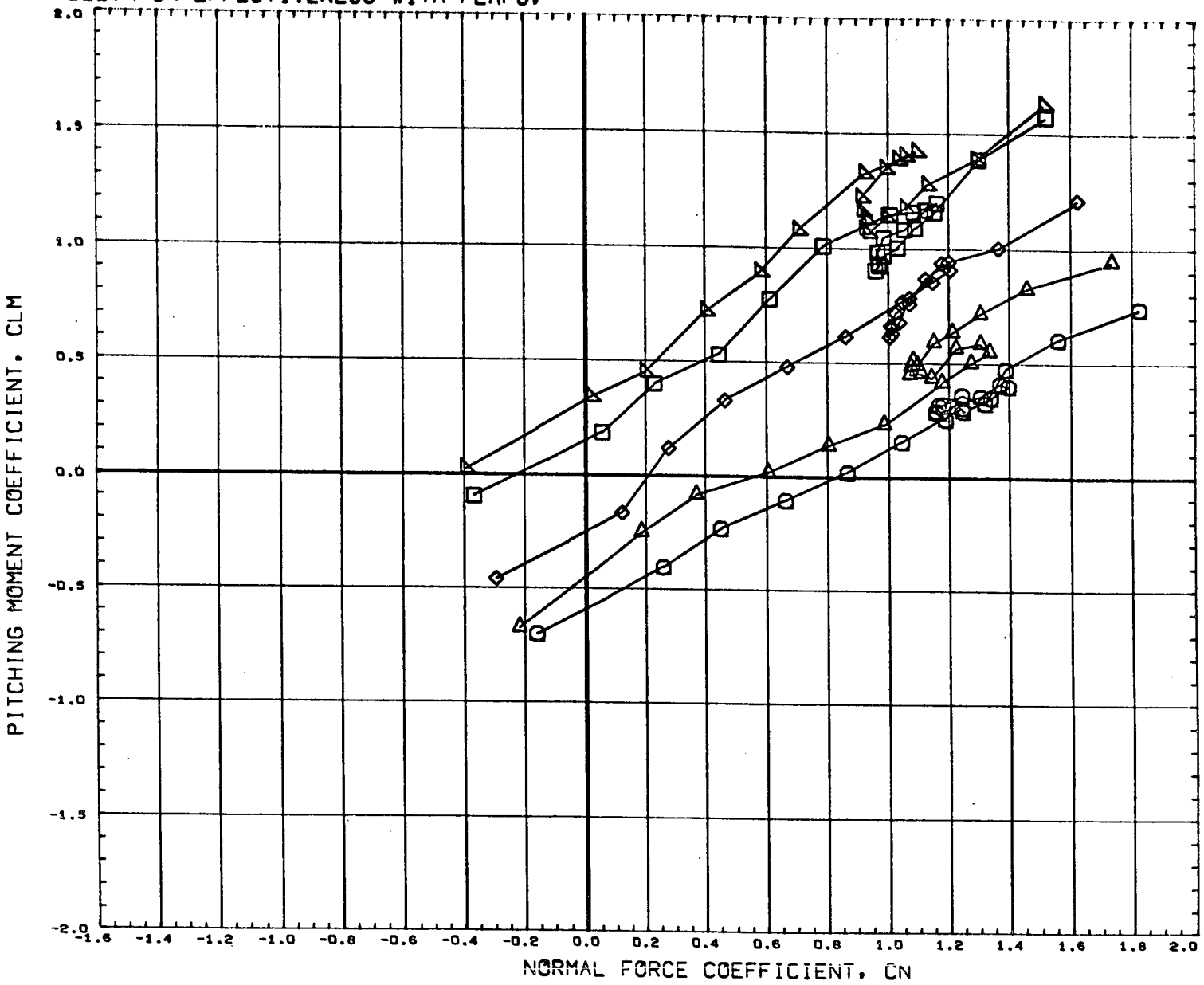
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION
(RG9051)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3
(RG9052)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3
(RG9053)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3
(RG9054)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3
(RG9055)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3

ELEVTR	FLAP	RUDDER	HORIZT
0.000	45.000	0.000	0.000
-5.000	45.000	0.000	0.000
-15.000	45.000	0.000	0.000
-25.000	45.000	0.000	0.000
-30.000	45.000	0.000	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

ELEVATOR EFFECTIVENESS WITH FLAPS.

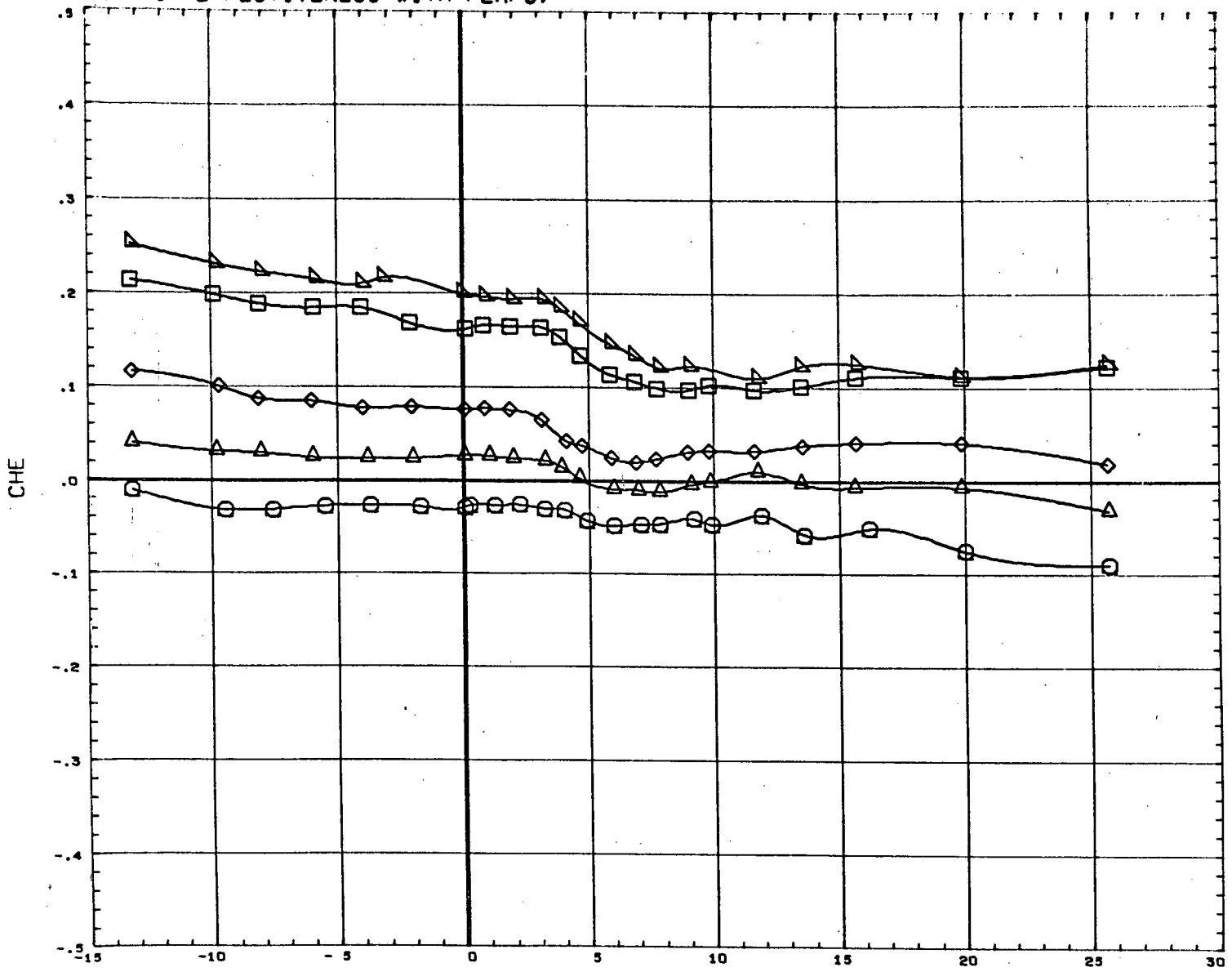


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	RUDDER	HORIZT
(RG9051)	□	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	45.000	0.000	0.000
(RG9052)	△	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	-5.000	45.000	0.000	0.000
(RG9053)	◇	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	-15.000	45.000	0.000	0.000
(RG9054)	▽	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	-25.000	45.000	0.000	0.000
(RG9055)	◁	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	-30.000	45.000	0.000	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

ELEVATOR EFFECTIVENESS WITH FLAPS.

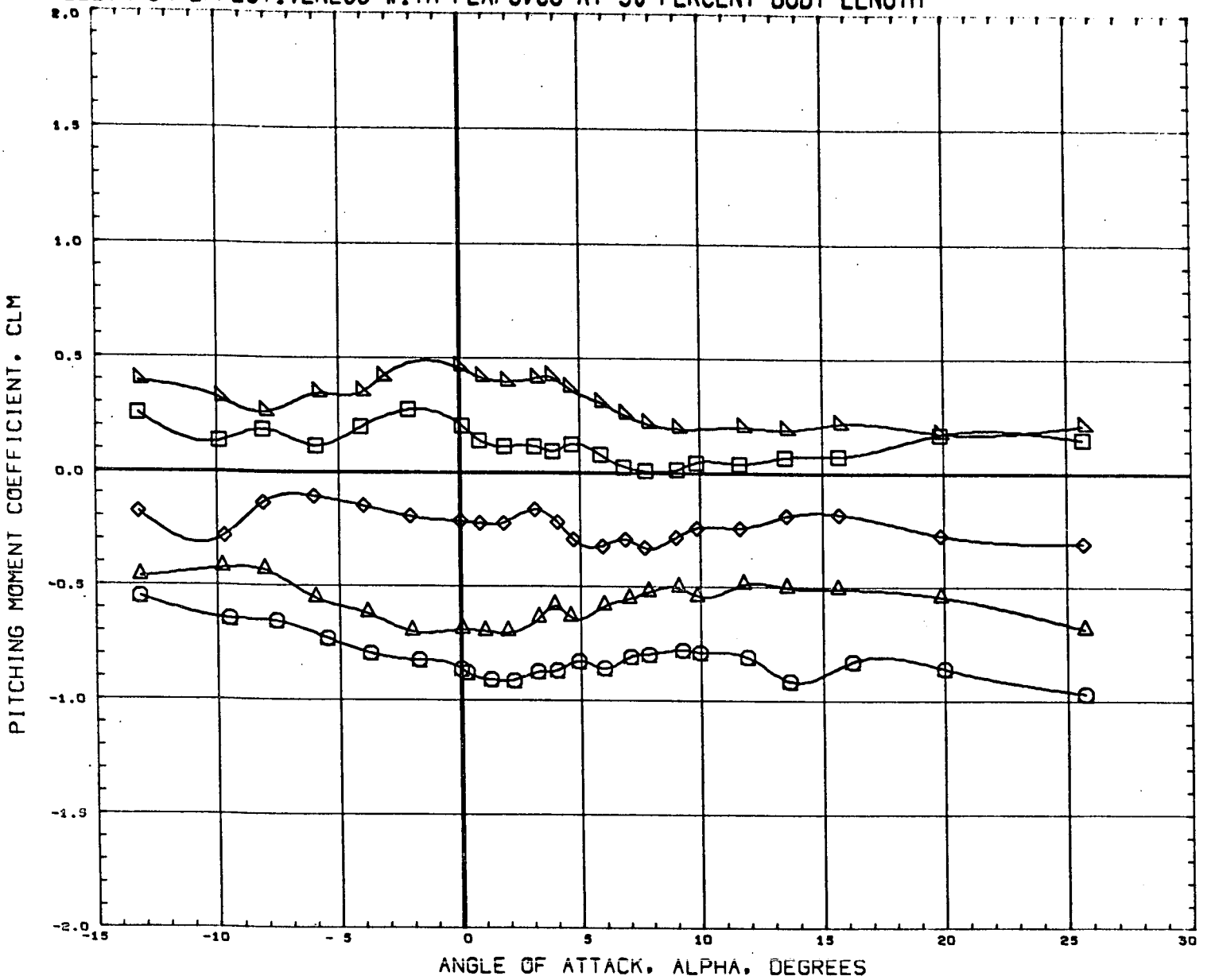


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	RUDDER	HORIZT
(RG9051)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	45.000	0.000	0.000
(RG9052)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	-5.000	45.000	0.000	0.000
(RG9053)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	-15.000	45.000	0.000	0.000
(RG9054)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	-25.000	45.000	0.000	0.000
(RG9055)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	-30.000	45.000	0.000	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

ELEVATOR EFFECTIVENESS WITH FLAPS, CG AT 50 PERCENT BODY LENGTH

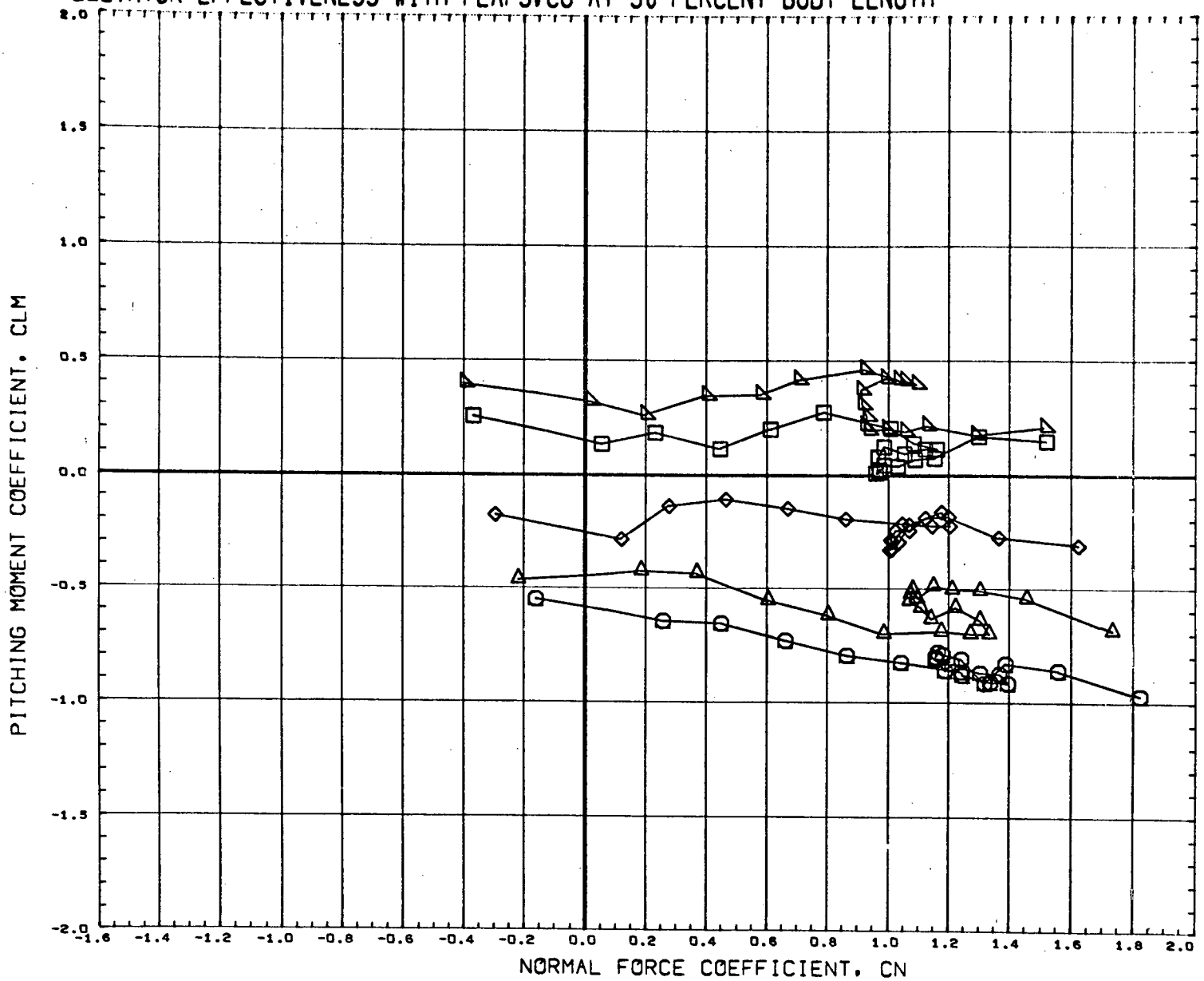


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	RUDDER	HORIZT
(AG9051)	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	45.000	0.000	0.000
(AG9052)	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	-5.000	45.000	0.000	0.000
(AG9053)	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	-15.000	45.000	0.000	0.000
(AG9054)	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	-25.000	45.000	0.000	0.000
(AG9055)	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	-30.000	45.000	0.000	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	34.5000	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

ELEVATOR EFFECTIVENESS WITH FLAPS, CG AT 50 PERCENT BODY LENGTH

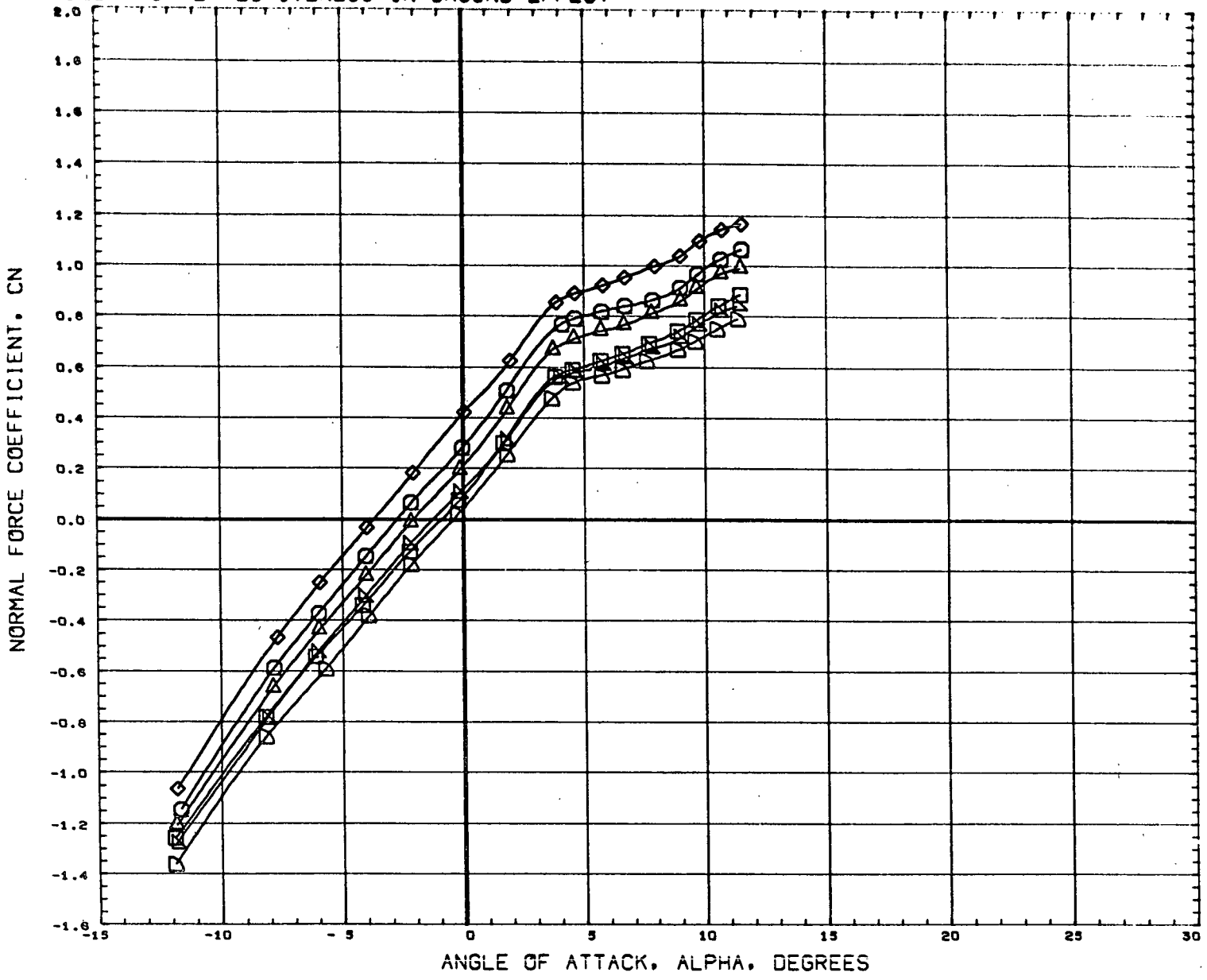


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	RUDDER	HORIZT
(AG9051)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	45.000	0.000	0.000
(AG9052)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	-5.000	45.000	0.000	0.000
(AG9053)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	-15.000	45.000	0.000	0.000
(AG9054)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	-25.000	45.000	0.000	0.000
(AG9055)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	-30.000	45.000	0.000	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	34.5000	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

ELEVATOR EFFECTIVENESS IN GROUND EFFECT

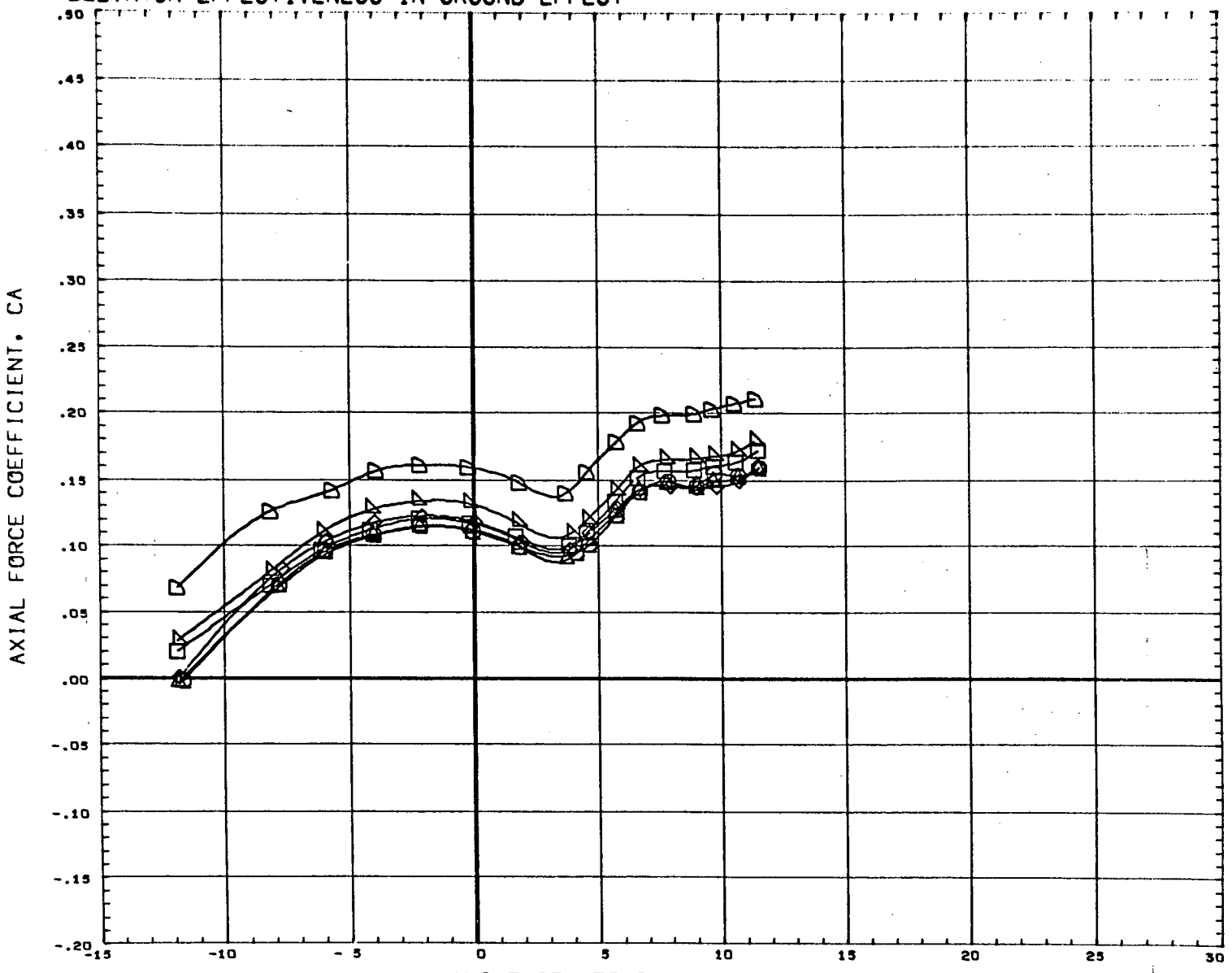


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(RG9070)	◇	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.150	0.000
(RG9061)	○	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	-5.000	0.000	0.150	0.000
(RG9062)	△	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	5.000	0.000	0.150	0.000
(RG9063)	▷	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	-10.000	0.000	0.150	0.000
(RG9064)	□	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	-15.000	0.000	0.150	0.000
(RG9065)	⬠	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	-25.000	0.000	0.150	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

ELEVATOR EFFECTIVENESS IN GROUND EFFECT

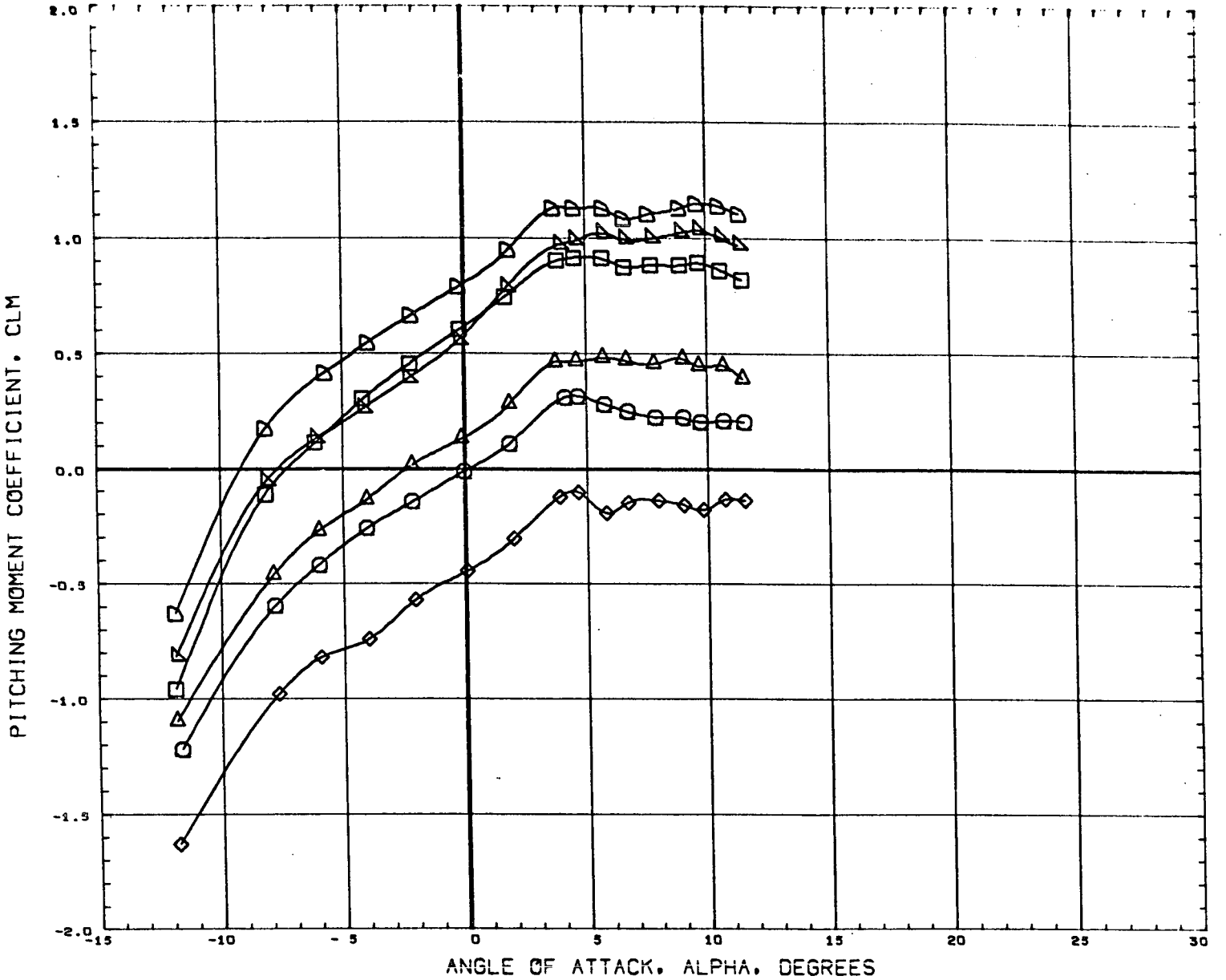


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(RG9070)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.150	0.000
(RG9061)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	-5.000	0.000	0.150	0.000
(RG9062)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	5.000	0.000	0.150	0.000
(RG9063)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	-10.000	0.000	0.150	0.000
(RG9064)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	-15.000	0.000	0.150	0.000
(RG9065)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	-25.000	0.000	0.150	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

ELEVATOR EFFECTIVENESS IN GROUND EFFECT

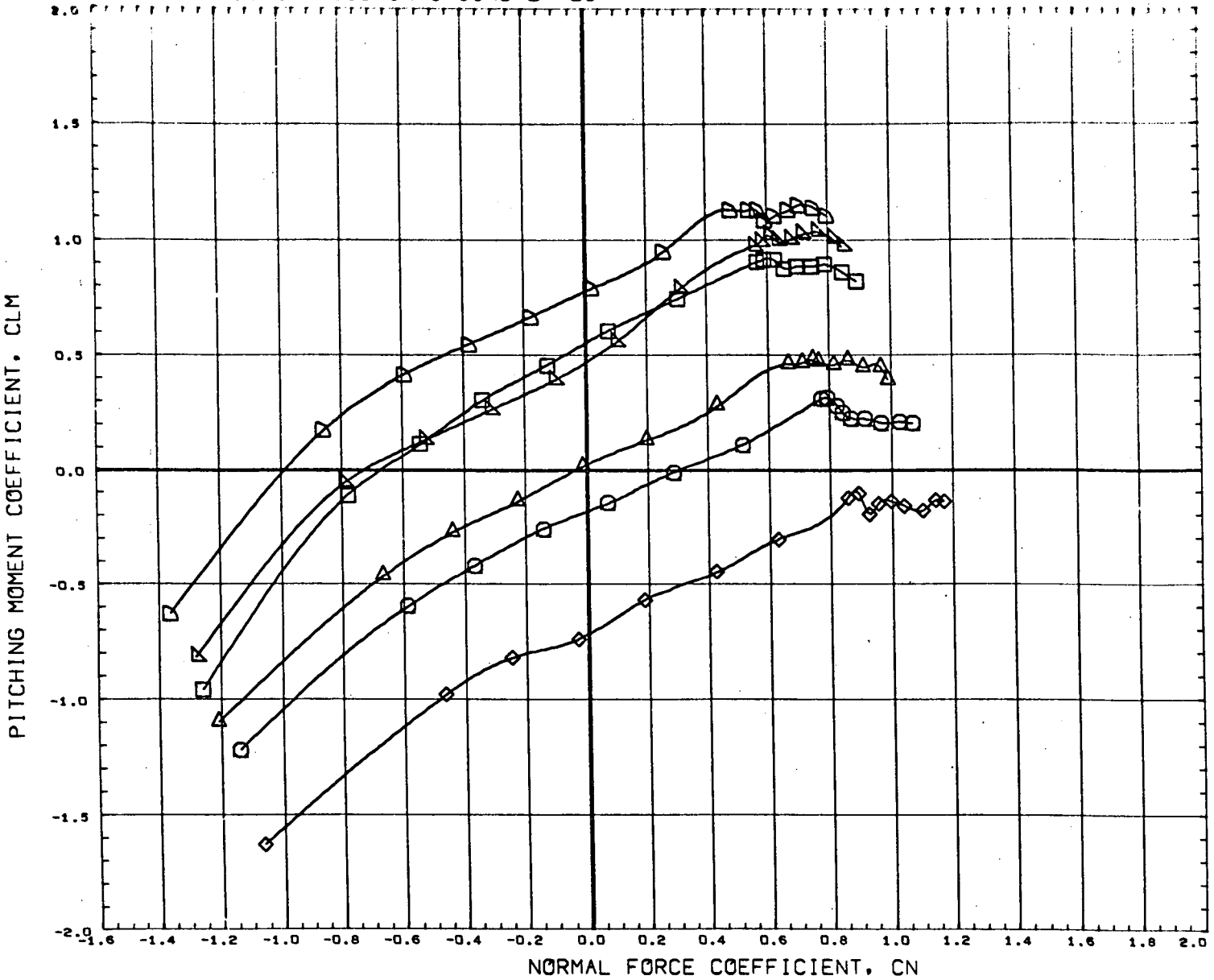


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(RG9070)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.150	0.000
(RG9061)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	-5.000	0.000	0.150	0.000
(RG9062)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	5.000	0.000	0.150	0.000
(RG9063)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	-10.000	0.000	0.150	0.000
(RG9064)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	-15.000	0.000	0.150	0.000
(RG9065)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	-25.000	0.000	0.150	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

ELEVATOR EFFECTIVENESS IN GROUND EFFECT

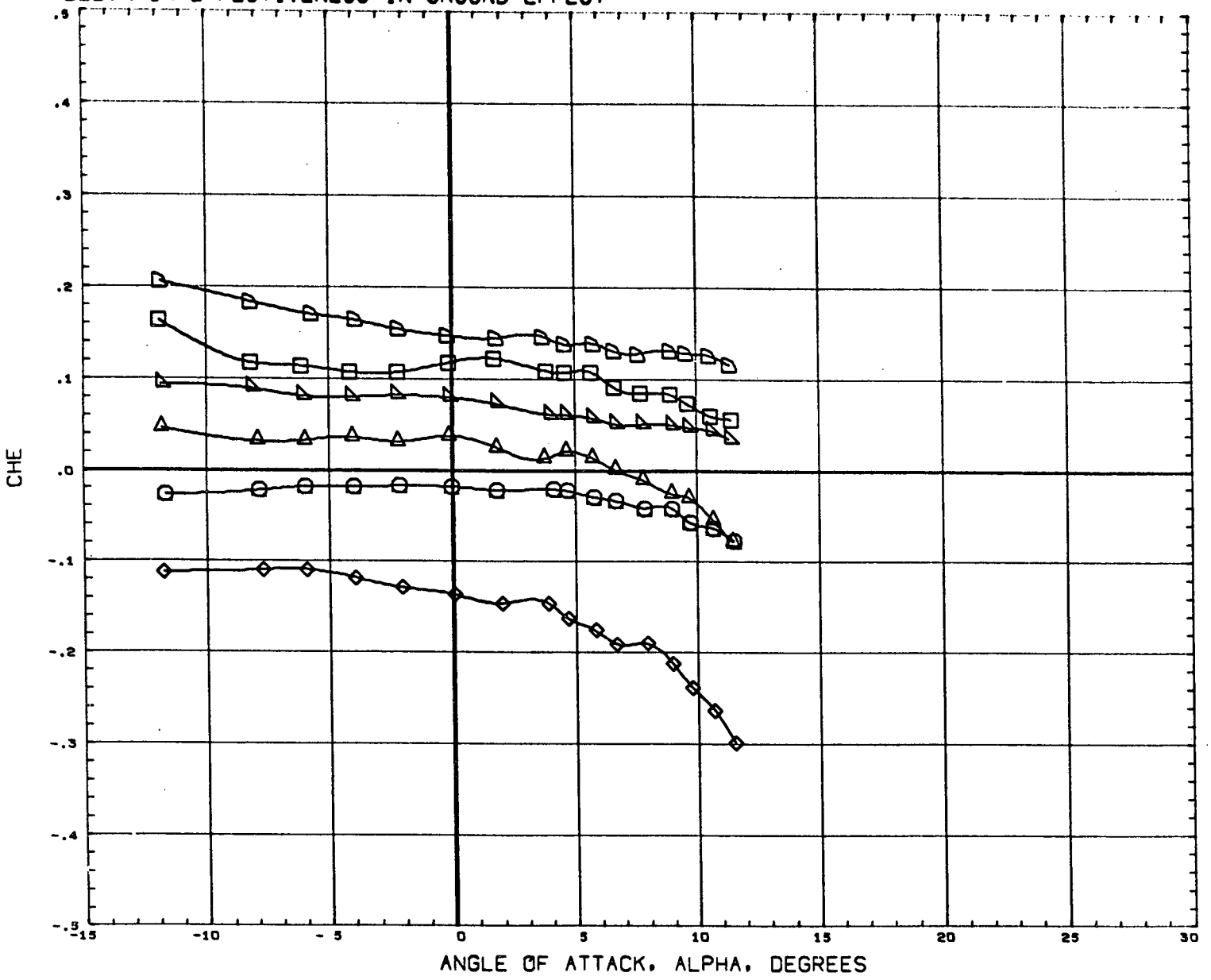


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(RG9070)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.150	0.000
(RG9061)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	-5.000	0.000	0.150	0.000
(RG9062)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	5.000	0.000	0.150	0.000
(RG9063)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	-10.000	0.000	0.150	0.000
(RG9064)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	-15.000	0.000	0.150	0.000
(RG9065)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	-25.000	0.000	0.150	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

ELEVATOR EFFECTIVENESS IN GROUND EFFECT

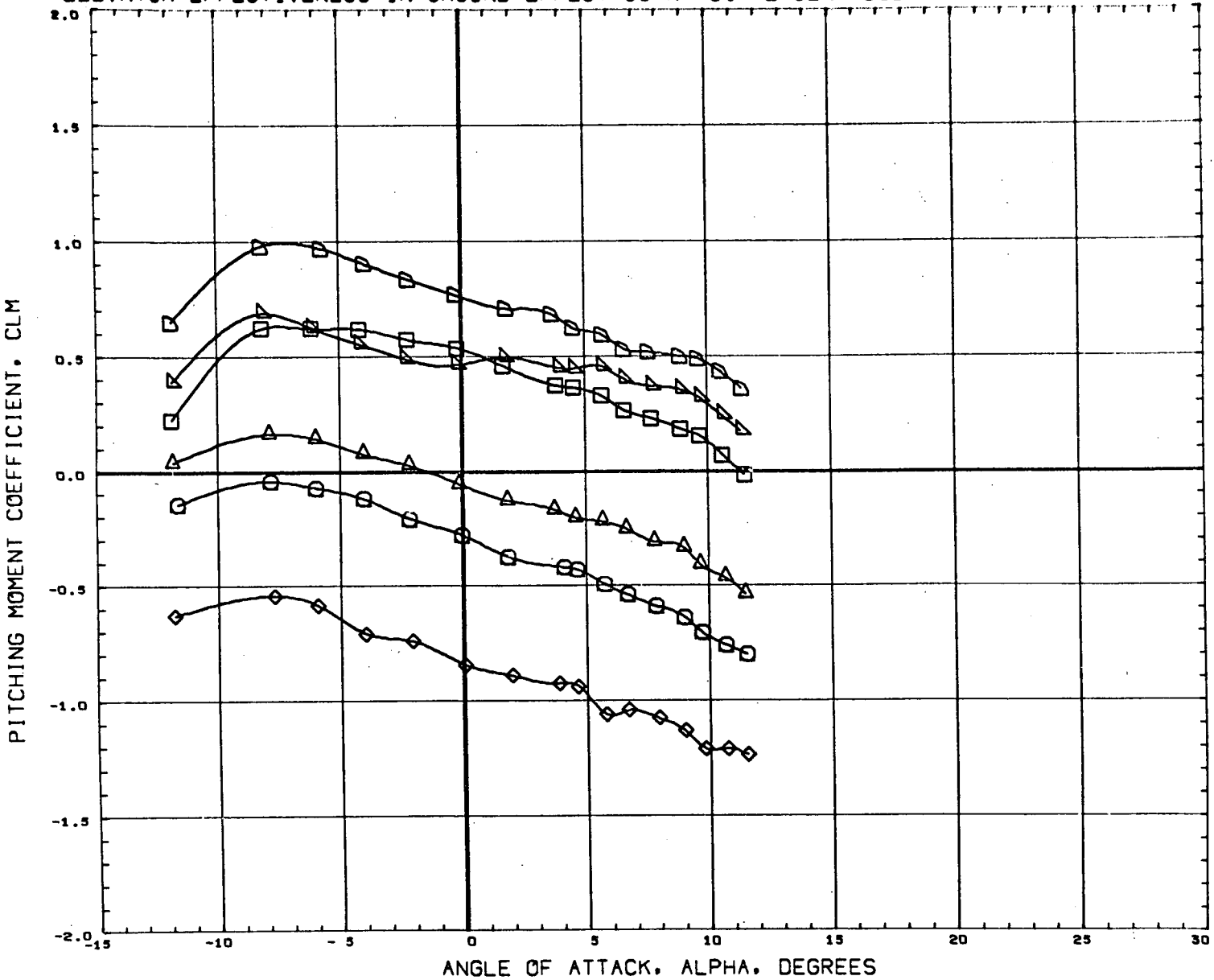


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(RG9070)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.150	0.000
(RG9061)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	-5.000	0.000	0.150	0.000
(RG9062)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	5.000	0.000	0.150	0.000
(RG9063)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	-10.000	0.000	0.150	0.000
(RG9064)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	-15.000	0.000	0.150	0.000
(RG9065)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	-25.000	0.000	0.150	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

ELEVATOR EFFECTIVENESS IN GROUND EFFECT CG AT 50 PERCENT BODY LENGTH

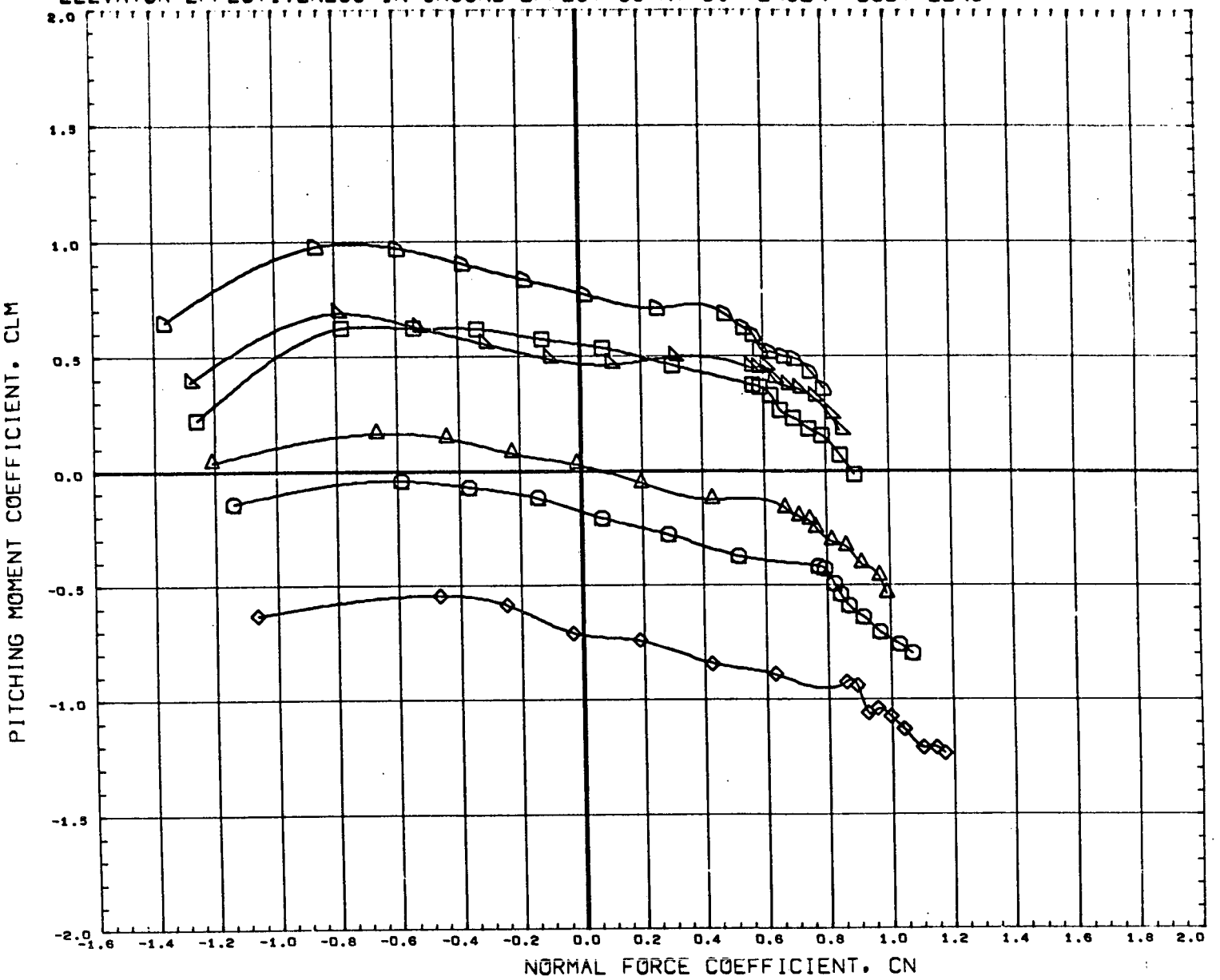


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(AG9070)	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.150	0.000
(AG9061)	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	-5.000	0.000	0.150	0.000
(AG9062)	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	5.000	0.000	0.150	0.000
(AG9063)	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	-10.000	0.000	0.150	0.000
(AG9064)	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	-15.000	0.000	0.150	0.000
(AG9065)	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	-25.000	0.000	0.150	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	34.5000	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

ELEVATOR EFFECTIVENESS IN GROUND EFFECT CG AT 50 PERCENT BODY LENGTH

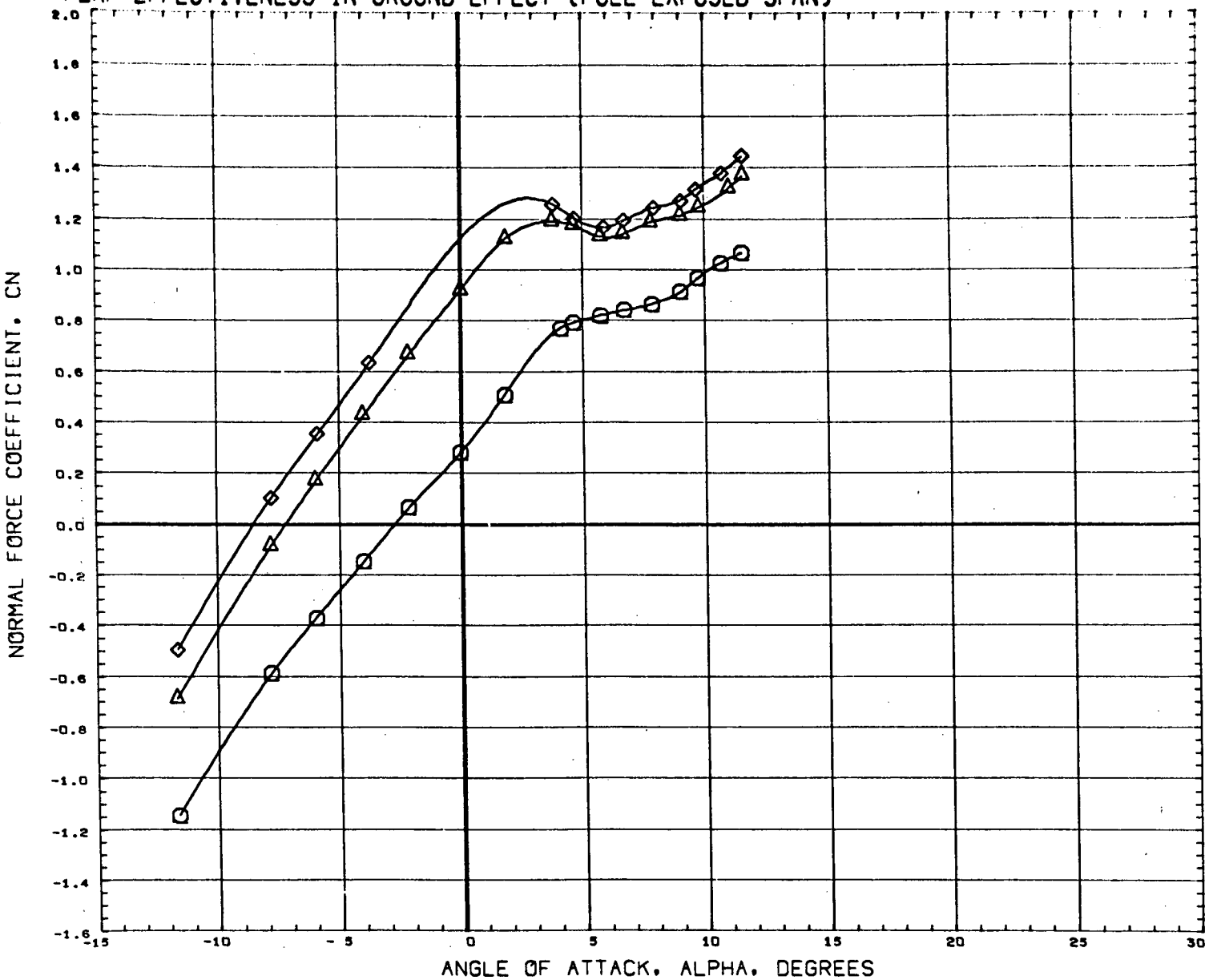


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(AG9070)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.150	0.000
(AG9061)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	-5.000	0.000	0.150	0.000
(AG9062)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	5.000	0.000	0.150	0.000
(AG9063)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	-10.000	0.000	0.150	0.000
(AG9064)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	-15.000	0.000	0.150	0.000
(AG9065)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	-25.000	0.000	0.150	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	34.5000	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

FLAP EFFECTIVENESS IN GROUND EFFECT (FULL EXPOSED SPAN)

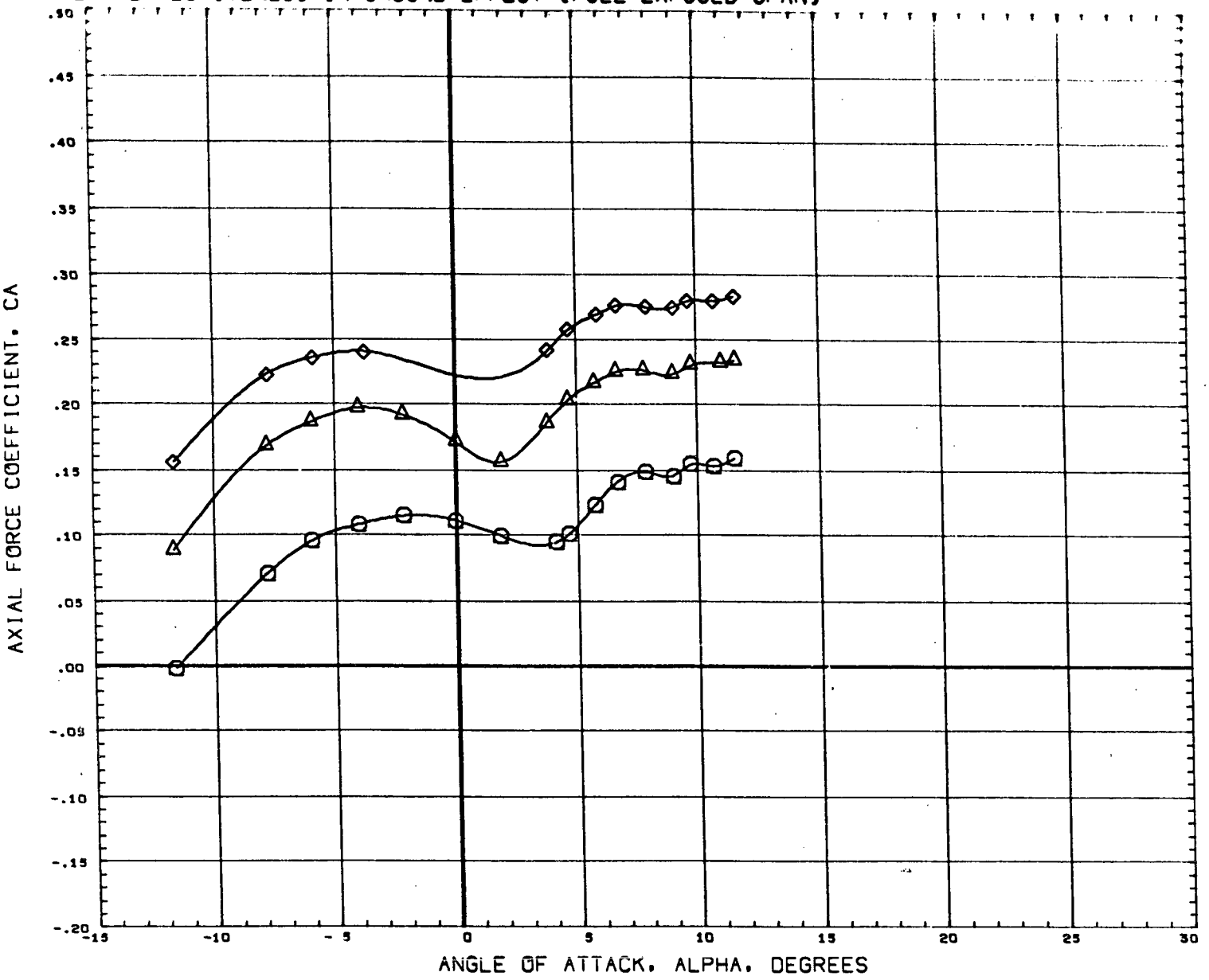


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(RG9070)	○	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.150	0.000
(RG9068)	△	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	15.000	0.150	0.000
(BG9066)	◇	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	25.000	0.150	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

FLAP EFFECTIVENESS IN GROUND EFFECT (FULL EXPOSED SPAN)

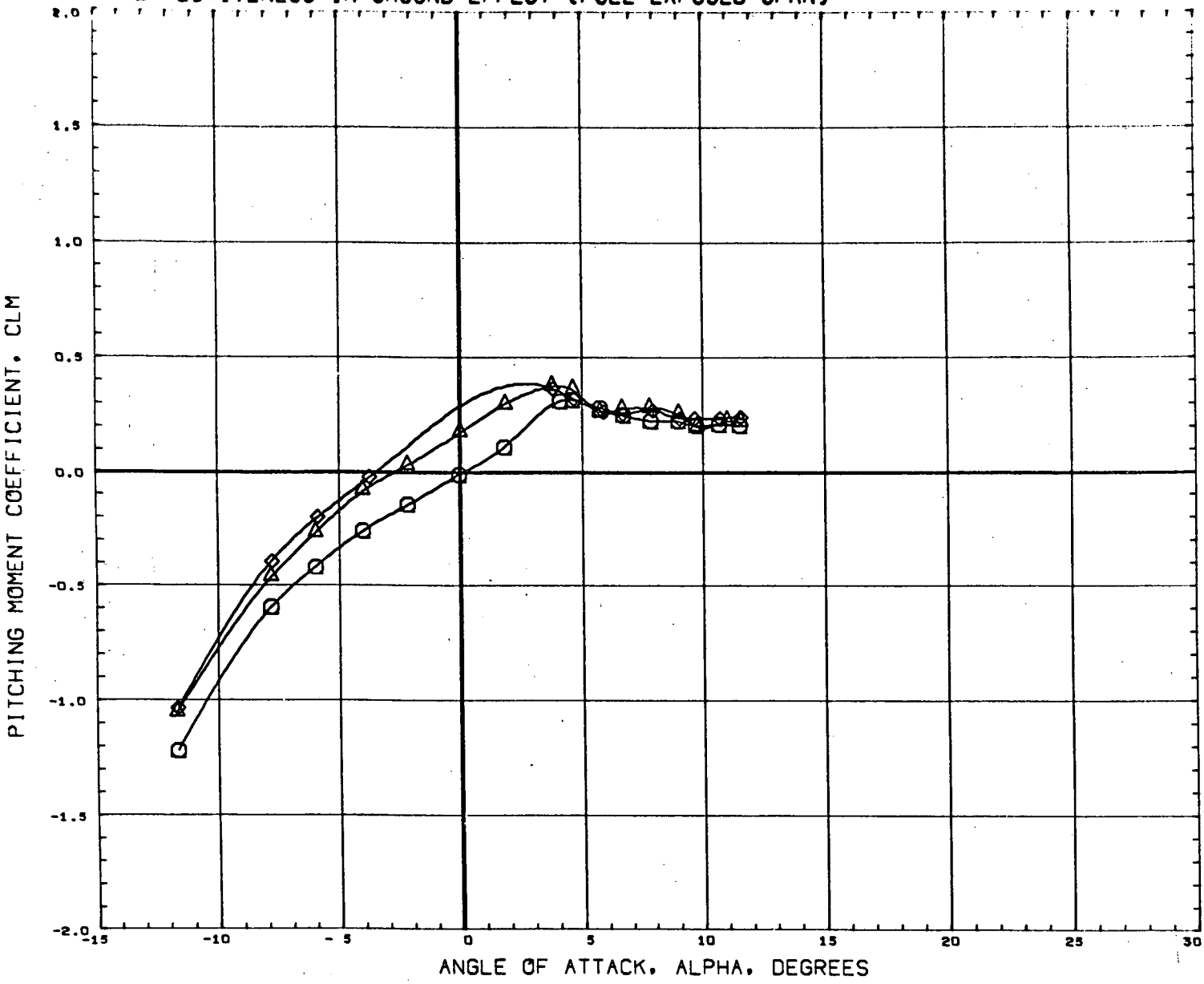


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(RG9070)	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.150	0.000
(RG9068)	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	15.000	0.150	0.000
(RG9066)	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	25.000	0.150	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

FLAP EFFECTIVENESS IN GROUND EFFECT (FULL EXPOSED SPAN)

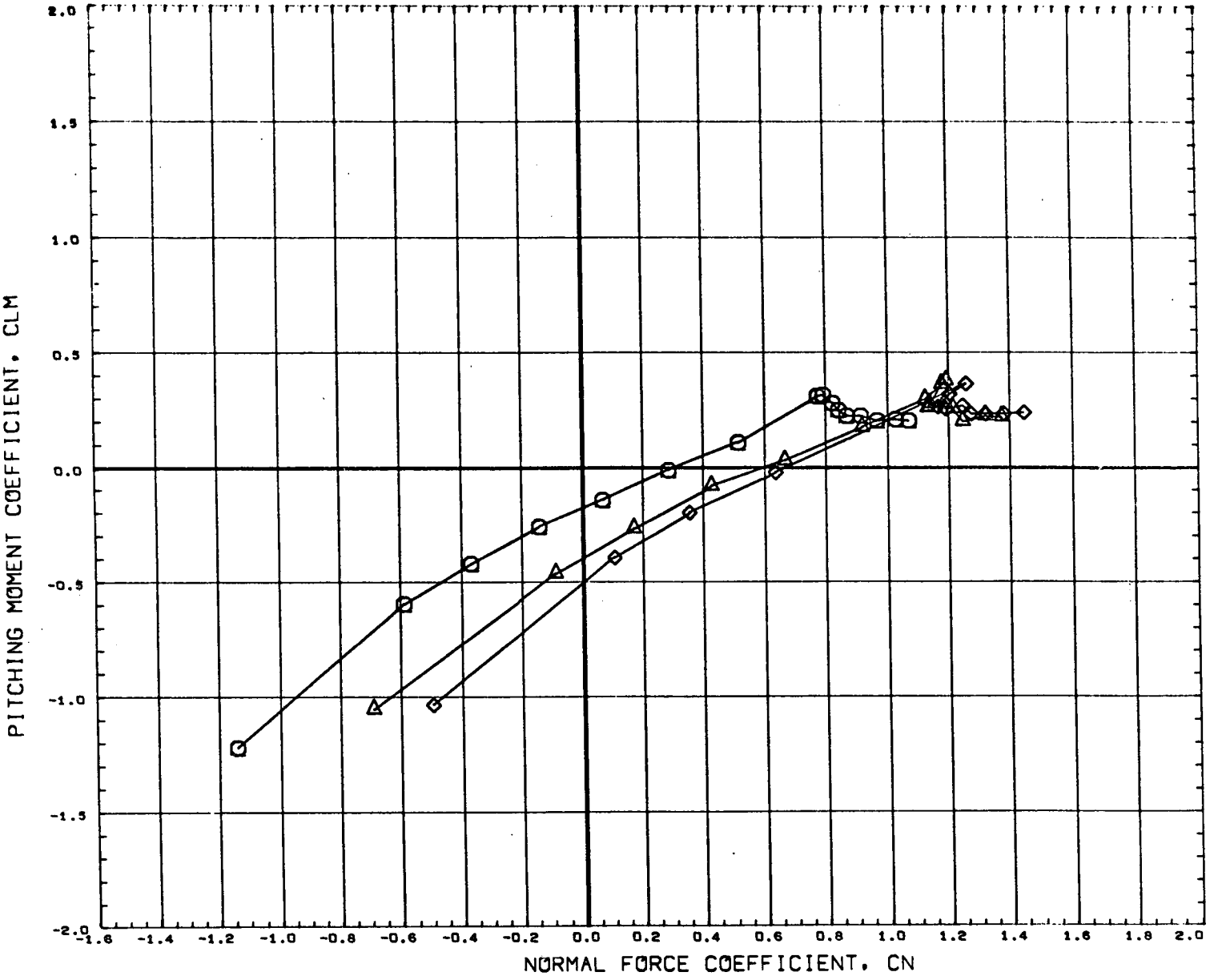


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(RG9070)	○	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.150	0.000
(RG9068)	△	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	15.000	0.150	0.000
(RG9066)	◇	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	25.000	0.150	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

FLAP EFFECTIVENESS IN GROUND EFFECT (FULL EXPOSED SPAN)

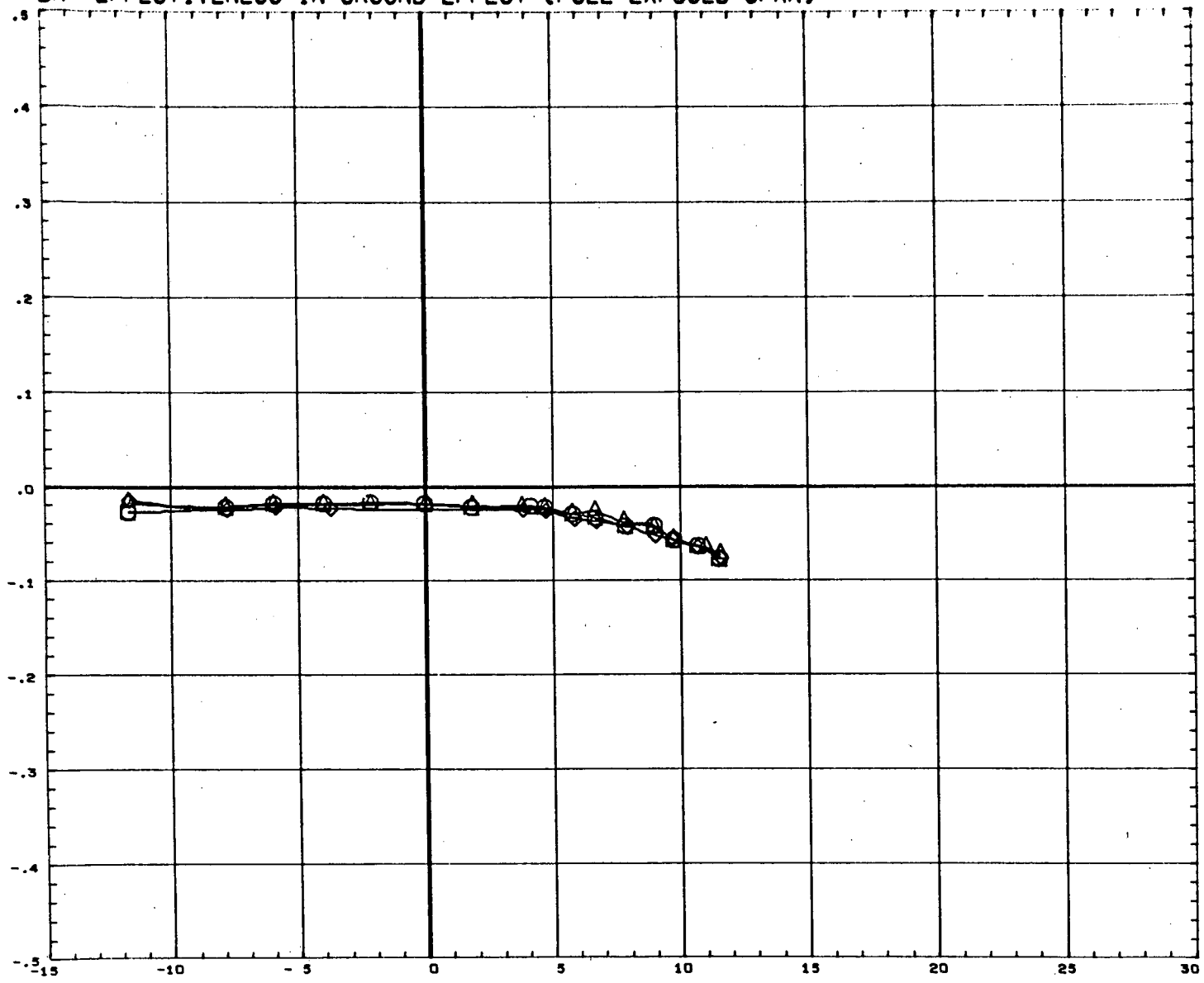


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(RG9070) ○	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.150	0.000
(RG9068) △	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	15.000	0.150	0.000
(RG9066) ◇	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	25.000	0.150	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

FLAP EFFECTIVENESS IN GROUND EFFECT (FULL EXPOSED SPAN)

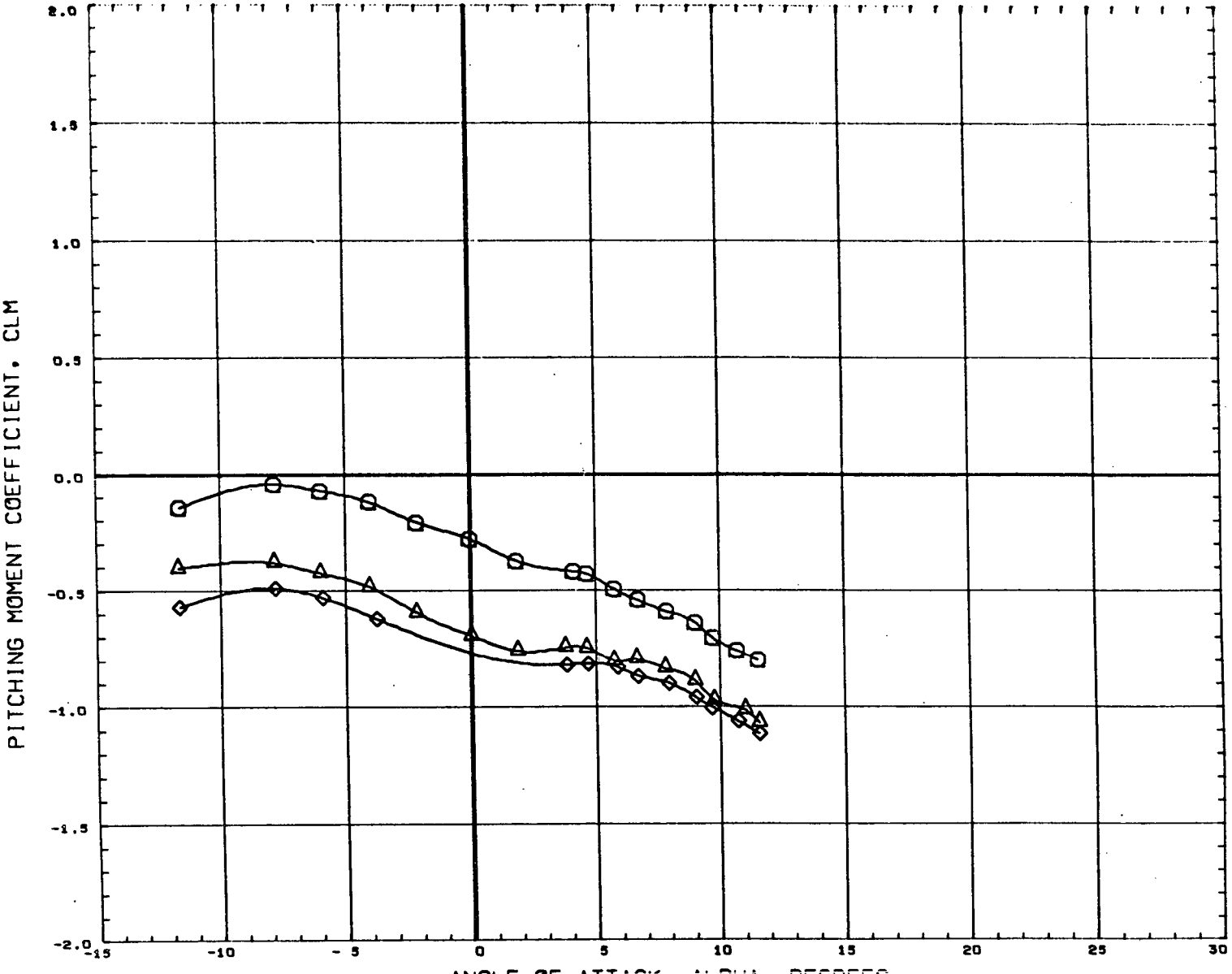


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(RG9070) ○	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.150	0.000
(RG9068) △	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	15.000	0.150	0.000
(RG9066) ◇	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	25.000	0.150	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

FLAP EFFECTIVENESS IN GROUND EFFECT (FULL EXPOSED SPAN) CG AT 0.50 B.L.

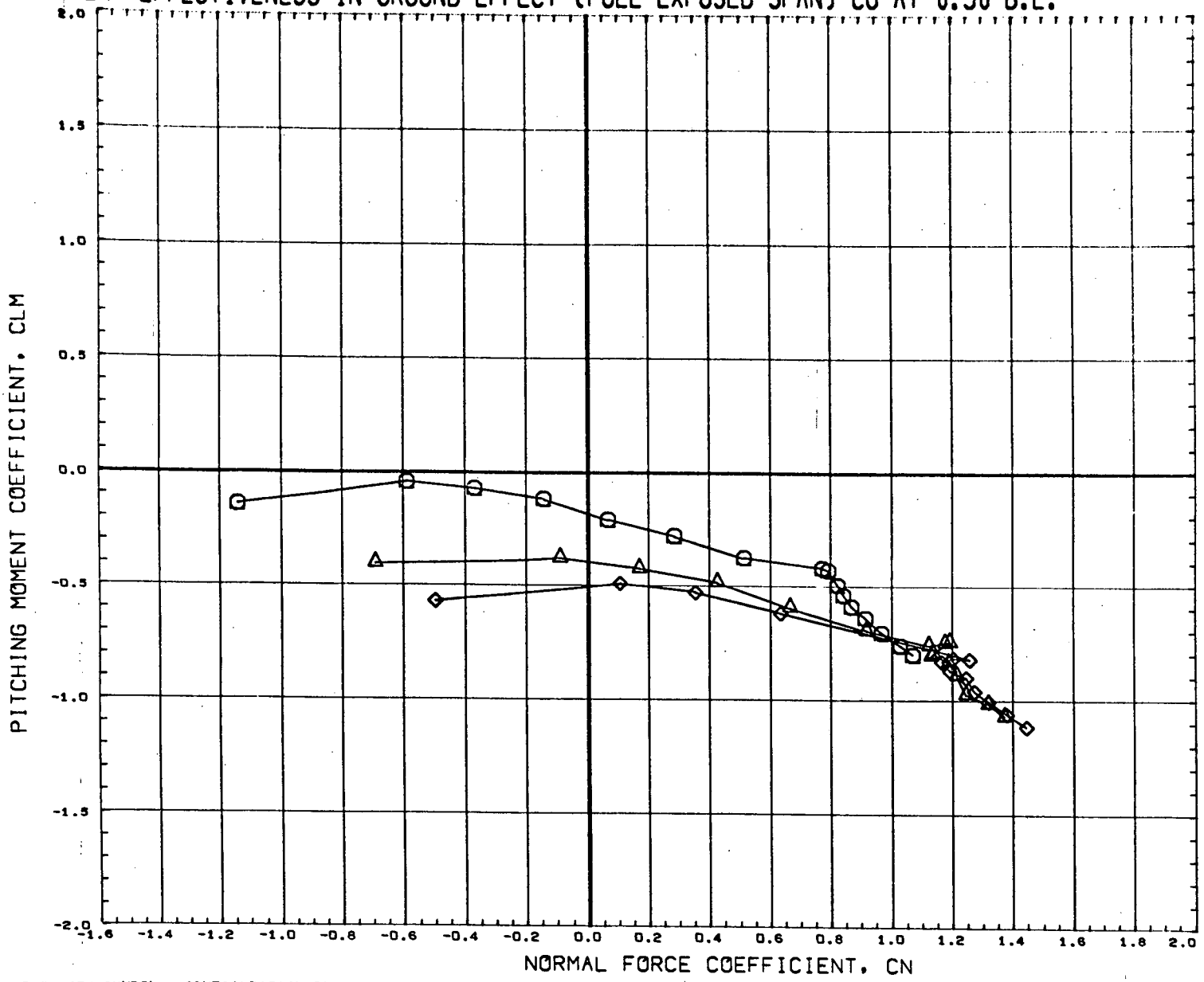


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(AG9070)	○	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.150	0.000
(AG9068)	△	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	15.000	0.150	0.000
(AG9066)	◇	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	25.000	0.150	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	34.5000	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

FLAP EFFECTIVENESS IN GROUND EFFECT (FULL EXPOSED SPAN) CG AT 0.50 B.L.

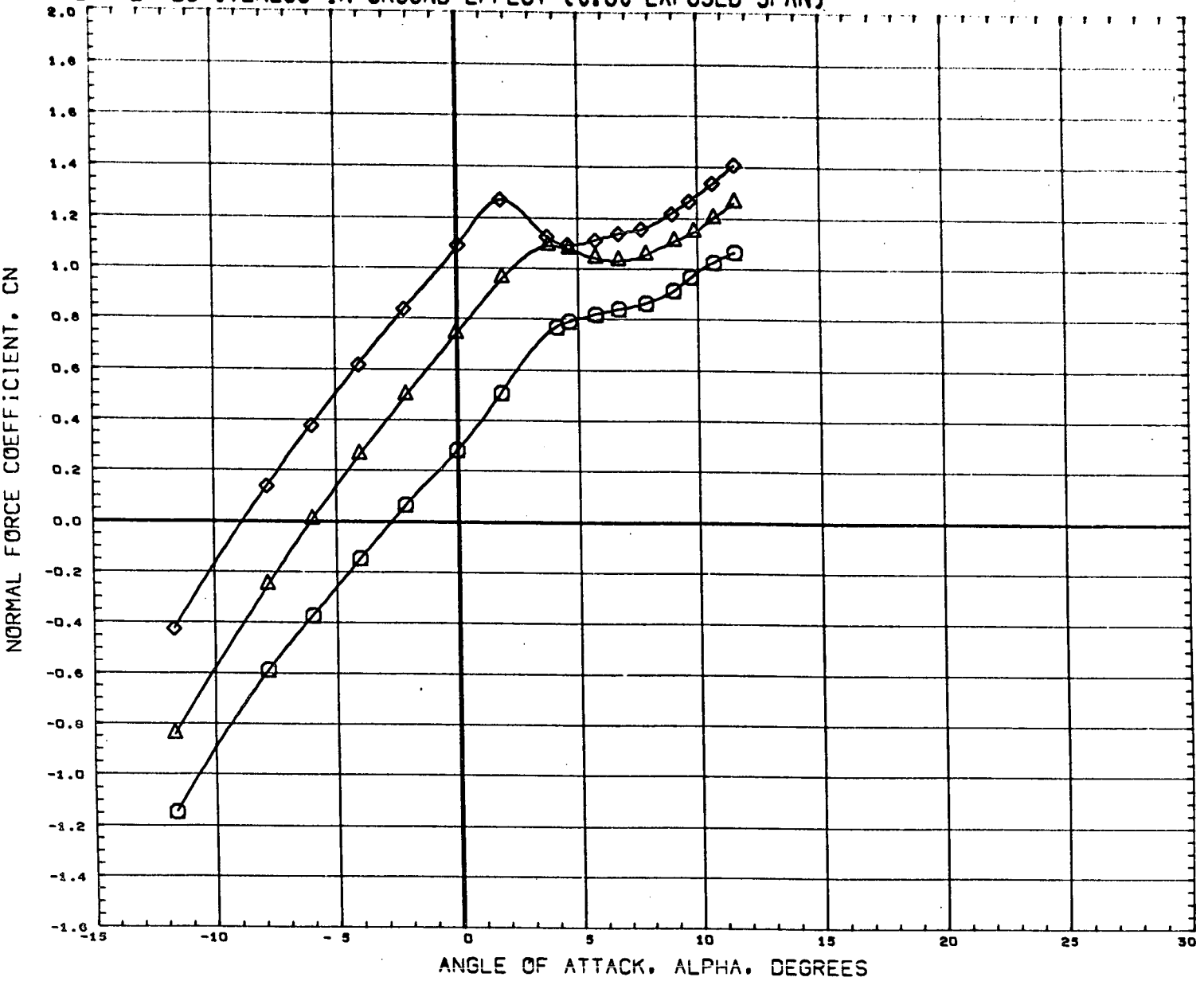


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(AG9070)	○	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.150	0.000
(AG9068)	△	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	15.000	0.150	0.000
(AG9066)	◇	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	25.000	0.150	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	34.5000	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

FLAP EFFECTIVENESS IN GROUND EFFECT (0.60 EXPOSED SPAN)

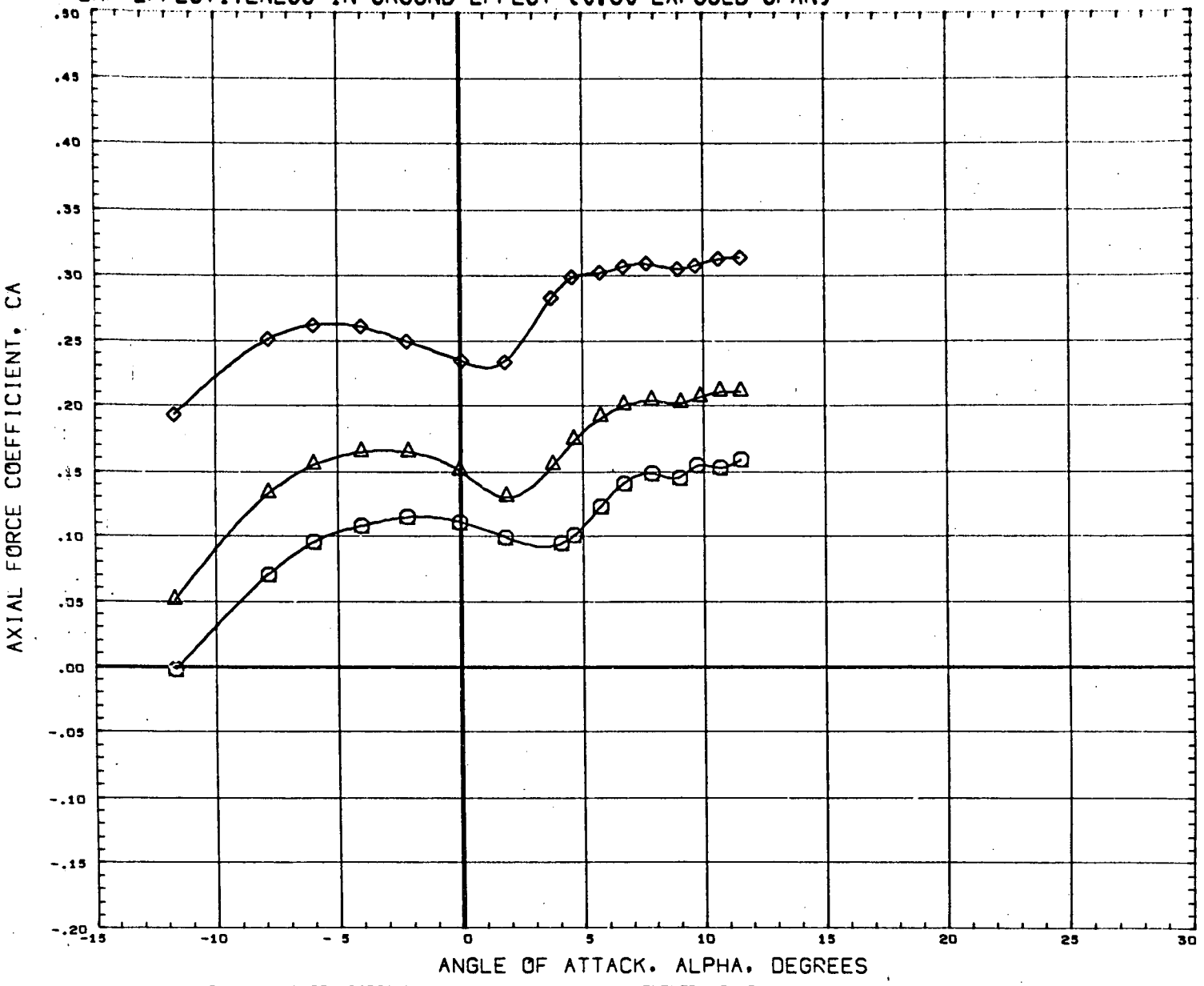


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(RG9070) ○	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.150	0.000
(RG9067) △	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	15.600	0.150	0.000
(RG9069) ◇	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	45.600	0.150	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

FLAP EFFECTIVENESS IN GROUND EFFECT (0.60 EXPOSED SPAN)

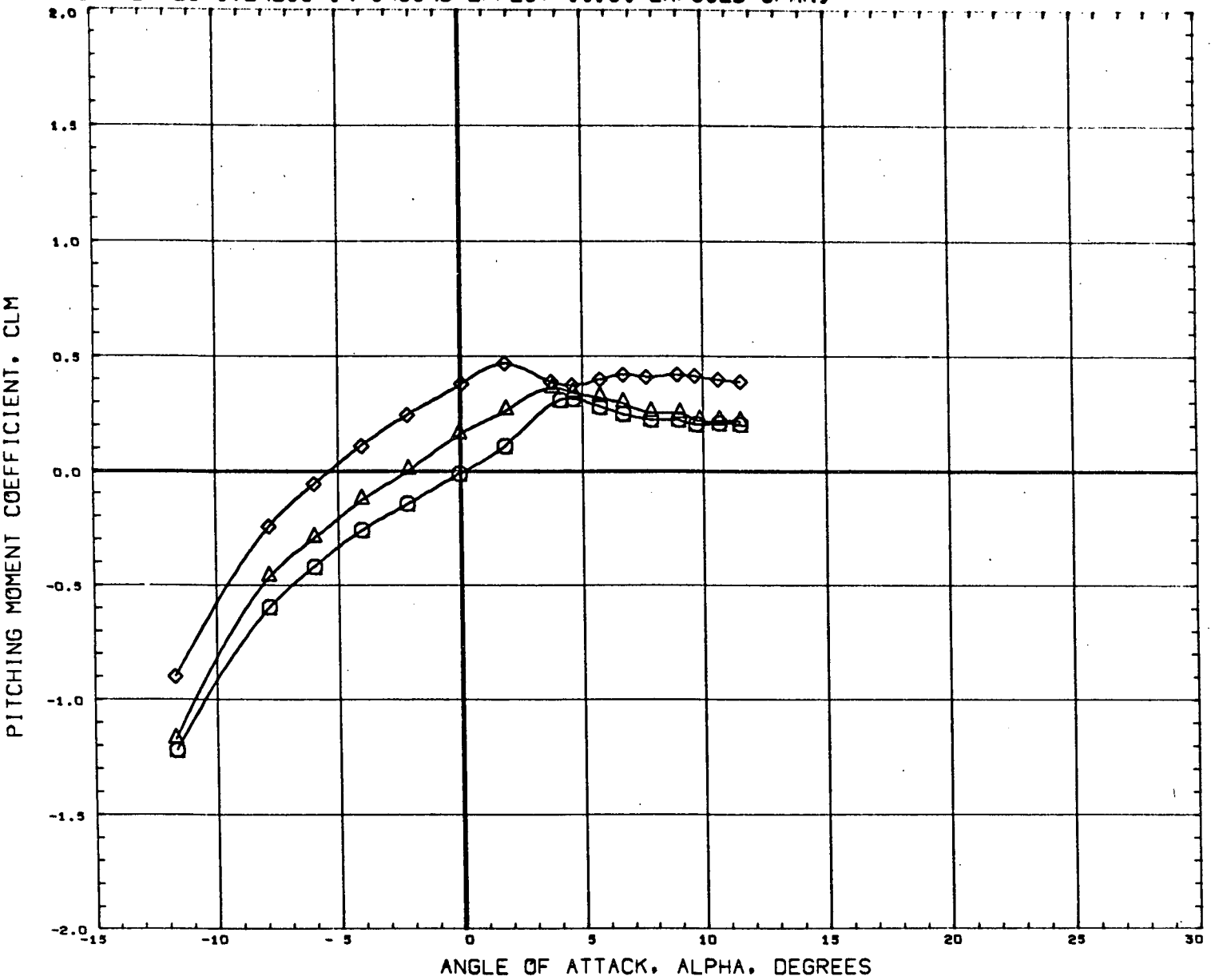


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(RG9070)	○	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.150	0.000
(RG9067)	△	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	15.600	0.150	0.000
(RG9069)	◇	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	45.600	0.150	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

FLAP EFFECTIVENESS IN GROUND EFFECT (0.60 EXPOSED SPAN)

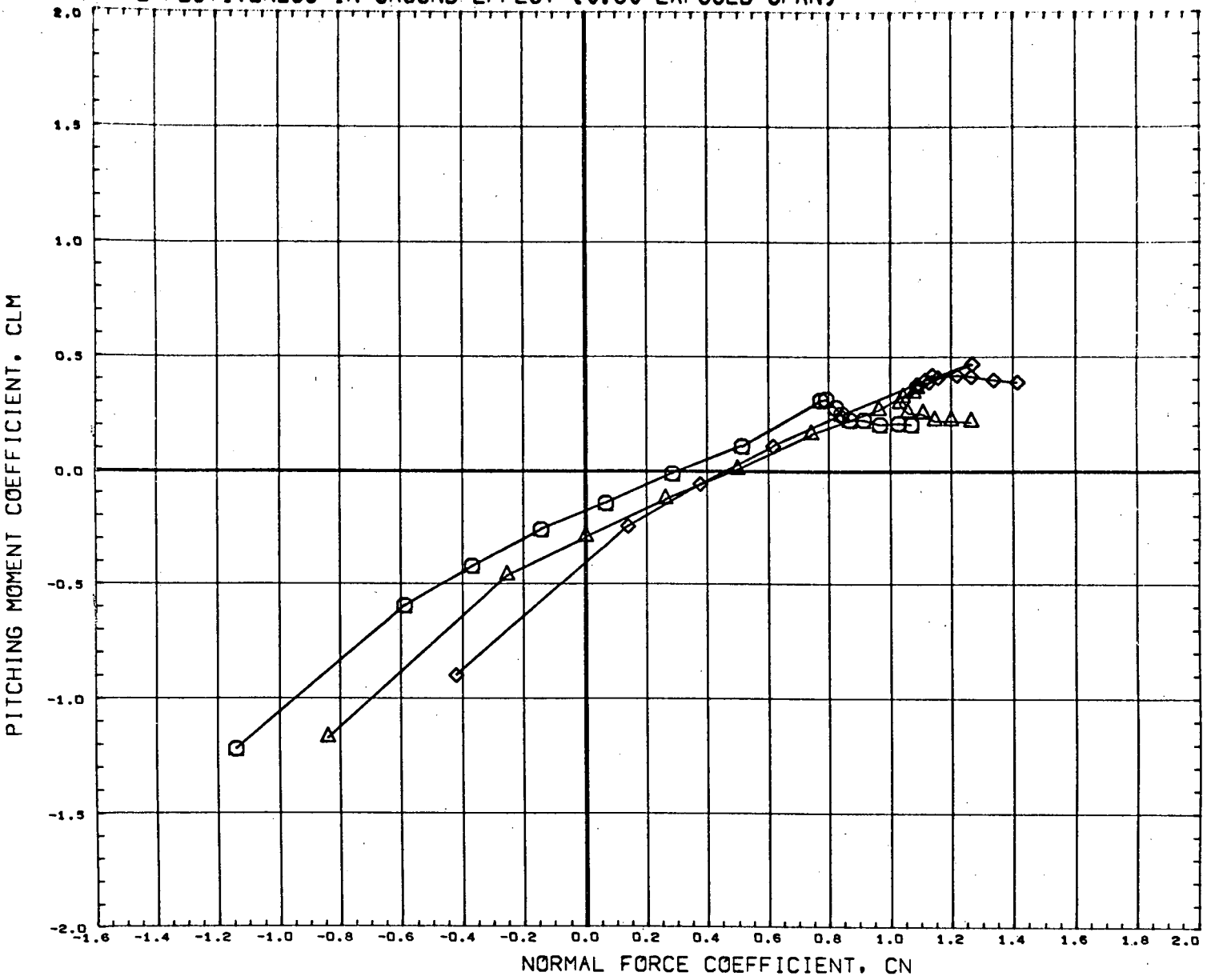


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(RG9070) ○	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.150	0.000
(RG9067) △	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	15.600	0.150	0.000
(RG9069) ◇	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	45.600	0.150	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

FLAP EFFECTIVENESS IN GROUND EFFECT (0.60 EXPOSED SPAN)

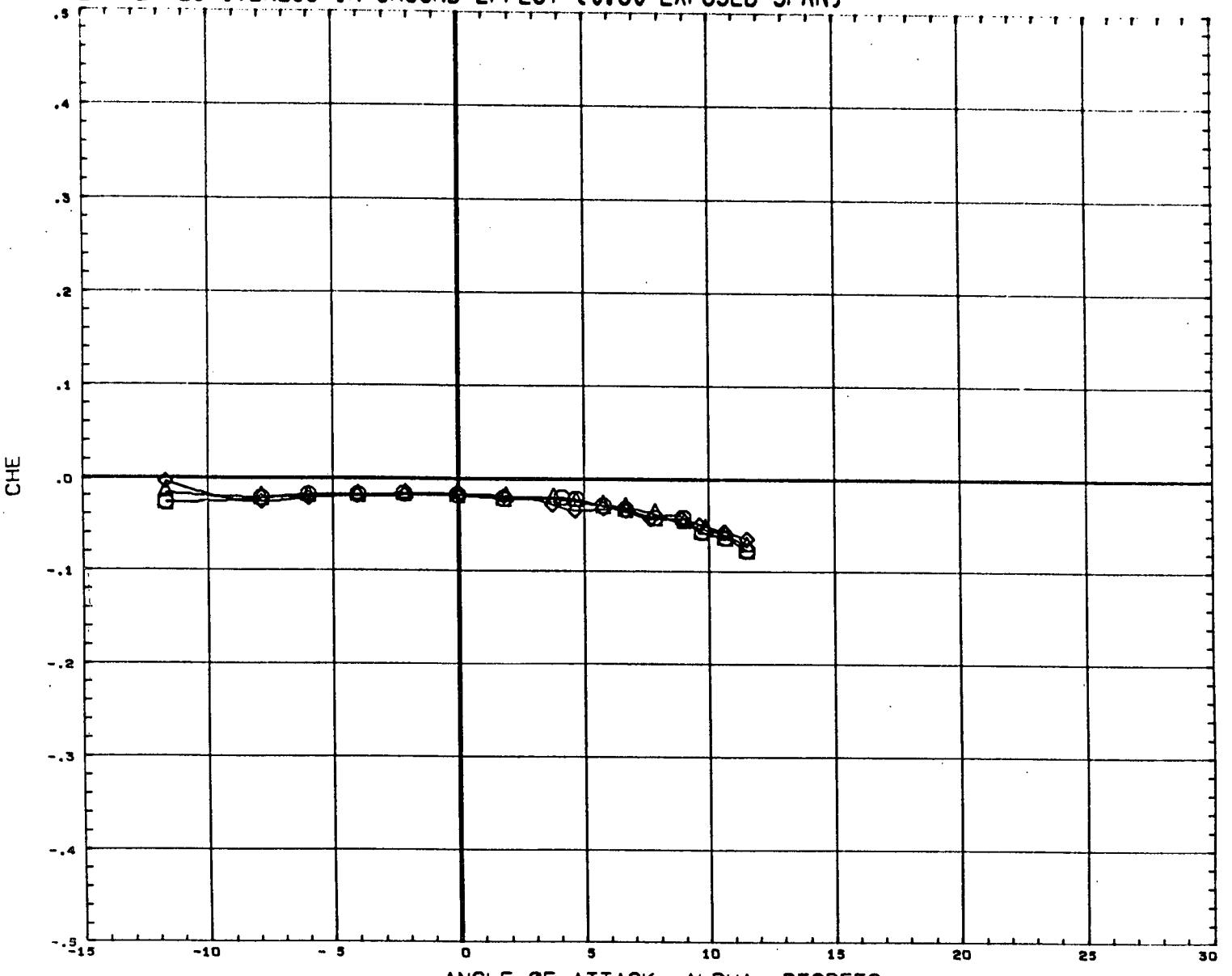


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(RG9070)	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.150	0.000
(RG9067)	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	15.600	0.150	0.000
(RG9069)	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	45.600	0.150	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

FLAP EFFECTIVENESS IN GROUND EFFECT (0.60 EXPOSED SPAN)

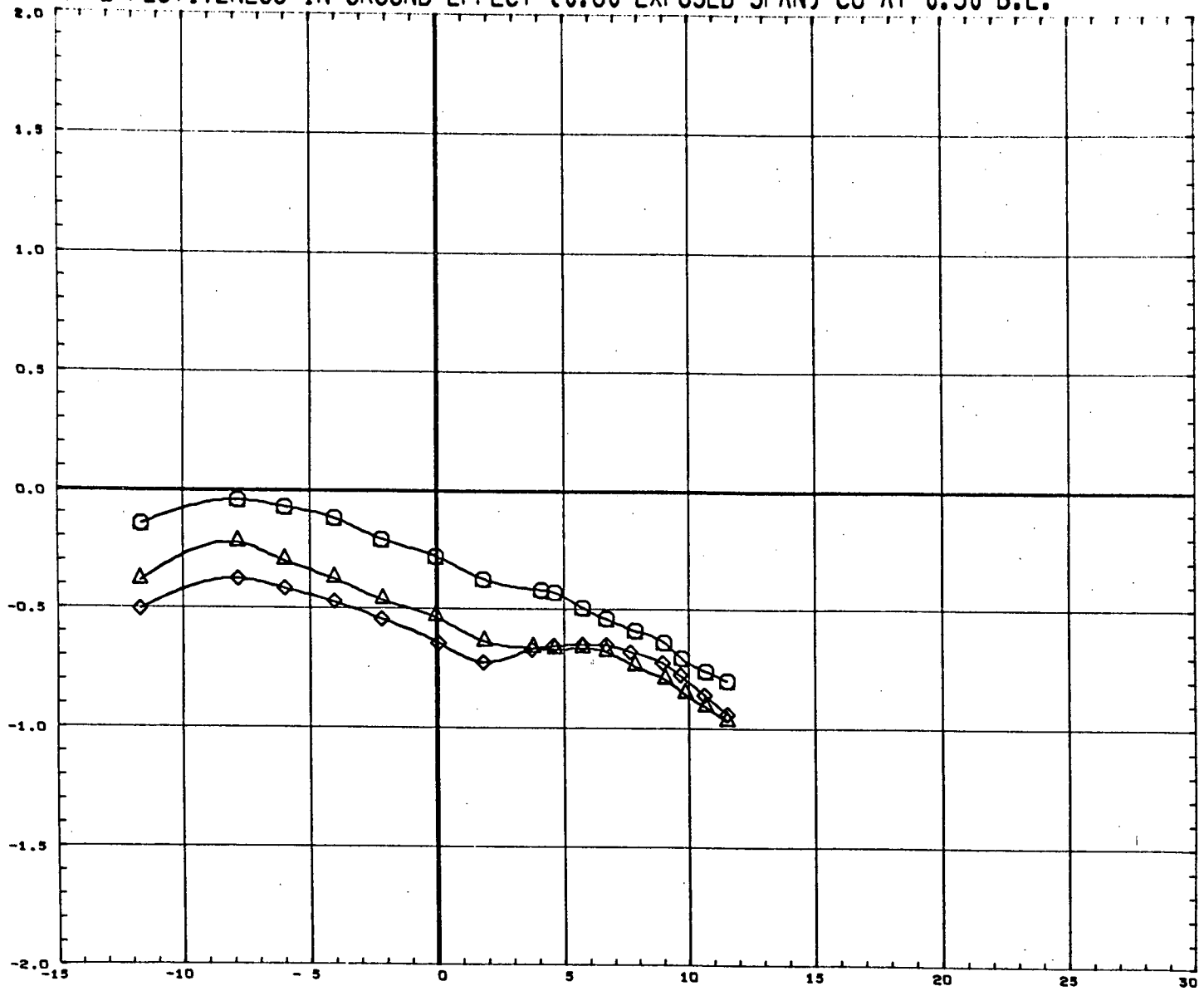


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(RG9070) ○	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.150	0.000
(RG9067) △	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	15.600	0.150	0.000
(RG9069) ◇	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	45.600	0.150	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

FLAP EFFECTIVENESS IN GROUND EFFECT (0.60 EXPOSED SPAN) CG AT 0.50 B.L.

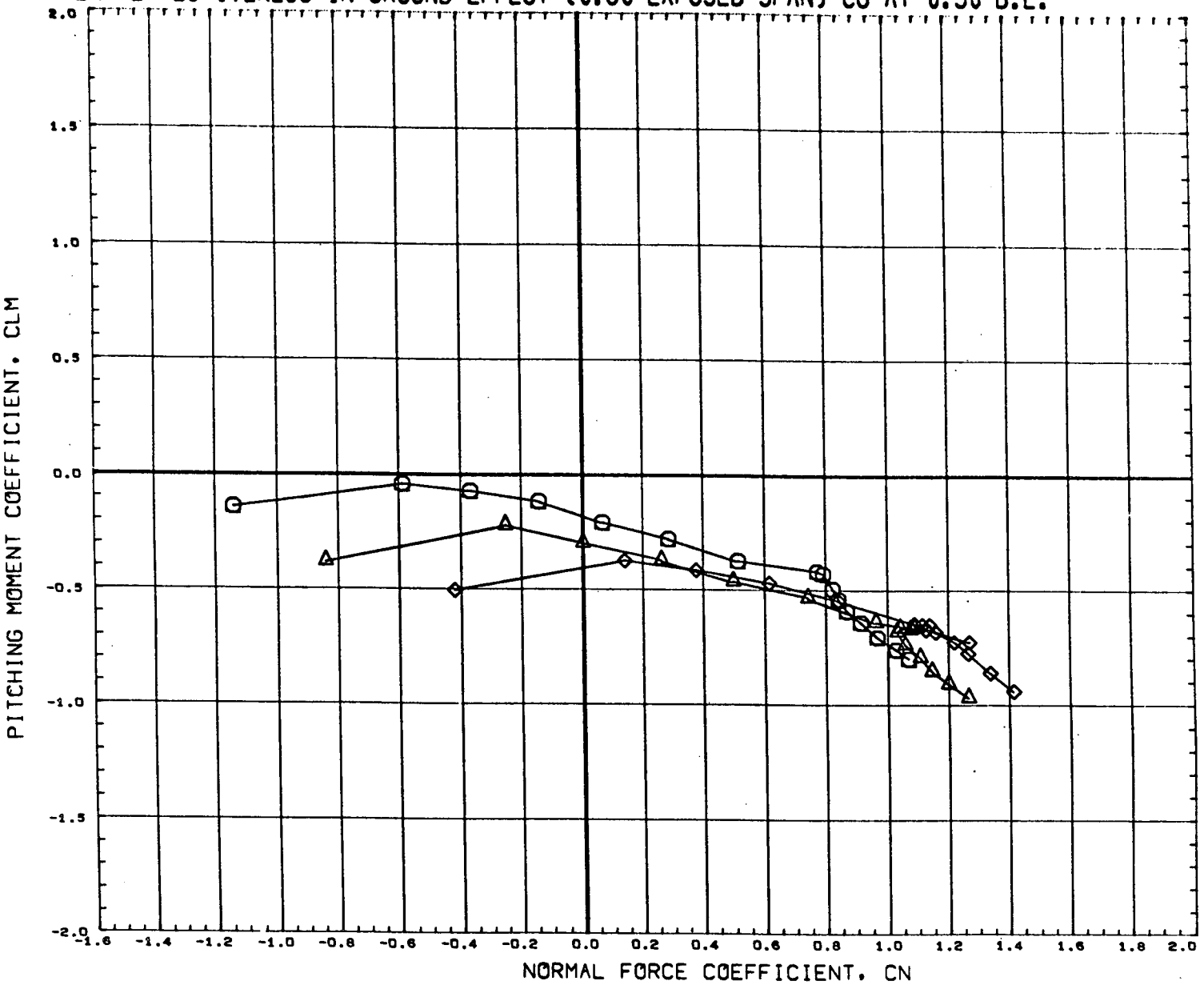


DATA SET SYMBOL		CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(AG9070)	○	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.150	0.000
(AG9067)	△	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	15.600	0.150	0.000
(AG9069)	◇	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	45.600	0.150	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	34.5000	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

FLAP EFFECTIVENESS IN GROUND EFFECT (0.60 EXPOSED SPAN) CG AT 0.50 B.L.

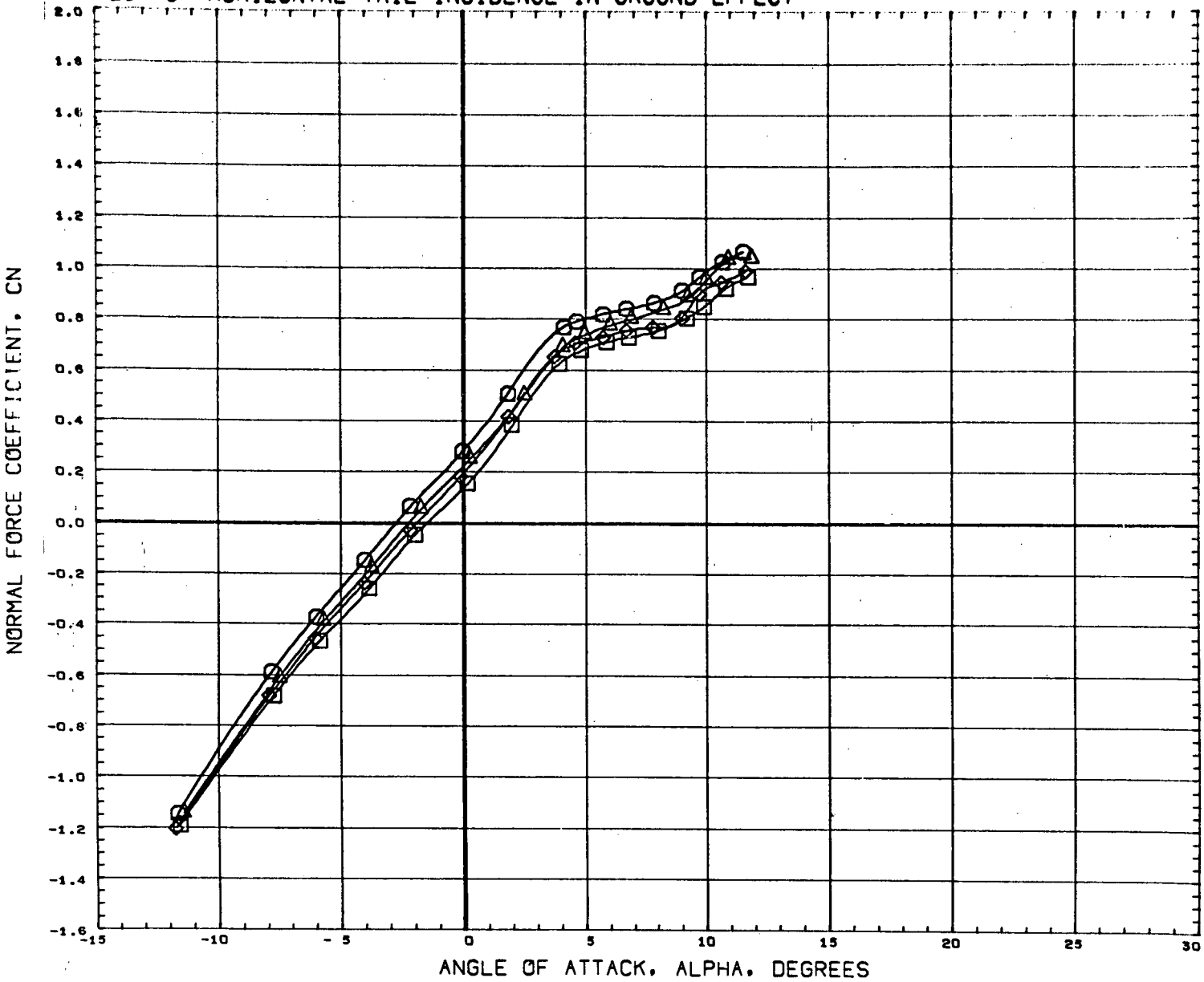


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(AG9070) ○	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.150	0.000
(AG9067) △	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	15.600	0.150	0.000
(AG9069) ◇	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	45.600	0.150	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	34.5000	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

EFFECT OF HORIZONTAL TAIL INCIDENCE IN GROUND EFFECT

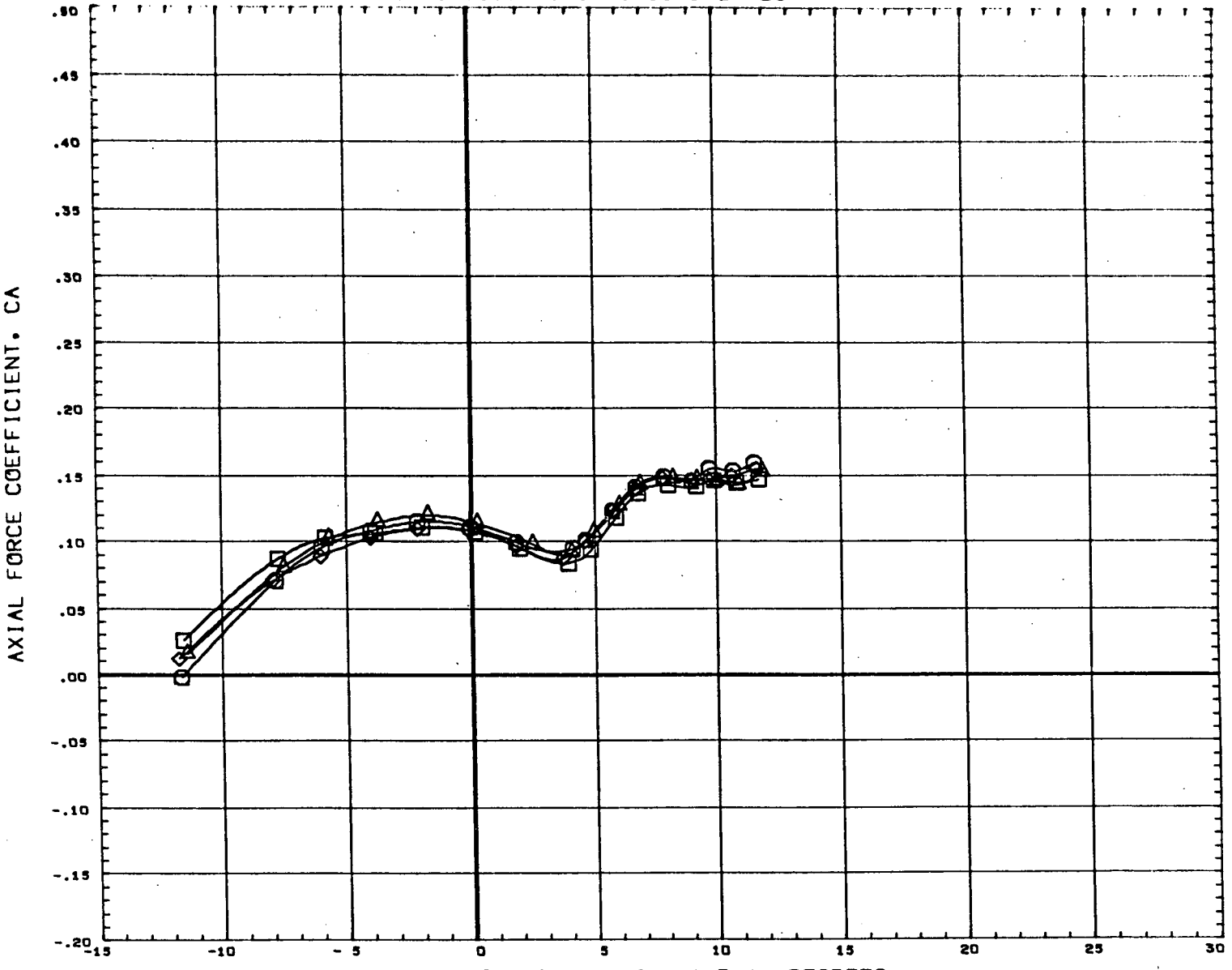


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(RG9070)	○	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.150	0.000
(RG9101)	△	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.150	-2.000
(RG9071)	◇	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.150	-4.000
(RG9072)	□	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.150	-6.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

EFFECT OF HORIZONTAL TAIL INCIDENCE IN GROUND EFFECT

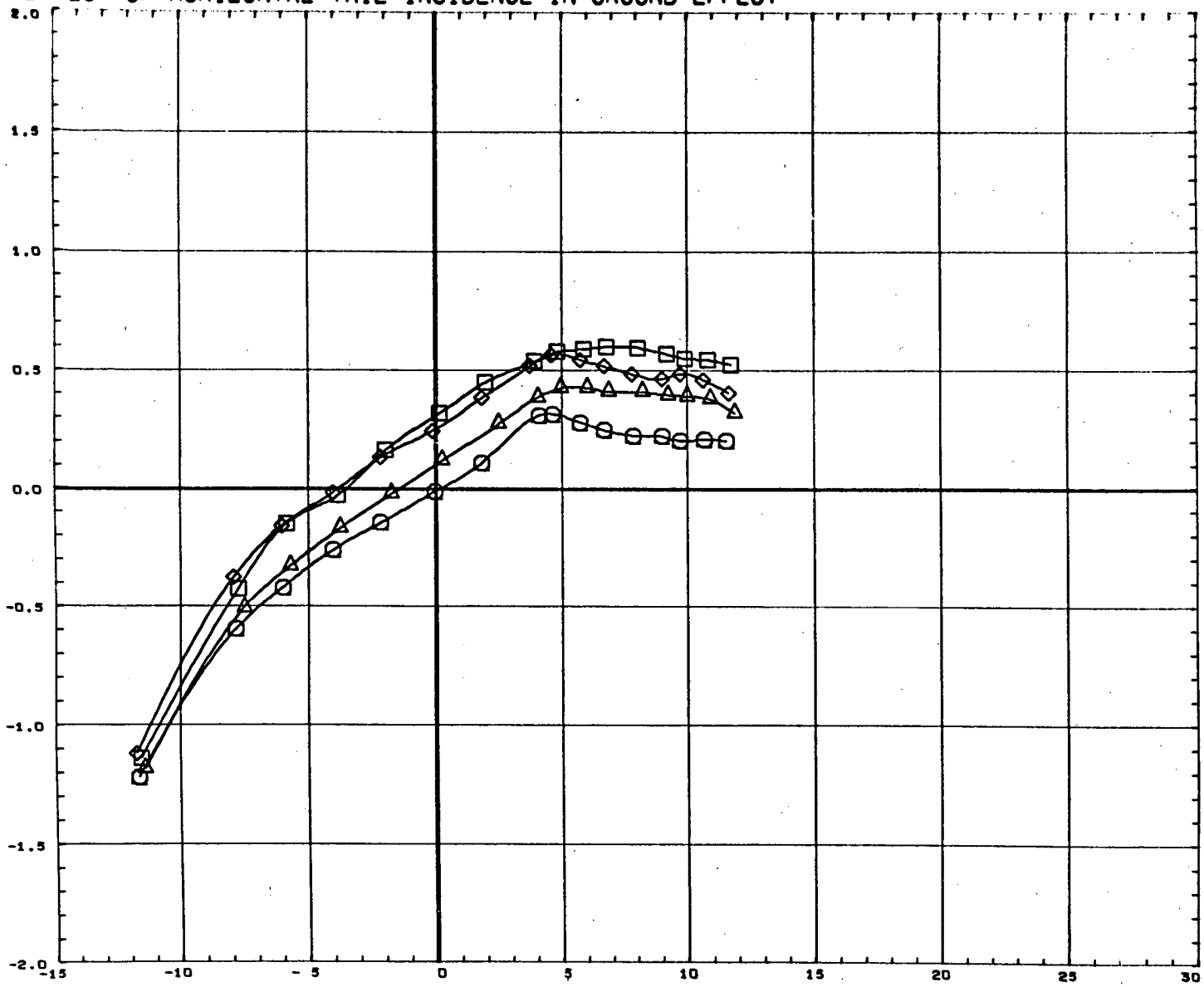


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(RG9070)	○	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.150	0.000
(RG9101)	△	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.150	-2.000
(RG9071)	◇	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.150	-4.000
(RG9072)	□	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.150	-6.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

EFFECT OF HORIZONTAL TAIL INCIDENCE IN GROUND EFFECT

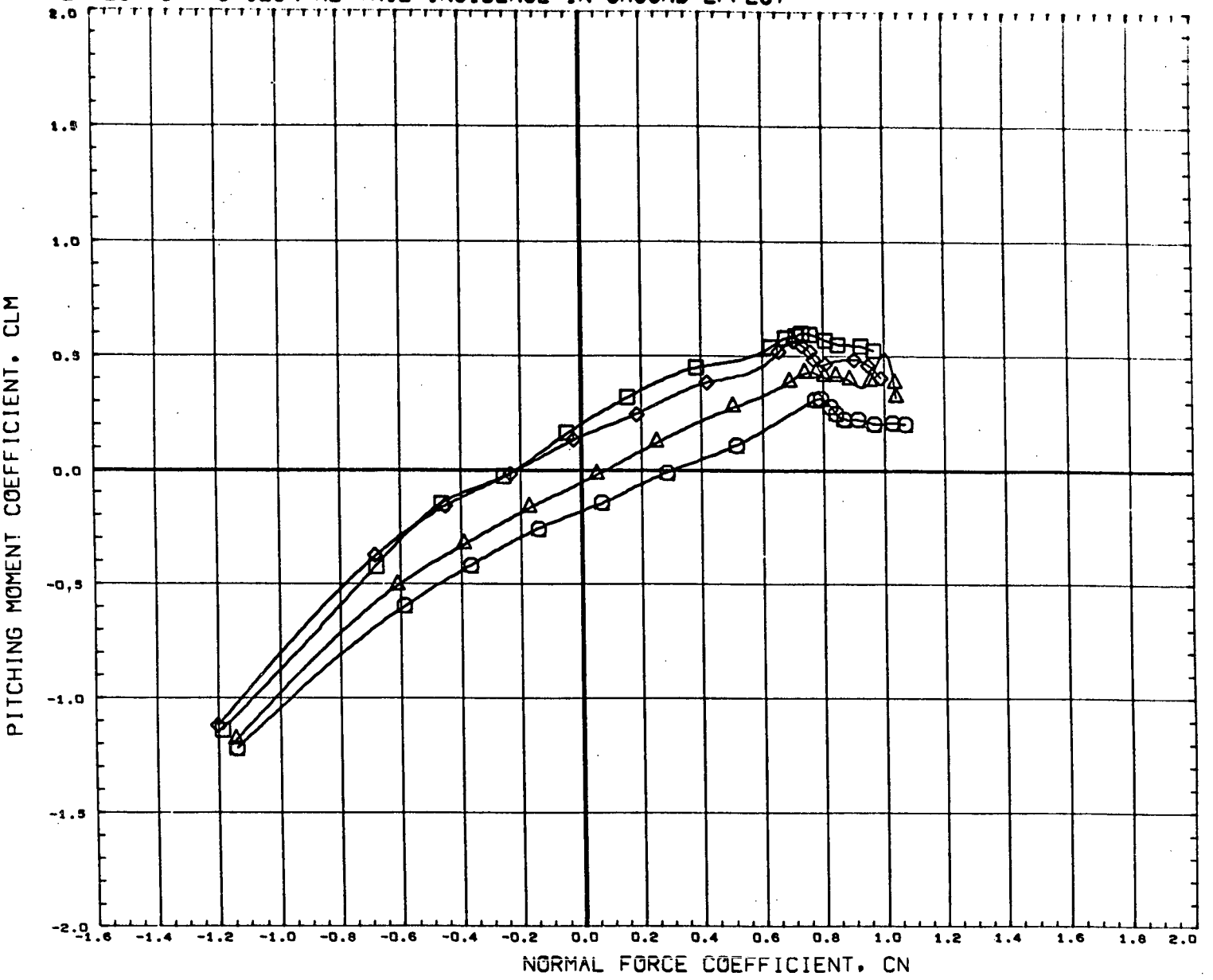


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(RG9070)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.150	0.000
(RG9101)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.150	-2.000
(RG9071)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.150	-4.000
(RG9072)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.150	-6.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

EFFECT OF HORIZONTAL TAIL INCIDENCE IN GROUND EFFECT

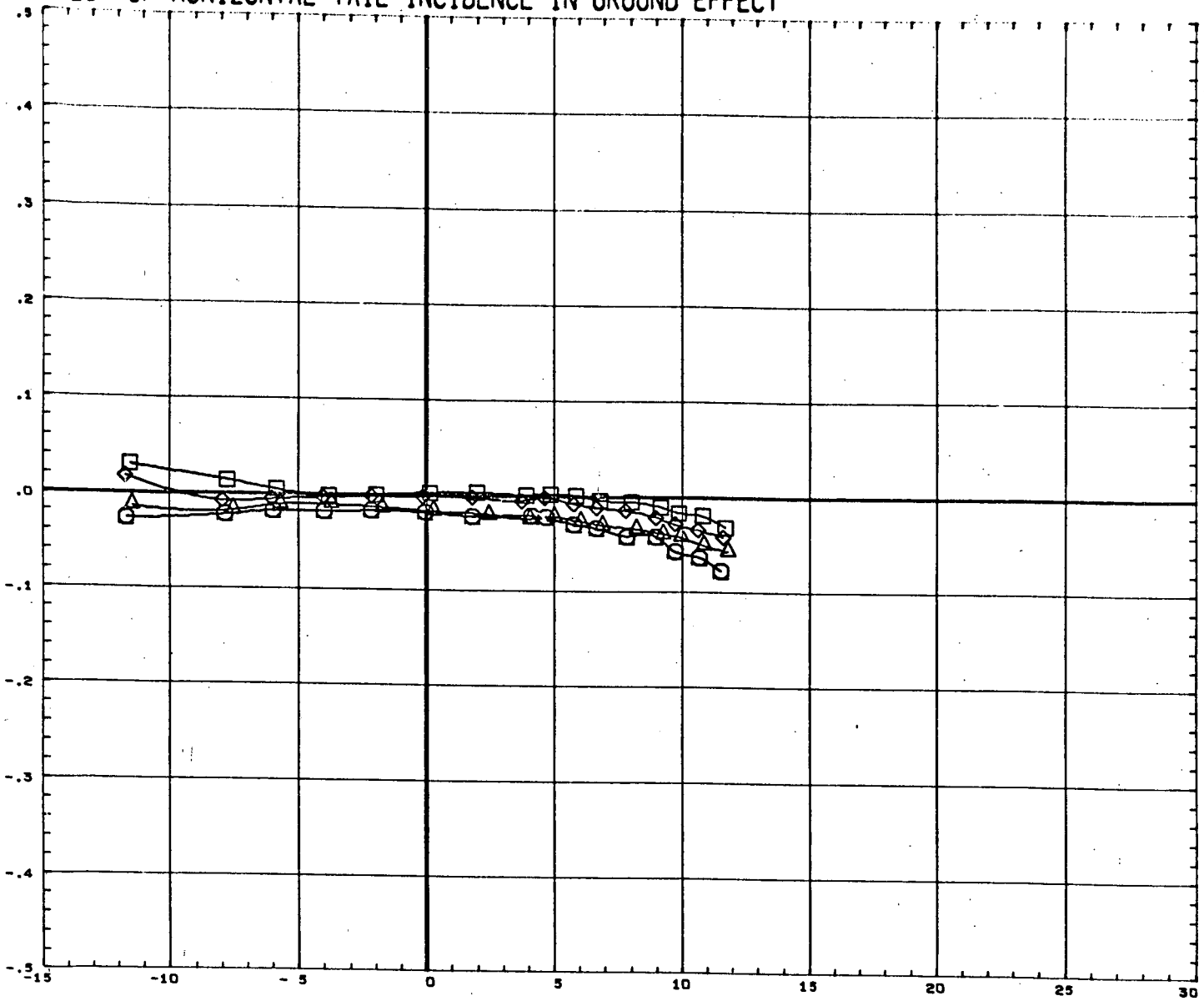


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(RG9070)	○	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.150	0.000
(RG9101)	▽	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.150	-2.000
(RG9071)	◇	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.150	-4.000
(RG9072)	□	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.150	-6.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

EFFECT OF HORIZONTAL TAIL INCIDENCE IN GROUND EFFECT

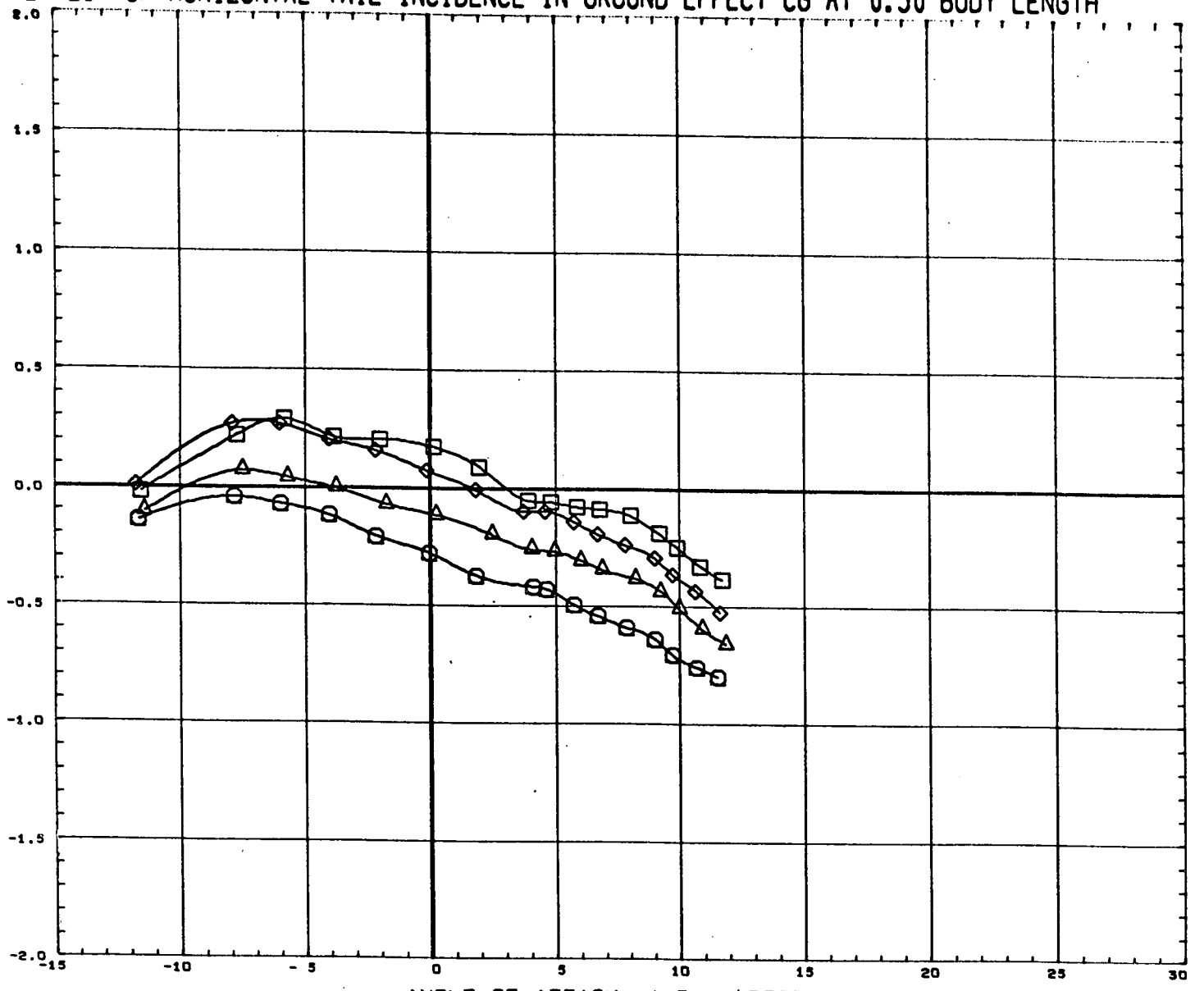


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(RG9070)	○	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.150	0.000
(RG9101)	△	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.150	-2.000
(RG9071)	◇	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.150	-4.000
(RG9072)	□	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.150	-6.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

EFFECT OF HORIZONTAL TAIL INCIDENCE IN GROUND EFFECT CG AT 0.50 BODY LENGTH

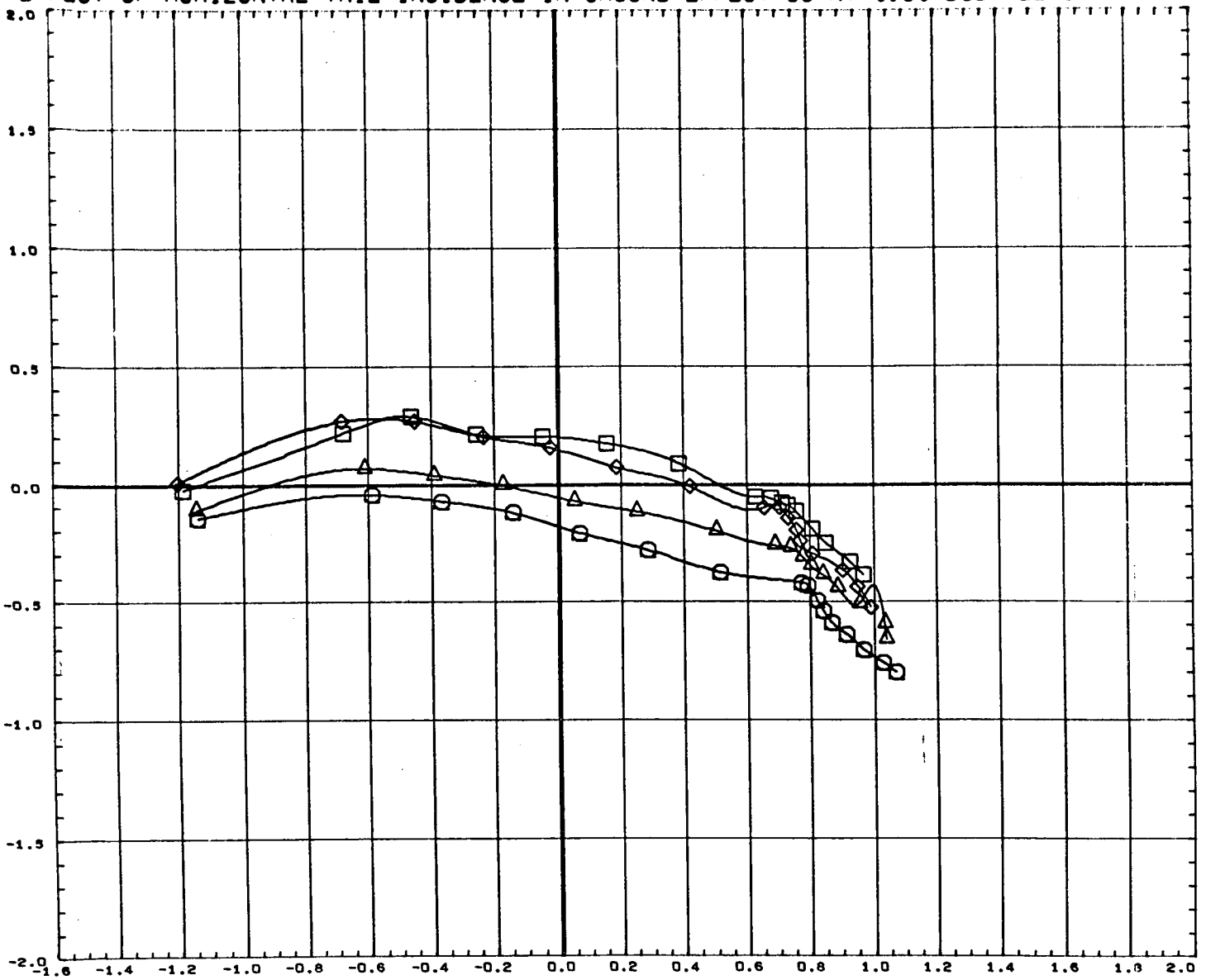


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(AG9070)	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.150	0.000
(AG9101)	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.150	-2.000
(AG9071)	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.150	-4.000
(AG9072)	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.150	-6.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	34.5000	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

EFFECT OF HORIZONTAL TAIL INCIDENCE IN GROUND EFFECT CG AT 0.50 BODY LENGTH

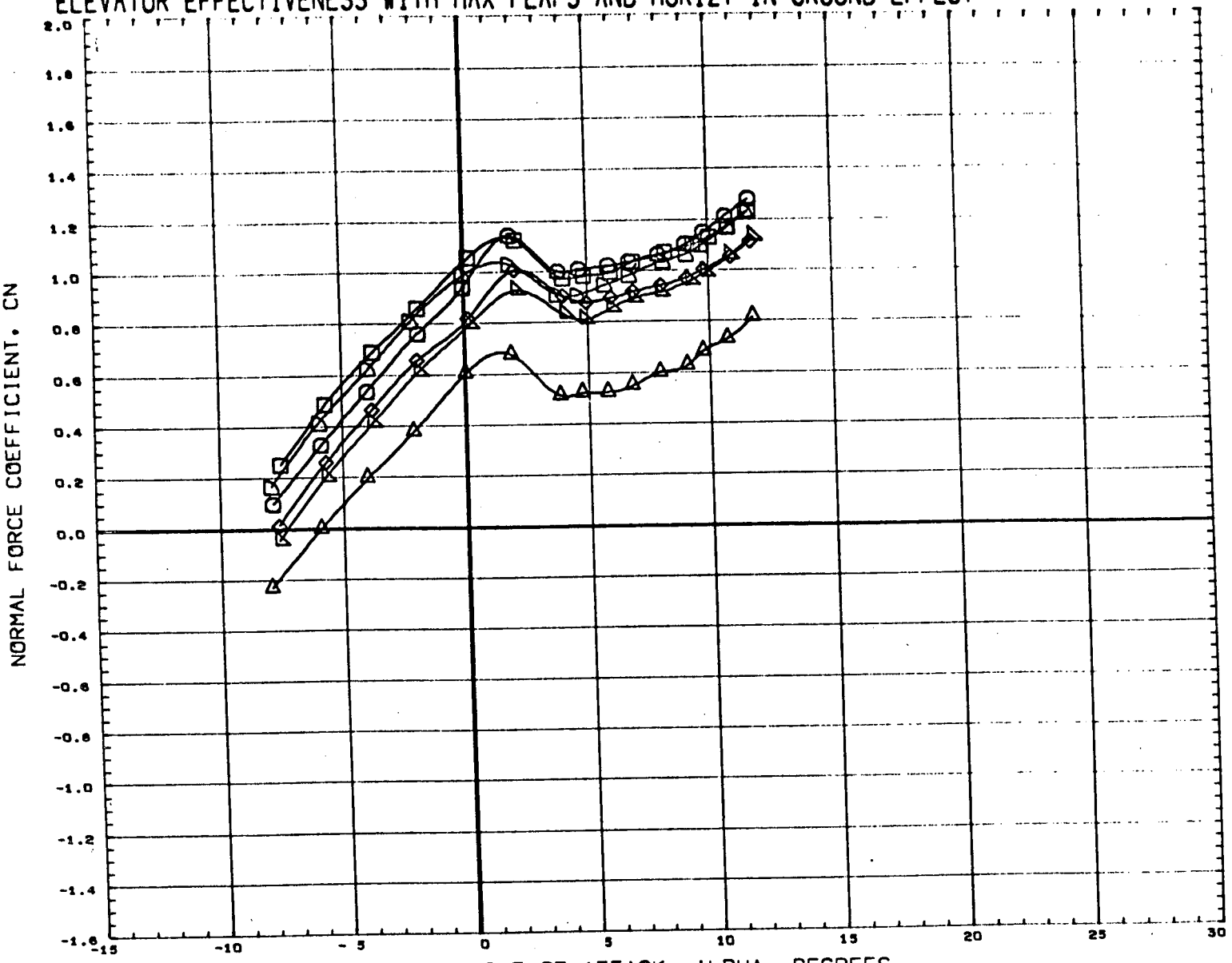


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(AG9070)	○	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.150	0.000
(AG9101)	△	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.150	-2.000
(AG9071)	◇	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.150	-4.000
(AG9072)	□	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.150	-6.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	34.5000	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

ELEVATOR EFFECTIVENESS WITH MAX FLAPS AND HORIZT IN GROUND EFFECT



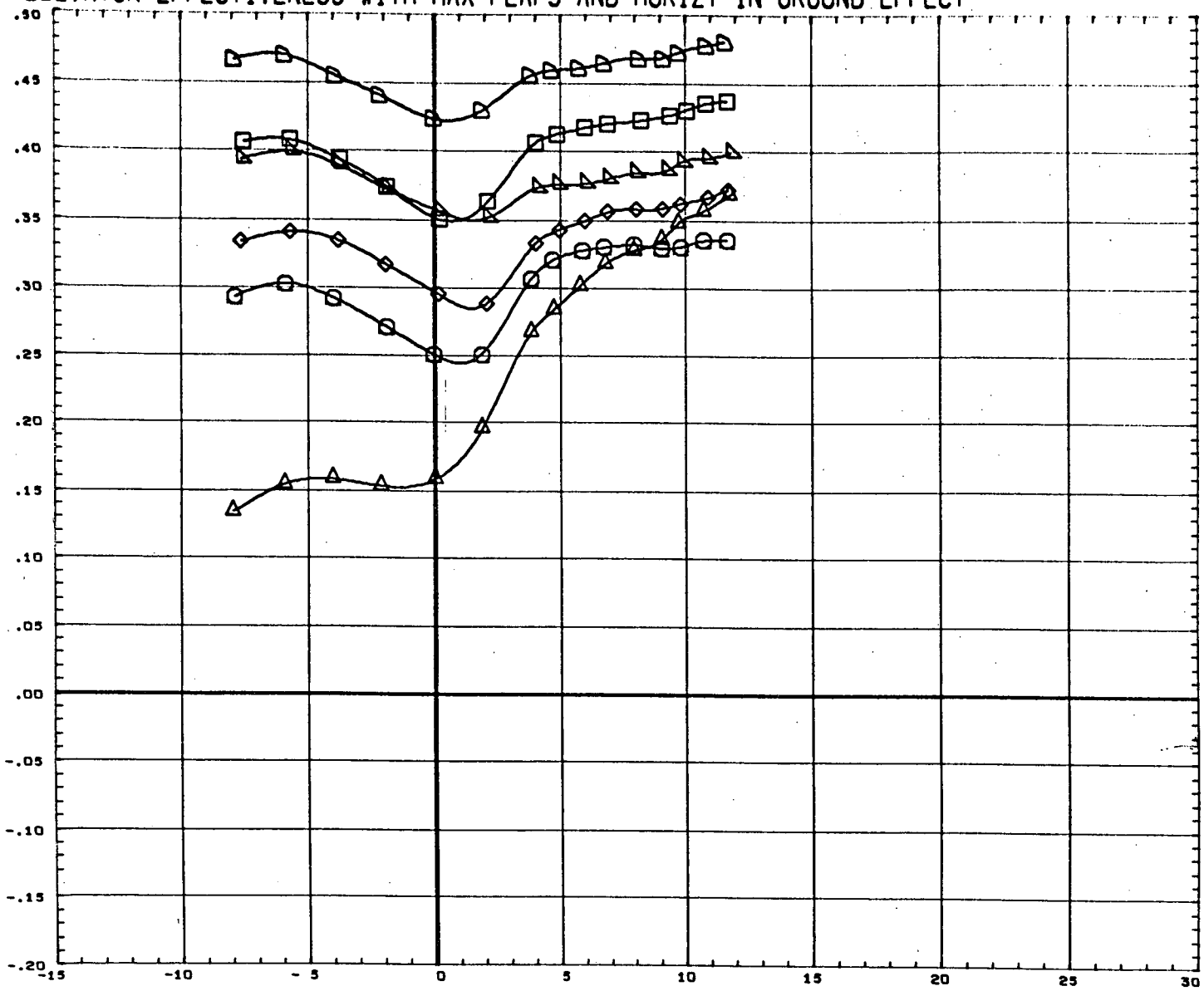
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION
(RG9073)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L
(RG9074)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L
(RG9102)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L
(RG9103)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L
(RG9105)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L
(RG9078)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L

ELEVTR	FLAP	H/B	HORIZT
0.000	45.600	0.150	-6.000
0.000	45.000	0.150	-6.000
-15.000	45.600	0.150	-6.000
-15.000	45.000	0.150	-6.000
-30.000	45.600	0.150	-6.000
-30.000	45.000	0.150	-6.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

ELEVATOR EFFECTIVENESS WITH MAX FLAPS AND HORIZT IN GROUND EFFECT

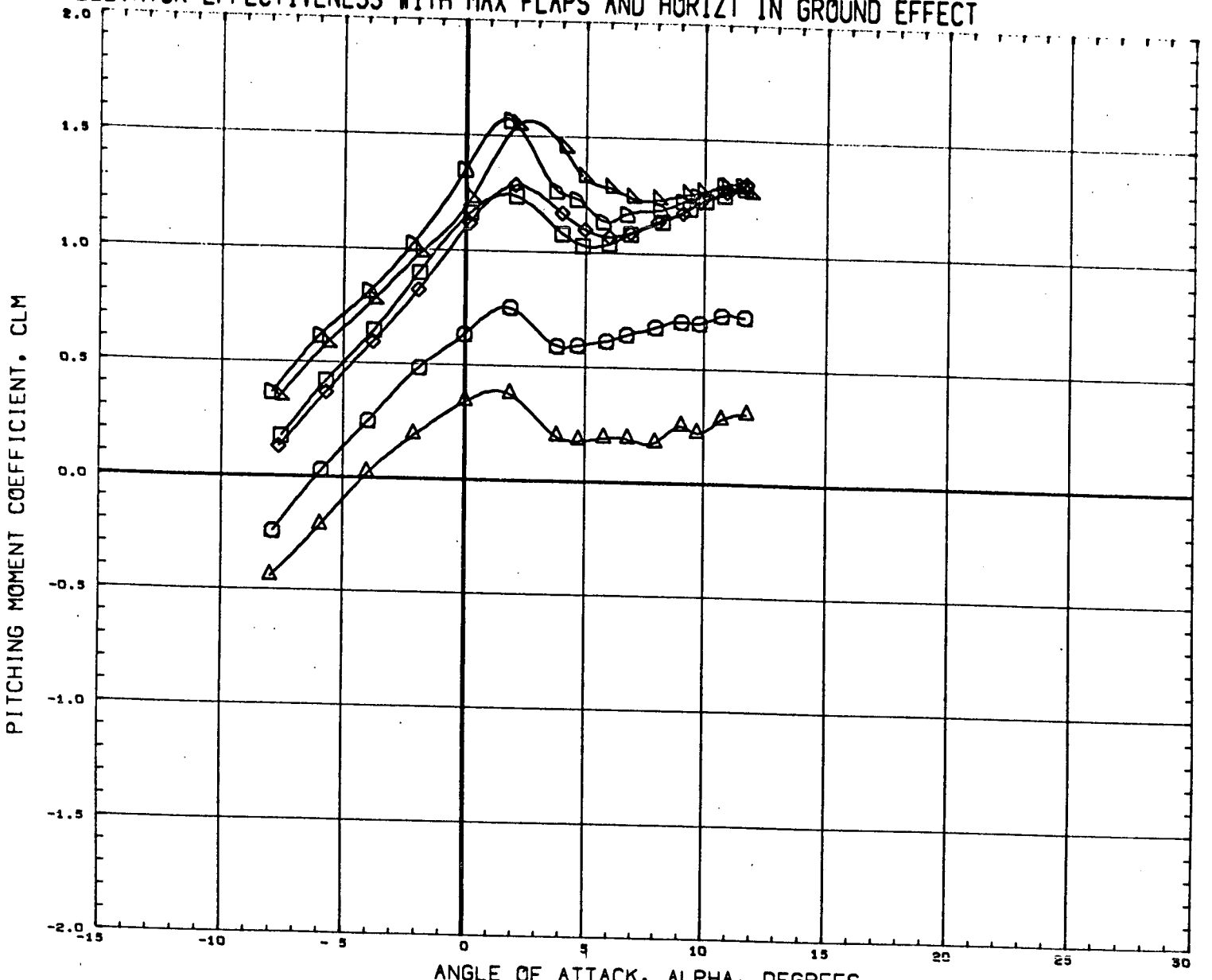


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(RG9073)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	0.000	45.600	0.150	-6.000
(RG9074)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	0.000	45.000	0.150	-6.000
(RG9102)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	45.600	0.150	-6.000
(RG9103)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	45.000	0.150	-6.000
(RG9105)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-30.000	45.600	0.150	-6.000
(RG9078)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-30.000	45.000	0.150	-6.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

ELEVATOR EFFECTIVENESS WITH MAX FLAPS AND HORIZT IN GROUND EFFECT

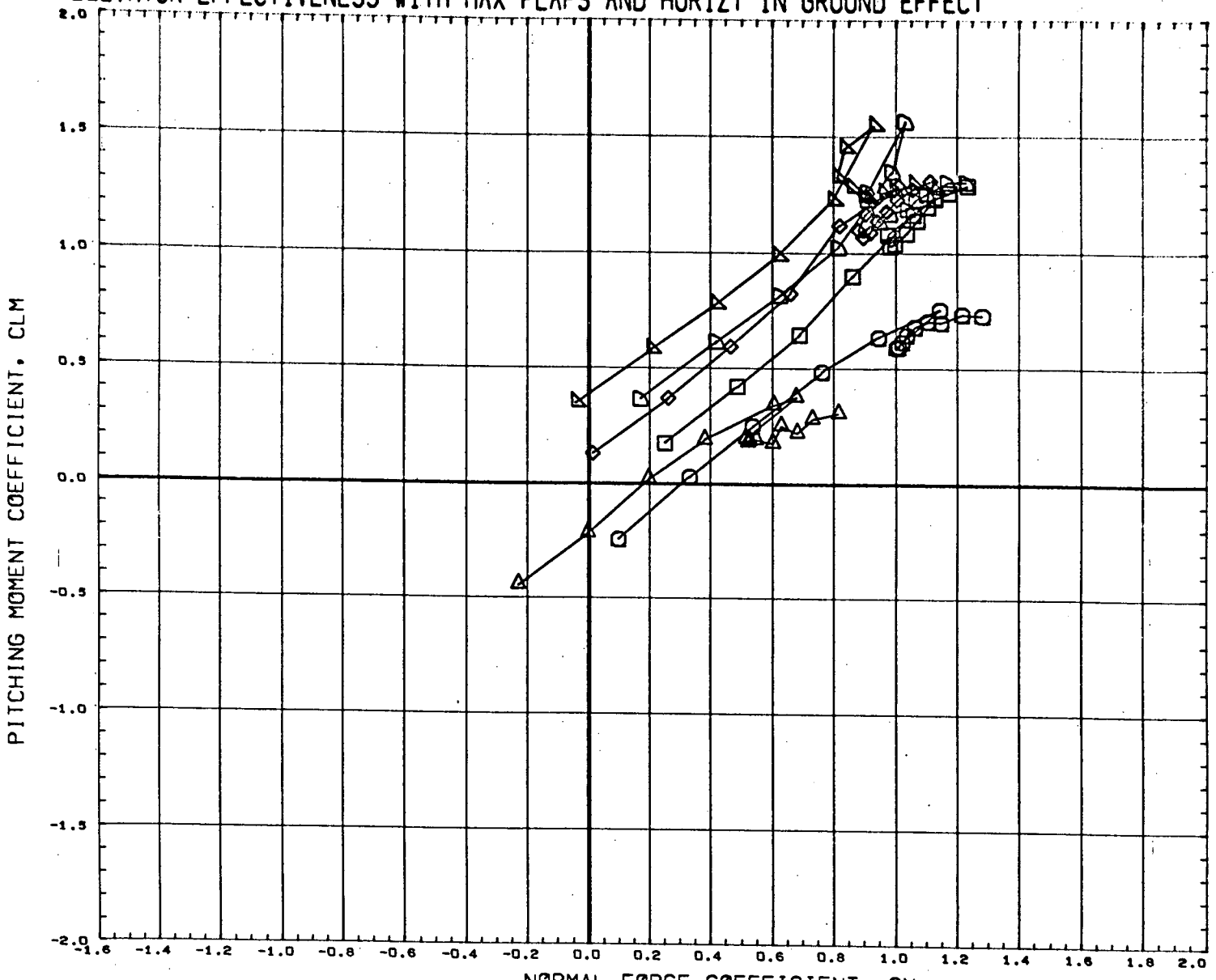


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(RG9073)	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	0.000	45.600	0.150	-6.000
(RG9074)	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	0.000	45.000	0.150	-6.000
(RG9102)	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	45.600	0.150	-6.000
(RG9103)	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	45.000	0.150	-6.000
(RG9105)	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-30.000	45.600	0.150	-6.000
(RG9078)	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-30.000	45.000	0.150	-6.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

ELEVATOR EFFECTIVENESS WITH MAX FLAPS AND HORIZT IN GROUND EFFECT

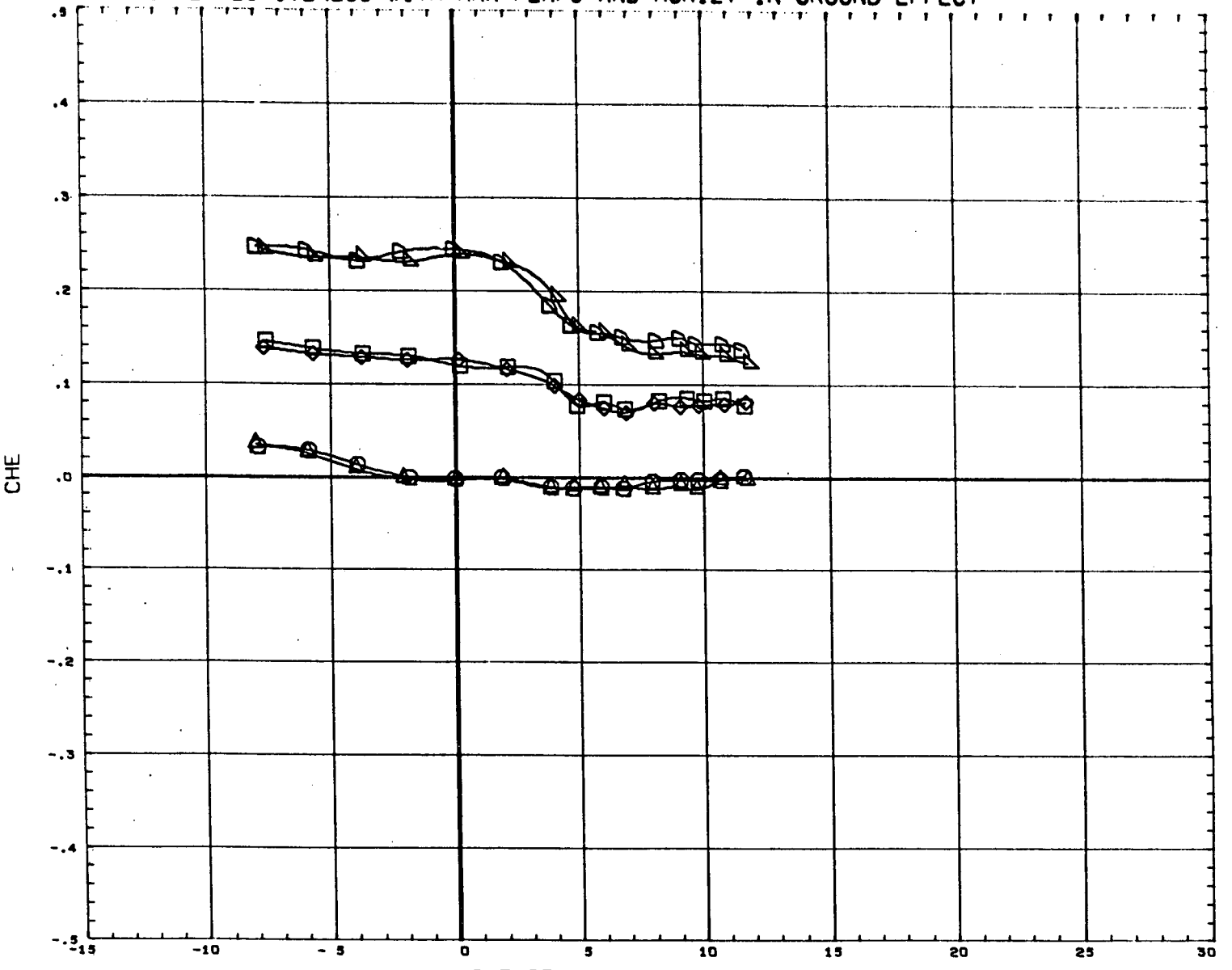


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(RG9073)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	0.000	45.600	0.150	-6.000
(RG9074)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	0.000	45.000	0.150	-6.000
(RG9102)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	45.600	0.150	-6.000
(RG9103)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	45.000	0.150	-6.000
(RG9105)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-30.000	45.600	0.150	-6.000
(RG9078)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-30.000	45.000	0.150	-6.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

ELEVATOR EFFECTIVENESS WITH MAX FLAPS AND HORIZT IN GROUND EFFECT



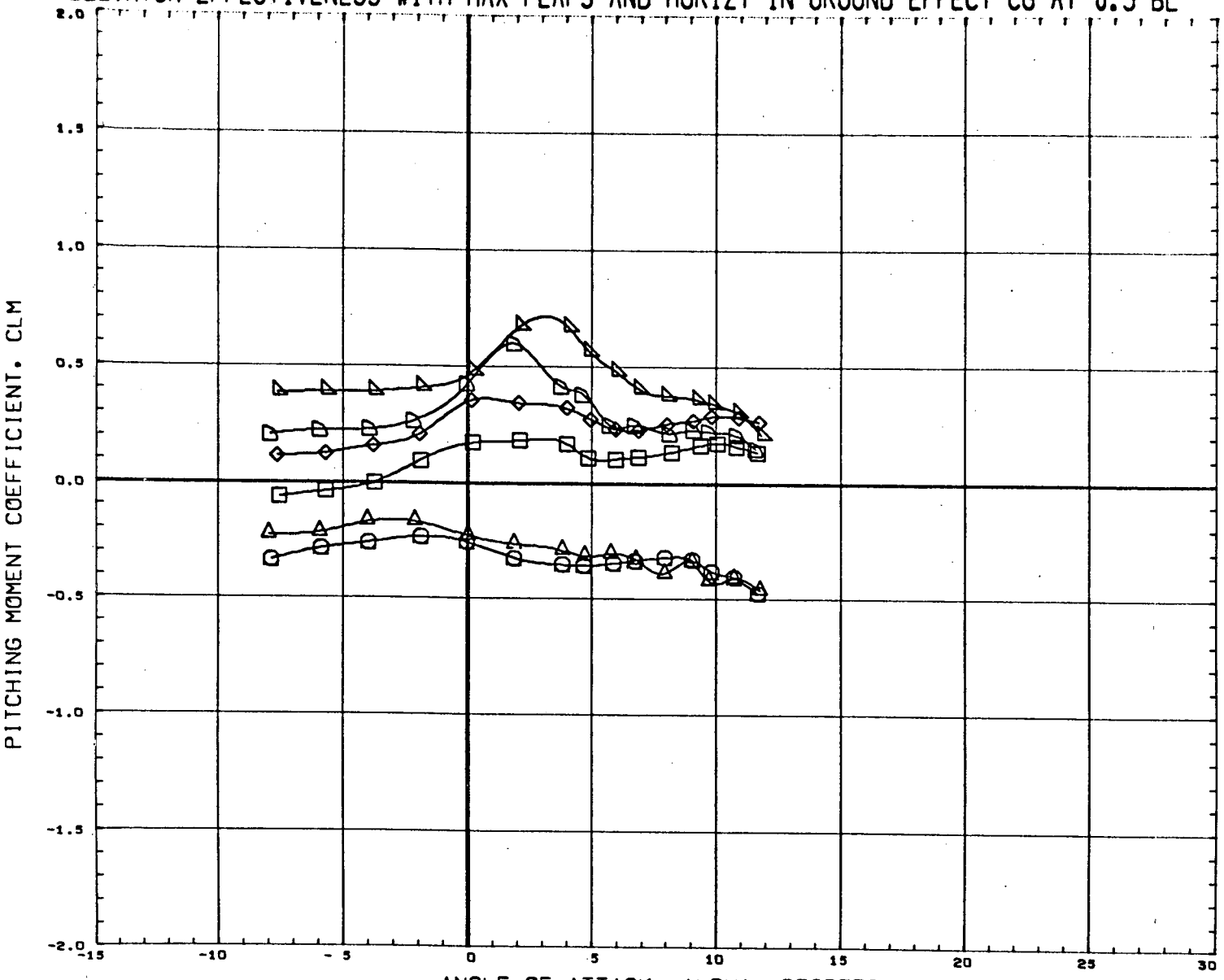
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(RG9073)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	0.000	45.600	0.150	-6.000
(RG9074)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	0.000	45.000	0.150	-6.000
(RG9102)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	45.600	0.150	-6.000
(RG9103)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	45.000	0.150	-6.000
(RG9105)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-30.000	45.600	0.150	-6.000
(RG9078)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-30.000	45.000	0.150	-6.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

C-3

ELEVATOR EFFECTIVENESS WITH MAX FLAPS AND HORIZT IN GROUND EFFECT CG AT 0.5 BL

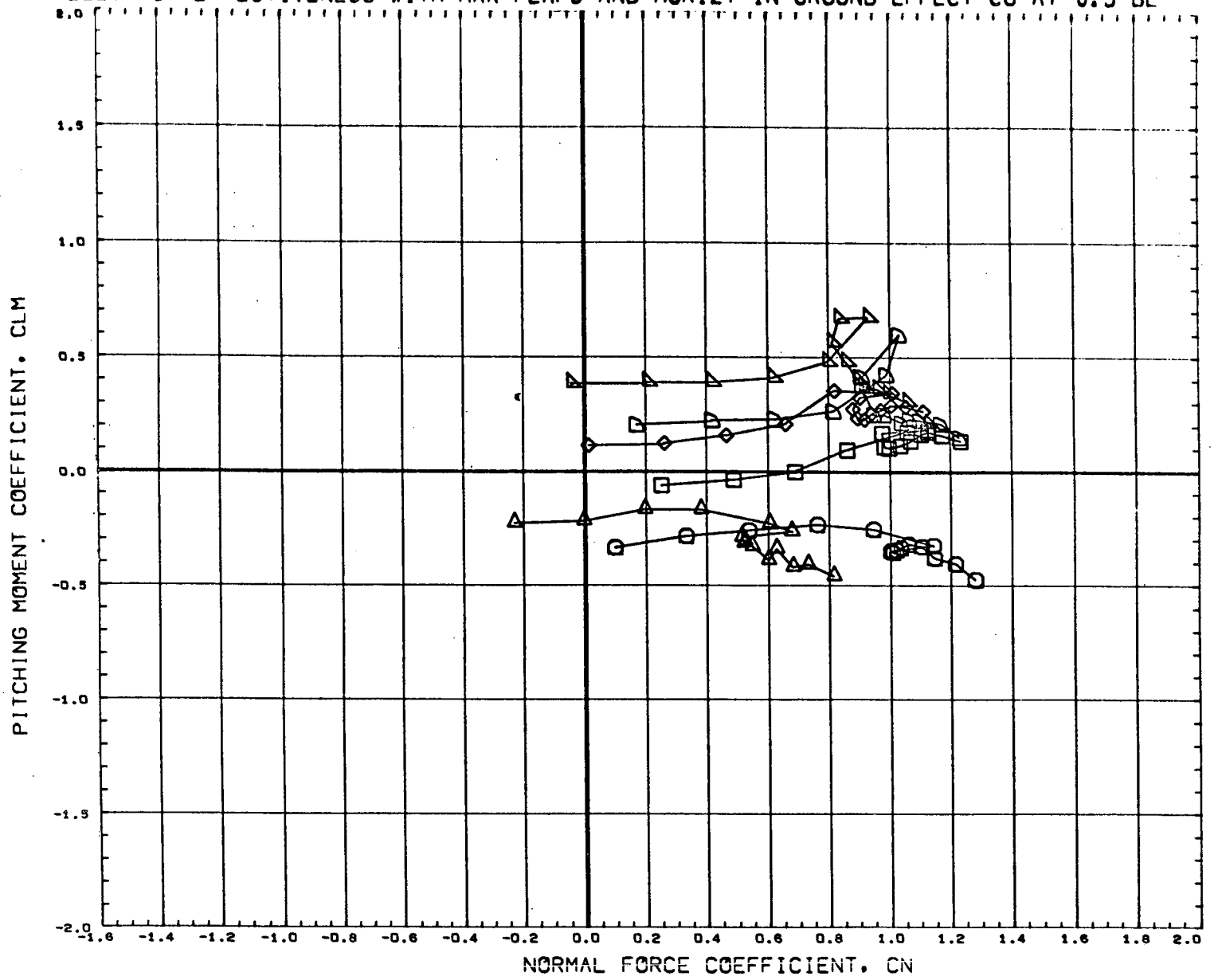


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(AG9073)	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	0.000	45.600	0.150	-6.000
(AG9074)	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	0.000	45.000	0.150	-6.000
(AG9102)	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	45.600	0.150	-6.000
(AG9103)	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	45.000	0.150	-6.000
(AG9105)	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-30.000	45.600	0.150	-6.000
(AG9078)	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-30.000	45.000	0.150	-6.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	34.5000	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

ELEVATOR EFFECTIVENESS WITH MAX FLAPS AND HORIZT IN GROUND EFFECT CG AT 0.5 BL

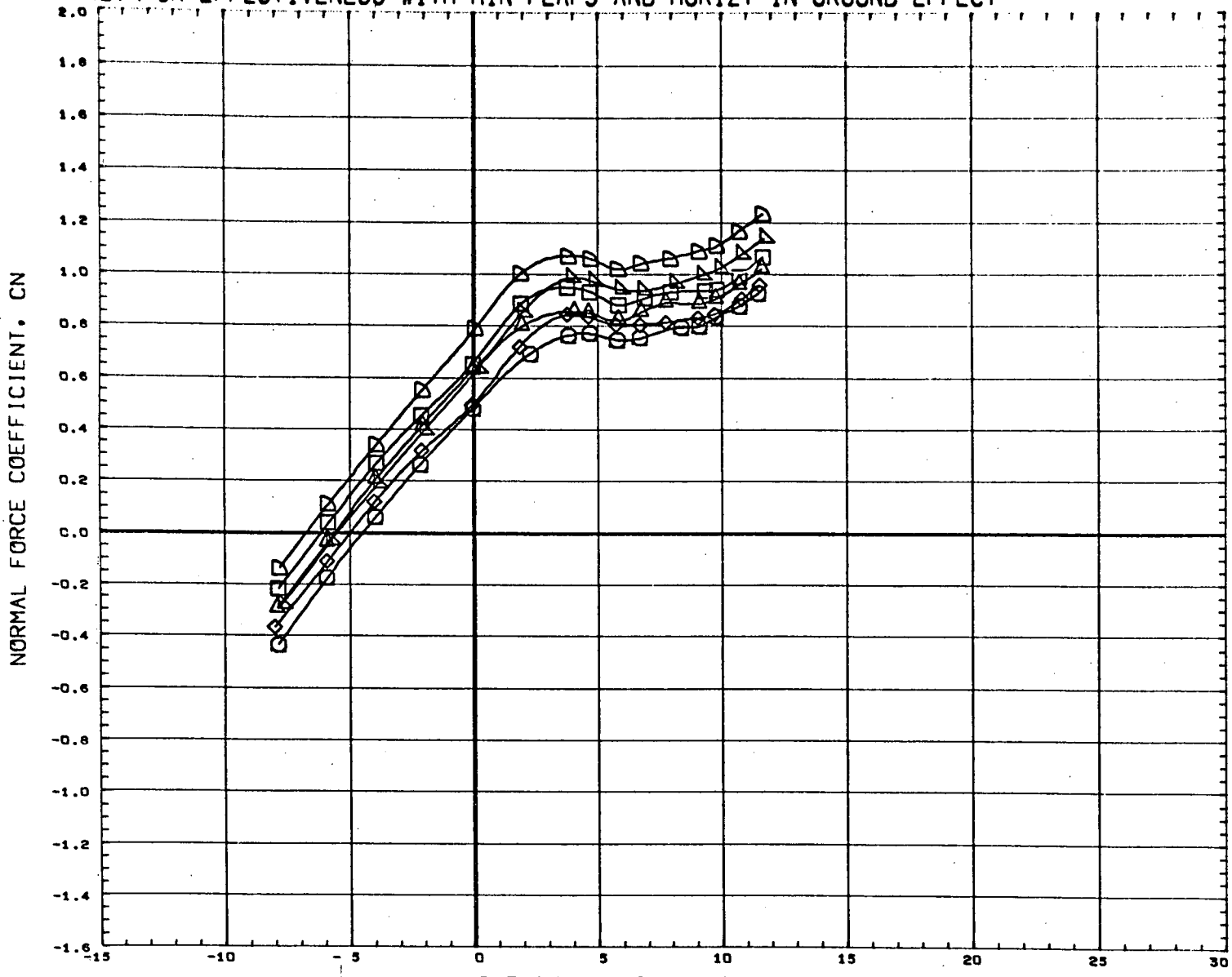


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(AG9073)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	0.000	45.600	0.150	-6.000
(AG9074)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	0.000	45.000	0.150	-6.000
(AG9102)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	45.600	0.150	-6.000
(AG9103)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	45.000	0.150	-6.000
(AG9105)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-30.000	45.600	0.150	-6.000
(AG9078)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-30.000	45.000	0.150	-6.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	34.5000	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

ELEVATOR EFFECTIVENESS WITH MIN FLAPS AND HORIZT IN GROUND EFFECT

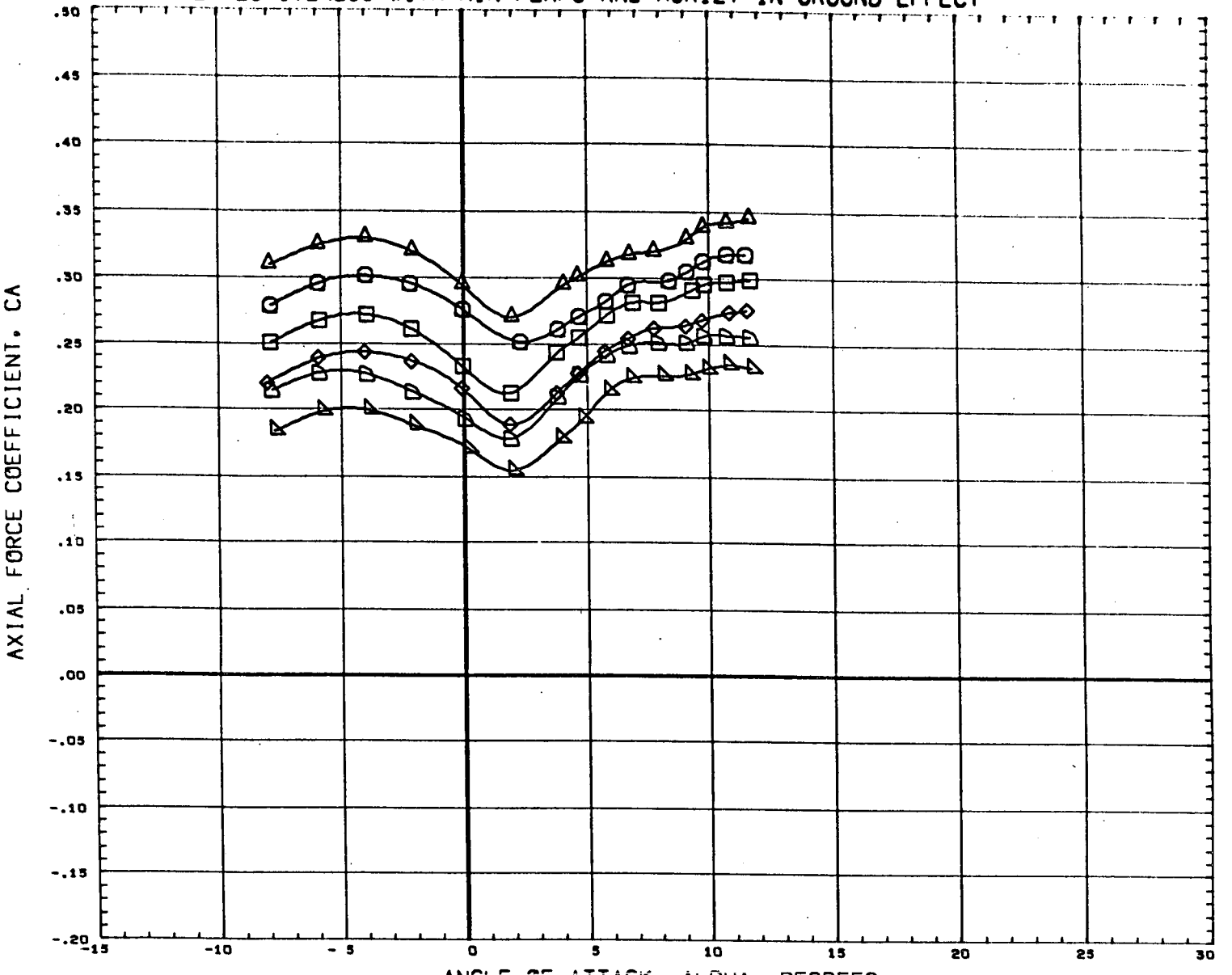


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(RG9079)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-30.000	15.600	0.150	-6.000
(RG9080)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-30.000	15.000	0.150	-6.000
(RG9083)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	15.600	0.150	-6.000
(RG9084)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	15.000	0.150	-6.000
(RG9087)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	0.000	15.600	0.150	-6.000
(RG9088)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	0.000	15.000	0.150	-6.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

ELEVATOR EFFECTIVENESS WITH MIN FLAPS AND HORIZT IN GROUND EFFECT

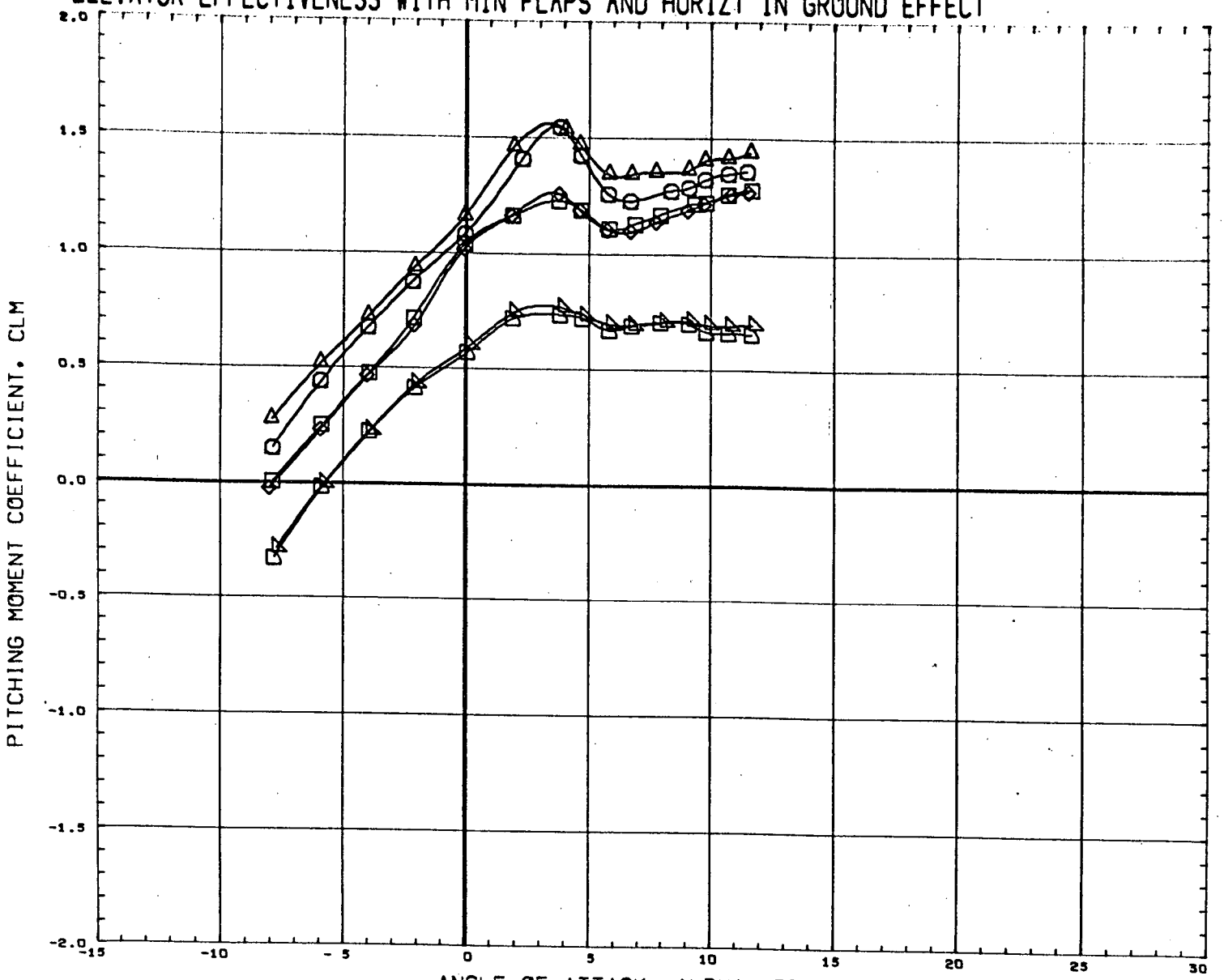


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(RG9079)	△	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-30.000	15.600	0.150	-6.000
(RG9080)	○	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-30.000	15.000	0.150	-6.000
(RG9083)	□	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	15.600	0.150	-6.000
(RG9084)	◇	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	15.000	0.150	-6.000
(RG9087)	▽	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	0.000	15.600	0.150	-6.000
(RG9088)	▷	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	0.000	15.000	0.150	-6.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

ELEVATOR EFFECTIVENESS WITH MIN FLAPS AND HORIZT IN GROUND EFFECT

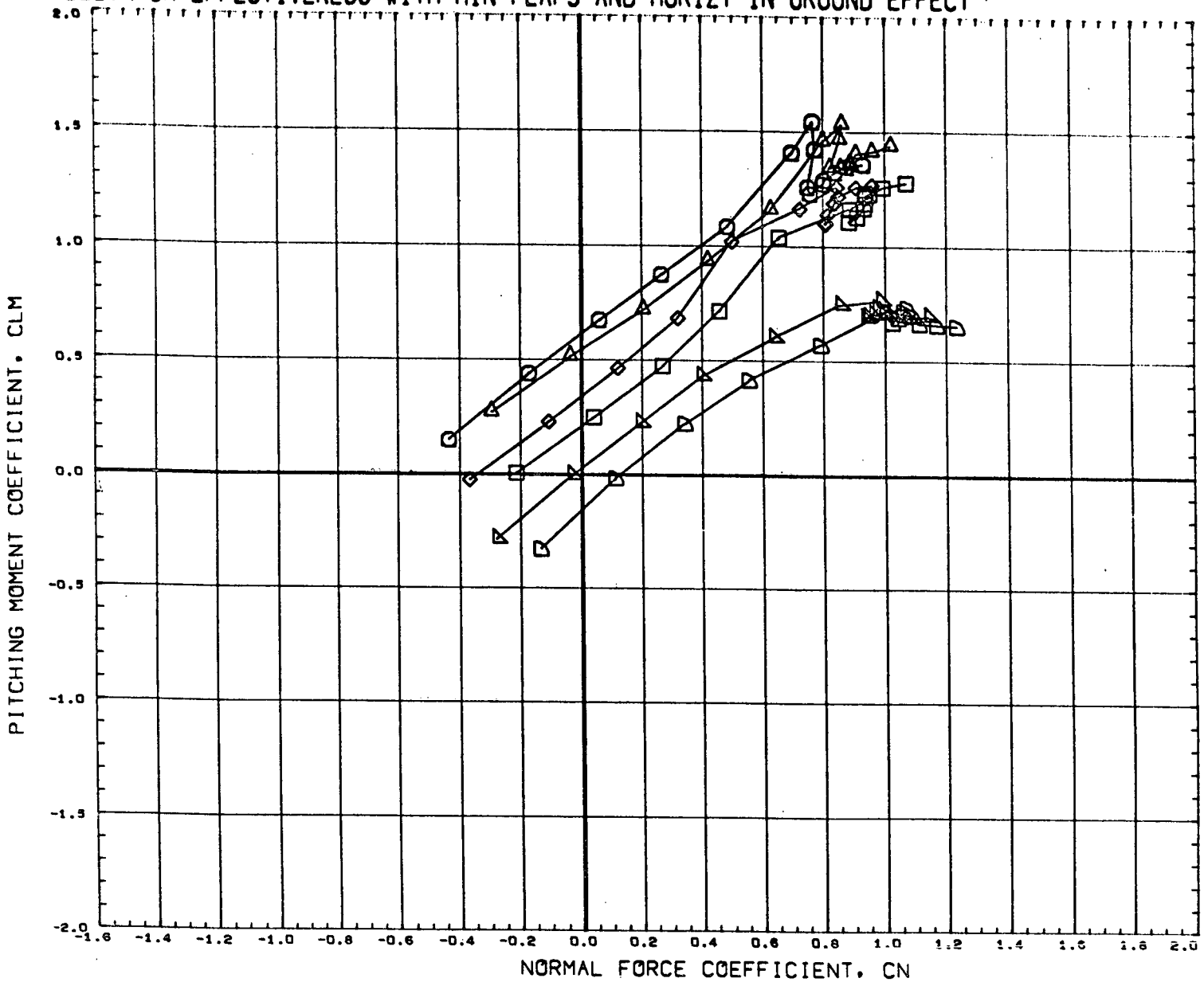


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(RG9079)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-30.000	15.600	0.150	-6.000
(RG9080)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-30.000	15.000	0.150	-6.000
(RG9083)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	15.600	0.150	-6.000
(RG9084)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	15.000	0.150	-6.000
(RG9087)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	0.000	15.600	0.150	-6.000
(RG9088)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	0.000	15.000	0.150	-6.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

ELEVATOR EFFECTIVENESS WITH MIN FLAPS AND HORIZT IN GROUND EFFECT

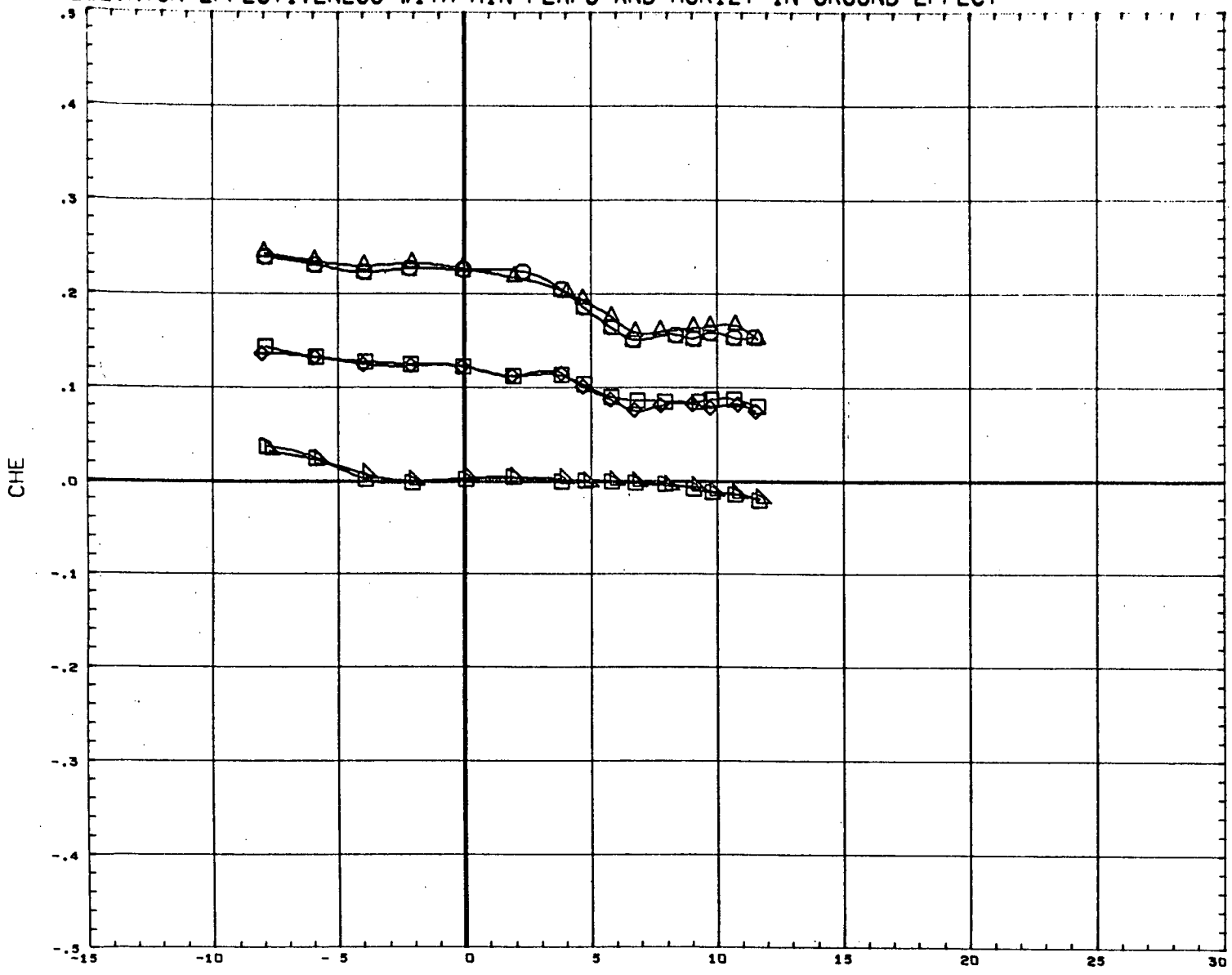


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(RG9079)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-30.000	15.600	0.150	-6.000
(RG9080)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-30.000	15.000	0.150	-6.000
(RG9083)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	15.600	0.150	-6.000
(RG9084)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	15.000	0.150	-6.000
(RG9087)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	0.000	15.600	0.150	-6.000
(RG9088)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	0.000	15.000	0.150	-6.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

ELEVATOR EFFECTIVENESS WITH MIN FLAPS AND HORIZT IN GROUND EFFECT

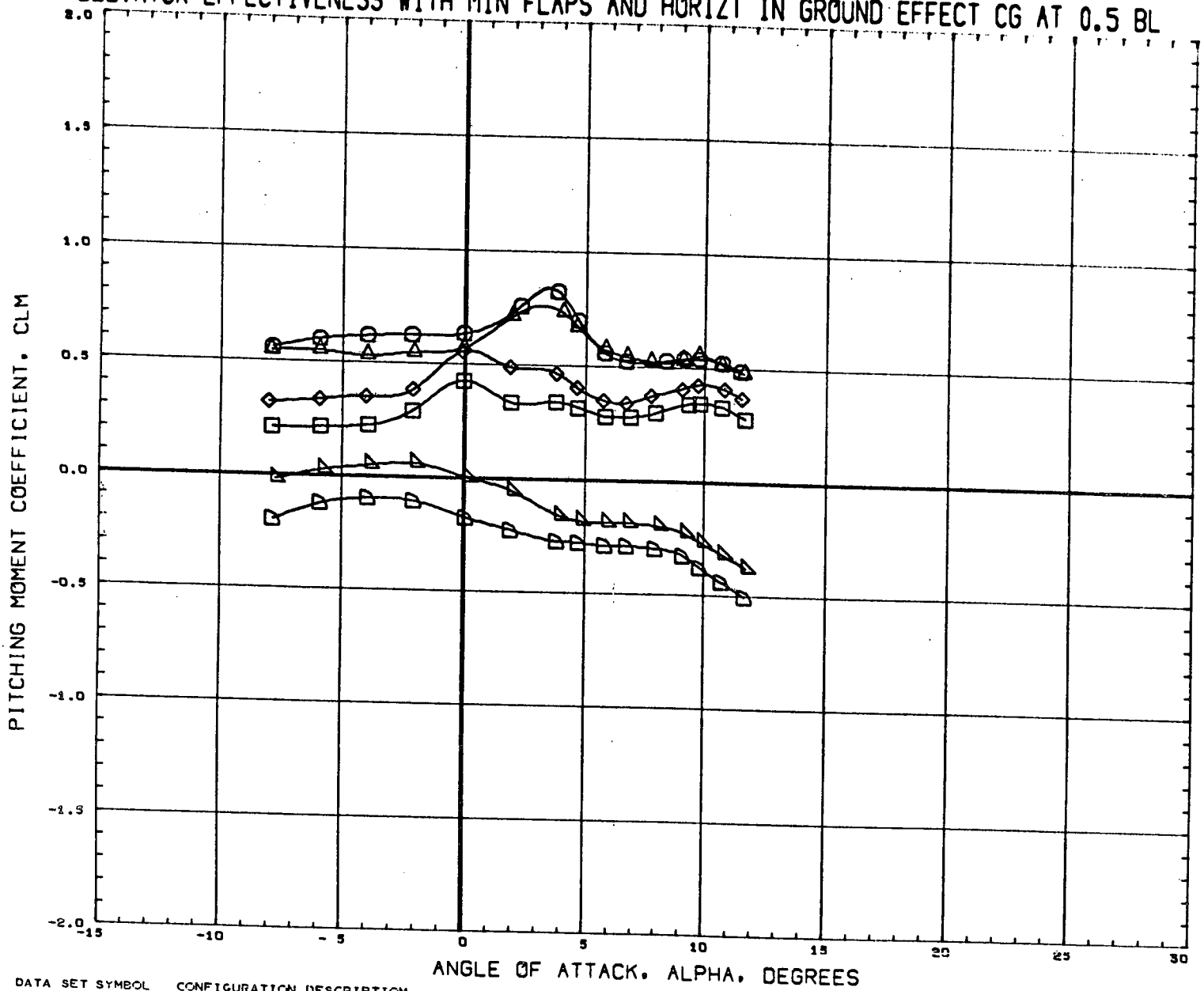


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(RG9079)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-30.000	15.600	0.150	-6.000
(RG9080)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-30.000	15.000	0.150	-6.000
(RG9083)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	15.600	0.150	-6.000
(RG9084)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	15.000	0.150	-6.000
(RG9087)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	0.000	15.600	0.150	-6.000
(RG9088)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	0.000	15.000	0.150	-6.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

ELEVATOR EFFECTIVENESS WITH MIN FLAPS AND HORIZT IN GROUND EFFECT CG AT 0.5 BL

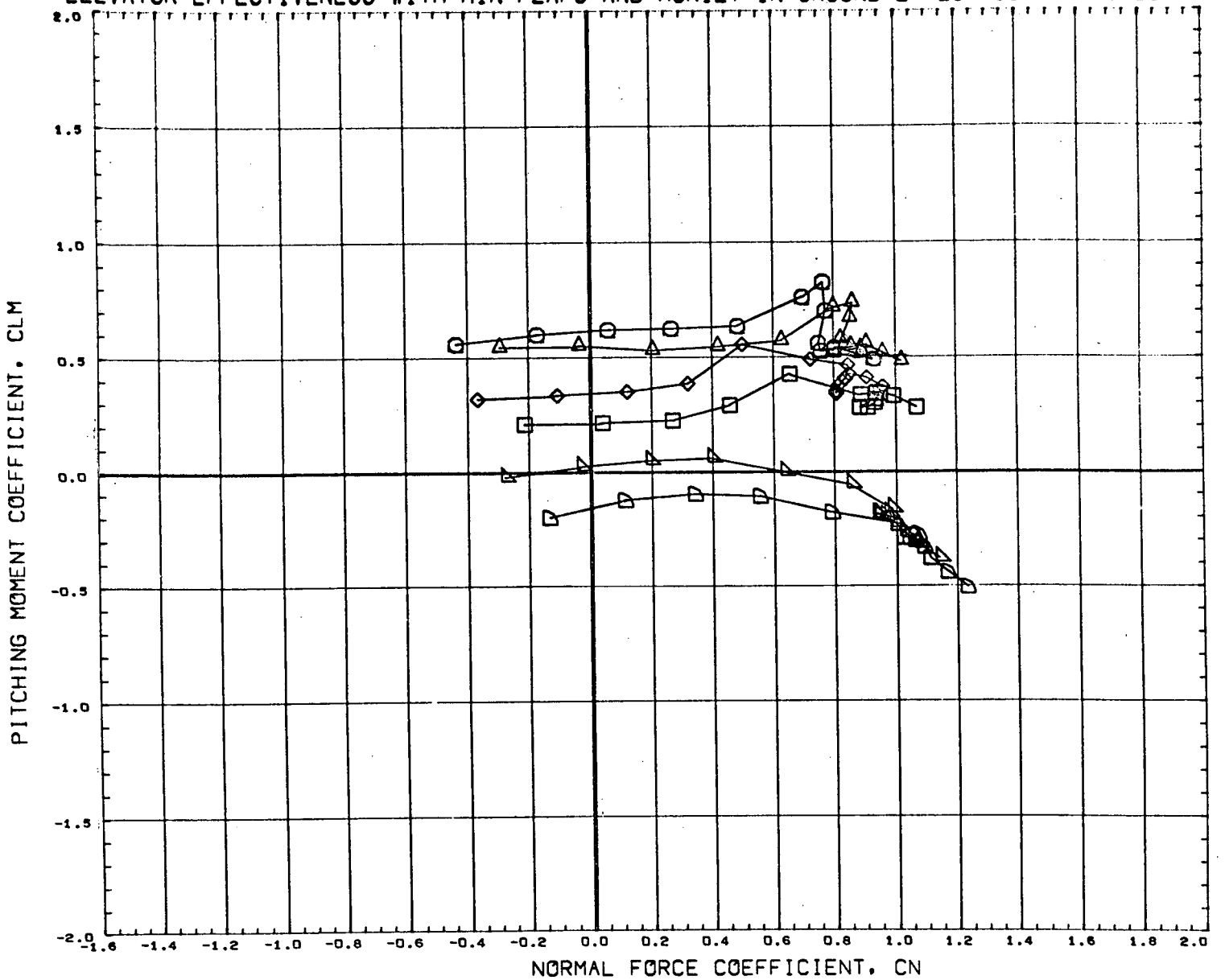


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(AG9079)	○	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-30.000	15.600	0.150	-6.000
(AG9080)	△	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-30.000	15.000	0.150	-6.000
(AG9083)	□	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	15.600	0.150	-6.000
(AG9084)	◇	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	15.000	0.150	-6.000
(AG9087)	▷	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	0.000	15.600	0.150	-6.000
(AG9088)	▽	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	0.000	15.000	0.150	-6.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	34.5000	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

ELEVATOR EFFECTIVENESS WITH MIN FLAPS AND HORIZT IN GROUND EFFECT CG AT 0.5 BL

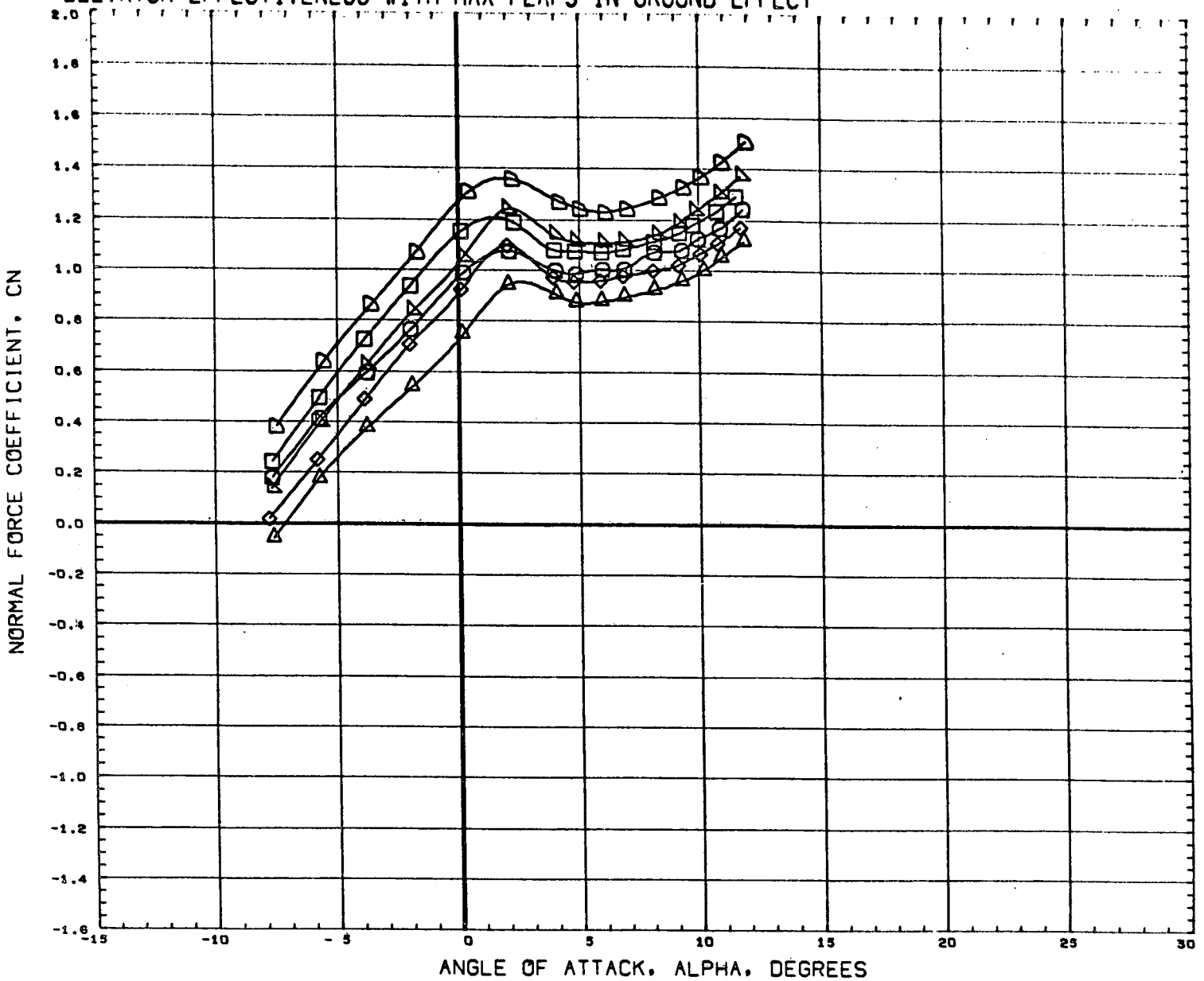


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(AG9079)	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-30.000	15.600	0.150	-6.000
(AG9080)	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-30.000	15.000	0.150	-6.000
(AG9083)	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	15.600	0.150	-6.000
(AG9084)	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	15.000	0.150	-6.000
(AG9087)	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	0.000	15.600	0.150	-6.000
(AG9088)	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	0.000	15.000	0.150	-6.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	34.5000	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

ELEVATOR EFFECTIVENESS WITH MAX FLAPS IN GROUND EFFECT

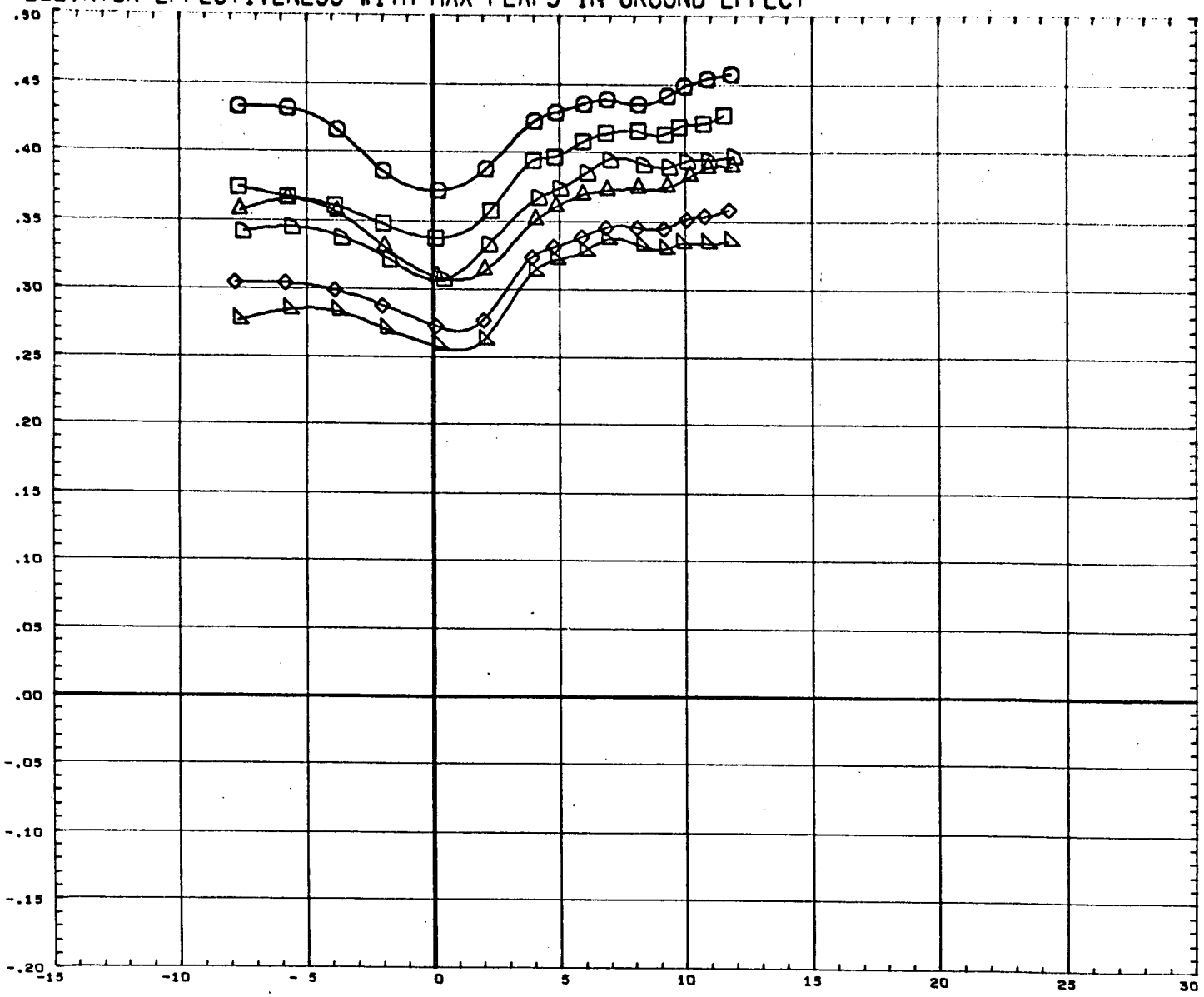


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(RG9120)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	45.000	0.150	0.000
(RG9121)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	45.600	0.150	0.000
(BG9092)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	45.600	0.150	0.000
(RG9093)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	45.000	0.150	0.000
(RG9096)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	0.000	45.600	0.150	0.000
(RG9097)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	0.000	45.000	0.150	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

ELEVATOR EFFECTIVENESS WITH MAX FLAPS IN GROUND EFFECT

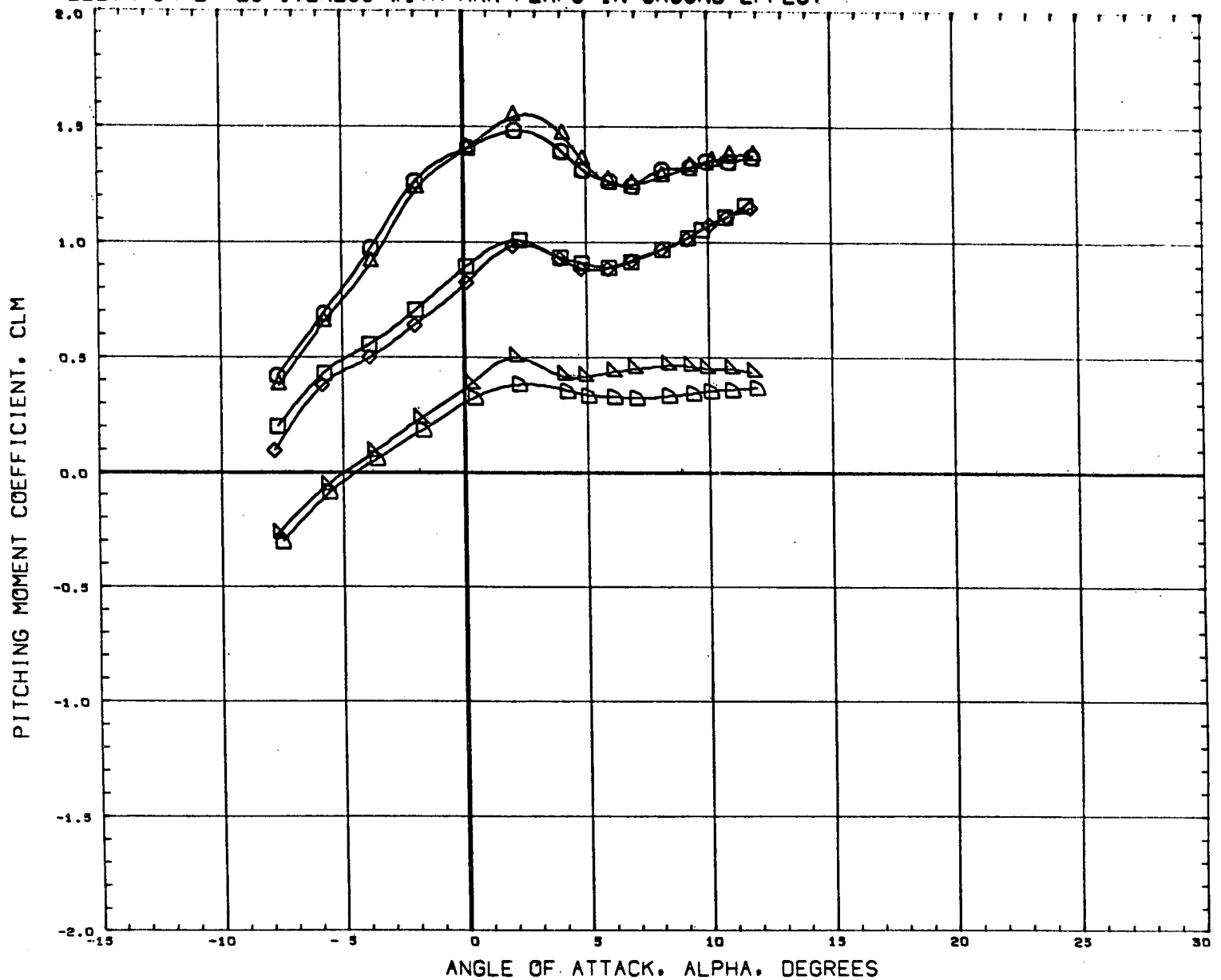


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(RG9120)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	45.000	0.150	0.000
(RG9121)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	45.600	0.150	0.000
(BG9092)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	45.600	0.150	0.000
(RG9093)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	45.000	0.150	0.000
(RG9096)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	0.000	45.600	0.150	0.000
(RG9097)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	0.000	45.000	0.150	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

ELEVATOR EFFECTIVENESS WITH MAX FLAPS IN GROUND EFFECT

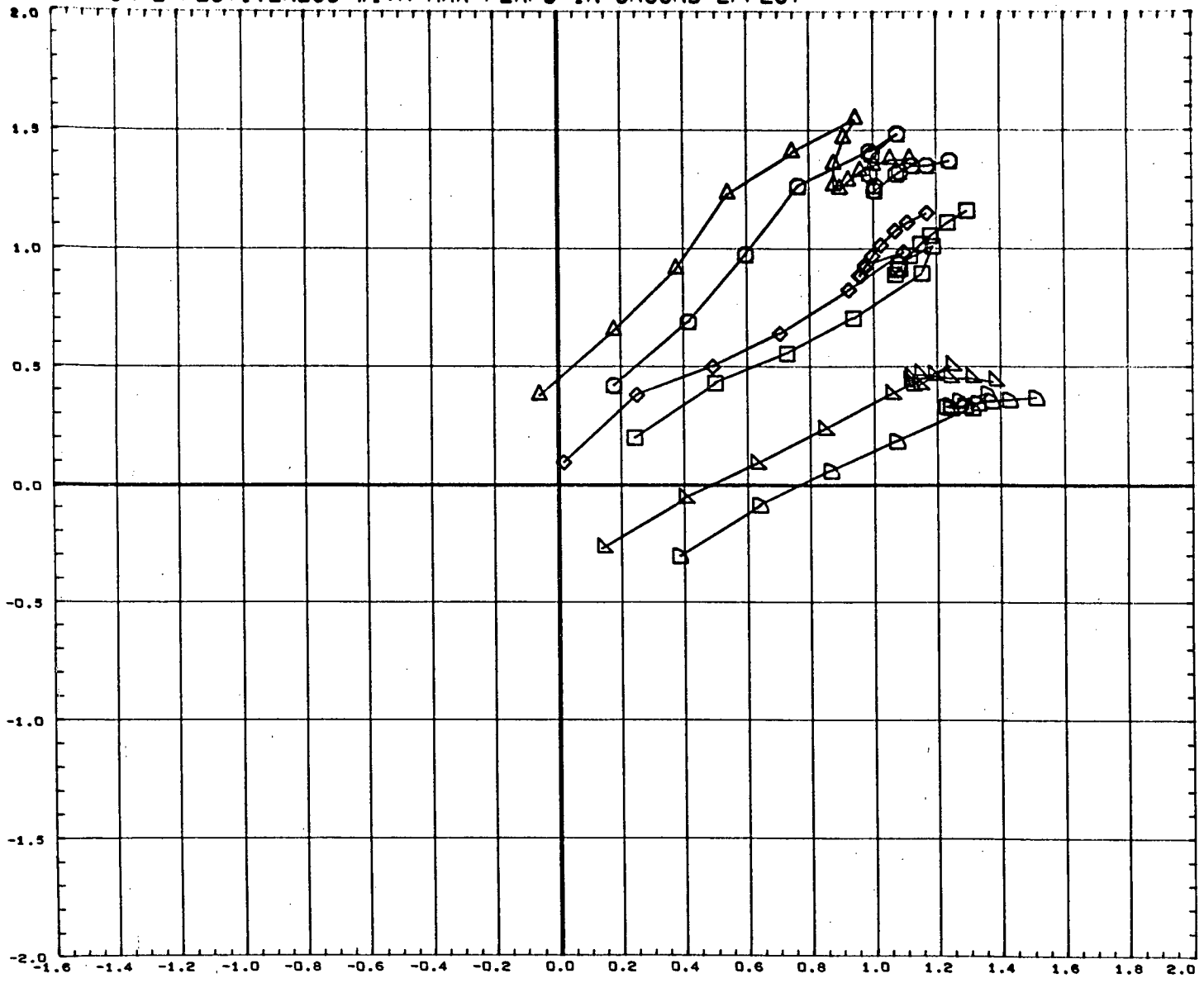


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(RG9120)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	45.000	0.150	0.000
(RG9121)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	45.600	0.150	0.000
(RG9092)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	45.600	0.150	0.000
(RG9093)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	45.000	0.150	0.000
(RG9096)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	0.000	45.600	0.150	0.000
(RG9097)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	0.000	45.000	0.150	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

ELEVATOR EFFECTIVENESS WITH MAX FLAPS IN GROUND EFFECT

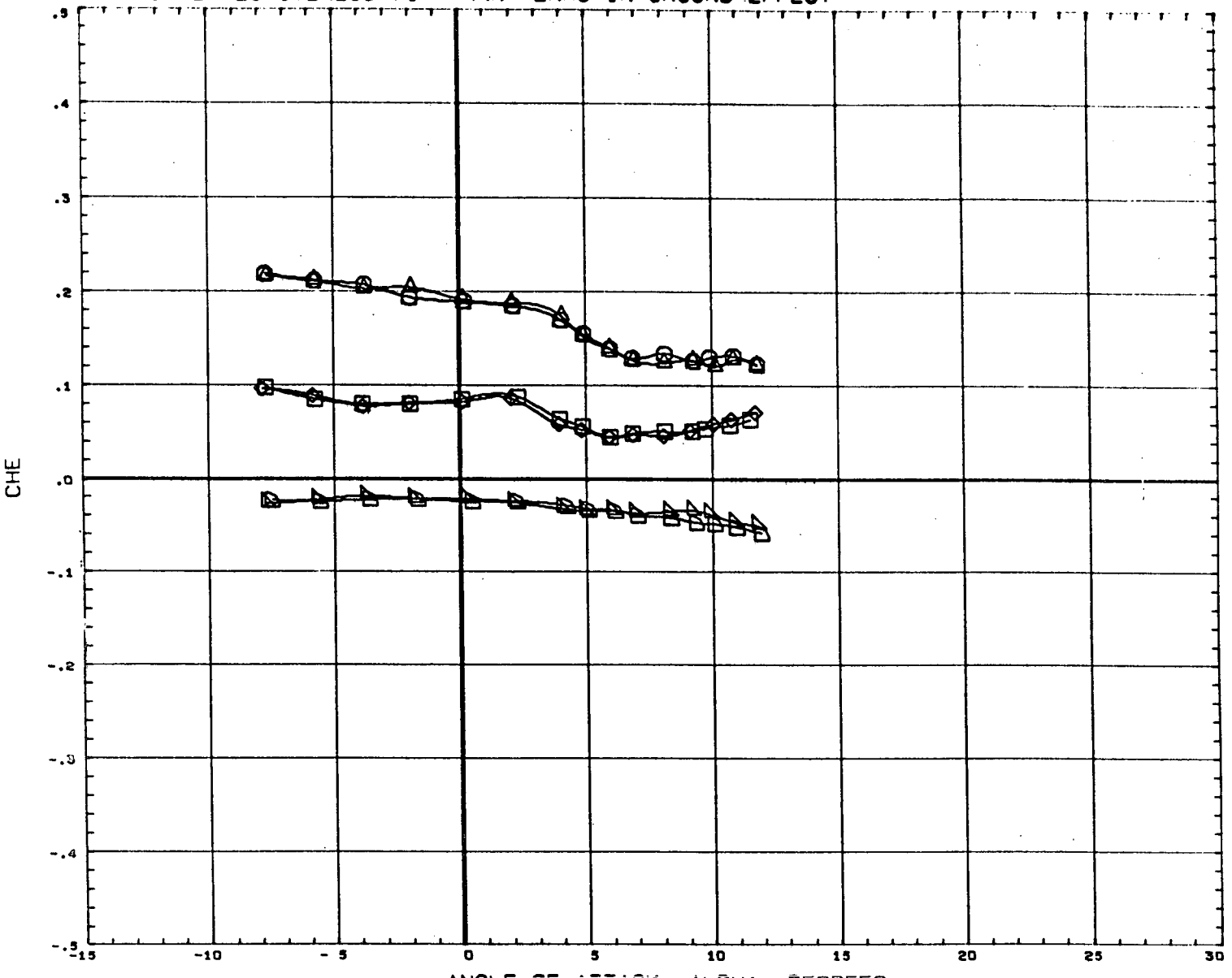


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(RG9120)	○	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	45.000	0.150	0.000
(RG9121)	△	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	45.600	0.150	0.000
(BG9092)	◇	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	45.600	0.150	0.000
(RG9093)	□	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	45.000	0.150	0.000
(RG9096)	▽	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	0.000	45.600	0.150	0.000
(RG9097)	▷	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	0.000	45.000	0.150	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

ELEVATOR EFFECTIVENESS WITH MAX FLAPS IN GROUND EFFECT

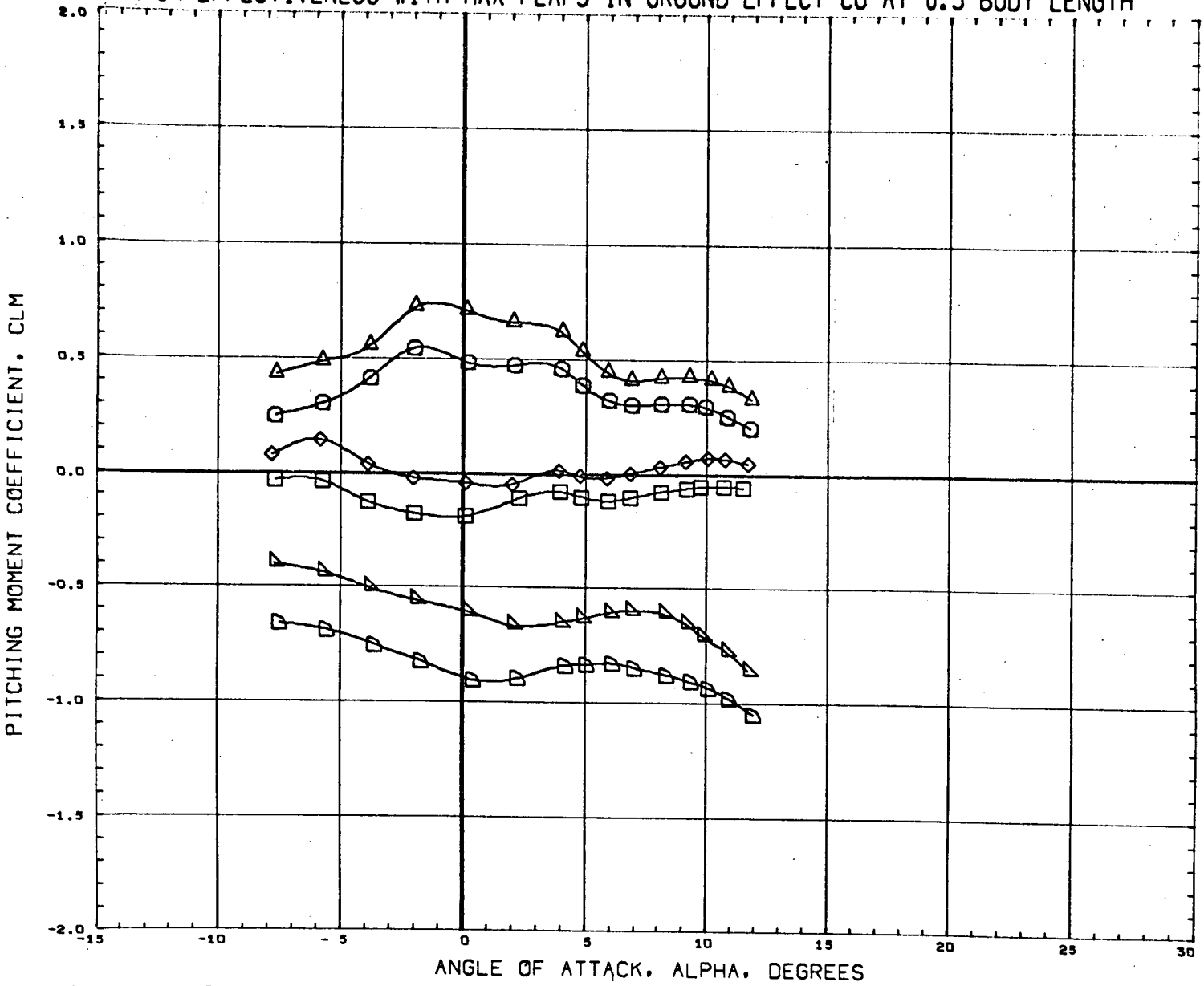


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(RG9120)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	45.000	0.150	0.000
(RG9121)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	45.600	0.150	0.000
(BG9092)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	45.600	0.150	0.000
(RG9093)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	45.000	0.150	0.000
(RG9096)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	0.000	45.600	0.150	0.000
(RG9097)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	0.000	45.000	0.150	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

ELEVATOR EFFECTIVENESS WITH MAX FLAPS IN GROUND EFFECT CG AT 0.5 BODY LENGTH

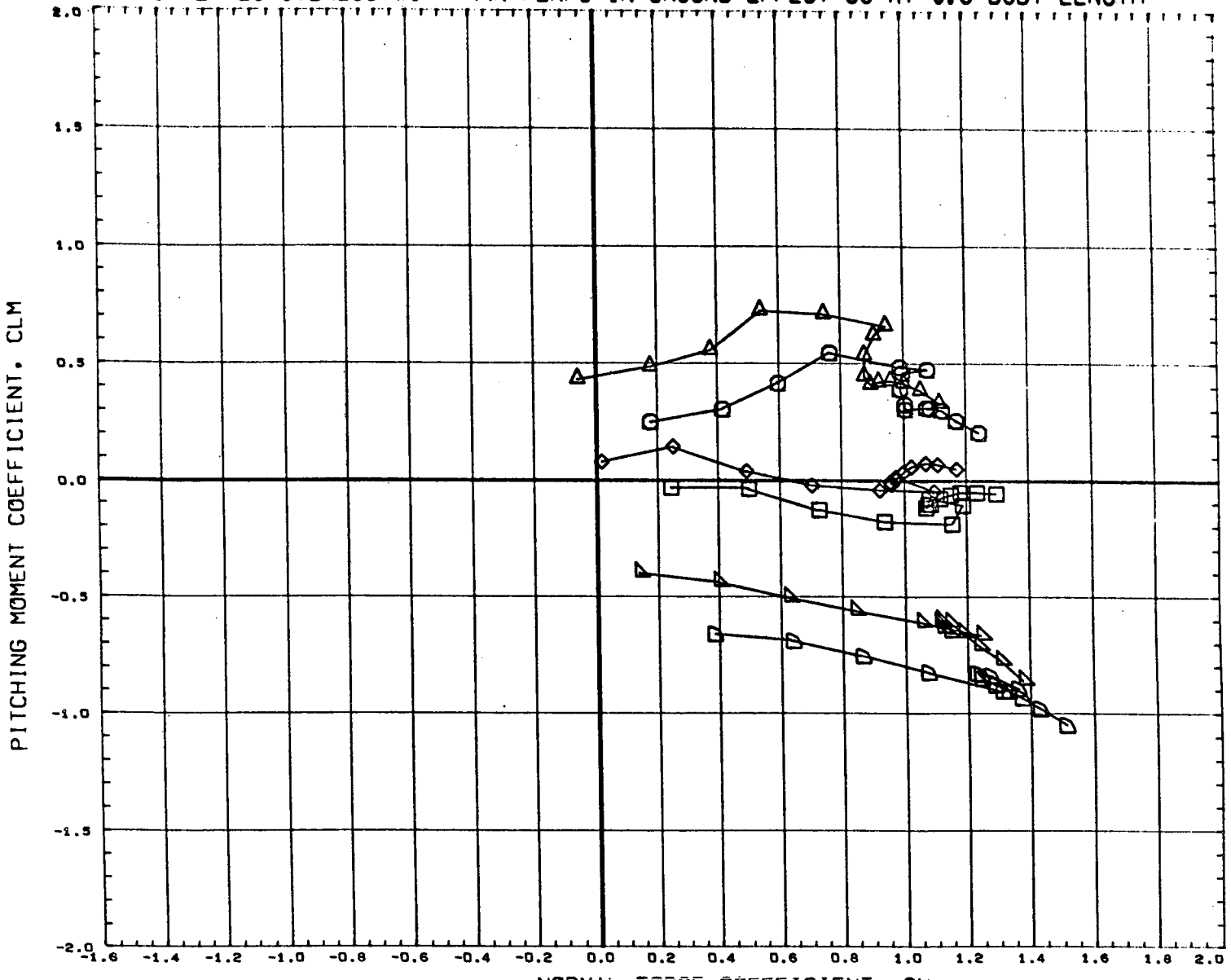


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(AG9120)	△	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	45.000	0.150	0.000
(AG9121)	○	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	45.600	0.150	0.000
(AG9092)	◇	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	45.600	0.150	0.000
(AG9093)	□	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	45.000	0.150	0.000
(AG9096)	▽	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	0.000	45.600	0.150	0.000
(AG9097)	▷	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	0.000	45.000	0.150	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	34.5000	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

ELEVATOR EFFECTIVENESS WITH MAX FLAPS IN GROUND EFFECT CG AT 0.5 BODY LENGTH

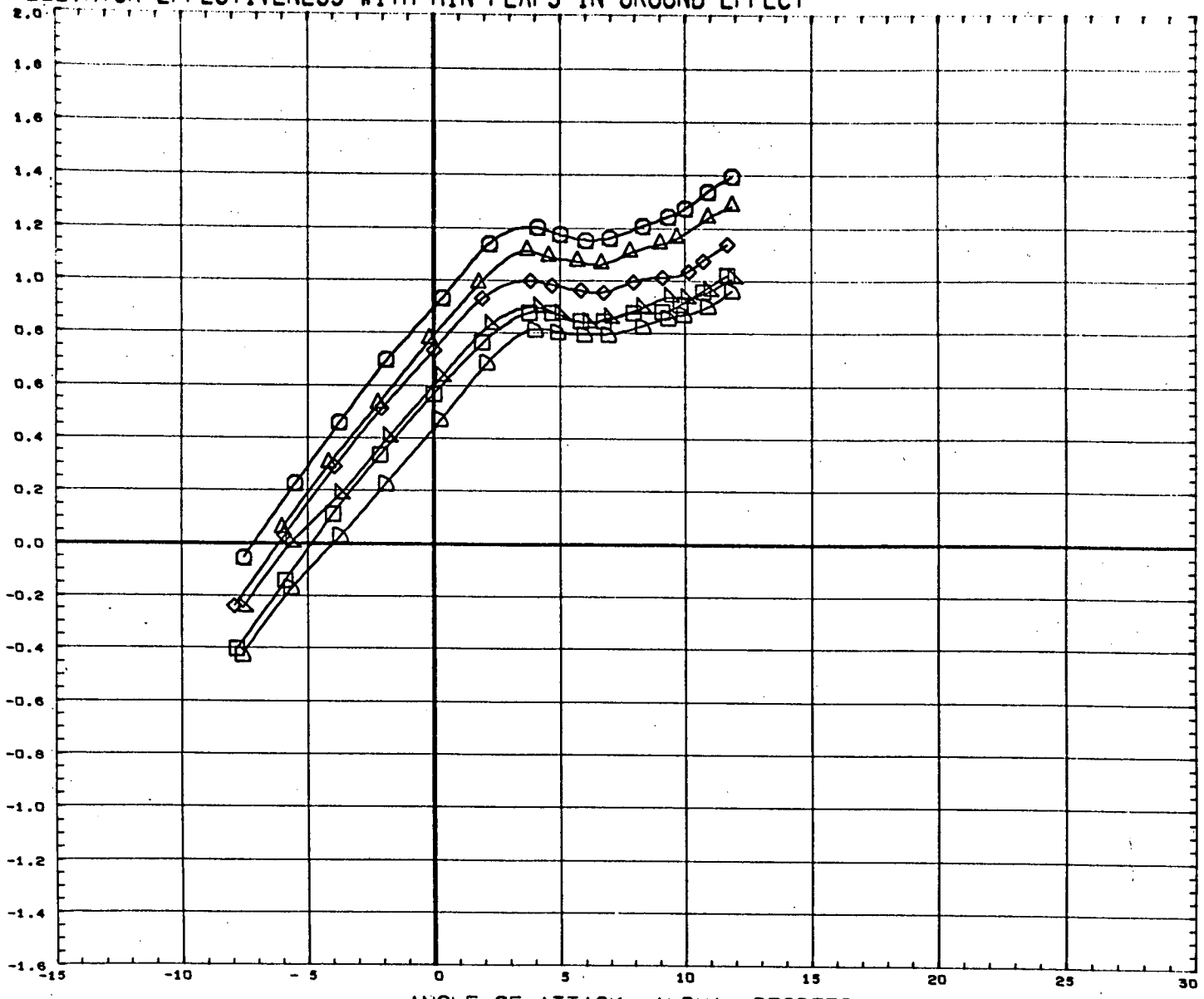


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(AG9120)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	45.000	0.150	0.000
(AG9121)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	45.600	0.150	0.000
(AG9092)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	45.600	0.150	0.000
(AG9093)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	45.000	0.150	0.000
(AG9096)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	0.000	45.600	0.150	0.000
(AG9097)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	0.000	45.000	0.150	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	34.5000	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

ELEVATOR EFFECTIVENESS WITH MIN FLAPS IN GROUND EFFECT

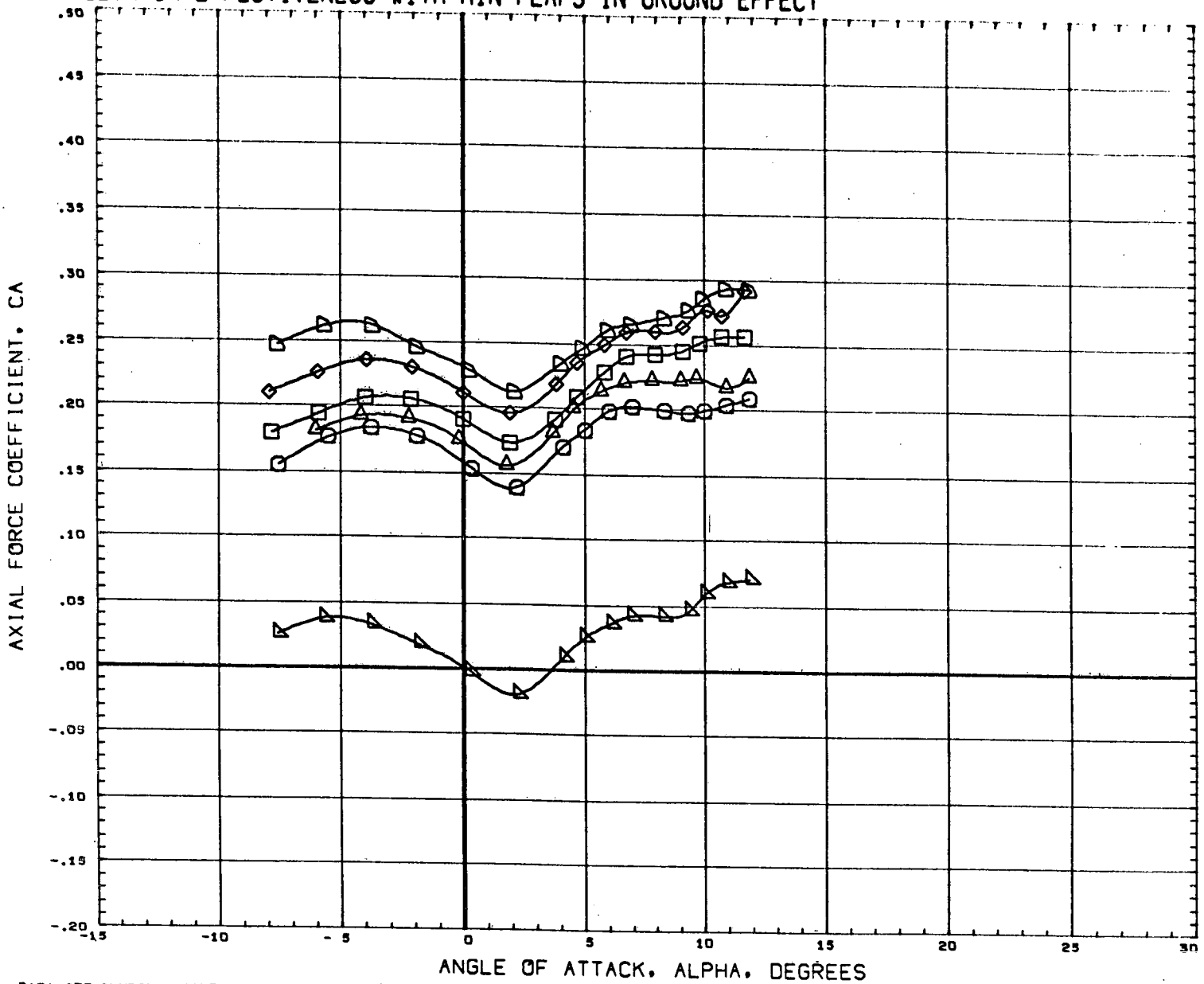


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(RG9119)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	0.000	15.000	0.150	0.000
(BG9118)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	0.000	15.600	0.150	0.000
(RG9089)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	15.000	0.150	0.000
(RG9090)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	15.600	0.150	0.000
(RG9112)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	15.000	0.150	0.000
(RG9113)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	15.600	0.150	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

ELEVATOR EFFECTIVENESS WITH MIN FLAPS IN GROUND EFFECT



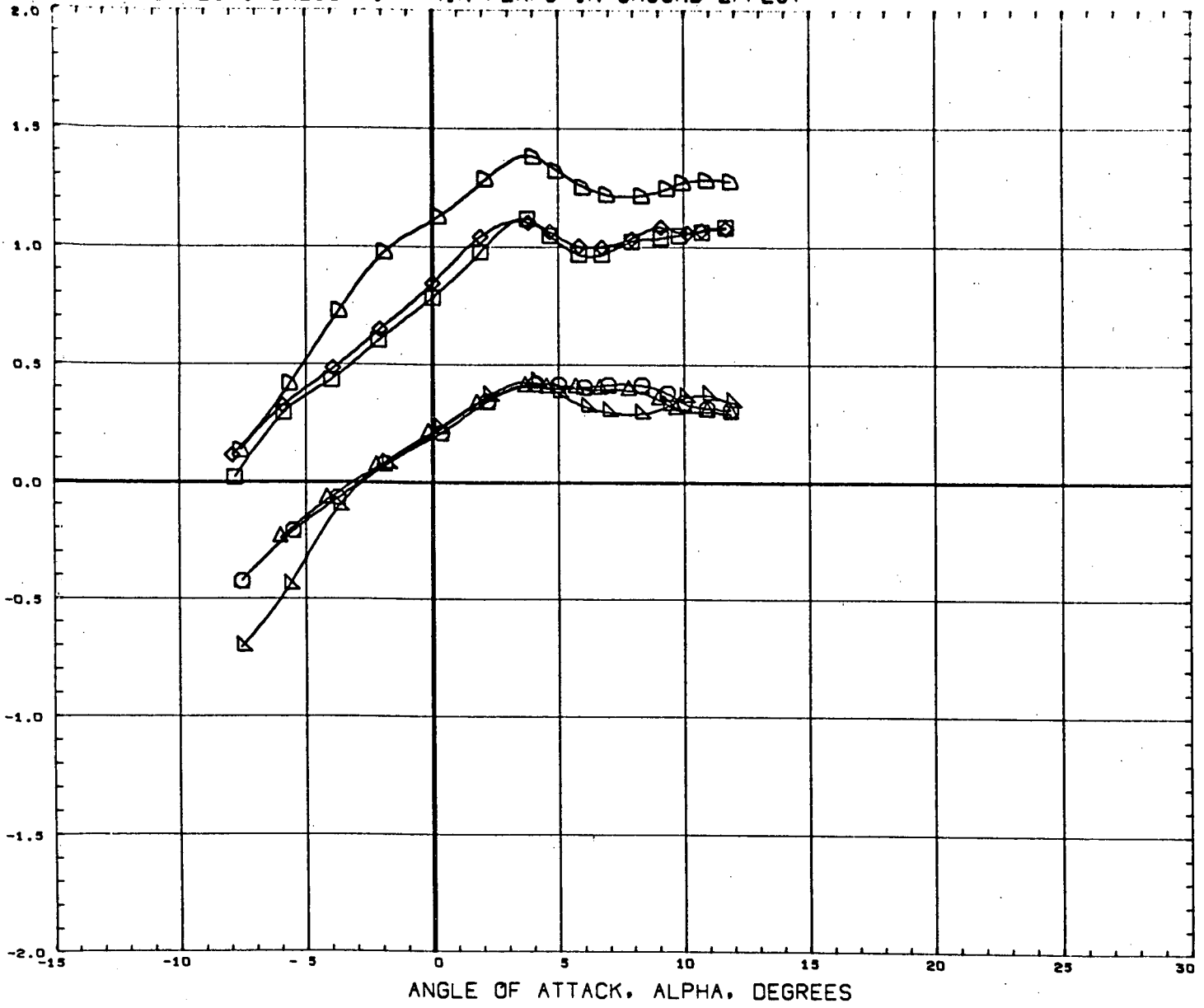
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION
(RG9119)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L
(RG9118)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L
(RG9089)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L
(RG9090)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L
(RG9112)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L
(RG9113)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L

ELEVTR	FLAP	H/B	HORIZT
0.000	15.000	0.150	0.000
0.000	15.600	0.150	0.000
-15.000	15.000	0.150	0.000
-15.000	15.600	0.150	0.000
-30.000	15.000	0.150	0.000
-30.000	15.600	0.150	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

ELEVATOR EFFECTIVENESS WITH MIN FLAPS IN GROUND EFFECT

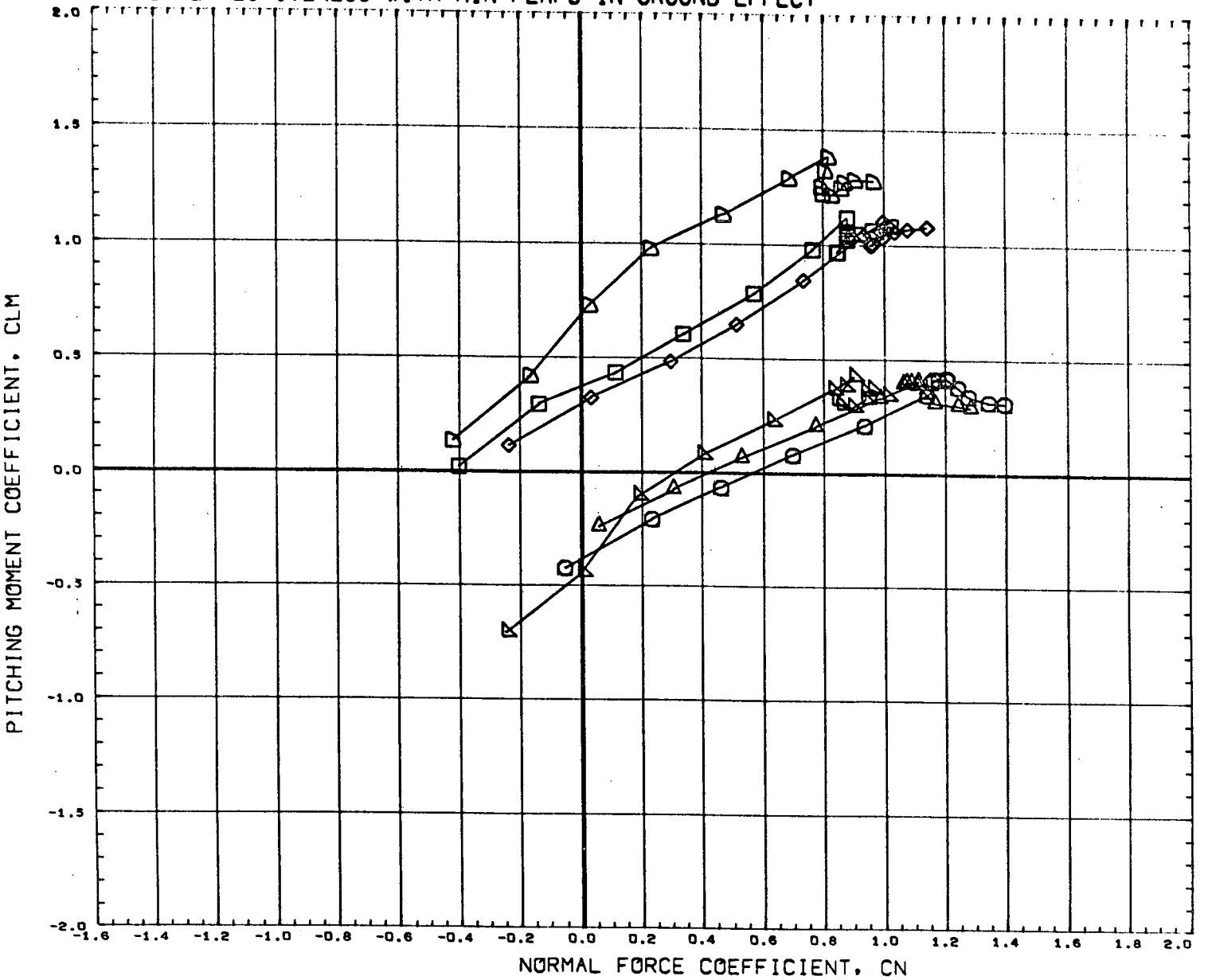


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(RG9119)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	0.000	15.000	0.150	0.000
(BG9118)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	0.000	15.600	0.150	0.000
(RG9089)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	15.000	0.150	0.000
(RG9090)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	15.600	0.150	0.000
(RG9112)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	15.000	0.150	0.000
(RG9113)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	15.600	0.150	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

ELEVATOR EFFECTIVENESS WITH MIN FLAPS IN GROUND EFFECT

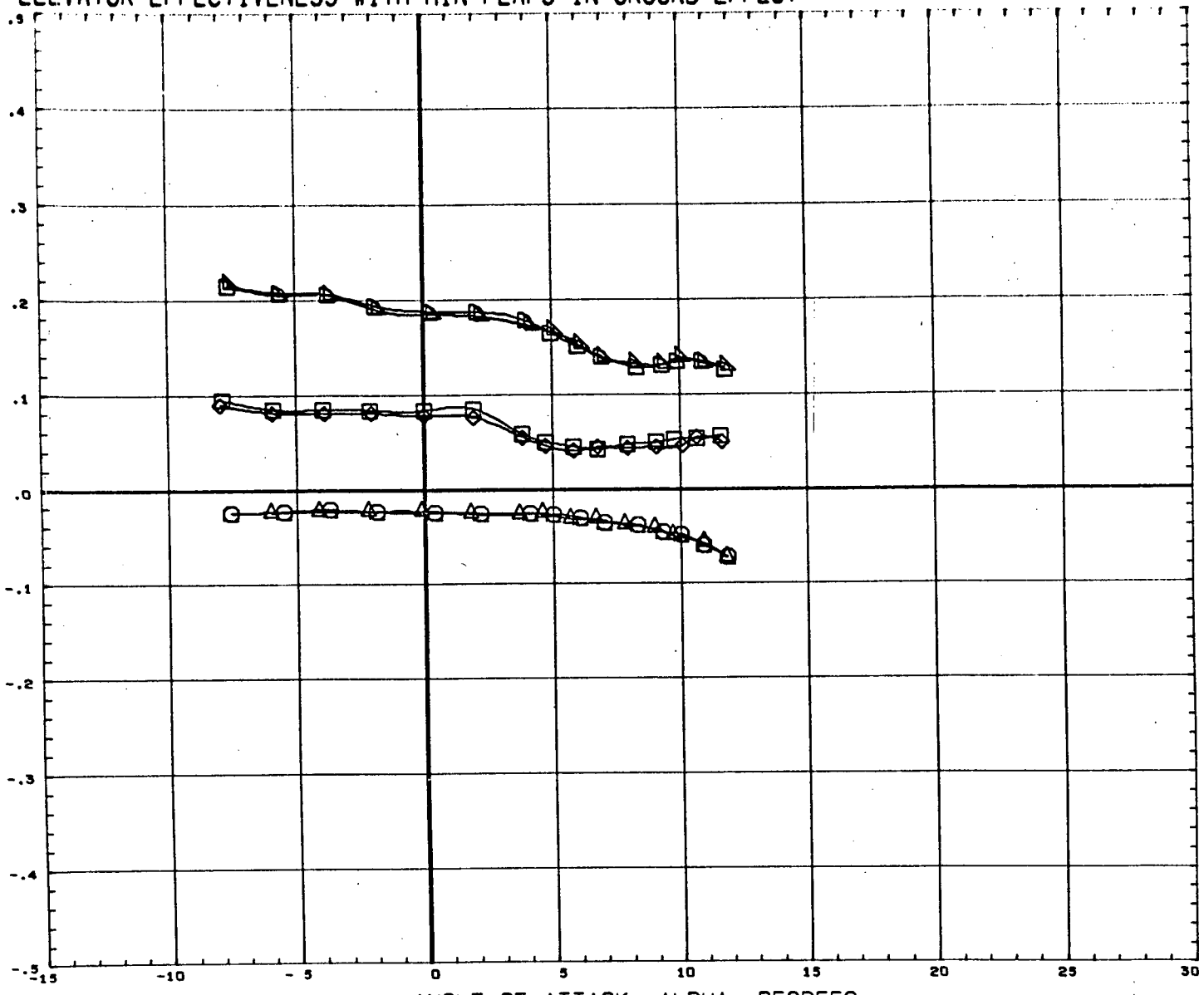


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(RG9119)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	0.000	15.000	0.150	0.000
(BG9118)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	0.000	15.600	0.150	0.000
(RG9089)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	15.000	0.150	0.000
(RG9090)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	15.600	0.150	0.000
(RG9112)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	15.000	0.150	0.000
(RG9113)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	15.600	0.150	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

ELEVATOR EFFECTIVENESS WITH MIN FLAPS IN GROUND EFFECT

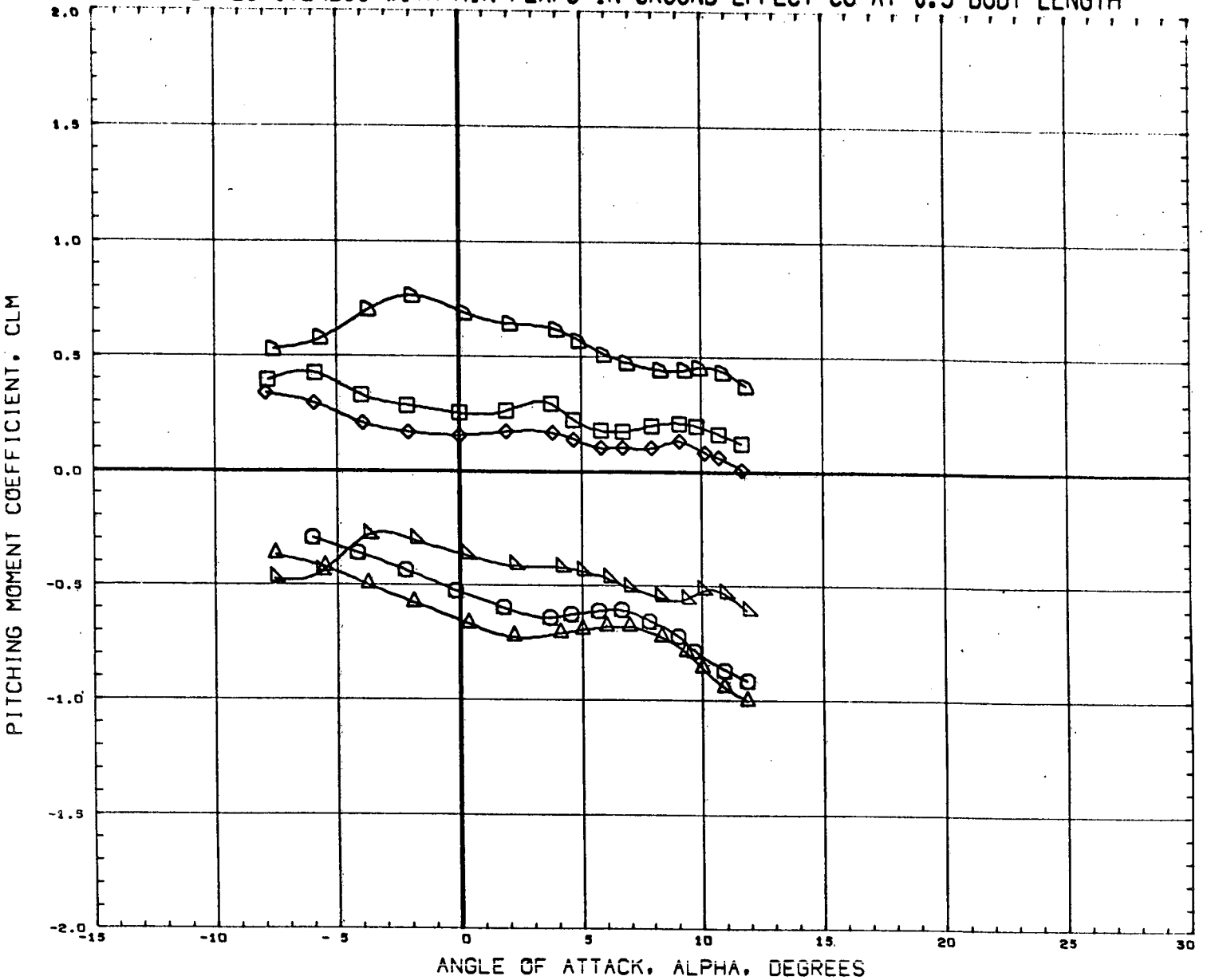


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(RG9119)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	0.000	15.000	0.150	0.000
(BG9118)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	0.000	15.600	0.150	0.000
(RG9089)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	15.000	0.150	0.000
(RG9090)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	15.600	0.150	0.000
(RG9112)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	15.000	0.150	0.000
(RG9113)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	15.600	0.150	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

ELEVATOR EFFECTIVENESS WITH MIN FLAPS IN GROUND EFFECT CG AT 0.5 BODY LENGTH

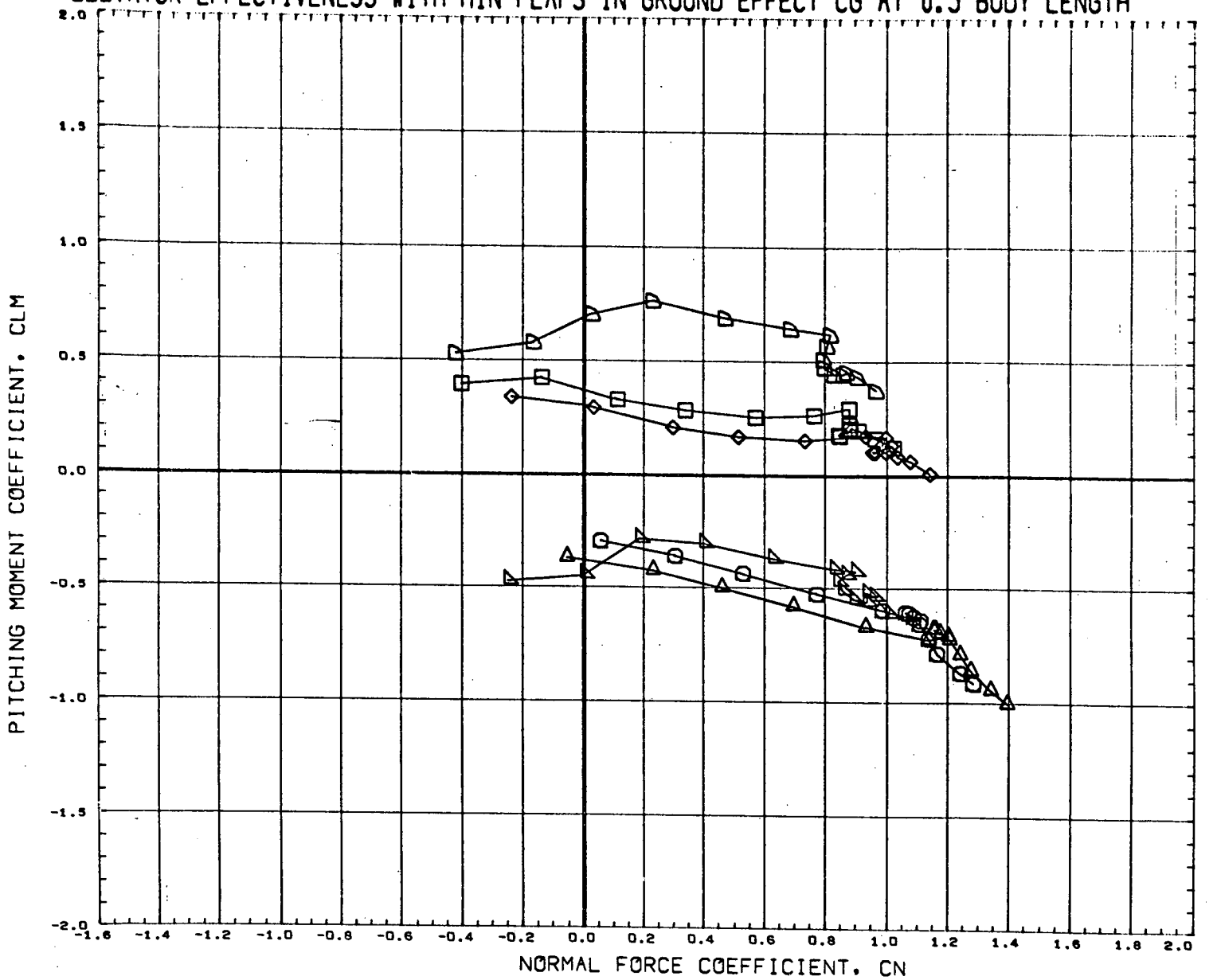


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(AG9118)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	0.000	15.600	0.150	0.000
(AG9119)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	0.000	15.000	0.150	0.000
(AG9089)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	15.000	0.150	0.000
(AG9090)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	15.600	0.150	0.000
(AG9112)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	15.000	0.150	0.000
(AG9113)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	15.600	0.150	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	34.5000	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

ELEVATOR EFFECTIVENESS WITH MIN FLAPS IN GROUND EFFECT CG AT 0.5 BODY LENGTH

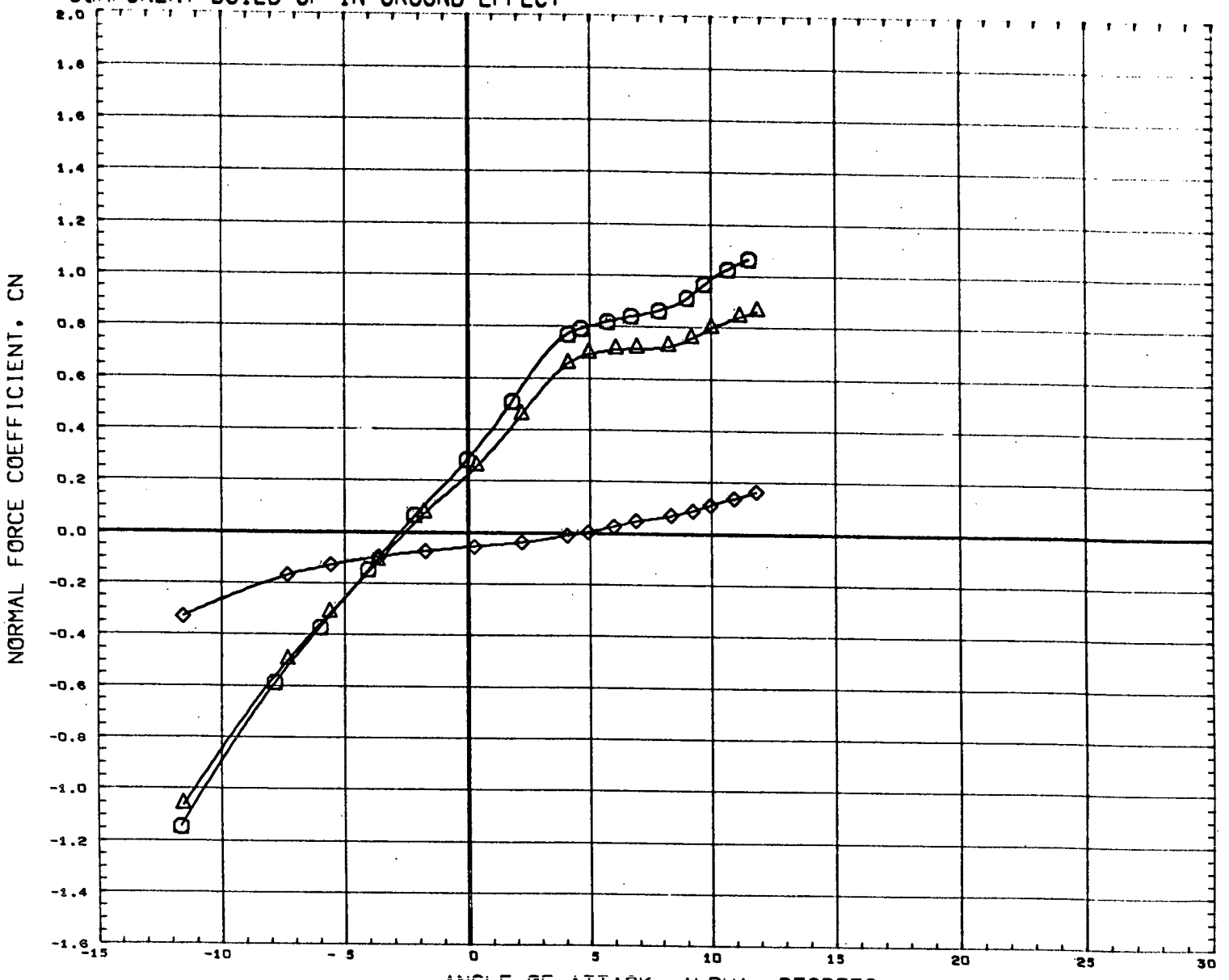


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(AG9118)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	0.000	15.600	0.150	0.000
(AG9119)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	0.000	15.000	0.150	0.000
(AG9089)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	15.000	0.150	0.000
(AG9090)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	-15.000	15.600	0.150	0.000
(AG9112)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	15.000	0.150	0.000
(AG9113)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	15.600	0.150	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	34.5000	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

COMPONENT BUILD-UP IN GROUND EFFECT



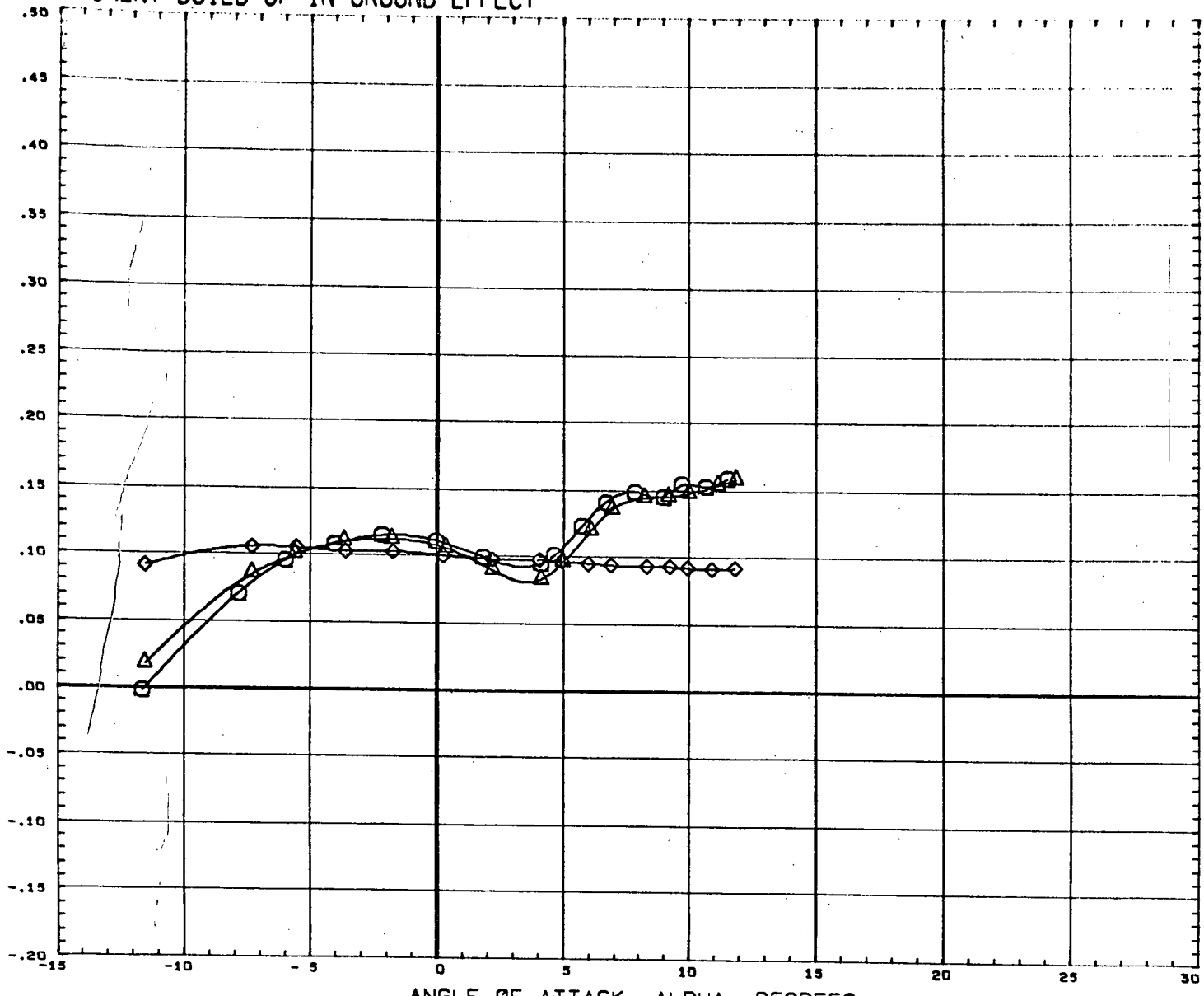
DATA SET SYMBOL		CONFIGURATION DESCRIPTION
(RG9070)	○	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3
(RG9110)	△	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2V3
(RG9111)	◇	MSC S-8 PART-2 S4 SHUTTLECRAFT B1V3

ELEVTR	FLAP	H/B	HORIZT
0.000	0.000	0.150	0.000
	0.000	0.150	
		0.150	

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

COMPONENT BUILD-UP IN GROUND EFFECT



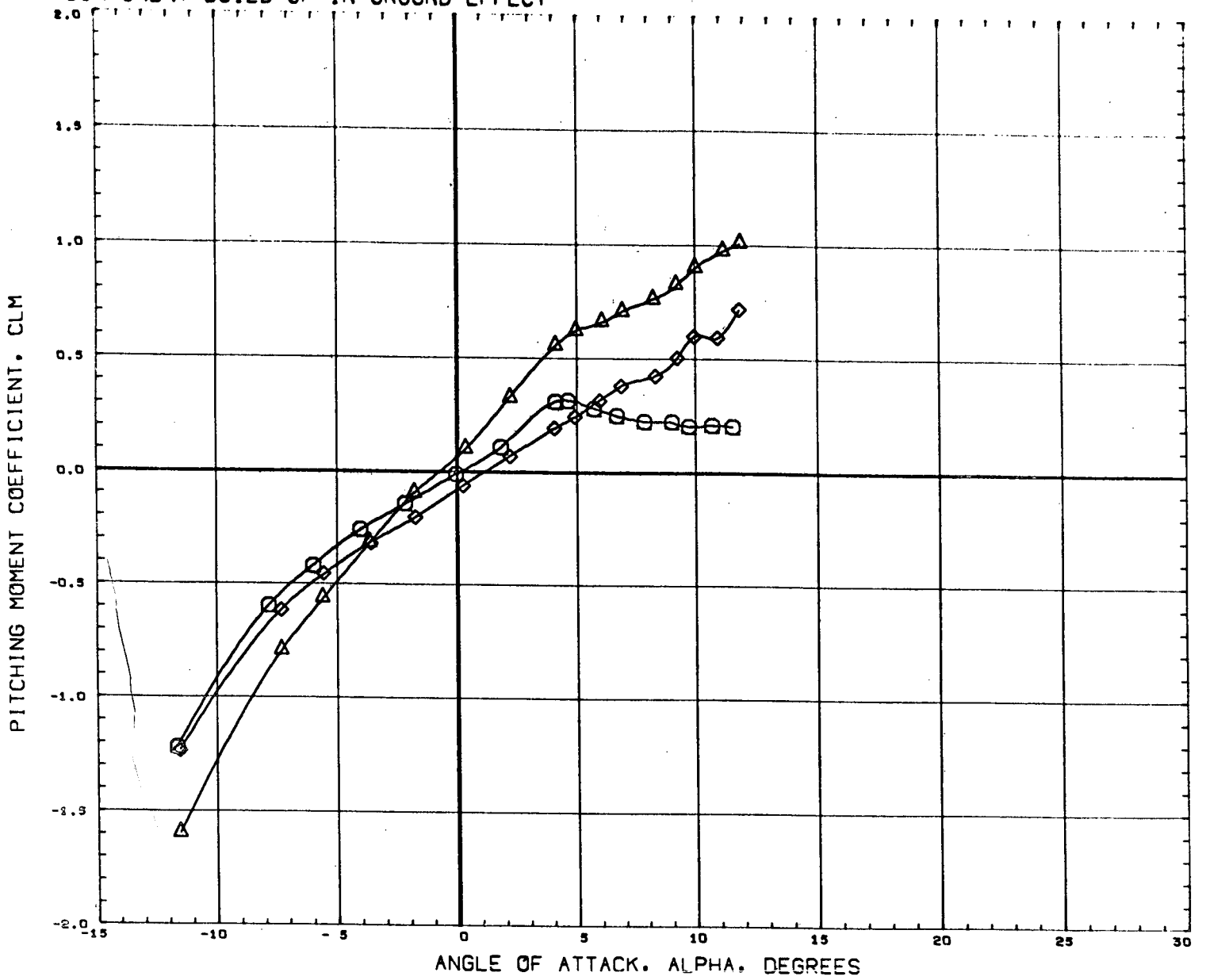
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION
(RG9070)	○	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3
(RG9110)	△	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2V3
(RG9111)	◇	MSC S-8 PART-2 S4 SHUTTLECRAFT B1V3

ELEVTR	FLAP	H/B	HORIZT
0.000	0.000	0.150	0.000
	0.000	0.150	
		0.150	

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

COMPONENT BUILD-UP IN GROUND EFFECT



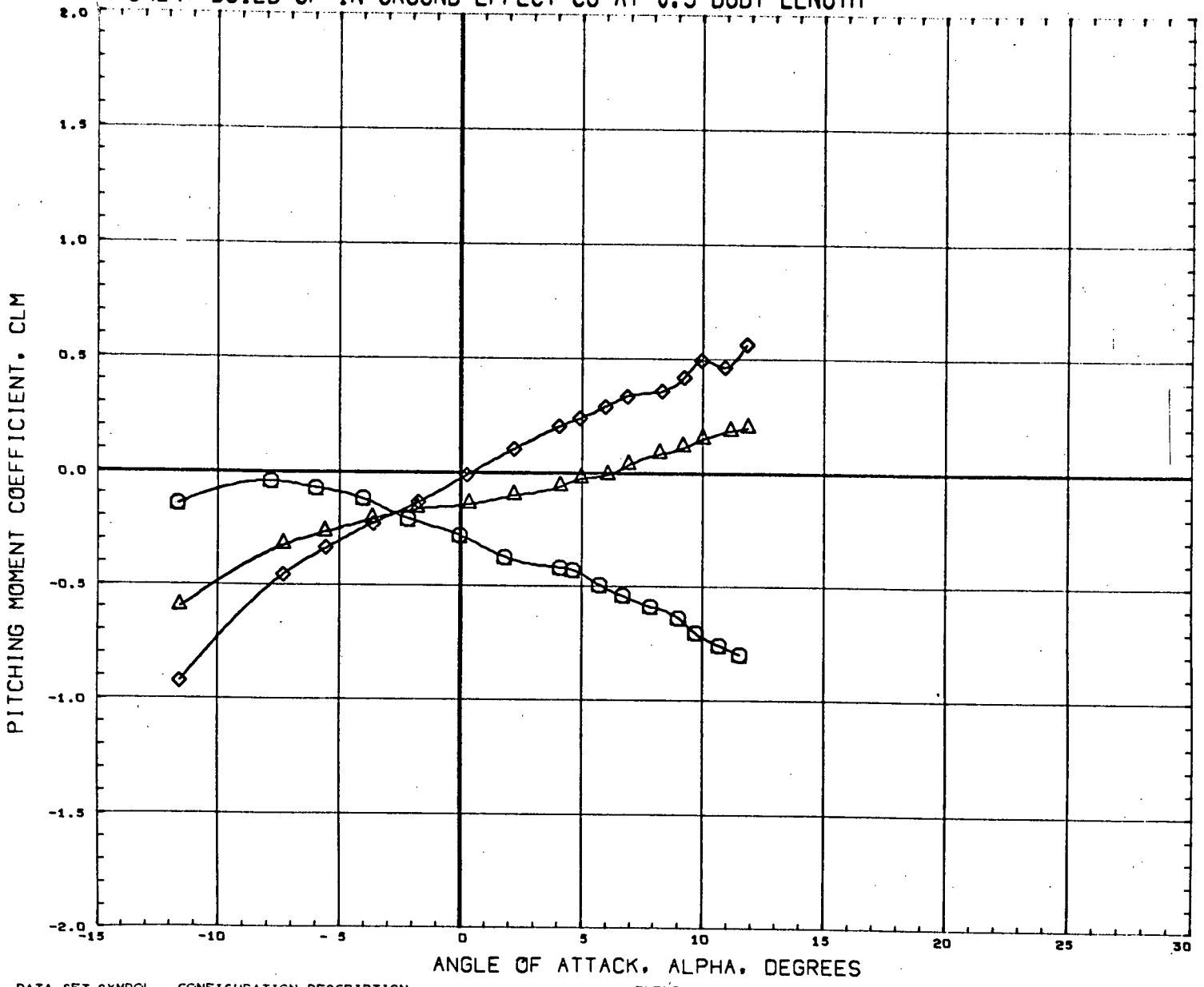
DATA SET SYMBOL		CONFIGURATION DESCRIPTION
(RG9070)	○	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3
(RG9110)	△	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2V3
(RG9111)	◇	MSC S-8 PART-2 S4 SHUTTLECRAFT B1V3

ELEVTR	FLAP	H/B	HORIZT
0.000	0.000	0.150	0.000
	0.000	0.150	
		0.150	

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

COMPONENT BUILD-UP IN GROUND EFFECT CG AT 0.5 BODY LENGTH

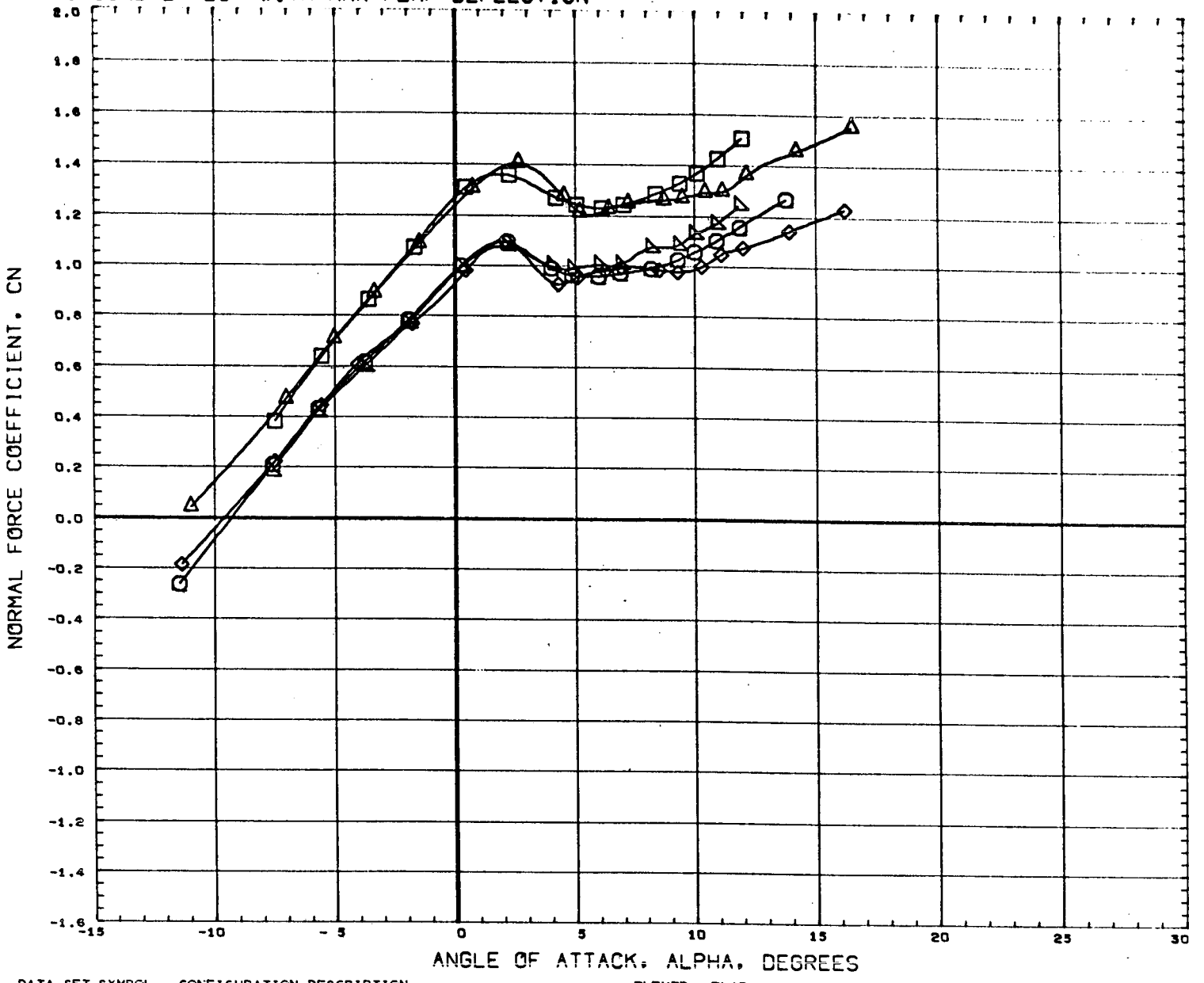


DATA SET SYMBOL		CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(AG9070)	○	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.150	0.000
(AG9110)	△	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2V3		0.000	0.150	
(AG9111)	◇	MSC S-8 PART-2 S4 SHUTTLECRAFT B1V3			0.150	

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	34.5000	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

GROUND EFFECT WITH MAX FLAP DEFLECTION

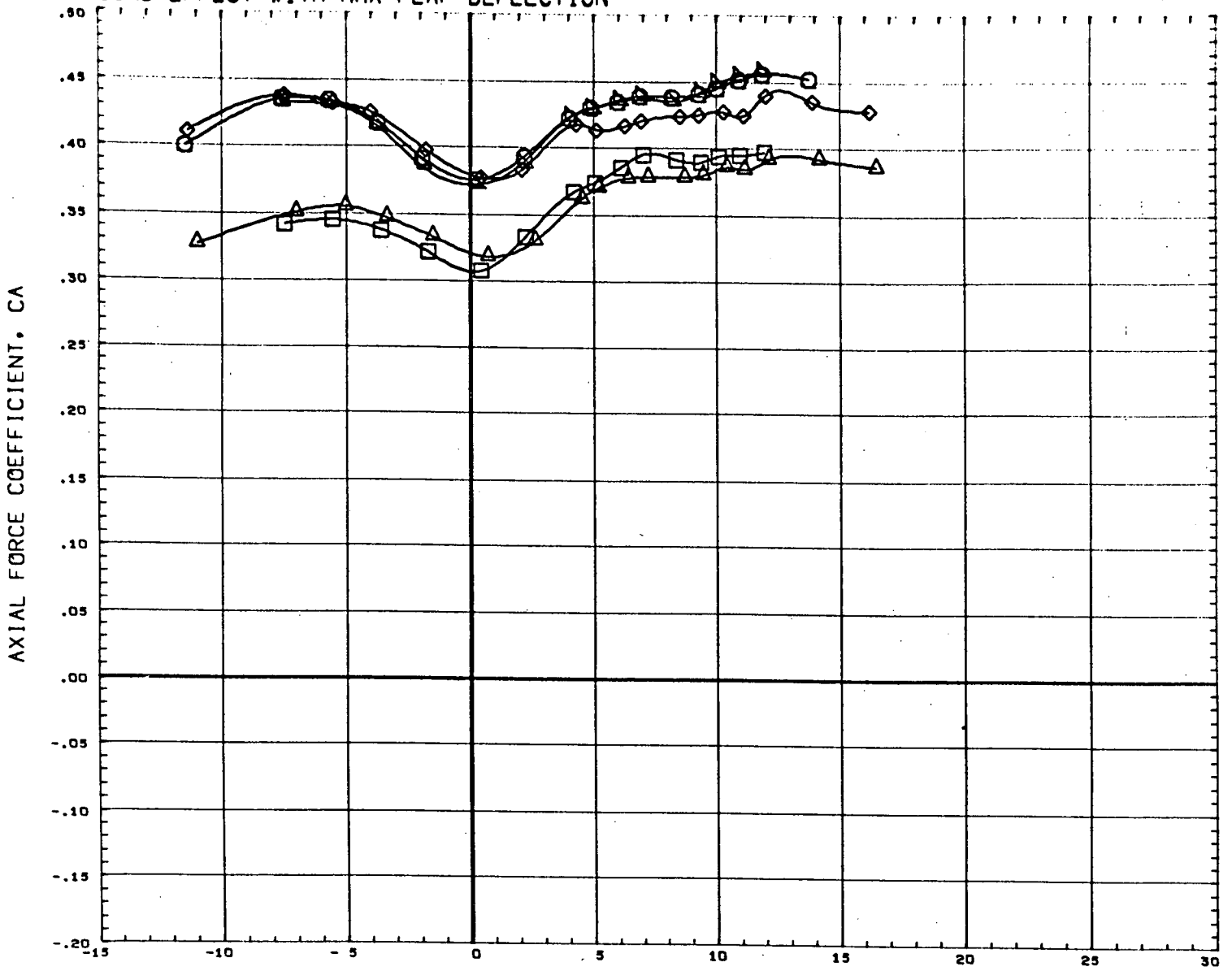


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(RG9126)	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	45.000	0.200	0.000
(RG9154)	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	0.000	45.000	0.300	0.000
(RG9152)	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	45.000	0.300	0.000
(RG9097)	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	0.000	45.000	0.150	0.000
(RG9120)	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	45.000	0.150	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

GROUND EFFECT WITH MAX FLAP DEFLECTION

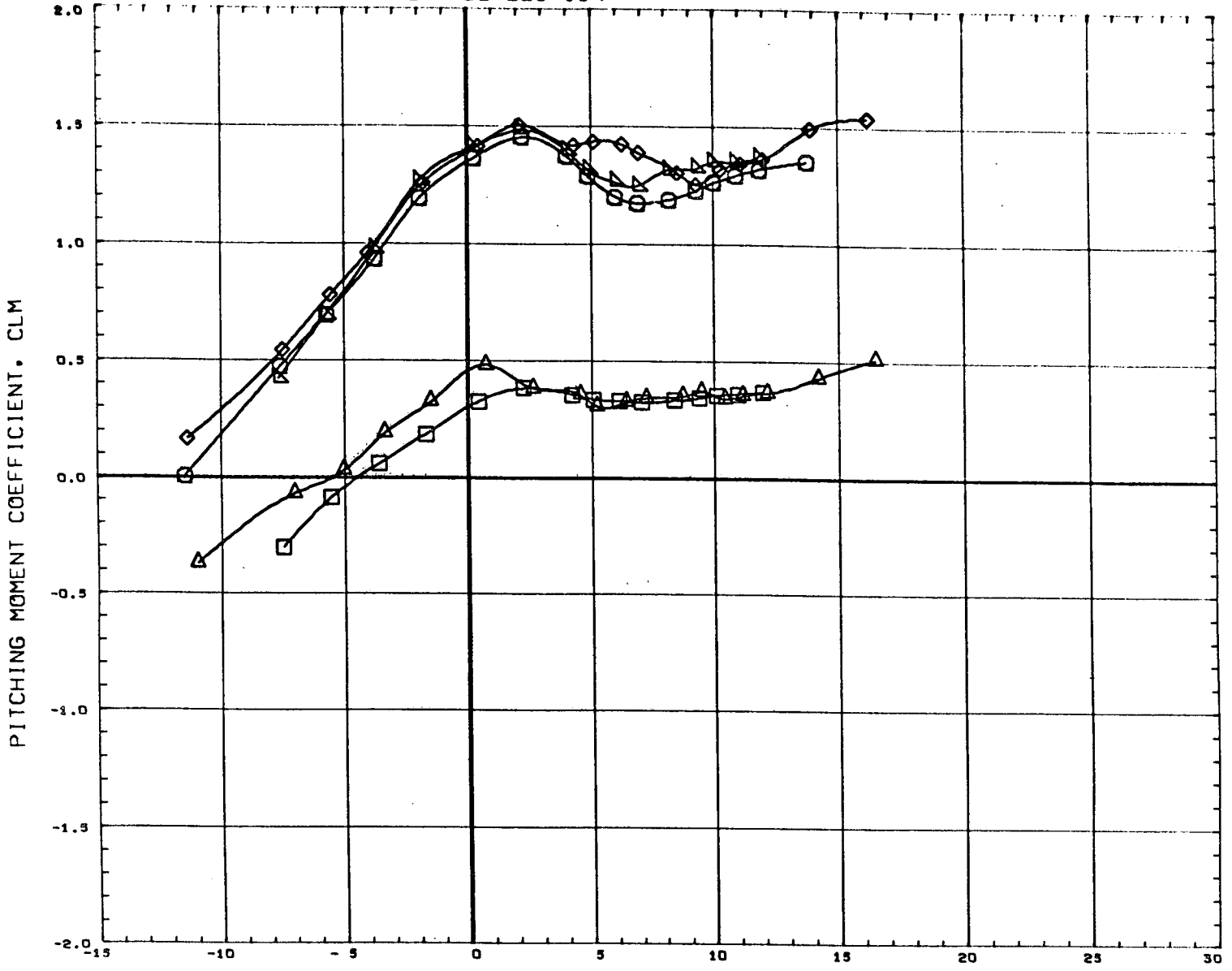


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(RG9126)	○	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	45.000	0.200	0.000
(RG9154)	△	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	0.000	45.000	0.300	0.000
(RG9162)	◇	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	45.000	0.300	0.000
(RG9097)	□	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	0.000	45.000	0.150	0.000
(RG9120)	▽	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	45.000	0.150	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

GROUND EFFECT WITH MAX FLAP DEFLECTION

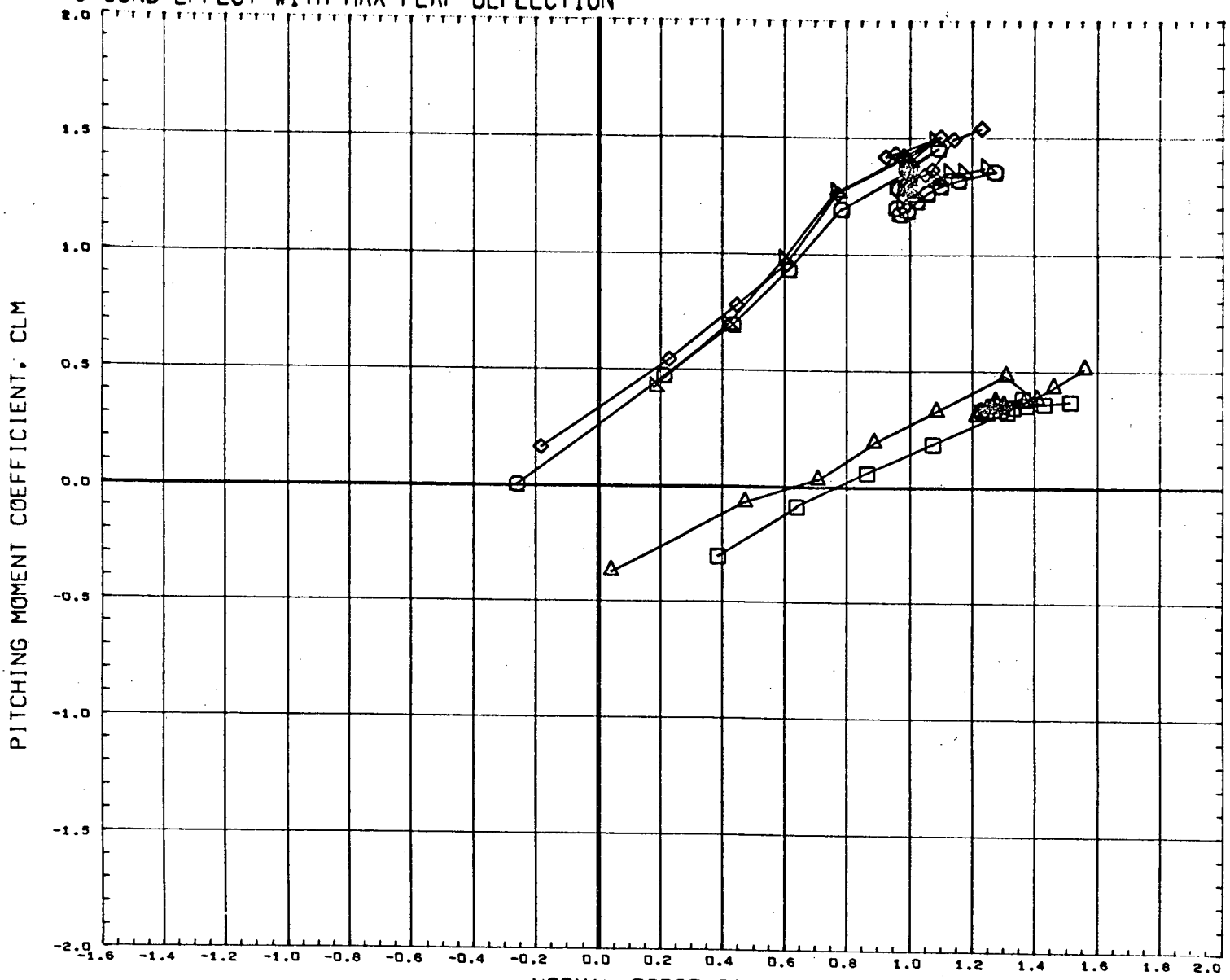


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(RG9126)	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	45.000	0.200	0.000
(RG9154)	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	0.000	45.000	0.300	0.000
(RG9162)	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	45.000	0.300	0.000
(RG9097)	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	0.000	45.000	0.150	0.000
(RG9120)	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	45.000	0.150	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

GROUND EFFECT WITH MAX FLAP DEFLECTION



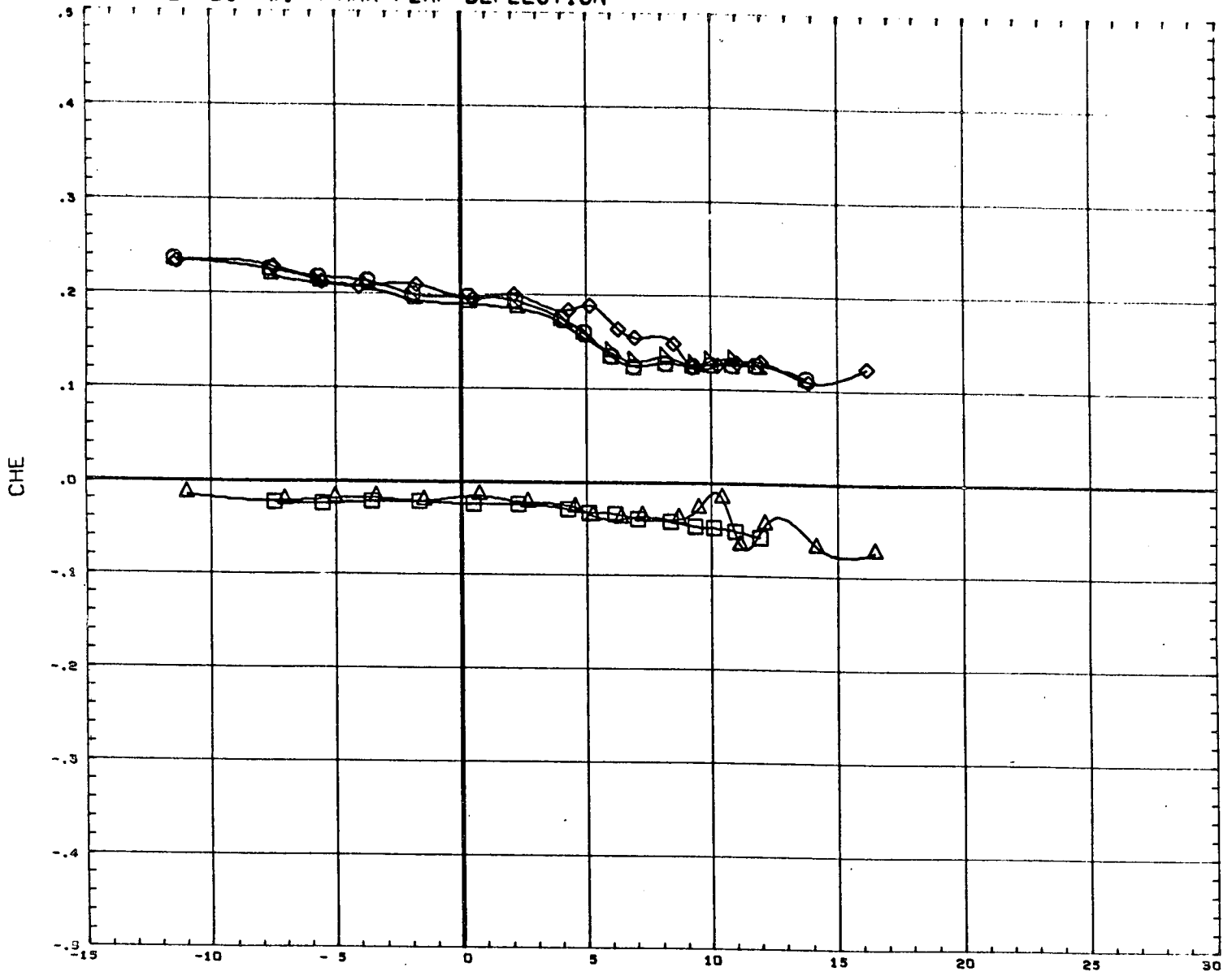
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION
(RG9126)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L
(RG9154)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L
(RG9162)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L
(RG9097)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L
(RG9120)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L

ELEVTR	FLAP	H/B	HORIZT
-30.000	45.000	0.200	0.000
0.000	45.000	0.300	0.000
-30.000	45.000	0.300	0.000
0.000	45.000	0.150	0.000
-30.000	45.000	0.150	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

GROUND EFFECT WITH MAX FLAP DEFLECTION

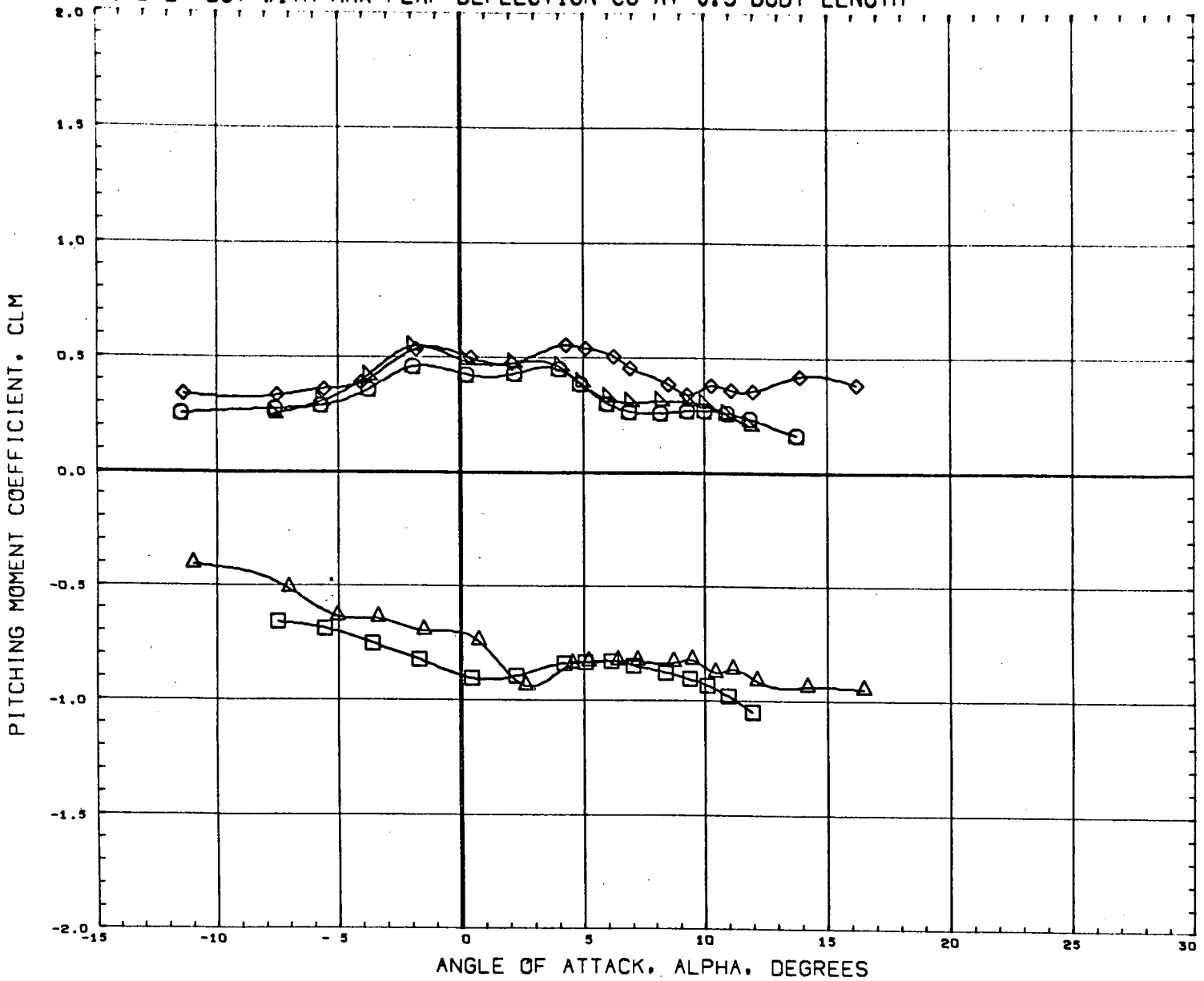


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(RG9126)	○	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	45.000	0.200	0.000
(RG9154)	△	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	0.000	45.000	0.300	0.000
(RG9162)	◇	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	45.000	0.300	0.000
(RG9097)	□	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	0.000	45.000	0.150	0.000
(RG9120)	⌂	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	45.000	0.150	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

GROUND EFFECT WITH MAX FLAP DEFLECTION CG AT 0.5 BODY LENGTH

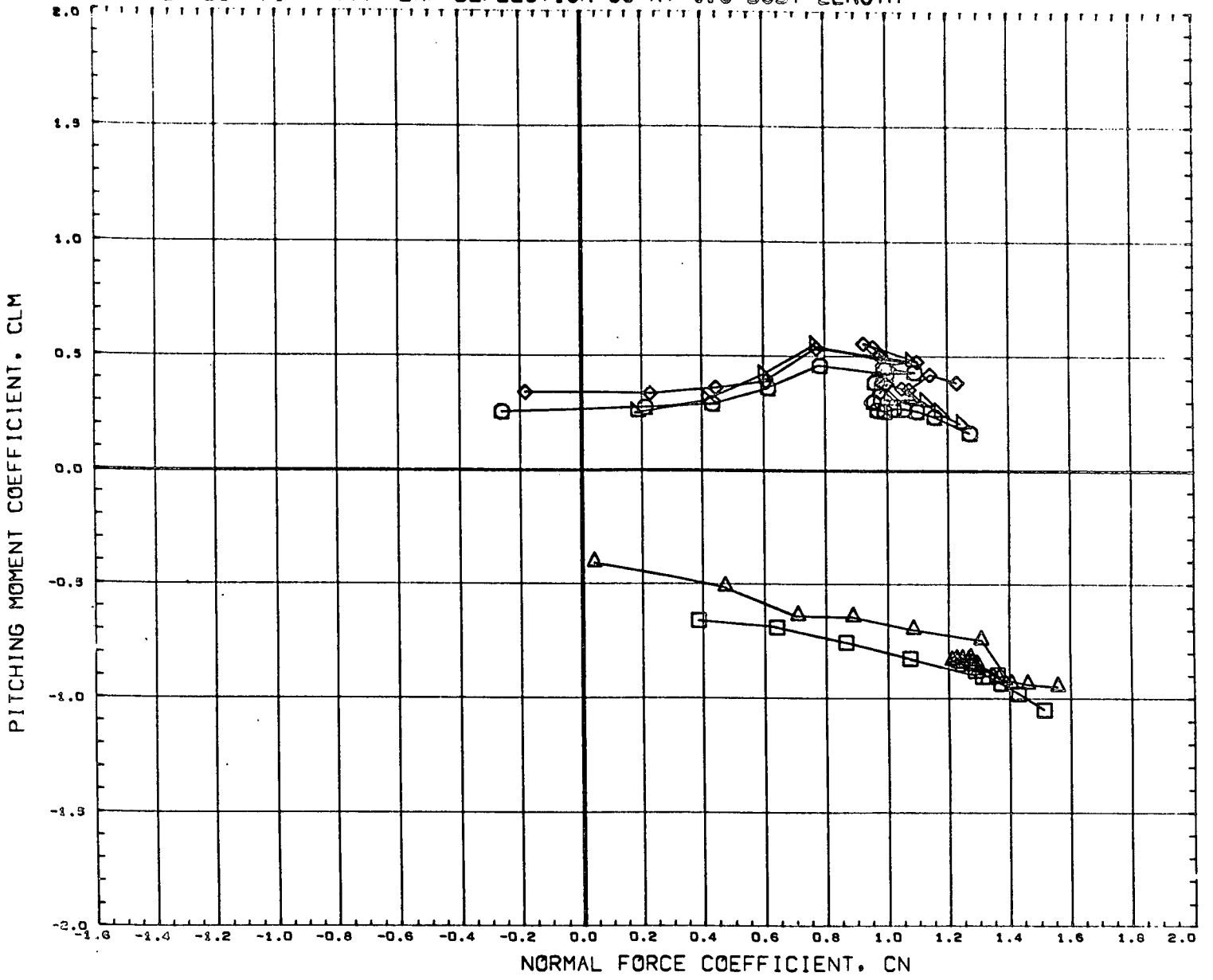


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(AG9126)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	45.000	0.200	0.000
(AG9154)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	0.000	45.000	0.300	0.000
(AG9162)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	45.000	0.300	0.000
(AG9097)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	0.000	45.000	0.150	0.000
(AG9120)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	45.000	0.150	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	34.5000	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

GROUND EFFECT WITH MAX FLAP DEFLECTION CG AT 0.5 BODY LENGTH

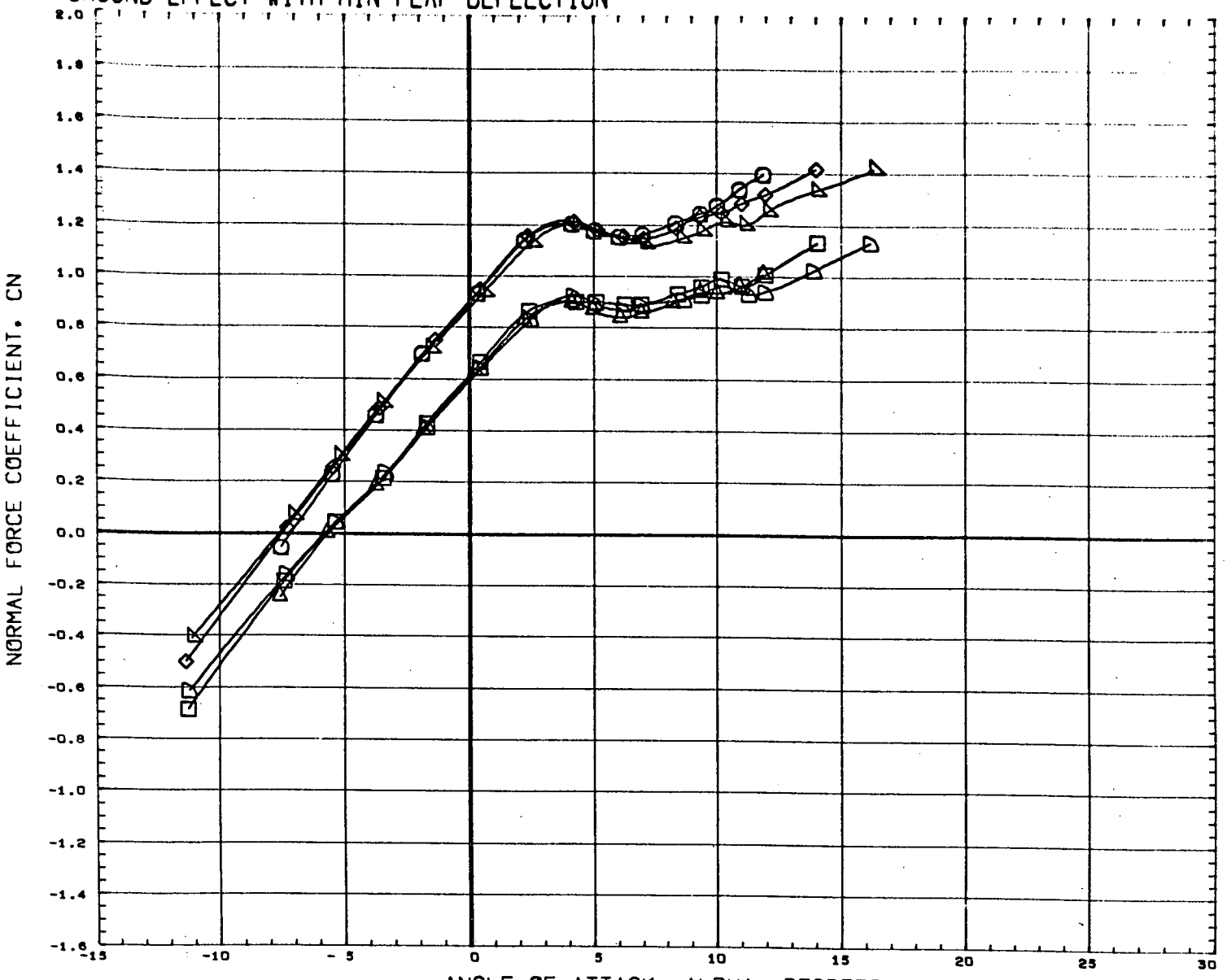


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(AG9126)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	45.000	0.200	0.000
(AG9154)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	0.000	45.000	0.300	0.000
(AG9162)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	45.000	0.300	0.000
(AG9097)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3L	0.000	45.000	0.150	0.000
(AG9120)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	45.000	0.150	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	34.5000	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

GROUND EFFECT WITH MIN FLAP DEFLECTION

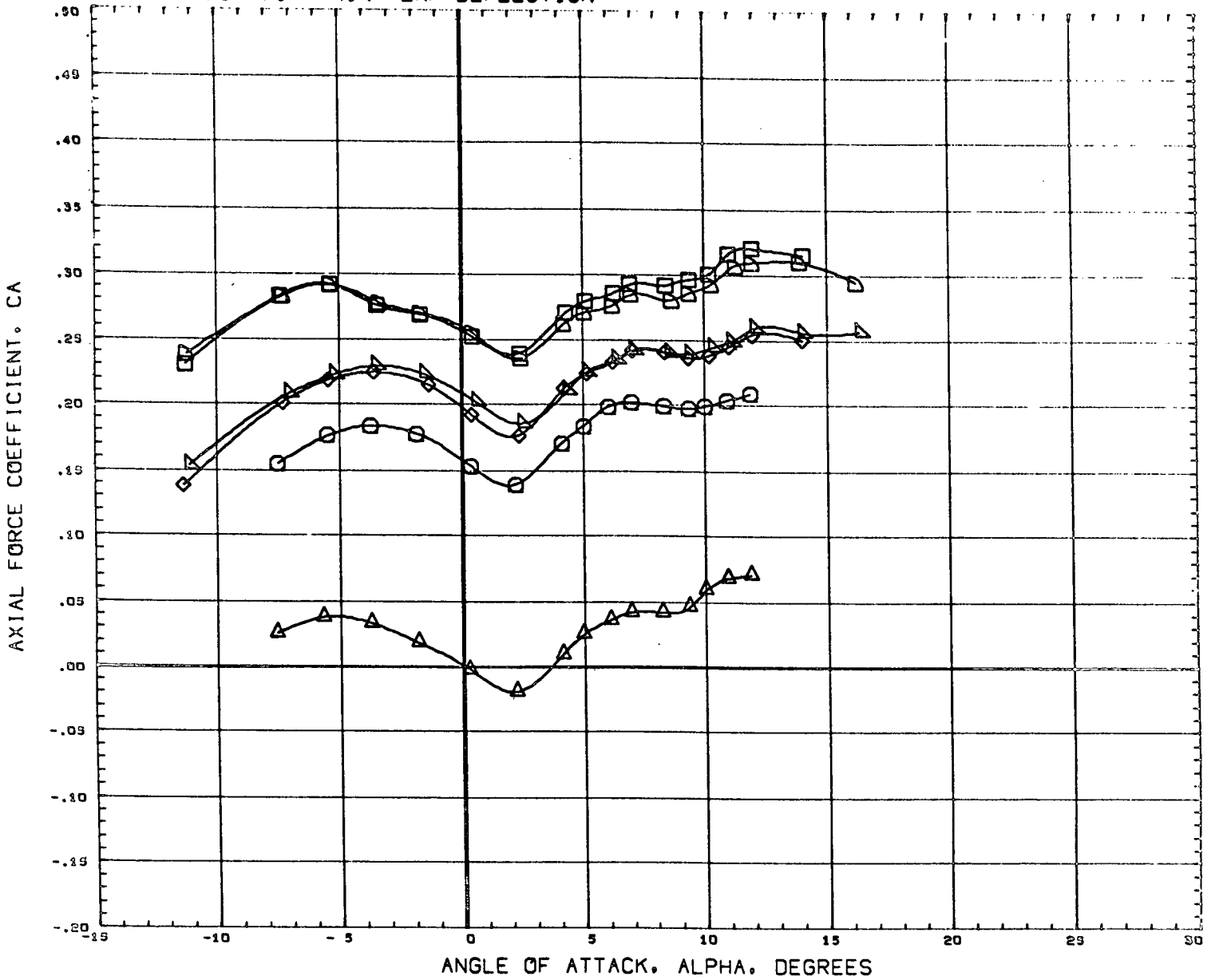


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(RG9119)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	0.000	15.000	0.150	0.000
(RG9112)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	15.000	0.150	0.000
(RG9134)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	0.000	15.000	0.200	0.000
(RG9142)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	15.000	0.200	0.000
(RG9151)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	0.000	15.000	0.300	0.000
(RG9143)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	15.000	0.300	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

GROUND EFFECT WITH MIN FLAP DEFLECTION

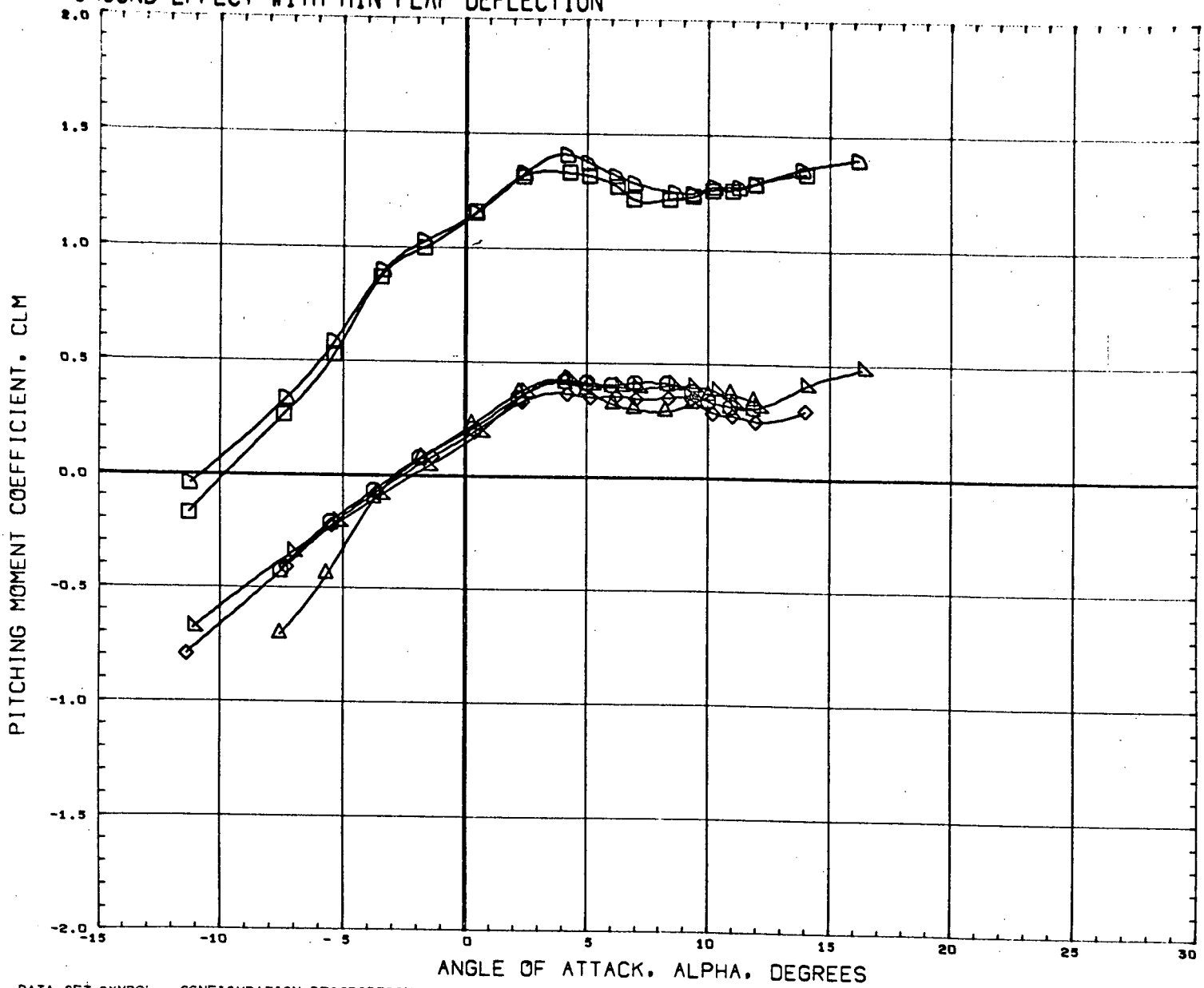


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(RG9119)	○	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	0.000	15.000	0.150	0.000
(RG9112)	□	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	15.000	0.150	0.000
(RG9134)	◇	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	0.000	15.000	0.200	0.000
(RG9142)	▷	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	15.000	0.200	0.000
(RG9151)	△	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	0.000	15.000	0.300	0.000
(RG9143)	▽	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	15.000	0.300	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

GROUND EFFECT WITH MIN FLAP DEFLECTION

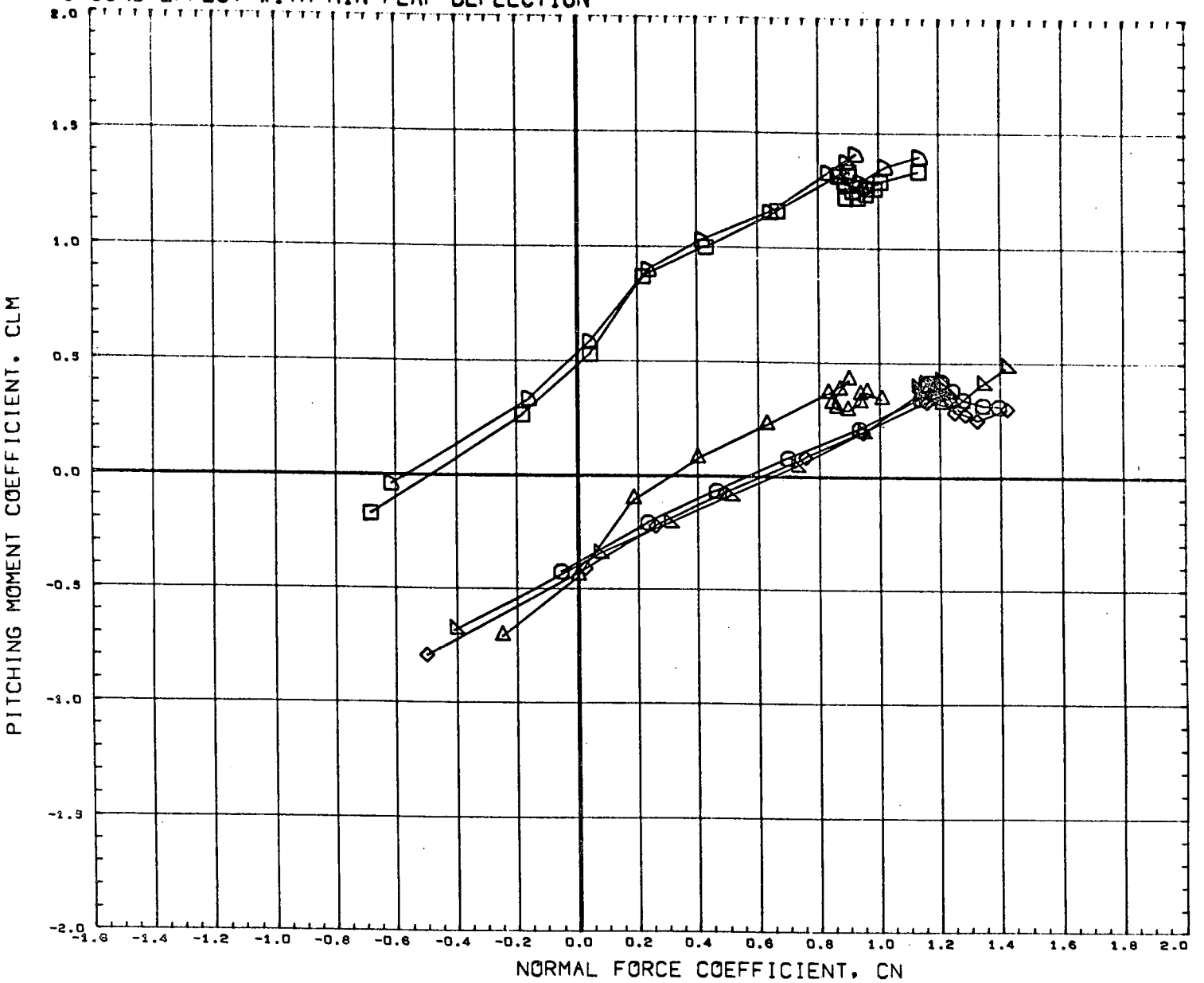


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(RG9119)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	0.000	15.000	0.150	0.000
(RG9112)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	15.000	0.150	0.000
(RG9134)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	0.000	15.000	0.200	0.000
(RG9142)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	15.000	0.200	0.000
(RG9151)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	0.000	15.000	0.300	0.000
(RG9143)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	15.000	0.300	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

GROUND EFFECT WITH MIN FLAP DEFLECTION

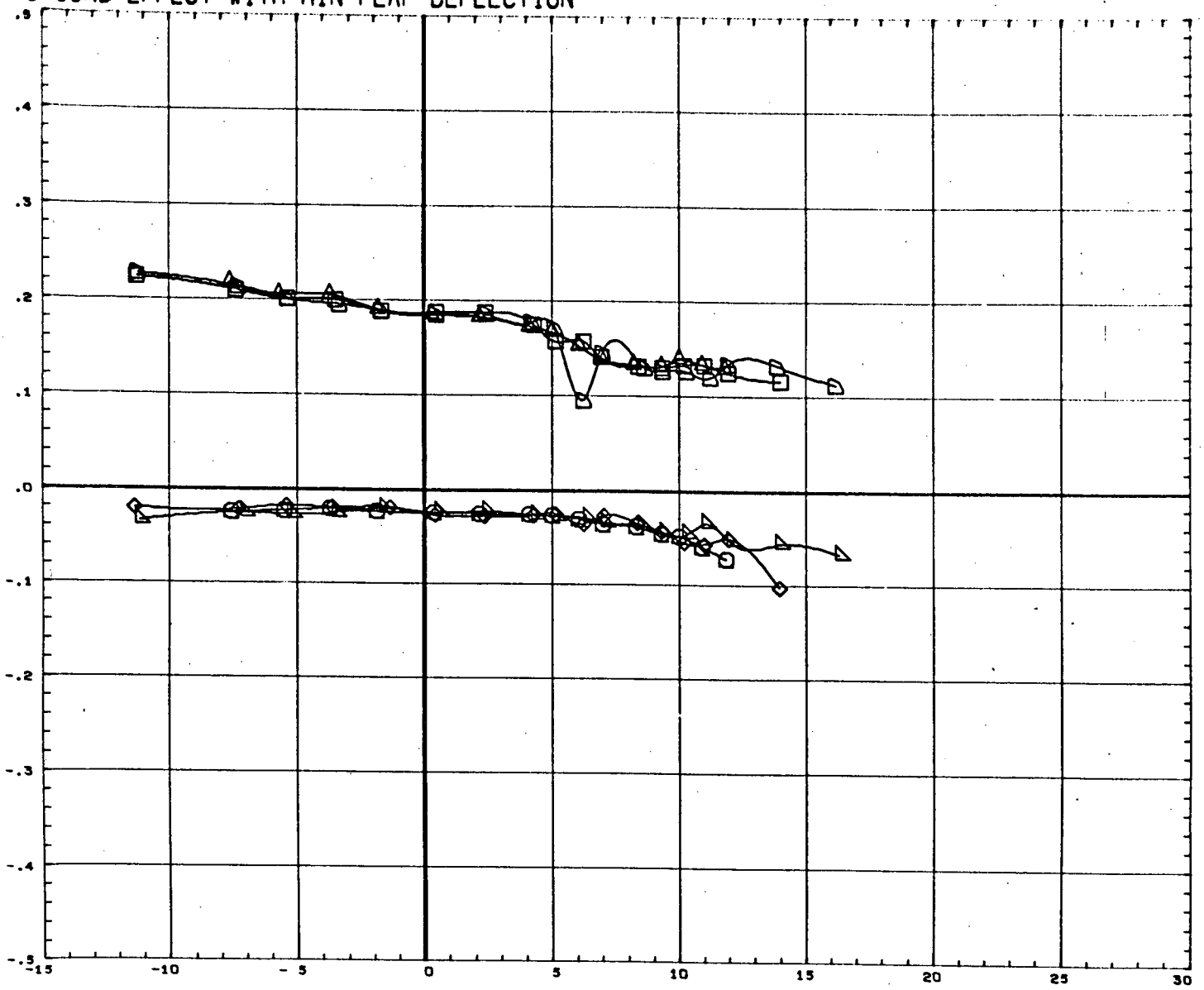


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(RG9119)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	0.000	15.000	0.150	0.000
(RG9112)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	15.000	0.150	0.000
(RG9134)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	0.000	15.000	0.200	0.000
(RG9142)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	15.000	0.200	0.000
(RG9151)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	0.000	15.000	0.300	0.000
(RG9143)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	15.000	0.300	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

GROUND EFFECT WITH MIN FLAP DEFLECTION

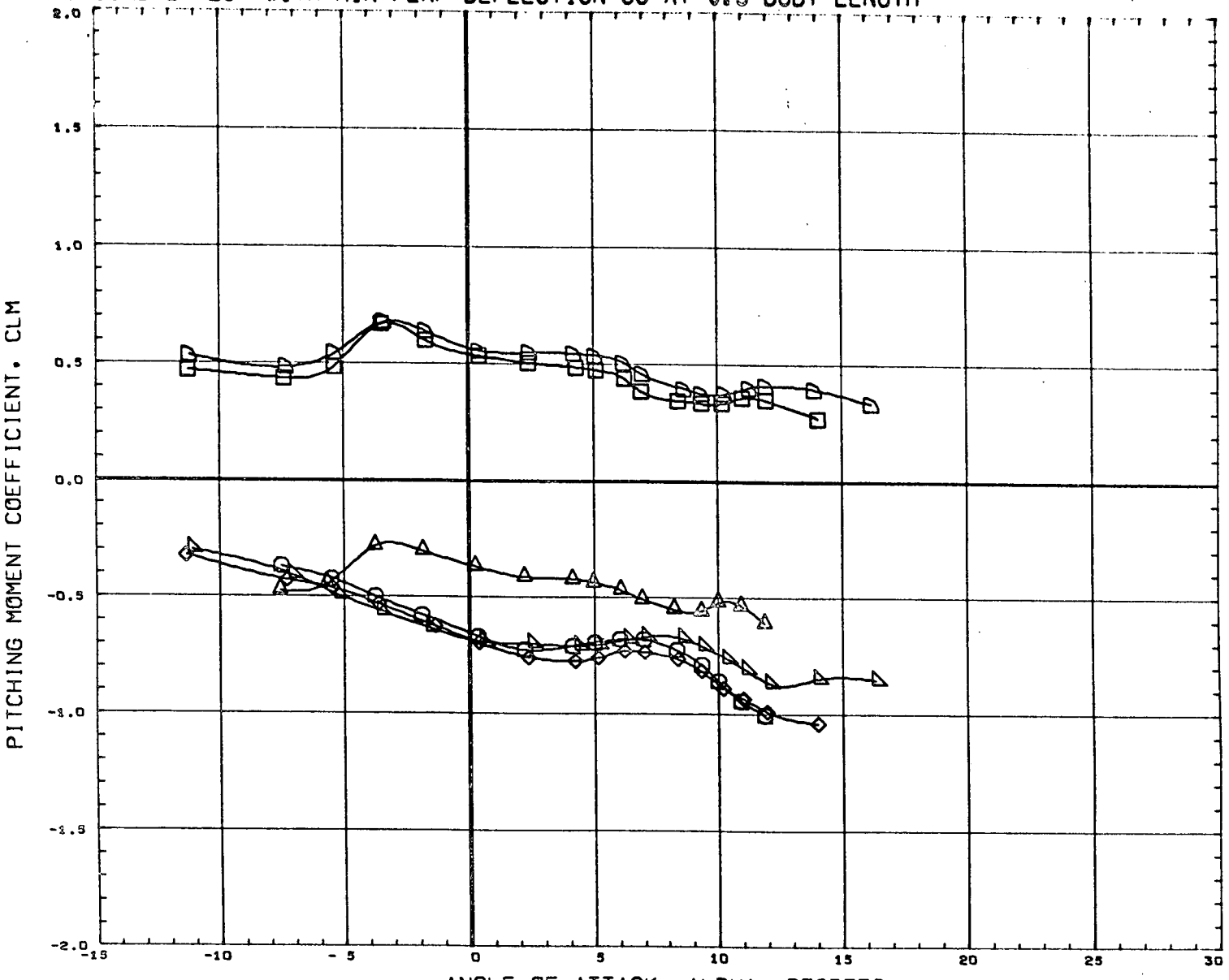


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(RG9119)	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	0.000	15.000	0.150	0.000
(RG9112)	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	15.000	0.150	0.000
(RG9134)	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	0.000	15.000	0.200	0.000
(RG9142)	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	15.000	0.200	0.000
(RG9151)	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H5L	0.000	15.000	0.300	0.000
(RG9143)	MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	15.000	0.300	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

GROUND EFFECT WITH MIN FLAP DEFLECTION CG AT 0.5 BODY LENGTH

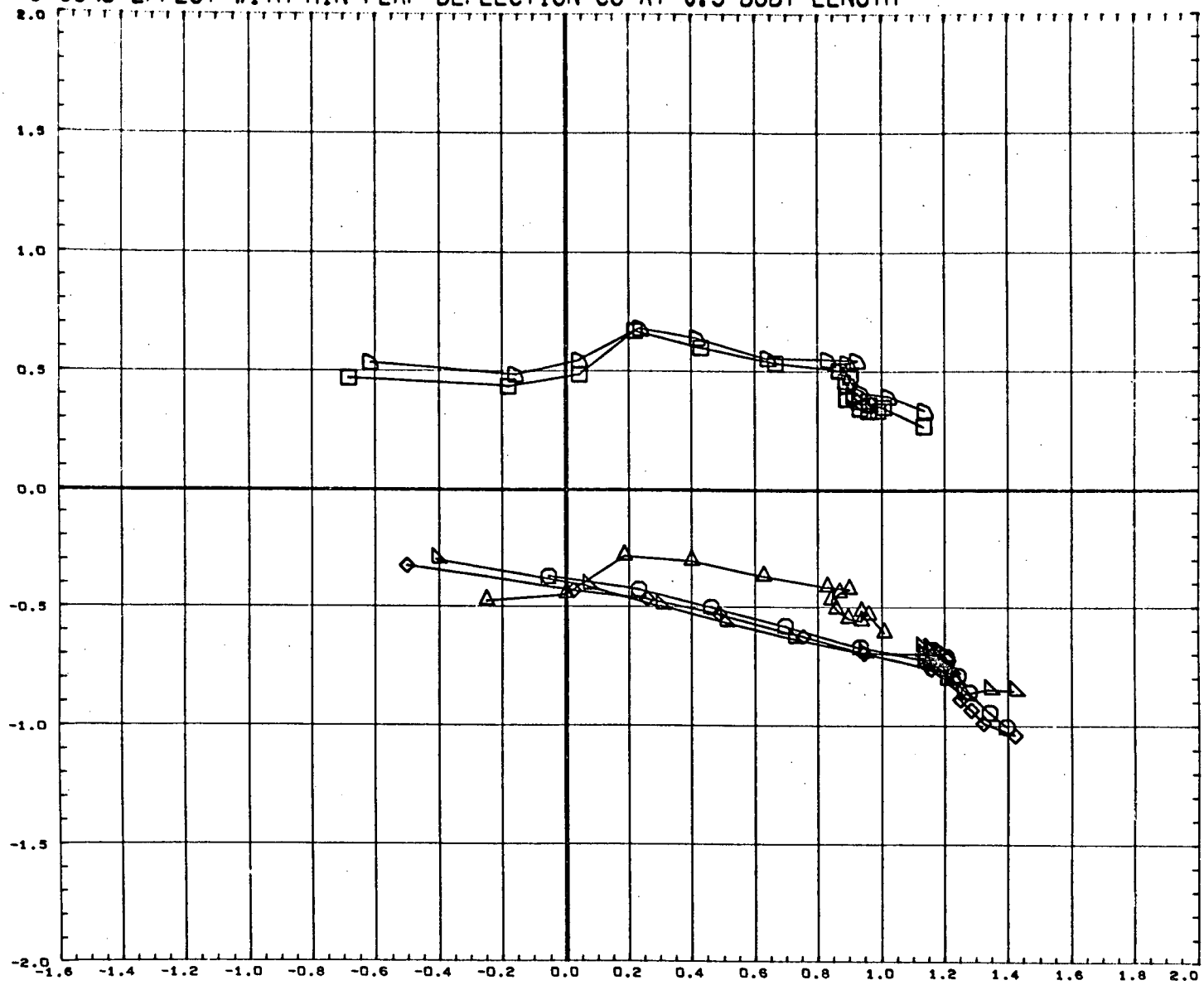


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(AG9119)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	0.000	15.000	0.150	0.000
(AG9112)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	15.000	0.150	0.000
(AG9134)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	0.000	15.000	0.200	0.000
(AG9142)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	15.000	0.200	0.000
(AG9151)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	0.000	15.000	0.300	0.000
(AG9143)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	15.000	0.300	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	34.5000	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

GROUND EFFECT WITH MIN FLAP DEFLECTION CG AT 0.5 BODY LENGTH

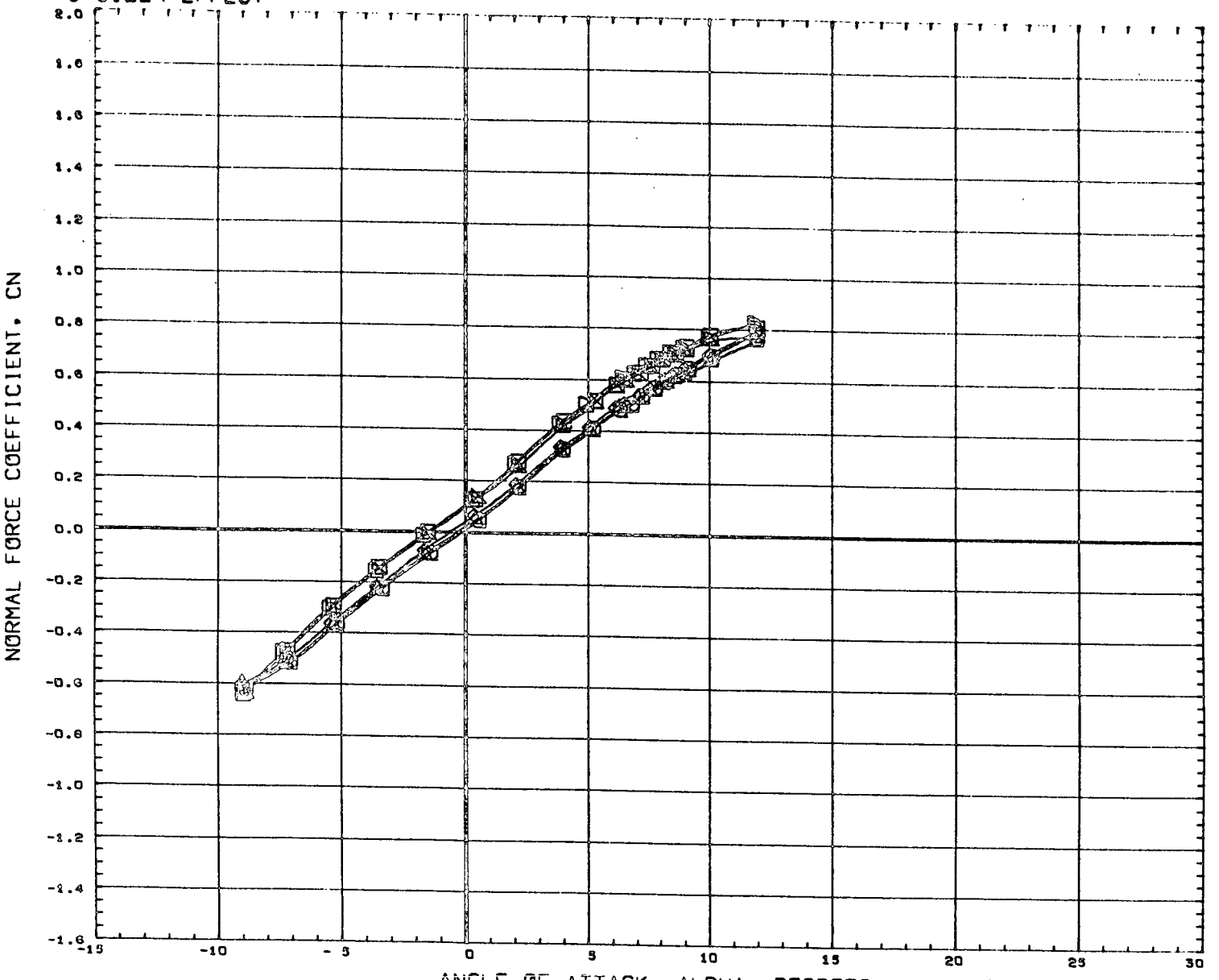


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	H/B	HORIZT
(AG9119)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	0.000	15.000	0.150	0.000
(AG9112)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	15.000	0.150	0.000
(AG9134)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	0.000	15.000	0.200	0.000
(AG9142)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	15.000	0.200	0.000
(AG9151)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	0.000	15.000	0.300	0.000
(AG9143)		MSC S-8 PART-2 S4 SHUTTLECRAFTB1W2V3H6L	-30.000	15.000	0.300	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	34.5000	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

SPOILER EFFECT

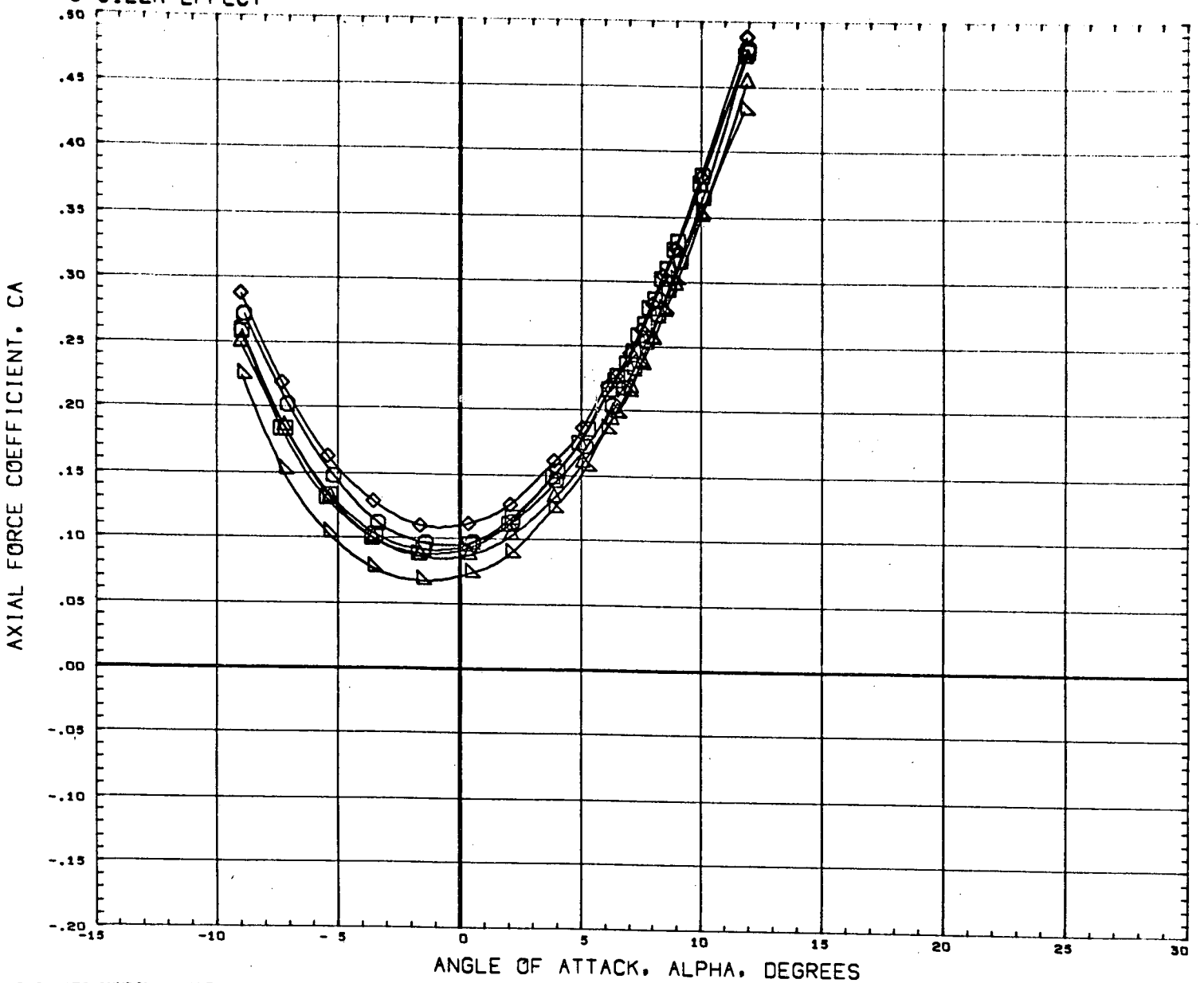


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	RUDDER	HORIZT
(BG9163)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3S11.15(I)	-5.000	0.000	0.000	0.000
(BG9165)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3S11.15(I)	0.000	0.000	0.000	0.000
(BG9167)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3S11.15(I)	5.000	0.000	0.000	0.000
(BG9168)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3S10.15(I)	5.000	0.000	0.000	0.000
(BG9170)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3S10.15(I)	0.000	0.000	0.000	0.000
(BG9172)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3S10.15(I)	-5.000	0.000	0.000	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

SPOILER EFFECT

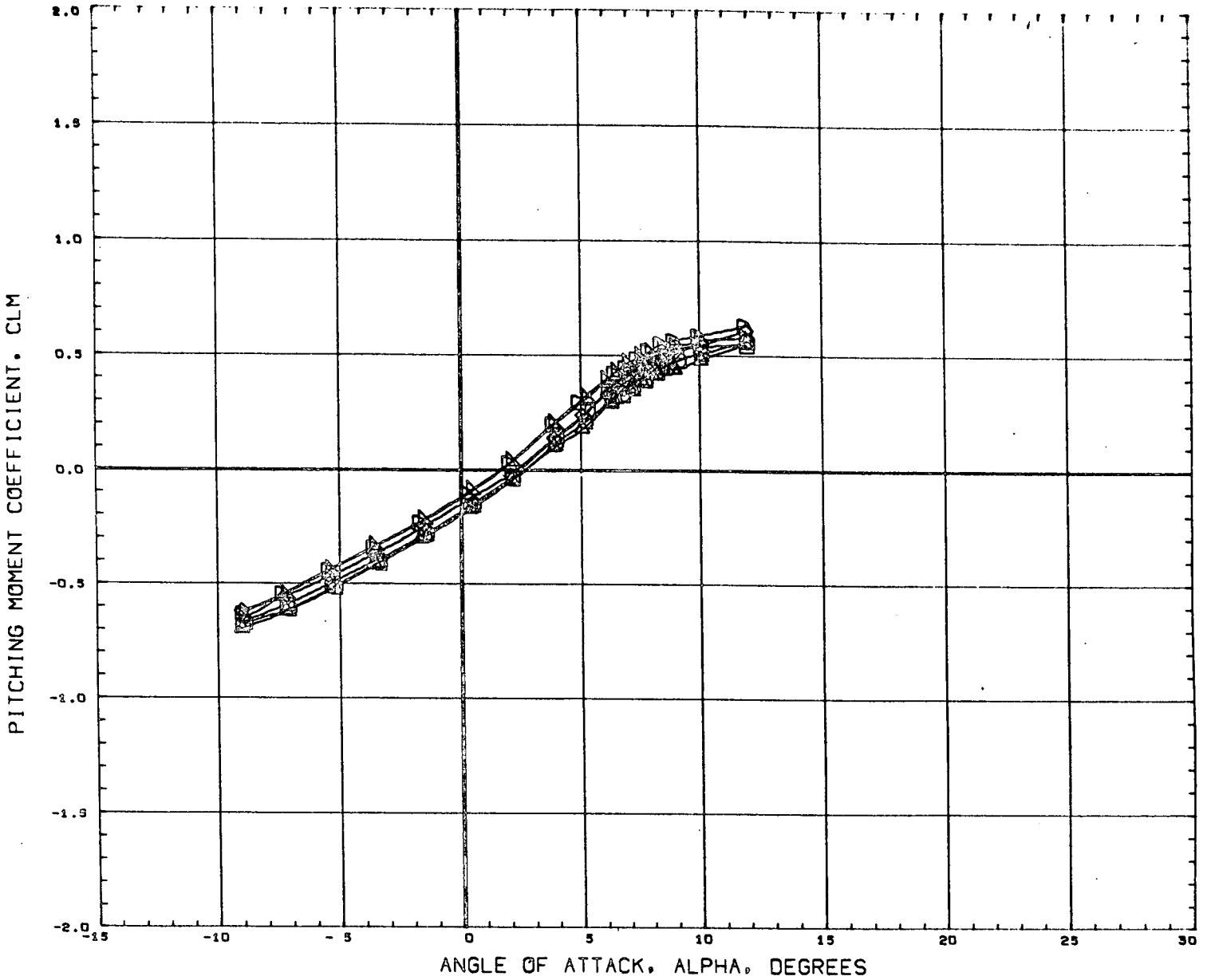


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	RUDDER	HORIZT
(BG9163)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3S11.15(I)	-5.000	0.000	0.000	0.000
(BG9165)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3S11.15(I)	0.000	0.000	0.000	0.000
(BG9167)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3S11.15(I)	5.000	0.000	0.000	0.000
(BG9168)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3S10.15(I)	5.000	0.000	0.000	0.000
(BG9170)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3S10.15(I)	0.000	0.000	0.000	0.000
(BG9172)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3S10.15(I)	-5.000	0.000	0.000	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

SPOILER EFFECT

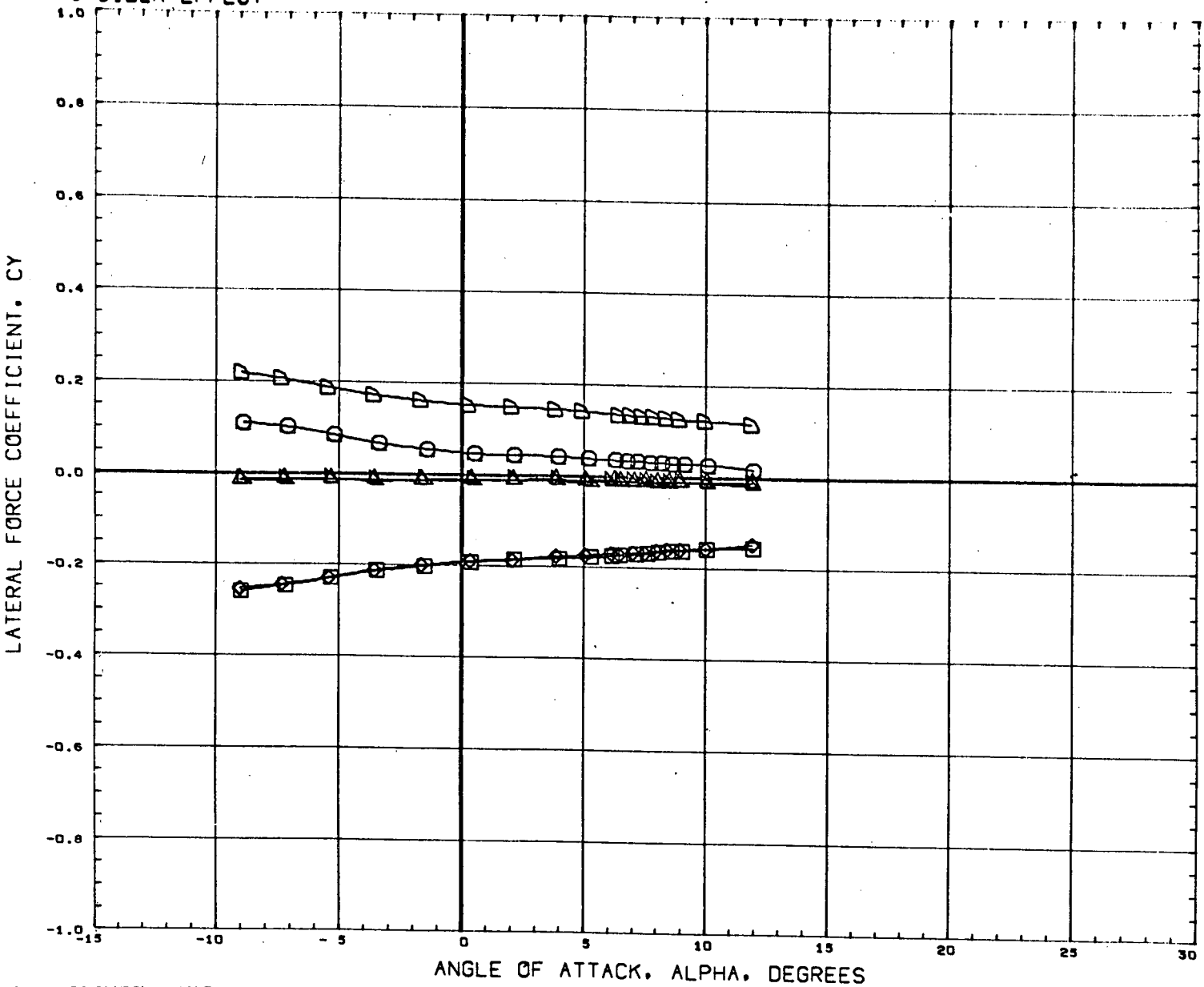


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	RUDDER	HORIZT
(BG9163)	○	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3S11.15(I)	-5.000	0.000	0.000	0.000
(BG9165)	△	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3S11.15(I)	0.000	0.000	0.000	0.000
(BG9167)	□	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3S11.15(I)	5.000	0.000	0.000	0.000
(BG9168)	◇	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3S10.15(I)	5.000	0.000	0.000	0.000
(BG9170)	▽	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3S10.15(I)	0.000	0.000	0.000	0.000
(BG9172)	⬠	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3S10.15(I)	-5.000	0.000	0.000	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

SPOILER EFFECT

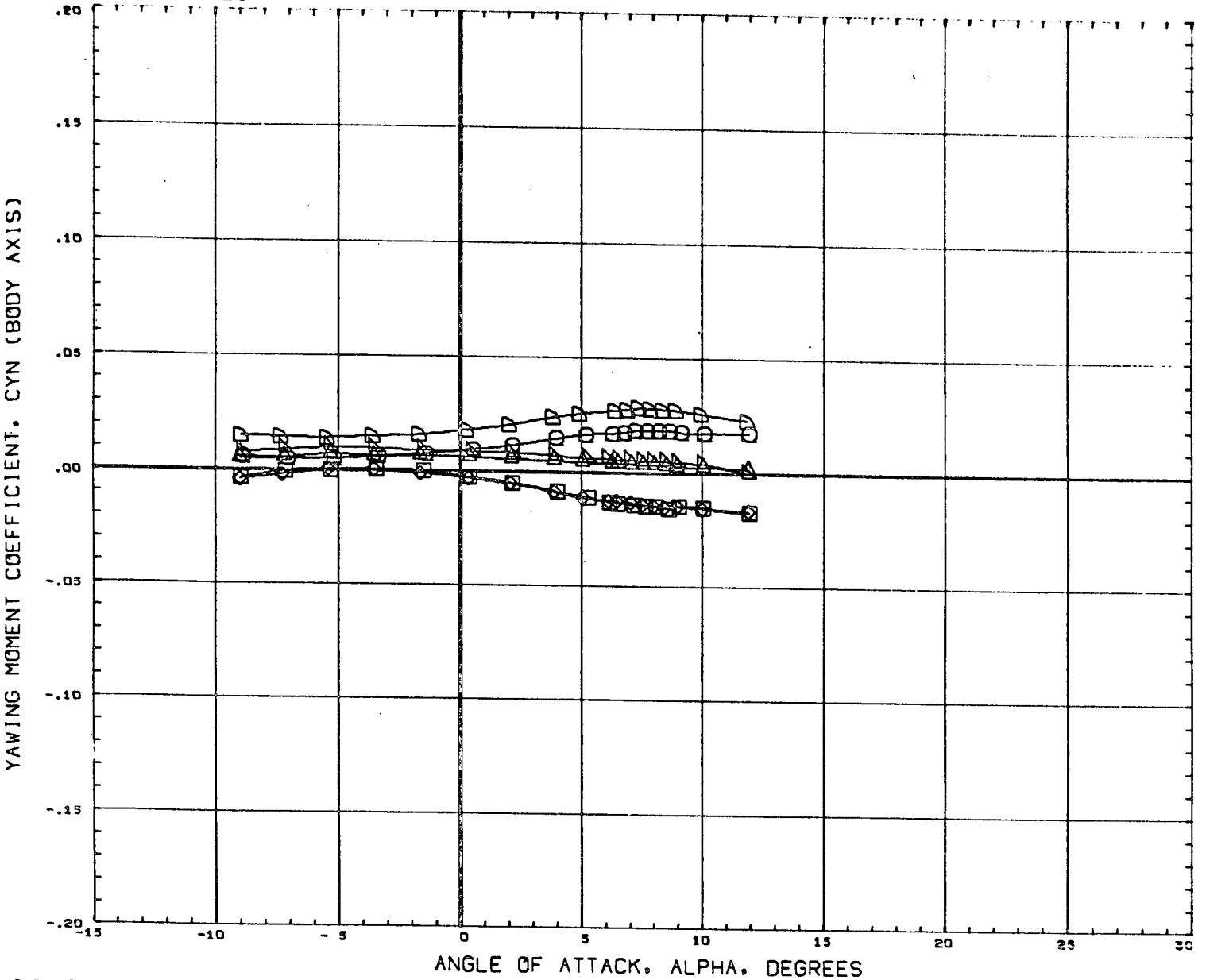


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	RUDDER	HORIZT
(BG9163)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3S11.15(I)	-5.000	0.000	0.000	0.000
(BG9165)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3S11.15(I)	0.000	0.000	0.000	0.000
(BG9167)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3S11.15(I)	5.000	0.000	0.000	0.000
(BG9168)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3S10.15(I)	5.000	0.000	0.000	0.000
(BG9170)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3S10.15(I)	0.000	0.000	0.000	0.000
(BG9172)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3S10.15(I)	-5.000	0.000	0.000	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

SPOILER EFFECT

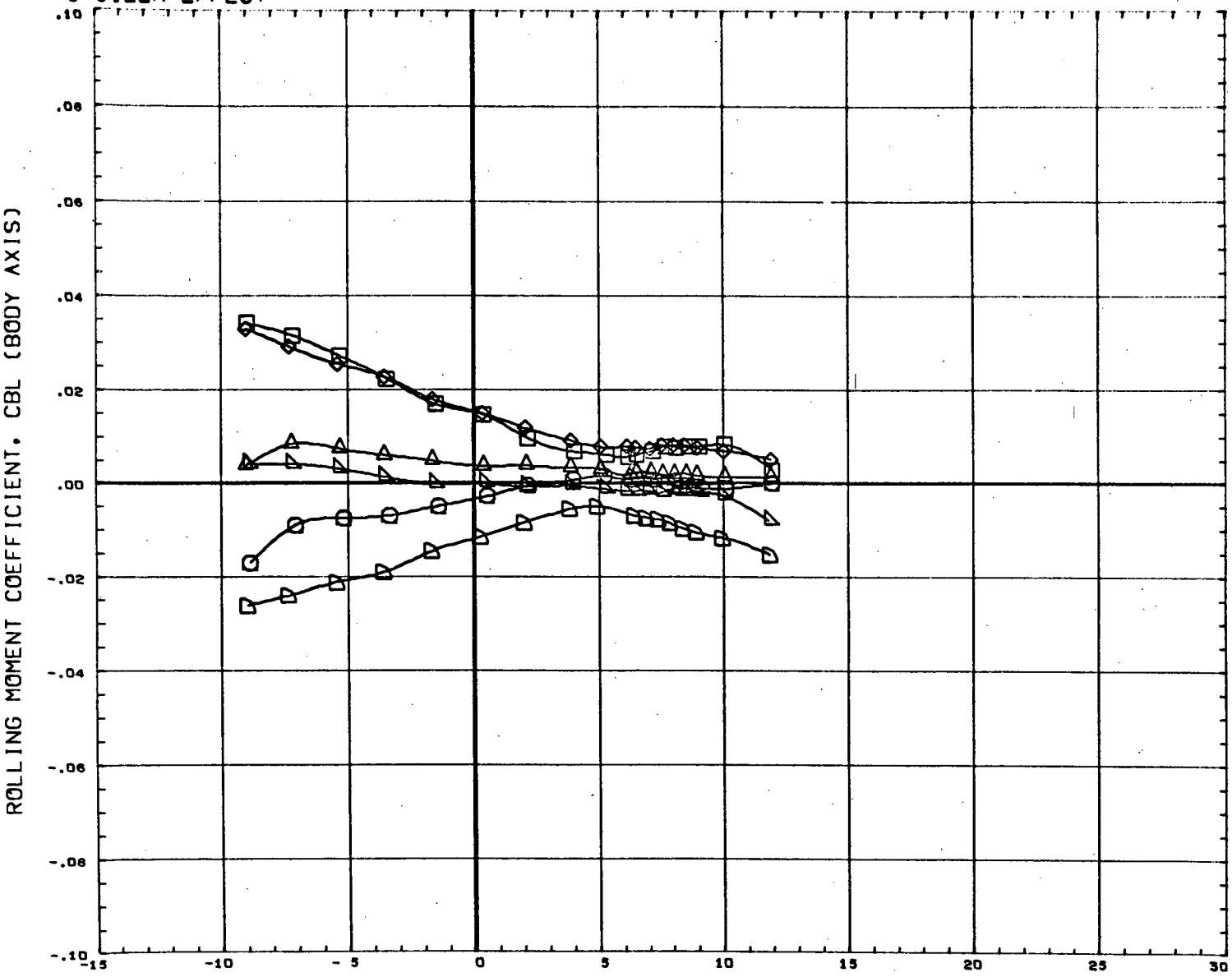


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	RUDDER	HORIZT
(BG9163)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3S11.15(I)	-5.000	0.000	0.000	0.000
(BG9165)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3S11.15(I)	0.000	0.000	0.000	0.000
(BG9167)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3S11.15(I)	5.000	0.000	0.000	0.000
(BG9168)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3S10.15(I)	5.000	0.000	0.000	0.000
(BG9170)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3S10.15(I)	0.000	0.000	0.000	0.000
(BG9172)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3S10.15(I)	-5.000	0.000	0.000	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

SPOILER EFFECT

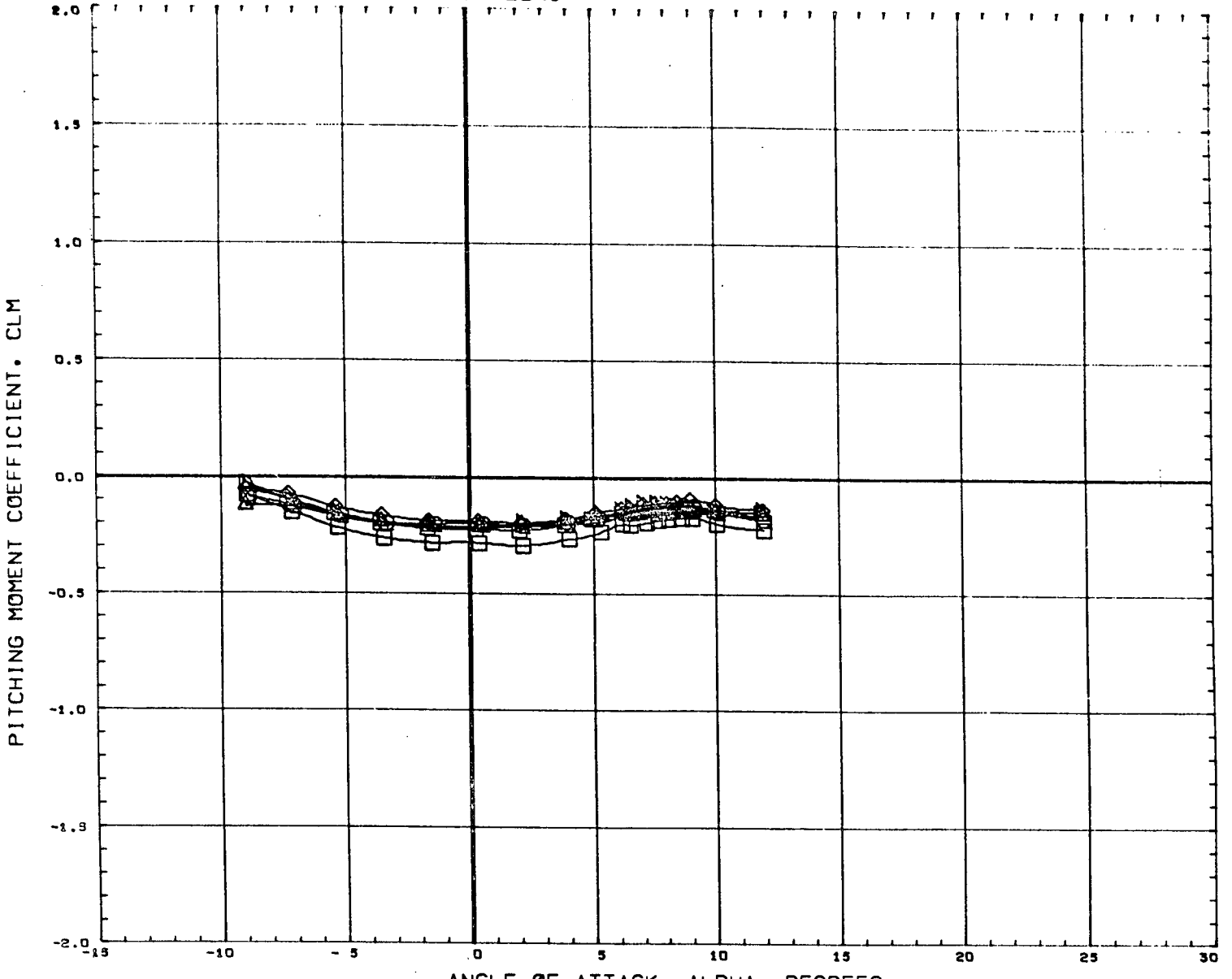


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	RUDDER	HORIZT
(BG9163)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3S11.15(I)	-5.000	0.000	0.000	0.000
(BG9165)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3S11.15(I)	0.000	0.000	0.000	0.000
(BG9167)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3S11.15(I)	5.000	0.000	0.000	0.000
(BG9168)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3S10.15(I)	5.000	0.000	0.000	0.000
(BG9170)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3S10.15(I)	0.000	0.000	0.000	0.000
(BG9172)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3S10.15(I)	-5.000	0.000	0.000	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

SPOILER EFFECT CG AT 0.50 BODY LENGTH

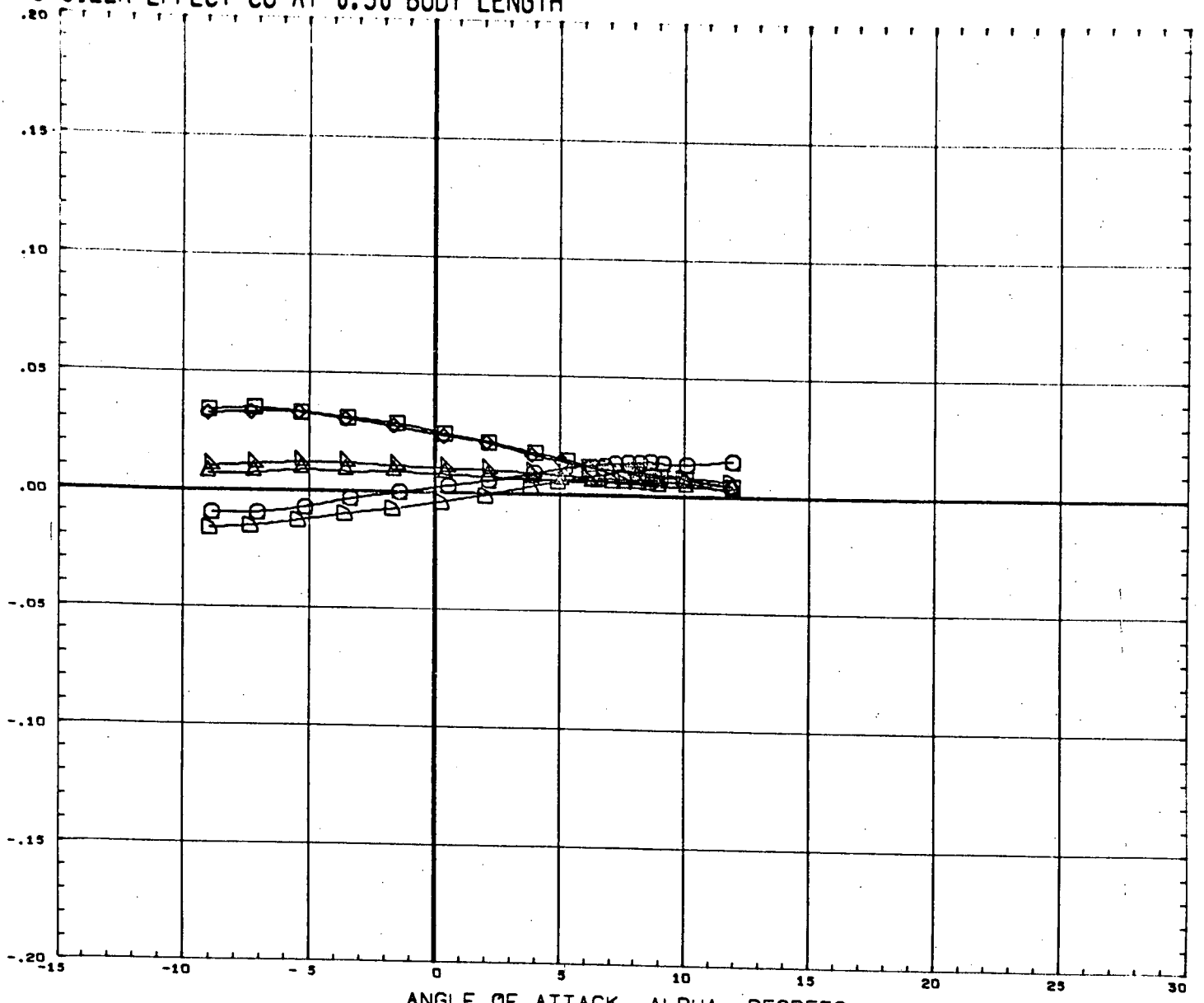


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	RUDDER	HORIZT
(AG9163)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3S11.15(I)	-5.000	0.000	0.000	0.000
(AG9165)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3S11.15(I)	0.000	0.000	0.000	0.000
(AG9167)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3S11.15(I)	5.000	0.000	0.000	0.000
(AG9168)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3S10.15(I)	5.000	0.000	0.000	0.000
(AG9170)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3S10.15(I)	0.000	0.000	0.000	0.000
(AG9172)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3S10.15(I)	-5.000	0.000	0.000	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	34.5000	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

SPOILER EFFECT CG AT 0.50 BODY LENGTH

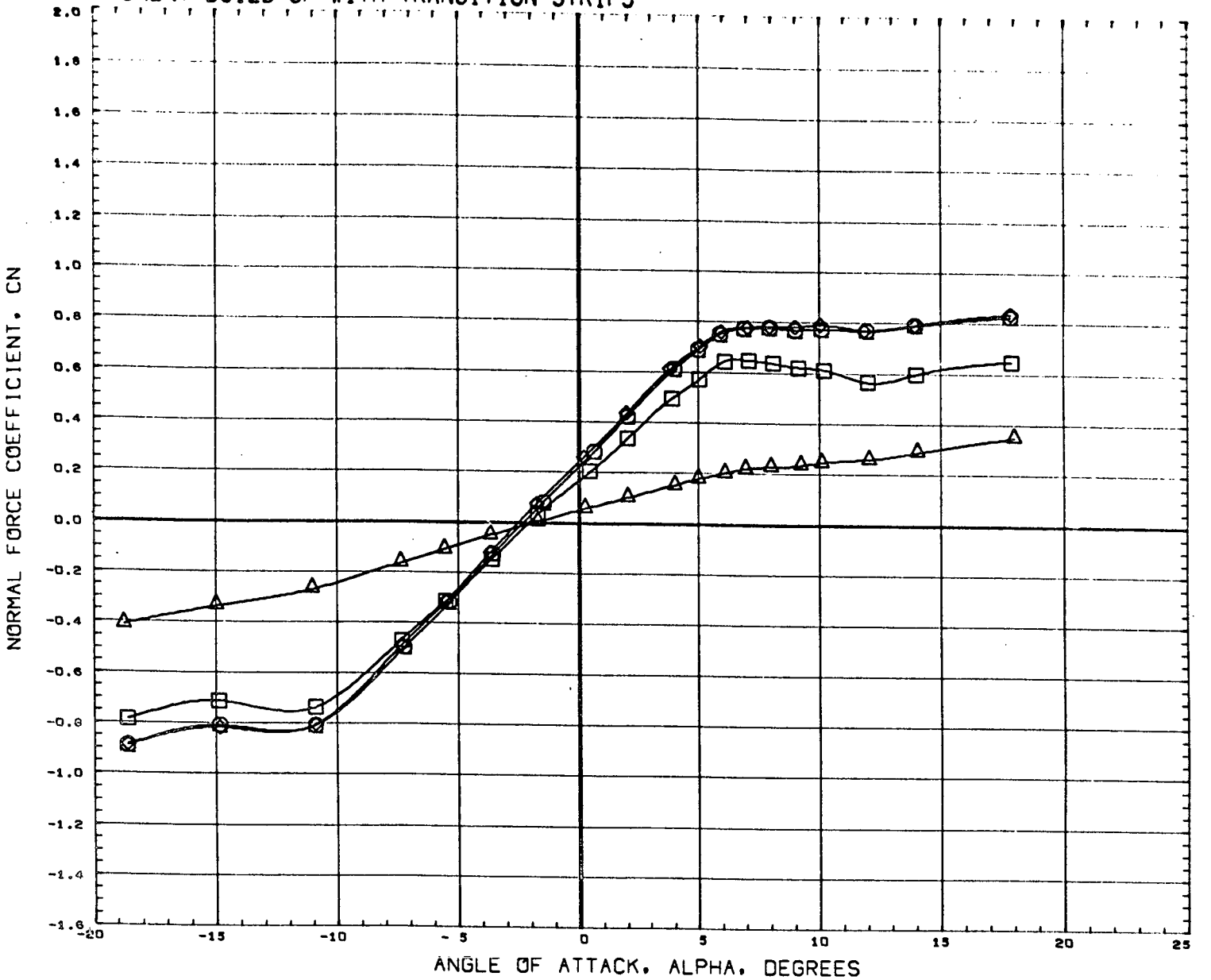


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	RUDDER	HORIZT
(AG9163)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3S11.15(I)	-5.000	0.000	0.000	0.000
(AG9165)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3S11.15(I)	0.000	0.000	0.000	0.000
(AG9167)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3S11.15(I)	5.000	0.000	0.000	0.000
(AG9168)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3S10.15(I)	5.000	0.000	0.000	0.000
(AG9170)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3S10.15(I)	0.000	0.000	0.000	0.000
(AG9172)		MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3S10.15(I)	-5.000	0.000	0.000	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	34.5000	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

COMPONENT BUILD-UP WITH TRANSITION STRIPS



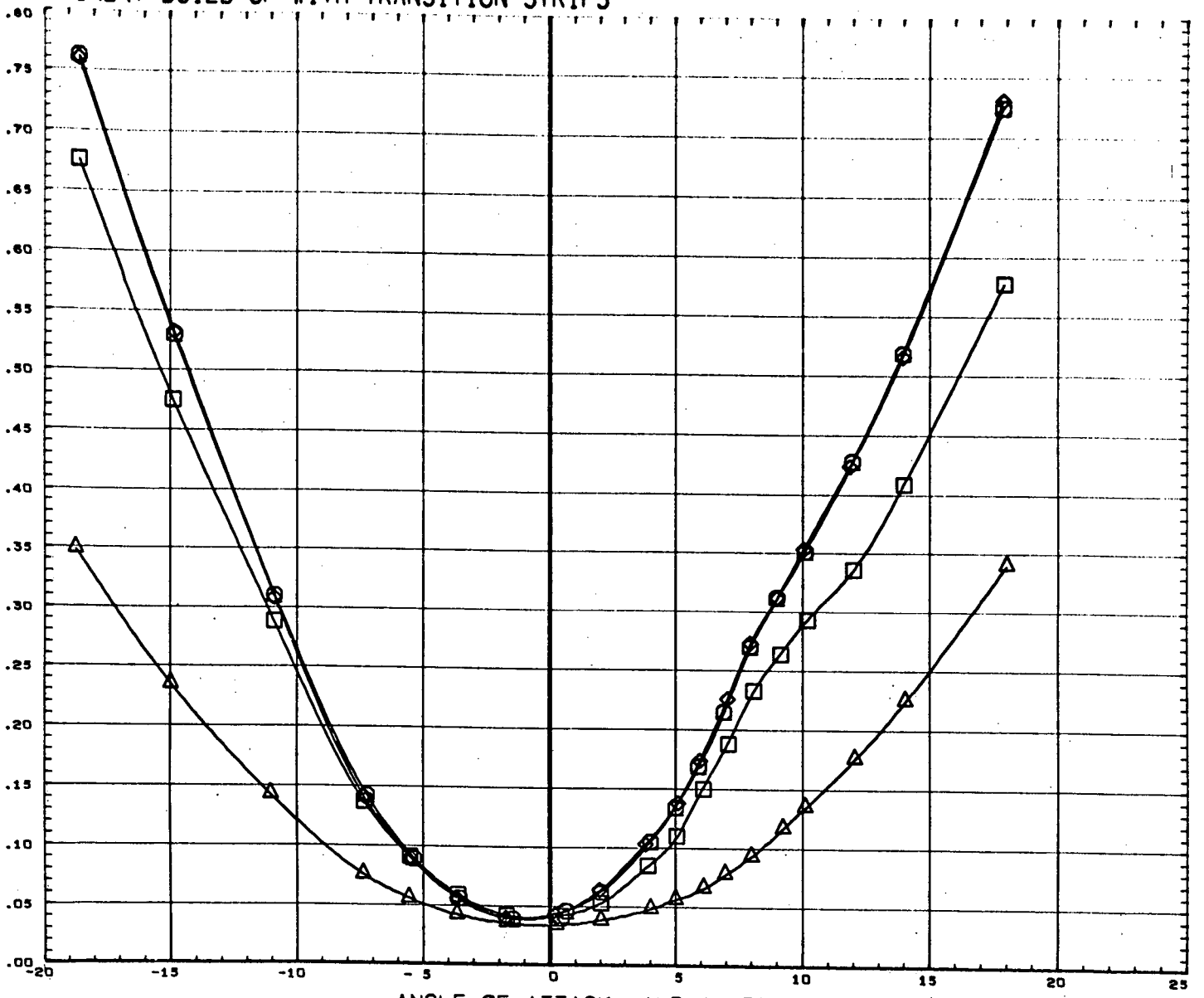
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION
(BG9173)	○	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3T(I)
(BG9174)	△	MSC S-8 PART-2 S4 SHUTTLECRAFT B1H6V3T(I)
(BG9175)	◇	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6T(I)
(BG9176)	□	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2T(I)

ELEVTR	FLAP	RUDDER	HORIZT
0.000	0.000	0.000	0.000
0.000		0.000	0.000
0.000	0.000		0.000
	0.000		

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

COMPONENT BUILD-UP WITH TRANSITION STRIPS



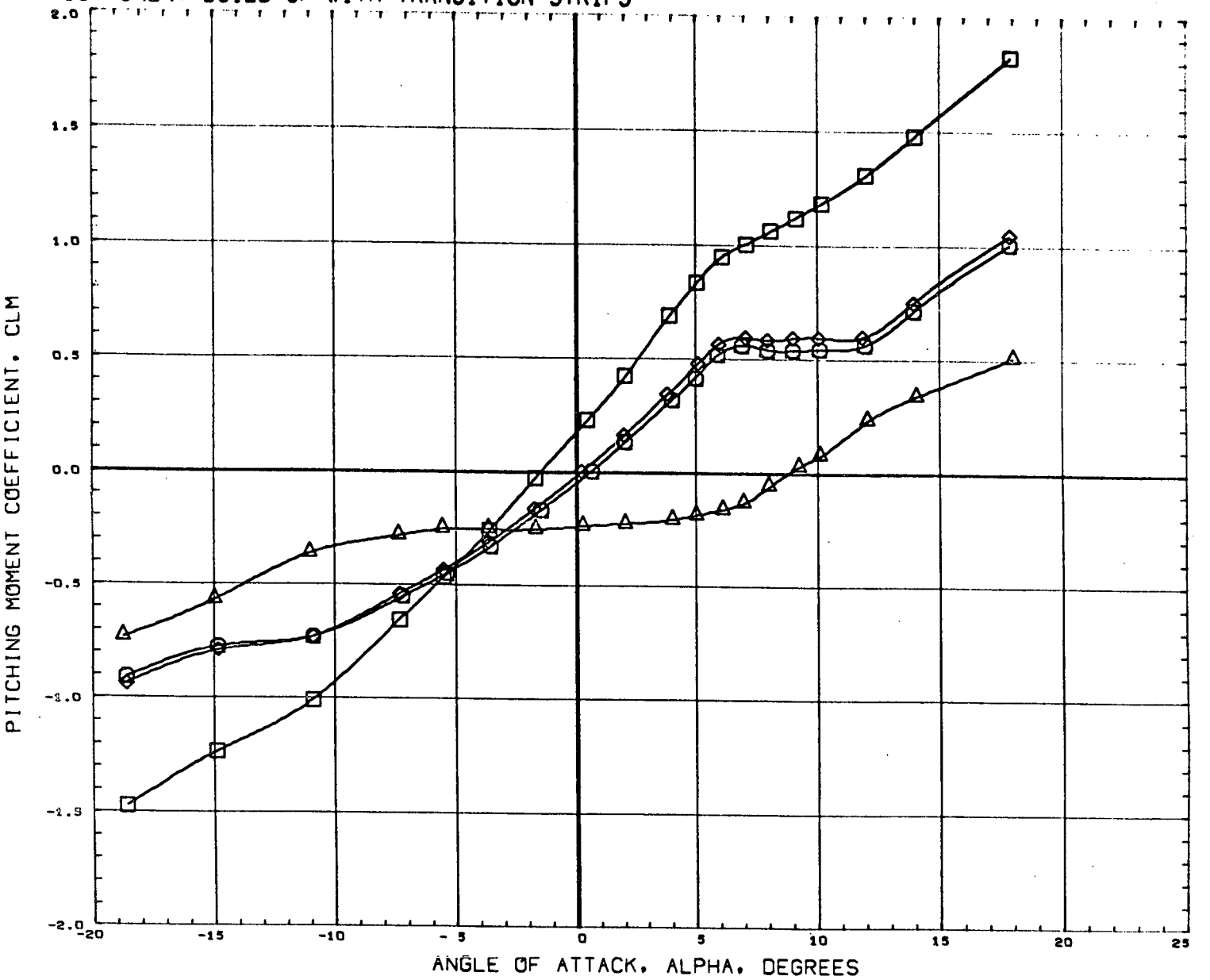
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION
(BG9173)	○	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3T(I)
(BG9174)	△	MSC S-8 PART-2 S4 SHUTTLECRAFT B1H6V3T(I)
(BG9175)	◇	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6T(I)
(BG9176)	□	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2T(I)

ELEVTR	FLAP	RUDDER	HORIZT
0.000	0.000	0.000	0.000
0.000		0.000	0.000
0.000	0.000		0.000
	0.000		

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

COMPONENT BUILD-UP WITH TRANSITION STRIPS

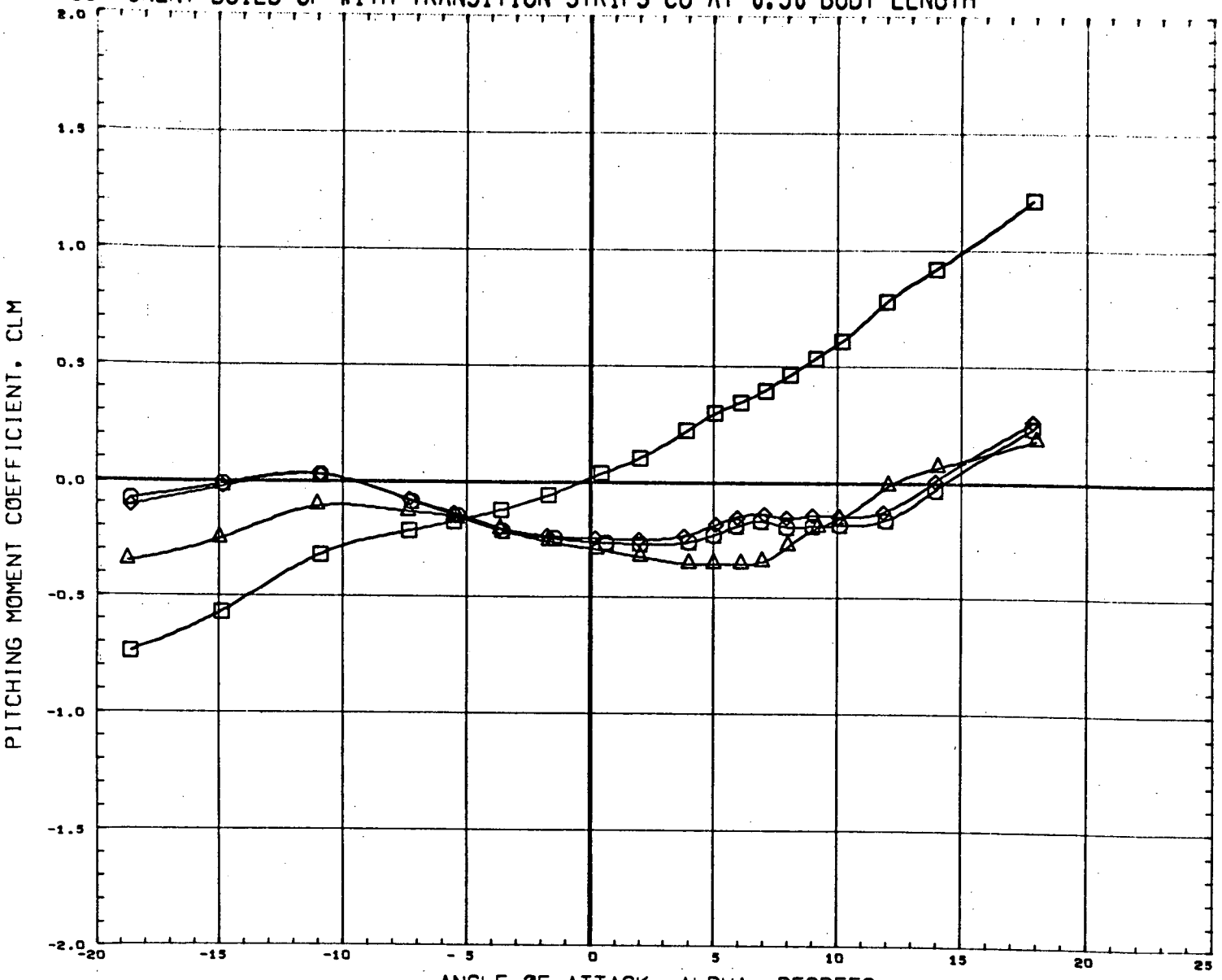


DATA SET SYMBOL		CONFIGURATION DESCRIPTION	ELEVTR	FLAP	RUDDER	HORIZT
(BG9173)	○	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3T(I)	0.000	0.000	0.000	0.000
(BG9174)	△	MSC S-8 PART-2 S4 SHUTTLECRAFT B1H6V3T(I)	0.000		0.000	0.000
(BG9175)	◇	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6T(I)	0.000	0.000		0.000
(BG9176)	□	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2T(I)		0.000		

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

COMPONENT BUILD-UP WITH TRANSITION STRIPS CG AT 0.50 BODY LENGTH

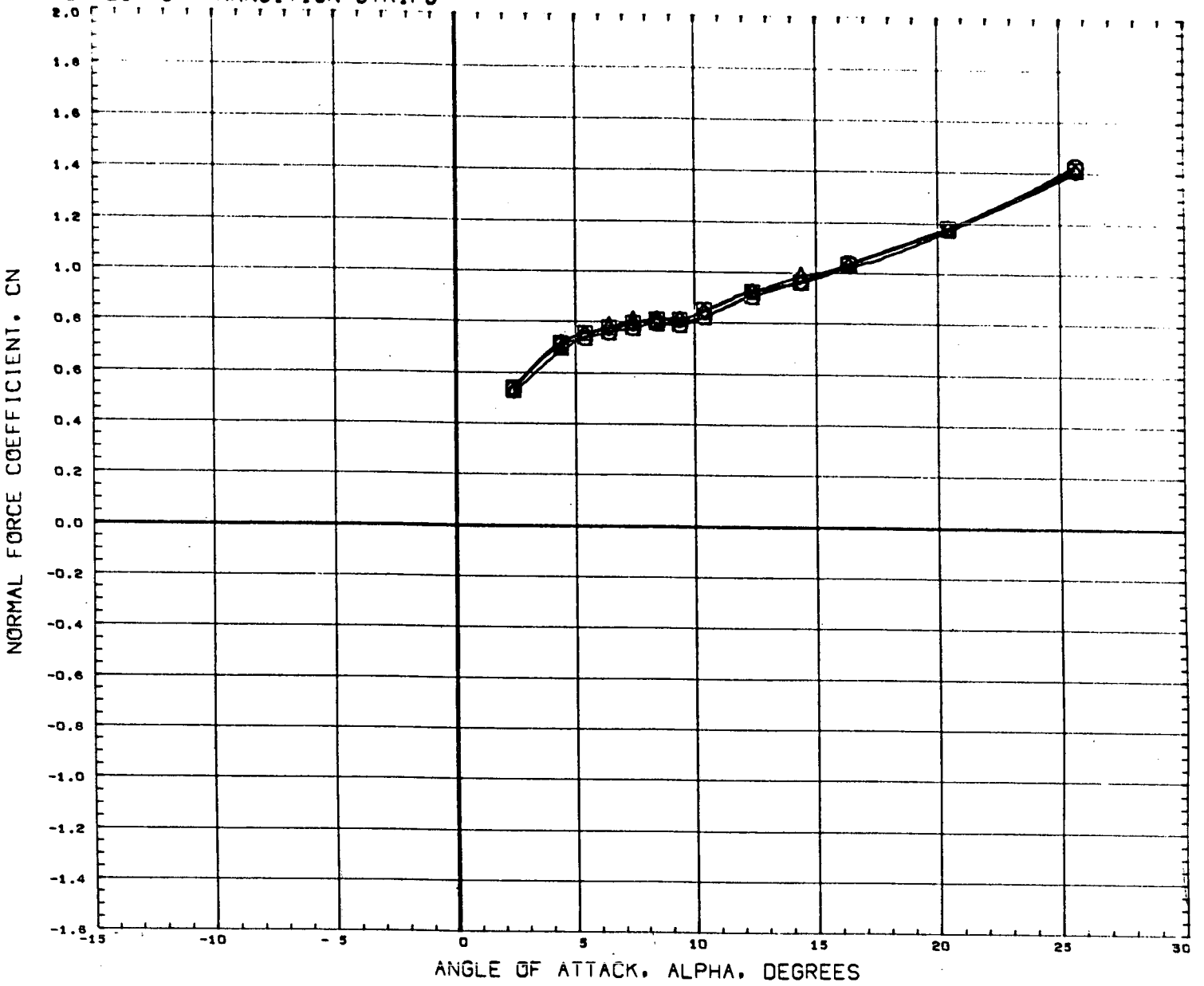


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	RUDDER	HORIZT
(AG9173)	○	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3T(I)	0.000	0.000	0.000	0.000
(AG9174)	△	MSC S-8 PART-2 S4 SHUTTLECRAFT B1H6V3T(I)	0.000		0.000	0.000
(AG9175)	◇	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6T(I)	0.000	0.000		0.000
(AG9176)	□	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2T(I)		0.000		

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	34.5000	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

EFFECT OF TRANSITION STRIPS

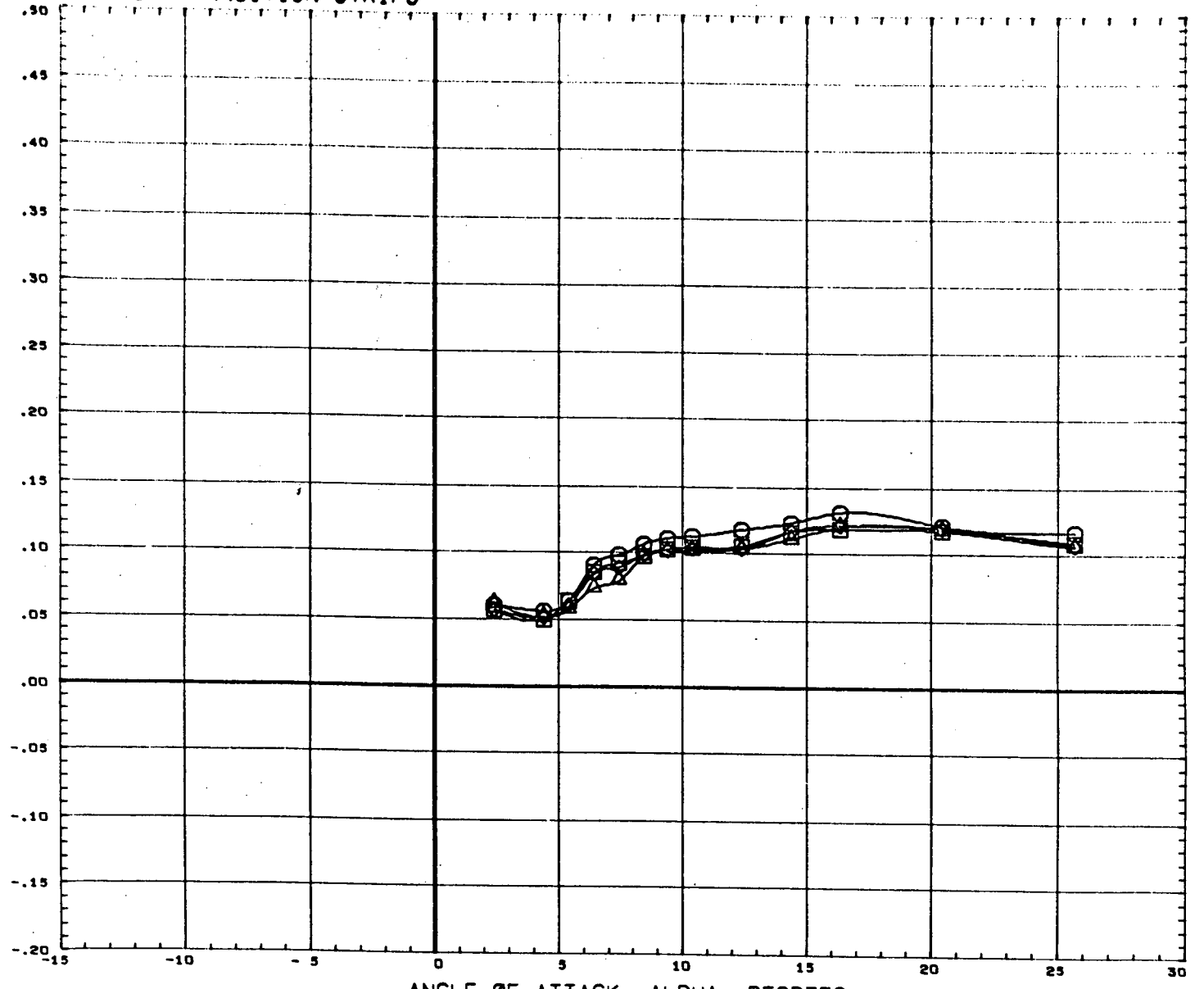


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	RUDDER	HORIZT
(RG9177)	○	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3T	0.000	0.000	0.000	0.000
(RG9178)	△	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3R1T	0.000	0.000	0.000	0.000
(RG9179)	◇	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3R1	0.000	0.000	0.000	0.000
(RG9180)	□	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.000	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

EFFECT OF TRANSITION STRIPS

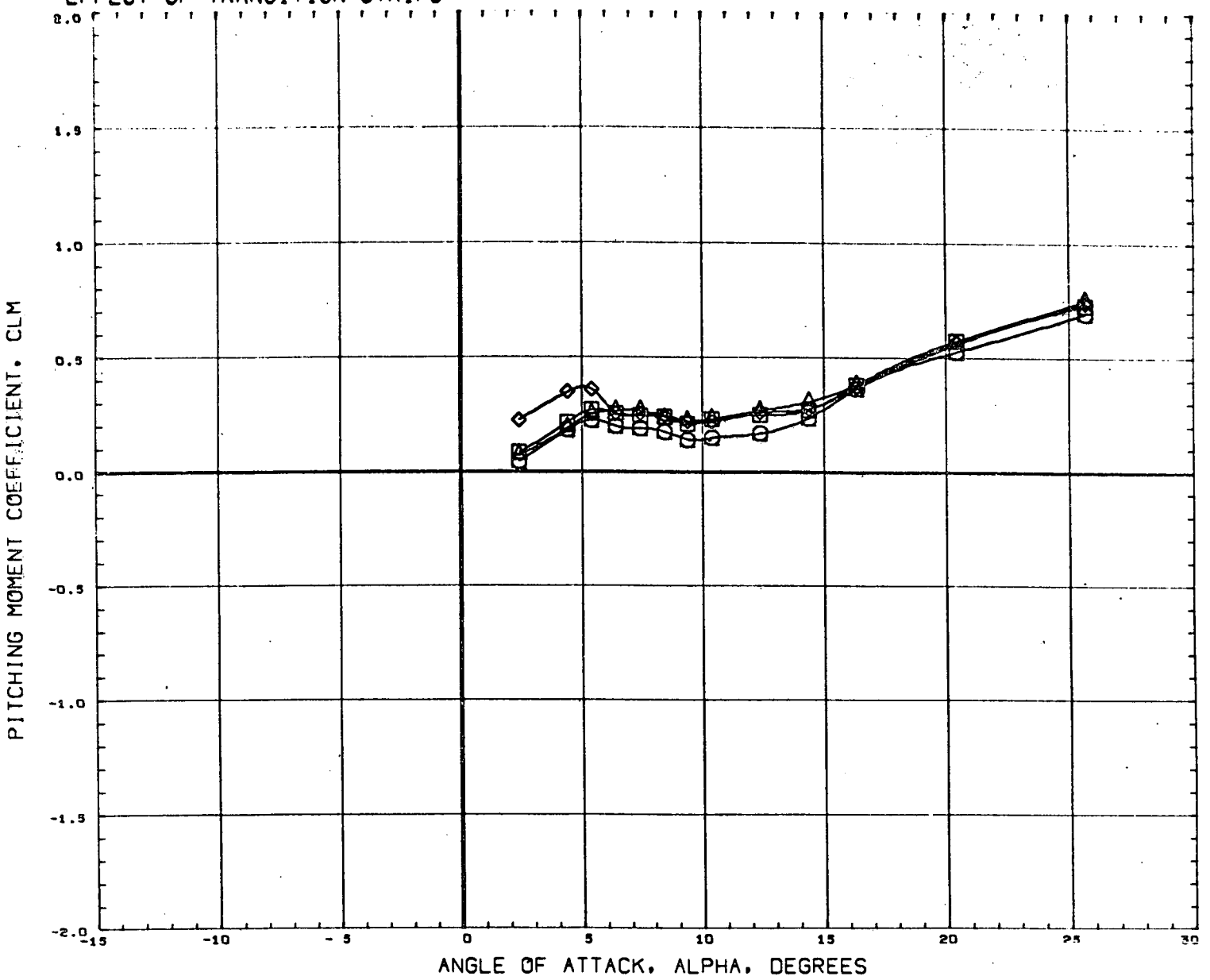


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	RUDDER	HORIZT
(RG9177)	○	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3T	0.000	0.000	0.000	0.000
(RG9178)	△	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3R1T	0.000	0.000	0.000	0.000
(RG9179)	◇	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3R1	0.000	0.000	0.000	0.000
(RG9180)	□	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.000	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

EFFECT OF TRANSITION STRIPS

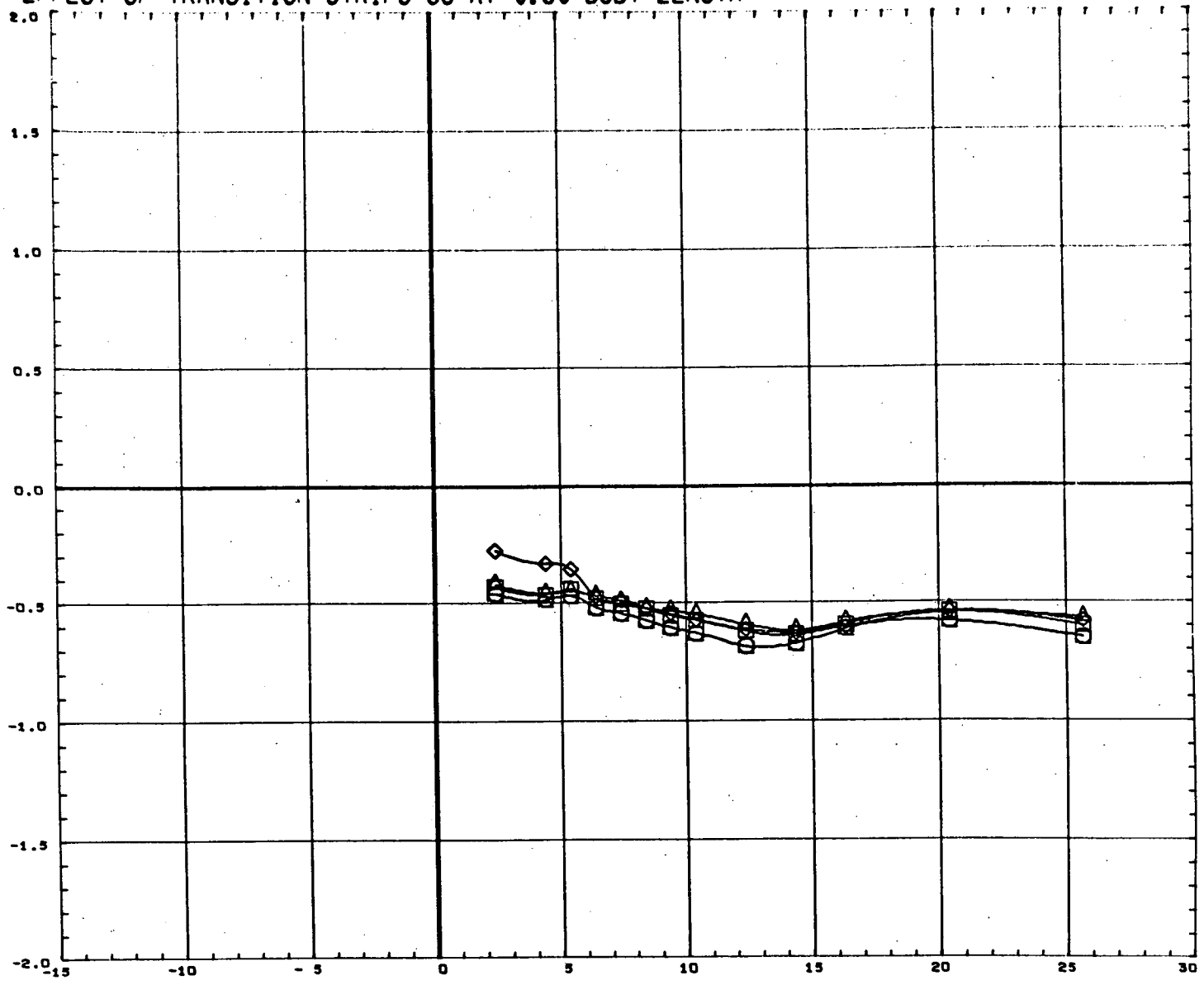


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	RUDDER	HORIZT
(RG9177) ○	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3T	0.000	0.000	0.000	0.000
(RG9178) △	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3R1T	0.000	0.000	0.000	0.000
(RG9179) ◇	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3R1	0.000	0.000	0.000	0.000
(RG9180) □	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.000	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	41.3960	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25

EFFECT OF TRANSITION STRIPS CG AT 0.50 BODY LENGTH



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	FLAP	RUDDER	HORIZT
(AG9177)	○	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3T	0.000	0.000	0.000	0.000
(AG9178)	△	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3R1T	0.000	0.000	0.000	0.000
(AG9179)	◇	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3R1	0.000	0.000	0.000	0.000
(AG9180)	□	MSC S-8 PART-2 S4 SHUTTLECRAFT B1W2H6V3	0.000	0.000	0.000	0.000

REFERENCE INFORMATION		
SREF	2.3000	SQ.FT
LREF	0.6121	FEET
BREF	3.9946	FEET
XMRP	34.5000	INCH
YMRP	0.0000	INCH
ZMRP	6.3960	INCH
SCALE	5.0000	PCT

MACH .25