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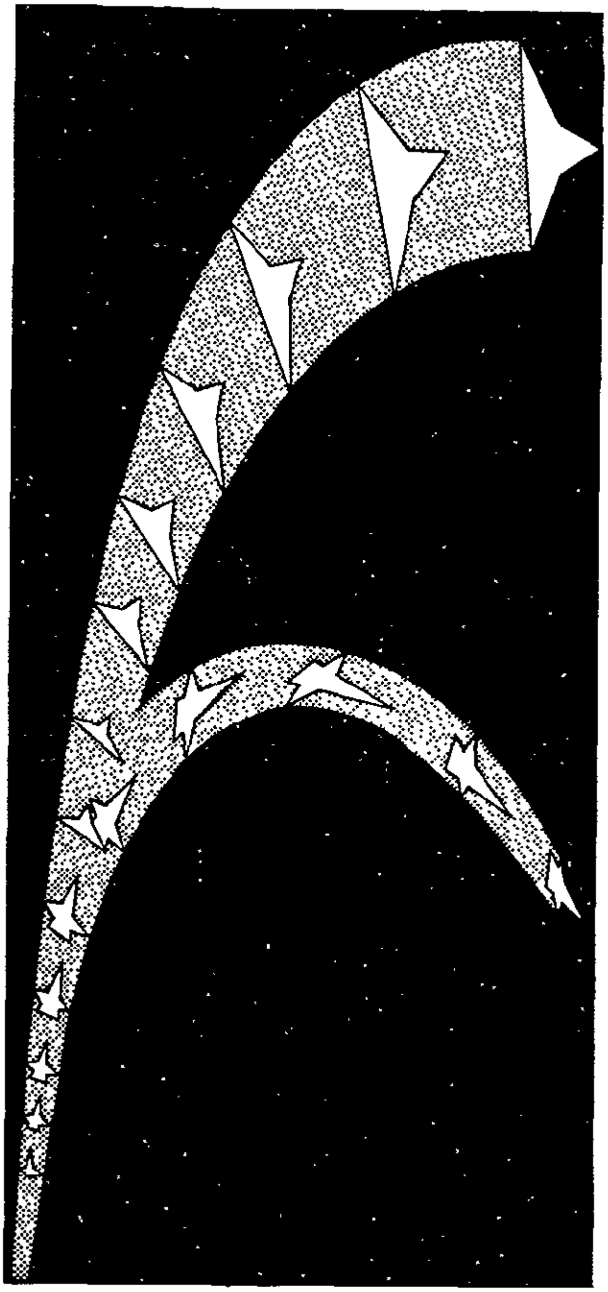

—SPACE SHUTTLE—

BASIC HYPERSONIC FORCE DATA FOR GRUMMAN DELTA WING ORBITER CONFIGURATIONS ROS-NBI AND ROS-WBI

by

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GRUMMAN FARMINGDALE
36 INCH HYPERSONIC
TUNNEL

SADSAC SPACE SHUTTLE
AEROTHERMODYNAMIC
DATA MANAGEMENT SYSTEM

CONTRACT NAS8-4016
MARSHALL SPACE FLIGHT CENTER

SPACE DIVISION CHRYSLER CORPORATION

NASA Series Number: S-0604

DMS-DR-1159
AUGUST, 1971

SADSAC/SPACE SHUTTLE

WIND TUNNEL TEST DATA REPORT

CONFIGURATION: Grumman Configurations ROS-NB1 and ROS-WB1

TEST PURPOSE: Determine Basic Hypersonic Force Data For Two Delta Wing Orbiter Configurations

TEST FACILITY: Grumman Farmingdale 36" Hypersonic Tunnel

TESTING AGENCY: Grumman Aerospace Corporation

TEST NO. & DATE: GFHT-019 4/28/71 to 5/7/71

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CONTRACT NAS 8-4016 AMENDMENT 153 DRL 184 - 58

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ABSTRACT

Two 1/200 scale models of the Grumman ROS-NB1 and ROS-WB1 space shuttle orbiters were tested in the GAC Hypersonic Wind Tunnel at a Mach number of 10. Model angle of attack, α, was varied from 20° to 65° at nominal sideslip angles of 0°, -3°, and -10° (Note: See Data Reduction section). Data were taken at approximately 2° increments while the model was being pitched at a rate of 8° per second.

Two different basic configurations were tested, the narrow body ROS-NB1, and the wide body ROS-WB1. Symmetric and asymmetric elevon deflections were tested to determine longitudinal and lateral control effectiveness. The effect of the rudder body flap, an auxiliary ventral fin and a different fuselage nose was also determined.

All testing was conducted without transition.

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SUMMARY

This report presents the details of the first series of hypersonic tests conducted on 1/200 scale models of the Grumman Aerospace ROS-NB1 and ROS-WB1 orbiter vehicles in the Grumman Farmingdale 36" Hypersonic Tunnel. The period of occupancy was from April 28 to May 7 on a one shift per day basis with the Grumman designation for this test being GFHT-019.

Additional tests were conducted on this same model in other Grumman facilities to more fully cover the Mach number range. The complete series of tests is covered in the following reports:

SADSAC Report No.	Mach No. Range
DMS-DR-1081	0.17
DMS-DR-1161	0.7 to 1.15
DMS-DR-1163	2.0 and 2.5
DMS-DR-1159	10.0

Six component aerodynamic force and moment coefficient data are presented herein in plotted form and cover an angle of attack range from 20° to 65° at nominal values of sideslip of 0°, -3° and -10°.

SUMMARY OF SADSAC NOMENCLATURE

COEFFICIENT	COEFFICIENT NAME	SADSAC NOMENCLATURE		
		BODY AXIS	STABILITY AXIS	WIND AXIS
C_A	Total Axial Force	CA	-	-
C_{A_B}	Base Axial Force	CAB	-	-
C_{A_F}	Forebody Axial Force	CAF	-	-
C_D	Total Drag Force	-	CD	CDTOTL
C_{D_B}	Base Drag Force	-	CDB	CDBASE
C_{D_F}	Forebody Drag Force	-	CDF	CDFORE
C_L	Lift Force	-	CL	CL
C_N	Normal Force	CN	-	-
C_Y	Side Force	CY	CY	CC
C_ℓ	Rolling Moment	CBL	CSL	CWL
C_m	Pitching Moment	CLM	CLM	CPM
C_n	Yawing Moment	CYN	CLN	CLN
L/D	Lift-To-Drag Force Ratio	-	L/D	CL/CD
L/D	Lift-To-Forebody Drag Force Ratio	-	L/DF	CL/CDF
N/A	Normal-To-Axial Force Ratio	N/A	-	-
N/A	Normal-To-Forebody Axial Force Ratio	CN/CAF	-	-

CONFIGURATIONS INVESTIGATED

The following model components were utilized during these tests:

- B_1 - basic fuselage for ROS-NB1
- B_{1A} - basic fuselage modified as shown in Figure 6
- B_2 - basic fuselage for ROS-WB1
- W_1 - basic delta wing
- V_1 - basic vertical tail for ROS-NB1
- V_2 - twin body tails, basic tails for ROS-WB1
- F_1 - body flap
- U_1 - ventral fins

Pertinent dimensional information for each of the above components can be found in the "Model Component Description Sheet" section of this report. The data set collation sheets which follow immediately give a complete test configuration summary.

TEST GFHT-019 DATA SET COLLATION SHEET

BASIC HYPERSONIC FORCE DATA ON TESTS OF TWO 1/200 SCALE MODELS OF THE GAC ROS-NBI AND ROS-WBI ORBITERS

☐ PRETEST
☒ POSTTEST

DATA SET IDENTIFIER	CONFIGURATION	SCHD. α	SCHD. β	CONTROL DEFLECTION δe_L	δe_R	δF	δu	NO. of RUNS	MACH NUMBERS 10											
RCT002	$B_1 W_1 V_1$	A	0	0	0	0	–	1	2											
RCT004	$B_1 W_1^{-10,0} V_1$	A	0	-10	0	0	–	1	4											
RCT005	$B_1 W_1^{10,0} V_1$	A	0	10	0	0	–	1	5											
RCT006	$B_1 W_1 V_1 F_1^{10}$	A	0	0	0	10	–	1	6											
RCT007	$B_1 W_1^{10,10} V_1 F_1^{10}$	A	0	10	10	10	–	1	7											
RCT008	$B_1 W_1^{-20,-20} V_1$	A	0	-20	-20	0	–	1	8											
RCT009	$B_1 W_1^{-40,-40} V_1$	A	0	-40	-40	0	–	1	9											
RCT011	$B_1 W_1 V_1 U_1^{10}$	A	0	0	0	0	10	1	11											
RCT012	$B_{1A} W_1 V_1$	A	0	0	0	0	–	1	12											
RCT014	$B_1 V_1$	A	0	–	–	0	–	1	14											
RCT015	$B_2 W_1 V_2$	A	0	0	0	0	–	1	15											
RCT016	$B_2 W_1$	A	0	0	0	0	–	1	16											
RCT017	$B_1 W_1 V_1 U_1^{0}$	A	0	0	0	0	0	1	17											
RCT018	$B_1 W_1 V_1 U_1^{0}$	A	B	0	0	0	0	1	18											
RCT020	$B_1 W_1 V_1$	A	B	0	0	0	–	1	20											
RCT021	$B_{1A} W_1 V_1$	A	B	0	0	0	–	1	21											
RCT023	$B_1 V_1$	A	B	–	–	0	–	1	23											
RCT024	$B_2 W_1 V_2$	A	B	0	0	0	–	1	24											
RCT025	$B_2 W_1$	A	B	0	0	0	–	1	25											
RCT026	$B_1 W_1 V_1$	A	C	0	0	0	–	1	26											

1	7	13	19	25	31	37	43	49	55	61	67	75 76
CN	CA	CY	CLM	CBL	CYM	BETA						

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

α or β SCHEDULES

$\alpha A = 20° \text{ to } 65°$

$\beta B = -10° \cos(\alpha)$

$\beta C = -3° \cos(\alpha)$

TEST GFHT-019 DATA SET COLLATION SHEET

☐ PRETEST
☒ POSTTEST

DATA SET IDENTIFIER	CONFIGURATION	SCHD. α	SCHD. β	CONTROL DEFLECTION δ_{EL}	δ_{ER}	δ_F	δ_u	NO. of RUNS	MACH NUMBERS 10											
RCT027	$B_1W_1V_1U_1$	A	C	0	0	0	0	1	27											
RCT028	$B_{1A}W_1V_1$	A	C	0	0	0	–	1	28											
RCT030	B_1V_1	A	C	0	0	0	–	1	30											
RCT001	$B_1W_1V_1$	A	0	0	0	0	–	1	1											

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

CN CA CY CLM CBL CYM BETA

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

α or β SCHEDULES

$\alpha A = 20° \text{ to } 65°$

$\beta C = -3° \cos(\alpha)$

TEST FACILITY DESCRIPTION

GRUMMAN 36-INCH HYPERSONIC TUNNEL

DESCRIPTION: This is an intermittent blowdown to vacuum type tunnel. The test section is 36 inches in diameter. High temperature air from a pebble bed heater is introduced to the test section through fixed contoured, axisymmetric nozzles.

PERFORMANCE PARAMETERS:

Mach Range:	8, 10, 14
Reynolds Number ($x10^6$/ft):	0.2 to 4.5
Stagnation Pressure (psia):	200 to 2200
Dynamic Pressure (psf):	100 to 1200
Stagnation Temperature (^oR):	1000 to 3500
Run Time (sec):	30 to 60

TESTING CAPABILITIES: Model mounting consists of a water-cooled, sting-balance sector rig which features a model injection system. Instrumentation for force, pressure, and heat transfer measurement is provided. A Schlieren system is available.

TEST CONDITIONS

TEST GFHT 019

MACH NUMBER	REYNOLDS NUMBER per unit length	DYNAMIC PRESSURE (pounds/sq. inch)	STAGNATION TEMPERATURE (degrees Fahrenheit)
10.0	2.32×10^6	2.16	1310

BALANCE UTILIZED: CHANCE - VOUGHT .625 in. VB-16

	CAPACITY:	ACCURACY:	COEFFICIENT TOLERANCE:
NF	200 lbs.	± .269 lbs.	.0060
SF	100 lbs.	± .228 lbs.	.0051
AF	60 lbs.	± .178 lbs.	.0040
PM	200 in-lbs.	± .402 in-lbs.	.0009
YM	100 in-lbs.	± .455 in-lbs.	.0016
RM	80 in-lbs.	± .601 in-lbs.	.0022

COMMENTS:

DATA REDUCTION

A Chance-Vought .625 inch VB-16 six component strain gage balance was used to measure orbiter forces and moments. All final data were presented along and about a set of body axis passing through a nominal center of gravity located at F.S. 1485, W.L. 377 and B.L. 0. Data were converted to standard NASA Coefficients using the following constants:

Reference area:	$S_{ref} = 20.689$ sq. in.
Reference length:	$\ell_{ref} = 9.648$ in.
Reference span:	$b_{ref} = 5.838$ in.

No adjustment was made to the final data to account for the model base and balance cavity pressure contributions.

Nominal sideslip angles are indicated under the parameter values with each dataset. However, angles of sideslip in the nominal -3^{o} and -10^{o} cases were actually $\beta = -3^{o} \cos(\alpha)$ and $-\beta = 10^{o} \cos(\alpha)$ respectively. Care must be exercised when using the data to bear this in mind and to interpret the data accordingly.

Refer to Figure 1 for values of beta as a function of alpha.

SUMMARY DATA PLOT INDEX

SUMMARY DATA PLOT INDEX

(CONTINUED)

PLOTTED COEFFICIENTS SCHEDULE:

(A) - CN, CLM, CA, CL, CD, L/D vs. α

CN vs. CLM, CL vs. CD

(B) - CY, CYN CBL vs. α

FIGURES

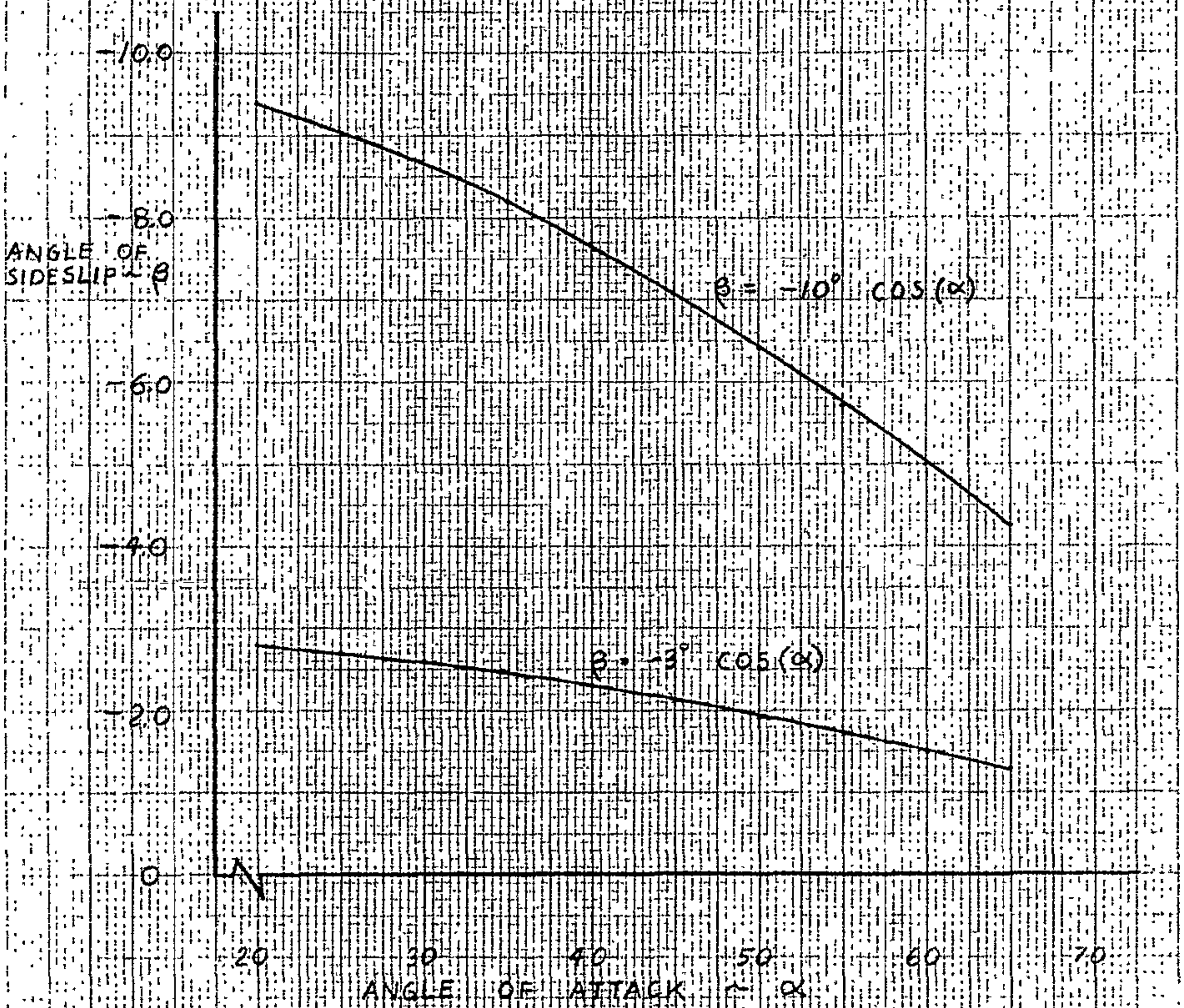


FIGURE 1. BETA VARIATION WITH ALPHA

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.

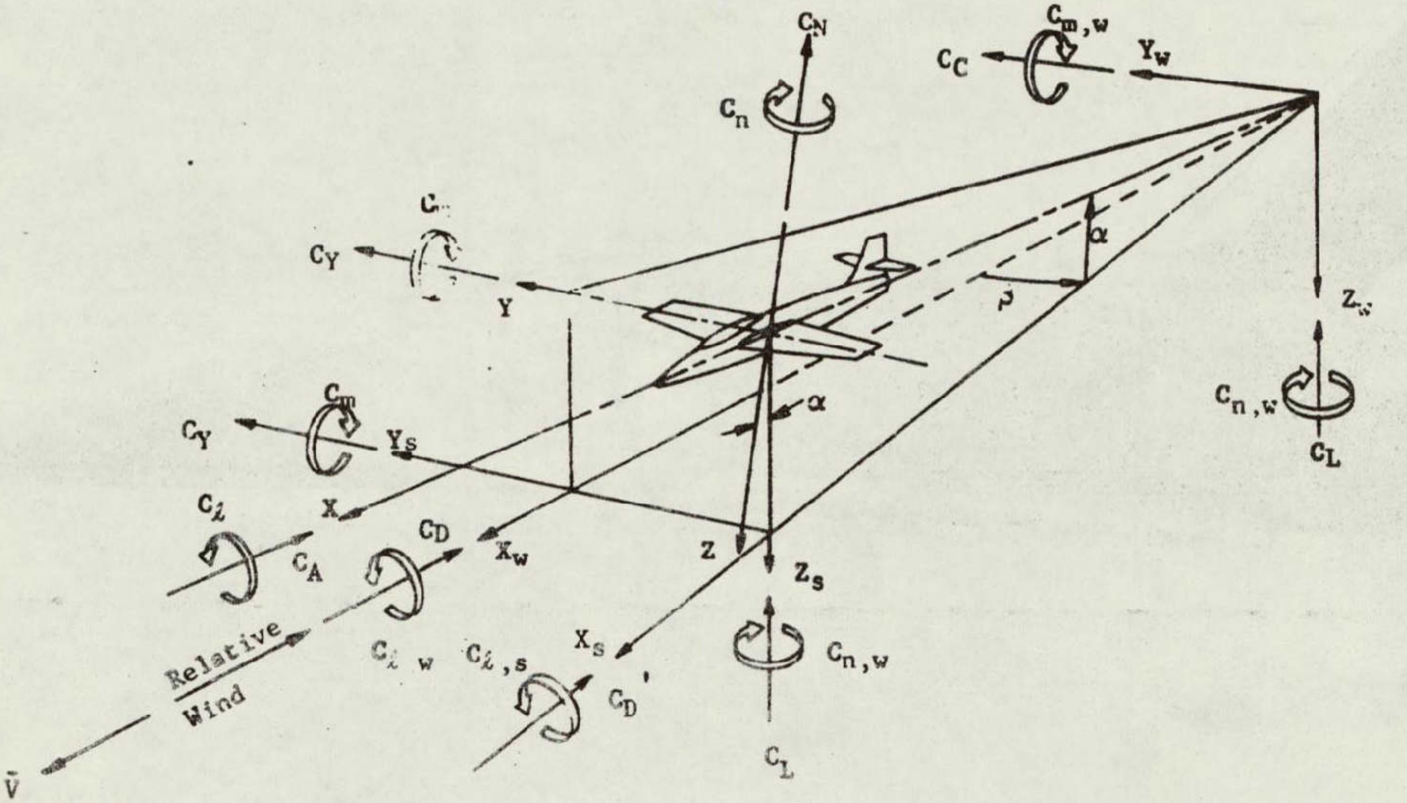


Figure 2. Axis systems, showing direction and sense of force and moment coefficients, angle of attack, and sideslip angle

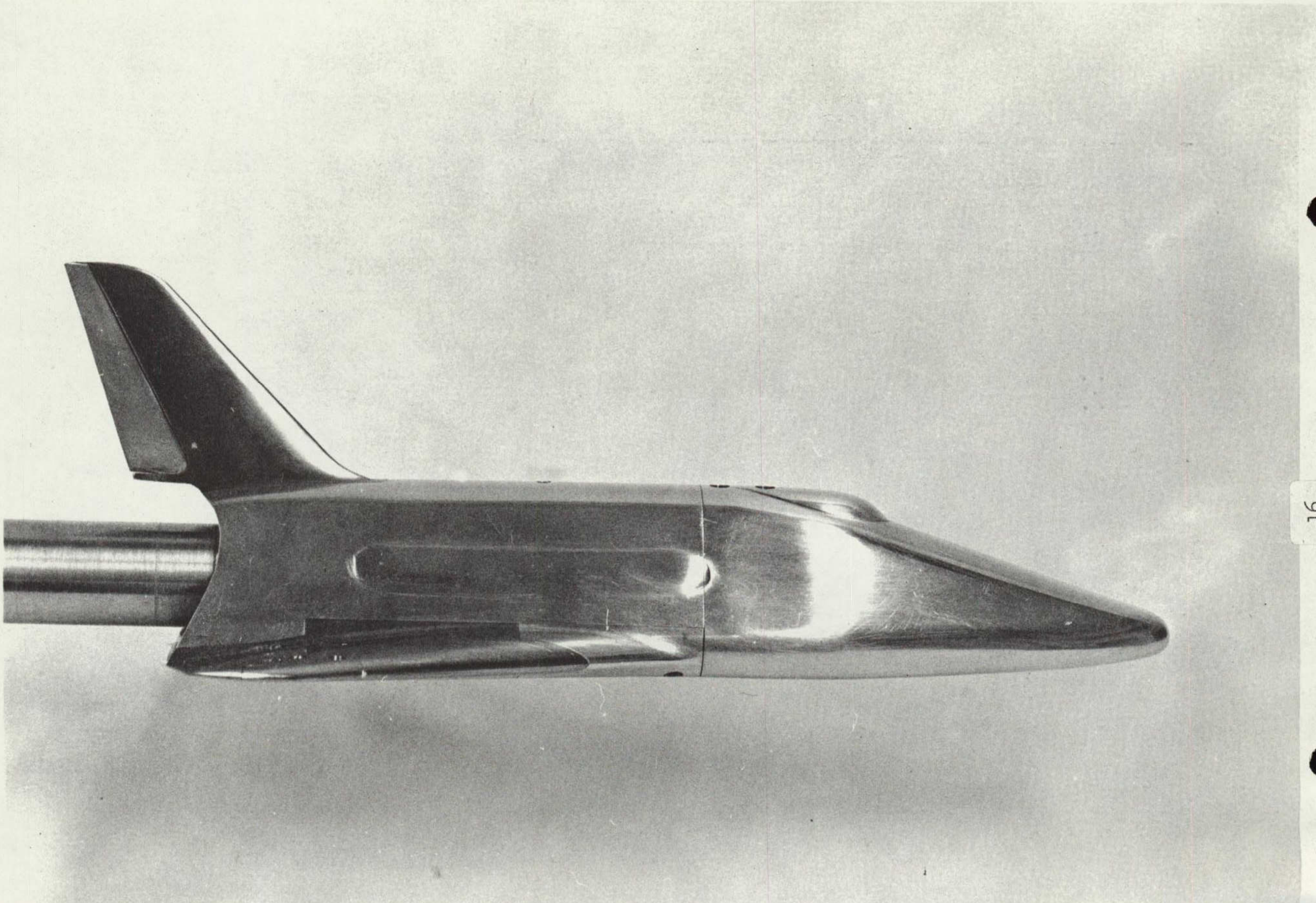


FIGURE 3. PHOTOGRAPH OF G.A.C. CONFIGURATION ROS-NB1

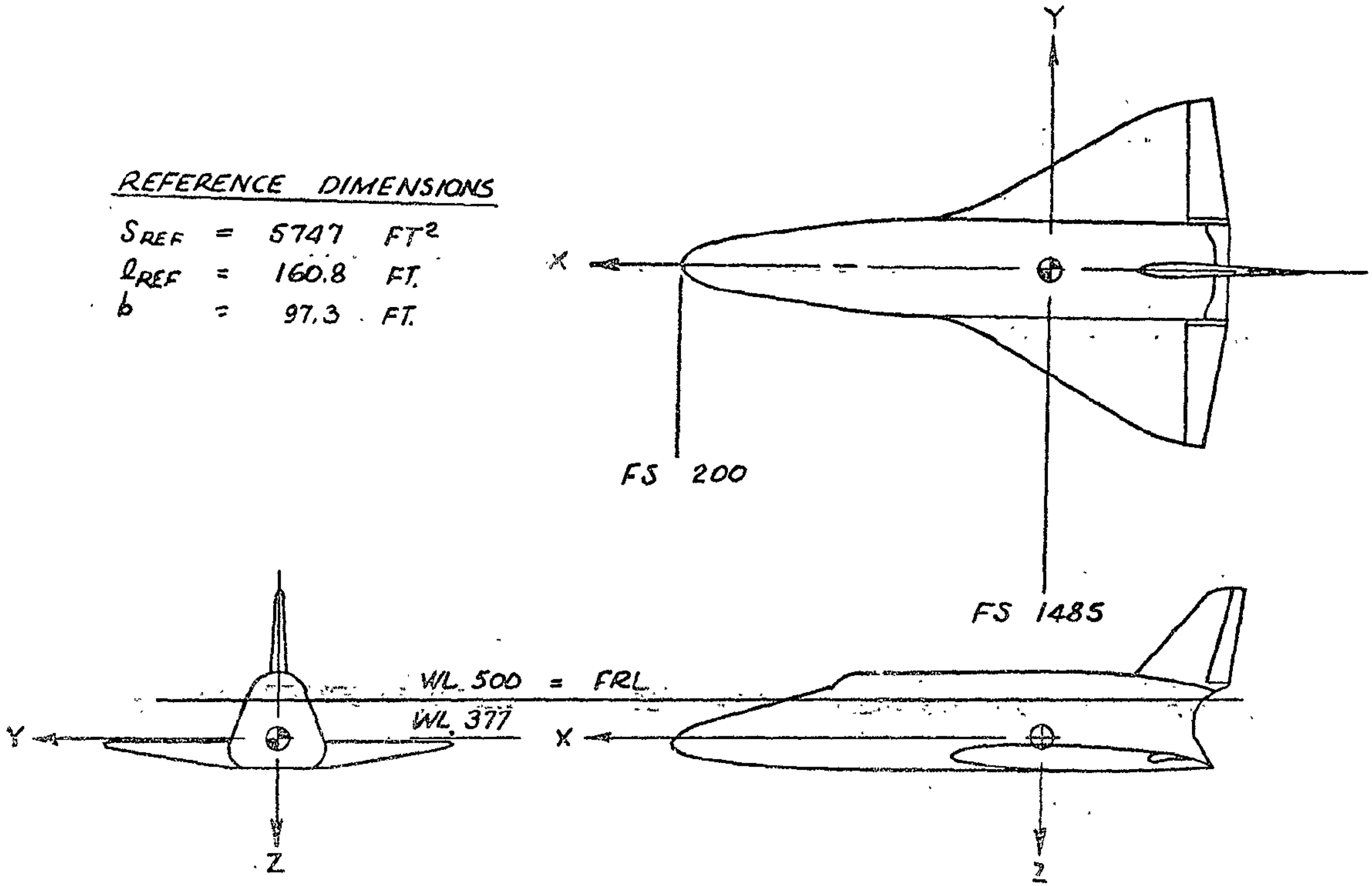


FIGURE 4. GENERAL ARRANGEMENT-BOS-NB1

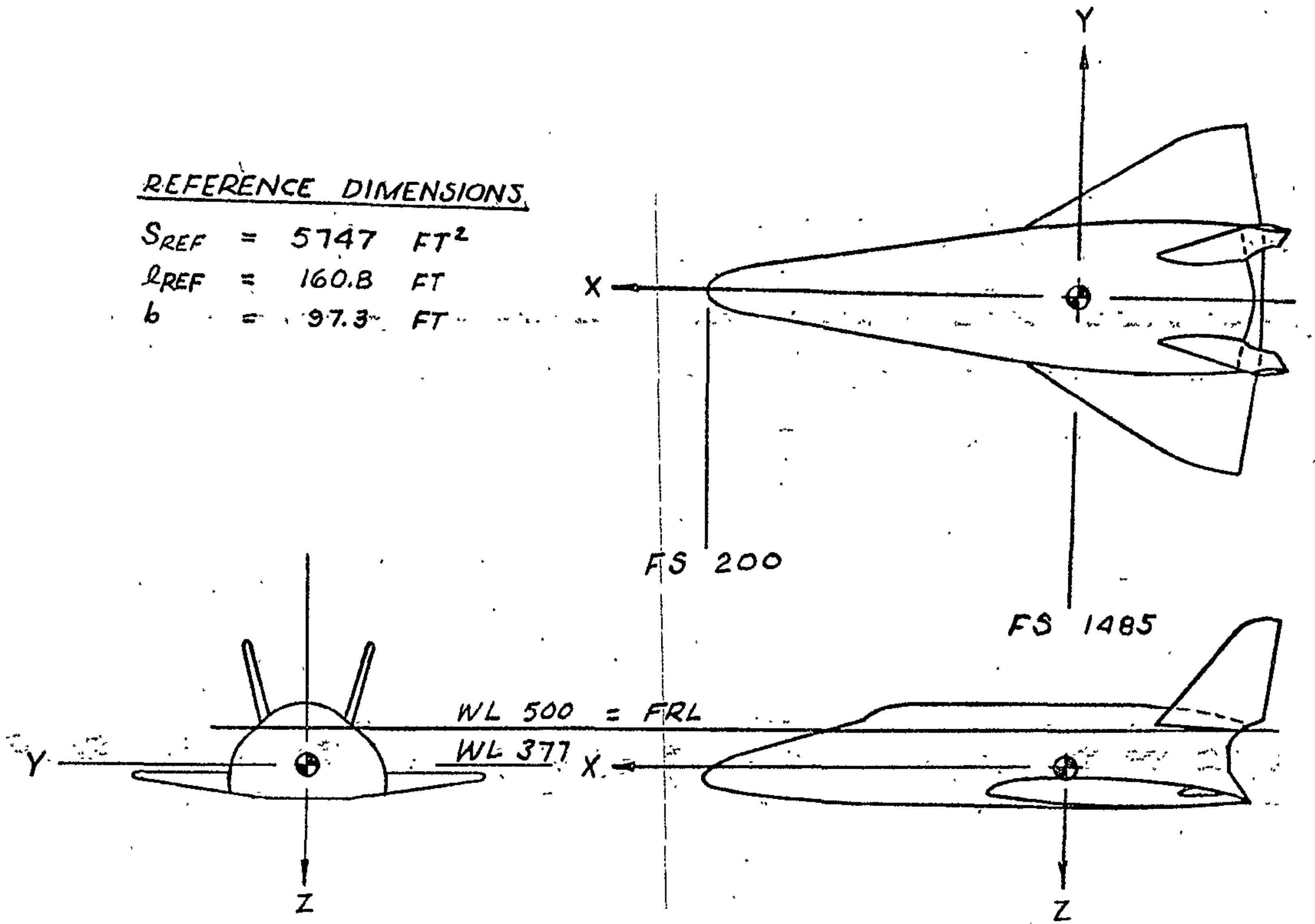


FIGURE 5. GENERAL ARRANGEMENT - ROS- WB1

B_{1A} Basic ROS-NB1 with modifications to lower surface of fuselage and nose. Defined in 518 MOD 909 (Available upon request from Aero Test, x7044) and in cross-sections below.

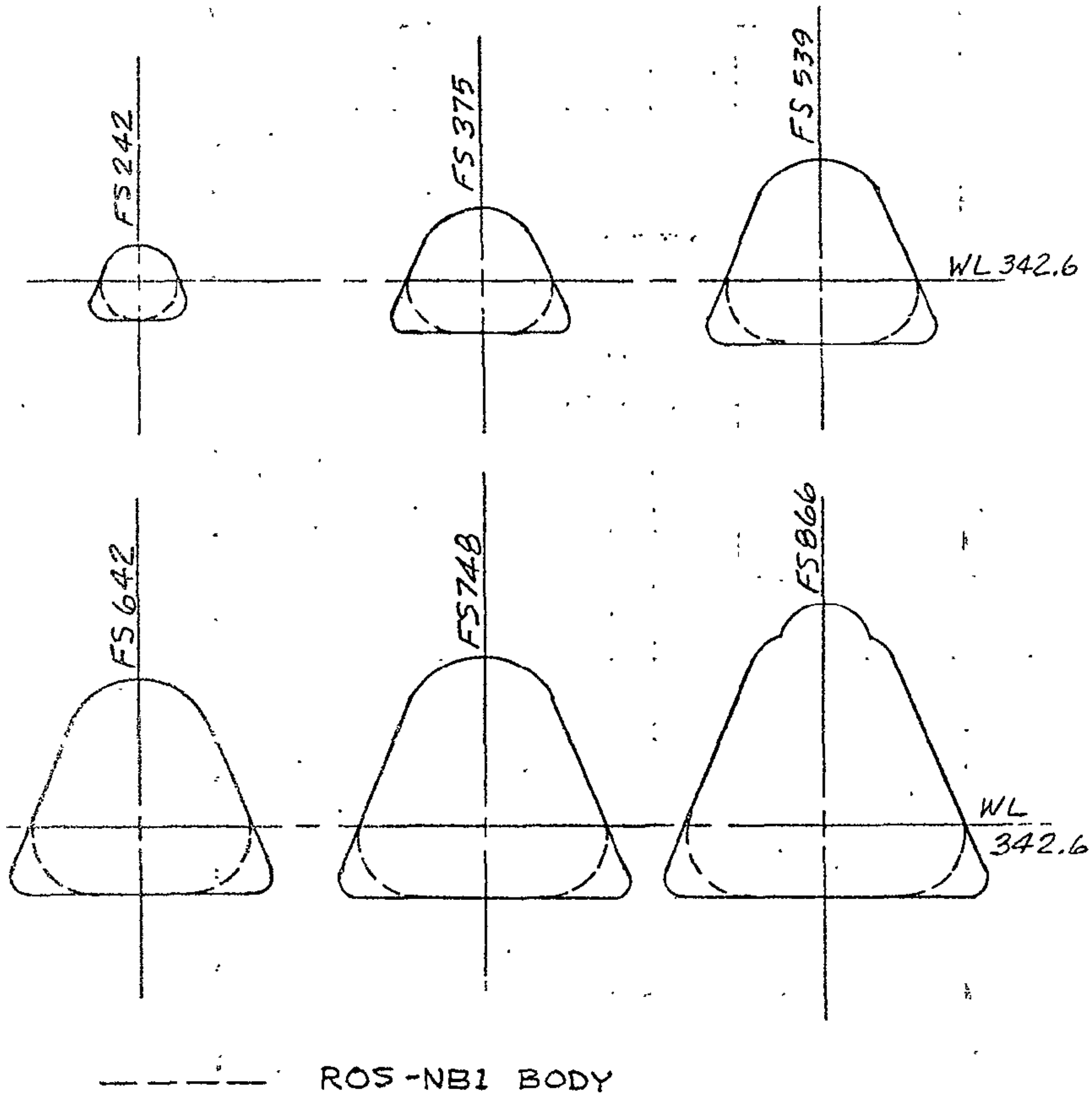
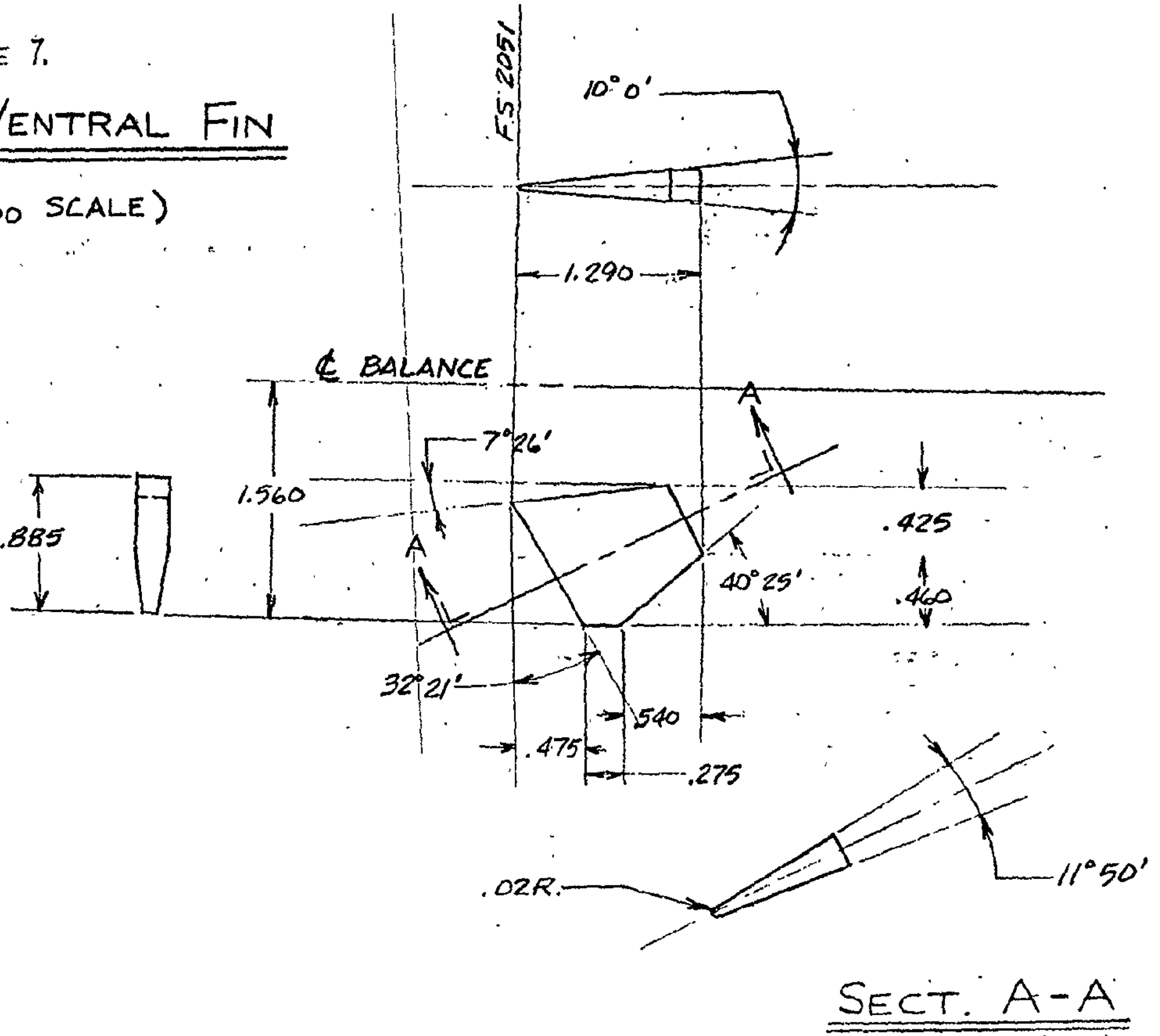


FIGURE 6. ROS NB1 BODY, B_1, AND B_{1A}

FIGURE 7.

U_1 - VENTRAL FIN

(1/200 SCALE)



F_1^x Body flap at lower aft end of vehicle. Hinge line is at FS 1983.125 and dimensions are as noted below. (superscript indicates the deflection angle, with positive deflections T.E. down)

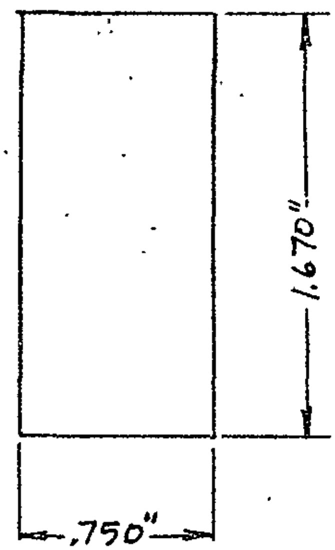


FIGURE 8. BODY FLAP, F_1

MODEL COMPONENT DESCRIPTION SHEETS

MODEL COMPONENT: BODY - B_1

GENERAL DESCRIPTION: BASIC ROS-NB1 BODY

DRAWING NUMBER: 518 MOD 900

DIMENSIONS:	FULL-SCALE (FT. or FT^2)	MODEL SCALE (IN. OR $IN.^2$)
Length	160.8	9.648
Max. Width	28.0	1.680
Max. Depth	28.7	1.722
Fineness Ratio	5.61	5.61
Area		
Max. Cross-Sectional	616	2.218
Planform	3990	14.364
Wetted	12,610	45.396
Base	590	2.124

MODEL COMPONENT: BODY - B_2

GENERAL DESCRIPTION: BASIC ROS-WB1 BODY

DRAWING NUMBER: 518 MOD 903

DIMENSIONS:	FULL-SCALE (FT. OR FT.^{2})	1/200 MODEL SCALE (IN. OR IN.^{2})
Length	160.8	9.648
Max. Width	44.8	2.688
Max. Depth	28.8	1.728
Fineness Ratio	3.6	3.6
Area		
Max. Cross-Sectional	956	3.442
Planform	5160	18.576
Wetted	13,230	47.628
Base	744	2.678

MODEL COMPONENT: WING - W_1

GENERAL DESCRIPTION: BASIC ROS-NB 1 WING

DRAWING NUMBER: 518 MOD 902

DIMENSIONS:	FULL-SCALE (FT. OR FT.^{2})	MODEL SCALE
TOTAL DATA		
Area		
Planform	5747	20.7 in.^{2}
Wetted	7780	28 in.^{2}
Span (equivalent)	97.3	5.84in.
Aspect Ratio	1.65	1.65
Rate of Taper	1.87	1.87
Taper Ratio	.129	.129
Diehedral Angle, degrees	5°	5°
Incidence Angle, degrees	+ 2° @ body	-3° @ tip
Aerodynamic Twist, degrees		
Toe-In Angle		
Cant Angle		
Sweep Back Angles, degrees		
Leading Edge	60°	60°
Trailing Edge	-8.4°	-8.4°
0.25 Element Line	42.9°	42.9°
Chords:		
Root (Wing Sta. 0.0)	104.6	6.276 in.
Tip, (equivalent)	13.5	0.81 in.
MAC	59.0	3.54 in.
Fus. Sta. of .25 MAC	1580	1580
W.P. of .25 MAC	302.6	302.6
B.L. of .25 MAC	290	290
Airfoil Section		
Root	18% max.camber 10% thickness	
Tip	3% max.camber 10% thickness	
EXPOSED DATA		
Area	3217	11.58 in.^{2}
Span, (equivalent)	69.3	4.16 in.
Aspect Ratio	1.5	1.5
Taper Ratio	.172	.172
Chords		
Root	78.25	4.7 in.
Tip	13.5	0.81 in.
MAC	46.4	2.78 in.
Fus. Sta. of .25 MAC		
W.P. of .25 MAC		
B.L. of .25 MAC		

MODEL COMPONENT: Elevon (For the W_1 Wing)

GENERAL DESCRIPTION: Moveable Control Surface Associated With the W_1 Wing

DRAWING NUMBER: 518 MOD 902

DIMENSIONS:

	FULL-SCALE (ft. or ft.^{2})	1/200 MODEL SCALE (in. or in.^{2})
Area	364	1.310
Span (equivalent)	35.5	2.130
~~Inb'd equivalent~~ Root chord	12.75	.765
Outb'd equivalent chord	7.75	.465
Ratio Elevator chord/horizontal tail chord		
At Inb'd equiv. chord		
At Outb'd equiv. chord		
Sweep Back Angles, degrees		
Leading Edge	0°	0°
Tailing Edge	-8.4°	-8.4°
Hingeline		
Area Moment (Normal to hinge line)		

MODEL COMPONENT: $\mathrm{\underline{C}}$ VERTICAL TAIL - V_7

GENERAL DESCRIPTION: BASIC ROS-NB 1 VERTICAL TAIL

DRAWING NUMBER: 518 MOD 902

DIMENSIONS:

	FULL-SCALE (FT. OR FT.^{2})	MODEL SCALE (IN. OR IN.^{2})
Area	805	2.898
Span (equivalent)	33.3	1.998
Inb'd equivalent chord	34.6	2.076
Outb'd equivalent chord	13.75	.825
Ratio movable surface chord/ total surface chord		
At Inb'd equiv. chord	.3	.3
At Outb'd equiv. chord	.3	.3
Sweep Back Angles, degrees		
Leading Edge	45°	45°
Tailing Edge	19.7°	19.7°
Hingeline	28.7°	28.7°
Area Moment (Normal to hinge line)	945	.204
AIRFOIL SECTION	64A010	64A010

MODEL COMPONENT: Rudder (for the V_1 vertical tail)

GENERAL DESCRIPTION: Moveable Control Surface Associated With the V_1 Vertical Tail

DRAWING NUMBER: 518 MOD 902

DIMENSIONS:

	FULL-SCALE (ft. or ft^2)	1/200 MODEL SCALE (in. or $in.^2$)
Area	240	.864
Span (equivalent)	33.3	1.998
ROOT ~~Inbd equivalent~~ chord	10.4	.624
Outb'd equivalent chord	4.02	.241
Ratio RUDDER ~~Elevator~~ chord/horizontal tail chord		
At Inb'd equiv. chord	.3	.3
At Outb'd equiv. chord	.3	.3
Sweep Back Angles, degrees		
Leading Edge	29.5°	29.5°
Tailing Edge	19.7°	19.7°
Hingeline		
Area Moment (Normal to hinge line)		

MODEL COMPONENT: TWIN BODY TAILS - V_2

GENERAL DESCRIPTION: BASIC ROS-WB1 VERTICAL TAILS

DRAWING NUMBER: 518 MOD 905

DIMENSIONS:

	FULL-SCALE (FT. OR FT.^{2})	MODEL SCALE (IN. OR IN.^{2})
Area	670	2.412
Span (equivalent)	35.5	2.130
Inb'd equivalent chord	33.17	1.990
Outb'd equivalent chord	9.08	.545
Ratio movable surface chord/ total surface chord		
At Inb'd equiv. chord		
At Outb'd equiv. chord		
Sweep Back Angles, degrees		
Leading Edge	40°	40°
Tailing Edge	8.5°	8.5°
Hingeline		
Area Moment (Normal to hinge line)		
AIRFOIL SECTION	NACA 64A010	NACA 64A010
CANT ANGLE (OUTBOARD)	15°	15°

NOMENCLATURE

(General)

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

NOMENCLATURE (Continued)

Reference & C. G. Definitions

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

NOMENCLATURE (Continued)

Axis System General

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

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

NOMENCLATURE (Continued)

Body & Stability Axis System

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

NOMENCLATURE (Continued)

Surface Definitions

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

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

TABULATED DATA LISTING

A tabulated data listing, consisting of all aero data sets, both original and those created in arriving at the plotted material to be presented subsequently, is available as an addendum to this report. The tabular listing is made up in two sections:

(a) a brief summary list of all data sets containing the identifier, the descriptor, and the resident dependent variables.

(b) a full list of all data sets containing all resident or selected aerodynamic coefficients of the data sets as well as the above mentioned information.

The listing is currently sent on limited distribution to the following organizations:

NASA AMES	Mr. V. Stevens
NASA MSC	Mr. Ray Nelson
GAC	Mr. M. Quan

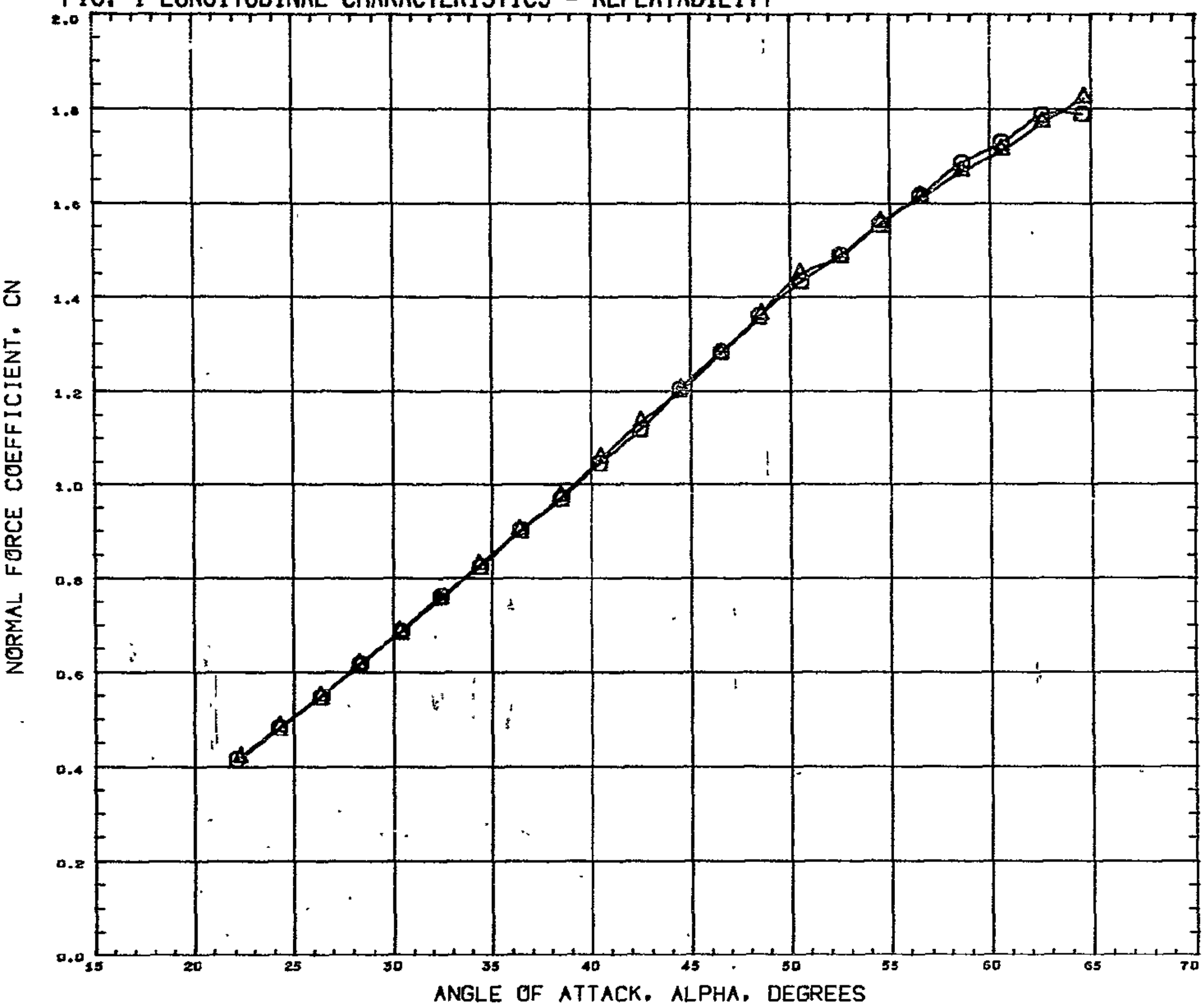
If copies of this listing are desired, please contact the above or the cognizant SADSAC personnel who, for this data, is:

Miss B. J. Fricken
Department 2780
Chrysler Corporation Space Division
New Orleans, La. 70129

(504) 255-2304

PLOTTED DATA

FIG. 1 LONGITUDINAL CHARACTERISTICS - REPEATABILITY



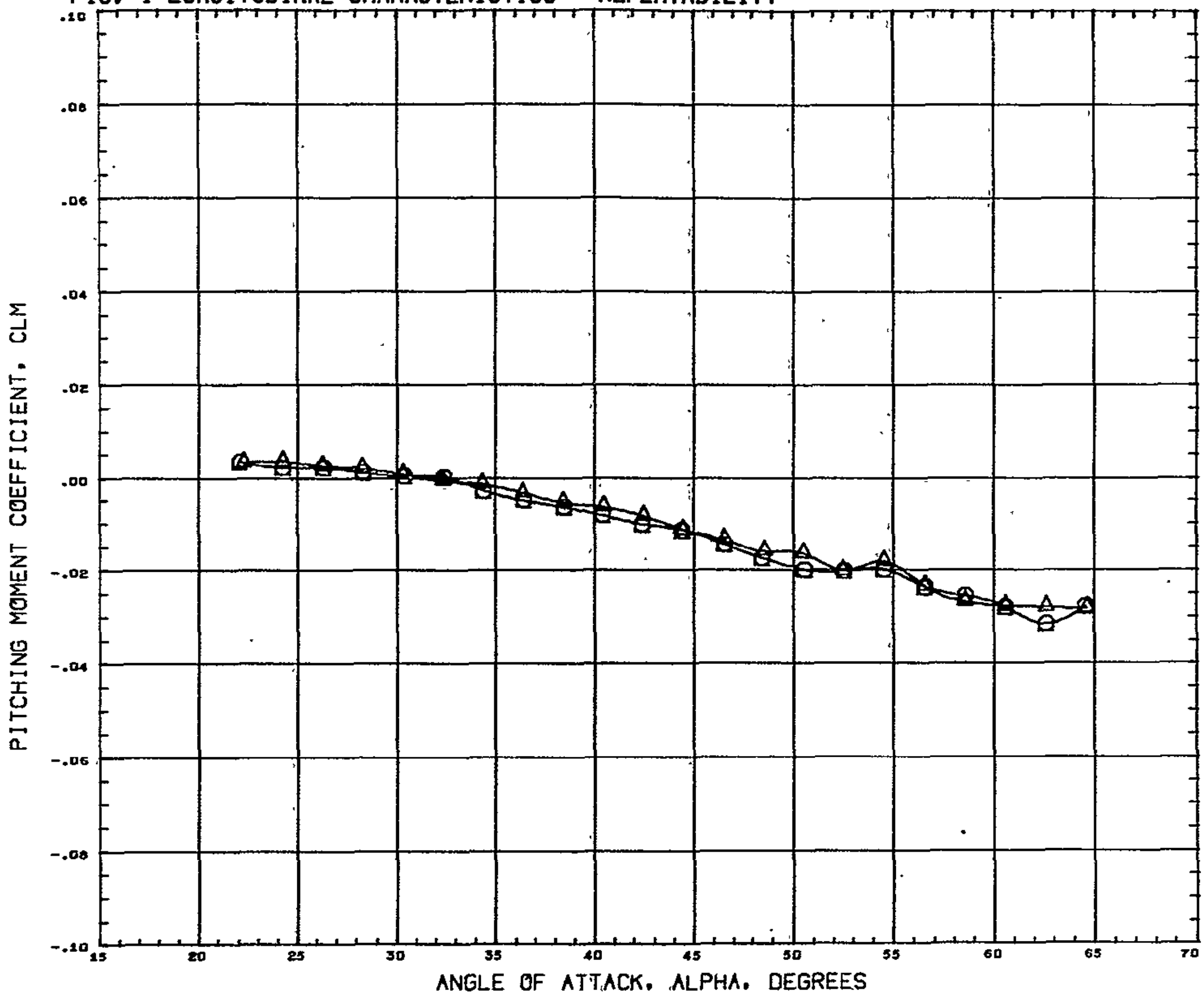
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT001)	O	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000
(DCT002)	Δ	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000

REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1465.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

MACH 10.130

FIG. 1 LONGITUDINAL CHARACTERISTICS - REPEATABILITY



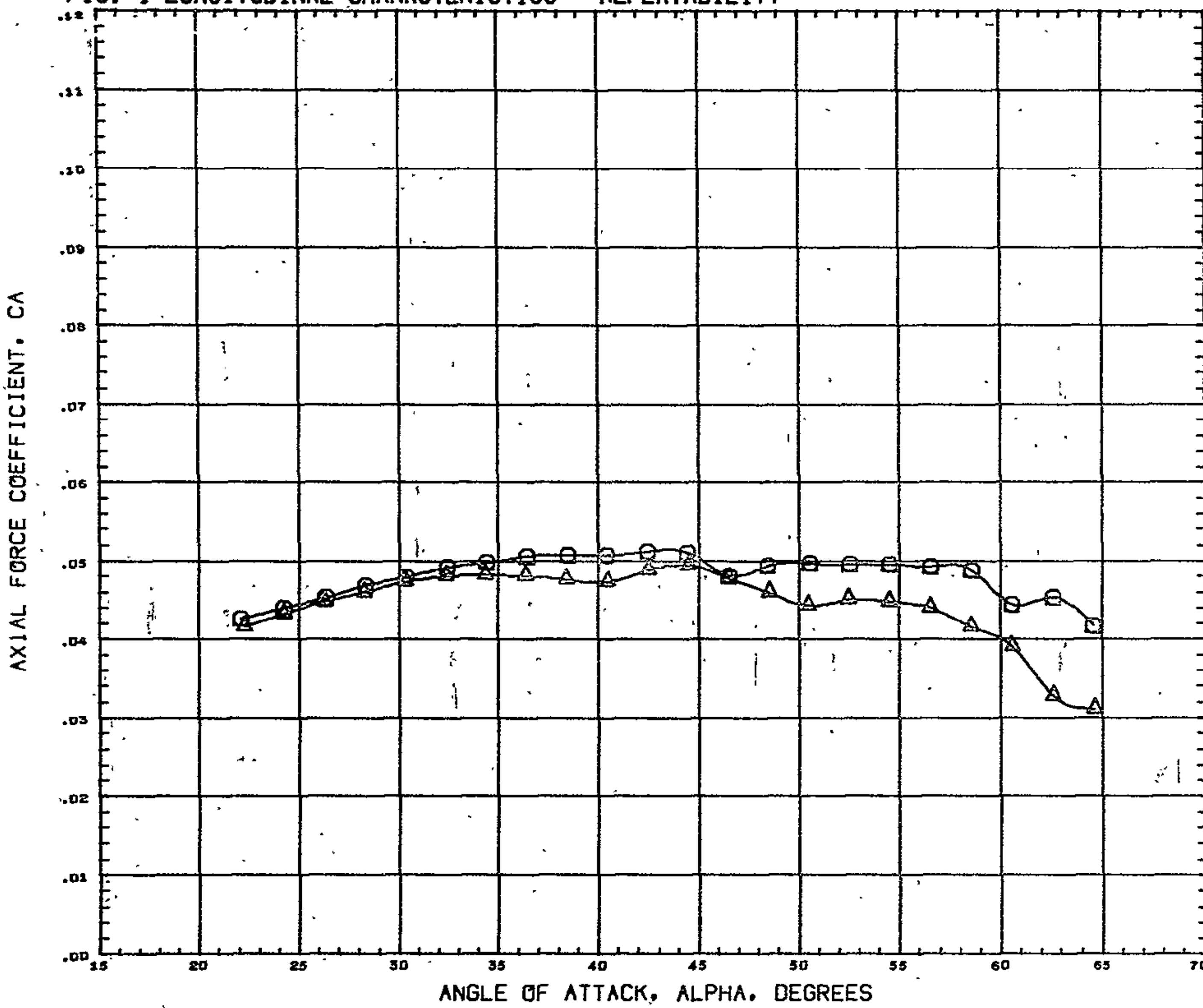
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT001)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000
(DCT002)	△	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000

REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

MACH 10.130

FIG. 1 LONGITUDINAL CHARACTERISTICS - REPEATABILITY

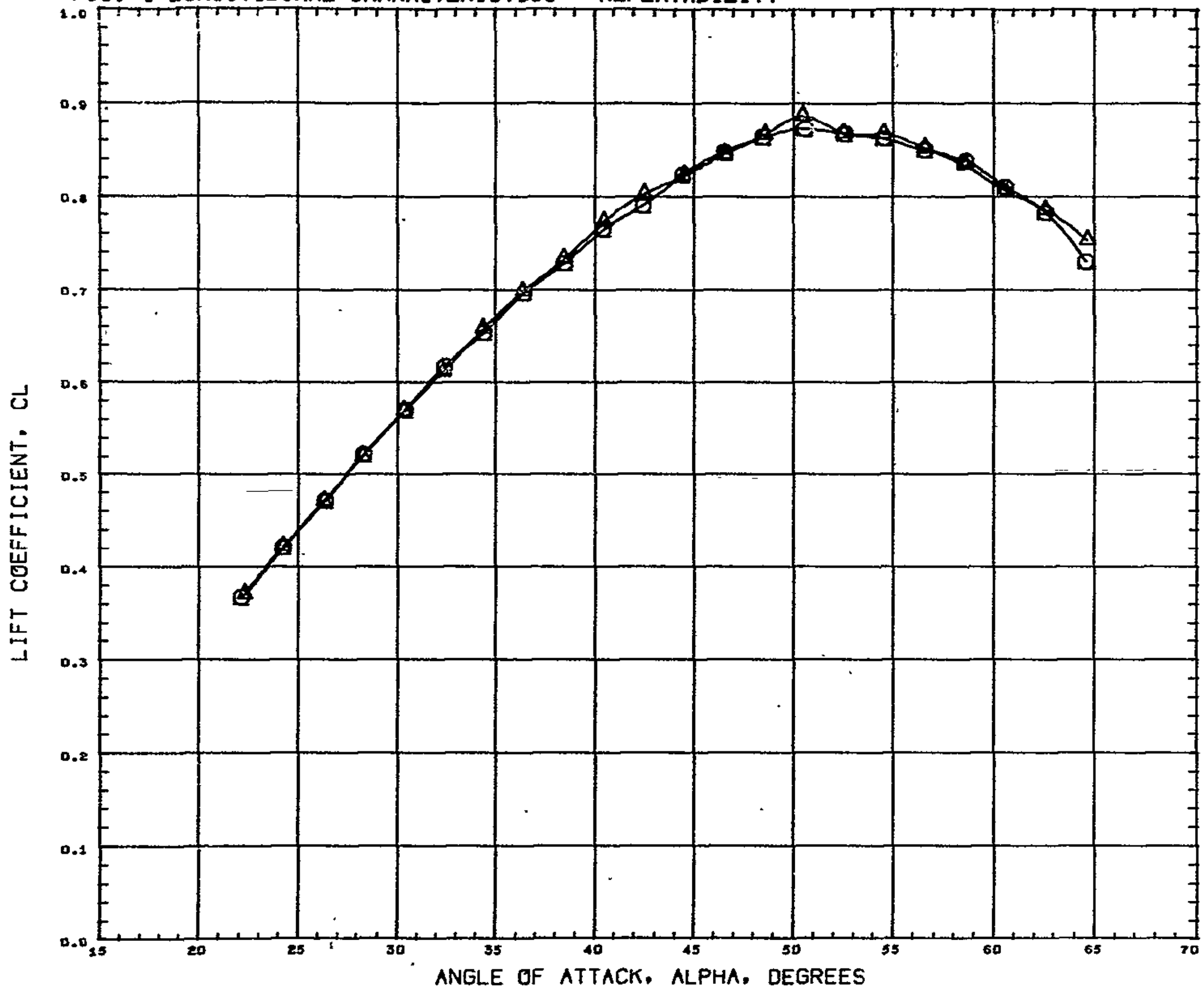


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT001)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000
(DCT002)	△	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000

REFERENCE INFORMATION		
SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

MACH 10.130

FIG. 1 LONGITUDINAL CHARACTERISTICS - REPEATABILITY



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT001)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000
(DCT002)	△	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000

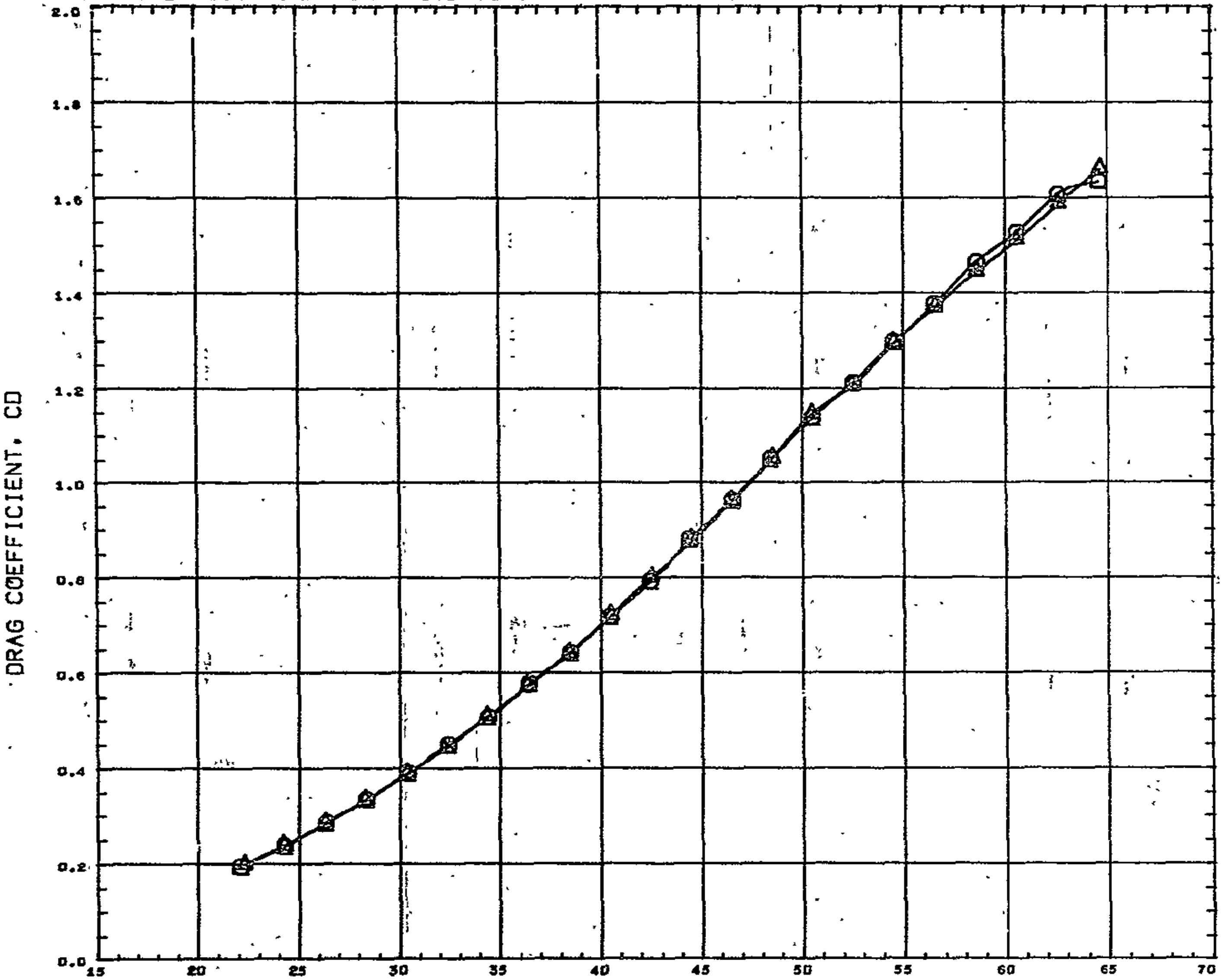
REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

MACH 10.130

PAGE

FIG. 1 LONGITUDINAL CHARACTERISTICS - REPEATABILITY



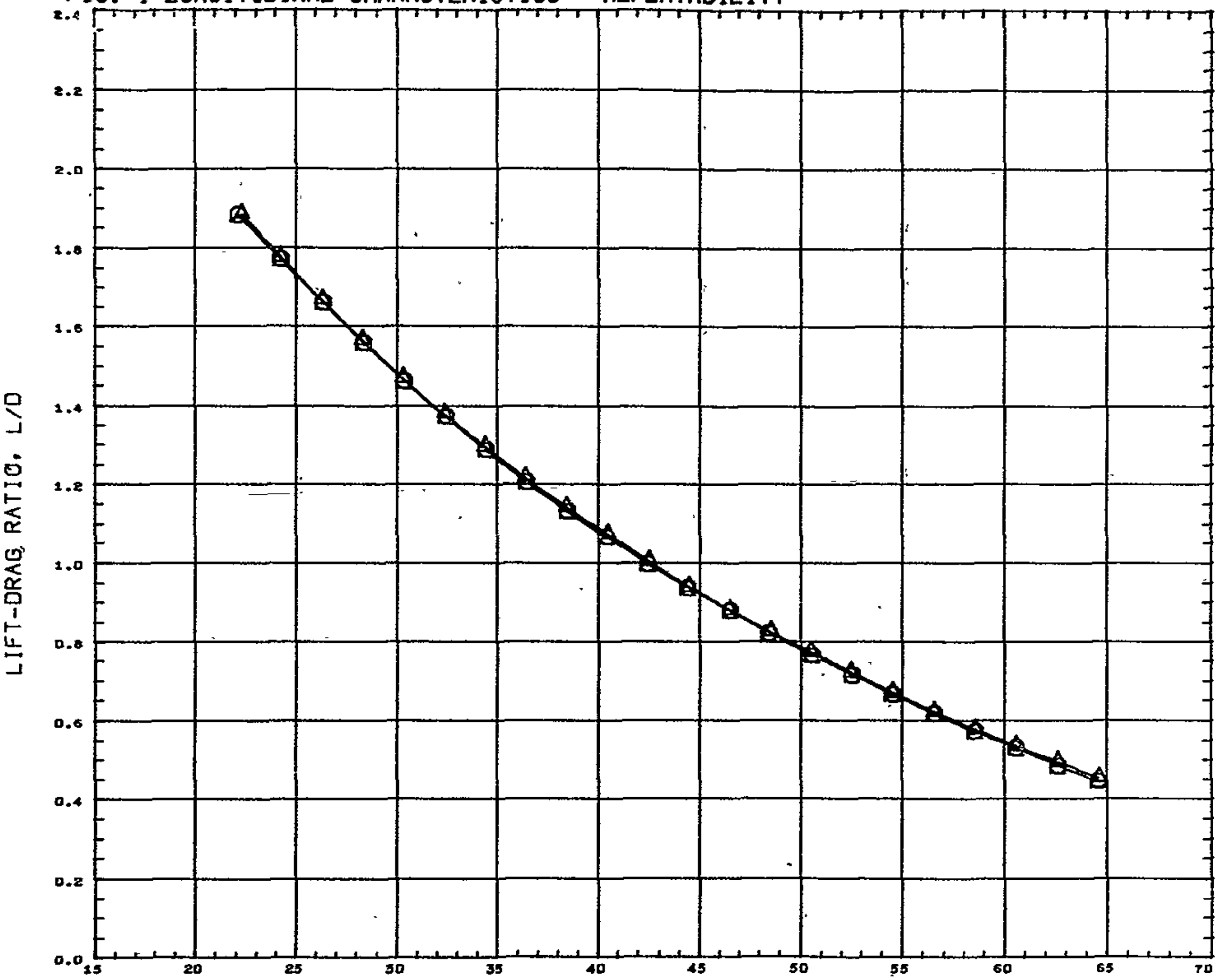
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT001)	○	GFHT 019 CONF. R05-NB1 B1W1V1	0.000	0.000	0.000	0.000
(DCT002)	△	GFHT 019 CONF. R05-NB1 B1W1V1	0.000	0.000	0.000	0.000

REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

MACH 10.130

FIG. 1 LONGITUDINAL CHARACTERISTICS - REPEATABILITY



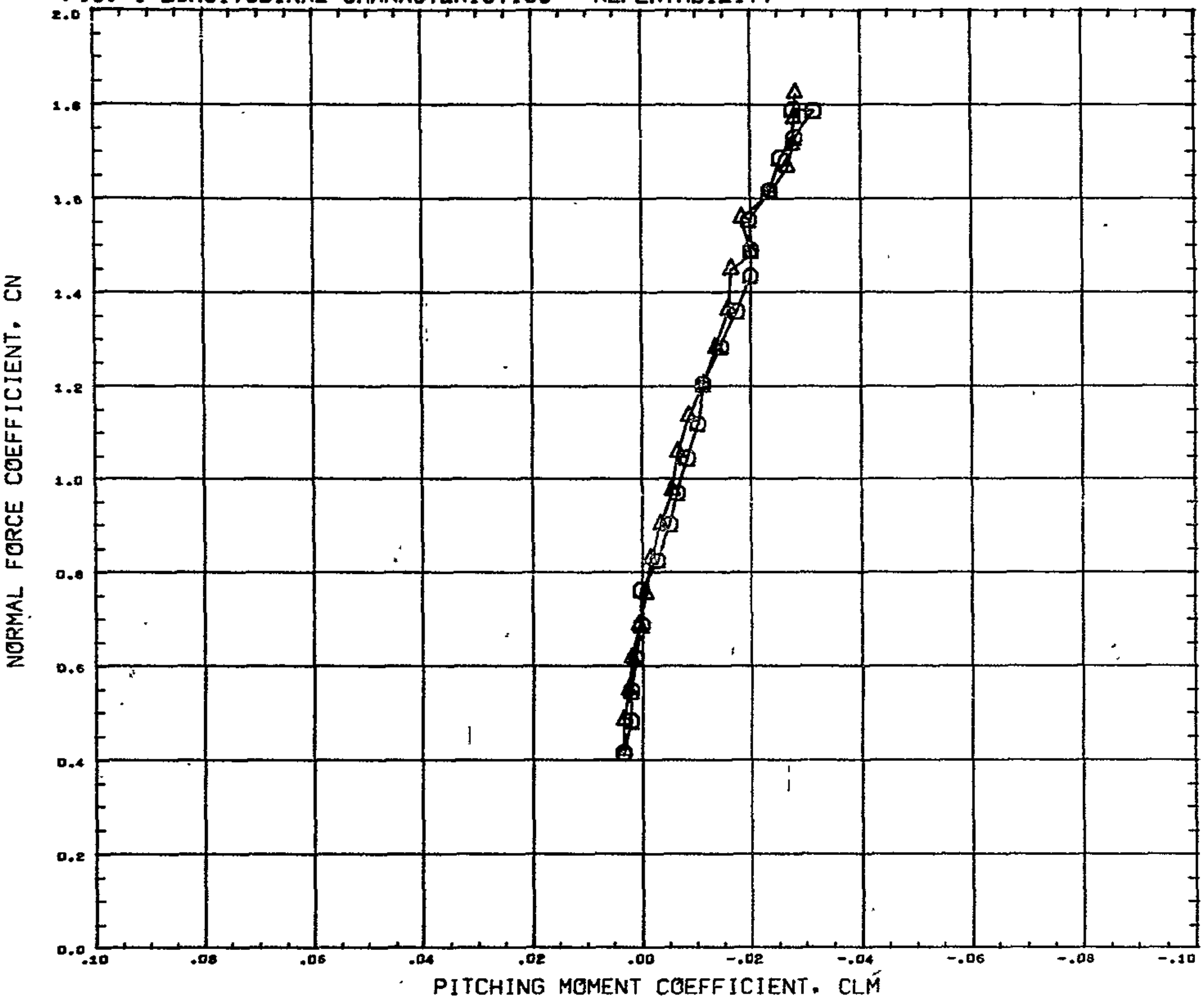
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT001)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000
(DCT002)	△	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000

REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

MACH 10.130

FIG. 1 LONGITUDINAL CHARACTERISTICS - REPEATABILITY



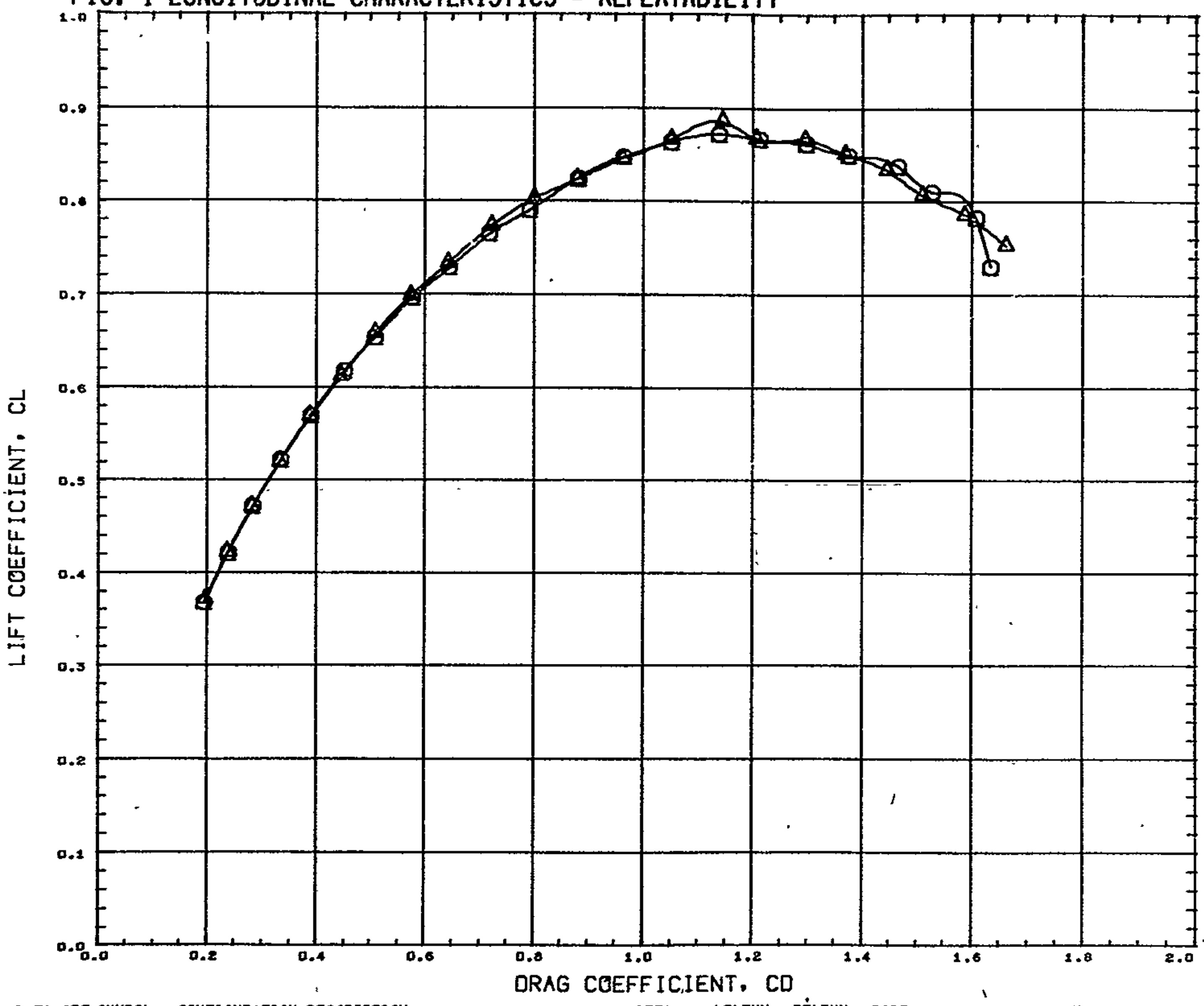
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT001)	○	GFHT 019 CONF. R05-NB1 B1W1V1	0.000	0.000	0.000	0.000
(DCT002)	△	GFHT 019 CONF. R05-NB1 B1W1V1	0.000	0.000	0.000	0.000

REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8360	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

MACH 10.130

FIG. 1 LONGITUDINAL CHARACTERISTICS - REPEATABILITY

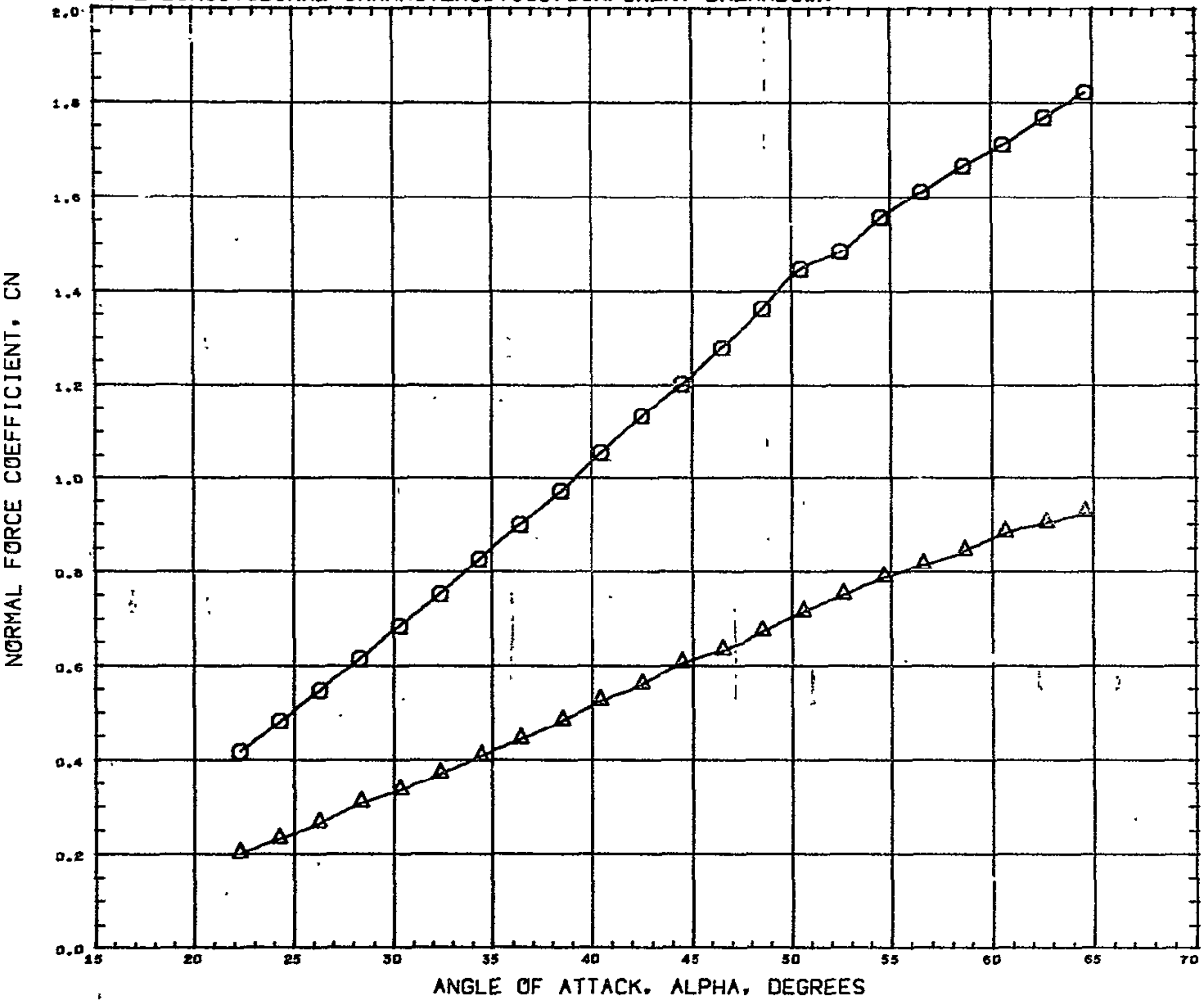


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT001)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000
(DCT002)	△	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000

MACH 10.130

REFERENCE INFORMATION		
SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

FIG. 2 LONGITUDINAL CHARACTERISTICS, COMPONENT BREAKDOWN



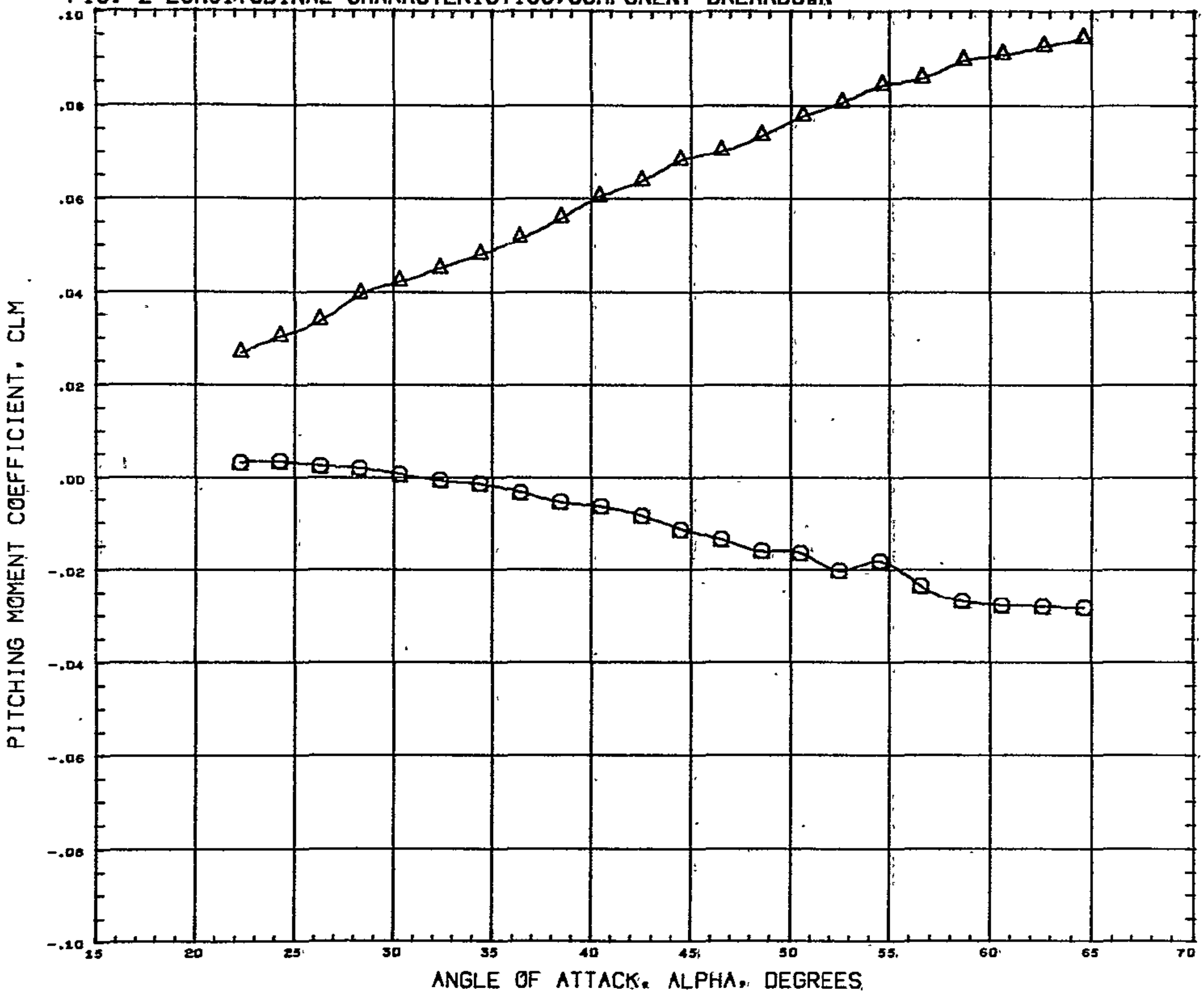
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT002)	O	6FHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000
(DCT014)	Δ	6FHT 019 CONF. ROS-NB1 B1V1	0.000			0.000

REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

MACH 10.130

FIG. 2 LONGITUDINAL CHARACTERISTICS,COMPONENT BREAKDOWN

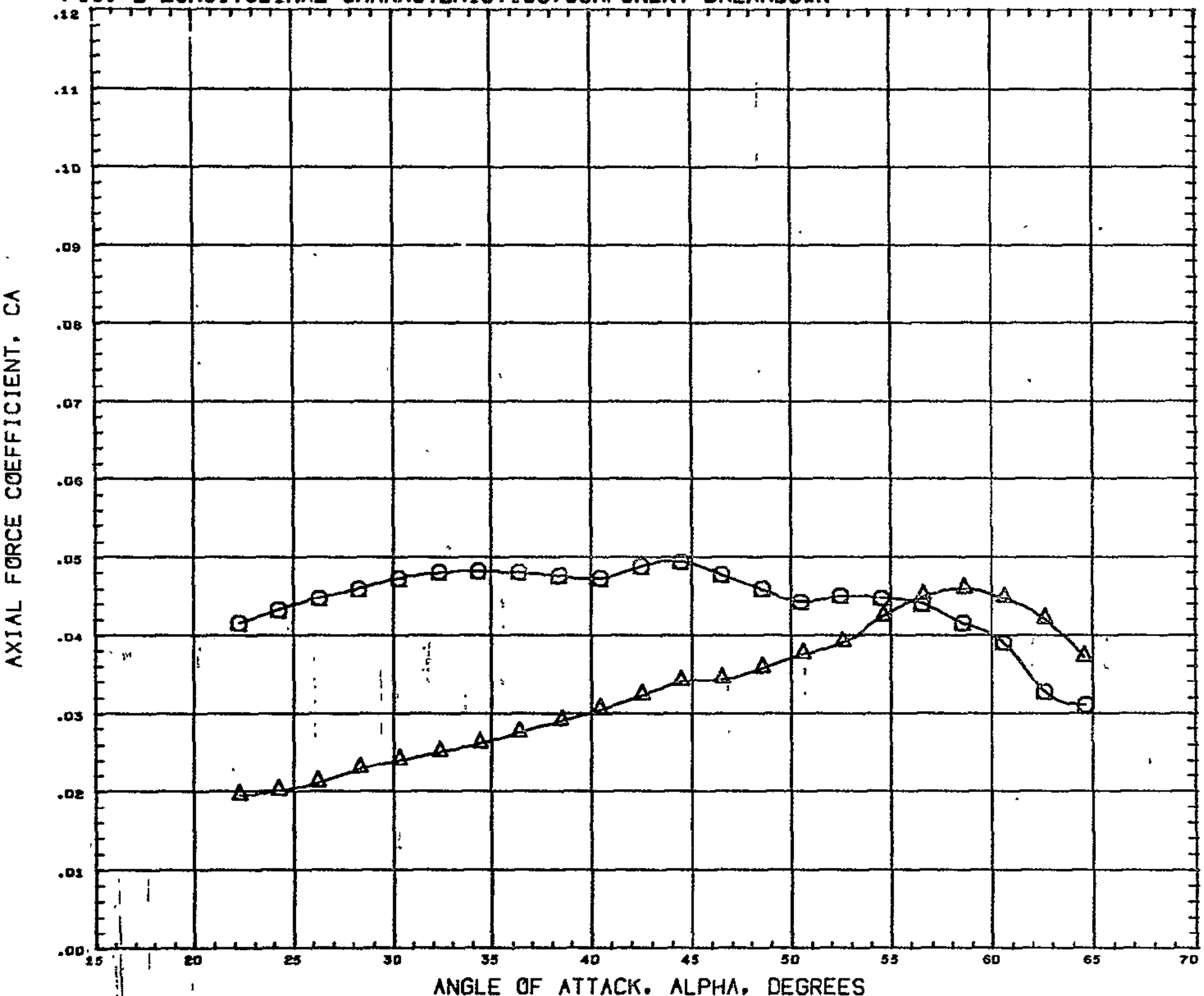


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BDFLP
(DCT002)	O	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000
(DCT014)	Δ	GFHT 019 CONF. ROS-NB1 B1V1	0.000			0.000

REFERENCE INFORMATION		
SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8360	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

MACH 10.130

FIG. 2 LONGITUDINAL CHARACTERISTICS, COMPONENT BREAKDOWN



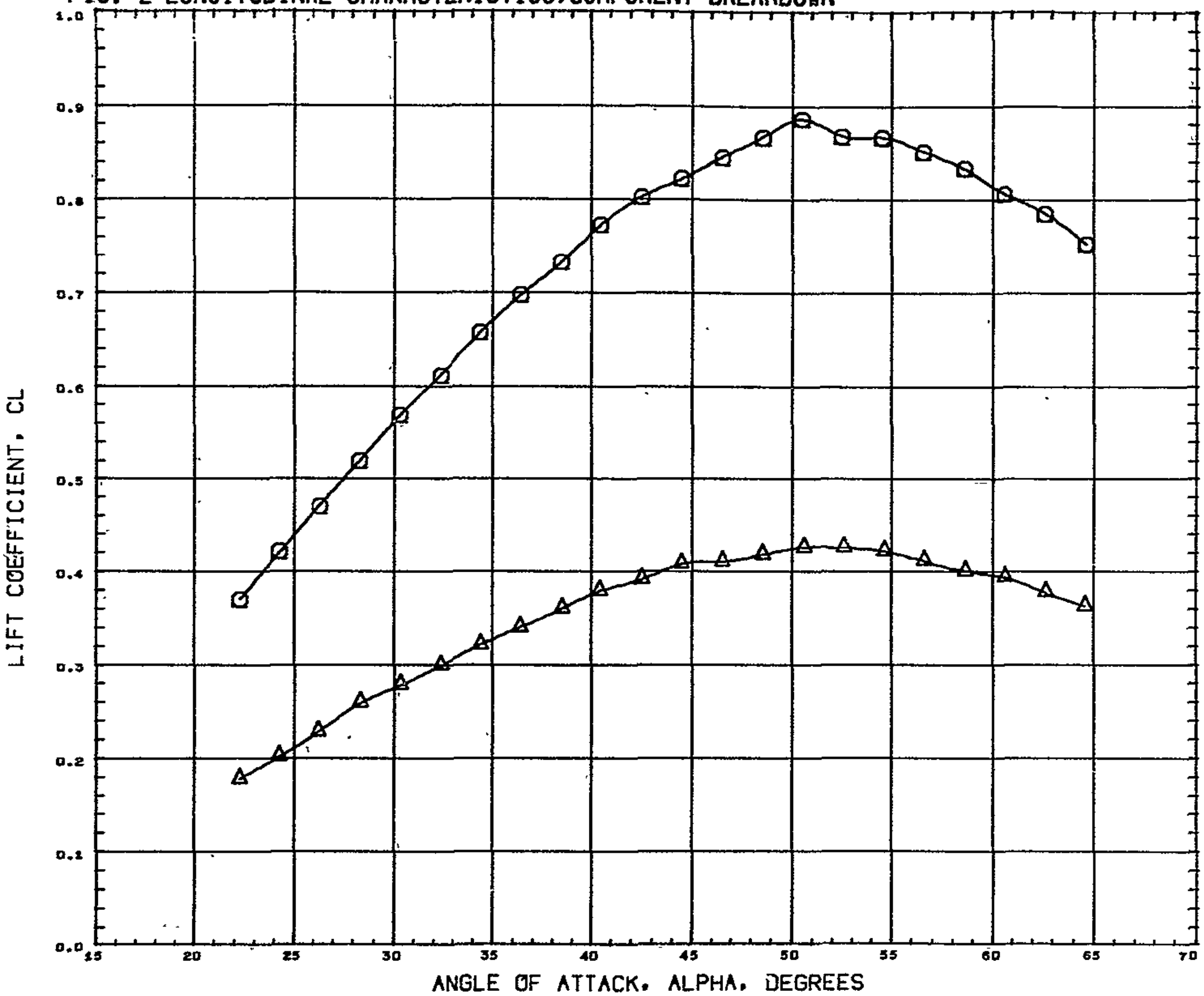
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT002)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000
(DCT014)	△	GFHT 019 CONF. ROS-NB1 B1V1	0.000			0.000

REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.6380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

MACH 10.130

FIG. 2 LONGITUDINAL CHARACTERISTICS, COMPONENT BREAKDOWN



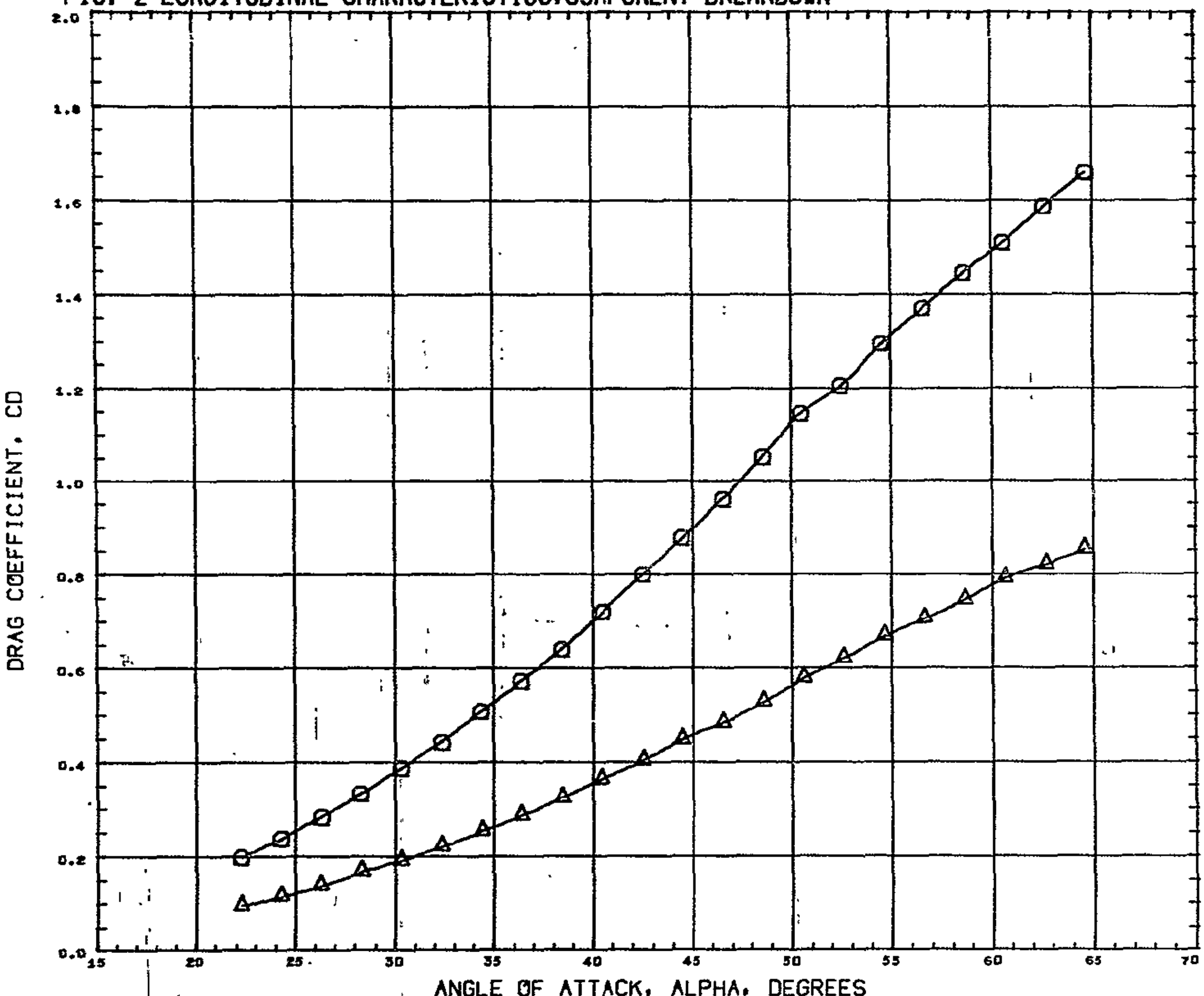
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT002)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000
(DCT014)	△	GFHT 019 CONF. ROS-NB1 B1V1	0.000			0.000

REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

MACH 10.130

FIG. 2 LONGITUDINAL CHARACTERISTICS,COMPONENT BREAKDOWN



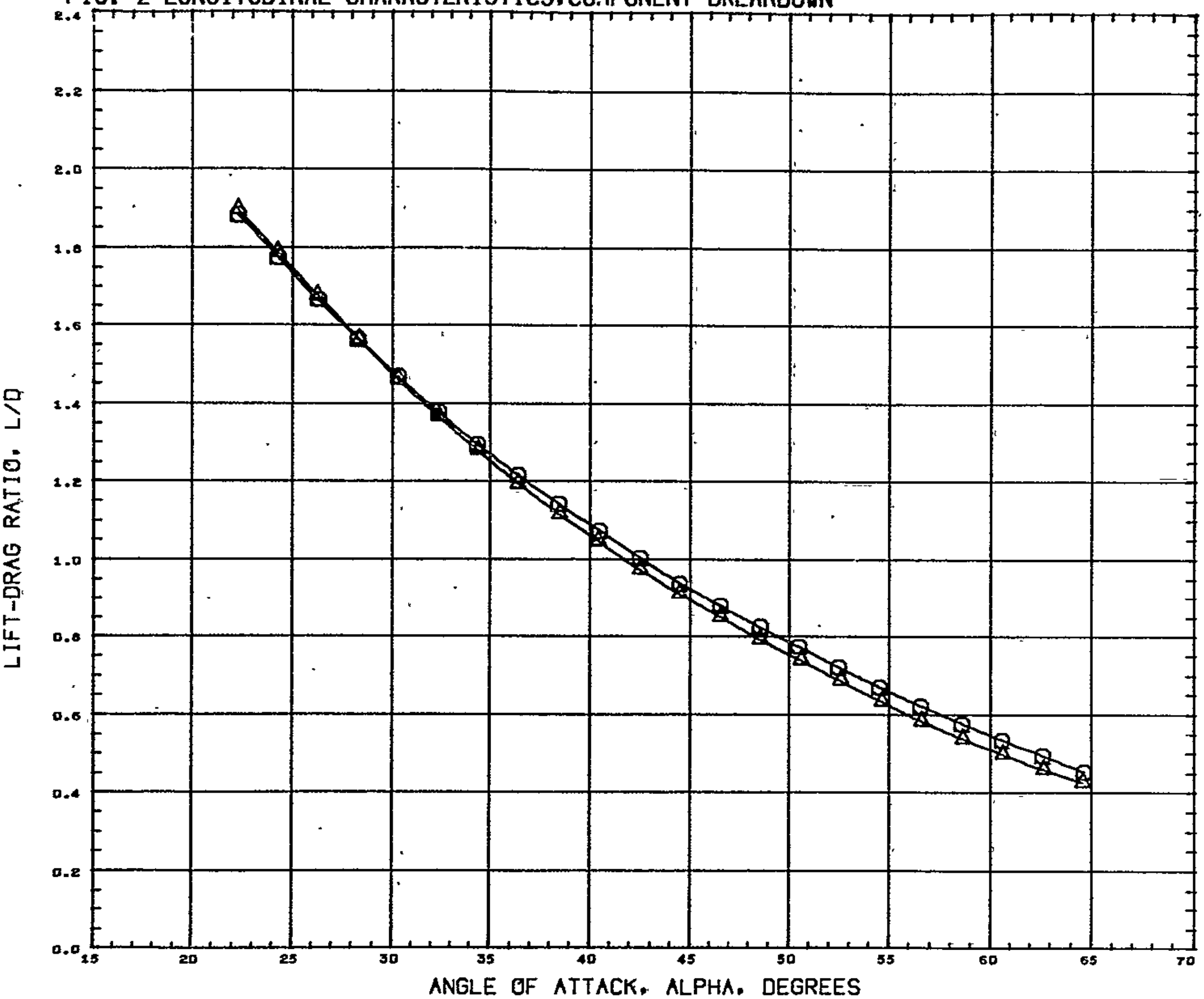
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT002)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000
(DCT014)	△	GFHT 019 CONF. ROS-NB1 B1V1	0.000			0.000

REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

MACH 10.130

FIG. 2 LONGITUDINAL CHARACTERISTICS, COMPONENT BREAKDOWN



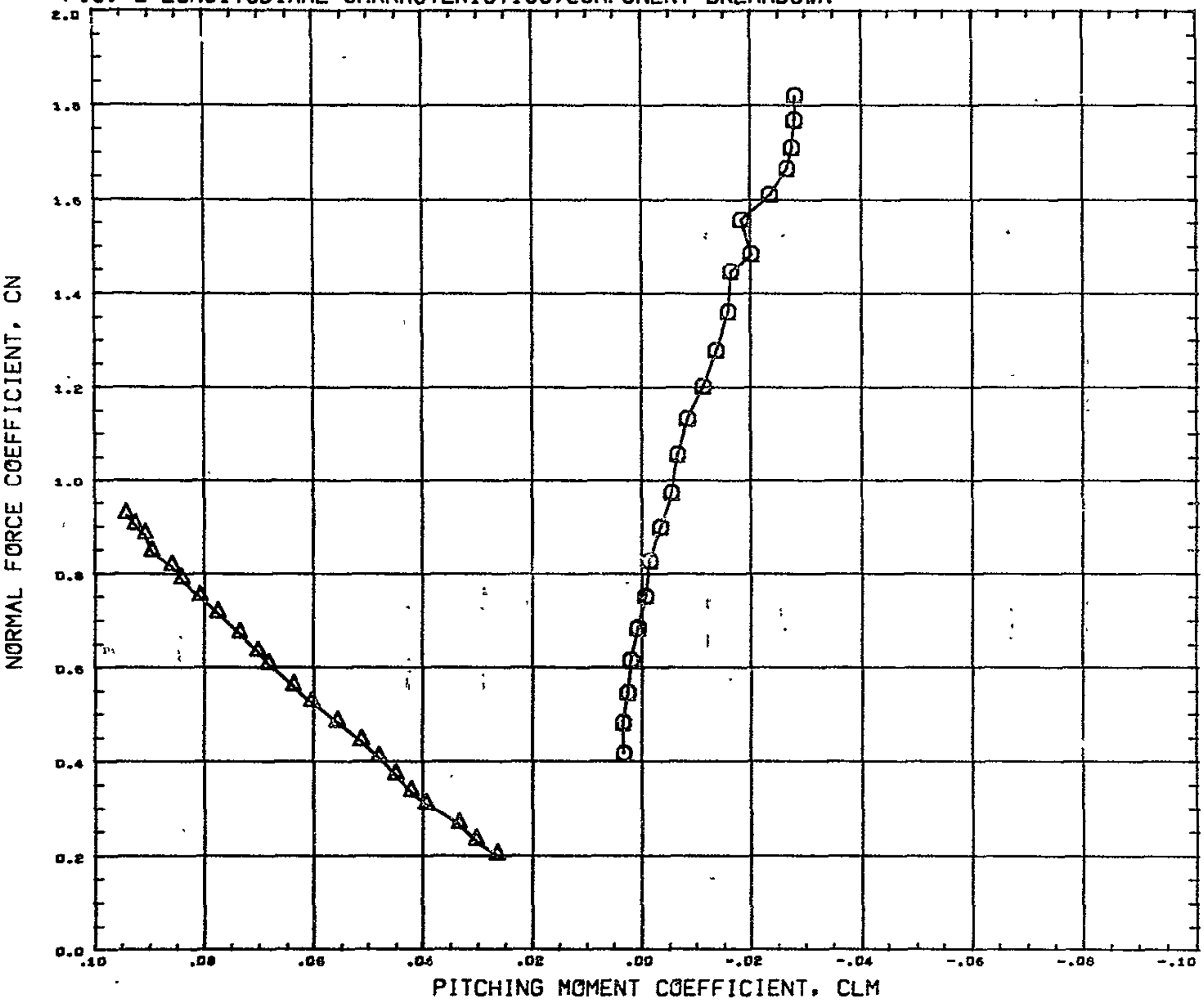
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT002)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000
(DCT014)	△	GFHT 019 CONF. ROS-NB1 B1V1	0.000			0.000

REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

MACH 10.130

FIG. 2 LONGITUDINAL CHARACTERISTICS, COMPONENT BREAKDOWN



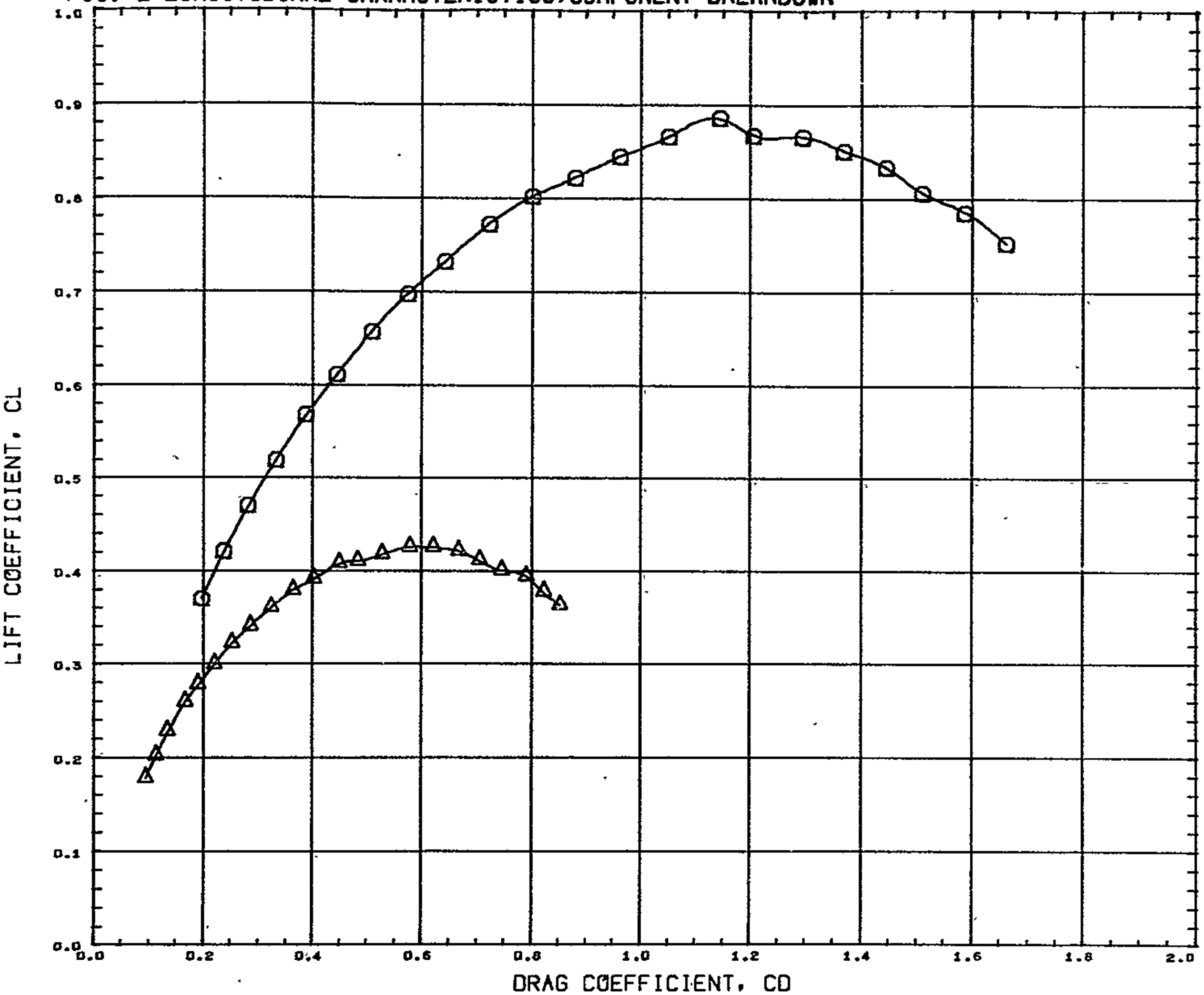
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT002)	○	GFMT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000
(DCT014)	△	GFMT 019 CONF. ROS-NB1 B1V1	0.000			0.000

REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

MACH 10.130

FIG. 2 LONGITUDINAL CHARACTERISTICS, COMPONENT BREAKDOWN



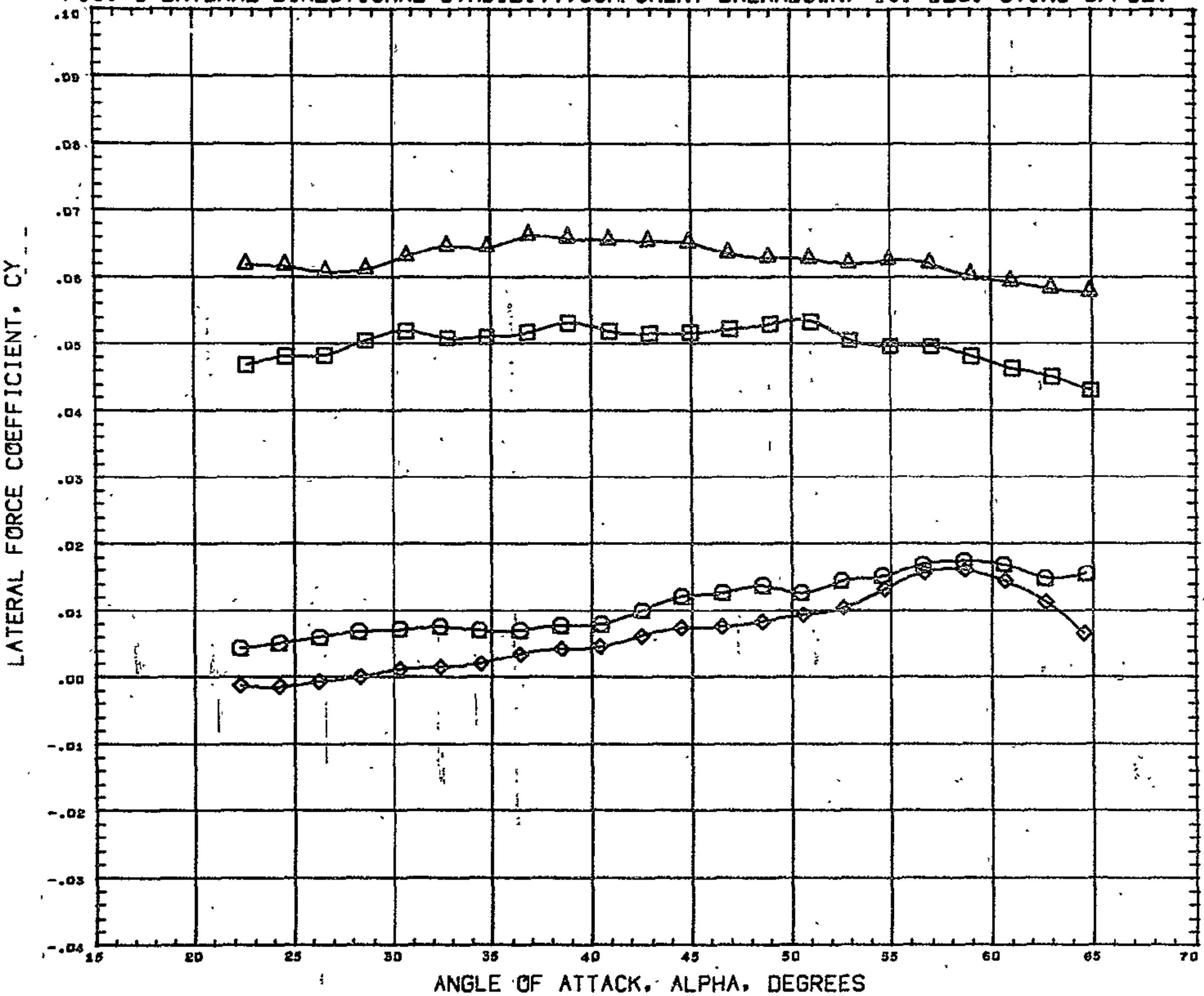
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT002)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000
(DCT014)	△	GFHT 019 CONF. ROS-NB1 B1V1	0.000			0.000

REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

MACH 10.130

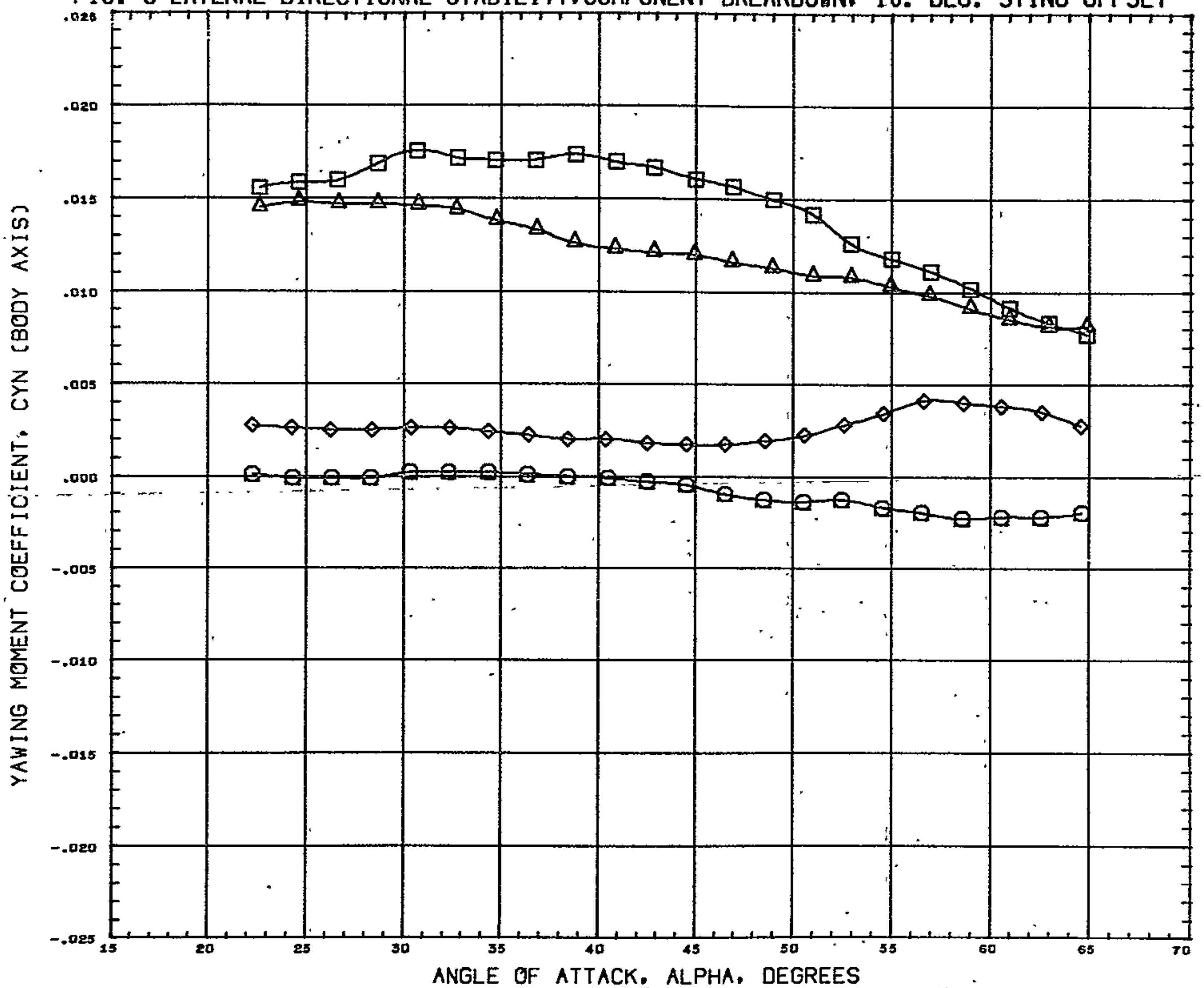
FIG. 3 LATERAL-DIRECTIONAL STABILITY, COMPONENT BREAKDOWN, 10. DEG. STING OFFSET



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP	REFERENCE INFORMATION		
(DCT002)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000	SREF	20.6890	SQ.IN.
(DCT020)	△	GFHT 019 ROS-NB1 B1W1V1 BETA IS -10 COS(ALPHA)		0.000	0.000	0.000	LREF	9.6480	IN.
(DCT014)	◇	GFHT 019 CONF. ROS-NB1 B1V1	0.000			0.000	BREF	5.8380	IN.
(DCT023)	□	GFHT 019 ROS-NB1 B1V1 BETA IS -10 COS(ALPHA)				0.000	XMRP	1485.0040	IN.
							YMRP	0.0000	IN.
							ZMRP	377.0004	IN.
							SCALE	0.0050	

MACH 10.130

FIG. 3 LATERAL-DIRECTIONAL STABILITY, COMPONENT BREAKDOWN, 10. DEG. STING OFFSET

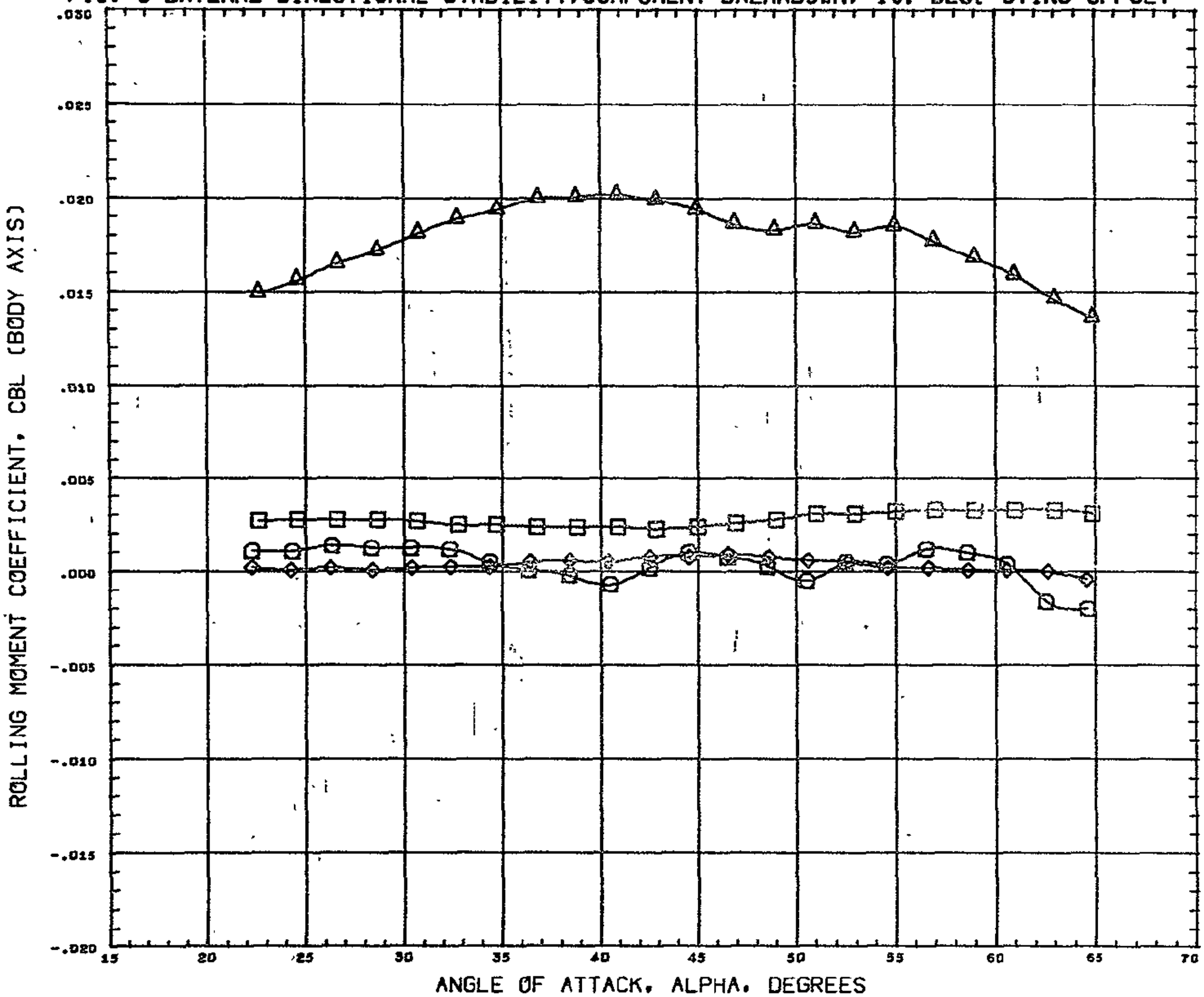


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT002)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000
(DCT020)	△	GFHT 019 ROS-NB1 B1W1V1 BETA IS -10 COS(ALPHA)		0.000	0.000	0.000
(DCT014)	◇	GFHT 019 CONF. ROS-NB1 B1V1	0.000			0.000
(DCT023)	□	GFHT 019 ROS-NB1 B1V1 BETA IS -10 COS(ALPHA)				0.000

MACH 10.130

REFERENCE INFORMATION		
SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

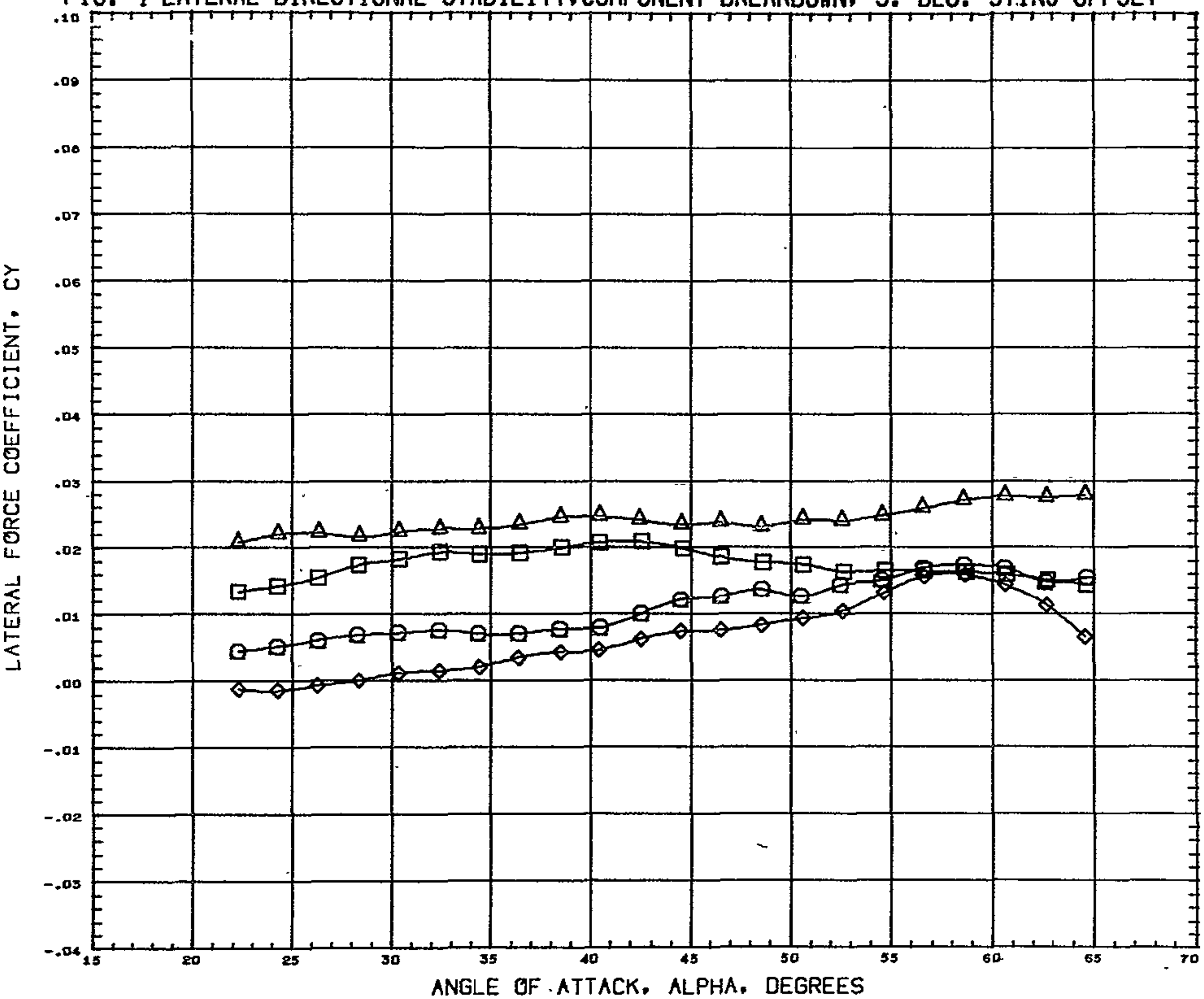
FIG. 3 LATERAL-DIRECTIONAL STABILITY,COMPONENT BREAKDOWN, 10. DEG. STING OFFSET



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP	REFERENCE INFORMATION		
(DCT002)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000	SREF	20.6890	SQ.IN.
(DCT020)	△	GFHT 019 ROS-NB1 B1W1V1 BETA IS -10 COS(ALPHA)		0.000	0.000	0.000	LREF	9.6480	IN.
(DCT014)	◇	GFHT 019 CONF. ROS-NB1 B1V1	0.000			0.000	BREF	5.8380	IN.
(DCT023)	□	GFHT 019 ROS-NB1 B1V1 BETA IS -10 COS(ALPHA)				0.000	XMRP	1485.0040	IN.
							YMRP	0.0000	IN.
							ZMRP	377.0004	IN.
							SCALE	0.0050	

MACH 10.150

FIG. 4 LATERAL-DIRECTIONAL STABILITY,COMPONENT BREAKDOWN, 3. DEG. STING OFFSET



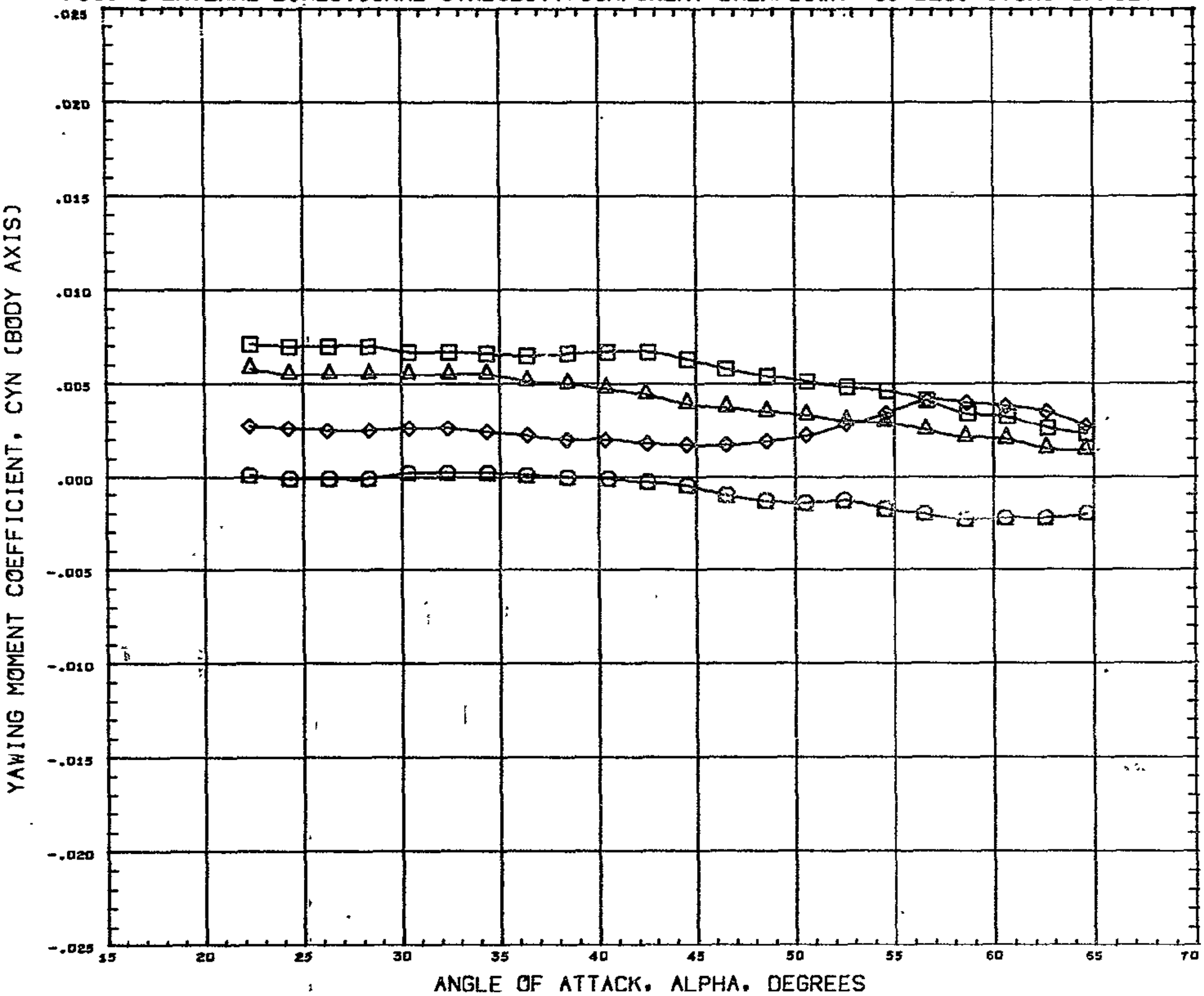
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT002)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000
(DCT026)	△	GFHT 019 ROS-NB1 B1W1V1 BETA IS -3 COS(ALPHA)		0.000	0.000	0.000
(DCT014)	◇	GFHT 019 CONF. ROS-NB1 B1V1	0.000			0.000
(DCT030)	□	GFHT 019 ROS-NB1 B1V1 BETA IS -3 COS(ALPHA)				0.000

REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

MACH 10.130

FIG. 4 LATERAL-DIRECTIONAL STABILITY, COMPONENT BREAKDOWN, 3. DEG. STING OFFSET



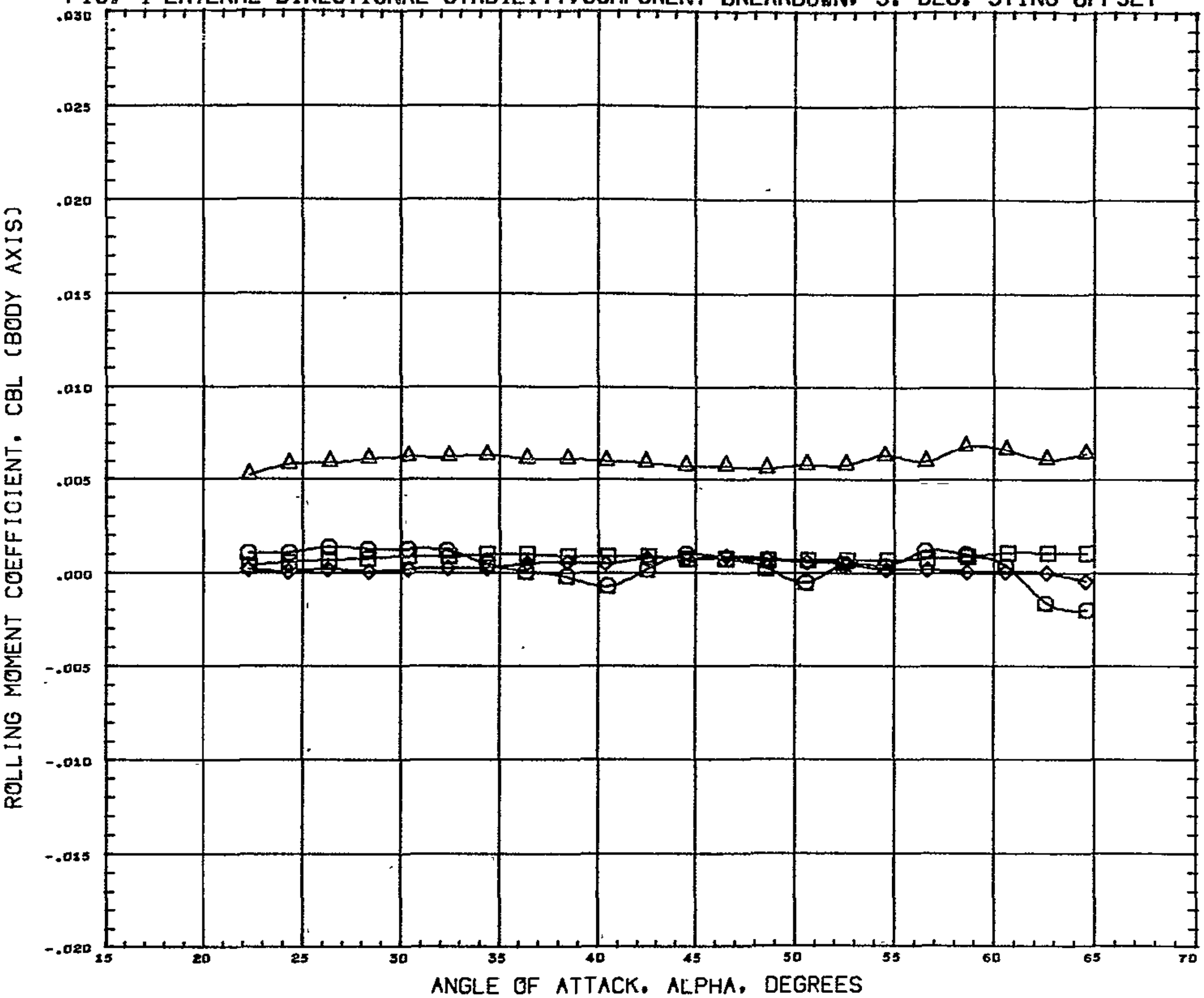
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT002)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000
(DCT026)	△	GFHT 019 ROS-NB1 B1W1V1 BETA IS -3 COS(ALPHA)		0.000	0.000	0.000
(DCT014)	◇	GFHT 019 CONF. ROS-NB1 B1V1	0.000			0.000
(DCT030)	□	GFHT 019 ROS-NB1 B1V1 BETA IS -3 COS(ALPHA)				0.000

REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

MACH 10.130

FIG. 4 LATERAL-DIRECTIONAL STABILITY, COMPONENT BREAKDOWN, 3. DEG. STING OFFSET



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT002)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000
(DCT026)	△	GFHT 019 ROS-NB1 B1W1V1 BETA IS -3 COS(ALPHA)		0.000	0.000	0.000
(DCT014)	◇	GFHT 019 CONF. ROS-NB1 B1V1	0.000			0.000
(DCT030)	□	GFHT 019 ROS-NB1 B1V1 BETA IS -3 COS(ALPHA)				0.000

REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

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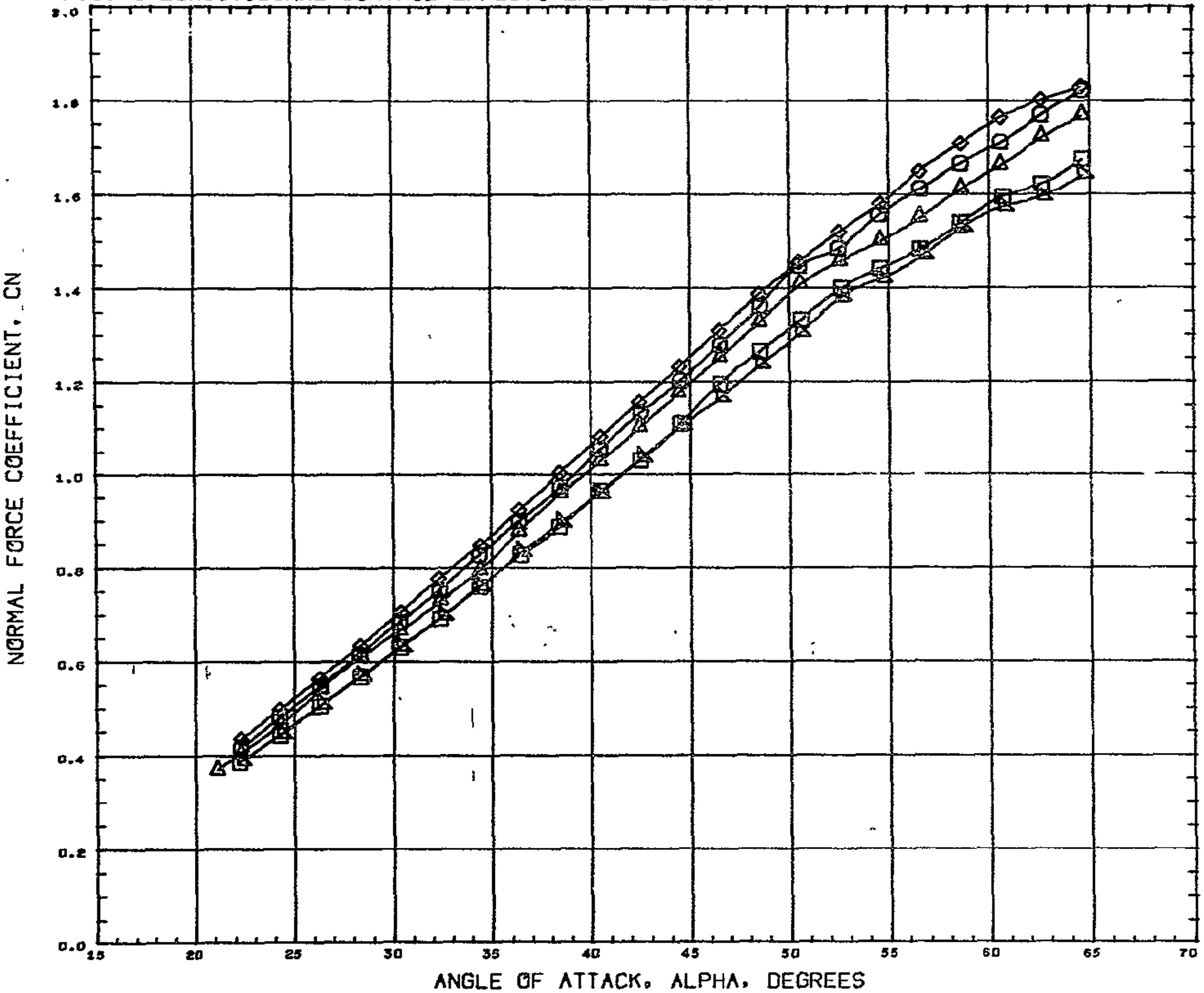
FIG. 5 LONGITUDINAL CONTROL EFFECTIVENESS, ELEVONS



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT002)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000
(DCT004)	△	GFHT 019 CONF. ROS-NB1 B1W1(-10,0)V1	0.000	-10.000	0.000	0.000
(DCT005)	◇	GFHT 019 CONF. ROS-NB1 B1W1(10,0)V1	0.000	10.000	0.000	0.000
(DCT006)	□	GFHT 019 CONF. ROS-NB1 B1W1(-20,-20)V1	0.000	-20.000	-20.000	0.000
(DCT009)	◺	GFHT 019 CONF. ROS-NB1 B1W1(-40,-40)V1	0.000	-40.000	-40.000	0.000

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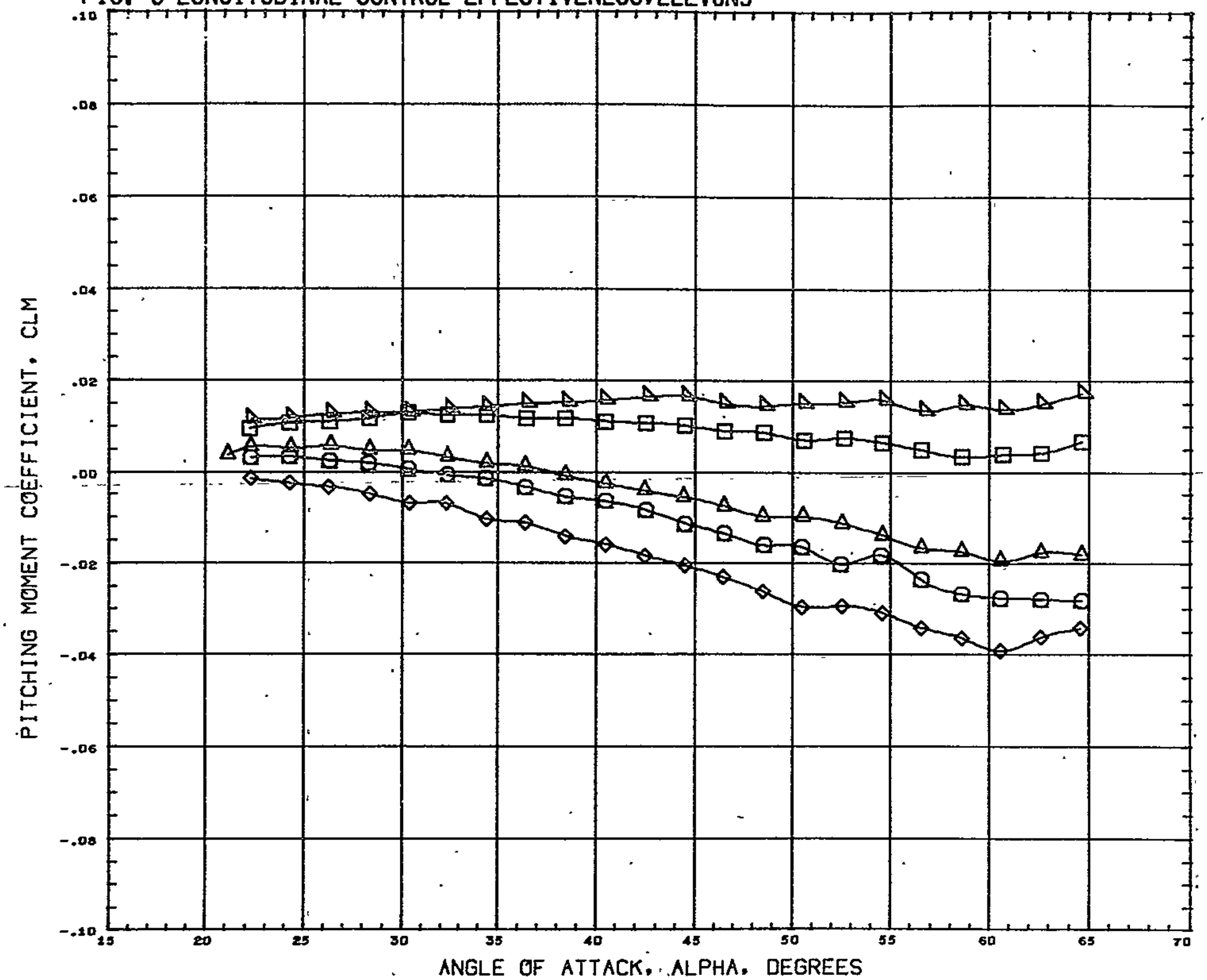
REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8360	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

FIG. 5 LONGITUDINAL CONTROL EFFECTIVENESS, ELEVONS



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT002)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000
(DCT004)	△	GFHT 019 CONF. ROS-NB1 B1W1(-10,0)V1	0.000	-10.000	0.000	0.000
(DCT005)	◇	GFHT 019 CONF. ROS-NB1 B1W1(10,0)V1	0.000	10.000	0.000	0.000
(DCT008)	□	GFHT 019 CONF. ROS-NB1 B1W1(-20,-20)V1	0.000	-20.000	-20.000	0.000
(DCT009)	◺	GFHT 019 CONF. ROS-NB1 B1W1(-40,-40)V1	0.000	-40.000	-40.000	0.000

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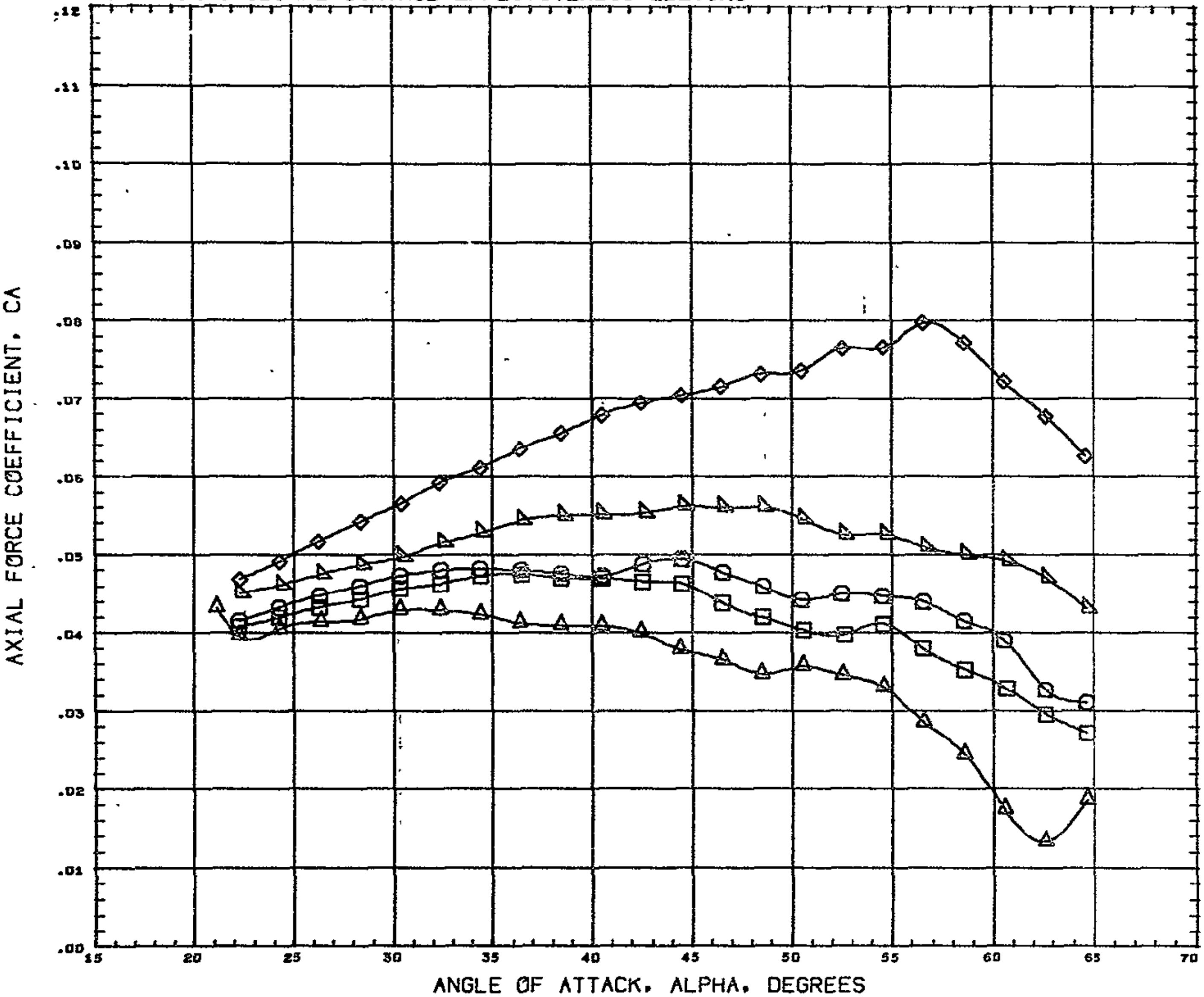
REFERENCE INFORMATION		
SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

FIG. 5 LONGITUDINAL CONTROL EFFECTIVENESS, ELEVONS



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP	REFERENCE INFORMATION		
(DCT002)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000	SREF	20.6890	SQ.IN.
(DCT004)	△	GFHT 019 CONF. ROS-NB1 B1W1(-10,0)V1	0.000	-10.000	0.000	0.000	LREF	9.6480	IN.
(DCT005)	◇	GFHT 019 CONF. ROS-NB1 B1W1(10,0)V1	0.000	10.000	0.000	0.000	BREF	5.8380	IN.
(DCT008)	□	GFHT 019 CONF. ROS-NB1 B1W1(-20,-20)V1	0.000	-20.000	-20.000	0.000	XMRP	1485.0040	IN.
(DCT009)	◺	GFHT 019 CONF. ROS-NB1 B1W1(-40,-40)V1	0.000	-40.000	-40.000	0.000	YMRP	0.0000	IN.
							ZMRP	377.0004	IN.
							SCALE	0.0050	

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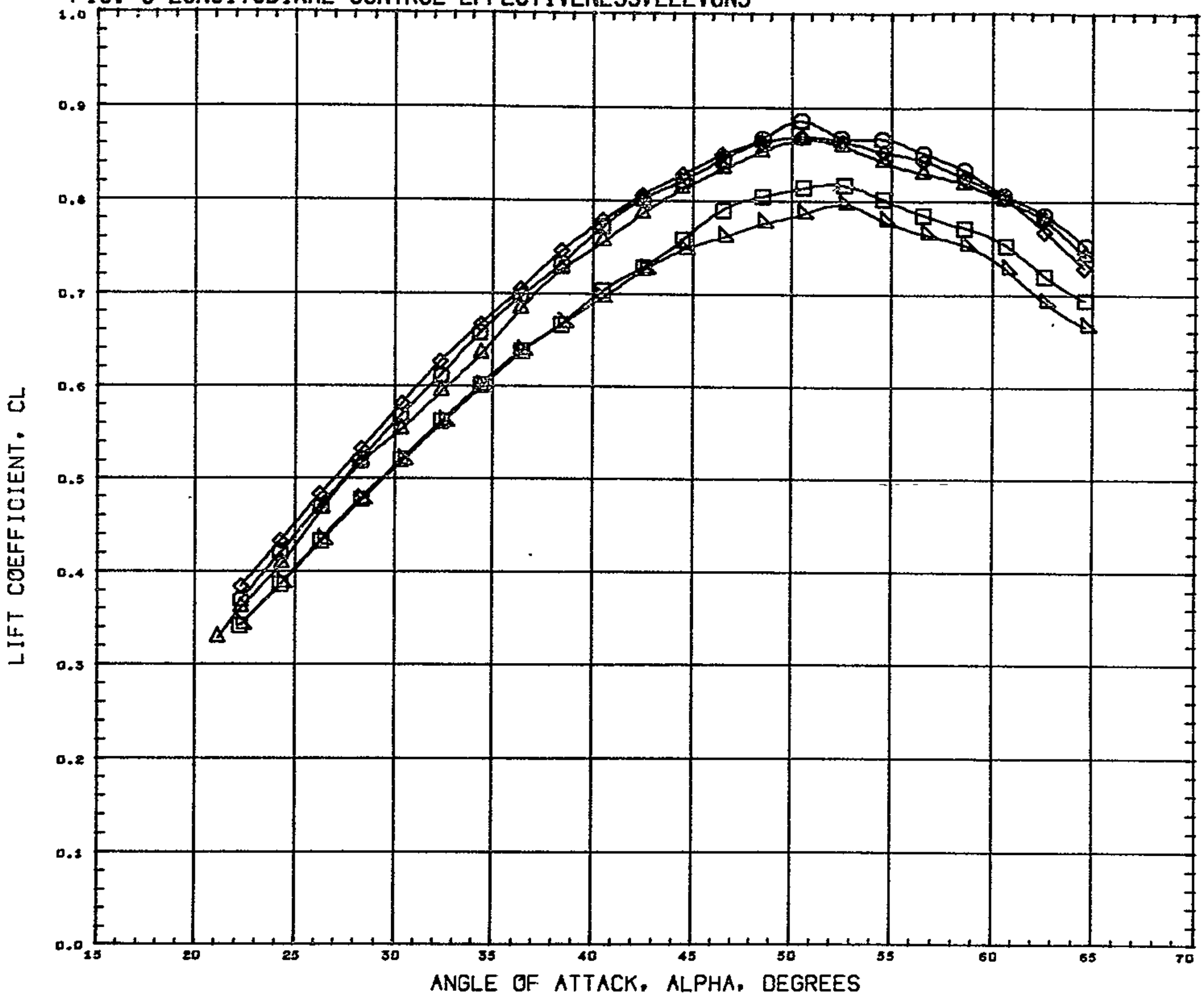
FIG. 5 LONGITUDINAL CONTROL EFFECTIVENESS, ELEVONS



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT002)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000
(DCT004)	△	GFHT 019 CONF. ROS-NB1 B1W1(-10,0)V1	0.000	-10.000	0.000	0.000
(DCT005)	◇	GFHT 019 CONF. ROS-NB1 B1W1(10,0)V1	0.000	10.000	0.000	0.000
(DCT008)	□	GFHT 019 CONF. ROS-NB1 B1W1(-20,-20)V1	0.000	-20.000	-20.000	0.000
(DCT009)	◺	GFHT 019 CONF. ROS-NB1 B1W1(-40,-40)V1	0.000	-40.000	-40.000	0.000

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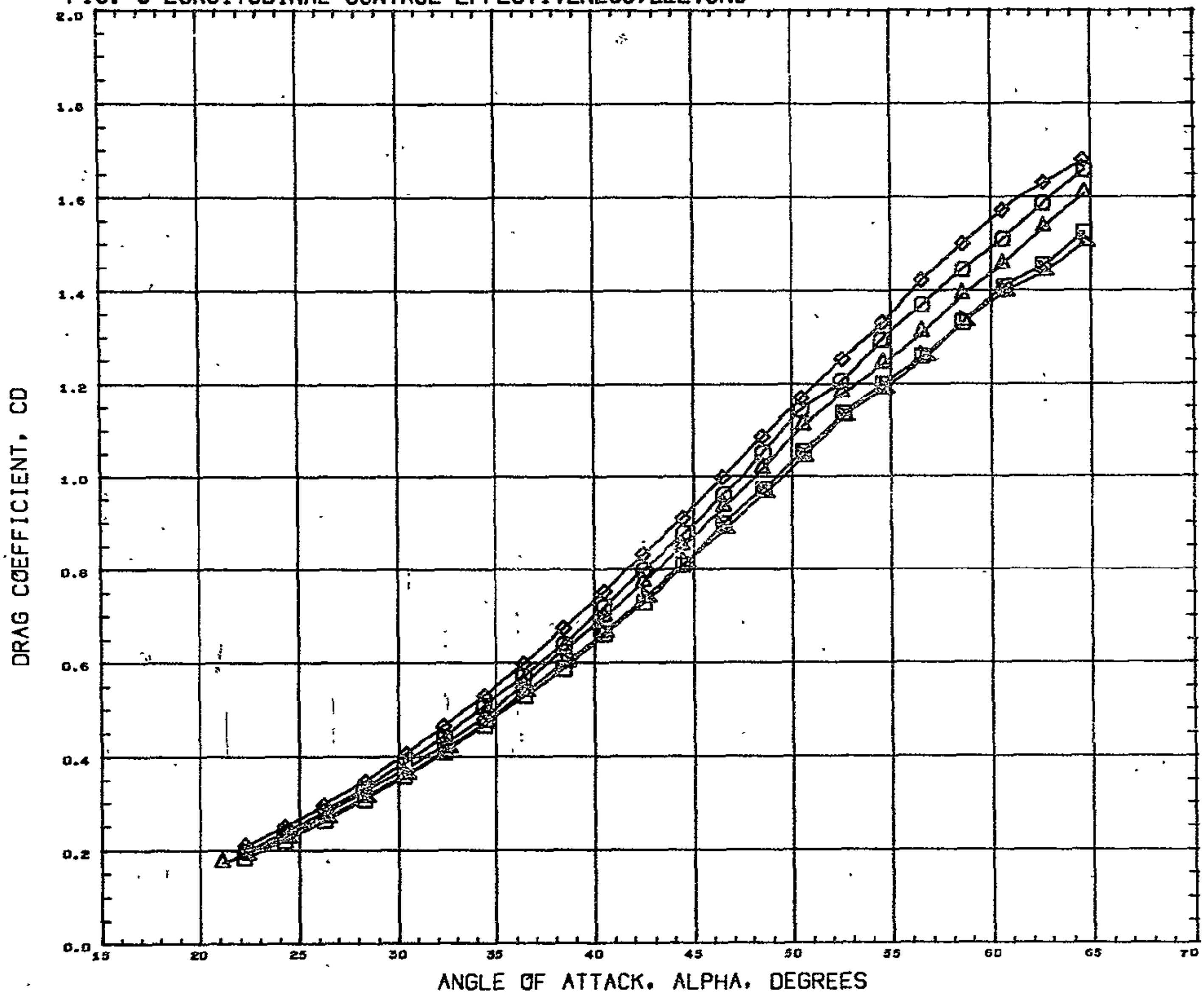
REFERENCE INFORMATION		
SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

FIG. 5 LONGITUDINAL CONTROL EFFECTIVENESS, ELEVONS



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT002)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000
(DCT004)	△	GFHT 019 CONF. ROS-NB1 B1W1(-10,0)V1	0.000	-10.000	0.000	0.000
(DCT005)	◇	GFHT 019 CONF. ROS-NB1 B1W1(10,0)V1	0.000	10.000	0.000	0.000
(DCT008)	□	GFHT 019 CONF. ROS-NB1 B1W1(-20,-20)V1	0.000	-20.000	-20.000	0.000
(DCT009)	◺	GFHT 019 CONF. ROS-NB1 B1W1(-40,-40)V1	0.000	-40.000	-40.000	0.000

REFERENCE INFORMATION		
SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

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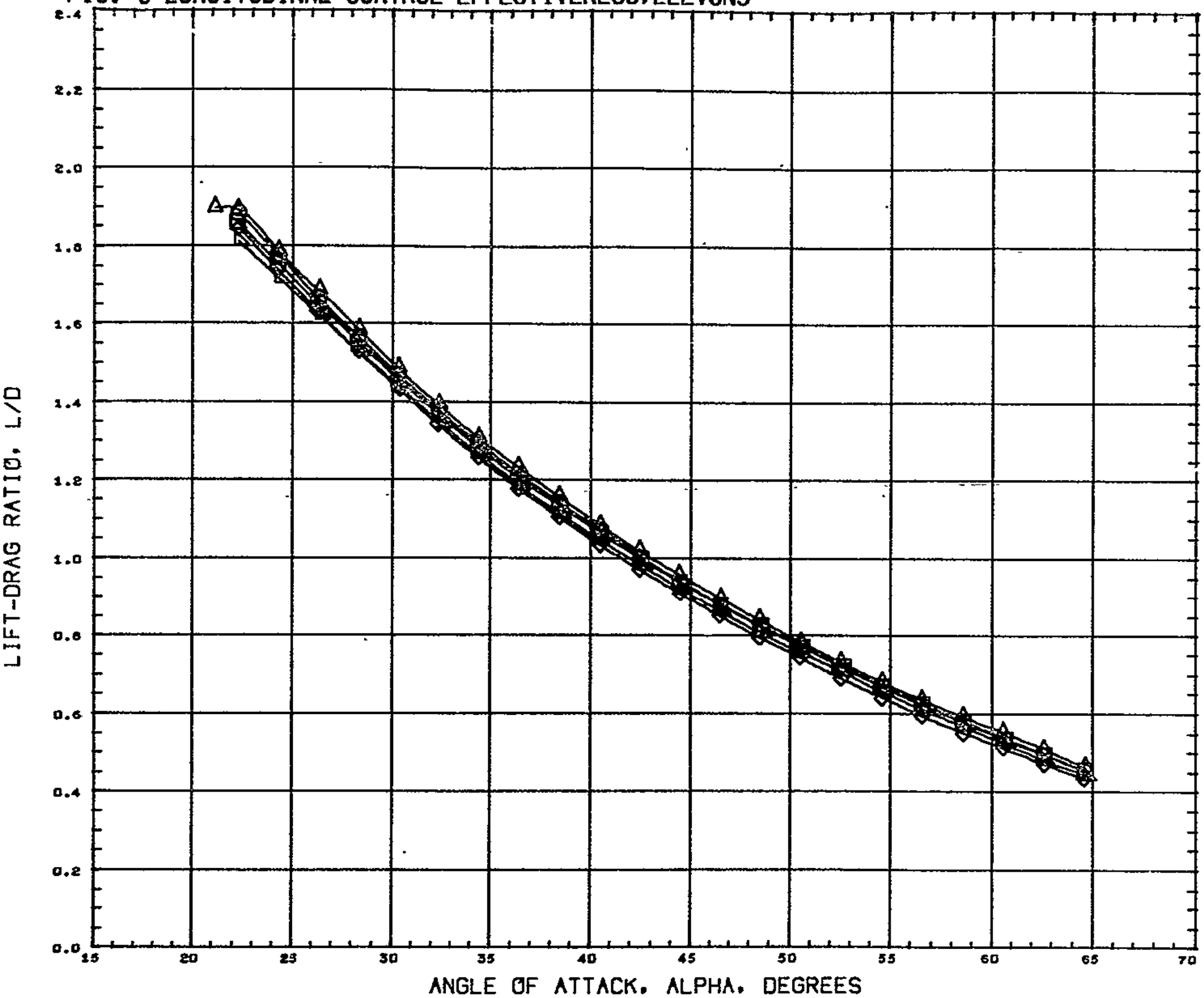
FIG. 5 LONGITUDINAL CONTROL EFFECTIVENESS, ELEVONS



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT002)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000
(DCT004)	△	GFHT 019 CONF. ROS-NB1 B1W1(-10,0)V1	0.000	-10.000	0.000	0.000
(DCT005)	◇	GFHT 019 CONF. ROS-NB1 B1W1(10,0)V1	0.000	10.000	0.000	0.000
(DCT008)	□	GFHT 019 CONF. ROS-NB1 B1W1(-20,-20)V1	0.000	-20.000	-20.000	0.000
(DCT009)	⊿	GFHT 019 CONF. ROS-NB1 B1W1(-40,-40)V1	0.000	-40.000	-40.000	0.000

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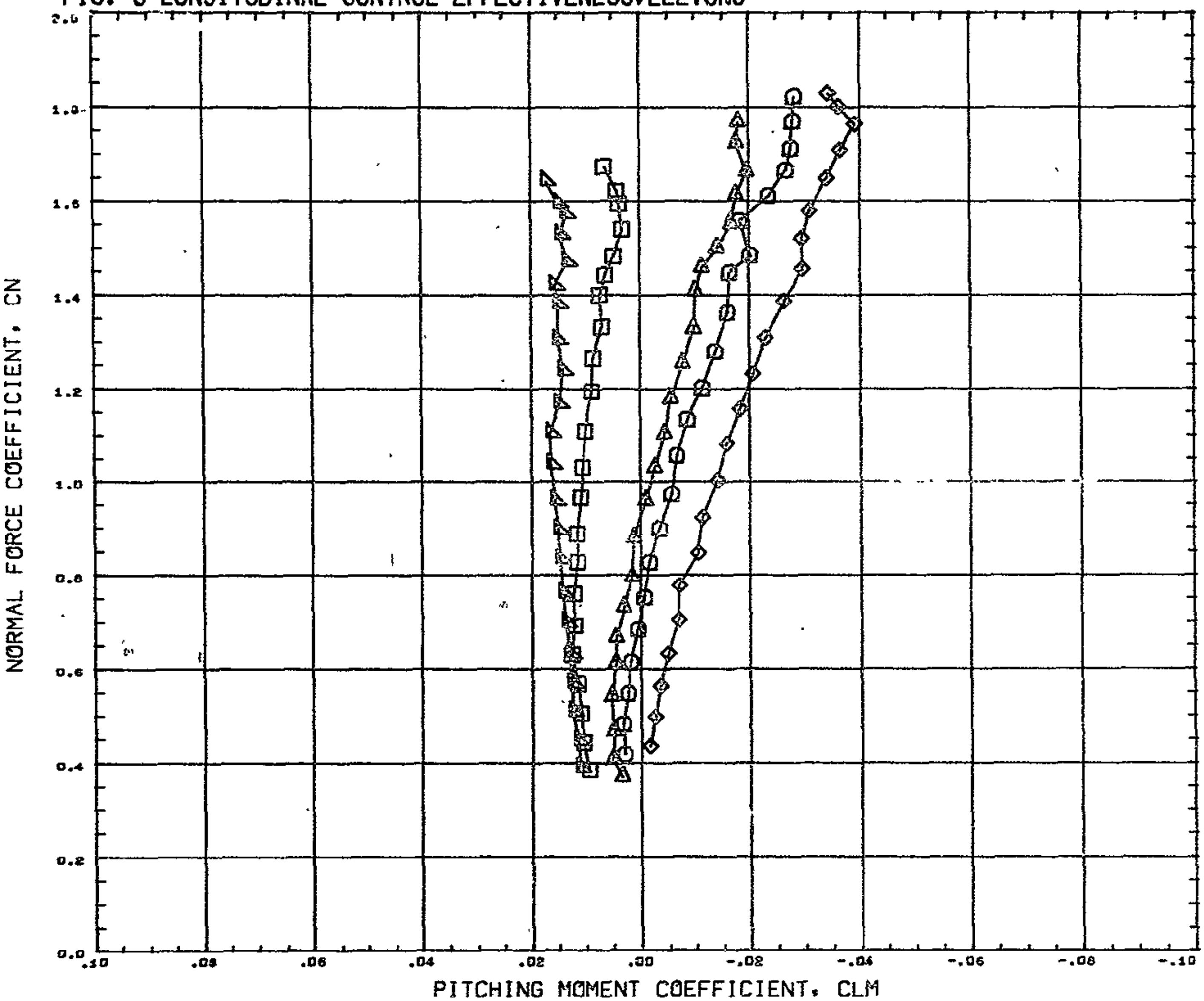
REFERENCE INFORMATION		
SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8360	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

FIG. 5 LONGITUDINAL CONTROL EFFECTIVENESS,ELEVONS



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		BETA	LELEVN	RELEVN	BODFLP
(DCT002)	○	GFHT 019 CONF. ROS-NB1	B1W1V1	0.000	0.000	0.000	0.000
(DCT004)	△	GFHT 019 CONF. ROS-NB1	B1W1(-10,0)V1	0.000	-10.000	0.000	0.000
(DCT005)	◇	GFHT 019 CONF. ROS-NB1	B1W1(10,0)V1	0.000	10.000	0.000	0.000
(DCT008)	□	GFHT 019 CONF. ROS-NB1	B1W1(-20,-20)V1	0.000	-20.000	-20.000	0.000
(DCT009)	◺	GFHT 019 CONF. ROS-NB1	B1W1(-40,-40)V1	0.000	-40.000	-40.000	0.000

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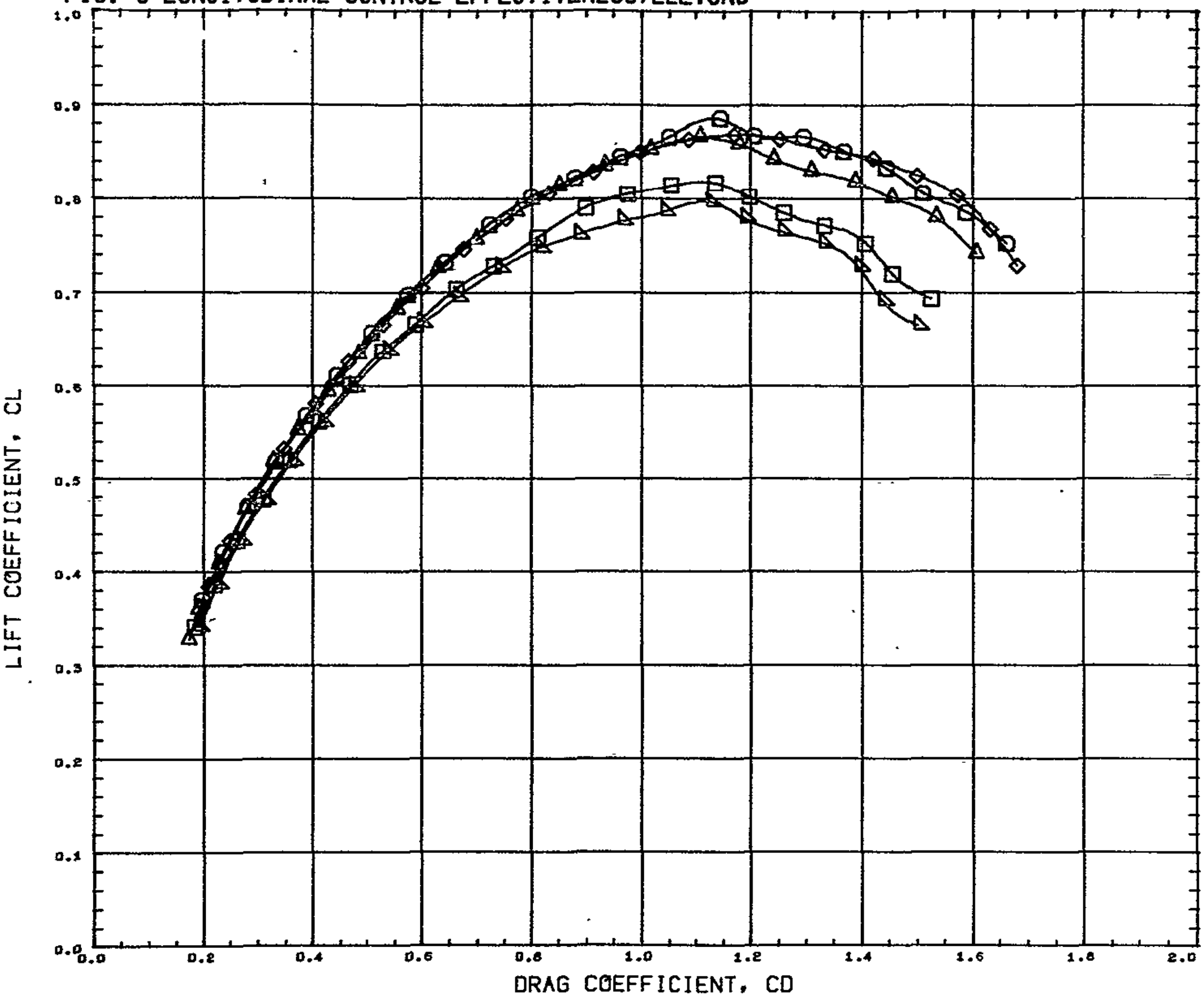
REFERENCE INFORMATION		
SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

FIG. 5 LONGITUDINAL CONTROL EFFECTIVENESS, ELEVONS

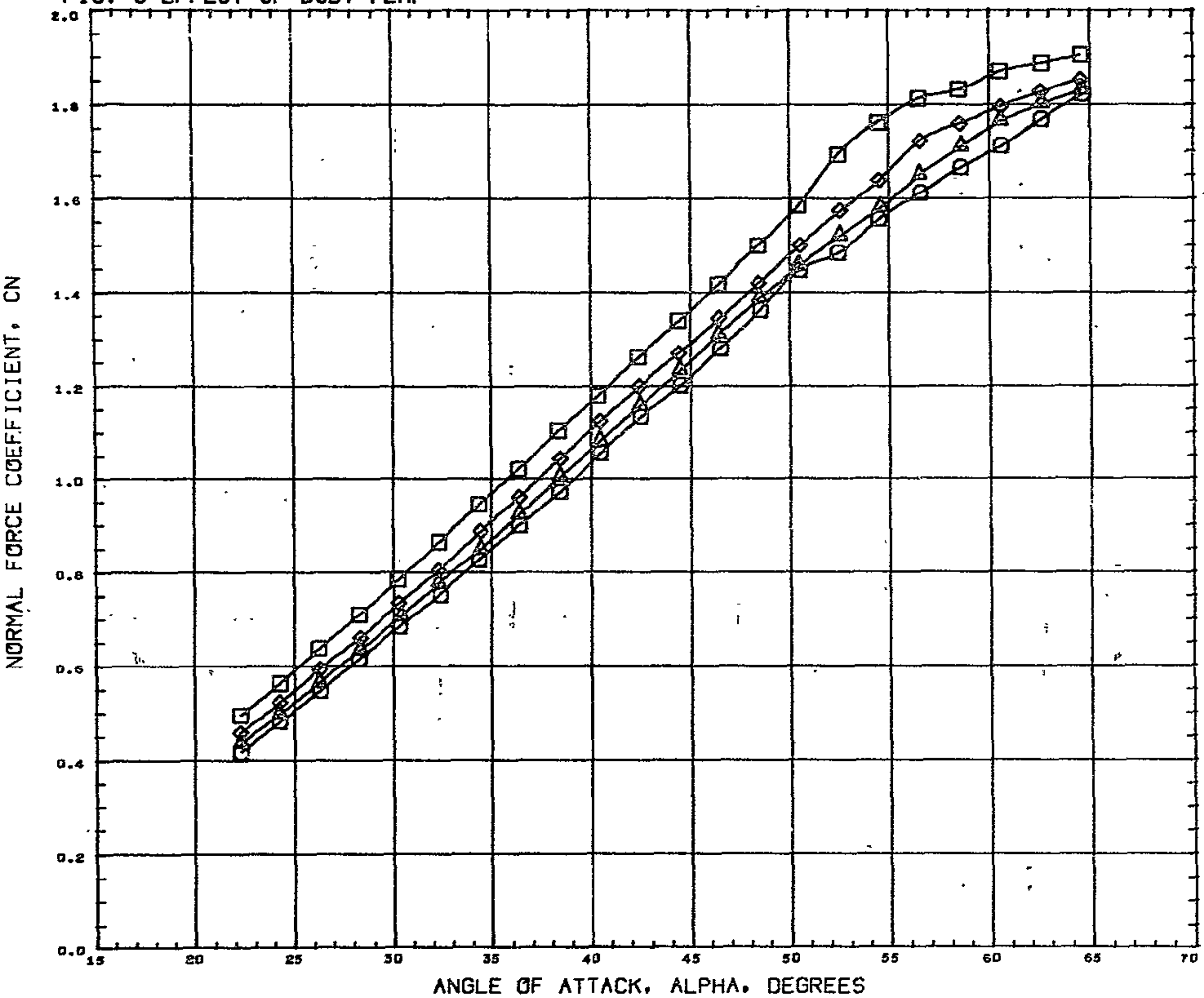


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT002)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000
(DCT004)	△	GFHT 019 CONF. ROS-NB1 B1W1(-10,0)V1	0.000	-10.000	0.000	0.000
(DCT005)	◇	GFHT 019 CONF. ROS-NB1 B1W1(10,0)V1	0.000	10.000	0.000	0.000
(DCT008)	□	GFHT 019 CONF. ROS-NB1 B1W1(-20,-20)V1	0.000	-20.000	-20.000	0.000
(DCT009)	◺	GFHT 019 CONF. ROS-NB1 B1W1(-40,-40)V1	0.000	-40.000	-40.000	0.000

REFERENCE INFORMATION		
SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

MACH 10.130

FIG. 6 EFFECT OF BODY FLAP



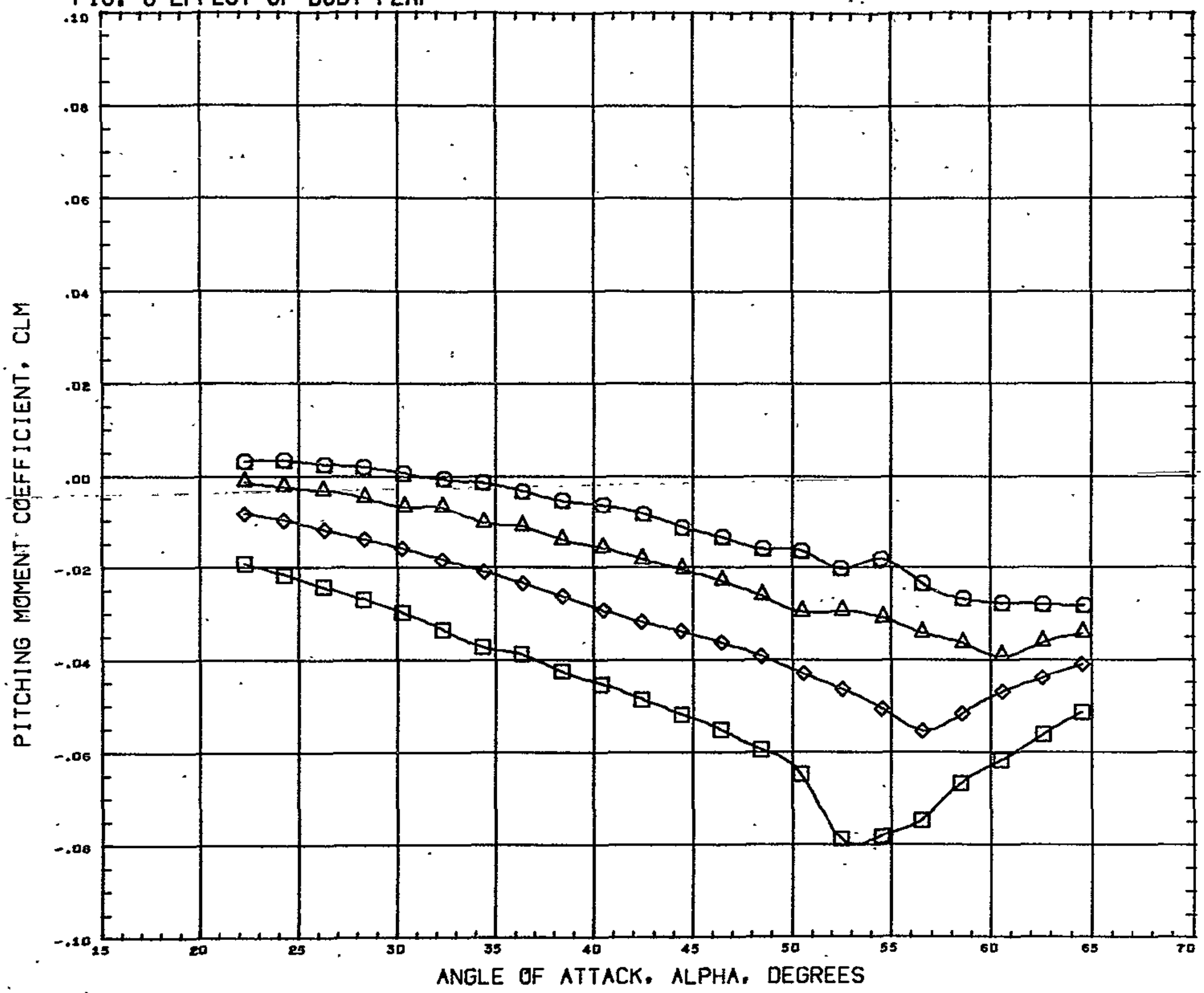
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT002)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000
(DCT005)	△	GFHT 019 CONF. ROS-NB1 B1W1(10,0)V1	0.000	10.000	0.000	0.000
(DCT006)	◇	GFHT 019 CONF. ROS-NB1 B1W1V1F1(10)	0.000	0.000	0.000	10.000
(DCT007)	□	GFHT 019 CONF. ROS-NB1 B1W1(10,10)V1F1(10)	0.000	10.000	10.000	10.000

REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.6380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

MACH 10.130

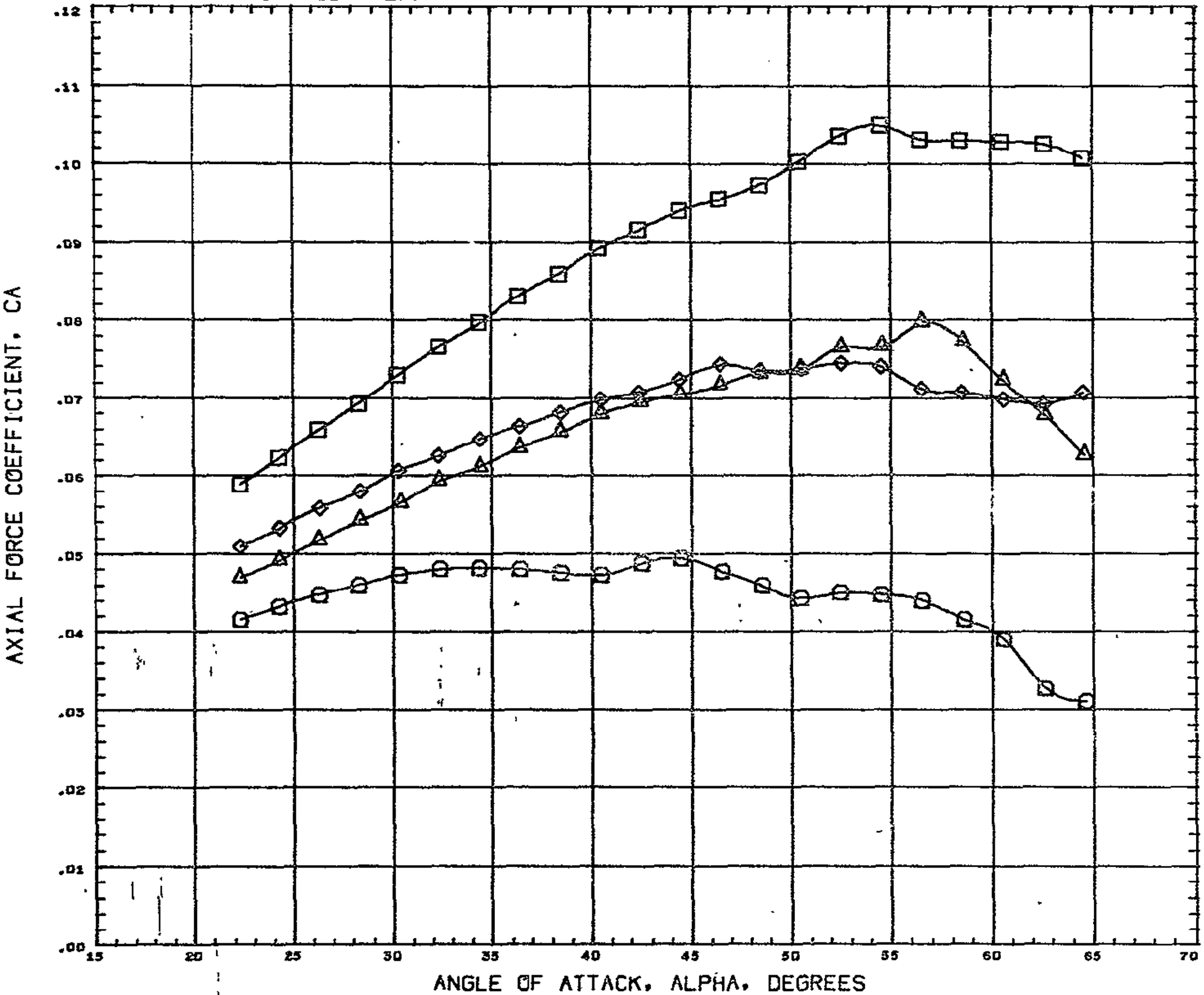
FIG. 6 EFFECT OF BODY FLAP



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION		BETA	LELEVN	RELEVN	BODFLF	REFERENCE INFORMATION		
(DCT002)	○	GFHT 019 CONF. ROS-NB1	B1W1V1	0.000	0.000	0.000	0.000	SREF	20.6890	SQ.IN.
(DCT005)	△	GFHT 019 CONF. ROS-NB1	B1W1(10,0)V1	0.000	10.000	0.000	0.000	LREF	9.6480	IN.
(DCT006)	◇	GFHT 019 CONF. ROS-NB1	B1W1V1F1(10)	0.000	0.000	0.000	10.000	BREF	5.8380	IN.
(DCT007)	□	GFHT 019 CONF. ROS-NB1	B1W1(10,10)V1F1(10)	0.000	10.000	10.000	10.000	XMRP	1485.0040	IN.
								YMRP	0.0000	IN.
								ZMRP	377.0004	IN.
								SCALE	0.0050	

MACH 10.130

FIG. 6 EFFECT OF BODY FLAP



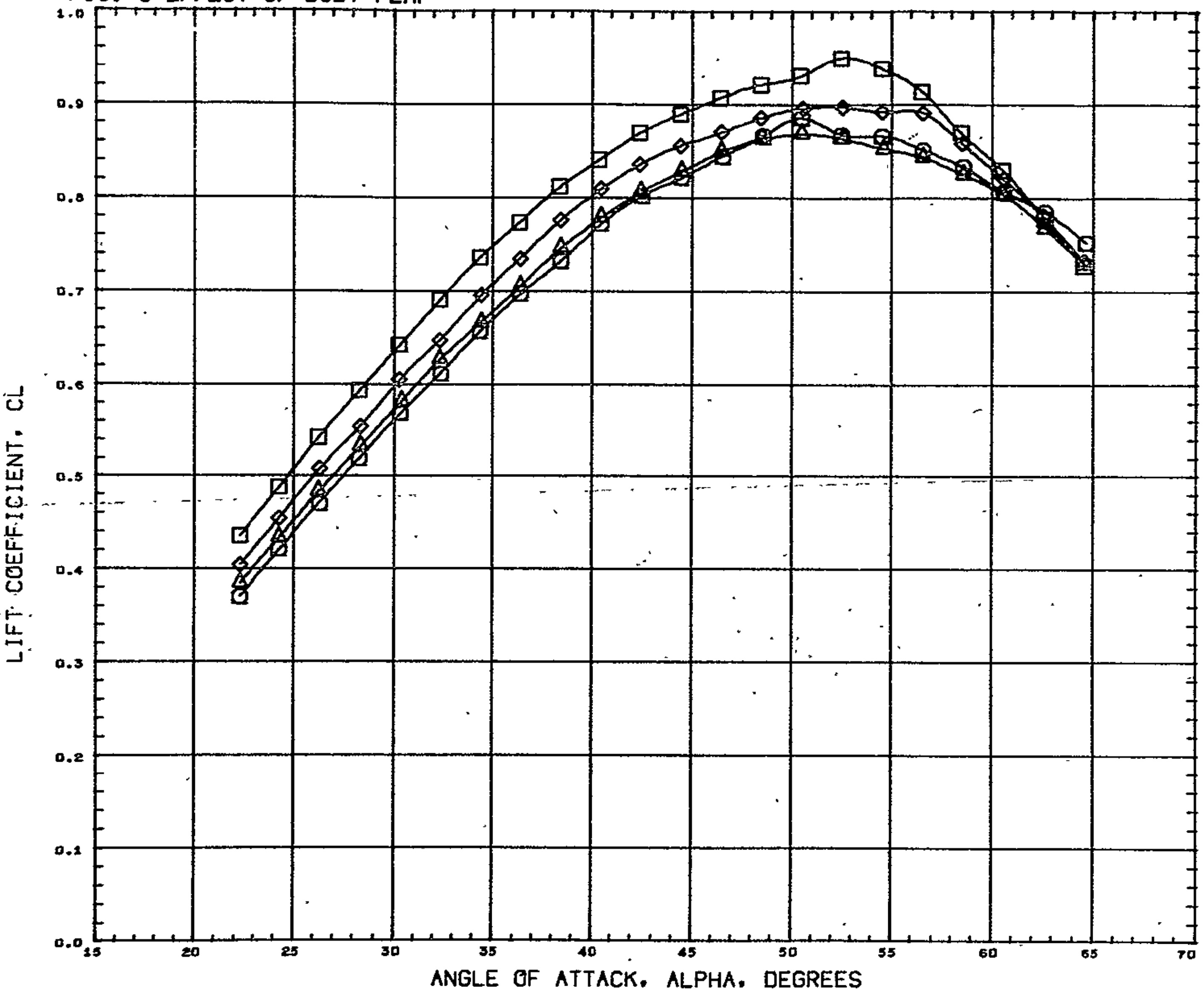
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT002)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000
(DCT005)	△	GFHT 019 CONF. ROS-NB1 B1W1(10,0)V1	0.000	10.000	0.000	0.000
(DCT006)	◇	GFHT 019 CONF. ROS-NB1 B1W1V1F1(10)	0.000	0.000	0.000	10.000
(DCT007)	□	GFHT 019 CONF. ROS-NB1 B1W1(10,10)V1F1(10)	0.000	10.000	10.000	10.000

REFERENCE INFOPHATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8360	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

MACH 10.130

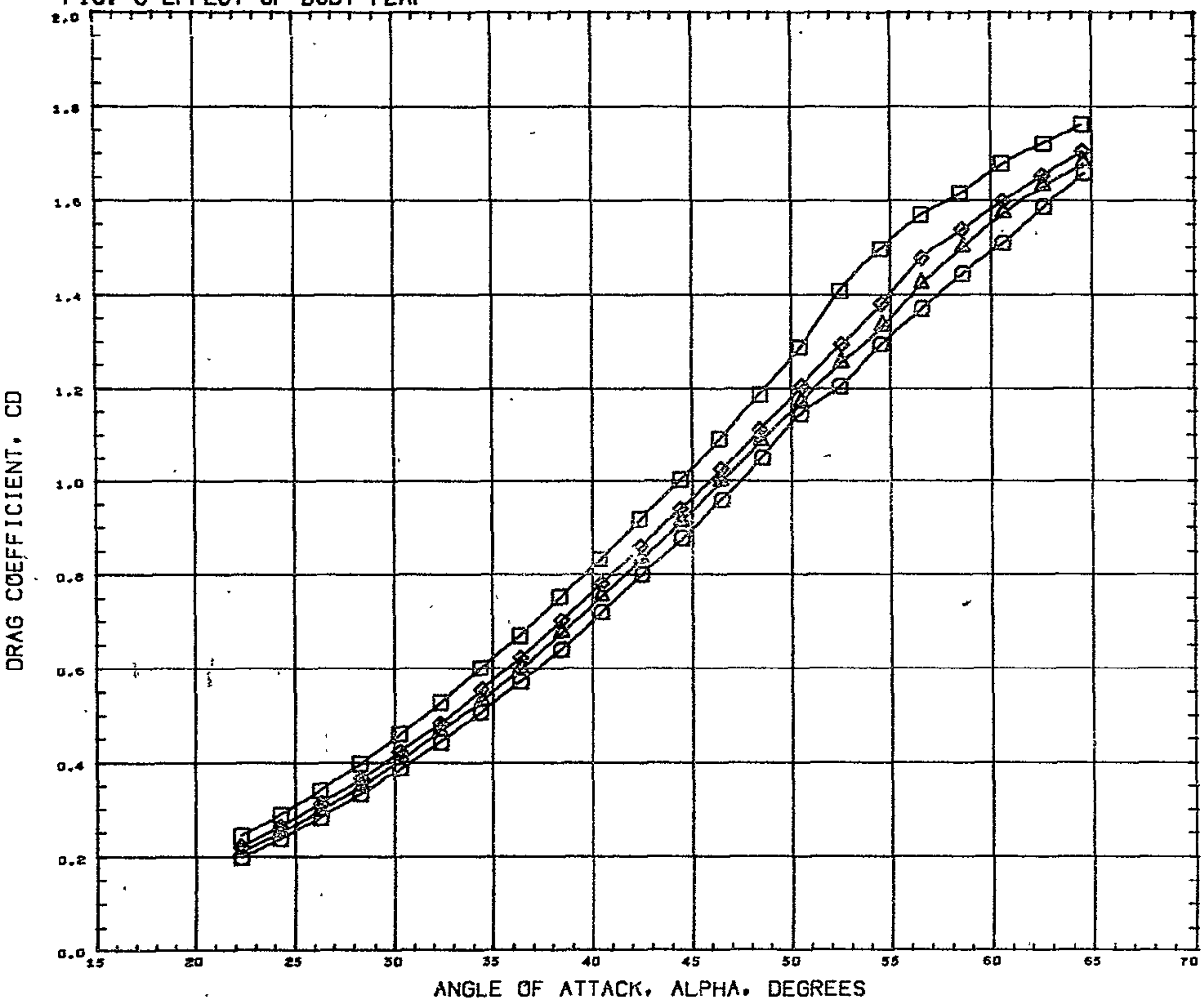
FIG. 6 EFFECT OF BODY FLAP



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP	REFERENCE INFORMATION		
(DCT002)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000	SREF	20.6890	SQ.IN.
(DCT005)	△	GFHT 019 CONF. ROS-NB1 B1W1(10,0)V1	0.000	10.000	0.000	0.000	LREF	9.6480	IN.
(DCT006)	◇	GFHT 019 CONF. ROS-NB1 B1W1V1F1(10)	0.000	0.000	0.000	10.000	BREF	5.8360	IN.
(DCT007)	□	GFHT 019 CONF. ROS-NB1 B1W1(10,10)V1F1(10)	0.000	10.000	10.000	10.000	XMRP	1485.0040	IN.
							YMRP	0.0000	IN.
							ZMRP	377.0004	IN.
							SCALE	0.0050	

MACH 10.130

FIG. 6 EFFECT OF BODY FLAP

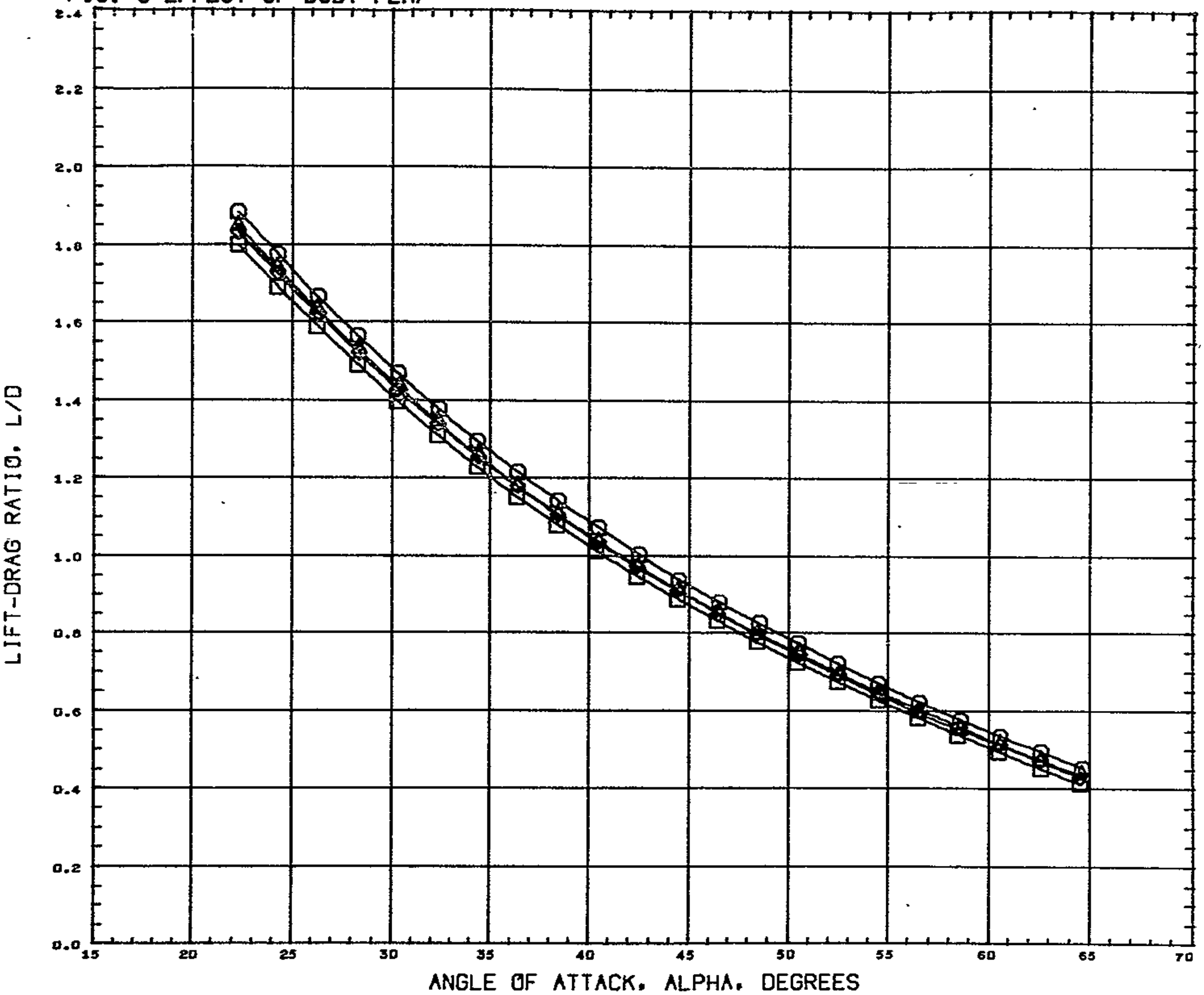


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT002)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000
(DCT005)	△	GFHT 019 CONF. ROS-NB1 B1W1(10,0)V1	0.000	10.000	0.000	0.000
(DCT006)	◇	GFHT 019 CONF. ROS-NB1 B1W1V1F1(10)	0.000	0.000	0.000	10.000
(DCT007)	□	GFHT 019 CONF. ROS-NB1 B1W1(10,10)V1F1(10)	0.000	10.000	10.000	10.000

REFERENCE INFORMATION		
SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1465.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

MACH 10.13C

FIG. 6 EFFECT OF BODY FLAP



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT002)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000
(DCT005)	△	GFHT 019 CONF. ROS-NB1 B1W1(10,0)V1	0.000	10.000	0.000	0.000
(DCT006)	◇	GFHT 019 CONF. ROS-NB1 B1W1V1F1(10)	0.000	0.000	0.000	10.000
(DCT007)	□	GFHT 019 CONF. ROS-NB1 B1W1(10,10)V1F1(10)	0.000	10.000	10.000	10.000

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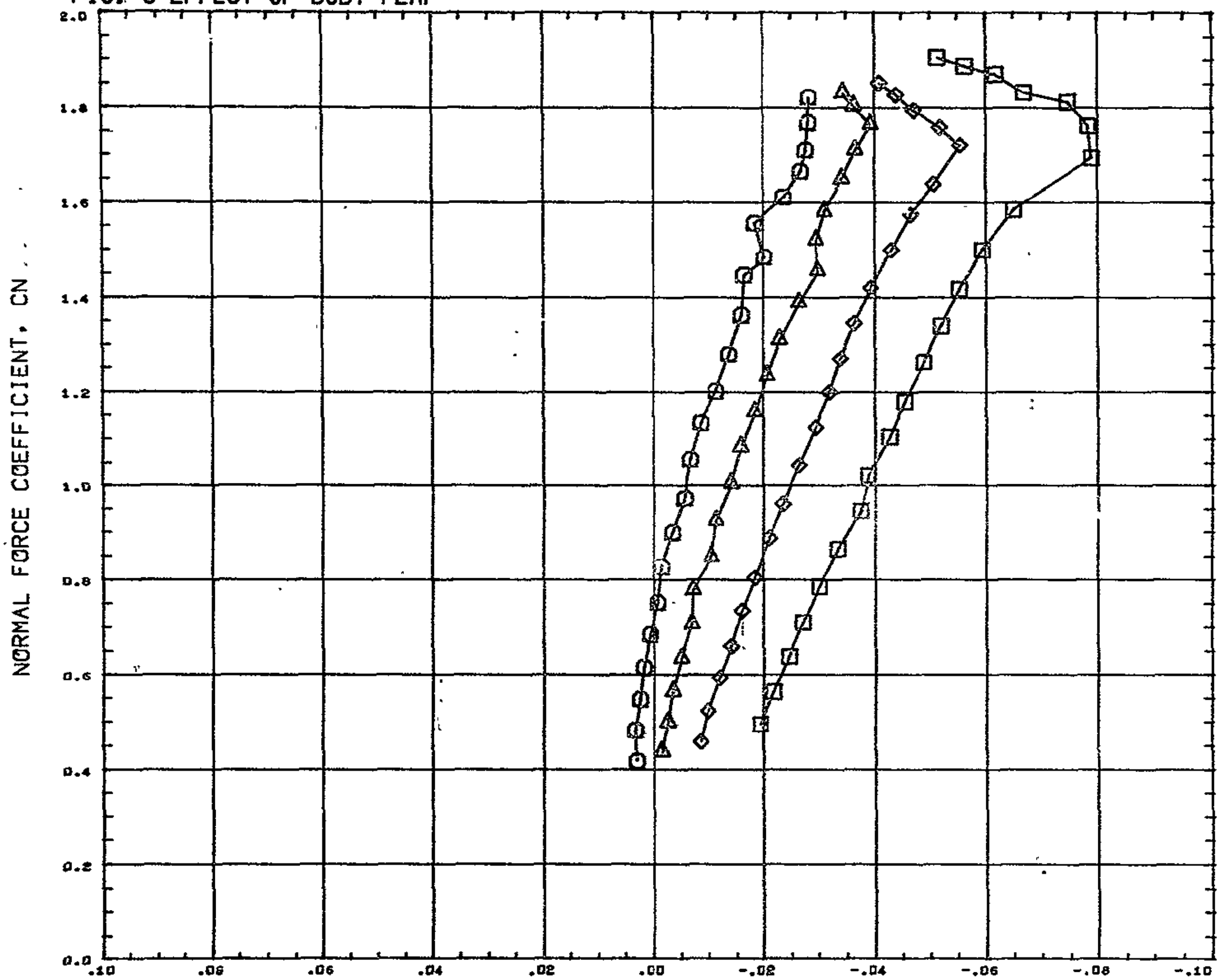
REFERENCE INFORMATION		
SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

FIG. 6 EFFECT OF BODY FLAP



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT002)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000
(DCT005)	△	GFHT 019 CONF. ROS-NB1 B1W1(10,0)V1	0.000	10.000	0.000	0.000
(DCT006)	◇	GFHT 019 CONF. ROS-NB1 B1W1V1F1(10)	0.000	0.000	0.000	10.000
(DCT007)	□	GFHT 019 CONF. ROS-NB1 B1W1(10,10)V1F1(10)	0.000	10.000	10.000	10.000

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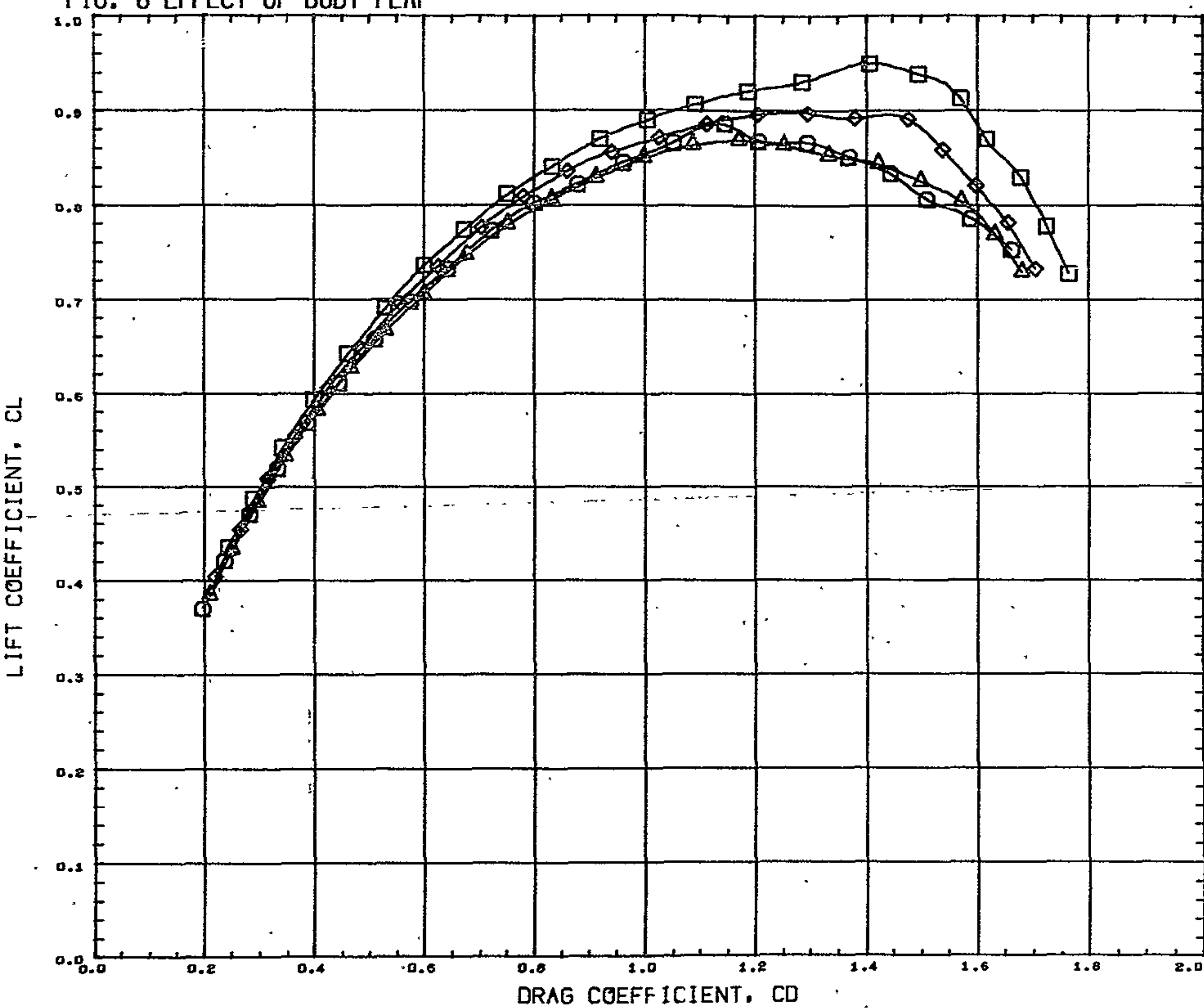
REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

FIG. 6 EFFECT OF BODY FLAP

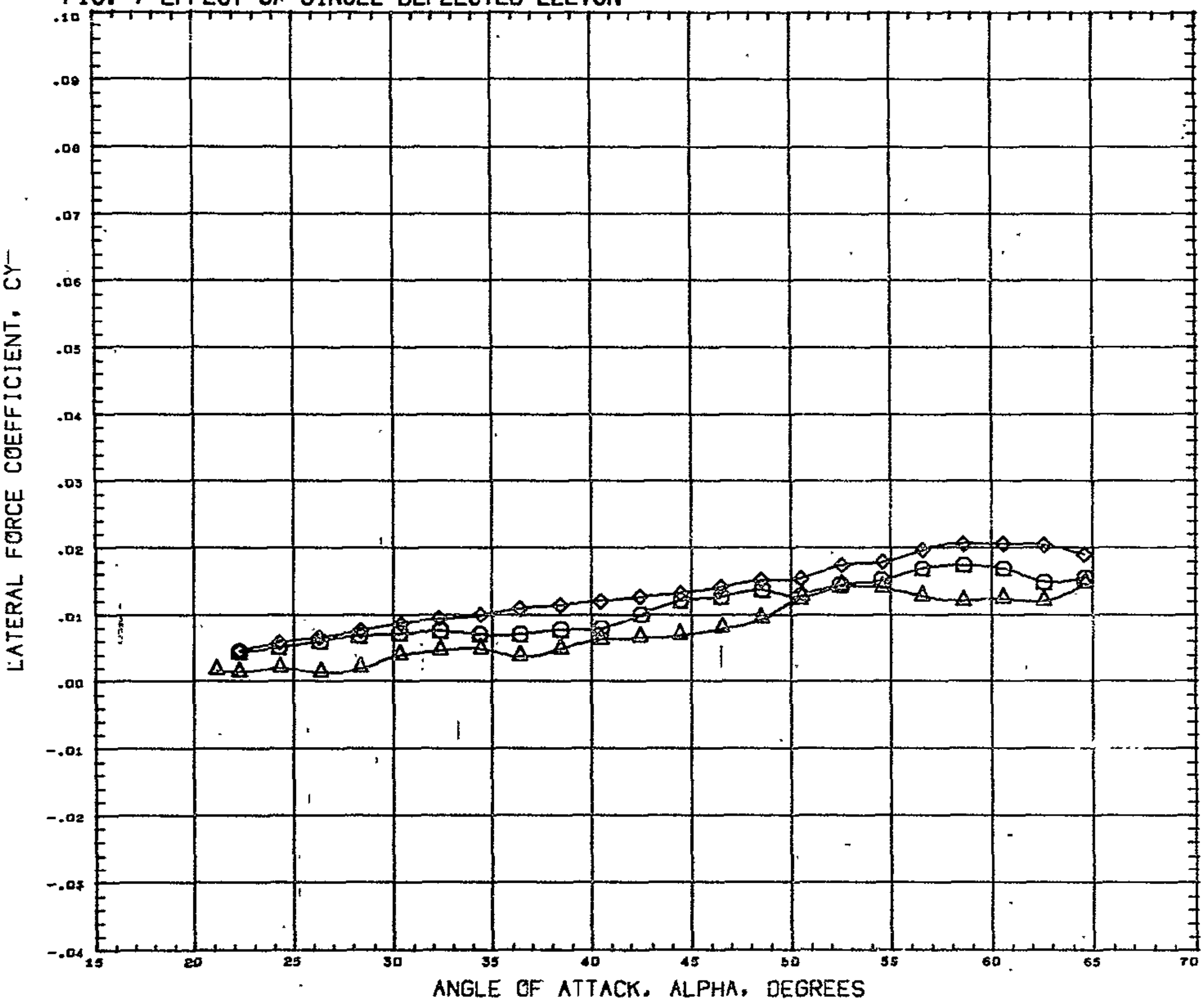


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT002)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000
(DCT005)	△	GFHT 019 CONF. ROS-NB1 B1W1(10,0)V1	0.000	10.000	0.000	0.000
(DCT006)	◇	GFHT 019 CONF. ROS-NB1 B1W1V1F1(10)	0.000	0.000	0.000	10.000
(DCT007)	□	GFHT 019 CONF. ROS-NB1 B1W1(10,10)V1F1(10)	0.000	10.000	10.000	10.000

MACH 10.130

REFERENCE INFORMATION		
SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

FIG. 7 EFFECT OF SINGLE DEFLECTED ELEVON



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(OCT002)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000
(OCT004)	△	GFHT 019 CONF. ROS-NB1 B1W1(-10,0)V1	0.000	-10.500	0.000	0.000
(OCT005)	◇	GFHT 019 CONF. ROS-NB1 B1W1(10,0)V1	0.000	10.000	0.000	0.000

REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

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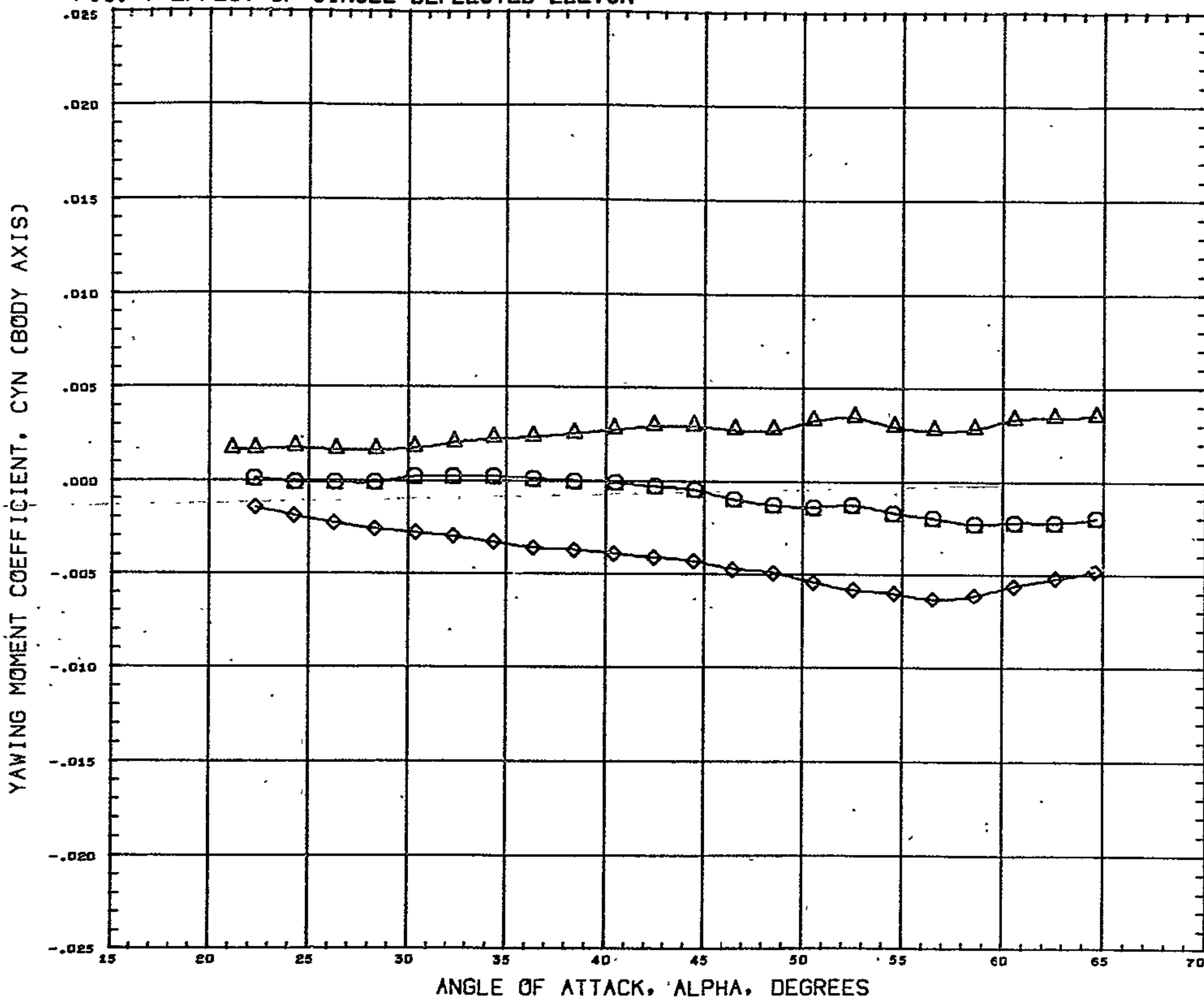
FIG. 7 EFFECT OF SINGLE DEFLECTED ELEVON



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT002)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000
(DCT004)	△	GFHT 019 CONF. ROS-NB1 B1W1(-10,0)V1	0.000	-10.000	0.000	0.000
(DCT005)	◇	GFHT 019 CONF. ROS-NB1 B1W1(10,0)V1	0.000	10.000	0.000	0.000

REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8360	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

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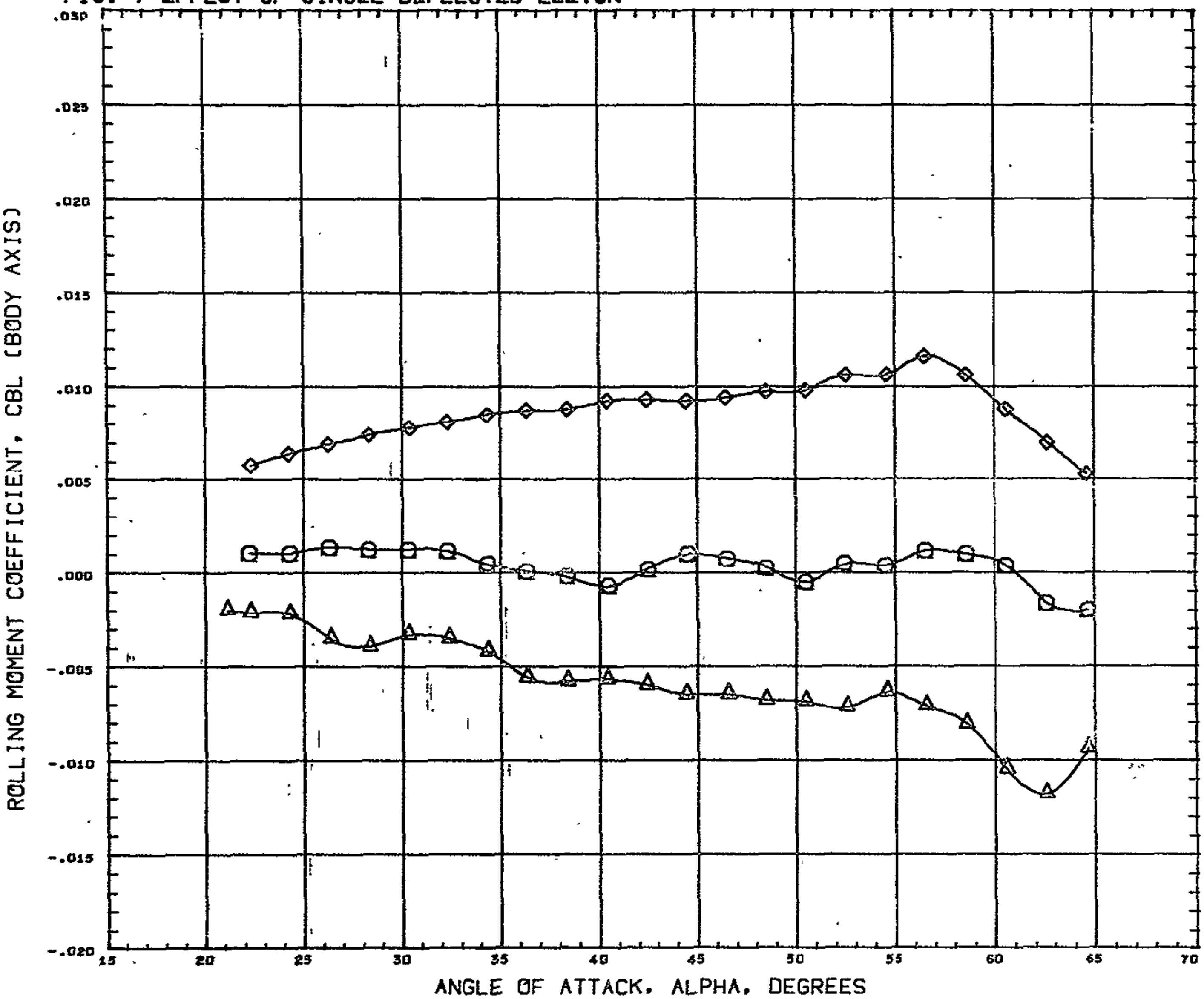
FIG. 7 EFFECT OF SINGLE DEFLECTED ELEVON



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT002)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000
(DCT004)	△	GFHT 019 CONF. ROS-NB1 B1W1(-10,0)V1	0.000	-10.000	0.000	0.000
(DCT005)	◇	GFHT 019 CONF. ROS-NB1 B1W1(10,0)V1	0.000	10.000	0.000	0.000

REFERENCE INFORMATION		
SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

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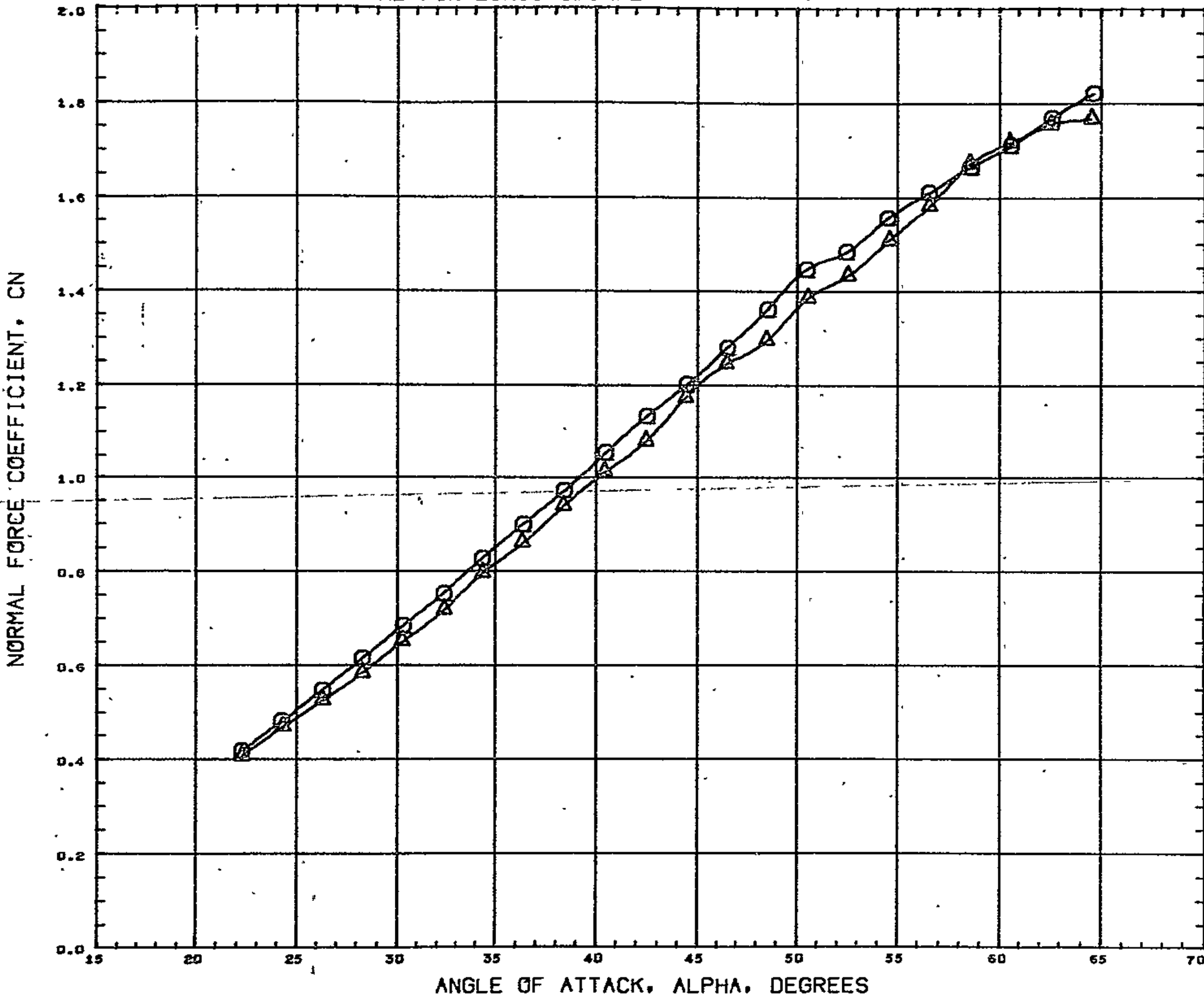
FIG. 8 EFFECT OF VENTRAL FIN,LONGITUDINAL



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	VENTRL
(DCT002)	O	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	
(DCT017)	Δ	GFHT 019 CONF. ROS-NB1 B1W1V1U1	0.000	0.000

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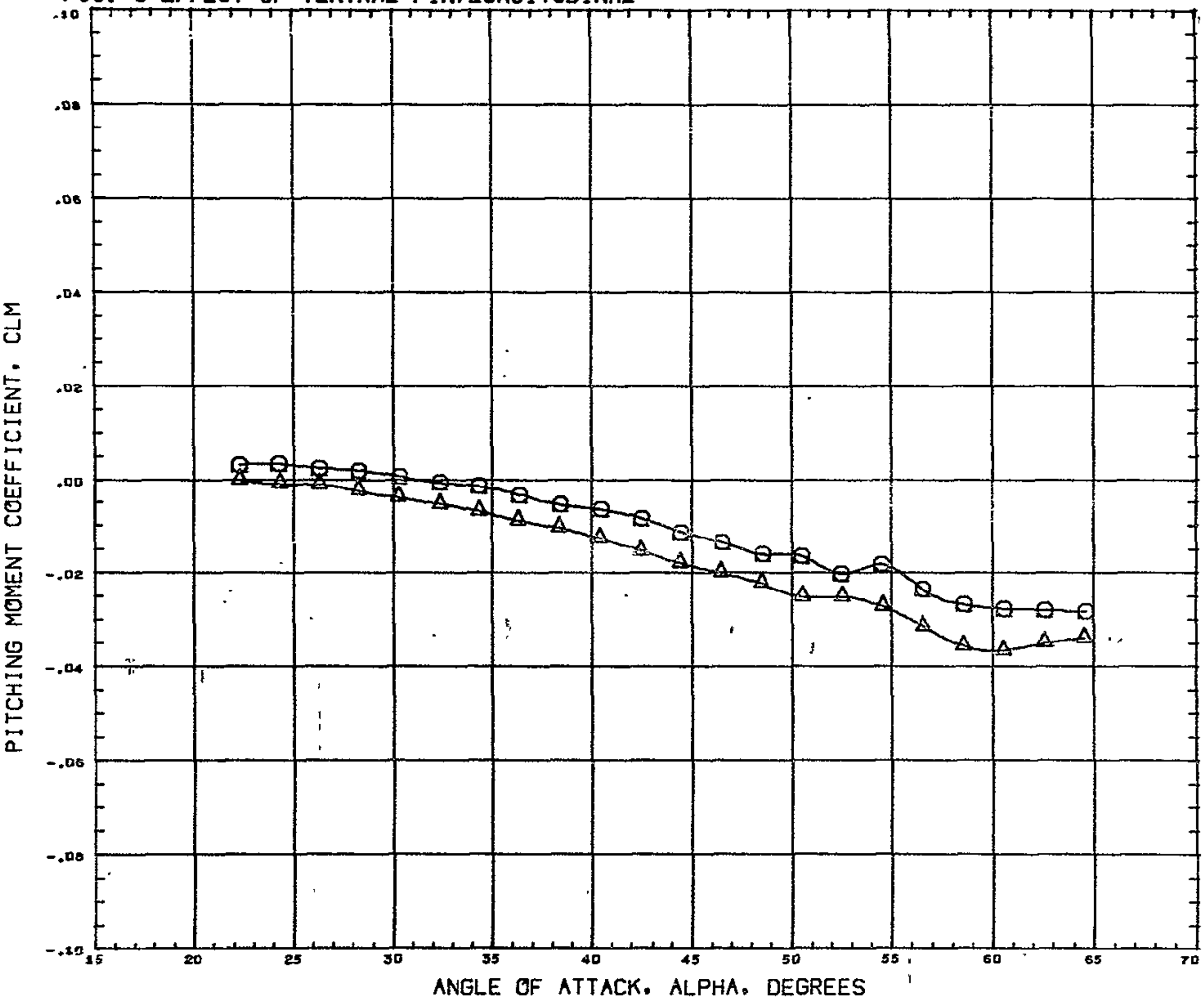
REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6420	IN.
BREF	5.8386	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

FIG. 8 EFFECT OF VENTRAL FIN, LONGITUDINAL



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	VENTRL
(DCT002)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	
(DCT017)	△	GFHT 019 CONF. ROS-NB1 B1W1V1U1	0.000	0.000

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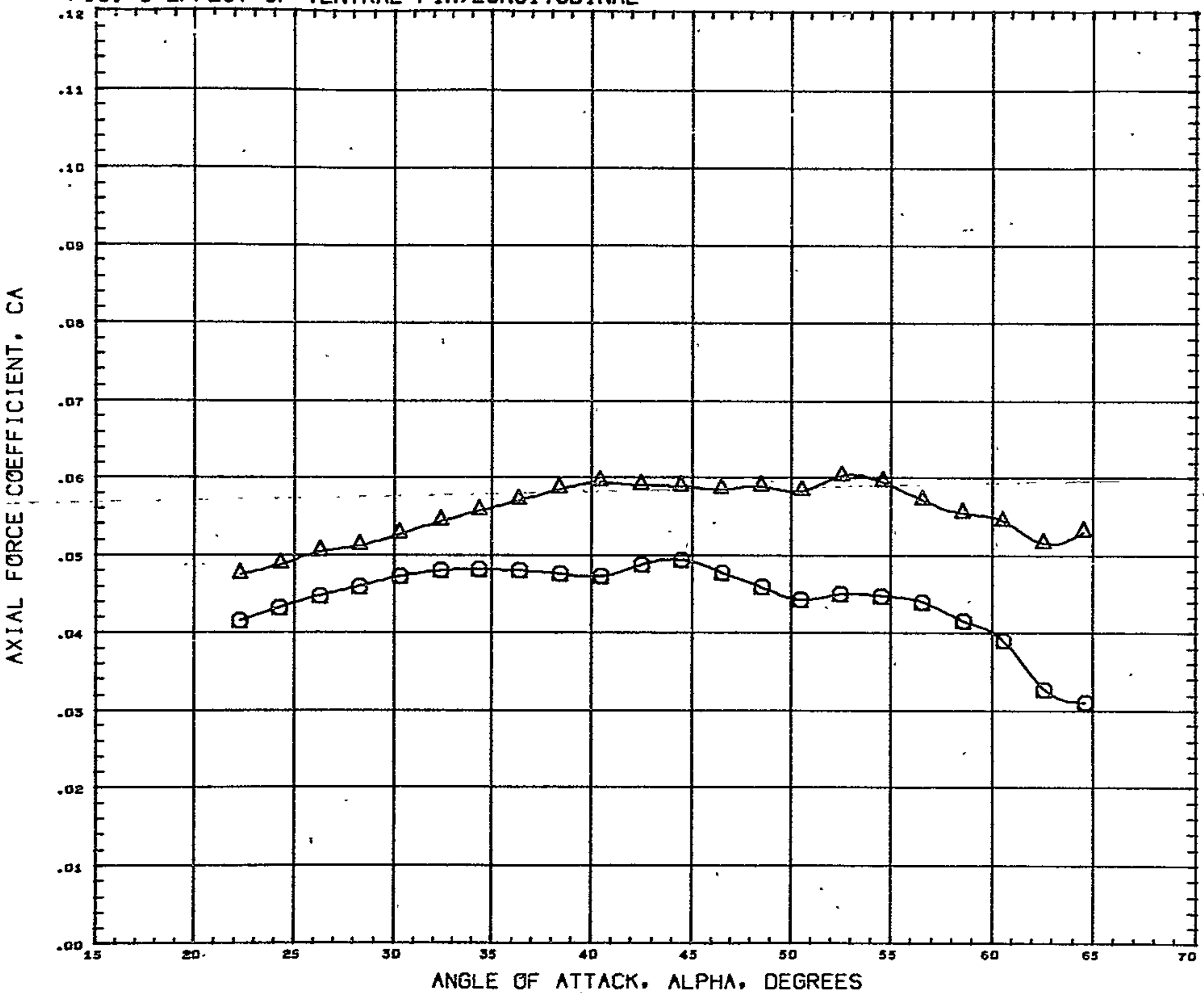
REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

FIG. 8 EFFECT OF VENTRAL FIN,LONGITUDINAL



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	VENTRL
(DCT002)	O	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	
(DCT017)	Δ	GFHT 019 CONF. ROS-NB1 B1W1V1U1	0.000	0.000

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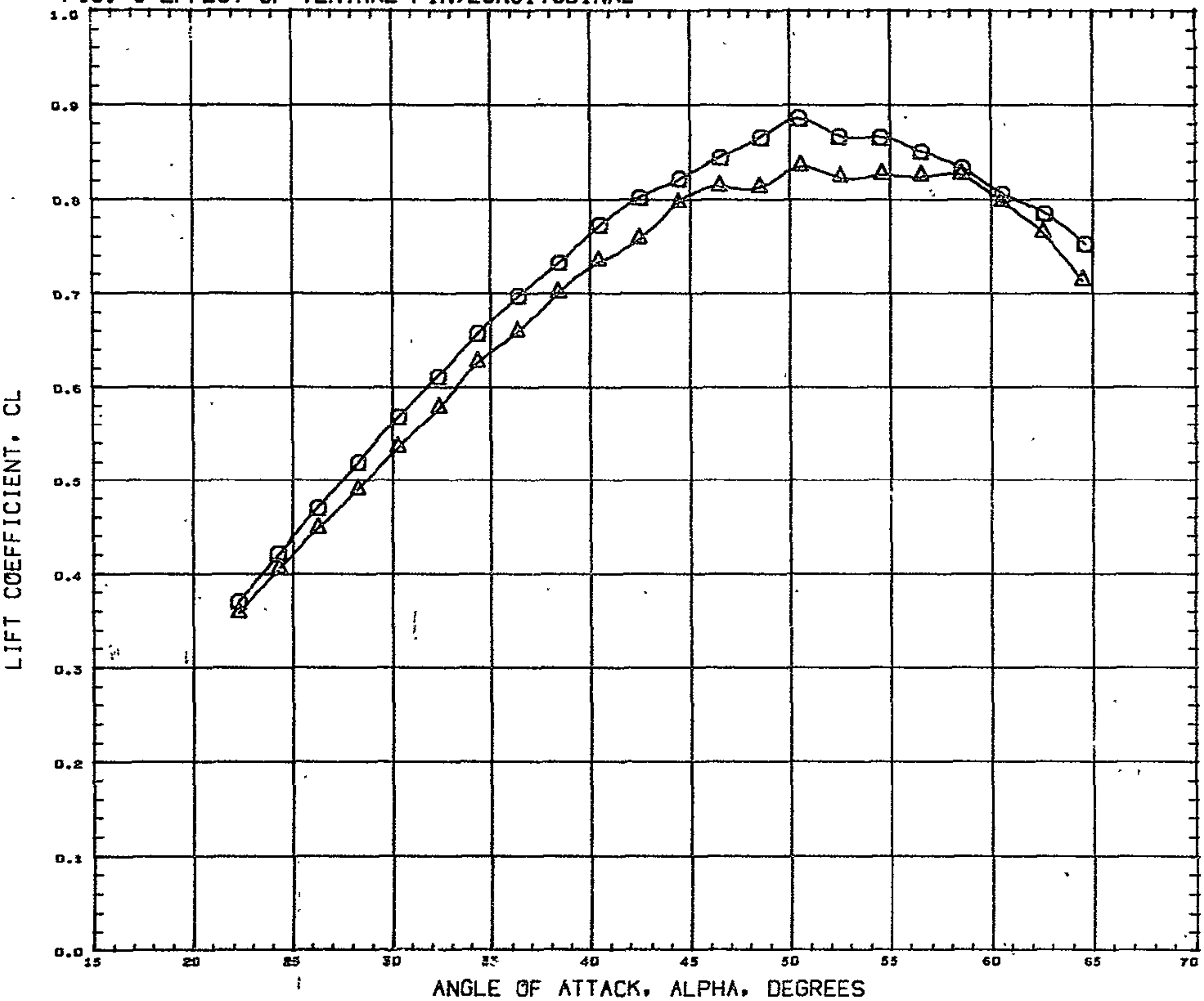
REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

FIG. 8 EFFECT OF VENTRAL FIN,LONGITUDINAL



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	VENTRL
(DCT002)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	
(DCT017)	△	GFHT 019 CONF. ROS-NB1 B1W1V1U1	0.000	0.000

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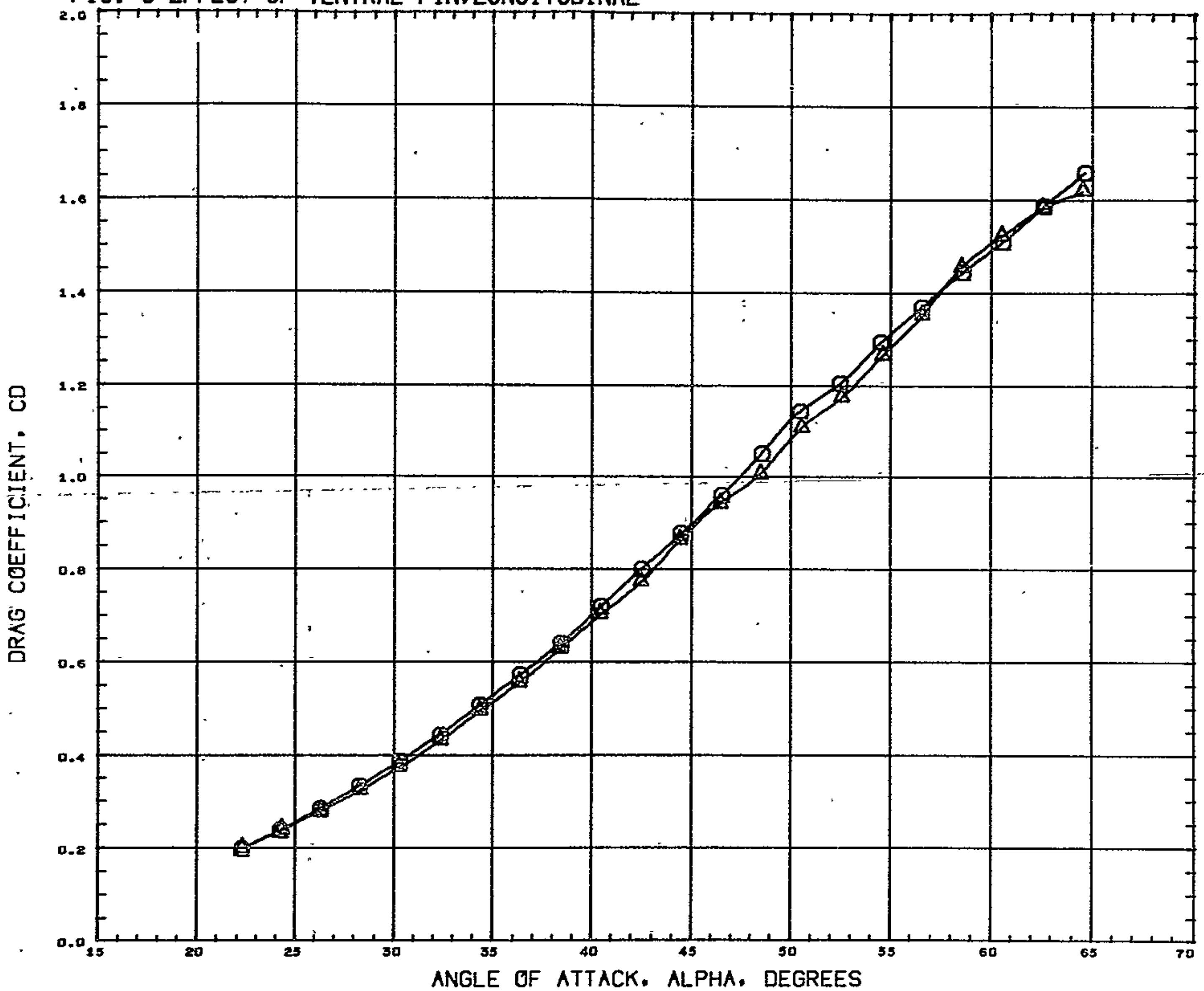
REFERENCE INFORMATION		
SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

FIG. 8 EFFECT OF VENTRAL FIN, LONGITUDINAL



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	VENTRL
(DCT002)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	
(DCT017)	△	GFHT 019 CONF. ROS-NB1 B1W1V1U1	0.000	0.000

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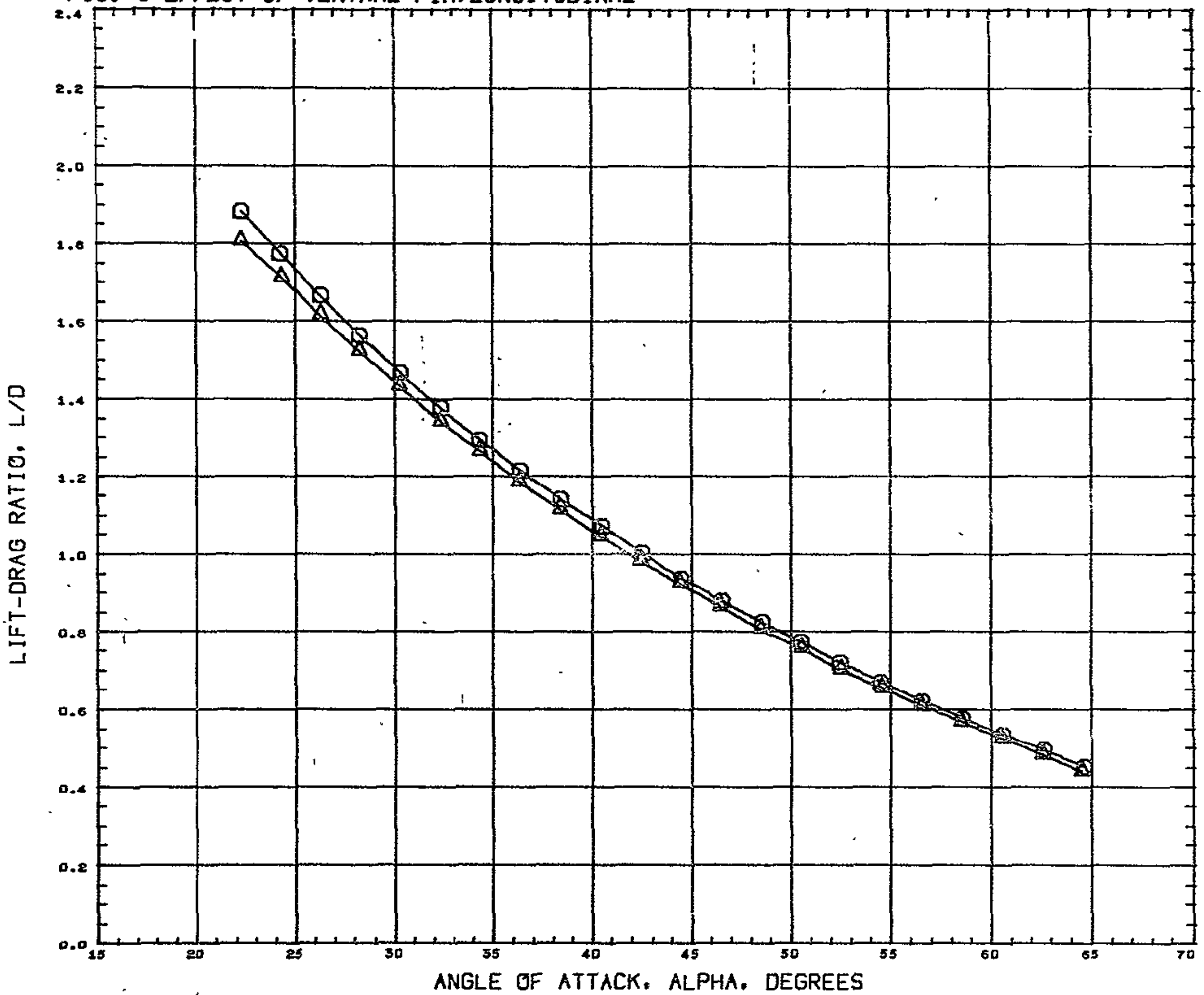
REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

FIG. 8 EFFECT OF VENTRAL FIN, LONGITUDINAL



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	VENTRL
(DCT002)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	
(DCT017)	△	GFHT 019 CONF. ROS-NB1 B1W1V1U1	0.000	0.000

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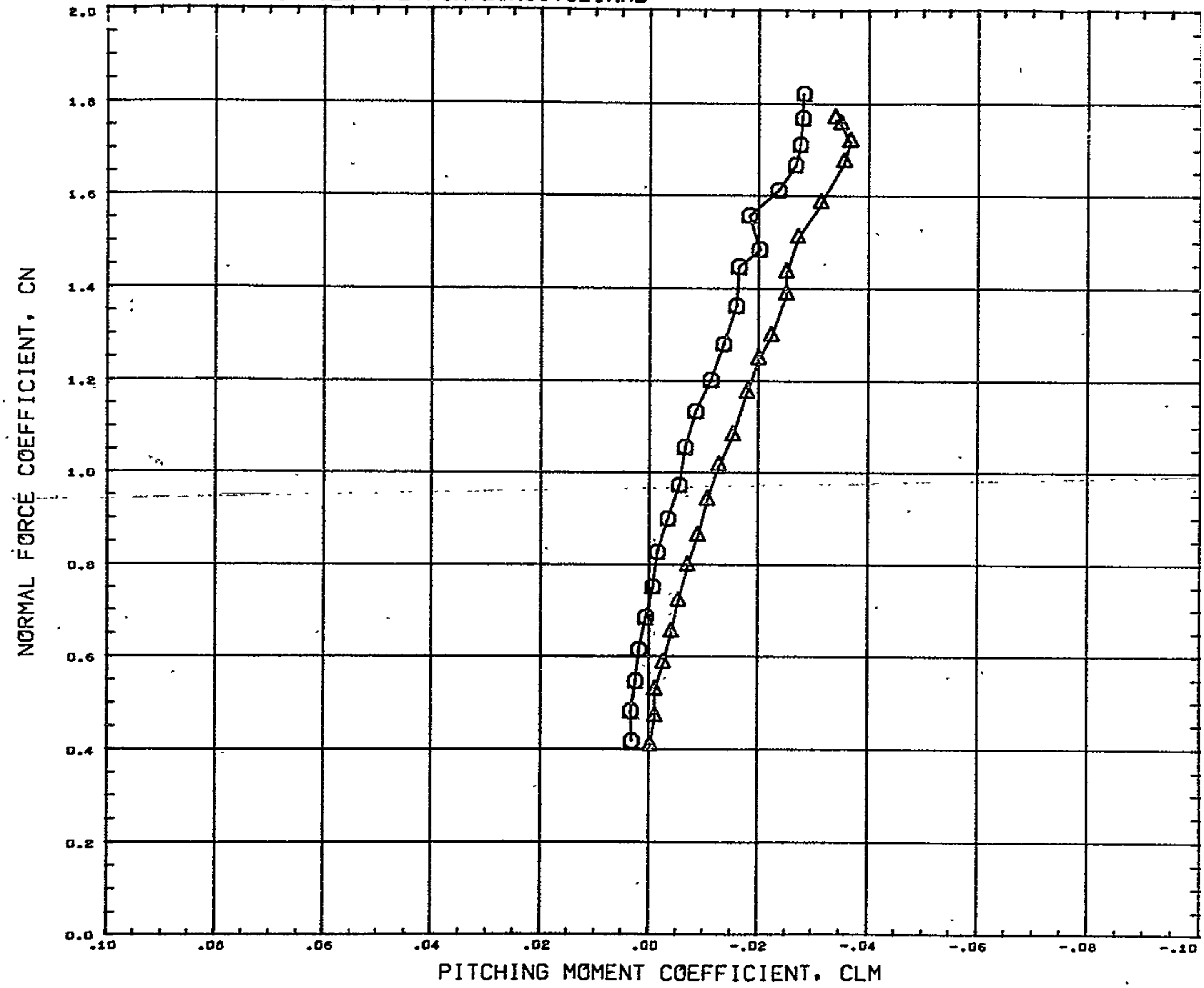
REFERENCE INFORMATION

SREF	20.6690	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

FIG. 8 EFFECT OF VENTRAL FIN,LONGITUDINAL



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	VENTRL
(DCT002)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	
(DCT017)	△	GFHT 019 CONF. ROS-NB1 B1W1V1U1	0.000	0.000

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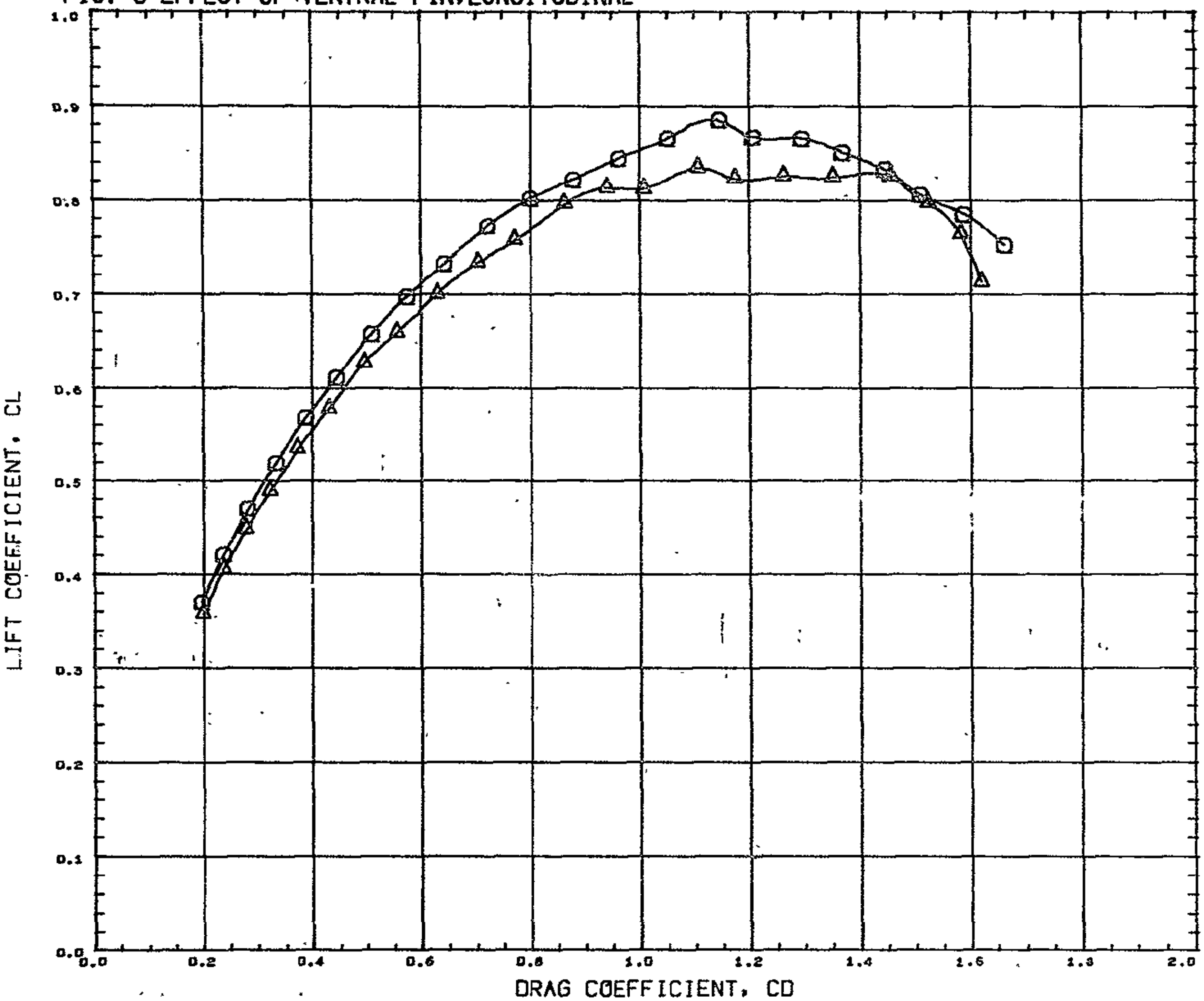
REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

FIG. 8 EFFECT OF VENTRAL FIN, LONGITUDINAL



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	VENTRL
(DCT002)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	
(DCT017)	△	GFHT 019 CONF. ROS-NB1 B1W1V1U1	0.000	0.000

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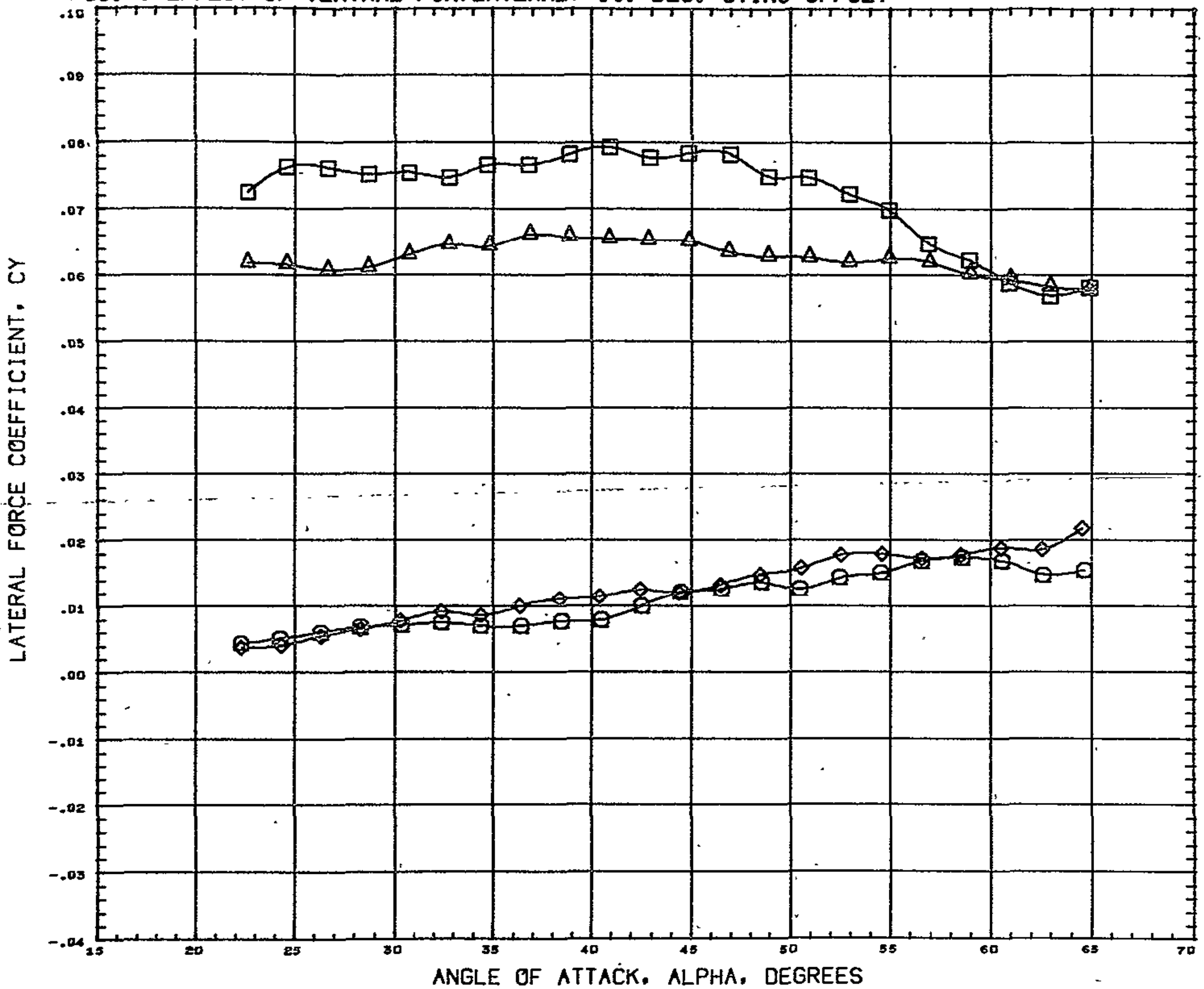
REFERENCE INFORMATION		
SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8580	IN.
XMRP	1465.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

FIG. 9 EFFECT OF VENTRAL FIN,LATERAL, 10. DEG. STING OFFSET



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	VENTRL
(DCT002)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	
(DCT020)	△	GFHT 019 ROS-NB1 B1W1V1 BETA IS -10 COS(ALPHA)		
(DCT017)	◇	GFHT 019 CONF. ROS-NB1 B1W1V1U1	0.000	0.000
(DCT018)	□	GFHT 019 ROS-NB1 B1W1V1U1 BETA IS -10 COS(ALPHA)		0.000

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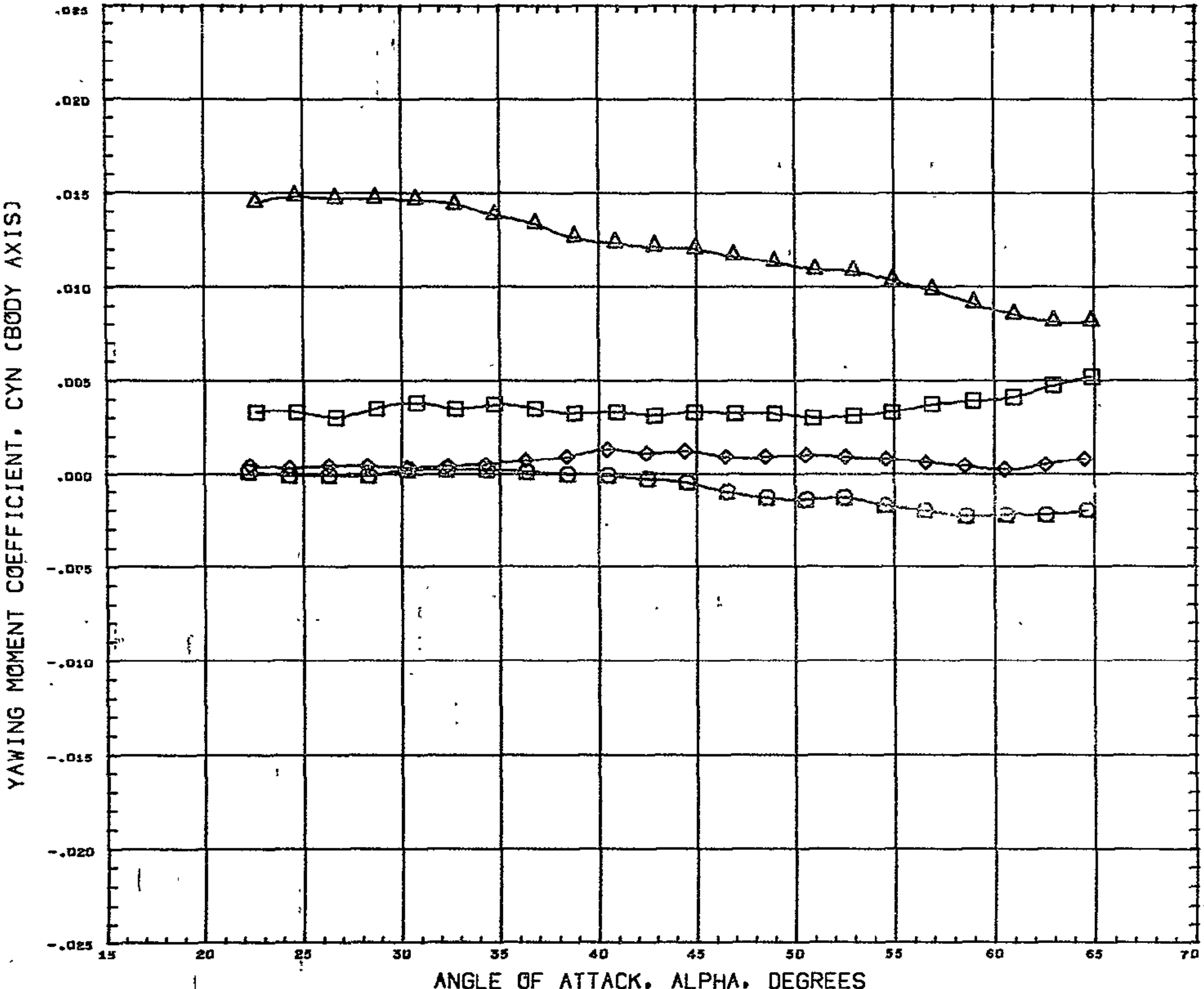
REFERENCE INFORMATION		
SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

FIG. 9 EFFECT OF VENTRAL FIN, LATERAL, 10. DEG. STING OFFSET



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	VENTRL
(DCT002)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	
(DCT020)	△	GFHT 019 ROS-NB1 B1W1V1 BETA IS -10 COS(ALPHA)		
(DCT017)	◇	GFHT 019 CONF. ROS-NB1 B1W1V1U1	0.000	0.000
(DCT016)	□	GFHT 019 ROS-NB1 B1W1V1U1 BETA IS -10 COS(ALPHA)		0.000

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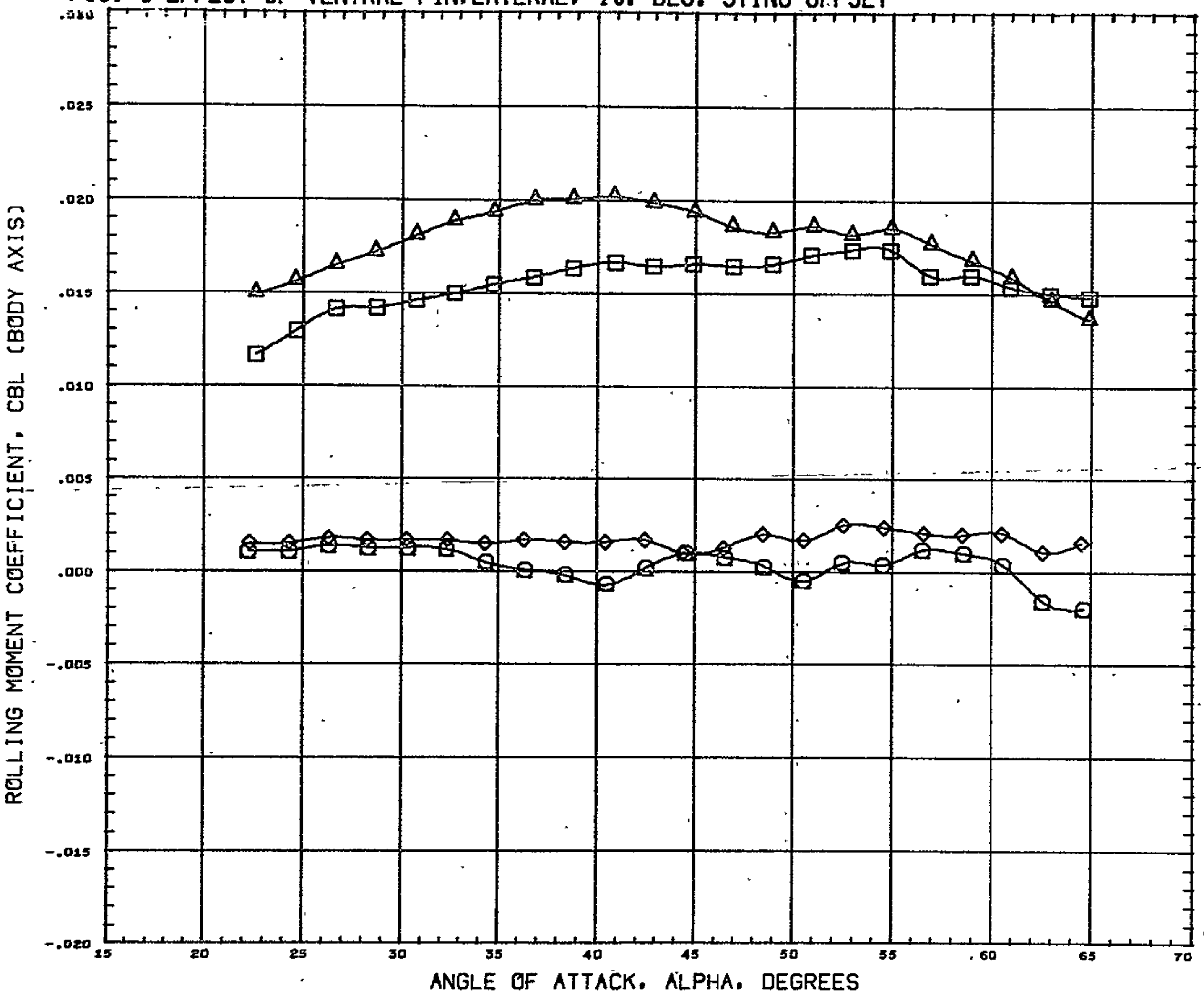
REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8360	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

FIG. 9 EFFECT OF VENTRAL FIN,LATERAL, 10. DEG. STING OFFSET



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	VENTRL
(DCT002)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	
(DCT020)	△	GFHT 019 ROS-NB1 B1W1V1 .BETA IS -10 COS(ALPHA)		
(DCT017)	◇	GFHT 019 CONF. ROS-NB1 B1W1V1U1	0.000	0.000
(DCT018)	□	GFHT 019 ROS-NB1 B1W1V1U1 BETA IS -10 COS(ALPHA)		0.000

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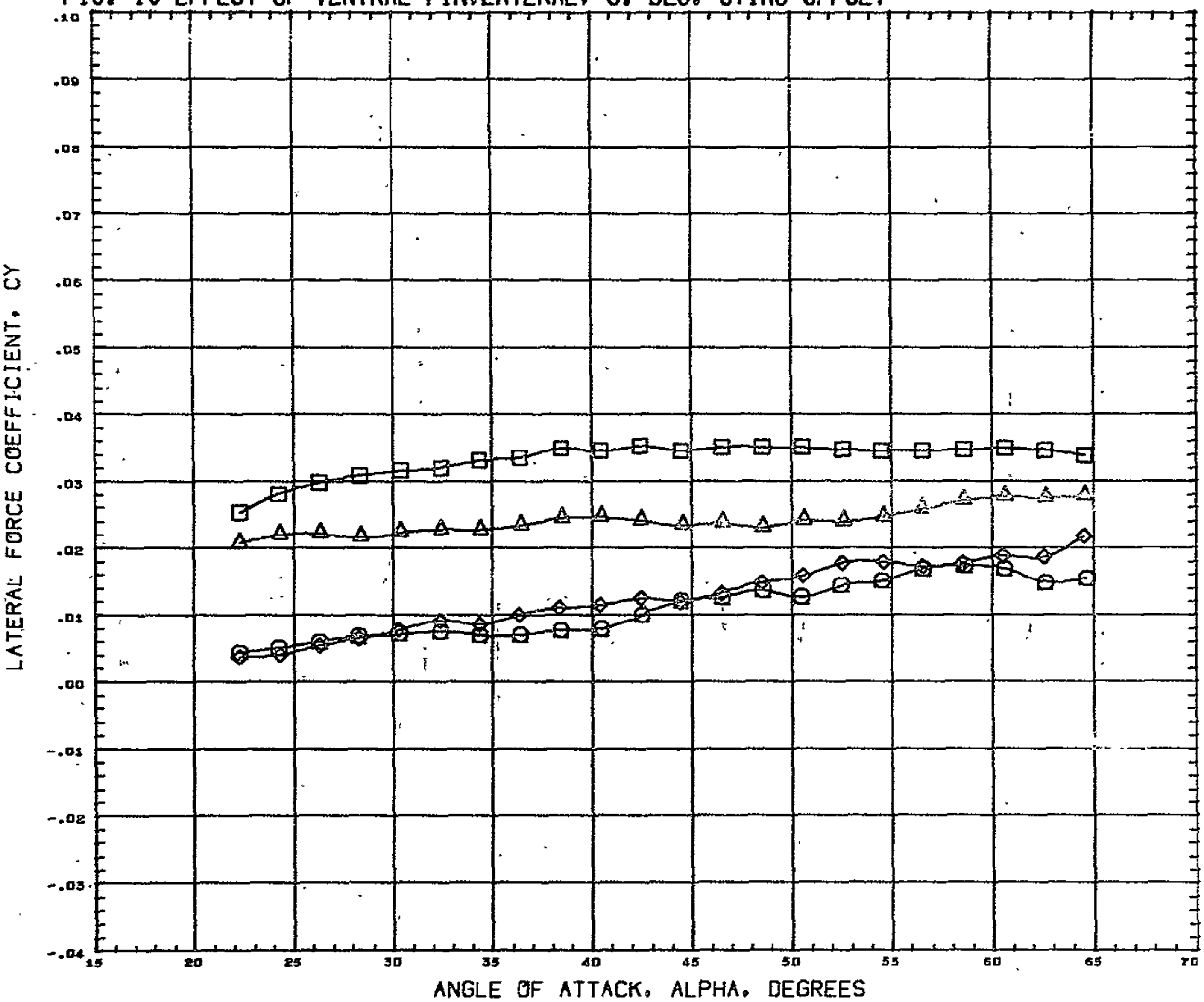
REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

FIG. 10 EFFECT OF VENTRAL FIN,LATERAL, 3. DEG. STING OFFSET



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	VENTRL
(DCT002)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	
(DCT026)	△	GFHT 019 ROS-NB1 B1W1V1 BETA IS -3 COS(ALPHA)		
(DCT017)	◇	GFHT 019 CONF. ROS-NB1 B1W1V1U1	0.000	0.000
(DCT027)	□	GFHT 019 ROS-NB1 B1W1V1U1 BETA IS -3 COS(ALPHA)		0.000

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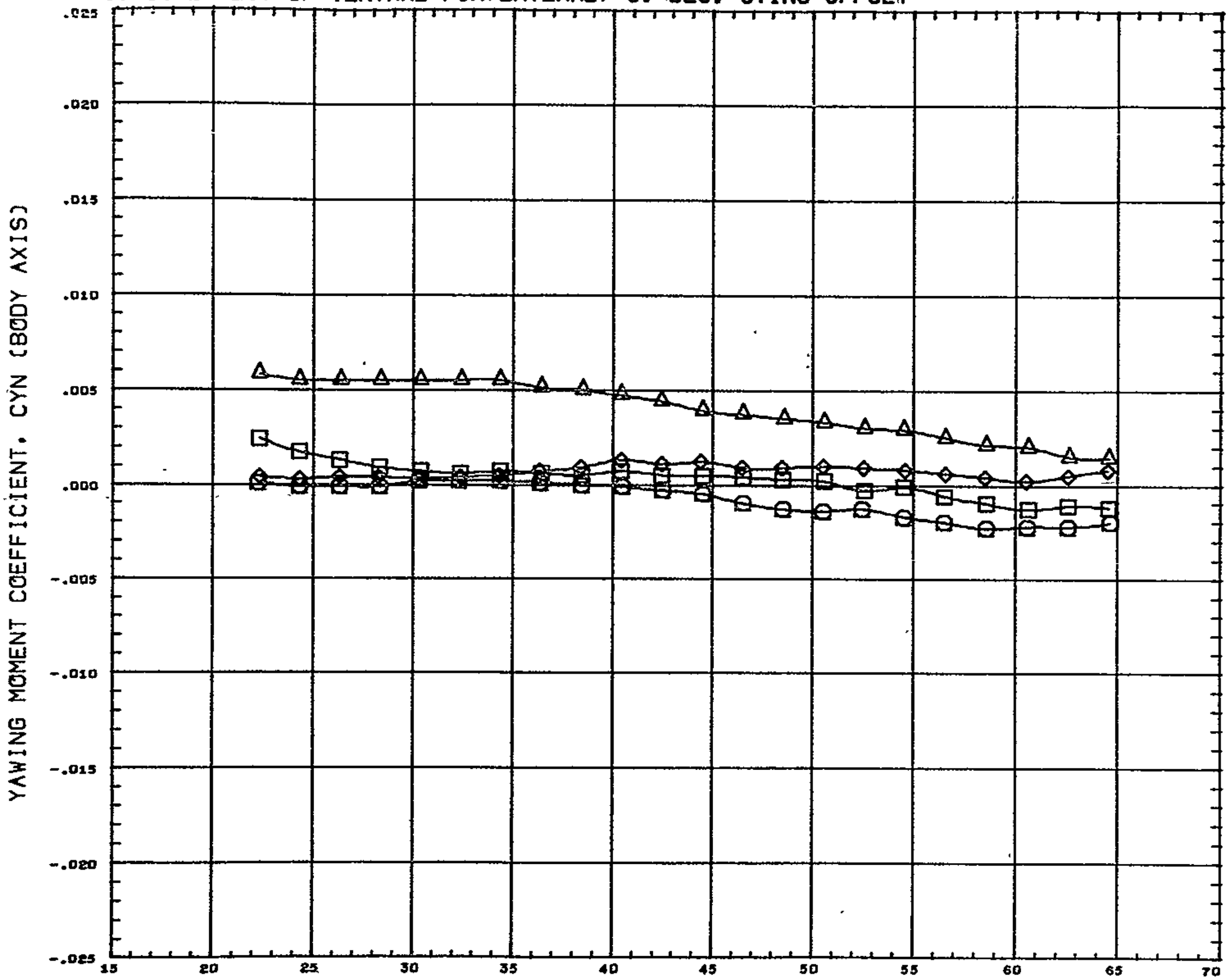
REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

FIG. 10 EFFECT OF VENTRAL FIN,LATERAL, 3. DEG. STING OFFSET



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	VENTRL
(DCT002)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	
(DCT026)	△	GFHT 019 ROS-NB1 B1W1V1 BETA IS -3 COS(ALPHA)		
(DCT017)	◇	GFHT 019 CONF. ROS-NB1 B1W1V1U1	0.000	0.000
(DCT027)	□	GFHT 019 ROS-NB1 B1W1V1U1 BETA IS -3 COS(ALPHA)		0.000

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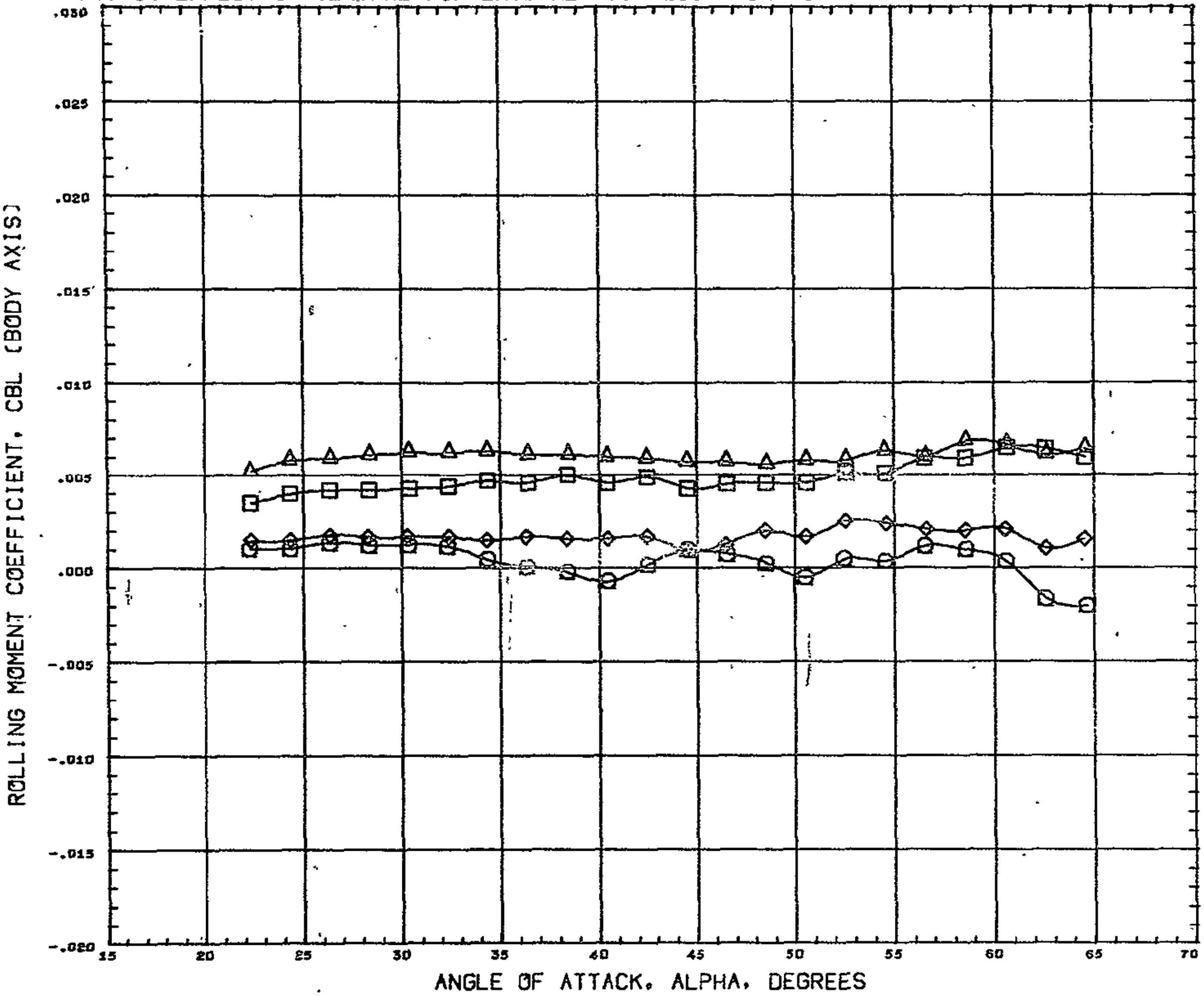
REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

FIG. 10 EFFECT OF VENTRAL FIN,LATERAL, 3. DEG. STING OFFSET



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	VENTRL
(DCT002)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	
(DCT026)	△	GFHT 019 ROS-NB1 B1W1V1 BETA IS -3 COS(ALPHA)		
(DCT017)	◇	GFHT 019 CONF. ROS-NB1 B1W1V1U1	0.000	0.000
(DCT027)	□	GFHT 019 ROS-NB1 B1W1V1U1 BETA IS -3 COS(ALPHA)		0.000

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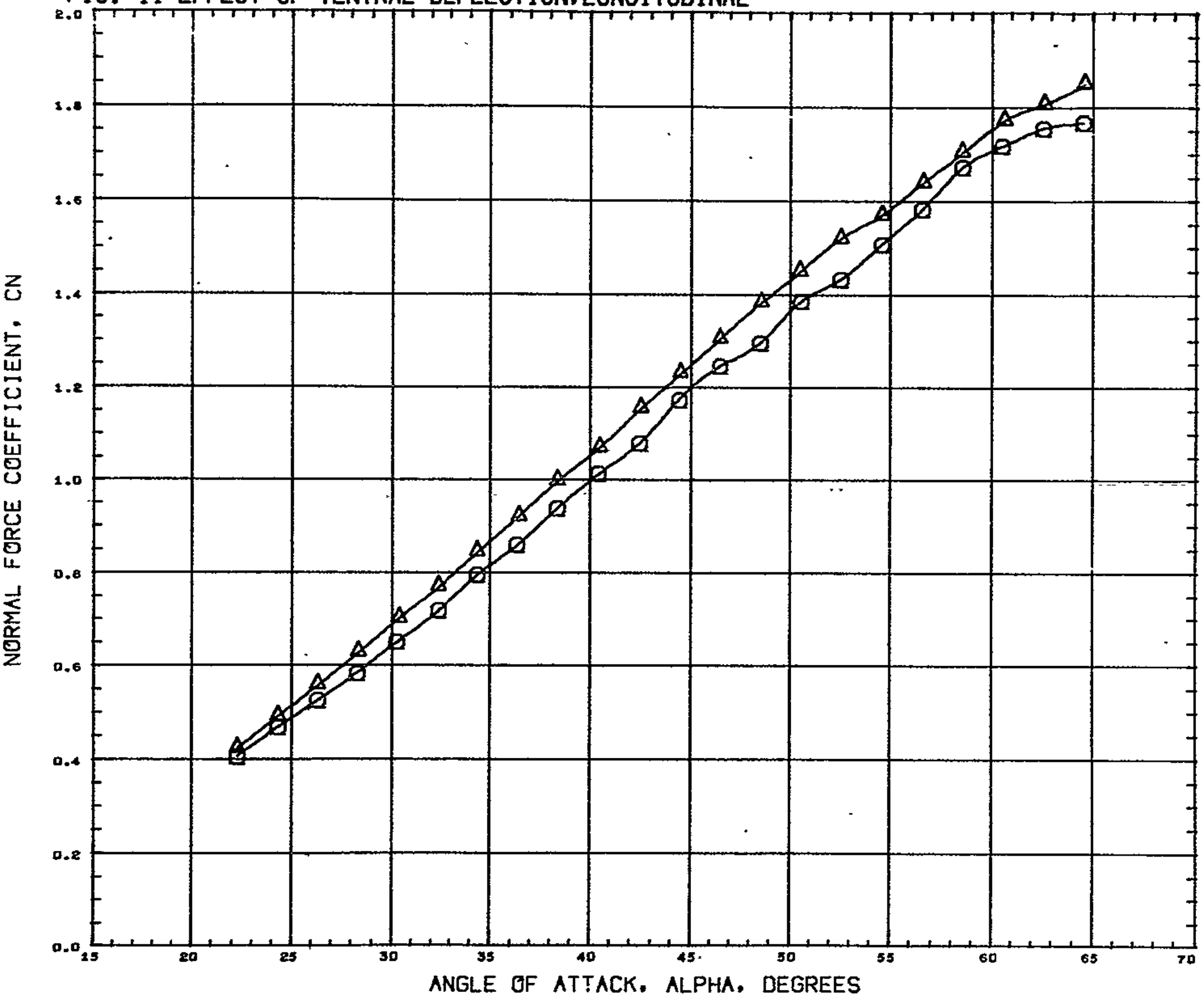
REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF.	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

FIG. 11 EFFECT OF VENTRAL DEFLECTION, LONGITUDINAL



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	VENTRL
(DCT017)	O	GFHT 019 CONF. ROS-NB1 B1W1V1U1	0.000	0.000
(DCT011)	Δ	GFHT 019 CONF. ROS-NB1 B1W1V1U1(10)	0.000	10.000

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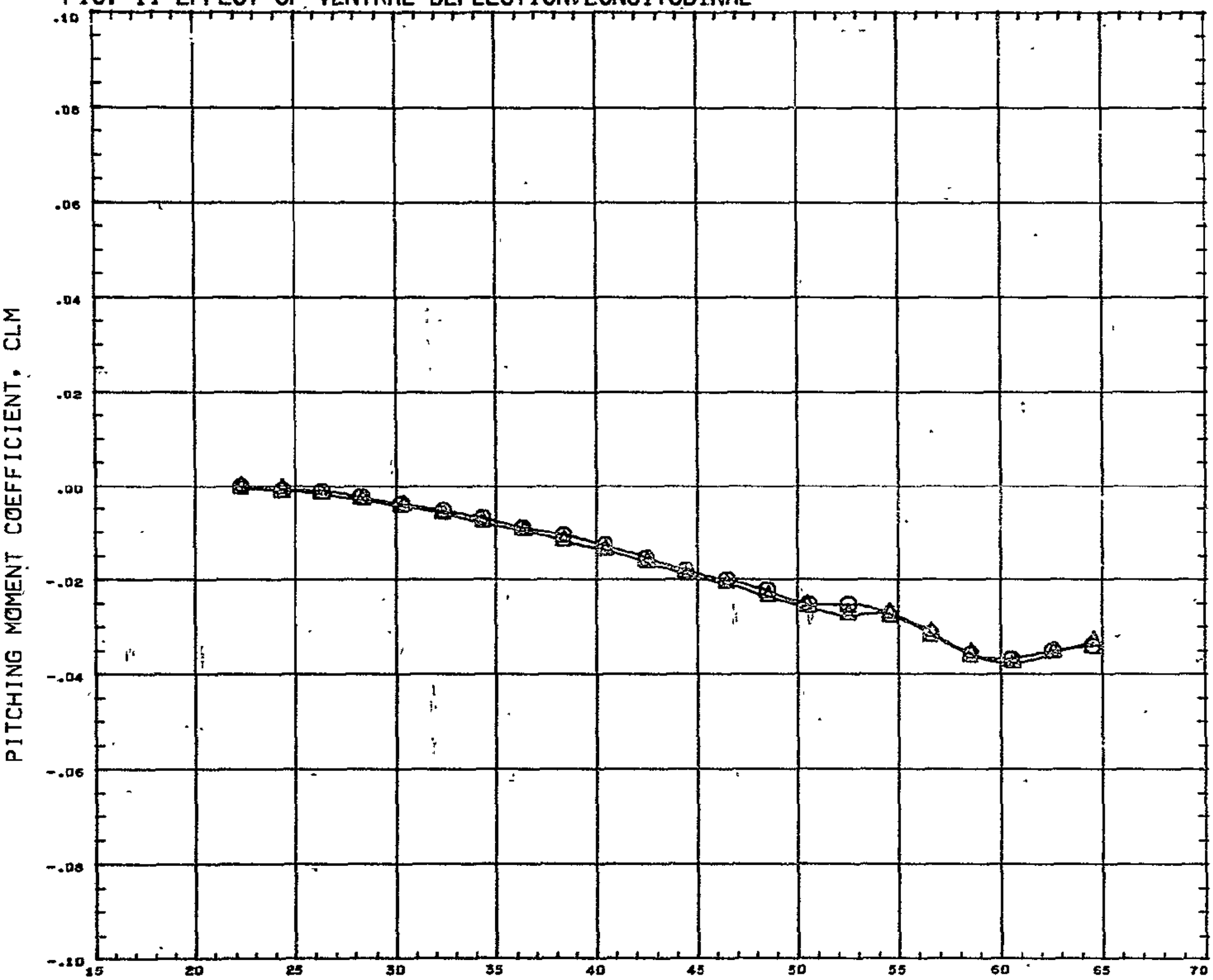
REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

FIG. 11 EFFECT OF VENTRAL DEFLECTION, LONGITUDINAL



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	VENTRL
(DCT017)	○	GFHT 019 CONF. ROS-NB1 B1W1V1U1	0.000	0.000
(DCT011)	△	GFHT 019 CONF. ROS-NB1 B1W1V1U1(10)	0.000	10.000

REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

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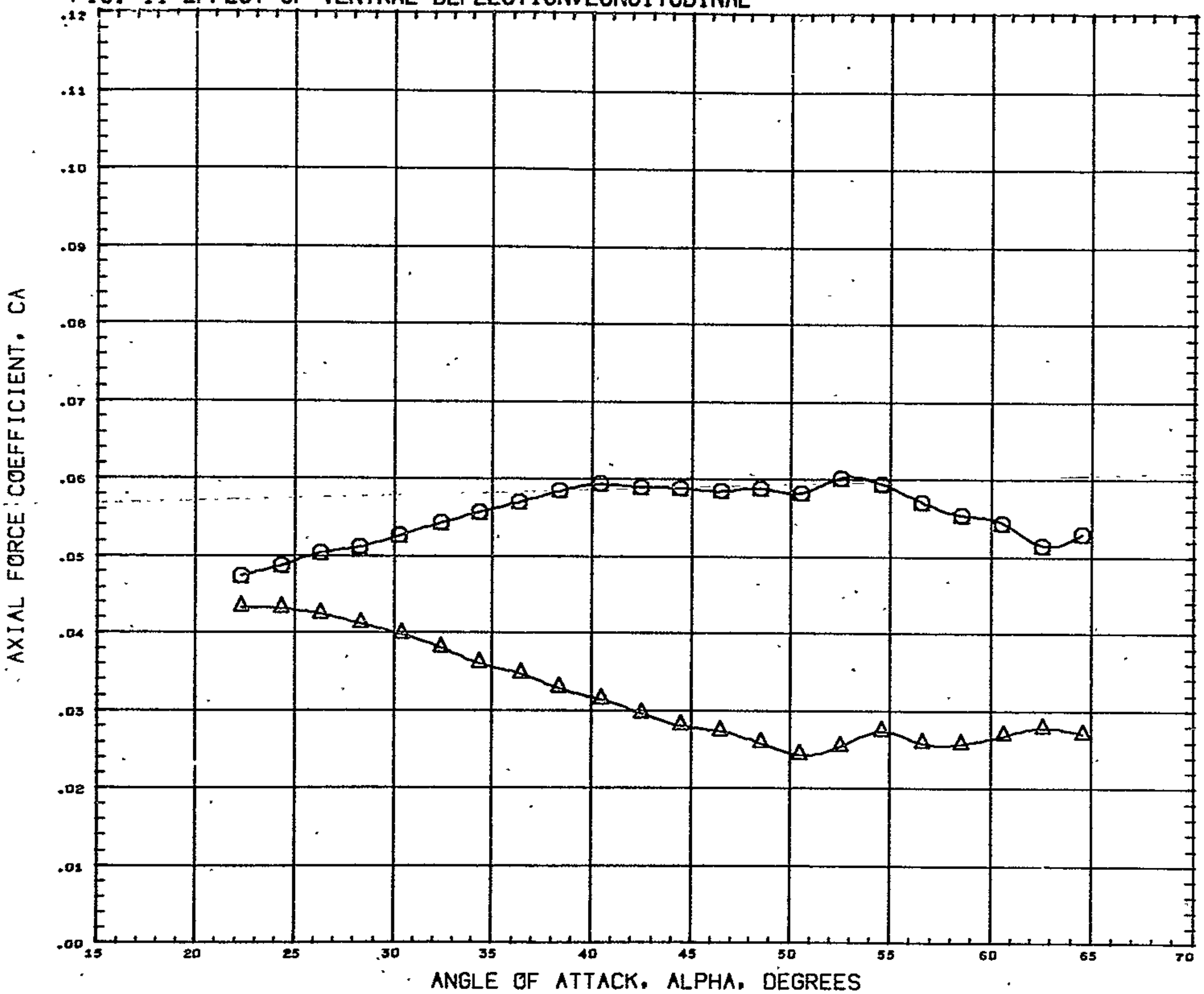
FIG. 11 EFFECT OF VENTRAL DEFLECTION,LONGITUDINAL



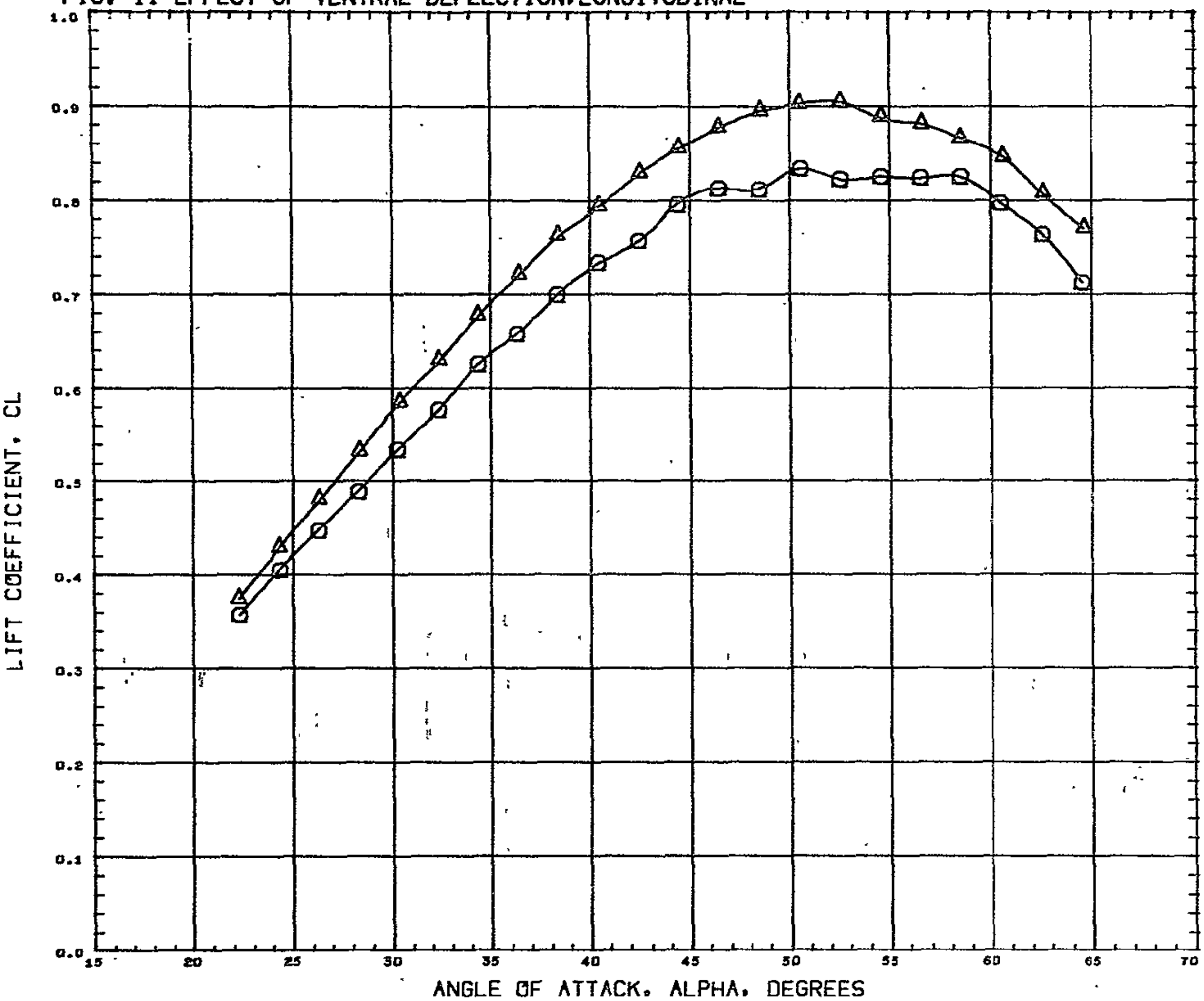
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	VENTRL
(DCT017)	○	GFHT 019 CONF. ROS-NB1 B1W1V1U1	0.000	0.000
(DCT011)	△	GFHT 019 CONF. ROS-NB1 B1W1V1U1(10)	0.000	10.000

MACH 10.130

REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

FIG. 11 EFFECT OF VENTRAL DEFLECTION,LONGITUDINAL



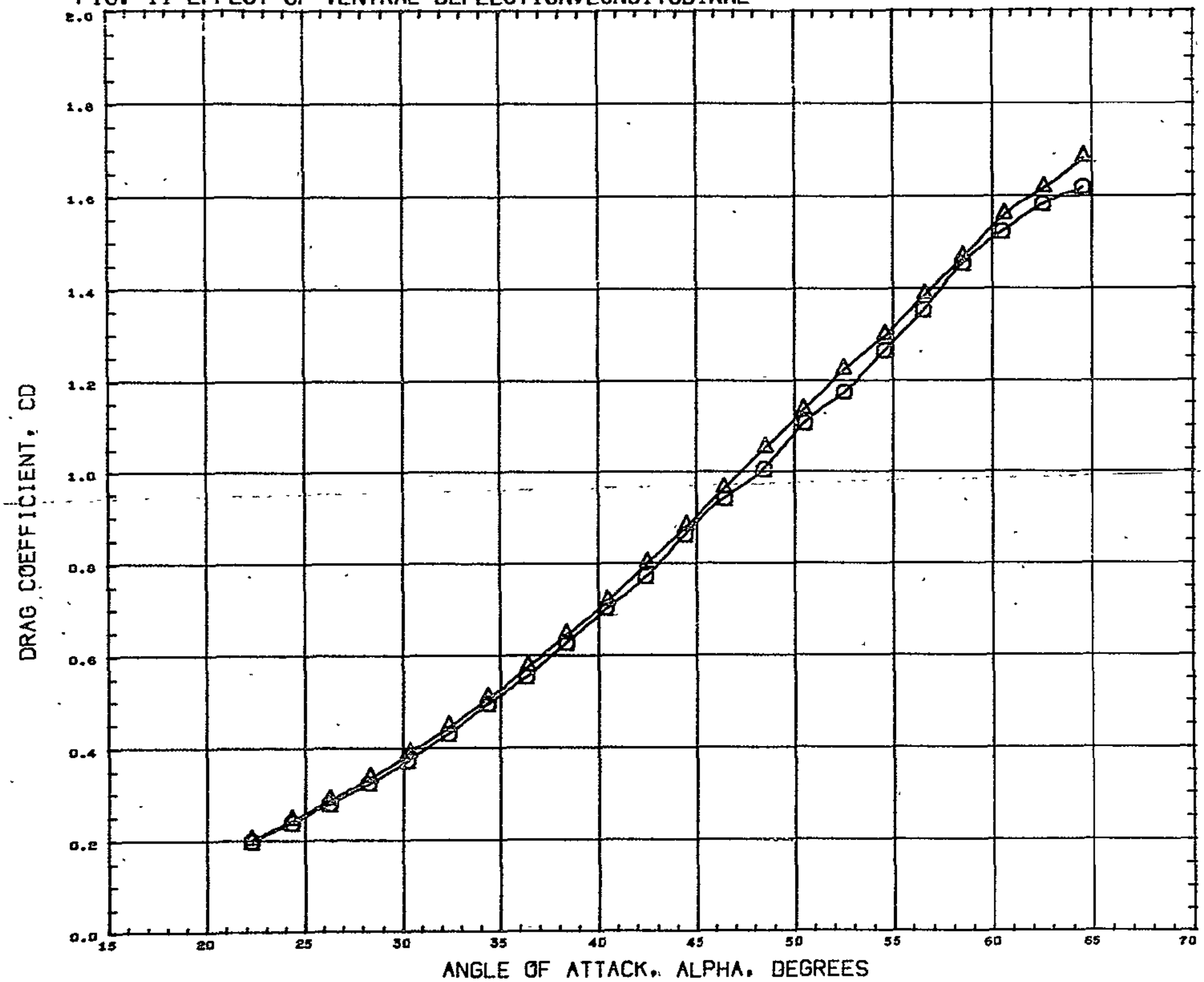
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	VENTRL
(DCT017)	○	GFHT 019 CONF. ROS-NB1 B1W1V1U1	0.000	0.000
(DCT011)	△	GFHT 019 CONF. ROS-NB1 B1W1V1U1(10)	0.000	10.000

REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

MACH 10.130

FIG. 11 EFFECT OF VENTRAL DEFLECTION,LONGITUDINAL



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	VENTRL
(DCT017)	O	GFHT 019 CONF. ROS-NB1 B1W1V1U1	0.000	0.000
(DCT011)	Δ	GFHT 019 CONF. ROS-NB1 B1W1V1U1(10)	0.000	10.000

REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

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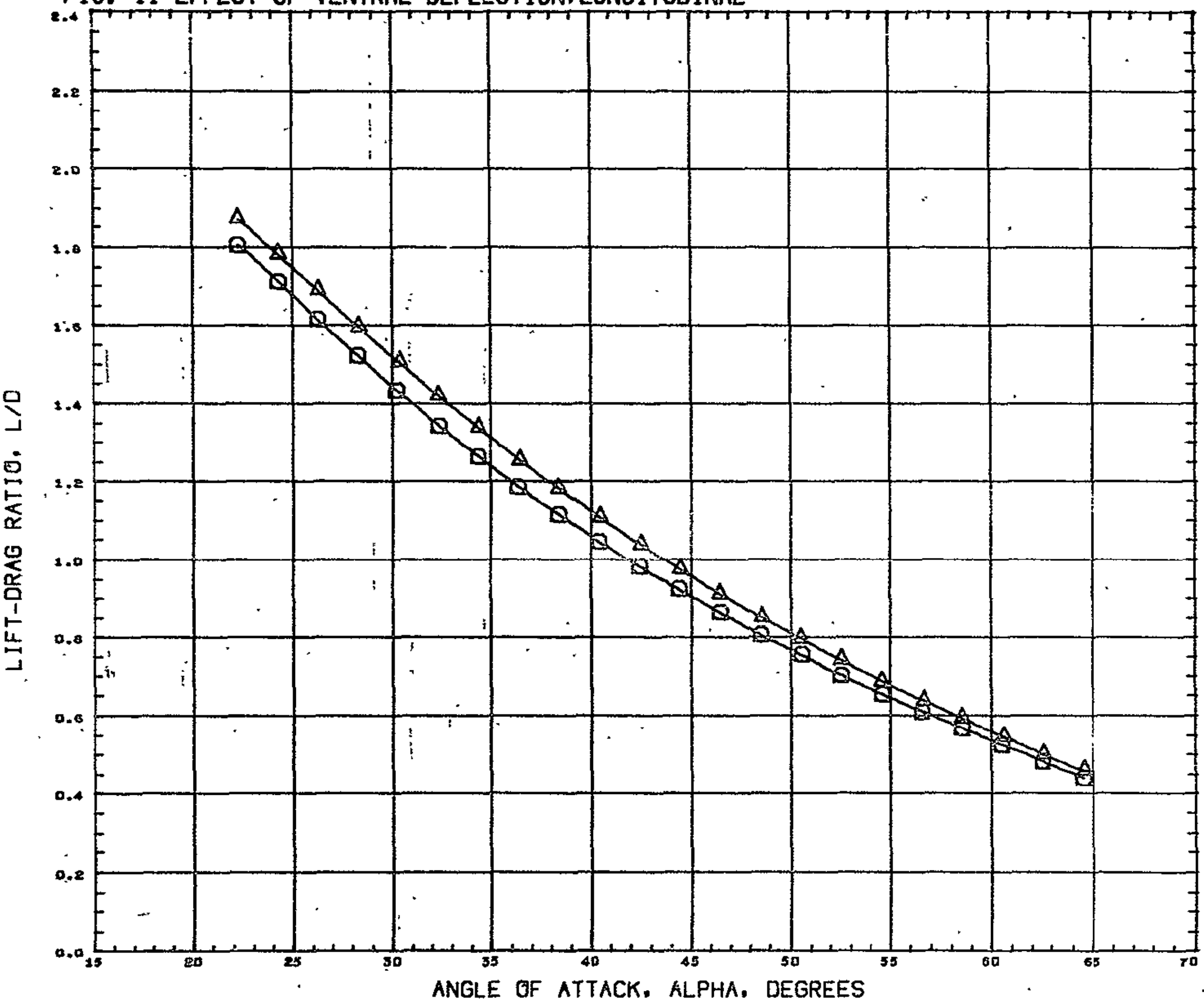
FIG. 11 EFFECT OF VENTRAL DEFLECTION, LONGITUDINAL



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	VENTRL
(DCT017)	○	GFHT 019 CONF. ROS-NB1 B1W1V1U1	0.000	0.000
(DCT011)	△	GFHT 019 CONF. ROS-NB1 B1W1V1U1(10)	0.000	10.000

REFERENCE INFORMATION		
SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1465.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

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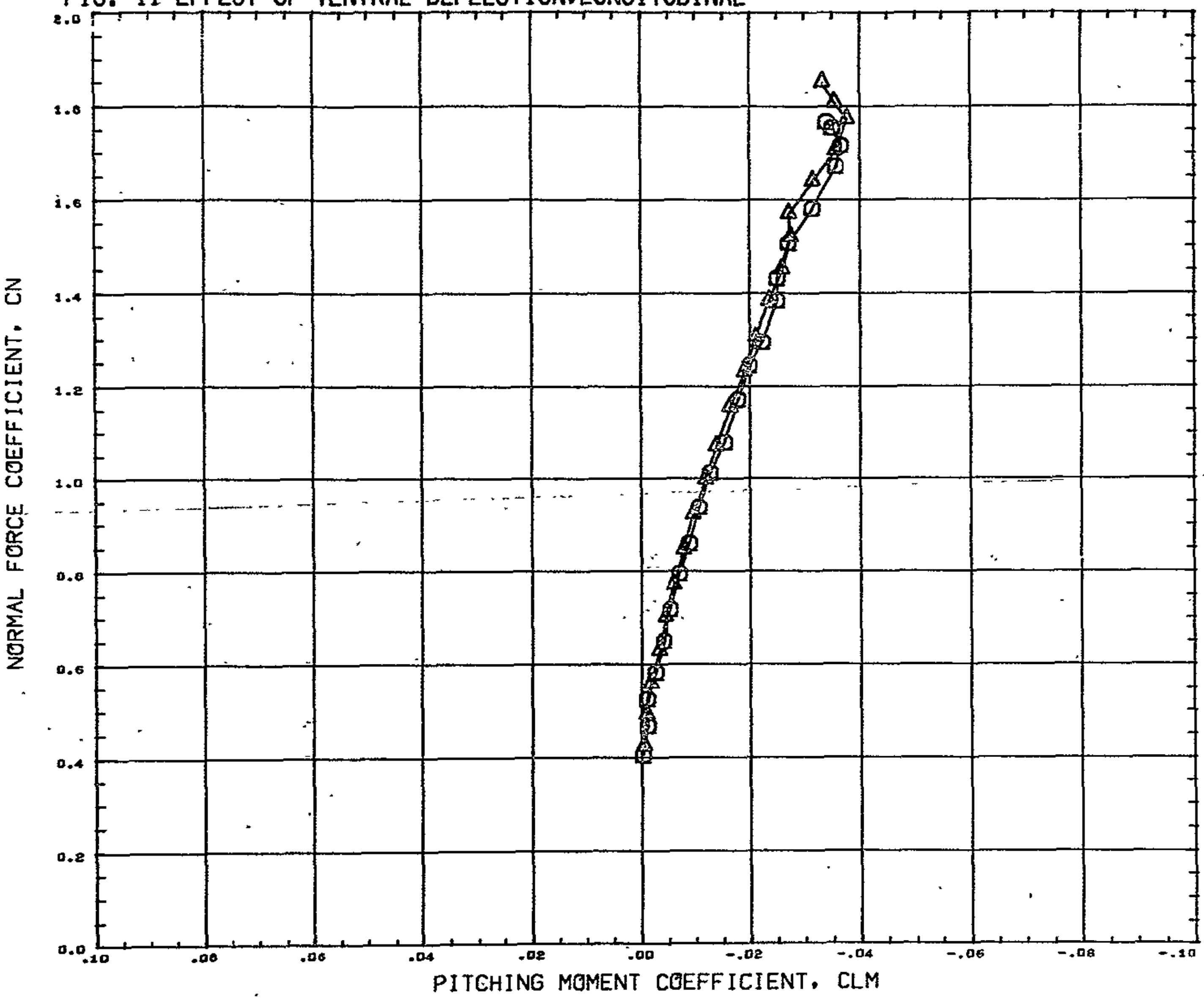
FIG. 11 EFFECT OF VENTRAL DEFLECTION, LONGITUDINAL



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	VENTRL
(DCT017)	○	GFHT 019 CONF. ROS-NB1 B1W1V1U1	0.000	0.000
(DCT011)	△	GFHT 019 CONF. ROS-NB1 B1W1V1U1(10)	0.000	10.000

REFERENCE INFORMATION		
SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

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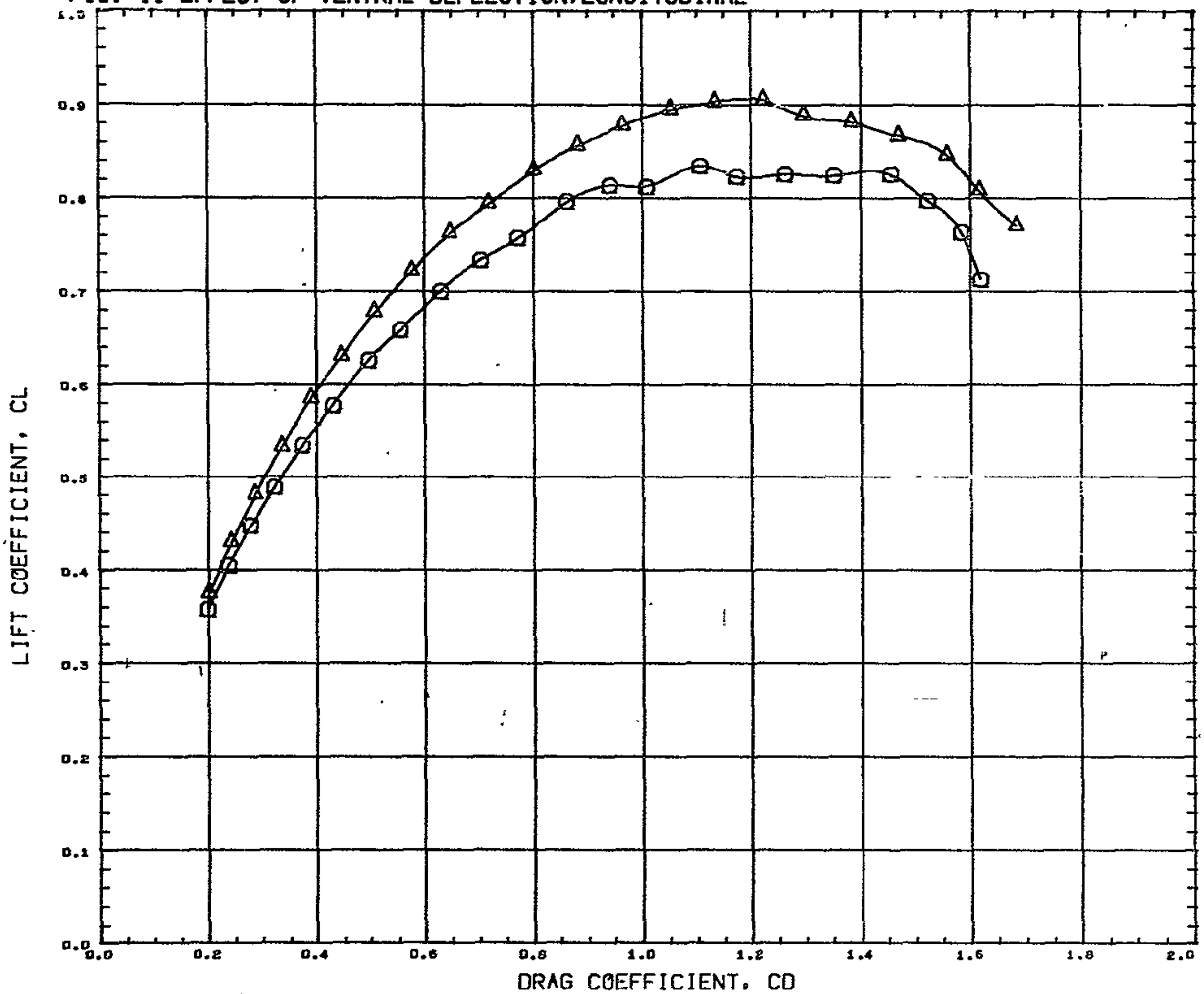
FIG. 11 EFFECT OF VENTRAL DEFLECTION, LONGITUDINAL



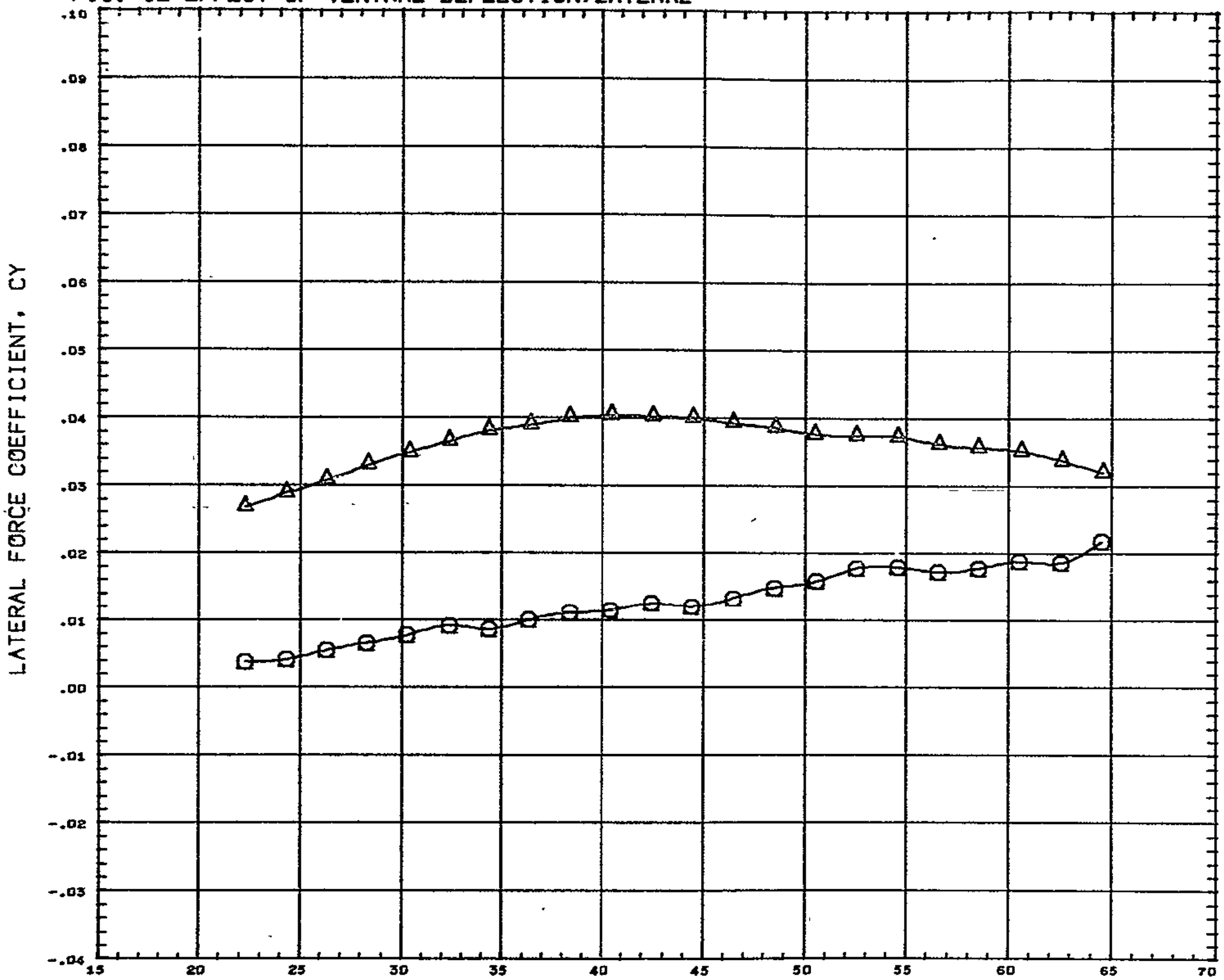
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	VENTRL
(DCT017)	○	GFHT 019 CONF. ROS-NB1 B1W1V1U1	0.000	0.000
(DCT011)	△	GFHT 019 CONF. ROS-NB1 B1W1V1U1(10)	0.000	10.000

REFERENCE INFORMATION

SREF	20.6690	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

MACH 10.130

FIG. 12 EFFECT OF VENTRAL DEFLECTION, LATERAL



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	VENTRL
(DCT017)	○	GFHT 019 CONF. ROS-NB1 B1W1V1U1	0.000	0.000
(DCT011)	△	GFHT 019 CONF. ROS-NB1 B1W1V1U1(10)	0.000	10.000

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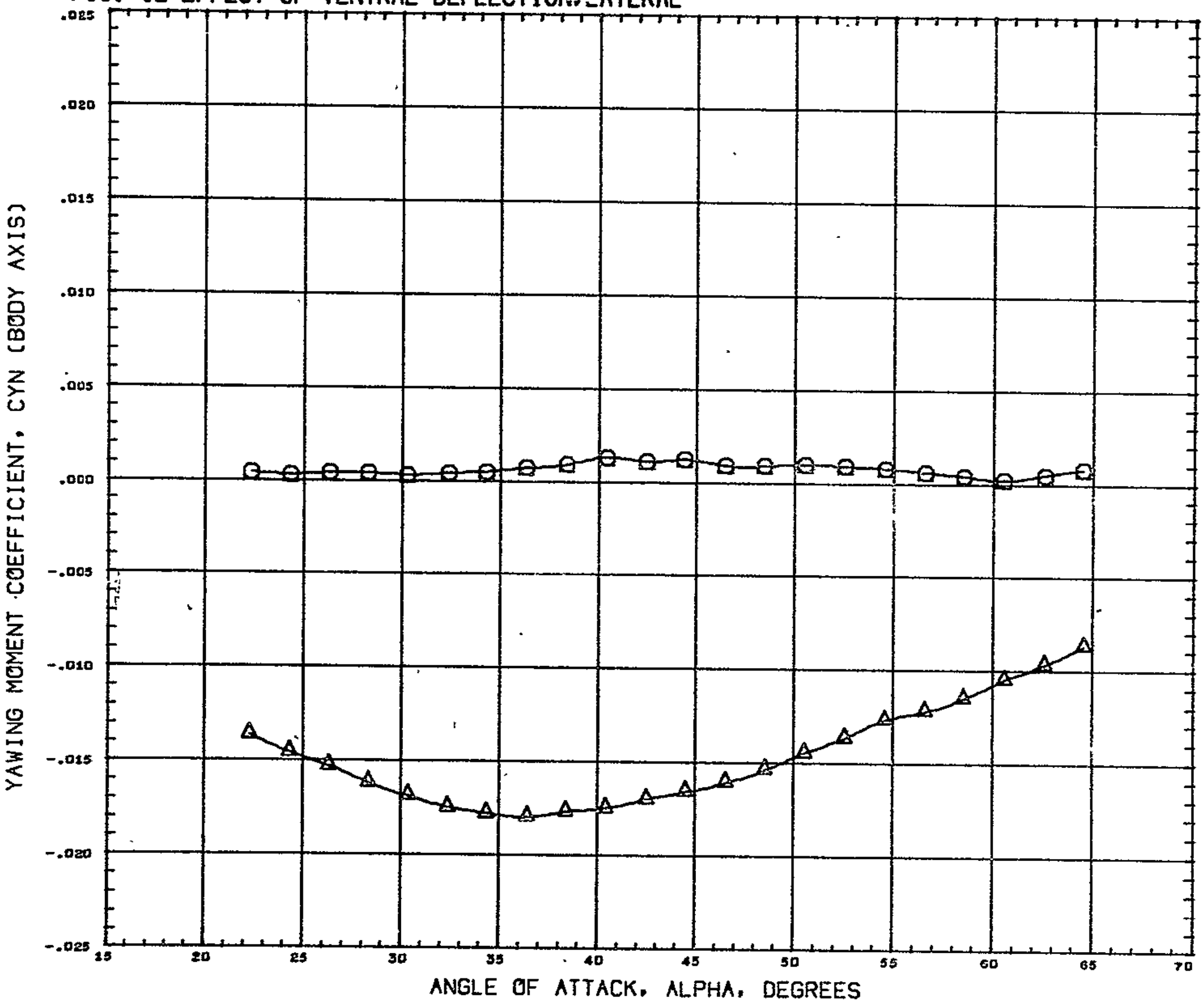
REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1465.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

FIG. 12 EFFECT OF VENTRAL DEFLECTION,LATERAL



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	VENTRL
(DCT017)	○	GFHT 019 CONF. ROS-NB1 B1W1V1U1	0.000	0.000
(DCT011)	△	GFHT 019 CONF. ROS-NB1 B1W1V1U1(10)	0.000	10.000

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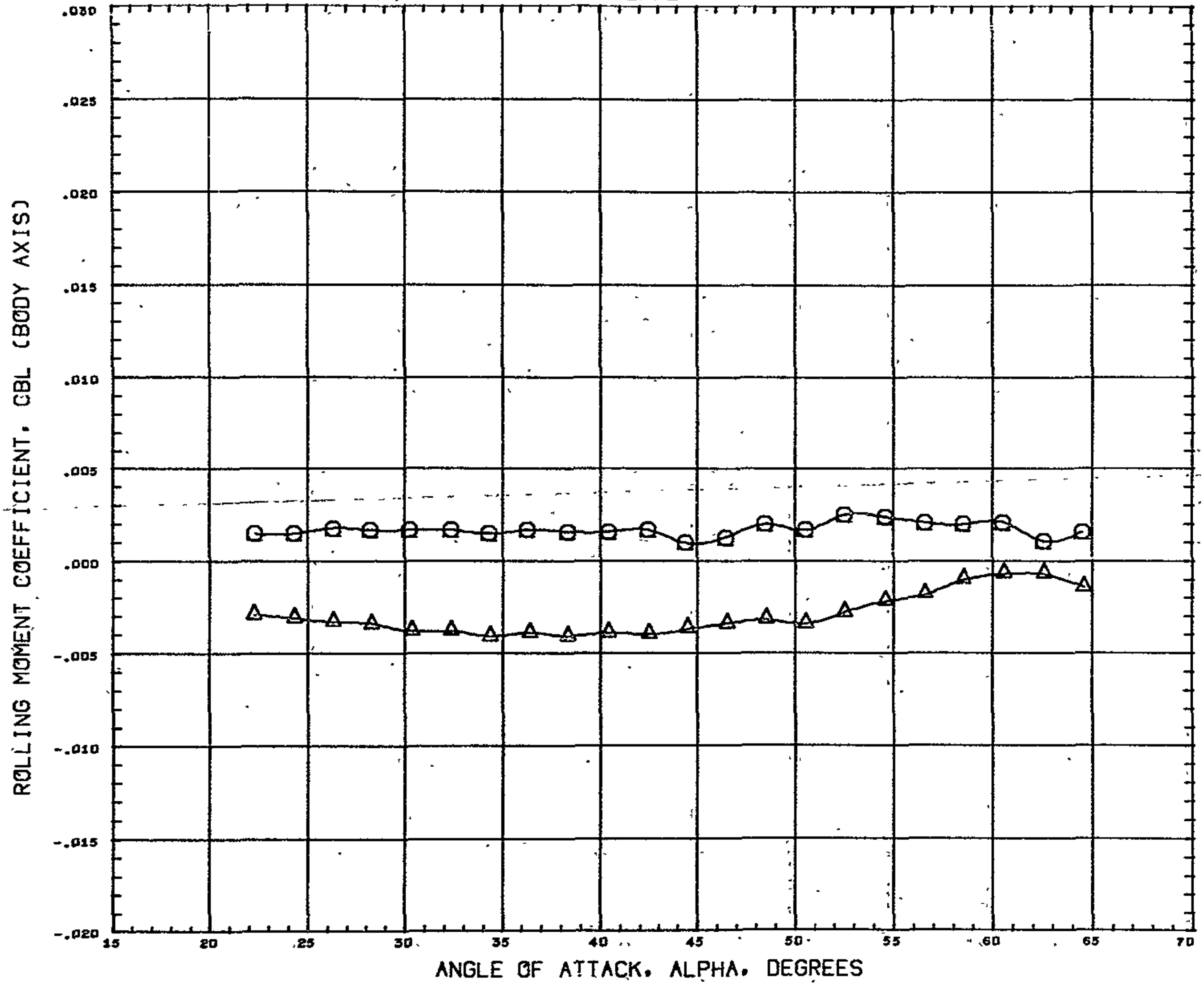
REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

FIG. 12 EFFECT OF VENTRAL DEFLECTION, LATERAL



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	VENTRL
(DCT017)	○	GFHT 019 CONF. ROS-NB1 B1W1V1U1	0.000	0.000
(DCT011)	△	GFHT 019 CONF. ROS-NB1 B1W1V1U1(10)	0.000	10.000

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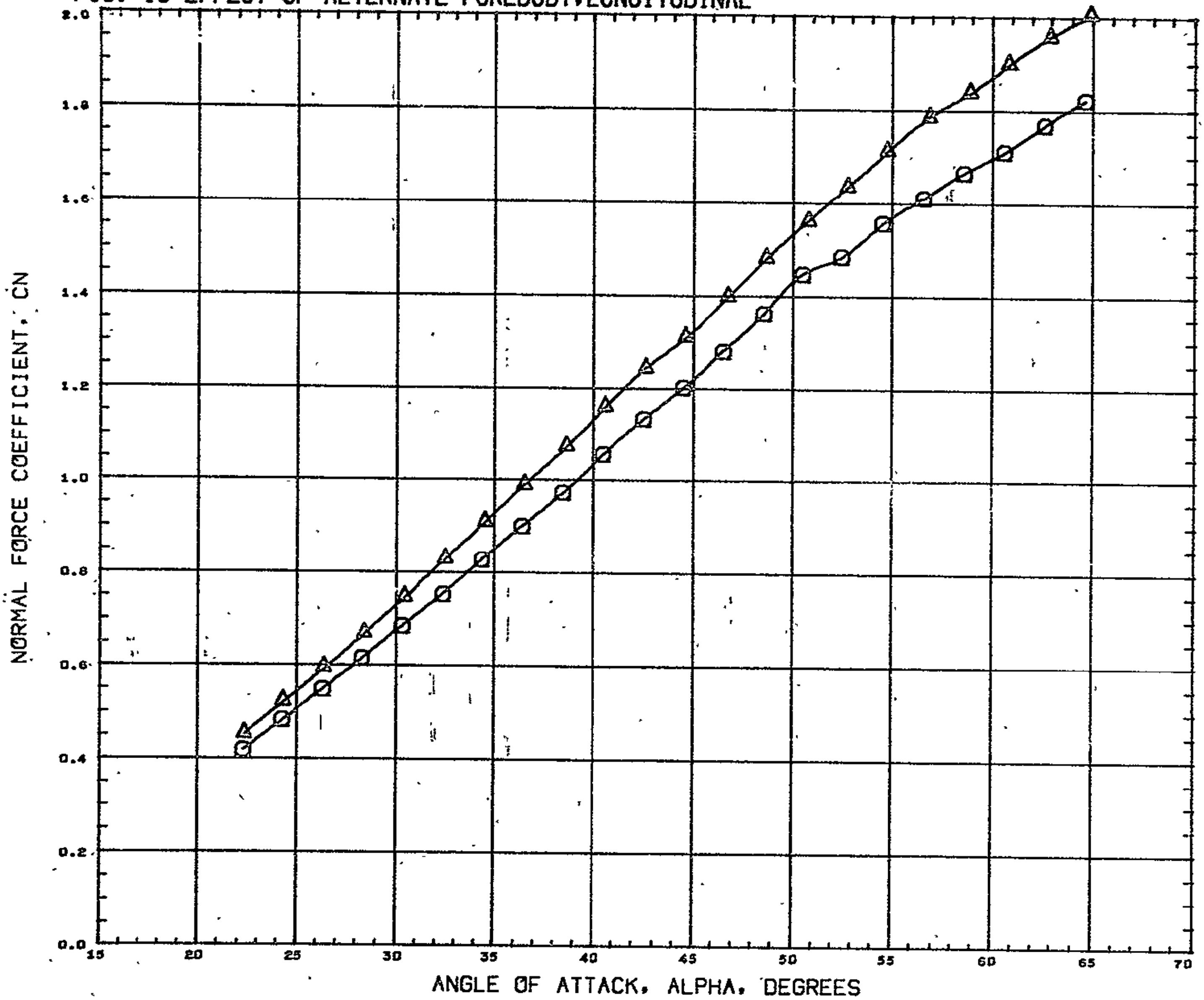
REFERENCE INFORMATION		
SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8360	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

FIG. 13 EFFECT OF ALTERNATE FOREBODY,LONGITUDINAL



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT002)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000
(DCT012)	△	GFHT 019 CONF. ROS-NB1 B(1A)W1V1	0.000	0.000	0.000	0.000

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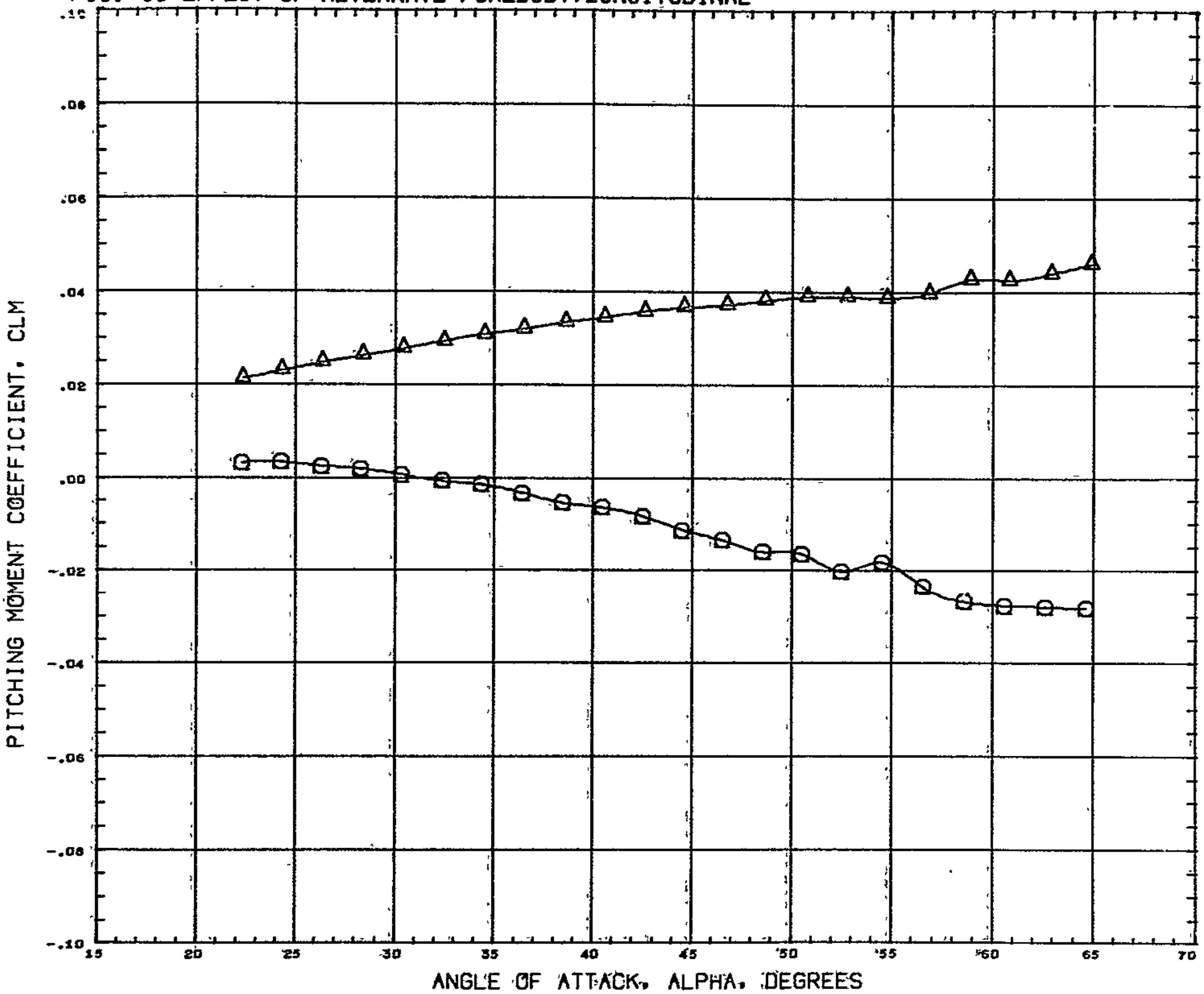
REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.6380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

FIG. 13 EFFECT OF ALTERNATE FOREBODY, LONGITUDINAL

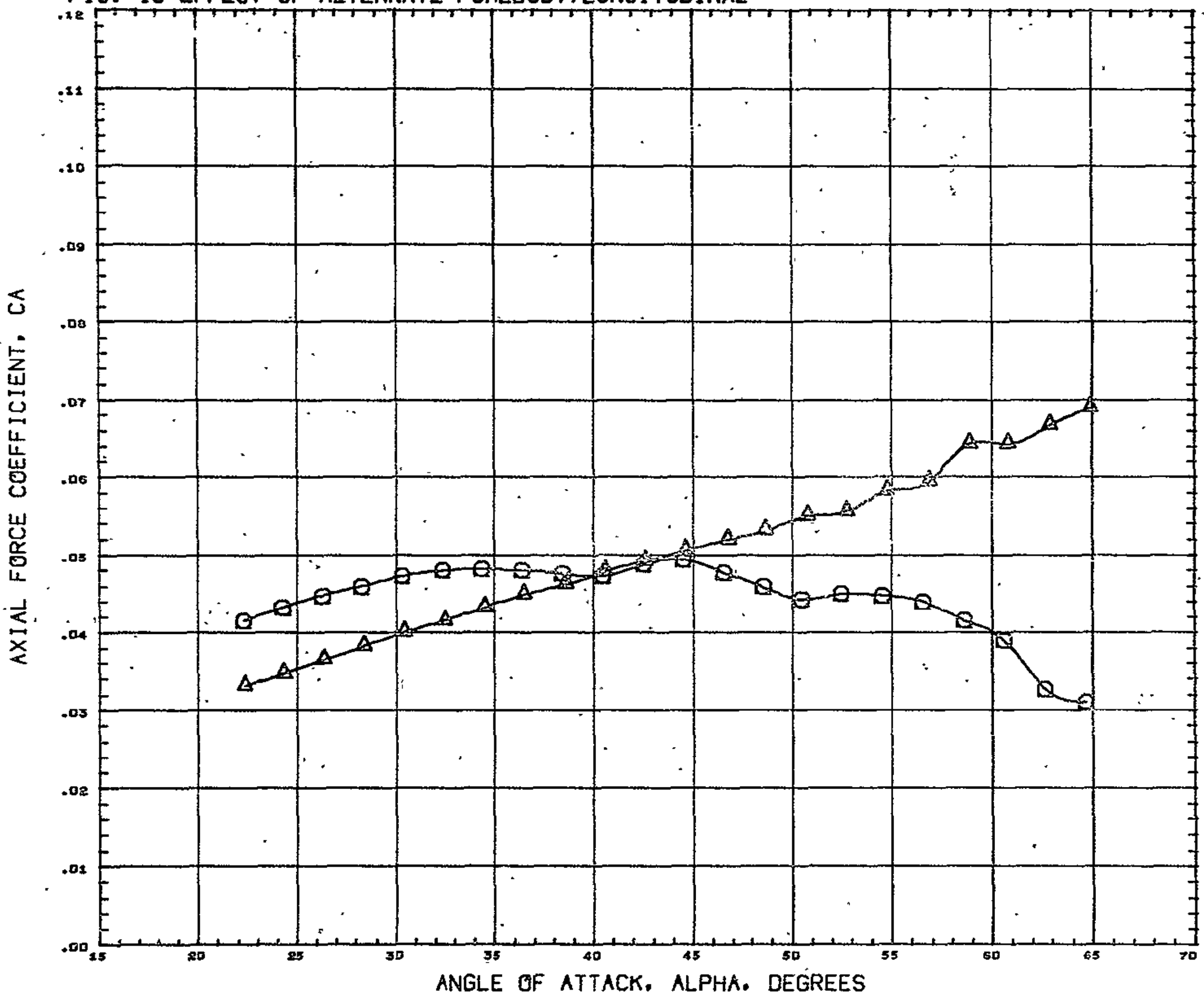


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT002)	O	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000
(DCT012)	Δ	GFHT 019 CONF. ROS-NB1 B(1A)W1V1	0.000	0.000	0.000	0.000

REFERENCE INFORMATION		
SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

MACH 10.130

FIG. 13 EFFECT OF ALTERNATE FOREBODY, LONGITUDINAL



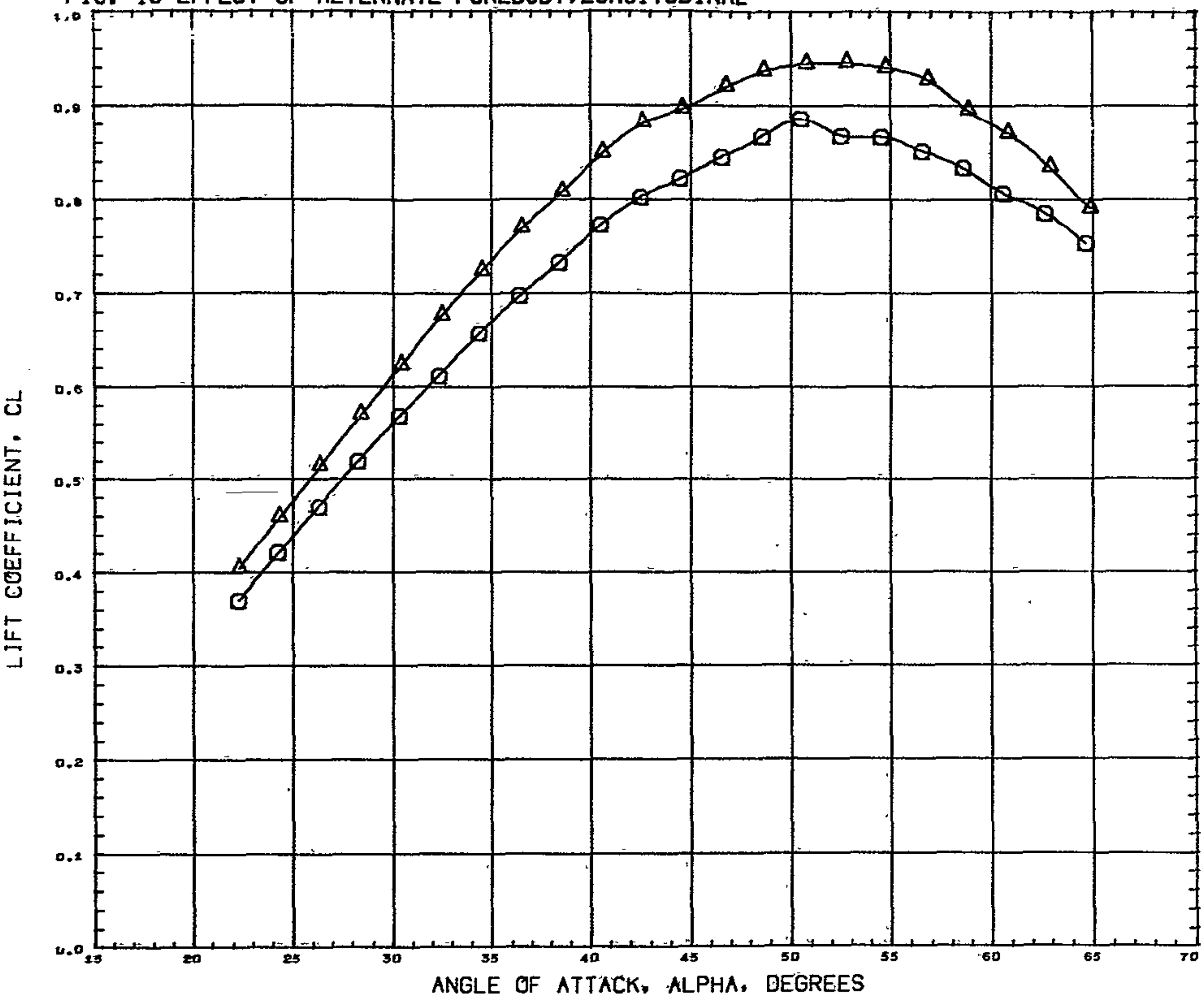
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT002)	○	GFHT 019.CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000
(DCT012)	△	GFHT 019 CONF. ROS-NB1 B(1A)W1V1	0.000	0.000	0.000	0.000

REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

MACH 10.150

FIG. 13 EFFECT OF ALTERNATE FOREBODY, LONGITUDINAL



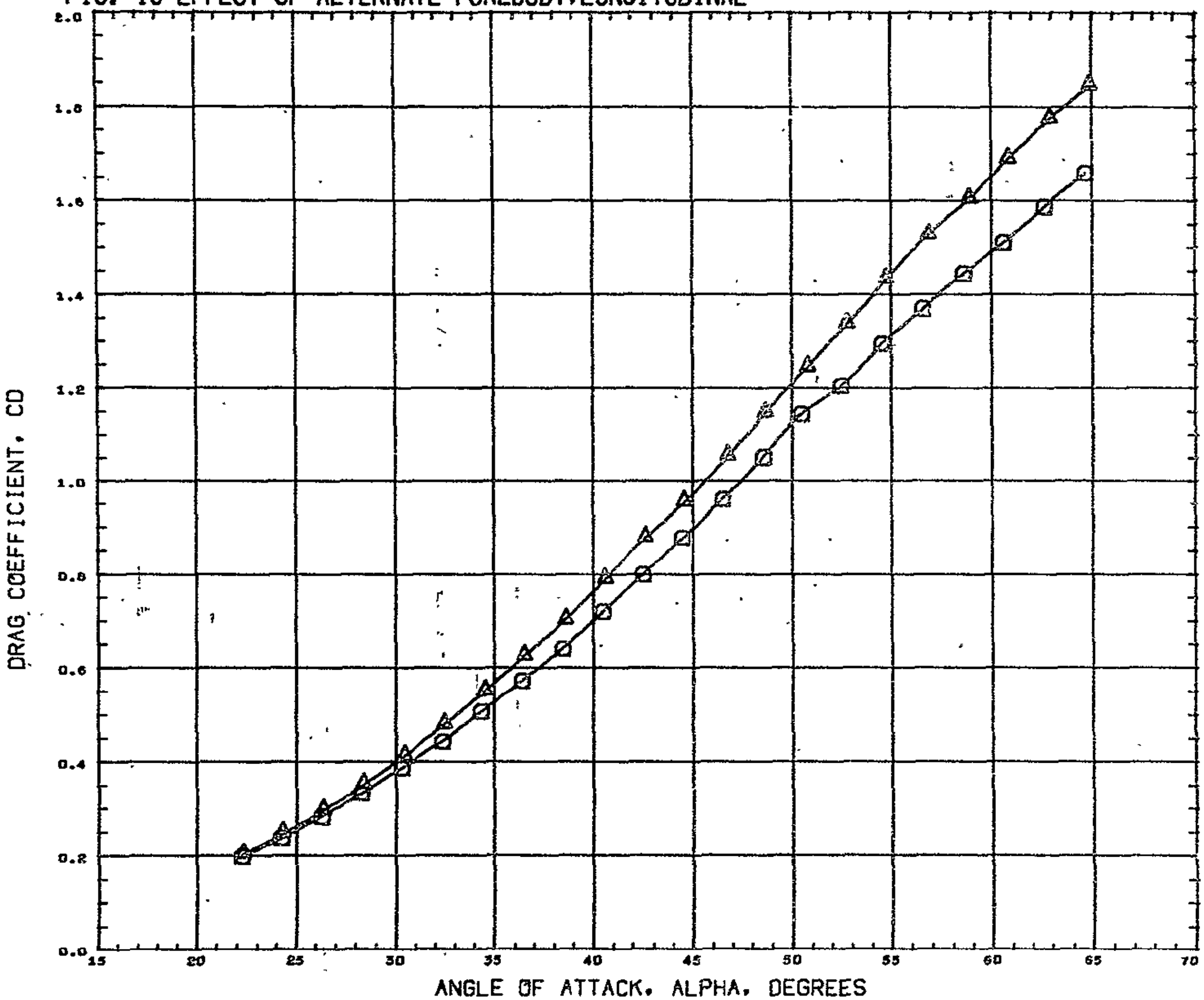
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT002)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000
(DCT012)	△	GFHT 019 CONF. ROS-NB1 B(1A)W1V1	0.000	0.000	0.000	0.000

REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

MACH 10.330

FIG. 13 EFFECT OF ALTERNATE FOREBODY, LONGITUDINAL



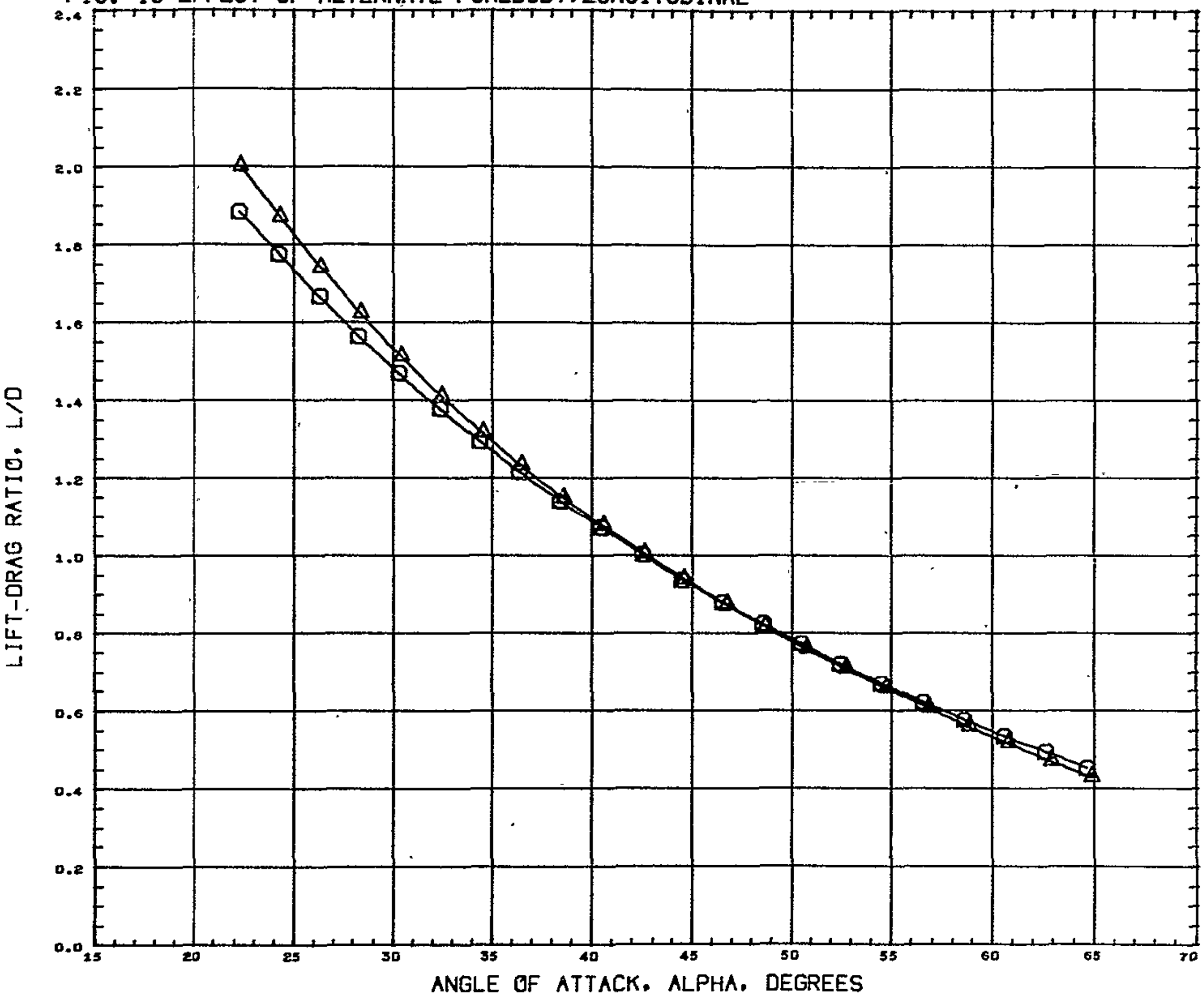
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT002)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000
(DCT012)	△	GFHT 019 CONF. ROS-NB1 B(1A)W1V1	0.000	0.000	0.000	0.000

REFERENCE INFORMATION

SREF	20.6090	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

MACH 10.130

FIG. 13 EFFECT OF ALTERNATE FOREBODY,LONGITUDINAL



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT002)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000
(DCT012)	△	GFHT 019 CONF. ROS-NB1 B(1A)W1V1	0.000	0.000	0.000	0.000

REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

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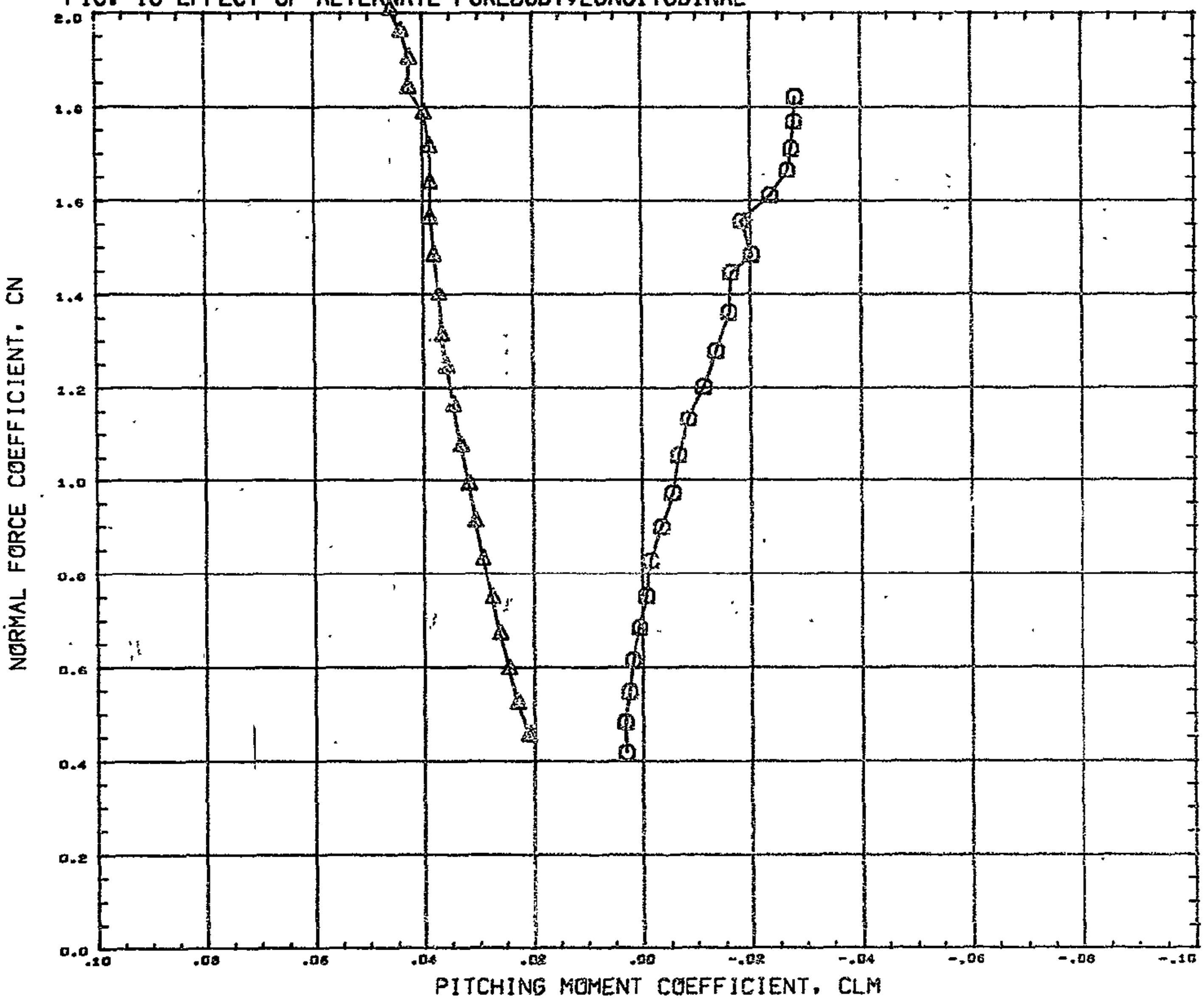
FIG. 13 EFFECT OF ALTERNATE FOREBODY,LONGITUDINAL



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT002)	O	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000
(DCT012)	Δ	GFHT 019 CONF. ROS-NB1 B(1A)W1V1	0.000	0.000	0.000	0.000

REFERENCE INFORMATION		
SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1483.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

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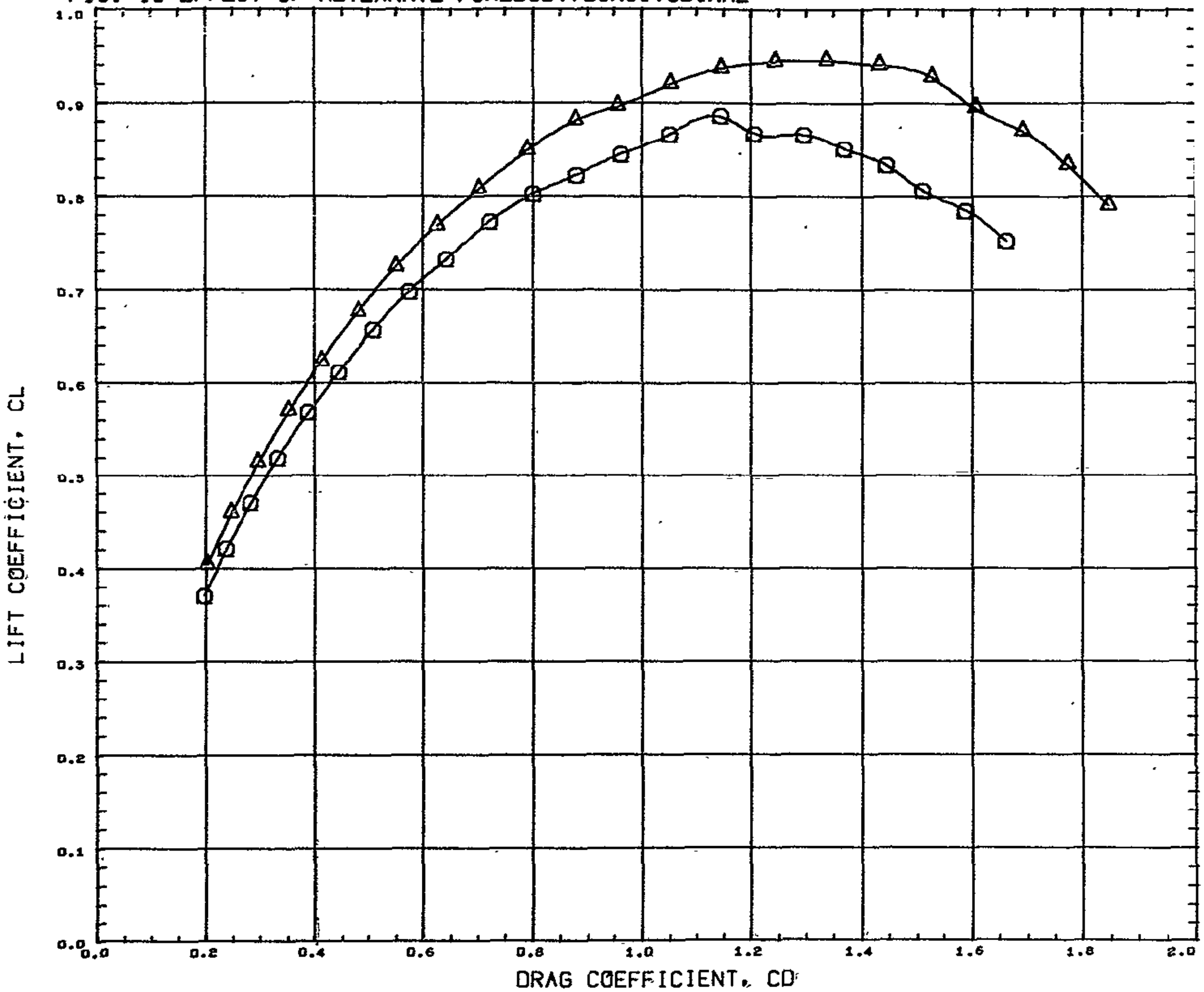
FIG. 13 EFFECT OF ALTERNATE FOREBODY, LONGITUDINAL



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT002)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000
(DCT012)	△	GFHT 019 CONF. ROS-NB1 B(1A)W1V1	0.000	0.000	0.000	0.000

REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

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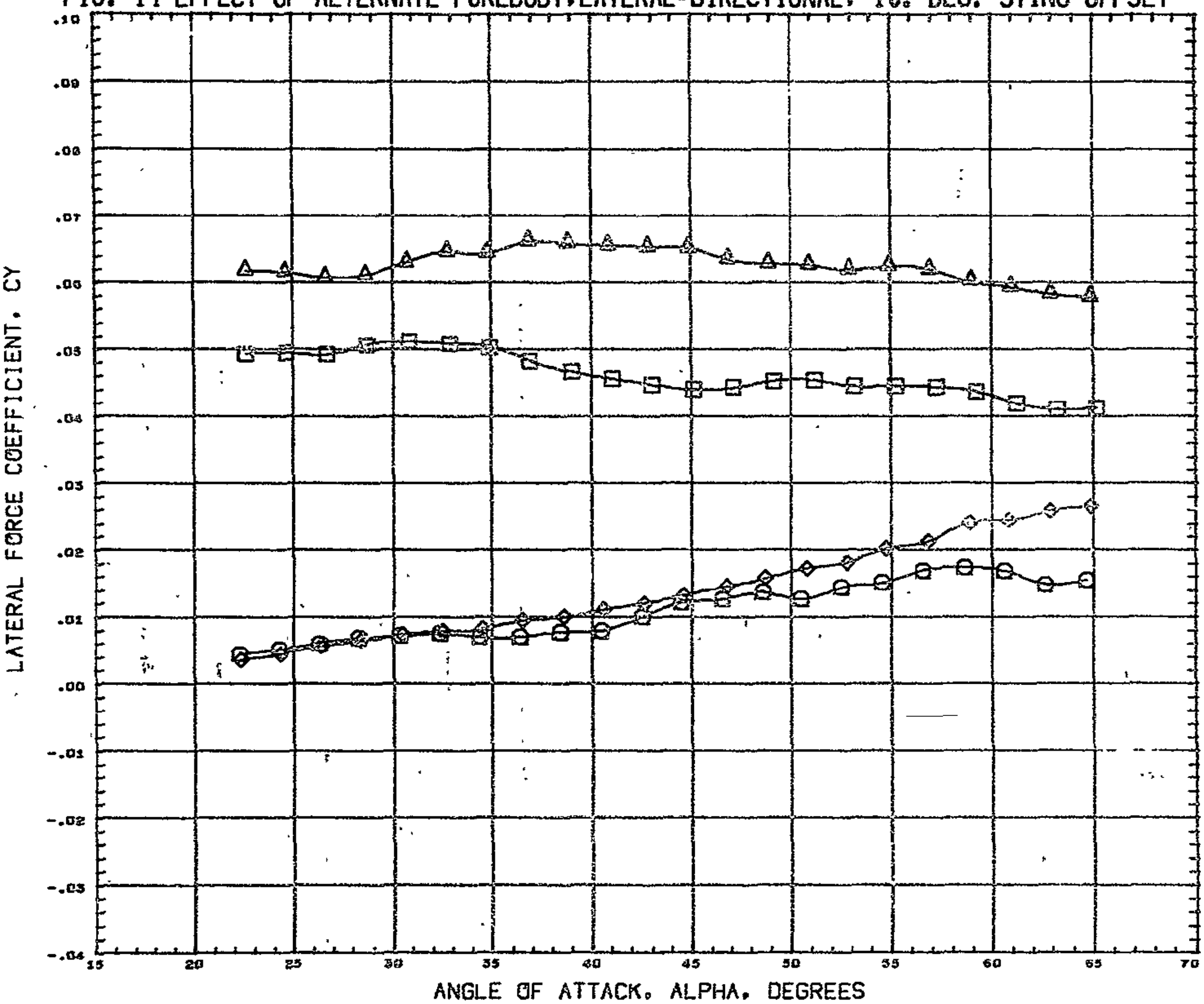
FIG. 14 EFFECT OF ALTERNATE FOREBODY, LATERAL-DIRECTIONAL, 10. DEG. STING OFFSET



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT002)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000
(DCT020)	△	GFHT 019 ROS-NB1 B1W1V1 BETA IS -10 COS(ALPHA)		0.000	0.000	0.000
(DCT012)	◇	GFHT 019 CONF. ROS-NB1 B(1A)W1V1	0.000	0.000	0.000	0.000
(DCT021)	□	GFHT 019 ROS-NB1 B(1A)W1V1 BETA IS -10COS(ALPHA)		0.000	0.000	0.000

REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

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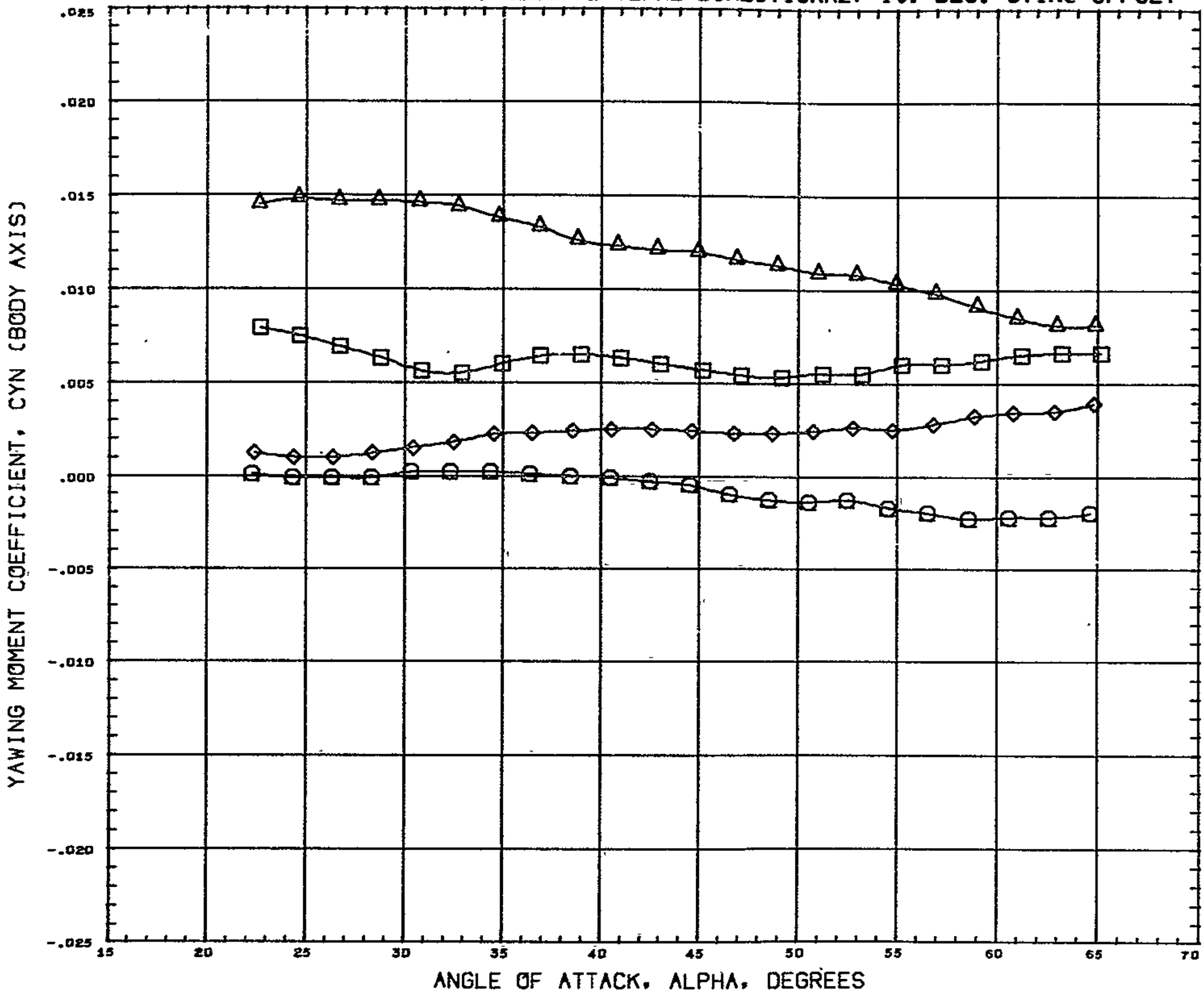
FIG. 14 EFFECT OF ALTERNATE FOREBODY,LATERAL-DIRECTIONAL, 10. DEG. STING OFFSET



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT002)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000
(DCT020)	△	GFHT 019 ROS-NB1 B1W1V1 BETA IS -10 COS(ALPHA)		0.000	0.000	0.000
(DCT012)	◇	GFHT 019 CONF. ROS-NB1 B(1A)W1V1	0.000	0.000	0.000	0.000
(DCT021)	□	GFHT 019 ROS-NB1 B(1A)W1V1 BETA IS -10COS(ALPHA)		0.000	0.000	0.000

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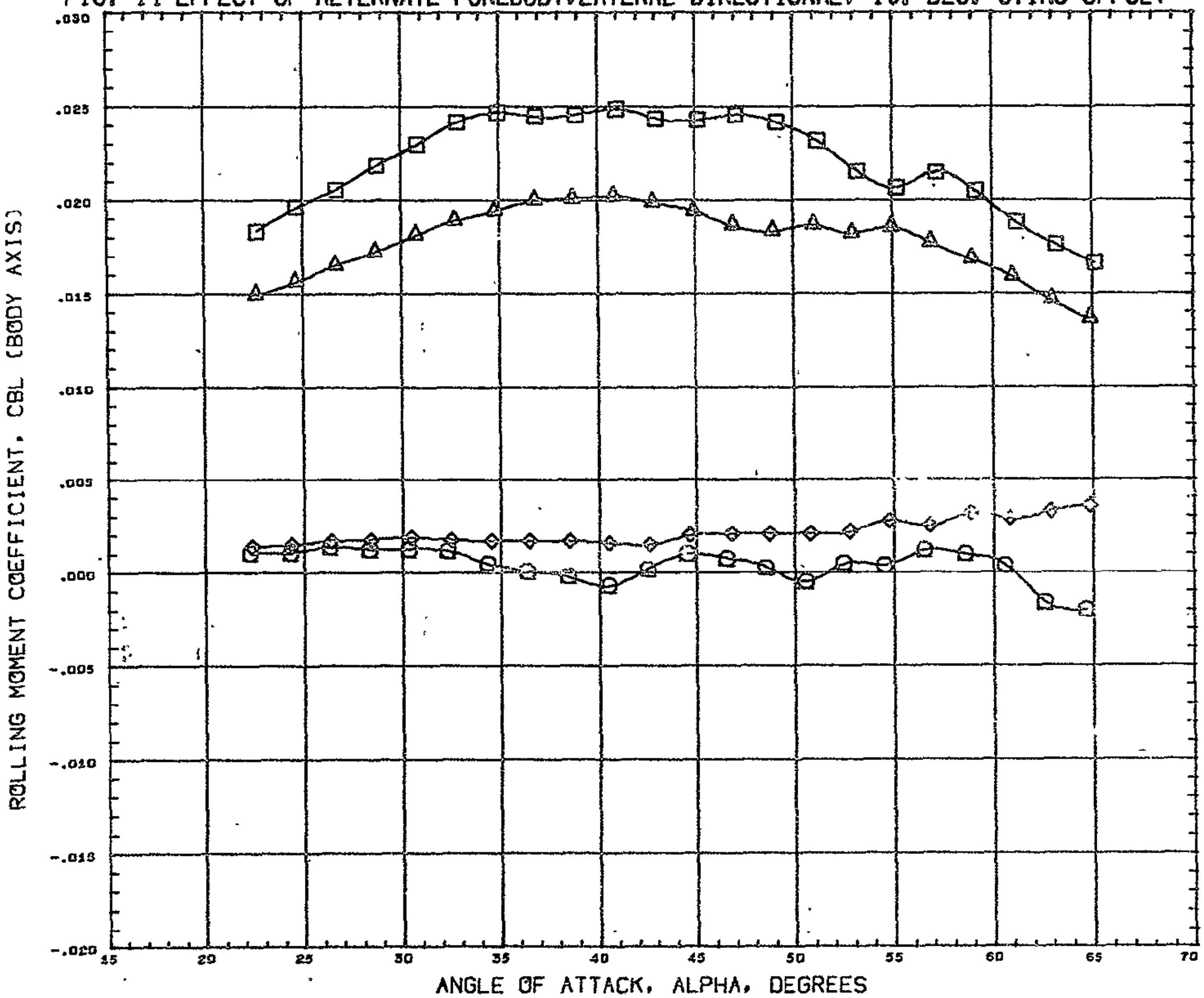
REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

FIG. 14 EFFECT OF ALTERNATE FOREBODY, LATERAL-DIRECTIONAL, 10. DEG. STING OFFSET



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP	REFERENCE INFORMATION		
(DCT002)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000	SREF	20.6890	SQ.IN.
(DCT020)	△	GFHT 019 ROS-NB1 B1W1V1 BETA IS -10 COS(ALPHA)		0.000	0.000	0.000	LREF	9.6480	IN.
(DCT012)	◇	GFHT 019 CONF. ROS-NB1 B(1A)W1V1	0.000	0.000	0.000	0.000	BREF	5.6380	IN.
(DCT021)	□	GFHT 019 ROS-NB1 B(1A)W1V1 BETA IS -10COS(ALPHA)		0.000	0.000	0.000	XMRP	1485.0040	IN.
							YMRP	0.0000	IN.
							ZMRP	377.0004	IN.
							SCALE	0.0050	

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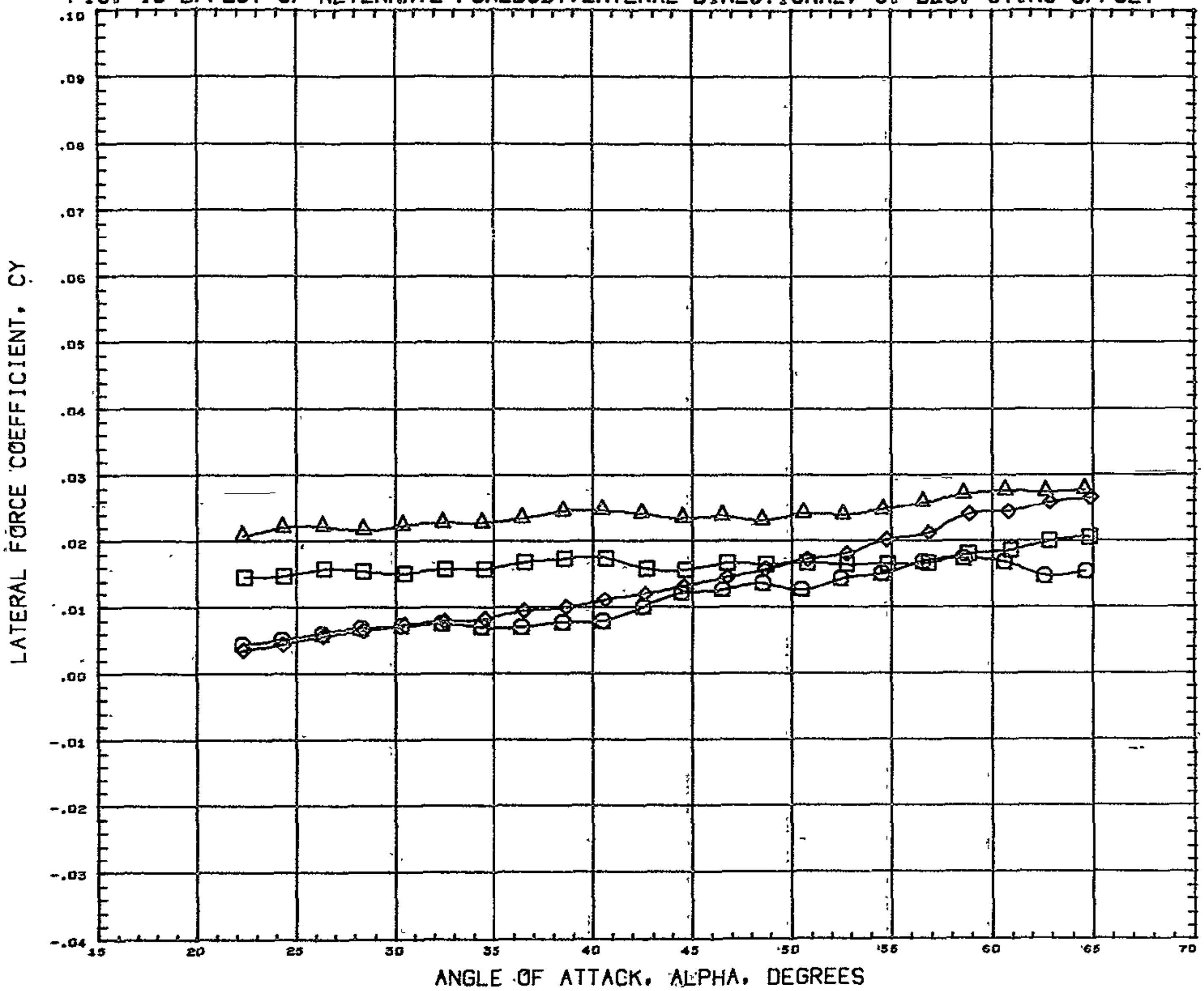
FIG. 15 EFFECT OF ALTERNATE FOREBODY,LATERAL-DIRECTIONAL, 3. DEG. STING OFFSET



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT002)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000
(DCT026)	△	GFHT 019 ROS-NB1 B1W1V1 BETA IS -3 COS(ALPHA)		0.000	0.000	0.000
(DCT012)	◇	GFHT 019 CONF. ROS-NB1 B(1A)W1V1	0.000	0.000	0.000	0.000
(DCT028)	□	GFHT 019 ROS-NB1 B(1A)W1V1 BETA IS -3 COS(ALPHA)		0.000	0.000	0.000

REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

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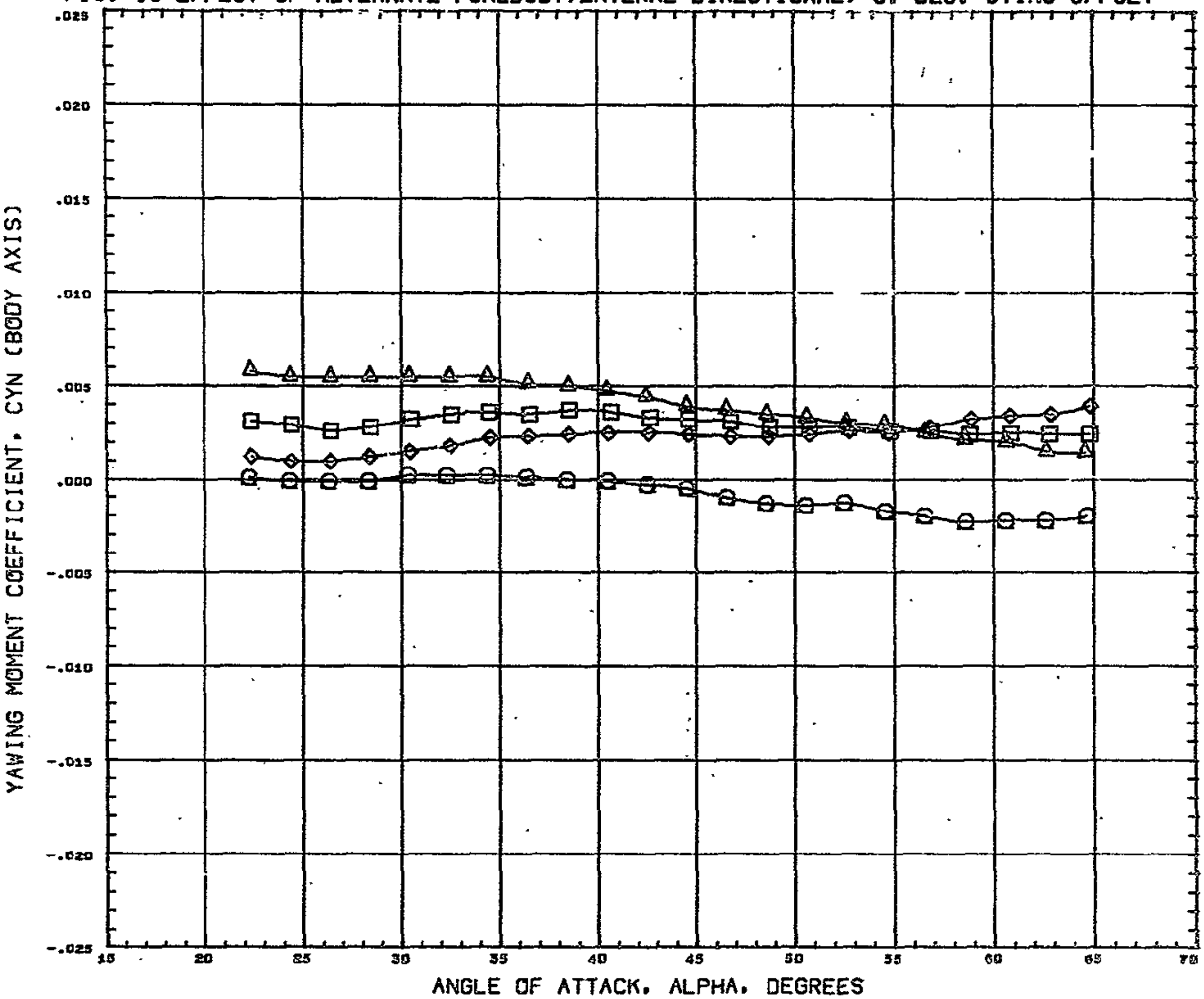
FIG. 15 EFFECT OF ALTERNATE FOREBODY,LATERAL-DIRECTIONAL, 3. DEG. STING OFFSET



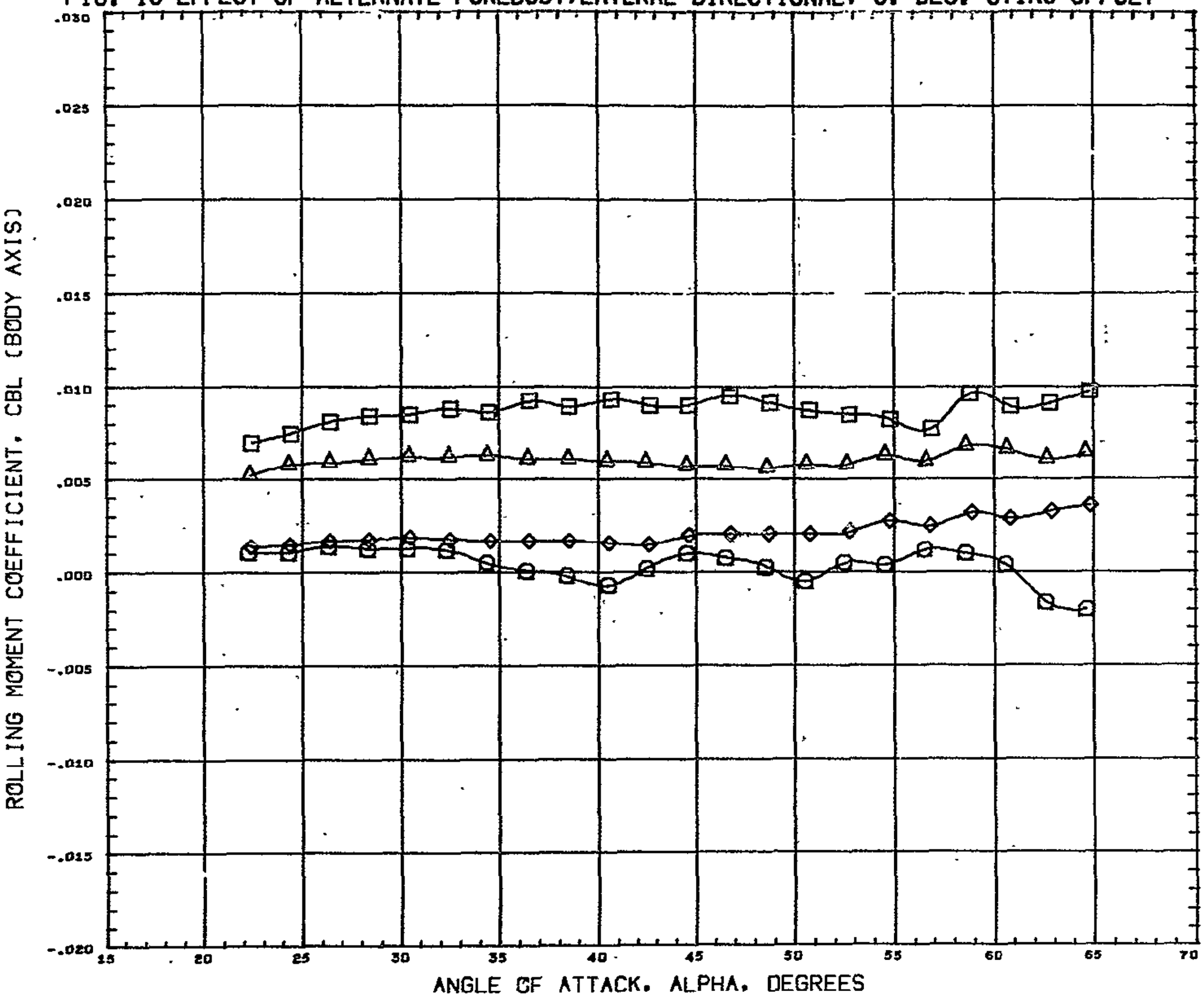
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT002)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000
(DCT026)	△	GFHT 019 ROS-NB1 B1W1V1 BETA IS -3 COS(ALPHA)		0.000	0.000	0.000
(DCT012)	◇	GFHT 019 CONF. ROS-NB1 B(1A)W1V1	0.000	0.000	0.000	0.000
(DCT028)	□	GFHT 019 ROS-NB1 B(1A)W1V1 BETA IS -3 COS(ALPHA)		0.000	0.000	0.000

REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.0380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

MACH 10.130

FIG. 15 EFFECT OF ALTERNATE FOREBODY,LATERAL-DIRECTIONAL, 3. DEG. STING OFFSET



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT002)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000
(DCT026)	△	GFHT 019 ROS-NB1 B1W1V1 BETA IS -3 COS(ALPHA)		0.000	0.000	0.000
(DCT012)	◇	GFHT 019 CONF. ROS-NB1 B(1A)W1V1	0.000	0.000	0.000	0.000
(DCT028)	□	GFHT 019 ROS-NB1 B(1A)W1V1 BETA IS -3 COS(ALPHA)		0.000	0.000	0.000

REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

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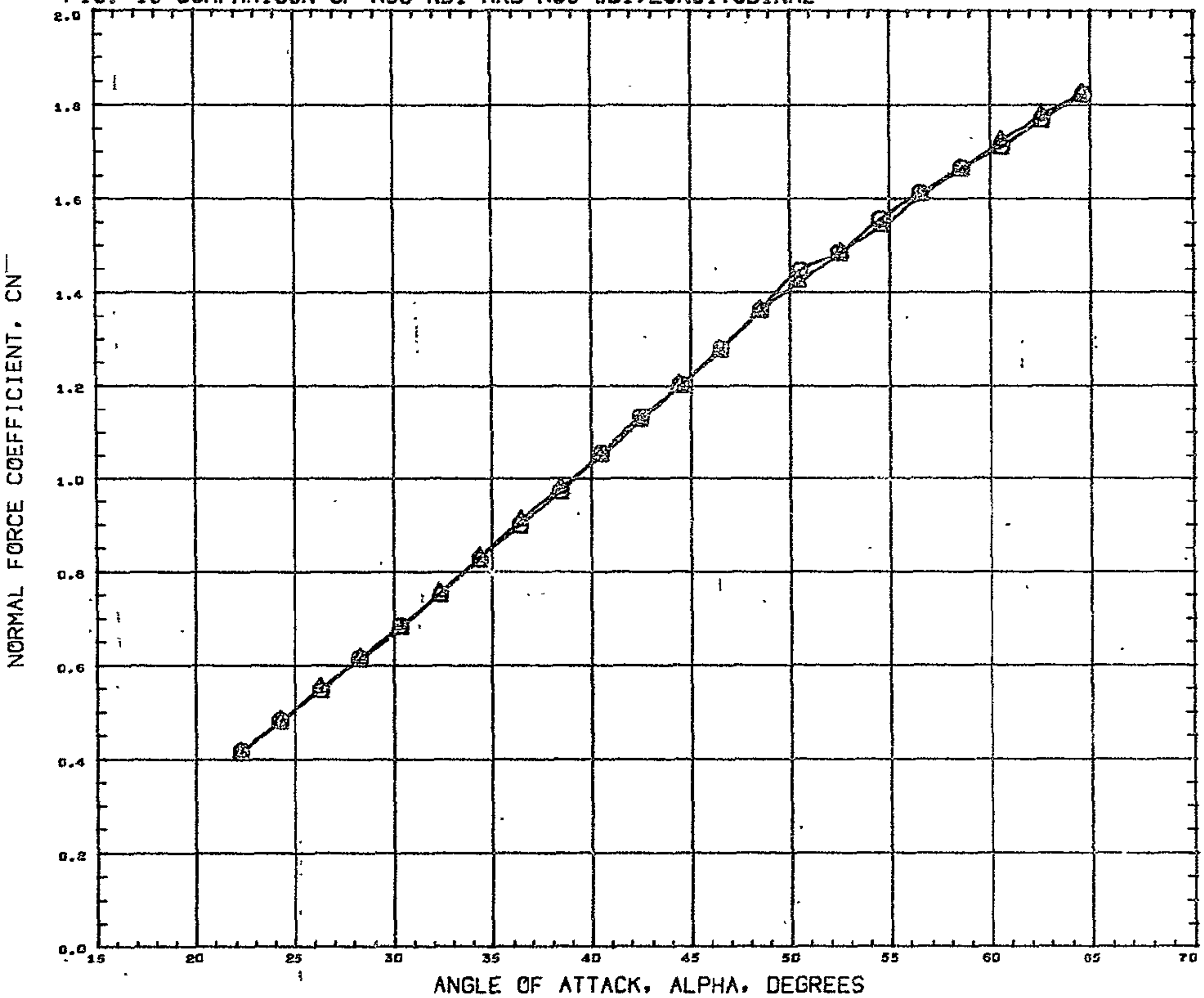
FIG. 16 COMPARISON OF ROS-NB1 AND ROS-WB1, LONGITUDINAL

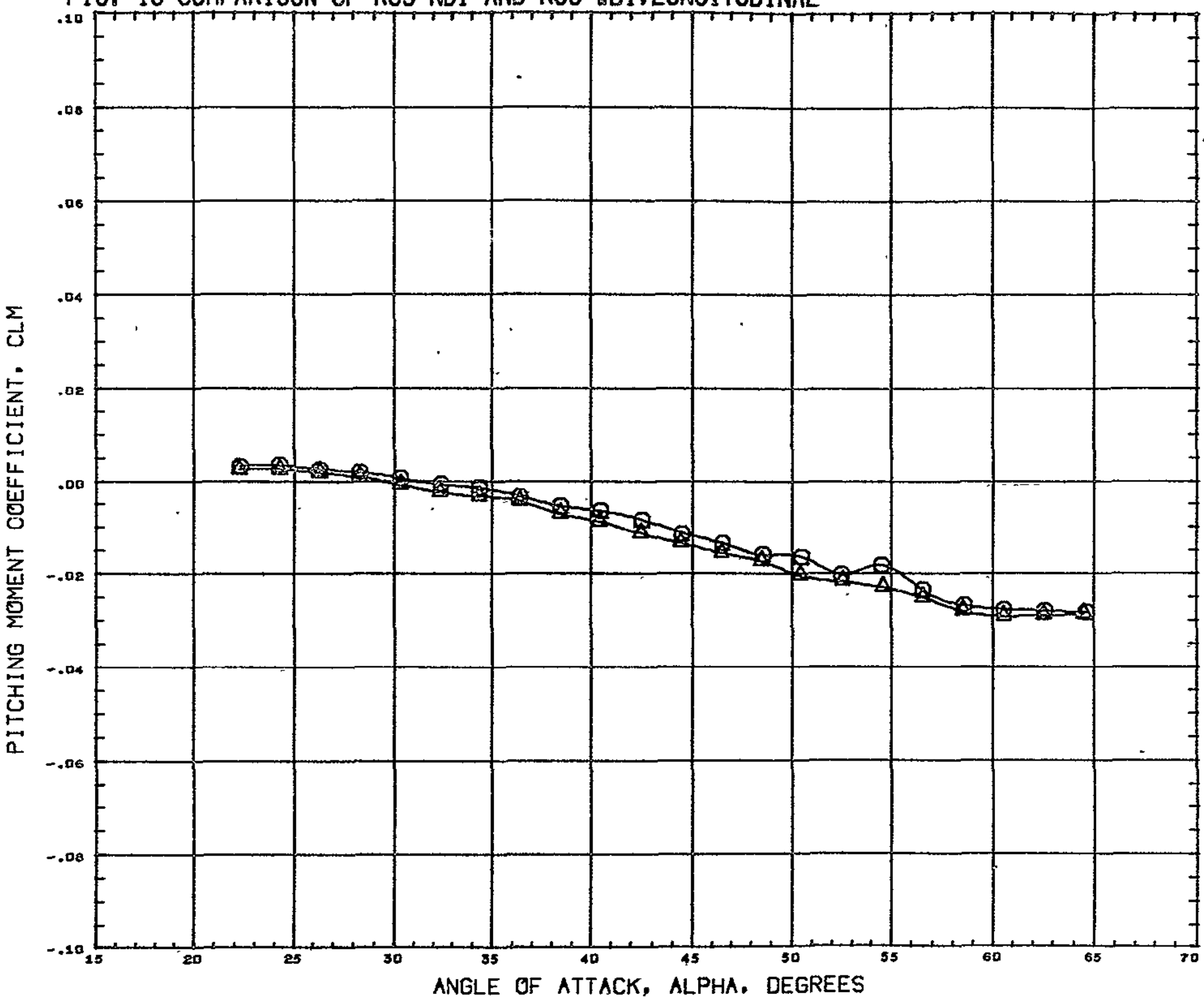


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT002)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000
(DCT015)	△	GFHT 019 CONF. ROS-WB1 B2W1V2	0.000	0.000	0.000	0.000

REFERENCE INFORMATION		
SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

MACH 10.130

FIG. 16 COMPARISON OF ROS-NB1 AND ROS-WB1, LONGITUDINAL



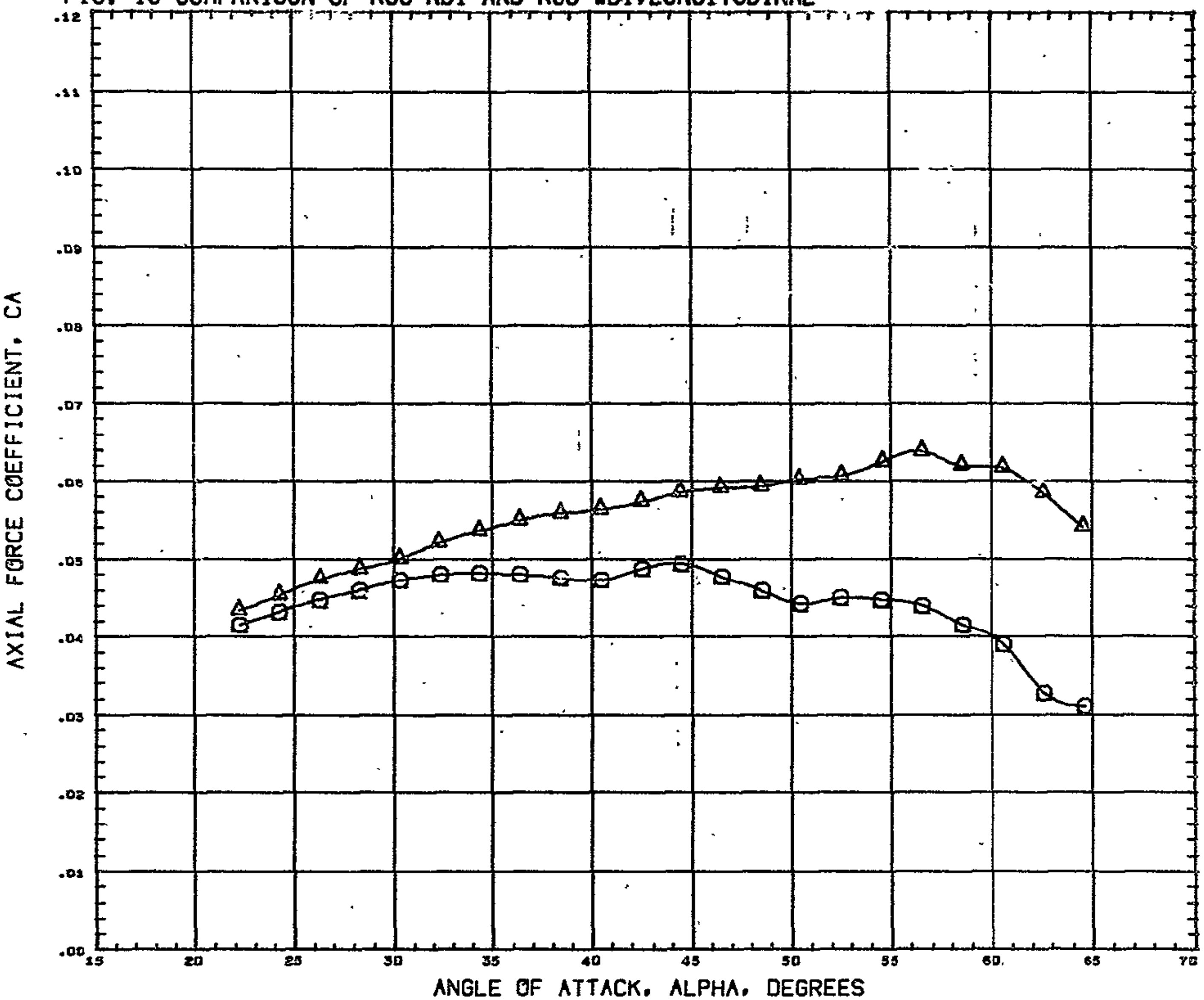
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT002)	O	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000
(DCT015)	Δ	GFHT 019 CONF. ROS-WB1 B2W1V2	0.000	0.000	0.000	0.000

REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

MACH 10.130

FIG. 16 COMPARISON OF ROS-NB1 AND ROS-WB1,LONGITUDINAL



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BDFLP
(DCT002)	O	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000
(DCT015)	Δ	GFHT 019 CONF. ROS-WB1 B2W1V2	0.000	0.000	0.000	0.000

REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8360	IN.
XMRP	1465.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

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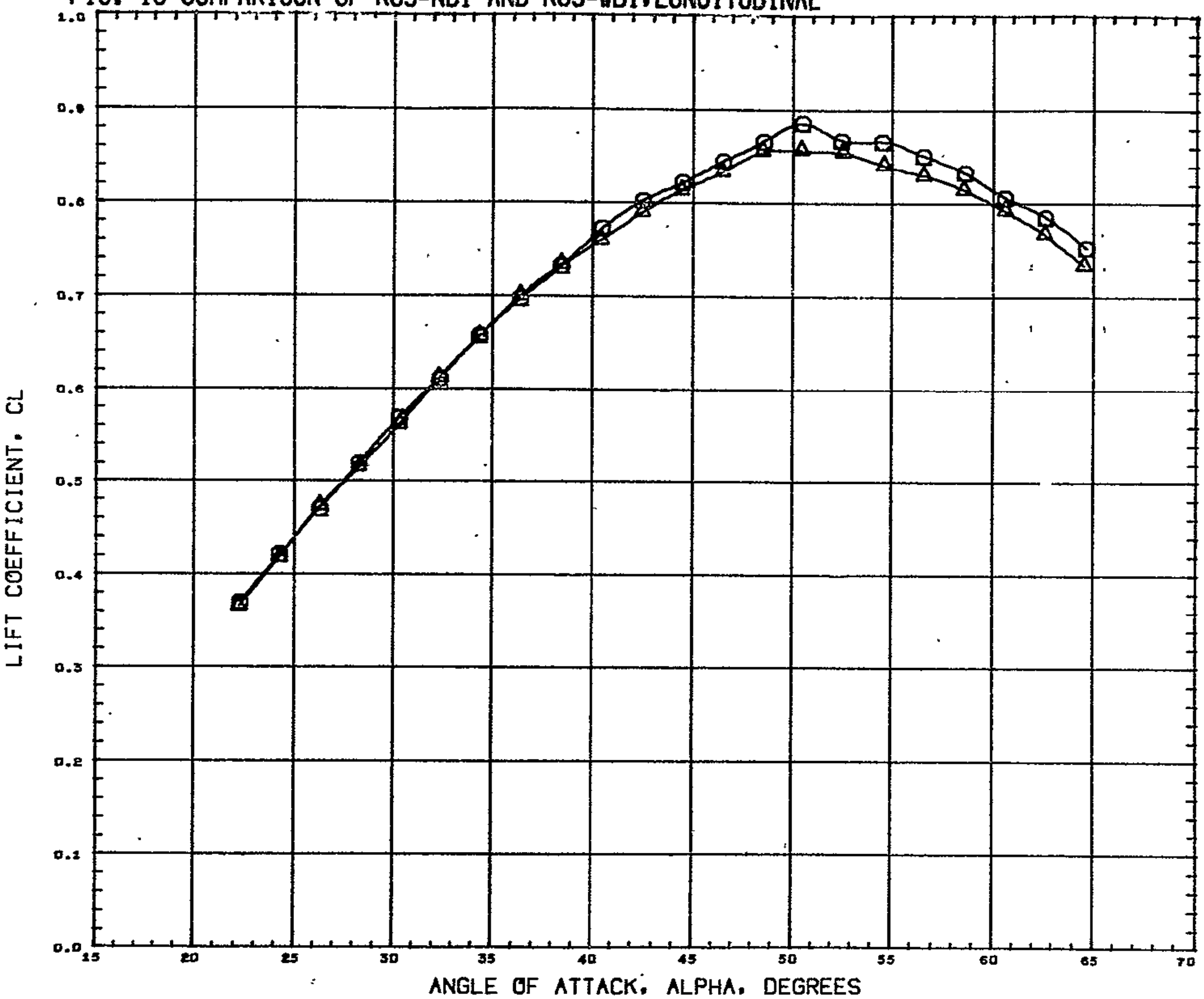
FIG. 16 COMPARISON OF ROS-NB1 AND ROS-WB1,LONGITUDINAL



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT002)	O	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000
(DCT015)	Δ	GFHT 019 CONF. ROS-WB1 B2W1V2	0.000	0.000	0.000	0.000

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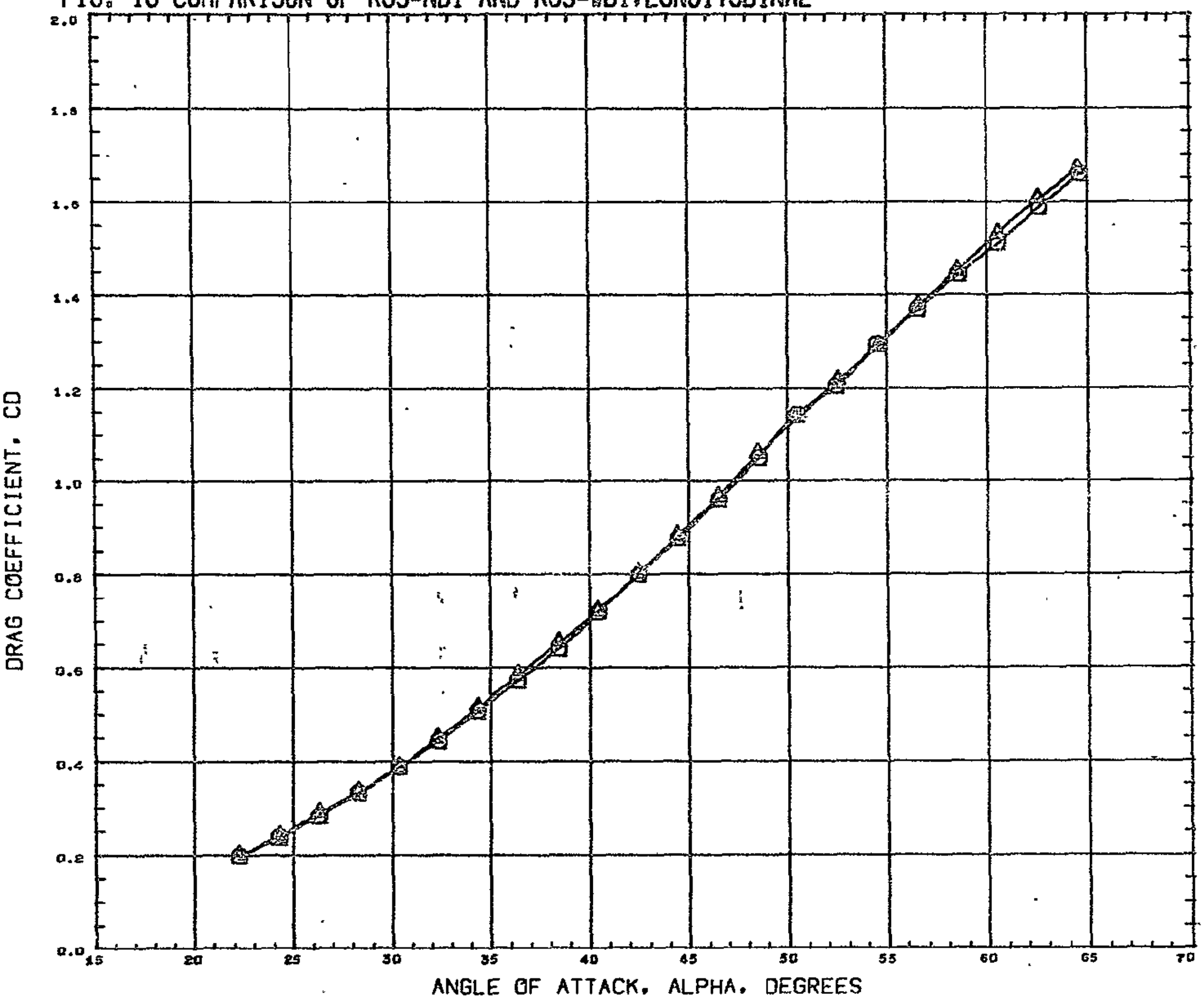
REFERENCE INFORMATION		
SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8360	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

FIG. 16 COMPARISON OF ROS-NB1 AND ROS-WB1,LONGITUDINAL



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT002)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000
(DCT015)	△	GFHT 019 CONF. ROS-WB1 B2W1V2	0.000	0.000	0.000	0.000

REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

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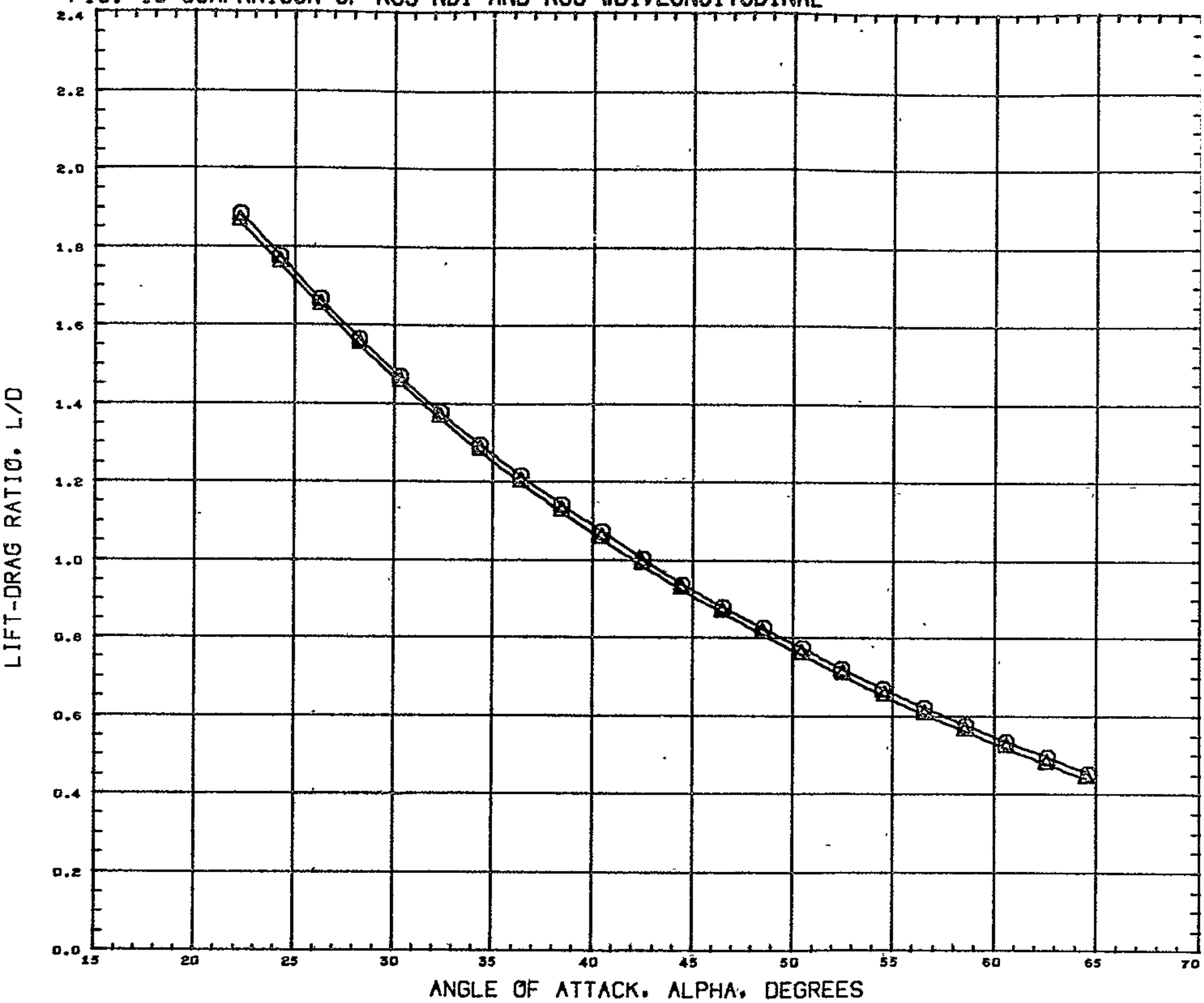
FIG. 16 COMPARISON OF ROS-NB1 AND ROS-WB1, LONGITUDINAL



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT002)	O	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000
(DCT015)	Δ	GFHT 019 CONF. ROS-WB1 B2W1V2	0.000	0.000	0.000	0.000

REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

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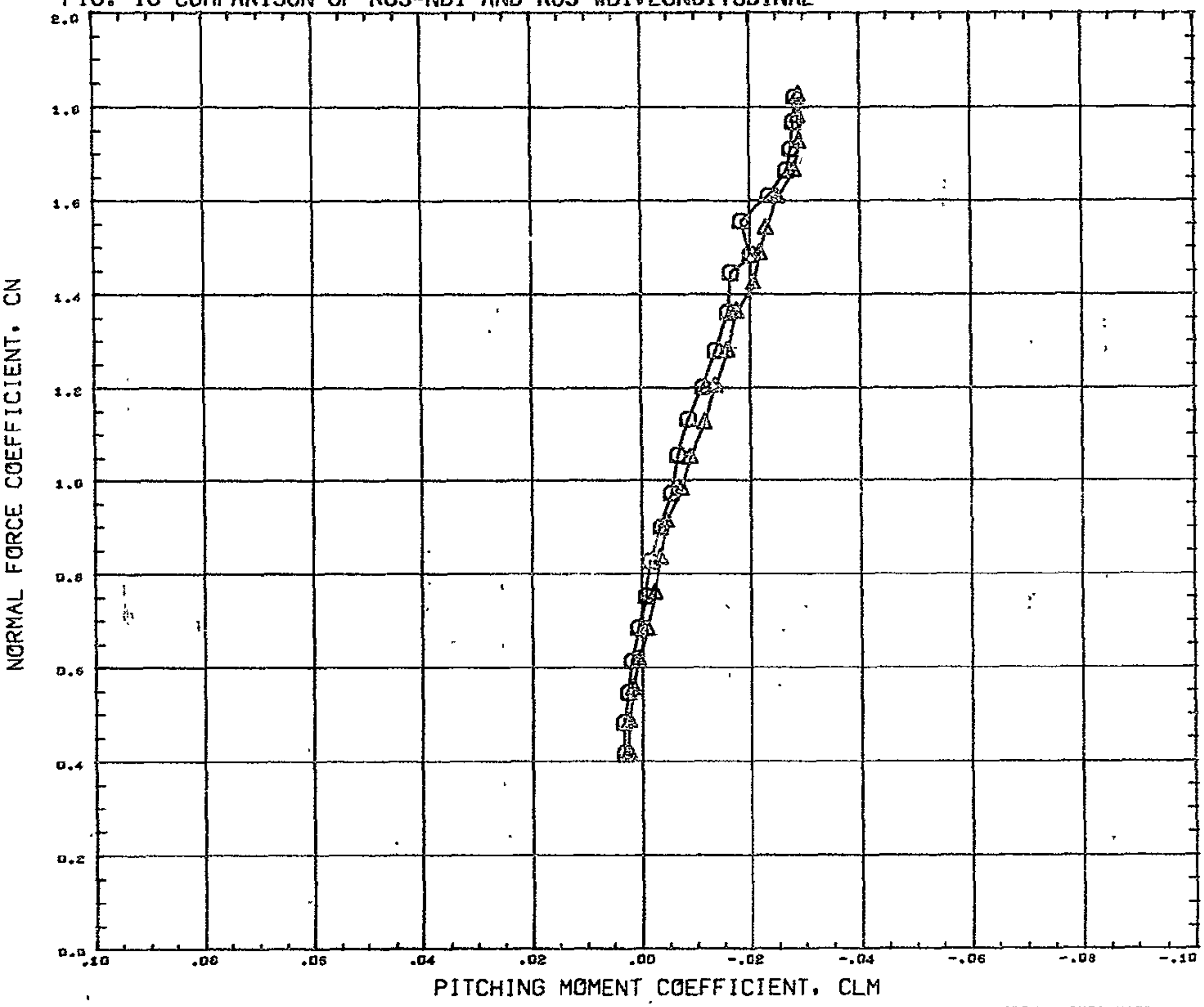
FIG. 16 COMPARISON OF ROS-NB1 AND ROS-WB1, LONGITUDINAL



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT002)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000
(DCT015)	△	GFHT 019 CONF. ROS-WB1 B2W1V2	0.000	0.000	0.000	0.000

REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

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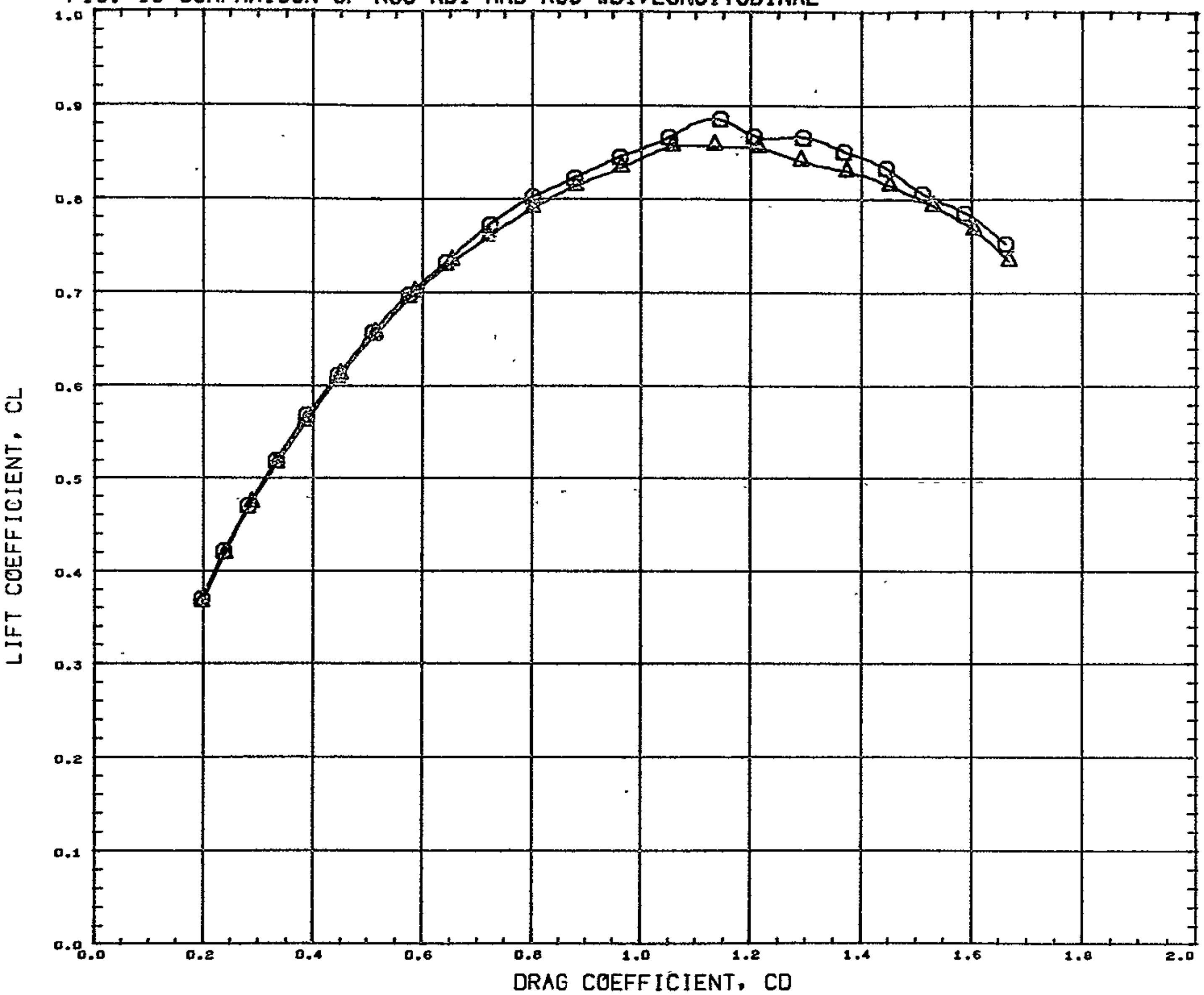
FIG. 16 COMPARISON OF ROS-NB1 AND ROS-WB1,LONGITUDINAL



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT002)	○	GFHT 019 CONF. ROS-NB1 B1W1V1	0.000	0.000	0.000	0.000
(DCT015)	△	GFHT 019 CONF. ROS-WB1 B2W1V2	0.000	0.000	0.000	0.000

REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

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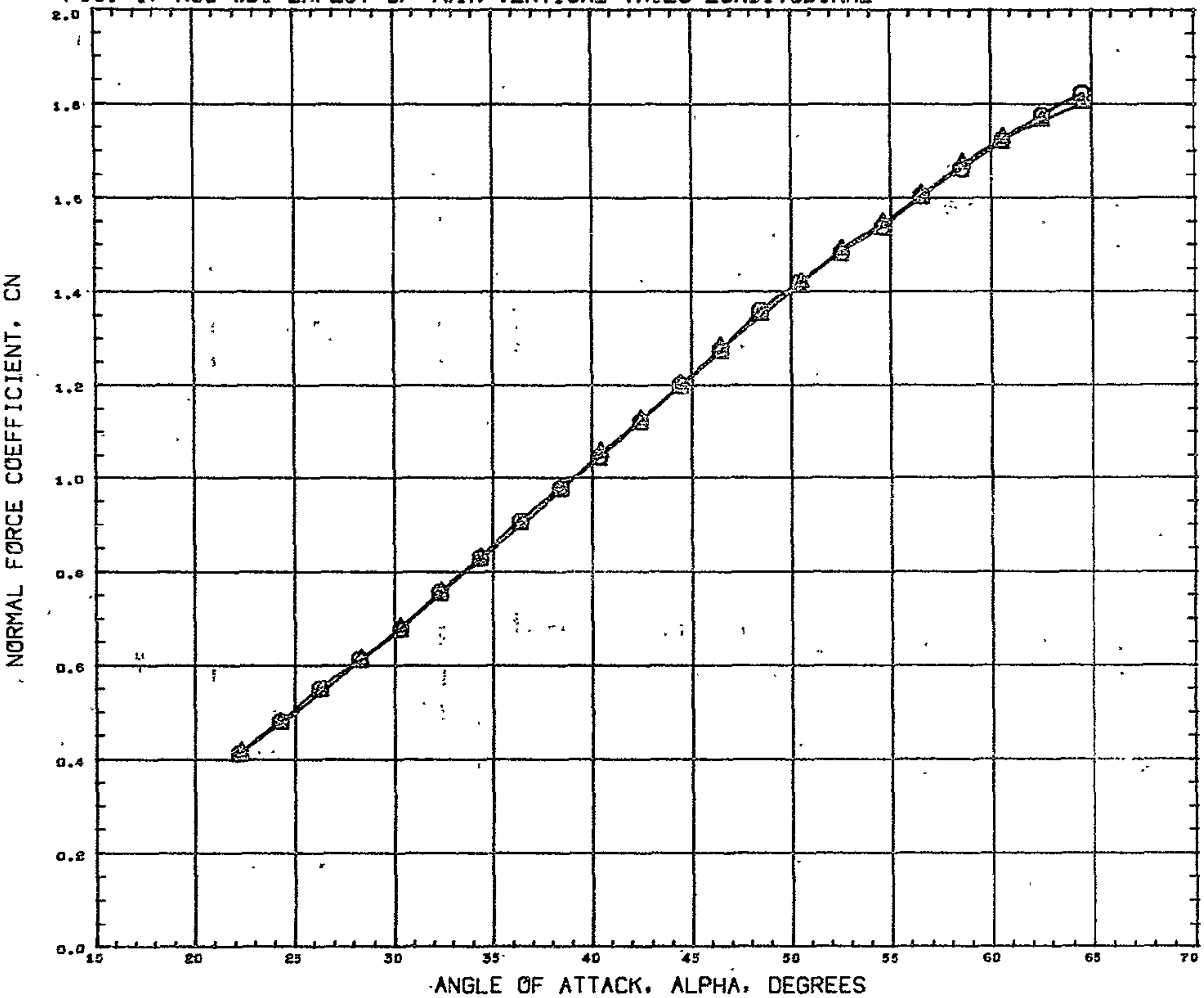
FIG. 17 ROS-WB1 EFFECT OF TWIN VERTICAL TAILS LONGITUDINAL



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BDFLP
(DCT015)	○	GFHT 019 CONF. ROS-WB1 B2W1V2	0.000	0.000	0.000	0.000
(DCT016)	△	GFHT 019 CONF. ROS-WB1 B2W1	0.000	0.000	0.000	0.000

REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

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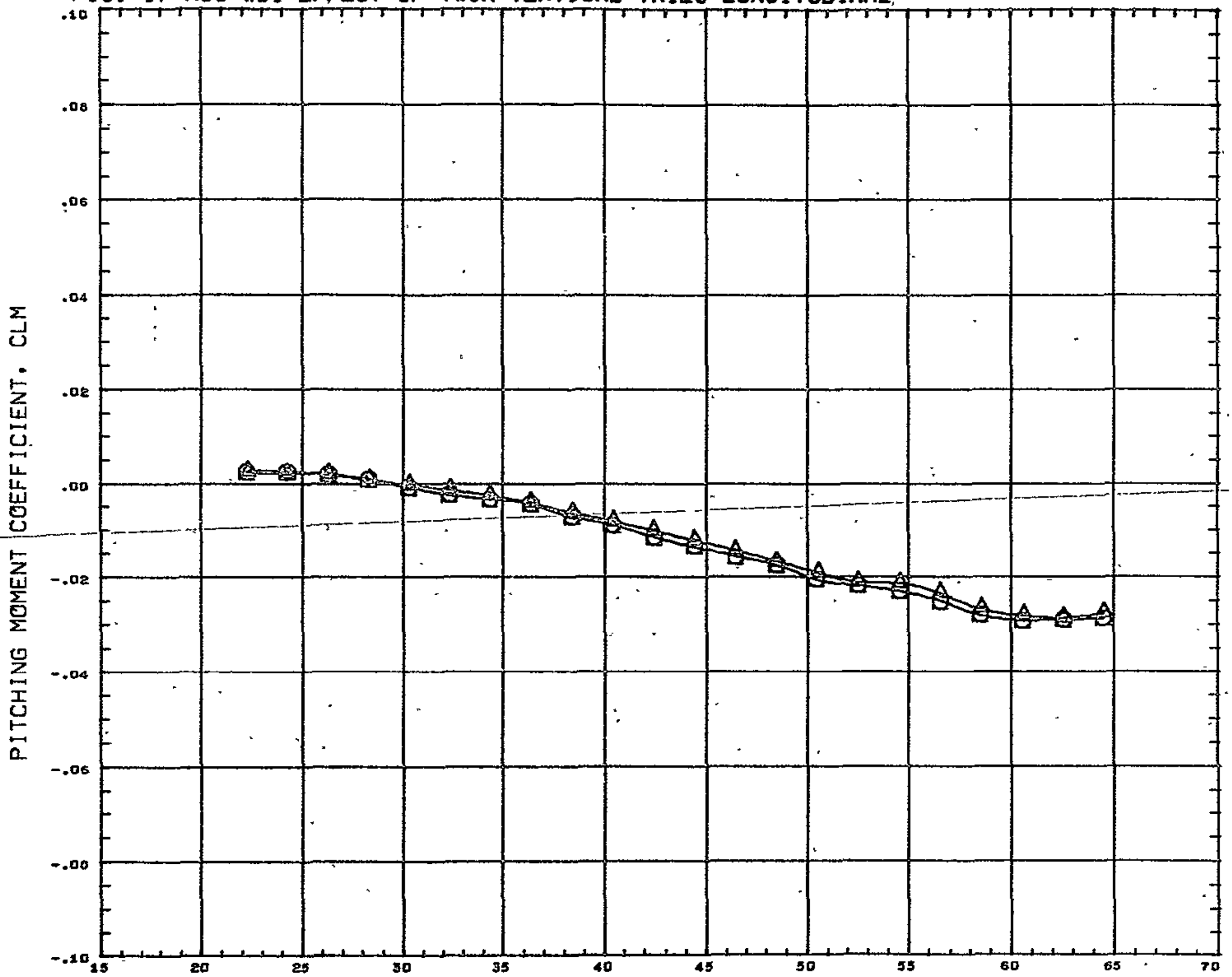
FIG. 17 ROS-WB1 EFFECT OF TWIN VERTICAL TAILS LONGITUDINAL



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT015)	○	GFHT 019 CONF. ROS-WB1 B2W1V2	0.000	0.000	0.000	0.000
(DCT016)	△	GFHT 019 CONF. ROS-WB1 B2W1	0.000	0.000	0.000	0.000

REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

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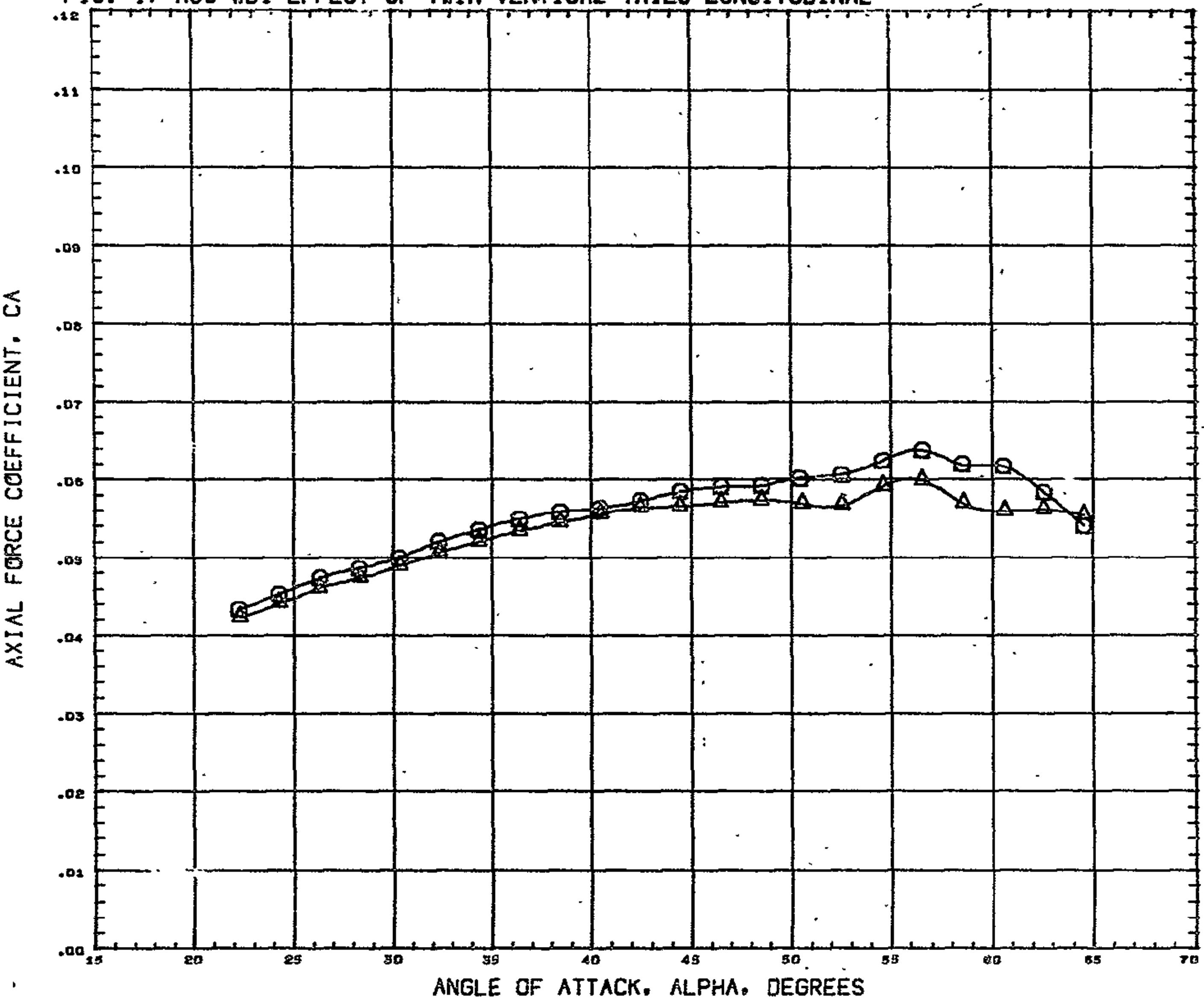
FIG. 17 ROS-WB1 EFFECT OF TWIN VERTICAL TAILS LONGITUDINAL



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT015)	○	GFHT 019 CONF. ROS-WB1 B2W1V2	0.000	0.000	0.000	0.000
(DCT016)	△	GFHT 019 CONF. ROS-WB1 B2W1	0.000	0.000	0.000	0.000

REFERENCE INFORMATION

SREF	20.6690	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

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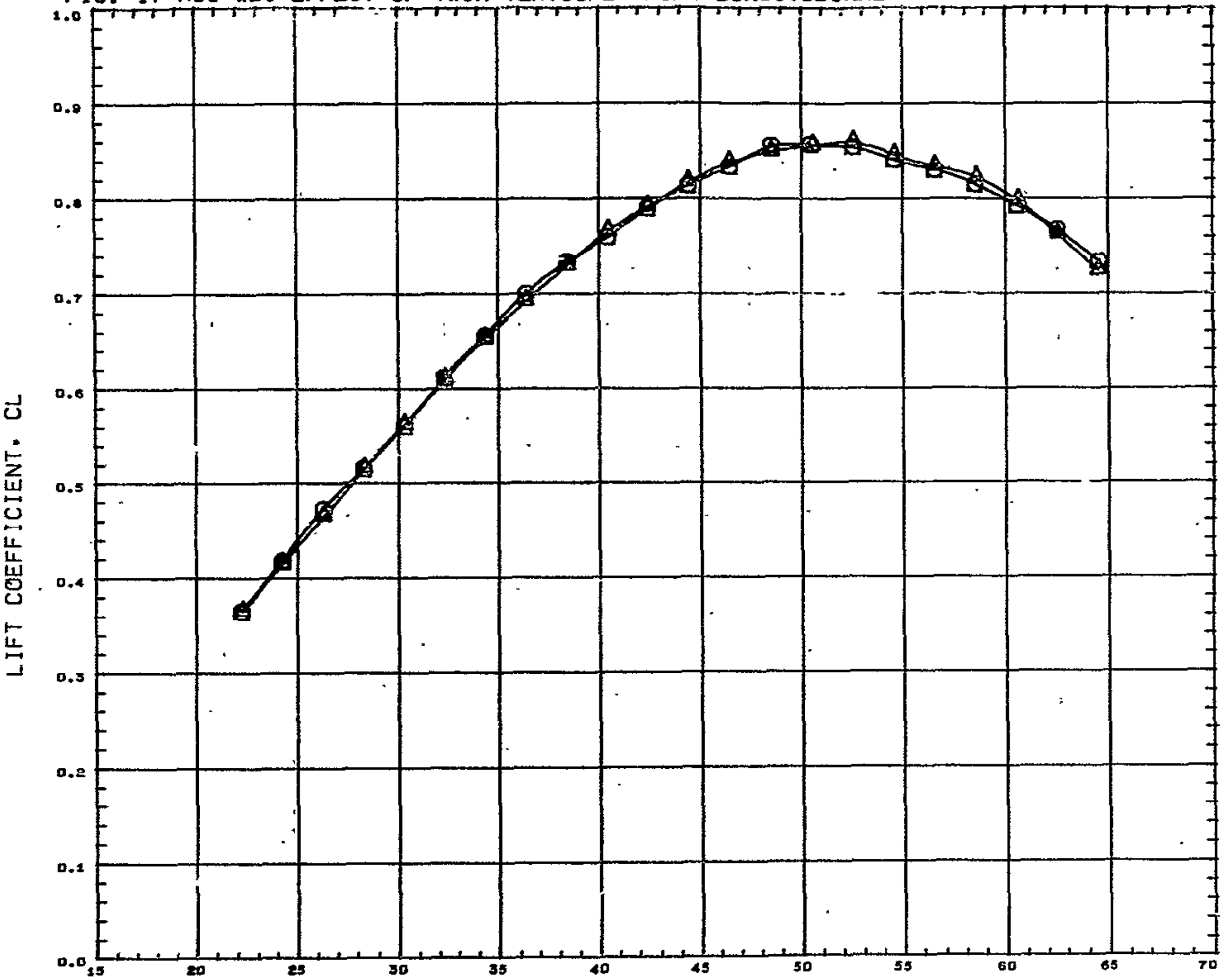
FIG. 17 ROS-WB1 EFFECT OF TWIN VERTICAL TAILS LONGITUDINAL



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT015)	○	GFHT 019 CONF. ROS-WB1 B2W1V2	0.000	0.000	0.000	0.000
(DCT016)	△	GFHT 019 CONF. ROS-WB1 B2W1	0.000	0.000	0.000	0.000

REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

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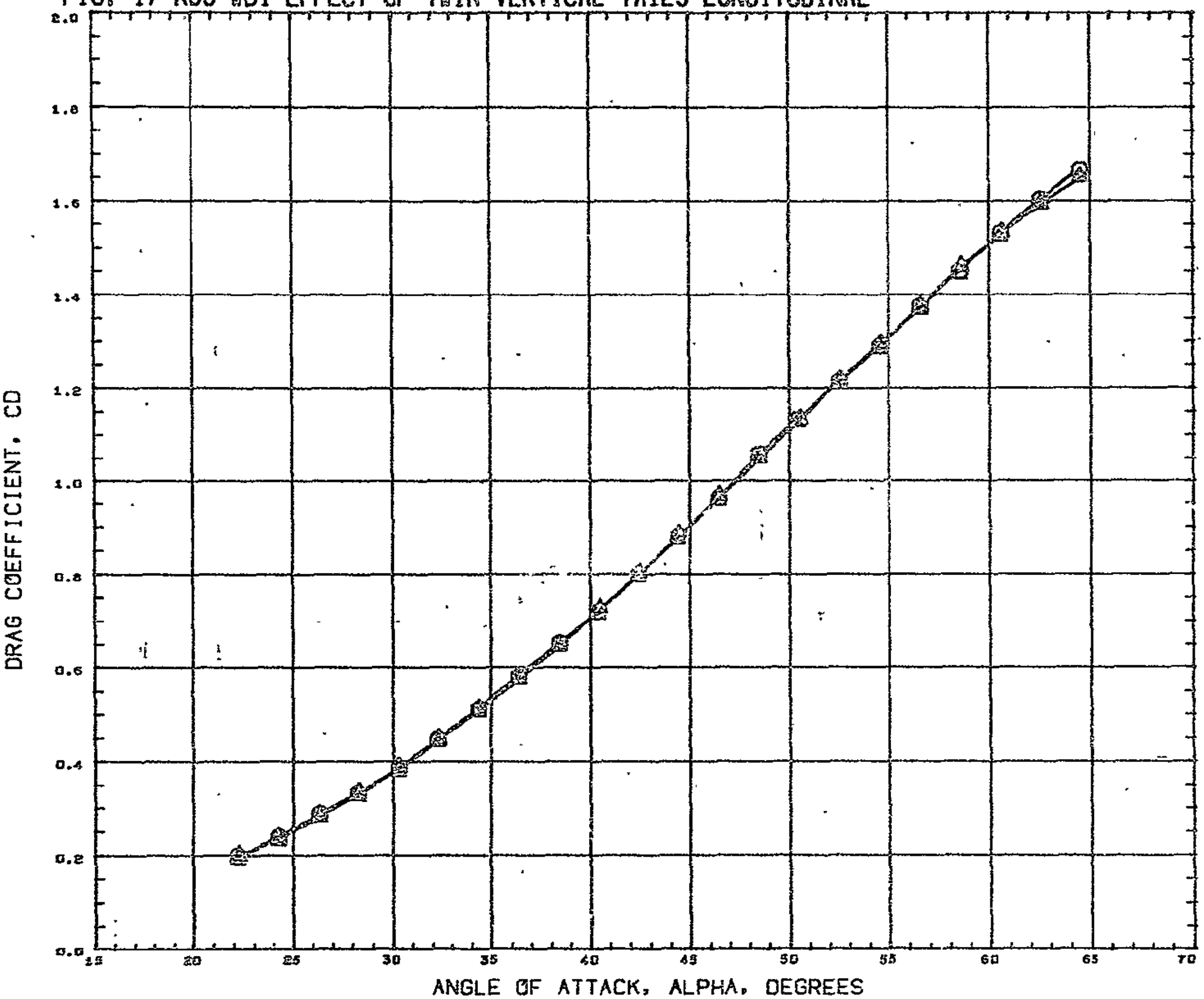
FIG. 17 ROS-WB1 EFFECT OF TWIN VERTICAL TAILS LONGITUDINAL



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT015)	○	GFHT 019 CONF. ROS-WB1 B2W1V2	0.000	0.000	0.000	0.000
(DCT016)	△	GFHT 019 CONF. ROS-WB1 B2W1	0.000	0.000	0.000	0.000

REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.0380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

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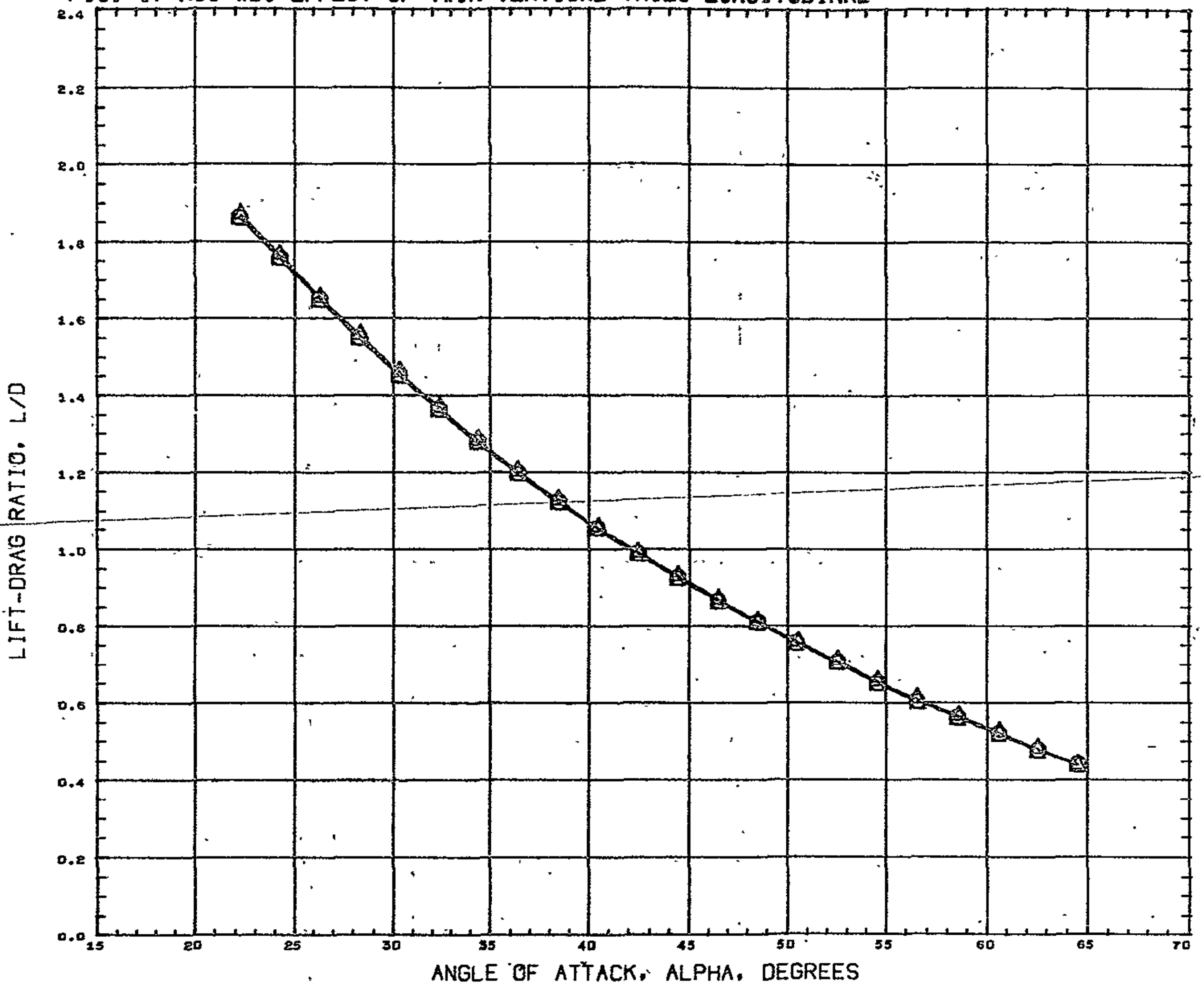
FIG. 17 ROS-WB1 EFFECT OF TWIN VERTICAL TAILS LONGITUDINAL



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT015)	○	GFHT 019 CONF. ROS-WB1 B2W1V2	0.000	0.000	0.000	0.000
(DCT016)	△	GFHT 019 CONF. ROS-WB1 B2W1	0.000	0.000	0.000	0.000

REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

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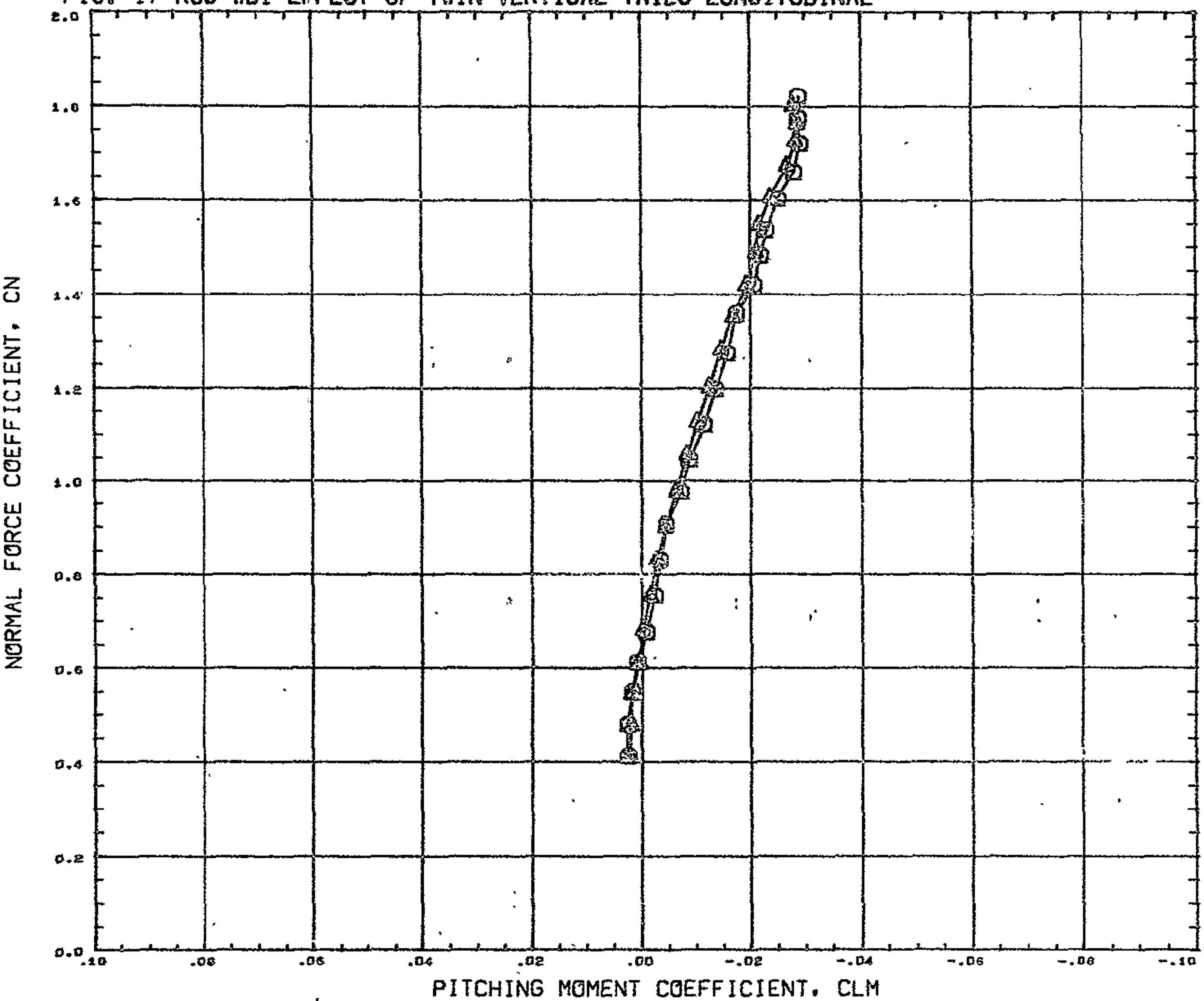
FIG. 17 ROS-WB1 EFFECT OF TWIN VERTICAL TAILS LONGITUDINAL



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT015)	○	GFHT 019 CONF. ROS-WB1 B2W1V2	0.000	0.000	0.000	0.000
(DCT016)	△	GFHT 019 CONF. ROS-WB1 B2W1	0.000	0.000	0.000	0.000

REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

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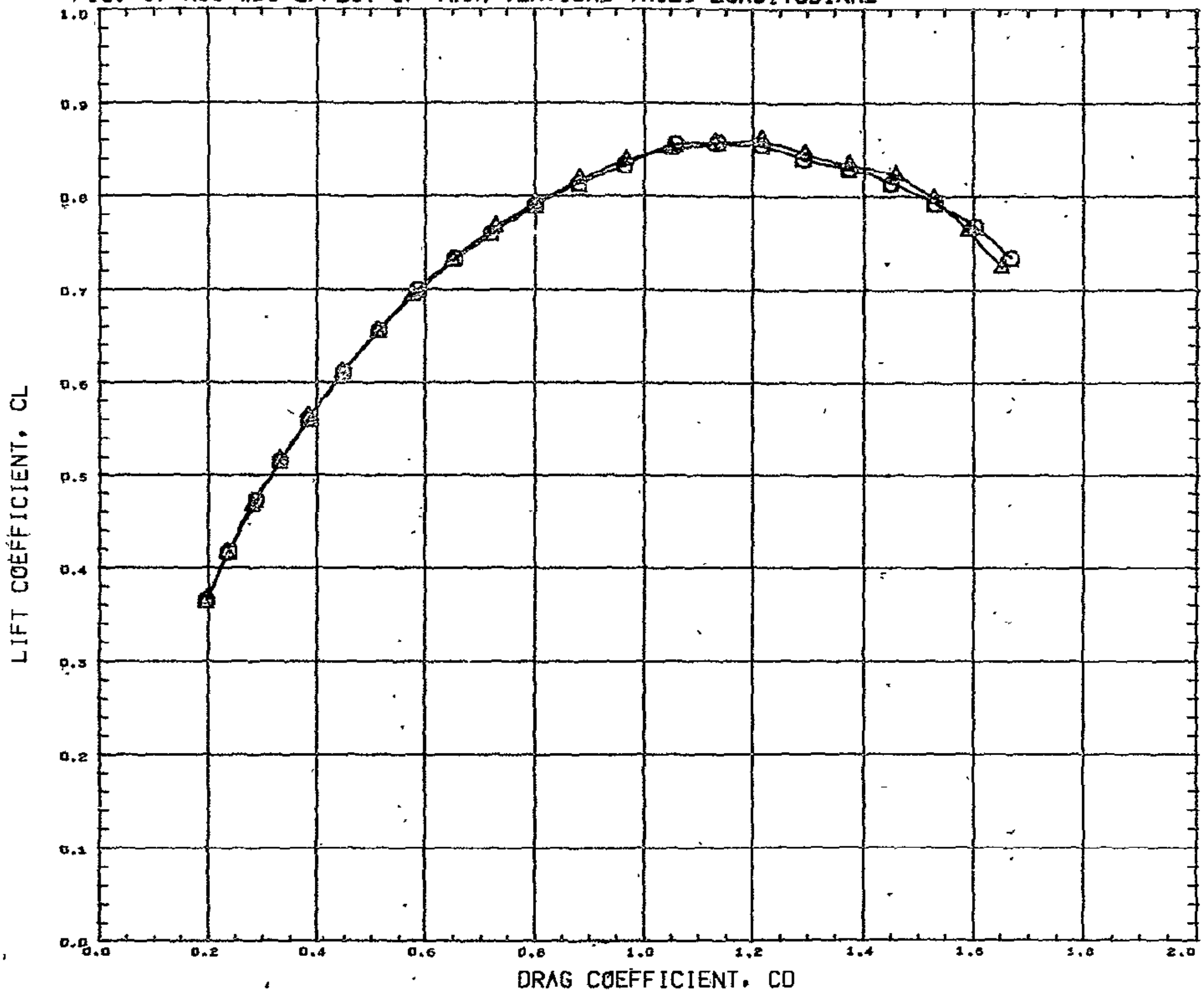
FIG. 17 RØS-WB1 EFFECT ØF TWIN VERTICAL TAILS LONGITUDINAL



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT015)	O	GFHT 019 CONF. ROS-WB1 B2W1V2	0.000	0.000	0.000	0.000
(DCT016)	Δ	GFHT 019 CONF. ROS-WB1 B2W1	0.000	0.000	0.000	0.000

REFERENCE INFORMATION		
SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

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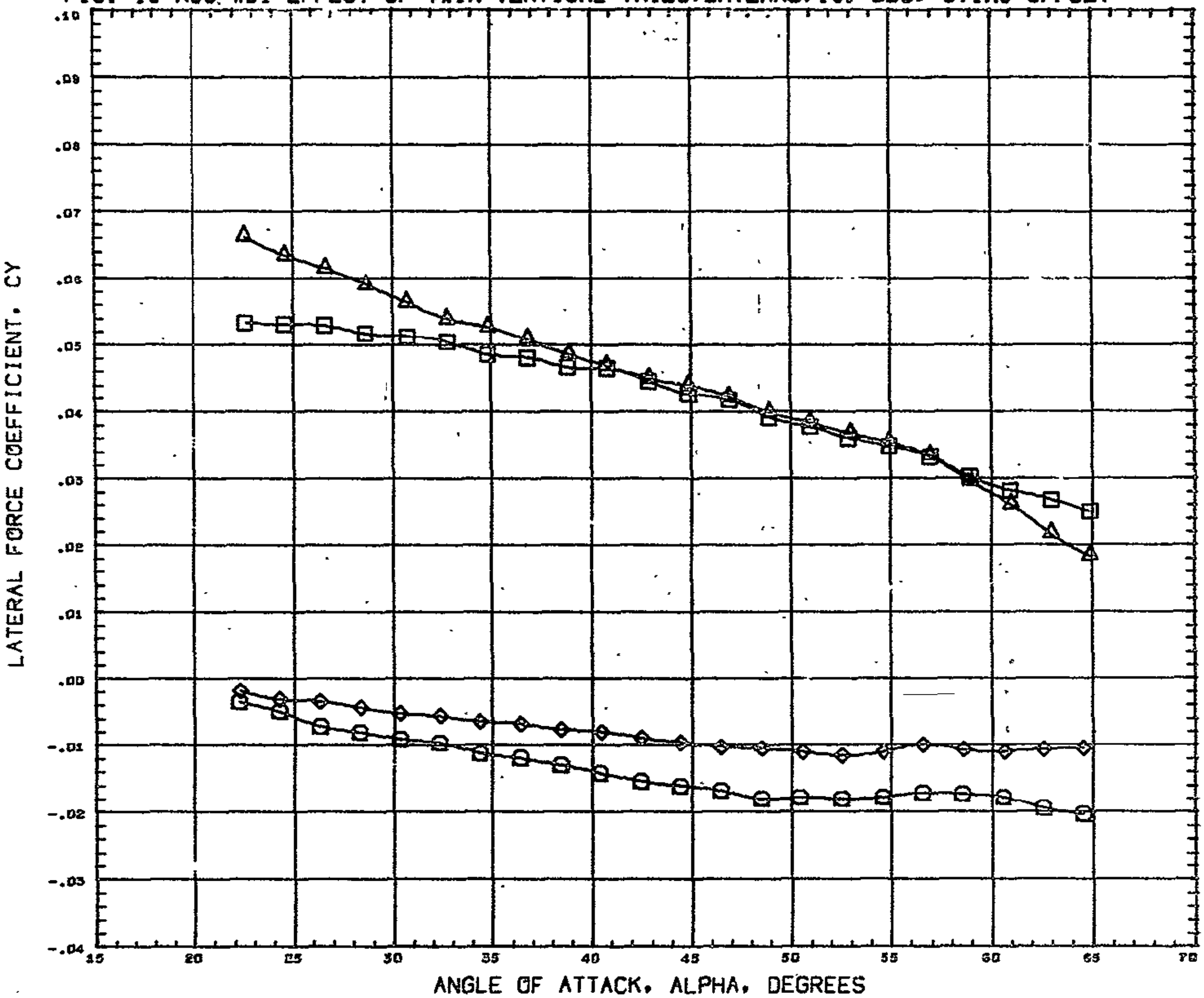
FIG. 18 ROS-WB1 EFFECT OF TWIN VERTICAL TAILS, LATERAL, 10. DEG. STING OFFSET



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP	REFERENCE INFORMATION		
(DCT015)	○	GFHT 019 CONF. ROS-WB1 B2W1V2	0.000	0.000	0.000	0.000	SREF	20.6890	SQ.IN.
(DCT024)	△	GFHT 019 ROS-WB1 B2W1V2 BETA IS -10 COS(ALPHA)		0.000	0.000	0.000	LREF	9.6480	IN.
(DCT016)	◇	GFHT 019 CONF. ROS-WB1 B2W1	0.000	0.000	0.000	0.000	BREF	5.8380	IN.
(DCT025)	□	GFHT 019 ROS-WB1 B2W1 BETA IS -10 COS(ALPHA)		0.000	0.000	0.000	XMRP	1485.0040	IN.
							YMRP	0.0000	IN.
							ZMRP	377.0004	IN.
							SCALE	0.0050	

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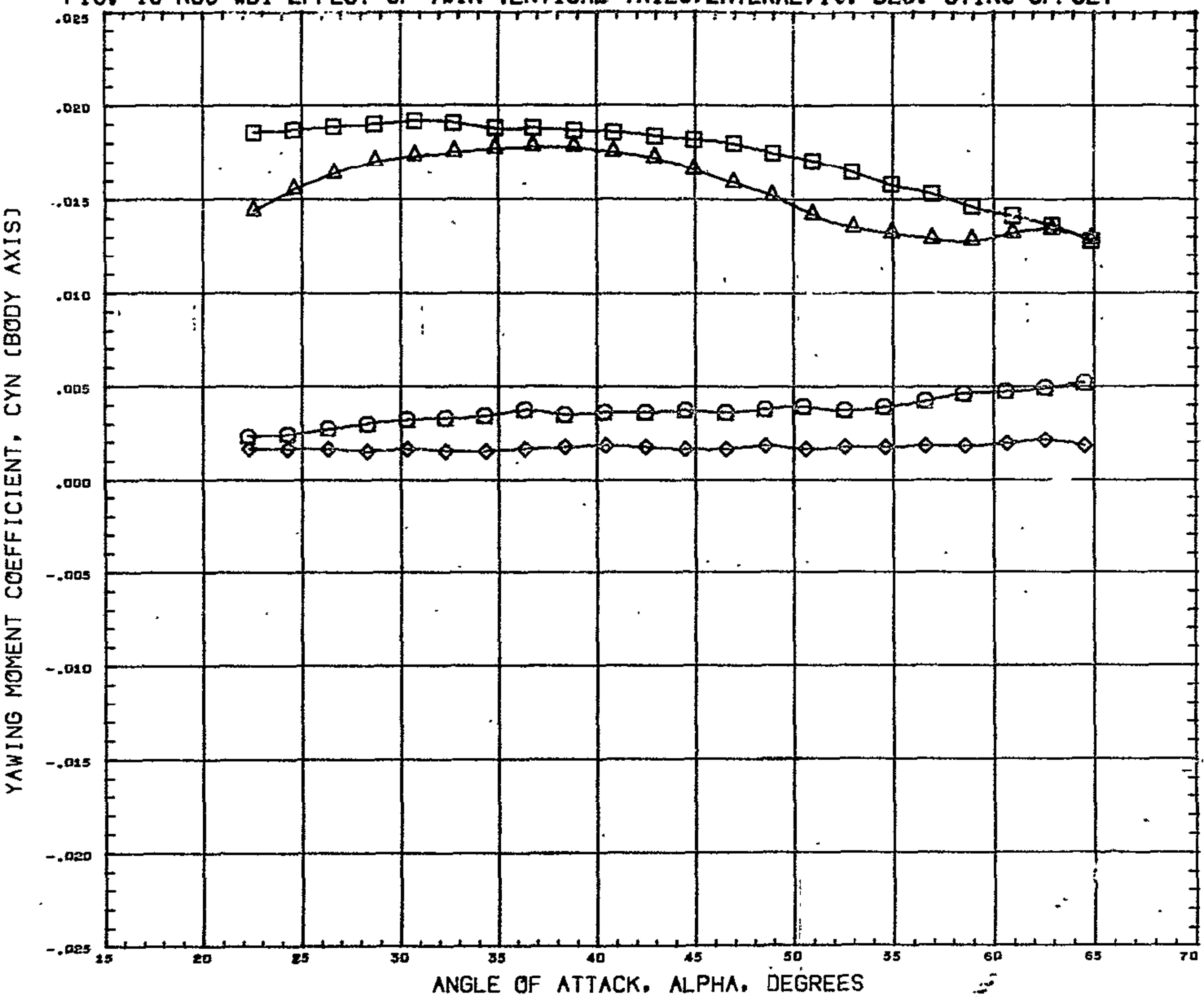
FIG. 18 ROS-WB1 EFFECT OF TWIN VERTICAL TAILS,LATERAL,10. DEG. STING OFFSET

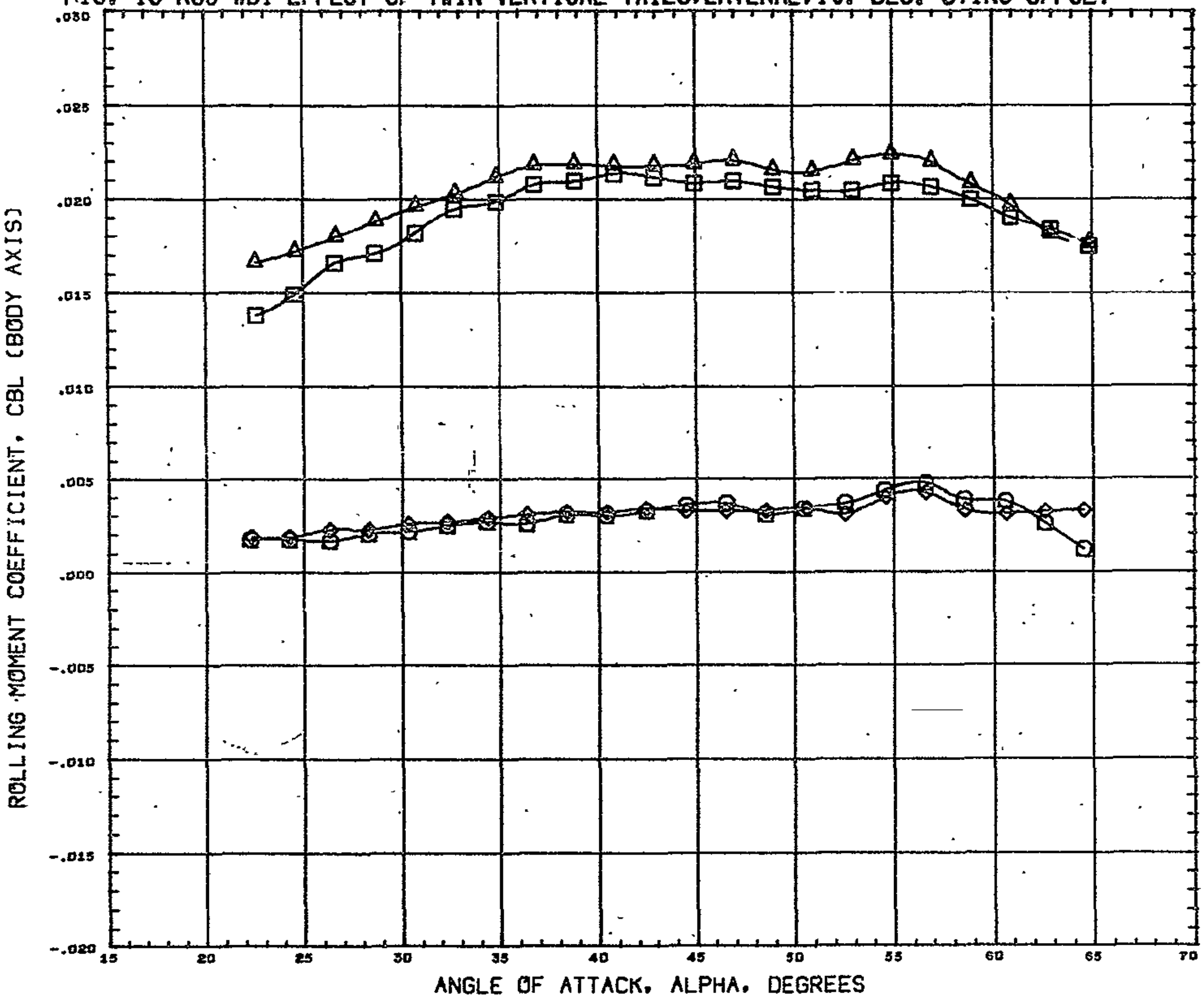


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT015)	○	GFHT 019 CONF. ROS-WB1 B2W1V2	0.000	0.000	0.000	0.000
(DCT024)	△	GFHT 019 ROS-WB1 B2W1V2 BETA IS -10 COS(ALPHA)		0.000	0.000	0.000
(DCT016)	◇	GFHT 019 CONF. ROS-WB1 B2W1	0.000	0.000	0.000	0.000
(DCT025)	□	GFHT 019 ROS-WB1 B2W1 BETA IS -10 COS(ALPHA)		0.000	0.000	0.000

MACH 10.130

REFERENCE INFORMATION		
SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	

FIG. 18 ROS-WB1 EFFECT OF TWIN VERTICAL TAILS,LATERAL,10. DEG. STING OFFSET



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	LELEVN	RELEVN	BODFLP
(DCT015)	○	GFHT 019 CONF. ROS-WB1 B2W1V2	0.000	0.000	0.000	0.000
(DCT024)	△	GFHT 019 ROS-WB1 B2W1V2 BETA IS -10 COS(ALPHA)		0.000	0.000	0.000
(DCT016)	◇	GFHT 019 CONF. ROS-WB1 B2W1	0.000	0.000	0.000	0.000
(DCT025)	□	GFHT 019 ROS-WB1 B2W1 BETA IS -10 COS(ALPHA)		0.000	0.000	0.000

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REFERENCE INFORMATION

SREF	20.6890	SQ.IN.
LREF	9.6480	IN.
BREF	5.8380	IN.
XMRP	1485.0040	IN.
YMRP	0.0000	IN.
ZMRP	377.0004	IN.
SCALE	0.0050	