

General Disclaimer

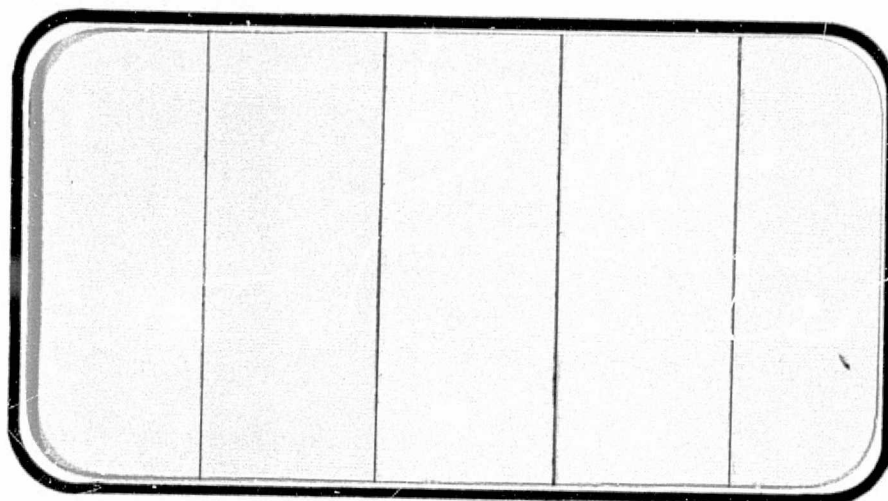
One or more of the Following Statements may affect this Document

- This document has been reproduced from the best copy furnished by the organizational source. It is being released in the interest of making available as much information as possible.
- This document may contain data, which exceeds the sheet parameters. It was furnished in this condition by the organizational source and is the best copy available.
- This document may contain tone-on-tone or color graphs, charts and/or pictures, which have been reproduced in black and white.
- This document is paginated as submitted by the original source.
- Portions of this document are not fully legible due to the historical nature of some of the material. However, it is the best reproduction available from the original submission.



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

NASA CR-
141805



(NASA-CR-141805) RESULTS OF INVESTIGATIONS
ON A 0.010-SCALE 140A/B CONFIGURATION SPACE
SHUTTLE VEHICLE ORBITER MODEL 72-0 IN THE
NASA/LANGLEY RESEARCH CENTER CONTINUOUS FLOW
HYPERSONIC TUNNEL (CA90) (Chrysler Corp.)

N75-30247

Unclas
34995
G3/18



SPACE SHUTTLE

AEROTHERMODYNAMIC DATA REPORT

JOHNSON SPACE CENTER

HOUSTON, TEXAS

DATA MANAGEMENT services



August, 1975

DMS-DR-2149
NASA-CR-141,805

RESULTS OF INVESTIGATIONS ON A 0.010-SCALE
140A/B CONFIGURATION SPACE SHUTTLE VEHICLE ORBITER
MODEL 72-0 IN THE NASA/LANGLEY RESEARCH CENTER
CONTINUOUS FLOW HYPERSONIC TUNNEL (0A90)

by

P. J. Hawthorne
Shuttle Aero Sciences
Rockwell International Space Division

Prepared under NASA Contract Number NAS9-13247

by

Data Management Services
Chrysler Corporation Space Division
New Orleans, La. 70189

for

Engineering Analysis Division
Johnson Space Center
National Aeronautics and Space Administration
Houston, Texas

WIND TUNNEL TEST SPECIFICS:

Test Number: LaRC CFHT 110
NASA Series Number: OA90
Model Number: 72-0
Test Dates: March 4 through March 6, 1974

FACILITY COORDINATOR:

Bernard Spencer, Jr.
Langley Research Center
SSD, Applied Aerodynamics Section
Bldg. 1251, Room 221B
Mail Stop 411
Hampton, Virginia 23665

Phone: (804) 827-3911

PROJECT ENGINEERS:

P. J. Hawthorne
Rockwell International Space Div.
12214 Lakewood Blvd.
Mail Code AC07
Downey, California 90241

Phone: (213) 922-2440

P. T. Bernot
NASA Langley Research Center
Continuous Flow Hypersonic Tunnel
Aerodynamics Section
Space Systems Division
Mail Stop 408, Bldg. 1251
Hampton, Virginia 23665

Phone: (804) 827-3984

DATA MANAGEMENT SERVICES:

Prepared by: Liaison--D. A. Sarver, V. W. Sparks
Operations--G. G. McDonald

Reviewed by: J. L. Glynn *JL*

Approved: *N D Kemp*
N. D. Kemp, Manager
Data Management Services

Concurrence: *J G Swider*
J. G. Swider, Manager
Flight Technology Branch

Chrysler Corporation Space Division assumes no responsibility for the data presented other than display characteristics.

RESULTS OF INVESTIGATIONS ON A 0.010-SCALE
140A/B CONFIGURATION SPACE SHUTTLE VEHICLE ORBITER MODEL 72-0
IN THE NASA/LANGLEY RESEARCH CENTER
CONTINUOUS FLOW HYPERSONIC TUNNEL (0A90)
by P. J. Hawthorne, Rockwell International Space Division

ABSTRACT

This report documents data obtained during a wind tunnel test of a 0.010-scale 140A/B configuration SSV Orbiter in the NASA/Langley Research Center Continuous Flow Hypersonic Tunnel. The test was conducted beginning 4 March and ending 6 March 1974 for a total of 24 occupancy hours. All test runs were conducted at a Mach number of 10.3 and at Reynolds numbers of 0.65, 1.0 and 1.33 million per foot. Only the complete 140A/B was tested with various elevon, speedbrake and bodyflap settings at angles of attack from 12 to 37 degrees at 0 and -5 degrees of beta, and from 0 to -9 degrees of beta at 20 and 30 degrees angle of attack.

The purpose of this test was to obtain hypersonic longitudinal and lateral-directional stability and control characteristics of the updated SSV configuration.

TABLE OF CONTENTS

	Page
ABSTRACT	iii
INDEX OF MODEL FIGURES	2
INDEX OF DATA FIGURES	3
NOMENCLATURE	5
CONFIGURATIONS INVESTIGATED	8
TEST FACILITY DESCRIPTION	9
DATA REDUCTION	10
REMARKS	11
TABLES	
I. TEST CONDITIONS	12
II. DATASET/RUN NUMBER COLLATION SUMMARY	13
III. MODEL DIMENSIONAL DATA	15
FIGURES	
MODEL	24
DATA	28
APPENDIX	
TABULATED SOURCE DATA	

INDEX OF MODEL FIGURES

Figure	Title	Page
1.	Axis systems.	24
2.	140A/B Orbiter for Test OA90.	25
3.	Model installation photographs.	
a.	Top Three-quarter View	26
b.	Side View	27

INDEX OF DATA FIGURES

TITLE	CONDITIONS VARYING	SCHEDULE OF COEFFICIENTS PLOTTED	PAGES
REYNOLDS NUMBER EFFECT AT ZERO DEGREE ELEVON DEFLECTION	RN/L BETA CONFIGURATION	(A)	1-10
REPEATABILITY STUDY	RN/L	(A)	11-20
ELEVON GAP INTERPANEL GAP EFFECT	CONFIGURATION RN/L BETA	(A)	21-30
EFFECT OF POSITIVE DEFLECTED UNSEALED ELEVONS	RN/L ELEVTR	(A)	31-40
EFFECT OF POSITIVE DEFLECTED SEALED ELEVONS	RN/L ELEVTR	(A)	41-50
EFFECT OF NEGATIVE DEFLECTED ELEVONS	RN/L ELEVTR	(A)	51-60
ELEVON EFFECTIVENESS AT -5 DEGREES BETA	CONFIGURATION RN/L BDFLAP ELEVTR BETA	(A)	61-70
BODY FLAP EFFECTIVENESS	RN/L BDFLAP	(A)	71-80
SPEED BRAKE EFFECTIVENESS	CONFIGURATION RN/L SPDBRK	(A)	81-90

INDEX OF DATA FIGURES (Concluded)

TITLE	CONDITIONS VARYING	SCHEDULE OF COEFFICIENTS PLOTTED	PAGES
SPEED BRAKE EFFECTIVENESS AT -5 DEGREES BETA	CONFIGURATION RN/L SPDBRK BETA	(A)	91-100
AILERON EFFECTIVENESS	RN/L AILRON	(A)	101-110
		(B)	111
LATERAL DIRECTIONAL CHARACTERISTICS	ALPHA	(C)	112

SCHEDULE OF COEFFICIENTS PLOTTED:

- (A) CN, CA versus ALPHA
CN versus CLM
CL, CD, CLM versus ALPHA
CL versus CLM
CD versus CL
XCP/L, L/D versus ALPHA
- (B) CY, CYN, CBL versus ALPHA
- (C) CY, CYN, CBL versus BETA

NOMENCLATURE
General

<u>SYMBOL</u>	<u>PLOT SYMBOL</u>	<u>DEFINITION</u>
a		speed of sound; m/sec, ft/sec
C _p	CP	pressure coefficient; $(p_1 - p_\infty)/q$
M	MACH	Mach number; V/a
p		pressure; N/m ² , psf
q	Q(NSM) Q(PSE)	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
$\frac{l}{c}$ _{REF}	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

<u>SYMBOL</u>	<u>PLOT SYMBOL</u>	<u>DEFINITION</u>
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	CIM	pitching-moment coefficient; $\frac{\text{pitching moment}}{qS l_{REF}}$
C_n	CYN	yawing-moment coefficient; $\frac{\text{yawing moment}}{qS b}$
C_l	CBL	rolling-moment coefficient; $\frac{\text{rolling moment}}{qS b}$

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	CIM	pitching-moment coefficient; $\frac{\text{pitching moment}}{qS l_{REF}}$
C_n	CLN	yawing-moment coefficient; $\frac{\text{yawing moment}}{qS b}$
C_l	CSL	rolling-moment coefficient; $\frac{\text{rolling moment}}{qS b}$
L/D	L/D	lift-to-drag ratio; C_L/C_D
L/D _f	L/D _f	lift to forebody drag ratio; C_L/C_{D_f}

NOMENCLATURE (Concluded)
(ADDITIONS)

<u>SYMBOL</u>	<u>PLOT SYMBOL</u>	<u>DEFINITION</u>
δ_e	ELEVTR	effective elevator deflection, symmetrical elevon deflection for pitch control, degrees
δ_a	AILRON	aileron, total aileron deflection angle, (left aileron-right aileron)/2, degrees
δ_{BF}	BDFLAP	bodyflap deflection, positive trailing edge down, degrees
δ_{SB}	SPDBRK	speedbrake deflection, total angle measured parallel to the FRL, degrees
δ_R	RUDDER	rudder deflection angle
U		outer elevon gaps unsealed
S		outer elevon gaps sealed
x_{cp}/l_B	XCP/L	normal force center of pressure in percent of body reference length measured from IML nose

CONFIGURATION INVESTIGATED

Throughout test OA90, the full 140A/B hybrid configuration Space Shuttle Vehicle Orbiter was used.

Model 72-0 dimensional data are given for the 140A/B configuration components in Table III of this report.

The tested configuration included the following components:

- B₂₆ Basic 140A/B configuration fuselage
- C₉ Basic 140A/B configuration canopy
- W₁₁₆ Basic 140A/B configuration wing
- E₃₇ E₂₆ (basic 140A/B) elevons with chamfered gaps and inboard edge
- V₈ Basic 140A/B configuration vertical tail
- R₅ Basic 140A/B configuration rudder for V₈
- M₇ Basic 140A/B configuration OMS/RCS pods
- N₂₈ Basic 140A/B configuration OMS engine nozzles
- F₁₀ 140A/B bodyflap

TEST FACILITY DESCRIPTION

The Mach 10 nozzle of the Langley continuous flow hypersonic tunnel is designed to operate at stagnation pressures of 15 to 150 atmospheres at temperatures up to 1960°R. Air is preheated electrically by passing through a multi-tube heater. The nozzle has a 31-inch square test section which incorporates a movable second minimum. Continuous operation is achieved by passing the air through a series of compressors. Additional information on this facility is given in NASA TM X-1130 entitled, "Characteristics of Major Active Wind Tunnels at the Langley Research Center," by William T. Schaefer, Jr.

DATA REDUCTION

The LaRC 2019 balance was used to measure Orbiter forces and moments at three Reynolds numbers. Data were converted to standard NASA force and moment coefficients and are presented about the moment reference center of $X_0 = 1076.7$, $Y_0 = 0$, $Z_0 = 375$ inches full scale. Data are presented in both stability and body axis systems.

Additionally, the normal force center of pressure is presented:

$$X_{cp}/l_B = \frac{X_{CG}}{l_B} - \frac{C_m(\bar{c}_w)}{C_N l_B}$$

where X_{cp} is the longitudinal distance from the inner mold line nose station ($X_0 = 238$ inches full scale) to the center of pressure.

The reference dimensions and constants utilized were as follows:

<u>Symbol</u>	<u>Definition</u>	<u>Value</u>
b_w	reference wing span	936.7 in
\bar{c}_w	reference MAC	474.8 in
l_B	reference body length	1290.0 in
S_w	reference wing area	2690 ft ²
X_{CG}	longitudinal length, nose to Moment Reference Center	838.7 in
XMRP	longitudinal length to Moment Reference Center	1076.7 in
YMRP	lateral length, plane of symmetry to Moment Reference Center	0 in
ZMRP	vertical length, FRP to Moment Reference Center	375.0 in

REMARKS

It was decided not to utilize the HC \bar{r} 09 balance at the start of the test program due to time constraints, and consequently no data were obtained at a Reynolds number of 2.2×10^6 per foot as delineated in the pretest report. In compromise, data were obtained at a Reynolds number of 1.33×10^6 per foot, which corresponds to the maximum safe loading of the LaRC 2019 balance.

At the lower end of the scale, it was found that $RN/L = 0.65 \times 10^6$ per foot was the lowest value of the parameter where there was reasonable assurance of maintaining flow.

TABLE II.

TEST: OA-90		DATA SET RUN NUMBER COLLATION SUMMARY											DATE: 4-6 MAR 74			
DATA SET IDENTIFIER	CONFIGURATION	SCHD.		PARAMETERS/VALUES RN/L X 10 ⁰ /ft									NO. OF RUNS	MACH NUMBERS		
		α	β	S_{2a}	S_{2e}	S_{2F}	S_{2B}	GAPS	0.65	1.03	1.33	10.3				
ROSC001	BASIC	A	0	0	0	0	55	U	17	14		2				
002			-5	0	0	0	55	U		15		1				
003			0	0	0	0	55	S			19	1				
004			-5	0	0	0	55	S			20	1				
005		20	B	0	0	0	55	U		23		1				
006		30	B	0	0	0	55	U		24		1				
007		A	0	0	0	0	85	U		25		1				
008			-5	0	0	0	85	U		26		1				
009			0	0	0	0	85	S			27	1				
010			-5	0	0	0	85	S			28	1				
011			0	0	0	-11.7	55	U		13		1				
012			0	0	0	+16.3	55	U		12		1				
013			0	0	10	+16.3	55	S		6	10	2				
014			-5	0	10	+16.3	55	S		7	11	2				
015			0	0	10	+16.3	55	U		8		1				
016			-5	0	10	+16.3	55	U		9		1				
017			0	0	15	+16.3	55	U	41	38	39	3				
018			0	0	15	+16.3	55	S			42	1				

13

TEST RUN NUMBERS

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

BETA GN CA CLM GBL GYN GY GL ED L/D RN/L 10

COEFFICIENTS $S_R = 0$

α OR β SCHEDULES $\alpha A = 12, 16, 20, 24, 28, 32, 36$ OUTLINE ELEVATION GAPS: S = SCALED, U = UNSCALED

DB = 0, 1, 3, 5, 7, 9 IDVAR (1) IDVAR (2) NDV

TABLE II - CONCLUDED

TEST: OA-90 DATA SET/RUN NUMBER COLLATION SUMMARY DATE: 4-6 MAR 74

DATA SET IDENTIFIER	CONFIGURATION	SCHD.		PARAMETERS/VALUES RN/L X 10 ⁶ ft									NO. OF RUNS	MACH NUMBERS		
		α	β	δ_a	δ_e	δ_{BP}	δ_{SB}	GAPS	0.65	1.03	1.33	103				
RQJ019	BASIC	A	0	0	-10	-11.7	55	U			36		1			
020			0	0	-20	-11.7	55	U			35		1			
021			0	0	-40	-11.7	55	U	32	31			2			
022			0	0	-40	-11.7	55	S				33	1			
023			-5	0	-40	-11.7	55	S				34	1			
024			0	+10L -15R	0	0	55	U			44		1			
025			0	+10L -10R	0	0	55	U			37		1			
026			0	+15L -15R	0	0	55	U			43		1			
RQJ01			0	0	0	0	55	U	47	45			2			
RQJ021			0	0	0	0	55	U			21		1			
RQJ02			-5	0	0	0	55	U			46		1			
RQJ022			-5	0	0	0	55	U			22		1			

14

TEST RUN NUMBERS

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

COEFFICIENTS $\delta_p = 0$
 OUTER ELEVATION GAPS: S = SCALED U = UNSCALED
 RN/L



TABLE III.
MODEL DIMENSIONAL DATA

MODEL COMPONENT : BODY - B₂₆

GENERAL DESCRIPTION : Configuration 140A/B Orbiter fuselage

B₂₆ is identical to B₂₄ except that the underside of the fuselage has been refaired to accept the W₁₁₆ wing.

MODEL SCALE: 0.010 MODEL DRAWING: SS-A01195

DRAWING NUMBER VL70-000143B, 00200 REVISED, -00205, -006089, -000145,
VL70-000140A, -000140B, SS-A00130

DIMENSIONS :	FULL SCALE	MODEL SCALE
Length (Body Fwd Sta X ₀ =235)	In. <u>1293.3</u>	<u>12.933</u>
Max Width (at X ₀ = 1520) - In.	<u>262.0</u>	<u>2.620</u>
Max Depth (at X ₀ = 1464) - In.	<u>250.0</u>	<u>2.500</u>
Fineness Ratio	<u>0.2636</u>	<u>0.2636</u>
Area - Ft ²	<u> </u>	<u> </u>
Max. Cross-Sectional	<u>340.88</u>	<u>0.03408</u>
Planform	<u> </u>	<u> </u>
Wetted	<u> </u>	<u> </u>
Base	<u> </u>	<u> </u>

TABLE III (CONT'D)
MODEL DIMENSIONAL DATA

MODEL COMPONENT : CANOPY - C₉

GENERAL DESCRIPTION Configuration 1/40A/B Orbiter Canopy

MODEL SCALE: 0.010 MODEL DRAWING: SS-A01195, RELEASE 3

DRAWING NUMBER VI70-000143B

DIMENSIONS :	FULL SCALE	MODEL SCALE
Length ($X_0=434.643$ to 578) - In.	<u>143.357</u>	<u>1.434</u>
Max Width (@ $X_0 = 513.127$) - In.	<u>152.412</u>	<u>1.524</u>
Max Depth (@ $X_0 = 485.0$) - In.	<u>25.000</u>	<u>0.250</u>
Fineness Ratio	<u> </u>	<u> </u>
Area	<u> </u>	<u> </u>
Max. Cross-Sectional	<u> </u>	<u> </u>
Planform	<u> </u>	<u> </u>
Wetted	<u> </u>	<u> </u>
Base	<u> </u>	<u> </u>

TABLE III (CONT'D)

MODEL COMPONENT: WING-W116

GENERAL DESCRIPTION: Configuration 140A/B Orbiter Wing. NOTE: Identical to W114 except airfoil thickness. Dihedral angle is along trailing edge of wing.

MODEL SCALE: 0.010

TEST NO.

DWG. NO. VL70-000200 REVISED,
-006089, -006092

DIMENSIONS:

FULL-SCALE

MODEL SCALE

TOTAL DATA

Area (Theo) Ft²

Planform

Span (Theo) In.

Aspect Ratio

Rate of Taper

Taper Ratio

Dihedral Angle, degrees

Incidence Angle, degrees

Aerodynamic Twist, degrees

Sweep Back Angles, degrees

Leading Edge

Trailing Edge

0.25 Element Line

Chords:

Root (Theo) B.P.O.O.

Tip, (Theo) B.P.

MAC

Fus. Sta. of .25 MAC

W.P. of .25 MAC

B.L. of .25 MAC

EXPOSED DATA

Area (Theo) Ft²

Span, (Theo) In. BP108

Aspect Ratio

Taper Ratio

Chords

Root BP108

Tip 1.00 $\frac{b}{2}$

MAC

Fus. Sta. of .25 MAC

W.P. of .25 MAC

B.L. of .25 MAC

Airfoil Section (Rockwell Mod NASA) XXXX-64

Root $\frac{T}{C}$ =

Tip $\frac{T}{C}$ =

Data for (1) of (2) Sides

Leading Edge Cuff

Planform Area Ft²

Leading Edge Intersects Fus M.L. @ Sta

Leading Edge Intersects Wing @ Sta

2690.00	0.269
936.682	9.367
2.265	2.265
1.177	1.177
0.200	0.200
3.500	3.500
0.500	0.500
+ 3.000	+ 3.000
45.000	45.000
-10.056	-10.056
35.209	35.209
689.243	6.892
137.847	1.378
474.812	4.748
1136.83	11.368
290.58	2.906
182.13	1.821
1751.5	0.1751
720.68	7.206
2.058	2.058
0.245	0.245
562.09	5.62
137.847	1.378
392.83	3.928
1185.98	11.859
294.3	2.943
251.77	2.517
0.113	0.113
0.12	0.12
113.18	0.0113
500.0	5.000
1024.0	10.24

TABLE III (CONT'D)

MODEL DIMENSIONAL DATA

MODEL COMPONENT: ALTERNATE SLOTTED ELEVON - E₃₇

GENERAL DESCRIPTION: Configuration 140A/B Orbiter Elevon

E₃₇ is a slotted version of E₂₆. Data is for one side.

MODEL SCALE: 0.010 MODEL DRAWING: SS-400147, RELEASE 12

DRAWING NUMBER: VL70-000200, -006089, -006092 and Fig. 4A of SAS/AERO/76-643

<u>DIMENSIONS:</u>	<u>FULL-SCALE</u>	<u>MODEL SCALE</u>
Area - Ft ²	<u>210.0</u>	<u>0.021</u>
Span (equivalent) - In.	<u>349.2</u>	<u>3.492</u>
Inb'd equivalent chord - In.	<u>118.004</u>	<u>1.118</u>
Outb'd equivalent chord - In.	<u>55.192</u>	<u>0.552</u>
Ratio movable surface chord/ total surface chord		
At Inb'd equiv. chord	<u>0.2096</u>	<u>0.2096</u>
At Outb'd equiv. chord	<u>0.4004</u>	<u>0.4004</u>
Sweep Back Angles, degrees		
Leading Edge	<u>0.00</u>	<u>0.00</u>
Tailing Edge	<u>- 10.056</u>	<u>- 10.056</u>
Hingeline	<u>0.00</u>	<u>0.00</u>
Area Moment (Normal to hinge line) Ft ³	<u>1587.25</u>	<u>0.0016</u>

TABLE III (CONT'D)

MODEL DIMENSIONAL DATA

MODEL COMPONENT: VERTICAL - V_B

GENERAL DESCRIPTION: Configuration 140A/B Orbiter Vertical Tail

MODEL SCALE: 0.010

MODEL DRAWING: SS-401195, RELEASE 3

DRAWING NUMBER:

VL70-000146A

DIMENSIONS:

FULL-SCALE

MODEL SCALE

TOTAL DATA

Area (Theo) - Ft²

Planform

413.253

0.04133

Span (Theo) In

315.720

3.157

Aspect Ratio

1.675

1.675

Rate of Taper

0.507

0.507

Taper Ratio

0.404

0.404

Sweep Back Angles, degrees

Leading Edge

45.000

45.000

Trailing Edge

25.947

25.947

0.25 Element Line

41.130

41.130

Chords:

Root (Theo) WP

268.500

2.685

Tip (Theo) WP

108.470

1.085

MAC

199.808

1.998

Fus. Sta. of .25 MAC

1463.50

14.635

W. P. of .25 MAC

635.522

6.352

B. L. of .25 MAC

0.00

0.00

Airfoil Section

Leading Wedge Angle Deg

10.00

10.00

Trailing Wedge Angle Deg

14.920

14.920

Leading Edge Radius

2.00

0.020

Void Area

13.17

0.0013

Blanketed Area

0.00

0.00

TABLE III (CONT'D)

MODEL DIMENSIONAL DATA

MODEL COMPONENT: RUDDER - R₅

GENERAL DESCRIPTION: Configuration 140A/B Orbiter Rudder

MODEL SCALE: 0.010 MODEL DRAWING: SS A01195, RELEASE 3

DRAWING NUMBER: VI70-000146A

<u>DIMENSIONS:</u>	<u>FULL-SCALE</u>	<u>MODEL SCALE</u>
Area - Ft ²	<u>106.38</u>	<u>0.01064</u>
Span (equivalent) - In.	<u>201.0</u>	<u>2.010</u>
Inb'd equivalent chord In.	<u>91.585</u>	<u>0.916</u>
Outb'd equivalent chord - In.	<u>50.833</u>	<u>0.508</u>
Ratio movable surface chord/ total surface chord		
At Inb'd equiv. chord	<u>0.400</u>	<u>0.400</u>
At Outb'd equiv. chord	<u>0.400</u>	<u>0.400</u>
Sweep Back Angles, degrees		
Leading Edge	<u>34.83</u>	<u>34.83</u>
Trailing Edge	<u>26.25</u>	<u>26.25</u>
Hingeline	<u>34.83</u>	<u>34.83</u>
Area Moment (normal to hinge line) Ft ³	<u>526.13</u>	<u>0.00526</u>

TABLE III (CONT'D)

MODEL DIMENSIONAL DATA

MODEL COMPONENT : OMS/RCS PODS - M

GENERAL DESCRIPTION : Configuration 140A/B Orbiter OMS/RCS pods

MODEL SCALE: 0.010

DRAWING NUMBER : VI70-000145 MODEL DRAWING: SS-A01195, RELEASE 3

DIMENSIONS	FULL SCALE	MODEL SCALE
Length (OMS Fwd Sta $X_o = 1233.0$) In.	<u>327.000</u>	<u>3.270</u>
Max Width (@ $X_o = 1450.0$) In.	<u>94.50</u>	<u>0.945</u>
Max Depth (@ $X_o = 1493.0$) - In.	<u>109.00</u>	<u>1.090</u>
Fineness Ratio	_____	_____
Area	_____	_____
Max. Cross-Sectional	_____	_____
Planform	_____	_____
Wetted	_____	_____
Base	_____	_____

TABLE III (CONT'D)

MODEL DIMENSIONAL DATA

MODEL COMPONENT: OMS NOZZLES - N₂₈

GENERAL DESCRIPTION: Configuration 140A/B Orbiter OMS Nozzles.

MODEL SCALE: 0.010

DRAWING NO.: VL70-000140A (Location), SS-A00106, RELEASE 5 (Contour)

FULL SCALE DIMENSIONS:

GIMBAL ORIGIN:	X ₀	Y ₀	Z ₀
Left Nozzle - In.	<u>1518.0</u>	<u>- 88.0</u>	<u>492.0</u>
Right Nozzle - In.	<u>1518.0</u>	<u>+ 88.0</u>	<u>492.0</u>

NULL POSITION:	<u>ΔPITCH</u>	<u>ΔYAW</u>
Left Nozzle (Null Pitch 15°49'; Yaw 12°17' OUTB'D)	<u>+ 8</u>	<u>13°17' OUTB'D</u> <u>2°30' INB'D</u>
Right Nozzle (Null Pitch 15°49'; Yaw 12°17' OUTB'D)	<u>+ 8</u>	<u>13°17' OUTB'D</u> <u>2°17' INB'D</u>

TABLE III (CONCL'D)
MODEL DIMENSIONAL DATA

MODEL COMPONENT: BODY FLAP - F₁₀

GENERAL DESCRIPTION: Vehicle 4 body flap with hingeline at X₀ = 1532,
Z₀ = 287.

MODEL SCALE: 0.010

DRAWING NUMBER: VL70-000140B, 140C
VL70-000200, 200A**

<u>DIMENSIONS:</u>	<u>FULL-SCALE</u>	<u>MODEL SCALE</u>
Area - Ft ²	<u>133.71</u>	<u>0.01337</u>
Span (equivalent) - In.	<u>255.42</u>	<u>2.554</u>
Inb'd equivalent chord - In.	<u>81.00</u>	<u>0.810</u>
Outb'd equivalent chord - In.	<u>81.00</u>	<u>0.810</u>
Ratio movable surface chord/ total surface chord		
At Inb'd equiv. chord	<u>1.00</u>	<u>1.00</u>
At Outb'd equiv. chord	<u>1.00</u>	<u>1.00</u>
Sweep Back Angles, degrees		
Leading Edge	<u>0.0</u>	<u>0.0</u>
Trailing Edge	<u>0.0</u>	<u>0.0</u>
Hingeline	<u>0.0</u>	<u>0.0</u>
Area Moment (Normal to hinge line) - Ft ³	<u>439.92</u>	<u>0.0004399</u>
**Hingeline shown on -200, -200A drawing is inconsistent with Configuration Control Drawing and should be ignored. Planform dimensions have been utilized.		
Maximum height - In.	<u>20.6</u>	<u>0.206</u>
Base Area - Ft ²	<u>36.53</u>	<u>0.003653</u>

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

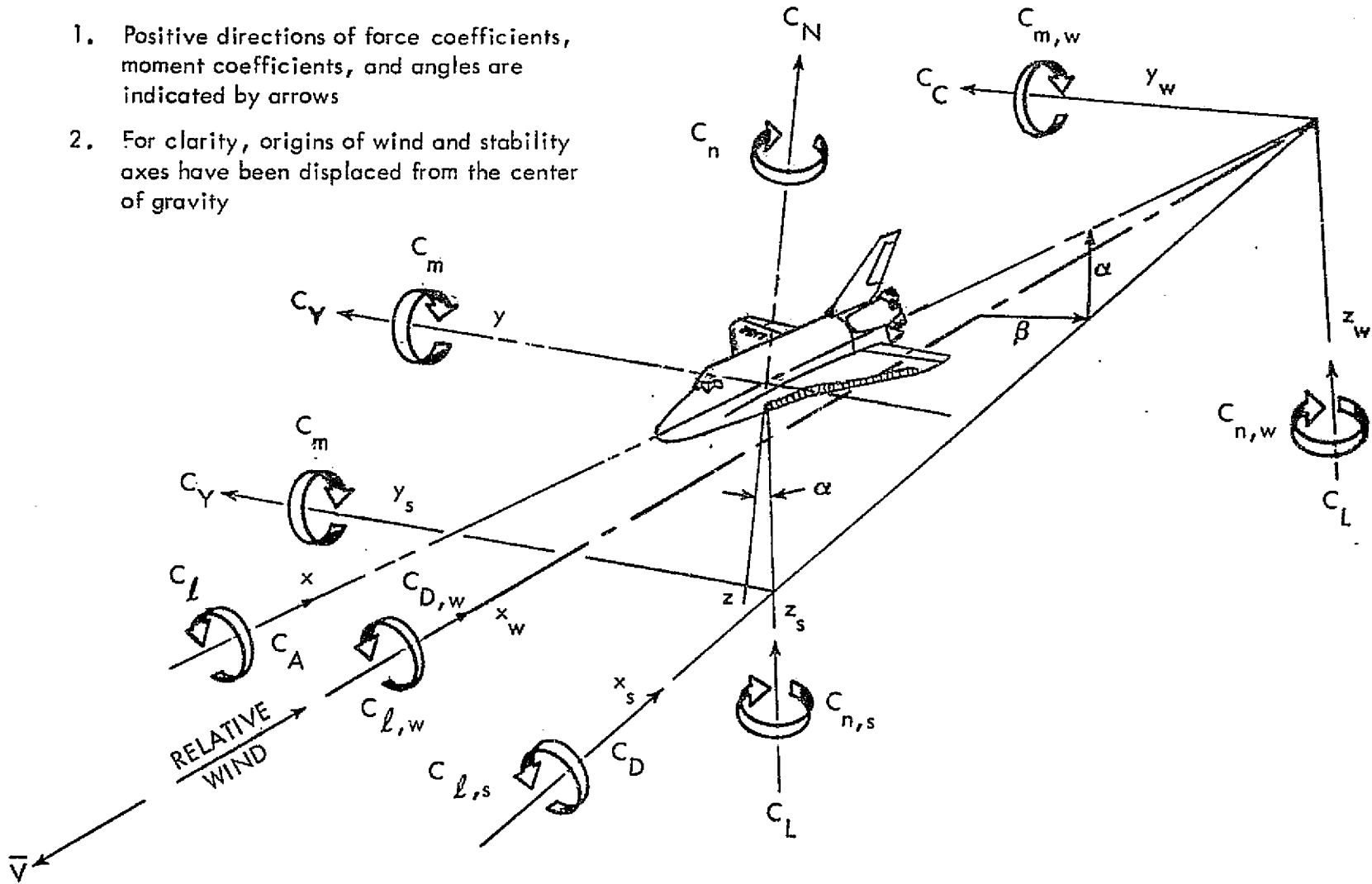


Figure 1. - Axis systems.

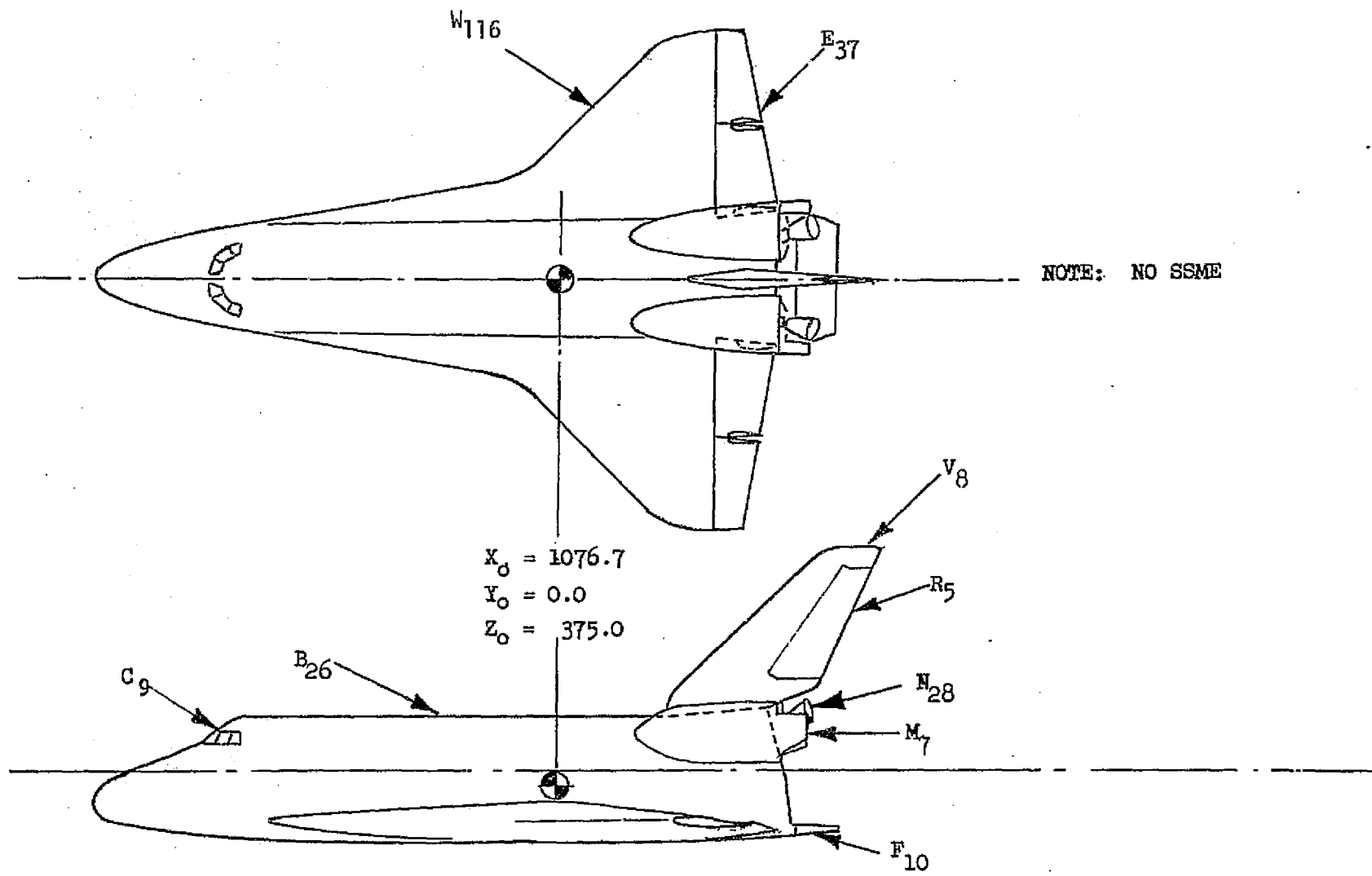
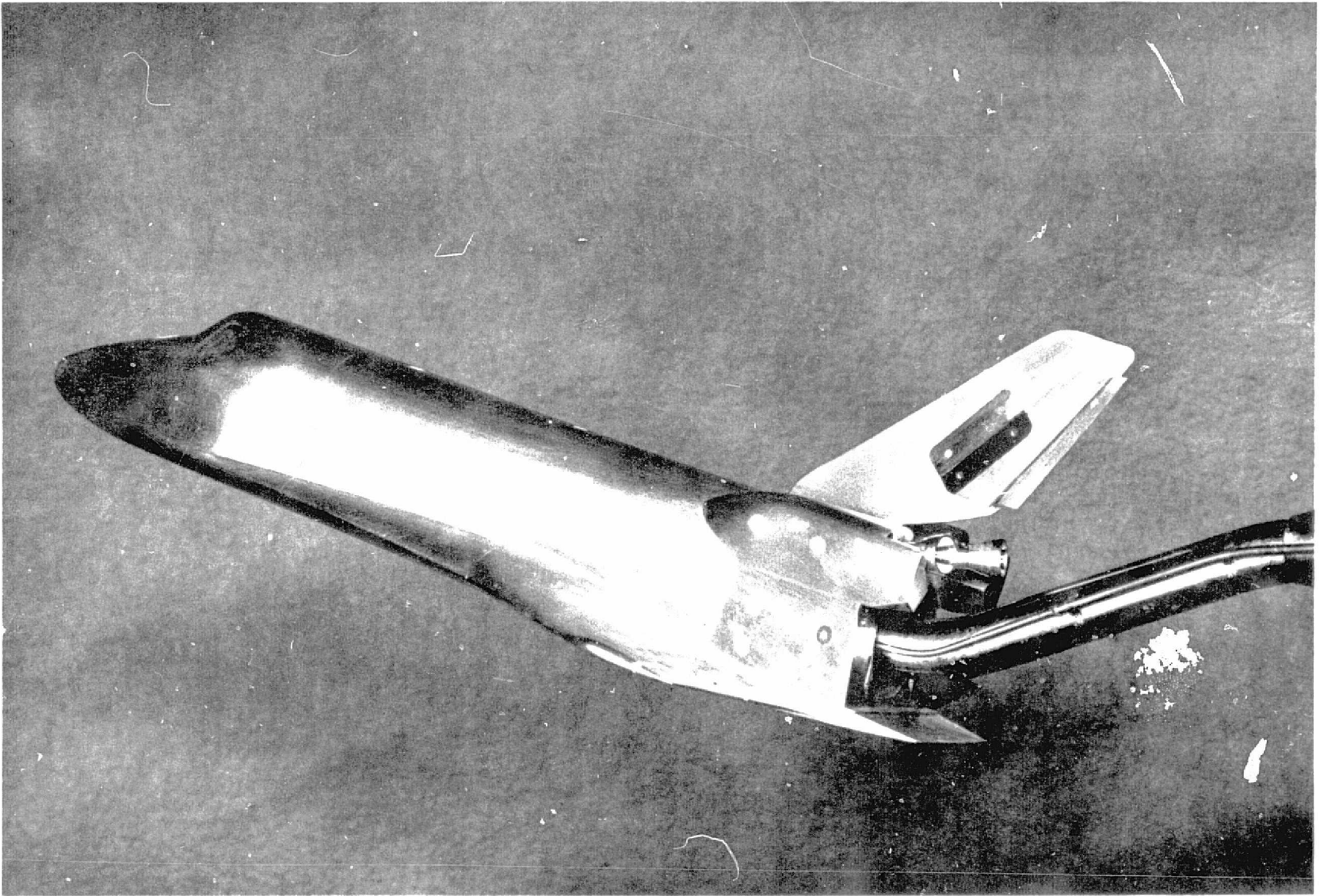
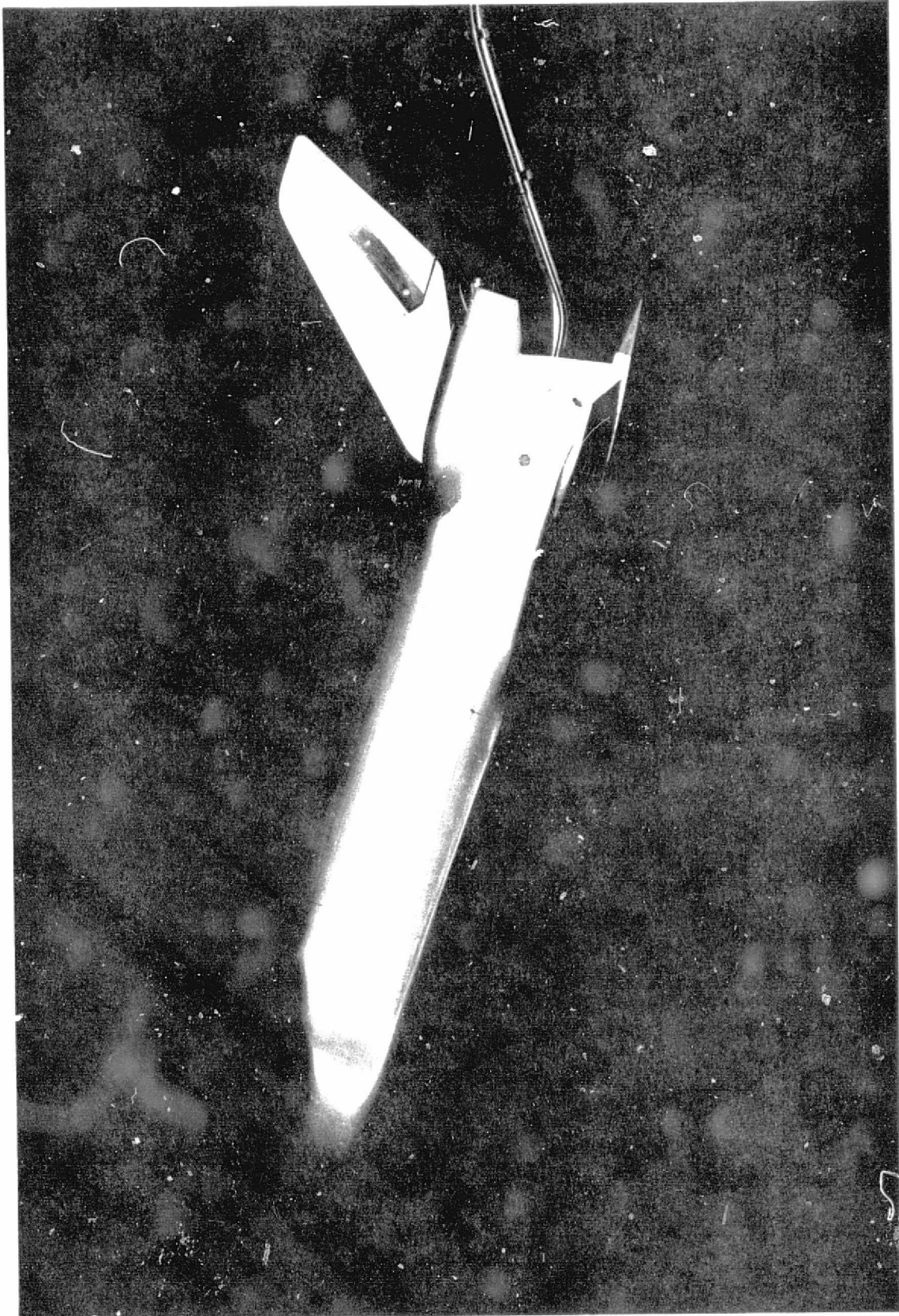


Figure 2. - 140A/B Orbiter for Test OA90.



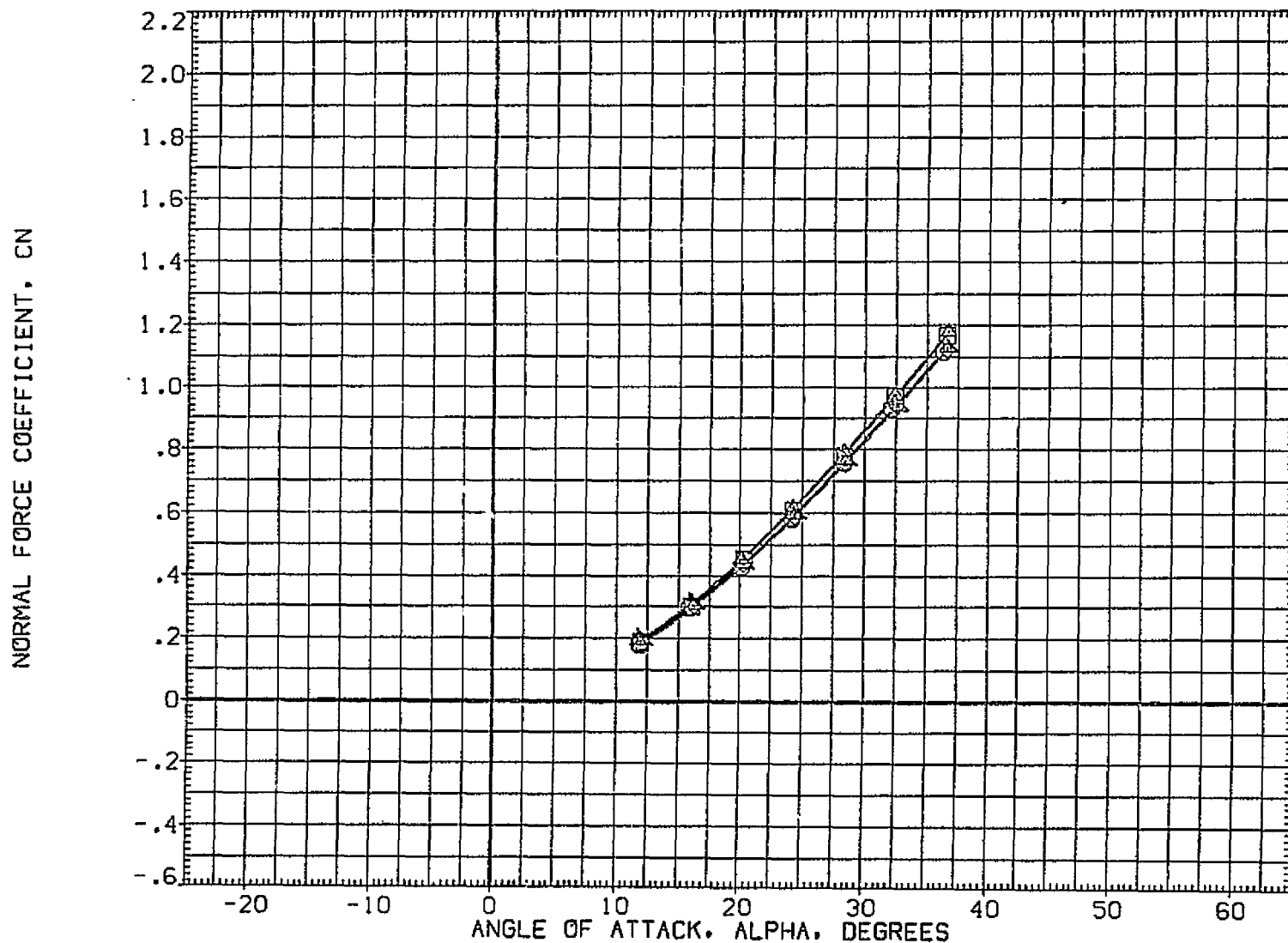
a. Top Three-quarter View
Figure 3. - Model installation photographs.



b. Side View
Figure 3. - Concluded.

DATA FIGURES

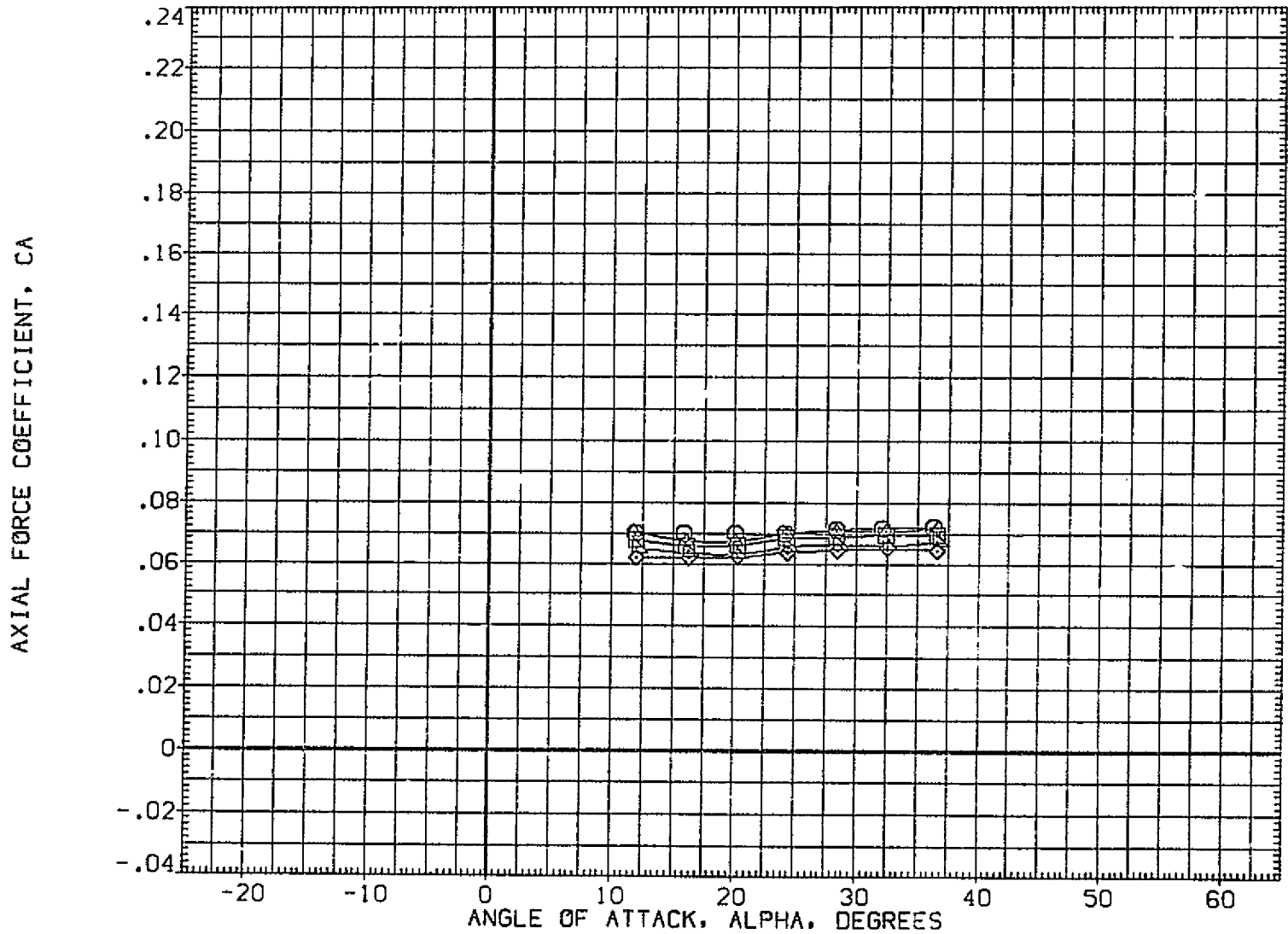
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	BETA	REFERENCE INFORMATION
(CGJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.602	.000	55.000	.000	SREF 2690.0000 SQ.FT.
(CGJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	LREF 474.8000 IN.
(CGJ003)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.245	.000	55.000	.000	BREF 936.7000 IN.
(CGJ002)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	-5.000	XMRP 1076.7000 IN. X0
(CGJ004)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.233	.000	55.000	-5.000	YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100



REYNOLDS NUMBER EFFECT AT ZERO DEGREE ELEVON DEFLECTION

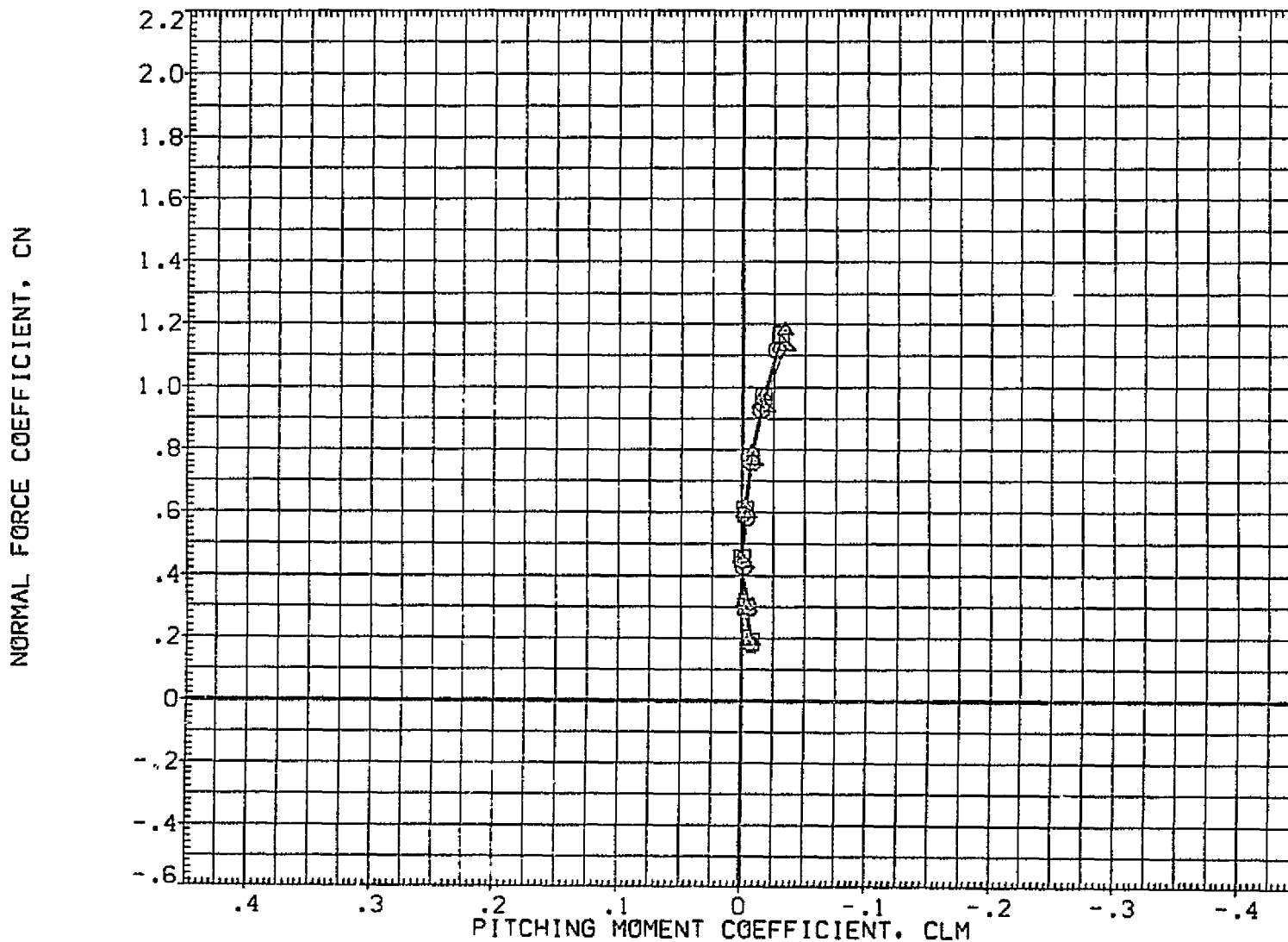
(A)MACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	BETA	REFERENCE INFORMATION
(CQJ001)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.602	.000	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ001)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	LREF 474.8000 IN.
(CQJ003)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPSEALED	1.245	.000	55.000	.000	BREF 936.7000 IN.
(CQJ002)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	-5.000	XMRP 1076.7000 IN. X0
(CQJ004)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPSEALED	1.233	.000	55.000	-5.000	YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100



REYNOLDS NUMBER EFFECT AT ZERO DEGREE ELEVON DEFLECTION
 (A)MACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPOBRK	BETA	REFERENCE INFORMATION
(CQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.602	.000	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ002)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	LREF 474.8000 IN.
(CQJ003)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	1.243	.000	55.000	.000	BREF 936.7000 IN.
(CQJ002)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	-5.000	XMRP 1076.7000 IN. X0
(CQJ004)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	1.233	.000	55.000	-5.000	YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

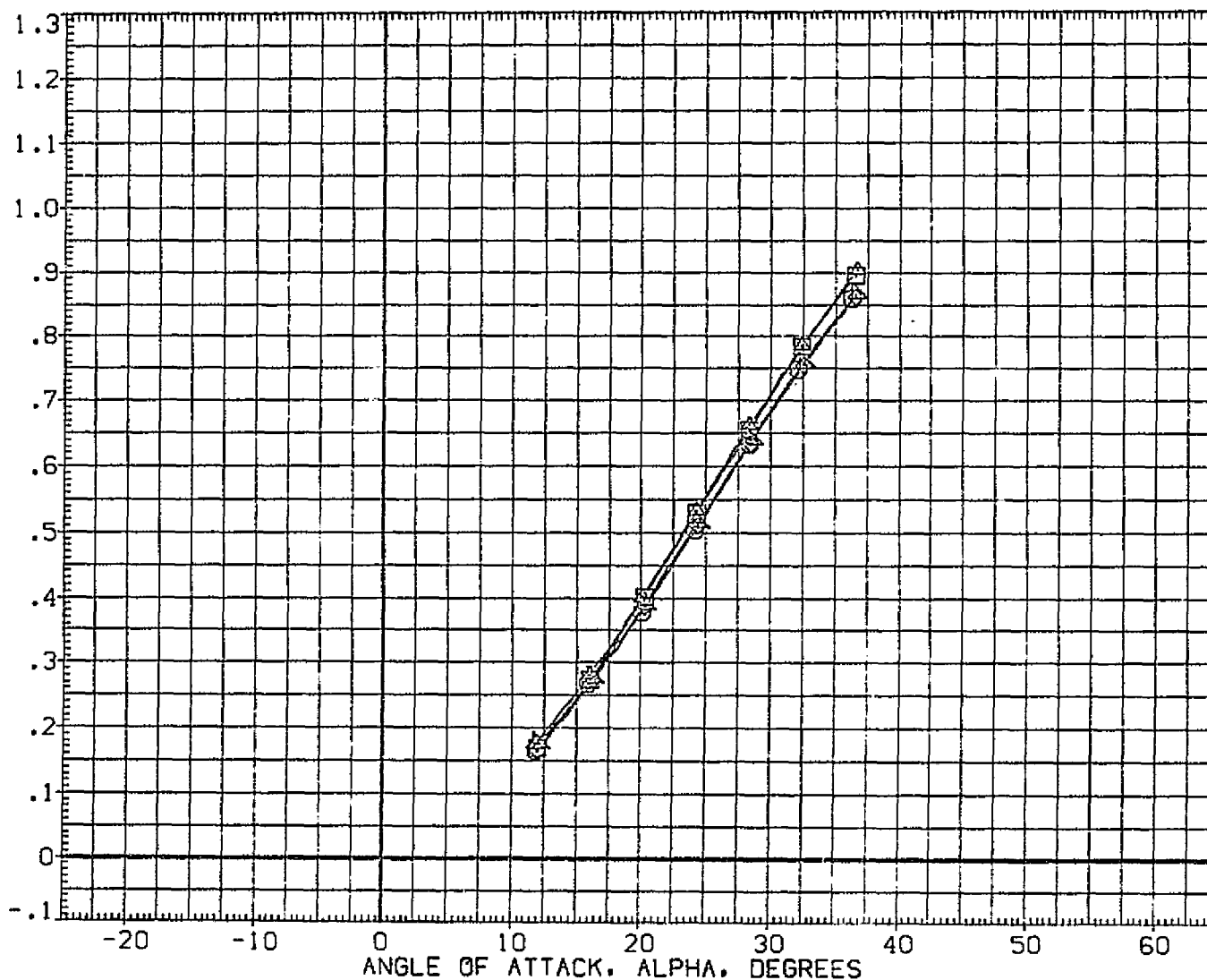


REYNOLDS NUMBER EFFECT AT ZERO DEGREE ELEVON DEFLECTION

(A)MACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	BETA	REFERENCE INFORMATION
(CQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.602	.000	55.000	.000	SREF 2690.0000 SQ. FT.
(CQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	LREF 474.8000 IN.
(CQJ003)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.245	.000	55.000	.000	BREF 936.7000 IN.
(CQJ002)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	-5.000	XMRP 1076.7000 IN. X0
(CQJ004)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.233	.000	55.000	-5.000	YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

LIFT COEFFICIENT, CL

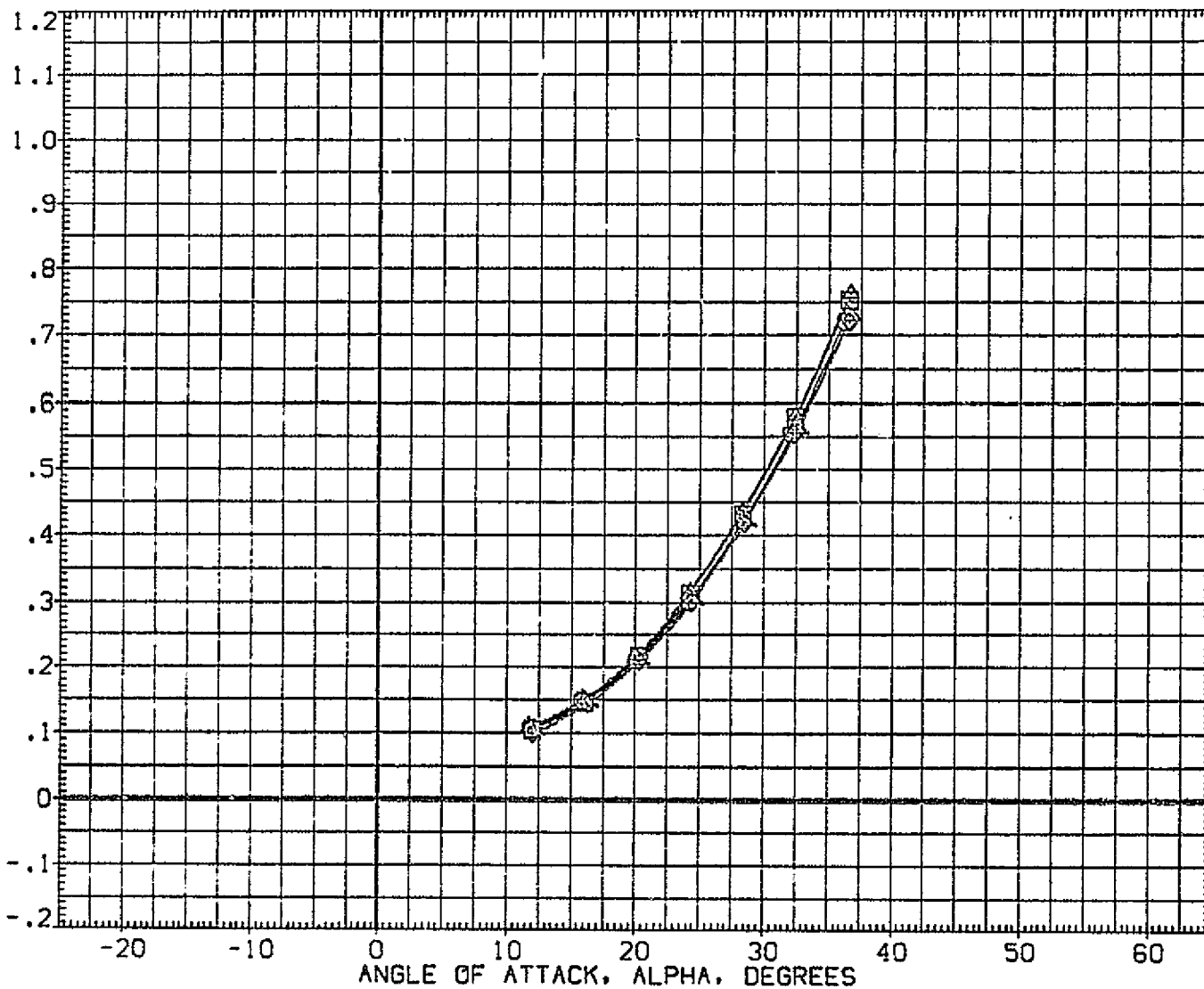


REYNOLDS NUMBER EFFECT AT ZERO DEGREE ELEVON DEFLECTION
(A)MACH = 10.31



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BOFLAP	SPDBR*	BETA	REFERENCE INFORMATION
(CQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.602	.000	55.000	.000	SREF 2690.0000 SQ.FT.
(DQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	LREF 474.8000 IN.
(CQJ003)	OA-90 CFHT-110 RI-140A/B MODEL 72-3 OTRGAPSEALED	1.245	.000	55.000	.000	BREF 936.7000 IN.
(CQJ002)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.070	-5.000	XMRP 1076.7000 IN. X0
(CQJ004)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.233	.000	55.000	-5.000	YMRP .0000 IN. Y0 ZMRP 375.0000 IN. Z0 SCALE .0100

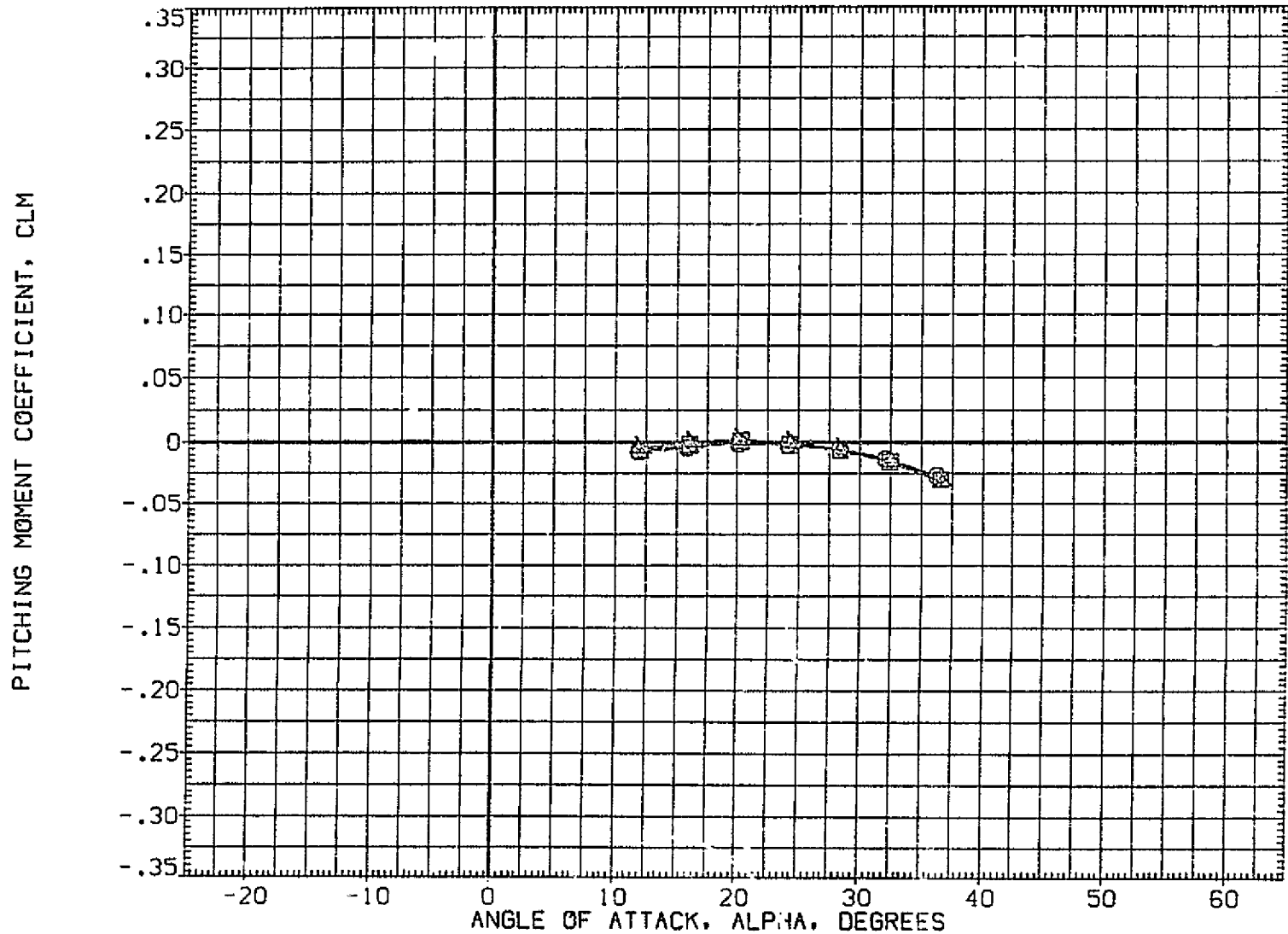
DRAG COEFFICIENT, CD



REYNOLDS NUMBER EFFECT AT ZERO DEGREE ELEVON DEFLECTION

(A)MACH = 10.31

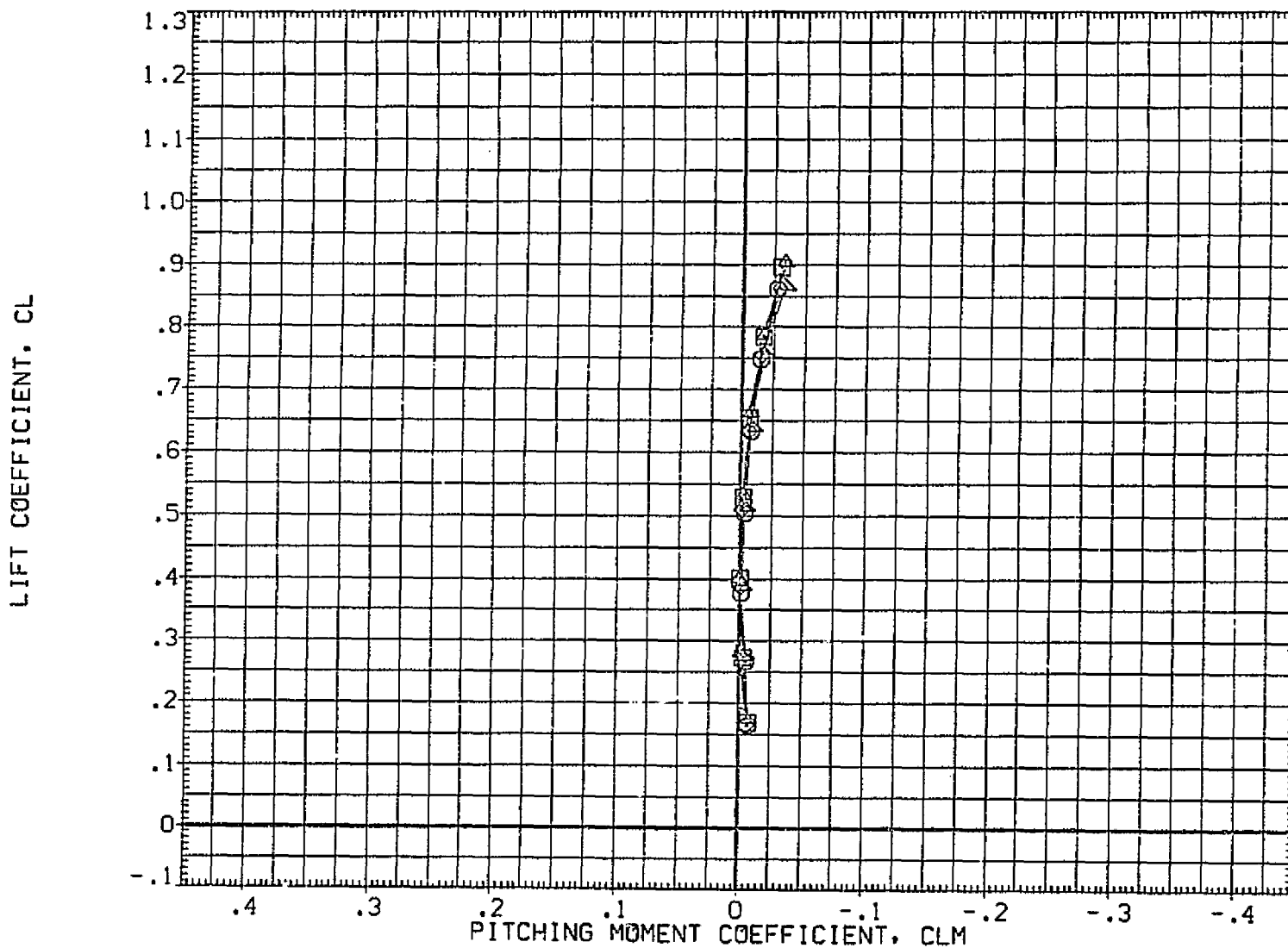
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	BETA	REFERENCE INFORMATION
(CGJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.602	.000	55.000	.000	SREF 2690.0000 SQ.FT.
(CGJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	LREF 474.8000 IN.
(CGJ003)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.2	.000	55.000	.000	BREF 936.7000 IN.
(CGJ002)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL		.000	55.000	-5.000	XMRP 1076.7000 IN. X0
(CGJ004)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1	.000	55.000	-5.000	YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100



REYNOLDS NUMBER EFFECT AT ZERO DEGREE ELEVON DEFLECTION

(A)MACH = 10.31

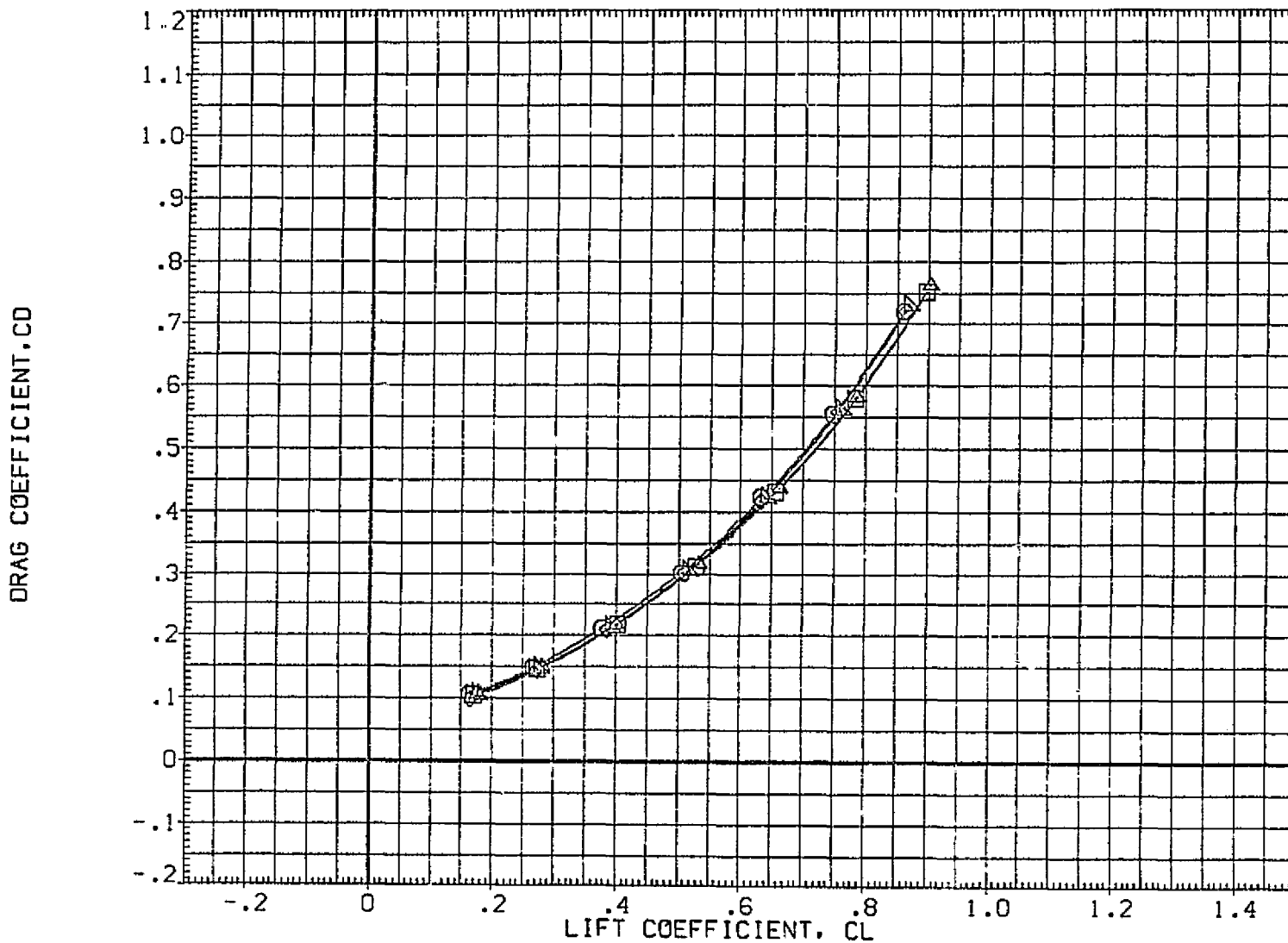
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	BETA	REFERENCE INFORMATION
(CQJ001)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.602	.000	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ001)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	LREF 474.8000 IN.
(CQJ003)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPSEALED	1.245	.000	55.000	.000	BREF 936.7000 IN.
(CQJ002)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	-5.000	XMRP 1076.7000 IN. X0
(CQJ004)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPSEALED	1.233	.000	55.000	-5.000	YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100



REYNOLDS NUMBER EFFECT AT ZERO DEGREE ELEVON DEFLECTION

(A)MACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	BETA	REFERENCE INFORMATION
(CQJ001)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.602	.000	55.000	.000	SREF 2690.0000 SQ.FT.
(DQJ001)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	LREF 474.8000 IN.
(CQJ003)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPSEALED	1.245	.000	55.000	.000	BREF 936.7000 IN.
(CQJ002)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	-5.000	XMRP 1076.7000 IN. X0
(CQJ004)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPSEALED	1.233	.000	55.000	-5.000	YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100



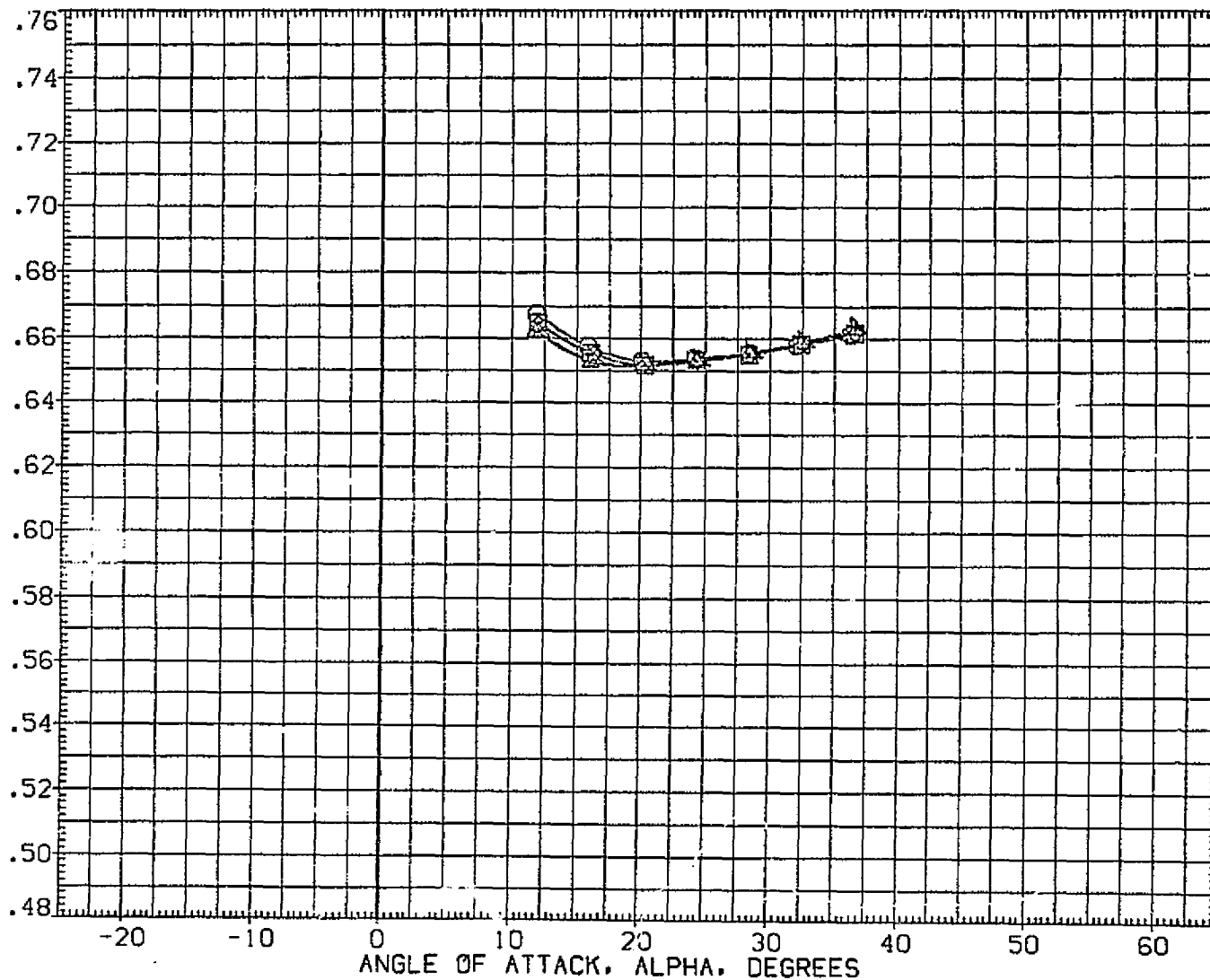
REYNOLDS NUMBER EFFECT AT ZERO DEGREE ELEVON DEFLECTION

(A)MACH = 10.31



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPOSRK	BETA	REFERENCE INFORMATION
(CQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.602	.000	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	LREF 474.8000 IN.
(CQJ003)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.245	.000	55.000	.000	BREF 936.7000 IN.
(CQJ002)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	-5.000	YMRF 1076.7000 IN. X0
(CQJ004)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.233	.000	55.000	-5.000	ZMRF .0000 IN. Y0
						SCALE .0100

CENTER OF PRESSURE LOCATION BASED ON BODY LENGTH, XCP/L

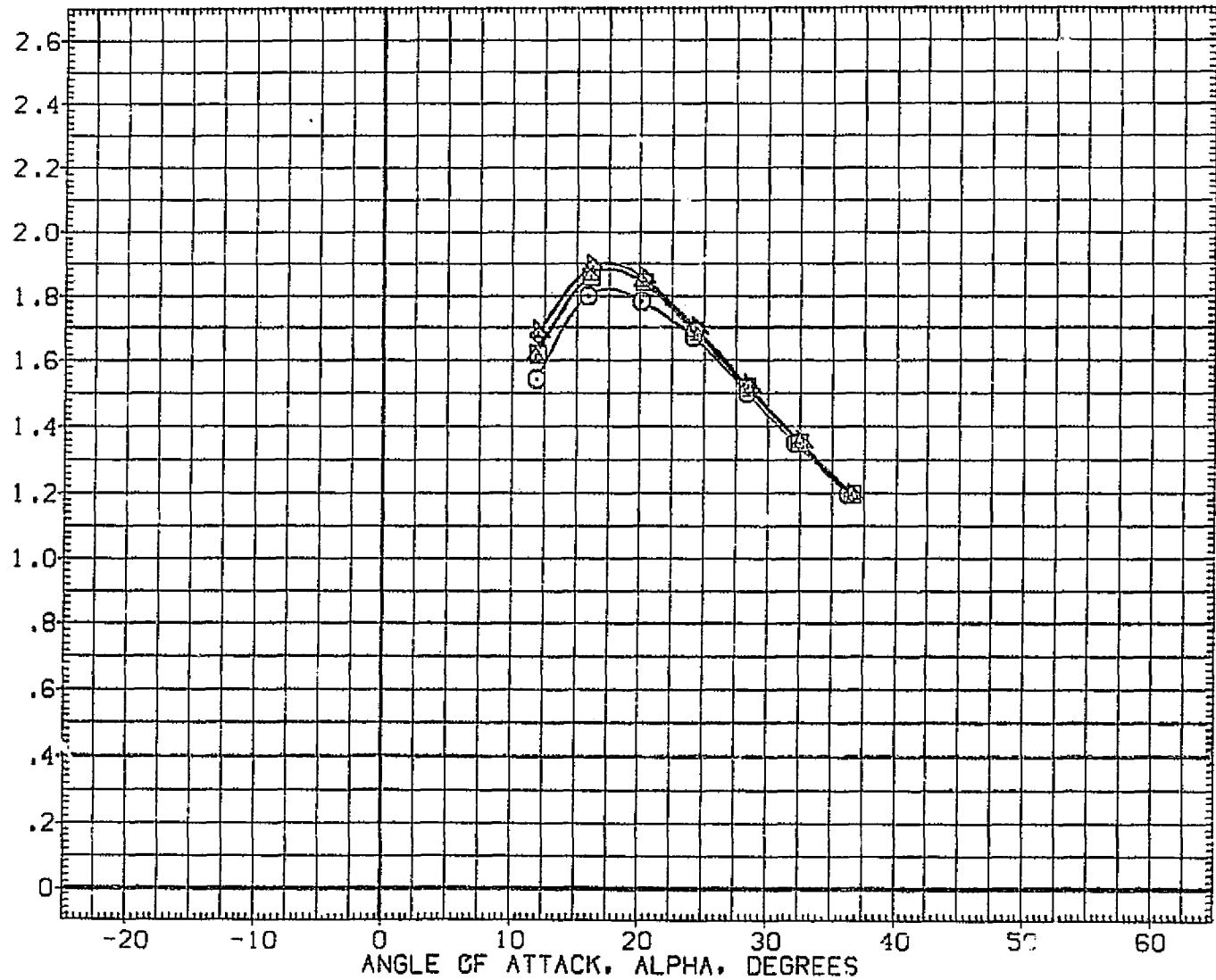


REYNOLDS NUMBER EFFECT AT ZERO DEGREE ELEVON DEFLECTION

(A)MACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BCFLAP	SPOBRK	BETA	REFERENCE INFORMATION
(CQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.602	.000	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	LREF 474.8000 IN.
(CQJ003)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.245	.000	55.000	.000	BREF 936.7000 IN.
(CQJ002)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	-5.000	YMRP 1076.7000 IN. X0
(CQJ004)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.233	.000	55.000	-5.000	ZMRP 375.0000 IN. Z0
						SCALE .0100

LIFT/DRAG RATIO, L/D

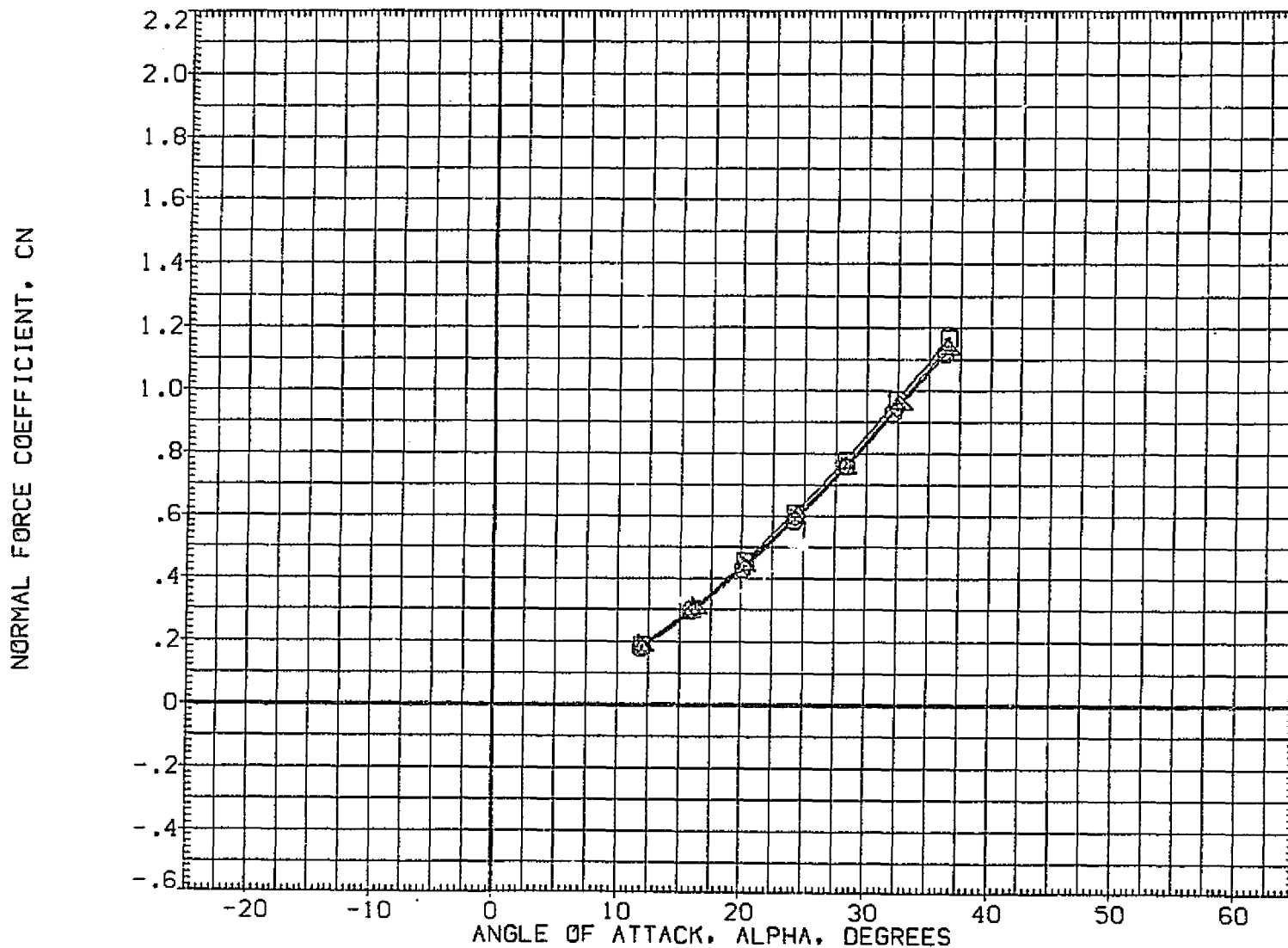


REYNOLDS NUMBER EFFECT AT ZERO DEGREE ELEVON DEFLECTION

(A)MACH = 10.31

PAGE 10

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
(CQJ001)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.602	.000	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ001)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	LREF 474.8000 IN.
(CQJRD1)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.598	.000	55.000	.000	BREF 936.7000 IN.
(CQJRD1)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.951	.000	55.000	.000	XMRP 1076.7000 IN. XC
(CQJRR1)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.950	.000	55.000	.000	YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

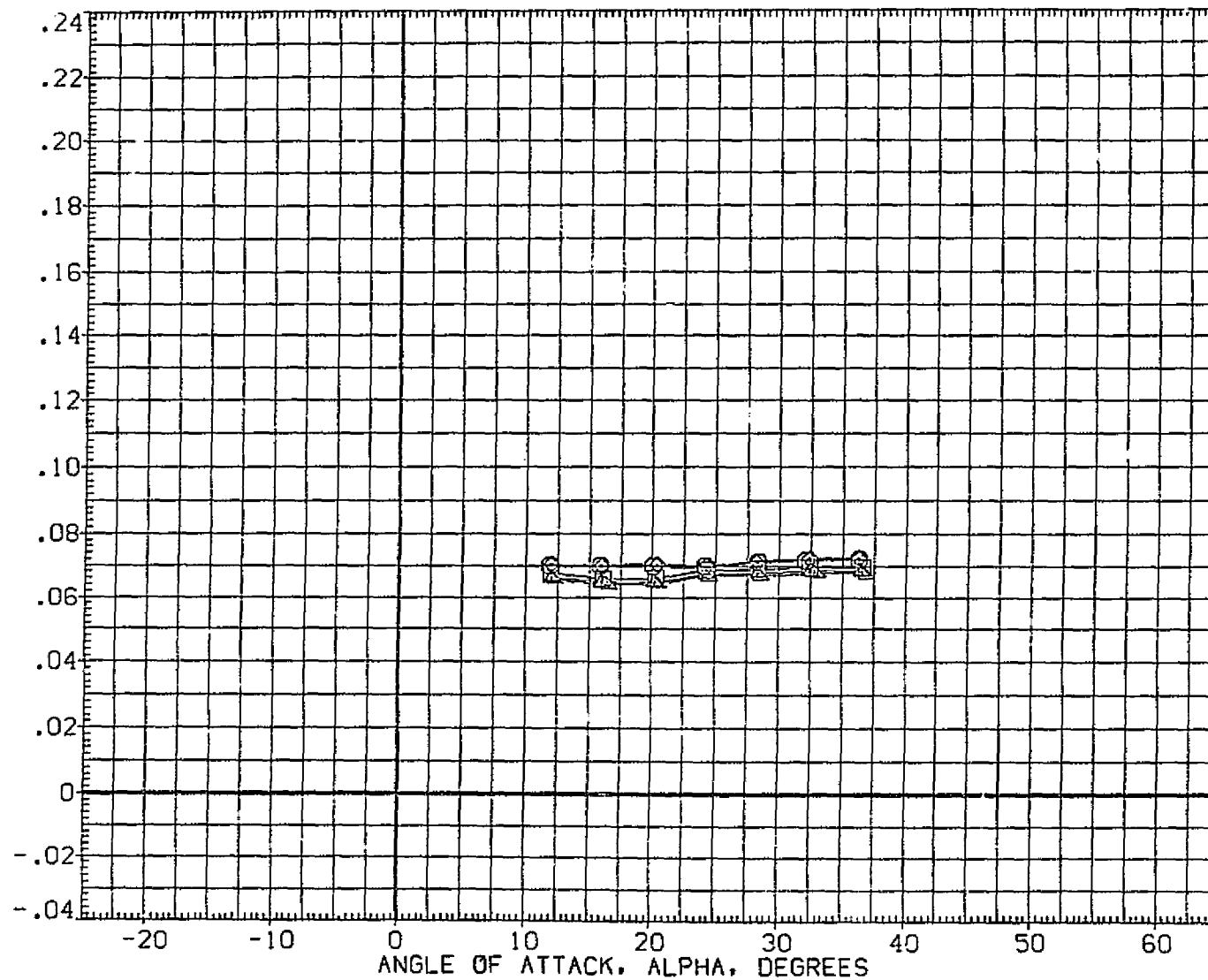


REPEATABILITY STUDY

(A)MACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
(CGJ001)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.602	.000	55.000	.000	SREF 2690.0000 SQ.FT.
(CGJ001)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	LREF 474.8000 IN.
(CGJRO1)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.598	.000	55.000	.000	BREF 936.7000 IN.
(CGJRO1)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.951	.000	55.000	.000	XMRP 1076.7000 IN. X0
(CGJRR1)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.950	.000	55.000	.000	YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

AXIAL FORCE COEFFICIENT, CA

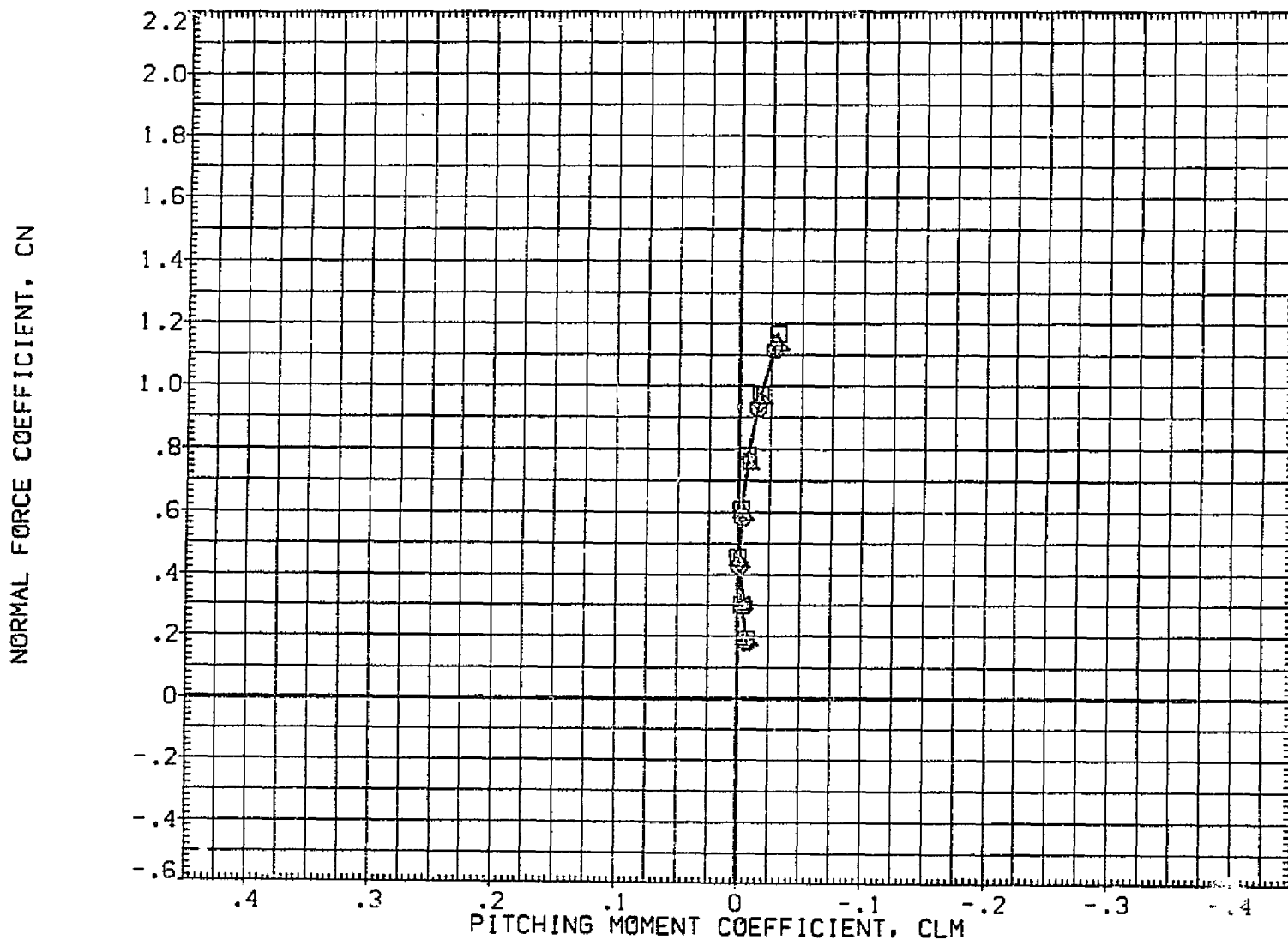


REPEATABILITY STUDY
 (A)MACH = 10.31

PAGE 12



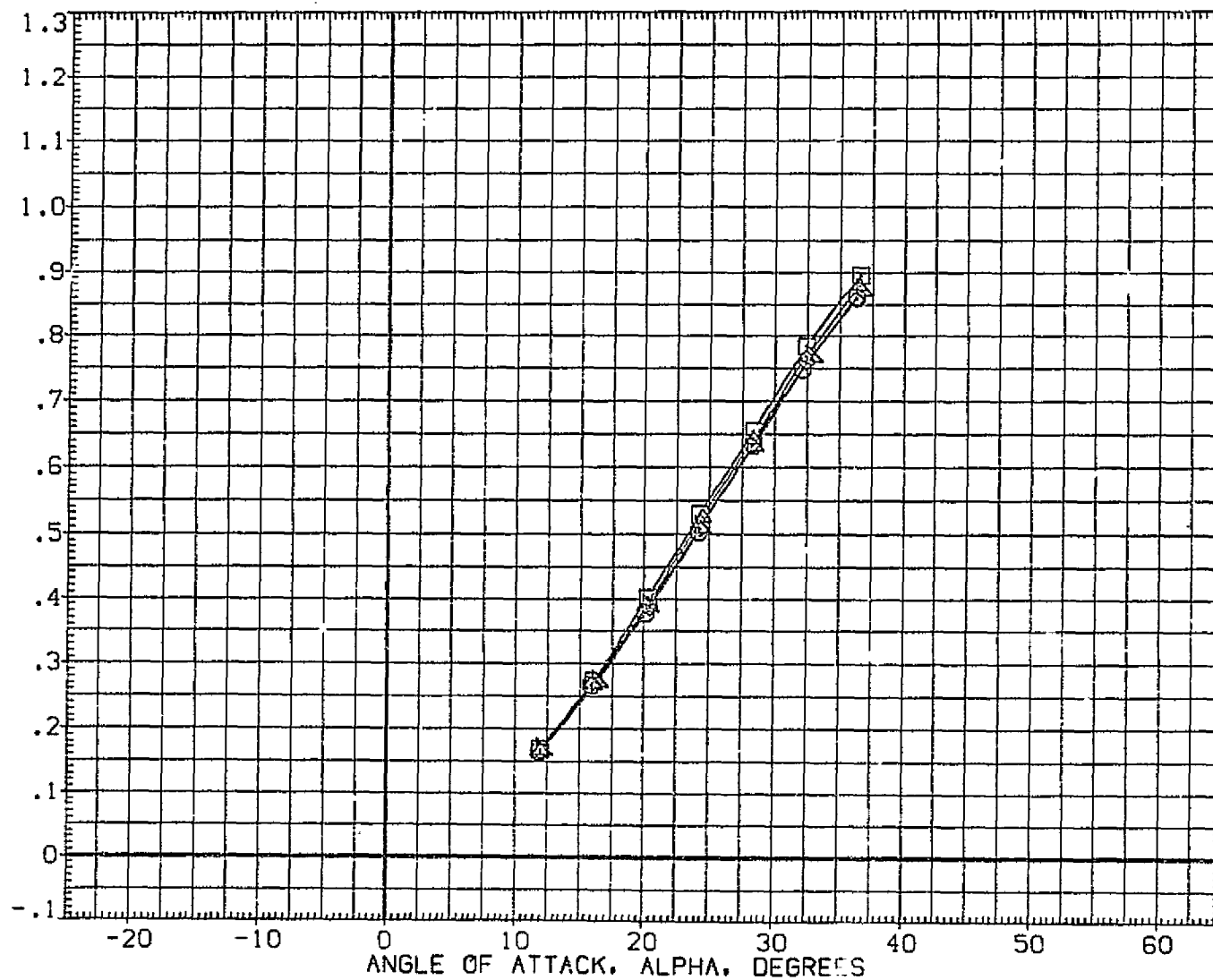
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
(CQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.602	.000	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	LREF 474.8000 IN.
(CQJRO1)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.598	.000	55.000	.000	BREF 936.7000 IN.
(CQJRO1)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.951	.000	55.000	.000	XMRP 1076.7000 IN. X0
(CQJRR1)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.950	.000	55.000	.000	YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100



REPEATABILITY STUDY
 (A)MACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
(CQJ001)	QA-90 CFHT-110 R1-140A/B MODEL 72-0 QTRGAPUNSEAL	.602	.000	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ001)	QA-90 CFHT-110 R1-140A/B MODEL 72-0 QTRGAPUNSEAL	.935	.000	55.000	.000	LREF 474.8000 IN.
(CQJ001)	QA-90 CFHT-110 R1-140A/B MODEL 72-0 QTRGAPUNSEAL	.598	.000	55.000	.000	BREF 936.7000 IN.
(CQJ001)	QA-90 CFHT-110 R1-140A/B MODEL 72-0 QTRGAPUNSEAL	.951	.000	55.000	.000	XMRP 1076.7000 IN. X0
(CQJRR1)	QA-90 CFHT-110 R1-140A/B MODEL 72-0 QTRGAPUNSEAL	.950	.000	55.000	.000	YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

LIFT COEFFICIENT, CL

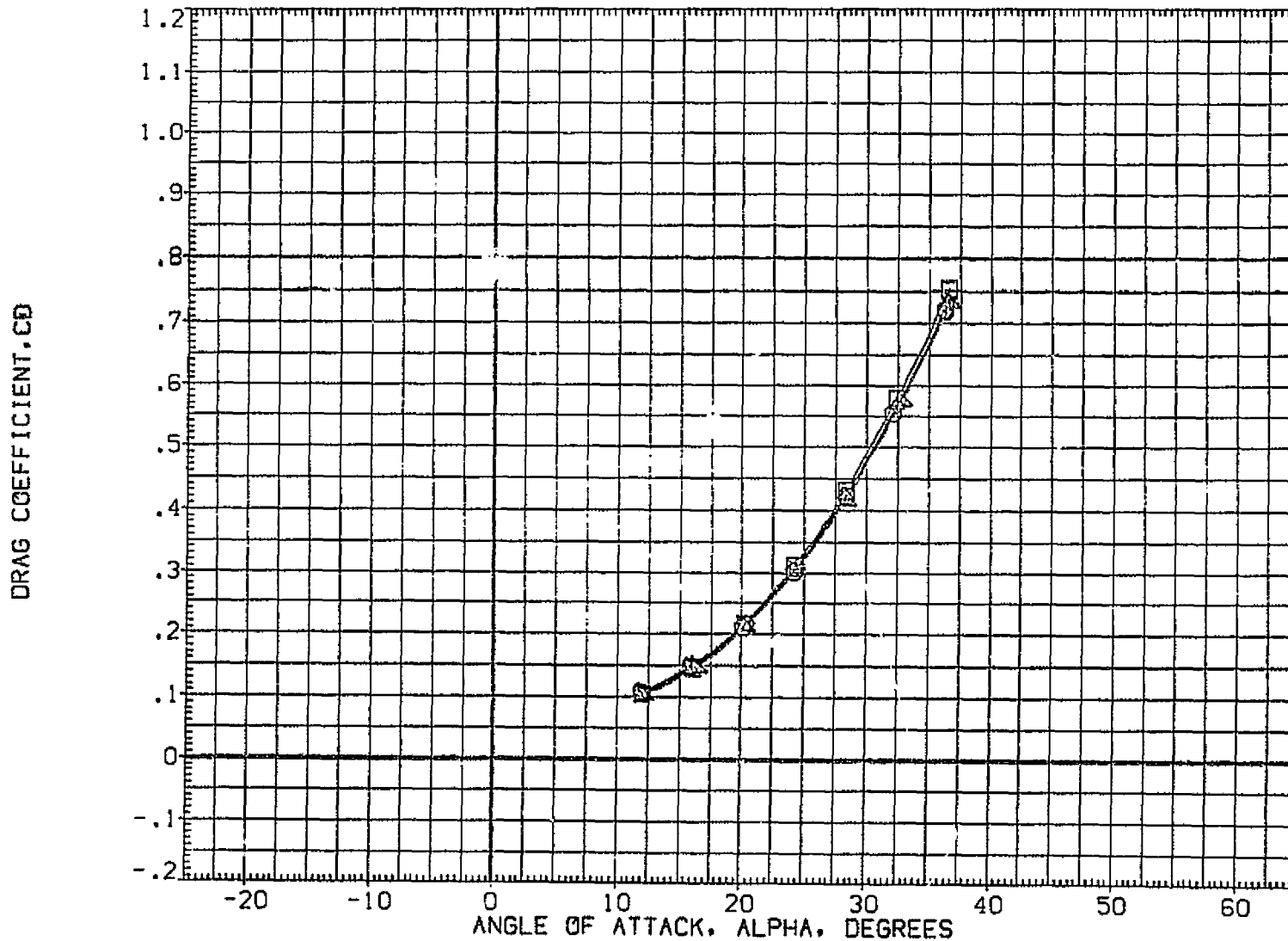


REPEATABILITY STUDY

(A)MACH = 10.31

PAGE 14

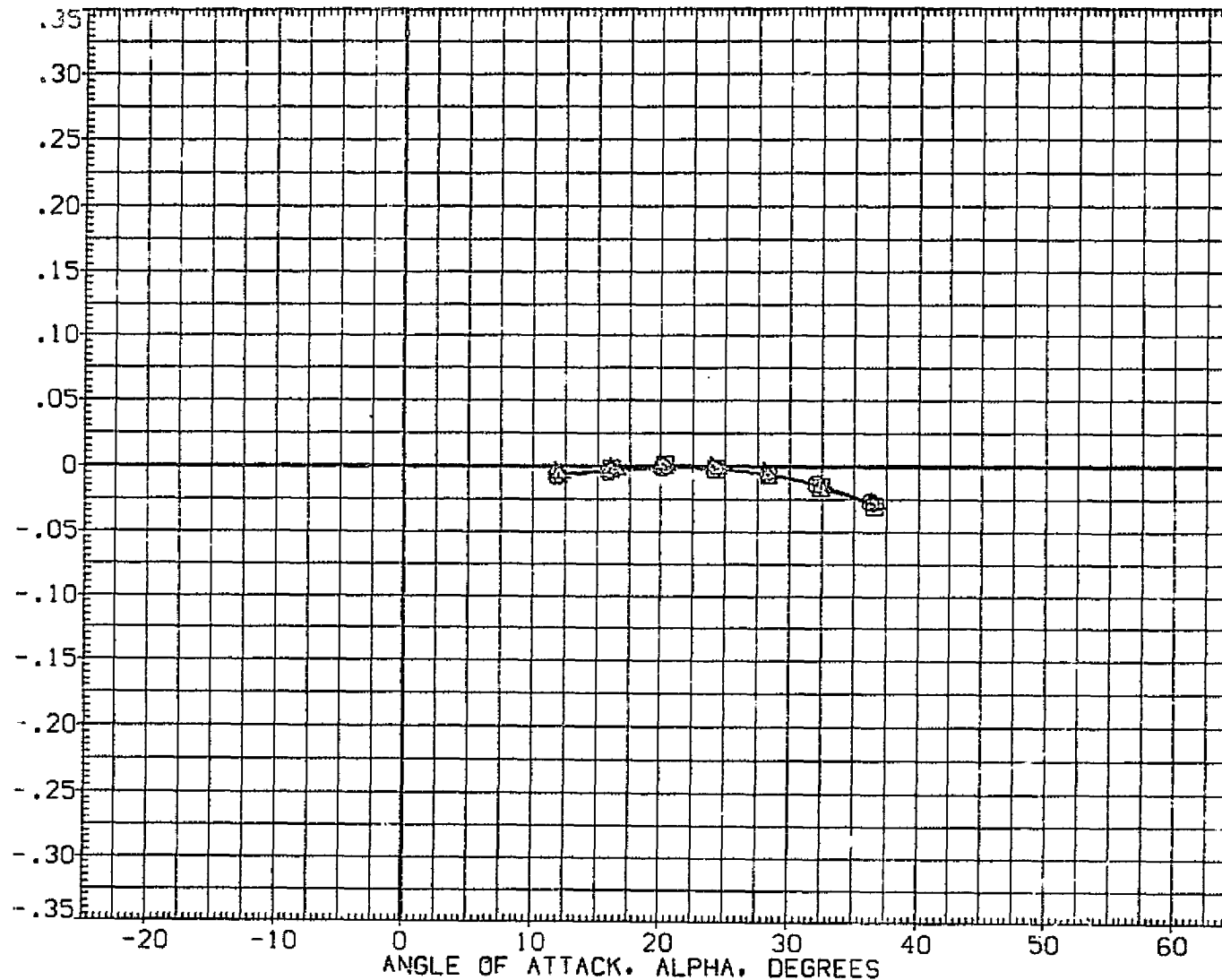
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
(CQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 QTRGAPUNSEAL	.602	.000	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 QTRGAPUNSEAL	.935	.000	55.000	.000	LREF 474.8000 IN.
(CQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 QTRGAPUNSEAL	.598	.000	55.000	.000	BREF 936.7000 IN.
(CQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 QTRGAPUNSEAL	.951	.000	55.000	.000	XMRP 1076.7000 IN. X0
(CQJRR1)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 QTRGAPUNSEAL	.950	.000	55.000	.000	YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100



REPEATABILITY STUDY
 (A)MACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
(CQJ001)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.602	.000	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ001)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	LREF 474.8000 IN.
(CQJ001)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.598	.000	55.000	.000	BREF 936.7000 IN.
(CQJ001)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.951	.000	55.000	.000	YMRP 1076.7000 IN. X0
(CQJRR1)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.950	.000	55.000	.000	ZMRP .0000 IN. Y0
						SCALE .0100

PITCHING MOMENT COEFFICIENT, CLM

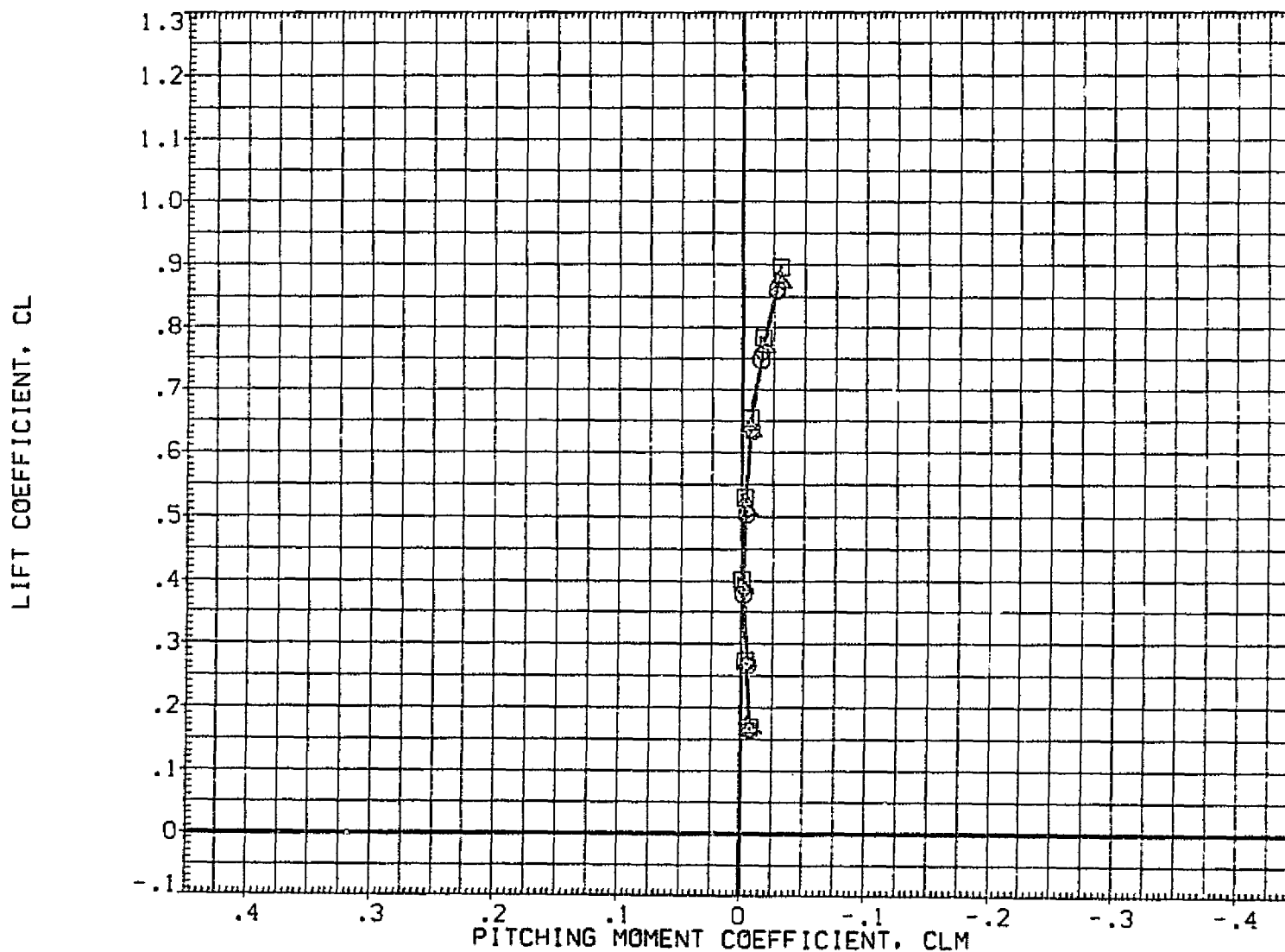


REPEATABILITY STUDY

(A)MACH = 10.31

PAGE 16

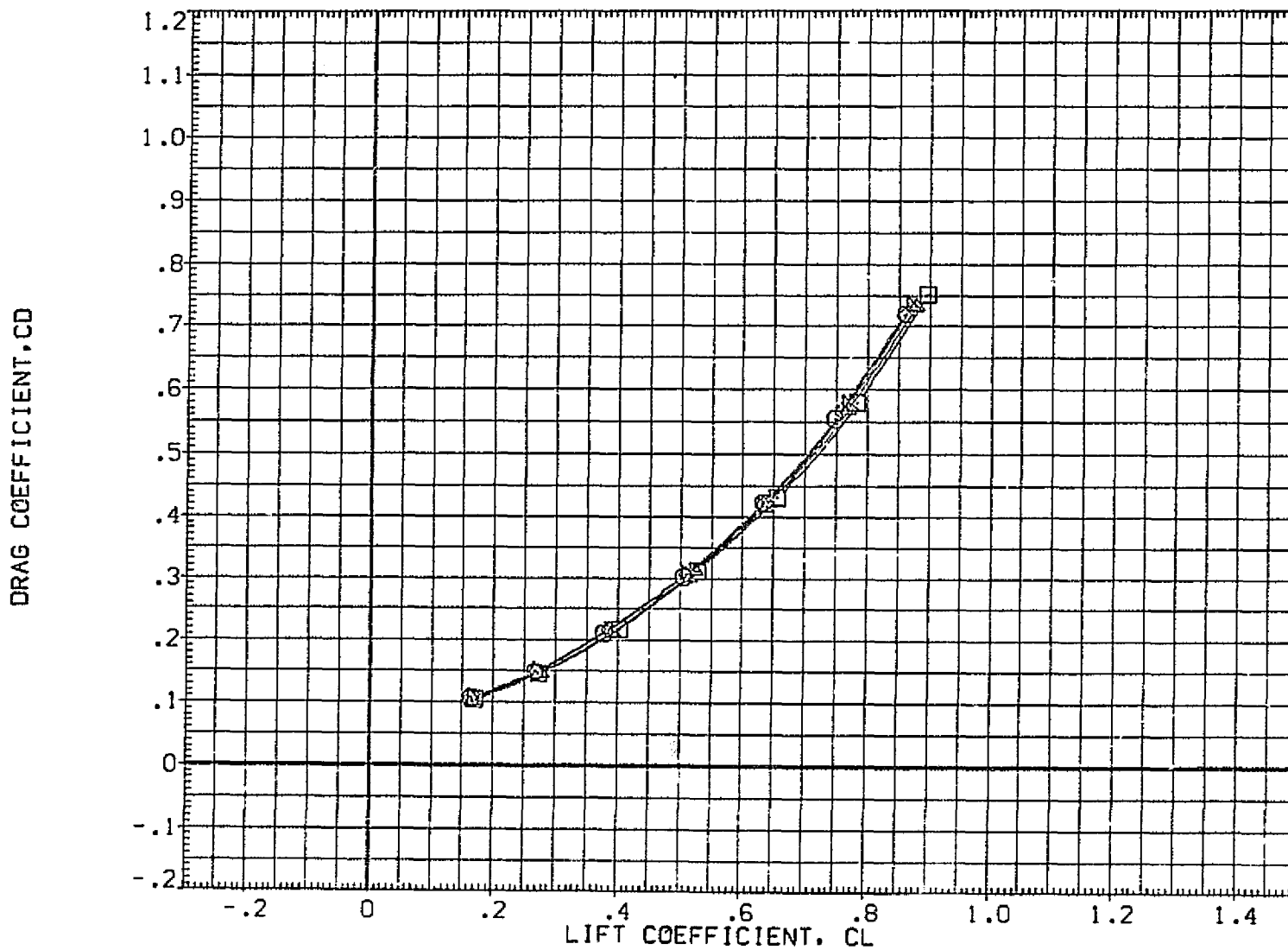
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
(CQJ001)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.602	.000	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ001)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	LREF 474.8000 IN.
(CQJRO1)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.598	.000	55.000	.000	BREF 936.7000 IN.
(CQJRO1)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.951	.000	55.000	.000	XMRP 1076.7000 IN. X0
(CQJRR1)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.950	.000	55.000	.000	YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100



REPEATABILITY STUDY

(A)MACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDRK	ELEVTR	REFERENCE INFORMATION
(CQJ001)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.602	.0C	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ001)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	LREF 474.8000 IN.
(CQJRD1)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.598	.000	55.000	.000	BREF 936.7000 IN.
(CQJRD1)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.951	.000	55.000	.000	XMRP 1076.7000 IN. X0
(CQJRR1)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.950	.000	55.000	.000	YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100



REPEATABILITY STUDY

(A)MACH = 10.31

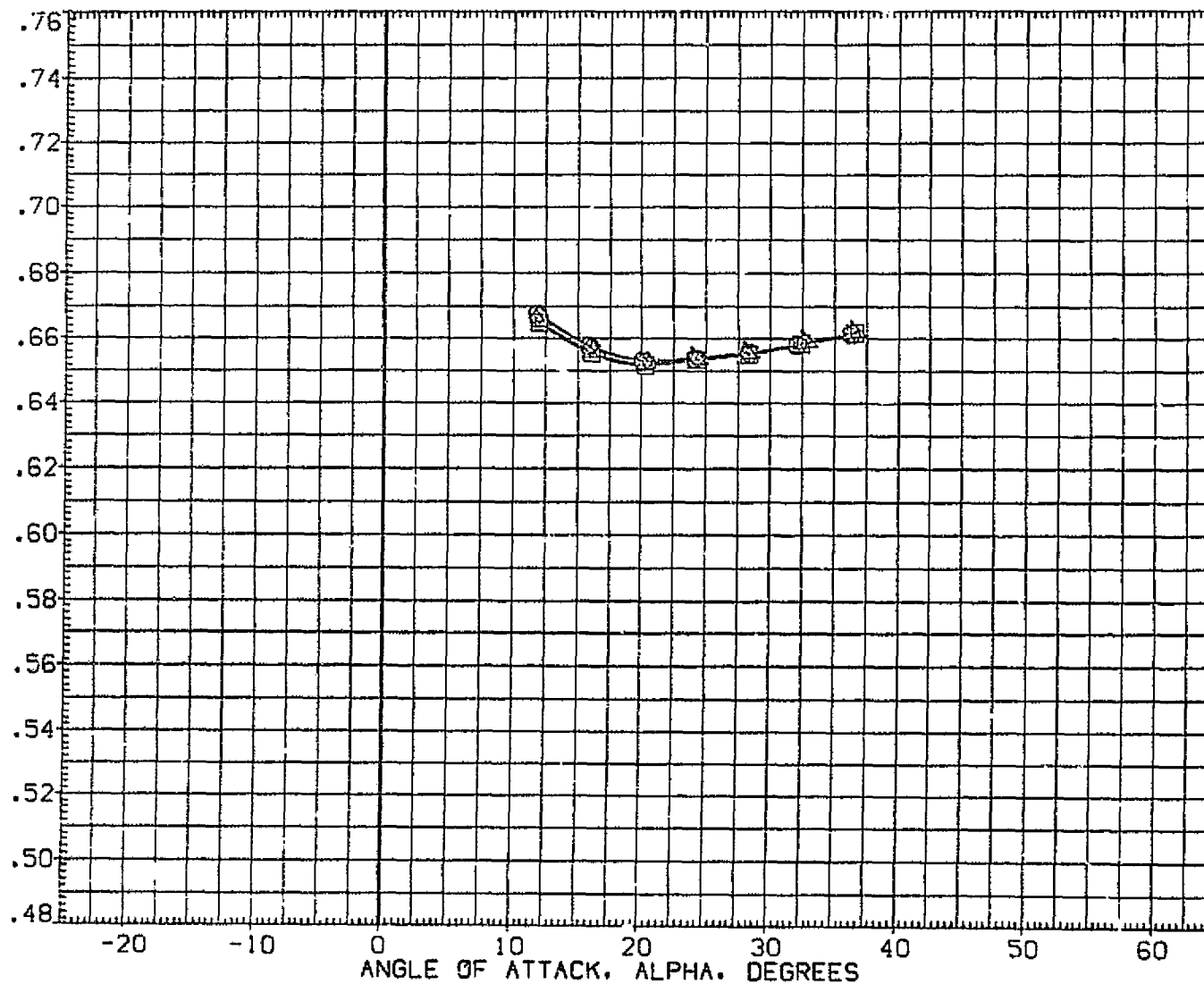
PAGE

18



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPOBRK	ELEVTR	REFERENCE INFORMATION
(CQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.602	.000	55.000	.000	SREF 2690.0000 SG.FT.
(CQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	LREF 474.8000 IN.
(CQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.988	.000	55.000	.000	SREF 936.7000 IN.
(CQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.951	.000	55.000	.000	XMRP 1076.7000 IN. XC
(CQJRR1)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.950	.000	55.000	.000	YMRP .0000 IN. YC
						ZMRP 375.0000 IN. ZC
						SCALE .0100

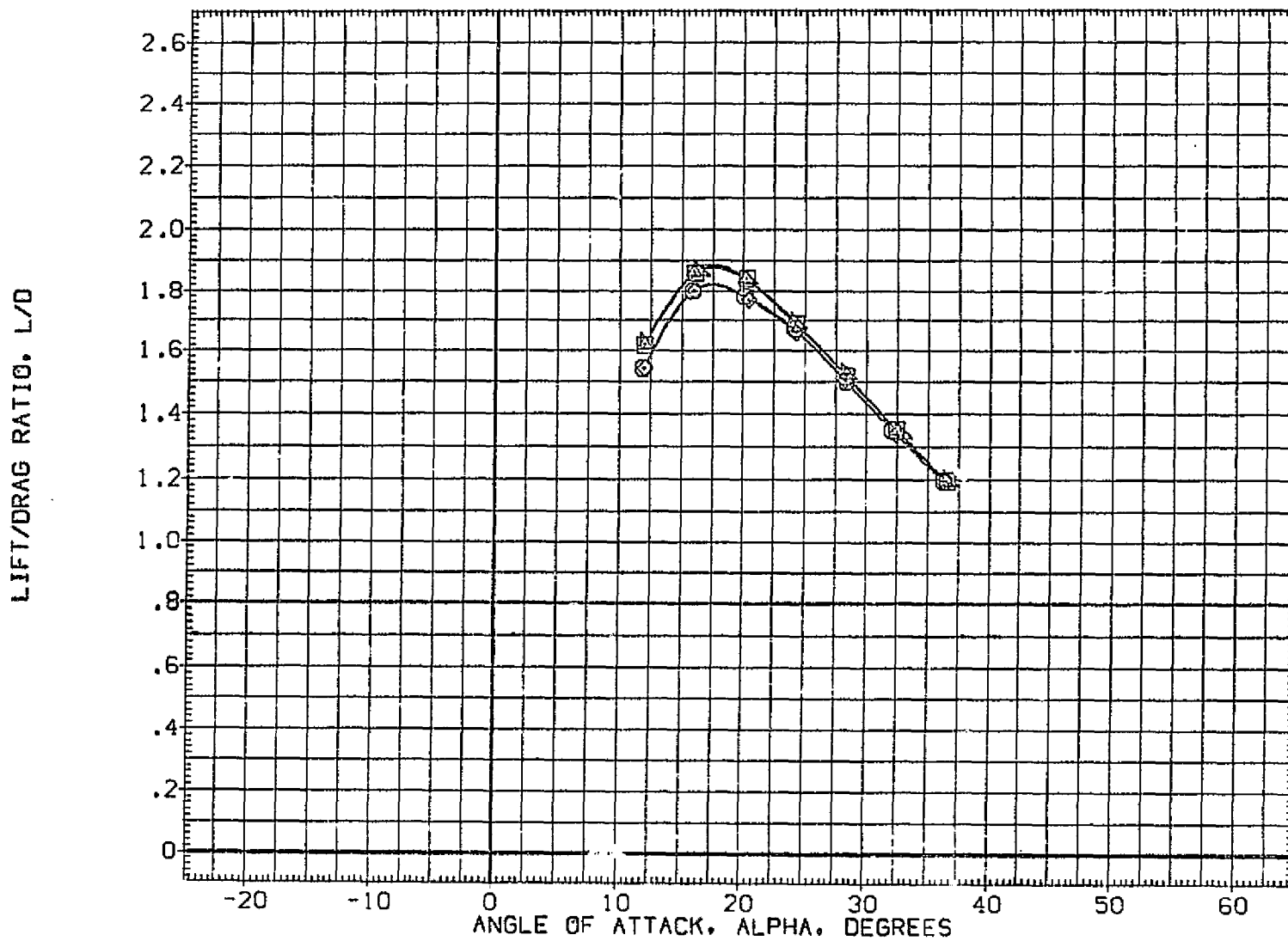
CENTER OF PRESSURE LOCATION BASED ON BODY LENGTH, XCP/L



REPEATABILITY STUDY

(A)MACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BOFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
(CQJ001)	0A-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.602	.000	55.000	.000	SREF 2690.0000 SJ.FT.
(CQJ001)	0A-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	LREF 474.8000 IN.
(CQJ001)	0A-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.598	.000	55.000	.000	BREF 536.7000 IN.
(CQJ001)	0A-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.951	.000	55.000	.000	XMRP 1076.7000 IN. X0
(CQJ001)	0A-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.950	.000	55.000	.000	YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100



REPEATABILITY STUDY

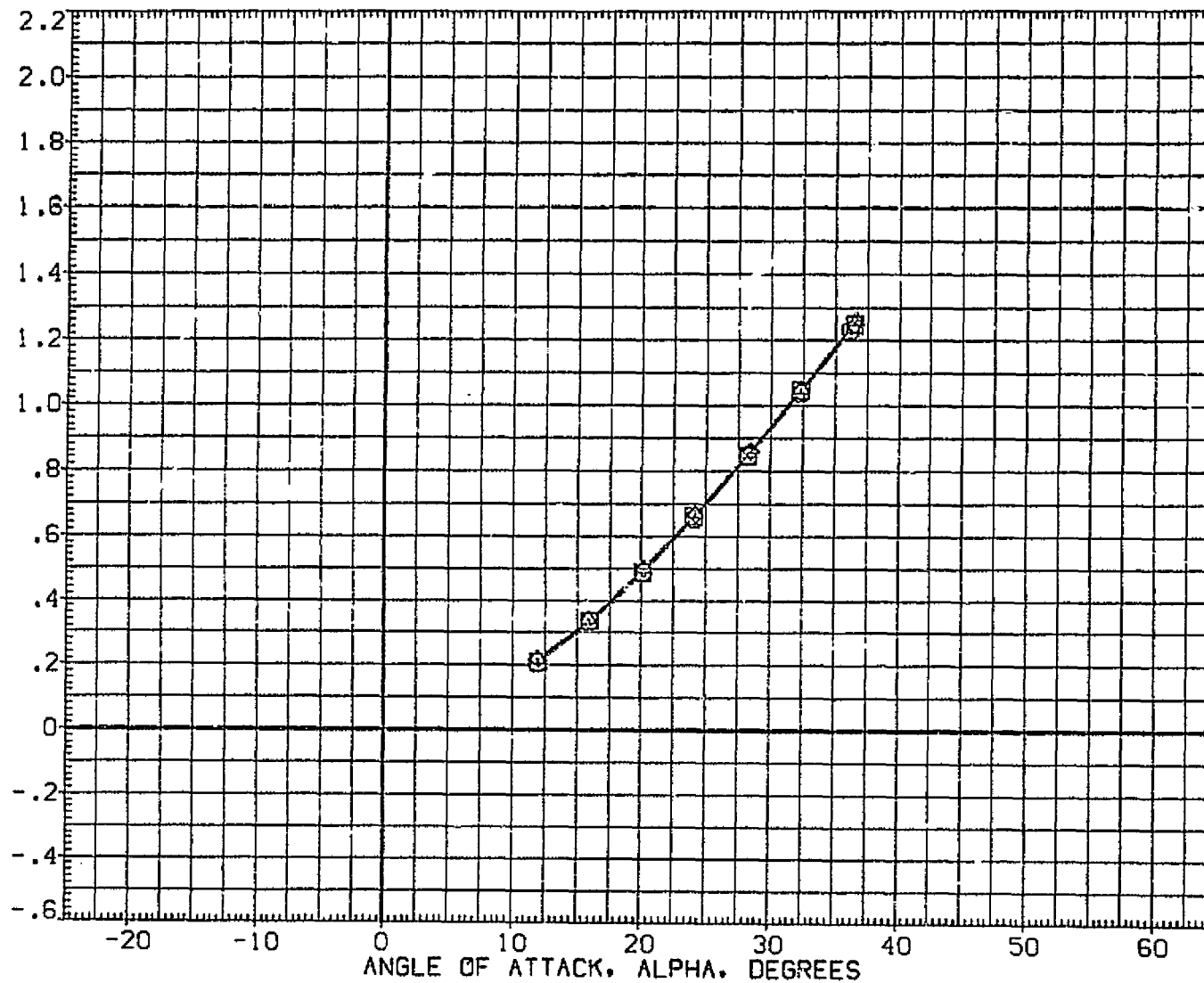
(A)MACH = 10.31

PAGE 20



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	ELEVTR	BETA	REFERENCE INFORMATION
(CQJ013)	○ 0A-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	10.000	.000	SREF 2690.0000 SQ. FT.
(CQJ015)	□ 0A-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	10.000	.000	LREF +74.8000 IN.
(CQJ014)	△ 0A-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	10.000	-5.000	BREF 936.7000 IN.
(CQJ016)	△ 0A-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	10.000	-5.000	XMRP 1076.7000 IN. X0 YMRP .0000 IN. Y0 ZMRP 375.0000 IN. Z0 SCALE .0100

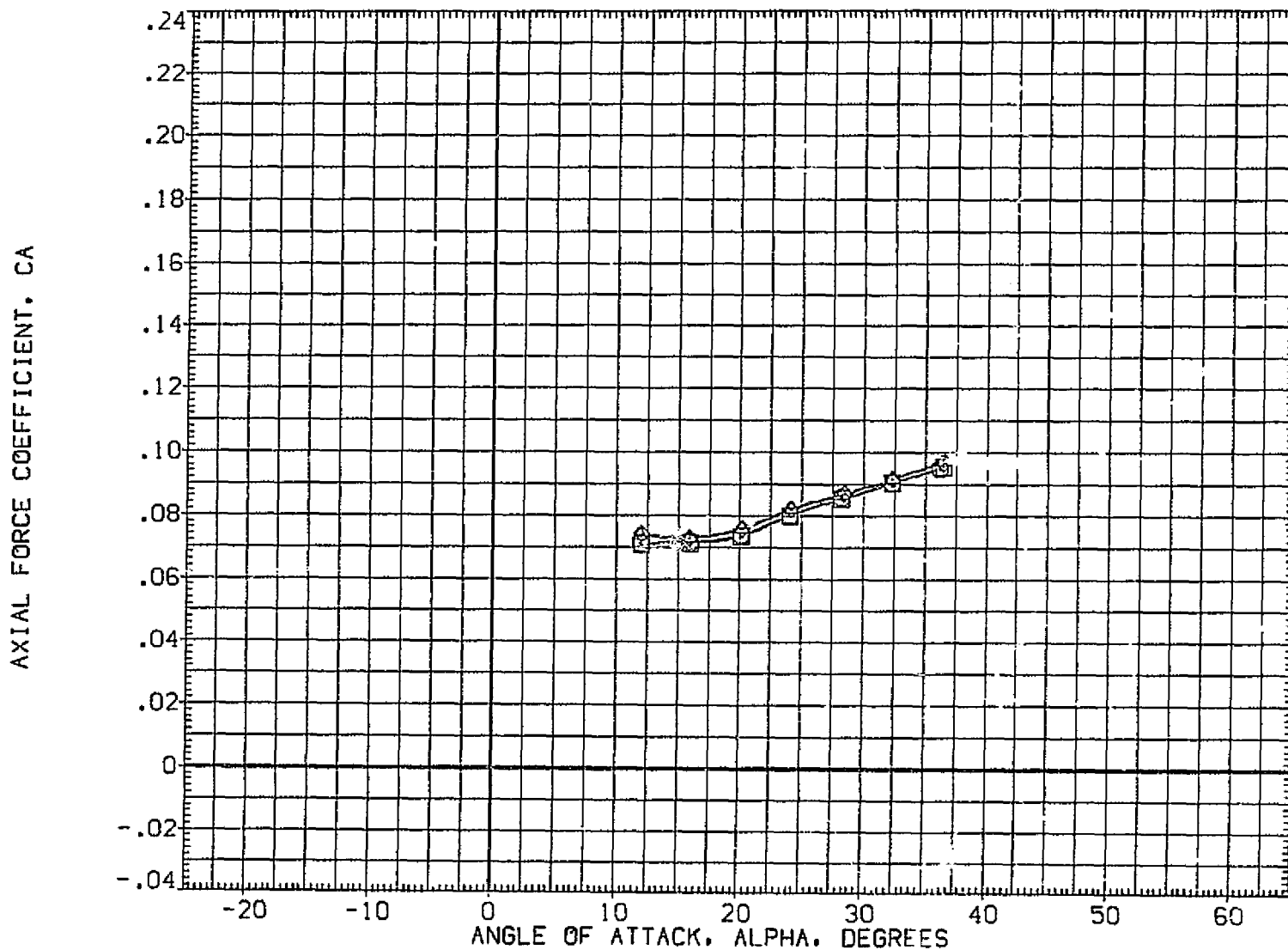
NORMAL FORCE COEFFICIENT, CN



ELEVON GAP INTERPANEL GAP EFFECT

(A)MACH = 10.33

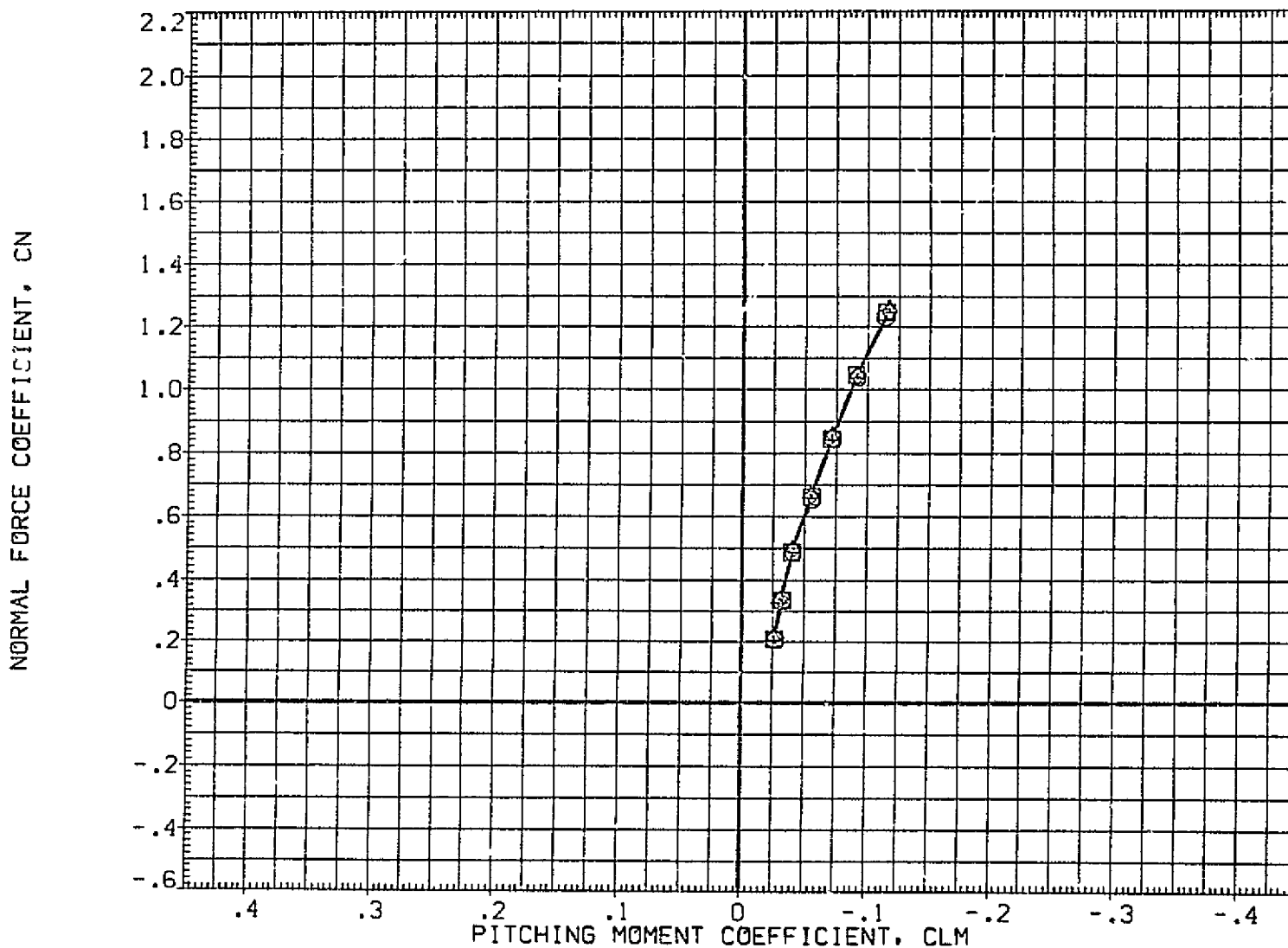
DATA SET	CONFIGURATION DESCRIPTION	RN/L	BD/FLAP	ELEVTR	BETA	REFERENCE INFORMATION
(CQJ013)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	10.000	.000	SREF 2690.0000 SQ.FT.
(CQJ015)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	10.000	.000	LREF 474.8000 IN.
(CQJ014)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	10.000	-5.000	BREF 936.7000 IN.
(CQJ016)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	10.000	-5.000	XMRP 1076.7000 IN. X0
						YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100



ELEVON GAP INTERPANEL GAP EFFECT

(A)MACH = 10.33

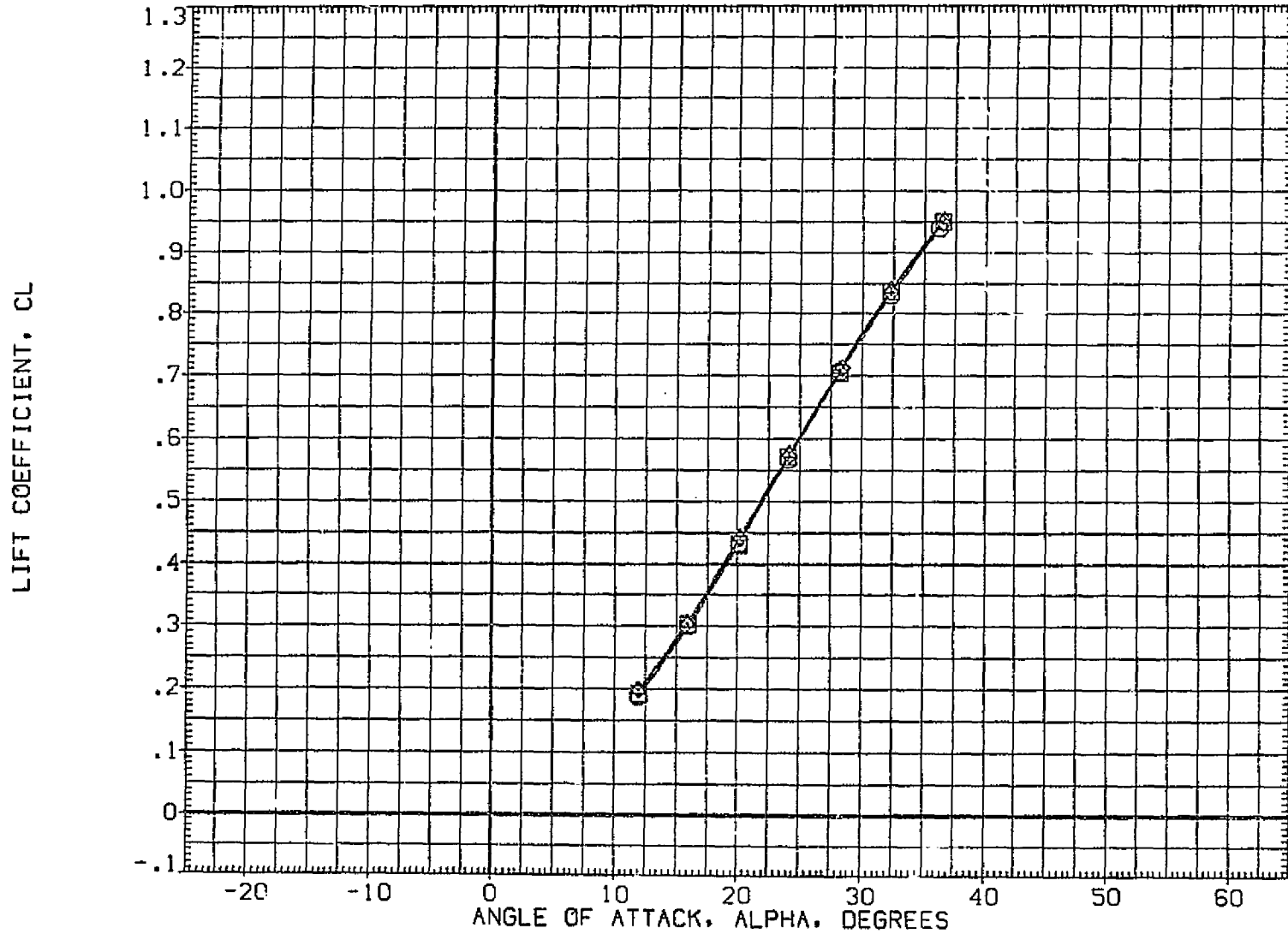
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	ELEVTR	BETA	REFERENCE INFORMATION
(CQJ013)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 ØTRGAPSEALED	.960	16.300	10.000	.000	SREF 2690.0000 SQ.FT.
(CQJ015)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 ØTRGAPUNSEAL	.953	16.300	10.000	.000	LREF 474.8000 IN.
(CQJ014)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 ØTRGAPSEALED	.960	16.300	10.000	-5.000	BREF 936.7000 IN.
(CQJ016)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 ØTRGAPUNSEAL	.953	16.300	10.000	-5.000	XMRP 1076.7000 IN. X0
						YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100



ELEVON GAP INTERPANEL GAP EFFECT

(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	ELEVTR	BETA	REFERENCE INFORMATION
(CQJ013)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	10.000	.000	SREF 2690.0000 SQ.FT.
(CQJ015)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	10.000	.000	LREF 474.8000 IN.
(CQJ014)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	10.000	-5.000	BREF 936.7000 IN.
(CQJ016)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	10.000	-5.000	XMRP 1076.7000 IN. X0 YMRP .0000 IN. Y0 ZMRP 375.0000 IN. Z0 SCALE .0100



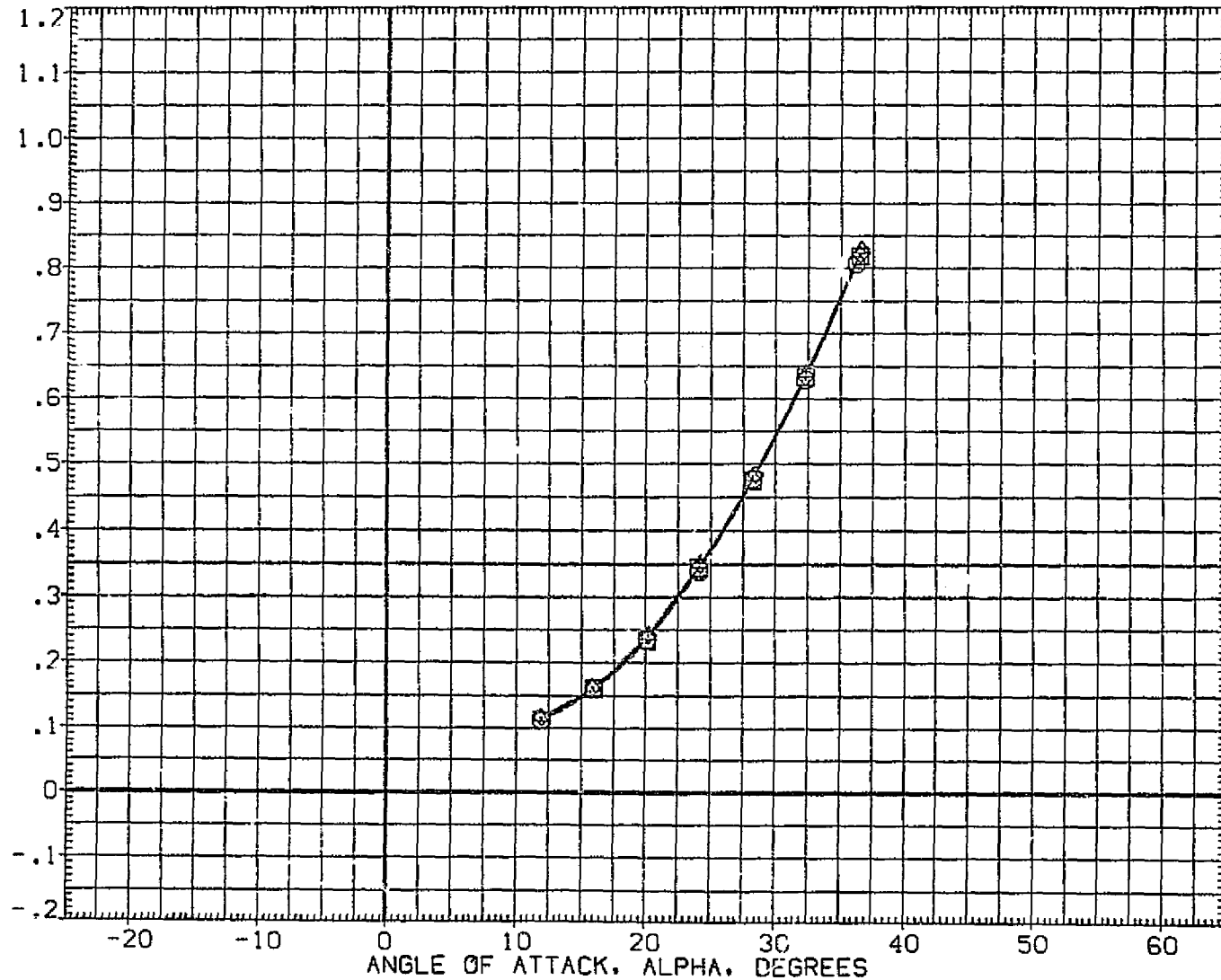
ELEVON GAP INTERPANEL GAP EFFECT

(A)MACH = 10.33



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	ELEVTR	BETA	REFERENCE INFORMATION
(CQJ013)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	10.000	.000	SREF 2690.0000 SQ.FT.
(CQJ015)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	10.000	.000	LREF 474.8000 IN.
(CQJ014)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	10.000	-5.000	BREF 935.7000 IN.
(CQJ016)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	10.000	-5.000	XMRP 1076.7000 IN. X0 YMRP .0000 IN. Y0 ZMRP 375.0000 IN. Z0 SCALE .0100

DRAG COEFFICIENT, CD



ELEVON GAP INTERPANEL GAP EFFECT

(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	ELEVTR	BETA	REFERENCE INFORMATION
(COJ013)	□ 0A-90 CFHT-110 R1-140A/B MODEL 72-0 QTRGAPSEALED	.960	16.300	10.000	.000	SREF 2690.0000 SQ.FT.
(COJ015)	◇ 0A-90 CFHT-110 R1-140A/B MODEL 72-0 QTRGAPUNSEAL	.953	16.300	10.000	.000	LREF 474.8000 IN.
(COJ014)	○ 0A-90 CFHT-110 R1-140A/B MODEL 72-0 QTRGAPSEALED	.960	16.300	10.000	-5.000	BREF 936.7000 IN.
(COJ016)	△ 0A-90 CFHT-110 R1-140A/B MODEL 72-0 QTRGAPUNSEAL	.953	16.300	10.000	-5.000	XMRP 1076.7000 IN. X0 YMRP .0000 IN. Y0 ZMRP 375.0000 IN. Z0 SCALE .0100



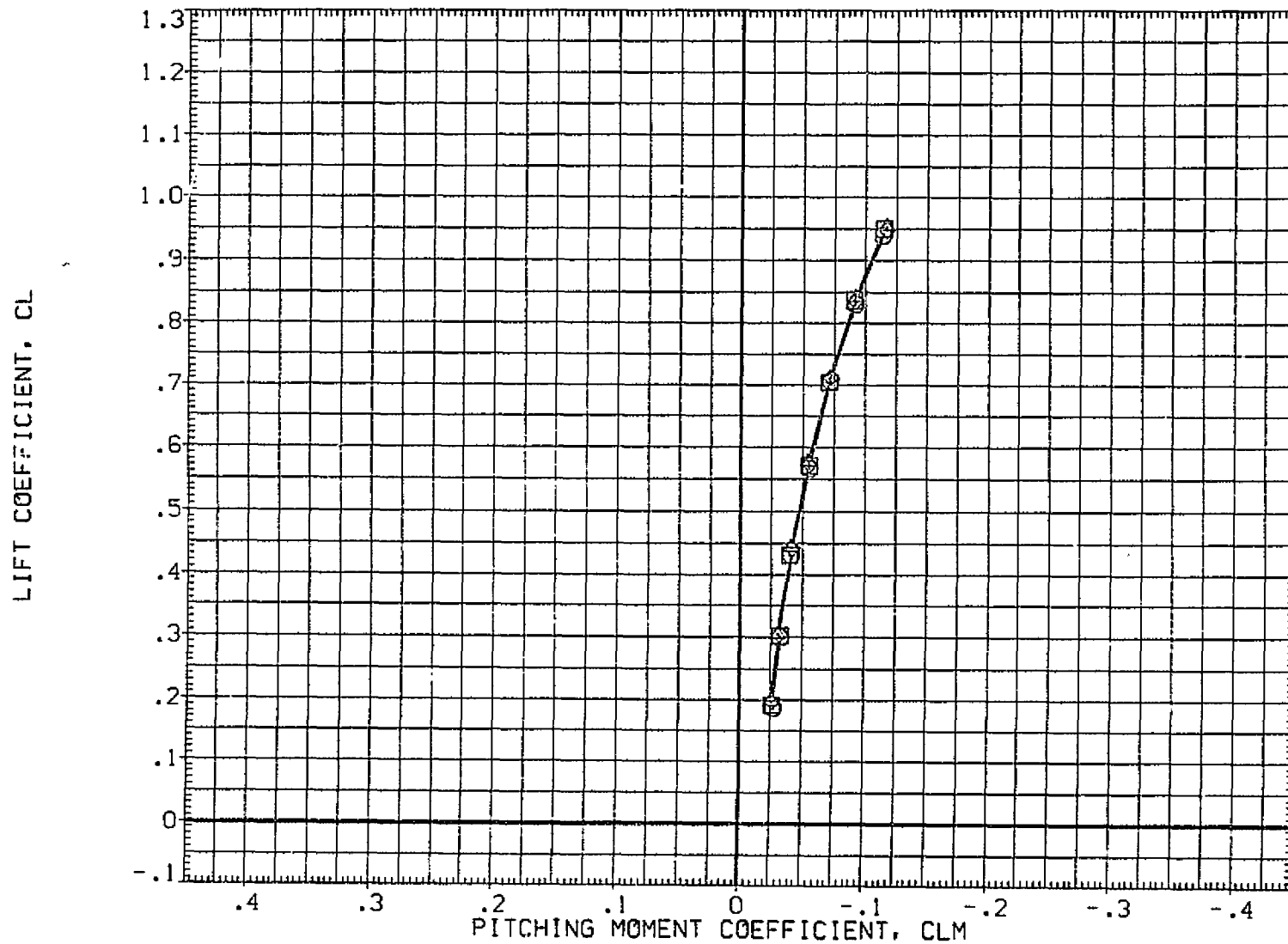
ELEVON GAP INTERPANEL GAP EFFECT

(A)MACH = 10.33

PAGE 26



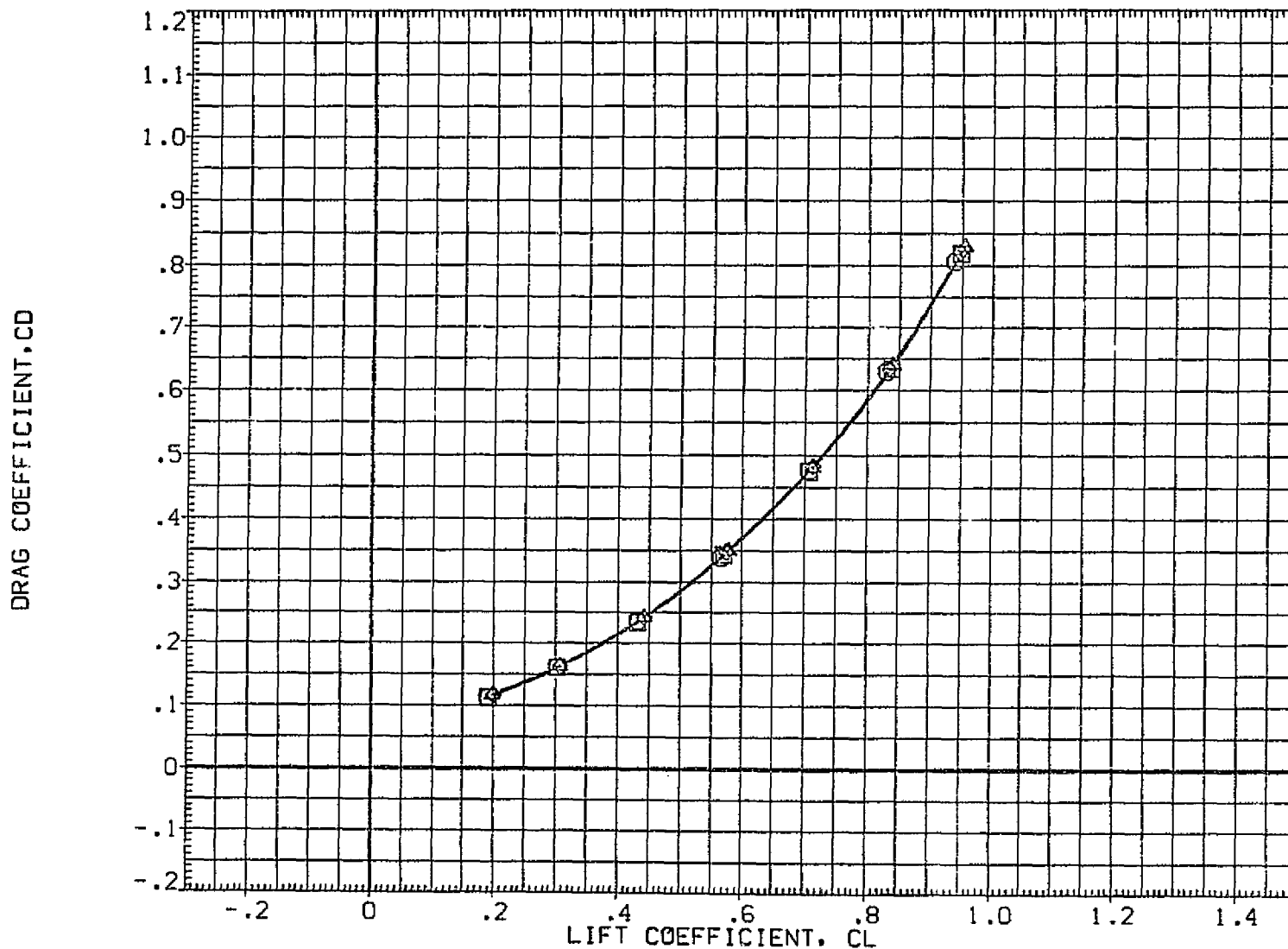
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	ELEVTR	BETA	REFERENCE INFORMATION
(CQJ013)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	10.000	.000	SREF 2690.0000 SQ.FT.
(CQJ015)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	10.000	.000	LREF 474.8000 IN.
(CQJ014)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	10.000	-5.000	BREF 936.7000 IN.
(CQJ016)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	10.000	-5.000	XMRP 1076.7000 IN. X0 YMRP .0000 IN. Y0 ZMRP 375.0000 IN. Z0 SCALE .0100



ELEVON GAP INTERPANEL GAP EFFECT

(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	ELEVTR	BETA	REFERENCE INFORMATION
(CQJ013) □	QA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	10.000	.000	SREF 2690.0000 SQ.FT.
(CQJ015) □	QA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	10.000	.000	LREF 474.8000 IN.
(CQJ014) △	QA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	10.000	-5.000	BREF 936.7000 IN.
(CQJ016) △	QA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	10.000	-5.000	XMRP 1076.7000 IN. X0 YMRP .0000 IN. Y0 ZMRP 375.0000 IN. Z0 SCALE .0100

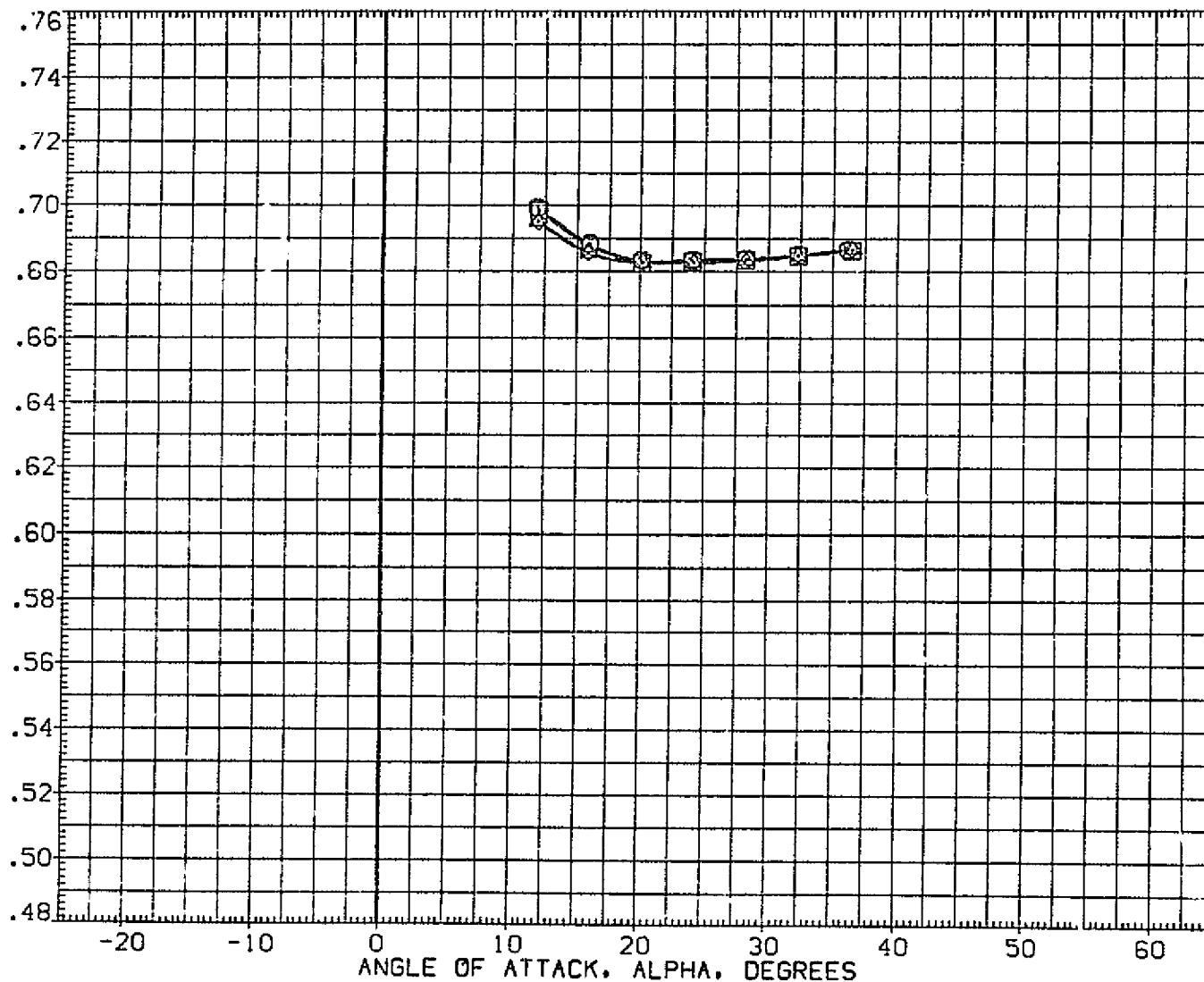


ELEVON GAP INTERPANEL GAP EFFECT

(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	ELEVTR	BETA	REFERENCE INFORMATION
(CQJ013)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	10.000	.000	SREF 2690.0000 SQ.FT.
(CQJ015)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	10.000	.000	LREF 474.8000 IN.
(CQJ014)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	10.000	-5.000	BREF 936.7000 IN.
(CQJ016)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	10.000	-5.000	XMRP 1076.7000 IN. X0
						YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

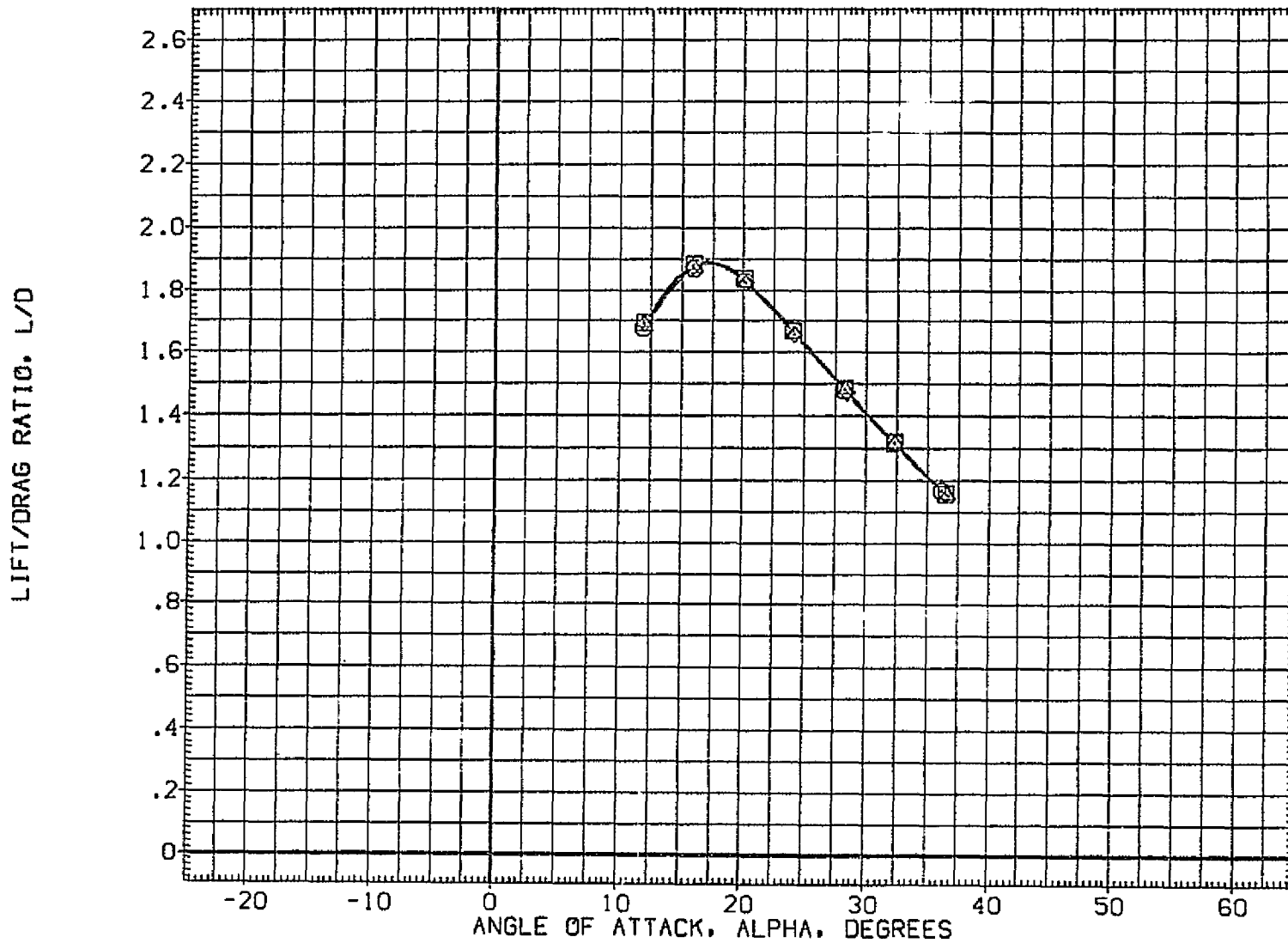
CENTER OF PRESSURE LOCATION BASED ON BODY LENGTH, XCP/L



ELEVON GAP INTERPANEL GAP EFFECT

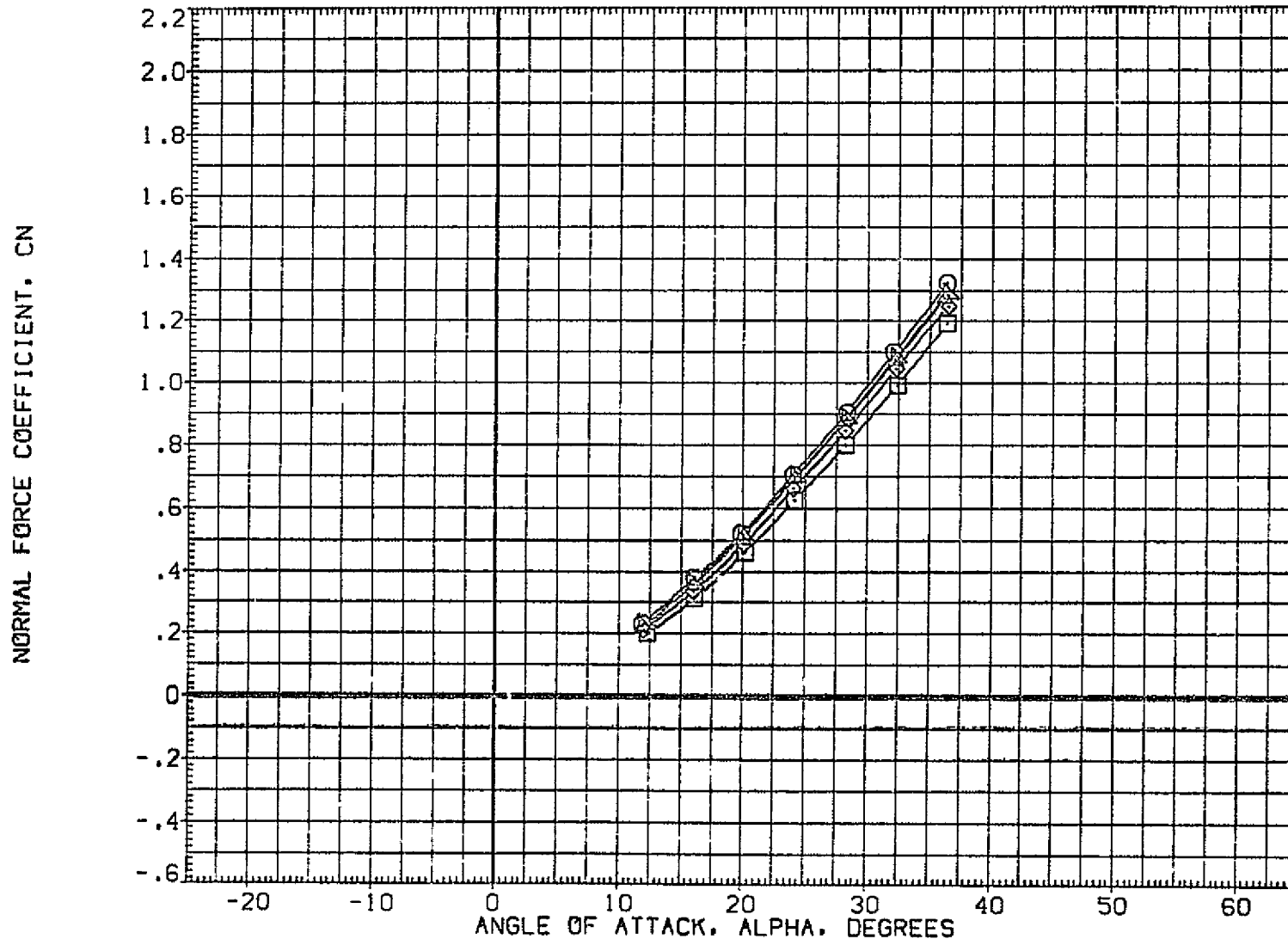
(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	ELEVTR	BETA	REFERENCE INFORMATION
(CQJ013)	QA-90 CFHT-110 RI-140A/B MODEL 72-0 QTRGAPSEALED	.960	16.300	10.000	.000	SREF 2690.0000 SQ.FT.
(CQJ015)	QA-90 CFHT-110 RI-140A/B MODEL 72-0 QTRGAPUNSEAL	.953	16.300	10.000	.000	LREF 474.8000 IN.
(CQJ014)	QA-90 CFHT-110 RI-140A/B MODEL 72-0 QTRGAPSEALED	.960	16.300	10.000	-5.000	BREF 936.7000 IN.
(CQJ016)	QA-90 CFHT-110 RI-140A/B MODEL 72-0 QTRGAPUNSEAL	.953	16.300	10.000	-5.000	XMRP 1076.7000 IN. X0 YMRP .0000 IN. Y0 ZMRP 375.0000 IN. Z0 SCALE .0100



ELEVON GAP INTERPANEL GAP EFFECT
(A)MACH = 10.33

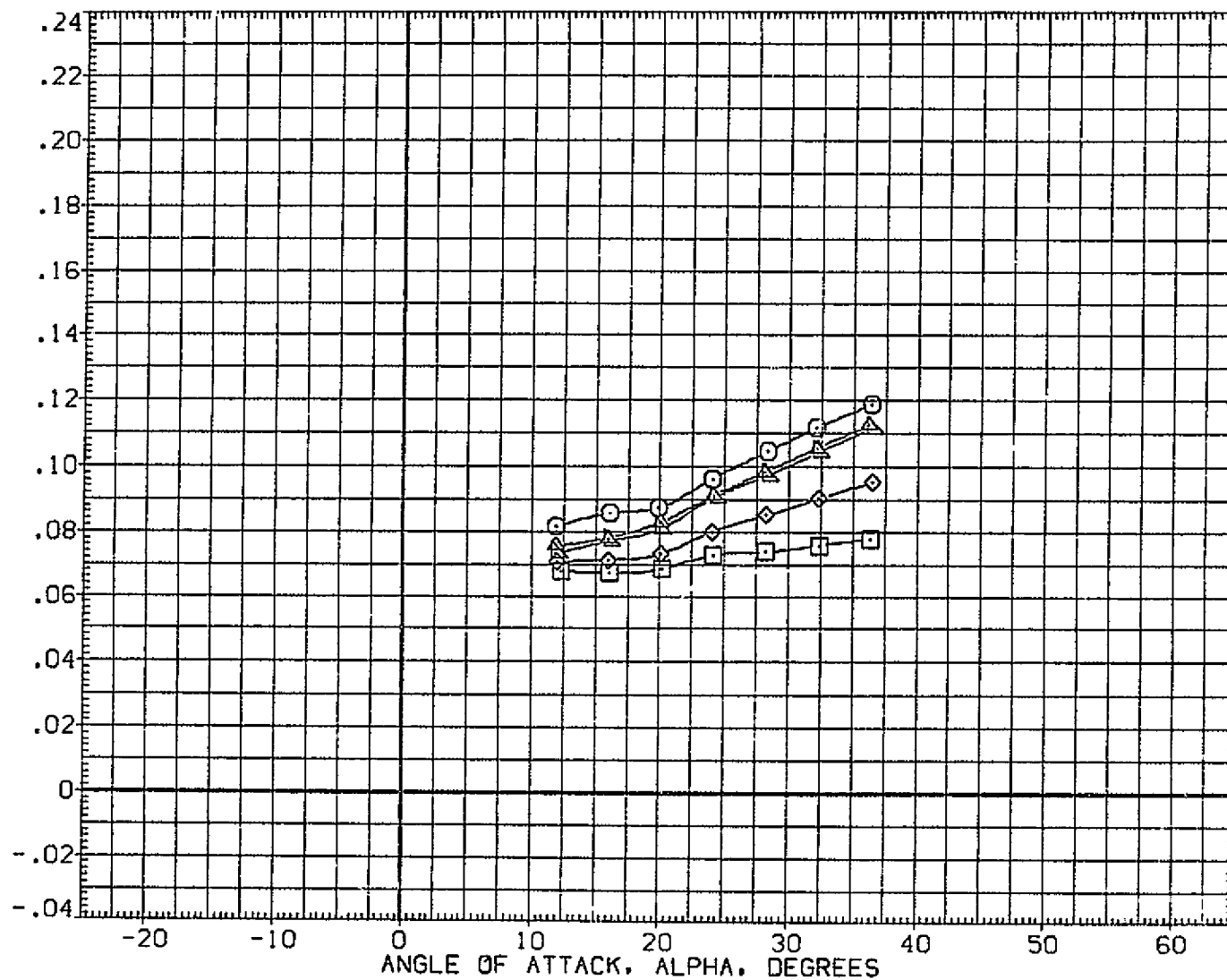
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDRK	ELEVTR	REFERENCE INFORMATION
(CQJ017)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.625	16.300	55.000	15.000	SREF 2690.0000 SQ.FT.
(CQJ012)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	55.000	.000	LREF 474.8000 IN.
(CQJ015)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	55.000	10.000	BREF 936.7000 IN.
(DQJ017)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	55.000	15.000	XMRP 1076.7000 IN. X0
(EQJ017)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	1.244	16.300	55.000	15.000	YMRP .0000 IN. Y0 ZMRP 375.0000 IN. Z0 SCALE .0100



EFFECT OF POSITIVE DEFLECTED UNSEALED ELEVONS
(A)MACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
(CGJ017)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.625	16.300	55.000	15.000	SREF 2690.0000 SQ. FT.
(CGJ012)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	55.000	.000	LREF 474.8000 IN.
(CGJ015)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	55.000	10.000	BREF 936.7000 IN.
(CGJ017)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	55.000	15.000	XMRP 1076.7000 IN. X0
(EGJ017)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	1.244	16.300	55.000	15.000	YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

AXIAL FORCE COEFFICIENT, CA

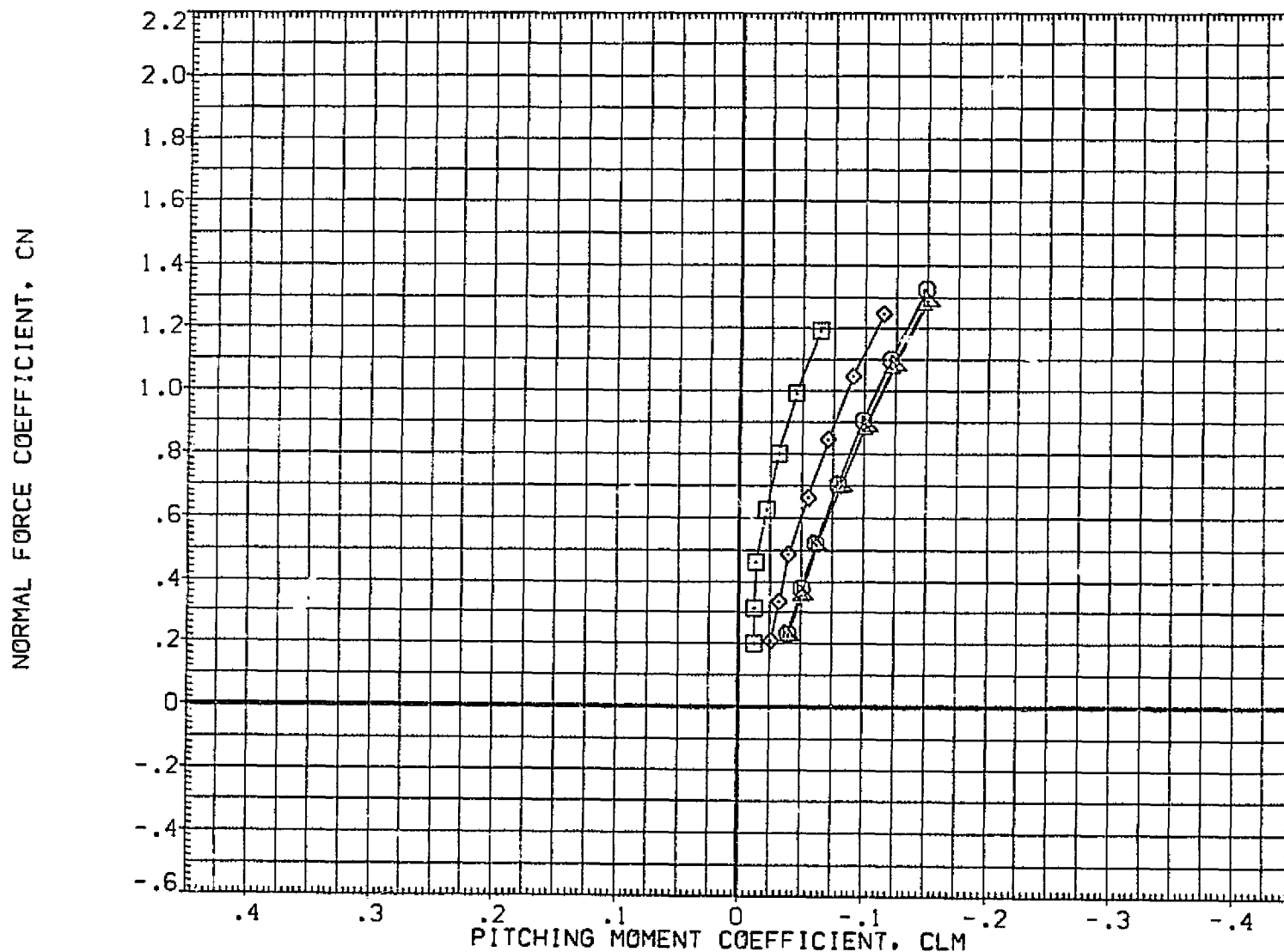


EFFECT OF POSITIVE DEFLECTED UNSEALED ELEVONS

(A)MACH = 10.31

PAGE 32

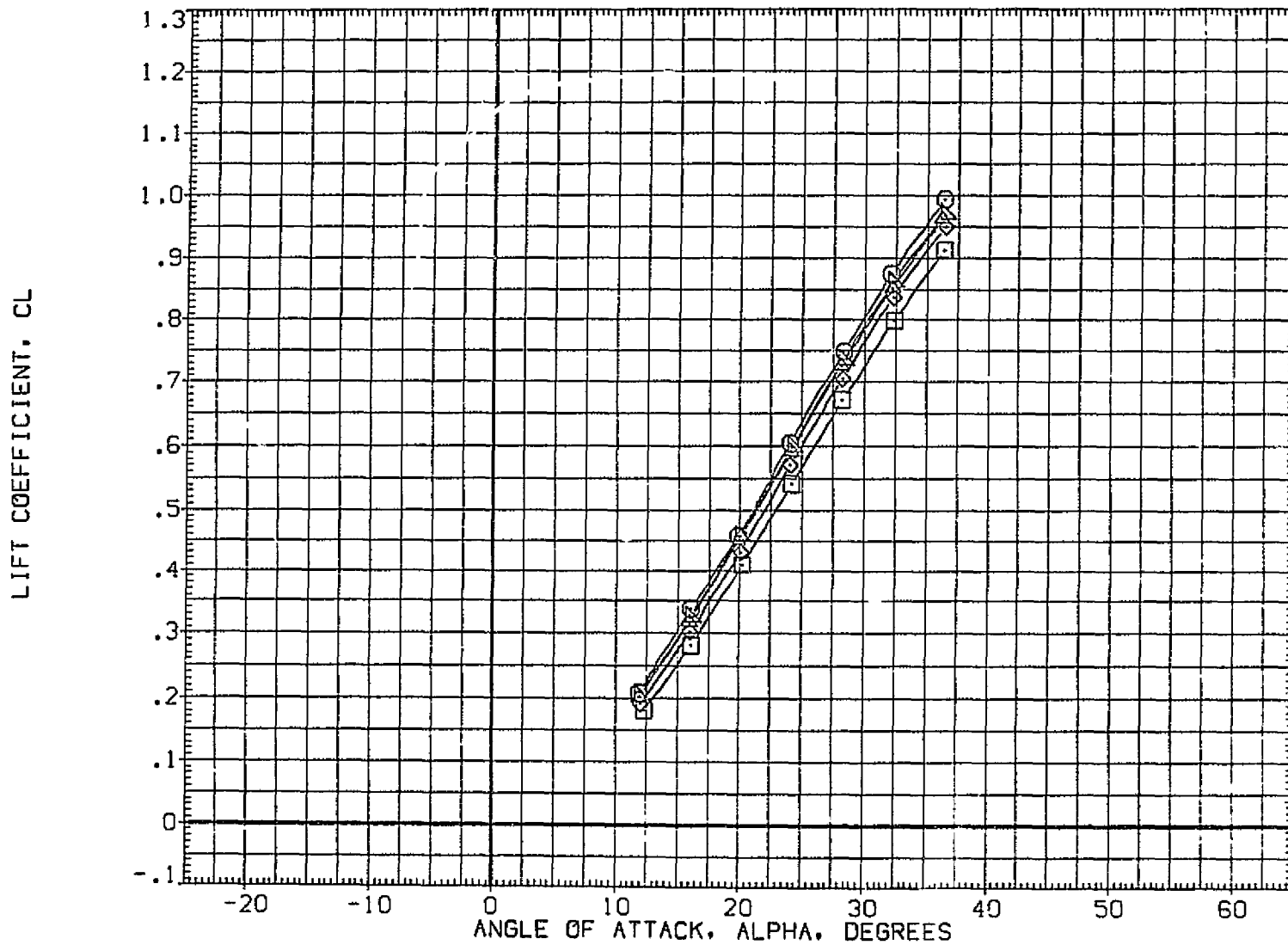
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
(CQJ017)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.625	16.300	55.000	15.000	SREF 2690.0000 SQ.FT.
(CQJ012)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	55.000	.000	LREF 474.8000 IN.
(CQJ015)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	55.000	10.000	BREF 936.7000 IN.
(DQJ017)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.963	16.300	55.000	15.000	XMRP 1076.7000 IN. X0
(EQJ017)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	1.244	16.300	55.000	15.000	YMRP .0000 IN. Y0 ZMRP 375.0000 IN. Z0 SCALE .0100



EFFECT OF POSITIVE DEFLECTED UNSEALED ELEVONS

(A)MACH = 10.31

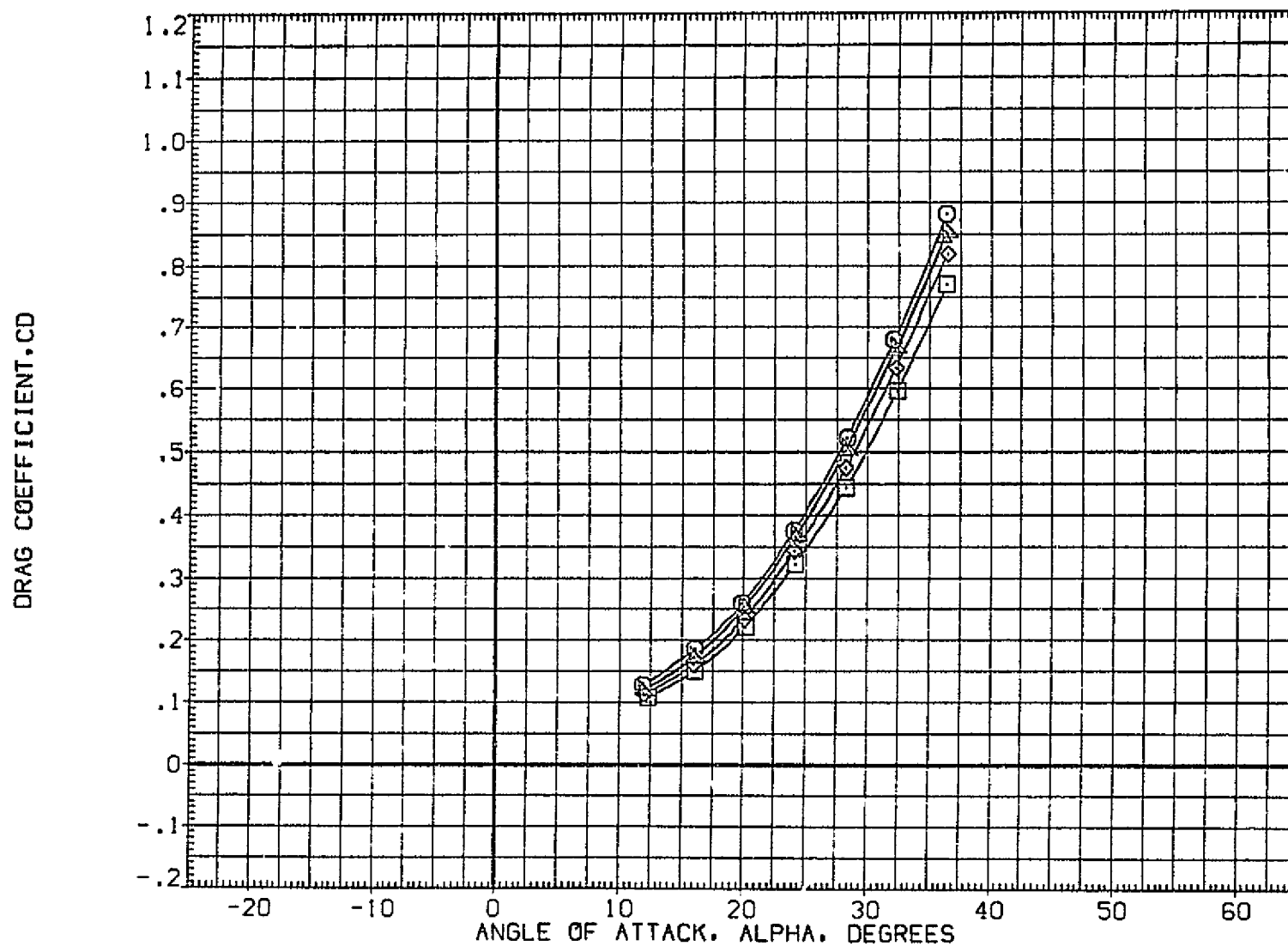
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPOBRK	ELEVTR	REFERENCE INFORMATION
(CQJO17)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.525	16.300	55.000	15.000	SREF 2690.0000 SQ.FT.
(CQJO12)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	55.000	.000	LREF 474.8000 IN.
(CQJO15)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	55.000	10.000	BREF 936.7000 IN.
(DQJO17)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.963	16.300	55.000	.5000	XMRP 1076.7000 IN. X0
(EQJO17)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	1.244	16.300	55.000	15.000	YMRP .0000 IN. Y0 ZMRP 375.0000 IN. Z0 SCALE .0100



EFFECT OF POSITIVE DEFLECTED UNSEALED ELEVONS

(A)MACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BOFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
(CQJ017)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.625	16.300	55.000	15.000	SREF 2690.0000 SQ.FT.
(CQJ012)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	55.000	.000	LREF 474.8000 IN.
(CQJ015)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	55.000	10.000	BREF 936.7000 IN.
(DQJ017)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.963	16.300	55.000	15.000	XMRP 1076.7000 IN. X0
(EQJ017)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	1.244	16.300	55.000	15.000	YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

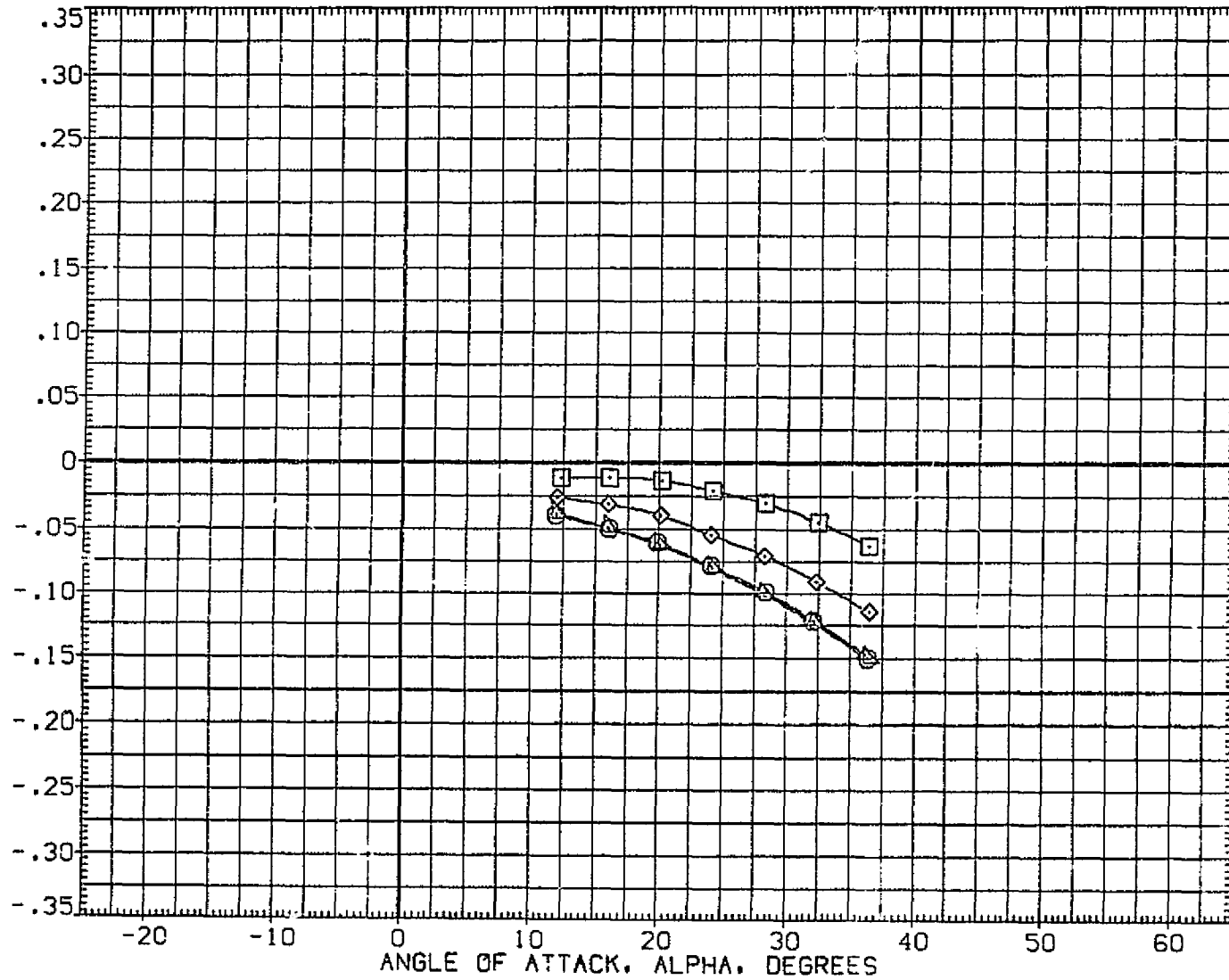


EFFECT OF POSITIVE DEFLECTED UNSEALED ELEVONS

(A)MACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
(COJ017)	QA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.625	16.300	55.000	15.000	SREF 2690.0000 SQ. FT.
(COJ012)	QA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.999	16.300	55.000	.000	LREF 474.8000 IN.
(COJ015)	QA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	55.000	10.000	BREF 936.7000 IN.
(COJ017)	QA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	55.000	15.000	XMRP 1076.7000 IN. X0
(EGJ017)	QA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	1.244	16.300	55.000	15.000	YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

PITCHING MOMENT COEFFICIENT, CLM

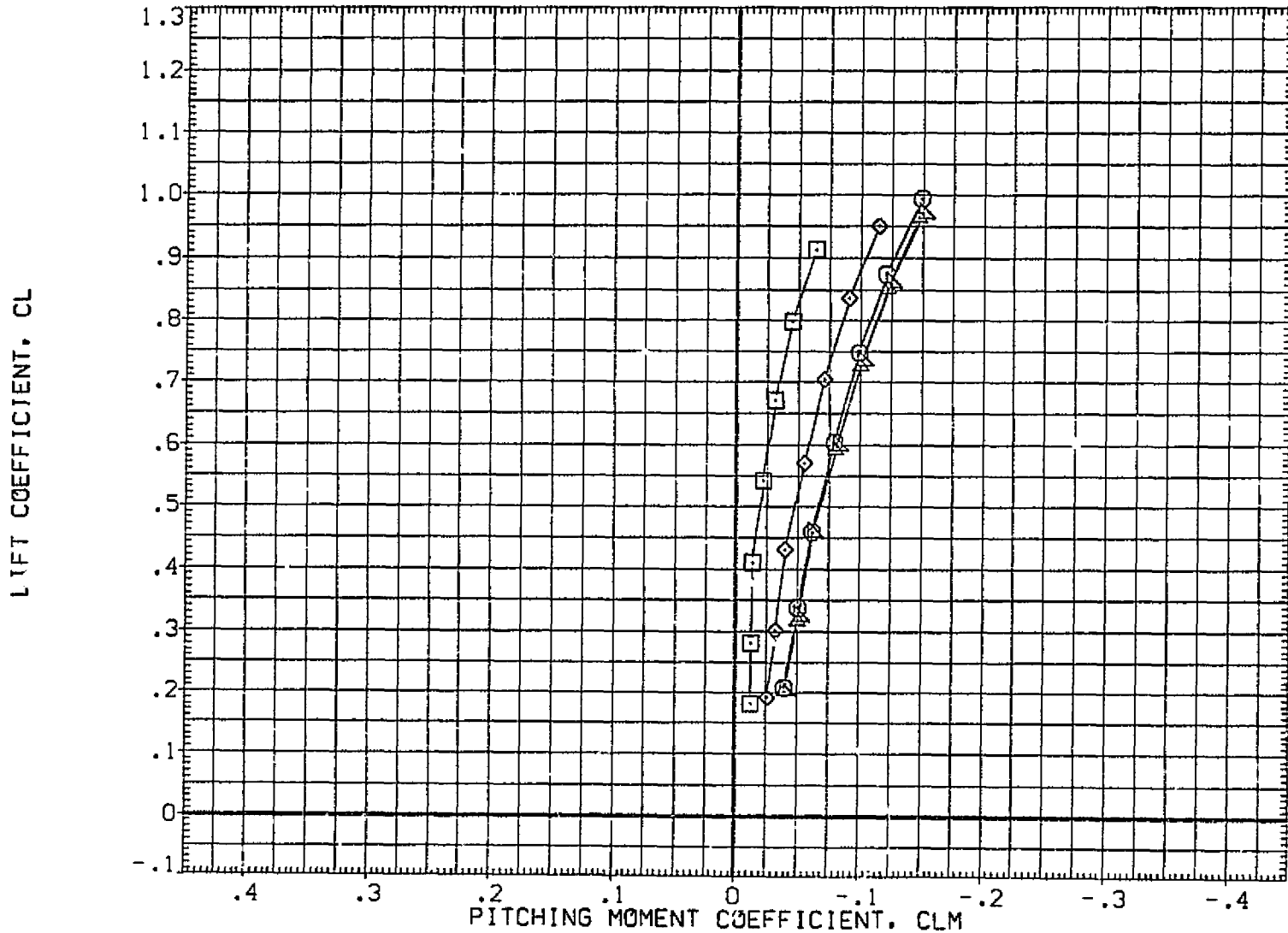


EFFECT OF POSITIVE DEFLECTED UNSEALED ELEVONS

(A) MACH = 10.31

PAGE 36

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDSBK	ELEVTR	REFERENCE INFORMATION
(CQJ017)	QA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.625	16.300	55.000	15.000	SREF 2690.0000 SQ.FT.
(CQJ012)	QA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	55.000	.000	LREF 474.8000 IN.
(CQJ015)	QA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	55.000	10.000	BREF 936.7000 IN.
(DQJ017)	QA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	55.000	15.000	XMRP 1076.7000 IN. Y0
(EQJ017)	QA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	1.244	16.300	55.000	15.000	YMRP .0000 IN. Z0
						ZMRP 375.0000 IN. ZC
						SCALE .0100

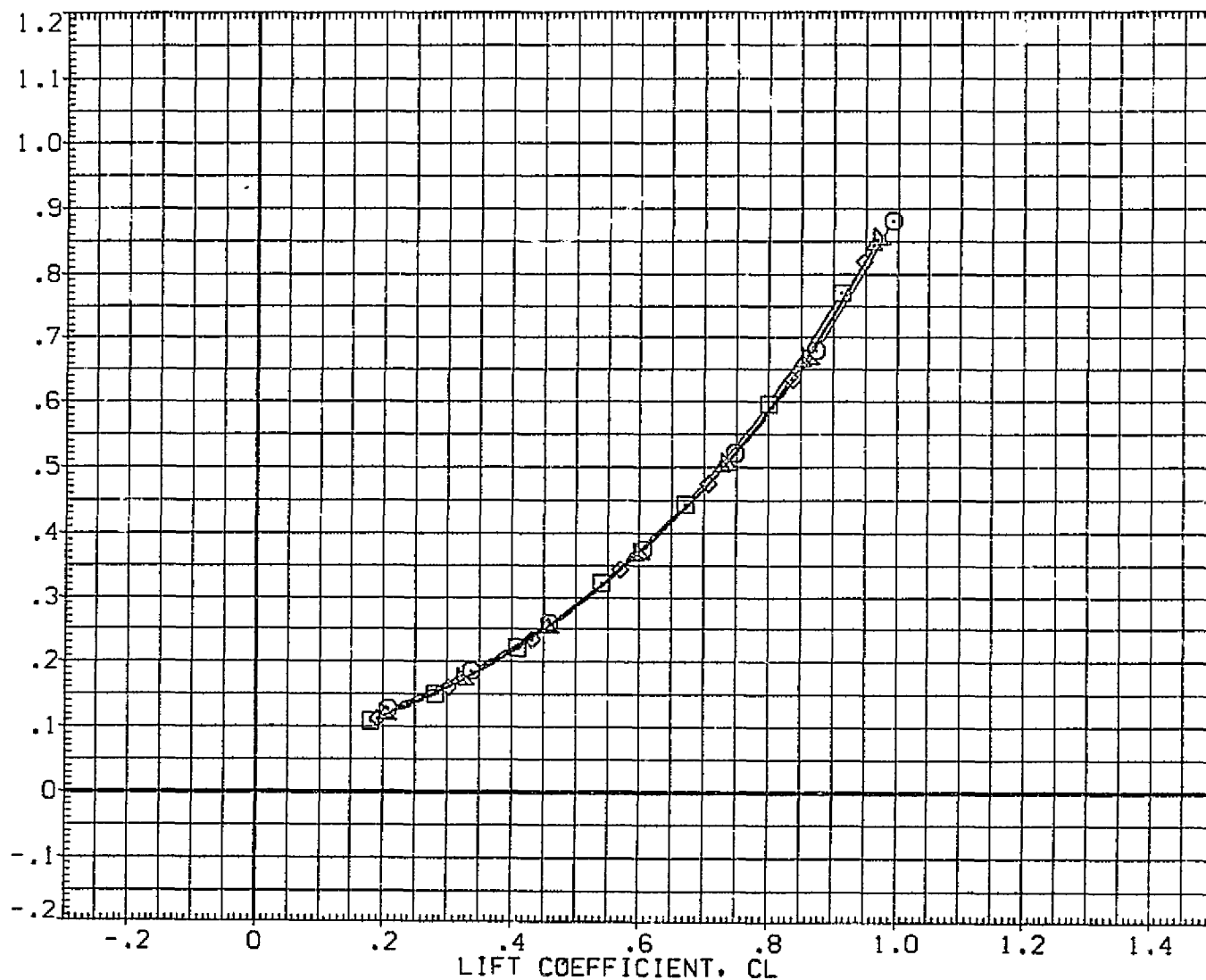


EFFECT OF POSITIVE DEFLECTED UNSEALED ELEVONS

(A)MACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BOFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
(CQJ017)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 01RGAPUNSEAL	.625	16.300	55.000	15.000	L F 2690.0000 SQ.FT.
(CQJ012)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 01RGAPUNSEAL	.989	16.300	55.000	.000	LREF 474.8000 IN.
(CQJ015)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 01RGAPUNSEAL	.953	16.300	55.000	10.000	BREF 936.7000 IN.
(DQJ017)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 01RGAPUNSEAL	.963	16.300	55.000	15.000	XMRP 1076.7000 IN. X0
(EJJD17)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 01RGAPUNSEAL	1.244	16.300	55.000	15.000	YMRP .0000 IN. Y0 ZMRP 375.0000 IN. Z0 SCALE .0100

DRAG COEFFICIENT, CD



EFFECT OF POSITIVE DEFLECTED UNSEALED ELEVONS

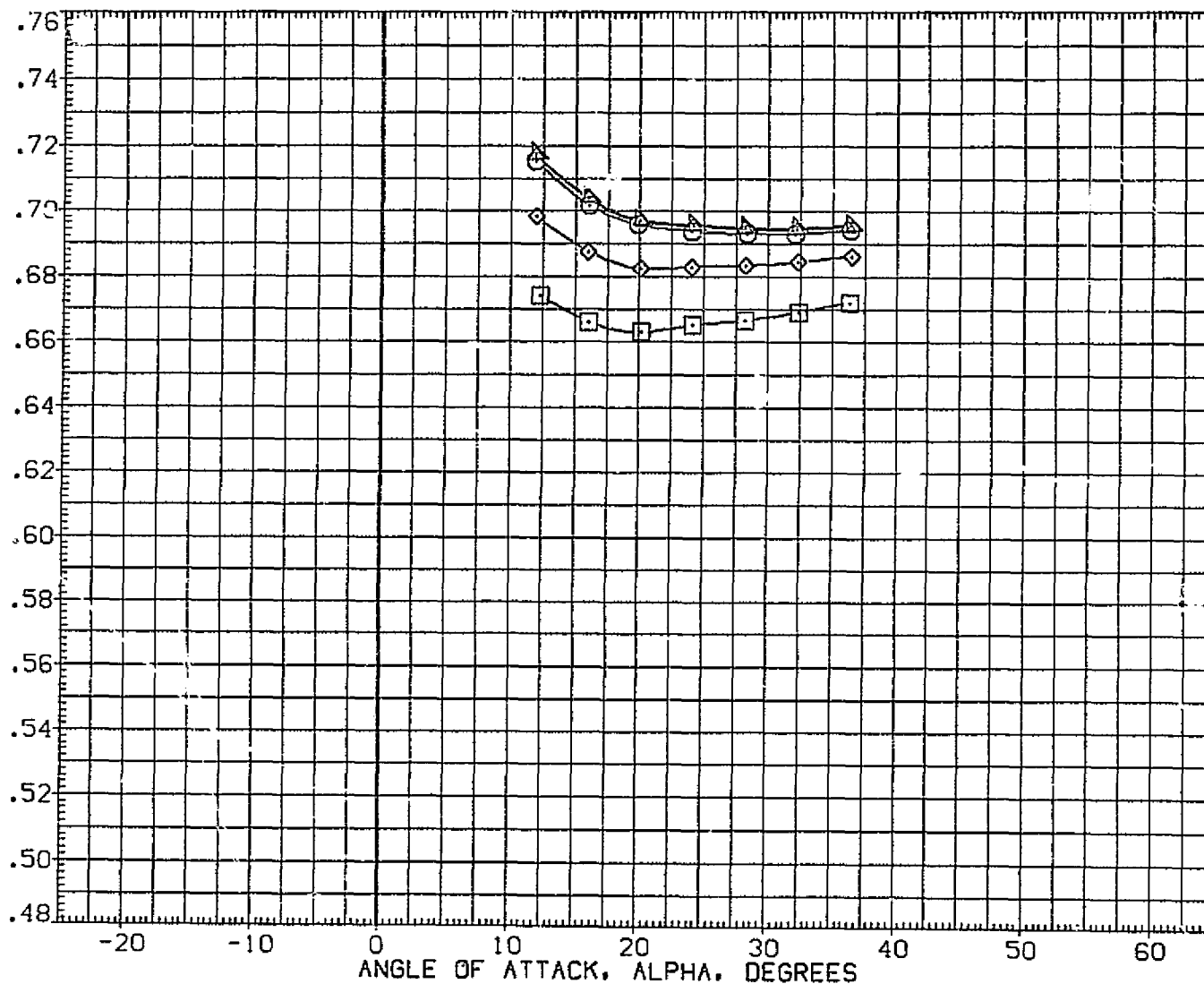
(A)MACH = 10.31

PAGE 38



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
(CQJ017)	□ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.625	16.300	55.000	15.000	SREF 2690.0000 SQ.FT.
(CQJ012)	◇ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	55.000	.000	LREF 474.8000 IN.
(CQJ015)	△ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	55.000	10.000	BREF 936.7000 IN.
(DQJ017)	△ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.963	16.300	55.000	15.000	XMRP 1076.7000 IN. X0
(EQJ017)	△ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	1.244	16.300	55.000	15.000	YMRP .0000 IN. Y0 ZMRP 375.0000 IN. Z0 SCALE .0100

CENTER OF PRESSURE LOCATION BASED ON BODY LENGTH, XCP/L



EFFECT OF POSITIVE DEFLECTED UNSEALED ELEVONS

(A)MACH = 10.31

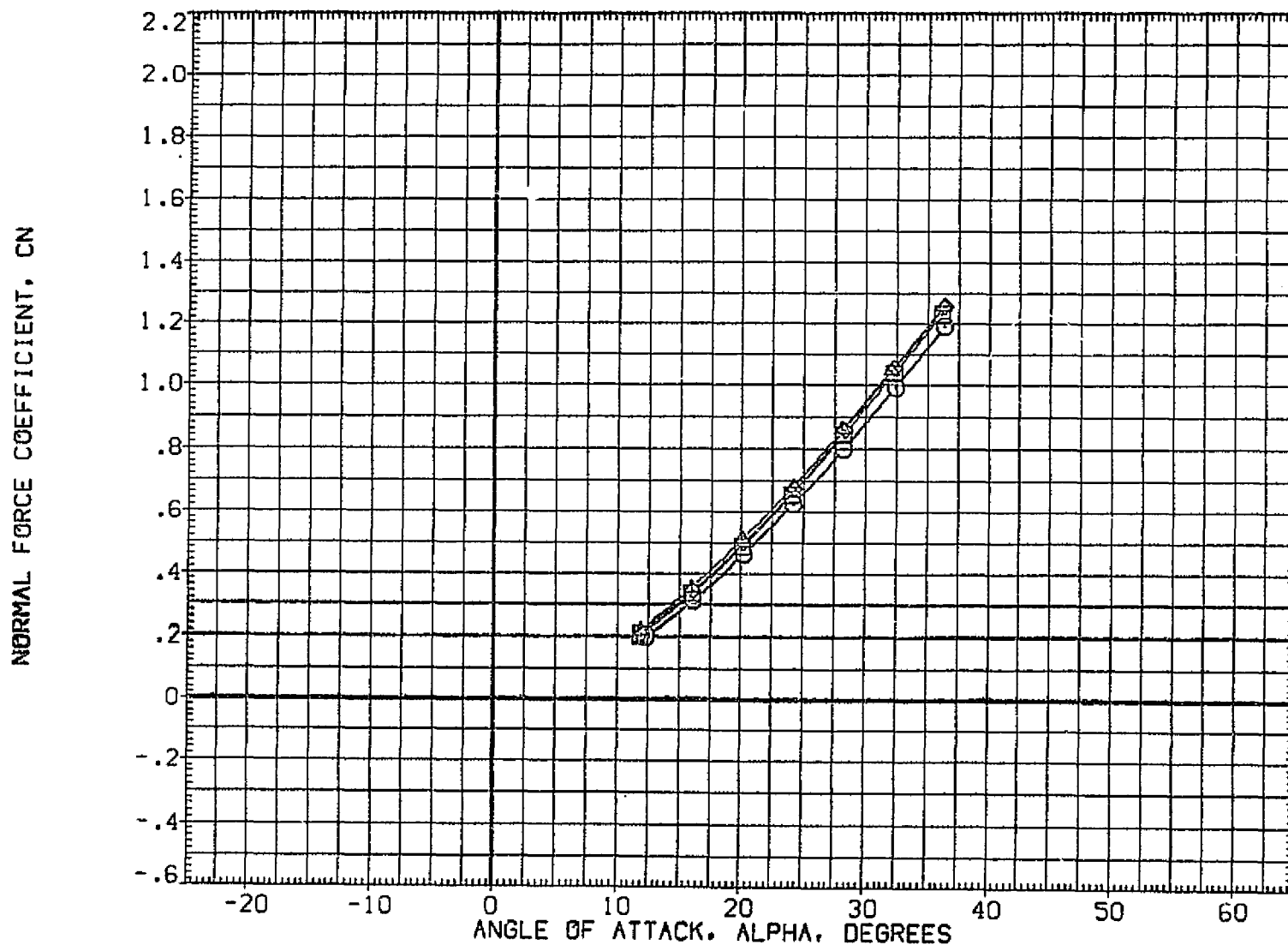
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BOFLAP	SPOBRK	ELEVTR	REFERENCE INFORMATION
(CQJ017)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.625	16.300	55.000	15.000	SREF 2690.0000 SQ.FT.
(CQJ012)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	55.000	.000	LREF 474.8000 IN.
(CQJ015)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	55.000	10.000	BREF 936.7000 IN.
(DQJ017)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.963	16.300	55.000	15.000	XMRP 1076.7000 IN. X0
(EQJ017)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	1.244	16.300	55.000	15.000	YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100



EFFECT OF POSITIVE DEFLECTED UNSEALED ELEVONS

(A)MACH = 10.31

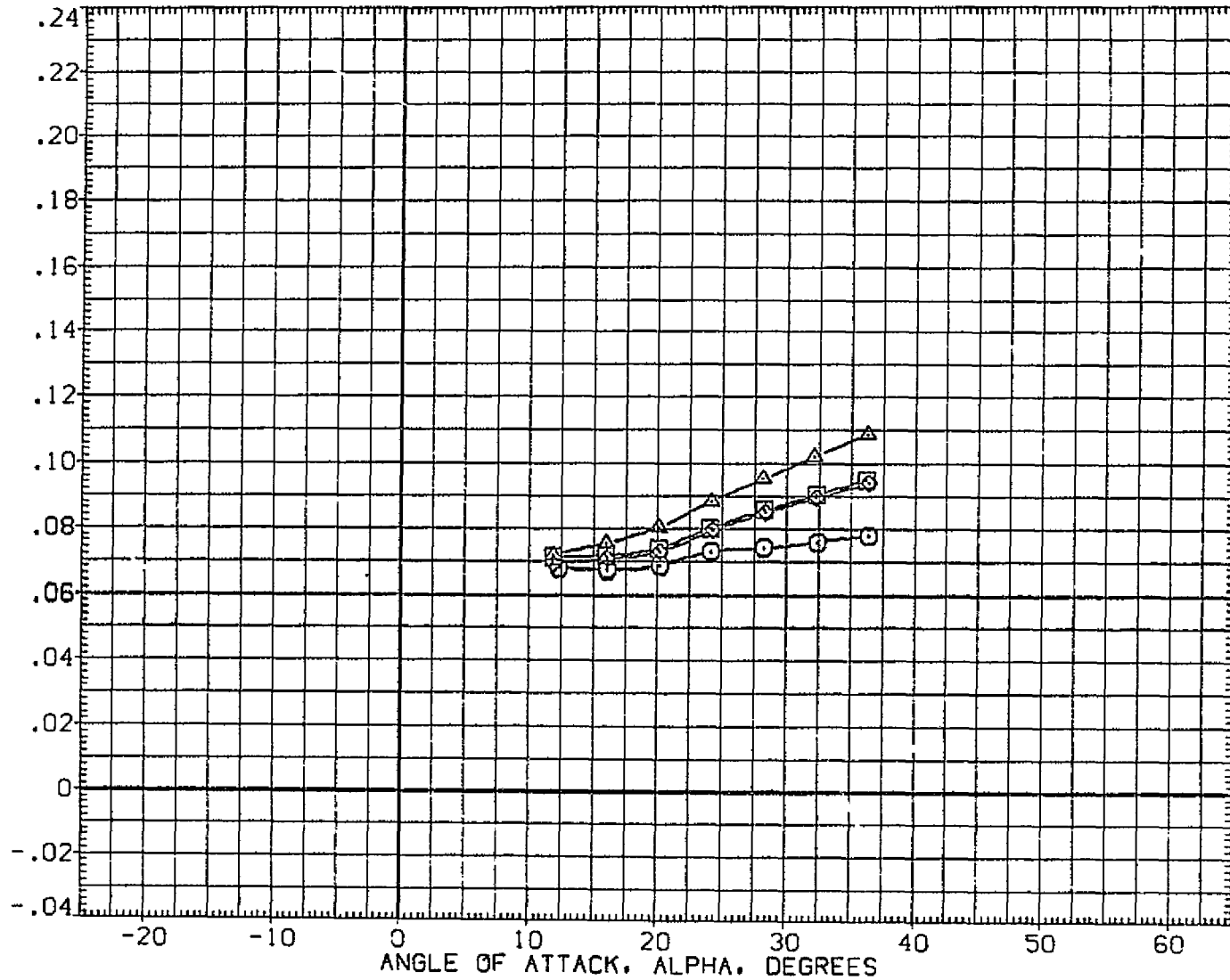
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPOBRK	ELEVTR	REFERENCE INFORMATION
(CQJ012)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	55.000	.000	SREF 2690.0000 SQ. FT.
(CQJ013)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	55.000	10.000	LREF 474.8000 IN.
(CQJ013)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.246	16.300	55.000	10.000	BREF 936.7000 IN.
(CQJ016)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.200	16.300	55.000	15.000	XMRP 1076.7000 IN. X0 YMRP .0000 IN. Y0 ZMRP 375.0000 IN. Z0 SCALE .0100



EFFECT OF POSITIVE DEFLECTED SEALED ELEVONS
 (A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPOBRK	ELEVTR	REFERENCE INFORMATION
(CQJ012)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ013)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	55.000	10.000	LREF 474.8000 IN.
(CQJ013)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.246	16.300	55.000	10.000	SREF 936.7000 IN.
(CQJ018)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.200	16.300	55.000	15.000	XMRP 1076.7000 IN. X0 YMRP .0000 IN. Y0 ZMRP 375.0000 IN. Z0 SCALE .0100

AXIAL FORCE COEFFICIENT, CA



EFFECT OF POSITIVE DEFLECTED SEALED ELEVONS

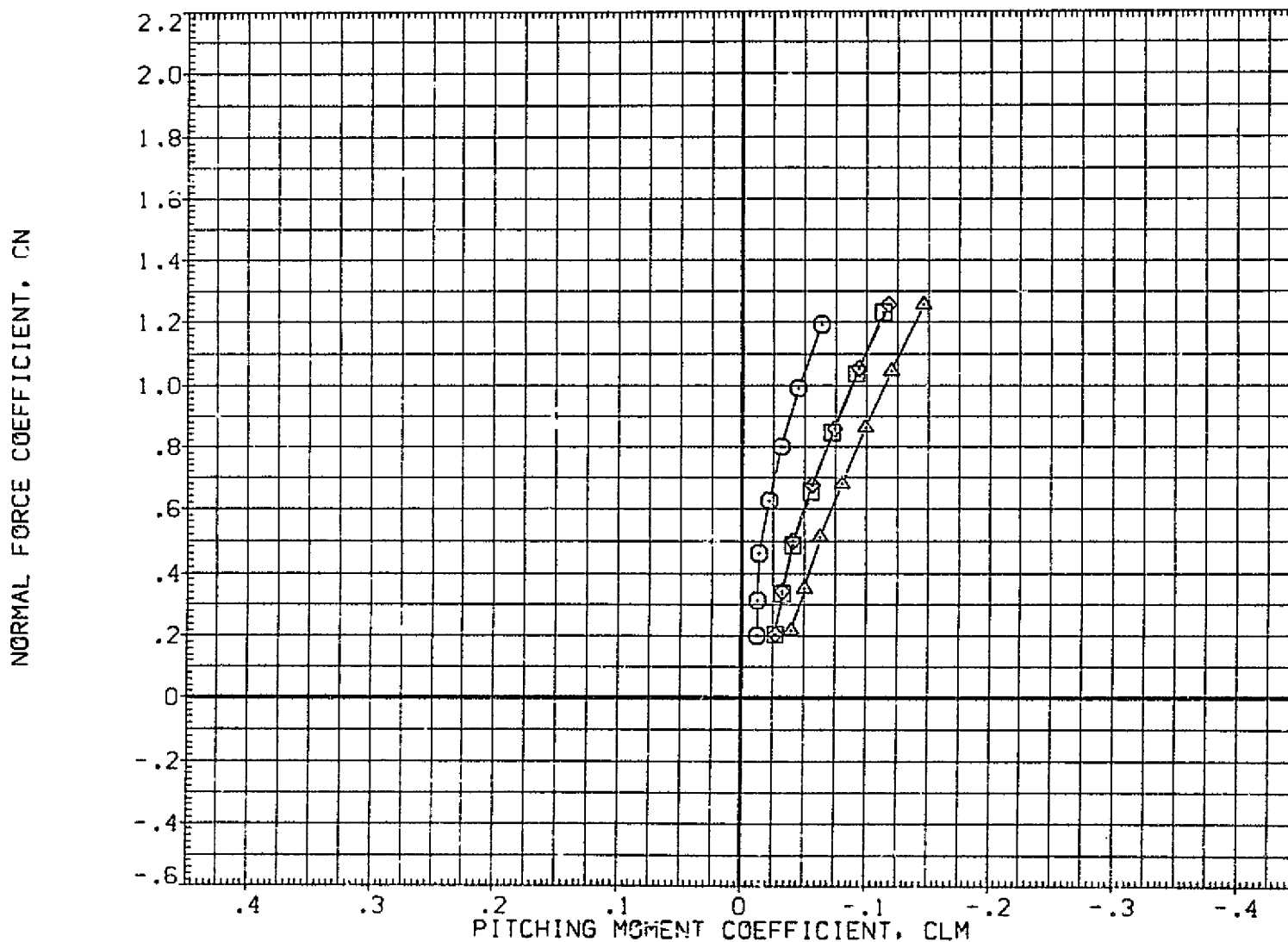
(A)MACH = 10.33

PAGE 42



C

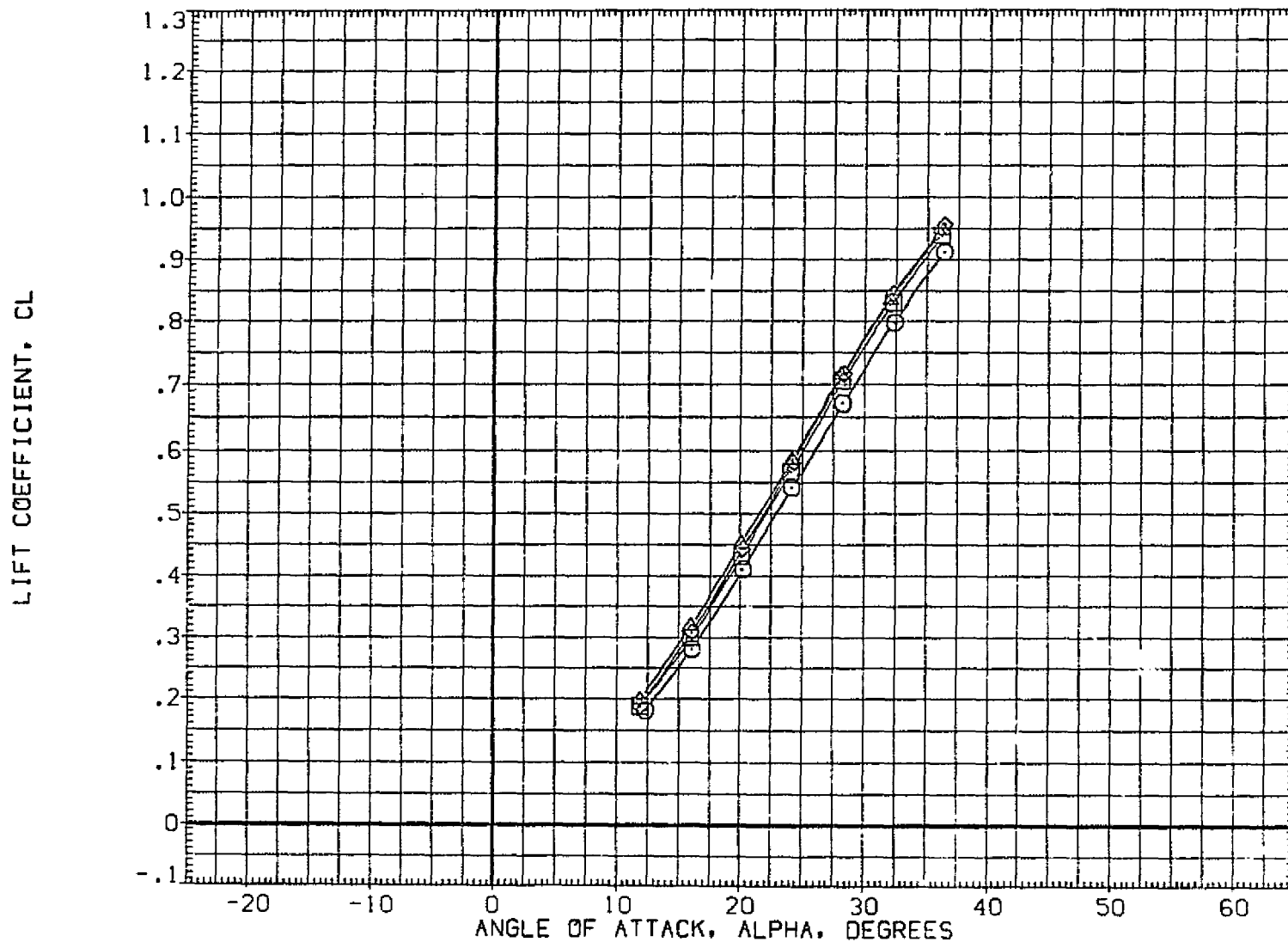
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
(CQJ012)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ013)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	55.000	10.000	LREF 474.8000 IN.
(CQJ013)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.246	16.300	55.000	10.000	BREF 936.7000 IN.
(CQJ018)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.200	16.300	55.000	15.000	XMRP 1076.7000 IN. X0 YMRP .0000 IN. Y0 ZMRP 375.0000 IN. Z0 SCALE .0100



EFFECT OF POSITIVE DEFLECTED SEALED ELEVONS

(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
(CQJ012)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ013)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	55.000	10.000	LREF 474.8000 IN.
(CQJ013)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPSEALED	1.246	16.300	55.000	10.000	BREF 936.7000 IN.
(CQJ018)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPSEALED	1.200	16.300	55.000	15.000	XMRP 1076.7000 IN. X0 YMRP .0000 IN. Y0 ZMRP 375.0000 IN. Z0 SCALE .0100



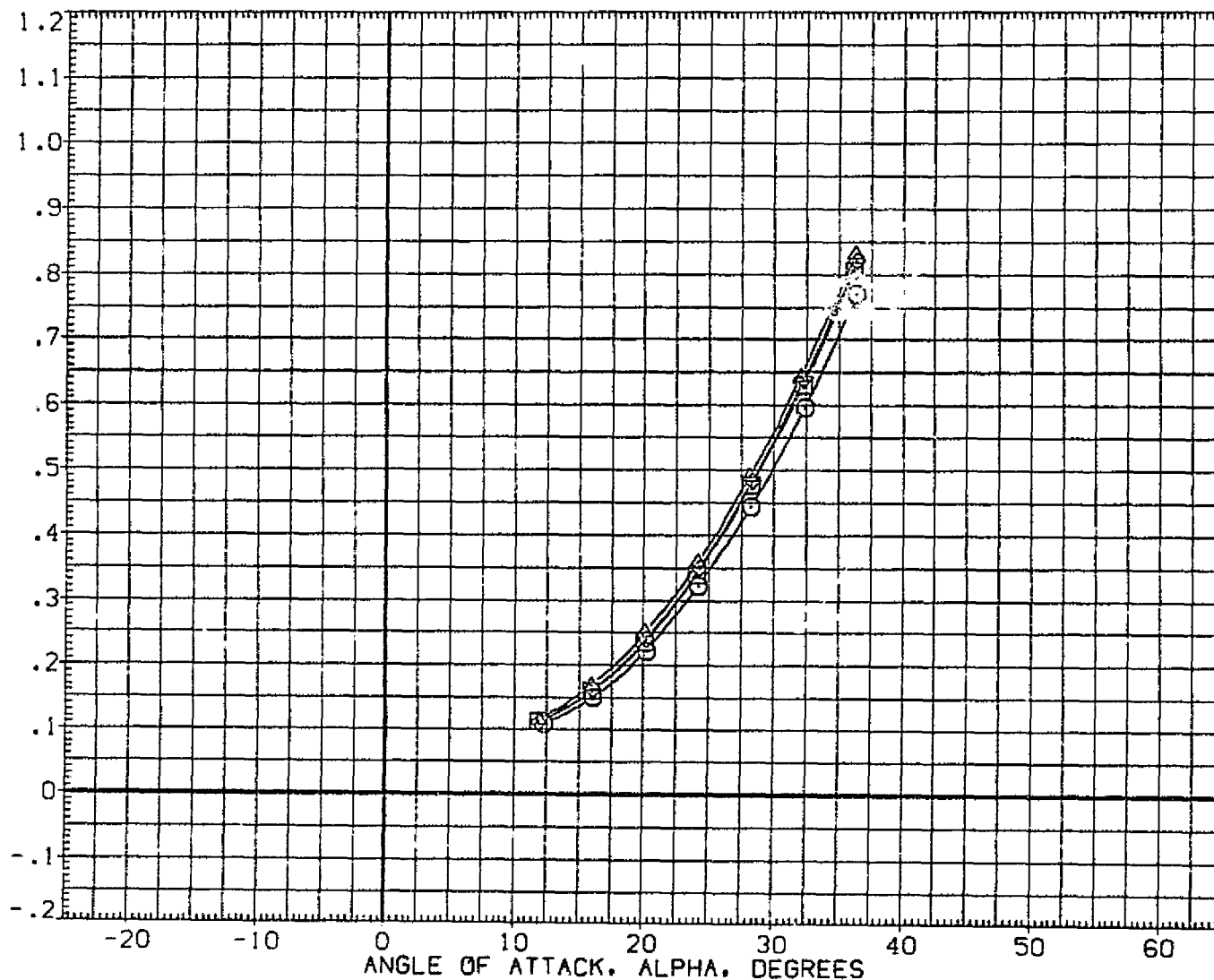
EFFECT OF POSITIVE DEFLECTED SEALED ELEVONS

(A)MACH = 10.33

PAGE 44

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BD/FLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
(CQJ012)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ013)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	55.000	10.000	LREF 474.8000 IN.
(DQJ013)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPSEALED	1.246	16.300	55.000	10.000	BREF 936.7000 IN.
(CQJ018)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPSEALED	1.200	16.300	55.000	15.000	XMRP 1076.7000 IN. X0 YMRP .0000 IN. Y0 ZMRP 375.0000 IN. Z0 SCALE .0100

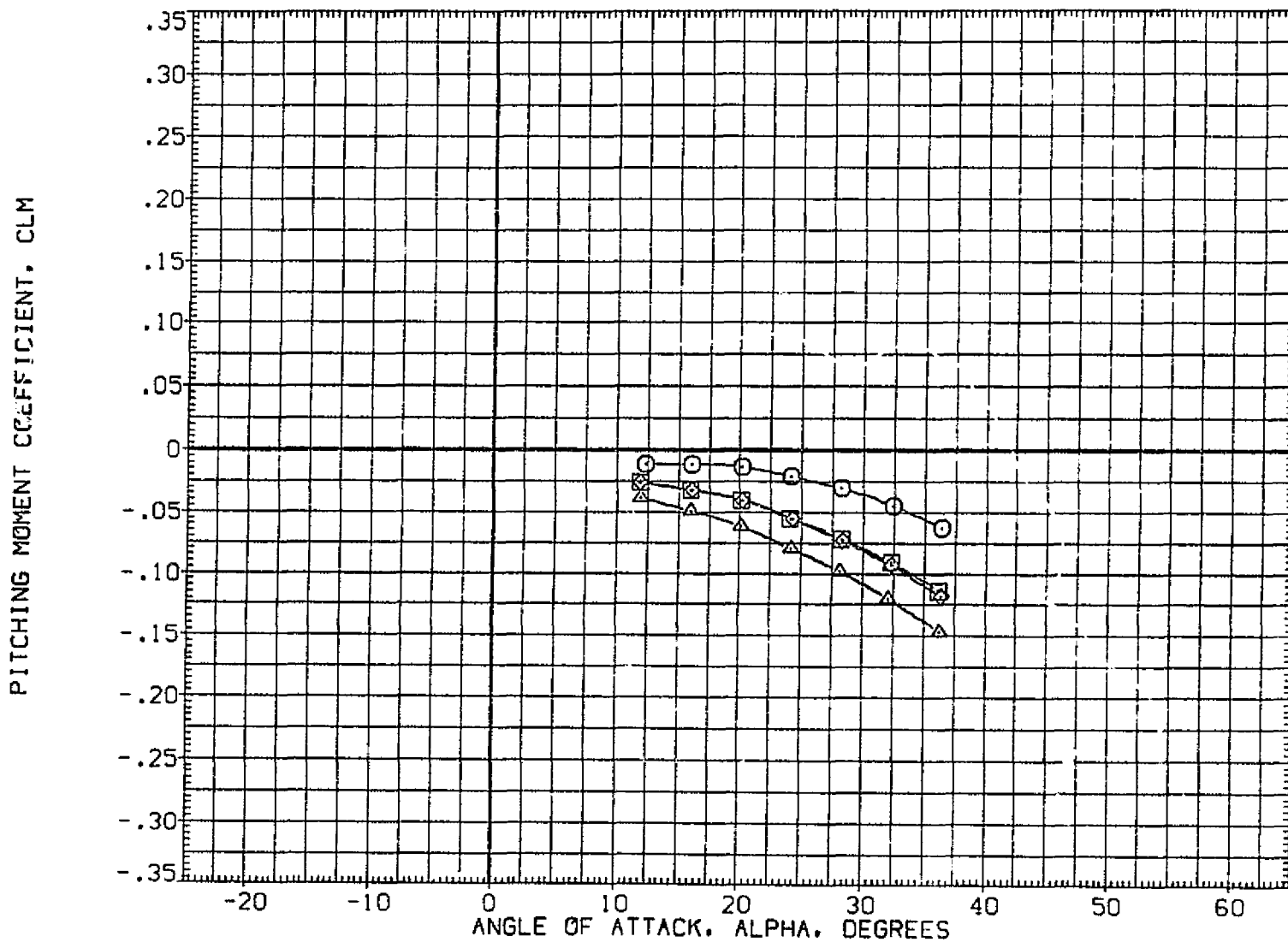
DRAG COEFFICIENT, CD



EFFECT OF POSITIVE DEFLECTED SEALED ELEVONS

(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
(CQJ012)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ013)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	55.000	10.000	LREF 474.8000 IN.
(DQJ013)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPSEALED	1.246	16.300	55.000	10.000	BREF 936.7000 IN.
(CQJ018)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPSEALED	1.200	16.300	55.000	15.000	XMRP 1076.0000 IN. X0 YMRP .0000 IN. Y0 ZMRP 375.0000 IN. Z0 SCALE .0100

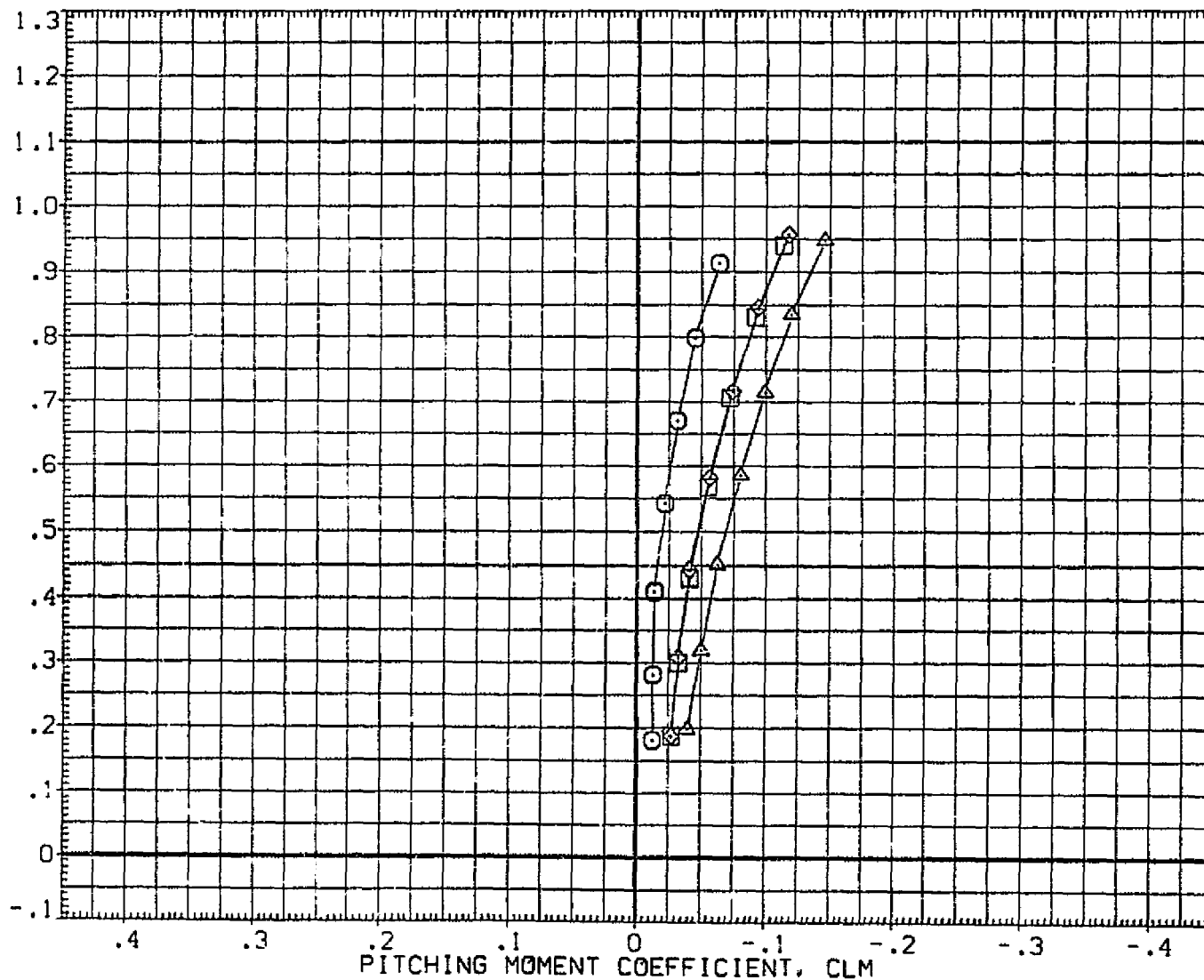


EFFECT OF POSITIVE DEFLECTED SEALED ELEVONS

(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
(CQJ012)	0A-90 CFHT-110 R1-140A/B MODEL 72-0 0TRGAPUNSEAL	.989	16.300	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ013)	0A-90 CFHT-110 R1-140A/B MODEL 72-0 0TRGAPSEALED	.960	16.300	55.000	10.000	LREF 474.8000 IN.
(CQJ013)	0A-90 CFHT-110 R1-140A/B MODEL 72-0 0TRGAPSEALED	1.246	16.300	55.000	10.000	BREF 936.7000 IN.
(CQJ018)	0A-90 CFHT-110 R1-140A/B MODEL 72-0 0TRGAPSEALED	1.200	16.300	55.000	15.000	XMRP 1076.7000 IN. X0 YMRP .0000 IN. Y0 ZMRP 375.0000 IN. Z0 SCALE .0100

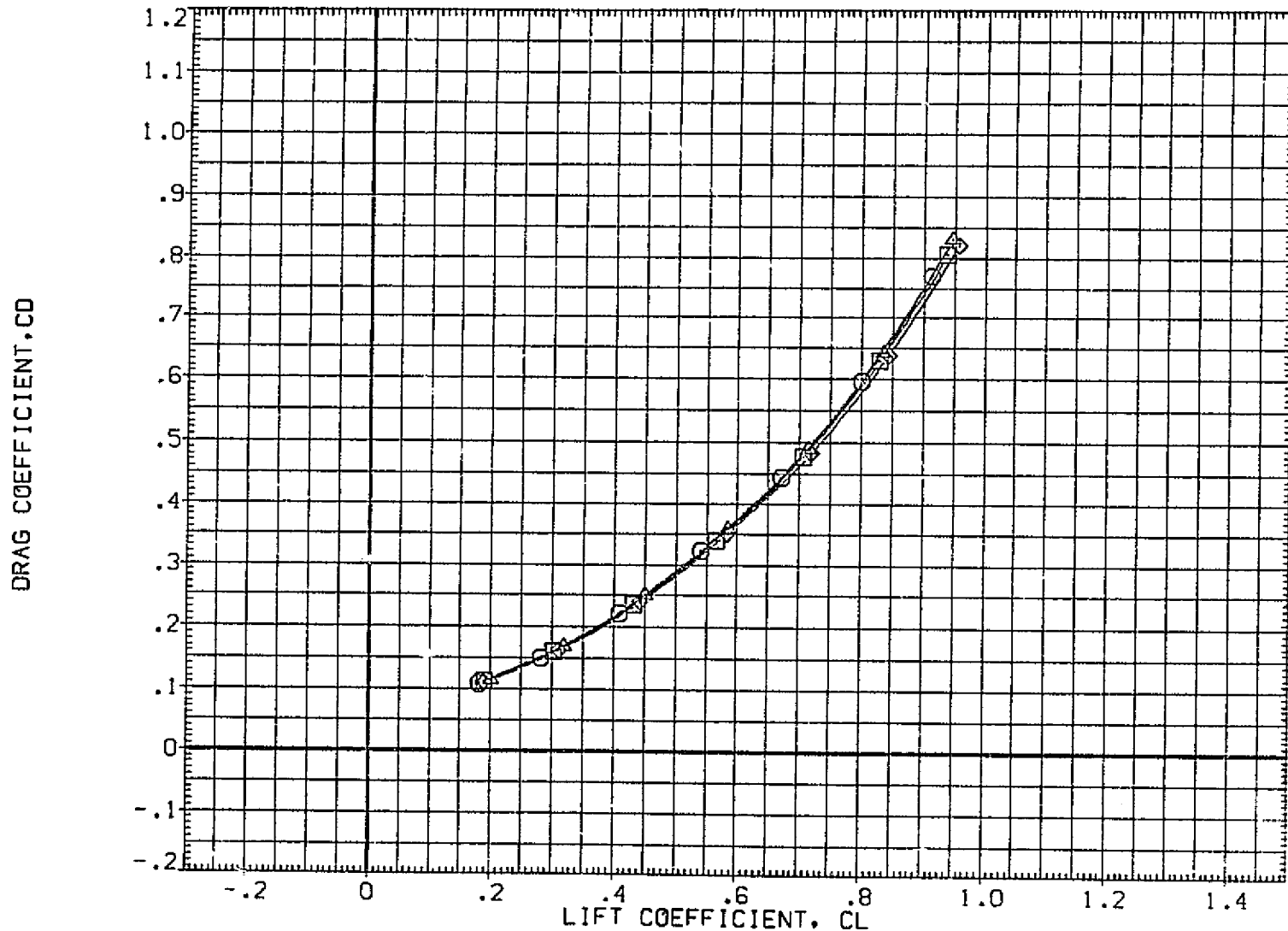
LIFT COEFFICIENT, CL



EFFECT OF POSITIVE DEFLECTED SEALED ELEVONS

(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPOBRK	ELEVTR	REFERENCE INFORMATION
(CGJO12)	GA-9D CFHT-110 RI-140A/B MODEL 72-0 01RGAPUNSEAL	.989	16.300	55.000	.000	SREF 2690.0000 SQ.FT.
(CGJO13)	GA-9D CFHT-110 RI-140A/B MODEL 72-0 0TRGAPSEALED	.960	16.300	55.000	10.000	LREF 474.8000 IN.
(CGJO14)	GA-9D CFHT-110 RI-140A/B MODEL 72-0 0TRGAPSEALED	1.246	16.300	55.000	10.000	BREF 936.7000 IN.
(CGJO15)	GA-9D CFHT-110 RI-140A/B MODEL 72-0 0TRGAPSEALED	1.200	16.300	55.000	15.000	XMRP 1076.7000 IN. X0 YMRP .0000 IN. Y0 ZMRP 375.0000 IN. Z0 SCALE .0100



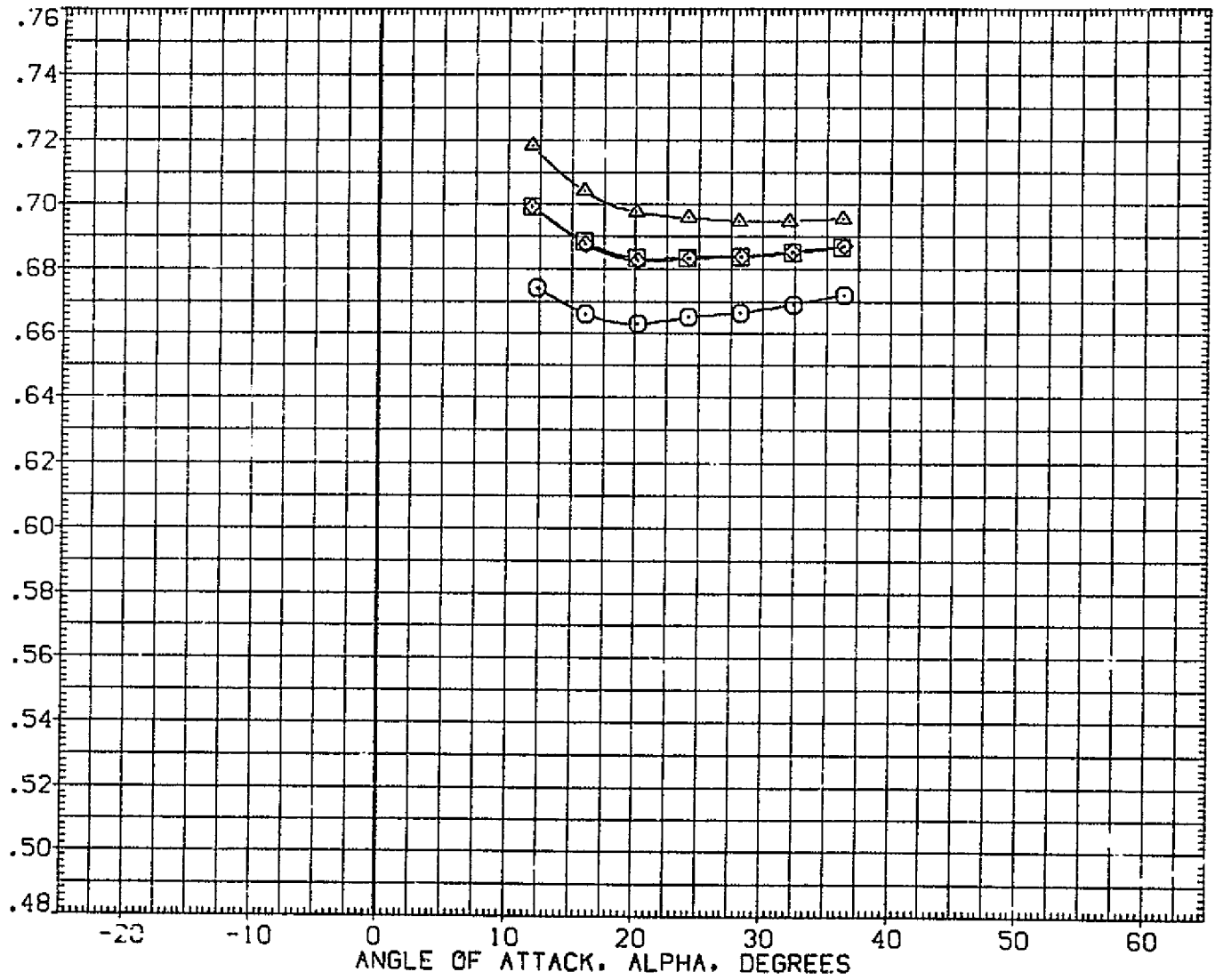
EFFECT OF POSITIVE DEFLECTED SEALED ELEVONS

(A)MACH = 10.33



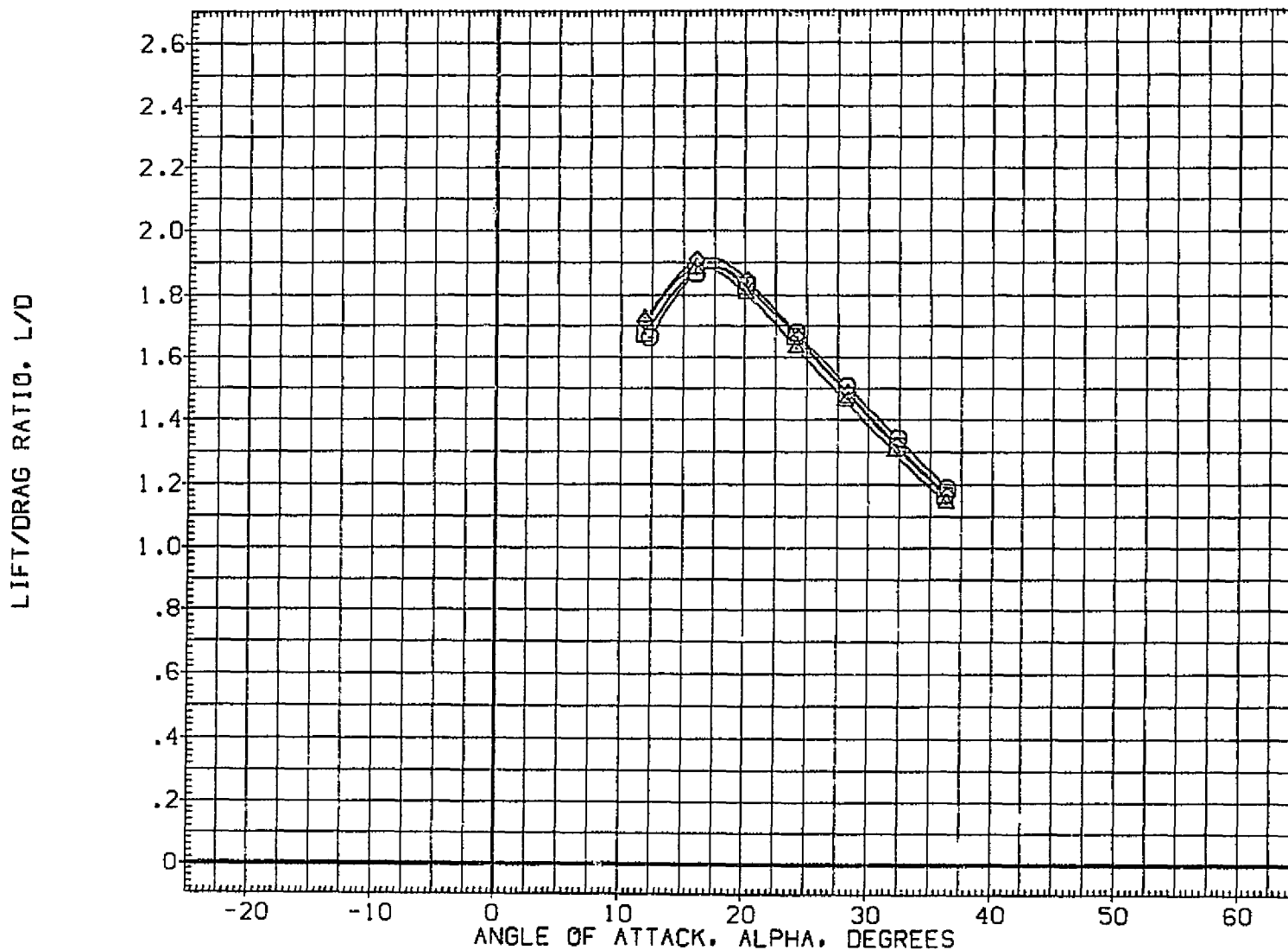
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BOFLAP	SPOBRK	ELEVTR	REFERENCE INFORMATION
(CQJ012)	0A-90 CFHT-110 R1-140A/B MODEL 72-0 0TRGAPUNSEAL	.989	16.300	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ013)	0A-90 CFHT-110 R1-140A/B MODEL 72-0 0TRGAPSEALED	.960	16.300	55.000	10.000	LREF 474.8000 IN.
(CQJ013)	0A-90 CFHT-110 R1-140A/B MODEL 72-0 0TRGAPSEALED	1.246	16.300	55.000	10.000	BREF 936.7000 IN.
(CQJ018)	0A-90 CFHT-110 R1-140A/B MODEL 72-0 0TRGAPSEALED	1.200	16.300	55.000	15.000	XMRP 1076.7000 IN. X0 YMRP .0000 IN. Y0 ZMRP 375.0000 IN. Z0 SCALE .0100

CENTER OF PRESSURE LOCATION BASED ON BODY LENGTH. XCP/L



EFFECT OF POSITIVE DEFLECTED SEALED ELEVONS
(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BOFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
(CQJ012)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ013)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	55.000	10.000	LREF 474.8000 IN.
(CQJ013)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.246	16.300	55.000	10.000	BREF 936.7000 IN.
(CQJ018)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.200	16.300	55.000	15.000	XMRP 1076.7000 IN. X0 YMRP .0000 IN. Y0 ZMRP 375.0000 IN. Z0 SCALE .0100



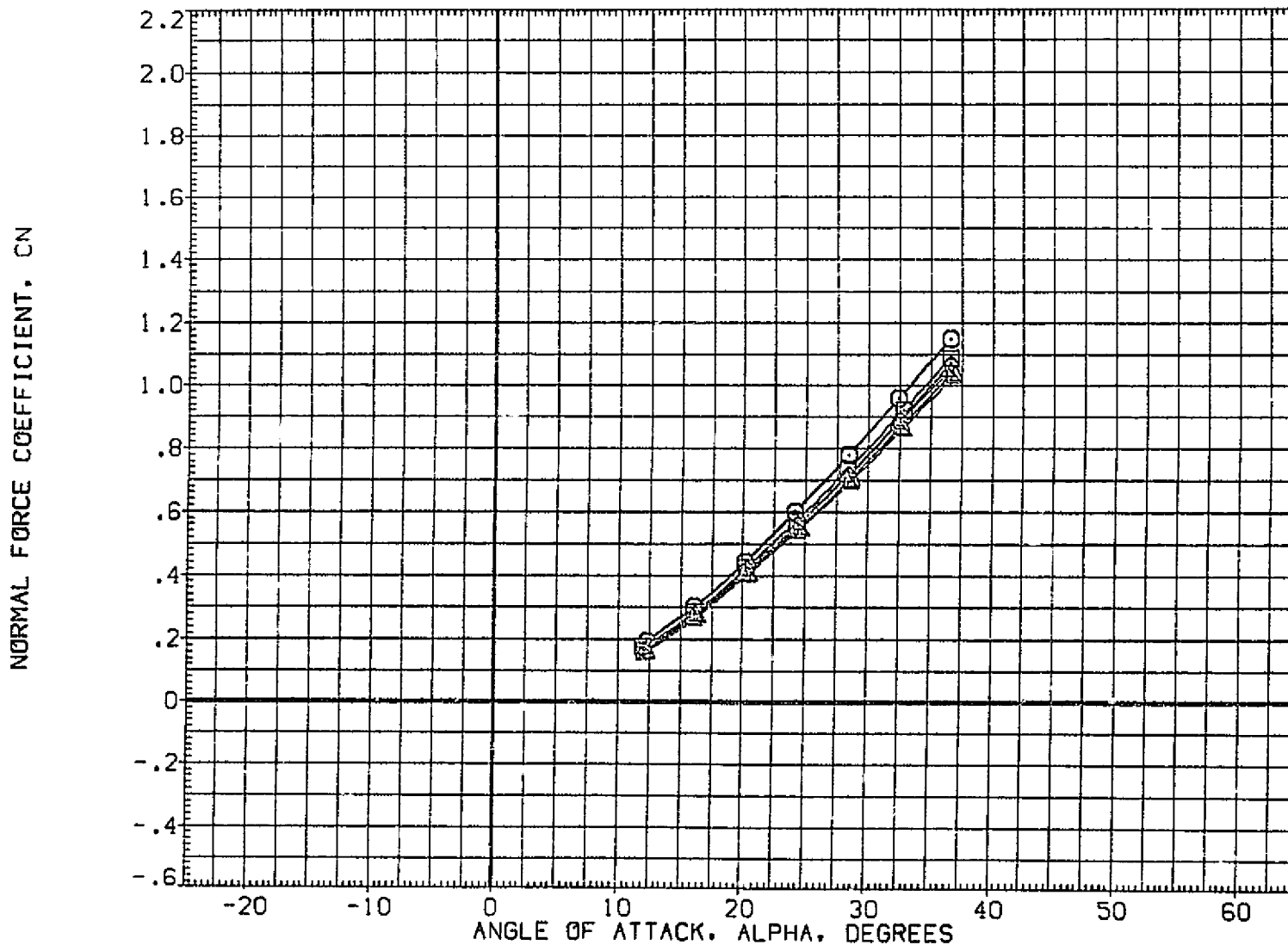
EFFECT OF POSITIVE DEFLECTED SEALED ELEVONS

(A)MACH = 10.33

PAGE 50



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
(CQJ011)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.948	-11.700	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ019)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.963	-11.700	55.000	-10.000	LREF 474.8000 IN.
(CQJ020)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.991	-11.700	55.000	-20.000	BREF 935.7000 IN.
(CQJ021)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.601	-11.700	55.000	-40.000	XMRP 1076.7000 IN. X0
(DNJ021)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.987	-11.700	55.000	-40.000	YMRP .0000 IN. Y0
(CQJ022)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.235	-11.700	55.000	-40.000	ZMRP 375.0000 IN. Z0 SCALE .0100

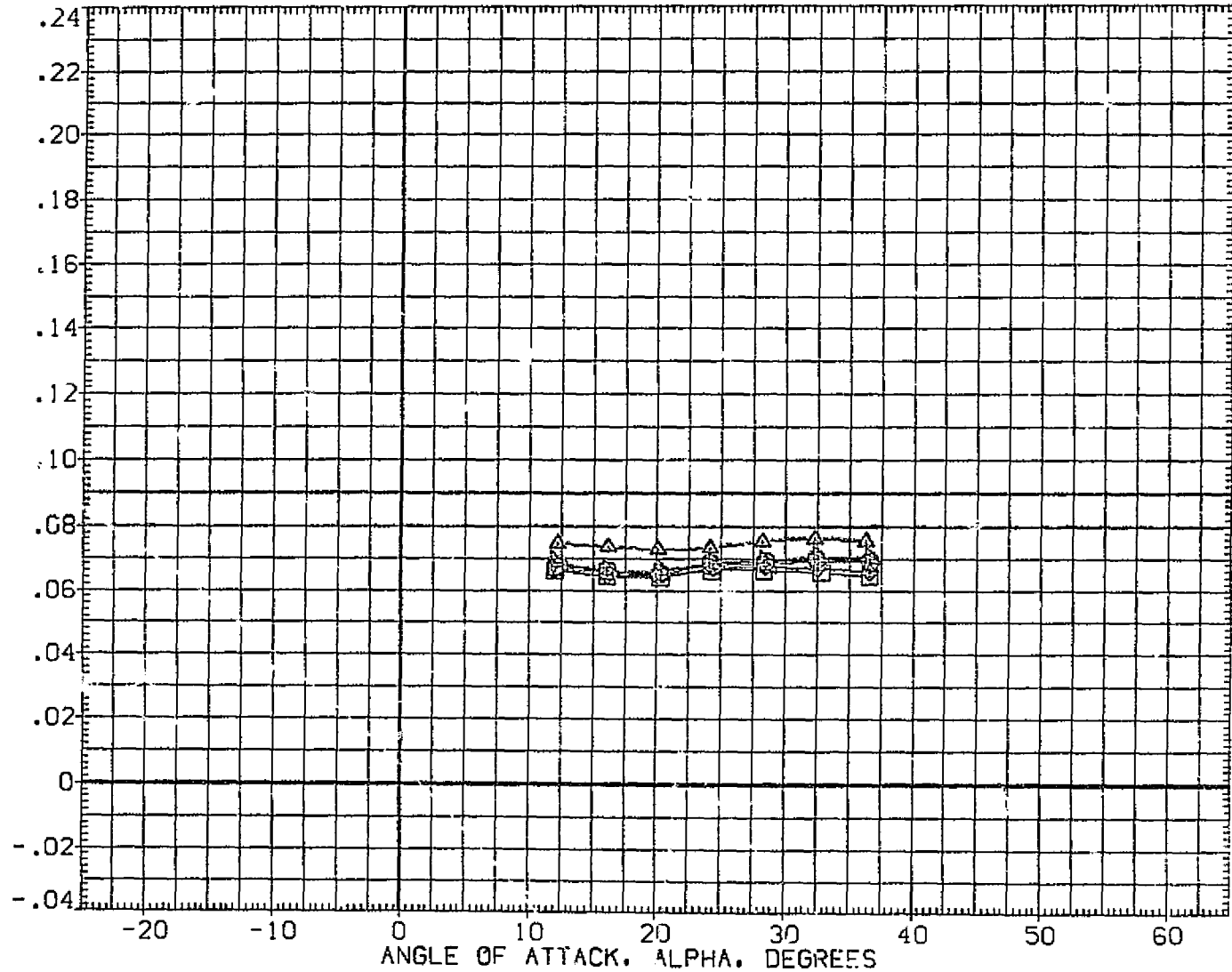


EFFECT OF NEGATIVE DEFLECTED ELEVONS

(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPOBRK	ELEVTR	REFERENCE INFORMATION
(CQJ011)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.948	-11.700	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ019)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.963	-11.700	55.000	-10.000	LREF 474.8000 IN.
(CQJ020)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.991	-11.700	55.000	-20.000	BREF 936.7000 IN.
(CQJ021)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.601	-11.700	55.000	-40.000	ZMRP 1076.7000 IN. X0
(CQJ021)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.987	-11.700	55.000	-40.000	YMRP .0000 IN. Y0
(CQJ022)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	1.235	-11.700	55.000	-40.000	ZMRP 375.0000 IN. Z0
						SCALE .0100

AXIAL FORCE COEFFICIENT, CA

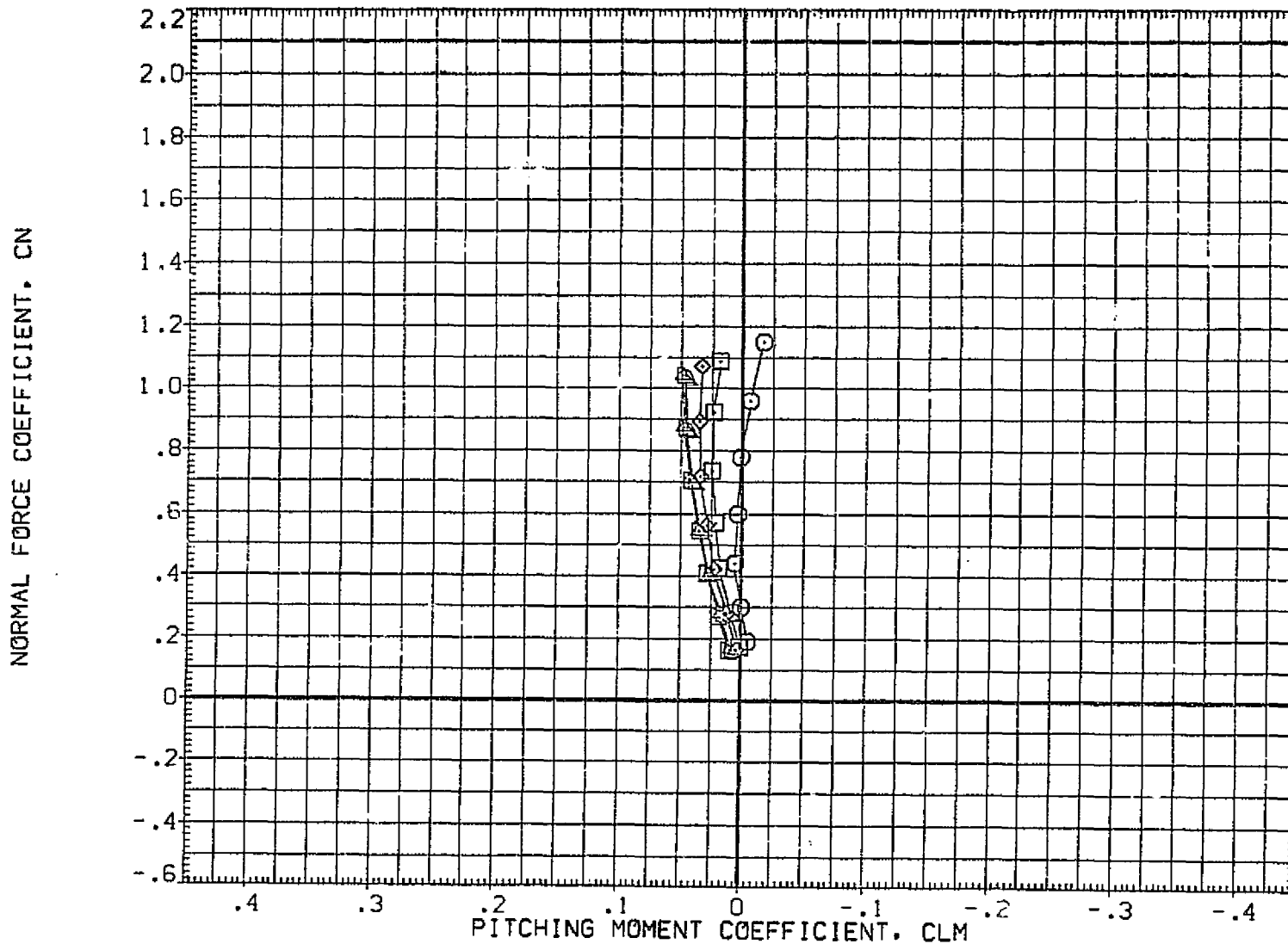


EFFECT OF NEGATIVE DEFLECTED ELEVONS

(A) MACH = 10.33

PAGE 52

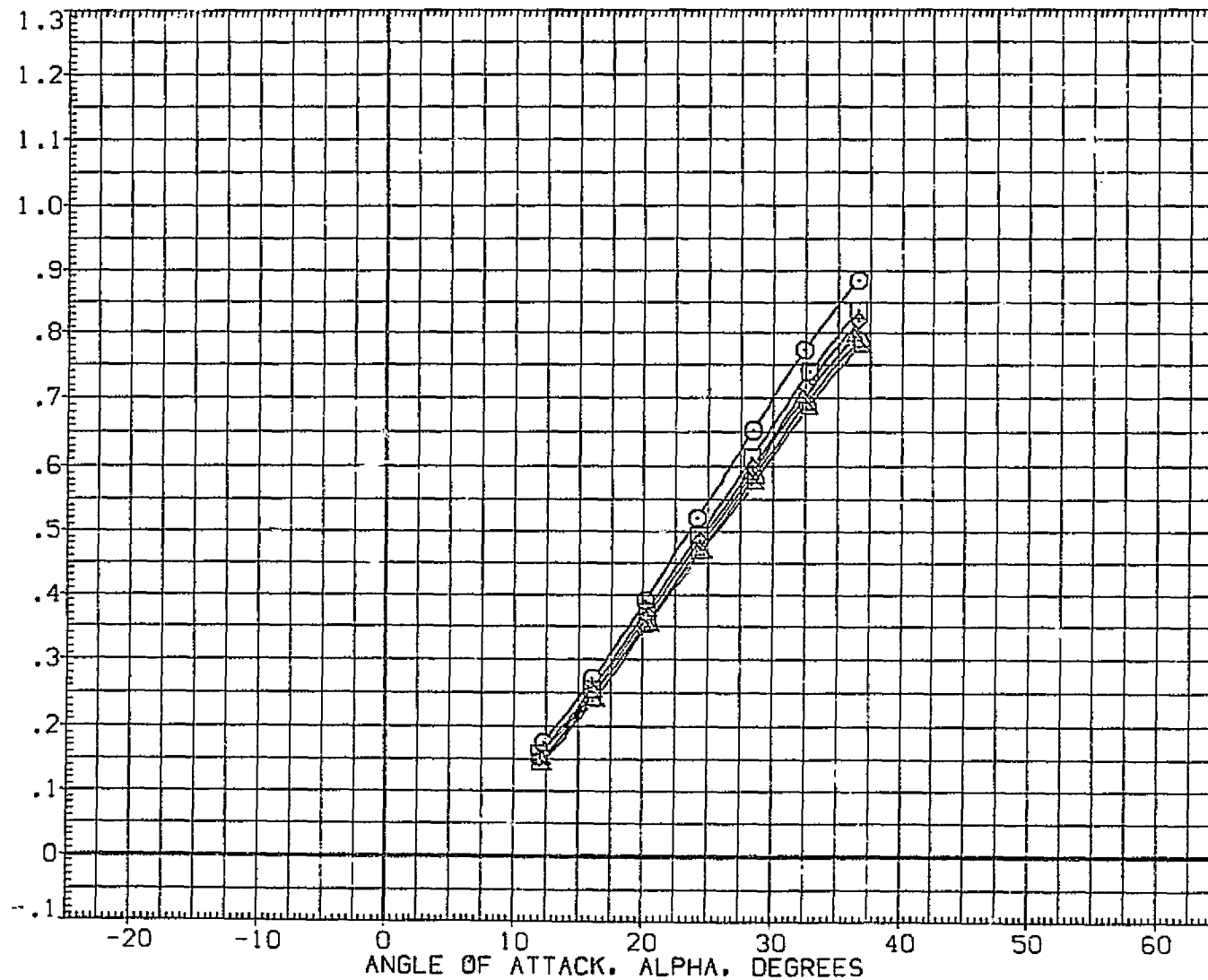
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BOFLAP	SPDRK	ELEVTR	REFERENCE INFORMATION
(CQJ011)	QA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.948	-11.700	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ019)	QA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.963	-11.700	55.000	-10.000	LREF 474.8000 IN.
(CQJ020)	QA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.991	-11.700	55.000	-20.000	BREF 936.7000 IN.
(CQJ021)	QA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.601	-11.700	55.000	-40.000	XMRP 1076.7000 IN. X0
(CQJ021)	QA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.987	-11.700	55.000	-40.000	YMRP .0000 IN. Y0
(CQJ022)	QA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	1.235	-11.700	55.000	-40.000	ZMRP 375.0000 IN. Z0
						SCALE .0100



EFFECT OF NEGATIVE DEFLECTED ELEVONS
 (A) MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
(CQJ011)	□ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.948	-11.700	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ019)	□ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.963	-11.700	55.000	-10.000	LREF 474.8000 IN.
(CQJ020)	□ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.991	-11.700	55.000	-20.000	SREF 936.7000 IN.
(CQJ021)	△ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.601	-11.700	55.000	-40.000	XMRP 1076.7000 IN. X0
(CQJ021)	△ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.987	-11.700	55.000	-40.000	ZMRP .0000 IN. Y0
(CQJ022)	△ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	1.235	-11.700	55.000	-40.000	ZMRP 375.0000 IN. Z0
						SCALE .0100

LIFT COEFFICIENT, CL

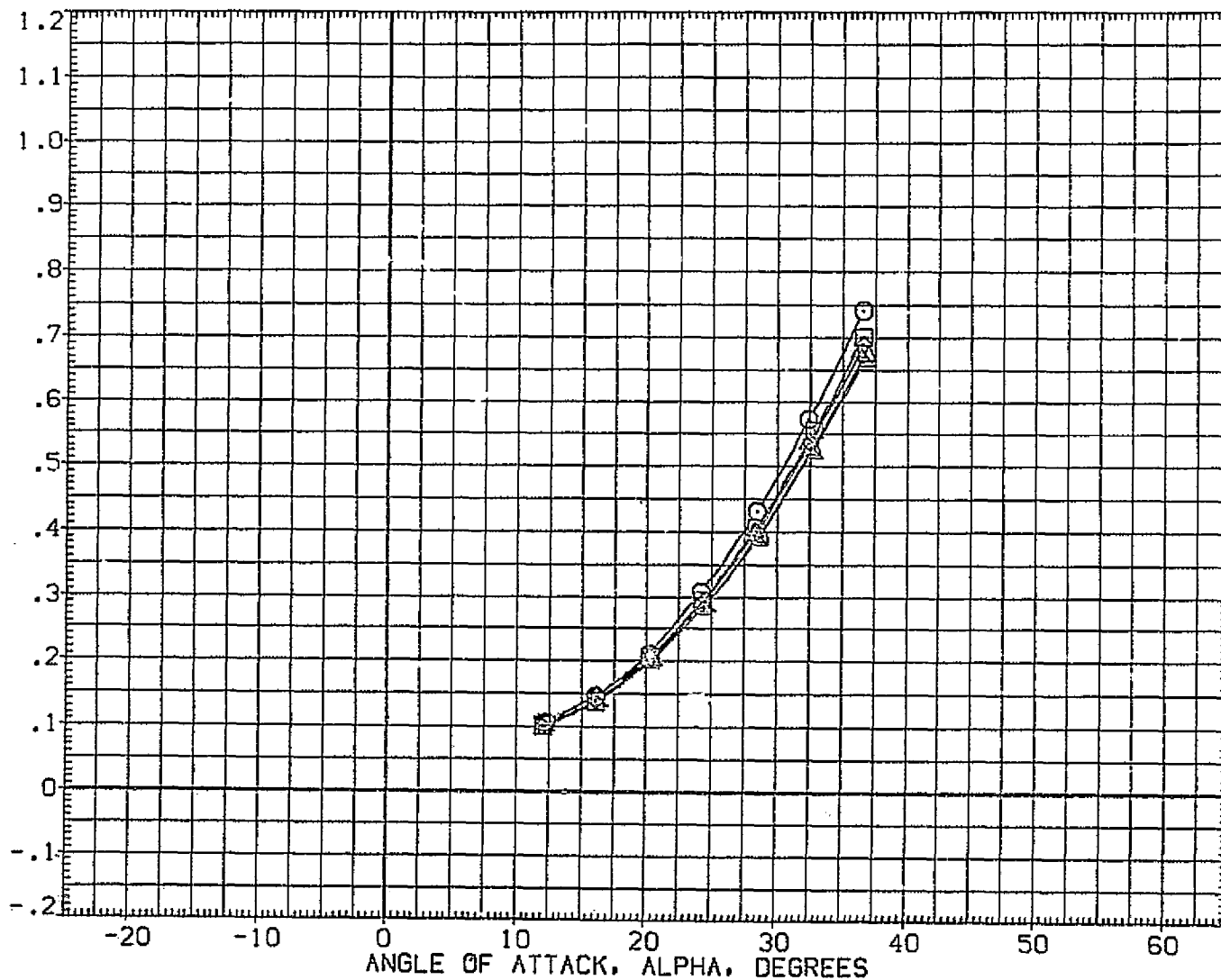


EFFECT OF NEGATIVE DEFLECTED ELEVONS
 (A)MACH = 10.33



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
(CGJ011)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.948	-11.700	55.000	.000	SREF 2690.0000 SQ.FT.
(CGJ019)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.963	-11.700	55.000	-10.000	LREF 474.8000 IN.
(CGJ020)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.991	-11.700	55.000	-20.000	BREF 936.7000 IN.
(CGJ021)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.601	-11.700	55.000	-40.000	XMRP 1076.7000 IN. X0
(CGJ021)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.987	-11.700	55.000	-40.000	YMRP .0000 IN. Y0
(CGJ022)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.235	-11.700	55.000	-40.000	ZMRP 375.0000 IN. Z0
						SCALE .0100

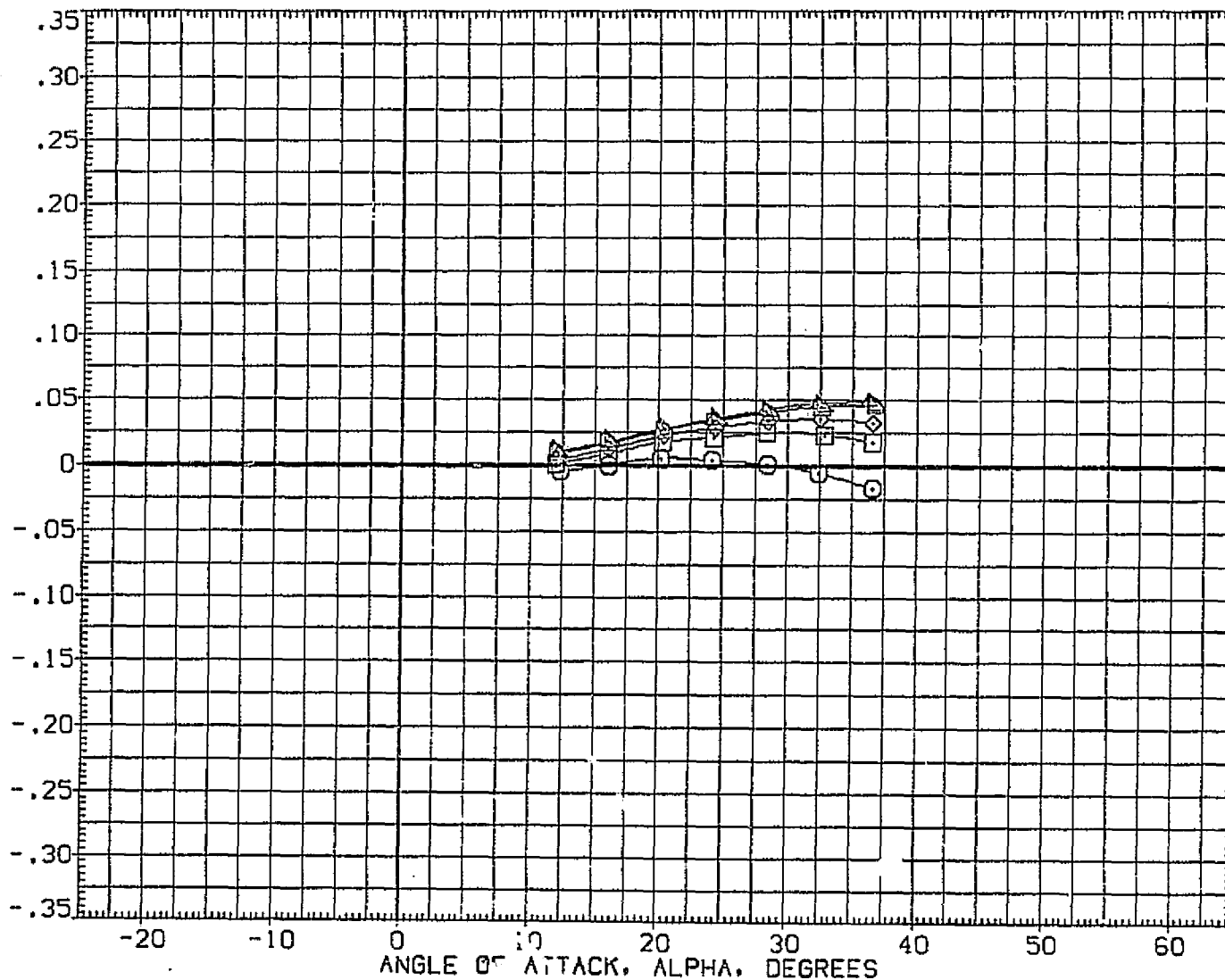
DRAG COEFFICIENT, CD



EFFECT OF NEGATIVE DEFLECTED ELEVONS
 (A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
(CQJ011)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.949	-11.700	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ019)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.963	-11.700	55.000	-10.000	LREF 474.8000 IN.
(CQJ020)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.991	-11.700	55.000	-20.000	BREF 936.7000 IN.
(CQJ021)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.601	-11.700	55.000	-40.000	XMRP 1076.7000 IN. X0
(CQJ021)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.987	-11.700	55.000	-40.000	YMRP .0000 IN. Y0
(CQJ022)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPSEALED	1.235	-11.700	55.000	-40.000	ZMRP 375.0000 IN. Z0
						SCALE .0100

PITCHING MOMENT COEFFICIENT, CLM

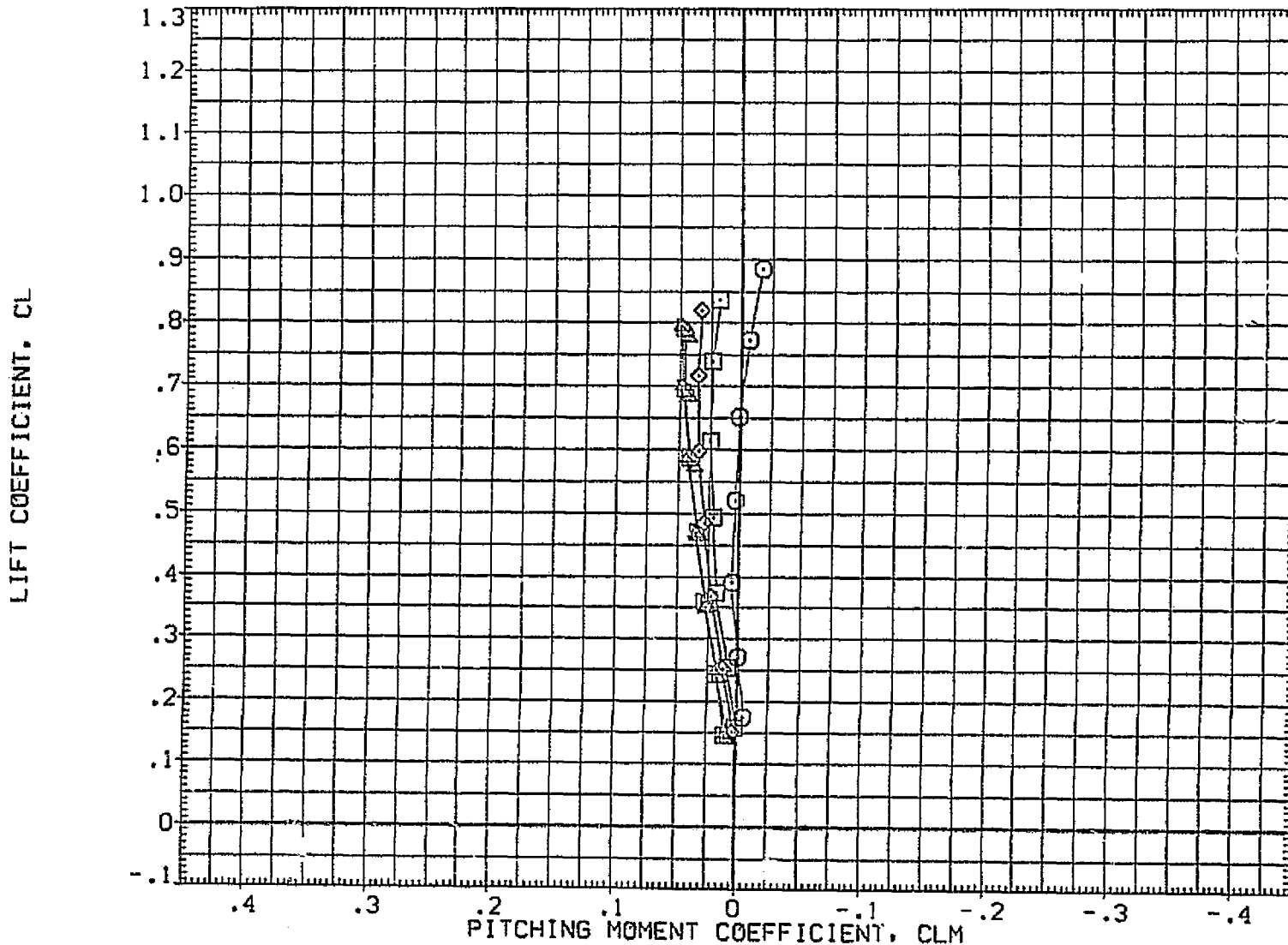


EFFECT OF NEGATIVE DEFLECTED ELEVONS

(A)MACH = 10.33

PAGE 56

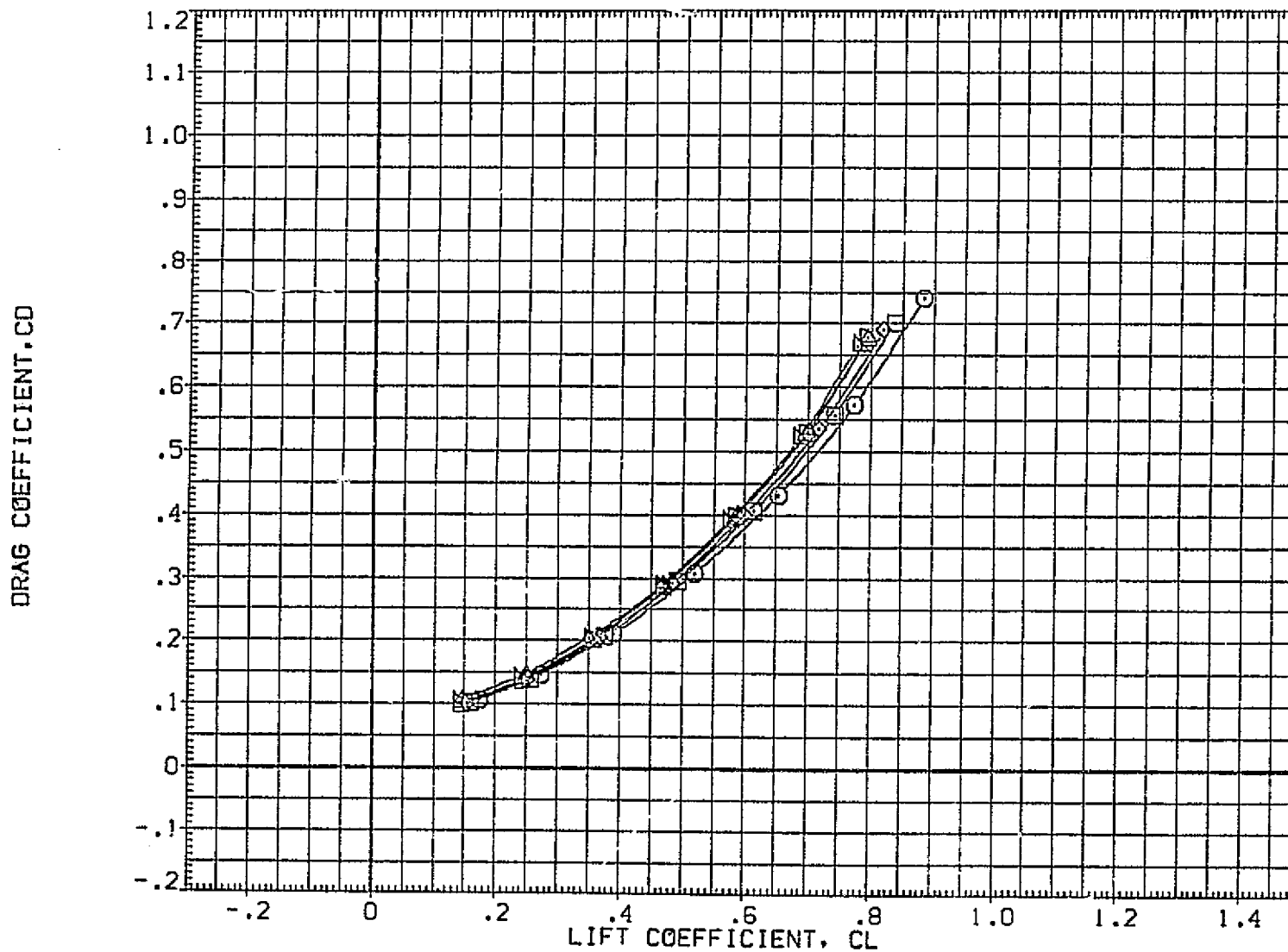
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BOFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
(CQJ011)	QA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.948	-11.700	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ019)	QA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.963	-11.700	55.000	-10.000	LREF 474.8000 IN.
(CQJ020)	QA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.991	-11.700	55.000	-20.000	BREF 936.7000 IN.
(CQJ021)	QA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.601	-11.700	55.000	-40.000	XMRP 1076.7000 IN. X0
(CQJ021)	QA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.987	-11.700	55.000	-40.000	YMRP .0000 IN. Y0
(CQJ022)	QA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.235	-11.700	55.000	-40.000	ZMRP 375.0000 IN. Z0
						SCALE .0100



EFFECT OF NEGATIVE DEFLECTED ELEVONS

(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
(CQJ011)	QA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.948	-11.700	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ019)	QA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.963	-11.700	55.000	-10.000	LREF 474.8000 IN.
(CQJ020)	QA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.991	-11.700	55.000	-20.000	BREF 936.7000 IN.
(CQJ021)	QA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.601	-11.700	55.000	-40.000	XMRP 1075.7000 IN. X0
(CQJ021)	QA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.987	-11.700	55.000	-40.000	YMRP .0000 IN. Y0
(C7J022)	QA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.235	-11.700	55.000	-40.000	ZMRP 375.0000 IN. Z0
						SCALE .0100

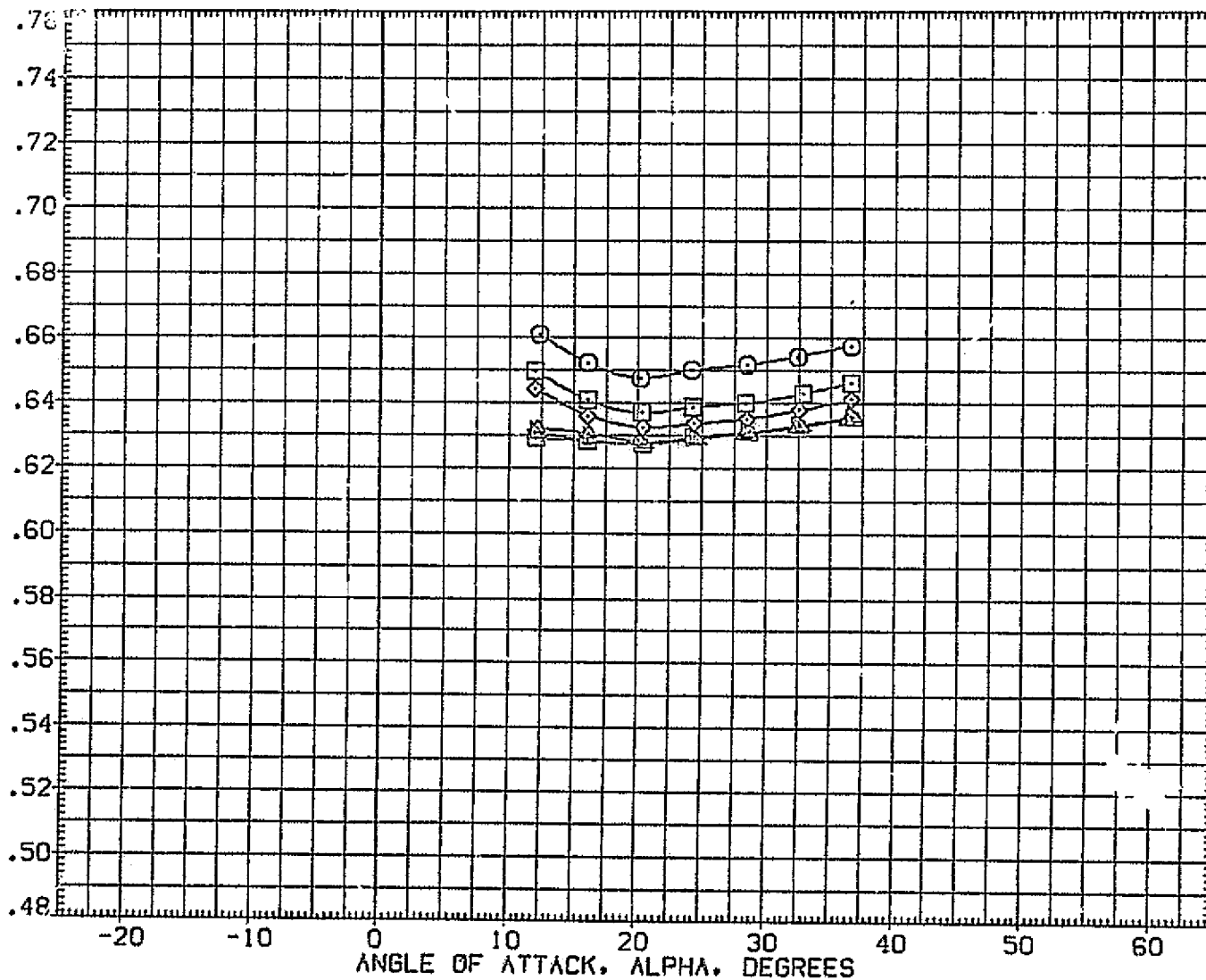


EFFECT OF NEGATIVE DEFLECTED ELEVONS

(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPOBRK	ELEVTR	REFERENCE INFORMATION
(CQJ011)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.948	-11.700	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ019)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.963	-11.700	55.000	-10.000	LREF 474.8000 IN.
(CQJ020)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.991	-11.700	55.000	-20.000	BREF 935.7000 IN.
(CJJO21)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.601	-11.700	55.000	-40.000	XMRP 1076.7000 IN. X0
(DJJO21)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.987	-11.700	55.000	-40.000	YMRP .0000 IN. Y0
(CJJO22)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPSEALED	1.235	-11.700	55.000	-40.000	ZMRP 375.0000 IN. Z0
						SCALE .0100

CENTER OF PRESSURE LOCATION BASED ON BODY LENGTH, XCP/L

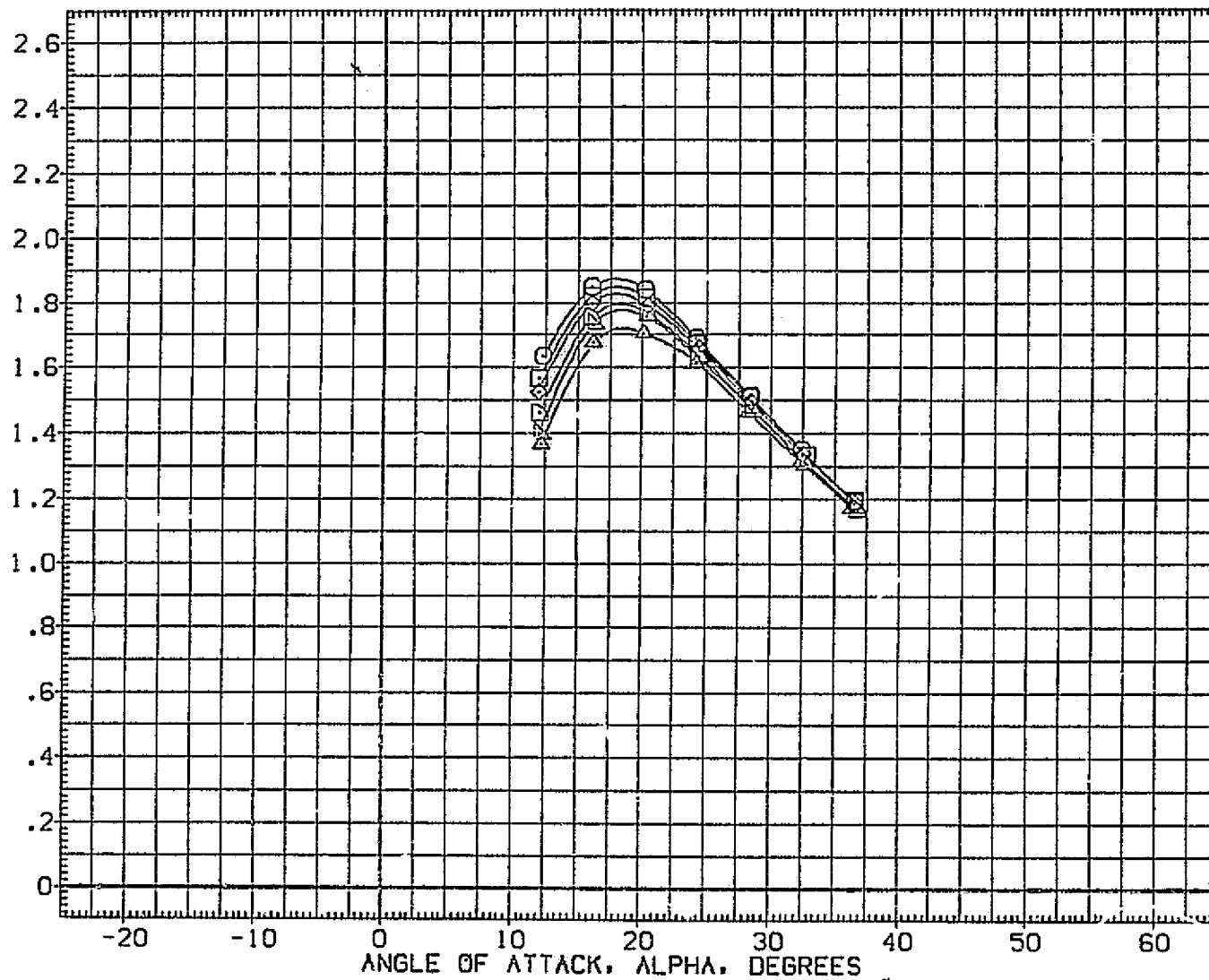


EFFECT OF NEGATIVE DEFLECTED ELEVONS

(M)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
(CQJ011)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.948	-11.700	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ019)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.963	-11.700	55.000	-10.000	LREF 474.8000 IN.
(CQJ020)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.991	-11.700	55.000	-20.000	BREF 936.7000 IN.
(CQJ021)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.601	-11.700	55.000	-40.000	XMRP 1076.7000 IN. X0
(DQJ021)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.987	-11.700	55.000	-40.000	YMRP .0000 IN. Y0
(CQJ022)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.235	-11.700	55.000	-40.000	ZMRP 375.0000 IN. Z0
						SCALE .0100

LIFT/DRAG RATIO, L/D



EFFECT OF NEGATIVE DEFLECTED ELEVONS

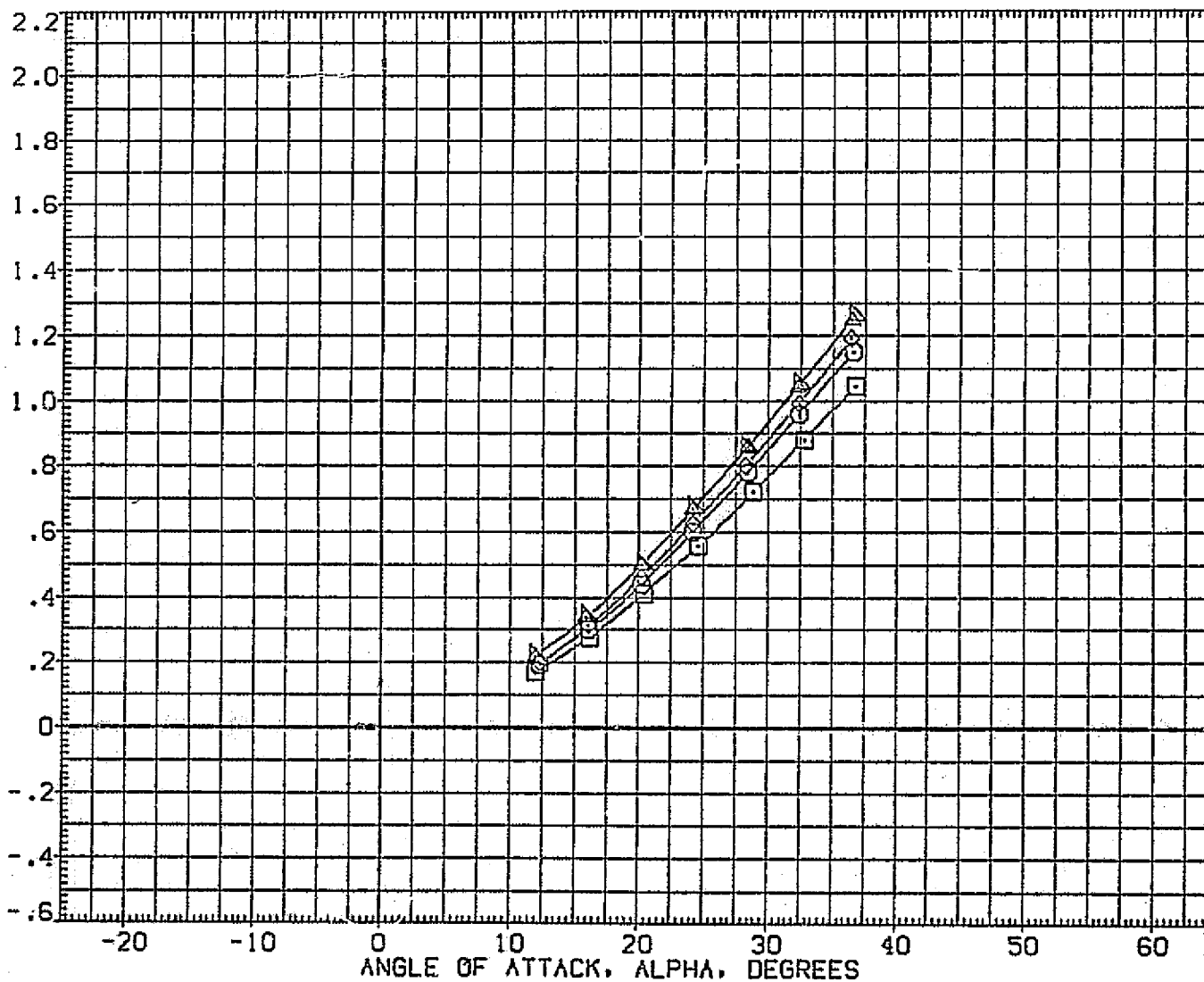
(A)MACH = 10.33

PAGE 60



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	ELEVTR	BETA	REFERENCE INFORMATION
(COJ011)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.948	-11.700	.000	.000	SREF 2690.0000 SQ.FT.
(COJ023)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.219	-11.700	-40.000	-5.000	LREF 474.8000 IN.
(COJ012)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	.000	.000	BREF 936.7000 IN.
(COJ014)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	10.000	-5.000	XMRP 1076.7000 IN. X0
(COJ016)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	10.000	-5.000	YMRP .0000 IN. Y0 ZMRP 375.0000 IN. Z0 SCALE .0100

NORMAL FORCE COEFFICIENT, CN

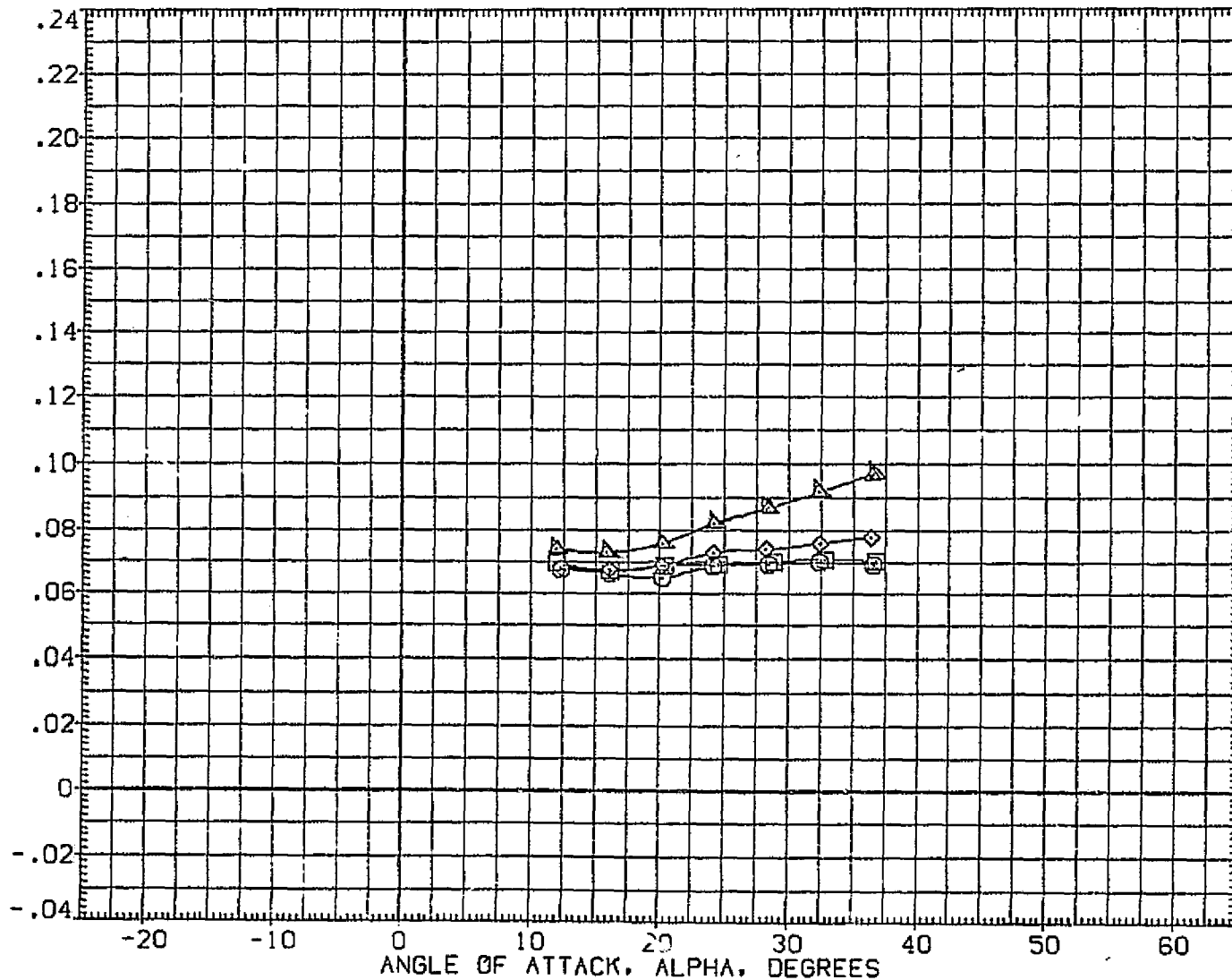


ELEVON EFFECTIVENESS AT -5 DEGREES BETA

(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	ELEVTR	BETA	REFERENCE INFORMATION
(CQJ011)	QA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.948	-11.700	.000	.000	SREF 2690.0000 SQ.FT.
(CQJ023)	QA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPSEALED	1.219	-11.700	-40.000	-5.000	LREF 474.8000 IN.
(CQJ012)	QA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	.000	.000	BREF 936.7000 IN.
(CQJ014)	QA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	10.000	-5.000	XMRP 1076.7000 IN. X0
(CQJ016)	QA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	10.000	-5.000	YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

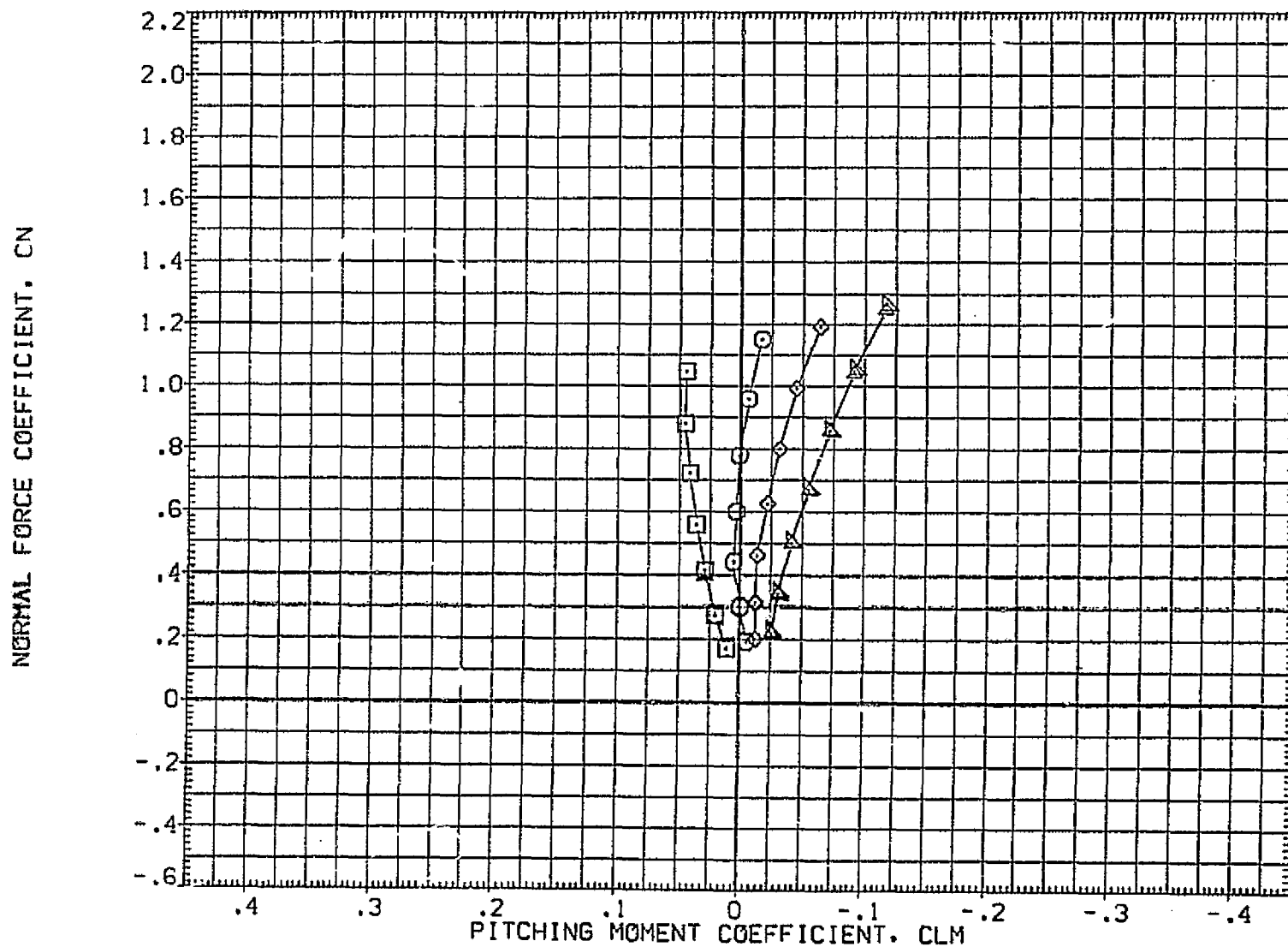
AXIAL FORCE COEFFICIENT, CA



ELEVON EFFECTIVENESS AT -5 DEGREES BETA

(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BOFLAP	ELEVTR	BETA	REFERENCE INFORMATION
(CQJ011)	QA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.948	-11.700	.000	.000	SREF 2690.0000 SQ.FT.
(CQJ023)	QA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.219	-11.700	-40.000	-5.000	LREF 474.8000 IN.
(CQJ012)	QA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	.000	.000	BREF 936.7000 IN.
(CQJ014)	QA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	10.000	-5.000	XMRP 1076.7000 IN. X0
(CQJ016)	QA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	10.000	-5.000	YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

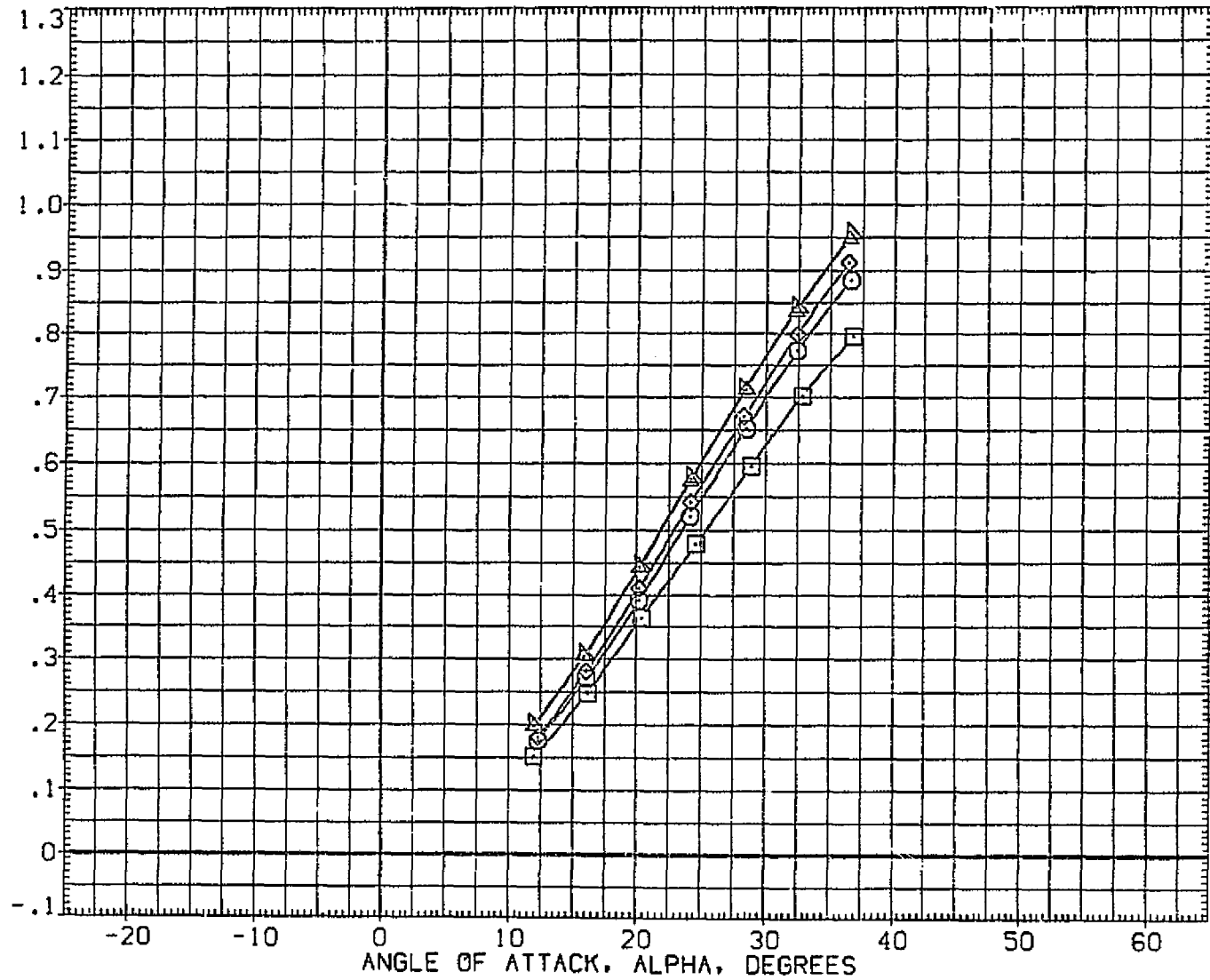


ELEVON EFFECTIVENESS AT -5 DEGREES BETA

(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	ELEVTR	BETA	REFERENCE INFORMATION
(CGJ011)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.948	-11.700	.000	.000	SREF 2690.0000 SQ.FT.
(CGJ023)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.219	-11.700	-40.000	-5.000	LREF 474.8000 IN.
(CGJ012)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	.000	.000	BREF 936.7000 IN.
(CGJ014)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	.860	16.300	10.000	-5.000	XMRP 1076.7000 IN. X0
(CGJ016)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	10.000	-5.000	YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

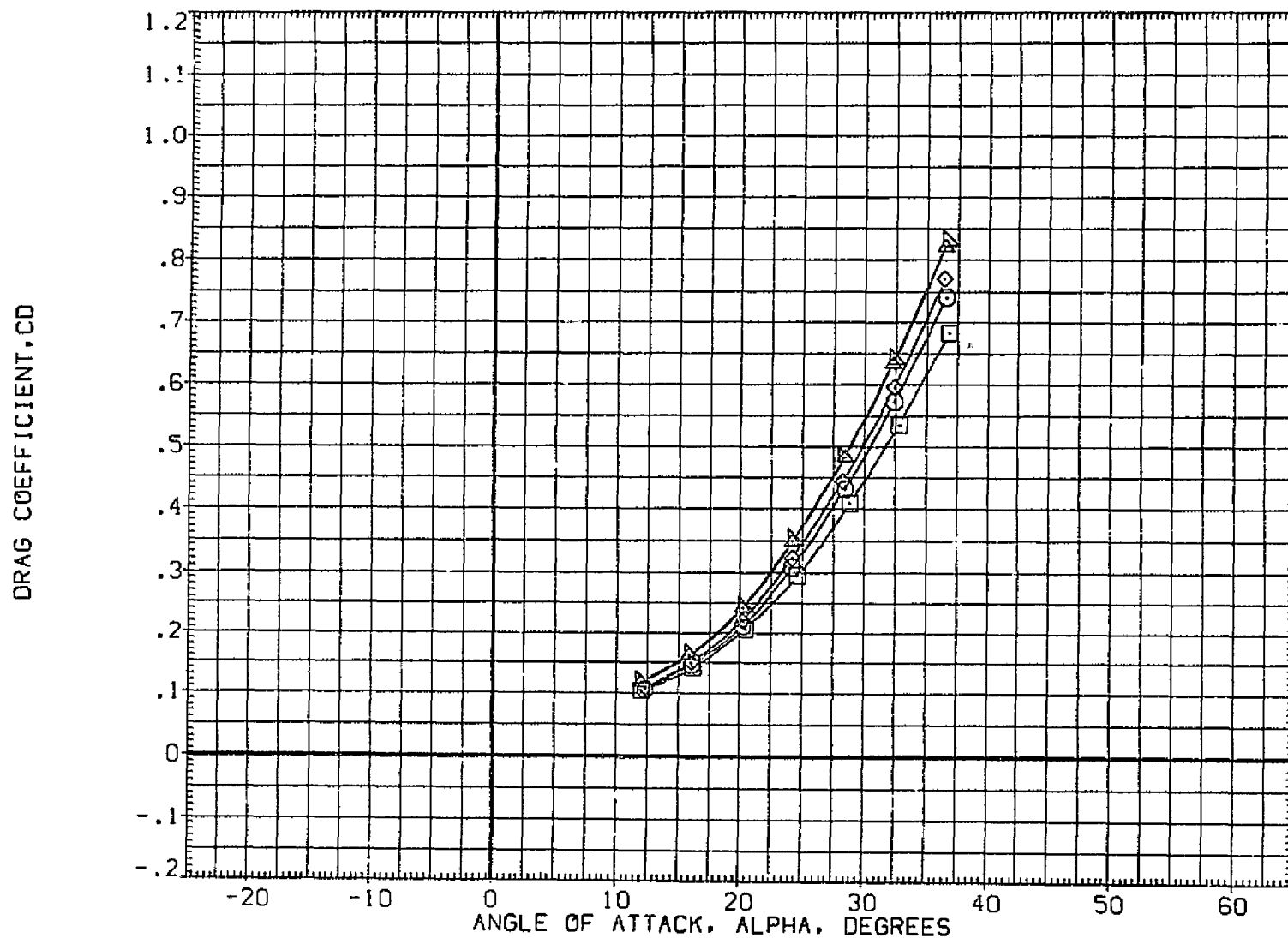
LIFT COEFFICIENT, CL



ELEVON EFFECTIVENESS AT -5 DEGREES BETA

(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BOFLAP	ELEVTR	BETA	REFERENCE INFORMATION
(CQJ011)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.948	-11.700	.000	.000	SREF 2690.0000 SQ.FT.
(CQJ023)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.219	-11.700	-40.000	-5.000	LREF 474.8000 IN.
(CQJ012)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	.000	.000	BREF 936.7000 IN.
(CQJ014)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	10.000	-5.000	XMRP 1076.7000 IN. X0
(CQJ016)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	10.000	-5.000	YMRP .0000 IN. Y0 ZMRP 375.0000 IN. Z0 SCALE .0100



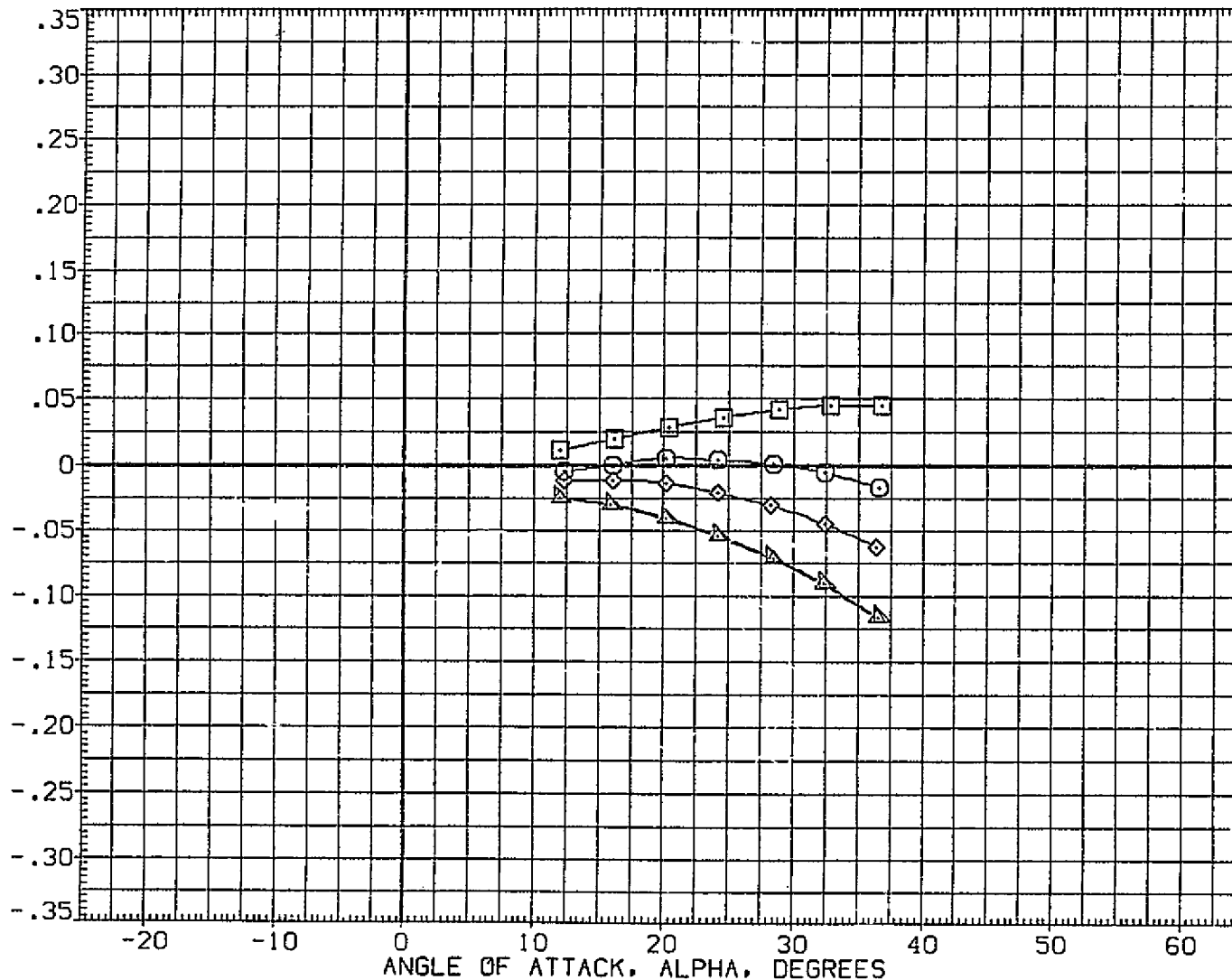
ELEVON EFFECTIVENESS AT -5 DEGREES BETA

(A)MACH = 10.33

C-2

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	ELEVTR	BETA	REFERENCE INFORMATION
(CQJ011)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.948	-11.700	.000	.000	SREF 2690.0000 SQ.FT.
(CQJ023)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.219	-11.700	-40.000	-5.000	LREF 474.8000 IN.
(CQJ012)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	.000	.000	BREF 936.7000 IN.
(CQJ014)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	10.000	-5.000	XMRP 1076.7000 IN. X0
(CQJ016)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	10.000	-5.000	YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

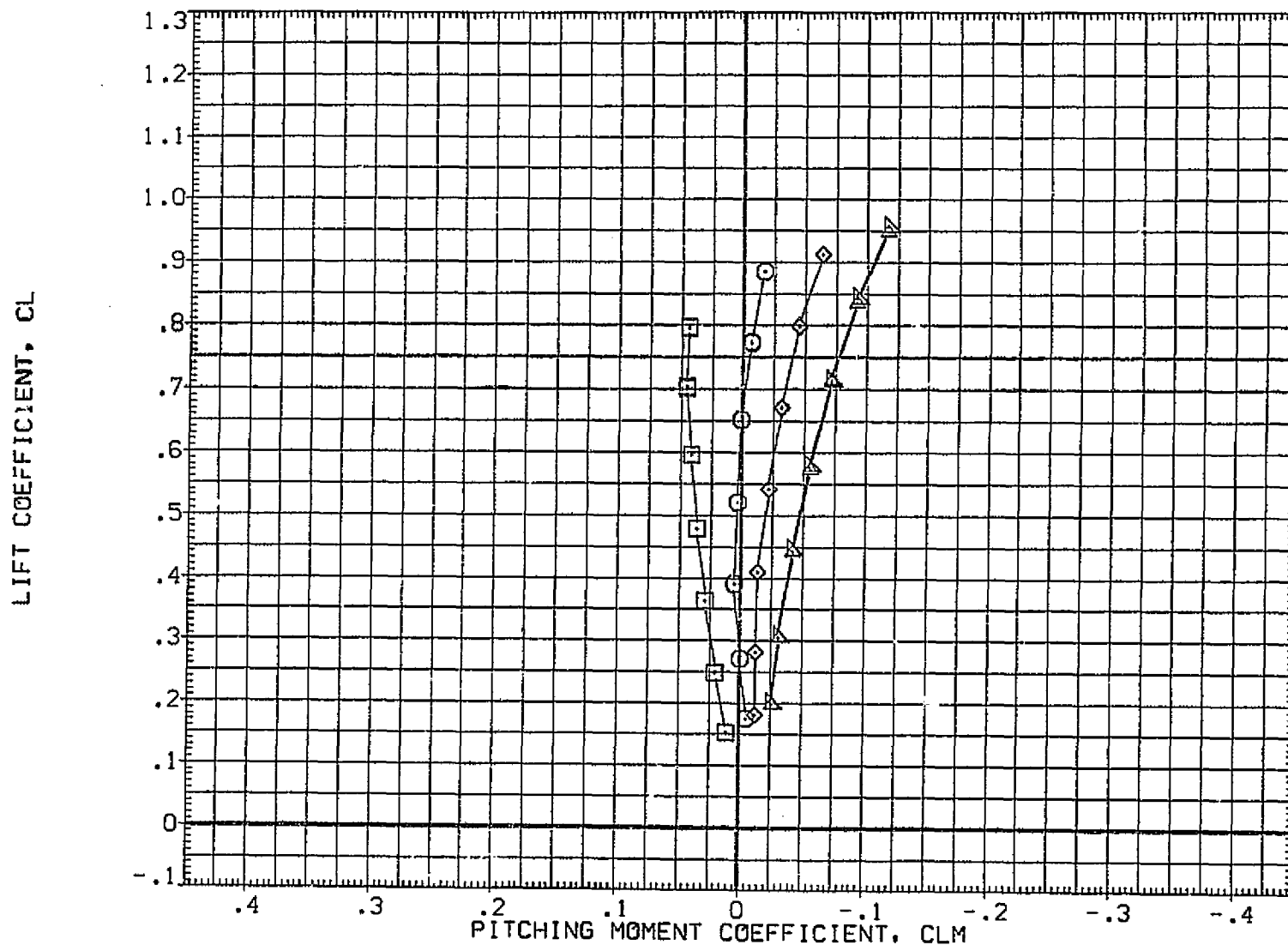
PITCHING MOMENT COEFFICIENT, CLM



ELEVON EFFECTIVENESS AT -5 DEGREES BETA

(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	ELEVTR	BETA	REFERENCE INFORMATION
(CQJ011)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.948	-11.700	.000	.000	SREF 2690.0000 SQ.FT.
(CQJ023)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPSEALED	1.219	-11.700	-40.000	-5.000	LREF 474.8000 IN.
(CQJ012)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	.000	.000	BREF 936.7000 IN.
(CQJ014)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPSEALED	.950	16.300	10.000	-5.000	XMRP 1076.7000 IN. X0
(CQJ016)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	10.000	-5.000	YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

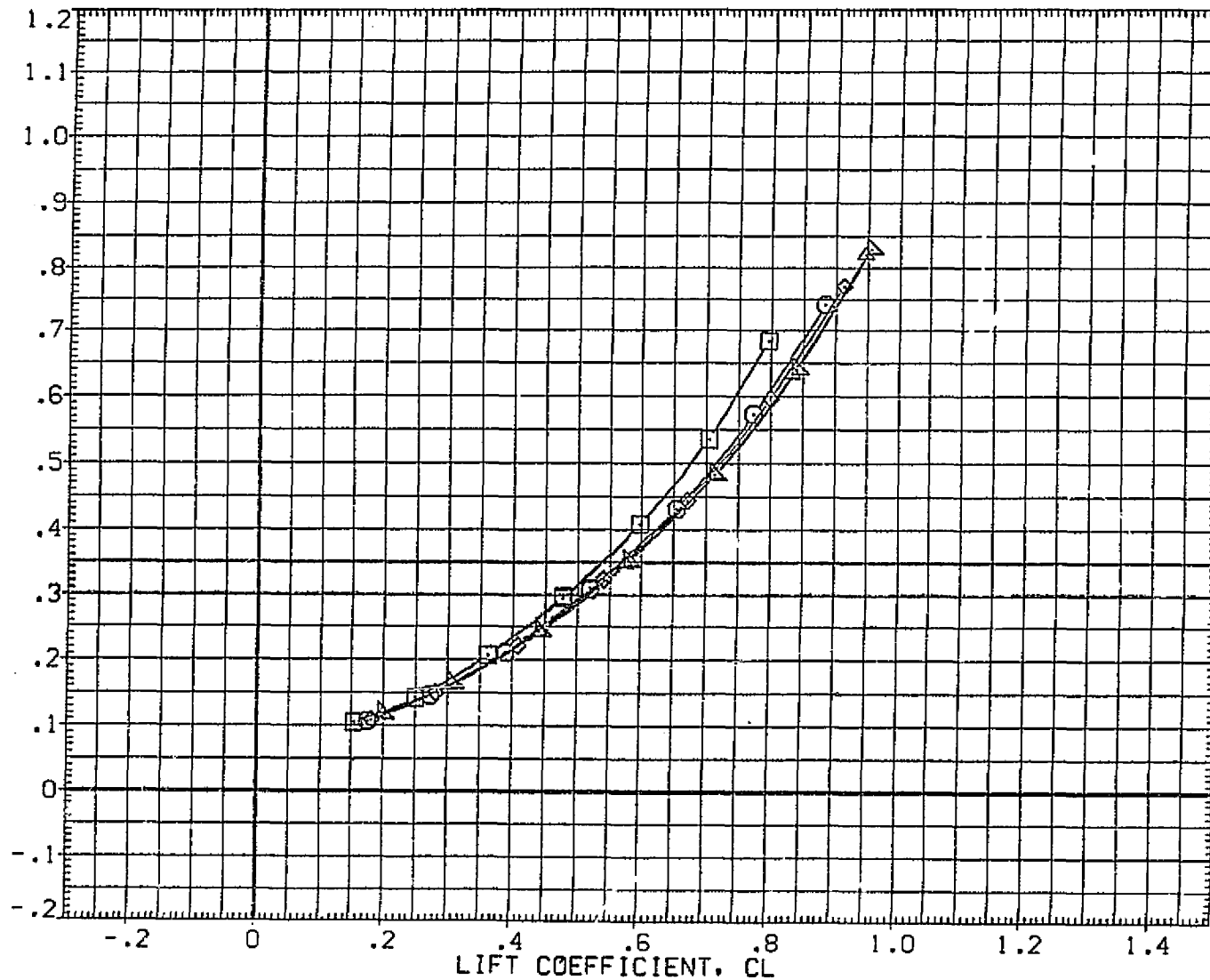


ELEVON EFFECTIVENESS AT -5 DEGREES BETA

(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	ELEVTR	BETA	REFERENCE INFORMATION
(CQJ011)	QA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.948	-11.700	.000	.000	SREF 2690.0000 SQ.FT.
(CQJ023)	QA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPSEALED	1.219	-11.700	-40.000	-5.000	LREF 474.8000 IN.
(CQJ012)	QA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	.000	.000	BREF 936.7000 IN.
(CQJ014)	QA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	10.000	-5.000	XMRP 1076.7000 IN. X0
(CQJ016)	QA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	10.000	-5.000	YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

DRAG COEFFICIENT, CD

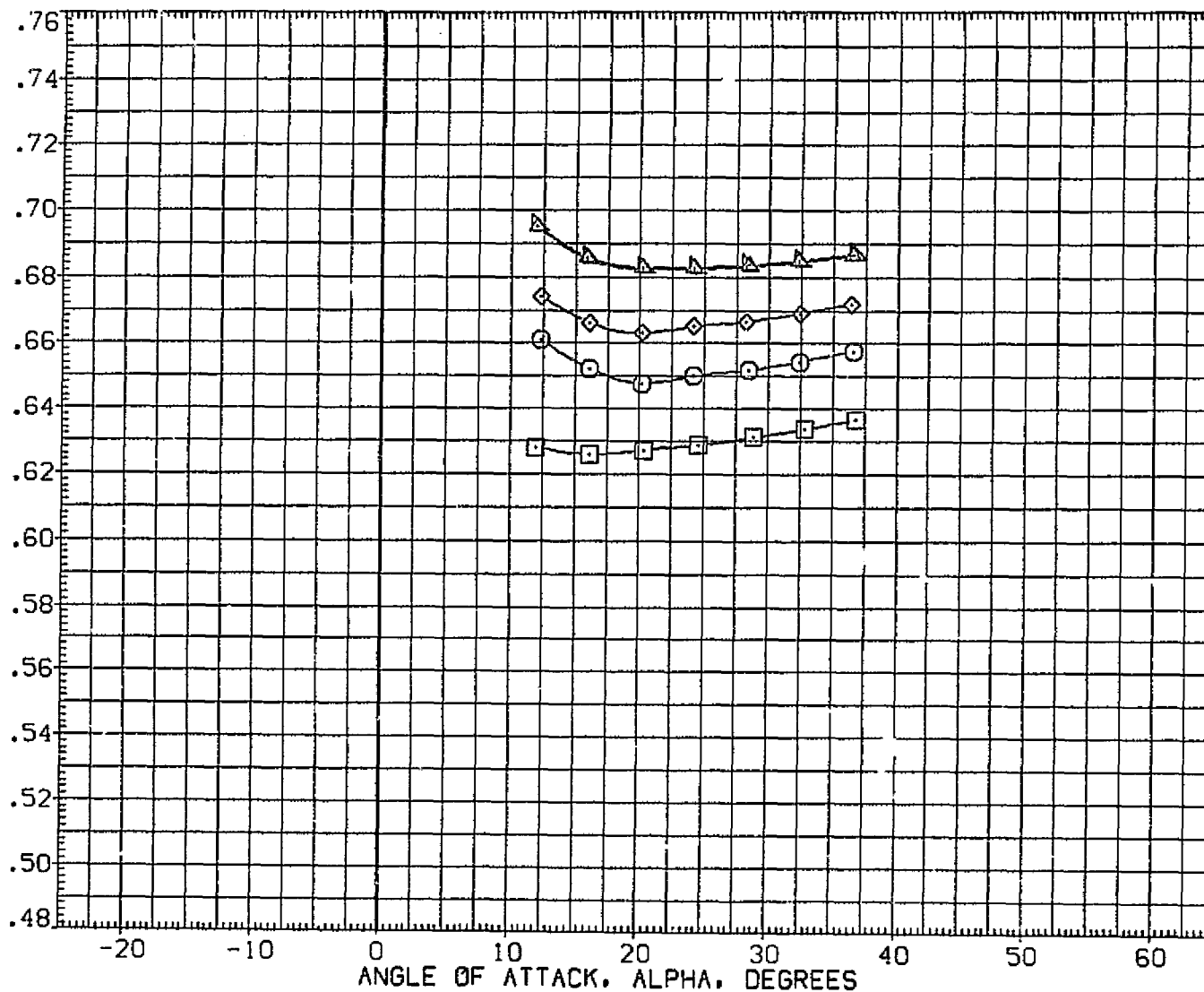


ELEVON EFFECTIVENESS AT -5 DEGREES BETA

(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	ELEVTR	BETA	REFERENCE INFORMATION
(CQJ011)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.948	-11.700	.000	.000	SREF 2690.0000 SQ. FT.
(CQJ023)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.219	-11.700	-40.000	-5.000	LREF 474.8000 IN.
(CQJ012)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	.000	.000	BREF 936.7000 IN.
(CQJ014)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	10.000	-5.000	XMRP 1076.7000 IN. X0
(CQJ016)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	10.000	-5.000	YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

CENTER OF PRESSURE LOCATION BASED ON BODY LENGTH. XCP/L

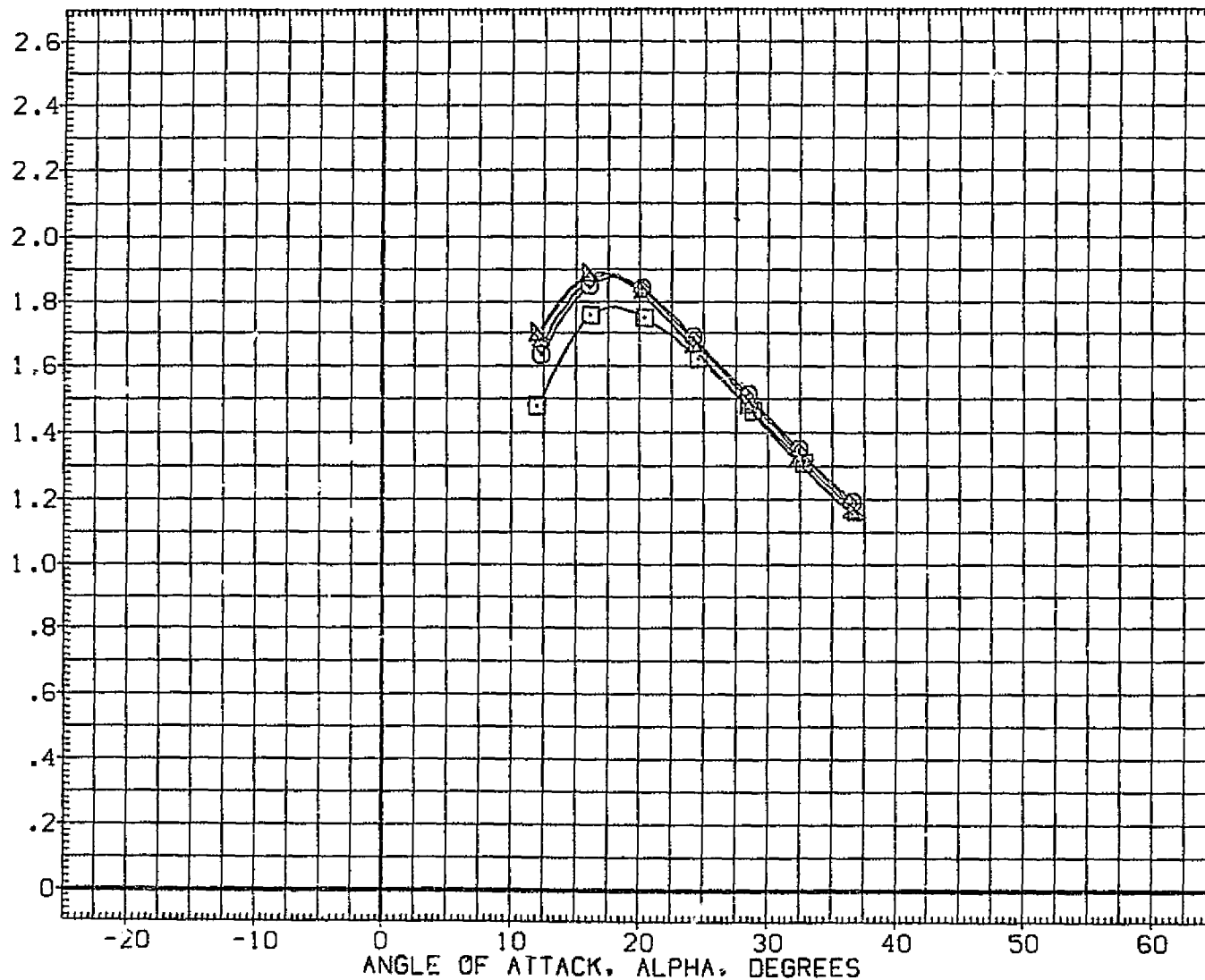


ELEVON EFFECTIVENESS AT -5 DEGREES BETA

(A)MACH = 10.30

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	ELEVTR	BETA	REFERENCE INFORMATION
(CQJ011)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.948	-11.700	.000	.000	SREF 2690.0000 SQ.FT.
(CQJ023)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPSEALED	1.219	-11.700	-40.000	-5.000	LREF 474.8000 IN.
(CQJ012)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	.000	.000	BREF 936.7000 IN.
(CQJ014)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	10.000	-5.000	YMRP 1076.7000 IN. X0
(CQJ016)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	10.000	-5.000	XMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

LIFT/DRAG RATIO, L/D

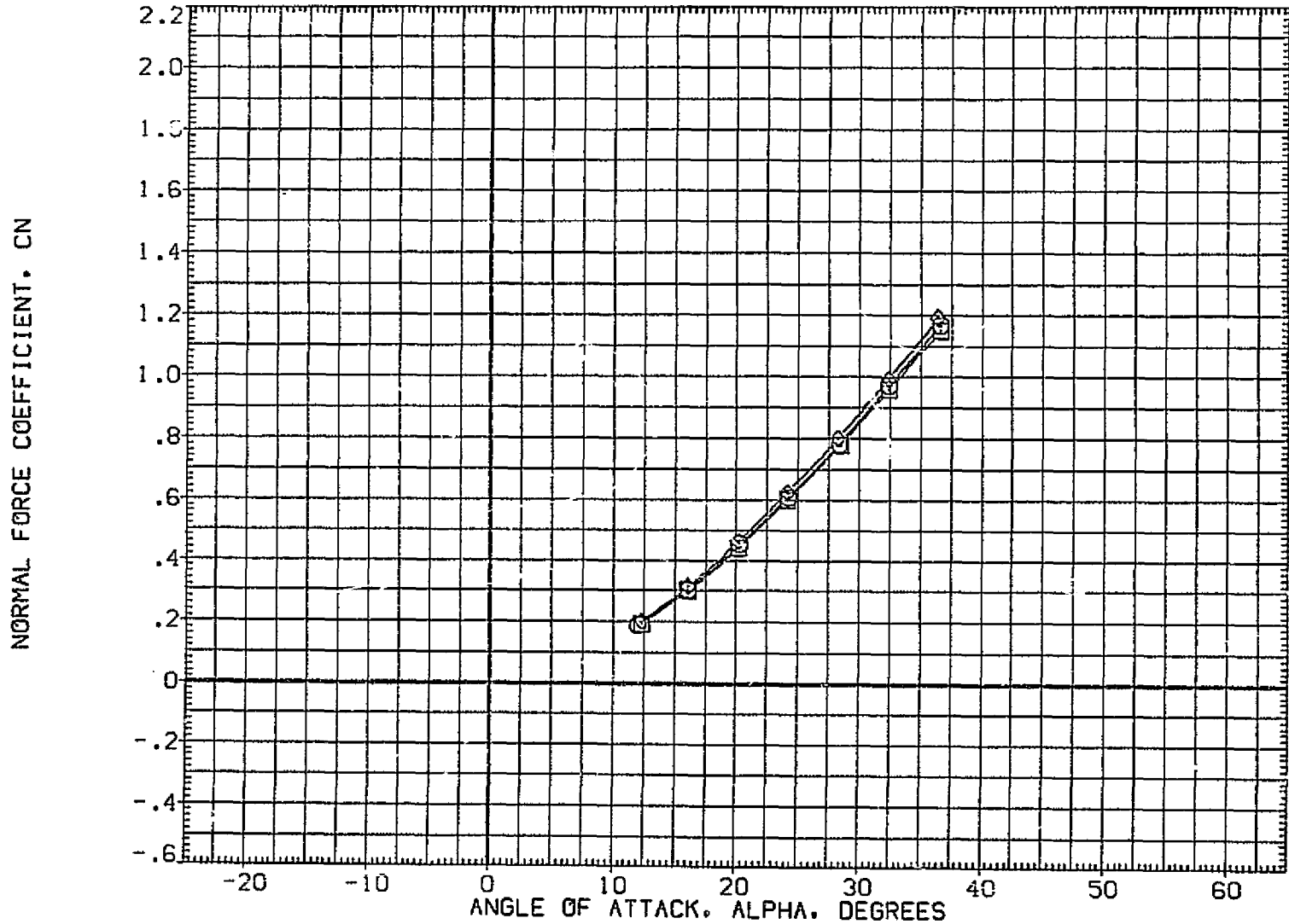


ELEVON EFFECTIVENESS AT -5 DEGREES BETA

(A)MACH 10.33

PAGE 70

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
(CQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ011)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.948	-11.700	55.000	.000	LREF 474.8000 IN.
(CQJ012)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	55.000	.000	BREF 936.7000 IN.
						XMRP 1076.7000 IN. X0
						YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

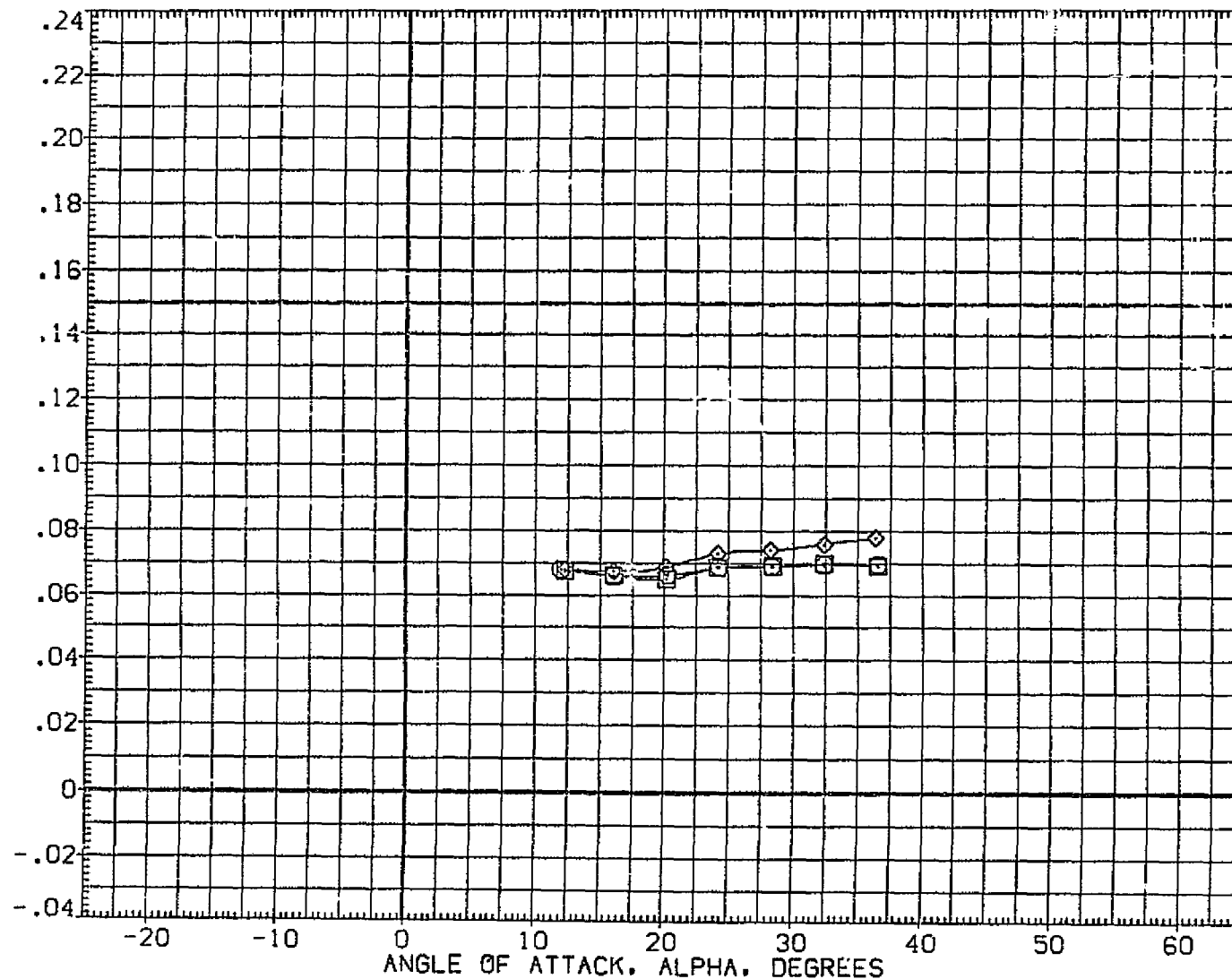


BODY FLAP EFFECTIVENESS

(A)MACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BOFLAP	SPOBRK	ELEVTR	REFERENCE INFORMATION
(CGJ001)	□ OA-90 CFHT-110 RI-140A/B MODEL 72-0 0TRGAPUNSEAL	.935	.000	55.000	.000	SREF 2650.0000 SQ. FT.
(CGJ011)	◇ OA-90 CFHT-110 RI-140A/B MODEL 72-0 0TRGAPUNSEAL	.948	-11.700	55.000	.000	LREF 474.8000 IN.
(CGJ012)	◇ OA-90 CFHT-110 RI-140A/B MODEL 72-0 0TRGAPUNSEAL	.959	55.000	.000	BREF 936.7000 IN.	
						XMRP 1076.7000 IN. X0
						YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

AXIAL FORCE COEFFICIENT, CA

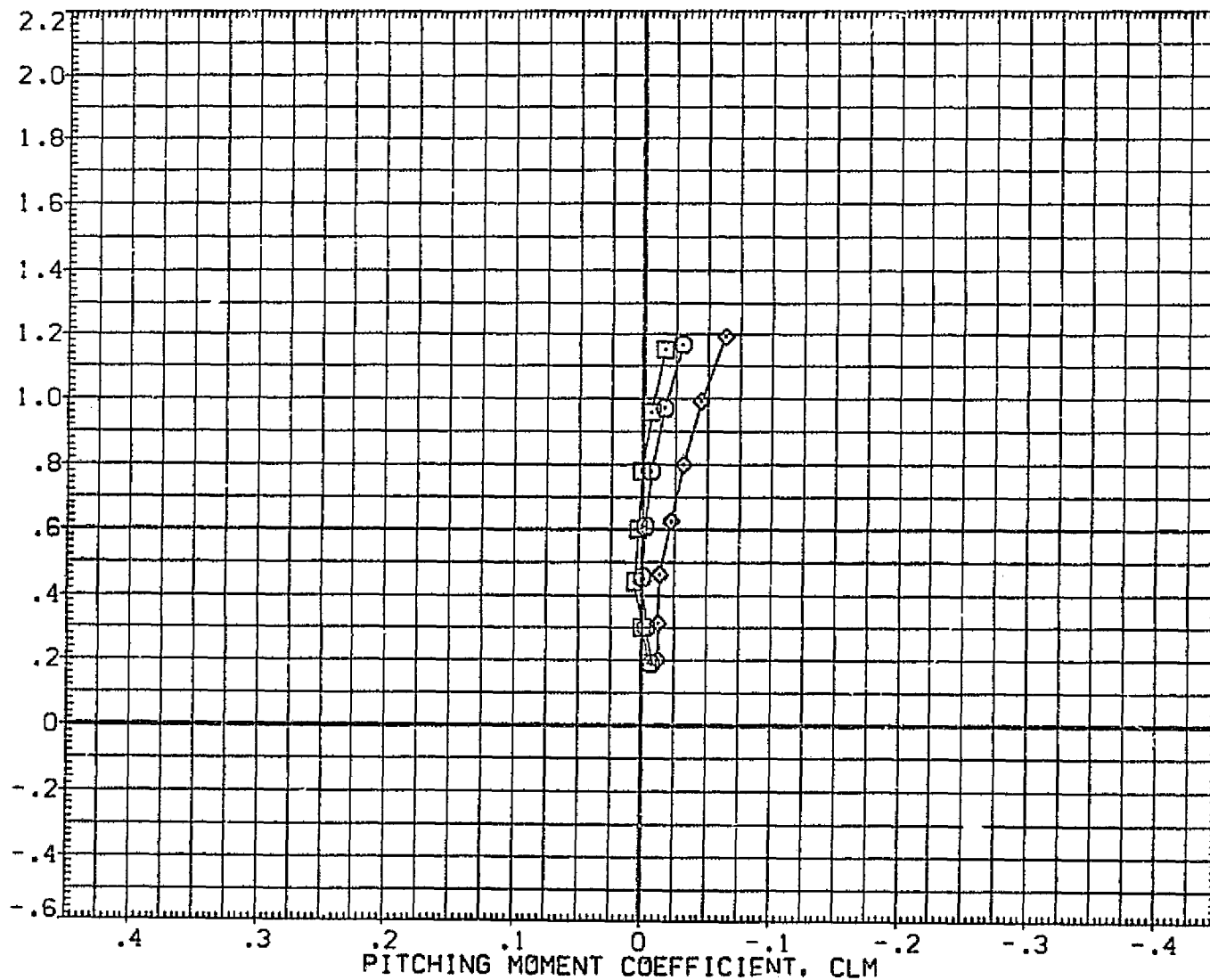


BODY FLAP EFFECTIVENESS

(A)MACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPOBRK	ELEVTR	REFERENCE INFORMATION
(DOJ001)	QA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	SREF 2690.0000 SQ.FT.
(CGJO11)	QA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.948	-11.700	55.000	.000	LREF 474.8000 IN.
(CGJO12)	QA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	55.000	.000	BREF 936.7000 IN. XMRP 1076.7000 IN. X0 YMRP .0000 IN. Y0 ZMRP 375.0000 IN. Z0 SCALE .0100

NORMAL FORCE COEFFICIENT, CN

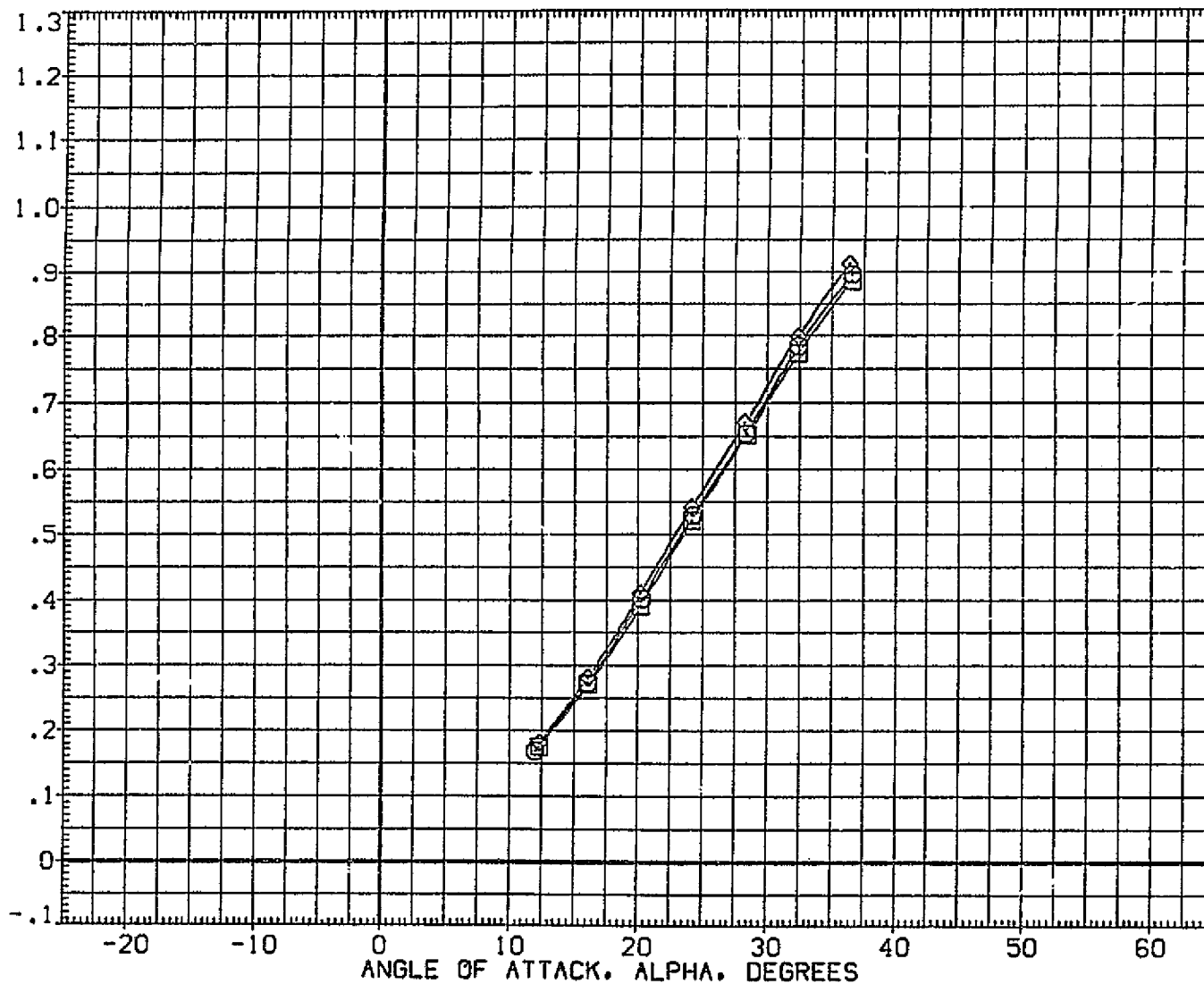


BODY FLAP EFFECTIVENESS

(A)MACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
(DQJ001)	□ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ011)	◇ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.948	-11.700	55.000	.000	LREF 474.8000 IN.
(CQJ012)	◇ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	55.000	.000	BREF 936.7000 IN.
						XMRP 1076.7000 IN. X ²
						YMRP .0000 IN. Y ²
						ZMRP 375.0000 IN. Z ²
						SCALE .0100

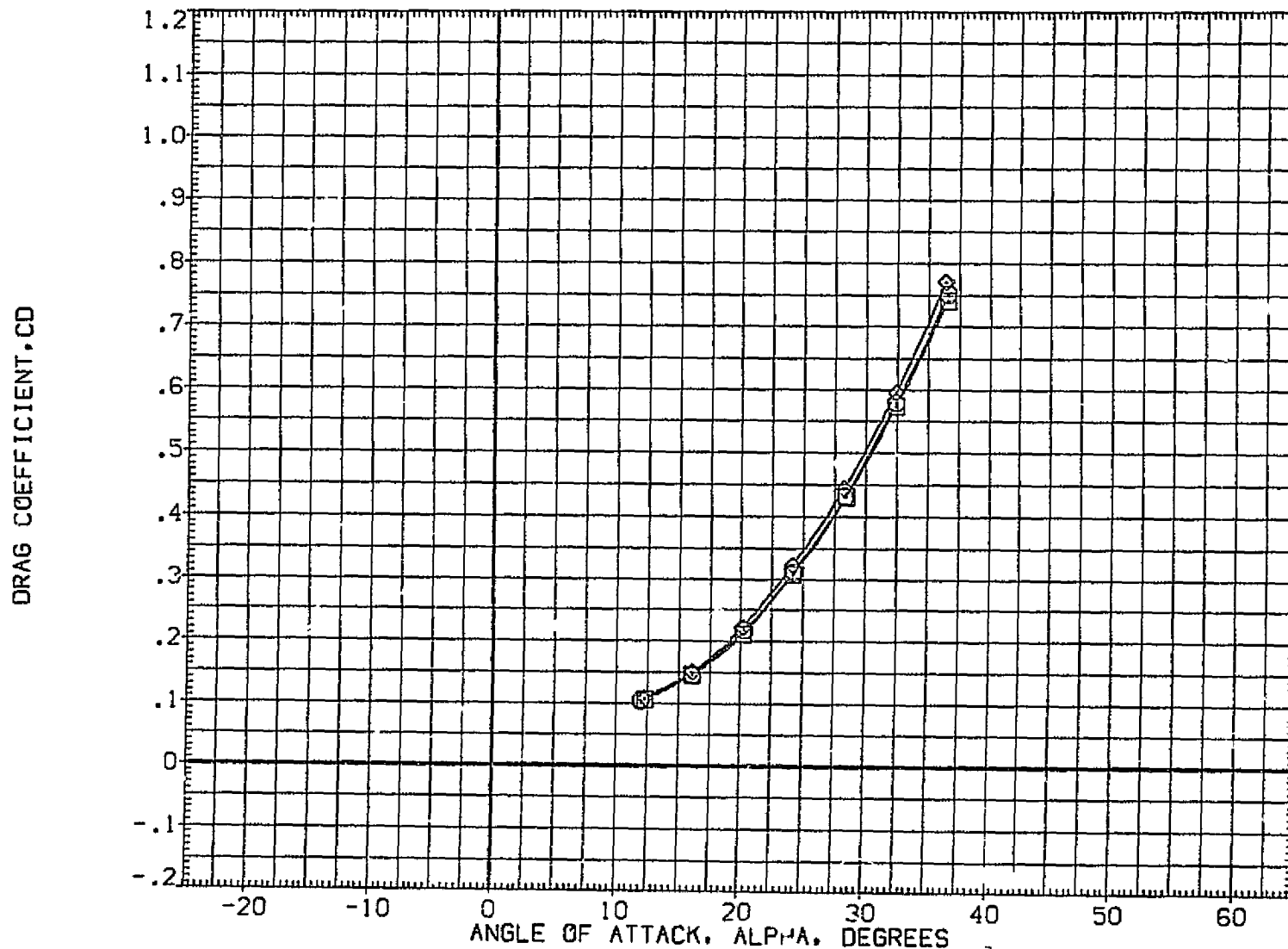
LIFT COEFFICIENT, CL



BODY FLAP EFFECTIVENESS

(A)MACH = 10.31

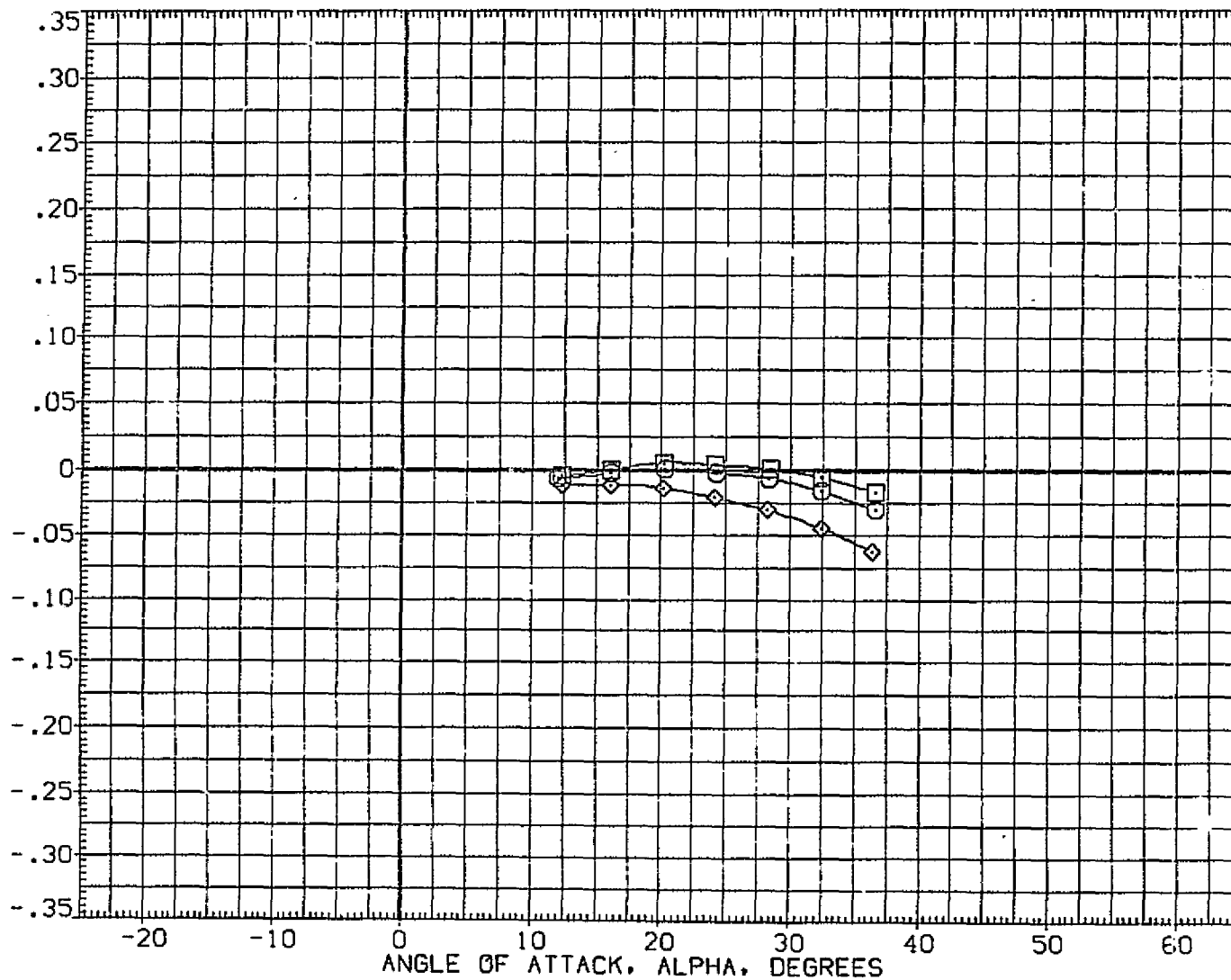
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPOSRK	ELEVTR	REFERENCE INFORMATION
(DOJ00)	□ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	SREF 2690.0000 SQ.FT.
(COJ01)	□ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.948	-11.700	55.000	.000	LREF 474.8000 IN.
(CGJ012)	◇ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	55.000	.000	BREF 936.7000 IN.
						XMRP 1076.7000 IN. X0
						YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100



BODY FLAP EFFECTIVENESS
 (A)MACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDRK	ELEVTR	REFERENCE INFORMATION
(DQJ001)	□ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ011)	○ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.948	-11.700	55.000	.000	LREF 474.8000 IN.
(CQJ012)	◇ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	55.000	.000	BREF 936.7000 IN. XMRP 1076.7000 IN. X0 YMRP .0000 IN. Y0 ZMRP 375.0000 IN. Z0 SCALE .0100

PITCHING MOMENT COEFFICIENT, CLM

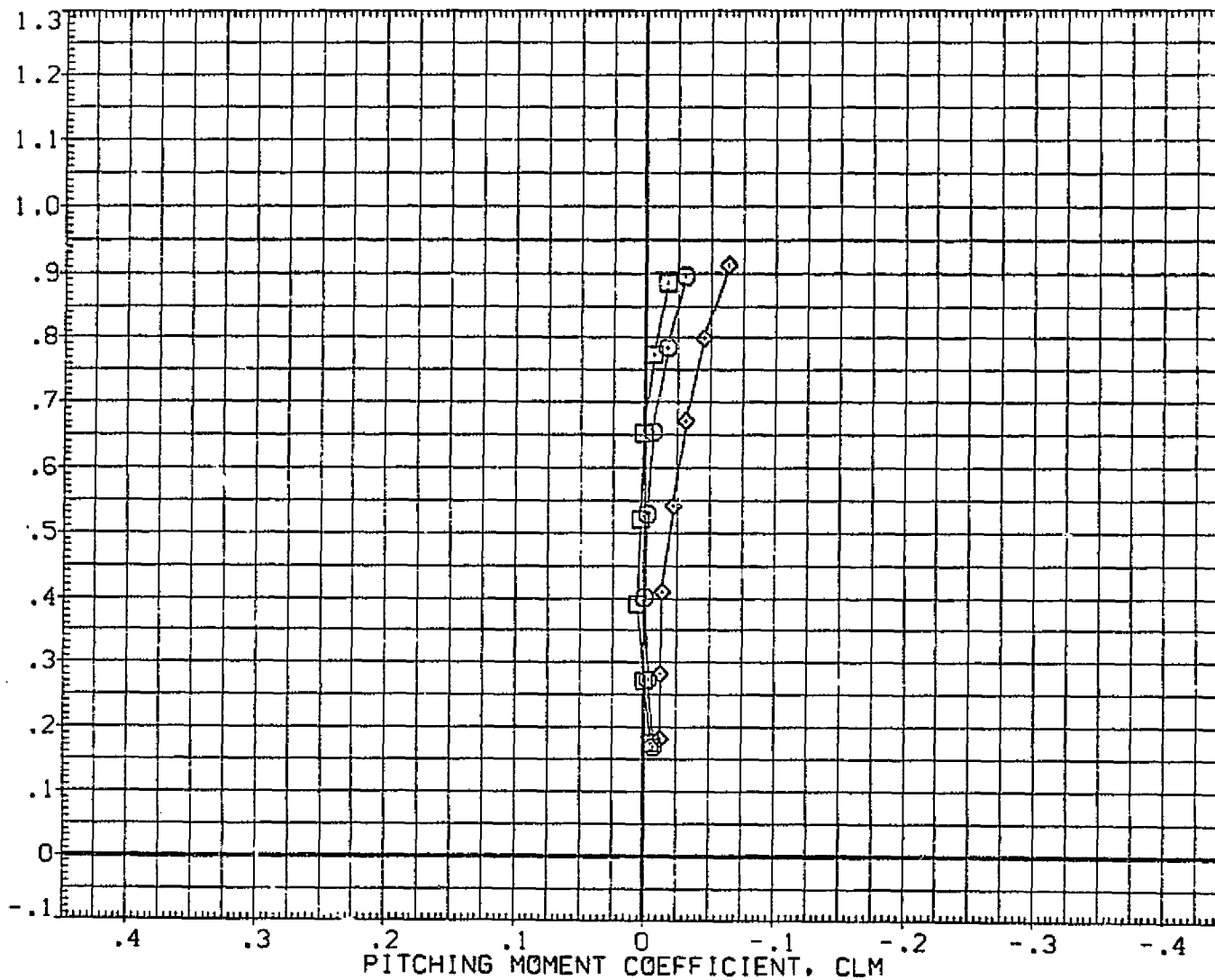


BODY FLAP EFFECTIVENESS

(A)MACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	R/I/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
(00J001)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	SREF 2690.0000 SQ.FT.
(00J011)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.948	-11.700	55.000	.000	LREF 474.8000 IN.
(00J012)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	55.000	.000	BREF 936.7000 IN. XMRP 1076.7000 IN. X0 YMRP .0000 IN. Y0 ZMRP 375.0000 IN. Z0 SCALE .0100

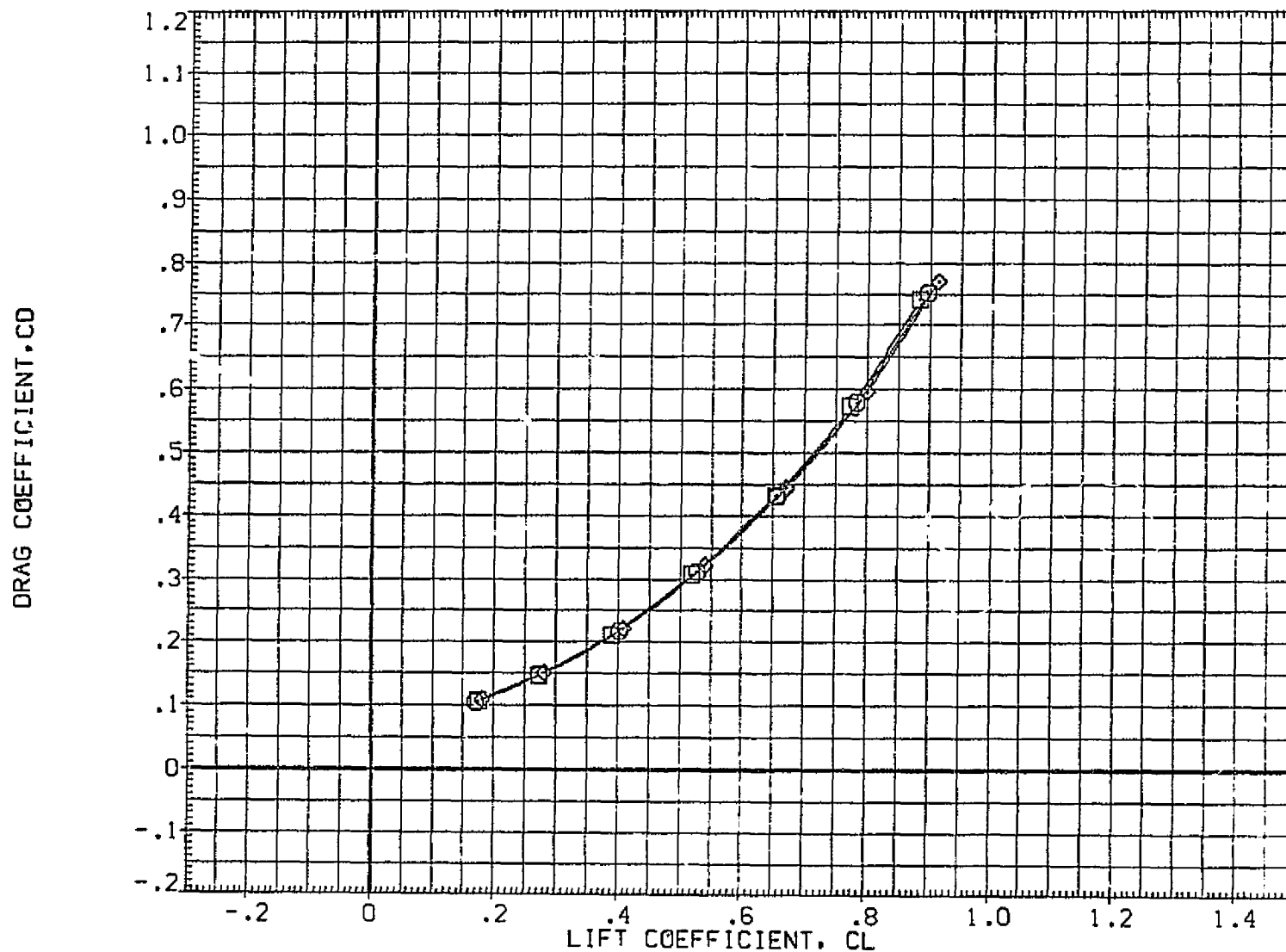
LIFT COEFFICIENT, CL



BODY FLAP EFFECTIVENESS

(A)MACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
(CQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ011)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.948	-11.700	55.000	.000	LREF 474.8000 IN.
(CQJ012)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	55.000	.000	BREF 936.7000 IN.
						XMRP 1076.7000 IN. X0
						YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

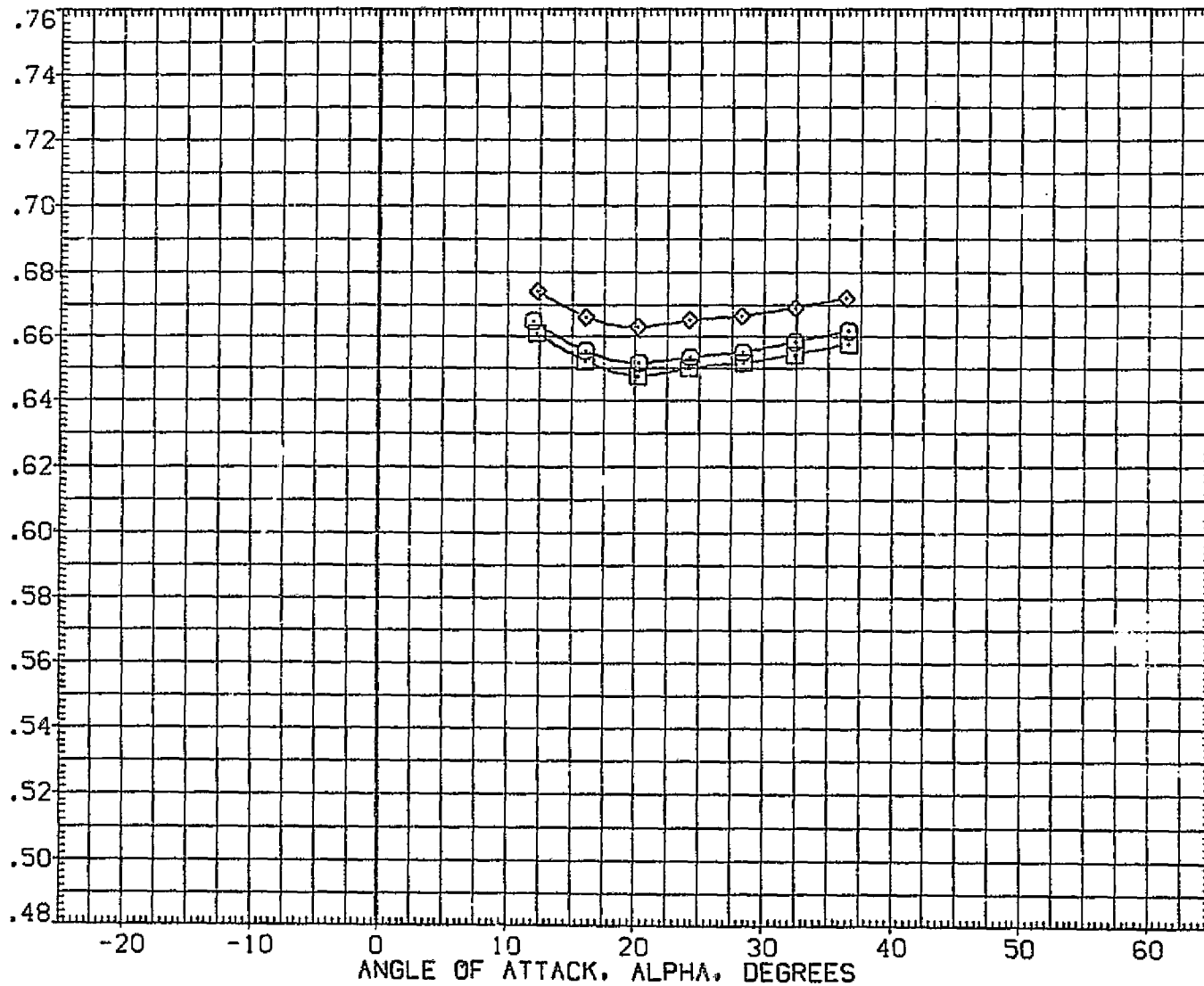


BODY FLAP EFFECTIVENESS

(A)MACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
(DQJ001)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 0TRGAPUNSEAL	.935	.000	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ011)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 0TRGAPUNSEAL	.949	-11.700	55.000	.000	LREF 474.8000 IN.
(CQJ012)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 0TRGAPUNSEAL	.989	16.300	55.000	.000	BREF 936.7000 IN.
						XMRP 1076.7000 IN. X0
						YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

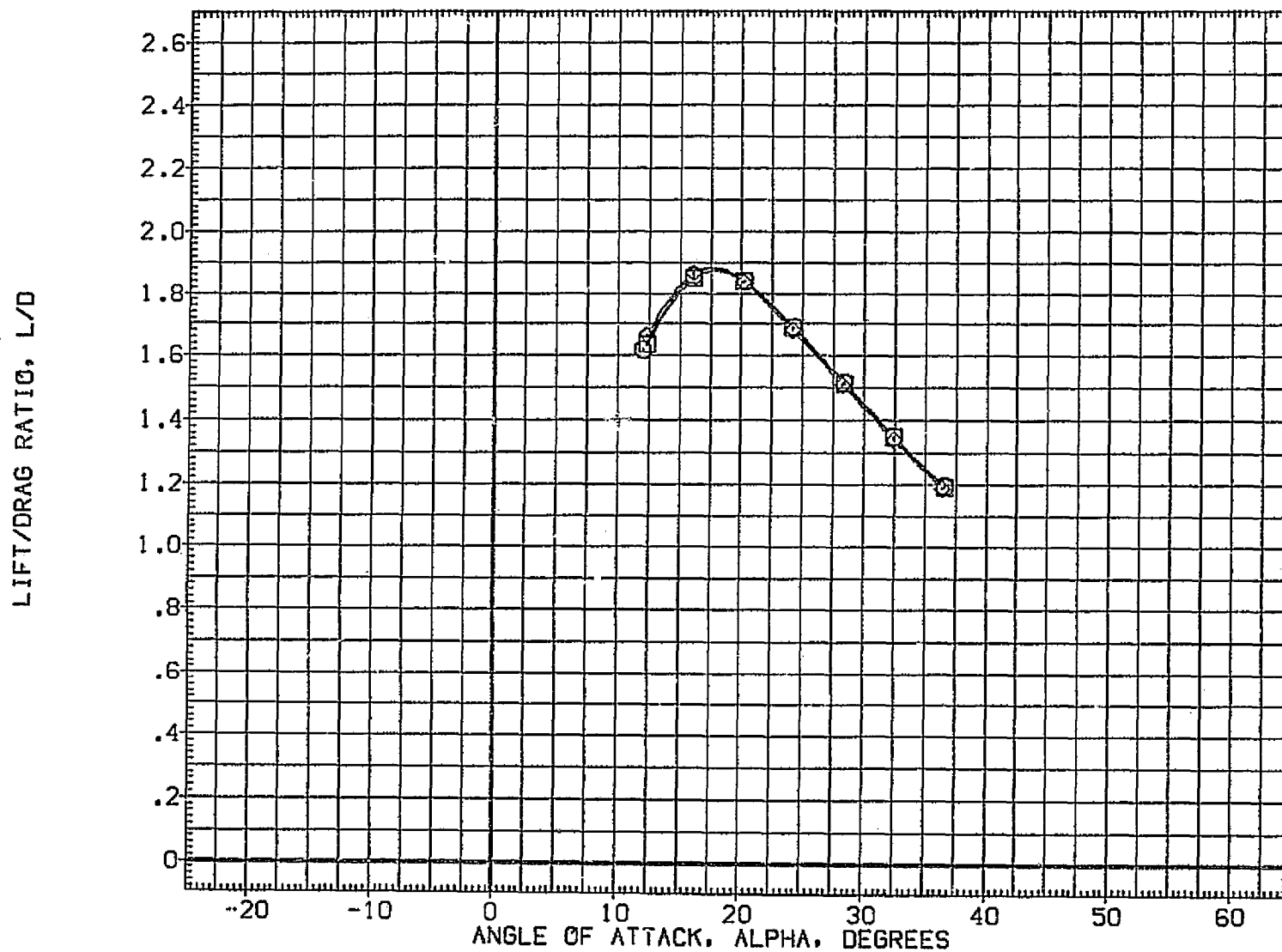
CENTER OF PRESSURE LOCATION BASED ON BODY LENGTH, XCP/L



BODY FLAP EFFECTIVENESS

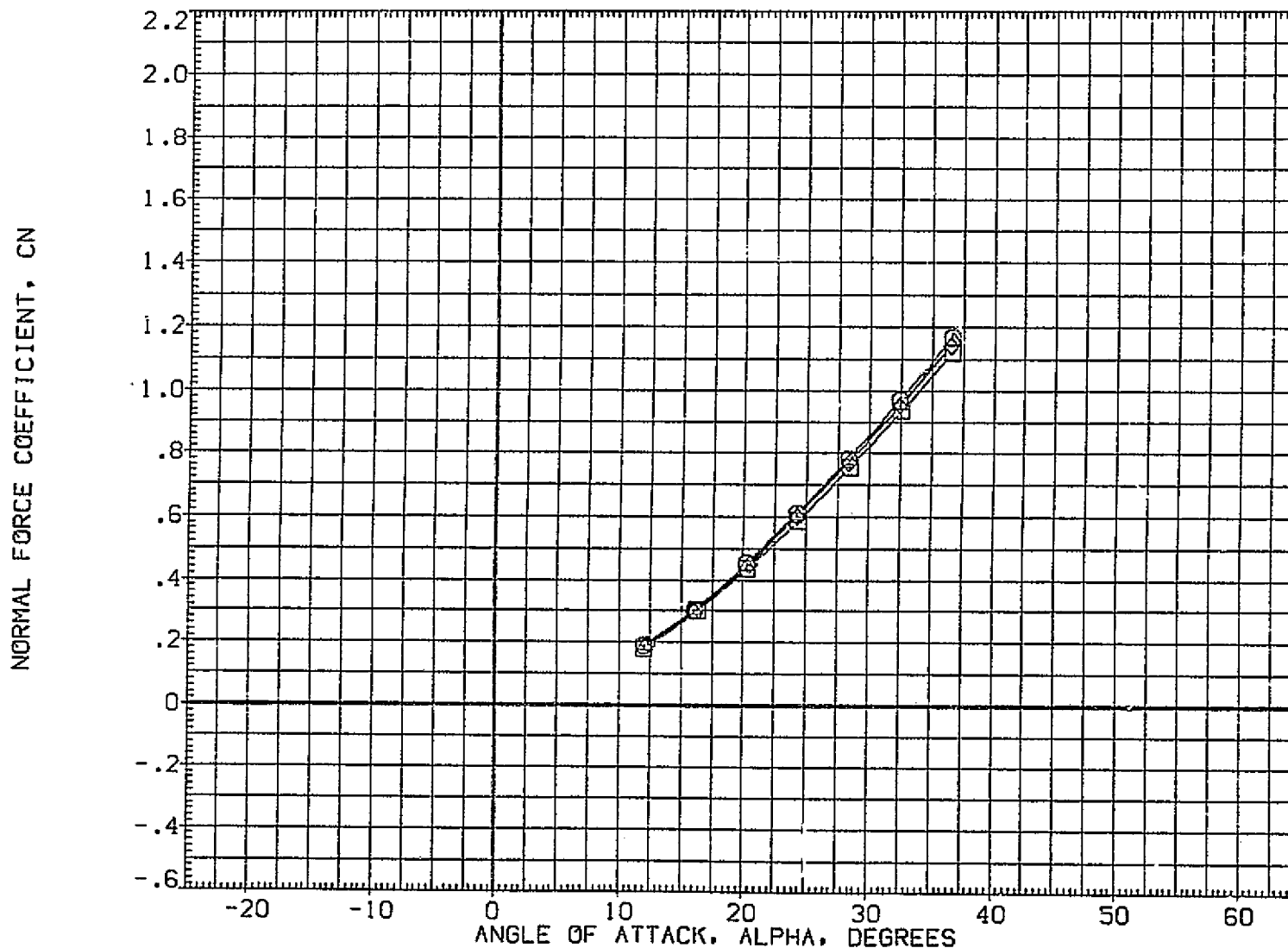
(A)MACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BOFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
(DQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	SREF 2690.0000 SQ. FT.
(CQJ011)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.948	-11.700	55.000	.000	LREF 474.8000 IN.
(CQJ012)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.969	16.300	55.000	.000	BREF 936.7000 IN.
						XMRP 1076.7000 IN. X0
						YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100



BODY FLAP EFFECTIVENESS
 (A)MACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
{CGJ001}	○ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	SREF 2690.0000 SQ.FT.
{CGJ003}	□ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.245	.000	55.000	.000	LREF 474.6000 IN.
{CGJ007}	◇ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.980	.000	85.000	.000	BREF 936.7000 IN.
{CGJ009}	△ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.214	.000	85.000	.000	XMRP 1076.7000 IN. X0 YMRP .0000 IN. Y0 ZMRP 375.0000 IN. Z0 SCALE .0100

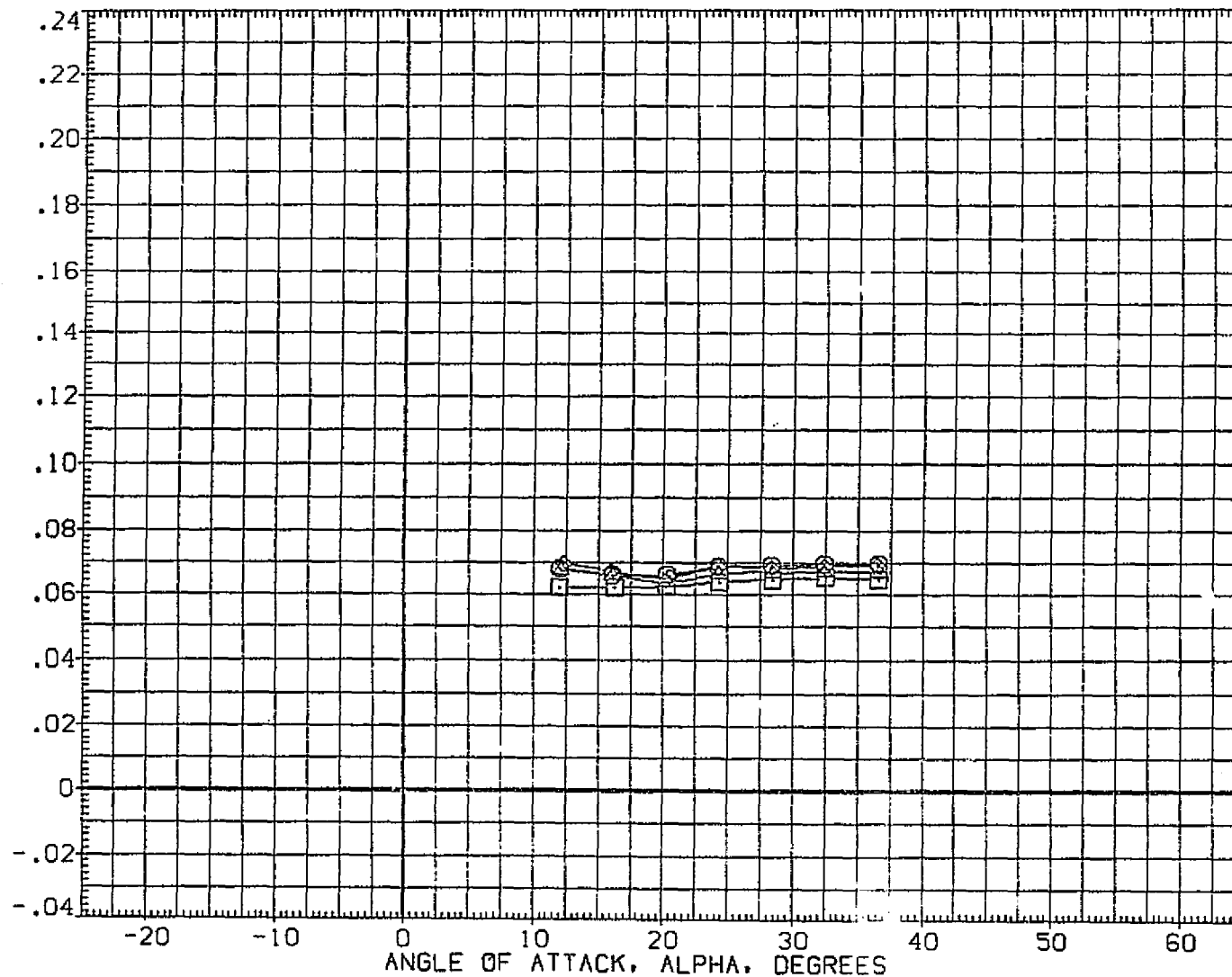


SPEED BRAKE EFFECTIVENESS

(A)MACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPOBRK	ELEVTR	REFERENCE INFORMATION
(CQJ001)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ003)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPSEALED	1.245	.000	55.000	.000	LREF 474.8000 IN.
(CQJ007)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.980	.000	85.000	.000	BR F 936.7000 IN.
(CQJ009)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPSEALED	1.214	.000	85.000	.000	XMRP 1076.7000 IN. X0 YMRP .0000 IN. Y0 ZMRP 375.0000 IN. Z0 SCALE .0100

AXIAL FORCE COEFFICIENT, CA

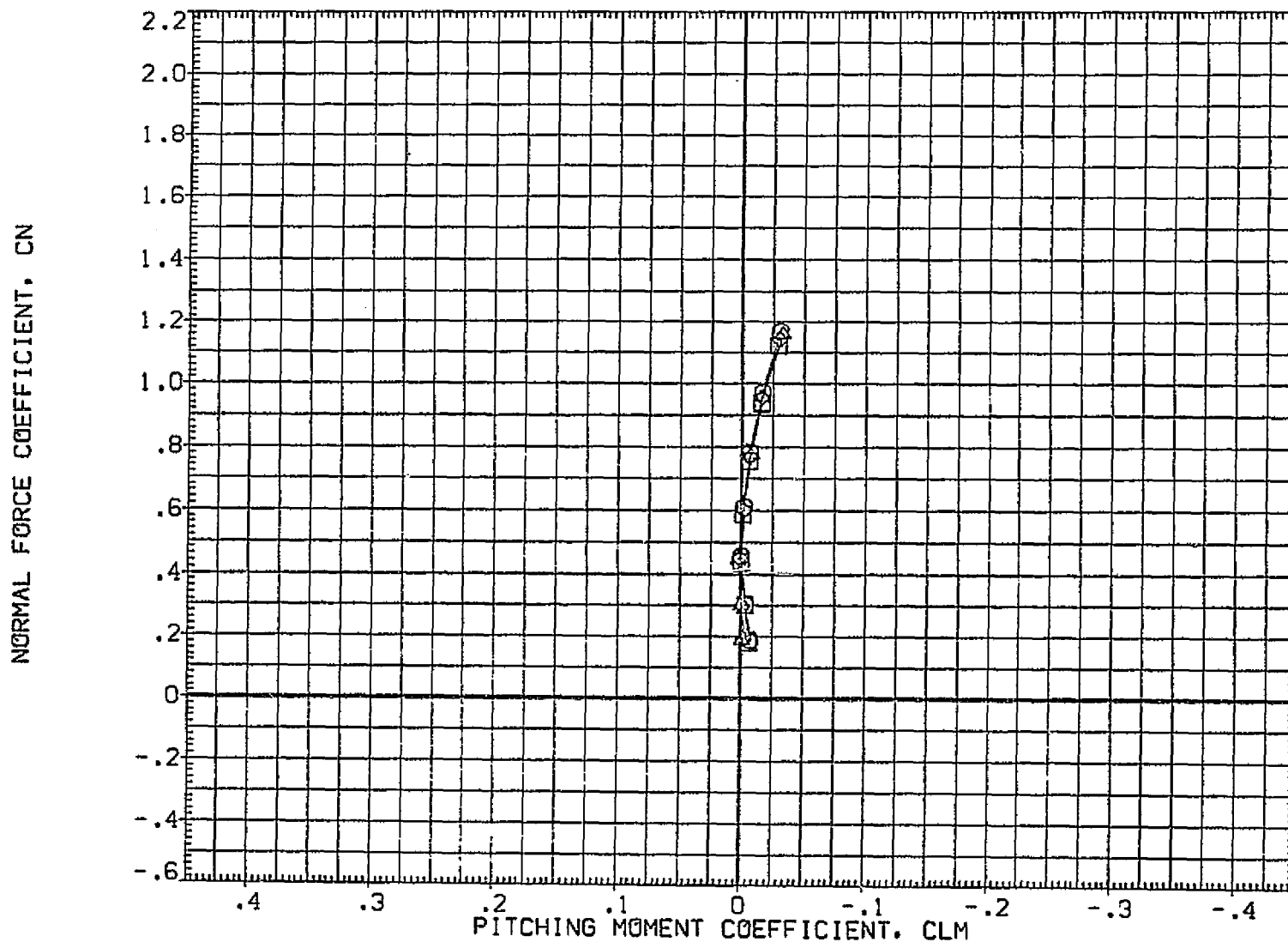


SPEED BRAKE EFFECTIVENESS

(A)MACH = 10.31



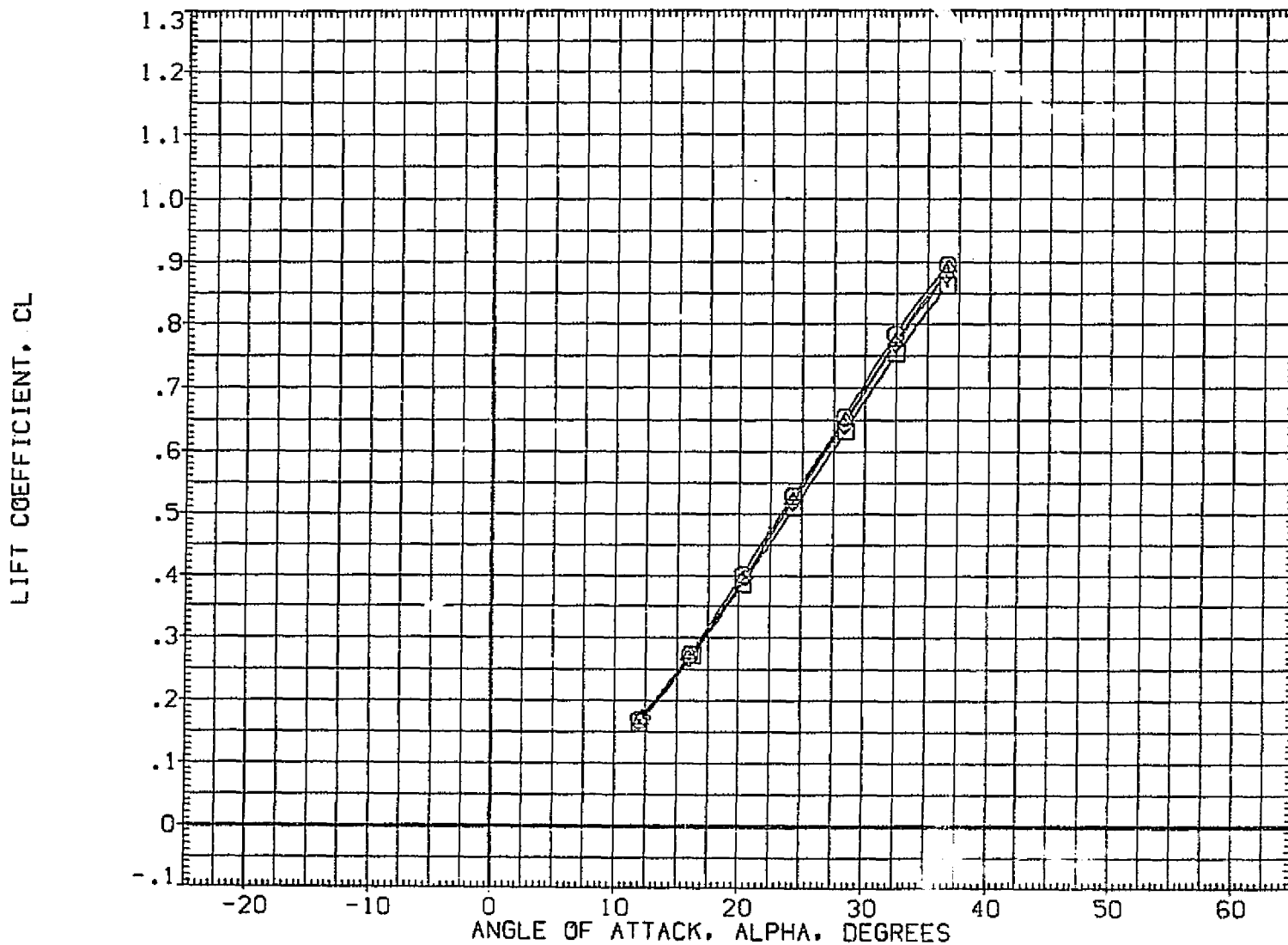
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
(DQJ001)	□ OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ003)	□ OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPSEALED	1.245	.000	55.000	.000	LREF 474.8000 IN.
(CQJ007)	△ OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.990	.000	85.000	.000	BREF 936.7000 IN.
(CQJ009)	△ OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPSEALED	1.214	.000	85.000	.000	XMRP 1076.7000 IN. X0 YMRP .0000 IN. Y0 ZMRP 375.0000 IN. Z0 SCALE .0100



SPEED BRAKE EFFECTIVENESS

(A)MACH = 10.31

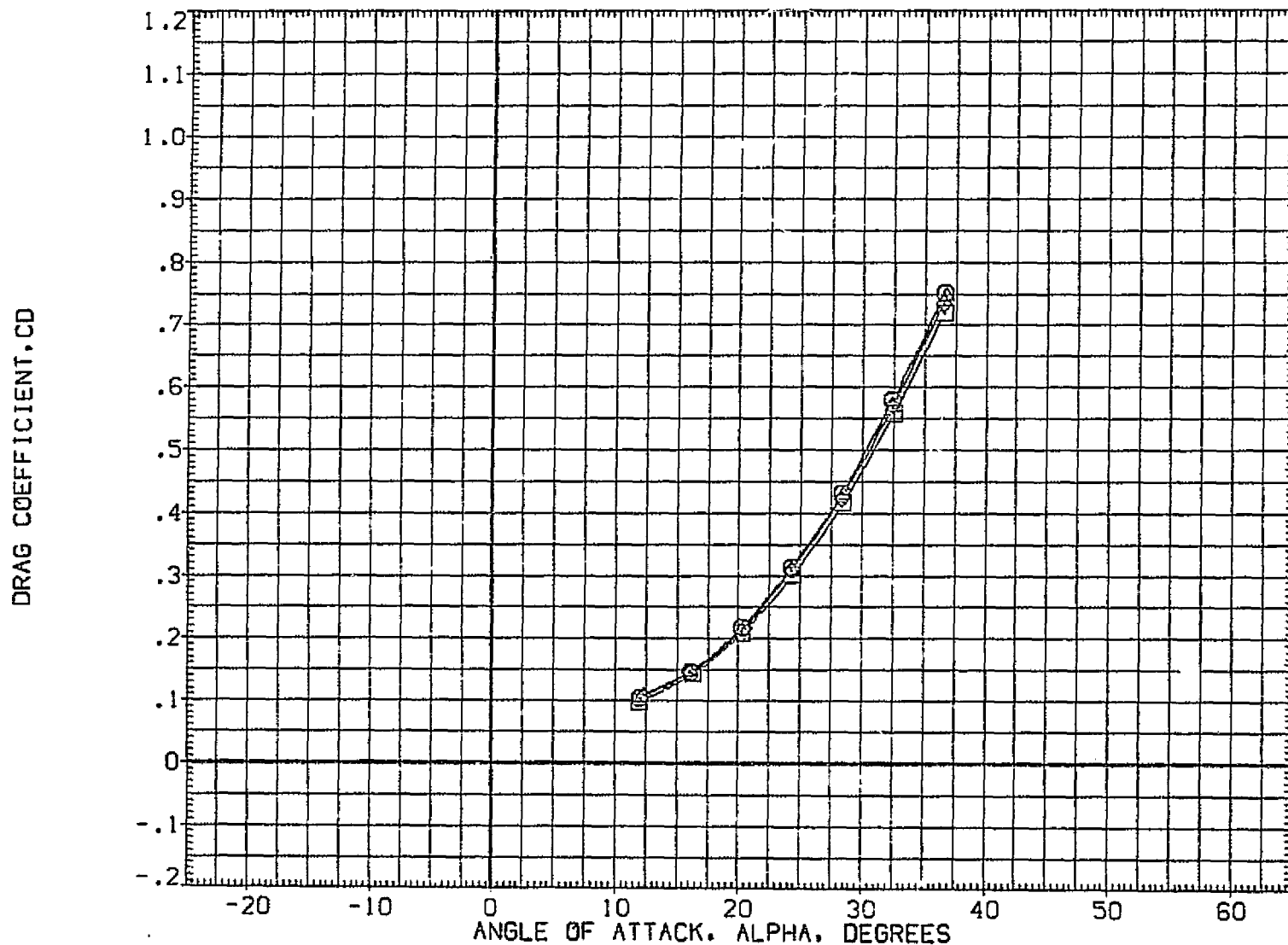
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFL P	SPDBRK	ELEVTR	REFERENCE INFORMATION
(CQJ001)	□ OA-90 CFHT-110 RI-140A/B MODEL 72-0 0TRGAPUNSEAL	.935	.000	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ003)	□ OA-90 CFHT-110 RI-140A/B MODEL 72-0 0TRGAPSEALED	1.245	.000	55.000	.000	LREF 474.8000 IN.
(CQJ007)	△ OA-90 CFHT-110 RI-140A/B MODEL 72-0 0TRGAPUNSEAL	.930	.000	55.000	.000	BREF 936.7000 IN.
(CQJ009)	△ OA-90 CFHT-110 RI-140A/B MODEL 72-0 0TRGAPSEALED	1.214	.000	55.000	.000	XMRP 1076.7000 IN. X0 YMRP .0000 IN. Y0 ZMRP 375.0000 IN. Z0 SCALE .0100



SPEED BRAKE EFFECTIVENESS

(A)MACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPOBRK	ELEVTR	REFERENCE INFORMATION
(CQJ001)	□ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ003)	○ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.245	.000	55.000	.000	LREF 474.8000 IN.
(CQJ007)	◇ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.980	.000	85.000	.000	BREF 936.7000 IN.
(CQJ009)	△ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.214	.000	85.000	.000	XMRP 1076.7000 IN. X0 YMRP .0600 IN. Y0 ZMRP 375.0000 IN. Z0 SCALE .0100

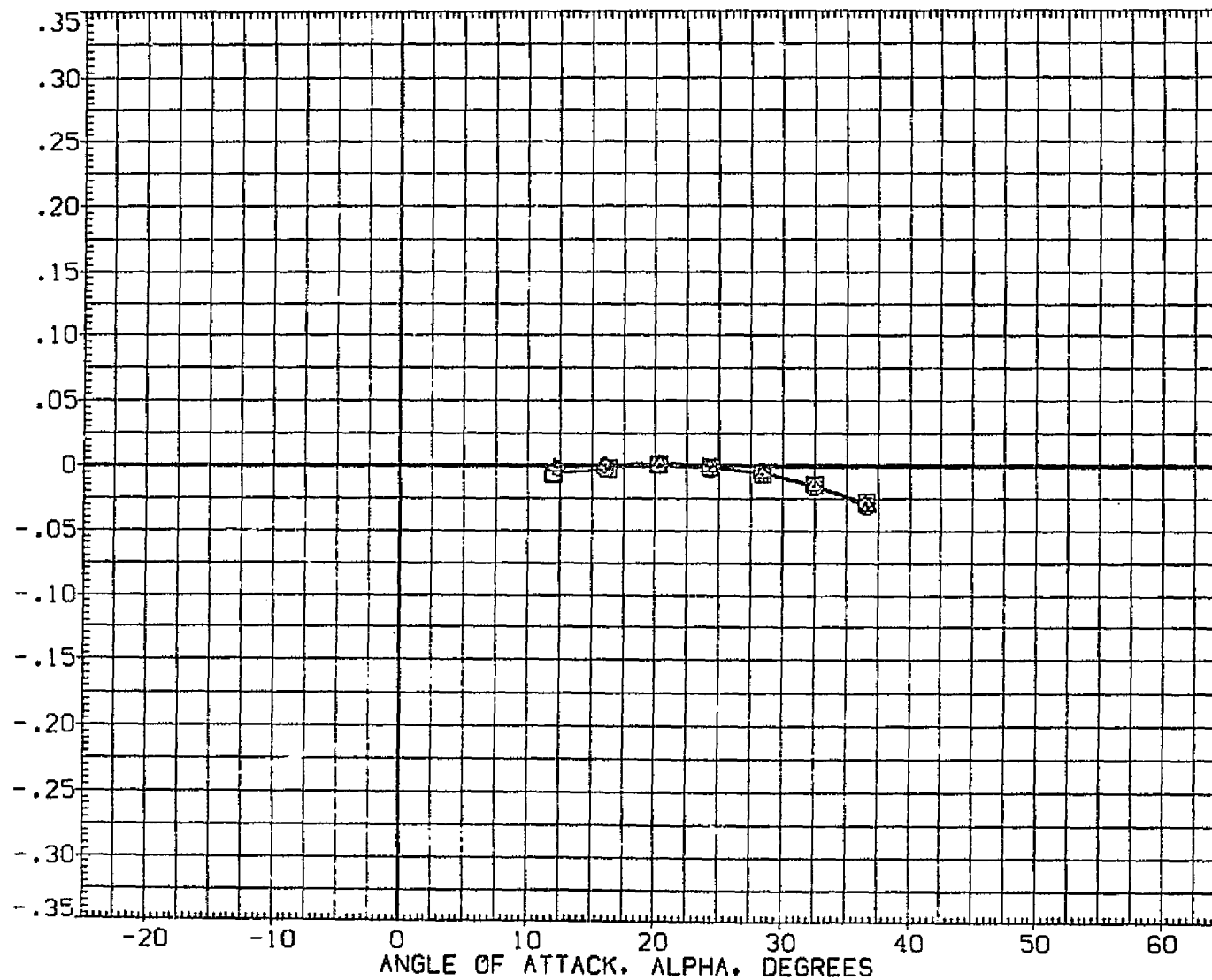


SPEED BRAKE EFFECTIVENESS

(A) MACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION	
(D)J001)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	SREF	2690.0000 SQ.FT.
(C)J003)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.245	.000	55.000	.000	LREF	474.8000 IN.
(C)J007)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.980	.000	85.000	.000	BREF	936.7000 IN.
(C)J009)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.214	.000	85.000	.000	XMRP	1076.7000 IN. X0
						YMRP	.0000 IN. Y0
						ZMRP	375.0000 IN. Z0
						SCALE	.0100

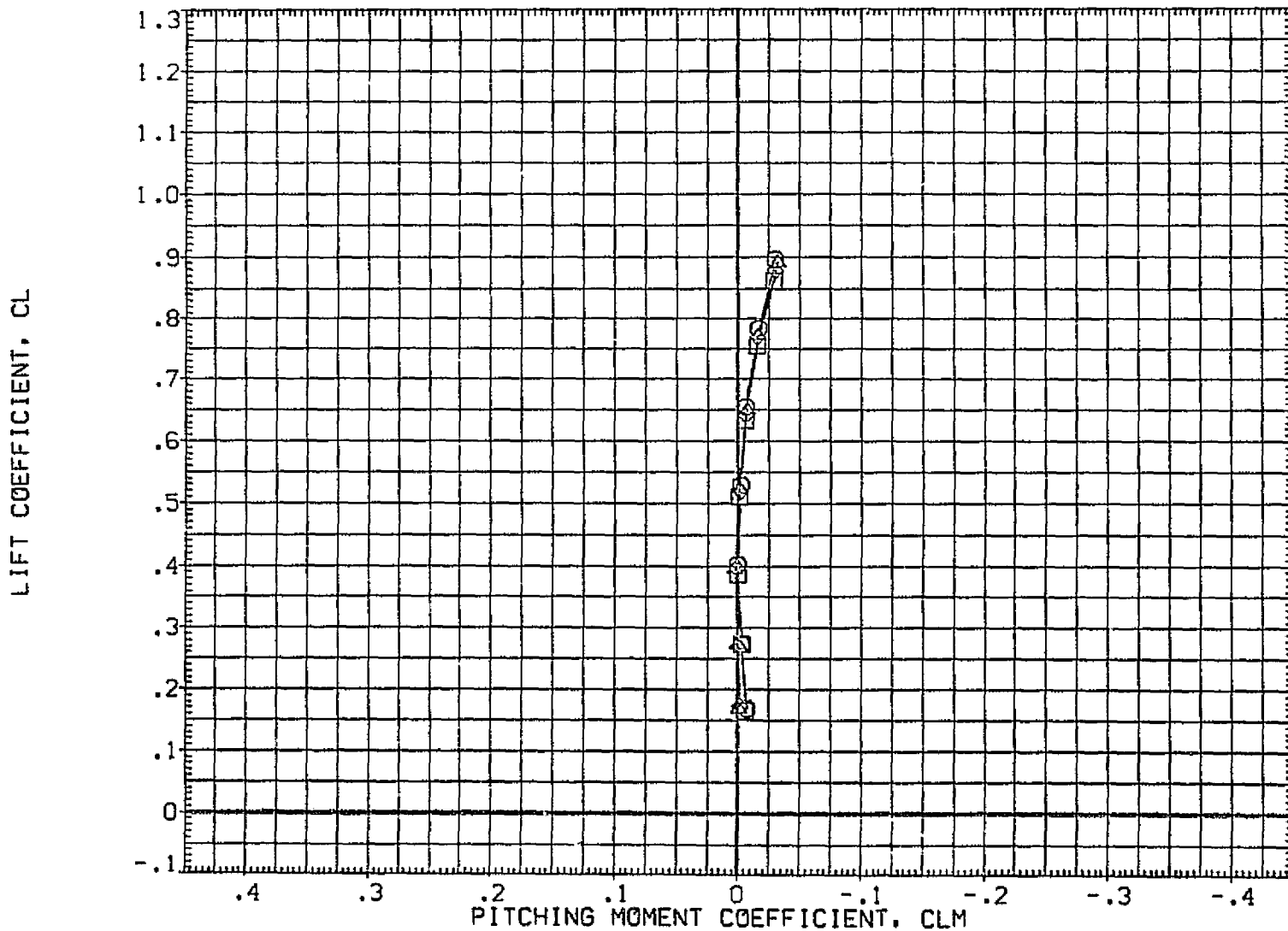
PITCHING MOMENT COEFFICIENT, CLM



SPEED BRAKE EFFECTIVENESS

(A)MACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
(CQJ001)	QA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	SREF 2690.0000 SQ. FT.
(CQJ003)	QA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.245	.000	55.000	.000	LREF 474.8000 IN.
(CQJ007)	QA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.980	.000	85.000	.000	BREF 936.7000 IN.
(CQJ009)	QA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.214	.000	85.000	.000	XMRP 1076.7000 IN. X0 YMRP .0000 IN. Y0 ZMRP 375.0000 IN. Z0 SCALE .0100

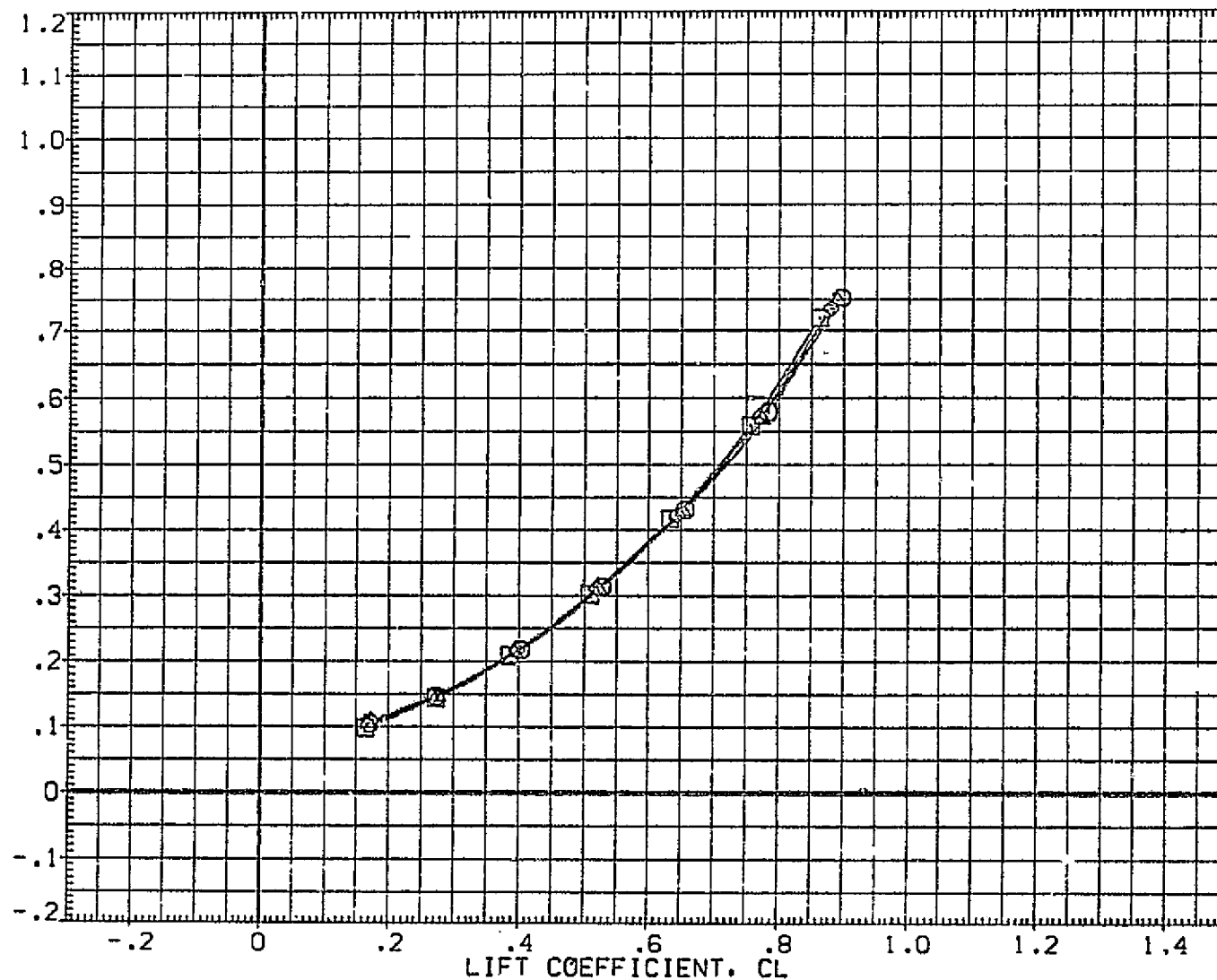


SPEED BRAKE EFFECTIVENESS

(A)MACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
(00J001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 0TRGAPUNSEAL	.935	.000	55.000	.000	SREF 2690.0000 SQ.FT.
(00J003)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 0TRGAPSEALED	1.245	.000	55.000	.000	LREF 474.8000 IN.
(00J007)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 0TRGAPUNSEAL	.980	.000	85.000	.000	BREF 936.7000 IN.
(00J009)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 0TRGAPSEALED	1.214	.000	85.000	.000	XMRP 1076.7000 IN. X0 YMRP .0000 IN. Y0 ZMRP 375.0000 IN. Z0 SCALE .0100

DRAG COEFFICIENT, CD



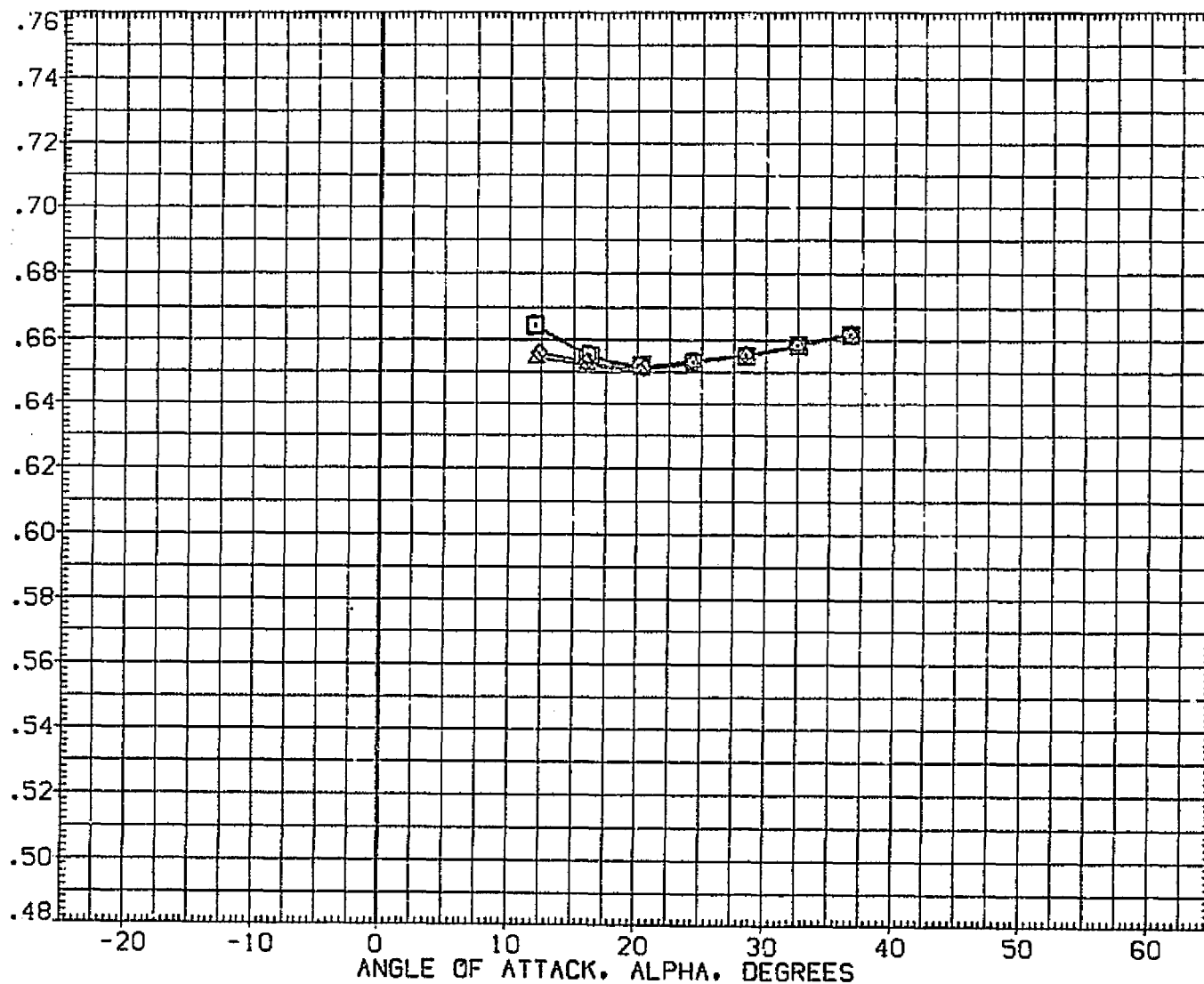
SPEED BRAKE EFFECTIVENESS

(A) MACH = 10.31

PAGE 88

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
(00J001)	QA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	SREF 2690.0000 SQ.FT.
(00J003)	QA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.245	.000	55.000	.000	LREF 474.8000 IN.
(00J007)	QA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.980	.000	65.000	.000	BREF 936.7000 IN.
(00J009)	QA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.214	.000	65.000	.000	XMRP 1076.7000 IN. X0
						YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

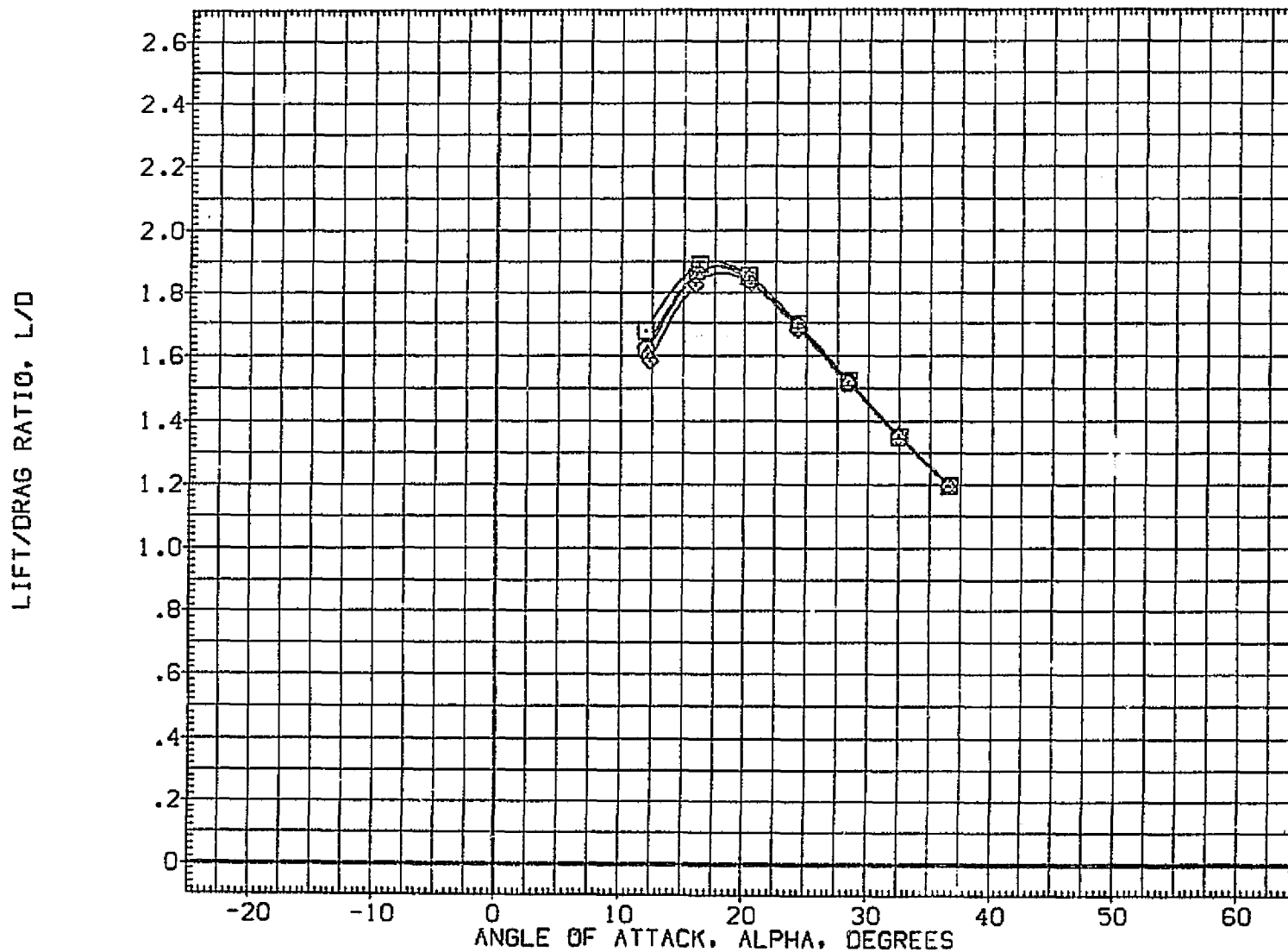
CENTER OF PRESSURE LOCATION BASED ON BODY LENGTH, XCP/L



SPEED BRAKE EFFECTIVENESS

(A)MACH = 10.31

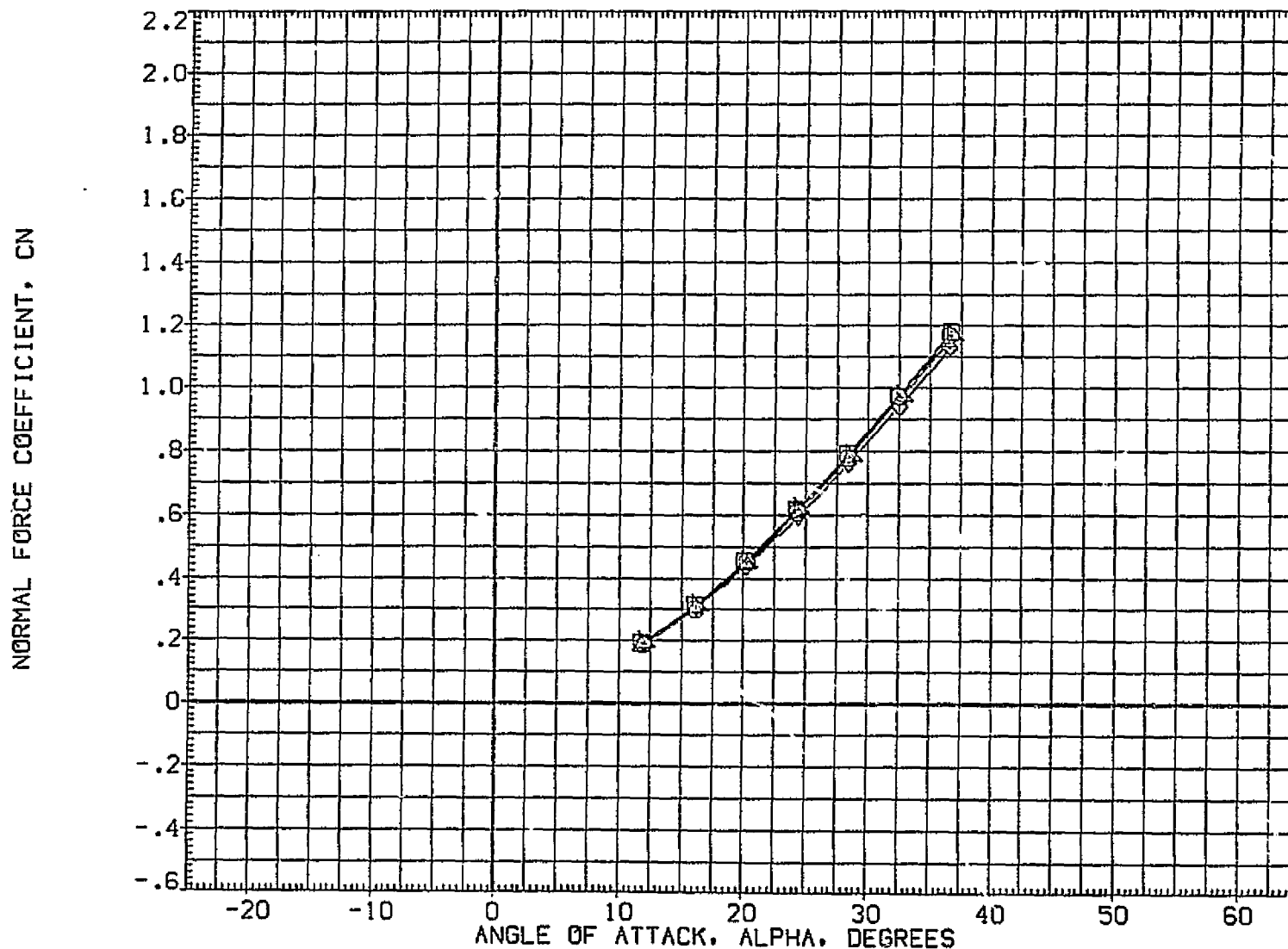
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BOFLAP	SPOBRK	ELEVTR	REFERENCE INFORMATION
(00J001)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ003)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPSEALED	1.245	.000	55.000	.000	LREF 474.8000 IN.
(CQJ007)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.980	.000	85.000	.000	BREF 936.7000 IN.
(CQJ009)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPSEALED	1.214	.000	65.000	.000	XMRP 1076.7000 IN. X0 YMRP .0000 IN. Y0 ZMRP 375.0000 IN. Z0 SCALE 0100



SPEED BRAKE EFFECTIVENESS

(A)MACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	BETA	REFERENCE INFORMATION
(CQJ001)	□ OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ002)	□ OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	-5.000	LREF 474.8000 IN.
(CQJ004)	□ OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPSEALED	1.233	.000	55.000	-5.000	BREF 936.7000 IN.
(CQJ008)	□ OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.985	.000	85.000	-5.000	XMRP 1076.7000 IN. X0
(CQJ010)	□ OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPSEALED	1.211	.000	85.000	-5.000	YMRP .0000 IN. Y0 ZMRP 375.0000 IN. Z0 SCALE .0100

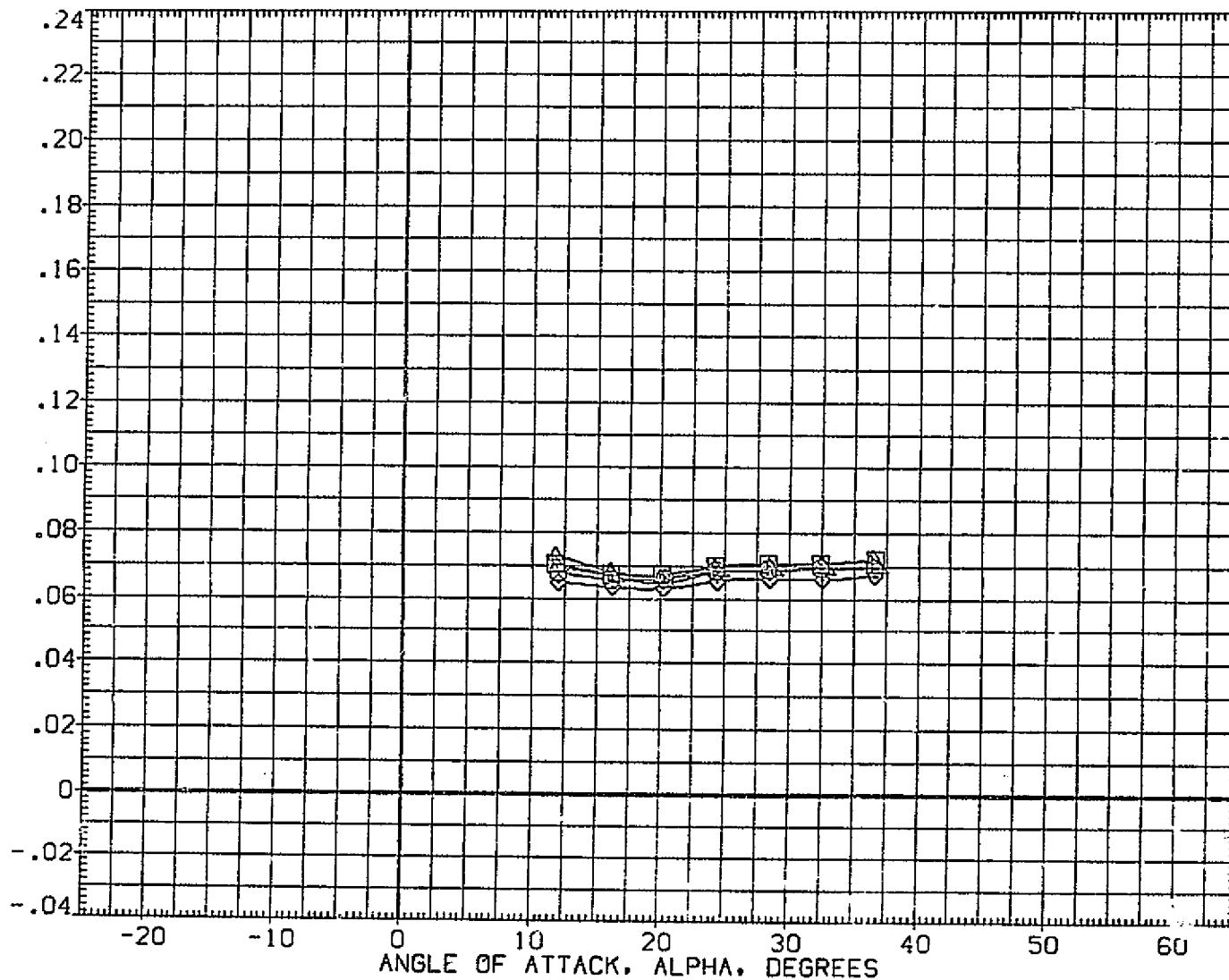


SPEED BRAKE EFFECTIVENESS AT -5 DEGREES BETA

(A)MACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BOFLAP	SPDBRK	BETA	REFERENCE INFORMATION
(CQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ002)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	-5.000	LREF 474.8000 IN.
(CQJ004)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.233	.000	55.000	-5.000	BREF 936.7000 IN.
(CQJ008)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.985	.000	85.000	-5.000	XMRP 1076.7000 IN. X0
(CQJ010)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.211	.000	85.000	-5.000	YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

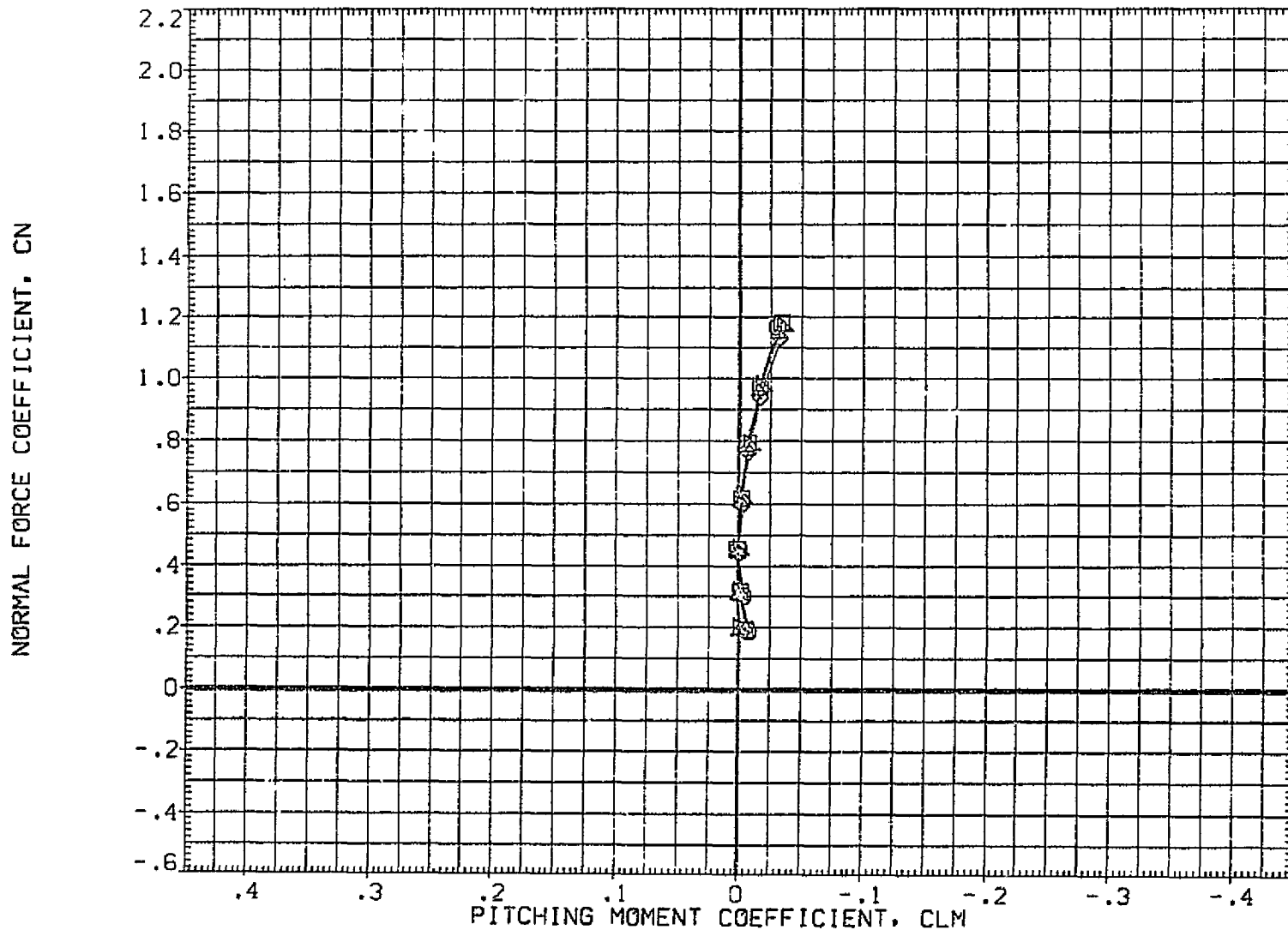
AXIAL FORCE COEFFICIENT, CA



SPEED BRAKE EFFECTIVENESS AT -5 DEGREES BETA

(A)MACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	BETA	REFERENCE INFORMATION
(CQJ001)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ002)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	-5.000	LREF 474.8000 IN.
(CQJ004)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	1.233	.000	55.000	-5.000	BREF 936.7000 IN.
(CQJ008)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.985	.000	85.000	-5.000	XMRP 1076.7000 IN. X0
(CQJ010)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	1.211	.000	85.000	-5.000	YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

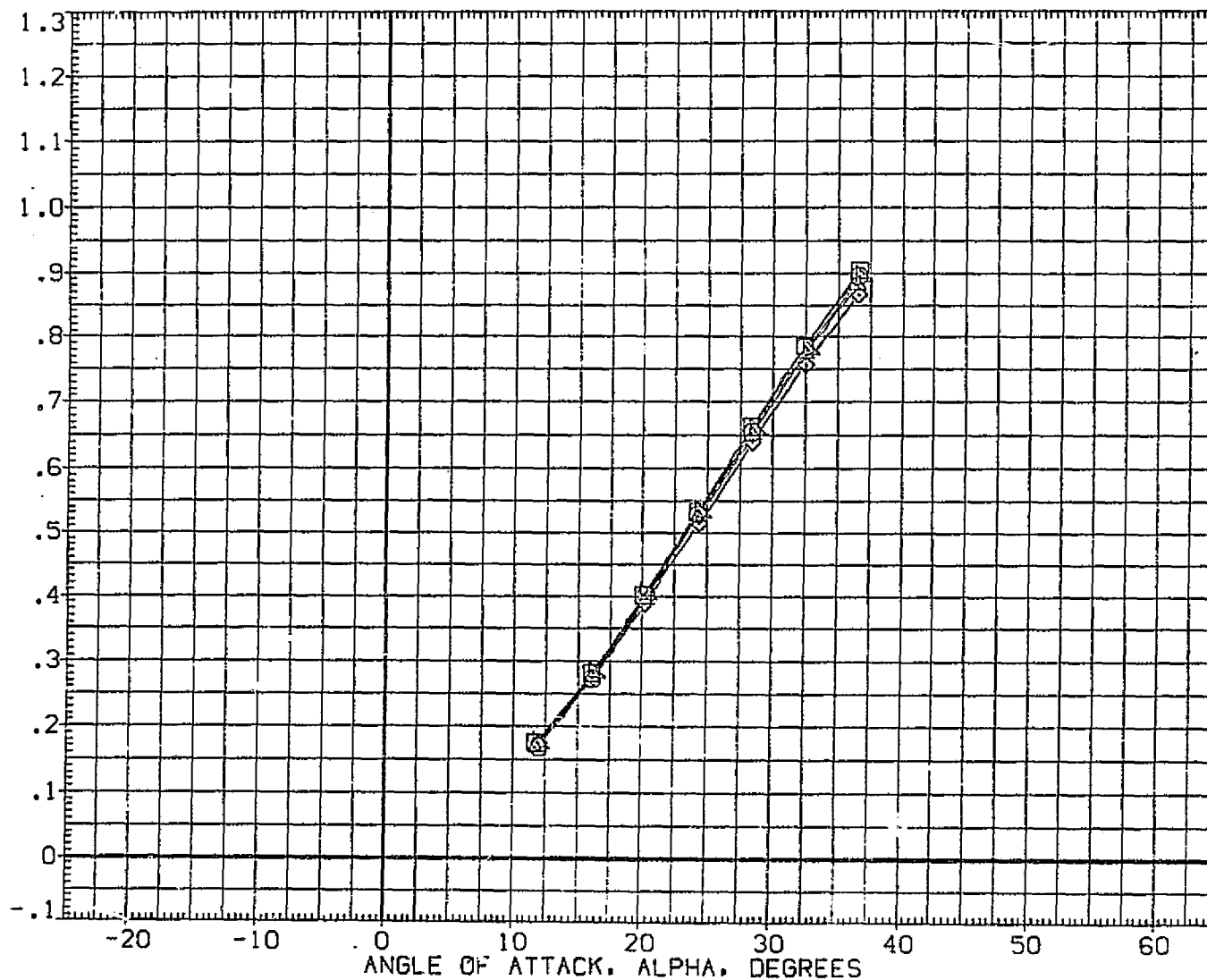


SPEED BRAKE EFFECTIVENESS AT -5 DEGREES BETA

(A)MACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	BETA	REFERENCE INFORMATION
(CQJ001)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	-5.000	SREF 2690.0000 SQ.FT.
(CQJ002)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	-5.000	LREF 474.8000 IN.
(CQJ004)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	1.233	.000	55.000	-5.000	BREF 936.7000 IN.
(CQJ008)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.985	.000	85.000	-5.000	XMRP 1076.7000 IN. Y0
(CQJ010)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	1.211	.000	85.000	-5.000	YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

LIFT COEFFICIENT, CL

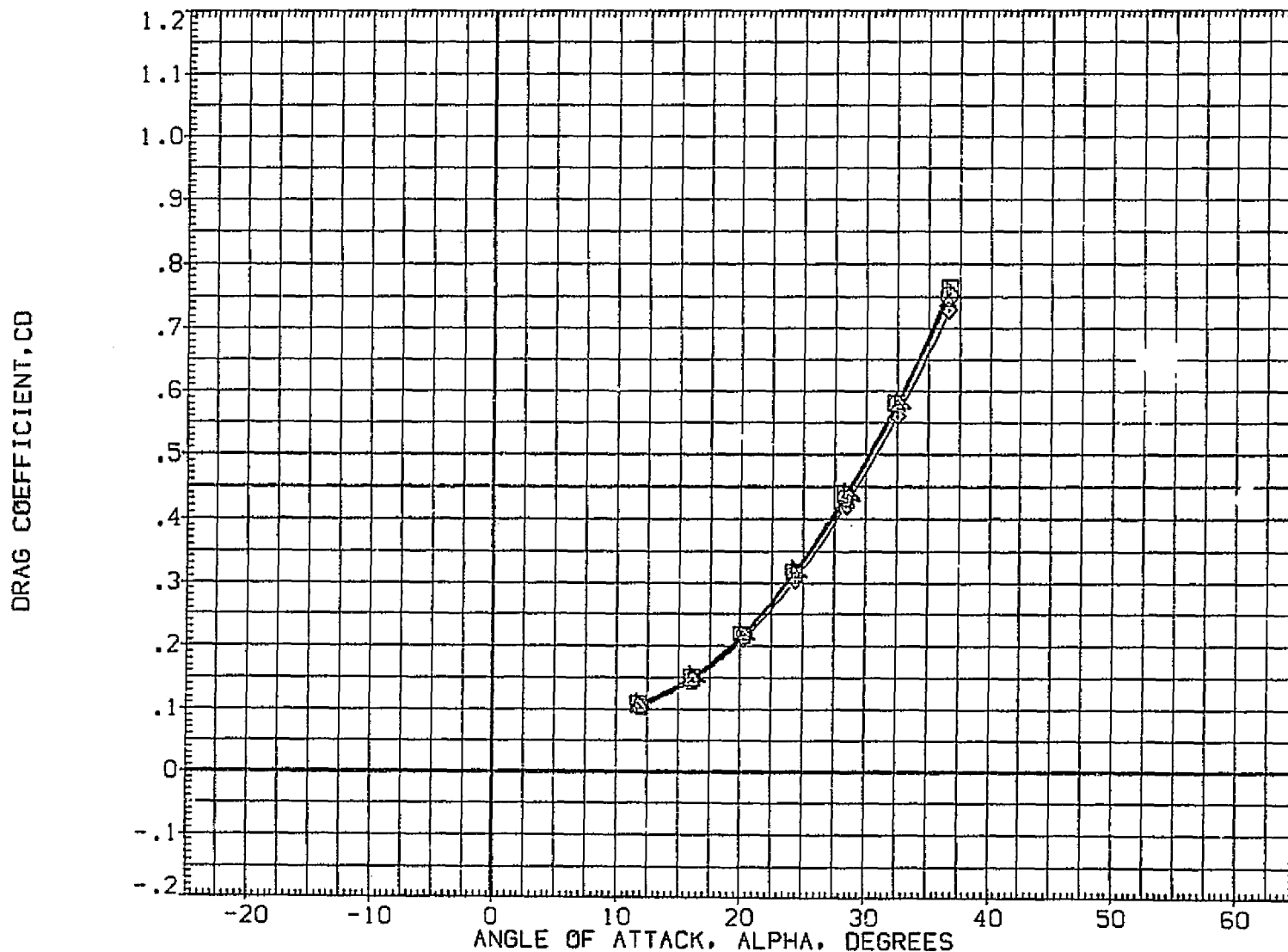


SPEED BRAKE EFFECTIVENESS AT -5 DEGREES BETA

(A)MACH = 10.01

PAGE 94

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BOFLAP	SPDBRK	BETA	REFERENCE INFORMATION
(CQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ002)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	-5.000	LREF 474.8000 IN.
(CQJ004)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEAL	1.233	.000	55.000	-5.000	BREF 936.7000 IN.
(CQJ008)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.985	.000	85.000	-5.000	XMRP 1076.7000 IN. X0
(CQJ010)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEAL	1.211	.000	85.000	-5.000	YMRP .0000 IN. Y0 ZMRP 375.0000 IN. Z0 SCALE .0100

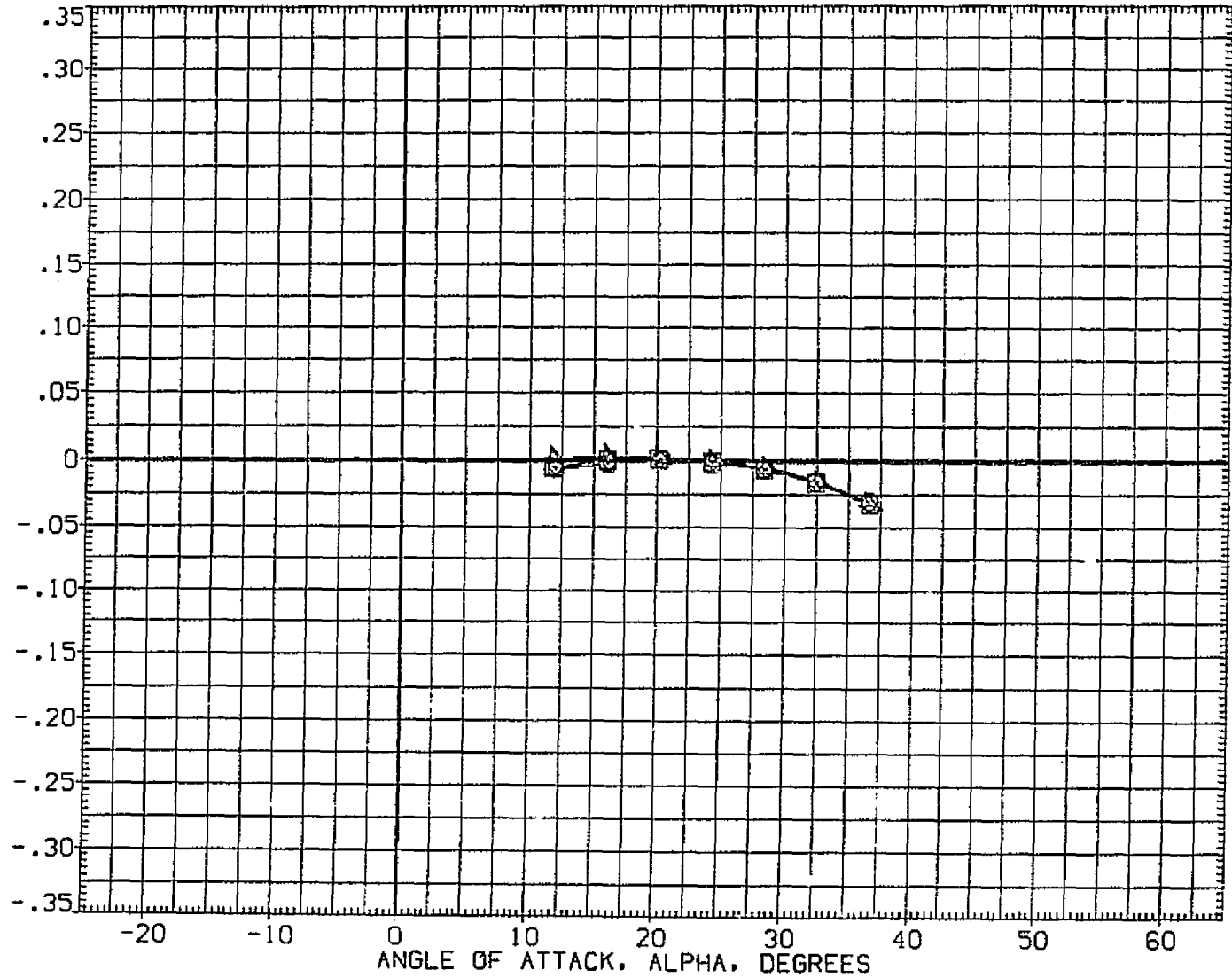


SPEED BRAKE EFFECTIVENESS AT -5 DEGREES BETA

(A)MACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	BETA	REFERENCE INFORMATION
(CQJ001)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ002)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	-5.000	LREF 474.8000 IN.
(CQJ004)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPSEAL	1.233	.000	55.000	-5.000	BREF 976.7000 IN.
(CQJ008)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.985	.000	85.000	-5.000	XMRP 1076.7000 IN. X0
(CQJ010)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPSEAL	1.211	.000	85.000	-5.000	YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

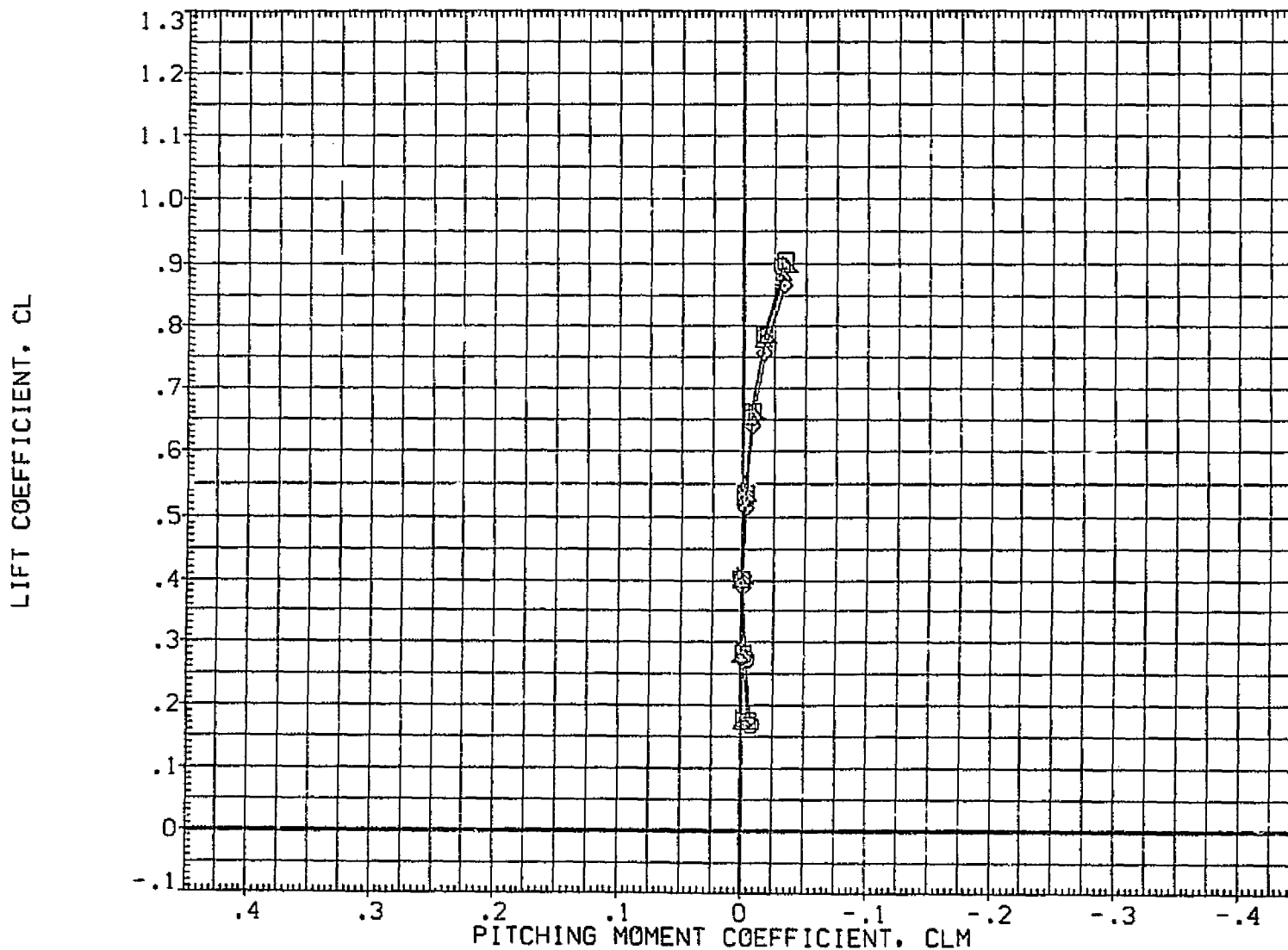
PITCHING MOMENT COEFFICIENT, CLM



SPEED BRAKE EFFECTIVENESS AT -5 DEGREES BETA

(A)MACH = 10.31

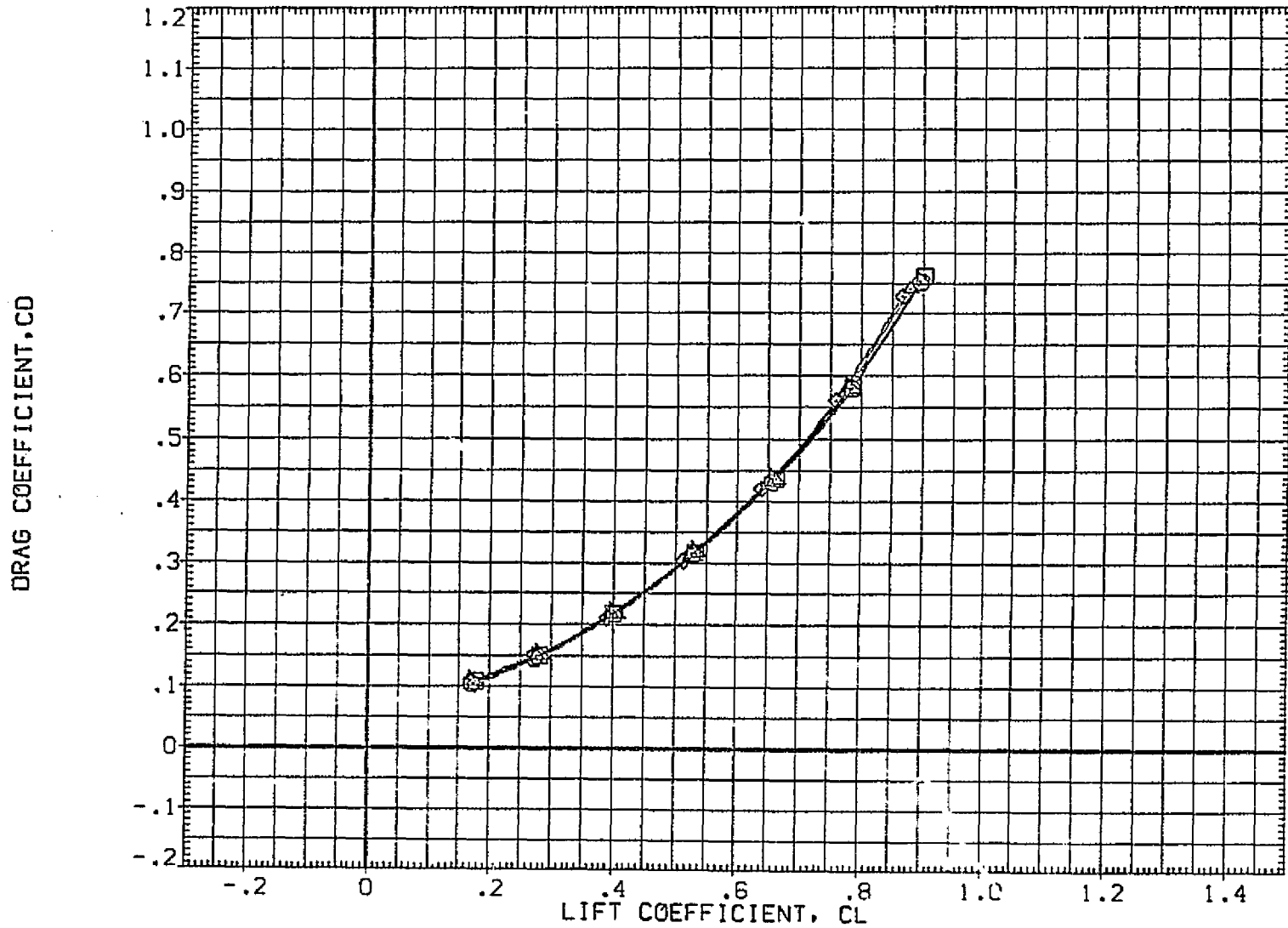
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	BETA	REFERENCE INFORMATION
(CQJ001)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ002)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	-5.000	LREF 474.8000 IN.
(CQJ004)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPSEALED	1.233	.000	55.000	-5.000	BREF 936.7000 IN.
(CQJ008)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.985	.000	85.000	-5.000	XMRP 1076.7000 IN. X0
(CQJ010)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPSEALED	1.211	.000	85.000	-5.000	ZMRP .0000 IN. Z0
						SCALE 375.0000 IN. Z0
						SCALE .0100



SPEED BRAKE EFFECTIVENESS AT -5 DEGREES BETA

(A)MACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	BETA	REFERENCE INFORMATION
(CQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	-.000	SREF 2690.0000 SQ.FT.
(CQJ002)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	-.000	LREF 474.8000 IN.
(CQJ004)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.233	.000	55.000	-.000	BREF 936.7000 IN.
(CQJ008)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.985	.000	85.000	-.000	XMRP 1076.7000 IN. X0
(CQJ010)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.211	.000	85.000	-.000	YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

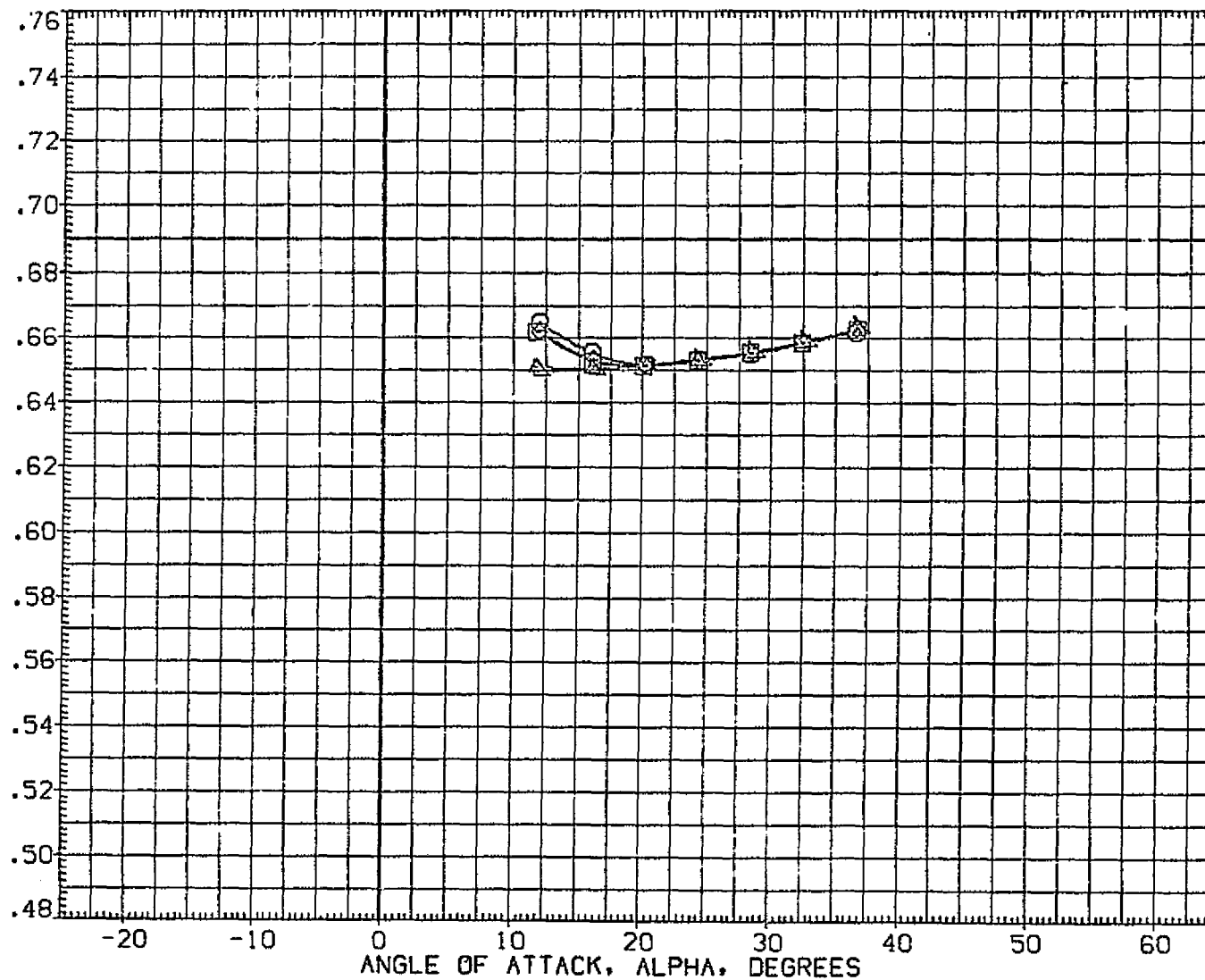


SPEED BRAKE EFFECTIVENESS AT -5 DEGREES BETA

(A)MACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BOFLAP	SPDBRK	BETA	REFERENCE INFORMATION
(CQJ001)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ002)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	-5.000	LREF 474.8000 IN.
(CQJ004)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.233	.000	55.000	-5.000	BREF 936.7000 IN.
(CQJ008)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.985	.000	85.000	-5.000	XMRP 1076.7000 IN. X0
(CQJ010)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.211	.000	85.000	-5.000	YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

CENTER OF PRESSURE LOCATION BASED ON BODY LENGTH, XCP/L

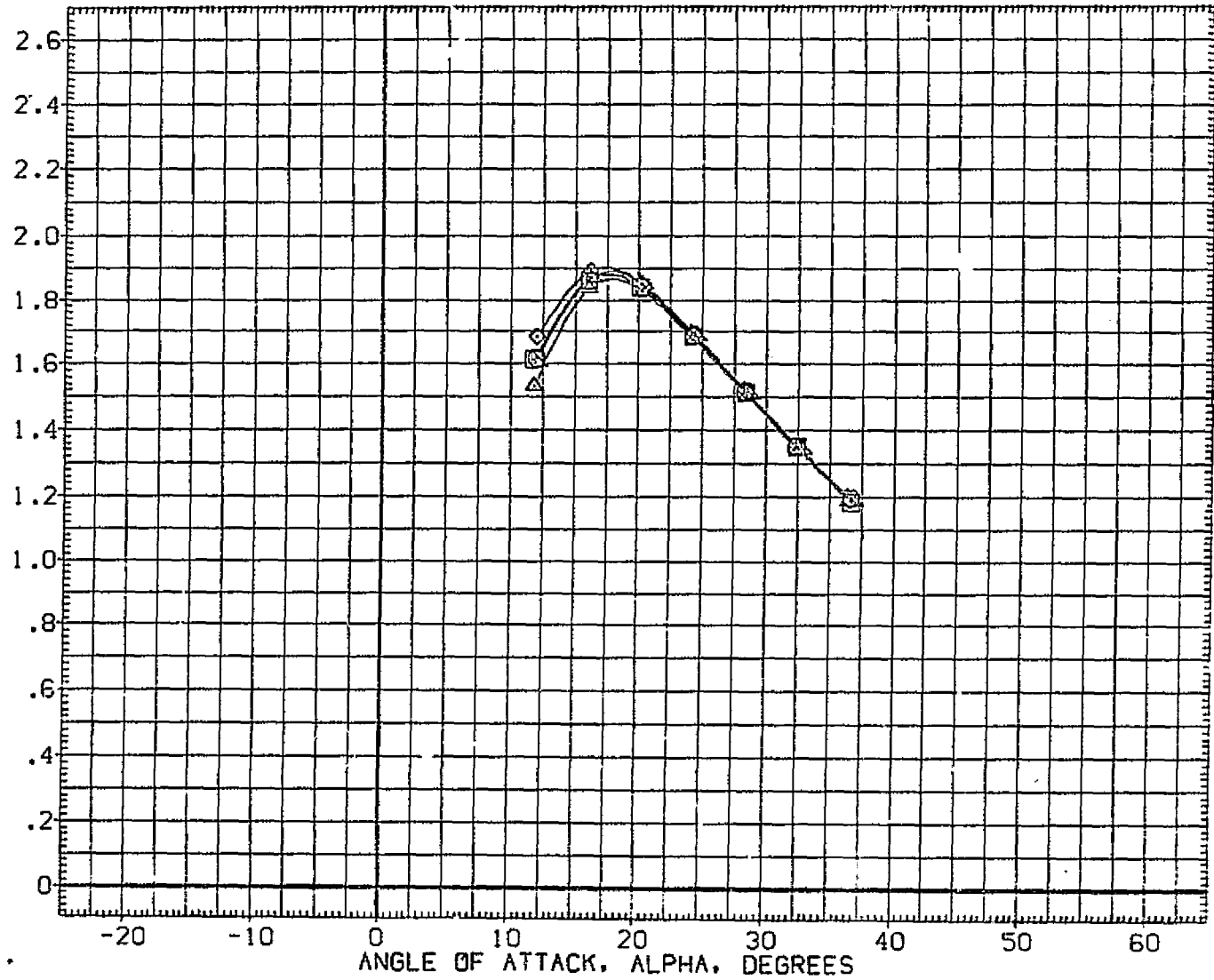


SPEED BRAKE EFFECTIVENESS AT -5 DEGREES BETA

(A)MACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPOBRK	BETA	REFERENCE INFORMATION
(CQJ001)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	-5.000	SREF 2690.0000 SQ.FT.
(CQJ002)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	-5.000	LREF 474.8000 IN.
(CQJ004)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	1.233	.000	55.000	-5.000	BREF 936.7000 IN.
(CQJ008)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.985	.000	85.000	-5.000	XMRP 1076.7000 IN. X0
(CQJ010)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPSEALED	1.211	.000	85.000	-5.000	YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

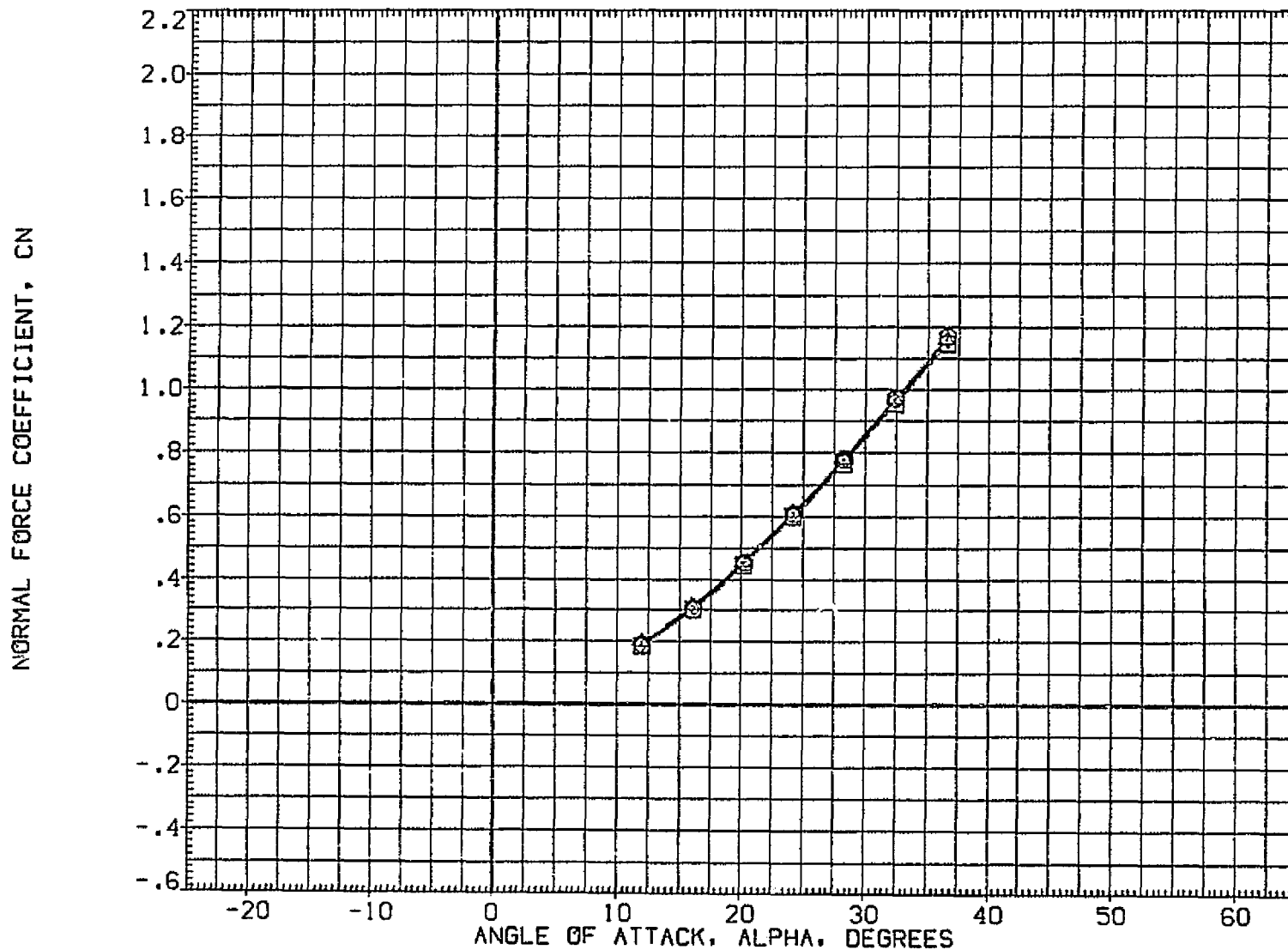
LIFT/DRAG RATIO, L/D



SPEED BRAKE EFFECTIVENESS AT -5 DEGREES BETA

(A)MACH = 10.31

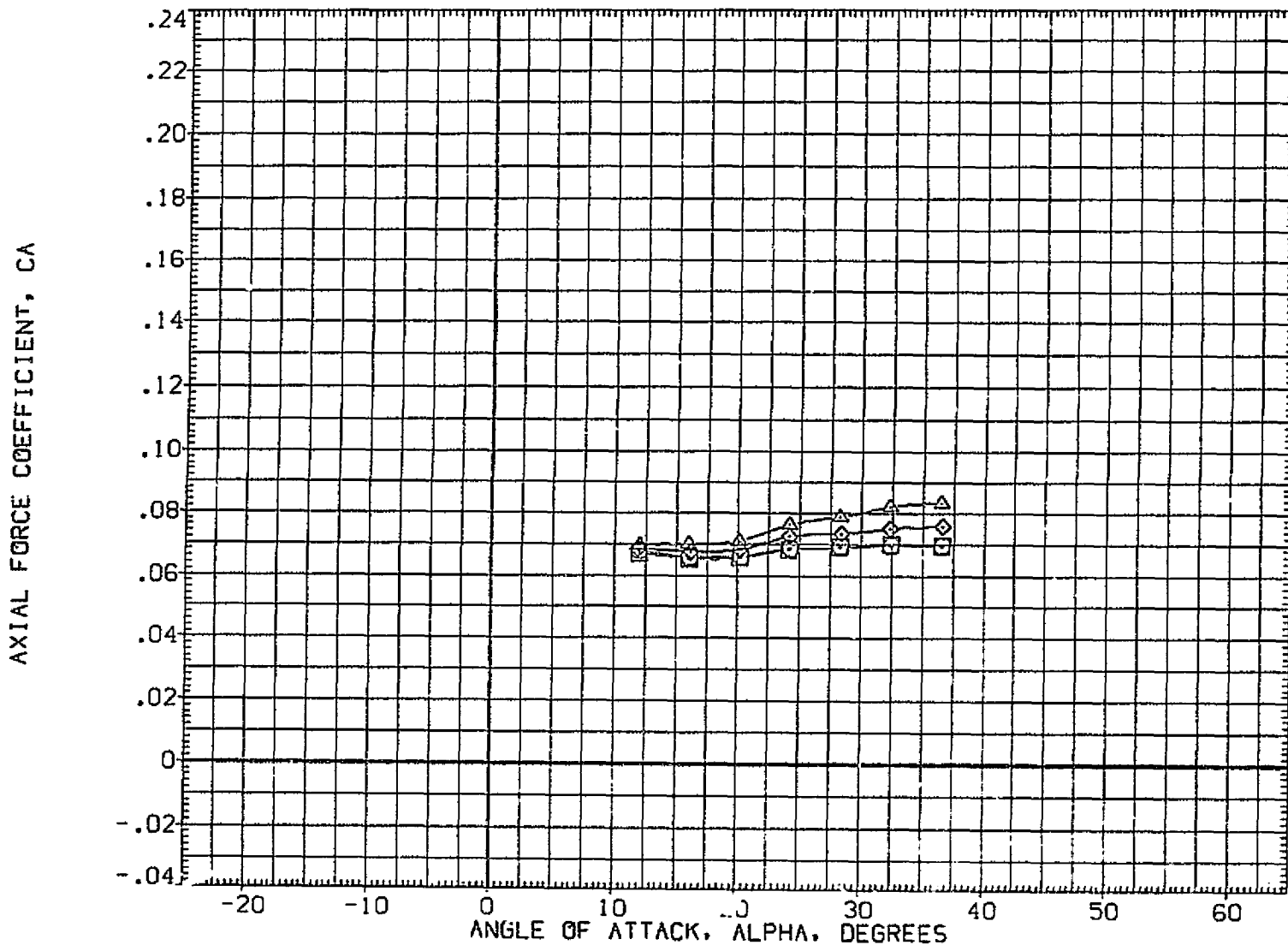
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	ELEVTR	AILRON	REFERENCE INFORMATION
(00J001)	□ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	.000	.000	SREF 2690.0000 SQ. FT.
(00J024)	□ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.990	.000	.000	5.000	LREF 474.8000 IN.
(00J025)	◇ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.970	.000	.000	10.000	BREF 936.7000 IN.
(00J026)	△ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.993	.000	.000	15.000	XMRP 1076.7000 IN. X0 YMRP .0000 IN. Y0 ZMRP 375.0000 IN. Z0 SCALE .0100



AILERON EFFECTIVENESS

(A)MACH = 10.31

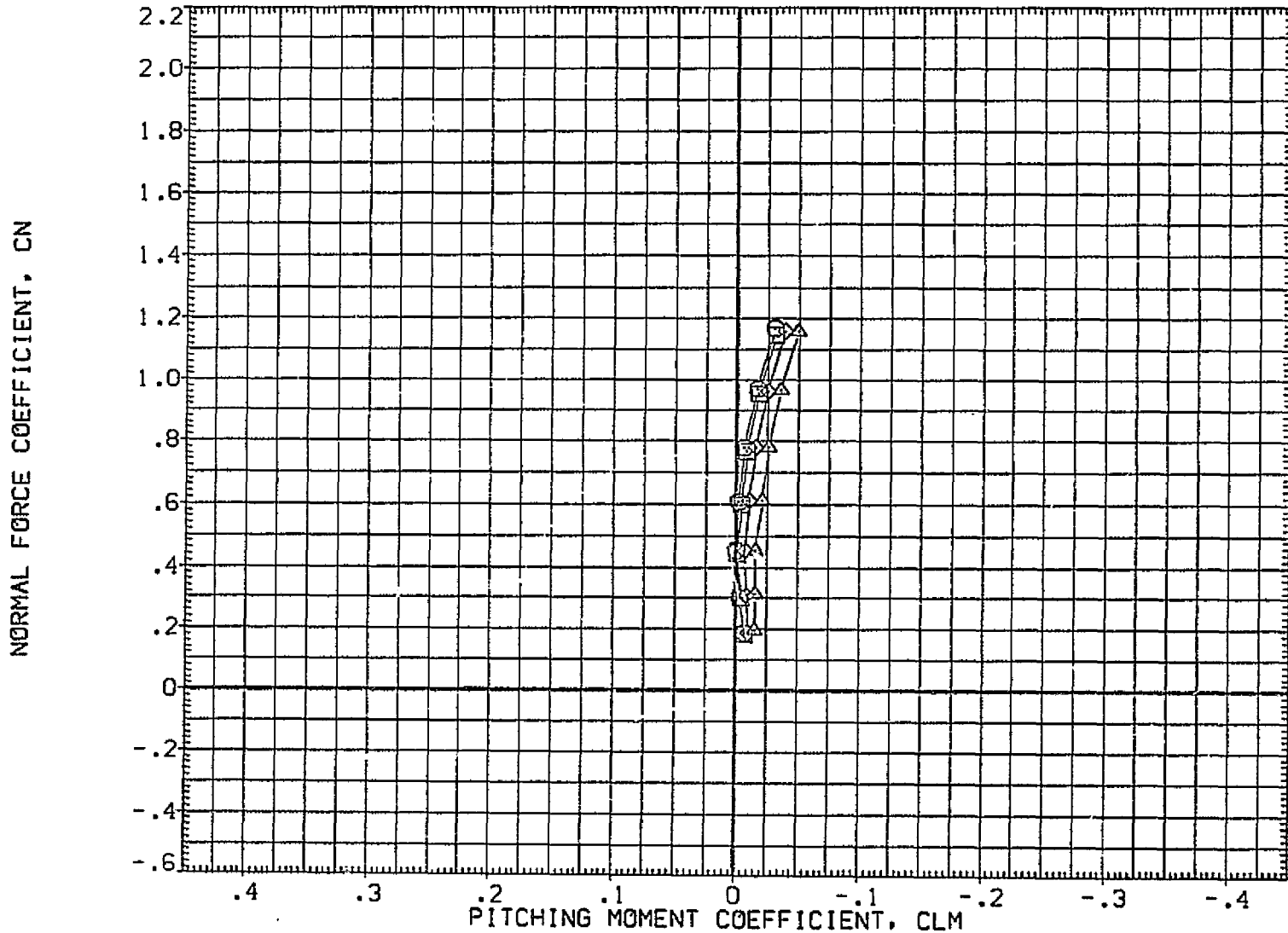
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BOFLAP	ELEVTR	AILERON	REFERENCE INFORMATION
(CQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	.000	.000	SREF 2690.0000 SQ.FT.
(CQJ024)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.990	.000	.000	5.000	LREF 474.8000 IN.
(CQJ025)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.970	.000	.000	10.000	BREF 936.7000 IN.
(CQJ026)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.993	.000	.000	15.000	XMRP 1076.7000 IN. X0 YMRP .0000 IN. Y0 ZMRP 375.0000 IN. Z0 SCALE .0100



AILERON EFFECTIVENESS

(A)MACH = 10.31

DATA SET SYMBOL	CONFIGURATION	DESCRIPTION	RN/L	BDFLAP	ELEVTR	AILRON	REFERENCE INFORMATION
(CQJ001)	○	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	.000	.000	SREF 2690.0000 SQ.FT.
(CQJ024)	□	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.990	.000	.000	5.000	LREF 474.8000 IN.
(CQJ025)	△	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.970	.000	.000	10.000	BREF 936.7000 IN.
(CQJ026)	×	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.993	.000	.000	15.000	XMRP 1076.7000 IN. X0 YMRP .0000 IN. Y0 ZMRP 375.0000 IN. Z0 SCALE .0100

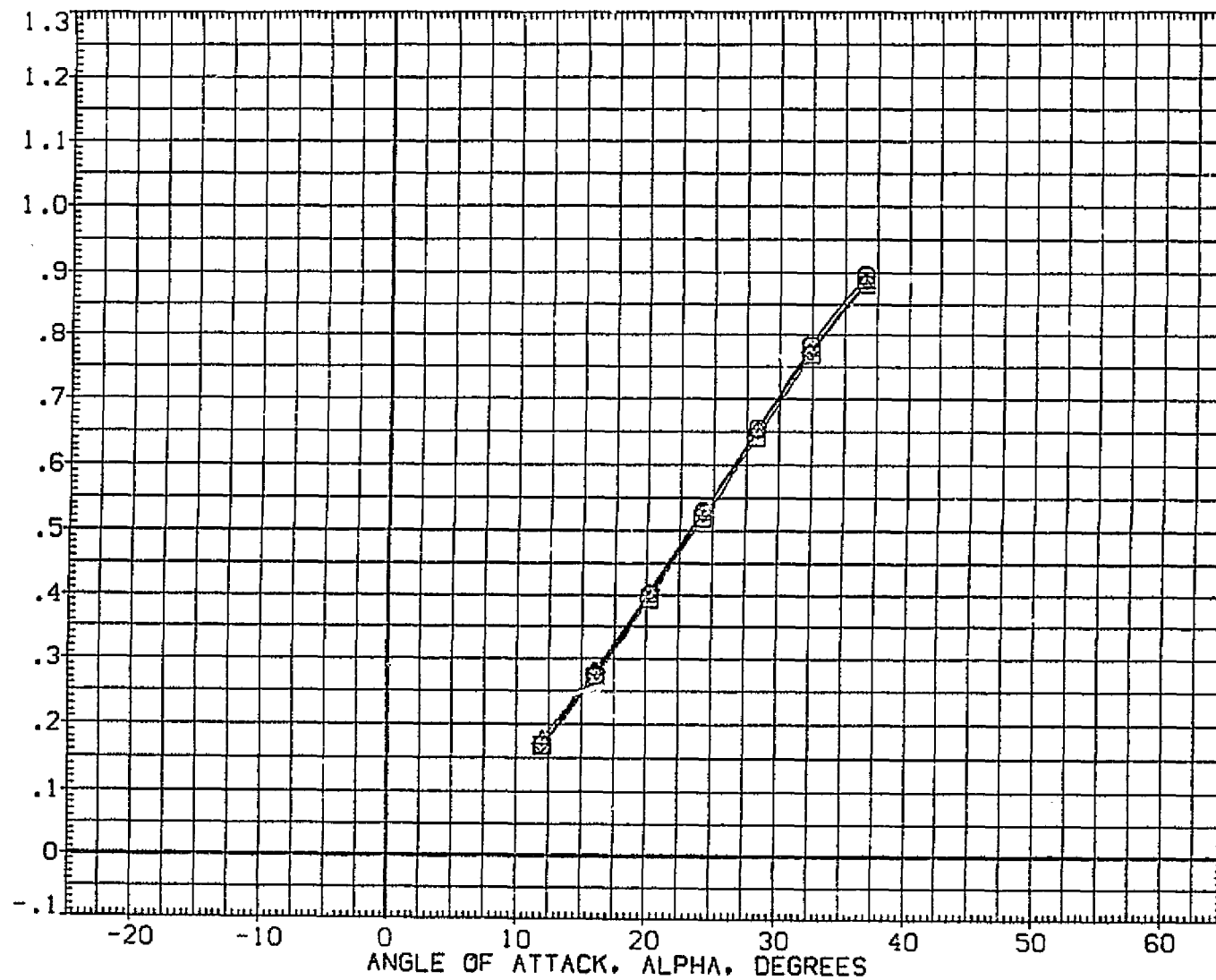


AILERON EFFECTIVENESS

(A)MACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	ELEVTR	AILRON	REFERENCE INFORMATION
(CGJ001)	DA-90 CFHT-110 RI-14DA/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	.000	.000	SREF 2690.0000 SQ.FT.
(CGJ024)	DA-90 CFHT-110 RI-14DA/B MODEL 72-0 OTRGAPUNSEAL	.990	.000	.000	5.000	LREF 474.8000 IN.
(CGJ025)	DA-90 CFHT-110 RI-14DA/B MODEL 72-0 OTRGAPUNSEAL	.970	.000	.000	10.000	BREF 936.7000 IN.
(CGJ026)	DA-90 CFHT-110 RI-14DA/B MODEL 72-0 OTRGAPUNSEAL	.993	.000	.000	15.000	XMRP 1076.7000 IN. X0
						YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

LIFT COEFFICIENT, CL



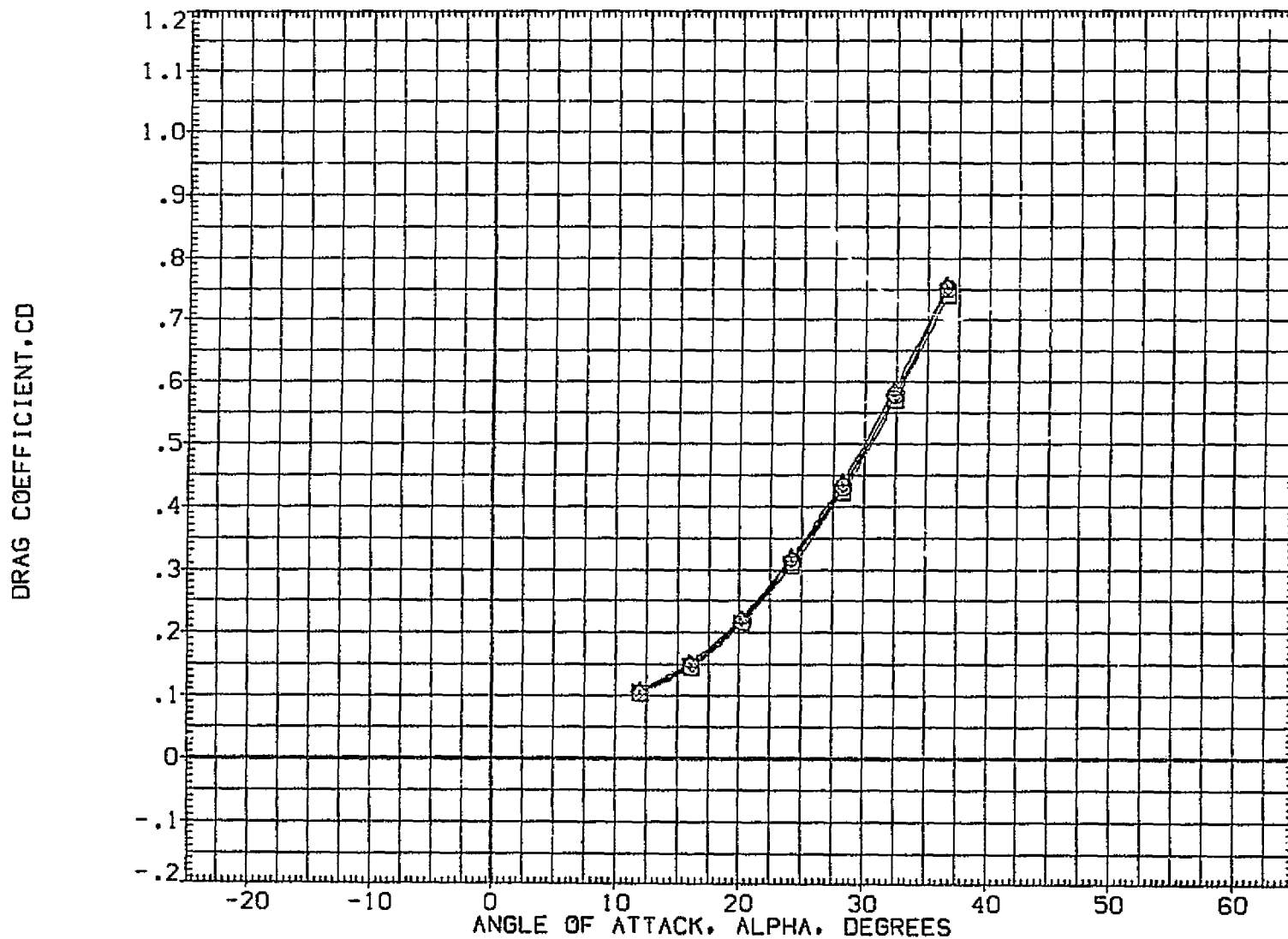
AILERON EFFECTIVENESS

(A)MACH = 10.31

PAGE 104



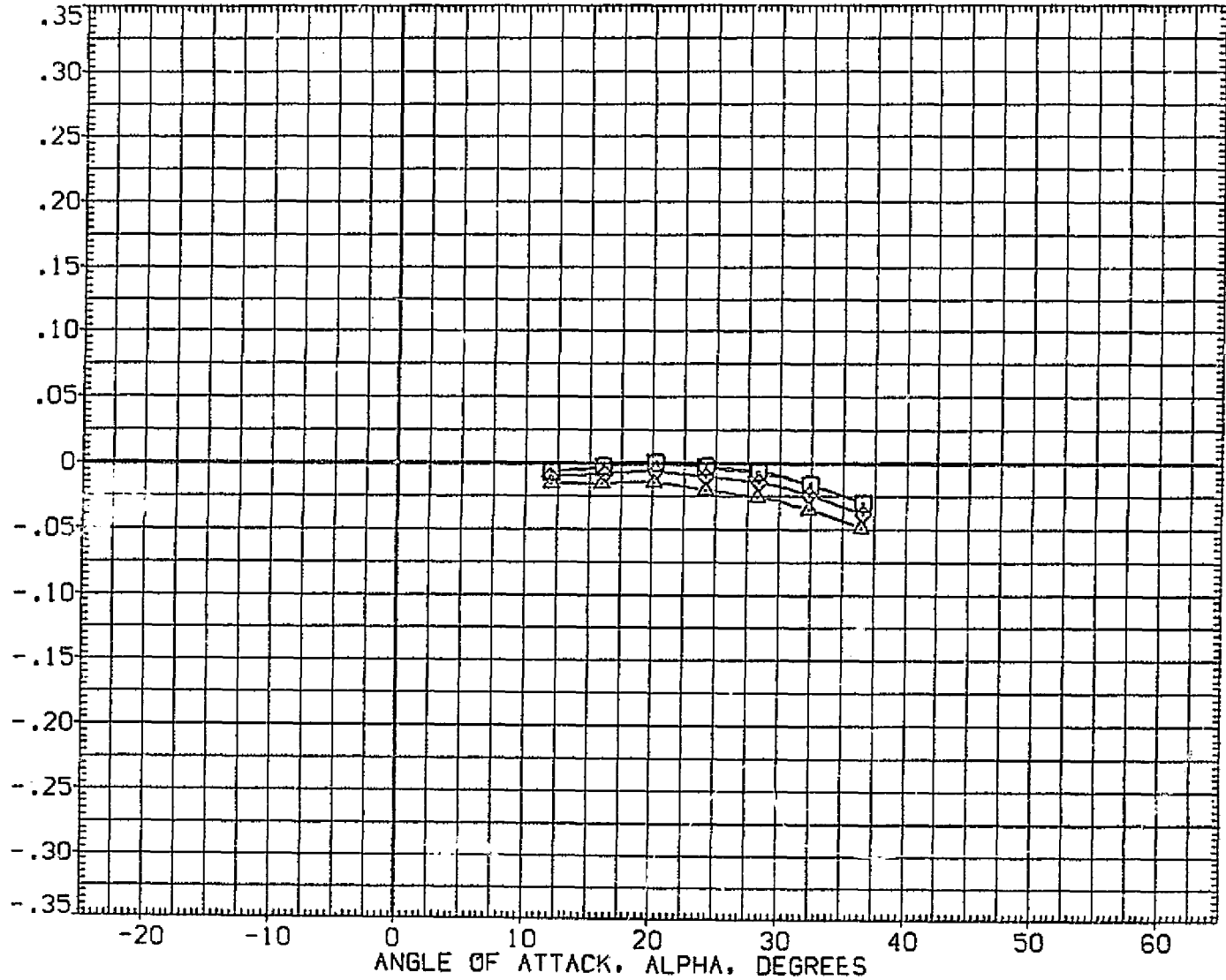
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	ELEVTR	AILERON	REFERENCE INFORMATION
(DQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 ØTRGAPUNSEAL	.935	.000	.000	.000	SREF 2690.0000 SQ.FT.
(CQJ024)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 ØTRGAPUNSEAL	.990	.000	.000	5.000	LREF 474.8000 IN.
(CQJ025)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 ØTRGAPUNSEAL	.970	.000	.000	10.000	BREF 936.7000 IN.
(CQJ026)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 ØTRGAPUNSEAL	.993	.000	.000	15.000	XMRF 1076.7000 IN. X0 YMRP .0000 IN. Y0 ZMRP 375.0000 IN. Z0 SCALE .0100



AILERON EFFECTIVENESS
 (A)MACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	ELEVTR	AILRON	REFERENCE INFORMATION
(CQJ001)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	.000	.000	SREF 2690.0000 SQ.FT.
(CQJ024)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.990	.000	.000	5.000	LREF 474.8000 IN.
(CQJ025)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.970	.000	.000	10.000	BREF 936.7000 IN.
(CQJ026)	OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.993	.000	.000	15.000	XMRP 1076.7000 IN. X0 YMRP .0000 IN. Y0 ZMRP 375.0000 IN. Z0 SCALE .0100

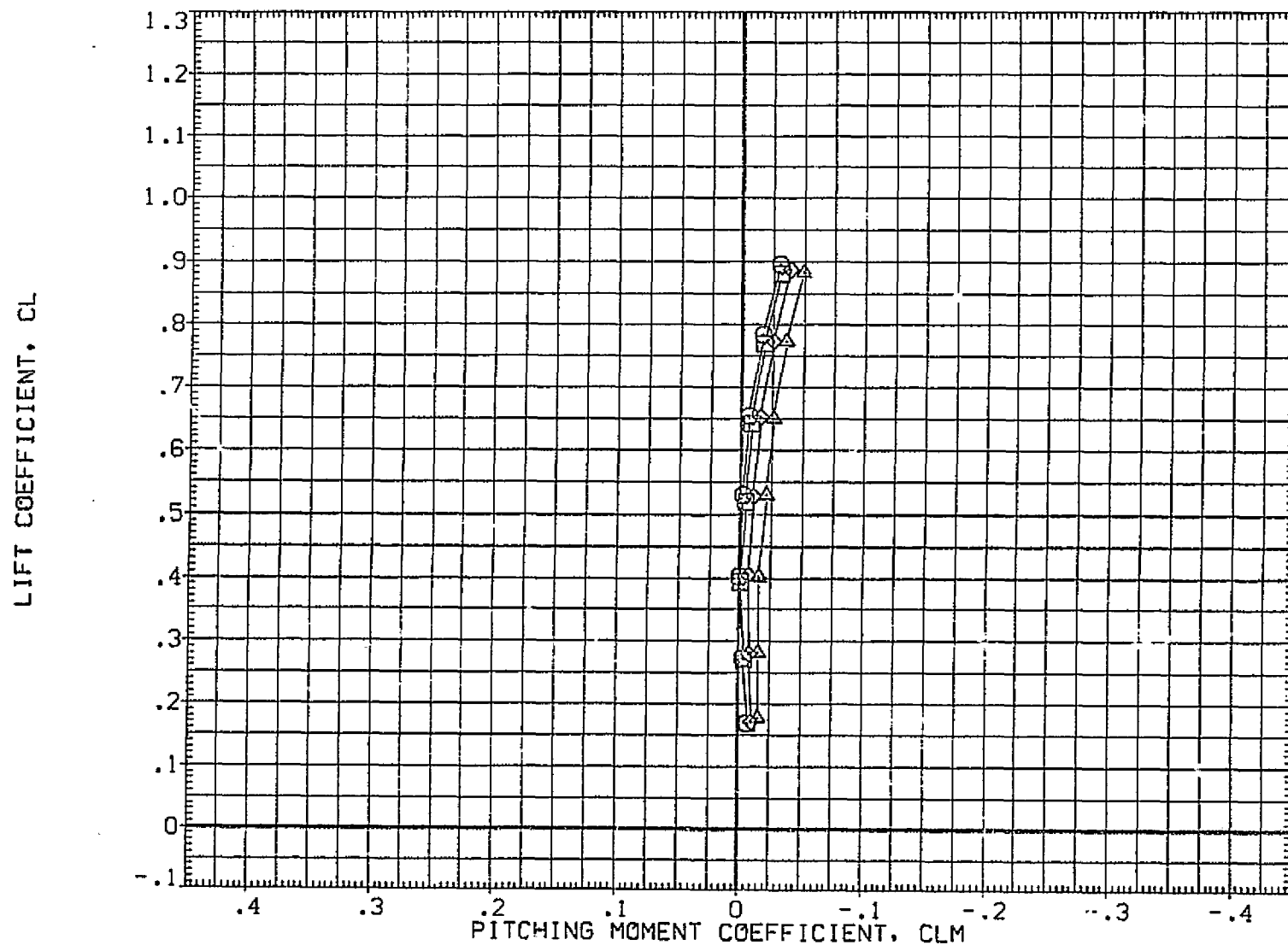
PITCHING MOMENT COEFFICIENT, CLM



AILERON EFFECTIVENESS

(A) MACH = 10.31

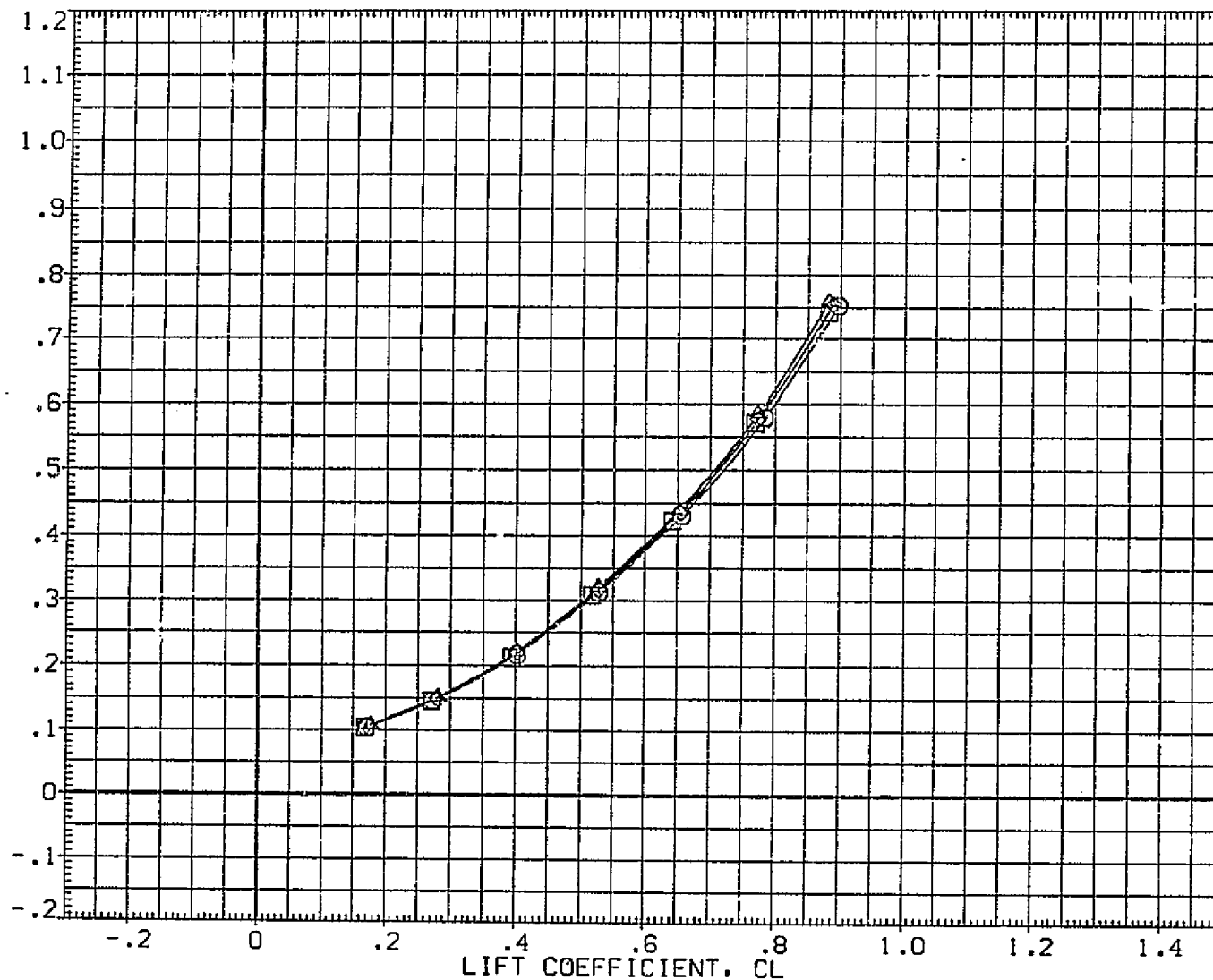
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	SDFLAP	ELEVTR	AILRON	REFERENCE INFORMATION
(CQJ001)	○ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	.000	.000	SREF 2690.0000 SQ.FT.
(CQJ024)	□ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.990	.000	.000	5.000	LREF 474.8000 IN.
(CQJ025)	◇ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.970	.000	.000	10.000	BREF 936.7000 IN.
(CQJ026)	△ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.993	.000	.000	15.000	XMRP 1076.7000 IN. X0 YMRP .0000 IN. Y0 ZMRP 375.0000 IN. Z0 SCALE .0100



AILERON EFFECTIVENESS
(A)MACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	ELEVTR	AILRON	REFERENCE INFORMATION
(DQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	.000	.000	SREF 2690.0000 SQ.FT.
(DQJ024)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.990	.000	.000	5.000	LREF 474.8000 IN.
(DQJ025)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.970	.000	.000	10.000	BREF 936.7000 IN.
(DQJ026)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.993	.000	.000	15.000	XMRP 1076.7000 IN. X0 YMRP .0000 IN. Y0 ZMRP 375.0000 IN. Z0 SCALE .0100

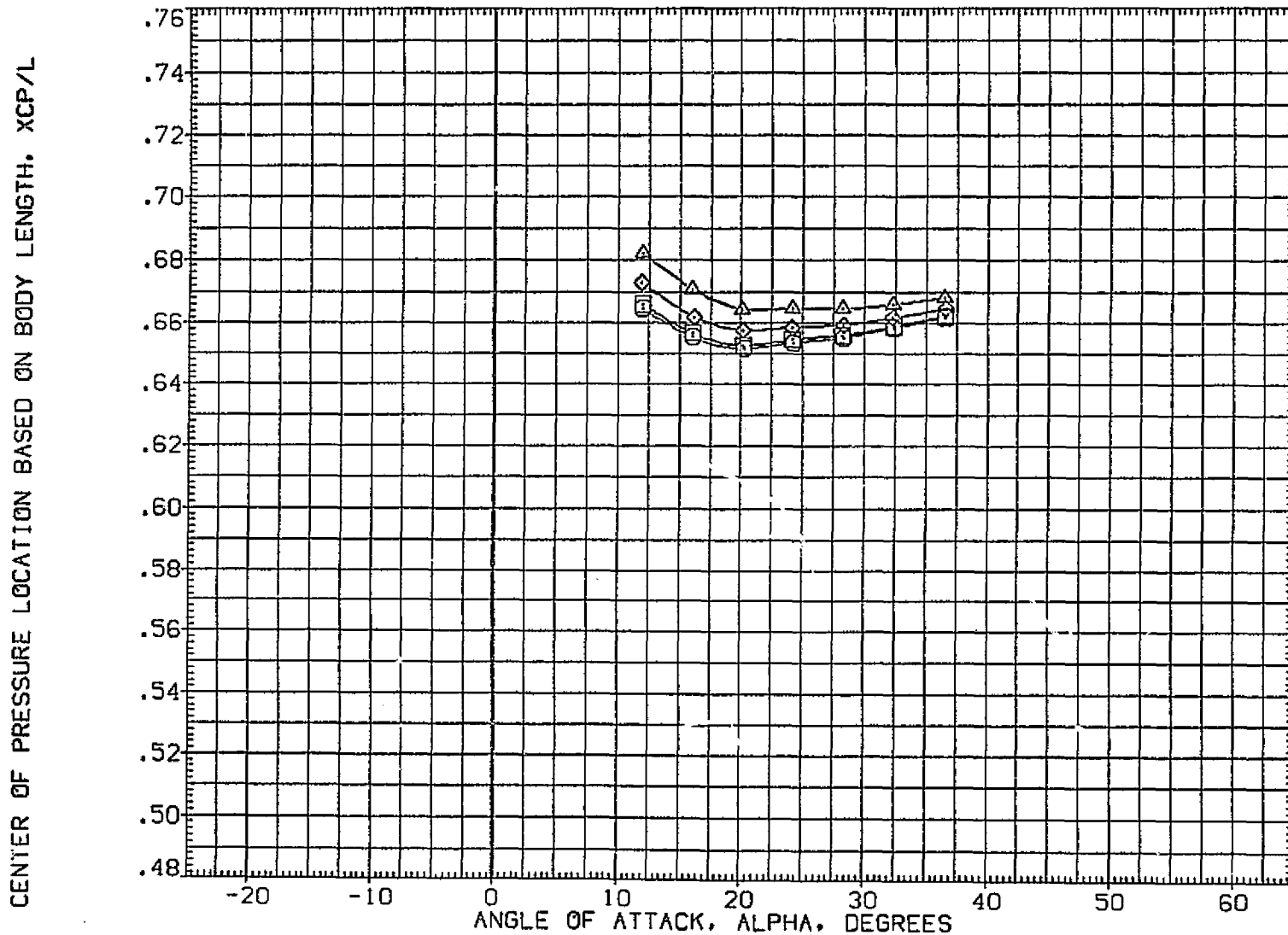
DRAG COEFFICIENT, CD



AILERON EFFECTIVENESS

(A)MACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	ELEVTR	AILRON	REFERENCE INFORMATION
(CQJ001)	QA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	.000	.000	SREF 2690.0000 SQ.FT.
(CQJ024)	QA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.990	.000	.000	5.000	LREF 474.8000 IN.
(CQJ025)	QA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.970	.000	.000	10.000	BREF 936.7000 IN.
(CQJ026)	QA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.993	.000	.000	15.000	XMRP 1076.7000 IN. X0
						YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

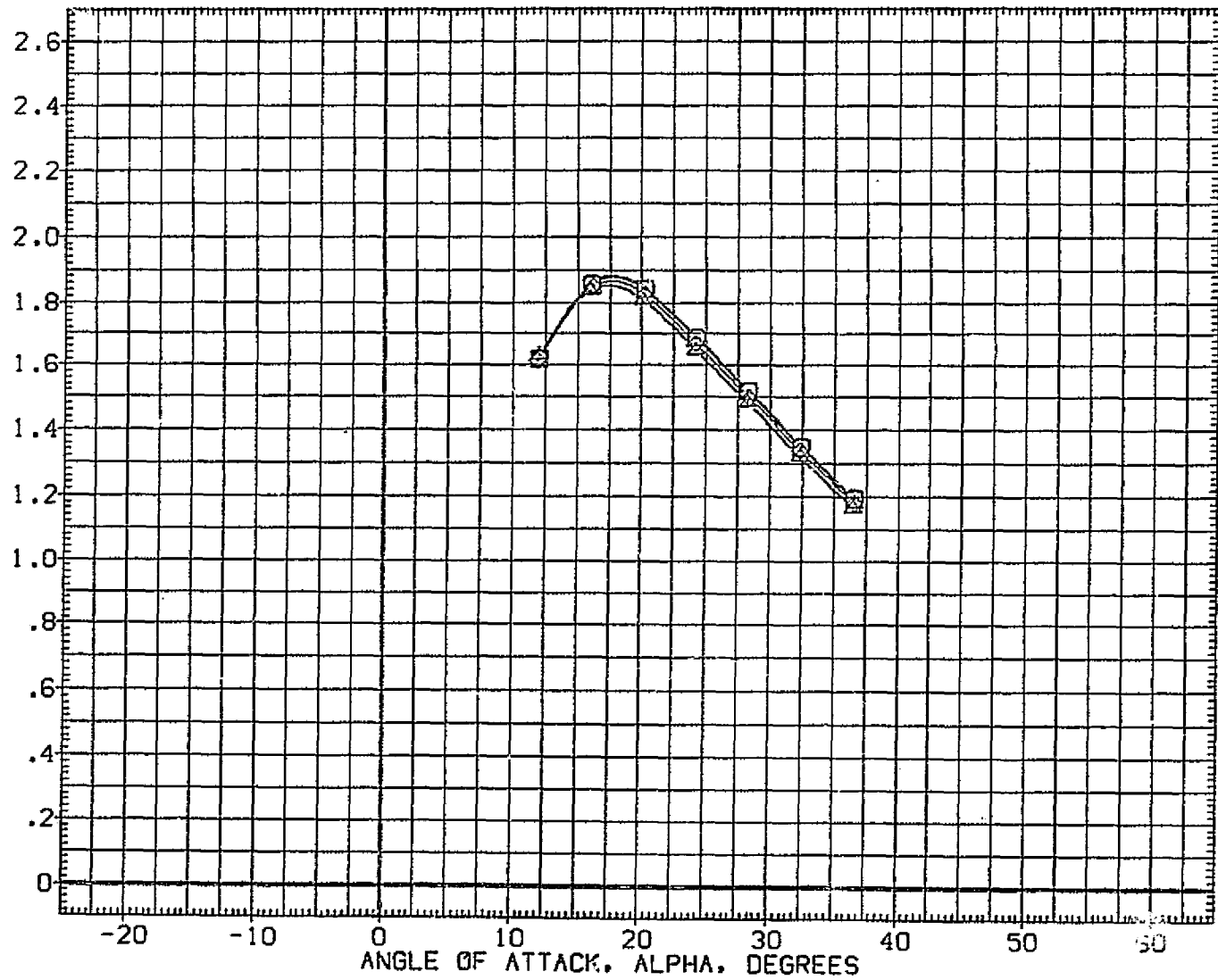


AILERON EFFECTIVENESS

(A)MACH = 10.31

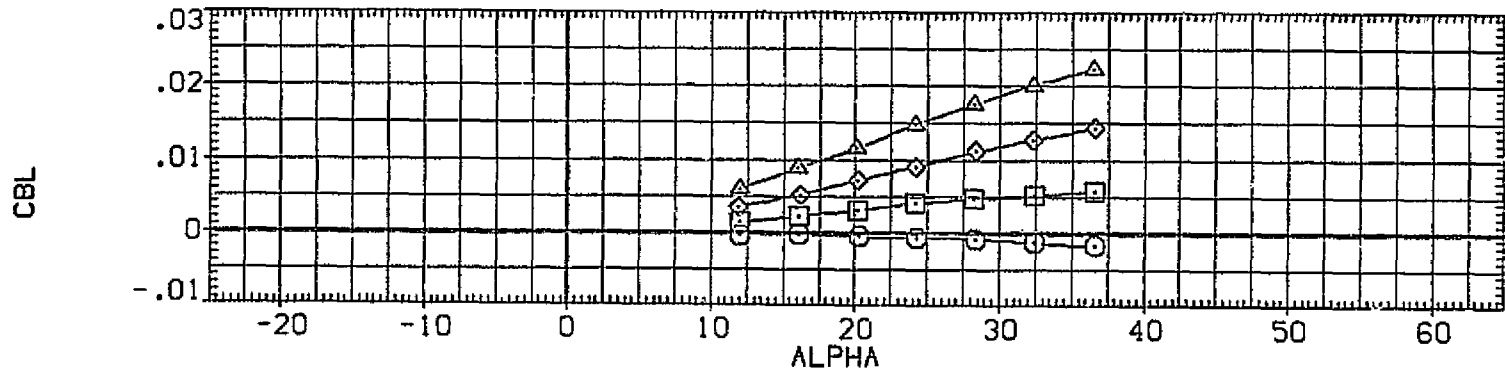
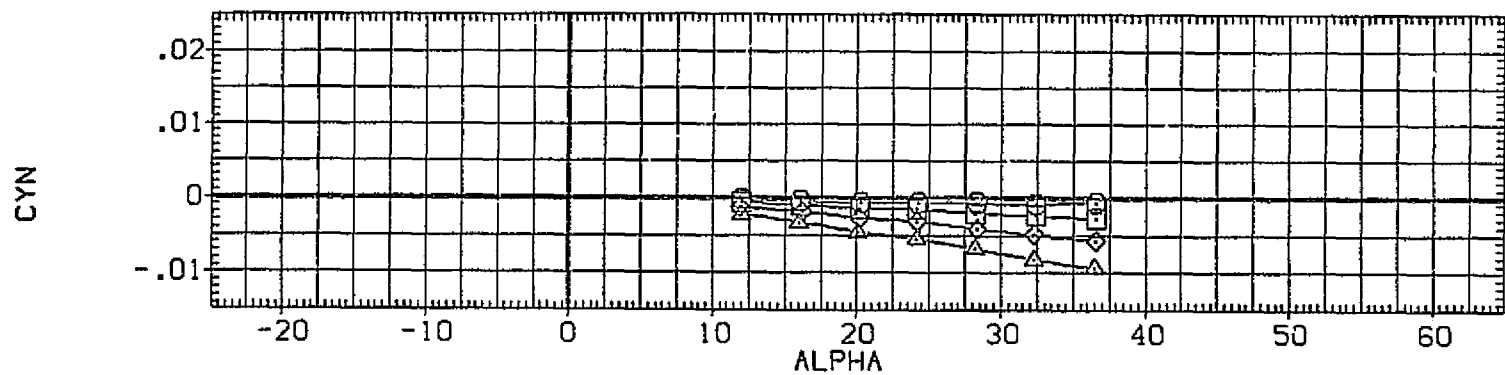
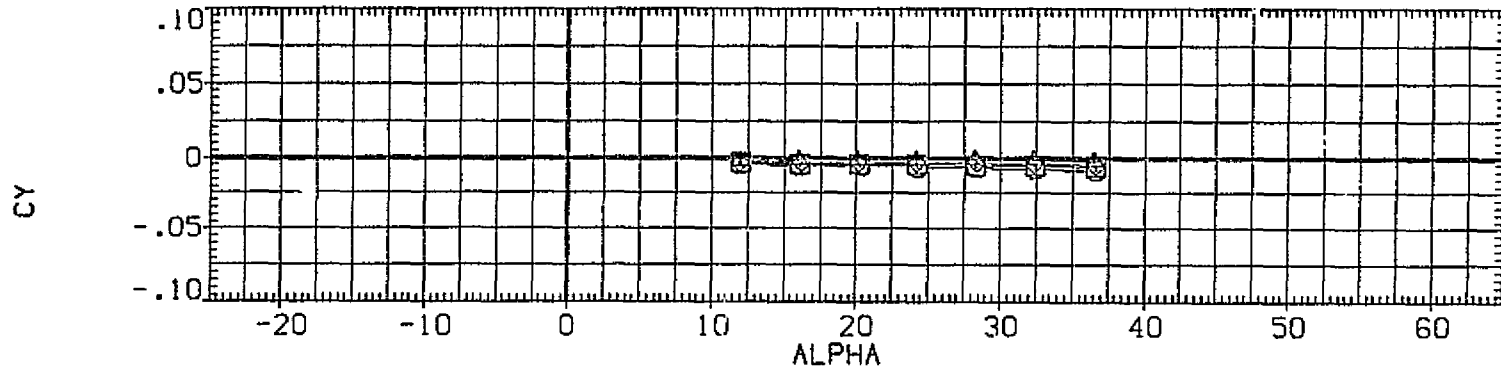
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	ELEVTR	AILRON	REFERENCE INFORMATION	
(CQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	.000	.000	SREF	2690.0000 SO.FT.
(CQJ024)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.980	.000	.000	5.000	LREF	474.8000 IN.
(CQJ025)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.970	.000	.000	10.000	BREF	935.7000 IN.
(CQJ026)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.993	.000	.000	15.000	XMRP	1076.7000 IN. X0
						YMRP	.0000 IN. Y0
						ZMRP	375.0000 IN. Z0
						SCALE	.0100

LIFT/DRAG RATIO, L/D



AILERON EFFECTIVENESS
(A)MACH = 10.31

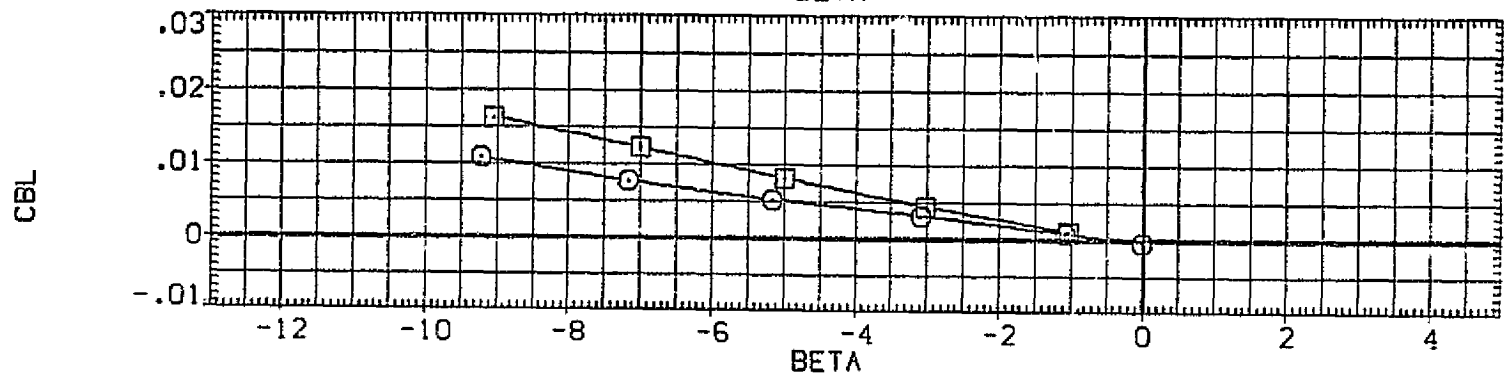
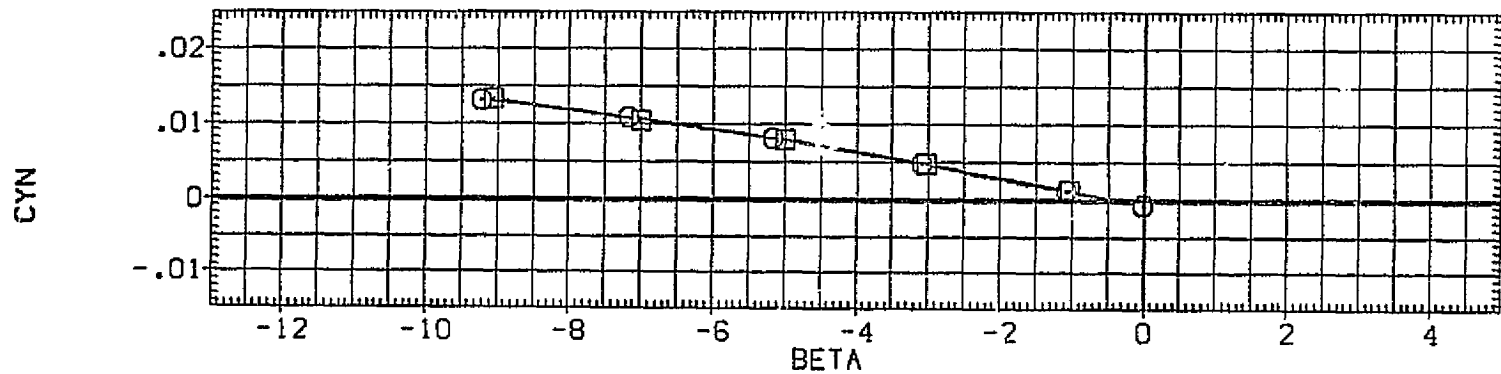
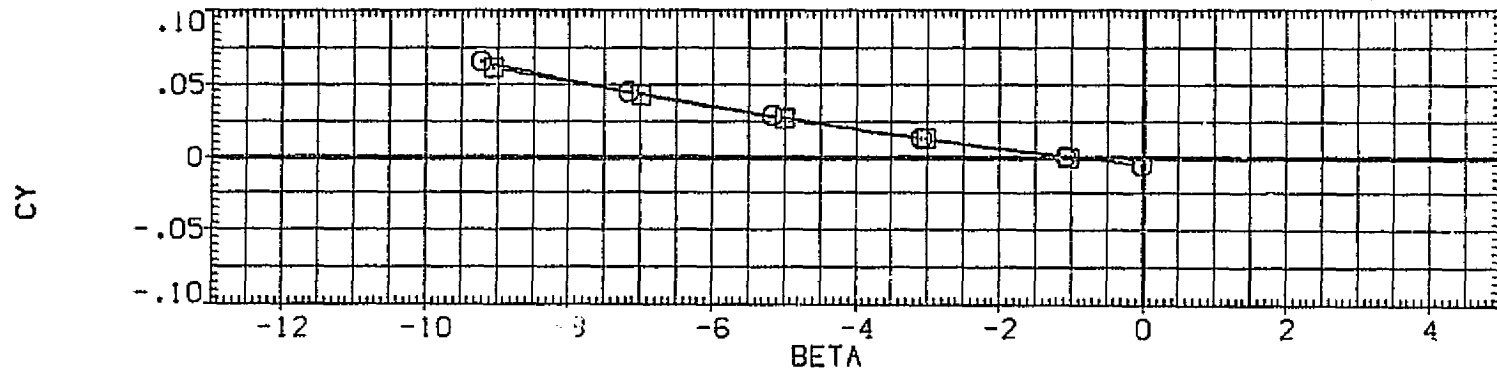
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BD/FLAP	ELEVTR	AILRON	REFERENCE INFORMATION
(CQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	.000	.000	SREF 2690.0000 SQ.FT.
(CQJ024)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.990	.000	.000	5.000	LREF 474.8000 IN.
(CQJ025)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.970	.000	.000	10.000	BREF 935.7000 IN.
(CQJ026)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.993	.000	.000	15.000	XMRP 1076.7000 IN. X0 YMRP .0000 IN. Y0 ZMRP 375.0000 IN. Z0 SCALE .0100



AILERON EFFECTIVENESS

(A)MACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	BDFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION		
(RQJ005)	□ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	20.000	.000	55.000	.000	SREF	2690.0000	SG.FT.
(RQJ006)	○ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	30.000	.000	55.000	.000	LREF	474.8000	IN.
						BREF	936.7000	IN.
						XMRP	1076.7000	IN. X0
						YMRP	.0000	IN. Y0
						ZMRP	375.0000	IN. Z0
						SCALE	.0100	



LATERAL DIRECTIONAL CHARACTERISTICS

(A)RN/L = .95

APPENDIX
TABULATED SOURCE DATA

Tabulations of plotted data are available on request from
Data Management Services.

DATE 23 JUL 75

TABULATED SOURCE DATA, LARC CFHT 110 (0A90)

PAGE 1

0A-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL

(RQJ001) (21 JUL 75)

REFERENCE DATA

SREF = 2680.0000 SQ.FT. XMRP = 1078.7000 IN. XO
 LREF = 474.8000 IN. YMRP = .0000 IN. YO
 BREF = 936.7000 IN. ZMRP = 375.0000 IN. ZO
 SCALE = .0100

PARAMETRIC DATA

BETA = .000 MACH = 10.310
 AILRON = .000 ELEVTR = .000
 BDFLAP = .000 SPDBRK = 55.000

RUN NO. 17/ 0 RN/L = .80 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
.602	11.930	.00814	.18211	.06994	-.00728	-.00038	-.00024	-.00458	.16372	.10687	1.54343
.601	15.984	.00136	.29766	.06967	-.00422	-.00032	-.00046	-.00493	.26718	.14857	1.79836
.601	20.019	-.00626	.42726	.06974	-.00073	-.00040	-.00054	-.00505	.37757	.21179	1.78270
.600	24.096	-.01728	.58405	.06972	-.00224	-.00057	-.00051	-.00571	.50469	.30209	1.67069
.600	28.307	-.02399	.75705	.07105	-.00638	-.00074	-.00056	-.00627	.63283	.42155	1.50121
.600	32.124	-.03462	.92859	.07166	-.01408	-.00114	-.00063	-.00694	.74832	.55447	1.34962
.599	36.226	-.04281	1.11916	.07208	-.02702	-.00145	-.00050	-.00808	.86023	.71954	1.19553
	GRADIENT	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000

RUN NO. 14/ 0 RN/L = .94 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
.935	11.950	.00253	.18784	.06758	-.00634	-.00043	-.00039	-.00479	.16978	.10501	1.61678
.936	16.027	-.00469	.30281	.06686	-.00250	-.00040	-.00057	-.00548	.27265	.14691	1.85733
.936	20.221	-.01264	.45206	.06598	.00081	-.00061	-.00070	-.00563	.40139	.21816	1.83985
.936	24.221	-.02017	.60954	.06842	-.00189	-.00076	-.00063	-.00635	.52791	.31247	1.68914
.936	28.324	-.02730	.78097	.06883	-.00610	-.00091	-.00079	-.00714	.65482	.43112	1.51887
.936	32.414	-.03922	.97205	.06952	-.01589	-.00144	-.00086	-.00781	.78334	.57974	1.35118
.936	36.544	-.04817	1.16639	.06949	-.03001	-.00180	-.00073	-.00912	.89571	.75034	1.19374
	GRADIENT	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000

ORIGINAL PAGE IS
 OF POOR QUALITY

DATE 23 JUL 75

TABULATED SOURCE DATA, LARC CFHT 110 (OASD)

PAGE 3

0A-90 CFHT-110 R1-140A/B MODEL 72-0 OTR0APSEALED

(RQJ004) (21 JUL 75)

REFERENCE DATA

SREF = 2690.0000 SQ.FT. XHRP = 1076.7000 IN. X0
 LREF = 474.8000 IN. YHRP = .0000 IN. Y0
 BREF = 936.7000 IN. ZHRP = 375.0000 IN. Z0
 SCALE = .0100

PARAMETRIC DATA

BETA = -5.000 MACH = 10.370
 AILRON = .000 ELEVTR = .000
 BDFLAP = .000 SPDBRK = 55.000

RUN NO. 20/ 0 RN/L = 1.24 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	BETA	CN	CA	CLM	CEL	CYN	CY	CL	CD	L/D
1.233	12.017	-5.10056	.18258	.06498	-.00481	.00439	.00487	.03597	.17482	.10363	1.68695
1.232	16.135	-5.14993	.30492	.06349	-.00058	.00490	.00650	.03107	.27526	.14572	1.88894
1.233	20.183	-5.17551	.43778	.06310	.00080	.00530	.00810	.02611	.38913	.21027	1.85063
1.235	24.296	-5.15827	.59344	.06542	-.00114	.00651	.00775	.02704	.51386	.30380	1.69177
1.236	28.427	-5.11281	.76284	.06623	-.00654	.00776	.00731	.02693	.63934	.42138	1.51723
1.236	32.473	-5.04132	.93964	.06599	-.01654	.00851	.00695	.02585	.75729	.56017	1.35190
1.237	36.628	-4.94008	1.12993	.06721	-.03206	.00898	.00637	.02601	.86672	.72805	1.19047
	GRADIENT	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000

0A-90 CFHT-110 R1-140A/B MODEL 72-0 OTR0APUNSEAL

(RQJ005) (21 JUL 75)

REFERENCE DATA

SREF = 2690.0000 SQ.FT. XHRP = 1076.7000 IN. X0
 LREF = 474.8000 IN. YHRP = .0000 IN. Y0
 BREF = 936.7000 IN. ZHRP = 375.0000 IN. Z0
 SCALE = .0100

PARAMETRIC DATA

ALPHA = 20.000 MACH = 10.330
 AILRON = .000 ELEVTR = .000
 BDFLAP = .000 SPDBRK = 55.000

RUN NO. 23/ 0 RN/L = .95 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	BETA	ALPHA	CN	CA	CLM	CEL	CYN	CY	CL	CD	L/D
.947	-9.223	20.08840	.42447	.06939	.00119	.01069	.01307	.06473	.37481	.21096	1.77659
.947	-7.170	20.06598	.42754	.06768	.00017	.00764	.01076	.04458	.37830	.21040	1.79801
.946	-5.161	20.08205	.43064	.06657	.00008	.00520	.00799	.02820	.38160	.21039	1.81375
.947	-3.095	20.07750	.43051	.06431	.00035	.00309	.00459	.01258	.38227	.20819	1.83619
.947	-1.070	20.07562	.43237	.06518	-.00054	.00079	.00112	.00078	.38372	.20954	1.83040
.946	-.013	20.07241	.42968	.06413	.00011	-.00060	-.00064	-.00528	.38157	.20771	1.83708
	GRADIENT	-.00158	-.00011	.00001	-.00015	-.00116	-.00170	-.00580	-.00010	-.00004	-.00014

0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL

(RQJ008) (21 JUL 75)

REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.7000 IN. XO
 LREF = 474.8000 IN. YMRP = .0000 IN. YO
 BREF = 936.7000 IN. ZMRP = 375.0000 IN. ZO
 SCALE = .0100

PARAMETRIC DATA

BETA = -5.000 HACH = 10.330
 AILRON = .000 ELEVTR = .000
 BOFLAP = .000 SPDBRK = 95.000

RUN NO. 26/ 0 RN/L = .88 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	BETA	CN	CA	CLH	CBL	CYN	CY	CL	CD	L/D
.985	11.834	-5.05089	.18727	.07280	.00078	.00494	.00395	.03803	.16838	.10968	1.53533
.984	16.042	-5.10499	.30849	.06822	.00162	.00499	.00649	.03221	.27570	.15028	1.83488
.984	20.220	-5.13125	.44632	.06660	.00140	.00536	.00857	.02668	.39580	.21675	1.82885
.984	24.275	-5.11785	.60719	.06959	-.00076	.00666	.00807	.02828	.52489	.31306	1.67663
.984	28.415	-5.07446	.77701	.07042	-.00598	.00779	.00778	.02787	.64989	.43167	1.50551
.983	32.460	-5.00512	.96104	.07079	-.01519	.00873	.00700	.02707	.77290	.57553	1.34294
.983	36.492	-4.91132	1.14798	.07222	-.03038	.00911	.00655	.02707	.87972	.74059	1.18785
	GRADIENT	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000

0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED

(RQJ009) (21 JUL 75)

REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.7000 IN. XO
 LREF = 474.8000 IN. YMRP = .0000 IN. YO
 BREF = 936.7000 IN. ZMRP = 375.0000 IN. ZO
 SCALE = .0100

PARAMETRIC DATA

BETA = .000 HACH = 10.370
 AILRON = .006 ELEVTR = .000
 BOFLAP = .000 SPDBRK = 95.000

RUN NO. 27/ 0 RN/L = 1.21 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	BETA	CN	CA	CLH	CBL	CYN	CY	CL	CD	L/D
1.214	12.059	.00781	.18700	.06747	-.00103	-.00048	-.00049	-.00521	.16877	.10505	1.60857
1.213	16.095	.00244	.30389	.06575	.00022	-.00042	-.00074	-.00543	.27356	.14737	1.89634
1.212	20.251	-.00517	.44426	.06363	.00228	-.00067	-.00077	-.00587	.39478	.21347	1.84935
1.211	24.261	-.01633	.60360	.06617	-.00095	-.00089	-.00051	-.00682	.52318	.30839	1.69652
1.210	28.405	-.02417	.77631	.06670	-.00656	-.00095	-.00080	-.00743	.65112	.42786	1.52147
1.208	32.375	-.03093	.95687	.06683	-.01599	-.00146	-.00085	-.00816	.77235	.56891	1.35784
1.207	36.585	-.04179	1.15952	.06669	-.03144	-.00180	-.00080	-.00907	.89001	.74621	1.19271
	GRADIENT	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000

ORIGINAL PAGE IS
 OF POOR QUALITY

0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL

(RQJ012) (21 JUL 75)

REFERENCE DATA

SREF = 2690.0000 SQ.FT. XHRP = 1078.7000 IN. XO
 LREF = 474.8000 IN. YHRP = .0000 IN. YO
 BREF = 936.7000 IN. ZHRP = 375.5000 IN. ZO
 SCALE = .0100

PARAMETRIC DATA

BETA = .000 HACH = 10.330
 AILFON = .000 ELEVTR = .000
 BDFLAP = 16.300 SPDRBK = 55.000

RUN NO. 12/ 0 RN/L = .99 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	BETA	CN	CA	CLM	CEL	CYN	CY	CL	CD	L/D
.989	12.260	.00188	.19369	.06782	-.01178	-.00039	-.00038	-.00506	.18072	.10870	1.66257
.989	16.073	-.00266	.31255	.06717	-.01154	-.00040	-.00052	-.00546	.28173	.15107	1.86486
.988	20.118	-.00942	.46022	.06846	-.01326	-.00055	-.00068	-.00582	.40860	.22258	1.83575
.989	24.111	-.01808	.62493	.07289	-.02135	-.00073	-.00051	-.00672	.54053	.32182	1.67992
.989	28.261	-.02582	.80120	.07389	-.03071	-.00092	-.00080	-.00733	.67071	.44444	1.50912
.990	32.357	-.03595	.99414	.07590	-.04486	-.00138	-.00087	-.00785	.73915	.59517	1.34048
.990	36.425	-.04563	1.19179	.07782	-.06287	-.00182	-.00072	-.00909	.91275	.77027	1.18498
	GRADIENT	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000

0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED

(RQJ013) (21 JUL 75)

REFERENCE DATA

SREF = 2690.0000 SQ.FT. XHRP = 1076.7000 IN. XO
 LREF = 474.8000 IN. YHRP = .0000 IN. YO
 BREF = 936.7000 IN. ZHRP = 375.0000 IN. ZO
 SCALE = .0100

PARAMETRIC DATA

BETA = .000 HACH = 10.330
 AILRON = .000 ELEVTR = 10.000
 BDFLAP = 16.300 SPDRBK = 55.000

RUN NO. 6/ 0 RN/L = .96 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	BETA	CN	CA	CLM	CEL	CYN	CY	CL	CD	L/D
.960	11.927	-.00214	.20711	.07096	-.02626	-.00043	-.00034	-.00478	.18797	.11223	1.67483
.961	16.011	-.00635	.33338	.07155	-.03226	-.00036	-.00034	-.00540	.30071	.16073	1.87091
.960	20.023	-.01433	.48570	.07380	-.04043	-.00046	-.00066	-.00602	.43107	.23564	1.82939
.961	24.002	-.02319	.65544	.07999	-.05497	-.00066	-.00058	-.00660	.56623	.33969	1.66690
.960	28.259	-.03004	.84785	.08582	-.07188	-.00090	-.00074	-.00739	.70527	.47683	1.48118
.960	32.253	-.03847	1.03850	.09037	-.09124	-.00133	-.00082	-.00802	.83004	.63063	1.31621
.961	36.207	-.04873	1.23265	.09501	-.11377	-.00183	-.00068	-.00898	.93848	.80479	1.16512
	GRADIENT	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000

ORIGINAL PAGE IS
 OF POOR QUALITY

0A-80 CFHT-110 RI-140A/B MODEL 72-0 OTR0APUNSEAL

(RQJD17) (21 JUL 75)

REFERENCE DATA

SREF = 2890.0000 SQ.FT. XMRP = 1076.7000 IN. XO
 LREF = 474.8000 IN. YMRP = .0000 IN. YO
 BREF = 936.7000 IN. ZMRP = 375.0000 IN. ZO
 SCALE = .0100

PARAMETRIC DATA

BETA = .000 MACH = 10.310
 AILRON = .000 ELEVTR = 15.000
 BDFLAP = 16.300 SPDBRK = 55.000

RUN NO. 39/ 0 RN/L = .88 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
.963	11.889	-.00359	.22295	.07532	-.03903	-.00033	-.00033	-.00484	.20261	.11893	1.69075
.963	15.921	-.01164	.35283	.07800	-.04955	-.00029	-.00047	-.00546	.31789	.17180	1.85042
.963	20.029	-.01941	.51690	.08295	-.06265	-.00044	-.00060	-.00569	.45722	.25497	1.79325
.962	24.090	-.02813	.68950	.09113	-.08056	-.00056	-.00049	-.00684	.59234	.36466	1.62436
.962	28.104	-.03600	.87609	.09937	-.09967	-.00070	-.00069	-.00746	.72645	.49947	1.45443
.962	32.181	-.04471	1.07294	.10553	-.12182	-.00108	-.00067	-.00807	.85190	.66076	1.28928
.961	36.205	-.05556	1.27470	.11249	-.14682	-.00146	-.00062	-.00918	.96212	.84371	1.14034
	GRADIENT	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000

RUN NO. 39/ 0 RN/L = 1.24 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
1.244	11.888	-.00183	.22154	.07305	-.03911	-.00037	-.00044	-.00529	.20174	.11712	1.72256
1.243	15.959	-.01069	.35774	.07699	-.04954	-.00036	-.00055	-.00570	.32279	.17237	1.87265
1.243	19.941	-.01752	.51328	.08095	-.06163	-.00046	-.00072	-.00613	.45493	.25107	1.81196
1.242	24.105	-.02551	.69515	.09045	-.08103	-.00065	-.00055	-.00713	.58759	.36646	1.63069
1.240	28.170	-.03177	.88370	.09709	-.10099	-.00074	-.00076	-.00782	.73320	.50278	1.45829
1.240	32.213	-.04262	1.08121	.10430	-.12370	-.00116	-.00076	-.00861	.85918	.65461	1.29275
1.240	36.341	-.05101	1.28498	.11129	-.15013	-.00156	-.00071	-.00956	.96911	.85111	1.13654
	GRADIENT	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000

ORIGINAL PAGE IS
 OF POOR QUALITY

OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL

(RQJ020) (21 JUL 75)

REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.7000 IN. XO
 LREF = 474.8000 IN. YMRP = .0000 IN. YO
 BREF = 936.7000 IN. ZMRP = 375.0000 IN. ZO
 SCALE = .0100

PARAMETRIC DATA

BETA = .000 MACH = 10.330
 ATLRON = .000 ELEVTR = -20.000
 BDFLAP = -11.700 SPOBRK = 55.000

RUN NO. 35/ 0 RN/L = .99 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	BETA	CN	CA	CLM	CBL	CYR	CY	CL	CB	L/D
.991	11.942	-.00090	.16987	.06814	.00375	-.00021	-.00033	-.00437	.15251	.09986	1.52715
.991	16.123	-.00744	.28660	.06460	.01249	-.00011	-.00054	-.00490	.25163	.13998	1.79759
.992	20.351	-.01631	.41708	.06481	.02250	-.00017	-.00058	-.00524	.36848	.20581	1.79039
.992	24.301	-.02467	.56125	.06679	.02977	-.00024	-.00055	-.00521	.48403	.29184	1.65854
.992	28.388	-.03035	.71691	.06720	.03352	-.00035	-.00086	-.00674	.59874	.39997	1.49698
.992	32.616	-.03980	.89257	.06691	.03529	-.00061	-.00083	-.00827	.71668	.53621	1.33658
.992	36.616	-.04745	1.07007	.06680	.03292	-.00093	-.00094	-.00829	.81966	.69104	1.18612
	GRADIENT	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000

OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL

(RQJ021) (21 JUL 75)

REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.7000 IN. XO
 LREF = 474.8000 IN. YMRP = .0000 IN. YO
 BREF = 936.7000 IN. ZMRP = 375.0000 IN. ZO
 SCALE = .0100

PARAMETRIC DATA

BETA = .000 MACH = 10.310
 ATLRON = .000 ELEVTR = -40.000
 BDFLAP = -11.700 SPOBRK = 55.000

RUN NO. 32/ 0 RN/L = .60 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	BETA	CN	CA	CLM	CBL	CYR	CY	CL	CB	L/D
.601	12.209	-.00831	.16740	.07453	.00923	-.00013	-.00021	-.00431	.14786	.10824	1.36598
.600	16.181	-.01463	.28113	.07351	.01677	-.00004	-.00040	-.00453	.24951	.14894	1.67523
.600	20.056	-.02119	.39893	.07276	.02631	-.00001	-.00054	-.00516	.34979	.20516	1.70499
.599	24.116	-.02872	.54665	.07333	.03483	-.00011	-.00043	-.00585	.46897	.29028	1.61557
.599	28.246	-.03590	.70752	.07538	.04229	-.00019	-.00063	-.00604	.58761	.40122	1.46455
.598	32.318	-.04581	.87660	.07615	.04753	-.00045	-.00070	-.00631	.70809	.53301	1.31348
.598	36.319	-.05275	1.04149	.07549	.04899	-.00069	-.00046	-.00760	.79445	.67768	1.17231
	GRADIENT	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000

ORIGINAL PAGE IS
 OF POOR QUALITY

DATE 23 JUL 75

TABULATED SOURCE DATA, LARC CFHT 110 (OAG0)

PAGE 15

0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTR0APSEAL

(RQJ023) (21 JUL 75)

REFERENCE DATA

SREF = 2890.0000 SQ.FT. XHRP = 1076.7000 IN. X0
 LREF = 474.8000 IN. YHRP = .0000 IN. Y0
 BREF = 936.7000 IN. ZHRP = 376.0000 IN. Z0
 SCALE = .0100

PARAMETRIC DATA

BETA = -5.000 MACH = 10.370
 AILRON = .000 ELEVTR = -40.000
 BDFLAP = -11.700 SPOBRK = 55.000

RUN NO. 34/ 0 RN/L = 1.23 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	BETA	CN	CA	CLM	CEL	CYN	CY	CL	CD	L/D
1.218	12.013	-5.09460	.17122	.06937	.01140	.00365	.00441	.03785	.15303	.10349	1.47870
1.220	16.176	-5.14883	.27832	.06682	.02007	.00411	.00625	.03297	.24869	.14171	1.75466
1.222	20.324	-5.16936	.41269	.06871	.02833	.00462	.00740	.03062	.36313	.20778	1.74773
1.222	24.549	-5.15690	.65661	.06907	.03579	.00576	.00789	.02771	.47760	.29408	1.62404
1.223	28.821	-5.10934	.71893	.07001	.04177	.00684	.00751	.02776	.59613	.40791	1.46141
1.226	32.771	-5.03610	.89127	.07087	.04507	.00767	.00682	.02748	.70265	.53661	1.30942
1.228	36.642	-4.93734	1.04785	.07022	.04476	.00802	.00655	.02652	.79648	.68449	1.16360
	GRADIENT	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000

0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTR0APUNSEAL

(RQJ024) (21 JUL 75)

REFERENCE DATA

SREF = 2690.0000 SQ.FT. XHRP = 1076.7000 IN. X0
 LREF = 474.8000 IN. YHRP = .0000 IN. Y0
 BREF = 936.7000 IN. ZHRP = 376.0000 IN. Z0
 SCALE = .0100

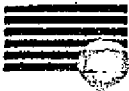
PARAMETRIC DATA

BETA = .000 MACH = 10.330
 AILRON = 5.000 ELEVTR = .000
 BDFLAP = .000 SPOBRK = 55.000

RUN NO. 44/ 0 RN/L = .89 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	BETA	CN	CA	CLM	CEL	CYN	CY	CL	CD	L/D
.990	11.958	-.00536	.18598	.06682	-.00686	.00130	-.00074	-.00400	.16910	.10391	1.61779
.990	16.070	-.01152	.30052	.06535	-.00342	.00220	-.00107	-.00433	.27069	.14599	1.65419
.989	20.107	-.01457	.44283	.06549	-.00034	.00303	-.00147	-.00430	.39333	.21374	1.84026
.989	24.160	-.02013	.59789	.06827	-.00343	.00398	-.00165	-.00493	.51758	.30700	1.68595
.990	28.230	-.01781	.76547	.06888	-.00755	.00459	-.00212	-.00532	.64184	.42275	1.51824
.990	32.381	-.01917	.95433	.06891	-.01676	.00512	-.00246	-.00577	.76849	.57014	1.34791
.990	36.560	-.01497	1.14831	.06965	-.03082	.00578	-.00284	-.00667	.88087	.73996	1.19042
	GRADIENT	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000

ORIGINAL PAGE IS
 OF POOR QUALITY



DATE 23 JUL 78

TABULATED SOURCE DATA, LARC CFHT 110 (OAR0)

PAGE 19

0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL

(RQJRR2) (21 JUL 78)

REFERENCE DATA

SREF = 2890.0000 SQ.FT. XMRP = 1076.7000 IN. X0
 LREF = 474.8000 IN. YMRP = .0000 IN. YO
 BREF = 938.7000 IN. ZMRP = 376.0000 IN. ZO
 SCALE = .0100

PARAMETRIC DATA

BETA = -5.000 MACH = 10.330
 AILRON = .000 ELEVTR = .000
 BOFLAP = .000 SPOBRK = 55.000

RUN NO. 22/ 0 RN/L = .95 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	BETA	CN	CA	CLH	CBL	CYN	CY	CL	CD	L/D
.951	11.818	-5.06512	.18753	.06856	-.00523	.00448	.00480	.03641	.16952	.10551	1.60661
.951	15.962	-5.11980	.29954	.06544	-.00082	.00470	.00677	.03120	.26999	.14529	1.85830
.951	20.206	-5.14372	.44094	.06543	.00050	.00526	.00851	.02619	.39121	.21370	1.93061
.951	24.281	-5.12979	.59679	.06799	-.00158	.00644	.00841	.02704	.51604	.30739	1.67880
.951	28.374	-5.08980	.76350	.06871	-.00662	.00759	.00810	.02675	.63912	.42330	1.50986
.951	32.404	-5.02158	.94268	.06860	-.01563	.00832	.00753	.02566	.76914	.56309	1.34817
.951	36.652	-4.92149	1.13907	.07012	-.03098	.00887	.00683	.02620	.87199	.73622	1.18441
	GRADIENT	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000

ORIGINAL PAGE IS
OF POOR QUALITY