

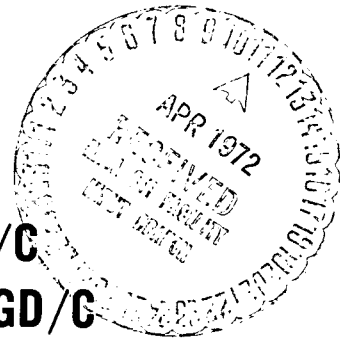
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DMS-DR-1223
CR-120,035
MARCH 1972

—SPACE SHUTTLE—

LOW SPEED AERODYNAMIC CHARACTERISTICS OF THE GD/C B-18E3 BOOSTER

by

W.V. CARTER, GD/C
W.H. GALLAHER, GD/C



GENERAL DYNAMICS
LOW SPEED WIND TUNNEL

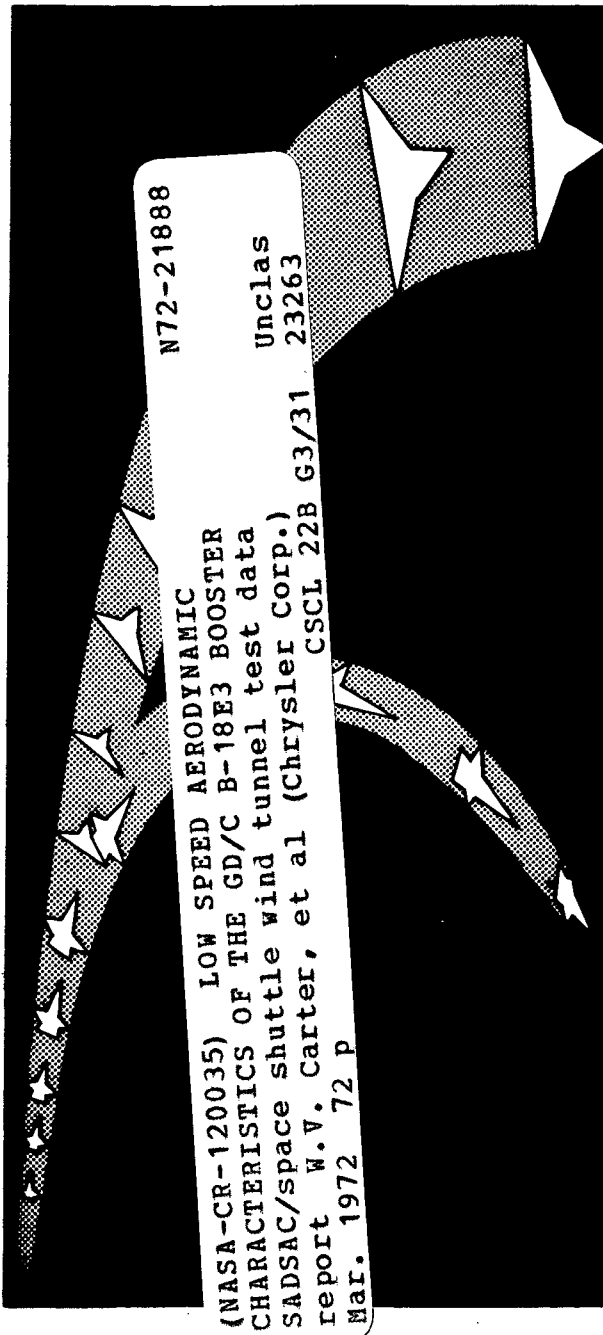
SADSAC SPACE SHUTTLE
AEROTHERMODYNAMIC
DATA MANAGEMENT SYSTEM

CONTRACT NAS8-4016
MARSHALL SPACE FLIGHT CENTER

SPACE DIVISION  CHRYSLER
CORPORATION

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March, 1972

SADSAC/SPACE SHUTTLE

WIND TUNNEL TEST DATA REPORT

CONFIGURATION: GD/Convair 0.02 Scale B-18E3 Booster

TEST PURPOSE: Investigate Low Speed Longitudinal and Lateral Directional
Characteristics

TEST FACILITY: GD Low Speed Wind Tunnel

TESTING AGENCY: GD/SDO

TEST NO. & DATE: GDLST 603-0; December 15-17, 1971

FACILITY COORDINATOR: R. Lanflisi - GD/C

PROJECT ENGINEER(S): W. V. Carter - GD/C
W. H. Gallaher - GD/C

DATA MANAGEMENT SERVICES

LIAISON: *H.C. Zimmerle* DATA OPERATIONS: *H.C. Zimmerle*
for W. Sparks H.C. Zimmerle

RELEASE APPROVAL: *N.D. Kemp*
N. D. Kemp, Supervisor
Aero Thermo Data Group

CONTRACT NAS 8-4016

AMENDMENT 153

DRL 184 - 58

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FACILITY COORDINATOR:

Mr. R. R. Lanflisi
General Dynamics/Convair
Mail Zone 583-00
P. O. Box 1128
San Diego, California 92112

Phone: (714) 277-8900-X1598

PROJECT ENGINEERS:

Mr. W. V. Carter
General Dynamics/Convair
Mail Zone 583-00
P. O. Box 1128
San Diego, California 92112

Phone: (714) 277-8900-X1352

Mr. W. H. Gallaheer
General Dynamics/Convair
Mail Zone 583-00
P. O. Box 1128
San Diego, California 92112

Phone: (714) 277-8900-X2827

SADSAC LIAISON

Mr. V. W. Sparks
Chrysler Corporation Huntsville Division
Department 4820
102 Wynn Drive
Huntsville, Alabama 35805

Phone: (205) 895-1560

SADSAC OPERATIONS:

Mr. H. C. Zimmerle
Chrysler Corporation Space Division
Department 2780
P. O. Box 29200
New Orleans, Louisiana 70129

Phone: (504) 255-2304

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LOW SPEED AERODYNAMIC CHARACTERISTICS OF
THE GD/C B-18E3 BOOSTER

By W. V. Carter and W. H. Gallaher

ABSTRACT

A 0.02 scale model of the General Dynamics Corporation B-18E3 Space Shuttle Booster was tested in the GD Low Speed Wind Tunnel to evaluate the low speed aerodynamic characteristics. The basic configuration, including build-up, was tested at a Mach number of 0.201 and Reynolds number per foot of 1.39 million. The normal angle-of-attack range was -4 to +24 degrees in 2 degree increments, at sideslip angles of 0 and 5 degrees. Some lateral data was obtained at the sideslip angle range of -6 to 10 degrees at angles-of attack of 0, 10 and 15 degrees. Data was obtained for canard, split elevon, and split rudder deflections.

NOMENCLATURE

(General)

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

NOMENCLATURE (Continued)

Reference & C. G. Definitions

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

NOMENCLATURE (Continued)

Axis System General

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

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

NOMENCLATURE (Continued)
Body & Stability Axis System

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

ADDITIONS TO SADSAC NOMENCLATURE
FOR
GD LST TEST NO. 603-0

<u>SYMBOL</u>	<u>SADSAC SYMBOL</u>	<u>DEFINITION</u>
$\delta_{e_{XY}}$	DEXY	Deflection angle of split elevons in degrees, positive trailing edge down with notation: X = L left side X = R right side Y = ϕ outboard elevon Y = M middle elevon Y = I inboard elevon Y = blank full span elevon deflection DEϕ, DEM, DEI denote symmetrical deflections of outboard, middle, and inboard split elevons, respectively.
δ_e	ELEVTR	Combined elevator deflection in degrees, for split elevons, (DELϕ + DELM + DELI + DERϕ + DERM + DERI)/6 or for full span deflections, (DEL + DER)/2
δ_a	AILR ϕ N	Combined aileron deflection in degrees, for split elevon, [(DELϕ + DELM + DELI) - (DERϕ + DERM + DERI)]/6 or for full span deflections, (DEL-DER)/2
δ_c	CANARD	Canard deflection angle, positive trailing edge down.
δ_{RX}	RUDDER	Rudder deflection angle, positive trailing edge left with notation: X = U upper of split rudder X = L lower of split rudder X = blank, full span rudder deflection

CONFIGURATIONS INVESTIGATED

Configuration Nomenclature

The model components tested are described below:

<u>Symbol</u>	<u>Description</u>
B ₃₀	Basic B-18E3 booster configuration with R ₅ rocket engines (4 engines with center engine removed) mounted at all times, canard fairings, canopy and X ₄ rocket engine shrouds.
B ₃₁	Same as B ₃₀ except with blunt nose
B ₃₂	8-Ft fuse. plug removed from B ₃₀
W ₂₃	Basic B-18E3 wing, 8549 ft ² , AR = 2.436, $\lambda = .2158$, 53° LE sweep, spanwise split elevons.
C ₁₀	Basic delta canard, 485 ft ² full scale planform area
C ₁₁	Delta canard 364 ft ² full scale planform area (75% of C ₁₀)
V ₁₄	Basic vertical tail, 1300 ft ² full scale area, $\Lambda_{LE} = 40^\circ$, AR = 1.4
V ₁₆	Vertical tail, 2200 ft ² full scale area, $\Lambda_{LE} = 40^\circ$
E ₃₈	Air breathing engines arrangement. 10 flow through nacelles individually mounted beneath wing and body
X ₅	Enlarged sting support
X ₆	Indicates the gap between the inboard elevon and body was sealed
X ₇	Indicates that the entire L.E. region of wing W ₂₃ was covered with 036 grit.

Combinations Tested

The basic B-18E3 configuration consisted of the following components:

$$B_{30} W_{23} C_{10} V_{14} E_{38}$$

with grit applied to the model nose, and near the leading edges of the canard, wing and vertical tail. The following combinations were tested:

<u>Combination</u>	<u>Run Numbers</u>
B ₃₀	93,94
B ₃₂	95,96
B ₃₀ V ₁₄	91,92
B ₃₀ C ₁₀	83 to 90
B ₃₀ W ₂₃ E ₃₈	65, 66
B ₃₀ W ₂₃ V ₁₄	77,78
B ₃₀ W ₂₃ V ₁₆	79,80
B ₃₀ W ₂₃ V ₁₄ E ₃₈	44,45
B ₃₀ W ₂₃ C ₁₀ V ₁₆	81,82
B ₃₀ W ₂₃ C ₁₀ V ₁₄	69,70
B ₃₂ W ₂₃ C ₁₀ V ₁₄	67,68
B ₃₀ W ₂₃ C ₁₀ E ₃₈	54 to 64
B ₃₁ W ₂₃ C ₁₀ V ₁₄ E ₃₈	15,16
B ₃₁ W ₂₃ C ₁₀ V ₁₄ E ₃₈ X ₆	17
B ₃₀ W ₂₃ C ₁₁ V ₁₄ E ₃₈	46 to 53
B ₃₀ W ₂₃ C ₁₀ V ₁₄ E ₃₈	2 to 14, 18 to 41, 43, 71 to 76
B ₃₀ W ₂₃ C ₁₀ V ₁₄ E ₃₈ X ₅	1
B ₃₀ W ₂₃ C ₁₀ V ₁₄ E ₃₈ X ₇	42

TEST FACILITY

The General Dynamics/Convair low speed wind tunnel is a close-return atmospheric tunnel, constructed of reinforced concrete. Airflow is created by a 6-bladed propeller, 20 feet in diameter, powered by a 2250-horsepower synchronous motor.

The tunnel has a primary test section 8 feet high, 12 feet wide and 25 feet long. A model or component can be tested in this section at air-speeds up to 300 mph. The sides and ceiling of the test section are largely glass windows. These windows and fluorescent lights, housed in corner fillets in the test section, provide excellent model observation and model photography. Personnel access doors open directly into the test section from the control room and the model service area.

A variety of support systems are available for mounting a model or component. These support systems include single, bicycle, and three-strut supports, sting supports and supports for two dimensional installations.

Digital computer and plotting facilities are available so that the results of a test run can be processed, tabulated, and plotted within 10 minutes of the test run.

DATA REDUCTION

Aerodynamic forces and moments were measured with the Convair C-5-1.35 six-component balance. Seven base and two cavity pressures were measured. The data presented have been corrected for tunnel wall effects before reducing to coefficient form about the Moment Reference Center (MRC). For all data presented, the MRC was at Fuselage Station (FS) 49.078 and Water Line (WL) 8.000, which corresponds to 29.078 inches from the model nose, and along the model centerline. Model wing dimensional data used to reduce the test data is given below for wing W_{23} :

$$S_{\text{ref}} = 492.48 \text{ sq. in.}$$

$$l_{\text{ref}} = 16.188 \text{ in}$$

$$b_{\text{ref}} = 34.632 \text{ in}$$

The total fuselage base area was 68.565 in^2 and the fuselage cavity area was 3.140 in^2 with the basic sting and 8.293 in^2 with the wood sting sleeve.

The data was reduced to coefficient form using the normal expressions, except for a cavity pressure correction to the axial force coefficient. The two pressure tubes in the balance cavity were manifolded together to provide one measurement denoted as P_c . This pressure along with the average base pressure (P_b) was used to correct the axial force as follows:

$$C_{A_{TC}} = \frac{(P_c - P_b)}{q} \frac{A_c}{S_{\text{REF}}}$$

and
$$C_A = C_{A_{\text{BALANCE}}} + C_{A_{TC}}$$

where A_c = cavity area

TEST CONDITIONS
TEST 603

[illegible]

BALANCE UTILIZED: GD/Convair, C-5-1.35

CAPACITY:

NF	<u>500 lbs</u>
SF	<u>500 lbs</u>
AF	<u>50 lbs</u>
PM	<u>1300 in-lbs</u>
YM	<u>1300 in-lbs</u>
RM	<u>240 in-lbs</u>

ACCURACY :

100

COEFFICIENT
TOLERANCE:

[illegible]

COMMENTS :

TABLE II. TEST GDLSWT 603-0 DATA SET COLLATION SHEET

☐ PRETEST
☒ POSTTEST

DATA SET IDENTIFIER	CONFIGURATION	SCHD.		PARAMETERS/VALUES				NO. of RUNS	MACH NUMBERS (OR ALTERNATE INDEPENDENT VARIABLE)									
		A	B	δC	δe_L	δe_R	δR		0.20									
RD6 024	B30 W23 C10 V14 E38	A	0	0	+5	+5	0	1	24									
025		A	5	0	+5	+5	0	1	25									
026		A	0	0	+10	+10	0	1	26									
027		A	5	0	+10	+10	0	1	27									
028		A	0	0	-5	-5	0	1	28									
029		A	5	0	-5	-5	0	1	29									
030		A	0	0	-10	-10	0	1	30									
031		A	5	0	-10	-10	0	1	31									
032		A	0	0	+10	-10	0	1	32									
033		A	5	0	+10	-10	0	1	33									
042	B30 W23 C10 V14 E38 X7	A	0	0	0	0	0	1	42									
043	B30 W23 C10 V14 E38	A	0	0	0	0	0	1	43									
044	B30 W23 V14 E38	A	0	-	0	0	0	1	44									
045		A	5	-	0	0	0	1	45									
046	B30 W23 C11 V14 E38	A	0	0	0	0	0	1	46									
047		A	5	0	0	0	0	1	47									
048		A	0	0	0	0	0	1	48									
049		A	5	0	0	0	0	1	49									
050		A	0	-10	0	0	0	1	50									
051		A	5	-10	0	0	0	1	51									

COEFFICIENTS: CL CY CD CSE CLM CLN CAF CAB CA CN IDPVAR(1) IDPVAR(2) IDV 10

a or b SCHEDULES

$$\alpha A = -4 \text{ to } +24^\circ @ \Delta \alpha = 2^\circ$$

TABLE II. TEST GDLSWT-603-0 DATA SET COLLATION SHEET (CONTINUED)

7

☐ PRETEST
☒ POSTTEST

DATA SET IDENTIFIER	CONFIGURATION	SCHD.				PARAMETERS/VALUES				NO. of RUNS	MACH NUMBERS (OR ALTERNATE INDEPENDENT VARIABLE)									
		a	b	c	d	e	f	g	h		0.201									
RD6001	B30W23C10V14E38X5	A	0	0	0	0	0	0	0	1	1									
002	B30W23C10V14E38	A	0	0	0	0	0	0	0	1	2									
003		A	5	0	0	0	0	0	0	1	3									
007		A	0	10	0	0	0	0	0	1	7									
008		A	5	10	0	0	0	0	0	1	8									
009		A	0	-10	0	0	0	0	0	1	9									
010		A	5	-10	0	0	0	0	0	1	10									
011		A	0	+15	0	0	0	0	0	1	11									
012		A	5	+15	0	0	0	0	0	1	12									
013		A	0	+20	0	0	0	0	0	1	13									
014		A	5	+20	0	0	0	0	0	1	14									
015	B31W23C10V14E38	A	0	0	0	0	0	0	0	1	15									
016		A	5	0	0	0	0	0	0	1	16									
017	B31W23C10V14E38X6	A	0	0	0	0	0	0	0	1	17									
018	B30W23C10V14E38	A	0	-10	-10	-10	-10	0	0	1	18									
019		A	5	-10	-10	-10	-10	0	0	1	19									
020		A	0	+15	+10	+10	+10	0	0	1	20									
021		A	5	+15	+10	+10	+10	0	0	1	21									
022		A	0	+15	+5	+5	+5	0	0	1	22									
023		A	5	+15	+5	+5	+5	0	0	1	23									

1 2 3 13 19 25 31 37 43 49 55 61 67 7576
 CL CY CD GCL CLM CLN CLN CAF CAB CA CN IDVAR(1) IDVAR(2) IDV

COEFFICIENTS:
 a OF b
 SCHEDULES

$$\alpha_A = -4.6 + 2.4^\circ @ \Delta \alpha = 2^\circ$$

TABLE II. TEST GDLST 603-D DATA SET COLLATION SHEET (CONTINUED)

☐ PRETEST
☒ POSTTEST

DATA SET IDENTIFIER	CONFIGURATION	SCHD.		PARAMETERS/VALUES										NO. of RUNS	MACH NUMBERS					
		u	R	δ_c	$\delta_{c,i}$	$\delta_{c,m}$	$\delta_{c,o}$	$\delta_{c,ri}$	$\delta_{c,rm}$	$\delta_{c,ro}$	$\delta_{c,ru}$	$\delta_{c,rl}$	0.201							
RD6 034	B30 W23 C10 V4 E38	A	0	0	0	10	10	0	-10	-10	0	0	1	34						
035		A	5	0	0	10	10	0	-10	-10	0	0	1	35						
036		A	0	0	0	0	10	0	0	-10	0	0	1	36						
037		A	5	0	0	0	10	0	0	-10	0	0	1	37						
038		A	0	0	0	0	0	0	0	0	10	10	1	38						
039		A	5	0	0	0	0	0	0	0	10	10	1	39						
040		A	0	0	0	0	0	0	0	0	0	10	1	40						
041		A	5	0	0	0	0	0	0	0	0	10	1	41						
071		A	0	15	25	-10	-10	25	-10	-10	0	0	1	71						
072		A	5	15	25	-10	-10	25	-10	-10	0	0	1	72						
073		A	0	-10	-10	5	5	-10	5	5	0	0	1	73						
074	Y	A	5	-10	-10	5	5	-10	5	5	0	0	1	74						

1 CL 2 CY 3 CD 4 CSL 5 CLM 6 CLN 7 CAF 8 CAB 9 CA 10 CN 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

COEFFICIENTS: CL
CD
CSL
CLM
CLN
CAF
CAB
CA
CN

$\alpha = -4$ to $+24^\circ$ @ $\Delta\alpha = 2^\circ$

TABLE II. TEST GDLST 603-0 DATA SET COLLATION SHEET (CONTINUED)

☐ PRETEST
☐ POSTTEST

DATA SET IDENTIFIER	CONFIGURATION	SCHD.		PARAMETERS/VALUES					NO. of RUNS	MACH NUMBERS (OR ALTERNATE INDEPENDENT VARIABLE)									
		A	B	δc	δc_L	δc_e	δc_r	δR		0.201									
RD6052	B30 W23 C11 V4 E38	A	0	15	0	0	0	0	1	52									
053	✓	A	5	15	0	0	0	0	1	53									
054	B30 W23 C10 E38	A	0	0	0	0	0	0	1	54									
055		A	5	0	0	0	0	0	1	55									
059		A	0	-10	0	0	0	0	1	59									
060		A	5	-10	0	0	0	0	1	60									
061		A	0	+10	0	0	0	0	1	61									
062		A	5	+10	0	0	0	0	1	62									
063		A	0	+15	0	0	0	0	1	63									
064	✓	A	5	+15	0	0	0	0	1	64									
065	B30 W23 E38	A	0	-	0	0	0	0	1	65									
066	✓	A	5	-	0	0	0	0	1	66									
067	B32 W23 C10 V4	A	0	0	0	0	0	0	1	67									
068	✓	A	5	0	0	0	0	0	1	68									
069	B30 W23 C10 V4	A	0	0	0	0	0	0	1	69									
070	✓	A	5	0	0	0	0	0	1	70									
075	B30 W23 C10 V4 E38	A	0	0	0	0	0	0	1	75									
076	✓	A	0	0	0	0	0	0	1	76									
077	B30 W23 V4	A	0	0	0	0	0	0	1	77									
078	✓	A	5	0	0	0	0	0	1	78									

1 7 13 19 25 31 37 43 49 55 61 67 7576
 CL 1CY 1CD 1CSL 1CLM 1CLN 1CAF 1CAB 1CA 1CN 10
 COEFFICIENTS: IDPVAR(1) IDPVAR(2) INDV

α or β
SCHEDULES

$$\alpha A = -4 \text{ to } +240^\circ @ \Delta\alpha = 2^\circ$$

TABLE II. TEST 6DLST 603-0 DATA SET COLLATION SHEET (CONTINUED)

☐ PRETEST
☒ POSTTEST

DATA SET IDENTIFIER	CONFIGURATION	SCHD.		PARAMETERS/VALUES			NO. of RUNS	MACH NUMBERS (OR ALTERNATE INDEPENDENT VARIABLE)									
		A	B	Sc	SeL	SeR		0.201									
RD6079	B30W23 1/6	A	0	-	0	0	1	79									
080	↓	A	5	-	0	0	1	80									
081	B30W23 C10 1/6	A	0	0	0	0	1	81									
082	↓	A	5	0	0	0	1	82									
083	B30 C10	A	0	0	-	-	1	83									
084	↓	A	5	0	-	-	1	84									
085	↓	A	0	-10	-	-	1	85									
086	↓	A	5	-10	-	-	1	86									
087	↓	A	0	+10	-	-	1	87									
088	↓	A	5	+10	-	-	1	88									
089	↓	A	0	+15	-	-	1	89									
090	↓	A	5	+15	-	-	1	90									
091	B30 1/4	A	0	-	-	0	1	91									
092	↓	A	5	-	-	0	1	92									
093	B30	A	0	-	-	-	1	93									
094	↓	A	5	-	-	-	1	94									
095	B32	A	0	-	-	-	1	95									
096	↓	A	5	-	-	-	1	96									

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

CL CY CD CSL CLM CLN CAF CAB CA CN

COEFFICIENTS: IDPVAR(1) IDPVAR(2) IDV

a or B
 SCHEDULES

$\alpha A = -4$ to $+240$ @ $\Delta\alpha = 20$

TABLE III. DIMENSIONAL DATA

MODEL COMPONENT: B₃₀

GENERAL DESCRIPTION: Basic B-18E3 booster configuration with R₅ rocket engines mounted, canard fairings, canopy and rocket engines shrouds.

DRAWING NUMBER: WT-71-107502

<u>DIMENSIONS:</u>	<u>FULL-SCALE</u>	<u>MODEL SCALE</u>
Length (to wing T.E. @ B.L. 0.0)	<u>173.33 ft</u>	<u>41.60 in</u>
Max. Width	<u>33.00 ft</u>	<u>7.92 in</u>
Max. Depth	<u>33.00 ft</u>	<u>7.92 in</u>
Fineness Ratio	<u>5.253</u>	<u>5.253</u>
Area		
Max. Cross-Sectional	<u>855.29 ft²</u>	<u>49.265 in²</u>
Planform	<u> </u>	<u> </u>
Wetted	<u> </u>	<u> </u>
Base	<u> </u>	<u> </u>
Length (to model base area)	<u>159.79 ft</u>	<u>38.35 in</u>
Fineness Ratio (to model base area)	<u>4.842</u>	<u>4.842</u>

TABLE III. (CONTINUED).

MODEL COMPONENT: B₃₁GENERAL DESCRIPTION: Same as body B₃₀, but with a blunter nose (larger nose radius).DRAWING NUMBER: WT-71-107511

<u>DIMENSIONS:</u>	<u>FULL-SCALE</u>	<u>MODEL SCALE</u>
Length (to wing T.E. @ B.L. 0.0)	<u>169.0 ft</u>	<u>40.560 in</u>
Max. Width	<u>33.00 ft</u>	<u>7.92 in</u>
Max. Depth	<u>33.00 ft</u>	<u>7.92 in</u>
Fineness Ratio	<u>5.121</u>	<u>5.121</u>
Area		
Max. Cross-Sectional	<u>855.29 ft²</u>	<u>49.265 in²</u>
Planform	<u> </u>	<u> </u>
Wetted	<u> </u>	<u> </u>
Base	<u> </u>	<u> </u>
Length (to model base area)	<u>155.46 ft</u>	<u>37.310 in</u>
Fineness Ratio (to model base area)	<u>4.711</u>	<u>4.711</u>

TABLE III. (CONTINUED)

MODEL COMPONENT: BODY - B₃₂GENERAL DESCRIPTION: Same as body B₃₀, but with a full scale 8 foot
length section removed from the fuselage.DRAWING NUMBER: WT-71-107502

<u>DIMENSIONS:</u>	<u>FULL-SCALE</u>	<u>MODEL SCALE</u>
Length (to wing T.E. @ B.L.O.O)	<u>165.33 ft</u>	<u>39.679 in</u>
Max. Width	<u>33.00 ft</u>	<u>7.92 in</u>
Max. Depth	<u>33.00 ft</u>	<u>7.92 in</u>
Fineness Ratio	<u>5.010</u>	<u>5.010</u>
Area		
Max. Cross-Sectional	<u>855.29 ft²</u>	<u>49.265 in²</u>
Planform	<u> </u>	<u> </u>
Wetted	<u> </u>	<u> </u>
Base	<u> </u>	<u> </u>
Length (to model base area)	<u>151.79 ft</u>	<u>36.430 in</u>
Fineness Ratio (to model base area)	<u>4.600</u>	<u>4.600</u>

TABLE III. (CONTINUED)

MODEL COMPONENT: Wing W₂₃

GENERAL DESCRIPTION: Basic B-18E3 wing with full scale total characteristics of
8549 ft², A=2.436, = 0.2158, L.E. sweep = 53°, and spanwise split elevons.

Has three airfoil thickness

DRAWING NUMBER: WT-71-107503

<u>DIMENSIONS:</u>	<u>FULL-SCALE</u>	<u>MODEL SCALE</u>
<u>TOTAL DATA</u>		
Area		
Planform	8549 ft ²	492.43 in ²
Wetted		
Span (equivalent)	144.3 ft	34.634 in
Aspect Ratio	2.436	2.436
Rate of Taper		
Taper Ratio	0.2158	0.2158
Diehedral Angle, degrees	4°	4°
Incidence Angle, degrees	2°	2°
Aerodynamic Twist, degrees	0°	0°
Toe-In Angle		
Cant Angle		
Sweep Back Angles, degrees		
Leading Edge	53°	53°
Trailing Edge	15°	15°
0.25 Element Line	46.5°	46.5°
Chords:		
Root (Wing Sta. 0.0)	97.45 ft	23.388 in
Tip, (equivalent)	21.03 ft	5.048 in
MAC	67.46 ft	16.19 in
Fus. Sta. of .25 MAC	209.0 ft	50.166 in
W.L. of .25 MAC	23.65 ft	5.676 in
B.L. of .25 MAC	28.25 ft	6.780 in
Airfoil Section		
Root	NACA 0008-64	(MOD)
Tip	NACA 0010-64	
<u>EXPOSED DATA</u>		
Area	5621.5 ft ²	323.8 in ²
Span, (equivalent)	111.31 ft	26.714 in
Aspect Ratio	2.204	2.204
Taper Ratio	0.263	0.263
Chords		
Root	79.98 ft	19.194 in
Tip	21.03 ft	5.048 in
MAC	56.23 ft	13.497
Fus. Sta. of .25 MAC	220.29 ft	52.868 in
W.L. of .25 MAC	24.00 ft	5.760 in
B.L. of .25 MAC	38.82 ft	9.317 in

TABLE III. (CONTINUED)

MODEL COMPONENT: Canard C₁₀GENERAL DESCRIPTION: Basic delta canard for the B-18E3 with 485 ft² full scale planform area (both canards).DRAWING NUMBER:

DIMENSIONS - EXPOSED: per canard panel

	FULL SCALE	MODEL SCALE
Area	242.50 ft ²	13.968 in ²
Span (equivalent)	37.05 ft	8.892 in
Aspect Ratio	2.830	2.830
Taper Ratio	0.1698	0.1698
Dihedral Angle	0°	0°
Incidence Angle	0°	0°
Sweep Back Angles		
Leading Edge	45°	45°
Trailing Edge	0°	0°
0.25 Chord Line	36.83°	36.83°
Chords		
Root perpendicular to trailing edge	22.38 ft	5.371 in
Tip	3.80 ft	0.912 in
MAC	15.29 ft	3.669 in
Airfoil Section		
Root	NACA 0010-64	
Tip	NACA 0010-64	
Fuse. Sta. of .25 MAC	111.25 ft	26.70 in
W.L. of .25 MAC	38.33 ft	9.20 in
B.L. of .25 MAC	21.57 ft	5.176 in
Pivot Location		
Percent root chord	50%	50.0%
Fuselage station	111.48 ft	26.754 in
Water line	38.33 ft	9.20 in

TABLE III. (CONTINUED)

MODEL COMPONENT: Canard C11

GENERAL DESCRIPTION: Alternate canard with a 364 ft² full scale planform area (both canards). It represents 75% of canard C10 area

DRAWING NUMBER:

DIMENSIONS - EXPOSED: per canard

	FULL SCALE	MODEL SCALE
Area	181.86 ft ²	10.475 in ²
Span (equivalent)	32.09 ft	7.701 in
Aspect Ratio	2.830	2.830
Taper Ratio	0.1700	0.170
Dihedral Angle	0°	0°
Incidence Angle	0°	0°
Sweep Back Angles		
Leading Edge	45°	45°
Trailing Edge	0°	0°
0.25 Chord Line	36.83°	36.83°
Chords		
Root	19.38 ft	4.651 in
Tip	3.29 ft	0.790 in
MAC	13.24 ft	3.177 in
Airfoil Section		
Root	NACA 0010-64	
Tip	NACA 0010-64	
Fuse. Sta. of .25 MAC	111.25 ft	26.70 in
W.L. of .25 MAC	38.33 ft	9.20 in
B.L. of .25 MAC	20.59 ft	4.941 in
Pivot Location		
Percent root chord	50%	50%
Fuselage station	111.46 ft	26.754 in
Water line	38.33 ft	9.20 in

TABLE III. (CONTINUED)

MODEL COMPONENT: Vertical Tail V₁₄GENERAL DESCRIPTION: Basic tail for the B-18E3 configuration, 1300 ft²
full scale area

DRAWING NUMBER:

WT-71-107509 sheet 1

DIMENSIONS - EXPOSED:

	FULL SCALE	MODEL SCALE
Area	1299.82 ft ²	74.870 in ²
Span (equivalent)	42.66 ft	10.238 in
Aspect Ratio	1.40	1.40
Taper Ratio	0.40	0.400
Dihedral Angle		
Incidence Angle		
Sweep Back Angles		
Leading Edge	40°	40°
Trailing Edge	13°	13°
Hingeline	24°	
Chords		
Root	43.53 ft	10.448 in
Tip	17.41 ft	4.178 in
MAC	32.34 ft	7.761 in
Airfoil Section		
Root	NACA 0013-64	
Tip	NACA 0011-64	
Fuse. Sta. of .25 MAC	236.67 ft	56.800 in
W.L. of .25 MAC	68.25 ft	16.379 in
B.L. of .25 MAC	0.0	0.0 in
B-18E3 Ref. Locations		
Fuse. Sta. of RMC	204.49 ft	49.078 in
W.L. of RMC	33.33 ft	8.0 in
W.L. of $\bar{C}$	33.33 ft	8.0 in
B.L. of RMC	0.0	0.0

TABLE III. (CONCLUDED)

MODEL COMPONENT: Vertical Tail V₁₆GENERAL DESCRIPTION: Vertical tail for the B-18E2 Configuration, 2200 ft²
full scale area.DRAWING NUMBER: WT-71-107509 sheet 2

DIMENSIONS - EXPOSED:

	FULL SCALE	MODEL SCALE
Area	2210. ft ²	127.30 in ²
Span (equivalent)	55.60 ft	13.344 in
Aspect Ratio	1.40	1.40
Taper Ratio	0.4247	0.4247
Dihedral Angle		
Incidence Angle		
Sweep Back Angles		
Leading Edge	40°	40°
Trailing Edge	15°	15°
	25°	25°
Chords		
Root	55.80 ft	13.392 in
Tip	23.70 ft	5.688 in
MAC	42.33 ft	10.059 in
Airfoil Section		
Root	NACA 0013-64	
Tip	NACA 0011-64	
Fuse. Sta. of .25 MAC	232.38 ft	55.770 in
W.L. of .25 MAC	74.15 ft	17.797 in
B.L. of .25 MAC	0.0 ft	0.0 in
B-18E2 Ref: Locations		
Fuse. Sta. of RMC	200.33 ft	48.078 in
W.L. of RMC	33.33 ft	8.0 in
W.L. of Q	33.33 ft	8.0 in
B.L. of RMC	0.0	0.0
Fuse. Sta. of Nose	79.17 ft	19.0 in

TABLE IV. INDEX OF MODEL FIGURES

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8.	Base Region and Pressure Tap Locations	39
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Effect of Full Span Elevon Deflection on Longitudinal Characteristics of the Basic B-18E3 Configuration, CANARD = 0	A	ELEVTR		10-11
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Effect of Split Aileron Deflection - Basic B-18E3 Configuration, BETA = 0	B	AILRØN		14-16
Effect of Split Aileron Deflection - Basic B-18E3 Configuration, BETA = 5 Degrees	B	AILRØN		17-19
Effect of Nose Blunting, B30 vs. B31	B	Configuration, BETA		20-22
Effect of Canard Size, C10 vs. C11 and Canard Off, Canard Deflection = 0	B	Configuration, BETA		23-25
Effect of Canard Size, C10 vs. C11 and Canard Off, Canard Deflection = -10 Degrees	B	Configuration, BETA		26-28
Effect of Canard Size, C10 vs. C11 and Canard Off, Canard Deflection = 10 Degrees	B	Configuration, BETA		29-31

TABLE V. INDEX OF DATA FIGURES
(Continued)

TITLE	PLOTTED		CONDITIONS VARYING	PAGES
	COEFFICIENTS SCHEDULE			
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Effect of Flow-thru Engines E38	B		Configuration, BETA	35-37
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TABLE V. INDEX OF DATA FIGURES
(Concluded)

PLOTTED COEFFICIENTS SCHEDULE:

- (A) CL vs. ALPHA, CLM, CD, L/D
- (B) CL vs. ALPHA, CLM, CD, L/D
CLN, CY, CSL vs. ALPHA
- (C) CD, CAB, L/D vs. ALPHA
- (D) CLN, CY, CSL vs. BETA

MODEL FIGURES

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

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

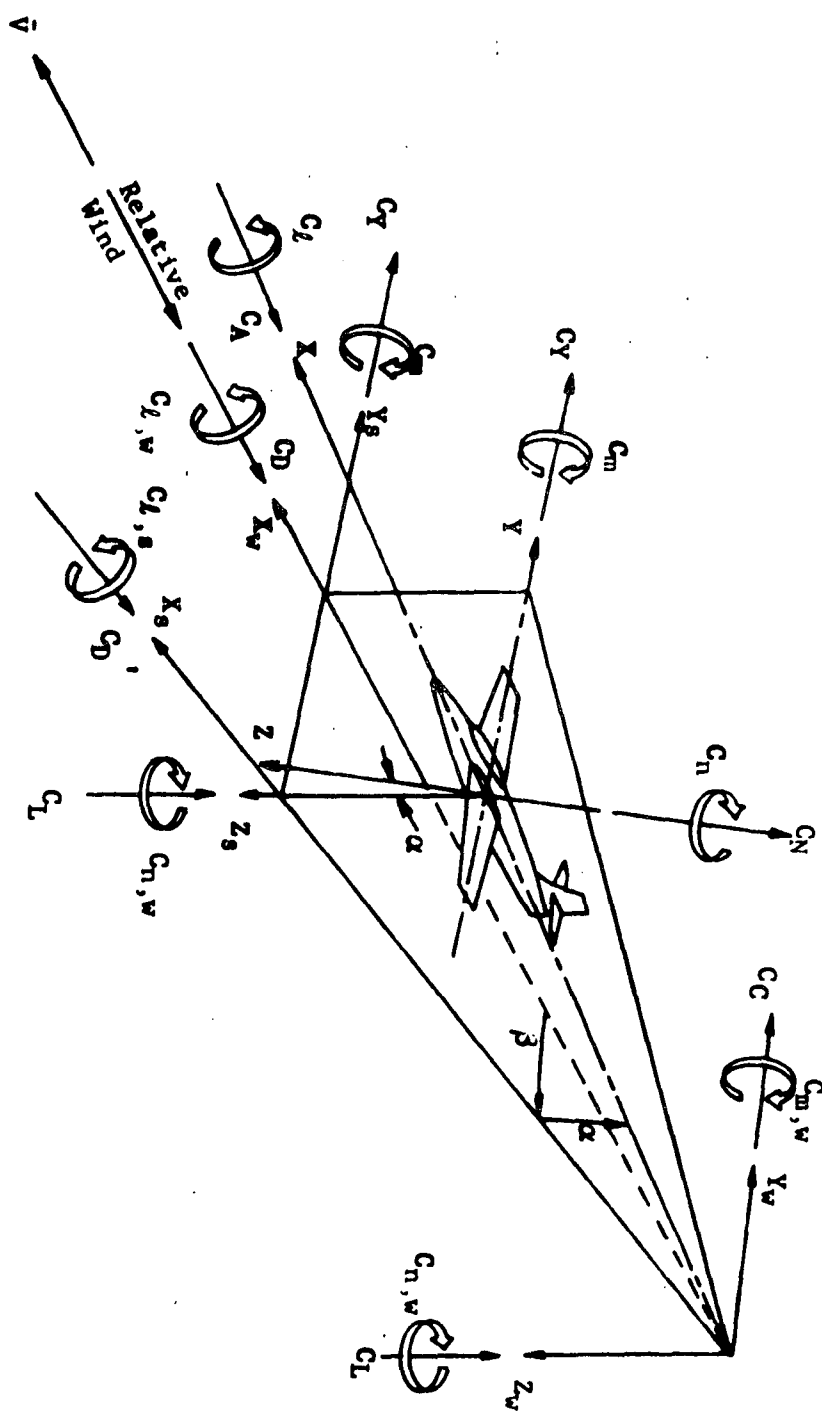


Figure 1. Axis systems, showing direction and sense of force and moment coefficients, angle of attack, and sideslip angle

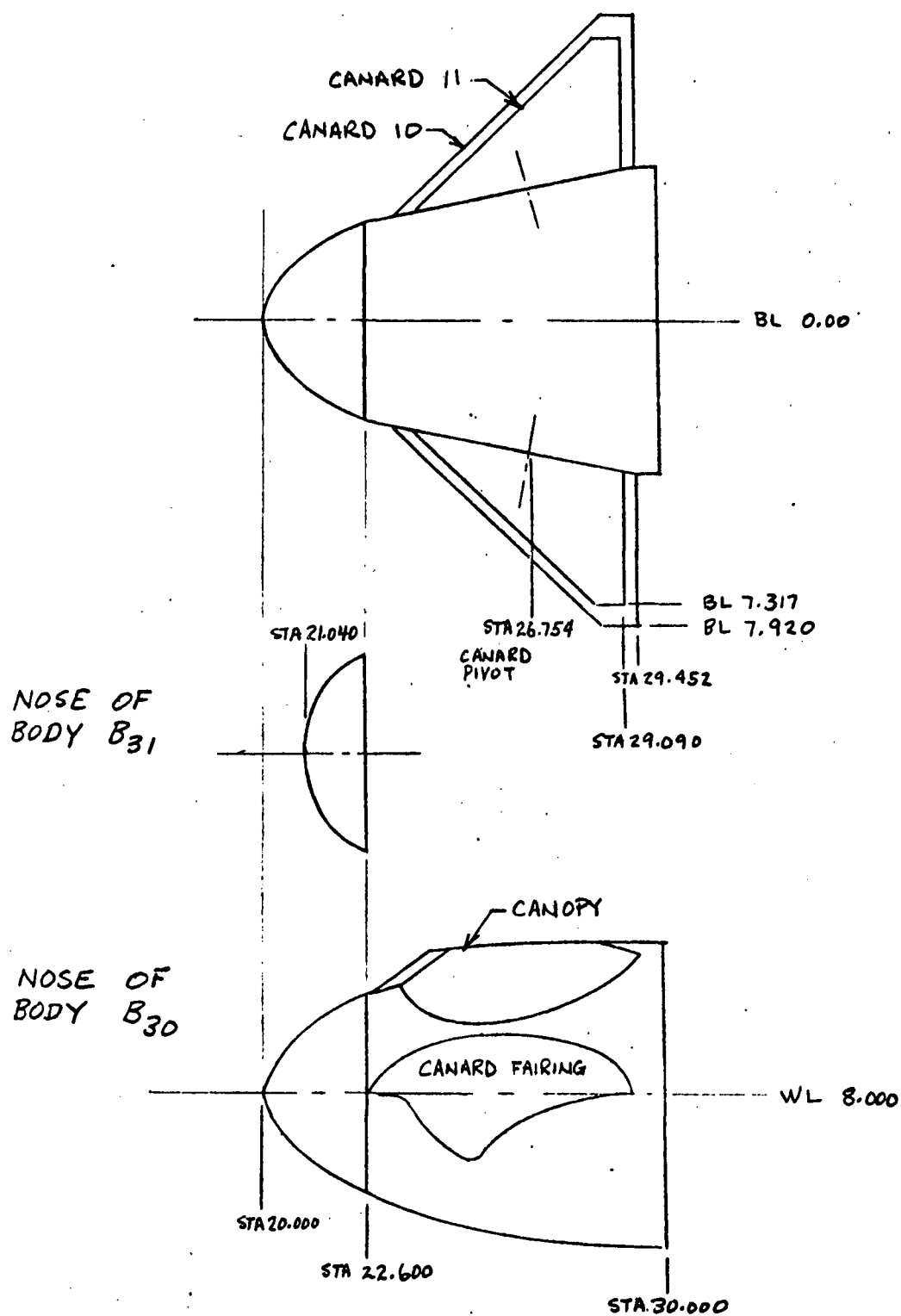


Figure 2. Nose of Body B₃₀ and B₃₁

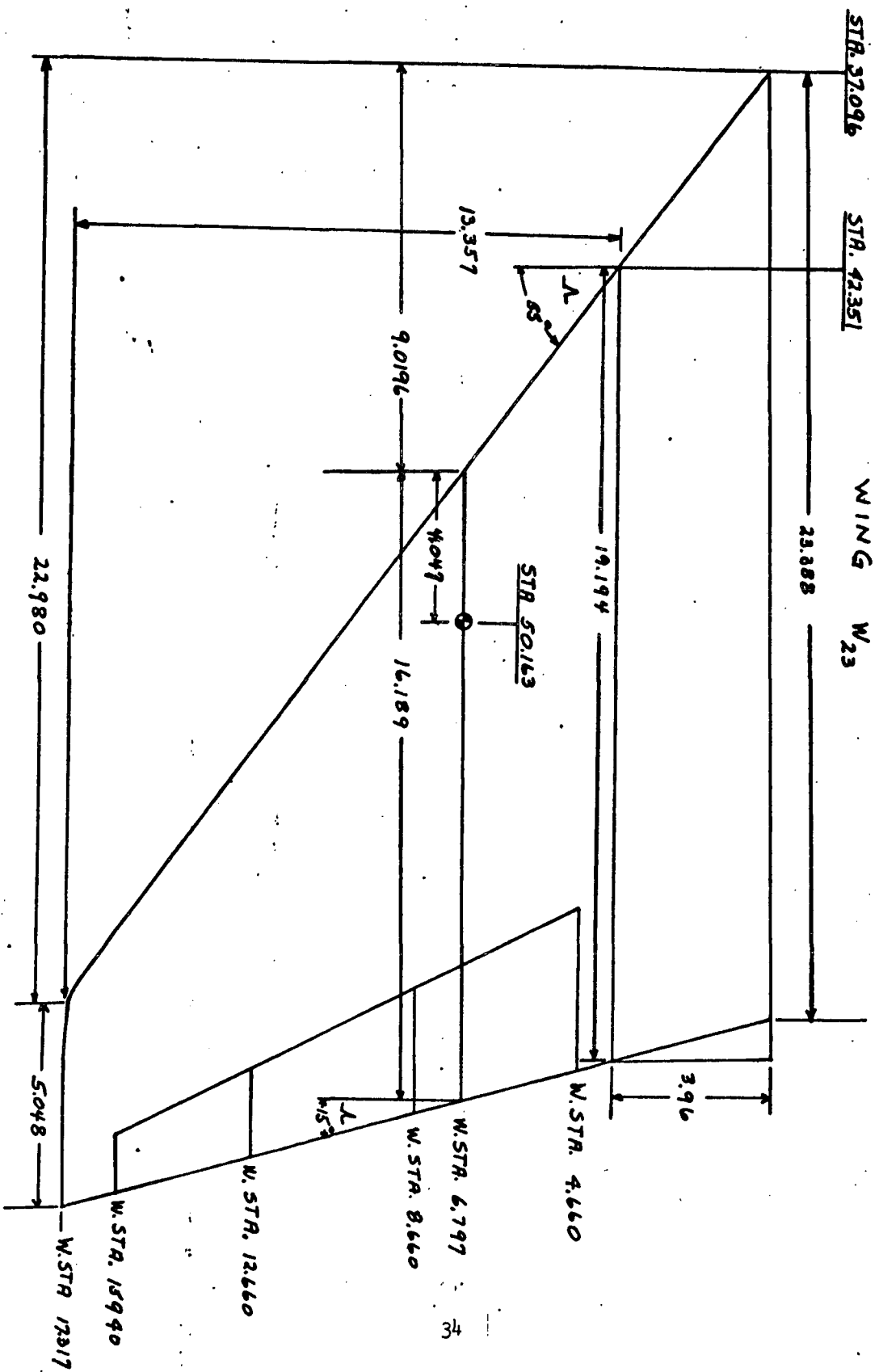


Figure 3. Wing W23

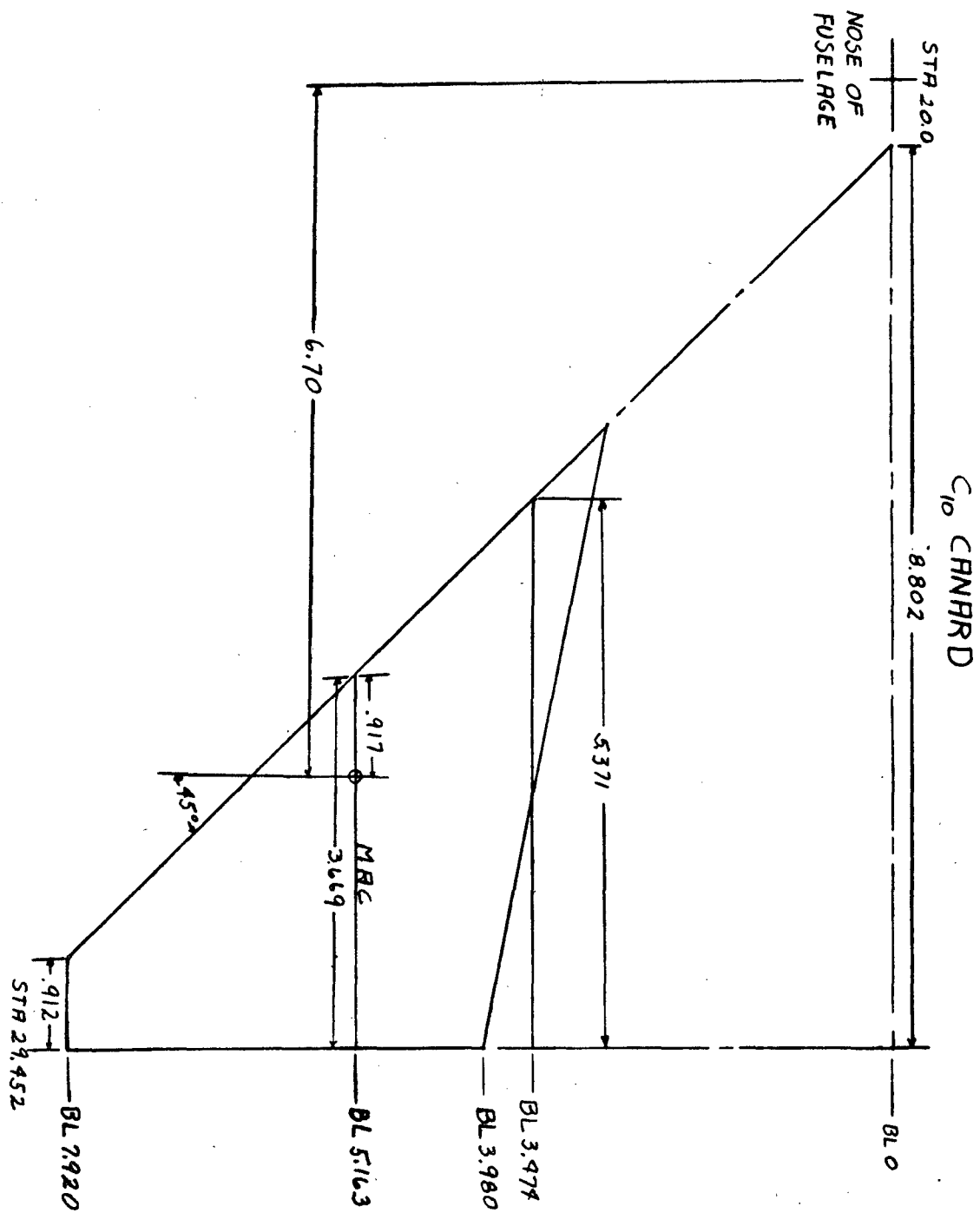


Figure 4. Canard C10

VERTICAL TAIL V₁₄

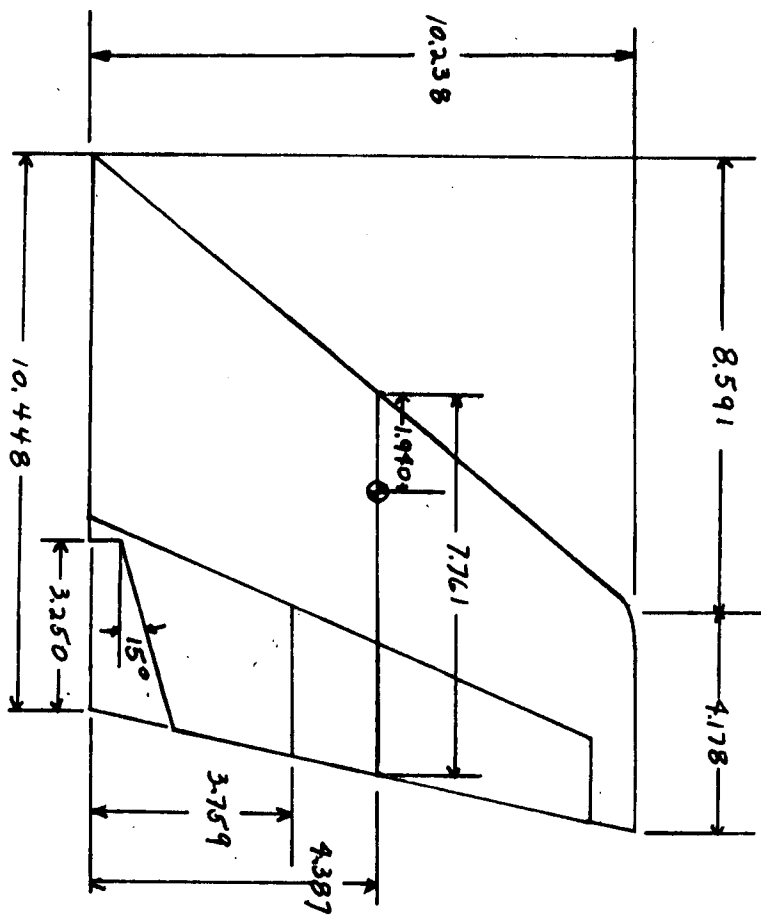


Figure 6. Vertical Tail V₁₄

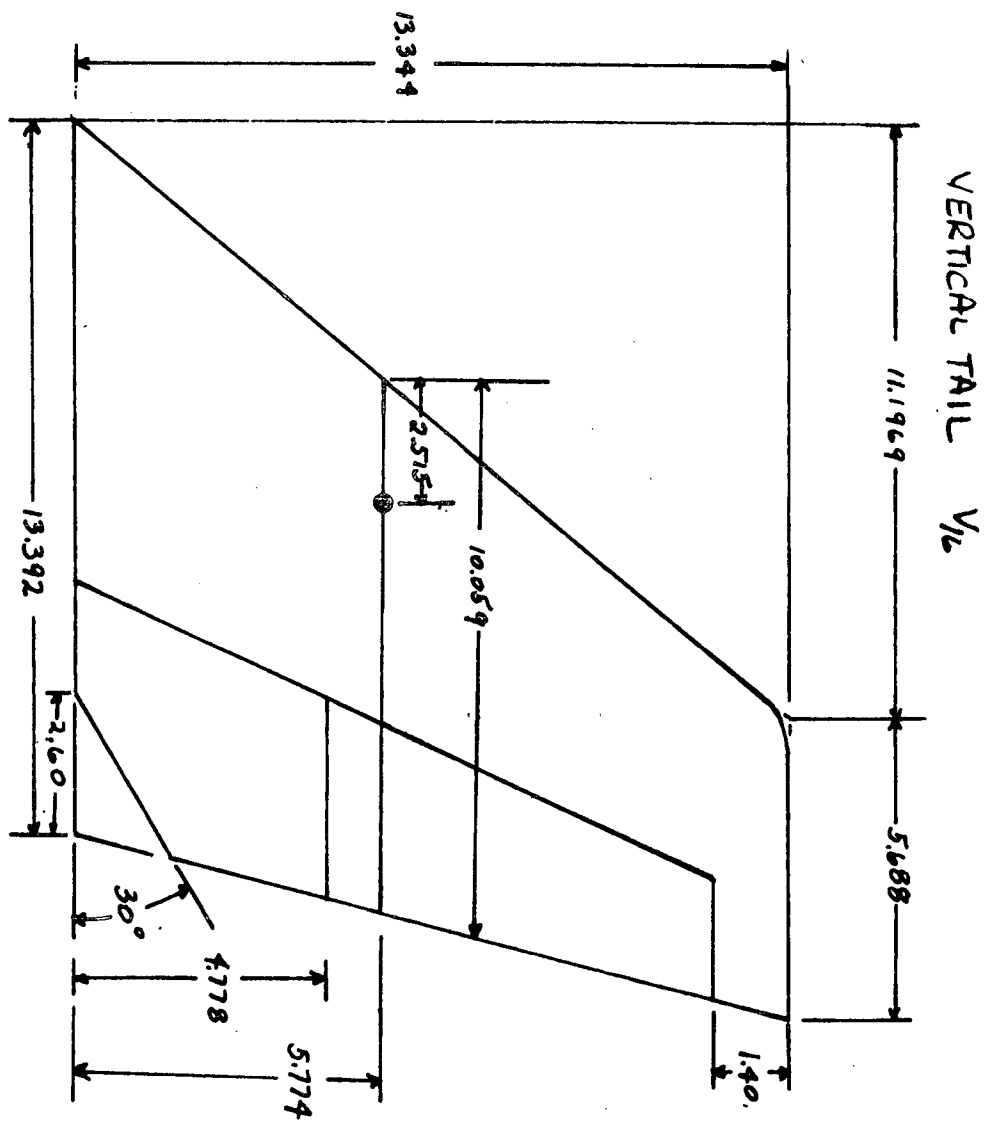


Figure 7. Vertical Tail V_{16}

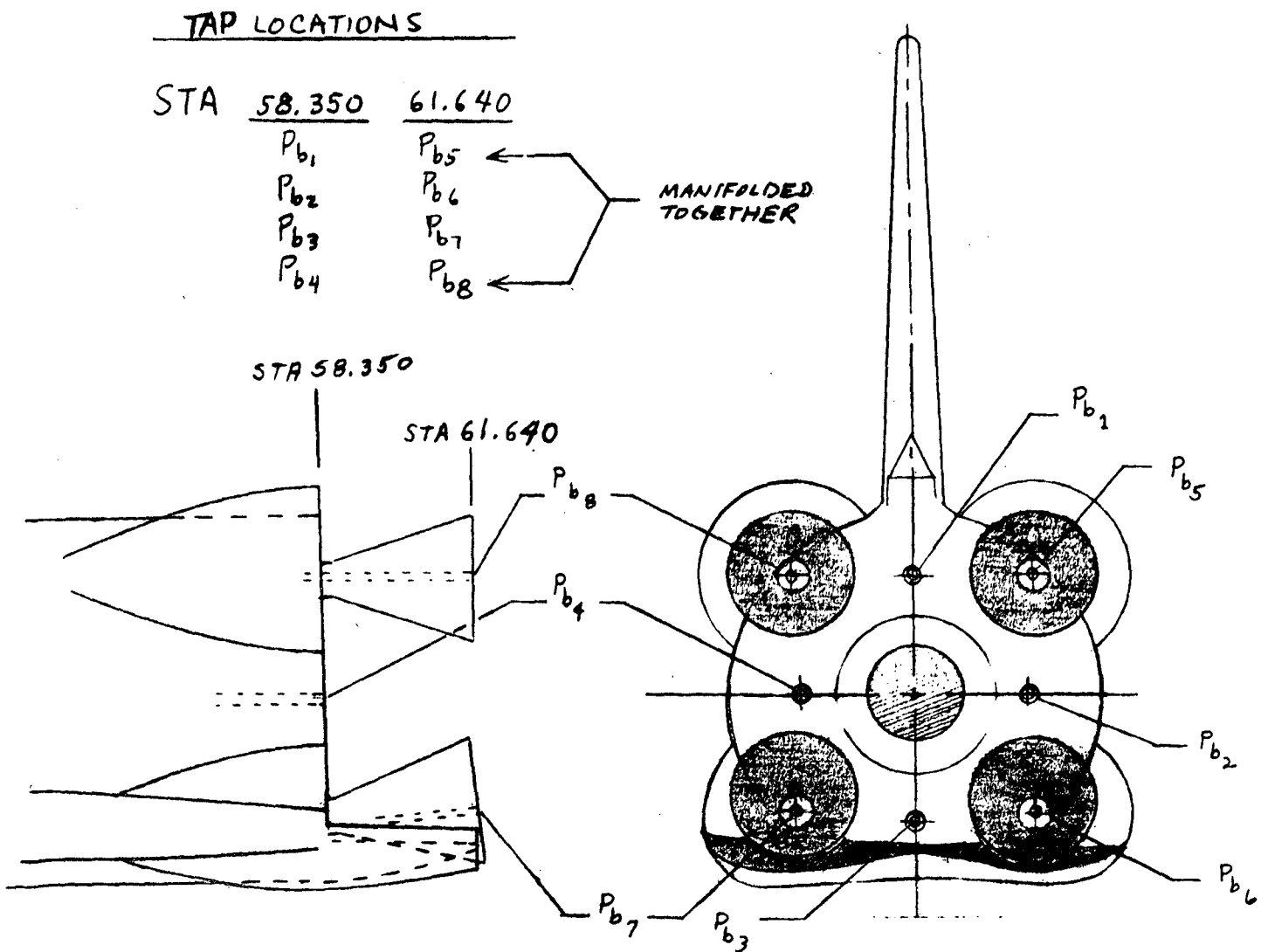


Figure 8. BASE REGION AND PRESSURE TAP LOCATIONS

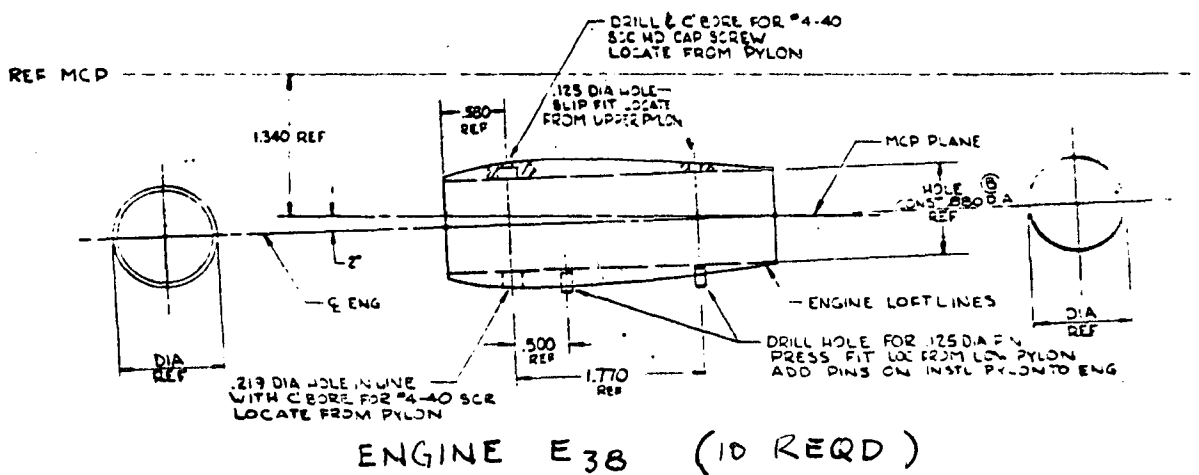
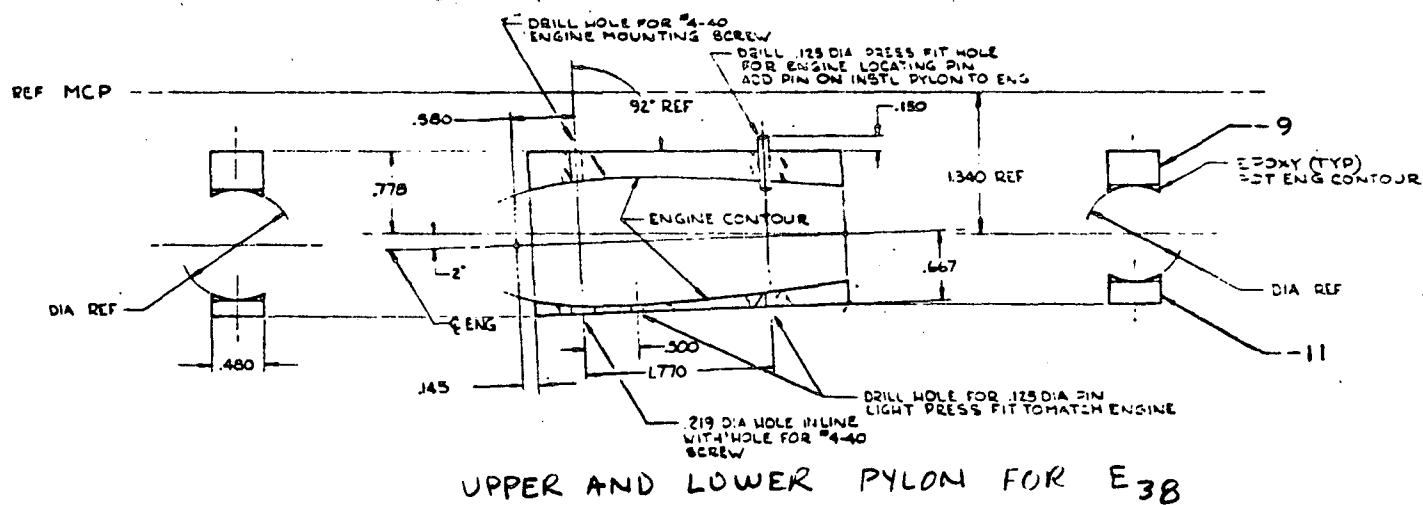
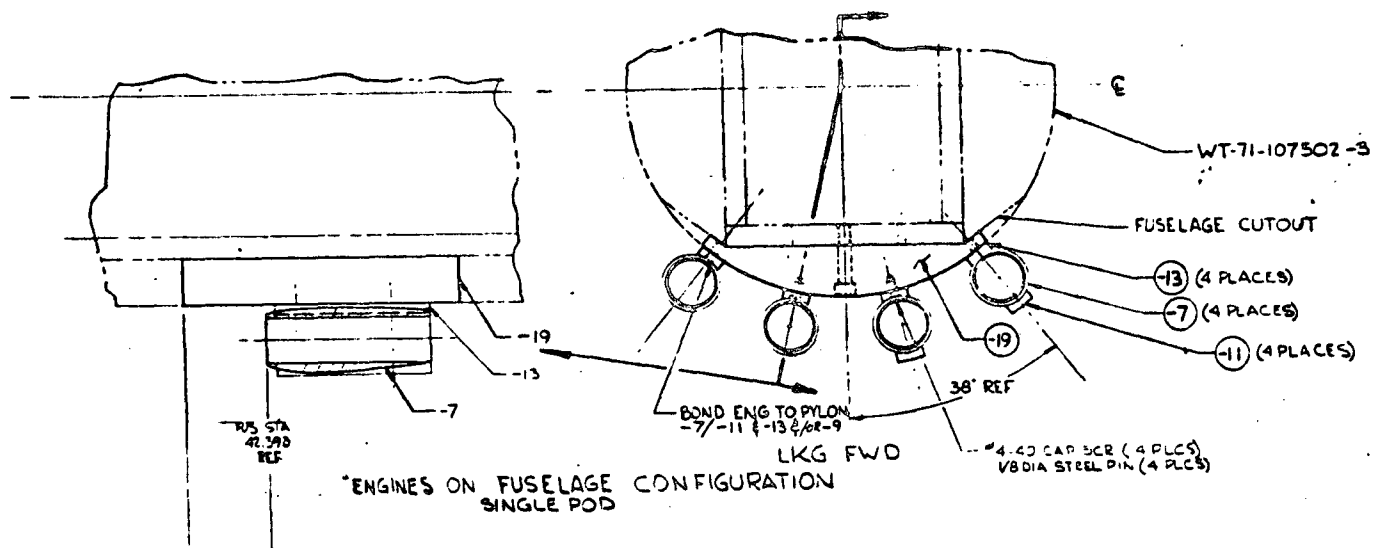


Figure 9. Engine E38

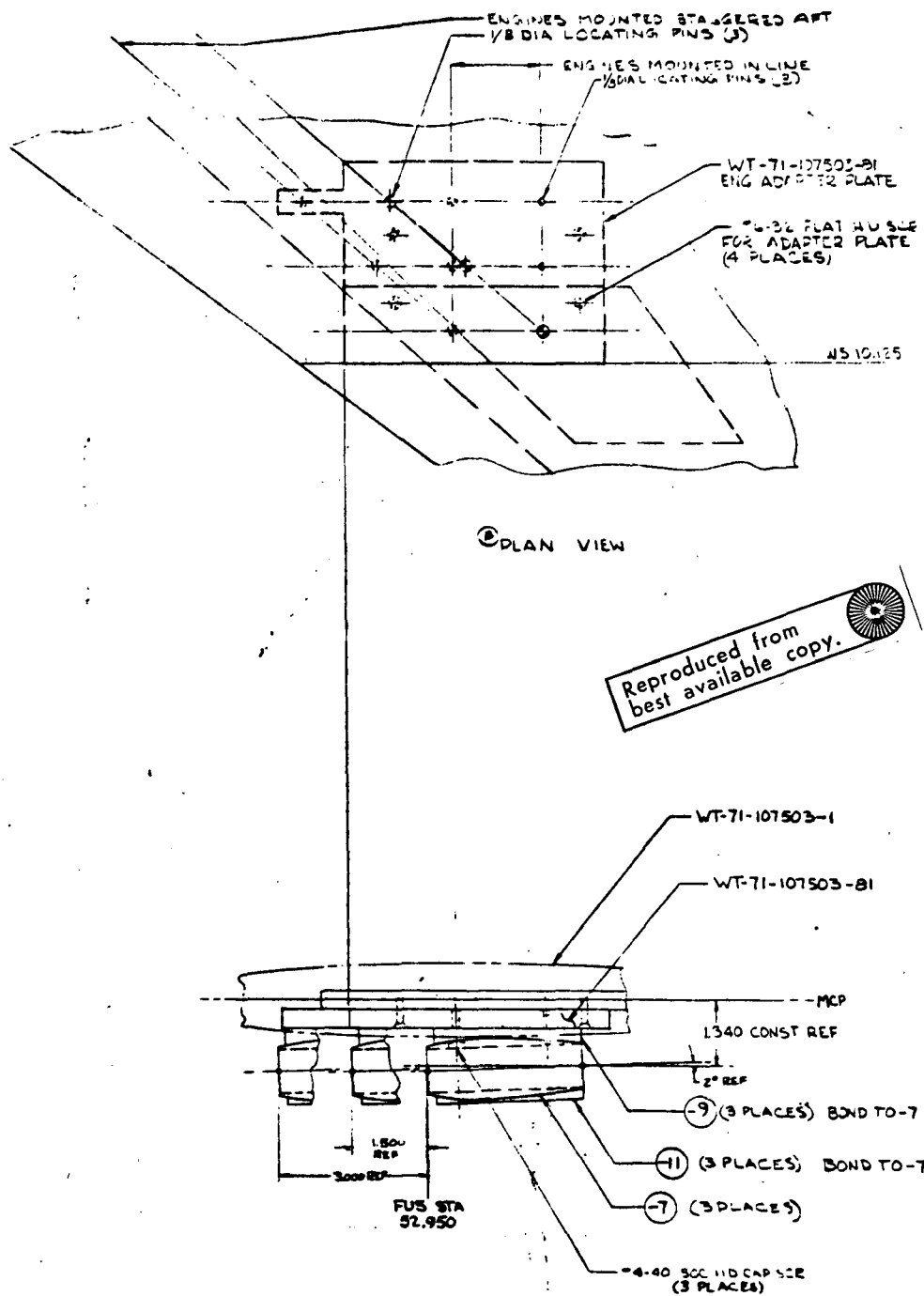


Figure 10. ENGINES ON WING

ROCKET ENGINES R₅

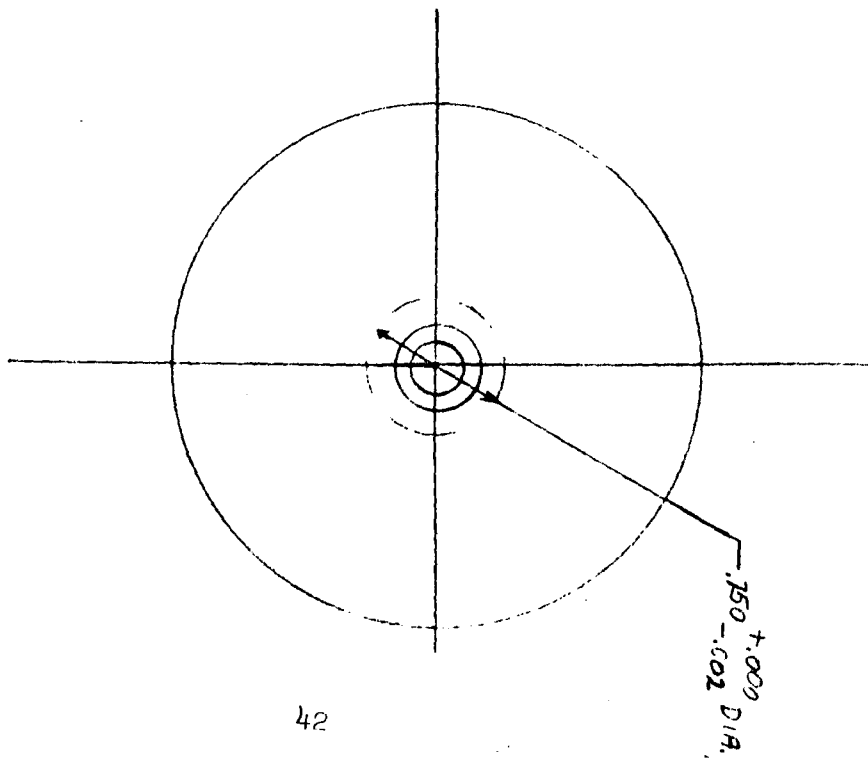
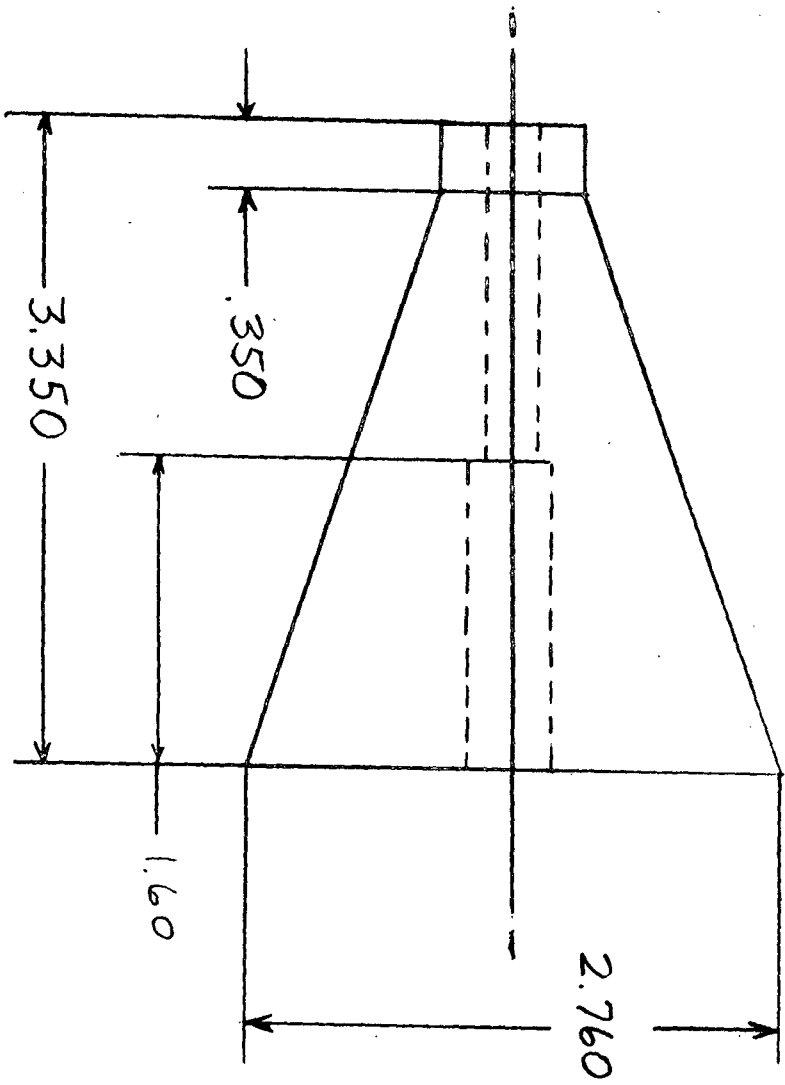


Figure 11. Rocket Engine R₅

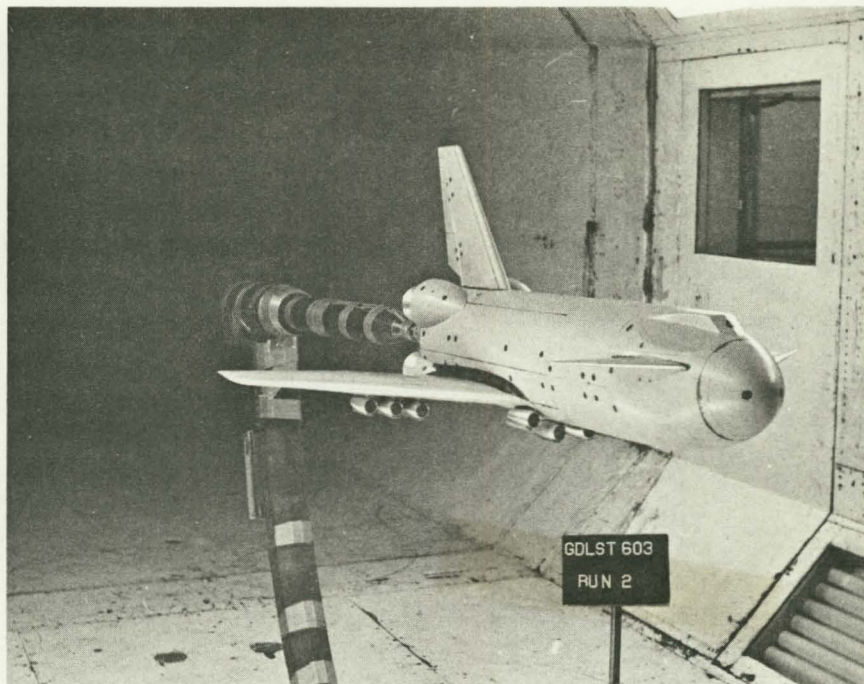


Figure 13. B-18E3 Configuration $B_{30}W_{23}C_{10}V_{14}E_{38}$

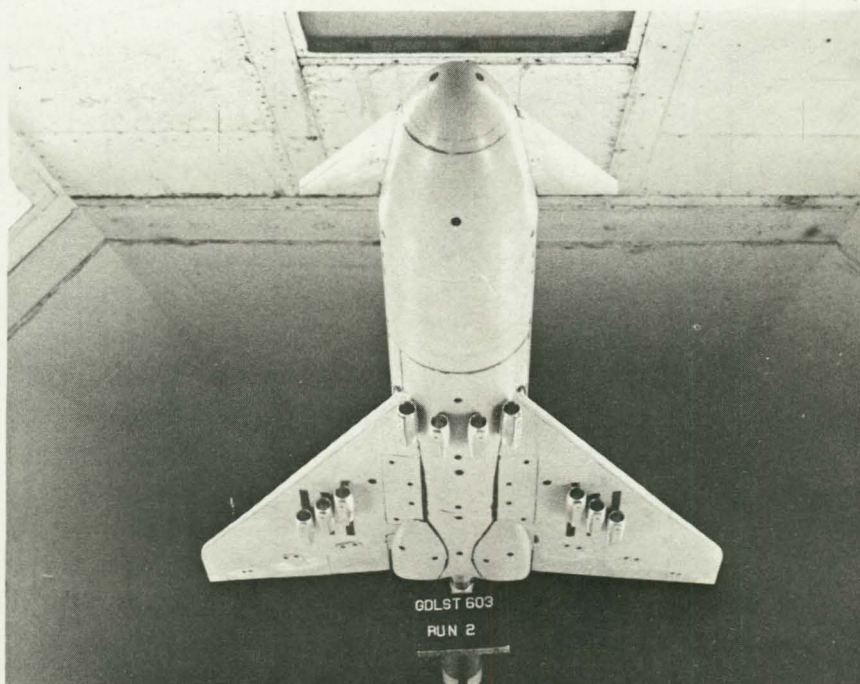


Figure 14. B-18E3 Showing Lower Surface

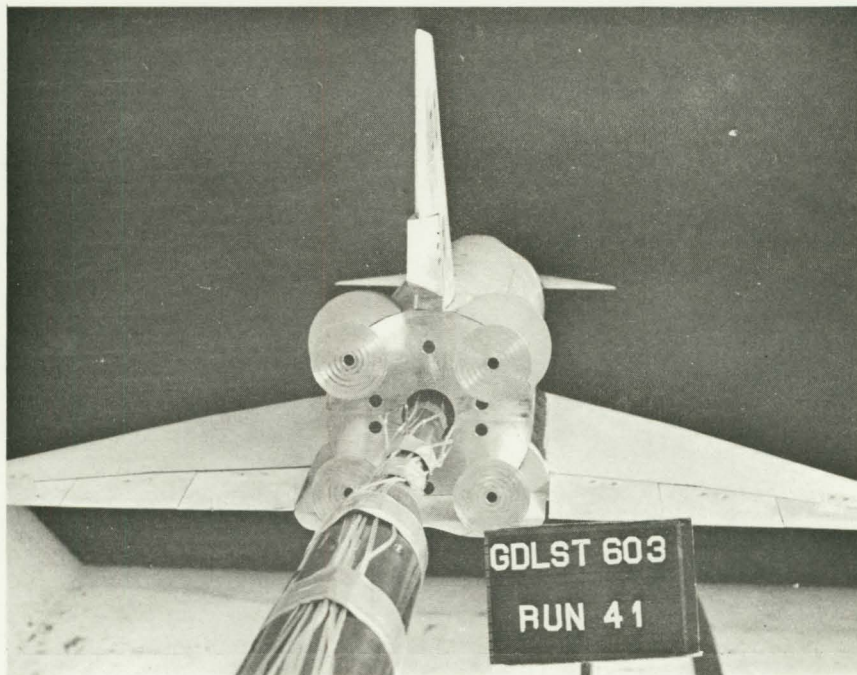


Figure 15. Lower Rudder Deflection and Close Up of Base Region.

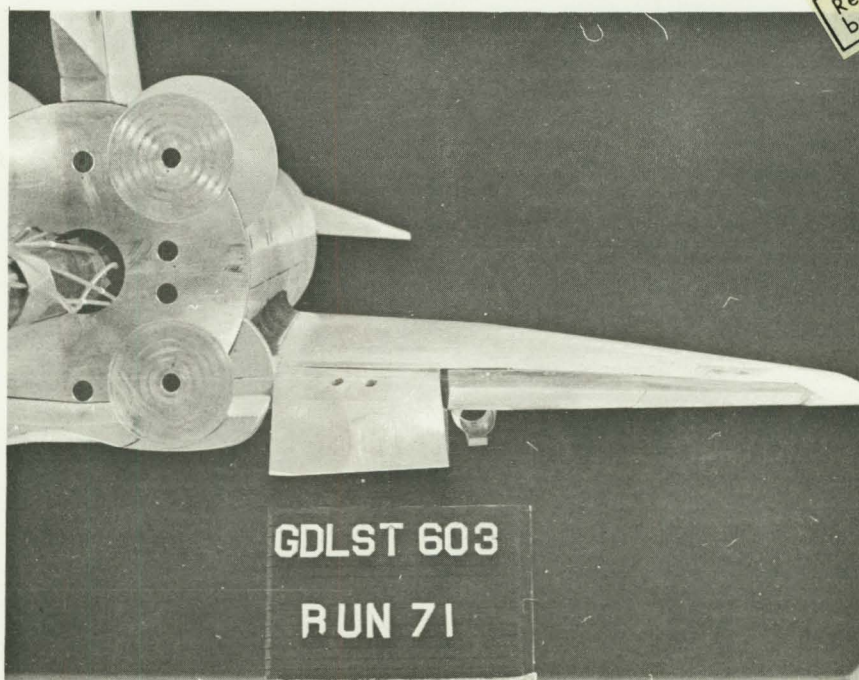


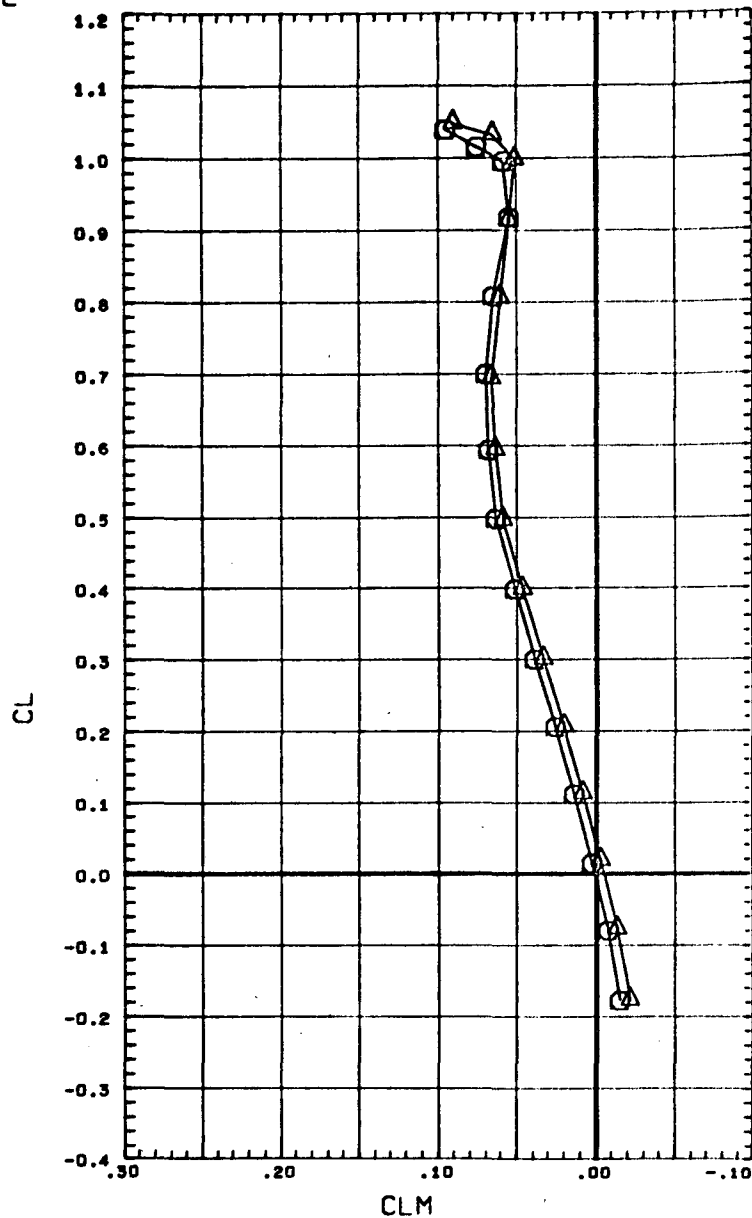
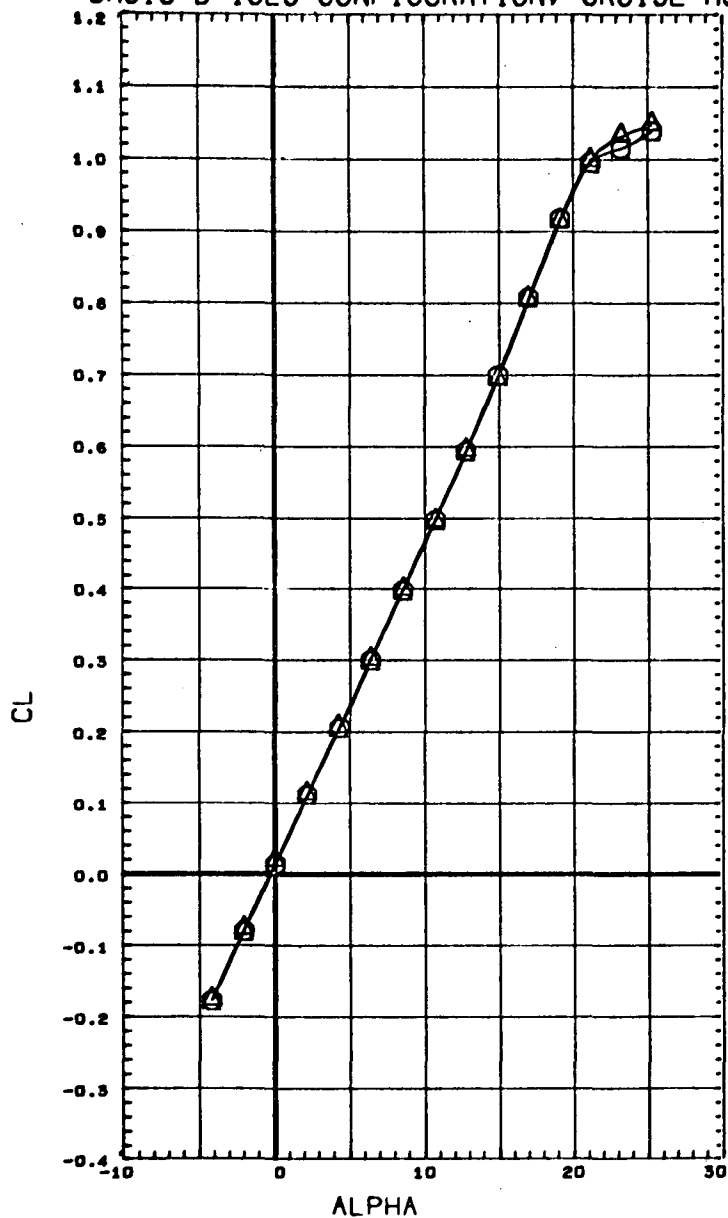
Figure 16. Split Elevon Deflections.

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P L O T T E D D A T A

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

BASIC B-18E3 CONFIGURATION, CRUISE MODE

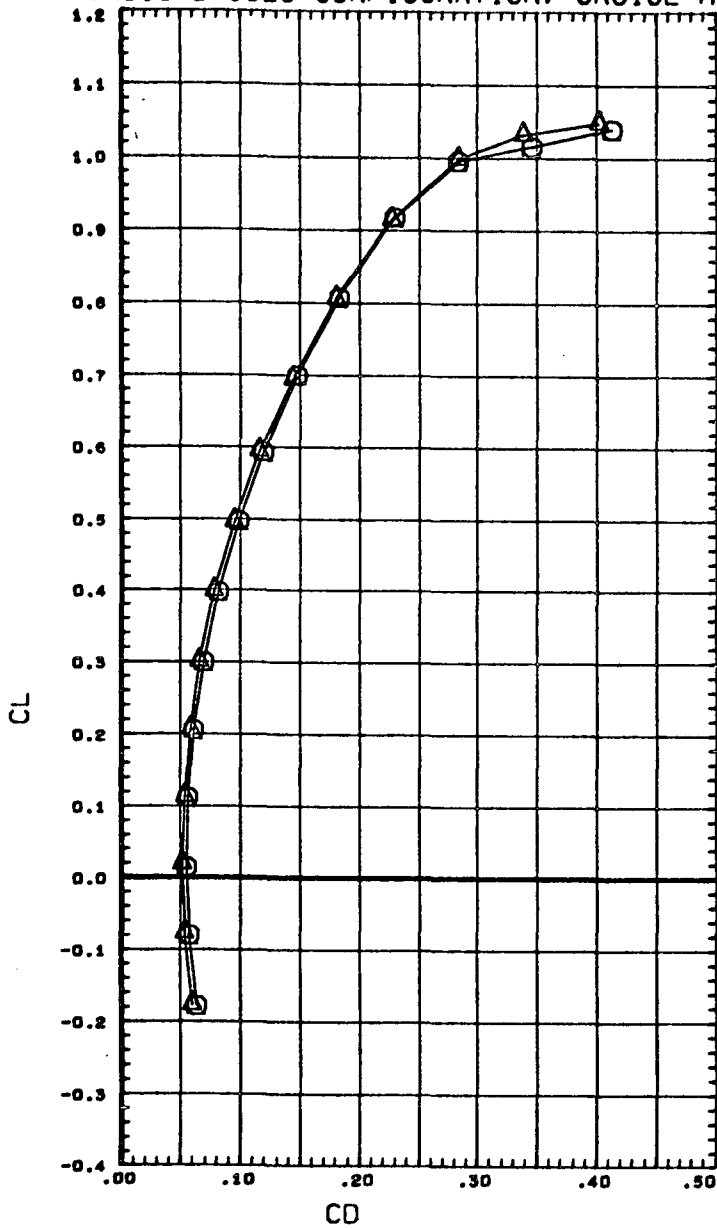


DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6002)	GDLST 603-0 B30W23C10V14E38
(AD6003)	GDLST 603-0 B30W23C10V14E38

MACH 0.201

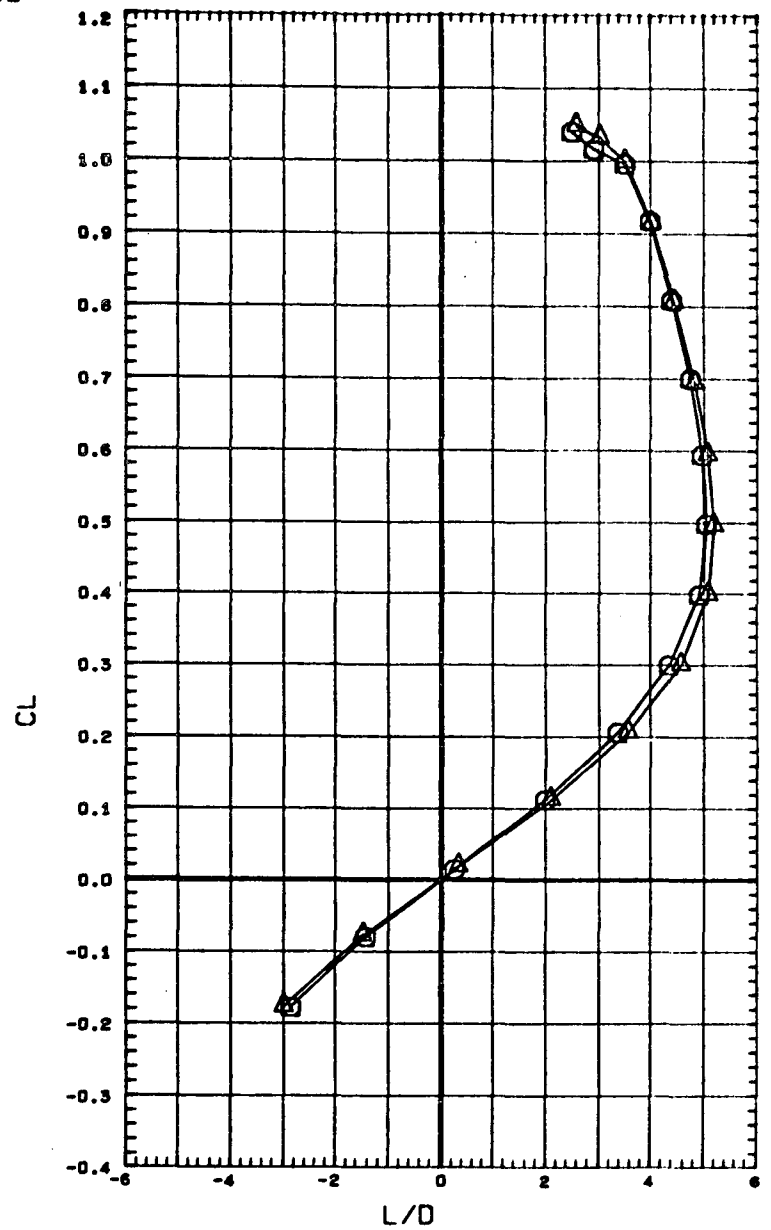
BETA	ELEVTR	CANARD	AILRON	REFERENCE INFORMATION
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5.000	0.000	0.000	0.000	LREF 16.1880 IN.
				BREF 34.6320 IN.
				XMRP 29.0780 IN.
				YMRP 0.0000 IN.
				ZMRP 0.0000 IN.
				SCALE 0.0200

BASIC B-18E3 CONFIGURATION, CRUISE MODE



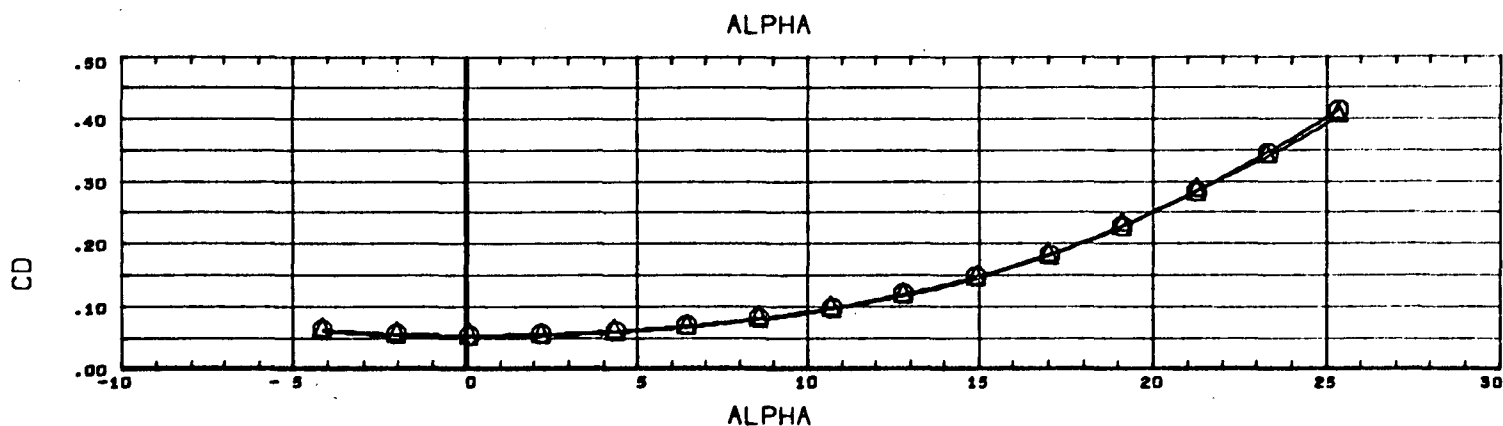
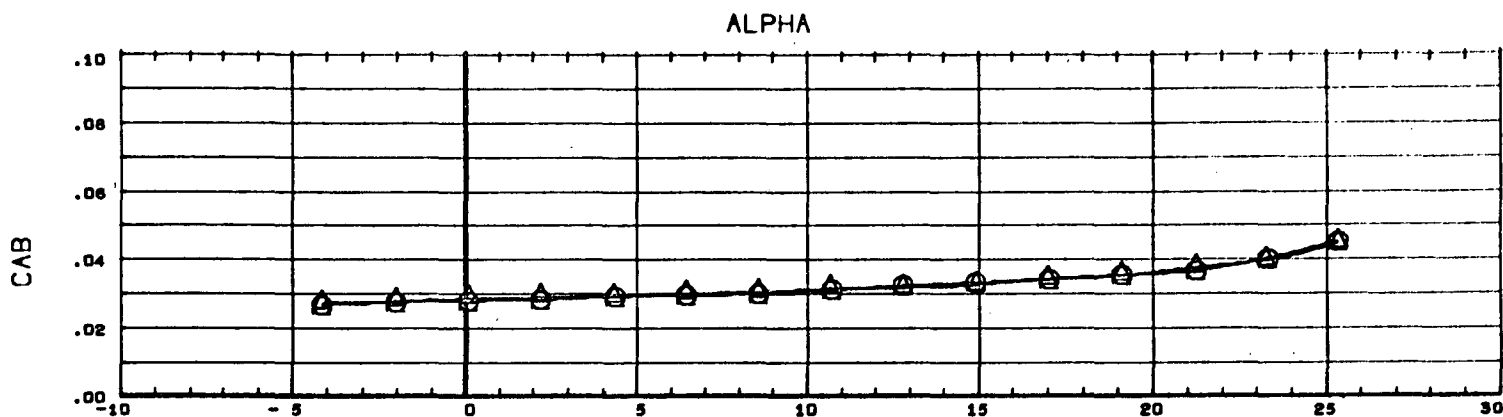
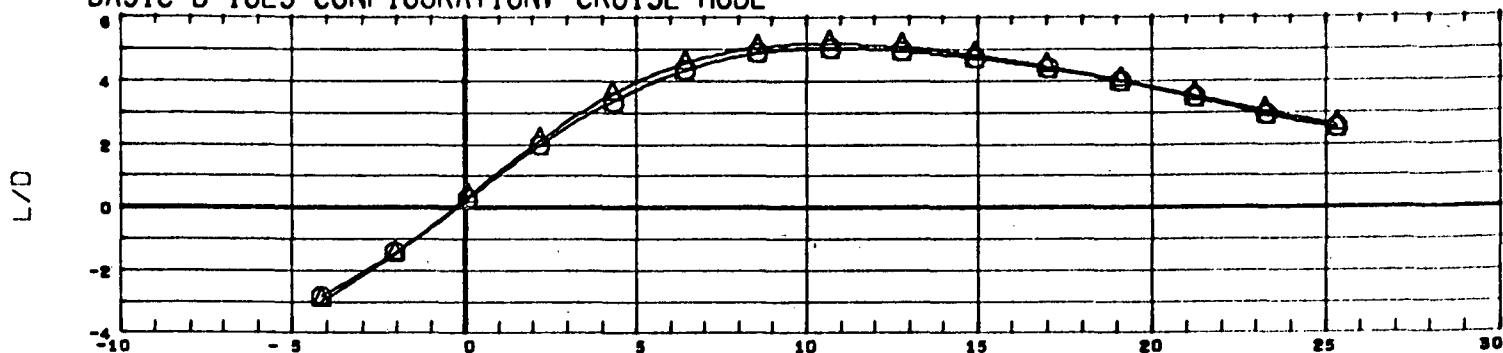
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 (A06003) GDLST 603-0 B30W23C10V14E38

MACH 0.201



BETA	ELEVTR	CANARD	AILRON	REFERENCE INFORMATION	
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5.000	0.000	0.000	0.000	LREF	16.1880 IN.
				BREF	34.6320 IN.
				XMRP	29.0780 IN.
				YMRP	0.0000 IN.
				ZMRP	0.0000 IN.
				SCALE	0.0200

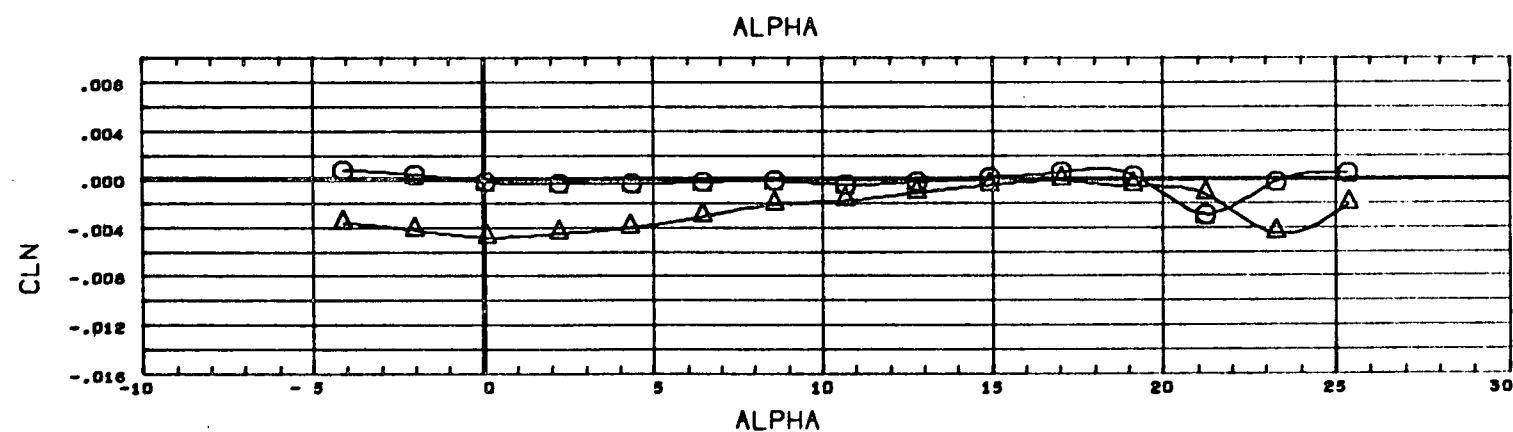
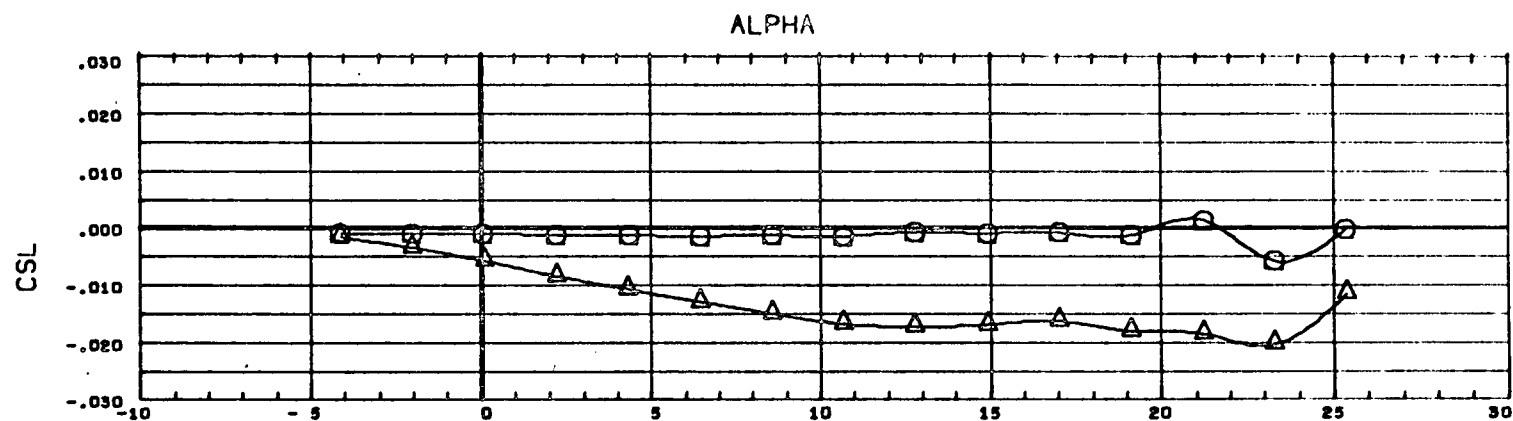
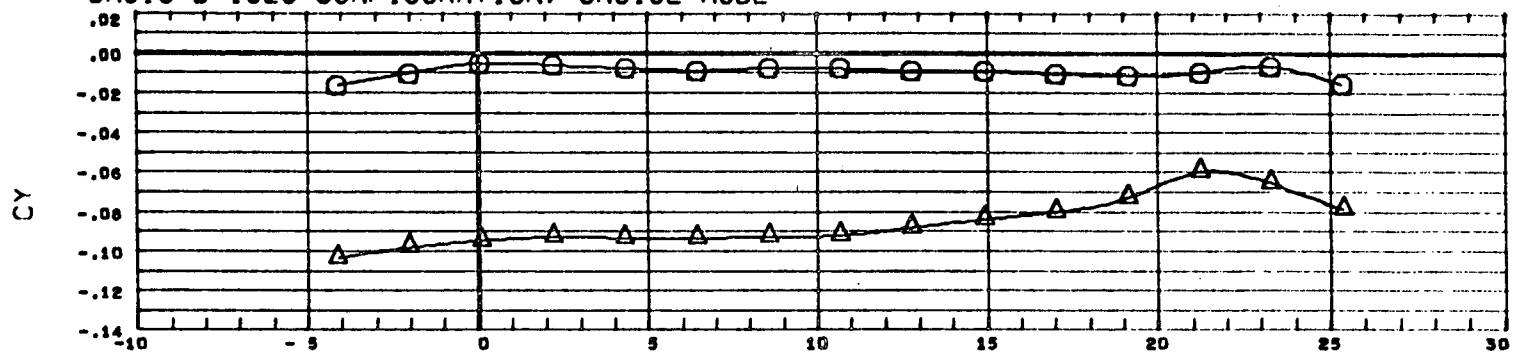
BASIC B-18E3 CONFIGURATION, CRUISE MODE



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	CANARD	AILRON	REFERENCE INFORMATION	
(AD6002)	GDLST 603-0 B30W23C10V14E38	0.000	0.000	0.000	0.000	SREF	492.4804 SQ. IN
(AD6003)	GDLST 603-0 B30W23C10V14E38	5.000	0.000	0.000	0.000	LREF	16.1880 IN.
						BREF	34.6320 IN.
						XMRP	29.0760 IN.
						YMRP	0.0000 IN.
						ZMRP	0.0000 IN.
						SCALE	0.0200

MACH 0.201

BASIC B-18E3 CONFIGURATION, CRUISE MODE

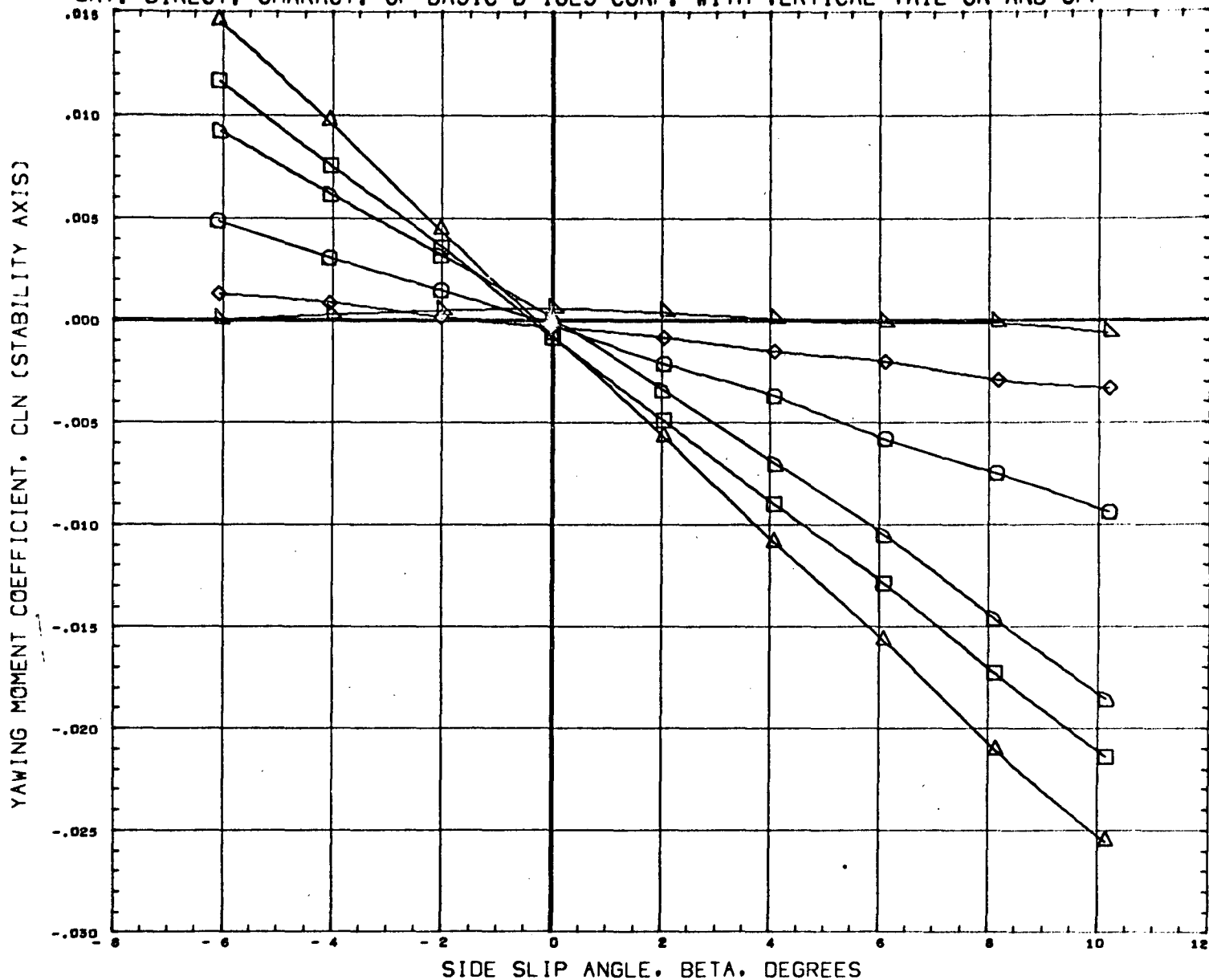


DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6002)	GDLST 603-0 B30W23C10V14E38
(AD6003)	GDLST 603-0 B30W23C10V14E38

BETA	ELEVTR	RUDDER	AILRON	REFERENCE INFORMATION
0.000	0.000	0.000	0.000	SREF 492.4804 SQ. IN
5.000	0.000	0.000	0.000	LREF 16.1880 IN.
				BREF 34.6320 IN.
				XMRP 29.0780 IN.
				YMRP 0.0000 IN.
				ZMRP 0.0000 IN.
				SCALE 0.0200

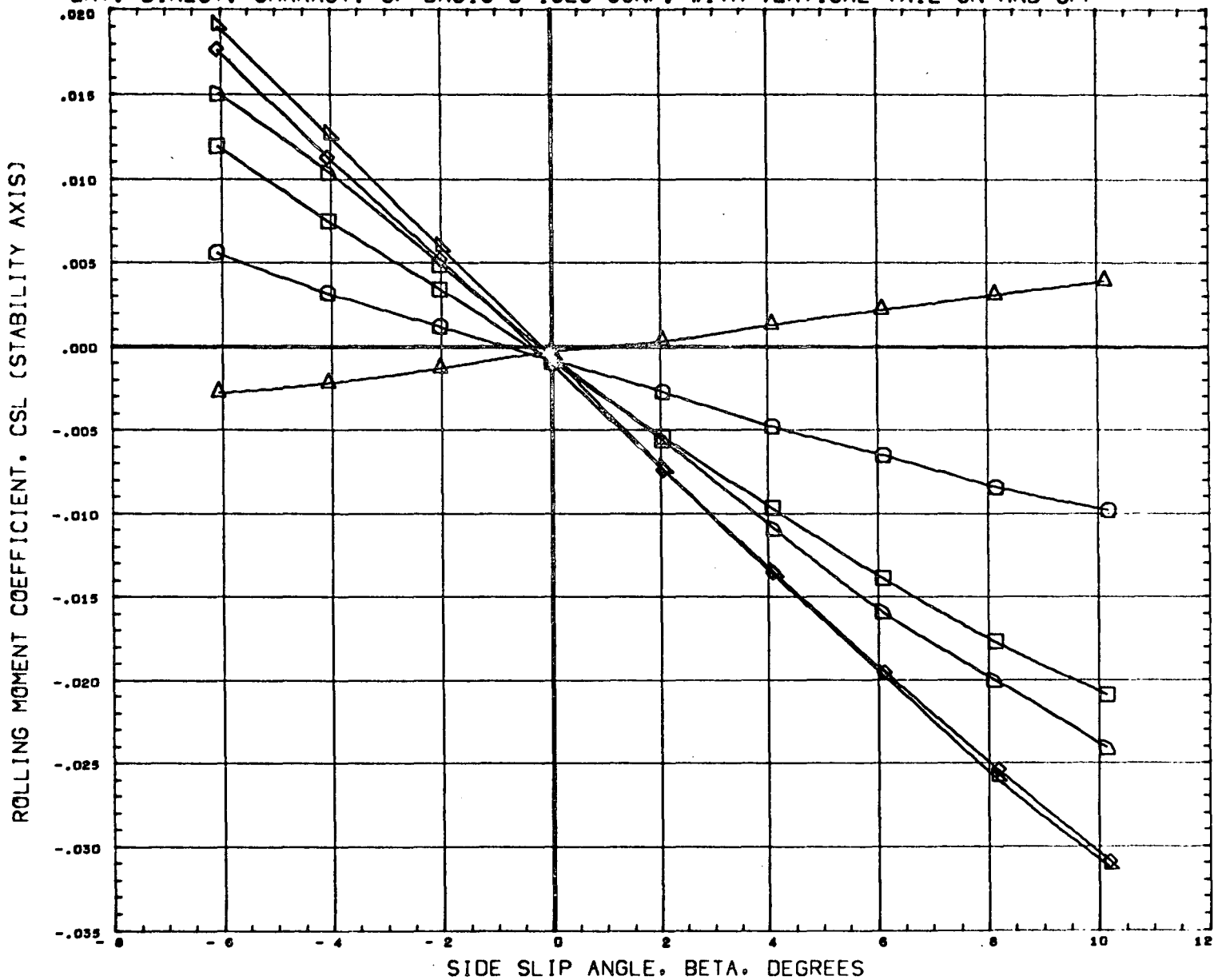
MACH 0.201

LAT.-DIRECT. CHARACT. OF BASIC B-18E3 CONF. WITH VERTICAL TAIL ON AND OFF



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	RUDDER	AILRON	REFERENCE INFORMATION
(RD6004)	GDLST 603-0 830W23C10V14E38	0.000	0.000	0.000	0.000	SREF 492.4804 SQ. IN
(RD6056)	GDLST 603-0 830W23C10E38	0.000	0.000	0.000	0.000	LREF 16.1880 IN.
(RD6005)	GDLST 603-0 830W23C10V14E38	10.000	0.000	0.000	0.000	BREF 34.6320 IN.
(RD6057)	GDLST 603-0 830W23C10E38	10.000	0.000	0.000	0.000	XMRP 29.0760 IN.
(RD6006)	GDLST 603-0 830W23C10V14E38	15.000	0.000	0.000	0.000	YMRP 0.0000 IN.
(RD6058)	GDLST 603-0 830W23C10E38	15.000	0.000	0.000	0.000	ZMRP 0.0000 IN.
MACH	0.201					SCALE 0.0200

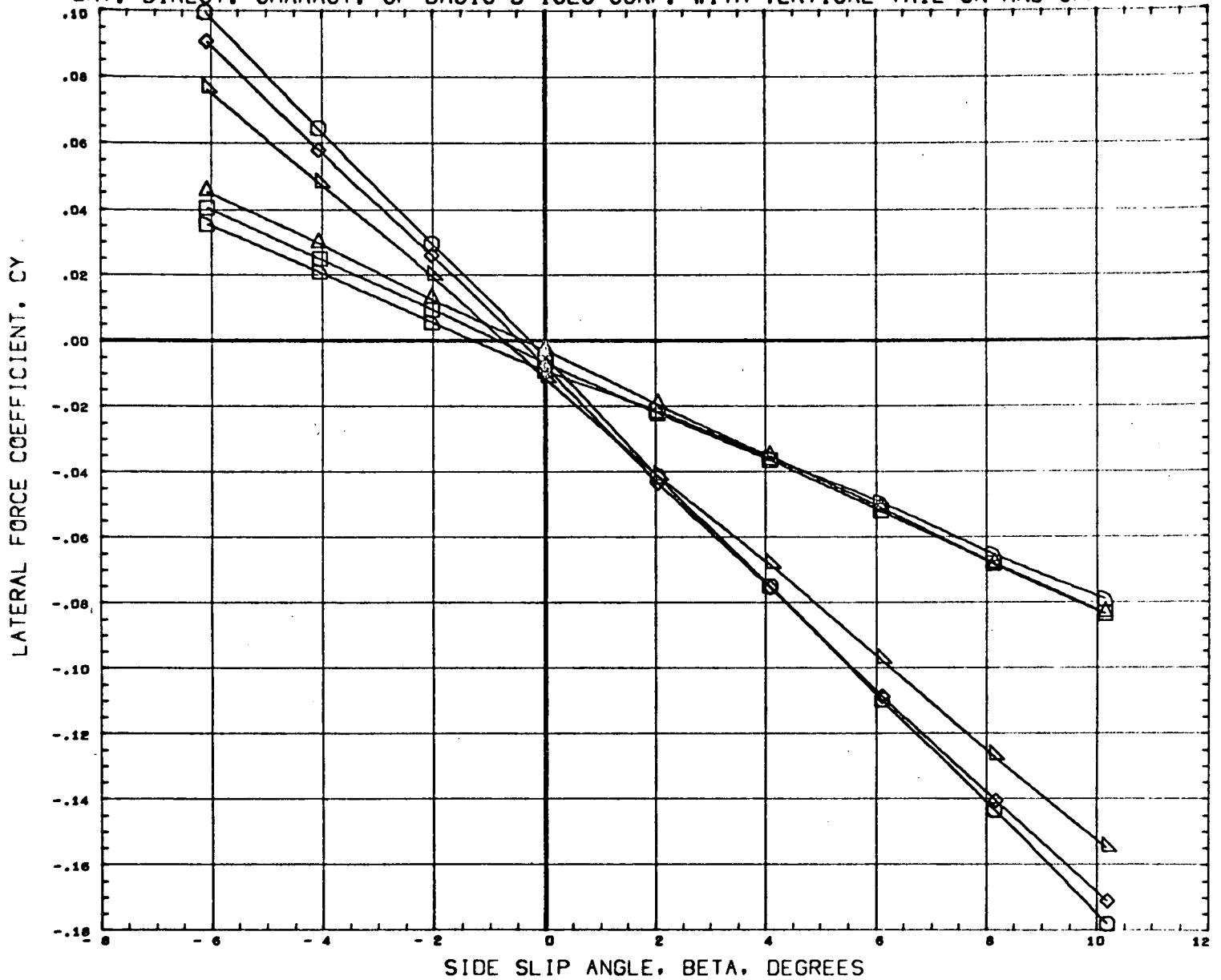
LAT.-DIRECT. CHARACT. OF BASIC B-18E3 CONF. WITH VERTICAL TAIL ON AND OFF



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	RUDDER	AILRON	REFERENCE INFORMATION
(RD6004)	GDLST 603-0 B30W23C10V14E38	0.000	0.000	0.000	0.000	SREF 492.4804 SQ. IN
(RD6056)	GDLST 603-0 B30W23C10E38	0.000	0.000	0.000	0.000	LREF 16.1880 IN.
(RD6005)	GDLST 603-0 B30W23C10V14E38	10.000	0.000	0.000	0.000	BREF 34.6320 IN.
(RD6057)	GDLST 603-0 B30W23C10E38	10.000	0.000	0.000	0.000	XMRP 29.0760 IN.
(RD6006)	GDLST 603-0 B30W23C10V14E38	15.000	0.000	0.000	0.000	YMRP 0.0000 IN.
(RD6058)	GDLST 603-0 B30W23C10E38	15.000	0.000	0.000	0.000	ZMRP 0.0000 IN.
						SCALE 0.0200

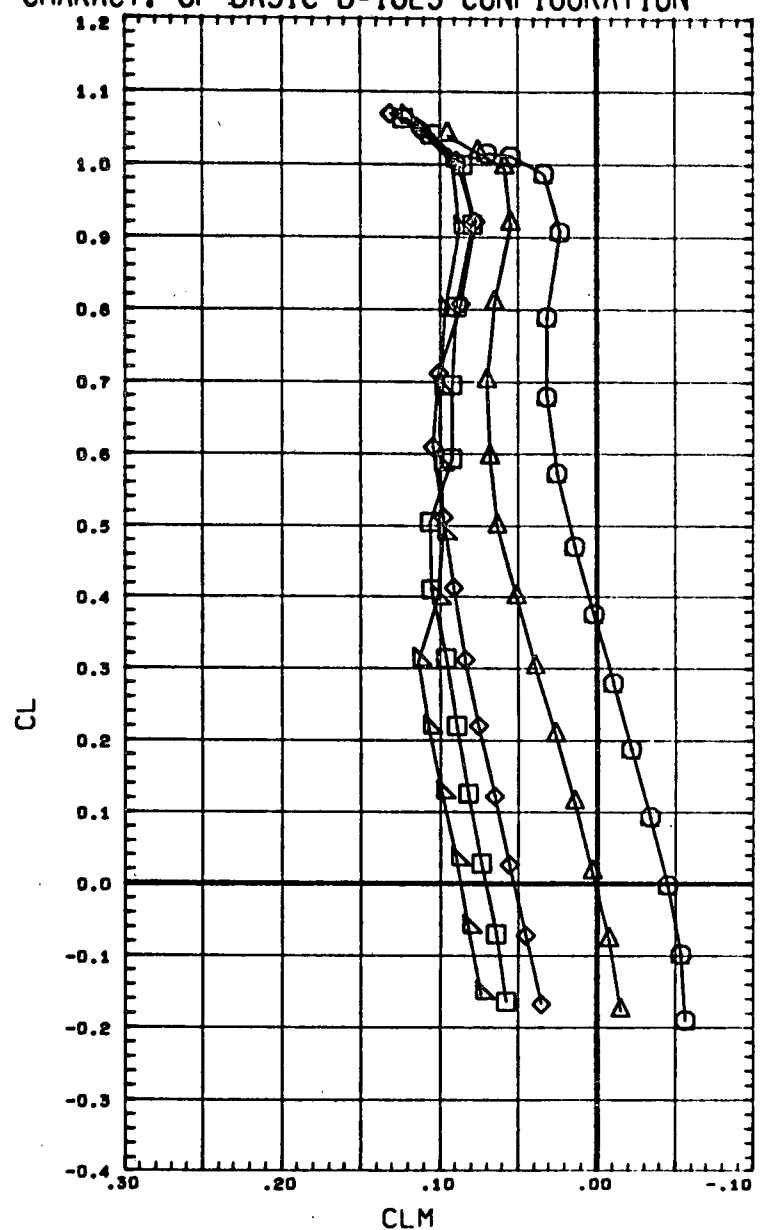
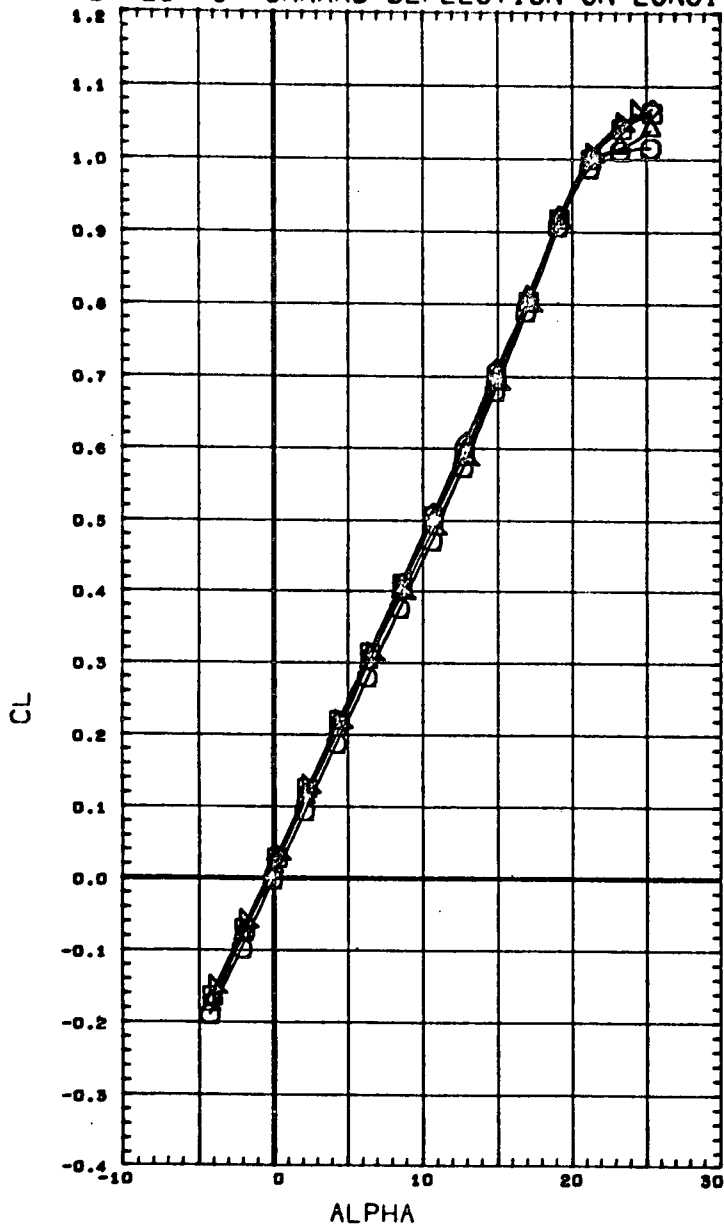
MACH 0.201

LAT.-DIRECT. CHARACT. OF BASIC B-18E3 CONF. WITH VERTICAL TAIL ON AND OFF



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ALPHA	ELEVTR	RUDDER	AILRON	REFERENCE INFORMATION	
(RD6004)	GDLST 603-0 B30W23C10V14E38	0.000	0.000	0.000	0.000	SREF	492.4804 SQ. IN
(RD6056)	GDLST 603-0 B30W23C10E38	0.000	0.000	0.000	0.000	LREF	16.1880 IN.
(RD6005)	GDLST 603-0 B30W23C10V14E38	10.000	0.000	0.000	0.000	BREF	34.6320 IN.
(RD6057)	GDLST 603-0 B30W23C10E38	10.000	0.000	0.000	0.000	XMRP	29.0780 IN.
(RD6006)	GDLST 603-0 B30W23C10V14E38	15.000	0.000	0.000	0.000	YMRP	0.0000 IN.
(RD6058)	GDLST 603-0 B30W23C10E38	15.000	0.000	0.000	0.000	ZMRP	0.0000 IN.
MACH 0.201						SCALE	0.0200

EFFECT OF CANARD DEFLECTION ON LONGIT. CHARACT. OF BASIC B-18E3 CONFIGURATION

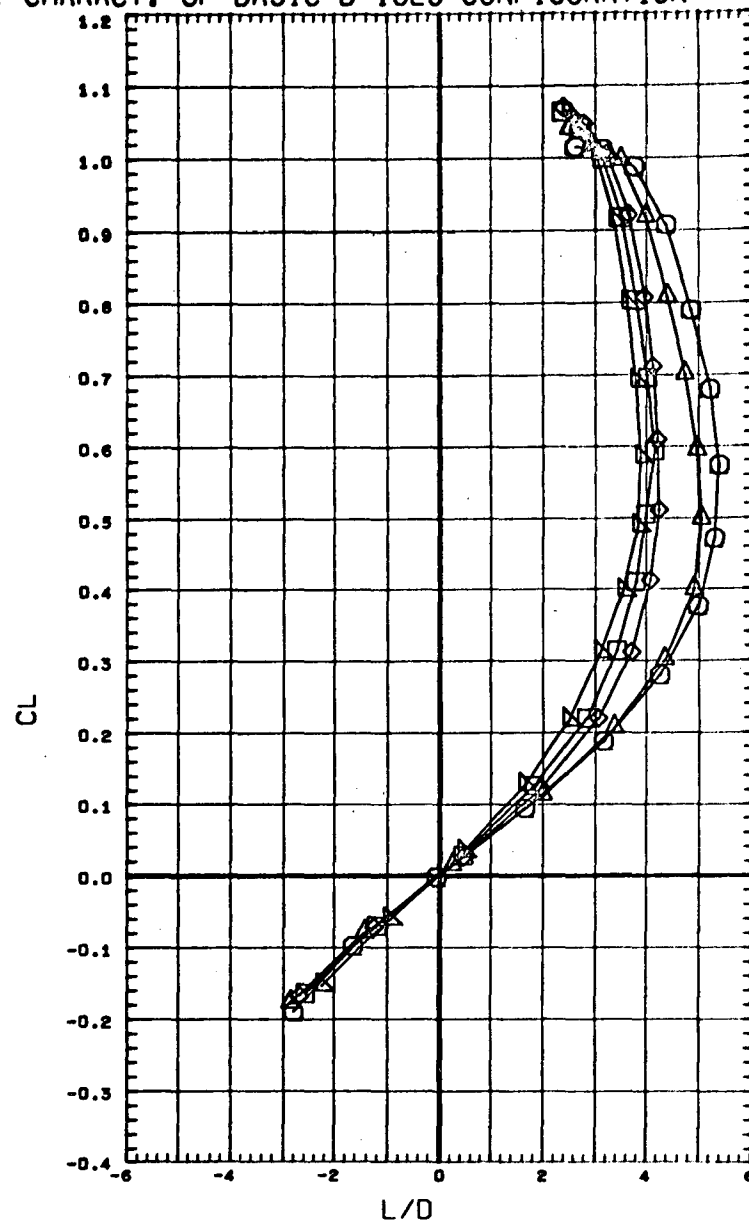
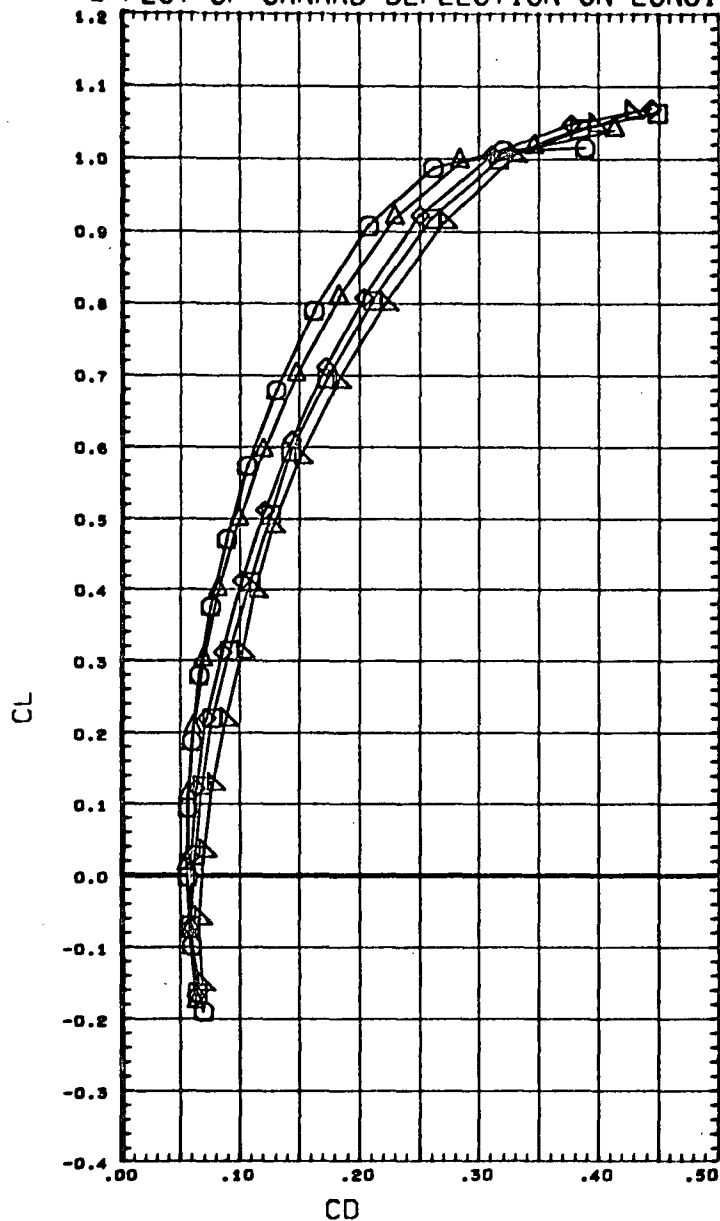


DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(A06009)	GOLST 603-0 830W23C10V14E38
(A06002)	GOLST 603-0 830W23C10V14E38
(A06007)	GOLST 603-0 830W23C10V14E38
(A06011)	GOLST 603-0 830W23C10V14E38
(A06013)	GOLST 603-0 830W23C10V14E38

MACH 0.201

BETA	ELEVTR	CANARD	AILRON	REFERENCE INFORMATION
0.000	0.000	-10.000	0.000	SREF 492.4804 SQ. IN
0.000	0.000	0.000	0.000	LREF 16.1880 IN.
0.000	0.000	10.000	0.000	BREF 34.6320 IN.
0.000	0.000	15.000	0.000	XMRP 29.0780 IN.
0.000	0.000	20.000	0.000	YMRP 0.0000 IN.
				ZMRP 0.0000 IN.
				SCALE 0.0200

EFFECT OF CANARD DEFLECTION ON LONGIT. CHARACT. OF BASIC B-18E3 CONFIGURATION

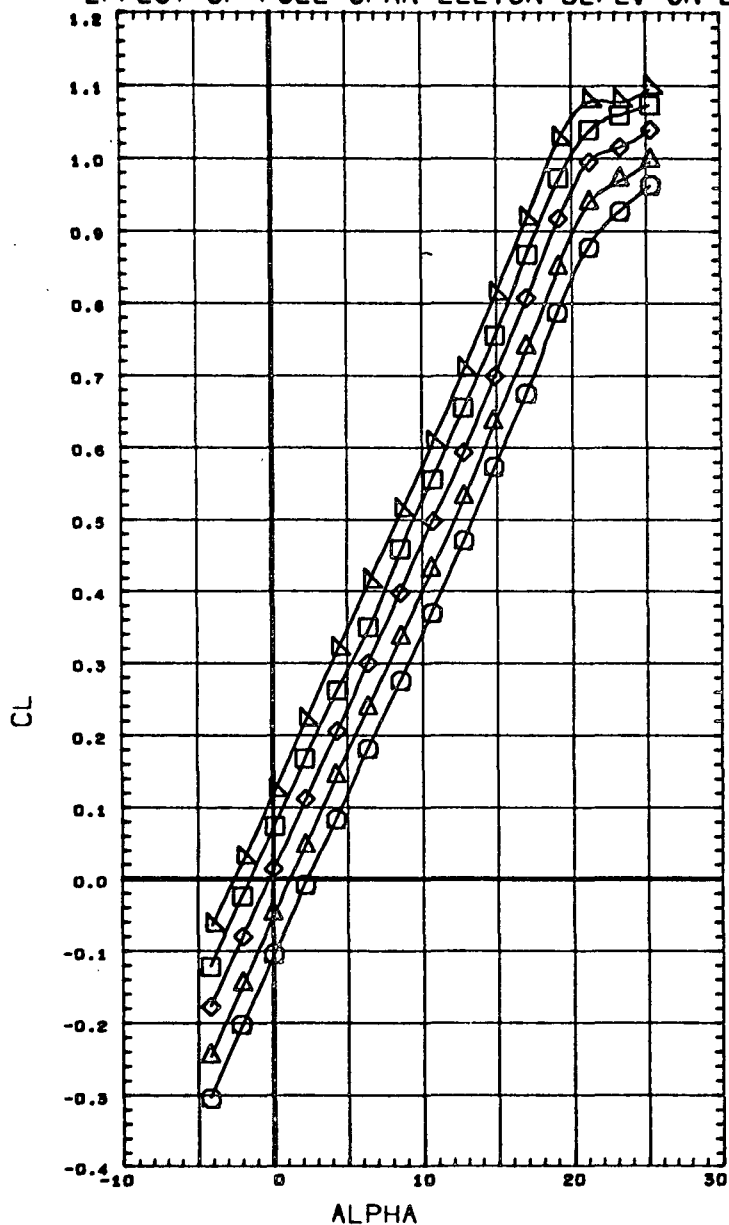


DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6009)	GDLST 603-0 B30W23C10V14E38
(AD6002)	GDLST 603-0 B30W23C10V14E38
(AD6007)	GDLST 603-0 B30W23C10V14E38
(AD6011)	GDLST 603-0 B30W23C10V14E38
(AD6013)	GDLST 603-0 B30W23C10V14E38

MACH 0.201

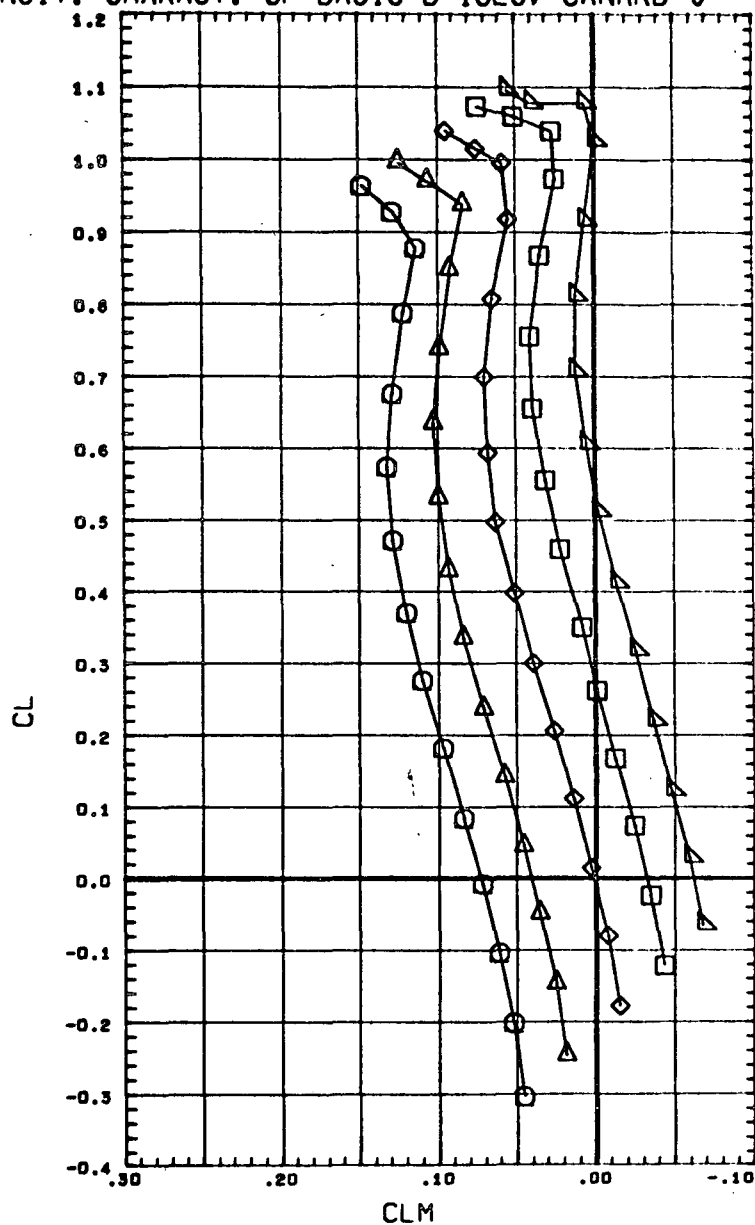
BETA	ELEVTR	CANARD	AILRON	REFERENCE INFORMATION	
0.000	0.000	-10.000	0.000	SREF	492.4804 SQ. IN
0.000	0.000	0.000	0.000	LREF	16.1880 IN.
0.000	0.000	10.000	0.000	BREF	34.6320 IN.
0.000	0.000	15.000	0.000	XMRP	29.0780 IN.
0.000	0.000	20.000	0.000	YMRP	0.0000 IN.
				ZMRP	0.0000 IN.
				SCALE	0.0200

EFFECT OF FULL SPAN ELEVON DEFL. ON LONGIT. CHARACT. OF BASIC B-18E3, CANARD=0



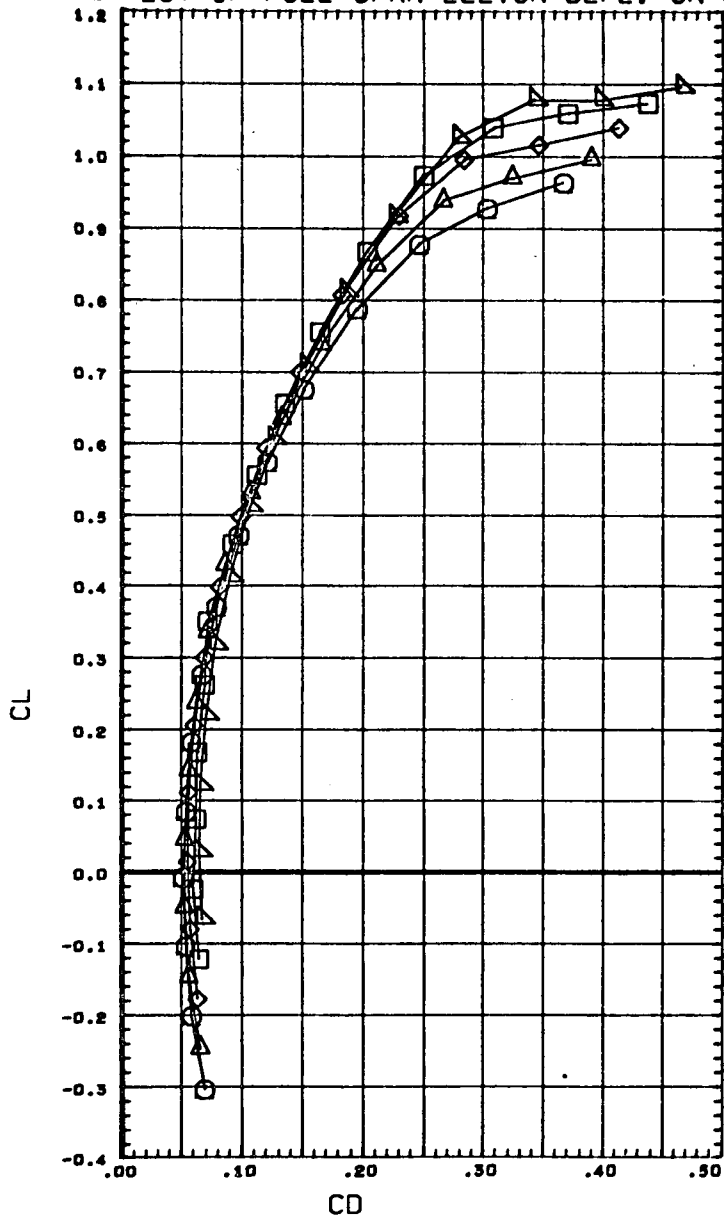
DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6030)	GDLST 603-0 830W23C10V14E38
(AD6026)	GDLST 603-0 830W23C10V14E38
(AD6002)	GDLST 603-0 830W23C10V14E38
(AD6024)	GDLST 603-0 830W23C10V14E38
(AD6026)	GDLST 603-0 830W23C10V14E38

MACH 0.201



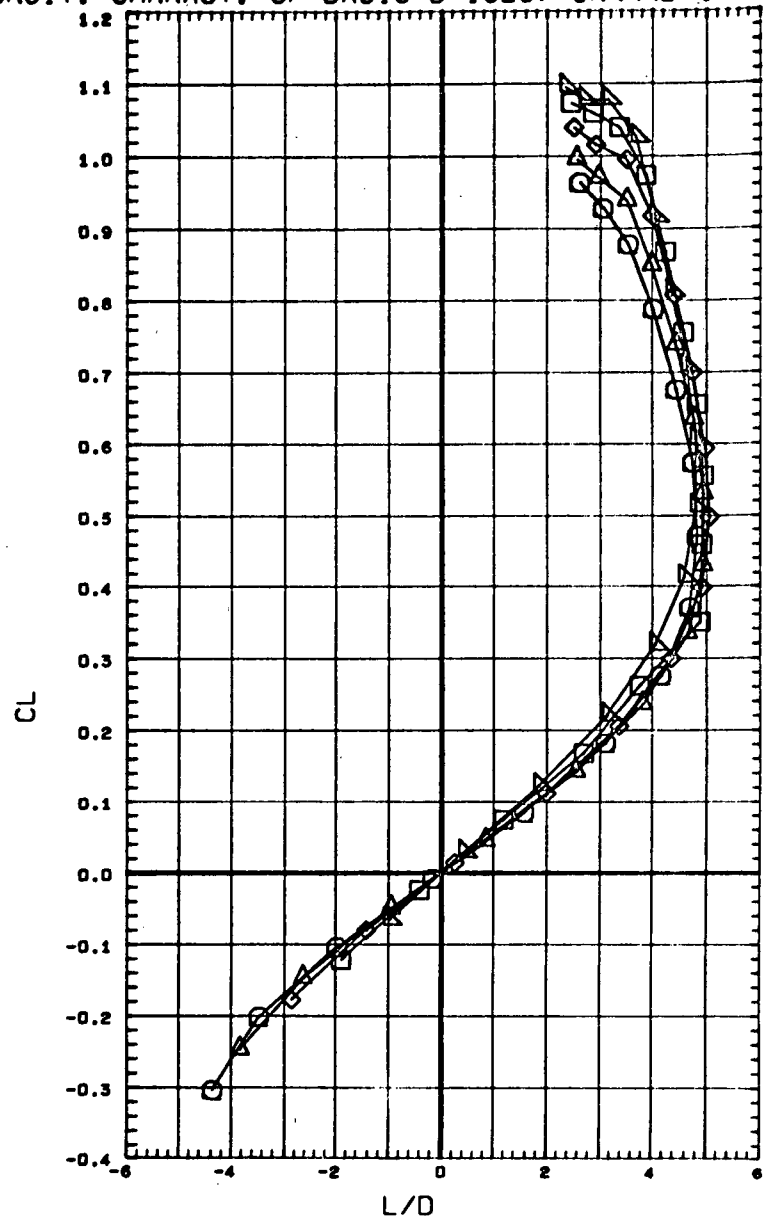
BETA	ELEVTR	CANARD	AILRON	REFERENCE INFORMATION
0.000	-10.000	0.000	0.000	SREF 492.4804 SQ. IN
0.000	-5.000	0.000	0.000	LREF 16.1880 IN.
0.000	0.000	0.000	0.000	BREF 34.6320 IN.
0.000	5.000	0.000	0.000	XMHP 29.0780 IN.
0.000	10.000	0.000	0.000	YMHP 0.0000 IN.
				ZMHP 0.0000 IN.
				SCALE 0.0200

EFFECT OF FULL SPAN ELEVON DEFL. ON LONGIT. CHARACT. OF BASIC B-18E3, CANARD=0



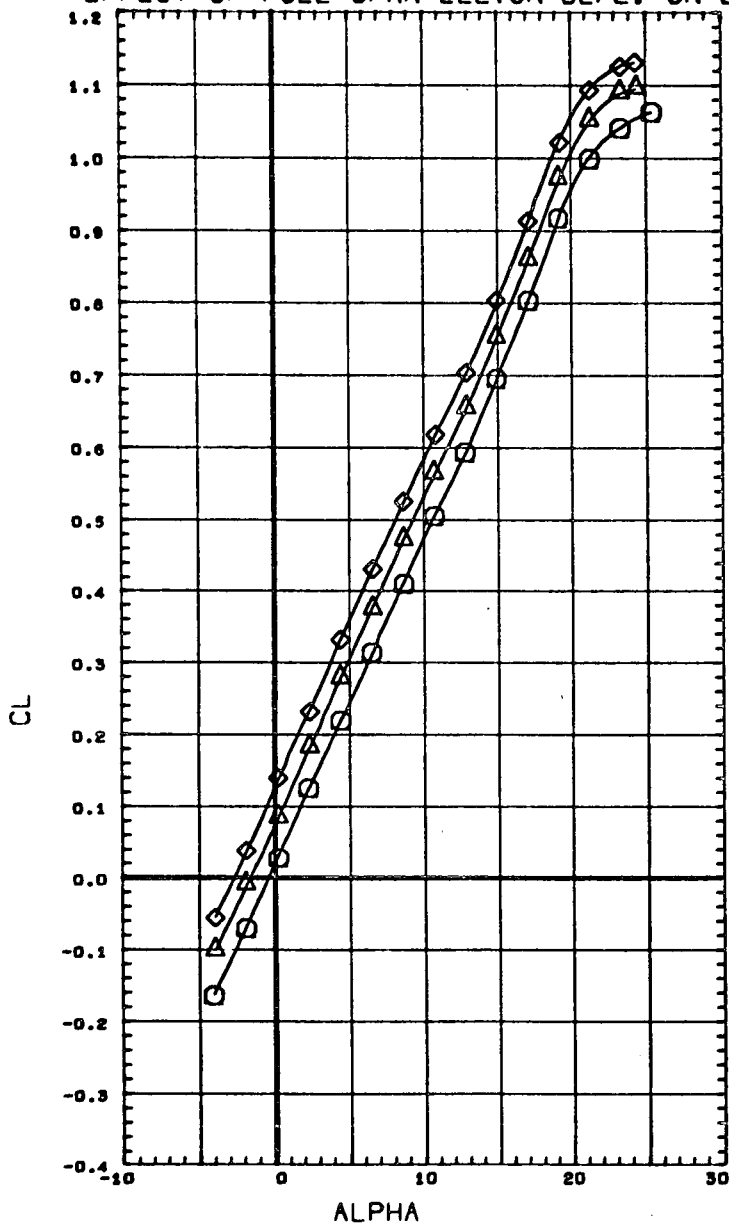
DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6030)	GDLST 603-0 830W23C10V14E38
(AD6028)	GDLST 603-0 830W23C10V14E38
(AD6002)	GDLST 603-0 830W23C10V14E38
(AD6024)	GDLST 603-0 830W23C10V14E38
(AD6026)	GDLST 603-0 830W23C10V14E38

MACH 0.201



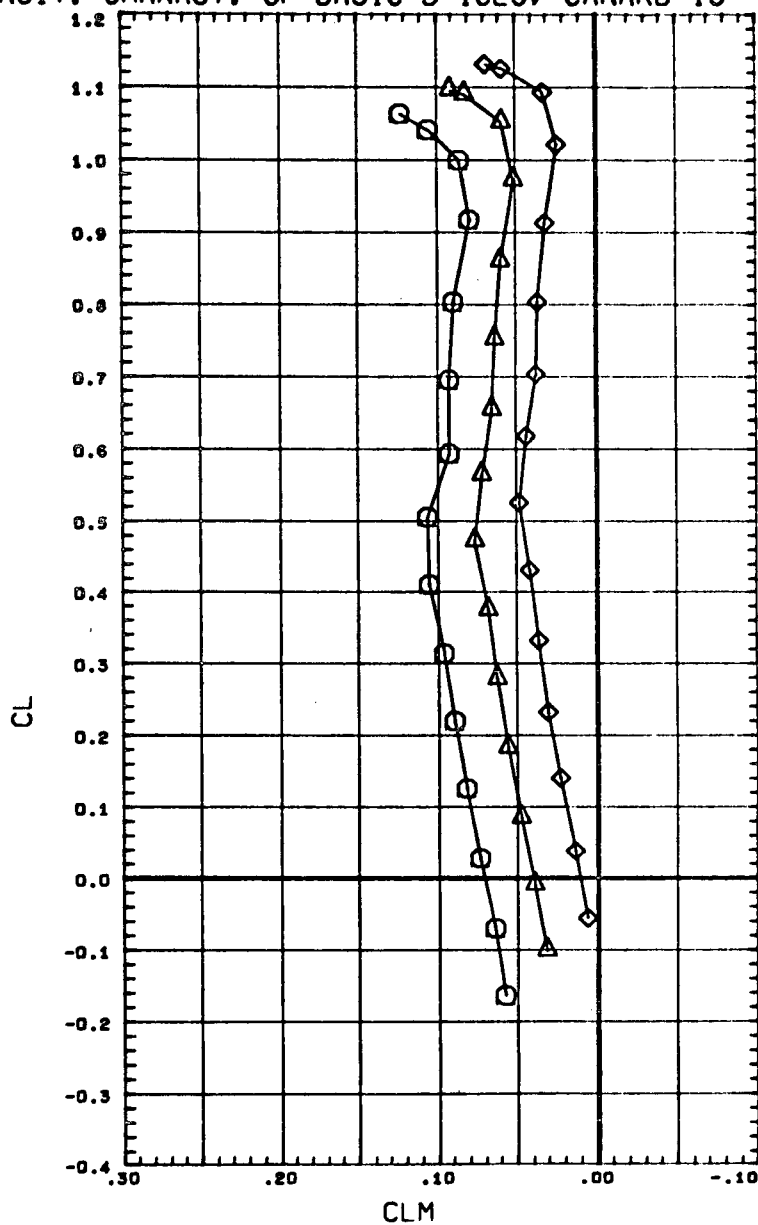
BETA	ELEVTR	CANARD	AILRON	REFERENCE INFORMATION
0.000	-10.000	0.000	0.000	SREF 492.4804 SQ. IN
0.000	-5.000	0.000	0.000	LREF 16.1880 IN.
0.000	0.000	0.000	0.000	BREF 34.6320 IN.
0.000	5.000	0.000	0.000	XMRF 29.0780 IN.
0.000	10.000	0.000	0.000	YMRF 0.0000 IN.
				ZMRF 0.0000 IN.
				SCALE 0.0200

EFFECT OF FULL SPAN ELEVON DEFL. ON LONGIT. CHARACT. OF BASIC B-18E3, CANARD=15



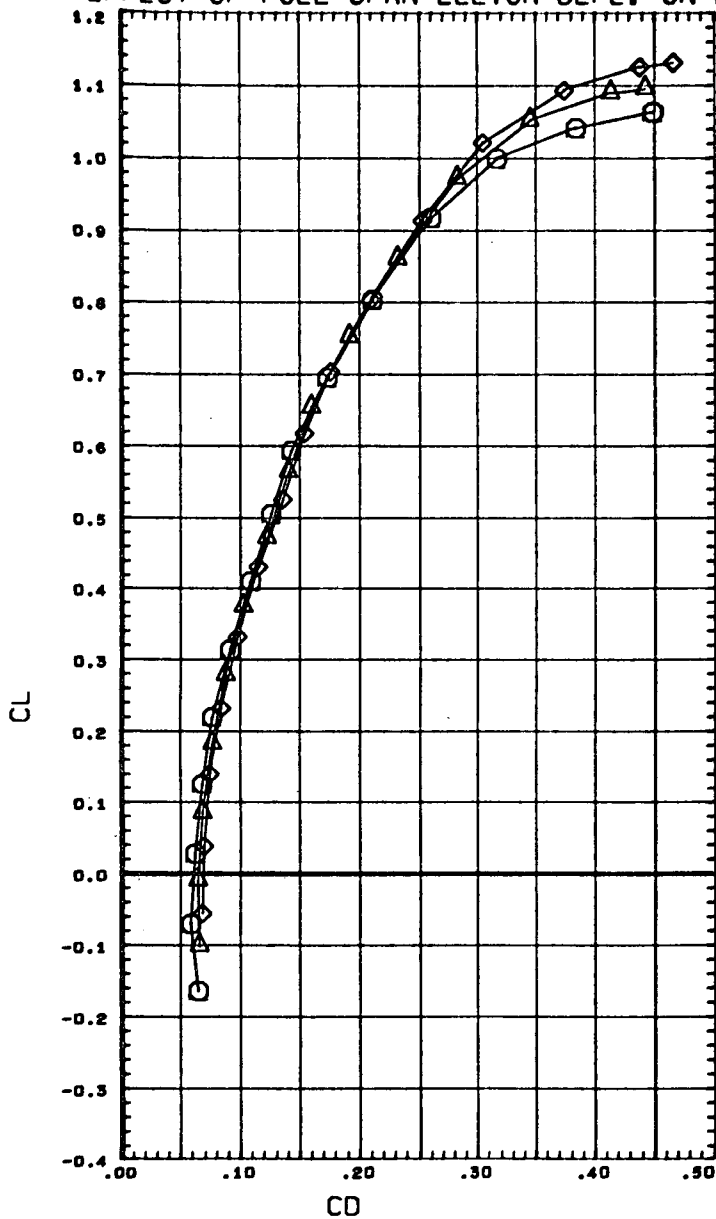
DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6011)	GDLST 603-0 B30W23C10V14E38
(AD6022)	GDLST 603-0 B30W23C10V14E38
(AD6020)	GDLST 603-0 B30W23C10V14E38

MACH 0.201



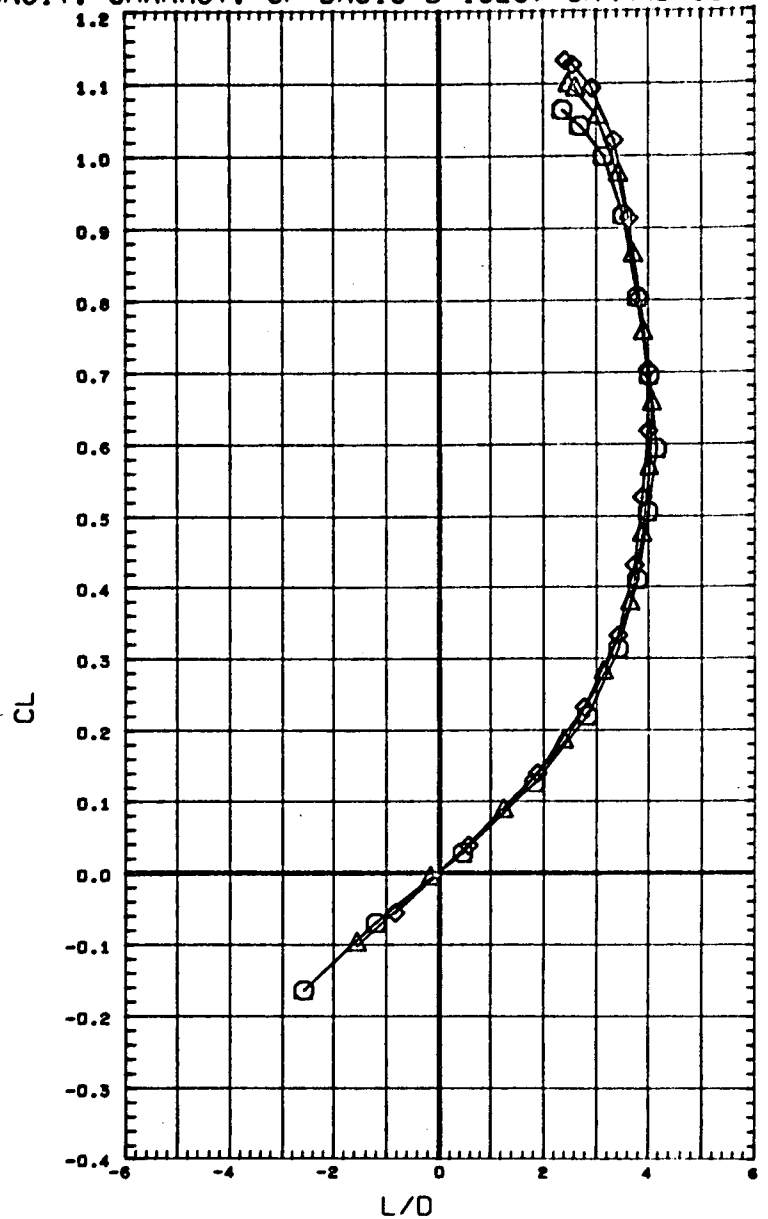
BETA	ELEVTR	CANARD	AILRON	REFERENCE INFORMATION
0.000	0.000	15.000	0.000	SREF 492.4804 SQ. IN
0.000	5.000	15.000	0.000	LREF 16.1880 IN.
0.000	10.000	15.000	0.000	BREF 34.6320 IN.
				XMRP 29.0780 IN.
				YMRP 0.0000 IN.
				ZMRP 0.0000 IN.
				SCALE 0.0200

EFFECT OF FULL SPAN ELEVON DEFL. ON LONGIT. CHARACT. OF BASIC B-18E3, CANARD=15



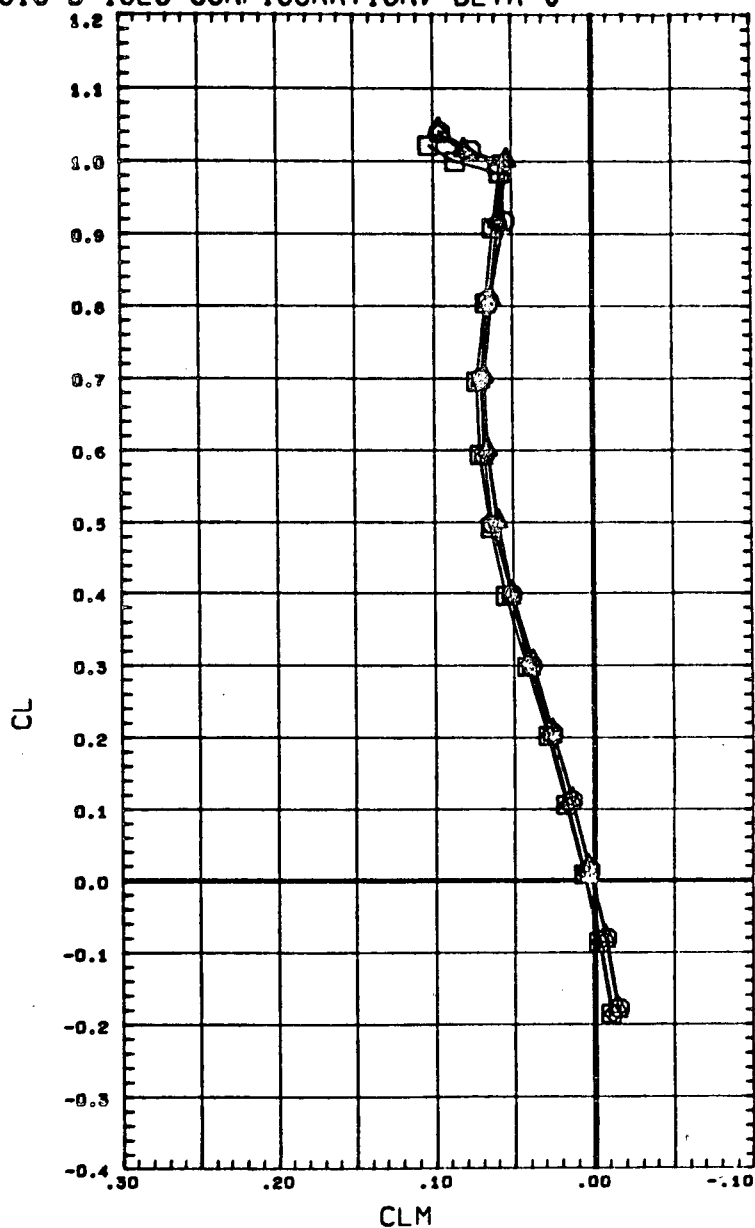
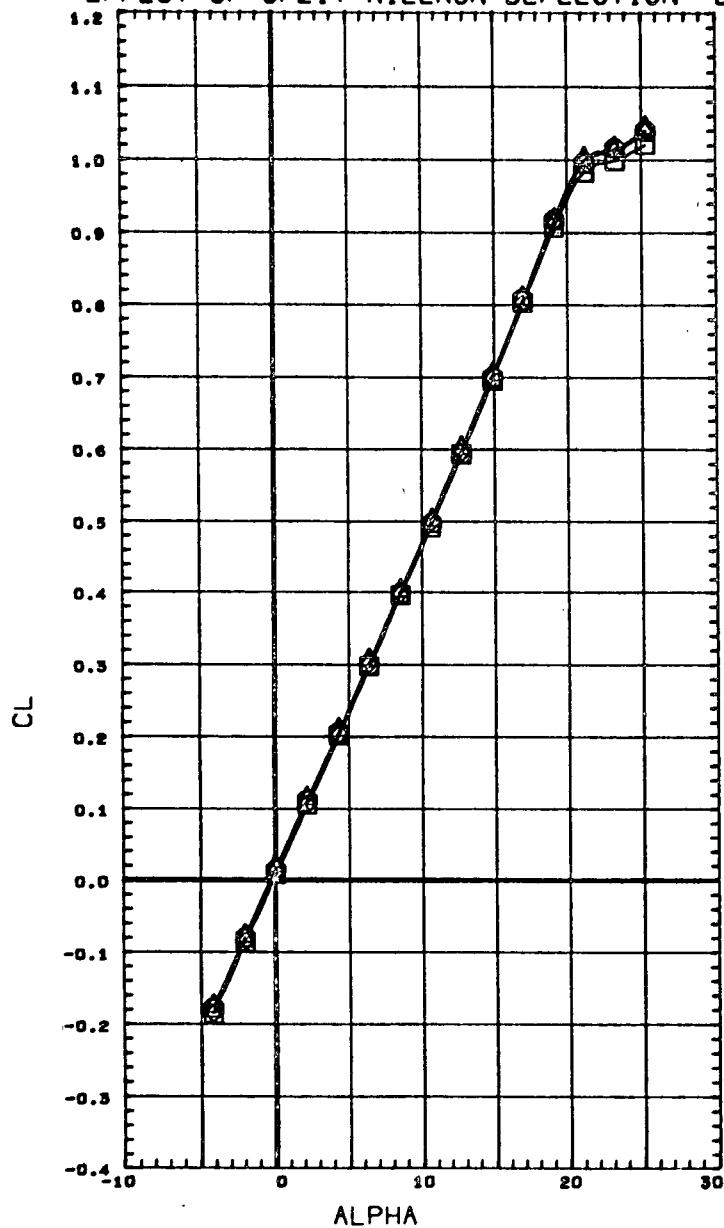
DATA SET SYMBOL	SYMBOL	CONFIGURATION DESCRIPTION
(AD6011)	○	GDLST 603-0 830W23C10V14E38
(AD6022)	△	GDLST 603-0 830W23C10V14E38
(AD6020)	◇	GDLST 603-0 830W23C10V14E38

MACH 0.201



BETA	ELEVTR	CANARD	AILRON	REFERENCE INFORMATION
0.000	0.000	15.000	0.000	SREF 492.4804 SQ. IN
0.000	5.000	15.000	0.000	LREF 16.1880 IN.
0.000	10.000	15.000	0.000	BREF 34.6320 IN.
				XMRP 29.0780 IN.
				YMRP 0.0000 IN.
				ZMRP 0.0000 IN.
				SCALE 0.0200

EFFECT OF SPLIT AILERON DEFLECTION- BASIC B-18E3 CONFIGURATION, BETA=0

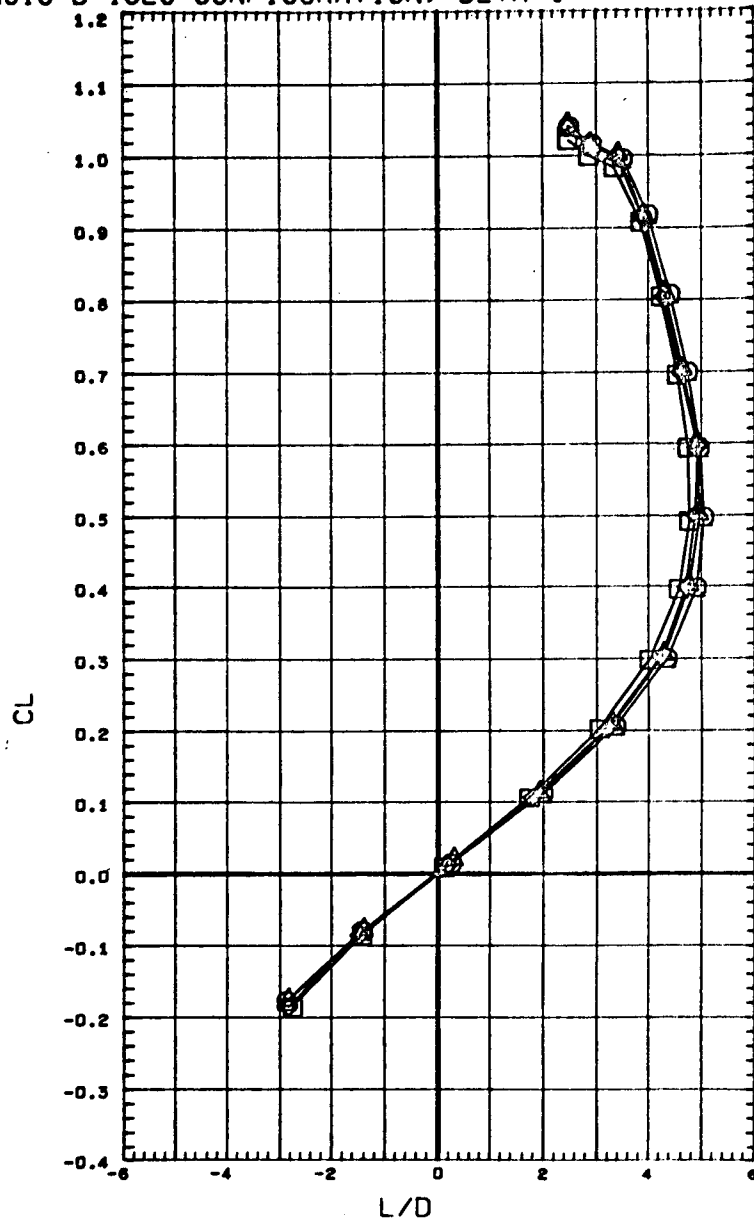
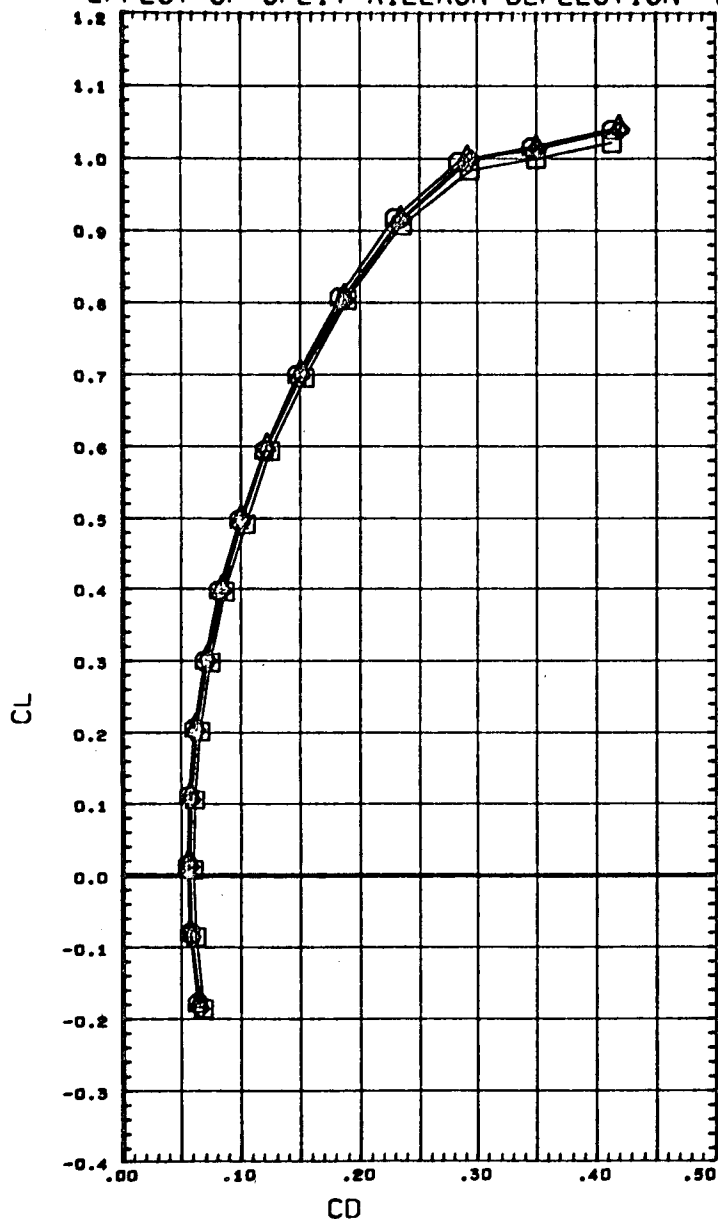


DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6002)	GDLST 603-0 830W23C10V14E38
(AD6036)	GDLST 603-0 830W23C10V14E38 (SPLIT ELEVONS)
(AD6034)	GDLST 603-0 830W23C10V14E38 (SPLIT ELEVONS)
(AD6032)	GDLST 603-0 830W23C10V14E38

MACH 0.201

ELEVTR	CANARD	RUDDER	AILRON	REFERENCE INFORMATION
0.000	0.000	0.000	0.000	SREF 492.4804 sq. IN
0.000	0.000	0.000	3.330	LREF 16.1880 IN.
0.000	0.000	0.000	6.670	BREF 34.6320 IN.
0.000	0.000	0.000	10.000	XMRP 29.0780 IN.
				YMRP 0.0000 IN.
				ZMRP 0.0000 IN.
				SCALE 0.0200

EFFECT OF SPLIT AILERON DEFLECTION- BASIC B-18E3 CONFIGURATION, BETA=0

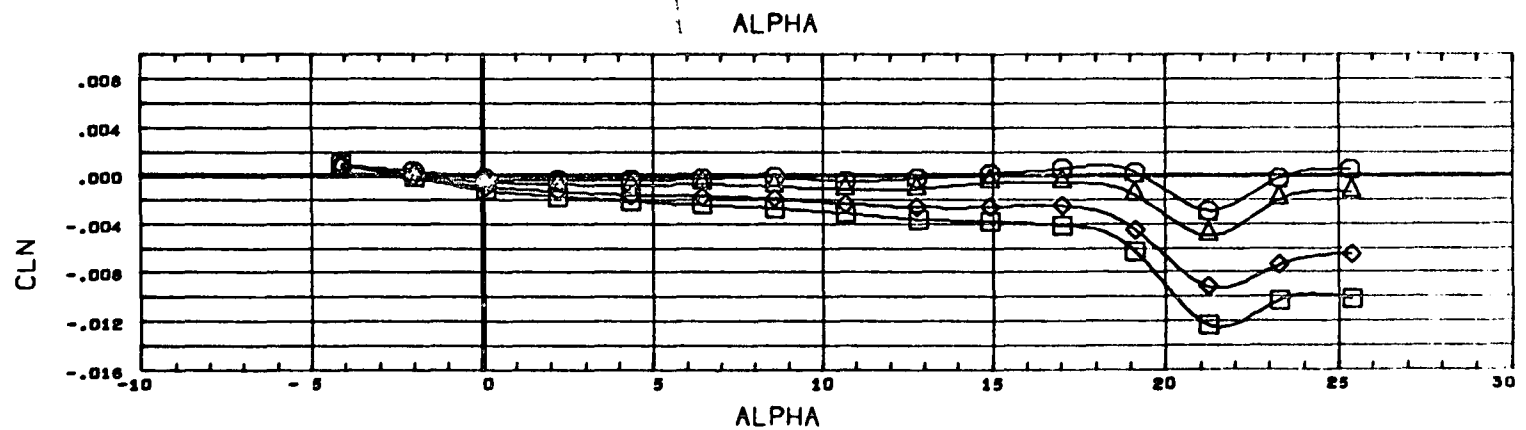
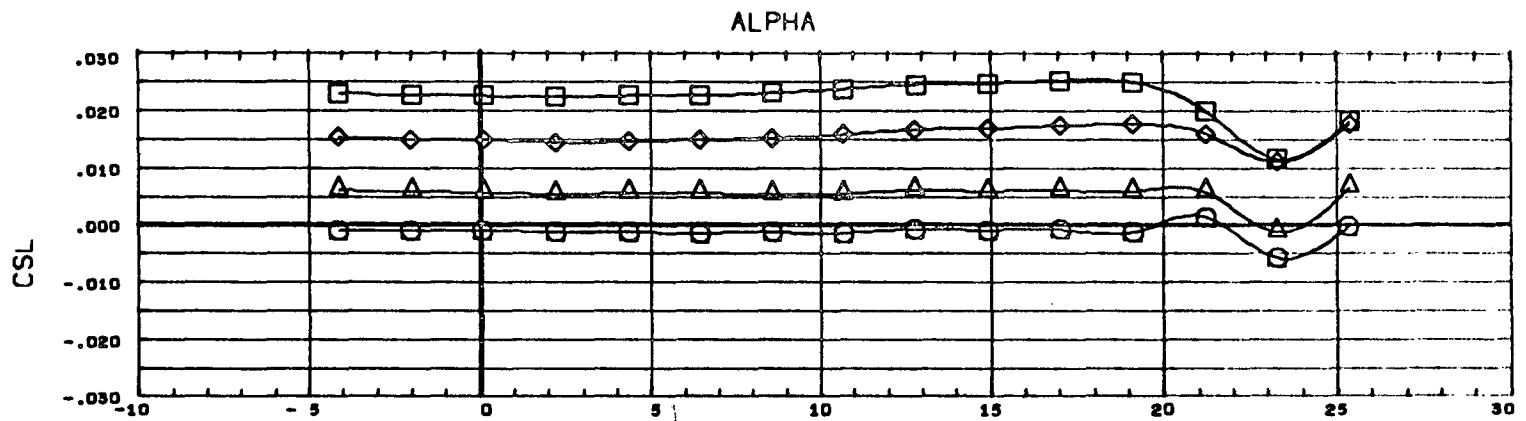
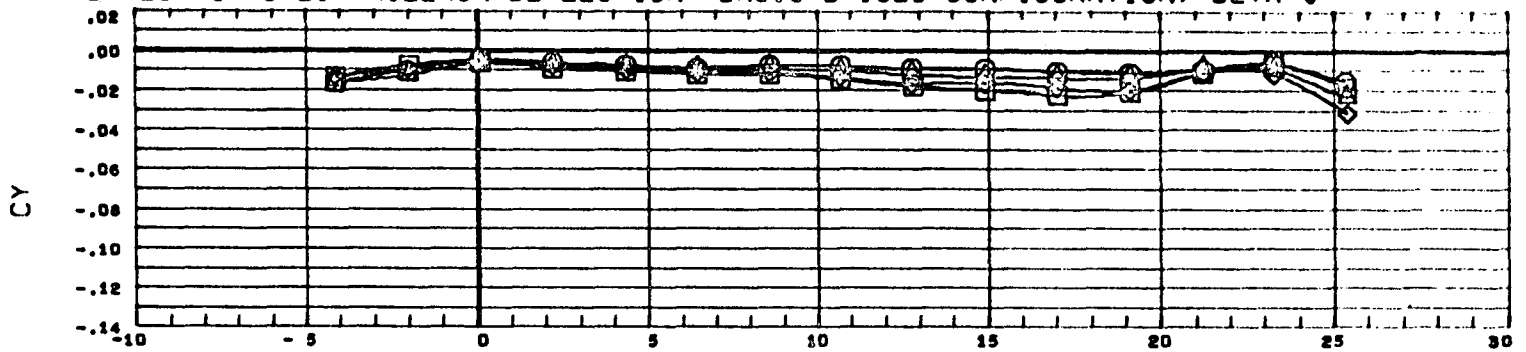


DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6002)	GDLST 603-0 B30W23C10V14E38
(AD6036)	GDLST 603-0 B30W23C10V14E38 (SPLIT ELEVONS)
(AD6034)	GDLST 603-0 B30W23C10V14E38 (SPLIT ELEVONS)
(AD6032)	GDLST 603-0 B30W23C10V14E38

MACH 0.201

ELEVTR	CANARD	RUDDER	AILRON	REFERENCE INFORMATION	
0.000	0.000	0.000	0.000	SREF	492.4804 SQ. IN
0.000	0.000	0.000	3.330	LREF	16.1880 IN.
0.000	0.000	0.000	6.670	BREF	34.6320 IN.
0.000	0.000	0.000	10.000	XMRP	29.0780 IN.
				YMRP	0.0000 IN.
				ZMRP	0.0000 IN.
				SCALE	0.0200

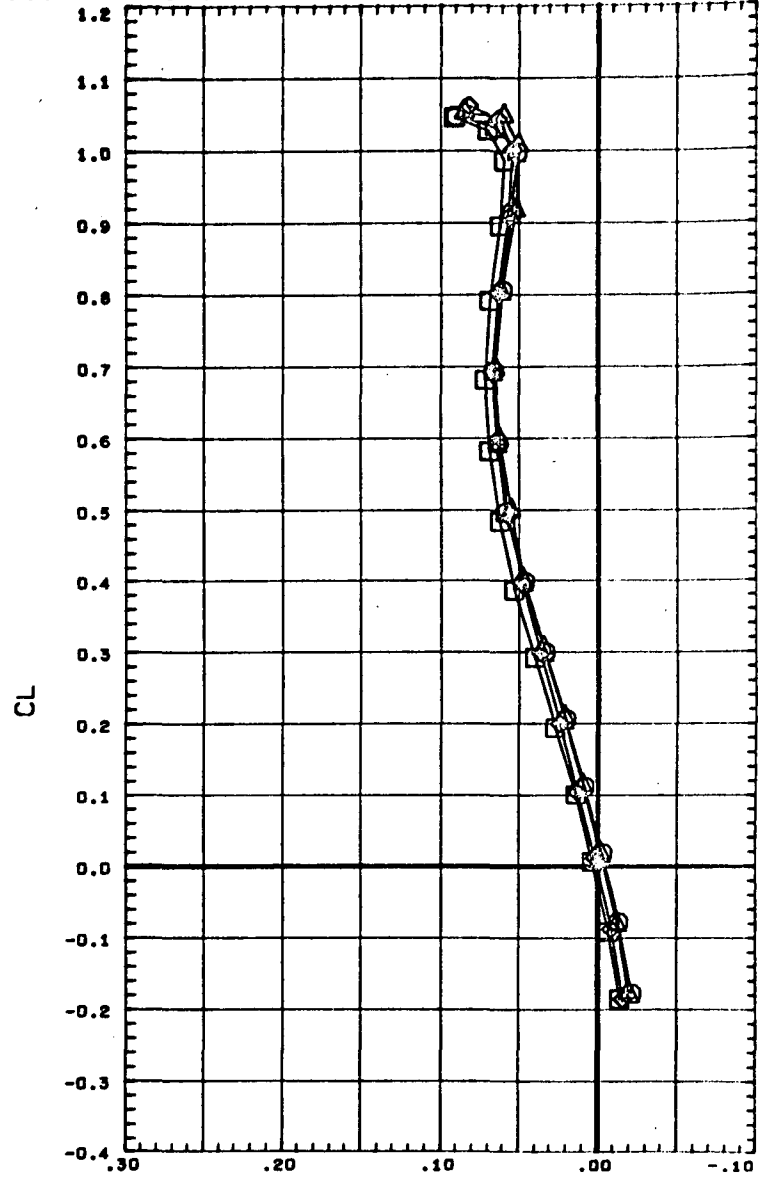
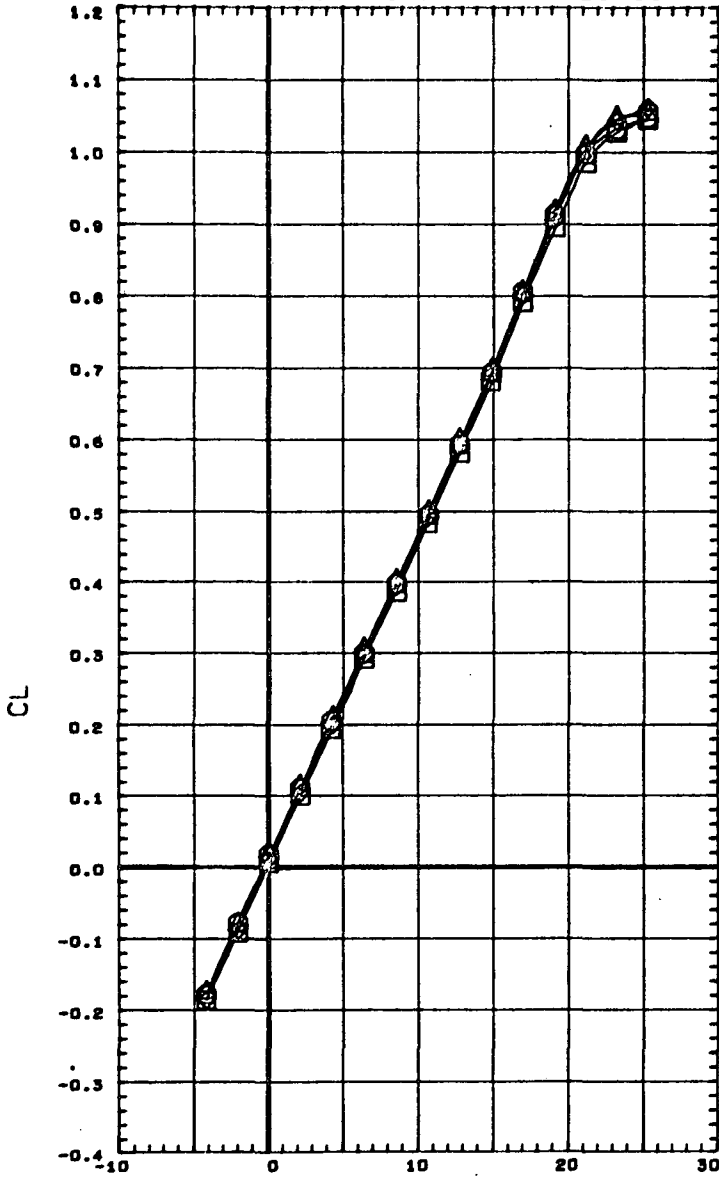
EFFECT OF SPLIT AILERON DEFLECTION- BASIC B-18E3 CONFIGURATION, BETA=0



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	CANARD	RUDDER	AILRON	REFERENCE INFORMATION		
(AD6002)	GDLST 603-0 B30W23C10V14E38	0.000	0.000	0.000	0.000	SREF	492.4804	SQ. IN
(AD6036)	GDLST 603-0 B30W23C10V14E38 (SPLIT ELEVONS)	0.000	0.000	0.000	3.330	LREF	16.1680	IN.
(AD6034)	GDLST 603-0 B30W23C10V14E38 (SPLIT ELEVONS)	0.000	0.000	0.000	6.670	BREF	34.6320	IN.
(AD6032)	GDLST 603-0 B30W23C10V14E38	0.000	0.000	0.000	10.000	XMRP	29.0780	IN.
						YMRP	0.0000	IN.
						ZMRP	0.0000	IN.
						SCALE	0.0200	

MACH 0.201

EFFECT OF SPLIT AILERON DEFLECTION- BASIC B-18E3 CONFIGURATION, BETA=5 DEG.

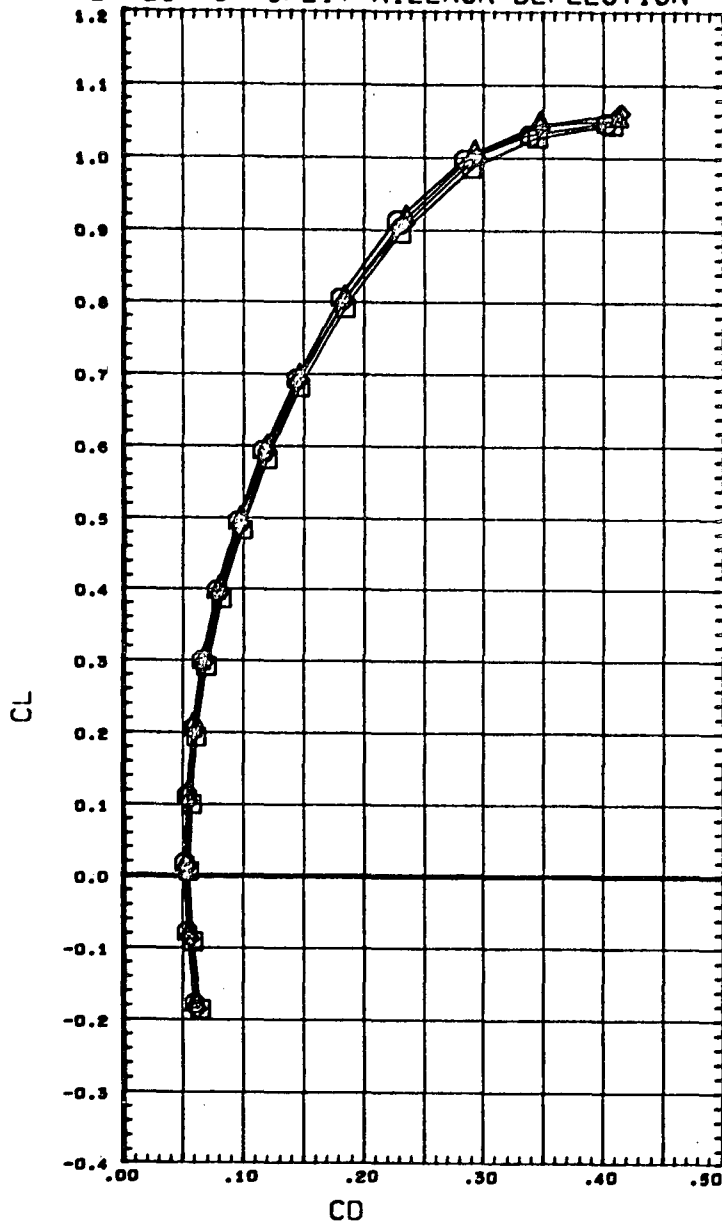


DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6003)	GDLST 603-0 B30W23C10V14E38
(AD6037)	GDLST 603-0 B30W23C10V14E38 (SPLIT ELEVONS)
(AD6035)	GDLST 603-0 B30W23C10V14E38 (SPLIT ELEVONS)
(AD6033)	GDLST 603-0 B30W23C10V14E38

MACH 0.201

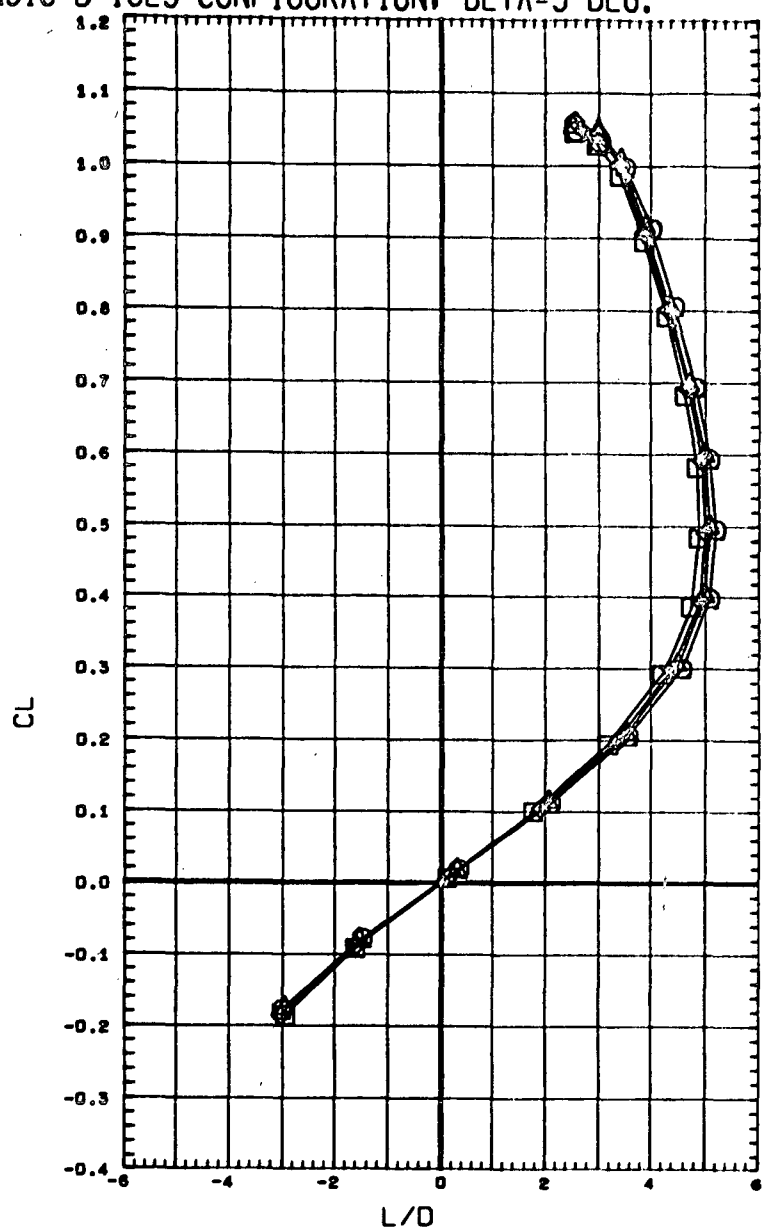
ELEVTR	CANARD	RUDDER	AILRON	REFERENCE INFORMATION
0.000	0.000	0.000	0.000	SREF 492.4804 SQ. IN
0.000	0.000	0.000	3.330	LREF 16.1880 IN.
0.000	0.000	0.000	6.670	BREF 34.6320 IN.
0.000	0.000	0.000	10.000	XMRP 29.0780 IN.
				YMRP 0.0000 IN.
				ZMRP 0.0000 IN.
				SCALE 0.0200

EFFECT OF SPLIT AILERON DEFLECTION- BASIC B-18E3 CONFIGURATION. BETA=5 DEG.



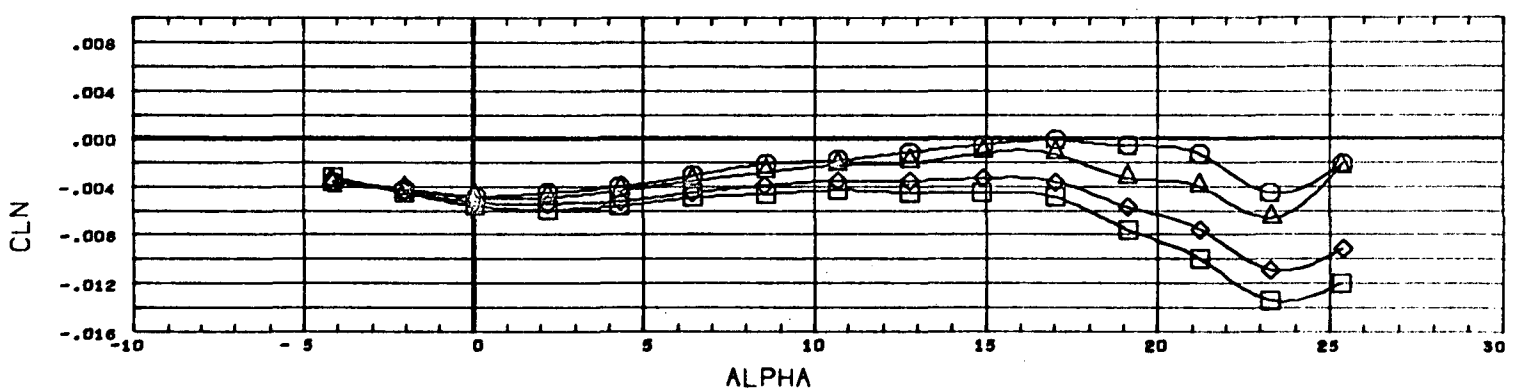
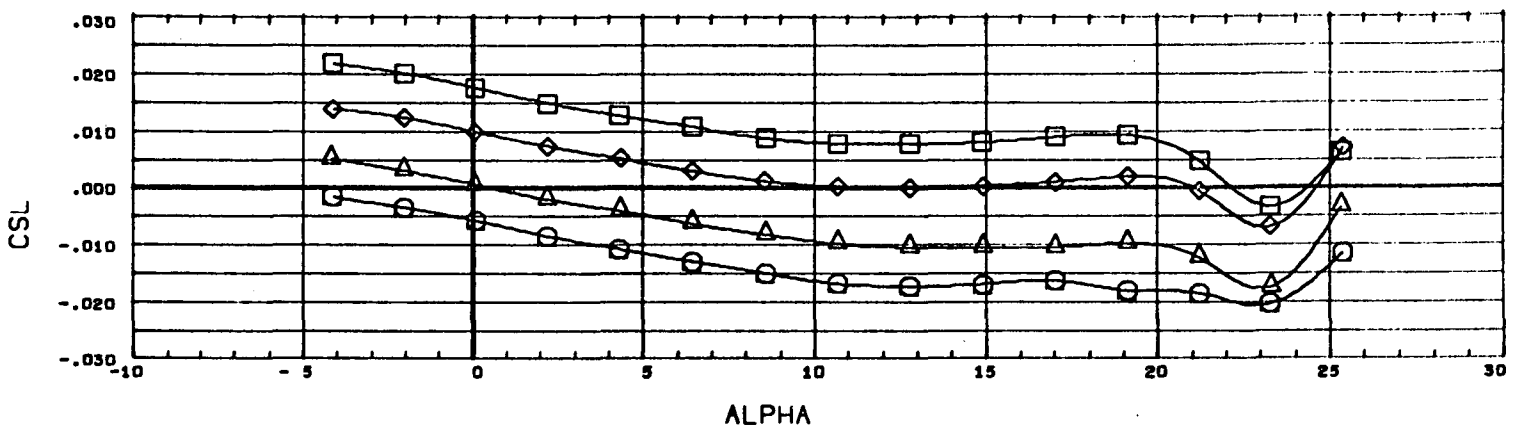
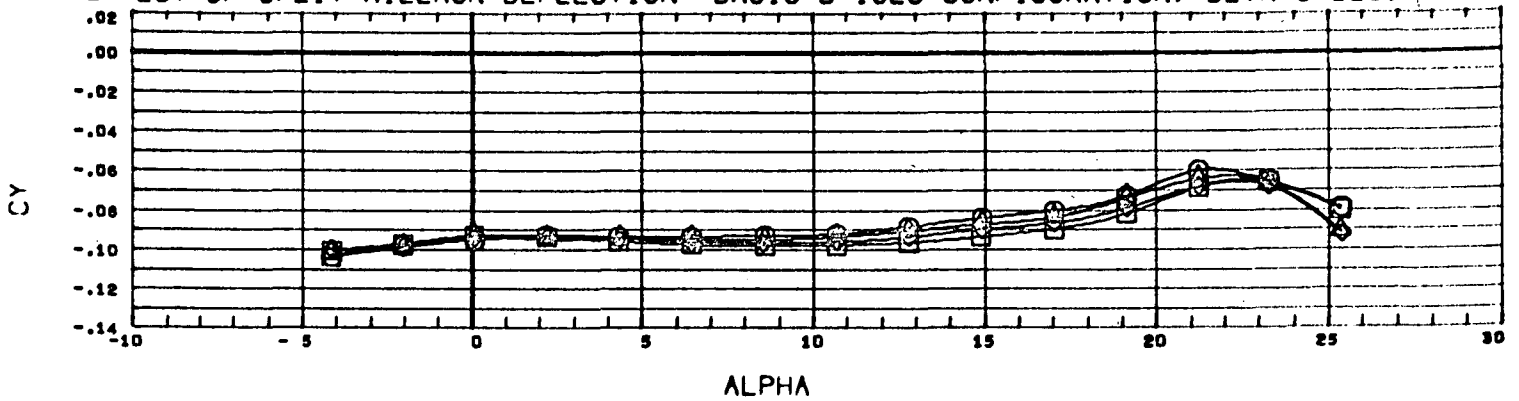
DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6003)	GDLST 603-0 B30W23C10V14E38
(AD6037)	GDLST 603-0 B30W23C10V14E38 (SPLIT ELEVONS)
(AD6035)	GDLST 603-0 B30W23C10V14E38 (SPLIT ELEVONS)
(AD6033)	GDLST 603-0 B30W23C10V14E38

MACH 0.201



ELEVTR	CANARD	RUDDER	AILRON	REFERENCE INFORMATION
0.000	0.000	0.000	0.000	SREF 492.4804 SQ. IN
0.000	0.000	0.000	3.330	LREF 16.1880 IN.
0.000	0.000	0.000	6.670	BREF 34.6320 IN.
0.000	0.000	0.000	10.000	XMRP 29.0760 IN.
				YMRP 0.0000 IN.
				ZMRP 0.0000 IN.
				SCALE 0.0200

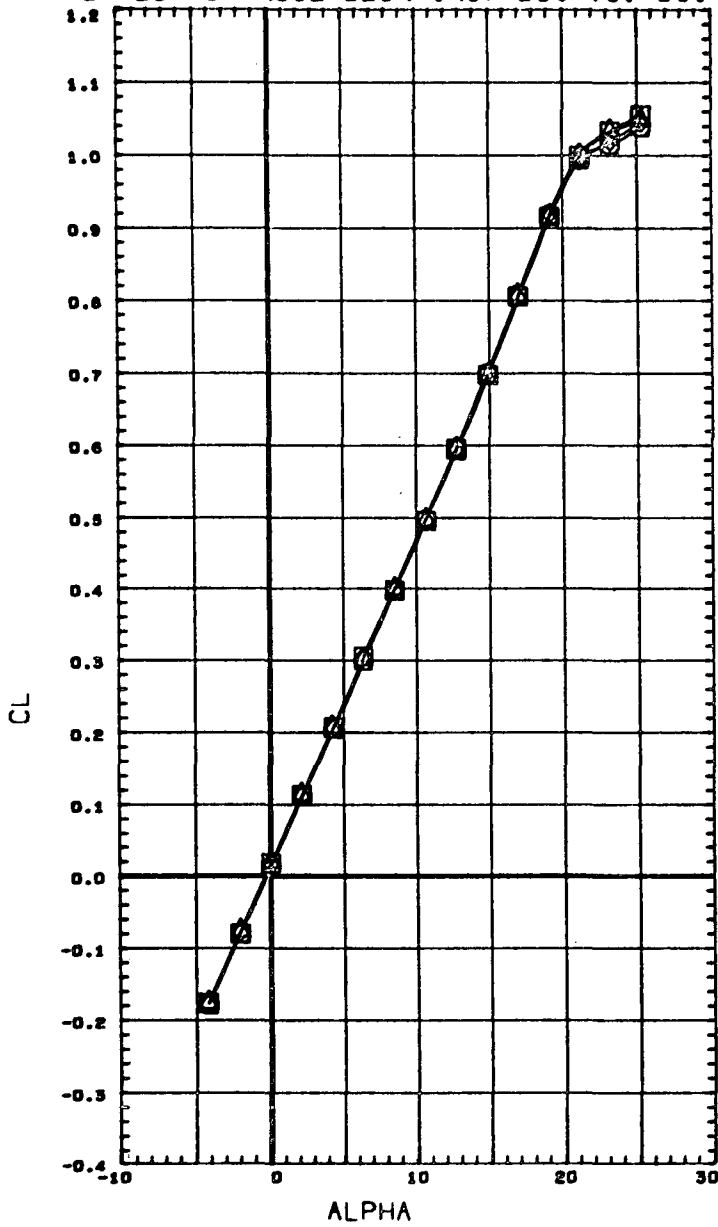
EFFECT OF SPLIT AILERON DEFLECTION- BASIC B-18E3 CONFIGURATION, BETA=5 DEG.



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	CANARD	RUDDER	AILRON	REFERENCE INFORMATION		
(AD6003)	□	GDLST 603-0 B30W23C10V14E38	0.000	0.000	0.000	0.000	SREF	492.4804	SQ. IN
(AD6037)	△	GDLST 603-0 B30W23C10V14E38 (SPLIT ELEVONS)	0.000	0.000	0.000	3.330	LREF	16.1880	IN.
(AD6035)	◇	GDLST 603-0 B30W23C10V14E38 (SPLIT ELEVONS)	0.000	0.000	0.000	6.670	BREF	34.6320	IN.
(AD6033)	○	GDLST 603-0 B30W23C10V14E38	0.000	0.000	0.000	10.000	XMRF	29.0780	IN.
							YMRF	0.0000	IN.
							ZMRF	0.0000	IN.
							SCALE	0.0200	

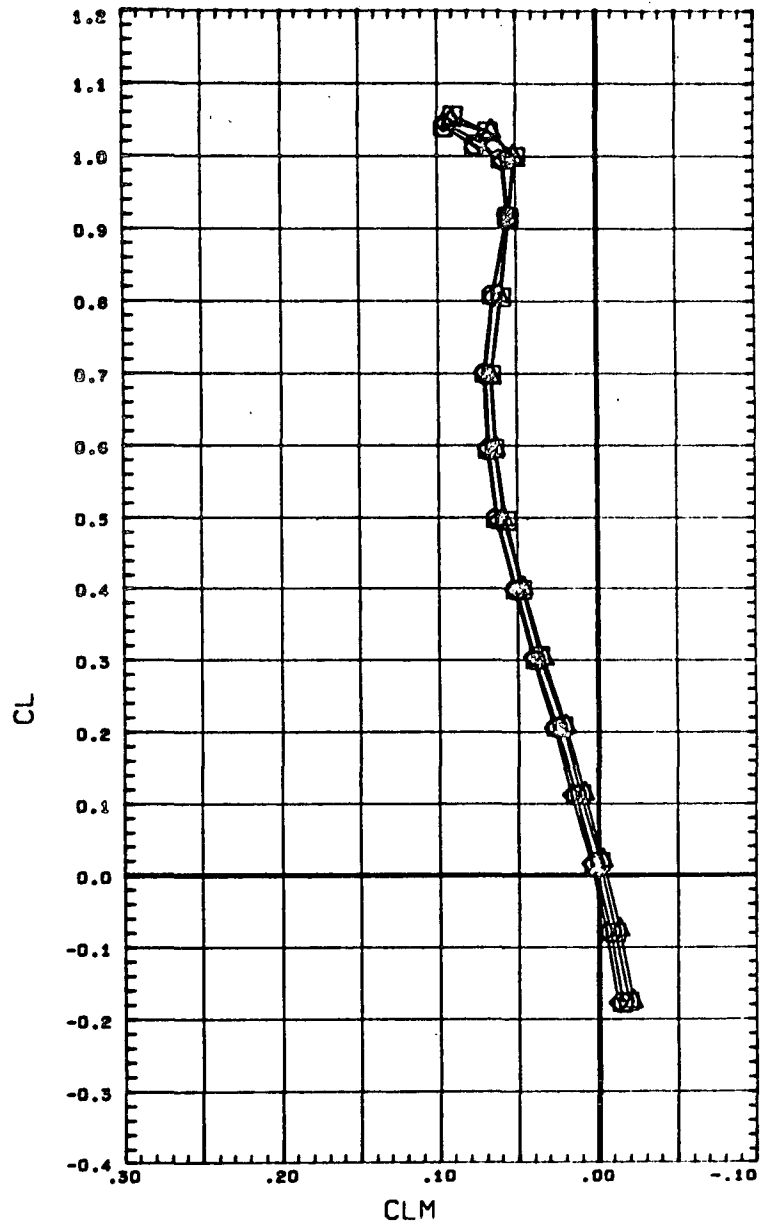
MACH 0.201

EFFECT OF NOSE BLUNTING, B30 VS. B31



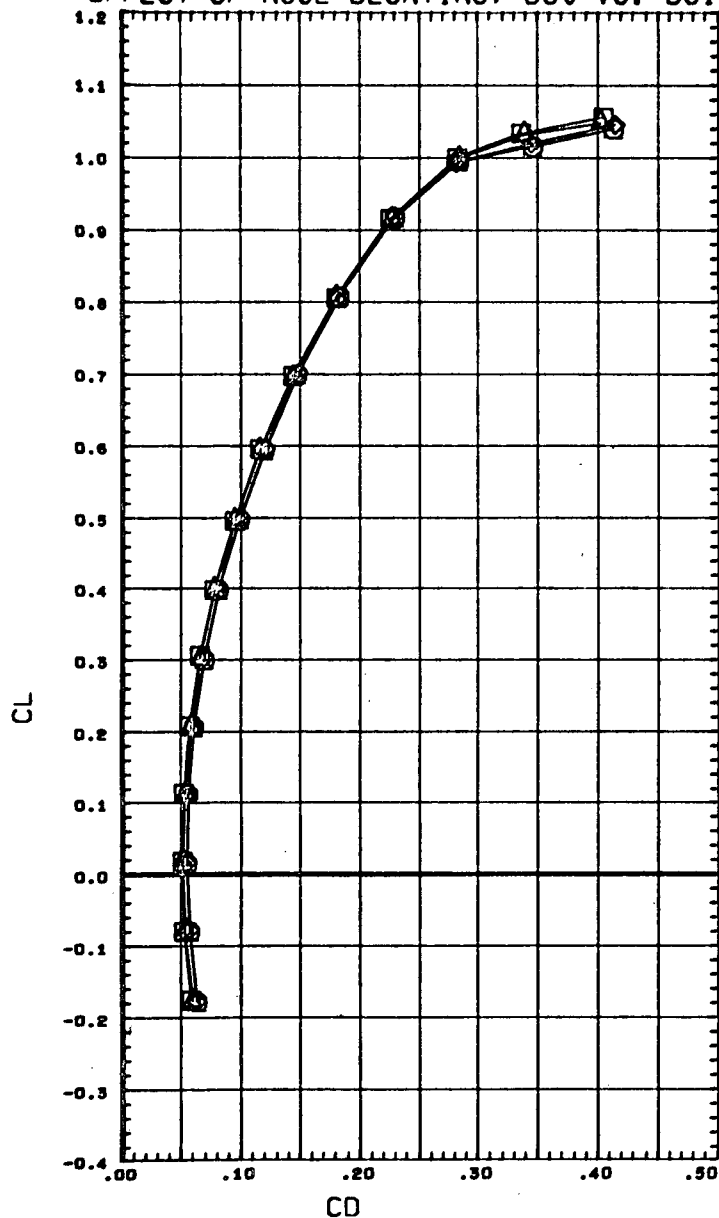
DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6002)	GDLST 603-0 B30W23C10V14E38
(AD6003)	GDLST 603-0 B30W23C10V14E38
(AD6015)	GDLST 603-0 B31W23C10V14E38
(AD6016)	GDLST 603-0 B31W23C10V14E38

MACH 0.201



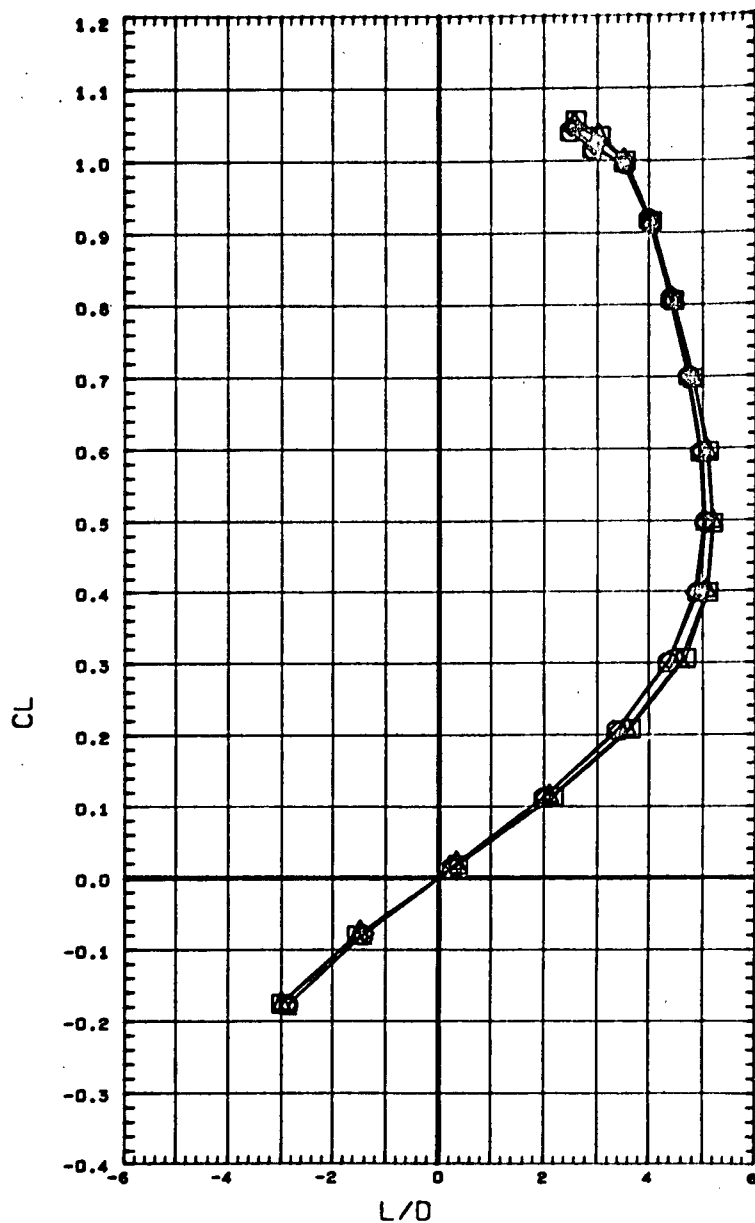
BETA	ELEVTR	CANARD	AILRON	REFERENCE INFORMATION
0.000	0.000	0.000	0.000	SREF 492.4804 SQ. IN
5.000	0.000	0.000	0.000	LREF 16.1880 IN.
0.000	0.000	0.000	0.000	BREF 34.6320 IN.
5.000	0.000	0.000	0.000	XMRP 29.0780 IN.
				YMRP 0.0000 IN.
				ZMRP 0.0000 IN.
				SCALE 0.0200

EFFECT OF NOSE BLUNTING, B30 VS. B31



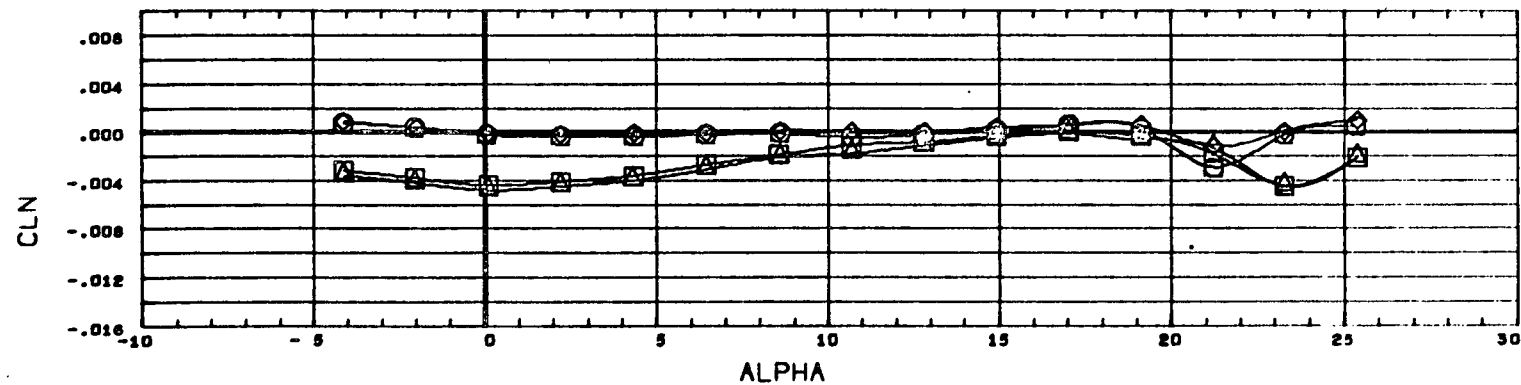
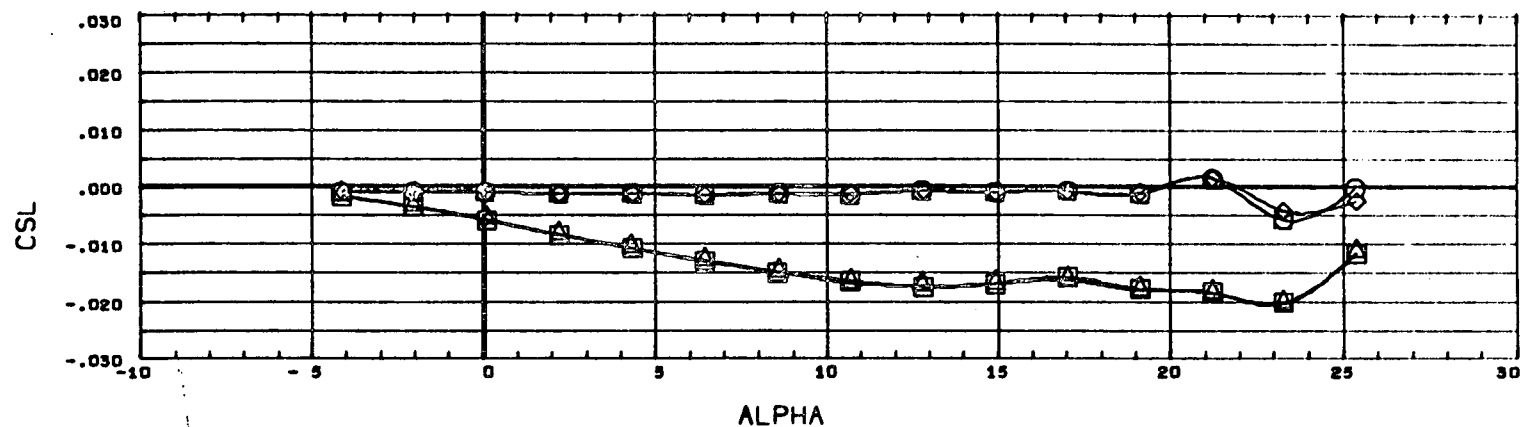
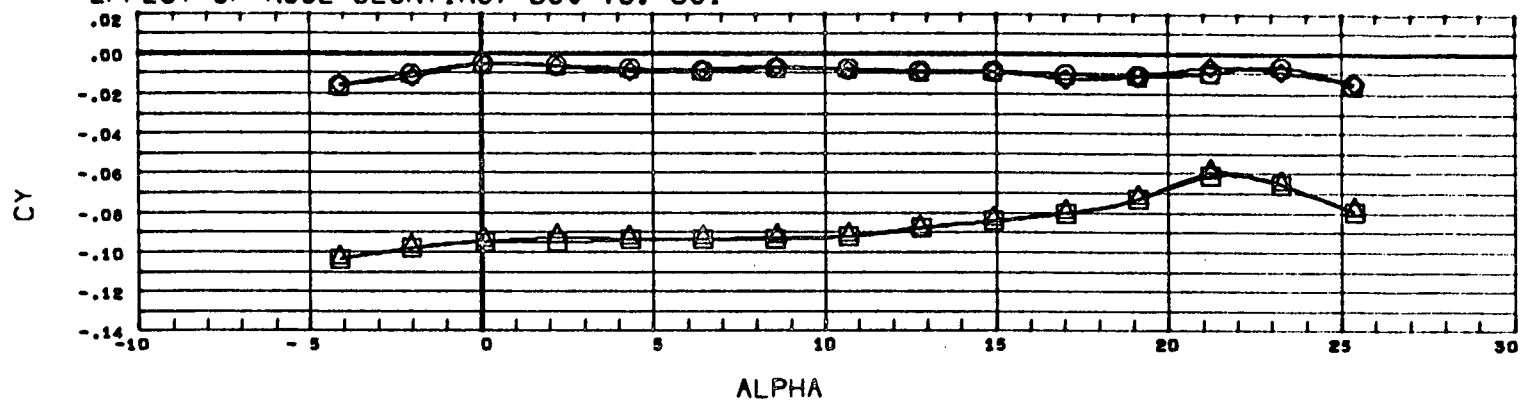
DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6002) ○	GDLST 603-0 B30W23C10V14E38
(AD6003) □	GDLST 603-0 B30W23C10V14E38
(AD6015) ◇	GDLST 603-0 B31W23C10V14E38
(AD6016) □	GDLST 603-0 B31W23C10V14E38

MACH 0.201



BETA	ELEVTR	CANARD	AILRON	REFERENCE INFORMATION		
0.000	0.000	0.000	0.000	SREF	492.4804	99. IN
5.000	0.000	0.000	0.000	LREF	16.1880	IN.
0.000	0.000	0.000	0.000	BREF	34.6320	IN.
5.000	0.000	0.000	0.000	XMRP	29.0780	IN.
				YMRP	0.0000	IN.
				ZMRP	0.0000	IN.
				SCALE	0.0200	

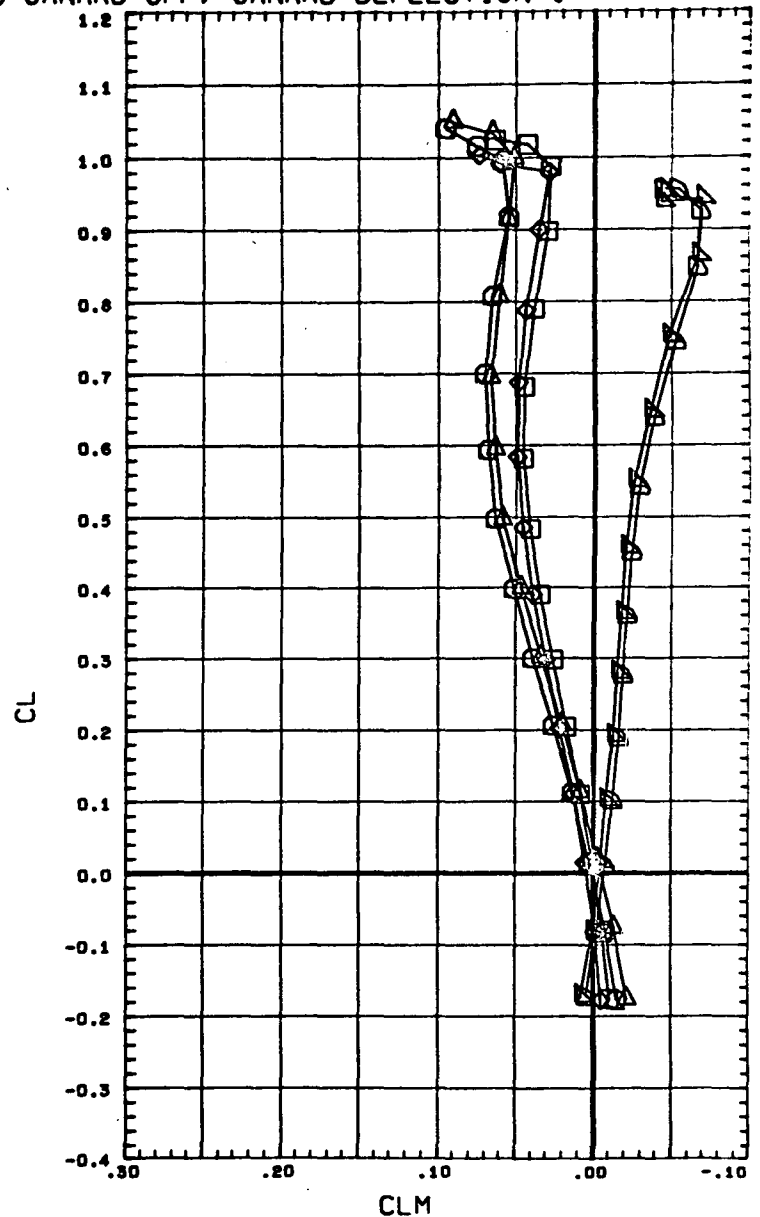
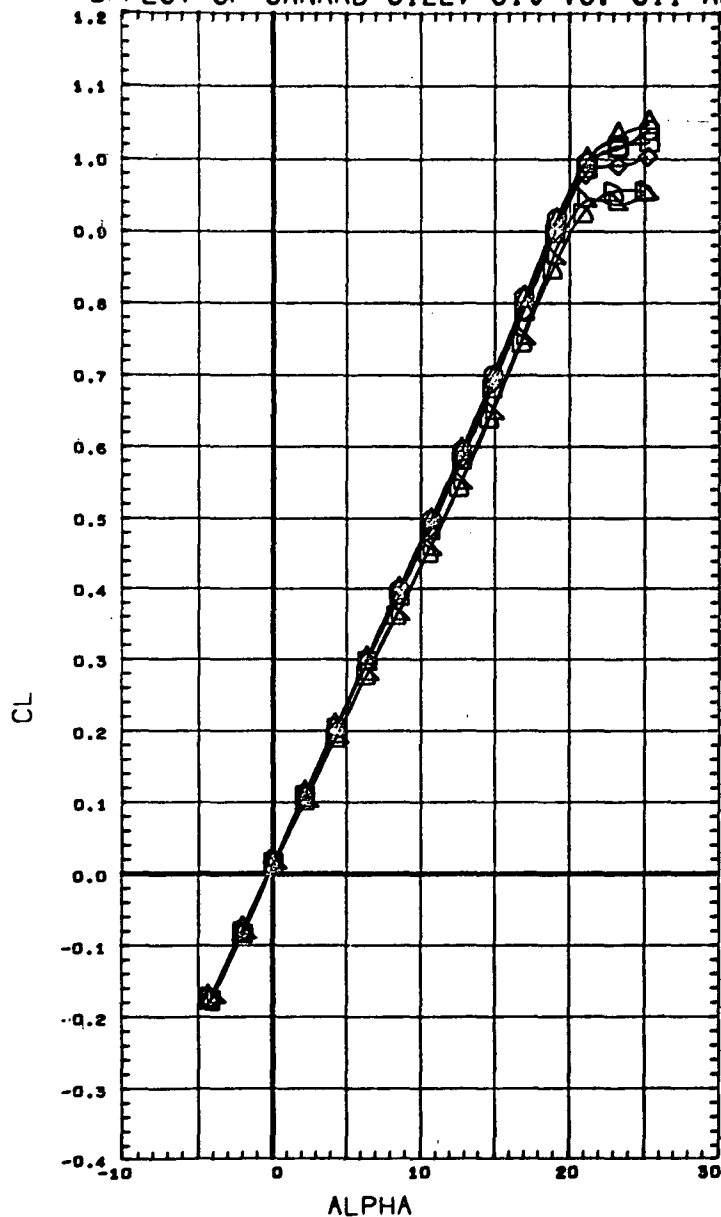
EFFECT OF NOSE BLUNTING, B30 VS. B31



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	RUDDER	AILRON	REFERENCE INFORMATION	
(AD6002)	GDLST 603-0 B30W23C10V14E38	0.000	0.000	0.000	0.000	SREF	492.4804 SQ. IN
(AD6003)	GDLST 603-0 B30W23C10V14E38	5.000	0.000	0.000	0.000	LREF	16.1880 IN.
(AD6015)	GDLST 603-0 B31W23C10V14E38	0.000	0.000	0.000	0.000	BREF	34.6320 IN.
(AD6016)	GDLST 603-0 B31W23C10V14E38	5.000	0.000	0.000	0.000	XMRP	29.0780 IN.
						YMRP	0.0000 IN.
						ZMRP	0.0000 IN.
						SCALE	0.0200

MACH 0.201

EFFECT OF CANARD SIZE, C10 VS. C11 AND CANARD OFF, CANARD DEFLECTION=0

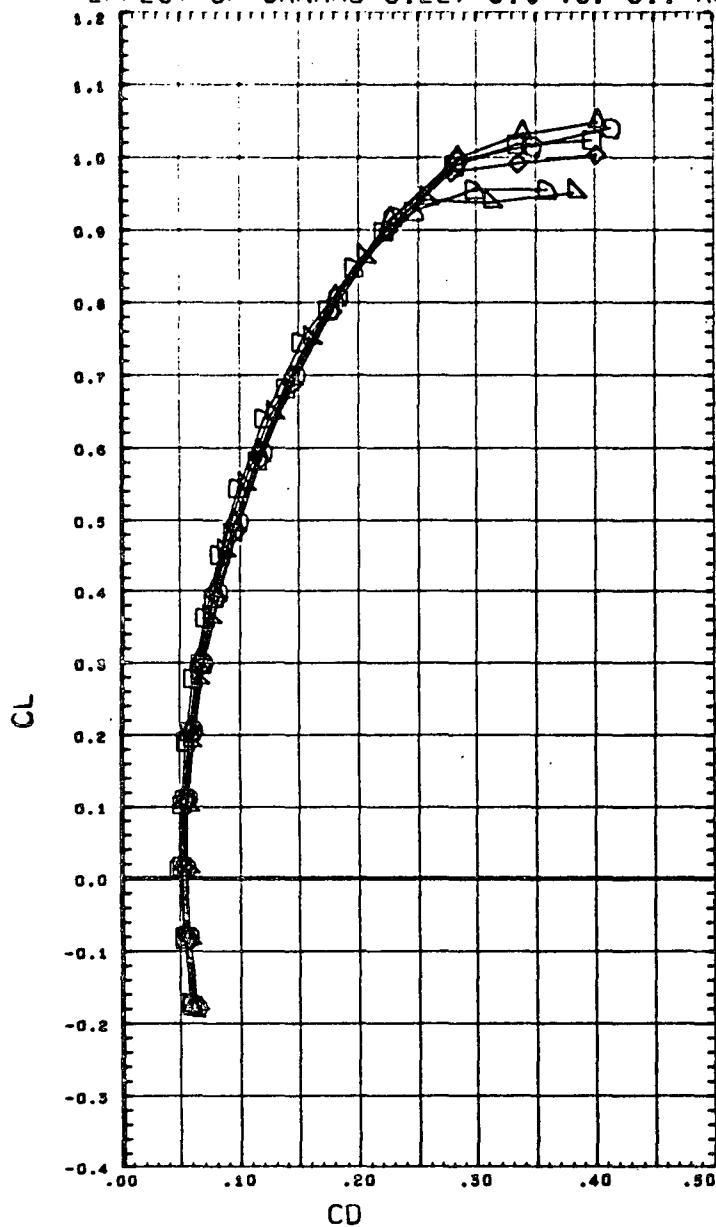


DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6002)	GDLST 603-0 B30W23C10V14E38
(AD6003)	GDLST 603-0 B30W23C10V14E38
(AD6046)	GDLST 603-0 B30W23C11V14E38
(AD6047)	GDLST 603-0 B30W23C11V14E38
(AD6044)	GDLST 603-0 B30W23V14E38
(AD6045)	GDLST 603-0 B30W23V14E38

MACH 0.201

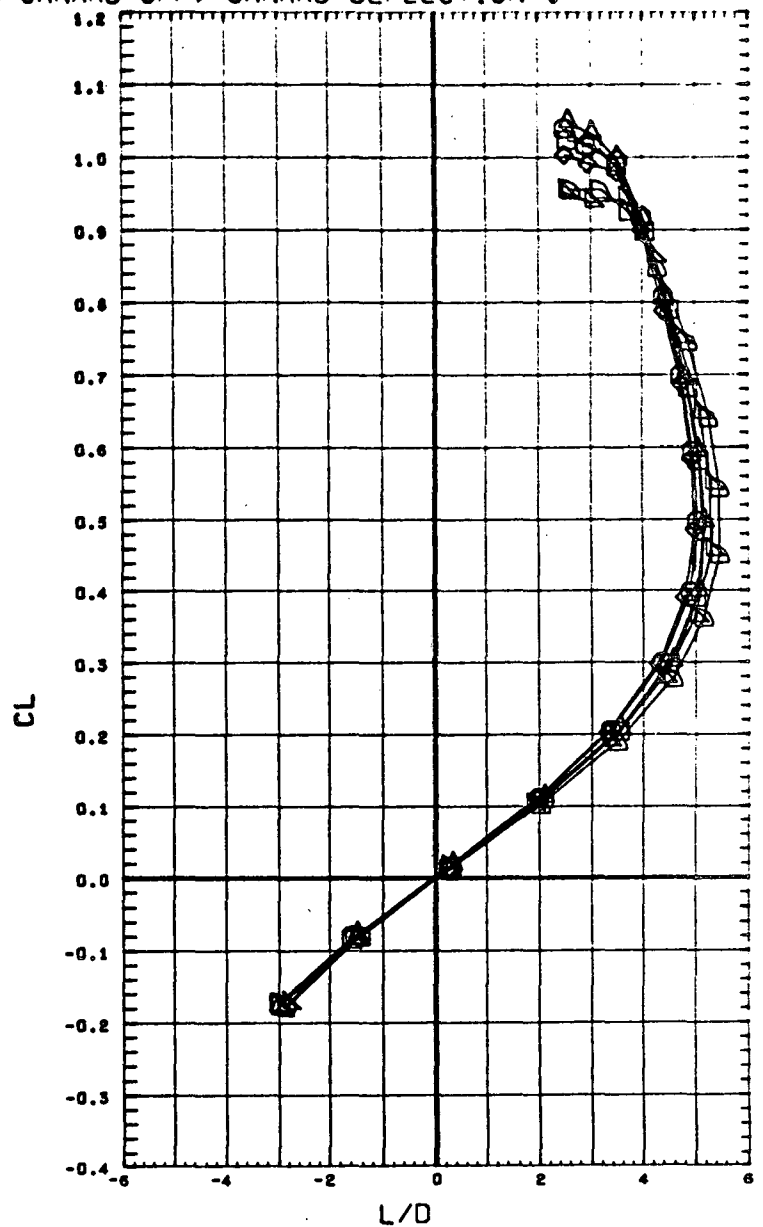
BETA	ELEVTR	RUDDER	AILRON	REFERENCE INFORMATION
0.000	0.000	0.000	0.000	SREF 492.4804 SQ. IN
5.000	0.000	0.000	0.000	LREF 16.1880 IN.
0.000	0.000	0.000	0.000	BREF 34.6320 IN.
5.000	0.000	0.000	0.000	XMRP 29.0780 IN.
0.000	0.000	0.000	0.000	YMRP 0.0000 IN.
5.000	0.000	0.000	0.000	ZMRP 0.0000 IN.
				SCALE 0.0200

EFFECT OF CANARD SIZE, C10 VS. C11 AND CANARD OFF, CANARD DEFLECTION=0



DATA SET SYMBOL	CONFIGURATION	DESCRIPTION
(AC6002)	GCLST 603-0	830W23C10V14E38
(AC6003)	GCLST 603-0	830W23C10V14E38
(AC6046)	GCLST 603-0	830W23C11V14E38
(AC6047)	GCLST 603-0	830W23C11V14E38
(AC6044)	GCLST 603-0	830W23V14E38
(AC6045)	GCLST 603-0	830W23V14E38

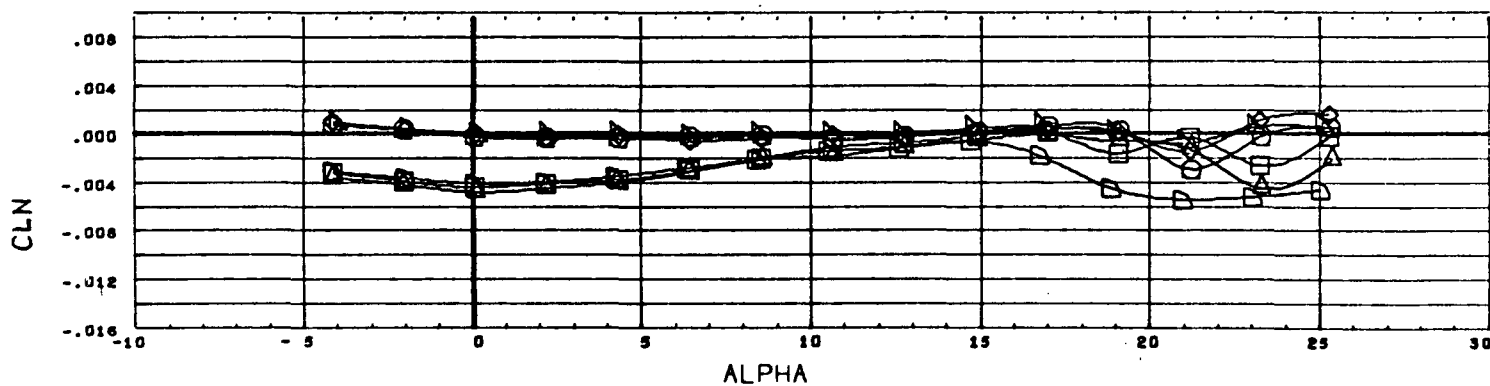
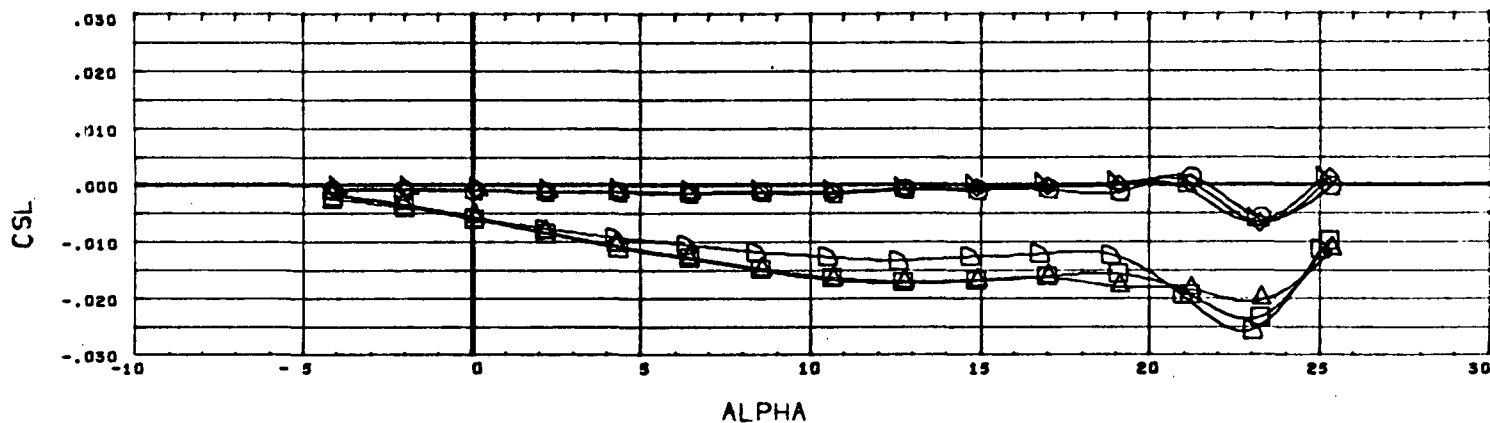
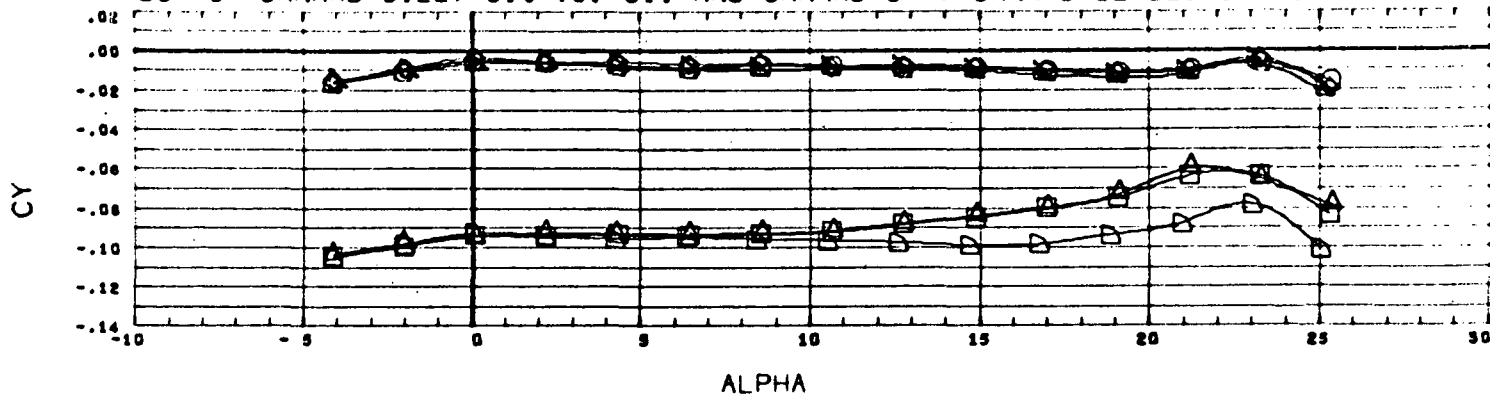
MACH .20



BETA	ELEVTR	RUDDER	AILRON	REFERENCE INFORMATION	
0.000	0.000	0.000	0.000	SREF	492.4804 SQ. IN
5.000	0.000	0.000	0.000	LREF	16.1880 IN.
0.000	0.000	0.000	0.000	BREF	34.6320 IN.
5.000	0.000	0.000	0.000	XMRP	29.0780 IN.
0.000	0.000	0.000	0.000	YMRP	0.0000 IN.
5.000	0.000	0.000	0.000	ZMRP	0.0000 IN.
				SCALE	0.0200

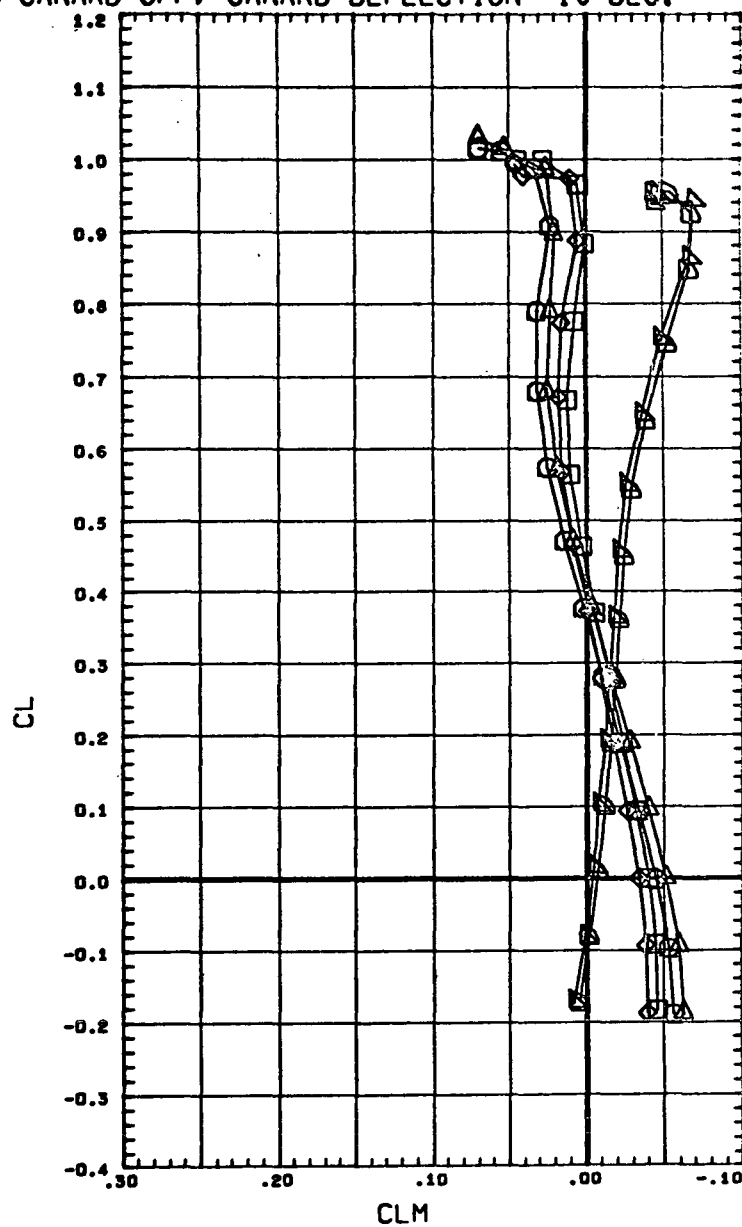
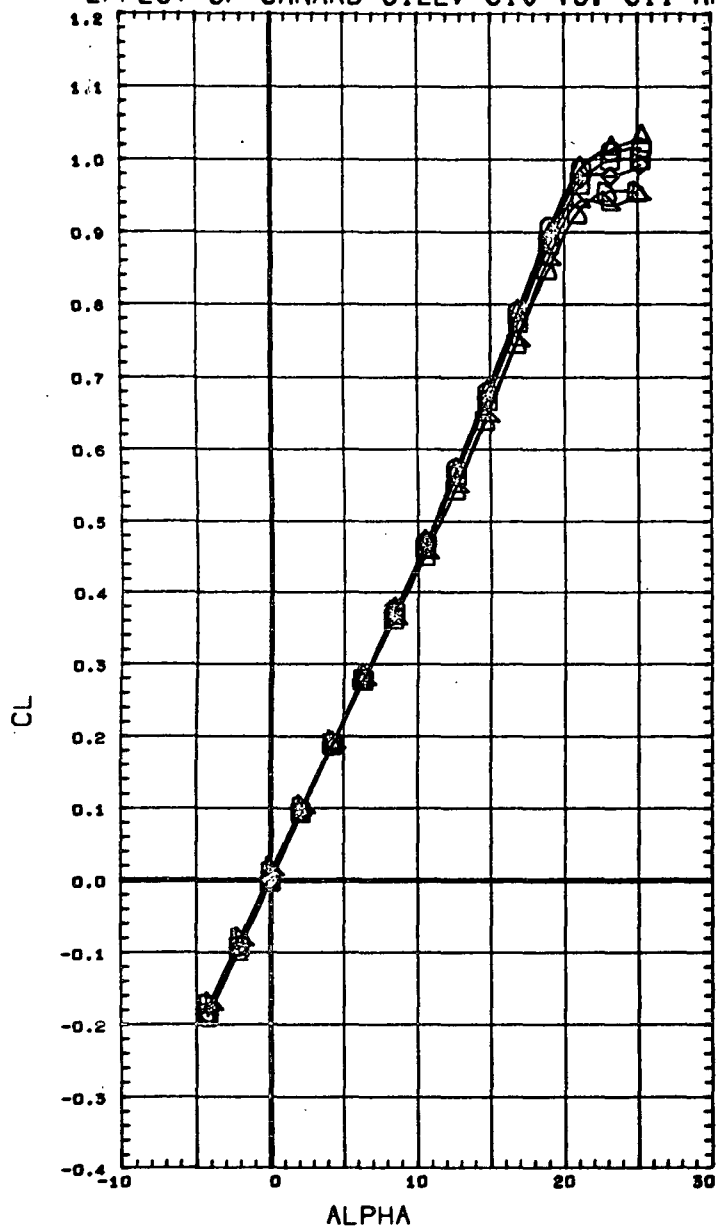
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EFFECT OF CANARD SIZE, C10 VS. C11 AND CANARD OFF, CANARD DEFLECTION=0



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	RUDDER	AILRON	REFERENCE INFORMATION		
(AD6002)	GDLST 603-0 830W23C10V14E38	0.000	0.000	0.000	0.000	SREF	492.4804	SQ. IN
(AD6003)	GDLST 603-0 830W23C10V14E38	5.000	0.000	0.000	0.000	LREF	16.1880	IN.
(AD6046)	GDLST 603-0 830W23C11V14E38	0.000	0.000	0.000	0.000	BREF	34.6320	IN.
(AD6047)	GDLST 603-0 830W23C11V14E38	5.000	0.000	0.000	0.000	XMRP	29.0780	IN.
(AD6044)	GDLST 603-0 830W23V14E38	0.000	0.000	0.000	0.000	YMRP	0.0000	IN.
(AD6045)	GDLST 603-0 830W23V14E38	5.000	0.000	0.000	0.000	ZMRP	0.0000	IN.
						SCALE	0.0200	

EFFECT OF CANARD SIZE, C10 VS. C11 AND CANARD OFF, CANARD DEFLECTION=-10 DEG.

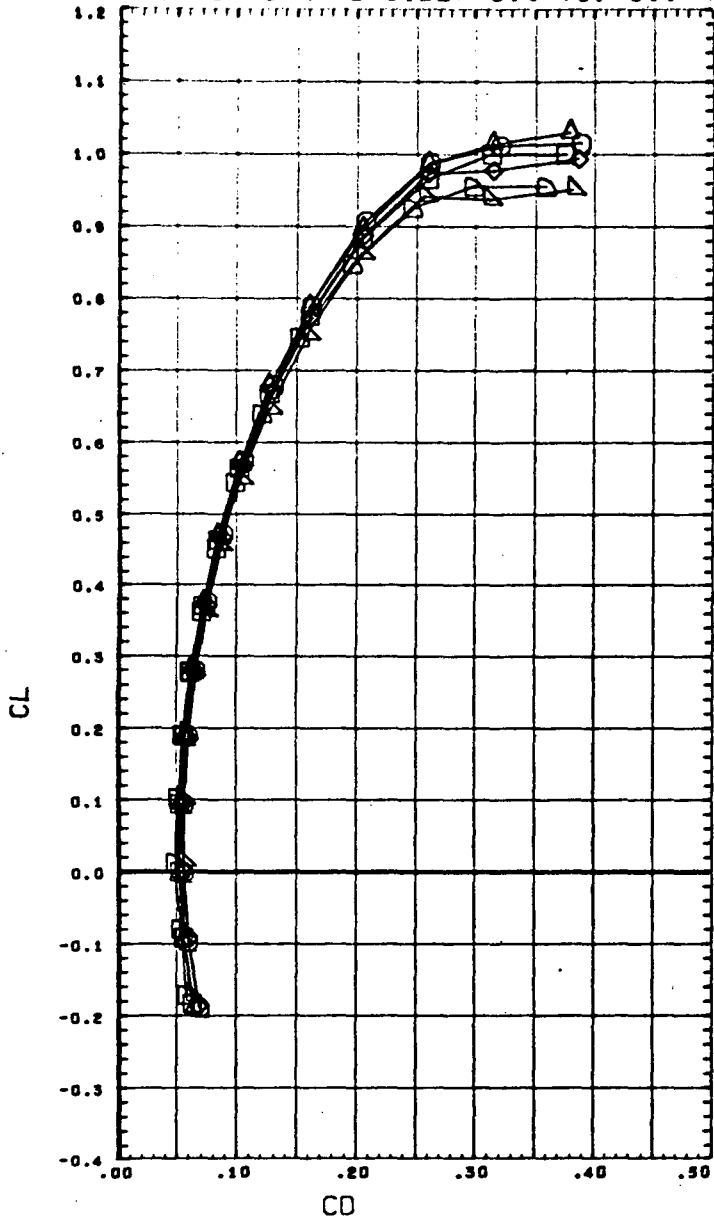


DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6009)	GDLST 603-0 830W23C10V14E38
(AD6010)	GDLST 603-0 830W23C10V14E38
(AD6050)	GDLST 603-0 830W23C11V14E38
(AD6051)	GDLST 603-0 830W23C11V14E38
(AD6044)	GDLST 603-0 830W23V14E38
(AD6045)	GDLST 603-0 830W23V14E38

MACH 0.201

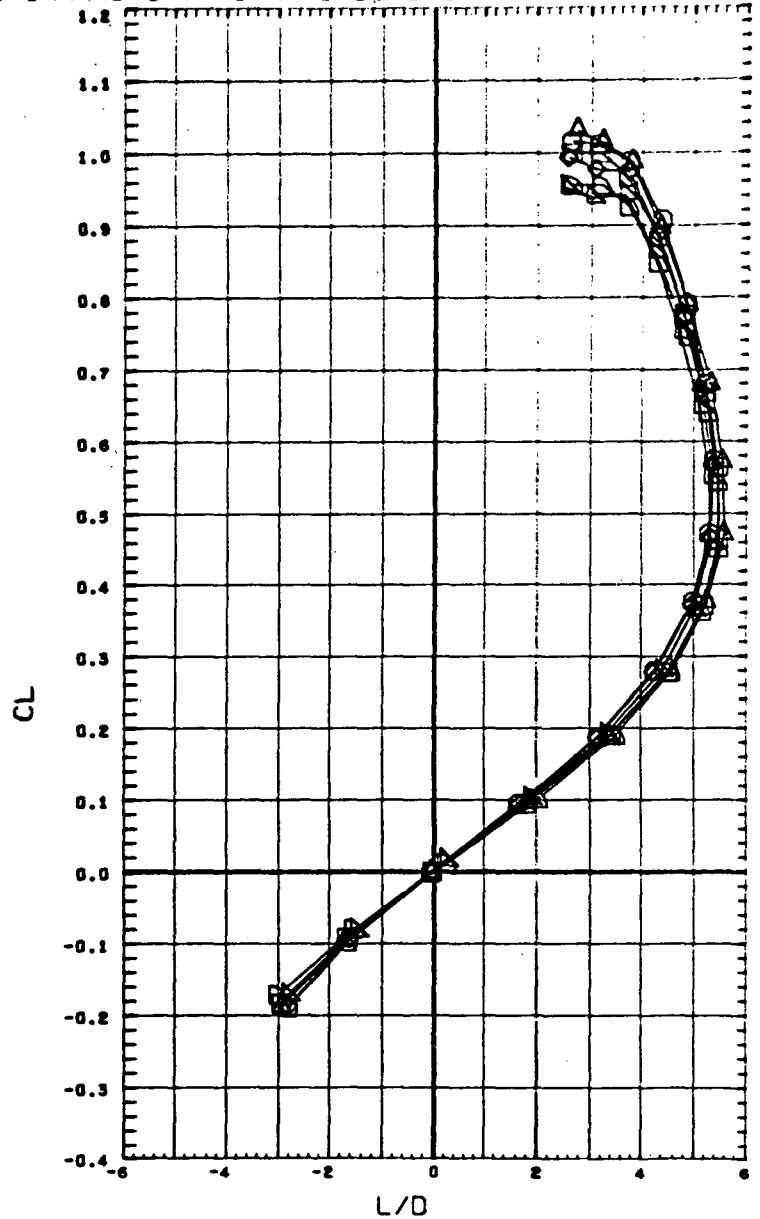
BETA	ELEVTR	RUDDER	AILRON	REFERENCE INFORMATION	
0.000	0.000	0.000	0.000	SREF	492.4804 Sq. IN
5.000	0.000	0.000	0.000	LREF	16.1880 IN.
0.000	0.000	0.000	0.000	BREF	34.6320 IN.
5.000	0.000	0.000	0.000	XMRP	29.0780 IN.
0.000	0.000	0.000	0.000	YMRP	0.0000 IN.
5.000	0.000	0.000	0.000	ZMRP	0.0000 IN.
				SCALE	0.0200

EFFECT OF CANARD SIZE, C10 VS. C11 AND CANARD OFF, CANARD DEFLECTION=-10 DEG.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AC6009)	GCLST 603-0 830W23C10V14E38
(AC6010)	GCLST 603-0 830W23C10V14E38
(AC6050)	GCLST 603-0 830W23C11V14E38
(AC6051)	GCLST 603-0 830W23C11V14E38
(AC6044)	GCLST 603-0 830W23V14E38
(AC6045)	GCLST 603-0 830W23V14E38

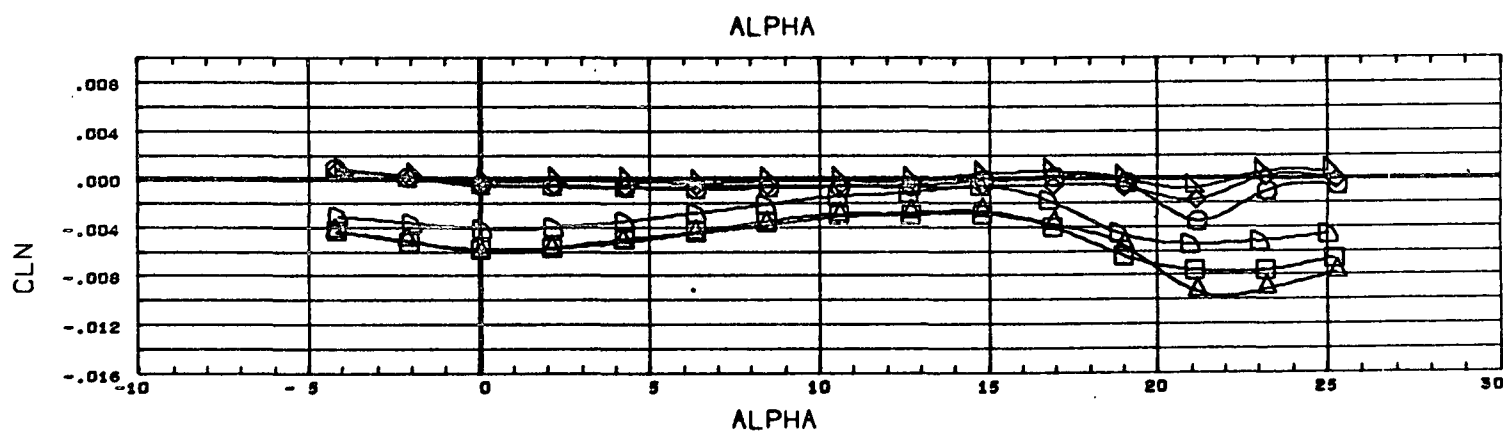
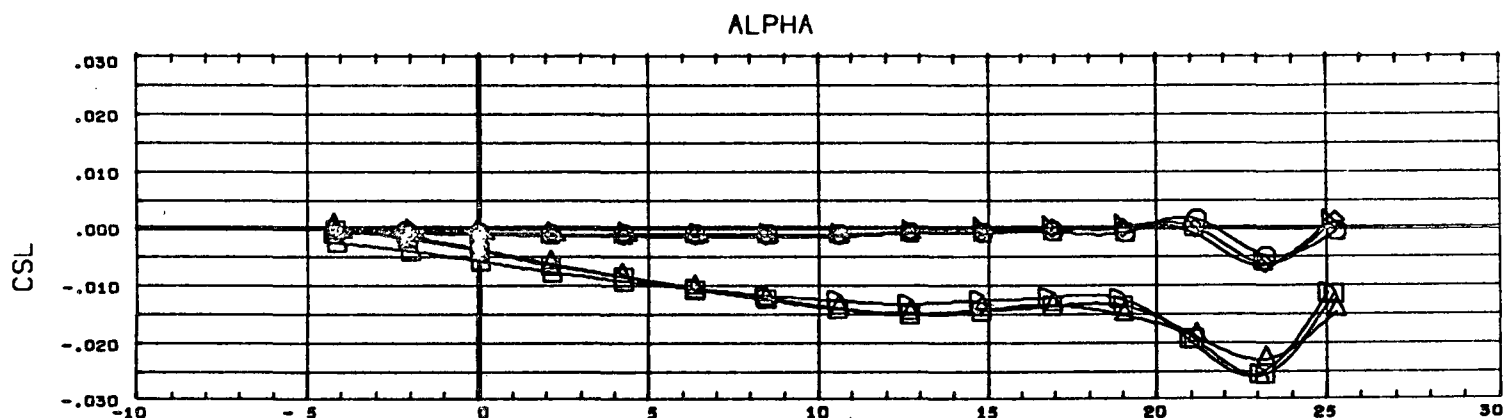
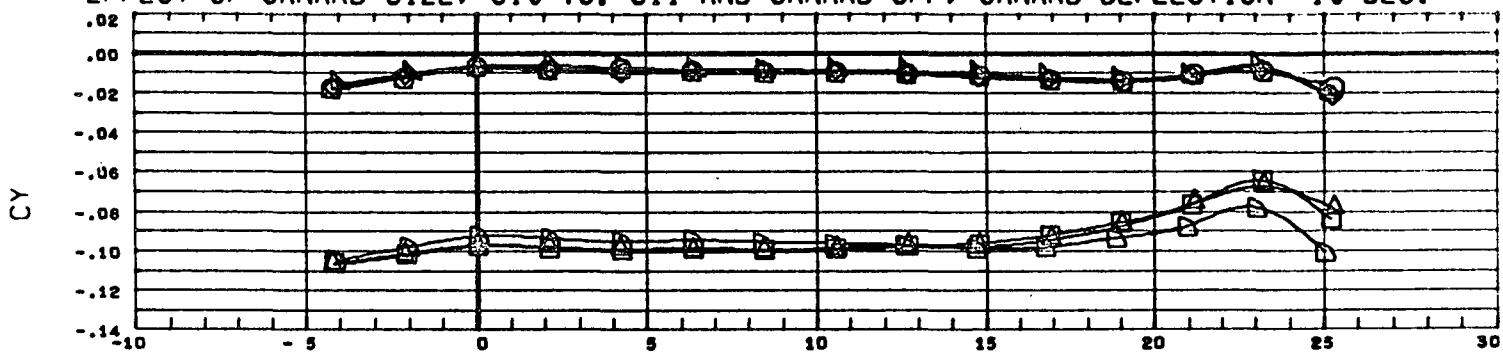
MACH .20



BETA	ELEVTR	RUDDER	AILRON	REFERENCE INFORMATION	
0.000	0.000	0.000	0.000	SREF	492.4804 SQ. IN
5.000	0.000	0.000	0.000	LREF	16.1880 IN.
0.000	0.000	0.000	0.000	BREF	34.6320 IN.
5.000	0.000	0.000	0.000	XMRP	29.0780 IN.
0.000	0.000	0.000	0.000	YMRP	0.0000 IN.
5.000	0.000	0.000	0.000	ZMRP	0.0000 IN.
				SCALE	0.0200

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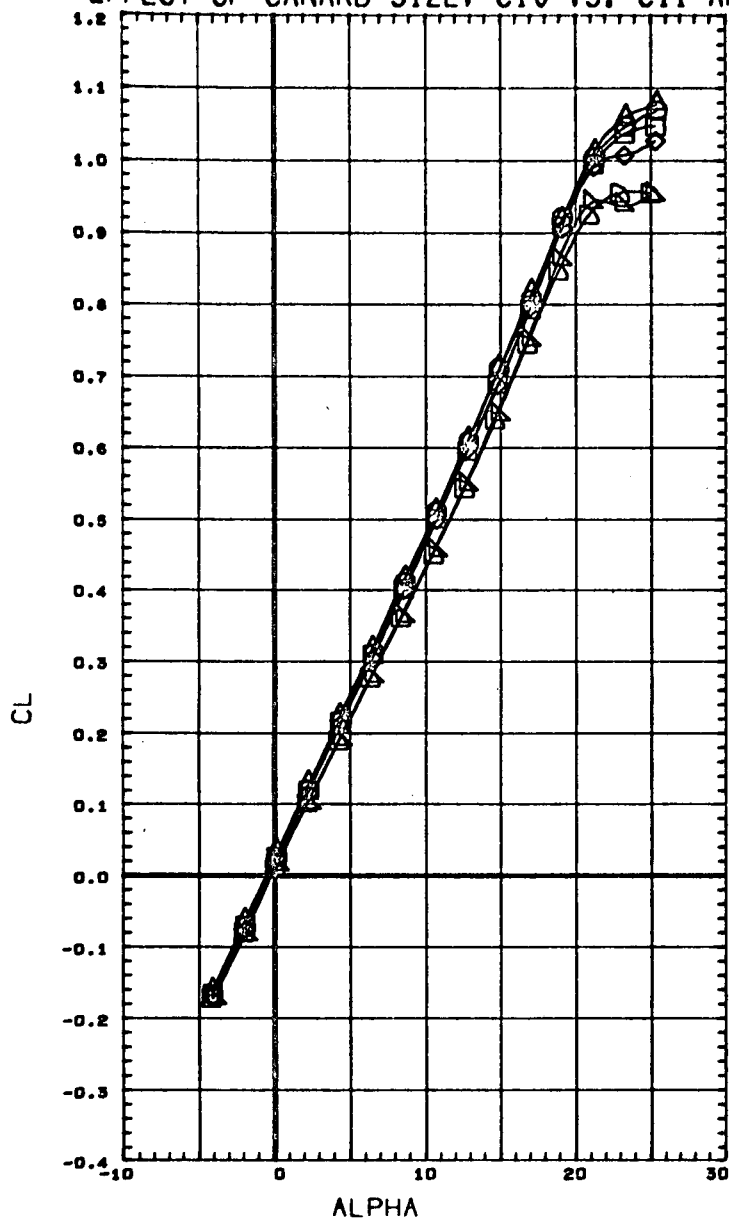
EFFECT OF CANARD SIZE, C10 VS. C11 AND CANARD OFF, CANARD DEFLECTION=-10 DEG.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	RUDDER	AILRON	REFERENCE INFORMATION	
(AD6009)	GDLST 603-0 B30W23C10V14E38	0.000	0.000	0.000	0.000	SREF	492.4804 SQ. IN
(AD6010)	GDLST 603-0 B30W23C10V14E38	5.000	0.000	0.000	0.000	LREF	16.1880 IN.
(AD6050)	GDLST 603-0 B30W23C11V14E38	0.000	0.000	0.000	0.000	BREF	34.6320 IN.
(AD6051)	GDLST 603-0 B30W23C11V14E38	5.000	0.000	0.000	0.000	XMRP	29.0780 IN.
(AD6044)	GDLST 603-0 B30W23V14E38	0.000	0.000	0.000	0.000	YMRP	0.0000 IN.
(AD6045)	GDLST 603-0 B30W23V14E38	5.000	0.000	0.000	0.000	ZMRP	0.0000 IN.
						SCALE	0.0200

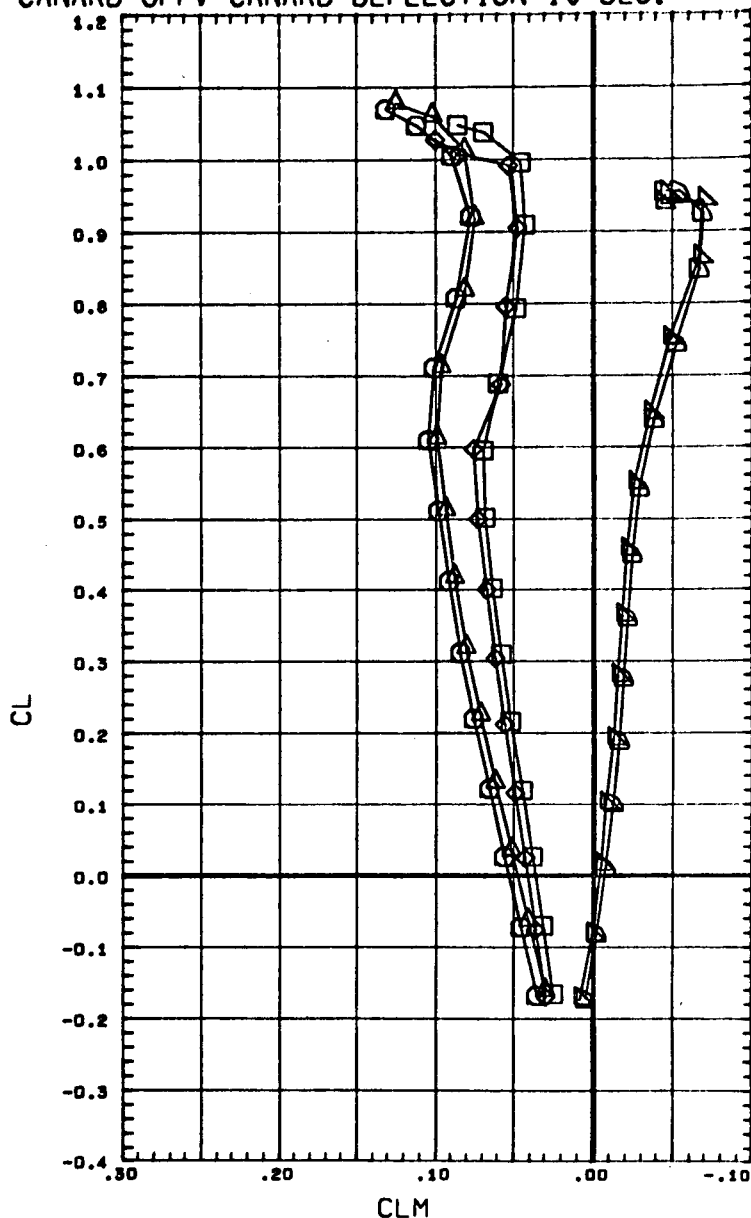
MACH 0.201

EFFECT OF CANARD SIZE, C10 VS. C11 AND CANARD OFF, CANARD DEFLECTION=10 DEG.



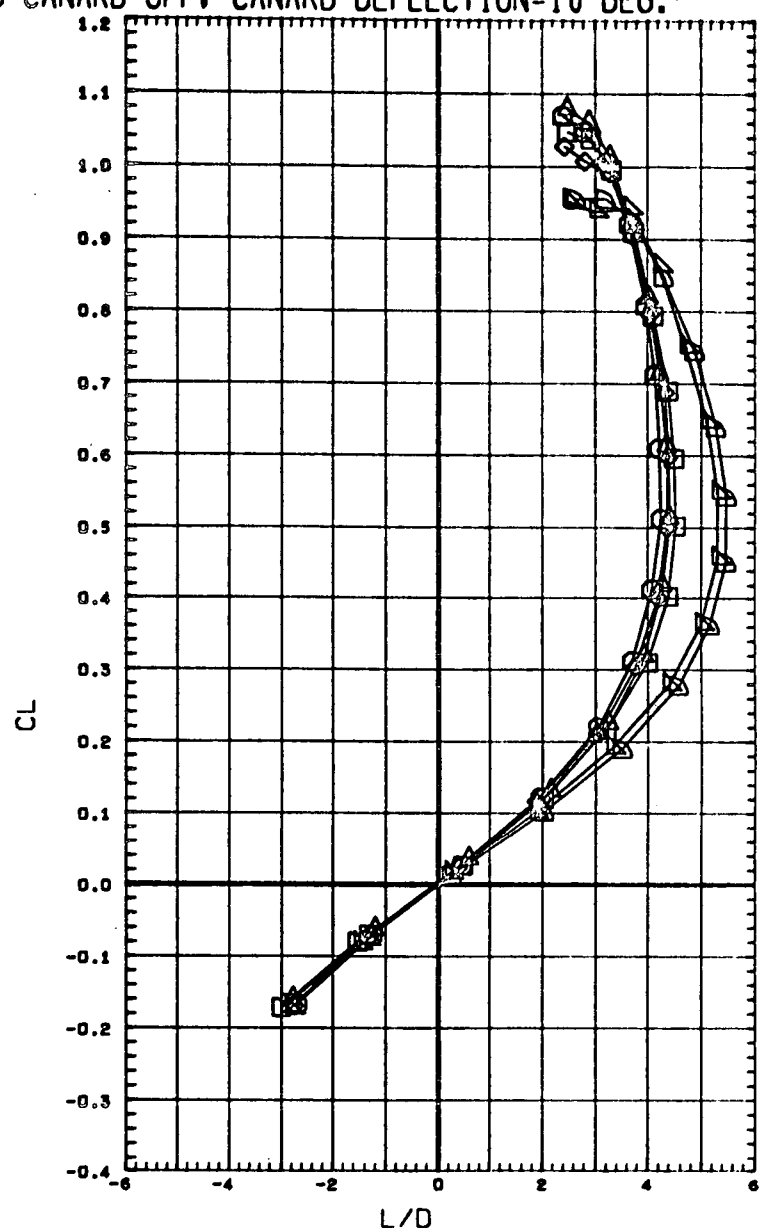
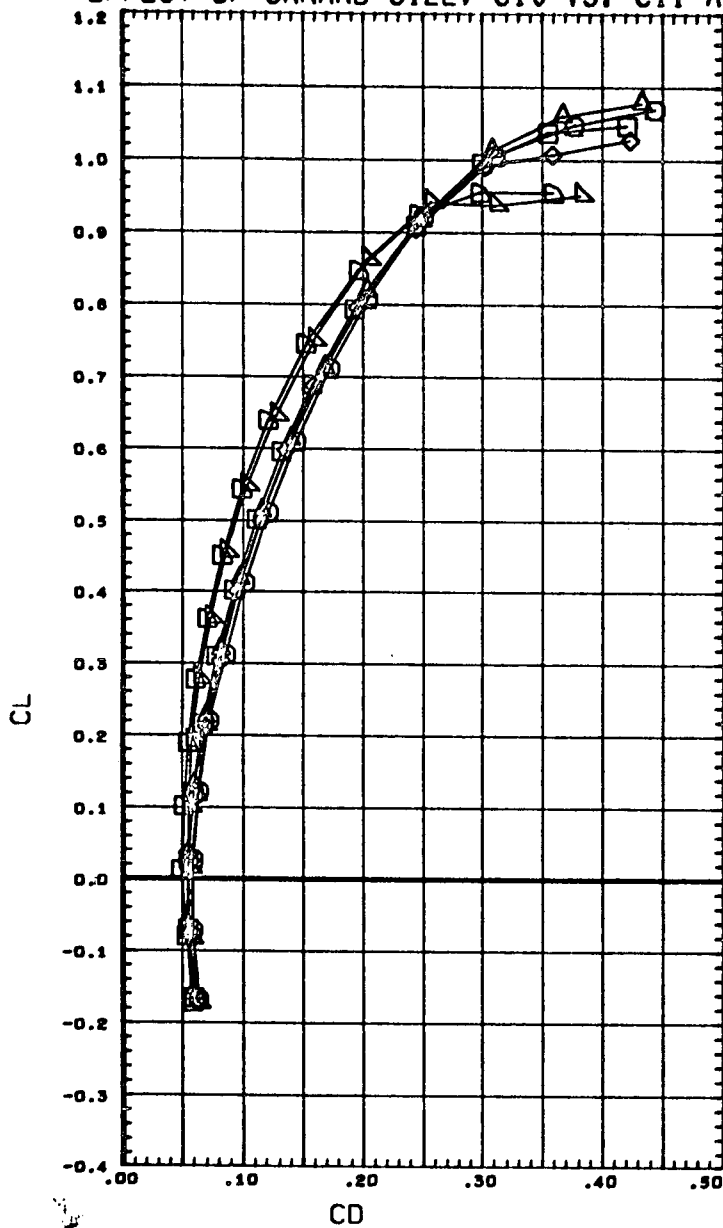
DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6007)	GDLST 603-0 B30W23C10V14E38
(AD6008)	GDLST 603-0 B30W23C10V14E38
(AD6048)	GDLST 603-0 B30W23C11V14E38
(AD6049)	GDLST 603-0 B30W23C11V14E38
(AD6044)	GDLST 603-0 B30W23V14E38
(AD6045)	GDLST 603-0 B30W23V14E38

MACH 0.201



BETA	ELEVTR	RUDDER	AILRON	REFERENCE INFORMATION
0.000	0.000	0.000	0.000	SREF 492.4804 34. IN
5.000	0.000	0.000	0.000	LREF 16.1880 IN.
0.000	0.000	0.000	0.000	BREF 34.6320 IN.
5.000	0.000	0.000	0.000	XMRP 29.0780 IN.
0.000	0.000	0.000	0.000	YMRP 0.0000 IN.
5.000	0.000	0.000	0.000	ZMRP 0.0000 IN.
				SCALE 0.0200

EFFECT OF CANARD SIZE, C10 VS. C11 AND CANARD OFF, CANARD DEFLECTION=10 DEG.

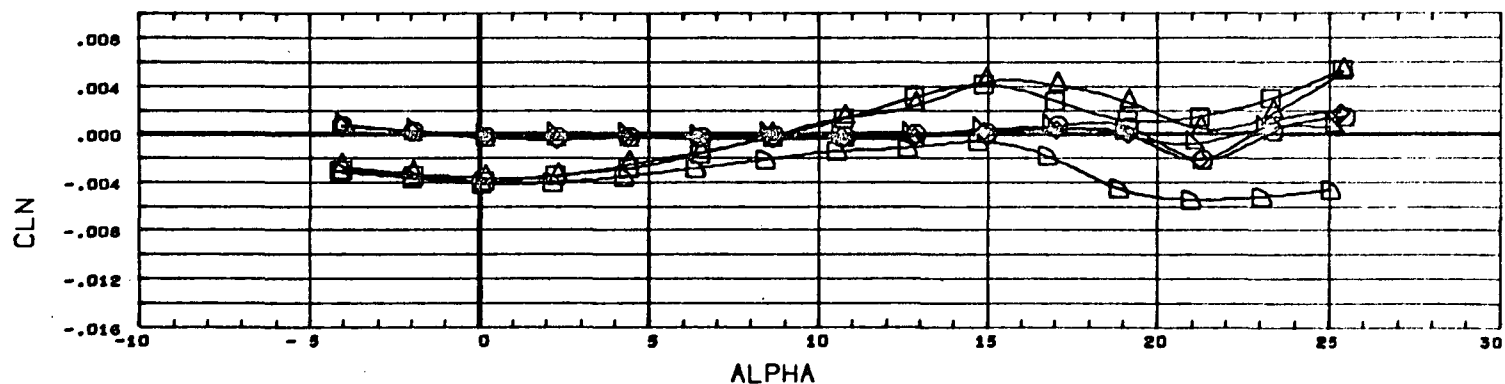
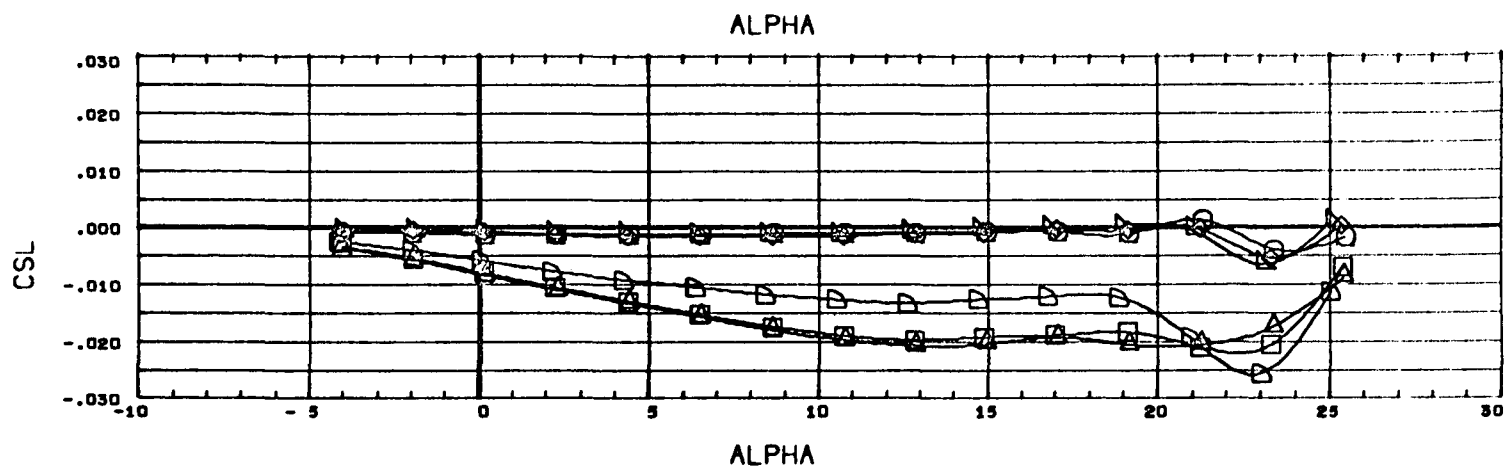
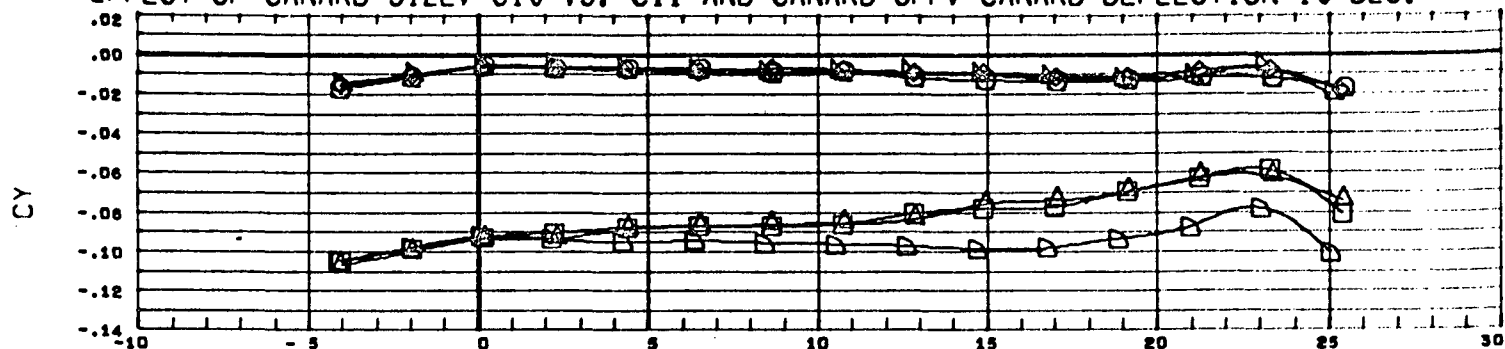


DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6007)	GDLST 603-0 B30W23C10V14E38
(AD6008)	GDLST 603-0 B30W23C10V14E38
(AD6048)	GDLST 603-0 B30W23C11V14E38
(AD6049)	GDLST 603-0 B30W23C11V14E38
(AD6044)	GDLST 603-0 B30W23V14E38
(AD6045)	GDLST 603-0 B30W23V14E38

MACH 0.201

BETA	ELEVTR	RUDDER	AILRON	REFERENCE INFORMATION
0.000	0.000	0.000	0.000	SREF 492.4804 SQ. IN
5.000	0.000	0.000	0.000	LREF 16.1880 IN.
0.000	0.000	0.000	0.000	BREF 34.6320 IN.
5.000	0.000	0.000	0.000	XMRP 29.0780 IN.
0.000	0.000	0.000	0.000	YMRP 0.0000 IN.
5.000	0.000	0.000	0.000	ZMRP 0.0000 IN.
				SCALE 0.0200

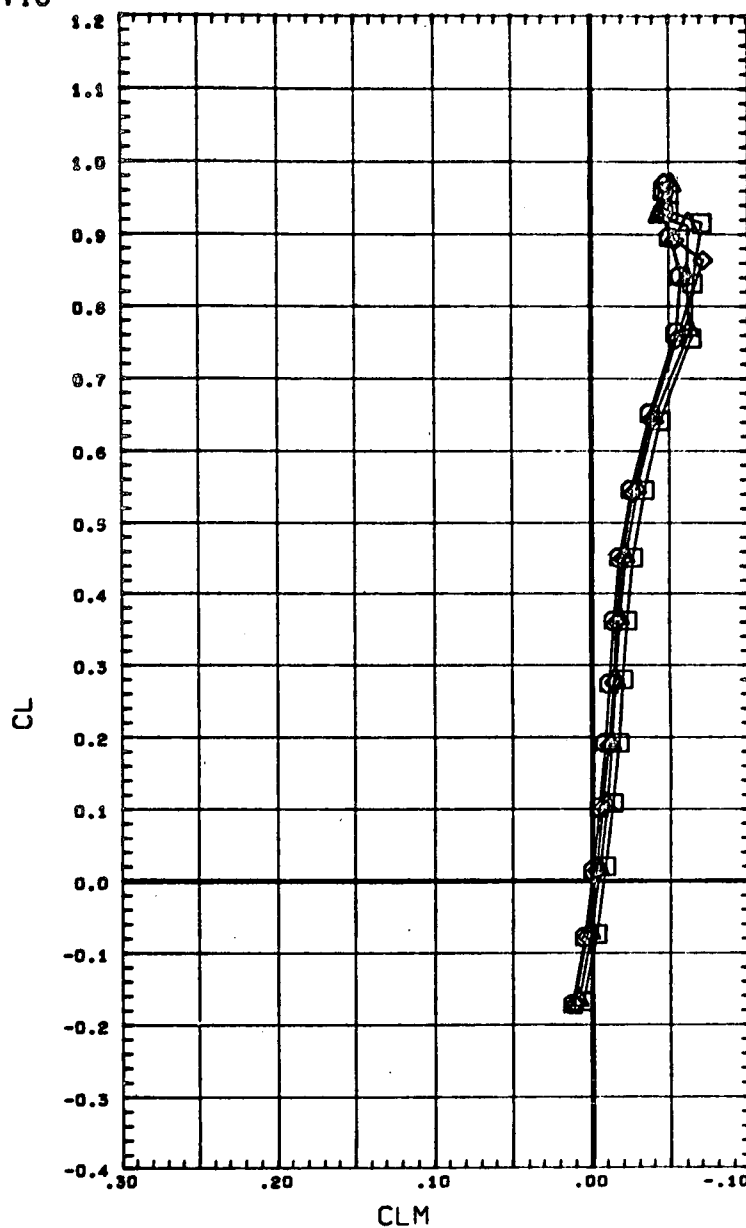
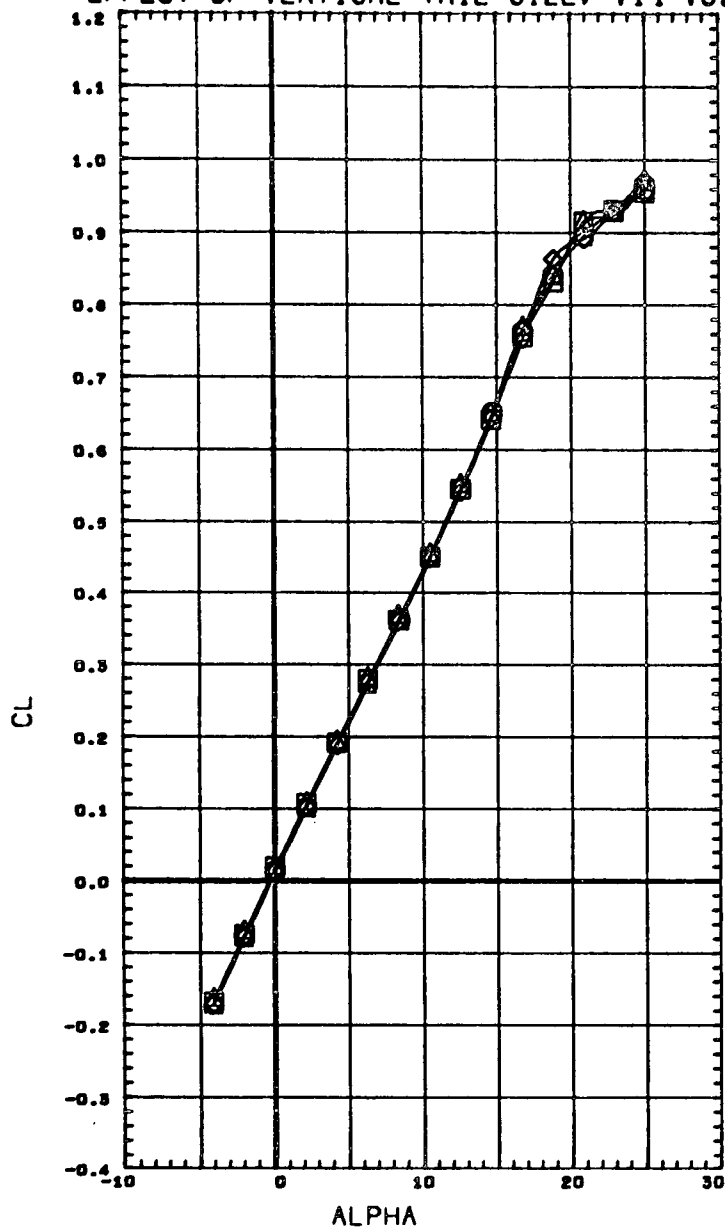
EFFECT OF CANARD SIZE, C10 VS. C11 AND CANARD OFF, CANARD DEFLECTION=10 DEG.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	RUDDER	AILRON	REFERENCE INFORMATION
(AD6007)	GDLST 603-0 B30W23C10V14E38	0.000	0.000	0.000	0.000	SREF 492.4804 SQ. IN
(AD6008)	GDLST 603-0 B30W23C10V14E38	5.000	0.000	0.000	0.000	LREF 16.1880 IN.
(AD6048)	GDLST 603-0 B30W23C11V14E38	0.000	0.000	0.000	0.000	BREF 34.6320 IN.
(AD6049)	GDLST 603-0 B30W23C11V14E38	5.000	0.000	0.000	0.000	YMRP 29.0780 IN.
(AD6044)	GDLST 603-0 B30W23V14E38	0.000	0.000	0.000	0.000	YMRP 0.0000 IN.
(AD6045)	GDLST 603-0 B30W23V14E38	5.000	0.000	0.000	0.000	ZMRP 0.0000 IN.
						SCALE 0.0200

MACH 0.201

EFFECT OF VERTICAL TAIL SIZE, V14 VS. V16

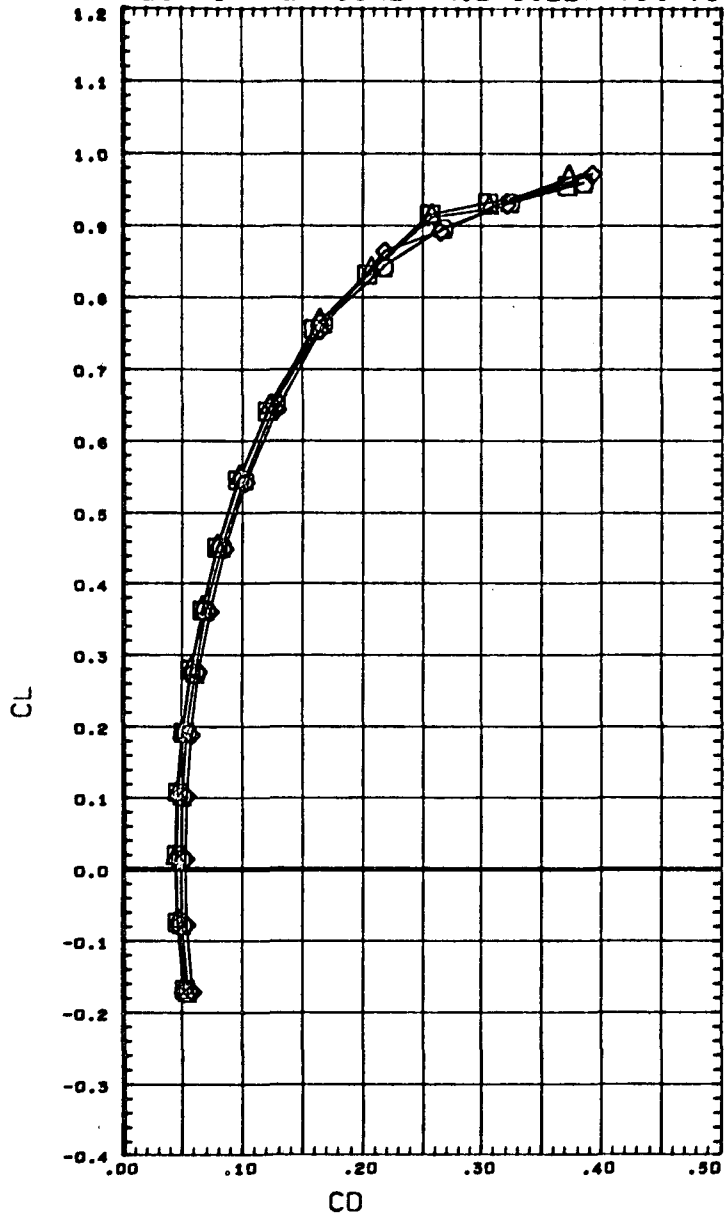


DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6077)	GDLST 603-0 830W23V14
(AD6078)	GDLST 603-0 830W23V14
(AD6079)	GDLST 603-0 830W23V16
(AD6080)	GDLST 603-0 830W23V16

MACH 0.201

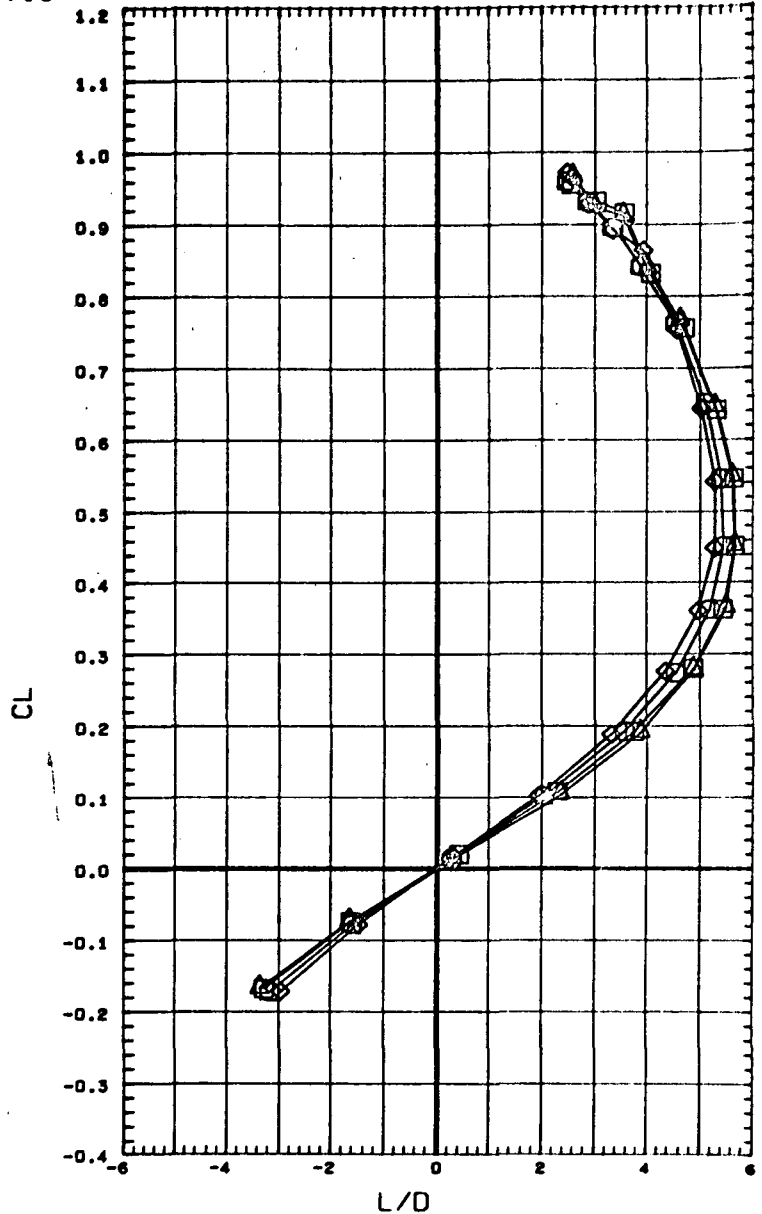
BETA	ELEVTR	RUDDER	AILRON	REFERENCE INFORMATION
0.000	0.000	0.000	0.000	SREF 492.4804 30. IN
5.000	0.000	0.000	0.000	LREF 16.1880 IN.
0.000	0.000	0.000	0.000	BREF 34.6320 IN.
5.000	0.000	0.000	0.000	XMRP 29.0780 IN.
				YMRP 0.0000 IN.
				ZMRP 0.0000 IN.
				SCALE 0.0200

EFFECT OF VERTICAL TAIL SIZE, V14 VS. V16



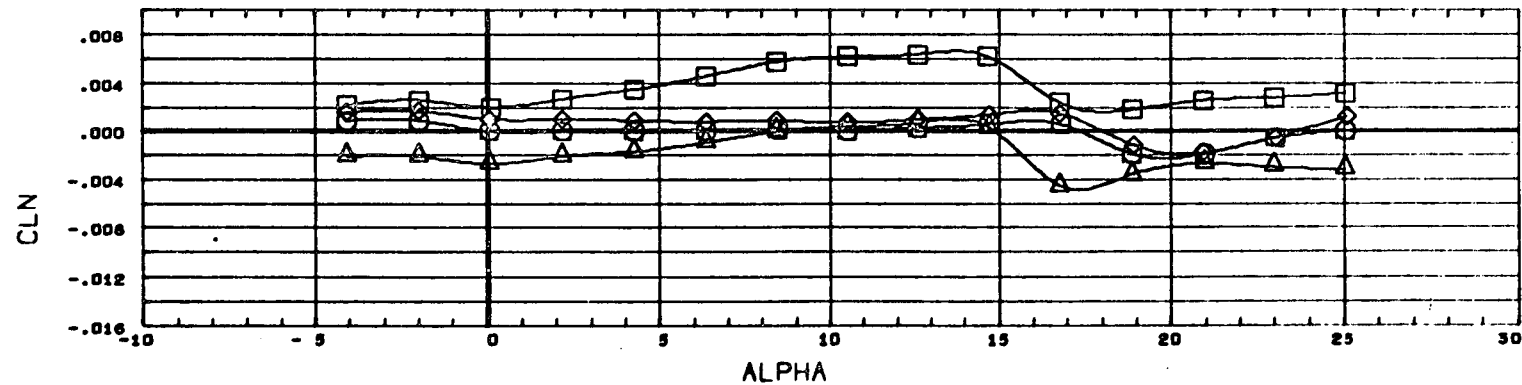
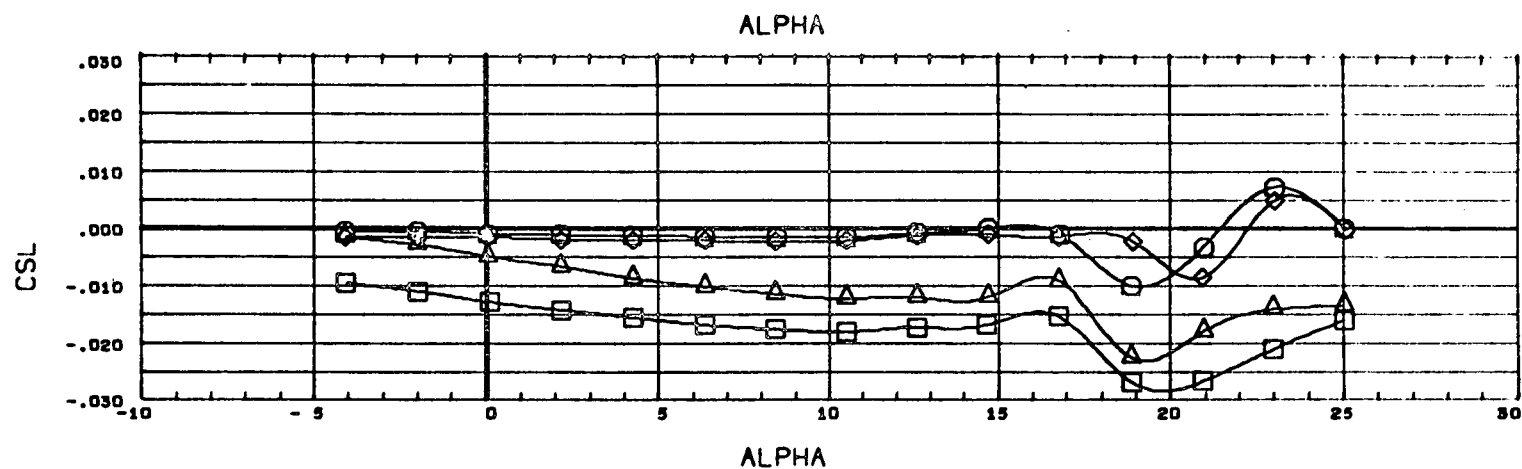
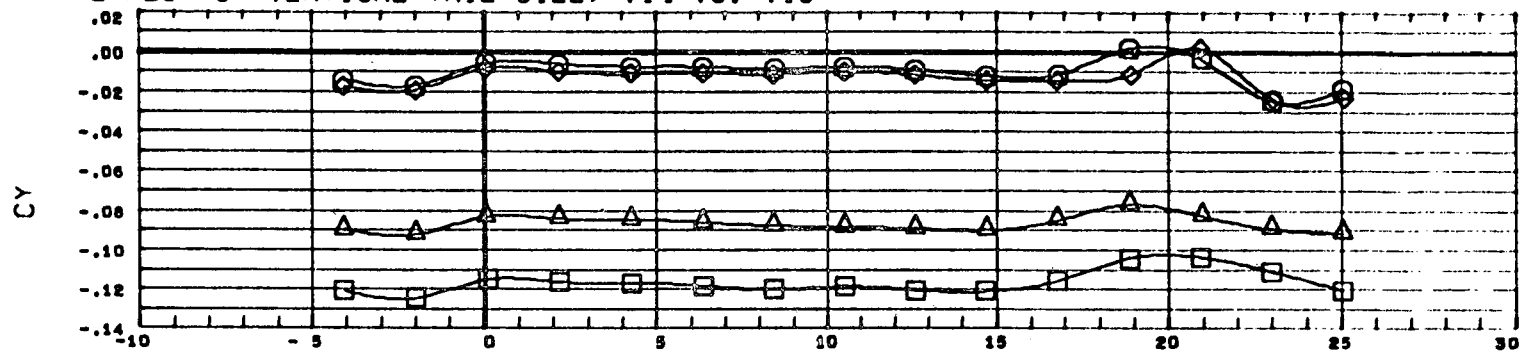
DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6077)	GDLST 603-0 830W23V14
(AD6078)	GDLST 603-0 830W23V14
(AD6079)	GDLST 603-0 830W23V16
(AD6080)	GDLST 603-0 830W23V16

MACH 0.201



BETA	ELEVTR	RUDDER	AILRON	REFERENCE INFORMATION
0.000	0.000	0.000	0.000	SREF 492.4804 SQ. IN
5.000	0.000	0.000	0.000	LREF 16.1680 IN.
0.000	0.000	0.000	0.000	BREF 34.6320 IN.
5.000	0.000	0.000	0.000	XMRP 29.0780 IN.
				YMRP 0.0000 IN.
				ZMRP 0.0000 IN.
				SCALE 0.0200

EFFECT OF VERTICAL TAIL SIZE, V14 VS. V16

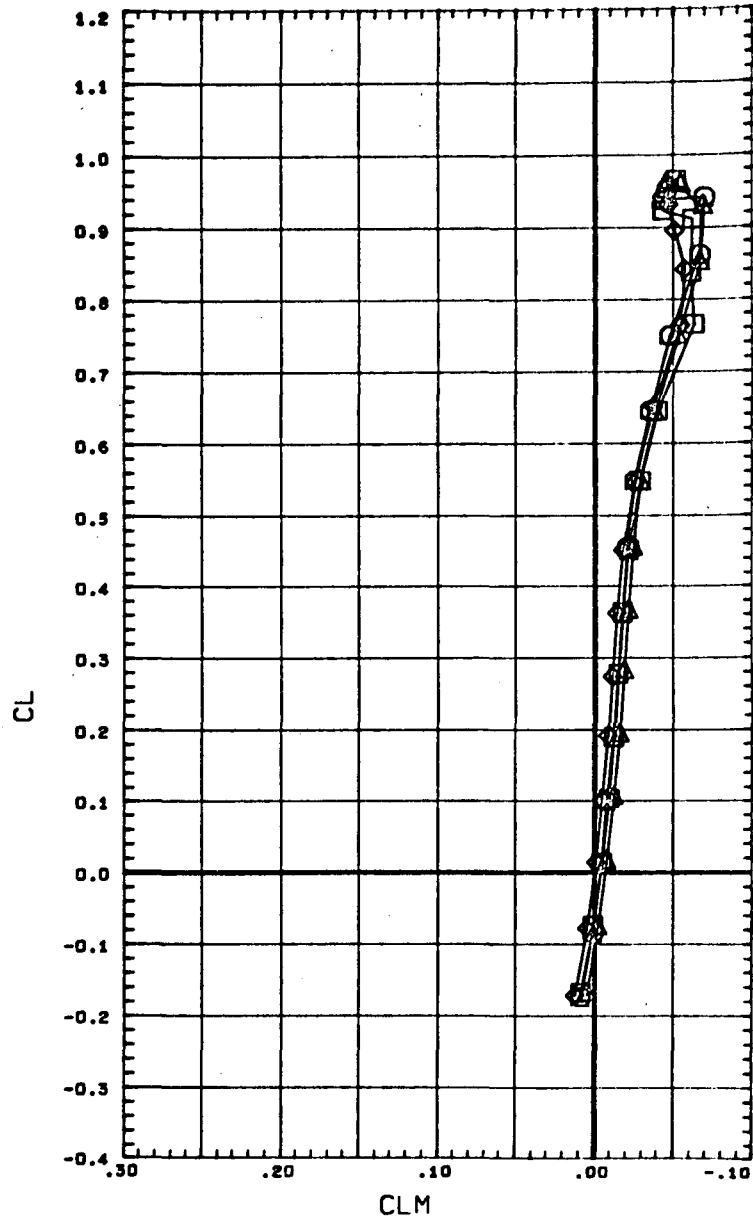
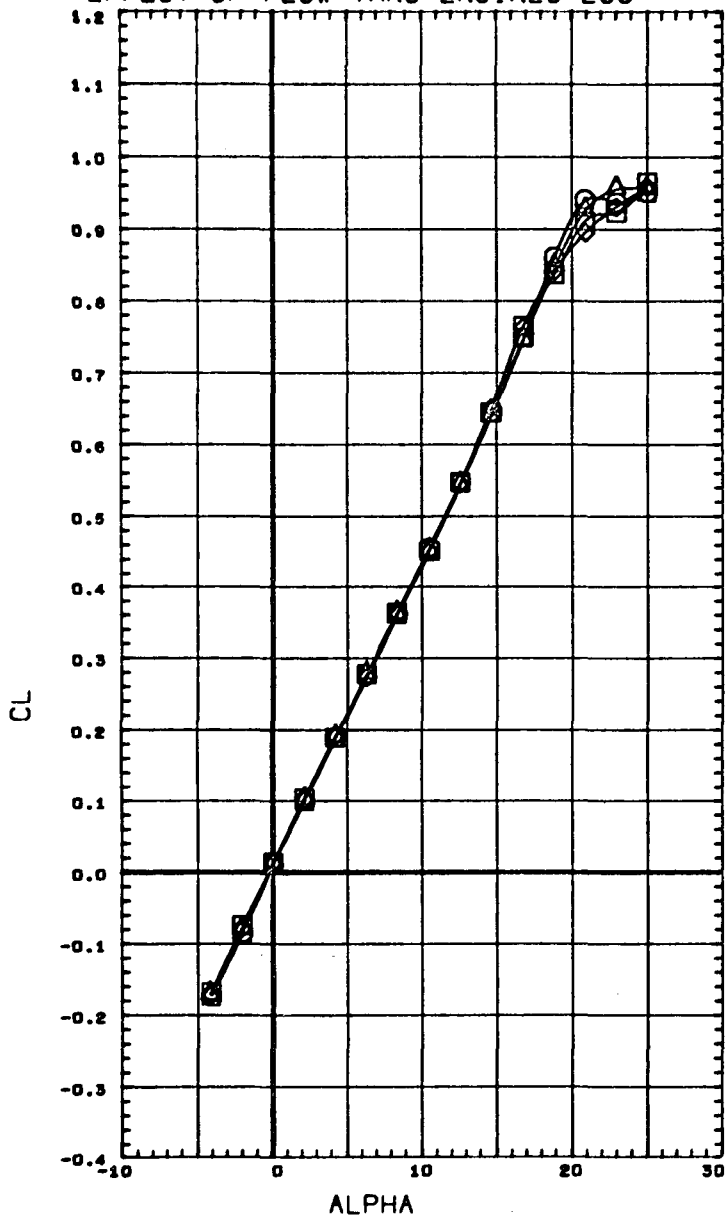


DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6077)	GDLST 603-0 830W23V14
(AD6078)	GDLST 603-0 830W23V14
(AD6079)	GDLST 603-0 830W23V16
(AD6080)	GDLST 603-0 830W23V16

BETA	ELEVTR	RUDDER	AILRON	REFERENCE INFORMATION	
0.000	0.000	0.000	0.000	SREF	492.4804 SQ. IN
5.000	0.000	0.000	0.000	LREF	16.1880 IN.
0.000	0.000	0.000	0.000	BREF	34.6320 IN.
5.000	0.000	0.000	0.000	XMRP	29.0780 IN.
				YMRP	0.0000 IN.
				ZMRP	0.0000 IN.
				SCALE	0.0200

MACH 0.201

EFFECT OF FLOW-THRU ENGINES E38

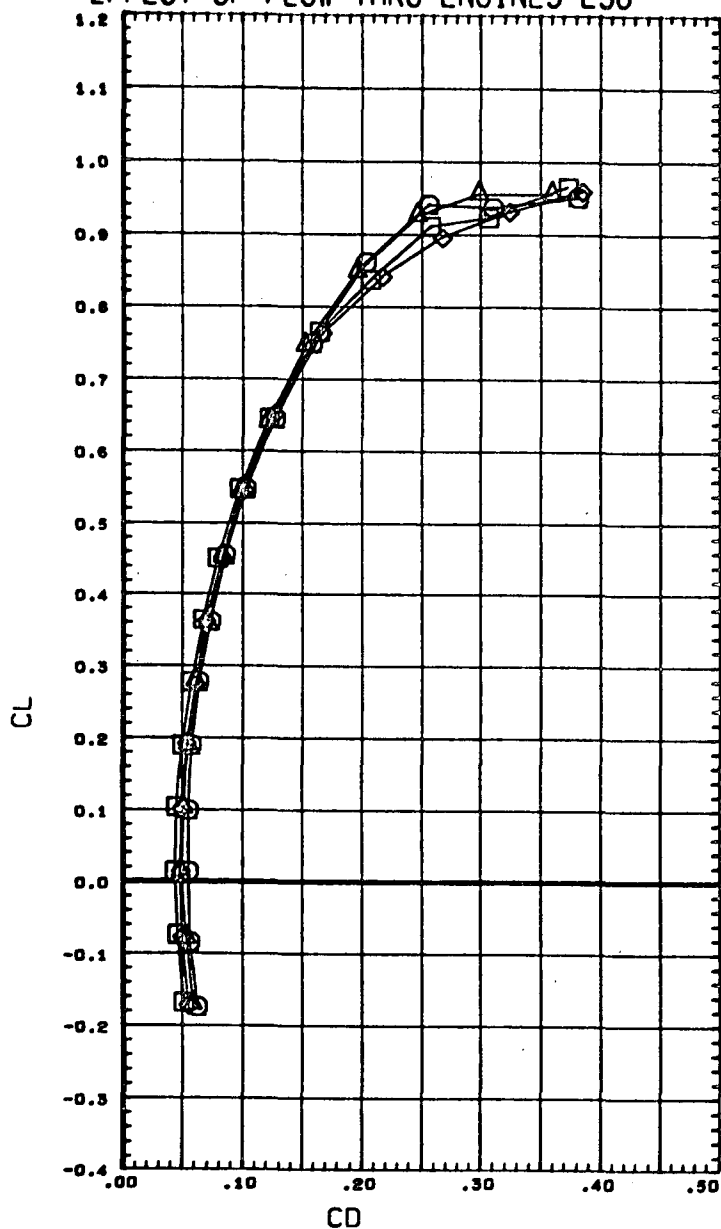


DATA SET	SYMBOL	CONFIGURATION	DESCRIPTION
(A06044)	○	GDLST 603-0	B30W23V14E38
(A06045)	△	GDLST 603-0	B30W23V14E38
(A06077)	◇	GDLST 603-0	B30W23V14
(A06078)	□	GDLST 603-0	B30W23V14

MACH 0.201

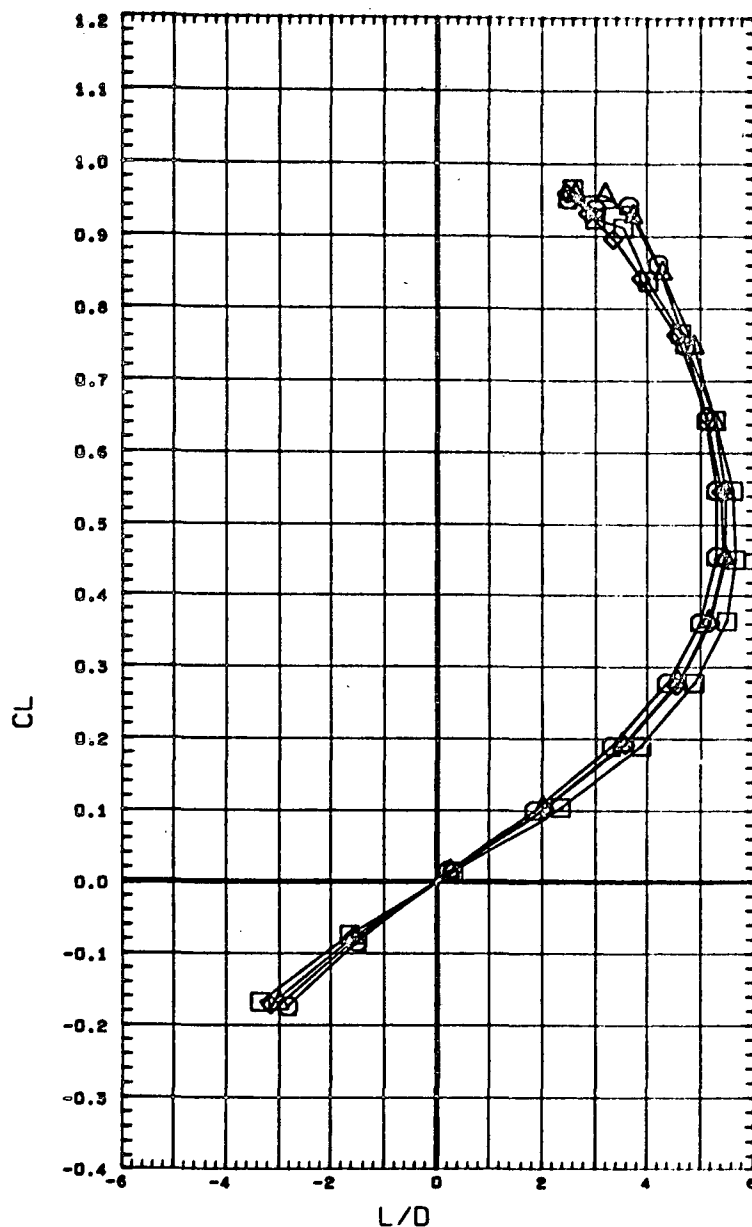
BETA	ELEVTR	RUDDER	AILRON	REFERENCE INFORMATION
0.000	0.000	0.000	0.000	SREF 492.4804 SQ. IN
5.000	0.000	0.000	0.000	LREF 16.1880 IN.
0.000	0.000	0.000	0.000	BREF 34.6320 IN.
5.000	0.000	0.000	0.000	XM RP 29.0780 IN.
				YM RP 0.0000 IN.
				ZM RP 0.0000 IN.
				SCALE 0.0200

EFFECT OF FLOW-THRU ENGINES E38



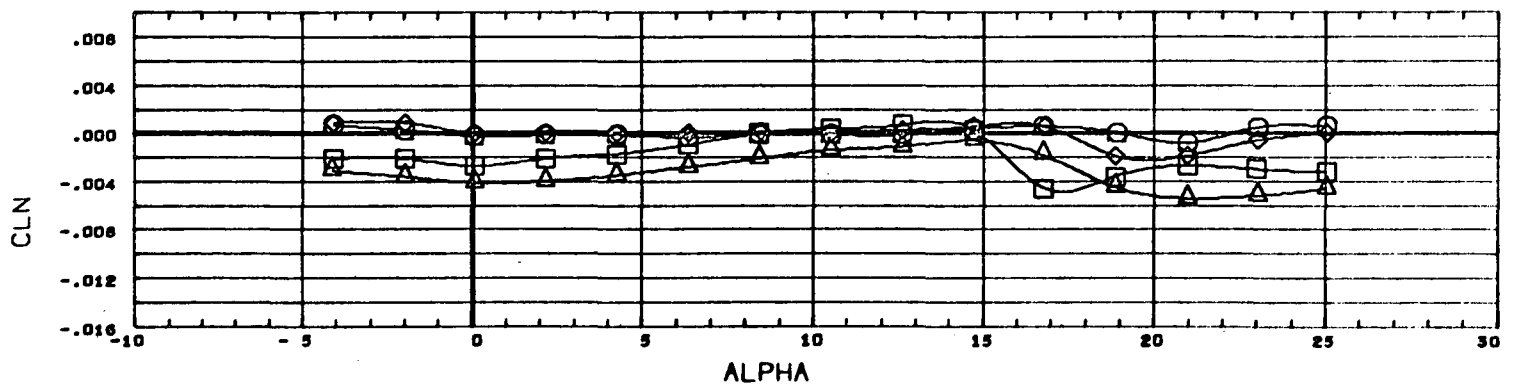
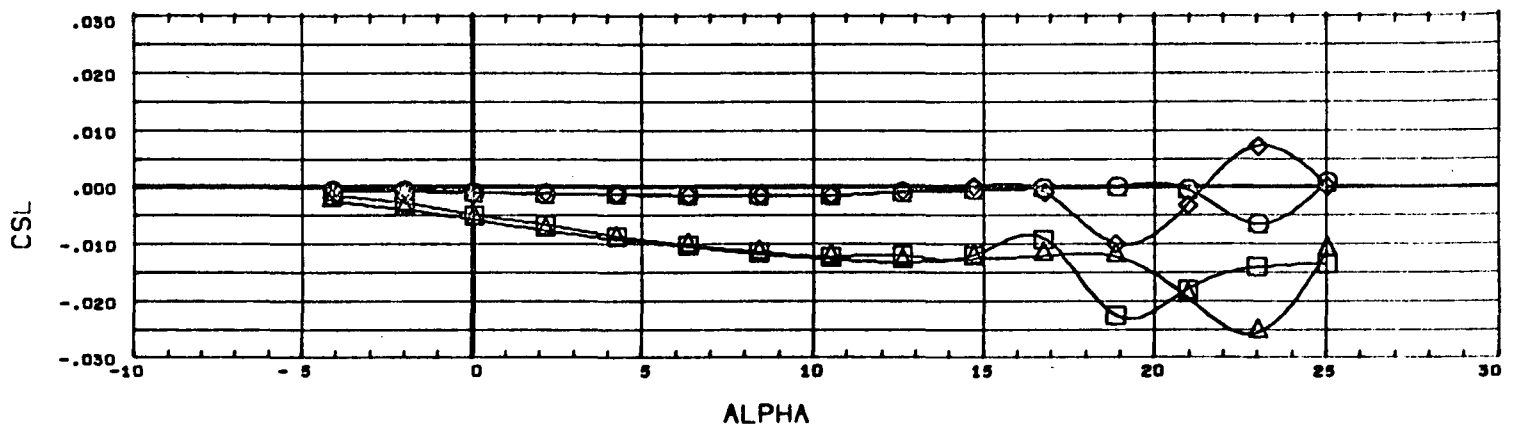
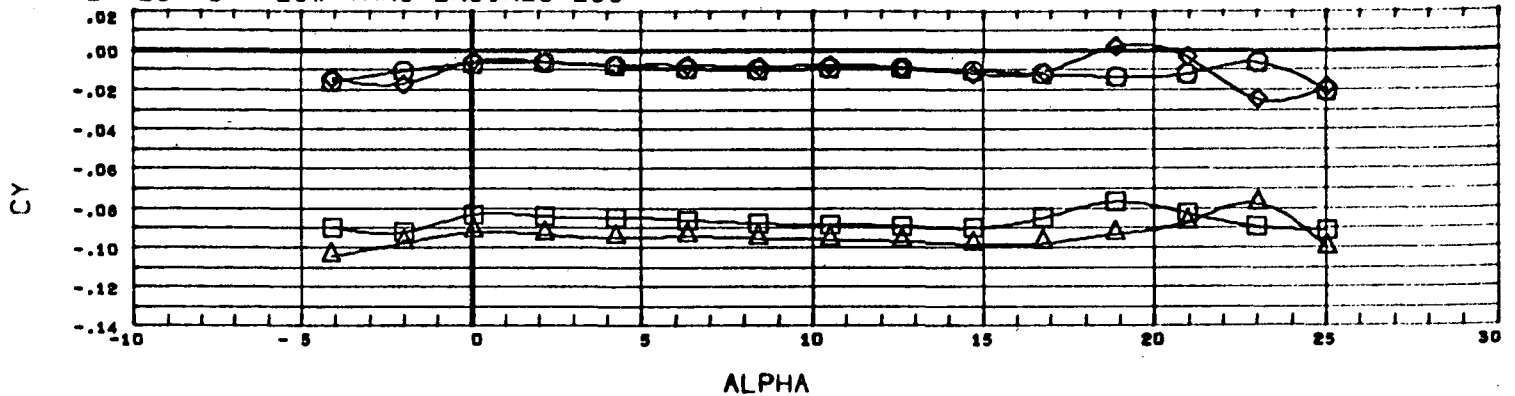
DATA SET SYMBOL	CONFIGURATION	DESCRIPTION
(AD6044)	○	GDLST 603-0 830W23V14E38
(AD6045)	△	GDLST 603-0 830W23V14E38
(AD6077)	◇	GDLST 603-0 830W23V14
(AD6078)	□	GDLST 603-0 830W23V14

MACH 0.201



BETA	ELEVTR	RUDDER	AILRON	REFERENCE INFORMATION		
0.000	0.000	0.000	0.000	SREF	492.4804	SQ. IN
5.000	0.000	0.000	0.000	LREF	16.1880	IN.
0.000	0.000	0.000	0.000	BREF	34.6320	IN.
5.000	0.000	0.000	0.000	XMRP	29.0780	IN.
				YMRP	0.0000	IN.
				ZMRP	0.0000	IN.
				SCALE	0.0200	

EFFECT OF FLOW-THRU ENGINES E38

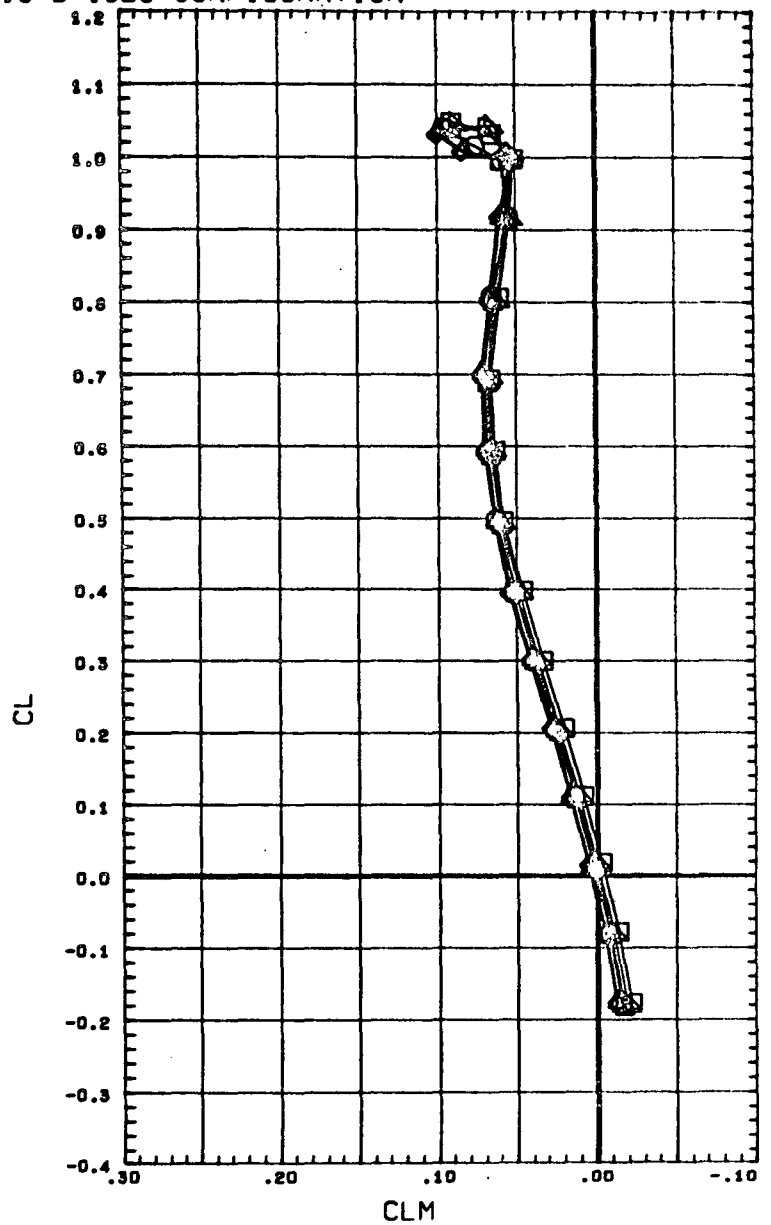
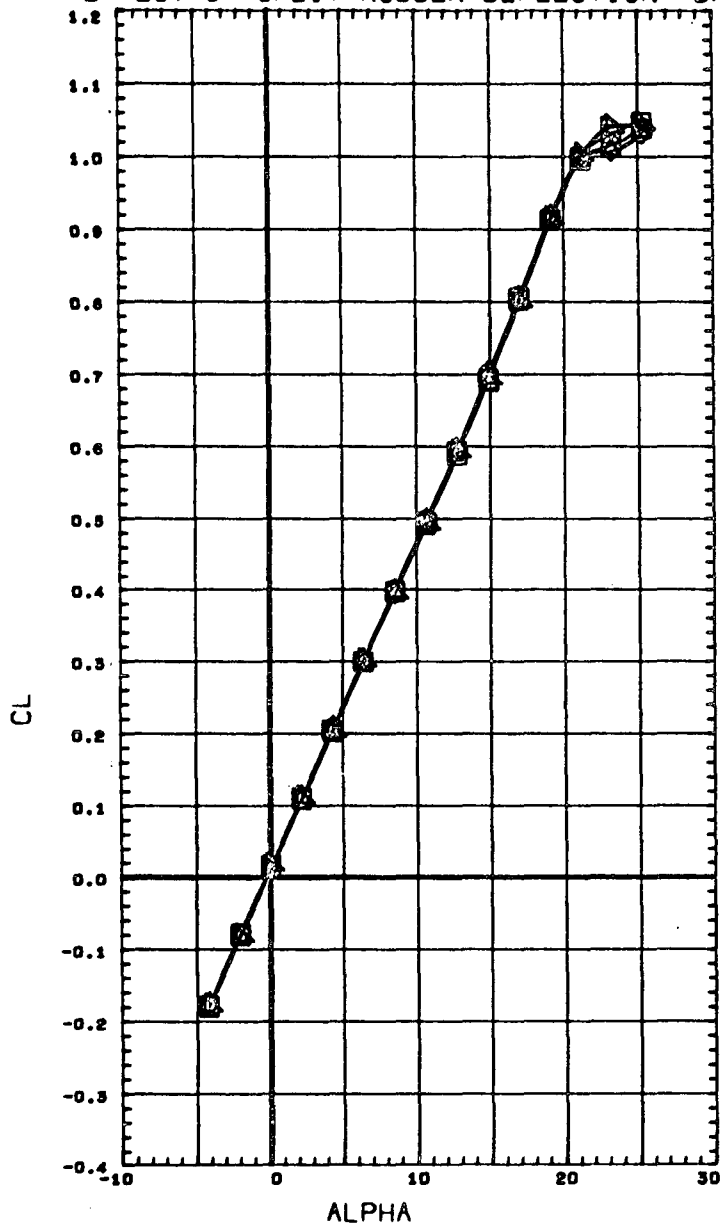


DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6044)	GDLST 603-0 B30W23V14E38
(AD6045)	GDLST 603-0 B30W23V14E38
(AD6077)	GDLST 603-0 B30W23V14
(AD6076)	GDLST 603-0 B30W23V14

MACH 0.201

BETA	ELEVTR	RUDDER	AILRON	REFERENCE INFORMATION
0.000	0.000	0.000	0.000	SREF 492.4804 SQ. IN
5.000	0.000	0.000	0.000	LREF 16.1880 IN.
0.000	0.000	0.000	0.000	BREF 34.6320 IN.
5.000	0.000	0.000	0.000	YMRP 29.0780 IN.
				ZMRP 0.0000 IN.
				SCALE 0.0200

EFFECT OF SPLIT RUDDER DEFLECTION- BASIC B-18E3 CONFIGURATION

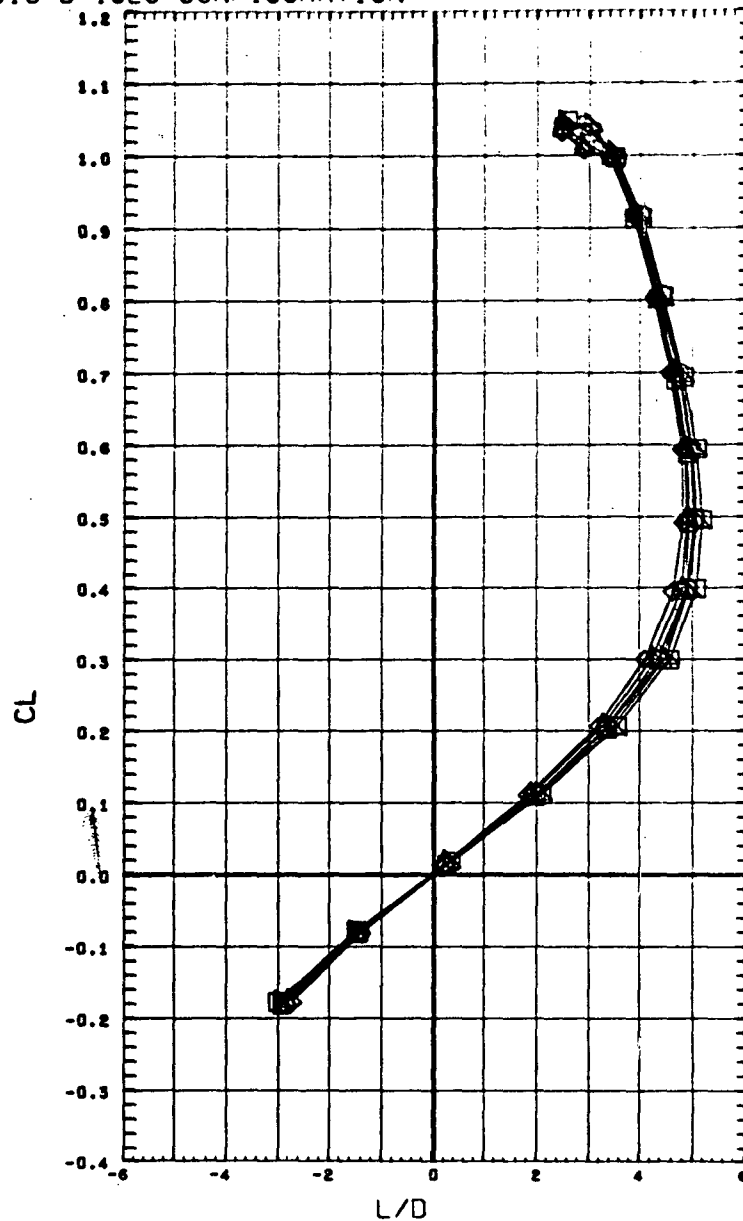
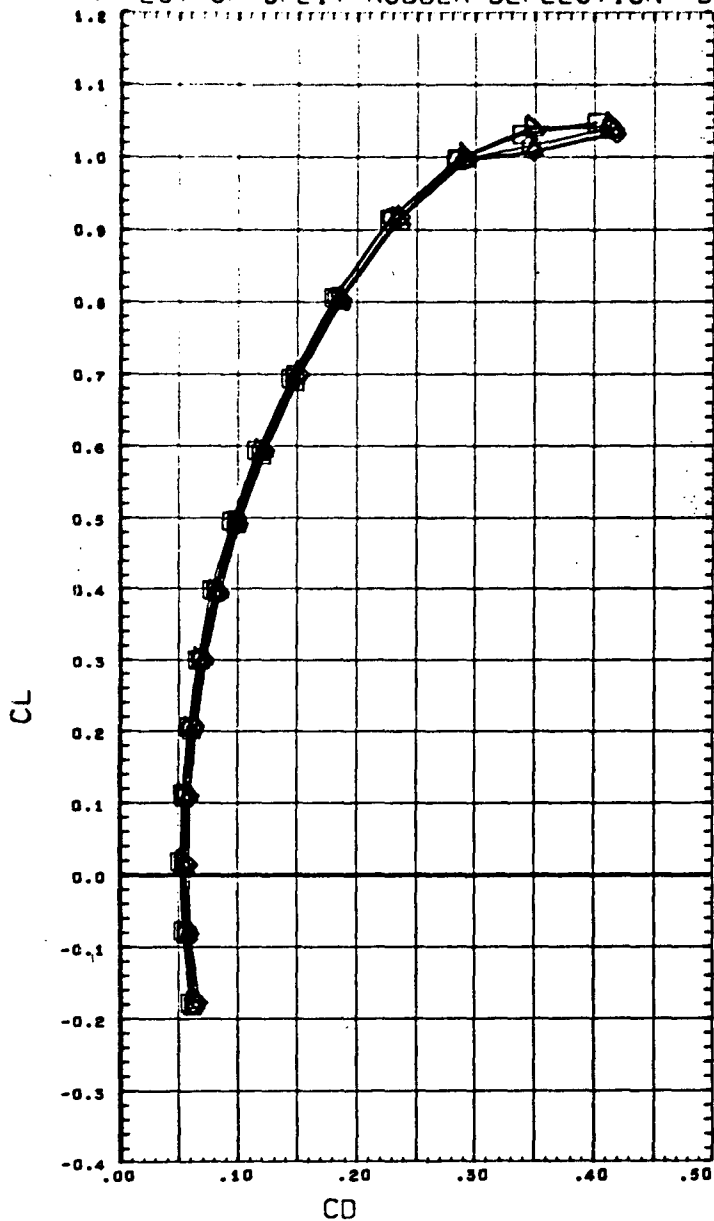


DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6002)	GDLST 603-0 B30W23C10V14E38
(AD6040)	GDLST 603-0 B30W23C10V14E38 (SPLIT RUDDER)
(AD6038)	GDLST 603-0 B30W23C10V14E38 (RUDDER)
(AD6003)	GDLST 603-0 B30W23C10V14E38
(AD6041)	GDLST 603-0 B30W23C10V14E38 (SPLIT RUDDER)
(AD6039)	GDLST 603-0 B30W23C10V14E38 (RUDDER)

MACH 0.201

BETA	ELEVTR	CANARD	RUDDER	REFERENCE INFORMATION
0.000	0.000	0.000	0.000	SREF 492.4804 sq. in
0.000	0.000	0.000	5.000	LREF 16.1880 in.
0.000	0.000	0.000	10.000	BREF 34.6320 in.
5.000	0.000	0.000	0.000	XMRP 29.0780 in.
5.000	0.000	0.000	5.000	YMRP 0.0000 in.
5.000	0.000	0.000	10.000	ZMRP 0.0000 in.
				SCALE 0.0200

EFFECT OF SPLIT RUDDER DEFLECTION- BASIC B-18E3 CONFIGURATION



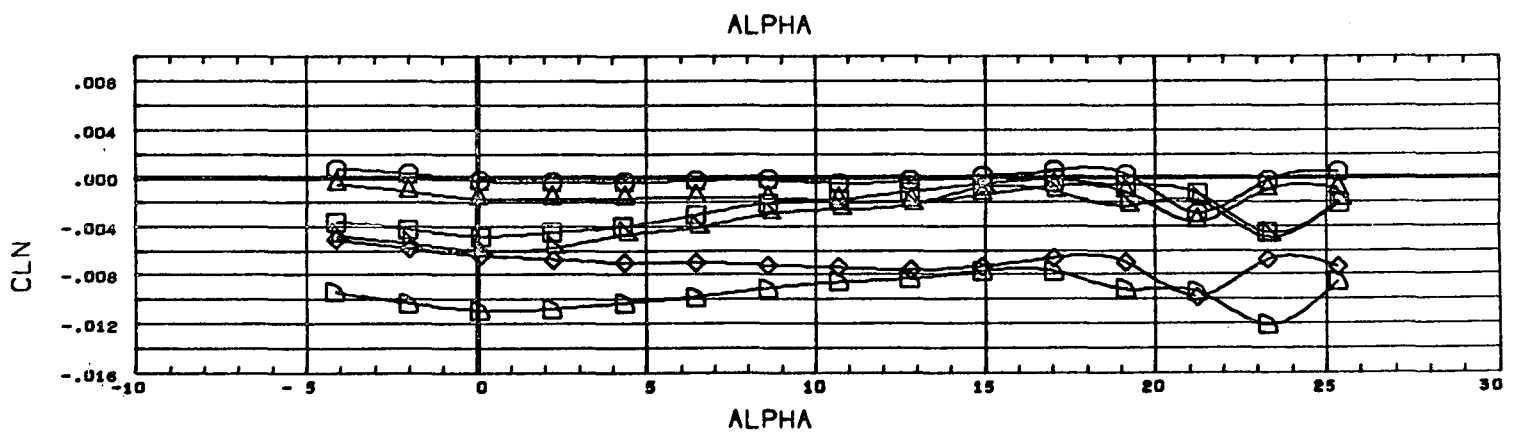
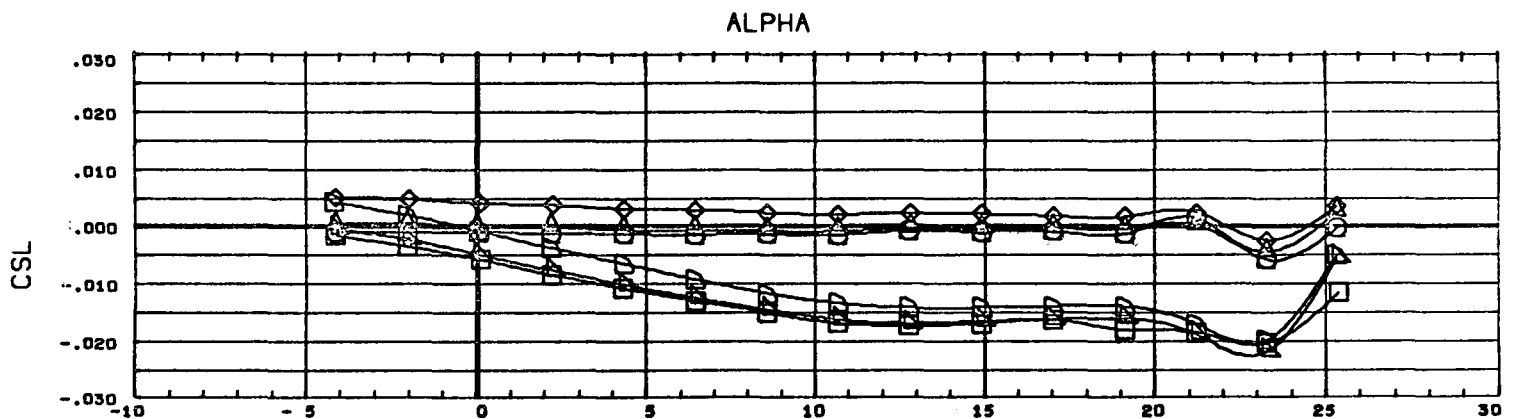
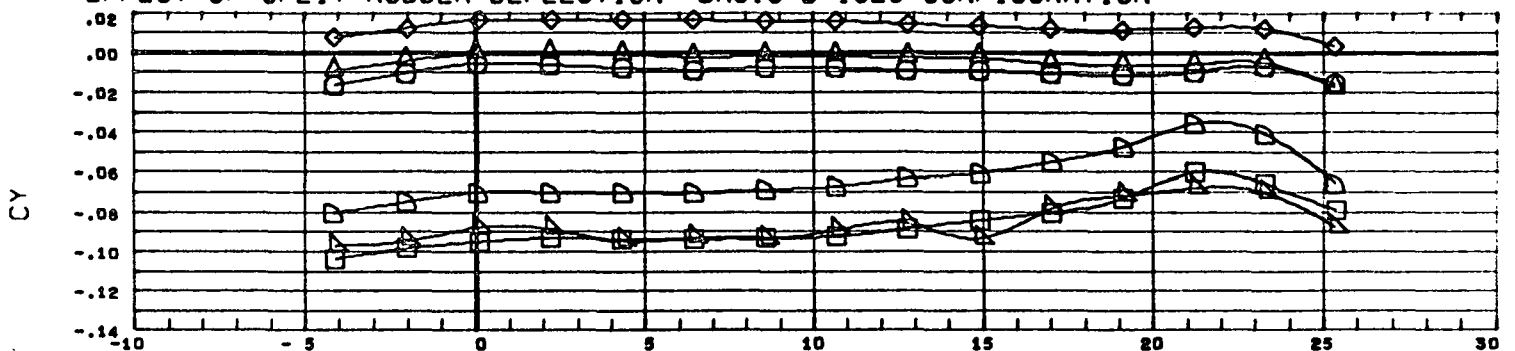
DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AC6002)	GCLST 603-0 B30W23C10V14E38
(AC6040)	GCLST 603-0 B30W23C10V14E38 (SPLIT RUDDER)
(AC6038)	GCLST 603-0 B30W23C10V14E38 (RUDDER)
(AC6003)	GCLST 603-0 B30W23C10V14E38
(AC6041)	GCLST 603-0 B30W23C10V14E38 (SPLIT RUDDER)
(AC6039)	GCLST 603-0 B30W23C10V14E38 (RUDDER)

BETA	ELEVTR	CANARC	RUDDER	REFERENCE INFORMATION
0.000	0.000	0.000	0.000	SREF 492.4804 SQ. IN
0.000	0.000	0.000	5.000	LREF 16.1880 IN.
0.000	0.000	0.000	10.000	BREF 34.6320 IN.
5.000	0.000	0.000	0.000	XMRP 29.0780 IN.
5.000	0.000	0.000	5.000	YMRP 0.0000 IN.
5.000	0.000	0.000	10.000	ZMRP 0.0000 IN.
			SCALE	0.0200

MACH .20

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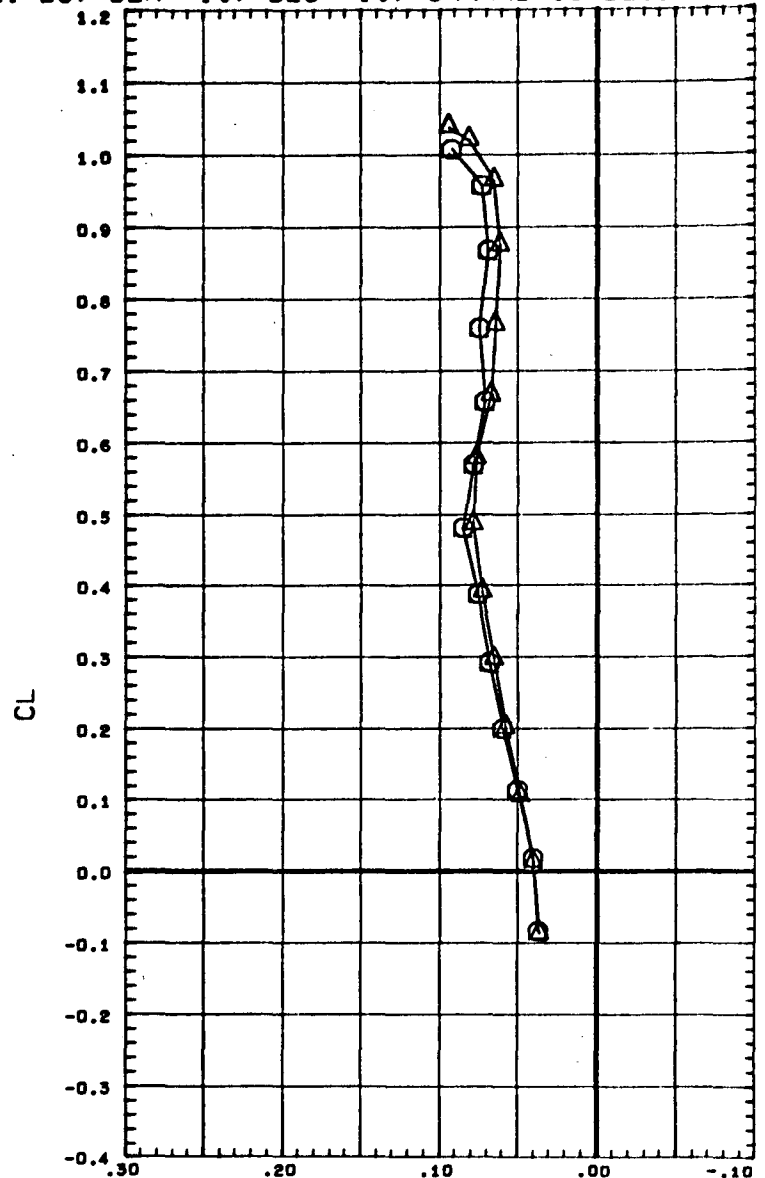
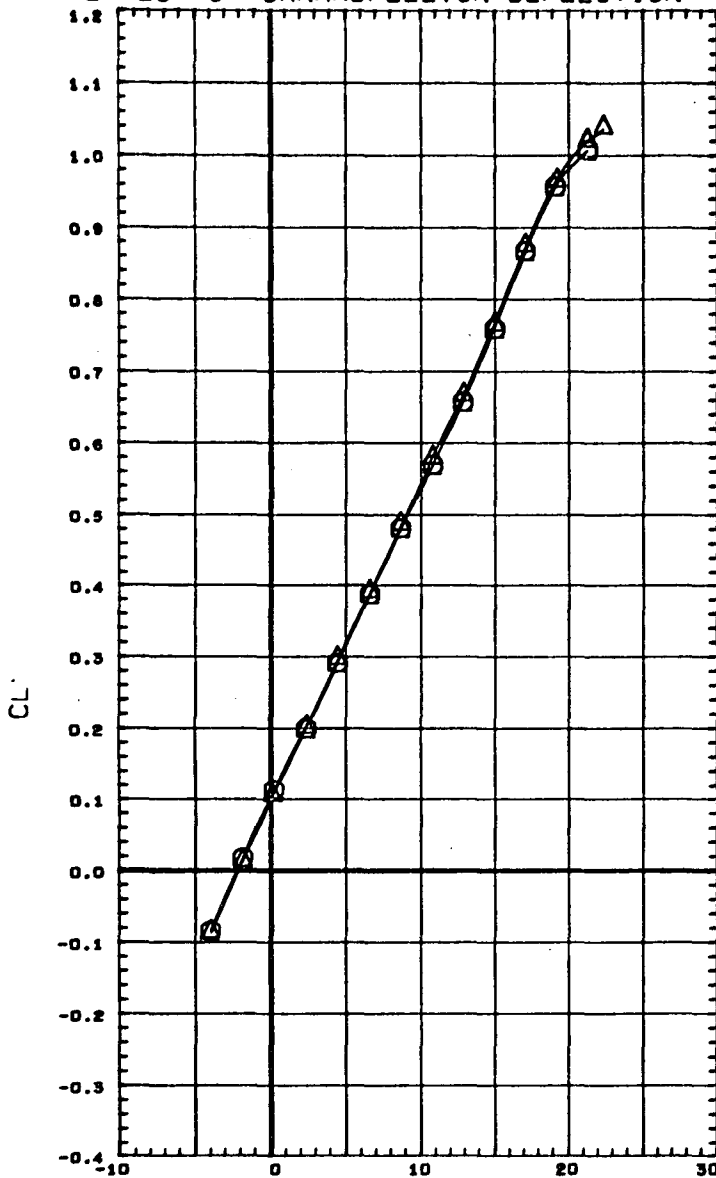
EFFECT OF SPLIT RUDDER DEFLECTION- BASIC B-18E3 CONFIGURATION



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	RUDDER	AILRON	REFERENCE INFORMATION	
(AD6002)	GDLST 603-0 B30W23C10V14E38	0.000	0.000	0.000	0.000	SREF	492.4804 SQ. IN
(AD6040)	GDLST 603-0 B30W23C10V14E38 (SPLIT RUDDER)	0.000	0.000	5.000	0.000	LREF	16.1880 IN.
(AD6038)	GDLST 603-0 B30W23C10V14E38 (RUDDER)	0.000	0.000	10.000	0.000	BREF	34.6320 IN.
(AD6003)	GDLST 603-0 B30W23C10V14E38	5.000	0.000	0.000	0.000	XMRP	29.0780 IN.
(AD6041)	GDLST 603-0 B30W23C10V14E38 (SPLIT RUDDER)	5.000	0.000	5.000	0.000	YMRP	0.0000 IN.
(AD6039)	GDLST 603-0 B30W23C10V14E38 (RUDDER)	5.000	0.000	10.000	0.000	ZMRP	0.0000 IN.
						SCALE	0.0200

MACH 0.201

EFFECT OF CANARD/ELEVON DEFLECTION- DEI=25, DEM=-10, DEO=-10, CANARD=15 DEG.

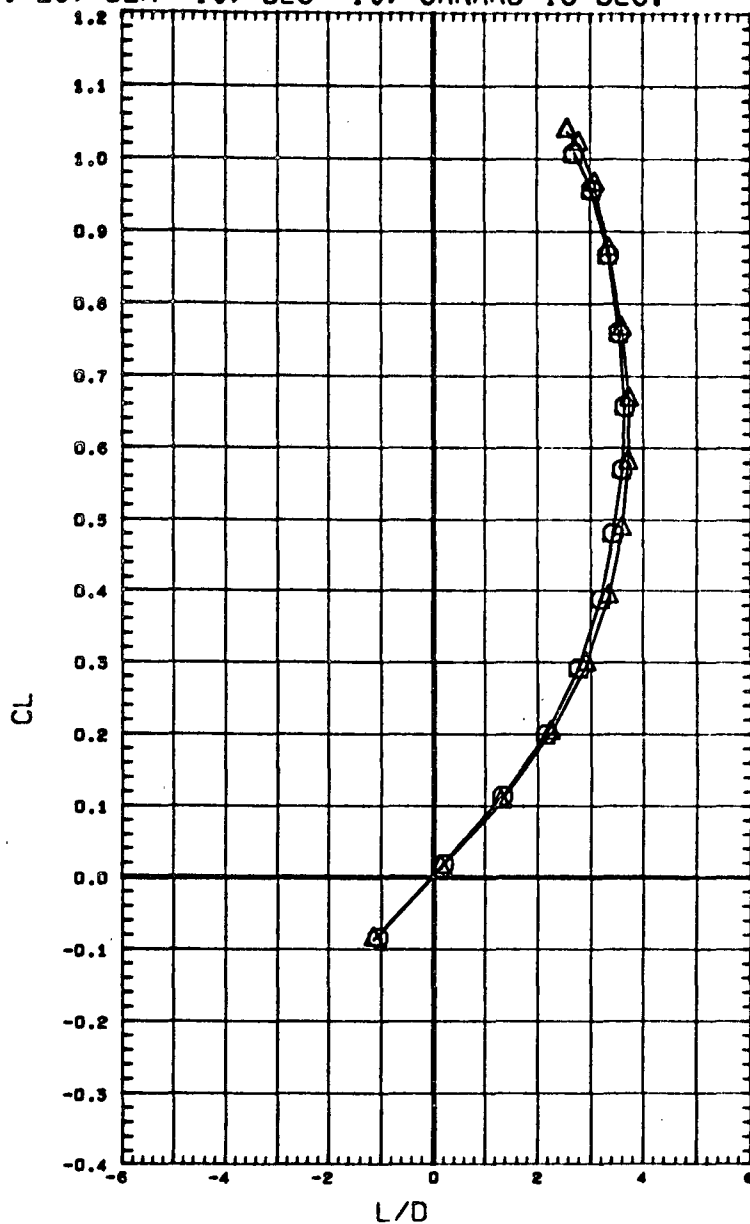
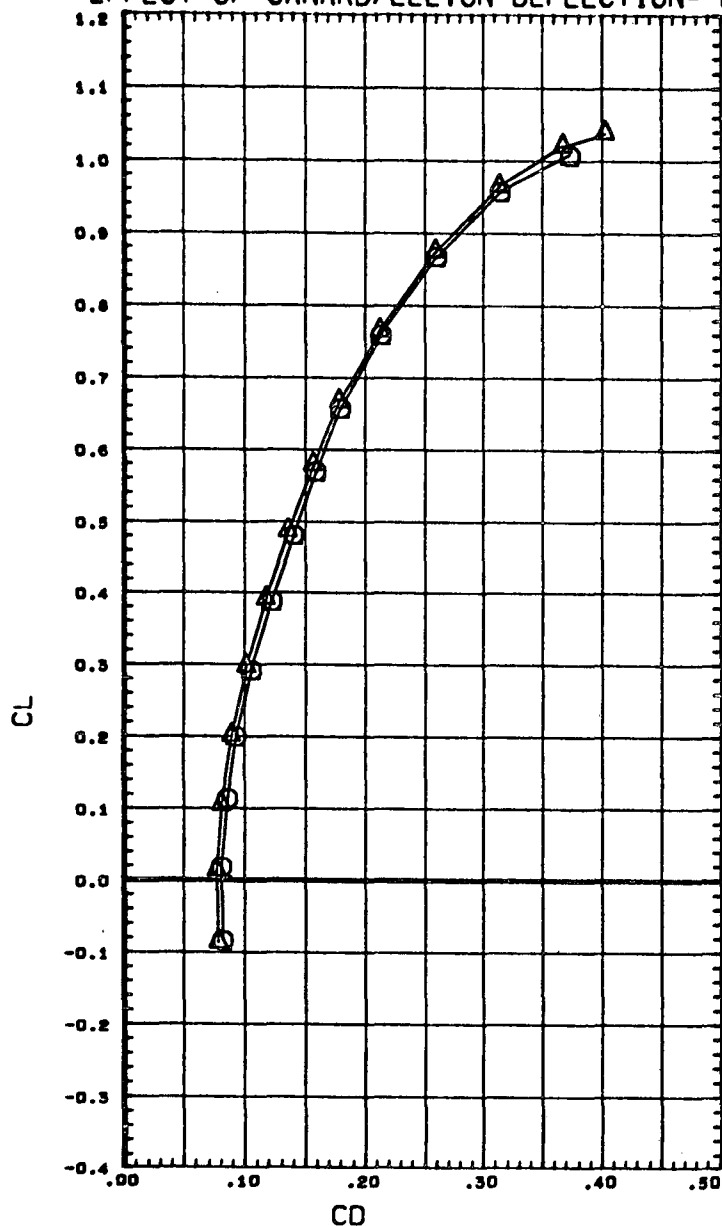


DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6071) ○	GDLST 603-0 B30W23C10V14E38 (CANARD + ELEVON)
(AD6072) △	GDLST 603-0 B30W23C10V14E38 (CANARD + ELEVON)

MACH 0.201

BETA	ELEVTR	RUDDER	AILRON	REFERENCE INFORMATION
0.000	1.660	0.000	0.000	SREF 492.4804 SQ. IN
5.000	1.660	0.000	0.000	LREF 16.1880 IN.
				BREF 34.6320 IN.
				XMRP 29.0780 IN.
				YMRP 0.0000 IN.
				ZMRP 0.0000 IN.
				SCALE 0.0200

EFFECT OF CANARD/ELEVON DEFLECTION- DEI=25, DEM=-10, DEO=-10, CANARD=15 DEG.

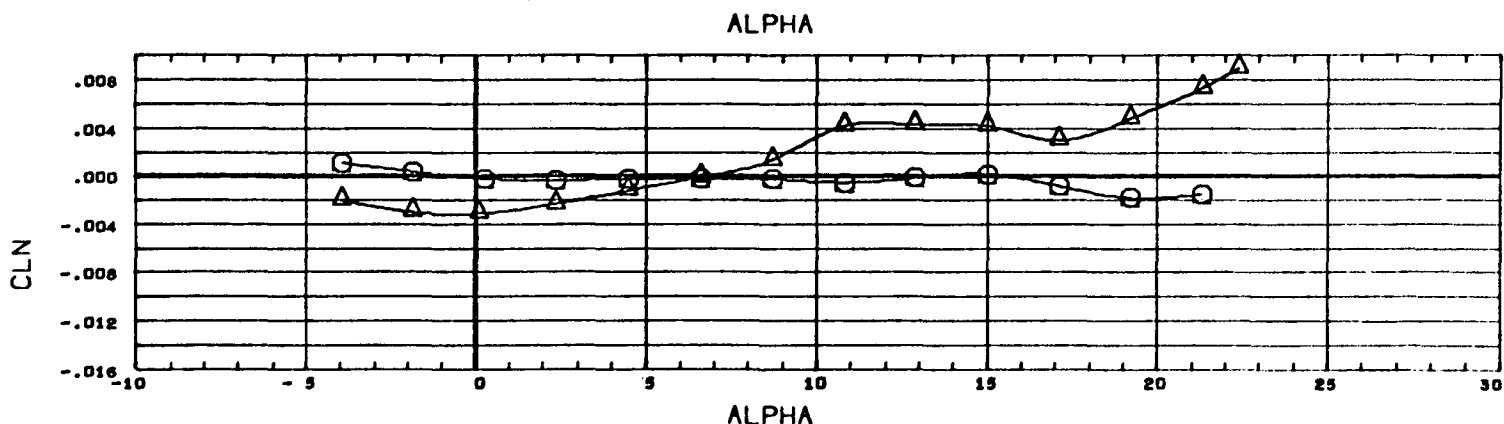
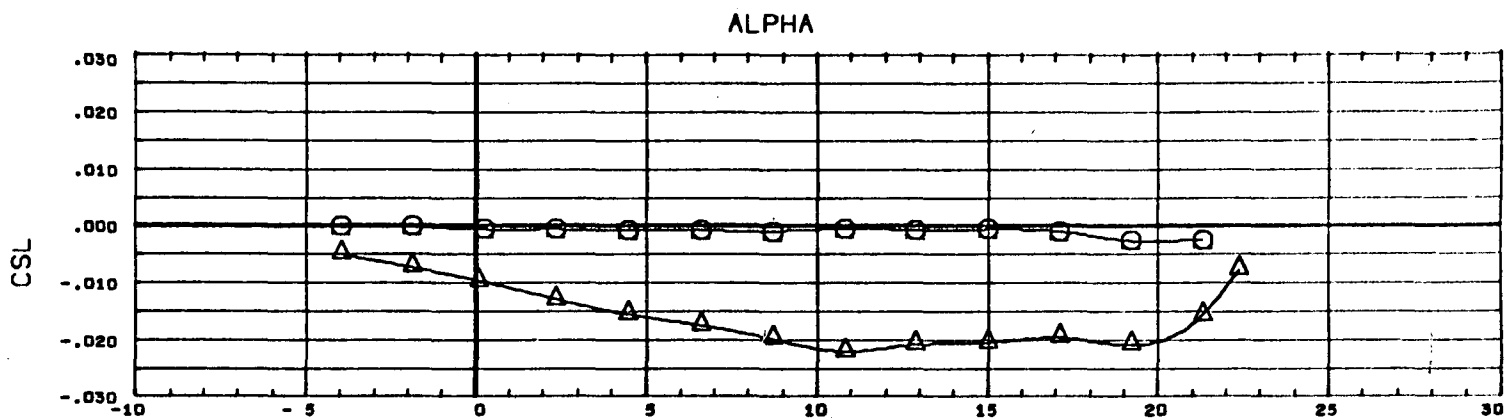
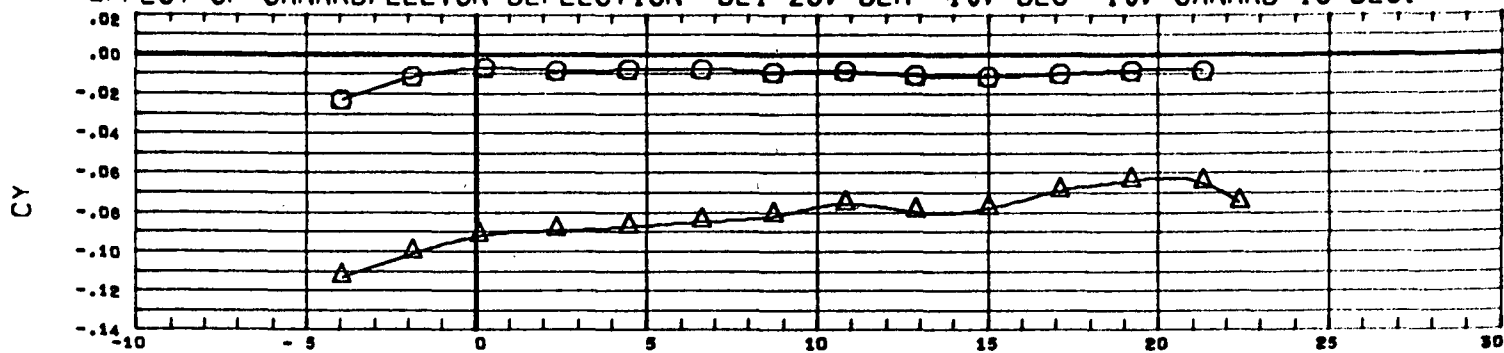


DATA SET	SYMBOL	CONFIGURATION	DESCRIPTION
(AD6071)	○	GDLST 603-0	830W23C10V14E38 (CANARD + ELEVON)
(AD6072)	△	GDLST 603-0	830W23C10V14E38 (CANARD + ELEVON)

MACH 0.201

BETA	ELEVTR	RUDDER	AILRON	REFERENCE INFORMATION	
0.000	1.660	0.000	0.000	SREF	492.4804 SQ. IN
5.000	1.660	0.000	0.000	LREF	16.1880 IN.
				BREF	34.6320 IN.
				XMRP	29.0780 IN.
				YMRP	0.0000 IN.
				ZMRP	0.0000 IN.
				SCALE	0.0200

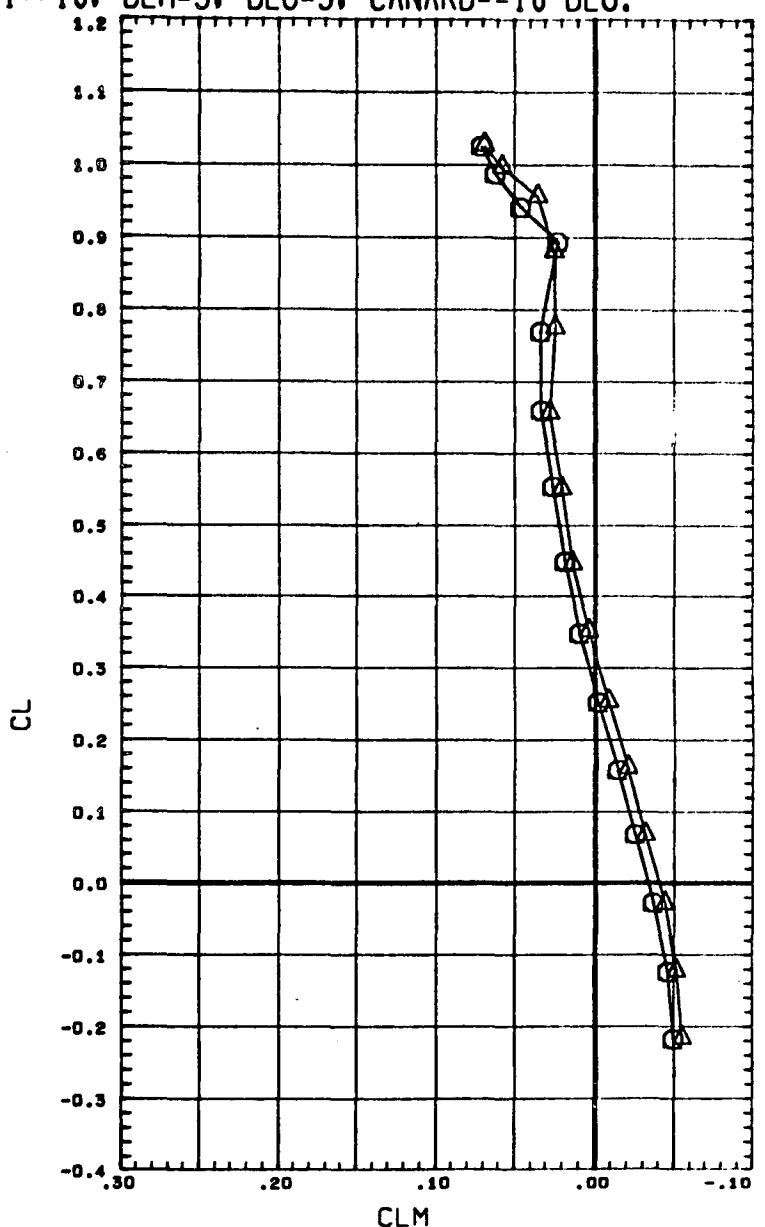
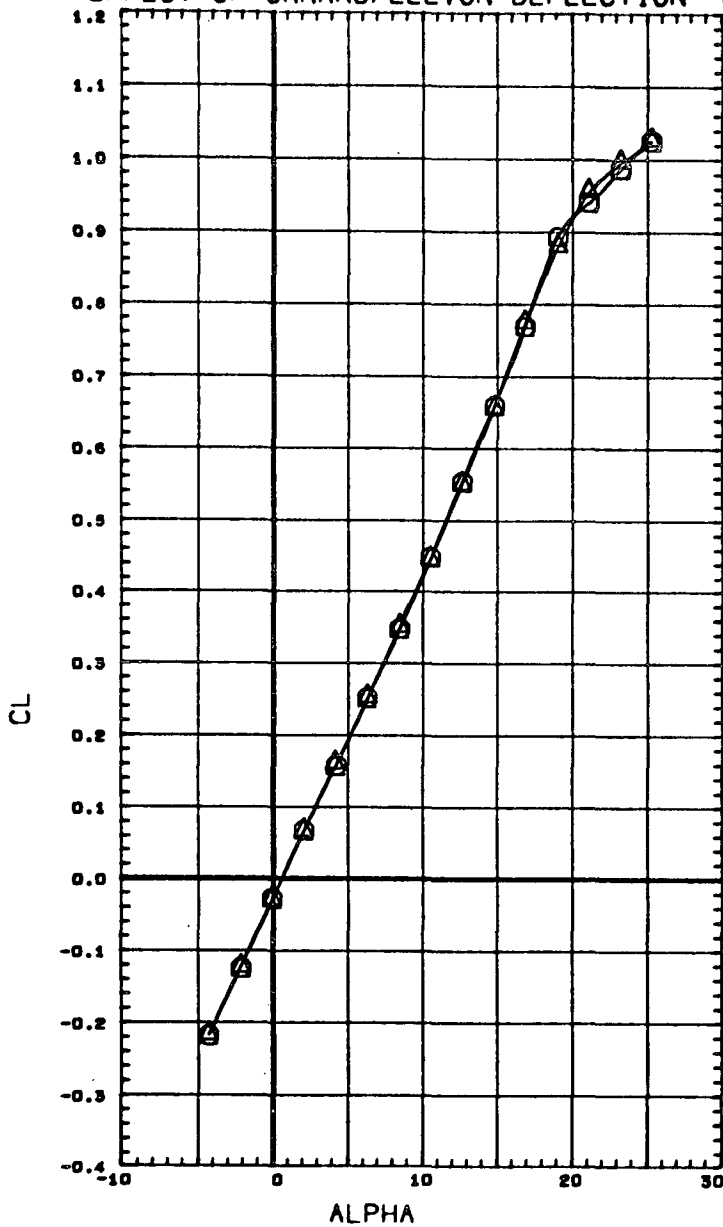
EFFECT OF CANARD/ELEVON DEFLECTION- DEI=25, DEM=-10, DEO=-10, CANARD=15 DEG.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	RUDDER	AILRON	REFERENCE INFORMATION	
(AD6071)	GDLST 603-D 830W23C10V14E38 (CANARD + ELEVON)	0.000	1.660	0.000	0.000	SREF	492.4804 SQ. IN
(AD6072)	GDLST 603-D 830W23C10V14E38 (CANARD + ELEVON)	5.000	1.660	0.000	0.000	LREF	16.1880 IN.
						BREF	34.6320 IN.
						XMRP	29.0780 IN.
						YMRP	0.0000 IN.
						ZMRP	0.0000 IN.
						SCALE	0.0200

MACH 0.201

EFFECT OF CANARD/ELEVON DEFLECTION- DEI=-10, DEM=5, DEO=5, CANARD=-10 DEG.

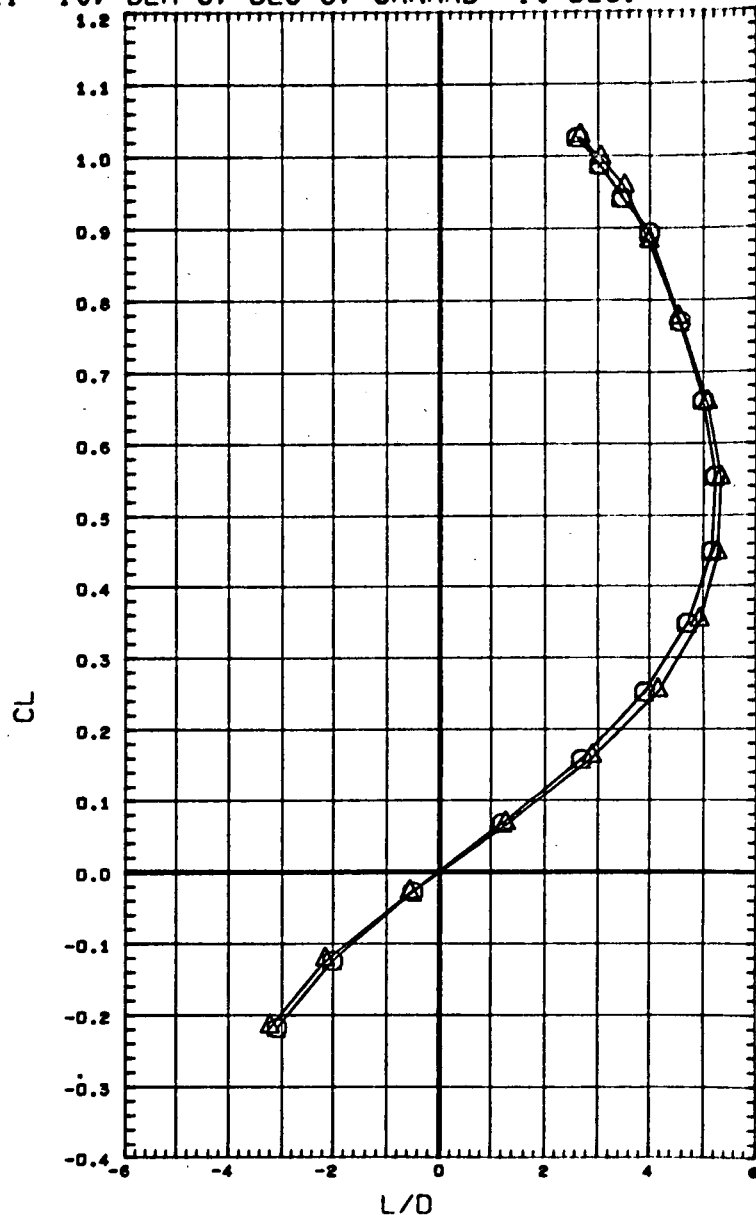
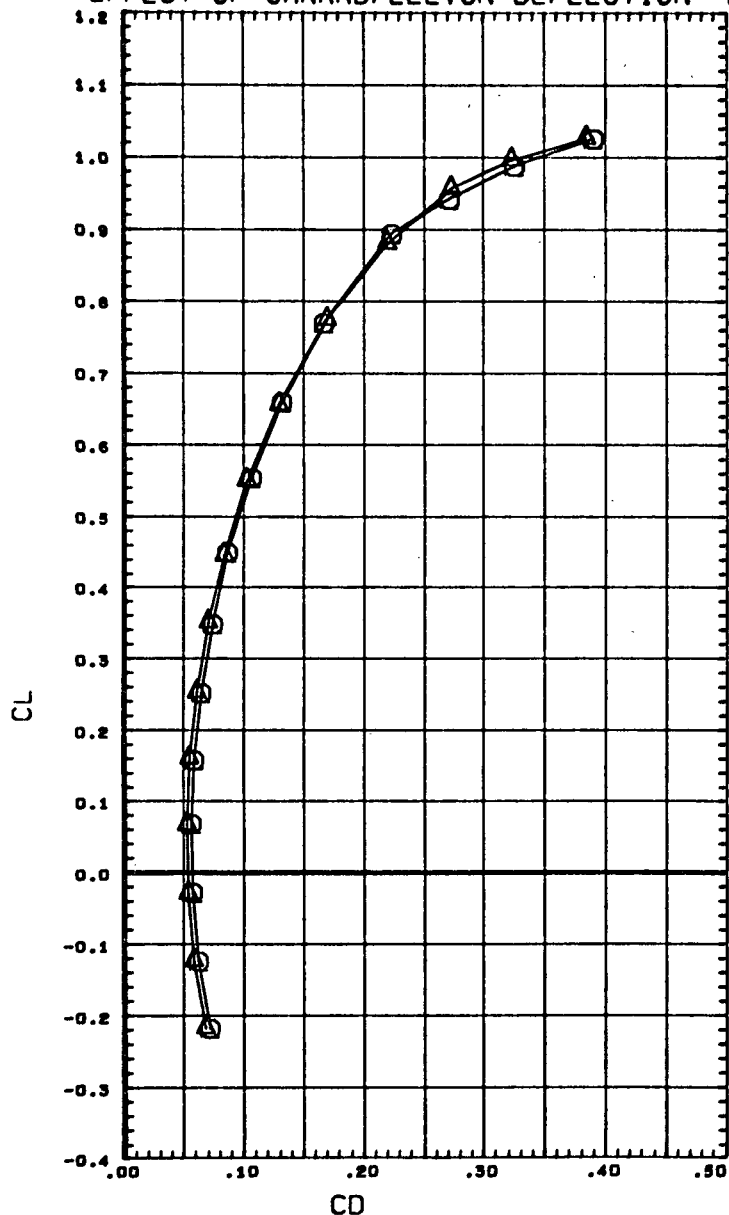


DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6073)	Q GDLST 603-0 830W23C10V14E38 (CANARD + ELEVON)
(AD6074)	Δ GDLST 603-0 830W23C10V14E38 (CANARD + ELEVON)

MACH 0.201

BETA	ELEVTR	RUDDER	AILRON	REFERENCE INFORMATION
0.000	0.000	0.000	0.000	SREF 492.4804 SQ. IN
5.000	0.000	0.000	0.000	LREF 16.1880 IN.
				BREF 34.6320 IN.
				XMRP 29.0780 IN.
				YMRP 0.0000 IN.
				ZMRP 0.0000 IN.
				SCALE 0.0200

EFFECT OF CANARD/ELEVON DEFLECTION- DEI=-10, DEM=5, DEO=5, CANARD=-10 DEG.

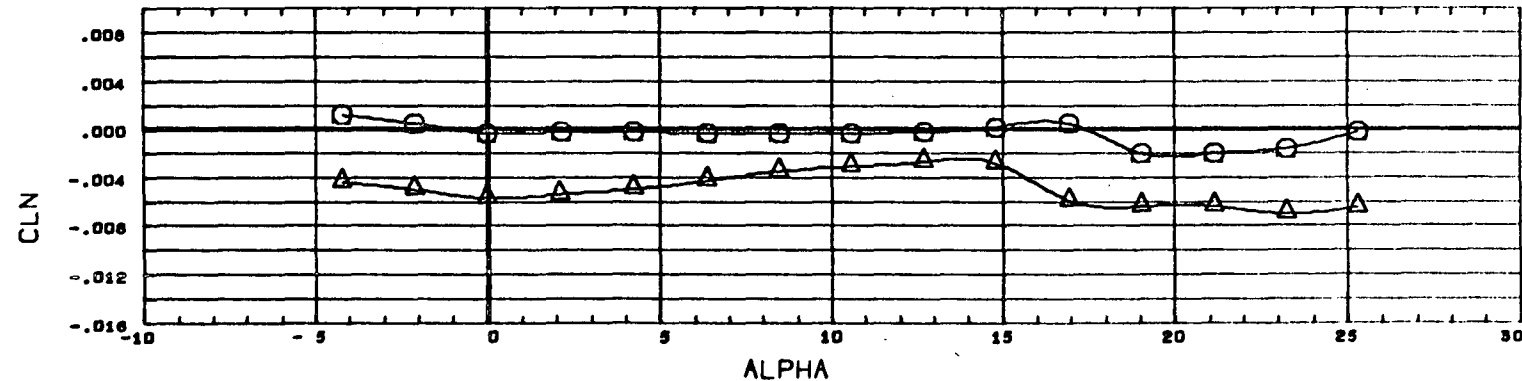
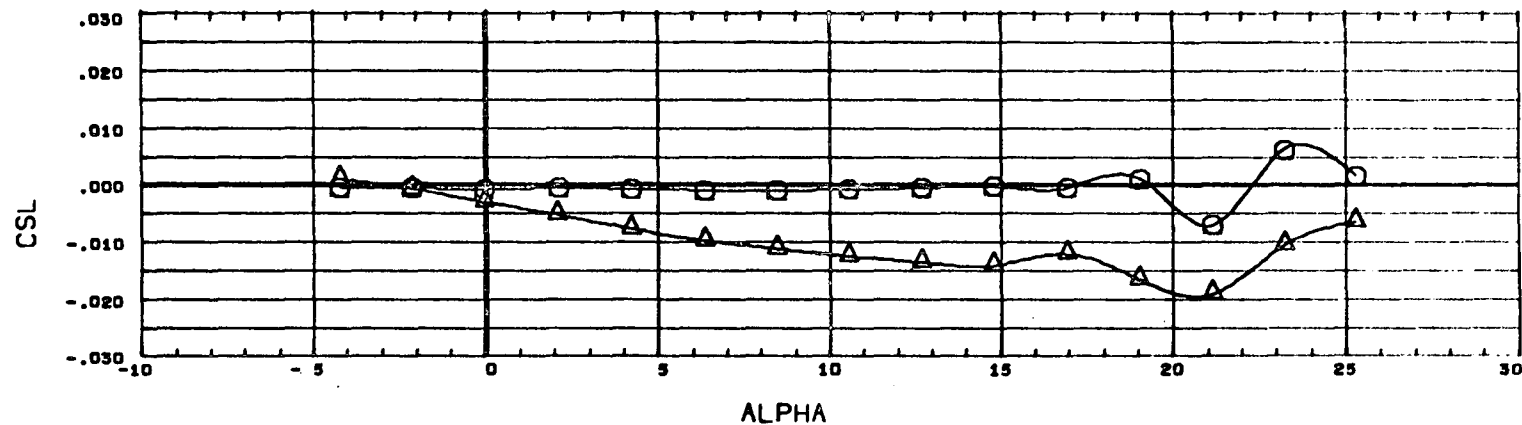
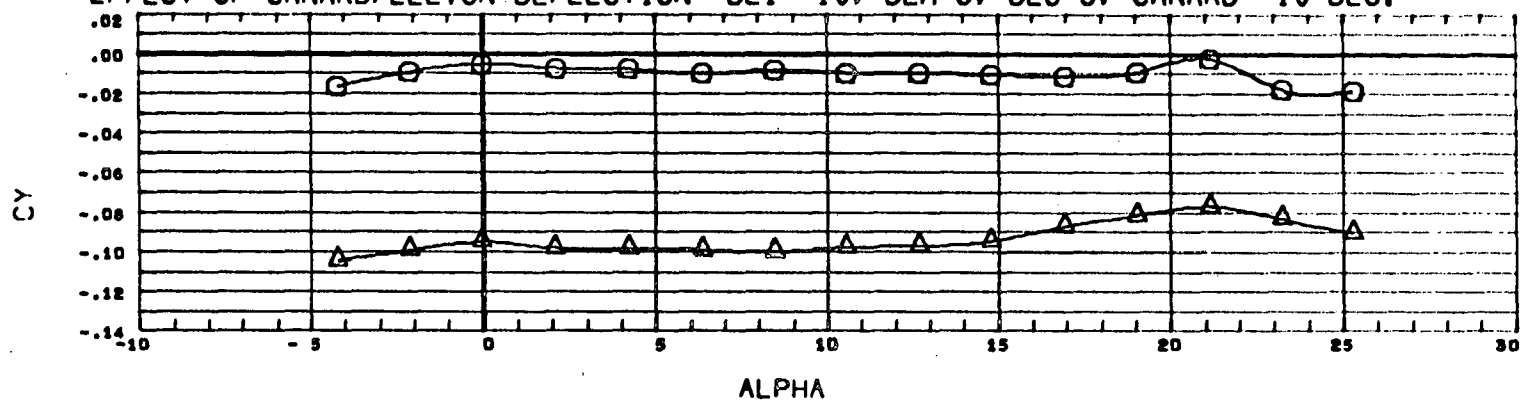


DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6073) ○	GDLST 603-0 B30W23C10V14E38 (CANARD + ELEVON)
(AD6074) △	GDLST 603-0 B30W23C10V14E38 (CANARD + ELEVON)

MACH 0.201

BETA	ELEVTR	RUDDER	AILRON	REFERENCE INFORMATION
0.000	0.000	0.000	0.000	SREF 492.4804 sq. in
5.000	0.000	0.000	0.000	LREF 16.1880 in.
				BREF 34.6320 in.
				XMRP 29.0780 in.
				YMRP 0.0000 in.
				ZMRP 0.0000 in.
				SCALE 0.0200

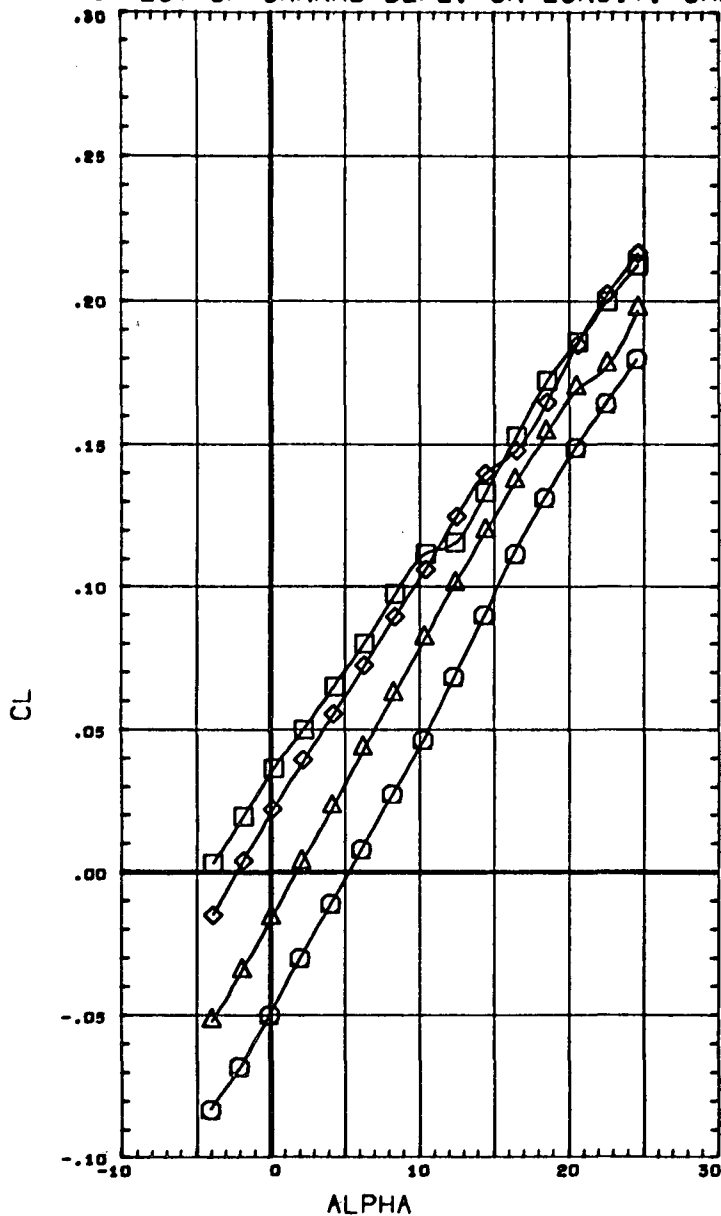
EFFECT OF CANARD/ELEVON DEFLECTION- DEI=-10, DEM=5, DEO=5, CANARD=-10 DEG.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	RUDDER	AILRON	REFERENCE INFORMATION	
(AD6073)	GDLST 603-D 830W23C10V14E38 (CANARD + ELEVON)	0.000	0.000	0.000	0.000	SREF	492.4804 SQ. IN
(AD6074)	GDLST 603-D 830W23C10V14E38 (CANARD + ELEVON)	5.000	0.000	0.000	0.000	LREF	16.1880 IN.
						BREF	34.6320 IN.
						XMRP	29.0780 IN.
						YMRP	0.0000 IN.
						ZMRP	0.0000 IN.
						SCALE	0.0200

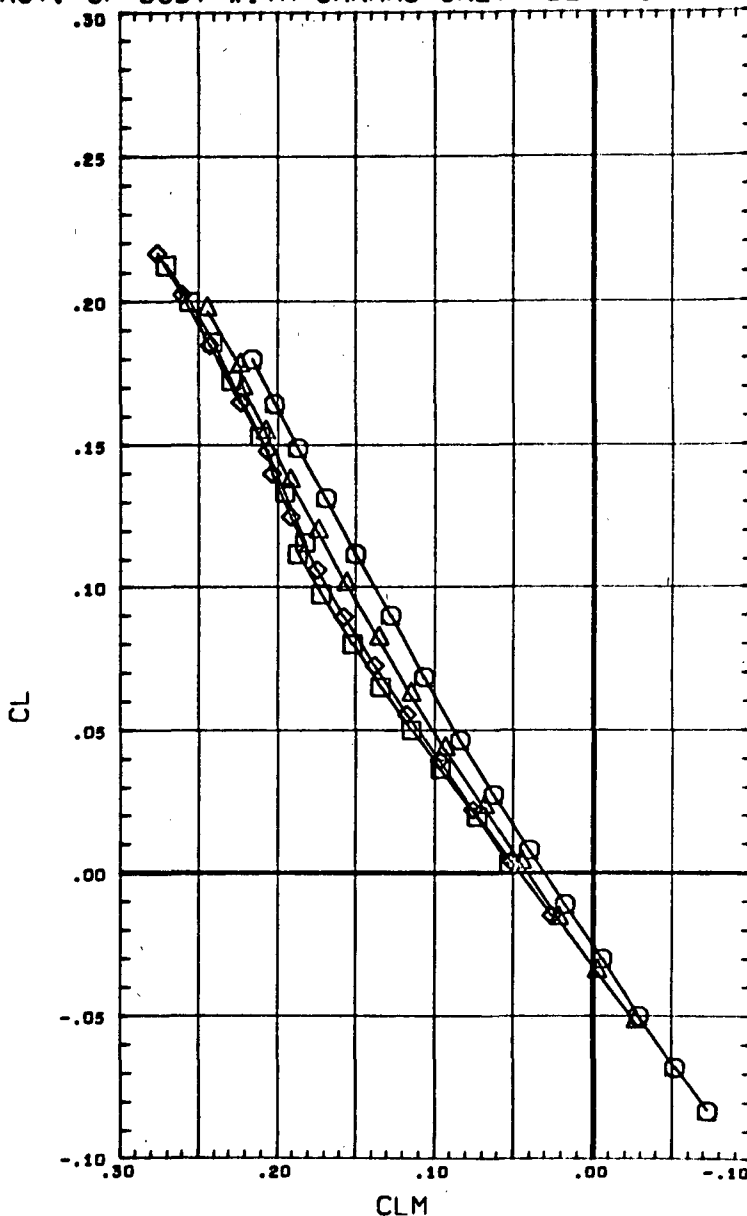
MACH 0.201

EFFECT OF CANARD DEFL. ON LONGIT. CHARACT. OF BODY WITH CANARD ONLY, BETA=0



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6085)	GDLST 603-0 B30C10
(AD6083)	GDLST 603-0 B30C10
(AD6087)	GDLST 603-0 B30C10
(AD6089)	GDLST 603-0 B30C10

MACH 0.201

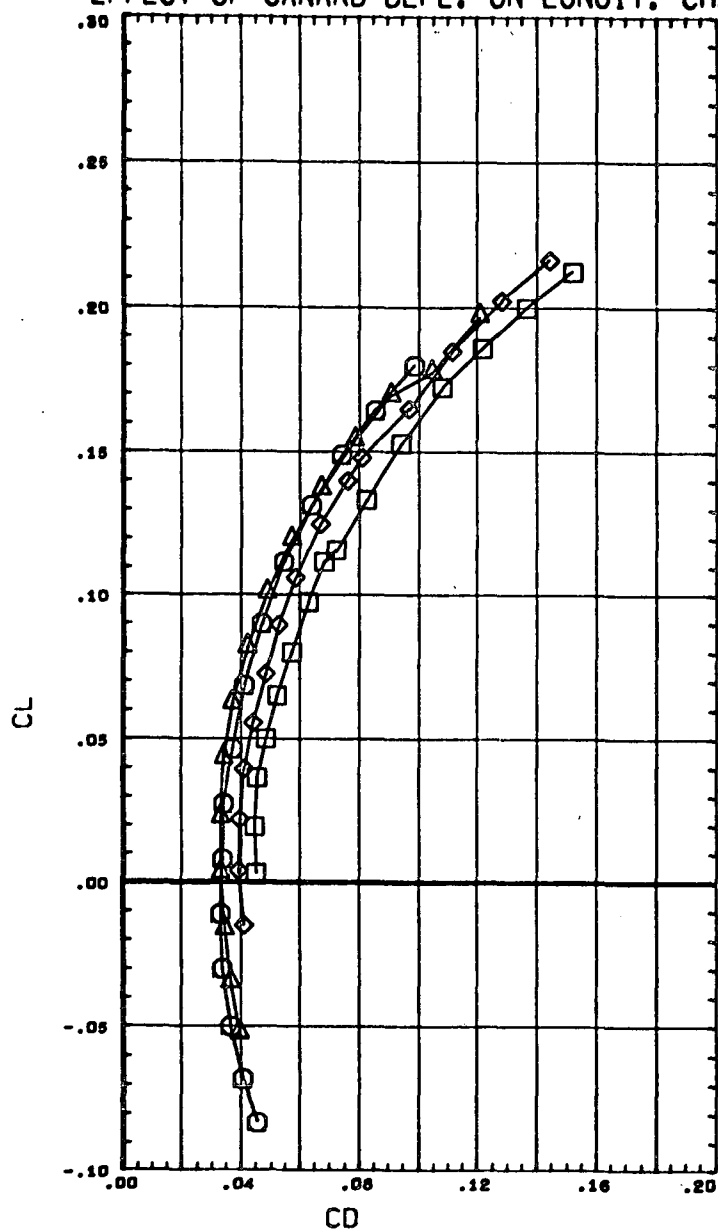


BETA	CANARD
0.000	-10.000
0.000	0.000
0.000	10.000
0.000	15.000

CLM

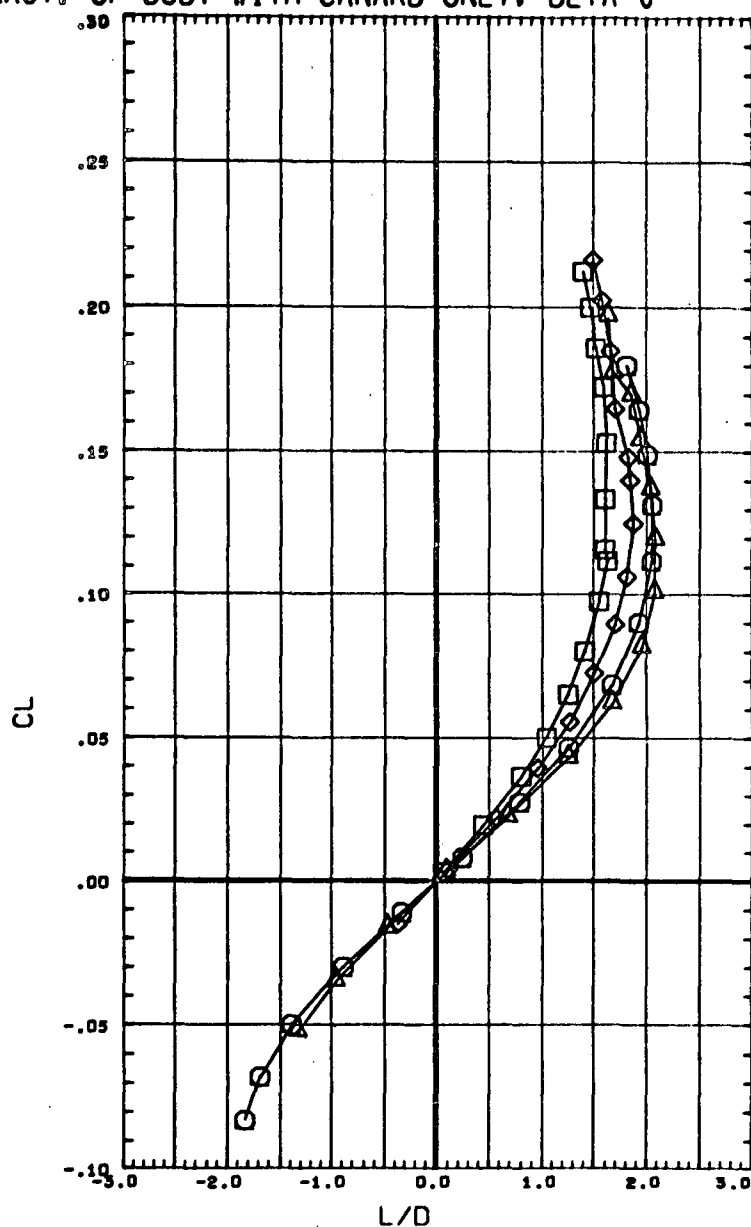
REFERENCE INFORMATION		
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LREF	16.1860	IN.
BREF	34.6320	IN.
XM RP	29.0780	IN.
YM RP	0.0000	IN.
ZM RP	0.0000	IN.
SCALE	0.0200	

EFFECT OF CANARD DEFL. ON LONGIT. CHARACT. OF BODY WITH CANARD ONLY, BETA=0



DATA SET SYMBOL	SYMBOL	CONFIGURATION DESCRIPTION
(AD6085)	○	GDLST 603-0 830C10
(AD6083)	△	GDLST 603-0 830C10
(AD6087)	◇	GDLST 603-0 830C10
(AD6089)	□	GDLST 603-0 830C10

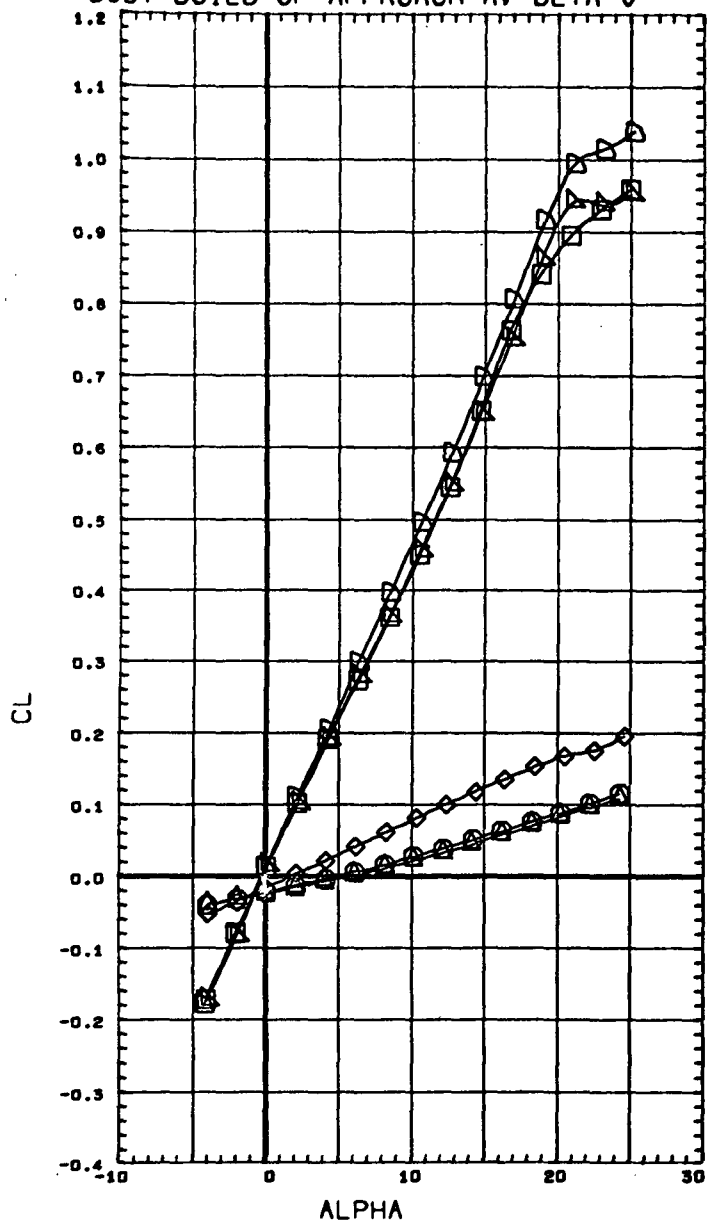
MACH 0.201



BETA	CANARD
0.000	-10.000
0.000	0.000
0.000	10.000
0.000	15.000

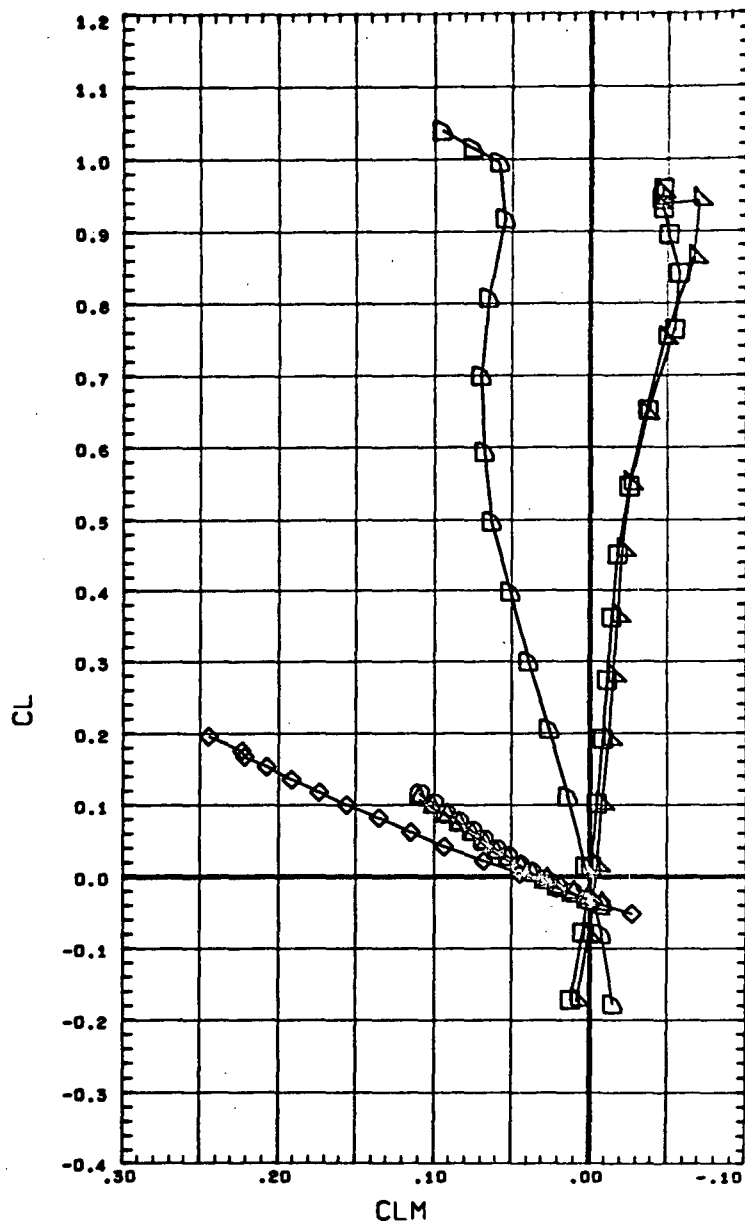
REFERENCE INFORMATION		
SREF	492.4804	SQ. IN
LREF	16.1680	IN.
BREF	34.6320	IN.
XMRP	29.0780	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0200	

BODY BUILD-UP APPROACH A, BETA=0



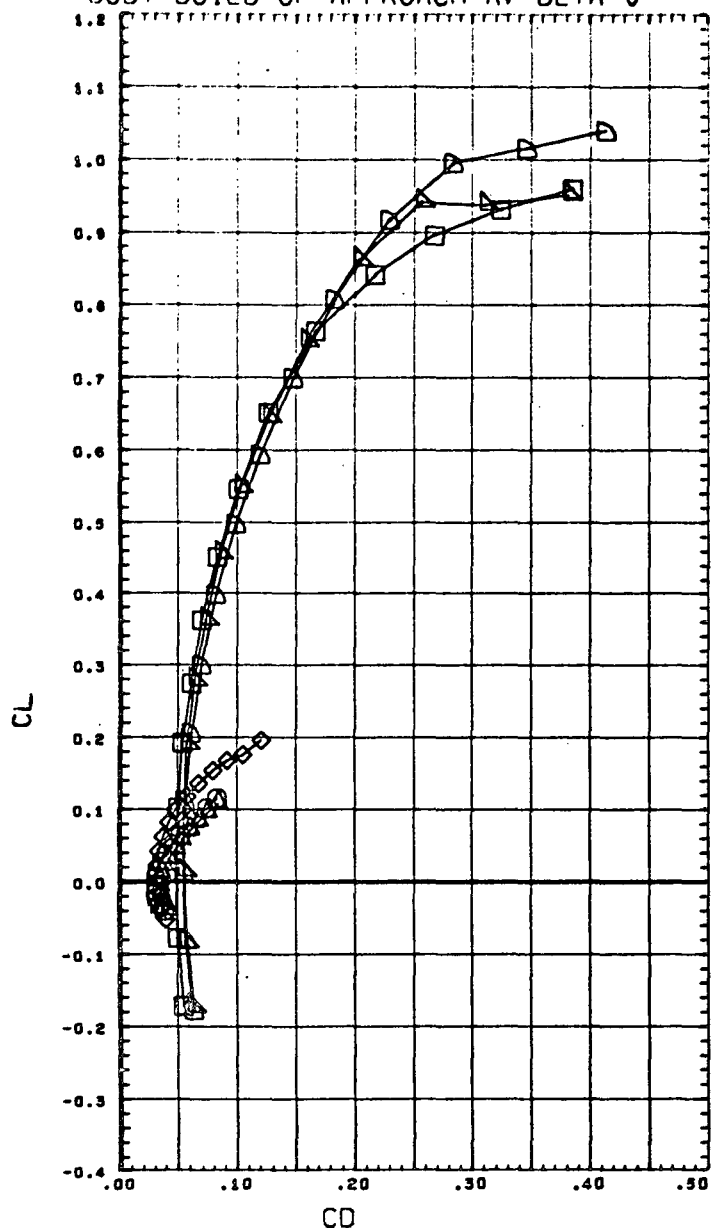
DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6093)	GDLST 603-0 B30
(AD6091)	GDLST 603-0 B30V14
(AD6083)	GDLST 603-0 B30C10
(AD6077)	GDLST 603-0 B30W23V14
(AD6044)	GDLST 603-0 B30W23V14E38
(AD6002)	GDLST 603-0 B30W23C10V14E38

MACH 0.201



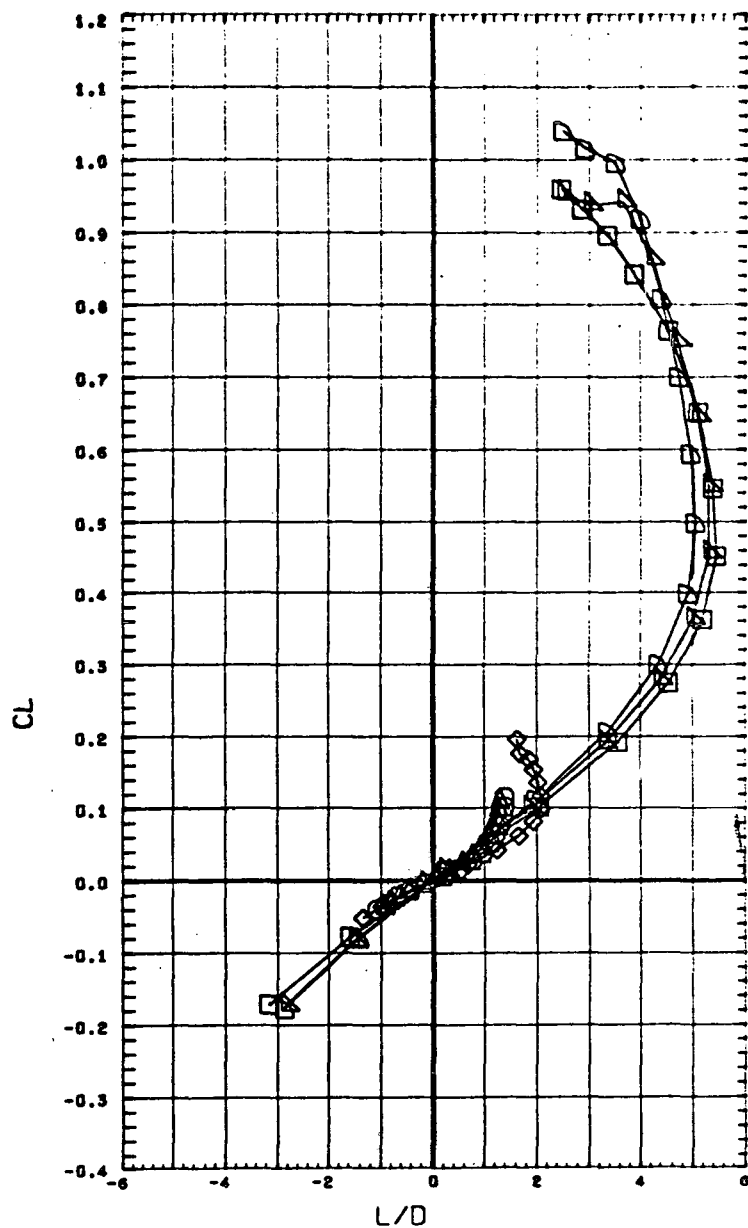
ELEVTR	CANARD	RUDDER	AILRON	REFERENCE INFORMATION
				SREF 492.4804 SQ. IN
				LREF 16.1880 IN.
				BREF 34.6320 IN.
0.000	0.000	0.000	0.000	XMRP 29.0780 IN.
0.000	0.000	0.000	0.000	YMRP 0.0000 IN.
0.000	0.000	0.000	0.000	ZMRP 0.0000 IN.
				SCALE 0.0200

BODY BUILD-UP APPROACH A. BETA=0



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AC6093)	GDLST 603-0 B30
(AC6091)	GDLST 603-0 B30V14
(AC6083)	GDLST 603-0 B30C10
(AC6077)	GDLST 603-0 B30W23V14
(AC6044)	GDLST 603-0 B30W23V14E38
(AC6002)	GDLST 603-0 B30W23C10V14E38

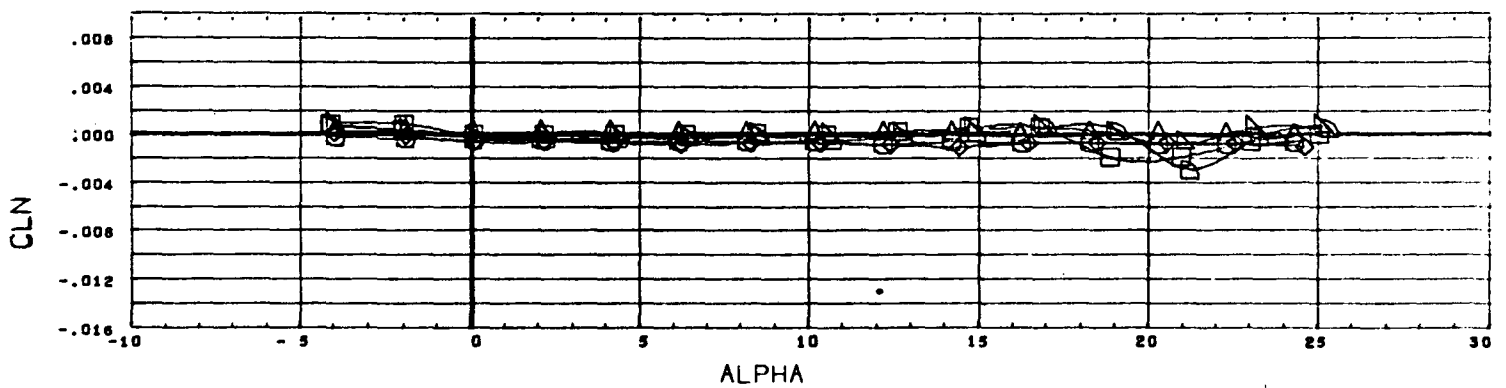
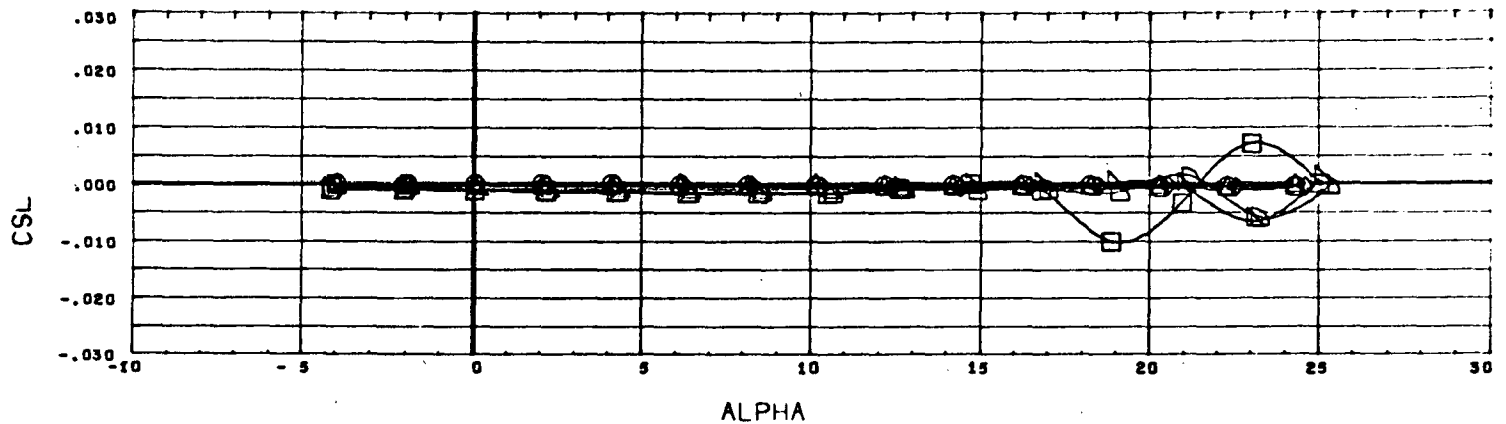
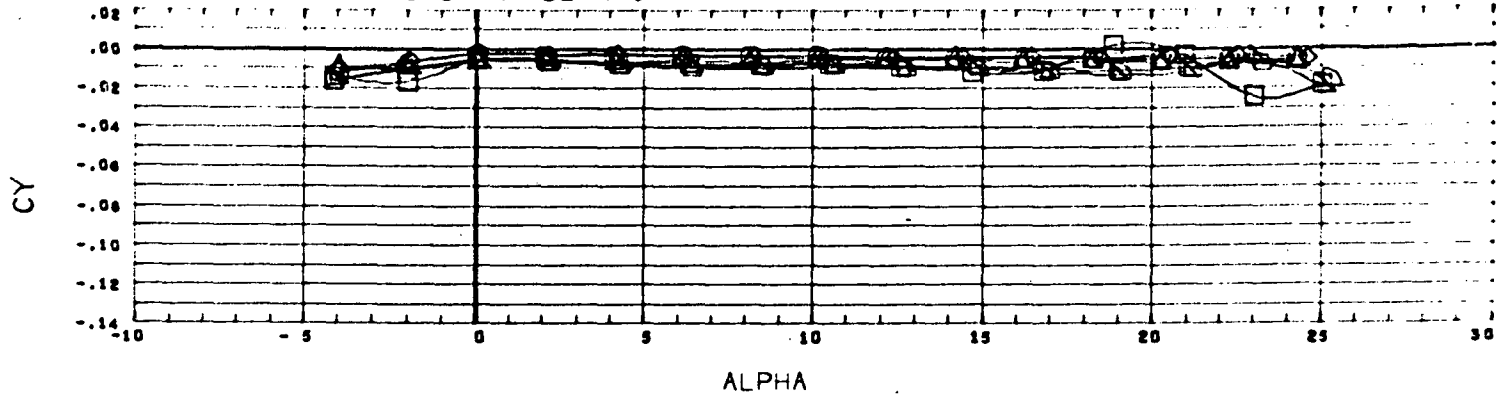
MACH .20



ELEVTR	CANARD	RUDDER	AILRON	REFERENCE INFORMATION	
				SREF	492.4854 SQ. IN
		0.000		LREF	16.1880 IN.
				BREF	34.6320 IN.
0.000		0.000	0.000	XMRP	29.0760 IN.
0.000		0.000	0.000	YMRP	0.0000 IN.
0.000	0.000	0.000	0.000	ZMRP	0.0000 IN.
				SCALE	0.0200

PAGE 50

BODY BUILD-UP APPROACH A, BETA=0

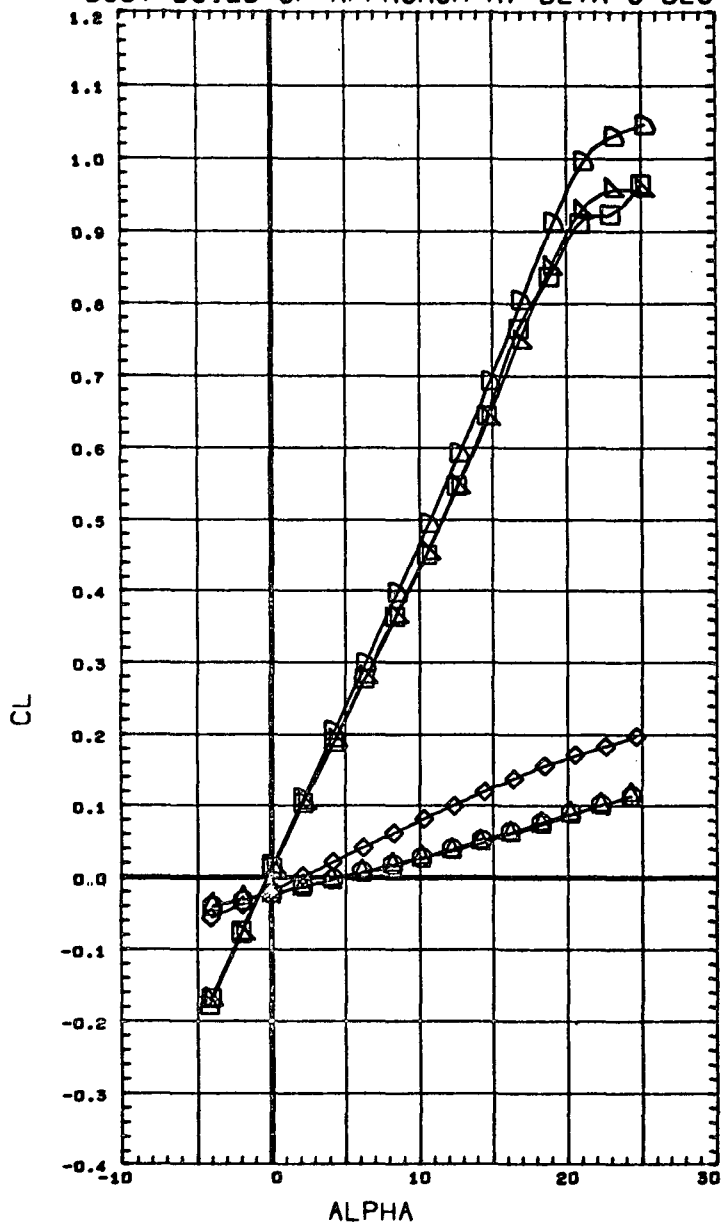


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	CANARD	RUDDER	AILRON	REFERENCE INFORMATION	
(AD6093)	GCLST 603-0 B30					SREF	492.4804 SQ. IN
(AD6091)	GCLST 603-0 B30V14			0.000		LREF	16.1886 IN.
(AD6083)	GCLST 603-0 B30C10		0.000			BREF	34.6320 IN.
(AD6077)	GCLST 603-0 B30W23V14	0.000		0.000	0.000	XMRP	29.0780 IN.
(AD6044)	GCLST 603-0 B30W23V14E38	0.000		0.000	0.000	YMRP	0.0000 IN.
(AD6002)	GCLST 603-0 B30W23C10V14E38	0.000	0.000	0.000	0.000	ZMRP	0.0000 IN.
						SCALE	0.0200

MACH .20

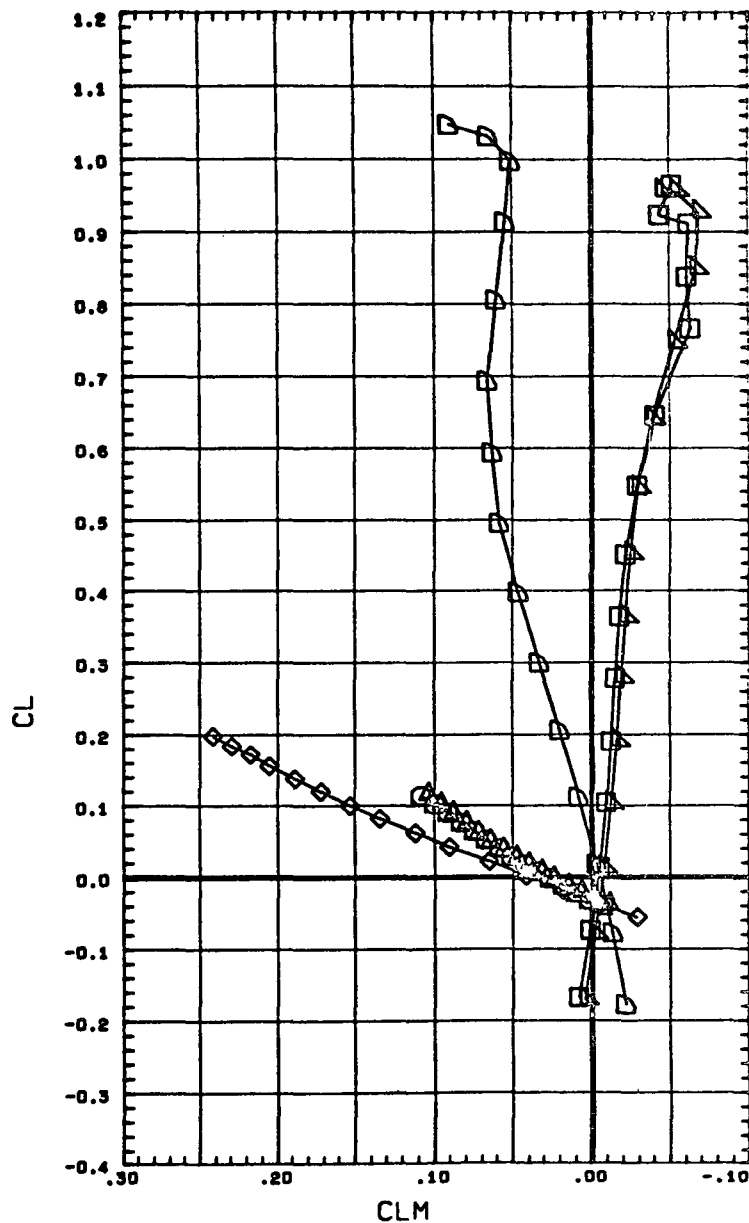
PAGE 51

BODY BUILD-UP APPROACH A, BETA=5 DEG



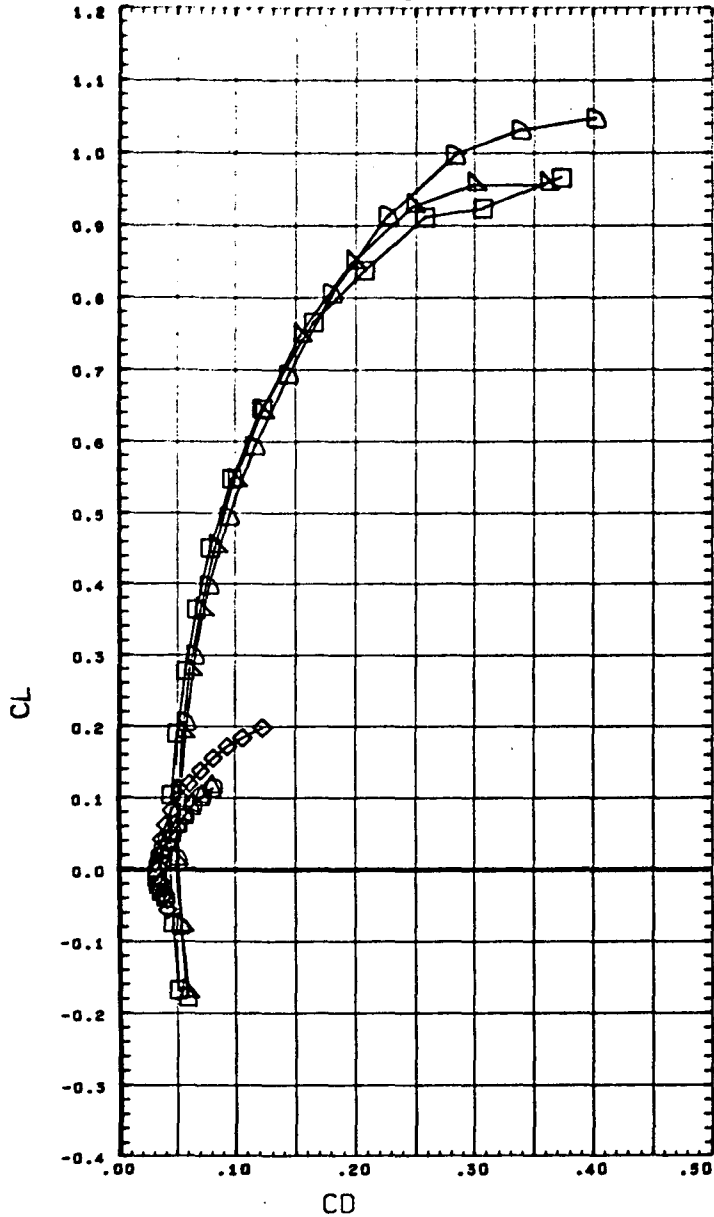
DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6094)	GDLST 603-0 B30
(AD6092)	GDLST 603-0 B30V14
(AD6084)	GDLST 603-0 B30C10
(AD6078)	GDLST 603-0 B30W23V14
(AD6045)	GDLST 603-0 B30W23V14E38
(AD6003)	GDLST 603-0 B30W23C10V14E38

MACH 0.201



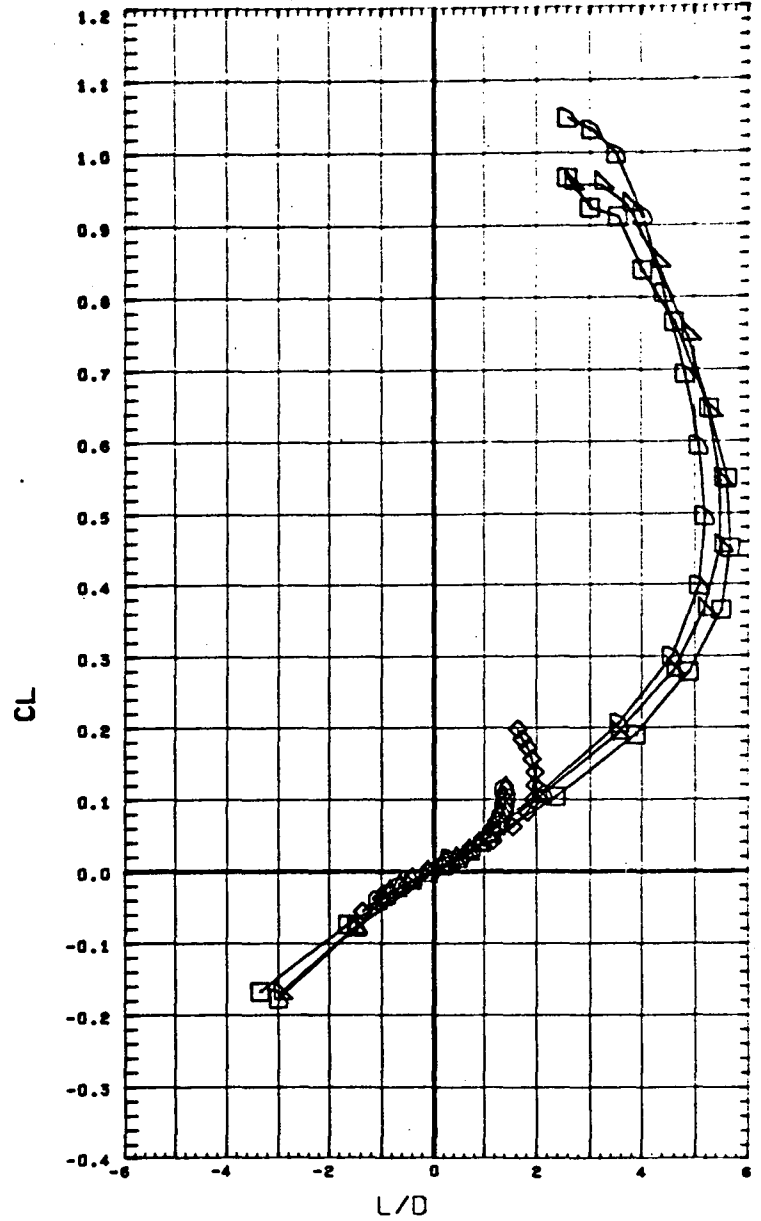
ELEVTR	CANARD	RUDDER	AILRON	REFERENCE INFORMATION	
				SREF	492.4804 SQ. IN
				LREF	16.1880 IN.
				BREF	34.6320 IN.
0.000	0.000	0.000	0.000	XMRP	29.0780 IN.
0.000		0.000	0.000	YMRP	0.0000 IN.
0.000	0.000	0.000	0.000	ZMRP	0.0000 IN.
				SCALE	0.0200

BODY BUILD-UP APPROACH A, BETA=5 DEG



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AC6094)	GCLST 603-0 B30
(AC6092)	GCLST 603-0 B30V14
(AC6084)	GCLST 603-0 B30C10
(AC6078)	GCLST 603-0 B30W23V14
(AC6045)	GCLST 603-0 B30W23V14E38
(AC6003)	GCLST 603-0 B30W23C10V14E38

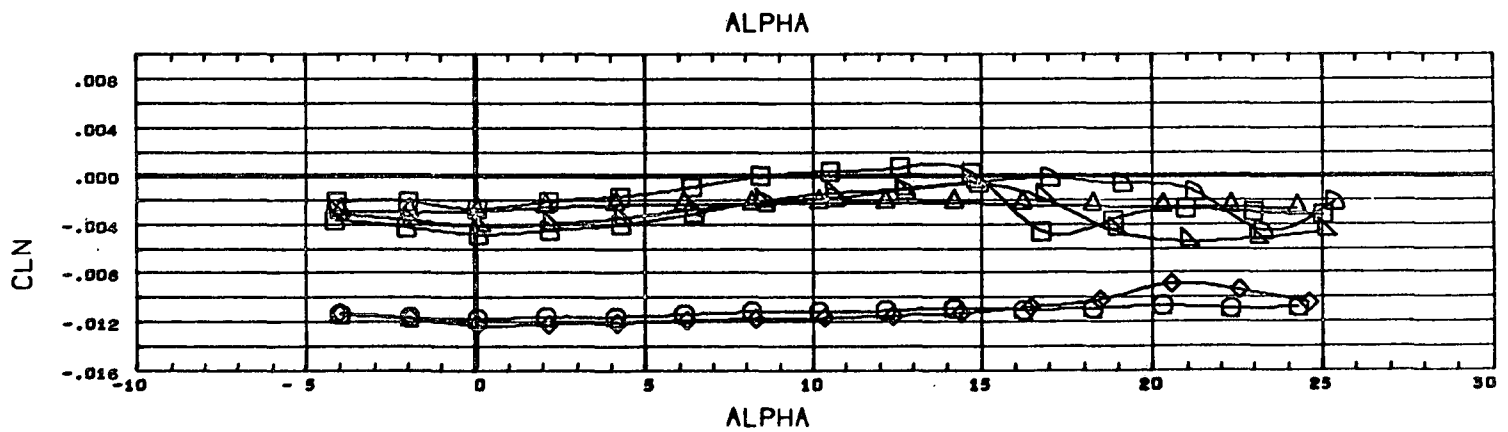
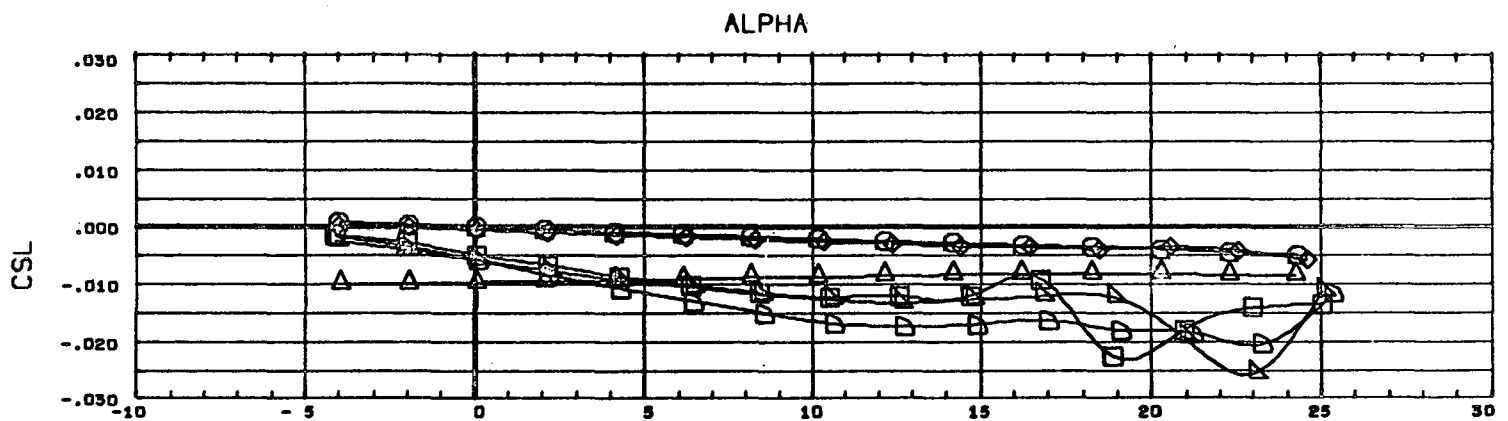
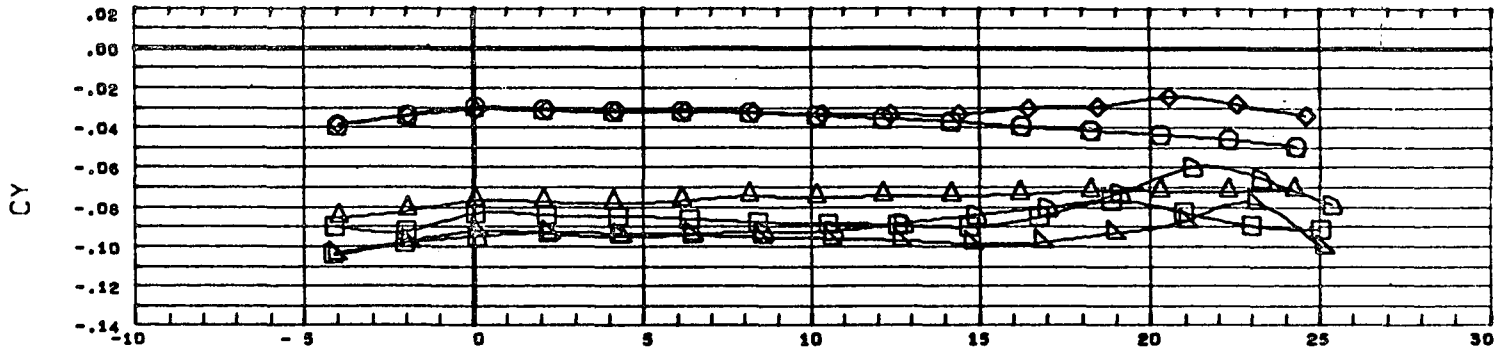
MACH .20



ELEVTR	CANARD	RUDDER	AILRON	REFERENCE INFORMATION	
				SREF	492.4804 SQ. IN
				LREF	16.1880 IN.
				BREF	34.6320 IN.
0.000	0.000	0.000	0.000	XMRF	29.0780 IN.
0.000		0.000	0.000	YMRF	0.0000 IN.
0.000	0.000	0.000	0.000	ZMRF	0.0000 IN.
				SCALE	0.0200

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BODY BUILD-UP APPROACH A, BETA=5 DEG

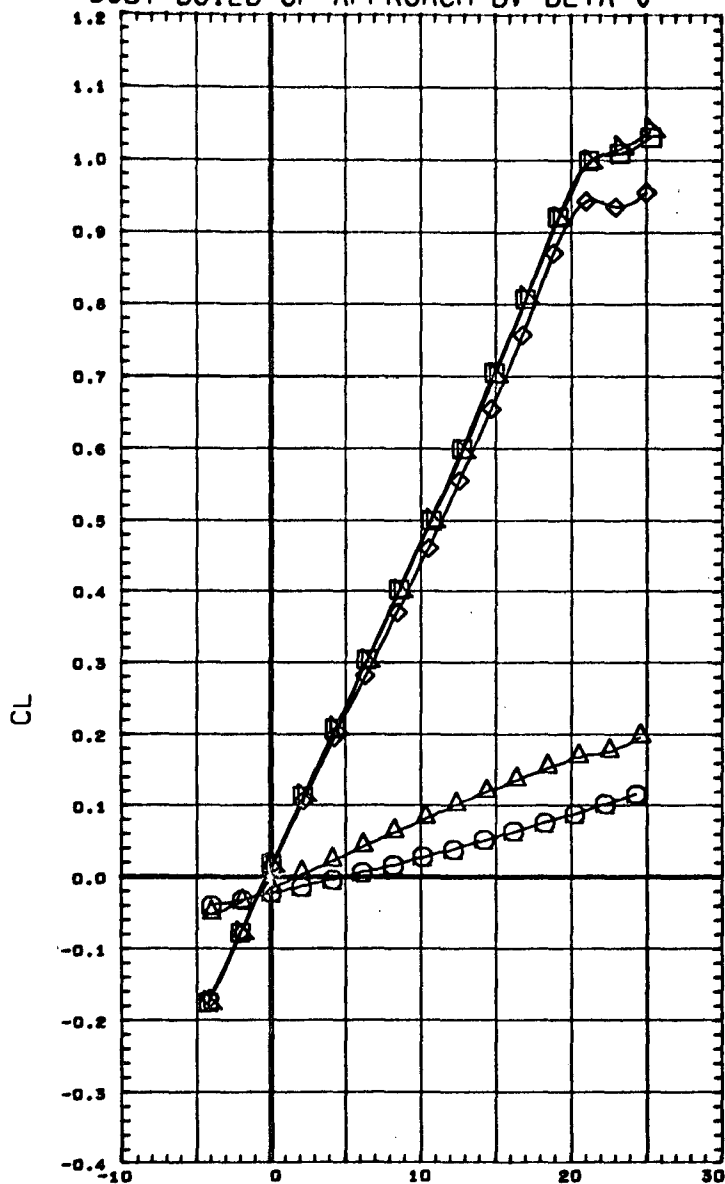


DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6094)	GDLST 603-0 B30
(AD6092)	GDLST 603-0 B30V14
(AD6084)	GDLST 603-0 B30C10
(AD6078)	GDLST 603-0 B30W23V14
(AD6045)	GDLST 603-0 B30W23V14E38
(AD6003)	GDLST 603-0 B30W23C10V14E38

MACH 0.201

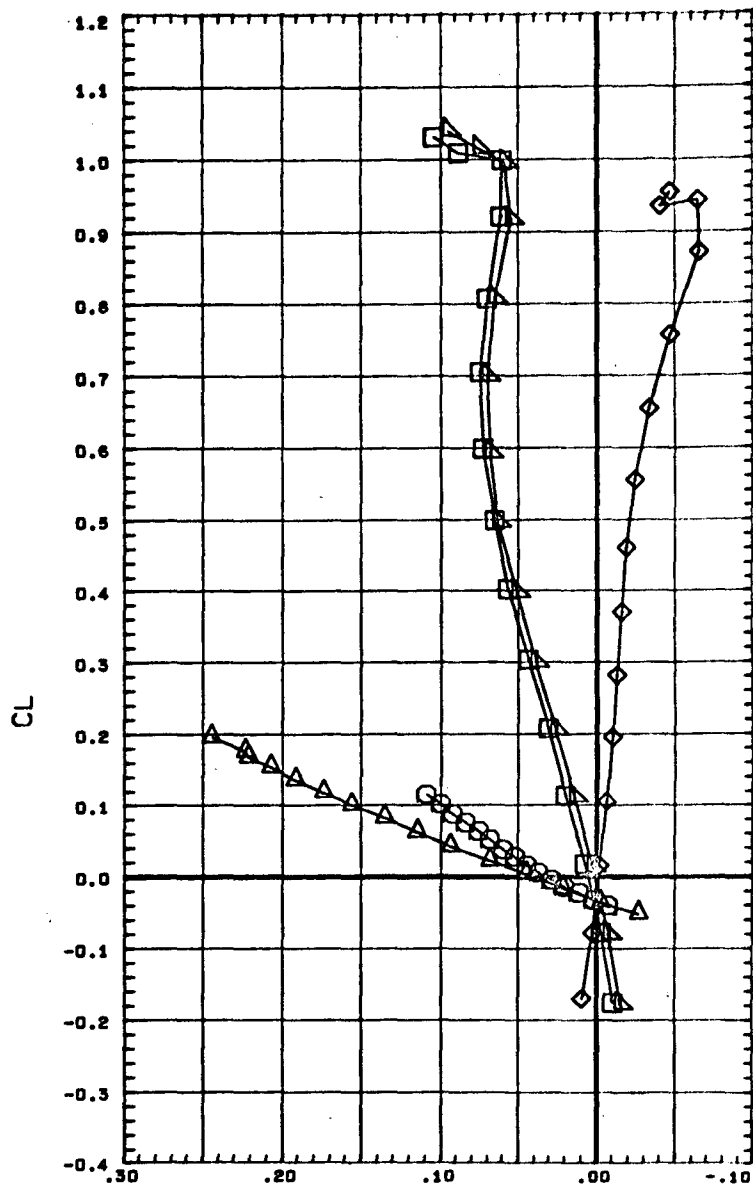
ELEVTR	CANARD	RUDDER	AILRON	REFERENCE INFORMATION
				SREF 492.4804 SQ. IN
		0.000		LREF 16.1880 IN.
	0.000			BREF 34.6320 IN.
0.000		0.000	0.000	XMRP 29.0780 IN.
0.000		0.000	0.000	YMRP 0.0000 IN.
0.000	0.000	0.000	0.000	ZMRP 0.0000 IN.
				SCALE 0.0200

BODY BUILD-UP APPROACH B, BETA=0



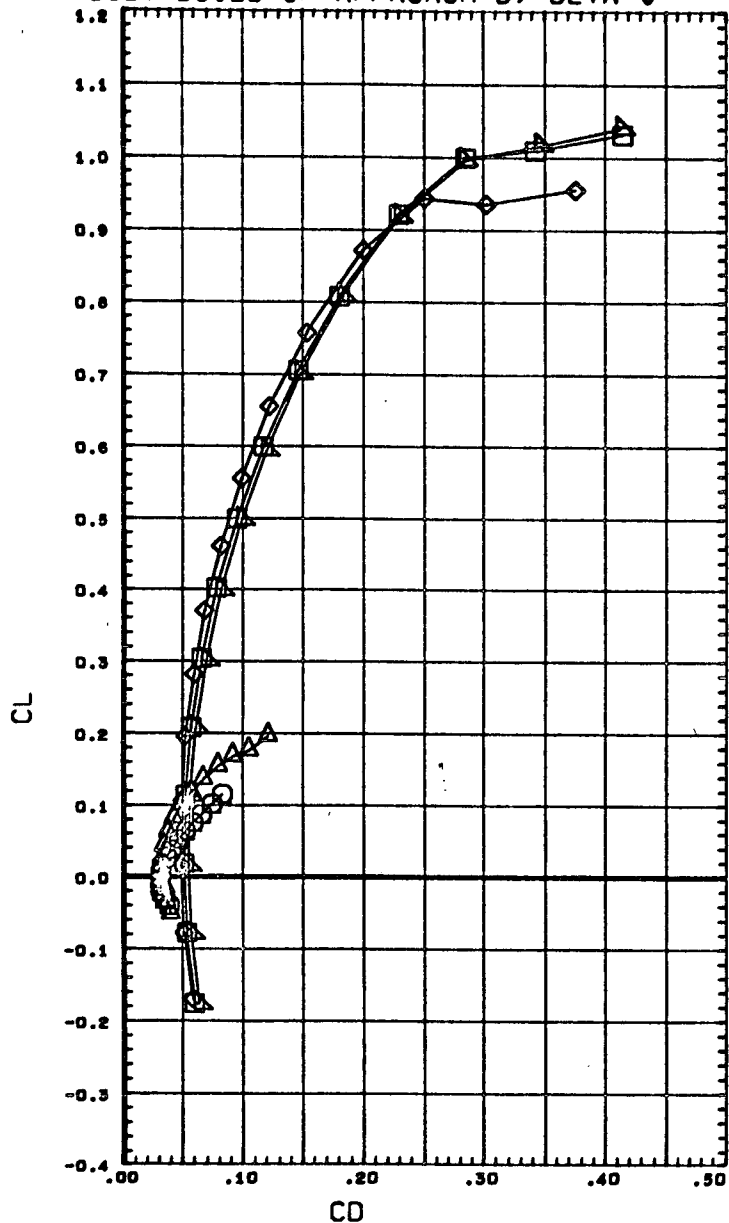
DATA SET SYMBOL	SYMBOL	CONFIGURATION DESCRIPTION
(AD6093)	□	GDLST 603-0 B30
(AD6083)	◇	GDLST 603-0 B30C10
(AD6065)	△	GDLST 603-0 B30W23E38
(AD6054)	○	GDLST 603-0 B30W23C10E38
(AD6002)	▽	GDLST 603-0 B30W23C10V14E38

MACH 0.201



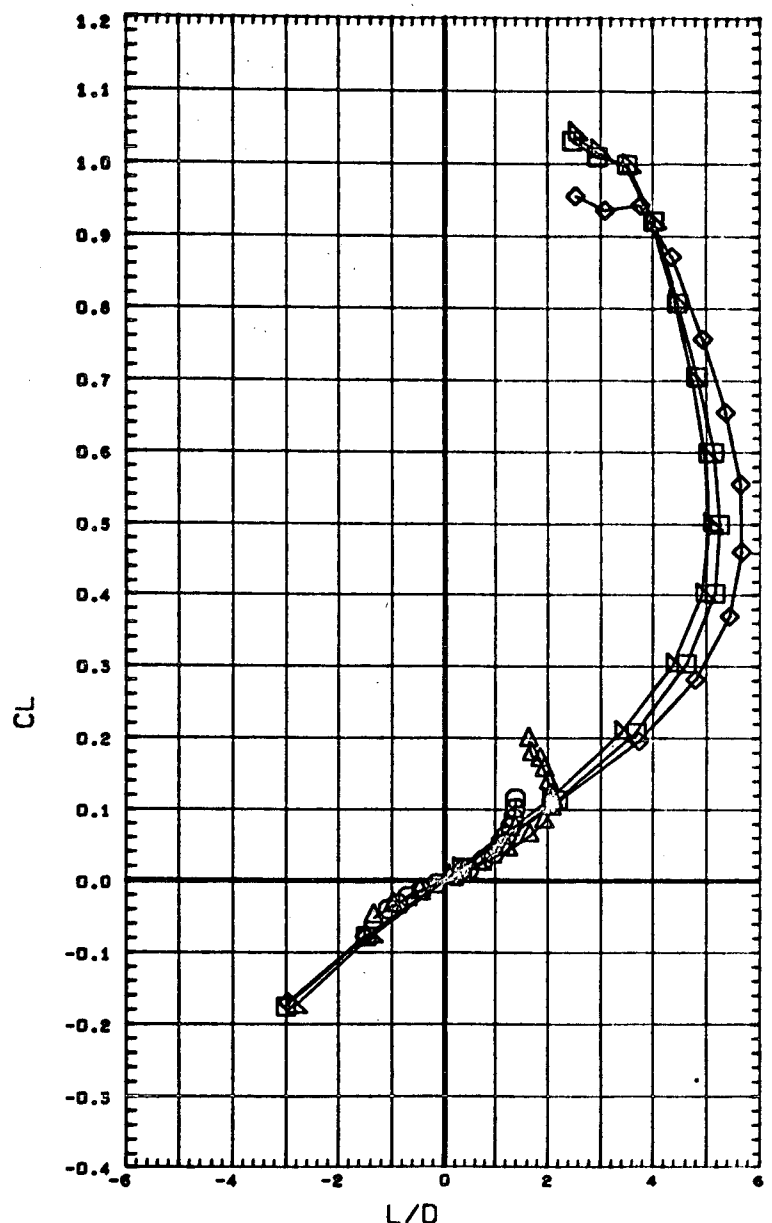
ELEVTR	CANARD	RUDDER	AILRON	REFERENCE INFORMATION
0.000	0.000		0.000	3REF 492.4804 39. IN
0.000	0.000		0.000	LREF 16.1880 IN.
0.000	0.000		0.000	BREF 34.6320 IN.
0.000	0.000	0.000	0.000	XMRP 29.0780 IN.
				YMRP 0.0000 IN.
				ZMRP 0.0000 IN.
				SCALE 0.0200

BODY BUILD-UP APPROACH B, BETA=0



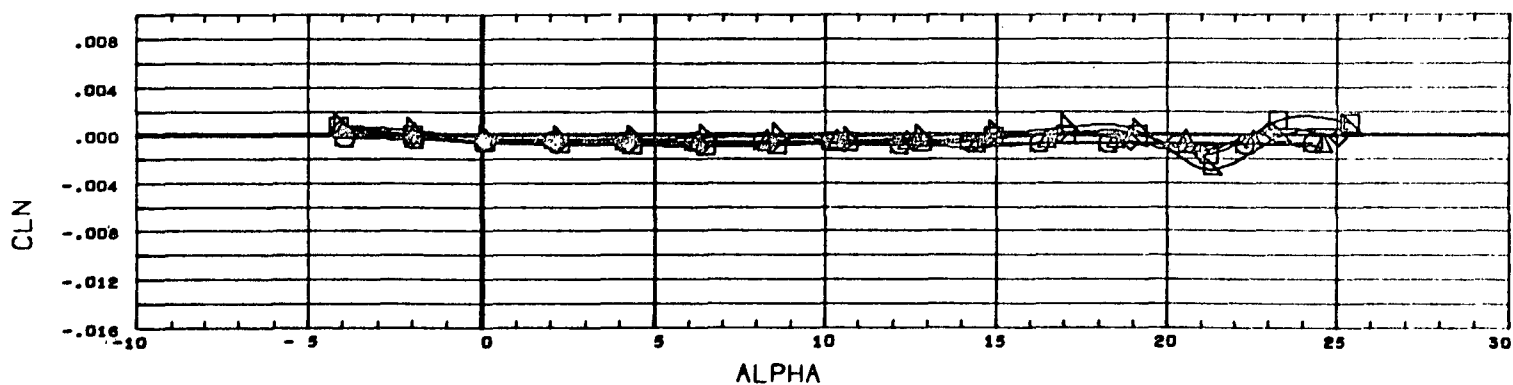
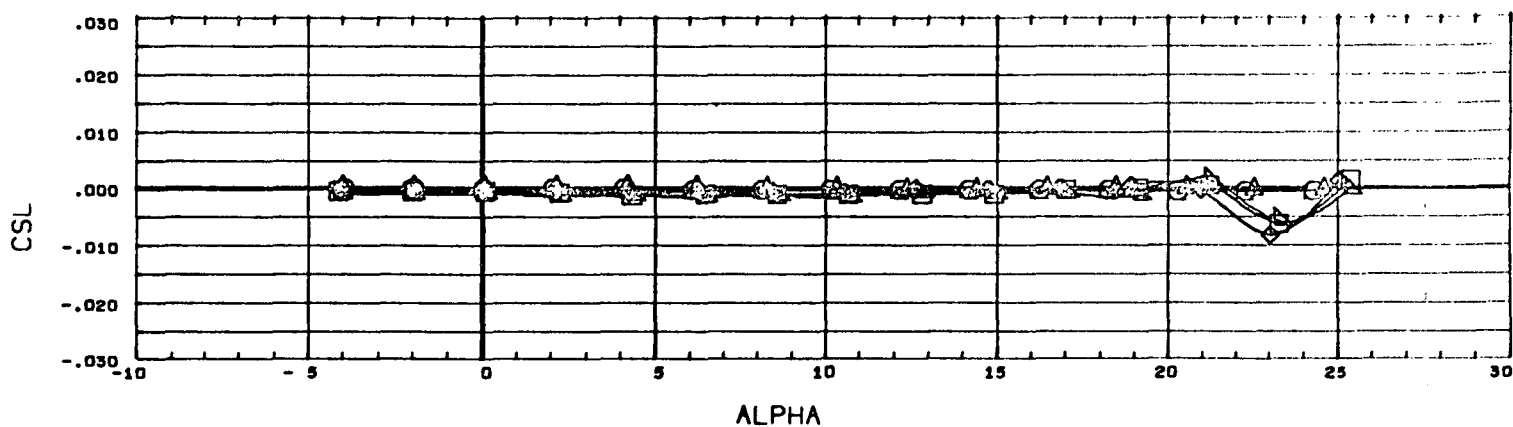
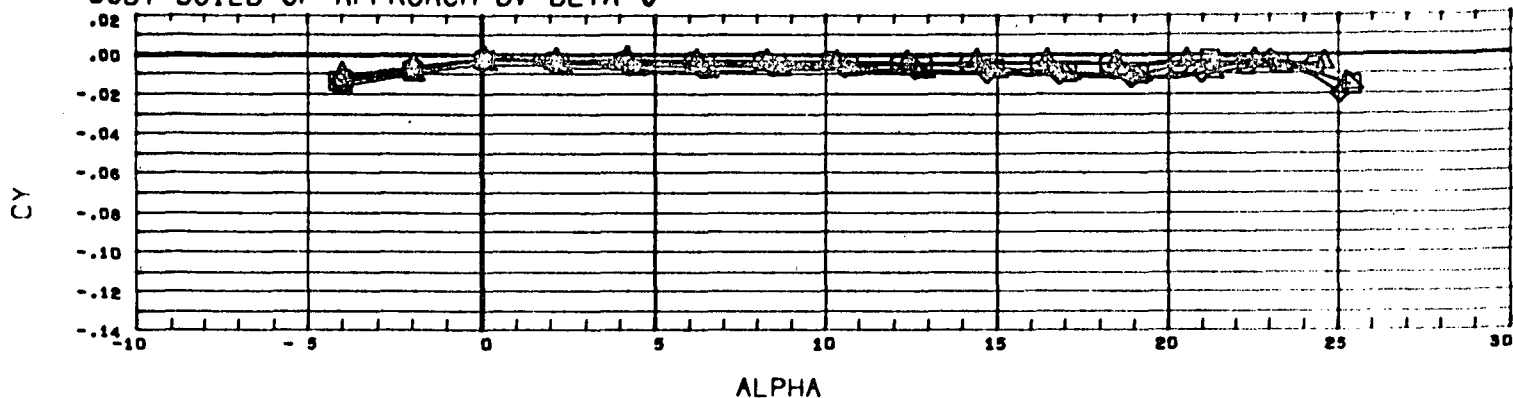
DATA SET SYMBOL	CONFIGURATION	DESCRIPTION
(AD6093)	GDLST 603-0	B30
(AD6083)	GDLST 603-0	B30C10
(AD6065)	GDLST 603-0	B30W23E38
(AD6054)	GDLST 603-0	B30W23C10E38
(AD6002)	GDLST 603-0	B30W23C10V14E38

MACH 0.201



ELEVTR	CANARD	RUDDER	AILRON	REFERENCE INFORMATION
0.000	0.000			SREF 492.4804 SQ. IN
0.000	0.000			LREF 16.1880 IN.
0.000	0.000			BREF 34.6320 IN.
0.000	0.000			XMRP 29.0780 IN.
0.000	0.000	0.000		YMRP 0.0000 IN.
				ZMRP 0.0000 IN.
				SCALE 0.0200

BODY BUILD-UP APPROACH B, BETA=0

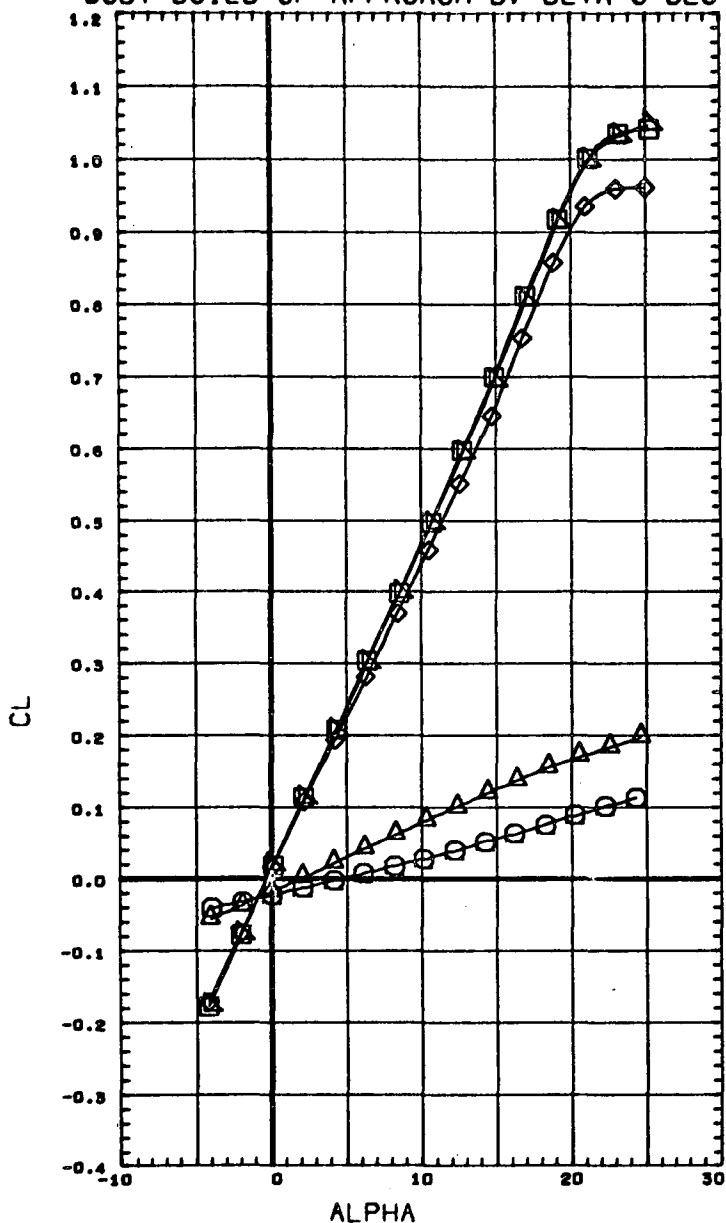


DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6093)	GDLST 603-0 B30
(AD6093)	GDLST 603-0 B30C10
(AD6093)	GDLST 603-0 B30W23E38
(AD6094)	GDLST 603-0 B30W23C10E38
(AD6002)	GDLST 603-0 B30W23C10V14E38

MACH 0.201

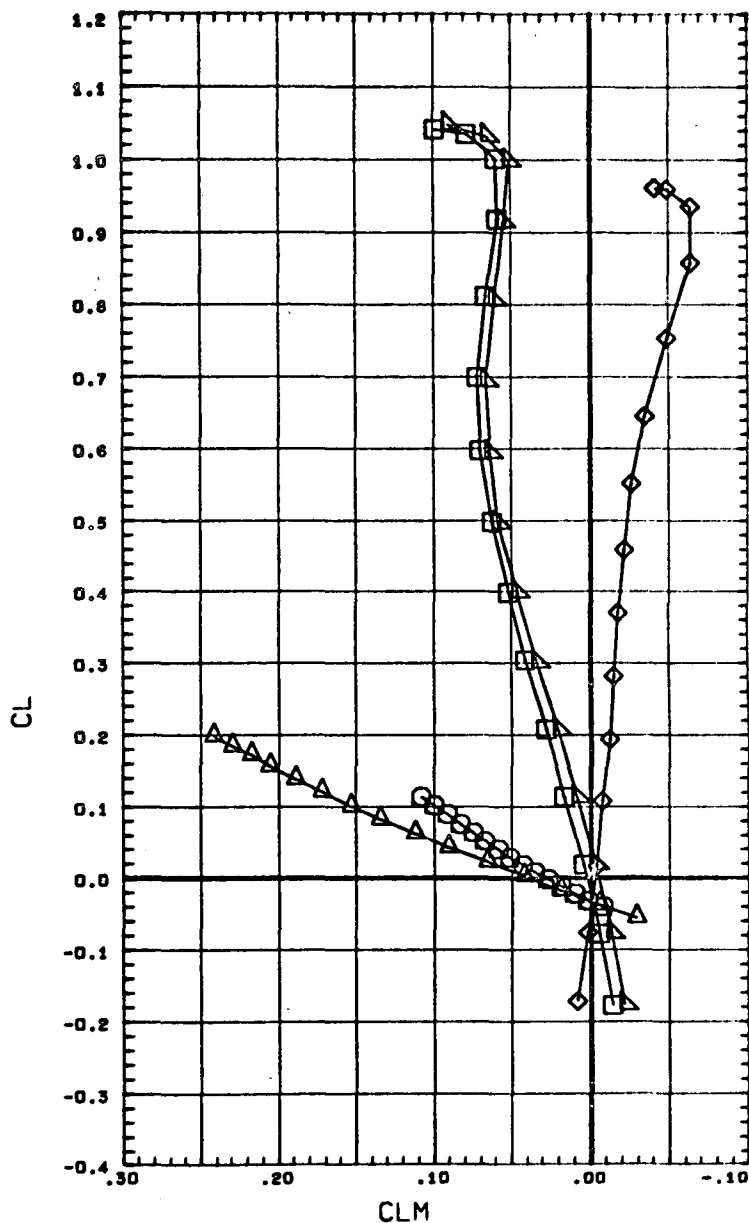
ELEVTR	CANARD	RUDDER	AILRON	REFERENCE INFORMATION
0.000	0.000		0.000	SREF 492.4804 SQ. IN
0.000	0.000		0.000	LREF 16.1880 IN.
0.000	0.000		0.000	BREF 34.6320 IN.
0.000	0.000	0.000	0.000	XMRP 29.0780 IN.
				YMRP 0.0000 IN.
				ZMRP 0.0000 IN.
				SCALE 0.0200

BODY BUILD-UP APPROACH B, BETA=5 DEG



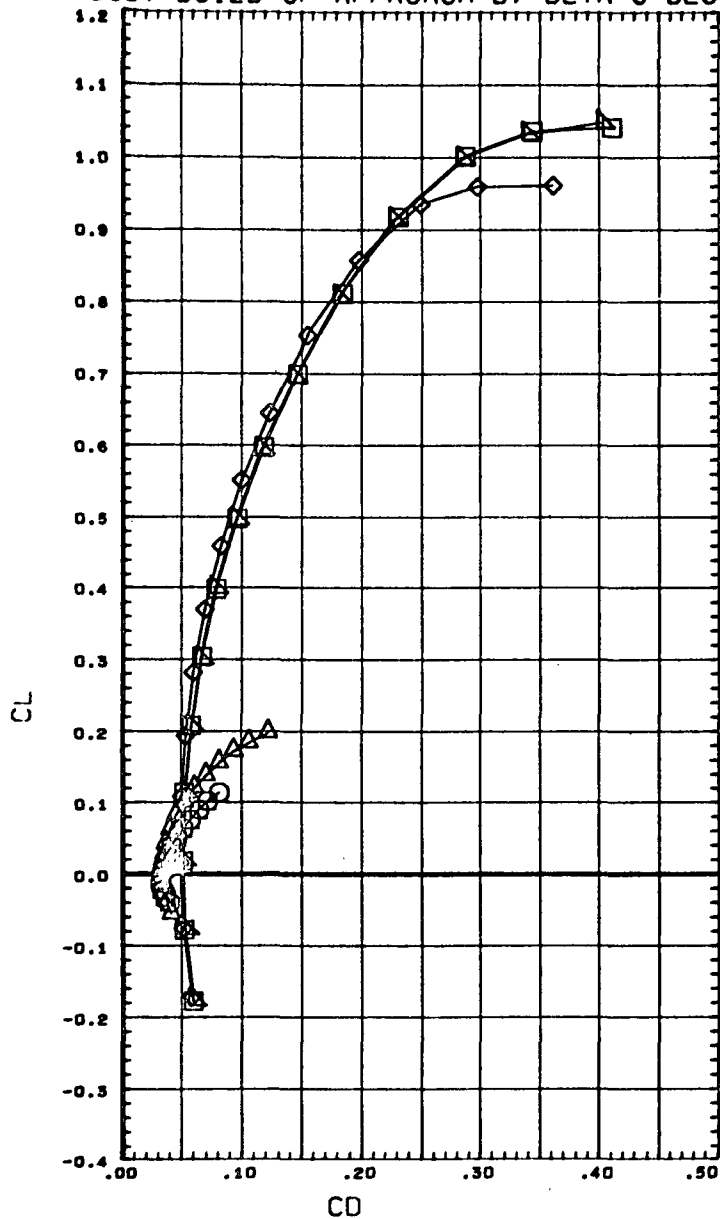
DATA SET	SYMBOL	CONFIGURATION	DESCRIPTION
(AD6094)	○	GDLST 603-0	B30
(AD6084)	△	GDLST 603-0	B30C10
(AD6066)	◇	GDLST 603-0	B30W23E38
(AD6055)	◇	GDLST 603-0	B30W23C10E38
(AD6003)	□	GDLST 603-0	B30W23C10V14E38

MACH 0.201



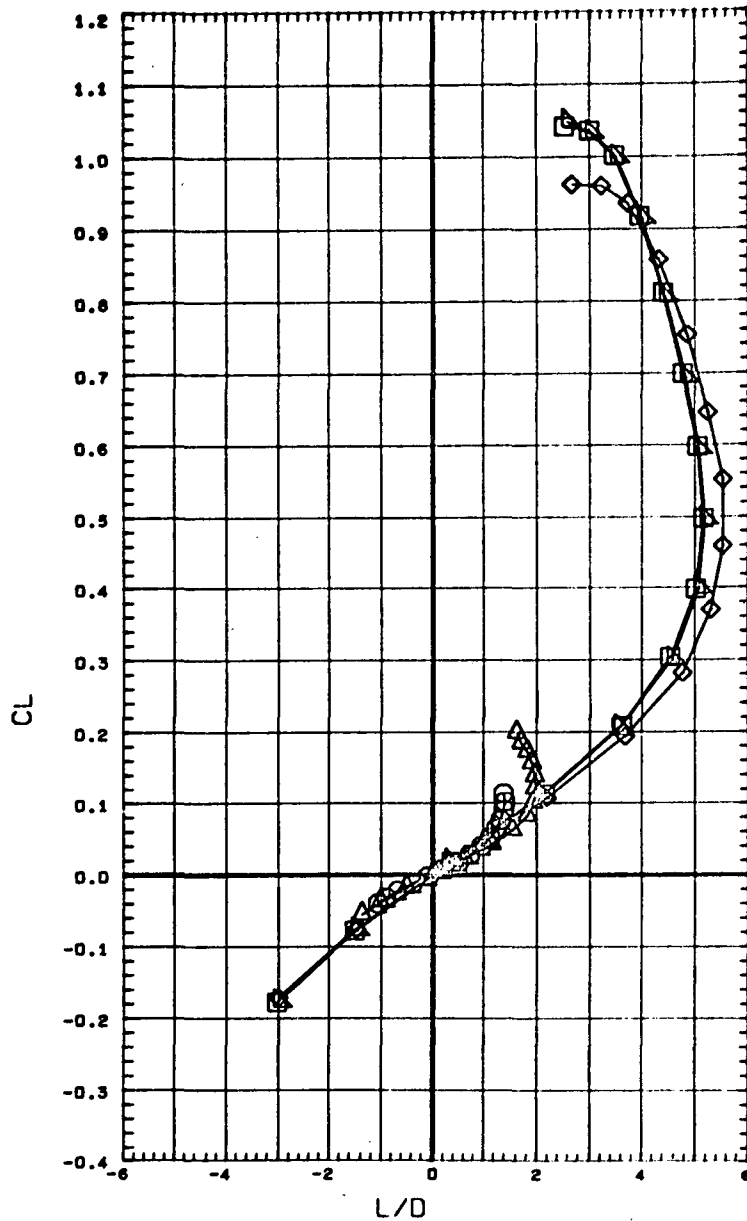
ELEVTR	CANARD	RUDDER	AILRON	REFERENCE INFORMATION	
0.000	0.000		0.000	SREF	492.4804 SQ. IN
0.000	0.000		0.000	LREF	16.1880 IN.
0.000	0.000		0.000	BREF	34.6320 IN.
0.000	0.000	0.000	0.000	XMRP	29.0780 IN.
				YMRP	0.0000 IN.
				ZMRP	0.0000 IN.
				SCALE	0.0200

BODY BUILD-UP APPROACH B, BETA=5 DEG



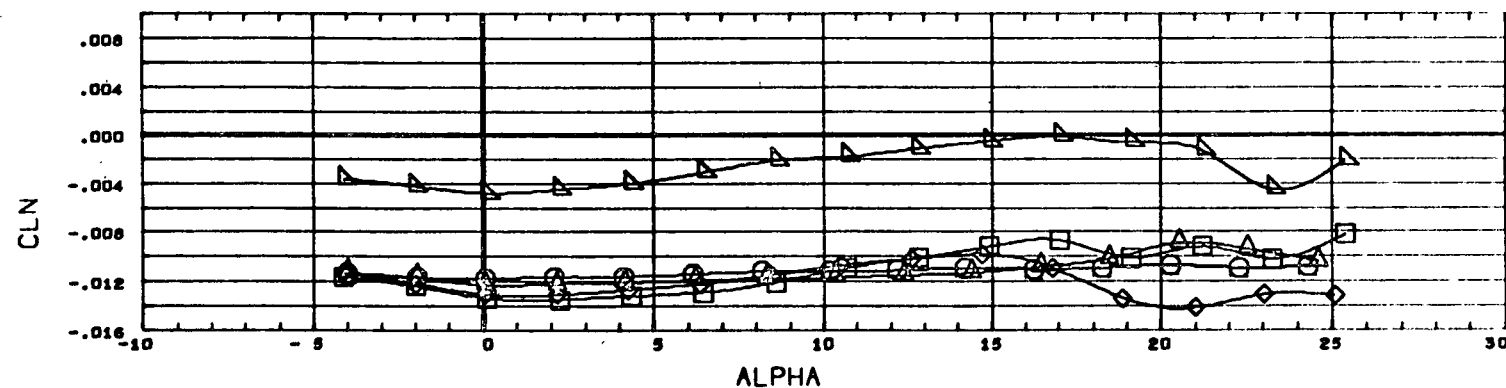
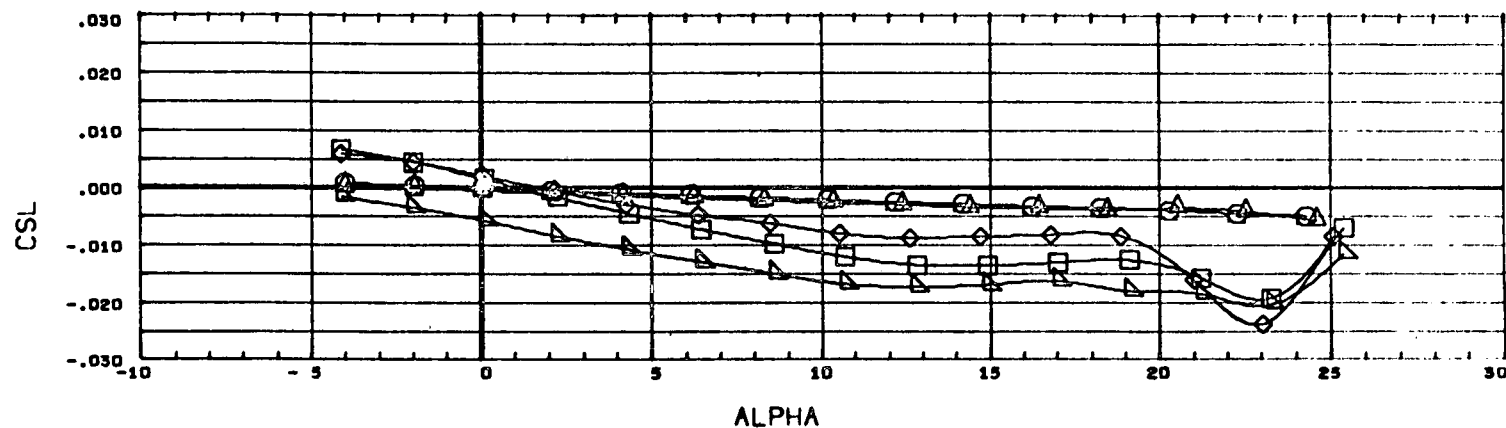
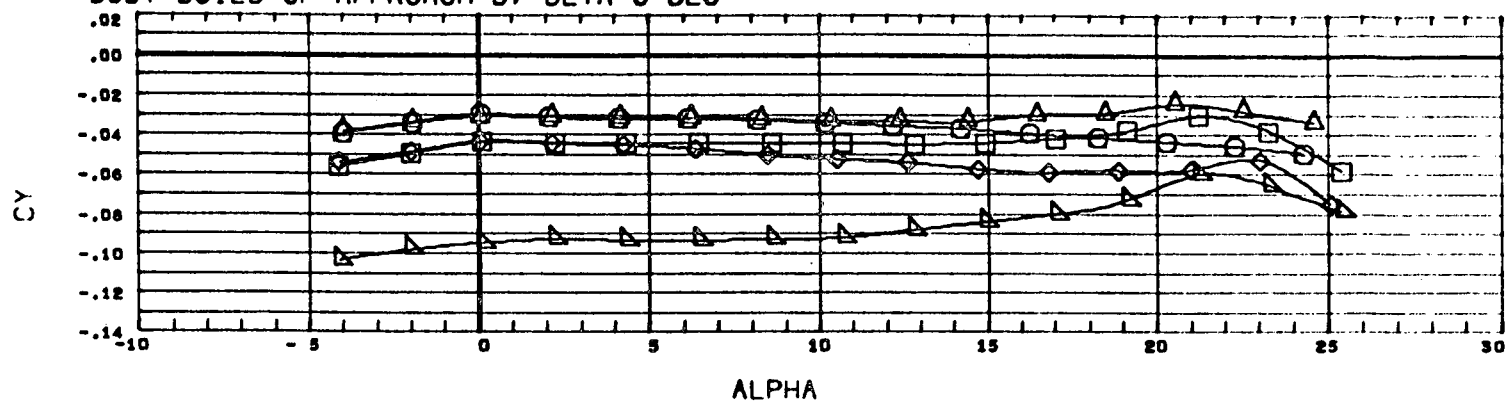
DATA SET SYMBOL	CONFIGURATION	DESCRIPTION
(AD6094)	GDLST 603-0	B30
(AD6084)	GDLST 603-0	B30C10
(AD6066)	GDLST 603-0	B30W23E38
(AD6055)	GDLST 603-0	B30W23C10E38
(AD6003)	GDLST 603-0	B30W23C10V14E38

MACH 0.201



ELEVTR	CANARD	RUDDER	AILRON	REFERENCE INFORMATION
0.000	0.000		0.000	SREF 492.4804 SQ. IN
0.000	0.000		0.000	LREF 16.1880 IN.
0.000	0.000		0.000	BREF 34.6320 IN.
0.000	0.000	0.000	0.000	XMRP 29.0780 IN.
				YMRP 0.0000 IN.
				ZMRP 0.0000 IN.
				SCALE 0.0200

BODY BUILD-UP APPROACH B, BETA=5 DEG

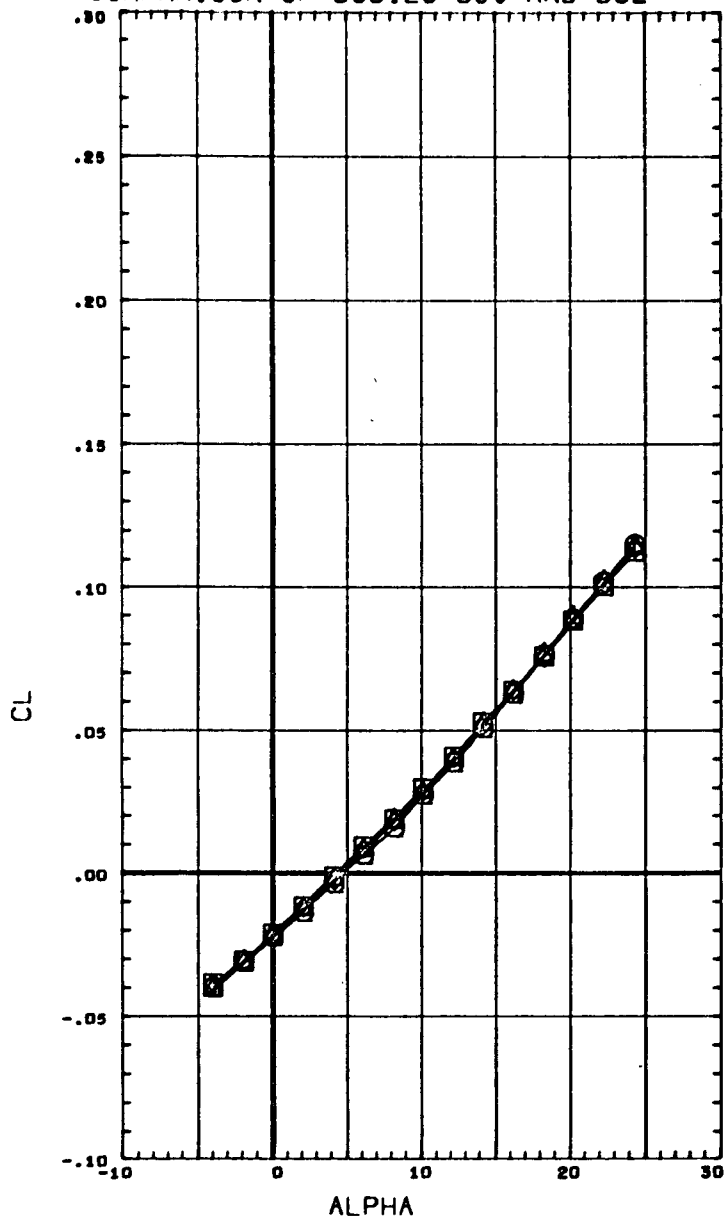


DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6094)	GDLST 603-0 B30
(AD6064)	GDLST 603-0 B30C10
(AD6066)	GDLST 603-0 B30W23E38
(AD6055)	GDLST 603-0 B30W23C10E38
(AD6003)	GDLST 603-0 B30W23C10V14E38

MACH 0.201

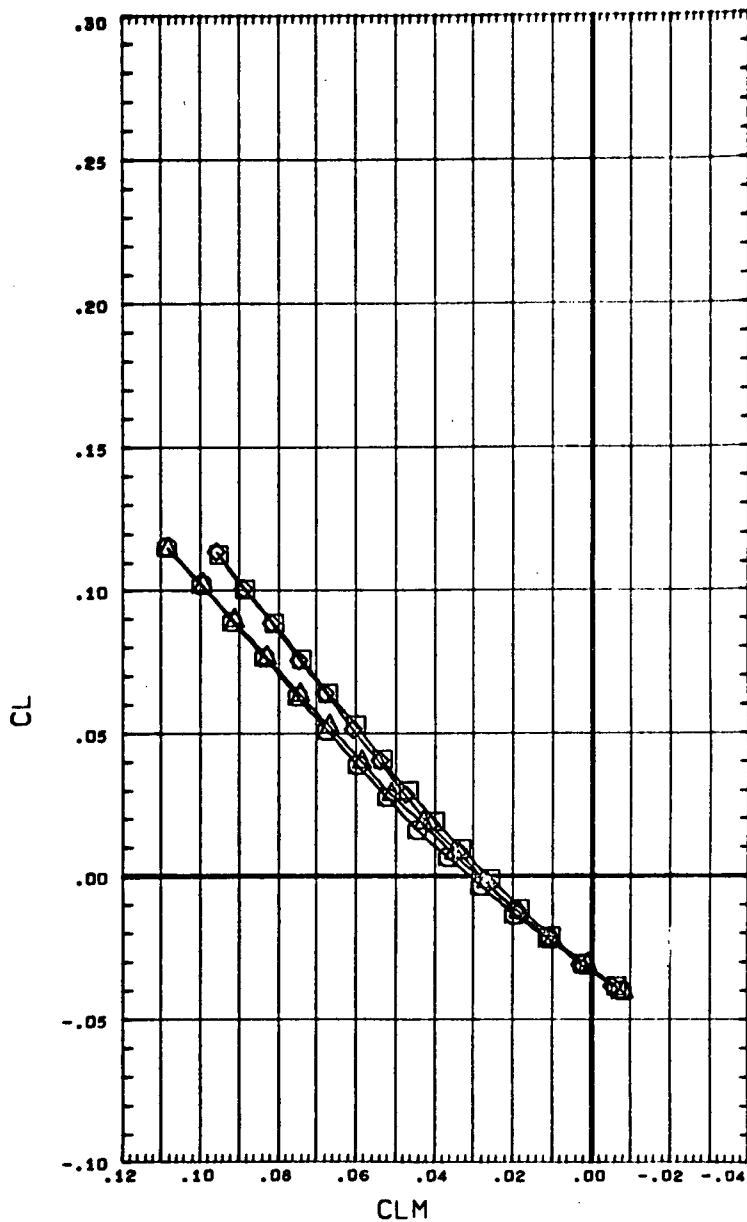
ELEVTR	CANARD	RUDDER	AILRON	REFERENCE INFORMATION
0.000	0.000			SREF 492.4804 39. IN
0.000	0.000			LREF 16.1880 IN.
0.000	0.000		0.000	BREF 34.6320 IN.
0.000	0.000	0.000	0.000	XMRP 29.0780 IN.
				YMRP 0.0000 IN.
				ZMRP 0.0000 IN.
				SCALE 0.0200

COMPARISON OF BODIES B30 AND B32



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6093)	GDLST 603-0 B30
(AD6094)	GDLST 603-0 B30
(AD6095)	GDLST 603-0 B32
(AD6096)	GDLST 603-0 B32

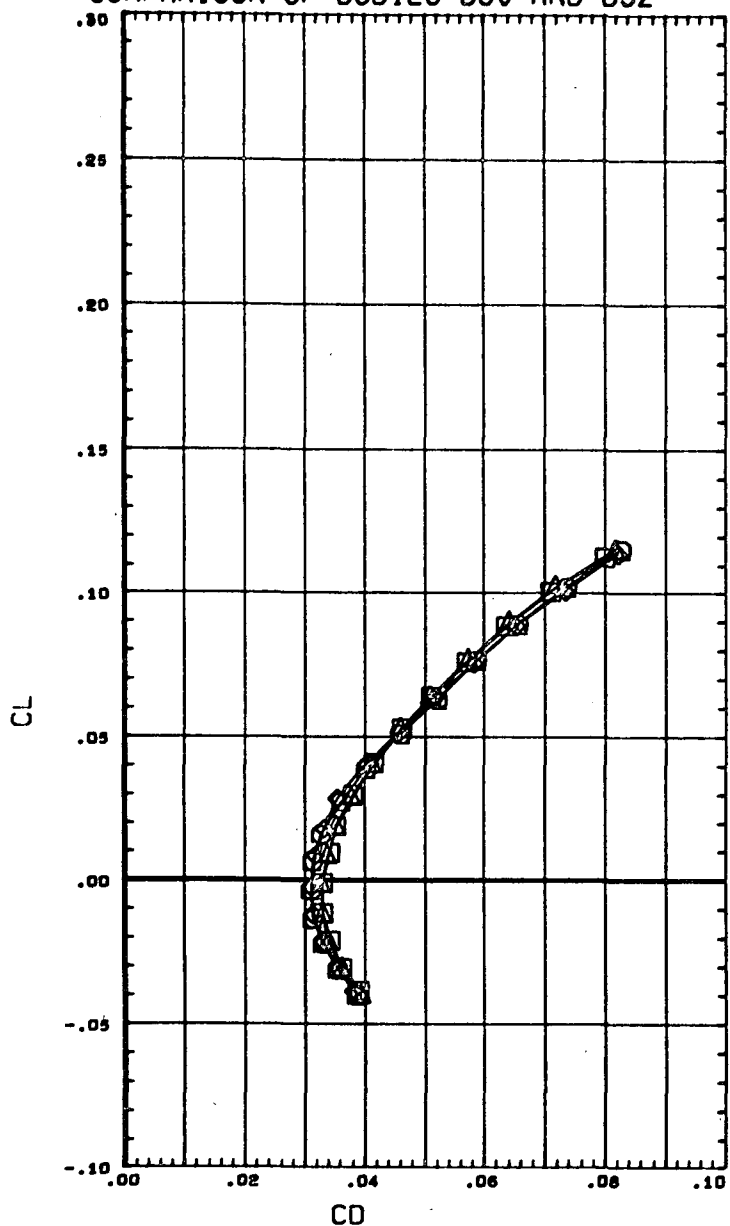
MACH 0.201



BETA	CANARD
0.000	
5.000	
0.000	
5.000	

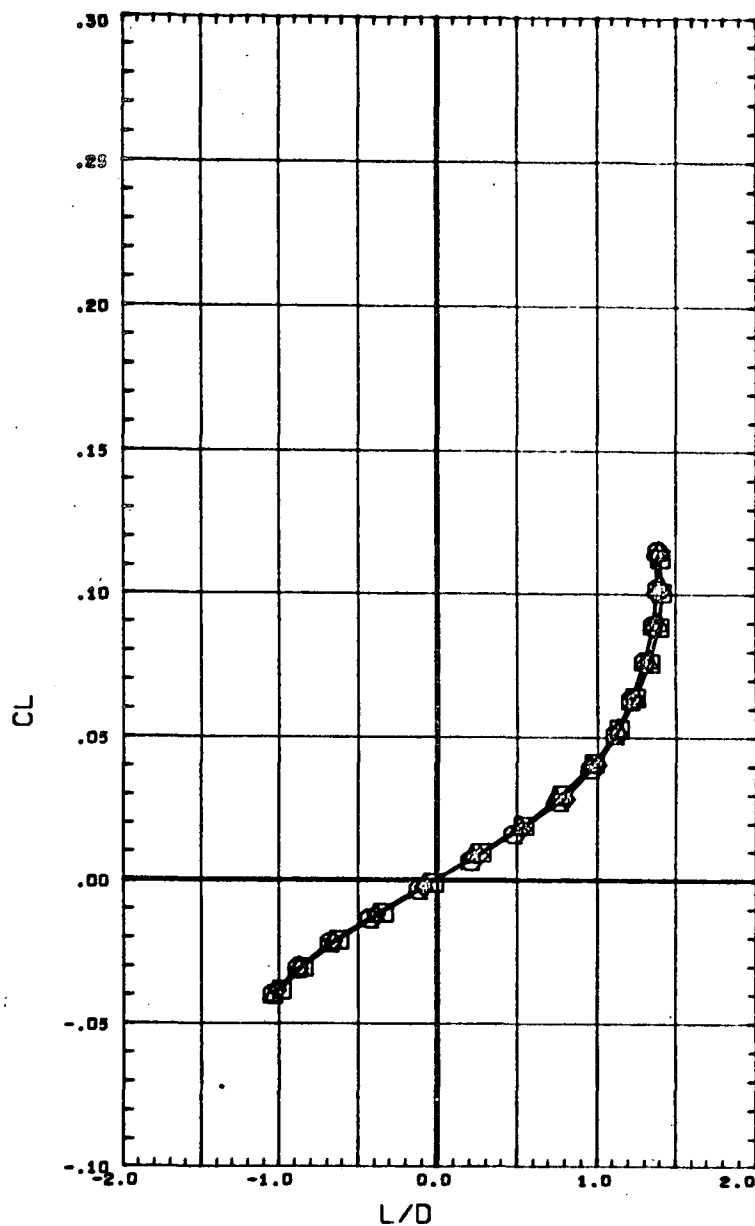
REFERENCE INFORMATION		
SREF	492.4804	SQ. IN
LREF	16.1880	IN.
BREF	34.6320	IN.
XMRP	29.0780	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0200	

COMPARISON OF BODIES B30 AND B32



DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6093)	GDLST 603-0 B30
(AD6094)	GDLST 603-0 B30
(AD6095)	GDLST 603-0 B32
(AD6096)	GDLST 603-0 B32

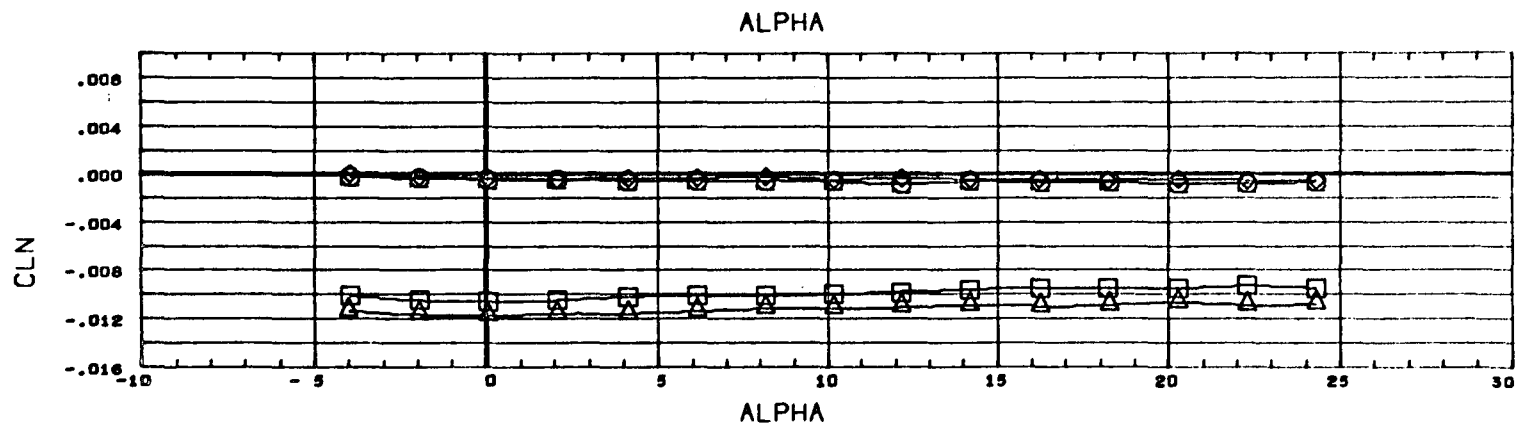
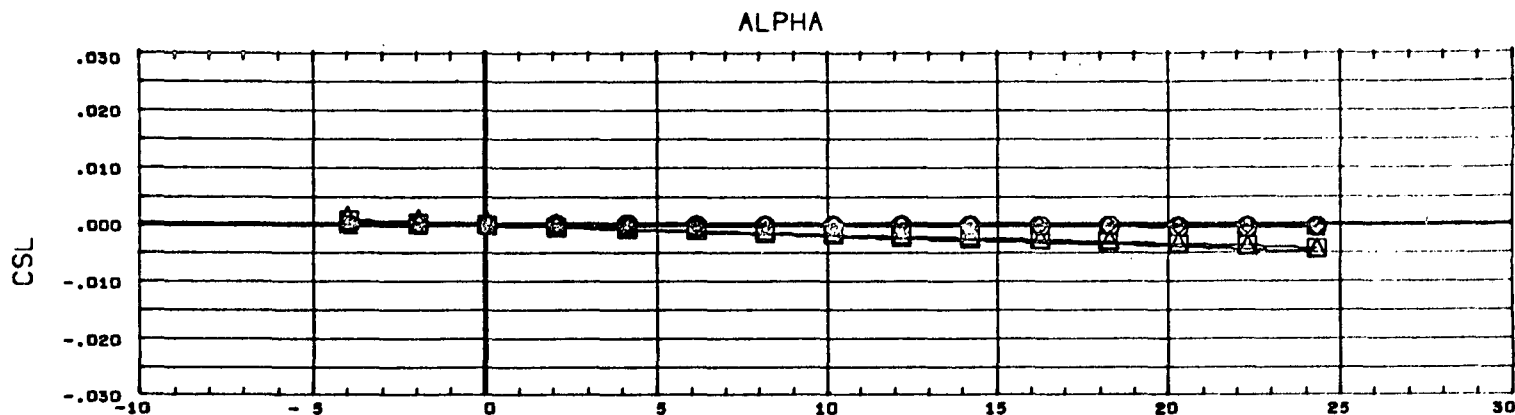
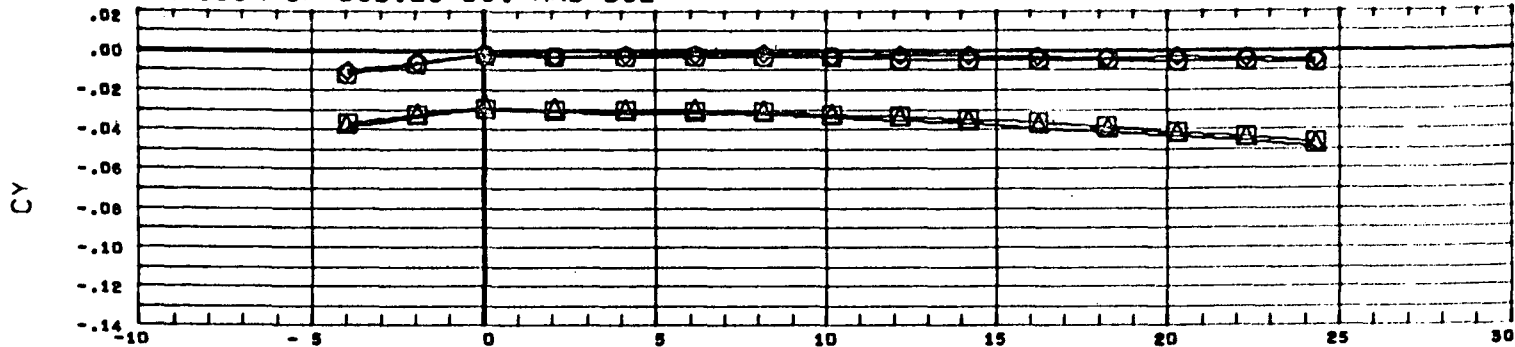
MACH 0.201



BETA	CANARD
0.000	
5.000	
0.000	
5.000	

REFERENCE INFORMATION		
SREF	492.4804	SQ. IN
LREF	16.1880	IN.
BREF	34.6320	IN.
XMRP	29.0780	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0200	

COMPARISON OF BODIES B30 AND B32



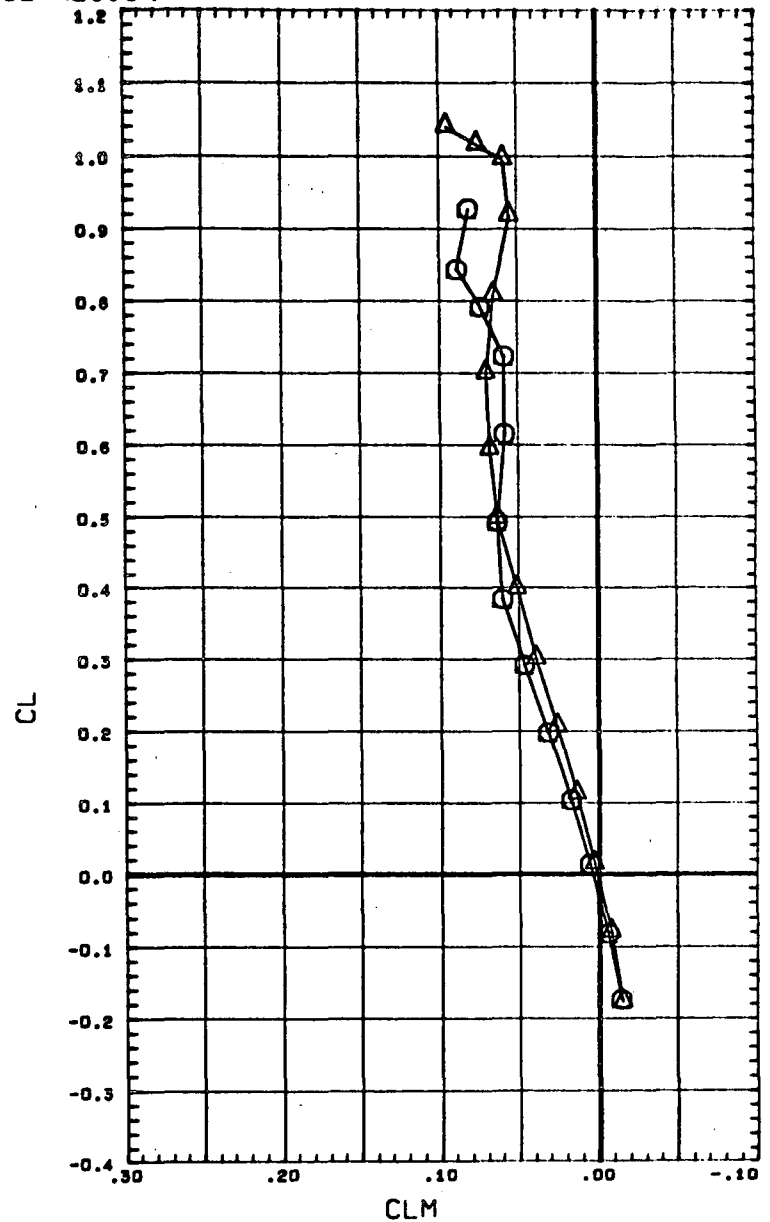
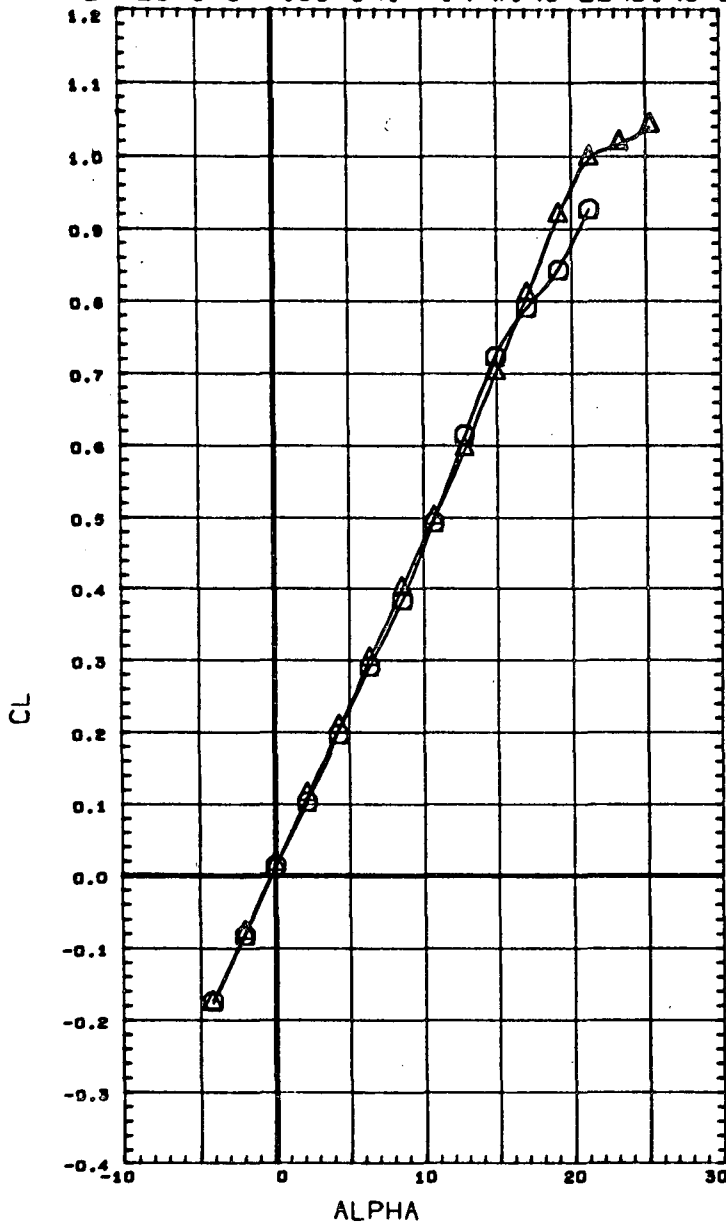
DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6093)	GDLST 603-0 B30
(AD6094)	GDLST 603-0 B30
(AD6095)	GDLST 603-0 B32
(AD6096)	GDLST 603-0 B32

BETA	CANARD
0.000	
5.000	
0.000	
5.000	

REFERENCE INFORMATION		
SREF	492.4804	SQ. IN
LREF	16.1680	IN.
BREF	34.6320	IN.
XMRP	29.0780	IN.
YMRP	0.0000	IN.
ZMRP	0.0000	IN.
SCALE	0.0200	

MACH 0.201

EFFECTS OF 036 GRIT IN WING LEADING EDGE REGION

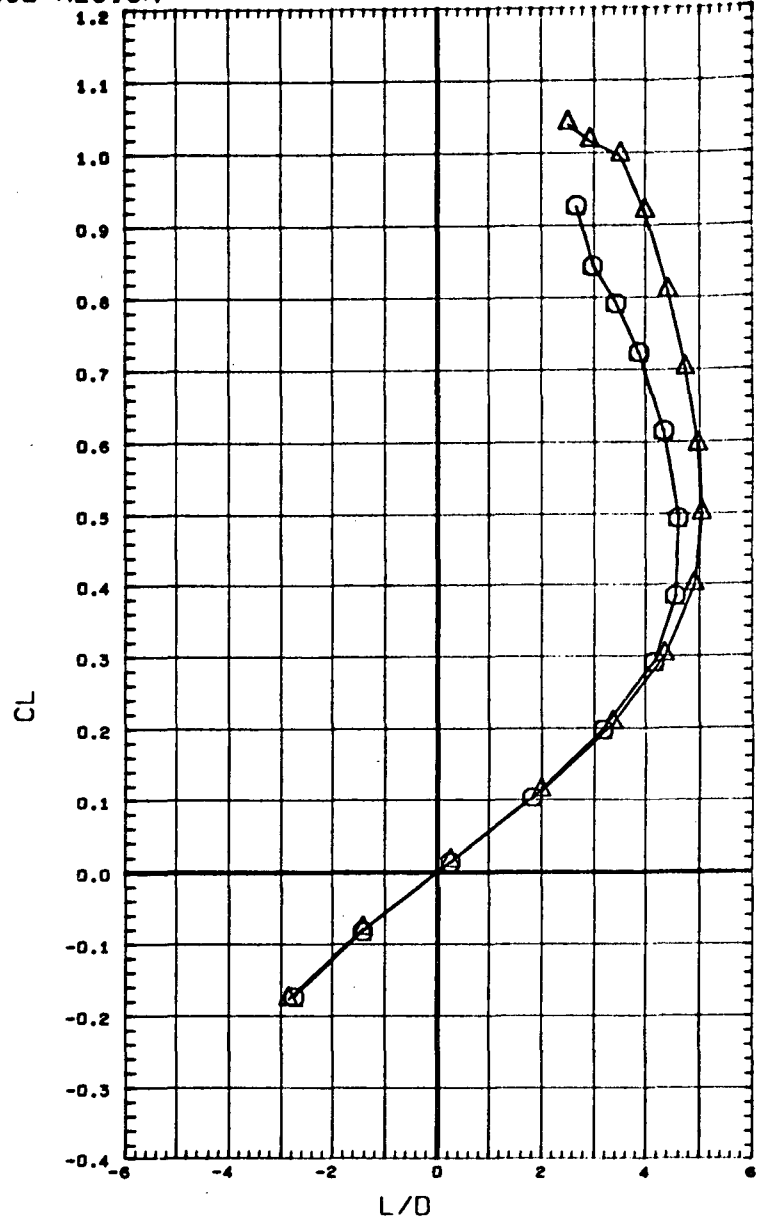
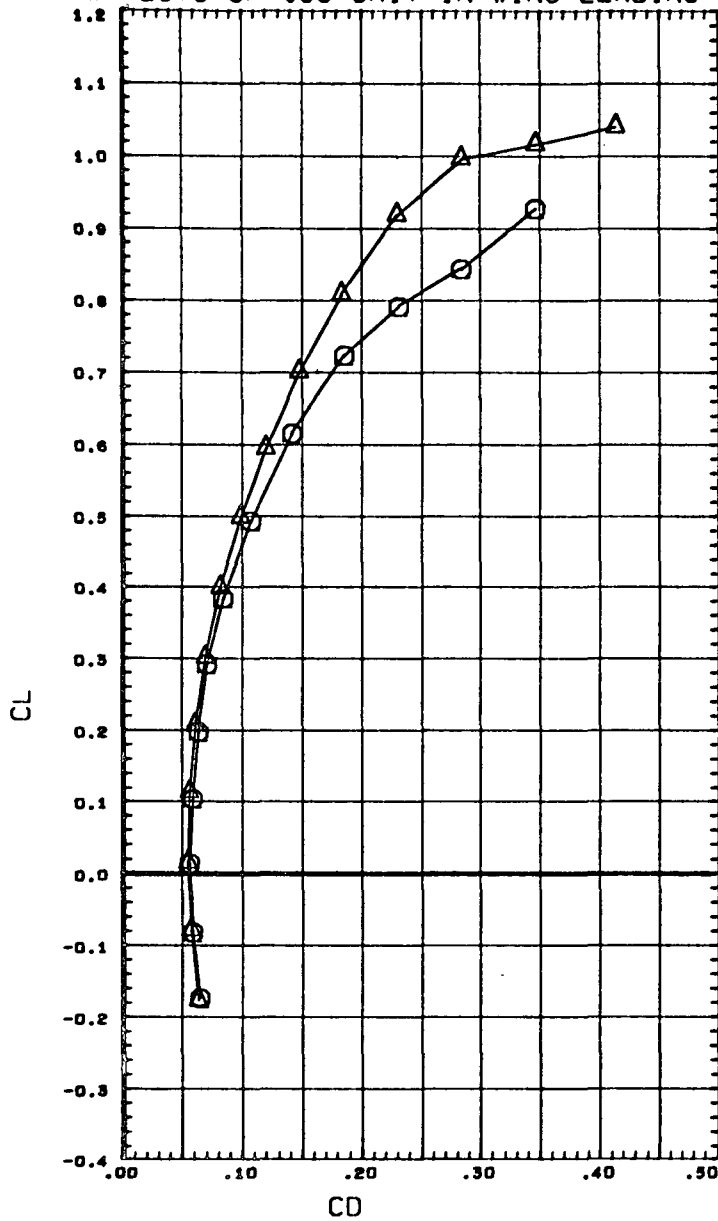


DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6042) ○	GDLST 603-0 B30W23C10V14E38x7
(AD6002) △	GDLST 603-0 B30W23C10V14E38

MACH 0.201

BETA	ELEVTR	CANARD	AILRON	REFERENCE INFORMATION
0.000	0.000	0.000	0.000	SREF 492.4804 SQ. IN
0.000	0.000	0.000	0.000	LREF 16.1880 IN.
				BREF 34.6320 IN.
				XMRP 29.0780 IN.
				YMRP 0.0000 IN.
				ZMRP 0.0000 IN.
				SCALE 0.0200

EFFECTS OF 036 GRIT IN WING LEADING EDGE REGION

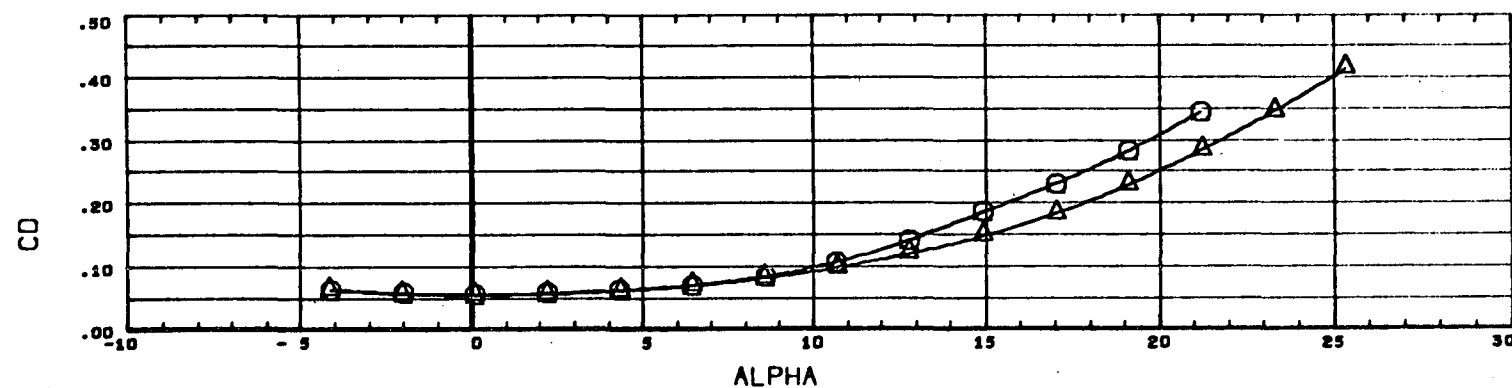
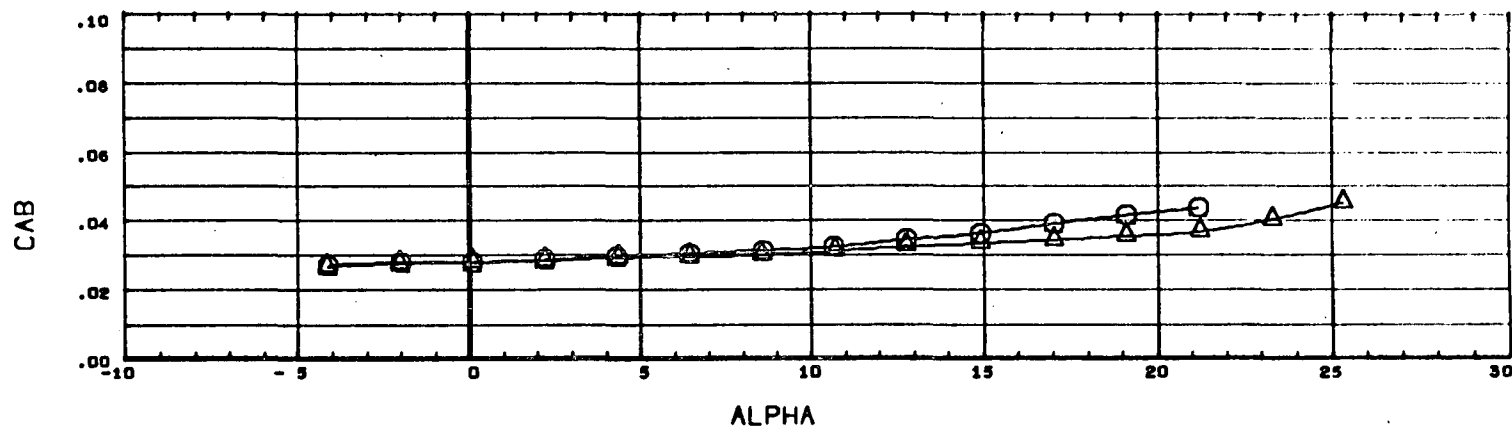
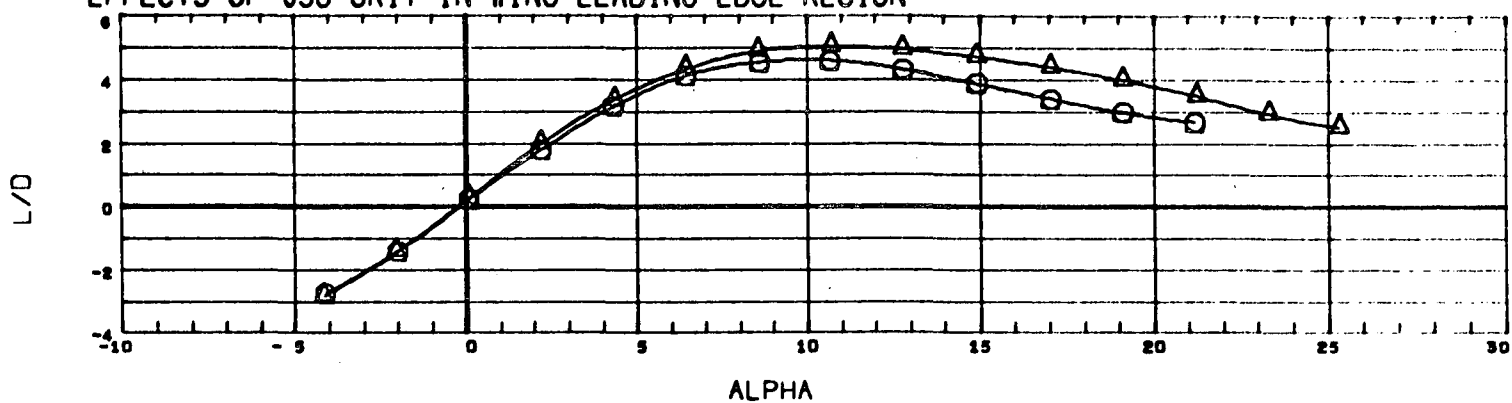


DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (AD6042) GDLST 603-0 B30W23C10V14E38X7
 (AD6002) GDLST 603-0 B30W23C10V14E38

MACH 0.201

BETA	ELEVTR	CANARD	AILRON	REFERENCE INFORMATION	
0.000	0.000	0.000	0.000	SREF	492.4804 SQ. IN
0.000	0.000	0.000	0.000	LREF	16.1880 IN.
				BREF	34.6320 IN.
				XMRP	29.0780 IN.
				YMRP	0.0000 IN.
				ZMRP	0.0000 IN.
				SCALE	0.0200

EFFECTS OF 036 GRIT IN WING LEADING EDGE REGION

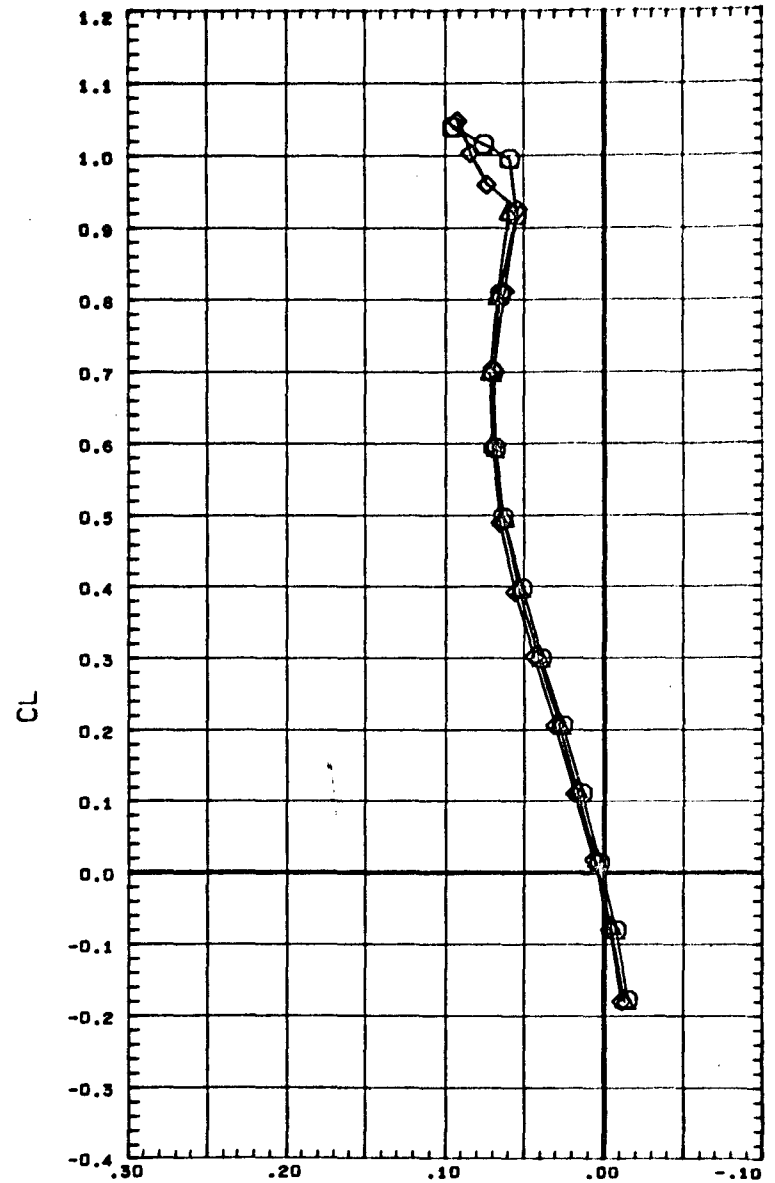
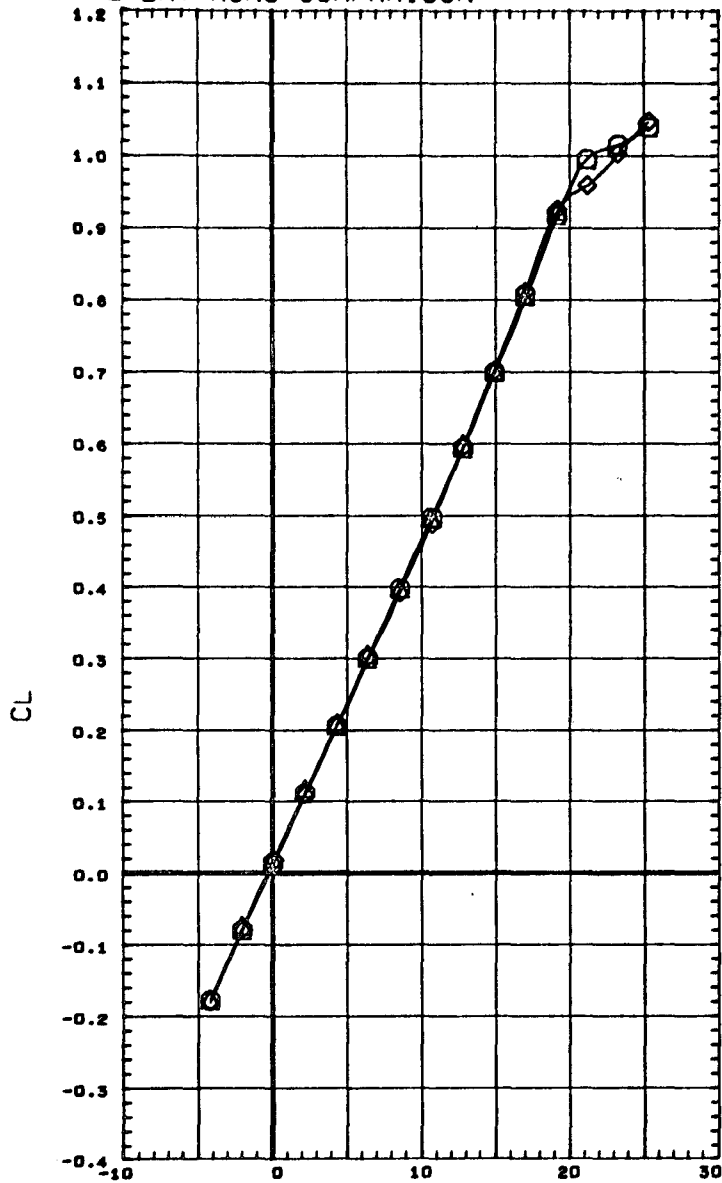


DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6042)	GDLST 603-0 B30W23C10V14E38X7
(AD6002)	GDLST 603-0 B30W23C10V14E38

BETA	ELEVTR	CANARD	AILRON	REFERENCE INFORMATION
0.000	0.000	0.000	0.000	SREF 492.4604 Sq. IN
0.000	0.000	0.000	0.000	LREF 16.1680 IN.
				BREF 34.6320 IN.
				XMRP 29.0760 IN.
				YMRP 0.0000 IN.
				ZMRP 0.0000 IN.
				SCALE 0.0200

MACH 0.201

REPEAT RUNS COMPARISON

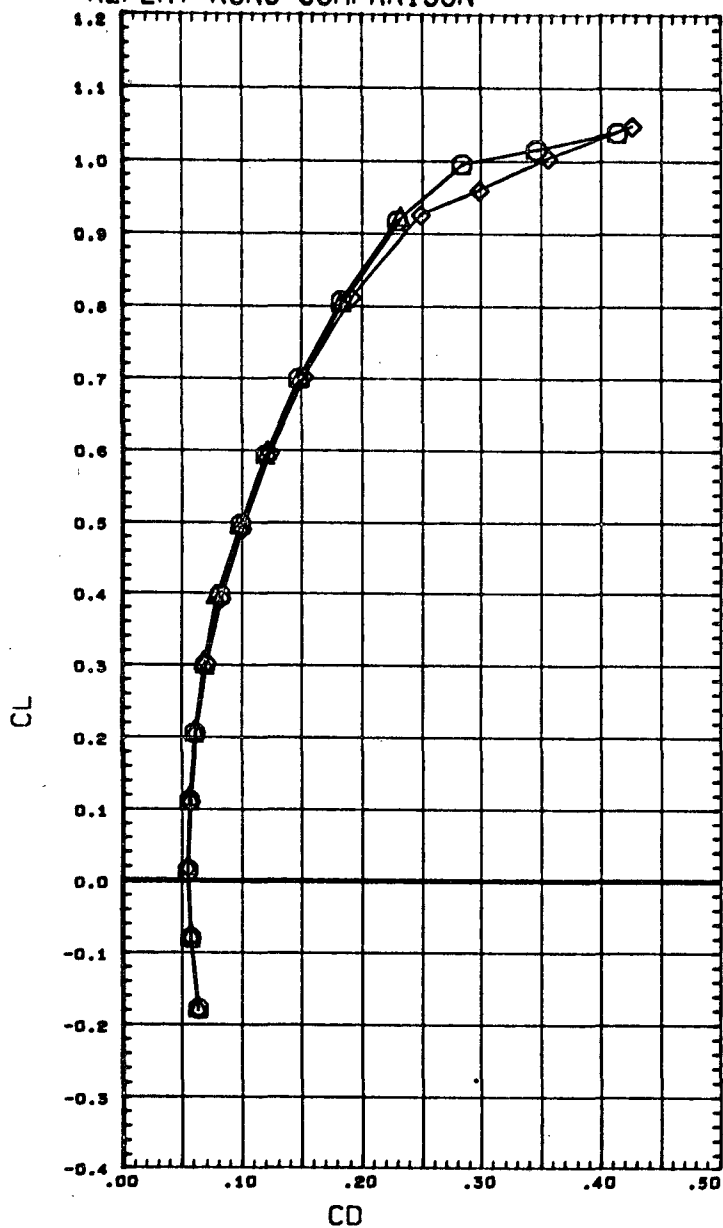


DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6002) ○	GDLST 603-0 B30W23C10V14E38
(AD6043) △	GDLST 603-0 B30W23C10V14E38
(AD6076) ◇	GDLST 603-0 B30W23C10V14E38 (MODEL UPRIGHT)

MACH 0.201

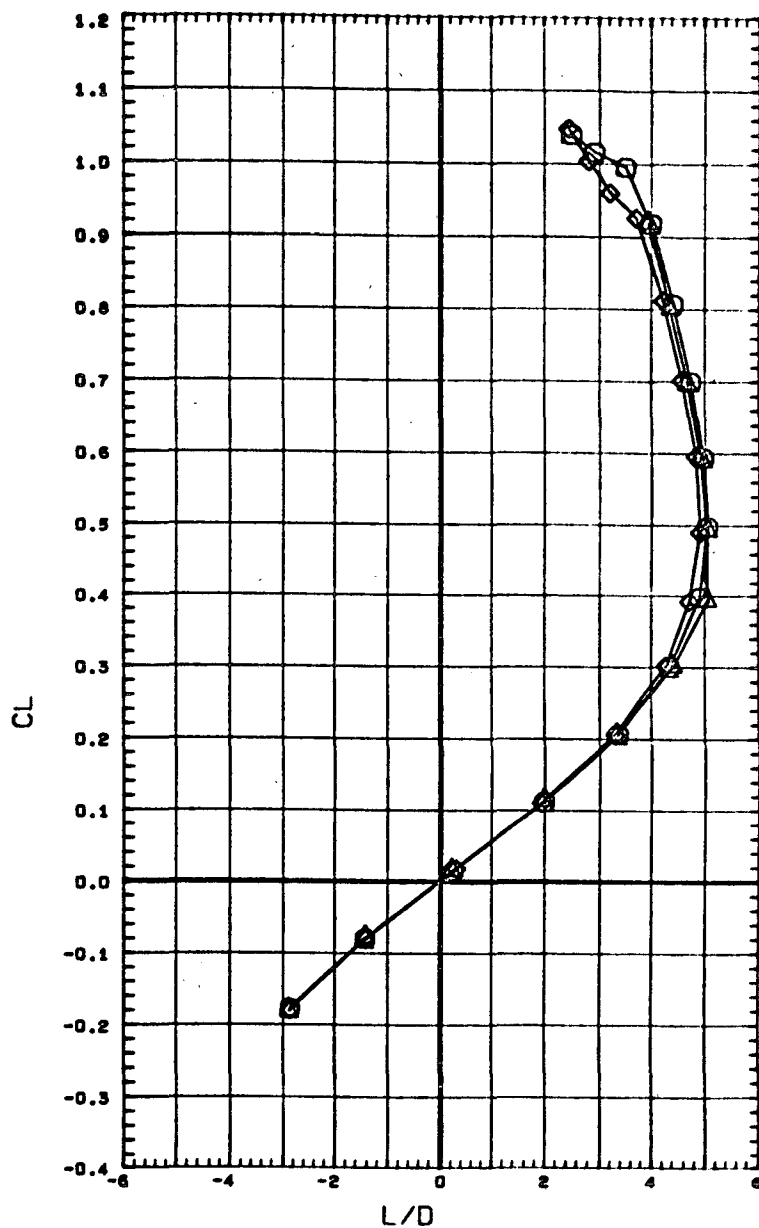
BETA	ELEVTR	CANARD	AILRON	REFERENCE INFORMATION
0.000	0.000	0.000	0.000	SREF 492.4804 sq. in
0.000	0.000	0.000	0.000	LREF 16.1880 in.
0.000	0.000	0.000	0.000	BREF 34.6320 in.
				XMRP 29.0780 in.
				YMRP 0.0000 in.
				ZMRP 0.0000 in.
				SCALE 0.0200

REPEAT RUNS COMPARISON



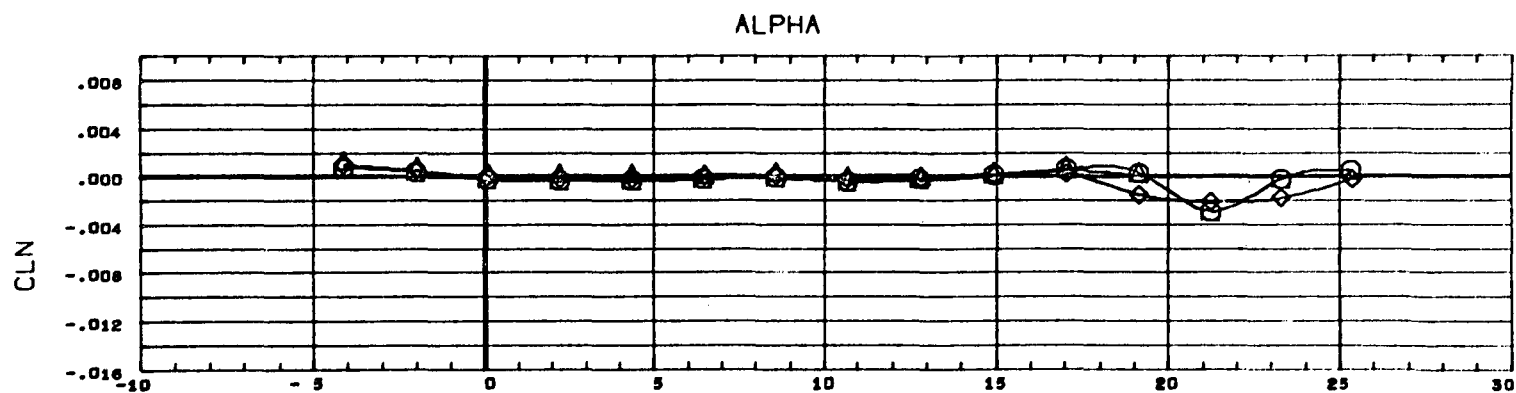
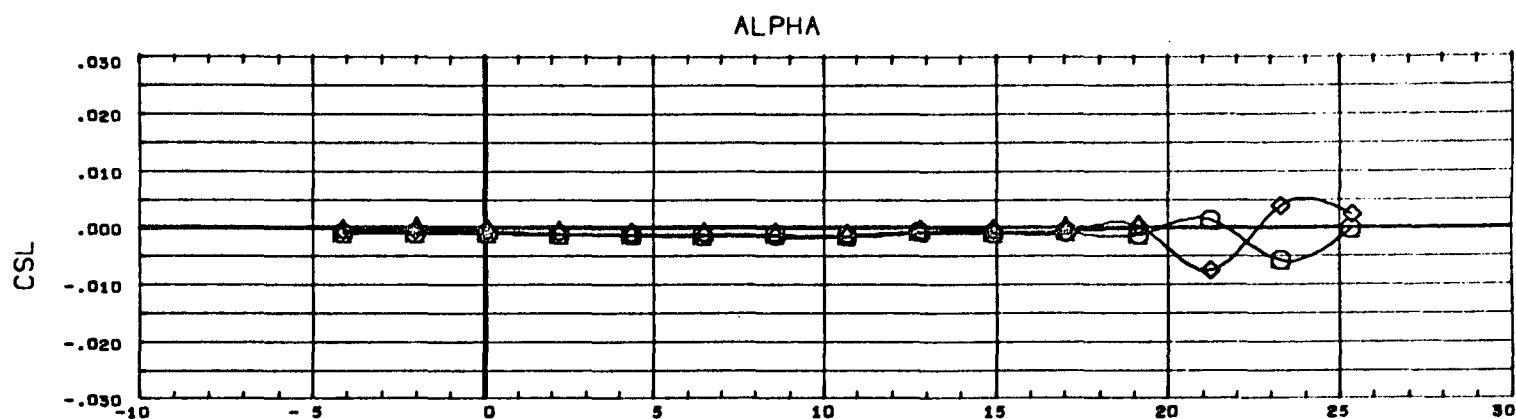
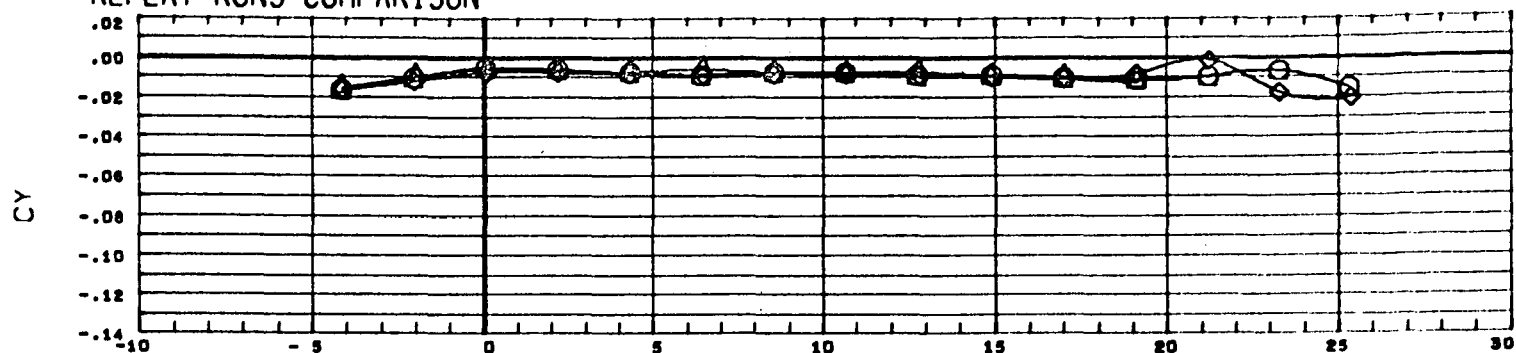
DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6002)	GDLST 603-0 830W23C10V14E38
(AD6043)	GDLST 603-0 830W23C10V14E38
(AD6076)	GDLST 603-0 830W23C10V14E38 (MODEL UPRIGHT)

MACH 0.201



BETA	ELEVTR	CANARD	AILRON	REFERENCE INFORMATION
0.000	0.000	0.000	0.000	SREF 492.4804 sq. IN
0.000	0.000	0.000	0.000	LREF 16.1880 IN.
0.000	0.000	0.000	0.000	BREF 34.6320 IN.
				XMRP 29.0780 IN.
				YMRP 0.0000 IN.
				ZMRP 0.0000 IN.
				SCALE 0.0200

REPEAT RUNS COMPARISON



ALPHA

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	RUDDER	AILRON	REFERENCE INFORMATION	
(AD6002)	GDLST 603-0 B30W23C10V14E38	0.000	0.000	0.000	0.000	SREF	492.4804 SQ. IN
(AD6043)	GDLST 603-0 B30W23C10V14E38	0.000	0.000	0.000	0.000	LREF	16.1880 IN.
(AD6076)	GDLST 603-0 B30W23C10V14E38 (MODEL UPRIGHT)	0.000	0.000	0.000	0.000	BREF	34.6320 IN.
						XMRP	29.0780 IN.
						YMRP	0.0000 IN.
						ZMRP	0.0000 IN.
						SCALE	0.0200

MACH 0.201