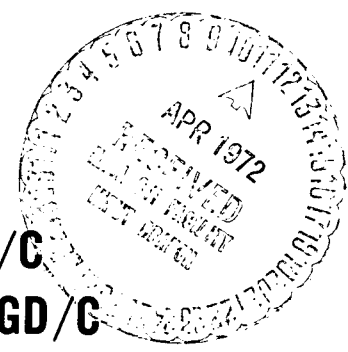


DMS-DR-1223
CR-120,035
MARCH 1972

—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

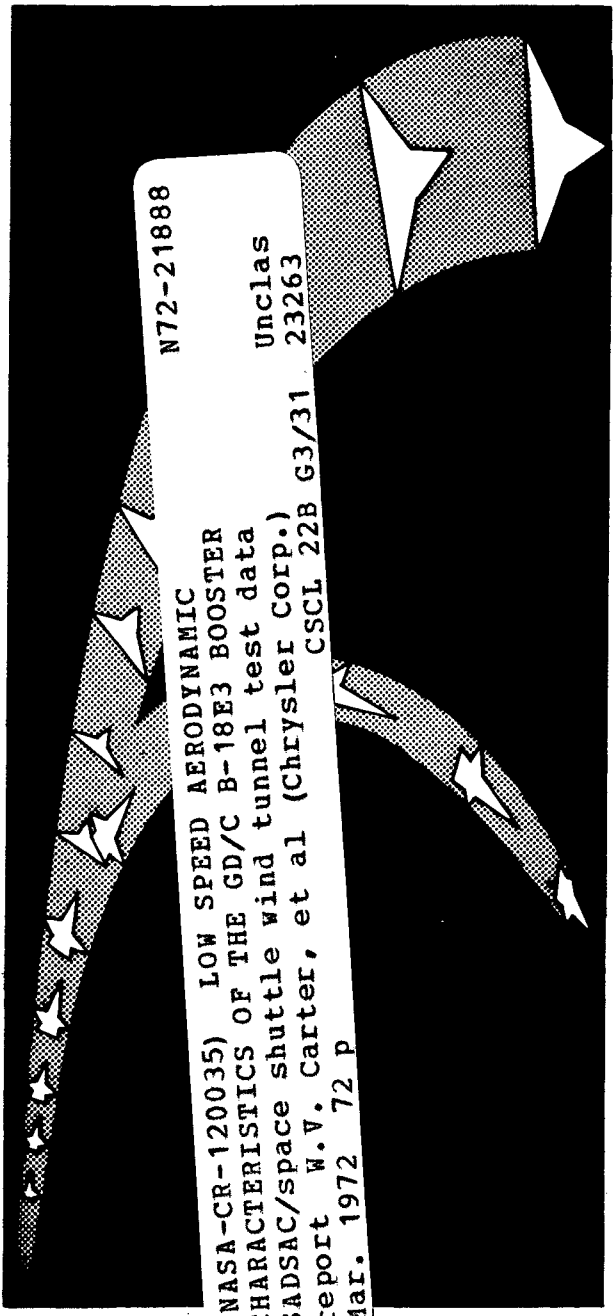


This document should be
referenced as NASA CR-120,035

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Pages 72

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CHARACTERISTICS OF THE GD/C B-18E3 BOOSTER
SADSAC/space shuttle wind tunnel test data

NASA Series Number: S-0252

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CR-120,035
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. Lenflisi - GD/C

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

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LIAISON: *H.C. Zimmerle* DATA OPERATIONS: *H.C. Zimmerle*
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CONTRACT NAS 8-4016

AMENDMENT 153

DRL 184 - 58

This report has been prepared by Chrysler Corporation Space Division under a Data Management Contract to the NASA. Chrysler assumes no responsibility for the data presented herein other than its display characteristics.

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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(P _{SI}) Q(P _{SF})	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; $[-1] \left[(p_b - p_\infty)/q \right] (A_b/S)$
C_{A_f}	CAF	forebody axial force coefficient; $C_A - C_{A_b}$
C_n	CYN	yawing moment coefficient; $M_Z/qS b_{ref}$
C_l	CBL	rolling moment coefficient; $M_X/qS b_{ref}$
<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	<p>Deflection angle of split elevons in degrees, positive trailing edge down with notation:</p> <p>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</p> <p>DEϕ, DEM, DEI denote symmetrical deflections of outboard, middle, and inboard split elevons, respectively.</p>
δ_e	ELEVTR	<p>Combined elevator deflection in degrees, for split elevons, (DELϕ + DELM + DELI + DERϕ + DERM + DERI)/6</p> <p>or for full span deflections, (DEL + DER)/2</p>
δ_a	AILR ϕ N	<p>Combined aileron deflection in degrees, for split elevon, [(DELϕ + DELM + DELI) - (DERϕ + DERM + DERI)]/6</p> <p>or for full span deflections, (DEL-DER)/2</p>
δ_c	CANARD	<p>Canard deflection angle, positive trailing edge down.</p>
δ_{RX}	RUDDER	<p>Rudder deflection angle, positive trailing edge left with notation:</p> <p>X = U upper of split rudder X = L lower of split rudder X = blank, full span rudder deflection</p>

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:

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

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

where $A_c = \text{cavity area}$

TABLE I.

TEST CONDITIONS
TEST 603

MACH NUMBER	REYNOLDS NUMBER per unit length	DYNAMIC PRESSURE (pounds/sq. inch)	STAGNATION TEMPERATURE (degrees Fahrenheit)
.201	$1.39 \times 10^6 / \text{Ft}$	60	80 (nominal)

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

CAPACITY: ACCURACY: COEFFICIENT
TOLERANCE:

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

COMMENTS:

TABLE II. TEST GDL5WT 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	SC	SEL	SR		0.20									
R06024	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								1
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 7 13 19 25 31 37 43 49 55 61 67 7576
 CY CD CSL CLM CLN CAF CAB CA CN IDPVAR(1) IDPVAR(2) NDY

a of h SCHEDULES

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

TABLE II. TEST GDL5WT-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	δeL	δeR	δR		0.201											
RD6001	B30W23C10V14E38X5	A	0	0	0	0	0	1												
002	B30W23C10V14E38	A	0	0	0	0	0	1	2											
003		A	5	0	0	0	0	1	3											
007		A	0	10	0	0	0	1	7											
008		A	5	10	0	0	0	1	8											
009		A	0	-10	0	0	0	1	9											
010		A	5	-10	0	0	0	1	10											
011		A	0	+15	0	0	0	1	11											
012		A	5	+15	0	0	0	1	12											
013		A	0	+20	0	0	0	1	13											
014		A	5	+20	0	0	0	1	14											
015	B31W23C10V14E38	A	0	0	0	0	0	1	15											
016		A	5	0	0	0	0	1	16											
017	B31W23C10V14E38X6	A	0	0	0	0	0	1	17											
018	B30W23C10V14E38	A	0	-10	-10	-10	0	1	18											
019		A	5	-10	-10	-10	0	1	19											
020		A	0	+15	+10	+10	0	1	20											
021		A	5	+15	+10	+10	0	1	21											
022		A	0	+15	+5	+5	0	1	22											
V023		A	5	+15	+5	+5	0	1	23											

COEFFICIENTS: CL CY CD CGL CLM CLN CAE CAB CA CN IDIPVAR(1) IDIPVAR(2) INDV

α OF β SCHEDULES

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

TABLE II. TEST GDL5WT-603 DATA SET COLLATION SHEET (CONTINUED)

DATA SET IDENTIFIER	CONFIGURATION	SCHD.		PARAMETERS/VALUES			NO. of RUNS	MACH NUMBERS (OR ALTERNATE INDEPENDENT VARIABLE)																																															
		a	B	γ_c	δ_{e1}	δ_{e2}		δ_R	0201																																														
RD6004	B30 W23 C10 V4 E38	0	B	0	0	0	0	1																																															
005		10	B	0	0	0	0	1																																															
006		15	B	0	0	0	0	1																																															
056	B30 W23 C10 E38	0	B	0	0	0	0	1																																															
057		10	B	0	0	0	0	1																																															
058		15	B	0	0	0	0	1																																															

PRETEST
 POSTEST

CL 7 CY 13 CD 19 CSL 25 CLM 31 CLN 37 CAF 43 CAB 49 CA 55 CN 61 MACH 67 BETA 7576
 IDIPVAR(1) | IDIPVAR(2) | INDV

COEFFICIENTS: _____
 a or B _____
 SCHEDULES $\beta R = -6.76 \pm 1.0^\circ$ @ $\Delta R = 2^\circ$

NASA-MSFC:MAF

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

PRETEST
 POSTTEST

DATA SET IDENTIFIER	CONFIGURATION	SCHD.		PARAMETERS/VARIABLES										NO. of RUNS	MACH NUMBERS					
		u	h	δ_c	$\delta_{c,1}$	$\delta_{c,M}$	$\delta_{c,0}$	$\delta_{c,R1}$	$\delta_{c,R2}$	$\delta_{c,R0}$	$\delta_{c,R1}$	$\delta_{c,R2}$	$\delta_{c,R0}$		0.20/					
RD6034	B30 W23 C10 V4 E38	A	0	0	0	10	10	0	-10	-10	0	0	0	1	34					
035		A	5	0	0	10	10	0	-10	-10	0	0	0	1	35					
036		A	0	0	0	0	0	0	0	0	0	0	0	1	36					
037		A	5	0	0	0	0	0	0	0	0	-10	0	1	37					
038		A	0	0	0	0	0	0	0	0	0	10	10	1	38					
039		A	5	0	0	0	0	0	0	0	0	10	10	1	39					
040		A	0	0	0	0	0	0	0	0	0	0	10	1	40					
041		A	5	0	0	0	0	0	0	0	0	0	10	1	41					
071		A	0	15	25	-10	-10	25	-10	-10	0	0	0	1	71					
072		A	5	15	25	-10	-10	25	-10	-10	0	0	0	1	72					
073		A	0	-10	-10	5	5	-10	5	5	0	0	0	1	73					
074		A	5	-10	-10	5	5	-10	5	5	0	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

COEFFICIENTS:
of 0
SCHEDULES

$\alpha_0 = -4$ 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	Sc	ScL	ScR	BR		
RD6052	B30 W23 C11 V4 E38	A	0	15	0	0	0	1	52
053	B30 W23 C10 E38	A	5	15	0	0	0	1	53
054	B30 W23 C10 E38	A	0	0	0	0	-	1	54
055		A	5	0	0	0	-	1	55
059		A	0	-10	0	0	-	1	59
060		A	5	-10	0	0	-	1	60
061		A	0	+10	0	0	-	1	61
062		A	5	+10	0	0	-	1	62
063		A	0	+15	0	0	-	1	63
064		A	5	+15	0	0	-	1	64
065	B30 W23 E38	A	0	-	0	0	-	1	65
066		A	5	-	0	0	-	1	66
067	B32 W23 C10 V4	A	0	0	0	0	0	1	67
068		A	5	0	0	0	0	1	68
069	B30 W23 C10 V4	A	0	0	0	0	0	1	69
070		A	5	0	0	0	0	1	70
075	B30 W23 C10 V4 E38	A	0	0	0	0	0	1	75
076		A	0	0	0	0	0	1	76
077	B30 W23 V4	A	0	0	0	0	0	1	77
078		A	5	0	0	0	0	1	78

1 CL 7 13 19 25 31 37 43 49 55 61 67 7576
 10 IDPVAR(1) IDPVAR(2) INDV

COEFFICIENTS:
 a or b
 SCHEDULES

$\alpha_A = -4$ to $+240^\circ$ @ $\Delta\alpha = 2^\circ$

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

DATA SET IDENTIFIER	CONFIGURATION	SCHD.		PARAMETERS/VALUES			NO. OF RUNS	MACH NUMBERS (OR ALTERNATE INDEPENDENT VARIABLE)	0.201															
		a	b	Sc	SeL	SeR																		
RD6079	B30W23 V6	A	0	-	0	0	0	79																
080	↓	A	5	-	0	0	0	80																
081	B30W23 C10 V6	A	0	0	0	0	0	81																
082	↓	A	5	0	0	0	0	82																
083	B30 C10	A	0	0	0	0	0	83																
084		A	5	0	-	-	-	84																
085		A	0	-10	-	-	-	85																
086		A	5	-10	-	-	-	86																
087		A	0	+10	-	-	-	87																
088		A	5	+10	-	-	-	88																
089		A	0	+15	-	-	-	89																
090	↓	A	5	+15	-	-	-	90																
091	B30 V4	A	0	-	-	0	0	91																
092	↓	A	5	-	-	0	0	92																
093	B30	A	0	-	-	-	-	93																
094	↓	A	5	-	-	-	-	94																
095	B32	A	0	-	-	-	-	95																
096	↓	A	5	-	-	-	-	96																

COEFFICIENTS:

a or b SCHEDULES

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

IDPVAR(1) IDPVAR(2) INDV

NASA-MSPC-MAF

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: B₃₁

GENERAL 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 - B₃₂

GENERAL 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

DIMENSIONS: FULL-SCALE MODEL SCALE

TOTAL DATA

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	

EXPOSED DATA

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 C₁₀

GENERAL 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 V₁₄

GENERAL 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 V16

GENERAL 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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12.	Predesign of the B-18E3 Booster	43
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TABLE V. INDEX OF DATA FIGURES
(Continued)

TITLE	PLOTTED		PAGES
	COEFFICIENTS SCHEDULE	CONDITIONS VARYING	
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Comparison of Bodies B30 and B32	B	Configuration, BETA	61-63
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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

- Notes:
1. Positive directions of force coefficients moment coefficients, and angles are indicated by arrows.
 2. For clarity, origins of wind and stability axes have been displaced from the center of gravity.

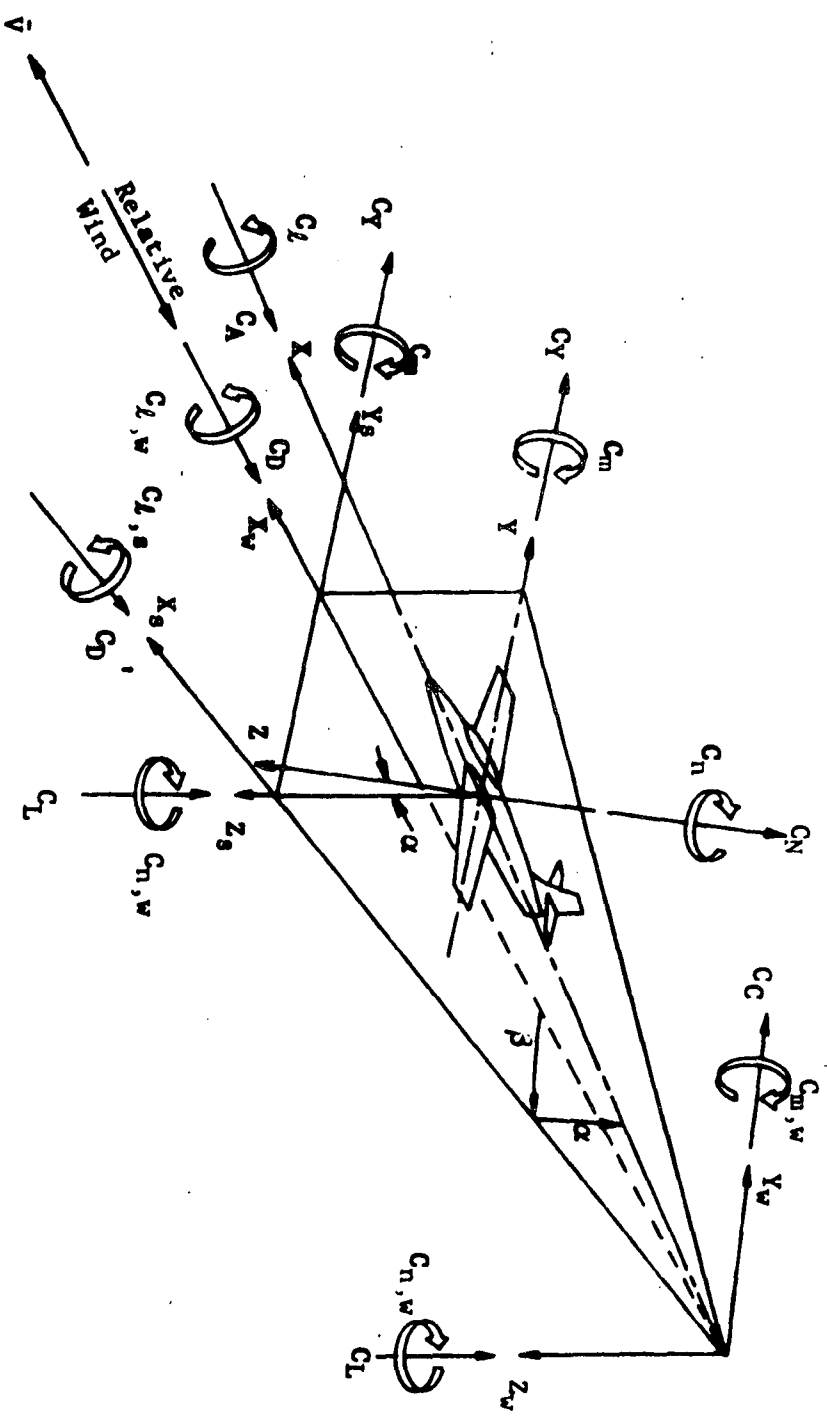


Figure 1. Axis systems, showing direction and sense of force and moment coefficients, angle of attack, and sideslip angle

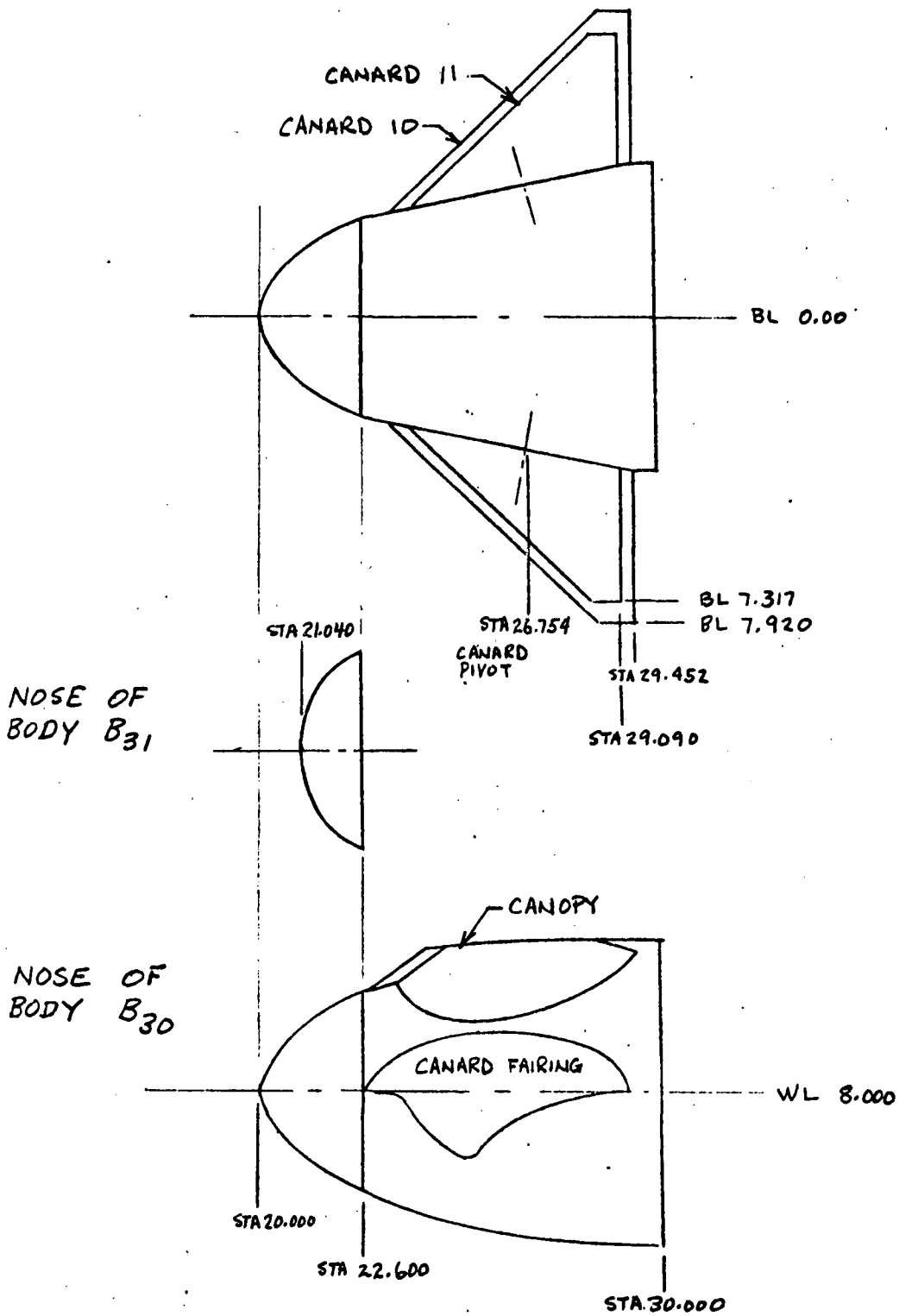


Figure 2. Nose of Body B₃₀ and B₃₁

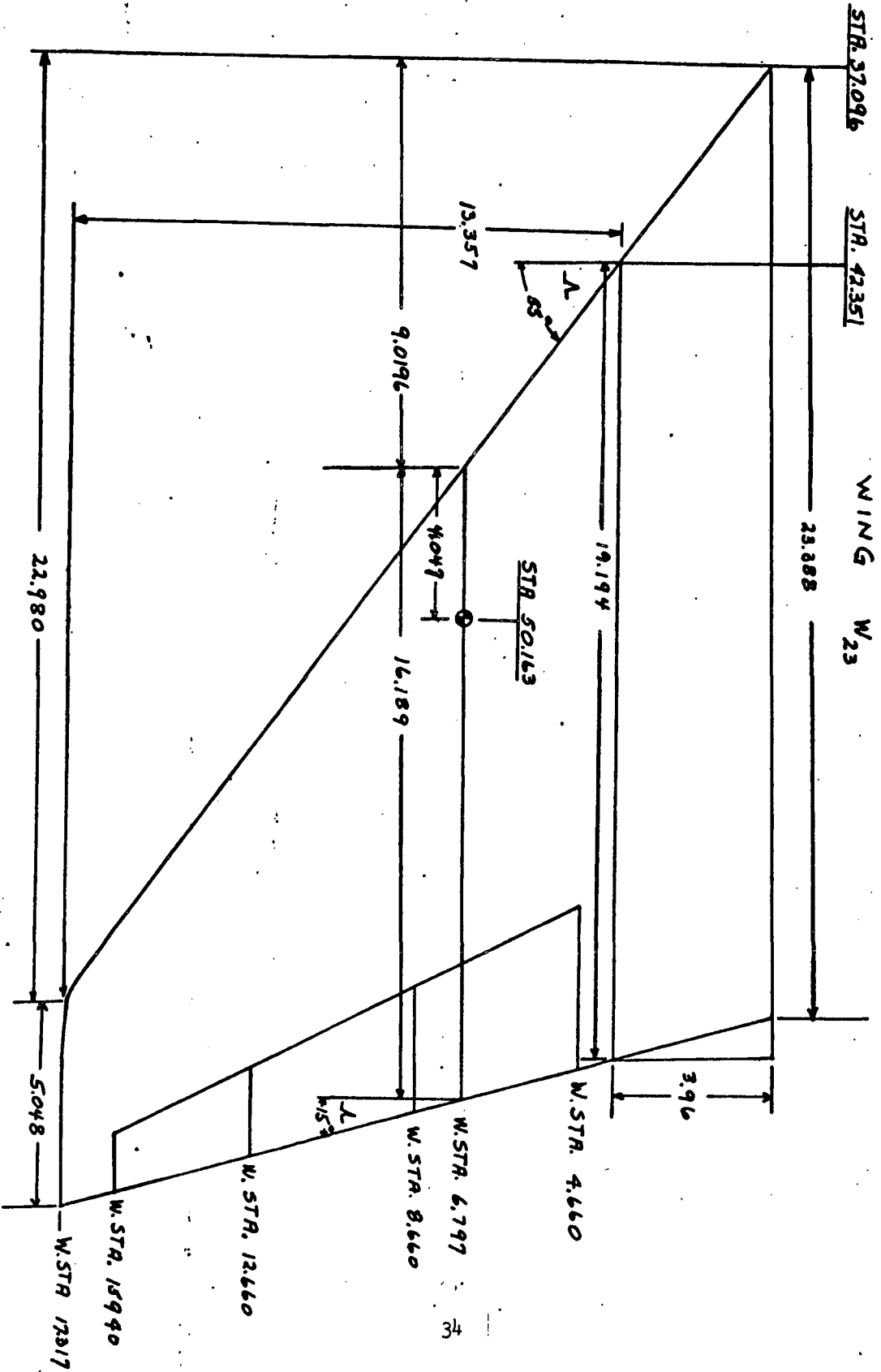


Figure 3. Wing W23

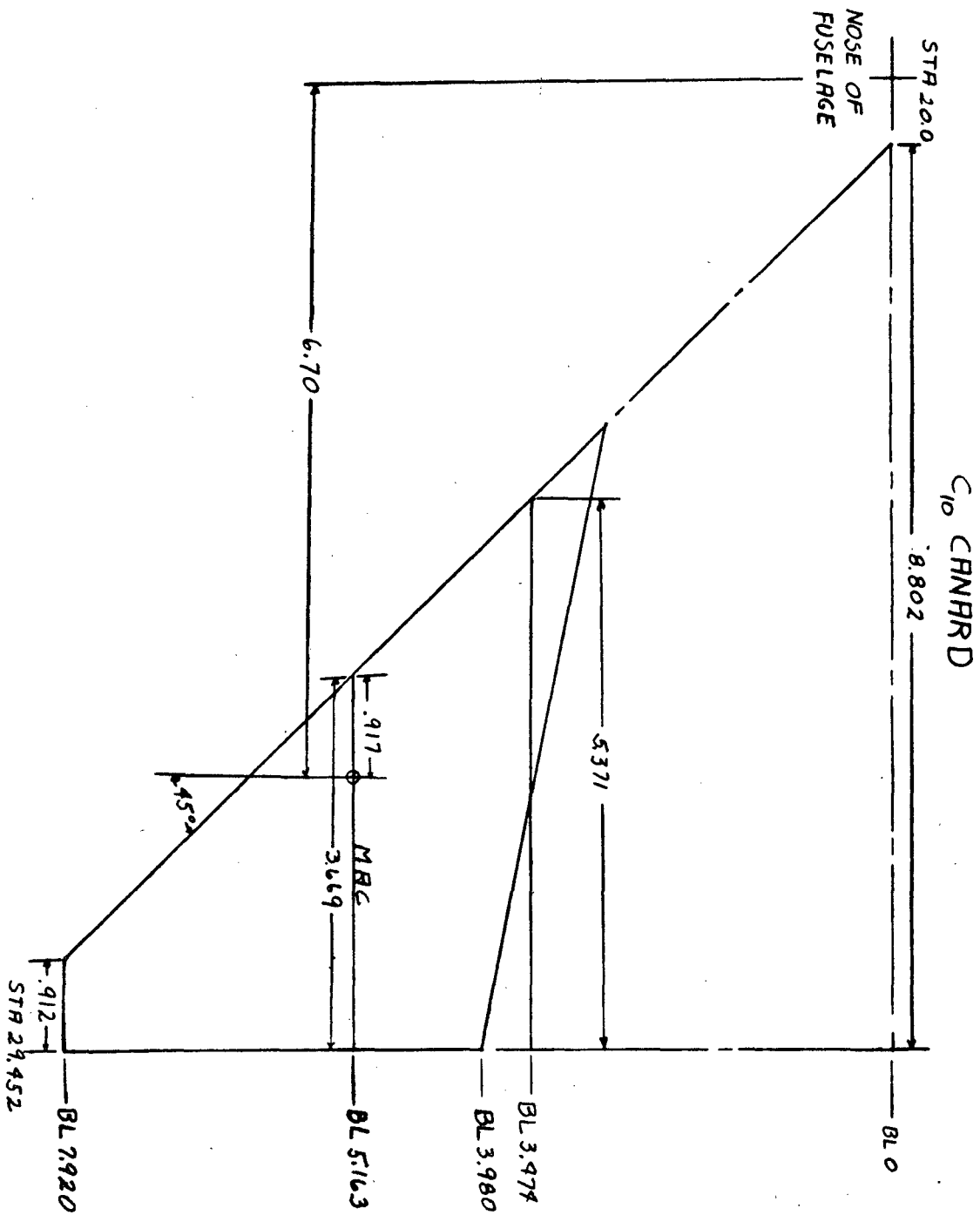


Figure 4. Canard C10

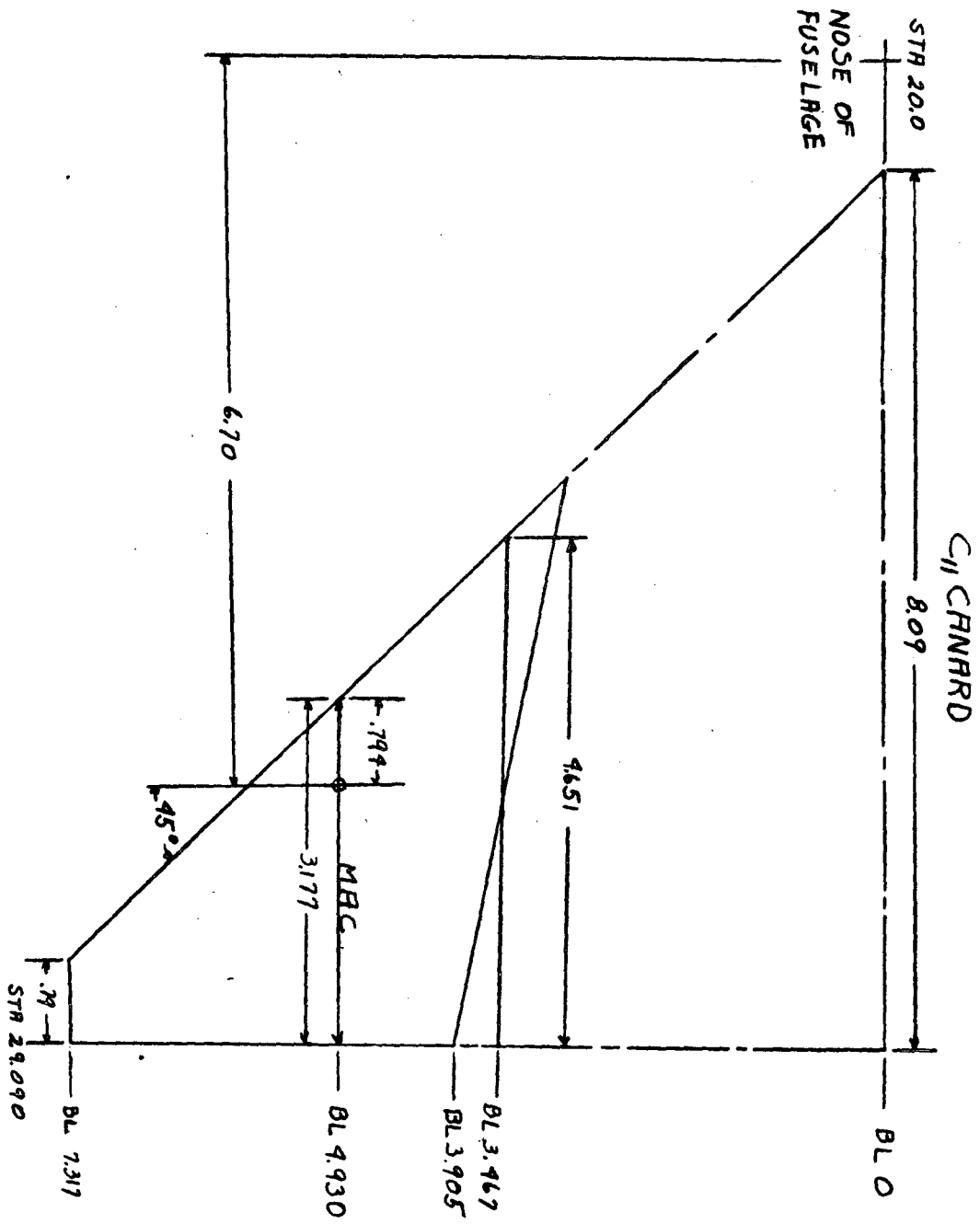


Figure 5. Canard C11

VERTICAL TAIL V₁₄

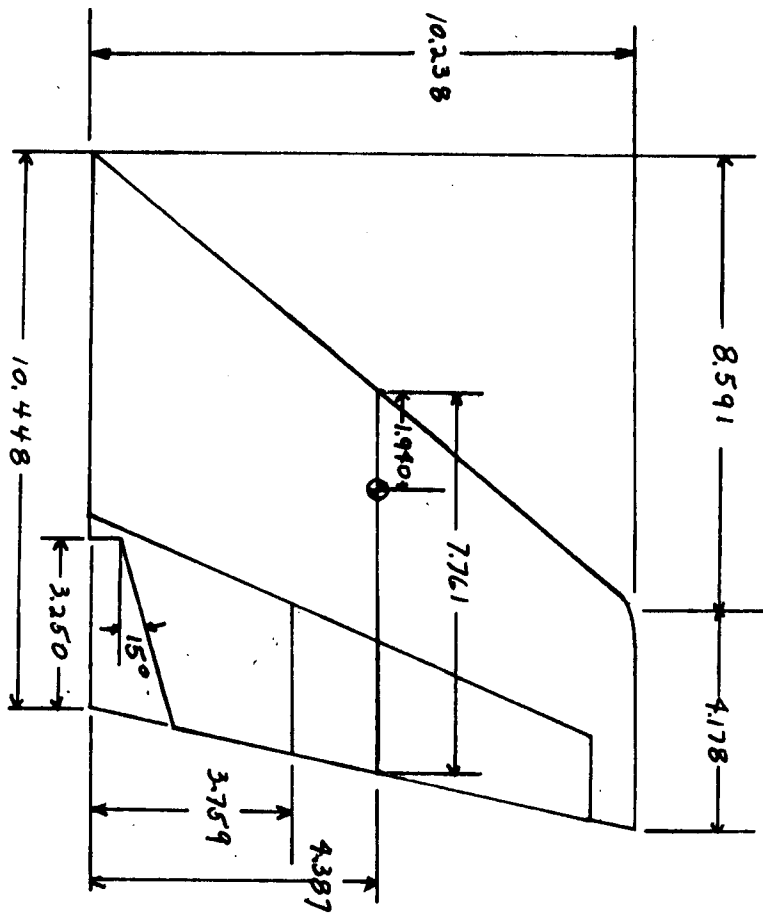


Figure 6. Vertical Tail V₁₄

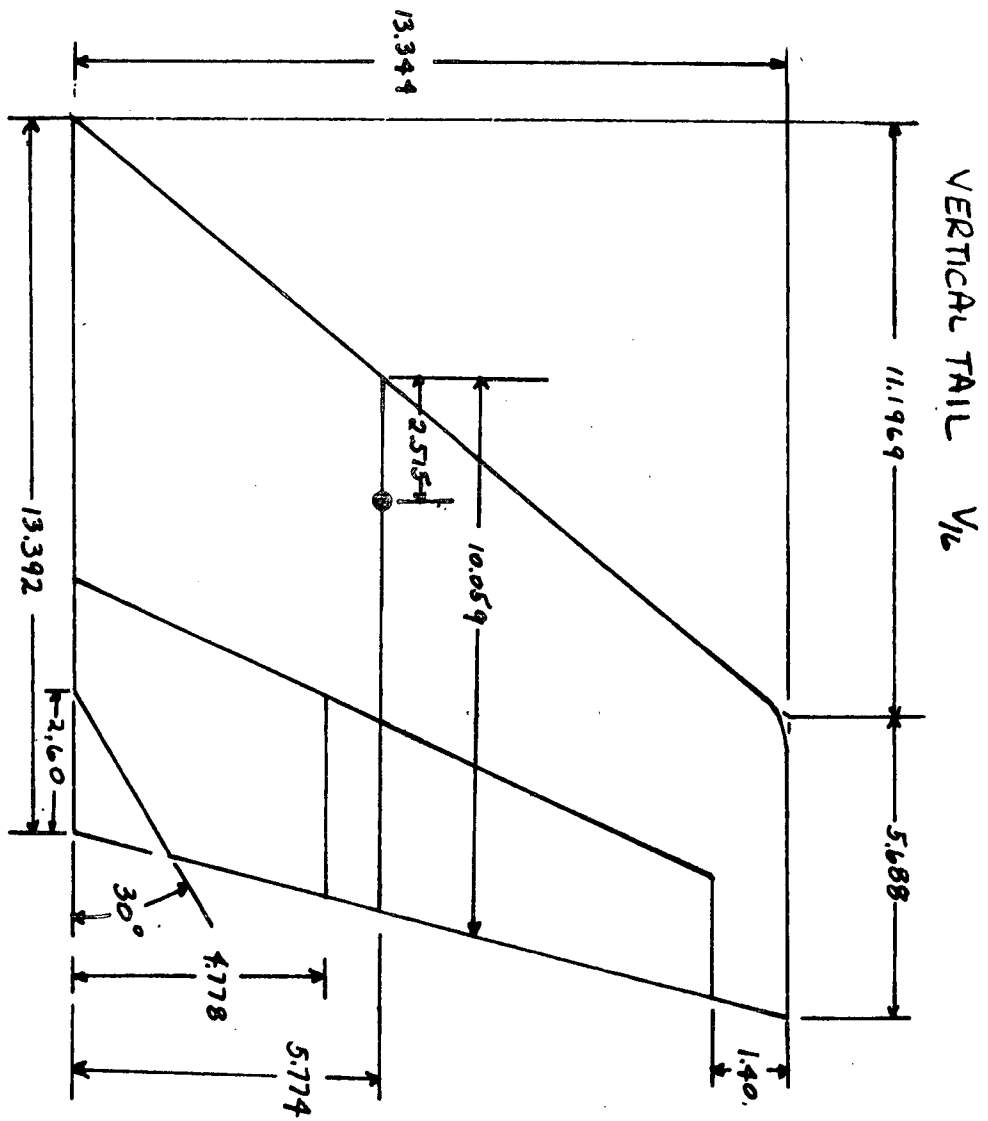


Figure 7. Vertical Tail V₁₆

TAP LOCATIONS

STA	<u>58.350</u>	<u>61.640</u>
-----	---------------	---------------

P_{b1}

P_{b2}

P_{b3}

P_{b4}

P_{b5}

P_{b6}

P_{b7}

P_{b8}

MANIFOLDED TOGETHER

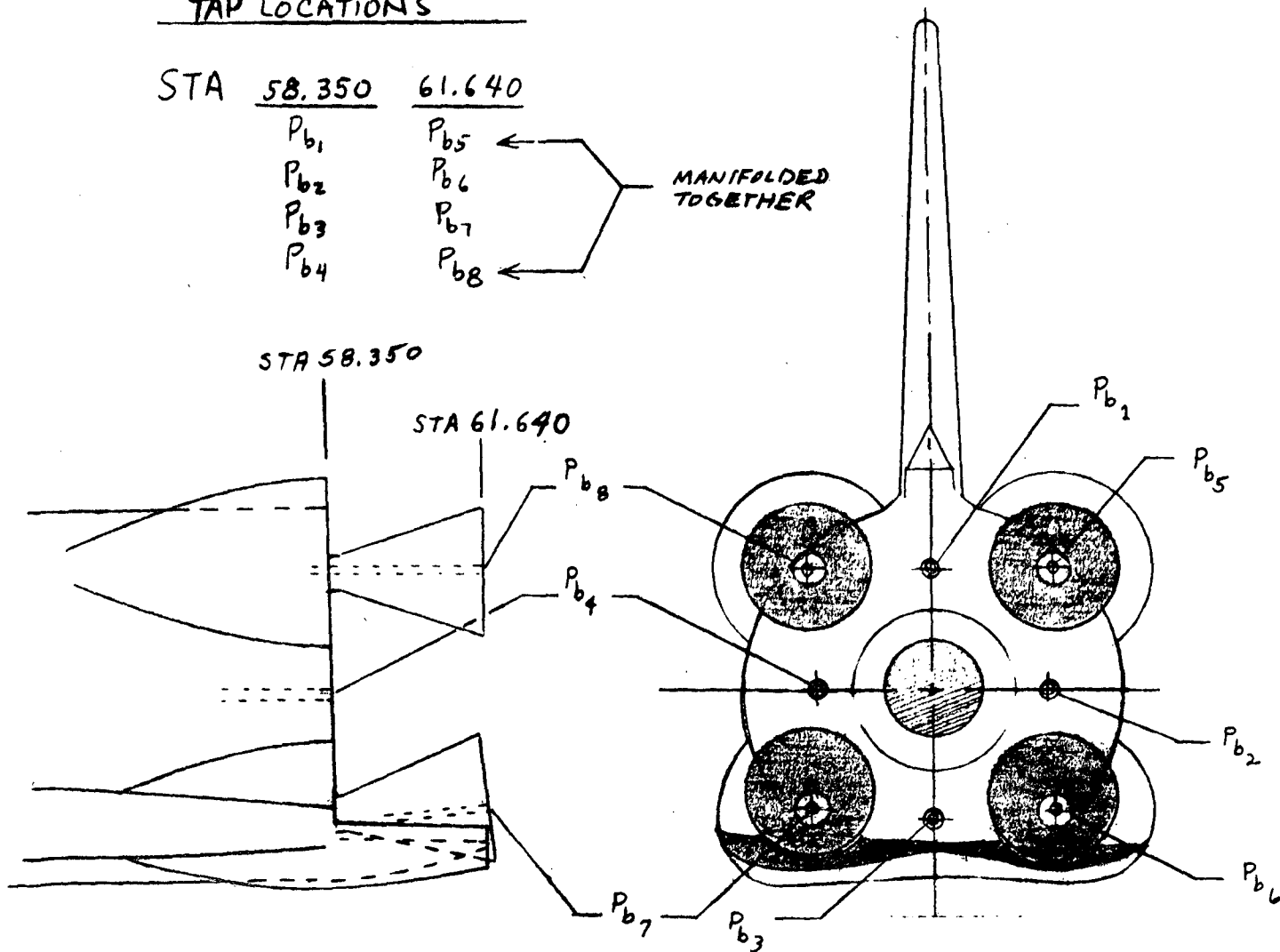


Figure 8. BASE REGION AND PRESSURE TAP LOCATIONS

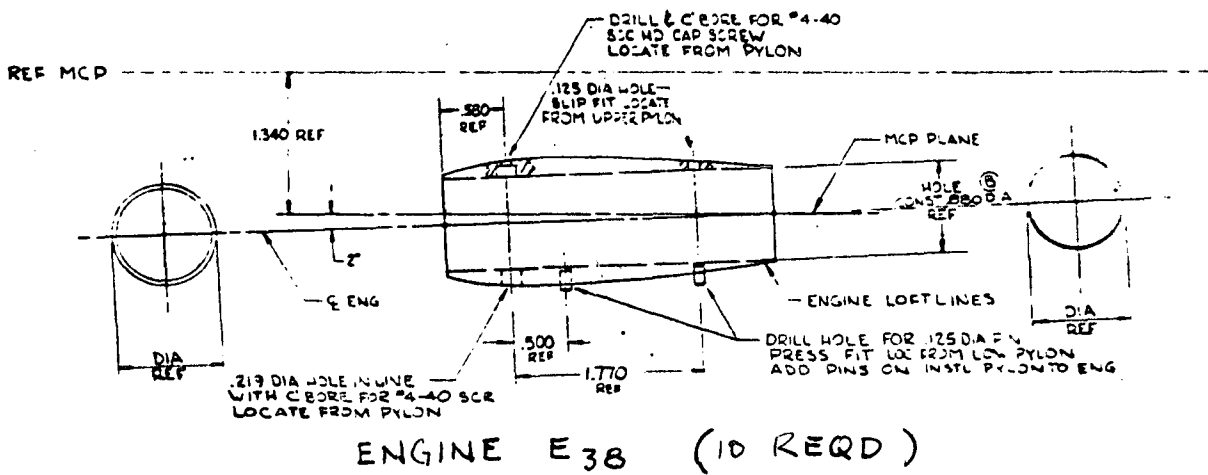
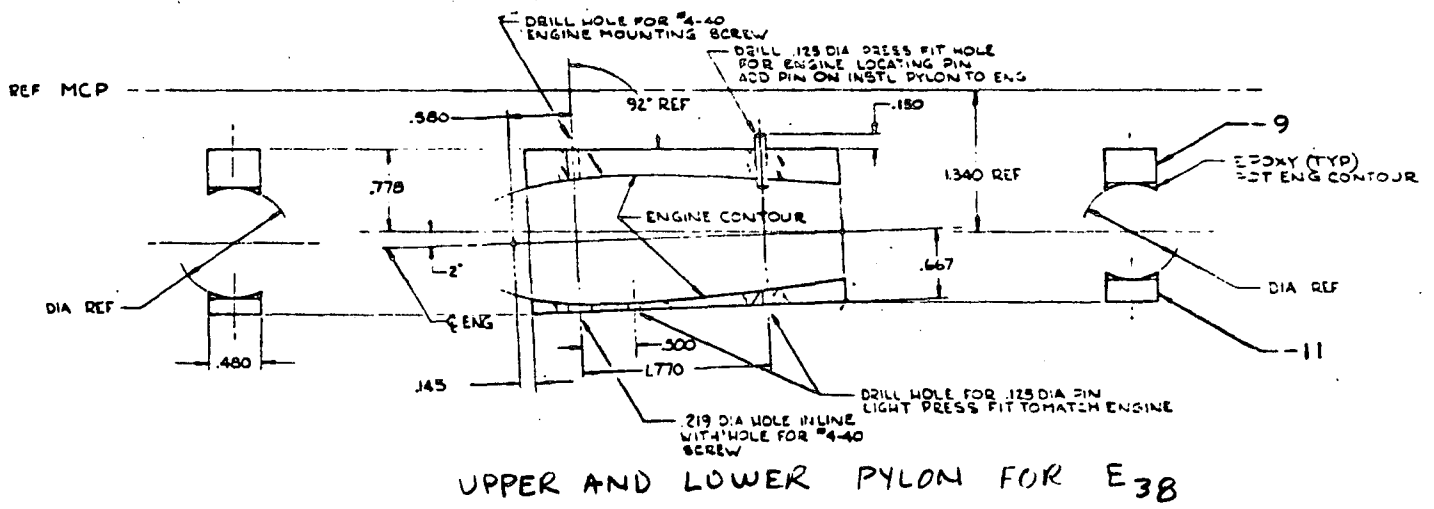
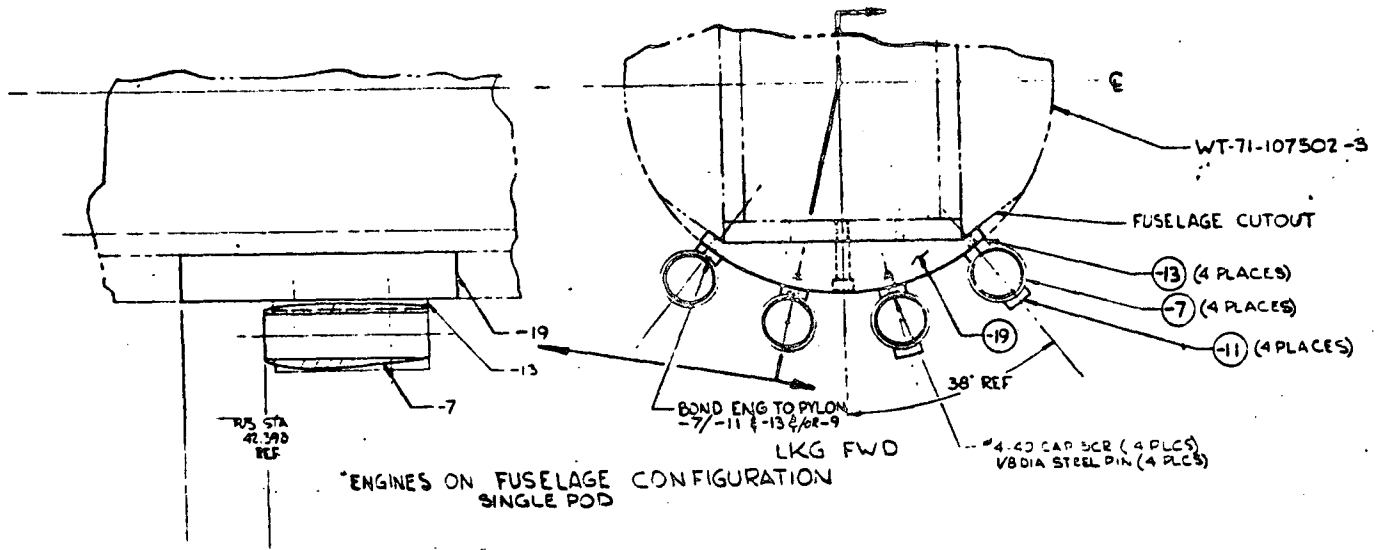


Figure 9. Engine E38

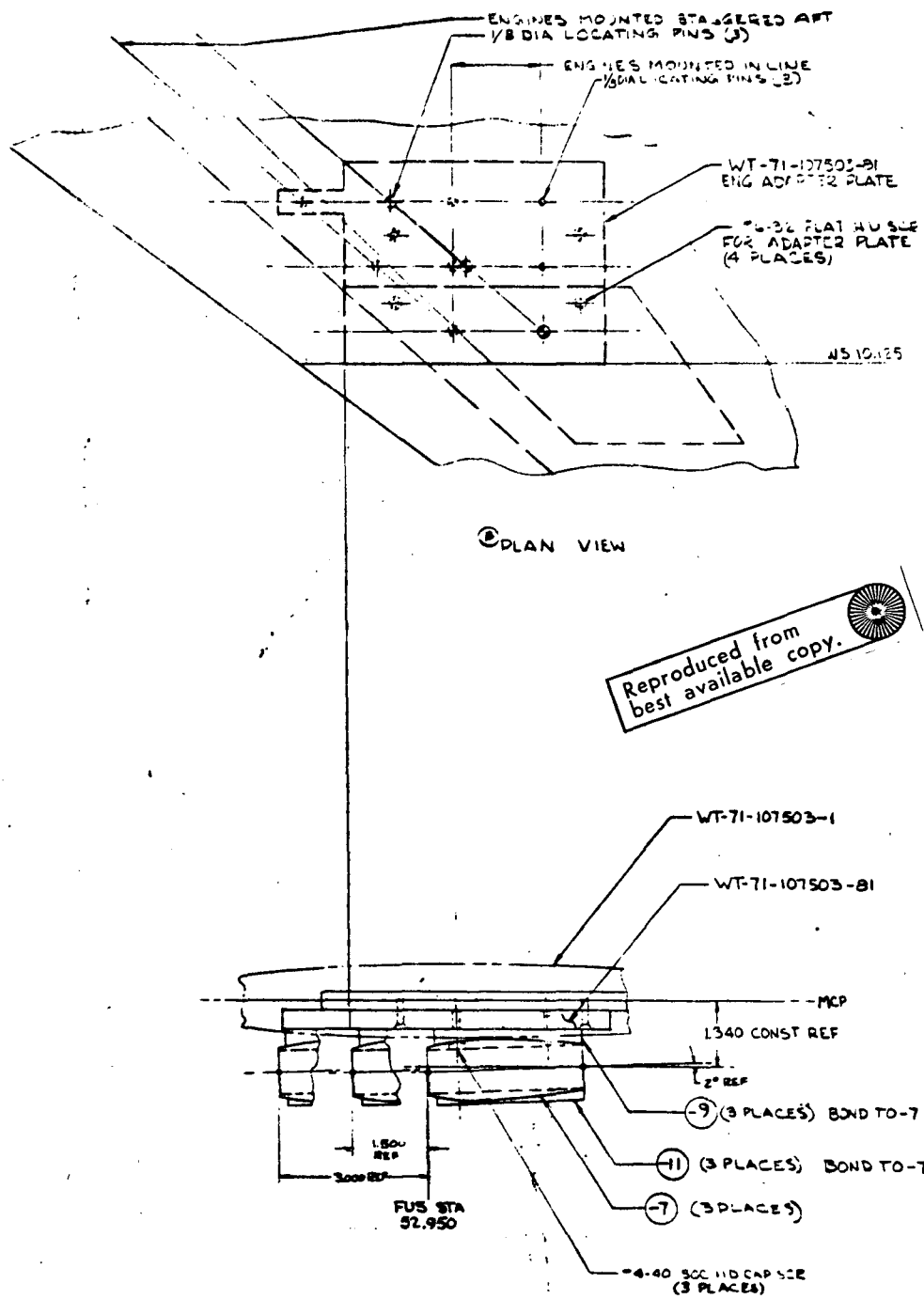


Figure 10. ENGINES ON WING

ROCKET ENGINES R₅

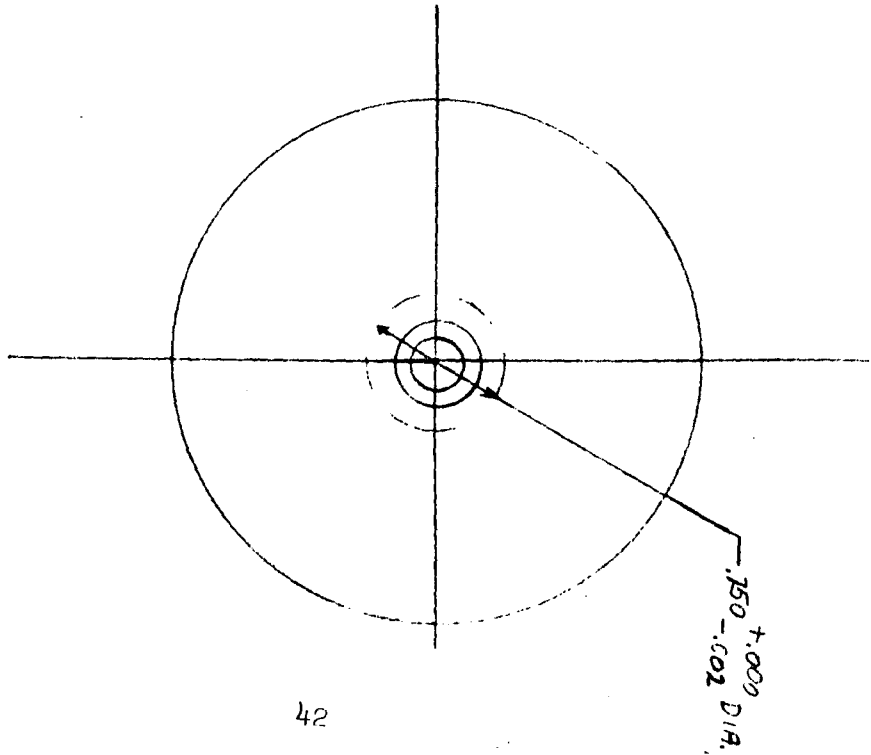
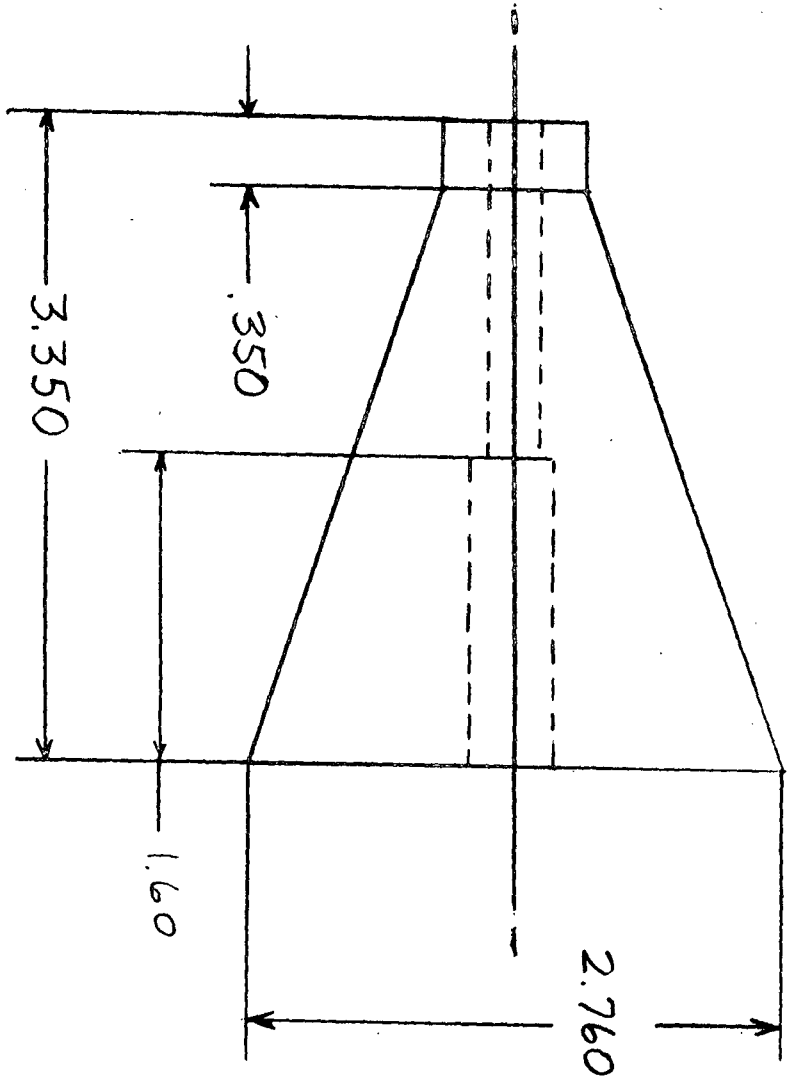
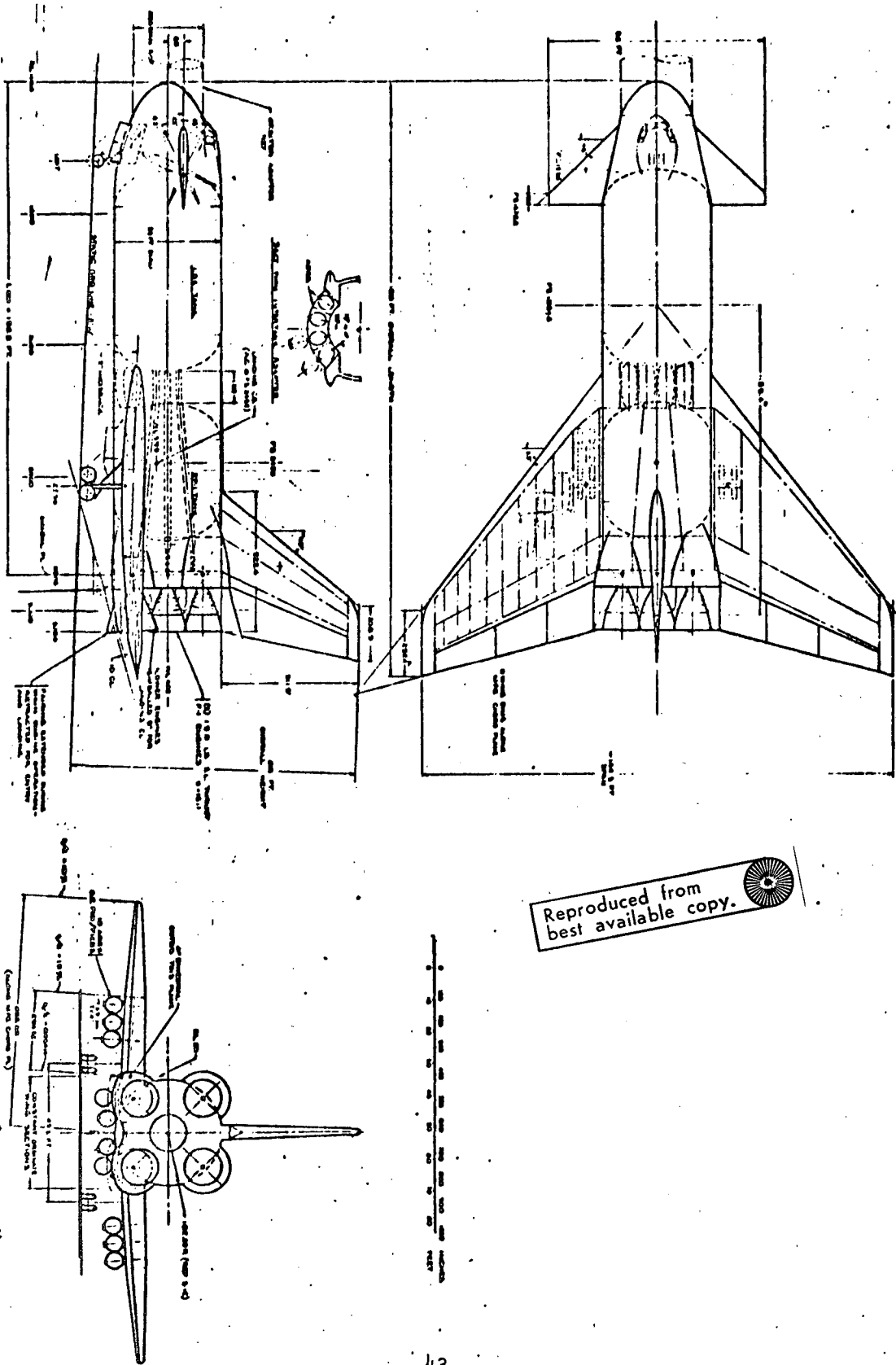


Figure 11. Rocket Engine R₅

FIGURE 12. PREDESIGN OF THE B-1BEE3 BOOSTER



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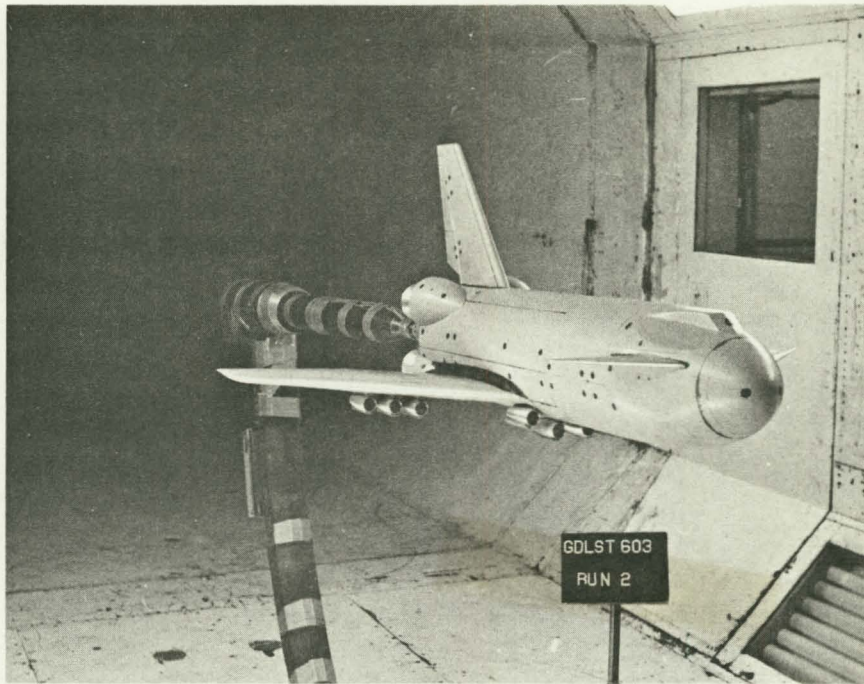


Figure 13. B-18E3 Configuration $B_{30}W_{23}C_{10}V_{14}E_{38}$

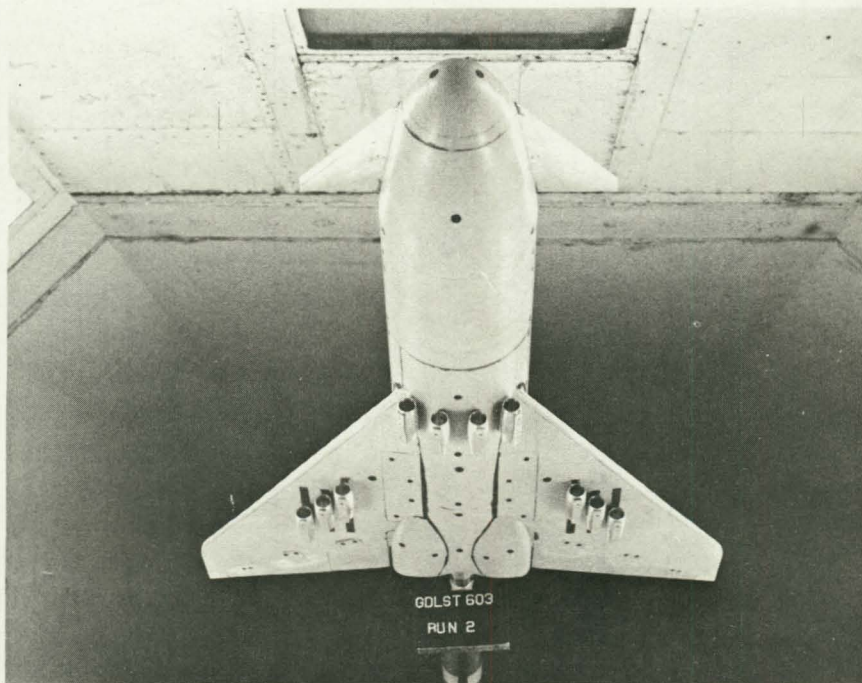


Figure 14. B-18E3 Showing Lower Surface

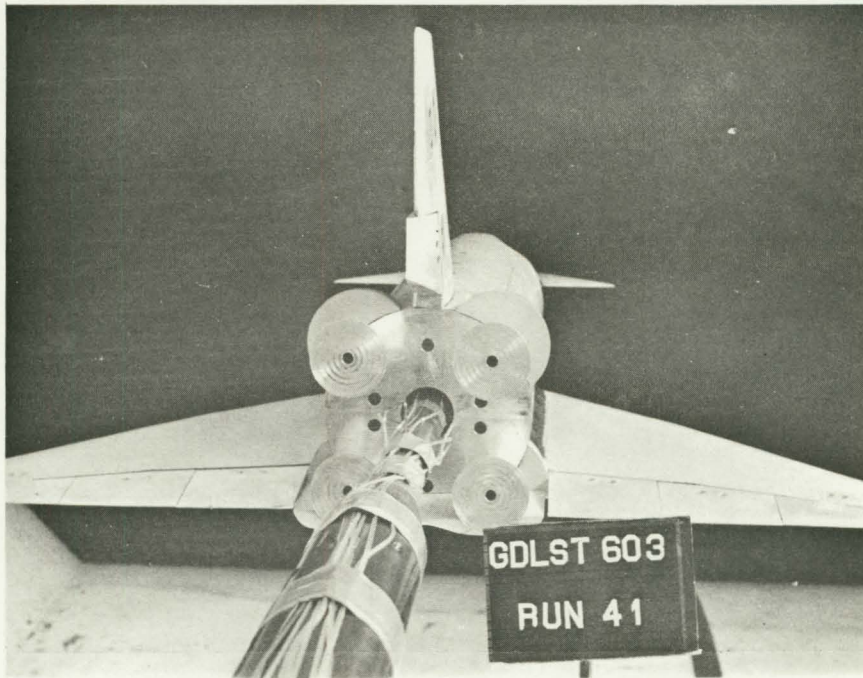


Figure 15. Lower Rudder Deflection and Close Up of Base Region.

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best available copy.

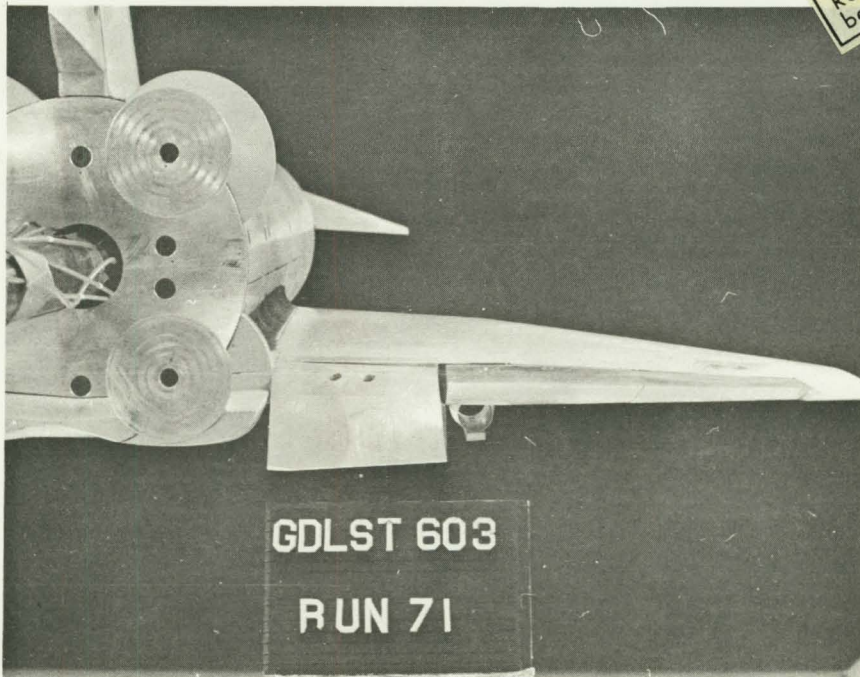
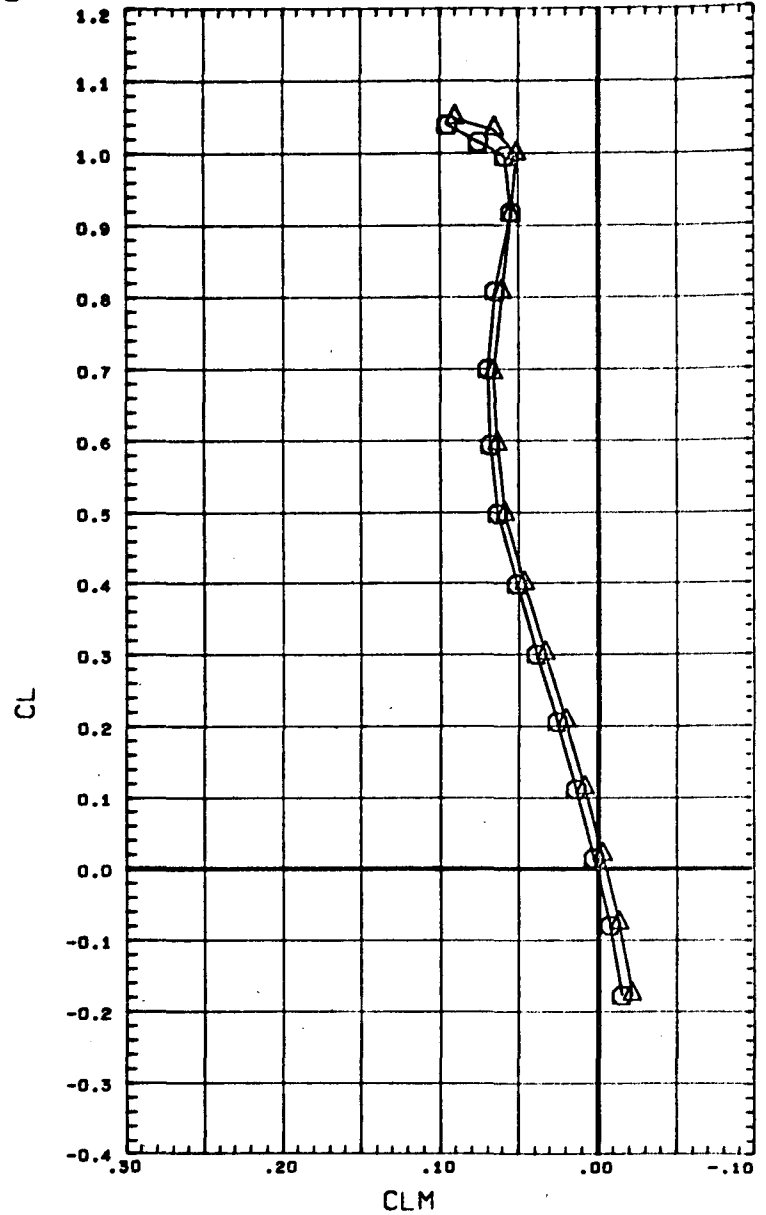
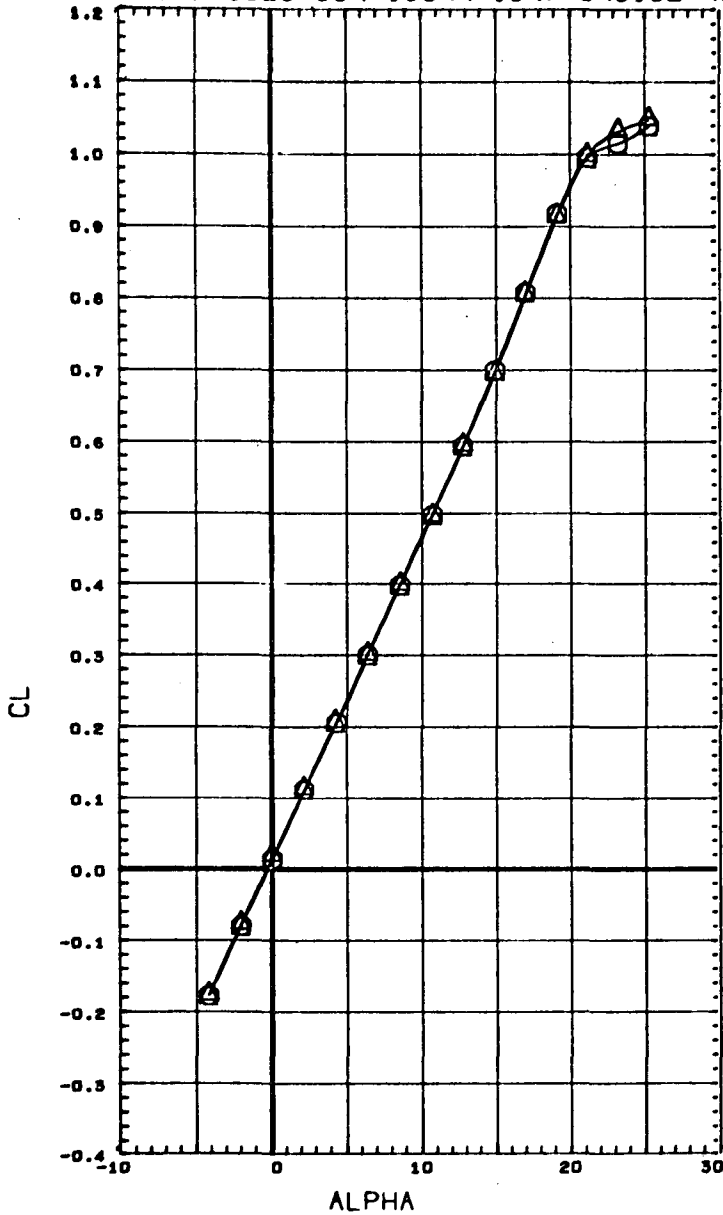


Figure 16. Split Elevon Deflections.

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

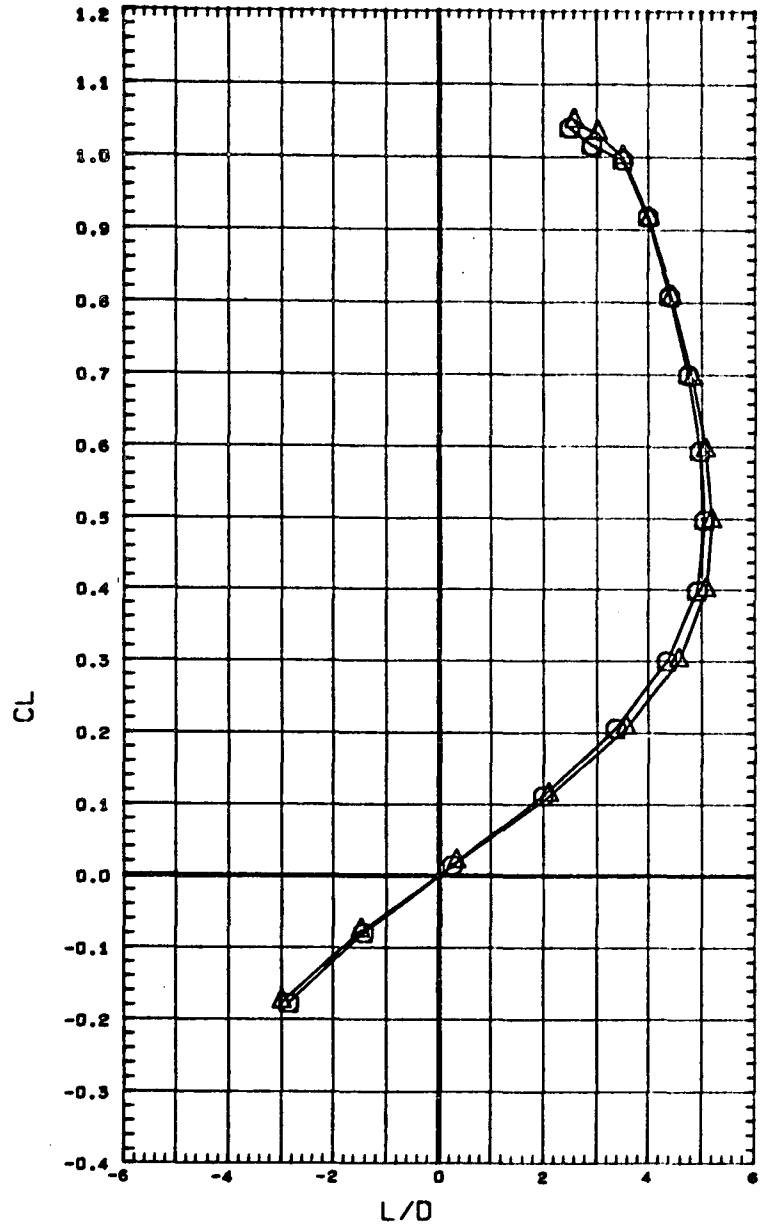
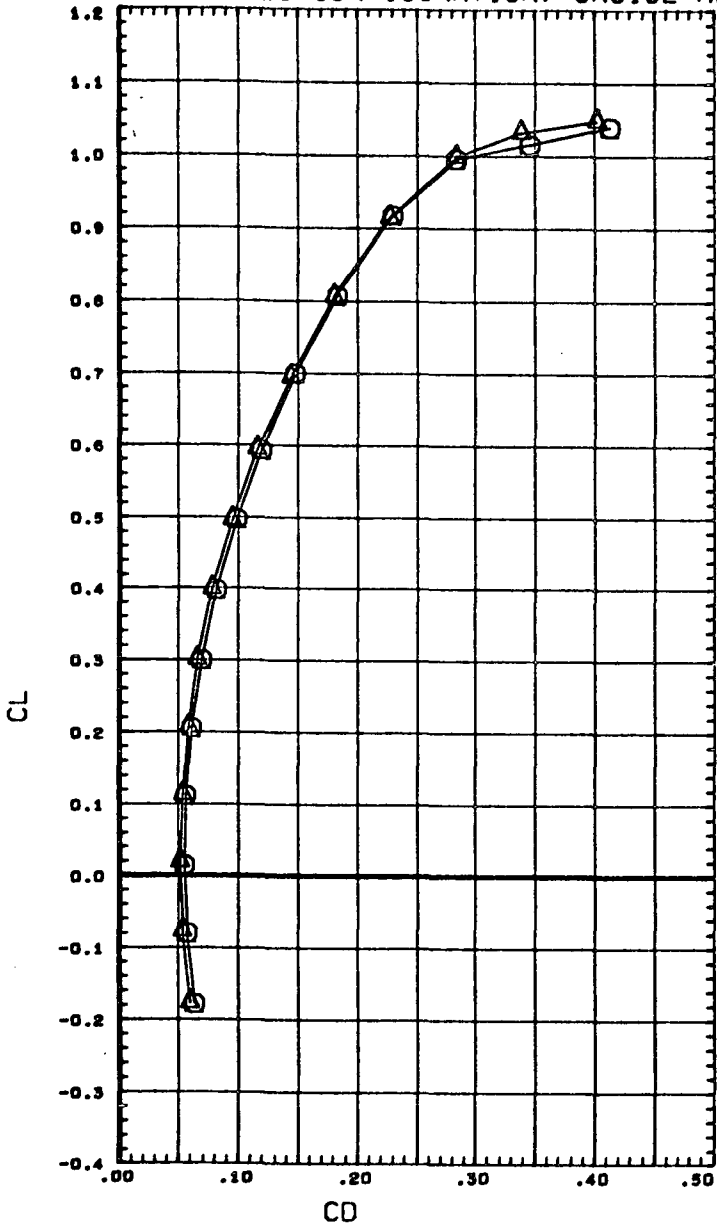


DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6002) ○	GOLST 603-0 B30W23C10V14E38
(AD6003) △	GOLST 603-0 B30W23C10V14E38

MACH 0.201

BETA	ELEVTR	CANARD	AILRON	REFERENCE INFORMATION
0.000	0.000	0.000	0.000	SREF 492.4804 90. 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

BASIC B-18E3 CONFIGURATION, CRUISE MODE

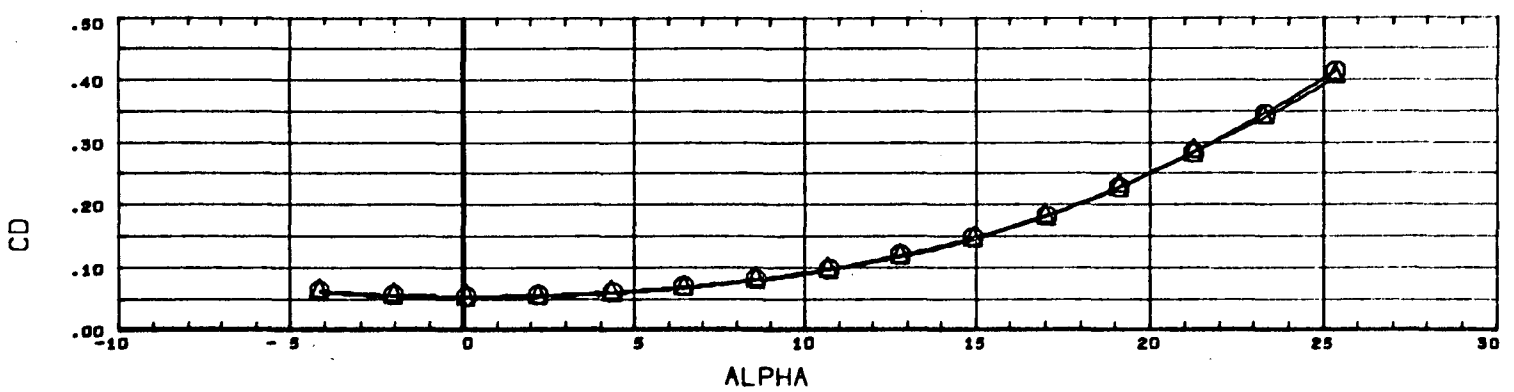
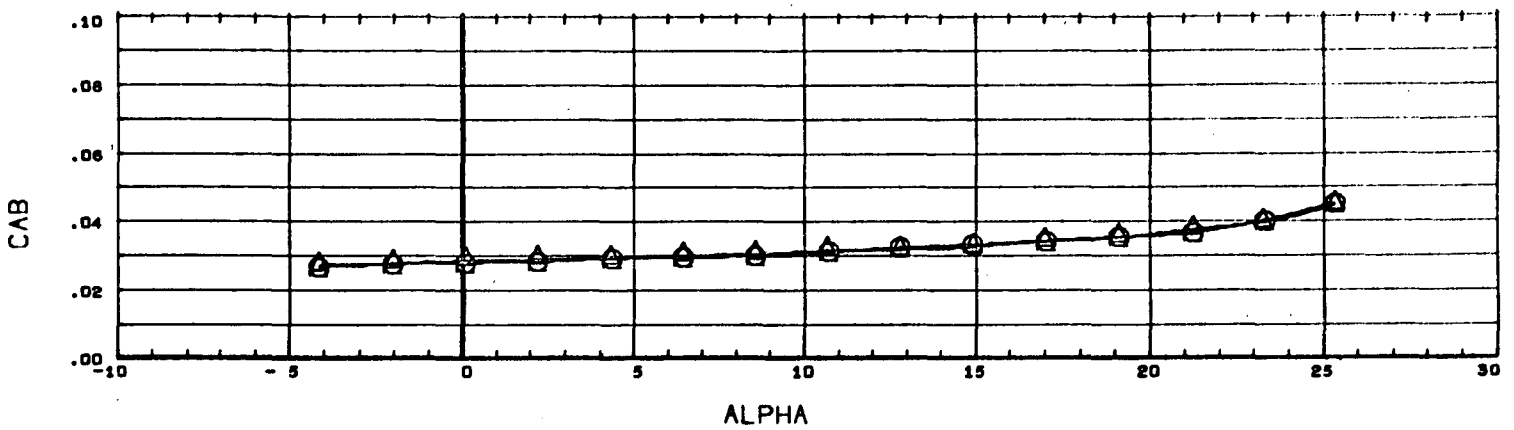
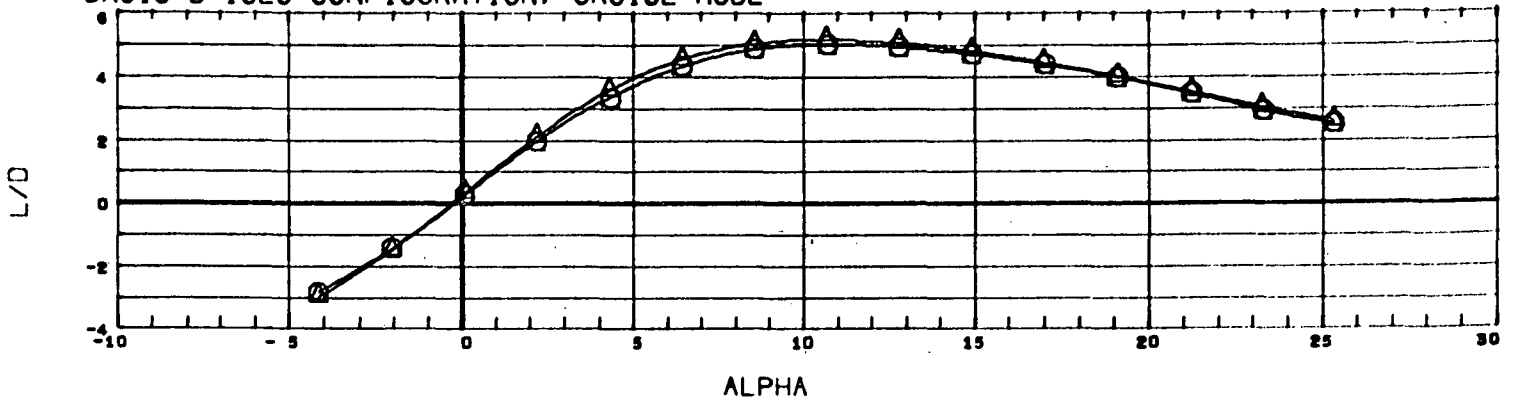


DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6002) ○	GDLST 603-0 B30W23C10V14E38
(AD6003) △	GDLST 603-0 B30W23C10V14E38

MACH 0.201

BETA	ELEVTR	CANARD	AILRON	REFERENCE INFORMATION
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

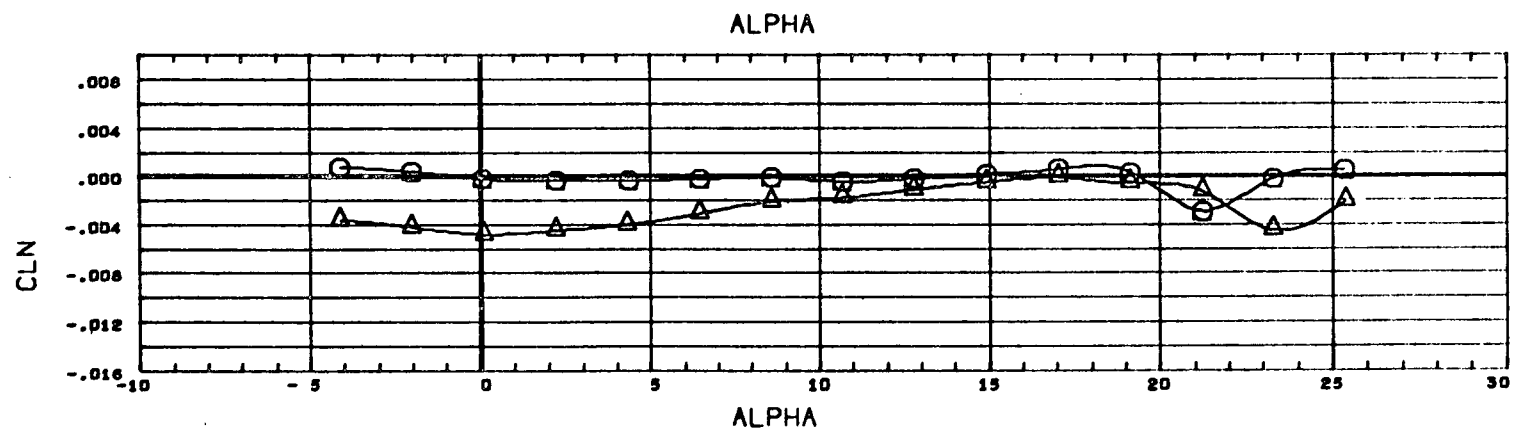
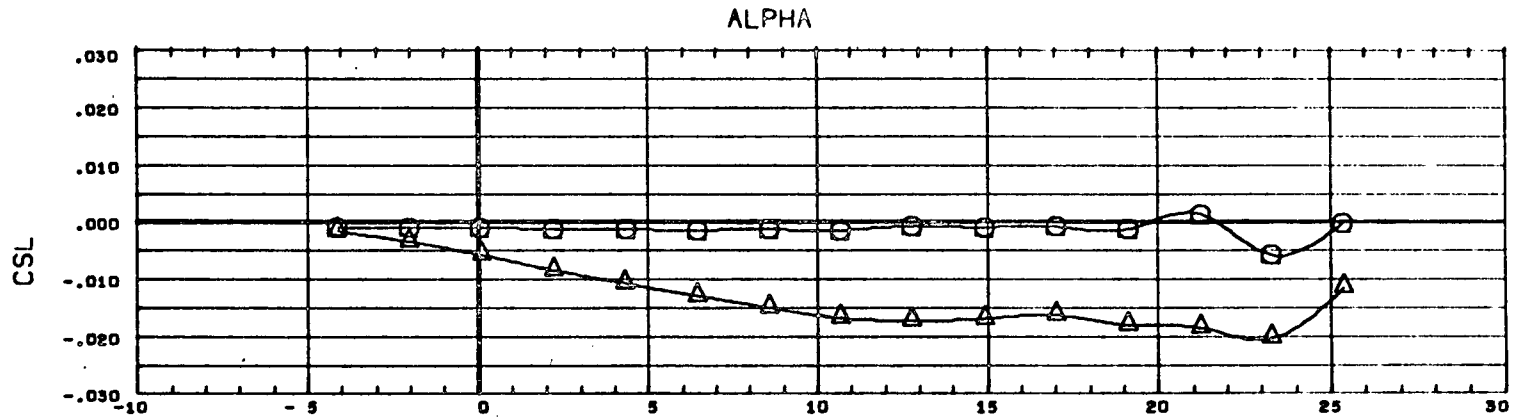
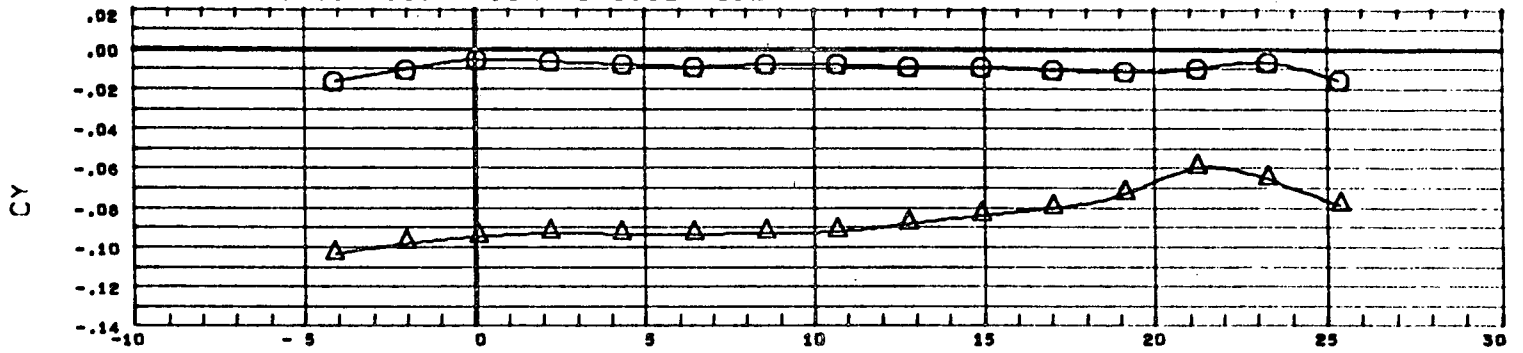
BASIC B-18E3 CONFIGURATION, CRUISE MODE



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 29.0780 IN.
						YMRP 0.0000 IN.
						ZMRP 0.0000 IN.
						SCALE 0.0200

MACH 0.201

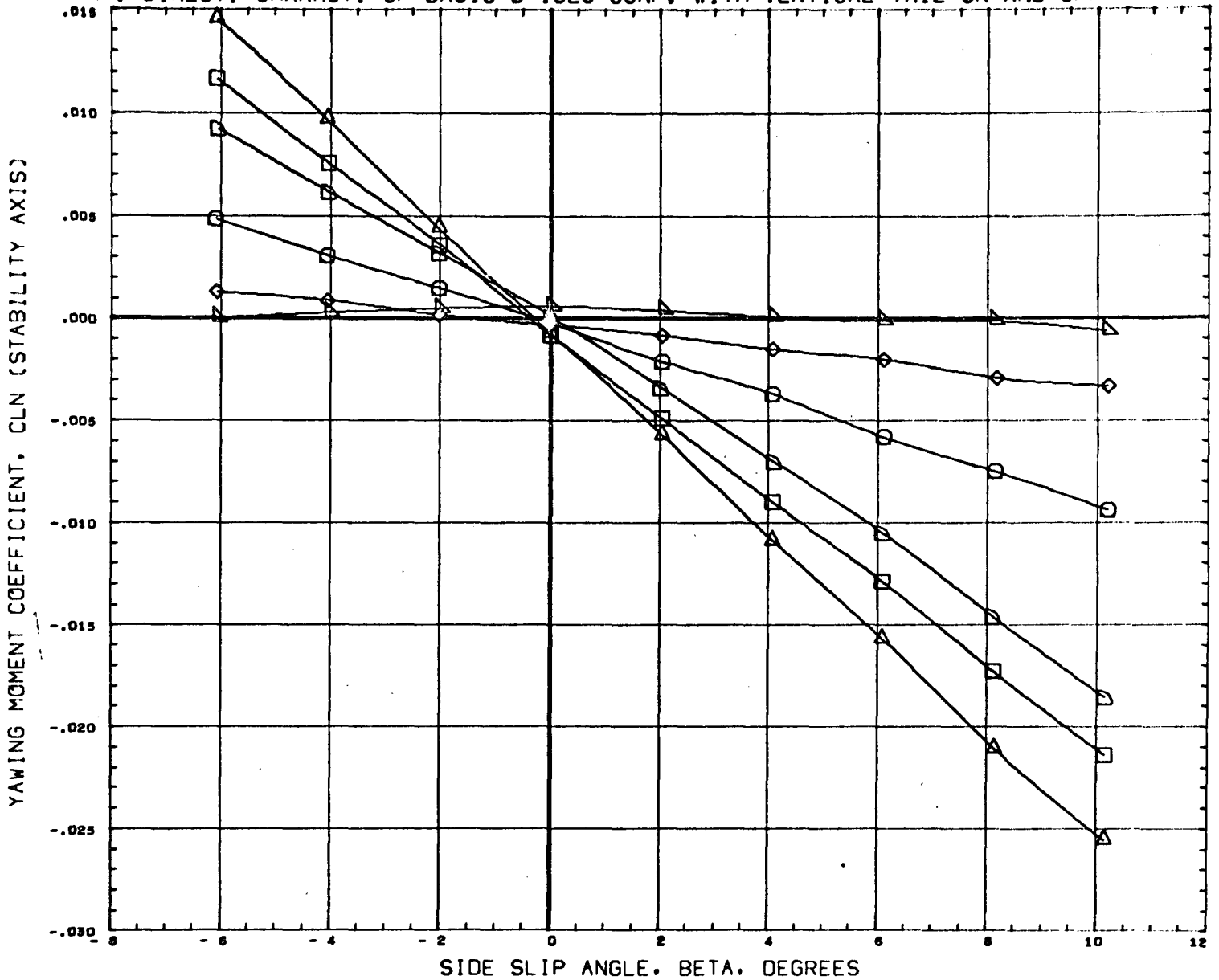
BASIC B-18E3 CONFIGURATION, CRUISE MODE



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	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.
						BREF 34.6320 IN.
						XMRP 29.0780 IN.
						YMRP 0.0000 IN.
						ZMRP 0.0000 IN.
						SCALE 0.0200

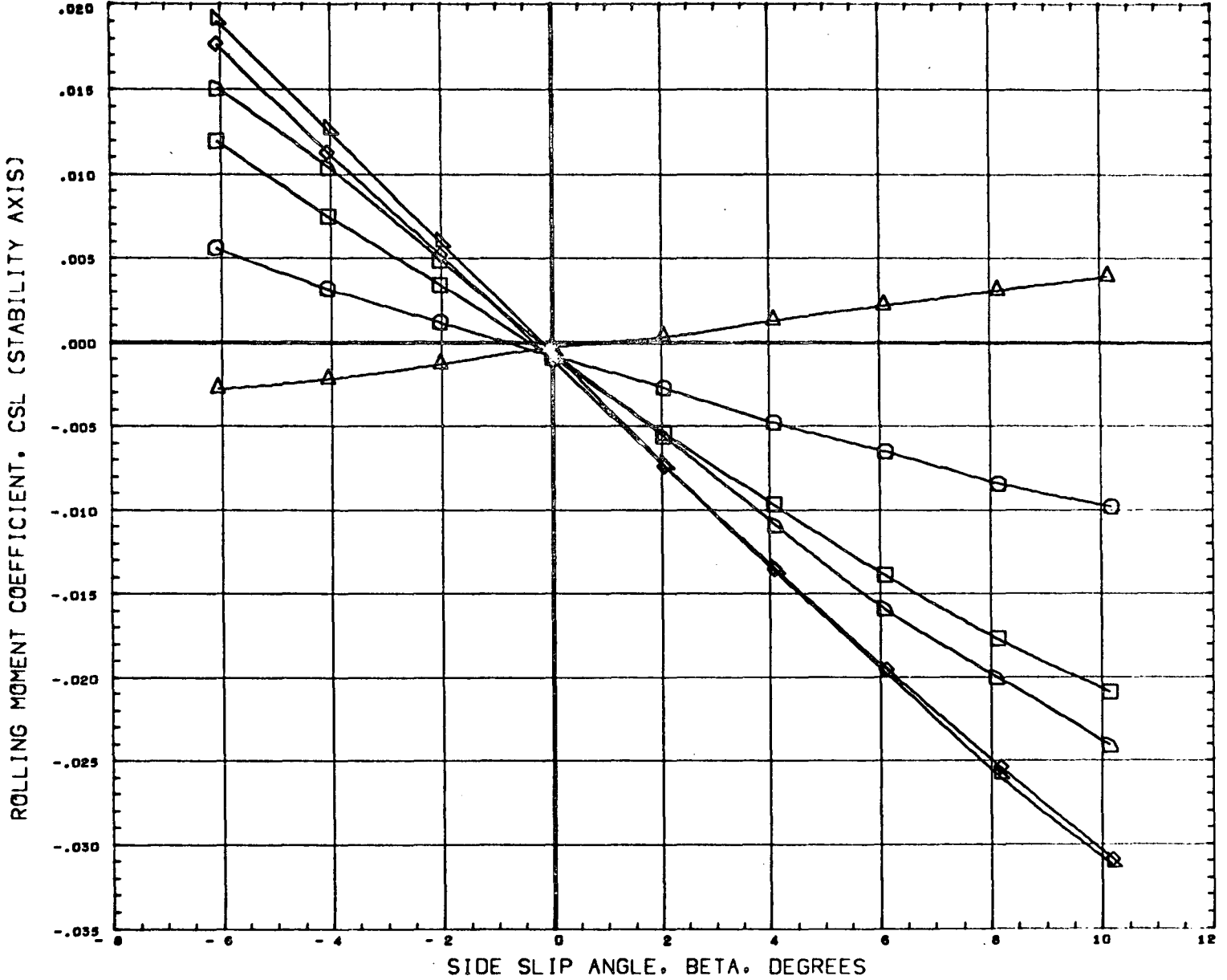
MACH 0.201

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	XHRP 29.0780 IN.
(RD6006)	GDLST 603-0 830W23C10V14E38	15.000	0.000	0.000	0.000	YHRP 0.0000 IN.
(RD6058)	GDLST 603-0 830W23C10E38	15.000	0.000	0.000	0.000	ZHRP 0.0000 IN.
MACH 0.201						SCALE 0.0200

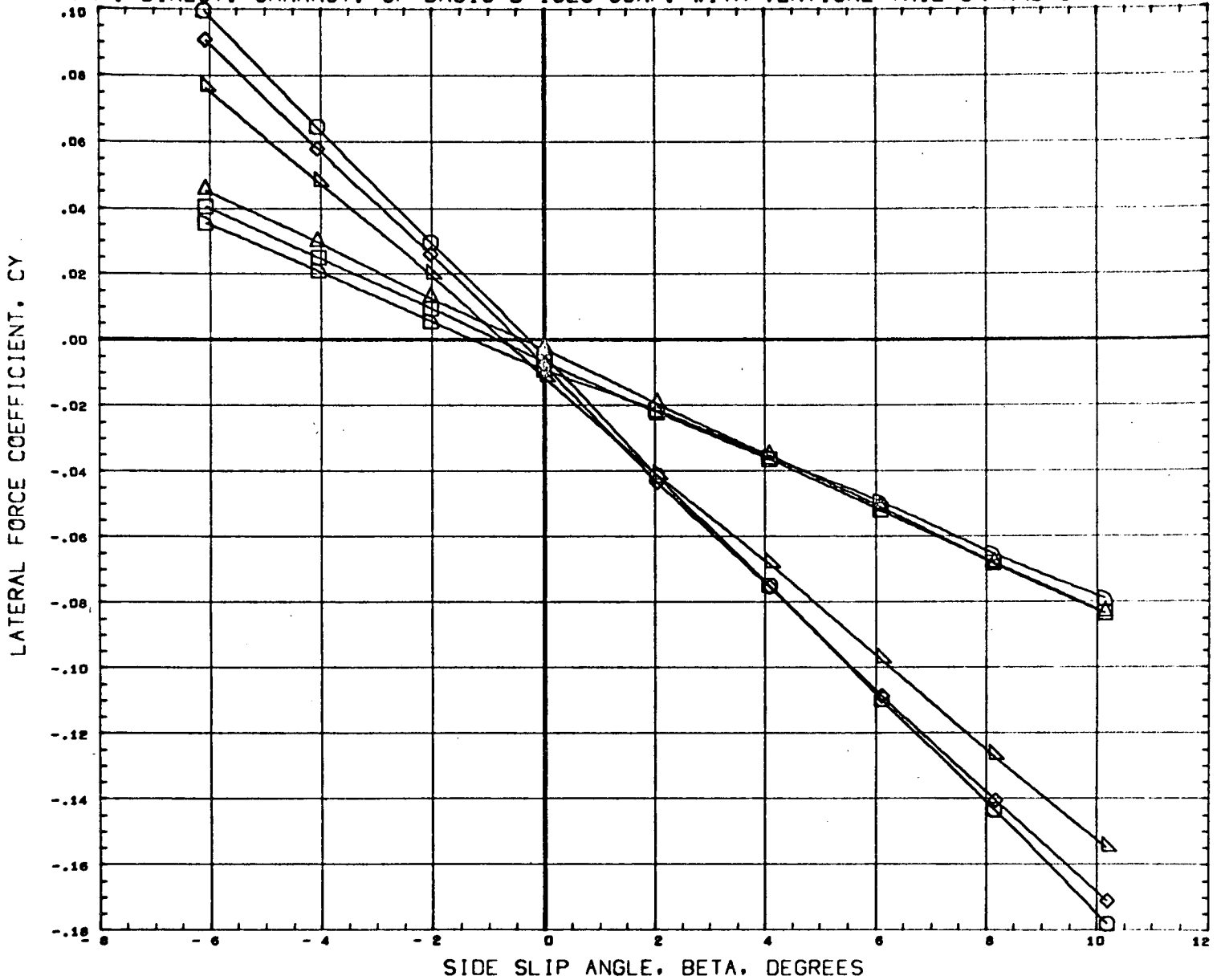
LAT.-DIRECT. CHARACT. OF BASIC B-18E3 CONF. WITH VERTICAL TAIL ON AND OFF



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 29.0780 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.
						SCALE 0.0200

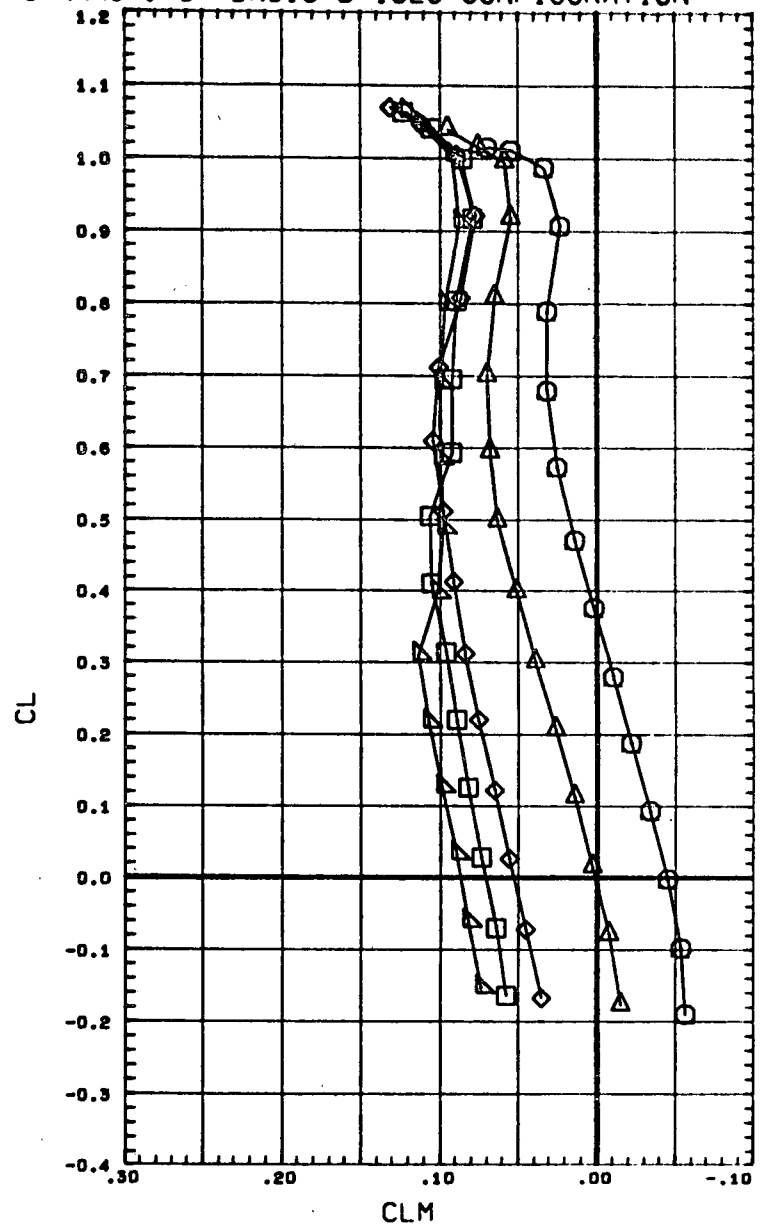
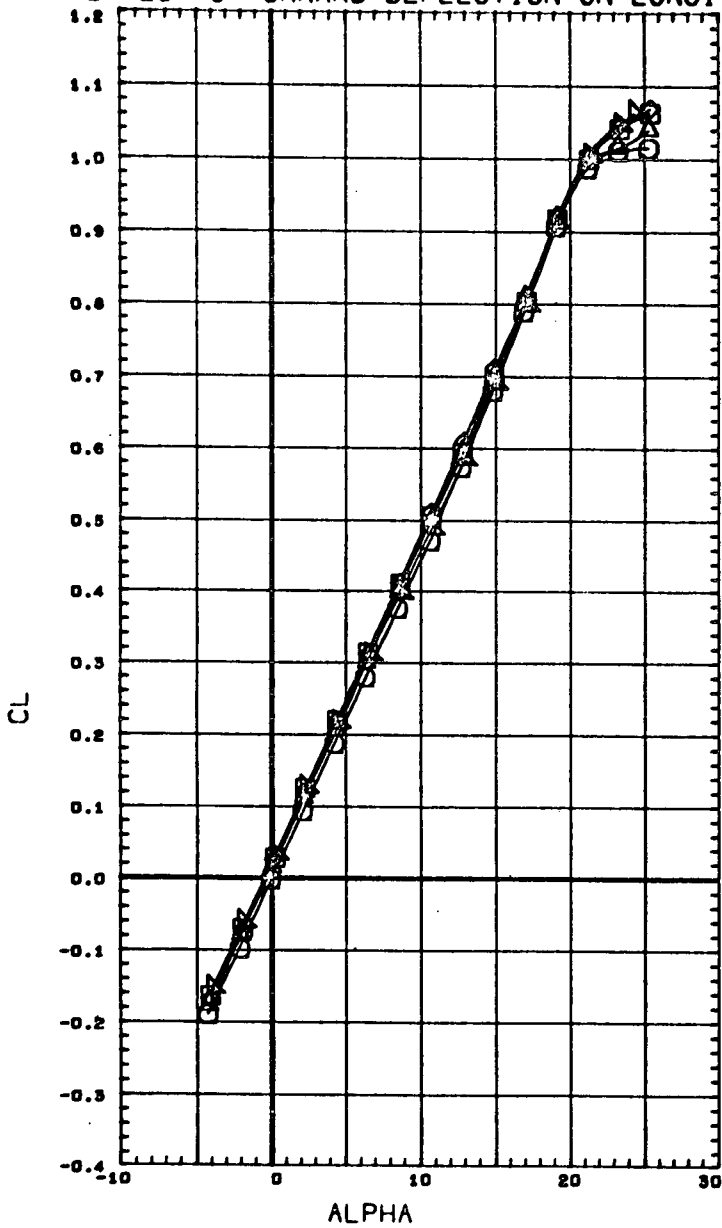
MACH 0.201

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)	DTEA	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

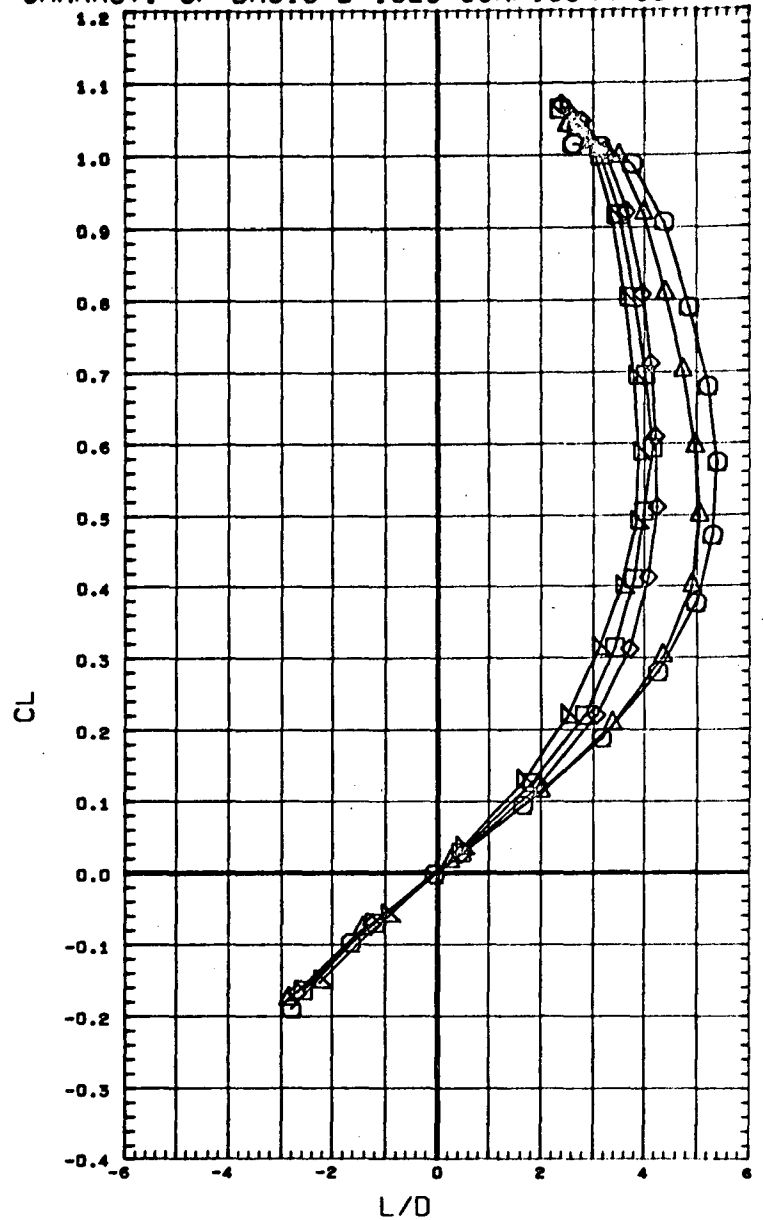
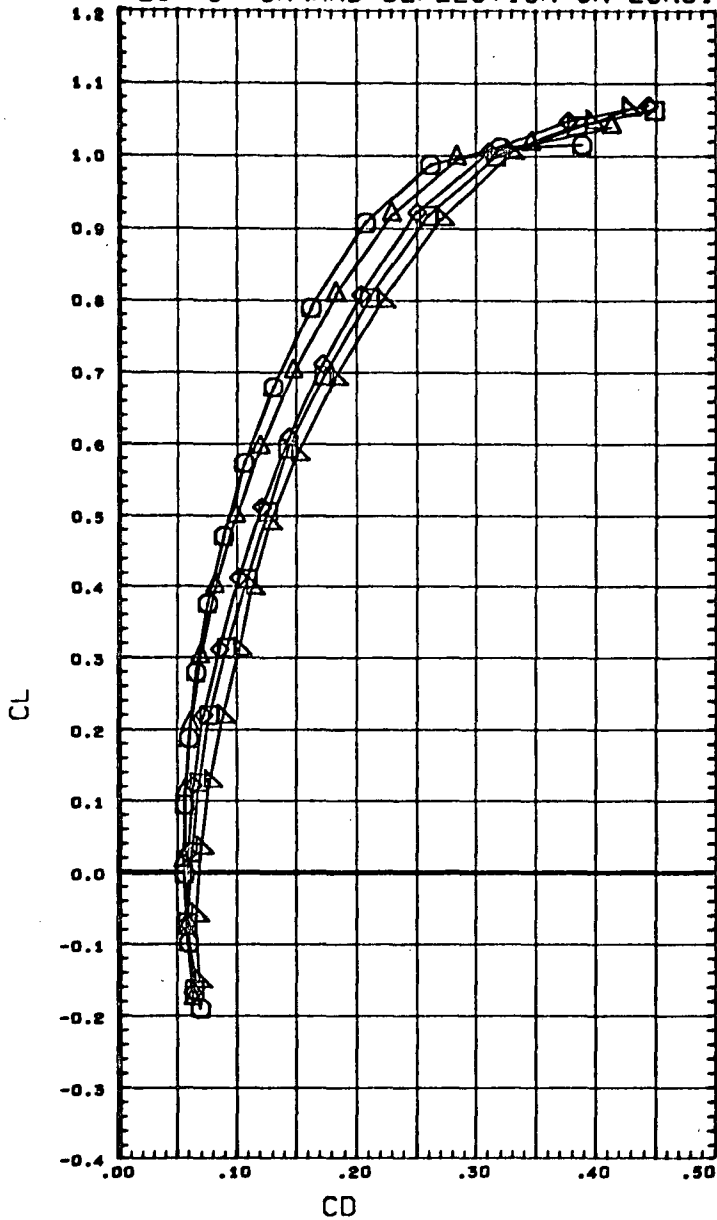


DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(A06009)	GDLST 603-0 830W23C10V14E38
(A06002)	GDLST 603-0 830W23C10V14E38
(A06007)	GDLST 603-0 830W23C10V14E38
(A06011)	GDLST 603-0 830W23C10V14E38
(A06013)	GDLST 603-0 830W23C10V14E38

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

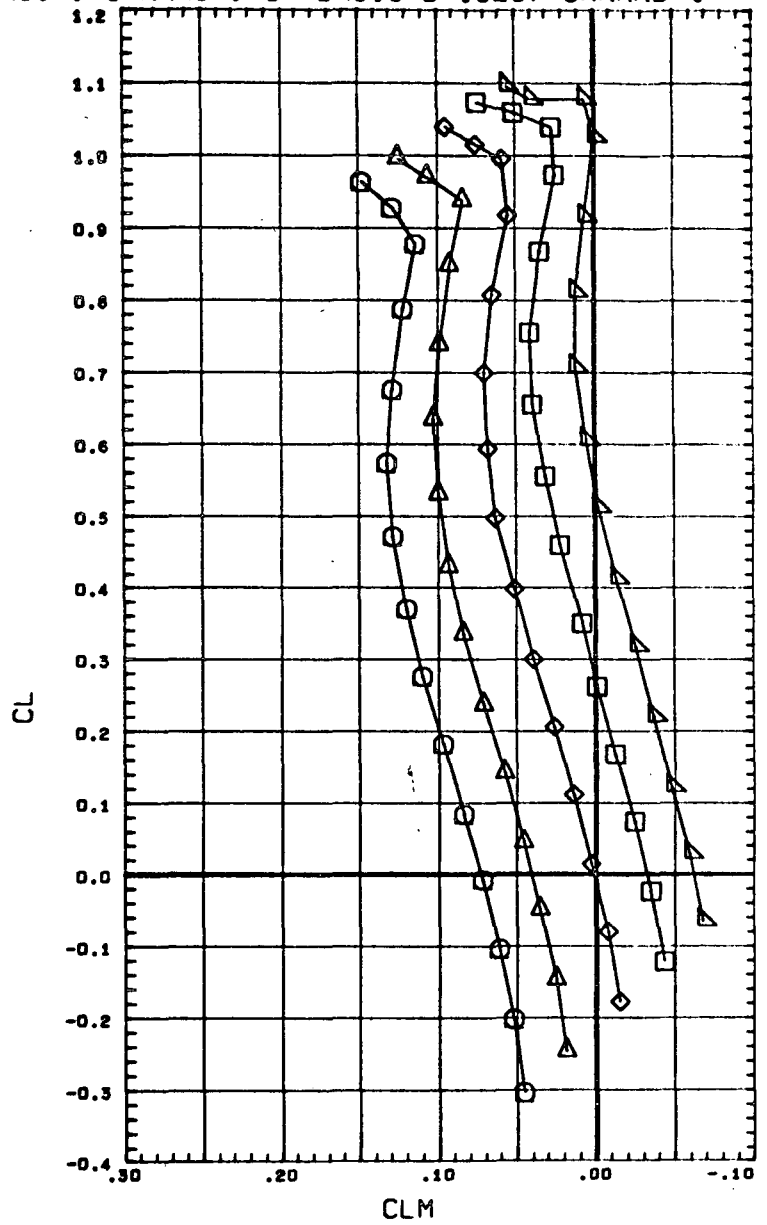
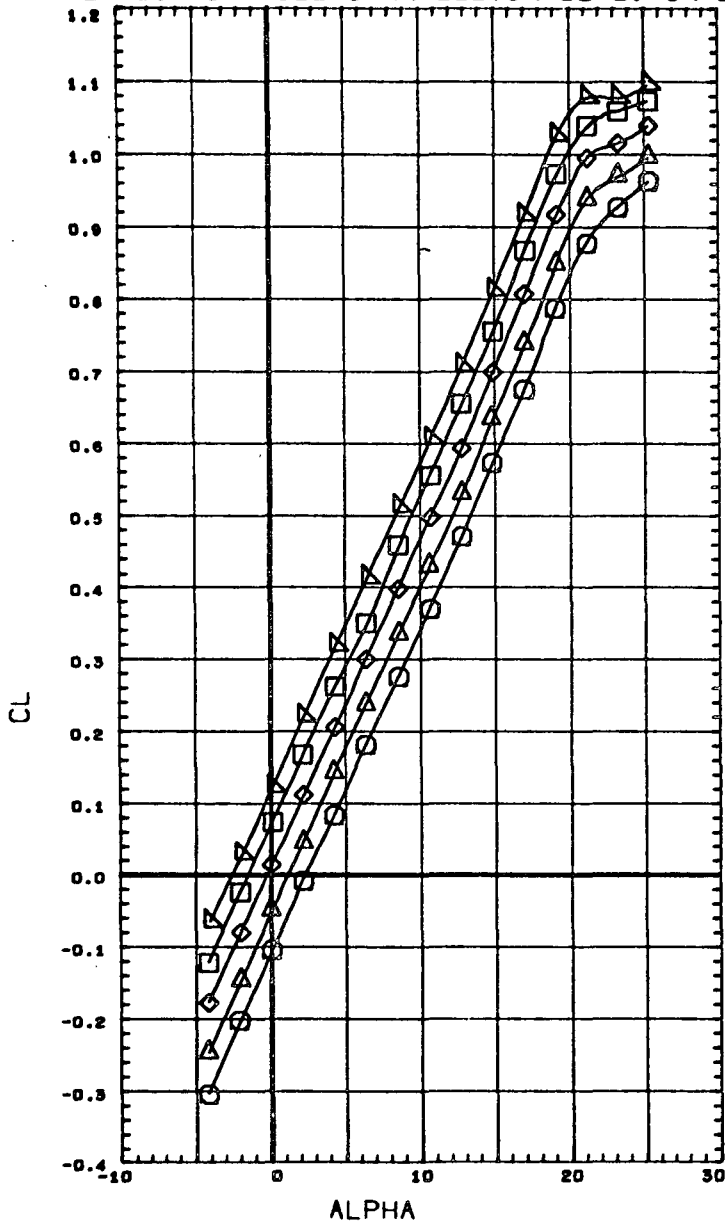


DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6009)	GDLST 603-0 B30W23C10V14E38
(AD6002)	GDLST 603-0 B30W23C10V14E38
(AD6007)	GDLST 603-0 B30W23C10V14E38
(AD6011)	GDLST 603-0 B30W23C10V14E38
(AD6013)	GDLST 603-0 B30W23C10V14E38

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

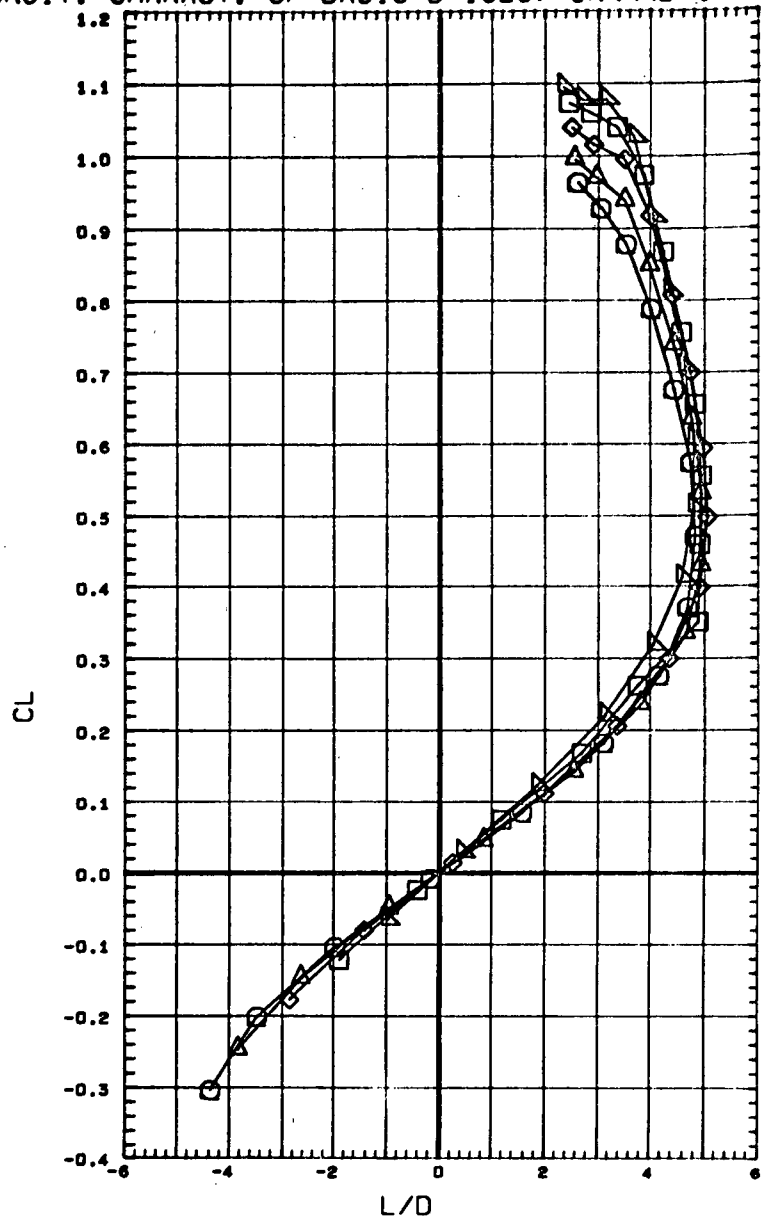
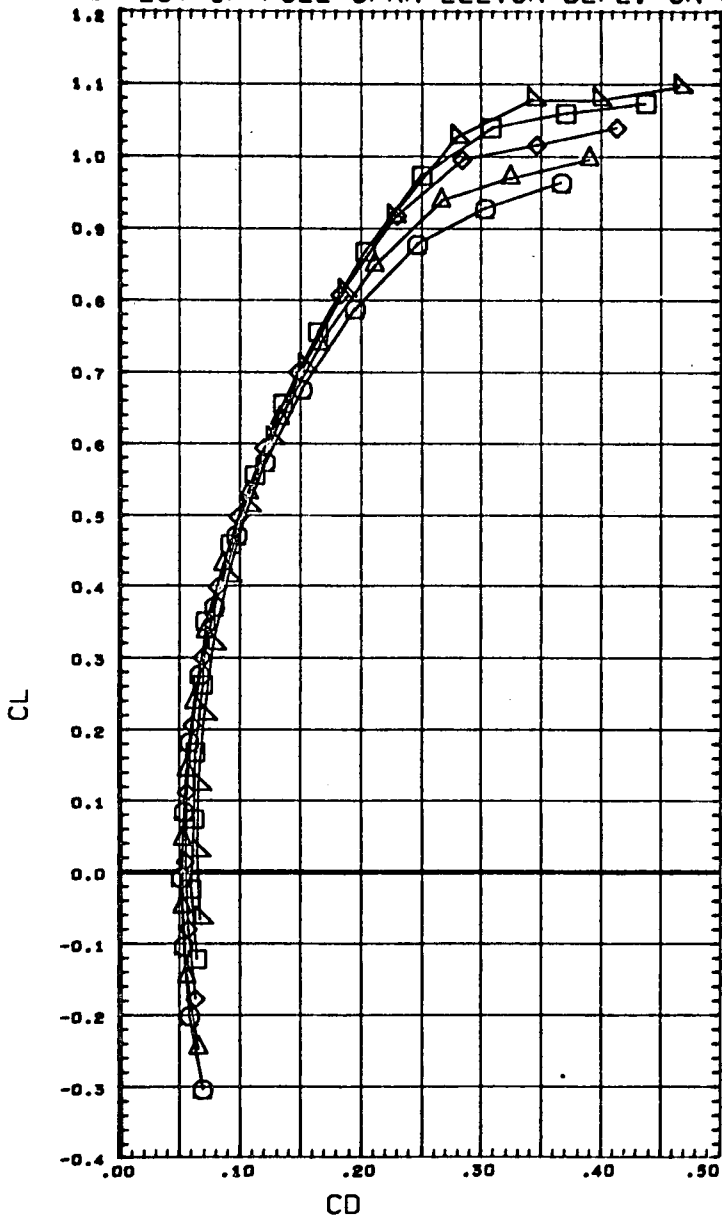


DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6030)	GDLST 603-0 830W23C10V14E38
(AD6026)	GDLST 603-0 830W23C10V14E38
(AD6002)	GDLST 603-0 830W23C10V14E38
(AD6024)	GDLST 603-0 830W23C10V14E38
(AD6026)	GDLST 603-0 830W23C10V14E38

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	XMRP 29.0780 IN.
0.000	10.000	0.000	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

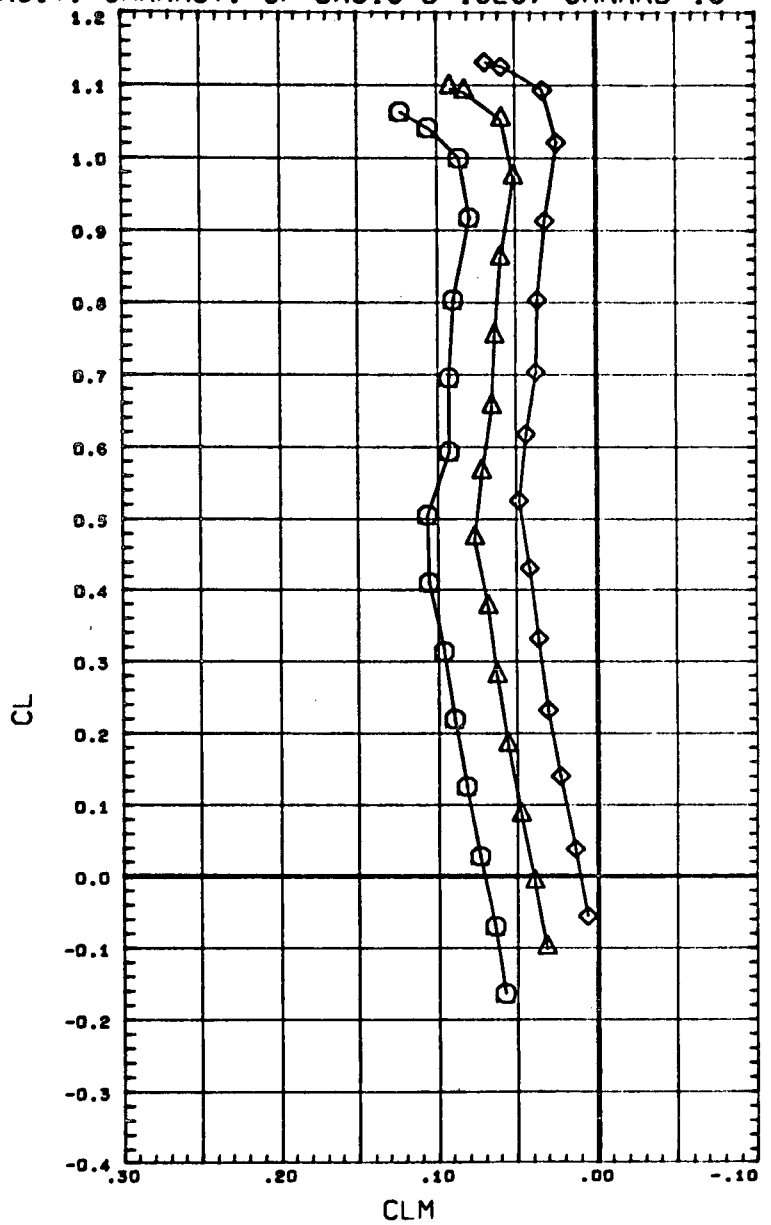
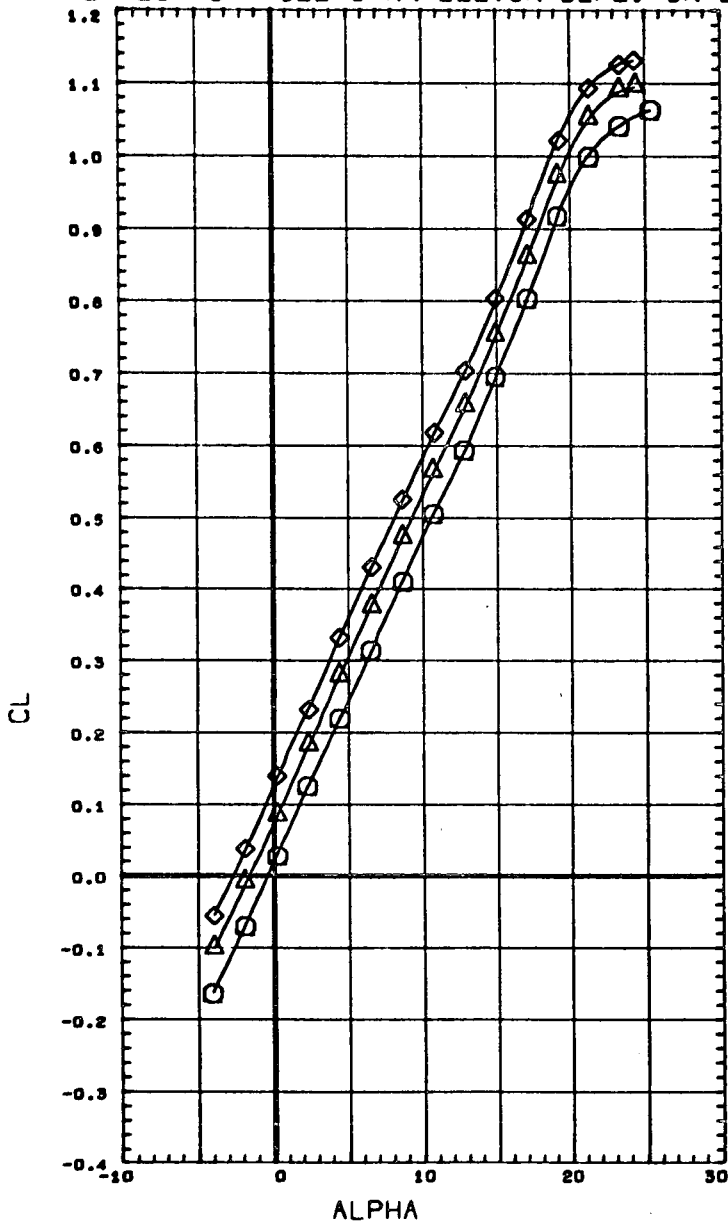


DATA SET SYMBOL	CONFIGURATION	DESCRIPTION
(AD6030)	GDLST 603-0	830W23C10V14E38
(AD6028)	GDLST 603-0	830W23C10V14E38
(AD6002)	GDLST 603-0	830W23C10V14E38
(AD6024)	GDLST 603-0	830W23C10V14E38
(AD6026)	GDLST 603-0	830W23C10V14E38

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

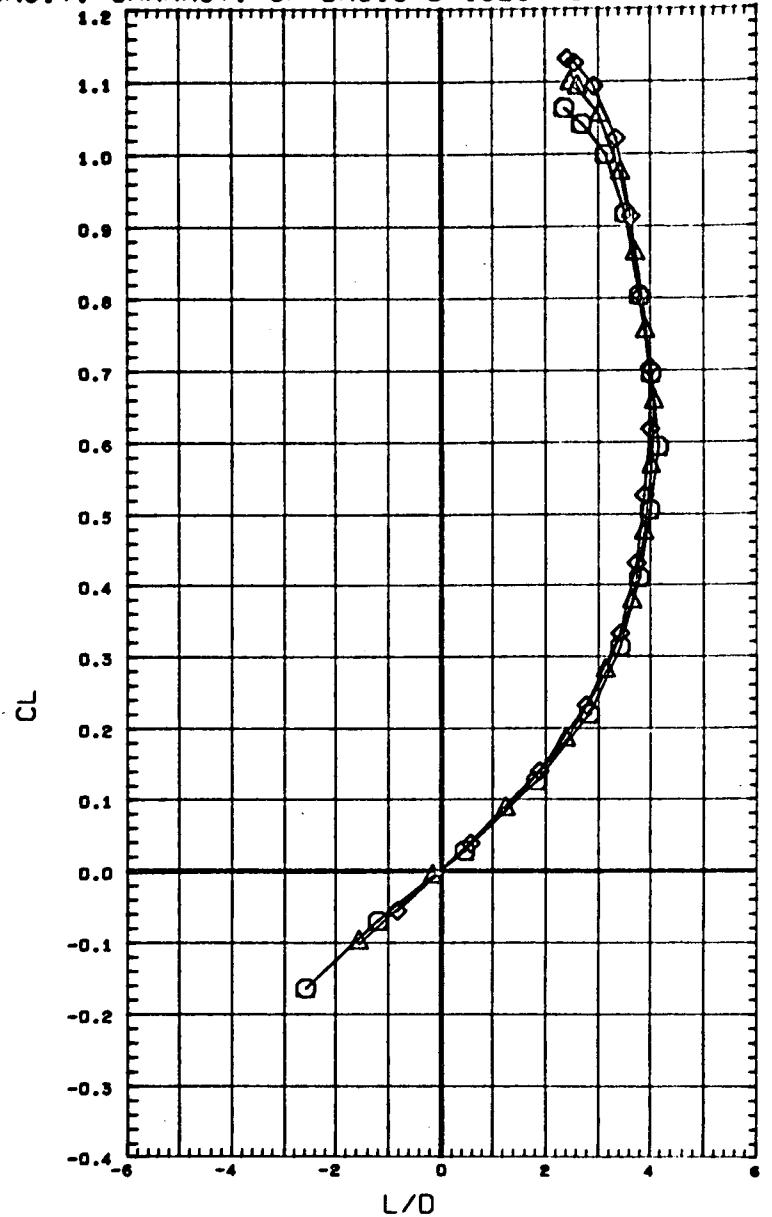
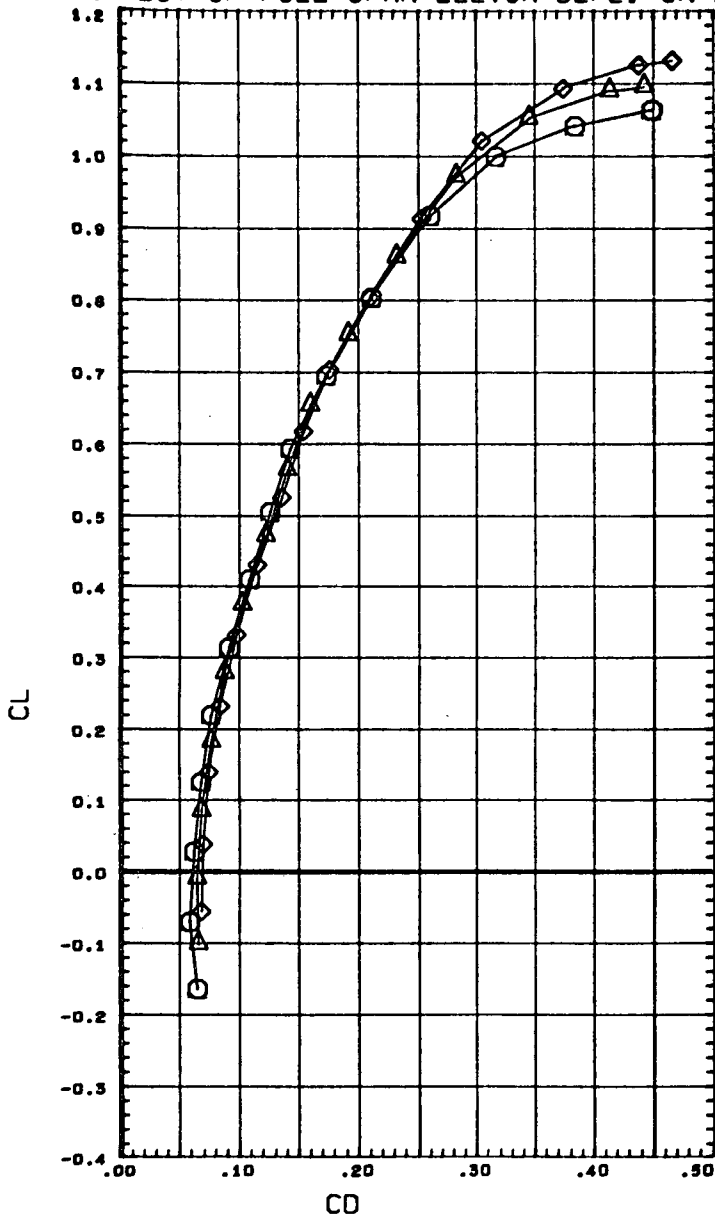


DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6011)	○ GDLST 603-0 B30W23C10V14E38
(AD6022)	△ GDLST 603-0 B30W23C10V14E38
(AD6020)	◇ GDLST 603-0 B30W23C10V14E38

MACH 0.201

BETA	ELEVTR	CANARD	AILRON	REFERENCE INFORMATION
0.000	0.000	15.000	0.000	\$REF 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

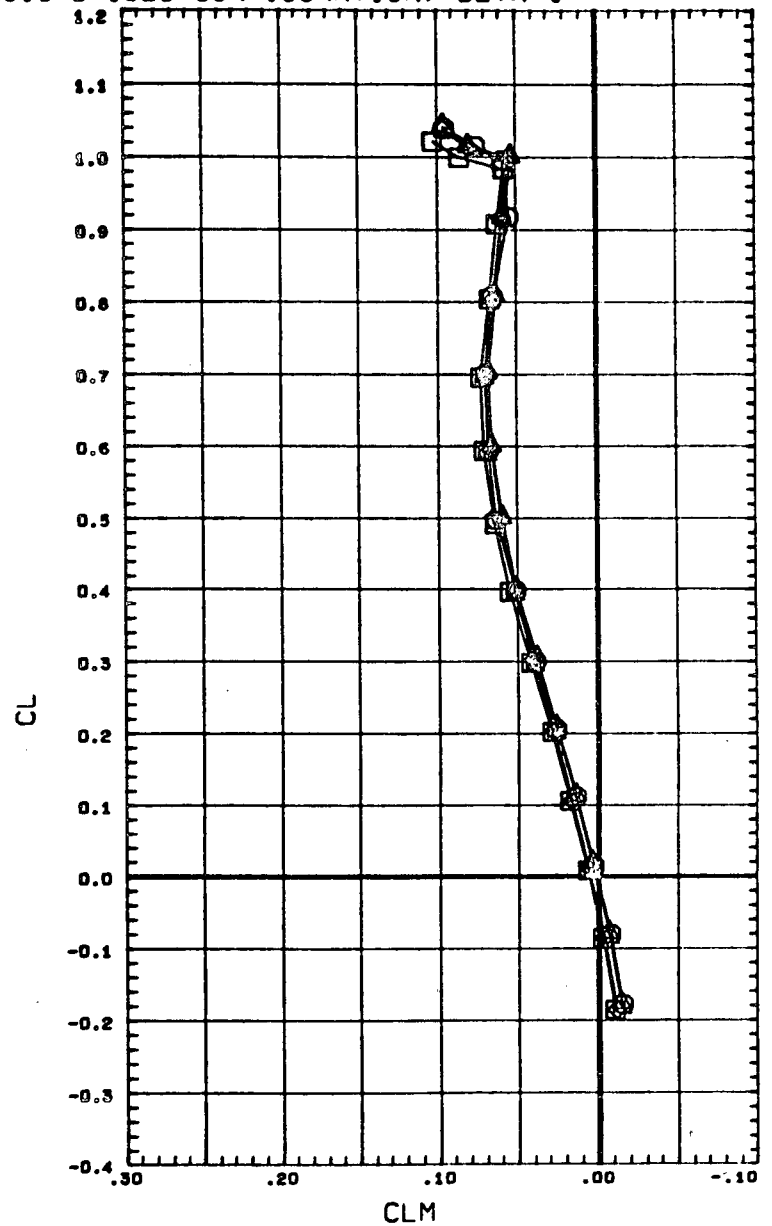
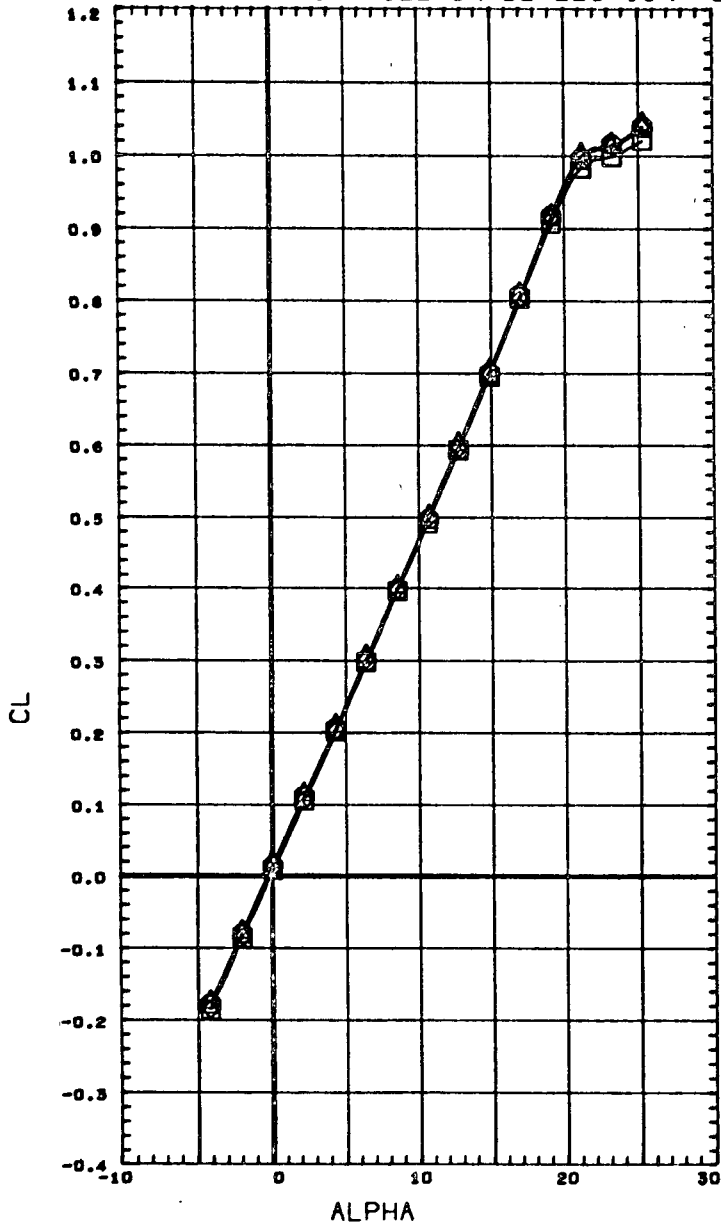


DATA SET SYMBOL	CONFIGURATION	DESCRIPTION
(AD6011)	○	GDLST 603-0 830W23C10V14E38
(AD6022)	△	GDLST 603-0 830W23C10V14E38
(AD6020)	◇	GDLST 603-0 830W23C10V14E38

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

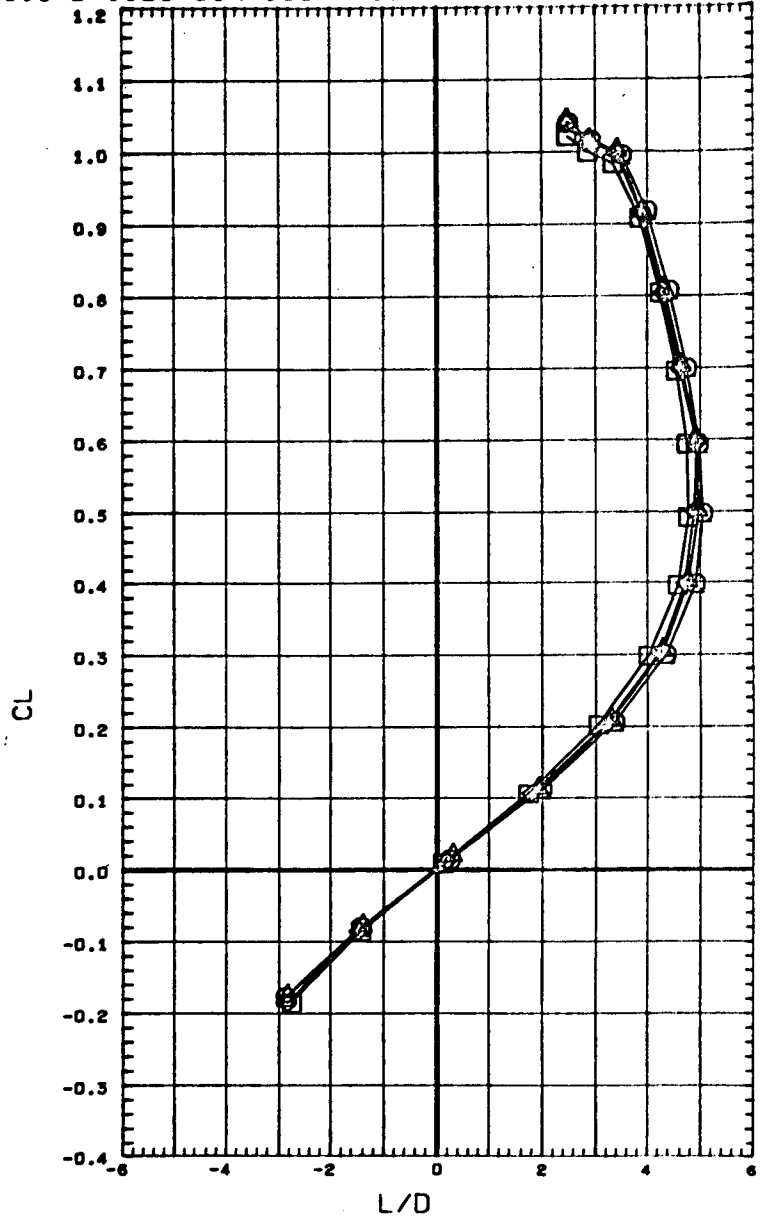
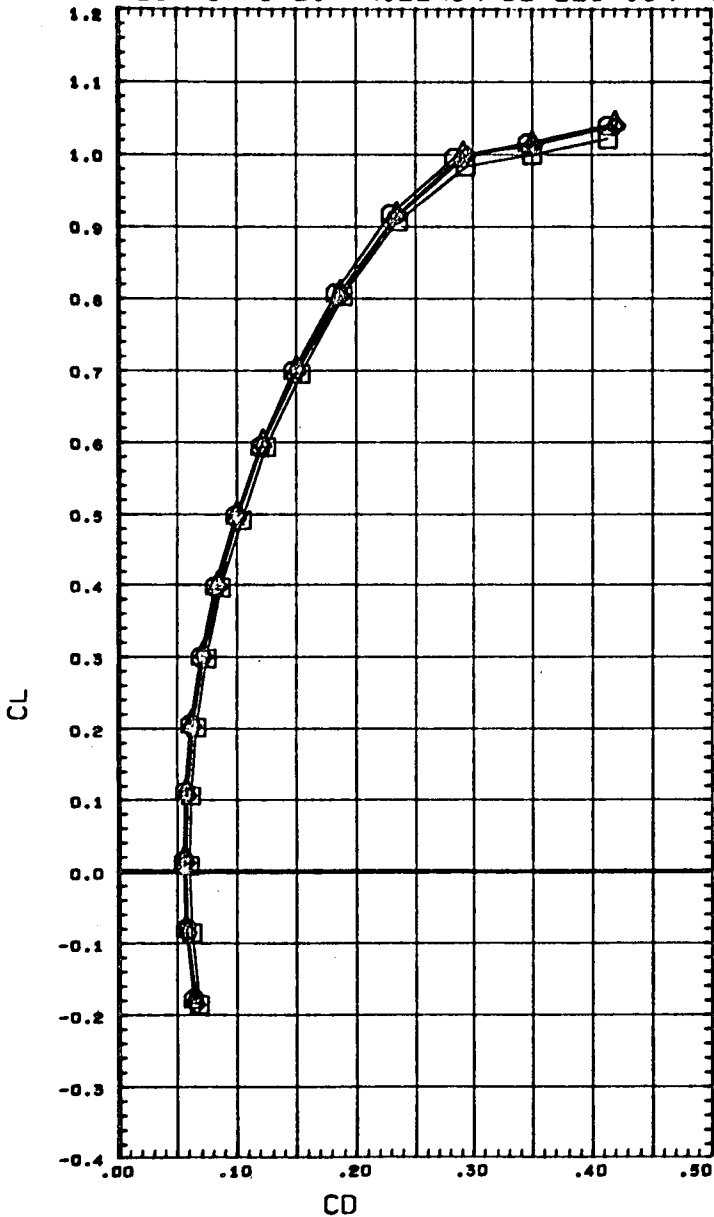


DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6002)	GDLST 603-0 B30W23C10V14E38
(AD6036)	GDLST 603-0 B30W23C10V14E38 (SPLIT ELEVONS)
(AD6034)	GDLST 603-0 B30W23C10V14E38 (SPLIT ELEVONS)
(AD6032)	GDLST 603-0 B30W23C10V14E38

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

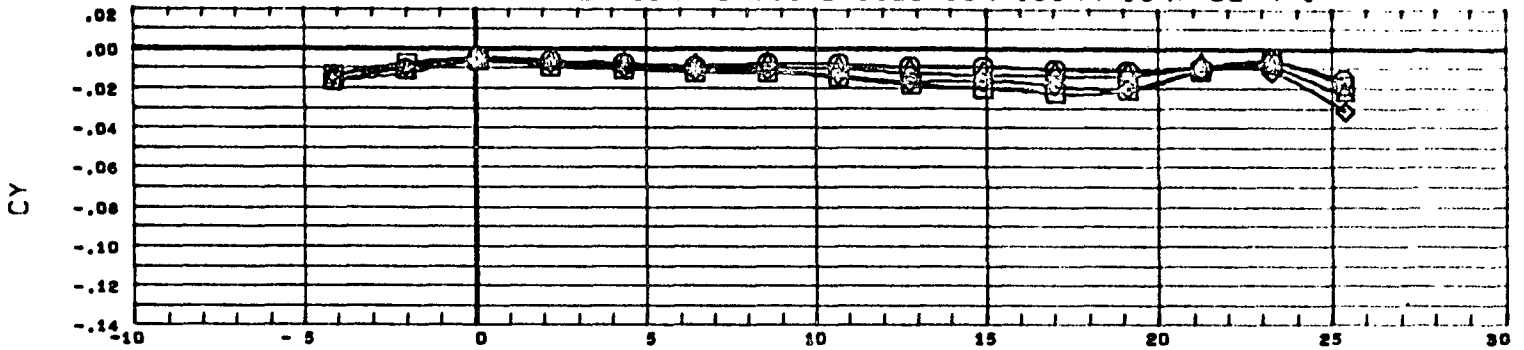


DATA SET SYMBOL	CONFIGURATION	DESCRIPTION
(AD6002)	○	GDLST 603-0 B30W23C10V14E38
(AD6036)	△	GDLST 603-0 B30W23C10V14E38 (SPLIT ELEVONS)
(AD6034)	◇	GDLST 603-0 B30W23C10V14E38 (SPLIT ELEVONS)
(AD6032)	□	GDLST 603-0 B30W23C10V14E38

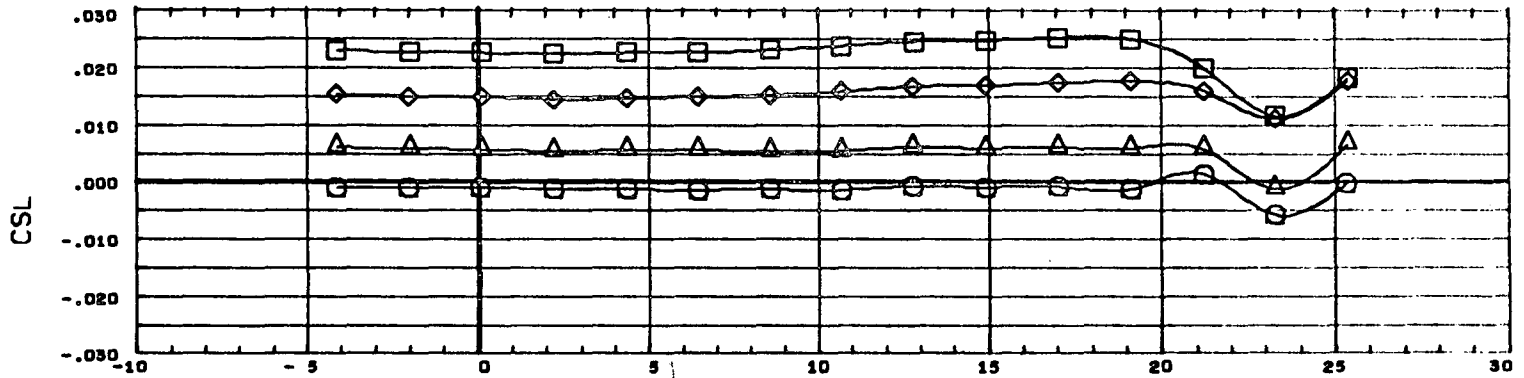
MACH 0.201

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

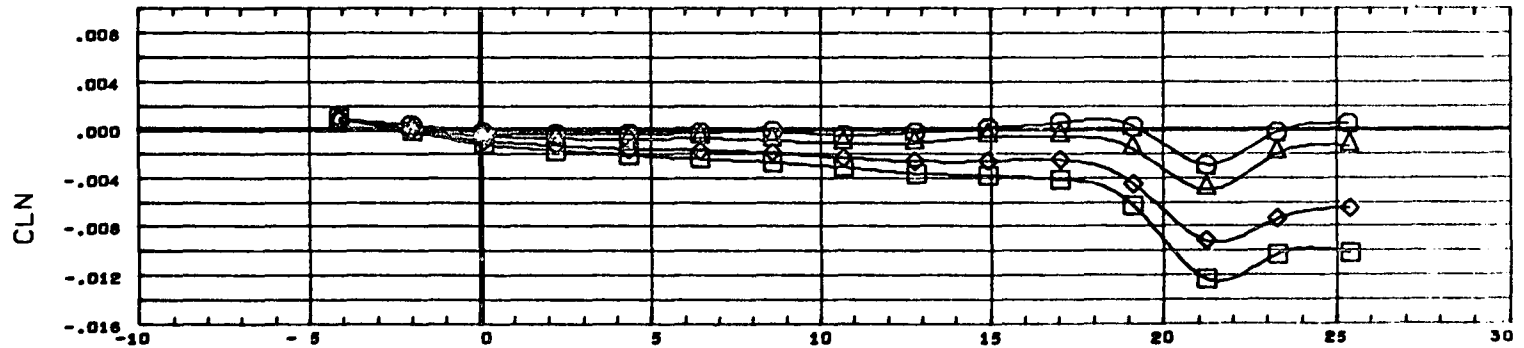
EFFECT OF SPLIT AILERON DEFLECTION- BASIC B-18E3 CONFIGURATION, BETA=0



ALPHA



ALPHA

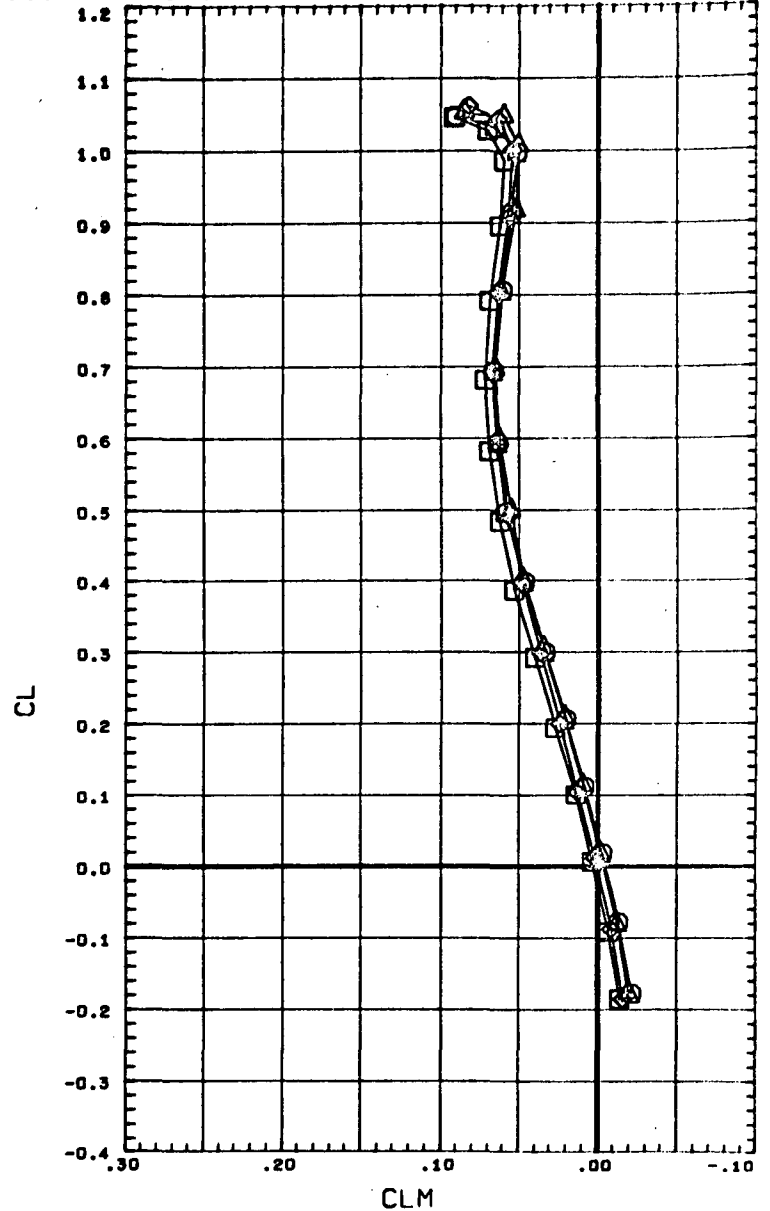
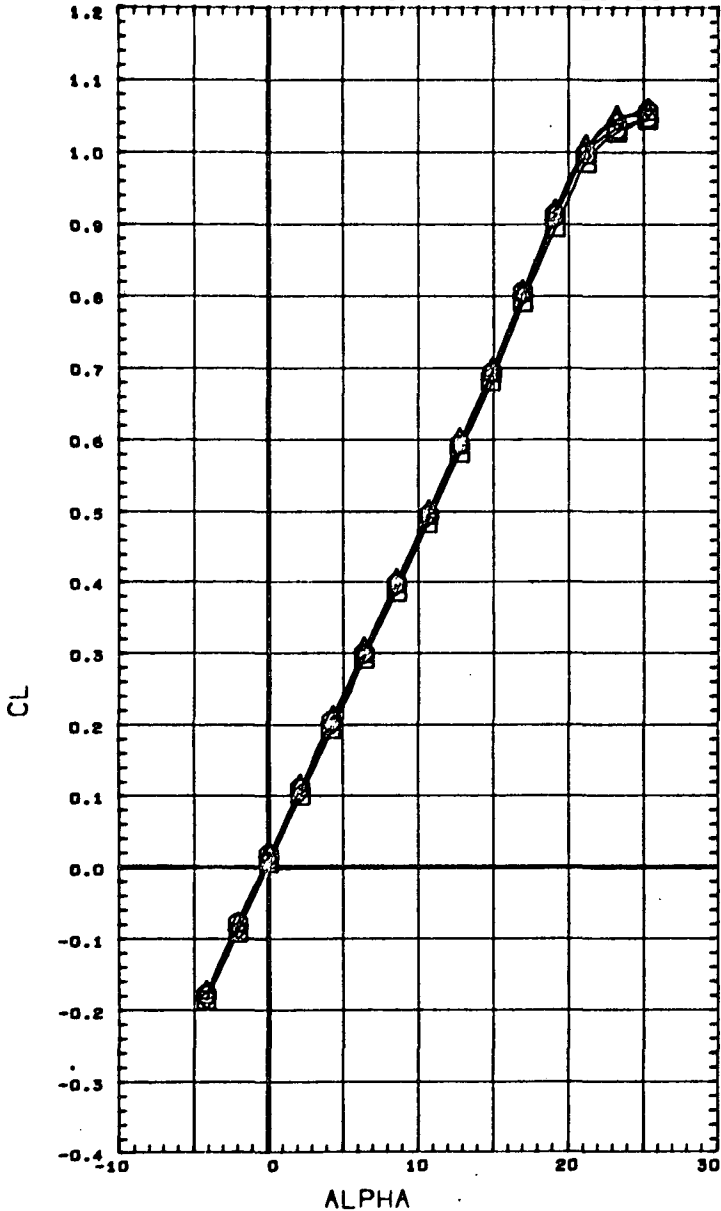


ALPHA

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.

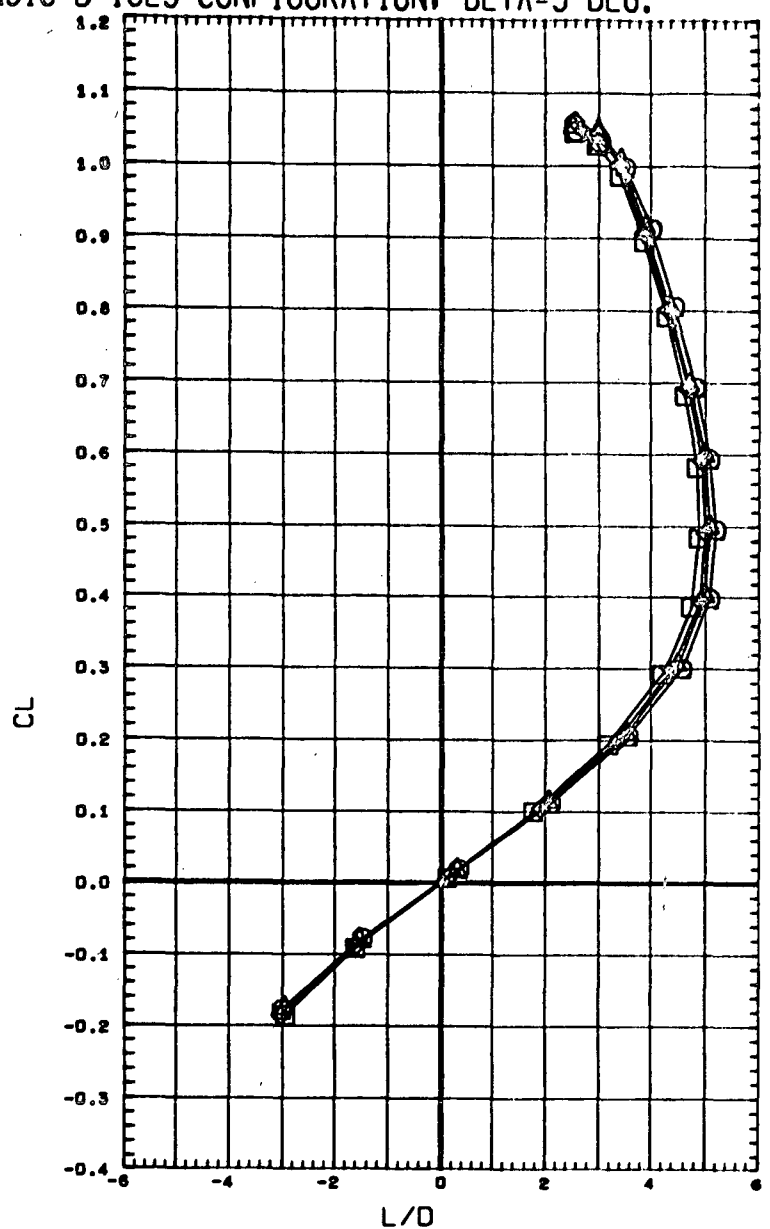
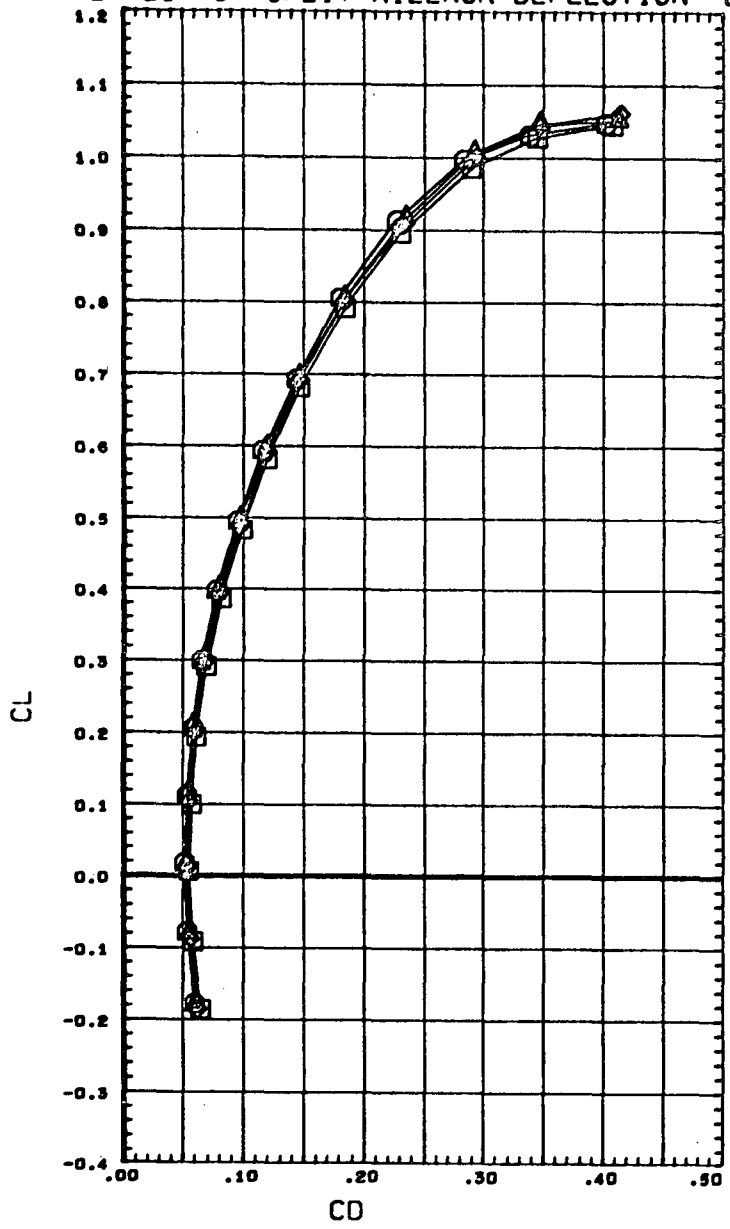


DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6003)	GDLST 603-0 B30W23C10V14E38
(AD6037)	GDLST 603-0 B30W23C10V14E38 (SPLIT ELEVONS)
(AD6035)	GDLST 603-0 B30W23C10V14E38 (SPLIT ELEVONS)
(AD6033)	GDLST 603-0 B30W23C10V14E38

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.

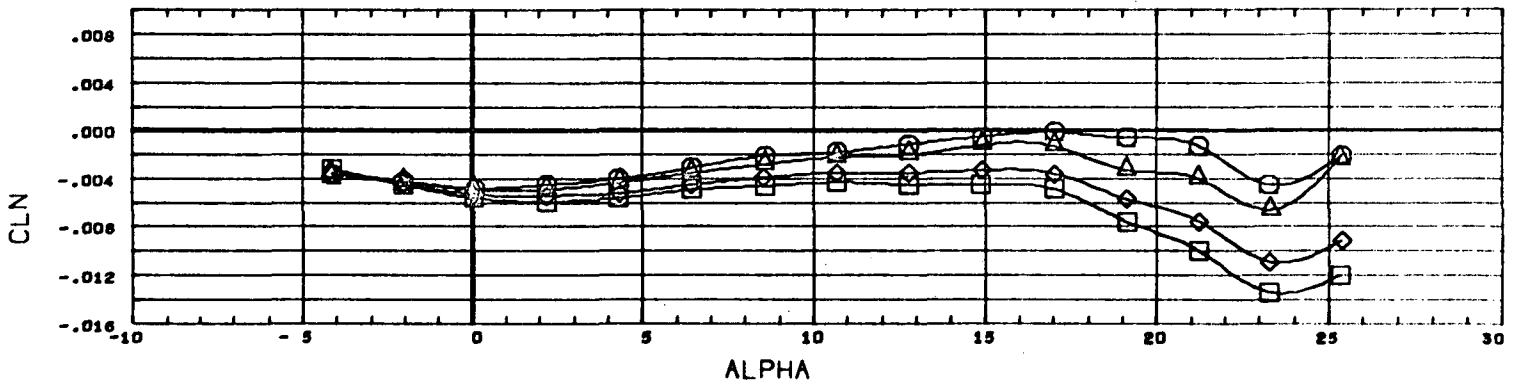
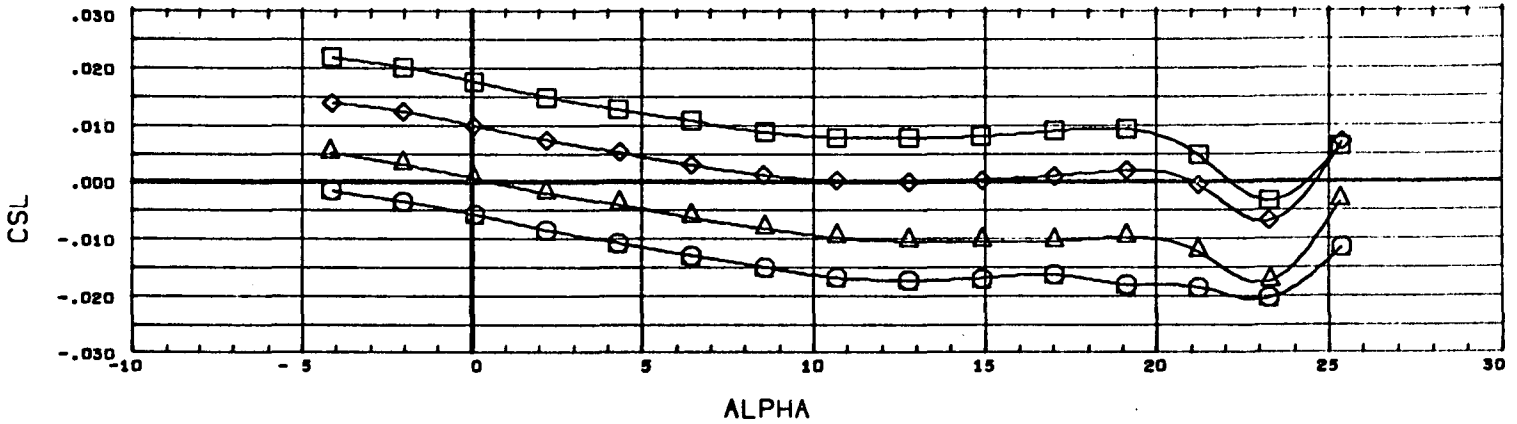
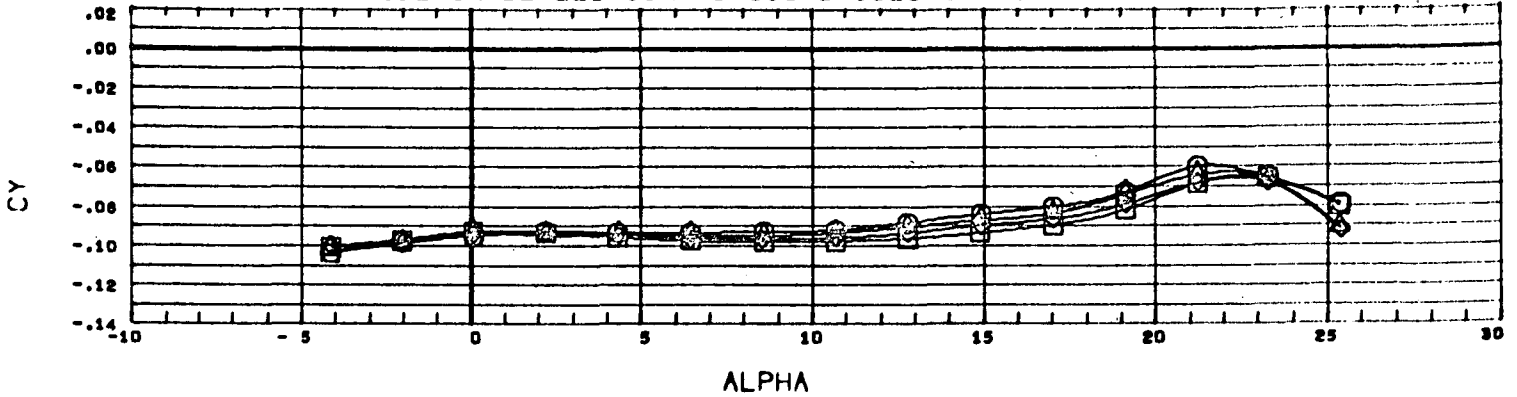


DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6003)	GDLST 603-0 B30W23C10V14E38
(AD6037)	GDLST 603-0 B30W23C10V14E38 (SPLIT ELEVONS)
(AD6039)	GDLST 603-0 B30W23C10V14E38 (SPLIT ELEVONS)
(AD6033)	GDLST 603-0 B30W23C10V14E38

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

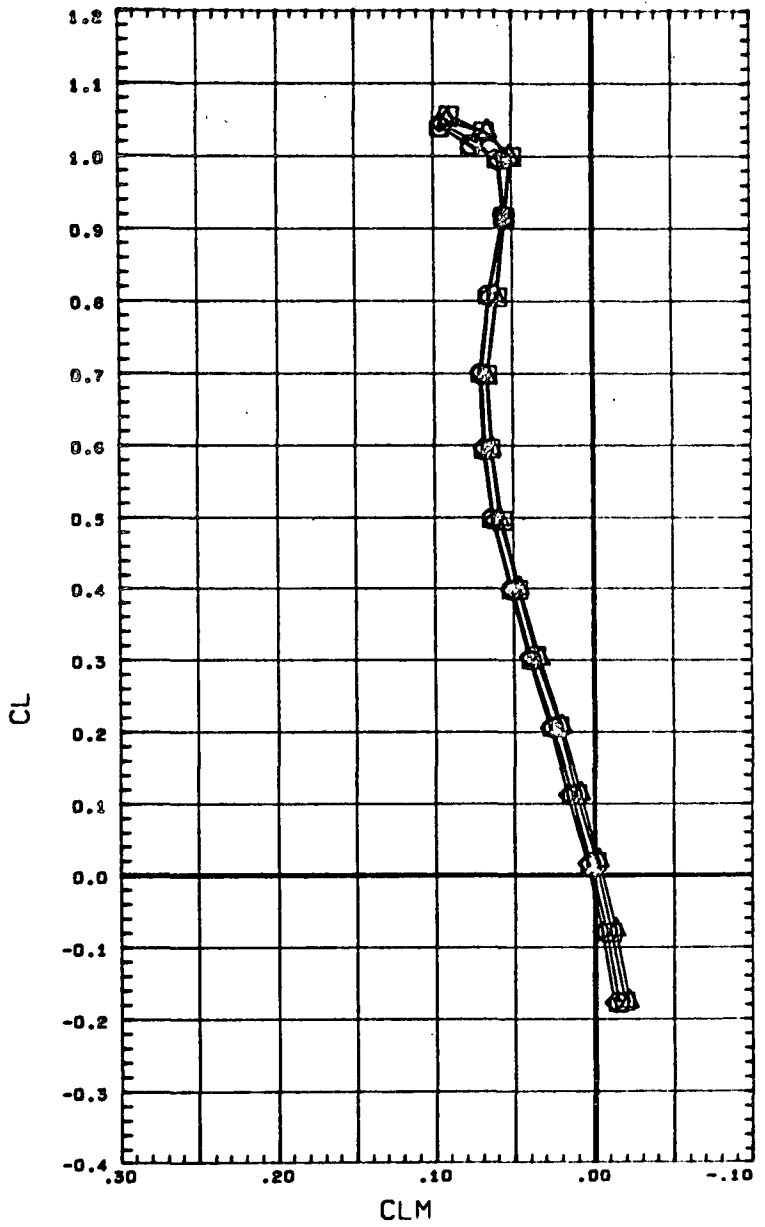
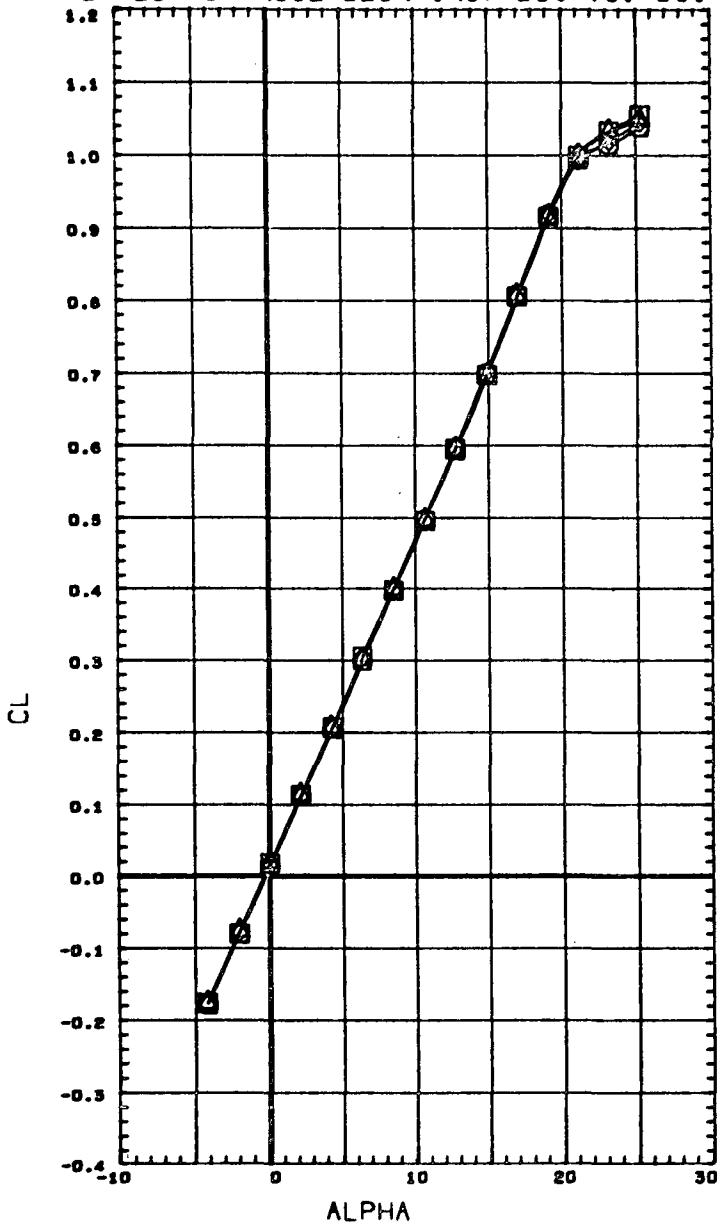
EFFECT OF SPLIT AILERON DEFLECTION- BASIC B-18E3 CONFIGURATION, BETA=5 DEG.



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	XMRP	29.0780 IN.
							YMRP	0.0000 IN.
							ZMRP	0.0000 IN.
							SCALE	0.0200

MACH 0.201

EFFECT OF NOSE BLUNTING, B30 VS. B31

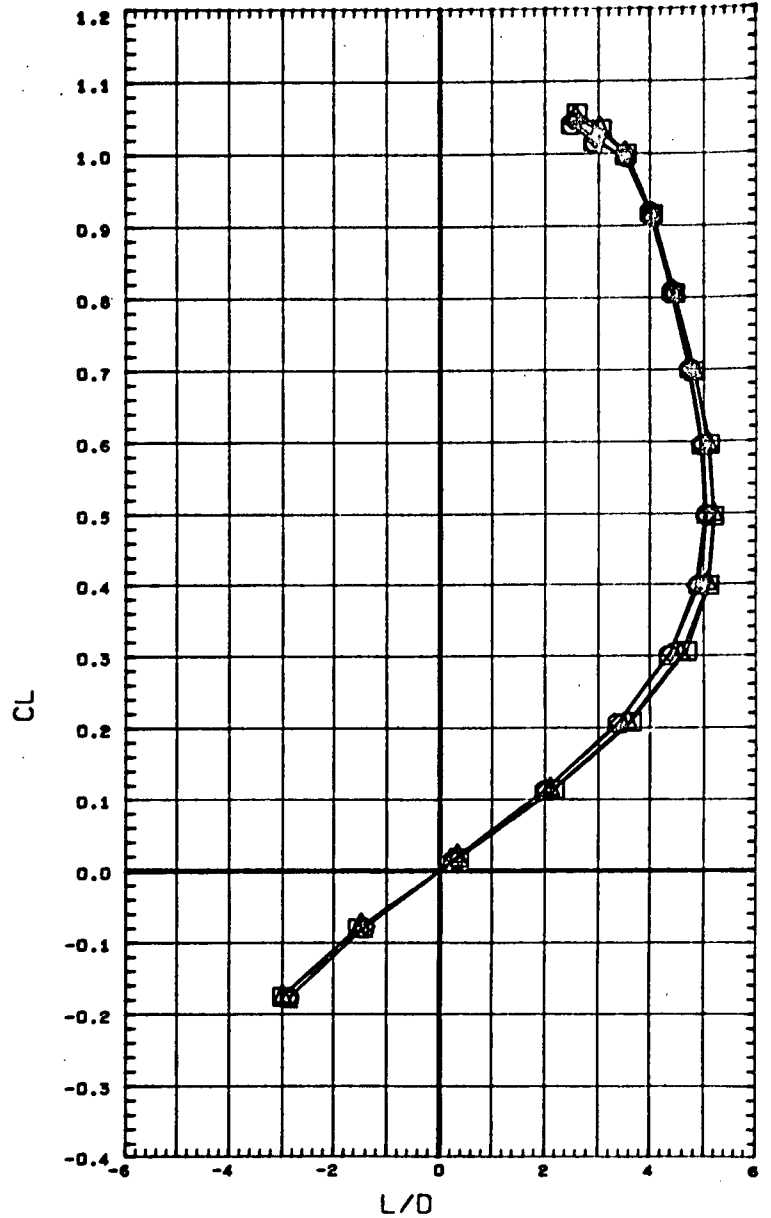
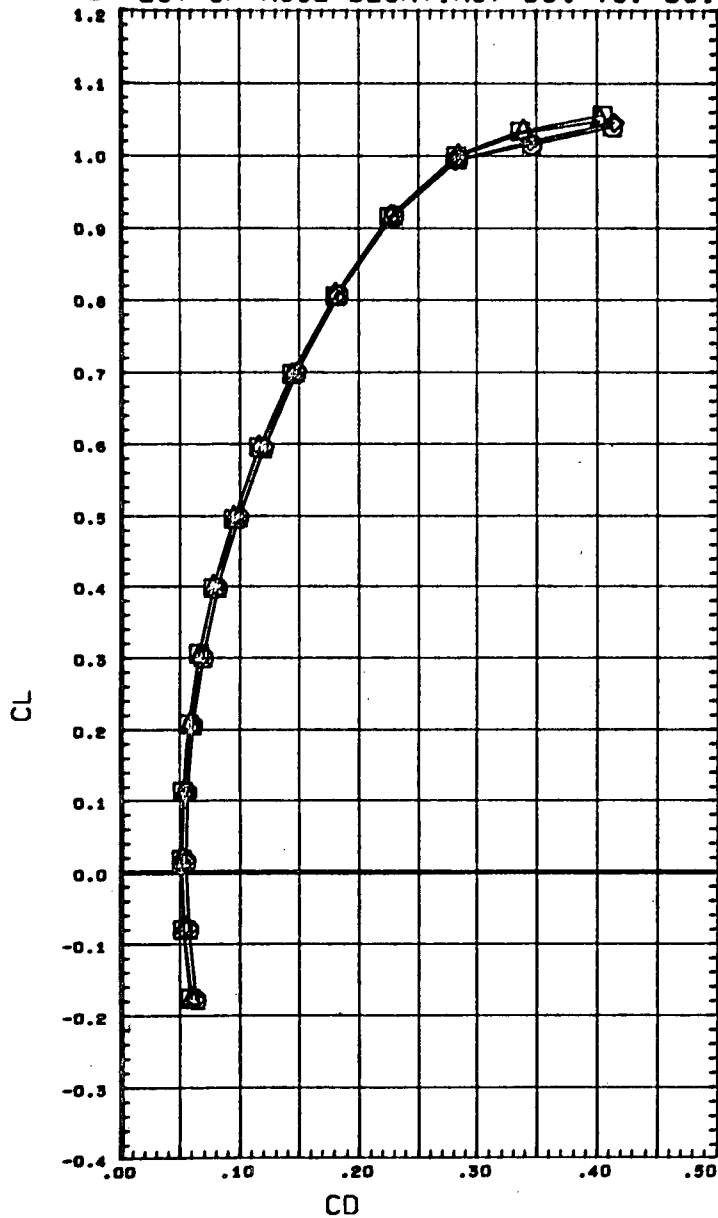


DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6002)	GDLST 603-0 B30W23C10V14E38
(AD6003)	GDLST 603-0 B30W23C10V14E38
(AD6015)	GDLST 603-0 B31W23C10V14E38
(AD6016)	GDLST 603-0 B31W23C10V14E38

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	XHRP 29.0780 IN.
				YHRP 0.0000 IN.
				ZHRP 0.0000 IN.
				SCALE 0.0200

EFFECT OF NOSE BLUNTING, B30 VS. B31

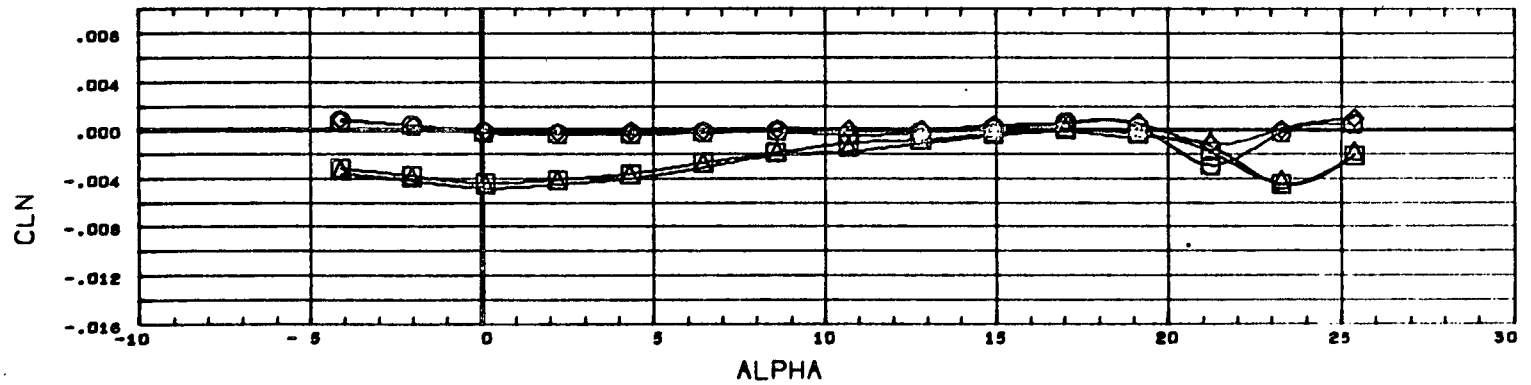
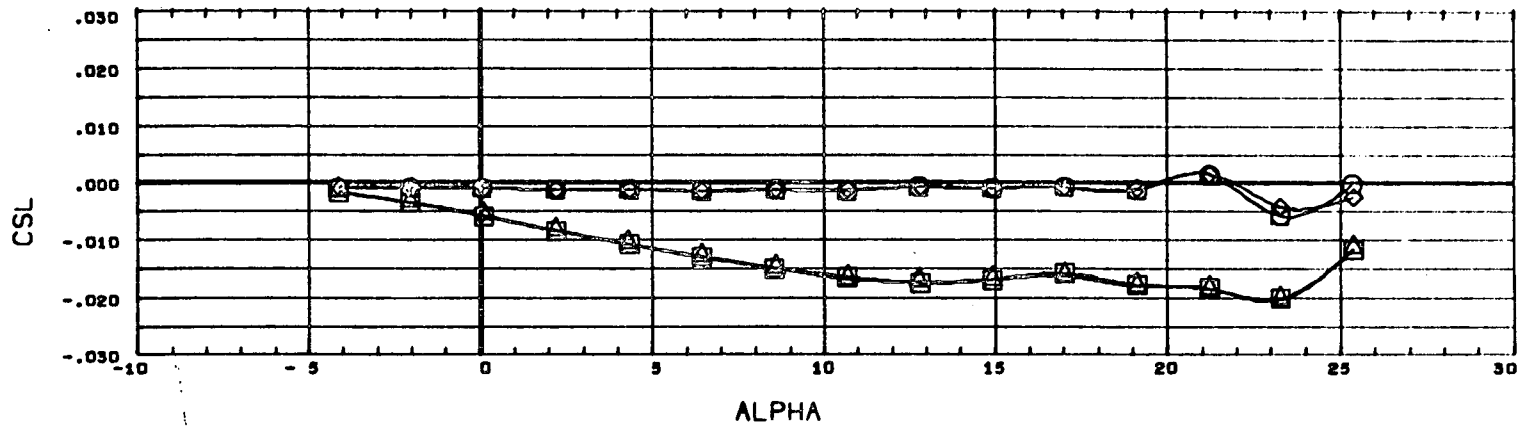
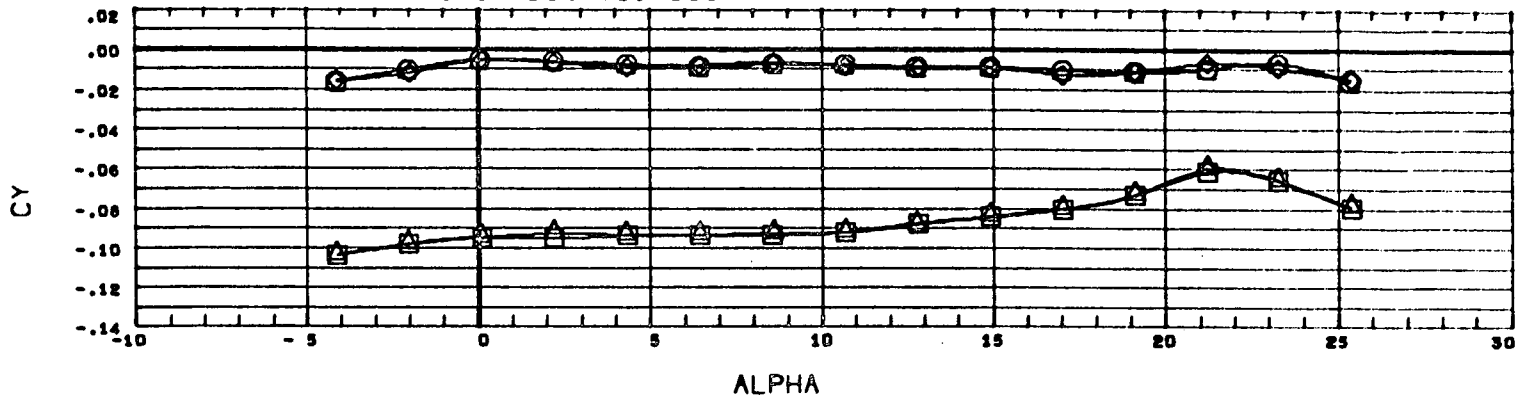


DATA SET	SYMBOL	CONFIGURATION	DESCRIPTION
(AD6002)	○	GDLST 603-0	B30W23C10V14E38
(AD6003)	◇	GDLST 603-0	B30W23C10V14E38
(AD6015)	◊	GDLST 603-0	B31W23C10V14E38
(AD6016)	□	GDLST 603-0	B31W23C10V14E38

MACH 0.201

BETA	ELEVTR	CANARD	AILRON	REFERENCE INFORMATION
0.000	0.000	0.000	0.000	SREF 492.4804 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

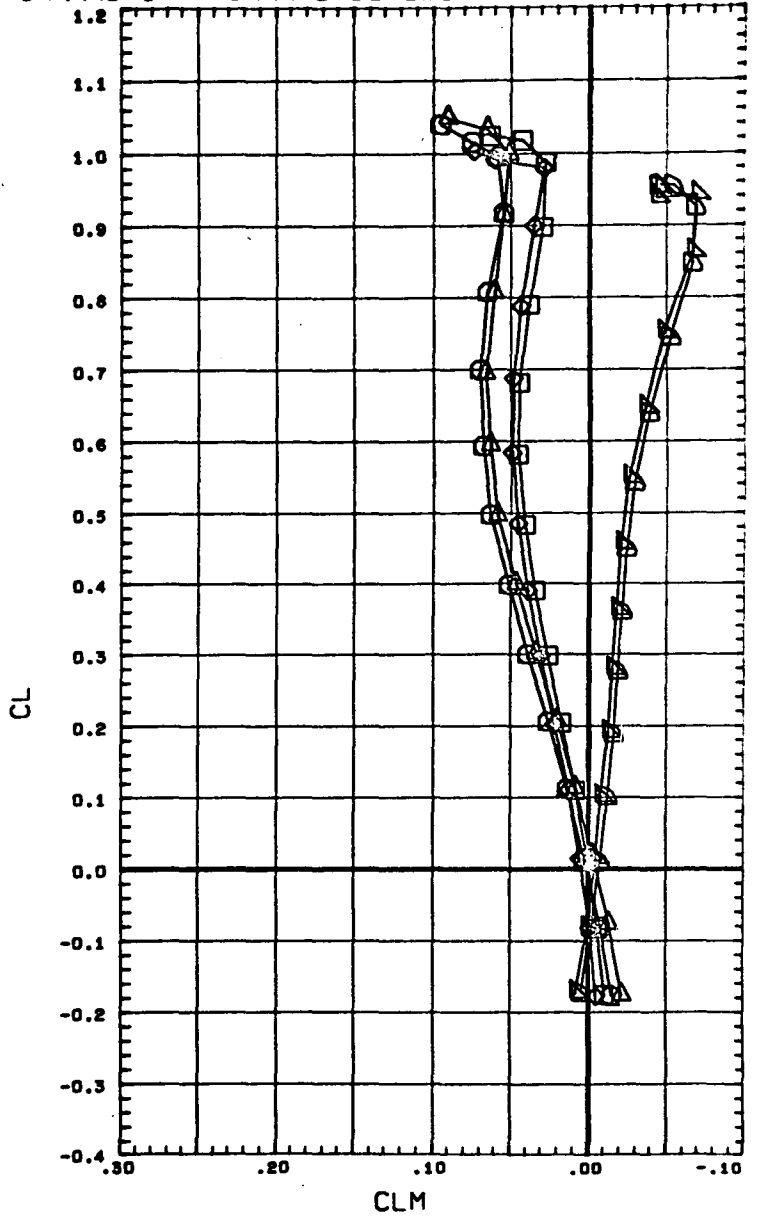
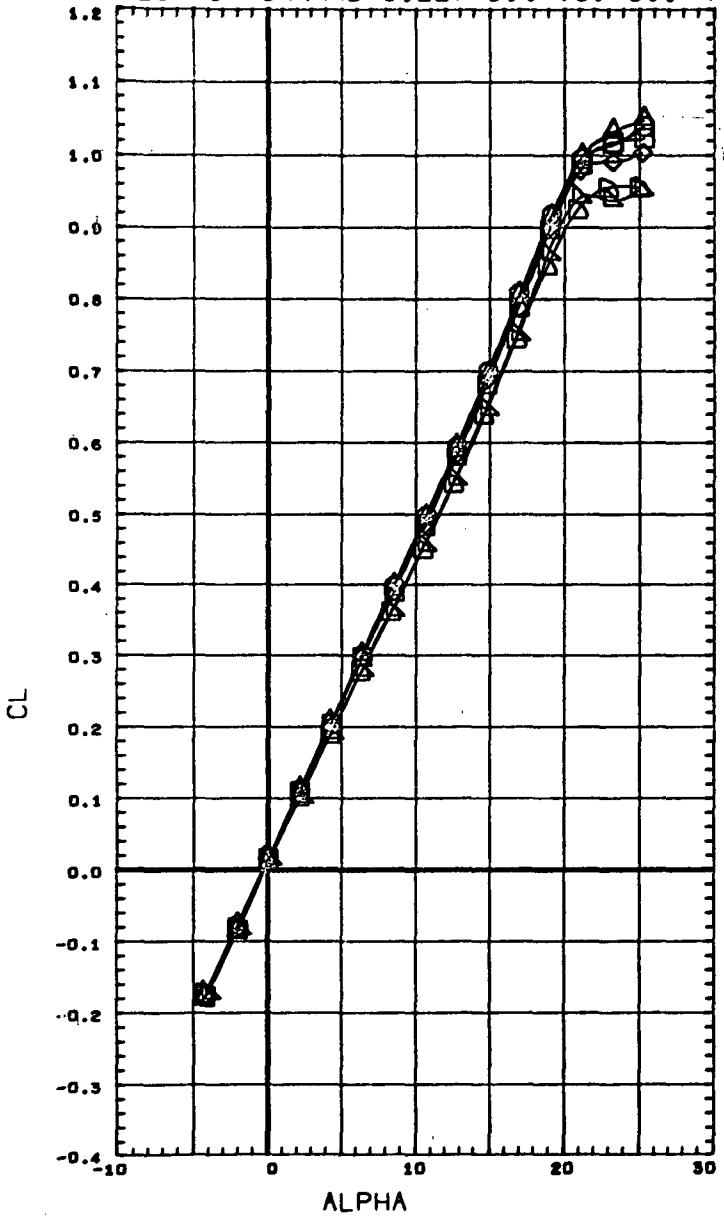
EFFECT OF NOSE BLUNTING, B30 VS. B31



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	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

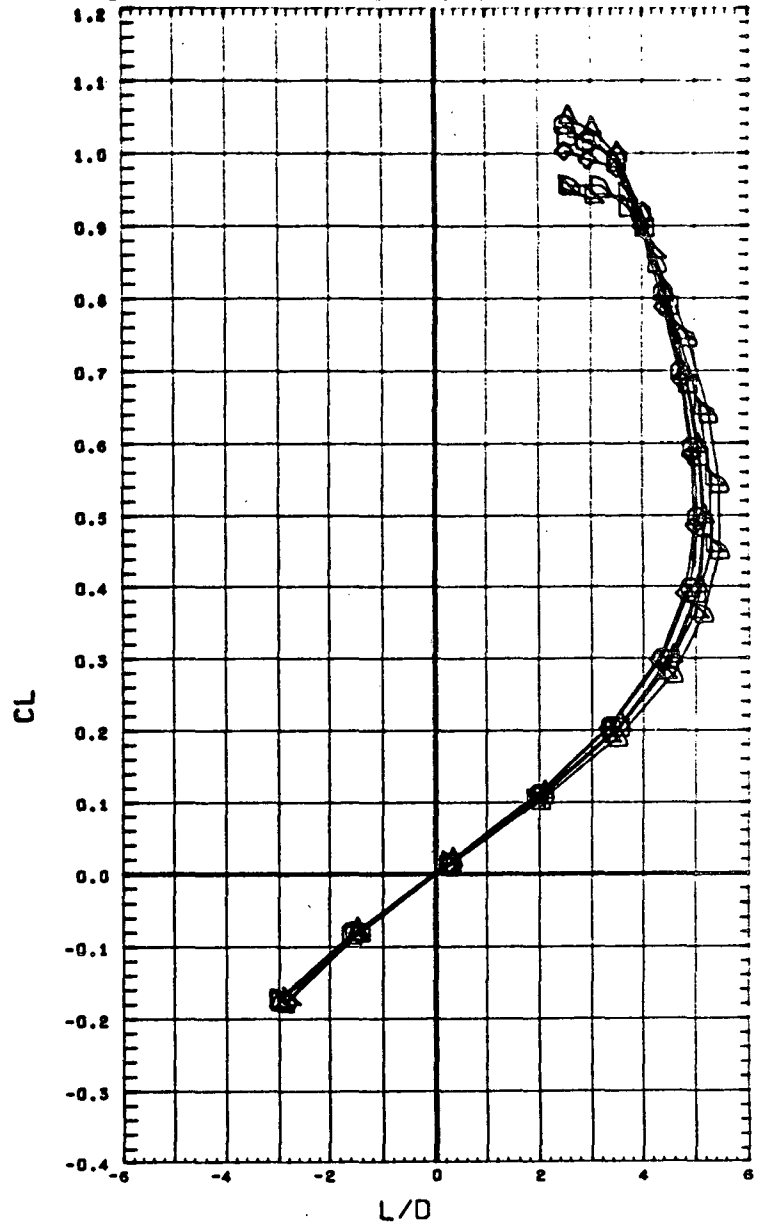
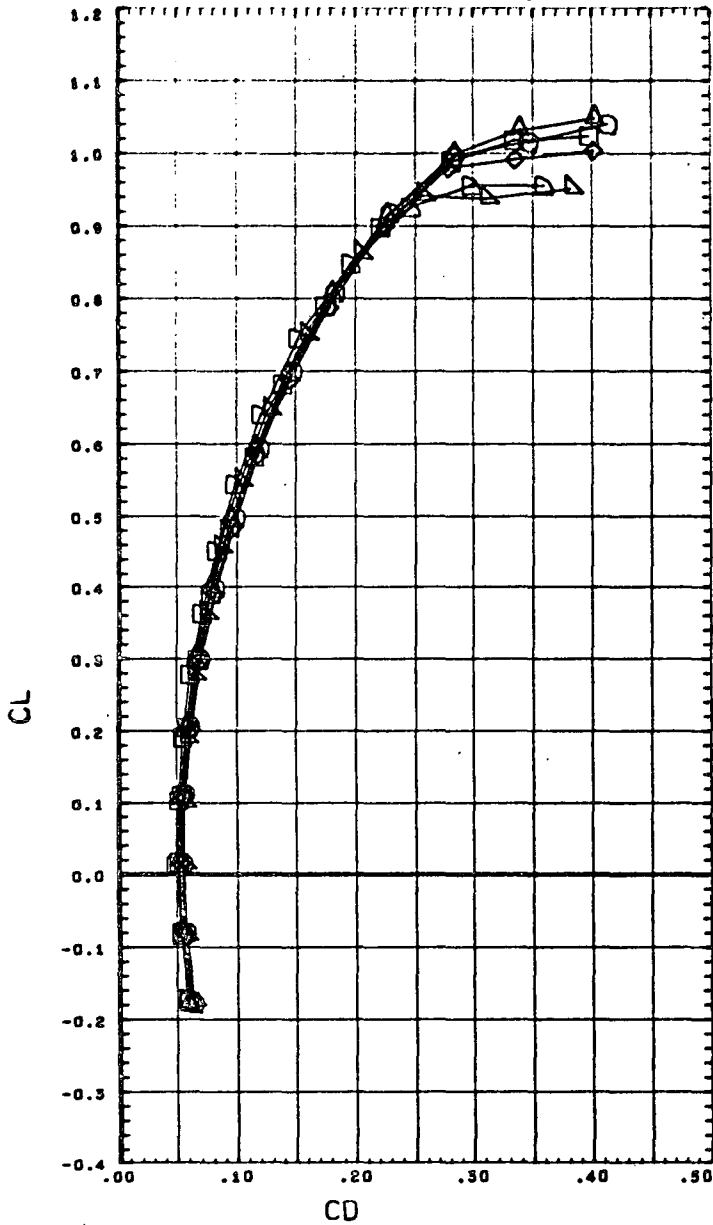


DATA SET SYMBOL	CONFIGURATION	DESCRIPTION
(AD6002)	GDLST 603-0	B30W23C10V14E38
(AD6003)	GDLST 603-0	B30W23C10V14E38
(AD6046)	GDLST 603-0	B30W23C11V14E38
(AD6047)	GDLST 603-0	B30W23C11V14E38
(AD6044)	GDLST 603-0	B30W23V14E38
(AD6045)	GDLST 603-0	B30W23V14E38

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

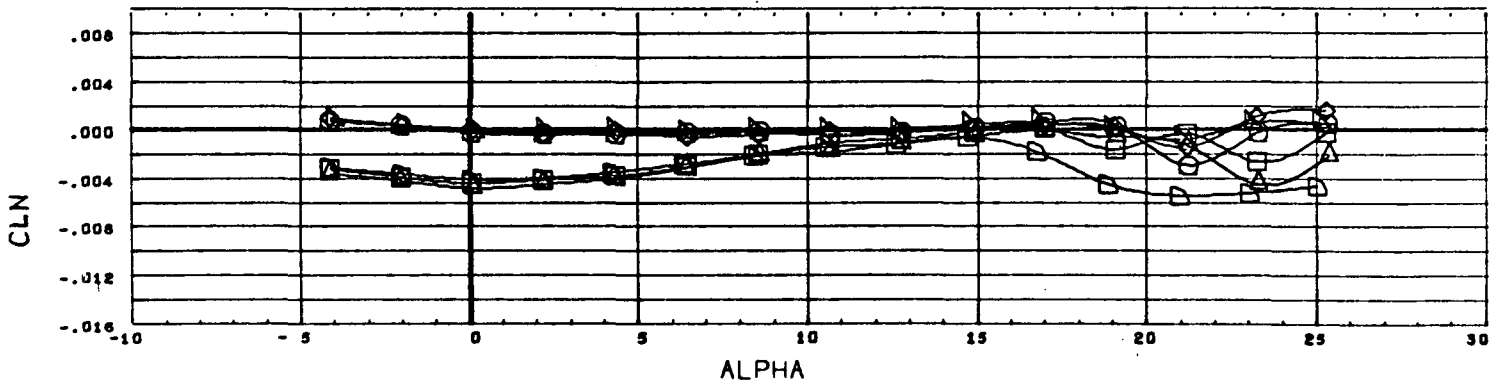
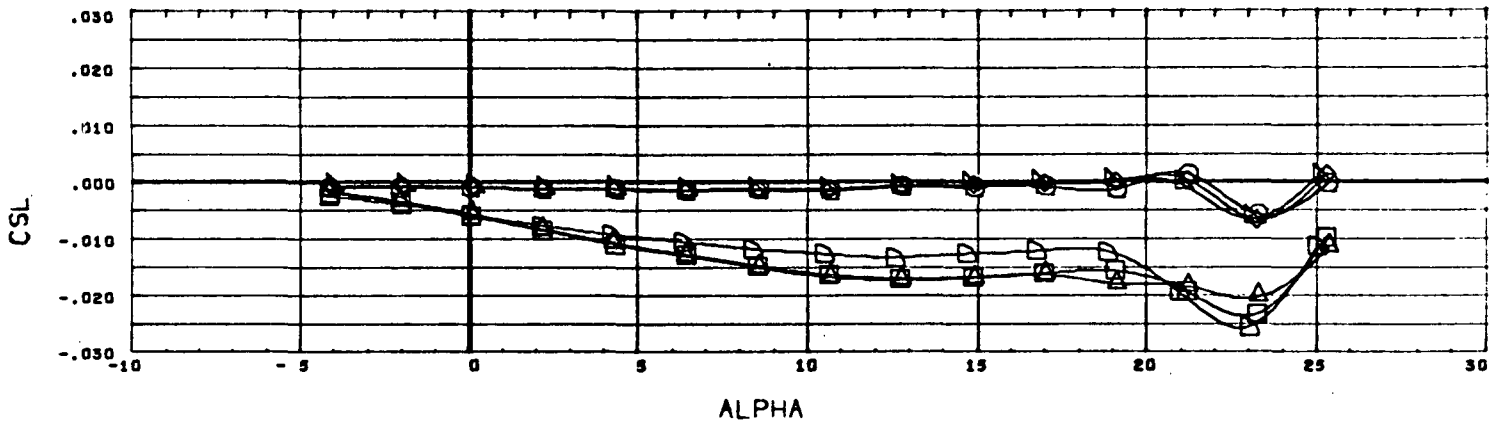
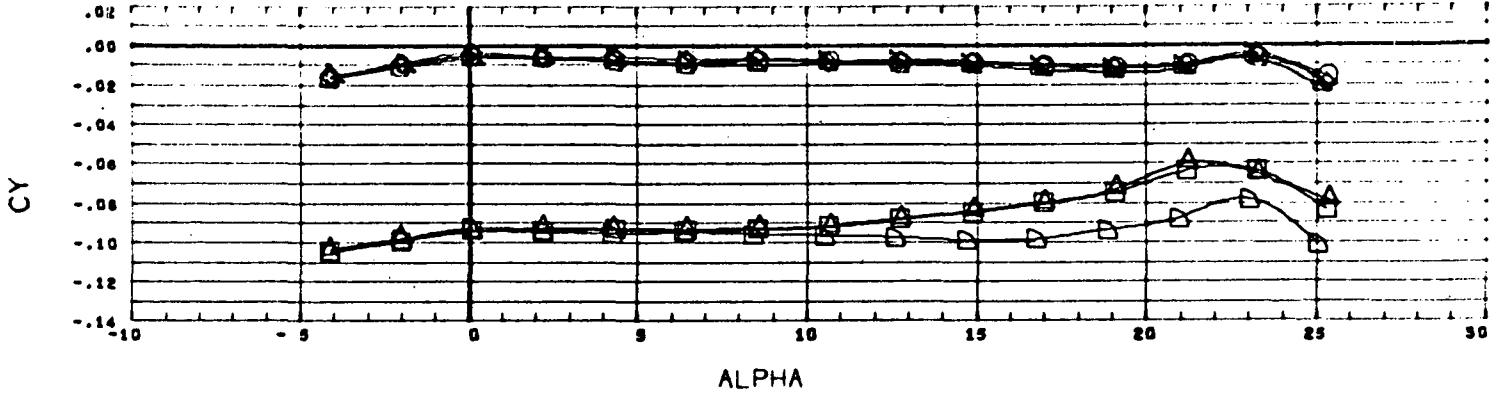


DATA SET SYMBOL	CONFIGURATION	DESCRIPTION
(AC6002)	GCLST 603-0	830W23C10V14E38
(AC6003)	GCLST 603-0	830W23C10V14E38
(AC6046)	GCLST 603-0	830W23C11V14E38
(AC6047)	GCLST 603-0	830W23C11V14E38
(AC6044)	GCLST 603-0	830W23V14E38
(AC6045)	GCLST 603-0	830W23V14E38

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

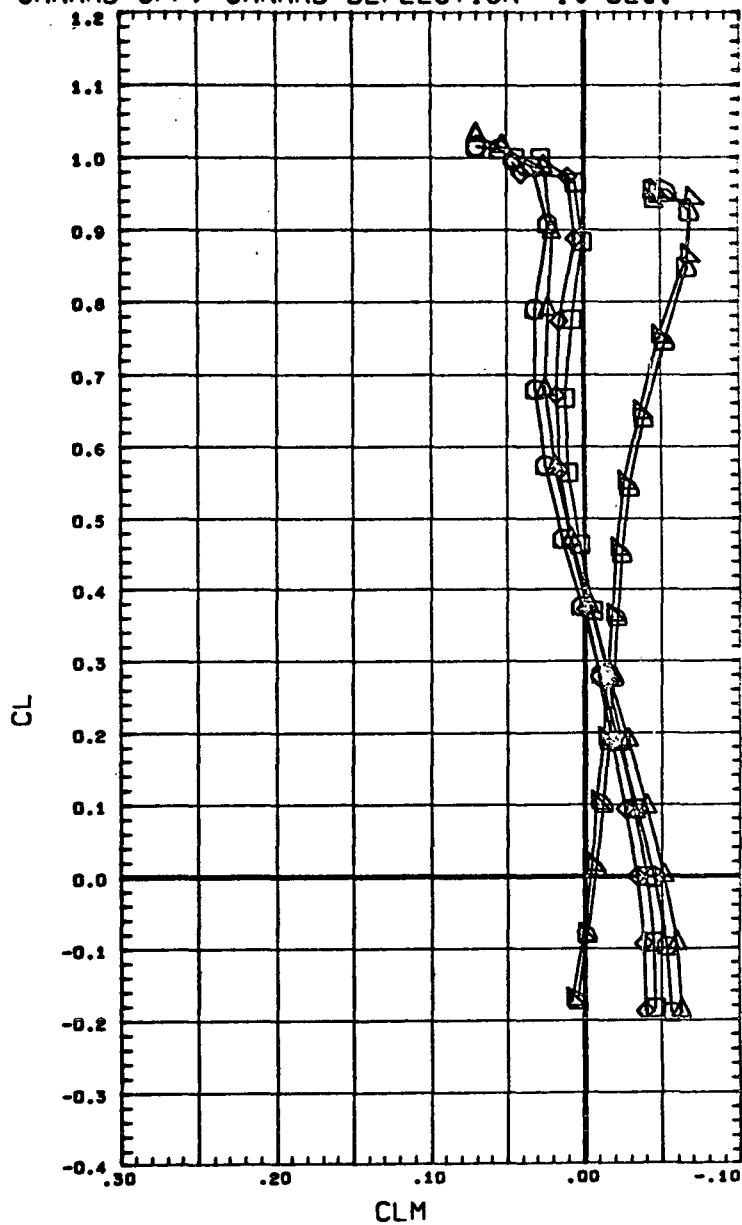
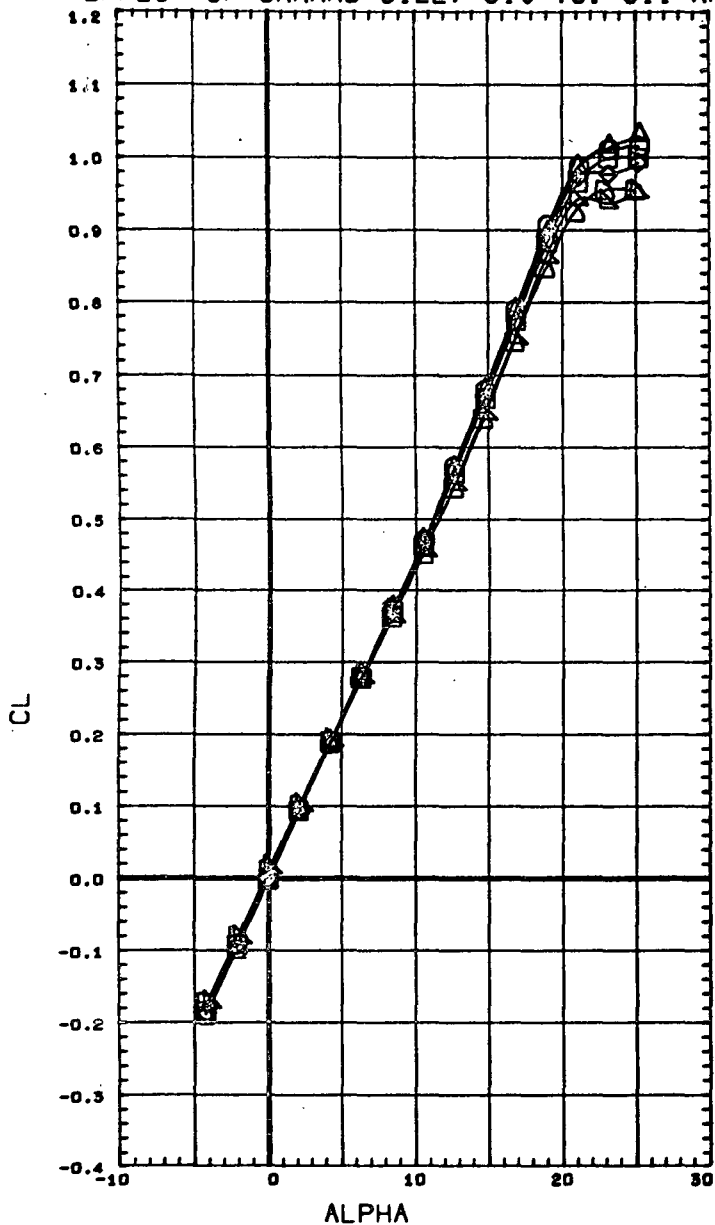
MACH .20

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 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.
(AD6046)	GDLST 603-0 B30W23C11V14E38	0.000	0.000	0.000	0.000	BREF 34.6320 IN.
(AD6047)	GDLST 603-0 B30W23C11V14E38	5.000	0.000	0.000	0.000	XNRP 29.0780 IN.
(AD6044)	GDLST 603-0 B30W23V14E38	0.000	0.000	0.000	0.000	YNRP 0.0000 IN.
(AD6045)	GDLST 603-0 B30W23V14E38	5.000	0.000	0.000	0.000	ZNRP 0.0000 IN.
						SCALE 0.0200

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

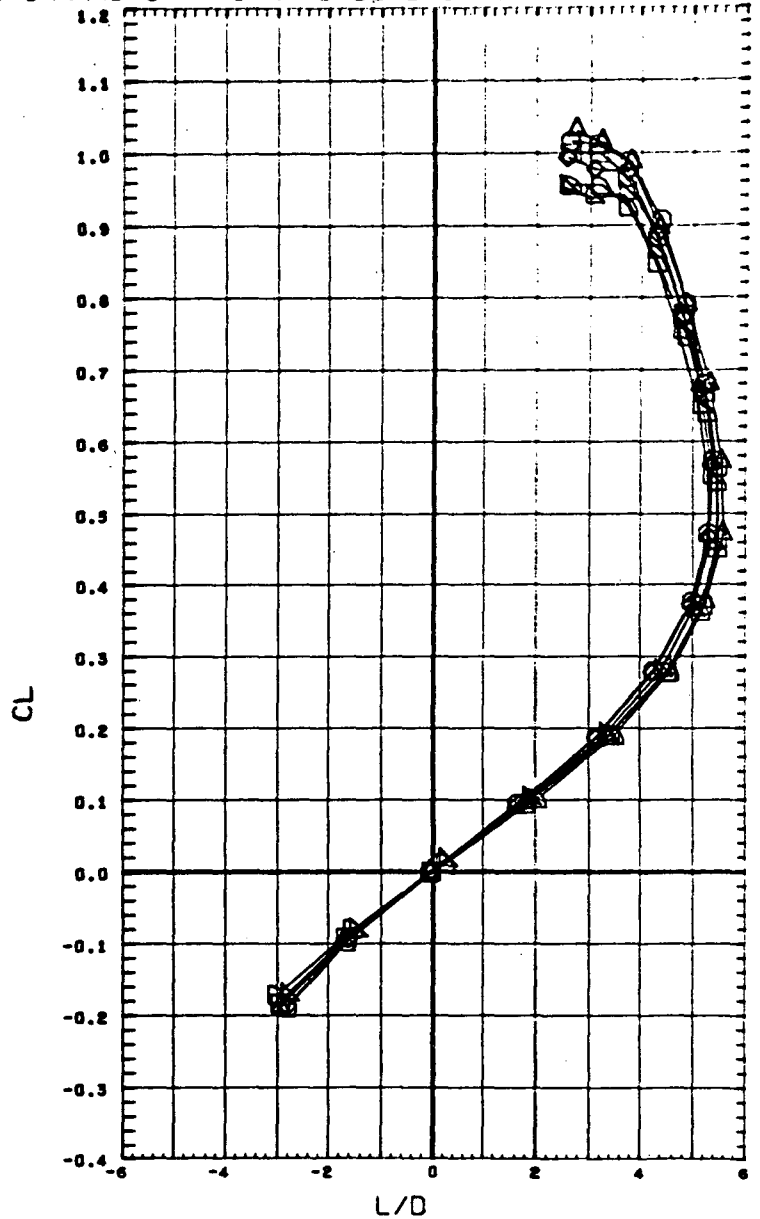
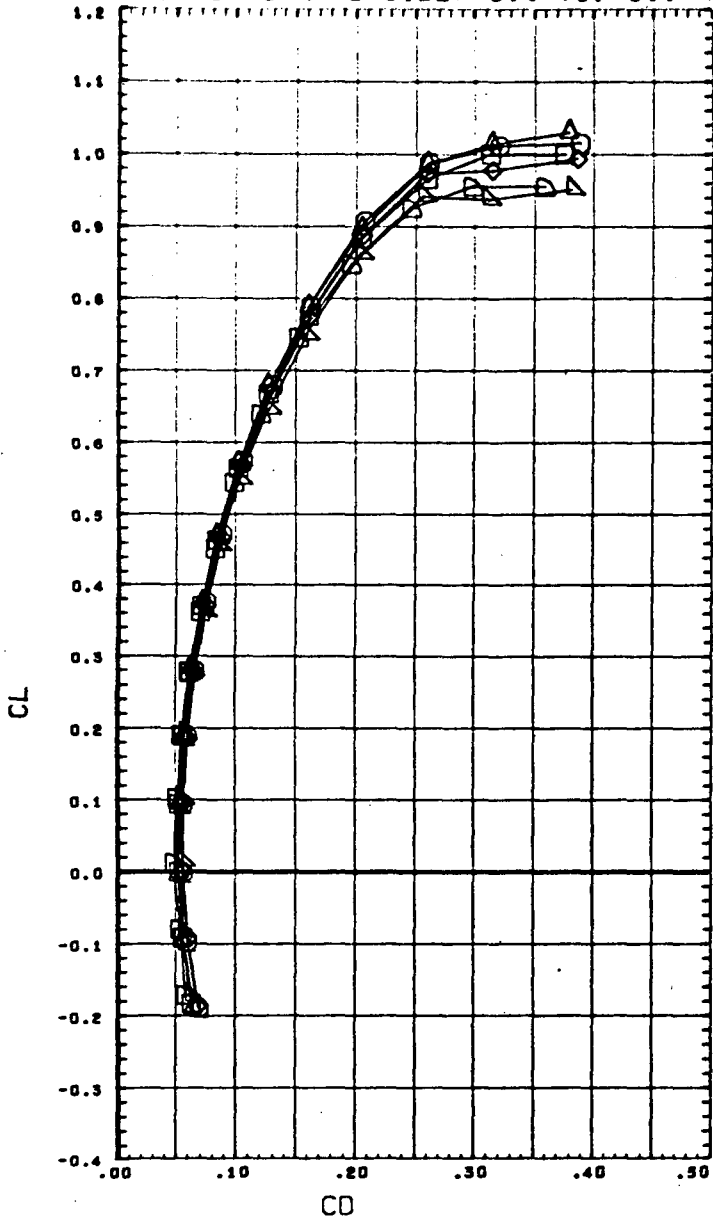


DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6009)	GDLST 603-0 830W23C10V14E38
(AD6010)	GDLST 603-0 830W23C10V14E38
(AD6050)	GDLST 603-0 830W23C11V14E38
(AD6051)	GDLST 603-0 830W23C11V14E38
(AD6044)	GDLST 603-0 830W23V14E38
(AD6045)	GDLST 603-0 830W23V14E38

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

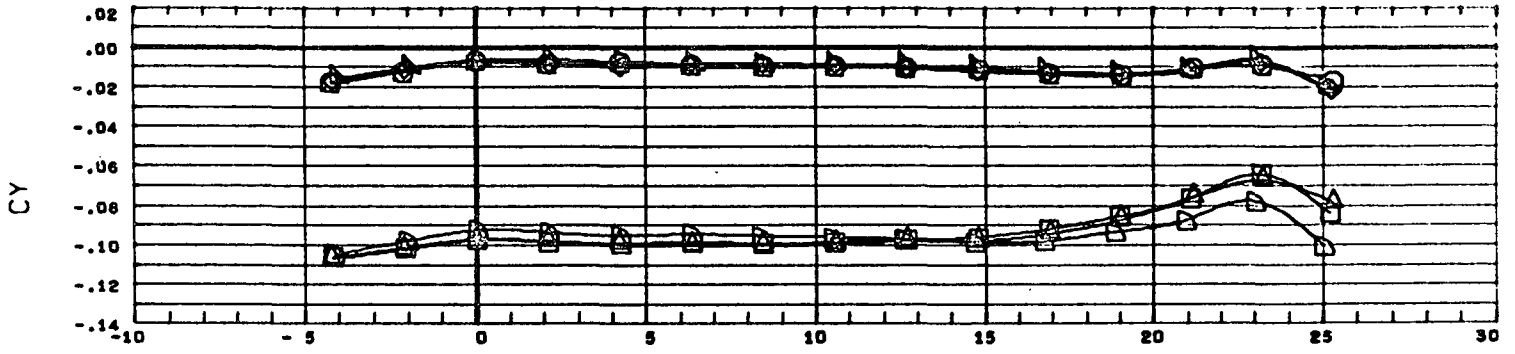
EFFECT OF CANARD SIZE, C10 VS. C11 AND CANARD OFF, CANARD DEFLECTION=-10 DEG.



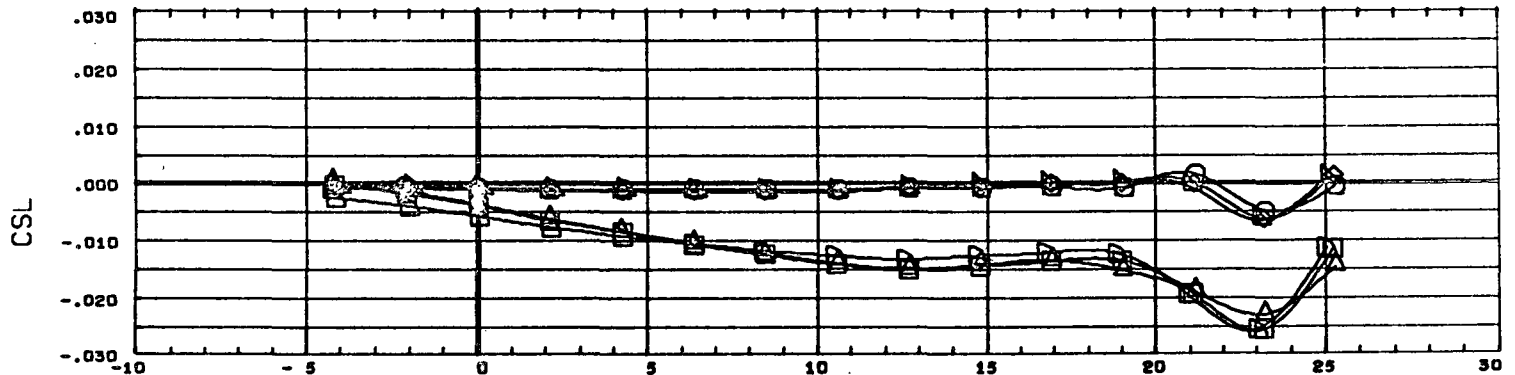
DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AC6009)	GCLST 603-0 B30W23C10V14E38
(AC6010)	GCLST 603-0 B30W23C10V14E38
(AC6050)	GCLST 603-0 B30W23C11V14E38
(AC6051)	GCLST 603-0 B30W23C11V14E38
(AC6044)	GCLST 603-0 B30W23V14E38
(AC6045)	GCLST 603-0 B30W23V14E38

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

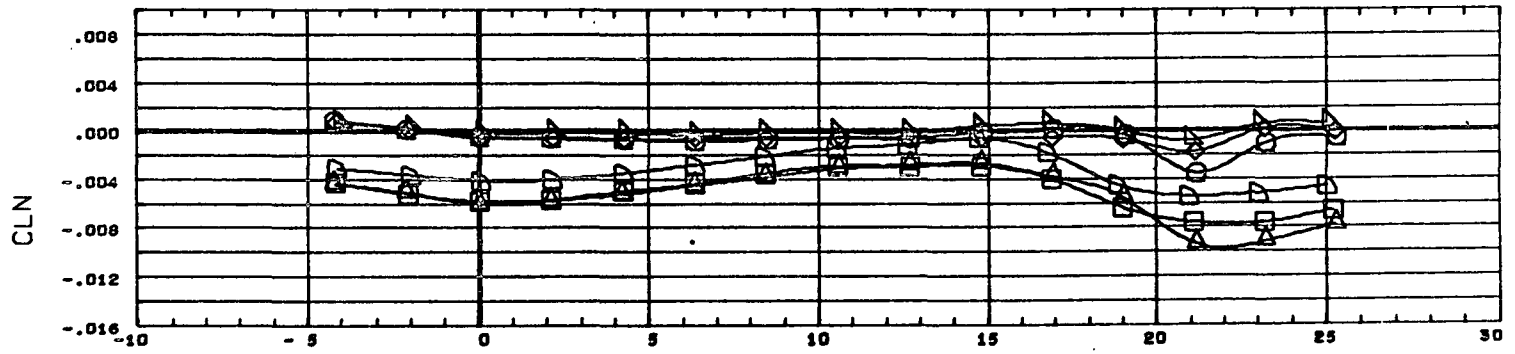
EFFECT OF CANARD SIZE, C10 VS. C11 AND CANARD OFF, CANARD DEFLECTION=-10 DEG.



ALPHA



ALPHA

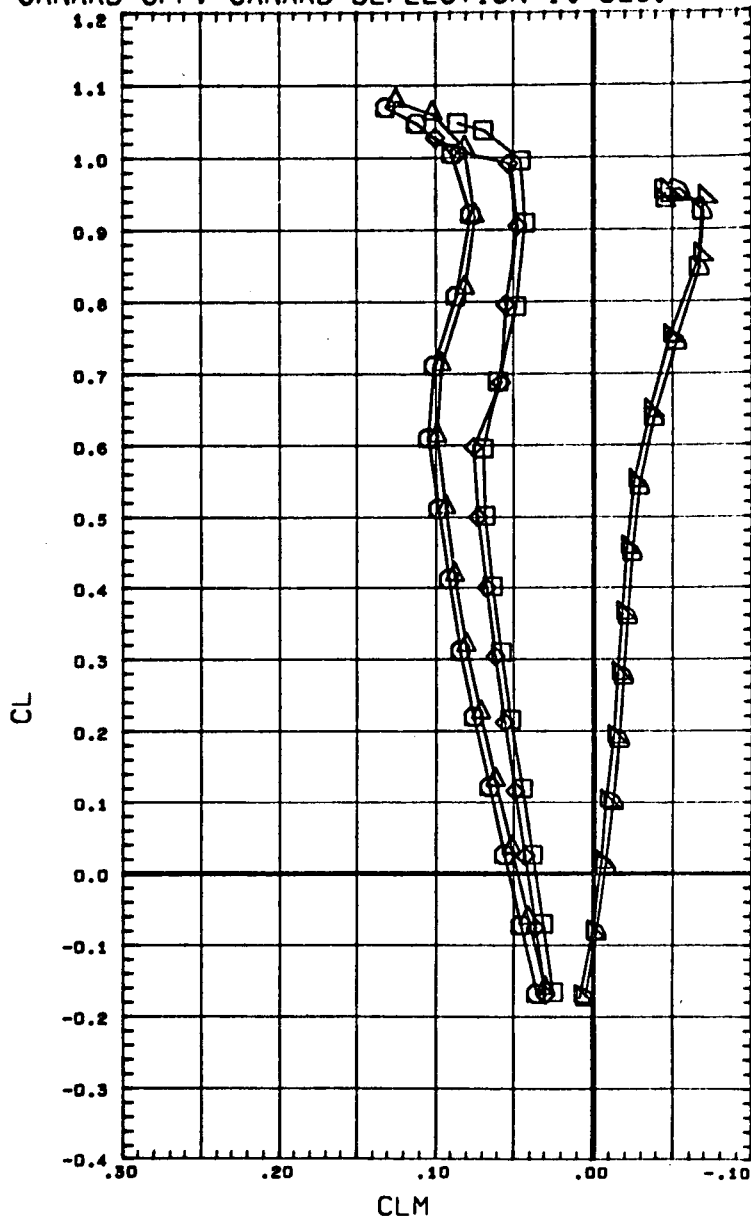
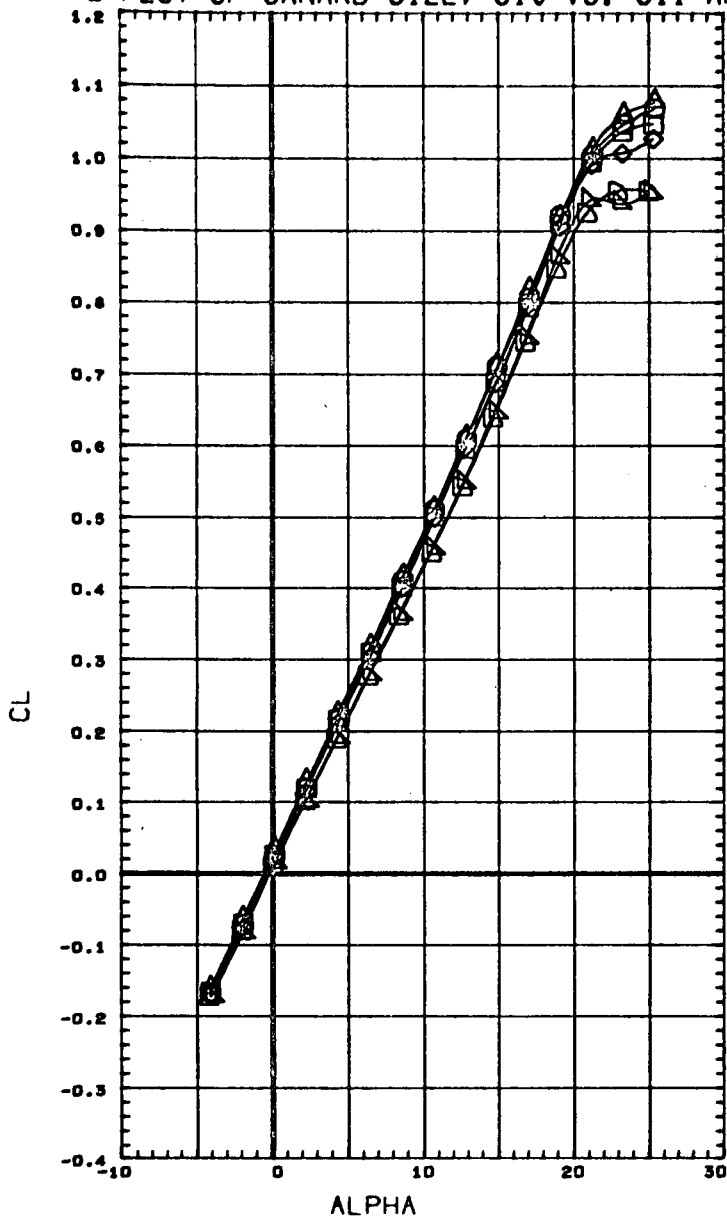


ALPHA

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.

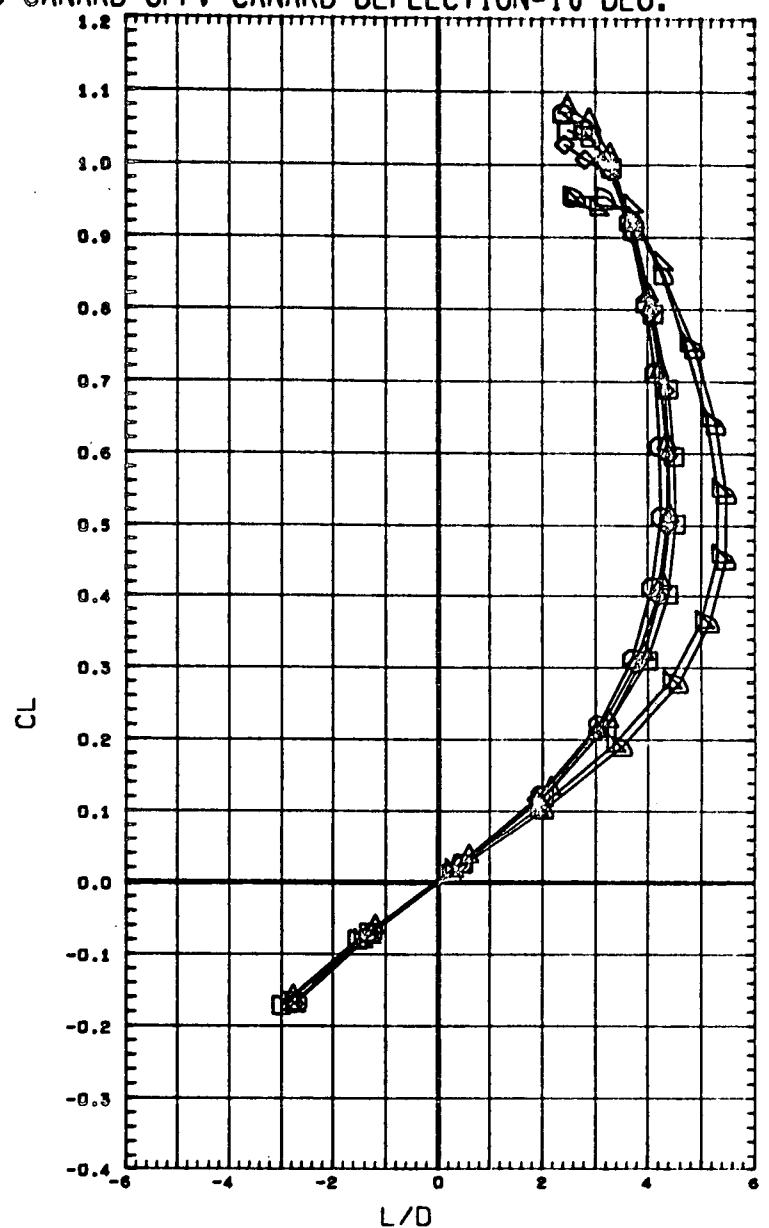
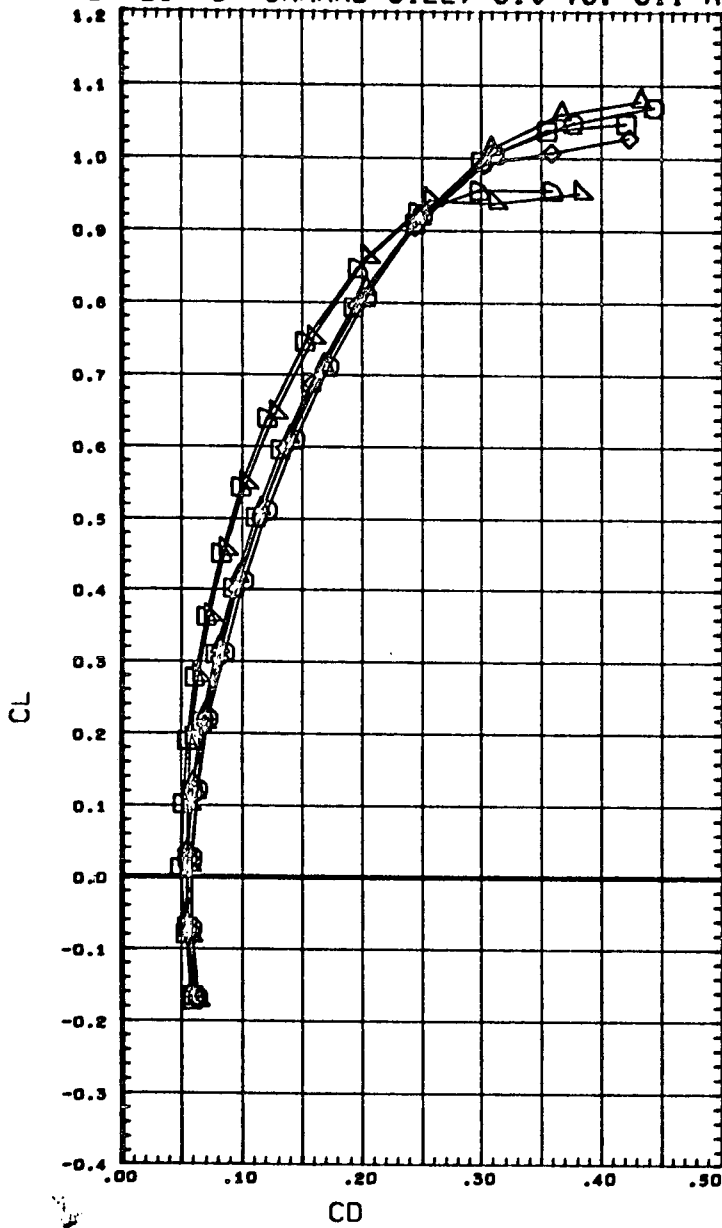


DATA SET SYMBOL	CONFIGURATION	DESCRIPTION
(AD6007)	GDLST 603-0	B30W23C10V14E38
(AD6008)	GDLST 603-0	B30W23C10V14E38
(AD6048)	GDLST 603-0	B30W23C11V14E38
(AD6049)	GDLST 603-0	B30W23C11V14E38
(AD6044)	GDLST 603-0	B30W23V14E38
(AD6045)	GDLST 603-0	B30W23V14E38

MACH 0.201

BETA	ELEVTR	RUDDER	AILRON	REFERENCE INFORMATION
0.000	0.000	0.000	0.000	SREF 492.4804 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.
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.

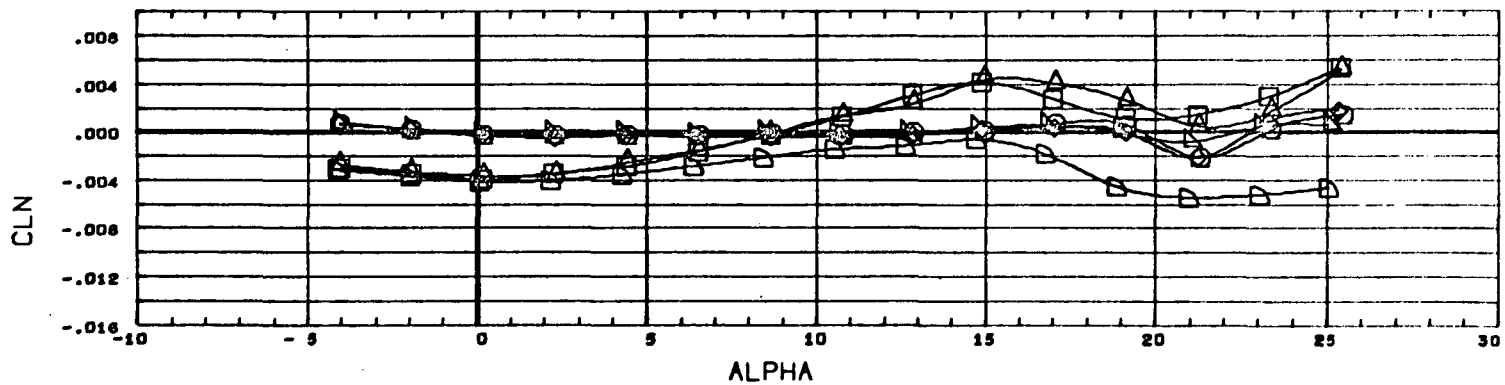
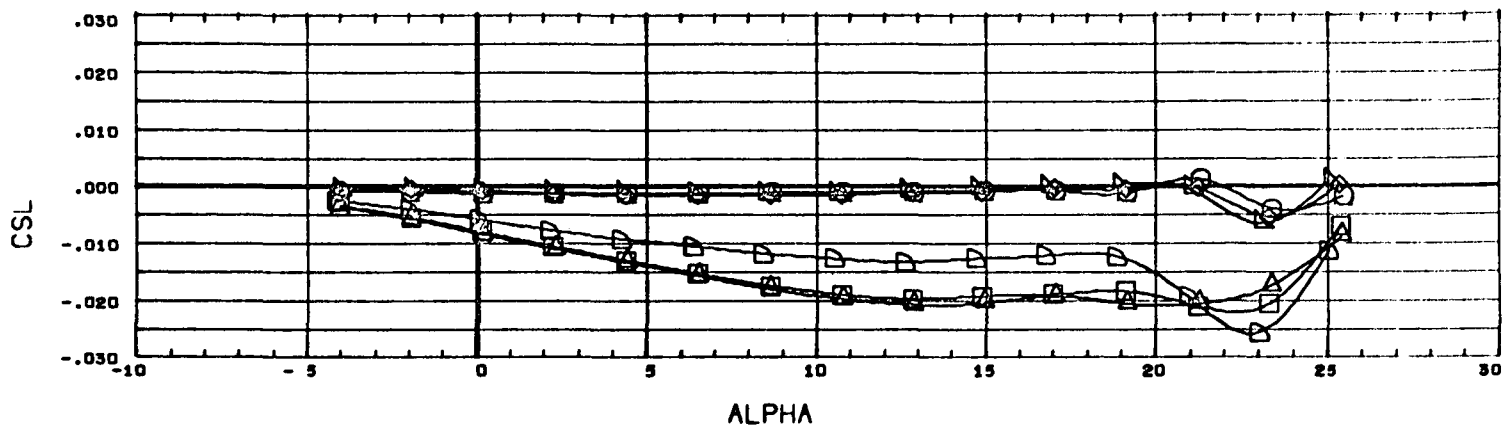
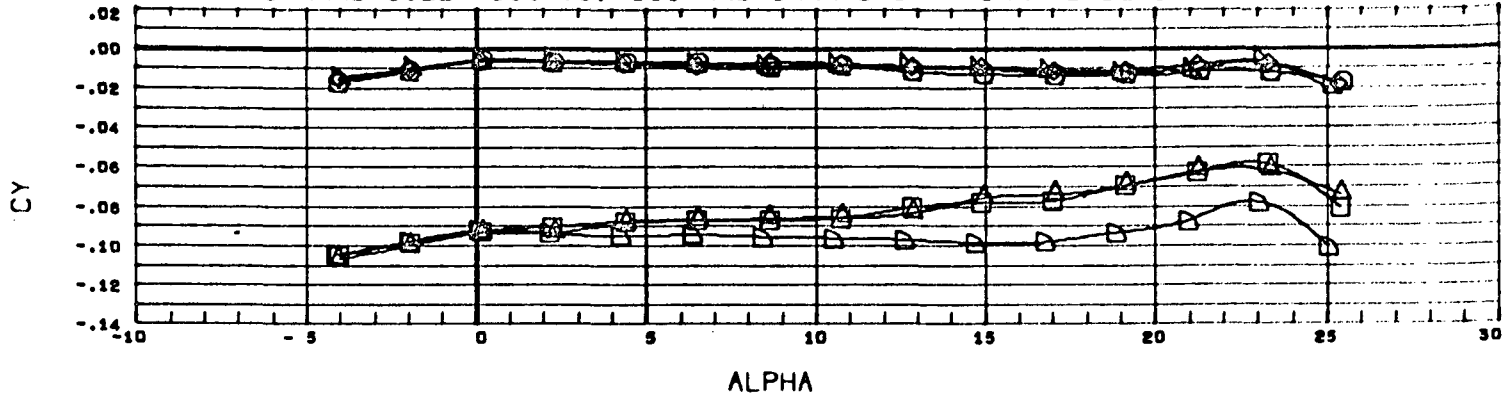


DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6007)	GDLST 603-0 B30W23C10V14E38
(AD6008)	GDLST 603-0 B30W23C10V14E38
(AD6048)	GDLST 603-0 B30W23C11V14E38
(AD6049)	GDLST 603-0 B30W23C11V14E38
(AD6044)	GDLST 603-0 B30W23V14E38
(AD6045)	GDLST 603-0 B30W23V14E38

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

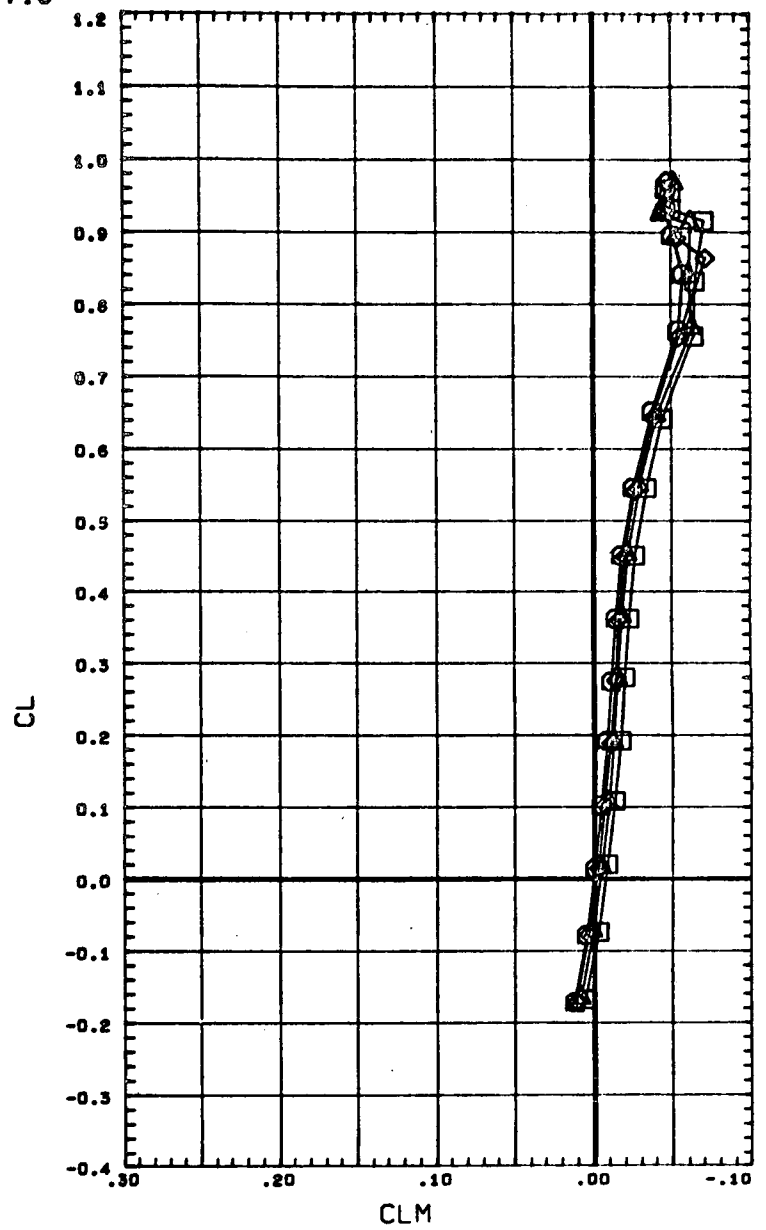
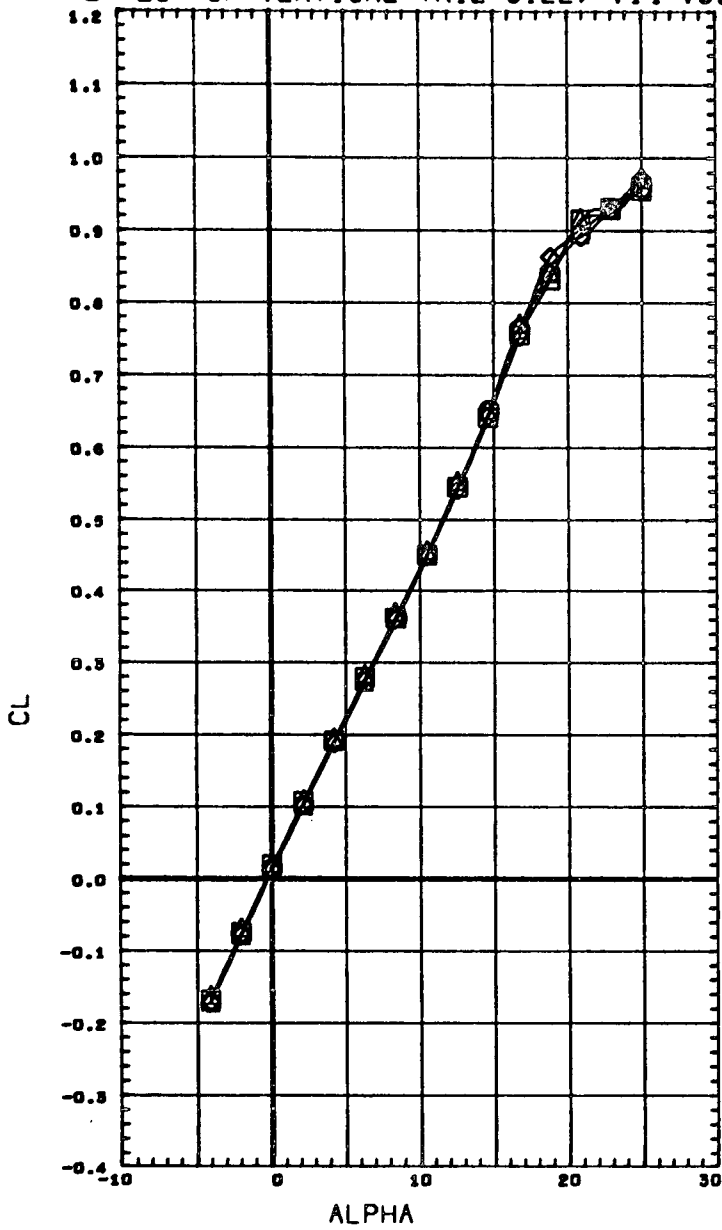
EFFECT OF CANARD SIZE, C10 VS. C11 AND CANARD OFF, CANARD DEFLECTION=10 DEG.



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	ZMRP 0.0000 IN.
(AD6045)	GDLST 603-0 B30W23V14E38	5.000	0.000	0.000	0.000	ZMRP 0.0000 IN.

MACH 0.201

EFFECT OF VERTICAL TAIL SIZE, V14 VS. V16

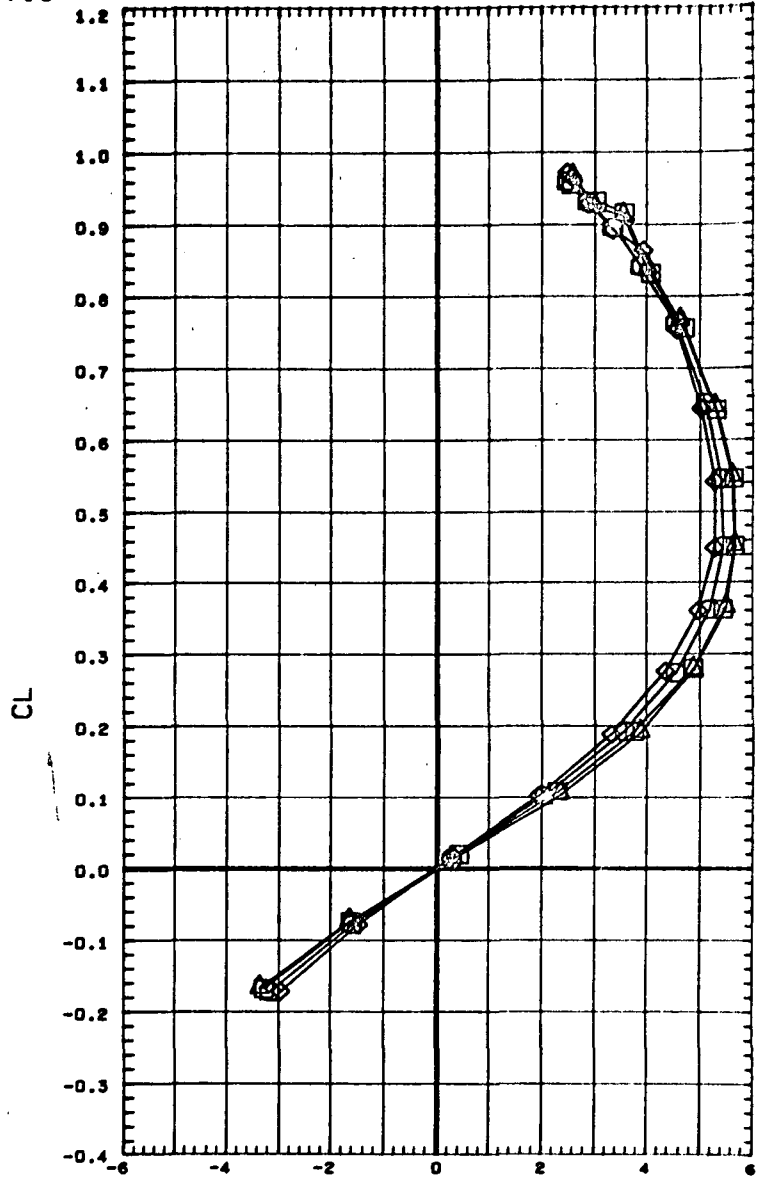
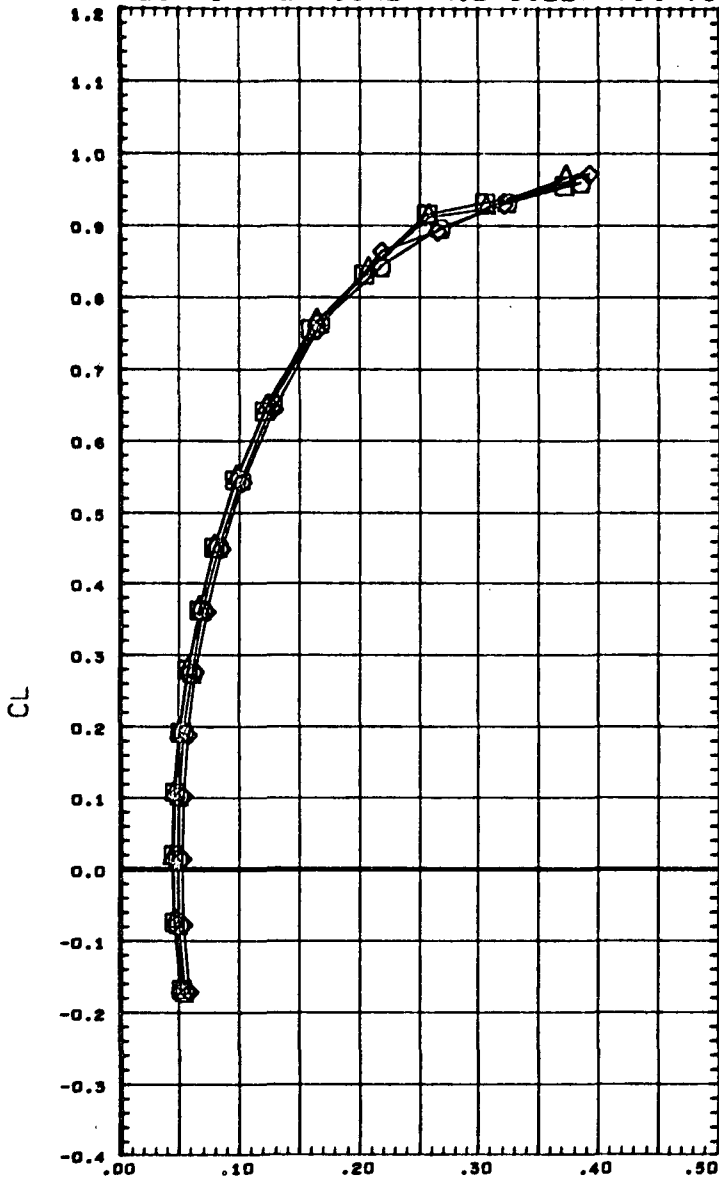


DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6077)	○ GDLST 603-0 830W23V14
(AD6078)	△ GDLST 603-0 830W23V14
(AD6079)	◇ GDLST 603-0 830W23V16
(AD6080)	□ GDLST 603-0 830W23V16

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

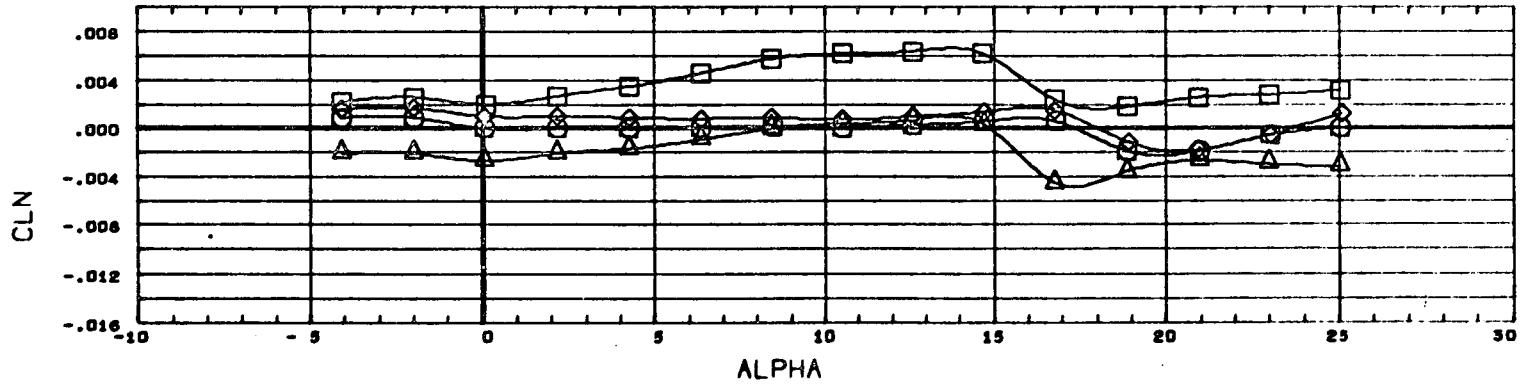
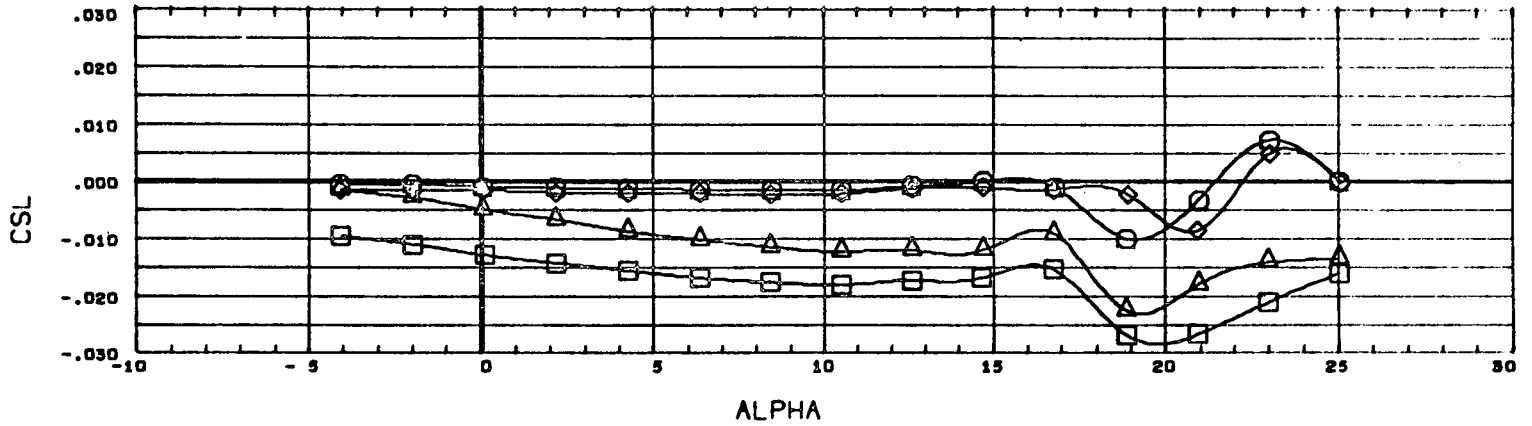
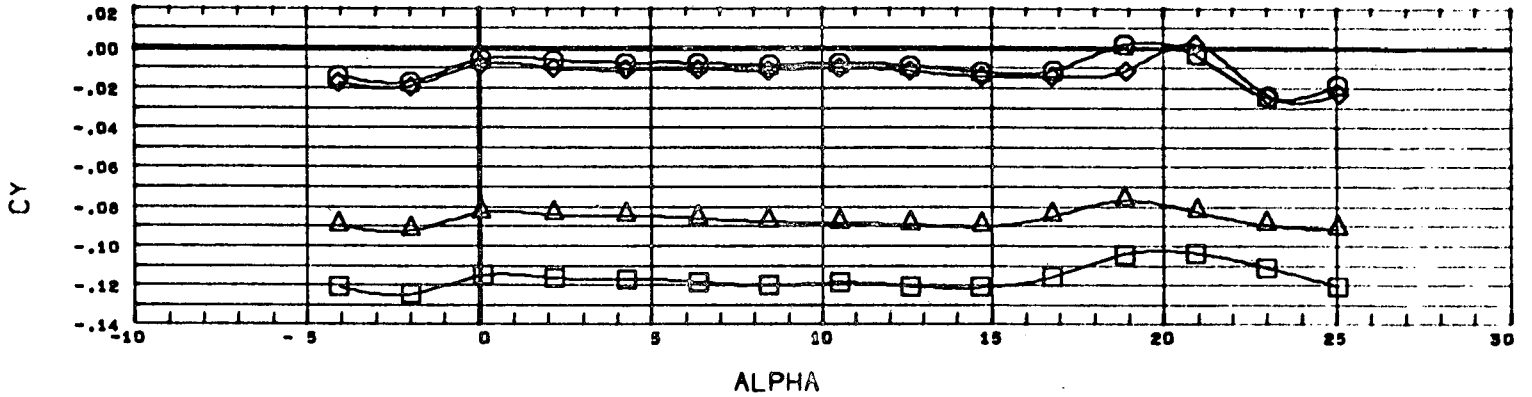


DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6077)	GDLST 603-0 830W23V14
(AD6078)	GDLST 603-0 830W23V14
(AD6079)	GDLST 603-0 830W23V16
(AD6080)	GDLST 603-0 830W23V16

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	XMRF 29.0750 IN.
				YMRF 0.0000 IN.
				ZMRF 0.0000 IN.
				SCALE 0.0200

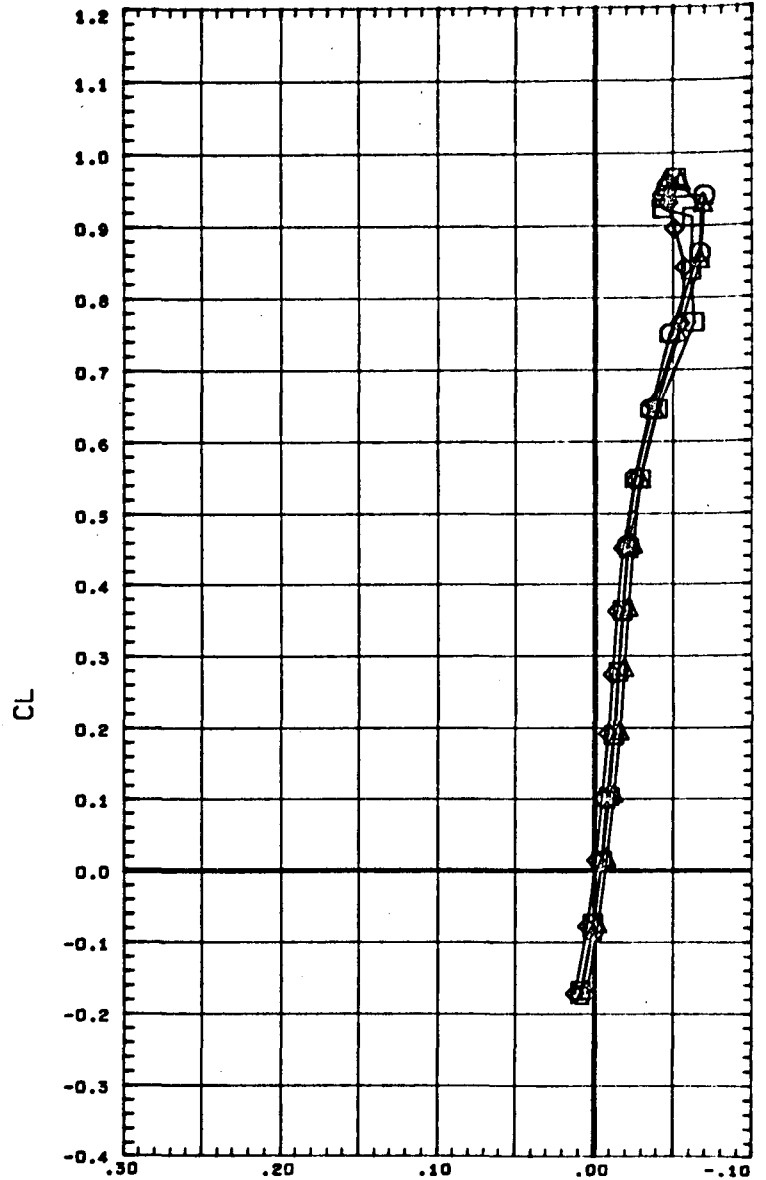
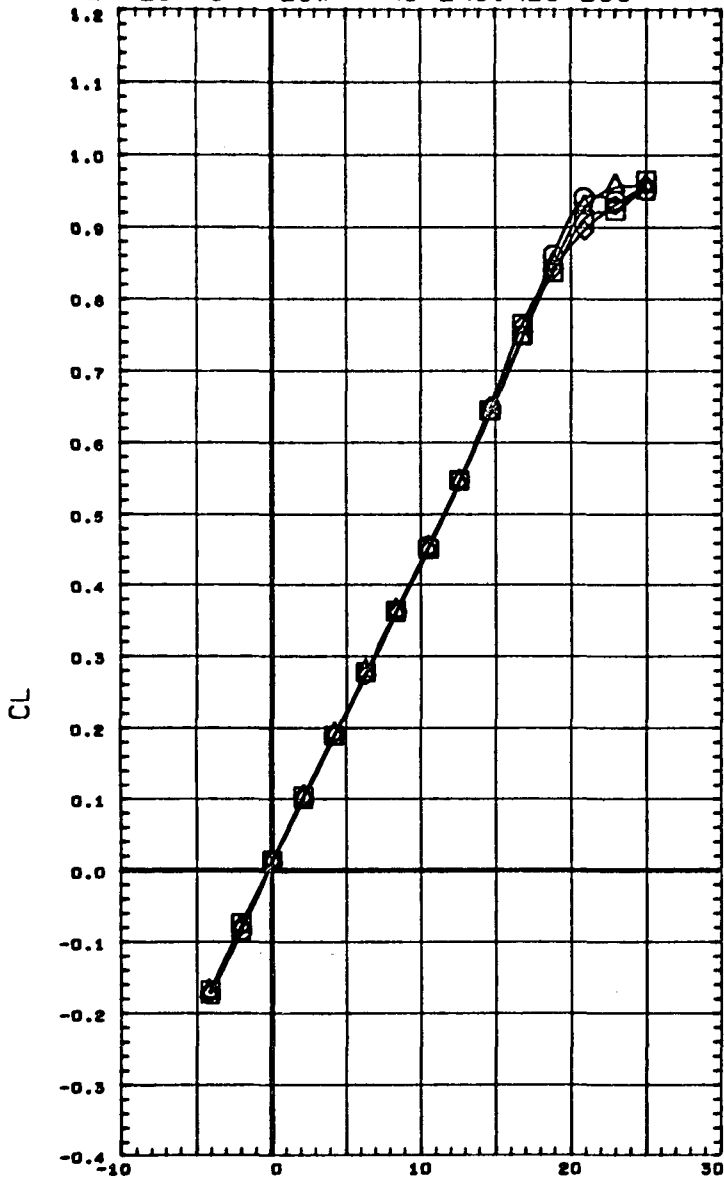
EFFECT OF VERTICAL TAIL SIZE, V14 VS. V16



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	RUDDER	AILRON	REFERENCE INFORMATION
(AD6077)	○ GDLST 603-0 830W23V14	0.000	0.000	0.000	0.000	SREF 492.4804 SQ. IN
(AD6078)	△ GDLST 603-0 830W23V14	5.000	0.000	0.000	0.000	LREF 16.1880 IN.
(AD6079)	◇ GDLST 603-0 830W23V16	0.000	0.000	0.000	0.000	BREF 34.6320 IN.
(AD6080)	□ GDLST 603-0 830W23V16	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

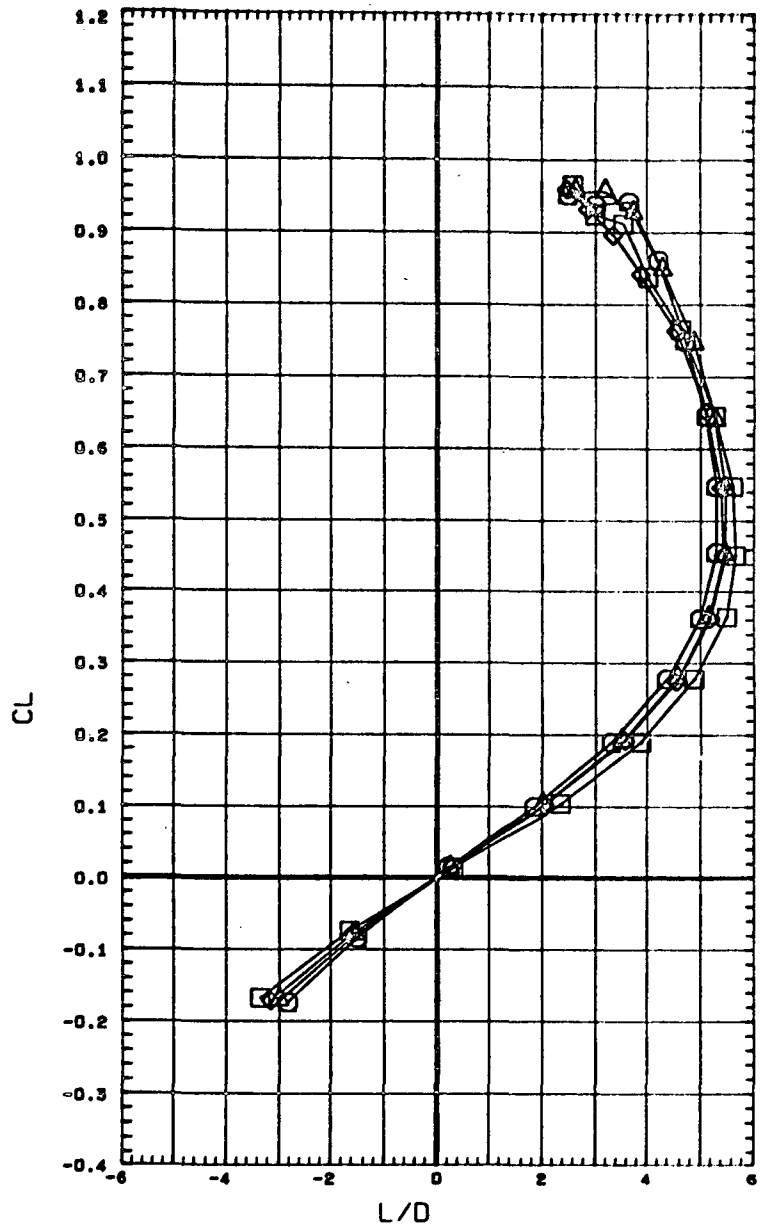
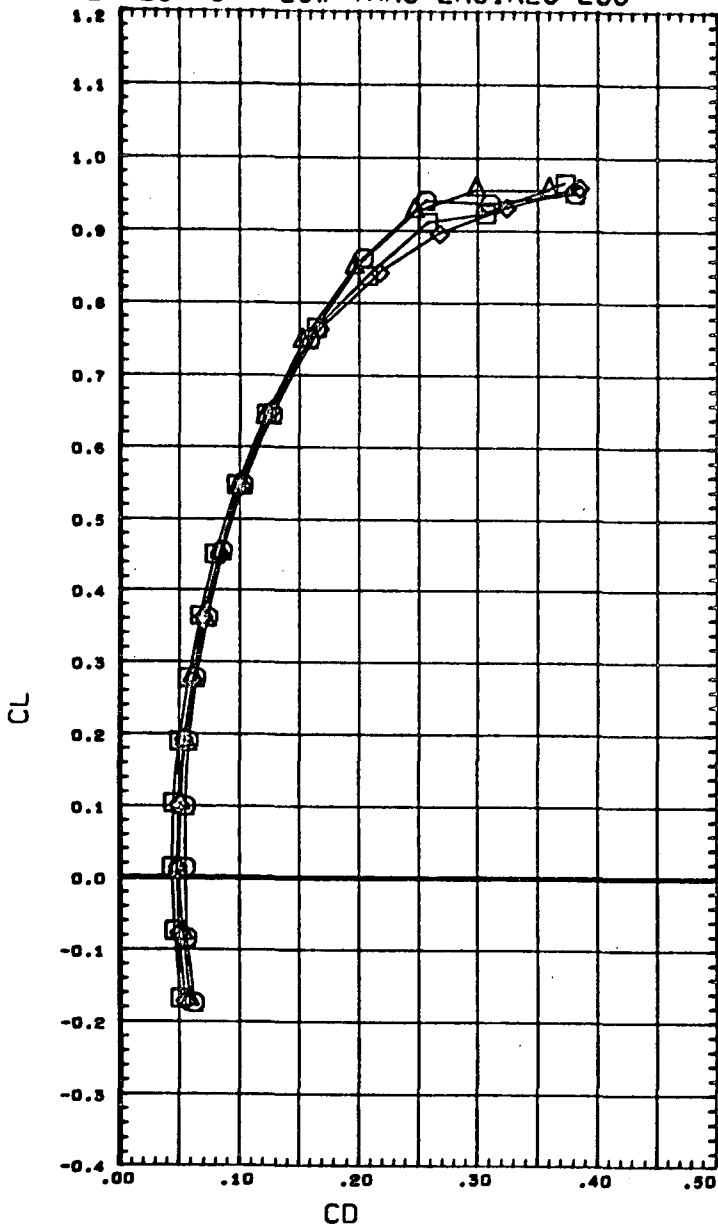


DATA SET SYMBOL	CONFIGURATION	DESCRIPTION
(A06044)	GDLST 603-D	B30W23V14E38
(A06045)	GDLST 603-D	B30W23V14E38
(A06077)	GDLST 603-D	B30W23V14
(A06078)	GDLST 603-D	B30W23V14

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 FLOW-THRU ENGINES E38

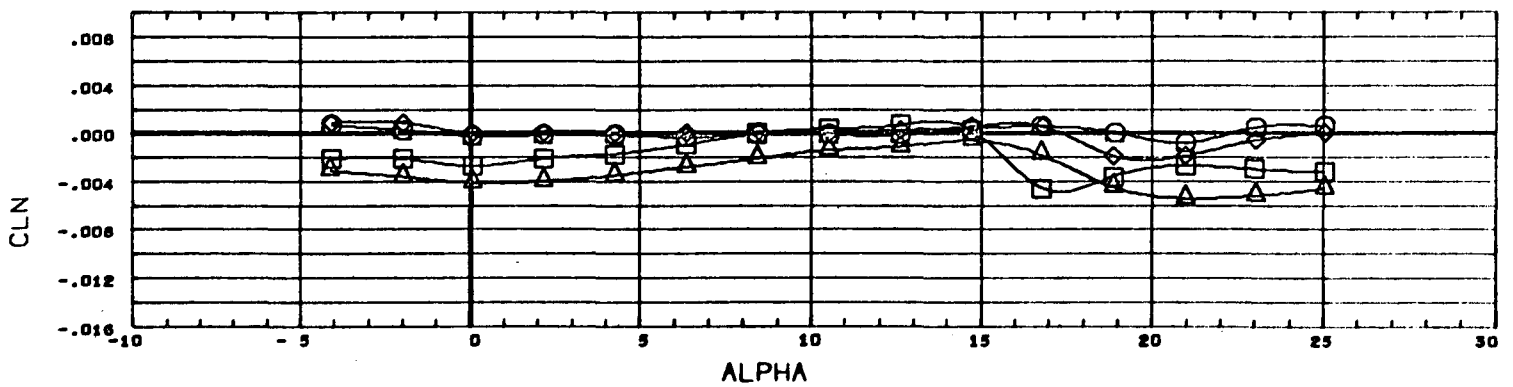
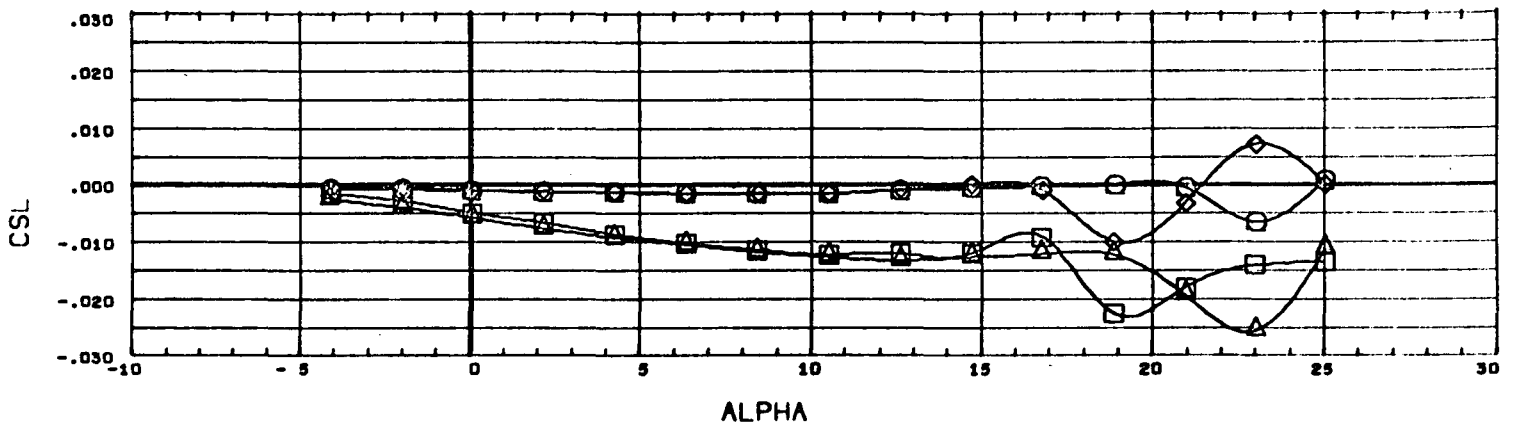
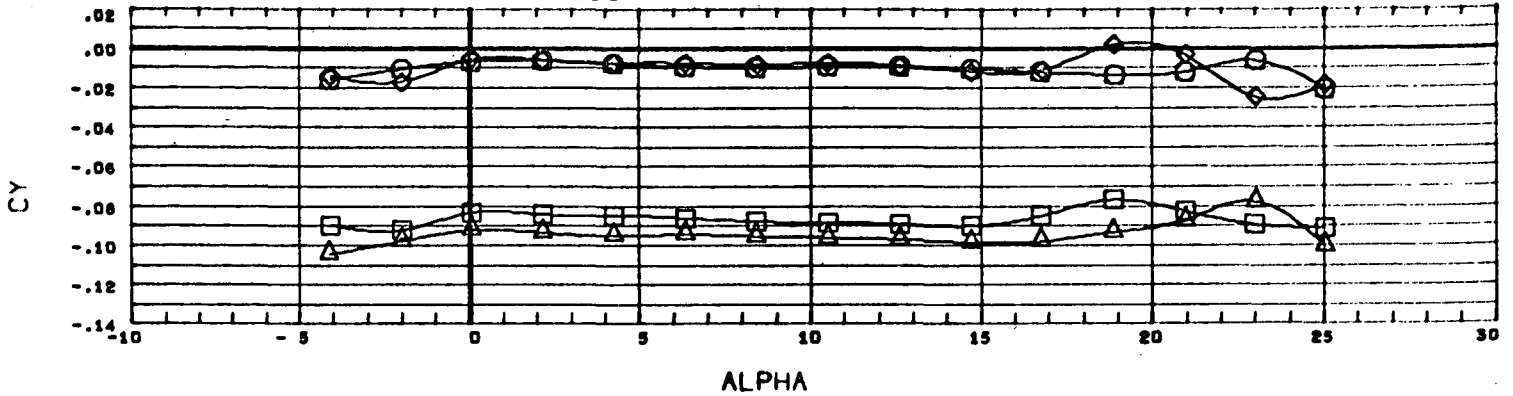


DATA SET SYMBOL	CONFIGURATION	DESCRIPTION
(AD6044)	○	GDLST 603-0 830W23V14E38
(AD6045)	◇	GDLST 603-0 830W23V14E38
(AD6077)	△	GDLST 603-0 830W23V14
(AD6078)	□	GDLST 603-0 830W23V14

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

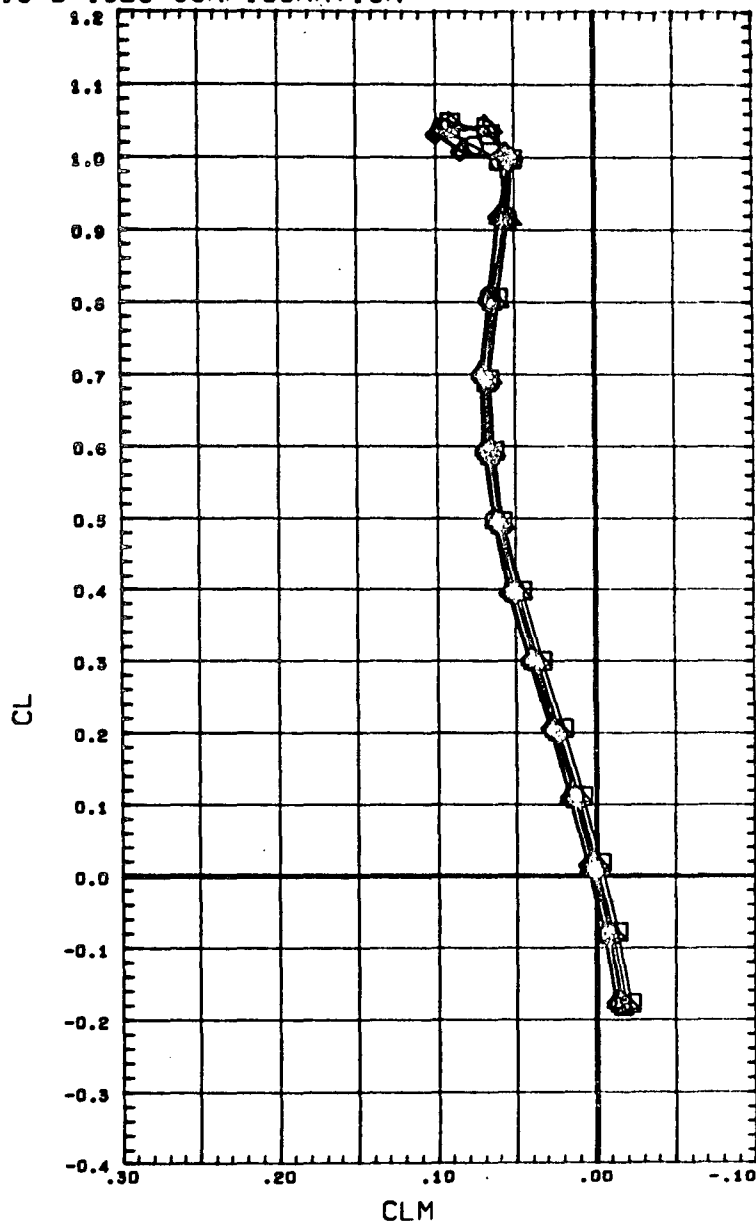
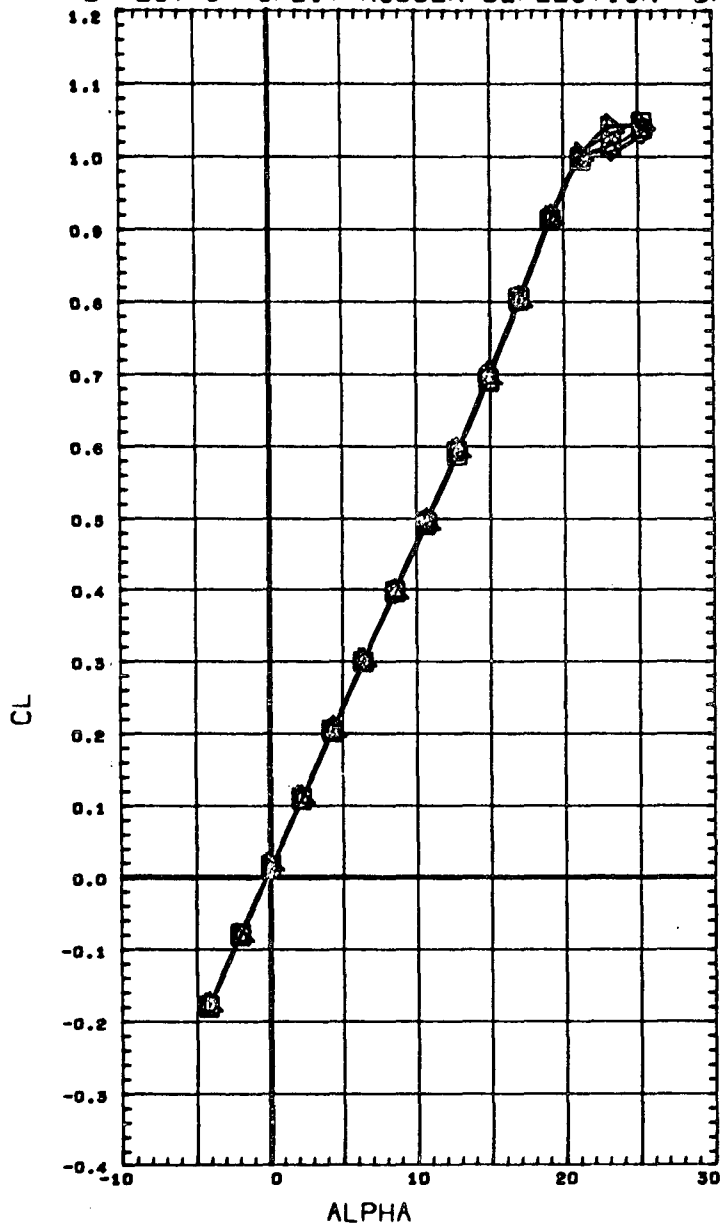


DATA SET SYMBOL	CONFIGURATION	DESCRIPTION
(AD6044)	○	GDLST 603-0 B30W23V14E38
(AD6045)	△	GDLST 603-0 B30W23V14E38
(AD6077)	◇	GDLST 603-0 B30W23V14
(AD6076)	□	GDLST 603-0 B30W23V14

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	XMRP	29.0780 IN.
				YMRP	0.0000 IN.
				ZMRP	0.0000 IN.
				SCALE	0.0200

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

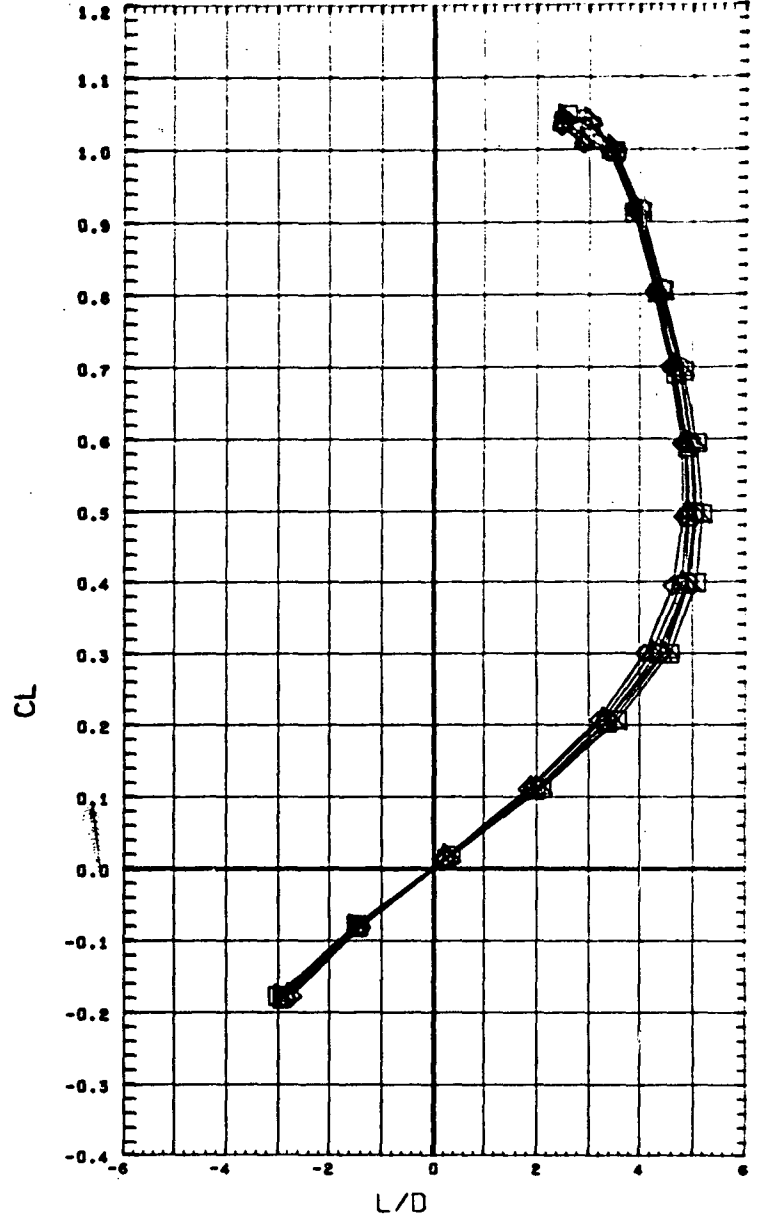
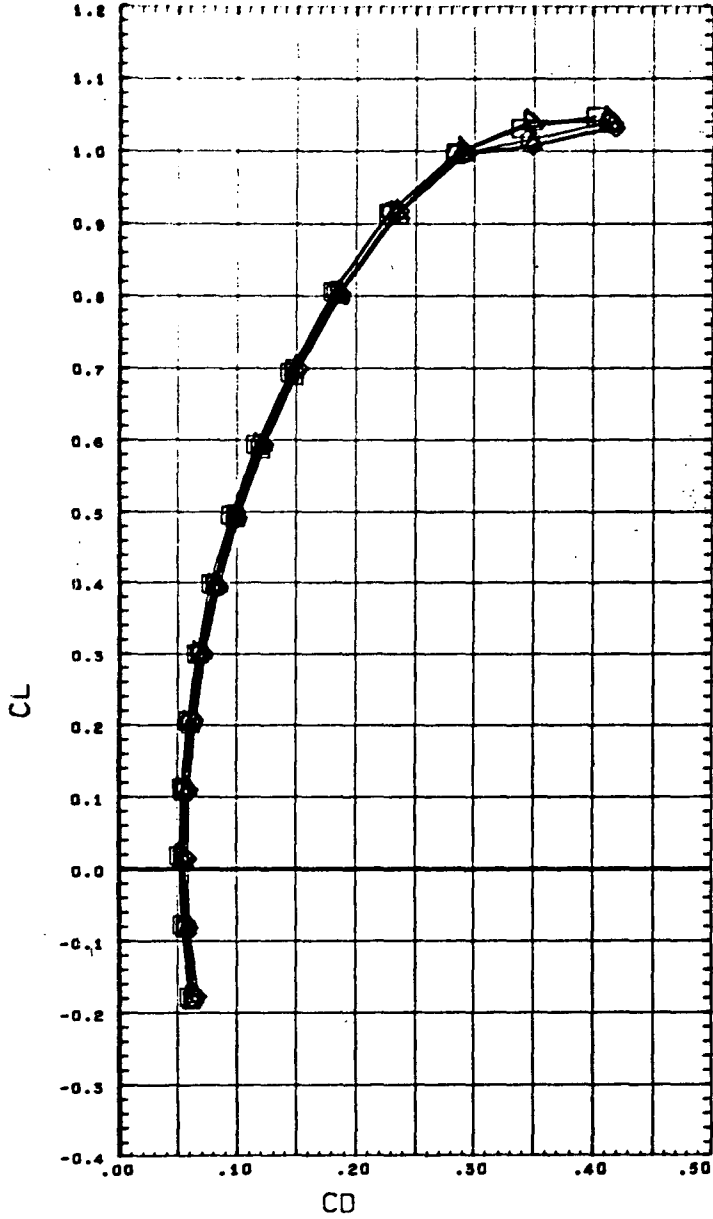


DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6002)	GDLST 603-0 B30W23C10V14E38
(AD6040)	GDLST 603-0 B30W23C10V14E38 (SPLIT RUDDER)
(AD6038)	GDLST 603-0 B30W23C10V14E38 (RUDDER)
(AD6003)	GDLST 603-0 B30W23C10V14E38
(AD6041)	GDLST 603-0 B30W23C10V14E38 (SPLIT RUDDER)
(AD6039)	GDLST 603-0 B30W23C10V14E38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

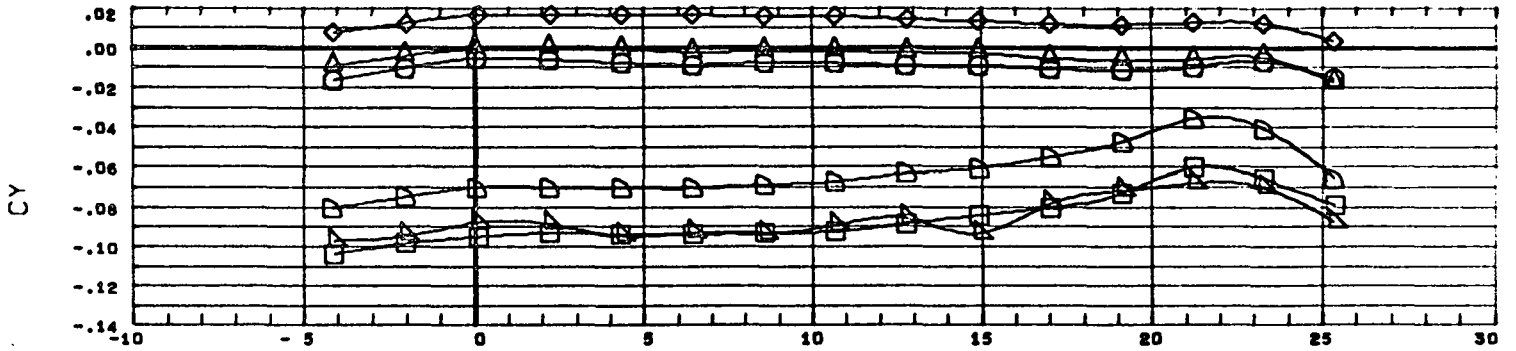
EFFECT OF SPLIT RUDDER DEFLECTION- BASIC B-18E3 CONFIGURATION



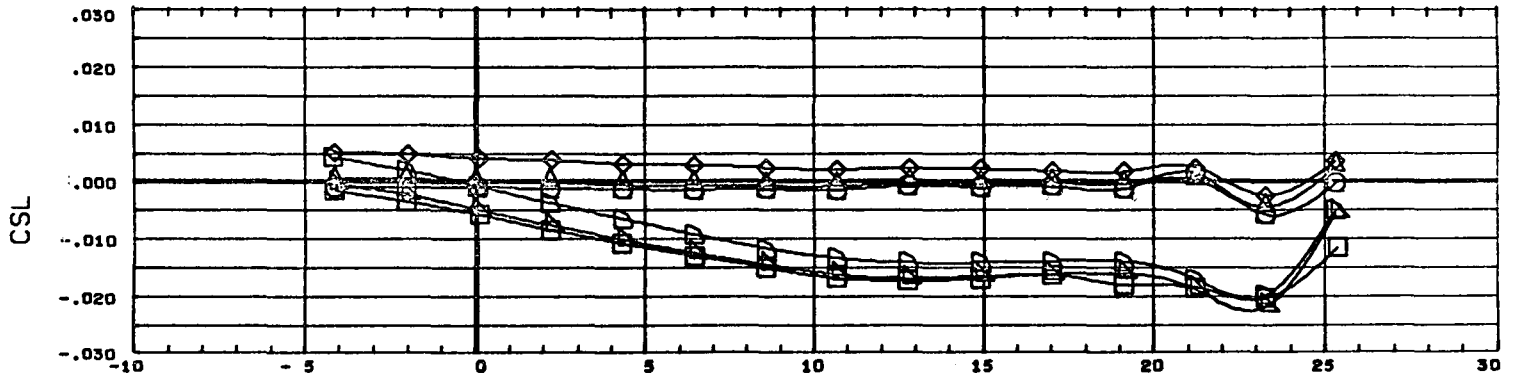
DATA SET SYMBOL	CONFIGURATION	DESCRIPTION
(AD6002)	GCLST 603-0	B30W23C10V14E38
(AD6040)	GCLST 603-0	B30W23C10V14E38 (SPLIT RUDDER)
(AD6038)	GCLST 603-0	B30W23C10V14E38 (RUDDER)
(AD6003)	GCLST 603-0	B30W23C10V14E38
(AD6041)	GCLST 603-0	B30W23C10V14E38 (SPLIT RUDDER)
(AD6039)	GCLST 603-0	B30W23C10V14E38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

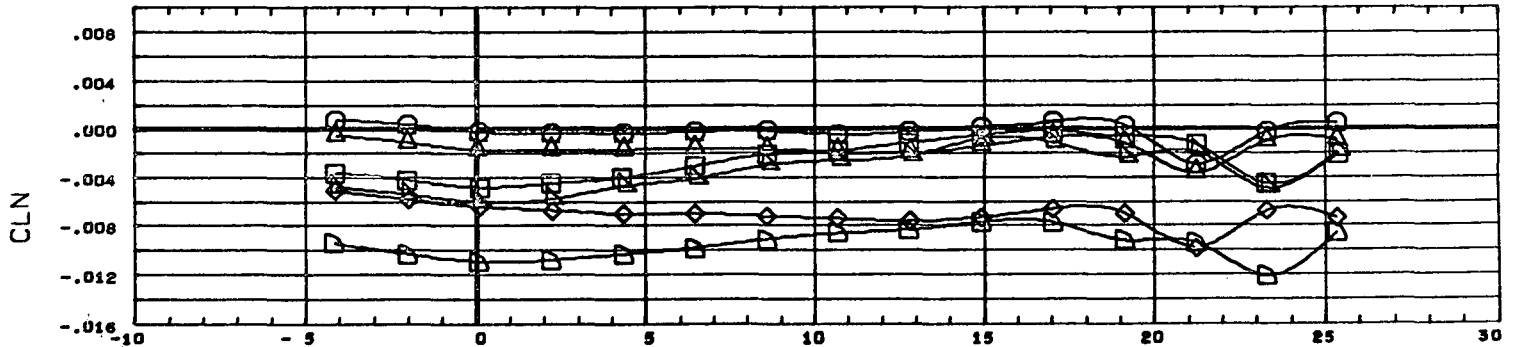
EFFECT OF SPLIT RUDDER DEFLECTION- BASIC B-18E3 CONFIGURATION



ALPHA



ALPHA

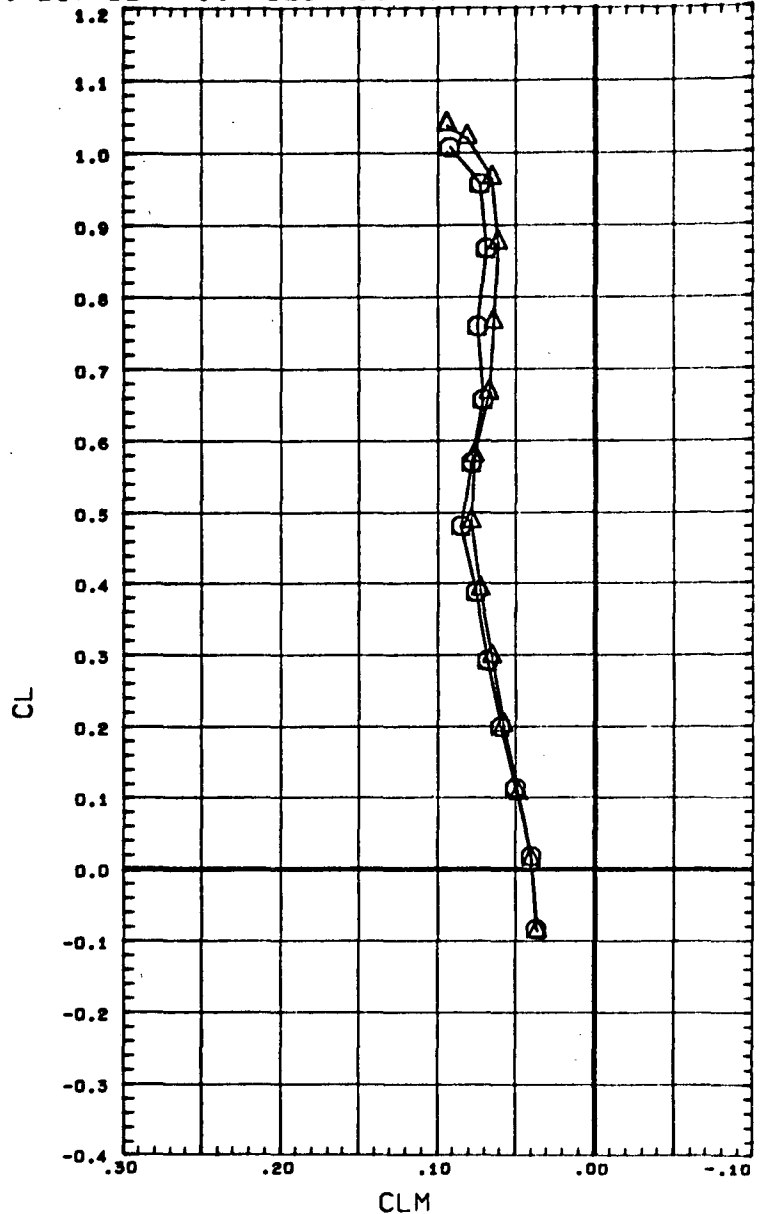
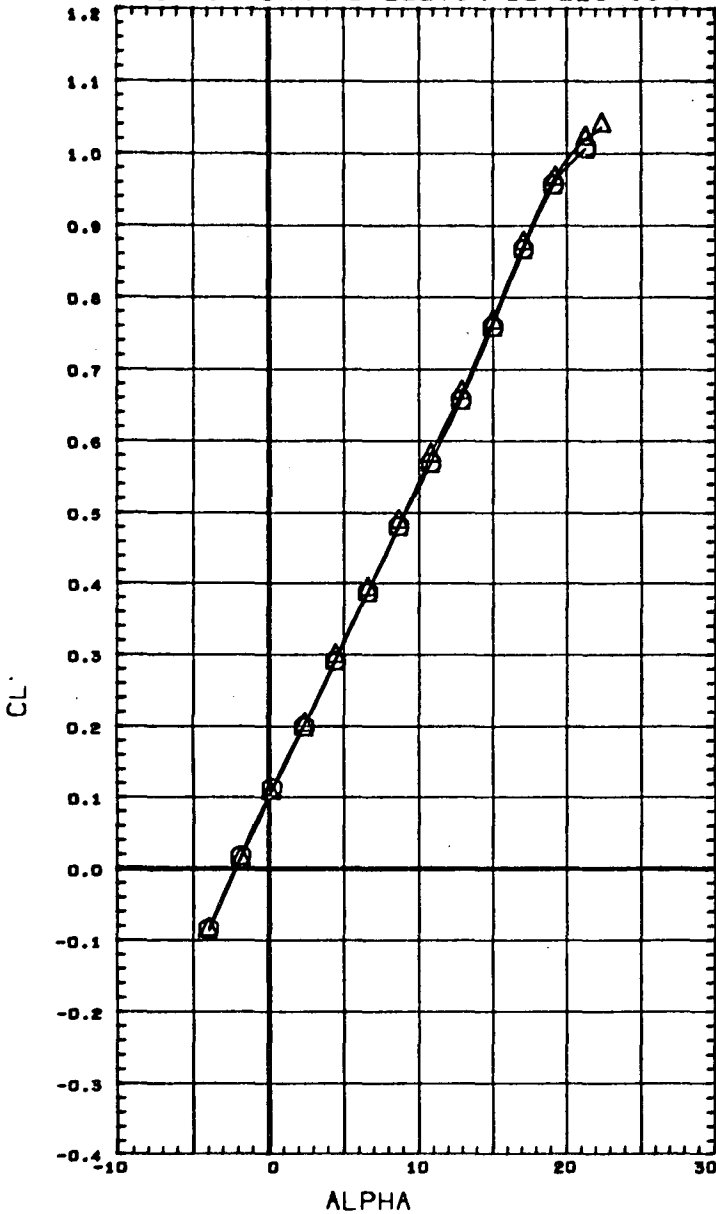


ALPHA

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
(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.

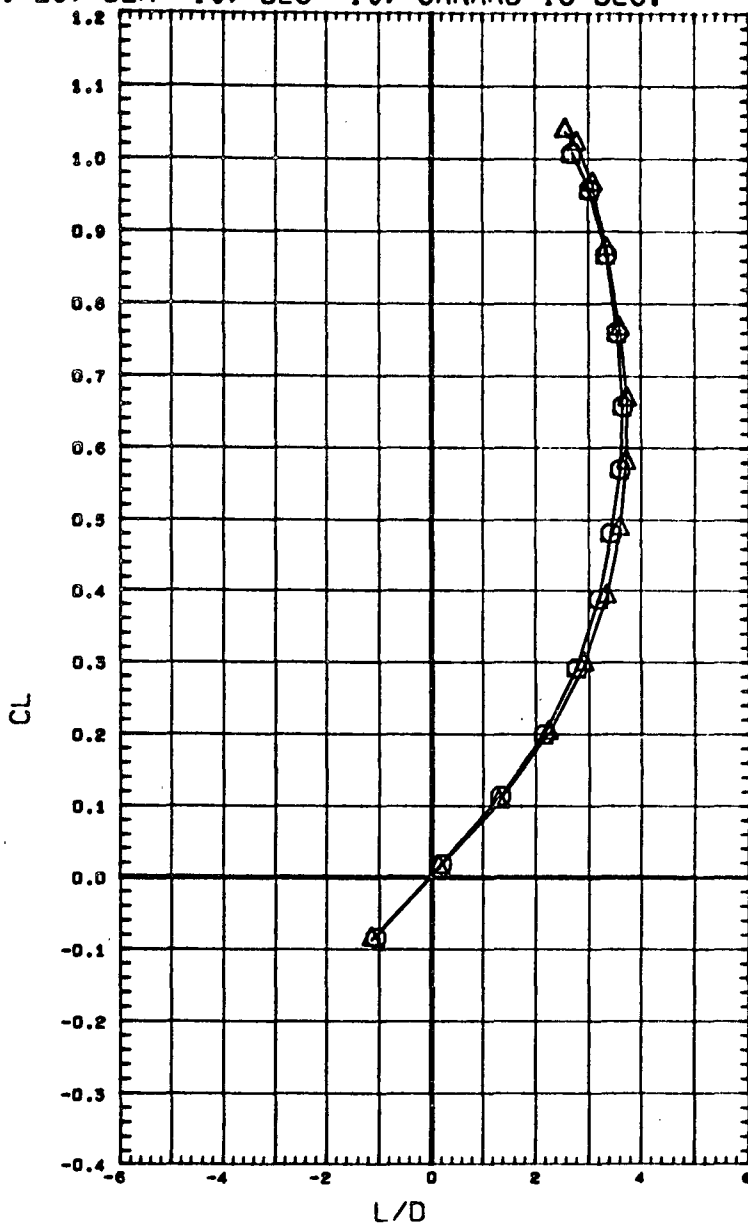
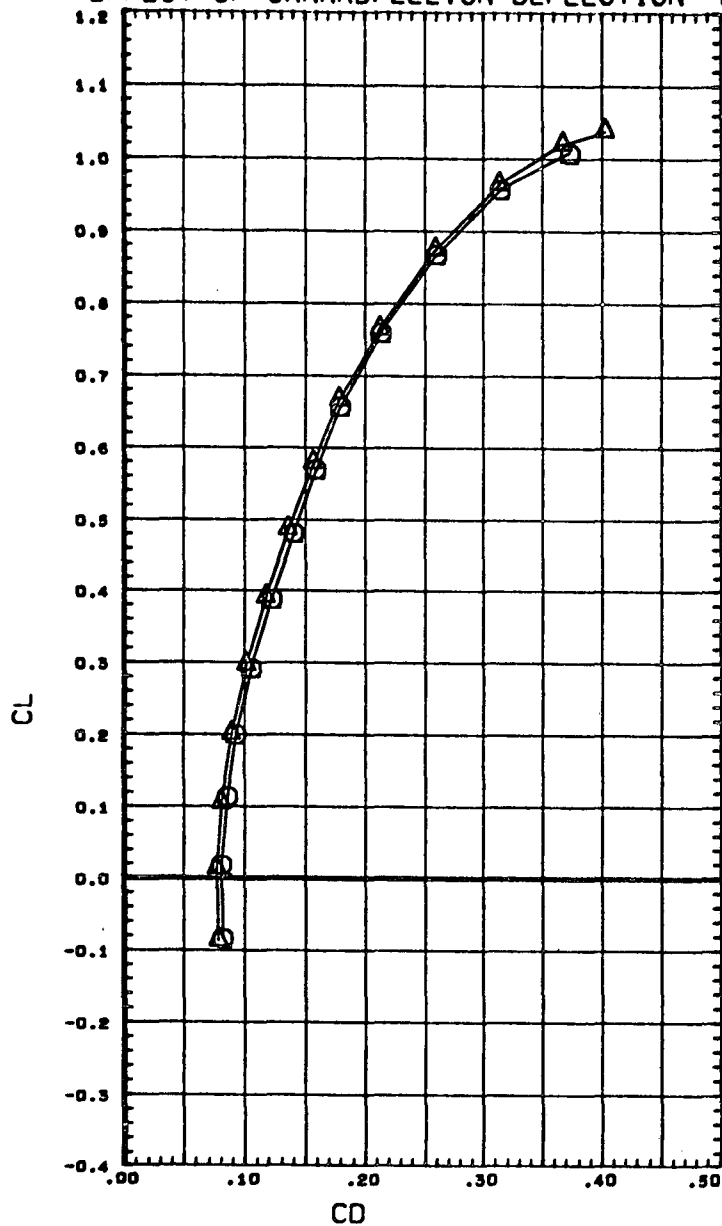


DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6071) ○	GDLST 603-0 B30W23C10V14E38 (CANARD + ELEVON)
(AD6072) △	GDLST 603-0 B30W23C10V14E38 (CANARD + ELEVON)

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.

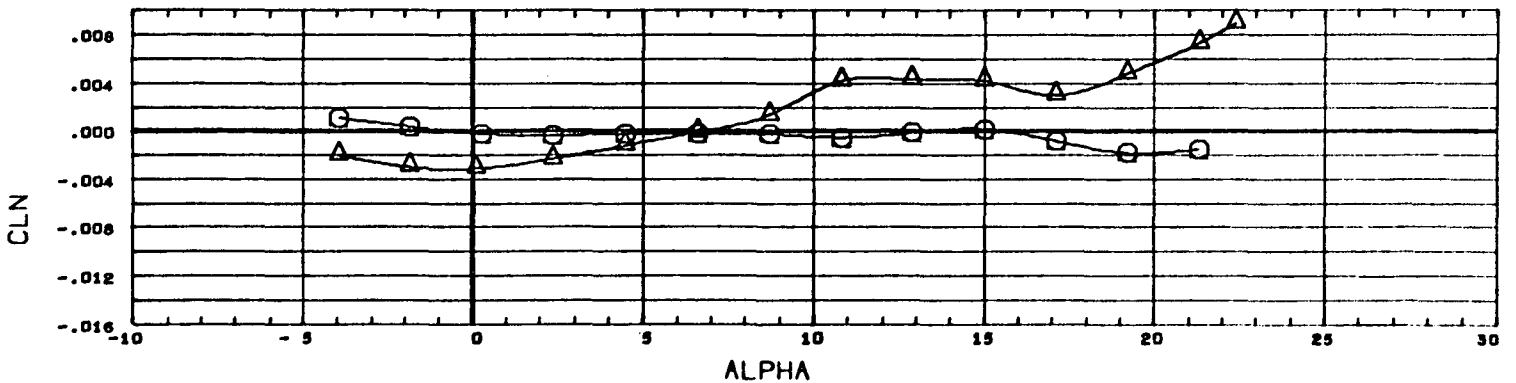
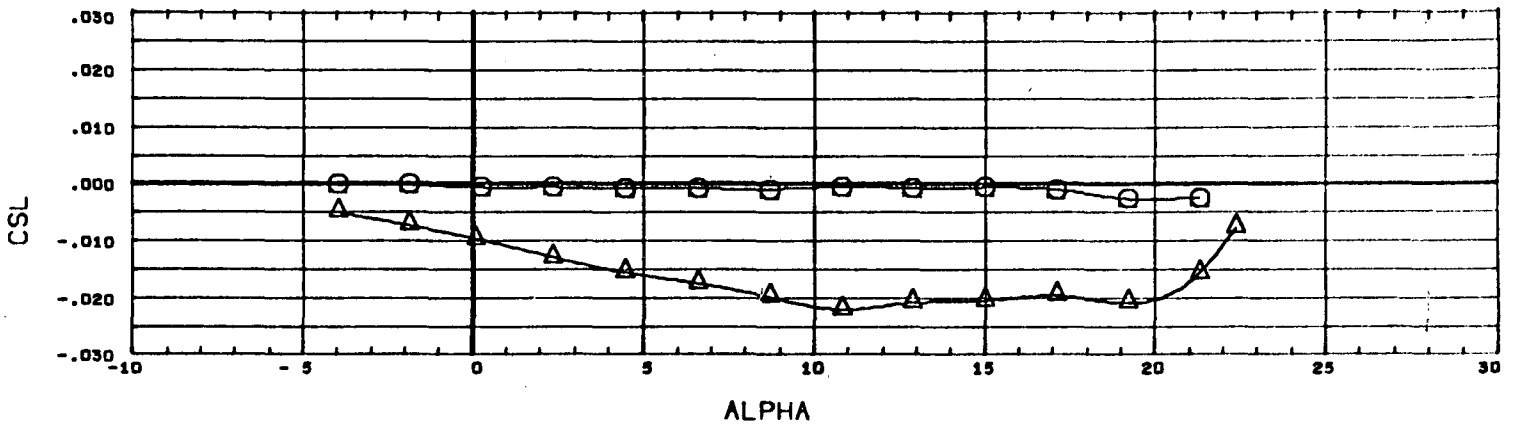
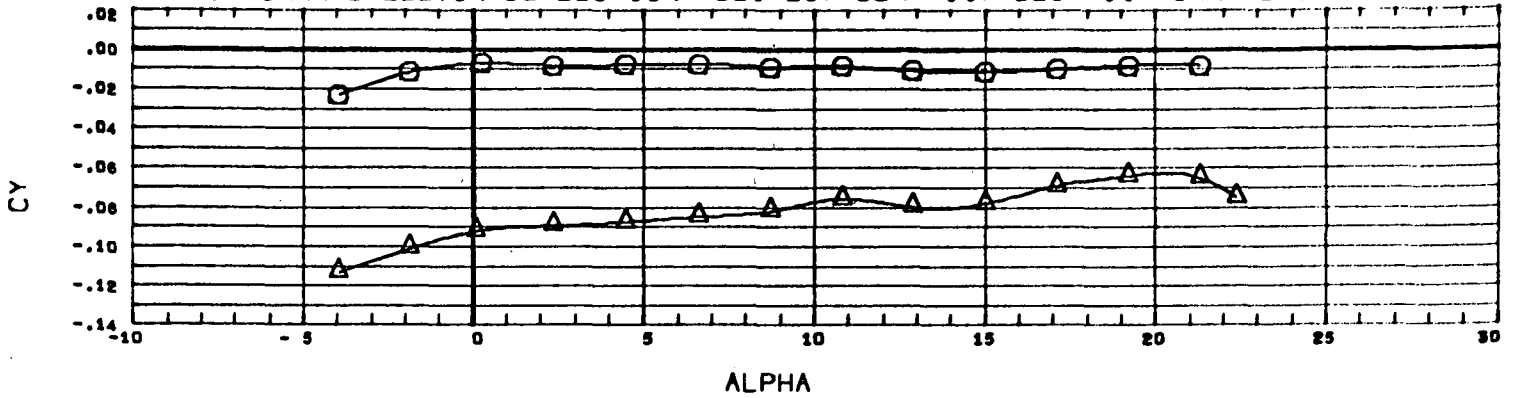


DATA SET SYMBOL	CONFIGURATION	DESCRIPTION
(AD6071)	GDLST 603-0	830W23C10V14E38 (CANARD + ELEVON)
(AD6072)	GDLST 603-0	830W23C10V14E38 (CANARD + ELEVON)

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

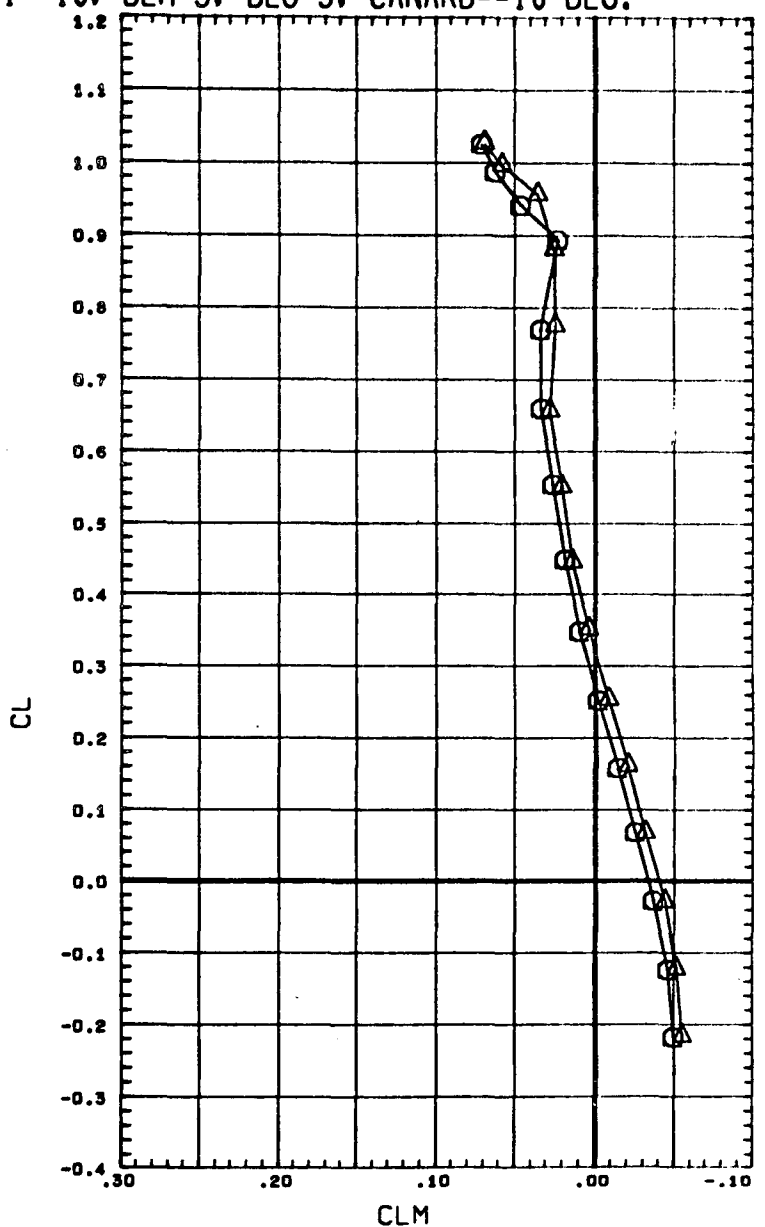
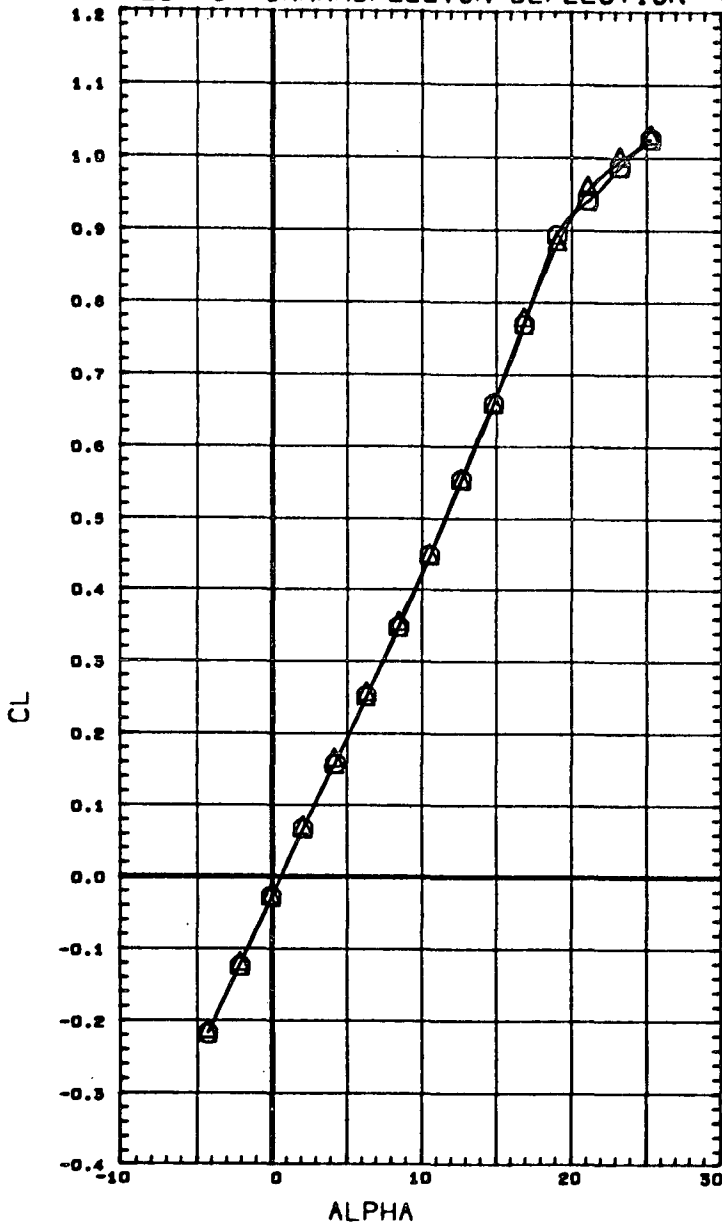
EFFECT OF CANARD/ELEVON DEFLECTION- DEI=25, DEM=-10, DEO=-10, CANARD=15 DEG.



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 90. 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.

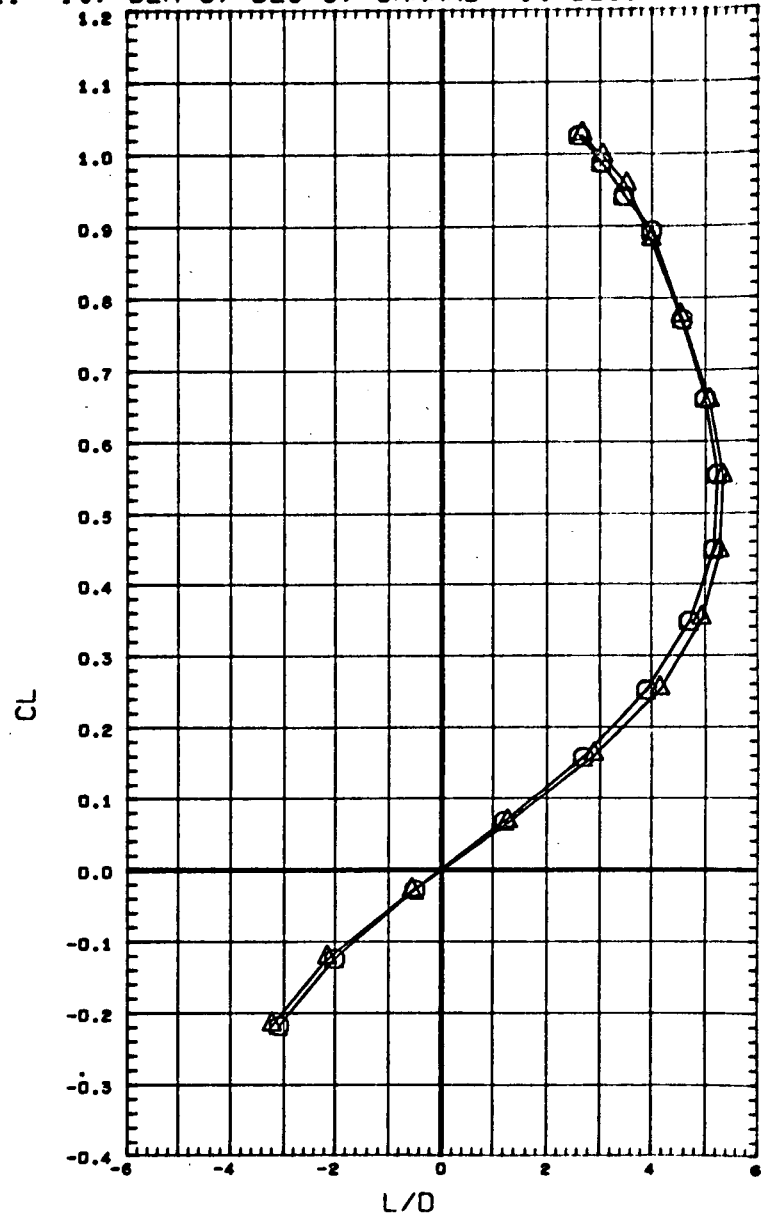
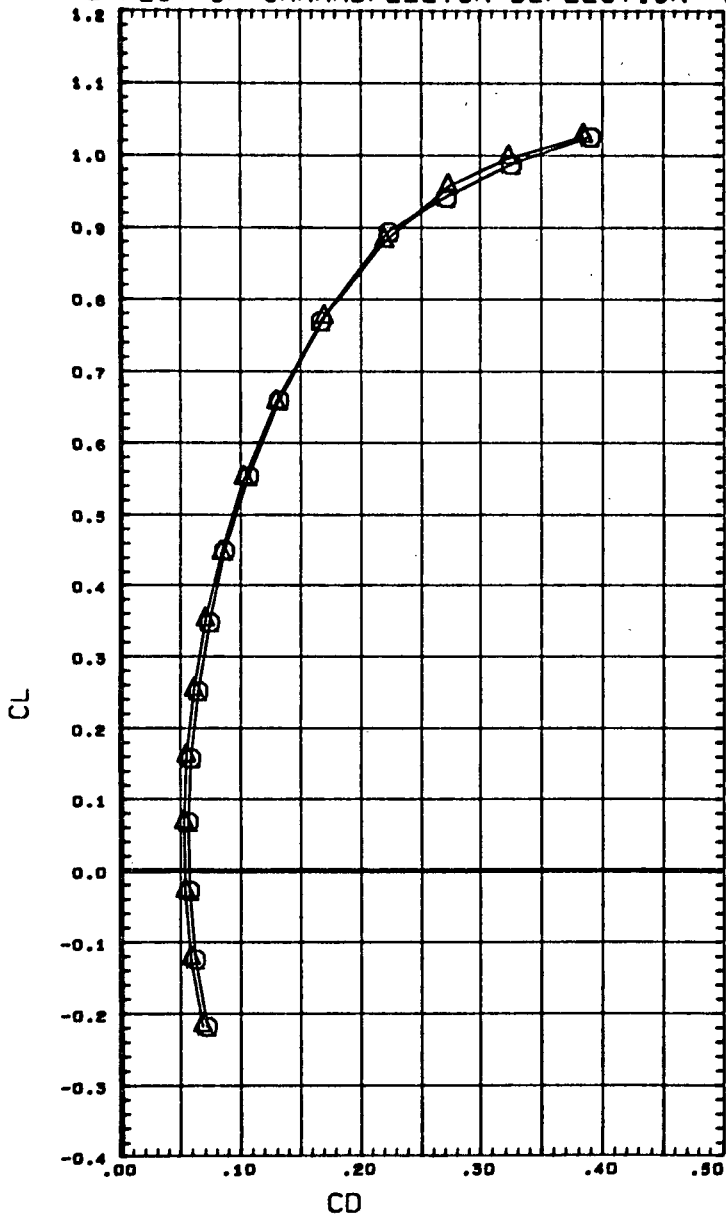


DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6073) ○	GDLST 603-0 830W23C10V14E38 (CANARD + ELEVON)
(AD6074) △	GDLST 603-0 830W23C10V14E38 (CANARD + ELEVON)

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

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

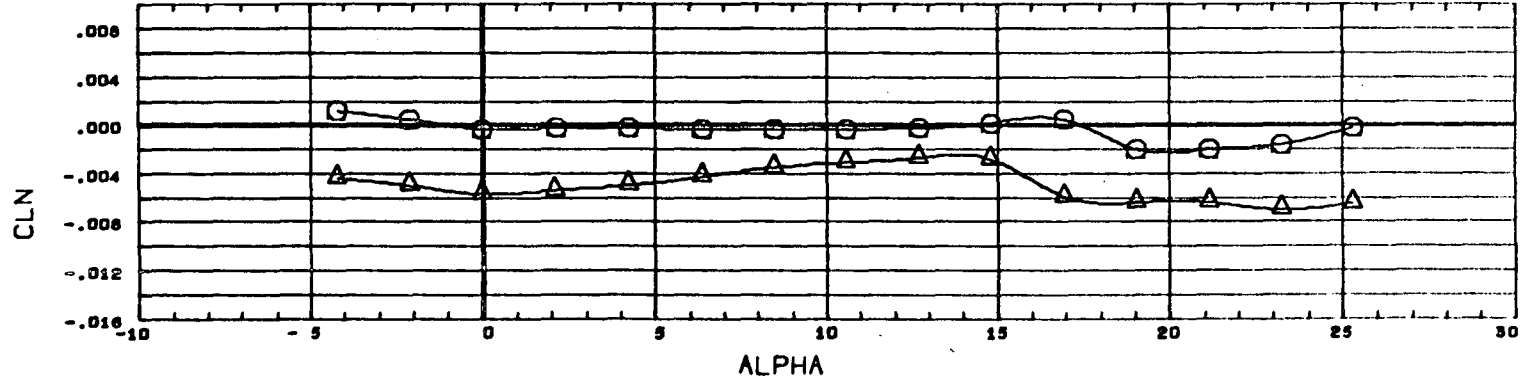
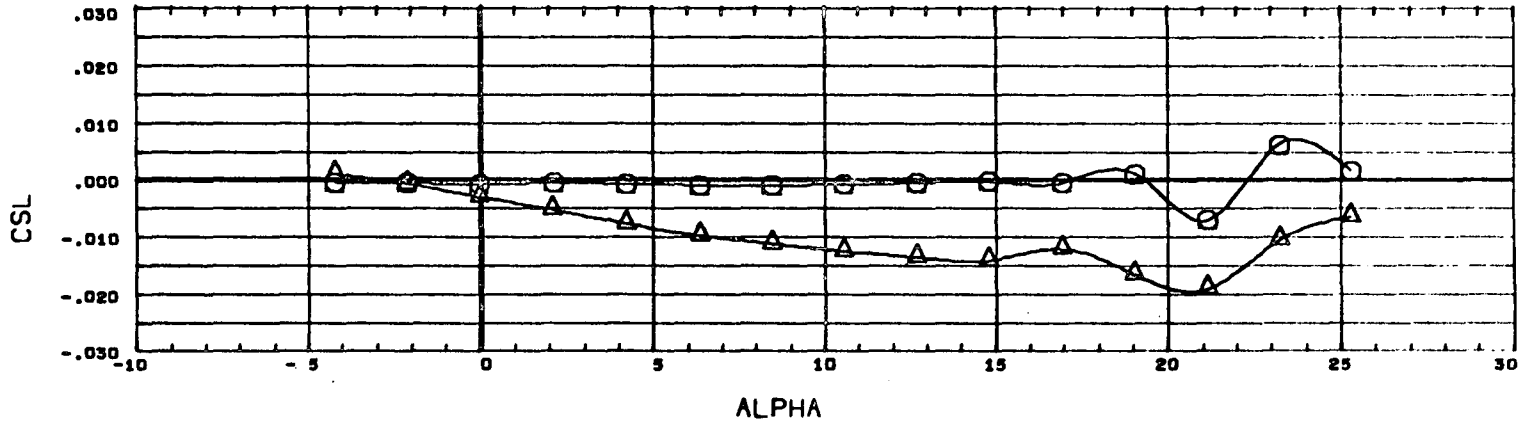
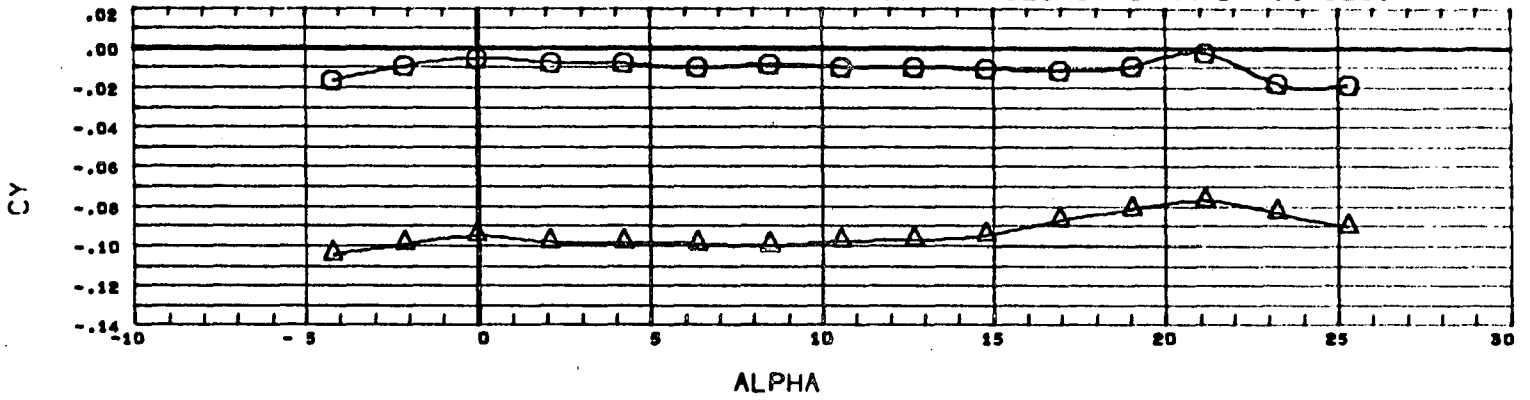


DATA SET SYMBOL	CONFIGURATION	DESCRIPTION
(AD6073)	GDLST 603-0	B30W23C10V14E38 (CANARD + ELEVON)
(AD6074)	GDLST 603-0	B30W23C10V14E38 (CANARD + ELEVON)

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

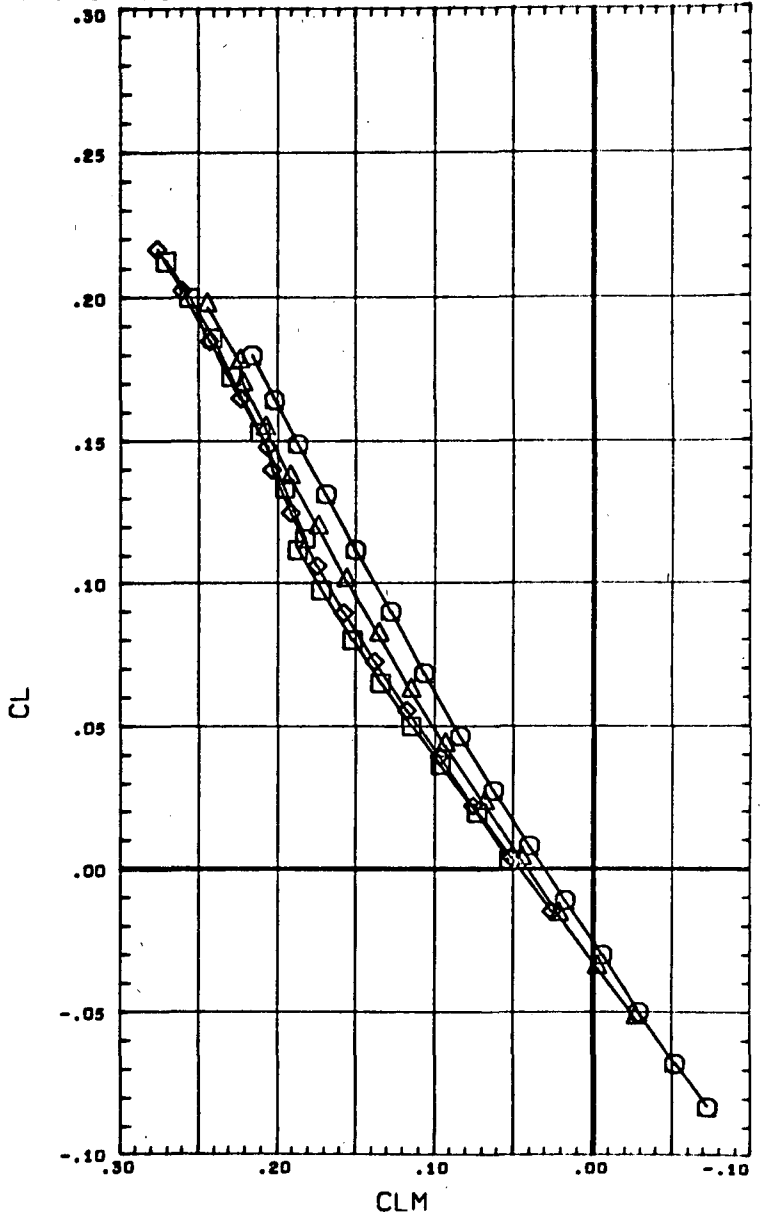
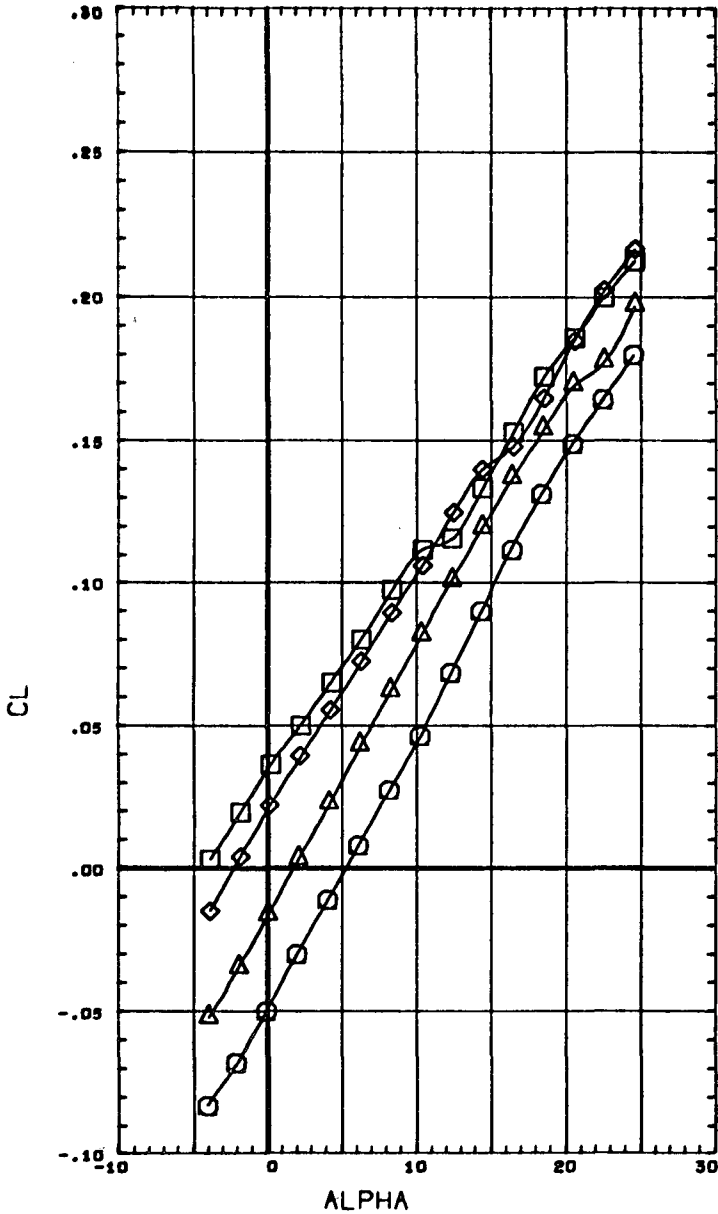
EFFECT OF CANARD/ELEVON DEFLECTION- DEI=-10, DEM=5, DEO=5, CANARD=-10 DEG.



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	RUDDER	AILRON	REFERENCE INFORMATION
(AD8073)	⊙ GDLST 603-0 B30W23C10V14E38 (CANARD + ELEVON)	0.000	0.000	0.000	0.000	SREF 492.4804 SQ. IN
(AD8074)	△ GDLST 603-0 B30W23C10V14E38 (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



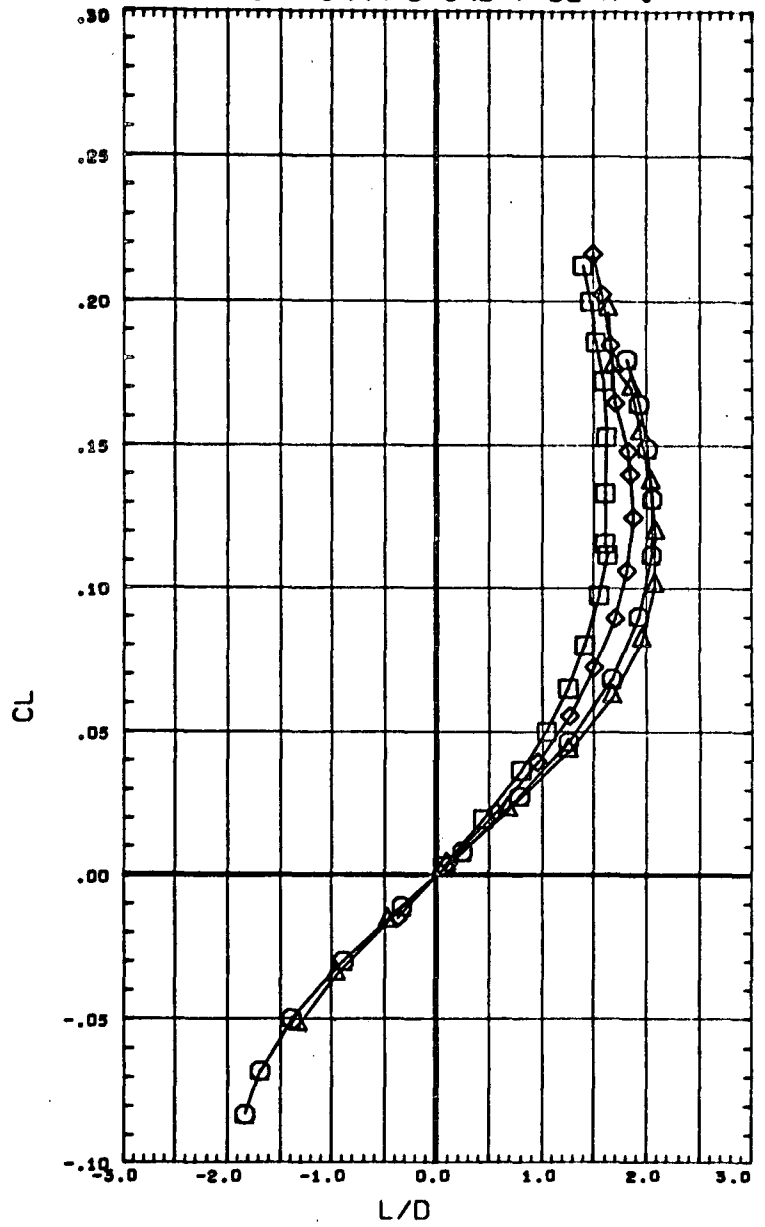
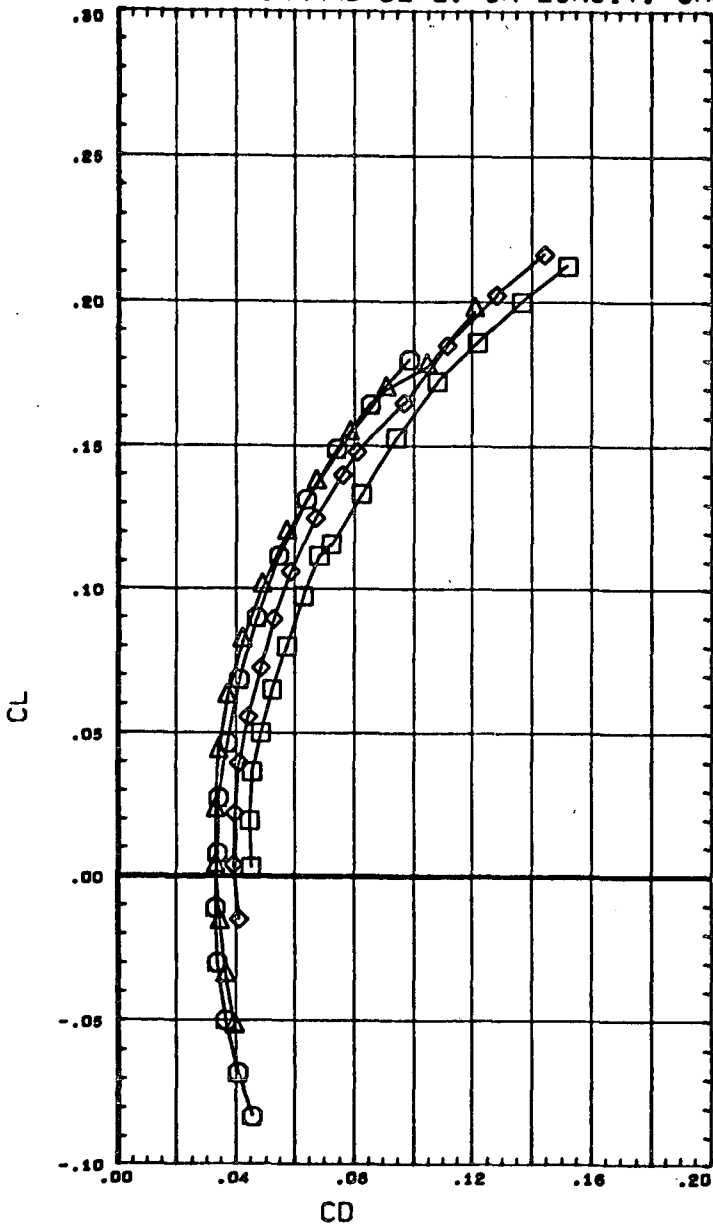
DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6085)	GDLST 603-0 B30C10
(AD6083)	GDLST 603-0 B30C10
(AD6087)	GDLST 603-0 B30C10
(AD6089)	GDLST 603-0 B30C10

MACH 0.201

BETA	CANARD
0.000	-10.000
0.000	0.000
0.000	10.000
0.000	15.000

REFERENCE INFORMATION		
SREF	492.4804	SQ. IN
LREF	16.1860	IN.
BREF	34.6320	IN.
XMNP	29.0780	IN.
YMNP	0.0000	IN.
ZMNP	0.0000	IN.
SCALE	0.0200	

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

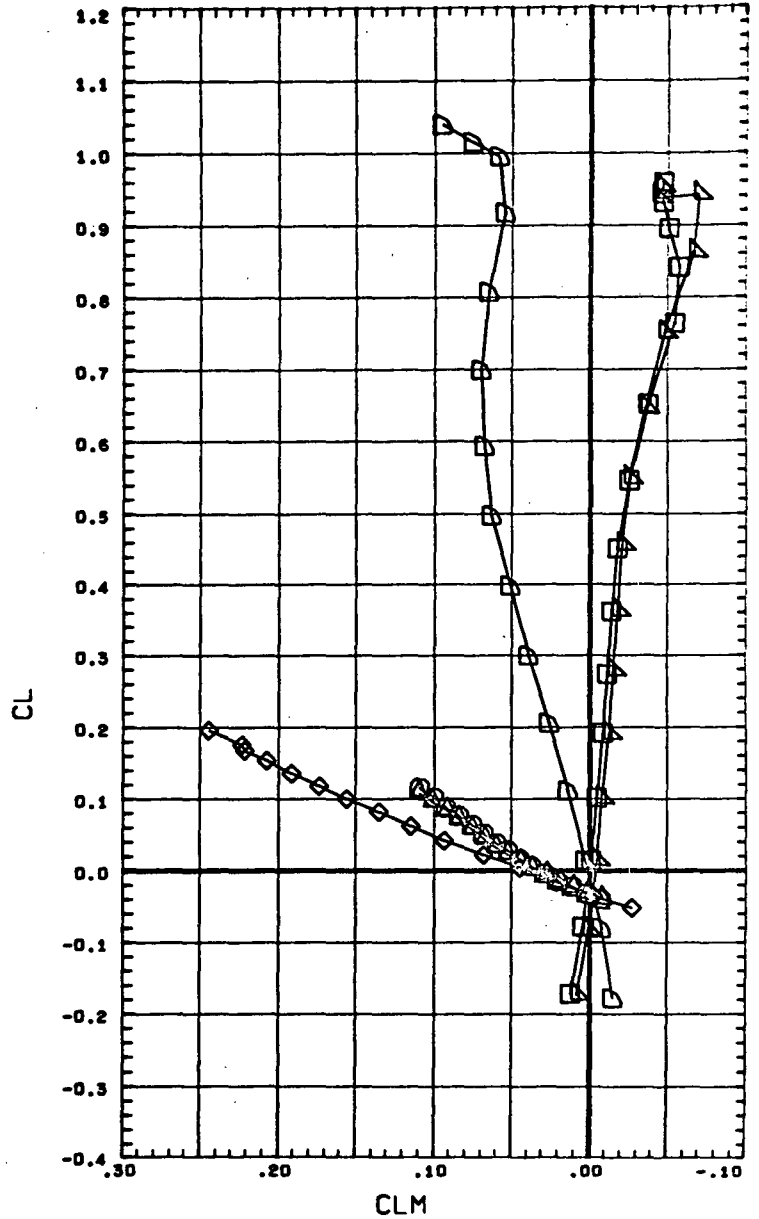
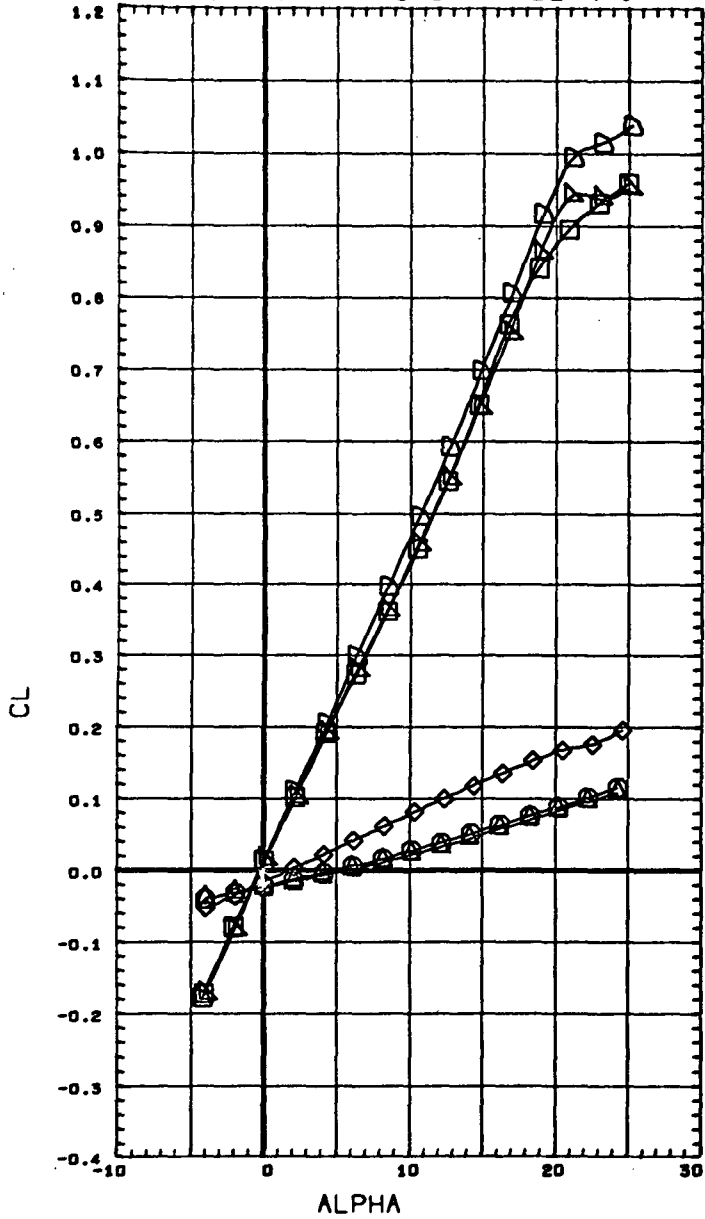


DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6085)	GDLST 603-0 830C10
(AD6083)	GDLST 603-0 830C10
(AD6087)	GDLST 603-0 830C10
(AD6089)	GDLST 603-0 830C10

MACH 0.201

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

BODY BUILD-UP APPROACH A, BETA=0

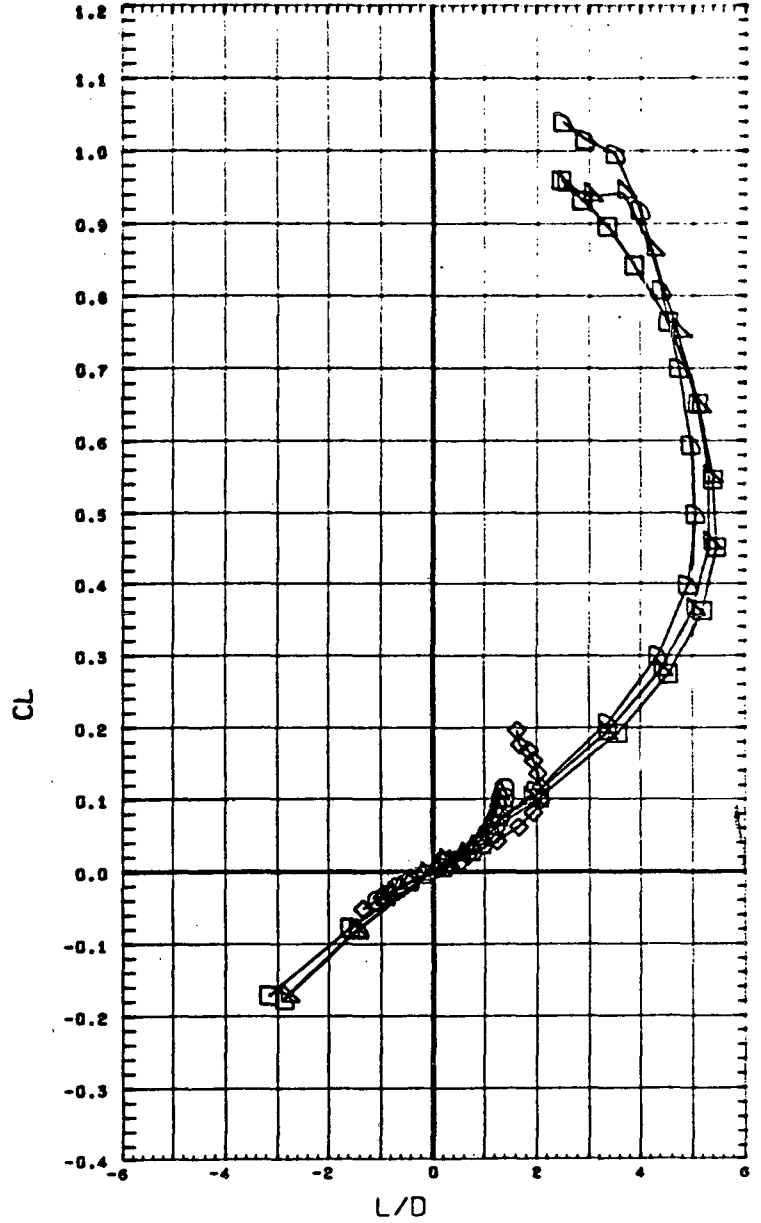
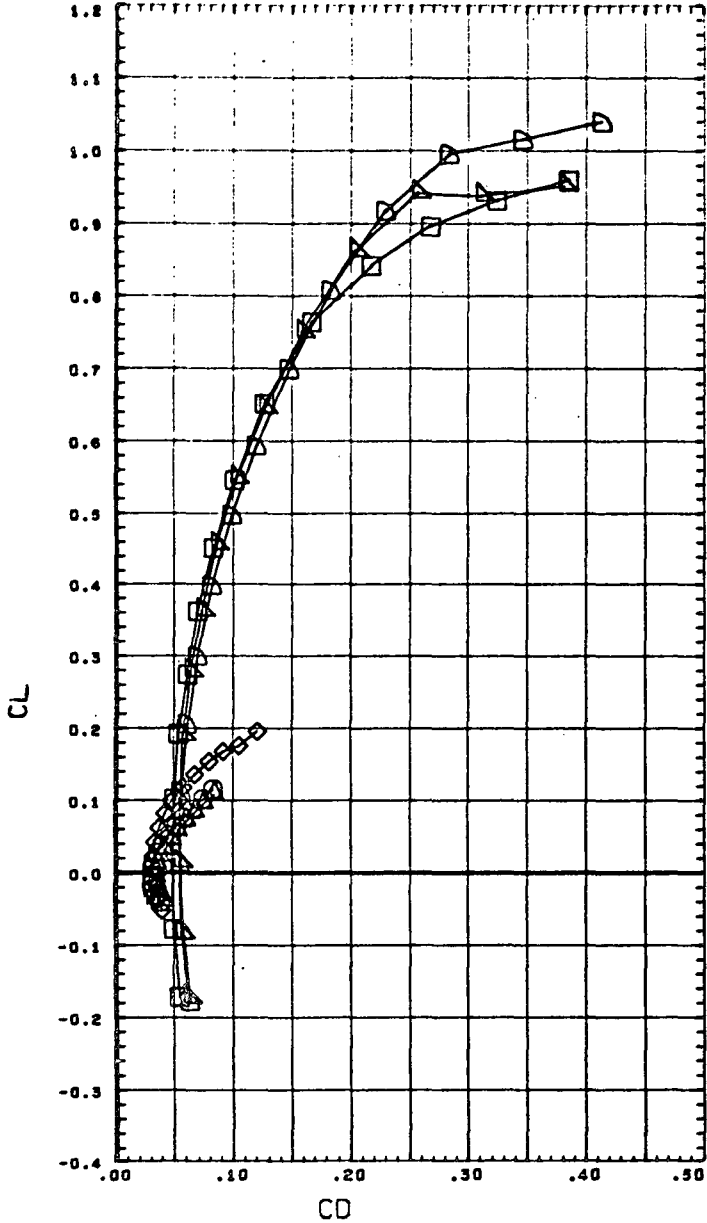


DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6093)	GDLST 603-0 B30
(AD6091)	GDLST 603-0 B30V14
(AD6083)	GDLST 603-0 B30C10
(AD6077)	GDLST 603-0 B30W23V14
(AD6044)	GDLST 603-0 B30W23V14E38
(AD6002)	GDLST 603-0 B30W23C10V14E38

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

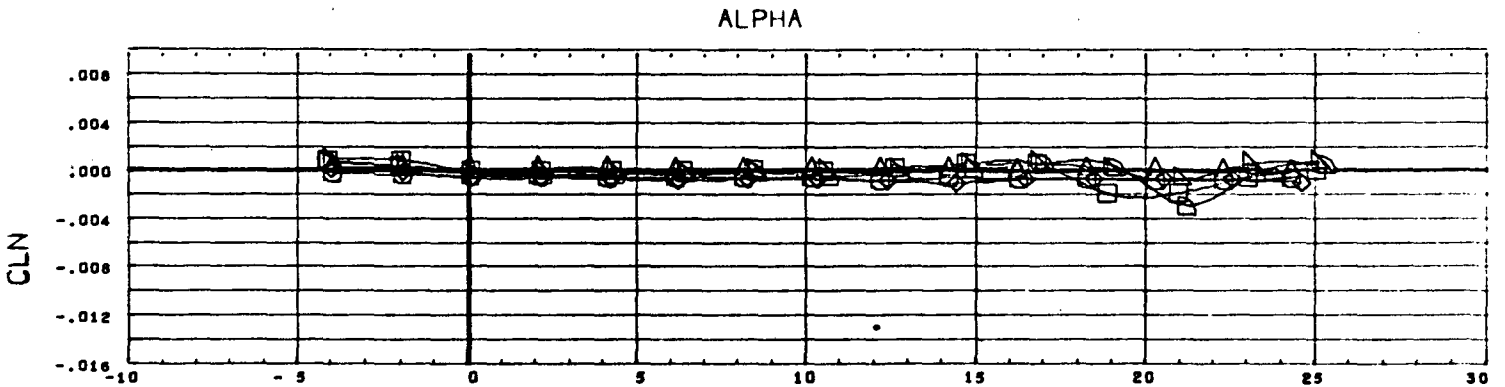
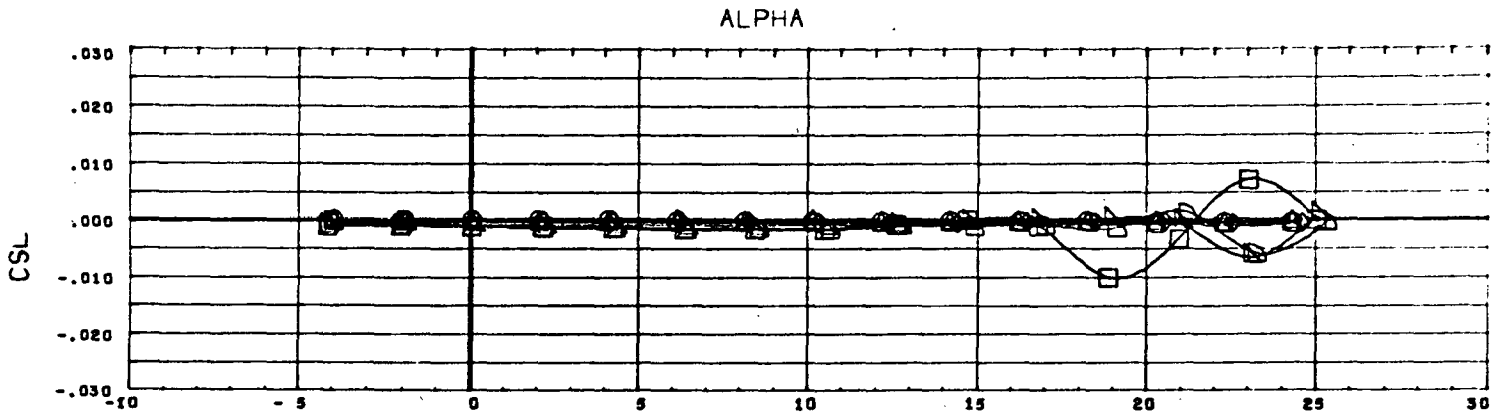
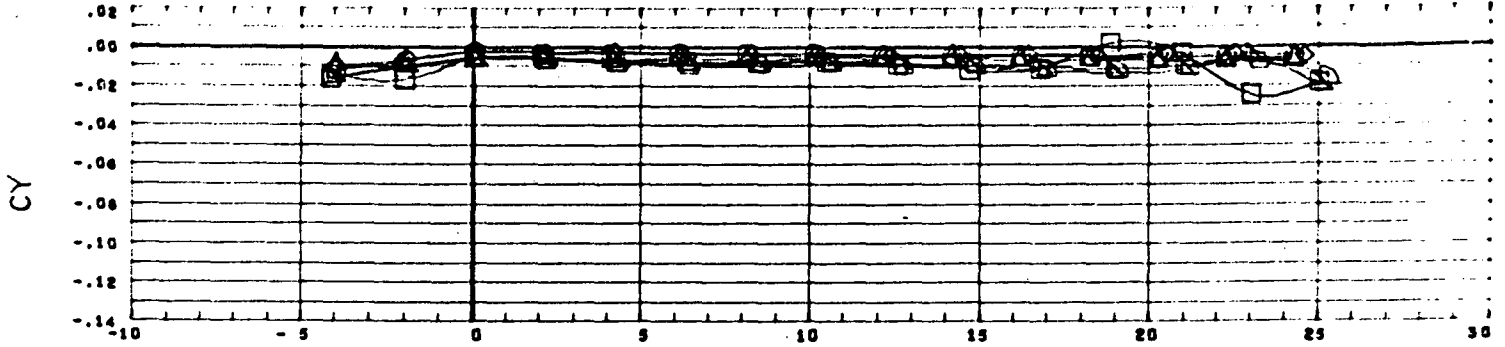


DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AC6093)	GDLST 603-0 B30
(AC6091)	GDLST 603-0 B30V14
(AC6083)	GDLST 603-0 B30C10
(AC6077)	GDLST 603-0 B30W23V14
(AC6044)	GDLST 603-0 B30W23V14E38
(AC6002)	GDLST 603-0 B30W23C10V14E38

ELEVTR	CANARD	RUDDER	AILRON	REFERENCE INFORMATION
		0.000		SREF 492.4854 SQ. IN
				LREF 16.1880 IN.
				BREF 34.6320 IN.
0.000	0.000	0.000	0.000	XHRP 29.0780 IN.
0.000		0.000	0.000	YHRP 0.0000 IN.
0.000	0.000	0.000	0.000	ZHRP 0.0000 IN.
				SCALE 0.0200

MACH .20

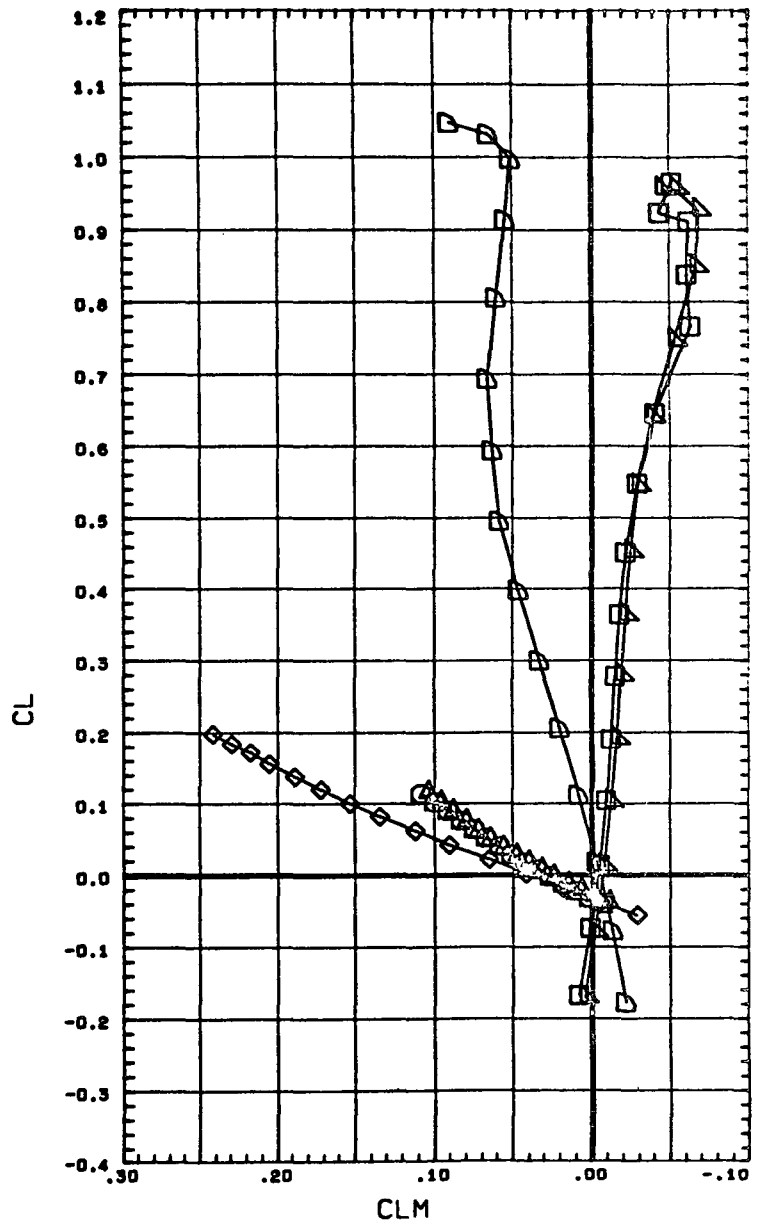
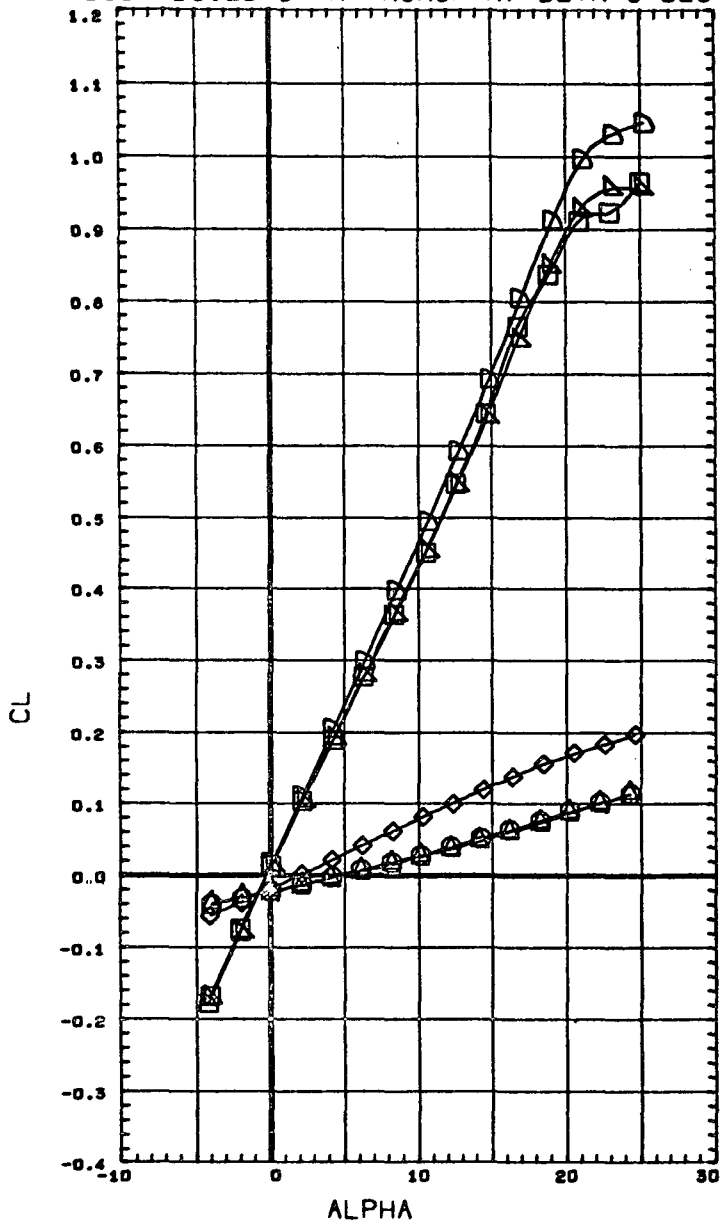
BODY BUILD-UP APPROACH A, BETA=0



ALPHA

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

BODY BUILD-UP APPROACH A, BETA=5 DEG

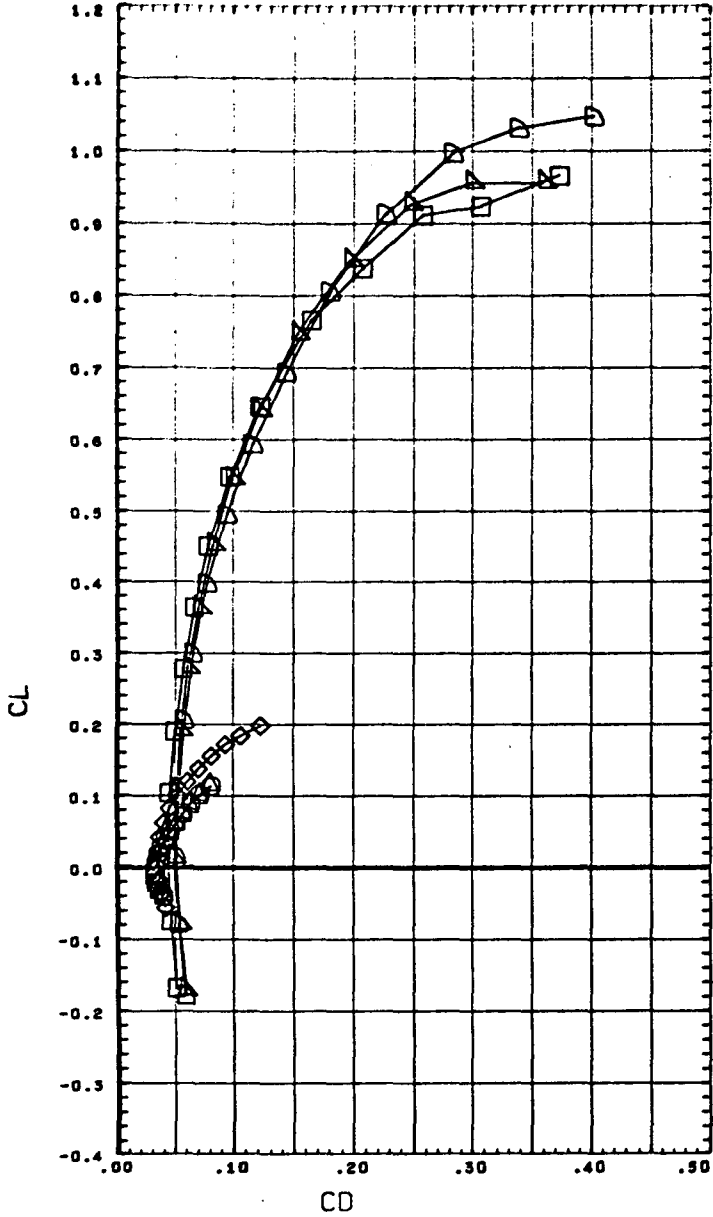


DATA SET SYMBOL	CONFIGURATION	DESCRIPTION
(AD6094)	GDLST 603-0	B30
(AD6092)	GDLST 603-0	B30V14
(AD6084)	GDLST 603-0	B30C10
(AD6078)	GDLST 603-0	B30W23V14
(AD6045)	GDLST 603-0	B30W23V14E38
(AD6003)	GDLST 603-0	B30W23C10V14E38

MACH 0.201

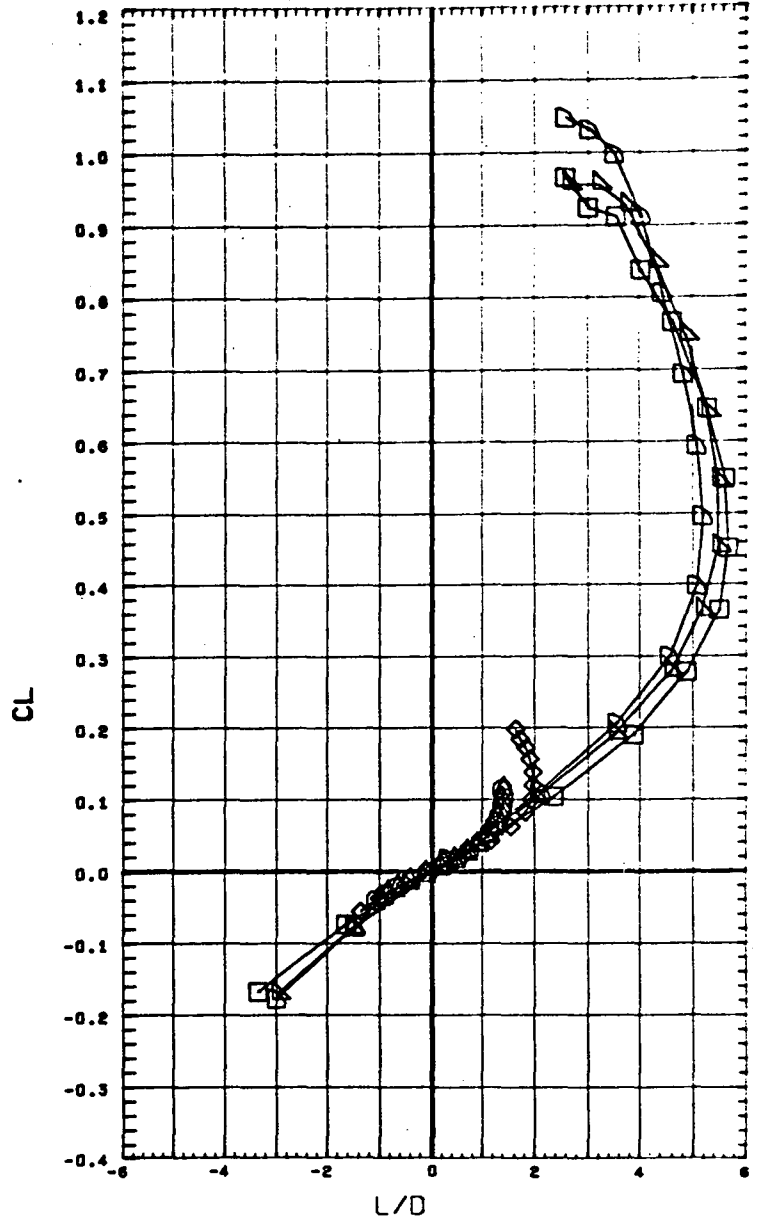
ELEVTR	CANARD	RUDDER	AILRON	REFERENCE INFORMATION	
				SREF	492.4804 SQ. IN
				LREF	16.1880 IN.
				BREF	34.6320 IN.
0.000	0.000	0.000	0.000	XMRP	29.0780 IN.
0.000		0.000	0.000	YMRP	0.0000 IN.
0.000	0.000	0.000	0.000	ZMRP	0.0000 IN.
				SCALE	0.0200

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
(AD6078)	GCLST 603-0 B30W23V14
(AC6045)	GCLST 603-0 B30W23V14E38
(AC6003)	GCLST 603-0 B30W23C10V14E38

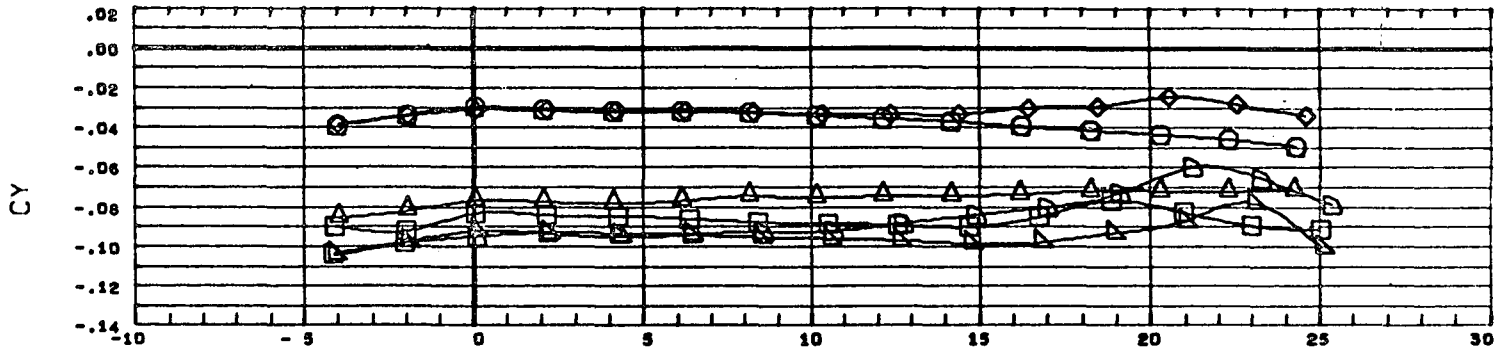
MACH .20



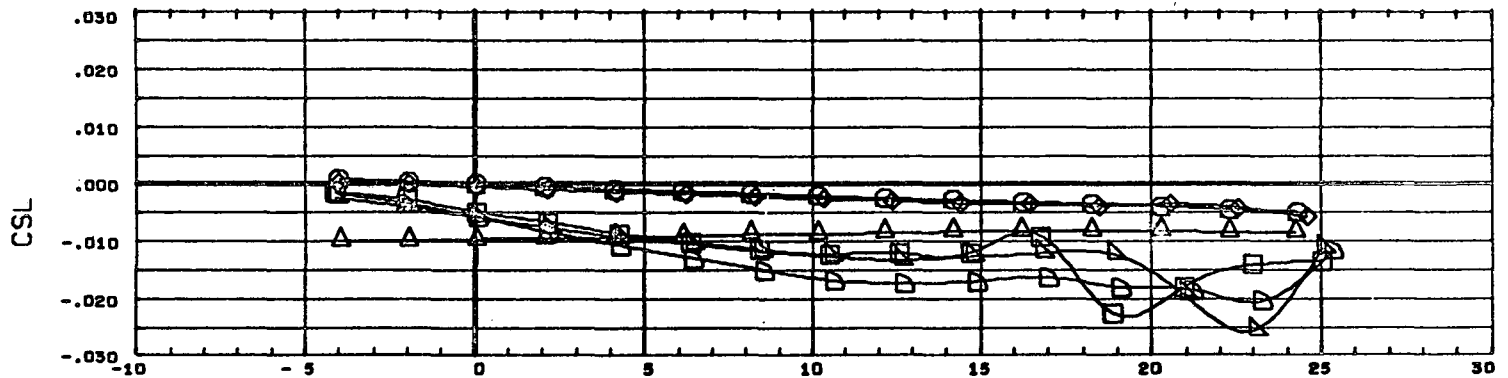
ELEVTR	CANARD	RUDDER	AILRON	REFERENCE INFORMATION
		0.000		SREF 492.4804 SQ. IN
	0.000			LREF 16.1880 IN.
				BREF 34.6320 IN.
0.000		0.000	0.000	XMRP 29.0780 IN.
0.000		0.000	0.000	YMRP 0.0000 IN.
0.000	0.000	0.000	0.000	ZMRP 0.0000 IN.
				SCALE 0.0200

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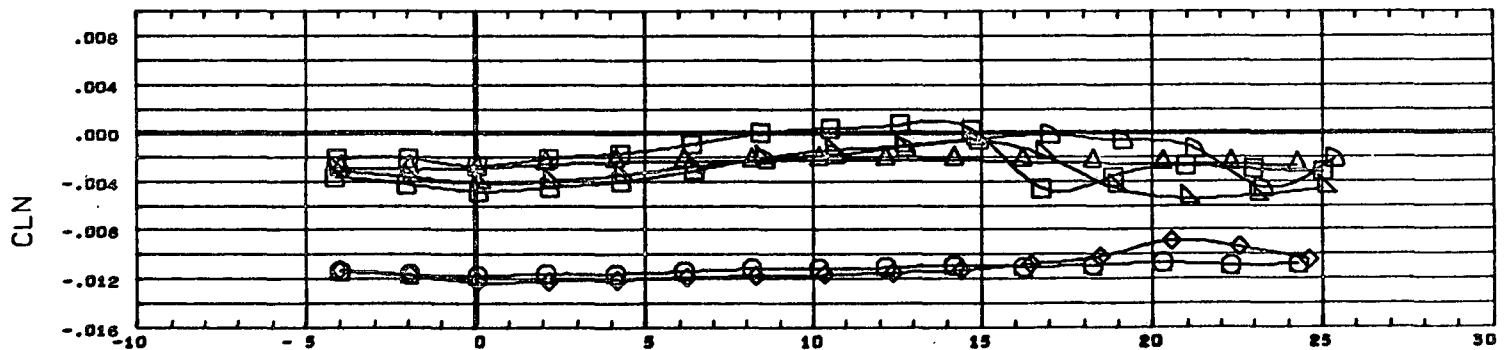
BODY BUILD-UP APPROACH A, BETA=5 DEG



ALPHA



ALPHA

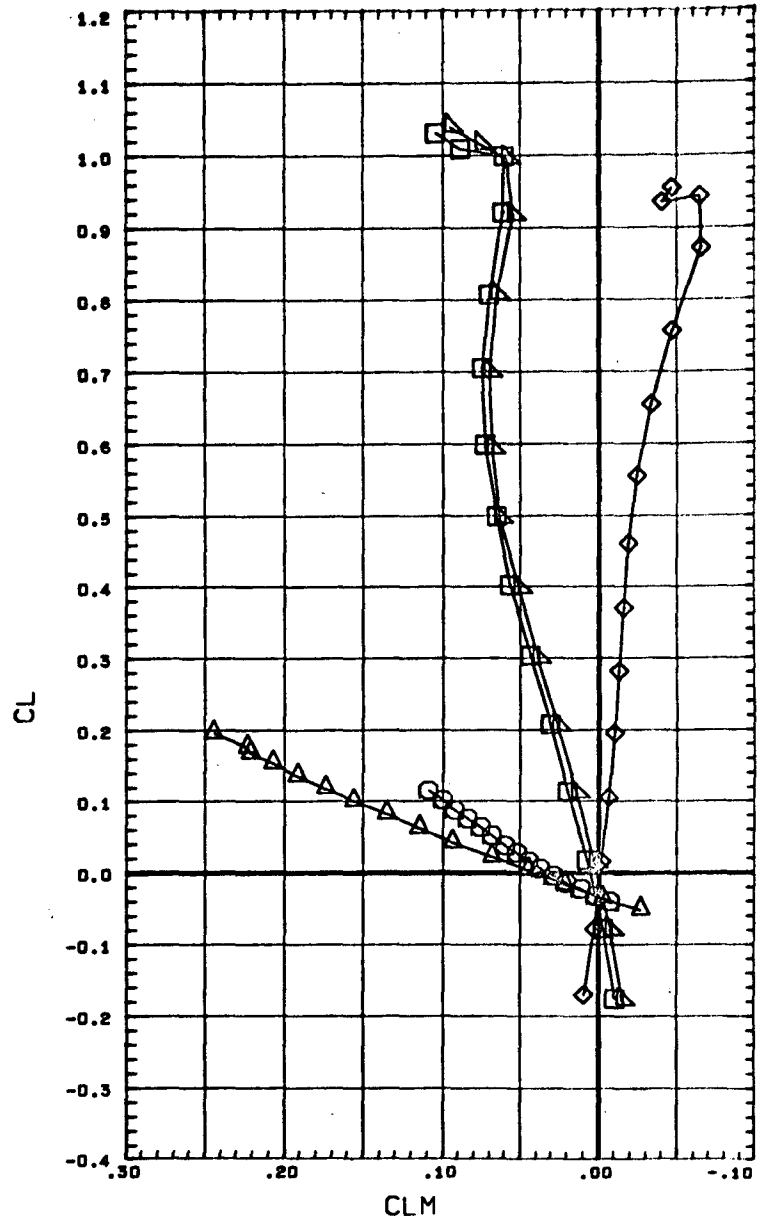
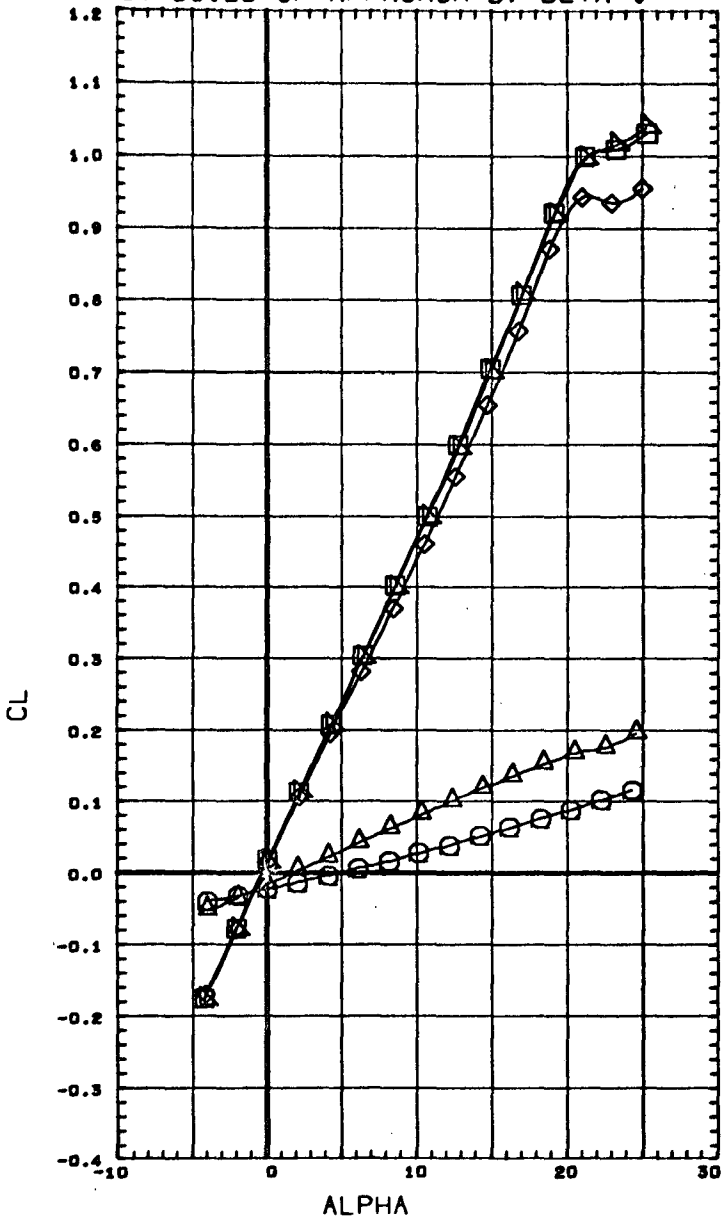


ALPHA

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	CANARD	RUDDER	AILRON	REFERENCE INFORMATION
(AD6094)	GDLST 603-0 B30					SREF 492.4804 SQ. IN
(AD6092)	GDLST 603-0 B30V14			0.000		LREF 16.1880 IN.
(AD6084)	GDLST 603-0 B30C10		0.000			BREF 34.6320 IN.
(AD6078)	GDLST 603-0 B30W23V14	0.000		0.000	0.000	XMRP 29.0780 IN.
(AD6045)	GDLST 603-0 B30W23V14E38	0.000		0.000	0.000	YMRP 0.0000 IN.
(AD6003)	GDLST 603-0 B30W23C10V14E38	0.000	0.000	0.000	0.000	ZMRP 0.0000 IN.
						SCALE 0.0200

MACH 0.201

BODY BUILD-UP APPROACH B, BETA=0

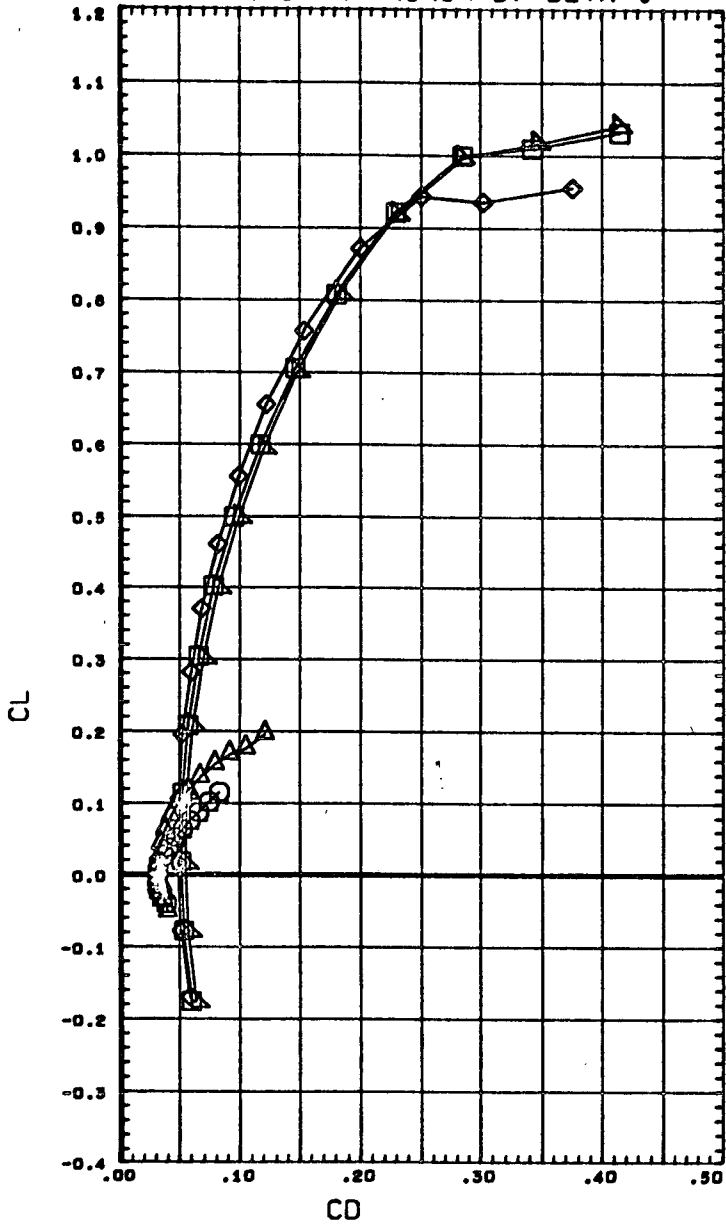


DATA SET SYMBOL	SYMBOL	CONFIGURATION	DESCRIPTION
(AD6093)	□	GDLST 603-0	B30
(AD6083)	△	GDLST 603-0	B30C10
(AD6065)	○	GDLST 603-0	B30W23E38
(AD6054)	◇	GDLST 603-0	B30W23C10E38
(AD6002)	□	GDLST 603-0	B30W23C10V14E38

MACH 0.201

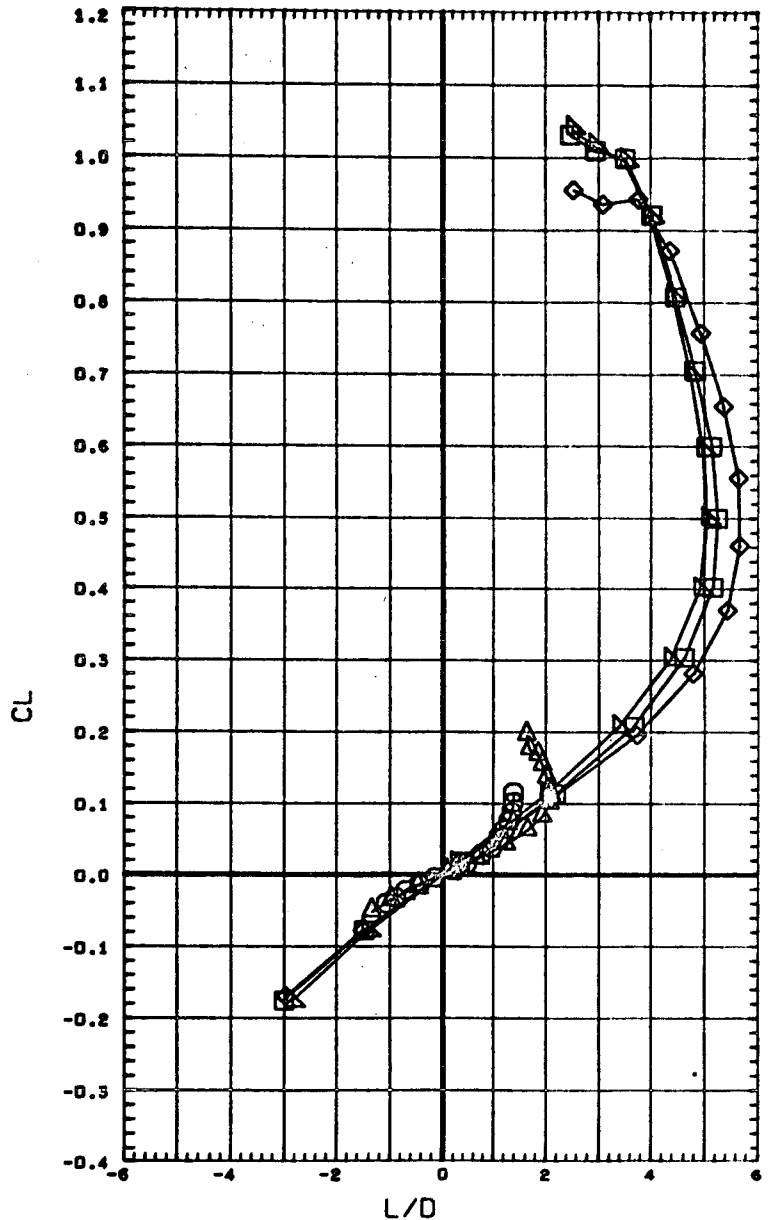
ELEVTR	CANARD	RUDDER	AILRON	REFERENCE INFORMATION
0.000	0.000			SREF 492.4804 90. IN
0.000				LREF 16.1880 IN.
0.000				BREF 34.6320 IN.
0.000				XMRP 29.0780 IN.
0.000		0.000		YMRP 0.0000 IN.
				ZMRP 0.0000 IN.
				SCALE 0.0200

BODY BUILD-UP APPROACH B, BETA=0



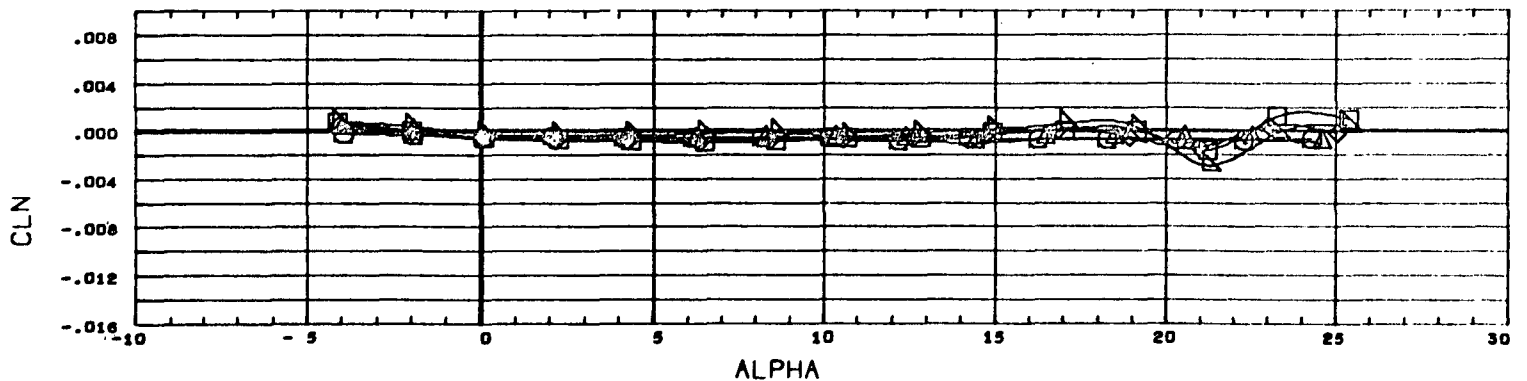
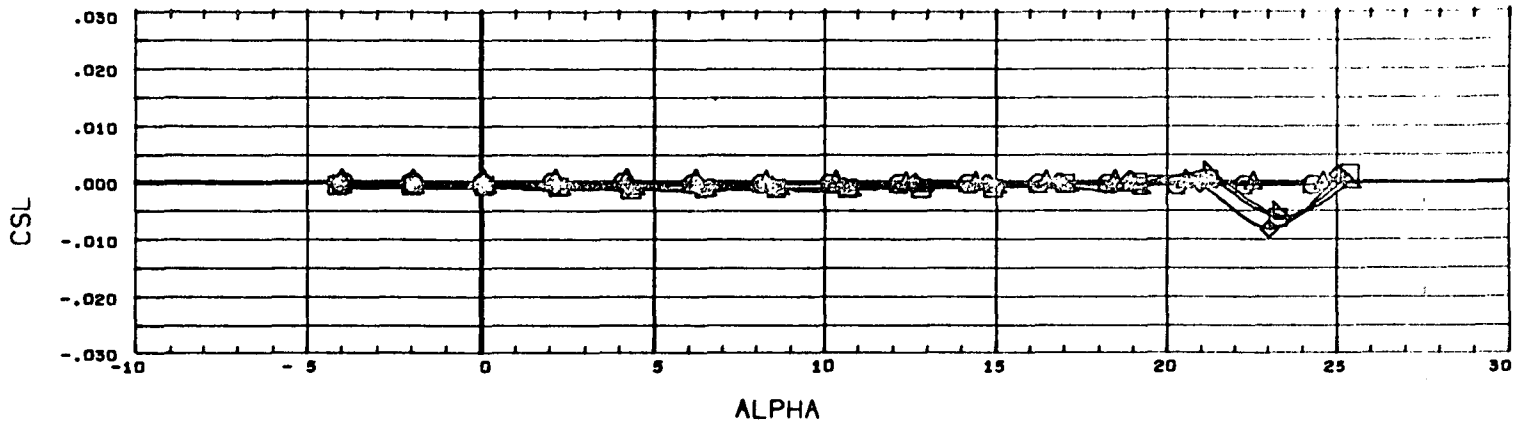
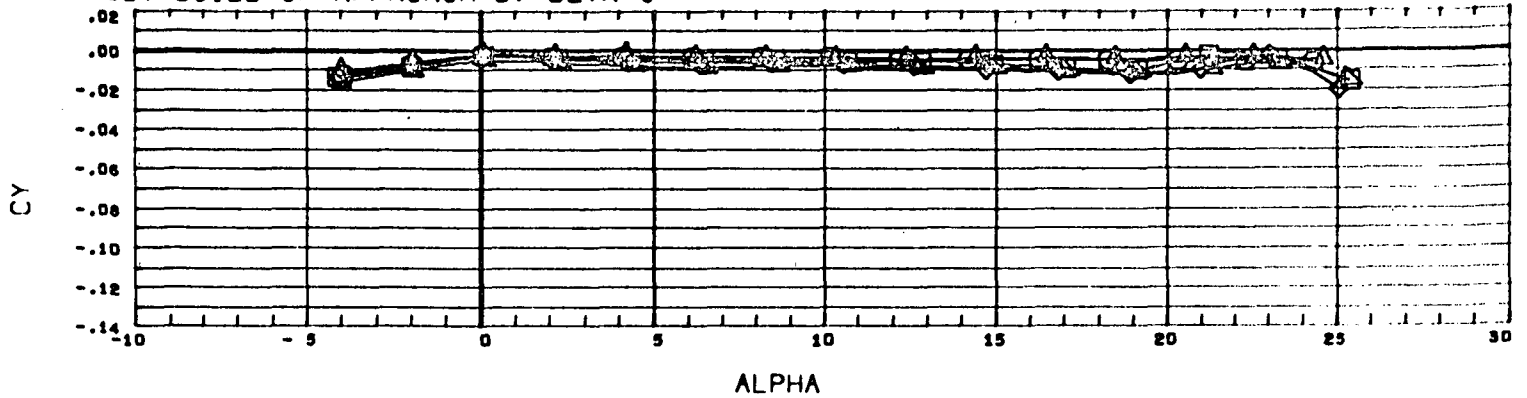
DATA SET SYMBOL	CONFIGURATION	DESCRIPTION
(AD6093)	GDLST 603-0	B30
(AD6083)	GDLST 603-0	B30C10
(AD6065)	GDLST 603-0	B30W23E38
(AD6054)	GDLST 603-0	B30W23C10E38
(AD6002)	GDLST 603-0	B30W23C10V14E38

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	0.000	YMRP 0.0000 IN.
				ZMRP 0.0000 IN.
				SCALE 0.0200

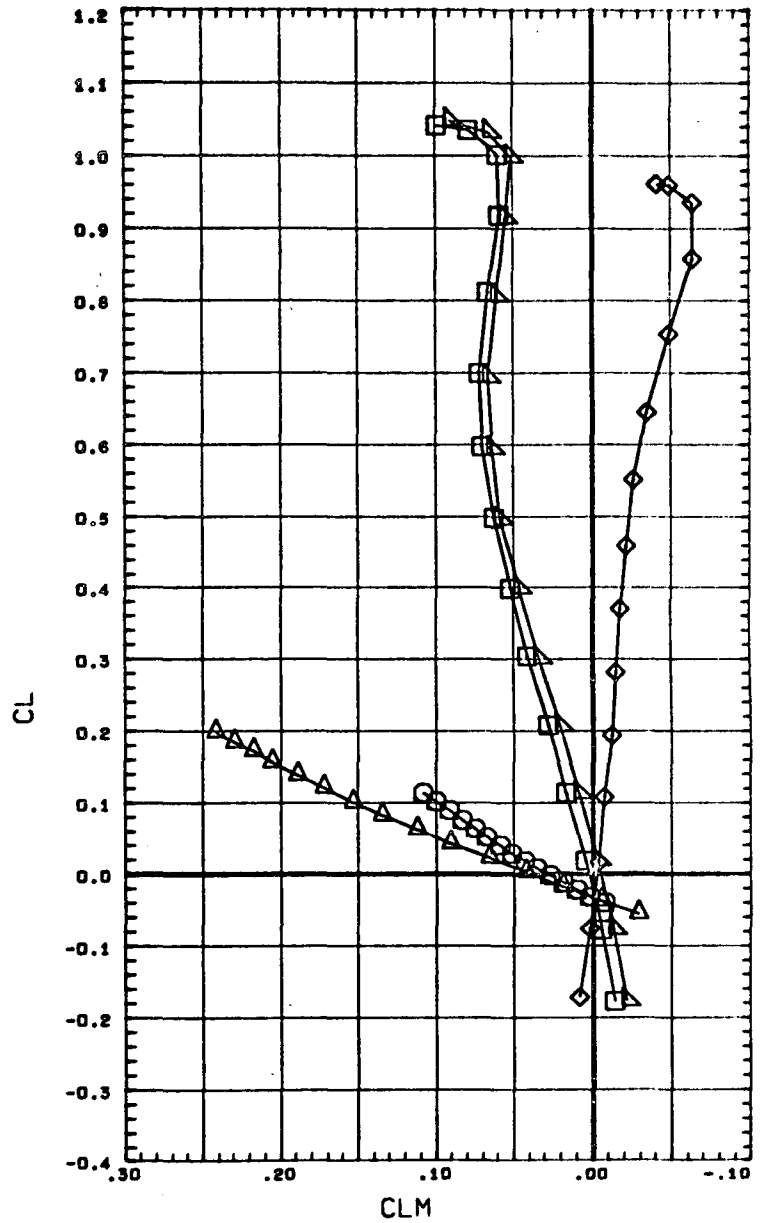
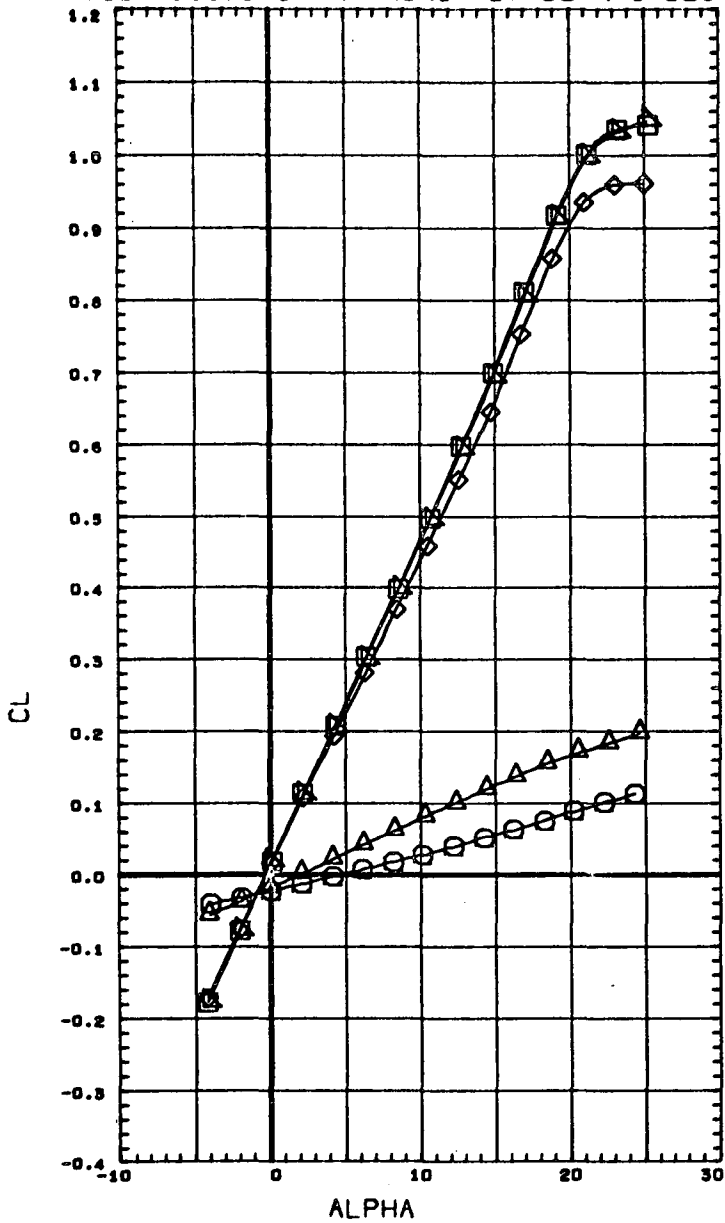
BODY BUILD-UP APPROACH B, BETA=0



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	CANARD	RUDDER	AILRON	REFERENCE INFORMATION
(AD6093)	GDLST 603-0 B30					SREF 492.4804 SQ. IN
(AD6083)	GDLST 603-0 B30C10		0.000			LREF 16.1880 IN.
(AD6065)	GDLST 603-0 B30W23E38	0.000			0.000	BREF 34.6320 IN.
(AD6054)	GDLST 603-0 B30W23C10E38	0.000	0.000		0.000	XMRP 29.0780 IN.
(AD6002)	GDLST 603-0 B30W23C10V14E38	0.000	0.000	0.000	0.000	YMRP 0.0000 IN.
						ZMRP 0.0000 IN.
						SCALE 0.0200

MACH 0.201

BODY BUILD-UP APPROACH B, BETA=5 DEG

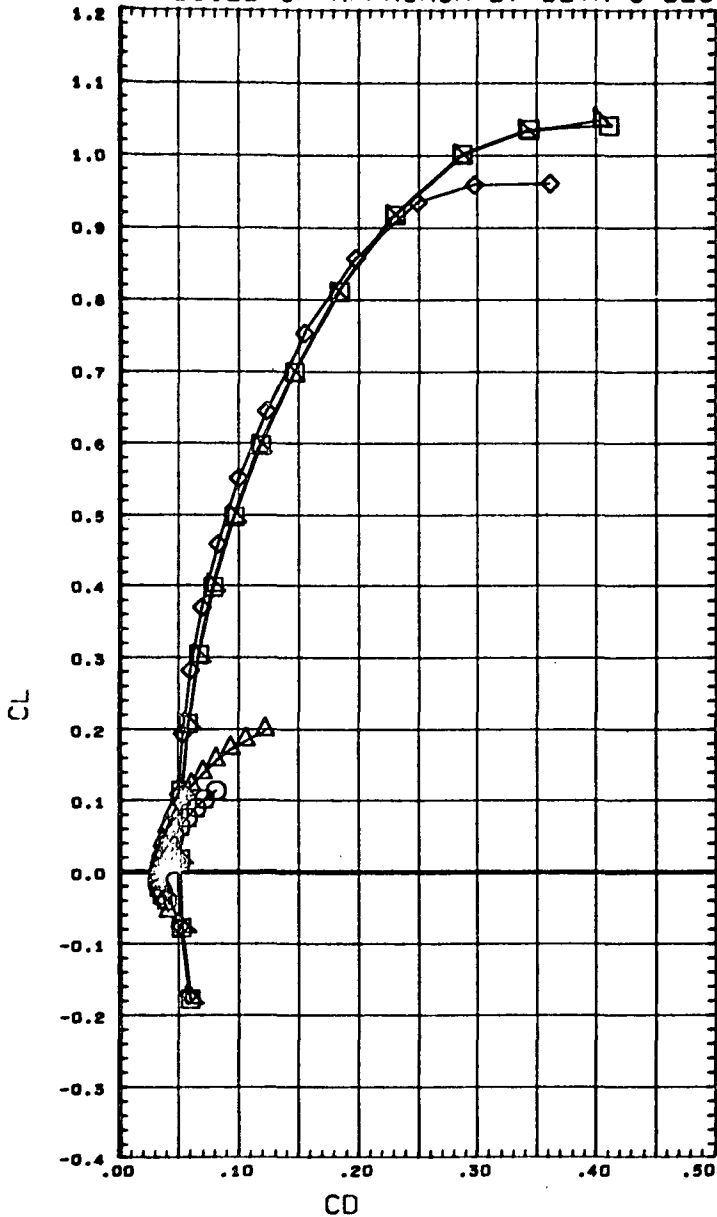


DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6094)	GDLST 603-0 B30
(AD6084)	GDLST 603-0 B30C10
(AD6066)	GDLST 603-0 B30W23E38
(AD6055)	GDLST 603-0 B30W23C10E38
(AD6003)	GDLST 603-0 B30W23C10V14E38

MACH 0.201

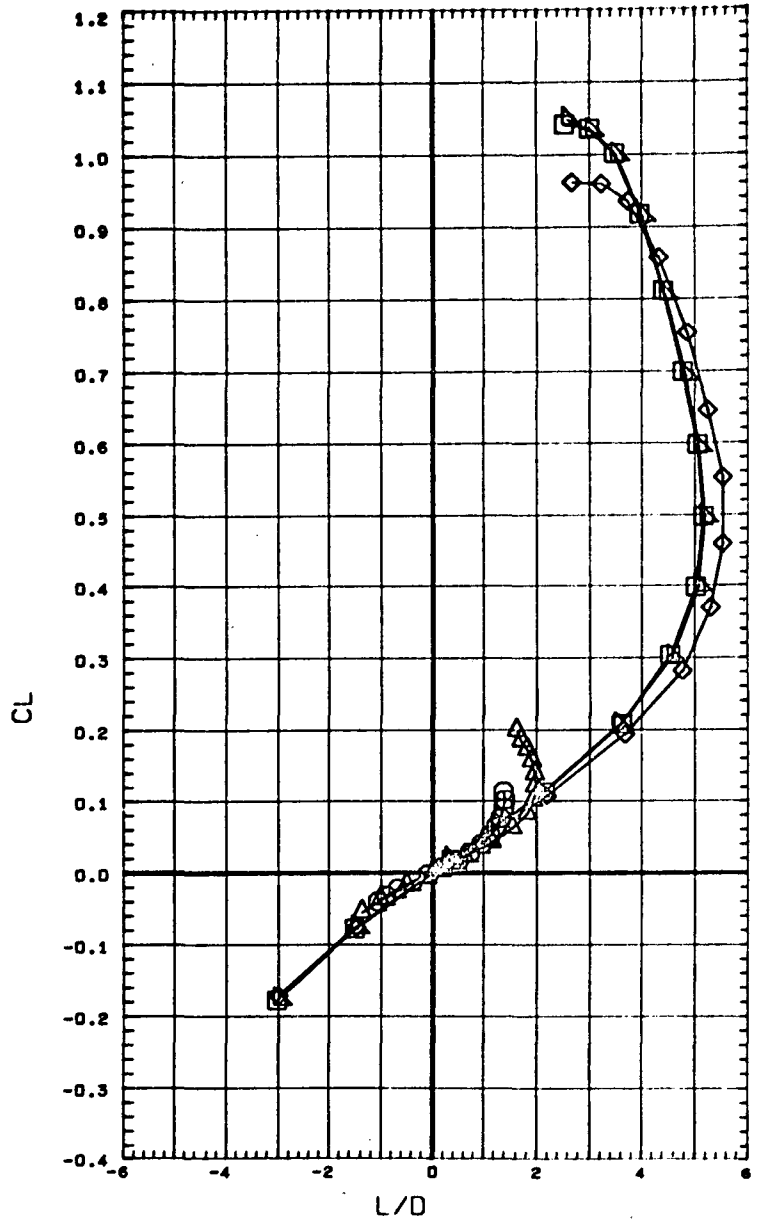
ELEVTR	CANARD	RUDDER	AILRON	REFERENCE INFORMATION	
0.000	0.000		0.000	SREF	492.4804 SQ. IN
0.000	0.000		0.000	LREF	16.1880 IN.
0.000	0.000		0.000	BREF	34.6320 IN.
0.000	0.000	0.000	0.000	XMRP	29.0780 IN.
				YMRP	0.0000 IN.
				ZMRP	0.0000 IN.
				SCALE	0.0200

BODY BUILD-UP APPROACH B, BETA=5 DEG



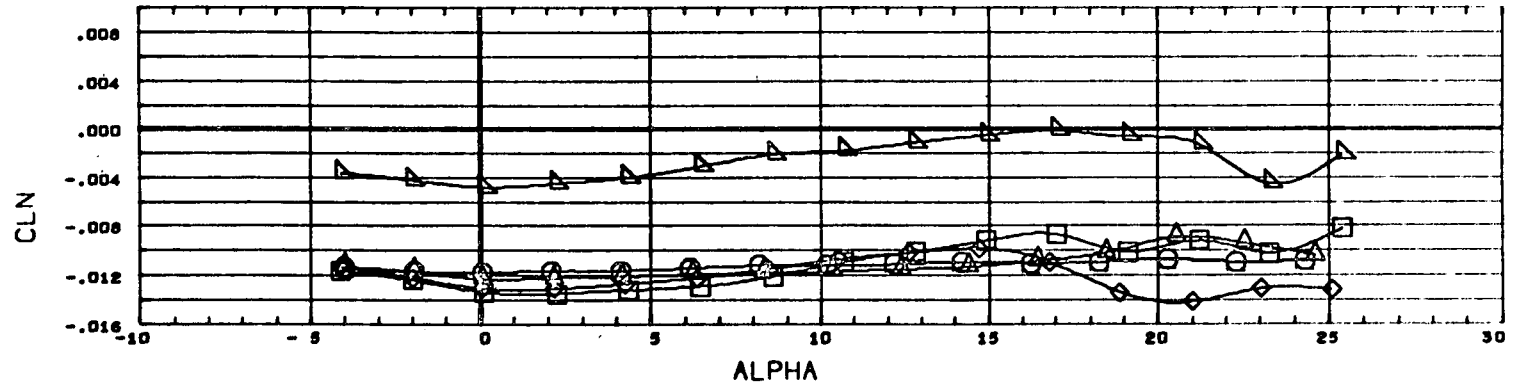
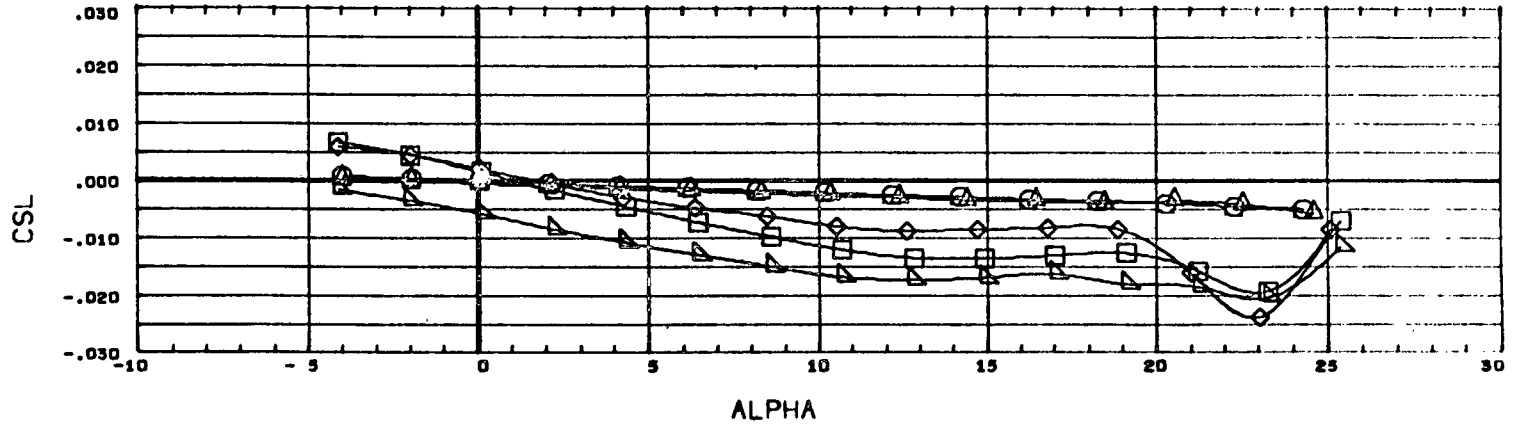
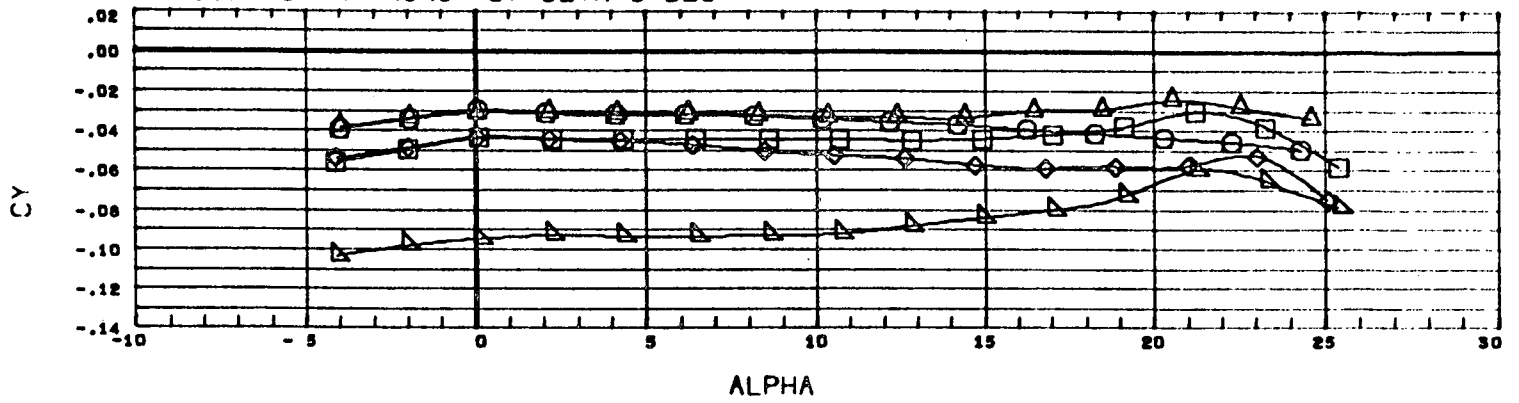
DATA SET SYMBOL	CONFIGURATION	DESCRIPTION
(AD6094)	GDLST 603-0	B30
(AD6084)	GDLST 603-0	B30C10
(AD6066)	GDLST 603-0	B30W23E38
(AD6055)	GDLST 603-0	B30W23C10E38
(AD6003)	GDLST 603-0	B30W23C10V14E38

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

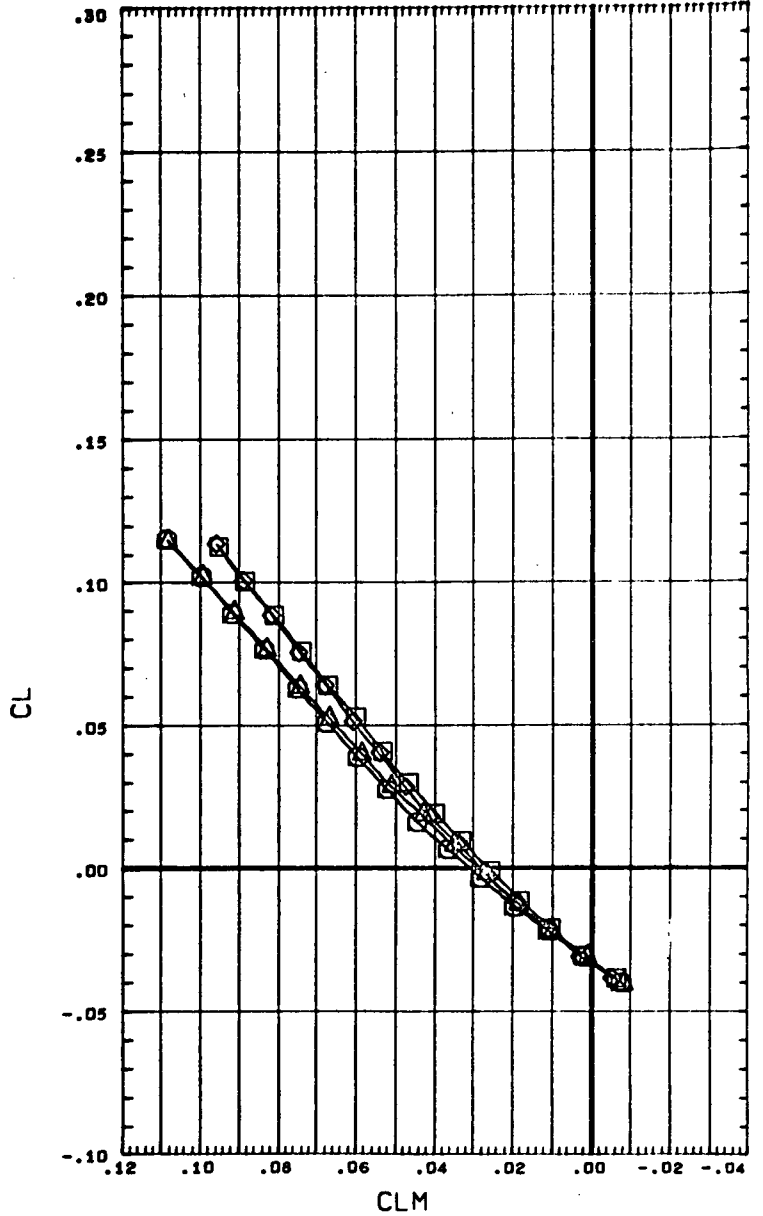
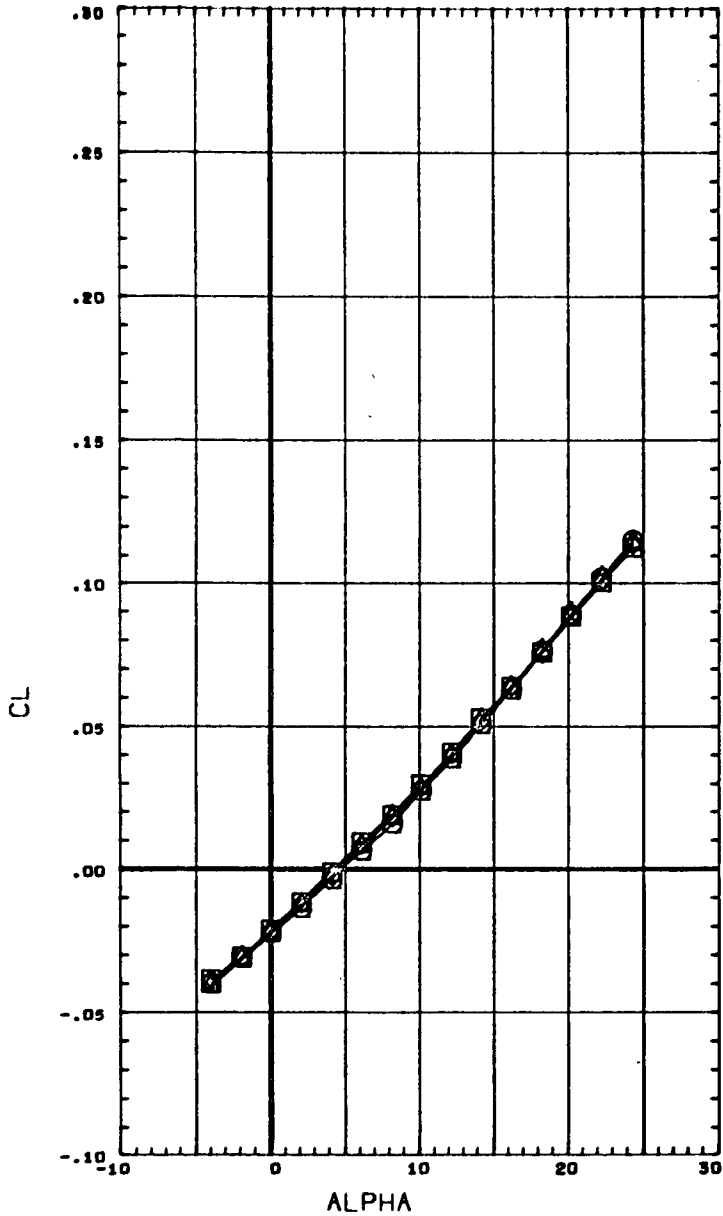
BODY BUILD-UP APPROACH B, BETA=5 DEG



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	CANARD	RUDDER	AILRON	REFERENCE INFORMATION
(AD6094)	△	GDLST 603-0 B30					SREF 492.4804 SQ. IN
(AD6084)	○	GDLST 603-0 B30C10		0.000			LREF 16.1880 IN.
(AD6066)	◇	GDLST 603-0 B30W23E38	0.000			0.000	BREF 34.6320 IN.
(AD6055)	□	GDLST 603-0 B30W23C10E38	0.000	0.000		0.000	XMRP 29.0780 IN.
(AD6003)	▽	GDLST 603-0 B30W23C10V14E38	0.000	0.000	0.000	0.000	YMRP 0.0000 IN. ZMRP 0.0000 IN. SCALE 0.0200

MACH 0.201

COMPARISON OF BODIES B30 AND B32

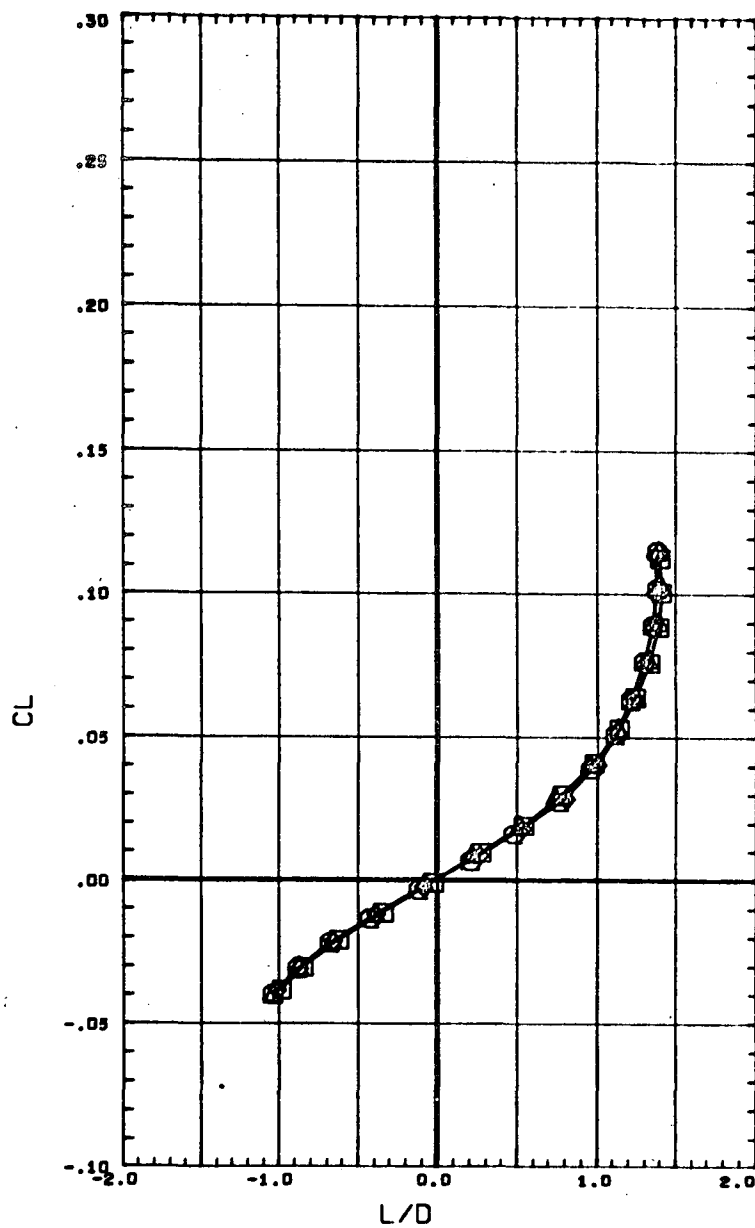
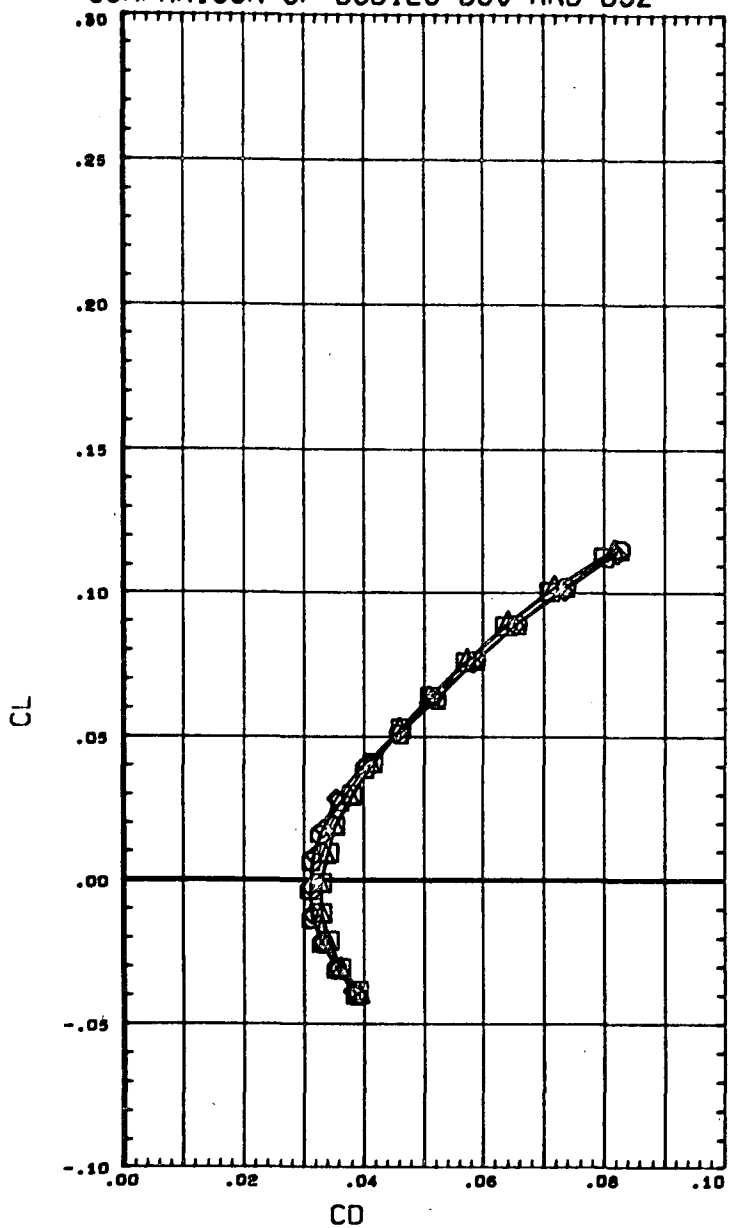


DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6093)	○ GDLST 603-0 B30
(AD6094)	△ GDLST 603-0 B30
(AD6095)	◇ GDLST 603-0 B32
(AD6096)	□ GDLST 603-0 B32

MACH 0.201

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

COMPARISON OF BODIES B30 AND B32



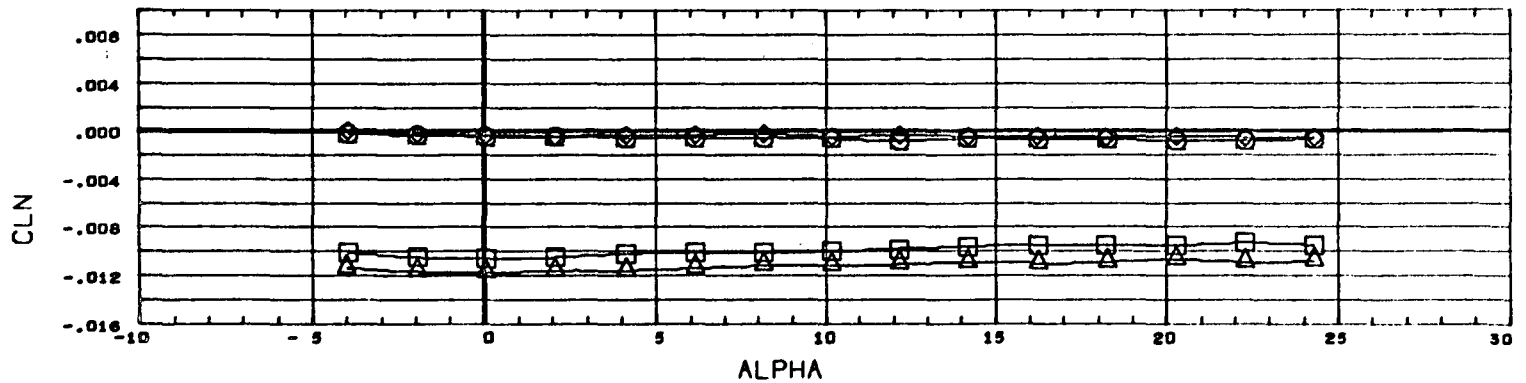
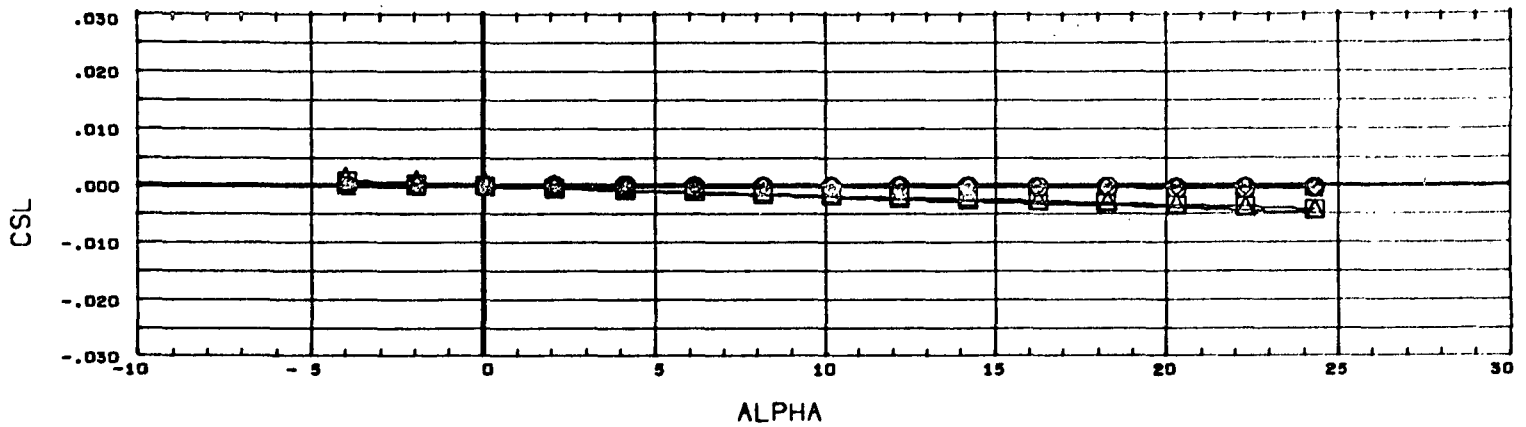
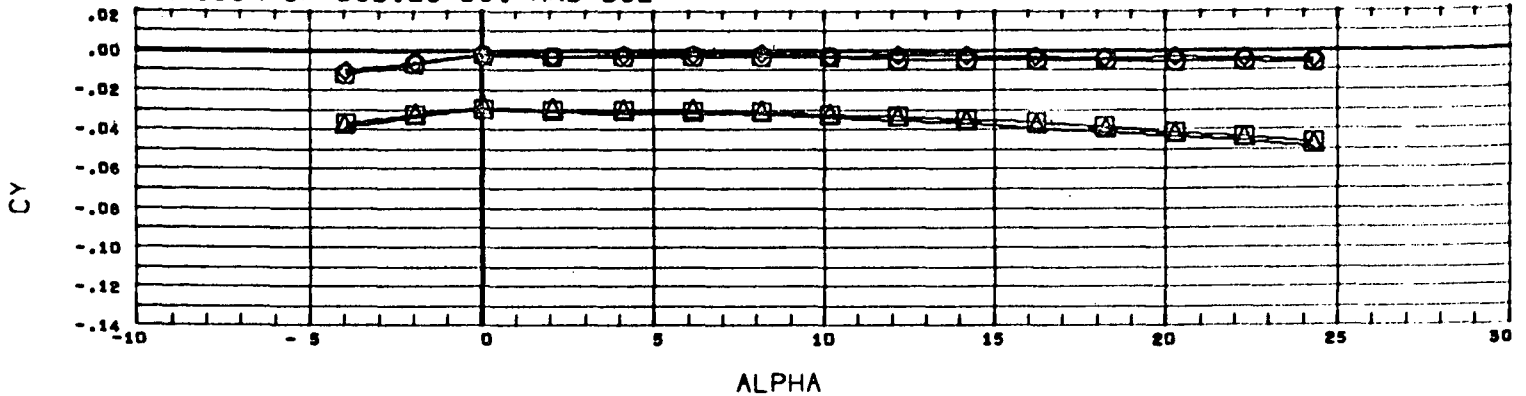
DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6093)	GDLST 603-0 B30
(AD6094)	GDLST 603-0 B30
(AD6095)	GDLST 603-0 B32
(AD6096)	GDLST 603-D B32

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



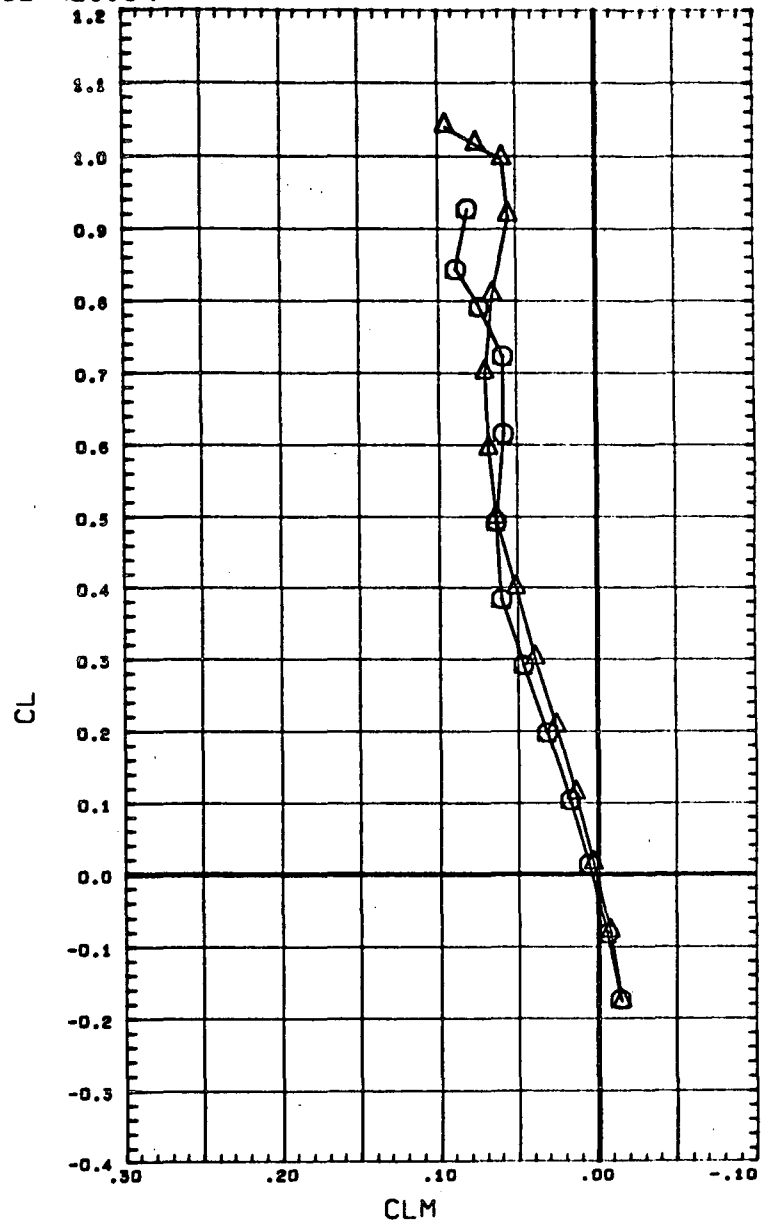
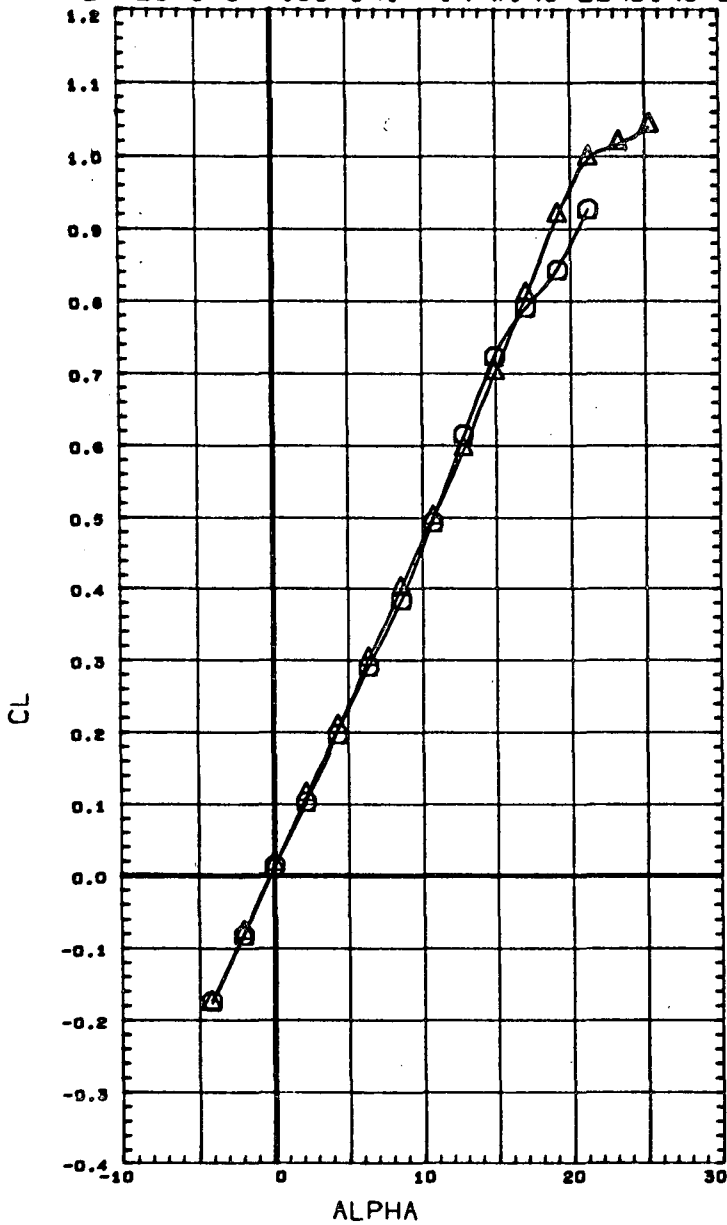
DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6093)	GDLST 603-0 B30
(AD6094)	GDLST 603-0 B30
(AD6095)	GDLST 603-0 B32
(AD6096)	GDLST 603-0 B32

BETA	CANARD
0.000	
5.000	
0.000	
5.000	

REFERENCE INFORMATION		
SREF	492.4804	sq. IN
LREF	16.1880	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

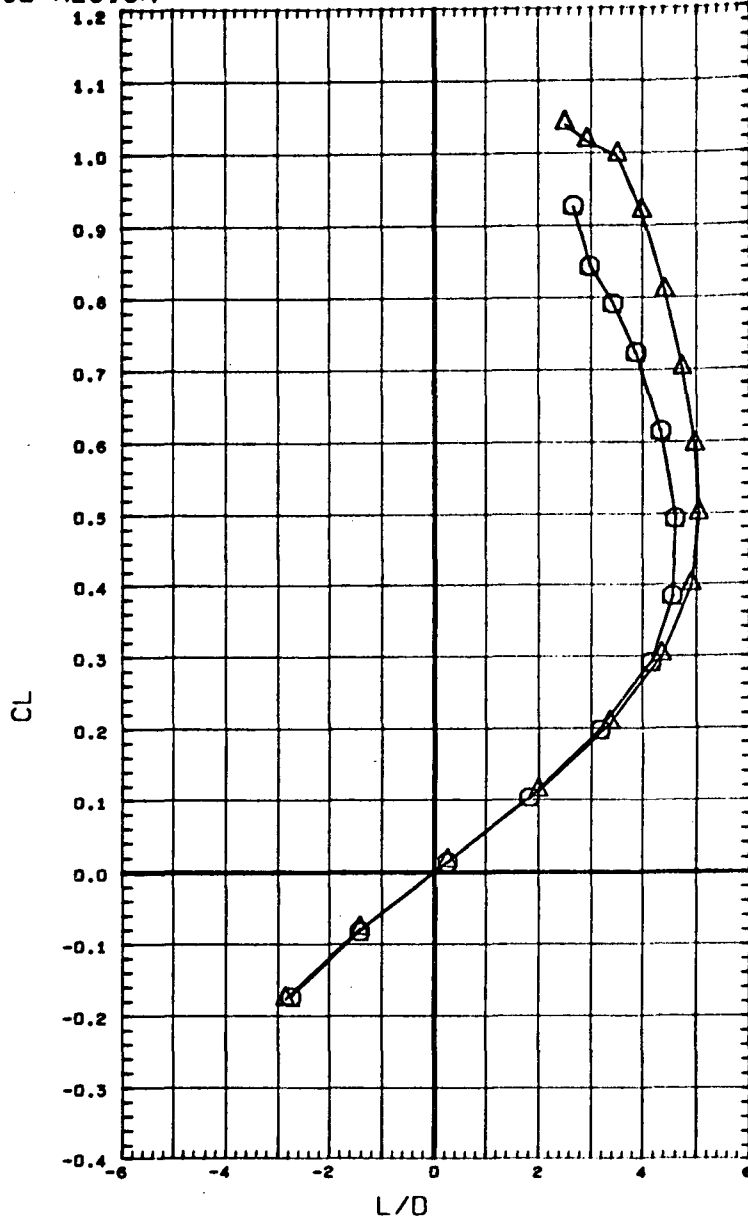
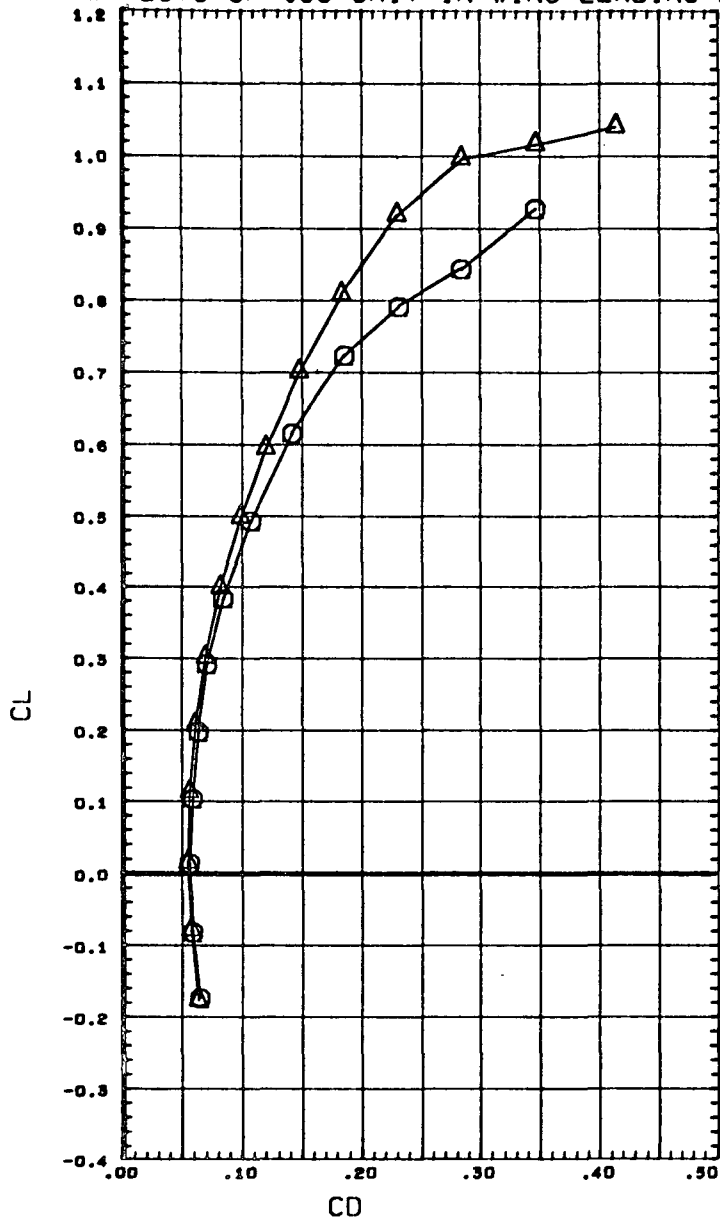


DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6042) ○	GDLST 603-0 B30W23C10V14E38x7
(AD6002) △	GDLST 603-0 B30W23C10V14E38

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

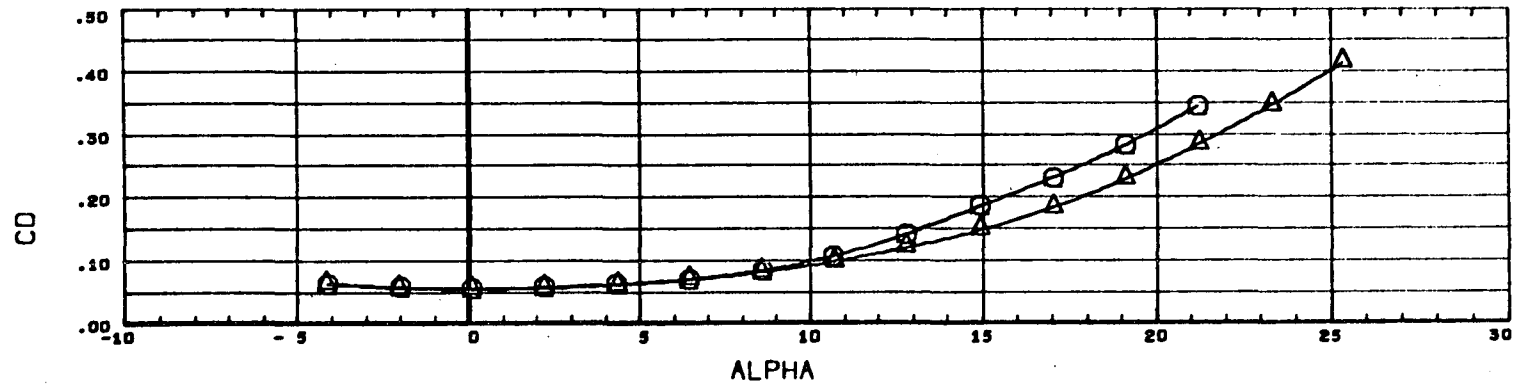
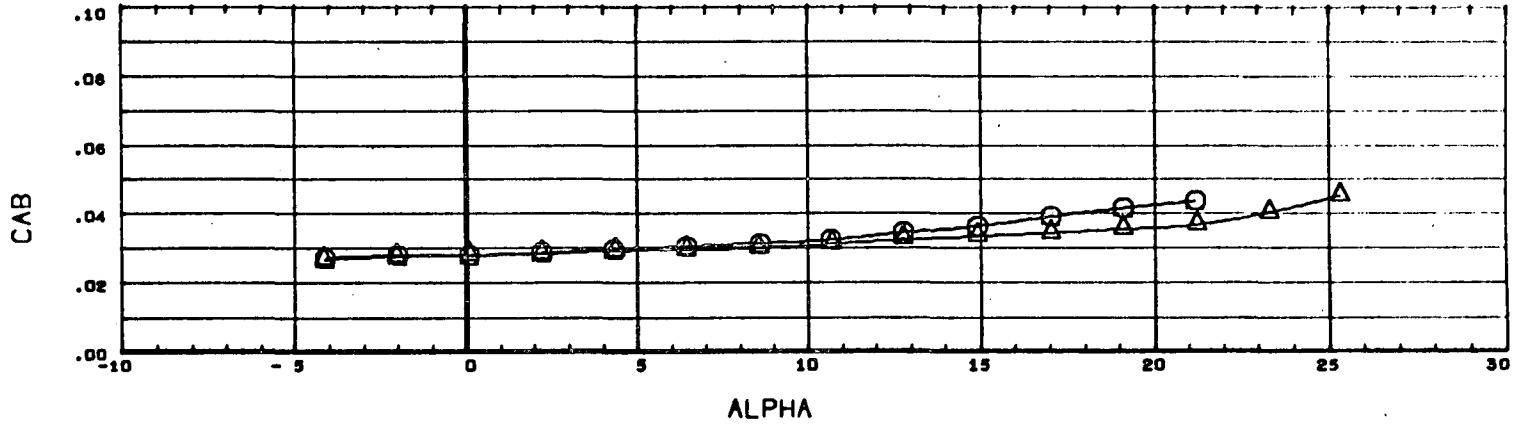
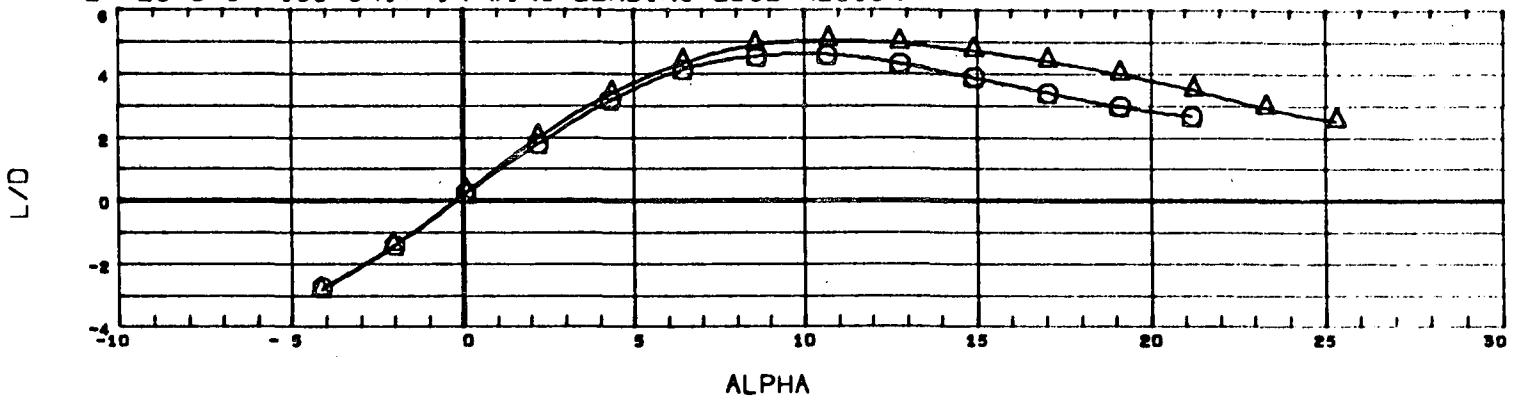


DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (AD6042) ○ GDLST 603-0 B30W23C10V14E38X7
 (AD6002) △ GDLST 603-0 B30W23C10V14E38

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

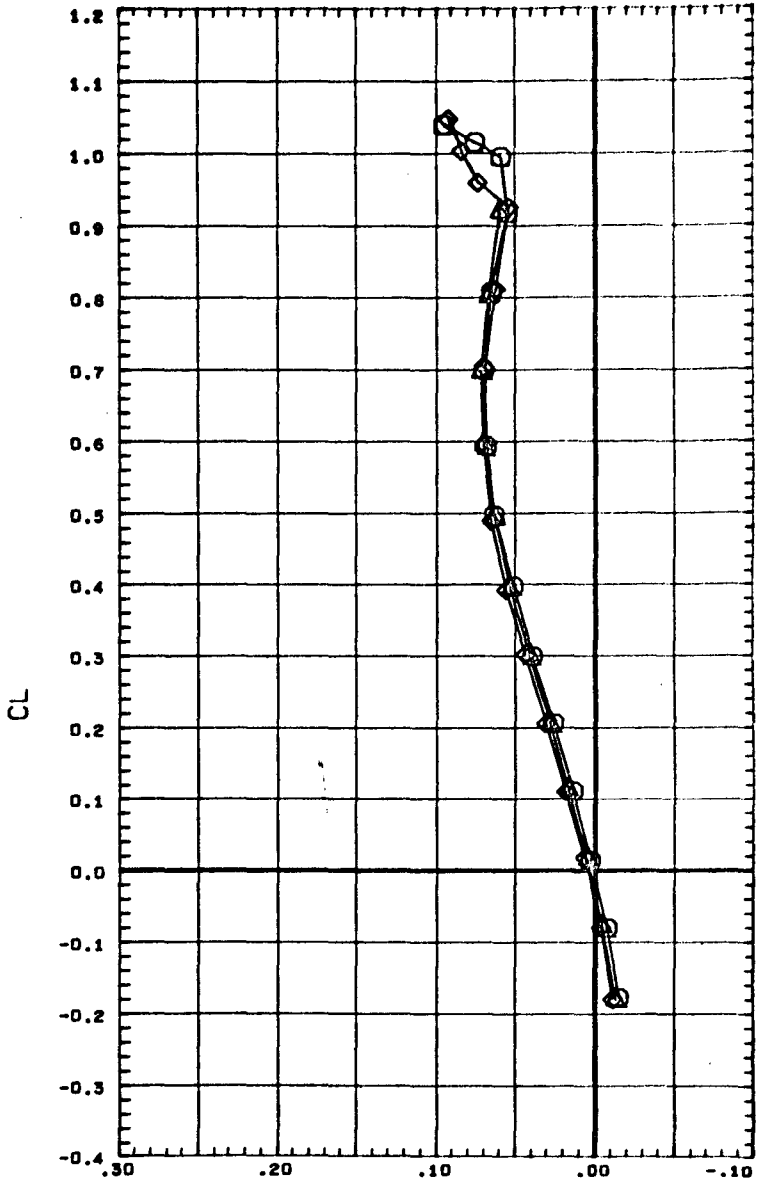
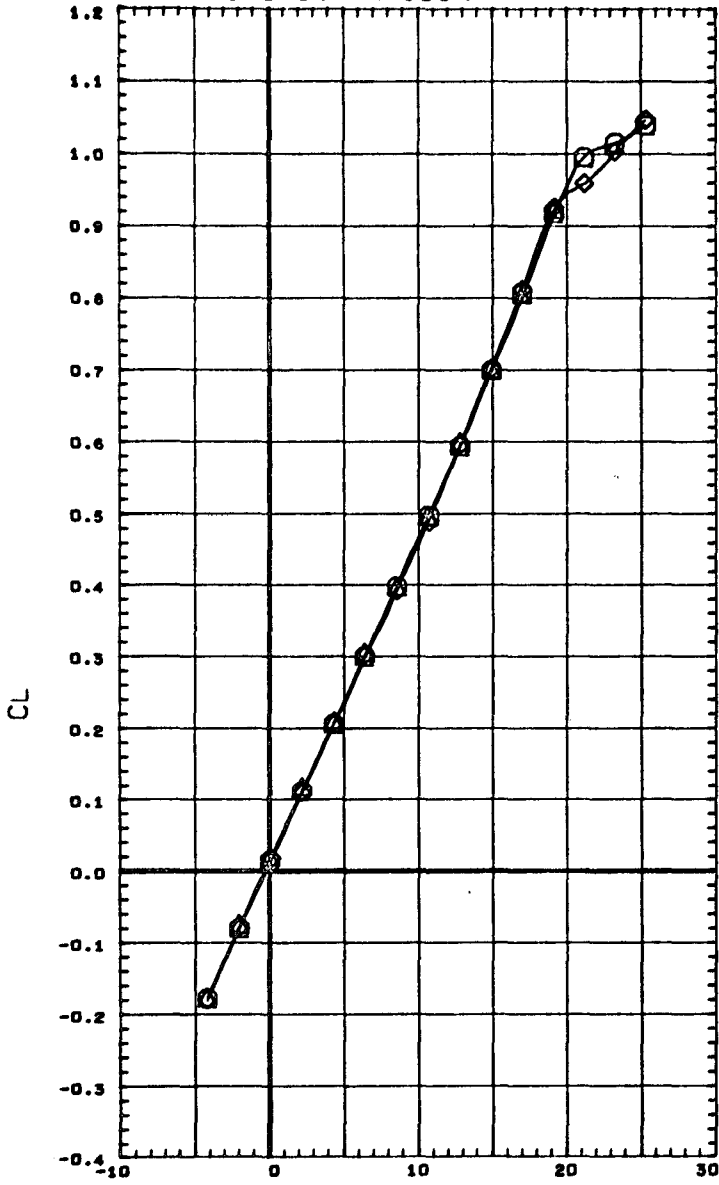
EFFECTS OF 036 GRIT IN WING LEADING EDGE REGION



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELEVTR	CANARD	AILRON	REFERENCE INFORMATION	
(AD6042)	⊙ GDLST 603-0 B30W23C10V14E38X7	0.000	0.000	0.000	0.000	SREF	492.4604 SQ. IN
(AD6002)	△ GDLST 603-0 B30W23C10V14E38	0.000	0.000	0.000	0.000	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

REPEAT RUNS COMPARISON

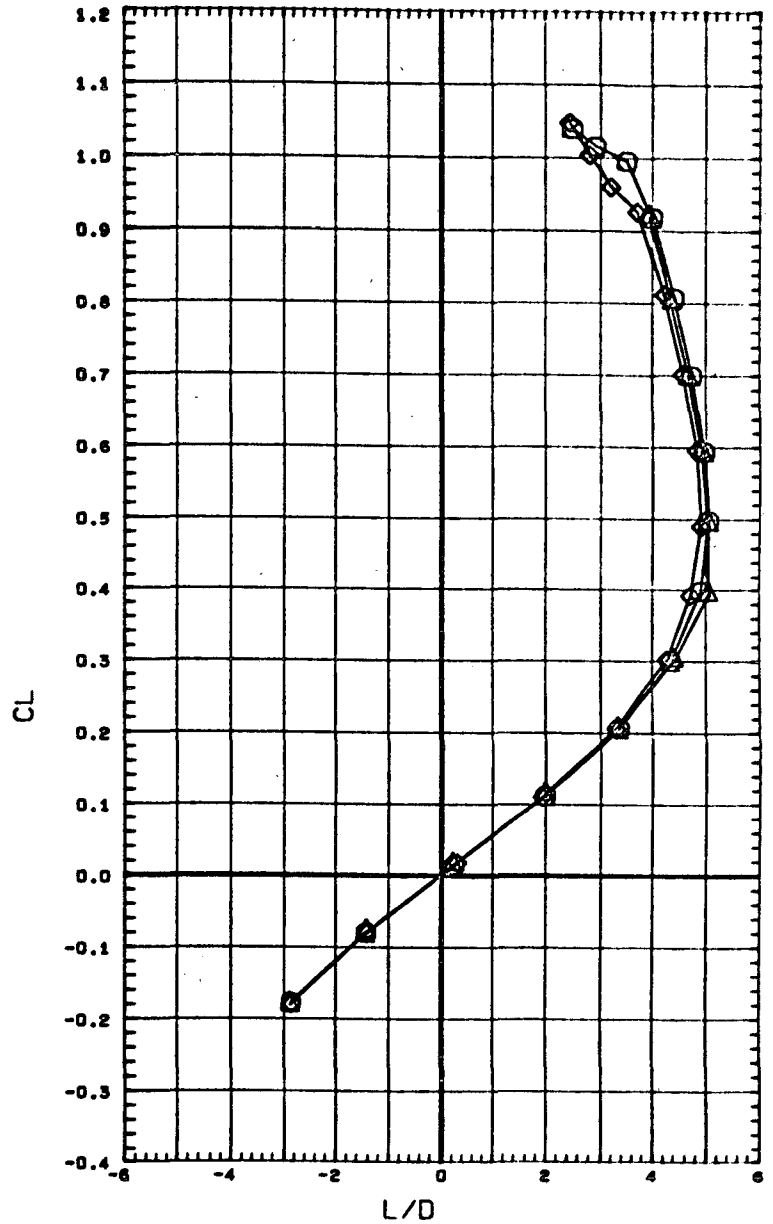
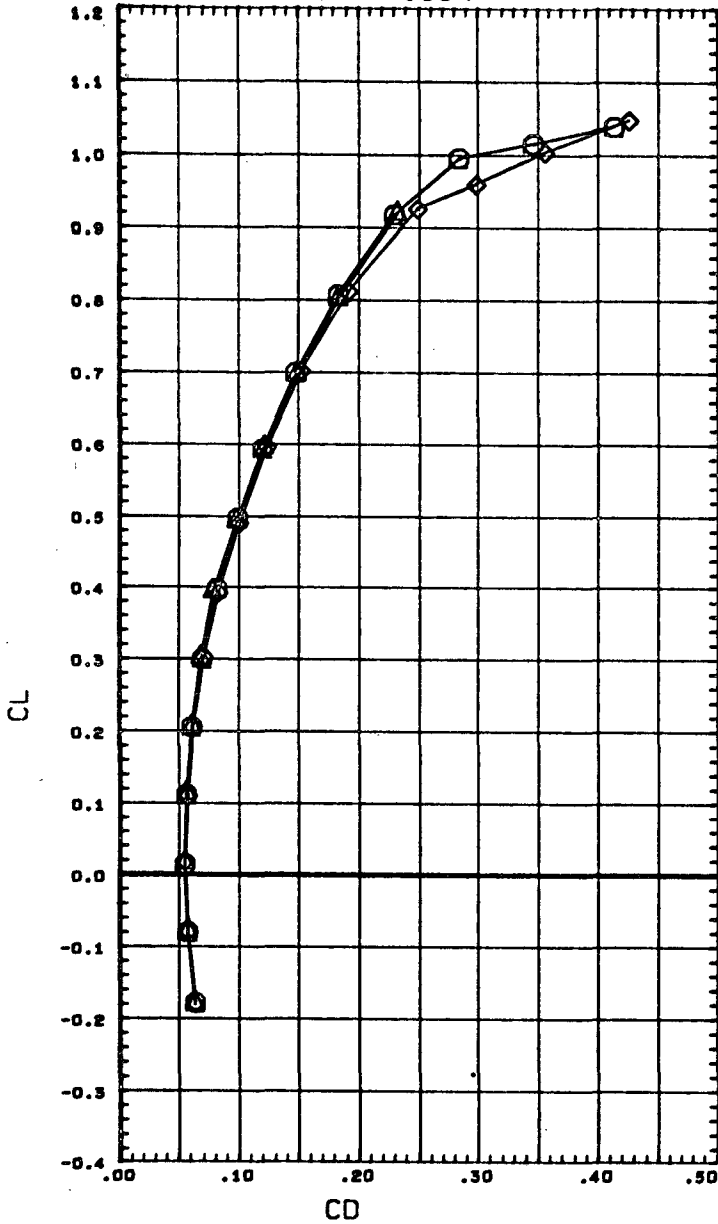


DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6002) ○	GDLST 603-0 B30W23C10V14E38
(AD6043) △	GDLST 603-0 B30W23C10V14E38
(AD6076) ◇	GDLST 603-0 B30W23C10V14E38 (MODEL UPRIGHT)

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 29.0760 IN.
				YMRP 0.0000 IN.
				ZMRP 0.0000 IN.
				SCALE 0.0200

REPEAT RUNS COMPARISON

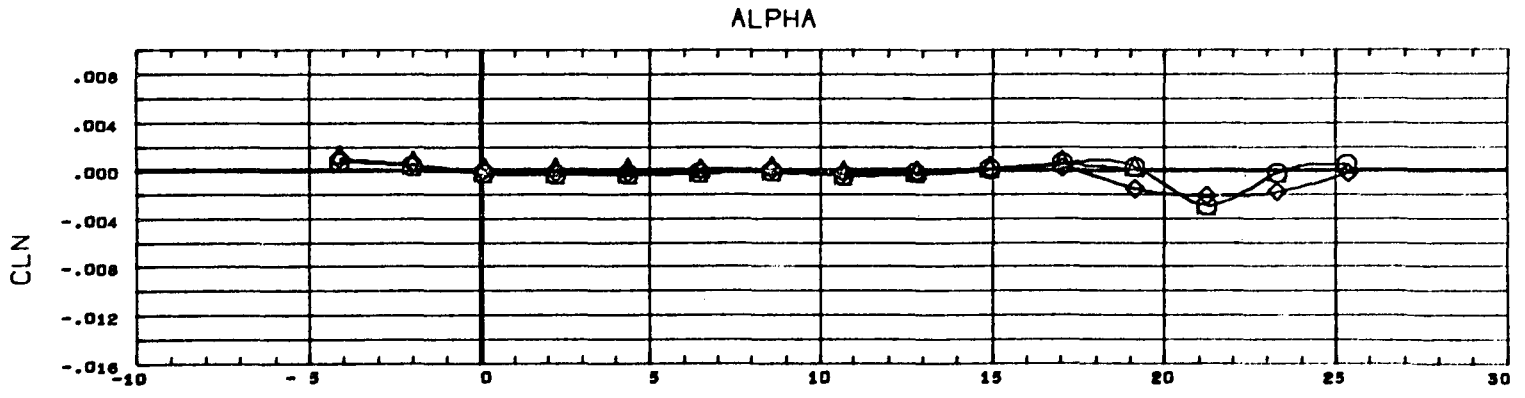
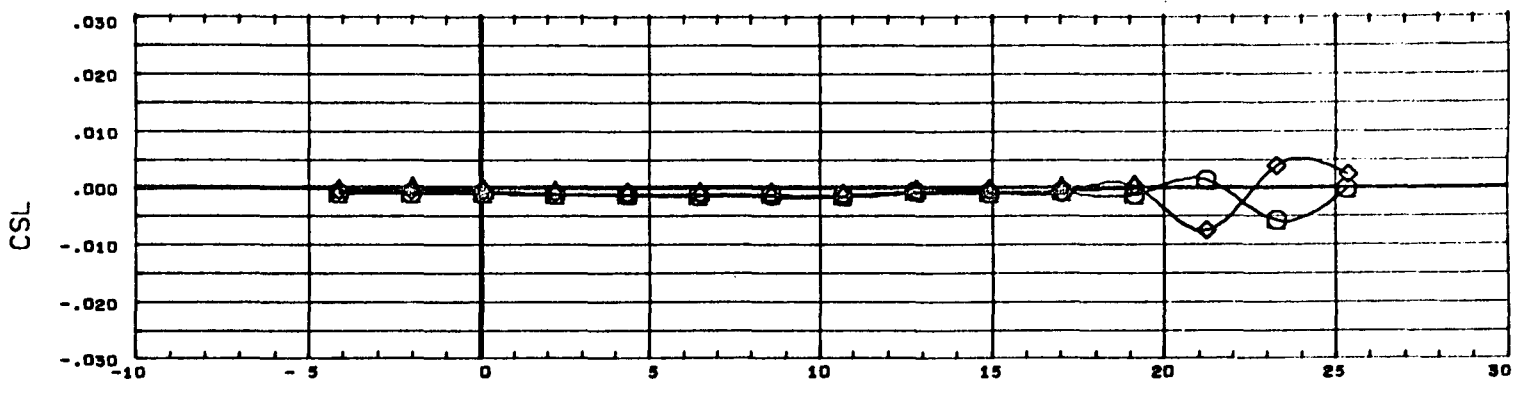
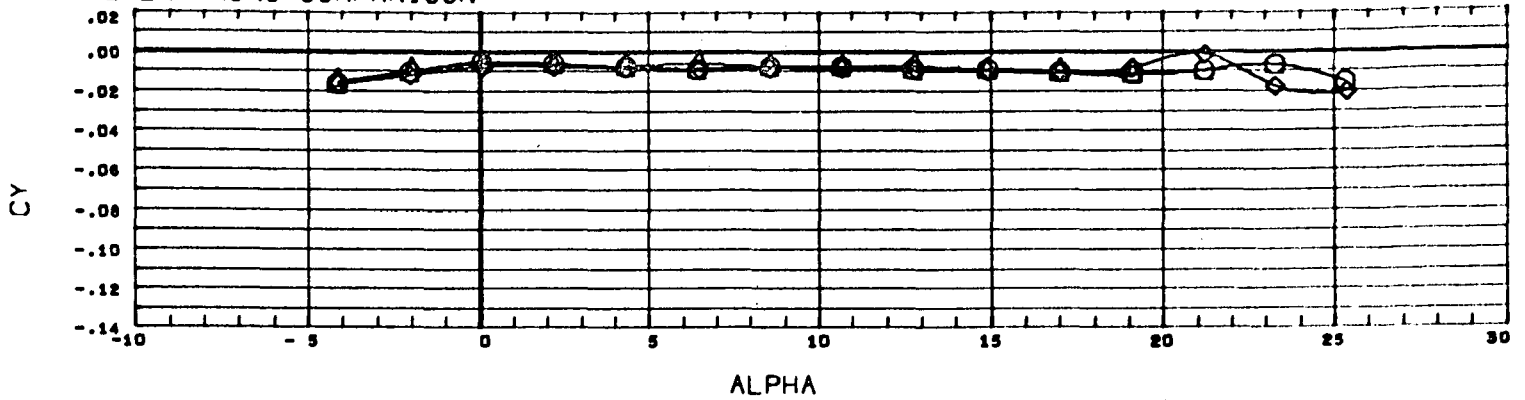


DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(AD6002) ○	GDLST 603-0 B30W23C10V14E38
(AD6043) △	GDLST 603-0 B30W23C10V14E38
(AD6076) ◇	GDLST 603-0 B30W23C10V14E38 (MODEL UPRIGHT)

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	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