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NASA TM X-72631

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NASA TM X-72631

SUBSONIC AND TRANSONIC DYNAMIC STABILITY DERIVATIVES OF A MODIFIED 089B SHUTTLE ORBITER

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December 1974

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

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1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
NASA TM X-72631		

4. Title and Subtitle	5. Report Date
Subsonic and Transonic Dynamic Stability Derivatives of a Modified 089B Shuttle Orbiter	September 1974
	6. Performing Organization Code
7. Author(s)	8. Performing Organization Report No.
Richmond P. Boyden and Delma C. Freeman, Jr.	
9. Performing Organization Name and Address	10. Work Unit No.
NASA Langley Research Center Hampton, VA 23665	11. Contract or Grant No.
	13. Type of Report and Period Covered
12. Sponsoring Agency Name and Address National Aeronautics & Space Administration Langley Research Center, Hampton, VA 23665	14. Sponsoring Agency Code

15. Supplementary Notes

16. Abstract

An experimental test program has been conducted to measure the dynamic stability derivatives of a modified 089B shuttle orbiter. Subsonic and transonic forced oscillation tests were conducted in the Langley 8 foot TPT Tunnel over a Mach number range from 0.3 to 1.2 for angles of attack up to 22°. The data were measured at the model resonant frequency with pitch and yaw amplitudes of 1° and a roll amplitude of 2.5°.

17. Key Words (Suggested by Author(s)) (STAR category underlined)	18. Distribution Statement
Orbiter aerodynamics Dynamic stability Unsteady aerodynamics	

19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No. of Pages	22. Price*
Unclassified	Unclassified	157	$6.25

*Available from { The National Technical Information Service, Springfield, Virginia 22151
STIF/NASA Scientific and Technical Information Facility, P.O. Box 33, College Park, MD 20740

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SUBSONIC AND TRANSONIC DYNAMIC STABILITY DERIVATIVES OF A MODIFIED 089B SHUTTLE ORBITER (LA20)

by

Richmond P. Boyden and Delma C. Freeman, Jr.

SUMMARY

An experimental test program has been conducted to measure the subsonic and transonic dynamic stability derivatives of a modified 089B shuttle orbiter configuration. The test were conducted in the Langley 8-Foot Transonic Pressure Tunnel utilizing forced oscillation equipment. Rotary derivatives were measured about all three axis with both the in-phase and out-of-phase derivatives reported herein. The test were conducted at Mach numbers of 0.6, 0.8, 0.9, 0.98 and 1.2 for angles of attack up to 22°. The data were measured at the model resonant frequency with pitch and yaw amplitude of 1° and roll amplitude of 2.5°.

INTRODUCTION

One of the current major national goals is the development of the Space Shuttle. As part of this effort a program has been initiated at the Langley Research Center to experimentally measure the dynamic damping derivatives of the shuttle orbiter for all flight phases from entry to landing. These experimentally measured values will be utilized in computations to assess the importance of the dynamic damping derivatives on overall vehicle dynamics. Supersonic results are presented in reference 1 and hypersonic results in reference 2

As part of this study subsonic and transonic forced oscillation tests of a 0.0165 scale model of a modified 089B shuttle orbiter have been made in the Langley 2.4384-meter (8-Foot) Transonic Pressure Tunnel. These tests were made for several configurations over a Mach number range from 0.3 to 1.2 measuring the pitch, roll, and yaw damping. The normal force due to pitch rate, cross-derivatives yawing moment due to roll rate, and rolling moment due to yaw rate were also measured. Data plots and tables were prepared by Chrysler Corporation under NASA contract. For this investigation, designated 8TPT 653 (LA20), the tunnel occupancy time was 160 hours.

SYMBOLS

SYMBOL	PLOT SYMBOL	DEFINITION
b	BREF	reference span, meters
C_ℓ	CBL	rolling-moment coefficient, $\frac{\text{rolling moment}}{q_\infty Sb}$
C_{ℓ_p}	-	$\frac{\partial C_\ell}{\partial\left(\frac{pb}{2V}\right)}$, per radian
$C_{\ell_{\dot{p}}}$	-	$\frac{\partial C_\ell}{\partial\left(\frac{\dot{p}b^2}{4V^2}\right)}$, per radian
$C_{\ell_p} + C_{\ell_\beta}\sin\alpha$	CBLP	damping-in-roll parameter, per radian
C_{ℓ_r}	-	$\frac{\partial C_\ell}{\partial\left(\frac{rb}{2V}\right)}$, per radian
$C_{\ell_{\dot{r}}}$	-	$\frac{\partial C_\ell}{\partial\left(\frac{\dot{r}b^2}{4V^2}\right)}$, per radian
$C_{\ell_r} - C_{\ell_{\dot{\beta}}}\cos\alpha$	CBLR	rolling moment due to yaw rate parameter, per radian

SYMBOLS (Continued)

SYMBOL	PLOT SYMBOL	DEFINITION
C_{ℓ_β}	-	$\frac{\partial C_\ell}{\partial \beta}$, per radian
$C_{\ell_{\dot{\beta}}}$	-	$\frac{\partial C_\ell}{\partial\left(\frac{\dot{\beta} b}{2V}\right)}$, per radian
$C_{\ell_\beta} \cos\alpha - k^2 C_{\ell_p}$	CBLBS	rolling moment due to roll displacement parameter, per radian
$C_{\ell_\beta} \cos\alpha + k^2 C_{\ell_r}$	CBLBC	effective dihedral parameter, per radian
C_m	CLM	pitching-moment coefficient, $\frac{\text{pitching moment}}{q_\infty S \bar{c}}$
$C_{m_{\dot{\alpha}}}$	-	$\frac{\partial C_m}{\partial\left(\frac{\dot{\alpha}\bar{c}}{2V}\right)}$, per radian
C_{m_q}	-	$\frac{\partial C_m}{\partial\left(\frac{q\bar{c}}{2V}\right)}$, per radian
$C_{m_q} + C_{m_{\dot{\alpha}}}$	CLMQ	damping-in-pitch parameter, per radian
C_{m_α}	-	$\frac{\partial C_m}{\partial \alpha}$, per radian
$C_{m_{\dot{\alpha}}}$	-	$\frac{\partial C_m}{\partial\left(\frac{\dot{\alpha}\bar{c}}{2V}\right)}$, per radian
$C_{m_\alpha} - k^2 C_{m_{\dot{q}}}$	CLMA	oscillatory longitudinal stability parameter, per radian
C_N	CN	normal force coefficient, $\frac{\text{normal force}}{q_\infty S}$

SYMBOLS (Continued)

SYMBOL	PLOT SYMBOL	DEFINITION
C_{N_q}	-	$\frac{\partial C_N}{\partial\left(\frac{q\bar{c}}{2V}\right)}$, per radian
$C_{N_{\dot{q}}}$	-	$\frac{\partial C_N}{\partial\left(\frac{\dot{q}\bar{c}^2}{4V^2}\right)}$, per radian
$C_{N_q} + C_{N_{\dot{\alpha}}}$	CNQ	normal force due to pitch rate parameter, per radian
C_{N_α}	-	$\frac{\partial C_N}{\partial \alpha}$, per radian
$C_{N_{\dot{\alpha}}}$	-	$\frac{\partial C_N}{\partial\left(\frac{\dot{\alpha}\bar{c}}{2V}\right)}$, per radian
$C_{N_\alpha} - k^2 C_{N_{\dot{q}}}$	CNA	normal force due to pitch displacement parameter, per radian
C_n	CYN	yawing-moment coefficient, $\frac{\text{yawing moment}}{q_\infty Sb}$
C_{n_p}	-	$\frac{\partial C_n}{\partial\left(\frac{pb}{2V}\right)}$, per radian
$C_{n_{\dot{p}}}$	-	$\frac{\partial C_n}{\partial\left(\frac{\dot{p}b^2}{4V^2}\right)}$, per radian
$C_{n_p} + C_{n_{\dot{\beta}}} \sin\alpha$	CYNP	yawing moment due to roll rate parameter, per radian
C_{n_r}	-	$\frac{\partial C_n}{\partial\left(\frac{rb}{2V}\right)}$, per radian

SYMBOLS (Continued)

SYMBOL	PLOT SYMBOL	DEFINITION
$C_{n_{\dot{r}}}$	-	$\frac{\partial C_n}{\partial\left(\frac{\dot{r}b^2}{4V^2}\right)}$, per radian
$C_{n_r} - C_{n_{\dot{\beta}}}\cos\alpha$	CYNR	damping-in-yaw parameter, per radian
C_{n_β}	-	$\frac{\partial C_n}{\partial \beta}$, per radian
$C_{n_{\dot{\beta}}}$	-	$\frac{\partial C_n}{\partial\left(\frac{\dot{\beta}b}{2V}\right)}$, per radian
$C_{n_\beta}\cos\alpha + k^2 C_{n_{\dot{r}}}$	CYNBC	oscillatory directional-stability parameter, per radian
$C_{n_\beta}\sin\alpha - k^2 C_{n_{\dot{p}}}$	CYNBS	yawing moment due to roll displacement parameter, per radian
$\bar{c}$	LREF	reference chord, meters
c.g.	CG-LOC	reference center of gravity location position
f	-	frequency of oscillation, Hertz
k	-	reduced frequency parameter, $\frac{\omega\bar{c}}{2V}$ in pitch; $\frac{\omega b}{2V}$ in roll and yaw, radians
M	MACH	free-stream Mach number
p	-	angular velocity of model about X axis, radians/second
q	-	angular velocity of model about Y axis, radians/second
q_∞	-	free-stream dynamic pressure, k Pa, psf
R	RN/L	Reynolds number, millions/meter, millions/foot, millions based on body length

SYMBOLS (Concluded)

SYMBOL	PLOT SYMBOL	DEFINITION
r	-	angular velocity of model about Z axis, radians/second
S	SREF	reference area, meters^2
V	-	free-stream velocity, meters/second
α	ALPHA	angle of attack, radians or degrees
β	BETA	angle of sideslip, radians or degrees
ω	-	angular velocity, $2\pi f$, radians/second
δ_a	AILRON	total aileron control surface deflection angle, degrees
δ_{bf}	BDFLAP	body flap surface deflection angle, positive trailing edge down, degrees
δ_e	ELEVTR	elevator surface deflection angle, positive trailing edge down, degrees
δ_r	RUDDER	rudder surface deflection angle, positive deflection trailing edge to the left, degrees
δ_{rf}	RUDFLR	rudder flare deflection angle, included angle between split rudder used to decrease speed, degrees

Note: A dot over a quantity indicates a first derivative with respect to time.

CONFIGURATION INVESTIGATED

A 0.0165-scale model of a blend of Rockwell International shuttle configurations was tested. The model consisted of a 089B orbiter configuration with a 139B configuration nose forward of fuselage station 500. A sketch and photograph of the model are shown in figures 2 and 3, respectively. Data were measured at two moment reference point locations, 65% and 67% of the body length, (positions 1.0 and 2.0 respectively). Variations of rudder flare, body flap and OMS installation were also investigated. The data tabulation sheets are presented in Table II and the model component dimensional data are presented in Table III.

TEST CONDITIONS

Tunnel conditions during the tests are summarized in table I. The Langley forced oscillation apparatus (see reference 3) was used with the model oscillating at resonant frequency. Amplitudes of 1° were used during the pitch and yaw tests and 2.5° for the roll tests. Both the in-phase and the out-of-phase derivatives are presented for the primary derivatives as well as the cross-derivatives of yawing moment due to rolling velocity and rolling moment due to yaw velocity. All data presented are average values of three data samples at each angle of attack.

TABLE I. TEST CONDITIONS

MACH NUMBER	REYNOLDS NUMBER X 10^6 (BASED ON MODEL LENGTH)	DYNAMIC PRESSURE	
		k Pa	PSF
0.30	3.2	5.985	125
0.80	6.7	29.781	622
0.90	7.0	33.947	709
0.98	3.6	18.434	385
1.20	3.7	21.115	441

TEST FACILITY DESCRIPTION

The NASA/Langley Research Center 2.4384-Meter (8-Foot) Transonic Pressure Tunnel is an air-medium, facility capable of attaining continuously variable Mach numbers from 0.20 to 1.30. It is a single-return, closed-circuit tunnel, having controlled stagnation temperature, total pressure, and dew-point temperature. The test section is 2.16 meters square (7.1 feet square). Reynolds numbers are variable from 0.985 to 23 x 10^6/meter (0.3 to 7 x 10^6/foot), depending on Mach number and tunnel total-pressure limitations. Models are generally supported in the test section by a sting-sector system, but wall-mounting is possible. Schlieren photography is available for flow and shock-wave studies.

DATA REDUCTION

Static aerodynamic forces and moments were reduced to coefficient form based on the following model reference values:

b = BREF = reference wing span = 0.39256 meter (15.455 in.)

$\bar{c}$ = LREF = reference MAC = 0.1990 meter (7.834 in.)

S = SREF = reference wing area = 0.0680 m^2 (0.7323 ft^2)

Moment coefficients are referenced to two theoretical center of gravity locations, which are; 1) 65% and 2) 67% of the body length. These dimensions are:

x_{cg_1} longitudinal length, nose to forward moment reference center	0.3513 meter	(13.830 in.)
x_{cg_2} longitudinal length, nose to aft moment reference center	0.3621 meter	(14.256 in.)
z_{cg} vertical distance, water plane 0 to moment reference center	0.0106 meter	(0.419 in.)

PRESENTATION OF RESULTS

The forced oscillation test results are presented in figures 4 through 13. The effect of c.g. position and OMS installation on the pitch damping and the normal force due to pitch rate are presented in figures 4 and 5 respectively. The model exhibited positive damping in pitch throughout the test angle-of-attack range for Mach numbers up to 0.9. At Mach numbers of 0.98 and 1.2 there were regions of negative damping between 10 and 12 degrees angle-of-attack. The effect of OMS installation on the yaw and roll damping are presented in figures 6 and 7 respectively. These results show that the model exhibited positive damping in yaw throughout the test angle of attack range and that the model exhibited positive roll damping over the test Mach number range except for the highest angles-of-attack (excess of 20°) for Mach numbers of 0.98 and 1.2. The vertical tail contributions to yaw and roll damping can be seen in figures 8 and 9 and the effect of configuration variables such as body flap deflection in combination with rudder flare and body flap removal are presented in figures 10 through 13.

REFERENCES

1. Freeman, Delma C., Jr.; Boyden, Richmond P., and Davenport, Edwin, E., Supersonic Dynamic Stability Derivatives of a Modfied 089B Shuttle Orbiter, TMX-72630, January 1975.

2. Uselton, Bob L., Hypersonic Dynamic Stability Derivatives of a Modified 089B Shuttle Orbiter, DMS-DR-2132, December 1974.

3. Bielat, Ralph P. and Wiley, Harleth G., Dynamic Longitudinal and Directional Stability Derivatives for a 45° Sweptback-Wing Airplane Model at Transonic Speeds, TM X-39, August 1959.

TABLE II.

TEST: LaRC 8 FT. TPT 653,692 — DATA SET/RUN NUMBER COLLATION SUMMARY — DATE: 10 September 73

DATA SET IDENTIFIER	CONFIGURATION	SCHD. α	SCHD. β	PARAMETERS/VALUES δe	δrf	δbf	C.G.	NO. OF RUNS	MACH NUMBERS (OR ALTERNATE INDEPENDENT VARIABLE) 0.3	0.8	0.9	0.98	1.2					TEST RUN NUMBERS
RPKY02	BWV F (Test 692)	A	0	0	10	0	1	5	23	22	21	20	19					
03	BW MF	A	0	0	-	0	1	5	11	10	9	13	12					
04	BWVMF	A	0	0	10	0	1	5	3	4	1	7	6					
05	BWVMF	A	0	0	85	13	1	5	16	15	14	18	17					
RPKF00	BWVM (Test 653)	A	0	0	10	-	1	5	5	3	4	13	14					
02	BWV F	A	0	0	10	0	1	5	17	16	20	19	18					
04	BWVMF	A	0	0	10	0	1	5	12	6	7	11	10					
05	BWVMF	A	0	0	85	13	1	5	25	24	23	22	21					
06	BWVMF	A	0	0	10	0	2	5	26	28	27	29	30					
RPKR01	BW F (Test 653)	A	0	0	-	0	1	2	81	80								
02	BWV F	A	0	0	10	0	1	5	77	76	75	79	78					
03	BW MF	A	0	0	-	0	1	5	67	66	65	68	69					
04	BWVMF	A	0	0	10	0	1	5	62	61	60	64	63					
05	BWVMF	A	0	0	85	13	1	5	72	74	73	71	70					

"Y" DATA	CYNR	CYNBC	CBLR	CBLBC	MACH	ALPHA	4
"P" DATA	CLMQ	CLMA	CNQ	CNA	MACH	ALPHA	4
"R" DATA	CBLP	CBLBS	CYNP	CYNBS	MACH	ALPHA	4

TYPE OF DATA α OR β SCHEDULES

A) = -4° → 24°, Δα = 2°

COEFFICENT SCHEDULES

C.G. IDVAR (1) IDVAR (2) NDV

1-FORWARD=65% Body Length

2-AFT =67% Body Length

TABLE III. - COMPONENT DIMENSIONAL DATA

COMPONENT- BODY - B
GENERAL DESCRIPTION- 0898-1398(MODIFIED NOSE).NOSE SECTION FROM FULL-SCALE STATION 238.0 TO STATION 500 FROM NAR DRAWING VL70-000139B. REMAINING BODY AFT OF STATION 500 FROM NAR VL70-000093.
MODEL SCALE- 0.0165
DRAWING NUMBER- VL70-000093, VL70-000139B.
TEST IDENTIFICATION- LA20

	FULL SCALE METRIC		FULL SCALE ENGLISH		MODEL SCALE METRIC		MODEL SCALE ENGLISH	
LENGTH	3277.4	CM.	1290.3	IN.	54.077	CM.	21.290	IN.
MAX. WIDTH	673.1	CM.	265.0	IN.	11.106	CM.	4.372	IN.
MAX. DEPTH	629.9	CM.	248.0	IN.	10.394	CM.	4.092	IN.
FINENESS RATIO	4.869		4.869		4.869		4.869	
MAX CROSS-SECTIONAL AREA	42.4011	SQ.M.	456.4000	SQ.FT.	115.4370	SQ.CM.	17.8927	SQ.IN.

FOOTNOTE-GENERAL-MODEL SCALE VALUES ARE DERIVED FROM FULL SCALE VALUES UNLESS NOTED OTHERWISE.

COMPONENT- ELEVON - E
GENERAL DESCRIPTION- CONFIGURATION PER LINES VL70-000093, DATA FOR (1) OF (2) SIDES.
MODEL SCALE- 0.0165
DRAWING NUMBER- VL70-000093
TEST IDENTIFICATION- LA20

	FULL SCALE METRIC		FULL SCALE ENGLISH		MODEL SCALE METRIC		MODEL SCALE ENGLISH	
AREA	19.0932	SQ.M.	205.5170	SQ.FT.	51.9813	SQ.CM.	8.0571	SQ.IN.
EQUIVALENT SPAN	897.5	CM.	353.34	IN.	14.81	CM.	5.83	IN.
INBOARD EQUIVALENT CHORD	291.5	CM.	114.78	IN.	4.81	CM.	1.89	IN.
OUTBOARD EQUIVALENT CHORD	139.7	CM.	55.00	IN.	2.31	CM.	.91	IN.
RATIO MOVABLE SURFACE CHORD/ TOTAL SURFACE CHORD								
AT INBOARD EQUIVALENT CHORD	.208		.208		.208		.208	
AT OUTBOARD EQUIVALENT CHORD	.400		.400		.400		.400	
SWEEP-BACK ANGLES								
LEADING EDGE	.00	DEG.	.00	DEG.	.00	DEG.	.00	DEG.
TAILING EDGE	-10.02	DEG.	-10.02	DEG.	-10.02	DEG.	-10.02	DEG.
HINGELINE	.00	DEG.	.00	DEG.	.00	DEG.	.00	DEG.
AREA MOMENT NORMAL TO HINGELINE	43.8367	CU.M.	1548.0700	CU.FT.	196.9200	CU.CM.	12.0167	CU.IN.

FOOTNOTE- GENERAL-MODEL SCALE VALUES ARE DERIVED FROM FULL SCALE VALUES UNLESS NOTED OTHERWISE.

TABLE III. - COMPONENT DIMENSIONAL DATA

COMPONENT- WING - W
GENERAL DESCRIPTION- ORBITER CONFIGURATION PER LINES VL70-000093, (DIHEDRAL IS DEFINED AT THE LOWER SURFACE OF THE WING AT THE 75.33 PERCENT ELEMENT LINE PROJECTED INTO A PLANE PERPENDICULAR TO THE FUSELAGE REFERENCE LINE).
MODEL SCALE- 0.0165
DRAWING NUMBER- VL70-000093
TEST IDENTIFICATION- LA20

	FULL SCALE METRIC		FULL SCALE ENGLISH		MODEL SCALE METRIC		MODEL SCALE ENGLISH	
TOTAL DATA								
PLANFORM AREA	249.9102	SQ.M.	2690.0000	SQ.FT.	680.3804	SQ.CM.	105.4588	SQ.IN.
EQUIVALENT SPAN	2379.172	CM.	936.680	IN.	39.256	CM.	15.455	IN.
ASPECT RATIO	2.265		2.265		2.265		2.265	
RATE OF TAPER	1.177		1.177		1.177		1.177	
TAPER RATIO	.200		.200		.200		.200	
DIHEDRAL ANGLE	3.500	DEG.	3.500	DEG.	3.500	DEG.	3.500	DEG.
INCIDENCE ANGLE	3.000	DEG.	3.000	DEG.	3.000	DEG.	3.000	DEG.
AERODYNAMIC TWIST	3.000	DEG.	3.000	DEG.	3.000	DEG.	3.000	DEG.
SWEEP-BACK ANGLES								
LEADING EDGE	45.000	DEG.	45.000	DEG.	45.000	DEG.	45.000	DEG.
TRAILING EDGE	-10.240	DEG.	-10.240	DEG.	-10.240	DEG.	-10.240	DEG.
0.25 ELEMENT LINE	35.209	DEG.	35.209	DEG.	35.209	DEG.	35.209	DEG.
CHORDS								
ROOT (WING STATION 0.0)	1750.67	CM.	689.24	IN.	28.89	CM.	11.37	IN.
TIP (EQUIVALENT)	350.14	CM.	137.85	IN.	5.78	CM.	2.27	IN.
MAC	1206.02	CM.	474.81	IN.	19.90	CM.	7.83	IN.
FUS. STA. OF 0.25 MAC	2887.71	CM.	1136.89	IN.	47.65	CM.	18.76	IN.
W.P. OF 0.25 MAC	759.97	CM.	299.20	IN.	12.54	CM.	4.94	IN.
B.L. OF 0.25 MAC	462.61	CM.	182.13	IN.	7.63	CM.	3.01	IN.
EXPOSED DATA								
AREA	162.7937	SQ.M.	1752.2900	SQ.FT.	443.2059	SQ.CM.	68.6968	SQ.IN.
EQUIVALENT SPAN	1830.53	CM.	720.68	IN.	30.20	CM.	11.89	IN.
ASPECT RATIO	2.058		2.058		2.058		2.058	
TAPER RATIO	.2451		.2451		.2451		.2451	
CHORDS								
ROOT	1428.50	CM.	562.40	IN.	23.57	CM.	9.28	IN.
TIP	350.14	CM.	137.85	IN.	5.78	CM.	2.27	IN.
MAC	998.30	CM.	393.03	IN.	16.47	CM.	6.48	IN.
FUS. STA. OF 0.25 MAC	3010.69	CM.	1185.31	IN.	49.68	CM.	19.56	IN.
W.P. OF 0.25 MAC	762.51	CM.	300.20	IN.	12.58	CM.	4.95	IN.
B.L. OF 0.25 MAC	365.15	CM.	143.76	IN.	6.02	CM.	2.37	IN.

FOOTNOTE- GENERAL- MODEL SCALE VALUES ARE DERIVED FROM FULL SCALE VALUES UNLESS NOTED OTHERWISE.

TABLE III. - COMPONENT DIMENSIONAL DATA

COMPONENT- VERTICAL TAIL -V
GENERAL DESCRIPTION- CENTERLINE VERTICAL TAIL DOUBLE WEDGE AIRFOIL WITH ROUNDED LEADING EDGE.
MODEL SCALE- 0.0165
DRAWING NUMBER- VL70-000095
TEST IDENTIFICATION- LA20

	FULL SCALE METRIC		FULL SCALE ENGLISH		MODEL SCALE METRIC		MODEL SCALE ENGLISH	
THEORETICAL AREA	38.3923	SQ.M.	413.2500	SQ.FT.	104.5231	SQ.CM.	16.2011	SQ.IN.
EQUIVALENT SPAN	801.93	CM.	315.72	IN.	13.23	CM.	5.21	IN.
INBOARD EQUIVALENT CHORD	681.99	CM.	268.50	IN.	11.25	CM.	4.43	IN.
OUTBOARD EQUIVALENT CHORD	275.51	CM.	108.47	IN.	4.55	CM.	1.79	IN.
SWEEP-BACK ANGLES								
LEADING EDGE	45.00	DEG.	45.00	DEG.	45.00	DEG.	45.00	DEG.
TAILING EDGE	26.25	DEG.	26.249	DEG.	26.25	DEG.	26.25	DEG.

FOOTNOTE-GENERAL-MODEL SCALE VALUES ARE DERIVED FROM FULL SCALE VALUES UNLESS NOTED OTHERWISE.

COMPONENT- RUDDER - R
GENERAL DESCRIPTION- CONFIGURATION PER LINES VL70-000095.
MODEL SCALE- 0.0165
DRAWING NUMBER- VL70-000095
TEST IDENTIFICATION- LA20

	FULL SCALE METRIC		FULL SCALE ENGLISH		MODEL SCALE METRIC		MODEL SCALE ENGLISH	
AREA	9.883	SQ.M.	106.380	SQ.FT.	.0027	SQ.M.	.0293	SQ.FT.
EQUIVALENT SPAN	510.54	CM.	201.00	IN.	8.42	CM.	3.32	IN.
INBOARD EQUIVALENT CHORD	232.63	CM.	91.585	IN.	3.84	CM.	1.51	IN.
OUTBOARD EQUIVALENT CHORD	129.12	CM.	50.833	IN.	2.13	CM.	.84	IN.
RATIO MOVABLE SURFACE CHORD/ TOTAL SURFACE CHORD								
AT INBOARD EQUIVALENT CHORD	.400		.400		.400		.400	
AT OUTBOARD EQUIVALENT CHORD	.400		.400		.400		.400	
SWEEP-BACK ANGLES								
LEADING EDGE	34.83	DEG.	34.83	DEG.	34.83	DEG.	34.83	DEG.
TRAILING EDGE	26.25	DEG.	26.25	DEG.	26.25	DEG.	26.25	DEG.
HINGELINE	34.83	DEG.	34.83	DEG.	34.83	DEG.	34.83	DEG.
AREA MOMENT NORMAL TO HINGELINE	14.8983	CU.M.	526.1250	CU.FT.	66.9250	CU.CM.	4.0840	CU.IN.

FOOTNOTE-GENERAL-MODEL SCALE VALUES ARE DERIVED FROM FULL SCALE VALUES UNLESS NOTED OTHERWISE.

TABLE III. - COMPONENT DIMENSIONAL DATA

COMPONENT- OMS PODS- M
GENERAL DESCRIPTION- 2A LIGHTWEIGHT CONFIGURATION PER MC120074
MODEL SCALE- 0.0165
DRAWING NUMBER- VL70-000094
TEST IDENTIFICATION- LA20

	FULL SCALE METRIC		FULL SCALE ENGLISH		MODEL SCALE METRIC		MODEL SCALE ENGLISH	
LENGTH	878.842	CM.	346.000	IN.	14.501	CM.	5.709	IN.
MAX WIDTH (AT XO=1450)	274.321	CM.	108.000	IN.	4.526	CM.	1.782	IN.
MAX DEPTH (AT XO=1500)	289.053	CM.	113.800	IN.	4.769	CM.	1.878	IN.
OMS POD CENTERLINE								
Z AXIS ORBITER	1178.308	CM.	463.900	IN.	19.442	CM.	7.654	IN.
Y AXIS ORBITER	203.200	CM.	80.000	IN.	3.353	CM.	1.320	IN.

FOOTNOTE- GENERAL- MODEL SCALE VALUES ARE DERIVED FROM FULL SCALE VALUES UNLESS NOTED OTHERWISE.

COMPONENT- BODY FLAP- F
GENERAL DESCRIPTION- BODY FLAP 2A CONFIGURATION PER LINES VL70-000094.
MODEL SCALE- 0.0165
DRAWING NUMBER- VL70-000094 A
TEST IDENTIFICATION- LA20

	FULL SCALE METRIC		FULL SCALE ENGLISH		MODEL SCALE METRIC		MODEL SCALE ENGLISH	
LENGTH	215.138	CM.	84.700	IN.	3.550	CM.	1.398	IN.
MAXIMUM WIDTH	673.101	CM.	265.000	IN.	11.106	CM.	4.372	IN.
MAXIMUM DEPTH	53.340	CM.	21.000	IN.	.880	CM.	.346	IN.
AREA PLANFORM	13.2517	SQ.M.	142.6400	SQ.FT.	36.0779	SQ.CM.	5.5921	SQ.IN.
AREA BASE	3.5903	SQ.M.	38.6460	SQ.FT.	9.7747	SQ.CM.	1.5151	SQ.IN.

FOOTNOTE- GENERAL- MODEL SCALE VALUES ARE DERIVED FROM FULL SCALE VALUES UNLESS NOTED OTHERWISE.

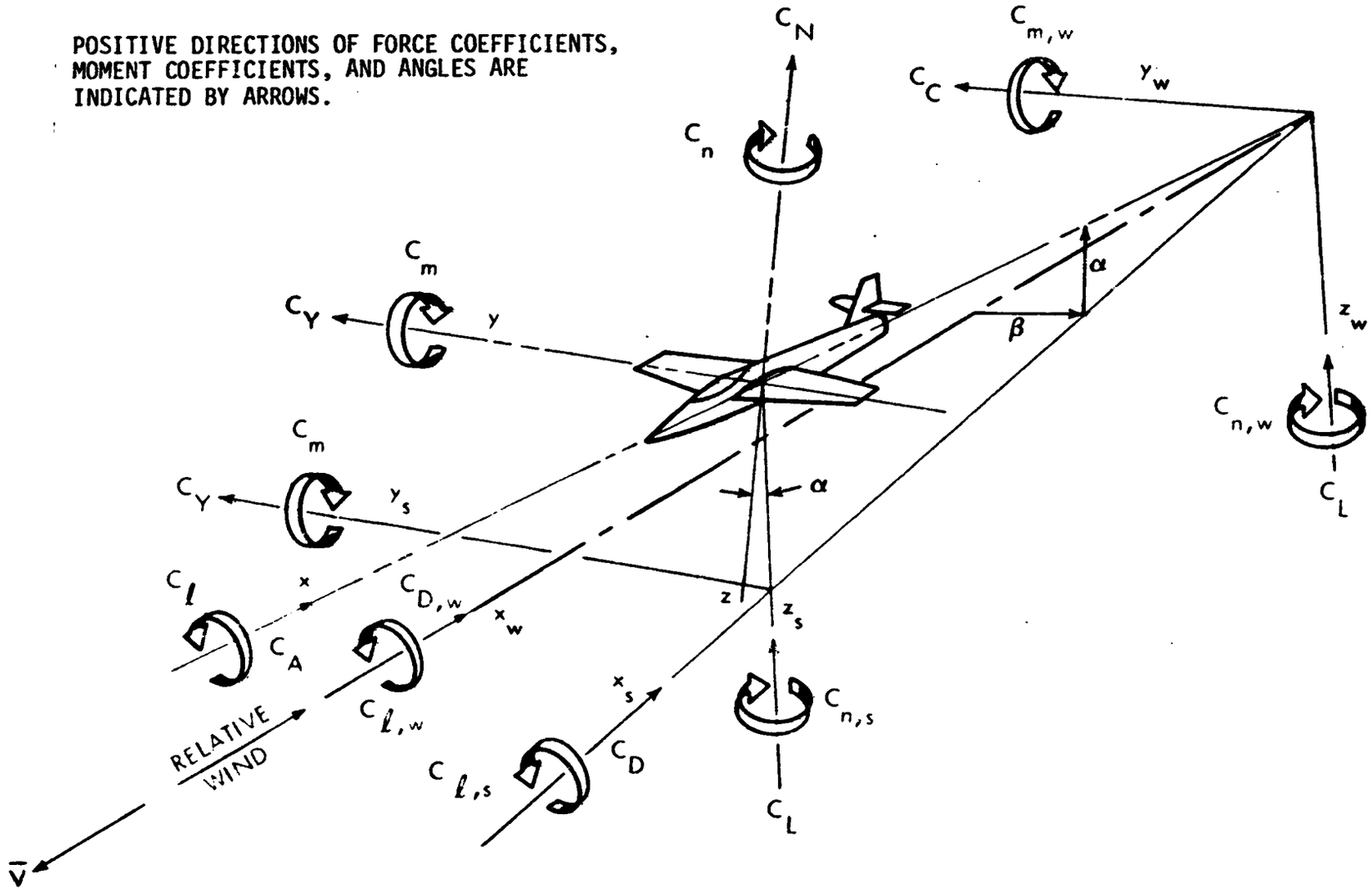
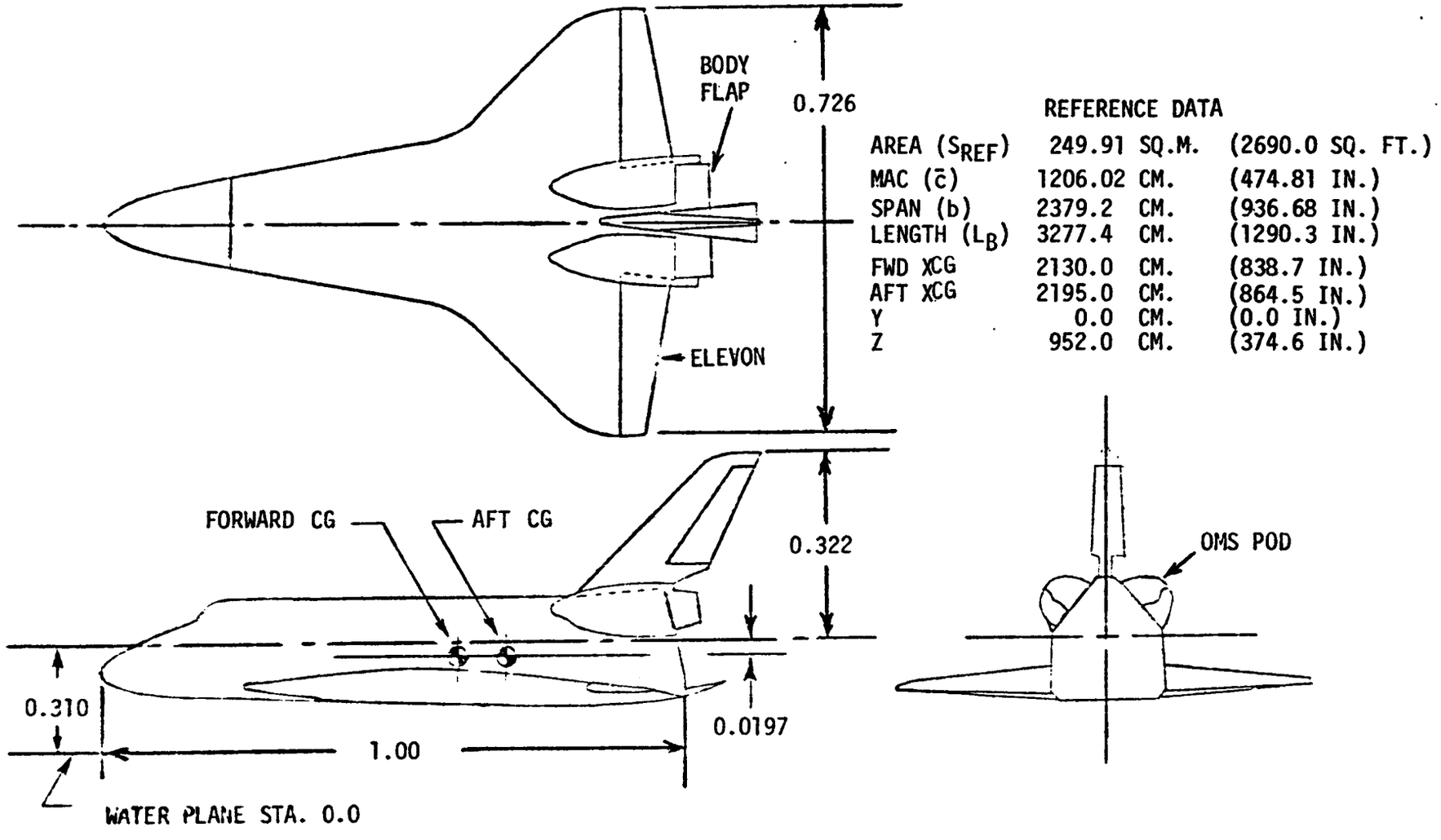


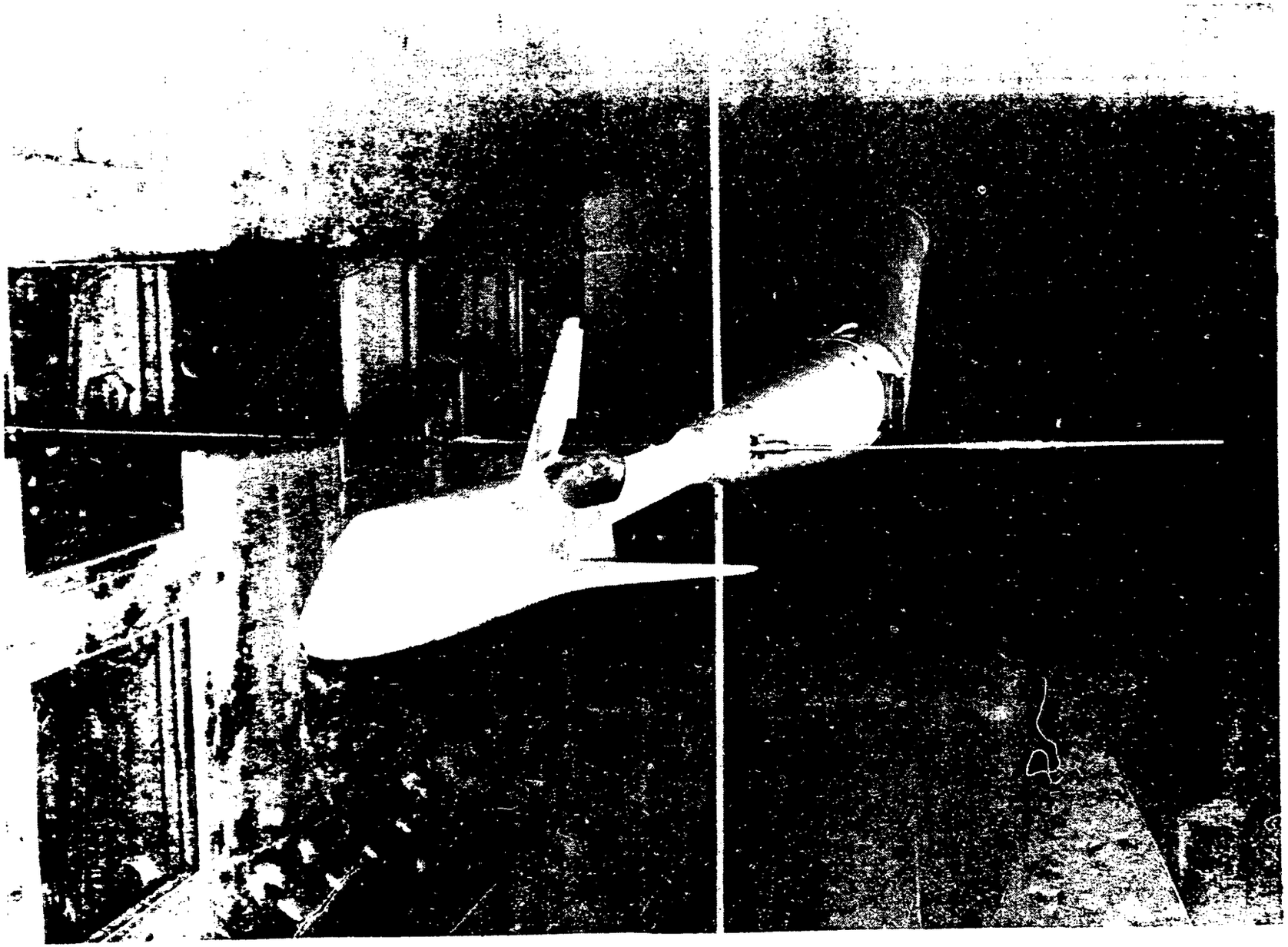
FIGURE 1. AXIS SYSTEMS



REFERENCE DATA

AREA (S_{REF})	249.91	SQ.M.	(2690.0 SQ. FT.)
MAC ($\bar{c}$)	1206.02	CM.	(474.81 IN.)
SPAN (b)	2379.2	CM.	(936.68 IN.)
LENGTH (L_B)	3277.4	CM.	(1290.3 IN.)
FWD XCG	2130.0	CM.	(838.7 IN.)
AFT XCG	2195.0	CM.	(864.5 IN.)
Y	0.0	CM.	(0.0 IN.)
Z	952.0	CM.	(374.6 IN.)

FIGURE 2. SSV ORBITER WITH DIMENSIONS NORMALIZED WITH RESPECT TO BODY LENGTH OF 3277.4 CM.(1290.3 IN.)



DATA FIGURES

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BOFLAP	RUDFLR
(RPKP04) ○	LA-20. ROCKWELL 0898 ORB W/MOD NOSE (BWVMF)	1.000	.000	.000	10.000
(RPKP06) □	LA-20. ROCKWELL 0898 ORB W/MOD NOSE (BWVMF)	2.000	.000	.000	10.000

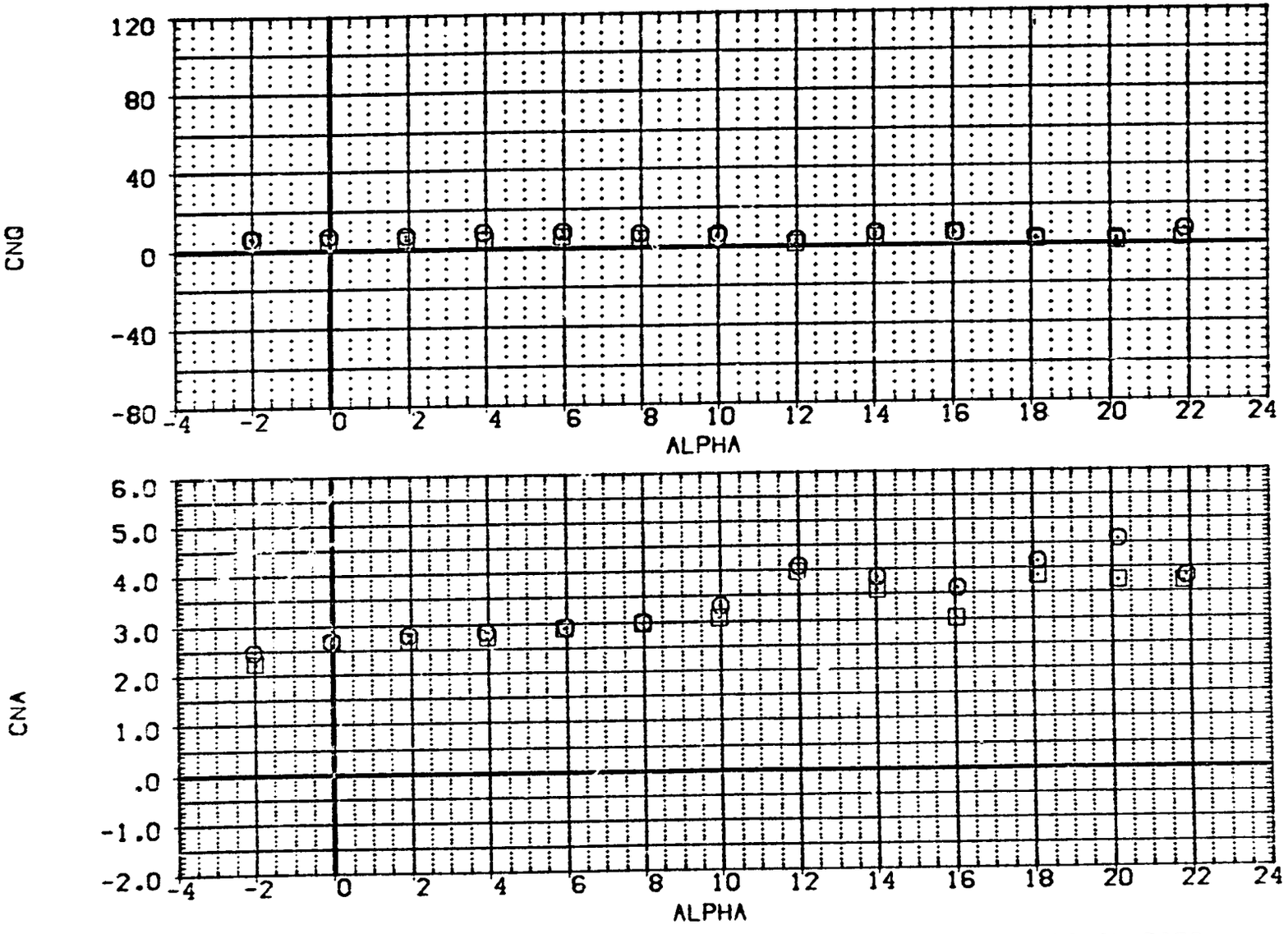


FIGURE 4. EFFECT OF C. G. LOCATION ON DYNAMIC STABILITY PARAMETERS IN PITCH

(A)MAC .30

PAGE

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BOFLAP	RUDFLR
(RPKP04)	○	LA-20, ROCKWELL 0898 ORB W/MOD NOSE (BWWF)	1.000	.000	.000	10.000
(RPKPC6)	□	LA-20, ROCKWELL 0898 ORB W/MOD NOSE (BWWF)	2.000	.000	.000	10.000

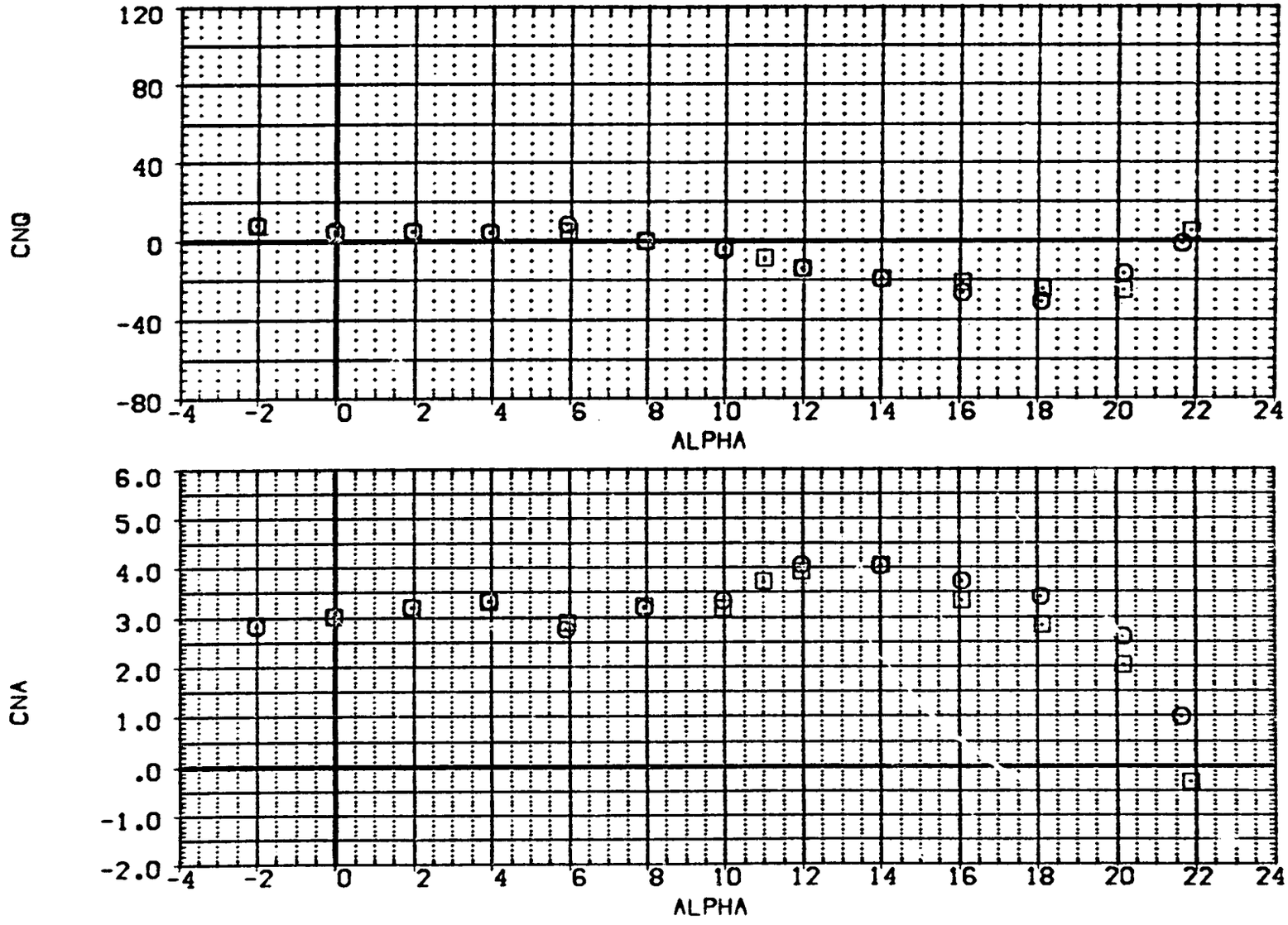


FIGURE 4. EFFECT OF C. G. LOCATION ON DYNAMIC STABILITY PARAMETERS IN PITCH

(B)MACH = .80

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BOFLAP	RUDFLR
(RPKP04)	○	LA-20, ROCKWELL 0899 ORB W/MOD NOSE (BWVMF)	1.000	.000	.000	10.000
(RPKP06)	□	LA-20, ROCKWELL 0899 ORB W/MOD NOSE (BWVMF)	2.000	.000	.000	10.000

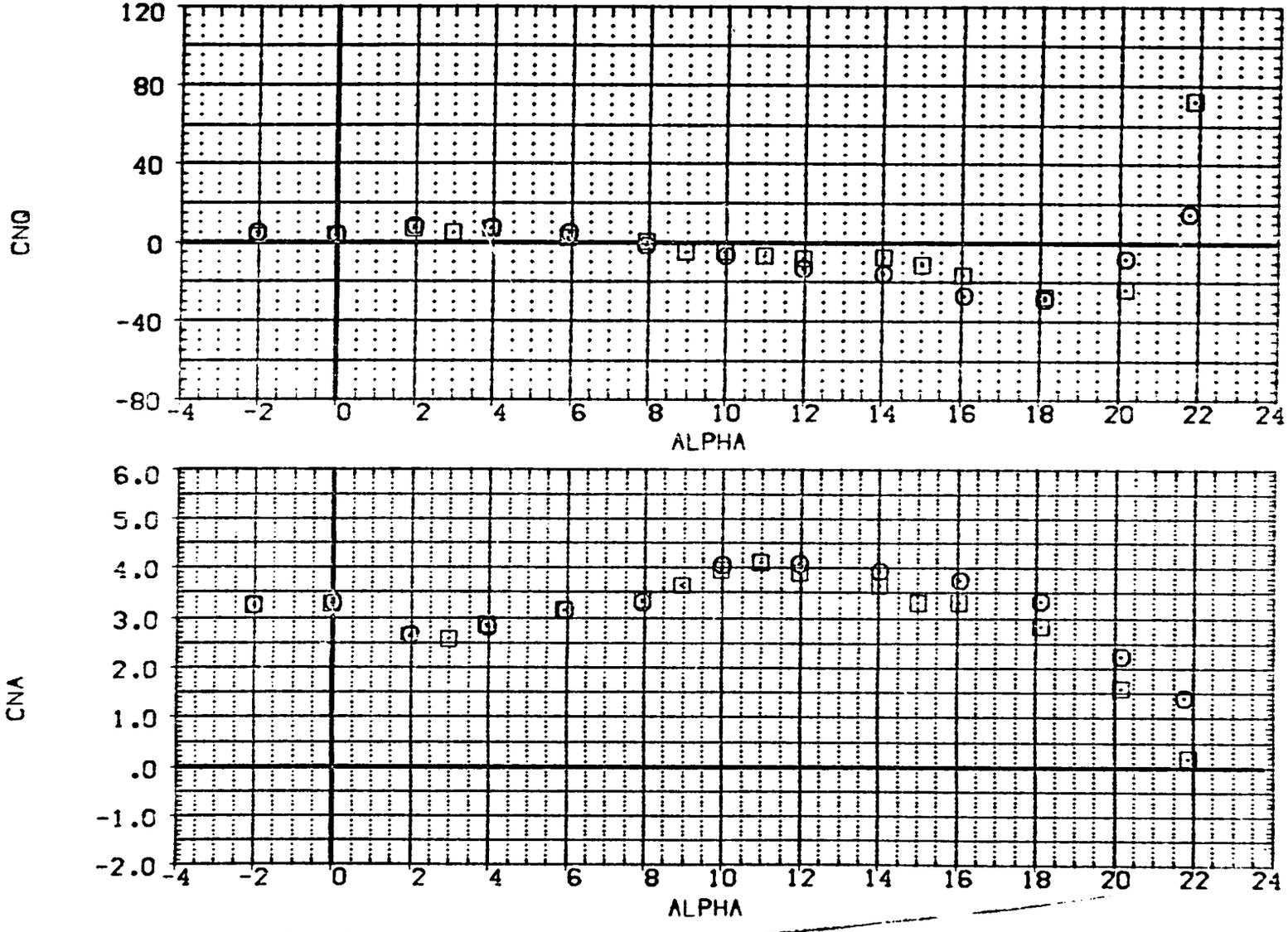


FIGURE 4. EFFECT OF C.G. LOCATION ON DYNAMIC STABILITY PARAMETERS IN PITCH

(CONFIG - .30

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BDFLAP	RUDFLR
(RPKPO1) ○	LA-20. ROCKWELL 089B ORB W/MOD NOSE (BWVMF)	1.000	.000	.000	10.000
(RPKPO6) □	LA-20. ROCKWELL 089B ORB W/MOD NOSE (BWVMF)	2.000	.000	.000	10.000

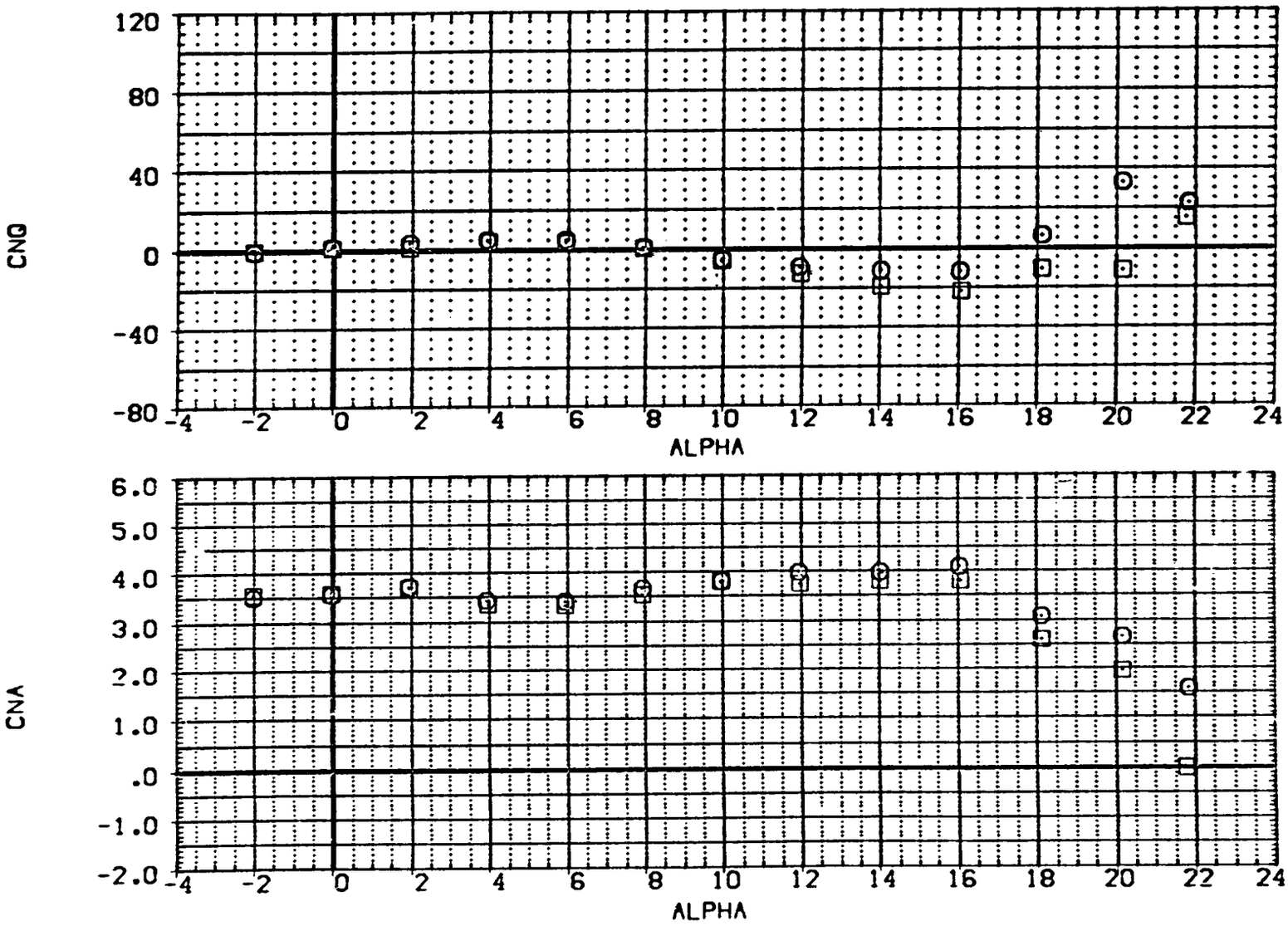


FIGURE 4. EFFECT OF C. G. LOCATION ON DYNAMIC STABILITY PARAMETERS IN PITCH

(D)MACH = .98

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BOFLAP	RUDFLR
(RPKP04)	○	LA-20. ROCKWELL 0898 ORB W/MOD NOSE (BWVMF)	1.000	.000	.000	10.000
(RPKP06)	□	LA-20. ROCKWELL 0898 ORB W/MOD NOSE (BWVMF)	2.000	.000	.000	10.000

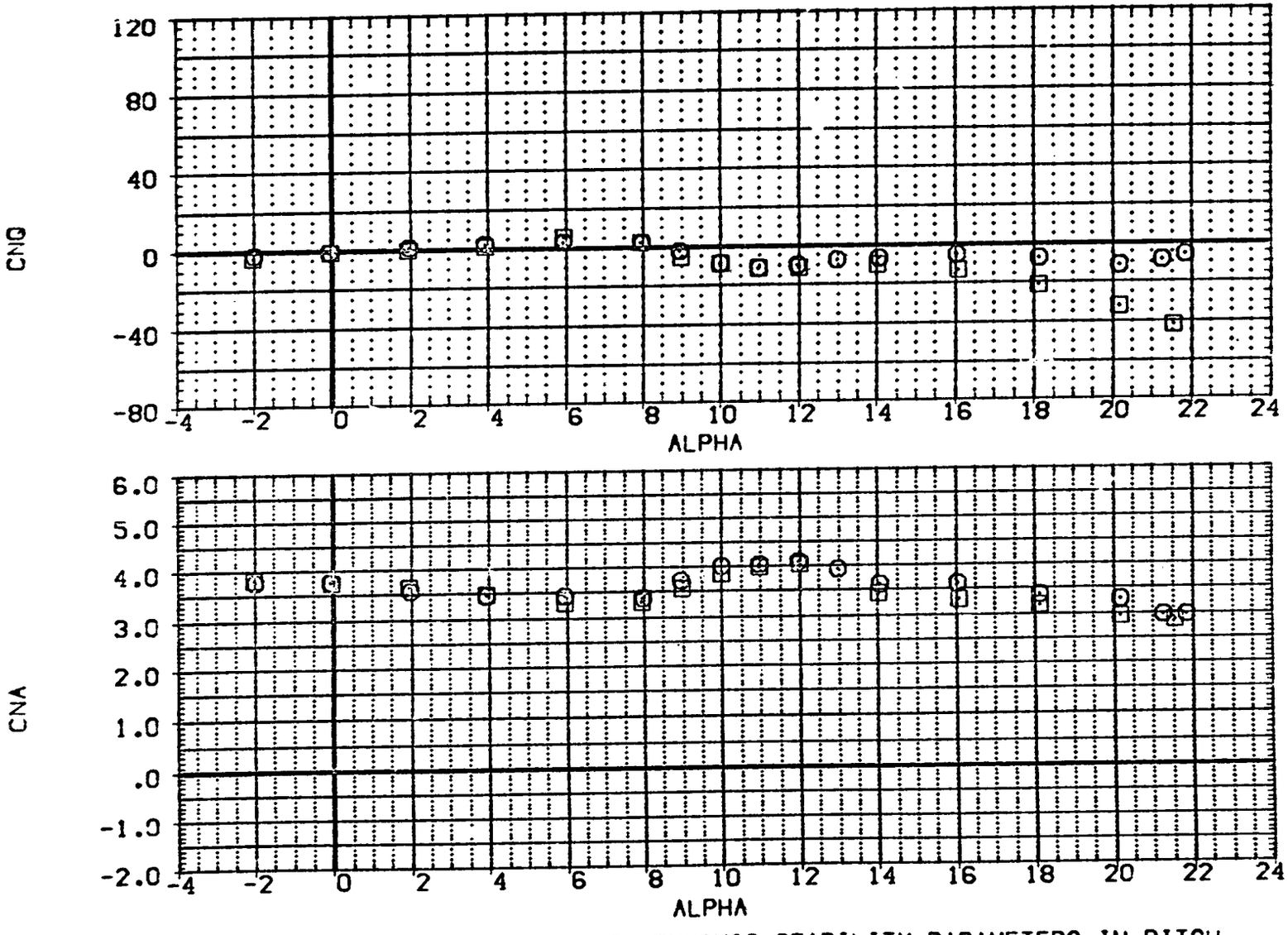


FIGURE 4. EFFECT OF C. G. LOCATION ON DYNAMIC STABILITY PARAMETERS IN PITCH

(E)MACH = 1.20

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BDFLAP	RUDFLR
(RPKP04) ○	LA-20. ROCKWELL 089B ORB. W/MOD NOSE (BWVMF)	1.000	.000	.000	10.000
(RPKP06) □	LA-20. ROCKWELL 089B ORB. W/MOD NOSE (BWVMF)	2.000	.000	.000	10.000

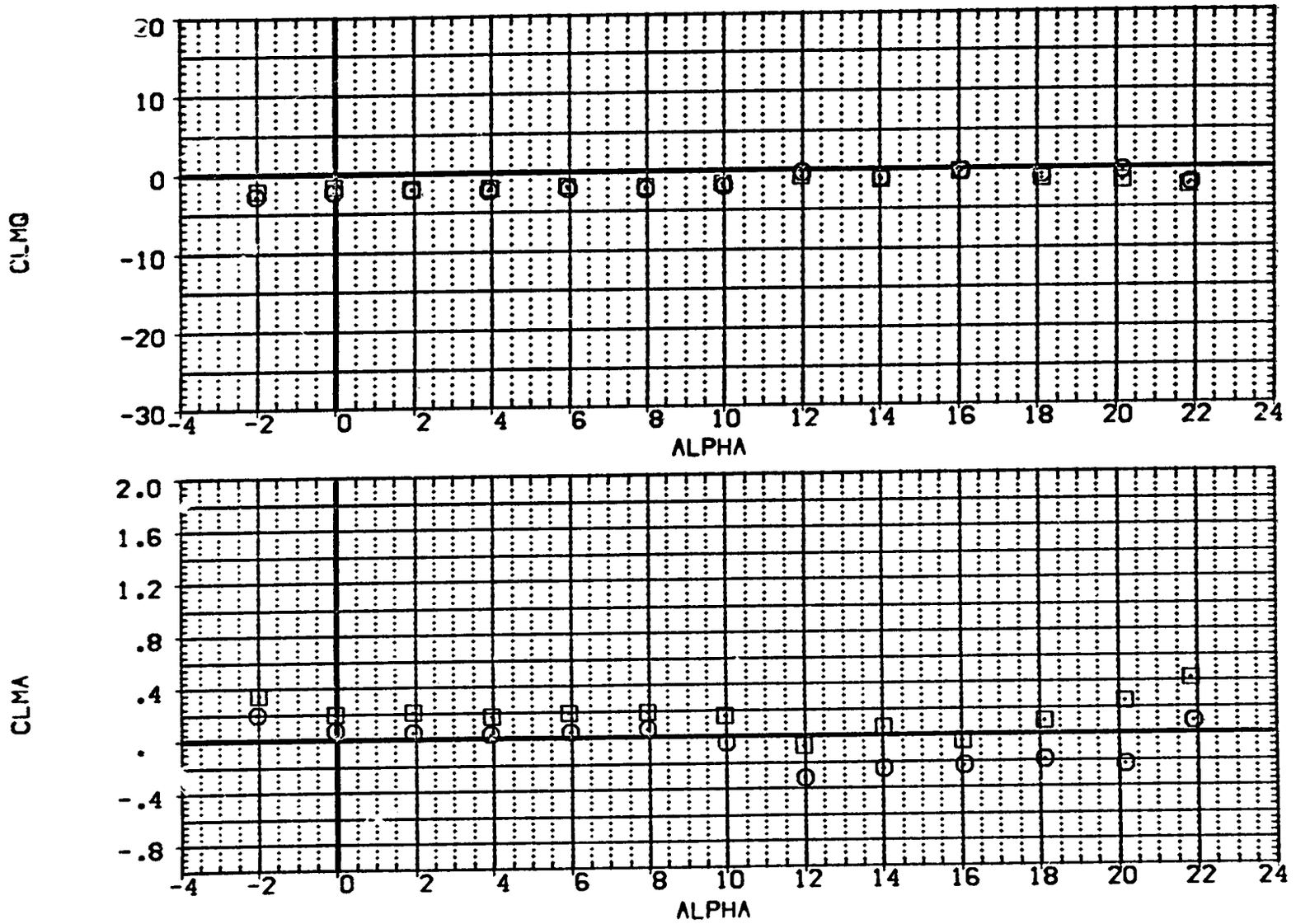


FIGURE 4. EFFECT OF C. G. LOCATION ON DYNAMIC STABILITY PARAMETERS IN PITCH

(A)MACH = .30

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BDFLAP	RUDFLR
(RPKPC4)	○	LA-20. ROCKWELL 089B ORB W/MOD NOSE (BWVMF)	1.000	.000	.000	10.000
(RPKPC6)	□	LA-20. ROCKWELL 089B ORB W/MOD NOSE (BWVMF)	2.000	.000	.000	10.000

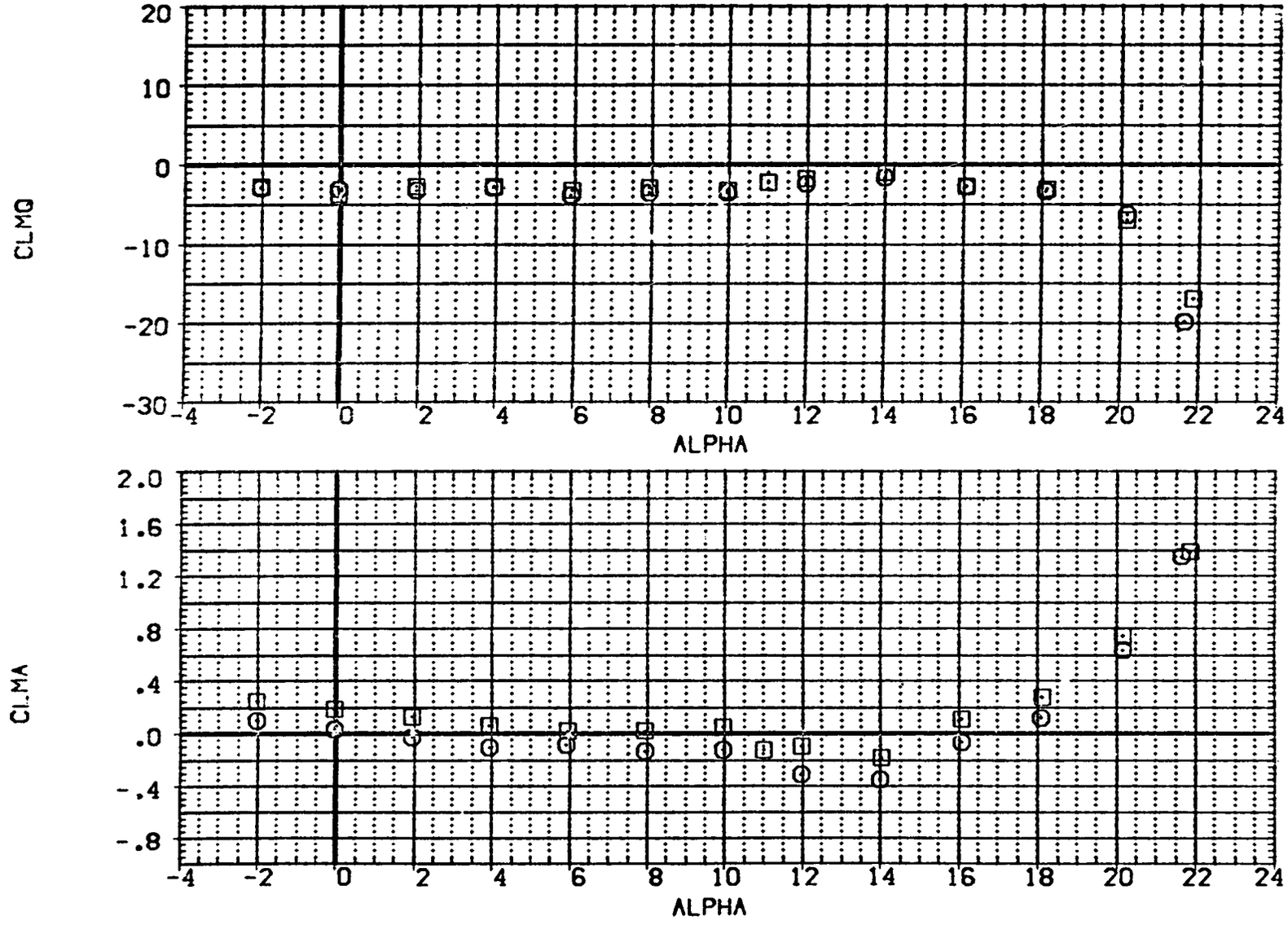


FIGURE 4. EFFECT OF C. G. LOCATION ON DYNAMIC STABILITY PARAMETERS IN PITCH

(B)MACH = .80

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BDFLAP	RUDFLR
(RPKP04)	LA-20, ROCKWELL 0898 ORB W/MOD NOSE (BWVMF)	1.000	.000	.000	10.000
(RPKP06)	LA-20, ROCKWELL 0898 ORB W/MOD NOSE (BWVMF)	2.000	.000	.000	10.000

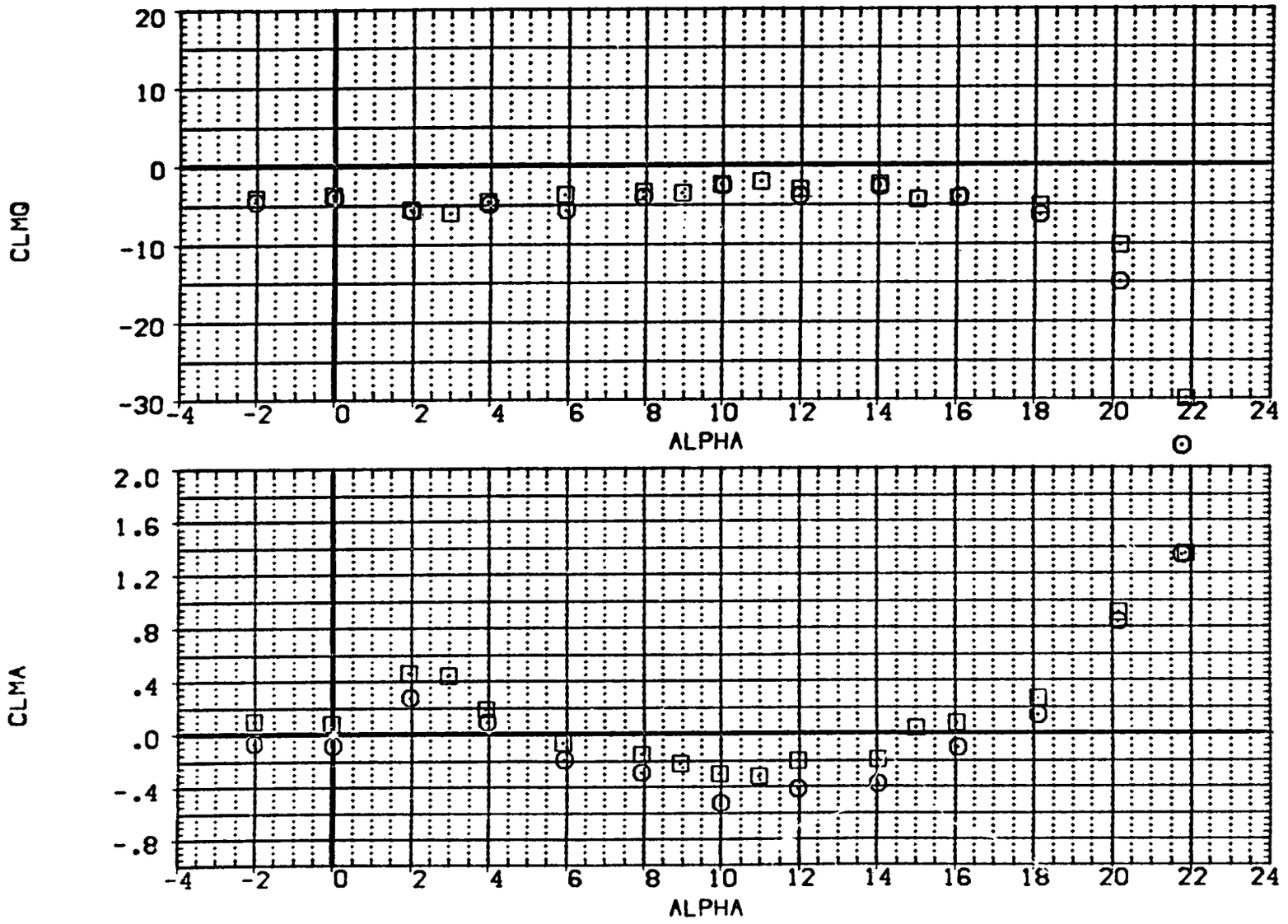


FIGURE 4. EFFECT OF C. G. LOCATION ON DYNAMIC STABILITY PARAMETERS IN PITCH

(C)MACH = .90

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BDFLAP	RUDFLR
(RPKP04)	LA-20, ROCKWELL 089B ORB W/MOD NOSE (BWVMF)	1.000	.000	.000	10.000
(RPKP06)	LA-20, ROCKWELL 089B ORB W/MOD NOSE (BWVMF)	2.000	.000	.000	10.000

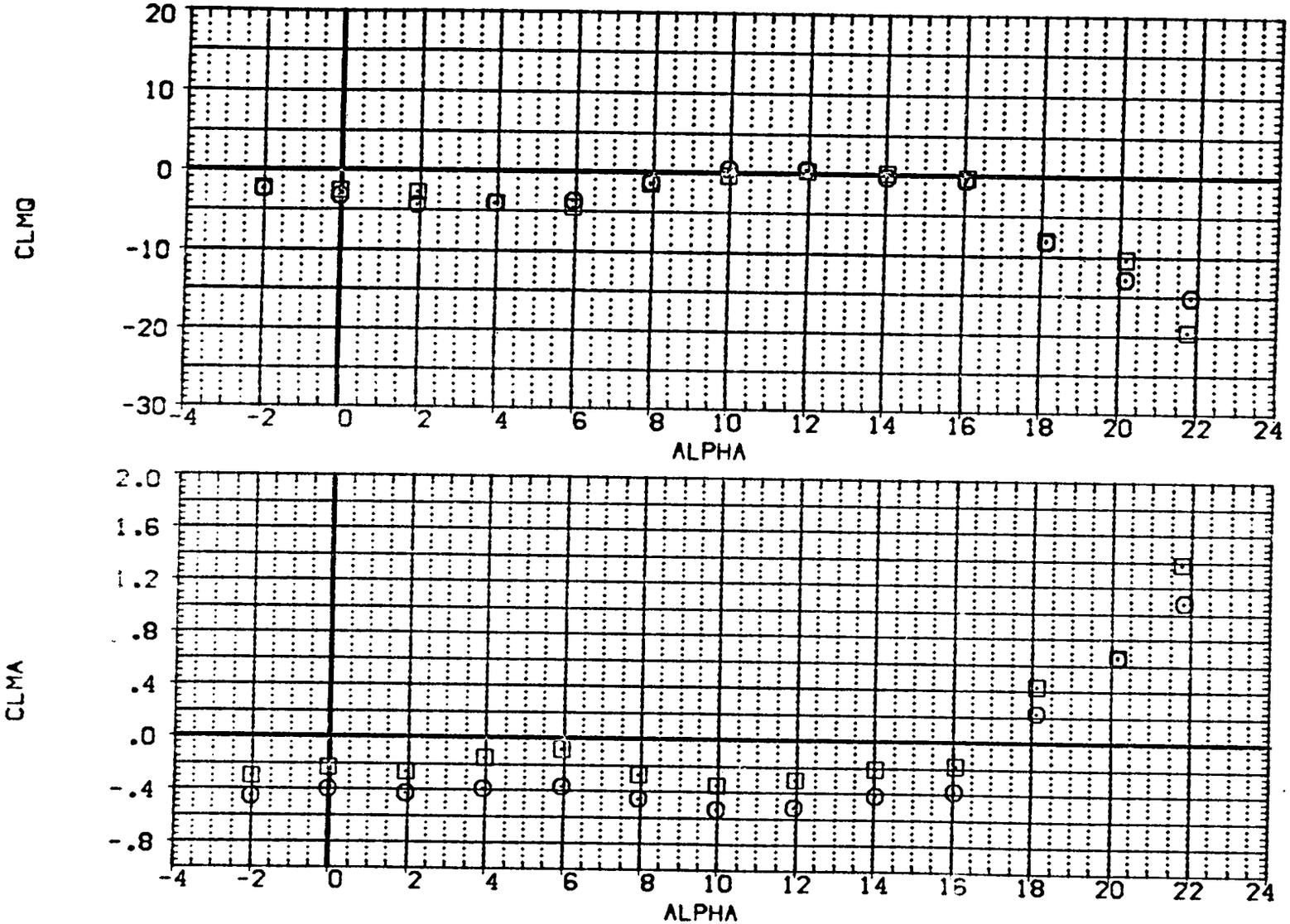


FIGURE 4. EFFECT OF C. G. LOCATION ON DYNAMIC STABILITY PARAMETERS IN PITCH

(23)MACH = .98

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BOFLAP	RUDFLR
(RPKP04)	○	LA-20. ROCKWELL 089B ORB W/MOD NOSE (BWVMF)	1.000	.000	.000	10.000
(RPKP06)	□	LA-20. ROCKWELL 089B ORB W/MOD NOSE (BWVMF)	2.000	.000	.000	10.000

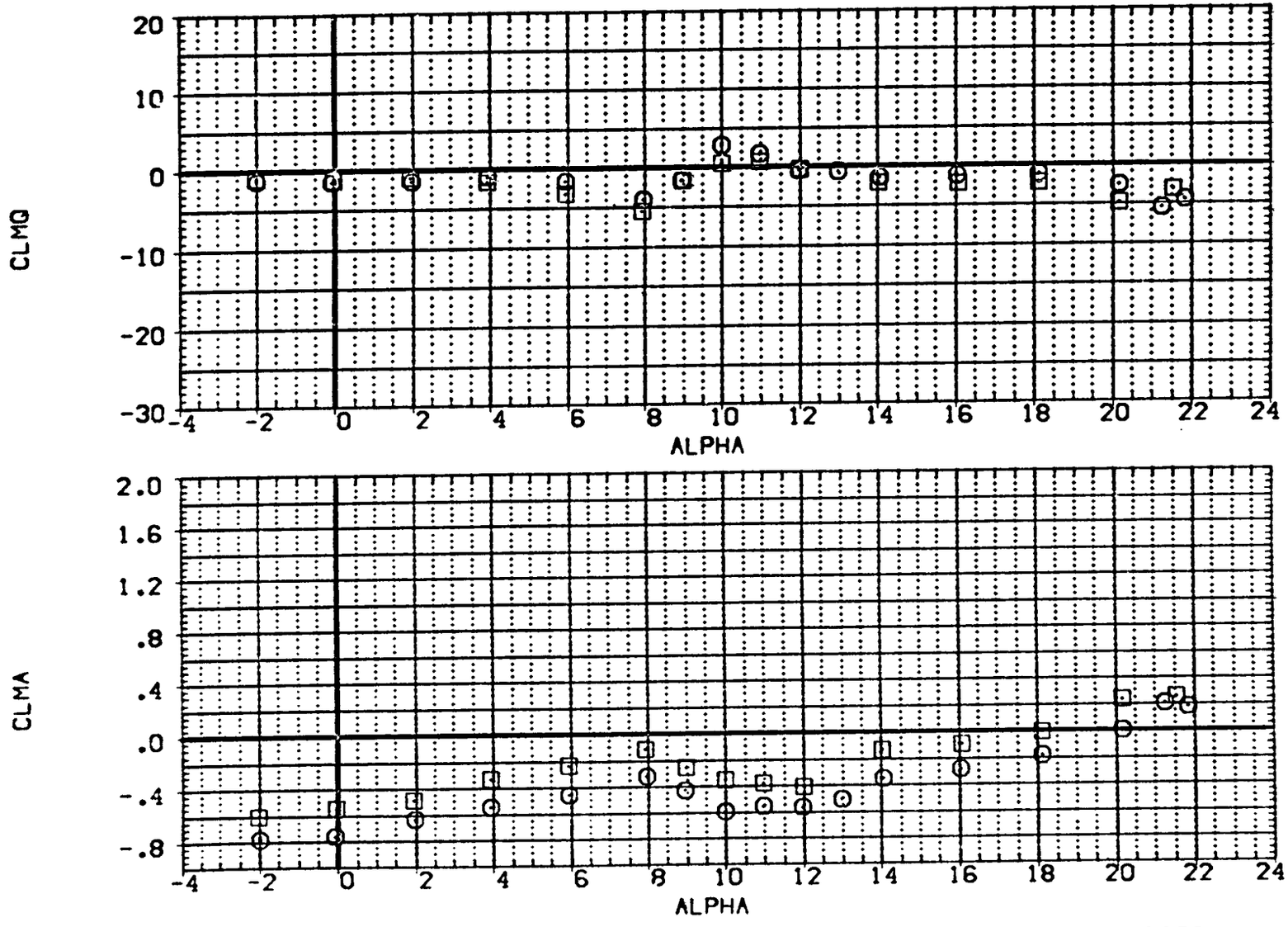


FIGURE 4. EFFECT OF C. G. LOCATION ON DYNAMIC STABILITY PARAMETERS IN PITCH

(E)MACH = 1.20

DATA SET SYMBOL		CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BOFLAP	RUDFLR
(RPKP02)	○	LA-20. ROCKWELL 089B ORB W/MOD NOSE (BWV F)	1.000	.000	.000	10.000
(RPKP04)	□	LA-20. ROCKWELL 089B ORB W/MOD NOSE (BWVMF)	1.000	.000	.000	10.000

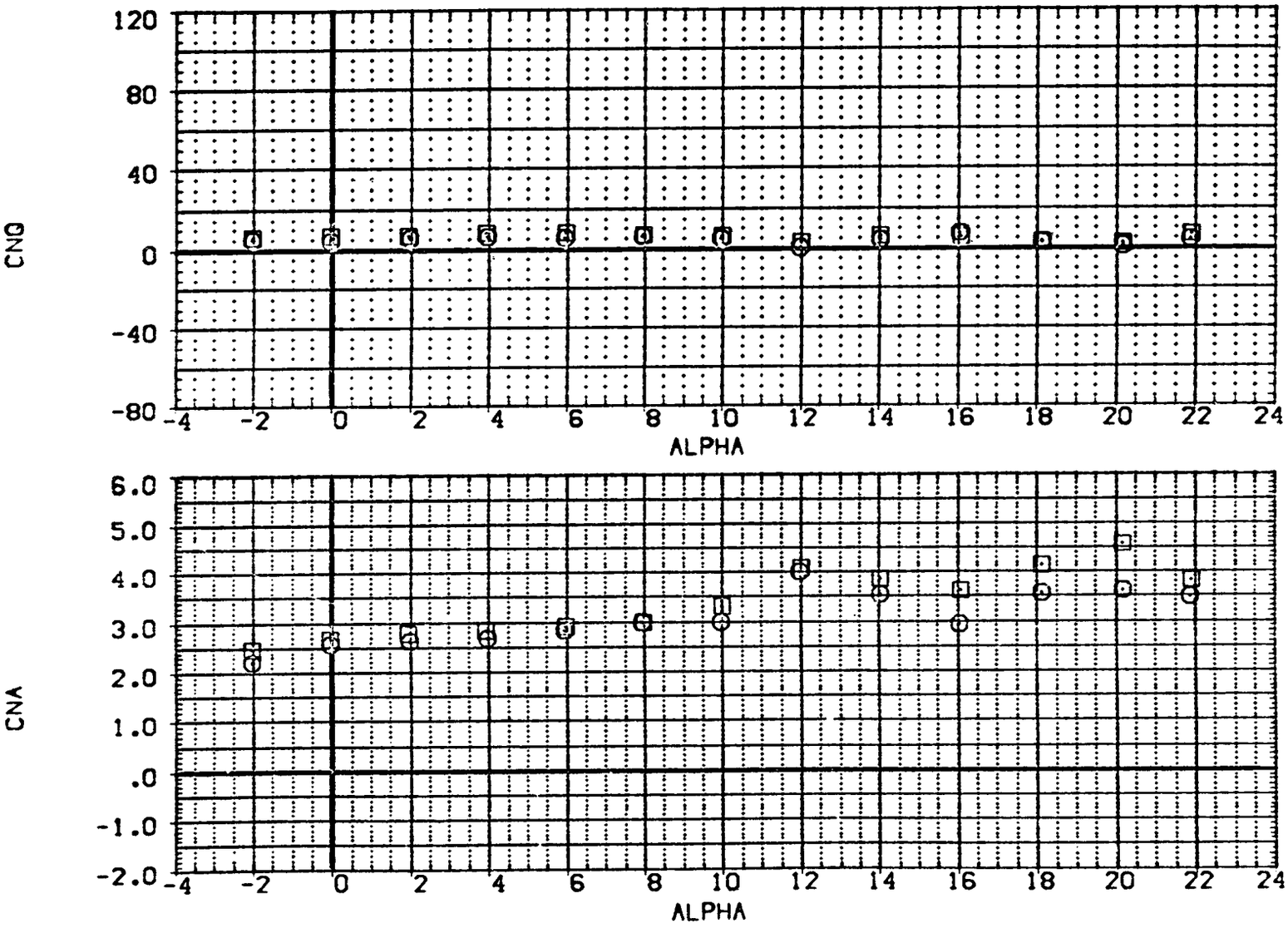


FIGURE 5. EFFECT OF OMS PODS ON DYNAMIC STABILITY PARAMETERS IN PITCH

(A)MACH = .30

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BDFLAP	RUDFLR
(RPAPC2)	○	LA-20, ROCKWELL 0898 ORB W/MOD NOSE (BWV F)	1.000	.000	.000	10.000
(RPAPC4)	□	LA-20, ROCKWELL 0898 ORB W/MOD NOSE (BWVMF)	1.000	.000	.000	10.000

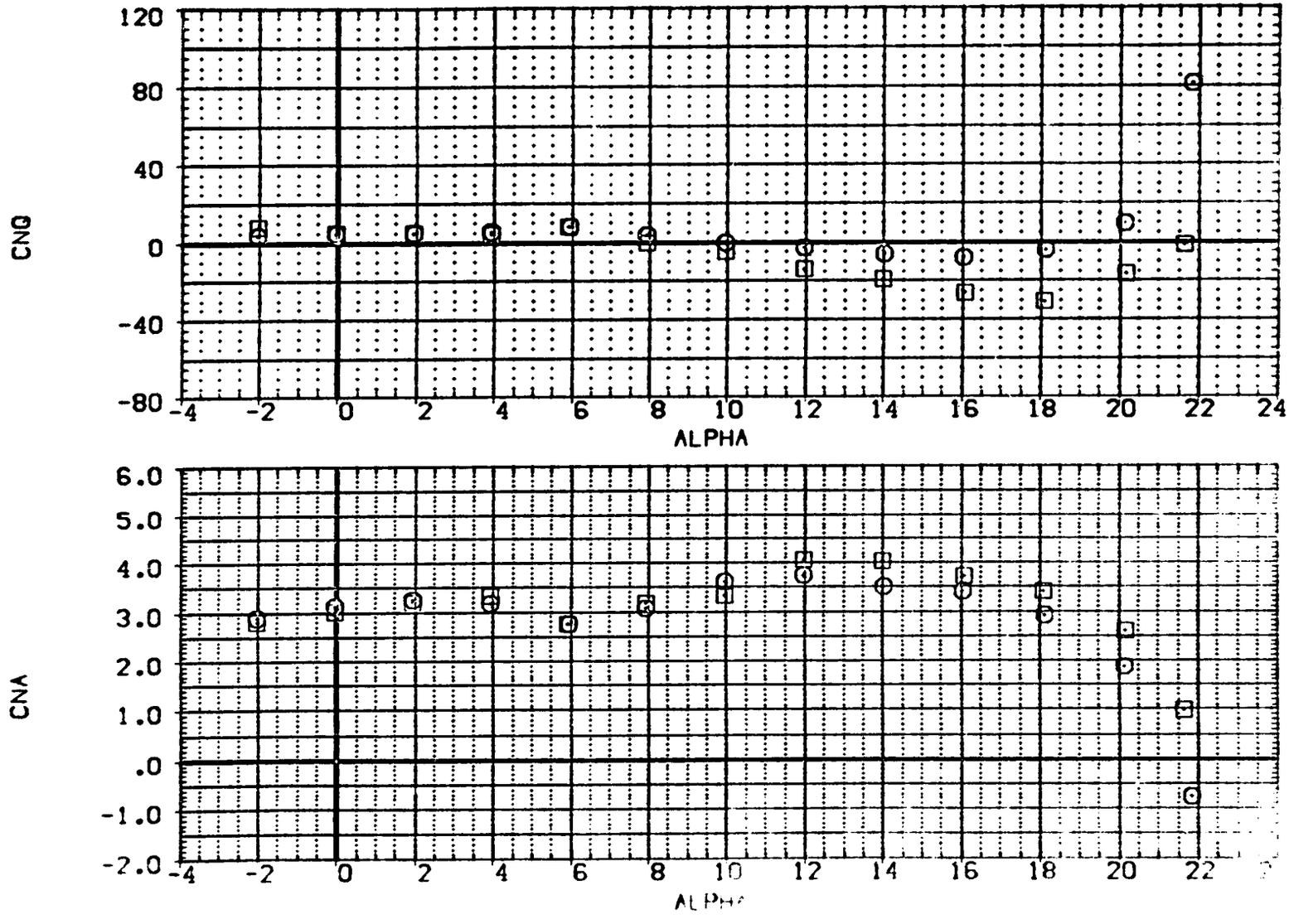


FIGURE 5. EFFECT OF [illegible] PODS ON DYNAMIC STABILITY PARAMETERS IN PITCH

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BOFLAP	RUDFLR
[RPKPO2]	○	LA-20. ROCKWELL 0899 ORB W/MOD NOSE (BWV F)	1.000	.000	.000	10.000
[RPKPO4]	□	LA-20. ROCKWELL 0899 ORB W/MOD NOSE (BWVMF)	1.000	.000	.000	10.000

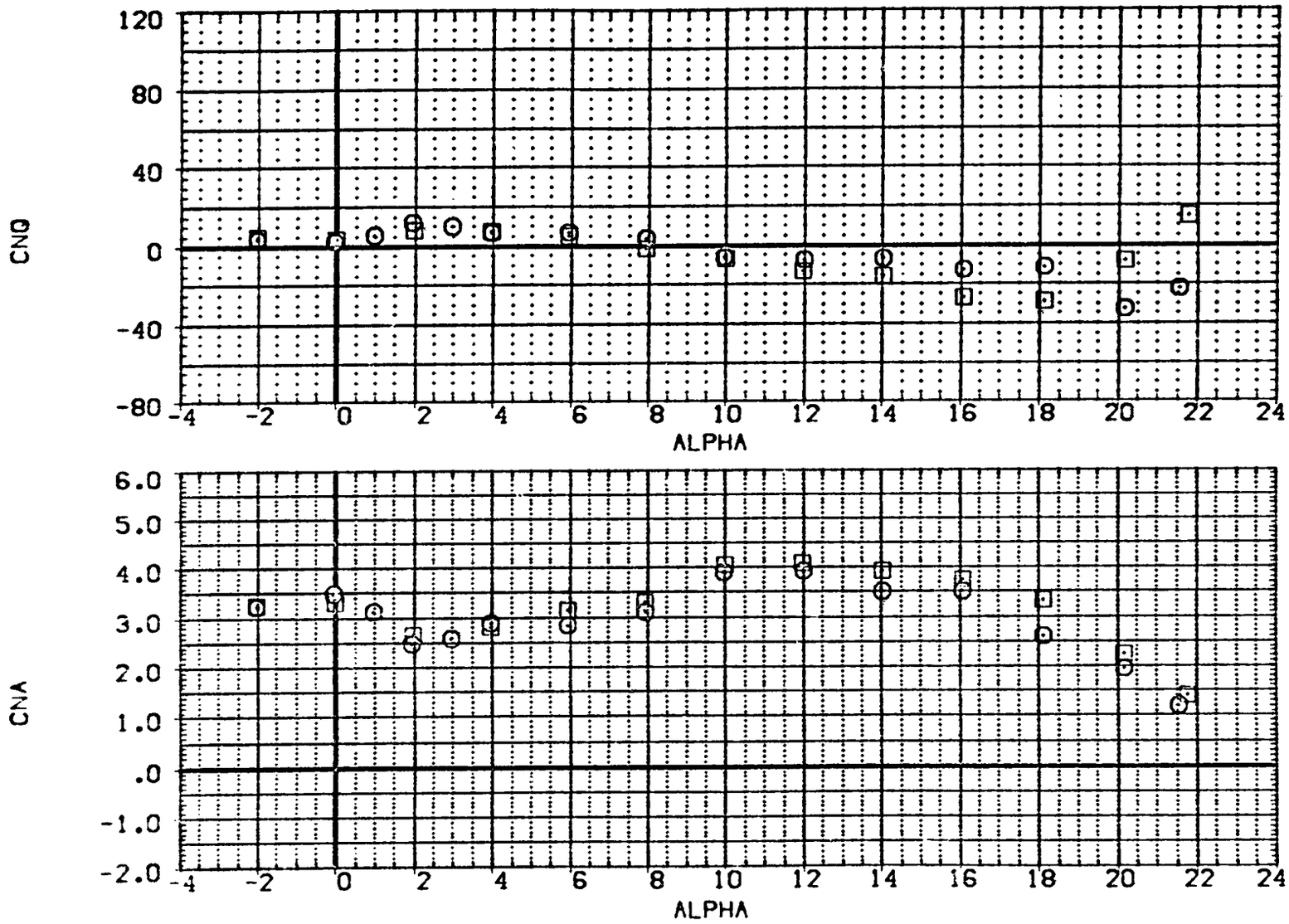
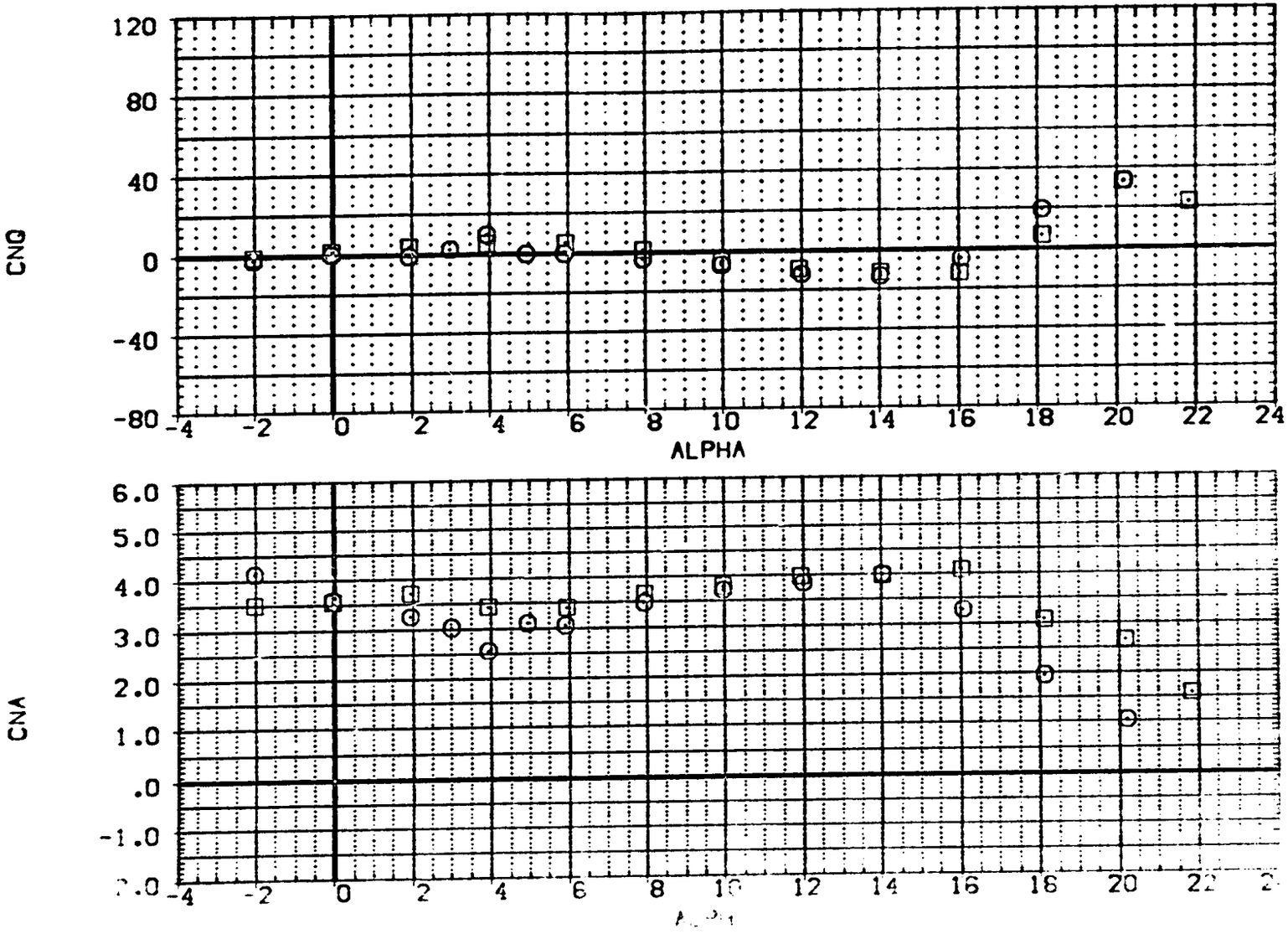


FIGURE 5. EFFECT OF OMS PODS ON DYNAMIC STABILITY PARAMETERS IN PITCH

[ ]MACH = .90

DAT.	SET	SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BOFLAP	RUDFLR
(RPKPO2)			LA-20. ROCKWELL 0898 ORB W/MOD NOSE (BWV F)	1.000	.000	.000	10.000
(RPKPO4)			LA-20. ROCKWELL 0898 ORB W/MOD NOSE (BWVMF)	1.000	.000	.000	10.000



5. EFFECT OF [illegible] ON DYNAMIC [illegible] PARAMETERS IN PITCH

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BDFLAP	RUDFLR
(RPAP02)	○	LA-20. ROCKWELL 0898 ORB W/MOD NOSE (BWV F)	1.000	.000	.000	10.000
(RPAP04)	□	LA-20. ROCKWELL 0898 ORB W/MOD NOSE (BWVMF)	1.000	.000	.000	10.000

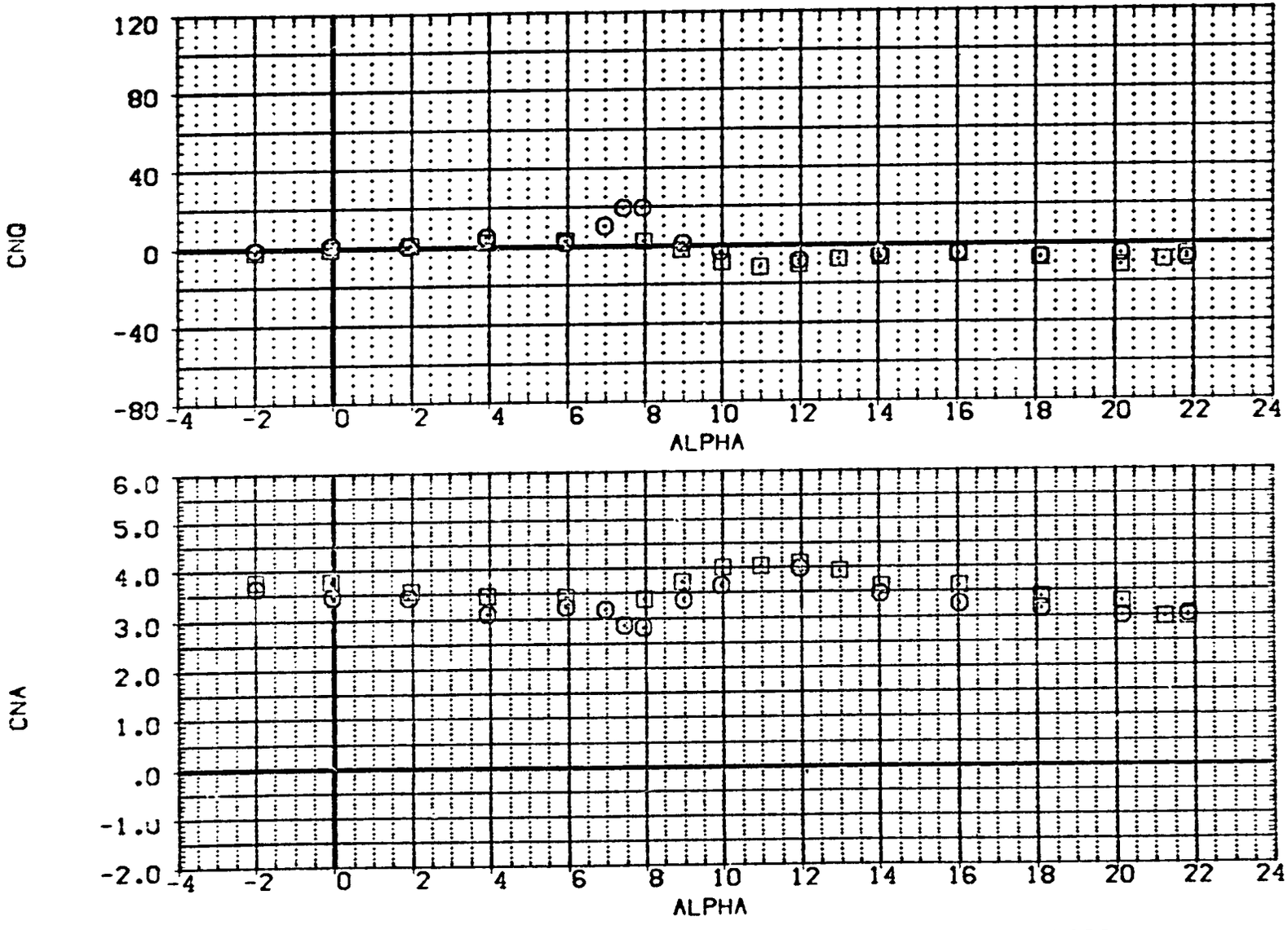


FIGURE 5. EFFECT OF OMS PODS ON DYNAMIC STABILITY PARAMETERS IN PITCH

(E)MACH = 1.20

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BOFLAP	RUDFLR
(RPKP02)	○	LA-20, ROCKWELL 089B ORB W/MOD NOSE (BWV F)	1.000	.000	.000	10.000
(RPKP04)	□	LA-20, ROCKWELL 089B ORB W/MOD NOSE (BWVMF)	1.000	.000	.000	10.000

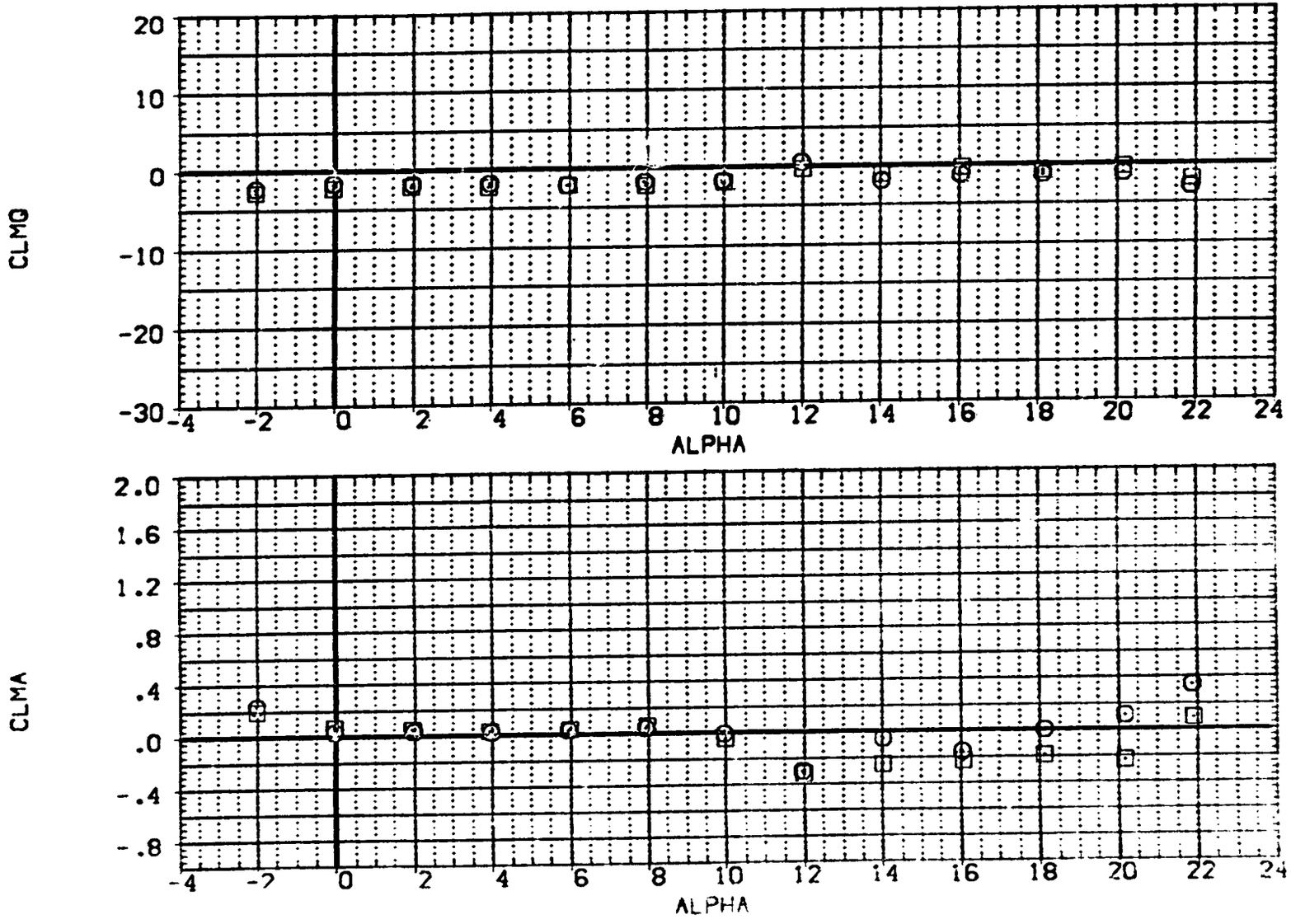


FIGURE 5. EFFECT OF [illegible] PODS ON DYNAMIC STABILITY PARAMETERS IN PITCH

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BDFLAP	RUDFLR
(RPKP02) ○	LA-20. ROCKWELL 0898 ORB W/MOD NOSE (BWV F)	1.000	.000	.000	10.000
(RPKP04) □	LA-20. ROCKWELL 0898 ORB W/MOD NOSE (BWVMF)	1.000	.000	.000	10.000

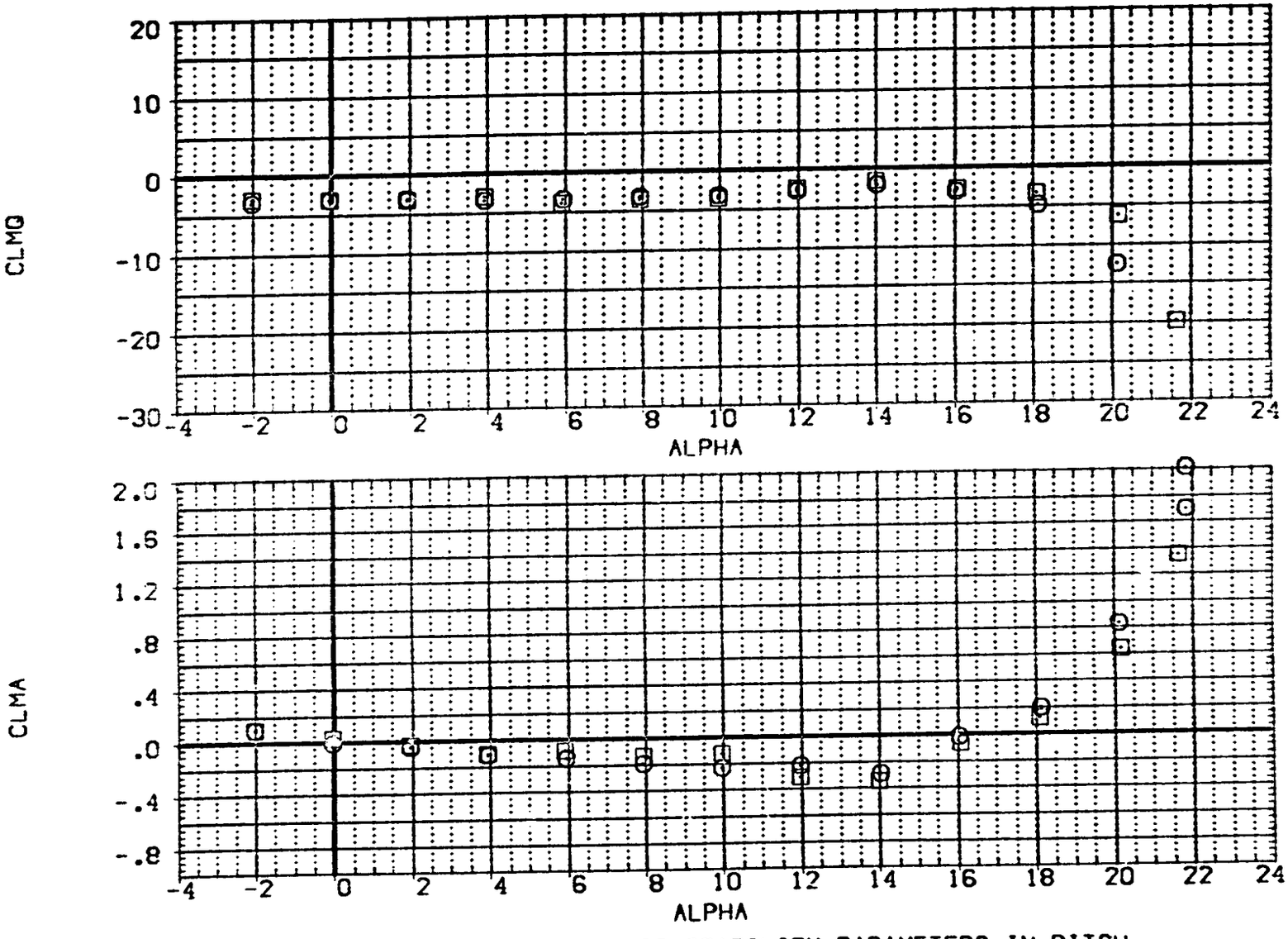


FIGURE 5. EFFECT OF OMS PODS ON DYNAMIC STABILITY PARAMETERS IN PITCH

(B)MACH = .80

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BOFLAP	RUDFLR
(RPKP02)	○	LA-20. ROCKWELL 0998 ORB W/MOD NOSE (BWV F)	1.000	.000	.000	10.000
(RPKP04)	□	LA-20. ROCKWELL 0898 ORB W/MOD NOSE (BWVMF)	1.000	.000	.000	10.000

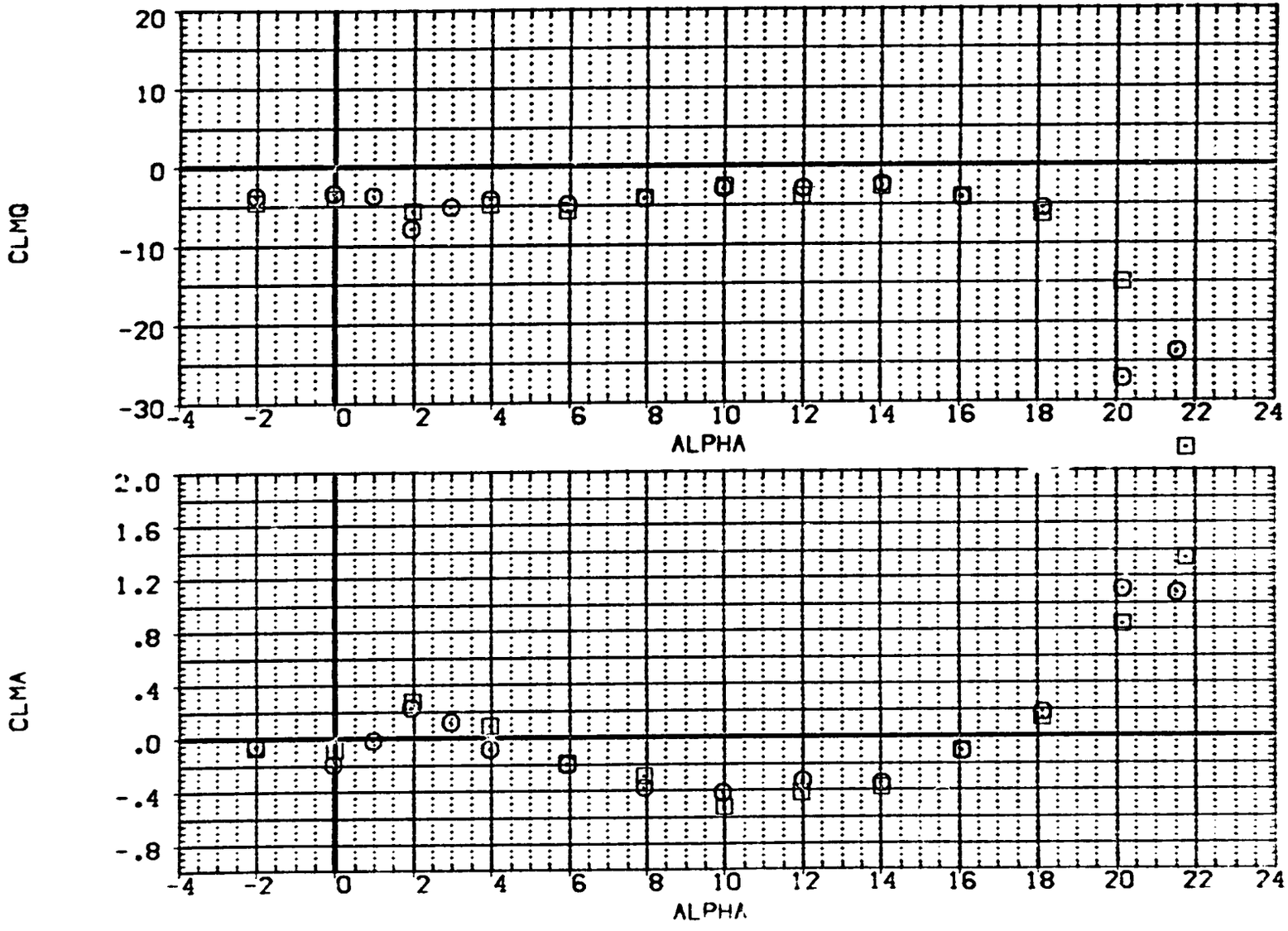


FIGURE 5. EFFECT OF [illegible]MS PODS ON DYNAMIC STABILITY PARAMETERS IN PITCH

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BDFLAP	RUDFLR
(RPKP02) ○	LA-20. ROCKWELL 089B ORB W/MOD NOSE (BWV F)	1.000	.000	.000	10.000
(RPKP01) □	LA-20. ROCKWELL 089B ORB W/MOD NOSE (BWVMF)	1.000	.000	.000	10.000

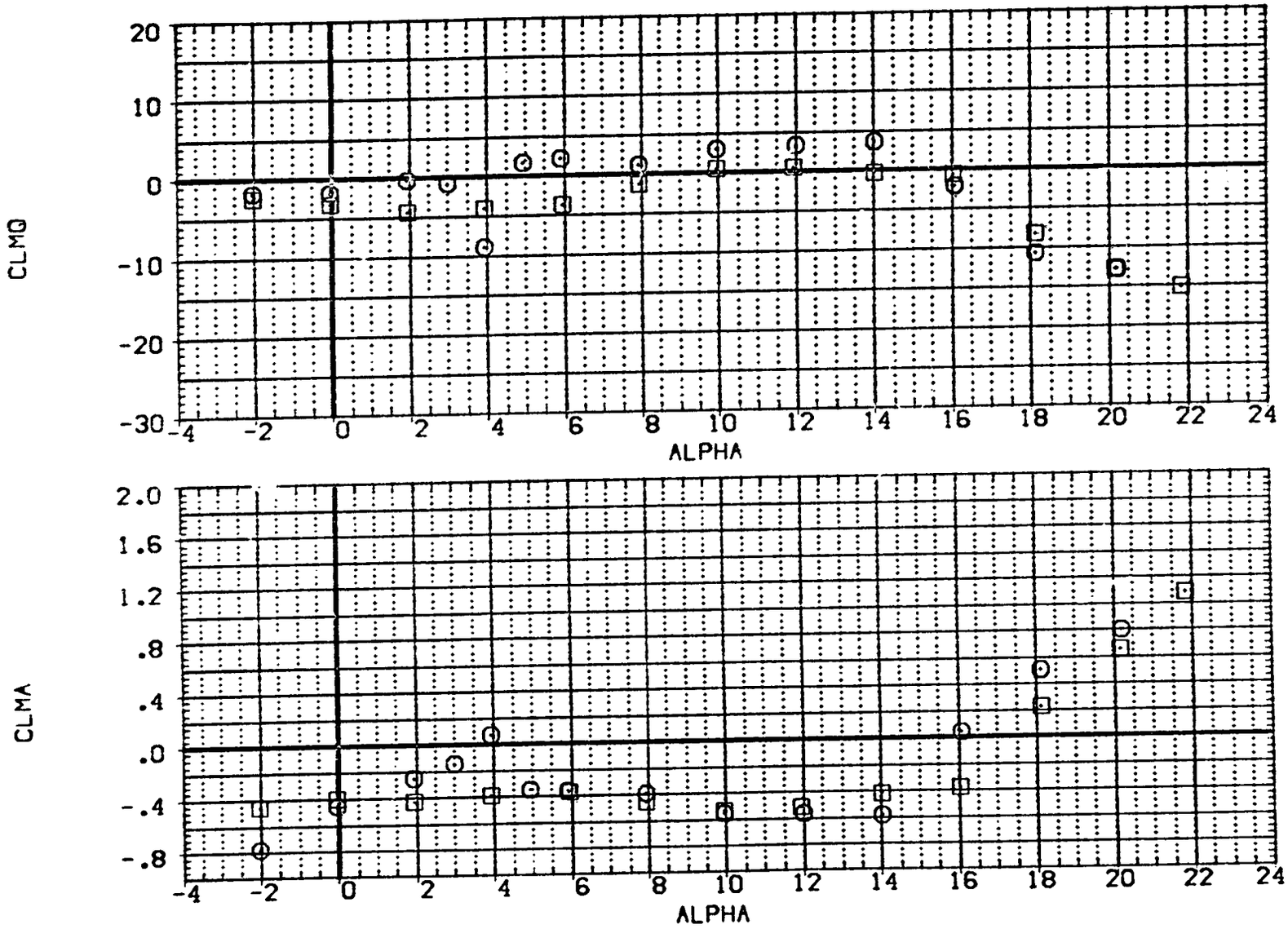


FIGURE 5. EFFECT OF OMS PODS ON DYNAMIC STABILITY PARAMETERS IN PITCH

(D)MACH = .98

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BOFLAP	RUDFLR
(RPKP02) ○	LA-20, ROCKWELL 089B ORB W/MOD NOSE (BWV F)	1.000	.000	.000	10.000
(RPKP04) □	LA-20, ROCKWELL 089B ORB W/MOD NOSE (BWVMF)	1.000	.000	.000	10.000

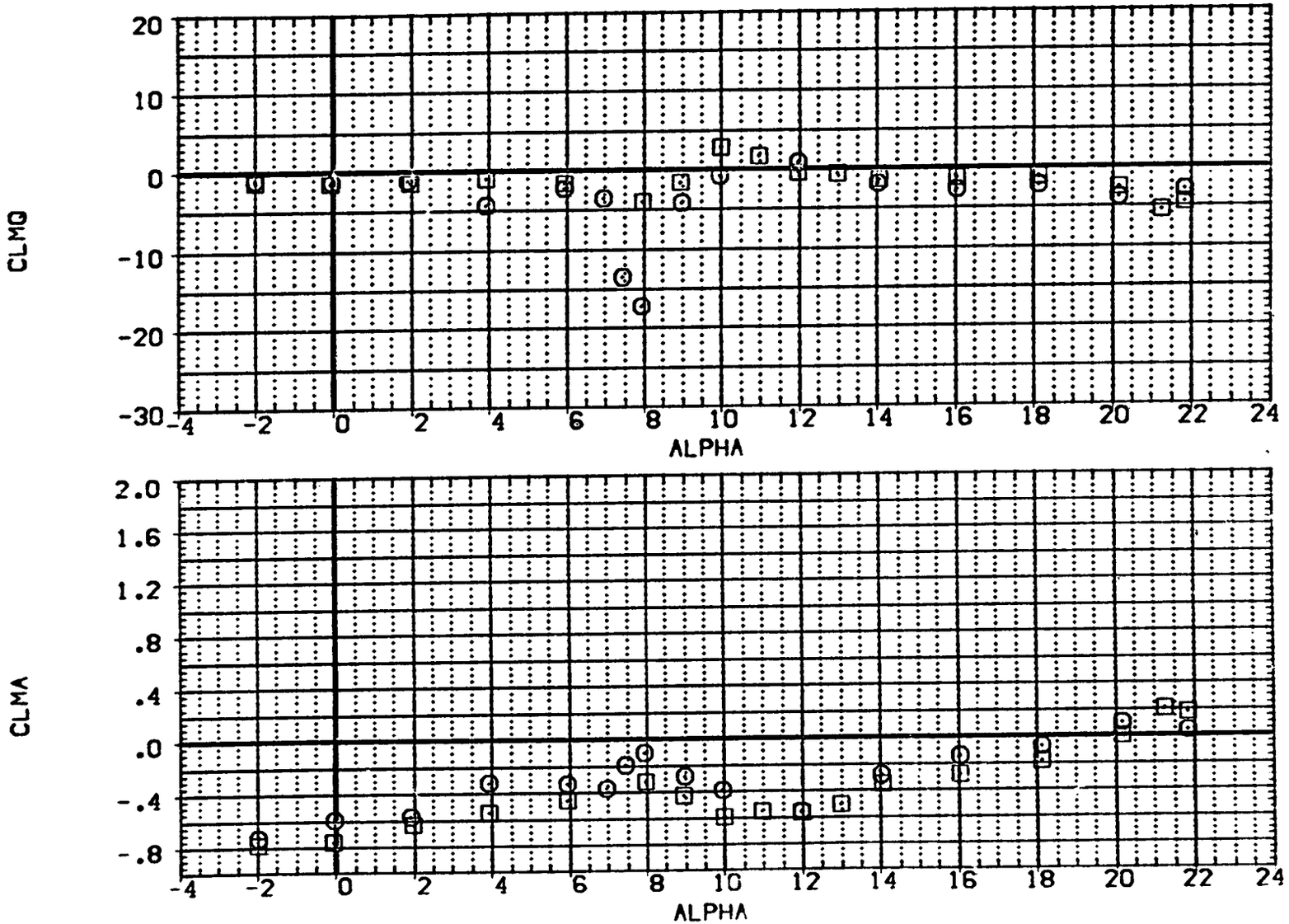


FIGURE 5. EFFECT OF OMS PODS ON DYNAMIC STABILITY PARAMETERS IN PITCH

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BOFLAP	RUDFLR
(RPKY02)	○	LA-20. ROCKWELL ORB 089B W/MOD. NOSE (BWV F)	1.000	.000	.000	10.000
(RPKY04)	□	LA-20. ROCKWELL ORB 089B W/MOD. NOSE (BWVMF)	1.000	.000	.000	10.000

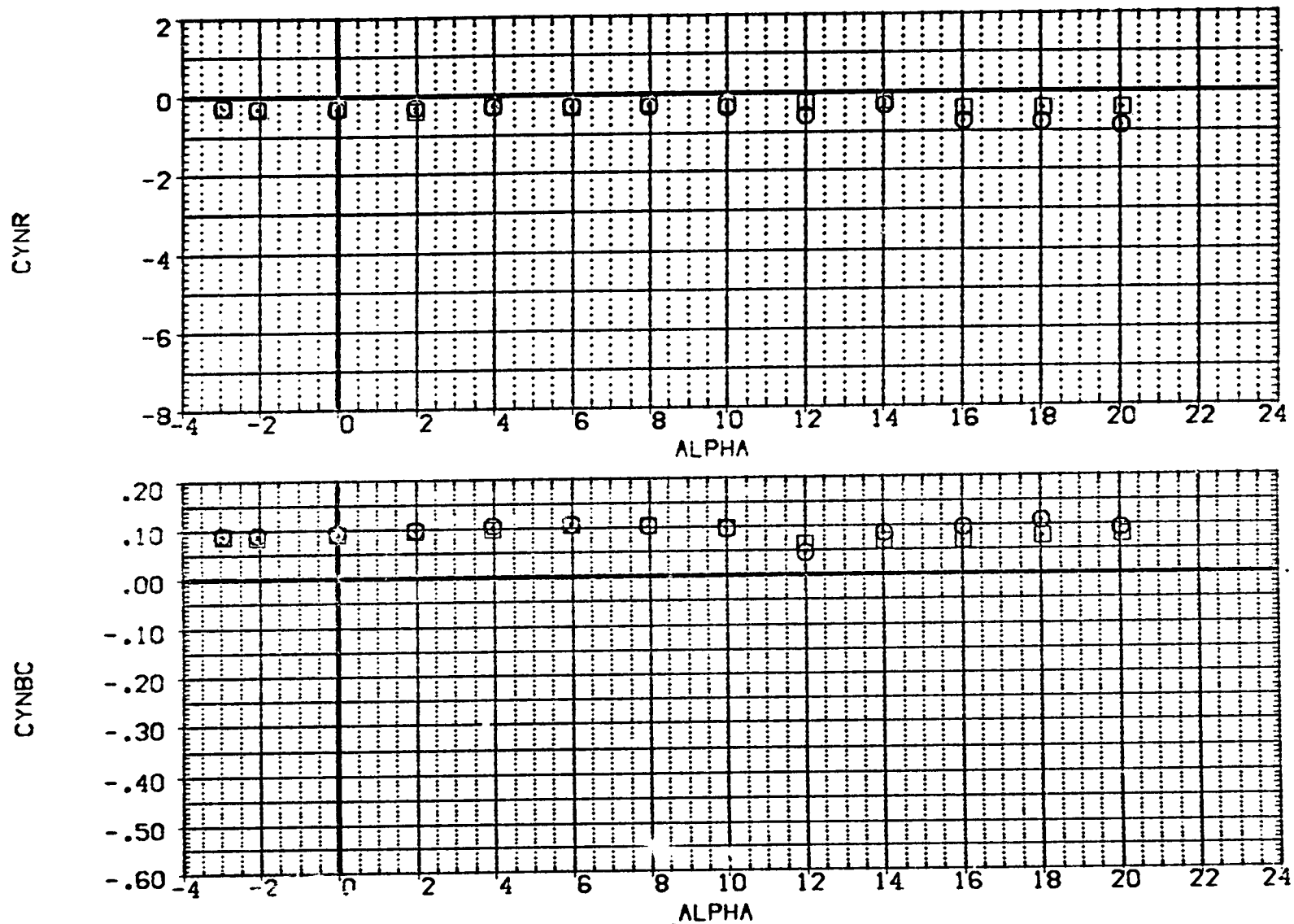


FIGURE 6. EFFECT OF OMS PODS ON DYNAMIC STABILITY PARAMETERS IN YAW

(A)MACH = .30

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BDFLAP	RUDFLR
(RPKYO2) ○	LA-20. ROCKWELL ORB 0898 W/MOD. NOSE (BWV F)	1.000	.000	.000	10.000
(RPKYO4) □	LA-20. ROCKWELL ORB 0898 W/MOD. NOSE (BWVMF)	1.000	.000	.000	10.000

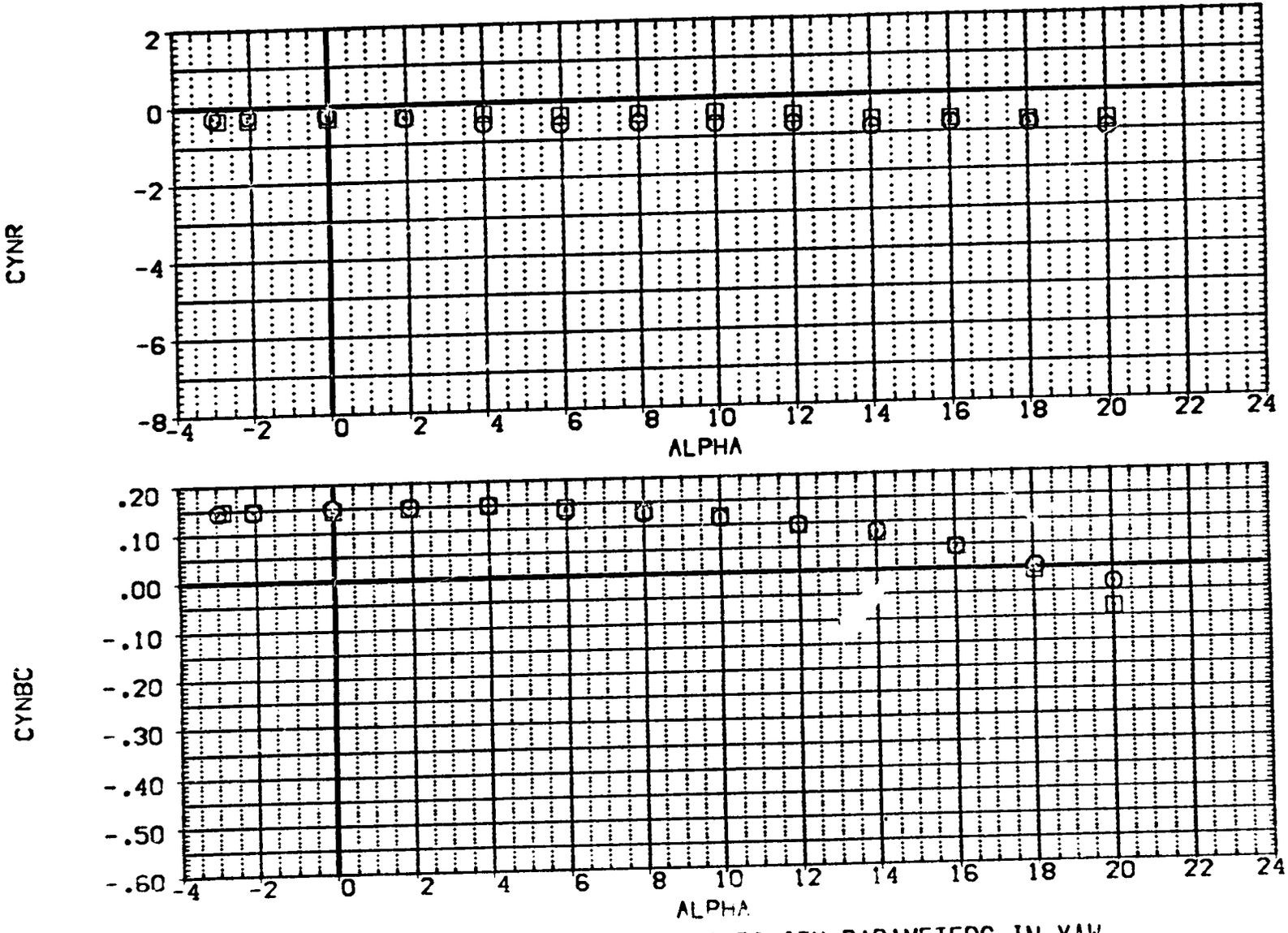


FIGURE 6. EFFECT OF OMS PODS ON DYNAMIC STABILITY PARAMETERS IN YAW

.80

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BDFLAP	RUDFLR
(RPKY02) ○	LA-20. ROCKWELL ORB 089B W/MOD. NOSE (BWV F)	1.000	.000	.000	10.000
(RPKY04) □	LA-20. ROCKWELL ORB 089B W/MOD. NOSE (BWVMF)	1.000	.000	.000	10.000

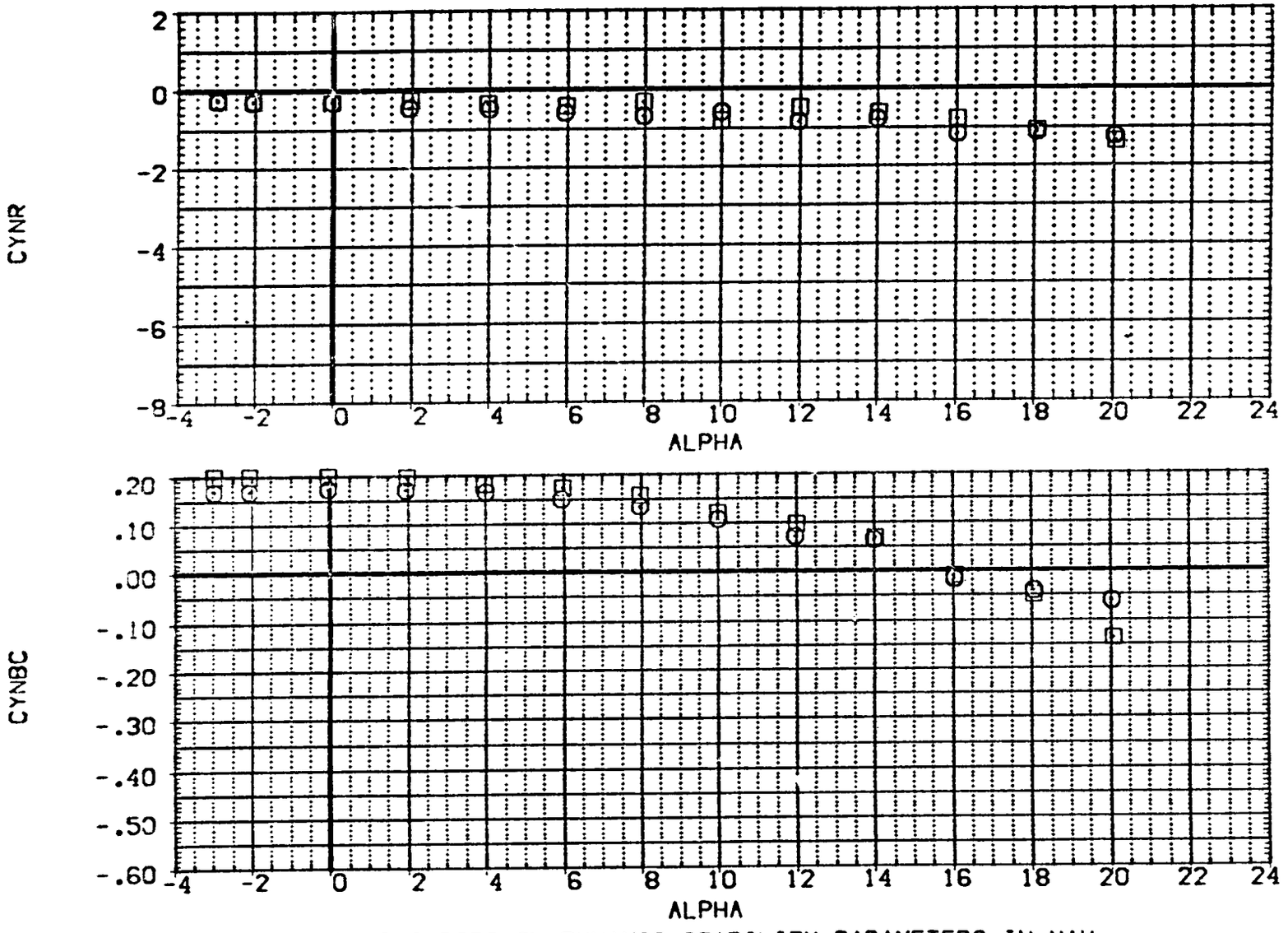


FIGURE 6. EFFECT OF OMS PODS ON DYNAMIC STABILITY PARAMETERS IN YAW

(C)MACH = .90

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BOFLAP	RUDFLR
(RPKYC2)	LA-20. ROCKWELL ORB 0898 W/MOD. NOSE (BWV F)	1.000	.000	.000	10.000
(RPKY04)	LA-20. ROCKWELL ORB 0898 W/MOD. NOSE (BWVMF)	1.000	.000	.000	10.000

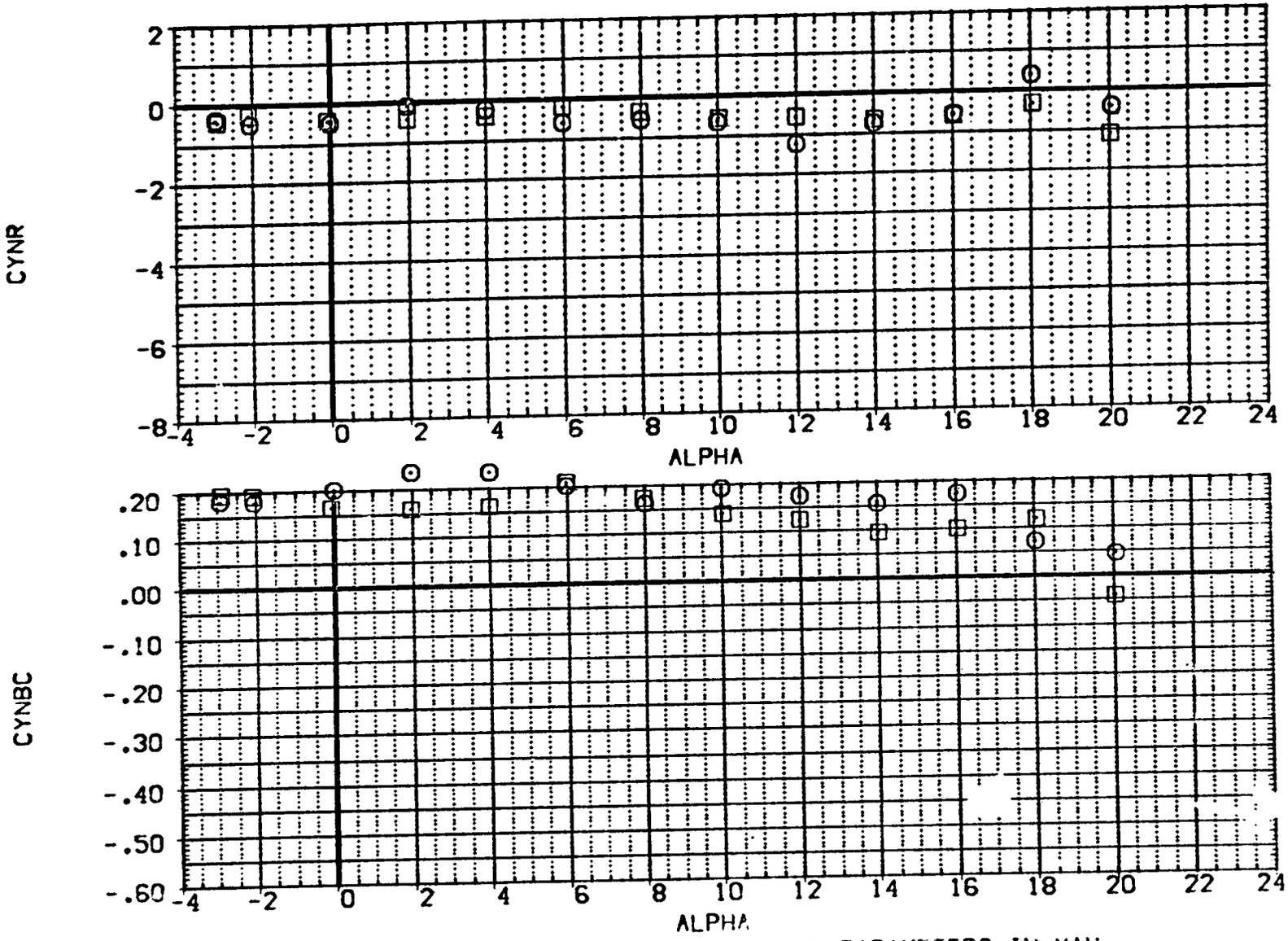


FIGURE 6. EFFECT OF OMS PODS ON DYNAMIC STABILITY PARAMETERS IN YAW

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BOFLAP	RUDFLR
(RPKY02)	○	LA-20. ROCKWELL ORB 0898 W/MOD. NOSE (BVV F)	1.000	.000	.000	10.000
(RPKY04)	□	LA-20. ROCKWELL ORB 0898 W/MOD. NOSE (BVVMF)	1.000	.000	.000	10.000

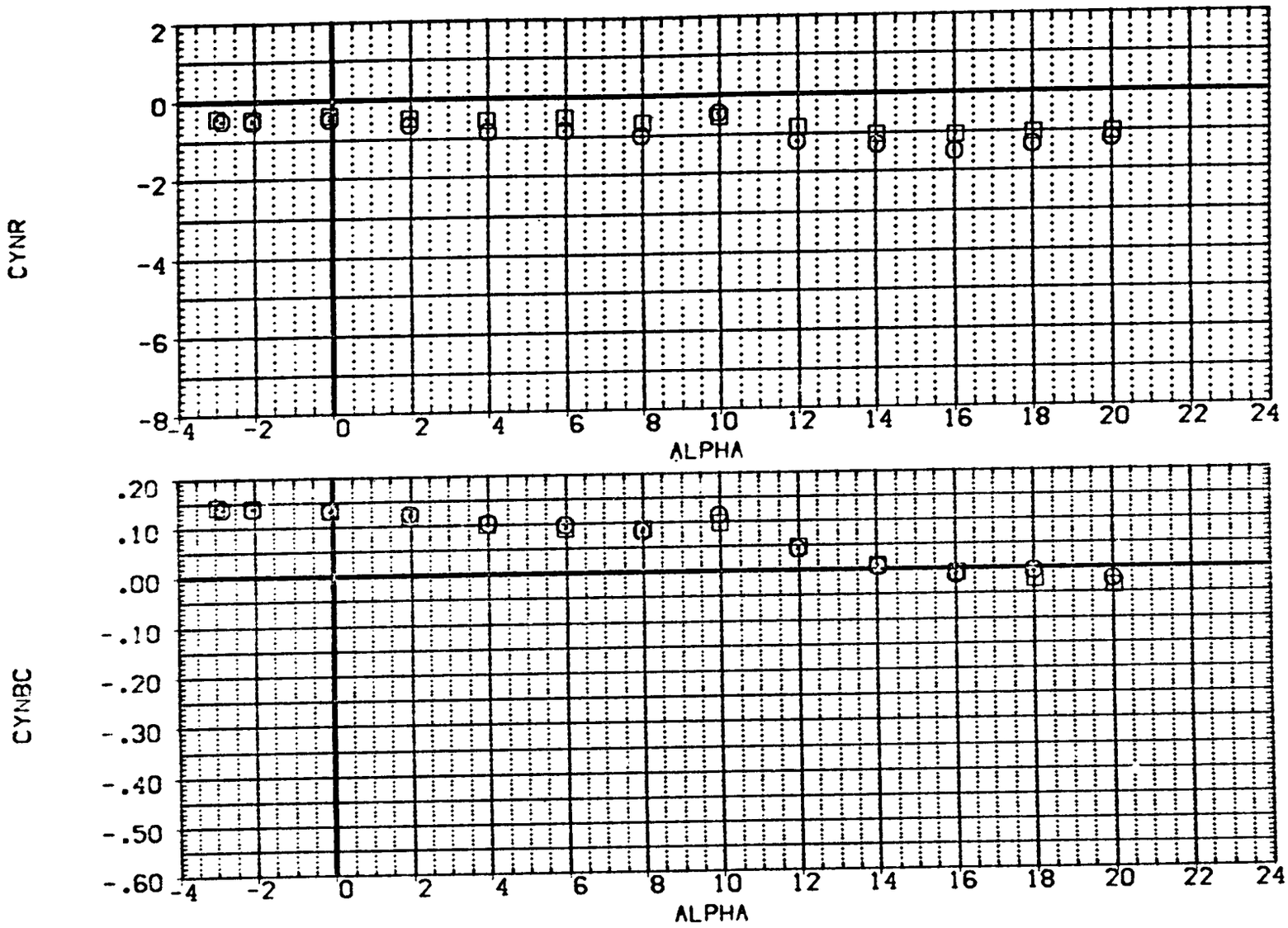


FIGURE 6. EFFECT OF OMS PODS ON DYNAMIC STABILITY PARAMETERS IN YAW

(E)MACH = 1.20

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BOFLAP	RUDFLR
(RPKY02)	○	LA-20. ROCKWELL ORB OBSB W/MOD. NOSE (BVV F)	1.000	.000	.000	10.000
(RPKY04)	□	LA-20. ROCKWELL ORB OBSB W/MOD. NOSE (BVVMF)	1.000	.000	.000	10.000

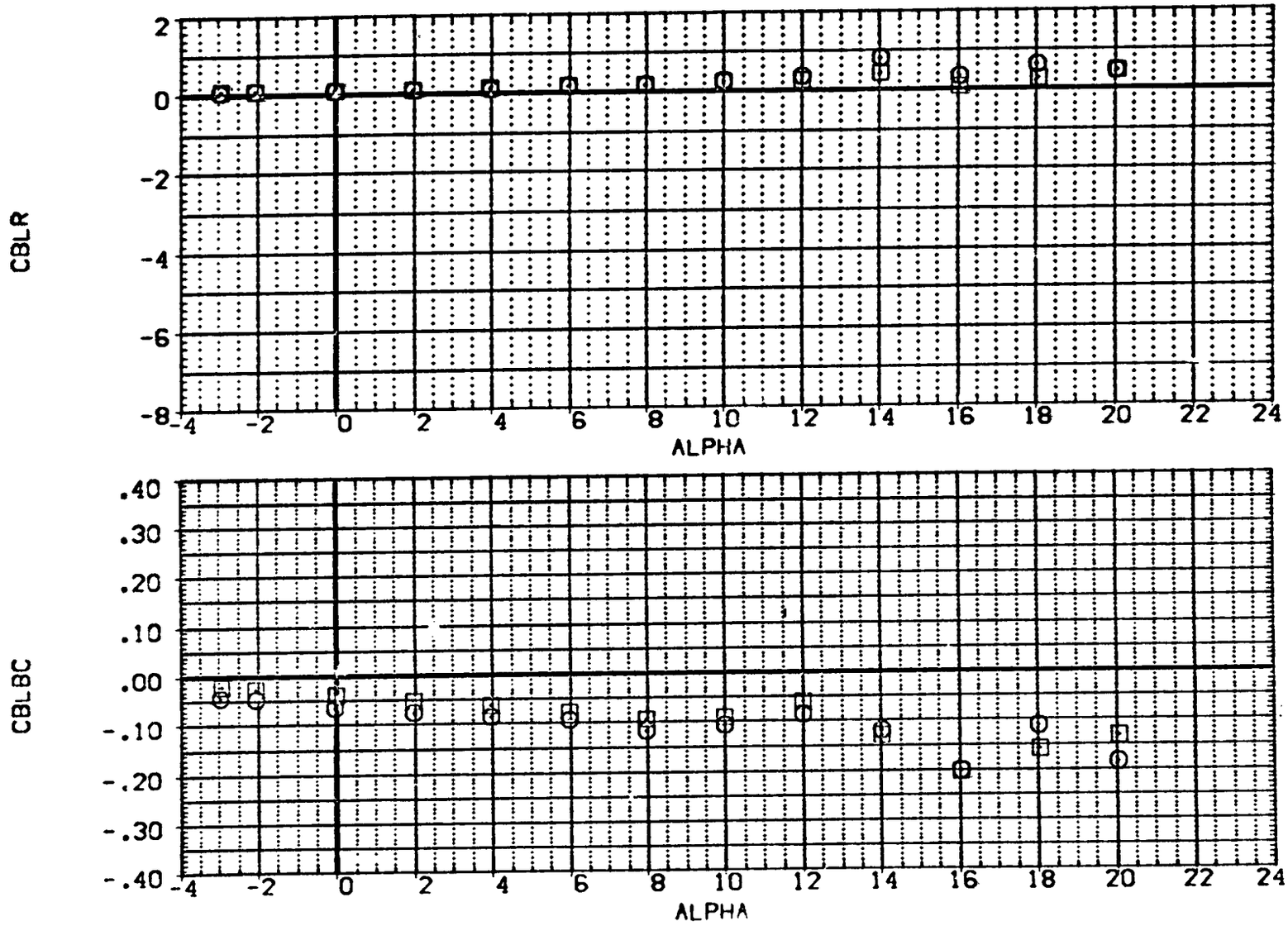


FIGURE 6. EFFECT OF OMS PODS ON DYNAMIC STABILITY PARAMETERS IN YAW

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BOFLAP	RUDFLR
(RPKY02)	LA-20. ROCKWELL ORB OBSB W/MOD. NOSE (BWV F)	1.000	.000	.000	10.000
(RPKY04)	LA-20. ROCKWELL ORB OBSB W/MOD. NOSE (BWVMF)	1.000	.000	.000	10.000

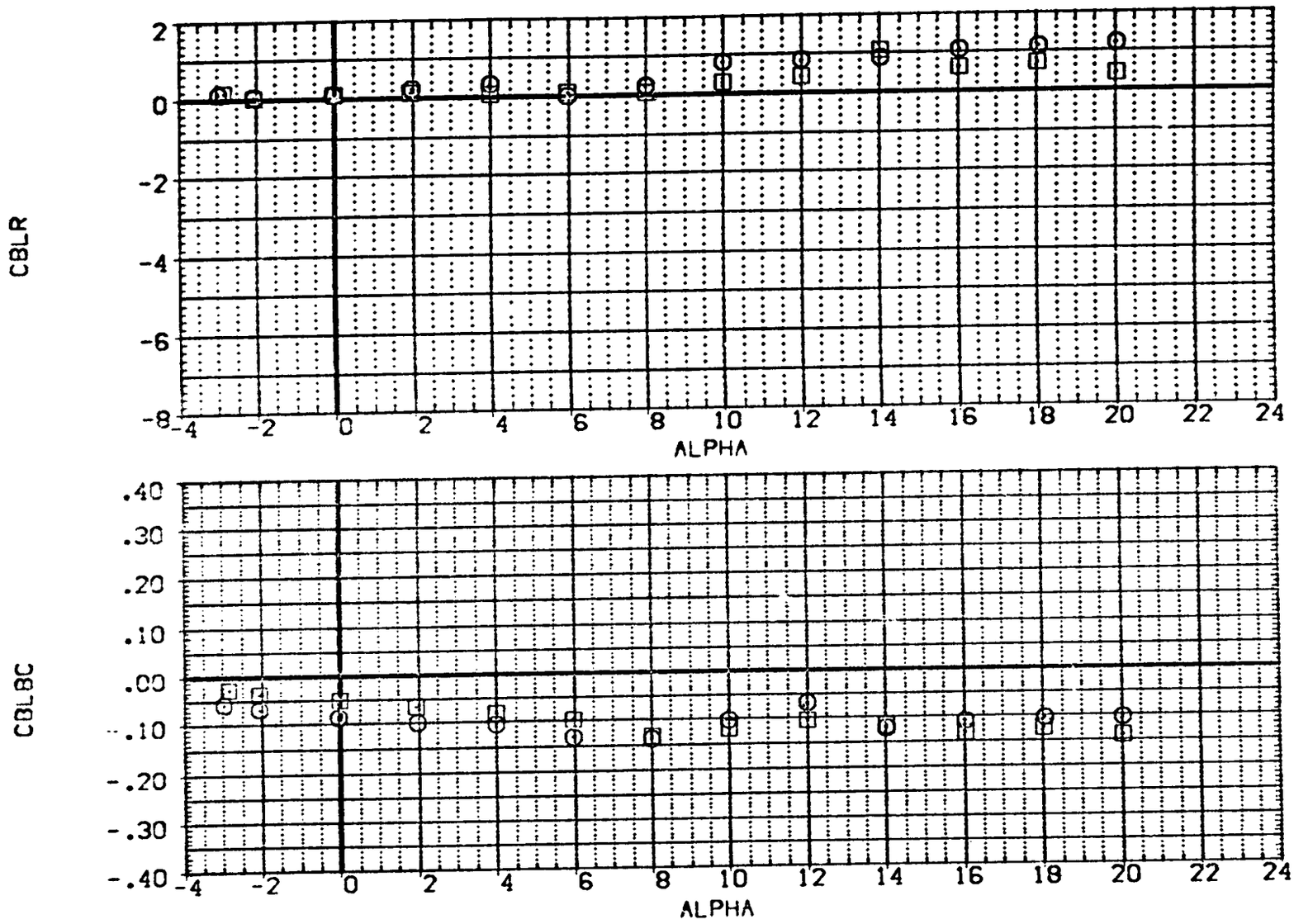


FIGURE 6. EFFECT OF OMS PODS ON DYNAMIC STABILITY PARAMETERS IN YAW

(B)MACH = .80

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BDFLAP	RUDFLR
(RPKY02)	○	LA-20. ROCKWELL ORB 0898 W/MOD. NOSE (BWV F)	1.000	.000	.000	10.000
(RPKY01)	□	LA-20. ROCKWELL ORB 0898 W/MOD. NOSE (BWVMF)	1.000	.000	.000	10.000

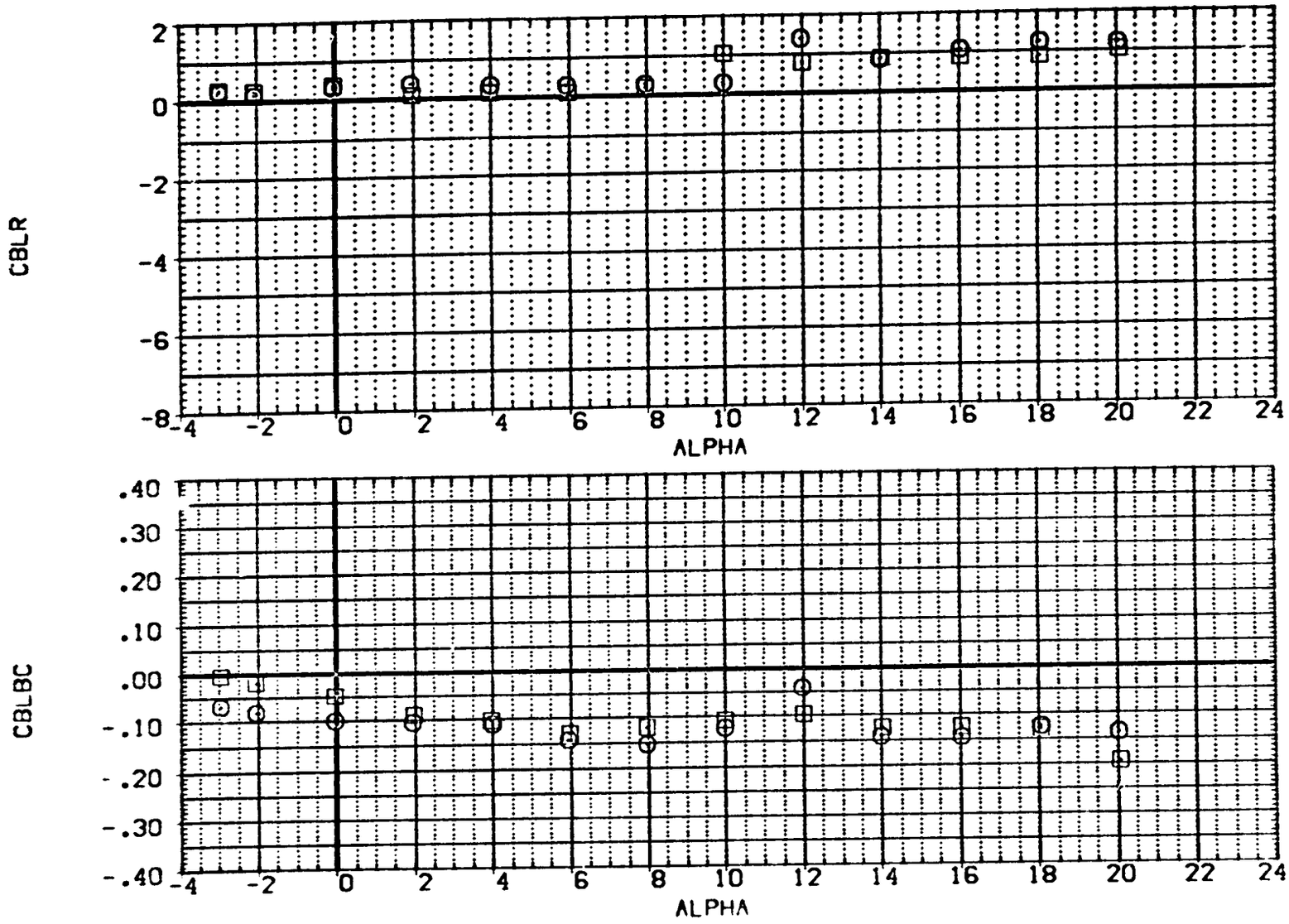


FIGURE 6. EFFECT OF OMS PODS ON DYNAMIC STABILITY PARAMETERS IN YAW

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BOFLAP	RUDFLR
(RPKY02)	○	LA-20. ROCKWELL ORB 0898 W/MOD. NOSE (BWV F)	1.000	.000	.000	10.000
(RPKY04)	□	LA-20. ROCKWELL ORB 0898 W/MOD. NOSE (BWVMF)	1.000	.000	.000	10.000

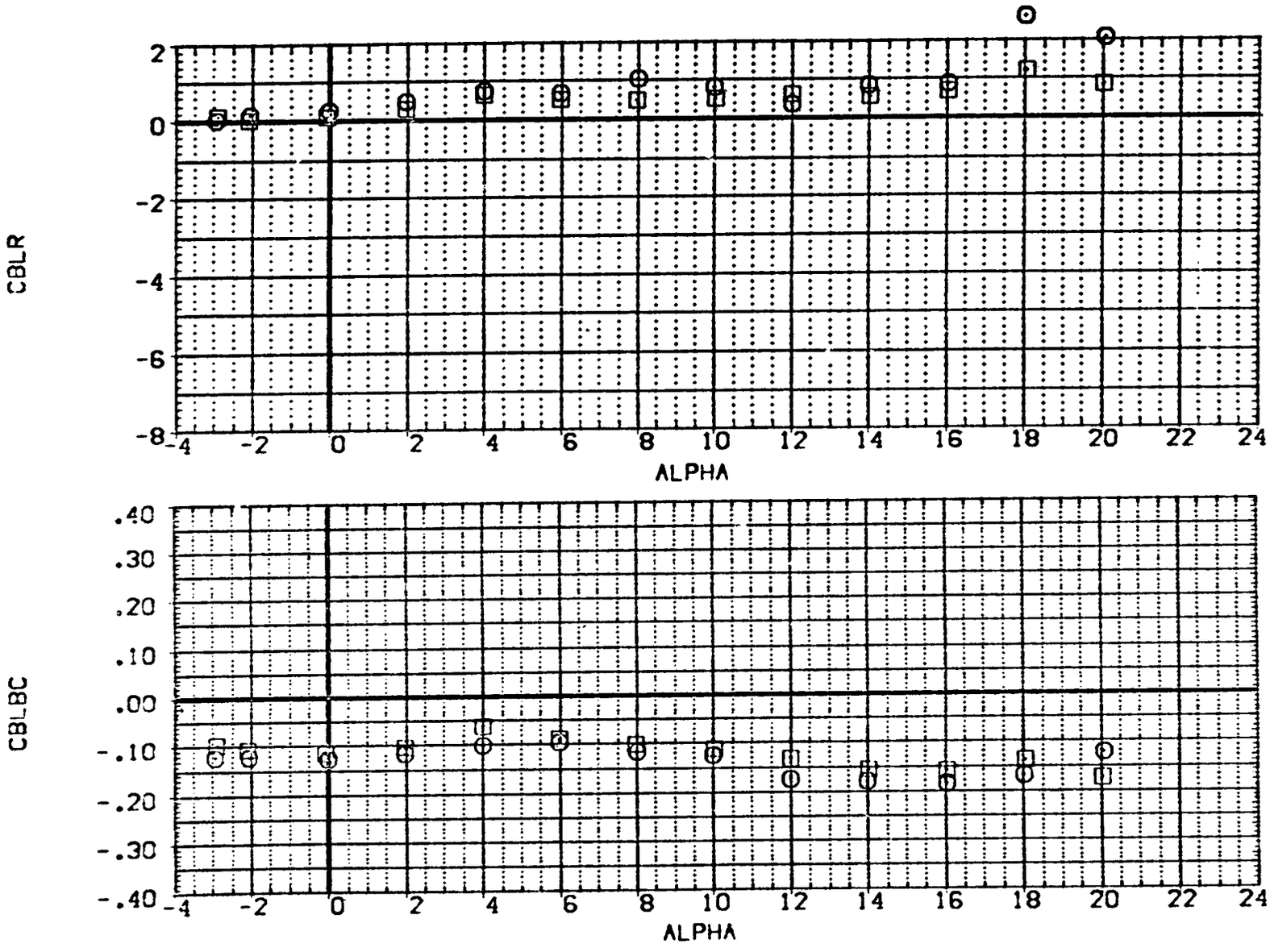


FIGURE 6. EFFECT OF OMS PODS ON DYNAMIC STABILITY PARAMETERS IN YAW

(D)MACH = .98

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BOFLAP	RUDFLR
(RPKY02) ○	LA-20. ROCKWELL ORB 0898 W/MOD. NOSE (BVV F)	1.000	.000	.000	10.000
(RPKY04) □	LA-20. ROCKWELL ORB 0898 W/MOD. NL . (BVVMF)	1.000	.000	.000	10.000

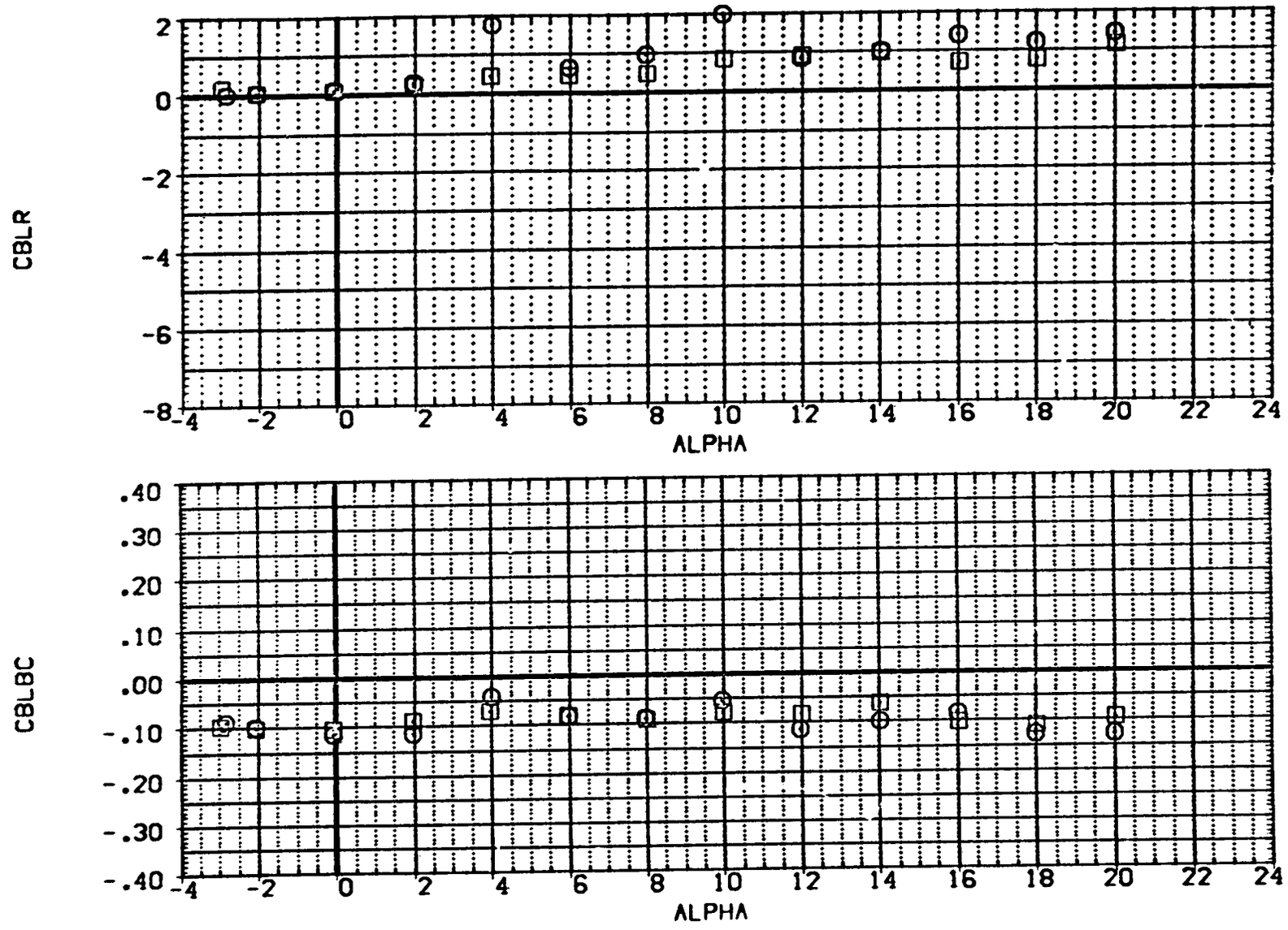


FIGURE 6. EFFECT OF OMS PODS ON DYNAMIC STABILITY PARAMETERS IN YAW

(F)MACH = 1.20

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BOFLAP	RUDFLR
(RPKR02)	○	LA-20, ROCKWELL 0898 ORB W/MOD NOSE (BWV F)	1.000	.000	.000	10.000
(RPKR04)	□	LA-20, ROCKWELL 0898 ORB W/MOD NOSE (BWVMF)	1.000	.000	.000	10.000

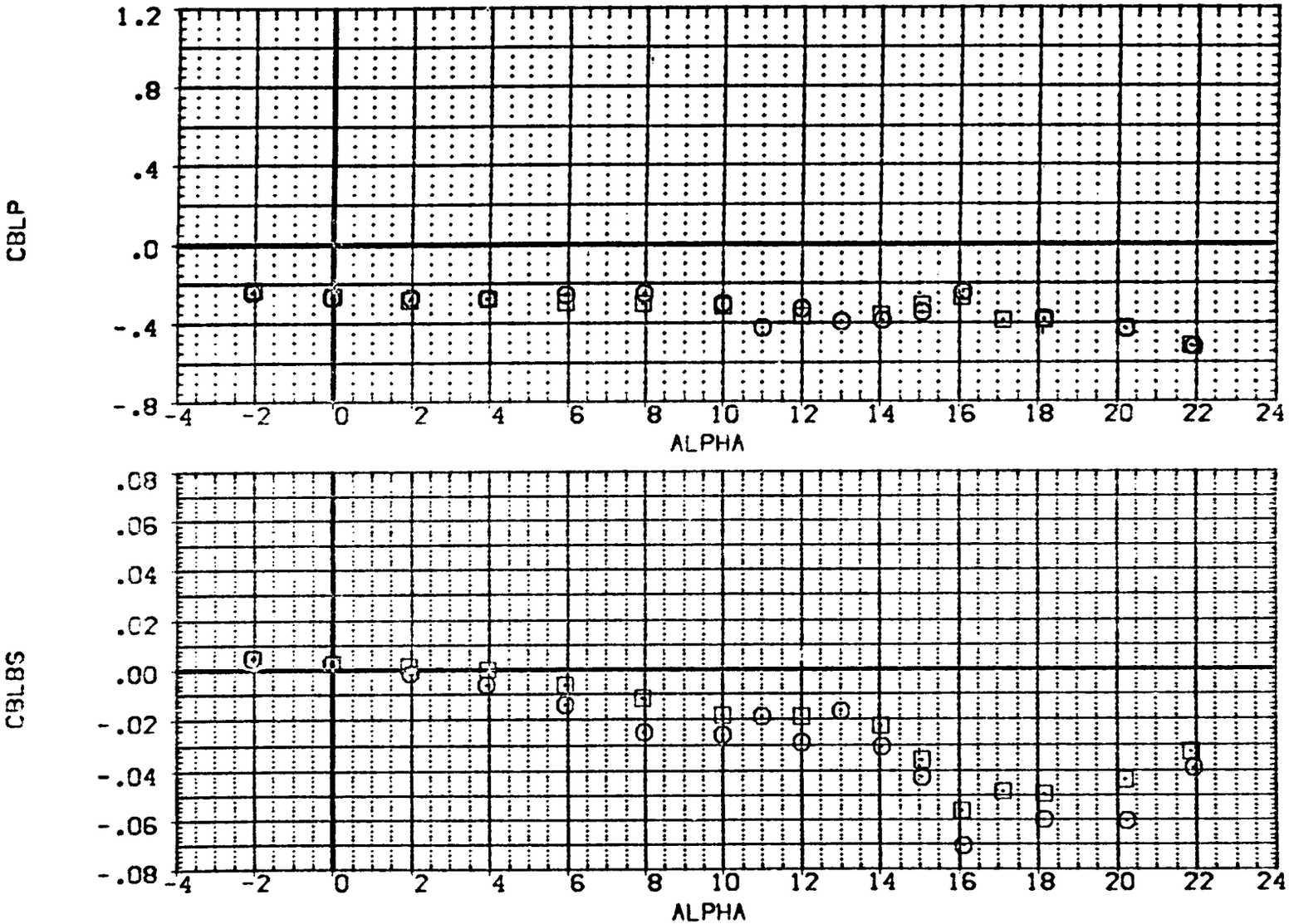


FIGURE 7. EFFECT OF OMS PODS ON DYNAMIC STABILITY PARAMETERS IN ROLL

(A)MACH = .30

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BOFLAP	RUDFLR
[RPKRC2]	○	LA-20. ROCKWELL 089B ORB W/MOD NOSE (BWV F)	1.000	.000	.000	10.000
[RPKRC4]	□	LA-20. ROCKWELL 089B ORB W/MOD NOSE (BWVMF)	1.000	.000	.000	10.000

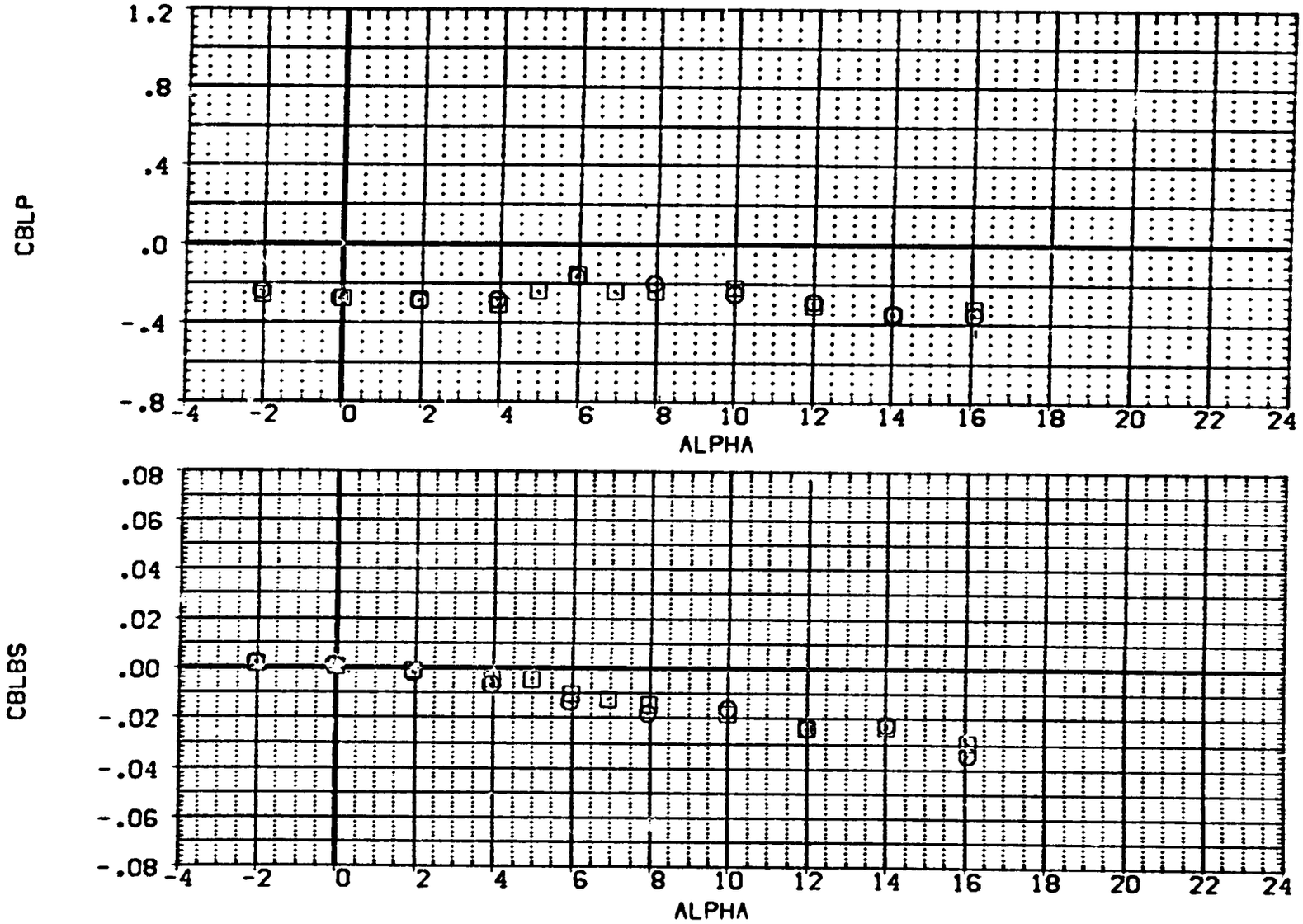


FIGURE 7. EFFECT OF OMS PODS ON DYNAMIC STABILITY PARAMETERS IN ROLL

(B)MACH = .80

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BDFLAP	RUDFLR
(RPKR02) ○	LA-20. ROCKWELL 0898 ORB W/MOD NOSE (BVV F)	1.000	.000	.000	10.000
(RPKR04) □	LA-20. ROCKWELL 0898 ORB W/MOD NOSE (BVVMF)	1.000	.000	.000	10.000

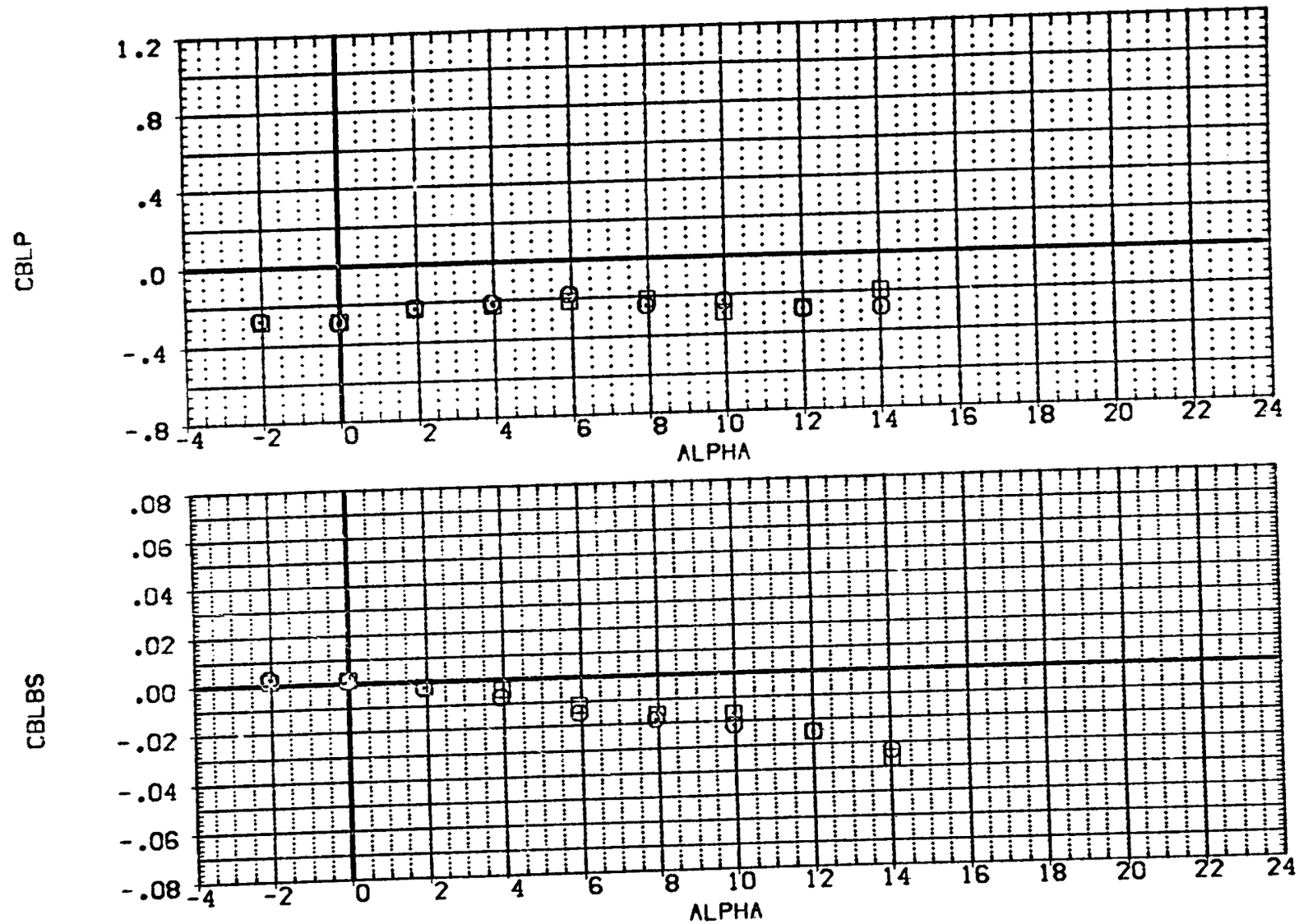


FIGURE 7. EFFECT OF OMS PODS ON DYNAMIC STABILITY PARAMETERS IN ROLL

(C)MACH = .90

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BOFLAP	RUDFLR
(RPKRO2) ○	LA-20, ROCKWELL 089B ORB W/MOD NOSE (BWV F)	1.000	.000	.000	10.000
(RPKRO4) □	LA-20, ROCKWELL 089B ORB W/MOD NOSE (BWVMF)	1.000	.000	.000	10.000

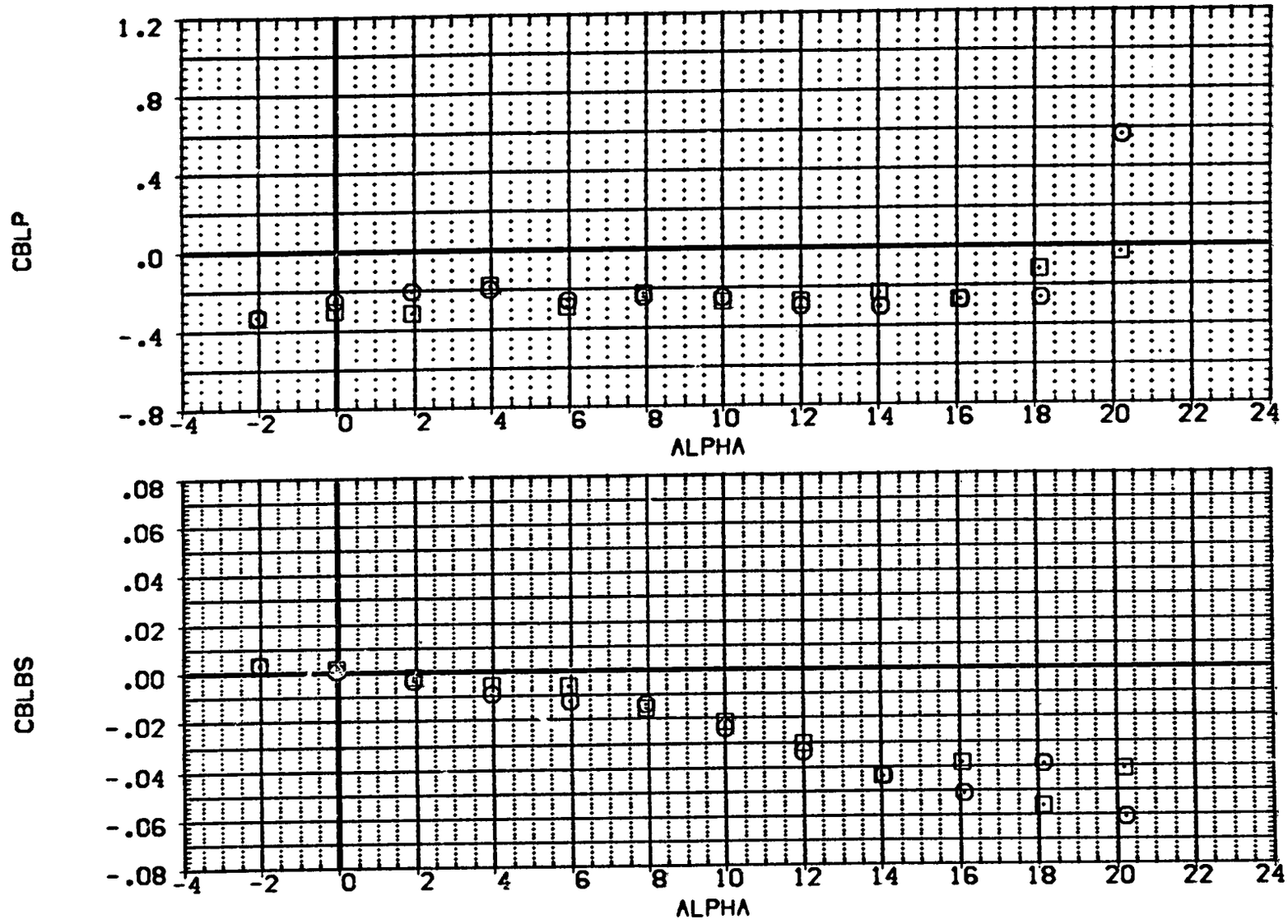


FIGURE 7. EFFECT OF OMS PODS ON DYNAMIC STABILITY PARAMETERS IN ROLL

(□)MACH = .98

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BOFLAP	RUDFLR
(RPKR02) ○	LA-20. ROCKWELL 089B ORB W/MOD NOSE (BWV F)	1.000	.000	.000	10.000
(RPKR04) □	LA-20. ROCKWELL 089B ORB W/MOD NOSE (BWMF)	1.000	.000	.000	10.000

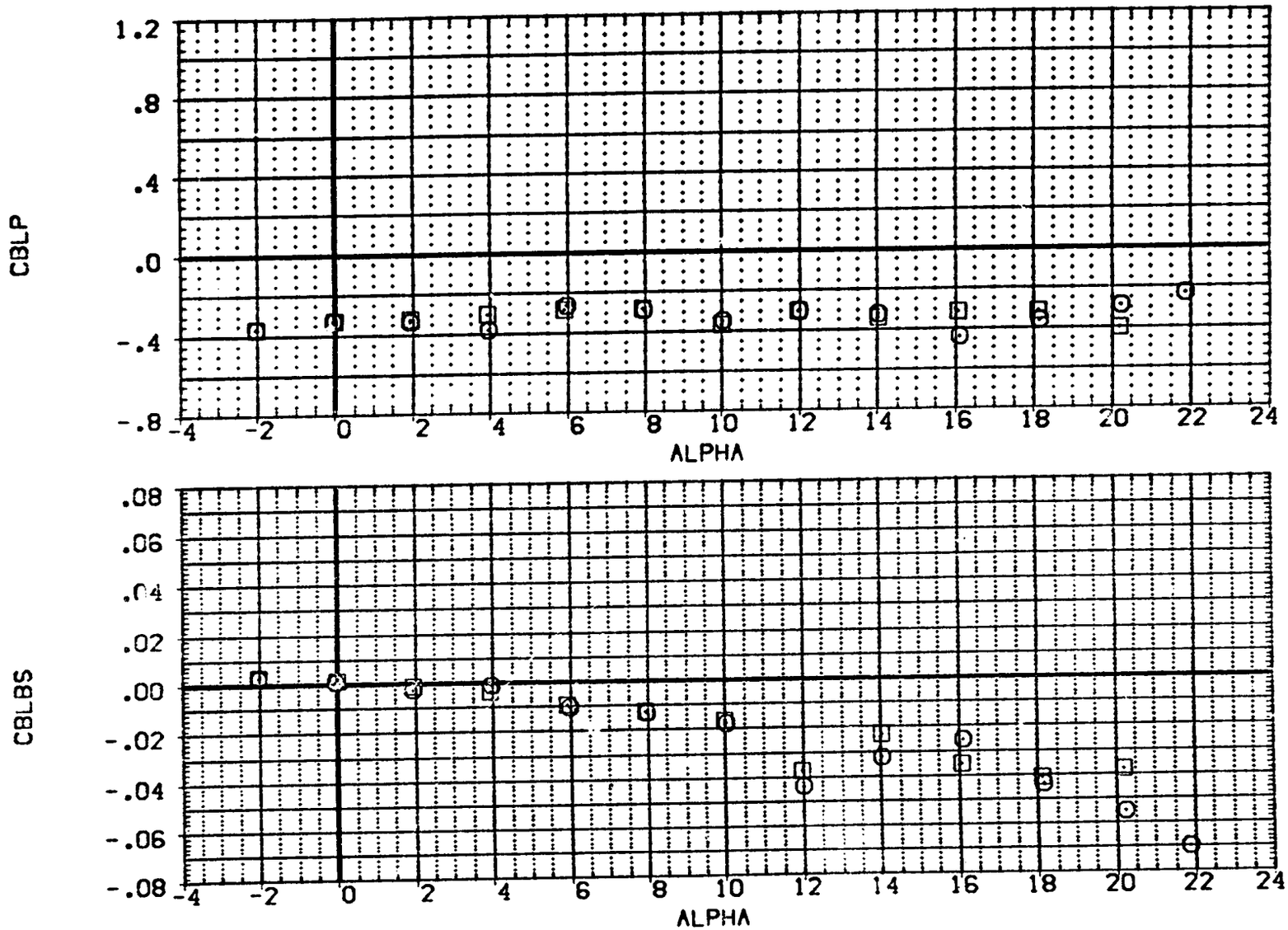


FIGURE 7. EFFECT OF OMS PODS ON DYNAMIC STABILITY PARAMETERS IN ROLL

(E)MACH = 1.20

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	βOFLAP	RUDFLR
(RPKR02)	LA-20. ROCKWELL 089B ORB W/MOD NOSE (BWV F)	1.000	.000	.000	10.000
(RPKR04)	LA-20. ROCKWELL 089B ORB W/MOD NOSE (BWVMF)	1.000	.000	.000	10.000

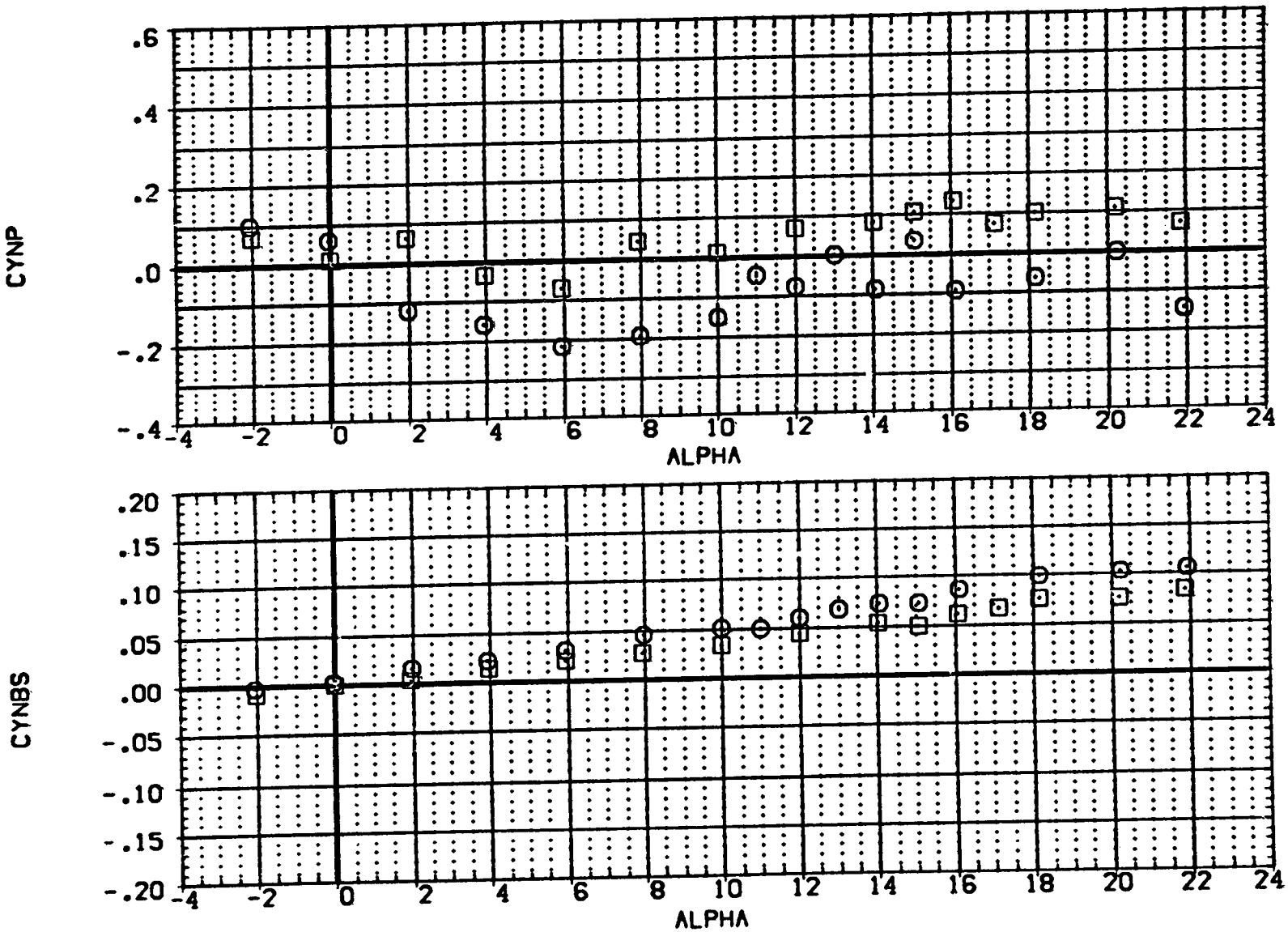


FIGURE 7. EFFECT OF OMS PODS ON DYNAMIC STABILITY PARAMETERS IN ROLL

(A)MACH = .30

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BDFLAP	RUDFLR
(RPKR02)	LA-20, ROCKWELL 089B ORB W/MOD NOSE (BWV F)	1.000	.000	.000	10.000
(RPKR04)	LA-20, ROCKWELL 089B ORB W/MOD NOSE (BWVMF)	1.000	.000	.000	10.000

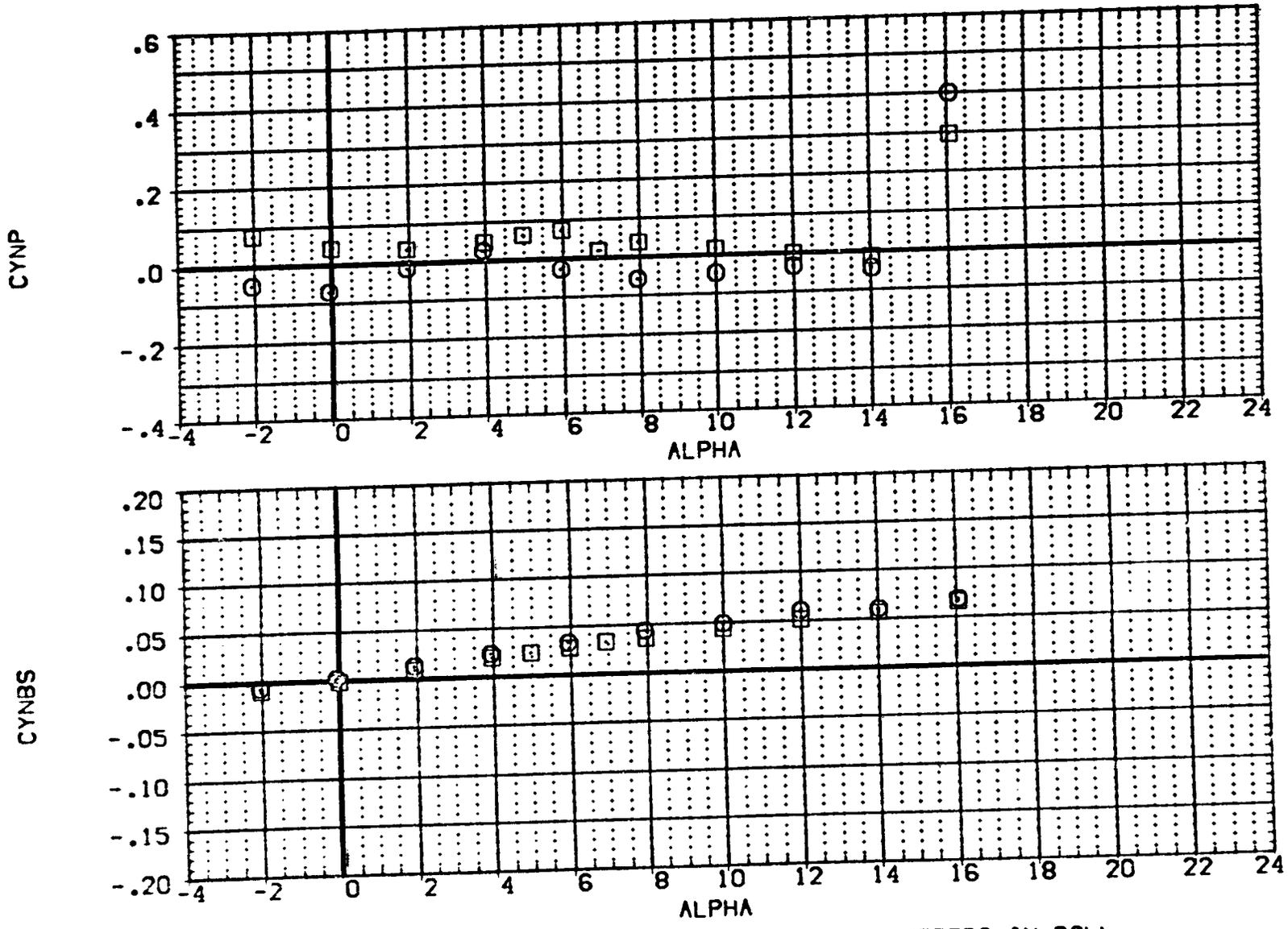


FIGURE 7. EFFECT OF OMS PODS ON DYNAMIC STABILITY PARAMETERS IN ROLL

(B)MACH = .80

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BOFLAP	RUDFLR
(RPKR02)	○	LA-20. ROCKWELL 0898 ORB W/MOD NOSE (BWV F)	1.000	.000	.000	10.000
(RPKR04)	□	LA-20. ROCKWELL 0898 ORB W/MOD NOSE (BWVMF)	1.000	.000	.000	10.000

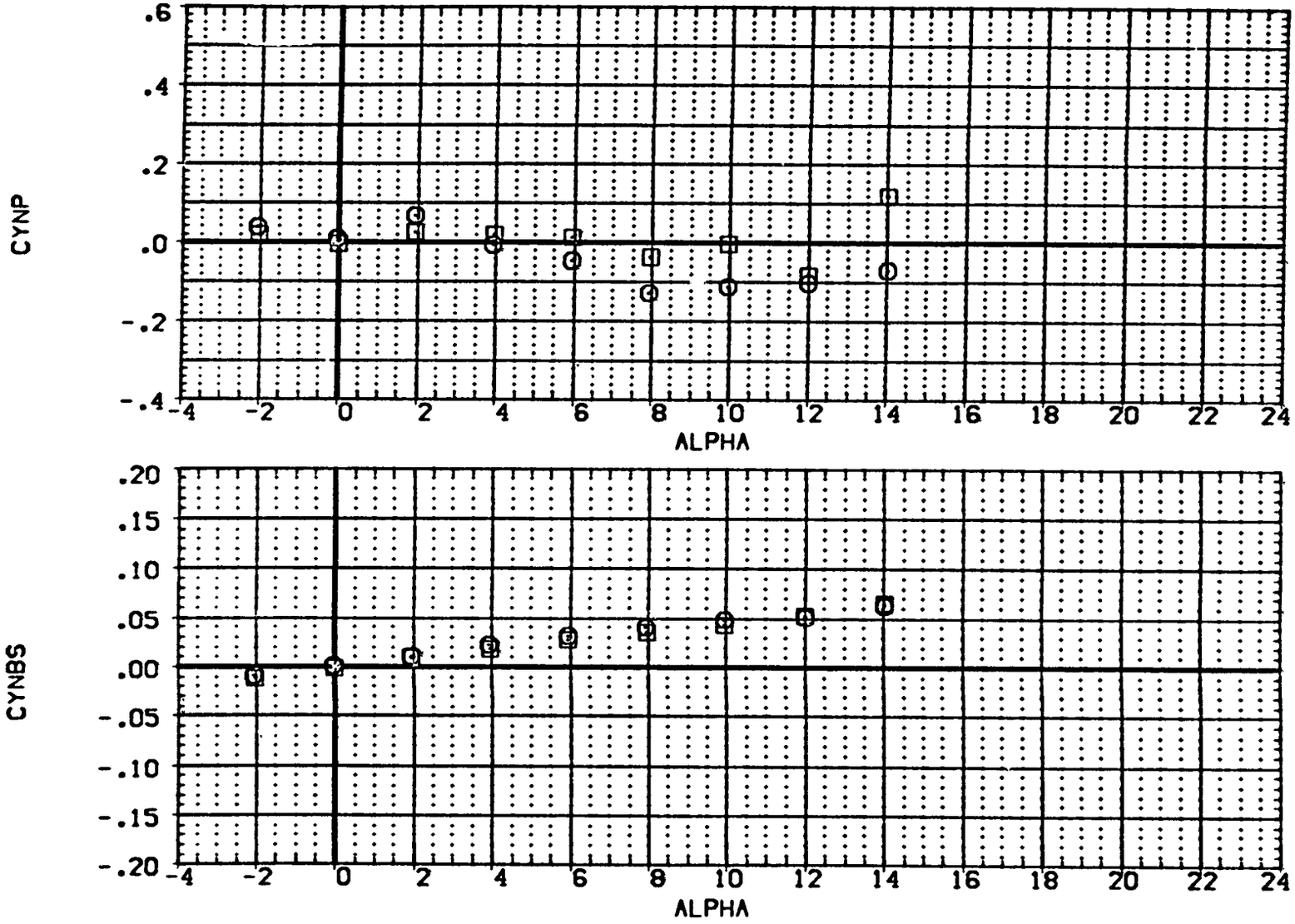


FIGURE 7. EFFECT OF OMS PODS ON DYNAMIC STABILITY PARAMETERS IN ROLL

(C)MACH = .90

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BDFLAP	RUDFLR
(RPKR02)	LA-20. ROCKWELL 0898 ORB V/MOD NOSE (BWV F)	1.000	.000	.000	10.000
(RPKR04)	LA-20. ROCKWELL 0898 ORB V/MOD NOSE (BWVMF)	1.000	.000	.000	10.000

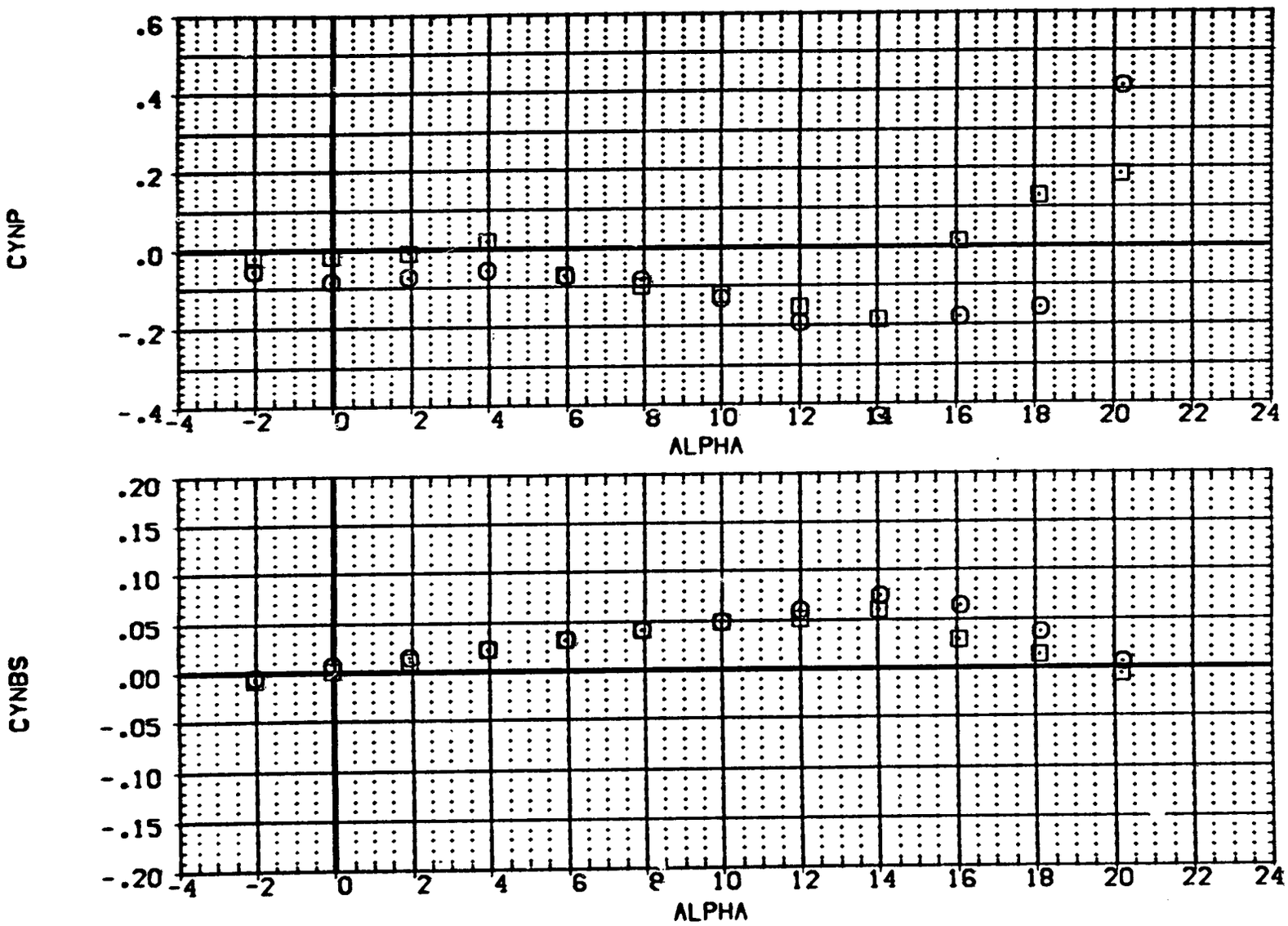


FIGURE 7. EFFECT OF OMS PODS ON DYNAMIC STABILITY PARAMETERS IN ROLL

(D)MACH = .98

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	AILERON	RUDDER
(RPKR02)	○	LA-20. ROCKWELL 0898 ORB W/MOD NOSE (BWV F)	1.000	.000	.000	10.000
(RPKR04)	□	LA-20. ROCKWELL 0898 ORB W/MOD NOSE (BWVMF)	1.000	.000	.000	10.000

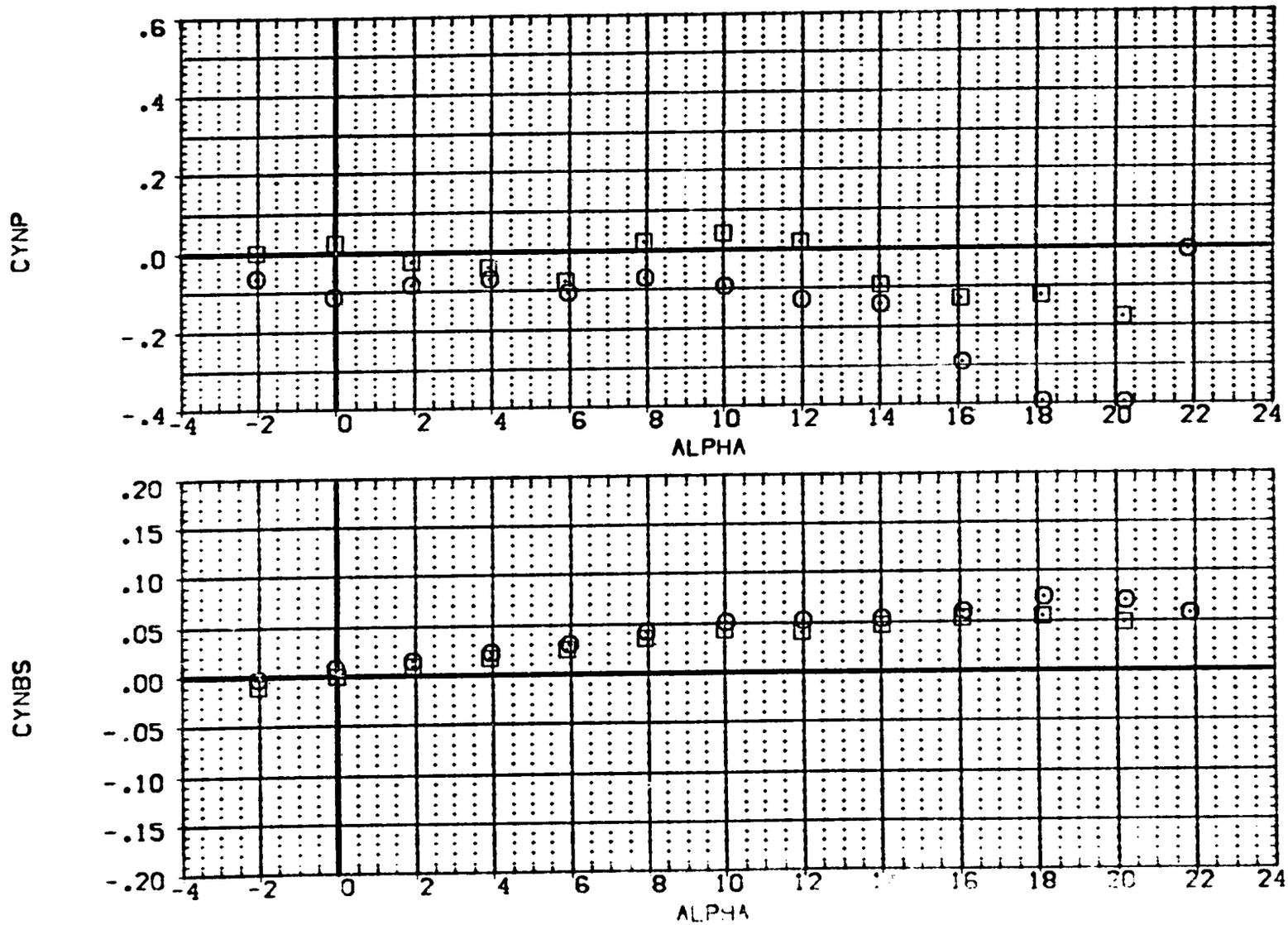


FIGURE 7. EFFECT OF OMS PODS ON DYNAMIC STABILITY PARAMETERS IN ROLL

(E)MACH = 1.20

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BDFLAP	RUDFLR
(RPKY03)	○	LA-20. ROCKWELL ORB 0898 W/MOD. NOSE (BW MF)	1.000	.000	.000	
(RPKY04)	□	LA-20. ROCKWELL ORB 0898 W/MOD. NOSE (BWVMF)	1.000	.000	.000	10.000

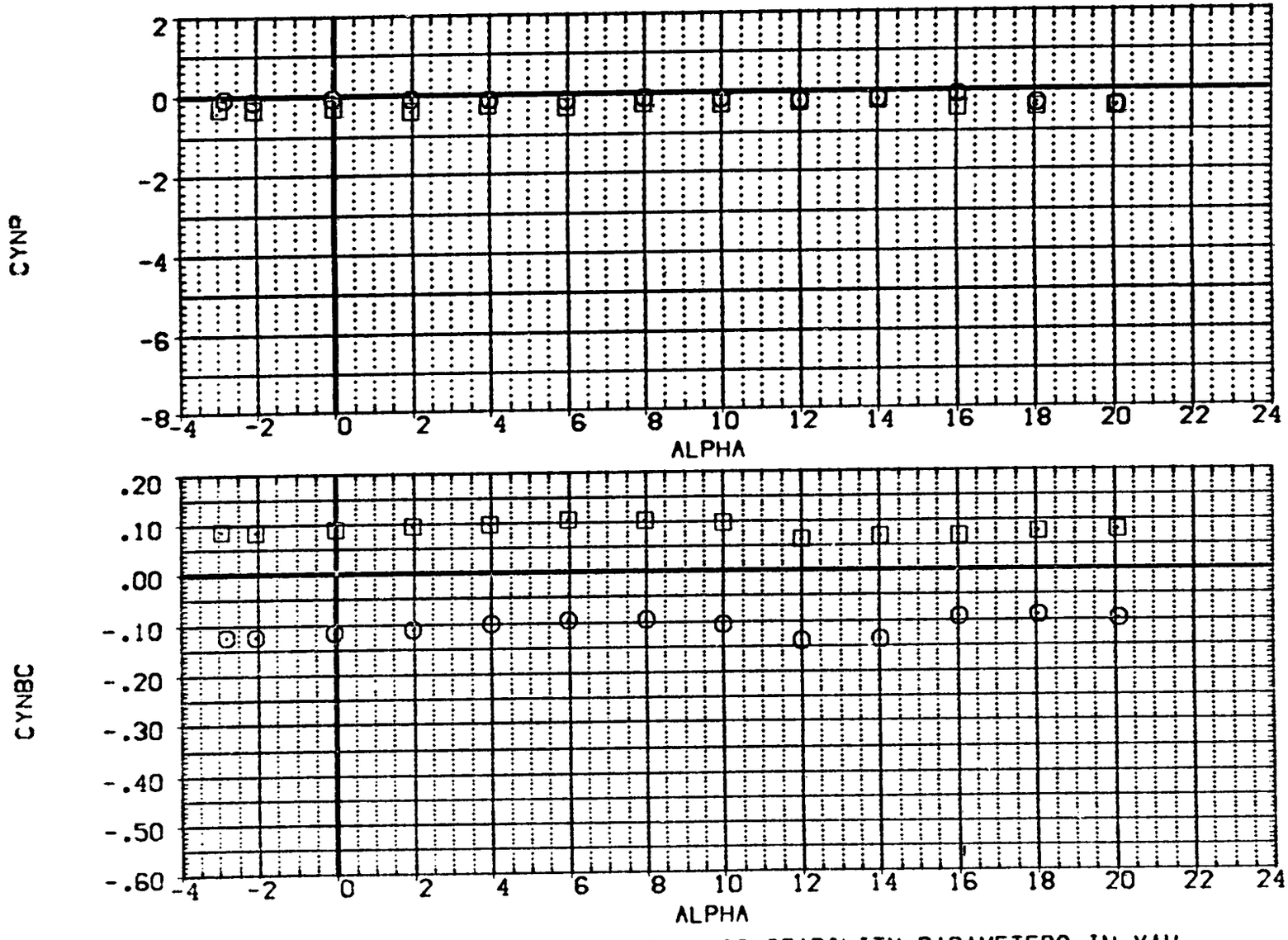


FIGURE 8. EFFECT OF VERTICAL TAIL ON DYNAMIC STABILITY PARAMETERS IN YAW

(A)MACH = .30

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	RDFLAP	RUDFLR
(RPHY33)	○	LA-20. ROCKWELL ORB 0898 W/MOD. NOSE (EW MF)	1.000	.000	.000	
(RPHY34)	□	LA-20. ROCKWELL ORB 0898 W/MOD. NOSE (BWVMF)	1.000	.000	.000	10.000

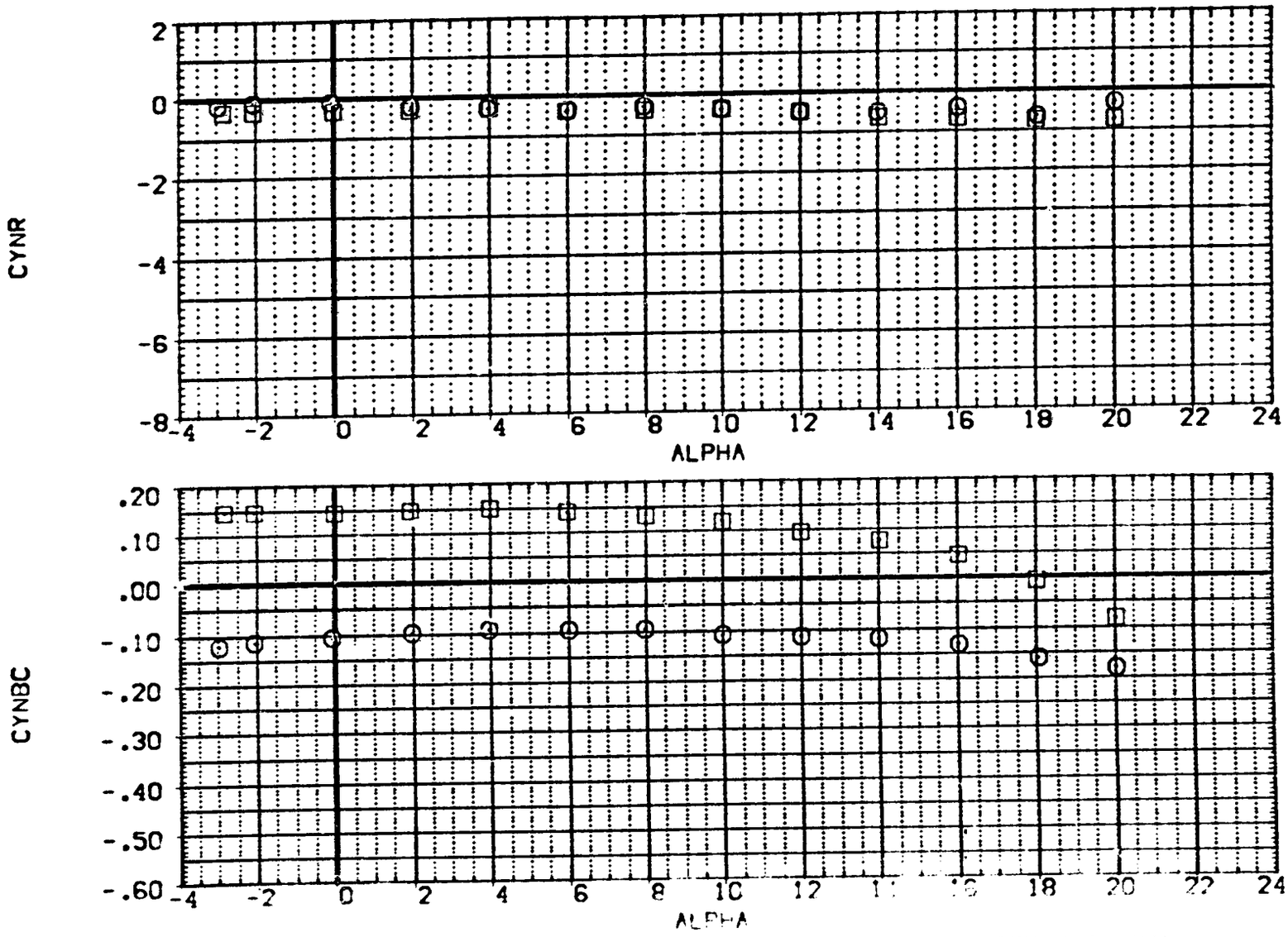


FIGURE 8. EFFECT OF VERTICAL TAIL ON DYNAMIC STABILITY PARAMETERS IN YAW

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BOFLAP	RUDFLR
[RPKY03] ○	LA-20, ROCKWELL ORB 0898 W/MOD. NOSE (BV MF)	1.000	.000	.000	
[RPKY04] □	LA-20, ROCKWELL ORB 0898 W/MOD. NOSE (BVVMF)	1.000	.000	.000	10.000

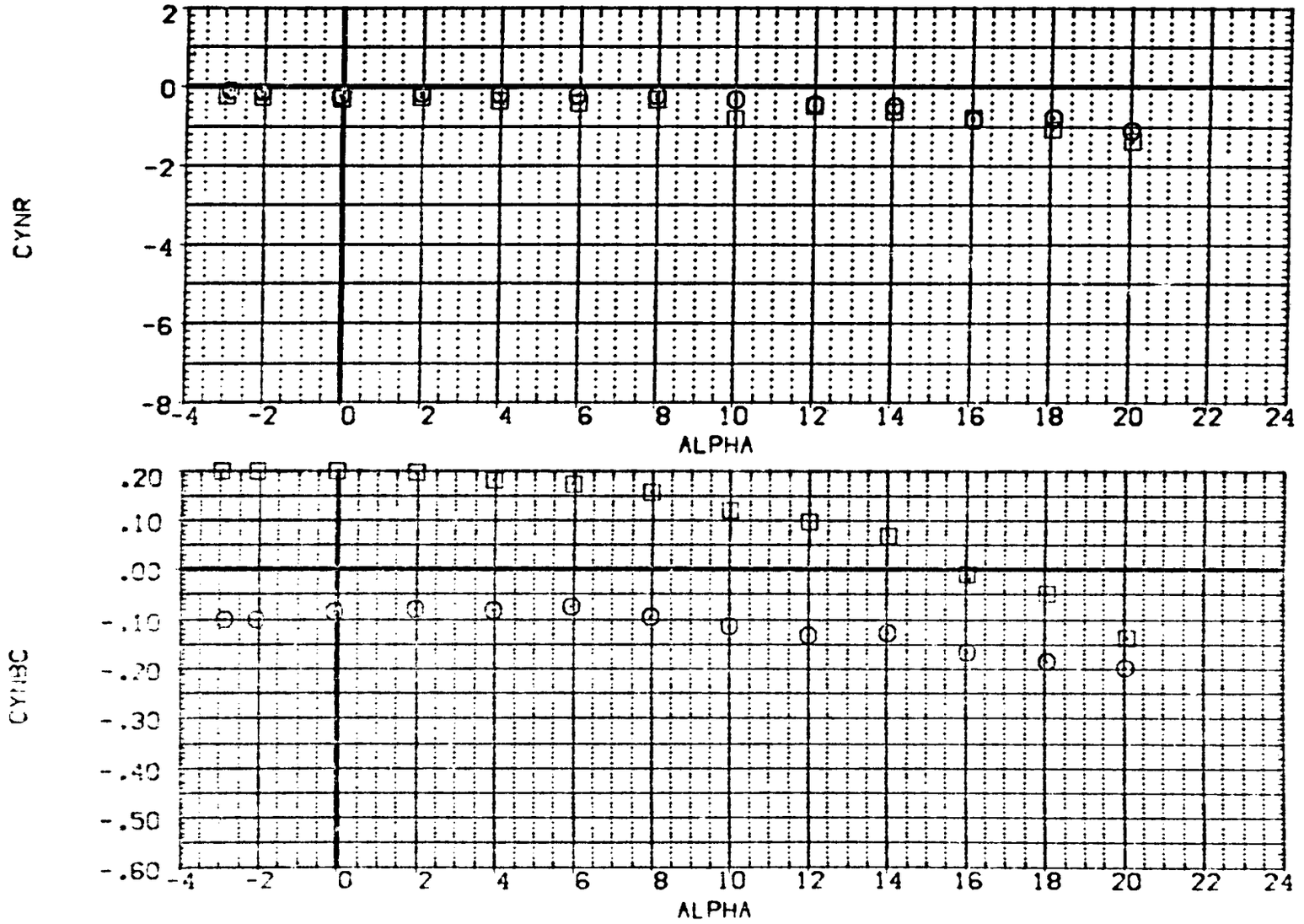


FIGURE 8. EFFECT OF VERTICAL TAIL ON DYNAMIC STABILITY PARAMETERS IN YAW

(C)MACH = .90

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BDFLAP	RUDFLR
(RPKY03)	○	LA-20. ROCKWELL ORB 0898 W/MOD. NOSE (BW MF)	1.000	.000	.000	
(RPKY04)	□	LA-20. ROCKWELL ORB 0898 W/MOD. NOSE (BWVMF)	1.000	.000	.000	10.000

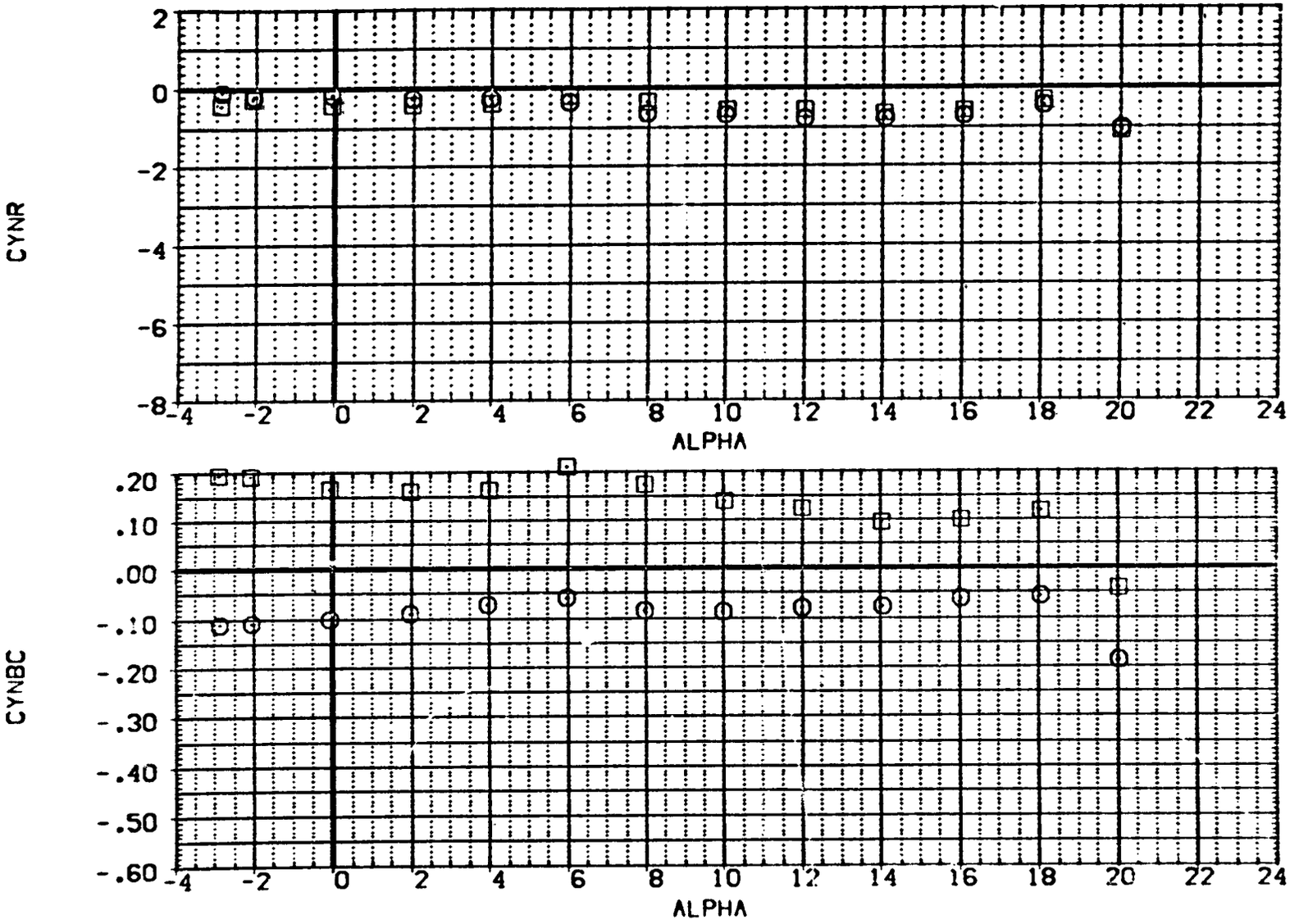


FIGURE 8. EFFECT OF VERTICAL TAIL ON DYNAMIC STABILITY PARAMETERS I[illegible]

(D)MACH - .90

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BCFLAP	RUDFLR
(RPKY03) ○	LA-20. ROCKWELL ORB 0898 W/MOD. NOSE (BW MF)	1.000	.000	.000	
(RPKY04) □	LA-20. ROCKWELL ORB 0898 W/MOD. NOSE (BWVMF)	1.000	.000	.000	10.000

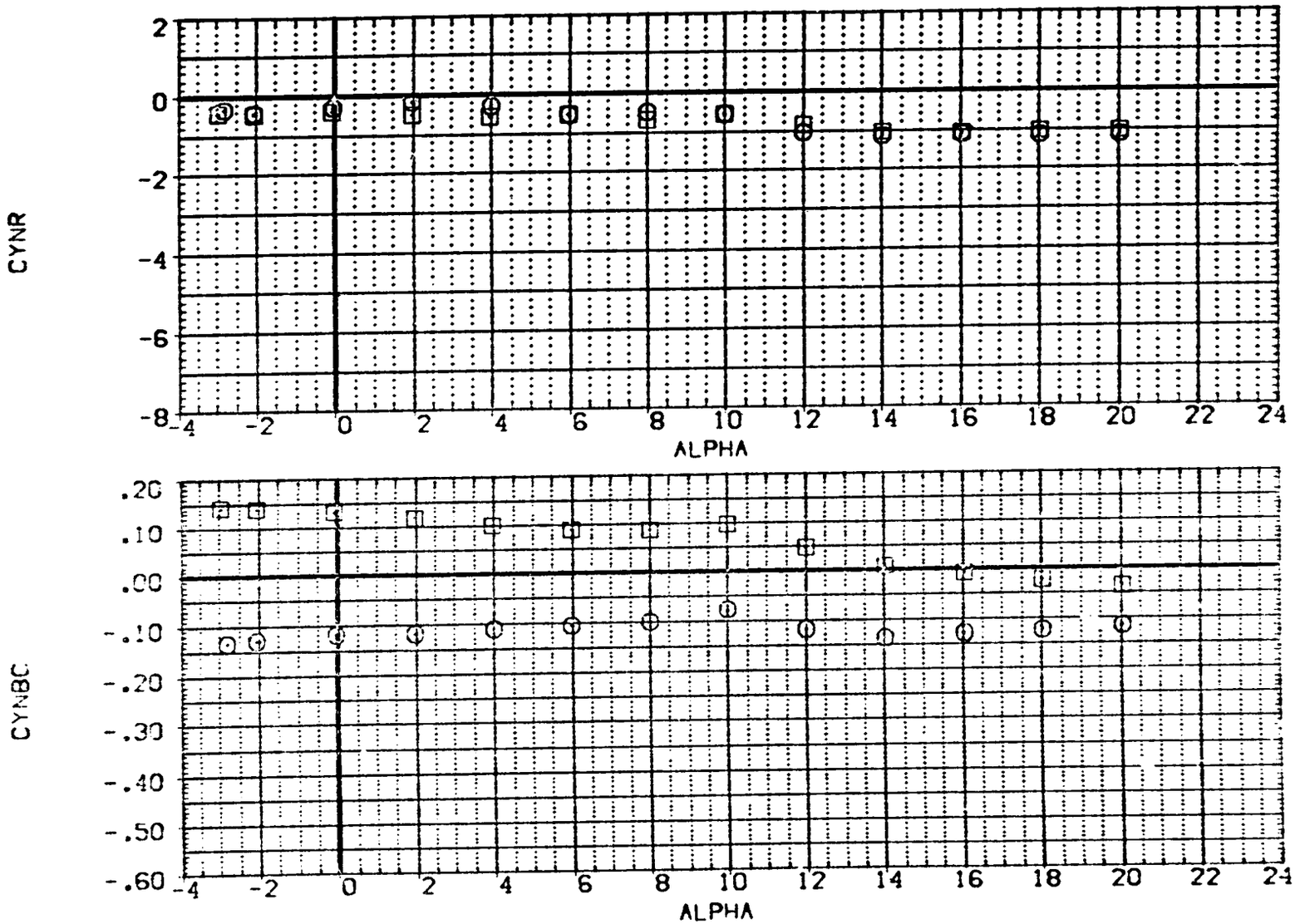


FIGURE 8. EFFECT OF VERTICAL TAIL ON DYNAMIC STABILITY PARAMETERS IN YAW

(REYNACH = 1.20

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BDFLAP	RUDFLR
(RPKYC3)	○	LA-20. ROCKWELL CRP 0898 W/MOD. NOSE (BW MF)	1.000	.000	.000	
(RPKYC4)	□	LA-20. ROCKWELL CRP 0898 W/MOD. NOSE (BWVMF)	1.000	.000	.000	10.000

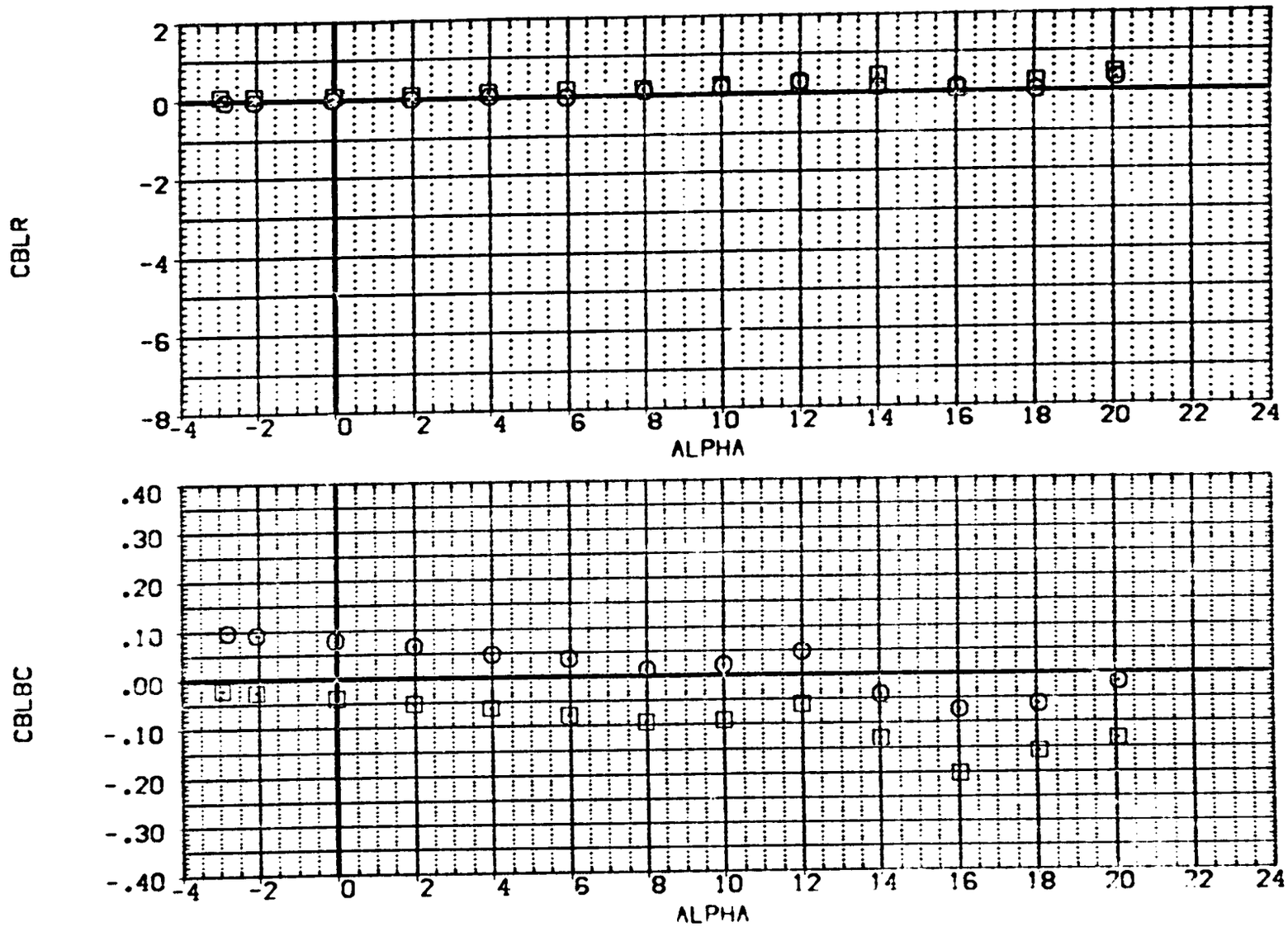


FIGURE 8. EFFECT OF VERTICAL TAIL ON DYNAMIC STABILITY PARAMETERS IN YAW

MACH = .30

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BDFLAP	RUDFLR
(RPKY03) ○	LA-20. ROCKWELL ORB 0828 W/MOD. NOSE (BV MF)	1.000	.000	.000	
(RPKYC4) □	LA-20. ROCKWELL ORB 0898 W/MOD. NOSE (BWVMF)	1.000	.000	.000	10.000

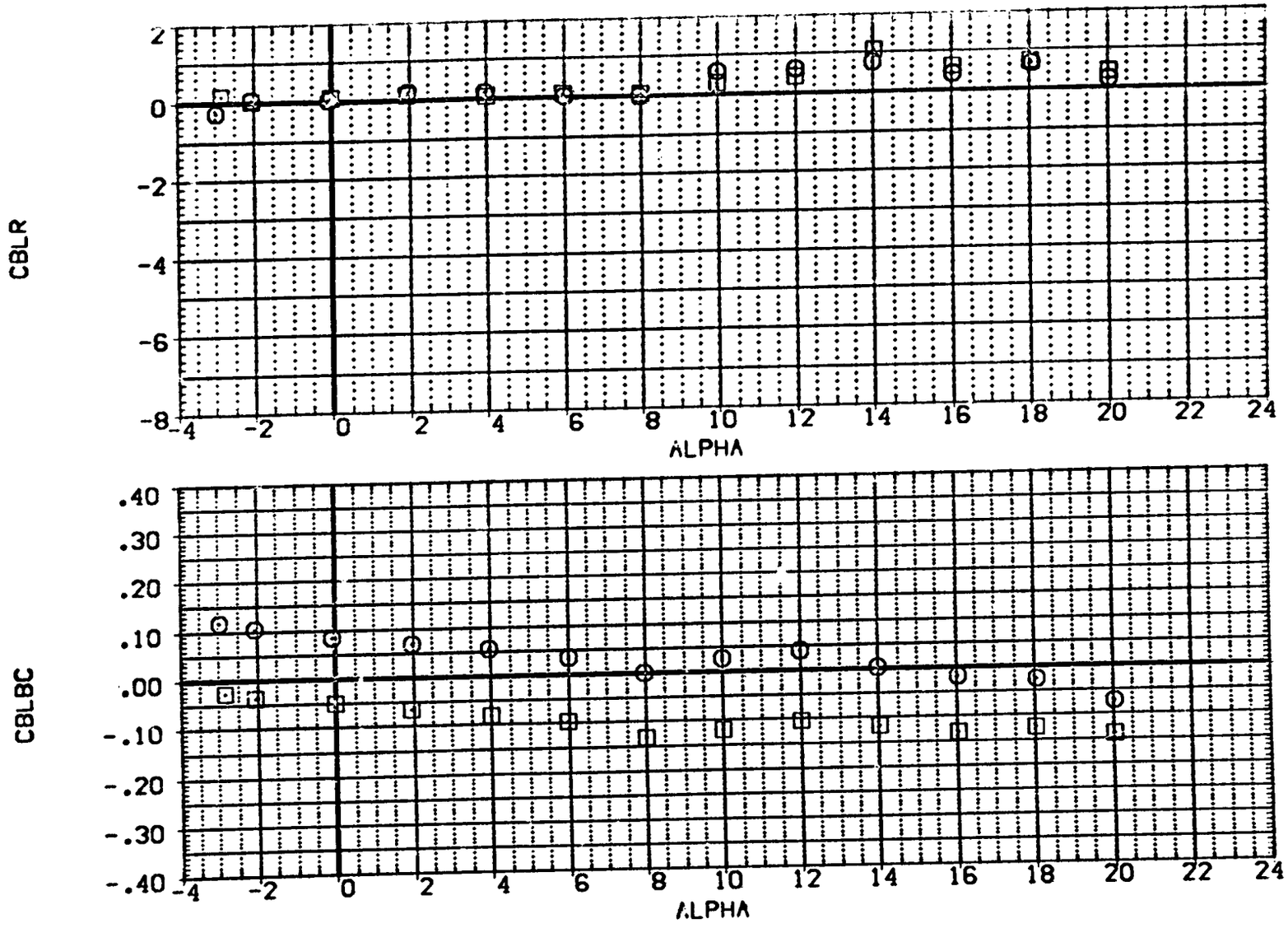


FIGURE 8. EFFECT OF VERTICAL TAIL ON DYNAMIC STABILITY PARAMETERS IN YAW

(B)MACH = .80

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BOFLAP	RUDFLR
[RPKY03]	○	LA-20. ROCKWELL ORB 0898 W/MOD. NOSE (BW MF)	1.000	.000	.000	
[RPKY04]	□	LA-20. ROCKWELL ORB 0898 W/MOD. NOSE (BWVMF)	1.000	.000	.000	10.000

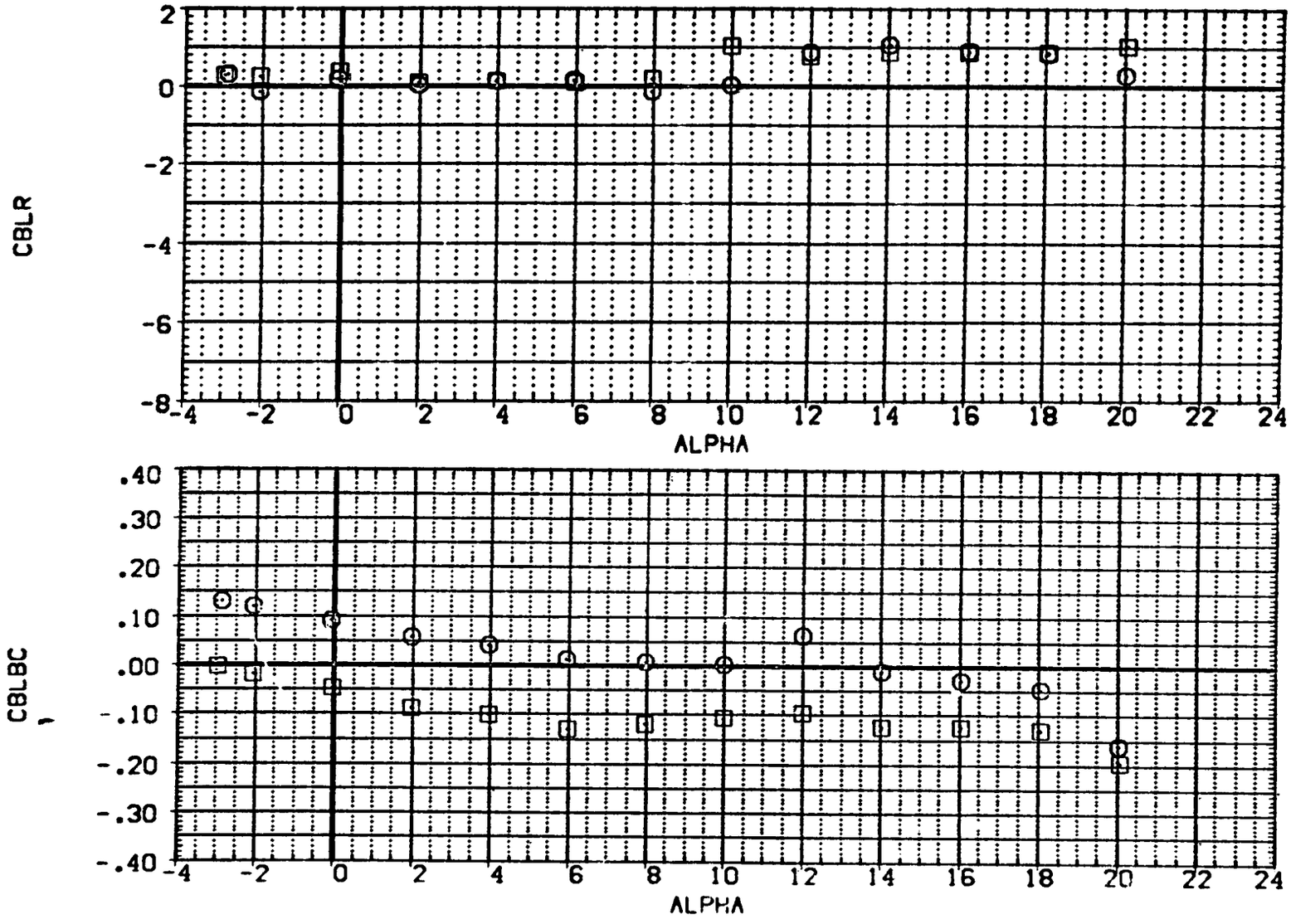


FIGURE 8. EFFECT OF VERTICAL TAIL ON DYNAMIC STABILITY PARAMETERS IN YAW

(C)MACH = .90

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	RDFLAP	RUDFLR
(RPA103)	○	LA-20. ROCKWELL 3RB 0800 W/M90. NOSE (BV MF)	1.000	.000	.000	
(RPA101)	□	LA-20. ROCKWELL 3RB 0800 W/M90. NOSE (BV MF)	1.000	.000	.000	10.000

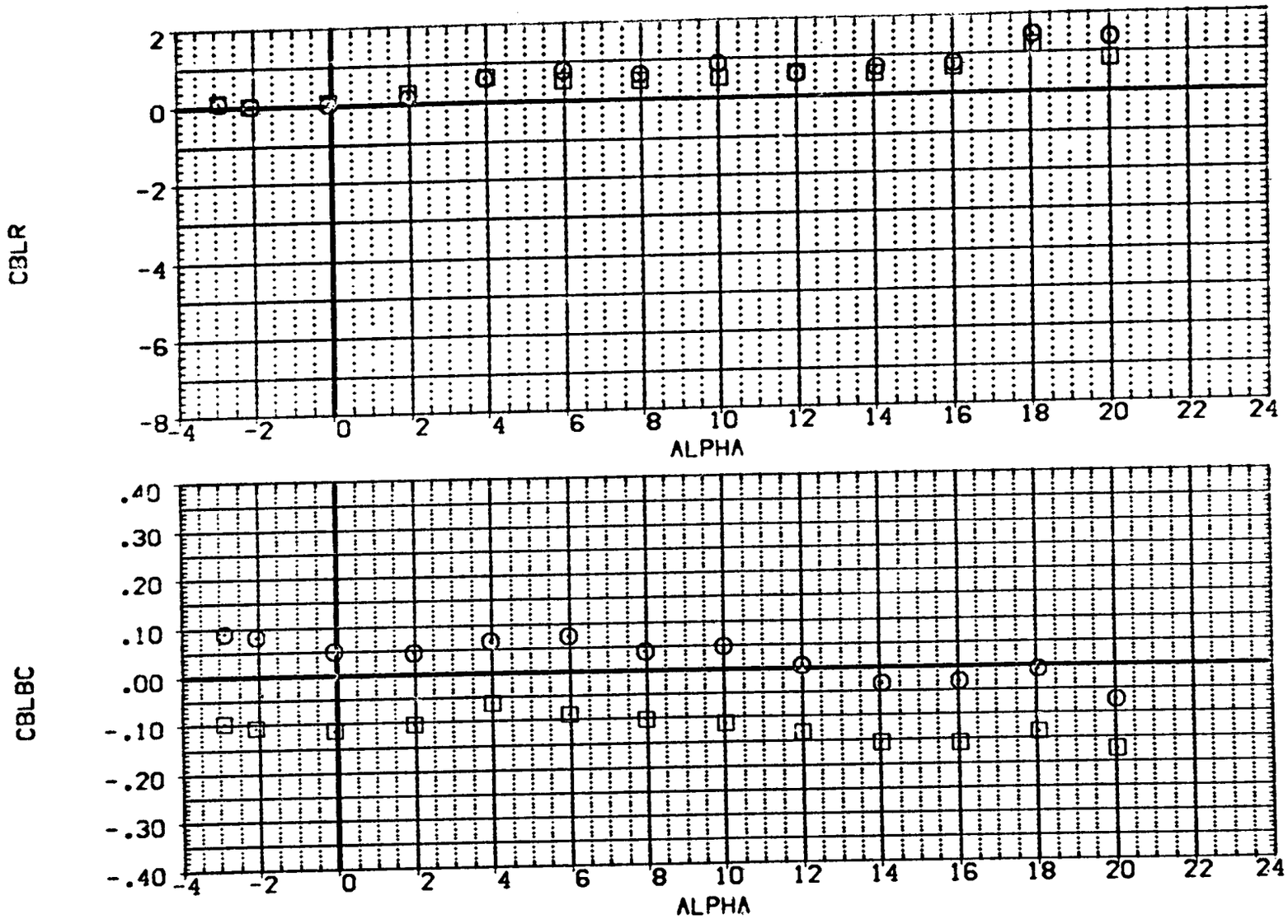


FIGURE 8. EFFECT OF VERTICAL TAIL ON DYNAMIC STABILITY PARAMETERS IN YAW

(□)MACH = .98

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BDFLAP	RUDFLR
(RPKY03)	○	LA-20. ROCKWELL ORB 0898 W/MOD. NOSE (BW MF)	1.000	.000	.000	
(RPKY04)	□	LA-20. ROCKWELL ORB 0898 W/MOD. NOSE (BWVMF)	1.000	.000	.000	10.000

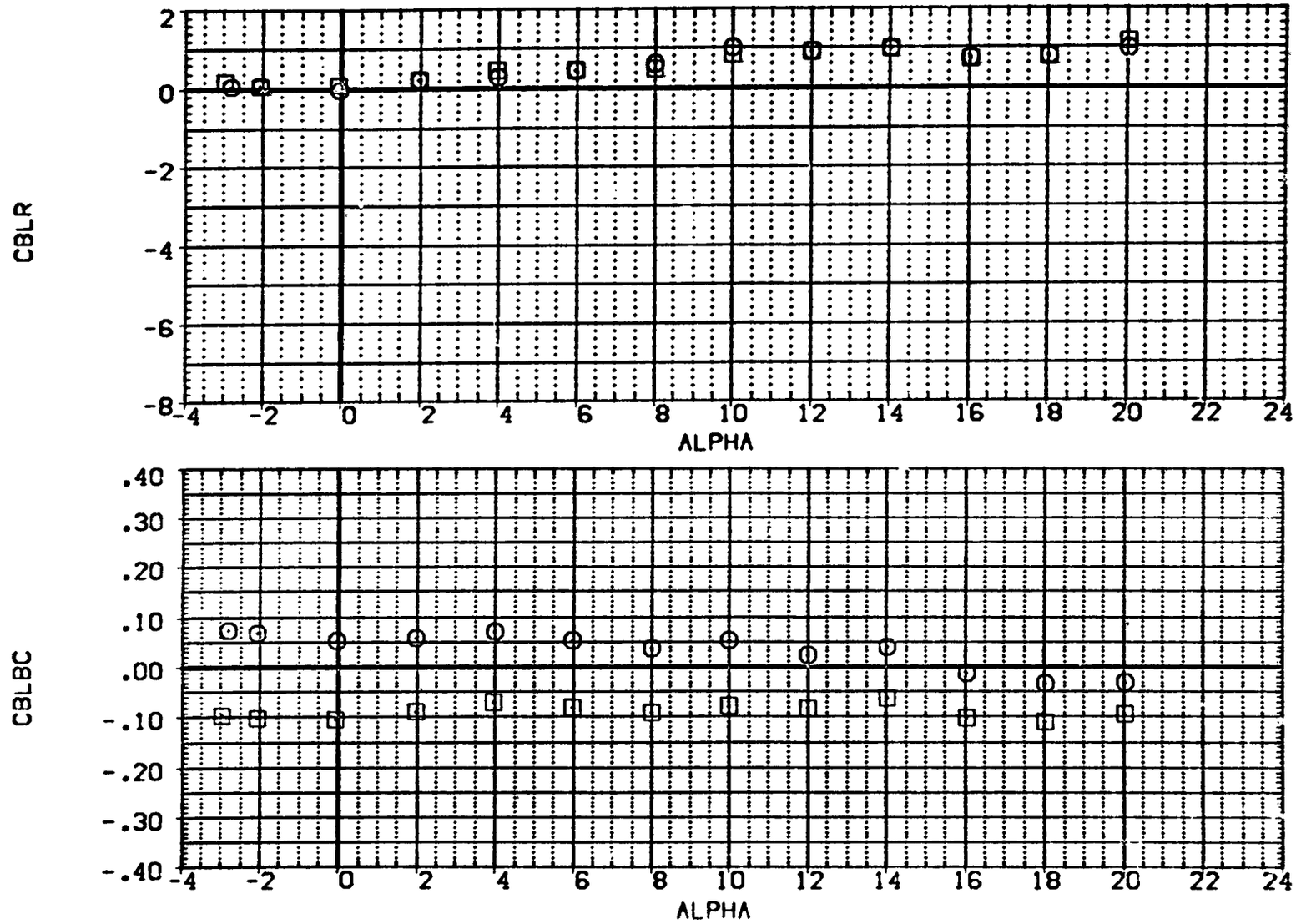


FIGURE 8. EFFECT OF VERTICAL TAIL ON DYNAMIC STABILITY PARAMETERS IN YAW

LEDMACH = 1.20

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BDFLAP	RUDFLR
(RP#P03)	C	LA-20, ROCK•ELL 0898 CPB W/MOD NOSE (BW MF)	1.000	.000	.000	
(RP#R01)		LA-20, ROCK•ELL 0893 CPB W/MOD NOSE (BWVMF)	1.000	.000	.000	10.000

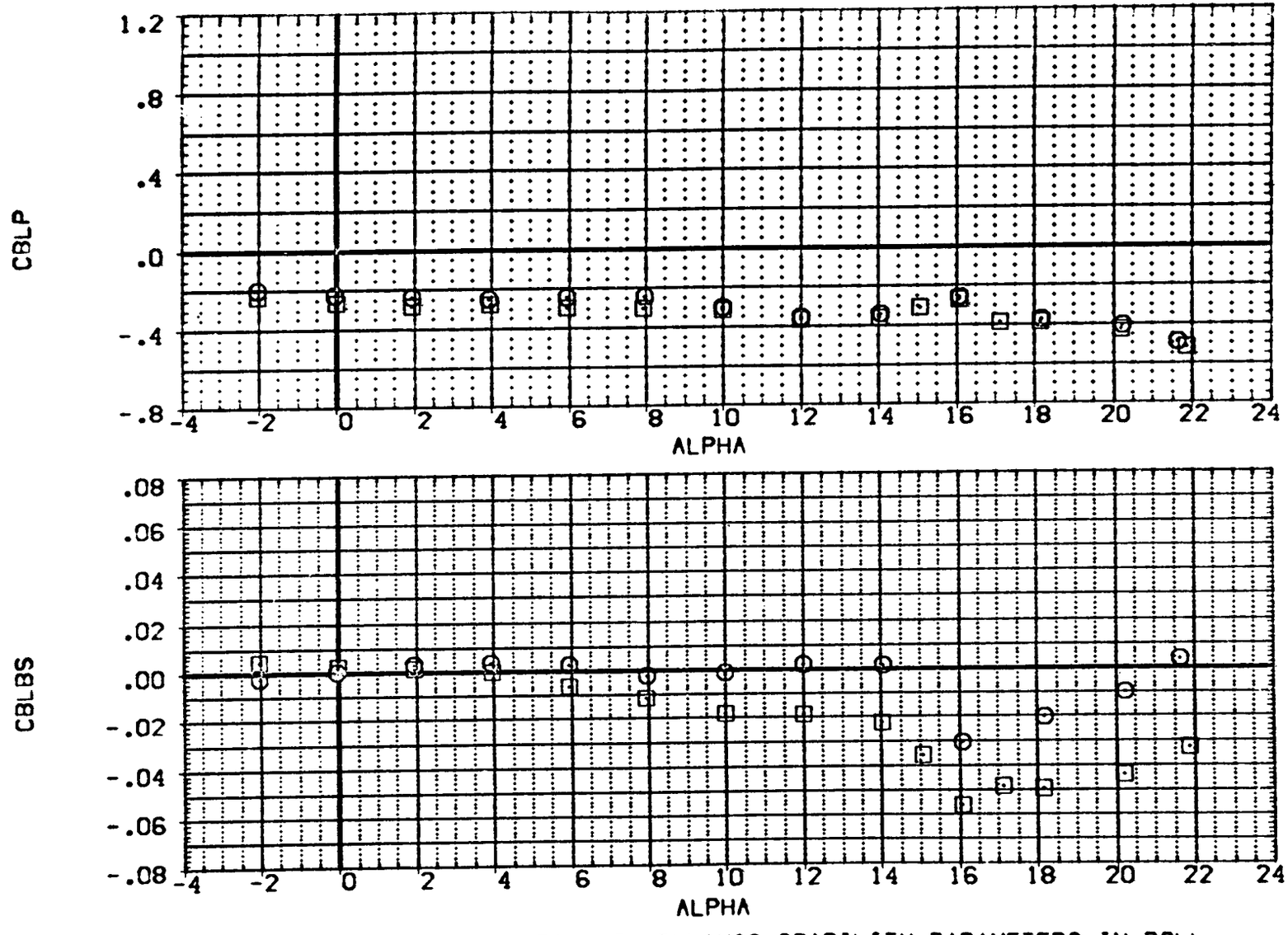


FIGURE 9. EFFECT OF VERTICAL TAIL ON DYNAMIC STABILITY PARAMETERS IN ROLL

(A)MACH = .30

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BOFLAP	RUDFLR
(RPKR03)	○	LA-20, ROCKWELL 0899 ORB W/MOD NOSE (BV MF)	1.000	.000	.000	
(RPKR04)	□	LA-20, ROCKWELL 0899 ORB W/MOD NOSE (BVVMF)	1.000	.000	.000	10,000

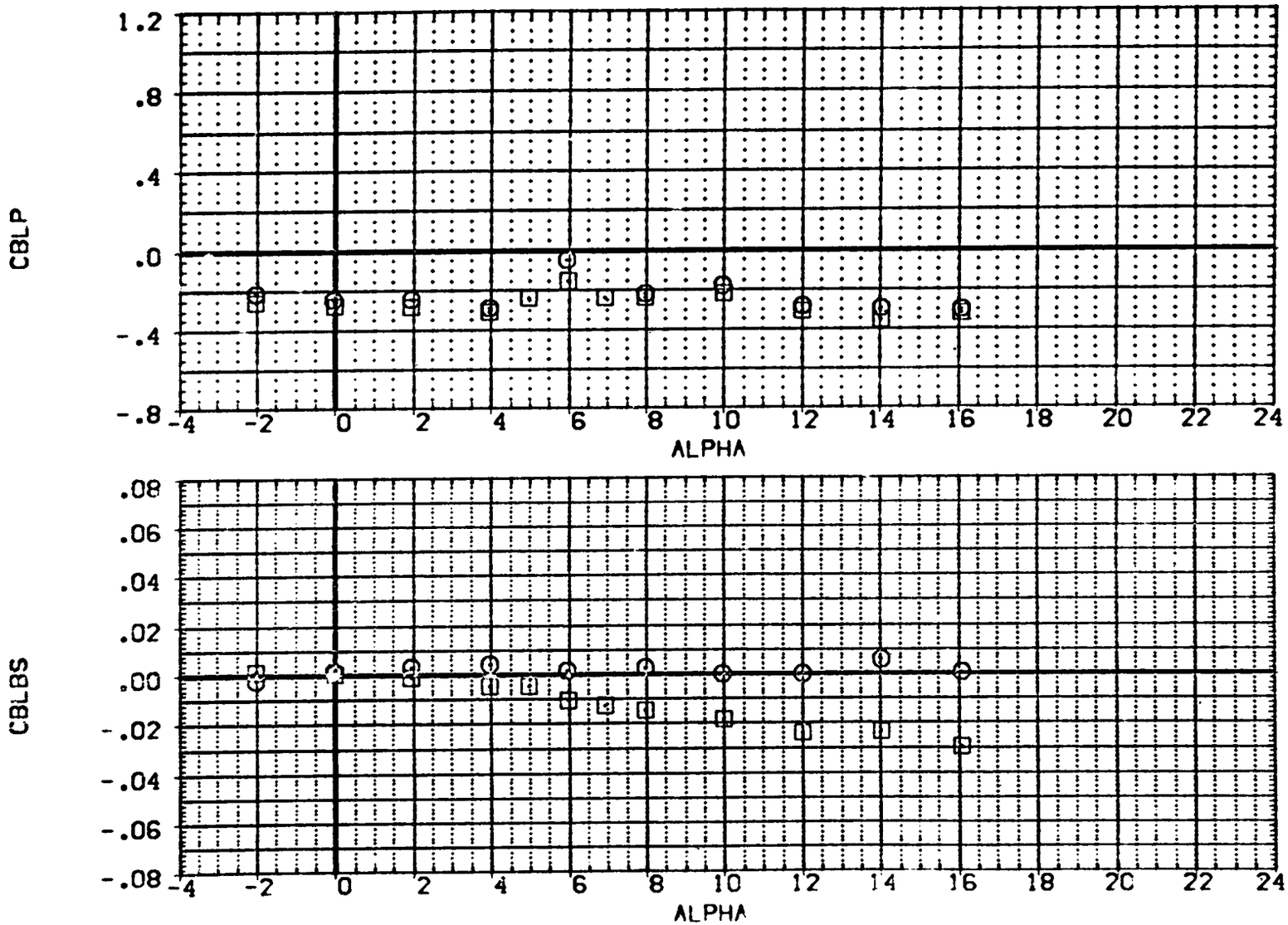


FIGURE 9. EFFECT OF VERTICAL TAIL ON DYNAMIC STABILITY PARAMETERS IN ROLL

(B)MACH = .80

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BDFLAP	RUDFLR
(RPKR03)	○	LA-20. ROCKWELL 0898 ORB W/MOD NOSE (BV MF)	1.000	.000	.000	
(RPKR04)	□	LA-20. ROCKWELL 0898 ORB W/MOD NOSE (BVVMF)	1.000	.000	.000	10.000

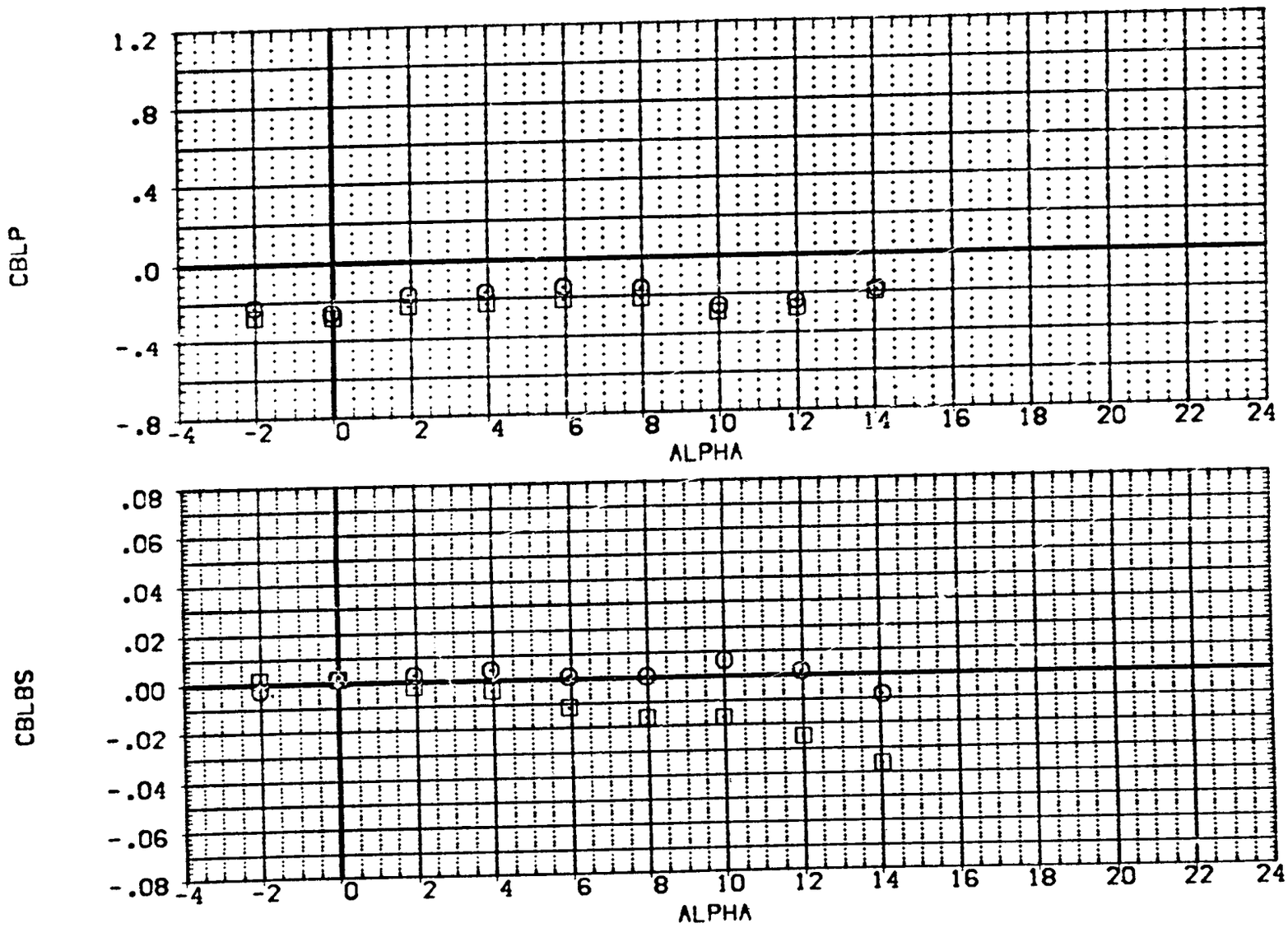


FIGURE 9. EFFECT OF VERTICAL TAIL ON DYNAMIC STABILITY PARAMETERS IN ROLL

(C)MACH = .90

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BOFLAP	RUDFLR
(RPKRC3)	○	LA-20. ROCKWELL 089B ORB W/MOD NOSE (BW MF)	1.000	.000	.000	0.000
(RPKRC4)	□	LA-20. ROCKWELL 089B ORB W/MOD NOSE (BWVMF)	1.000	.000	.000	

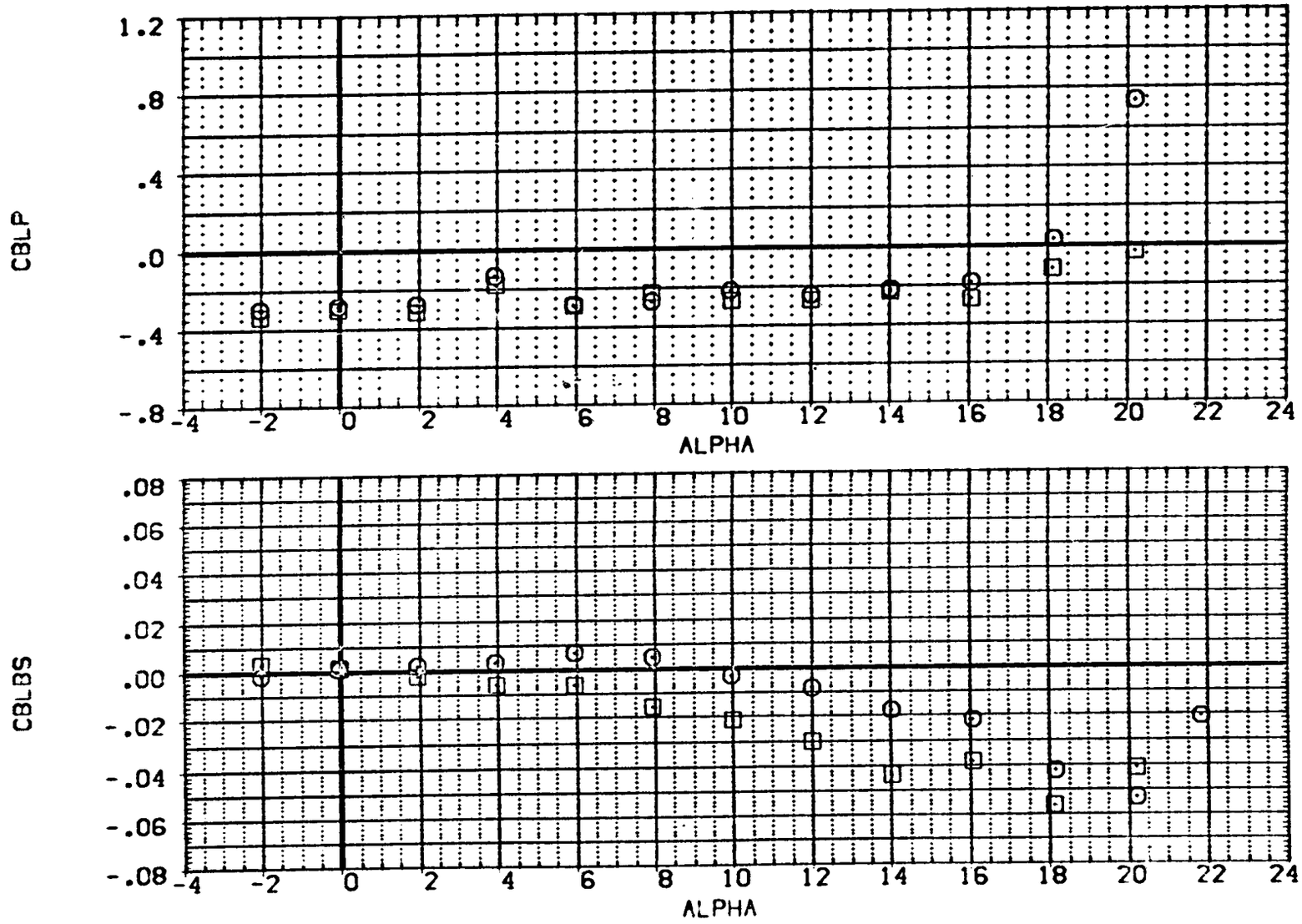


FIGURE 9. EFFECT OF VERTICAL TAIL ON DYNAMIC STABILITY PARAMETERS IN ROLL

(MACH = .98

SYMBOL	CONFIGURATION DESCRIPTION	PC	ELEVTR	RDFLAP	RUDDLR
[illegible]	[illegible]	1.000	.000	.000	
[illegible]	LA-20, [illegible]	1.000	.000	.000	10.000

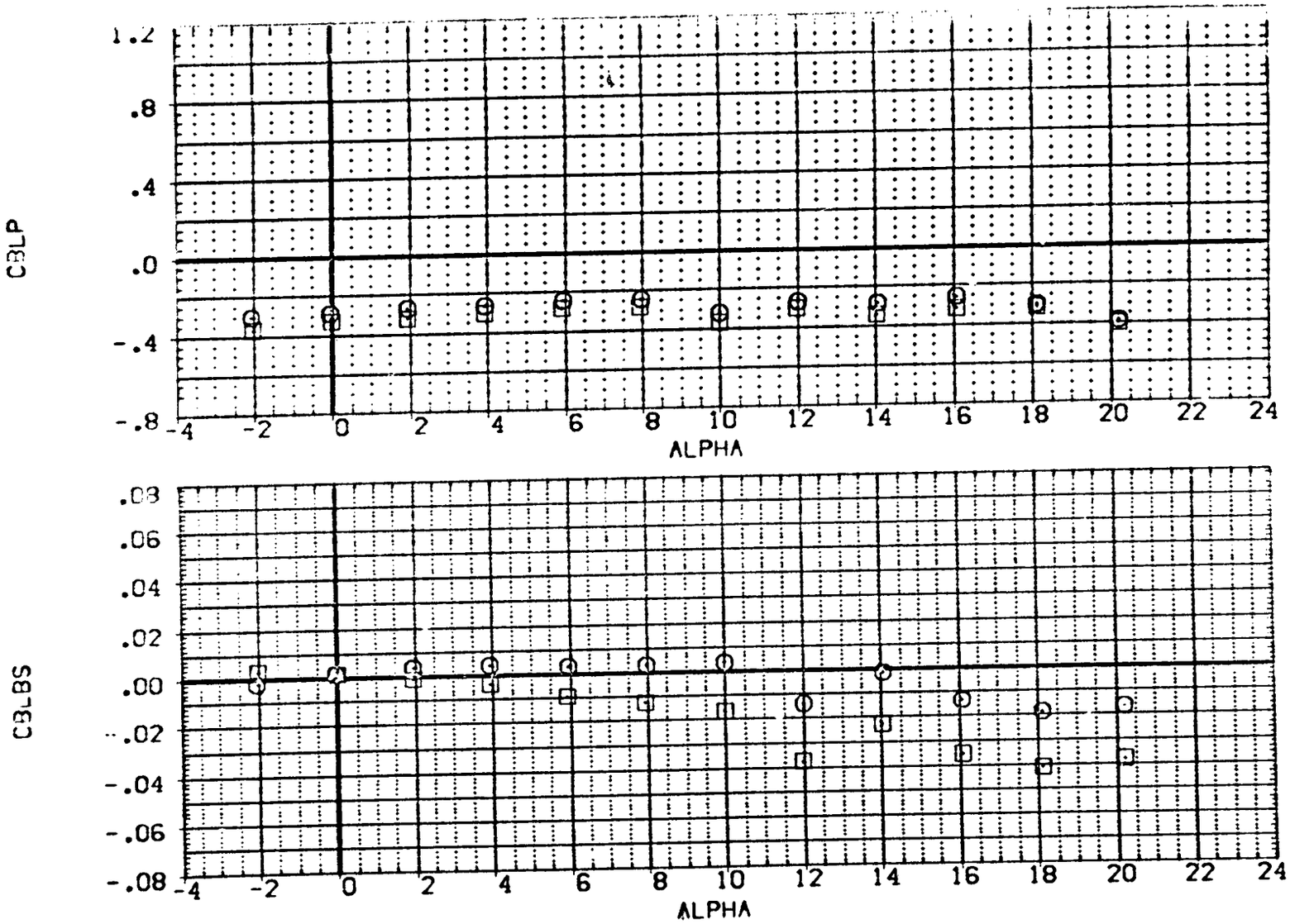


FIGURE 9. EFFECT OF VERTICAL TAIL ON DYNAMIC STABILITY PARAMETERS IN ROLL

(E)MACH = 1.20

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BDFLAP	RUDFLR
(RPKP04)	○	LA-20. ROCKWELL 0898 ORB W/MOD NOSE (BWVMF)	1.000	.000	.000	10.000
(RPKP05)	□	LA-20. ROCKWELL 0898 ORB W/MOD NOSE (BWVMF)	1.000	.000	13.000	85.000

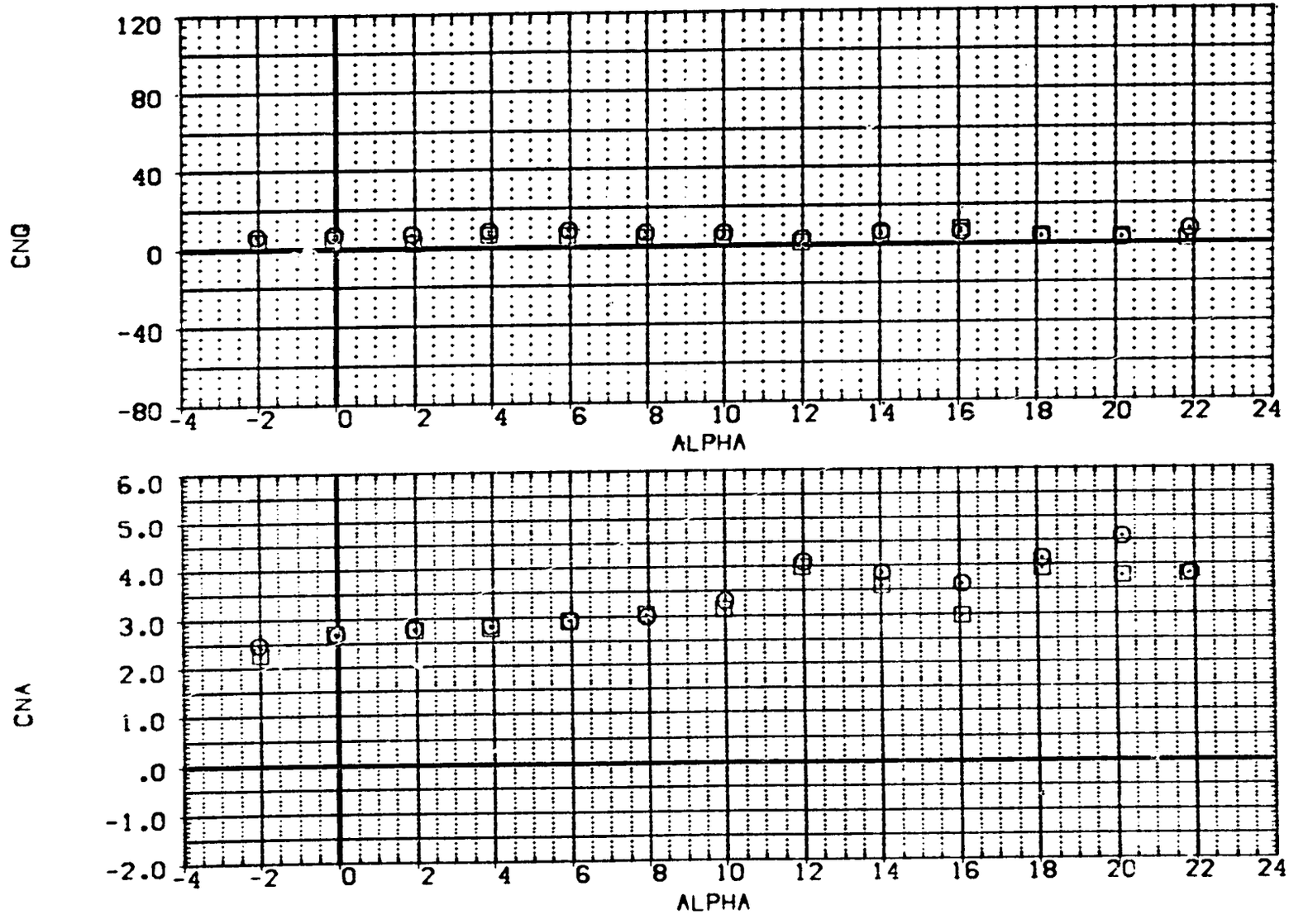


FIGURE 10. EFFECT OF BODY FLAP AND RUDDER FLARE ON DYN. STAB. PARM. IN PITCH

(A) MACH = .30

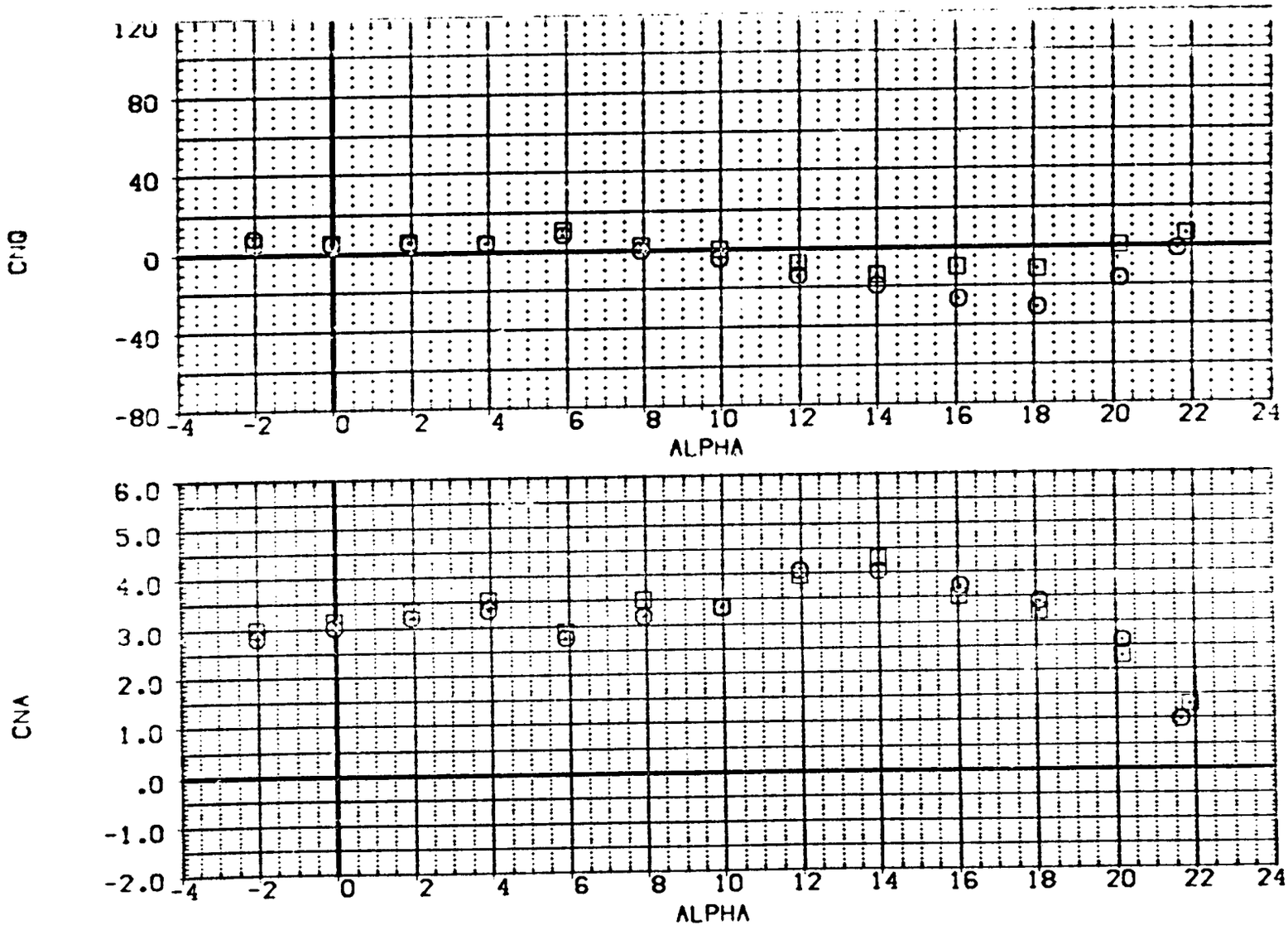


FIGURE 10. EFFECT OF BODY FLAP AND RUDDER FLARE ON DYN. STAB. PARM. IN PITCH

(B)MACH = .80

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BDFLAP	RUDFLR
[RPKP04]	LA-20, ROCKWELL 0898 ORB W/MOD NOSE (BWVMF)	1.000	.000	.000	10.000
[RPKP05]	LA-20, ROCKWELL 0898 ORB W/MOD NOSE (BWVMF)	1.000	.000	13.000	85.000

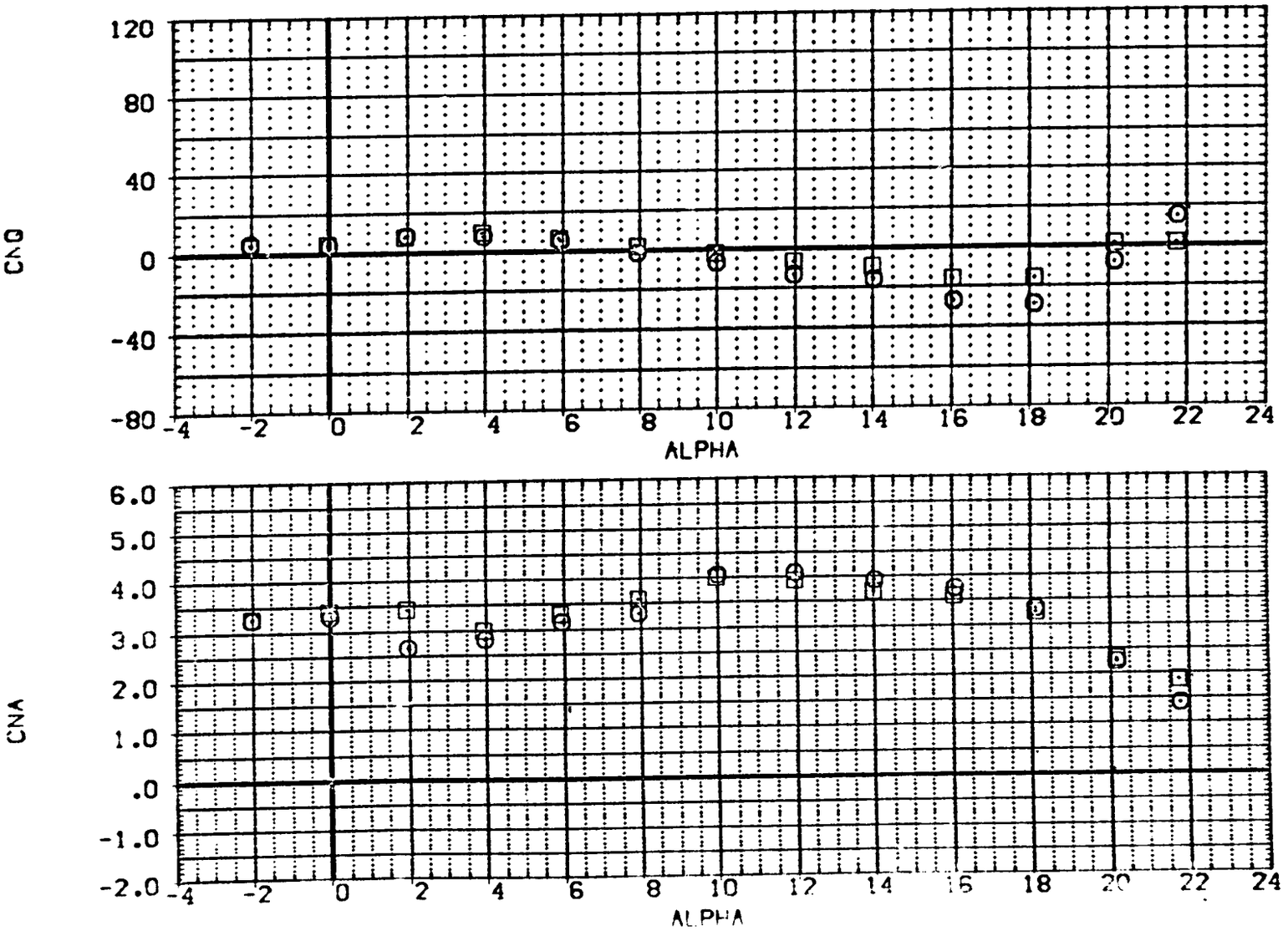


FIGURE 10. EFFECT OF BODY FLAP AND RUDDER FLARE ON DYN. STAB. PARM. IN PITCH

(C)MACH = .90

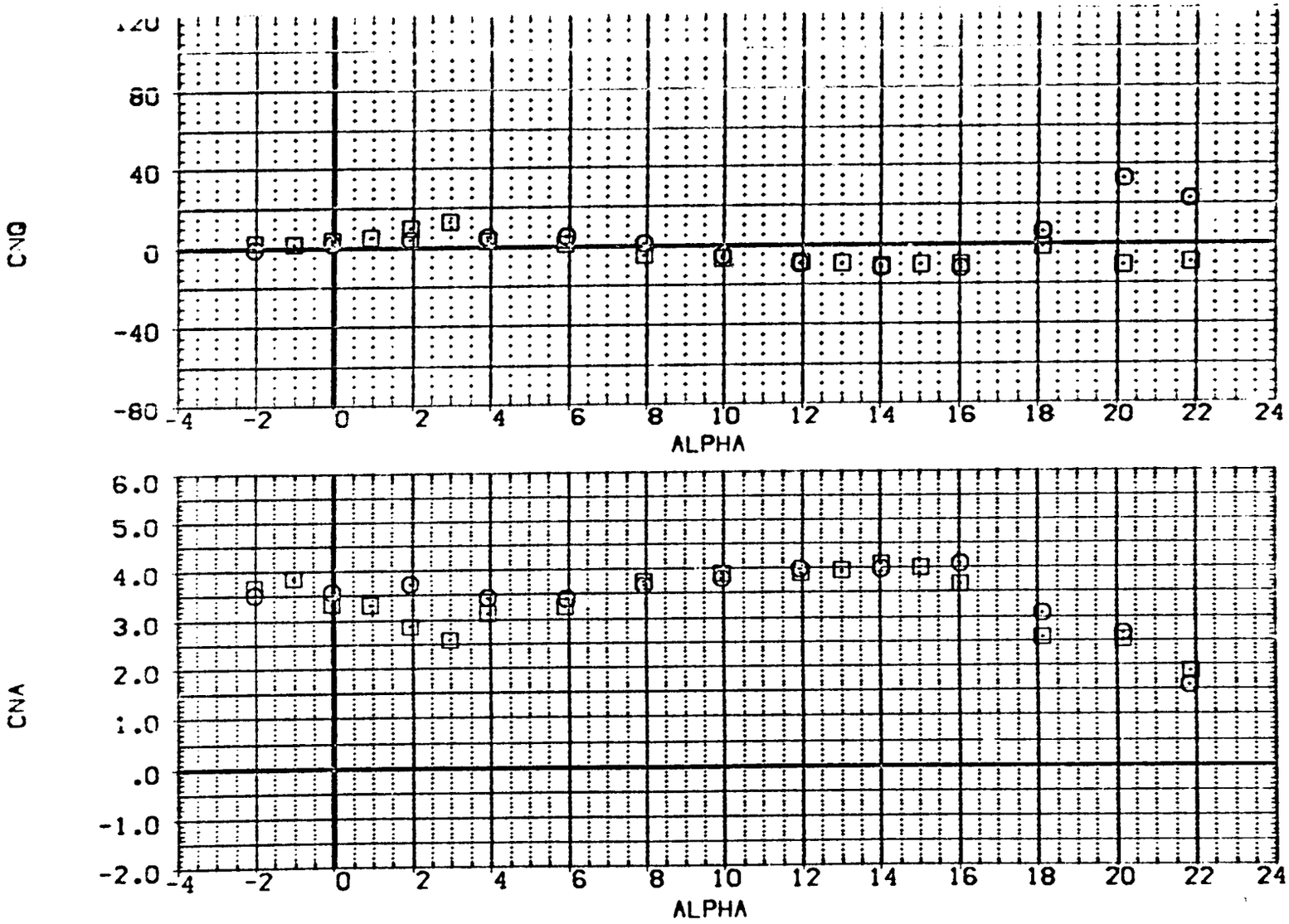


FIGURE 10. EFFECT OF BODY FLAP AND RUDDER FLARE ON DYN. STAB. PARM. IN PITCH

(D)MACH = .98

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BDFLAP	RUDFLR
(RPKP04) ○	LA-20, ROCKWELL 0898 ORB W/MOD NOSE (BWVMF)	1.000	.000	.000	10.000
(RPKP05) □	LA-20, ROCKWELL 0898 ORB W/MOD NOSE (BWVMF)	1.000	.000	13.000	85.000

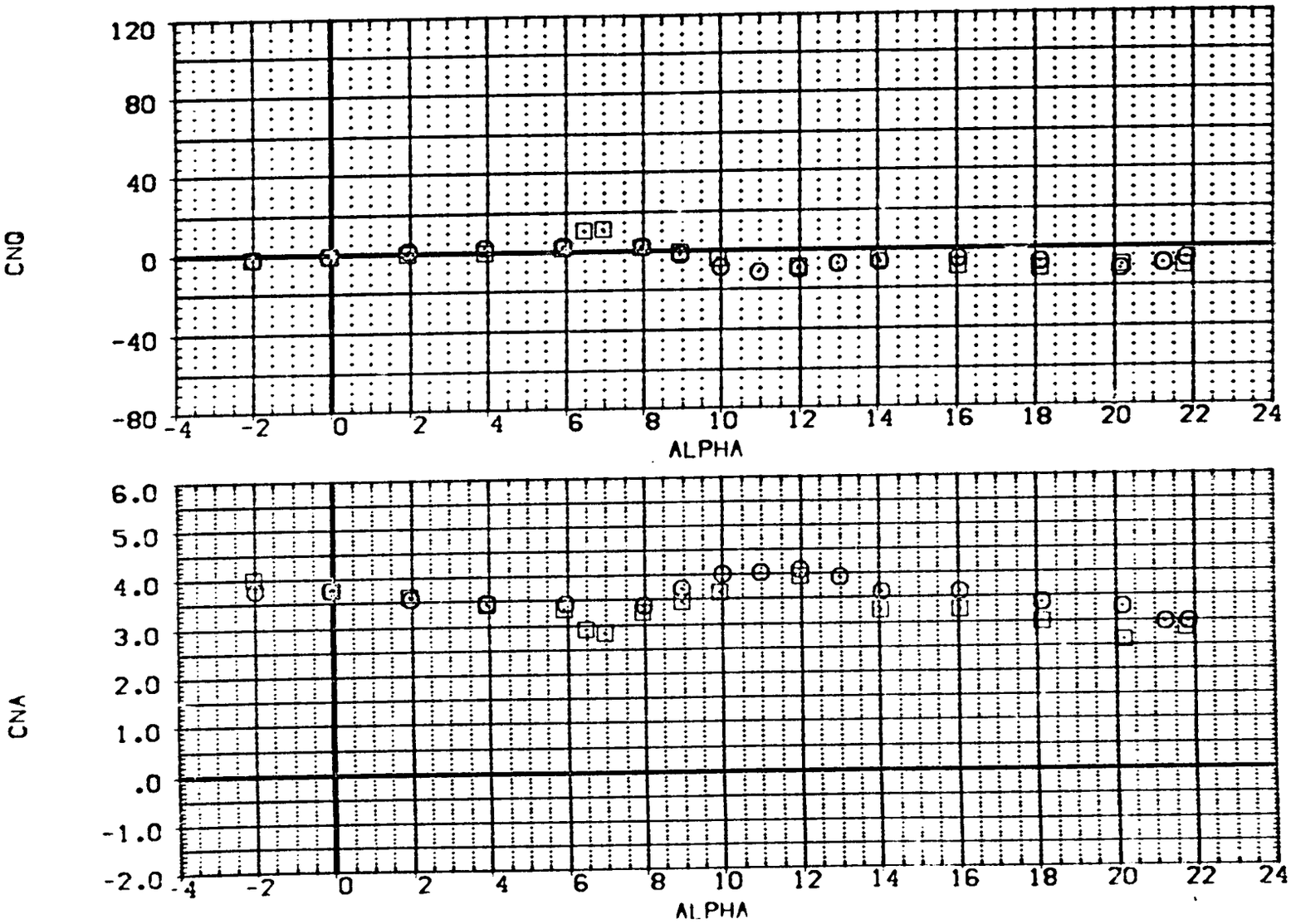


FIGURE 10. EFFECT OF BODY FLAP AND RUDDER FLARE ON DYN. STAB. PARM. IN PITCH

(F)MACH = 1.20

SYM	SET	SYMBOL	CONFIGURATION DESCRIPTION	ELEVTR	RUDDLR	BODYLR
[illegible]	[illegible]	[illegible]	LA-20, [illegible] GOOD ORB WING NOSE (BW/MF)	1.000	.000	[illegible]
[illegible]	[illegible]	[illegible]	LA-20, [illegible] GOOD ORB WING NOSE (BW/MF)	1.000	.000	[illegible]

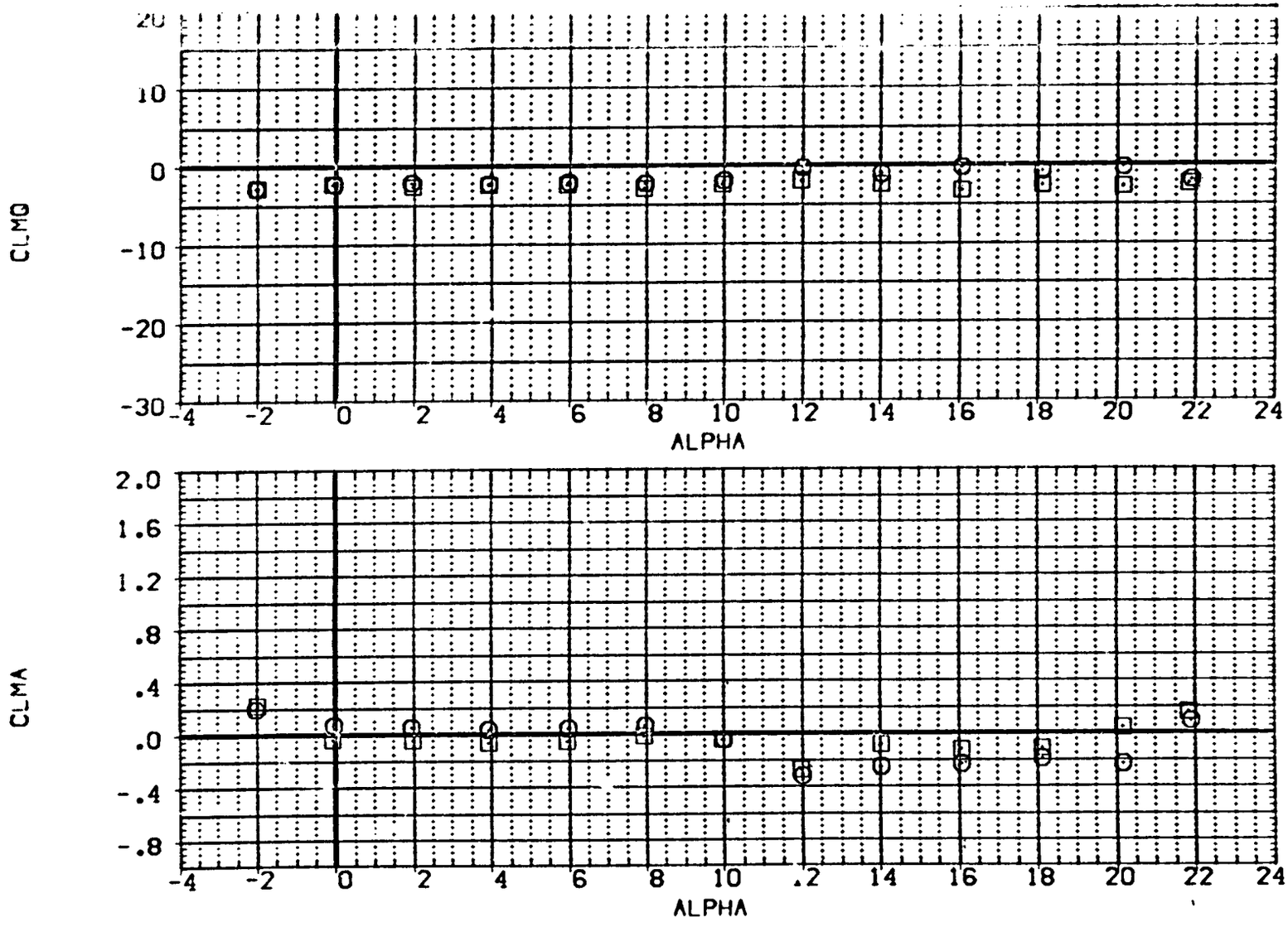


FIGURE 10. EFFECT OF BODY FLAP AND RUDDER FLARE ON DYN. STAB. PARM. IN PITCH

(A)MACH = .30

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BDFLAP	RUDFLR
(RPKPC4)	○	LA-20. ROCKWELL 089B ORB W/MOD NOSE (BWVMF)	1.000	.000	.000	10.000
(RPKPC5)	□	LA-20. ROCKWELL 083B ORB W/MOD NOSE (BWVMF)	1.000	.000	13.000	85.000

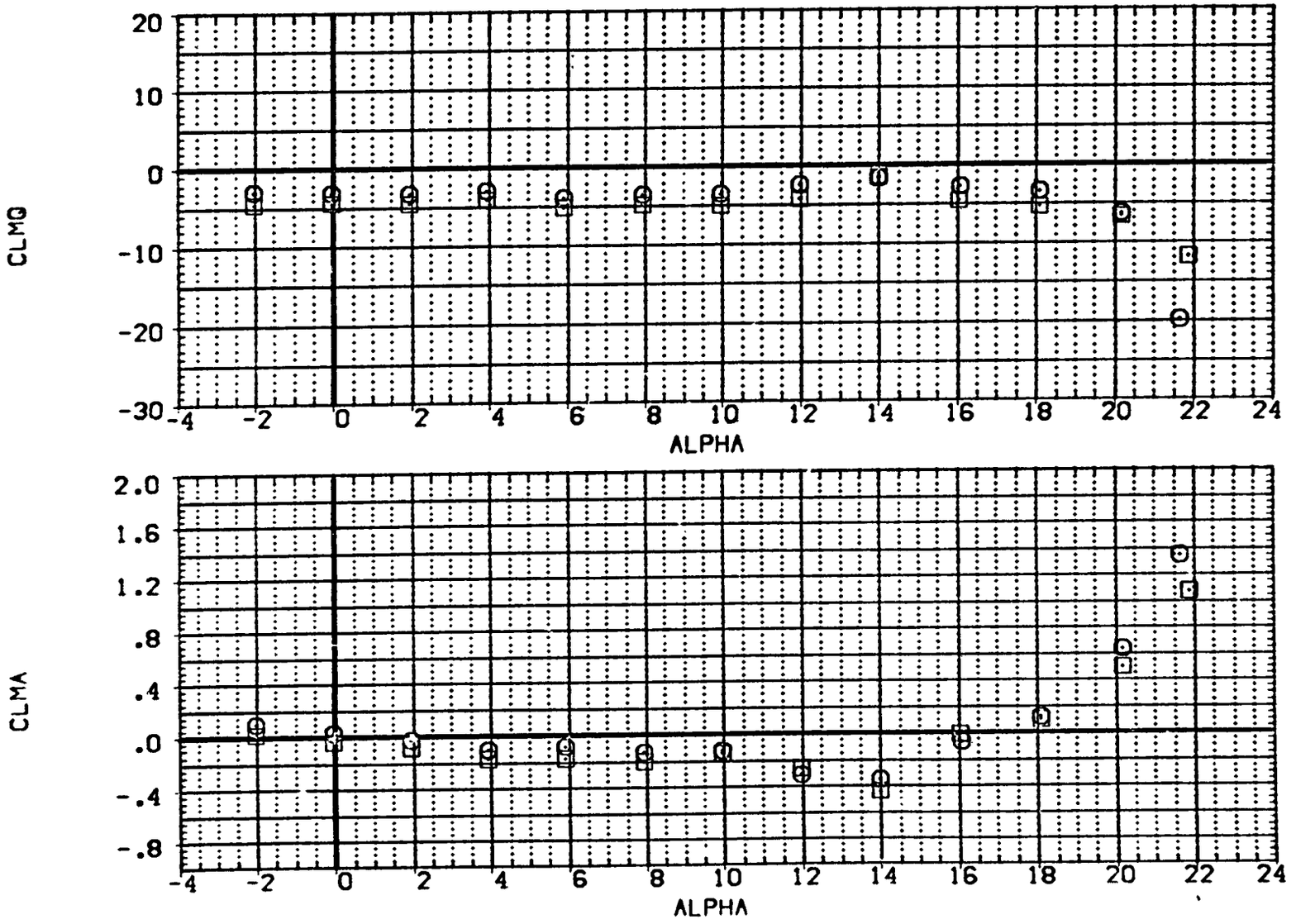


FIGURE 10. EFFECT OF BODY FLAP AND RUDDER FLARE ON DYN. STAB. PARM. IN PITCH

(B)MACH = .80

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BOFLAP	RUDFLR
(C)MPOS	□	LA-20. ROCKWELL 0893 0PB W/MOD NOSE (B/W/MF)	.000	.000	.000	10.000
(R)MPOS	□	LA-20. ROCKWELL 0893 0PB W/MOD NOSE (B/W/MF)	1.000	.000	13.000	85.000

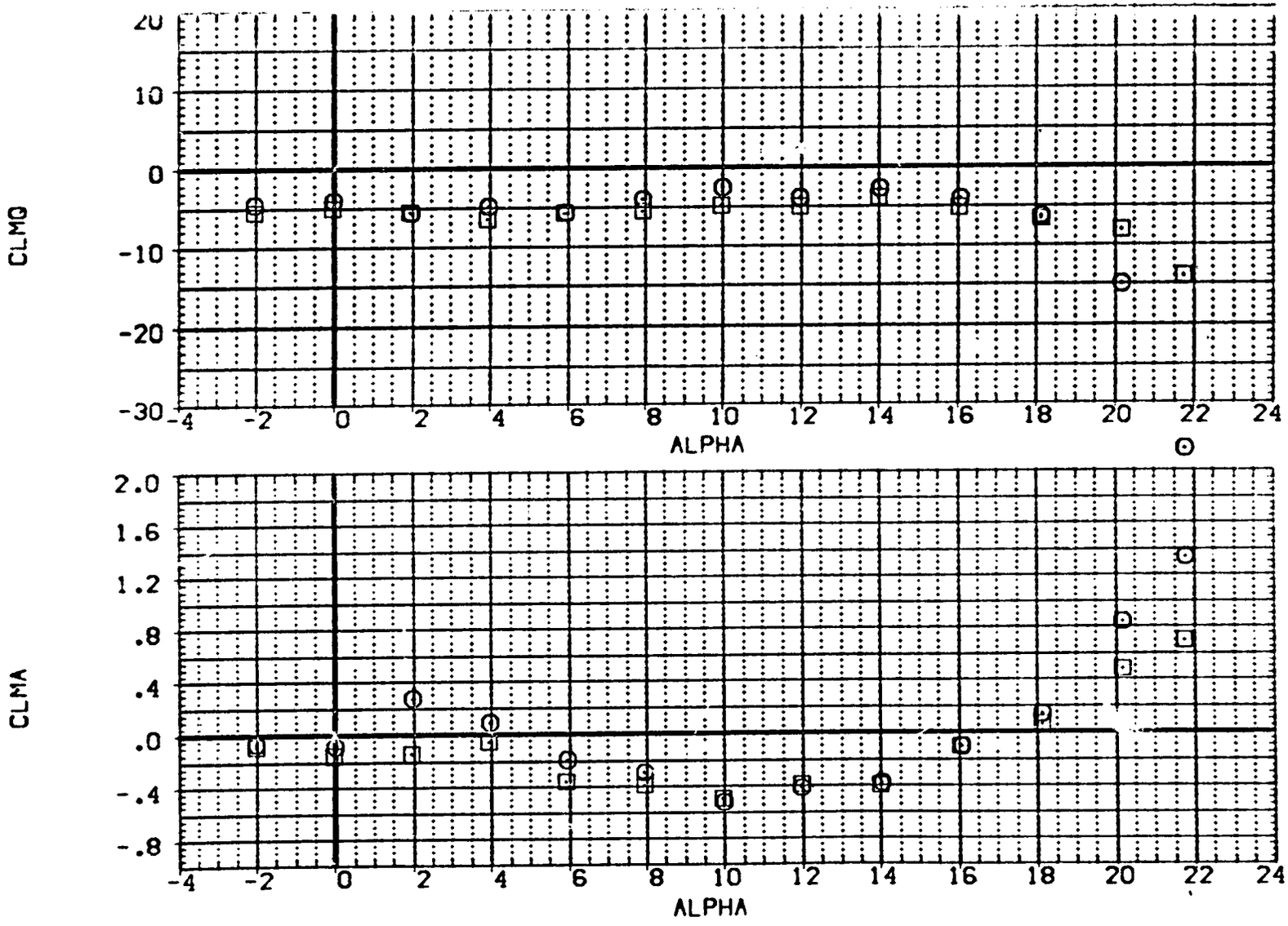


FIGURE 10. EFFECT OF BODY FLAP AND RUDDER FLARE ON DYN. STAB. PARM. IN PITCH

(C)MACH = .90

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BOFLAP	RUDFLR
[RPKPC4]	○	LA-20. ROCKWELL 089B ORB W/MOD NOSE (BWVMF)	1.000	.000	.000	10.000
[RPKPC5]	□	LA-20. ROCKWELL 089B ORB W/MOD NOSE (BWVMF)	1.000	.000	13.000	85.000

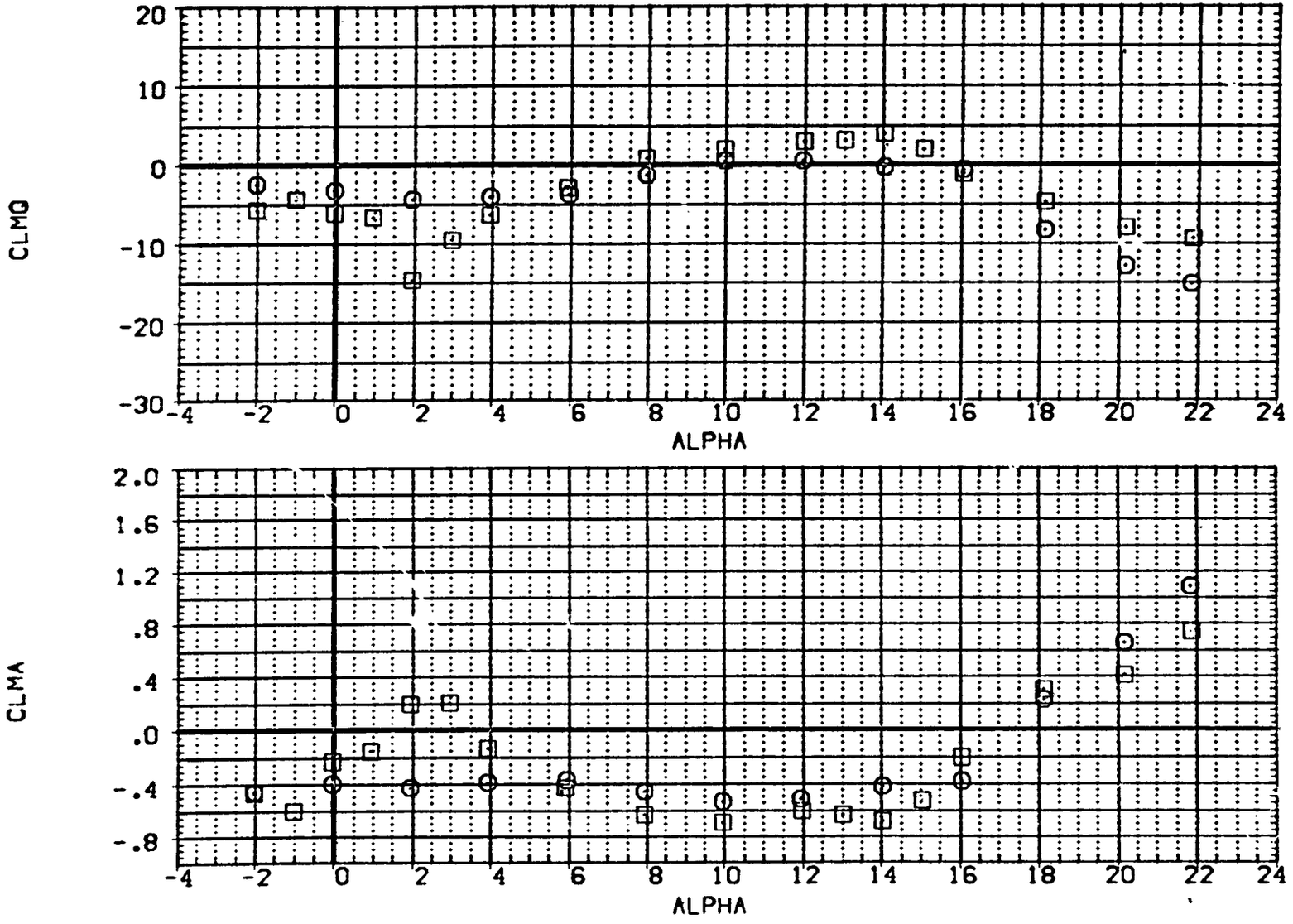


FIGURE 10. EFFECT OF BODY FLAP AND RUDDER FLARE ON DYN. STAB. PARM. IN PITCH

(D) MACH = .98

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BDFLAP	RUDFLR
[illegible]	○	LA-20. ROCKWELL 0899 CRB W/MOD NOSE (BW/MF)	1.000	.000	.000	10.000
[illegible]	□	LA-20. ROCKWELL 0898 CRB W/MOD NOSE (BW/MF)	1.000	.000	10.000	85.000

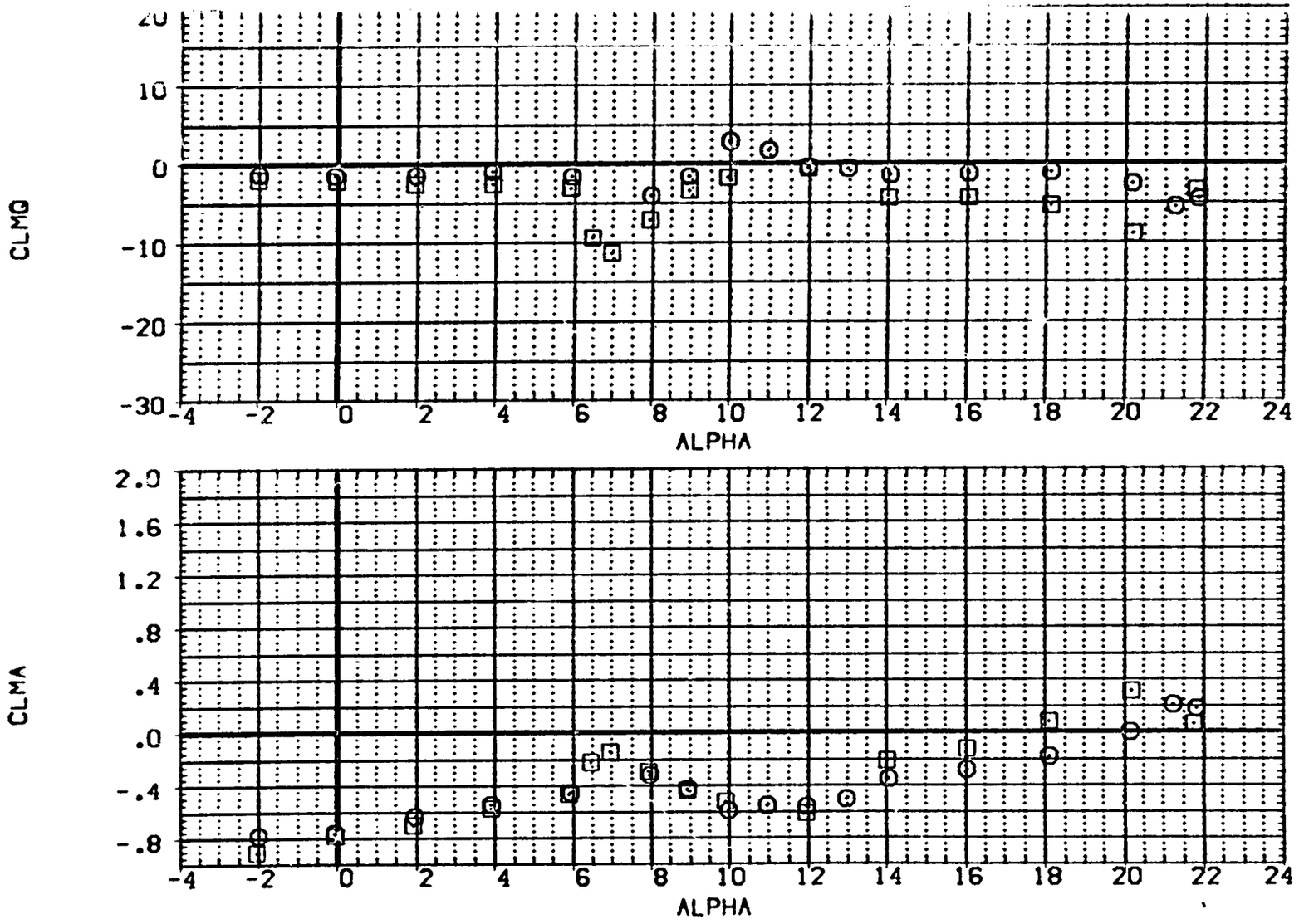


FIGURE 10. EFFECT OF BODY FLAP AND RUDDER FLARE ON DYN. STAB. PARM. IN PITCH

(E)MACH = 1.20

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION				
[RPKY04]	○	LA-20. ROCKWELL ORB 0898 W/MOD. NOSE (BVVMF)	1.000	.000	.000	10.000
[RPKY05]	□	LA-20. ROCKWELL ORB 0898 W/MOD. NOSE (BVVMF)	1.000	.000	13.000	85.000

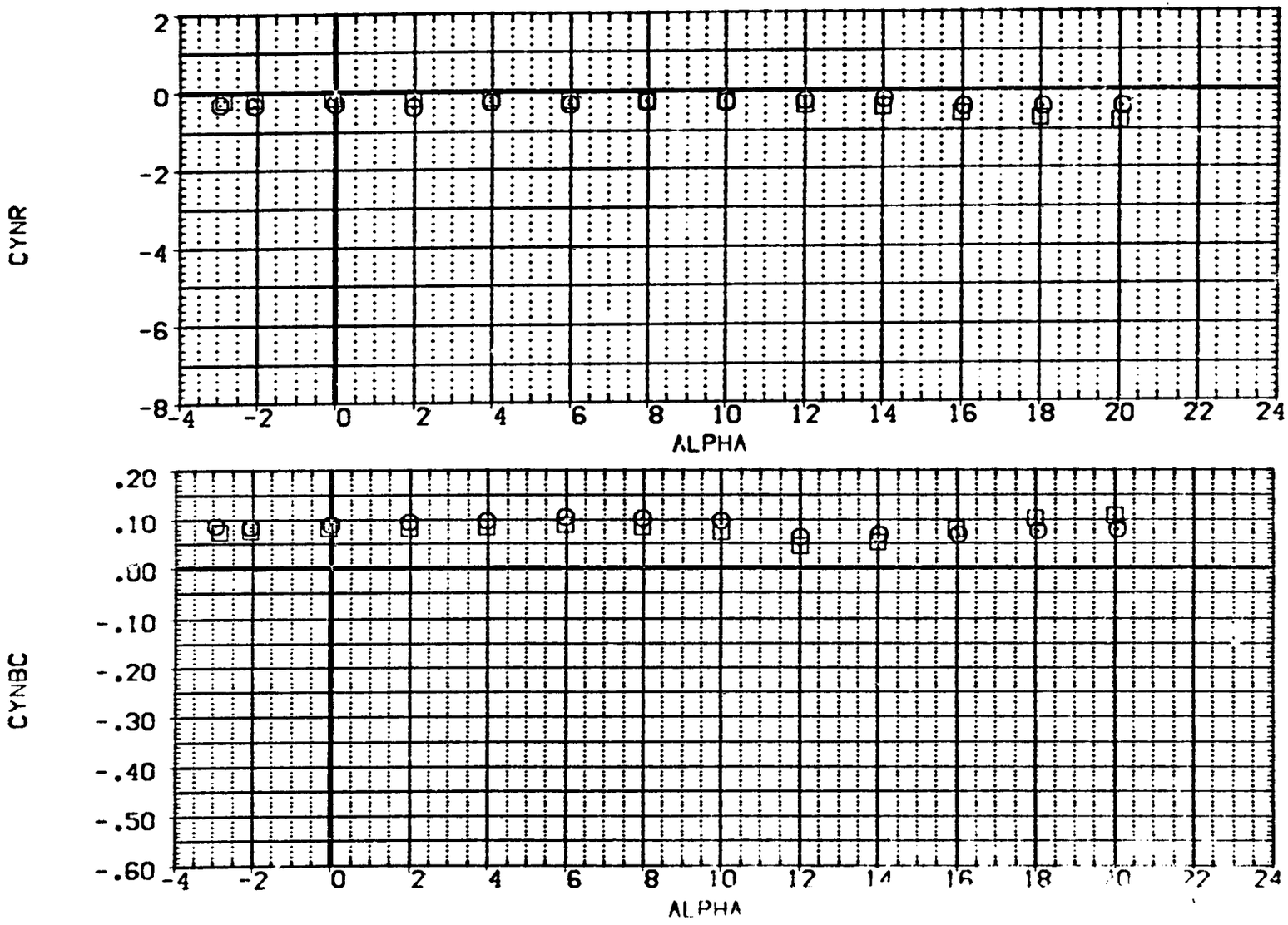


FIGURE 11. EFFECT OF BODY FLAP AND RUDDER FLAP ON DIRECTIONAL STABILITY (M)MACH = .3

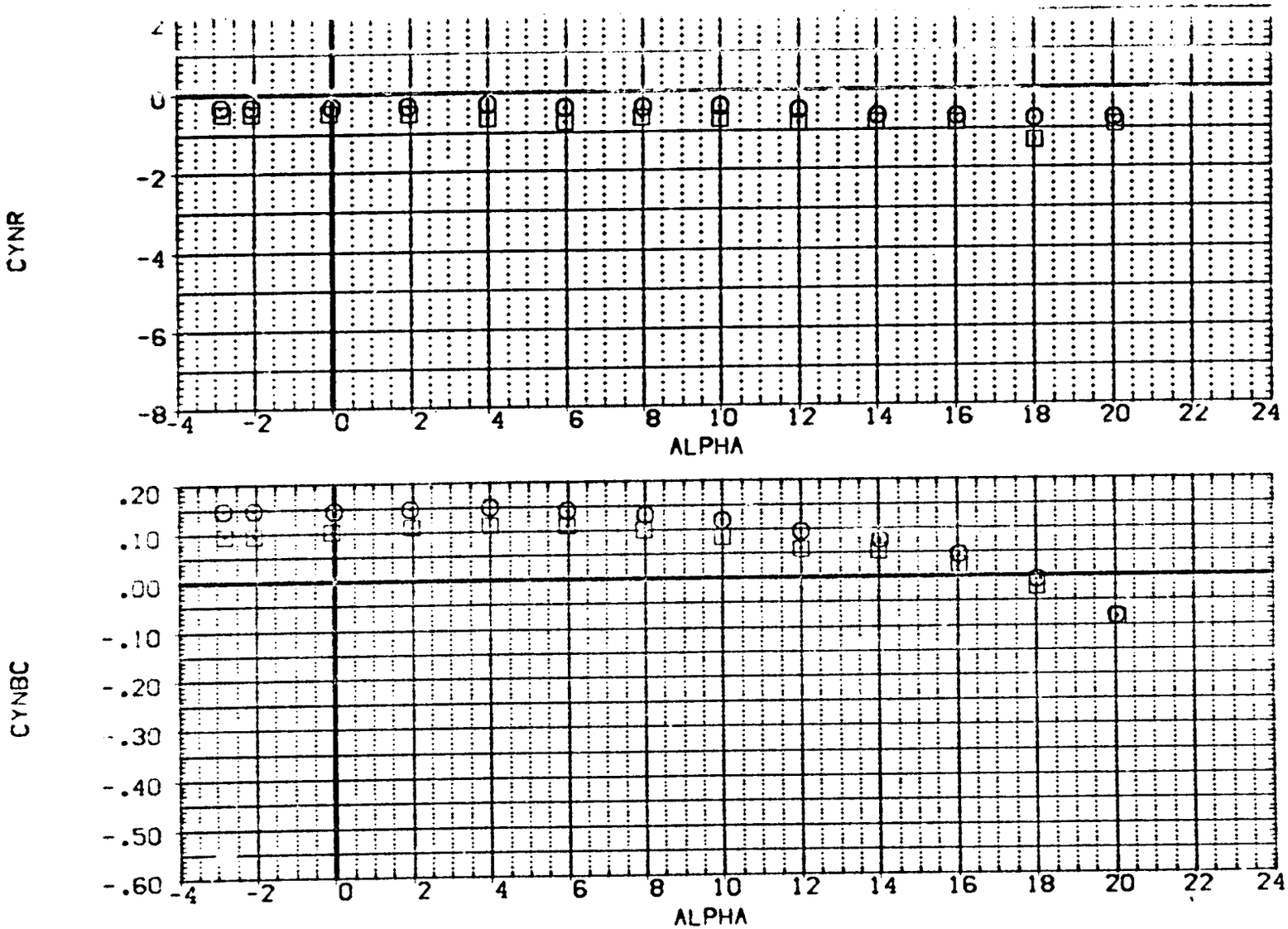


FIGURE 11. EFFECT OF BODY FLAP AND RUDDER FLARE ON DYN. STAB. PARM. IN YAW

(B)MACH = .80

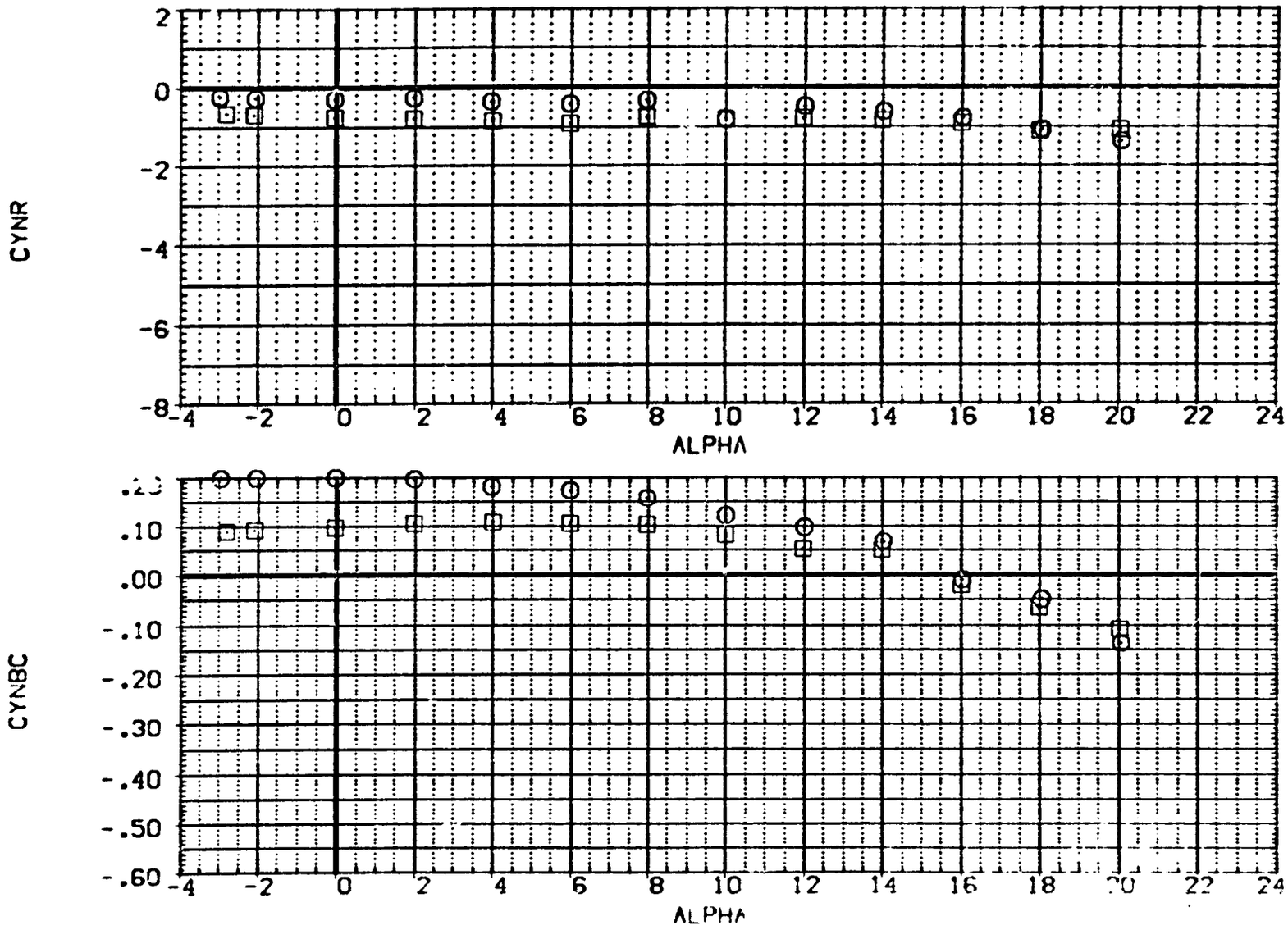


FIGURE 11. EFFECT OF BODY FLAP AND RUDDER [illegible]

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BDFLAP	RUDFLR
(RPAYC4)	○	LA-20. ROCKWELL CRB 0898 W/MOD. NOSE (BWVMF)	1.000	.000	.000	10.000
(RPAYC5)	□	LA-20. ROCKWELL CRB 0898 W/MOD. NOSE (BWVMF)	1.000	.000	13.000	85.000

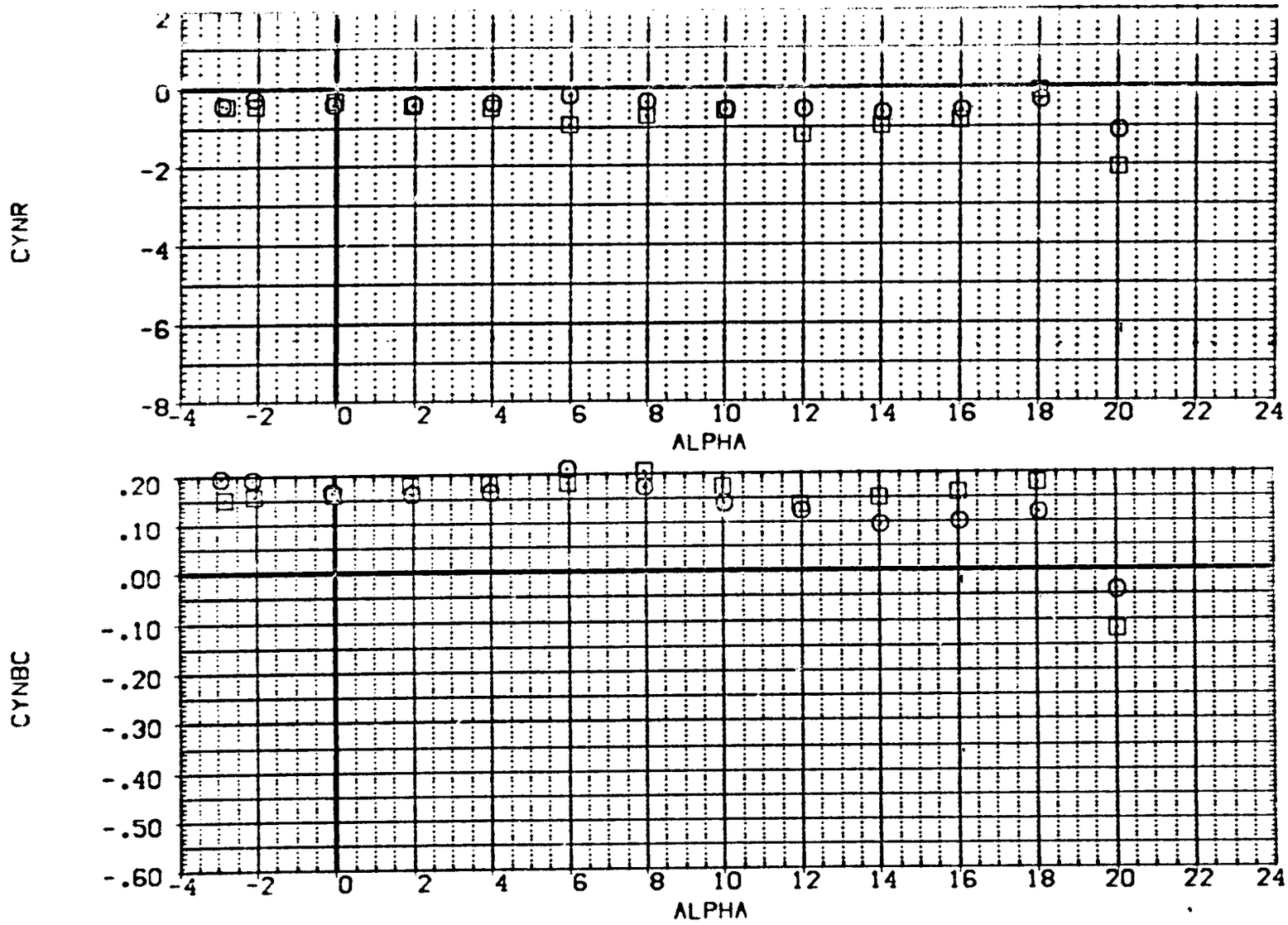


FIGURE 11. EFFECT OF BODY FLAP AND RUDDER FLARE ON DYN. STAB. PARM. IN YAW

(D)MACH = .98

DATA SET SYMBOL	CONFIGURATION DESCRIPTION				
(RPKYC4)	LA-20. ROCKWELL CRB 0898 W/MOD. NOSE (BWVMF)	1.000	.000	.000	10.000
(RPKY05)	LA-20. ROCKWELL CRB 0898 W/MOD. NOSE (BWVMF)	1.000	.000	13.000	85.000

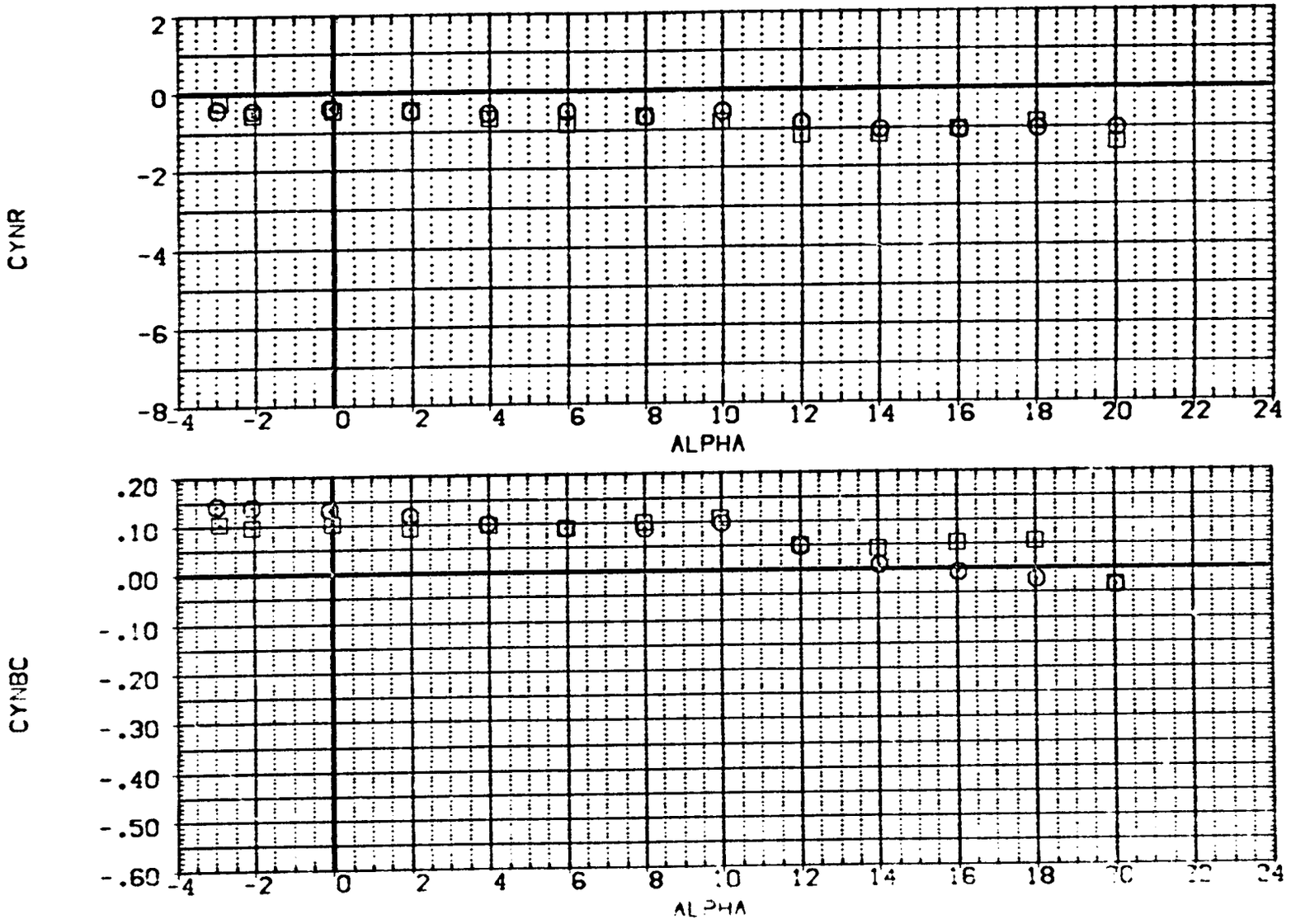


FIGURE 11. EFFECT OF BODY FLAP AND RUDDER FLARE ON DYN[illegible] PARM. IN YAW

[illegible]MACH = 1.20

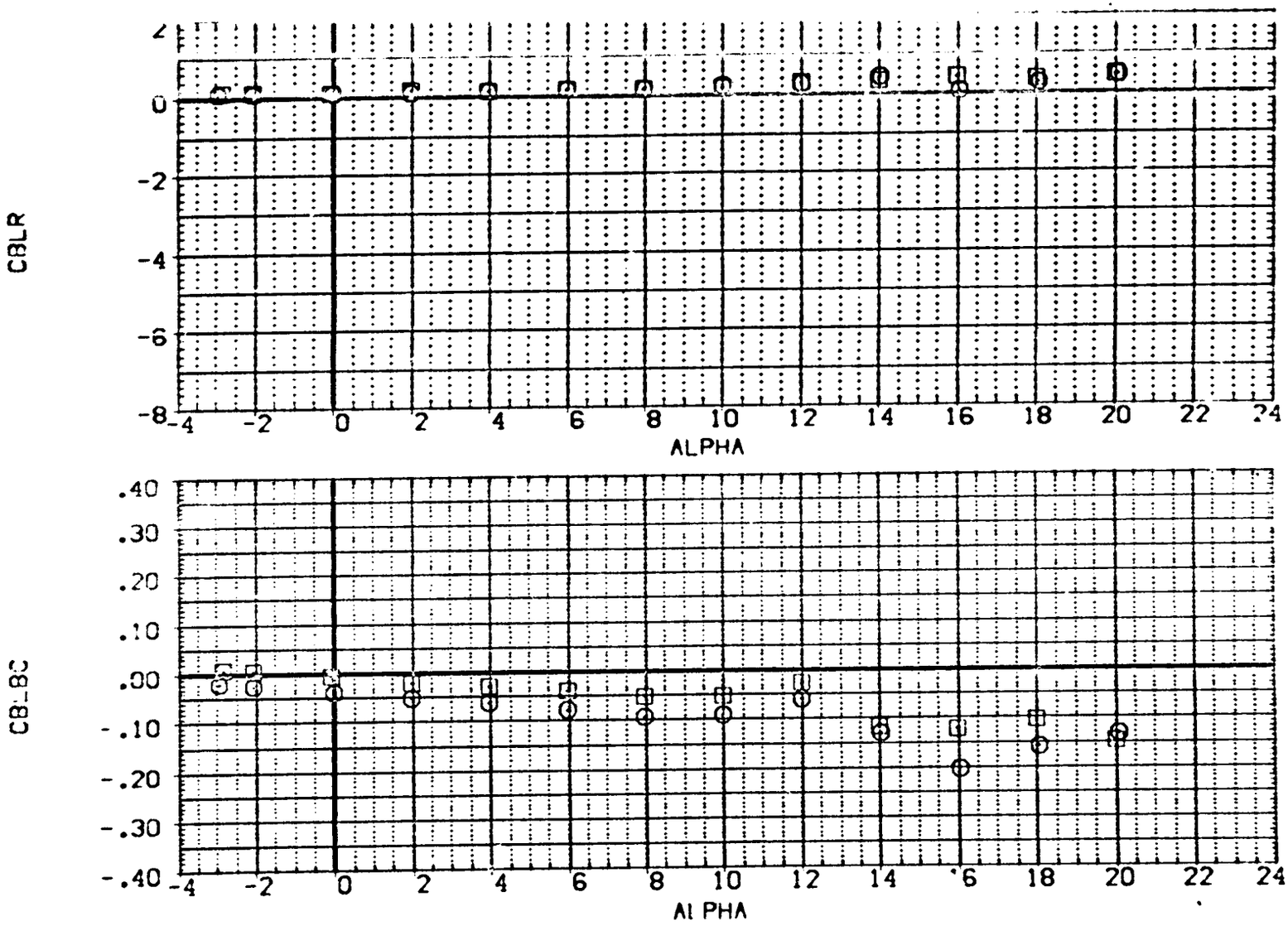


FIGURE 11. EFFECT OF BODY FLAP AND RUDDER FLARE ON DYN. STAB. PARM. IN YAW

(A)MACH = .30

DATA SY[illegible] CONFIGURA[illegible]N DESCRIPTION

[RPNY04]	[illegible]	LA-20, ROCKWELL ORB 089B W/MOD, NOSE (BWVMF)	1.000	.000	[illegible]	10.000
[RPNY05]	[illegible]	LA-20, ROCKWELL ORB 089B W/MOD, NOSE (BWVMF)	1.000	.000	13.000	85.000

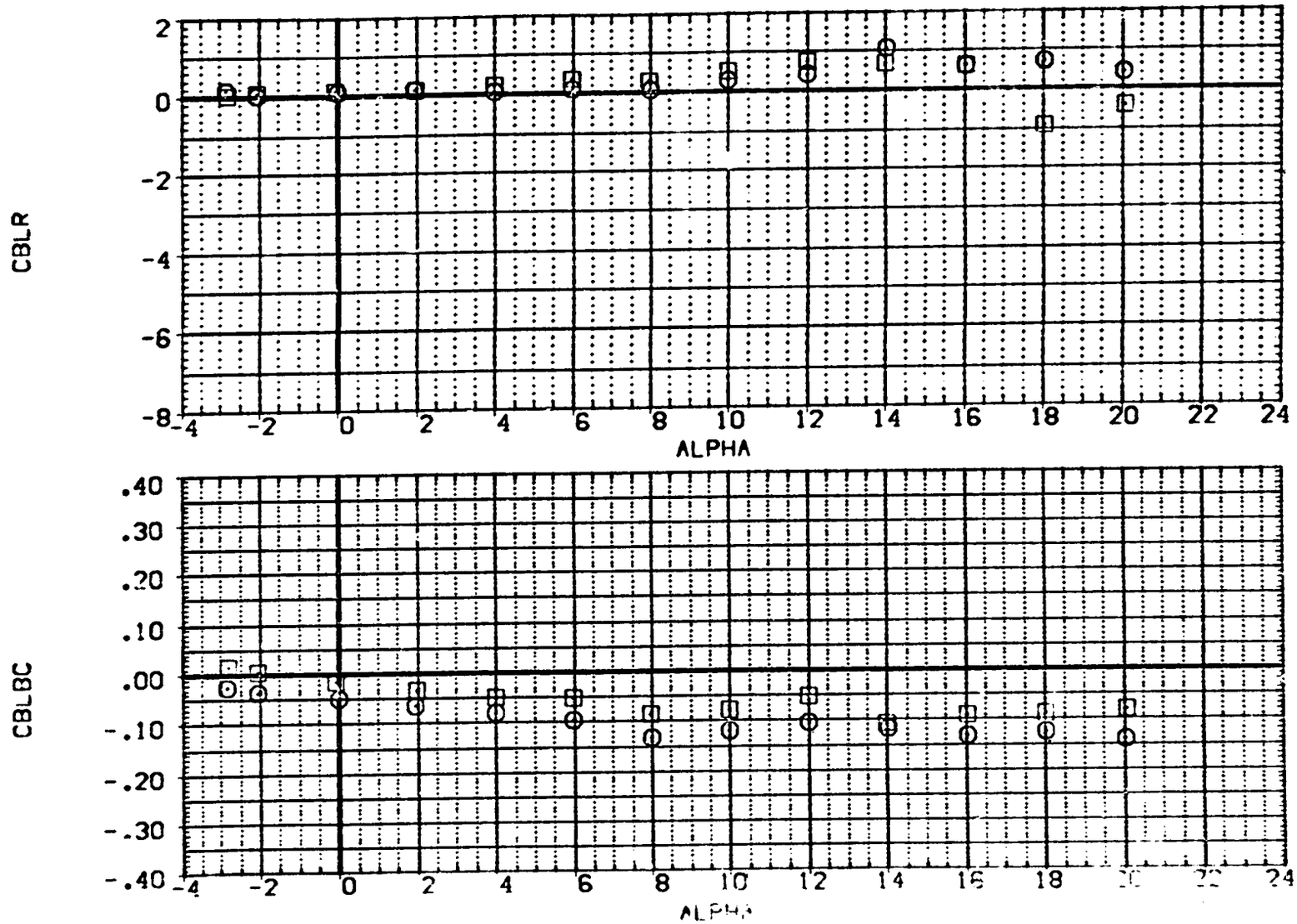


FIGURE 11. EFFECT OF BODY FLAP AND RUDDER [illegible]ON [illegible]

(B) MACH = .80

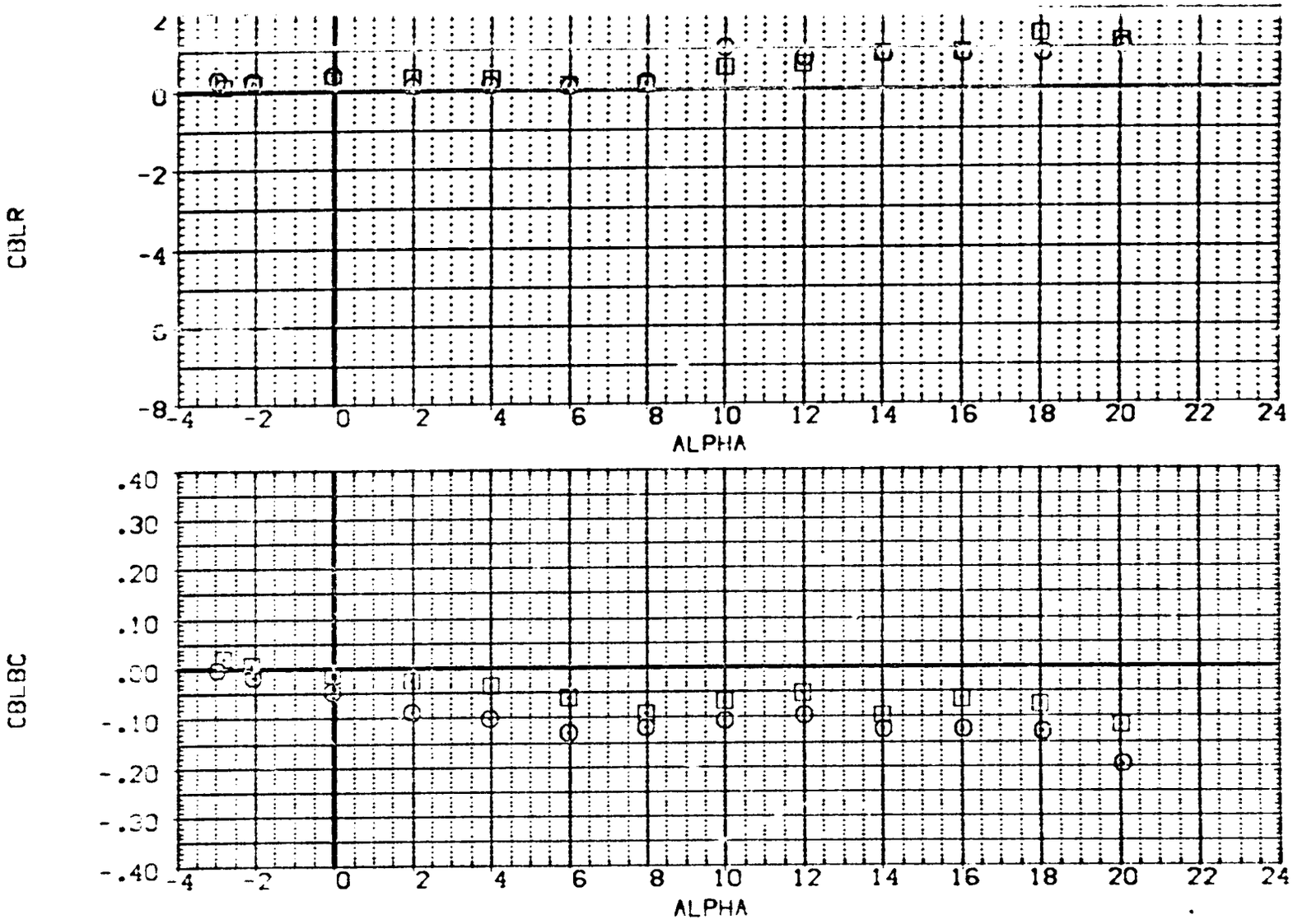


FIGURE 11. EFFECT OF BODY FLAP AND RUDDER FLARE ON DYN. STAB. PARM. IN YAW

CONFIG = .90

CONFIGURATION DESCRIPTION

[illegible]
[illegible] LA-20. ROCKWELL ORB 0898 W/MOD. NOSE (BWVM-) 1.00 .000 [illegible] [illegible]
[illegible] LA-20. ROCKWELL ORB 0898 W/MOD. NOSE (BWVM-) 1.00 .000 15.000 85.00

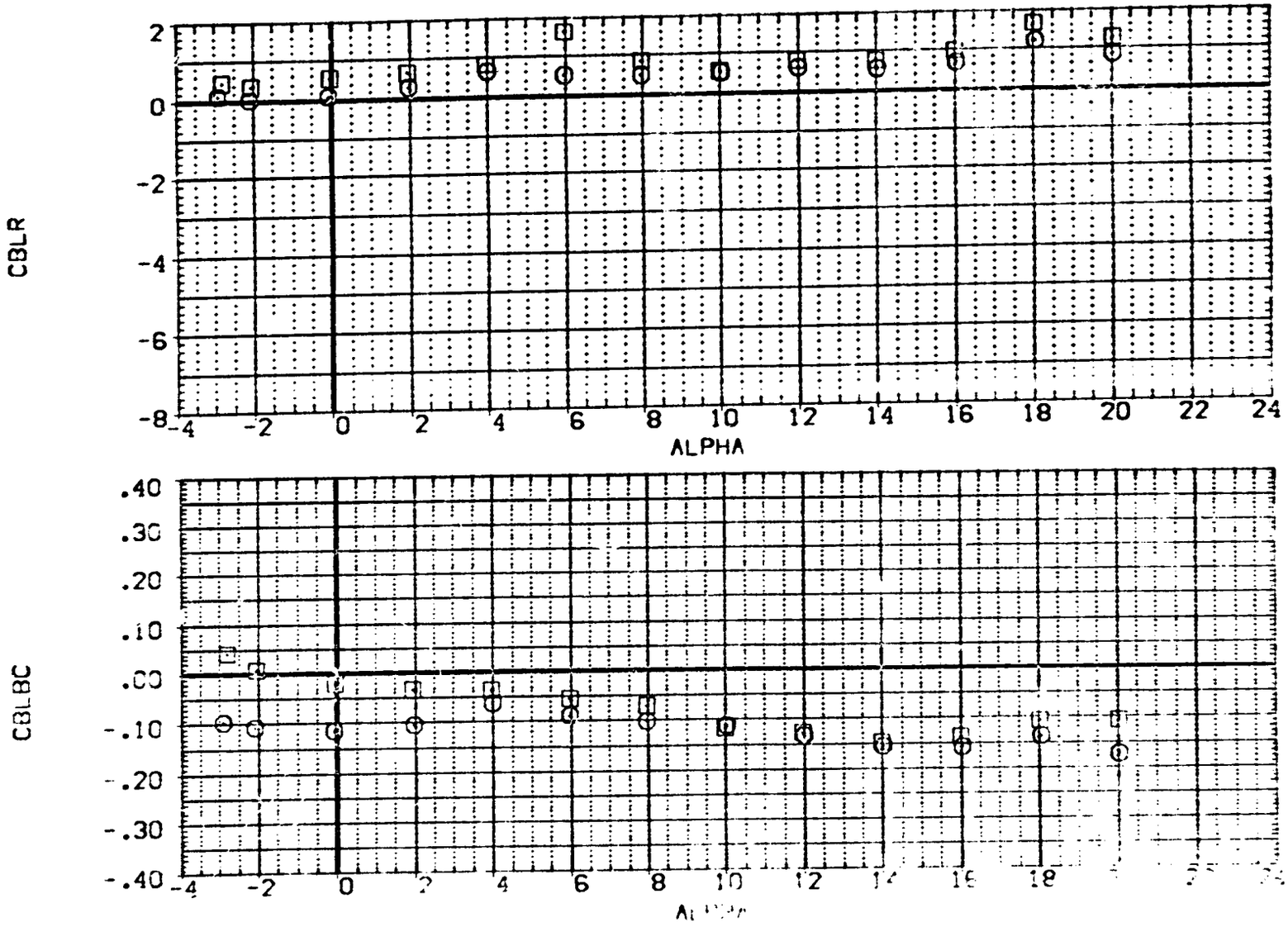


FIGURE 11. EFFECT OF BODY FLAP AND [illegible] ON [illegible]
[illegible]

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BOFLAP	RUDFLR
(REF1C5)	□	LA-20. ROCKWELL ORB 089B W/MOD. NOSC (BWVMF)	1.000	.000	.000	10.000
(REF1C5)	□	LA-20. ROCKWELL ORB 089B W/MOD. NOSE (BWVMF)	1.000	.000	13.000	85.000

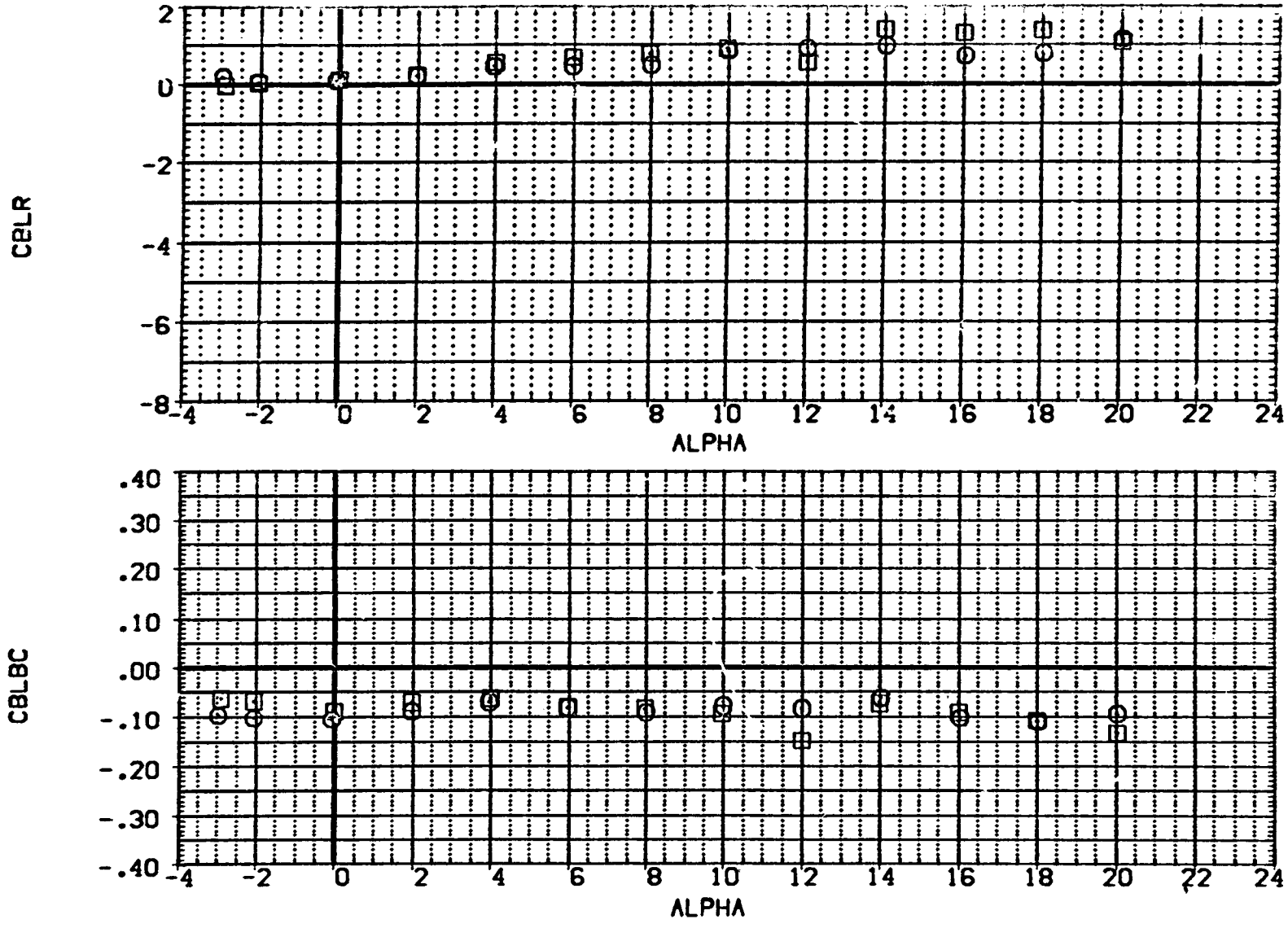


FIGURE 11. EFFECT OF BODY FLAP AND RUDDER FLARE ON DYN. STAB. PARM. IN YAW

(E)MACH = 1.20

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BDFLAP	RUDFLR
(RPKR04) ○	LA-20. ROCKWELL 089B ORB W/MOD NOSE (BWVMF)	1.000	.000	.000	10.000
(RPKR05) □	LA-20. ROCKWELL 089J ORB W/MOD NOSE (BWVMF)	1.000	.000	13.000	85.000

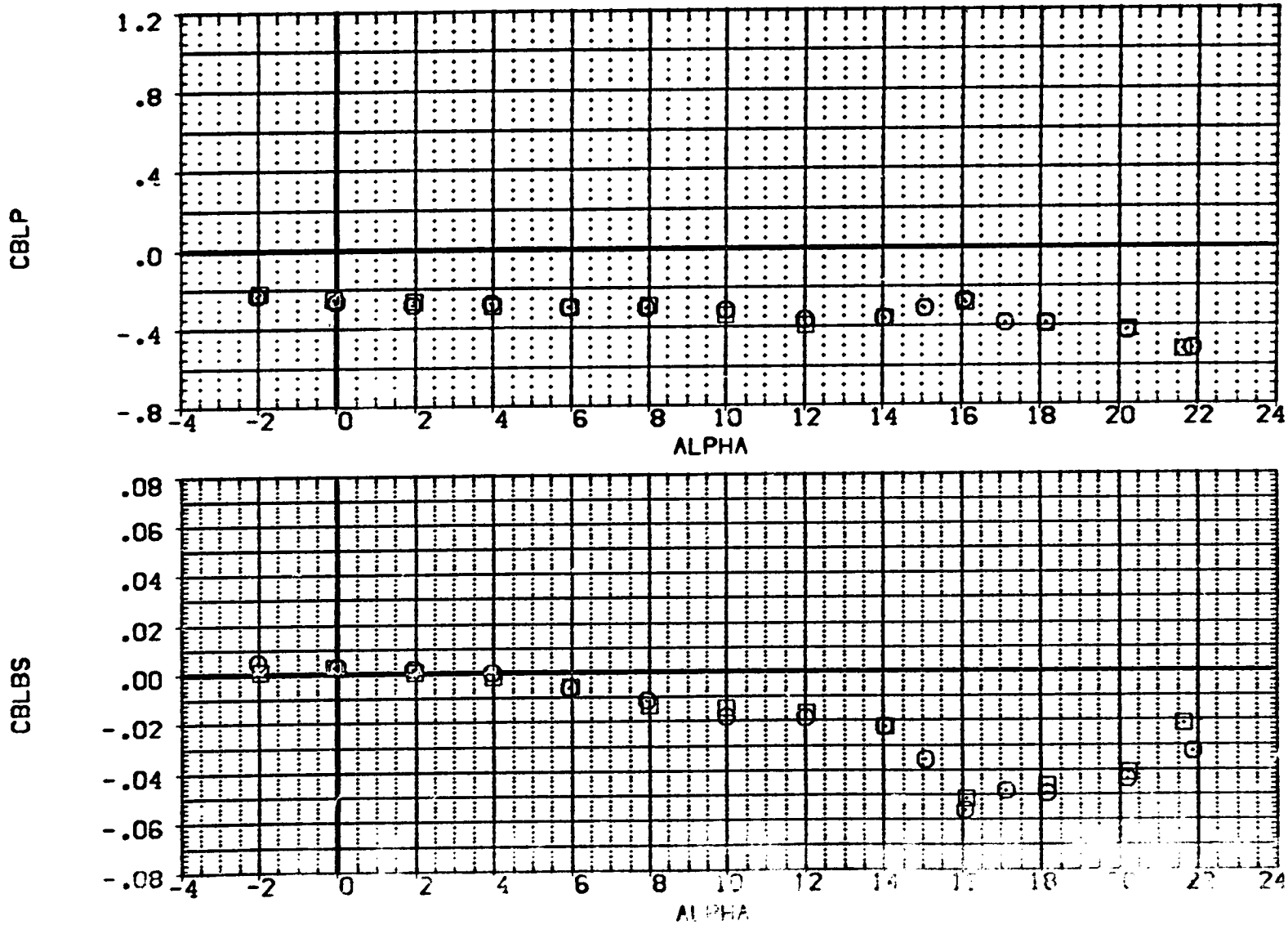


FIGURE 12. EFFECT OF BODY FLAP AND RUDDER [illegible] ON [illegible]

(A)MACH = .30

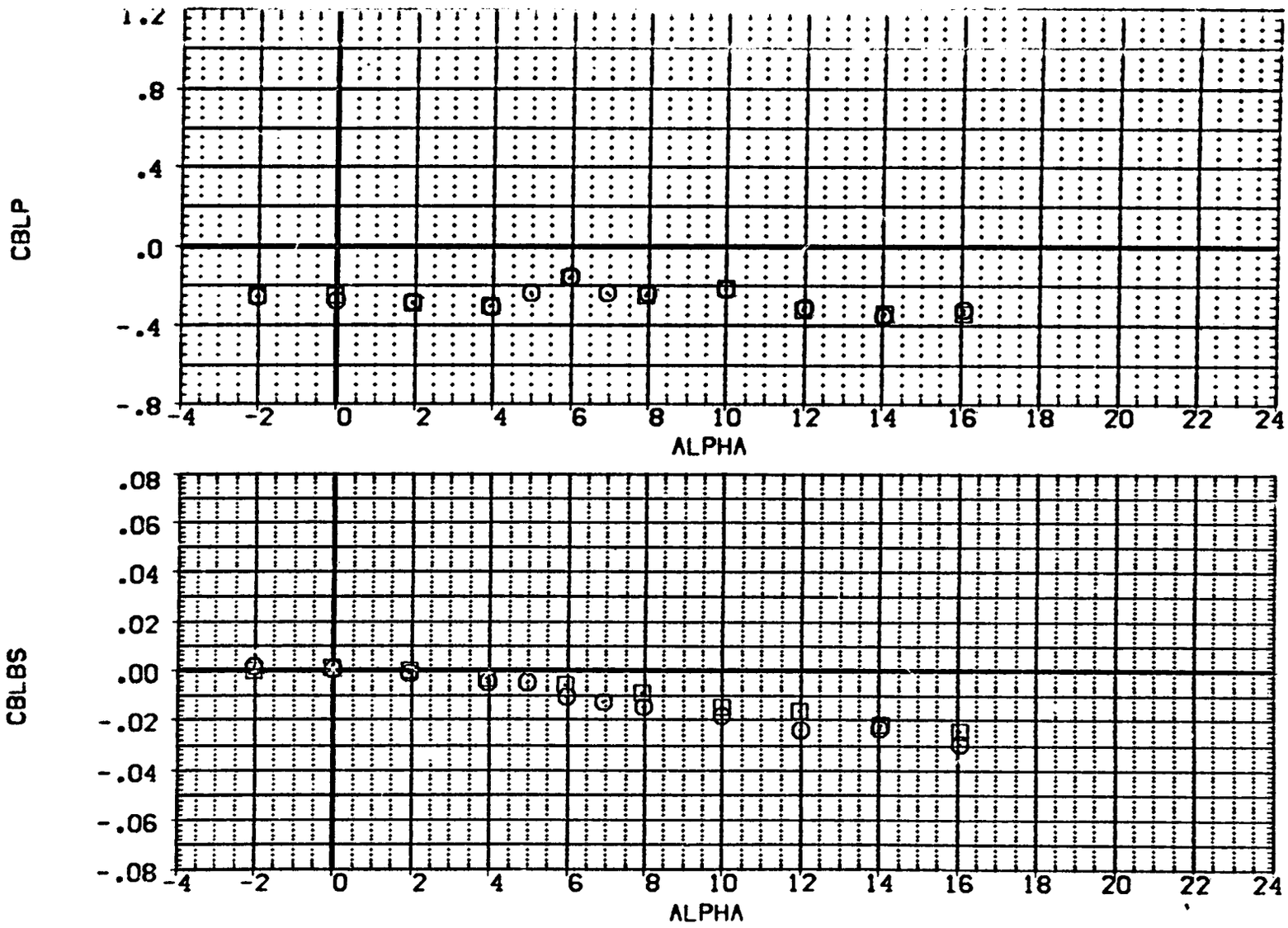


FIGURE 12. EFFECT OF BODY FLAP AND RUDDER FLARE ON DYN. STAB. PARM. IN ROLL

(B)MACH = .80

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	CO..O	ELEVTR	BO..AP	RUD..R
(RPKR04)	○	LA-20. ROCKWELL 0898 ORB W/MOD NOSE (BWVMF)	1.000	.000	.000	10.000
(RPKR05)	□	LA-20. ROCKWELL 0898 ORB W/MOD NOSE (BWVMF)	1.000	.000	13.000	85.000

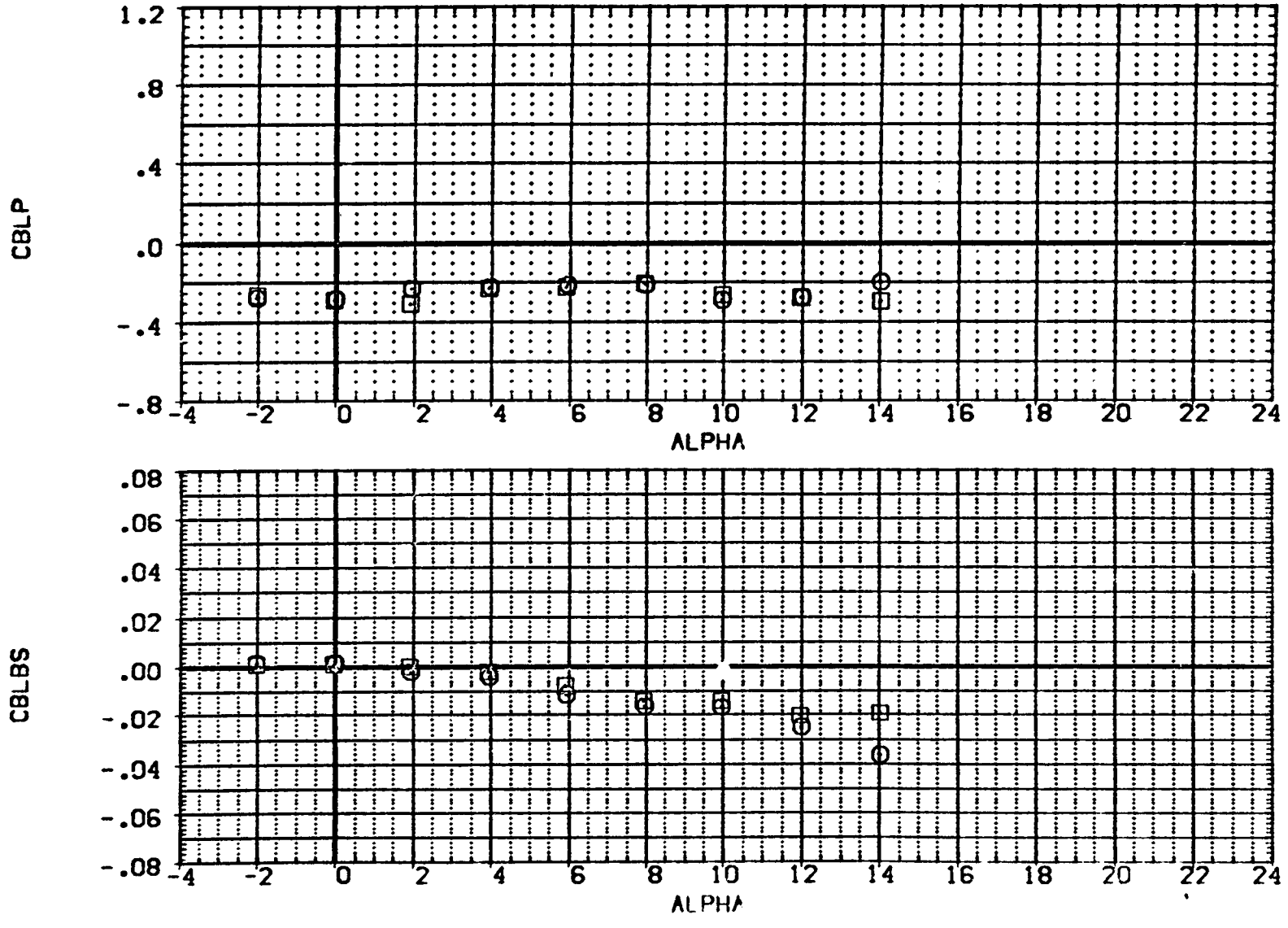


FIGURE 12. EFFECT OF BODY FLAP AND RUDDER FLARE ON DYN. STAB. PARM. IN ROLL

(C)MACH = .90

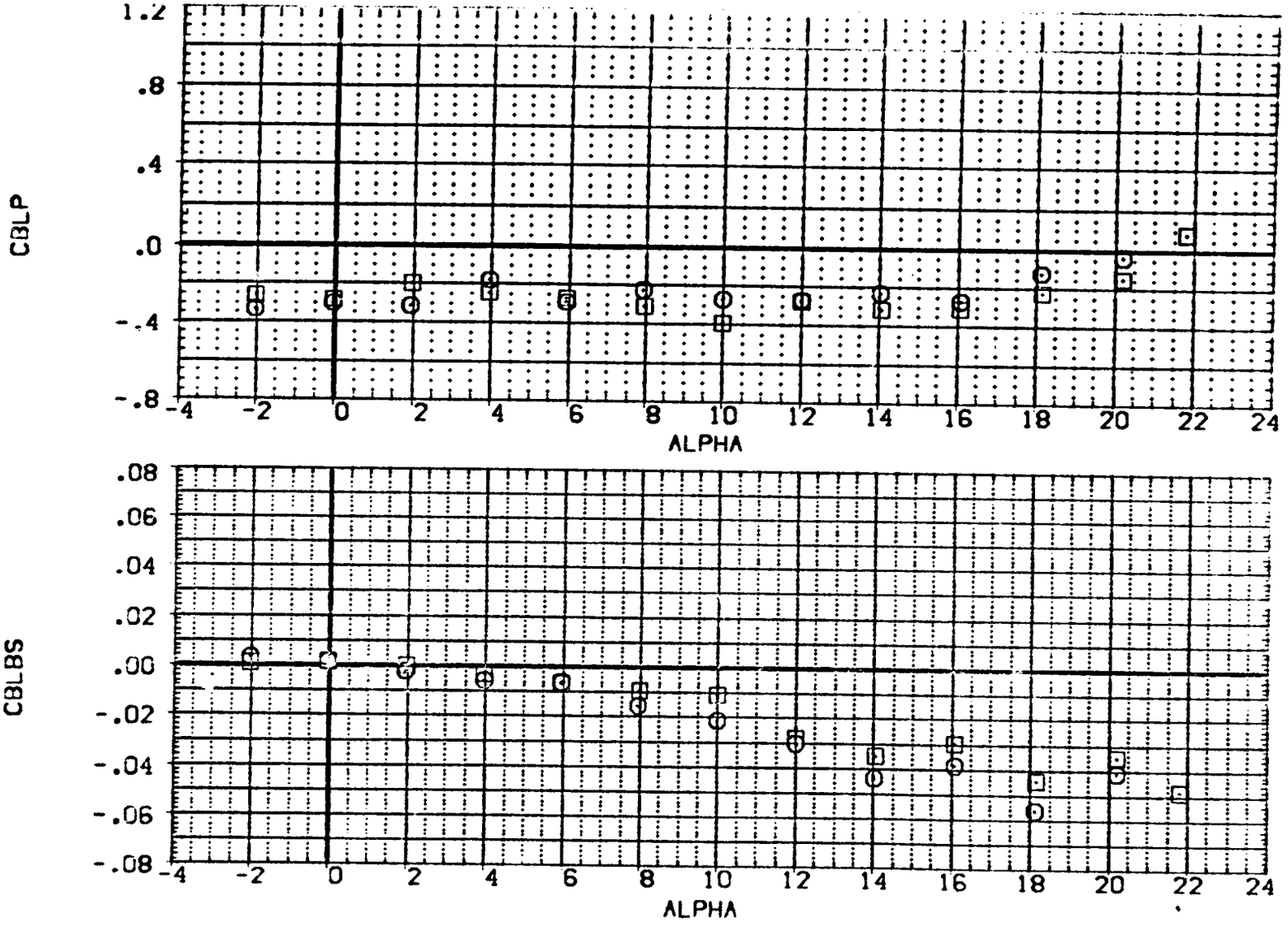


FIGURE 12. EFFECT OF BODY FLAP AND RUDDER FLARE ON DYN. STAB. PARM. IN ROLL

(D)MACH = .98

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BDFLAP	RUDDR
(RPKR04) ○	LA-20. ROCKWELL 0899 ORB W/MOD NOSE (BWVMF)	1.000	.000	.000	10.000
(RPKR05) □	LA-20. ROCKWELL 0899 ORB W/MOD NOSE (BWVMF)	1.000	.000	13.000	85.000

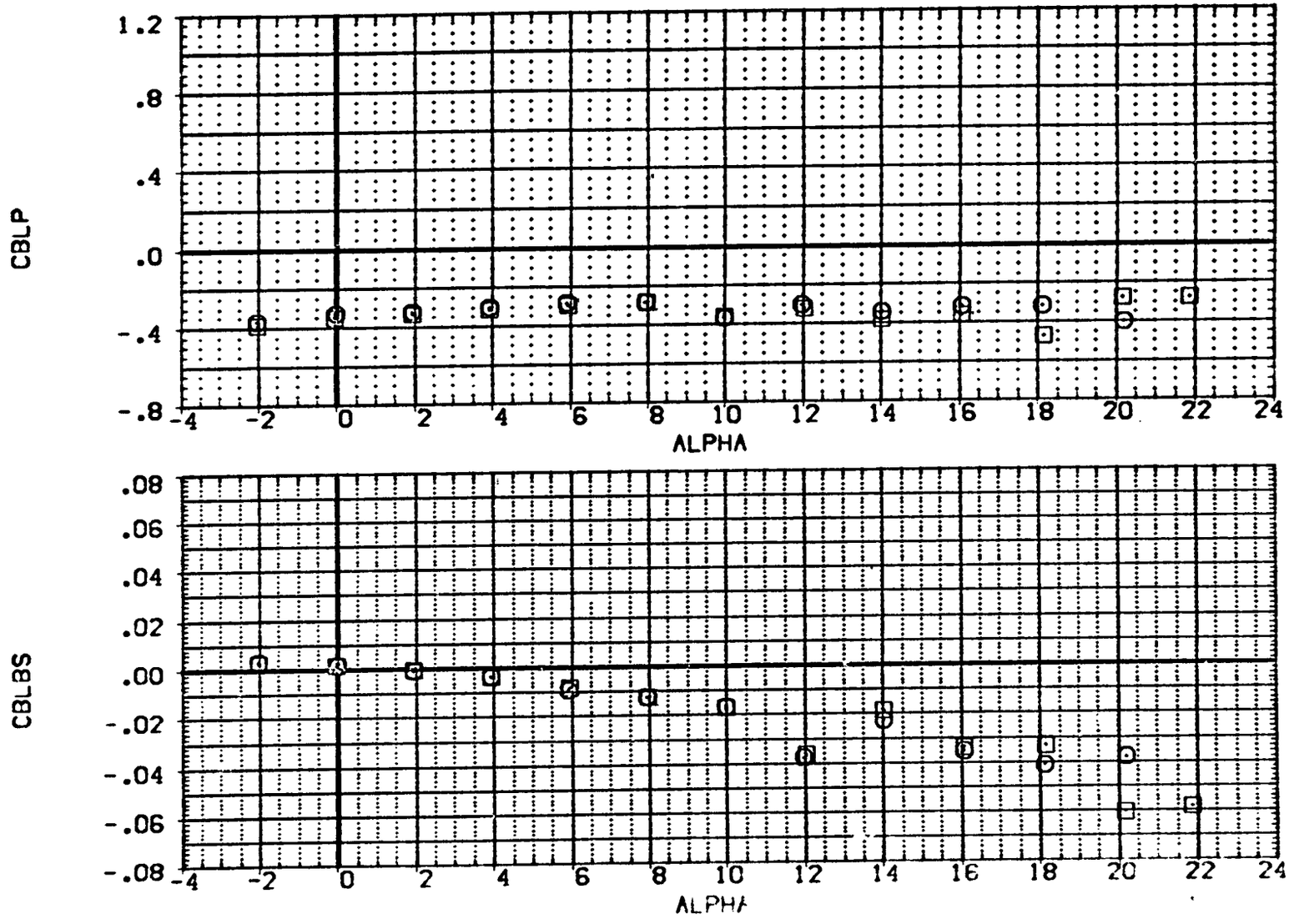


FIGURE 12. EFFECT OF BODY FLAP AND RUDDER FLARE ON DYN. STAB. PARAMETER

(E)MACH = 1.20

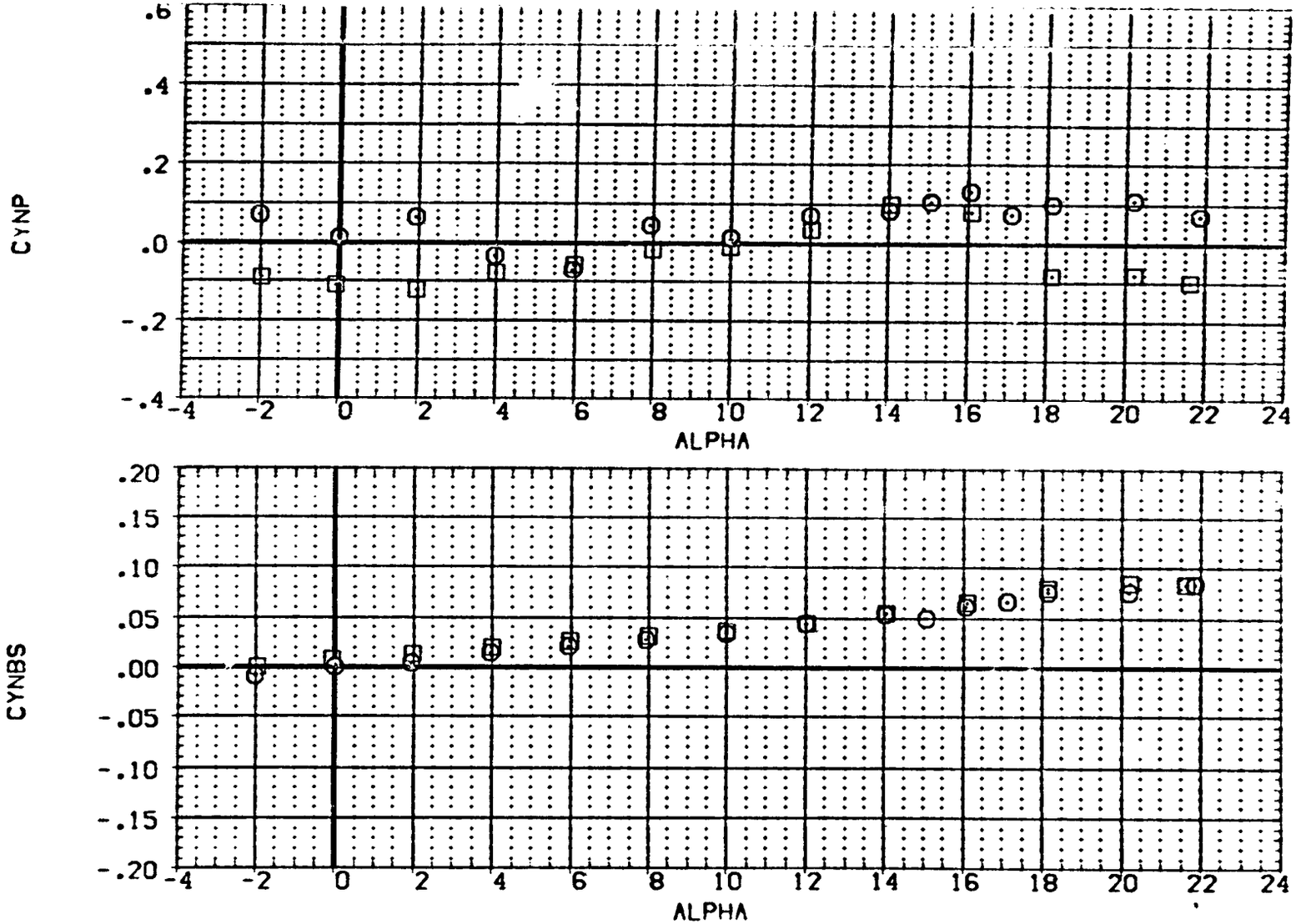


FIGURE 12. EFFECT OF BODY FLAP AND RUDDER FLARE ON DYN. STAB. PARM. IN ROLL

(A)MACH = .30

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BDFLAP	RUDFLR
(RPKR04)	☐	LA-20. ROCKWELL 089B ORB W/MOD NOSE (BWVMF)	1.000	.000	.000	10.000
(RPKR05)	☐	LA-20. ROCKWELL 089B ORB W/MOD NOSE (BWVMF)	1.000	.000	13.000	85.000

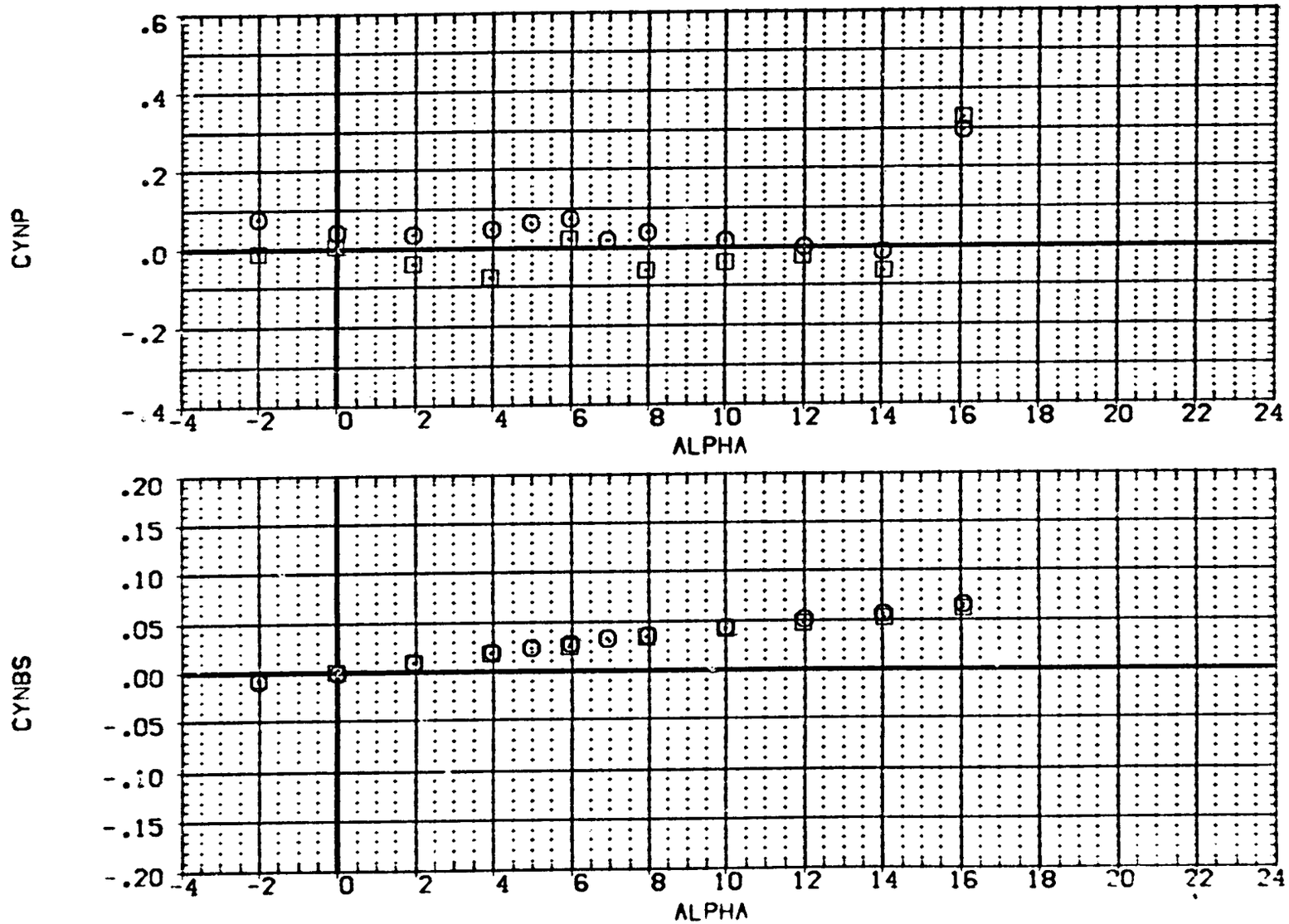


FIGURE 12. EFFECT OF BODY FLAP AND RUDDER FLARE ON DYN. STAB. PARM. IN ROLL

(B)MACH = .80

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BDFLAP	RUDFLR
(RPKR04)	○	LA-20. ROCKWELL 0898 ORB W/MOD NOSE (BWWF)	1.000	.000	.000	10.000
(RPKR05)	□	LA-20. ROCKWELL 0898 ORB W/MOD NOSE (BWWF)	1.000	.000	13.000	85.000

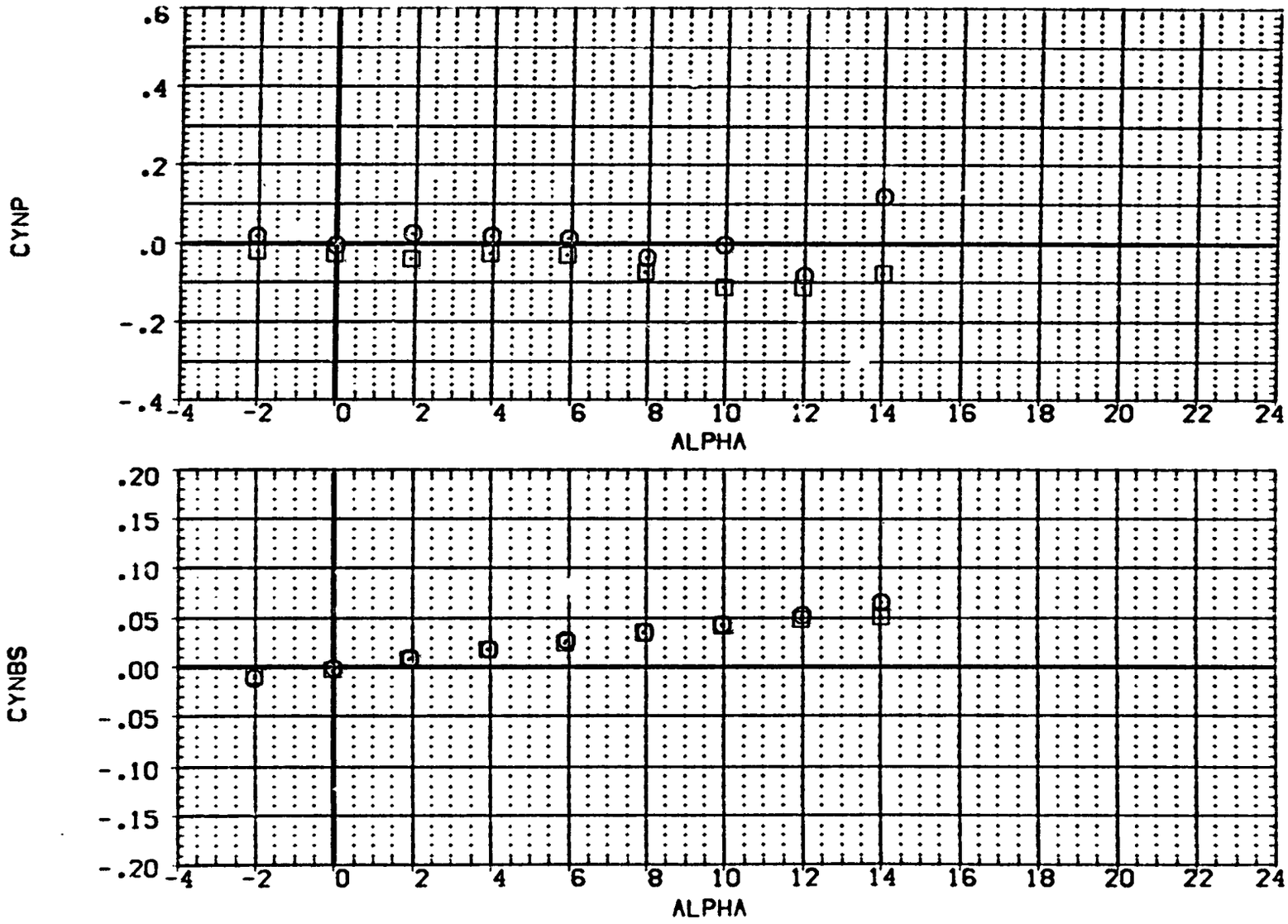


FIGURE 12. EFFECT OF BODY FLAP AND RUDDER FLARE ON DYN. STAB. PARM. IN ROLL

(C)MACH = .90

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BOFLAP	RUDFLR
(RPKR04)	○	LA-20. ROCKWELL 0898 ORB W/MOD NOSE (BWVMF)	1.000	.000	.000	10.000
(RPKR05)	□	LA-20. ROCKWELL 0898 ORB W/MOD NOSE (BWVMF)	1.000	.000	13.000	85.000

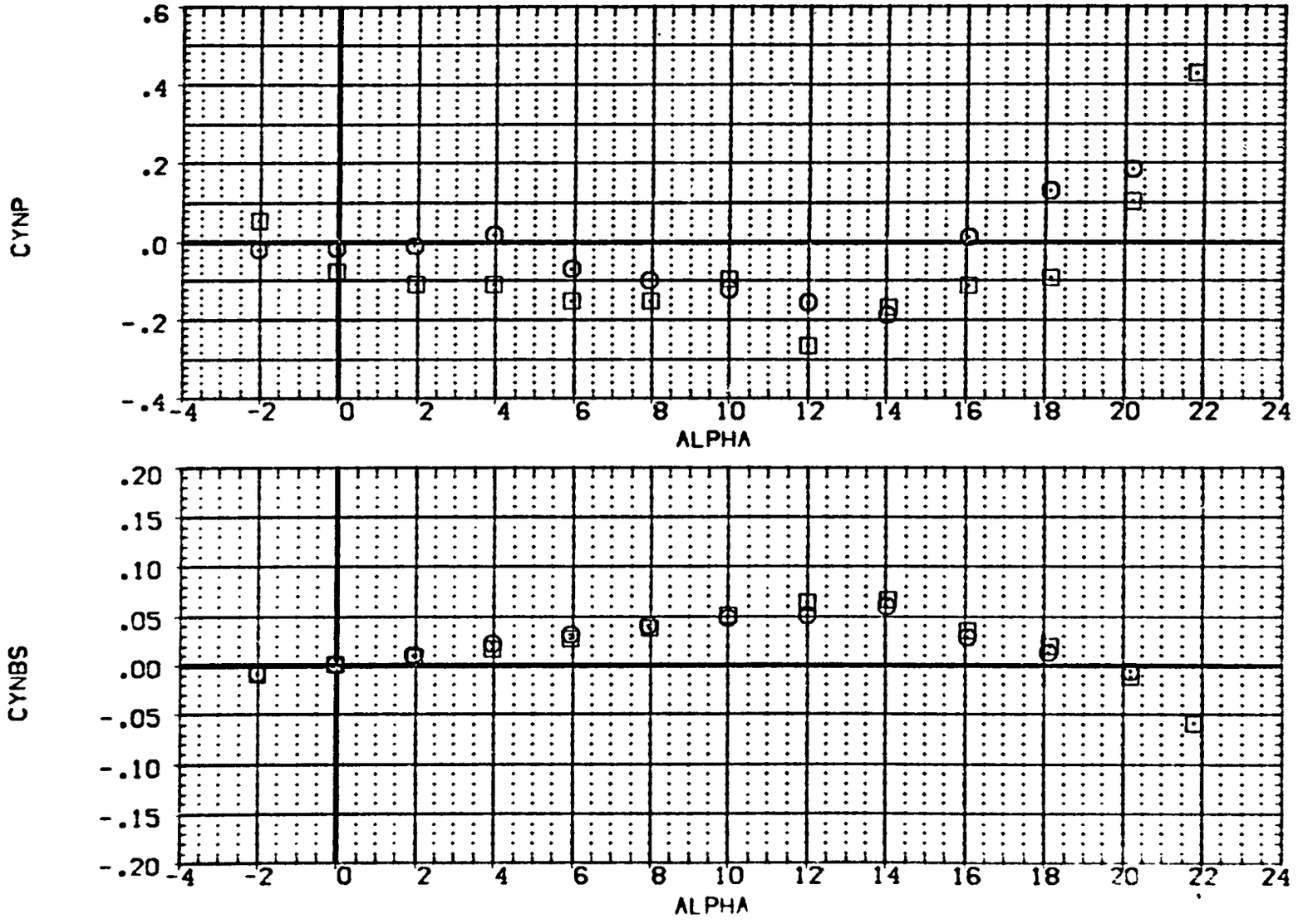


FIGURE 12. EFFECT OF BODY FLAP AND RUDDER FLARE ON DYN. STAB. PARM. IN ROLL

(O)MACH = .98

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BDFLAP	RUDFLR
(RPKR04)	○	LA-20, ROCKWELL 0898 ORB W/MOD NOSE (BWVMF)	1.000	.000	.000	10.000
(RPKR05)	□	LA-20, ROCKWELL 0898 ORB W/MOD NOSE (BWVMF)	1.000	.000	13.000	85.000

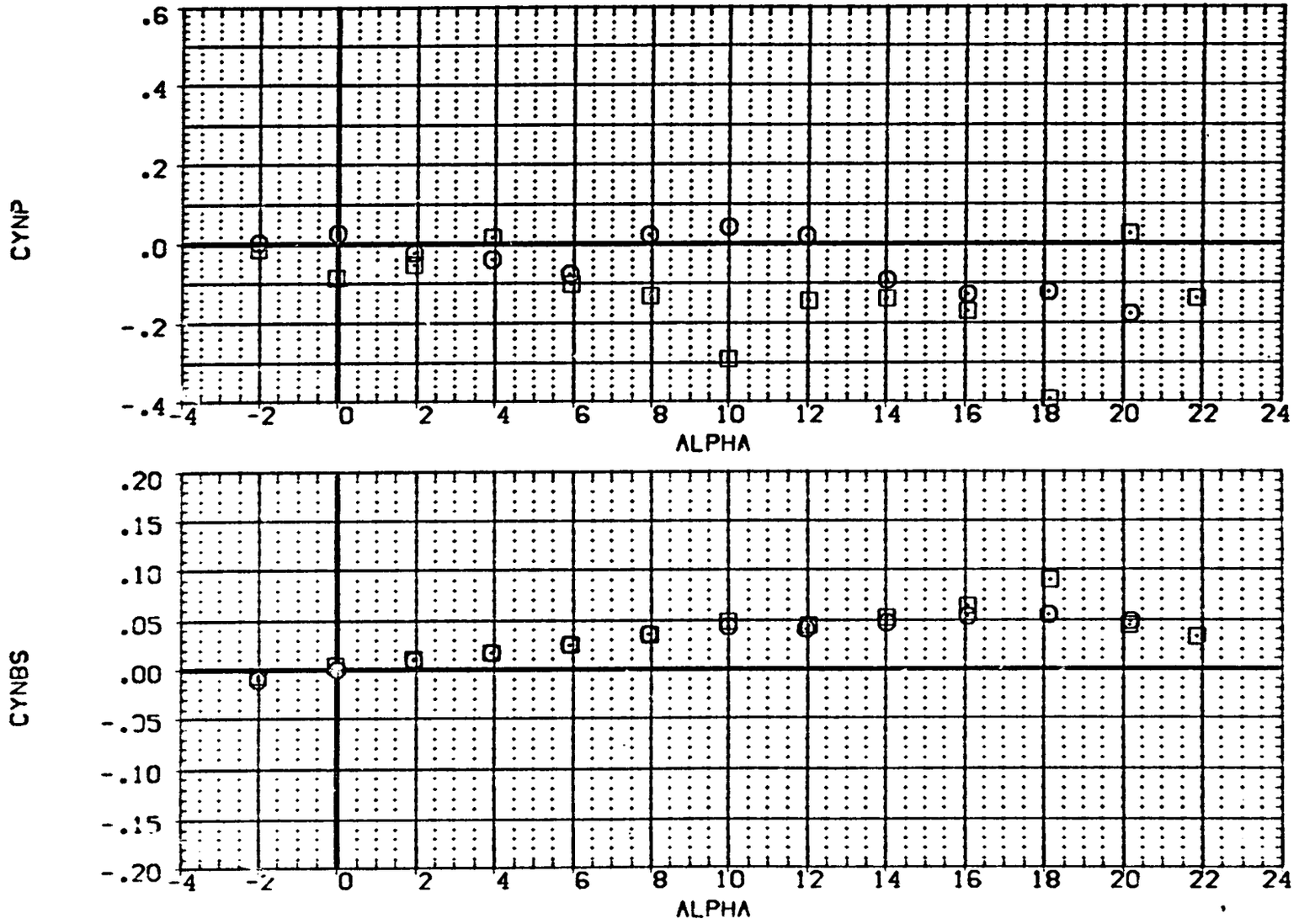


FIGURE 12. EFFECT OF BODY FLAP AND RUDDER FLARE ON DYN. STAB. PARM. IN ROLL

(E)MACH = 1.20

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BDFLAP	RUDDLR
(RPKP00) ○	LA-20. ROCKWELL 0898 ORB W/MOD NOSE (BVVM)	1.000	.000		10.000
(RPKP04) □	LA-20. ROCKWELL 0898 ORB W/MOD NOSE (BVVMF)	1.000	.000	.000	10.000

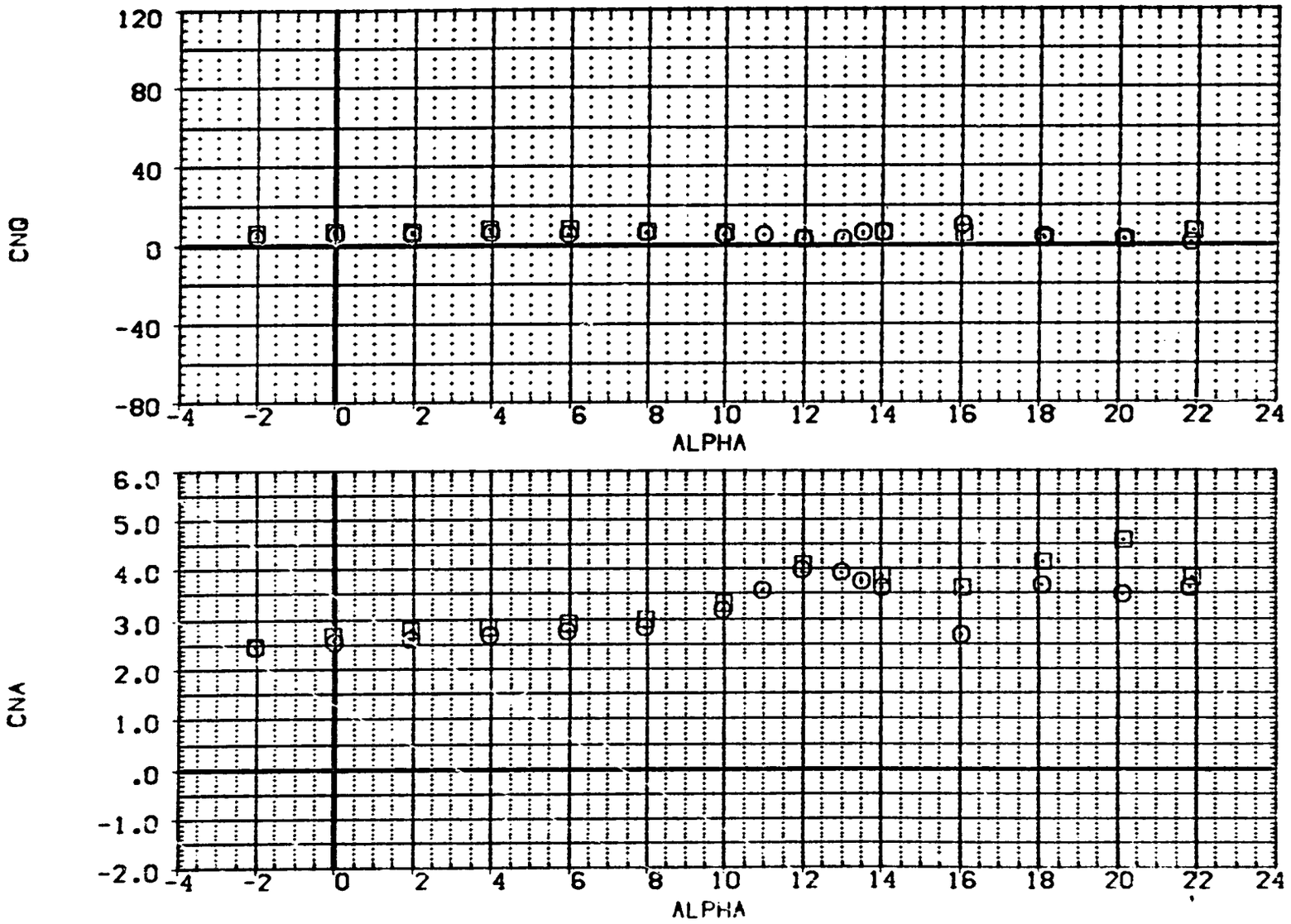


FIGURE 13. EFFECT OF BODY FLAP ON DYNAMIC STABILITY PARAMETERS IN PITCH

(A)MACH = .30

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BDFLAP	RUDFLR
(RPKP00)	LA-20. ROCKWELL 0898 ORB W/MOD NOSE (BWVM)	1.000	.000		10.000
(RPKP04)	LA-20. ROCKWELL 0898 ORB W/MOD NOSE (BWVMF)	1.000	.000	.000	10.000

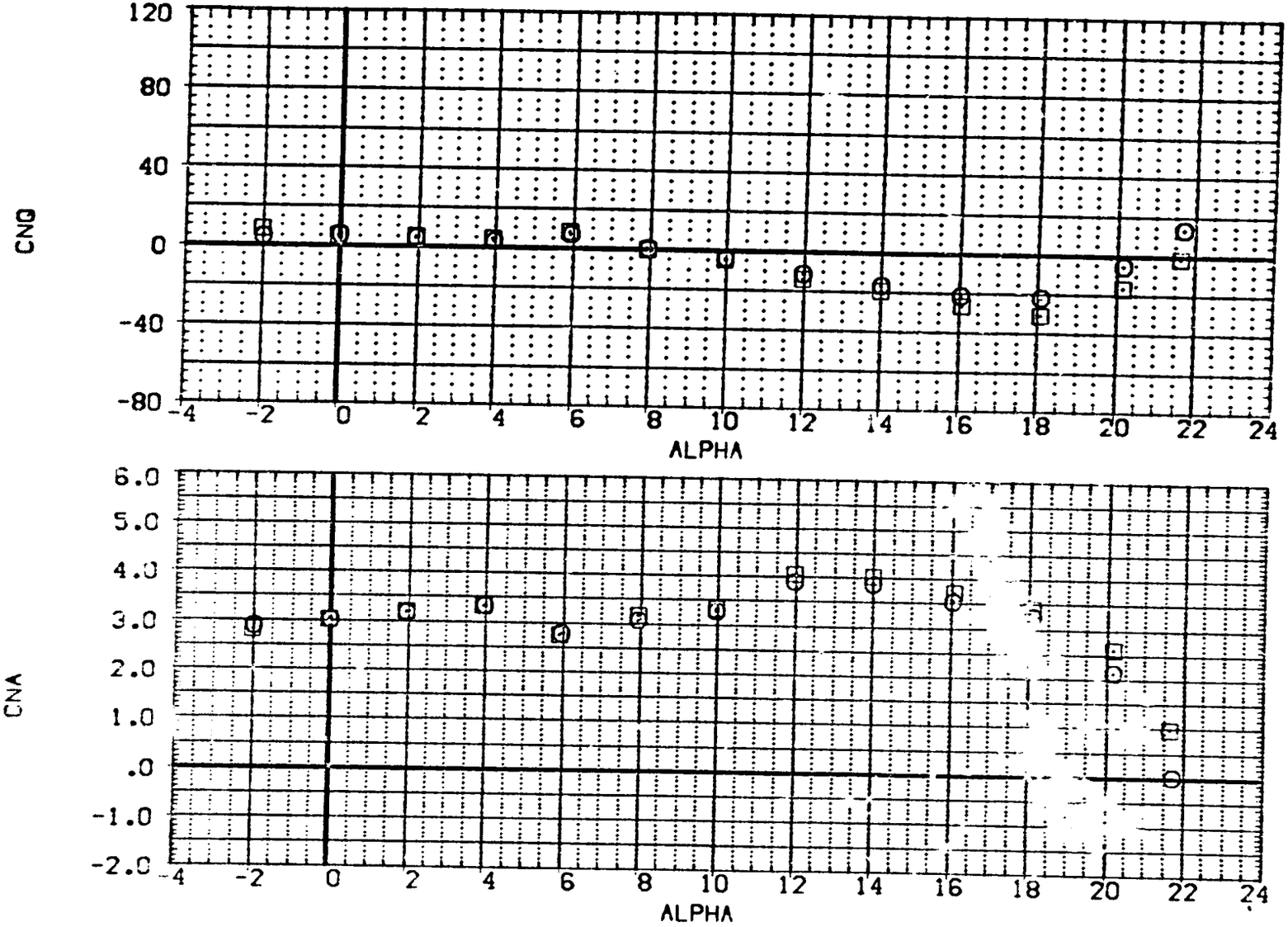


FIGURE 13. EFFECT OF BODY FLAP ON DYNAMIC STABILITY PARAMETERS IN PITCH

(B)MACH = .80

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BDFLAP	RUDFLR
(RPKP00)	○	LA-20, ROCKWELL 089B ORB W/MOD NOSE (BWVM)	1.000	.000		10.000
(RPKP04)	□	LA-20, ROCKWELL 089B ORB W/MOD NOSE (BWVMF)	1.000	.000	.000	10.000

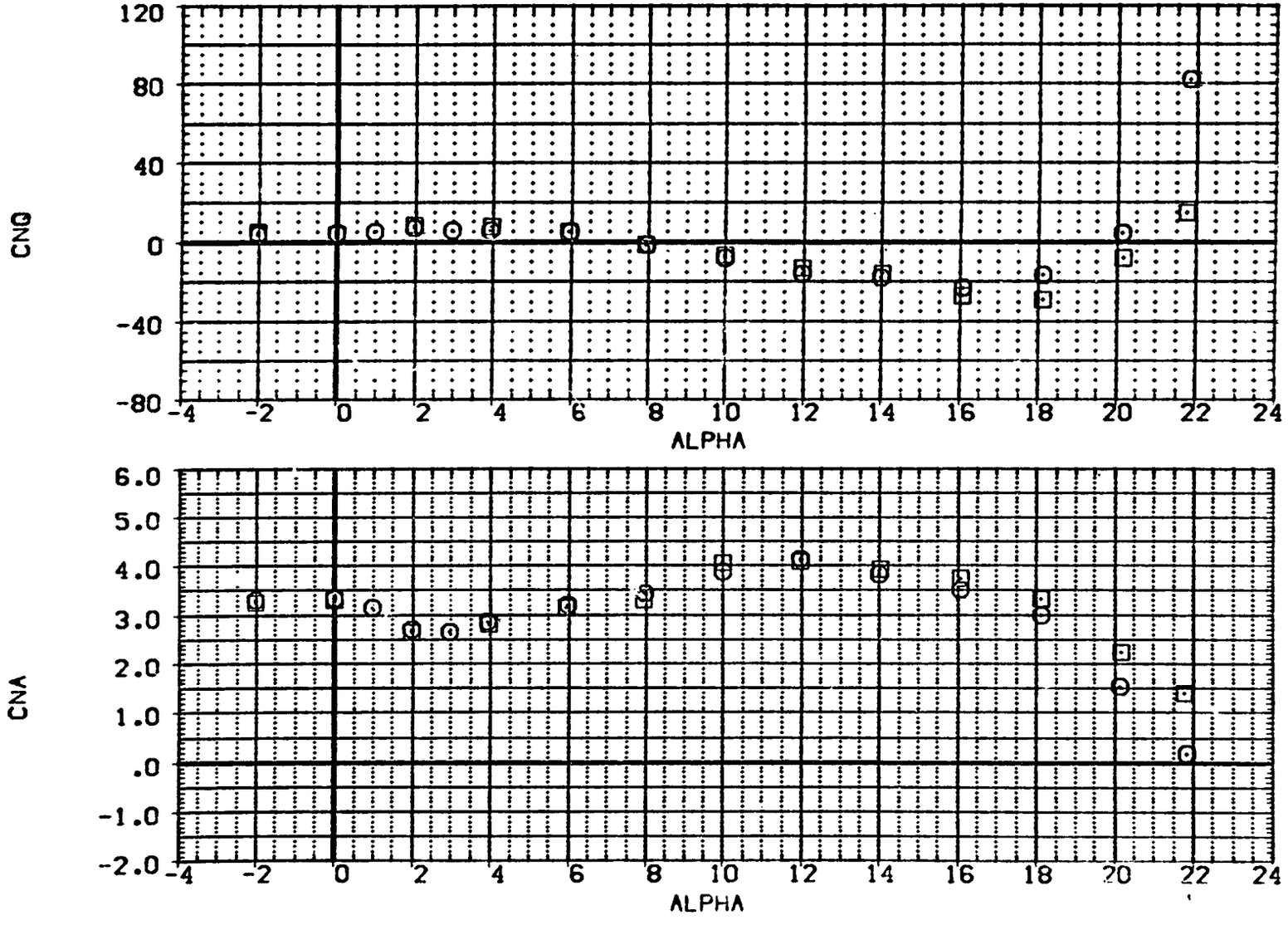


FIGURE 13. EFFECT OF BODY FLAP ON DYNAMIC STABILITY PARAMETERS IN PITCH

(C)MACH = .90

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BOFLAP	RUDFLR
(RPKP00)	○	LA-20. ROCKWELL 0898 ORB W/MOD NOSE (BVVM)	1.000	.000		10.000
(RPKP04)	□	LA-20. ROCKWELL 0898 ORB W/MOD NOSE (BVVMF)	1.000	.000	.000	10.000

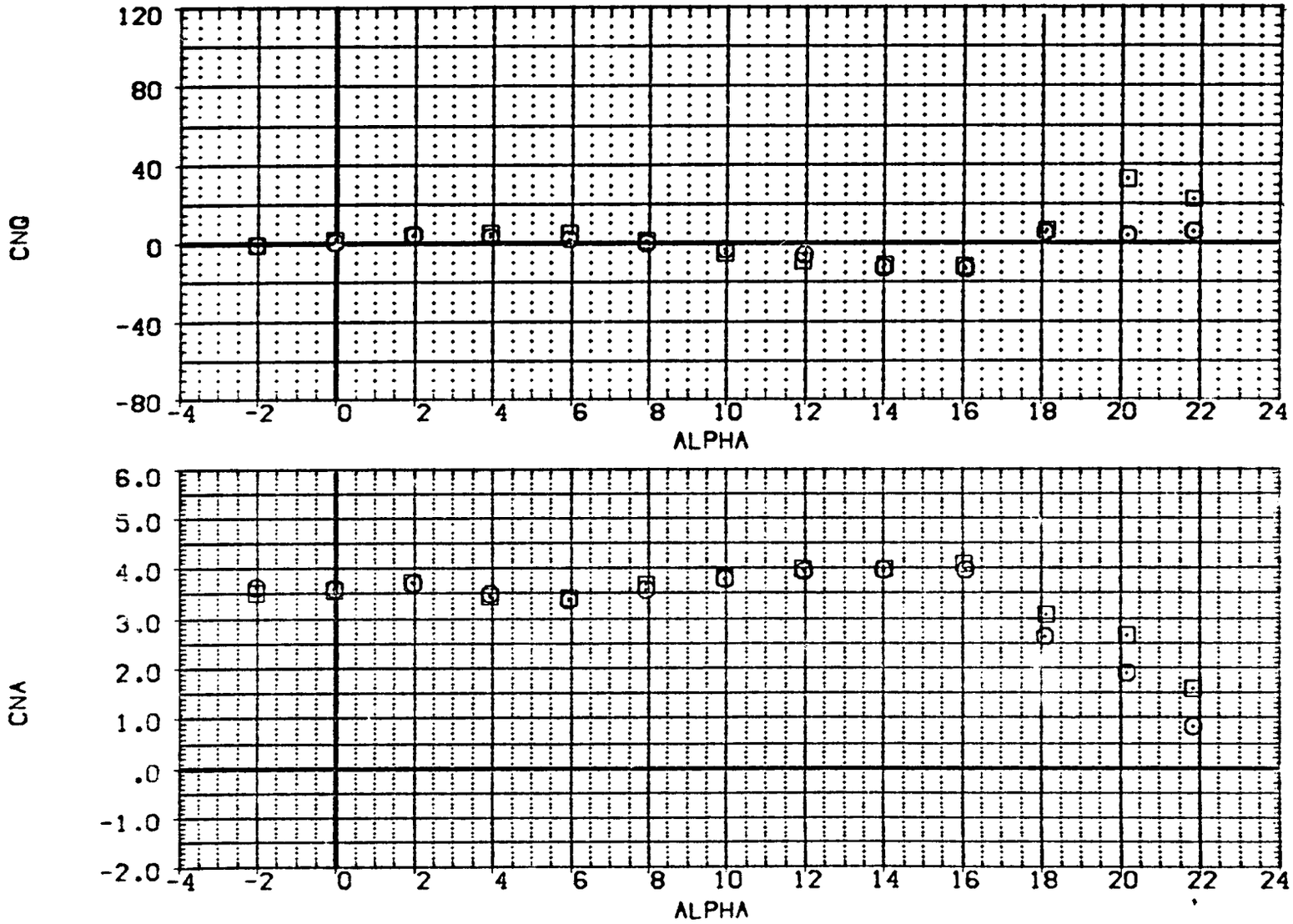


FIGURE 13. EFFECT OF BODY FLAP ON DYNAMIC STABILITY PARAMETERS IN PITCH

(D)MACH = .98

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BDFLAP	RUDFLR
(RPKP00)	⊡	LA-20. ROCKWELL 0898 ORB W/MOD NOSE (BWVM)	1.000	.000		10.000
(RPKP04)	□	LA-20. ROCKWELL 0898 ORB W/MOD NOSE (BWVMF)	1.000	.000	.000	10.000

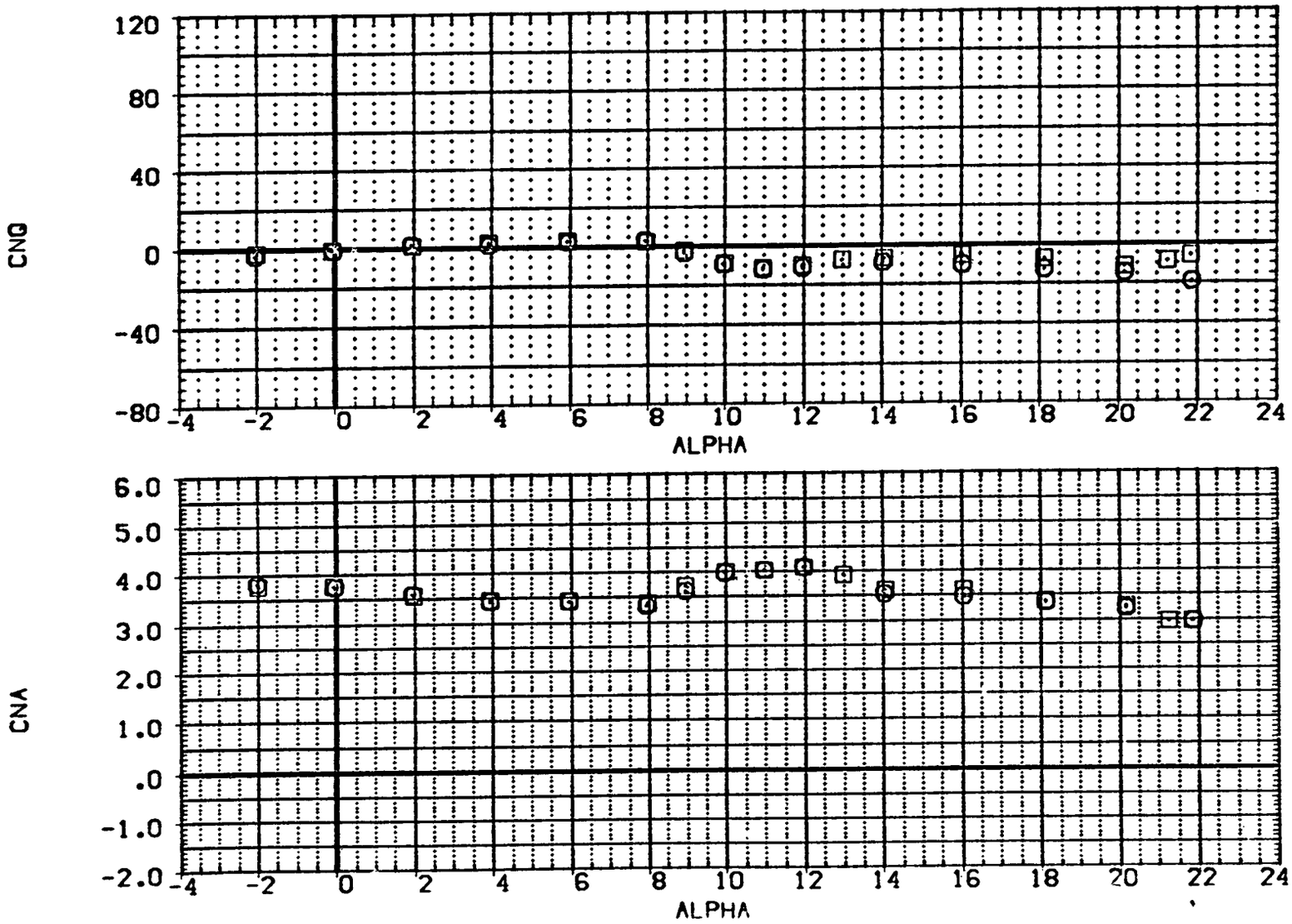


FIGURE 13. EFFECT OF BODY FLAP ON DYNAMIC STABILITY PARAMETERS IN PITCH

(E3MACH = 1.20

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BDFLAP	RUDFLR
(RPKP00)	○	LA-20. ROCKWELL 0898 ORB W/MOD NOSE (BWVM)	1.000	.000		10.000
(RPKP04)	□	LA-20. ROCKWELL 0898 ORB W/MOD NOSE (BWVMF)	1.000	.000	.000	10.000

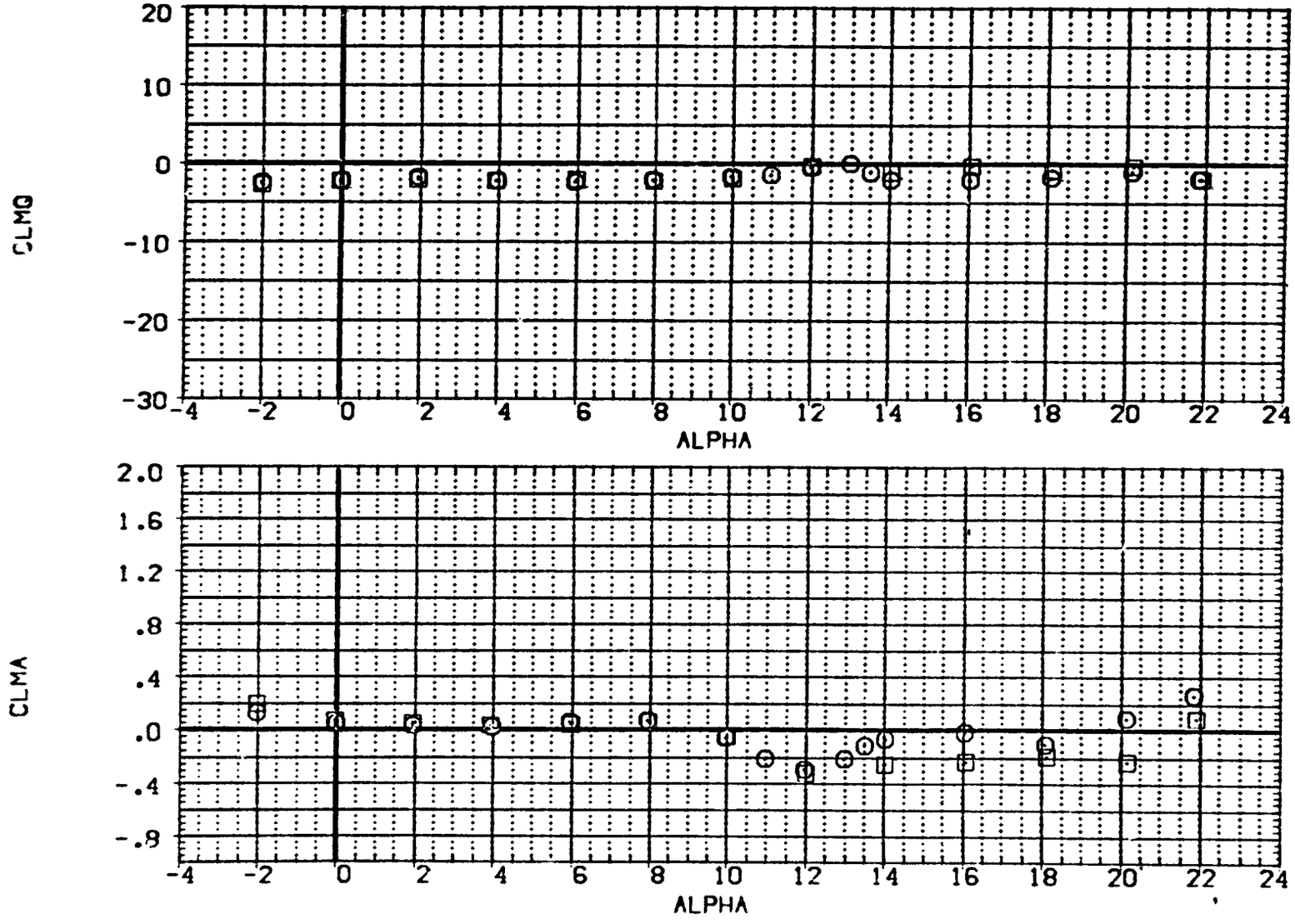


FIGURE 13. EFFECT OF BODY FLAP ON DYNAMIC STABILITY PARAMETERS IN PITCH

(A)MACH = .30

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BDFLAP	RUDFLR
(RPKP00)	○	LA-20, ROCKWELL 089B ORB W/MOD NOSE (BWVM)	1.000	.000		10.000
(RPKP04)	□	LA-20, ROCKWELL 089B ORB W/MOD NOSE (BWVMF)	1.000	.000	.000	10.000

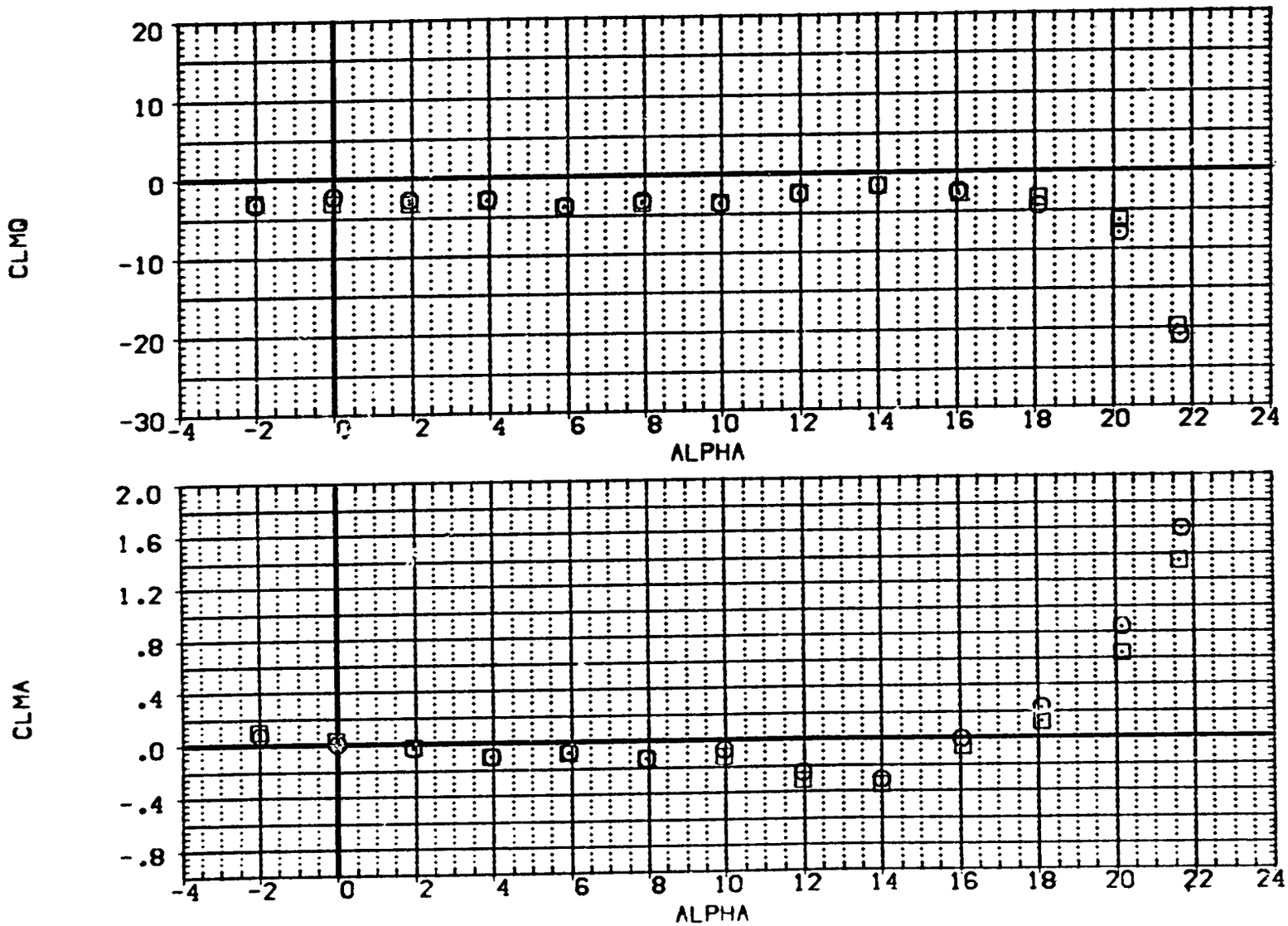


FIGURE 13. EFFECT OF BODY FLAP ON DYNAMIC STABILITY PARAMETERS IN PITCH

(B)MACH = .80

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BDFLAP	RUDFLR
(RPKP00)	○	LA-20. ROCKWELL 089B ORB W/MOD NOSE (BWVM)	1.000	.000		10.000
(RPKP04)	□	LA-20. ROCKWELL 089B ORB W/MOD NOSE (BWVMF)	1.000	.000	.000	10.000

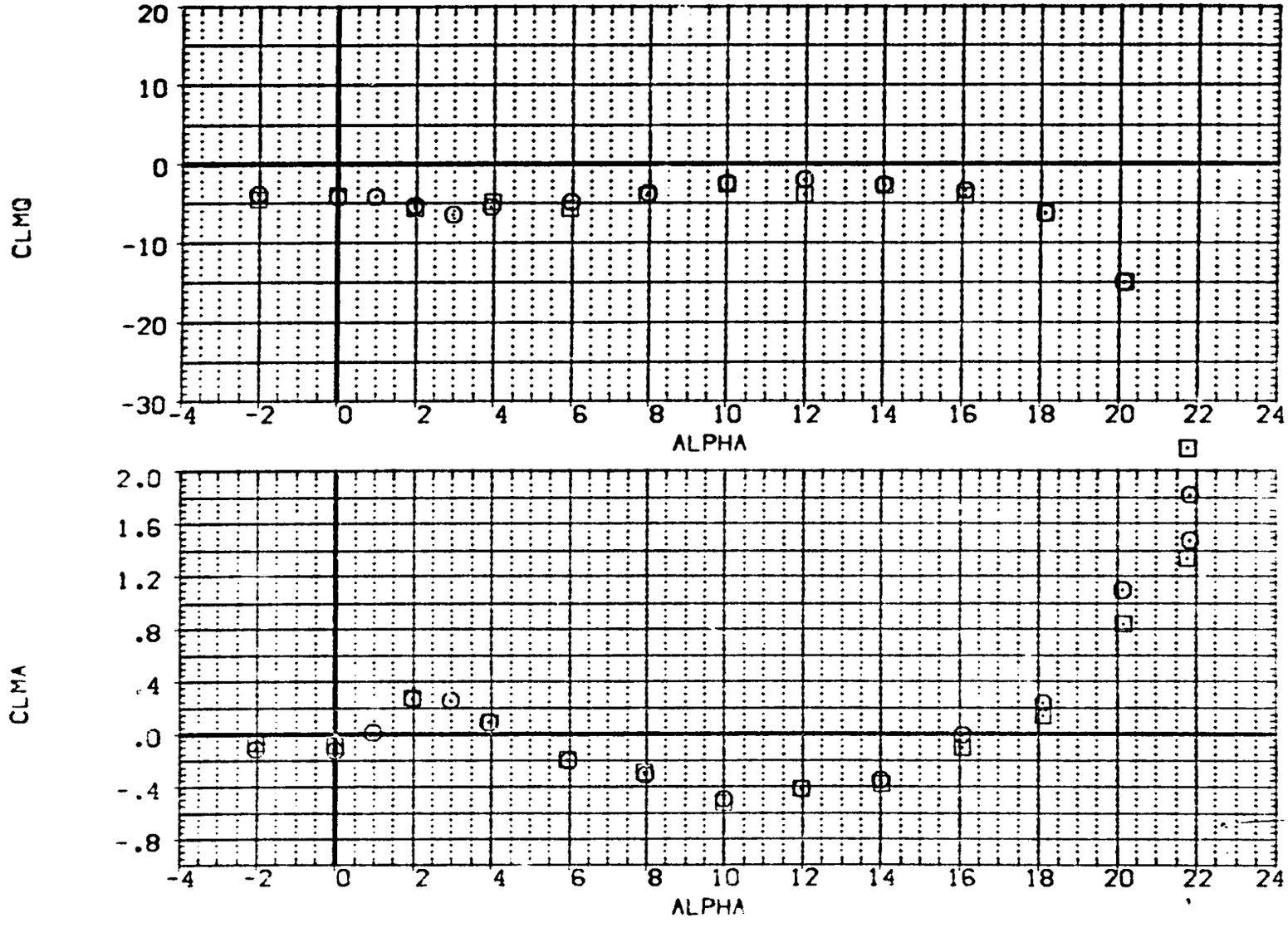


FIGURE 13. EFFECT OF BODY FLAP ON DYNAMIC STABILITY PARAMETERS IN PITCH

(C)MACH = .90

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BOFLAP	RUDFLR
(RPKP00)	LA-20, ROCKWELL 089B ORB W/MOD NOSE (BWVM)	1.000	.000		10.000
(RPKP01)	LA-20, ROCKWELL 089B ORB W/MOD NOSE (BWVMF)	1.000	.000	.000	10.000

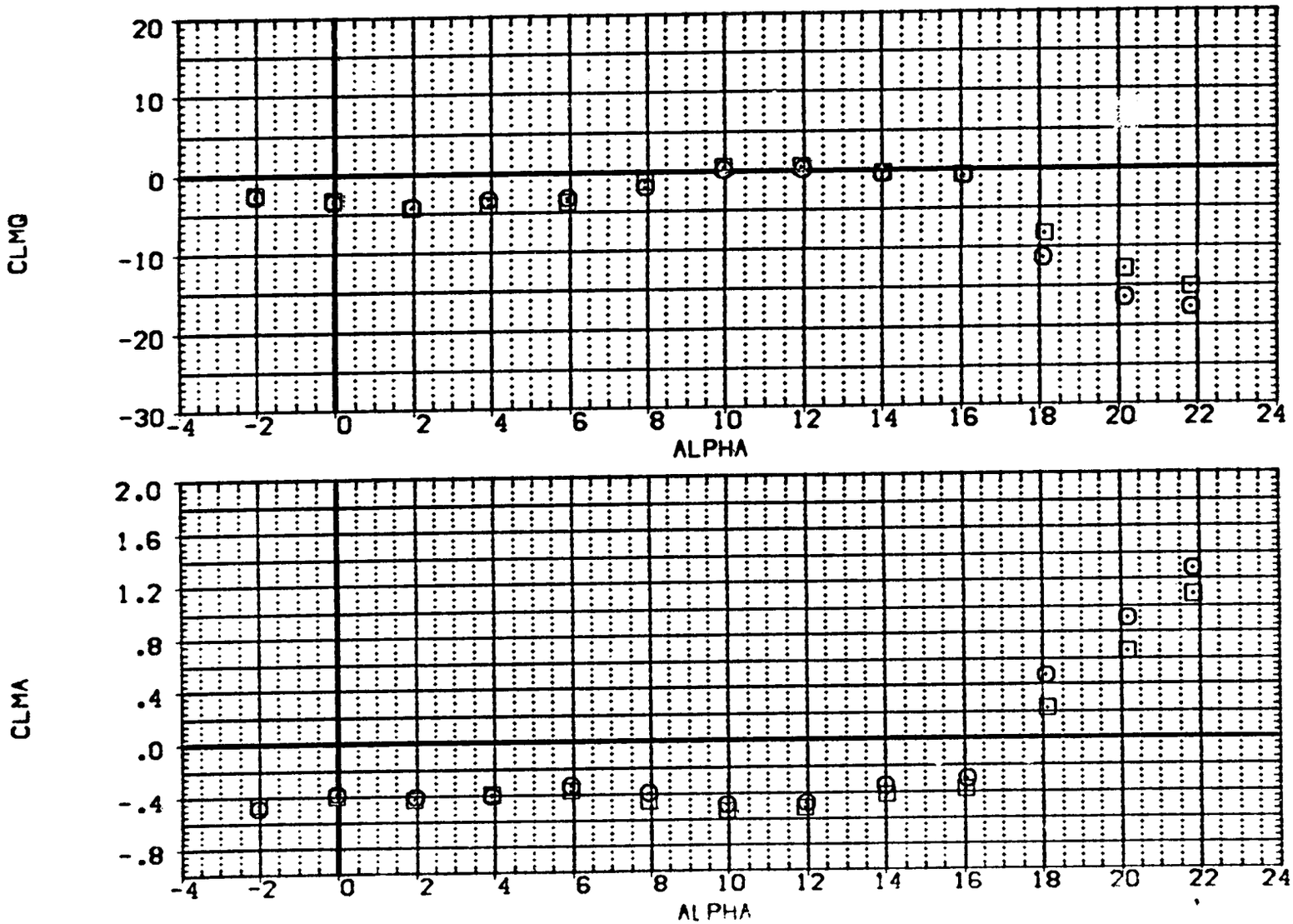


FIGURE 13. EFFECT OF BODY FLAP ON DYNAMIC STABILITY PARAMETERS IN PITCH

(O)MACH = .98

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	CG-LOC	ELEVTR	BOFLAP	RUDFLR
(RPKP00) ○	LA-20. ROCKWELL 089B ORB W/MOD NOSE (BWVM)	1.000	.000		10.000
(RPKP04) □	LA-20. ROCKWELL 089B ORB W/MOD NOSE (BWVMF)	1.000	.000	.000	10.000

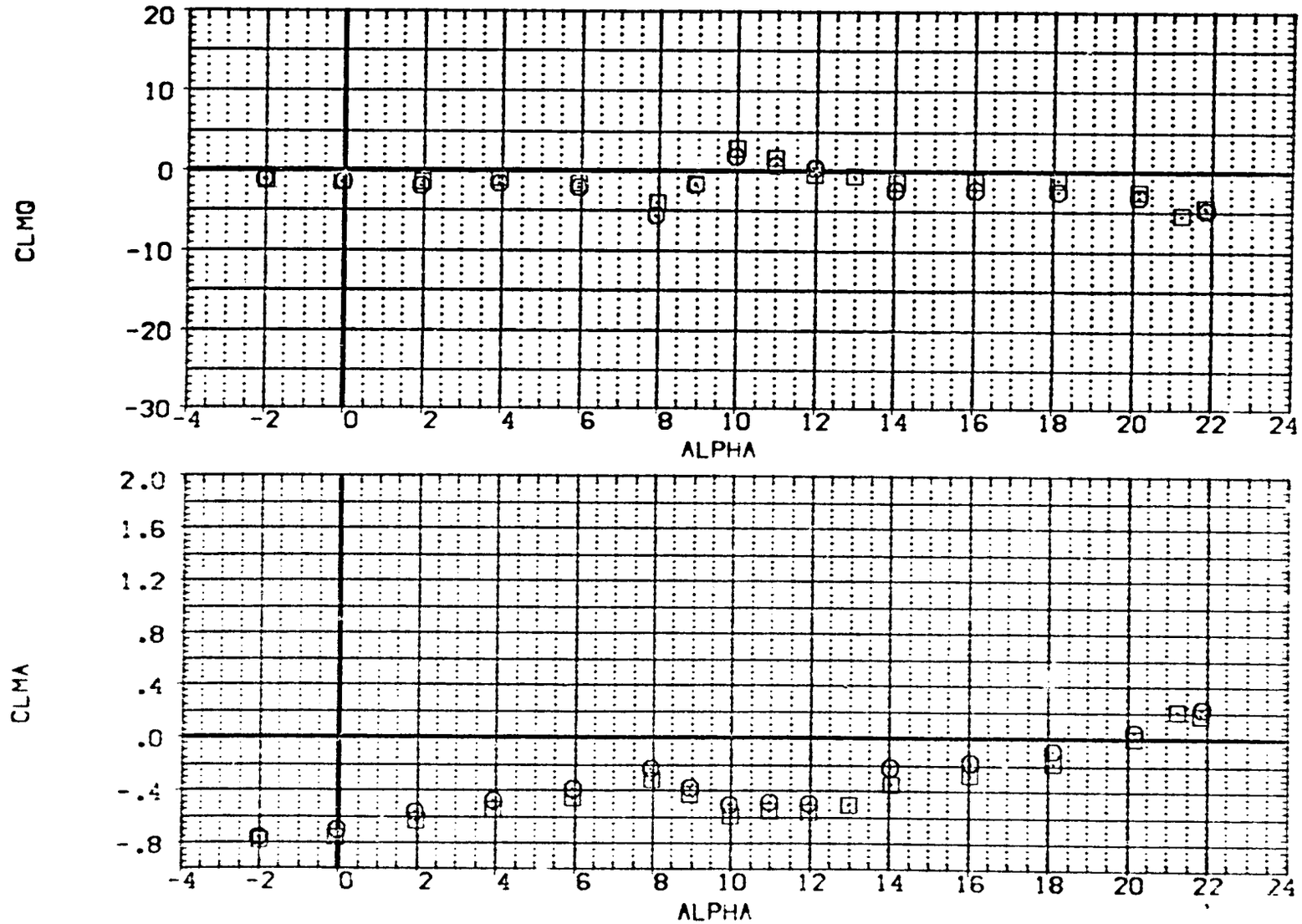


FIGURE 13. EFFECT OF BODY FLAP ON DYNAMIC STABILITY PARAMETERS IN PITCH

(E)MACH = 1.20

APPENDIX

TABULATED SOURCE DATA

Plotted data tabulations are
available from DMS on request.

LA-20, ROCKWELL ORB 0898 W/WCD. NOSE (BW F) (RRKY02)

PARAMETRIC DATA

BETA =	.000	ELEVTR =	.000
AILRON =	.000	CG-LOC =	1.000
BDFLAP =	.000	RUDFLR =	10.000
RUDDER =	.000		

RUN NO. 23/ 0

MACH	ALPHA	CYNR	CYNBC	CBLR	CBLBC
.300	-2.965	-.27397	.08800	.07099	-.04469
.300	-2.074	-.29950	.09011	.09636	-.04817
.300	-.050	-.31424	.09203	.09843	-.06410
.300	1.961	-.30762	.09632	.10964	-.07458
.300	3.950	-.29223	.10425	.09783	-.08562
.300	5.986	-.29127	.10707	.16071	-.09368
.300	7.972	-.34134	.10340	.16491	-.11649
.300	9.983	-.34772	.09357	.25968	-.10663
.300	11.987	-.39046	.04619	.34609	-.08724
.300	14.015	-.33710	.08463	.80434	-.11977
.300	16.031	-.75653	.09342	.31660	-.20184
.300	18.013	-.78518	.10718	.60186	-.11182
.300	20.045	-.88683	.09106	.44780	-.18407

RUN NO. 22/ 0

MACH	ALPHA	CYNR	CYNBC	CBLR	CBLBC
.800	-2.976	-.25756	.14321	.12967	-.05645
.800	-2.068	-.23199	.14374	.05853	-.06719
.800	-.044	-.22025	.14979	.07893	-.08534
.800	1.978	-.36239	.14935	.23203	-.09953
.800	3.989	-.56909	.14830	.30656	-.10551
.800	5.992	-.63466	.13433	.00219	-.13181
.800	7.989	-.61402	.12608	.22234	-.13870
.800	9.977	-.69349	.11197	.80168	-.10184
800	11.998	-.71524	.09769	.84909	-.06872
.800	14.015	-.86554	.08244	.86205	-.12268
.800	16.025	-.77088	.04446	1.06333	-.11024
.800	18.042	-.84488	.00431	1.12855	-.10402
.800	20.056	-.97924	-.03317	1.21063	-.10447

LA-20, ROCKWELL ORB 0698 W/MOD. NOSE (BW F) (RFKY02)

PARAMETRIC DATA

BETA =	.000	ELEVTR =	.000
AILRON =	.000	CG-LOC =	1.000
BDFLAP =	.000	RUDFLR =	10.000
RUDDER =	.000		

RUN NO. 21/ 0

MACH	ALPHA	CYNR	CYNBC	CBLR	CBLBC
.900	-2.959	-.26854	.16786	.24168	-.06789
.900	-2.074	-.30700	.16787	.14781	-.07968
.900	-.033	-.29439	.17357	.31723	-.09797
.900	1.955	-.45606	.17077	.38085	-.10461
.900	3.978	-.50279	.16383	.33725	-.10950
.900	5.958	-.59481	.14962	.29878	-.14300
.900	7.972	-.70081	.13365	.30297	-.15475
.900	9.994	-.59754	.10819	.30040	-.12373
.900	11.976	-.83084	.06985	1.38966	-.04255
.900	13.998	-.78000	.06204	.83541	-.14284
.900	16.031	-1.16188	-.01632	1.08194	-.14685
.900	18.059	-1.13462	-.04080	1.21863	-.12399
.900	20.051	-1.25071	-.06309	1.20617	-.13904

RUN NO. 20/ 0

MACH	ALPHA	CYNR	CYNBC	CBLR	CBLBC
.980	-2.954	-.35218	.18131	.03829	-.12175
.980	-2.074	-.48536	.17850	.15244	-.12136
.980	-.016	-.48408	.20328	.27088	-.12867
.980	1.961	-.10915	.23535	.48960	-.11726
.980	3.994	-.21631	.23150	.73700	-.10222
.980	5.986	-.57515	.20109	.67748	-.09689
.980	7.989	-.54269	.16227	1.04945	-.11779
.980	9.983	-.67065	.19075	.81058	-.12603
.980	11.998	-1.25035	.17372	.33902	-.17519
.980	14.004	-.75167	.15337	.83174	-.17886
.980	16.025	-.56061	.17358	.88741	-.18563
.980	18.030	.37456	.07020	2.61809	-.16927
.980	20.068	-.42098	.04620	2.04042	-.12344

LA-20, ROCKWELL CRB 0898 W/MOD. NOSE (BW F) (RFKY02)

PARAMETRIC DATA

BETA =	.000	ELEVTR =	.000
AILRON =	.000	CG-LOC =	1.000
BDFLAP =	.000	RUDFLR =	10.000
RUDDER =	.000		

RUN NO. 19/ D

MACH	ALPHA	CYNR	CYNBC	CBLR	CBLBC
1.200	-2.841	-.49797	.13697	.02164	-.08887
1.200	-2.074	-.32942	.13559	.06221	-.09834
1.200	-.072	-.30404	.13187	.12609	-.11544
1.200	1.967	-.24060	.12357	.27954	-.11576
1.200	3.983	-.83673	.10206	1.77084	-.04123
1.200	3.975	-.84206	.09654	.66166	-.08453
1.200	7.950	-1.02312	.08161	.98362	-.08876
1.200	9.966	-.44697	.11333	1.97036	-.05572
1.200	11.976	-1.21446	.04305	.82813	-.11551
1.200	14.010	-1.31328	.00660	.99812	-.09933
1.200	15.997	-1.51730	-.01169	1.39897	-.08371
1.200	18.008	-1.33740	-.00474	1.19343	-.12651
1.200	20.016	-1.21321	-.02180	1.43970	-.12644

LA-20, ROCKWELL CRB 0898 W/MOD. NOSE (BW MF) (RFKY03)

PARAMETRIC DATA

BETA =	.000	ELEVTR =	.000
AILRON =	.000	CG-LOC =	1.000
BDFLAP =	.000		

RUN NO. 11/ C

MACH	ALPHA	CYNR	CYNBC	CBLR	CBLBC
.300	-2.796	-.07452	-.12518	-.03303	.09697
.300	-2.062	-.12881	-.12490	-.02721	.09210
.300	-.044	-.08174	-.11729	.00409	.07764
.300	1.961	-.11074	-.11064	-.00770	.06437
.300	3.978	-.12208	-.10060	.03792	.04681
.300	5.975	-.15769	-.09625	-.02012	.03582
.300	7.989	-.13519	-.09613	.09074	.01303
.300	9.983	-.15585	-.10581	.14887	.02011
.300	12.004	-.22675	-.14061	.28632	.04599
.300	14.026	-.19698	-.13805	.11693	-.04142
.300	16.025	-.11418	-.09337	.11884	-.07401
.300	18.059	-.31727	-.09070	.04263	-.06315
.300	20.114	-.40046	-.09771	.33101	-.01702

LA-20, ROCKWELL ORB 0898 W/WCD. NOSE (BW MF) (RPKY03)

PARAMETRIC DATA

BETA = .000 ELEVTR = .000
AILRON = .000 CG-LOC = 1.000
BDFLAP = .000

RUN NO. 10/ 0

MACH	ALPHA	CYNR	CYNBC	CBLR	CBLBC
.800	-2.976	-.15470	-.12141	-.27583	.11853
.800	-2.051	-.10410	-.11504	.04587	.10444
.800	-.078	-.08579	-.10734	.03571	.08354
.800	1.967	-.22798	-.09855	.19798	.06869
.800	3.972	-.29195	-.09290	.16578	.05518
.800	5.997	-.35086	-.09538	.04331	.03353
.800	7.978	-.30967	-.09572	.00550	-.00008
.800	9.983	-.40786	-.10843	.57125	.02504
.800	11.987	-.49205	-.11473	.62674	.03825
.800	13.998	-.54026	-.11914	.75073	.00202
.800	16.025	-.43797	-.13346	.42444	-.01762
.800	18.048	-.64849	-.15993	.66298	-.02546
.800	20.056	-.31397	-.18214	.22862	-.07294

RUN NO. 9/ 0

MACH	ALPHA	CYNR	CYNBC	CBLR	CBLBC
.900	-2.875	-.10687	-.10167	.33004	.13059
.900	-2.074	-.11906	-.10068	-.12396	.11872
.900	-.067	-.22279	-.08627	.18824	.09042
.900	1.967	-.16774	-.08081	.02914	.05639
.900	3.961	-.20933	-.08310	.14290	.04172
.900	5.958	-.23702	-.07562	.15059	.01418
.900	7.961	-.21749	-.09538	-.12655	.00693
.900	9.983	-.31371	-.11307	.04145	.00292
.900	12.004	-.45419	-.13175	.88843	.06146
.900	14.010	-.49384	-.12779	1.07183	-.01152
.900	16.036	-.86562	-.16665	.90204	-.02912
.900	18.053	-.78115	-.18419	.85527	-.04662
.900	20.051	-1.11915	-.19635	.29520	-.16245

LA-20, ROCKWELL ORB 0898 W/HOD. NOSE (3W MF) (RPK/03)

PARAMETRIC DATA

BETA =	.000	ELEVTR =	.000
AILRON =	.000	CG-LOC =	1.000
BDFLAP =	.000		

RUN NO. 13/ 0

MACH	ALPHA	CYNR	CYNBC	CBLR	CBLBC
.980	-2.875	-.08788	-.11127	.09882	.08648
.980	-2.074	-.18808	-.10820	.01894	.08154
.980	-.061	-.15921	-.10037	.03085	.04850
.980	1.961	-.26760	-.09005	.16850	.04477
.980	3.961	-.27194	-.07244	.60976	.06620
.980	5.975	-.35904	-.06016	.77120	.07415
.980	7.978	-.64252	-.08652	.65740	.03812
.980	9.983	-.68823	-.08789	.86016	.04589
.980	11.998	-.78968	-.09109	.59737	.00621
.980	14.043	-.77113	-.07771	.72023	-.03262
.980	16.031	-.72154	-.06132	.78093	-.03087
.980	18.042	-.44925	-.05732	1.47049	-.00811
.980	20.056	-1.04354	-.18687	1.35455	-.07367

RUN NO. 12/ 0

MACH	ALPHA	CYNR	CYNBC	CBLR	CBLBC
1.200	-2.813	-.33587	-.13364	.07276	.07225
1.200	-2.077	-.42942	-.13046	.09109	.06737
1.200	-.050	-.30902	-.11812	-.03439	.05311
1.200	1.961	-.15715	-.11989	.22728	.05654
1.200	4.000	-.29487	-.11189	.28489	.06909
1.200	5.975	-.31388	-.10706	.46395	.05156
1.200	7.983	-.49564	-.10132	.63141	.03661
1.200	9.983	-.56536	-.07830	1.01867	.05262
1.200	12.009	-1.04127	-.11838	.90264	.02423
1.200	14.010	-1.15403	-.13720	.98716	.03896
1.200	16.042	-1.09666	-.13024	.75399	-.01400
1.200	18.036	-1.14669	-.12485	.77043	-.03493
1.200	20.045	-1.13929	-.11718	.96253	-.03083

LA-20, ROCKWELL CRB 0898 W/HOD. NOSE (BWMF) (RFKY04)

PARAMETRIC DATA

BETA =	.000	ELEVTR =	.000
AILRON =	.000	CG-LOC =	1.000
BDFLAP =	.000	RUDFLR =	10.000
RUDDER =	.000		

RUN NO. 3/ 0

MACH	ALPHA	CYNR	CYNBC	CBLR	CBLBC
.300	-2.937	-.29511	.08552	.08100	-.02030
.300	-2.037	-.31306	.08443	.09851	-.02681
.300	-.027	-.30413	.08990	.08041	-.03692
.300	1.967	-.38099	.09495	.10035	-.05283
.300	3.961	-.27209	.09710	.12749	-.06174
.300	5.975	-.31526	.10510	.17227	-.07753
.300	7.978	-.28845	.10139	.15540	-.09413
.300	9.977	-.28472	.09816	.23213	-.09045
.300	11.998	-.26823	.06238	.24284	-.05903
.300	14.021	-.22574	.06764	.41931	-.12997
.300	16.036	-.42550	.06866	.05812	-.20406
.300	18.042	-.42223	.07648	.24282	-.15882
.300	20.074	-.42054	.07871	.44252	-.13315

RUN NO. 4/ 0

MACH	ALPHA	CYNR	CYNBC	CBLR	CBLBC
.800	-2.835	-.32948	.14559	.17034	-.02656
.800	-2.057	-.32091	.14614	.03175	-.03531
.800	-.027	-.31295	.14398	.08406	-.04961
.800	1.955	-.32800	.14743	.12214	-.06580
.800	3.978	-.29945	.14996	.07522	-.07991
.800	5.986	-.36972	.14129	.08885	-.09628
.800	7.989	-.39453	.13206	.03573	-.13311
.800	9.999	-.38253	.11752	.30040	-.11963
.800	12.009	-.48534	.09510	.41745	-.10397
.800	14.015	-.63848	.07624	1.07326	-.11635
.800	16.035	-.68933	.04487	.62350	-.13277
.800	18.030	-.75297	-.00628	.71469	-.12383
.800	20.053	-.75155	-.08384	.40976	-.14104

LA-20, ROCKWELL CRB 0698 W/MOD. NOSE (BWMF)

(RFKY04)

PARAMETRIC DATA

BETA =	.000	ELEVTR =	.000
AILRON =	.000	CG-LOC =	1.000
BDFLAP =	.000	RUDFLR =	10.000
RUDDER =	.000		

RUN NO. 1/ 0

MACH	ALPHA	CYNR	CYNBC	CBLR	CBLBC
.900	-2.965	-.21594	.19990	.28037	-.00258
.900	-2.057	-.26310	.19928	.25945	-.01899
.900	-.033	-.28247	.19978	.37470	-.04651
.900	1.961	-.26629	.19727	.09848	-.08845
.900	3.966	-.36964	.18169	.13096	-.10155
.900	5.975	-.43904	.17333	.08599	-.12920
.900	7.978	-.33637	.15682	.17786	-.11887
.900	9.988	-.82573	.12107	1.05260	-.10644
.900	12.015	-.48762	.09752	.76493	-.09532
.900	14.017	-.61275	.06921	.87486	-.12619
.900	16.051	-.78505	-.00950	.88268	-.12452
.900	18.042	-1.08279	-.04781	.88364	-.13029
.900	20.065	-1.37117	-.13875	1.03850	-.19617

RUN NO. 7/ 0

MACH	ALPHA	CYNR	CYNBC	CBLR	CBLBC
.980	-2.903	-.41342	.19465	.13121	-.09592
.980	-2.085	-.25120	.19000	.04218	-.10729
.980	-.061	-.42784	.16592	.10059	-.11495
.980	1.978	-.41148	.15933	.29882	-.10528
.980	3.978	-.40734	.16211	.63566	-.06297
.980	5.986	-.18901	.20843	.52543	-.08802
.980	7.961	-.36171	.17199	.49331	-.10242
.980	10.005	-.55838	.13982	.51781	-.11203
.980	12.009	-.55707	.12301	.61971	-.13166
.980	14.032	-.65042	.09513	.55653	-.15505
.980	16.042	-.58105	.09972	.68842	-.15988
.980	18.042	-.33428	.11696	1.21731	-.13848
.980	20.056	-1.12686	-.04034	.85793	-.17512

LA-20, ROCKWELL CRB 0898 W/WCD. NOSE (BWWF) (RFKY04)

PARAMETRIC DATA

BETA =	.000	ELEVTR =	.000
AILRON =	.000	CG-LOC =	1.000
BDFLAP =	.000	RUDFLR =	10.000
RUDDER =	.000		

RUN NO. 6/ 0

MACH	ALPHA	CYNR	CYNBC	CBLR	CBLBC
1.200	-2.965	-.42475	.14208	.18897	-.09737
1.200	-2.074	-.45022	.13850	.05410	-.10050
1.200	-.061	-.40072	.13052	.10878	-.10506
1.200	1.972	-.49338	.11827	.21969	-.08954
1.200	3.966	-.54463	.10020	.46154	-.07134
1.200	5.981	-.52026	.08828	.43894	-.06005
1.200	7.983	-.68050	.08733	.50029	-.09018
1.200	9.999	-.55733	.09664	.82950	-.07834
1.200	11.992	-.85913	.04829	.92306	-.08407
1.200	14.021	-1.05235	.00888	.97053	-.06368
1.200	16.036	-1.07816	-.00591	.70642	-.10231
1.200	18.019	-1.03973	-.02363	.77393	-.10877
1.200	20.045	-1.05217	-.03650	1.13382	-.09394

LA-20, ROCKWELL CRB 0898 W/WCD. NOSE (BWMF) (RPKY05)

PARAMETRIC DATA

BETA =	.000	ELEVTR =	.000
AILRON =	.000	CG-LOC =	1.000
BDFLAP =	13.000	RUDFLR =	65.000
RUDDER =	.000		

RUN NO. 16/ 0

MACH	ALPHA	CYNR	CYNBC	CBLR	CBLBC
.300	-2.852	-.18364	.07468	.12582	.00702
.300	-2.062	-.18159	.07518	.11094	.00524
.300	-.072	-.16775	.08052	.09659	-.00445
.300	1.961	-.16406	.08269	.15587	-.01978
.300	3.955	-.18227	.08390	.13559	-.02889
.300	5.964	-.23892	.08893	.16047	-.03904
.300	7.950	-.25492	.09372	.14680	-.05146
.300	9.972	-.27451	.07258	.16810	-.05300
.300	11.992	-.36136	.04406	.29768	-.02522
.300	13.993	-.43693	.05355	.31329	-.11660
.300	15.986	-.57557	.07901	.42216	-.12119
.300	18.002	-.71429	.10163	.35575	-.10302
.300	19.999	-.78175	.10902	.44682	-.14877

RUN NO. 15/ 0

MACH	ALPHA	CYNR	CYNBC	CBLR	CBLBC
.800	-2.796	-.47798	.09383	.03904	.01564
.800	-2.051	-.50325	.09567	.08767	.00514
.800	-.067	-.50253	.10138	.12233	-.01622
.800	1.978	-.53053	.10977	.11194	-.03481
.800	3.978	-.64330	.11160	.21942	-.04908
.800	5.969	-.75452	.11007	.34287	-.05119
.800	7.978	-.65932	.09857	.27698	-.08487
.800	9.977	-.72767	.08357	.51022	-.07715
.800	11.987	-.82886	.05817	.74364	-.05099
.800	13.987	-.80994	.05373	.66709	-.10697
.800	16.025	-.84887	.02511	.61567	-.09153
.800	18.036	-1.30504	-.02187	-.91092	-.08928
.800	20.062	-.91017	-.08541	-.41193	-.08093

LA-20, ROCKWELL CRB 0898 W/HOD. NOSE (BWMF) (RPKY05)

PARAMETRIC DATA

BETA =	.000	ELEVTR =	.000
AILRON =	.000	CG-LOC =	1.000
BDFLAP =	13.000	RUDFLR =	85.000
RUDDER =	.000		

RUN NO. 14/ 0

MACH	ALPHA	CYNR	CYNBC	CBLR	CBLBC
.900	-2.813	-.64599	.09050	.13162	.01958
.900	-2.065	-.67925	.09099	.20081	.00685
.900	-.050	-.75252	.09752	.27841	-.01384
.900	1.961	-.80059	.10598	.32849	-.02664
.900	3.983	-.84324	.10737	.29021	-.03776
.900	5.969	-.92905	.10555	.11167	-.05904
.900	7.972	-.75906	.10110	.12670	-.09199
.900	9.972	-.80828	.08076	.54620	-.06860
.900	11.981	-.78065	.05227	.60748	-.05231
.900	13.987	-.84173	.05006	.88531	-.09624
.900	16.019	-.90274	-.01929	.89800	-.06601
.900	18.008	-1.11790	-.06336	1.35930	-.07635
.900	20.039	-1.08640	-.10798	1.16356	-.11647

RUN NO. 18/ 0

MACH	ALPHA	CYNR	CYNBC	CBLR	CBLBC
.980	-2.801	-.44323	.15237	.45096	.04062
.980	-2.079	-.46356	.15647	.36244	.00711
.980	-.050	-.32866	.16029	.53655	-.02002
.980	1.944	-.44851	.17854	.63912	-.03342
.980	3.955	-.53643	.17963	.82433	-.03592
.980	5.975	-.94193	.18129	1.63073	-.05574
.980	7.978	-.71034	.20303	.85129	-.07028
.980	9.994	-.59903	.17351	.56398	-.11647
.980	11.976	-1.20579	.13645	.78038	-.12667
.980	13.998	-.99441	.15032	.74675	-.14956
.980	16.019	-.85192	.16057	.96858	-.13682
.980	18.025	-.09015	.17790	1.66037	-.10618
.980	20.045	-2.06010	-.11925	1.26572	-.10672

LA-20, ROCKWELL CRB 0898 W/MOD. NOSE (BWMF) (RPKY05)

PARAMETRIC DATA

BETA =	.000	ELEVTR =	.000
AILRON =	.000	CG-LOC =	1.000
BDFLAP =	13.000	RUDFLR =	85.000
RUDDER =	.000		

RUN NO. 17/ 0

MACH	ALPHA	CYNR	CYNBC	CBLR	CBLBC
1.200	-2.897	-.21882	.10601	-.02148	-.06192
1.200	-2.062	-.56553	.09928	.03370	-.06779
1.200	-.027	-.45548	.10220	.12157	-.08911
1.200	1.989	-.46834	.09258	.22110	-.07049
1.200	3.989	-.67549	.09586	.56234	-.06187
1.200	5.975	-.83897	.08928	.68718	-.09014
1.200	7.978	-.65773	.10097	.77262	-.08367
1.200	9.966	-.81610	.10637	.92056	-.09497
1.200	11.987	-1.18046	.04960	.56396	-.14759
1.200	13.987	-1.17617	.04286	1.39630	-.07236
1.200	16.008	-1.03670	.05262	1.29038	-.09093
1.200	18.008	-.87084	.05547	1.36042	-.10580
1.200	20.033	-1.39107	-.03295	1.07250	-.13394

LA-20, ROCKWELL B898 ORB W/HOD NOSE (BWVH) (RPKP00)

PARAMETRIC DATA

BETA =	.000	ELEVTR =	.000
AILRON =	.000	CG-LOC =	1.000
RUDFLR =	10.000	RUDDER =	.000

RUN NO. 5/ 0

MACH	ALPHA	CLMQ	CLMA	CND	CNA
.300	-2.016	-2.33995	.12556	4.40947	2.45458
.300	-.012	-2.20421	.05533	5.94316	2.55207
.300	1.957	-1.73398	.03217	5.73165	2.59401
.300	3.948	-2.25030	.02560	6.17289	2.68871
.300	5.939	-2.33365	.05547	5.90415	2.76399
.300	7.934	-2.06613	.06896	6.39467	2.83549
.300	9.963	-1.56018	-.05636	5.06706	3.17239
.300	10.970	-1.40386	-.20872	4.93927	3.55910
.300	11.972	-.38703	-.29083	2.96692	3.98652
.300	12.982	.06061	-.21145	3.20584	3.93974
.300	13.515	-1.01756	-.11634	6.01848	3.74669
.300	14.013	-2.12799	-.06868	6.38048	3.61508
.300	16.051	-2.07102	-.01837	9.99203	2.67481
.300	18.097	-1.67190	-.11054	4.09462	3.66456
.300	20.156	-.99813	.08663	3.14934	3.47956
.300	21.842	-1.93782	.26702	1.16503	3.60514

RUN NO. 3/ 0

MACH	ALPHA	CLMQ	CLMA	CND	CNA
.800	-2.000	-3.24293	.07326	4.15580	2.88808
.800	-.024	-2.29028	.00392	5.47922	3.01906
.800	1.945	-2.78843	-.03950	4.59912	3.18439
.800	3.960	-2.73421	-.10323	2.89076	3.32155
.800	5.951	-3.72818	-.07633	7.09270	2.78010
.800	7.946	-3.23723	-.13257	.15958	3.08018
.800	9.963	-3.62201	-.07388	-4.27834	3.27884
.800	11.980	-2.50535	-.25705	-11.04751	3.89906
.800	13.988	-1.55970	-.30813	-16.37823	3.88802
.800	16.051	-2.45240	-.01265	-20.92883	3.54639
.800	18.106	-4.28911	.22894	-21.55204	3.25209
.800	20.164	-7.98457	.83931	-5.08570	2.12061
.800	21.691	-21.04138	1.59186	13.76897	.00739

LA-20, ROCKWELL 0898 CRB W/HCD NOSE (BWH) (RFKF00)

PARAMETRIC DATA

BETA =	.000	ELEVTR =	.000
AILRON =	.000	CG-LOC =	1.000
RUDFLR =	10.000	RUDDER =	.000

RUN NO. 4/ 0

MACH	ALPHA	CLMQ	CLMA	CND	CNA
.900	-2.016	-3.79933	-.11353	3.99099	3.31062
.900	-.024	-4.20214	-.12145	4.09982	3.33826
.900	.962	-4.26448	.00898	5.10369	3.14169
.900	1.969	-5.40060	.26830	7.27493	2.69492
.900	2.948	-6.39841	.25861	5.78045	2.65680
.900	3.940	-5.52473	.08750	5.92591	2.85346
.900	5.963	-4.79958	-.20060	5.19586	3.19306
.900	7.958	-3.77710	-.31125	-1.40339	3.42460
.900	9.975	-2.46321	-.49547	-7.70022	3.86414
.900	11.984	-1.94686	-.41583	-15.56030	4.12692
.900	14.000	-2.50564	-.35267	-17.51272	3.83110
.900	16.063	-3.33092	-.00432	-23.16613	3.51364
.900	18.110	-6.33901	.23331	-16.66975	2.99405
.900	20.130	-14.91252	1.10063	4.20710	1.52518
.900	21.821	-41.83679	1.48083	82.02365	.19879

RUN NO. 13/ 0

MACH	ALPHA	CLMQ	CLMA	CND	CNA
.980	-2.034	-2.75957	-.48380	-.61799	3.62685
.980	-.042	-3.55021	-.37680	.28107	3.58981
.980	1.969	-4.14596	-.41302	4.33330	3.68759
.980	3.928	-3.31082	-.41243	2.87026	3.49706
.980	5.939	-3.25049	-.33297	2.01553	3.35404
.980	7.934	-1.83028	-.39302	-.04487	3.56244
.980	9.951	.18463	-.48804	-3.70960	3.76633
.980	11.980	.22507	-.47536	-6.10362	3.93430
.980	13.994	-.49098	-.35132	-12.62012	3.95969
.980	16.059	-.72014	-.29838	-13.54475	3.96510
.930	18.097	-11.38490	.47033	5.15365	2.61620
.980	20.181	-16.34415	.90594	3.53187	1.88286
.980	21.847	-17.68545	1.28385	5.89158	.82062

LA-20, ROCKWELL 0898 CRB W/HCD NOSE (BWVH) (RFKF00)

PARAMETRIC DATA

BETA =	.000	ELEVTR =	.000
AILRON =	.000	CG-LOC =	1.000
RUDFLR =	10.000	RUDDER =	.000

RUN NO. 14/ 0

MACH	ALPHA	CLMQ	CLMA	CND	CNA
1.200	-2.028	-1.02962	-.76182	-3.41212	3.83218
1.200	-.042	-1.38394	-.70026	-.64546	3.75894
1.200	1.939	-1.98599	-.56992	1.53339	3.58556
1.200	3.934	-1.63632	-.48129	1.29911	3.44521
1.200	5.939	-2.06314	-.39409	2.64373	3.43201
1.200	7.946	-5.68632	-.23242	3.02262	3.32574
1.200	8.947	-1.80654	-.38435	-3.59422	3.60333
1.200	9.951	1.77044	-.50256	-9.61002	3.97418
1.200	10.958	.68669	-.49101	-12.13745	4.04097
1.200	11.972	.29943	-.49471	-11.31006	4.08780
1.200	14.013	-2.34311	-.22701	-8.57677	3.53745
1.200	16.051	-2.45180	-.18563	-10.23343	3.48858
1.200	18.110	-2.55706	-.09949	-12.89484	3.35089
1.200	20.160	-3.13539	.04992	-14.32102	3.22246
1.200	21.868	-4.85000	.23010	-19.13647	2.96911

LA-20, ROCKWELL 0698 CRB W/MOD NOSE (BLW F) (RPKP02)

PARAMETRIC DATA

BETA =	.000	ELEVTR =	.000
AILRON =	.000	CG-LOC =	1.700
BDFLAP =	.000	RUDFLR =	10.000
RUDDER =	.000		

RUN NO. 17/ 0

MACH	ALPHA	CLMQ	CLMA	CNQ	CNA
.300	-2.016	-2.27602	.23491	4.94184	2.22022
.300	-.036	-1.58855	.02810	4.30404	2.56983
.300	1.969	-1.71627	.03064	5.36287	2.62317
.300	3.952	-1.88896	.01870	6.00650	2.67808
.300	5.945	-2.03195	.03043	5.69390	2.83867
.300	7.940	-1.81867	.03766	6.27143	2.98882
.300	9.963	-1.67449	-.00350	5.21795	2.99704
.300	11.980	.61098	-.29686	.47886	4.00529
.300	14.013	-1.90771	-.08066	4.35705	3.54773
.300	16.051	-1.28678	-.16536	7.38893	2.94967
.300	18.123	-1.29197	.00007	3.34447	3.56308
.300	20.175	-1.11363	.10910	1.31335	3.60815
.300	21.881	-2.93248	.34518	4.12742	3.47496

RUN NO. 16/ 0

MACH	ALPHA	CLMQ	CLMA	CNQ	CNA
.800	-2.022	-3.31188	.10198	3.67168	2.88279
.800	-.030	-2.98017	-.00774	4.95112	3.11771
.800	1.945	-3.09234	-.05131	4.97647	3.24897
.800	3.940	-3.35382	-.11404	5.58842	3.18396
.800	5.939	-3.42453	-.14306	8.15223	2.74324
.800	7.934	-3.16770	-.19819	4.01712	3.06440
.800	9.951	-3.21379	-.22907	-.18087	3.60874
.800	11.956	-2.76101	-.22161	-3.00723	3.73468
.800	14.007	-2.09935	-.28963	-6.38404	3.52071
.800	16.051	-3.07076	-.01565	-7.79255	3.40924
.800	18.114	-4.90618	.19860	-3.93798	2.89978
.800	20.156	-12.49727	.83450	9.88878	1.87139
.800	21.849	-38.52198	1.70473	81.15708	-.75052

LA-20, ROCKWELL 0898 CRB W/HOD NOSE (SW F) (RPKP02)

PARAMETRIC DATA

BETA =	.000	ELEVTR =	.000
AILRON =	.000	CG-LOC =	1.000
BDFLAP =	.000	RUDFLR =	10.000
RUDDER =	.000		

RUN NO. 20/ 0

MACH	ALPHA	CLMQ	CLMA	CND	CNA
.900	-2.016	-3.62457	-.05337	3.64146	3.23338
.900	-.048	-3.42799	-.10048	2.49009	3.48280
.900	.978	-3.75751	-.01653	5.55417	3.13242
.900	1.945	-7.99584	.23083	11.93086	2.45845
.900	2.948	-5.20792	.11702	10.36835	2.57168
.900	3.952	-4.22454	-.08797	7.11515	2.88146
.900	5.943	-4.81327	-.20596	7.03112	2.84616
.900	7.946	-4.22911	-.37969	3.63130	3.10534
.900	9.951	-2.81554	-.41753	-5.83202	3.91224
.900	11.992	-2.90217	-.33292	-7.40072	3.93761
.900	14.017	-2.43873	-.34954	-6.53945	3.50996
.900	16.076	-4.21095	-.11239	-12.83303	3.51113
.900	18.118	-5.31164	.17545	-11.37330	2.59486
.900	20.181	-27.17055	1.10379	-32.73740	1.94945
.900	21.543	-23.77241	1.07223	-22.06596	1.19051

RUN NO. 19/ 0

MACH	ALPHA	CLMQ	CLMA	CND	CNA
.980	-2.028	-1.74553	-.78155	-2.34671	4.13422
.980	-.033	-1.74432	-.45922	.62725	3.59087
.980	1.957	-.20024	-.25238	-.93412	3.25895
.980	2.972	-.75744	-.14784	2.39123	3.01580
.980	3.940	-8.82915	.07014	9.62240	2.54358
.980	4.933	1.64045	-.34942	-.47917	3.08703
.980	5.923	2.16701	-.36299	-.35436	3.04117
.980	7.946	1.21760	-.39370	-3.49505	3.49793
.980	9.963	2.90337	-.55622	-6.64439	3.72441
.980	11.992	3.33210	-.56657	-11.83771	3.85159
.980	14.025	3.60017	-.58567	-13.08272	4.01729
.980	16.071	-2.07368	.04379	-4.78681	3.27491
.980	18.118	-10.77123	.51051	19.36566	1.93607
.980	20.194	-12.74419	.80292	33.81458	1.03312

LA-20, ROCKWELL 0898 CRB W/HOD NOSE (BW F) (RPKF02)

PARAMETRIC DATA

BETA =	.000	ELEVTR =	.000
AILRON =	.000	CG-LOC =	1.000
BOFLAP =	.000	RUDFLR =	10.000
RUDDER =	.000		

RUN NO. 18/ 0

MACH	ALPHA	CLMQ	CLMA	CNQ	CNA
1.200	-2.004	-.87177	-.73370	-.85195	3.64193
1.200	-.030	-1.29092	-.59453	.97779	3.44952
1.200	1.925	-1.06735	-.57857	.16030	3.43351
1.200	3.916	-4.35721	-.32083	4.88062	3.09714
1.200	5.939	-2.20077	-.33290	1.95791	3.22530
1.200	5.948	-3.45720	-.37393	10.19040	3.18079
1.200	7.433	-13.40854	-.19000	19.59149	2.87013
1.200	7.938	-17.20359	-.10646	19.31470	2.81134
1.200	8.967	-4.20641	-.27770	.83334	3.34266
1.200	9.943	-.80394	-.39372	-3.67283	3.62913
1.200	11.980	.91320	-.55256	-8.08101	3.97394
1.200	14.021	-1.91571	-.28619	-5.50450	3.45002
1.200	16.051	-2.77245	-.14520	-4.72157	3.24088
1.200	18.110	-2.26659	-.07285	-6.58768	3.14099
1.200	20.181	-3.78973	.09778	-5.25655	2.97755
1.200	21.834	-2.85646	.04266	-8.09638	3.02542

LA-20, ROCKWELL 089B CRB W/WOD NOSE (BWMF) (RFKF04)

PARAMETRIC DATA

BETA =	.000	ELEVTR =	.000
AILRON =	.000	CG-LOC =	1.000
BDFLAP =	.000	RUDFLR =	10.000
RUDDER =	.000		

RUN NO. 12/ 0

MACH	ALPHA	CLMQ	CLMA	CND	CNA
.300	-2.016	-2.72938	.19969	6.50238	2.47961
.300	-.032	-2.17986	.07067	6.80992	2.66682
.300	1.957	-2.12049	.04801	6.97793	2.78973
.300	3.922	-2.19415	.02897	8.05724	2.82831
.300	5.981	-2.07554	.03807	8.07220	2.91891
.300	7.976	-2.20974	.06368	7.28950	2.97846
.300	9.993	-1.89616	-.05090	6.41932	3.31412
.300	12.011	-.33585	-.31691	3.04068	4.07836
.300	14.037	-1.02909	-.25244	6.50691	3.85577
.300	16.082	-.23985	-.23624	5.88392	3.61106
.300	18.110	-.77935	-.19553	3.19844	4.13976
.300	20.168	-.35048	-.23593	2.13111	4.57636
.300	21.887	-1.93928	.09203	6.67373	3.83089

RUN NO. 6/ 0

MACH	ALPHA	CLMQ	CLMA	CND	CNA
.800	-2.028	-2.82466	.09883	8.33104	2.79904
.800	-.048	-3.08616	.03023	5.12477	3.02585
.800	1.957	-3.14363	-.02892	5.32615	3.19509
.800	3.928	-2.86961	-.10725	4.38280	3.33345
.800	5.927	-3.85053	-.08960	8.11294	2.76102
.800	7.946	-3.53386	-.13710	-.90058	3.16106
.800	9.951	-3.47668	-.12074	-5.02673	3.32977
.800	11.968	-2.42366	-.31528	-13.92196	4.05875
.800	14.004	-1.55789	-.35478	-19.06624	4.02368
.800	16.067	-2.79505	-.06620	-26.52833	3.72755
.800	18.097	-3.40524	.12332	-30.67306	3.40224
.800	20.181	-6.27668	.63242	-16.19448	2.59271
.800	21.637	-19.89398	1.34807	-1.56984	.97301

LA-20, ROCKWELL 0898 CRB W/HOD NOSE (BWHF) (RPKP04)

PARAMETRIC DATA

BETA =	.000	ELEVTR =	.000
AILRON =	.000	CG-LOC =	1.000
BDFLAP =	.000	RUDFLR =	10.000
RUDDER =	.000		

RUN NO. 7/ 0

MACH	ALPHA	CLMQ	CLMA	CND	CNA
.900	-2.016	-4.46865	-.06665	4.94218	3.25546
.900	-.024	-3.95738	-.08869	4.00270	3.31295
.900	1.961	-5.69019	.27905	8.39738	2.66129
.900	3.946	-4.84906	.08491	7.85258	2.81190
.900	5.957	-5.61473	-.19784	4.74367	3.13946
.900	7.934	-4.08366	-.29384	-1.64818	3.31221
.900	9.975	-2.58949	-.52382	-6.58731	4.07164
.900	11.980	-3.89664	-.42096	-13.53784	4.09017
.900	14.013	-2.68232	-.38070	-16.10634	3.94128
.900	16.057	-3.99199	-.10810	-26.62727	3.74199
.900	18.123	-6.34126	.13443	-29.02756	3.33929
.900	20.181	-14.86912	.83429	-8.21320	2.24509
.900	21.778	-35.95169	1.33475	14.62312	1.39458

RUN NO. 11/ 0

MACH	ALPHA	CLMQ	CLMA	CND	CNA
.980	-2.028	-2.44266	-.46080	-.89545	3.51959
.980	-.040	-3.21196	-.40297	2.07767	3.55603
.980	1.945	-4.31842	-.42581	3.94911	3.70686
.980	3.940	-4.06545	-.34608	5.19165	3.43892
.980	5.943	-3.74686	-.36870	4.75564	3.41040
.980	7.946	-1.26117	-.45871	1.25830	3.66136
.980	9.963	.46040	-.53732	-5.63314	3.80459
.980	11.948	.54723	-.51919	-9.23801	3.98070
.980	14.013	-.32608	-.41727	-11.44978	3.99000
.980	16.051	-.58074	-.38218	-12.04901	4.09195
.980	18.110	-8.18361	.23078	6.43680	3.05909
.980	20.185	-12.83326	.65653	32.71966	2.66277
.980	21.825	-15.13201	1.08502	22.47898	1.57339

LA-20, ROCKWELL 0898 CRB W/MOD NOSE (BWMF) (RPKP04)

PARAMETRIC DATA

BETA =	.000	ELEVTR =	.000
AILRON =	.000	CG-LOC =	1.000
BDFLAP =	.000	RUDFLR =	10.000
RUDDER =	.000		

RUN NO. 10/ 0

MACH	ALPHA	CLMQ	CLMA	CND	CNA
1.200	-2.004	-1.22047	-.78110	-2.08571	3.78367
1.200	-.088	-1.36085	-.76184	-.70450	3.76871
1.200	1.965	-1.45186	-.62917	1.39513	3.55697
1.200	3.944	-.92276	-.54751	2.26277	3.45516
1.200	5.951	-1.55267	-.46056	3.02142	3.42187
1.200	7.970	-4.05167	-.32497	2.45097	3.39299
1.200	8.947	-1.63758	-.42393	-2.26789	3.70729
1.200	9.987	2.62800	-.59740	-8.73173	4.01612
1.200	10.964	1.59856	-.55713	-11.30557	4.02793
1.200	11.980	-.36059	-.56302	-10.07721	4.07440
1.200	12.994	-.60392	-.50873	-7.35027	3.93888
1.200	14.050	-1.37671	-.35286	-6.85201	3.61914
1.200	16.051	-1.25094	-.28030	-5.53297	3.60430
1.200	18.135	-1.09778	-.18453	-7.52646	3.37499
1.200	20.160	-2.62616	.00413	-11.26622	3.27930
1.200	21.240	-5.54023	.20525	-8.90635	2.96932
1.200	21.834	-4.49222	.17905	-5.81699	2.95766

LA-20, ROCKWELL 0898 ORB W/HOD NOSE (BWMF) (RFKF05)

PARAMETRIC DATA

BETA =	.000	ELEVTR =	.000
AILRON =	.000	CG-LOC =	1.000
BDFLAP =	13.000	RUDFLR =	85.000
RUDDER =	.000		

RUN NO. 25/ 0

MACH	ALPHA	CLMQ	CLMA	CND	CNA
.300	-2.010	-2.72180	.22286	3.84400	2.26670
.300	-.072	-2.27081	-.03463	4.90878	2.70639
.300	1.963	-2.53923	-.04462	2.61587	2.75837
.300	3.934	-2.42482	-.06498	6.02317	2.78348
.300	5.933	-2.33750	-.03464	5.85959	2.91561
.300	7.934	-2.84372	-.01843	4.16404	3.03093
.300	9.951	-2.44275	-.04638	3.88583	3.12006
.300	11.980	-1.89442	-.27343	1.28269	3.98563
.300	14.013	-2.47489	-.08465	4.86351	3.58282
.300	16.057	-3.15081	-.12538	7.79502	2.95716
.300	18.116	-2.55577	-.11086	3.61669	3.91575
.300	20.187	-2.79966	.04383	3.31022	3.76719
.300	21.842	-2.46683	.16126	1.91818	3.81047

RUN NO. 24/ 0

MACH	ALPHA	CLMQ	CLMA	CND	CNA
.800	-2.040	-4.47922	.02001	5.37101	2.98879
.800	-.048	-4.34000	-.03463	5.93653	3.15088
.800	1.937	-4.52431	-.08759	5.59189	3.34092
.800	3.928	-4.08295	-.17430	4.09271	3.53131
.800	5.927	-5.10009	-.17674	10.68591	2.88658
.800	7.922	-4.77059	-.19987	2.39512	3.50998
.800	9.951	-4.98010	-.14658	-.43884	3.36303
.800	11.968	-4.25408	-.26463	-7.04135	3.96507
.800	14.004	-1.47761	-.43344	-13.36017	4.29779
.800	16.051	-4.50494	-.01225	-9.81134	3.50770
.800	18.104	-5.37755	.09620	-11.19687	3.19535
.800	20.168	-6.67387	.30134	.28455	2.29286
.800	21.855	-11.85982	1.07208	6.19558	1.29668

LA-20, ROCKWELL 0898 ORB W/MOD NOSE (BWMF) (RFKF05)

PARAMETRIC DATA

BETA =	.000	ELEVTR =	.000
AILRON =	.000	CG-LOC =	1.000
BDFLAP =	13.000	RUDFLR =	65.000
RUDDER =	.000		

RUN NO. 23/ 0

MACH	ALPHA	CLMQ	CLMA	CND	CNA
.900	-2.028	-5.44374	-.08620	3.55645	3.28720
.900	-.048	-4.98797	-.15639	4.43860	3.41551
.900	1.945	-5.46722	-.14768	7.73445	3.42775
.900	3.916	-6.53689	-.05830	9.51318	2.99375
.900	5.927	-5.68397	-.36364	6.34780	3.29460
.900	7.922	-5.53049	-.38732	2.01730	3.58698
.900	9.939	-4.89263	-.49617	-2.37368	3.99426
.900	11.968	-3.01090	-.39032	-6.71019	3.94105
.900	14.000	-3.85667	-.39465	-9.05875	3.68219
.900	16.045	-5.16336	-.10215	-15.59998	3.59293
.900	18.110	-6.70550	.06267	-16.10858	3.25574
.900	20.181	-8.09148	.47576	.83312	2.28426
.900	21.730	-13.98265	.69396	1.12639	1.87447

RUN NO. 22/ 0

MACH	ALPHA	CLMQ	CLMA	CND	CNA
.980	-2.040	-5.58033	-.46532	2.37086	3.67122
.980	-1.020	-4.38825	-.60121	1.53924	3.84165
.980	-.060	-6.14509	-.23228	3.93484	3.33966
.980	.942	-6.64217	-.15959	5.15633	3.31085
.980	1.933	-14.62167	.19775	9.62752	2.86537
.980	2.948	-9.49879	.21162	12.81062	2.58028
.980	3.928	-6.32247	-.13122	3.31209	3.11375
.980	5.927	-2.81149	-.42936	.95514	3.26281
.980	7.934	.82731	-.62961	-4.77524	3.75043
.980	9.951	2.03895	-.69606	-6.64111	3.91383
.980	11.968	3.01910	-.60589	-8.63372	3.89188
.980	13.007	3.19503	-.63245	-9.53051	3.94411
.980	14.019	4.01936	-.68172	-10.86119	4.07328
.980	15.035	1.99042	-.52453	-9.88856	4.00285
.980	16.038	-1.02181	-.20320	-10.08225	3.67252
.980	18.110	-4.74721	.30632	-1.28648	2.57646
.980	20.181	-7.87409	.41675	-10.36051	2.53102
.980	21.855	-9.47386	.74398	-9.40561	1.86888

LA-20, ROCKWELL 0898 ORB W/HOD NOSE (BWMF) (RPKP05)

PARAMETRIC DATA

BETA =	.000	ELEVTR =	.000
AILRON =	.000	CG-LOC =	1.000
BDFLAP =	13.000	RUDFLR =	85.000
RUDDER =	.000		

RUN NO. 21/ 0

MACH	ALPHA	CLMQ	CLMA	CND	CNA
1.200	-2.028	-1.91748	-.90638	-2.22967	4.00875
1.200	-.080	-2.09612	-.77738	-.69963	3.78034
1.200	1.945	-2.58852	-.70062	.09602	3.61640
1.200	3.928	-2.58273	-.57751	-.06598	3.42544
1.200	5.927	-3.01898	-.47020	2.02051	3.33685
1.200	6.473	-9.40492	-.22087	10.63274	2.92482
1.200	6.954	-11.31281	-.14512	11.74990	2.84264
1.200	7.928	-7.13353	-.28724	1.64018	3.25901
1.200	8.929	-3.43781	-.43558	-.84742	3.45739
1.200	9.933	-1.73766	-.52[illegible]4	-4.30687	3.64918
1.200	11.980	-.52545	-.61527	-8.97905	3.95663
1.200	14.013	-4.32158	-.20848	-5.31844	3.26268
1.200	15.051	-4.39209	-.12171	-9.48684	3.26320
1.200	18.110	-5.32468	.07559	-10.30341	2.98735
1.200	20.211	-8.83153	.31569	-9.13160	2.60755
1.200	21.778	-3.45145	.06487	-10.27359	2.82815

LA-20, ROCKWELL 089B CRB W/HCD NOSE (BWMF) (RPKP06)

PARAMETRIC DATA

BETA =	.000	ELEVTR =	.000
AILRON =	.000	CG-LOC =	2.000
BDFLAP =	.000	RUDFLR =	10.000
RUDDER =	.000		

RUN NO. 26/ 0

MACH	ALPHA	CLMQ	CLMA	CND	CNA
.300	-2.010	-2.12458	.34533	5.58727	2.24546
.300	-.036	-1.58130	.20059	4.39738	2.64796
.300	1.957	-1.97264	.20336	4.93198	2.68613
.300	3.952	-1.97410	.16895	4.59620	2.73797
.300	5.951	-1.79271	.18362	5.64134	2.89537
.300	7.958	-1.91221	.18843	4.46102	2.96009
.300	9.963	-1.52044	.15945	4.77647	3.07422
.300	11.974	-.69119	-.07961	1.22837	3.98753
.300	14.025	-1.24461	.06282	4.63800	3.59408
.300	16.051	-.30621	-.04500	6.50440	3.00377
.300	18.110	-1.19974	.09950	2.13209	3.84058
.300	20.181	-1.61584	.24328	1.08629	3.73458
.300	21.842	-2.25252	.41993	2.63292	3.72504

RUN NO. 28/ 0

MACH	ALPHA	CLMQ	CLMA	CND	CNA
.800	-2.036	-2.73265	.24553	7.30508	2.86746
.800	-.080	-3.71792	.19183	5.47825	3.01752
.800	1.945	-2.71519	.12761	4.36893	3.20058
.800	3.940	-2.78147	.05997	3.47121	3.29942
.800	5.951	-3.20642	.02054	4.76648	2.87881
.800	7.946	-2.80488	.02237	-.41430	3.23001
.800	9.943	-3.28488	.04666	-3.45500	3.17355
.800	10.978	-2.21115	-.12693	-8.98443	3.73054
.800	11.980	-1.81884	-.10021	-13.75348	3.92976
.800	14.021	-1.00632	-.18039	-18.83189	4.06653
.800	16.063	-2.77745	.10859	-21.27743	3.33946
.800	18.110	-3.10320	.27786	-24.61157	2.83696
.800	20.181	-6.90474	.74185	-24.73505	2.03140
.800	21.855	-16.82834	1.38504	4.95977	-.31789

LA-20, ROCKWELL 0698 ORB W/HOD NOSE (BWMF) (RKF06)

PARAMETRIC DATA

BETA =	.000	ELEVTR =	.000
AILRON =	.000	CG-LOC =	2.000
BDFLAP =	.000	RUDFLR =	10.000
RUDDER =	.000		

RUN NO. 27/ 0

MACH	ALPHA	CLMQ	CLMA	CND	CNA
.900	-2.034	-4.09009	.09890	3.34133	3.25460
.900	-.080	-3.69566	.07568	3.41179	3.27648
.900	1.945	-5.52786	.45825	6.78340	2.63358
.900	2.936	-5.99339	.44153	5.12201	2.58022
.900	3.928	-4.52924	.18543	6.93268	2.86548
.900	5.923	-3.70905	-.06587	2.60423	3.14892
.900	7.930	-3.44268	-.15786	.51972	3.34999
.900	8.951	-3.47291	-.22343	-4.46206	3.63499
.900	9.939	-2.44397	-.30201	-4.91775	3.54968
.900	10.958	-2.08567	-.32548	-7.00538	4.12078
.900	11.976	-3.02920	-.19886	-8.32429	3.90540
.900	14.013	-2.34430	-.19172	-7.33717	3.65232
.900	15.011	-4.39947	.04048	-11.43868	3.29018
.900	16.038	-4.17648	.07998	-16.76356	3.29676
.900	18.110	-5.14348	.26153	-27.60520	2.82727
.900	20.168	-10.27558	.90624	-23.34993	1.58614
.900	21.855	-29.94590	1.35145	72.15391	.16665

RUN NO. 29/ 0

MACH	ALPHA	CLMQ	CLMA	CND	CNA
.980	-2.016	-2.16018	-.30370	-.07523	3.56369
.980	-.080	-2.51708	-.23688	1.38342	3.59126
.980	1.945	-2.73294	-.25785	1.09284	3.69234
.980	3.952	-3.96085	-.15149	4.56038	3.35658
.980	5.951	-4.46185	-.08428	3.42615	3.32168
.980	7.946	-1.43673	-.27162	.31680	3.52710
.980	9.963	-.35269	-.34609	-6.35534	3.78625
.980	11.968	.31726	-.30015	-12.61968	3.73434
.980	14.025	.28136	-.21440	-19.05928	3.80491
.980	16.071	-.33727	-.18688	-21.87659	3.81035
.980	18.123	-8.12741	.42733	-10.87781	2.59211
.980	20.189	-10.45516	.66729	-11.28347	1.95292
.980	21.778	-19.47595	1.37918	15.69051	.00461

LA-20, ROCKWELL 089B CRB W/HOD NOSE (BWMF) (RFKF06)

PARAMETRIC DATA

BETA =	.000	ELEVTR =	.000
AILRON =	.000	CG-LOC =	2.000
BDFLAP =	.000	RUDFLR =	10.000
RUDDER =	.000		

RUN NO. 30/ 0

MACH	ALPHA	CLMQ	CLMA	CND	CNA
1.200	-2.028	-1.00288	-.60297	-3.18846	3.83279
1.200	-.040	-1.29934	-.54387	-1.14168	3.75616
1.200	1.945	-1.00845	-.48417	-.03598	3.63861
1.200	3.940	-1.51036	-.33362	1.19933	3.48420
1.200	5.939	-3.17873	-.23055	5.47152	3.29903
1.200	7.946	-5.51596	-.11819	2.43546	3.29292
1.200	8.959	-1.63731	-.25630	-5.08399	3.57550
1.200	9.975	.53531	-.34987	-8.50717	3.85851
1.200	10.974	.76727	-.38342	-11.10576	3.99346
1.200	11.988	-.23075	-.40610	-11.44203	4.04474
1.200	14.013	-2.02862	-.13997	-9.71057	3.42665
1.200	16.076	-2.28479	-.09303	-12.97500	3.29376
1.200	18.123	-2.29761	-.00740	-20.81955	3.18188
1.200	20.168	-4.76877	.23308	-32.20947	2.34104
1.200	21.547	-3.17455	.25386	-42.08606	2.84758

LA-20, ROCKWELL 0898 ORB W/MOD NOSE (BW F)

(RFKR01)

PARAMETRIC DATA

BETA =	.000	ELEVTR =	.000
AILRON =	.000	CG-LOC =	1.000
BDFLAP =	.000		

RUN NO. 81/ 0

MACH	ALPHA	CBLP	CBLBS
.300	-2.032	-.22036	-.00146
.300	-.060	-.23849	.00342
.300	1.949	-.26158	.00435
.300	3.952	-.26892	.00376
.300	5.959	-.27342	.00122
.300	7.946	-.26535	-.00125
.300	9.963	-.31586	-.00165
.300	12.017	-.35285	.00076
.300	14.045	-.39235	.00357
.300	16.105	-.31383	-.02913
.300	18.148	-.38846	-.01757
.300	20.223	-.45448	-.00929
.300	21.568	-.60164	.00909

RUN NO. 80/ 0

MACH	ALPHA	CBLP	CBLBS
.800	-2.040	-.20543	-.00084
.800	-.048	-.25039	.00161
.800	1.957	-.25140	.00267
.800	3.948	-.20746	.00308
.800	5.955	-.16427	.00248
.800	7.958	-.15545	.00161
.800	9.987	-.27935	.01145
.800	11.988	-.21740	.00301
.800	14.050	-.33598	.00473
.800	16.080	-.31985	-.00109

LA-20, ROCKWELL 089B CRB W/HOD NOSE (BW F) (RPKR02)

PARAMETRIC DATA

BETA =	.000	ELEVTR =	.000
AILRON =	.000	CG-LOC =	1.000
BDFLAP =	.000	RUDFLR =	10.000
RUDDER =	.000		

RUN NO. 77/ 0

MACH	ALPHA	CBLP	CBLBS	CYNP	CYNBS
.300	-2.060	-.24505	.00456	.09899	-.00283
.300	-.060	-.27102	.00244	.05939	.00278
.300	1.969	-.27135	-.00164	-.11669	.01604
.300	3.940	-.27566	-.00636	-.15623	.02181
.300	5.947	-.25552	-.01421	-.21664	.03154
.300	7.970	-.24874	-.02512	-.19390	.04529
.300	9.999	-.30350	-.02992	-.15109	.05066
.300	10.982	-.42591	-.01874	-.04550	.04904
.300	12.013	-.32631	-.02922	-.07444	.05944
.300	13.027	-.38973	-.01653	.00097	.06758
.300	14.050	-.38515	-.03079	-.08724	.07252
.300	15.068	-.34419	-.04270	.03415	.07341
.300	16.096	-.24576	-.07018	-.09194	.08577
.300	18.143	-.38101	-.05993	-.06172	.09846
.300	20.232	-.43074	-.06046	-.00186	.10297
.300	21.919	-.52068	-.03915	-.14318	.10570

RUN NO. 76/ 0

MACH	ALPHA	CBLP	CBLBS	CYNP	CYNBS
.800	-2.056	-.23904	.00195	-.04848	-.00595
.800	-.064	-.27263	.00112	-.06777	.00296
.800	1.945	-.28583	-.00203	-.01532	.01270
.800	3.940	-.28396	-.00688	.02473	.02348
.800	5.943	-.16167	-.01343	-.02605	.03246
.800	7.934	-.19672	-.01807	-.05721	.04336
.800	9.975	-.25188	-.01635	-.04719	.04952
.800	12.013	-.28717	-.02405	-.03386	.05989
.800	14.033	-.34824	-.02232	-.04491	.06032
.800	16.088	-.35540	-.03459	.39973	.06768

LA-20, ROCKWELL 0898 CRB W/WID NOSE (BW F) (RFKR02)

PARAMETRIC DATA

BETA =	.000	ELEVTR =	.000
AILRON =	.000	CG-LOC =	1.000
BDFLAP =	.000	RUDFLR =	10.000
RUDDER =	.000		

RUN NO. 75/ 0

MACH	ALPHA	CBLP	CBLBS	CYNP	CYNBS
.900	-2.052	-.27154	.00265	.03748	-.00866
.900	-.056	-.28645	.00098	.01027	.00175
.900	1.937	-.22644	-.00247	.06678	.01062
.900	3.928	-.20784	-.00704	-.00705	.02242
.900	5.939	-.17742	-.01484	-.04525	.03100
.900	7.942	-.24207	-.01633	-.12645	.04026
.900	9.967	-.22785	-.02199	-.11123	.04778
.900	11.997	-.28140	-.02511	-.10166	.05134
.900	14.037	-.28226	-.03359	-.08963	.05315

RUN NO. 79/ 0

MACH	ALPHA	CBLP	CBLBS	CYNP	CYNBS
.980	-2.028	-.32618	.00304	-.05462	-.00565
.980	-.036	-.24759	.00028	-.08375	.00593
.980	1.953	-.20110	-.00346	-.07346	.01493
.980	3.956	-.19780	-.00936	-.05643	.02250
.980	5.963	-.25694	-.01267	-.07360	.03142
.980	7.934	-.24322	-.01425	-.08307	.04014
.980	9.987	-.25146	-.02415	-.13266	.04787
.980	11.992	-.29562	-.03381	-.19223	.05952
.980	14.050	-.30180	-.04368	-.43135	.07493
.980	16.096	-.26804	-.05117	-.17953	.06394
.980	18.160	-.26358	-.03901	-.15760	.03605
.980	20.228	.56348	-.06101	.40822	.00541

LA-20, ROCKWELL 0898 ORB W/HOD NOSE (BW F) (RFKR02)

PARAMETRIC DATA

BETA =	.000	ELEVTR =	.000
AILRON =	.000	CG-LOC =	1.000
BDFLAP =	.000	RUDFLR =	10.000
RUDDER =	.000		

RUN NO. 78/ 0

MACH	ALPHA	CBLP	CBLBS	CYNP	CYNBS
1.200	-2.044	-.36404	.00262	-.06192	-.00265
1.200	-.036	-.32765	.00094	-.11261	.00750
1.200	1.933	-.33318	-.00236	-.08270	.01482
1.200	3.952	-.37745	-.00096	-.06872	.02211
1.200	5.963	-.26094	-.01042	-.10546	.03040
1.200	7.970	-.28864	-.01303	-.06902	.04115
1.200	10.003	-.35000	-.01753	-.09114	.05121
1.200	12.017	-.29847	-.04374	-.12725	.05234
1.200	14.037	-.31963	-.03246	-.14179	.05380
1.200	16.105	-.44116	-.02529	-.29144	.05932
1.200	18.160	-.36141	-.04398	-.39239	.07407
1.200	20.240	-.28751	-.05525	-.39642	.07051
1.200	21.881	-.22756	-.06987	-.00747	.05735

LA-20, ROCKWELL 0898 ORB W/HOD NOSE (BW MF) (RFKR03)

PARAMETRIC DATA

BETA =	.000	ELEVTR =	.000
AILRON =	.000	CG-LOC =	1.000
BDFLAP =	.000		

RUN NO. 67/ 0

MACH	ALPHA	CBLP	CBLBS
.300	-2.028	-.19423	-.00206
.300	-.054	-.22598	.00069
.300	1.945	-.23513	.00287
.300	3.940	-.25159	.00385
.300	5.939	-.24302	.00253
.300	7.958	-.24404	-.00192
.300	9.987	-.30133	-.00116
.300	12.017	-.35373	.00189
.300	14.056	-.34327	.00180
.300	16.071	-.25522	-.03049
.300	18.173	-.37325	-.02037
.300	20.226	-.40744	-.01012
.300	21.624	-.48745	.00378