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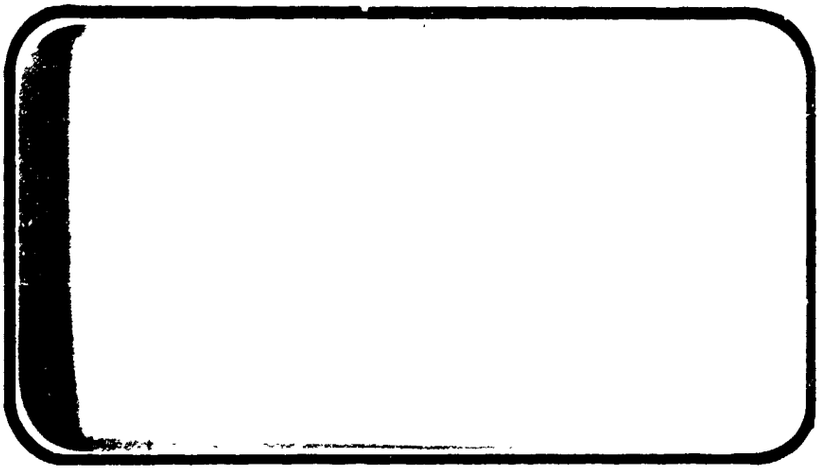




# SPACE SHUTTLE

# AEROTHERMODYNAMIC DATA REPORT

JOHNSON SPACE CENTER

HOUSTON, TEXAS

DATA MANagement services

SPACE DIVISION CHRYSLER CORPORATION

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# WIND TUNNEL TEST RESULTS OF FAIRINGS ON A .004 SCALE MODEL ROCKWELL SPACE SHUTTLE INTEGRATED VEHICLE AERODYNAMIC CHARACTERISTICS AT MACH NUMBERS FROM 0.6 TO 4.96

(IA62F)

By

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(Rockwell International)

Prepared under NASA Contract Number NAS9-13247

by

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

for

Engineering Analysis Division

Johnson Space Center
National Aeronautics and Space Administration
Houston, Texas

WIND TUNNEL TEST SPECIFICS

Test Number: MSFC 589
NASA Series No.: IA62F
Date: November 15-19, 1973 (19 Occ. Hrs.)

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

# WIND TUNNEL TEST RESULTS OF FAIRINGS ON A .004 SCALE MODEL ROCKWELL SPACE SHUTTLE INTEGRATED VEHICLE AERODYNAMIC CHARACTERISTICS AT MACH NUMBERS FROM 0.6 TO 4.96 (IA62F)

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## ABSTRACT

Experimental aerodynamic investigations were conducted on a .004 scale model (34-OTS) orbiter, external tank, and solid rocket booster combined as an integrated vehicle in the NASA/MSFC 14 x 14 inch Trisonic Wind Tunnel. The primary test objective was to determine the effect of a full length orbiter/external tank fairing on axial force. Secondary objectives were to define the static stability characteristics of the mated vehicle configuration with fairings over a Mach number range of 0.6 thru 4.96. Six component aerodynamic force and moment data were recorded over an angle of attack range from -10° to 10° at 0° sideslip angle and from -10° to 10° sideslip range at 0° and 5° angle of attack. Plotted and tabular results are presented herein.

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Plotted Coefficient Schedules:

A) CN vs CLM; CN, CLM, CAF, CA vs ALPHA

B) CY vs CYN; CY, CYN, CBL vs BETA

C) CABO, CABE, CABS, (CABF where applicable) vs ALPHA or BETA, as appropriate

## NOMENCLATURE
### General

| SYMBOL | SADSAC SYMBOL | DEFINITION |
|---|---|---|
| a | | speed of sound; m/sec, ft/sec |
| $C_p$ | CP | pressure coefficient; $(p_l - p_\infty)/q$ |
| M | MACH | Mach number; V/a |
| p | | pressure; $N/m^2$, psf |
| q | Q(NSM)<br>Q(PSF) | dynamic pressure; $1/2\rho V^2$, $N/m^2$, psf |
| RN/L | RN/L | unit Reynolds number; per m, per ft |
| V | | velocity; m/sec, ft/sec |
| $\alpha$ | ALPHA | angle of attack, degrees |
| $\beta$ | BETA | angle of sideslip, degrees |
| $\psi$ | PSI | angle of yaw, degrees |
| $\phi$ | PHI | angle of roll, degrees |
| $\rho$ | | mass density; $kg/m^3$, $slugs/ft^3$ |
| | | **Reference & C.G. Definitions** |
| $A_b$ | | base area; $m^2$, $ft^2$ |
| b | BREF | wing span or reference span; m, ft |
| c.g. | | center of gravity |
| $\ell_{REF}$<br>$\bar{c}$ | LREF | reference length or wing mean aerodynamic chord; m, ft |
| S | SREF | wing area or reference area; $m^2$, $ft^2$ |
| | MRP | moment reference point |
| | XMRP | moment reference point on X axis |
| | YMRP | moment reference point on Y axis |
| | ZMRP | moment reference point on Z axis |

**SUBSCRIPTS**

| | |
|---|---|
| b | base |
| l | local |
| s | static conditions |
| t | total conditions |
| $\infty$ | free stream |

NOMENCLATURE (Continued)

Body-Axis System

| SYMBOL | SADSAC SYMBOL | DEFINITION |
|---|---|---|
| $C_N$ | CN | normal-force coefficient; $\frac{\text{normal force}}{qS}$ |
| $C_A$ | CA | axial-force coefficient; $\frac{\text{axial force}}{qS}$ |
| $C_Y$ | CY | side-force coefficient; $\frac{\text{side force}}{qS}$ |
| $C_{A_b}$ | CAB | base-force coefficient; $\frac{\text{base force}}{qS}$ $-A_b(p_b - p_\infty)/qS$ |
| $C_{A_f}$ | CAF | forebody axial force coefficient, $C_A - C_{A_b}$ |
| $C_m$ | CLM | pitching-moment coefficient; $\frac{\text{pitching moment}}{qSl_{REF}}$ |
| $C_n$ | CYN | yawing-moment coefficient; $\frac{\text{yawing moment}}{qSb}$ |
| $C_l$ | CBL | rolling-moment coefficient; $\frac{\text{rolling moment}}{qSb}$ |

Stability-Axis System

| | | |
|---|---|---|
| $C_L$ | CL | lift coefficient; $\frac{\text{lift}}{qS}$ |
| $C_D$ | CD | drag coefficient; $\frac{\text{drag}}{qS}$ |
| $C_{D_b}$ | CDB | base-drag coefficient; $\frac{\text{base drag}}{qS}$ |
| $C_{D_f}$ | CDF | forebody drag coefficient; $C_D - C_{D_b}$ |
| $C_Y$ | CY | side-force coefficient; $\frac{\text{side force}}{qS}$ |
| $C_m$ | CLM | pitching-moment coefficient; $\frac{\text{pitching moment}}{qSl_{REF}}$ |
| $C_n$ | CLN | yawing-moment coefficient; $\frac{\text{yawing moment}}{qSb}$ |
| $C_l$ | CSL | rolling-moment coefficient; $\frac{\text{rolling moment}}{qSb}$ |
| L/D | L/D | lift-to-drag ratio; $C_L/C_D$ |
| $L/D_f$ | L/DF | lift to forebody drag ratio; $C_L/C_{D_f}$ |

NOMENCLATURE
(ADDITIONAL TO STANDARD LIST)

| SYMBOL | DMS SYMBOL | DEFINITION |
|---|---|---|
| $C_{A_{B_O}}$ | CABO | axial force coefficient due to pressure force on orbiter base |
| $C_{A_{B_E}}$ | CABE | axial force coefficient due to pressure force on external tank base |
| $C_{A_{B_S}}$ | CABS | axial force coefficient due to pressure force on solid rocket booster base |
| $C_{A_{B_F}}$ | CABF | axial force coefficient due to pressure force on fairing base |
| $i_o$ | ORBINC | angle between the orbiter water plane ₀₀ line and the external tank center line, degrees |
| $Z_o$ | DELTAZ | minimum vertical separation distance between the orbiter and external tank, inches |
| $P_{b_O}$ | | orbiter base measured pressure |
| $P_{b_S}$ | | SRB base measured pressure |
| $P_{b_E}$ | | external tank base measured pressure |
| $P_{b_F}$ | | fairing base measured pressure |

## CONFIGURATIONS INVESTIGATED

As a part of the continuing drag reduction program for the mated vehicle a full length (orbiter) fairing between the orbiter and external tank was tested on the 0.004-scale mated vehicle model (34-OTS). The orbiter used in this test was the vehicle 4 configuration (140 A/B). The tank was mounted on the sting/balance combination with both the orbiter and SRB's rigidly attached to the tank. The model geometry (0.004-s is shown in figure 2. Figure 3 is a side view of the model installe the tunnel. The configuration designation is given below:

Orbiter (034 modified to 140 A/B)

| | |
|---|---|
| B26 | Body |
| C9 | Canopy |
| R5 | Rudder |
| V8 | Vertical tail |
| W116 | Wing |
| F7 | Body Flap |
| E26 | Elevon |
| M7 | OMS pods |
| T14 | External tank with LOX and $LH_2$ Vent lines and LOX feed line (PT 1, 2, 3) |
| PT4 | LOX vent fairing on tank nose vertical centerline |
| S12 | Solid Rocket Booster with attach ring (PS2) and separation rocket fairing (PS3) |
| FR4 | Full length orbiter/ET fairing |
| T9 | External Tank |

The speed brake, rudder, and body flap deflections were zero for the entire test. The orbiter/ET incidence angle was also zero.

The external tank was mounted on the TWT 232 balance which was supported by the number 3 balance adapter and sting. The orbiter was mounted to the tank at three points simulating the forward attach point and the two main fuel lines for the rear attach points. The SRB's were also rigidly attached to the tank.

Base pressures were monitored at the six locations shown in Figure 4. A total of four base pressures were recorded. The two tubes monitoring the orbiter base pressure were "teed" together, as were the two tubes at the base of the external tank. The four base pressures recorded then were the orbiter, tank, solid rocket motor and fairing.

Model dimensional data sheets defining the various configuration designators are presented in Table III.

## TEST FACILITY DESCRIPTION

The Marshall Space Flight Center 14" x 14" Trisonic Wind Tunnel is an intermittent blowdown tunnel which operates by high pressure air flowing from storage to either vacuum or atmospheric conditions. A Mach number range from .2 to 5.85 is covered by utilizing two interchangeable test sections. The transonic section permits testing at Mach 0.20 through .50, and the supersonic section permits testing at Mach 2.74 through 5.85. Mach numbers between .2 and .9 are obtained by using a controllable diffuser. The range from .95 to 1.3 is achieved through the use of plenum suction and perforated walls. Mach numbers of 1.44, 1.93 and 2.50 are produced by interchangeable sets of fixed contour nozzle blocks. Above Mach 2.50 a set of fixed contour nozzle blocks are tilted and translated automatically to produce any desired Mach number in .25 increments.

Air is supplied to a 6000 cubic foot storage tank at approximately -40°F dew point and 500 psi. The compressor is a three-stage reciprocating unit driven by a 1500 hp motor.

The tunnel flow is established and controlled with a servo actuated gate valve. The controlled air flows through the valve diffuser into the stilling chamber and heat exchanger where the air temperature can be controlled from ambient to approximately 180°F. The air then passes through the test section which contains the nozzle blocks and test region.

Downstream of the test section is a hydraulically controlled pitch sector that provides a total angle of attack range of 20° (±10°). Sting offsets are available for obtaining various maximum angles of attack up to 90°.

## DATA REDUCTION

All model forces and moments were resolved in the body axis system and presented in the form of nondimensional coefficients.

Data were corrected for weight tares and sting deflections.

Model reference dimensions used in the data reduction for this test are presented below:

| PARAMETER | FULL SCALE | MODEL SCALE |
|---|---|---|
| Reference Area ($S_{ref}$) = wing planform area = | 2960 ft.$^2$ | 6.198 in.$^2$ |
| Reference Length ($l_{ref}$=$b_{ref}$) = orbiter body length = | 1290.3 in. | 5.160 in. |
| Moment Reference Center, from tank nose on tank $\mathcal{L}$ | 670 in. | 2.680 in. |
| Base Areas | | |
| Orbiter | 417.4 ft.$^2$ | 0.9617 in.$^2$ |
| Tank | 572.55 ft.$^2$ | 1.319 in.$^2$ |
| Fairing | 107.7 ft.$^2$ | 0.2482 in.$^2$ |
| SRB (2) | 402.12 ft.$^2$ | 0.9265 in.$^2$ |

Pitching moments were corrected for the effects of orbiter and fairing base drag in the following manner:

$$CLM = CLMU - CABF \frac{Z_2}{l_{ref}} - CABO \frac{Z_1}{l_{ref}}$$ , pitching moment coefficient corrected for orbiter and fairing base drag

where

$$CLMU = \frac{M_Y}{qS_{ref}l_{ref}}$$ , balance measured pitching moment coefficient

$Z_1$ = 1.332 in., vertical moment arm for orbiter base drag

$Z_2$ = 0.680 in., vertical moment arm for fairing base drag

Axial force coefficients were determined as follows:

$$CA = \frac{F_A}{qS_{ref}}, \text{ axial force coefficient}$$

$$CAF = CA - CABO - CABS - CABE - CABF, \text{ forebody axial force coefficient}$$

$$CABO = -CPBO \frac{A_{b_o}}{S_{ref}}, \text{ orbiter base axial force coefficient}$$

$$CABS = -CAPS \frac{A_{b_s}}{S_{ref}}, \text{ SRB base axial force coefficient}$$

$$CABE = -CPBE \frac{A_{b_e}}{S_{ref}}, \text{ tank base axial force coefficient}$$

$$CABF = -CPBF \frac{A_{b_f}}{S_{ref}}, \text{ fairing base axial force coefficient}$$

Where:

$$CPBO = \frac{P_{b_o} - P_\infty}{q}, \text{ orbiter base pressure coefficient}$$

$$CPBS = \frac{P_{b_s} - P_\infty}{q}, \text{ SRB base pressure coefficient}$$

$$CPBE = \frac{P_{b_e} - P_\infty}{q}, \text{ tank base pressure coefficient}$$

$$CPBF = \frac{P_{b_f} - P_\infty}{q}, \text{ fairing base pressure coefficient}$$

TABLE I.

TEST: TWT-589 (IA-62F) DATE: 11-13-73

TEST CONDITIONS

| MACH NUMBER | REYNOLDS NUMBER (per unit length) | DYNAMIC PRESSURE (pounds/sq.inch) | STAGNATION TEMPERATURE (degrees Fahrenheit) | STAGNATION PRESSURE (pounds/sq inch) |
|---|---|---|---|---|
| 0.6 | 5.0 x $10^6$/ft | [illegible] | 100 | 22 |
| 0.9 | 6.2 | 7.37 | 100 | 22 |
| 1.0 | 6.5 | 8.24 | 100 | 22 |
| 1.2 | 6.7 | 9.29 | 100 | 22 |
| 1.46 | 6.5 | 9.47 | 100 | 22 |
| 2.99 | 4.0 | 5.19 | 140 | 30 |
| 4.96 | 4.8 | 3.07 | 140 | 90 |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

BALANCE UTILIZED: MSFC 232

| | CAPACITY: | ACCURACY: | COEFFICIENT TOLERANCE: |
|---|---|---|---|
| NF | 300 lbs. | ±1.50 lbs. | ±0.024 |
| SF | 143 lbs. | ±0.72 lbs. | ±0.012 |
| AF | 50 lbs. | ±0.25 lbs. | ±0.004 |
| PM | 400 in. -lbs. | ±2.00 in. -lbs. | ±0.006 |
| RM | 100 in. -lbs. | ±0.50 in. -lbs. | ±0.002 |
| YM | 192 in. -lbs. | ±0.96 in. -lbs. | ±0.003 |

COMMENTS: Accuracy based on ±0.5% of balance capacity.

TABLE II.

**TEST : MSFC TWT 5E9 (IA-62F)** — **DATA SET/RUN NUMBER COLLATION SUMMARY** — **DATE : 11-12-74**

| DATA SET IDENTIFIER | CONFIGURATION | SCHD. α | SCHD. β | PARAMETERS/VALUES $i_0$ | PARAMETERS/VALUES $Z_0$ | NO. OF RUNS | MACH NUMBERS (OR ALTERNATE INDEPENDENT VARIABLE) 0.6 | 0.9 | 1.0 | 1.2 | 1.46 | 2.99 | 4.96 | TEST RUN NUMBERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R94001 | Φ34 T14 S12 | A | 0 | 0° | 333 | | 30 | 31 | 32 | 33 | 22 | 21 | 20 | |
| C2 | ↓ | 5 | B | ↓ | ↓ | | 24 | 25 | | 26 | 23 | | 18 | |
| C3 | ↓ | 0 | B | ↓ | ↓ | | 29 | 28 | | 27 | | | 19 | |
| C4 | Φ34 T9 S12 PT4 FR4 | A | 0 | ↓ | ↓ | | 14 | 13 | 12 | 11 | 15 | 1 | 2 | |
| C5 | ↓ | 5 | B | ↓ | ↓ | | 8 | 9 | | 10 | 16 | | 17 | |
| C6 | ↓ | 0 | B | ↓ | ↓ | | 7 | 6 | | 5 | | | 4 | |

| 1 | 7 | 13 | 19 | 25 | 31 | 37 | 43 | 49 | 55 | 61 | 67 | 75 76 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CN | CLM | CY | CYN | CBL | CAF | CABΦ | CABE | CAF | CABF | | | 1 0 |

α OR β SCHEDULES: A) = B) = $-10^\circ$ to $10^\circ$ ($\Delta = 2^\circ$) COEFFICENTS

IDVAR (1) IDVAR (2) NDV

TABLE III. MODEL DIMENSIONAL DATA

MODEL COMPONENT: BODY - $B_{26}$

GENERAL DESCRIPTION: Orbiter Fuselage Configuration 140 A/B

NOTE: $B_{26}$ identical to $B_{24}$ except underside of fuselage refaired to accept $B_{116}$.

Model Scale = .004

DRAWING NUMBER: VL70-000193
VL70-000140A

| DIMENSIONS: | FULL-SCALE | MODEL SCALE |
|---|---|---|
| Length (Body Fwd Sta $X_o$ = 238) - in. | 1290.3 | 5.16120 |
| Max. Width (at $X_o$ = 1529) - in. | 262.0 | 1.04800 |
| Max. Depth (at $X_o$ = 1464) - in. | 250.0 | 1.000 |
| Fineness Ratio | 4.92481 | 4.92481 |
| Area - $ft^2$ | | |
| Max. Cross-Sectional | 340.88462 | 0.00545 |
| Planform | | |
| Wetted | | |
| Base | | |

TABLE III. - CONT.

MODEL COMPONENT: CANOPY - Co

GENERAL DESCRIPTION: Configuration 3A

Model Scale = .004

DRAWING NUMBER VL70-000140A
VL70-000143

| DIMENSION: | FULL SCALE | MODEL SCALE |
|---|---|---|
| Length ($X_o$=434.643 to 670) | 235.357 | 0.94143 |
| Max Width (@ $X_o$=513.127) | 152.412 | 0.60965 |
| Max Depth (@ $X_o$=485.0) | 25.000 | 0.10000 |
| Fineness Ratio | | |
| Area | | |
| Max Cross-Sectional | | |
| Planform | | |
| Wetted | | |
| Base | | |

TABLE III - CONT.

MODEL COMPONENT: Body Flap - $F_2$

GENERAL DESCRIPTION: Configuration 3.

NOTE: Body flap has variable centerline deflection of -13.75° and -24.2° from null position. Hinge line located at $Y_o$ = 1528.3, $Z_o$ = 284.3

Model Scale = .004

DRAWING NUMBER VL70-000140, VL70-000245

| DIMENSION: | FULL SCALE | MODEL SCALE |
|---|---|---|
| Length ($X_o$=1520 to $X_o$=1613) - IN. | 93.000 | 0.372 |
| Max Width - IN. | 262.000 | 1.048 |
| Max Depth ($X_o$ = 1520) - IN. | 23.000 | 0.092 |
| Fineness Ratio | | |
| Area - $Ft^2$ | | |
| Max Cross-Sectional | | |
| Planform | 150.5250 | 0.00241 |
| Wetted | | |
| Base | 41.84722 | 0.00067 |

TABLE III - CONT.

MODEL COMPONENT: [illegible]

GENERAL DESCRIPTION: Configuration 3A

Model Scale = .004

DRAWING NUMBER VL70-000140A
VL70-000145

| DIMENSION: | FULL SCALE | MODEL SCALE |
|---|---|---|
| Length (OTS Fwd Ste $X_o$=1233.0) - IN. | 327.000 | 1.30800 |
| Max Width (@ $X_o$=1450.0) - IN. | 94.5 | 0.37800 |
| Max Depth (@ $X_o$=1493.0) - IN. | 109.000 | 0.43600 |
| Fineness Ratio | | |
| Area | | |
| Max Cross-Sectional | | |
| Planform | | |
| Wetted | | |
| Base | | |

TABLE III - CONT.

MODEL COMPONENT: WING-W116

GENERAL DESCRIPTION: Configuration 4

NOTE: Identical to W114 except airfoil thickness. Dihedral angle is along trailing edge of wing.

Model Scale = .004

TEST NO. DWG. NO. VL70-0001408 VL70-0[illegible]

| DIMENSIONS: | FULL-SCALE | MODEL SCALE |
|---|---|---|
| TOTAL DATA | | |
| Area (Theo.) $Ft^2$ | | |
| Planform | 2690.00 | 0.4304 |
| Span (Theo In. | 936.6816 | 3.74672 |
| Aspect Ratio | 2.265 | 2.265 |
| Rate of Taper | 1.177 | 1.177 |
| Taper Ratio | 0.200 | 0.200 |
| Dihedral Angle, degrees(at $X_o$=1506.623,$Y_o$= | 3.500 | 3.500 |
| Incidence Angle, degrees 105, $Z_o$= 282.75) | 0.500 | 0.500 |
| Aerodynamic Twist, degrees | +3.000 | +3.000 |
| Sweep Back Angles, degrees | | |
| Leading Edge | 45.00 | 45.00 |
| Trailing Edge | -10.056 | -10.056 |
| 0.25 Element Line | 35.209 | 35.209 |
| Chords: | | |
| Root (Theo) B.P.0.0. | 689.44.9 | 2.75697 |
| Tip, (Theo) B.P. | 137.8486 | 0.551[illegible] |
| MAC | 474.8117 | 1.[illegible] |
| Fus. Sta. of .25 MAC | 1126.721 | 4.5[illegible] |
| W.P. of .25 MAC | 291.00 | 1.16400 |
| B.L. of .25 MAC | 187.35491 | 0.749[illegible] |
| EXPOSED DATA | | |
| Area (Theo) $Ft^2$ | 1812.2205 | 0.02899 |
| Span, (Theo) In. BP108 | 736.6816 | 2.94673 |
| Aspect Ratio | 2.058 | 2.058 |
| Taper Ratio | 0.2451 | 0.2451 |
| Chords | | |
| Root BP108 | 570.6230 | 2.28249 |
| Tip 1.00 $\frac{b}{2}$ | 137.8512 | 0.55140 |
| MAC | 354.2376 | 1.41695 |
| Fus. Sta. of .25 MAC | 1164.237 | 4.65695 |
| W.P. of .25 MAC | 292.00 | 1.16800 |
| B.L. of .25 MAC | 239.67786 | 0.95871 |
| Airfoil Section (Rockwell Mod NASA) XXXX-64 | | |
| Root $\frac{b}{2}$ = 0.425 | 0.113 | 0.113 |
| Tip $\frac{b}{2}$ = 1.00 | 0.12 | 0.12 |
| Data for (1) of (2) Sides | | |
| Leading Edge Cuff | | |
| Planform Area $Ft^2$ | 118.335 | 0.00189 |
| Leading Edge Intersects Fus M. L. @ Sta | 505.0 | 2.02000 |
| Leading Edge Intersects Wing @ Sta | 1003.5 | 4.01400 |

TABLE III - CONT.

MODEL COMPONENT: ELEVON - $E_{26}$

GENERAL DESCRIPTION: Configuration 4

NOTE: VL70-000400 data for (1) of (2) sides. Identical to $E_{25}$ except airfoil thickness

Model Scale = .004

DRAWING NUMBER: VL70-000200
VL70-000140 B

| DIMENSIONS: | FULL-SCALE | MODEL SCALE |
|---|---|---|
| Area ft. | 223.5814 | 0.00358 |
| Span (equivalent) in. | 368.34 | 1.47336 |
| Inb'd equivalent chord in. | 119.623 | 0.47849 |
| Outb'd equivalent chord in. | 55.1922 | 0.22077 |
| Ratio movable surface chord/ total surface chord | | |
| At Inb'd equiv. chord | 0.2096 | 0.2096 |
| At Outb'd equiv. chord | 0.4004 | 0.4004 |
| Sweep Back Angles, degrees | | |
| Leading Edge | 0.00 | 0.00 |
| Tailing Edge | -10.056 | -10.056 |
| Hingeline | 0.00 | 0.00 |
| Area Moment (Normal to hinge line) | 851.1502 | 0.00005 |

TABLE III - CONT.

MODEL COMPONENT: VERTICAL - V 8

GENERAL DESCRIPTION: Configuration 3A

NOTE: Similar to V5 with radius on TE upper corner and LE lower corner where vertical meets fuselage.

Model Scale = .004

DRAWING NUMBER: VL70-000140, VL70-000146A

| DIMENSIONS: | FULL-SCALE | MODEL SCALE |
|---|---|---|
| **TOTAL DATA** | | |
| Area (Theo) $Ft^2$ | 413.253 | 0.00661 |
| Planform | | |
| Span (Theo) In | 315.720 | 1.262 |
| Aspect Ratio | 1.675 | 1.675 |
| Rate of Taper | 0.547 | 0.547 |
| Taper Ratio | 0.40359 | 0.40359 |
| Sweep Back Angles, degrees | | |
| Leading Edge | 45.00 | 45.00 |
| Trailing Edge | 25.947 | 25.947 |
| 0.25 Element Line | 41.130 | 0.16452 |
| Chords: | | |
| Root (Theo) WP | 268.500 | 1.07400 |
| Tip (Theo) WP | 108.420 | 0.43368 |
| MAC | 199.0772 | 0.79631 |
| Fus. Sta. of .25 MAC | 1463.00 | 5.85200 |
| W. P. of .25 MAC | 635.520 | 2.54208 |
| B. L. of .25 MAC | 0.00 | 0.00 |
| Airfoil Section | | |
| Leading Wedge Angle Deg | 10.00 | 10.00 |
| Trailing Wedge Angle Deg | 14.893 | 14.893 |
| Leading Edge Radius (Min) - IN. | 2.00 | 0.00800 |
| Void Area | 13.17 | 0.05271 |
| Blanketed Area | 0.00 | 0.00 |

TABLE III - CONT.

MODEL COMPONENT: RUDDER - R5

GENERAL DESCRIPTION: 2A, 3 and 3A Configuration per Rockwell Lines VL70-000095

Model Scale = .004

DRAWING NUMBER: VL70-000095

| DIMENSIONS: | FULL-SCALE | MODEL SCALE |
|---|---|---|
| Area - $FT^2$ | 106.38 | 0.00170 |
| Span (equivalent) - IN. | 201.0 | 0.80400 |
| Inb'd equivalent chord | 91.585 | 0.36634 |
| Outb'd equivalent chord | 50.833 | 0.20333 |
| Ratio movable surface chord/ total surface chord | | |
| At Inb'd equiv. chord | 0.400 | 0.400 |
| At Outb'd equiv. chord | 0.400 | 0.400 |
| Sweep Back Angles, degrees | | |
| Leading Edge | 34.83 | 34.83 |
| Tailing Edge | 26.25 | 26.25 |
| Hingeline | 34.83 | 34.83 |
| Area Moment (Normal to hinge line)- $FT^3$ Product of Area and Mean Chord | 526.13 | 0.00003 |

TABLE III - CONT.

MODEL COMPONENT: External Tank T9

GENERAL DESCRIPTION: 2A Configuration Per NR Lines VL78-000018 and VL72-000618;
Body of Revolution

Scale Model = .004

DRAWING NUMBER: VL78-000018

| DIMENSIONS: | THEORETICAL FULL-SCALE | THEORETICAL MODEL SCALE | ACTUAL MEASURED MODEL SCALE |
|---|---|---|---|
| Length | 1826.00 | 7.304 | |
| Max. Width | 324.00 | 1.296 | |
| Max. Depth | | | |
| Fineness Ratio | 6.13889 | 6.13889 | |
| Area | | | |
| Max. Cross-Sectional | 572.555 | 0.00916 | |
| Planform | | | |
| Wetted | | | |
| Base | 572.555 | 0.00916 | |

REF

FS (Orbiter) 0.00 = TANK Station 635.0 INFS

WP (ET) = 400 - 344.413 = 55.587 INFS

BP (Orbiter) 0.00 = 0.00 ET

TABLE III - CONT.

MODEL COMPONENT: EXTERNAL TANK - $T_{14}$

GENERAL DESCRIPTION:

NOTE: $T_{14}$ identical to $T_9$ but with external fuel lines added.

Model Scale = 0.004

DRAWING NUMBER: VL78-000018

| DIMENSIONS: | FULL-SCALE | MODEL SCALE |
|---|---|---|
| Length - IN. | 1858 | 7.432 |
| Max. Width (Dia) - IN. | 324.0 | 1.296 |
| Max. Depth | | |
| Fineness Ratio - L/D | 5.73457 | 5.73457 |
| Area - $FT^2$ | | |
| Max. Cross-Sectional | 572.56 | 0.009161 |
| Planform | | |
| Wetted | | |
| Base | | |

TABLE III - CONT.

MODEL COMPONENT: BOOSTER SOLID ROCKET MOTOR - S12

GENERAL DESCRIPTION: Configuration 3A, Data for (1) of (2) sides, per Rockwell Lines VL77-000036A

Model Scale = 0.004

DRAWING NUMBER: VL72-000088A, VL77-000036A

| DIMENSIONS: | FULL-SCALE | MODEL SCALE |
|---|---|---|
| Length (Includes Nozzle) - IN. | 1741.0 | 6.9640 |
| Max. Width (Tank Dia) - IN. | 142.3 | 0.5692 |
| Max. Depth (Aft Shroud) - IN. | 192.0 | 0.7680 |
| Fineness Ratio | 9.06771 | 9.06771 |
| Area - $FT^2$ | | |
| Max. Cross-Sectional | 201.06193 | 0.00322 |
| Planform | | |
| Wetted | | |
| Base | | |
| WP of BSRM Centerline ($Z_T$) - IN. | 400 | 1.6000 |
| FS of BSRM Nose ($X_T$) - IN. | 200 | 0.8000 |

**Notes:**

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

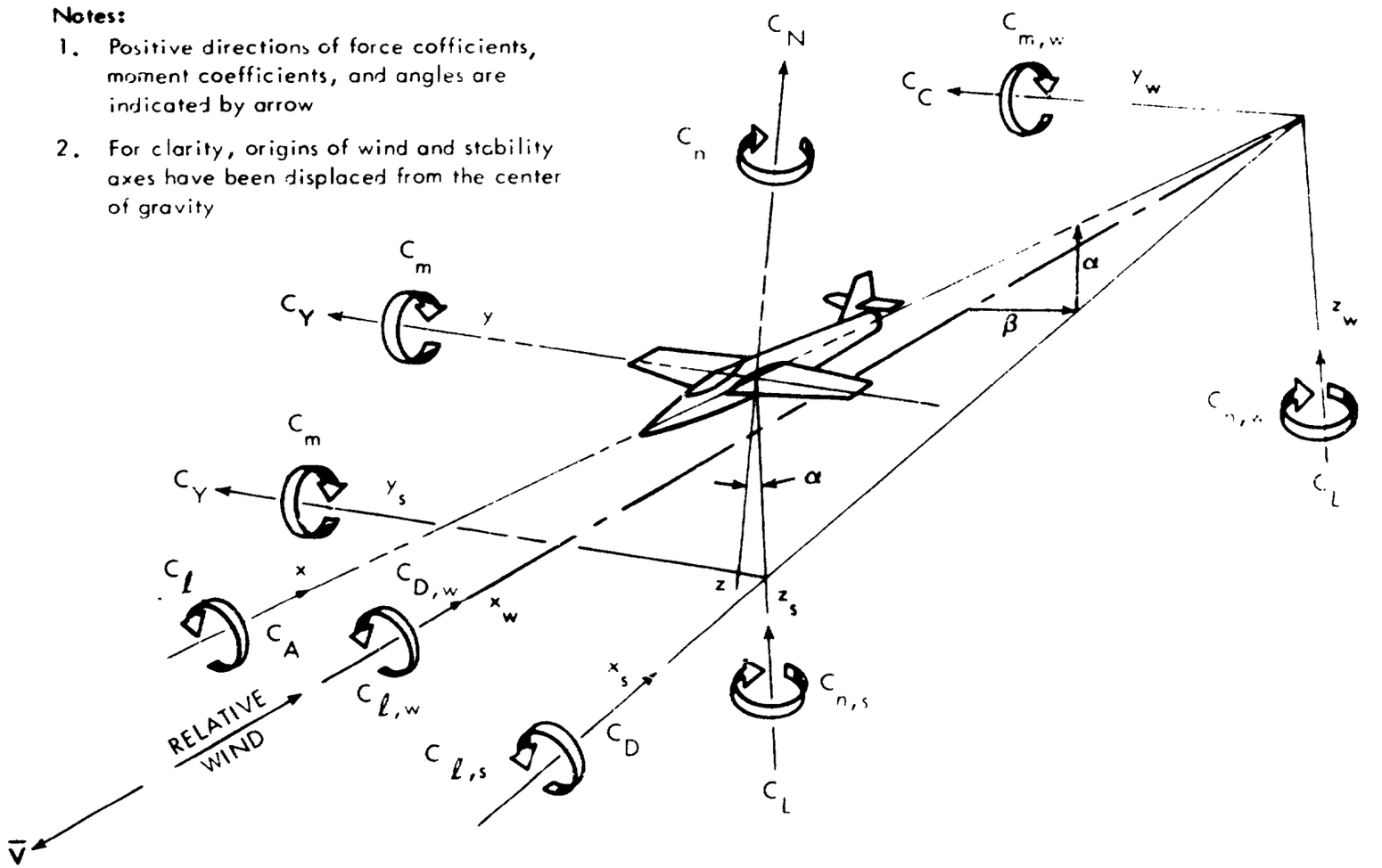



Figure 1. Axis Systems.

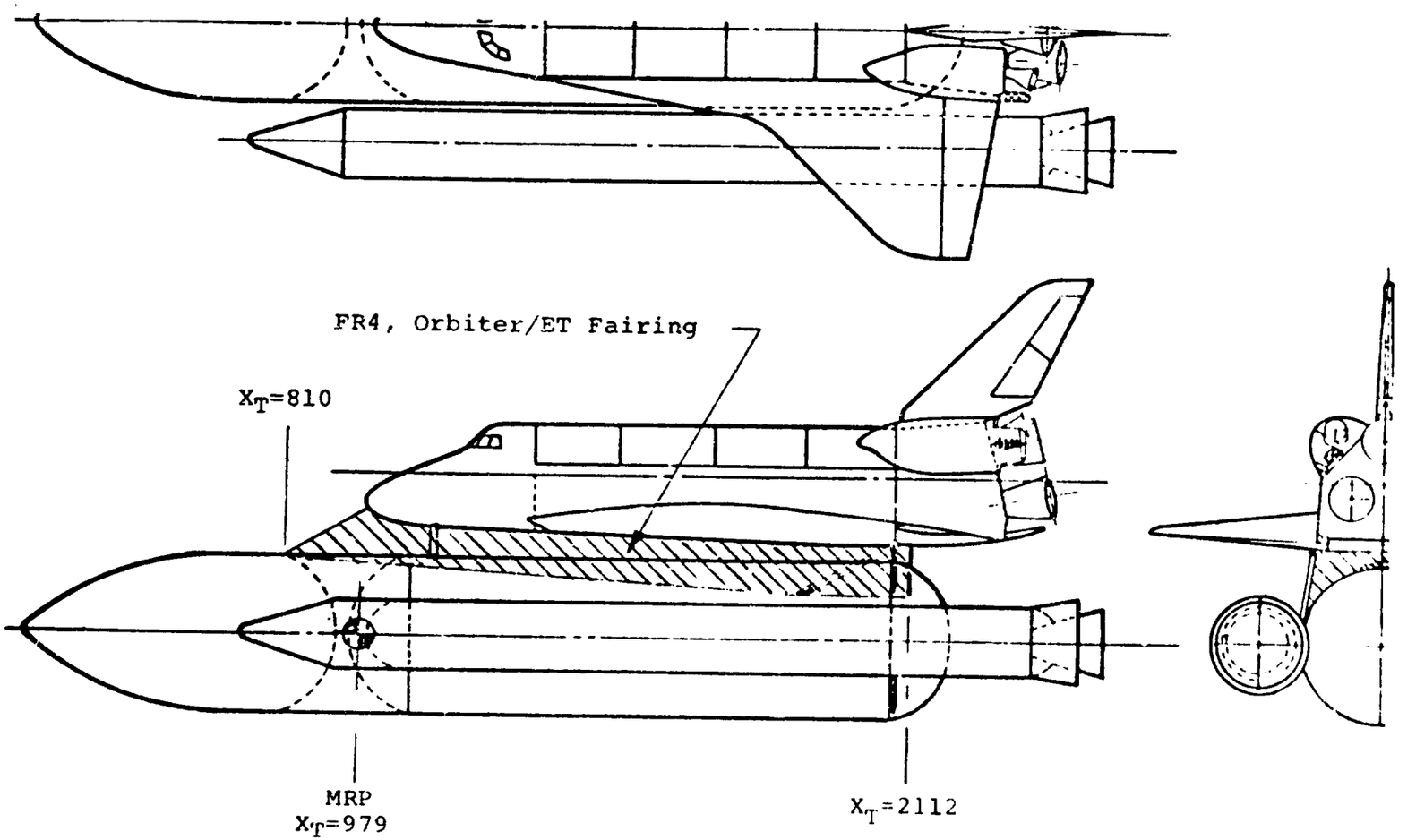



Figure 2. General Arrangement of the Integrated Vehicle Model.

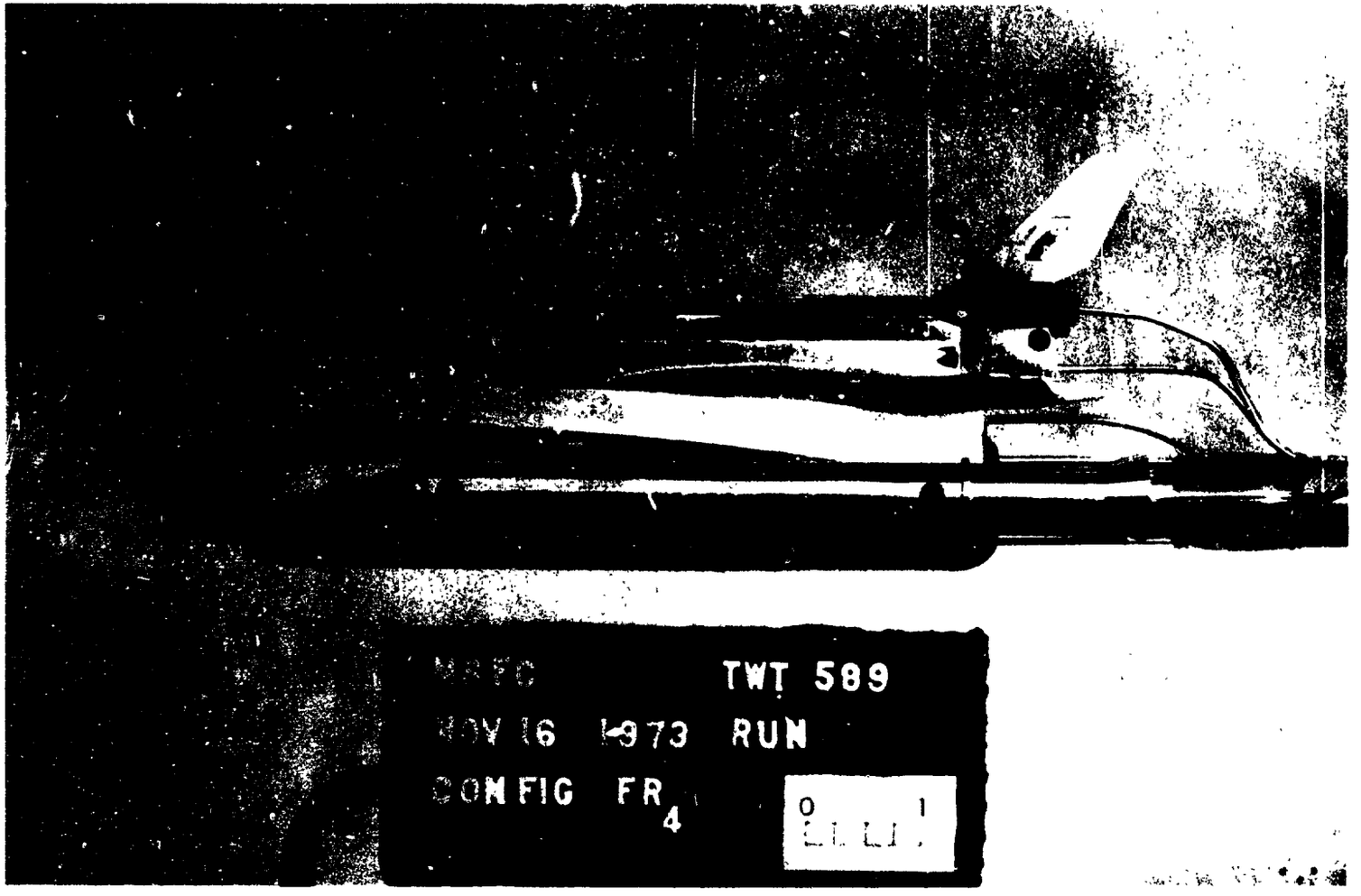





**Figure 3.** Side View of .004 Scale Model 34-OTS Installed in the NASA/MSFC 14 x 14 Inch Wind Tunnel.

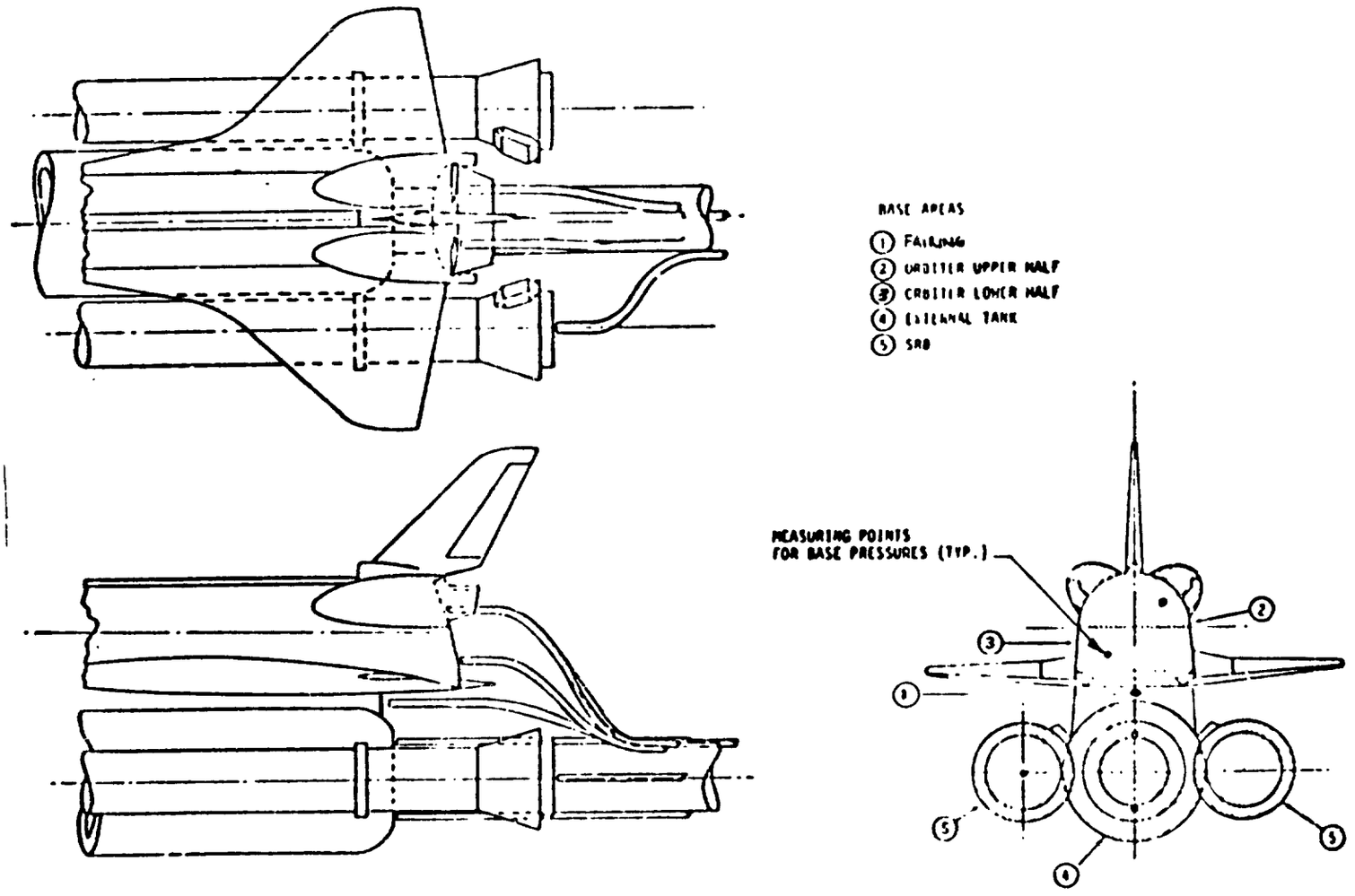


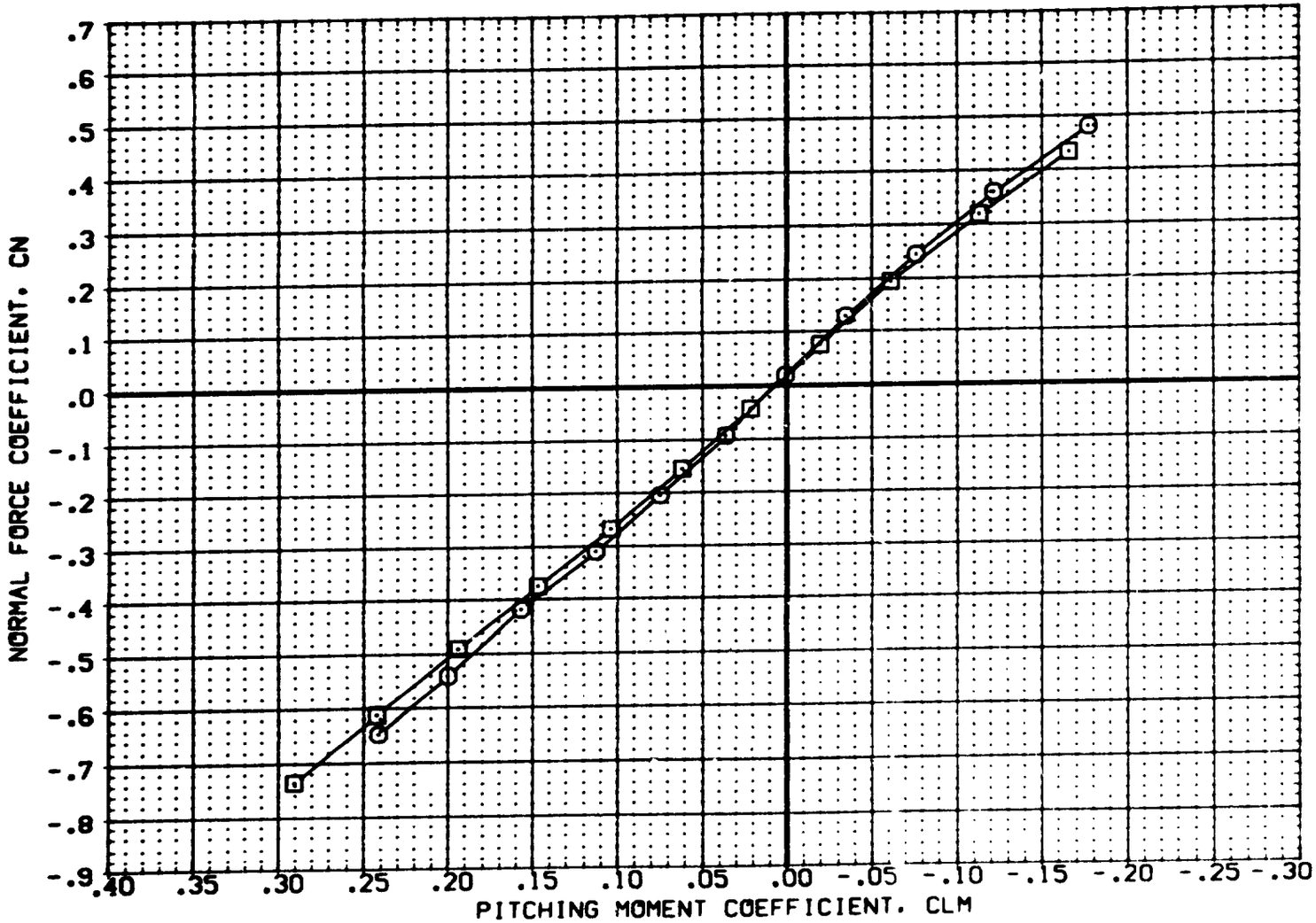

Figure 4. Base Pressure Measuring Tube Locations.

DATA FIGURES

| DATA SET | SYMBOL | CONFIGURATION DESCRIPTION | BETA | ORBINC | DELTAZ |
|---|---|---|---|---|---|
| (894001) | ○ | MSFC 589(1A62F)(034)(T14)(S12) | .000 | .000 | 333.000 |
| (894004) | □ | MSFC 589(1A62F)(034)(T9)(Si2)(PT4)(FR4) | .000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |



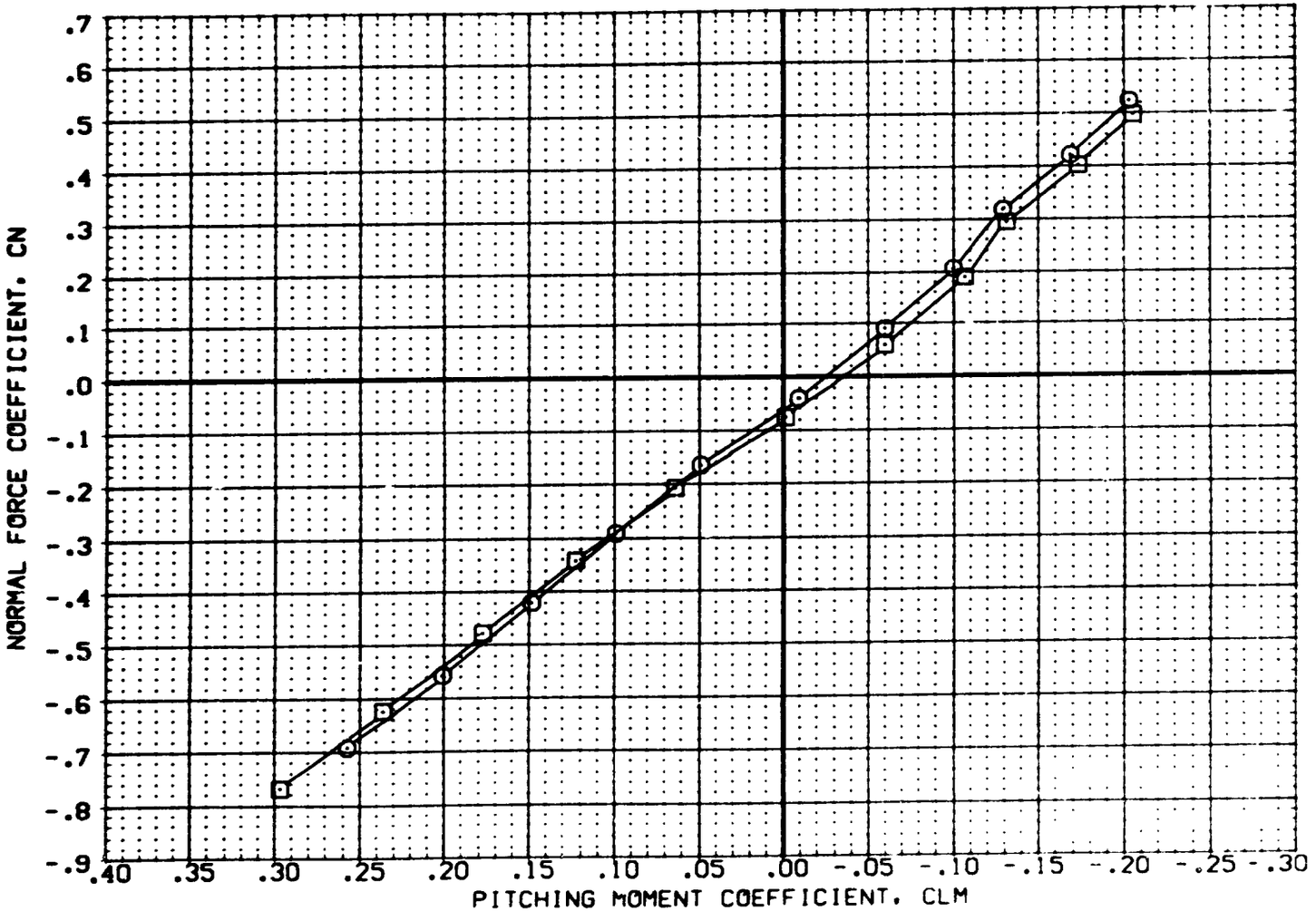

EFFECT OF FAIRINGS ON INTEGRATED VEHICLE LONGITUDINAL CHARACTERISTICS

(A)MACH = .60

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ORBINC | DELTAZ |
|---|---|---|---|---|
| (B94CC1) ○ | MSFC 589(1A62F)(034)(T14)(S12) | .000 | .000 | 333.000 |
| (B94CC4) □ | MSFC 589(1A62F)(034)(T9)(S12)(PT4)(FR4) | .000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |

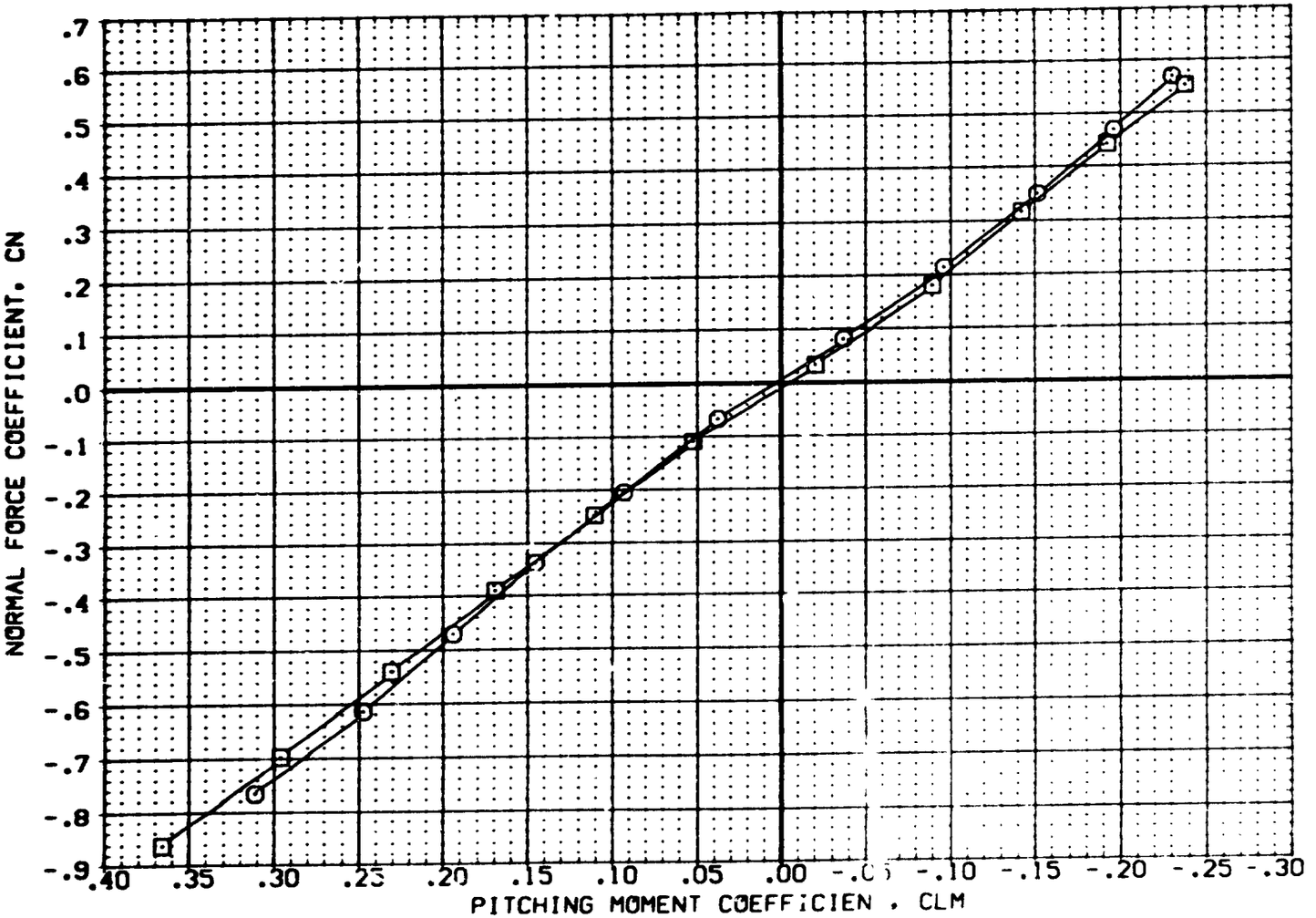



EFFECT OF FAIRINGS ON INTEGRATED VEHICLE LONGITUDINAL CHARACTERISTICS

(B)MACH = .90

| DATA SET | SYMBOL | CONFIGURATION DESCRIPTION | BETA | ORBINC | DELTAZ |
|---|---|---|---|---|---|
| (894001) | ○ | MSFC 589(1A62F)(034)(T14)(S12) | .000 | .000 | 333.000 |
| (894004) | □ | MSFC 589(1A62F)(034)(T9)(S12)(PT4)(FR4) | .000 | .000 | 333.000 |

| REFERENCE INFORMATION | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |




EFFECT OF FAIRINGS ON INTEGRATED VEHICLE LONGITUDINAL CHARACTERISTICS

(C)MACH = 1.00

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ORBINC | DELTAZ |
|---|---|---|---|---|
| (B94OC1) | MSFC 589([A62F](034)(T14)(S12) | .000 | .000 | 333.000 |
| (B94OC4) | MSFC 589([A62F](034)(T9)(S12)(PT4)(FR4) | .000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1300 | IN. |
| BREF | 5.1300 | IN. |
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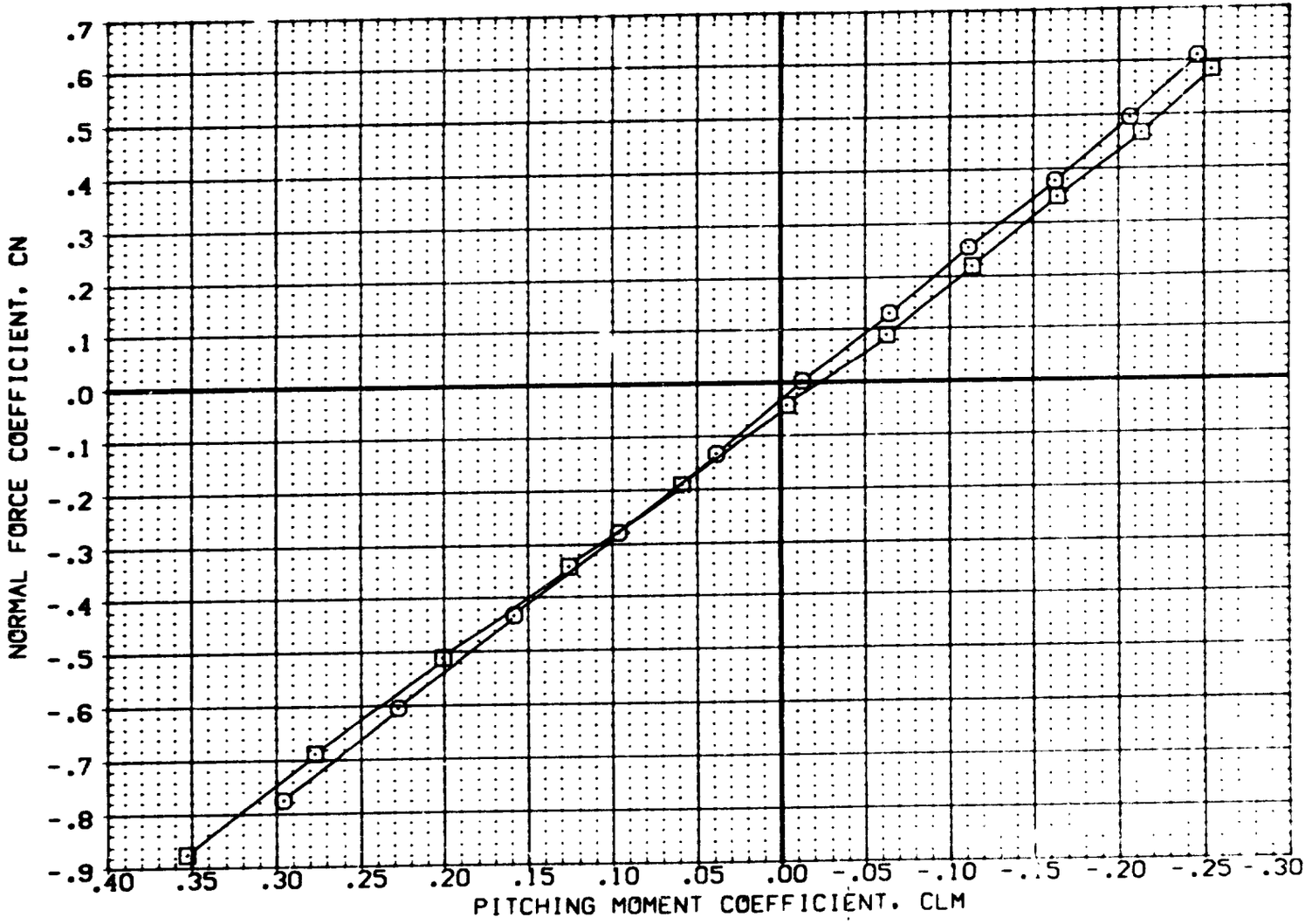
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |



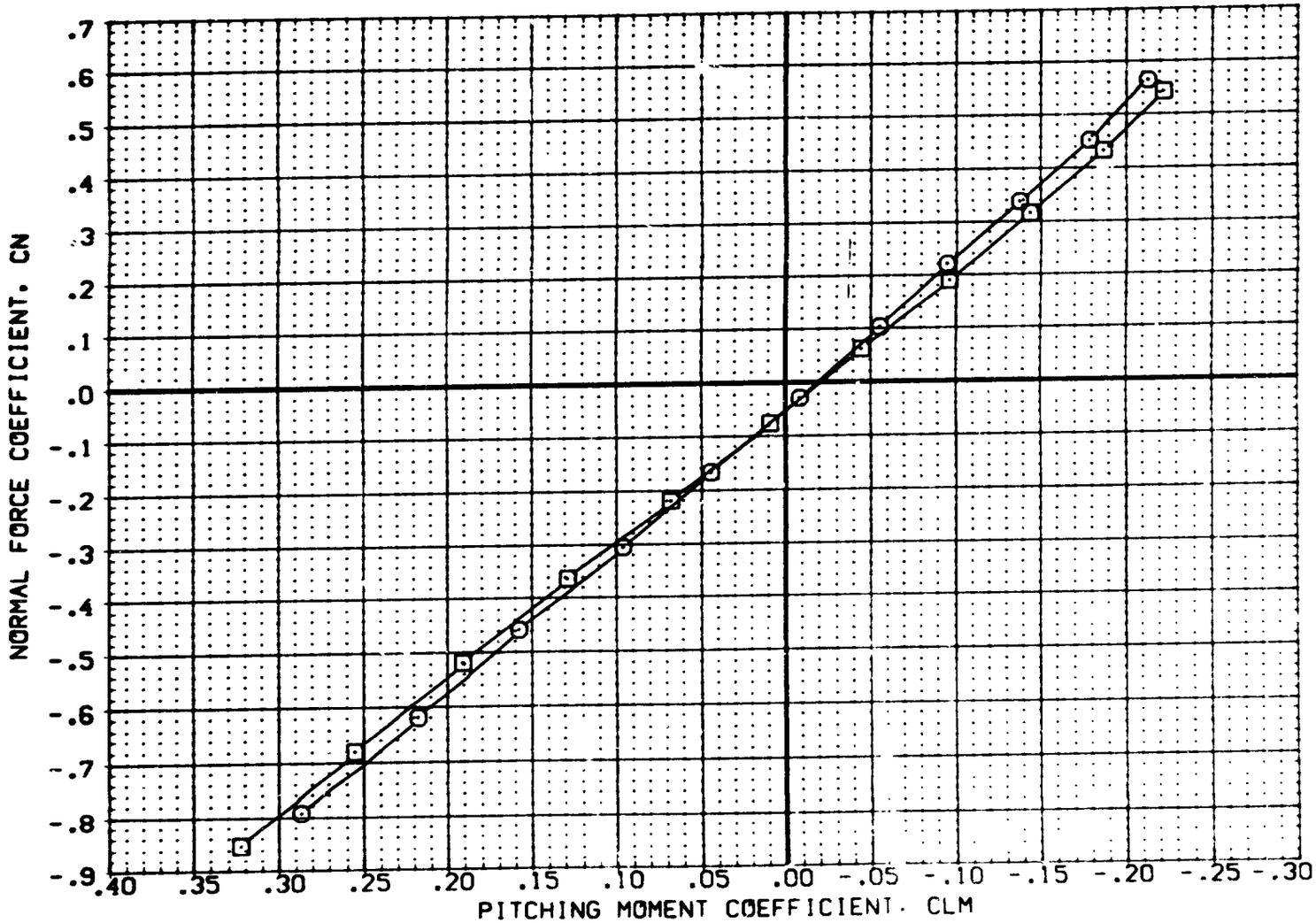

EFFECT OF FAIRINGS ON INTEGRATED VEHICLE LONGITUDINAL CHARACTERISTICS

(D)MACH = 1.20

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ORBINC | DELTAZ |
|---|---|---|---|---|
| (B94001) ○ | MSFC 589(1A62F)(034)(T14)(S12) | .000 | .000 | 333.000 |
| (B94004) □ | MSFC 589(1A62F)(034)(T9)(S12)(PT4)(FR4) | .000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |




EFFECT OF FAIRINGS ON INTEGRATED VEHICLE LONGITUDINAL CHARACTERISTICS

(E)MACH = 1.46

| DATA SET | SYMBOL | CONFIGURATION DESCRIPTION | BETA | ORBINC | DELTAZ |
|---|---|---|---|---|---|
| (894001) | ○ | MSFC 589(1A62F)(034)(T14)(S12) | .000 | .000 | 333.000 |
| (894004) | □ | MSFC 589(1A62F)(034)(T9)(S12)(PT4)(FR4) | .000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
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| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
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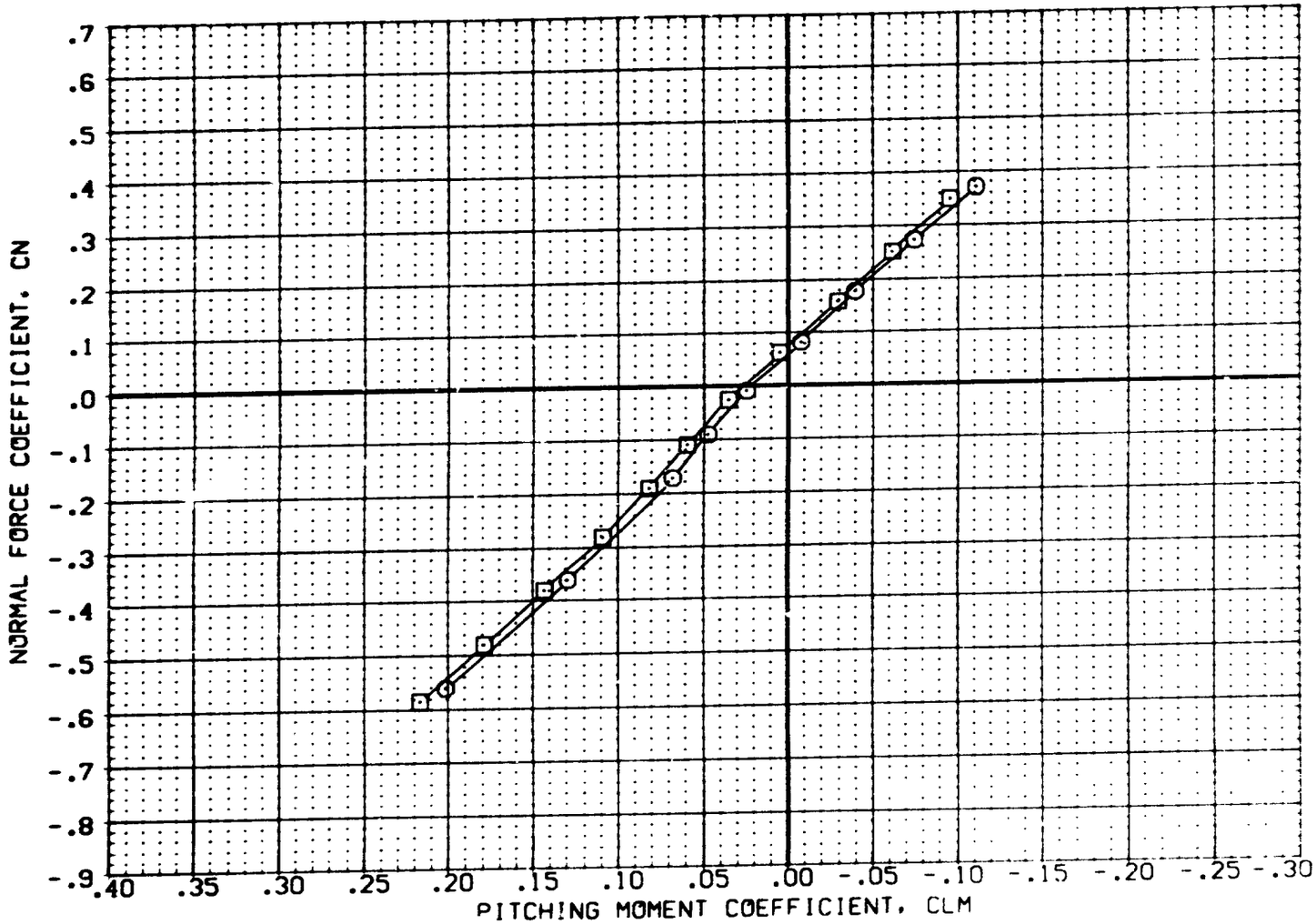


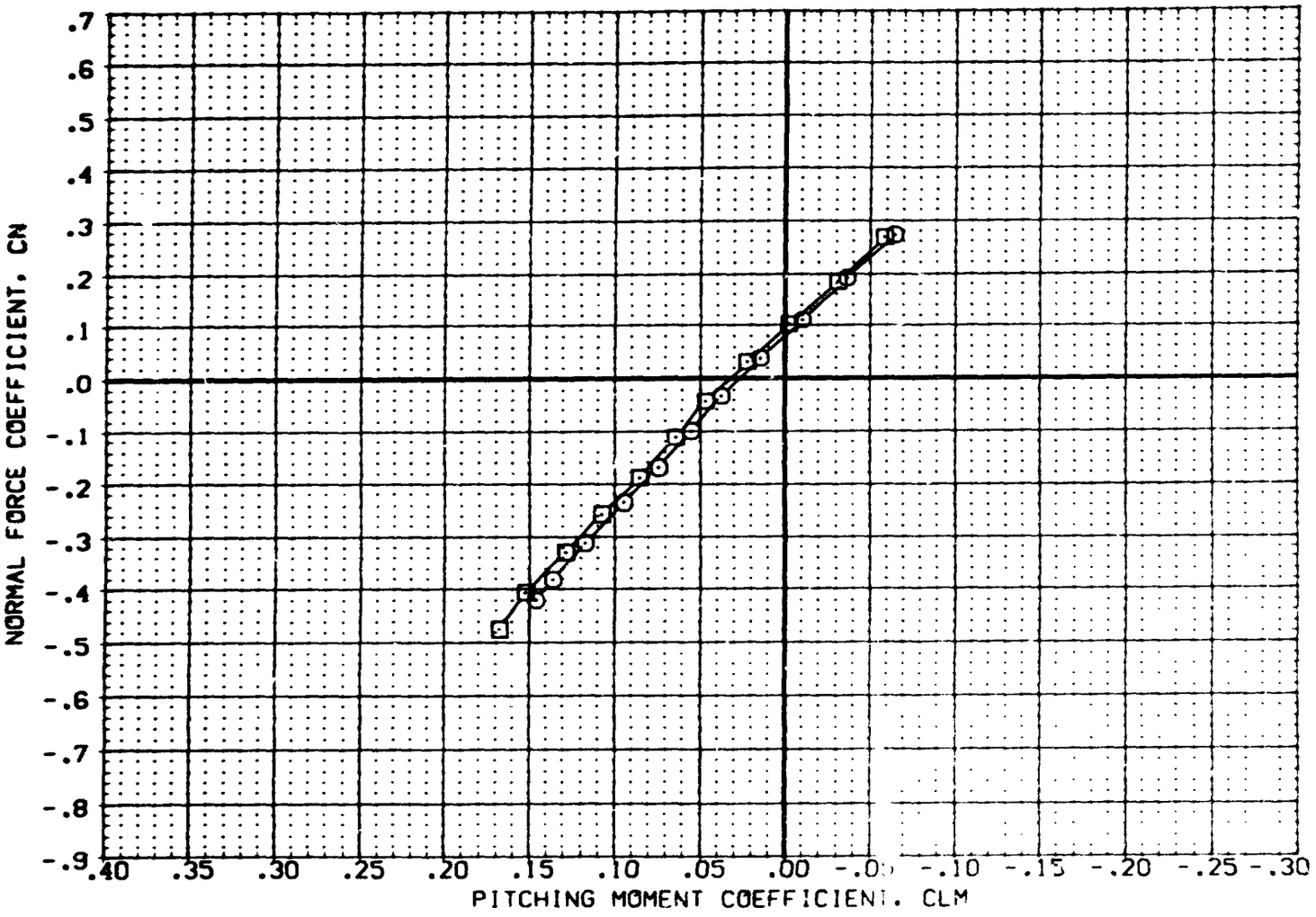

EFFECT OF FAIRINGS ON INTEGRATED VEHICLE LONGITUDINAL CHARACTERISTICS

(F)MACH = 2.99

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ORBINC | DELTAZ |
|---|---|---|---|---|
| (894001) | MSFC 589(IA62F)(034)(T14)(S12) | .000 | .000 | 333.000 |
| (894004) | MSFC 589(IA62F)(034)(T9)(S12)(PT4)(FR4) | .000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |




EFFECT OF FAIRINGS ON INTEGRATED VEHICLE LONGITUDINAL CHARACTERISTICS

(G)MACH = 4.96

| DATA SET | SYMBOL | CONFIGURATION DESCRIPTION | BETA | ORBINC | DELTAZ |
|---|---|---|---|---|---|
| (894001) | ○ | MSFC 589(1A62F)(034)(T14)(S12) | .000 | .000 | 333.000 |
| (894004) | □ | MSFC 589(1A62F)(034)(T9)(S12)(PT4)(FR4) | .000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ. IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
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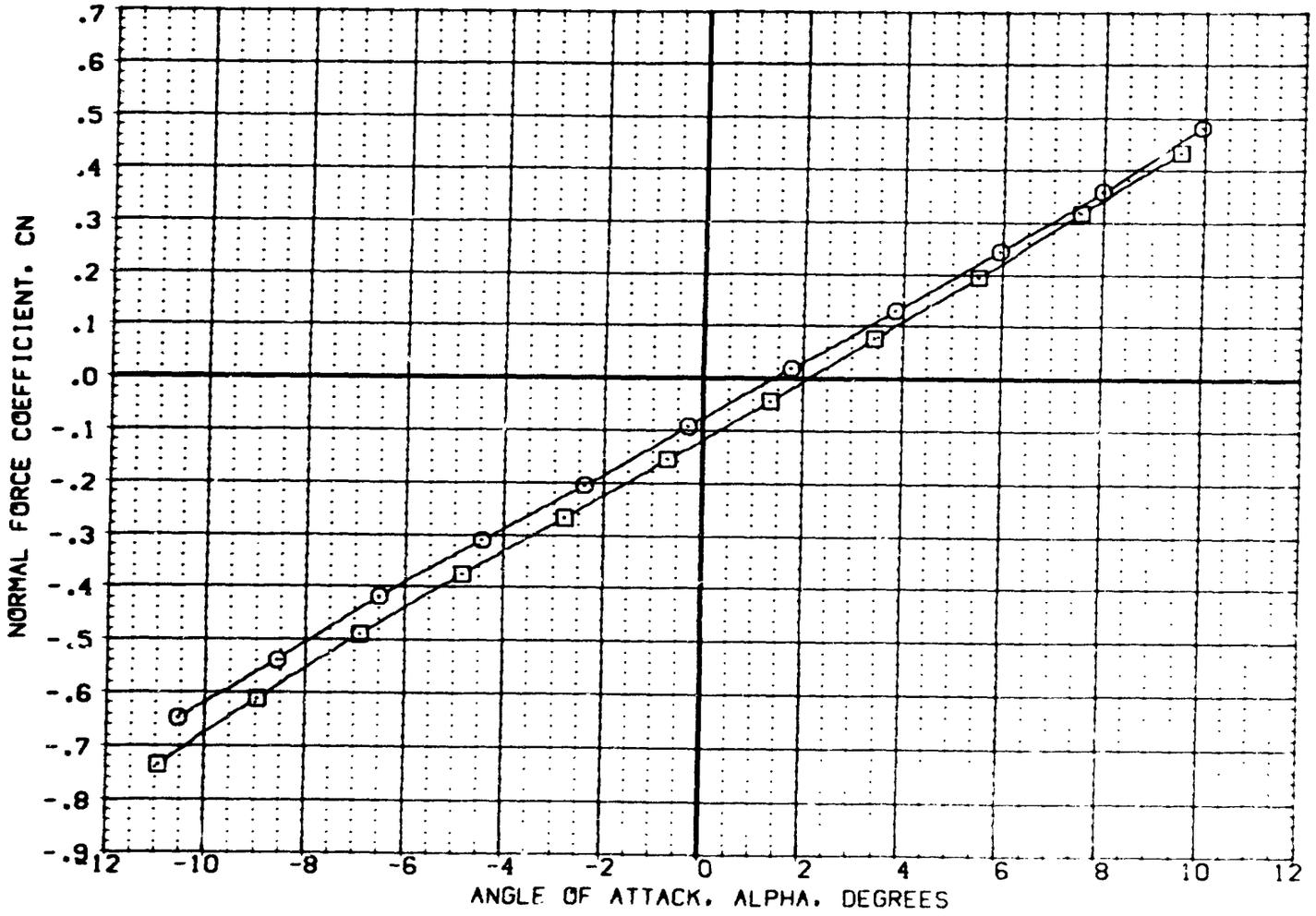
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |




EFFECT OF FAIRINGS ON INTEGRATED VEHICLE LONGITUDINAL CHARACTERISTICS

(A)MACH = .60

| DATA SET | SYMBOL | CONFIGURATION DESCRIPTION | BETA | ORBINC | DELTAZ |
|---|---|---|---|---|---|
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| (894004) | □ | MSFC 589:(A62F)(034)(T9)(S12)(PT4)(FR4) | .000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
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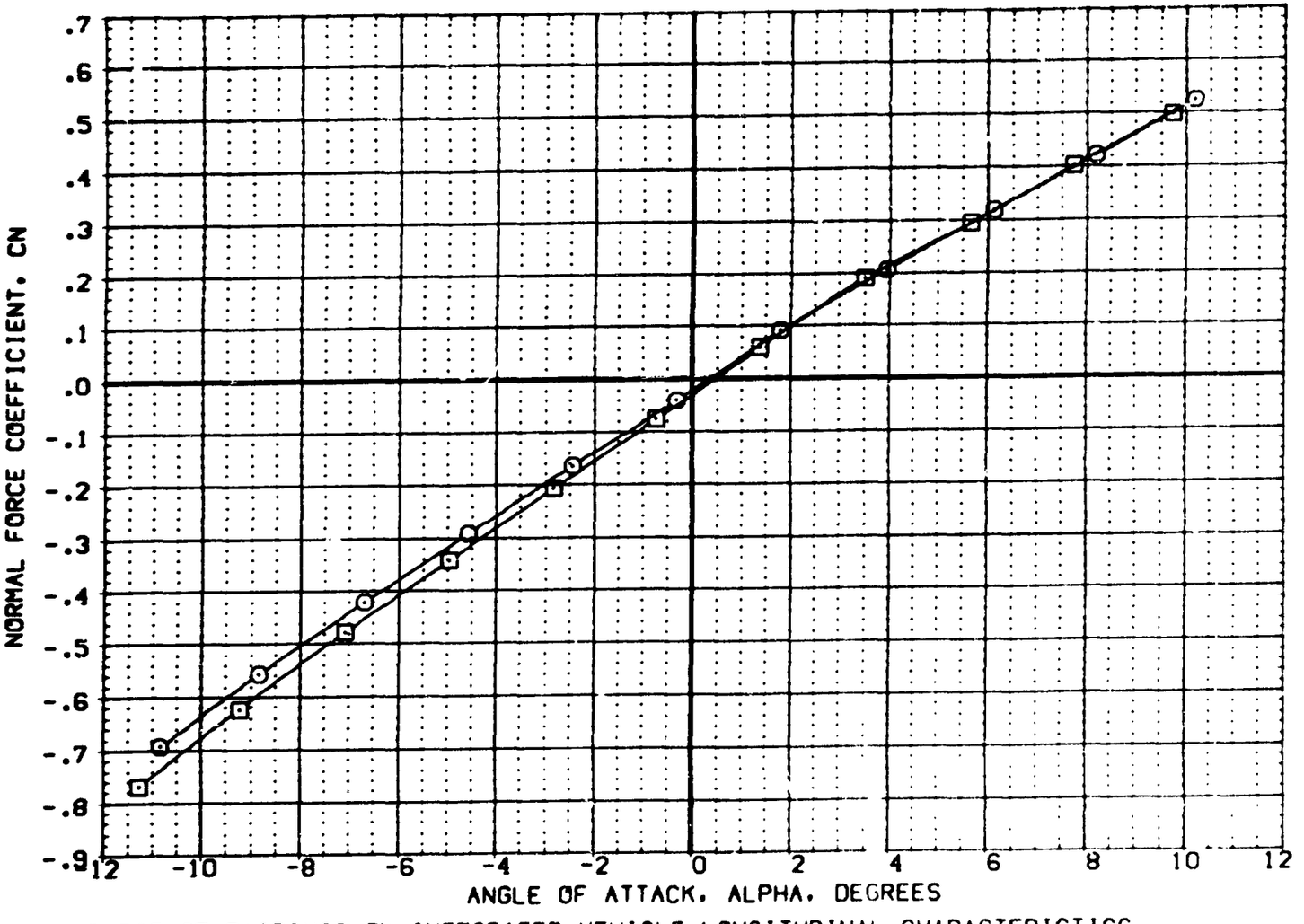
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |




EFFECT OF FAIRINGS ON INTEGRATED VEHICLE LONGITUDINAL CHARACTERISTICS

(B)MACH = .90

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ORBINC | DELTAZ |
|---|---|---|---|---|
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| (B94CC4) | MSFC S89(IA62F)(034)(T9)(S12)(PT4)(FR4) | .000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
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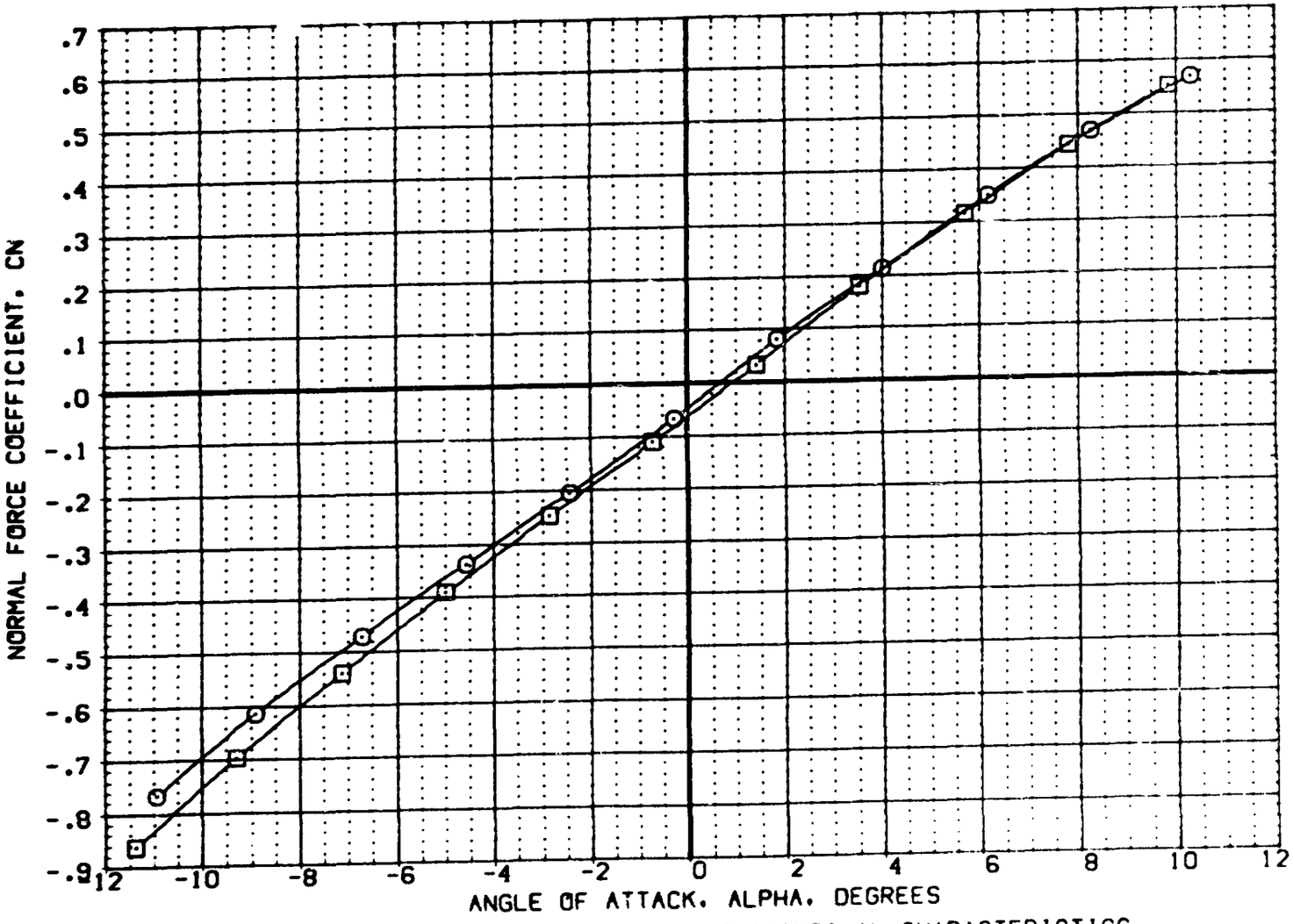
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |




EFFECT OF FAIRINGS ON INTEGRATED VEHICLE LONGITUDINAL CHARACTERISTICS

PAGE

(C)MACH = 1.00

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ORBINC | DELTAZ |
|---|---|---|---|---|
| (894001) ○ | MSFC 589(1A62F)(034)(T14)(S12) | .000 | .000 | 333.000 |
| (894004) □ | MSFC 589(1A62F)(034)(T9)(S12)(PT4)(FR4) | .000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
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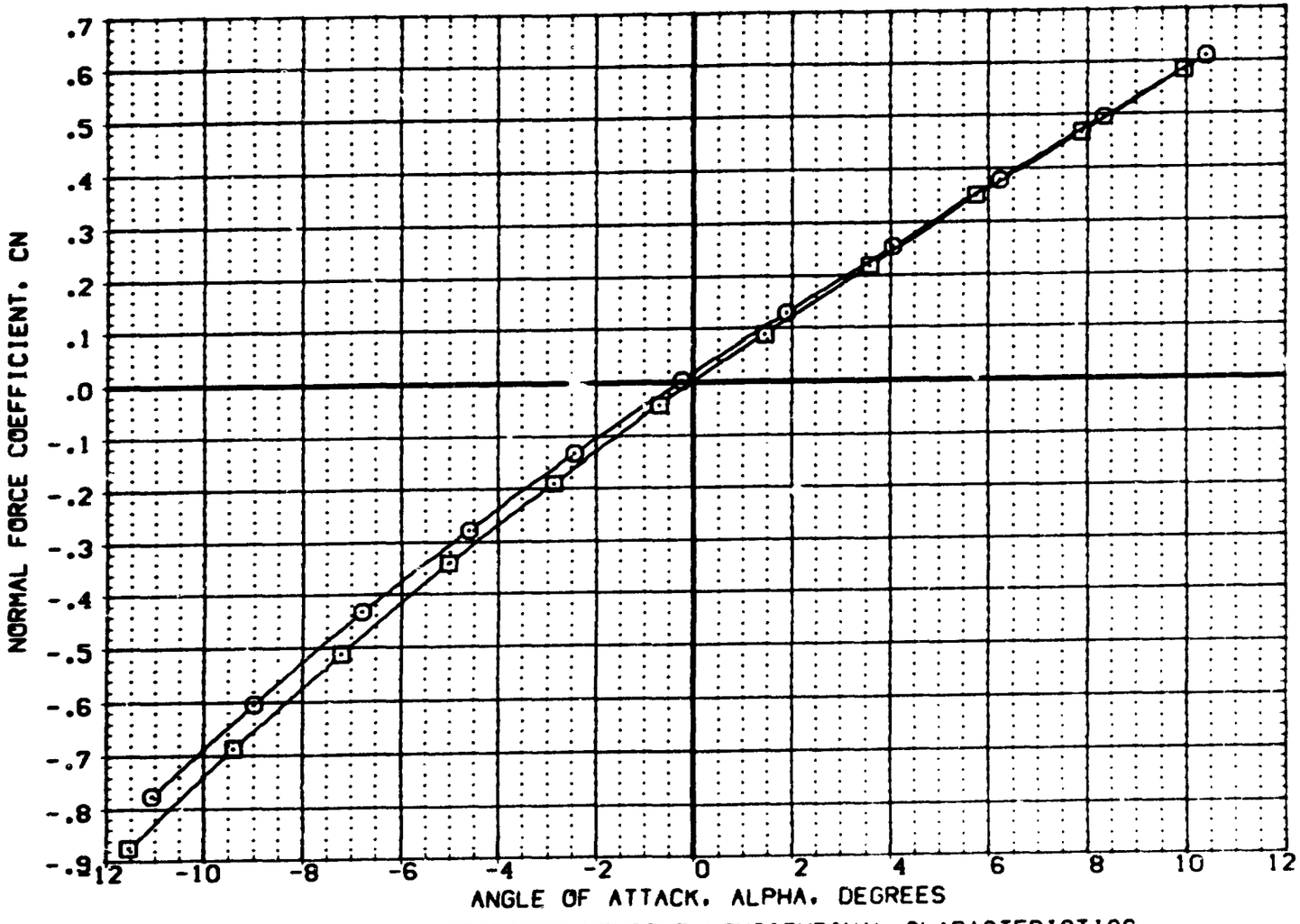
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |



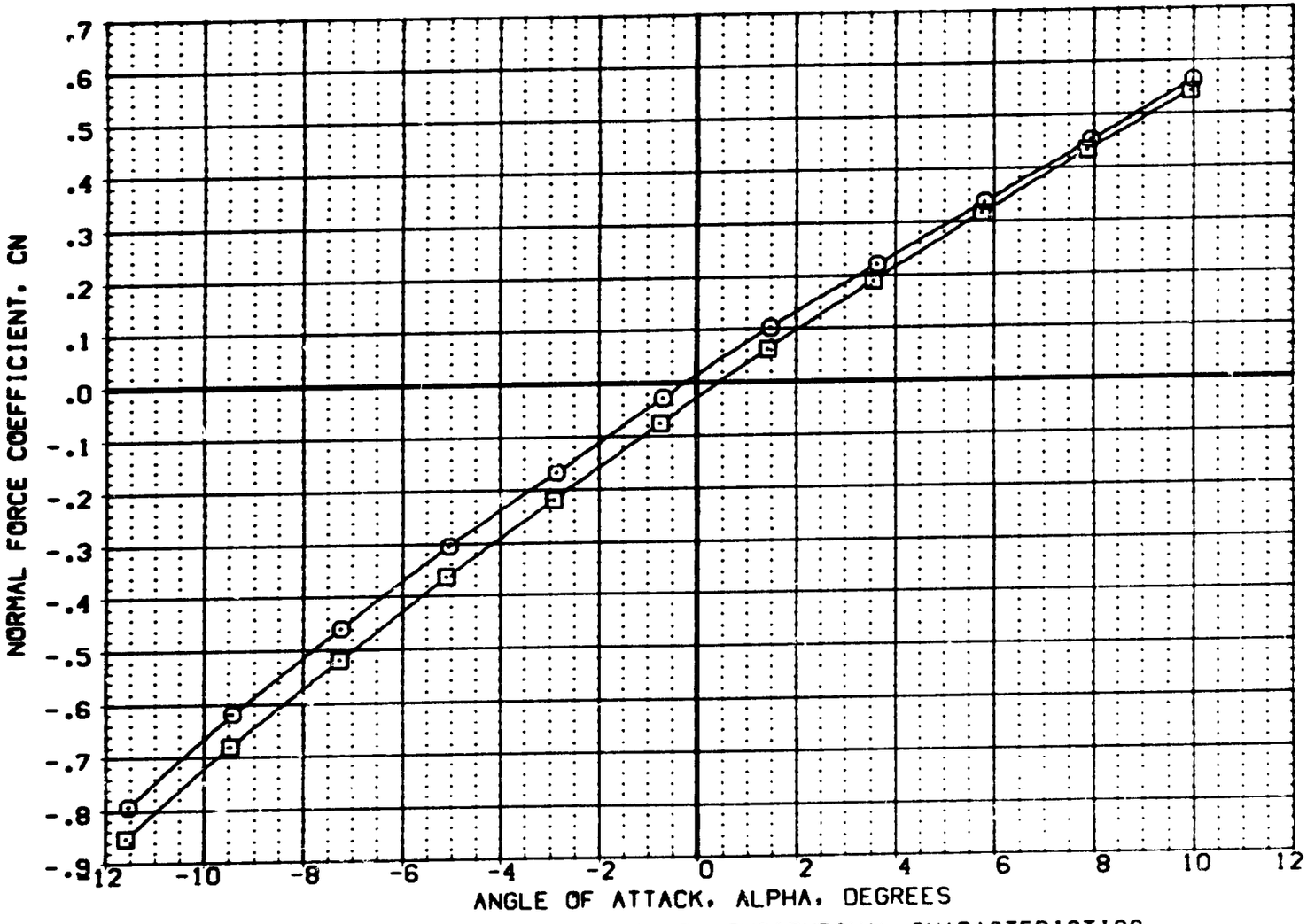

EFFECT OF FAIRINGS ON INTEGRATED VEHICLE LONGITUDINAL CHARACTERISTICS

(D)MACH = 1.20

| DATA SET | SYMBOL | CONFIGURATION DESCRIPTION | BETA | ORBINC | DELTAZ |
|---|---|---|---|---|---|
| (894001) | | MSFC 589(1A62F)(034)(T14)(S12) | .000 | .000 | 333.000 |
| (894004) | | MSFC 589(1A62F)(034)(T9)(S12)(PT4)(FR4) | .000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |




EFFECT OF FAIRINGS ON INTEGRATED VEHICLE LONGITUDINAL CHARACTERISTICS

(E)MACH = 1.46

| DATA SET | SYMBOL | CONFIGURATION DESCRIPTION | BETA | ORBINC | DELTAZ |
|---|---|---|---|---|---|
| (894001) | | MSFC 589(1A62F)(034)(T14)(S12) | .000 | .000 | 333.000 |
| (894004) | | MSFC 589(1A62F)(034)(T9)(S12)(PT4)(FR4) | .000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
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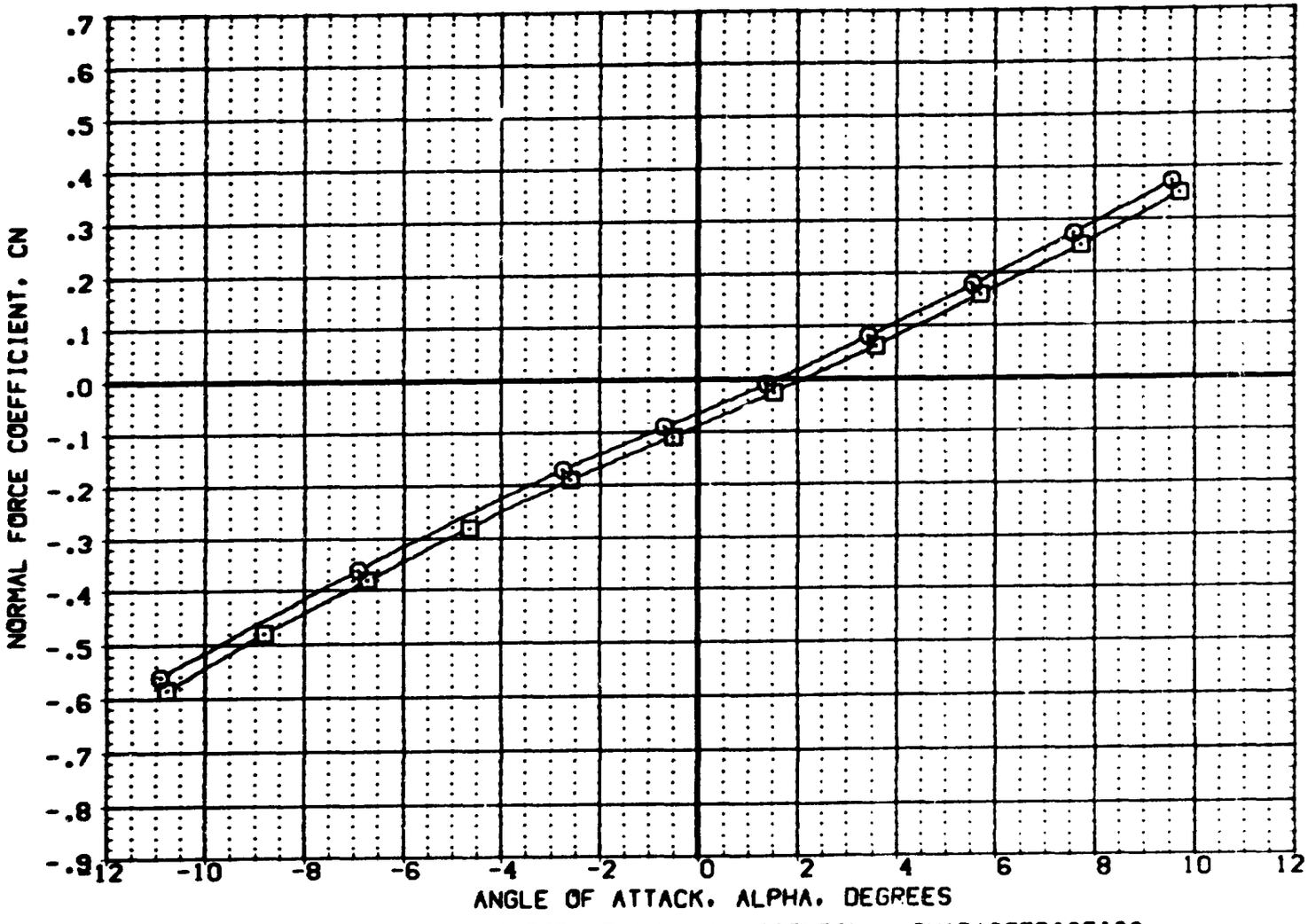
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |




EFFECT OF FAIRINGS ON INTEGRATED VEHICLE LONGITUDINAL CHARACTERISTICS

(F)MACH = 2.99

| DATA SET | SYMBOL | CONFIGURATION DESCRIPTION | BETA | ORBINC | DELTAZ |
|---|---|---|---|---|---|
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| (B940C4) | □ | MSFC 589(1A62F)(034)(T9)(S12)(PT4)(FR4) | .000 | .000 | 333.000 |

REFERENCE INFORMATION

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|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
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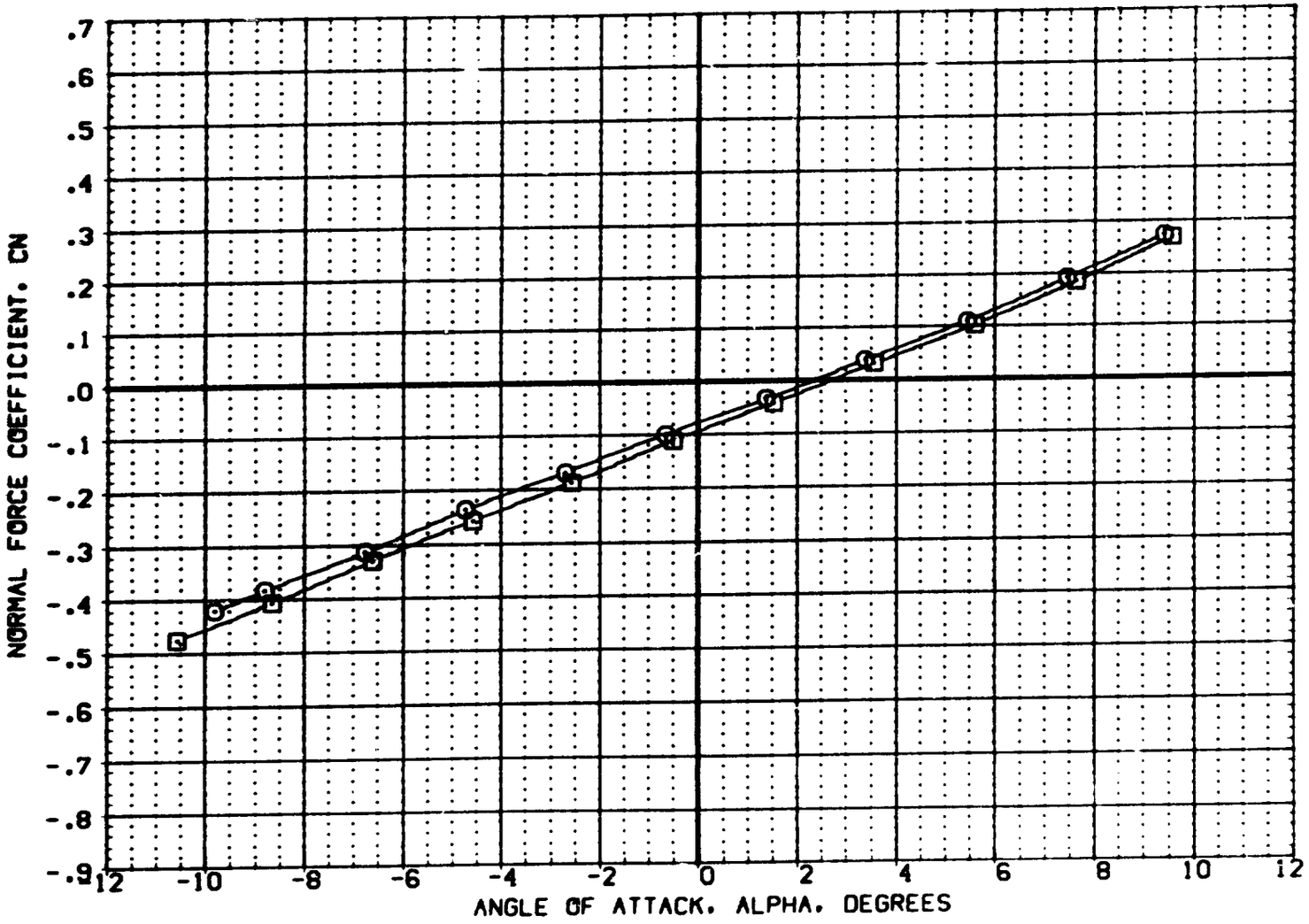
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |




EFFECT OF FAIRINGS ON INTEGRATED VEHICLE LONGITUDINAL CHARACTERISTICS

(G)MACH = 4.96

| DATA SET | SYMBOL | CONFIGURATION DESCRIPTION | BETA | ORBINC | DELTAZ |
|---|---|---|---|---|---|
| (894001) | | MSFC 589(1A62F)(034)(T14)(S12) | .000 | .000 | 333.000 |
| (894004) | | MSFC 589(1A62F)(034)(T9)(S12)(PT4)(FR4) | .000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
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| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
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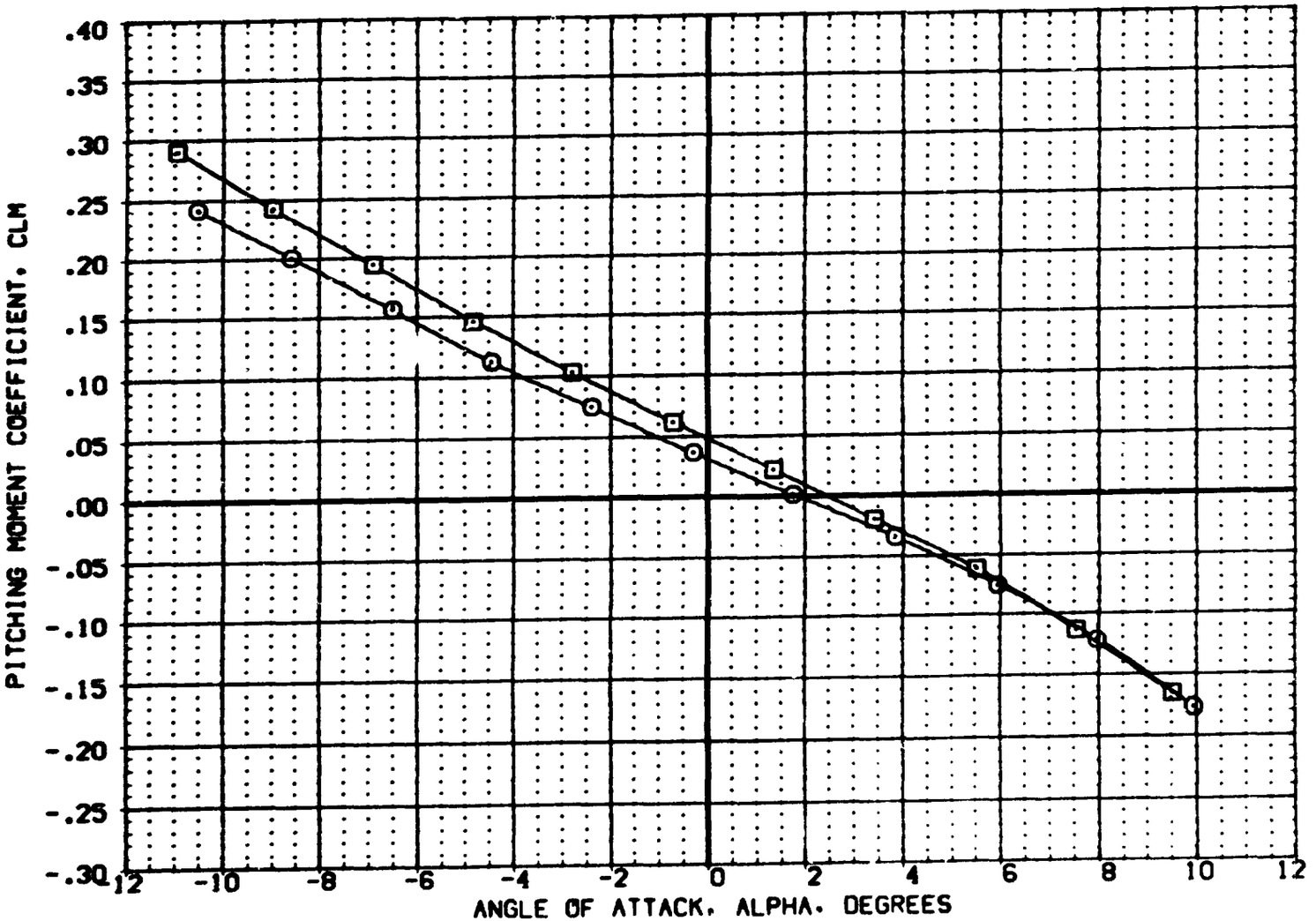
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |



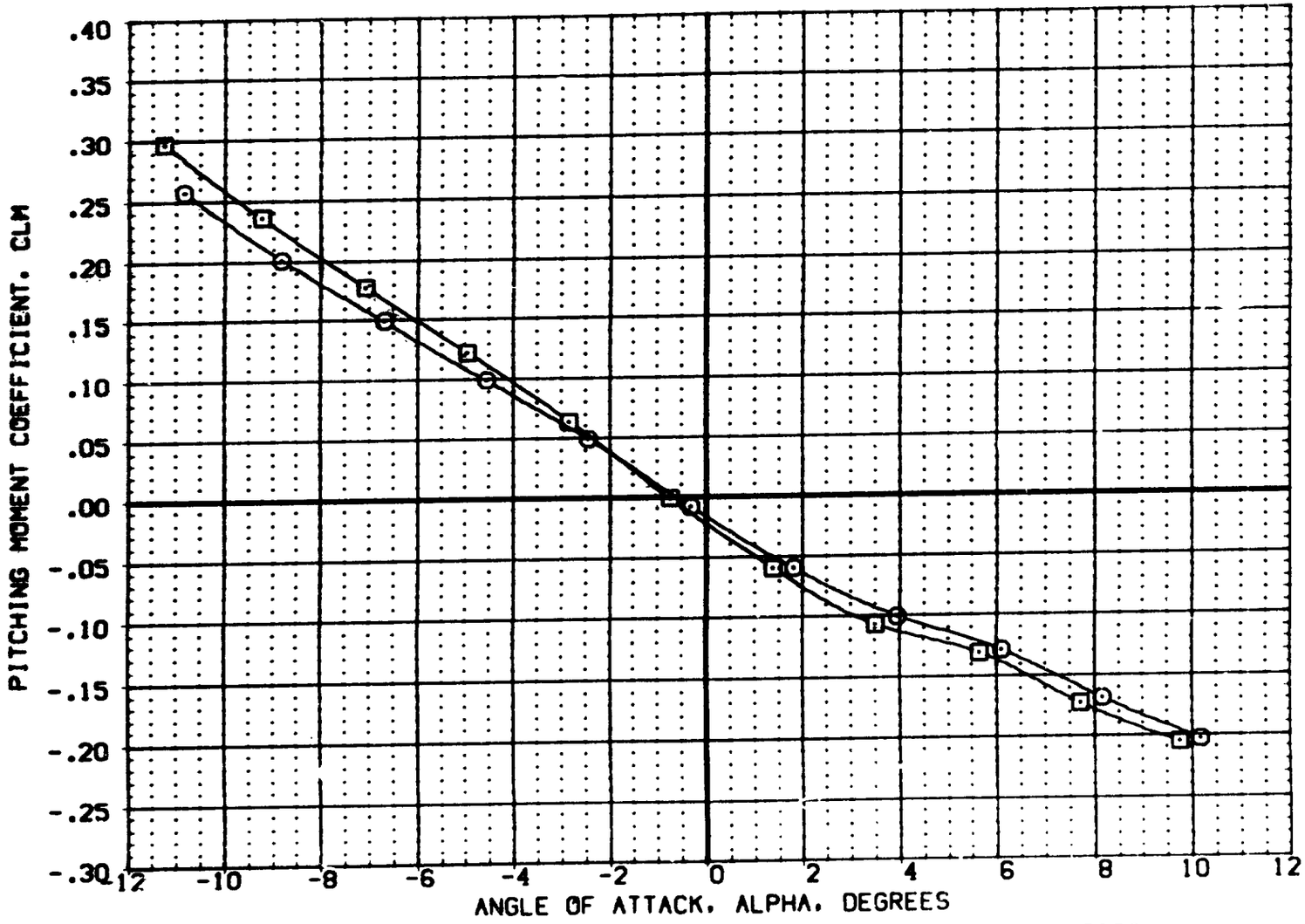

EFFECT OF FAIRINGS ON INTEGRATED VEHICLE LONGITUDINAL CHARACTERISTICS

(A)MACH = .60

| DATA SET | SYMBOL | CONFIGURATION DESCRIPTION | BETA | ORBINC | DELTAZ |
|---|---|---|---|---|---|
| (B94001) | | MSFC 589(1A62F)(034)(T14)(S12) | .000 | .000 | 333.000 |
| (B94004) | | MSFC 589(1A62F)(034)(T9)(S12)(PT4)(FR4) | .000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |



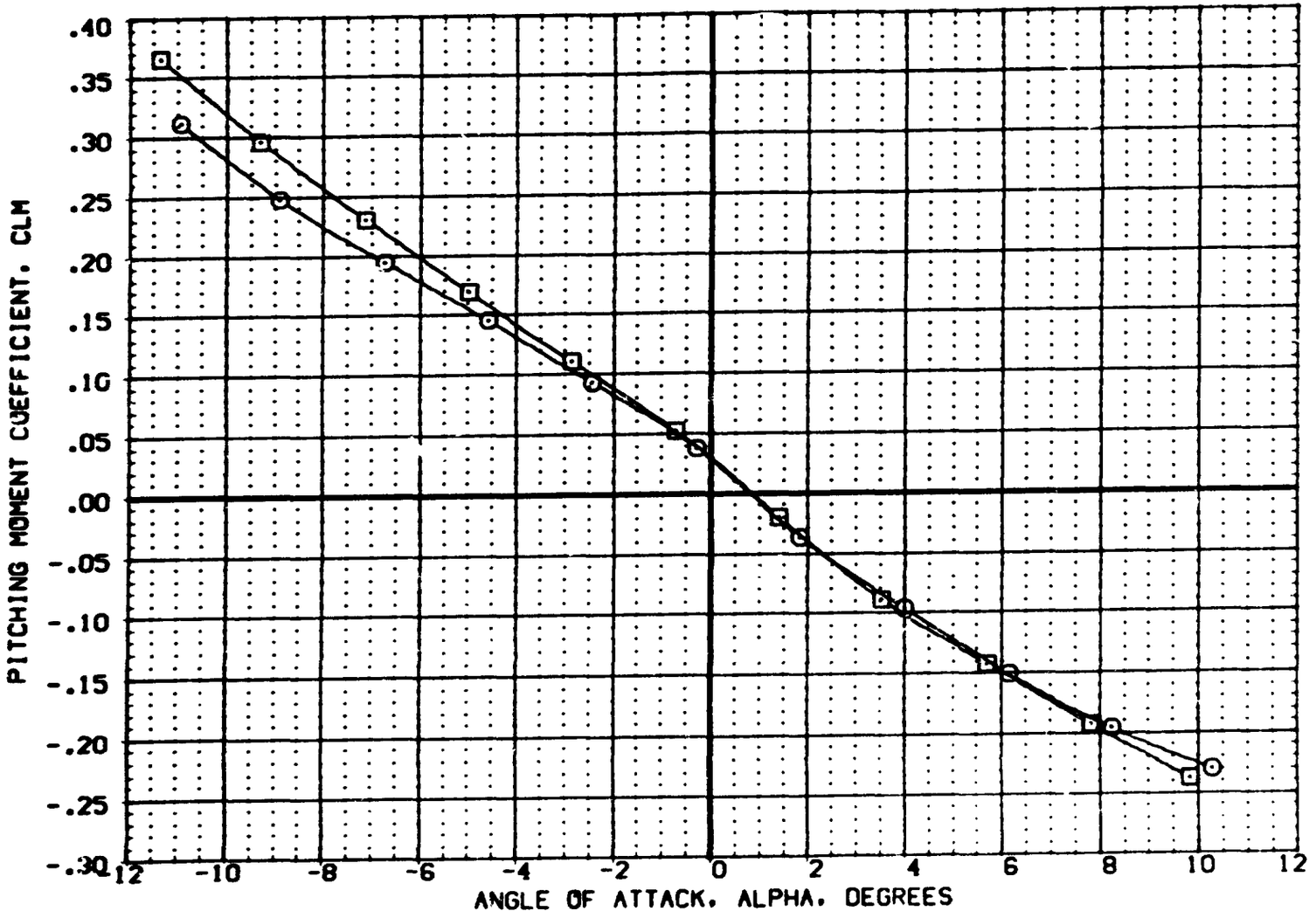

EFFECT OF FAIRINGS ON INTEGRATED VEHICLE LONGITUDINAL CHARACTERISTICS

(B)MACH = .90

| DATA SET | SYMBOL | CONFIGURATION DESCRIPTION | BETA | ORBINC | DELTAZ |
|---|---|---|---|---|---|
| (894001) | | MSFC 589(1A62F)(034)(T14)(S12) | .000 | .000 | 333.000 |
| (894004) | | MSFC 589(1A62F)(034)(T9)(S12)(PT4)(FR4) | .000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |



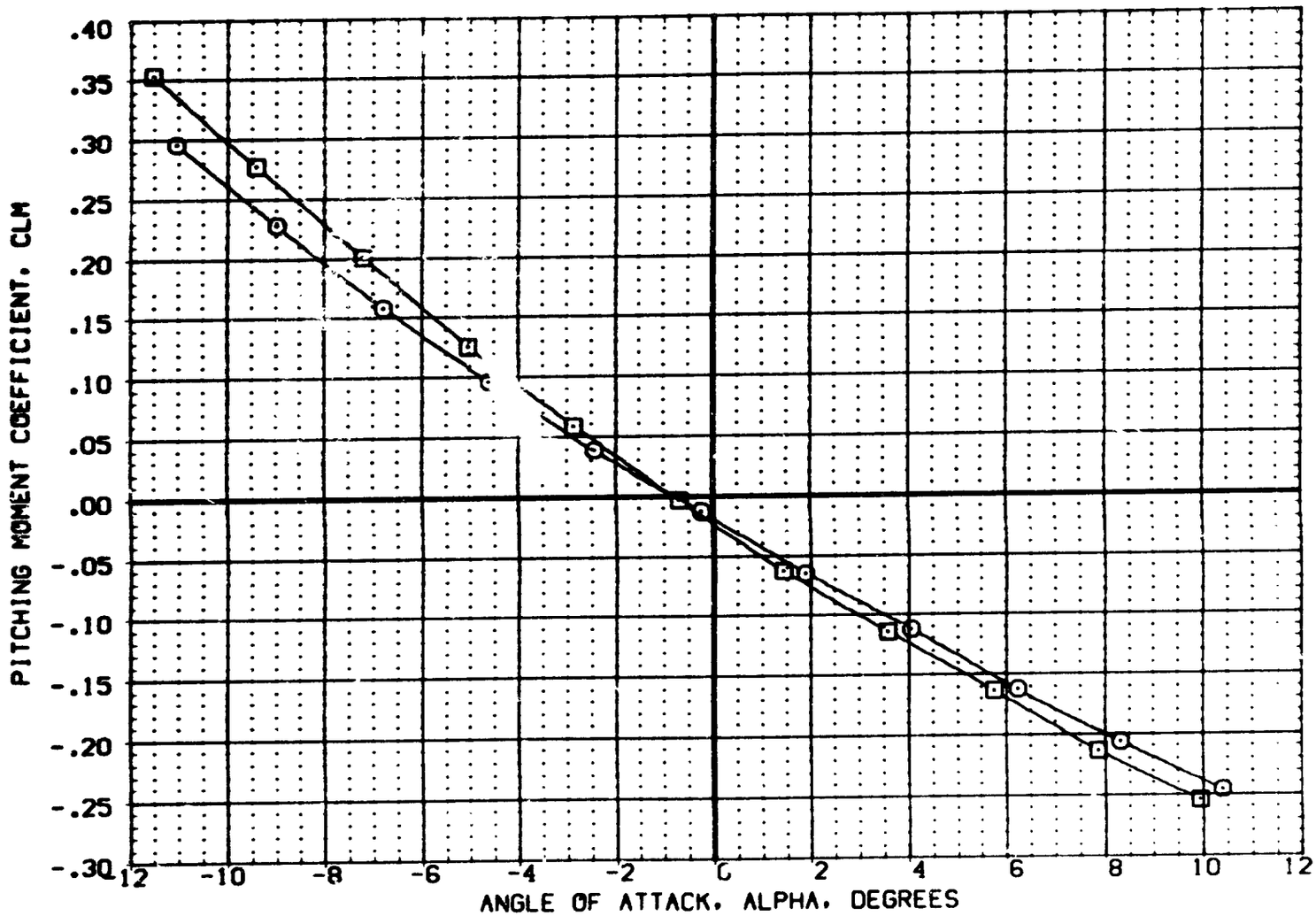

EFFECT OF FAIRINGS ON INTEGRATED VEHICLE LONGITUDINAL CHARACTERISTICS

(C)MACH = 1.00

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ORBINC | DELTAZ |
|---|---|---|---|---|
| (B940C) | MSFC 589(1A62F)(034)(T14)(S12) | .000 | .000 | 333.000 |
| (B94CC4) | MSFC 589(1A62F)(034)(T9)(S12)(PT4)(FR4) | .000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |



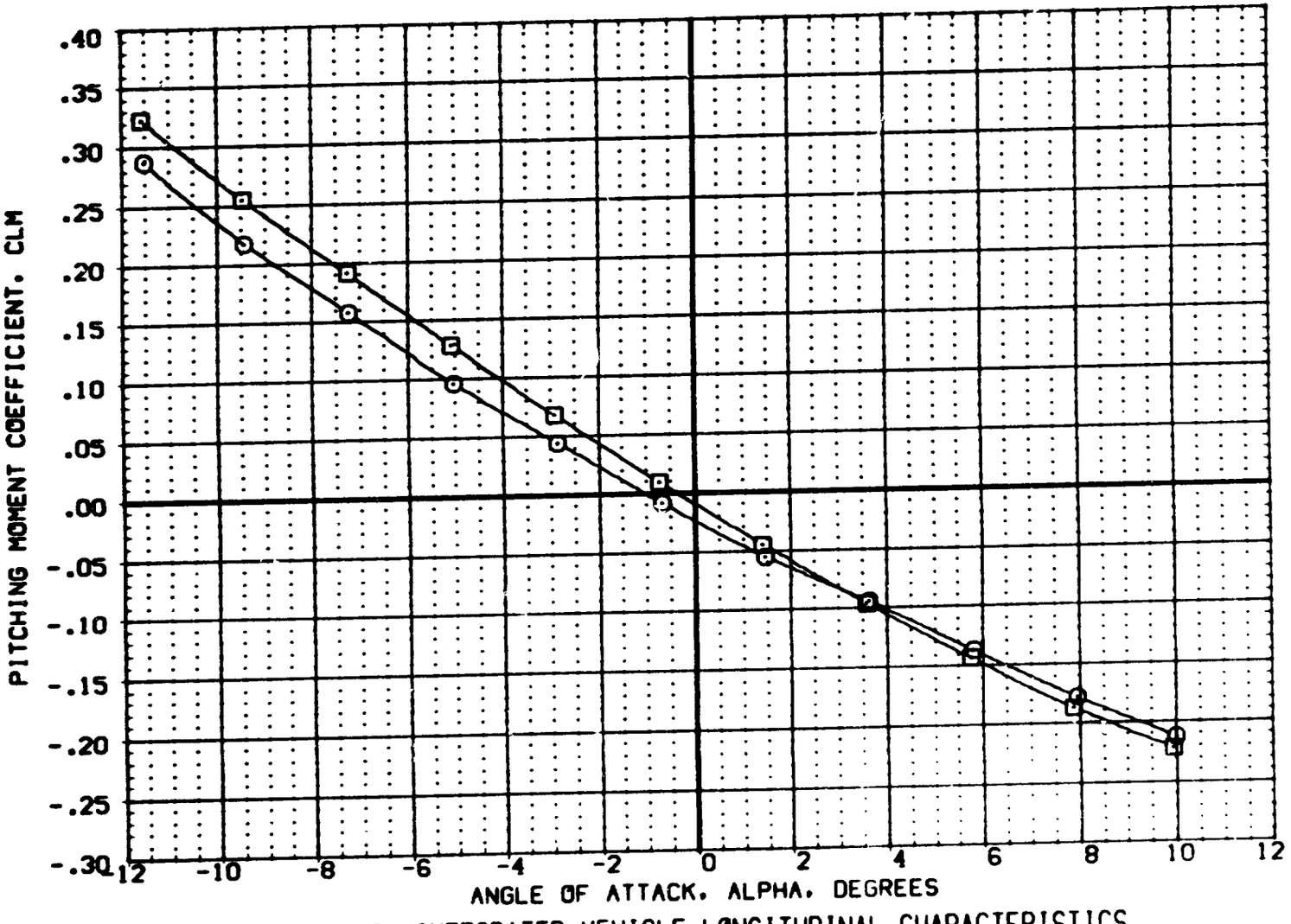

EFFECT OF FAIRINGS ON INTEGRATED VEHICLE LONGITUDINAL CHARACTERISTICS

(D)MACH = 1.20

| DATA SET | SYMBOL | CONFIGURATION DESCRIPTION | BETA | ORBINC | DELTAZ |
|---|---|---|---|---|---|
| (894001) | ○ | MSFC 589(1A62F)(034)(T14)(S12) | .000 | .000 | 333.000 |
| (894004) | □ | MSFC 589(1A62F)(034)(T9)(S12)(PT4)(FR4) | .000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |



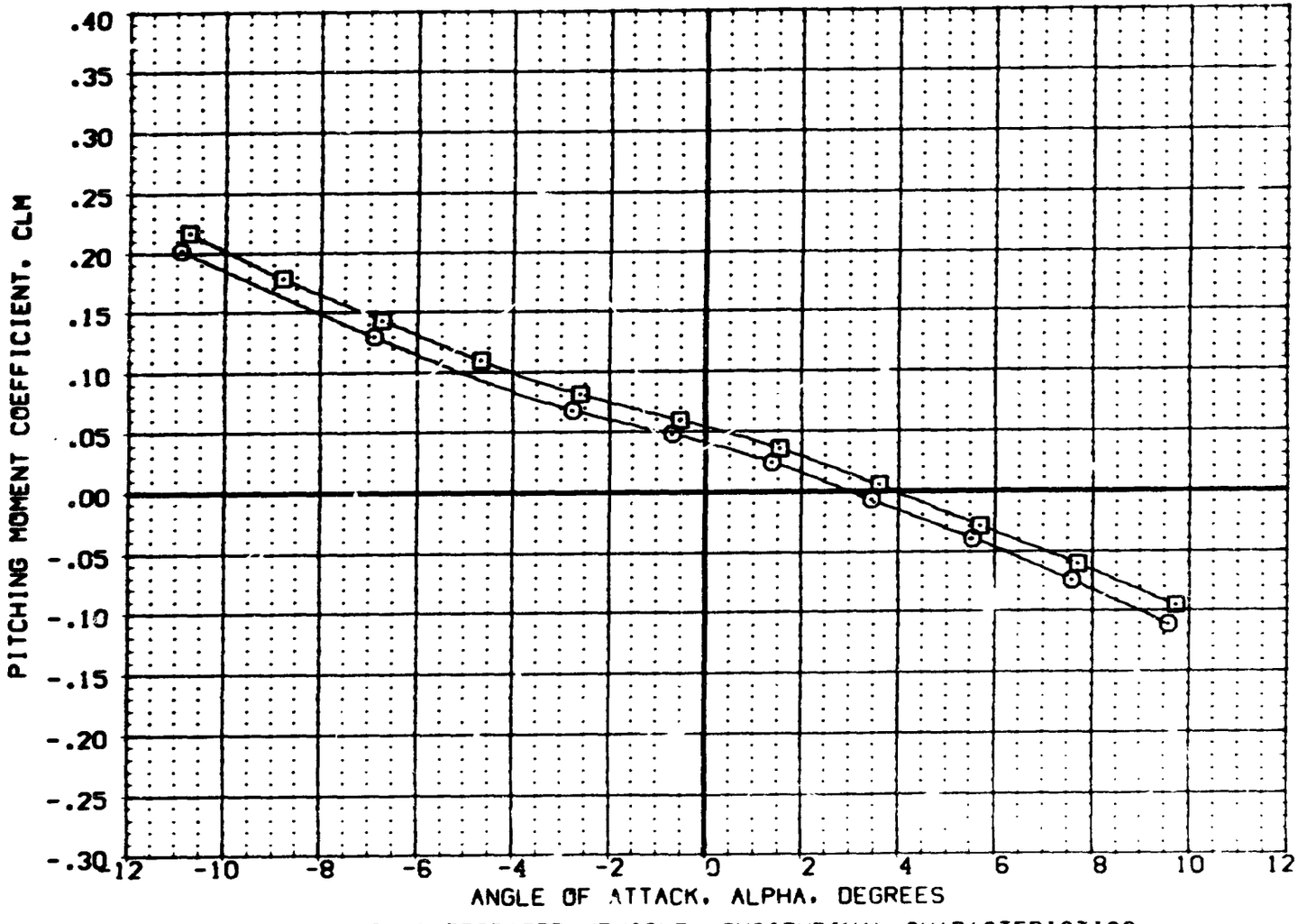

EFFECT OF FAIRINGS ON INTEGRATED VEHICLE LONGITUDINAL CHARACTERISTICS



(E)MACH = 1.46

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ORBINC | DELTAZ |
|---|---|---|---|---|
| (894001) | MSFC 589(1A62F)(034)(T14)(S12) | .000 | .000 | 333.000 |
| (894004) | MSFC 589(1A62F)(034)(T9)(S12)(PT4)(FR4) | .000 | .000 | 333.000 |

| REFERENCE INFORMATION | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.5800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |



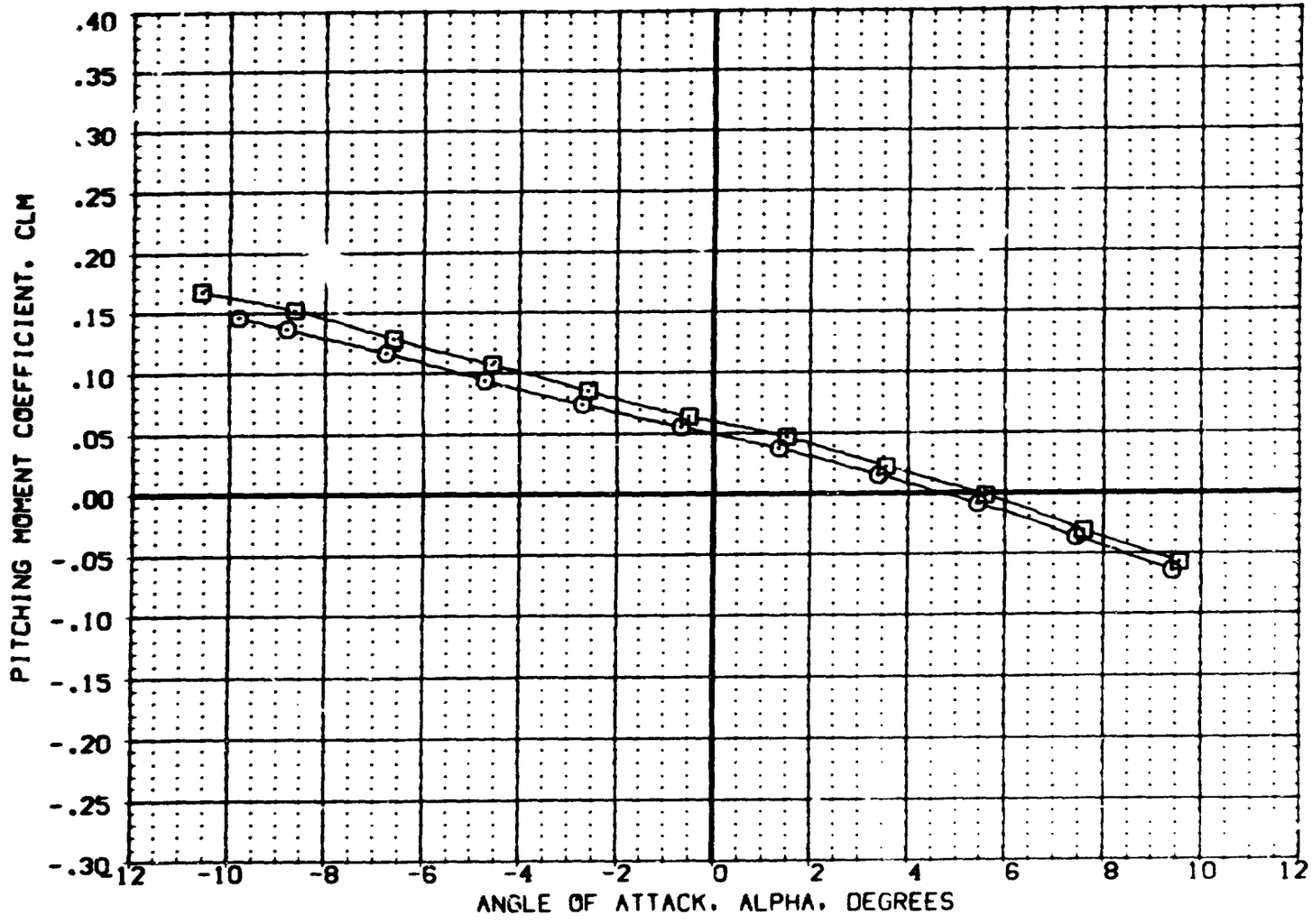

EFFECT OF FAIRINGS ON INTEGRATED VEHICLE LONGITUDINAL CHARACTERISTICS

(F)MACH = 2.99

| DATA SET | SYMBOL | CONFIGURATION DESCRIPTION | BETA | ORBINC | DELTAZ |
|---|---|---|---|---|---|
| (B94001) | | MSFC 589(1A62F)(034)(T14)(S12) | .000 | .000 | 333.000 |
| (B94C04) | | MSFC 589(1A62F)(034)(T9)(S12)(PT4)(FR4) | .000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |



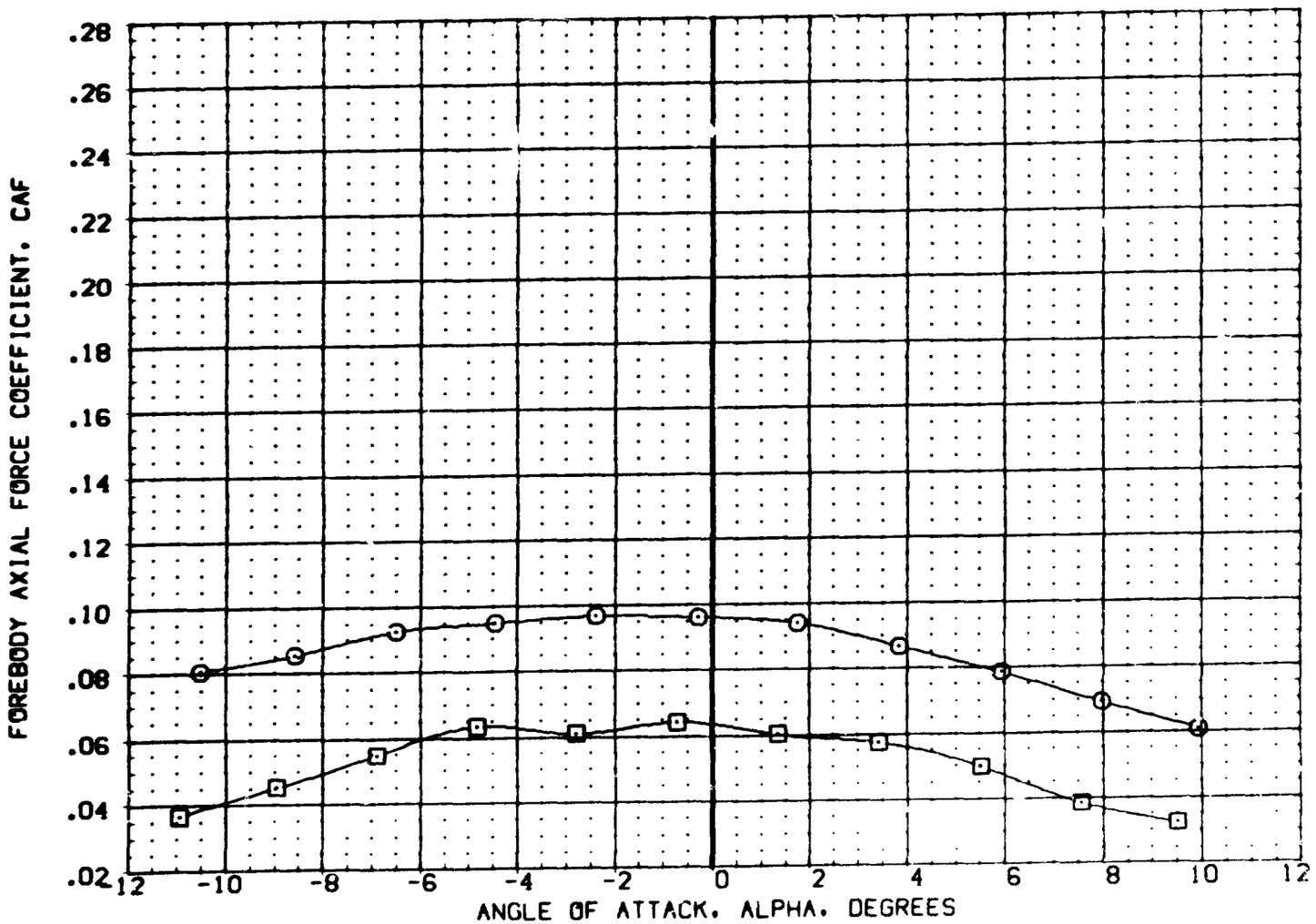

EFFECT OF FAIRINGS ON INTEGRATED VEHICLE LONGITUDINAL CHARACTERISTICS

(G)MACH = 4.96

| DATA SET | SYMBOL | CONFIGURATION DESCRIPTION | BETA | ORBINC | DELTAZ |
|---|---|---|---|---|---|
| (894001) | □ | MSFC 589(A62F)(034)(T14)(S12) | .000 | .000 | 333.000 |
| (894004) | ⊟ | MSFC 589(A62F)(034)(T9)(S12)(PT4)(FR4) | .000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |



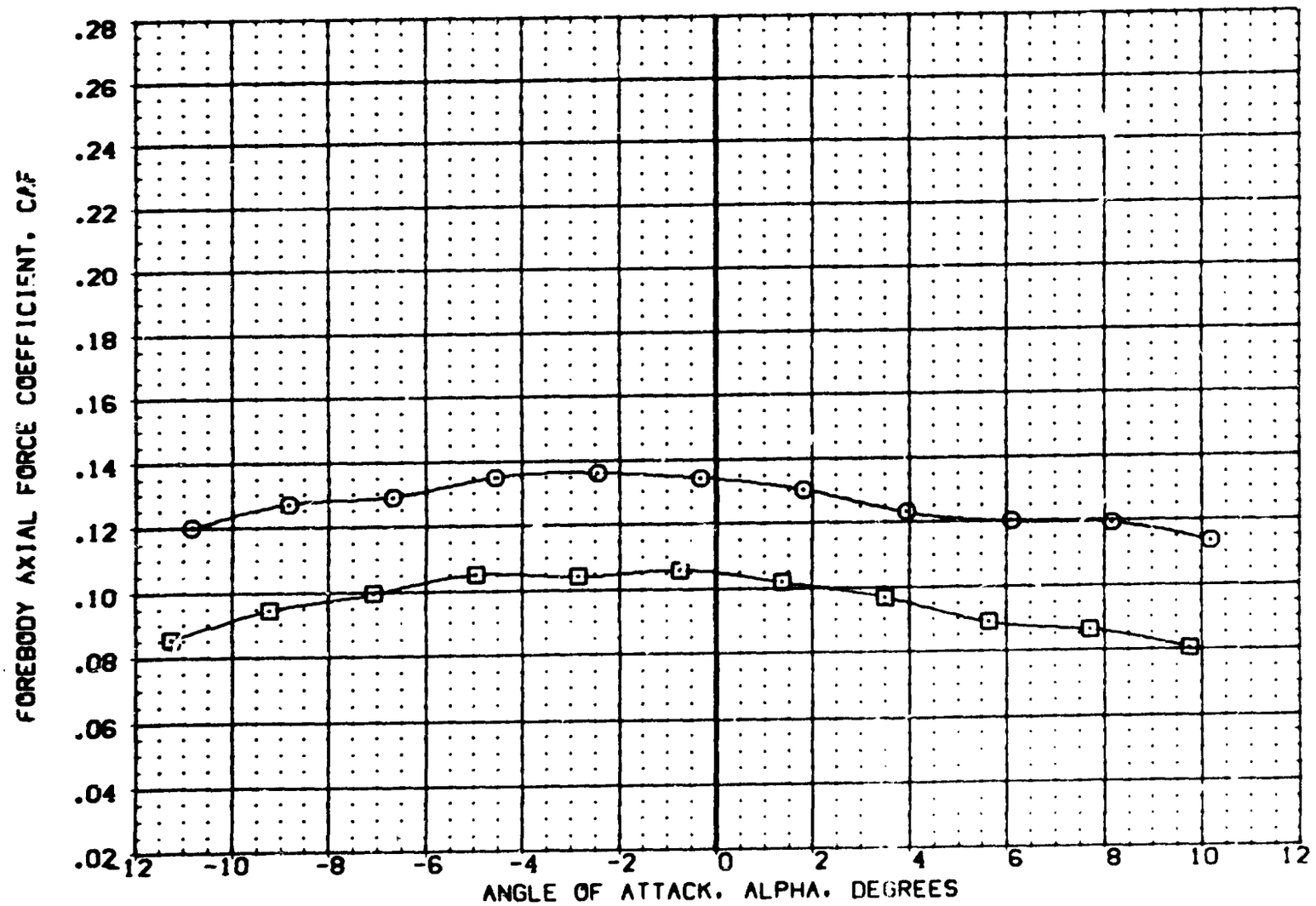

EFFECT OF FAIRINGS ON INTEGRATED VEHICLE LONGITUDINAL CHARACTERISTICS

(A)MACH = .60

| DATA SET | SYMBOL | CONFIGURATION DESCRIPTION | BETA | ORBINC | DELTAZ |
|---|---|---|---|---|---|
| (894001) | | MSFC 589([A62F])(034)([T4])(S12) | .000 | .000 | 333.000 |
| (894004) | | MSFC 589([A62F])(034)([T4])(S12)(PT4)(FR4) | .000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |



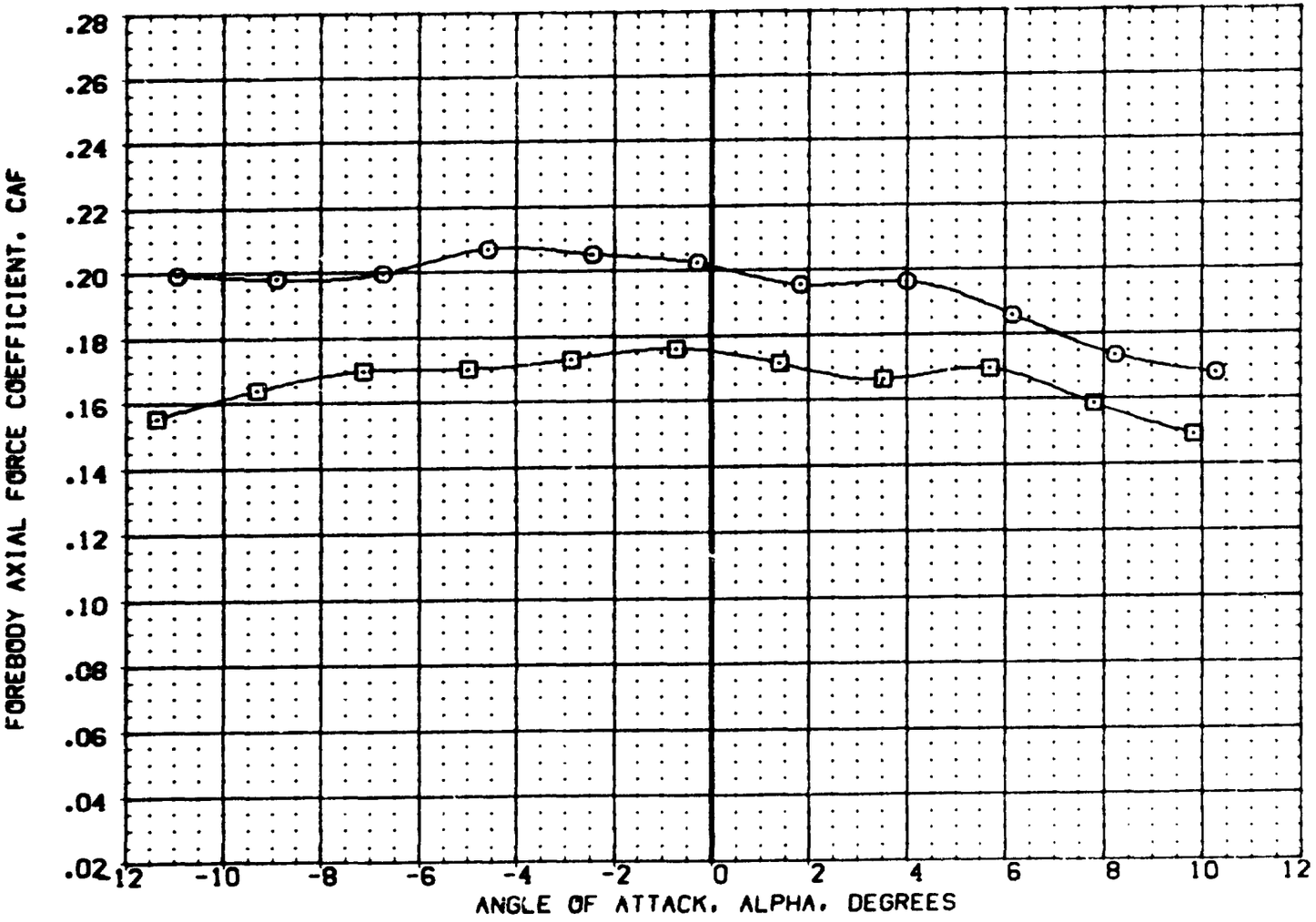

EFFECT OF FAIRINGS ON INTEGRATED VEHICLE LONGITUDINAL CHARACTERISTICS

(B)MACH = .90

| DATA SET | SYMBOL | CONFIGURATION DESCRIPTION | BETA | ORBINC | DELTAZ |
|---|---|---|---|---|---|
| (894001) | □ | MSFC 589(1A62F)(034)(T14)(S12) | .000 | .000 | 333.000 |
| (894004) | □ | MSFC 589(1A62F)(034)(T9)(S12)(PT4)(FR4) | .300 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6400 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |



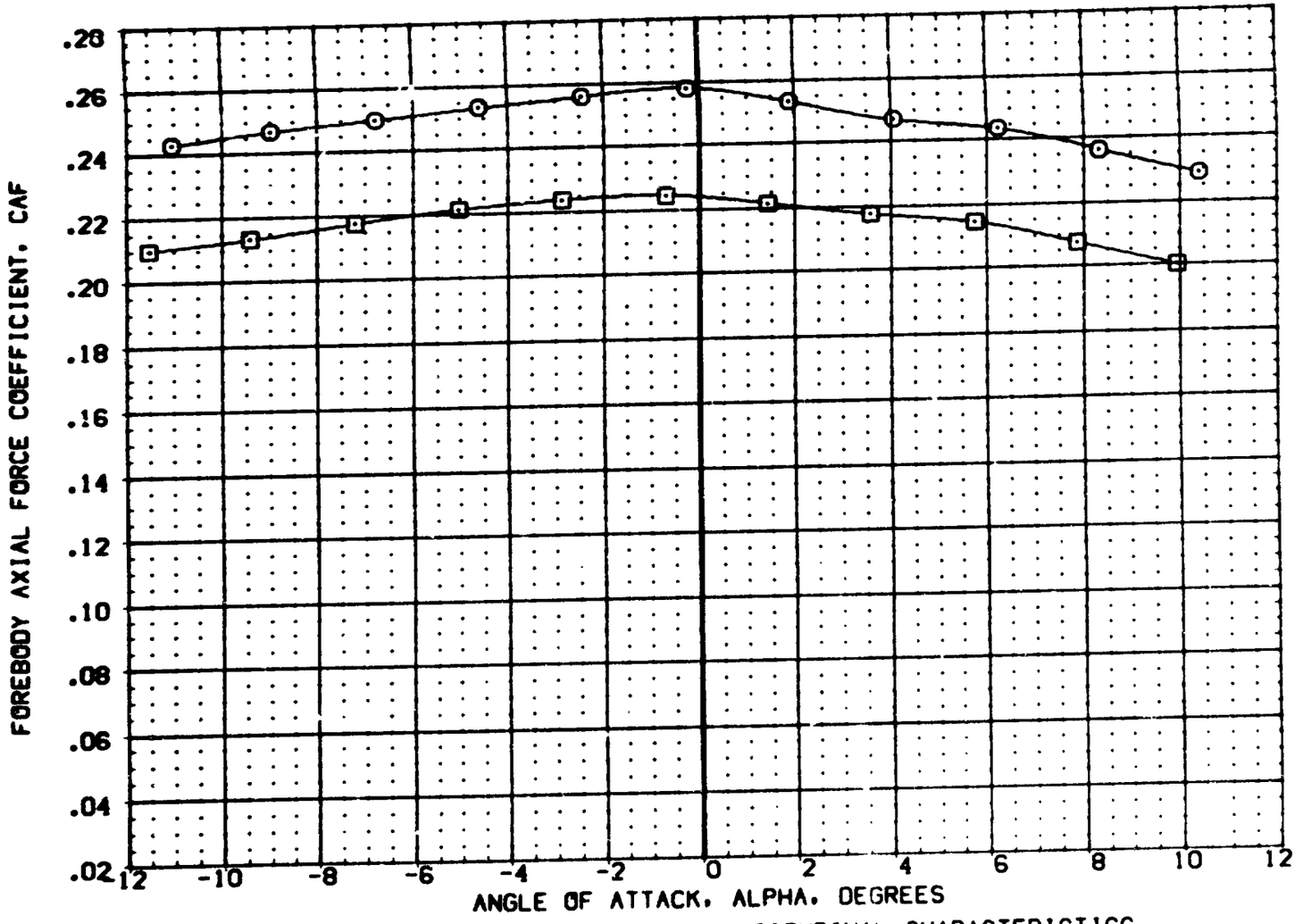

EFFECT OF FAIRINGS ON INTEGRATED VEHICLE LONGITUDINAL CHARACTERISTICS

(C)MACH = 1.00

| DATA SET | SYMBOL | CONFIGURATION DESCRIPTION | BETA | ORBINC | DELTAZ |
|---|---|---|---|---|---|
| (894001) | ○ | MSFC 589(1A62F)(034)(T14)(S12) | .000 | .000 | 333.000 |
| (894004) | □ | MSFC 589(1A62F)(034)(T9)(S12)(PT4)(FR4) | .000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |



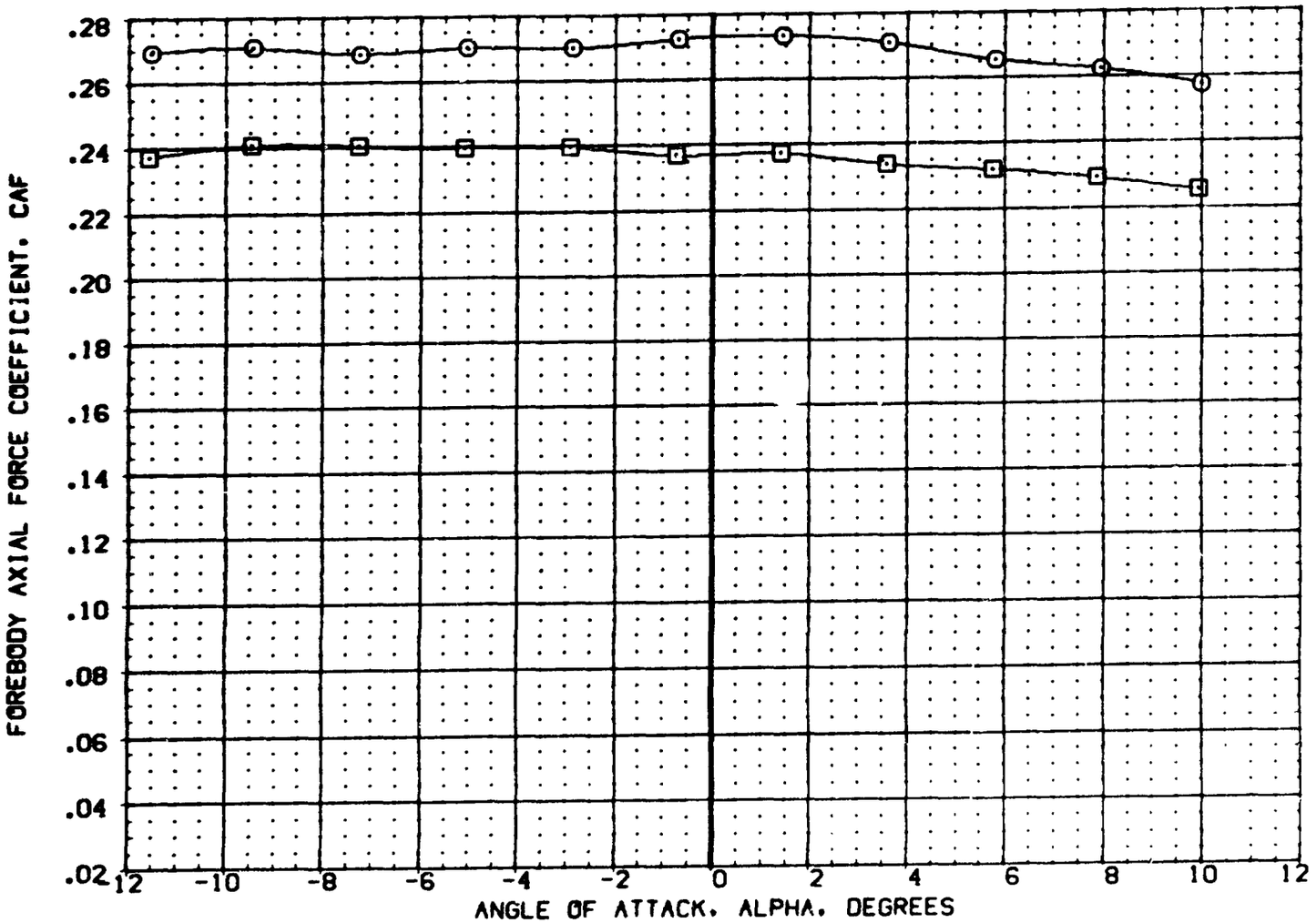

EFFECT OF FAIRINGS ON INTEGRATED VEHICLE LONGITUDINAL CHARACTERISTICS

(D)MACH = 1.20

| DATA SET | SYMBOL | CONFIGURATION DESCRIPTION | BETA | ORBINC | DELTAZ |
|---|---|---|---|---|---|
| (894001) | ○ | MSFC 589(1A62F)(034)(T14)(S12) | .000 | .000 | 333.000 |
| (894004) | □ | MSFC 589(1A62F)(034)(T9)(S12)(PT4)(FR4) | .000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |

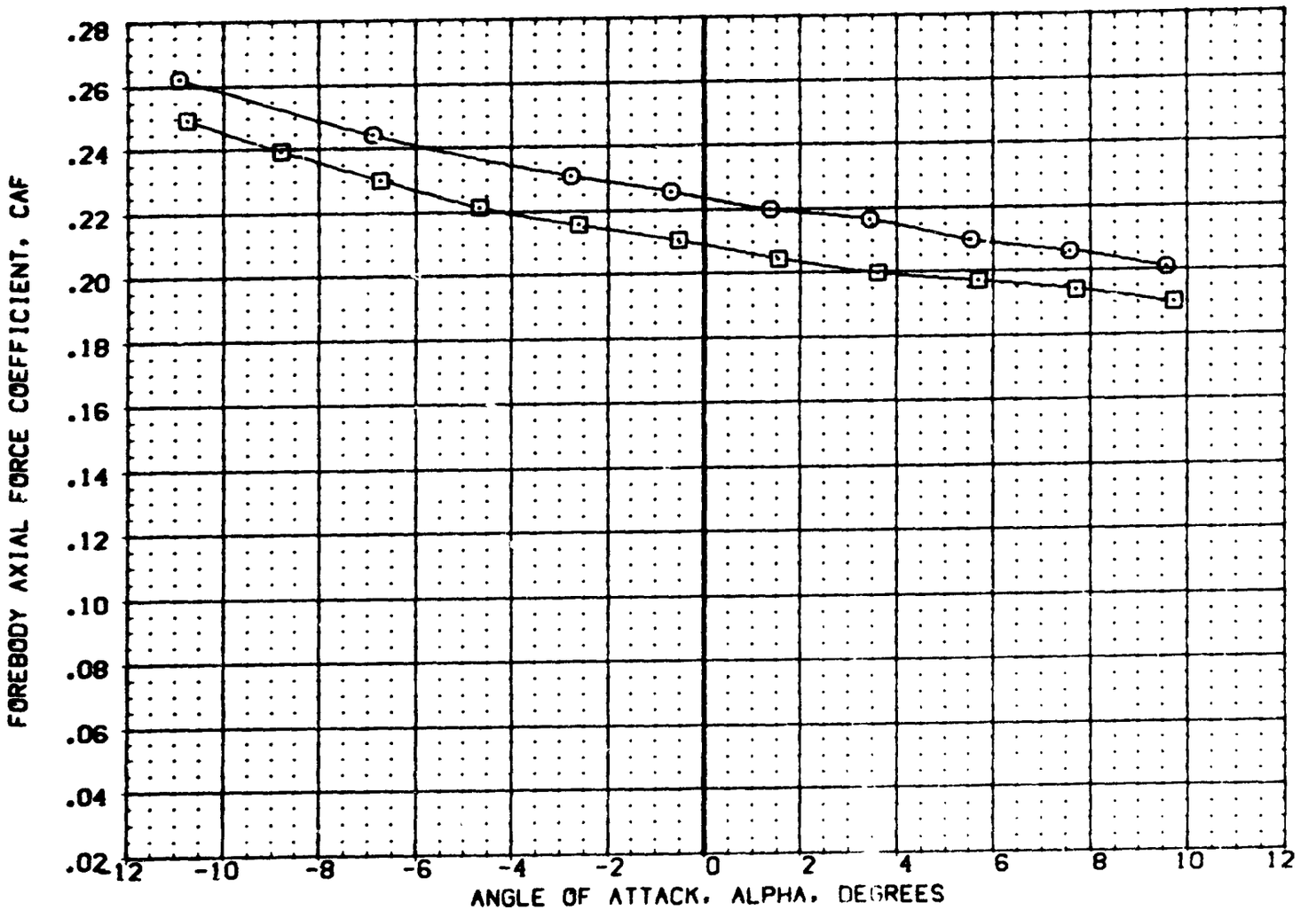



EFFECT OF FAIRINGS ON INTEGRATED VEHICLE LONGITUDINAL CHARACTERISTICS

(E)MACH = 1.46

| DATA SET | SYMBOL | CONFIGURATION DESCRIPTION | BETA | ORBINC | DELTAZ |
|---|---|---|---|---|---|
| (894DC1) | 8 | MSFC 589(1A62F)(034)(T14)(S12) | .000 | .000 | 333.000 |
| (894CC4) | □ | MSFC 589(1A62F)(034)(T9)(S12)(PT4)(FR4) | .000 | .000 | 333.000 |

| REFERENCE INFORMATION | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |



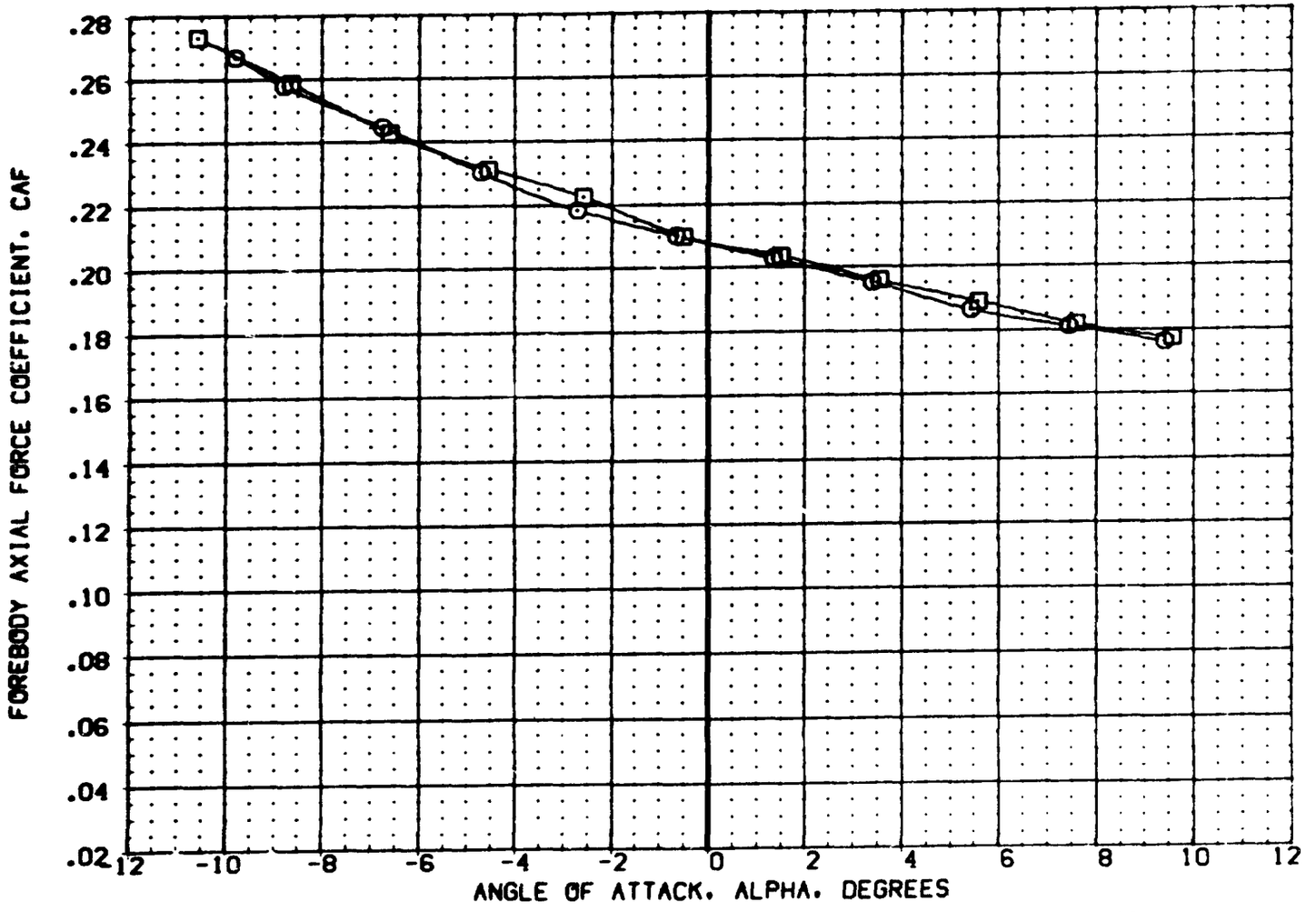

EFFECT OF FAIRINGS ON INTEGRATED VEHICLE LONGITUDINAL CHARACTERISTICS

(F)MACH = 2.99

| DATA SET | SYMBOL | CONFIGURATION DESCRIPTION | BETA | ORBINC | DELTAZ |
|---|---|---|---|---|---|
| (B94C01) | | MSFC 589(IA62F)(034)(T14)(S12) | .000 | .000 | 333.000 |
| (B94C04) | | MSFC 589(IA62F)(034)(T9)(S12)(PT4)(FR4) | .000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |



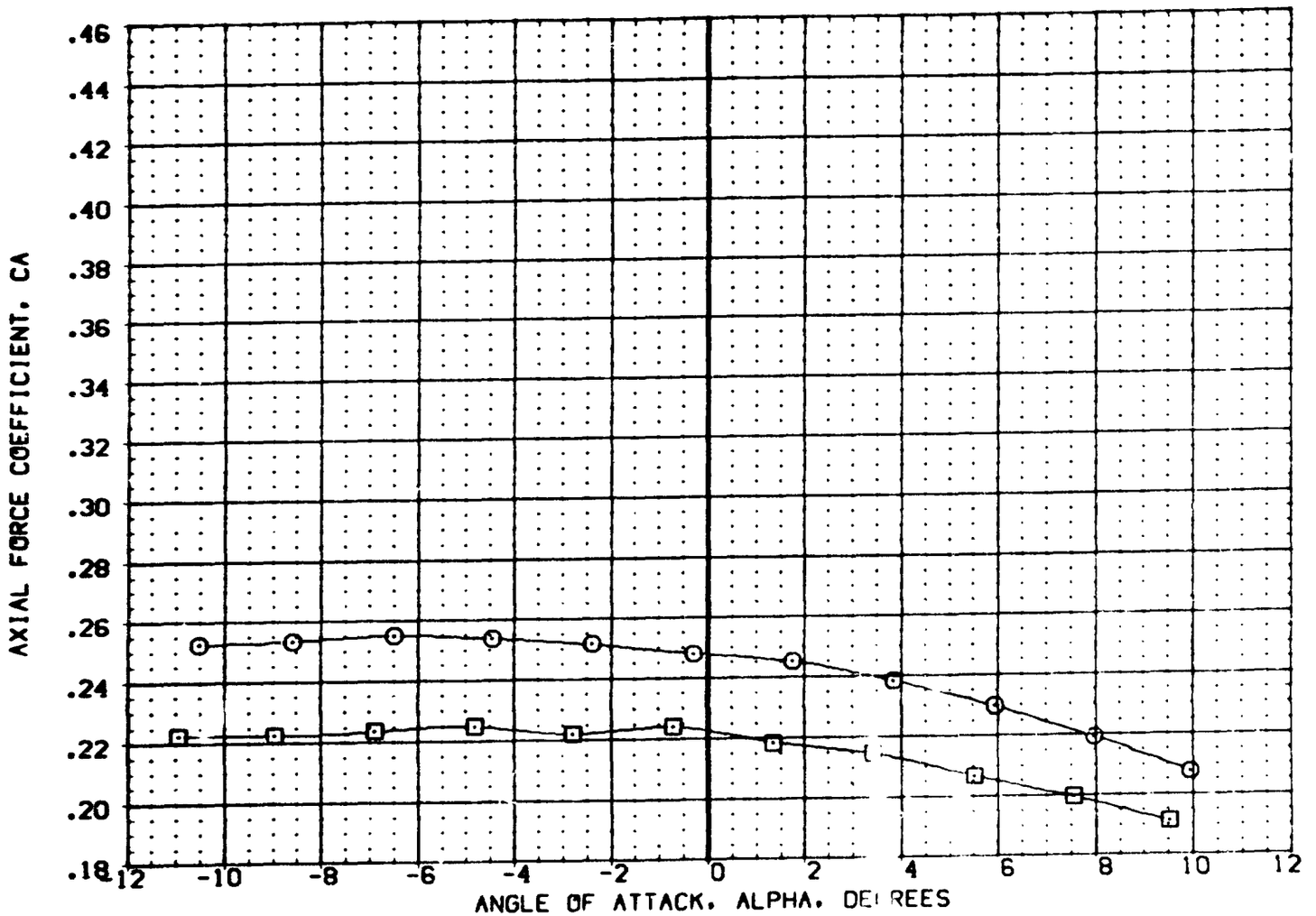

EFFECT OF FAIRINGS ON INTEGRATED VEHICLE LONGITUDINAL CHARACTERISTICS

(G)MACH = 4.96

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ORBINC | DELTAZ |
|---|---|---|---|---|
| (894031) ○ | MSFC 589(1A62F)(034)(T14)(S12) | .000 | .000 | 333.000 |
| (894004) □ | MSFC 589(1A62F)(034)(T9)(S12)(PT4)(FR4) | .000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |



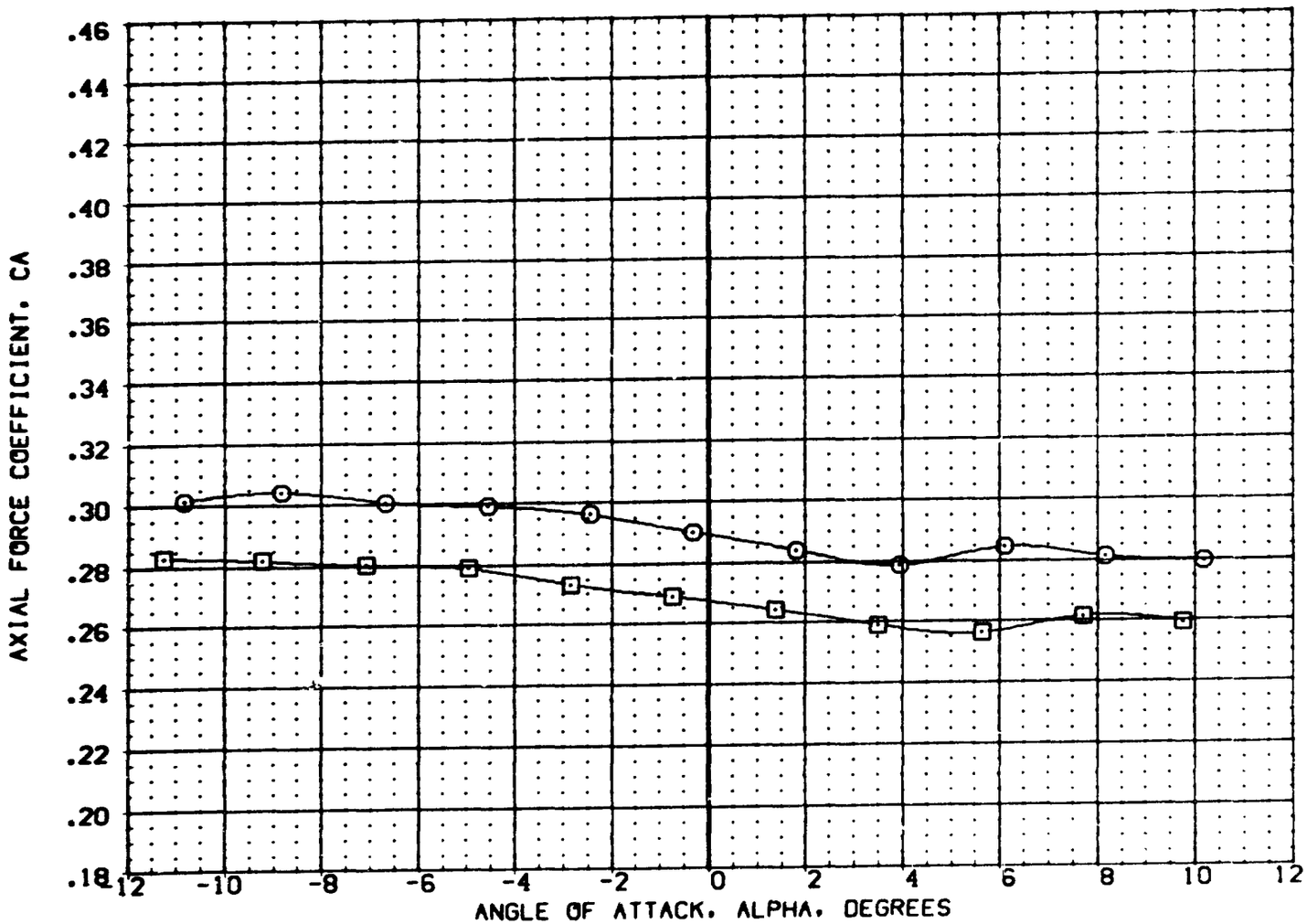

EFFECT OF FAIRINGS ON INTEGRATED VEHICLE LONGITUDINAL CHARACTERISTICS

(A)MACH = .60

| DATA SET | SYMBOL | CONFIGURATION DESCRIPTION | BETA | ORBINC | DELTAZ |
|---|---|---|---|---|---|
| (894001) | ○ | MSFC 589(1A62F)(034)(T14)(S12) | .000 | .000 | 333.000 |
| (894004) | □ | MSFC 589(1A62F)(034)(T9)(S12)(PT4)(FR4) | .000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |



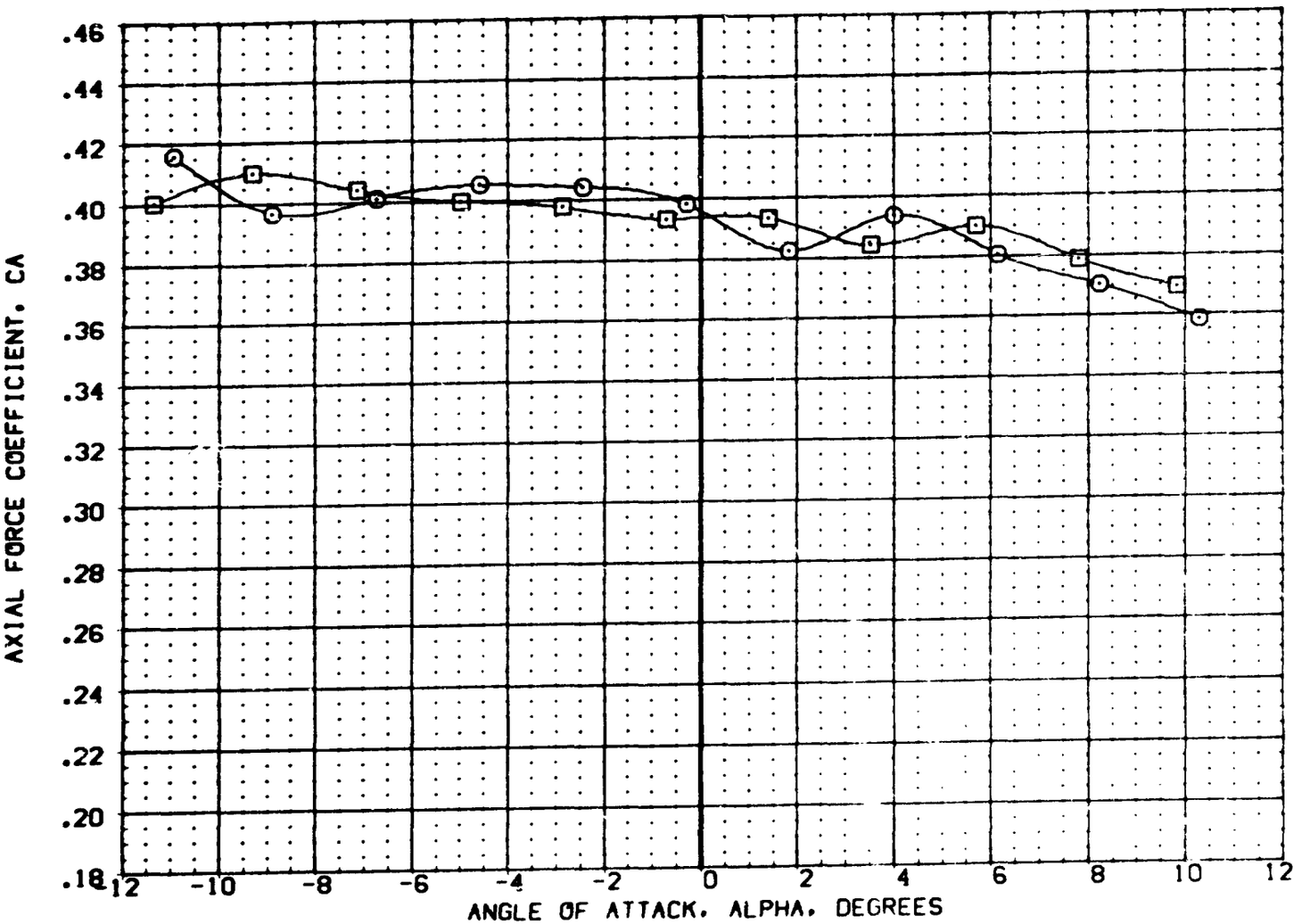

EFFECT OF FAIRINGS ON INTEGRATED VEHICLE LONGITUDINAL CHARACTERISTICS

(B)MACH = .90

| DATA SET | SYMBOL | CONFIGURATION DESCRIPTION | BETA | ORBINC | DELTAZ |
|---|---|---|---|---|---|
| (894001) | ○ | MSFC 589(1A62F)(034)(T14)(S12) | .000 | .000 | 333.000 |
| (894004) | □ | MSFC 589(1A62F)(034)(T9)(S12)(PT4)(FR4) | .000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |



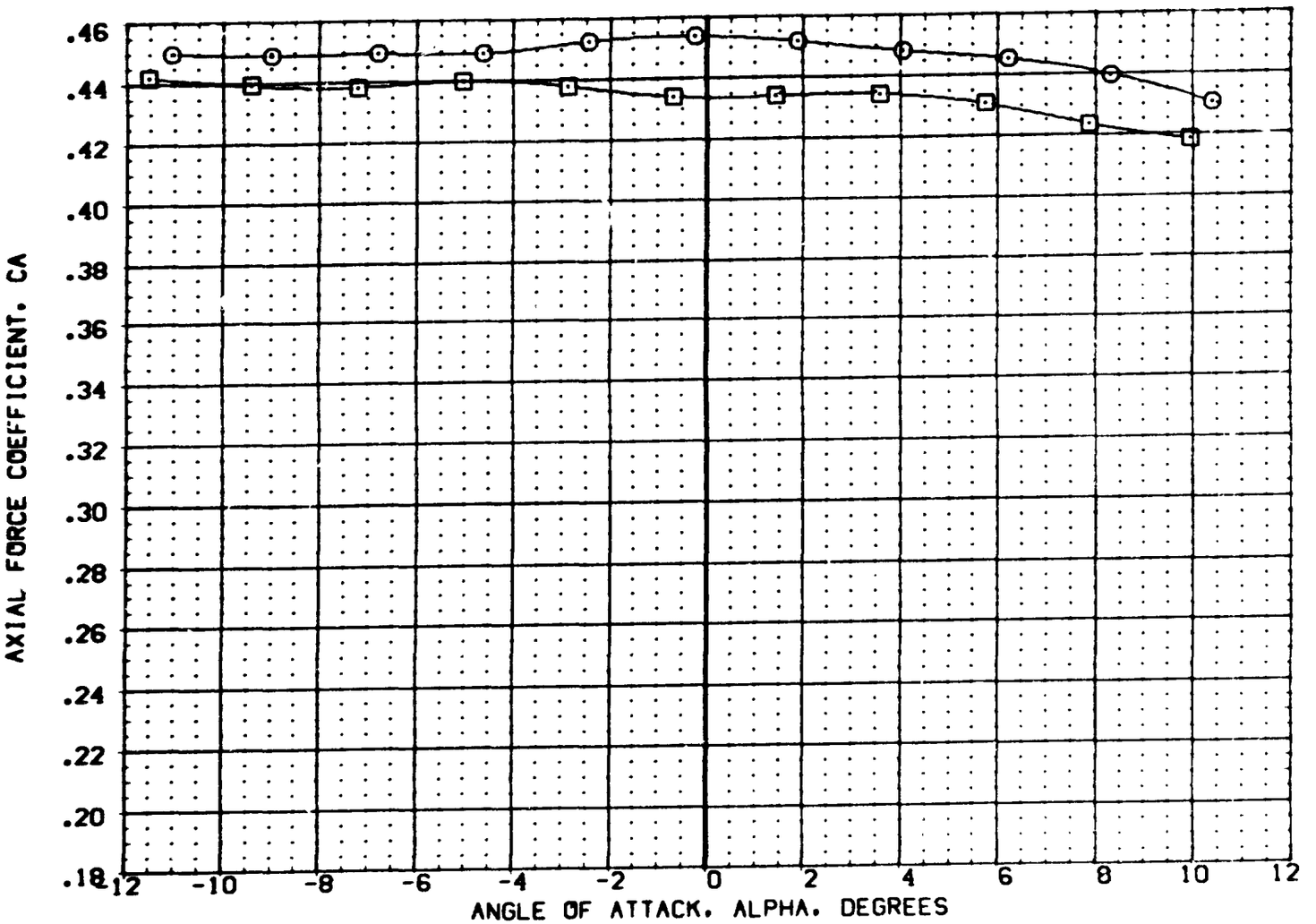

EFFECT OF FAIRINGS ON INTEGRATED VEHICLE LONGITUDINAL CHARACTERISTICS

(C)MACH = 1.00

| DATA SET | SYMBOL | CONFIGURATION DESCRIPTION | BETA | ORBINC | DELTAZ |
|---|---|---|---|---|---|
| (894001) | ○ | MSFC 589(IA62F)(034)(T14)(S12) | .000 | .000 | 333.000 |
| (894004) | □ | MSFC 589(IA62F)(034)(T9)(S12)(PT4)(FR4) | .000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |

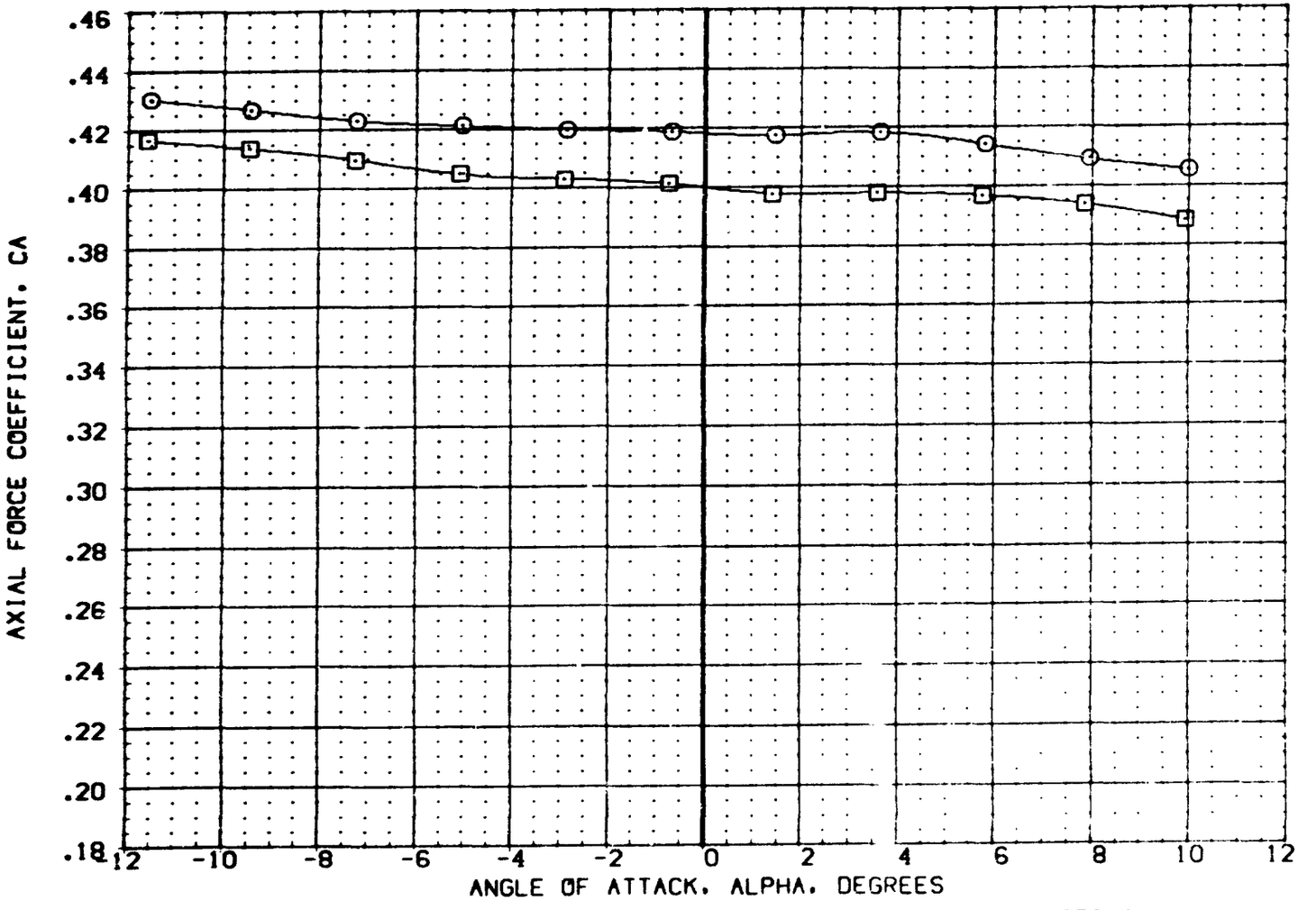



EFFECT OF FAIRINGS ON INTEGRATED VEHICLE LONGITUDINAL CHARACTERISTICS

(D)MACH = 1.20

| DATA SET | SYMBOL | CONFIGURATION DESCRIPTION | BETA | ORBINC | DELTAZ |
|---|---|---|---|---|---|
| (894001) | ○ | MSFC 589(1A62F)(034)(T14)(S12) | .000 | .000 | 333.000 |
| (894004) | □ | MSFC 589(1A62F)(034)(T9)(S12)(PT4)(FR4) | .000 | .000 | 333.000 |

| REFERENCE INFORMATION | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |



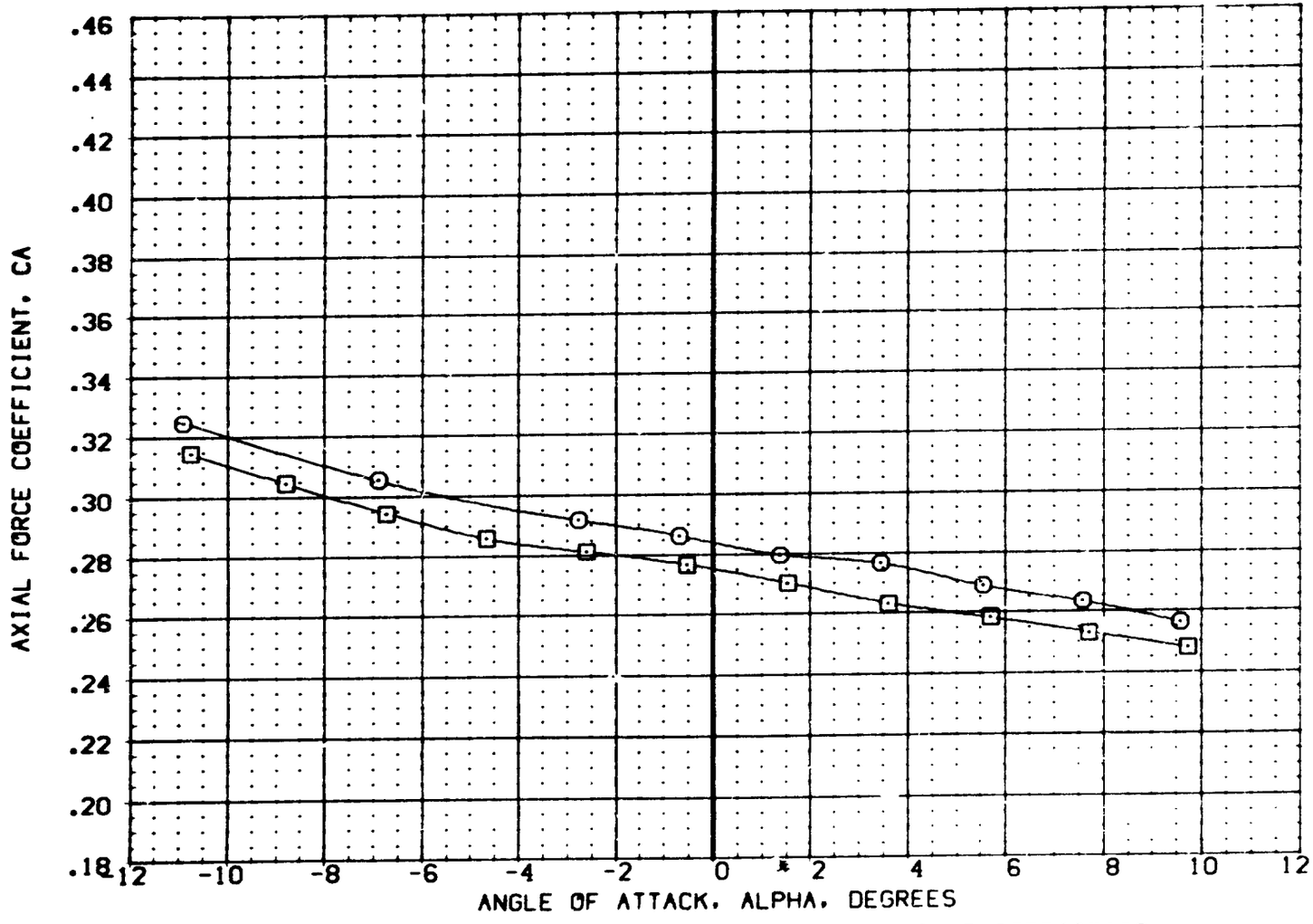

EFFECT OF FAIRINGS ON INTEGRATED VEHICLE LONGITUDINAL CHARACTERISTICS

(E)MACH = 1.46

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | BETA | ORBINC | DELTAZ |
|---|---|---|---|---|
| (894001) | MSFC 589(1A62F)(034)(T14)(S12) | .000 | .000 | 333.000 |
| (894004) □ | MSFC 589(1A62F)(034)(T9)(S12)(PT4)(FR4) | .000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |



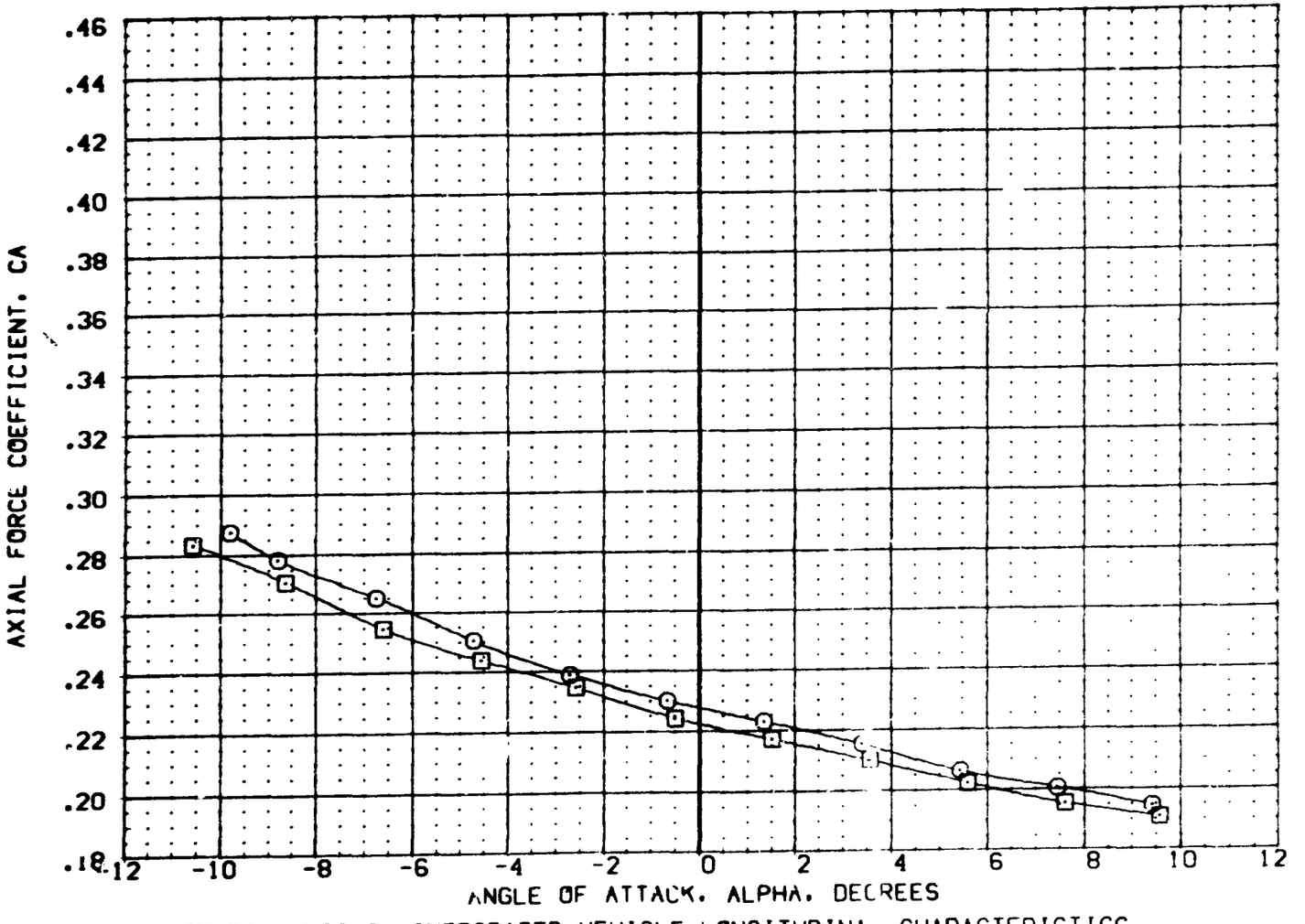

EFFECT OF FAIRINGS ON INTEGRATED VEHICLE LONGITUDINAL CHARACTERISTICS

(F)MACH = 2.99

| DATA SET | SYMBOL | CONFIGURATION DESCRIPTION | BETA | ORBINC | DELTAZ |
|---|---|---|---|---|---|
| 894001 | ○ | MSFC 589(,A62F)(034),T14)(S12) | .000 | .000 | 333.000 |
| 894004 | □ | MSFC 589(,A62F)(034)(T9)(S12)(PT4)(FR4) | .000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |



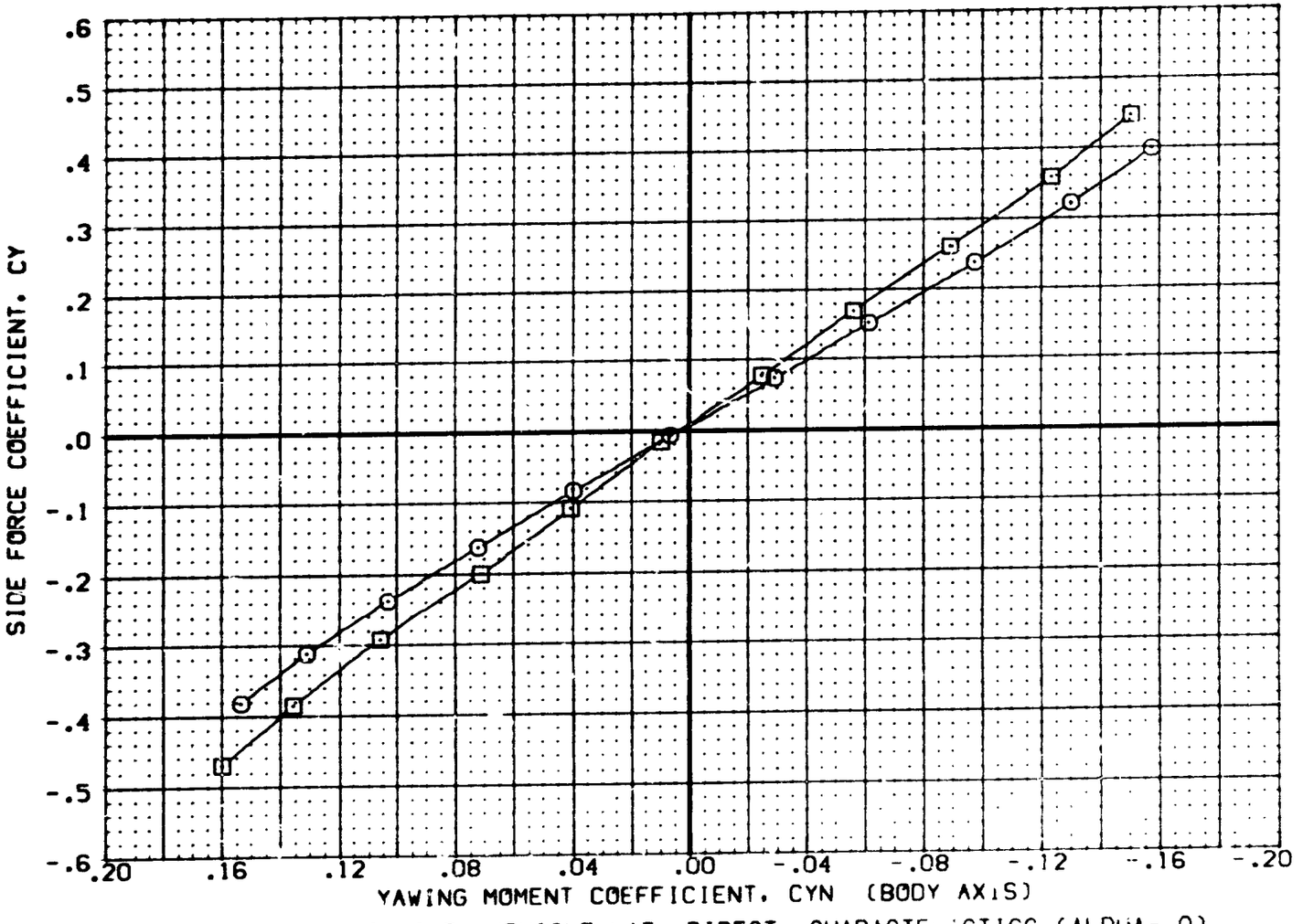

EFFECT OF FAIRINGS ON INTEGRATED VEHICLE LONGITUDINAL CHARACTERISTICS

(G)MACH = 4.96

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | ALPHA | ORBINC | DELTAZ |
|---|---|---|---|---|
| (A94003) ○ | MSFC 589(1A62F)(034)(T14)(SI2) | .000 | .000 | 333.000 |
| (A94006) □ | MSFC 589.1A62F)(034)(T9)(SI2)(PT4)(FR4) | .000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0140 | |



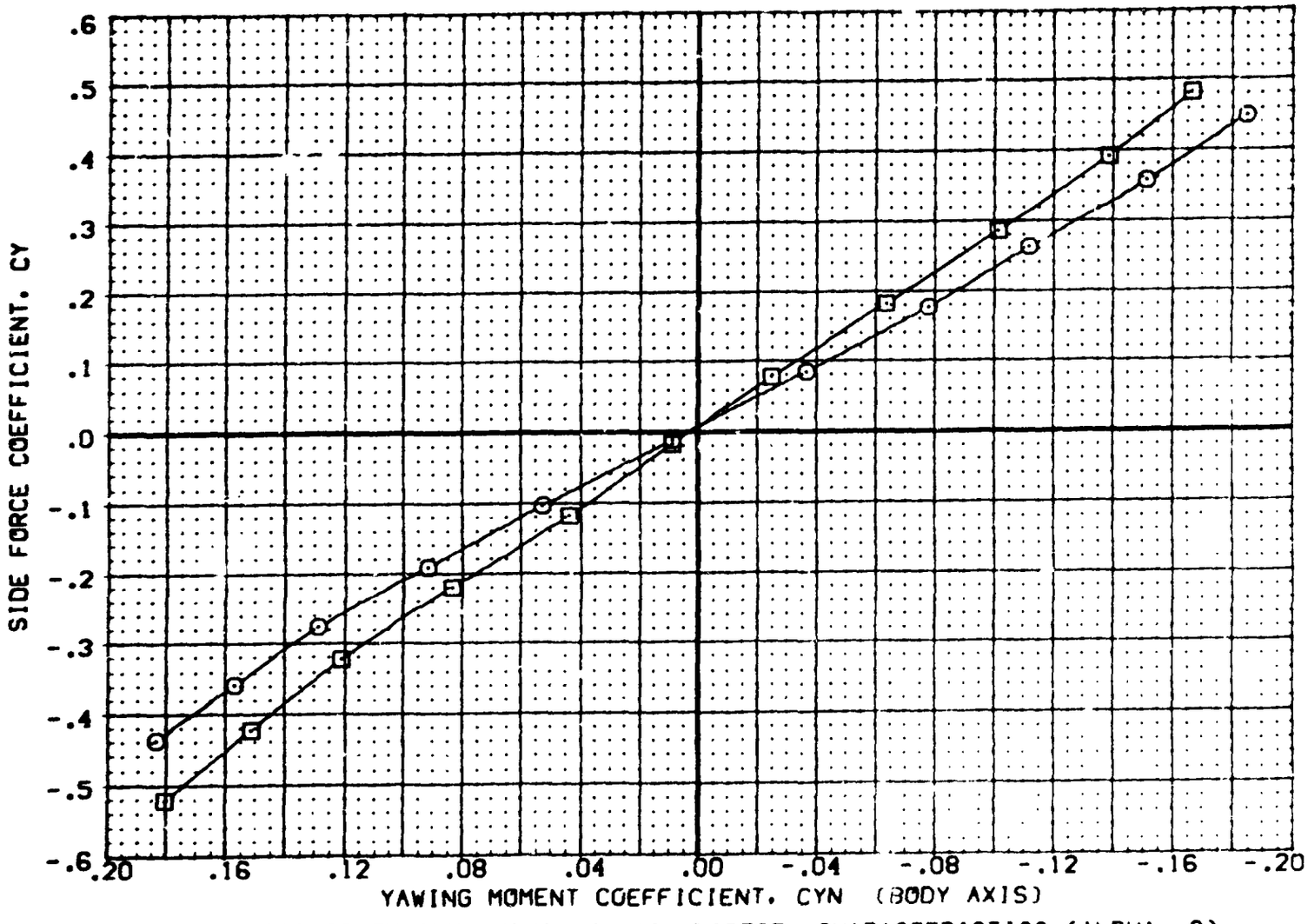

EFFECT OF FAIRINGS ON INT. VEHICLE LAT.-DIRECT. CHARACTERISTICS (ALPHA= 0)

(A)MACH = .60

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | ALPHA | ORBINC | DELTAZ |
|---|---|---|---|---|
| (A94003) | MSFC 589((A62F)(034)(T14)(S12) | .000 | .000 | 333.000 |
| (A94006) | MSFC 589((A62F)(034)(T9)(S12)(PT4)(FR4) | .000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |



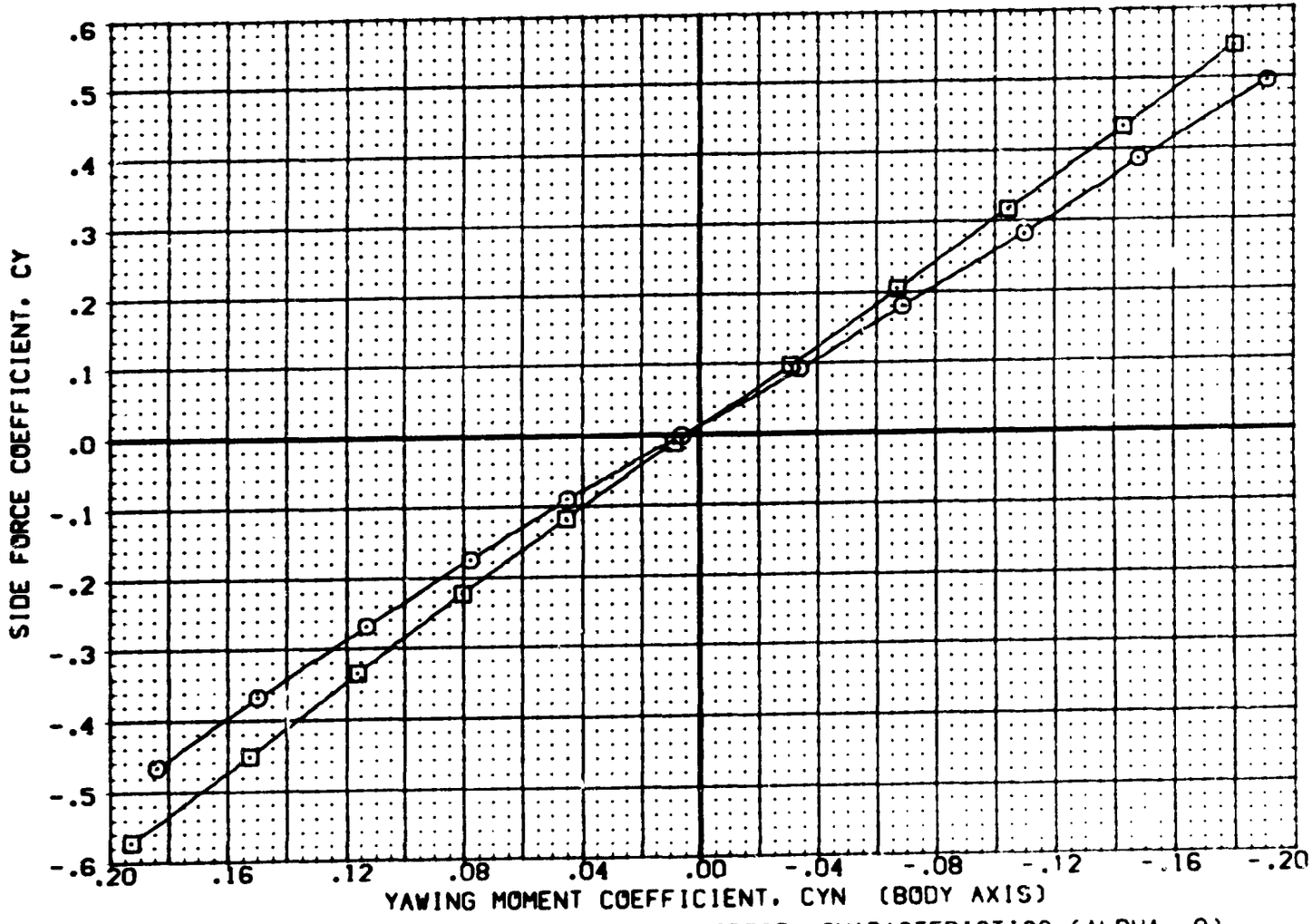

EFFECT OF FAIRINGS ON INT. VEHICLE LAT.-DIRECT. CHARACTERISTICS (ALPHA= 0)

(B)MACH = .90

| DATA SET SYMBOL | | CONFIGURATION DESCRIPTION | ALPHA | ORBINC | DELTAZ |
|---|---|---|---|---|---|
| (A94003) | 8 | MSFC S89(1A62F)(034)(T14)(S12) | .000 | .000 | 333.000 |
| (A94006) | | MSFC S89(1A62F)(034)(T9)(S12)(PT4)(FR4) | .000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.16[illegible] | IN. |
| BREF | [illegible].16.00 | IN. |
| XMRP | 2.6[illegible]00 | IN. |
| YMRP | .00[illegible] | IN. |
| ZMRP | .0[illegible] | IN. |
| SCALE | .0040 | |



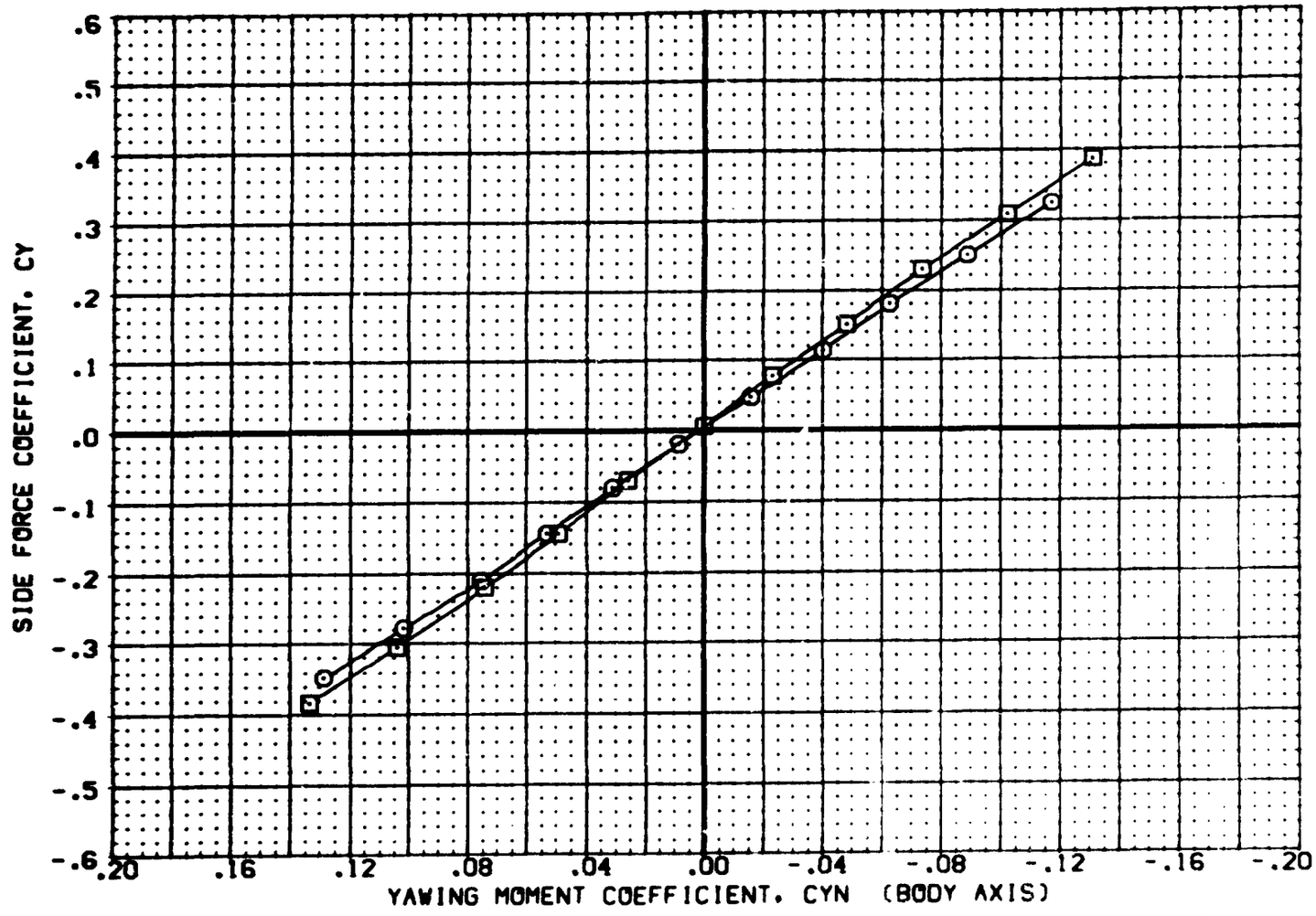

EFFECT OF FAIRINGS ON INT. VEHICLE LAT.-DIRECT. CHARACTERISTICS (ALPHA= 0)

(C)MACH = 1.20

| DATA SET | SYMBOL | CONFIGURATION DESCRIPTION | ALPHA | ORBINC | DELTAZ |
|---|---|---|---|---|---|
| A94003 | ○ | MSFC 589(1A62F)(034)(T14)(S12) | .000 | .000 | 333.000 |
| A94006 | □ | MSFC 589(1A62F)(034)(T9)(S12)(PT4)(FR4) | .000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |




EFFECT OF FAIRINGS ON INT. VEHICLE LAT.-DIRECT. CHARACTERISTICS (ALPHA= 0)

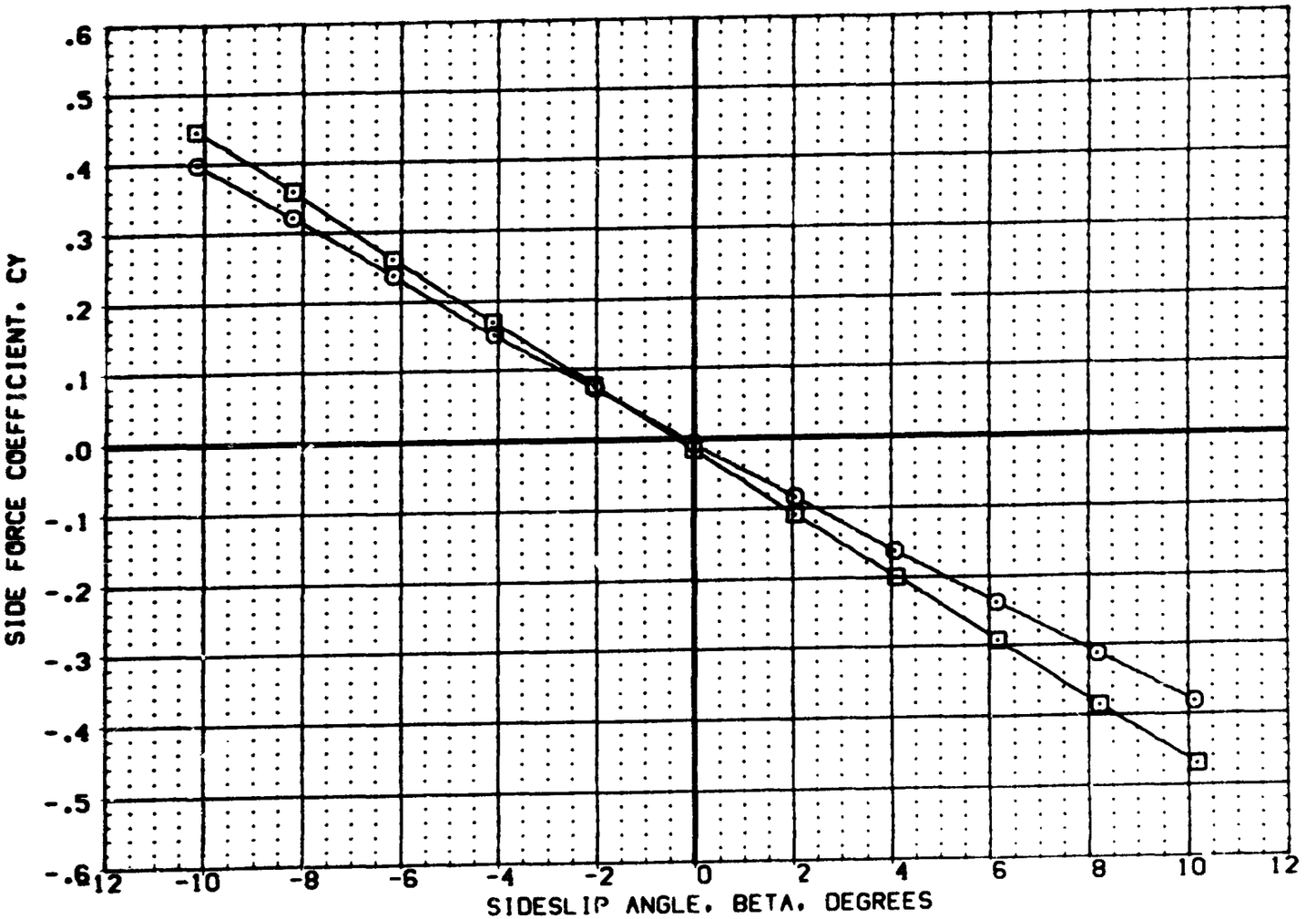
(O)MACH = 4.96

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION |
|---|---|
| (A94003) ○ | MSFC 589(1A62F)(034)(T14)(S12) |
| (A94006) □ | MSFC 589(1A62F)(034)(T9)(S12)(PT4)(FR4) |

| ALPHA | ORBINC | DELTAZ |
|---|---|---|
| .000 | .000 | 333.000 |
| .000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0140 | |



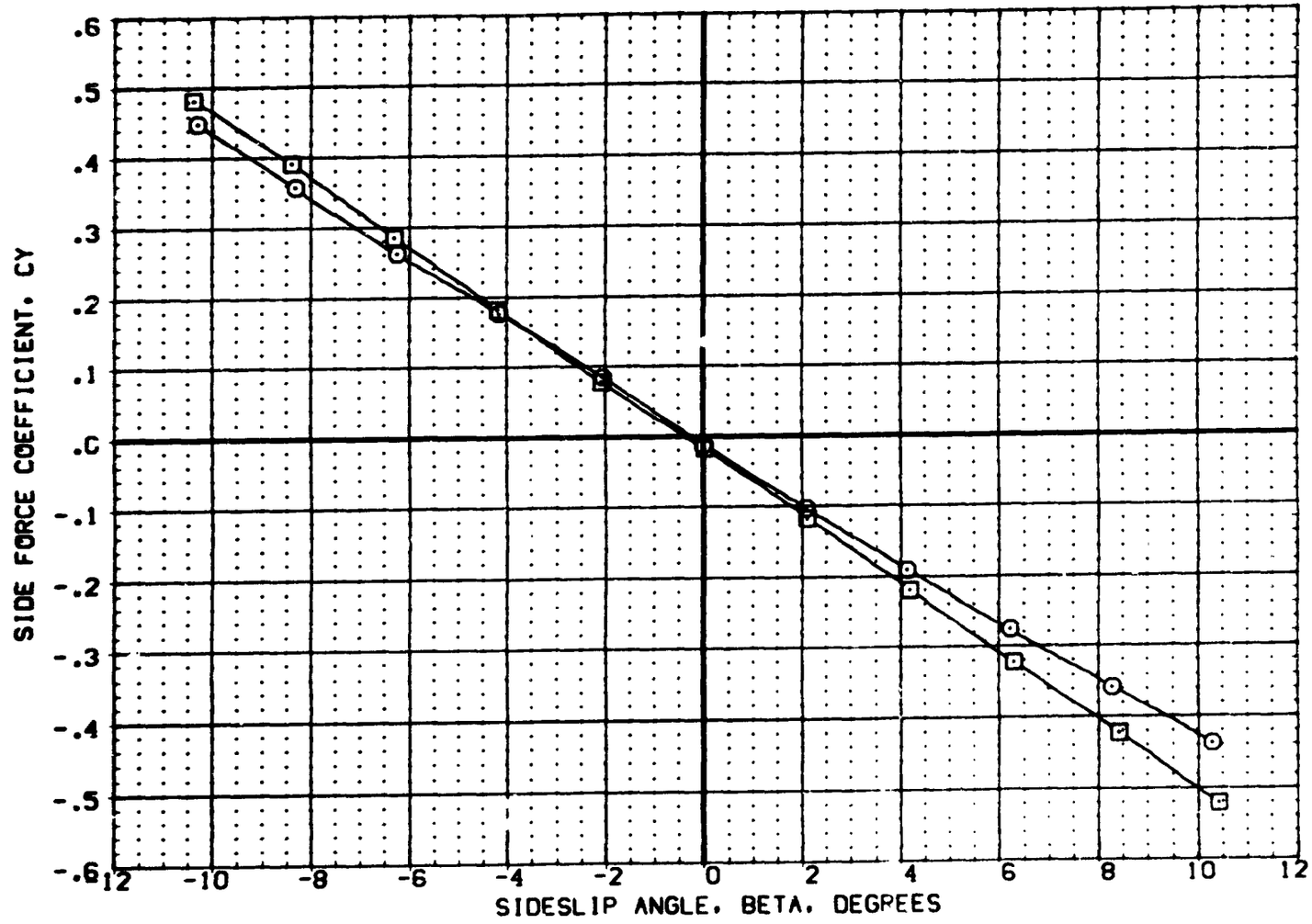

EFFECT OF FAIRINGS ON INT. VEHICLE LAT.-DIRECT. CHARACTERISTICS (ALPHA= 0)

(A)MACH = .60

| DATA SET | SYMBOL | CONFIGURATION DESCRIPTION | ALPHA | ORBINC | DELTAZ |
|---|---|---|---|---|---|
| (A94003) | | MSFC 589(1A62F)(034)(T14)(S12) | .000 | .000 | 333.000 |
| (A94006) | | MSFC 589(1A62F)(034)(T9)(S12)(PT4)(FR4) | .000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |



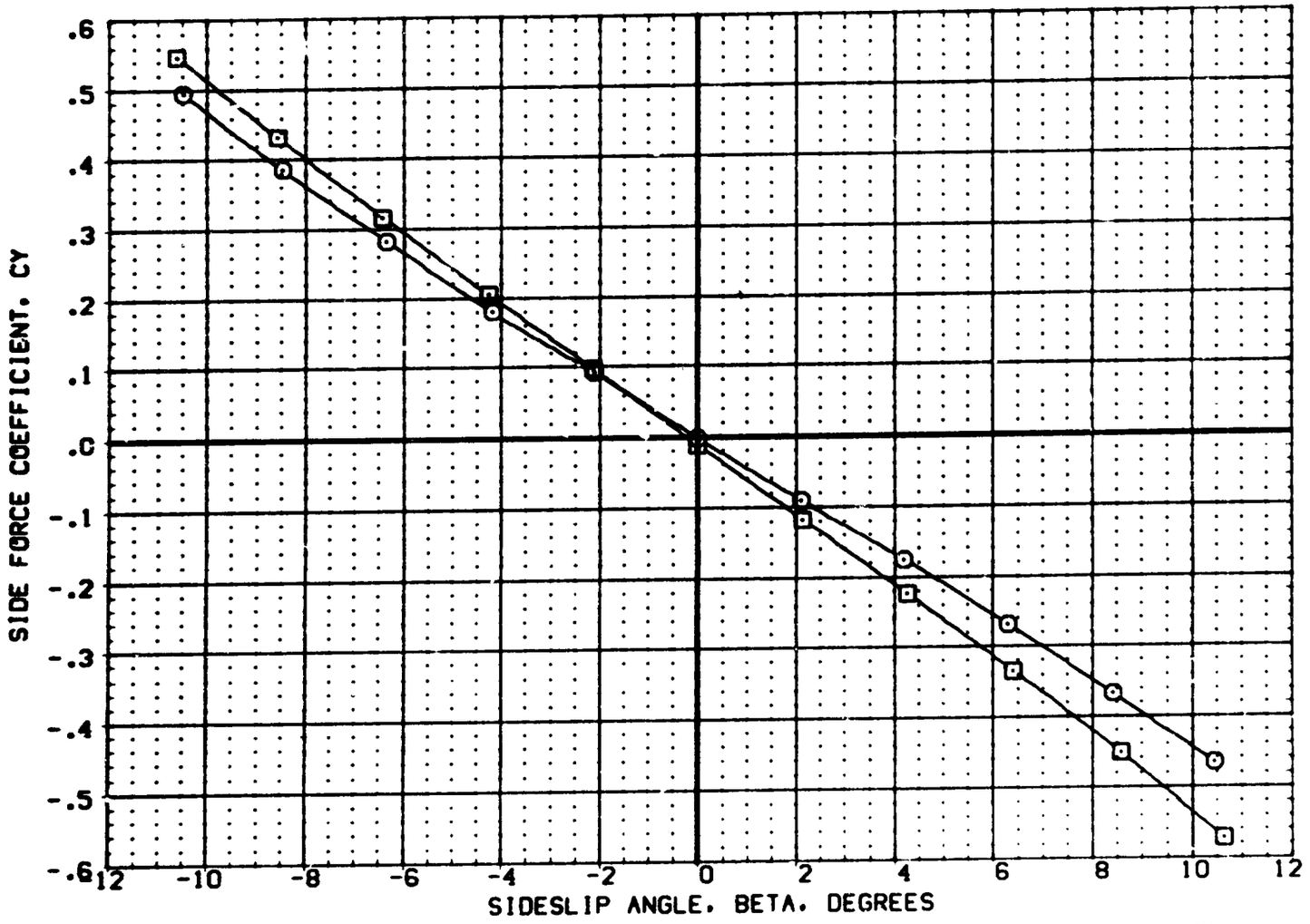

EFFECT OF FAIRINGS ON INT. VEHICLE LAT.-DIRECT. CHARACTERISTICS (ALPHA= 0)

(B)MACH = .90

| DATA SET | SYMBOL | CONFIGURATION DESCRIPTION | ALPHA | ORBINC | DELTAZ |
|---|---|---|---|---|---|
| (A94003) | ○ | MSFC 589(1A62F)(034)(T14)(S12) | .000 | .000 | 333.000 |
| (A94006) | □ | MSFC 589(1A62F)(034)(T9)(S12)(PT4)(FR4) | .000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |



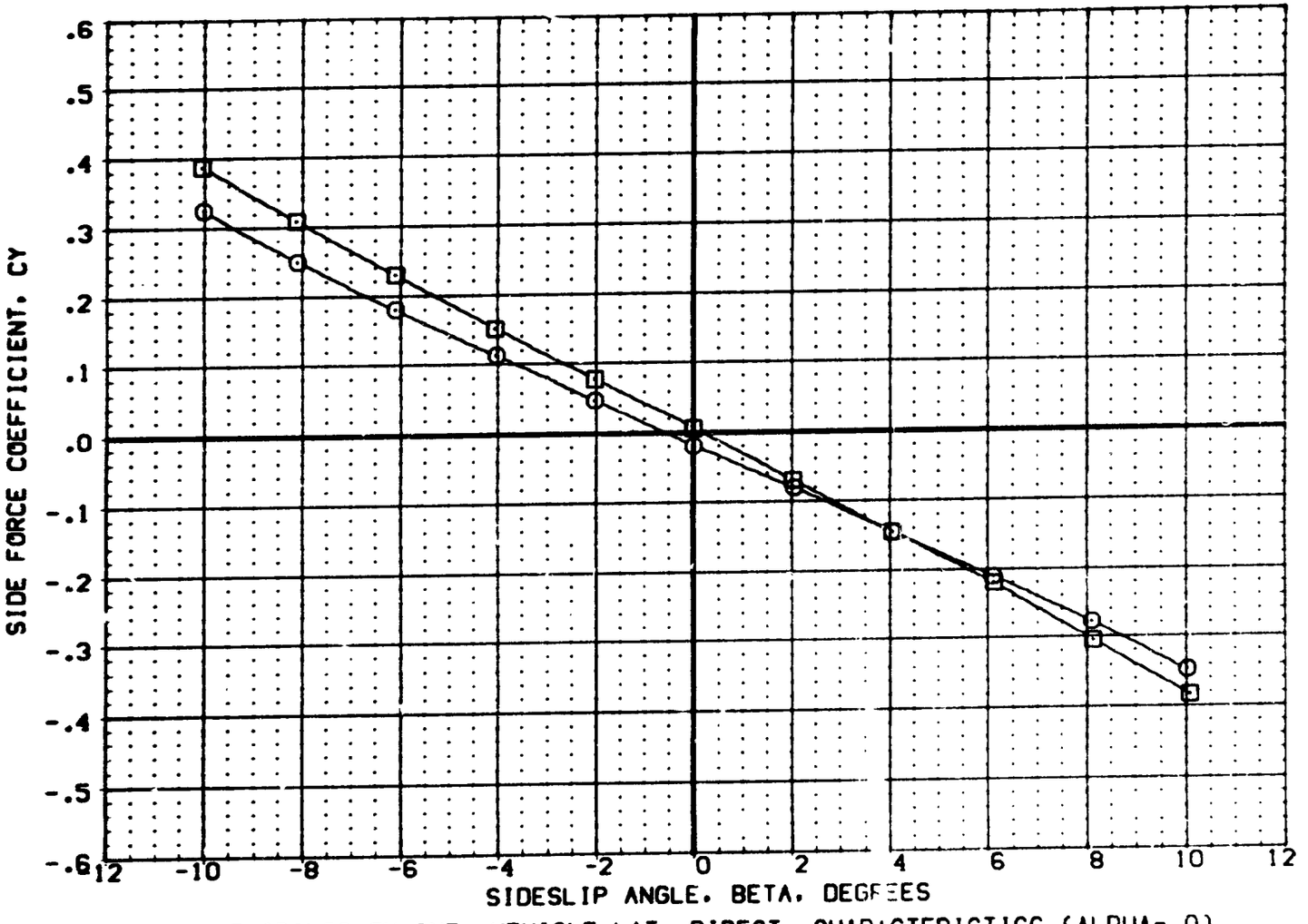

EFFECT OF FAIRINGS ON INT. VEHICLE LAT.-DIRECT. CHARACTERISTICS (ALPHA= 0)

(C)MACH = 1.20

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | ALPHA | ORBINC | DELTAZ |
|---|---|---|---|---|
| (A94003) | MSFC 589(1A62F)(034)(T14)(S12) | .000 | .000 | 333.000 |
| (A94006) | MSFC 589(1A62F)(034)(T9)(S12)(PT4)(FR4) | .000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |



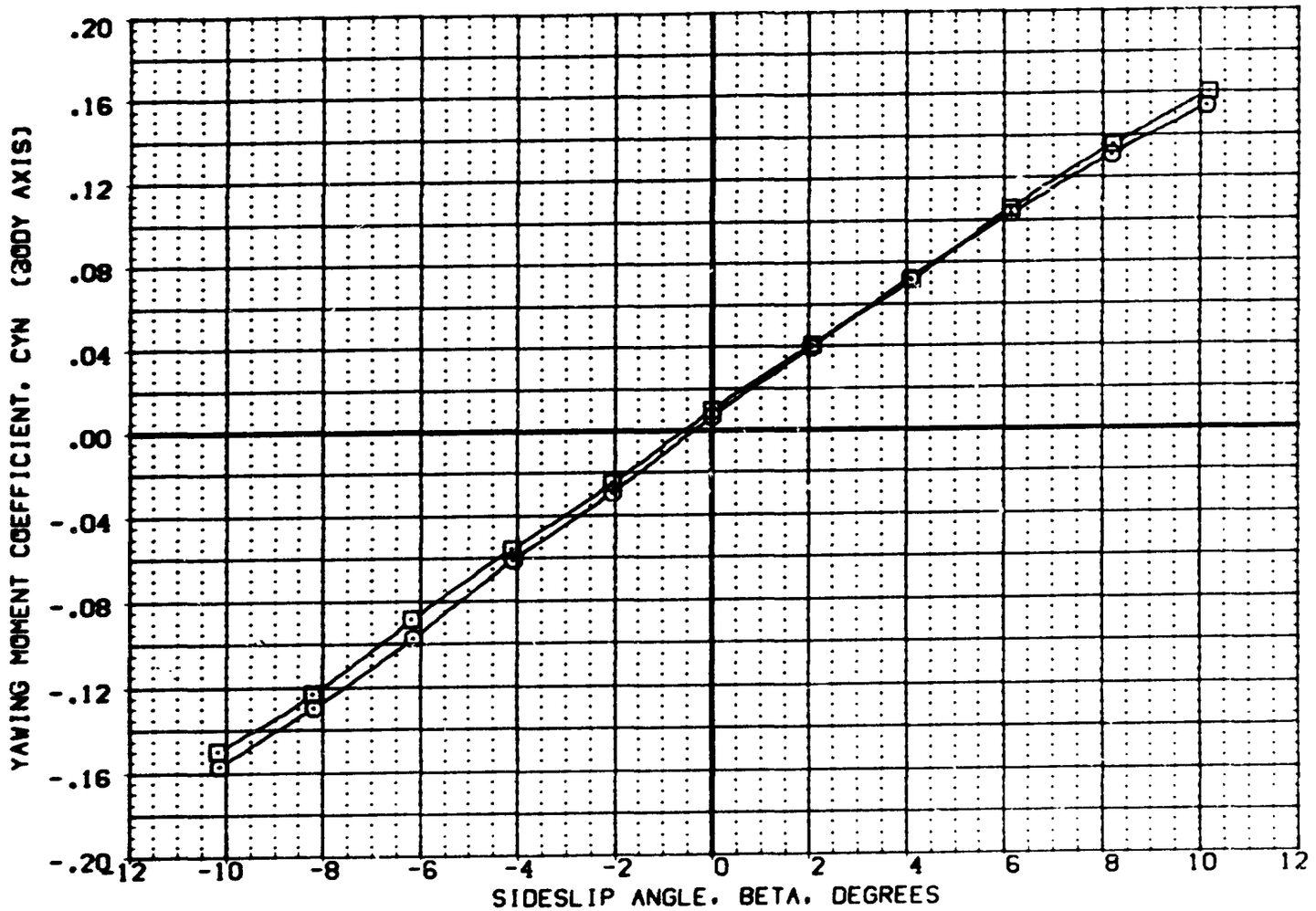

EFFECT OF FAIRINGS ON INT. VEHICLE LAT.-DIRECT. CHARACTERISTICS (ALPHA= 0)

(D)MACH = 4.96

| DATA SET SYMBOL | | CONFIGURATION DESCRIPTION | ALPHA | ORBINC | DELTAZ |
|---|---|---|---|---|---|
| (A94003) | 8 | MSFC 589(1A62F)(034)(T18)(S12) | .000 | .000 | 333.000 |
| (A94006) | □ | MSFC 589(1A62F)(034)(T9)(S12)(PT4)(FR4) | .000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |

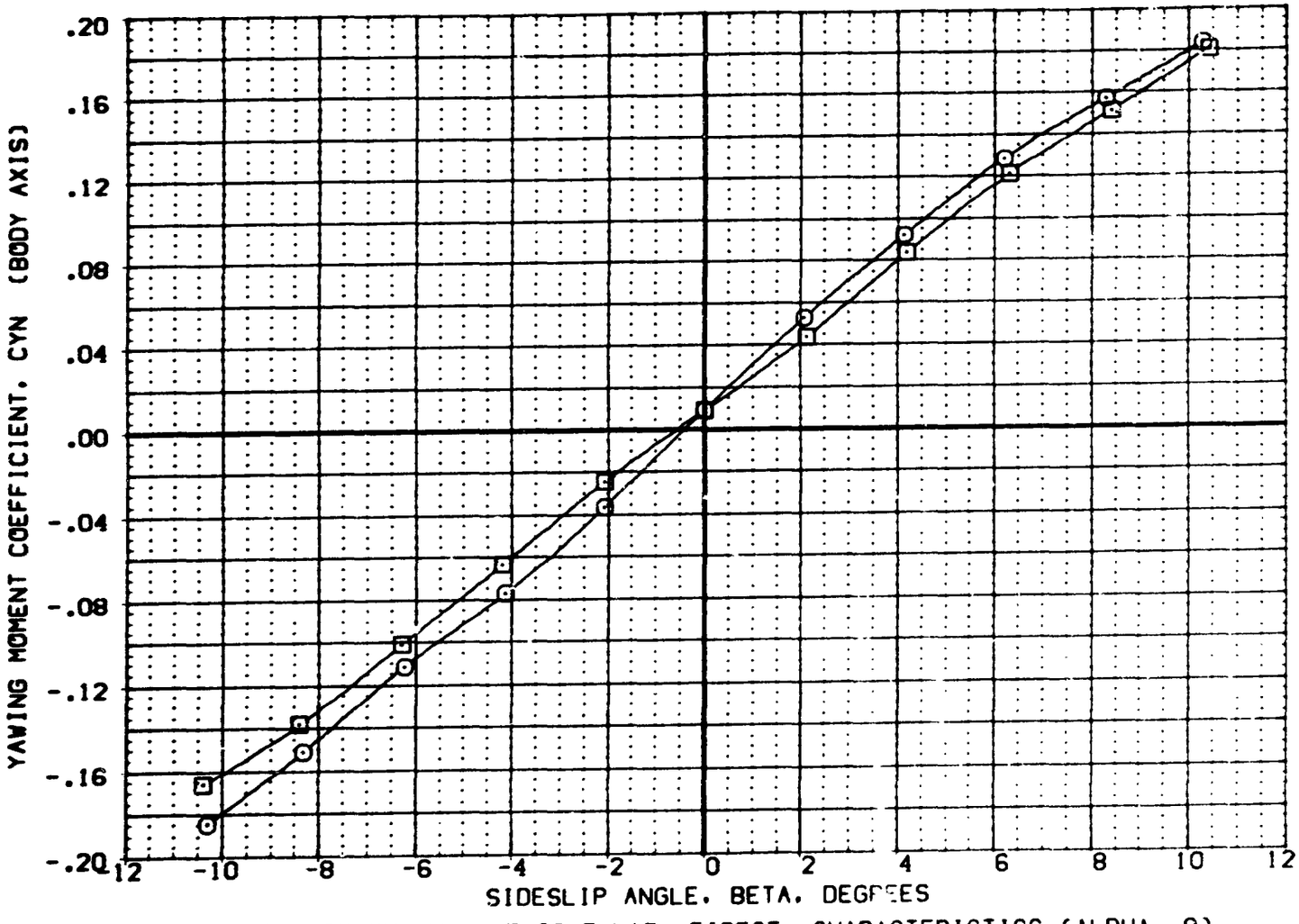



EFFECT OF FAIRINGS ON INT. VEHICLE LAT.-DIRECT. CHARACTERISTICS (ALPHA= 0)

(A)MACH = .60

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | ALPHA | ORBINC | DELTAZ |
|---|---|---|---|---|
| (A94003) | MSFC 589(1A62F)(034)(T14)(S12) | .000 | .000 | 333.000 |
| (A94006) | MSFC 589(1A62F)(034)(T9)(S12)(PT4)(FR4) | .000 | .000 | 333.000 |

| REFERENCE INFORMATION | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |



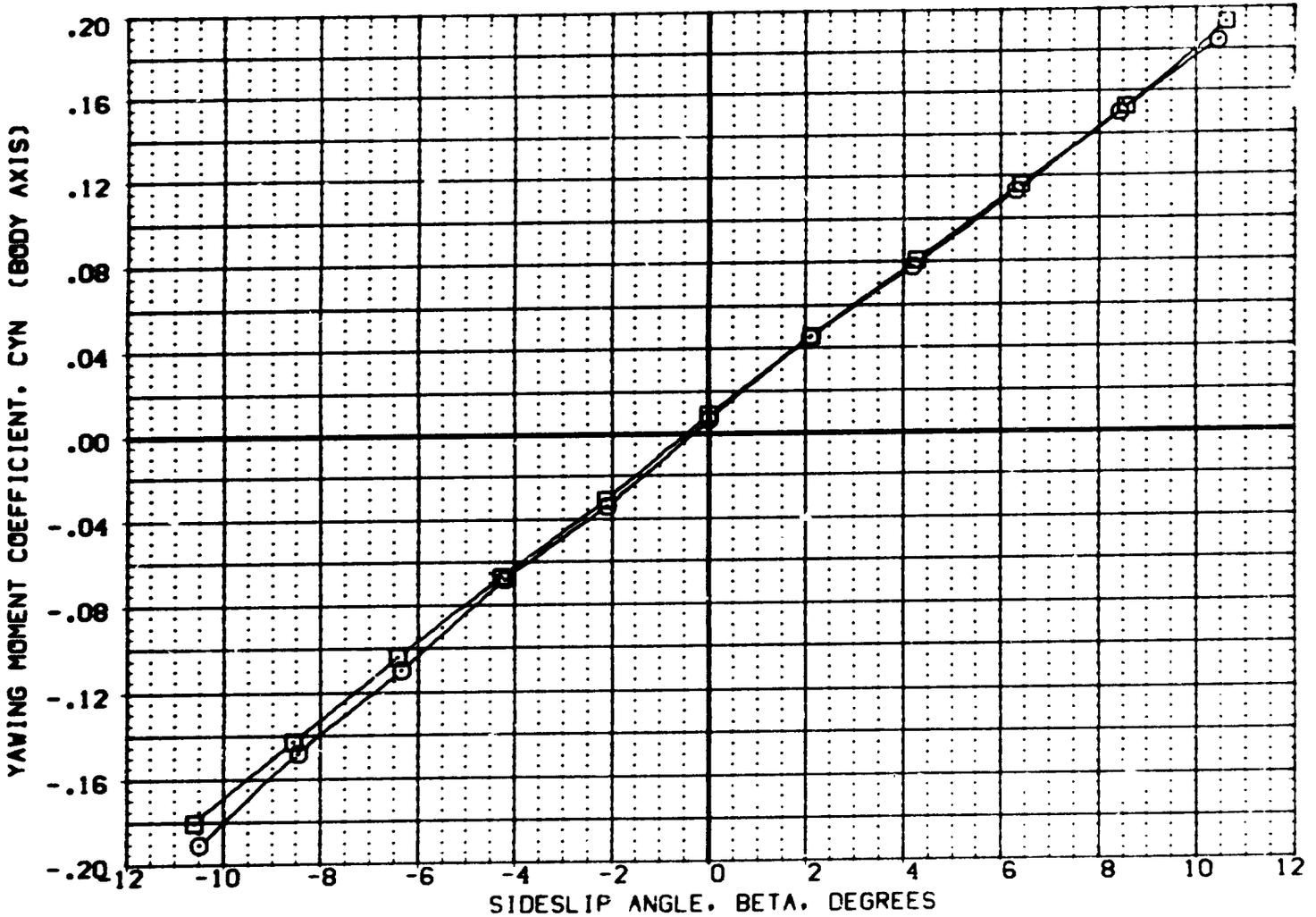

EFFECT OF FAIRINGS ON INT. VEHICLE LAT.-DIRECT. CHARACTERISTICS (ALPHA= 0)

(B)MACH = .90

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | ALPHA | ORBINC | DELTAZ |
|---|---|---|---|---|
| (A94003) | MSFC 589(1A62[illegible])(034)(T14)(S12) | .000 | .000 | 333.000 |
| (A94006) | MSFC 589(1A62F)(034)(T9)(S12)(PT4)(FR4) | .000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |



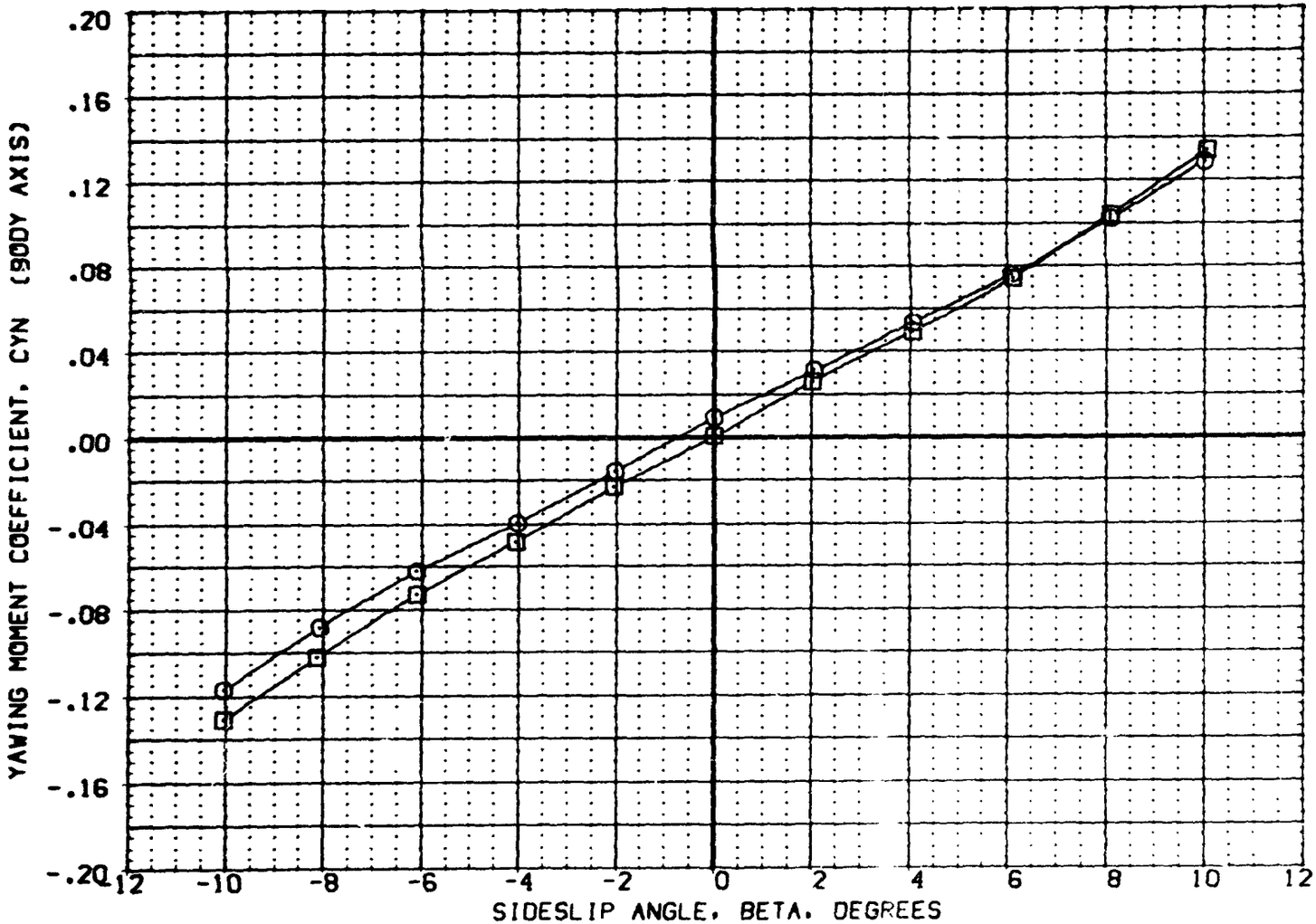

EFFECT OF FAIRINGS ON INT. VEHICLE LAT.-DIRECT. CHARACTERISTICS (ALPHA= 0)

(C)MACH = 1.20

| DATA SET | SYMBOL | CONFIGURATION DESCRIPTION | ALPHA | ORBINC | DELTAZ |
|---|---|---|---|---|---|
| (A94003) | ○ | MSFC S89(1A62F)(034)(T14)(S12) | .000 | .000 | 333.000 |
| (A94006) | □ | MSFC S89(1A62F)(034)(T9)(S12)(PT4)(FR4) | .000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |



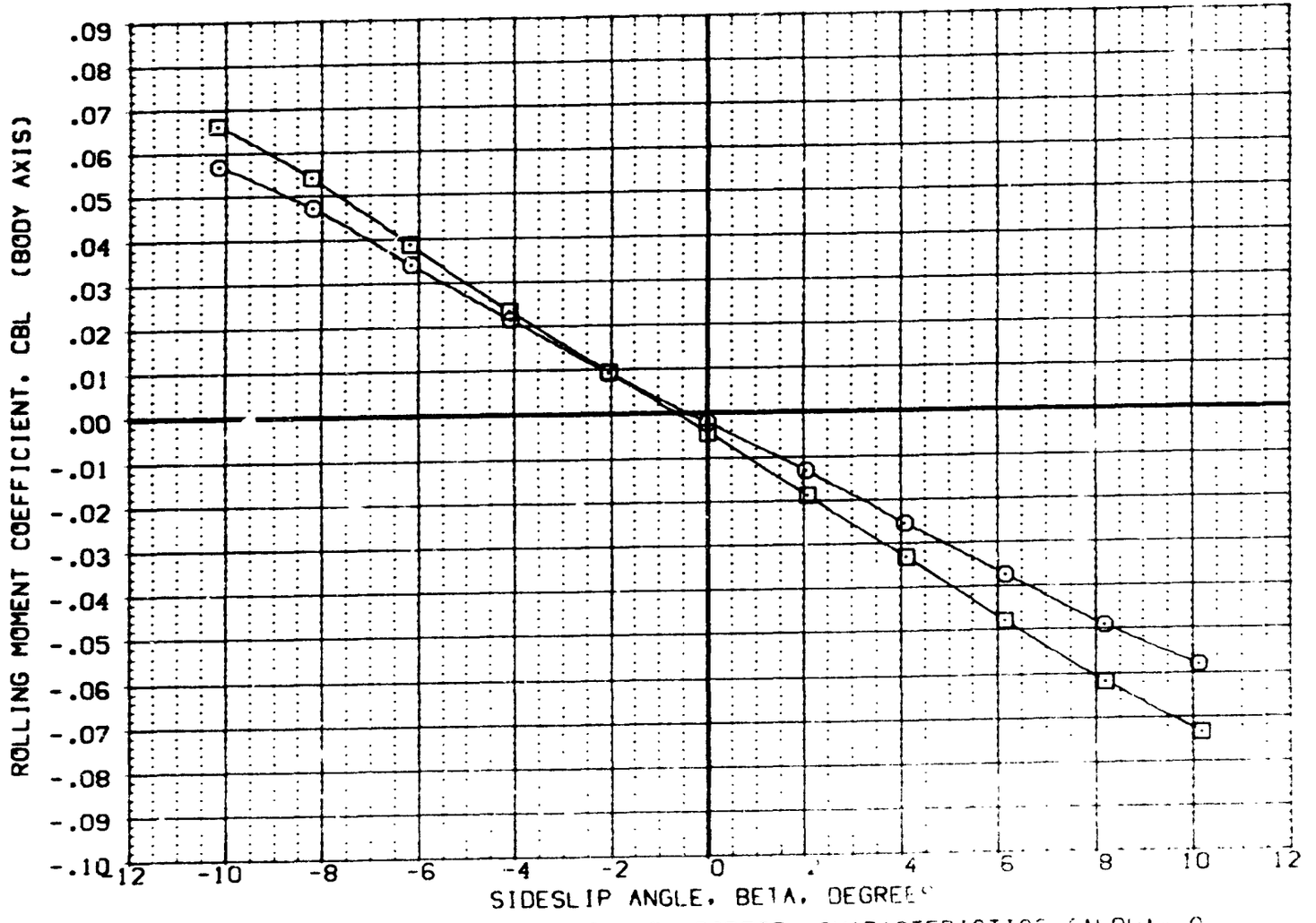

EFFECT OF FAIRINGS ON INT. VEHICLE LAT.-DIRECT. CHARACTERISTICS (ALPHA= 0)

(D)MACH = 4.96

| DATA SET | SYMBOL | CONFIGURATION DESCRIPTION | ALPHA | ORBINC | DELTAZ |
|---|---|---|---|---|---|
| (A94003) | ○ | MSFC 589((A62F)((034)((T14)(S12) | .000 | .000 | 333.000 |
| (A94006) | □ | MSFC 589((A62F)((034)((T9)(S12)(PT4)(FR4) | .000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6000 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .40 | |



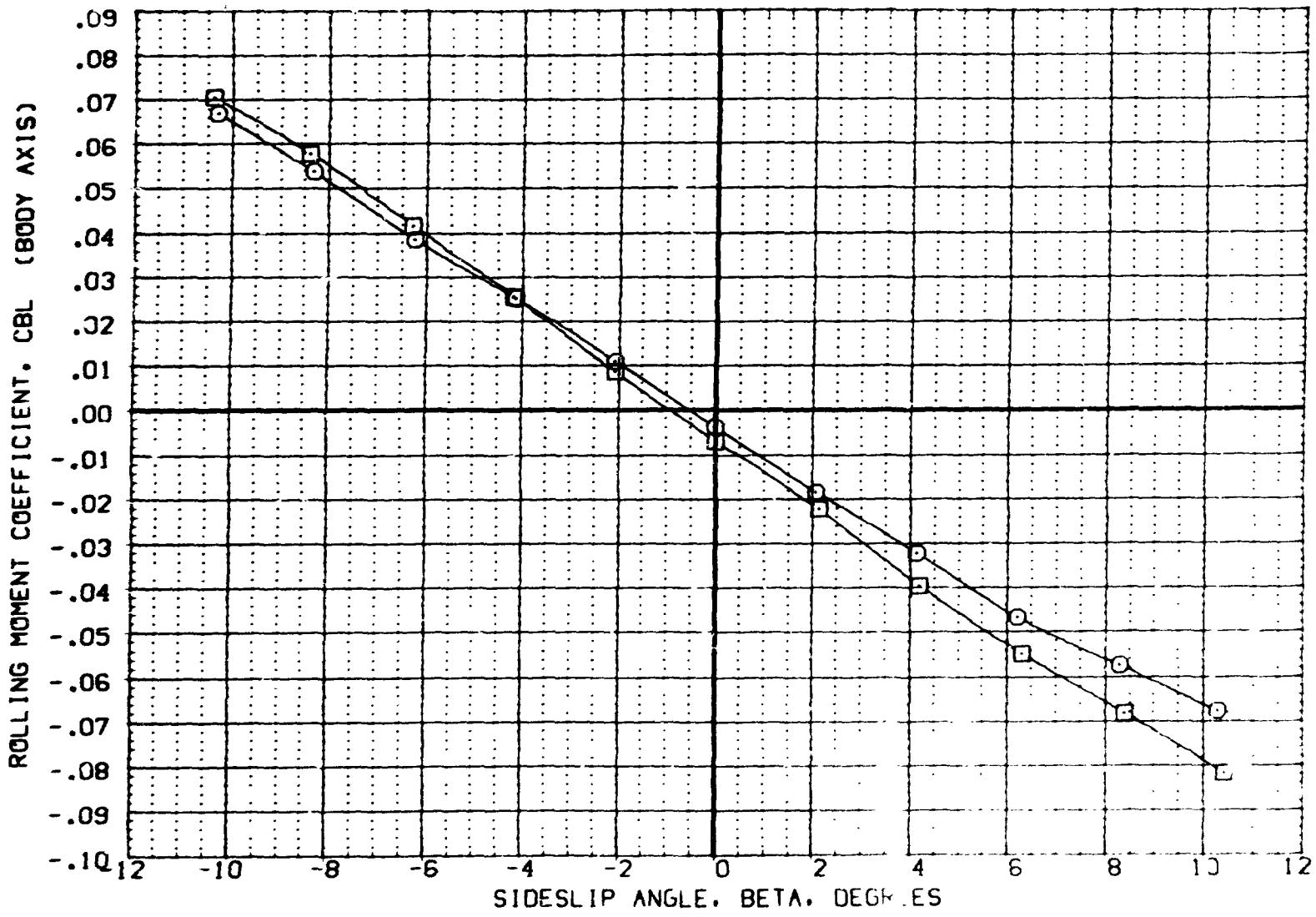

EFFECT OF FAIRINGS ON INT. VEHICLE LAT.-DIRECT. CHARACTERISTICS (ALPHA= 0.

(A)MACH = .60

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | ALPHA | ORBINC | DELTAZ |
|---|---|---|---|---|
| A94003 | MSFC 089(A62F)(034)(T14)(S12) | .000 | .000 | 333.000 |
| A94004 | MSFC 089(A62F)(034)(T9)(S12)(PT4)(FR4) | .000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.68[illegible] | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |




EFFECT OF FAIRINGS ON INT. VEHICLE LAT.-DIRECT. CHARACTERISTICS (ALPHA= 0)

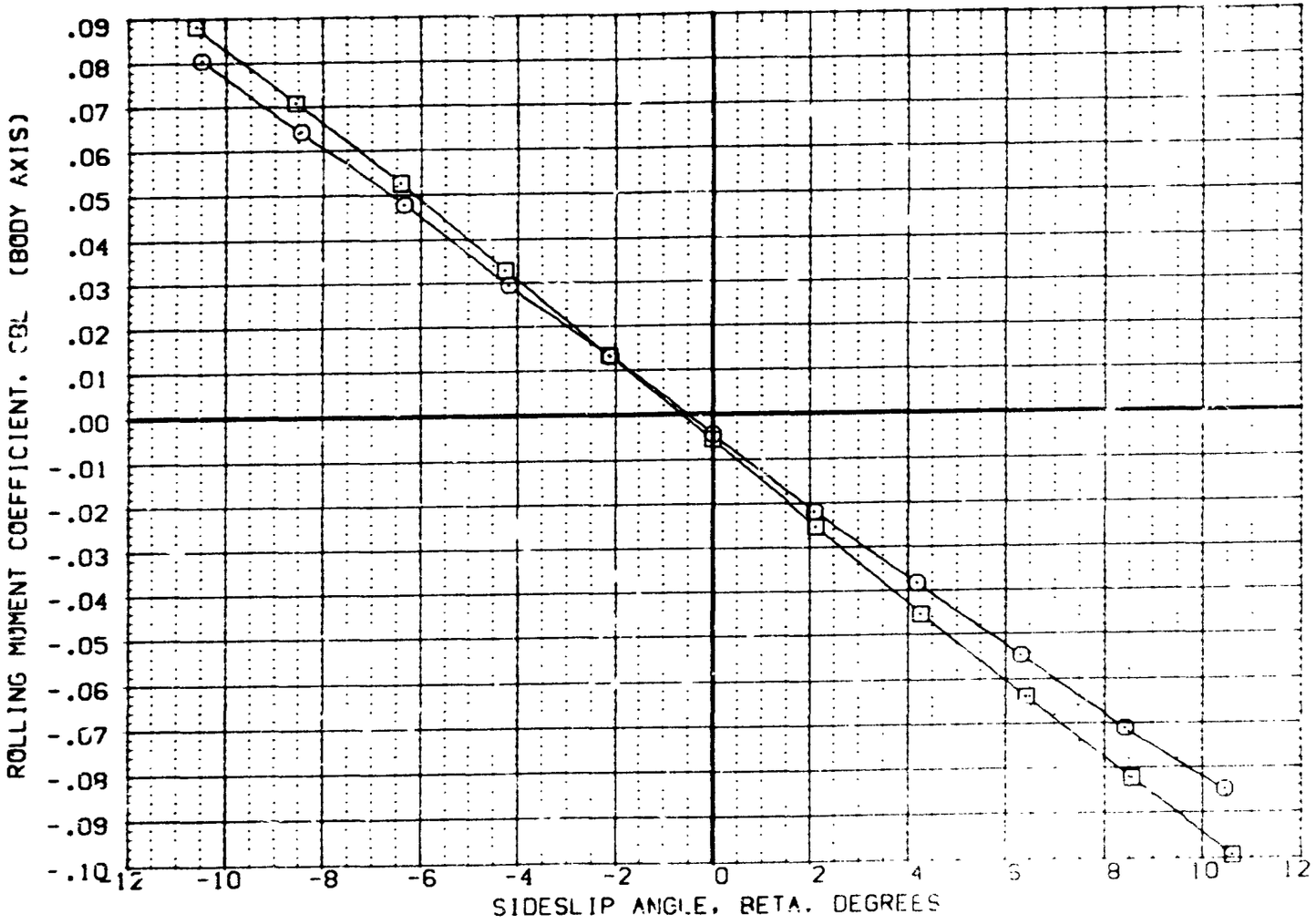
(B)MACH = .90

| DATA SET | SYMBOL | CONFIGURATION DESCRIPTION |
|---|---|---|
| A94003 | | MSFC 589(1A62F)(034A)(T14)(S12) |
| A94006 | □ | MSFC 589(1A62F)(034A)(T9)(S12)(PT4)(FR4) |

| ALPHA | ORBINC | DELTAZ |
|---|---|---|
| .000 | .000 | 333.000 |
| .000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.198 | SQ.IN. |
| LREF | 9.16 | IN. |
| BREF | 9.16 | IN. |
| XMRP | 2.68 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .00 | IN. |
| SCALE | .040 | |



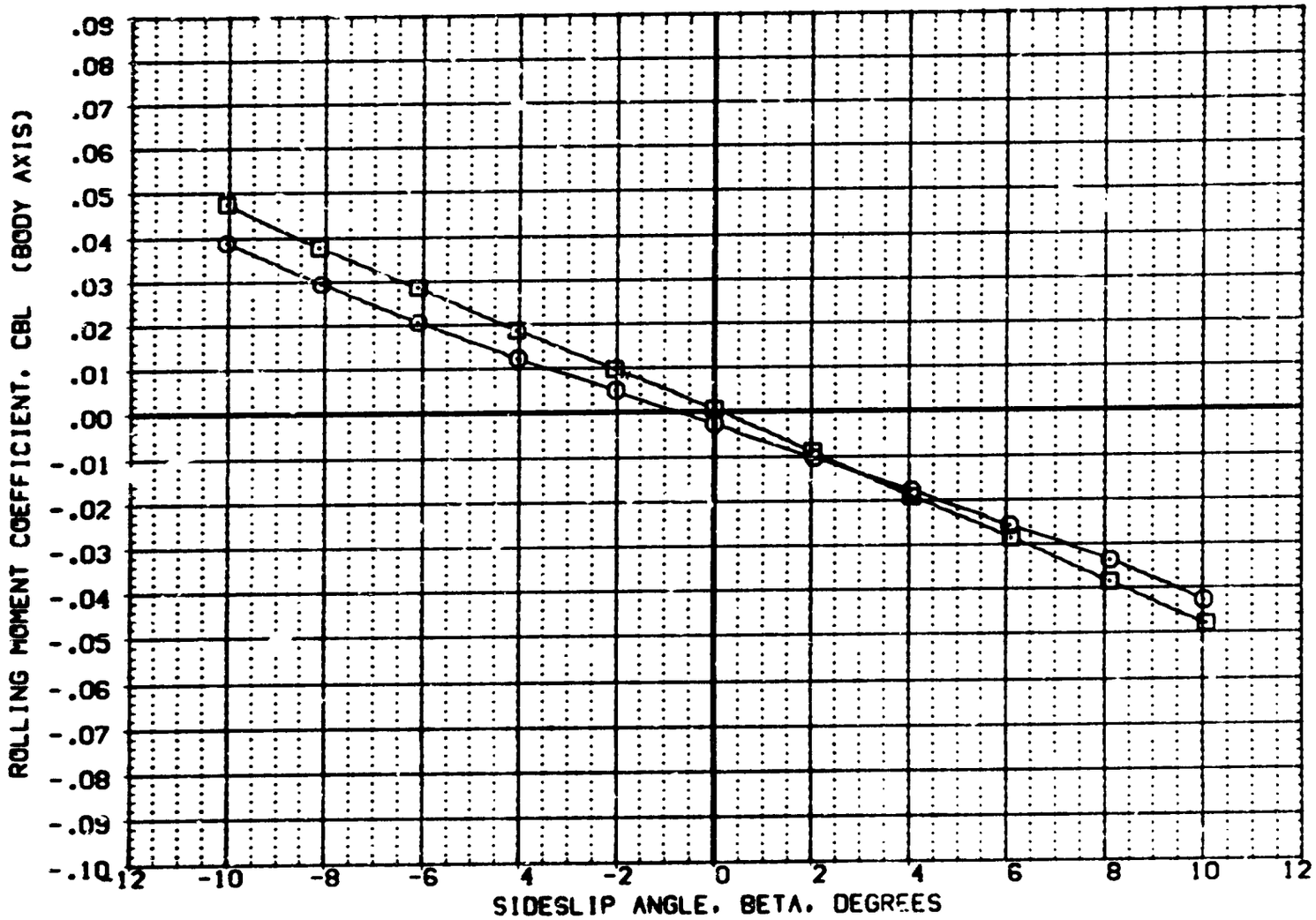

EFFECT OF FAIRINGS ON INT. VEHICLE LAT.-DIRECT. CHARACTERISTICS (ALPHA= 0)

(C)MACH = 1.20

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | ALPHA | ORBINC | DELTAZ |
|---|---|---|---|---|
| (A5400₂) ○ | MSFC 589((A62F)(034)(T14)(S12) | .000 | .000 | 333.000 |
| (A94C06) □ | MSFC 589((A62F)(034)(T9)(S12)(PT4)(FR4) | .000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |



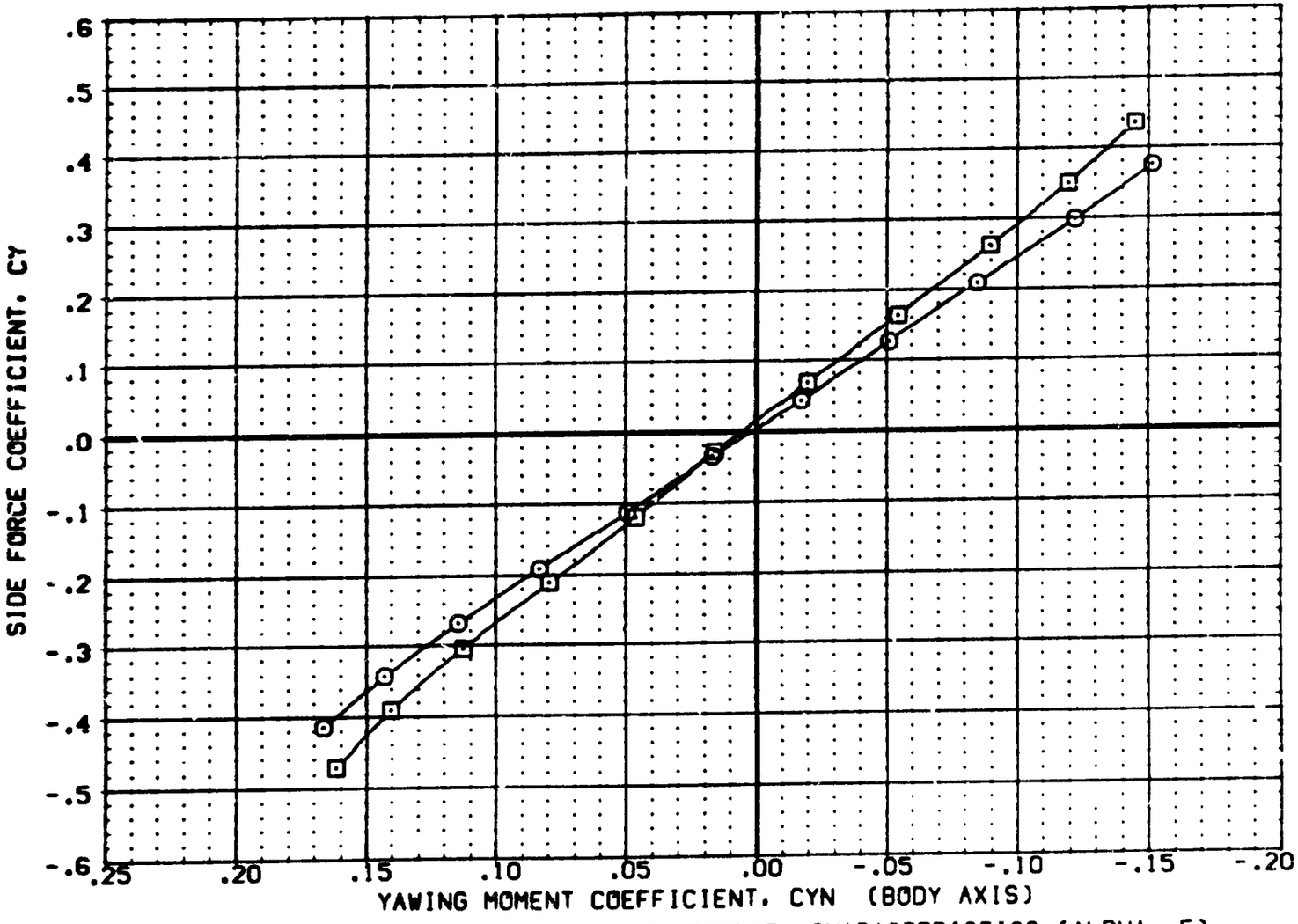

EFFECT OF FAIRINGS ON INT. VEHICLE LAT.-DIRECT. CHARACTERISTICS (ALPHA= 0)

(D)MACH = 4.96

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | ALPHA | ORBINC | DELTAZ |
|---|---|---|---|---|
| (A94002) | MSFC 589(1A62F)(034)(T14)(S12) | 5.000 | .000 | 333.000 |
| (A94005) | MSFC 589(1A62F)(034)(T9)(S12)(PT4)(FR4) | 5.000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |

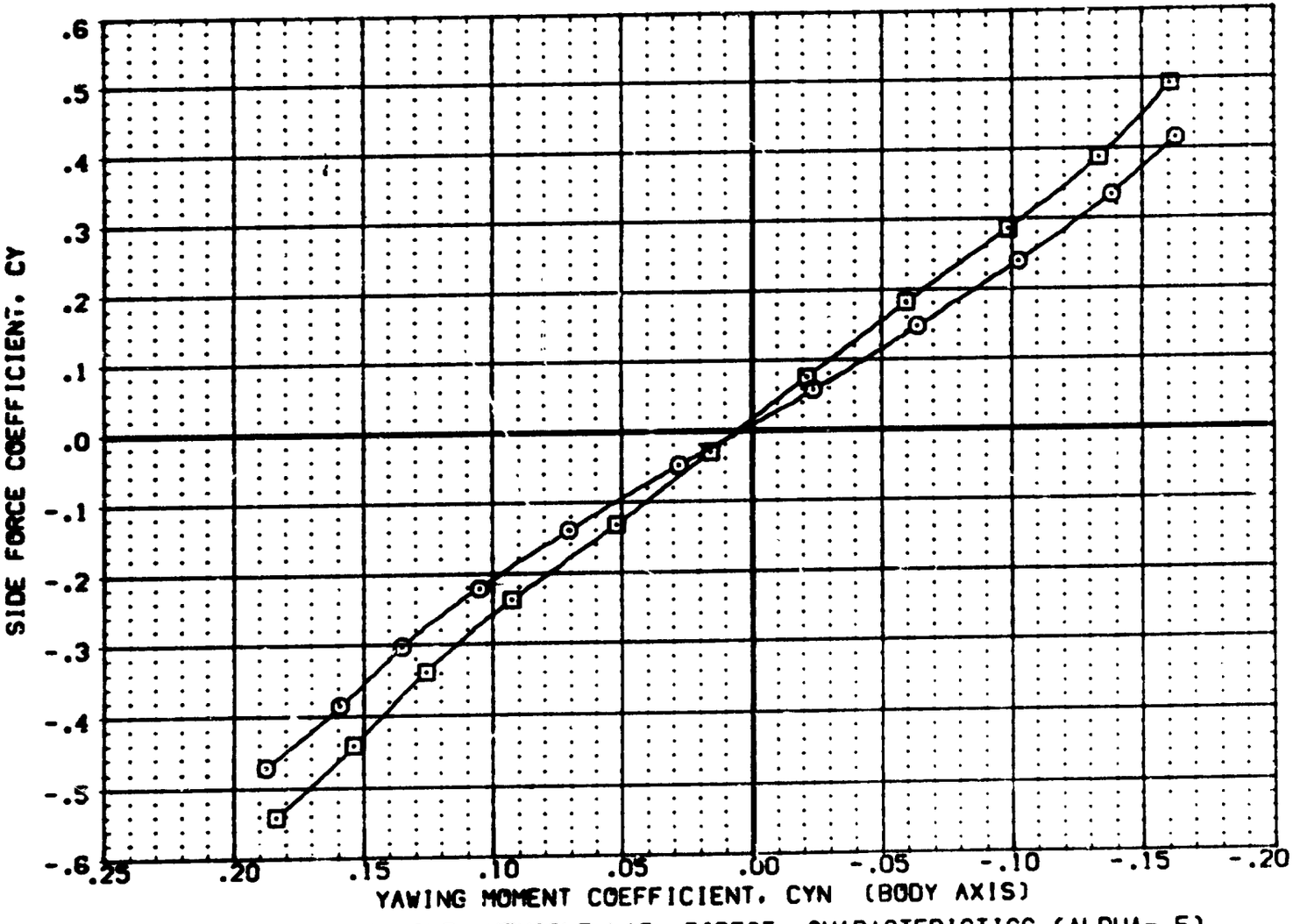



EFFECT OF FAIRINGS ON INT. VEHICLE LAT.-DIRECT CHARACTERISTICS (ALPHA= 5)

(A)MACH = .59

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | ALPHA | OPBINC | DELTAZ |
|---|---|---|---|---|
| (A94002) | MSFC 389(1A62F)(034)(T14)(S12) | 5.000 | .000 | 333.000 |
| (A94005) | MSFC 389(1A62F)(C34)(T9)(S12)(PT4)(FR4) | 5.000 | .000 | 333.000 |

| REFERENCE INFORMATION | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |



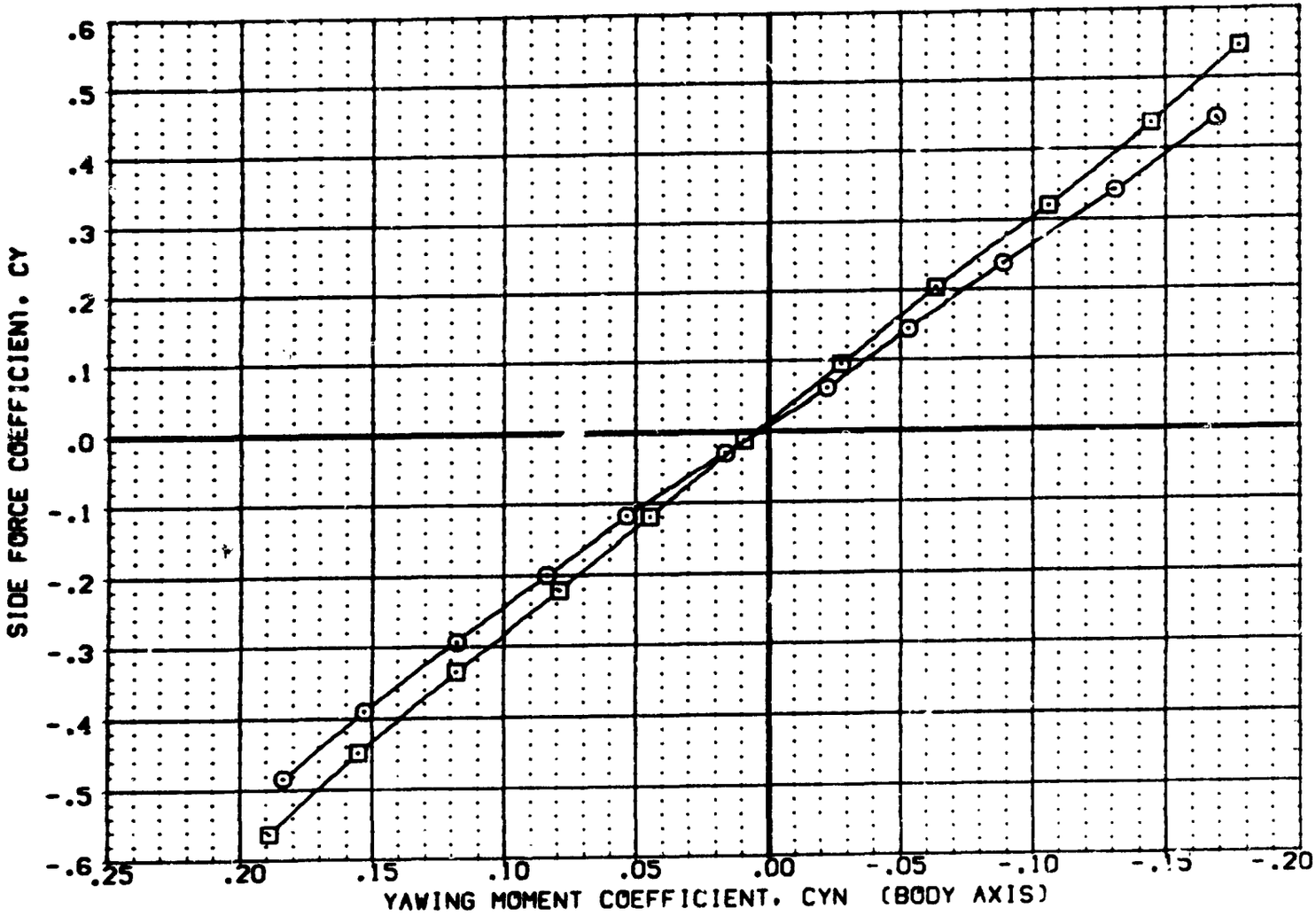

EFFECT OF FAIRINGS ON INT. VEHICLE LAT.-DIRECT. CHARACTERISTICS (ALPHA= 5)

(B)MACH = .90

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | ALPHA | ORBINC | DELTAZ |
|---|---|---|---|---|
| (A94002) | MSFC 589((A62F)(034)(T14)(S12) | 5.000 | .000 | 333.000 |
| (A94005) | MSFC 589((A62F)(034)(T9)(S12)(PT4)(FR4) | 5.000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |



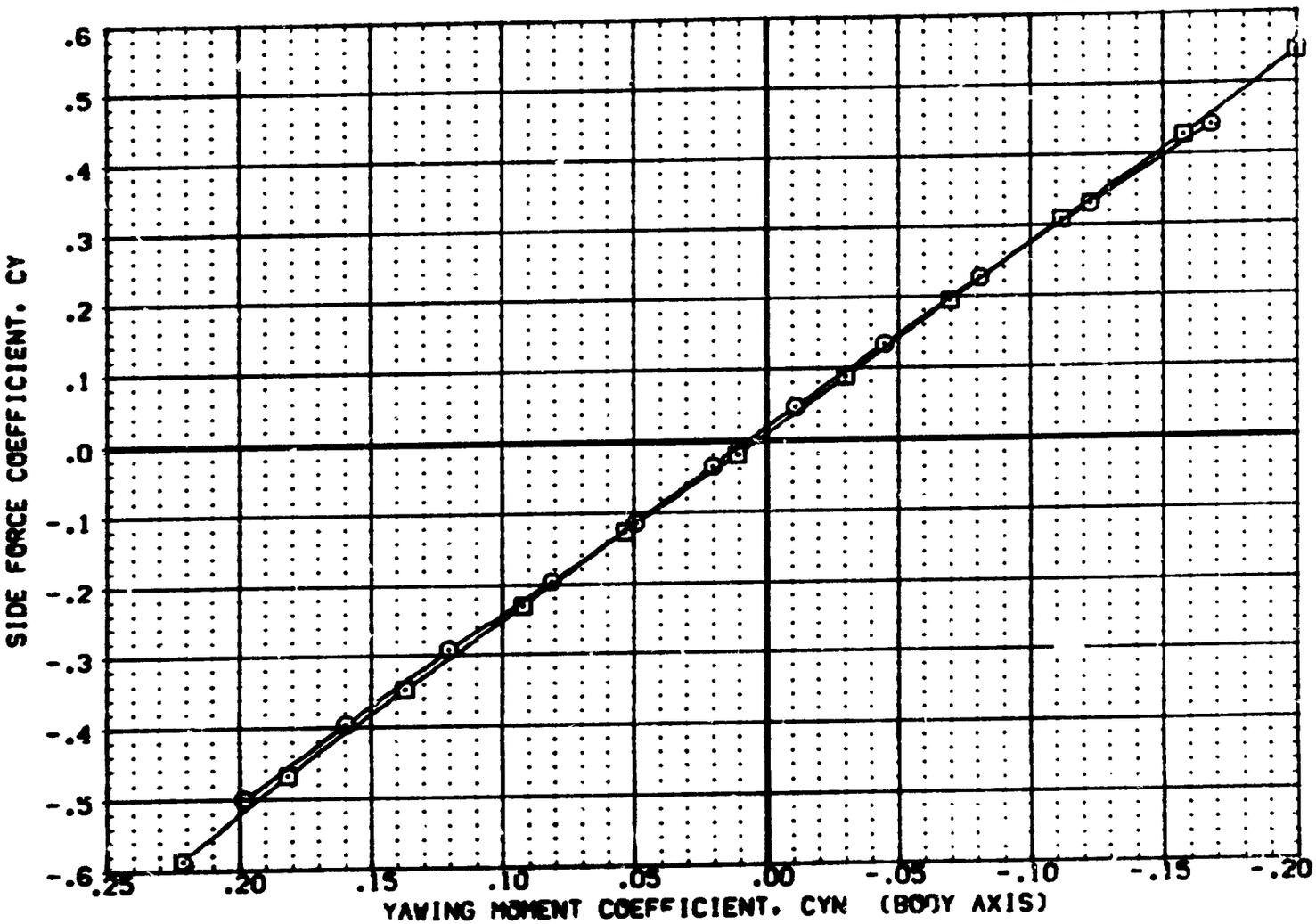

EFFECT OF FAIRINGS ON INT. VEHICLE LAT.-DIRECT. CHARACTERISTICS (ALPHA= 5)

(C)MACH = 1.20

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | ALPHA | ORBINC | DELTAZ |
|---|---|---|---|---|
| (A94302) | MSFC 589((AL2F)(034)(T14)(S12) | 5.000 | .000 | 333.000 |
| (A94305) | MSFC 589((AL2F)(034)(T9)(S12)(PT4)(FR4) | 5.000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .004C | |

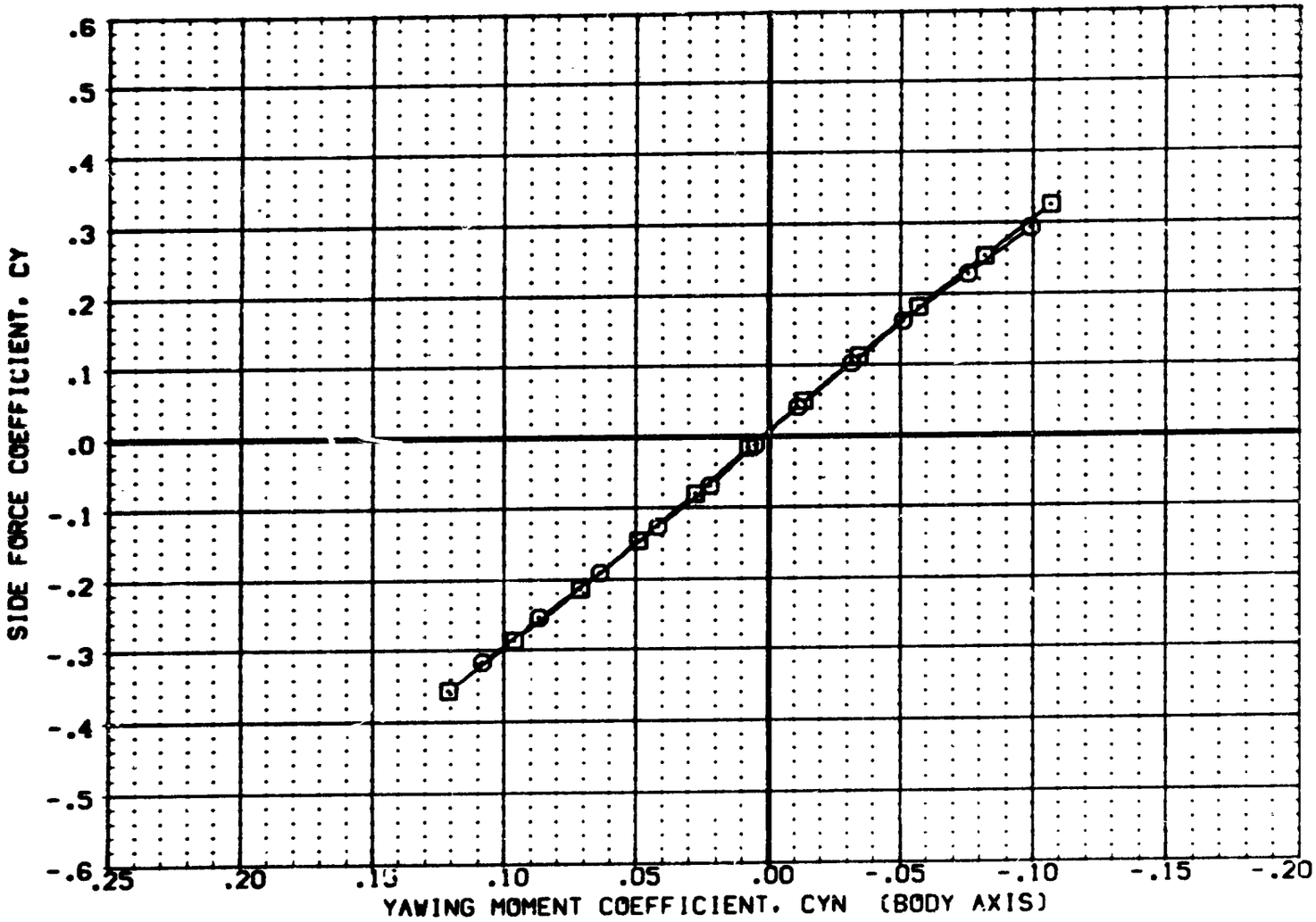



EFFECT OF FAIRINGS ON INT. VEHICLE LAT.-DIRECT. CHARACTERISTICS (ALPHA= 5)

(D)MACH = 1.46

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | ALPHA | ORBINC | DELTAZ |
|---|---|---|---|---|
| (A94002) | MSFC 589((A62F)(034)(T14)(S12) | 5.000 | .000 | 333.000 |
| (A94005) | MSFC 589((A62F)(034)(T9)(S12)(PT4)(FR4) | 5.000 | .000 | 333.000 |

| REFERENCE INFORMATION | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |



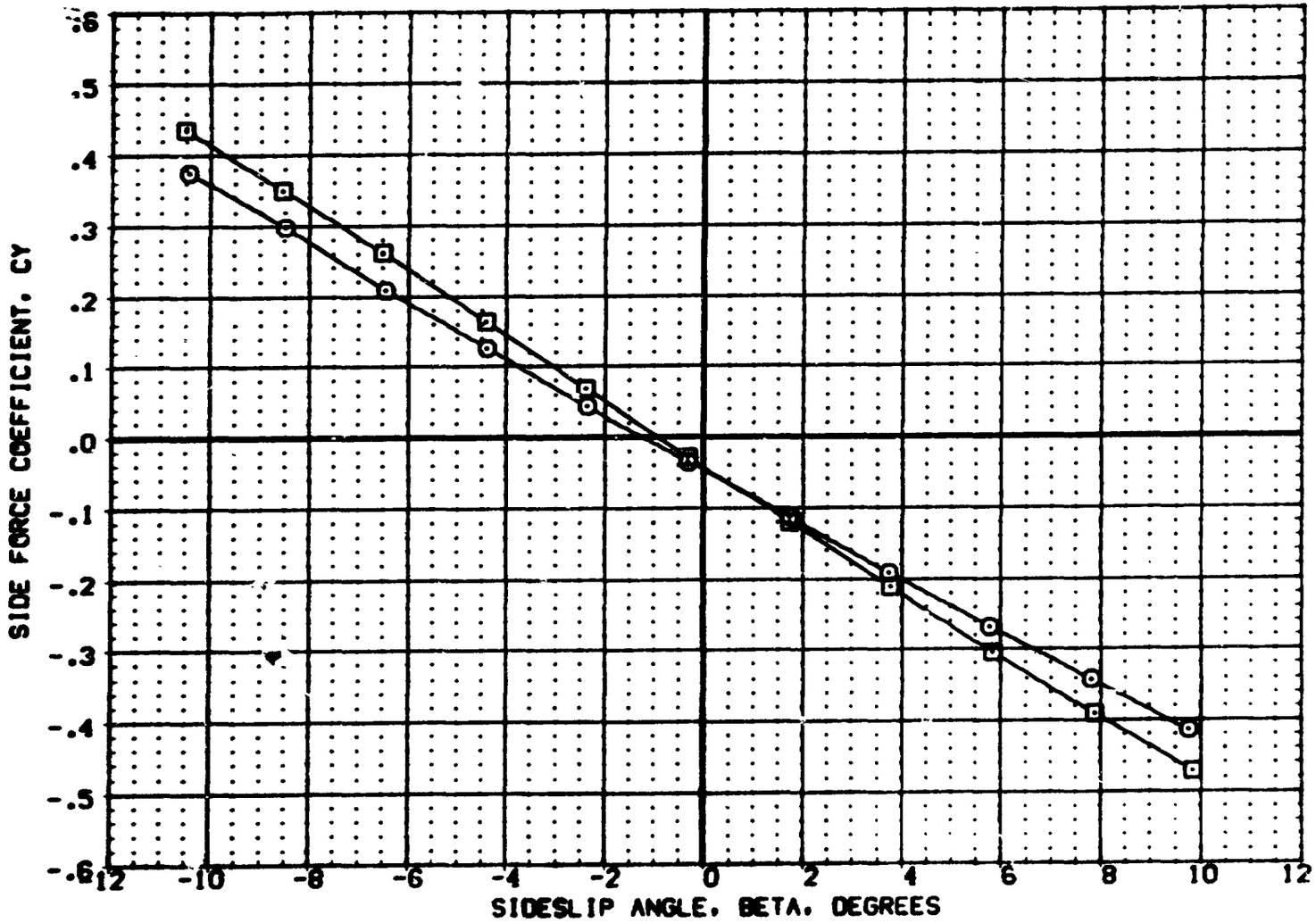

EFFECT OF FAIRINGS ON INT. VEHICLE LAT.-DIRECT. CHARACTERISTICS (ALPHA= 5)

(E)MACH = 4.96

| DATA SET SYMBOL | | CONFIGURATION DESCRIPTION | ALPHA | ORBINC | DELTAZ |
|---|---|---|---|---|---|
| (A94002) | ⌂ | MSFC 589([A62F)(334)(T14)(S12) | 5.000 | .000 | 333.000 |
| (A94005) | ⌂ | MSFC 589([A62F)(334)(T9)(S12)(PT4 (FR4) | 5.000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .004C | |



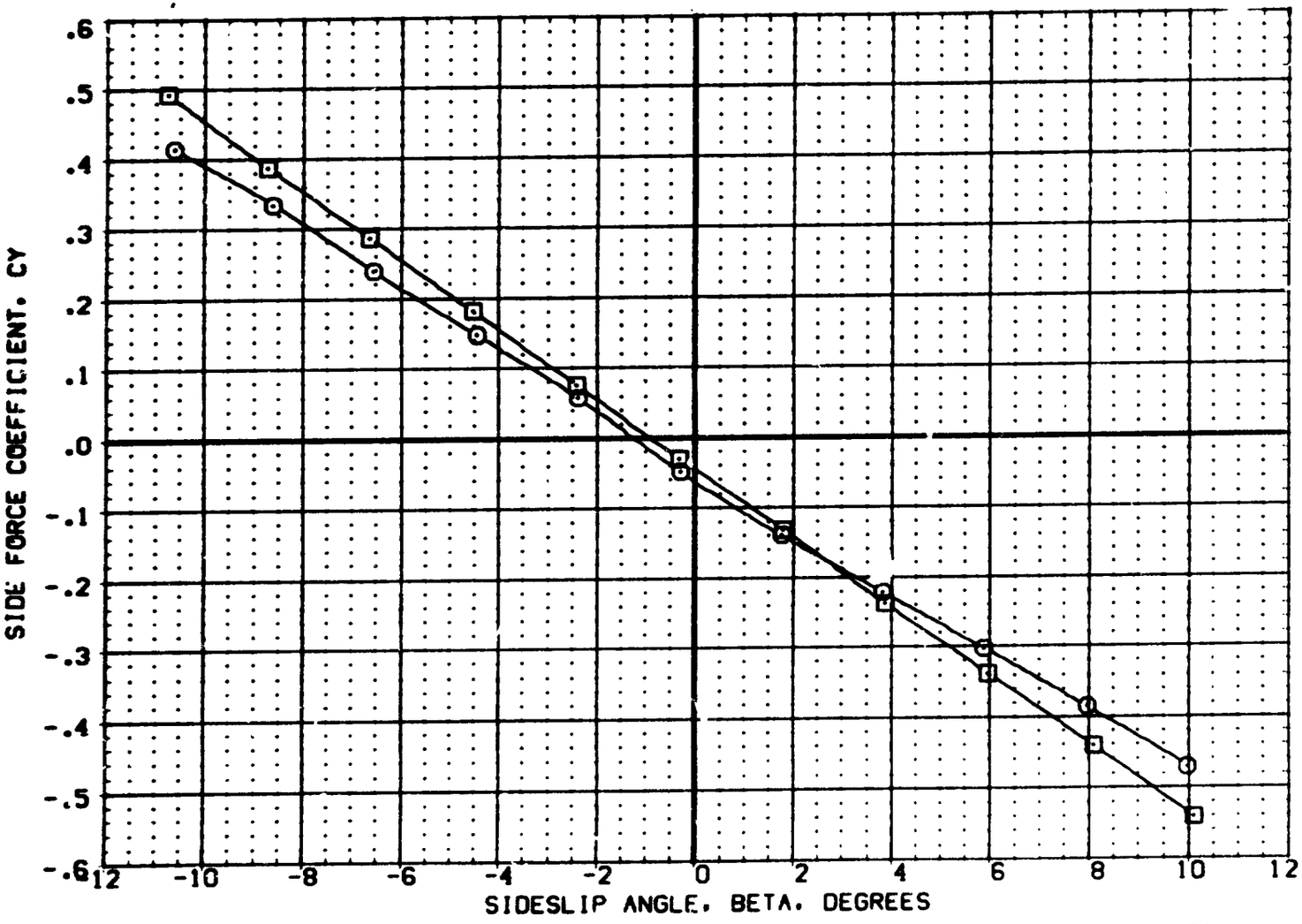

EFFECT OF FAIRINGS ON INT. VEHICLE LAT.-DIRECT. CHARACTERISTICS (ALPHA= 5)

(A)MACH = .59

| DATA SET | SYMBOL | CONFIGURATION DESCRIPTION | ALPHA | ORBINC | DELTAZ |
|---|---|---|---|---|---|
| (A94002) | □ | MSFC S89(1A62F)(034)(T14)(S12) | 5.000 | .000 | 333.000 |
| (A94005) | □ | MSFC S89(1A62F)(034)(T9)(S12)(PT4)(FR4) | 5.000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1990 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .004 | |



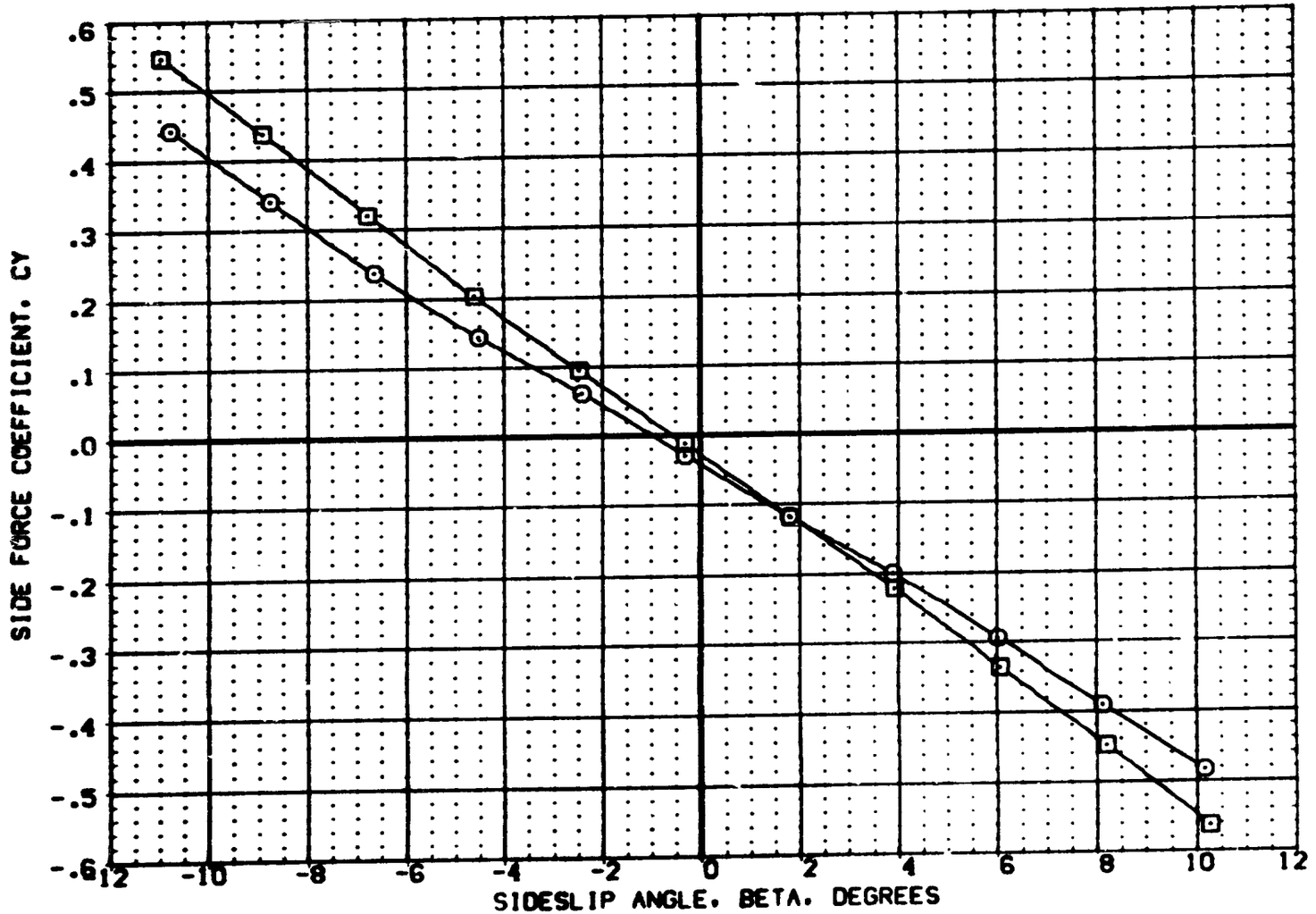

EFFECT OF FAIRINGS ON INT. VEHICLE LAT.-DIRECT. CHARACTERISTICS (ALPHA= 5)

(B)MACH = .90

| DATA SET | SYMBOL | CONFIGURATION DESCRIPTION | ALPHA | ORBINC | DELTAZ |
|---|---|---|---|---|---|
| (A94002) | ○ | MSFC 589(1A62F)(034)(T14)(S12) | 5.000 | .000 | 333.000 |
| (A94005) | □ | MSFC 589(1A62F)(034)(T9)(S12)(PT4)(FR4) | 5.000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |

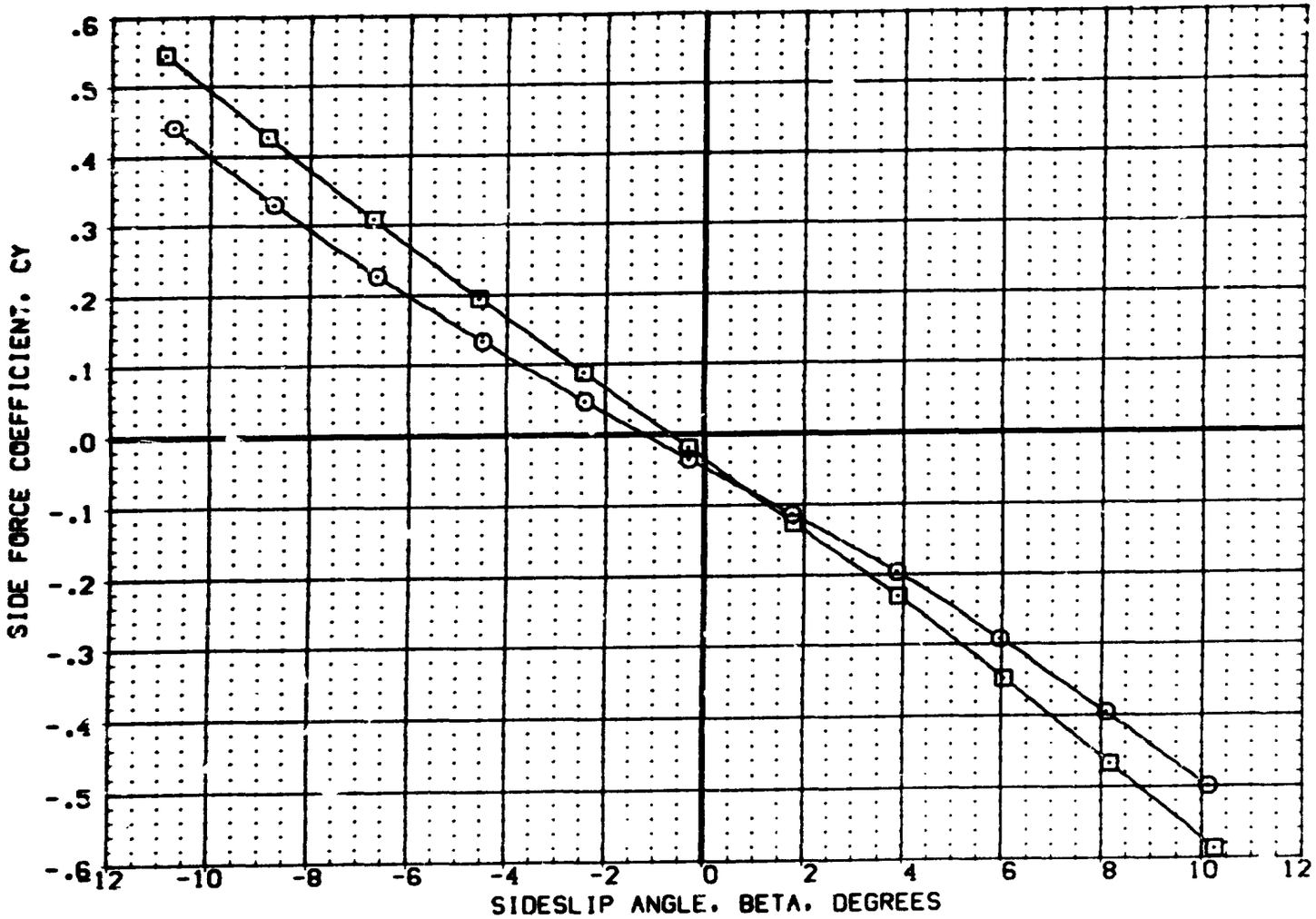



EFFECT OF FAIRINGS ON INT. VEHICLE LAT.-DIRECT. CHARACTERISTICS (ALPHA= 5)

(C)MACH = 1.20

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | ALPHA | ORBINC | DELTAZ |
|---|---|---|---|---|
| (A940C2) | MSFC 589(1A62F)(034)(T14)(S12) | 5.000 | .000 | 333.000 |
| (A940C5) | MSFC 589(1A62F)(034)(T9)(S12)(PT4)(FR4) | 5.000 | .000 | 333.000 |

| REFERENCE INFORMATION | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6300 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |

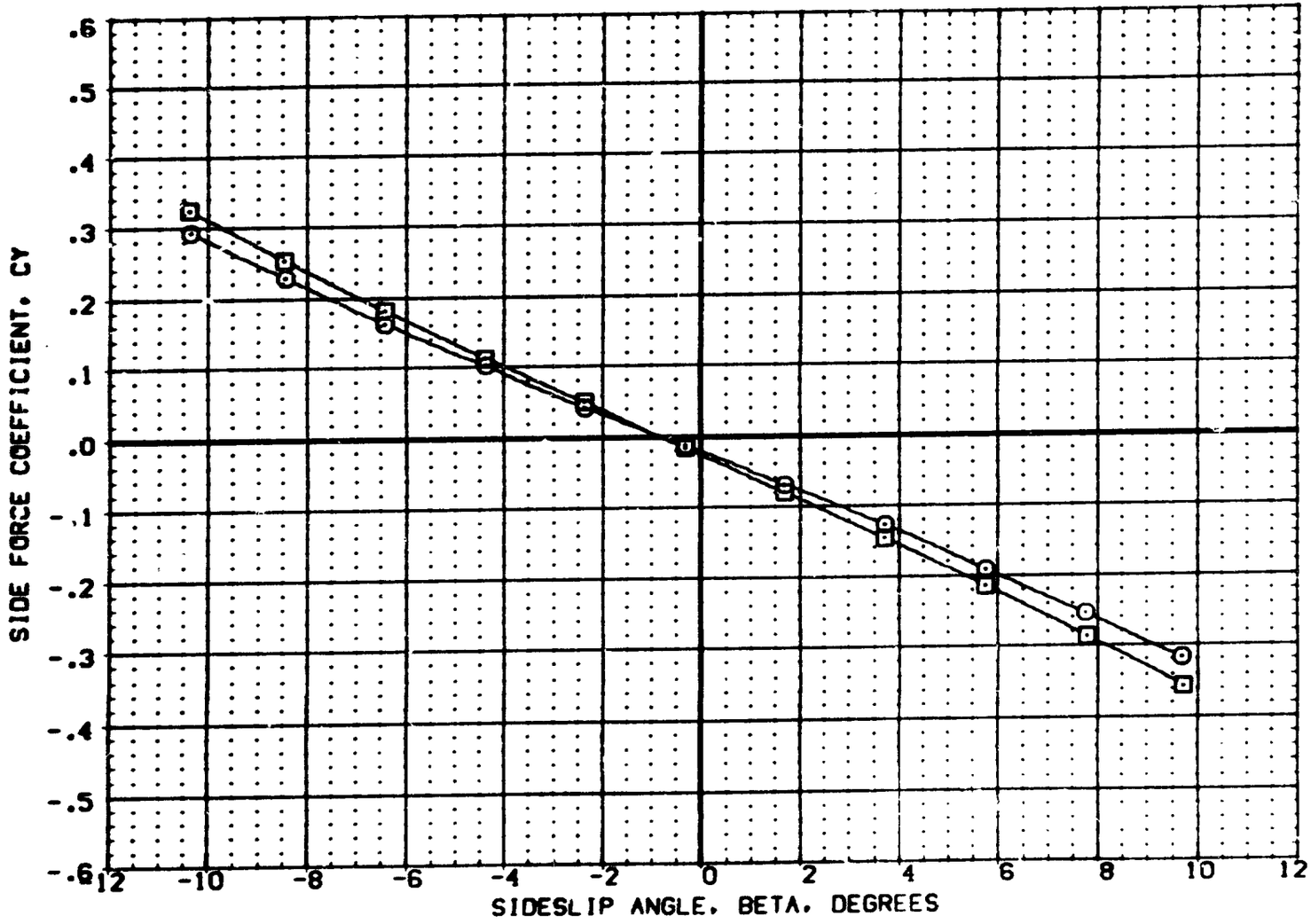



EFFECT OF FAIRINGS ON INT. VEHICLE LAT.-DIRECT. CHARACTERISTICS (ALPHA= 5)

(D)MACH = 1.46

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | ALPHA | ORBINC | DELTAZ |
|---|---|---|---|---|
| (A34002) ○ | MSFC 589(1AS2F)(034)(T14)(S12) | 5.000 | .000 | 333.000 |
| (A34005) □ | MSFC 589(1A62F)(034)(T9)(S12)(PT4)(FR4) | 5.000 | .000 | 333.000 |

| REFERENCE INFORMATION | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |



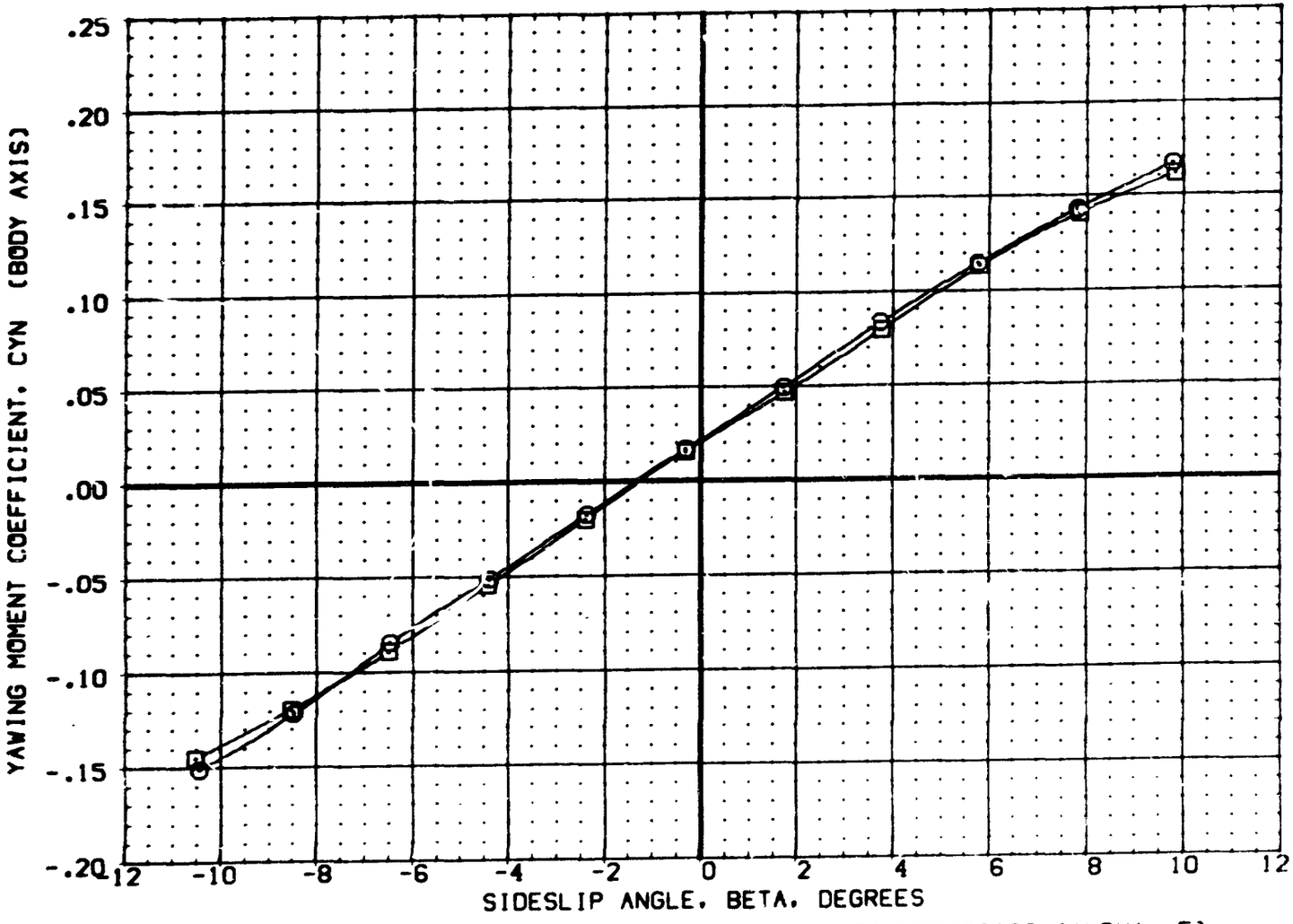

EFFECT OF FAIRINGS ON INT. VEHICLE LAT.-DIRECT. CHARACTERISTICS (ALPHA= 5)

(E)MACH = 4.96

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | ALPHA | ORBINC | DELTAZ |
|---|---|---|---|---|
| (A94002) | MSFC 589(1A62F)(334)(114)(512) | 5.000 | .000 | 333.000 |
| (A94005) | MSFC 589(1A62F)(034)(19)(512)(PT4)(FR4) | 5.000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |



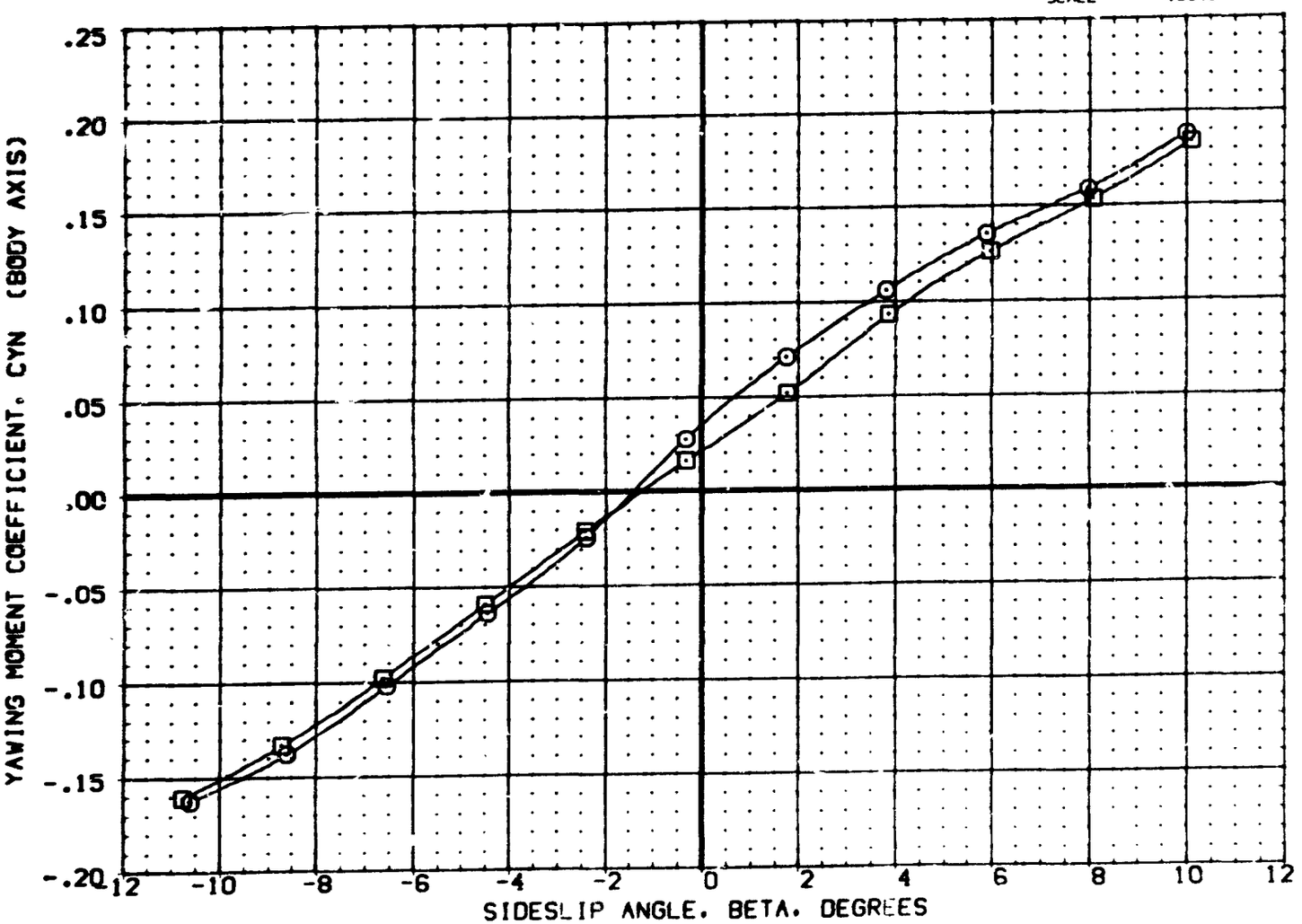

EFFECT OF FAIRINGS ON INT. VEHICLE LAT.-DIRECT. CHARACTERISTICS (ALPHA= 5)

(A)MACH = .59

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | ALPHA | ORBINC | DELTAZ |
|---|---|---|---|---|
| (A94002) | MSFC 589([A62F])(034)([T14])(S12) | 5.000 | .000 | 333.000 |
| (A94003) | MSFC 589([A62F])(034)([T9])(S12)(PT4)(FR4) | 5.000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |



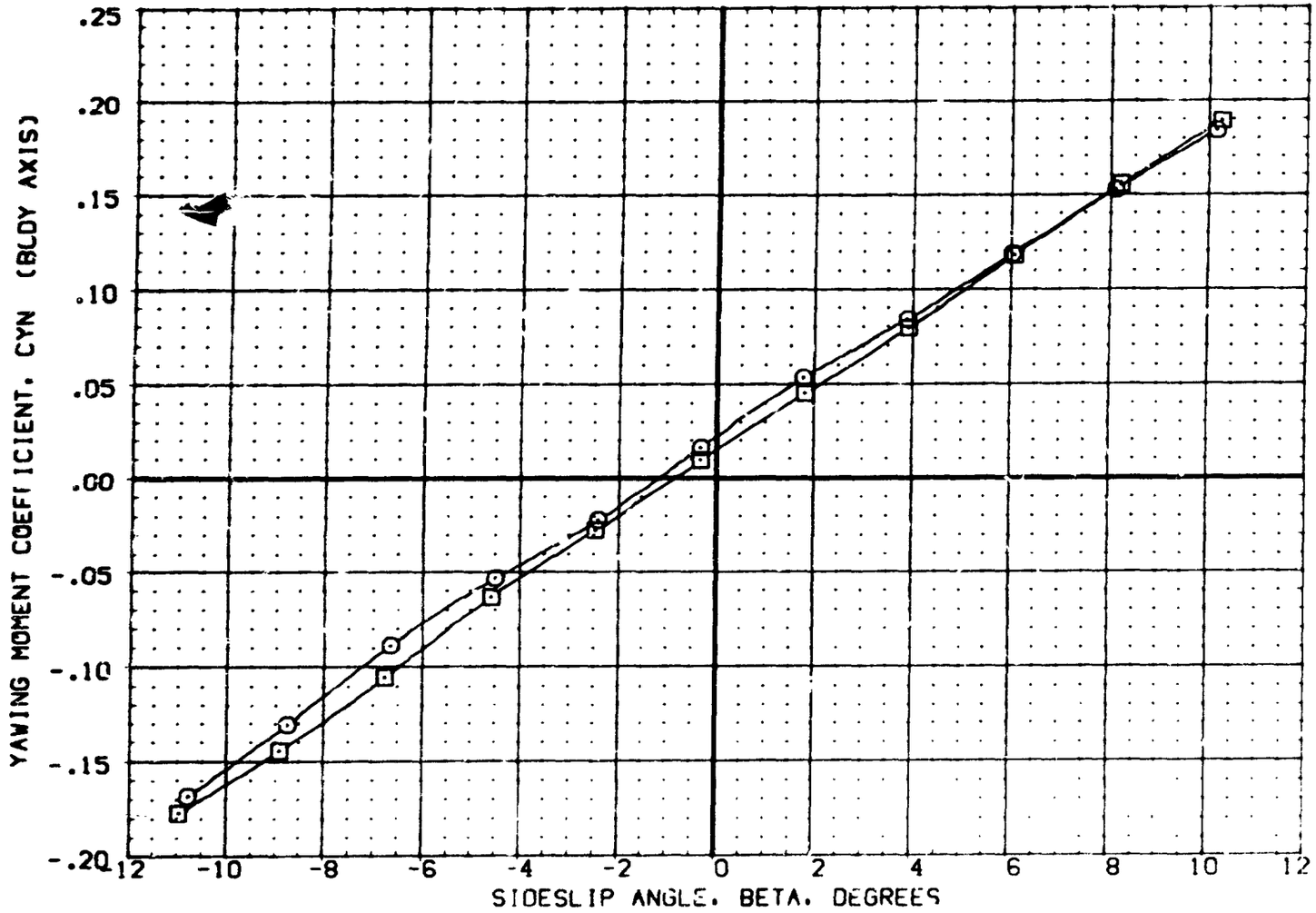

EFFECT OF FAIRINGS ON INT. VEHICLE LAT.-DIRECT. CHARACTERISTICS (ALPHA= 5)

(B)MACH = .90

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | ALPHA | ORBINC | DELTAZ |
|---|---|---|---|---|
| (A94002) | □ MSFC SB9(1A62F)(034)(T14)(S12) | 5.000 | .000 | 333.000 |
| (A94003) | □ MSFC SB9(1A62F)(034)(T9)(S12)(PT4)(FR4) | 5.000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |



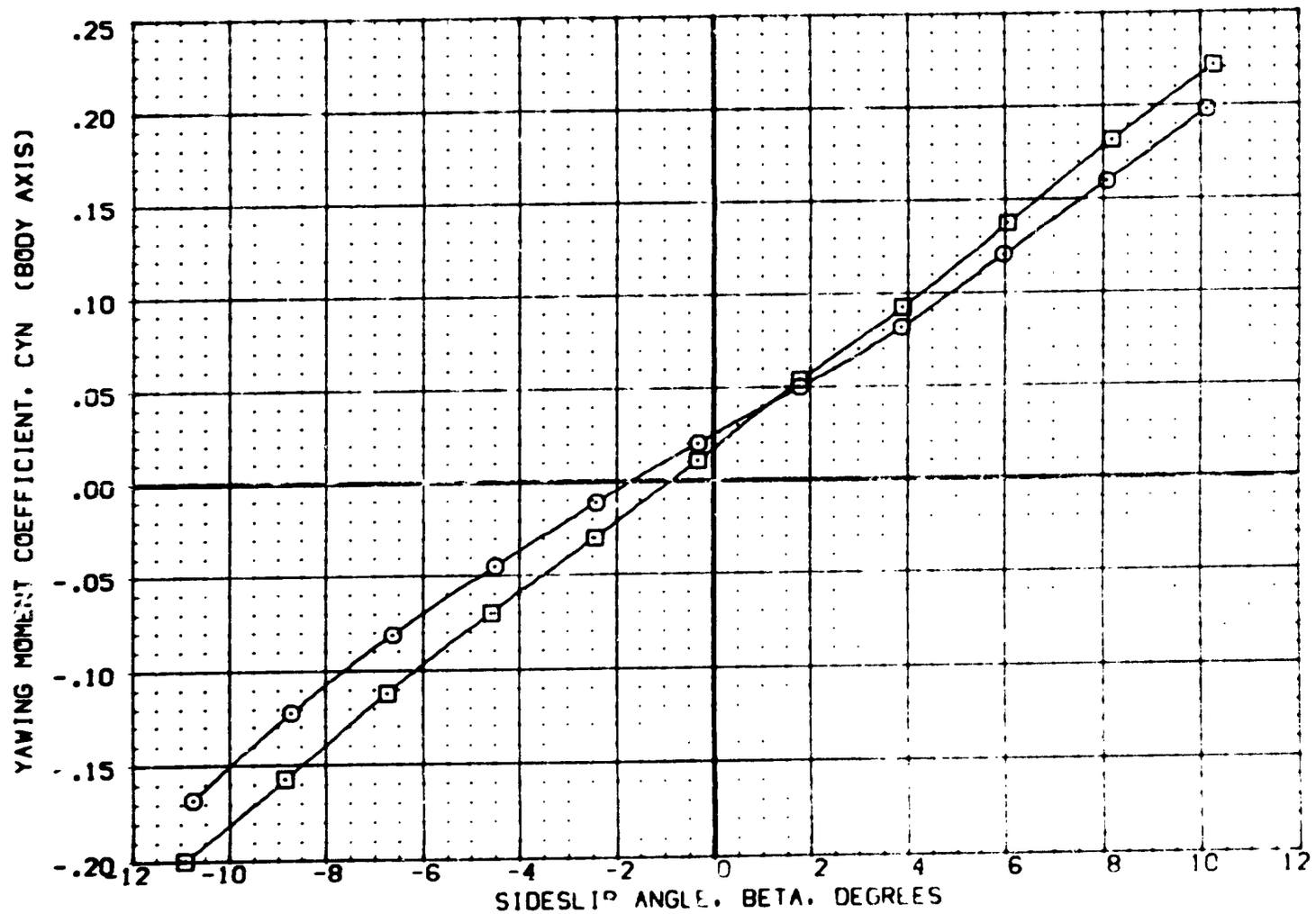

EFFECT OF FAIRINGS ON INT. VEHICLE LAT.-DIRECT. CHARACTERISTICS (ALPHA= 5)

(C)MACH = 1.20

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | ALPHA | ORBINC | DELTAZ |
|---|---|---|---|---|
| A94002 | MSFC 589(1A62F)(034)(114)(S12) | 5.000 | .000 | 333.000 |
| A94003 | MSFC 589(1A62F)(034)(119)(S12)(PT4)(FR4) | 5.000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 3.1600 | IN. |
| BREF | 3.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |



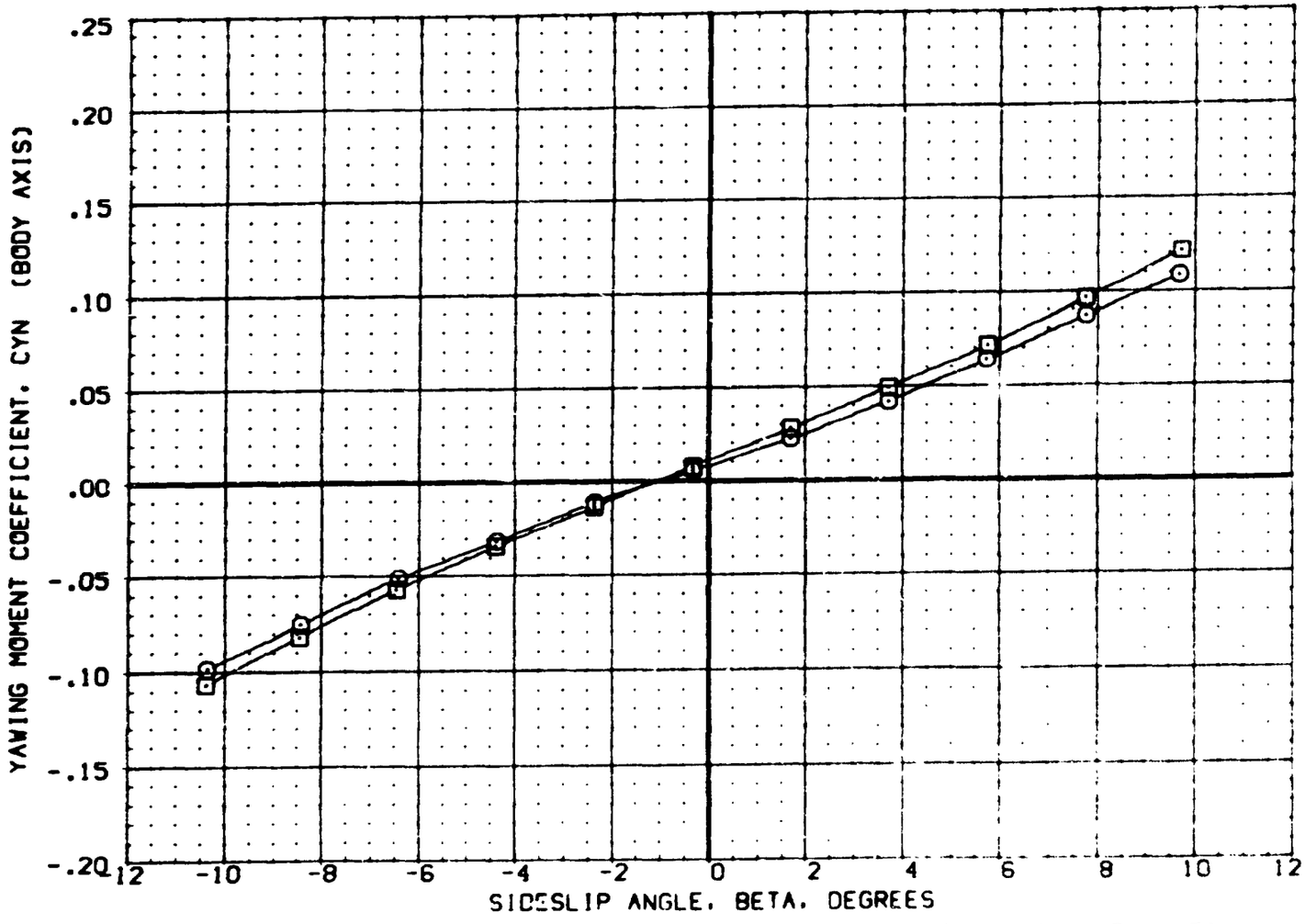

EFFECT OF FAIRINGS ON INT. VEHICLE LAT.-DIRECT. CHARACTERISTICS (ALPHA= 5)

(D)MACH = 1.46

| DATA SET | SYMBOL | CONFIGURATION DESCRIPTION | ALPHA | ORBINC | DELTAZ |
|---|---|---|---|---|---|
| (A94002) | | MSFC 589((A62F)(034)(T14)(S12) | 5.000 | .000 | 333.000 |
| (A94005) | □ | MSFC 589((A62F)(034)(T9)(S12)(PT4)(FR4) | 5.000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6400 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |



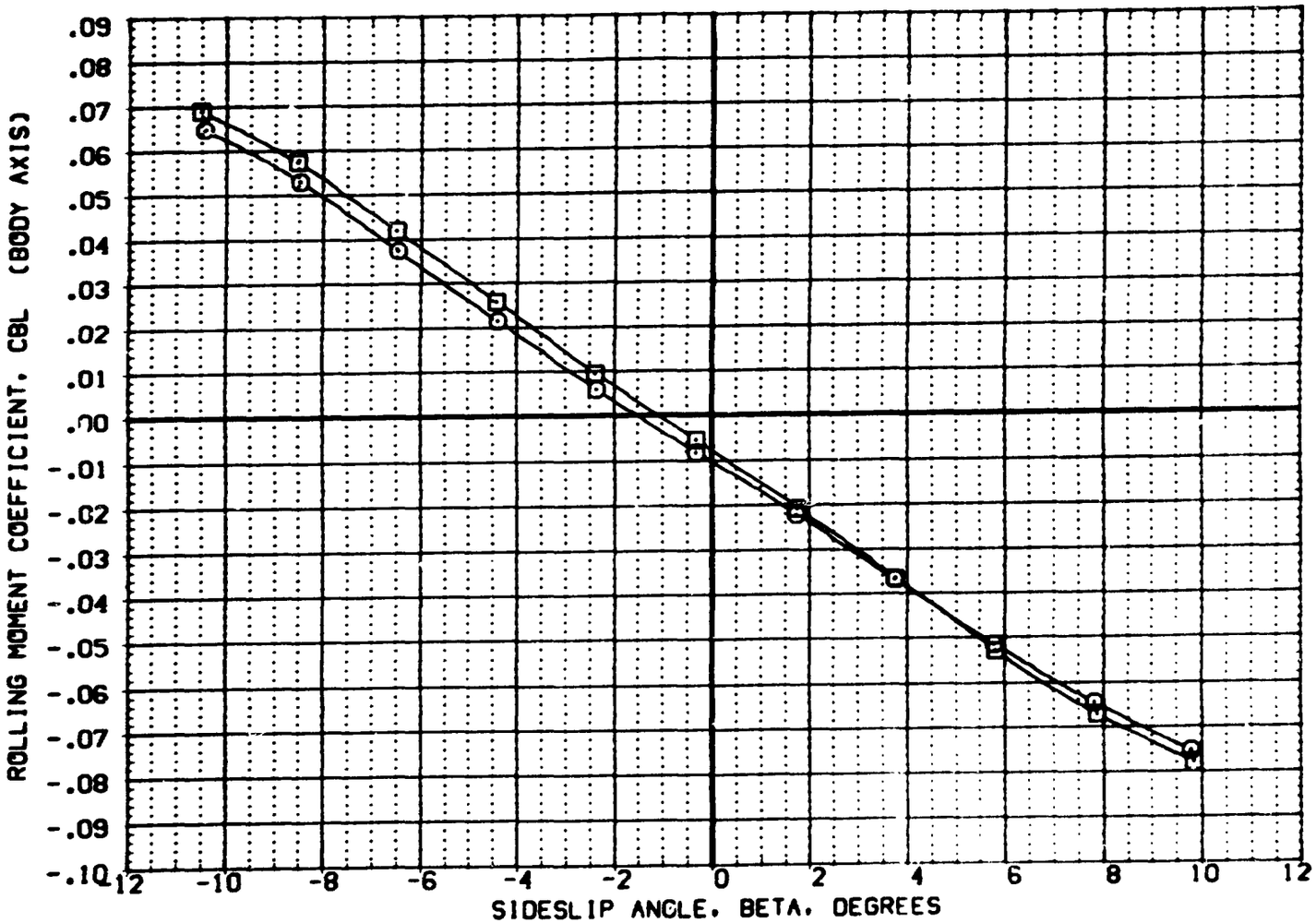

EFFECT OF FAIRINGS ON INT. VEHICLE LAT.-DIRECT. CHARACTERISTICS (ALPHA= 5)

(E)MACH = 4.36

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | ALPHA | ORBINC | DELTAZ |
|---|---|---|---|---|
| (A94022) | MSFC 589((A62F)(034)(T14)(S12) | 5.000 | .000 | 333.000 |
| (A94022) □ | MSFC 589((A62F)(034)(T9)(S12)(PT4)(FR4) | 5.000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |



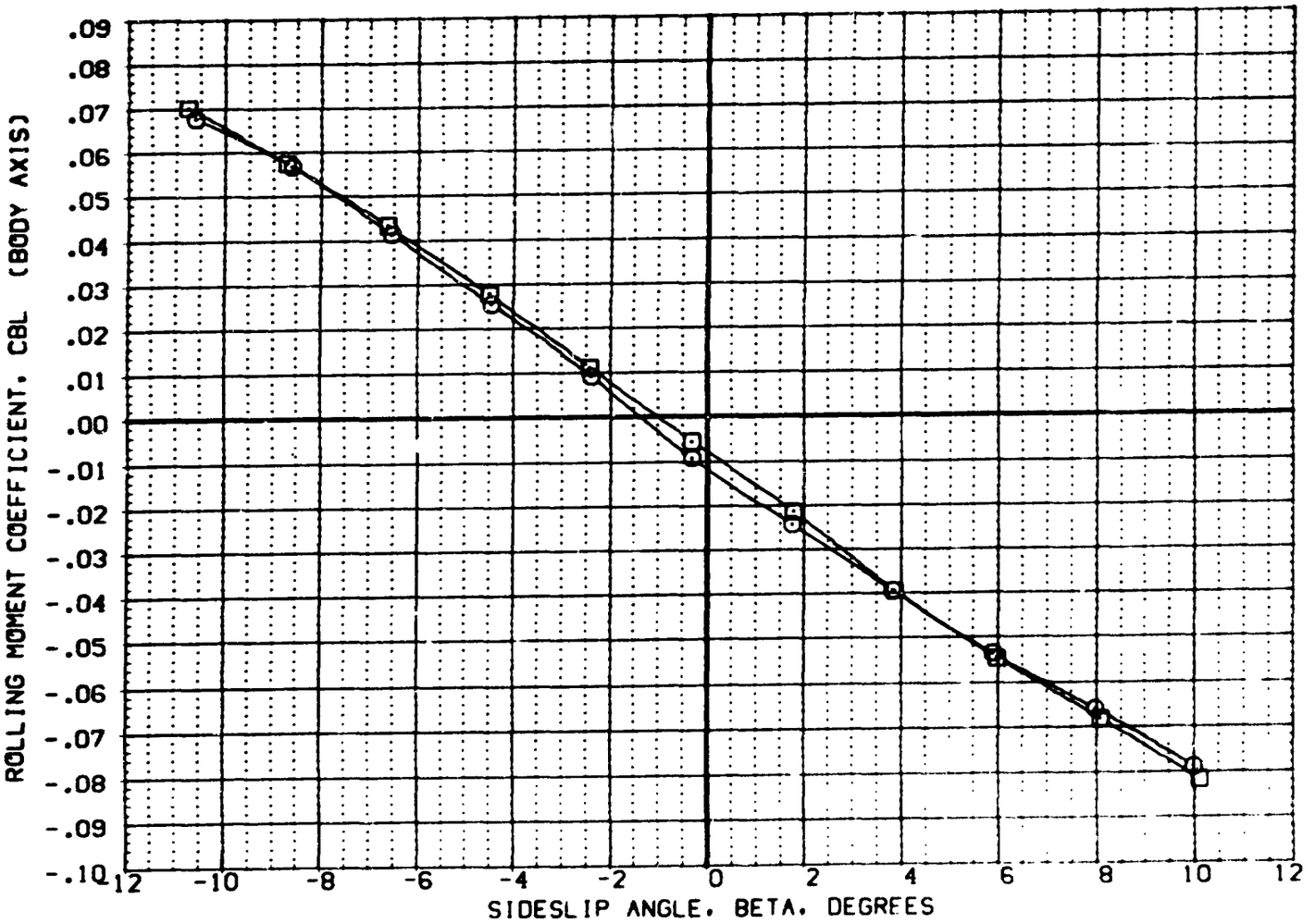

EFFECT OF FAIRINGS ON INT. VEHICLE LAT.-DIRECT. CHARACTERISTICS (ALPHA= 5)

(A)MACH = .59

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | ALPHA | ORBINC | DELTAZ |
|---|---|---|---|---|
| (A94002) | MSFC 589(1A62F)(034)(T14)(SI2) | 5.000 | .000 | 333.000 |
| (A94005) | MSFC 589(1A62F)(034)(T9)(SI2)(PT4)(FR4) | 5.000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |

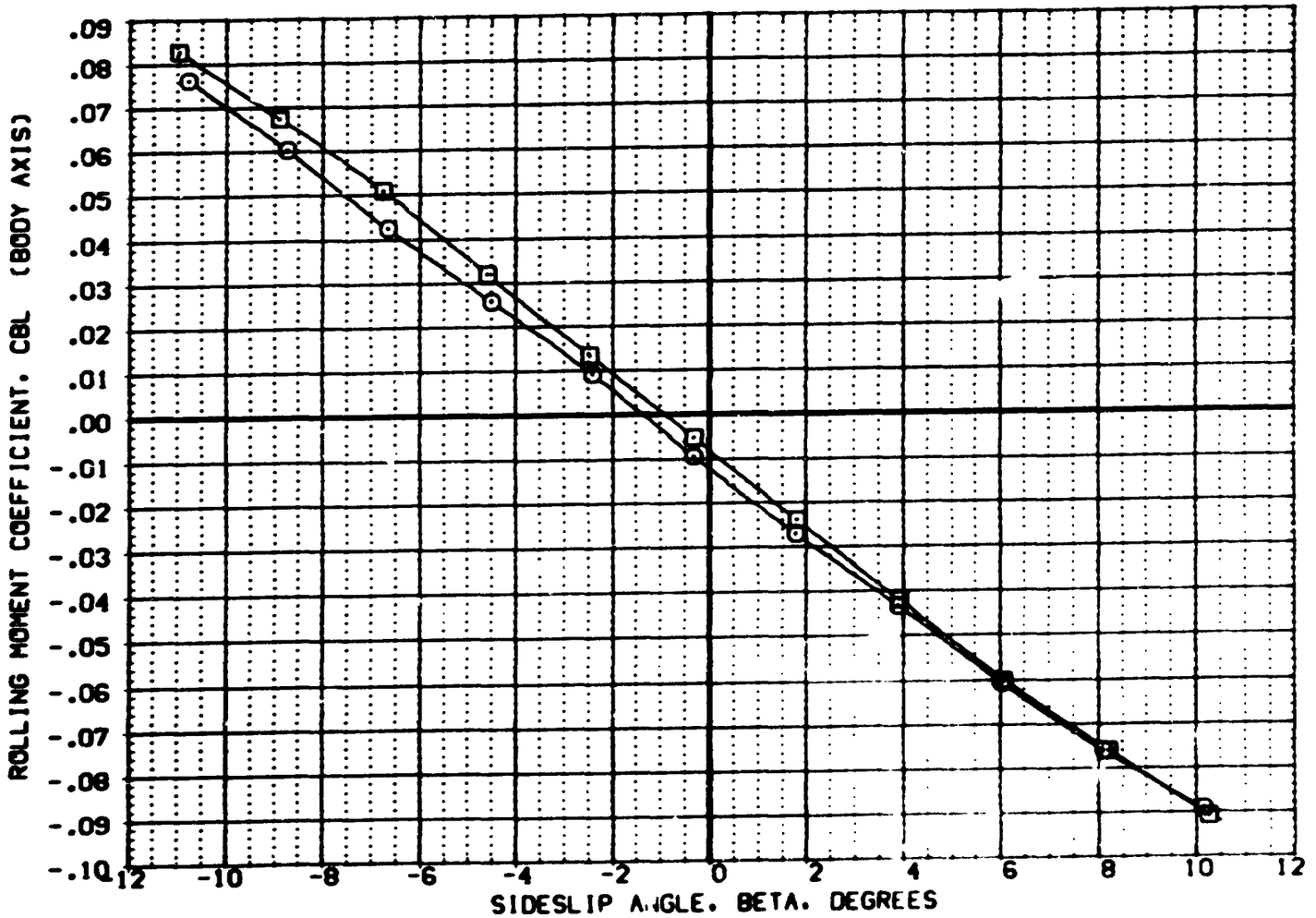



EFFECT OF FAIRINGS ON INT. VEHICLE LAT.-DIRECT. CHARACTERISTICS (ALPHA= 5)

(B)MACH = .90

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | ALPHA | ORBINC | DELTAZ |
|---|---|---|---|---|
| (A94002) | MSFC 589(1A62F)(034)(T14)(S12) | 5.000 | .000 | 333.000 |
| (A94005) | MSFC 589(1A62F)(034)(T9)(S12)(PT4)(FR4) | 5.000 | .000 | 333.000 |

| REFERENCE INFORMATION | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |



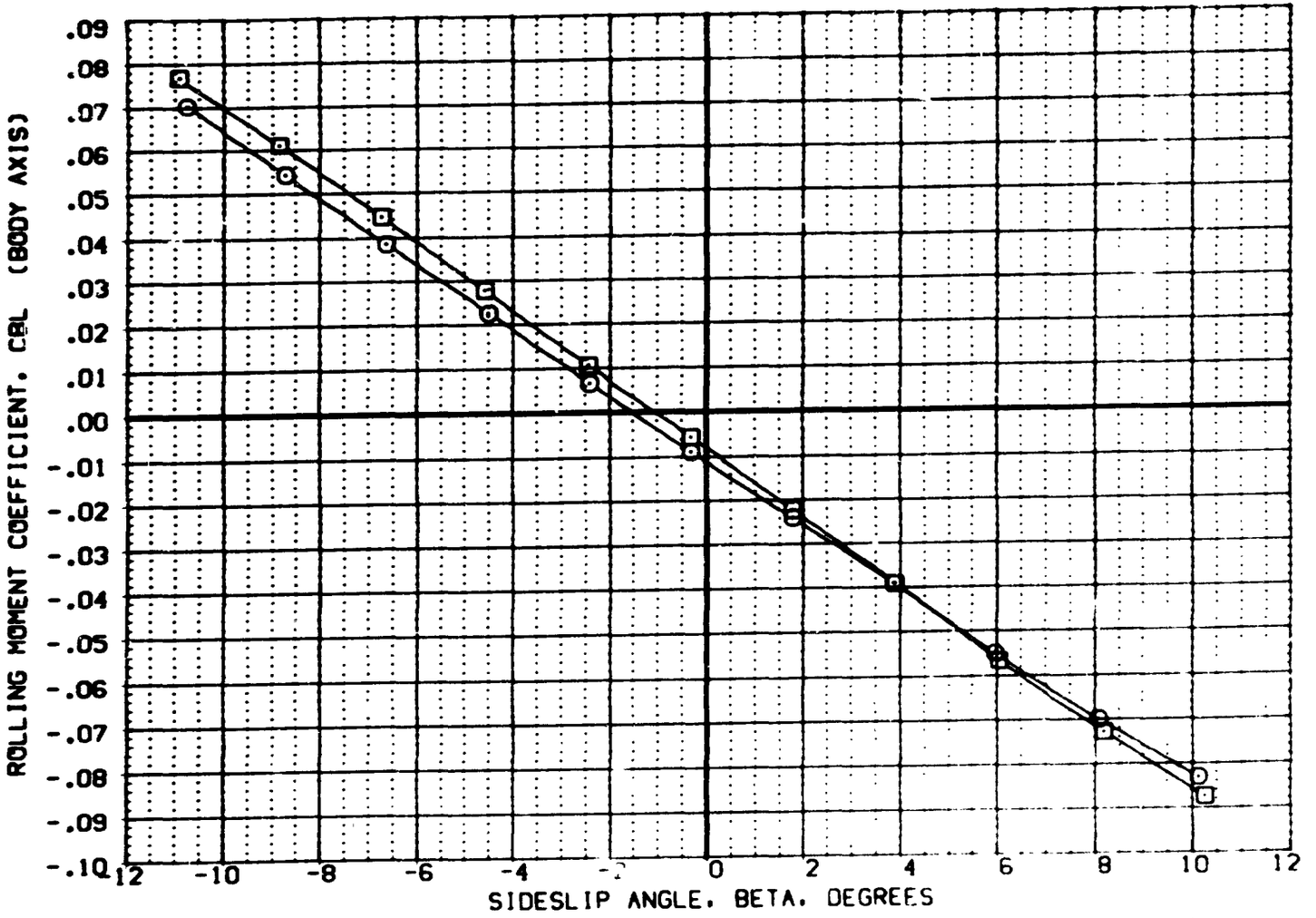

EFFECT OF FAIRINGS ON INT. VEHICLE LAT.-DIRECT. CHARACTERISTICS (ALPHA= 5)

(C)MACH = 1.20

| DATA SET | SYMBOL | CONFIGURATION DESCRIPTION | ALPHA | DRBINC | DELTAZ |
|---|---|---|---|---|---|
| (A94[illegible]2) | ○ | MSFC 589,(A62F)(034)(T14)(S12) | 5.000 | .000 | 333.000 |
| (A94[illegible]5) | □ | MSFC 589,(A62F)(034)(T9)(S12)(PT4)(FF4) | 5.000 | .000 | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.[illegible]960 | SQ.IN. |
| LREF | [illegible] | IN. |
| BMFS | 5.16[illegible] | IN. |
| XMRP | 2.6880[illegible] | IN. |
| YMRP | .00[illegible] | IN. |
| ZMRP | .00[illegible] | IN. |
| SCALE | .0041[illegible] | |

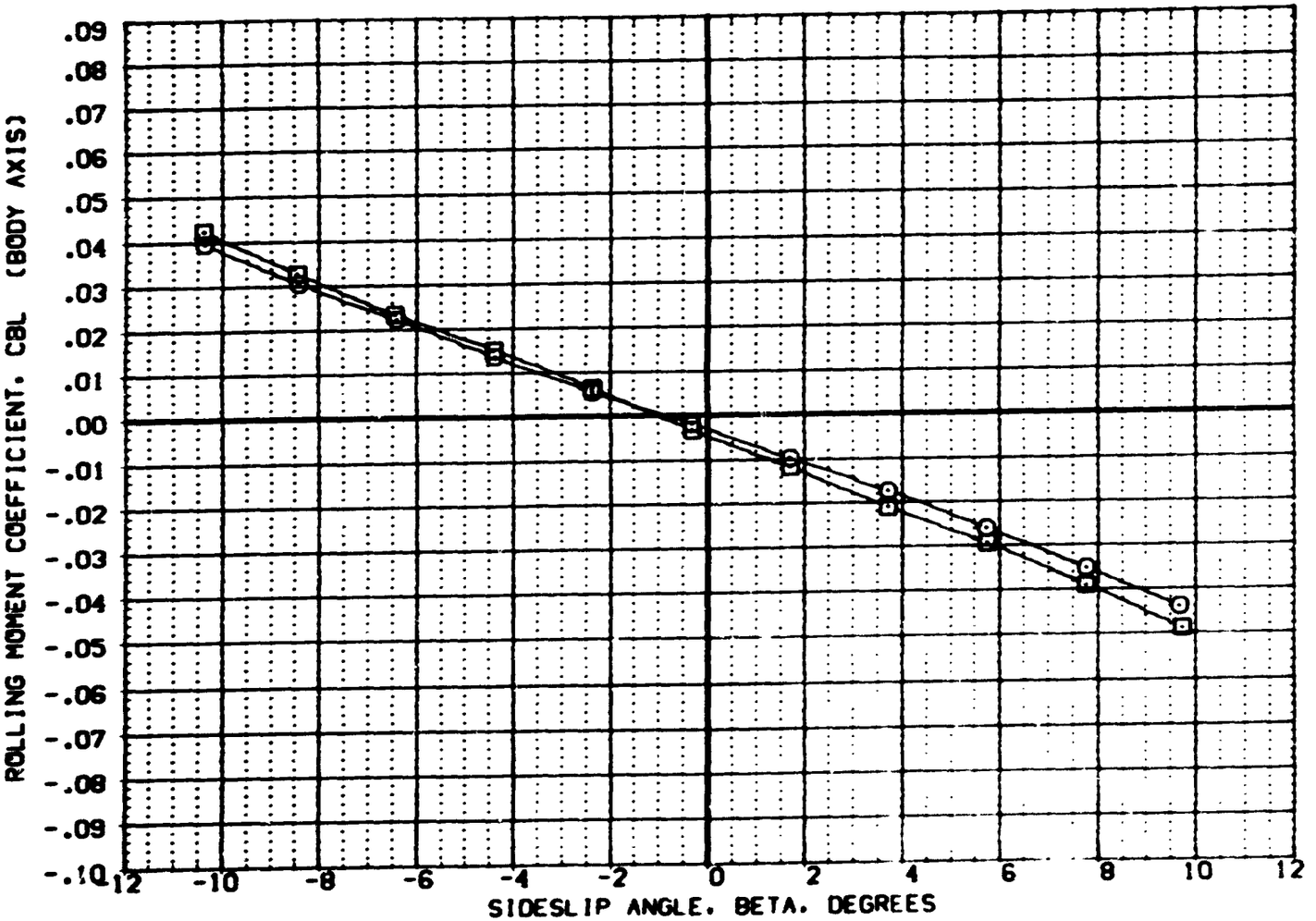



EFFECT OF FAIRINGS ON INT. VEHICLE LAT.-DIRECT. CHARACTERISTICS (ALPHA= 5)

(D)MACH = 1.46

| DATA SET SYMBOL | CONFIGURATION DESCRIPTION | ALPHA | ORBINC | DELTAZ |
|---|---|---|---|---|
| (A94002) | MSFC 589((A62F)(034)((T14)(S12) | 5.000 | .000 | 333.000 |
| (A94003) | MSFC 589((A62F)(034)((T9)(S12)(PT4)(FR4) | 5.000 | .000 | 333.000 |

| REFERENCE INFORMATION | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |




EFFECT OF FAIRINGS ON INT. VEHICLE LAT.-DIRECT. CHARACTERISTICS (ALPHA= 5)

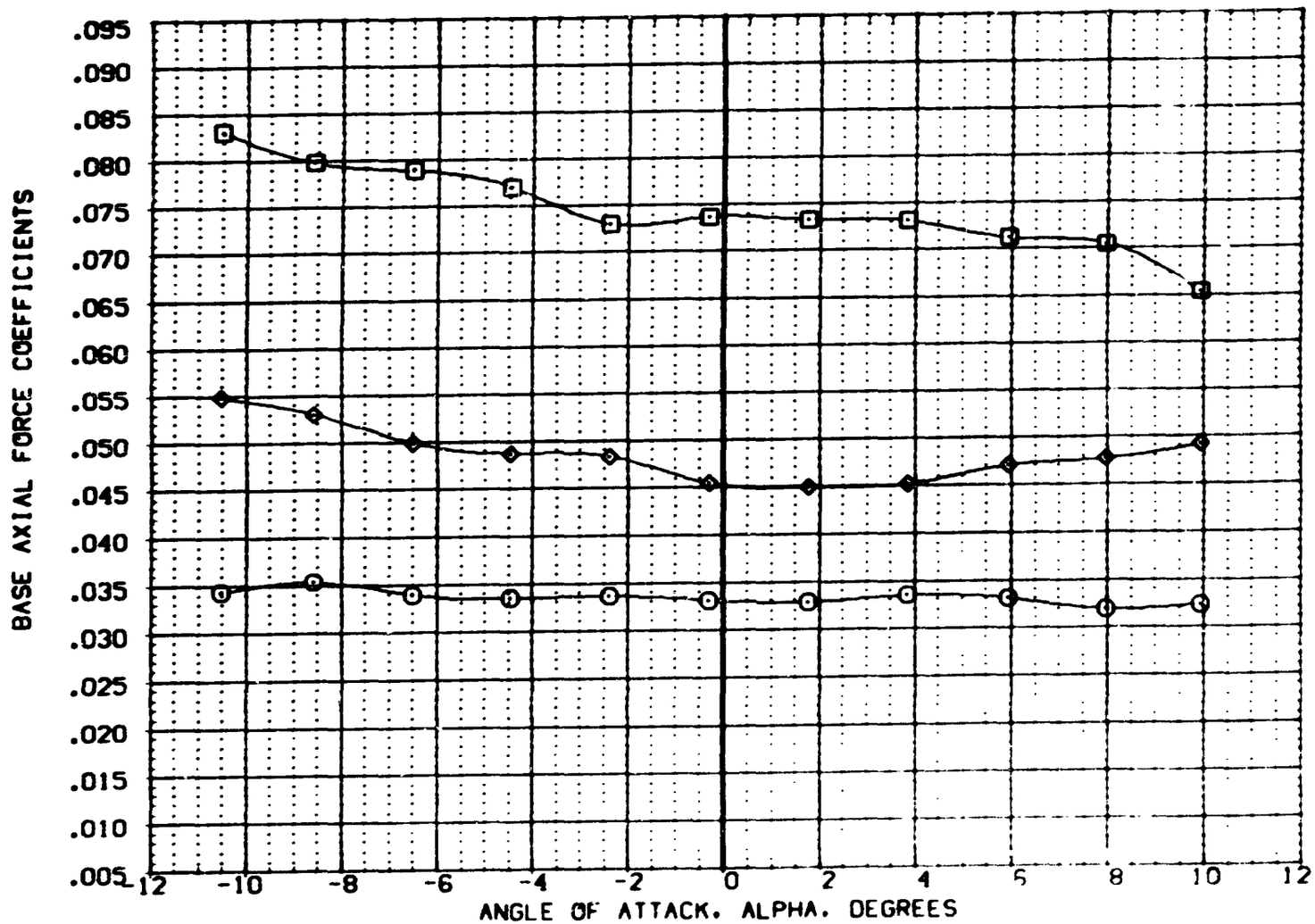
(E)MACH = 4.96

MSFC 589(1A62F)(034)(T14)(S12) (A94001)

| SYMBOL | DATA | PARAMETRIC VALUES | | | |
|---|---|---|---|---|---|
| ○ | CABO | MACH | .597 | BETA | .000 |
| □ | CABE | ORBINC | .000 | DELTAZ | 333.000 |
| ◇ | CABS | | | | |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |




BASE AXIAL FORCE COEFFICIENTS OF INTEGRATED VEHICLE COMPONENTS

PAGE 12

MSFC 589(1A62F)(034)(T14)(S12) (A94001)

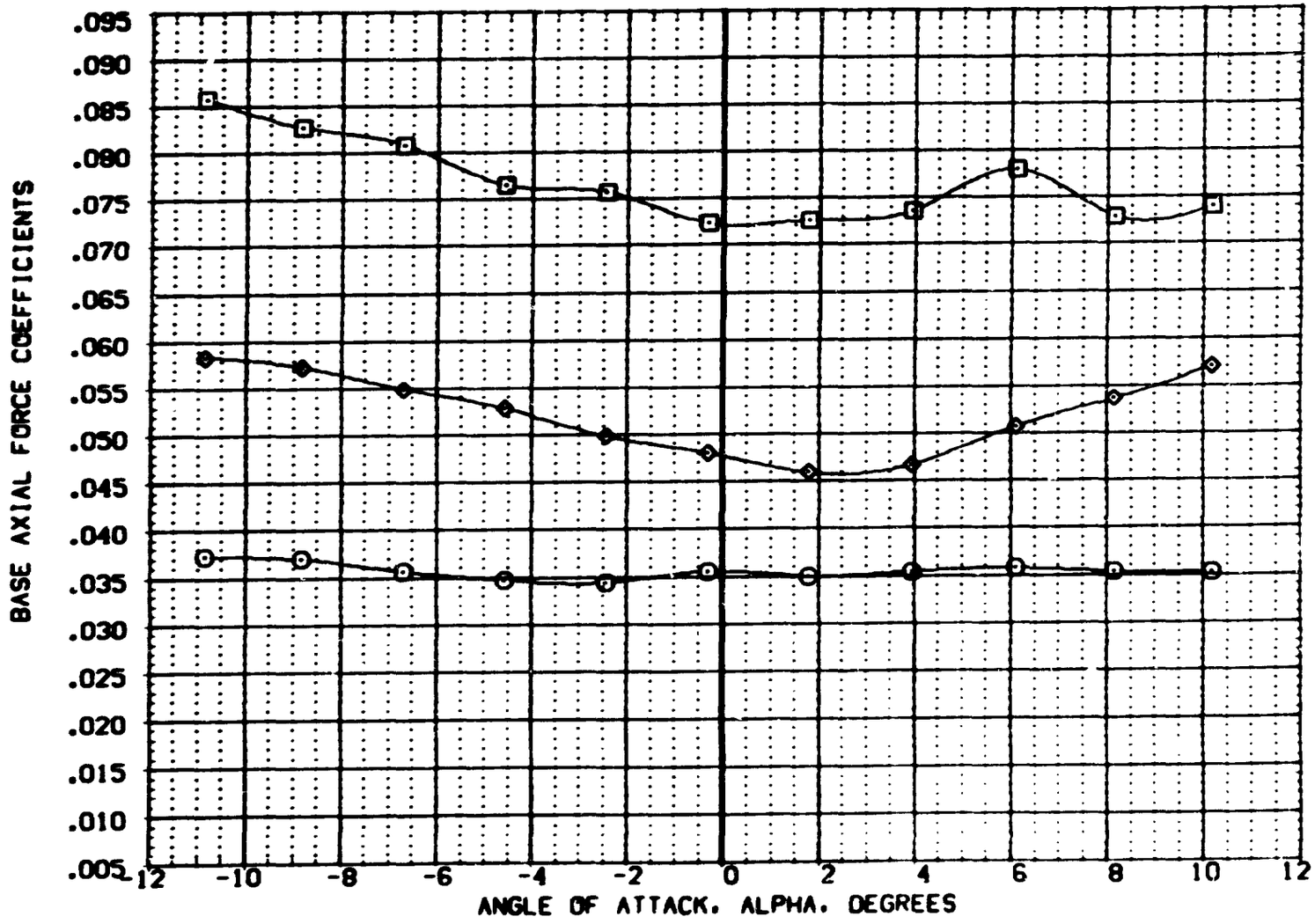
| SYMBOL | DATA |
|---|---|
| ○ | CABD |
| □ | CABE |
| ◇ | CABS |

PARAMETRIC VALUES

| | | | |
|---|---|---|---|
| MACH | .902 | BETA | .000 |
| ORBINC | .000 | DELTAZ | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |




BASE AXIAL FORCE COEFFICIENTS OF INTEGRATED VEHICLE COMPONENTS

MSFC 589(1A62F)(C34)(T14)(S12) (A94001)

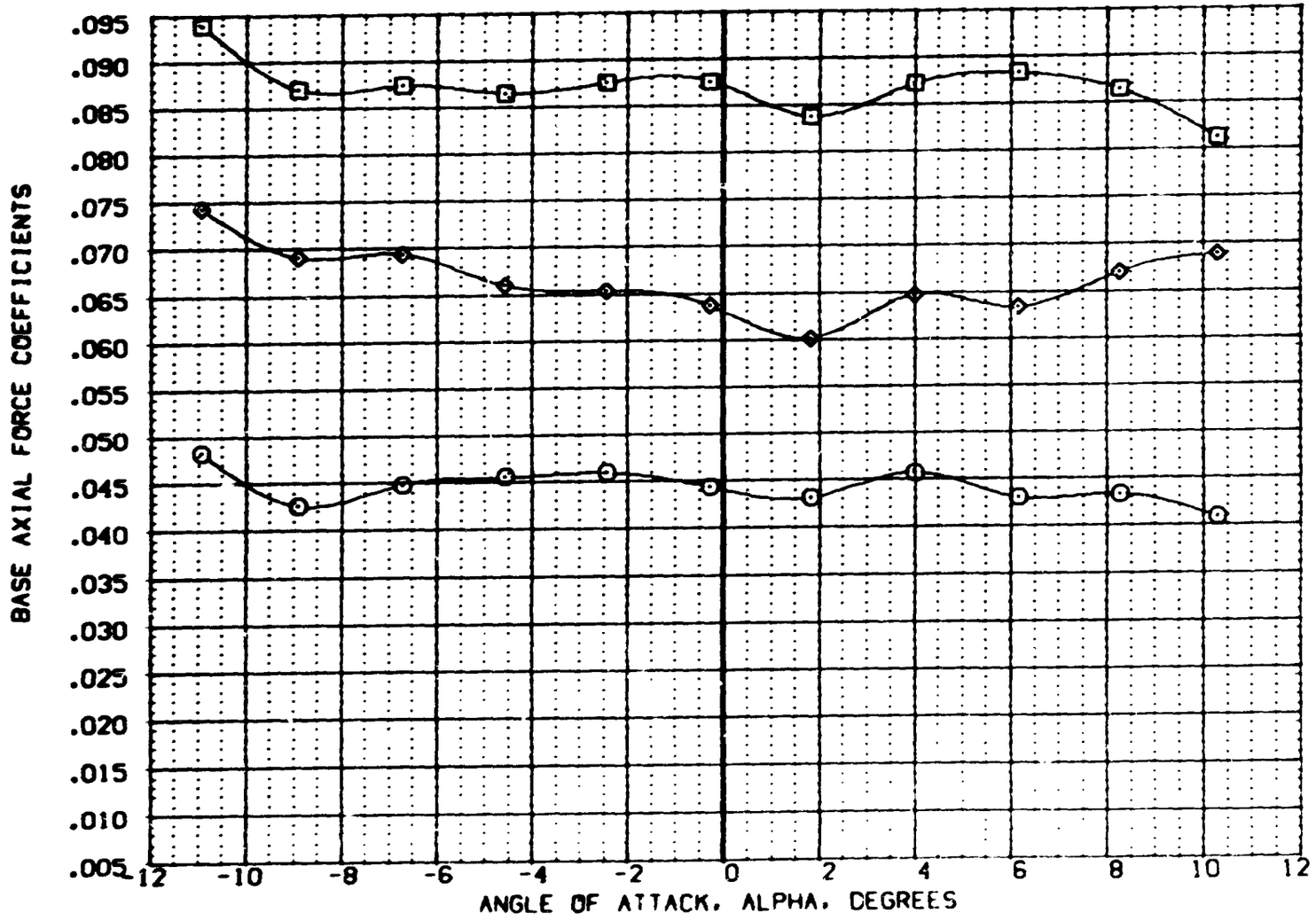
| SYMBOL | DATA |
|---|---|
| □ | CABC |
| ◇ | CABE |
| | CABS |

PARAMETRIC VALUES

| | | | |
|---|---|---|---|
| MACH | .996 | BETA | .000 |
| ORBINC | .000 | DELTAZ | 330.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 3.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 7.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |




BASE AXIAL FORCE COEFFICIENTS OF INTEGRATED VEHICLE COMPONENTS

MSFC 589(IA62F)(034)(T14)(S12) (A94001)

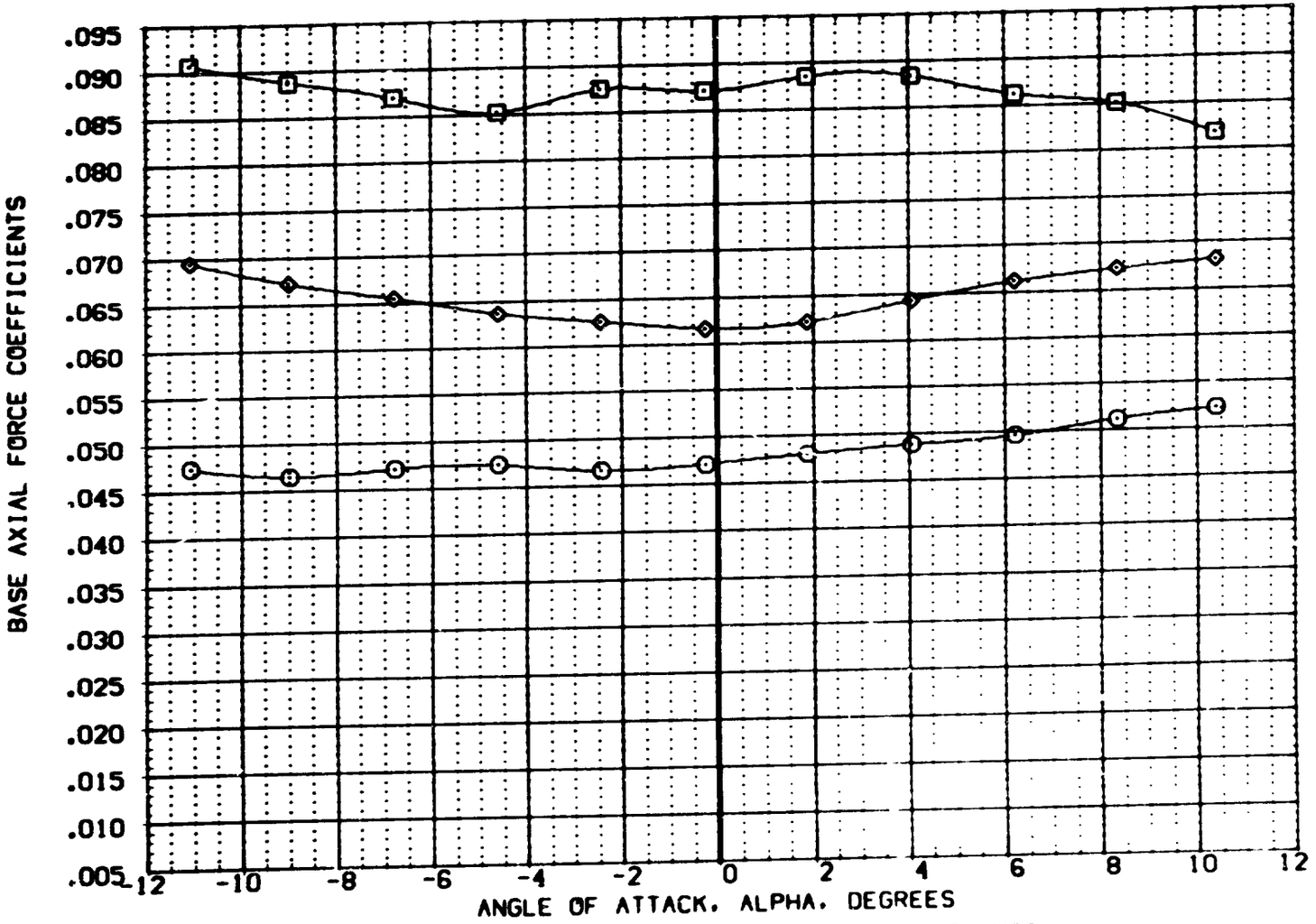
| SYMBOL | DATA |
|---|---|
| △ | CABO |
| □ | CABE |
| ◇ | CABS |

PARAMETRIC VALUES

| | | | |
|---|---|---|---|
| MACH | 1.200 | BETA | .000 |
| ORBINC | .000 | DELTAZ | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |



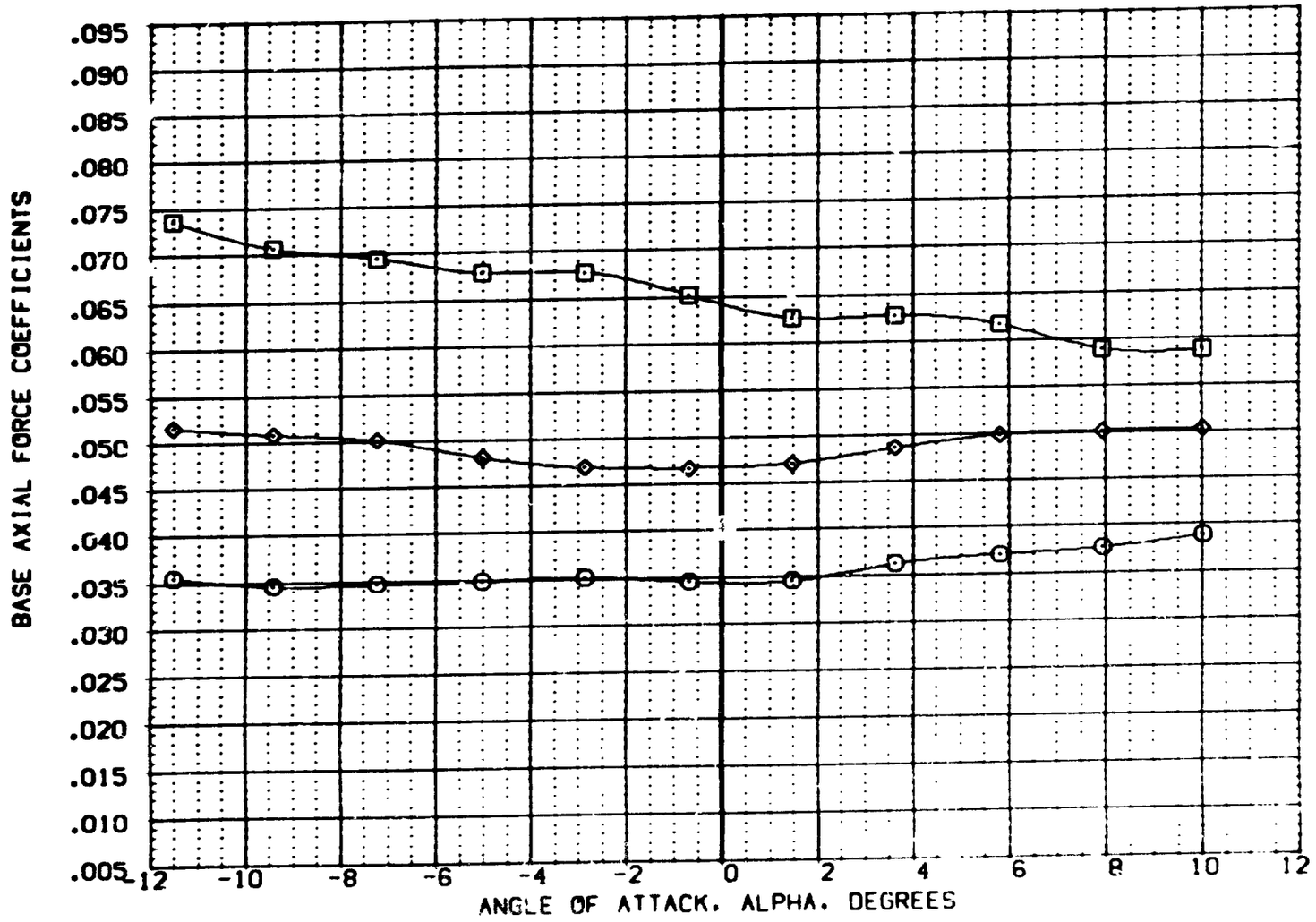

BASE AXIAL FORCE COEFFICIENTS OF INTEGRATED VEHICLE COMPONENTS

MSFC 589(1A62F)(034)(T14)(S12) (A94001)

| SYMBOL | DATA | PARAMETRIC VALUES | | | |
|---|---|---|---|---|---|
| ○ | CABC | MACH | 1.463 | BETA | .000 |
| □ | CABE | ORBINC | .000 | DELTAZ | 333.000 |
| ◇ | CABS | | | | |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1500 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6900 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |




BASE AXIAL FORCE COEFFICIENTS OF INTEGRATED VEHICLE COMPONENTS

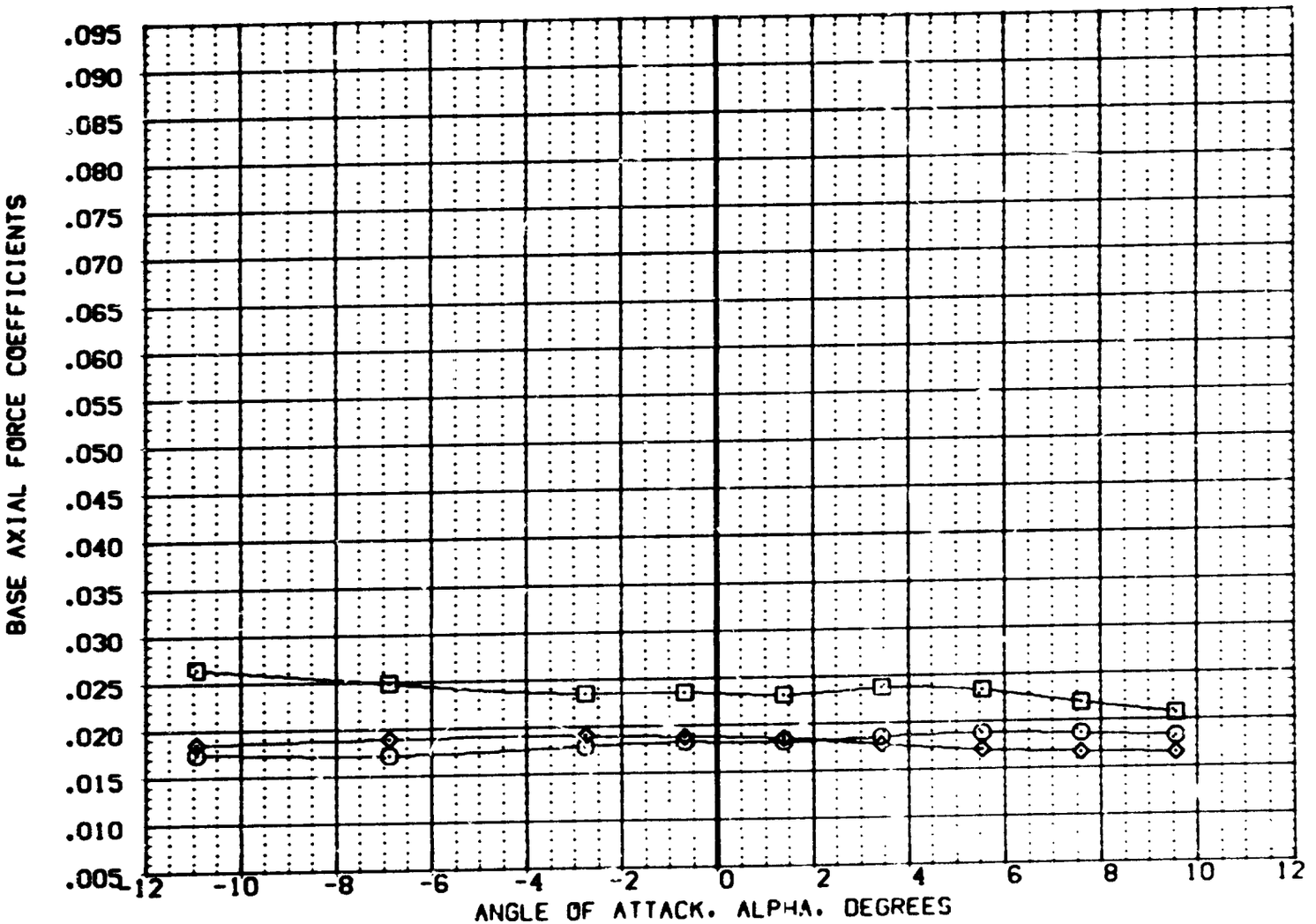
MSFC 589(1A62F)(034)(T14)(S12)

(A94001)

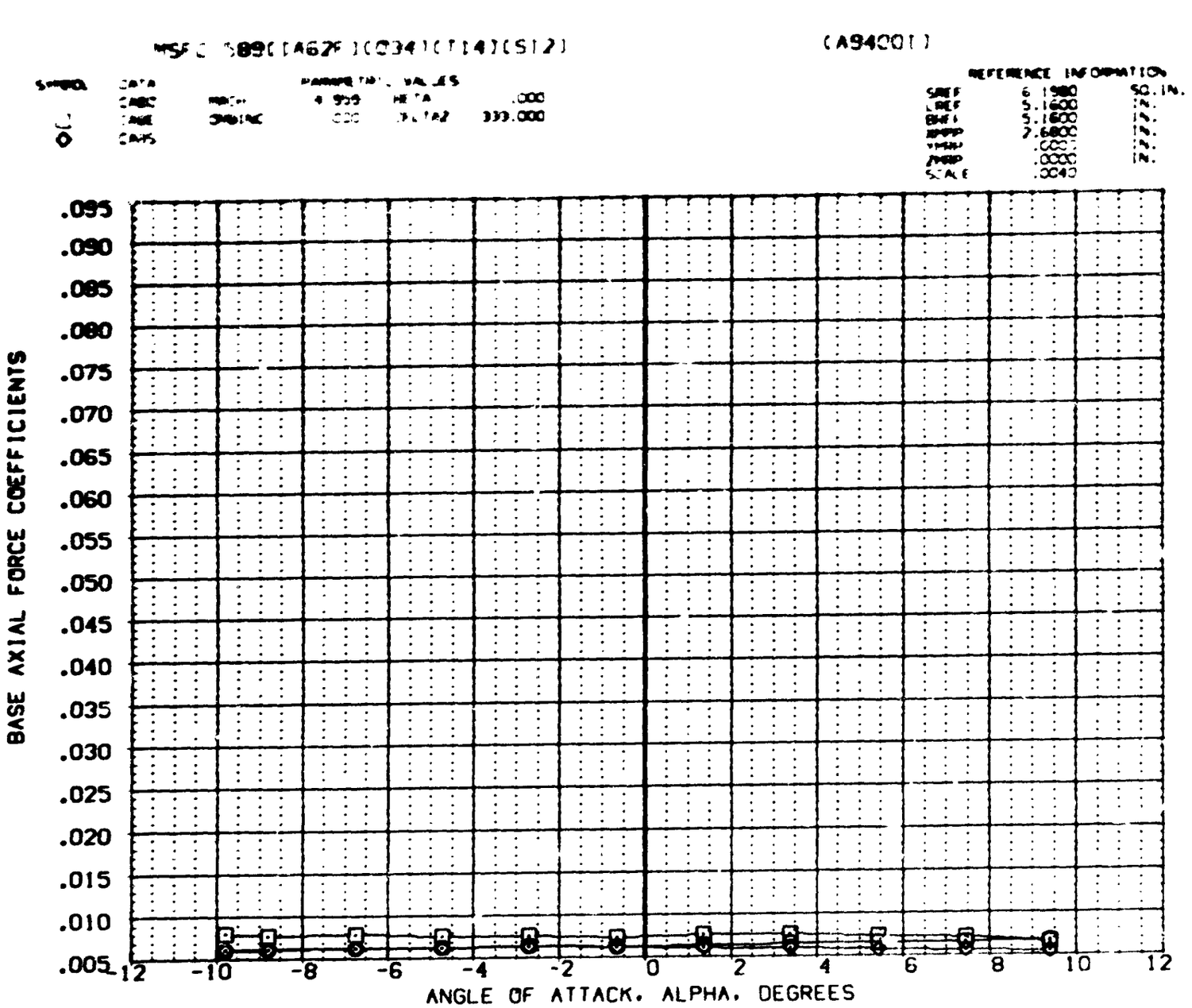
| SYMBOL | DATA | PARAMETRIC VALUES | | | |
|---|---|---|---|---|---|
| ○ | CARC | MACH | 2.990 | BETA | .000 |
| □ | CARE | ORBINC | .000 | DELTAZ | 333.000 |
| ◇ | CARS | | | | |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |




BASE AXIAL FORCE COEFFICIENTS OF INTEGRATED VEHICLE COMPONENTS




BASE AXIAL FORCE COEFFICIENTS OF INTEGRATED VEHICLE COMPONENTS

MSFC 589(1A62F)(034)(T9)(S12)(PT4)(FR4) (A94004)

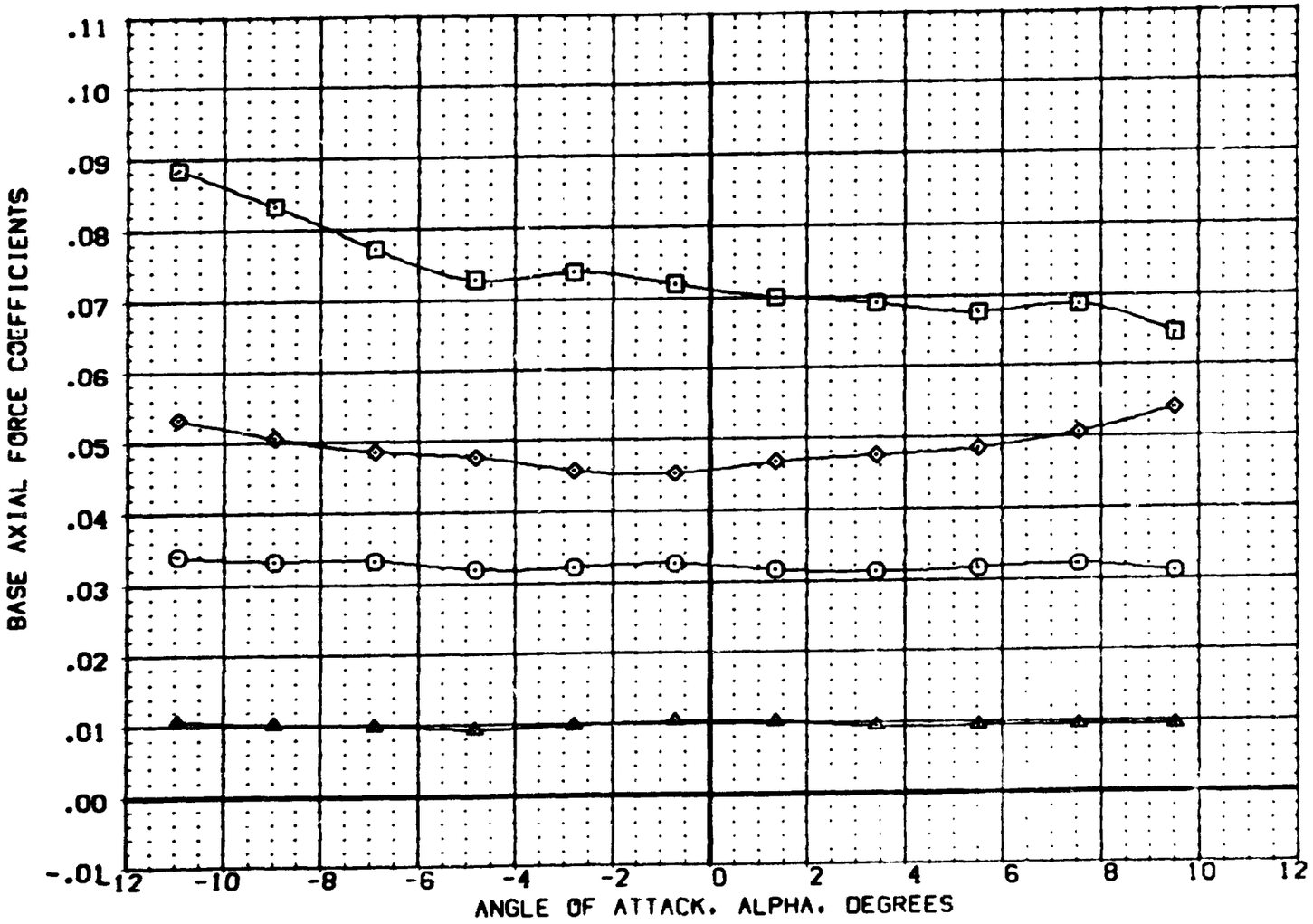
| SYMBOL | DATA |
|---|---|
| ○ | CABC |
| □ | CABE |
| ◇ | CABS |
| △ | CABF |

PARAMETRIC VALUES

| | | | |
|---|---|---|---|
| MACH | .596 | BETA | .000 |
| ORBINC | .000 | DELTAZ | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |




BASE AXIAL FORCE COEFFICIENTS OF INTEGRATED VEHICLE COMPONENTS

MSFC 589(IA62F)(034)(T9)(S12)(PT4)(FR4) (A94004)

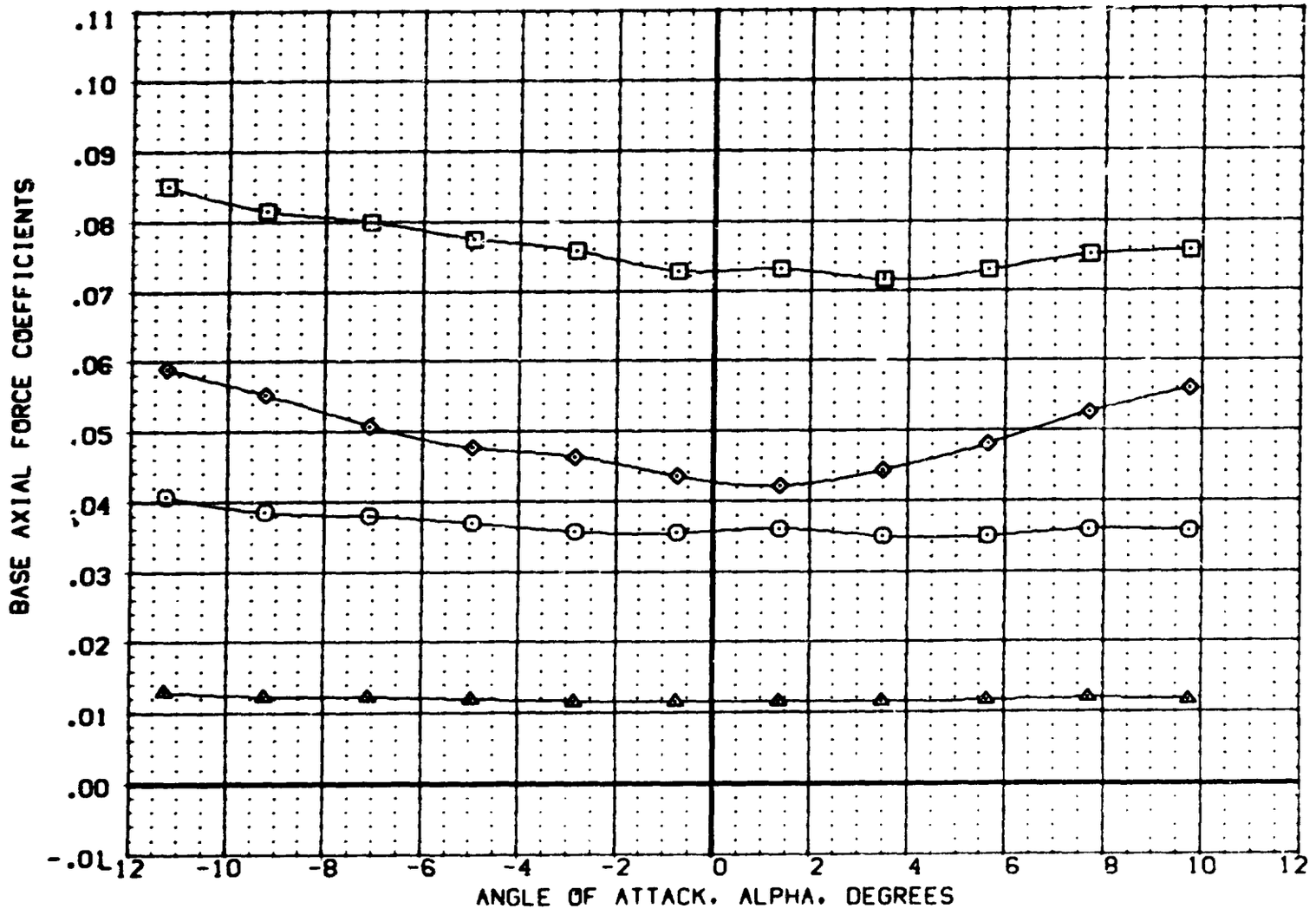
| SYMBOL | DATA |
|---|---|
| ○ | CABC |
| □ | CABE |
| ◇ | CABS |
| △ | CAB# |

PARAMETRIC VALUES

| | | | |
|---|---|---|---|
| MACH | .900 | BETA | .000 |
| ORGINC | .000 | DELTAZ | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |




BASE AXIAL FORCE COEFFICIENTS OF INTEGRATED VEHICLE COMPONENTS

MSFC 589(IA62F)(034)(T9)(S12)(PT4)(FR4) (A94004)

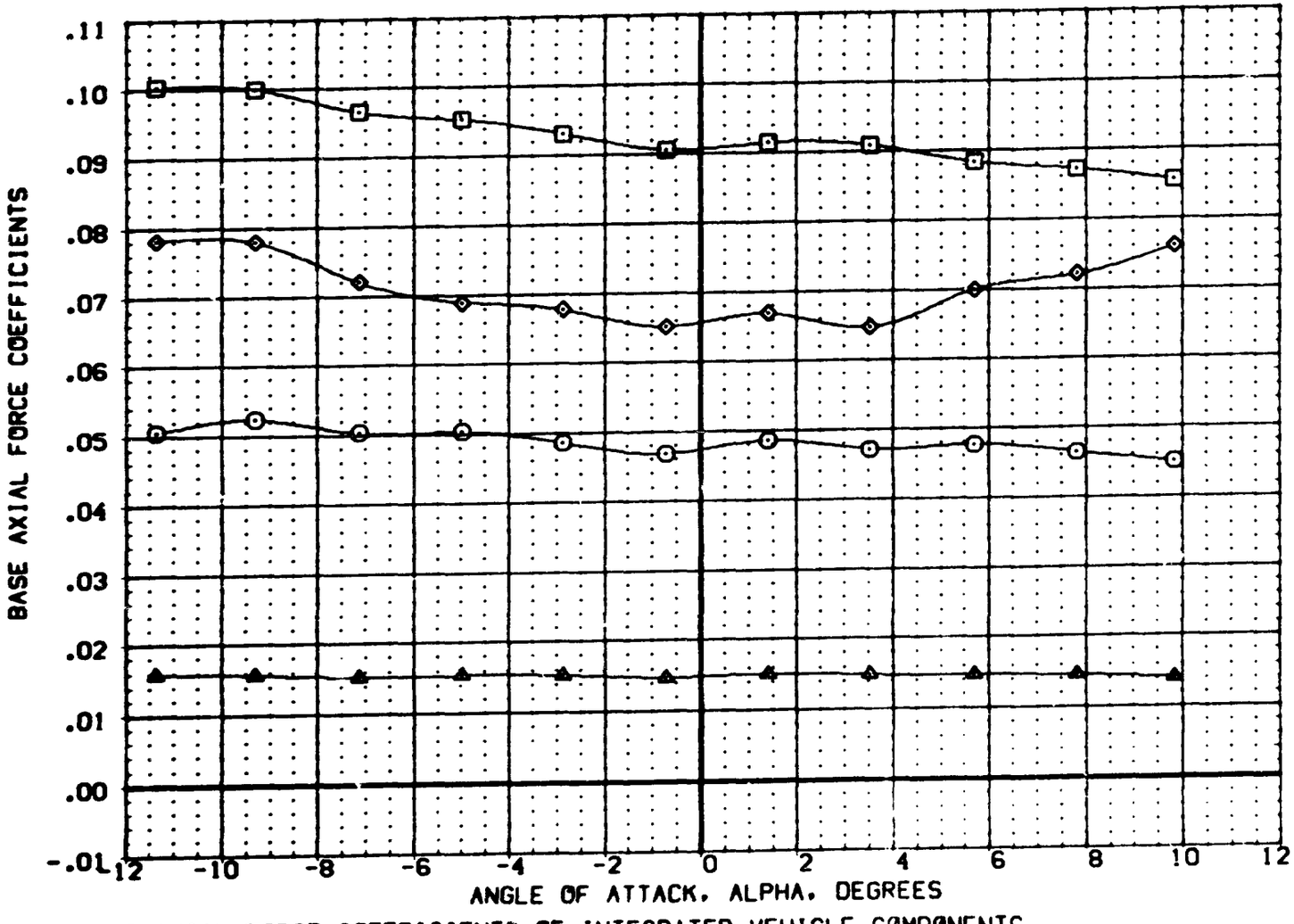
| SYMBOL | DATA |
|---|---|
| ○ | CABD |
| □ | CABE |
| ◇ | CABS |
| △ | CABF |

PARAMETRIC VALUES

| | | | |
|---|---|---|---|
| MACH | .998 | BETA | .000 |
| ORBINC | .000 | DELTAZ | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |




BASE AXIAL FORCE COEFFICIENTS OF INTEGRATED VEHICLE COMPONENTS

MSFC 589([A62F](034)(T9)(S12)(PT4)(FR4) (A94004)

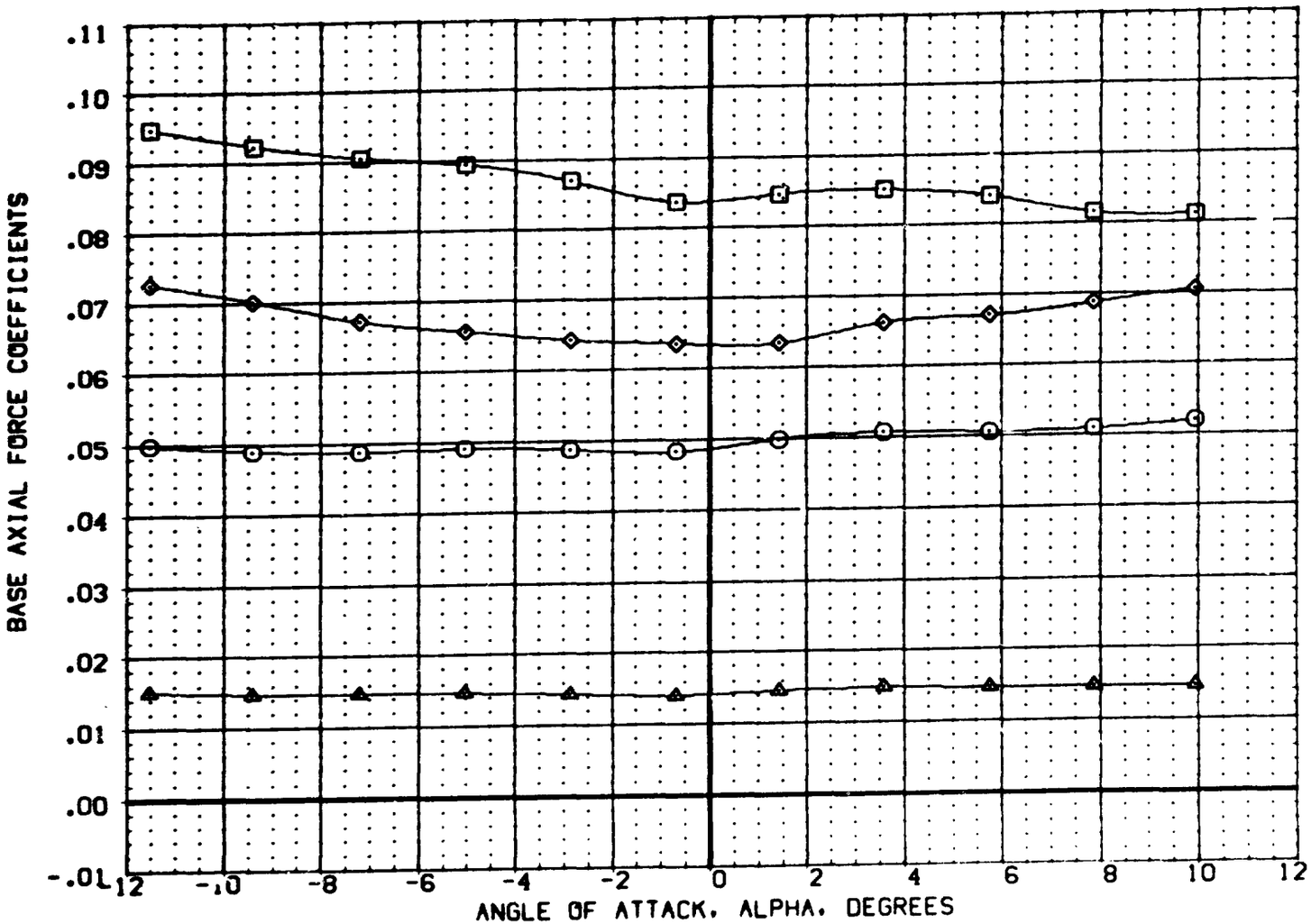
| SYMBOL | DATA |
|---|---|
| ○ | CABO |
| □ | CABE |
| ◇ | CABS |
| △ | CABF |

PARAMETRIC VALUES

| | | | |
|---|---|---|---|
| MACH | 1.202 | BETA | .000 |
| ORBINC | .000 | DELTAZ | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |




BASE AXIAL FORCE COEFFICIENTS OF INTEGRATED VEHICLE COMPONENTS

MSFC 589(IA62F)(034)(T9)(S12)(PT4)(FR4) (A94004)

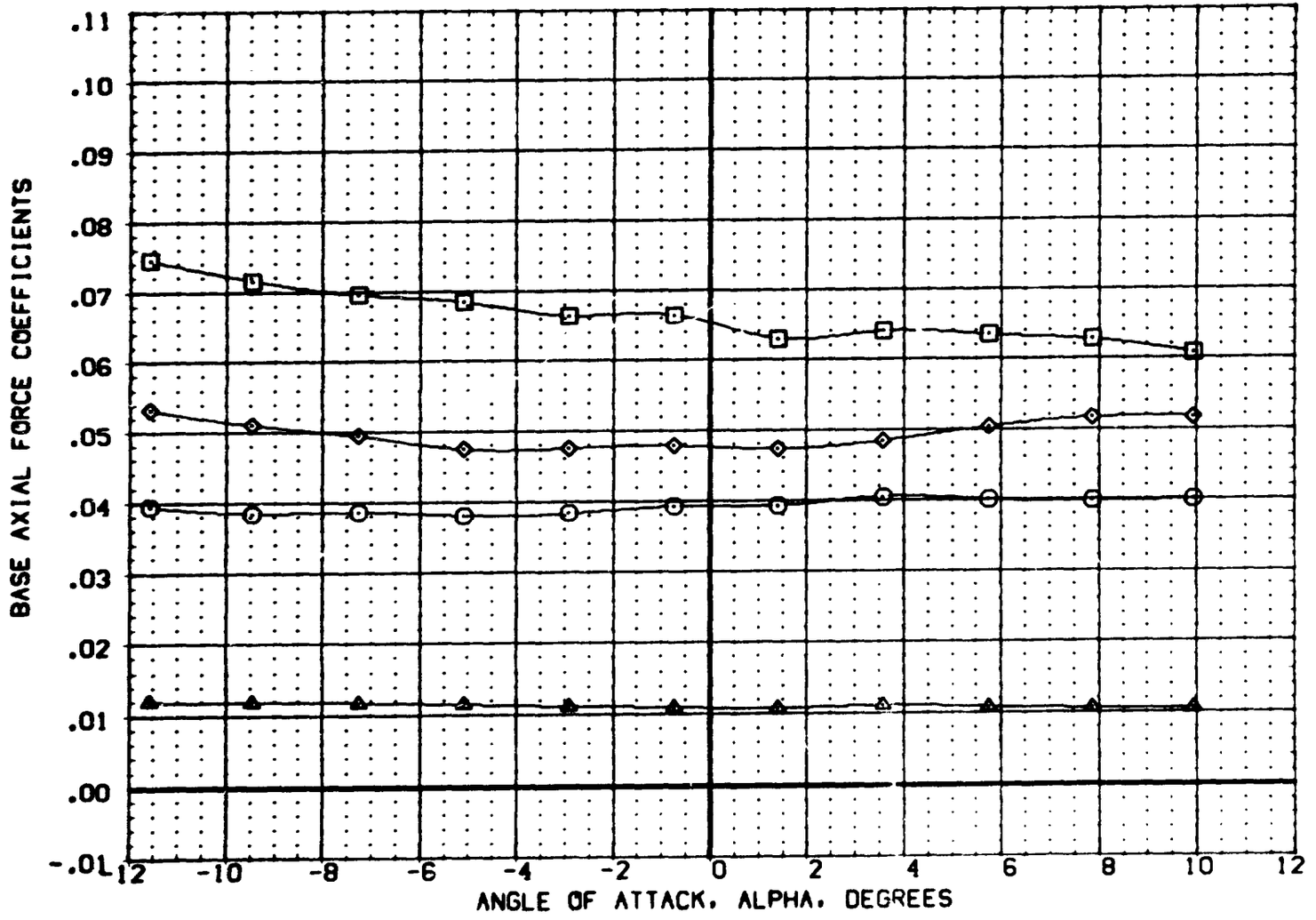
| SYMBOL | DATA |
|---|---|
| ○ | CABC |
| □ | CABE |
| ◇ | CABS |
| △ | CABF |

PARAMETRIC VALUES

| | | | |
|---|---|---|---|
| MACH | 1.458 | BETA | .000 |
| ORBINC | .000 | DELTAZ | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |




BASE AXIAL FORCE COEFFICIENTS OF INTEGRATED VEHICLE COMPONENTS

MSFC 589(IA62F)(034)(T9)(S12)(PT4)(FR4) (A94004)

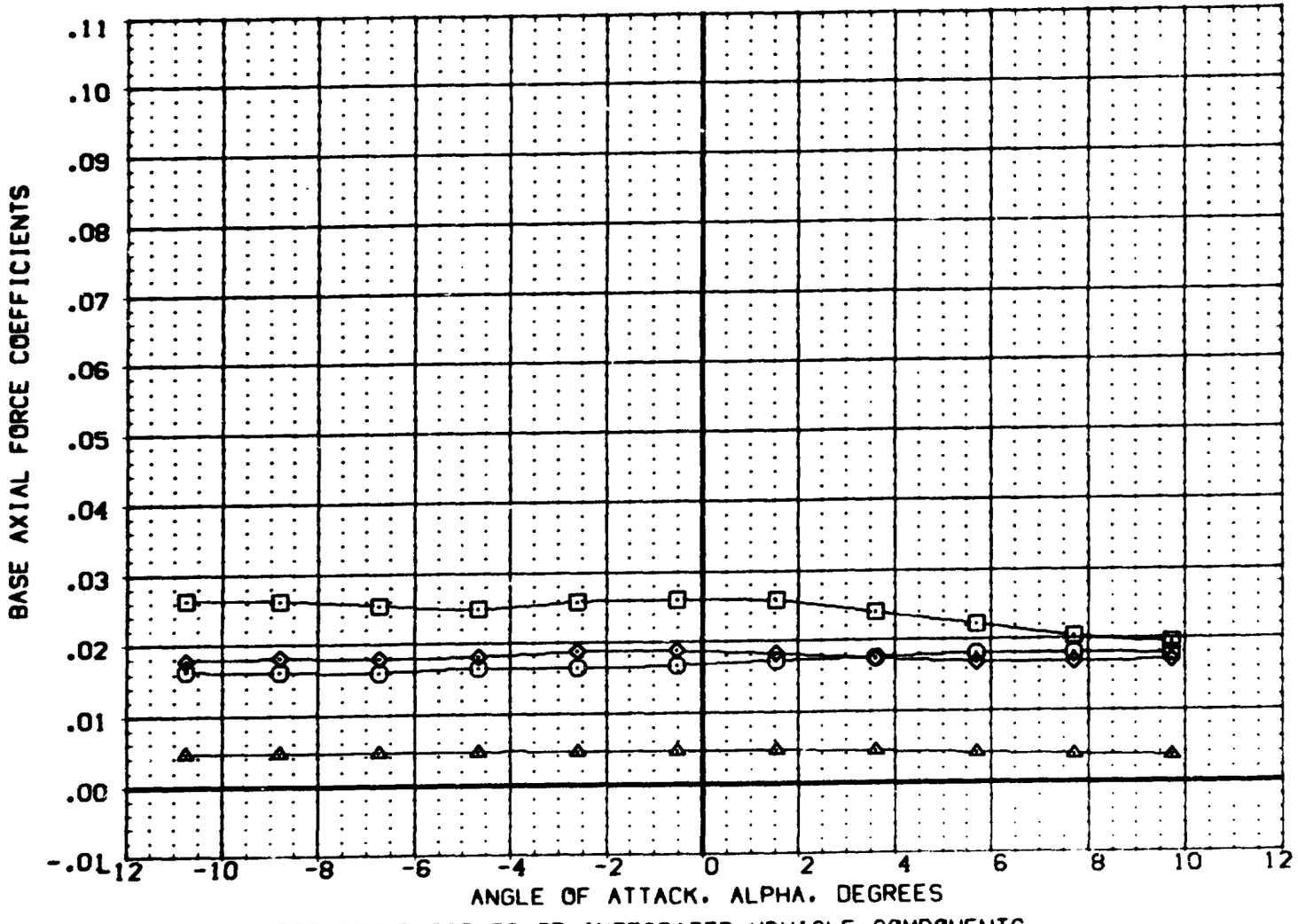
| SYMBOL | DATA |
|---|---|
| ○ | CA&C |
| □ | CABF |
| ◇ | CABS |
| △ | CABF |

PARAMETRIC VALUES

| | | | |
|---|---|---|---|
| MACH | 2.990 | BETA | .000 |
| ORBINC | .000 | DELTAZ | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |




BASE AXIAL FORCE COEFFICIENTS OF INTEGRATED VEHICLE COMPONENTS

MSFC 589(!A62F)(034)(T9)(S12)(PT4)(FR4) (A94004)

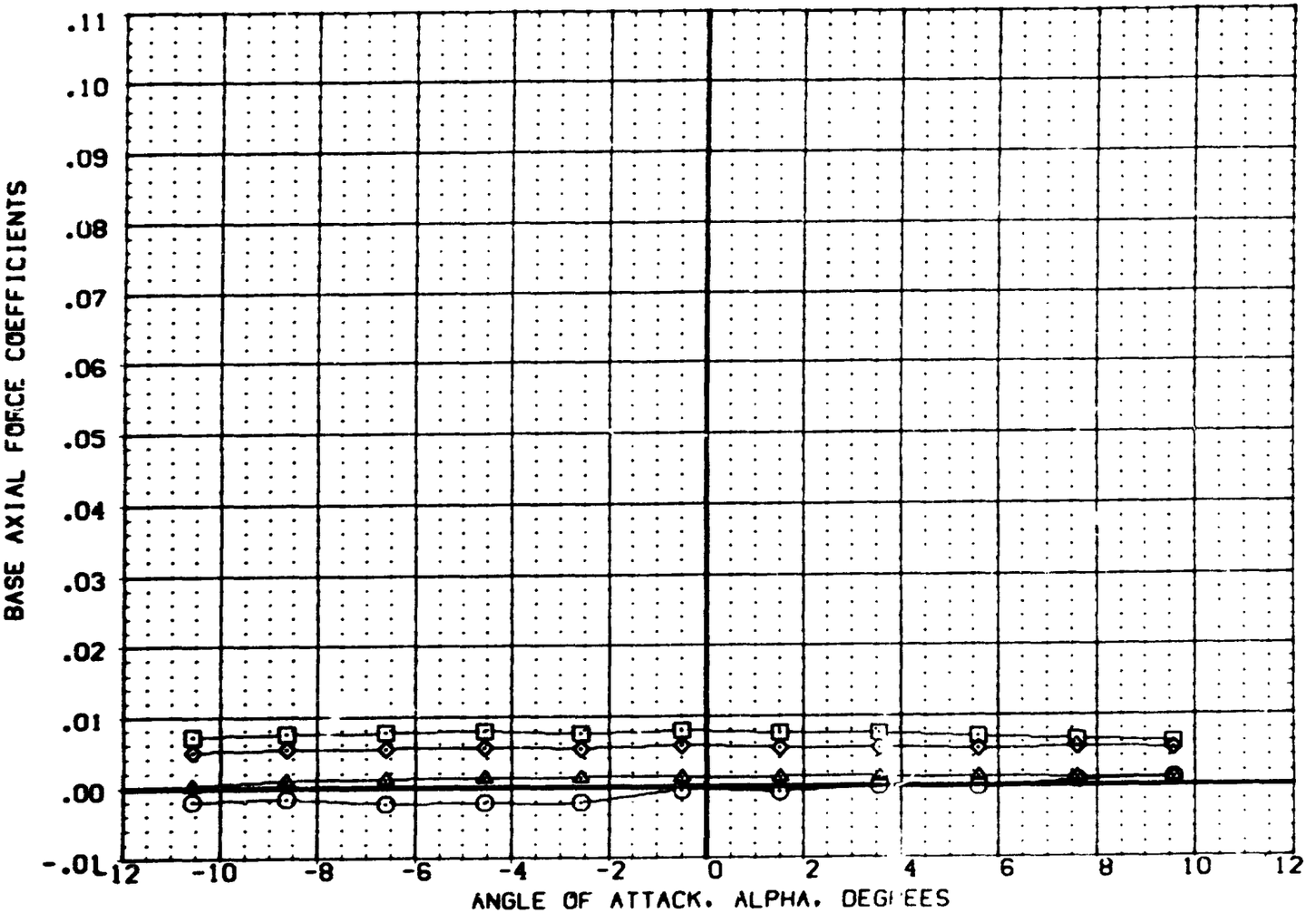
| SYMBOL | DATA |
|---|---|
| ○ | CABC |
| □ | CABE |
| ◇ | CABS |
| △ | CABF |

PARAMETRIC VALUES

| | | | |
|---|---|---|---|
| MACH | 4.959 | BETA | .000 |
| ORBINC | .000 | DELTAZ | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |




BASE AXIAL FORCE COEFFICIENTS OF INTEGRATED VEHICLE COMPONENTS

MSFC 589(1A62F)(034)(T14)(S12) (A94003)

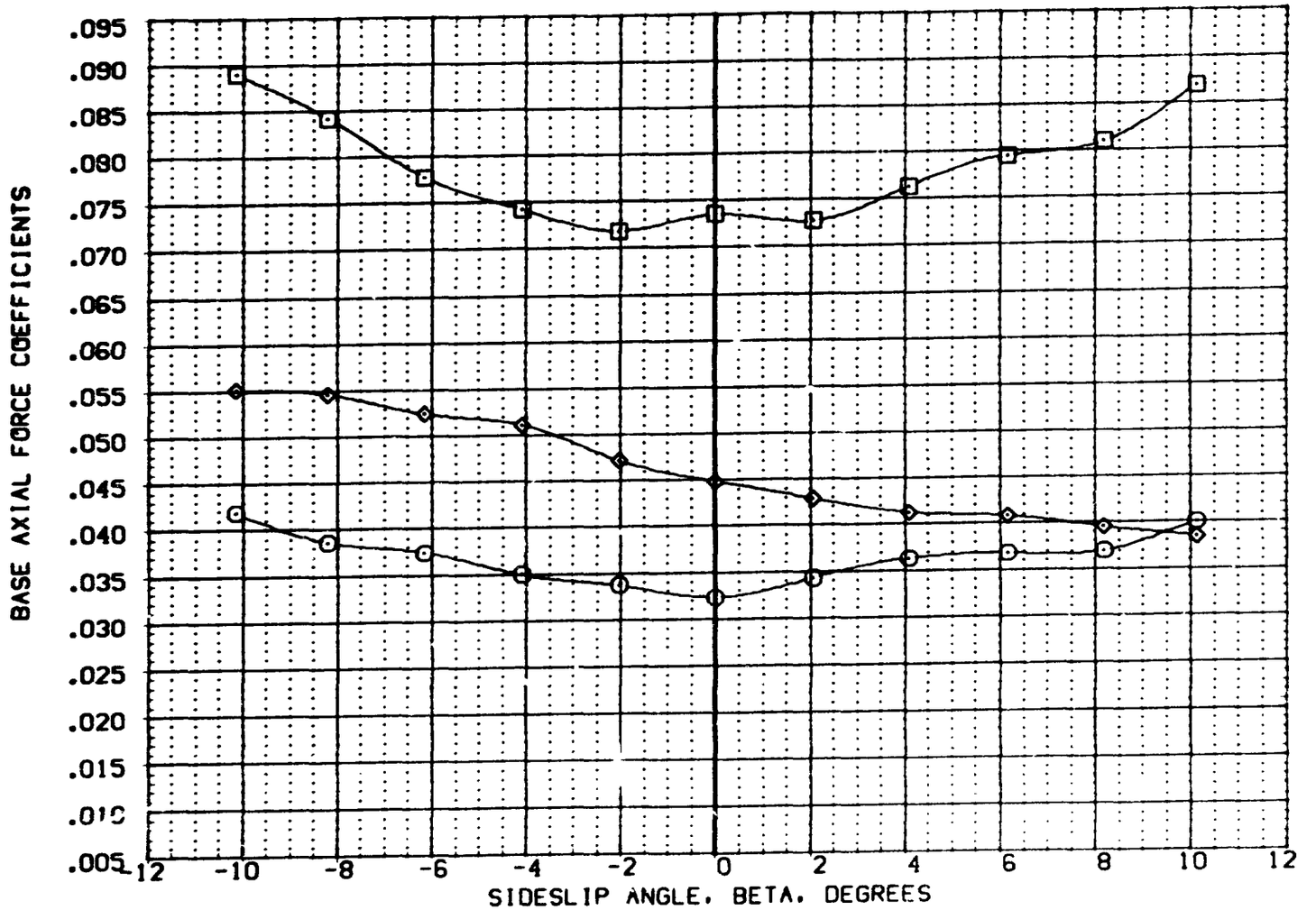
| SYMBOL | DATA |
|---|---|
| ○ | CABC |
| ◇ | CABE |
| | CAPS |

PARAMETRIC VALUES

| | | | |
|---|---|---|---|
| MACH | .599 | ALPHA | .000 |
| DXBINC | .000 | DELTAZ | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |




BASE AXIAL FORCE COEFFICIENTS OF INTEGRATED VEHICLE COMPONENTS

MSFC 589(IA62F)(034)(T14)(S12) (A94003)

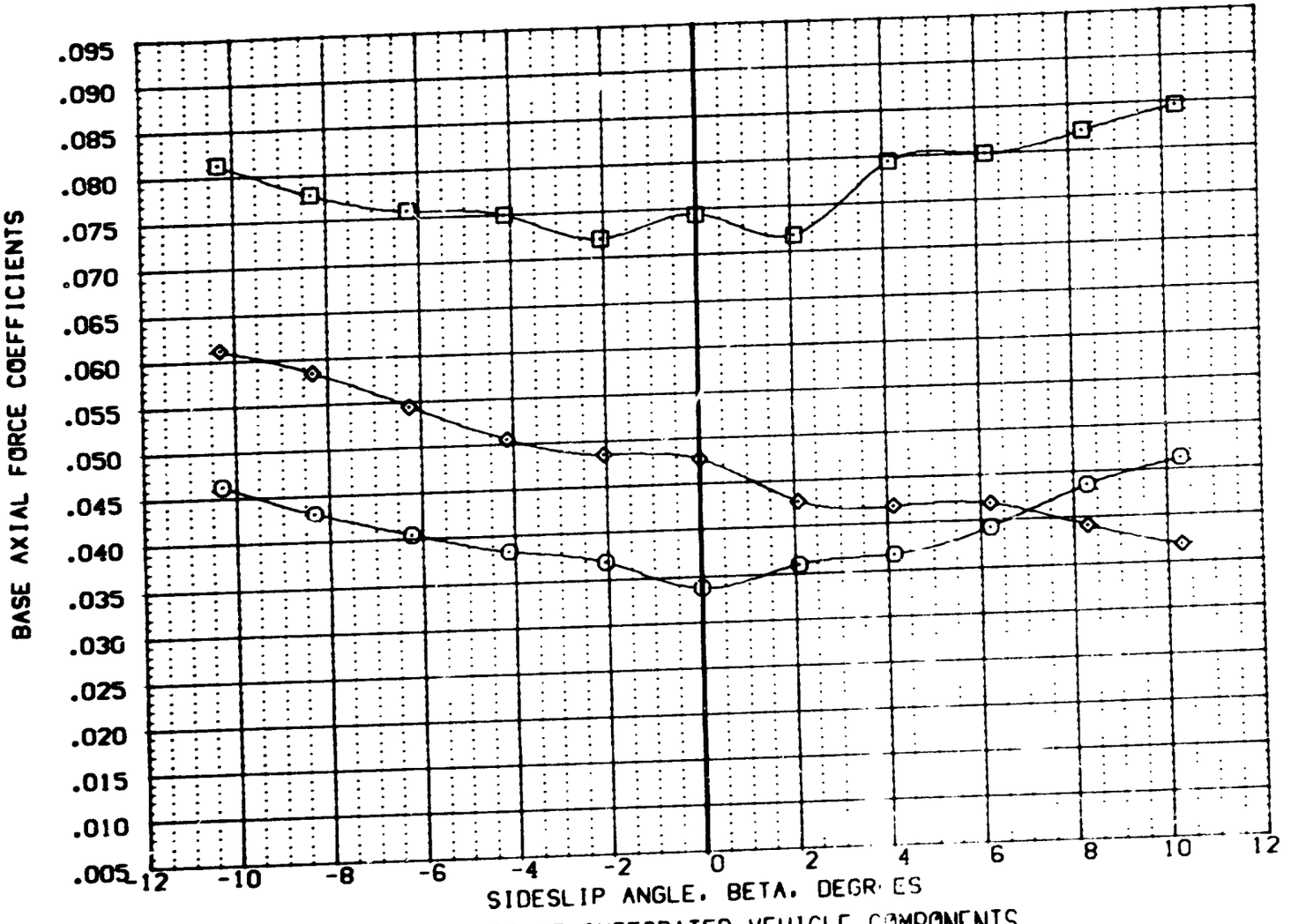
| SYMBOL | DATA |
|---|---|
| ○ | CABC |
| □ | CABE |
| ◇ | CABS |

PARAMETRIC VALUES

| | | | |
|---|---|---|---|
| MACH | .901 | ALPHA | .000 |
| ORBINC | .000 | DELTAZ | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BRLF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |



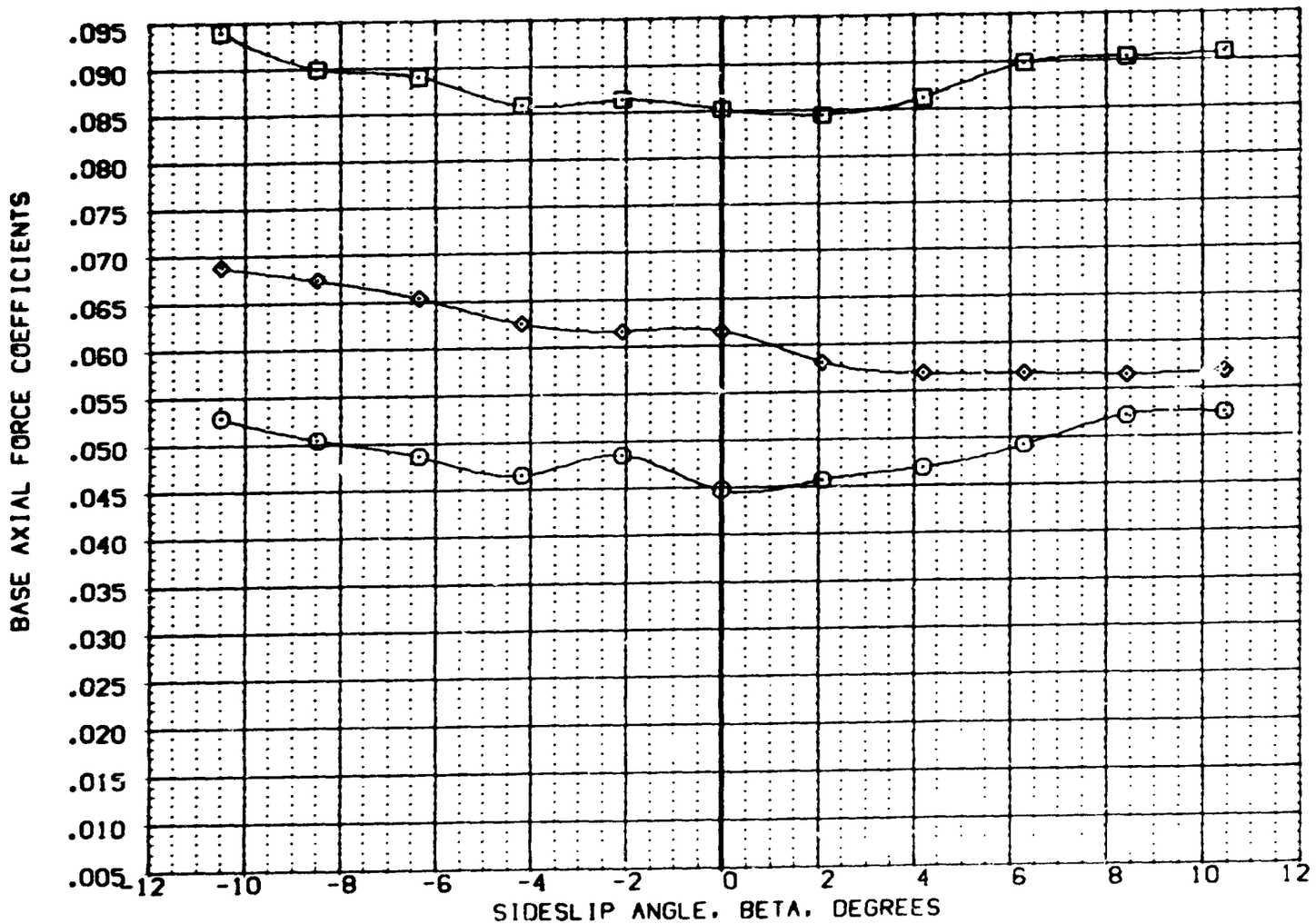

BASE AXIAL FORCE COEFFICIENTS OF INTEGRATED VEHICLE COMPONENTS

MSFC 589(1A62F)(034)(T14)(S12) (A94003)

| SYMBOL | DATA | PARAMETRIC VALUES | | | |
|---|---|---|---|---|---|
| | CABO | MACH | 1.197 | ALPHA | .000 |
| □ | CAWB | ORIENC | .000 | DELTAZ | 333.000 |
| ◇ | CABS | | | | |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |




BASE AXIAL FORCE COEFFICIENTS OF INTEGRATED VEHICLE COMPONENTS

MSFC 589(1A62F)(034)(T14)(S12) (A94003)

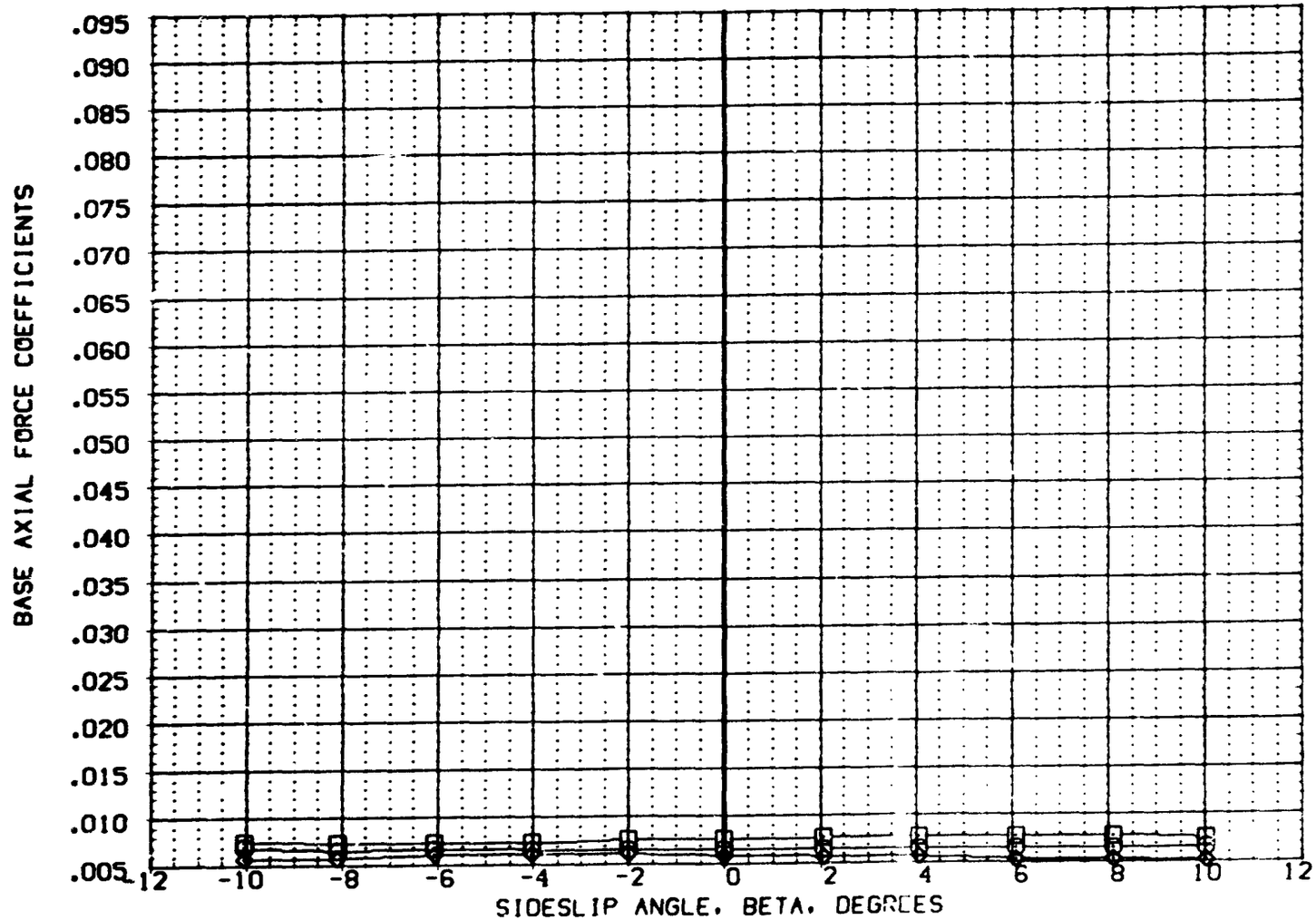
| SYMBOL | DATA |
|---|---|
| ○ | CABS |
| □ | CABE |
| ◇ | CABS |

PARAMETRIC VALUES

| | | | |
|---|---|---|---|
| MACH | 4.959 | ALPHA | .000 |
| ORBINC | .000 | DELTAZ | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |




BASE AXIAL FORCE COEFFICIENTS OF INTEGRATED VEHICLE COMPONENTS

MSFC 589[IA62F][034][T9][S12][PT4][FR4] (A94006)

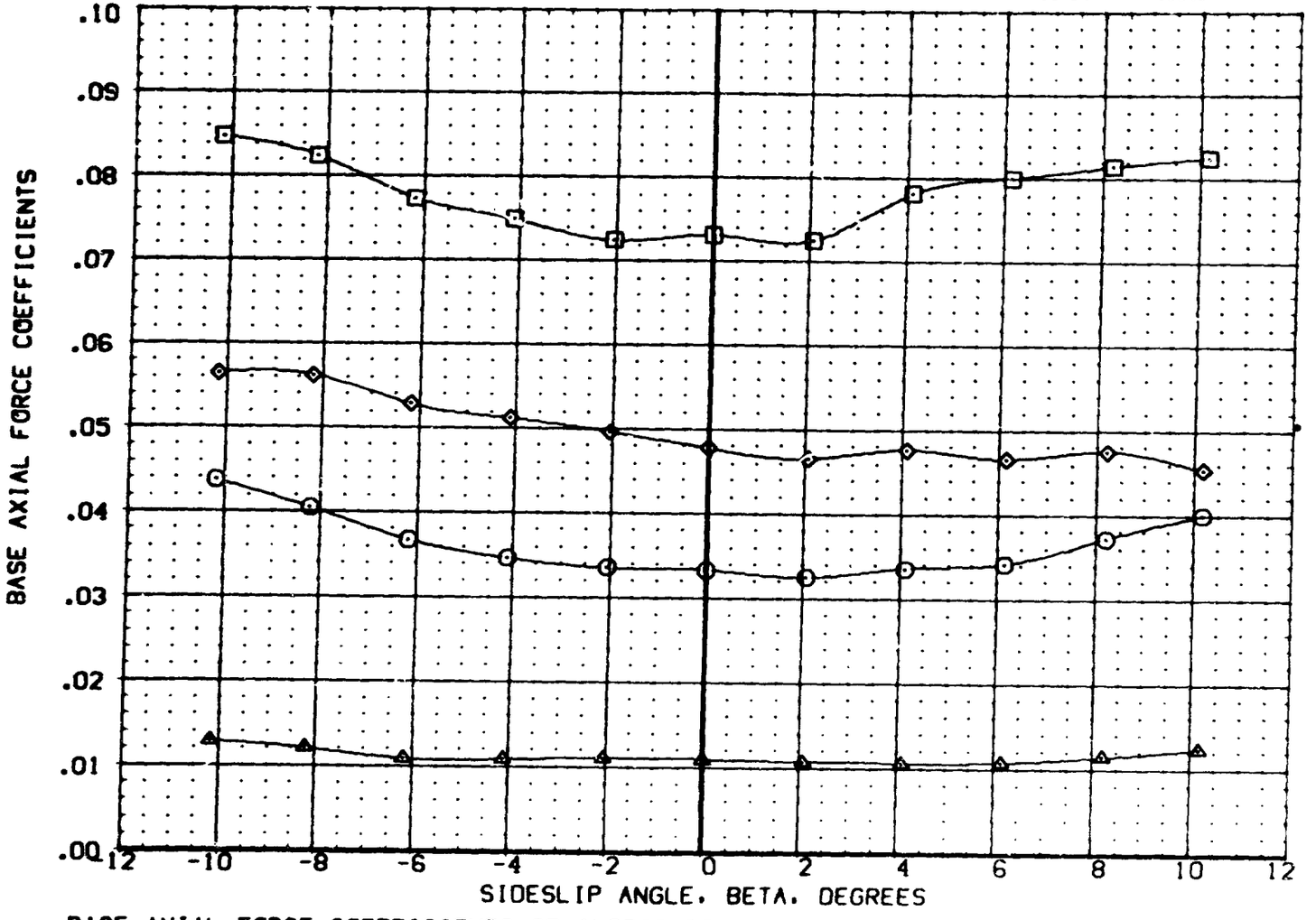
| SYMBOL | DATA |
|---|---|
| ○ | CAHC |
| □ | CABE |
| ◇ | CABS |
| △ | CA?? |

PARAMETRIC VALUES

| | | | |
|---|---|---|---|
| MACH | .600 | ALPHA | .000 |
| ORBINC | .000 | DELTAZ | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |




BASE AXIAL FORCE COEFFICIENTS OF INTEGRATED VEHICLE COMPONENTS

MSFC 589(1A62F )(034)(T9)(S12)(PT4)(FR4) (A94006)

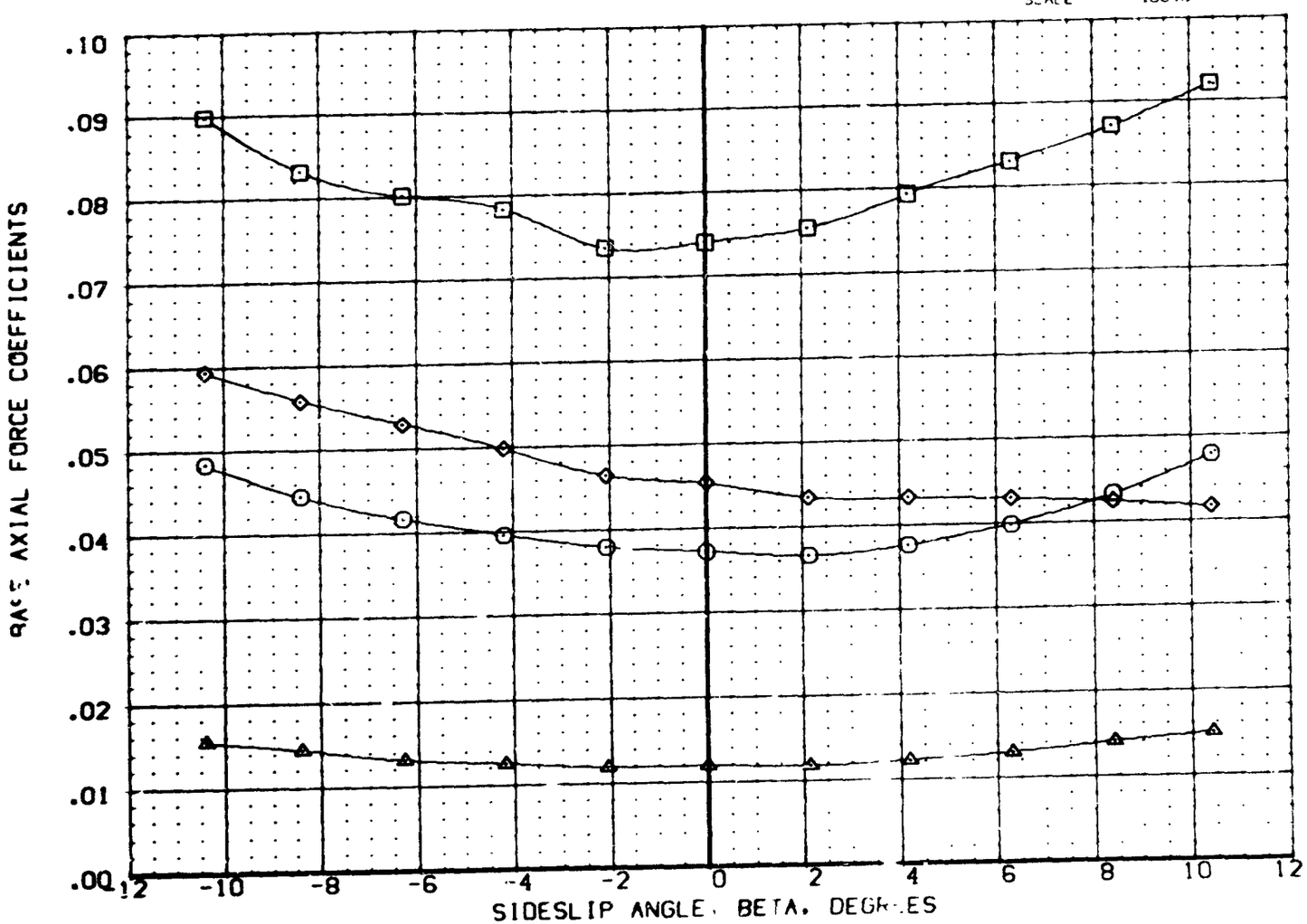
| SYMBOL | DATA |
|---|---|
| | CAFC |
| □ | CAFE |
| ◇ | CAFS |
| △ | CAF# |

PARAMETRIC VALUES

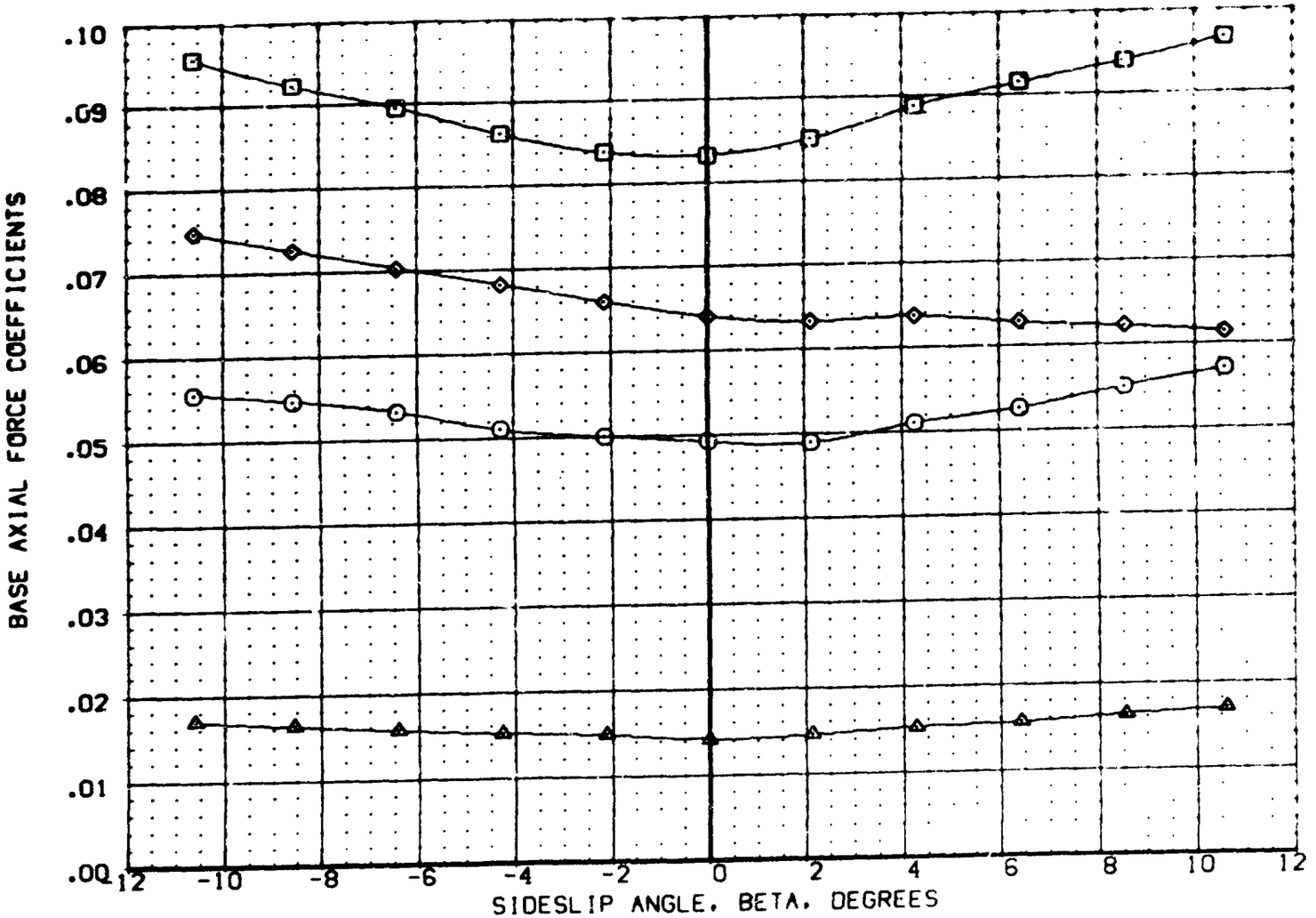
| | | | |
|---|---|---|---|
| MACH | .904 | ALPHA | .000 |
| ORBINC | .000 | DELTAZ | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |




BASE AXIAL FORCE COEFFICIENTS OF INTEGRATED VEHICLE COMPONENTS




BASE AXIAL FORCE COEFFICIENTS OF INTEGRATED VEHICLE COMPONENTS

MSFC 589(1A62F)(034)(T9)(S12)(PT4)(FR4) (A94006)

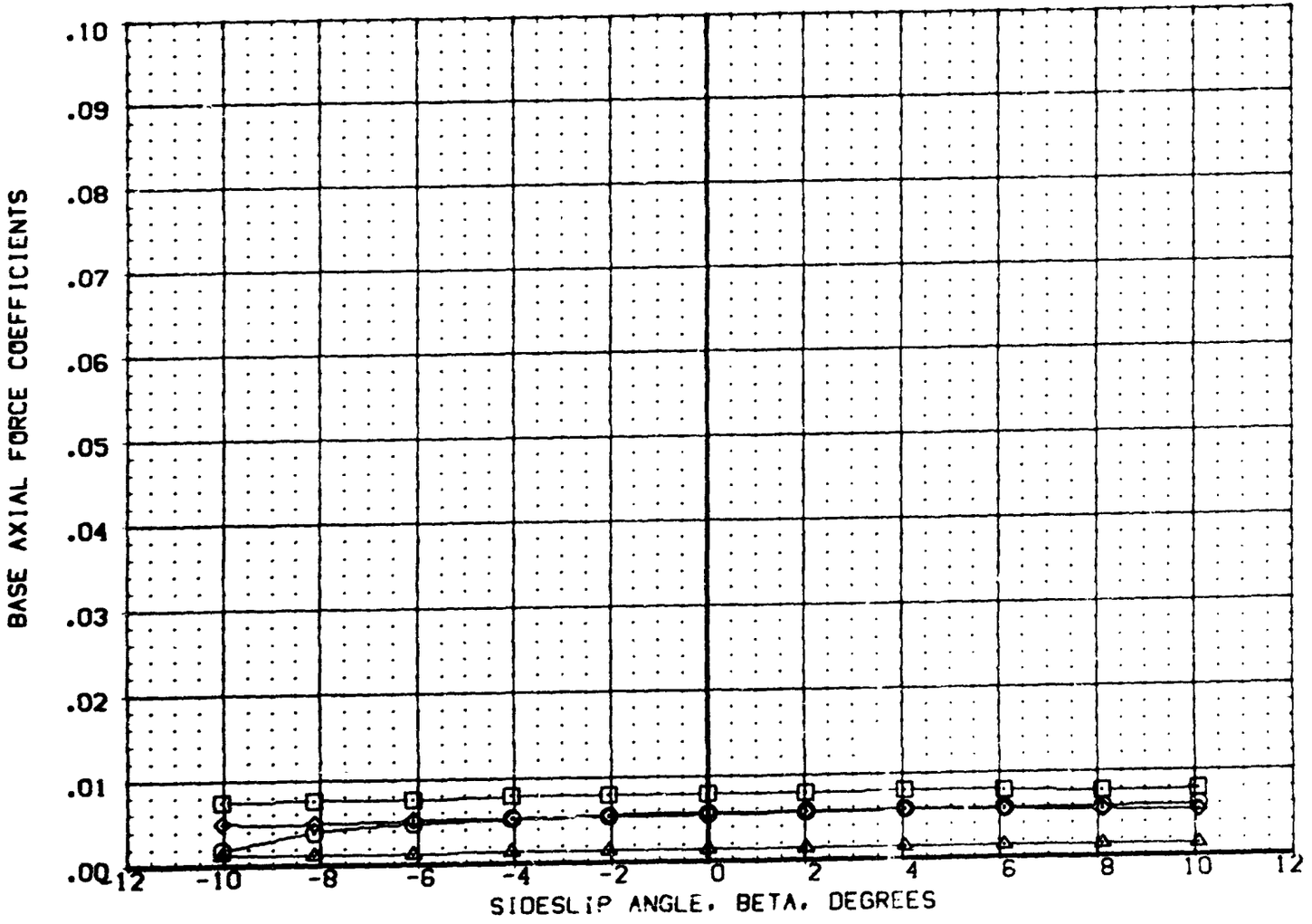
| SYMBOL | DATA |
|---|---|
| ○ | CABC |
| □ | CABE |
| ◇ | CABS |
| △ | CABF |

PARAMETRIC VALUES

| | | | |
|---|---|---|---|
| MACH | 4.959 | ALPHA | .000 |
| ORBINC | .000 | DELTAZ | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 2.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |




BASE AXIAL FORCE COEFFICIENTS OF INTEGRATED VEHICLE COMPONENTS

MSFC 589(1A62F)(034)(T14)(S12) (A94002)

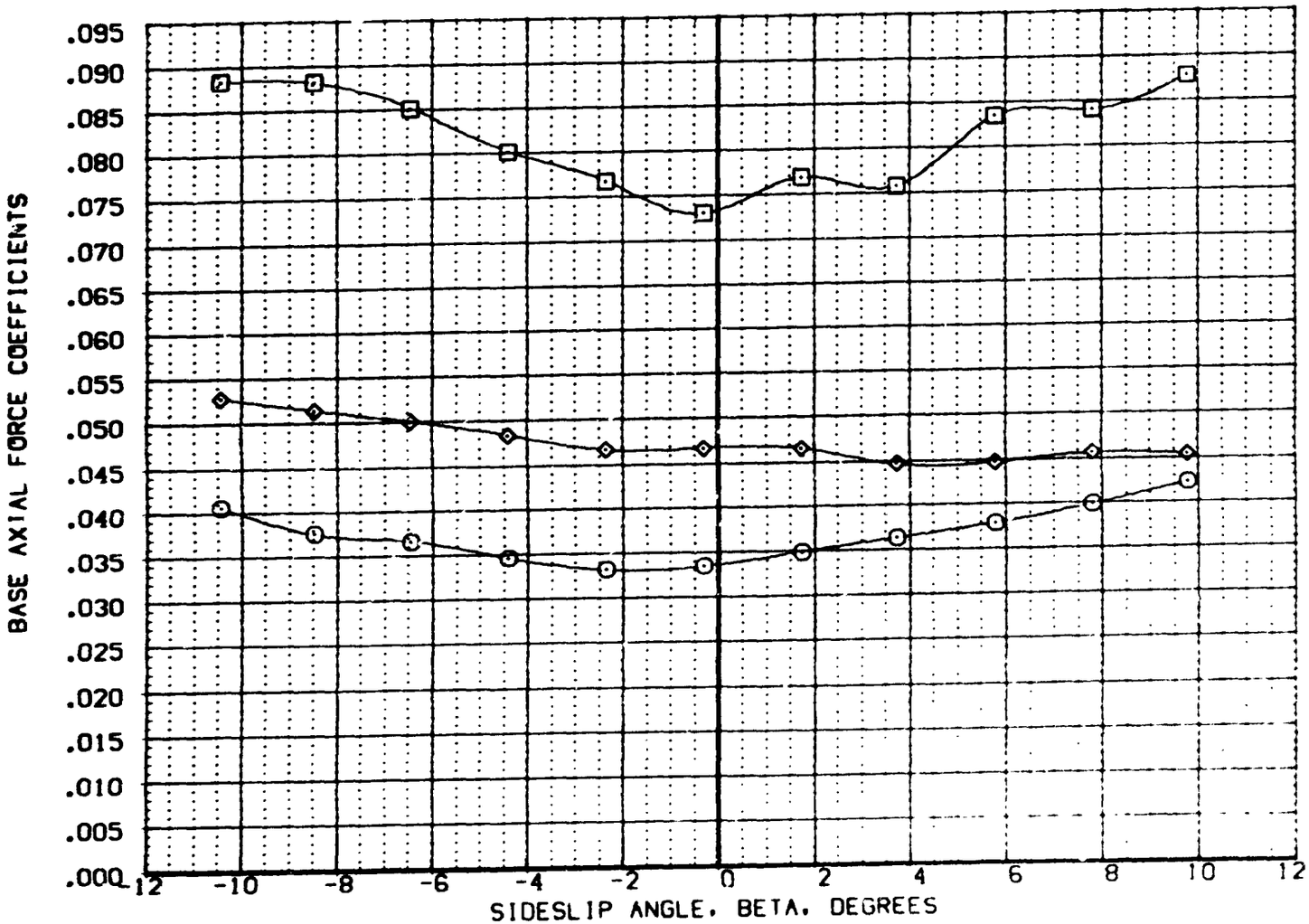
| SYMBOL | DATA |
|---|---|
| ○ | CARC |
| □ | CABL |
| ◇ | CARS |

PARAMETRIC VALUES

| | | | |
|---|---|---|---|
| MACH | .59 | ALPHA | 5.000 |
| ORBINC | .000 | DELTAZ | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .004 | |



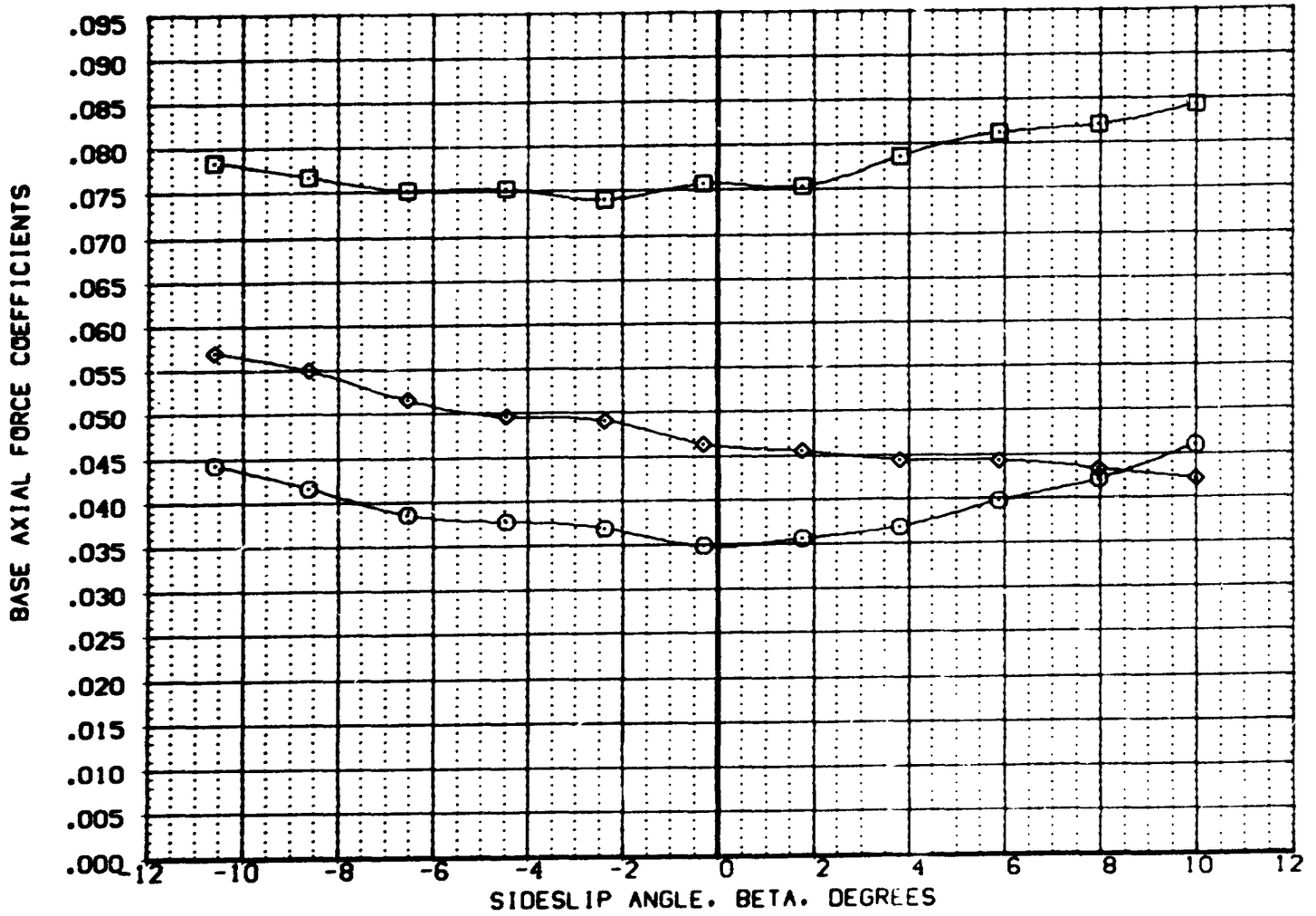

BASE AXIAL FORCE COEFFICIENTS OF INTEGRATED VEHICLE COMPONENTS

MSFC 589(1A62F)(034)(T14)(S12) (A94002)

| SYMBOL | DATA | PARAMETRIC VALUES | | | |
|---|---|---|---|---|---|
| | CABO | MACH | .902 | ALPHA | 5.000 |
| □ | CABL | ORBINC | .000 | DELTAZ | 333.000 |
| ◇ | CABS | | | | |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |




BASE AXIAL FORCE COEFFICIENTS OF INTEGRATED VEHICLE COMPONENTS

MSFC 589(1A62F)(034)(T14)(S12) (A94002)

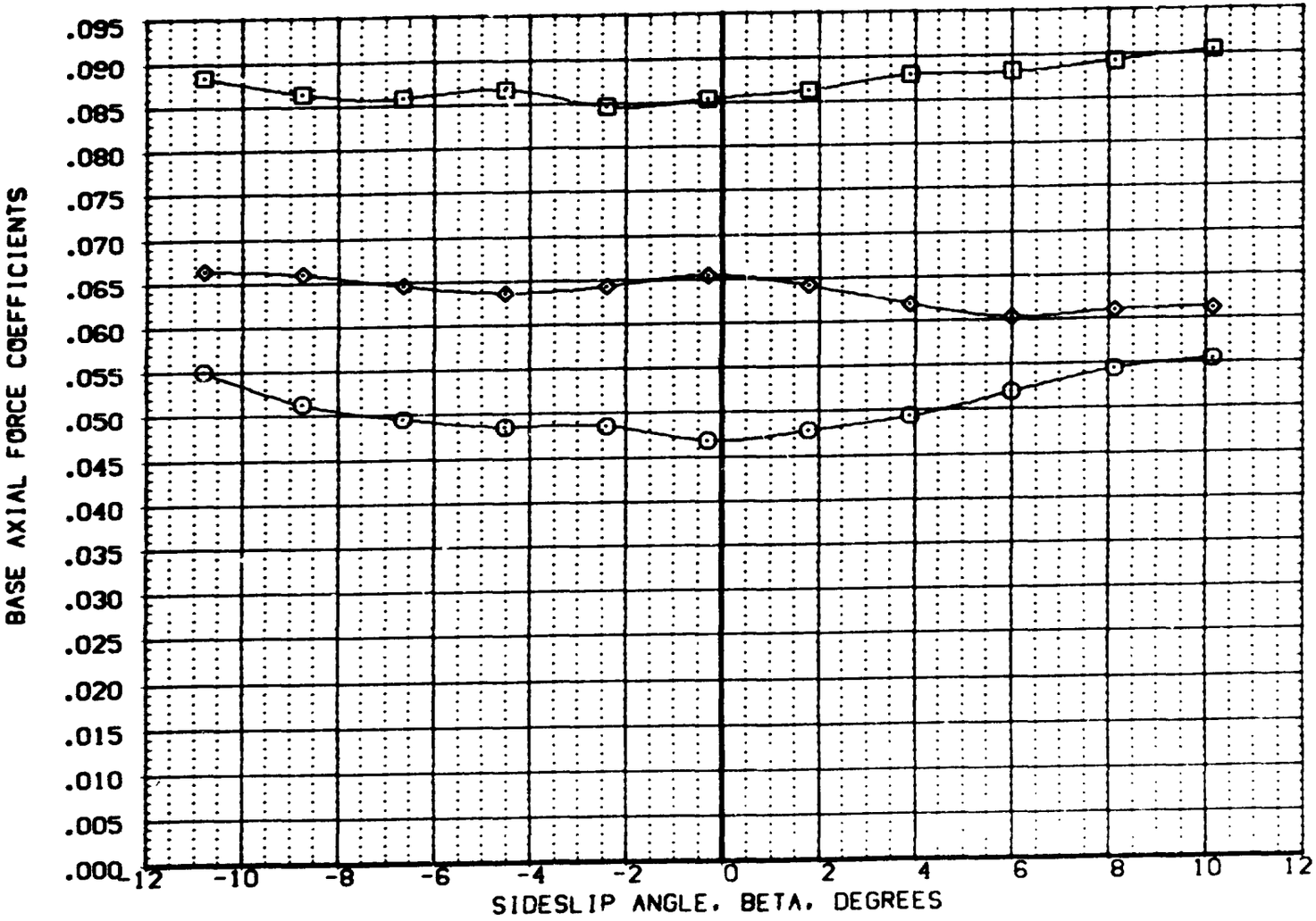
| SYMBOL | DATA |
|---|---|
| ○ | CAB2 |
| □ | CAB1 |
| ◇ | CAB5 |

PARAMETRIC VALUES

| | | | |
|---|---|---|---|
| MACH | 1.198 | ALPHA | 5.000 |
| ORBINC | .000 | DELTAZ | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0340 | |



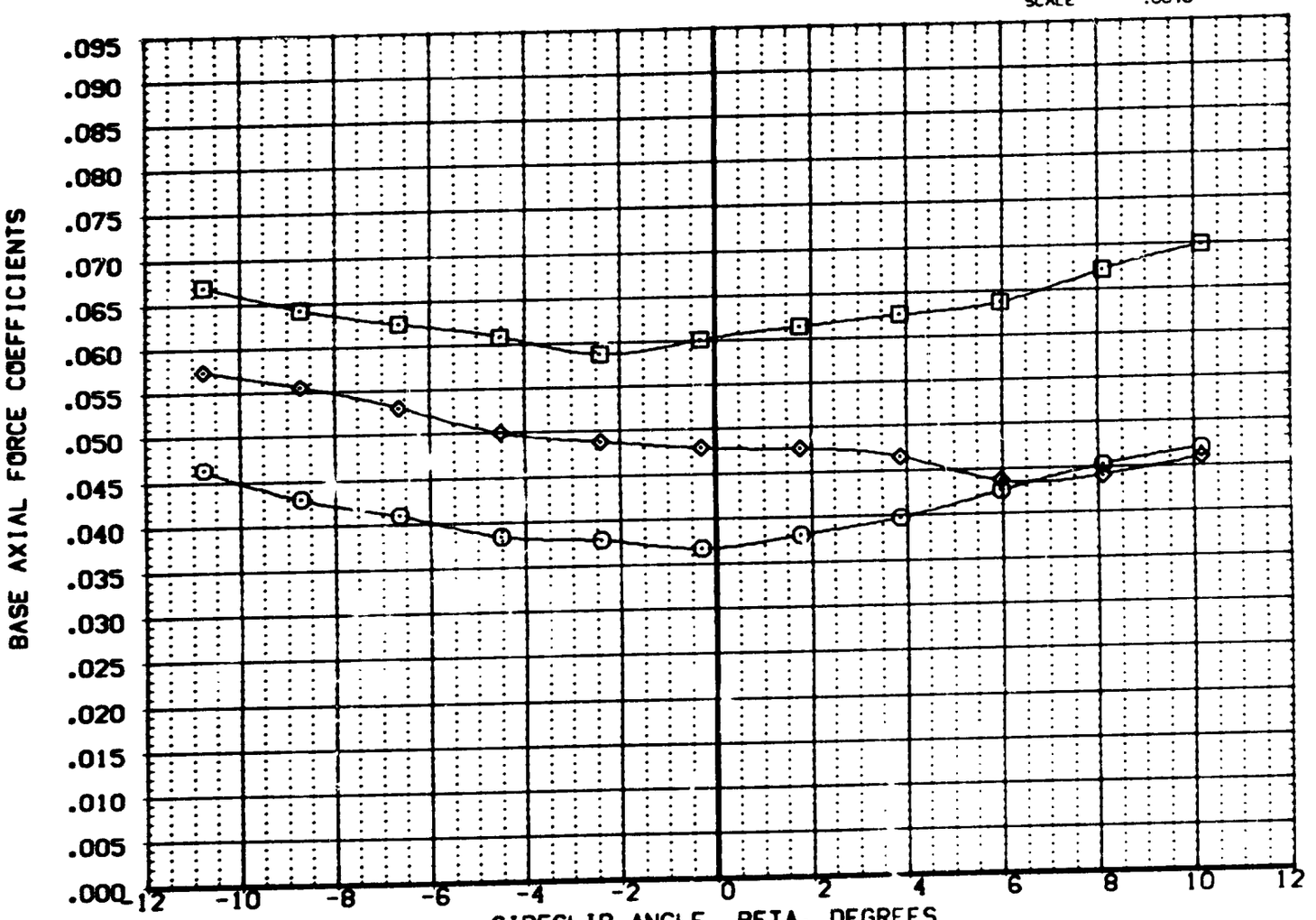

BASE AXIAL FORCE COEFFICIENTS OF INTEGRATED VEHICLE COMPONENTS

MSFC 589(1A62F)(034)(T14)(S12) (A94002)

| SYMBOL | DATA | | PARAMETRIC VALUES | | |
|---|---|---|---|---|---|
| | CABC | MACH | 1.461 | ALPHA | 5.000 |
| □ | CABE | ORBINC | .000 | DELTAZ | 333.000 |
| ◇ | CABS | | | | |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |



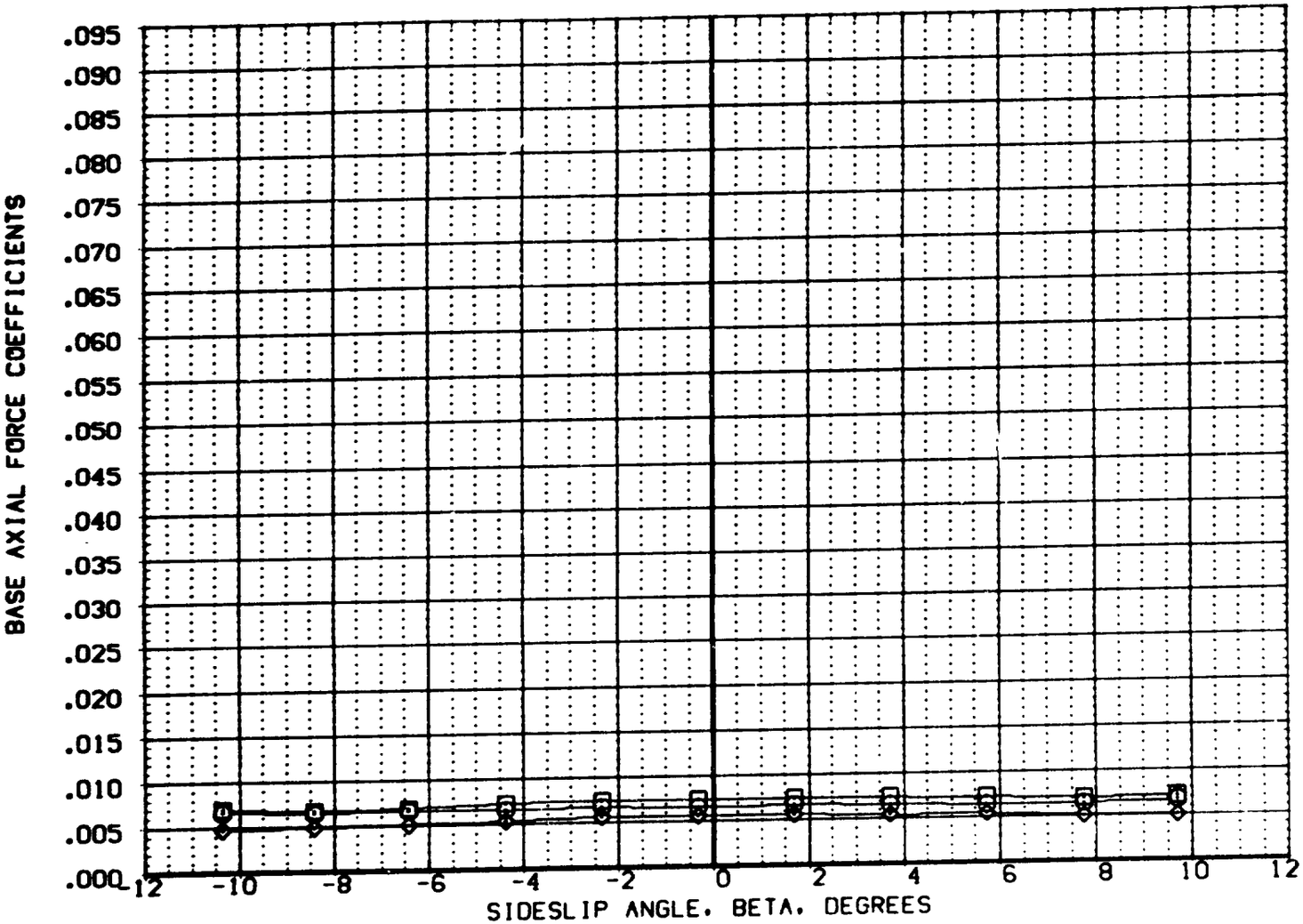

BASE AXIAL FORCE COEFFICIENTS OF INTEGRATED VEHICLE COMPONENTS

MSFC 589(IA62F)(034)(T14)(S12) (A94002)

| SYMBOL | DATA | | PARAMETRIC VALUES | | |
|---|---|---|---|---|---|
| ○ | CABO | MACH | 4.959 | ALPHA | 5.000 |
| □ | CABE | ORBINC | .000 | DELTAZ | 333.000 |
| ◇ | CABS | | | | |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |




BASE AXIAL FORCE COEFFICIENTS OF INTEGRATED VEHICLE COMPONENTS

MSFC 589(1A62F)(034)(T9)(S12)(PT4)(FR4) (A94005)

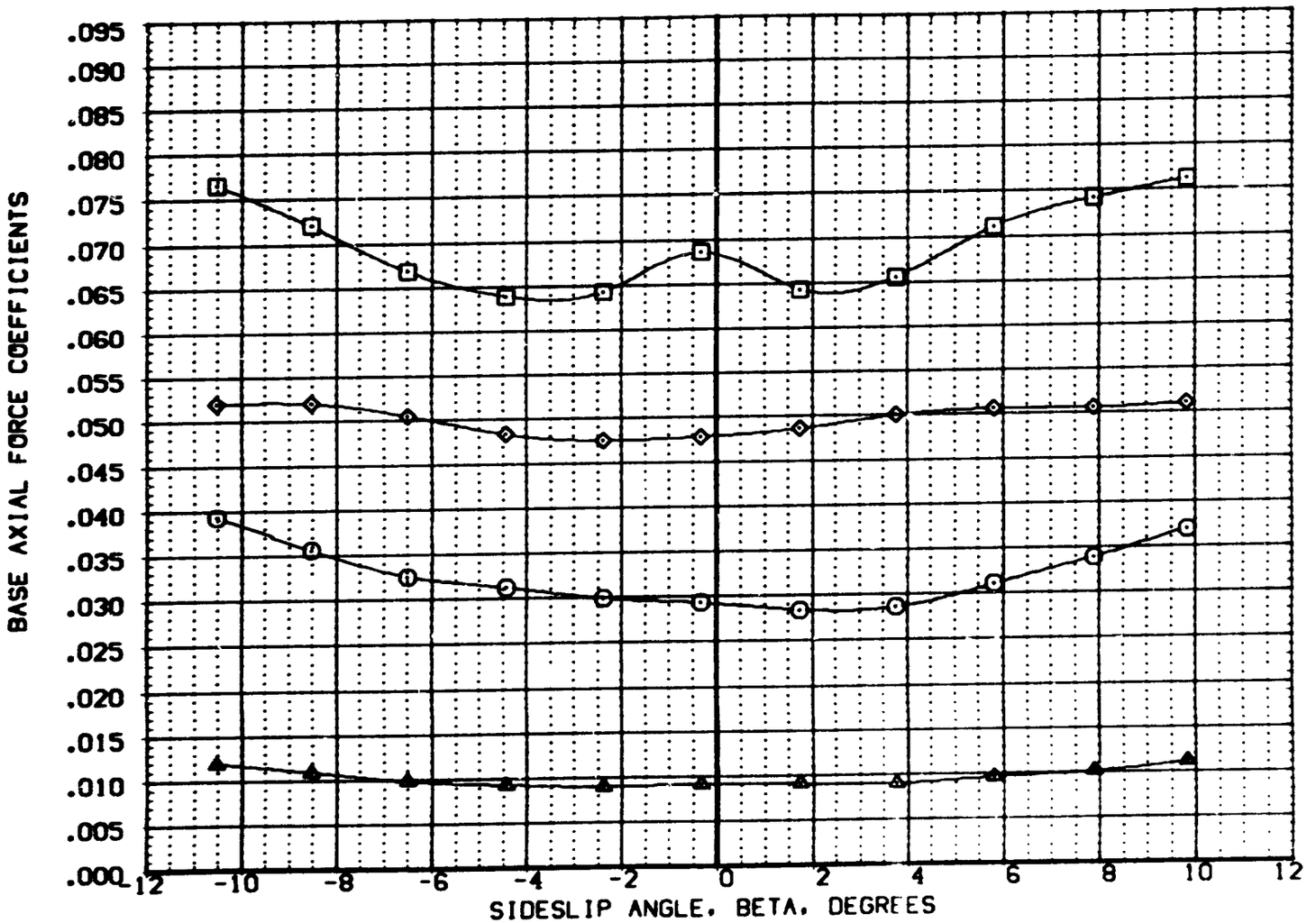
| SYMBOL | DATA |
|---|---|
| ○ | CABC |
| □ | CABE |
| ◇ | CABS |
| △ | CABF |

PARAMETRIC VALUES

| | | | |
|---|---|---|---|
| MACH | .600 | ALPHA | 5.000 |
| ORBINC | .000 | DELTAZ | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |




BASE AXIAL FORCE COEFFICIENTS OF INTEGRATED VEHICLE COMPONENTS

MSFC 589(IA62F)(034)(T9)(S12)(PT4)(FR4) (A94005)

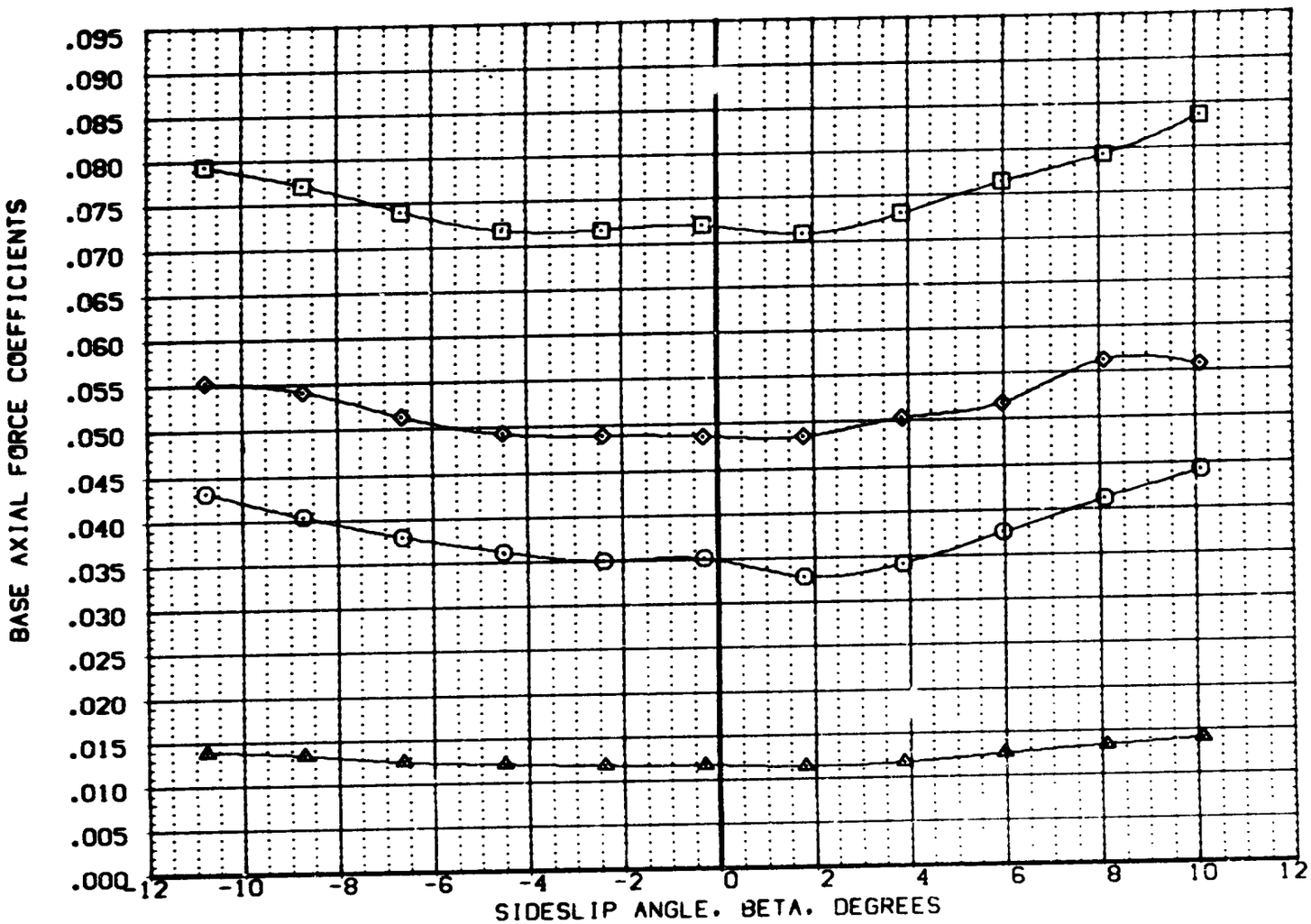
| SYMBOL | DATA |
|---|---|
| ○ | CABC |
| □ | CABL |
| ◇ | CABS |
| △ | CABF |

PARAMETRIC VALUES

| | | | |
|---|---|---|---|
| MACH | .902 | ALPHA | 5.000 |
| DHBINC | .000 | DELTAZ | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |




BASE AXIAL FORCE COEFFICIENTS OF INTEGRATED VEHICLE COMPONENTS

MSFC 589(1A62F)(034)(T9)(S12)(PT4)(FR4) (A94005)

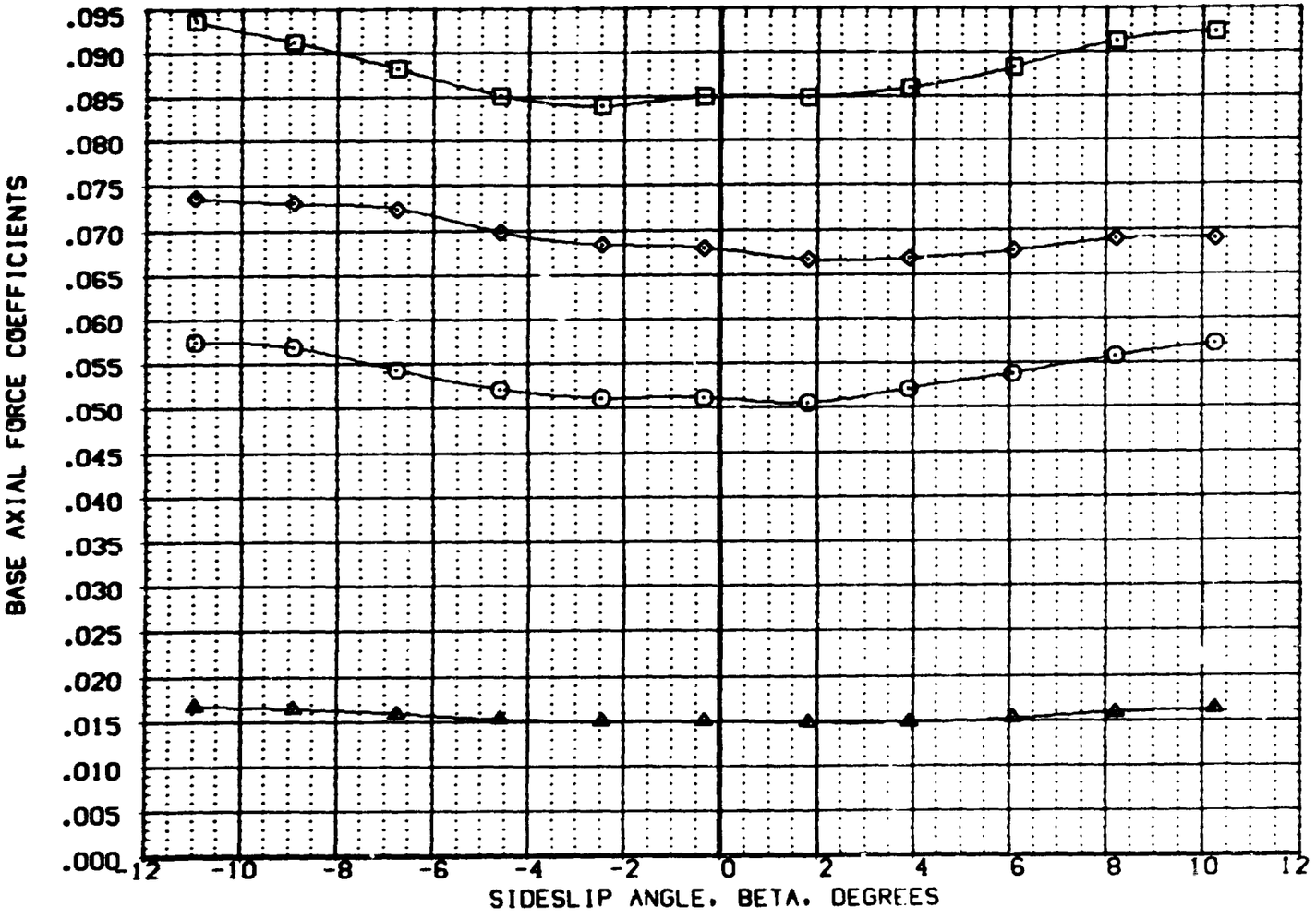
| SYMBOL | DATA |
|---|---|
| ○ | CABD |
| □ | CABE |
| ◇ | CABS |
| △ | CABF |

PARAMETRIC VALUES

| | | | |
|---|---|---|---|
| MACH | 1.195 | ALPHA | 5.000 |
| ORBINC | .000 | DELTAZ | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |




BASE AXIAL FORCE COEFFICIENTS OF INTEGRATED VEHICLE COMPONENTS

MSFC 589(1A62F)(034)(T9)(S12)(PT4)(FR4) (A94005)

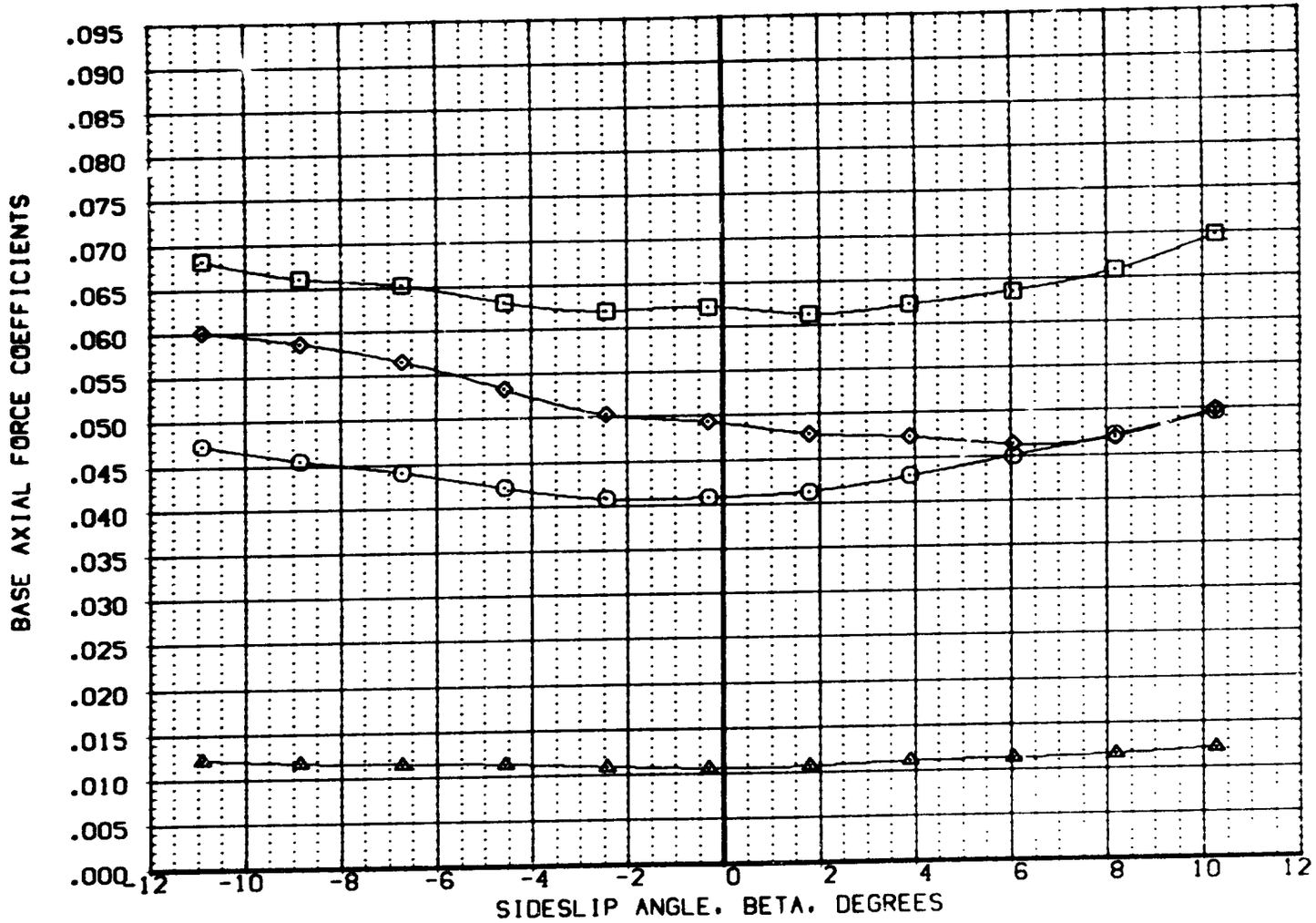
| SYMBOL | DATA |
|---|---|
| | CABC |
| □ | CABE |
| ◇ | CABS |
| △ | CABF |

PARAMETRIC VALUES

| | | | |
|---|---|---|---|
| MACH | 1.467 | ALPHA | 5.000 |
| ORBINC | .000 | DELTAZ | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |




BASE AXIAL FORCE COEFFICIENTS OF INTEGRATED VEHICLE COMPONENTS

MSFC 589(IA62F)(034)(T9)(S12)(PT4)(FR4) (A94005)

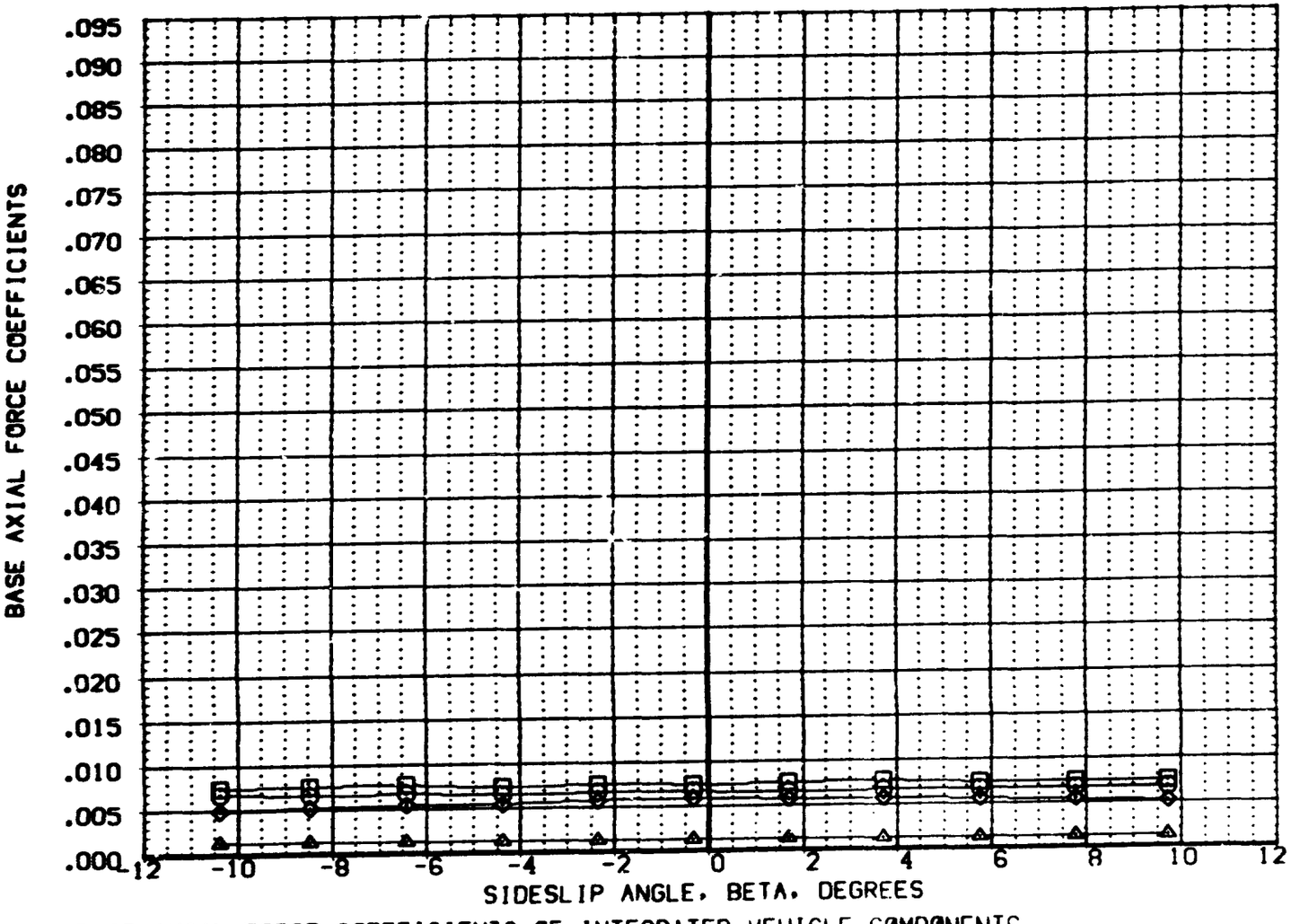
| SYMBOL | DATA |
|---|---|
| ○ | CABC |
| □ | CABE |
| ◇ | CABS |
| △ | CABF |

PARAMETRIC VALUES

| | | | |
|---|---|---|---|
| MACH | 4.959 | ALPHA | 5.000 |
| ORBINC | .000 | DELTAZ | 333.000 |

REFERENCE INFORMATION

| | | |
|---|---|---|
| SREF | 6.1980 | SQ.IN. |
| LREF | 5.1600 | IN. |
| BREF | 5.1600 | IN. |
| XMRP | 2.6800 | IN. |
| YMRP | .0000 | IN. |
| ZMRP | .0000 | IN. |
| SCALE | .0040 | |




BASE AXIAL FORCE COEFFICIENTS OF INTEGRATED VEHICLE COMPONENTS

# APPENDIX

## TABULATED SOURCE DATA

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Plotted Data Tabulations Available
From DMS on Request.

MSFC 509([A62F)(084)(714)(512) (A94001) ( 8/ NOV /3 )

REFERENCE DATA

SREF = 6.1980 SQ.IN. XMRP = 2.6900 IN.
LREF = 3.1600 IN. YMRP = .0000 IN.
BREF = 3.1600 IN. ZMRP = .0000 IN.
SCALE = .0049

PARAMETRIC DATA

BETA = .000 ORBINC = .000
DELTAZ = 333.000

RUN NO. 30/ 0 RN/L = 6.44 GRADIENT INTERVAL = -5.00/ 5.00

| MACH | ALPHA | CN | CLM | CY | CYN | CBL | CAF | CABO | CABE | CABS | CABF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| .90/ | -10.340 | -.64760 | .24160 | .01650 | -.00290 | .00260 | .08050 | .03420 | .06310 | .05480 | .00000 |
| .90/ | -8.380 | -.53880 | .20050 | .01650 | -.00380 | .00200 | .08550 | .03530 | .0/980 | .05300 | .00000 |
| .90/ | -6.310 | -.41850 | .15660 | .01680 | -.0047/0 | .00150 | .09240 | .03390 | .0/890 | .04993 | .00000 |
| .90/ | -4.450 | -.30880 | .112/0 | .01/20 | -.00540 | .00130 | .09480 | .03340 | .0//00 | .048/0 | .00000 |
| .90/ | -2.380 | -.20630 | .07460 | .01480 | -.00360 | .0006C | .0967/0 | .03360 | .0/300 | .04830 | .00000 |
| .90/ | -.300 | -.08010 | .03620 | .01390 | -.00310 | .00090 | .09600 | .03310 | .0/3/0 | .04540 | .00000 |
| .90/ | 1./60 | .01950 | .0007/0 | .01150 | -.002/0 | .0006/0 | .09400 | .03280 | .0/330 | .04490 | .00000 |
| .90/ | 3.850 | .12850 | -.034/0 | .00900 | -.00260 | -.00030 | .08660 | .03340 | .0/310 | .04520 | .00000 |
| .90/ | 5.940 | .24440 | -.0/560 | .00820 | -.001/0 | .00000 | .0/830 | .03300 | .0/120 | .04/00 | .00000 |
| .90/ | /.980 | .35800 | -.12120 | .00560 | -.001/0 | .00000 | .06910 | .03190 | .0/050 | .04//0 | .00000 |
| .90/ | 9.940 | .48230 | -.1//20 | .00610 | -.00200 | -.00030 | .06060 | .03230 | .06530 | .04920 | .00000 |
| | GRADIENT | .09313 | -.01/// | -.00095 | .00031 | -.00015 | -.00092 | -.00004 | -.00036 | -.00050 | .00000 |

RUN NO. 31/ 0 RN/L = 8.15 GRADIENT INTERVAL = -5.00/ 5.00

| MACH | ALPHA | CN | CLM | CY | CYN | CBL | CAF | CABO | CABE | CABS | CABF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| .902 | -10.030 | -.60410 | .25/50 | .00690 | .00130 | -.00100 | .11990 | .03/20 | .08580 | .05840 | .00000 |
| .902 | -8.080 | -.50620 | .20100 | .01290 | -.00140 | -.00080 | .12/20 | .03690 | .082/0 | .05/30 | .00000 |
| .902 | -6.080 | -.42140 | .14090 | .011/0 | -.00130 | -.0011/0 | .12920 | .03560 | .08080 | .05490 | .00000 |
| .902 | -4.5/0 | -.291/0 | .088/0 | .00810 | -.00040 | -.00150 | .13490 | .034/0 | 0/650 | .05280 | .00000 |
| .902 | -2.440 | -.164/0 | .04090 | .00620 | .00020 | -.00130 | .13610 | .03440 | .0/5/0 | .04980 | .00000 |
| .902 | -.320 | -.04110 | -.008/0 | .00340 | .00240 | -.001/0 | .13420 | .03550 | .0/230 | .04800 | .00000 |
| .902 | 1.800 | .08040 | -.0602/0 | .003/0 | .00130 | -.00220 | .13020 | .03500 | .0/260 | .04590 | .00000 |
| .902 | 3.940 | .20660 | -.10030 | .002/0 | .00190 | -.00100 | .12300 | .03540 | .0/360 | .046/0 | .00000 |
| .902 | 6.110 | .31/60 | -.12090 | .00150 | .00130 | -.00120 | .11990 | .035/0 | .0/800 | .050/0 | .00000 |
| .902 | 8.1/0 | .42050 | -.168/0 | -.00040 | .00250 | -.000/0 | .11920 | .03530 | .0/290 | .05360 | .00000 |
| .902 | 10.180 | .52440 | -.232/0 | -.00640 | .00320 | -.000/0 | .11350 | .03520 | .0/590 | .05/00 | .00000 |
| | GRADIENT | .058/6 | -.02360 | -.00062 | .0002/ | .00001 | -.00140 | .00009 | -.00042 | -.000/9 | .00000 |

MSFC 500(1A06F) (084) (T14) (B12) (A060D1) ( 2/ NOV /3 )

REFERENCE DATA

SREF = 6.1900 SQ.IN. XMRP = 2.4800 IN.
LREF = 3.1600 IN. YMRP = .0000 IN.
BREF = 3.1600 IN. ZMRP = .0000 IN.
SCALE = .0040

PARAMETRIC DATA

BETA = .000 ORBINC = .000
DELTAZ = 333.000

RUN NO. 32/ 0 RN/L = 8.43 GRADIENT INTERVAL = -5.00/ 5.00

| MACH | ALPHA | CN | CLM | CY | CYN | CBL | CAF | CABO | CABE | CABS | CABF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| .996 | -10.940 | -.76/20 | .311 | .02130 | -.008/0 | .00140 | .19940 | .04820 | .09390 | .0/440 | .00000 |
| .996 | -8.900 | -.61310 | .24/· | .02060 | -.00880 | .00110 | .19800 | .04260 | .08/00 | .06810 | .00000 |
| .996 | -6./30 | -.46080 | .19430 | .018/0 | -.00/00 | .00090 | .19980 | .04480 | .08/40 | .06940 | .00000 |
| .996 | -4.580 | -.339/0 | .14520 | .01840 | -.00/40 | .00080 | .20/30 | .04550 | .08650 | .06600 | .00000 |
| .996 | -2.440 | -.20440 | .09280 | .01800 | -.00930 | .00030 | .20930 | .04590 | .08/50 | .06540 | .00000 |
| .996 | -.280 | -.06810 | .03/40 | .01910 | -.00890 | -.00040 | .20250 | .04430 | .08/60 | .06370 | .00000 |
| .996 | 1.830 | .08160 | -.03680 | .01240 | -.00950 | -.00190 | .19540 | .04310 | .08380 | .06010 | .00000 |
| .996 | 4.000 | .21360 | -.09650 | .00//0 | .00000 | -.00240 | .19620 | .045/0 | .08/20 | .064/0 | .00000 |
| .996 | 6.160 | .34900 | -.15130 | .004/0 | .001/0 | -.00130 | .18580 | .04300 | .08830 | .06330 | .00000 |
| .996 | 8.260 | .46810 | -.19630 | -.00210 | .00420 | -.00080 | .1/340 | .04330 | .08640 | .06/00 | .00000 |
| .996 | 10.280 | .568/0 | -.230/0 | -.00380 | .00330 | -.00060 | .16//0 | .04080 | .09120 | .06890 | .00000 |
| | GRADIENT | .06461 | -.02861 | -.00126 | .00091 | -.00040 | -.00150 | -.00011 | -.00011 | -.0003/ | .00000 |

RUN NO. 33/ 0 RN/L = 8./1 GRADIENT INTERVAL = -5.00/ 5.00

| MACH | ALPHA | CN | CLM | CY | CYN | CBL | CAF | CABO | CABE | CABS | CABF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.200 | -11.0/0 | -.///30 | .29590 | .02910 | -.015/0 | .00290 | .242/0 | .04/40 | .090/0 | .06950 | .00000 |
| 1.200 | -8.990 | -.60490 | .22/60 | .02500 | -.01560 | .00260 | .246/0 | .04650 | .08880 | .06/20 | .00000 |
| 1.200 | -6./90 | -.43290 | .15810 | .02160 | -.01250 | .00140 | .24990 | .04/20 | .08/00 | .06550 | .00000 |
| 1.200 | -4.610 | -.2/8/0 | .09620 | .02030 | -.01100 | .00060 | .25320 | .04/40 | .08520 | .06360 | .00000 |
| 1.200 | -2.440 | -.13390 | .03810 | .01960 | -.00640 | -.00010 | .25610 | .04660 | .08/50 | .06250 | .00000 |
| 1.200 | -.290 | .00380 | -.01290 | .0148) | -.00510 | -.00050 | .25820 | .04/10 | .08/10 | .06160 | .00000 |
| 1.200 | 1.880 | .12940 | -.064/0 | .01490 | -.005/0 | -.00090 | .25330 | .04800 | .08850 | .06210 | .00000 |
| 1.200 | 4.050 | .25290 | -.11190 | .01300 | -.00500 | -.00080 | .24/00 | .04680 | .08840 | .06430 | .00000 |
| 1.200 | 6.220 | .37950 | -.162/0 | .00900 | -.00260 | -.00090 | .24360 | .04960 | .08620 | .06610 | .00000 |
| 1.200 | 8.340 | .49600 | -.20660 | .00550 | -.00150 | -.00050 | .23640 | .05110 | .08510 | .06/30 | .00000 |
| 1.200 | 10.390 | .61030 | -.24630 | .00590 | -.00210 | -.00090 | .228/0 | .05210 | .081/0 | .06820 | .00000 |
| | GRADIENT | .06128 | -.02398 | -.000/3 | .00059 | -.0001/ | -.000/0 | .00019 | .00004 | .00005 | .00000 |

NSFC 500(IA6BF)(034)(T14)(S12) (A94001) ( 27 NOV 73 )

REFERENCE DATA

SREF = 9.1600 SQ.IN. XMRP = 2.6800 IN.
LREF = 9.1600 IN. YMRP = .0000 IN.
BREF = 9.1600 IN. ZMRP = .0000 IN.
SCALE = .0040

PARAMETRIC DATA

BETA = .000 ORBINC = .000
DELTAZ = 333.000

RUN NO. 22/ 0 RN/L = 8.55 GRADIENT INTERVAL = -5.00/ 5.00

| MACH | ALPHA | CN | CLM | CY | CYN | CBL | CAF | CABO | CABE | CABS | CABF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.463 | -11.540 | -.79320 | .28720 | -.03480 | .01720 | -.00120 | .26830 | .03550 | .03730 | .09160 | .00000 |
| 1.463 | -8.430 | -.68000 | .21790 | -.03170 | .01600 | -.00480 | .27080 | .03450 | .03070 | .09080 | .00000 |
| 1.463 | -7.230 | -.49800 | .19750 | -.02920 | .01620 | -.00620 | .26870 | .03460 | .06950 | .09010 | .00000 |
| 1.463 | -5.040 | -.30510 | .09620 | -.02870 | .01620 | -.00670 | .27040 | .03480 | .06790 | .04810 | .00000 |
| 1.463 | -2.860 | -.10640 | .04400 | -.02830 | .01640 | -.00700 | .27000 | .03510 | .06780 | .04680 | .00000 |
| 1.463 | -.680 | -.02740 | -.00850 | -.03100 | .01850 | -.00770 | .27240 | .03490 | .06520 | .04670 | .00000 |
| 1.463 | 1.470 | .10410 | -.09920 | -.03300 | .02040 | -.00850 | .27320 | .03490 | .06270 | .04710 | .00000 |
| 1.463 | 3.630 | .22050 | -.08460 | -.03380 | .02020 | -.00800 | .27080 | .03610 | .06280 | .04860 | .00000 |
| 1.463 | 5.800 | .33680 | -.13750 | -.03580 | .02080 | -.00920 | .26950 | .03700 | .06170 | .04990 | .00000 |
| 1.463 | 7.950 | .45220 | -.17830 | -.03900 | .01940 | -.00930 | .26230 | .03760 | .05890 | .05020 | .00000 |
| 1.463 | 10.010 | .56600 | -.21270 | -.03580 | .01900 | -.00930 | .25740 | .03880 | .05670 | .05030 | .00000 |
| | GRADIENT | .05974 | -.02136 | -.00006 | .00062 | -.00031 | .00015 | .00014 | -.00081 | .00025 | .00000 |

RUN NO. 21/ 0 RN/L = 6.18 GRADIENT INTERVAL = -5.00/ 5.00

| MACH | ALPHA | CN | CLM | CY | CYN | CBL | CAF | CABO | CABE | CABS | CABF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.980 | -10.930 | -.56140 | .20160 | -.02660 | .01660 | -.00500 | .26240 | .01750 | .02640 | .01850 | .00000 |
| 2.980 | -8.880 | -.36010 | .12940 | -.02710 | .01520 | -.00500 | .24430 | .01720 | .02480 | .01690 | .00000 |
| 2.980 | -2.760 | -.17180 | .06800 | -.02520 | .01410 | -.00470 | .23100 | .01790 | .02350 | .01500 | .00000 |
| 2.980 | -.680 | -.08040 | .04760 | -.02380 | .01240 | -.00430 | .22970 | .01820 | .02350 | .01680 | .00000 |
| 2.980 | 1.380 | -.00870 | .02430 | -.02120 | .01060 | -.00360 | .21980 | .01810 | .02310 | .01850 | .00000 |
| 2.980 | 3.440 | .08160 | -.00780 | -.02210 | .01110 | -.00460 | .21650 | .01850 | .02370 | .01770 | .00000 |
| 2.980 | 5.540 | .17680 | -.03950 | -.02180 | .01030 | -.00410 | .20970 | .01880 | .02330 | .01700 | .00000 |
| 2.980 | 7.580 | .27410 | -.07460 | -.02250 | .01070 | -.00420 | .20610 | .01860 | .02190 | .01670 | .00000 |
| 2.980 | 9.570 | .37170 | -.11080 | -.02340 | .01010 | -.00440 | .20080 | .01830 | .02070 | .01690 | .00000 |
| | GRADIENT | .04078 | -.01213 | .00058 | -.00052 | .00004 | -.00239 | .00008 | .00001 | -.00020 | .00000 |

RUN NO. 20/ 0 RN/L = 7.67 GRADIENT INTERVAL = -5.00/ 5.00

| MACH | ALPHA | CN | CLM | CY | CYN | CBL | CAF | CABO | CABE | CABS | CABF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 4.990 | -9.810 | -.42100 | .14660 | -.02020 | .01370 | -.00290 | .26710 | .00690 | .00800 | .00610 | .00000 |
| 4.990 | -8.800 | -.30290 | .13690 | -.02020 | .01130 | -.00290 | .25800 | .00610 | .00780 | .00620 | .00000 |
| 4.990 | -6.760 | -.31380 | .11730 | -.02180 | .01270 | -.00310 | .24480 | .00650 | .00790 | .00630 | .00000 |
| 4.990 | -4.730 | -.23710 | .09440 | -.02160 | .01260 | -.00330 | .23040 | .00630 | .00760 | .00630 | .00000 |
| 4.990 | -2.710 | -.16020 | .07430 | -.01950 | .01080 | -.00360 | .21850 | .00640 | .00780 | .00640 | .00000 |
| 4.990 | -.660 | -.08820 | .05510 | -.01910 | .01070 | -.00250 | .21010 | .00630 | .00740 | .00630 | .00000 |
| 4.990 | 1.360 | -.03420 | .03730 | -.01920 | .00680 | -.00300 | .20270 | .00640 | .00760 | .00610 | .00000 |
| 4.990 | 3.300 | .03890 | .01480 | -.01900 | .00680 | -.00330 | .19510 | .00690 | .00760 | .00600 | .00000 |
| 4.990 | 5.440 | .11120 | -.00860 | -.01660 | .00620 | -.00300 | .18640 | .00660 | .00730 | .00580 | .00000 |
| 4.990 | 7.460 | .19190 | -.03660 | -.01240 | .00360 | -.00270 | .18110 | .00660 | .00710 | .00560 | .00000 |
| 4.990 | 9.410 | .27220 | -.06470 | -.01420 | .00320 | -.00320 | .17590 | .00670 | .00690 | .00590 | .00000 |
| | GRADIENT | .03974 | -.00866 | .00086 | -.00089 | .00003 | -.00429 | .00002 | -.00000 | -.00004 | .00000 |

MSFC 909(IA62F) (084) (T14) (S12) (A84002) ( 2/ NOV /3 )

REFERENCE DATA

SREF = 6.1900 SQ.IN. XMRP = 2.6400 IN.
LREF = 5.1600 IN. YMRP = .0000 IN.
BREF = 5.1600 IN. ZMRP = .0000 IN.
SCALE = .0040

PARAMETRIC DATA

ALPHA = 5.000 ORBINC = .000
DELTAZ = 333.000

RUN NO. 24/ 0 RN/L = 6.43 GRADIENT INTERVAL = -5.00/ 5.00

| MACH | BETA | CN | CLN | CY | CYN | CBL | CAF | CABO | CABE | CABS | CABF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| .909 | -10.440 | .22290 | -.07780 | .37490 | -.19130 | .06480 | .03650 | .04060 | .08840 | .05280 | .00000 |
| .909 | -8.480 | .20800 | -.07820 | .29780 | -.12180 | .05300 | .06400 | .03750 | .08820 | .05140 | .00000 |
| .909 | -6.460 | .20840 | -.06870 | .20890 | -.03480 | .03720 | .07000 | .03660 | .08520 | .05010 | .00000 |
| .909 | -4.400 | .19880 | -.06330 | .12630 | -.05100 | .02140 | .07730 | .03460 | .08020 | .04840 | .00000 |
| .909 | -2.360 | .19180 | -.05800 | .04260 | -.01720 | .00590 | .08180 | .03310 | .07680 | .04660 | .00000 |
| .909 | -.320 | .18870 | -.05780 | -.03500 | .01700 | -.00830 | .08510 | .03340 | .07300 | .04670 | .00000 |
| .909 | 1.730 | .19950 | -.06500 | -.11320 | .04950 | -.02220 | .08100 | .03490 | .07690 | .04650 | .00000 |
| .909 | 3.740 | .20320 | -.07110 | -.19180 | .08330 | -.03680 | .08380 | .03630 | .07580 | .04460 | .00000 |
| .909 | 5.780 | .20850 | -.07360 | -.26850 | .11460 | -.05150 | .07480 | .03790 | .08340 | .04470 | .00000 |
| .909 | 7.820 | .20730 | -.07890 | -.34320 | .14290 | -.06460 | .07200 | .03980 | .08400 | .04560 | .00000 |
| .909 | 9.780 | .20820 | -.08300 | -.41510 | .16670 | -.07550 | .06790 | .04230 | .08770 | .04540 | .00000 |
| | GRADIENT | .00081 | -.00111 | -.03688 | .01646 | -.00109 | .00060 | .00025 | -.00043 | -.00038 | .00000 |

RUN NO. 25/ 0 RN/L = 8.15 GRADIENT INTERVAL = -5.00/ 5.00

| MACH | BETA | CN | CLN | CY | CYN | CBL | CAF | CABO | CABE | CABS | CABF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| .902 | -10.480 | .26470 | -.11500 | .41440 | -.16260 | .06780 | .11960 | .04430 | .07850 | .05700 | .00000 |
| .902 | -8.610 | .26090 | -.11880 | .33410 | -.13190 | .05670 | .11860 | .04160 | .07680 | .05500 | .00000 |
| .902 | -6.590 | .27570 | -.12210 | .23890 | -.10220 | .04130 | .12380 | .03860 | .07520 | .05160 | .00000 |
| .902 | -4.490 | .27180 | -.12320 | .14690 | -.06380 | .02540 | .12760 | .03770 | .07930 | .04960 | .00000 |
| .902 | -2.380 | .27370 | -.12280 | .05670 | -.02380 | .00920 | .12780 | .03690 | .07400 | .04910 | .00000 |
| .902 | -.310 | .27480 | -.12110 | -.04890 | .02800 | -.00940 | .13120 | .03480 | .07570 | .04640 | .00000 |
| .902 | 1.760 | .28010 | -.12560 | -.14060 | .07090 | -.02430 | .13360 | .03560 | .07540 | .04550 | .00000 |
| .902 | 3.810 | .27100 | -.11980 | -.22170 | .10550 | -.03930 | .13440 | .03690 | .07860 | .04440 | .00000 |
| .902 | 5.860 | .26400 | -.11370 | -.30310 | .13530 | -.05360 | .13390 | .03970 | .08120 | .04430 | .00000 |
| .902 | 7.980 | .25550 | -.10790 | -.38640 | .15910 | -.06600 | .13410 | .04210 | .08200 | .04350 | .00000 |
| .902 | 9.980 | .24790 | -.10140 | -.47090 | .18770 | -.07880 | .13250 | .04600 | .08430 | .04210 | .00000 |
| | GRADIENT | -.00035 | .00019 | -.04524 | .02098 | -.00789 | .00494 | -.00014 | .00039 | -.00068 | .00000 |

NSFC 500(IA68F) (CB4) (T14) (S12) (A94008) ( 27 NOV 73 )

REFERENCE DATA

SREF = 6.1000 SQ.IN. XMRP = 2.6000 IN.
LREF = 3.1600 IN. YMRP = .0000 IN.
BREF = 3.1600 IN. ZMRP = .0000 IN.
SCALE = .0040

PARAMETRIC DATA

ALPHA = 3.000 CRBINC = .000
DELTAZ = 333.000

RUN NO. 26/ 0 RN/L = 8.71 GRADIENT INTERVAL = -3.00/ 3.00

| MACH | BETA | CN | CLN | CY | CYN | CBL | CAF | CABO | CABE | CABS | CABF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.198 | -10.000 | .31040 | -.14380 | .44370 | -.16080 | .07620 | .23670 | .03500 | .08840 | .06640 | .00000 |
| 1.198 | -8.760 | .30880 | -.14100 | .34070 | -.13060 | .06030 | .24330 | .03130 | .08640 | .06380 | .00000 |
| 1.198 | -6.680 | .31130 | -.14080 | .23680 | -.08880 | .04230 | .24750 | .04950 | .08580 | .06450 | .00000 |
| 1.198 | -4.320 | .30700 | -.13480 | .14420 | -.06320 | .02970 | .24860 | .04850 | .08470 | .06360 | .00000 |
| 1.198 | -2.410 | .30280 | -.12880 | .06120 | -.02230 | .00820 | .24880 | .04850 | .08470 | .06430 | .00000 |
| 1.198 | -.380 | .30400 | -.12960 | -.02980 | .01640 | -.00860 | .25030 | .04680 | .08540 | .06540 | .00000 |
| 1.198 | 1.780 | .30710 | -.13250 | -.11080 | .05340 | -.02720 | .25260 | .04780 | .08630 | .06410 | .00000 |
| 1.198 | 3.800 | .30710 | -.13560 | -.20160 | .08410 | -.04340 | .25350 | .04930 | .08800 | .06190 | .00000 |
| 1.198 | 6.010 | .30810 | -.13810 | -.29330 | .11840 | -.06060 | .25360 | .05190 | .08820 | .06030 | .00000 |
| 1.198 | 8.120 | .31060 | -.14170 | -.38070 | .15290 | -.07610 | .25020 | .05440 | .08930 | .06100 | .00000 |
| 1.198 | 10.150 | .31080 | -.14580 | -.48460 | .18380 | -.08920 | .24480 | .05550 | .09040 | .06120 | .00000 |
| | GRADIENT | .00021 | -.00029 | -.04143 | .01665 | -.00830 | .00066 | .00004 | .00020 | -.00017 | .00000 |

RUN NO. 23/ 0 RN/L = 8.55 GRADIENT INTERVAL = -3.00/ 3.00

| MACH | BETA | CN | CLN | CY | CYN | CBL | CAF | CABO | CABE | CABS | CABF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.404 | -10.770 | .28720 | -.12960 | .44080 | -.16780 | .07040 | .25010 | .04630 | .06700 | .05750 | .00000 |
| 1.404 | -8.730 | .28600 | -.12840 | .33060 | -.12240 | .05430 | .25740 | .04290 | .06430 | .05560 | .00000 |
| 1.404 | -6.640 | .28680 | -.12450 | .22660 | -.08100 | .03650 | .26310 | .04080 | .06250 | .05310 | .00000 |
| 1.404 | -4.310 | .28720 | -.12420 | .13300 | -.04480 | .02260 | .26700 | .03840 | .06080 | .05000 | .00000 |
| 1.404 | -2.410 | .28640 | -.12100 | .04660 | -.01100 | .00670 | .26880 | .03780 | .05870 | .04880 | .00000 |
| 1.404 | -.380 | .28380 | -.11840 | -.05550 | .02050 | -.00800 | .27130 | .03670 | .06010 | .04790 | .00000 |
| 1.404 | 1.770 | .28910 | -.12140 | -.11470 | .04970 | -.02410 | .26850 | .03800 | .06140 | .04760 | .00000 |
| 1.404 | 3.870 | .28620 | -.12490 | -.19740 | .08140 | -.03910 | .27040 | .03970 | .06250 | .04650 | .00000 |
| 1.404 | 5.970 | .28400 | -.12660 | -.29290 | .12040 | -.05510 | .27000 | .04250 | .06370 | .04360 | .00000 |
| 1.404 | 8.080 | .28720 | -.12950 | -.38670 | .15980 | -.07010 | .26440 | .04520 | .06710 | .04400 | .00000 |
| 1.404 | 10.140 | .29040 | -.13340 | -.90110 | .19820 | -.08380 | .25850 | .04700 | .06980 | .04590 | .00000 |
| | GRADIENT | -.00016 | -.00009 | -.03826 | .01496 | -.00736 | .00035 | .00013 | .00028 | -.00039 | .00000 |

MSFC 909(IA6EF)(084)(T14)(812) (A94002) ( 2/ NOV /3 )

REFERENCE DATA

BREF = 6.1980 SQ.IN. XMRP = 2.6800 IN.
LREF = 5.1600 IN. YMRP = .0000 IN.
SREF = 5.1600 IN. ZMRP = .0000 IN.
SCALE = .0040

PARAMETRIC DATA

ALPHA = 5.000 ORBINC = .000
DELTAZ = 333.000

RUN NO. 18/ 0 RN/L = /.6/ GRADIENT INTERVAL = -5.00/ 5.00

| MACH | BETA | CN | CLN | CY | CYN | CBL | CAF | CABO | CABE | CABB | CABF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 4.990 | -10.380 | .12880 | -.08080 | .29230 | -.08810 | .03060 | .20100 | .00660 | .00/00 | .00470 | .00000 |
| 4.990 | -8.430 | .12010 | -.01610 | .22620 | -.07950 | .03050 | .19580 | .00650 | .0067/0 | .00490 | .00000 |
| 4.990 | -6.430 | .11520 | -.012/0 | .16230 | -.05130 | .02230 | .19200 | .00640 | .00680 | .00510 | .00000 |
| 4.990 | -4.380 | .11010 | -.00830 | .10190 | -.03170 | .01370 | .18080 | .00660 | .00/30 | .00550 | .00000 |
| 4.990 | -2.360 | .10910 | -.00490 | .041/0 | -.01110 | .00560 | .18770 | .0067/0 | .00/50 | .00560 | .00000 |
| 4.990 | -.330 | .10360 | -.00280 | -.012/0 | .00540 | -.00190 | .18/60 | .00660 | .00/40 | .00560 | .00000 |
| 4.990 | 1.680 | .10230 | -.00470 | -.06020 | .02220 | -.00080 | .18950 | .0067/0 | .00/50 | .00560 | .00000 |
| 4.990 | 3.710 | .10900 | -.00680 | -.12/40 | .04200 | -.01/50 | .19190 | .00660 | .00/40 | .00540 | .00000 |
| 4.990 | 5.740 | .11130 | -.01040 | -.19150 | .0638/0 | -.02610 | .19500 | .00650 | .00730 | .00540 | .00000 |
| 4.990 | 7.760 | .11770 | -.01980 | -.25560 | .08670 | -.03510 | .20130 | .00650 | .00/10 | .00510 | .00000 |
| 4.990 | 9.680 | .12420 | -.02050 | -.31/80 | .10640 | -.04400 | .20750 | .0067/0 | .00/20 | .00500 | .00000 |
| | GRADIENT | -.00064 | .00015 | -.02615 | .00093 | -.00385 | .00039 | -.00000 | .00001 | .00001 | .00000 |

MSFC 500(IA&2F)6084)(T14)(S12) (A94003) ( 2/ NOV 13 )

REFERENCE DATA

| | | | | | |
|---|---|---|---|---|---|
| SREF = | 6.1980 SQ.IN. | XMRP = | 2.6800 IN. | | |
| LREF = | 9.1600 IN. | YMRP = | .0000 IN. | | |
| BREF = | 9.1600 IN. | ZMRP = | .0000 IN. | | |
| SCALE = | .0040 | | | | |

PARAMETRIC DATA

ALPHA = .000 ORBINC = .000
DELTAZ = 333.000

RUN NO. 29/ 0 RN/L = 6.45 GRADIENT INTERVAL = -9.00/ 9.00

| MACH | BETA | CN | CLM | CY | CYN | CBL | CAF | CABO | CABE | CABS | CABF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| .900 | -10.140 | -.0/140 | .01050 | .59/60 | -.19/00 | .05/00 | .06630 | .04180 | .08900 | .05510 | .00000 |
| .900 | -8.200 | -.08040 | .0177/0 | .32100 | -.12960 | .04720 | .07440 | .03860 | .08420 | .05460 | .00000 |
| .900 | -6.150 | -.09410 | .02180 | .23620 | -.09/30 | .03410 | .08180 | .03/40 | .07/70 | .05240 | .00000 |
| .900 | -4.080 | -.0/960 | .02330 | .14990 | -.06080 | .02150 | .09820 | .03490 | .0/420 | .05110 | .00000 |
| .900 | -2.030 | -.08120 | .03090 | .0/270 | -.02910 | .00810 | .09530 | .0337/0 | .0/180 | .04720 | .00000 |
| .900 | .000 | -.08680 | .03010 | -.00800 | .00660 | -.00210 | .09520 | .03230 | .0/350 | .04480 | .00000 |
| .900 | 2.050 | -.08430 | .02/40 | -.084/0 | .03960 | -.01330 | .09800 | .03430 | .0/270 | .04280 | .00000 |
| .900 | 4.080 | -.08000 | .02240 | -.16330 | .0/260 | -.02940 | .09/10 | .03630 | .0/630 | .04130 | .00000 |
| .900 | 6.150 | -.0/270 | .01600 | -.23840 | .10320 | -.03730 | .09400 | .03680 | .0/990 | .04080 | .00000 |
| .900 | 8.190 | -.0/930 | .0107/0 | -.31160 | .13100 | -.04900 | .09310 | .03/00 | .08090 | .03950 | .00000 |
| .900 | 10.130 | -.0//80 | .01850 | -.38120 | .15380 | -.05810 | .08660 | .04000 | .08690 | .03840 | .00000 |
| | GRADIENT | .00030 | -.00025 | -.03835 | .01642 | -.00560 | .00091 | .00017 | .00025 | -.00117 | .00000 |

RUN NO. 28/ 0 RN/L = 8.15 GRADIENT INTERVAL = -9.00/ 9.00

| MACH | BETA | CN | CLM | CY | CYN | CBL | CAF | CABO | CABE | CABS | CABF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| .901 | -10.3/0 | -.03810 | -.00/50 | .44930 | -.18470 | .06680 | .11560 | .04630 | .08130 | .06110 | .00000 |
| .901 | -8.380 | -.02710 | -.01470 | .35610 | -.15110 | .053/0 | .12260 | .04300 | .0/780 | .05890 | .00000 |
| .901 | -6.240 | -.02360 | -.01850 | .26190 | -.11180 | .03850 | .12320 | .04050 | .0/580 | .05490 | .00000 |
| .901 | -4.130 | -.02310 | -.02190 | .17610 | -.0/740 | .02510 | .12960 | .03830 | .0/500 | .05050 | .00000 |
| .901 | -2.060 | -.02980 | -.01800 | .08500 | -.03630 | .01100 | .12930 | .03680 | .0/210 | .04850 | .00000 |
| .901 | .000 | -.02700 | -.01410 | -.01170 | .00910 | -.00390 | .13240 | .0337/0 | .0/440 | .04//0 | .00000 |
| .901 | 2.080 | -.022/0 | -.01030 | -.10410 | .052/0 | -.01890 | .14220 | .03590 | .0/180 | .04280 | .00000 |
| .901 | 4.140 | -.02180 | -.02020 | -.19150 | .09210 | -.03230 | .142/0 | .036/0 | .0/940 | .04190 | .00000 |
| .901 | 6.210 | -.02080 | -.01850 | -.2//10 | .12880 | -.04680 | .14650 | .03930 | .08000 | .04190 | .00000 |
| .901 | 8.290 | -.020/0 | -.01010 | -.35080 | .15/30 | -.05/60 | .14540 | .04350 | .08210 | .03910 | .00000 |
| .901 | 10.300 | -.04440 | .00080 | -.43/20 | .183/0 | -.06/90 | .14280 | .04620 | .08460 | .03680 | .00000 |
| | GRADIENT | .00025 | .00019 | -.04461 | .02066 | -.00686 | .00189 | -.00020 | .00041 | -.00111 | .00000 |

MSFC 909(IA6EF)(054)(T14)(S12) (AB4003) ( 2/ NOV /3 )

REFERENCE DATA

SREF = 6.1900 SQ.IN. XBRP = 2.6800 IN.
LREF = 9.1600 IN. YMRP = .0000 IN.
BREF = 9.1600 IN. ZMRP = .0000 IN.
SCALE = .0040

PARAMETRIC DATA

ALPHA = .000 ORBINC = .000
DELTAZ = 333.000

RUN NO. 2// 0 RN/L = 8./1 GRADIENT INTERVAL = -9.00/ 9.00

| MACH | BETA | CN | CLN | CY | CYN | CBL | CAF | CABO | CABE | CABS | CABF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.19/ | -10.480 | -.01630 | -.016/0 | .49560 | -.19100 | .08050 | .24810 | .05280 | .09400 | .06860 | .00000 |
| 1.19/ | -8.4/0 | -.00380 | -.02290 | .38490 | -.14810 | .06420 | .23670 | .05040 | .09030 | .06/30 | .00000 |
| 1.19/ | -6.350 | -.00410 | -.01800 | .28230 | -.10890 | .04/80 | .26030 | .04860 | .08900 | .06550 | .00007 |
| 1.19/ | -4.200 | .00350 | -.02090 | .1/920 | -.06830 | .02940 | .26190 | .04650 | .08590 | .06250 | .00000 |
| 1.19/ | -2.100 | -.00810 | -.00820 | .09090 | -.03390 | .01330 | .25890 | .04850 | .08640 | .06160 | .00000 |
| 1.19/ | -.010 | -.00/40 | -.01160 | -.00200 | .00630 | -.00430 | .26070 | .044/0 | .08520 | .06150 | .00000 |
| 1.19/ | 2.090 | -.00090 | -.01530 | -.09090 | .04490 | -.02190 | .264/0 | .045/0 | .08450 | .05810 | .00000 |
| 1.19/ | 4.180 | -.00030 | -.01570 | -.1/530 | .0/800 | -.03830 | .27000 | .04690 | .08620 | .05680 | .00000 |
| 1.19/ | 6.310 | -.00180 | -.01620 | -.26910 | .11310 | -.05480 | .26950 | .04920 | .08980 | .056/0 | .00000 |
| 1.19/ | 8.420 | -.00480 | -.01/00 | -.36850 | .15010 | -.0/110 | .26990 | .05220 | .09043 | .05650 | .00000 |
| 1.19/ | 10.440 | -.01180 | -.01500 | -.46/00 | .18410 | -.08490 | .26590 | .05240 | .090/0 | .056/0 | .00000 |
| | GRADIENT | .00005 | .00021 | -.04252 | .01773 | -.00814 | .00105 | -.00010 | -.00006 | -.000/1 | .00000 |

RUN NO. 19/ 0 RN/L = 7.6/ GRADIENT INTERVAL = -9.00/ 9.00

| MACH | BETA | CN | CLN | CY | CYN | CBL | CAF | CABO | CABE | CABS | CABF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 4.950 | -10.040 | -.07440 | .05020 | .32340 | -.11690 | .038/0 | .21650 | .00690 | .00/50 | .00580 | .00000 |
| 4.950 | -8.100 | -.06/80 | .04570 | .25020 | -.08830 | .02950 | .21380 | .00660 | .00/40 | .00580 | .00000 |
| 4.950 | -6.080 | -.04800 | .04480 | .1/850 | -.06220 | .02060 | .20980 | .006/0 | .00/40 | .00610 | .00000 |
| 4.950 | -4.040 | -.0/800 | .05070 | .11250 | -.03960 | .01240 | .20650 | .00660 | .00/30 | .00610 | .00000 |
| 4.950 | -2.010 | -.0/910 | .05090 | .04660 | -.01560 | .00480 | .20490 | .00650 | .00/60 | .00610 | .00000 |
| 4.950 | .000 | -.08020 | .05100 | -.01910 | .00880 | -.00280 | .20510 | .00650 | .00/60 | .00590 | .00000 |
| 4.950 | 2.050 | -.0/750 | .05070 | -.08120 | .03090 | -.01040 | .20480 | .00660 | .00/70 | .00580 | .00000 |
| 4.950 | 4.050 | -.08250 | .05320 | -.14520 | .05330 | -.01/80 | .20950 | .00660 | .00/80 | .005/6 | .00000 |
| 4.950 | 6.080 | -.09000 | .05200 | -.21110 | .0/590 | -.025/0 | .21320 | .00660 | .00/80 | .00540 | .00000 |
| 4.950 | 8.110 | -.0/710 | .05080 | -.27880 | .10200 | -.03360 | .21680 | .00650 | .00/80 | .00530 | .00000 |
| 4.950 | 10.030 | -.0/820 | .05190 | -.34840 | .12880 | -.04280 | .22430 | .00650 | .00/50 | .00520 | .00000 |
| | GRADIENT | -.00036 | .00024 | -.03178 | .01148 | -.00374 | .00029 | .00000 | .00005 | -.00005 | .00000 |

MSFC 500(IA68F) (CB4) (T9) (B12) (PT4) (FR4) (AE4004) ( 2/ NOV /3 )

REFERENCE DATA

SREF = 9.1900 SQ.IN. XMRP = 2.6800 IN.
LREF = 5.1600 IN. YMRP = .0000 IN.
BREF = 5.1600 IN. ZMRP = .0000 IN.
SCALE = .0040

PARAMETRIC DATA

BETA = .000 ORBINC = .000
DELTAZ = 333.000

RUN NO. 14/ 0 RN/L = 5.68 GRADIENT INTERVAL = -5.00/ 5.00

| MACH | ALPHA | CN | CLN | CY | CYN | CBL | CAF | CABO | CABE | CABS | CABF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| .900 | -10.990 | -.73960 | .25080 | -.03650 | .01800 | -.00520 | .03460 | .03380 | .08640 | .05320 | .01060 |
| .900 | -8.060 | -.61100 | .24210 | -.03090 | .01840 | -.00550 | .04530 | .03320 | .08330 | .05050 | .01010 |
| .900 | -6.900 | -.48080 | .19410 | -.03700 | .01780 | -.00550 | .0947/0 | .03320 | .0/720 | .04860 | .00980 |
| .900 | -4.830 | -.37430 | .14670 | -.03680 | .01730 | -.00590 | .06330 | .03190 | .0/2/0 | .04770 | .00930 |
| .900 | -2.780 | -.26480 | .10360 | -.03500 | .01550 | -.00580 | .06080 | .03210 | .0/360 | .04570 | .00980 |
| .900 | -.710 | -.15560 | .06180 | -.03610 | .01670 | -.00640 | .06410 | .03250 | .0/190 | .04520 | .01030 |
| .900 | 1.340 | -.04370 | .0217/0 | -.04120 | .01770 | -.00750 | .06010 | .03150 | .0/000 | .04670 | .01020 |
| .900 | 3.420 | .07640 | -.01980 | -.03990 | .01870 | -.00770 | .05740 | .03110 | .06900 | .04750 | .00940 |
| .900 | 5.510 | .19340 | -.06180 | -.04050 | .01720 | -.00840 | .04960 | .03160 | .06760 | .04840 | .00940 |
| .900 | 7.550 | .31820 | -.11300 | -.04030 | .01770 | -.00850 | .03850 | .03210 | .06860 | .05060 | .00950 |
| .900 | 9.530 | .43250 | -.16580 | -.04000 | .01700 | -.00830 | .03210 | .03080 | .06450 | .05390 | .00950 |
| | GRADIENT | .05454 | -.02015 | -.00056 | .00024 | -.00025 | -.00061 | -.00011 | -.00053 | 00003 | .00003 |

RUN NO. 13/ 0 RN/L = 11.24 GRADIENT INTERVAL = -5.00/ 5.00

| MACH | ALPHA | CN | CLN | CY | CYN | CBL | CAF | CABO | CABE | CABS | CABF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| .900 | -11.280 | -.76860 | .25680 | -.03980 | .01980 | -.00700 | .08530 | .04060 | .08510 | .05080 | .01280 |
| .900 | -9.230 | -.62260 | .23580 | -.03550 | .01770 | -.00730 | .09430 | .03850 | .08160 | .05520 | .01220 |
| .900 | -7.080 | -.47770 | .17730 | -.03250 | .01680 | -.00710 | .09830 | .03790 | .08000 | .05080 | .01210 |
| .900 | -4.970 | -.34220 | .12260 | -.03120 | .01510 | -.00740 | .10500 | .03680 | .0/750 | .04760 | .01180 |
| .900 | -2.840 | -.20680 | .06410 | -.03180 | .01520 | -.00740 | .10400 | .03560 | .0/580 | .04630 | .01150 |
| .900 | -.740 | -.07700 | -.00140 | -.03070 | .01310 | -.00720 | .10580 | .03540 | .0/280 | .04350 | .01140 |
| .900 | 1.370 | .05940 | -.06020 | -.03360 | .01350 | -.00790 | .10170 | .03600 | .0/310 | .04210 | .01150 |
| .900 | 3.900 | .18860 | -.10700 | -.03320 | .01430 | -.00700 | .09690 | .03490 | .0/150 | .04430 | .01140 |
| .900 | 5.640 | .29390 | -.13110 | -.03850 | .01770 | -.00610 | .08880 | .03490 | .0/290 | .04800 | .01160 |
| .900 | 7.730 | .40140 | -.17300 | -.03840 | .01650 | -.00730 | .08610 | .03590 | .0/510 | .05260 | .01190 |
| .900 | 9.750 | .49810 | -.20850 | -.04300 | .01840 | -.00660 | .08050 | .03570 | .0/960 | .05600 | .01170 |
| | GRADIENT | .06287 | -.02798 | -.00027 | -.00016 | .00001 | -.00088 | -.00017 | -.00040 | -.00051 | -.00004 |

MSFC 509(IA62F) (CB4) (T9) (S12) (PT4) (FR4) (A94004) ( 2/ NOV /3 )

REFERENCE DATA

PARAMETRIC DATA

SREF = 0.1980 SQ.IN. XMRP = 2.6800 IN. BETA = .000 ORBINC = .000
LREF = 5.1600 IN. YMRP = .0000 IN. DELTAZ = 333.000
BREF = 5.1600 IN. ZMRP = .0000 IN.
SCALE = .0040

RUN NO. 12/ 0 RN/L = 14.90 GRADIENT INTERVAL = -5.00/ 5.00

| MACH | ALPHA | CN | CLN | CY | CYN | CBL | CAF | CABO | CABE | CABS | CABF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| .900 | -11.380 | -.86330 | .36610 | -.03210 | .01740 | -.00980 | .15560 | .05050 | .10040 | .0/810 | .01580 |
| .900 | -9.300 | -.69480 | .29610 | -.03150 | .01640 | -.00630 | .16400 | .05230 | .10000 | .0/790 | .01560 |
| .900 | -/.140 | -.53880 | .23040 | -.03200 | .01660 | -.00680 | .16890 | .05030 | .09660 | .0/200 | .01520 |
| .900 | -4.980 | -.39010 | .16890 | -.03140 | .01650 | -.00700 | .17030 | .05030 | .09530 | .06890 | .01530 |
| .900 | -2.860 | -.24830 | .11040 | -.03100 | .015/0 | -.00/20 | .1/310 | .04860 | .09310 | .06//0 | .01520 |
| .900 | -./10 | -.11000 | .05190 | -.02930 | .01360 | -.00760 | .17610 | .04680 | .09060 | .06510 | .014/0 |
| .900 | 1.410 | .03420 | -.02010 | -.031/0 | .01450 | -.00950 | .1/130 | .04860 | .09140 | .06680 | .01510 |
| .900 | 3.530 | .1/990 | -.08950 | -.03310 | .01550 | -.01000 | .16630 | .04720 | .09090 | .064/0 | .01480 |
| .900 | 5./00 | .31520 | -.14230 | -.03500 | .01630 | -.00920 | .16930 | .04//0 | .08840 | .06990 | .01460 |
| .900 | /.810 | .44330 | -.19260 | -.03950 | .02000 | -.00760 | .15840 | .04650 | .08/20 | .0/200 | .01450 |
| .900 | 9.840 | .55240 | -.23/80 | -.04280 | .02190 | -.00/80 | .14900 | .04500 | .08550 | .0/600 | .01400 |
| | GRADIENT | .06675 | -.03037 | -.00019 | -.00016 | -.00039 | -.00046 | -.00029 | -.00049 | -.00044 | -.00005 |

RUN NO. 11/ 0 RN/L = 23.64 GRADIENT INTERVAL = -5.00/ 5.00

| MACH | ALPHA | CN | CLN | CY | CYN | CBL | CAF | CABO | CABE | CABS | CABF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.202 | -11.340 | -.87970 | .35300 | -.03440 | .00860 | -.00650 | .20990 | .04980 | .09480 | .0/260 | .01500 |
| 1.202 | -9.410 | -.69930 | .2/680 | -.02930 | .00/40 | -.00670 | .21330 | .04900 | .09240 | .0/010 | .014/0 |
| 1.202 | -/.210 | -.51180 | .20080 | -.03010 | .00860 | -.00870 | .21/50 | .048/0 | .09060 | .06/20 | .01460 |
| 1.202 | -5.030 | -.34160 | .12540 | -.03220 | .01110 | -.00980 | .22160 | .04910 | .08940 | .06560 | .01460 |
| 1.202 | -2.860 | -.19010 | .05680 | -.03290 | .01150 | -.01010 | .22400 | .04880 | .08690 | .06420 | .01430 |
| 1.202 | -./00 | -.04160 | -.00340 | -.03360 | .01490 | -.01020 | .22480 | .04830 | .083/0 | .06350 | .01400 |
| 1.202 | 1.440 | .09010 | -.062/0 | -.03650 | .01550 | -.01020 | .221/0 | .04990 | .084/0 | .06340 | .01450 |
| 1.202 | 3.560 | .21/20 | -.11420 | -.03420 | .01240 | -.00960 | .21760 | .050/0 | .08510 | .06620 | .01480 |
| 1.202 | 5./40 | .34880 | -.16390 | -.03680 | .01480 | -.00940 | .21440 | .05060 | .08410 | .06/00 | .014/0 |
| 1.202 | /.080 | .46/10 | -.21380 | -.03530 | .01340 | -.00940 | .20//0 | .05090 | .08150 | .06860 | .014/0 |
| 1.202 | 9.040 | .56400 | -.25460 | -.03610 | .01380 | -.00910 | .20010 | .05190 | .08120 | .0/050 | .01460 |
| | GRADIENT | .06308 | -.02684 | -.00022 | .00016 | .00007 | -.00104 | .00034 | -.00021 | .00027 | .00008 |

MSFC 500(1A6EF)(OB4)(T9)(S12)(PT4)(FR4) (A94004) ( 2/ NOV /3 )

REFERENCE DATA

SREF = 6.1900 SQ.IN. XMRP = 2.6800 IN.
LREF = 3.1600 IN. YMRP = .0000 IN.
BREF = 3.1600 IN. ZMRP = .0000 IN.
SCALE = .0040

PARAMETRIC DATA

BETA = .000 ORBINC = .000
DELTAZ = 333.000

RUN NO. 19/ 0 RN/L = 35.25 GRADIENT INTERVAL = -5.00/ 5.00

| MACH | ALPHA | CN | CLN | CY | CYN | CBL | CAF | CABO | CABE | CABS | CABF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.498 | -11.600 | -.85260 | .32330 | -.04380 | .01830 | -.00850 | .23750 | .03940 | .07450 | .05320 | .01190 |
| 1.498 | -8.670 | -.68100 | .25530 | -.03830 | .01520 | -.00800 | .24080 | .03840 | .07160 | .05100 | .01180 |
| 1.498 | -7.270 | -.51920 | .1916[illegible] | -.03600 | .01420 | -.00800 | .24050 | .03860 | .06950 | .04940 | .01170 |
| 1.498 | -5.080 | -.36400 | .12860 | -.03360 | .01290 | -.00800 | .23960 | .03800 | .06840 | .04740 | .01140 |
| 1.498 | -2.920 | -.21910 | .06770 | -.03250 | .01290 | -.00820 | .23970 | .03830 | .06640 | .04750 | .01110 |
| 1.498 | -.750 | -.07020 | .00830 | -.03380 | .01470 | -.00820 | .23690 | .03920 | .06640 | .04780 | .01090 |
| 1.498 | 1.410 | .08560 | -.04480 | -.03660 | .01700 | -.00870 | .23730 | .03930 | .06300 | .04730 | .01070 |
| 1.498 | 3.570 | .23000 | -.09620 | -.03660 | .01730 | -.00870 | .23380 | .04040 | .06400 | .04840 | .01110 |
| 1.498 | 5.750 | .37630 | -.14400 | -.03860 | .01850 | -.00890 | .23200 | .04000 | .06340 | .05040 | .01080 |
| 1.498 | 7.870 | .49290 | -.18130 | -.03820 | .01760 | -.00820 | .22910 | .03970 | .06270 | .05160 | .01060 |
| 1.498 | 9.950 | .54310 | -.22190 | -.03840 | .01800 | -.00800 | .22530 | .04000 | .06080 | .05170 | .01050 |
| | GRADIENT | .06316 | -.02523 | -.00069 | .00072 | -.00009 | -.00080 | .00030 | -.00049 | .00010 | -.00001 |

RUN NO. 1/ RN/L = 12.93 GRADIENT INTERVAL = -5.00/ 5.00

| MACH | ALPHA | CN | CLN | CY | CYN | CBL | CAF | CABO | CABE | CABS | CABF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.980 | -10.780 | -.90640 | .21700 | -.03030 | .01330 | -.00560 | .24950 | .01620 | .02640 | .01780 | .00460 |
| 2.980 | -8.800 | -.68000 | .17860 | -.02760 | .01220 | -.00530 | .23950 | .01610 | .02620 | .01800 | .00460 |
| 2.980 | -6.730 | -.48080 | .14330 | -.02640 | .01240 | -.00450 | .23020 | .01600 | .02550 | .01790 | .00460 |
| 2.980 | -4.660 | -.28070 | .10930 | -.02570 | .01180 | -.00440 | .22150 | .01650 | .02490 | .01810 | .00470 |
| 2.980 | -2.580 | -.19040 | .08120 | -.02770 | .01170 | -.00500 | .21550 | .01640 | .02580 | .01870 | .00470 |
| 2.980 | -.520 | -.10860 | .05950 | -.02620 | .01130 | -.00450 | .21050 | .01670 | .02590 | .01870 | .00470 |
| 2.980 | 1.550 | -.02470 | .03530 | -.02480 | .01080 | -.00470 | .20460 | .01720 | .02570 | .01820 | .00460 |
| 2.980 | 3.600 | .06370 | .00450 | -.02450 | .01110 | -.00440 | .19980 | .01760 | .02400 | .01740 | .00440 |
| 2.980 | 5.690 | .15870 | -.02930 | -.02520 | .01160 | -.00450 | .19700 | .01810 | .02220 | .01690 | .00410 |
| 2.980 | 7.730 | .25180 | -.06120 | -.02260 | .01080 | -.00440 | .19410 | .01810 | .02040 | .01680 | .00380 |
| 2.980 | 9.720 | .34930 | -.09570 | -.02350 | .01100 | -.00500 | .18990 | .01790 | .01950 | .01700 | .00360 |
| | GRADIENT | .04140 | -.01238 | .00026 | -.00011 | .00001 | -.00263 | .00015 | -.00009 | -.00009 | -.00003 |

MSFC 509(IA6BF) (094) (T9) (S12) (PT4) (FR4) (A94004) ( 2/ NOV /3 )

REFERENCE DATA

SREF = 6.1980 SQ.IN. XMRP = 2.6800 IN.
LREF = 3.1600 IN. YMRP = .0000 IN.
BREF = 3.1600 IN. ZMRP = .0000 IN.
SCALE = .0040

PARAMETRIC DATA

BETA = .000 ORBINC = .000
DELTAZ = 333.000

RUN NO. 2/ 0 RN/L = 19.66 GRADIENT INTERVAL = -5.00/ 5.00

| MACH | ALPHA | CN | CLM | CY | CYN | CBL | CAF | CABO | CABE | CABS | CABF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 4.950 | -10.580 | -.47490 | .16790 | -.02450 | .01050 | -.00420 | .2/310 | -.00210 | .00710 | .00500 | .00020 |
| 4.950 | -8.640 | -.40580 | .13240 | -.02420 | .01090 | -.00390 | .25870 | -.00170 | .00740 | .00530 | .00080 |
| 4.950 | -6.610 | -.32940 | .12870 | -.02400 | .00980 | -.00380 | .24300 | -.00230 | .00760 | .00540 | .00110 |
| 4.950 | -4.570 | -.25670 | .10720 | -.02370 | .00960 | -.00360 | .23140 | -.00220 | .00780 | .00560 | .00120 |
| 4.950 | -2.540 | -.18770 | .08520 | -.02350 | .00990 | -.00380 | .22250 | -.00220 | .00750 | .00540 | .00130 |
| 4.950 | -.500 | -.11110 | .06380 | -.02320 | .00880 | -.00330 | .20990 | -.00050 | .00780 | .00570 | .00130 |
| 4.950 | 1.520 | -.04180 | .04640 | -.01910 | .00820 | -.00330 | .20350 | -.00070 | .00750 | .00540 | .00130 |
| 4.950 | 3.550 | .03100 | .02200 | -.01880 | .00850 | -.00320 | .19570 | .00000 | .00740 | .00540 | .00130 |
| 4.950 | 5.600 | .10380 | -.00220 | -.02050 | .00910 | -.00350 | .18900 | -.00020 | .00690 | .00520 | .00120 |
| 4.950 | 7.620 | .16400 | -.03140 | -.02020 | .00750 | -.00320 | .18180 | .00060 | .00650 | .00530 | .00110 |
| 4.950 | 9.570 | .22640 | -.05820 | -.01800 | .00710 | -.00350 | .17730 | .00110 | .00610 | .00520 | .00110 |
| | GRADIENT | .03550 | -.01029 | .00070 | -.00019 | .00008 | -.00445 | .00029 | -.00004 | -.00002 | .00001 |

MSFC 500(IA68F) (OB4) (T5) (S12) (PT4) (FR4) (A94008) ( 27 NOV /3 )

REFERENCE DATA

SREF = 6.1988 SQ.IN. XBRP = 2.6000 IN.
LREF = 9.1680 IN. YBRP = .0000 IN.
BREF = 9.1680 IN. ZBRP = .0000 IN.
SCALE = .0040

PARAMETRIC DATA

ALPHA = 9.000 ORBINC = .000
DELTAZ = 335.000

RUN NO. 8/ 0 RN/L = 9.70 GRADIENT INTERVAL = -9.00/ 9.00

| MACH | BETA | CN | CLN | CY | CYN | CBL | CAF | CABO | CABE | CABS | CA3F |
|---|---|---|---|---|---|---|---|---|---|---|---|
| .600 | -10.980 | .21840 | -.08080 | .43990 | -.14490 | .06010 | .02650 | .03930 | .07660 | .05200 | .01190 |
| .600 | -8.340 | .21290 | -.08340 | .35000 | -.11940 | .05740 | .03470 | .03560 | .07200 | .05200 | .01080 |
| .600 | -6.910 | .20910 | -.07810 | .29120 | -.09890 | .04180 | .04420 | .03250 | .06680 | .05050 | .00980 |
| .600 | -4.430 | .19340 | -.06810 | .16380 | -.05450 | .02580 | .05520 | .03120 | .06380 | .04830 | .00930 |
| .600 | -2.380 | .18290 | -.05490 | .06820 | -.01980 | .00960 | .05910 | .02990 | .06430 | .04750 | .00800 |
| .600 | -.330 | .16670 | -.06640 | -.02900 | .01580 | -.00560 | .05730 | .02930 | .06060 | .04780 | .00820 |
| .600 | 1.740 | .18440 | -.09580 | -.11950 | .04630 | -.02080 | .0608 | .02840 | .06430 | .04860 | .00910 |
| .600 | 3.770 | .18610 | -.06470 | -.21220 | .07850 | -.03640 | .0571 | .02860 | .06560 | .05000 | .00900 |
| .600 | 5.820 | .19180 | -.07140 | -.30470 | .11300 | -.05300 | .0463 | .03100 | .07110 | .05060 | .00960 |
| .600 | 7.880 | .19230 | -.07460 | -.39130 | .14080 | -.06770 | .04130 | .03390 | .07420 | .05040 | .01010 |
| .600 | 9.840 | .19600 | -.07850 | -.47180 | .16160 | -.07780 | .03520 | .03680 | .07620 | .05100 | .01110 |
| | GRADIENT | -.00062 | .00025 | -.04580 | .01628 | -.00754 | .00027 | -.00033 | .00017 | .00022 | -.00002 |

RUN NO. 9/ 0 RN/L = 11.32 GRADIENT INTERVAL = -9.00/ 9.00

| MACH | BETA | CN | CLN | CY | CYN | CBL | CAF | CABO | CABE | CABS | CA3F |
|---|---|---|---|---|---|---|---|---|---|---|---|
| .902 | -10.770 | .28750 | -.13380 | .40340 | -.16080 | .07030 | .07520 | .04310 | .07940 | .05530 | .01380 |
| .902 | -8.290 | .28080 | -.13960 | .36740 | -.13330 | .05750 | .07660 | .04040 | .07720 | .05420 | .01340 |
| .902 | -6.640 | .30160 | -.14080 | .28580 | -.09830 | .04330 | .08270 | .03800 | .07410 | .05130 | .01250 |
| .902 | -4.580 | .30240 | -.14160 | .18060 | -.06820 | .02770 | .09130 | .03620 | .07180 | .04830 | .01210 |
| .902 | -2.480 | .30400 | -.14280 | .07930 | -.02100 | .01130 | .09830 | .03500 | .07170 | .04890 | .01180 |
| .902 | -.380 | .30670 | -.14900 | -.02970 | .01610 | -.00550 | .09850 | .03510 | .07200 | .04870 | .01170 |
| .902 | 1.790 | .31190 | -.14730 | -.13830 | .05220 | -.02160 | .10290 | .03290 | .07090 | .04850 | .01140 |
| .902 | 3.870 | .29860 | -.14120 | -.23860 | .08270 | -.03930 | .09950 | .03420 | .07300 | .05030 | .01170 |
| .902 | 5.970 | .28730 | -.13110 | -.33840 | .12600 | -.05060 | .09400 | .03750 | .07640 | .05180 | .01250 |
| .902 | 8.100 | .28270 | -.12820 | -.44160 | .15380 | -.06830 | .08500 | .04110 | .07930 | .05630 | .01330 |
| .902 | 10.110 | .26860 | -.12110 | -.54160 | .18350 | -.08160 | .07960 | .04420 | .08350 | .05970 | .01400 |
| | GRADIENT | .00010 | -.00008 | -.04982 | .01796 | -.00795 | .00100 | -.00029 | .00008 | .00008 | -.00006 |

NSPC 500(1A6SF) (CB4) (T9) (S12) (-3T4) (FR4) (A94009) ( 27 NOV 83 )

REFERENCE DATA

SREF = 6.1900 SQ IN. XMRP = 2.6900 IN.
LREF = 5.1600 IN. YMRP = .0000 IN.
BREF = 5.1600 IN. ZMRP = .0000 IN.
SCALE = .0060

PARAMETRIC DATA

ALPHA = 5.000 ORBINC = .000
DELTAZ = 333.000

RUN NO. 10/ 0 RN/L = 23.46 GRADIENT INTERVAL = -5.00/ 5.00

| MACH | BETA | CN | CLN | CY | CYN | CBL | CAF | CABO | CABE | CABS | CABF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.199 | -10.970 | .36410 | -.16360 | .54770 | -.17780 | .08270 | .19040 | .05750 | .09360 | .07360 | .01670 |
| 1.199 | -8.910 | .35410 | -.17760 | .43730 | -.14460 | .06790 | .19750 | .05690 | .09120 | .07300 | .01640 |
| 1.199 | -6.760 | .34780 | -.17210 | .32000 | -.10580 | .05100 | .20080 | .05430 | .08820 | .07240 | .01590 |
| 1.199 | -4.600 | .34910 | -.17090 | .20200 | -.06320 | .03180 | .20800 | .05210 | .08520 | .06980 | .01520 |
| 1.199 | -2.470 | .34730 | -.16820 | .09380 | -.02780 | .01340 | .21430 | .05110 | .08400 | .06840 | .01500 |
| 1.199 | -.330 | .34360 | -.16490 | -.01260 | .00820 | -.00550 | .21520 | .05110 | .08500 | .06800 | .01500 |
| 1.199 | 1.810 | .33880 | -.16490 | -.11940 | .04490 | -.02410 | .21690 | .05050 | .08490 | .06660 | .01480 |
| 1.199 | 3.980 | .34180 | -.16710 | -.22220 | .07920 | -.04200 | .21420 | .05210 | .08600 | .06680 | .01480 |
| 1.199 | 6.070 | .34490 | -.16870 | -.33610 | .11800 | -.06000 | .21260 | .05380 | .08820 | .06760 | .01520 |
| 1.199 | 8.210 | .34830 | -.16990 | -.44930 | .15520 | -.07610 | .20810 | .05580 | .09130 | .06890 | .01590 |
| 1.199 | 10.270 | .35300 | -.17310 | -.56300 | .18910 | -.09080 | .20250 | .05720 | .09230 | .06900 | .01620 |
| | GRADIENT | -.00071 | .00096 | -.04984 | .01677 | -.00868 | .00061 | -.00003 | .00012 | -.00037 | -.00005 |

RUN NO. 16/ 0 RN/L = 36.25 GRADIENT INTERVAL = -5.00/ 5.00

| MACH | BETA | CN | CLN | CY | CYN | CBL | CAF | CABO | CABE | CABS | CABF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.467 | 0.980 | .33280 | -.16700 | .54960 | -.19970 | .07670 | .20570 | .04740 | .06820 | .06020 | .01220 |
| 1.467 | 990 | .32250 | -.15710 | .42730 | -.15750 | .06110 | .21400 | .04550 | .06610 | .05870 | .01170 |
| 1.467 | 2.730 | .31350 | -.14980 | .30800 | -.11190 | .04470 | .21950 | .04410 | .06520 | .05660 | .01150 |
| 1.467 | -4.580 | .30920 | -.14760 | .19450 | -.06960 | .02760 | .22680 | .04220 | .06310 | .05550 | .01130 |
| 1.467 | -2.490 | .30980 | -.14360 | .08790 | -.03000 | .01070 | .23130 | .04080 | .06200 | .05030 | .01090 |
| 1.467 | -.380 | .29880 | -.13870 | -.01920 | .01110 | -.00560 | .23200 | .04080 | .06230 | .04930 | .01060 |
| 1.467 | 1.790 | .30080 | -.14210 | -.12700 | .05360 | -.02240 | .23440 | .04130 | .06130 | .04780 | .01070 |
| 1.467 | 3.910 | .30500 | -.14390 | -.23130 | .09240 | -.03900 | .23410 | .04290 | .06220 | .04730 | .01110 |
| 1.467 | 6.090 | .30840 | -.14710 | -.34830 | .13710 | -.05670 | .23130 | .04500 | .06360 | .04630 | .01130 |
| 1.467 | 8.190 | .31910 | -.15490 | -.46880 | .18190 | -.07300 | .22710 | .04720 | .06580 | .04700 | .01160 |
| 1.467 | 10.270 | .32880 | -.16280 | -.58630 | .22150 | -.08750 | .21790 | .04960 | .06960 | .04990 | .01220 |
| | GRADIENT | -.00073 | .00042 | -.09026 | .01921 | -.00784 | .00783 | .00009 | -.00012 | -.00068 | -.00003 |

MSFC 909(IA6EF) (CB4) (T9) (^12) (PT4) (FR4) (A94009) ( 2/ NOV /3 )

REFERENCE DATA

SREF = 6.1900 SQ.IN. XMRP = 2.6800 IN.
LREF = 3.1600 IN. YMRP = .0000 IN.
BREF = 3.1600 IN. ZMRP = .0000 IN.
SCALE = .0040

PARAMETRIC DATA

ALPHA = 5.000 ORBINC = .000
DELTAZ = 333.000

RUN NO. 17/ 0 RN/L = 19.98 GRADIENT INTERVAL = -5.00/ 5.00

| MACH | BETA | CN | CLM | CY | CYN | CBL | CAF | CABO | CABE | CABS | CABF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 4.950 | -10.400 | .11440 | -.01970 | .39520 | -.10670 | .04230 | .18670 | .00680 | .00750 | .00490 | .00140 |
| 4.950 | -8.470 | .10840 | -.01130 | .25340 | -.08200 | .03280 | .18230 | .00660 | .00760 | .00530 | .00140 |
| 4.950 | -6.440 | .10040 | -.00740 | .18150 | -.05680 | .02340 | .17970 | .00670 | .00770 | .00540 | .00140 |
| 4.950 | -4.380 | .09800 | -.00440 | .11360 | -.03440 | .01550 | .17730 | .00660 | .00740 | .00550 | .00140 |
| 4.950 | -2.360 | .09360 | -.00190 | .04940 | -.01740 | .00640 | .17810 | .00670 | .00760 | .00580 | .00140 |
| 4.950 | -.330 | .09230 | -.00180 | -.01670 | .00770 | -.00320 | .17690 | .00670 | .00750 | .00590 | .00130 |
| 4.950 | 1.680 | .09080 | -.00070 | -.08080 | .02770 | -.01190 | .17820 | .00660 | .00760 | .00580 | .00140 |
| 4.950 | 3.720 | .08920 | -.00290 | -.14680 | .04940 | -.02110 | .17970 | .00670 | .00770 | .00580 | .00140 |
| 4.950 | 5.750 | .08930 | -.00740 | -.21480 | .07130 | -.02950 | .18250 | .00680 | .00750 | .00560 | .00140 |
| 4.950 | 7.780 | .09780 | -.01200 | -.28670 | .09640 | -.03900 | .18690 | .00680 | .00750 | .00540 | .00130 |
| 4.950 | 9.730 | .10420 | -.01340 | -.35650 | .12130 | -.04870 | .19210 | .00670 | .00740 | .00520 | .00130 |
| | GRADIENT | -.00072 | .00021 | -.03213 | .01030 | -.00449 | .00024 | .00000 | .00003 | .00003 | -.00000 |

MSFC , 70(IAABF) (CB4) (T9) (S12) (PT4) (PR4) (A84006) ( 2/ NOV /5 )

REFERENCE DATA

PARAMETRIC DATA

| | | | | | |
|---|---|---|---|---|---|
| SREF = | 9.1000 SQ.IN. | XBRP = | 2.6000 IN. | ALPHA = | .000 ORBINC = .000 |
| LREF = | 9.1600 IN. | YBRP = | .0000 IN. | DELTAZ = | 333.000 |
| BREF = | 9.1600 IN. | ZBRP = | .0000 IN. | | |
| SCALE = | .0040 | | | | |

RUN NO. // 0 RN/L = 5.73 GRADIENT INTERVAL = -8.00/ 8.00

| MACH | BETA | CN | CLN | CY | CYN | CBL | CAF | CABO | CABF | CABS | CABF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| .600 | -10.180 | -.06660 | .01680 | .44720 | -.15010 | .06640 | .01960 | .04370 | .08480 | .09650 | .01890 |
| .600 | -8.210 | -.07190 | .02100 | .35060 | -.12380 | .06400 | .02780 | .04040 | .08260 | .09620 | .01800 |
| .600 | -6.170 | -.07800 | .02580 | .26070 | -.09870 | .03060 | .03640 | .03670 | .07740 | .09280 | .01080 |
| .600 | -4.100 | -.07740 | .02710 | .16870 | -.09570 | .02330 | .04090 | .03440 | .07490 | .08120 | .01080 |
| .600 | -2.040 | -.08480 | .03290 | .07700 | -.08460 | .00890 | .05800 | .03330 | .07250 | .04960 | .01100 |
| .600 | .000 | -.08080 | .03540 | -.01630 | .00860 | -.00430 | .04830 | .03330 | .07320 | .04770 | .01080 |
| .600 | 2.060 | -.08080 | .03420 | -.10080 | .04060 | -.01890 | .06020 | .03290 | .07260 | .04660 | .01070 |
| .600 | 4.110 | -.08170 | .02900 | -.20000 | .07160 | -.03320 | .09080 | .03360 | .07820 | .04760 | .01060 |
| .600 | 6.160 | -.07780 | .02570 | -.29190 | .10980 | -.04790 | .04610 | .03420 | .08010 | .04660 | .01070 |
| .600 | 8.220 | -.07180 | .02200 | -.38580 | .13970 | -.06190 | .04120 | .03720 | .08150 | .04750 | .01140 |
| .600 | 10.180 | -.06870 | .01730 | -.46080 | .16030 | -.07340 | .03850 | .04000 | .08260 | .04530 | .01230 |
| | GRADIENT | -.00056 | .00028 | -.04504 | .01559 | -.00601 | .00024 | -.00019 | .00033 | -.00050 | -.00003 |

RUN NO. 6/ 0 RN/L = 11.38 GRADIENT INTERVAL = -9.00/ 9.00

| MACH | BETA | CN | CLN | CY | CYN | CBL | CAF | CABO | CABE | CABS | CABF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| .904 | -10.400 | -.00680 | -.02370 | .48290 | -.16660 | .07050 | .06140 | .04830 | .08990 | .09840 | .01540 |
| .904 | -8.400 | .00830 | -.03300 | .38130 | -.13830 | .05780 | .07560 | .04440 | .08320 | .09580 | .01440 |
| .904 | -6.290 | .01730 | -.04220 | .28910 | -.10110 | .04170 | .08660 | .04160 | .08080 | .09290 | .01310 |
| .904 | -4.180 | .02010 | -.04740 | .19190 | -.06380 | .02550 | .09460 | .03960 | .07840 | .04980 | .01250 |
| .904 | -2.080 | .01680 | -.04930 | .07720 | -.02460 | .00860 | .10360 | .03790 | .07360 | .04640 | .01180 |
| .904 | .010 | .01510 | -.04300 | -.01790 | .00800 | -.00680 | .10470 | .03720 | .07410 | .04530 | .01190 |
| .904 | 2.110 | .01380 | -.04190 | -.11780 | .04360 | -.02240 | .10950 | .03650 | .07550 | .04340 | .01170 |
| .904 | 4.200 | .00070 | -.03970 | -.22050 | .08370 | -.03960 | .10730 | .03760 | .07940 | .04320 | .01220 |
| .904 | 6.300 | -.00230 | -.02950 | -.32300 | .12110 | -.05490 | .10300 | .03990 | .08320 | .04290 | .01290 |
| .904 | 8.410 | -.01730 | -.01480 | -.42240 | .15150 | -.06830 | .09840 | .04320 | .08720 | .04240 | .01400 |
| .904 | 10.480 | -.01980 | -.00880 | -.52240 | .18080 | -.08170 | .09220 | .04780 | .09210 | .04160 | .01490 |
| | GRADIENT | -.00202 | .00149 | -.04770 | .01728 | -.00768 | .00149 | -.00026 | .00019 | -.00077 | -.00004 |

MSFC 500(IA68F) (CB4) (T8) (S12) (PT4) (FB4) (AB4CBb) ( 27 NOV 73 )

REFERENCE DATA

SREF = 0.1900 SQ.IN. XMRP = 2.6800 IN.
LREF = 0.1600 IN. YMRP = .0000 IN.
BREF = 0.1600 IN. ZMRP = .0000 IN.
SCALE = .0040

PARAMETRIC DATA

ALPHA = .000 ORBINC = .000
DELTAZ = 355.000

RUN NO. 3/ 0 RN/L = 23.56 GRADIENT INTERVAL = -9.00/ 9.00

| MACH | BETA | CN | CLN | CY | CYN | CBL | CAF | CABO | CABE | CABS | CABF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.197 | -10.080 | .08080 | -.04080 | .54780 | -.18040 | .08810 | .19080 | .08640 | .08970 | .07480 | .01680 |
| 1.197 | -8.070 | .08080 | -.04080 | .43180 | -.14080 | .07080 | .20080 | .08470 | .08840 | .07860 | .01630 |
| 1.197 | -6.080 | .08080 | -.04080 | .31640 | -.10480 | .08860 | .21180 | .09330 | .08860 | .07040 | .01570 |
| 1.197 | -4.060 | .08440 | -.03080 | .20080 | -.06480 | .08880 | .21910 | .09100 | .08630 | .06830 | .01520 |
| 1.197 | -2.120 | .08480 | -.03810 | .09670 | -.03080 | .01340 | .21860 | .09000 | .08360 | .06600 | .01480 |
| 1.197 | .000 | .08890 | -.03310 | -.01180 | .00870 | -.00870 | .22370 | .04080 | .08340 | .06410 | .01420 |
| 1.197 | 2.130 | .08880 | -.03440 | -.11780 | .04960 | -.03940 | .22960 | .04080 | .08910 | .06330 | .01490 |
| 1.197 | 4.060 | .08830 | -.03480 | -.22380 | .08090 | -.04820 | .22900 | .09100 | .08080 | .06370 | .01520 |
| 1.197 | 6.410 | .08940 | -.03880 | -.33600 | .11810 | -.06410 | .22940 | .09260 | .08190 | .06280 | .01560 |
| 1.197 | 8.060 | .08380 | -.03870 | -.49160 | .19280 | -.08830 | .22330 | .09300 | .08400 | .06220 | .01640 |
| 1.197 | 10.080 | .08180 | -.03870 | -.57160 | .19280 | -.08940 | .21890 | .09710 | .08670 | .06140 | .01680 |
| | GRADIENT | -.00090 | .00082 | -.08027 | .01746 | -.02016 | .00126 | -.00005 | .00029 | -.00056 | -.00001 |

RUN NO. 4/ 0 RN/L = 30.01 GRADIENT INTERVAL = -9.00/ 9.00

| MACH | BETA | CN | CLN | CY | CYN | CBL | CAF | CABO | CABE | CABS | CABF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 4.000 | -10.060 | -.12380 | .06670 | .30080 | -.13080 | .04740 | .22260 | .00180 | .00740 | .00480 | .00130 |
| 4.000 | -8.130 | -.12780 | .06840 | .30860 | -.10800 | .03760 | .21600 | .00380 | .00750 | .00480 | .00130 |
| 4.000 | -6.100 | -.12080 | .06840 | .22980 | -.07810 | .08840 | .21120 | .00470 | .00750 | .00810 | .00130 |
| 4.000 | -4.060 | -.12880 | .06880 | .15150 | -.04080 | .01870 | .20800 | .00910 | .00780 | .00820 | .00140 |
| 4.000 | -2.080 | -.12080 | .06880 | .07770 | -.02280 | .00880 | .20670 | .00830 | .00780 | .00850 | .00140 |
| 4.000 | .000 | -.12160 | .06720 | .00880 | .00080 | .00060 | .20710 | .00940 | .00780 | .00960 | .00140 |
| 4.000 | 2.080 | -.11980 | .06700 | -.06870 | .02980 | -.00810 | .20330 | .00960 | .00780 | .00960 | .00140 |
| 4.000 | 4.060 | -.12130 | .06710 | -.14960 | .04880 | -.01910 | .20680 | .00570 | .00800 | .00970 | .00150 |
| 4.000 | 6.110 | -.12670 | .06860 | -.22130 | .07440 | -.02850 | .20880 | .00580 | .00780 | .00960 | .00140 |
| 4.000 | 8.120 | -.12440 | .06840 | -.30470 | .10410 | -.03840 | .21380 | .00580 | .00770 | .00970 | .00140 |
| 4.000 | 10.070 | -.12940 | .06850 | -.38410 | .13380 | -.04800 | .21760 | .00600 | .00780 | .00930 | .00140 |
| | GRADIENT | .00016 | .00025 | -.08689 | .01201 | -.00466 | -.00034 | .00007 | .00001 | .00005 | -.00000 |