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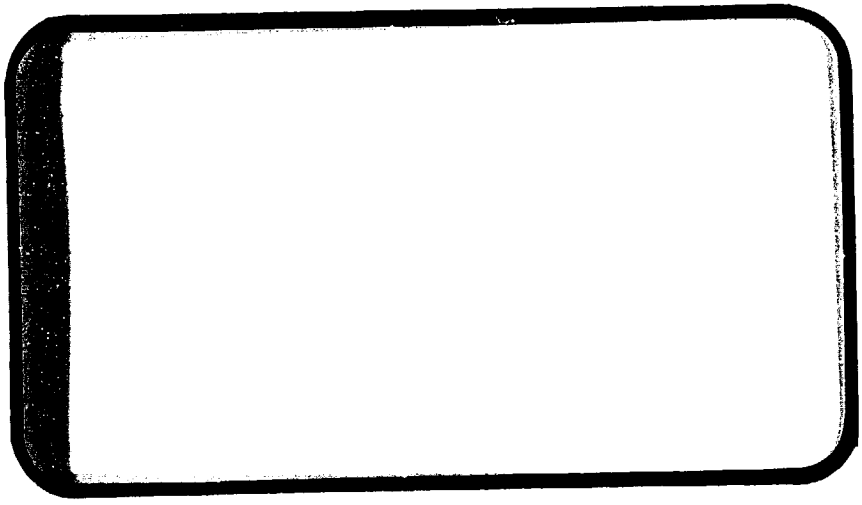
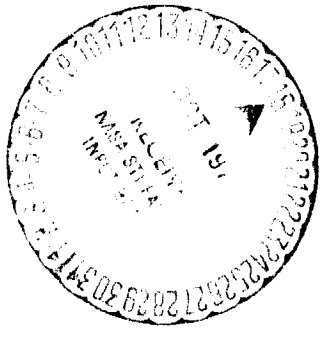


SPACE SHUTTLE

AEROTHERMODYNAMIC DATA REPORT



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EFFECT OF ENGINE SHROUD CONFIGURATION ON THE STATIC AERODYNAMIC CHARACTERISTICS OF A 0.00563 SCALE 142-INCH DIAMETER SOLID ROCKET BOOSTER (SA10F)

By

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Prepared under NASA Contract Number NAS9-13247

by

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Chrysler Corporation Space Division
New Orleans, La. 70189

for

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Johnson Space Center
National Aeronautics and Space Administration
Houston, Texas

WIND TUNNEL TEST SPECIFICS:

Test Number:	MSFC TWT 578
NASA Series No.:	SA10F
Occupancy Hours:	128
Test Date:	September 13 - October 2, 1973

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EFFECT OF ENGINE SHROUD CONFIGURATION ON THE STATIC AERODYNAMIC CHARACTERISTICS OF A 0.00563 SCALE 142-INCH DIAMETER SOLID ROCKET BOOSTER

(SA10F)

By J. D. Johnson* and W. F. Braddock**

ABSTRACT

A test of a 0.563 percent scale Space Shuttle Solid Rocket Booster (SRB) model, MSFC Model 449, was conducted at the Marshall Space Flight Center 14 x 14 inch Trisonic Wind Tunnel. This test, TWT-578 (NASA Series No. SA10F) occupied the tunnel for 128 hours during September and October 1973. There were 273 runs (pitch polars) made. Test Mach numbers were 0.4, 0.6, 0.9, 1.2, 1.96, 3.48, 4.0, 4.45, and 4.96; test angles-of-attack ranged from -10 degrees to 190 degrees; test Reynolds numbers ranged from 3.0 million per foot to 8.6 million per foot; and test roll angles were 0, 11.25, 22.5, 45, and 90 degrees. In addition to the static stability evaluation of the primary SRB configuration, five parametric investigations were made:

- o Effect of Reynolds number.
- o Effect of engine shroud flare angle.
- o Effect of engine shroud length.
- o Effect of engine shroud strakes.
- o Effect of engine shroud strakes and trust vector control bottles.

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** NSI

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(B) CNM, CLMM, CA, XCP/L VS. ALPHA.

NOMENCLATURE

SYMBOL	PLOT SYMBOL	DEFINITION	UNITS
A_{b_1}		base area of nozzle	
A_{b_2}		exposed base area of shroud, i.e., base area of shroud less base area of nozzle	
b_{ref}	BREF	reference span (diameter of the cylindrical section of the model)	in.
ℓ_{body}		length of the body	in.
ℓ_{ref}	LREF	reference length (diameter of the cylindrical section of the model)	in.
M		Mach number	
P_{b_i}		base pressures	psi
P_t		free stream total pressure	psi
P_∞		free stream static pressure	psi
q_∞		free stream dynamic pressure	psi
R_N		Reynolds number based on ℓ_{ref}	
R_N/ft	RN	Reynolds number per unit length	
S_{ref}	SREF	reference area (cross sectional area of the cylindrical section of the model)	$in.^2$
T_t		tunnel total temperature	^oF
X,Y,Z		body axes system coordinates (for an airplane, the X, Z-plane is the plane of symmetry, the origin of the axes system is the center of gravity or any other convenient point, and the X axis is the airplane longitudinal axis)	
$X_{c.g.}$		distance of center of gravity from nose of SRB (56.69% of ℓ_{body})	in.

NOMENCLATURE (CONTINUED)

SYMBOL	PLOT SYMBOL	DEFINITION	UNITS
X_m, Y_m, Z_m		missile axes (see text)	
XMRP, YMRP, ZMRP	XMRP, YMRP, ZMRP	Abbreviations for the location of the moment reference point in the missile axis system	in.
α_T	ALPHA	angle-of-attack, angle between the X_m-axis and a vector in the direction of the air flow	degrees
ϕ	PHI	roll angle, i.e., angle between the missile Y_m-axis and the body Y-axis (from a pilot's viewpoint in an airplane, a positive roll angle is a clockwise rotation). The parameter name describes the particular protuberance angular location in the degrees (see figures 5 and 6)	degrees
C_A		total axial force coefficient in the body axis system	
C_{A_b}		base axial force coefficient (same in both missile and body axis systems)	
C_{A_m}	CA	total axial force coefficient in the missile axis system, $F_{A_m}/q_\infty S_{ref}$	
C_ℓ		rolling moment coefficient in the body axis system	
C_{ℓ_m}	CBL	rolling moment coefficient in the missile axis system, $M_{X_m}/q_\infty S_{ref} \ell_{ref}$	
C_m		pitching moment coefficient in the body axis system	
C_{m_m}	CLMM	pitching moment coefficient in the missile axis system, $M_{Y_m}/q_\infty S_{ref} \ell_{ref}$	
C_N		normal force coefficient in the body axis system	

NOMENCLATURE (CONTINUED)

SYMBOL	PLOT SYMBOL	DEFINITION	UNITS
C_{N_m}	CNM	normal force coefficient in the missile axis system, $F_{N_m}/q_\infty S_{ref}$	
C_n		yawing moment coefficient in the body axis system	
C_{n_m}	CYNM	yawing moment coefficient in the missile axis system, $M_{Z_m}/q_\infty S_{ref} \ell_{ref}$	
$C_{P_{bi}}$		base pressure coefficient; $\frac{P_{bi}-P_\infty}{q_\infty}$	
C_Y		side force coefficient in the body axis system	
C_{Y_m}	CYM	side force coefficient in the missile axis system, $F_{Y_m}/q_\infty S_{ref}$	
X_{cp}/ℓ	XCP/L	center of pressure location in fraction of body length from nose; $\frac{X_{c.g.}}{\ell_{body}} - \frac{C_{m_m}}{C_{N_m}} \frac{\ell_{ref}}{\ell_{body}}$	
F_{Y_m}		side force in the missile axis system, positive in the positive direction of Y_m	lb
F_{A_m}		total axial force in the missile axis system, positive in the negative direction of X_m	lb
F_{N_m}		normal force in the missile axis system, positive in the negative direction of Z_m	lb
M_{X_m}		rolling moment in the missile axis system, i.e., moment about the X_m-axis (a positive rolling moment tends to rotate the positive Y_m-axis toward the positive Z_m-axis	in.-lb

NOMENCLATURE (Continued)

SYMBOL	PLOT SYMBOL	DEFINITION	UNITS
M_{Y_m}		pitching moment in the missile axis system; i.e., moment about the Y_m- axis (a positive pitching moment tends to rotate the positive Z_m- axis toward the positive X_m- axis)	in.-lb.
M_{Z_m}		yawing moment in the missile axis system; i.e., moment about the Z_m-axis (a positive yawing moment tends to rotate the positive X_m-axis toward the positive Y_m- axis)	in.-lb.

SUBSCRIPTS

b	base
c.g.	center of gravity
i	identifies the location of the base pressure measurements
m	missile axis system
ref	reference conditions
t	total conditions
∞	free stream conditions

PARAMETER NAME	DESCRIPTION
FWDSTK	parameter name describing the forward strake on the body; number in front of decimal is the number of strakes. Number after decimal is the length of the strake in calibers.
AFTSTK	parameter name describing the aft strake on the body; number in front of decimal is the number of strakes. Number after decimal is the length of the strake in calibers.

NOMENCLATURE (CONCLUDED)

PARAMETER NAME	DESCRIPTION
SHDSTK	parameter name describing the shroud strakes. A number indicates the presence of eight strakes. Number 0.000 indicates no strakes.
ATHRNG	parameter name describing the attachment ring. A number indicates the presence of the ring.
ATHS	parameter name describing attachment hardware. A number indicates the presence of attachment hardware.
CONFIG	configuration code (see Table 4).

NOTE: Strakes on shroud are used to change longitudinal trim point.

INTRODUCTION

The wind tunnel test described herein is a continuation of a series of tests conducted to evaluate the static aerodynamic stability of a Space Shuttle Solid Rocket Booster (SRB). These tests, described in References 1, 2, 3, and 4, were designed to simulate free-fall conditions of the SRB's after separation from the shuttle launch configuration.

In addition to an evaluation of the primary SRB configuration (less electrical tunnel and forward attachment hardware), five parametric investigations were made:

- o Effect of Reynolds number.
- o Effect of engine shroud flare angle.
- o Effect of engine shroud length.
- o Effect of engine shroud strakes.
- o Effect of engine shroud strakes and thrust vector control bottles.

Test Mach numbers were 0.4, 0.6, 0.9, 1.2, 1.96, 3.48, 4.0, 4.45, and 4.96; test angles-of-attack ranged from -10 degrees to 190 degrees; test Reynolds numbers ranged from 3.0 million per foot to 8.6 million per foot; and test roll angles were 0, 11.25, 22.5, 45, and 90 degrees.

MODEL AND SUPPORT HARDWARE

Model Description

The model, MSFC model 449, is a 0.563 percent scale model of a 142-inch diameter SRB. Details of this stainless steel model are presented in Table 1 and Figures 2, 3, 4, 5, and 6. Figure 2 presents the dimensions of the major geometric body segments and the attachment ring. The attachment ring was a scaled representation of a structure used to attach the SRB to the Space Shuttle External Tank. The attachment ring was affixed to the model throughout the wind tunnel test.

Figure 3 presents the dimensions of five of the six different nozzle/shroud sections used during this test. Figure 4 presents the sixth. These figures also present the dimensions and location of the throat plug. Each nozzle/shroud had a different combination of shroud angle and shroud length. They were used to investigate the effects of these differences on the static stability characteristics of the SRB. The plug was used to close the throat opening during runs where the model was not mounted on a tail sting.

Figure 5 presents the dimensions, location and roll sign convention, of eight engine shroud strakes. These strakes are scaled representations of small protuberances considered for use on the SRBs. They were used on the model only during selected parts of the test.

Figure 6 presents the dimensions, location and roll sign convention of three Thrust Vector Control (TVC) bottles. During the parts of the

test that these bottles were used on the model, the shroud strakes were also affixed and the three bottles replaced three of the eight strakes.

The model parts were given symbols to aid in identification of test configurations. These symbols are:

N	nose
B	body with attachment ring
E_1	Engine nozzle with 93 inch, 15°03' shroud
E_2	Engine nozzle with 93 inch, 18°03' shroud
E_3	Engine nozzle with 93 inch, 21°03' shroud
E_4	Engine nozzle with 113 inch, 15°03' shroud
E_5	Engine nozzle with 133 inch, 15°03' shroud
E_6	Engine nozzle with 177 inch, 18°17' shroud (identified in TWT 572 as E_2). ATHRNG AFT with E_6 indicates that the attachment ring was 7.868 inches from nose.
S	Shroud strakes (eight equally spaced)
TVC	Thrust vector control bottles

Figure 7 is a photograph of the model parts, except E_6, that were tested. Note that the object under the upper body was placed there to keep the body from rolling while the photograph was taken. It is not attached to the body. Some significant features of the design and construction of this model are as follows:

- The model was made in three major sections: nose, body, and engine.
- Nose and engine can be switched end for end in order to test at angles-of-attack above 90 degrees.

- There are two cylindrical bodies. One is a solid cylinder and is used for a sting adapter mounted from the end. The other is made in two parts with an opening in the side so that it can be fitted around a side mount.
- Both bodies are mounted in the same position relative to the balance and maintain that position when the nose and tail are switched end for end.
- The attachment ring, which was affixed to the body throughout this test, has mounting locations on both ends of both bodies so that it can maintain its position relative to the nose and engine.
- A slotted ring was necessary for certain side mount cases.
- Roll angles were accomplished by mounting the engine section at different angles of rotation. (The only non-axisymmetric protuberances used during this test were affixed to this section). The sign convention for roll angles is shown in Figures 5 and 6.
- Each engine section had a sting cavity through the center of its nozzle. This 0.625 inch diameter hole was closed with a plug whenever the model was not tail mounted.
- There were two noses. One was complete and the other had a 0.625 inch diameter hole through its center. This hole was necessary for sting passage when the model was nose mounted.

Figures 8 and 9 are photographs of typical end and side mount tunnel installations.

Support Hardware Description

Seven pieces of the MSFC double knuckle sting were used during this test:

- o Sting adapter no. 1
- o Sting adapter no. 3
- o Sting no. 1
- o Sting no. 3
- o Balance adapter no. 113
- o Balance adapter no. 118
- o Balance adapter extension no. 80M42509

Table 2 lists all the useful combinations of these support hardware pieces and their associated angles-of-attack. Those that were used during this test are indicated.

The "sting adapters" (Figure 10) adapted the stings to the model support system of the test facility.

Using different mounting hold combinations, the "stings" (Figure 11) are adjustable in angle relative to both the sting adapters and the balance adapters.

The "balance adapters" (Figures 12 and 13) connect the balance to the sting; No. 113 is a straight adapter and No. 118 (referred to as MSFC "sting" No. 118) has a 90 degree offset. When the straight adapter was used ($-10 \leq \alpha \leq 50$ degrees and $130 \leq \alpha \leq 190$ degrees), a one inch "balance adapter extension" (Figure 14) was used for proper tunnel position and adequate base clearance.

Typical installations of the support hardware are shown in Figures 15 and 16. Typical model and support hardware combinations are shown in Figures 17 and 18.

CONFIGURATIONS INVESTIGATED

The run schedule, i.e., data set collation sheet, for this test, MSFC TWT-578, is shown in Table 3. This table contains the data set collation identifiers for the test and identifies the nominal conditions at which various configurations were tested. These conditions are angle-of-attack (α), roll angle (ϕ), and Mach number. Table 4 presents a summary of Table 3. Table 4 also lists the collective data set identifiers (several angle-of-attack ranges grouped together) and the configuration numbers, which were assigned each case and are used in identification of the plots.

Configuration NBE_1 (Configuration #1) was a 0.563 percent scale model of a 142-inch diameter SRB configuration minus electrical tunnel and nose attachment hardware. Configurations NBE_2 (#2) and NBE_3 (#3) were designed by increasing the shroud flare angle of NBE_1 by 3 and 6 degrees, respectively. The shroud length was kept the same as NBE_1 (Figure 3).

Configurations NBE_4 (#4) and NBE_5 (#5) were designed by increasing the shroud length of NBE_1 by 20 to 40 inches, respectively (full scale). For these two configurations, the shroud flare angle was kept the same as NBE_1 (Figure 3).

Configurations NBE_1S (#6) was made by adding eight strakes equally spaced around the engine shroud of NBE_1 (Figure 5).

Configuration NBE_1TVCS (#7) was made from NBE_1S by replacing three of the strakes with Thrust Vector Control bottles. The bottles are positioned 90 degrees apart (Figure 6).

Two additional configurations (NBE_6 and NBE_6ATHRNG AFT) were tested to provide data for comparison with data from a previous test (Reference 4). Data from tests of these two configurations are not plotted; therefore, these configurations are not listed in Table 4.

With the exception of six runs, the complete test was made with No. 100 silicon carbide grit randomly applied over the areas shown in Figure 19.

To investigate the effect of Reynolds number on the cross flow around the cylindrical SRB body, eight runs were made with configuration NBE_1 at $80 \leq \alpha \leq 100$ degrees (Data Set Identifiers R91R11, R91R12, R91R21, and R91R22). As can be noted in Table 3, the model was tested at all combinations of the following parameters:

- Maximum and minimum Reynolds number obtainable in the tunnel.
- Mach numbers of 0.4 and 0.6
- With and without the No. 100 silicon carbide grit.

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 using two interchangeable test sections. The transonic section permits testing at Mach 0.20 through 2.50 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.

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 ACQUISITION AND REDUCTION

The parameters measured and recorded during this test were:

- o Wind tunnel conditions (P_∞, P_t, T_∞)
- o Six-component force and moment data
- o Sting attitude
- o Base pressure ($-10 \leq \alpha \leq 50$ degrees only)

Tunnel conditions were used to calculate the Mach number, the dynamic pressure, and the Reynolds number; the six-component force and moment data were used to calculate static stability coefficients; the sting attitude, nominal model attitude, and deflection calibrations were used to calculate the model angle-of-attack; and the base pressures were used to calculate base pressure coefficients.

Base pressures were recorded only over the angle-of-attack range from -10 to 50 degrees; i.e., only when the model was on a tail-mounted sting. Figure 20 shows the location of the pressure tubes. A tabulation of the base pressure coefficients ($C_{P_{bi}}$) are included in the appendix to this report. Zeroes are listed where base pressures were not recorded.

As stated above, the six-component force and moment data were used to calculate six-component static stability coefficients. These data were measured with MSFC Balance #237. The rated capacities of this balance are listed in Table 5. The six coefficients, C_{A_m}, C_{ℓ_m}, C_{m_m}, C_{N_m}, C_{n_m}, and C_{Y_m}, are coefficients in the missile axis system.

Parameter	Full Scale	Model Scale
Moment Reference Center (from body nose)		
*XMRP	986.97 in.	5.557 in.
YMRP	0	0
ZMRP	0	0

The force and moment data were corrected for model weight tares but tunnel flow angularity was assumed to be zero.

Reference data used to reduce the data to coefficient form are as follows:

S_{ref} = 0.5030 SQ. IN.

ℓ_{ref} = 0.800 IN.

b_{ref} = 0.800 IN.

*Note: XMRP (56.69% of body length, measured from nose tip)

DATA PRESENTATION

Data are presented in two forms: (1) stability coefficients and center of pressure location are plotted as a function of angle-of-attack and (2) data tables are presented that include six stability coefficients, two base pressure coefficients, tunnel flow conditions, and model attitude (angle-of-attack and roll angle).

Data Plots

The plots of the stability coefficients are presented in the following groups:

- Stability Characteristics of SRB (Basic Engine Shroud, E_1)
- Effects of Reynolds Number (With and Without Transition Grit)
- Effect of Engine Shroud Flare Angle
- Effect of Engine Shroud Length
- Effect of Strakes
- Effect of TVC

Configuration NBE_1 was a scaled model of a 142-inch diameter SRB except for the absence of the electrical tunnel and forward attachment hardware. Data from tests of this configuration are shown on all plots as the basis for comparison. For each investigation, Table 6 presents the coefficients which are plotted and the Mach numbers for which data are available.

Data Tables

Data tables, identified as tabulated source data in the Appendix, are presented for each of the 273 runs that were made during this test. They are presented in the order of data set number. Each table contains a listing of the six static aerodynamic stability coefficients. Two base pressure coefficients ($C_{P_{b_1}}$) are listed. Values appear for those runs that had base pressures recorded and zeroes appear for those runs that did not. Each table also includes information that describes the model configuration, the model attitude, the tunnel flow conditions, and model reference dimensions.

If base axial force coefficients are desired, the equation to be used is:

$$C_{A_b} = -\frac{C_{P_{b_1}} A_{b_1}}{S_{ref}} - \frac{C_{P_{b_2}} A_{b_2}}{S_{ref}}$$

The base areas for each of the engine nozzle/shrouds are as follows:

ENGINE	A_{b_1}	A_{b_2}
E_1	0.500 sq.in.	0.419 sq.in.
E_2	0.500	0.524
E_3	0.500	0.637
E_4	0.500	0.524
E_5	0.500	0.637
E_6	0.793	0.879

REFERENCES

1. NASA CR-120, 056 (DMS-DR-1253), "Aerodynamic Characteristics of a 156-Inch Solid Rocket Motor at Angles of Attack from -10° to 190°", Buchholz, R. E., Elder, D. J.; August 1972.

2. NASA CR-120, 090 (DMS-DR-2012), "Aerodynamic Characteristics of a 162-Inch Diameter Solid Rocket Booster with and without Strakes", Radford, W. D., Johnson, J. D., Rampy, J. M.; March 1973.

3. NASA CR-128, 767 (DMS-DR-2025), "Aerodynamic Characteristics of a 142-Inch Solid Rocket Booster with and without Strakes", Radford, W. D., Johnson, J. D.; May 1973.

4. NASA CR-128, 774 (DMS-DR-2051), "Aerodynamic Characteristics of a 142-Inch Diameter Solid Rocket Booster (Configurations 89B and 139)", Radford, W. D., Johnson, J. D.; August 1973.

Table 1.
MODEL DIMENSIONAL DATA

MODEL COMPONENT: Nose-N

GENERAL DESCRIPTION: 142 inch SRB nose, cone angle is 18° with a spherical radius nose cap. (The nose was cut to allow for sting mounting when angle-of-attack exceeded 130°).

DRAWING NUMBER:

DIMENSIONS:	THEORETICAL FULL-SCALE	THEORETICAL MODEL SCALE	ACTUAL MEASURED MODEL SCALE
Length	188.0 in.	1.059 in.	
Max. Width	142 in.	0.8 in.	
Max. Depth	142 in.	0.8 in.	
Fineness Ratio	1.32	1.32	
Area			
Max. Cross-Sectional	109.98 ft^2	0.503 $in.^2$	
Planform			
Wetted			
Base	109.98 ft^2	0.503 $in.^2$	
Length When Drilled for Sting Mounting (see Figure 2)		0.271 in.	

Table 1. (Continued)

MODEL COMPONENT: BODY - B

GENERAL DESCRIPTION: 142 inch diameter SRB body (this body was cut on its side for sting mounting for angles-of-attack from 50° to 130°)

DRAWING NUMBER: 80M32577, 80M32579, 80M42619

DIMENSIONS:	THEORETICAL		ACTUAL MEASURED
	FULL-SCALE	MODEL SCALE	MODEL SCALE
Length	1407.8 in.	7.931 in.	
Max. Width	142 in.	0.8 in.	
Max. Depth	142 in.	0.8 in.	
Fineness Ratio			
Area			
Max. Cross-Sectional	109.98 ft^2	0.503 $in.^2$	
Planform			
Wetted			
Base	109.98 ft^2	0.503 $in.^2$	

Table 1. (Continued)

MODEL COMPONENT: ENGINE SHROUD/NOZZLE - E_1

GENERAL DESCRIPTION: 142 inch diameter SRB engine shroud/nozzle combination. Both are symmetrical with the SRB body and were cut to allow for sting mounting for angles-of-attack -10 to 50°. The model was hollowed to simulate full scale.

DRAWING NUMBER: 80M42583

	THEORETICAL		ACTUAL MEASURED
DIMENSIONS:	FULL-SCALE	MODEL SCALE	MODEL SCALE
Engine Shroud			
Flare Angle	15°03'	15°03'	
Length	93 in.	0.524 in.	
Max. Width	192 in.	1.082 in.	
Max. Depth	192 in.	1.082 in.	
Max. Cross Sectional Area	201.1 ft^2	.920 $in.^2$	
Engine Nozzle			
Length	52.2 in.	0.294 in.	
Max. Width	141.6 in.	0.798 in.	
Max. Depth	141.6 in.	0.798 in.	
Base Area	109.52 ft^2	0.500 $in.^2$	

Table 1. (Continued)

MODEL COMPONENT: ENGINE SHROUD/NOZZLE - E_2

GENERAL DESCRIPTION: 142 inch diameter SRB engine shroud/nozzle combination. Both are symmetrical with the SRB body and were cut to allow for sting mounting for angles-of-attack -10 to 50°. The model was hollowed to simulate full scale.

DRAWING NUMBER: 80M42636

	THEORETICAL		ACTUAL MEASURED
DIMENSIONS:	FULL-SCALE	MODEL SCALE	MODEL SCALE
Engine Shroud			
Flare Angle	18°03'	18°03'	
Length	93 in.	0.524 in.	
Max. Width	202.7 in.	1.142 in.	
Max. Depth	202.7 in.	1.142 in.	
Max. Cross Sectional Area	224.1 ft^2	1.024 $in.^2$	
Engine Nozzle			
Length	52.2 in.	0.294 in.	
Max. Width	141.6 in.	0.798 in.	
Max. Depth	141.6 in.	0.798 in.	
Base Area	109.52 ft^2	0.500 $in.^2$	

Table 1. (Continued)

MODEL COMPONENT: ENGINE SHROUD/NOZZLE - E_3

GENERAL DESCRIPTION: 142 inch diameter SRB engine shroud/nozzle combination. Both are symmetrical with the SRB body and were cut to allow for sting mounting for angles-of-attack -10 to 50°. The model was hollowed to simulate full scale.

DRAWING NUMBER: 80M42636

DIMENSIONS:	THEORETICAL FULL-SCALE	THEORETICAL MODEL SCALE	ACTUAL MEASURED MODEL SCALE
Engine Shroud			
Flare Angle	21°03'	21°03'	
Length	93 in.	0.524 in.	
Max. Width	213.5 in.	1.203 in.	
Max. Depth	213.5 in.	1.203 in.	
Max. Cross Sectional Area	248.7 ft^2	1.137 $in.^2$	
Engine Nozzle			
Length	52.2 in.	0.294 in.	
Max. Width	141.6 in.	0.798 in.	
Max. Depth	141.6 in.	0.798 in.	
Base Area	109.52 ft^2	0.500 in.	

Table 1. (Continued)

MODEL COMPONENT: ENGINE SHROUD/NOZZLE - E_4

GENERAL DESCRIPTION: 142 inch diameter SRB engine shroud/nozzle combination. Both are symmetrical with the SRB body and were cut to allow for sting mounting for angles-of-attack -10 to 50°. The model was hollowed to simulate full scale.

DRAWING NUMBER: 80M42636

DIMENSIONS:	THEORETICAL FULL-SCALE	THEORETICAL MODEL SCALE	ACTUAL MEASURED MODEL SCALE
Engine Shroud			
Flare Angle	15°03'	15°03'	
Length	113 in.	0.636 in.	
Max. Width	202.7 in.	1.142 in.	
Max. Depth	202.7 in.	1.142 in.	
Max. Cross Sectional Area	224.1 ft^2	1.024 $in.^2$	
Engine Nozzle			
Length	32.2 in.	0.182 in.	
Max. Width	141.6 in.	0.798 in.	
Max. Depth	141.6 in.	0.798 in.	
Base Area	109.52 ft^2	0.500 $in.^2$	

Table 1. (Continued)

MODEL COMPONENT: ENGINE SHROUD/NOZZLE - E_5

GENERAL DESCRIPTION: 142 inch diameter SRB engine shroud/nozzle combination. Both are symmetrical with the SRB body and were cut to allow for sting mounting for angles-of-attack -10 to 50°. The model was hollowed to simulate full scale.

DRAWING NUMBER: 80M42636

DIMENSIONS:	THEORETICAL FULL-SCALE	THEORETICAL MODEL SCALE	ACTUAL MEASURED MODEL SCALE
Engine Shroud			
Flare Angle	15°03'	15°03'	
Length	133 in.	0.749 in.	
Max. Width	213.5 in.	1.203 in.	
Max. Depth	213.5 in.	1.203 in.	
Max. Cross Sectional Area	248.7 ft^2	1.137 $in.^2$	
Engine Nozzle			
Length	12.2 in.	0.069 in.	
Max. Width	141.6 in.	0.798 in.	
Max. Depth	141.6 in.	0.798 in.	
Base Area	109.52 ft^2	0.500 $in.^2$	

Table 1. (Continued)

MODEL COMPONENT: Engine/Shroud - E_6

GENERAL DESCRIPTION: 142 inch diameter SRB engine shroud/nozzle combination for configuration 89B. Both are symmetrical with SRB body and were cut to allow for sting mounting for angle of attack -10° to 50°. This model was hollowed to simulate full scale.

DRAWING NUMBER: MSFC 80M51303

DIMENSIONS:	FULL SCALE	MODEL SCALE
Engine Shroud		
Flare Angle	18°17'	18°17'
Length	177 in.	0.997 in.
Max Width	259 in.	1.459 in.
Max Depth	259 in.	1.459 in.
Max Cross-Sectional Area	365.68 ft^2	1.672 $in.^2$
Engine Nozzle		
Length	26 in.	0.146 in.
Max Width	178.5 in.	1.005 in.
Max Depth	178.5 in.	1.005 in.
Base Area	173.89 ft^2	0.793 $in.^2$

Table 1. (Continued)

MODEL COMPONENT: Attachment Ring - R

GENERAL DESCRIPTION: An attachment ring (used to attach SRB to ET) is located 1.127 inches model scale (200 inches full scale) forward of the shroud flare.

DRAWING NUMBER:

DIMENSIONS:	THEORETICAL		ACTUAL MEASURED
	FULL-SCALE	MODEL SCALE	MODEL SCALE
Length			
Max. Width	10.3 in.	0.058 in.	
Max. Depth	10.6 in.	0.059 in.	
Fineness Ratio			
Area			
Max. Cross-Sectional			
Planform			
Wetted			
Base			

Table 1. (Continued)

MODEL COMPONENT: Strakes - S

GENERAL DESCRIPTION: The strakes extend lengthwise with the leading end at the forward edge of the shroud flare and the trailing end at the trailing edge of the shroud. There are eight strakes equally spaces around the shroud and designed to fit only E_1.

DRAWING NUMBER: 80M21800

	THEORETICAL		ACTUAL MEASURED
DIMENSIONS:	FULL-SCALE	MODEL SCALE	MODEL SCALE
Length	96.4 in.	0.543 in.	
Max. Width	14.2 in.	0.08 in.	
Max. Depth	14.2 in.	0.08 in.	
Fineness Ratio			
Area			
Max. Cross-Sectional			
Planform			
Wetted			
Base			

Table 1. (Concluded)

MODEL COMPONENT: Thrust Vector Control Bottles - TVC

GENERAL DESCRIPTION: THE TANKS EXTEND LENGTHWISE AND LOCATED EQUAL DISTANT FRO" THE FORWARD EDGE OF THE SHROUD FLARE AND THE TRAILING EDGE OF THE SHROUD

DRAWING NUMBER:

DIMENSIONS:	THEORETICAL FULL-SCALE	THEORETICAL MODEL SCALE	ACTUAL MEASURED MODEL SCALE
Length	60 IN.	0.338 IN.	
Max. Width	20 IN.	0.113 IN.	
Max. Depth	20 IN.	0.113 IN.	
Fineness Ratio			
Area			
Max. Cross-Sectional			
Planform			
Wetted			
Base			

Table 2. STING COMBINATION NOMENCLATURE

α SCHEDULE	α RANGE (deg)	STING ADAPTER			STING NO.	BALANCE ADAPTER		BALANCE ADAPTER EXTENSION	NOSE
		ADAPTER NO.	HOLE NO.	ADAPTER POSITION		ADAPTER NO.	HOLE NO.		
A(1)	-10 to 10	1	53	7.50 in.	1	113	1	80M42509	FWD
K(1)	170 to 190								AFT
B(1)	10 to 30		51				3		FWD
J(1)	150 to 170								AFT
C(1)	30 to 50		54				4		FWD
I(1)	130 to 150								AFT
D(1)	50 to 70	3	63	3.50 in.	3	118(2)	A-3(B-6)(3)	—	UP
E	70 to 90		61				B-5(A-2)	—	UP
F(1)	80 to 100						A-1(B-4)	—	UP or DOWN
G	90 to 110						B-5(A-2)	—	DOWN
H(1)	110 to 130		63				B-6(A-3)		DOWN

(1) Combinations used

(2) MSFC Sting No. 118

(3) (Alternate hole)

Table 3.

TEST: MSFC TWT 578 (SA10F) — DATA SET/RUN NUMBER COLLATION SUMMARY — DATE: OCT 2, 1973

	DATA SET IDENTIFIER	CONFIGURATION	SCHD. α	SCHD. β	φ	Rn/L	Grit	Nose	NO. OF RUNS	0.4	0.6	0.9	1.2	1.96	3.48	4.00	4.45	4.96
R91100	R911A1	NBE1	A	0	0	Nominal	ON	FWD	3							273/0	274/0	275/0
	1B1		B						8		3/0	4/0	5/0	55/0	86/0	267/0	268/0	269/0
	1C1		C						5	54/0	53/0					272/0	271/0	270/0
	1D1		D					UP	6	217/0	216/0	218/0	219/0	131/0	87/1			
	1F1		F					UP*	5		222/0	221/0	254/0	130/0	88/0			
	1H1		H					DN	5		155/0	154/0	153/0	152/0	110/0			
	1I1		I					AFT	3							264/0	265/0	266/0
	1J1		J						8		8/0	7/0	6/0	70/0	71/0	258/0	259/0	260/0
	1K1		K						3							263/0	262/0	261/0
	1D2		D				OFF	UP	1				252/0					
	1F2		F				ON	UP	1				220/0					
R91200	R912B1	NBE2	B	0	0	Nominal	ON	FWD	5		52/0	51/0	50/0	56/0	85/0			
	2D1		D					UP	5		215/0	214/0	253/0	132/0	90/0			
	2F1		F					UP	5		223/0	224/0	225/0	129/0	89/0			
	2H1		H					DN	5		156/0	157/0	158/0	151/0	109/0			
	2J1		J					AFT	5		9/0	10/0	11/0	69/0	72/0			
	2D2		D				OFF	UP	1				213/0					

TEST RUN NUMBERS

COEFFICIENTS: CNM CLMR CA CYM CYNM CBL — NDV 6

α OR β SCHEDULES: $\alpha_A = -10$ TO $10°$; $\alpha_B = 10$ TO $30°$; $\alpha_C = 30$ TO $50°$; $\alpha_D = 50$ TO $70°$; $\alpha_F = 80$ TO $100°$; $\alpha_H = 110$ TO $130°$; $\alpha_I = 130$ TO $150°$; $\alpha_J = 150$ TO $170°$; $\alpha_K = 170$ TO $190°$

IDVAR (1) IDVAR (2)

* RUN 254/0 WAS NOSE DOWN

Table 3. (Continued)

TEST : MSFC TWT 576(SA10F) — DATA SET/RUN NUMBER COLLATION SUMMARY — DATE :

DATA SET IDENTIFIER	CONFIGURATION	SCHD. α	SCHD. β	PARAMETERS/VALUES ϕ	PARAMETERS/VALUES Rn/L	PARAMETERS/VALUES GRIT	PARAMETERS/VALUES NOSE	NO. OF RUNS	MACH NUMBERS (OR ALTERNATE INDEPENDENT VARIABLE) 0.4	0.6	0.9	1.2	1.96	3.48	4.00	4.45	4.96	TEST RUN NUMBERS
R91 3B1	NBE_3	B	0	0	[illegible]	ON	FWD	5		47/0	48/0	49/0	57/0	84/0				
3D1		D					UP	5		210/1	211/1	212/1	133/0	91/0				
3F1		F					UP*	5		228/0	227/0	255/0	123/0	92/0				
3H1		H					DN	5		161/0	160/0	159/0	150/0	108/0				
3J1		J					AFT	5		14/0	13/0	12/0	68/0	73/0				
3F2		F					UP	1				226/0						
R91 4B1	NBE_4	B	0	0	[illegible]	ON	FWD	5		46/0	45/0	44/0	58/0	83/0				
4D1		D					UP	5		209/0	208/0	207/0	137/0	94/0				
4F1		F					UP	5		244/0	242/0	243/0	124/0	93/0				
4H1		H					DN	5		174/0	175/0	176/0	146/0	107/0				
4J1		J					AFT	5		16/0	17/0	18/0	67/0	74/0				

R91300

R91400

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

COEFFICENTS — IDVAR (1) — IDVAR (2) — NDV

α OR β SCHEDULES

* RUN 255/0 WAS NOSE DOWN.

Table 3. (Continued)

TEST: MSFC TWT 578 (SAIOF) — DATA SET/RUN NUMBER COLLATION SUMMARY — DATE:

DATA SET IDENTIFIER	CONFIGURATION	SCHD. α	SCHD. β	PARAMETERS/VALUES Φ	PARAMETERS/VALUES Rn/L	PARAMETERS/VALUES GRIT	PARAMETERS/VALUES NOSE	NO. OF RUNS	MACH NUMBERS (OR ALTERNATE INDEPENDENT VARIABLE) 0.4	0.6	0.9	1.2	1.96	3.48	4.00	4.45	4.96
R91500																	
R915B1	NBE5	B	0	0	Nominal	ON	FWD	5		41/0	42/0	43/0	59/0	82/0			
5D1		D					UP	5		195/0	196/0	197/0	138/0	95/0			
5F1		F					UP*	5		240/0	239/0	256/0	128/0	96/0			
5H1		H					DN	5		173/0	172/0	171/0	145/0	106/0			
5J1		J					AFT	5		21/0	20/0	19/0	66/0	75/0			
5F2		F					UP	1				238/0					
R916J1	NBE6	J	0	0	Nominal	ON	AFT	1		15/0							
6J2	NBE6 ATHRN6 AFT	J	0	0			AFT	1		22/0							
R91A00																	
R91AB1	NBE1,5	B	0	0	Nominal	ON	FWD	5		40/0	39/0	38/0	60/0	81/0			
AD1		D					UP	5		200/0	199/0	198/0	134/0	98/0			
AF1		F					UP*	5		229/0	230/0	259/0	125/0	97/0			
AH1		H					DN	5		168/0	169/0	170/0	147/0	105/0			
AJ1		J					AFT	5		23/0	24/0	25/0	65/0	76/0			
AF2		F					UP	1				231/0					

TEST RUN NUMBERS

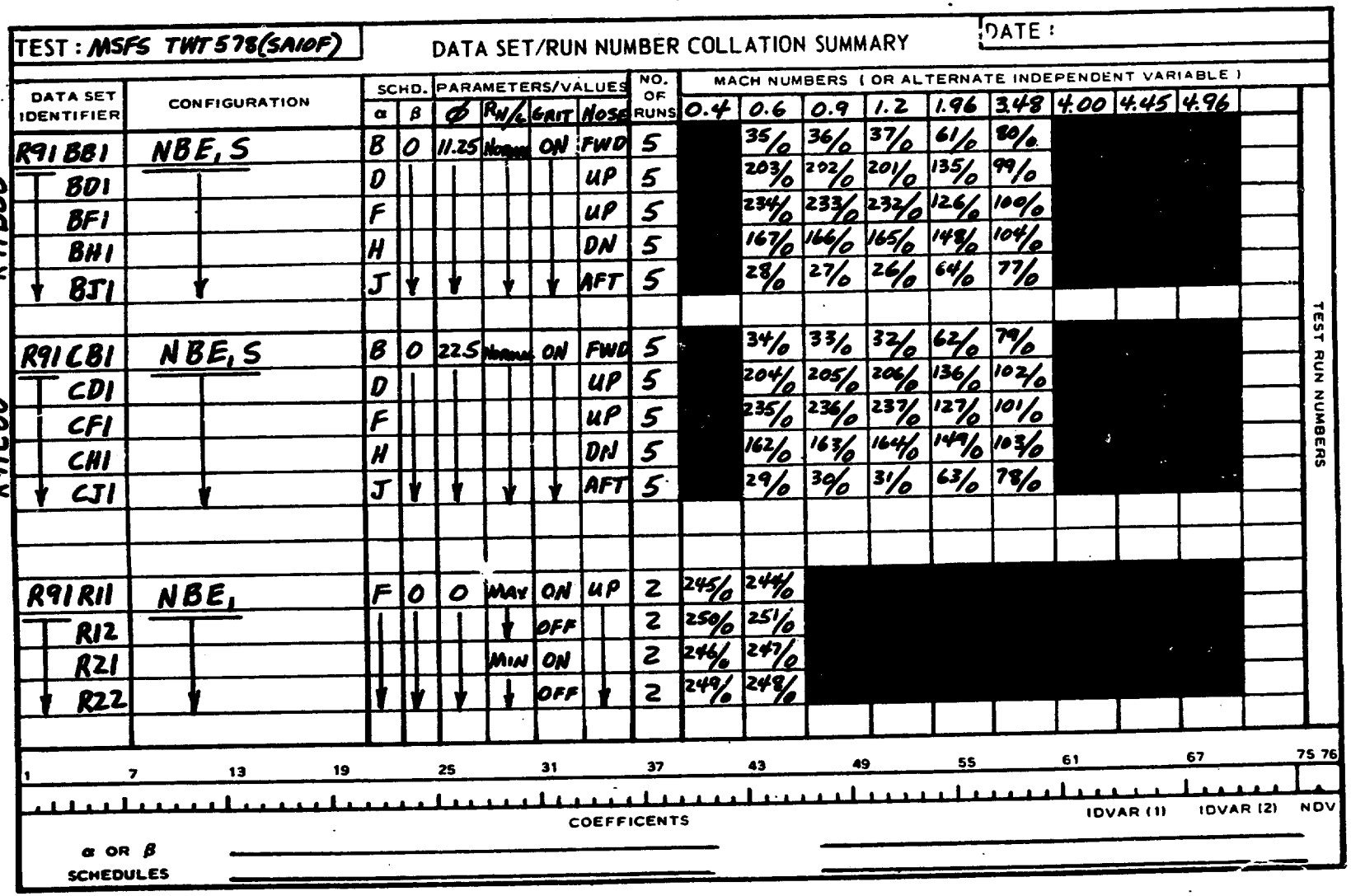
1 7 13 19 25 31 37 43 49 55 61 67 75 76

COEFFICENTS — IDVAR (1) — IDVAR (2) — NDV

α OR β SCHEDULES

* RUNS 256/0 AND 257/0 WERE NOSE DOWN.

Table 3. (Continued)



TEST : MSFS TWT 578 (SA10F) — DATA SET/RUN NUMBER COLLATION SUMMARY — DATE :

DATA SET IDENTIFIER	CONFIGURATION	SCHD. α	SCHD. β	PARAMETERS/VALUES Φ	R_N/L	GRIT	NOSE	NO. OF RUNS	MACH NUMBERS (OR ALTERNATE INDEPENDENT VARIABLE) 0.4	0.6	0.9	1.2	1.96	3.48	4.00	4.45	4.96
R91B00																	
R91B01	NBE, S	B	0	11.25	Normal	ON	FWD	5		35/0	36/0	37/0	61/0	80/0			
B01		D					UP	5		203/0	202/0	201/0	135/0	99/0			
BF1		F					UP	5		234/0	233/0	232/0	126/0	100/0			
BH1		H					DN	5		167/0	166/0	165/0	148/0	104/0			
BJ1		J					AFT	5		28/0	27/0	26/0	64/0	77/0			
R91C00																	
R91C01	NBE, S	B	0	22.5	Normal	ON	FWD	5		34/0	33/0	32/0	62/0	79/0			
C01		D					UP	5		204/0	205/0	206/0	136/0	102/0			
CF1		F					UP	5		235/0	236/0	237/0	127/0	101/0			
CH1		H					DN	5		162/0	163/0	164/0	149/0	103/0			
CJ1		J					AFT	5		29/0	30/0	31/0	63/0	78/0			
R91R11	NBE,	F	0	0	MAX	ON	UP	2	245/0	244/0							
R12						OFF		2	250/0	251/0							
R21					MIN	ON		2	246/0	247/0							
R22						OFF		2	249/0	248/0							

TEST RUN NUMBERS

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

COEFFICENTS — IDVAR (1) — IDVAR (2) — NDV

α OR β SCHEDULES

Table 3. (Concluded)

TEST : MSFC TWT 578 (SA10F) — DATA SET/RUN NUMBER COLLATION SUMMARY — DATE :

DATA SET IDENTIFIER	CONFIGURATION	SCHD. α	SCHD. β	PARAMETERS/VALUES φ	PARAMETERS/VALUES Rn/L	PARAMETERS/VALUES GRIT	PARAMETERS/VALUES NOSE	NO. OF RUNS	MACH NUMBERS (OR ALTERNATE INDEPENDENT VARIABLE) 0.4	0.6	0.9	1.2	1.96	3.48	4.00	4.45	4.96	TEST RUN NUMBERS
R91DDI	NBE, TVC S	D	0	0	Maximum	ON	UP	4		190/0		189/0	139/0	116/0				
DFI		F					UP	4		187/0		188/0	120/0	117/0				
DHI		H					DN	4		178/0		177/0	144/0	111/0				
R91EDI	NBE, TVC S	D	0	45	Maximum	ON	UP	4		191/0		192/0	140/0	115/0				
EFI		F					UP	4		186/0		185/0	121/0	118/0				
EHI		H					DN	4		179/0		180/0	143/0	112/0				
R91FDI	NBE, TVC S	D	0	90	Maximum	ON	UP	4		194/0		193/0	141/0	119/0				
FFI		F					UP	4		183/0		184/0	122/0	114/0				
FHI		H					DN	4		182/0		181/0	142/0	113/0				

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

COEFFICENTS IDVAR (1) IDVAR (2) NDV

α OR β SCHEDULES

Table 4. TEST SUMMARY

DATA SET IDENTIFIER	CONFIGURATION NUMBER	CONFIGURATION SYMBOLS	PROTUBERANCE ROLL ANGLE (ϕ) (DEGREES)	ANGLE-OF-ATTACK RANGE* (DEGREES)	MACH NUMBER RANGE
R91100	1	NBE_1	-	-10 to 190	0.4 to 4.96
R91200	2	NBE_2	-	10 to 170	0.6 to 3.48
R91300	3	NBE_3	-		
R91400	4	NBE_4	-		
R91500	5	NBE_5	-		
R91A00	6	NBE_1S	0		
R91B00			11.25		
R91C00			22.5		
R91D00	7	NBE_1 TVCS	0	50 to 130	
R91E00			45		
R91F00			90		

*The full angle of attack range was not covered at all Mach numbers. See Table 3 for details.

Table 5.

TEST: TWT 578 DATE: 10/2/73

TEST CONDITIONS

MACH NUMBER	REYNOLDS NUMBER (million per ft)	DYNAMIC PRESSURE (pounds/sq.inch)	STAGNATION TEMPERATURE (degrees Fahrenheit)	STAGNATION PRESSURE (pounds/sq.inch)
0.40	3.63	2.21	100	22
0.60	4.95	4.35	100	22
0.90	6.25	7.37	100	22
1.20	6.62	9.14	100	22
1.96	6.92	10.02	100	28
3.48	6.96	6.36	100	60
4.00	6.30	5.53	100	75
4.45	5.20	3.83	100	75
4.96	4.20	2.56	100	75
0.40*	3.00	1.85	100	18
0.40*	5.40	3.33	100	32
0.60*	4.10	3.55	100	18
0.60*	8.60	7.42	100	38

BALANCE UTILIZED: MSFC 237

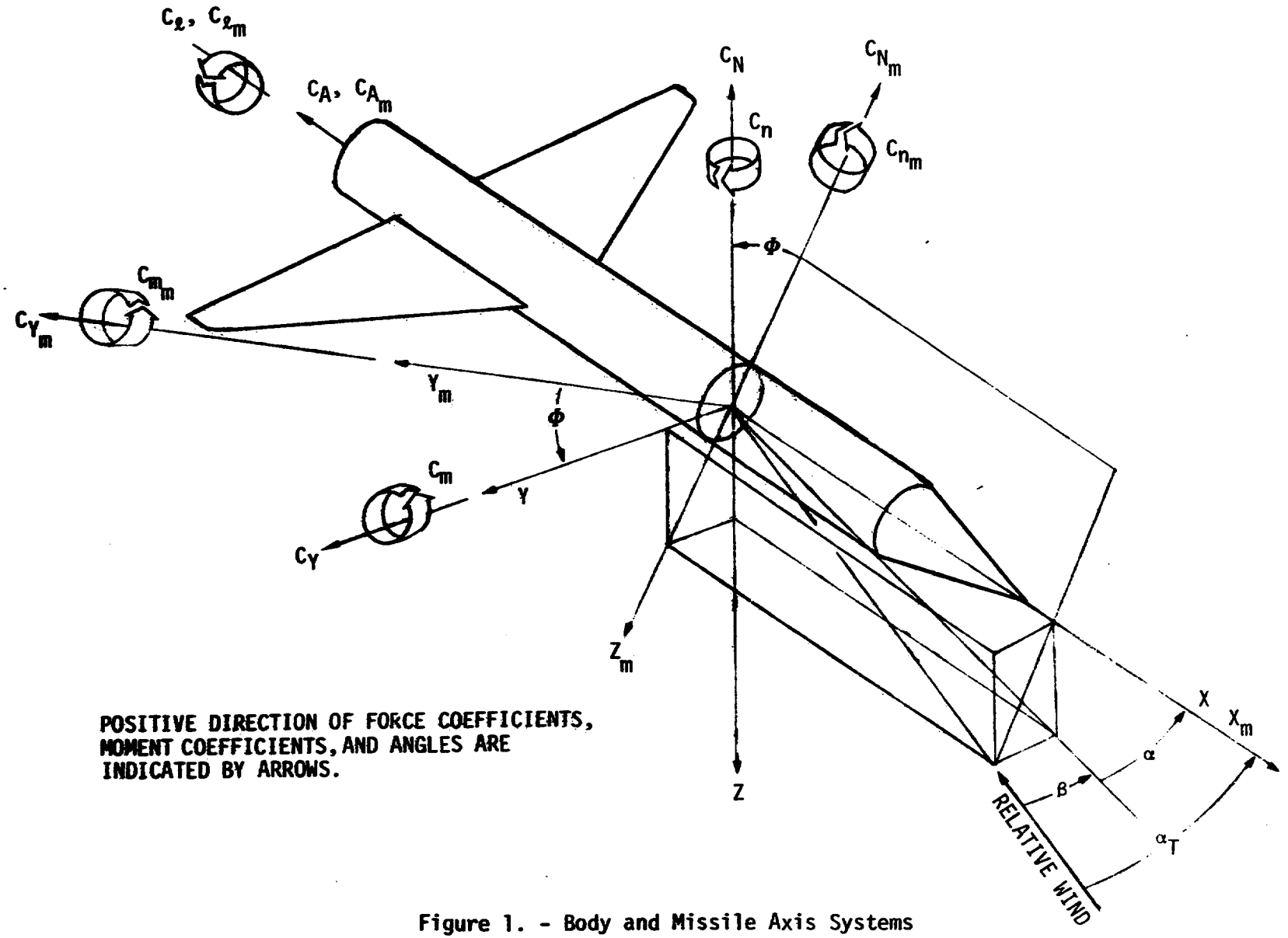
	CAPACITY:	ACCURACY:	COEFFICIENT TOLERANCE:
NORMAL FORCE	200 lbs		
SIDE FORCE	100 lbs		
AXIAL FORCE	20 lbs		
PITCHING MOMENT	196 in-lbs		
ROLLING MOMENT	98 in-lbs		
YAWING MOMENT	50 in-lbs		

COMMENTS:

*Used in Reynolds number effect study.

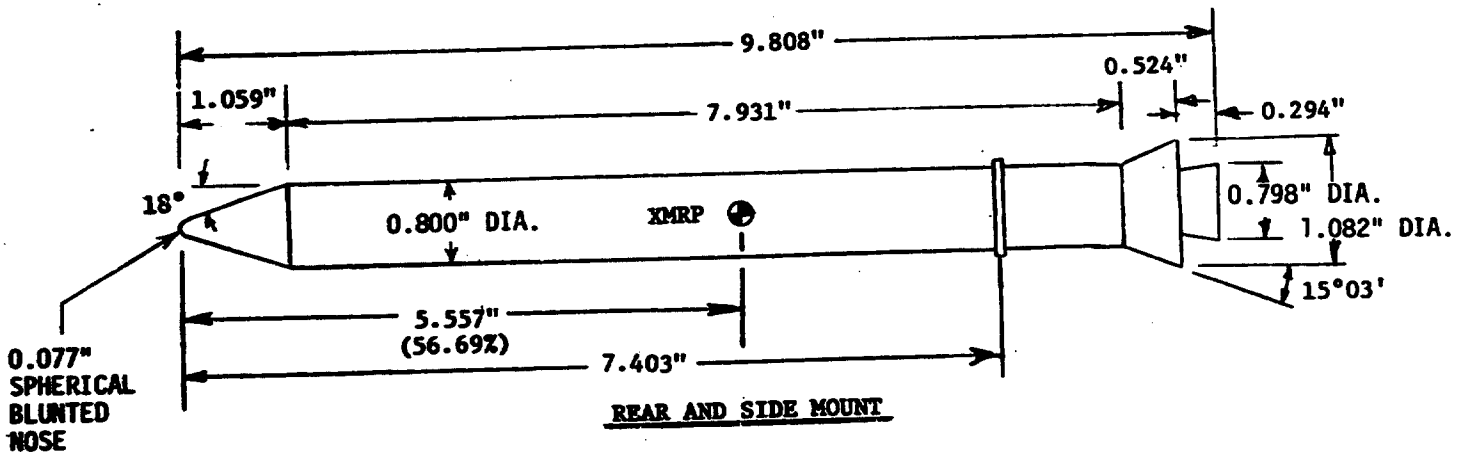
Table 6. PLOT SUMMARY

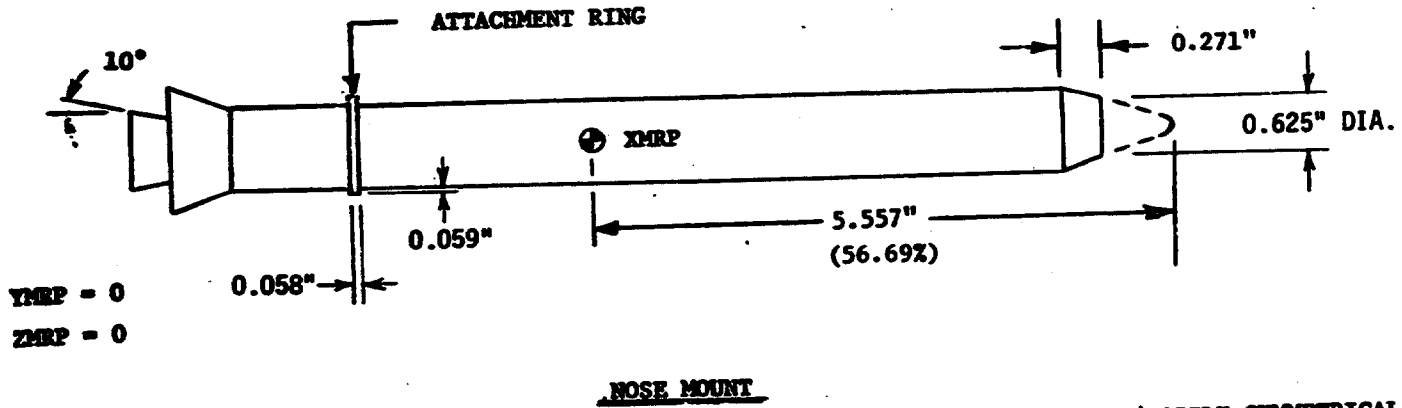
INVESTIGATION	MACH NUMBERS									COEFFICIENTS						
	0.4	0.6	0.9	1.2	1.96	3.48	4.00	4.45	4.96	CNM	CLMM	CA	XCP/L	CYM	CYNM	CBL
Config. NBE_1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
R_N effect	X	X								X	X	X	X	X	X	X
Shroud flare angle effect		X	X	X	X	X				X	X	X	X			
Shroud length effect		X	X	X	X	X				X	X	X	X			
Strake effect		X	X	X	X	X				X	X	X	X	X	X	X
TVC effect		X		X	X	X				X	X	X	X	X	X	X



POSITIVE DIRECTION OF FORCE COEFFICIENTS, MOMENT COEFFICIENTS, AND ANGLES ARE INDICATED BY ARROWS.

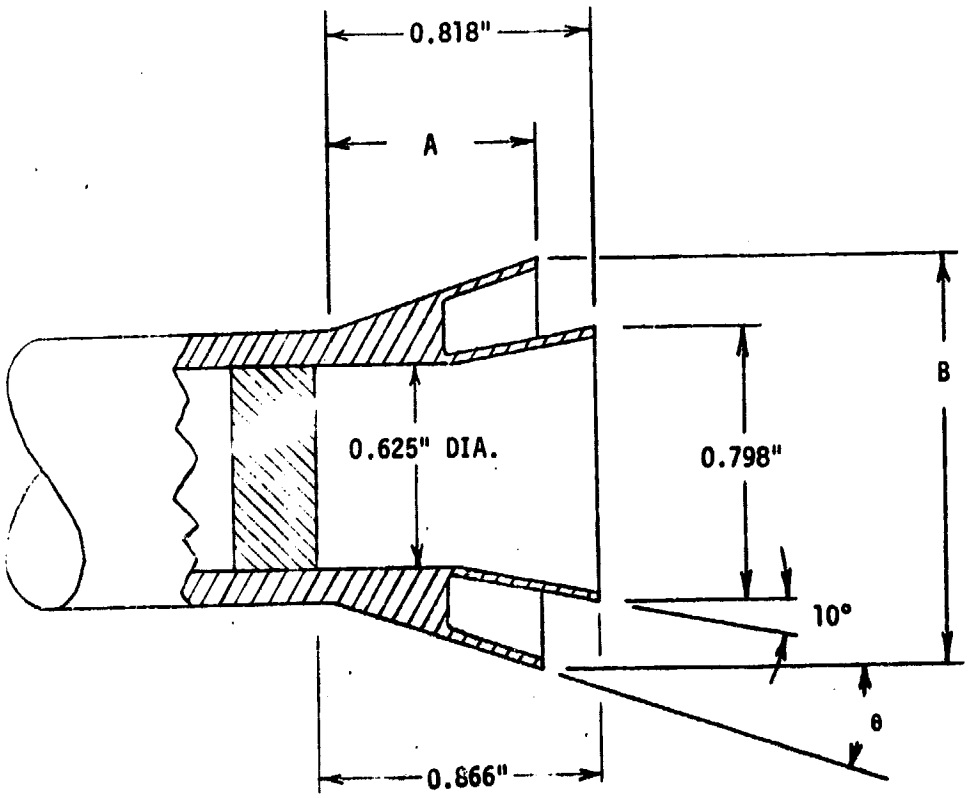
Figure 1. - Body and Missile Axis Systems





(ENGINE SHROUD/NOZZLE SYMMETRICAL WITH BODY)

Figure 2. 0.00563 SCALE 142-INCH SRB GEOMETRY (MSFC MODEL 449) (SHROUD E_1)



	A	B	θ
E_1	.524 in.	1.082 in.	15° 03'
E_2	.524	1.142	18° 03'
E_3	.524	1.203	21° 03'
E_4	.636	1.142	15° 03'
E_5	.749	1.203	15° 03'

NOTE: SHROUD E_1 WAS USED IN TWT-572, BUT WAS REFERRED TO IN THAT TEST AS E_3.

Figure 3. VARIOUS ENGINE SHROUDS FOR A 0.00563 SCALE 142-INCH SRB

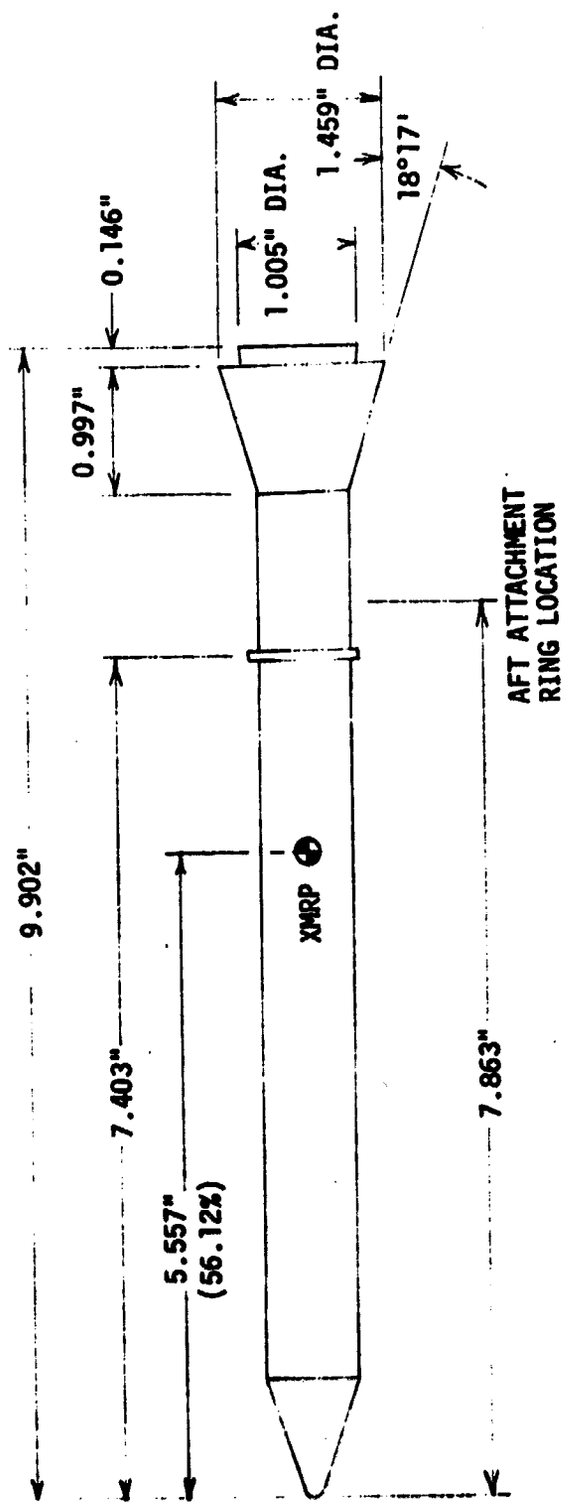


Figure 4. 0.00563 SCALE 142-INCH SRB GEOMETRY (MSFC MODEL 449) (SHROUD E_6)

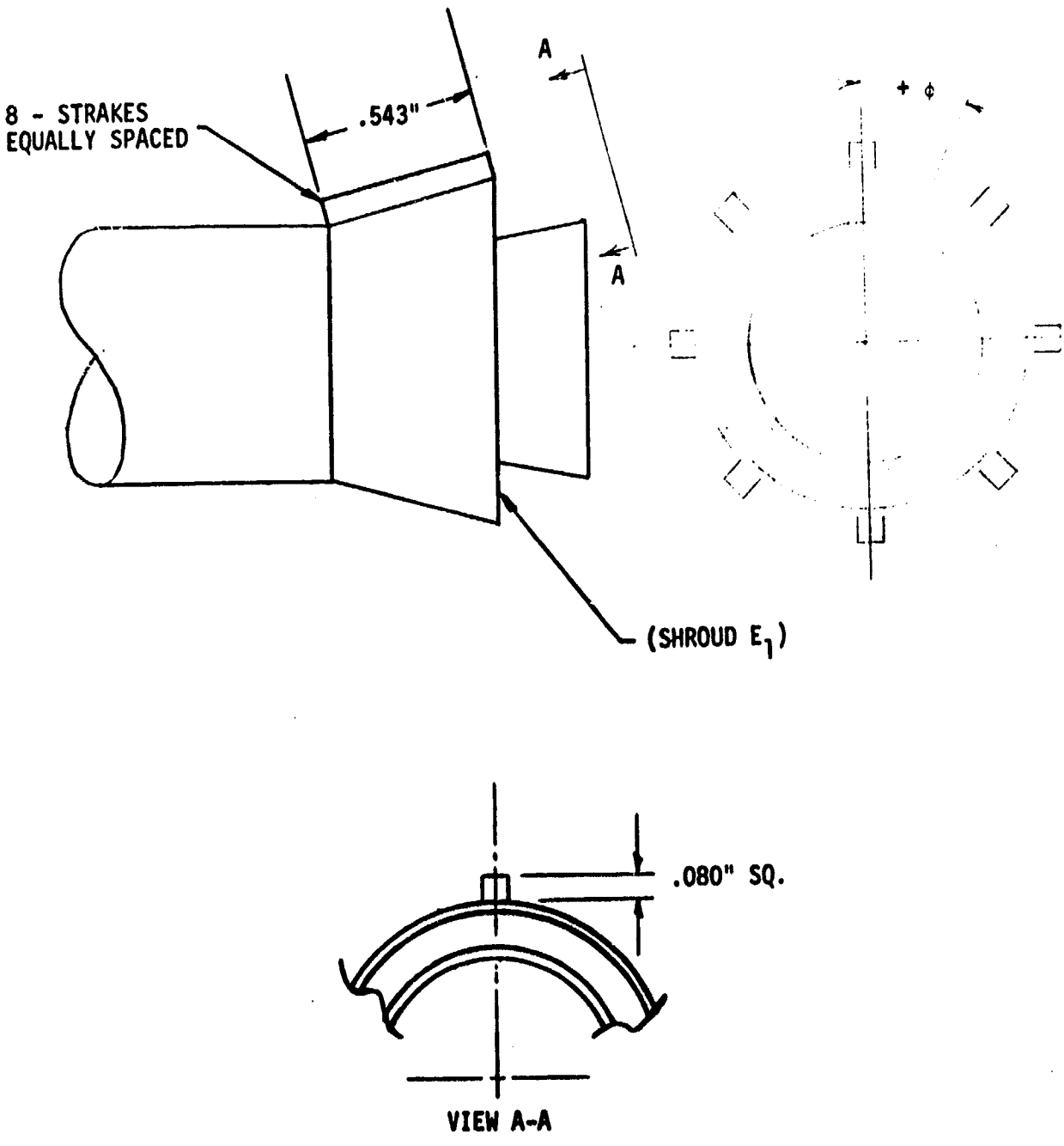


Figure 5. STRAKE INSTALLATION ON 0.00563 SCALE, 142-INCH SRB, SHROUD E_1

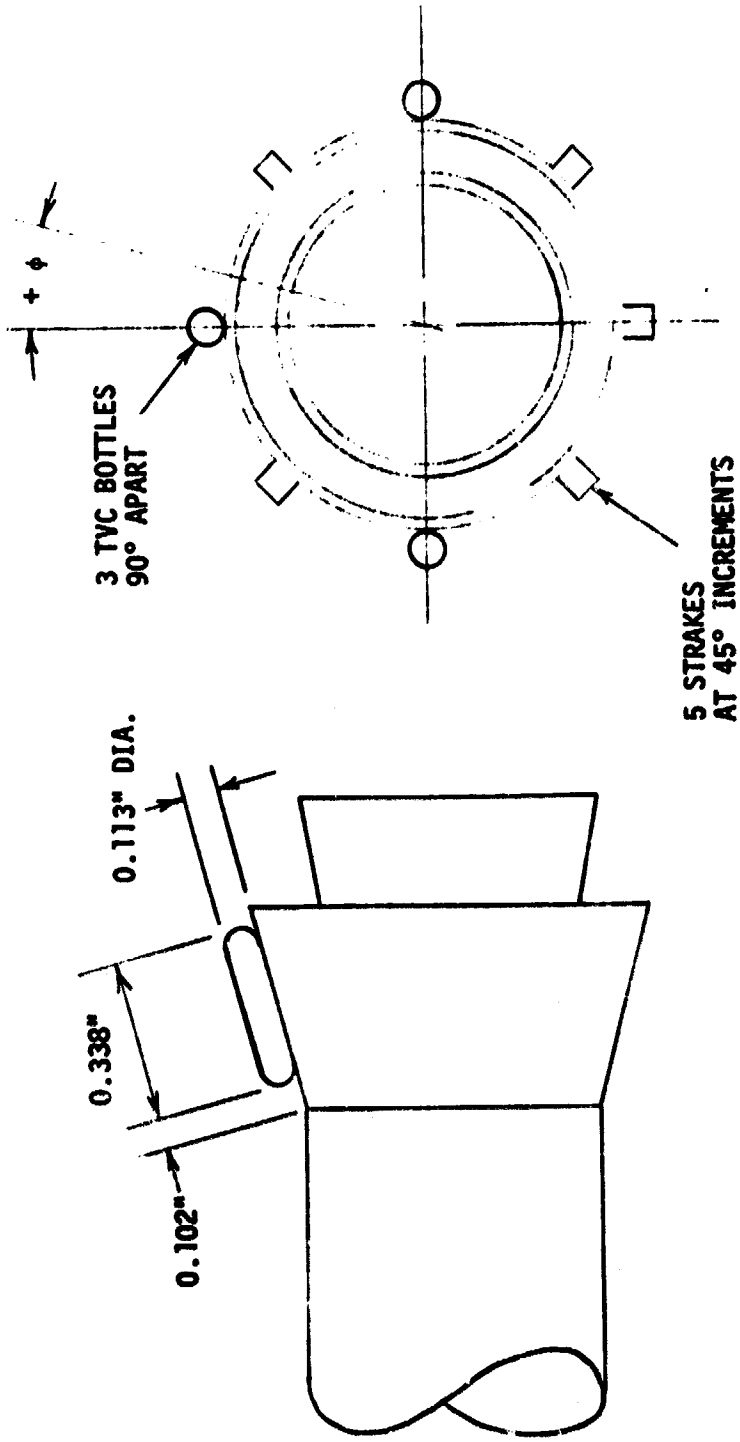


Figure 6. THRUST VECTOR CONTROL BOTTLES, TVC

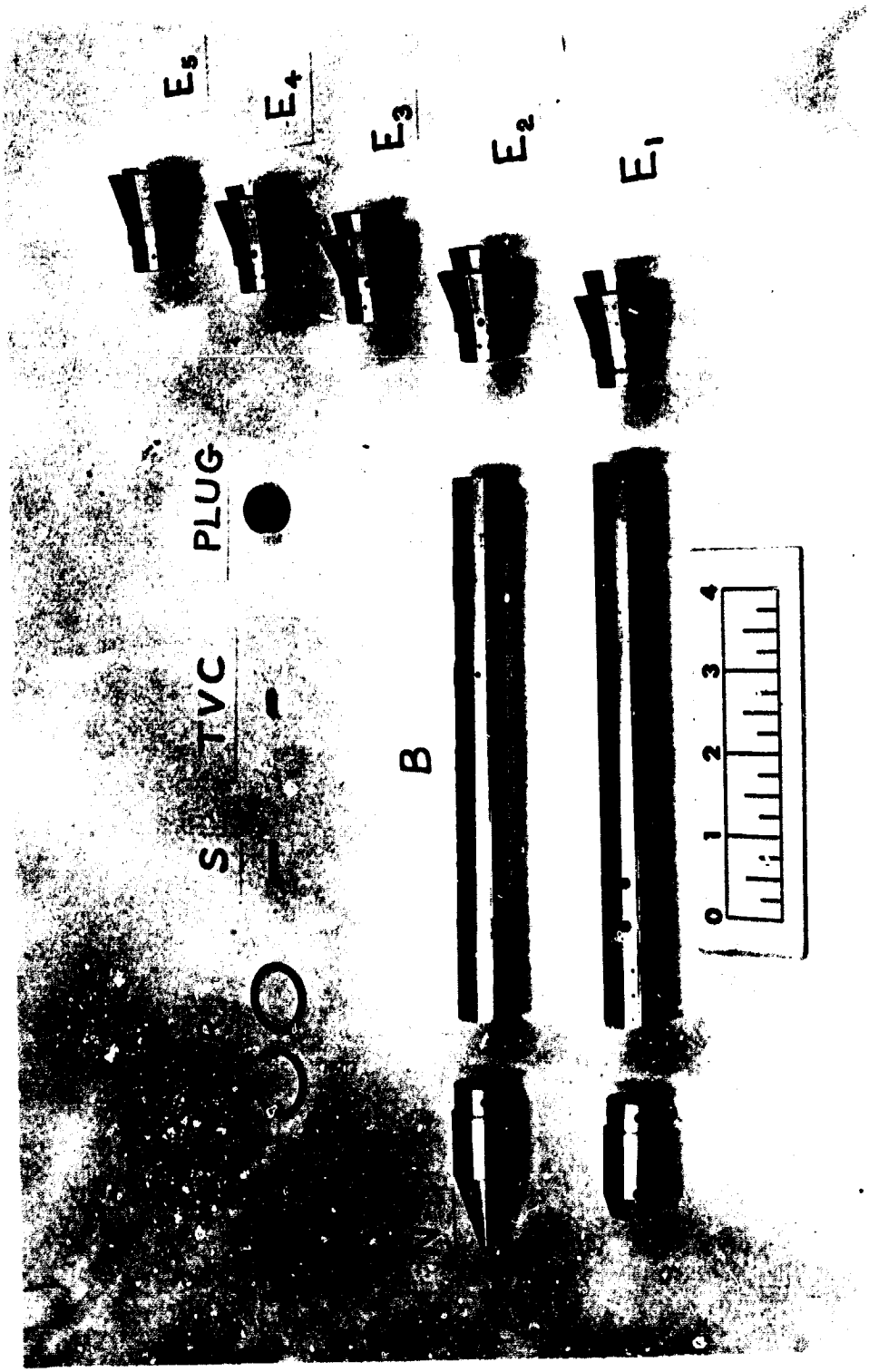


FIGURE 7. MODEL COMPONENTS

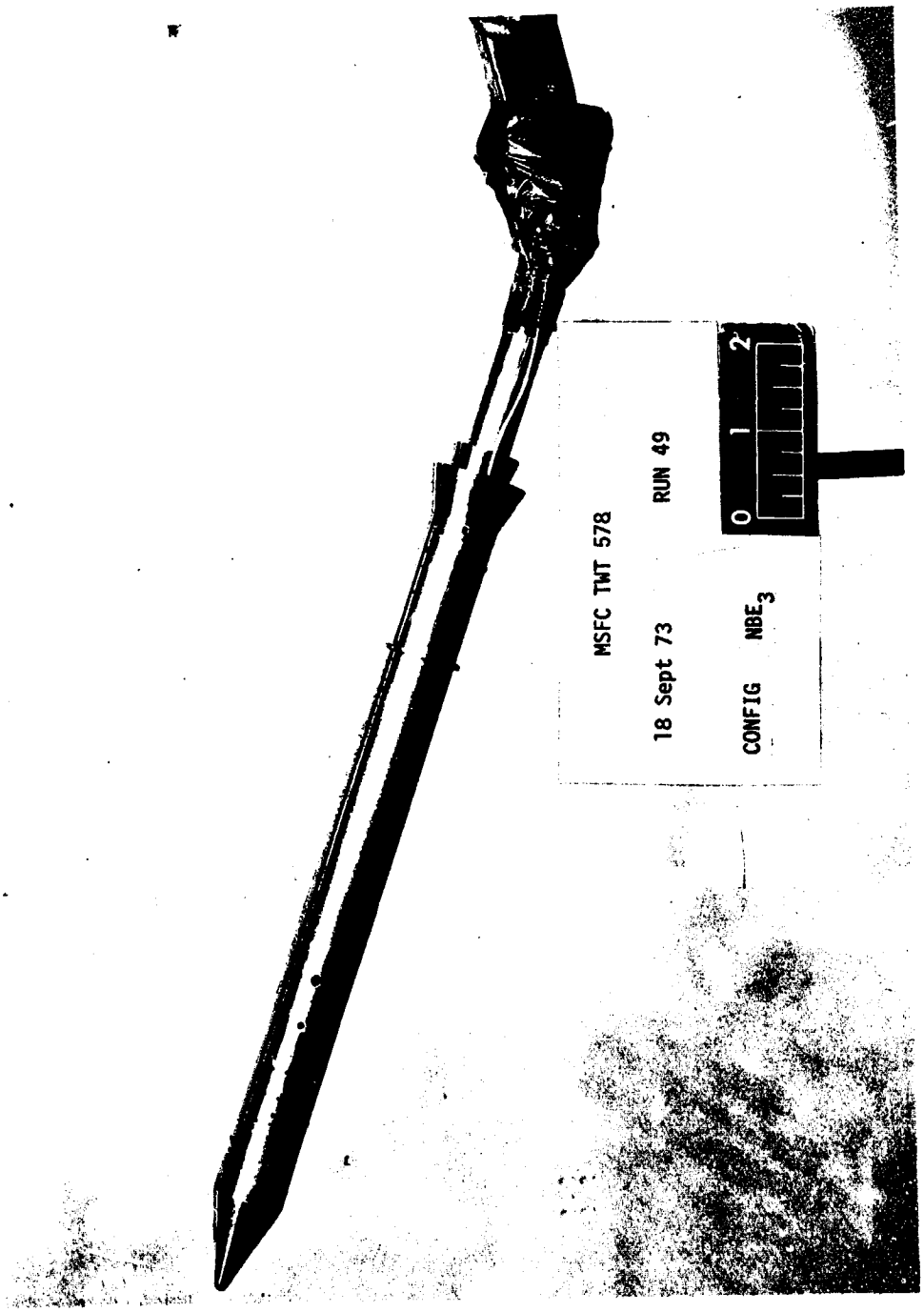


FIGURE 8. TYPICAL END MOUNT TUNNEL INSTALLATION

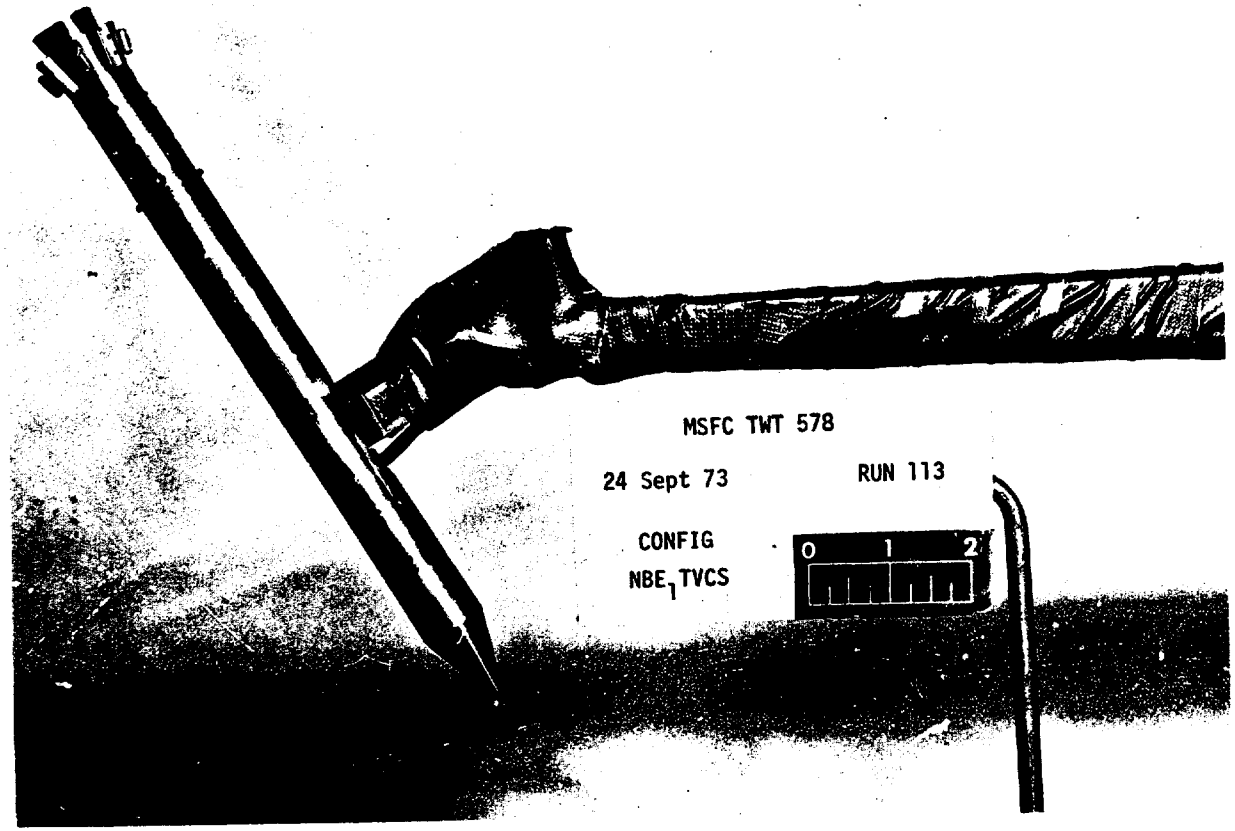
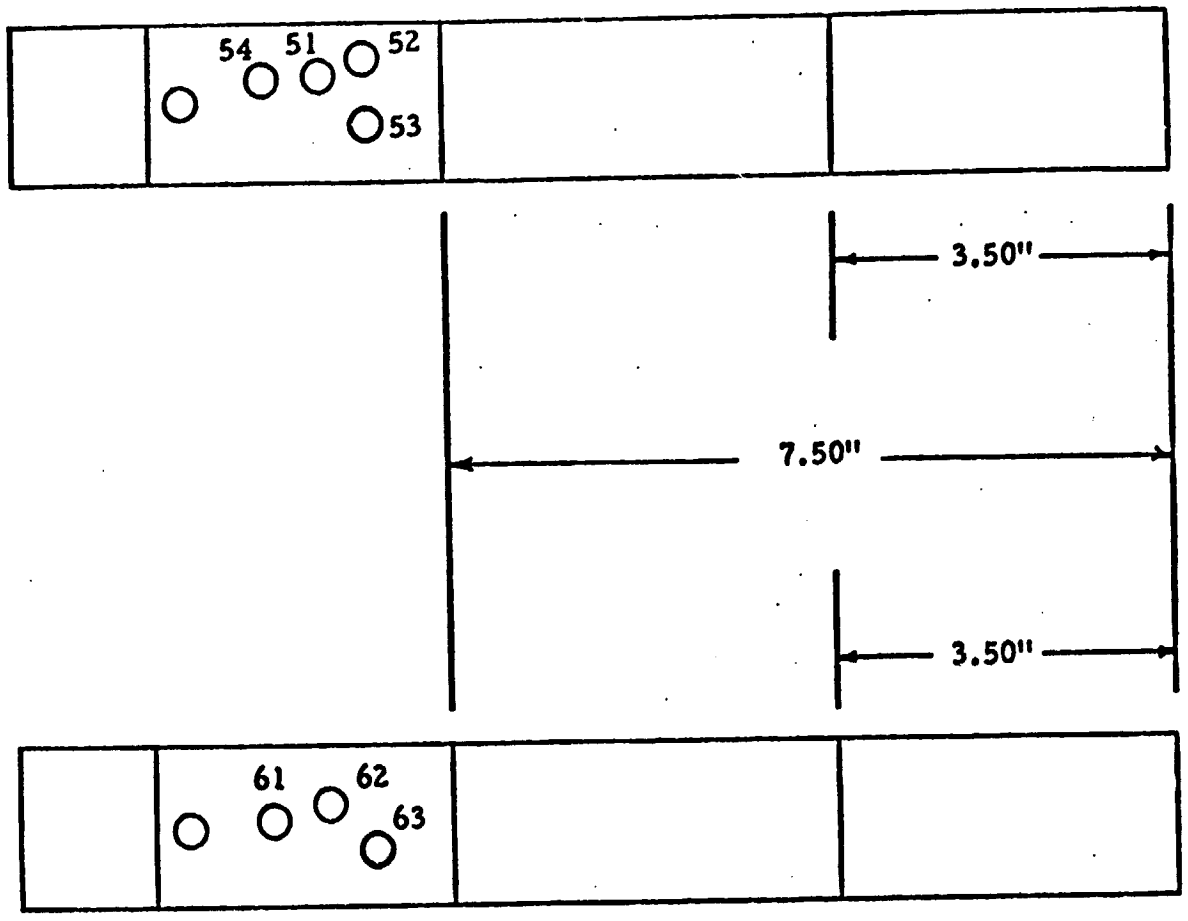


FIGURE 9. TYPICAL SIDE MOUNT TUNNEL INSTALLATION

Sting Adapter 1



Sting Adapter 3

Figure 10. STING ADAPTERS

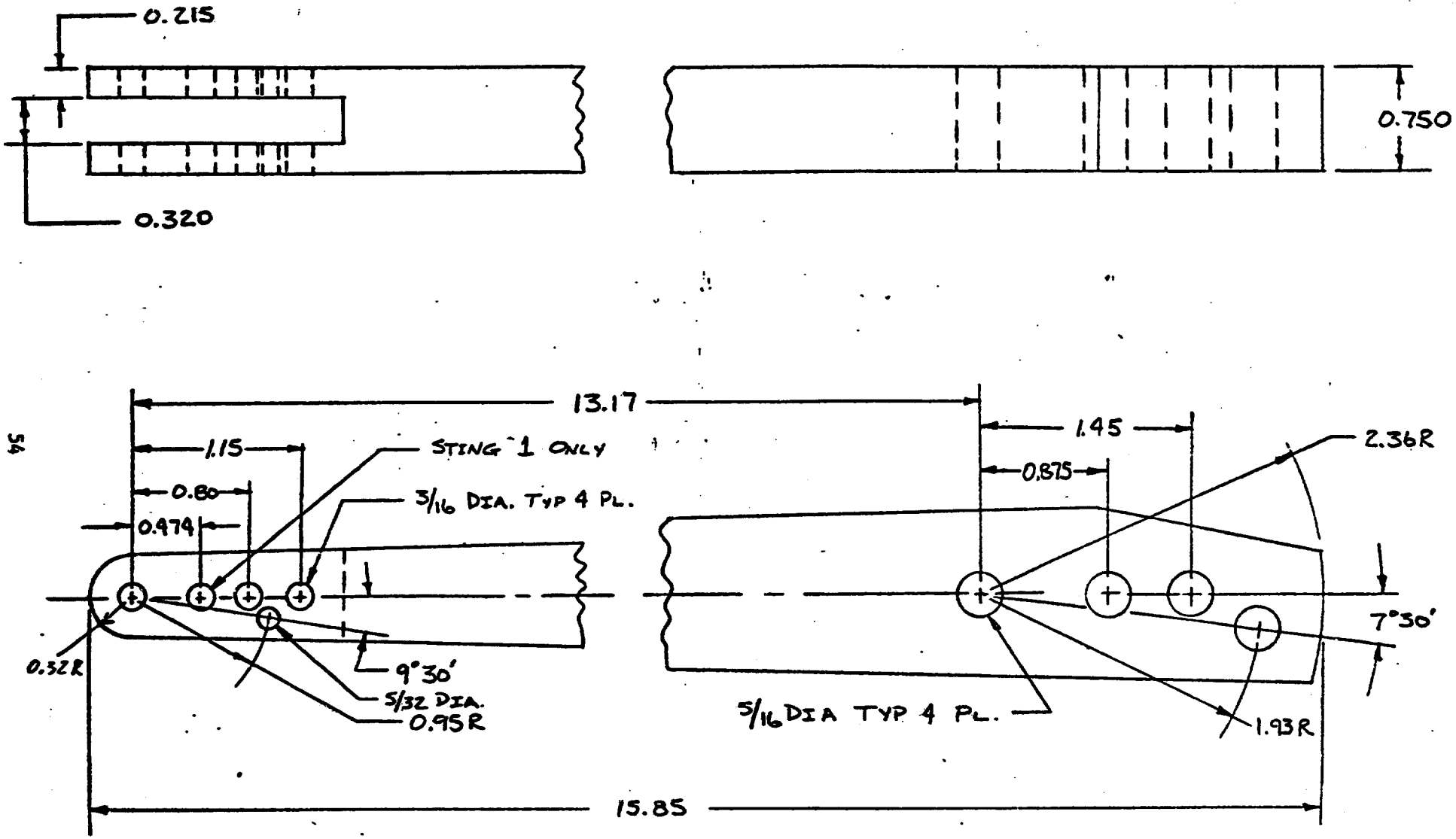


Figure 11. STINGS

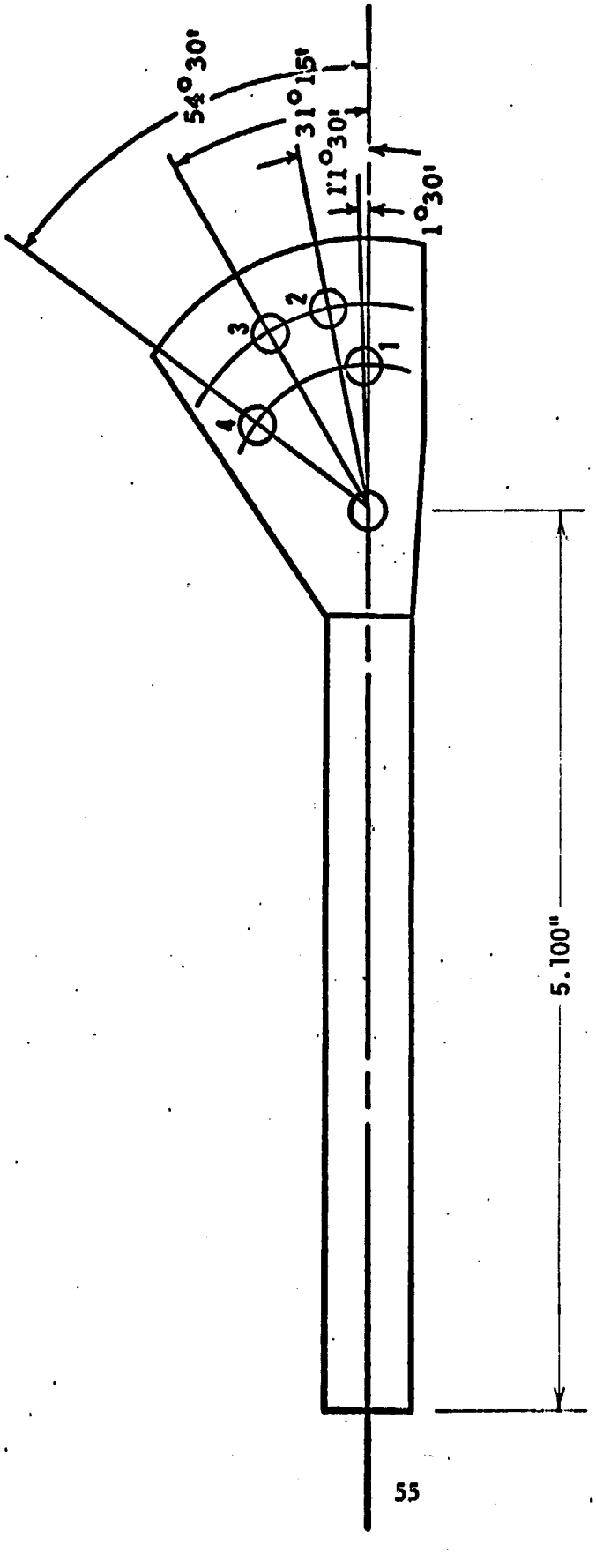
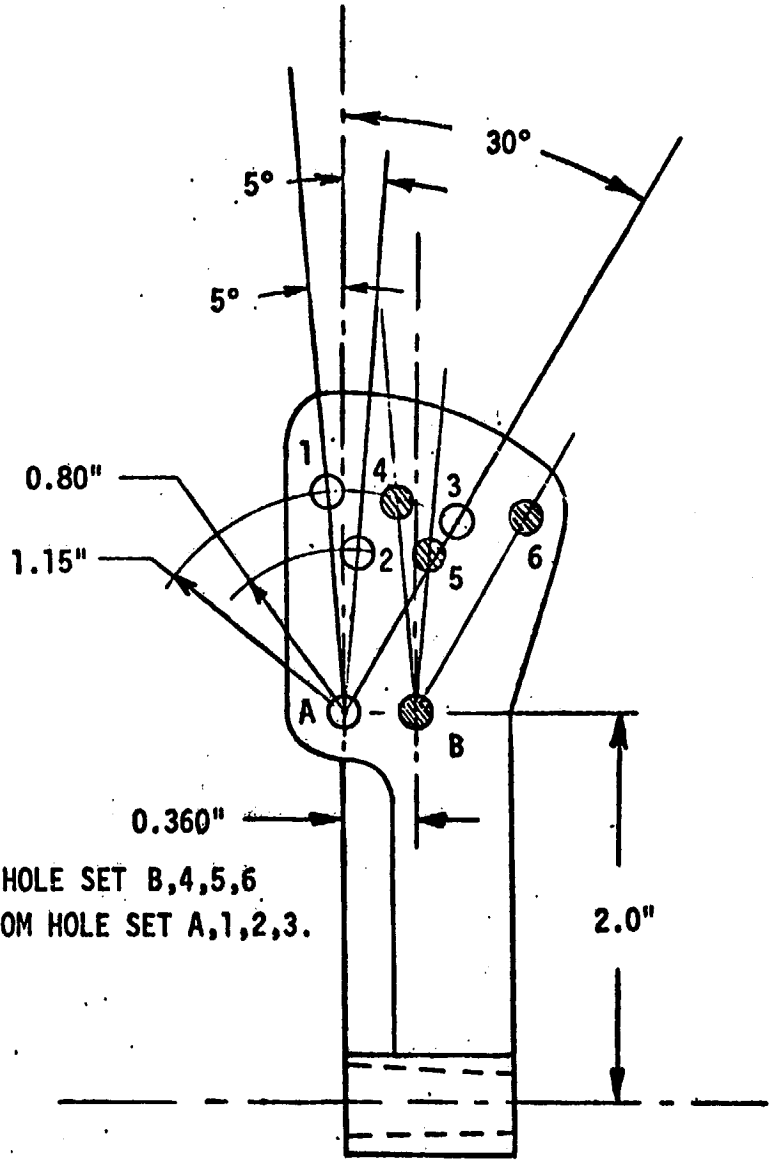


Figure 12. BALANCE ADAPTER 113 (FROM MSFC DWG. NO. 80M42541)



NOTE: ALTERNATE HOLE SET B,4,5,6
SHIFTED 0.360" FROM HOLE SET A,1,2,3.

Holes A-2 and B-5 Radius = 0.80"
Holes A-1,3 and B-4,6 Radius = 1.15"

Figure 13. BALANCE ADAPTER 118 (MSFC STING NO. 118 FROM MSFC DRAWING 80M42582)

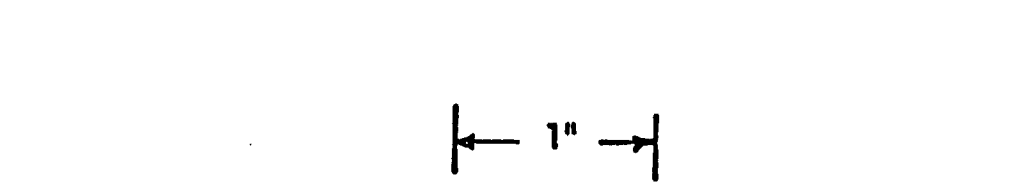


Figure 14. BALANCE ADAPTER (FROM MSFC DWG. NO. 80M 42509)

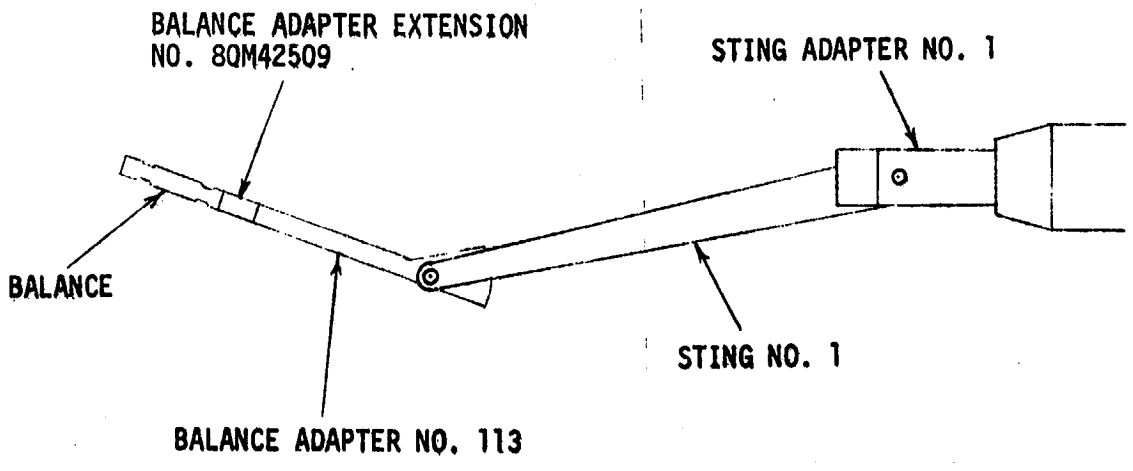


Figure 15. SUPPORT SETUP - END MOUNT

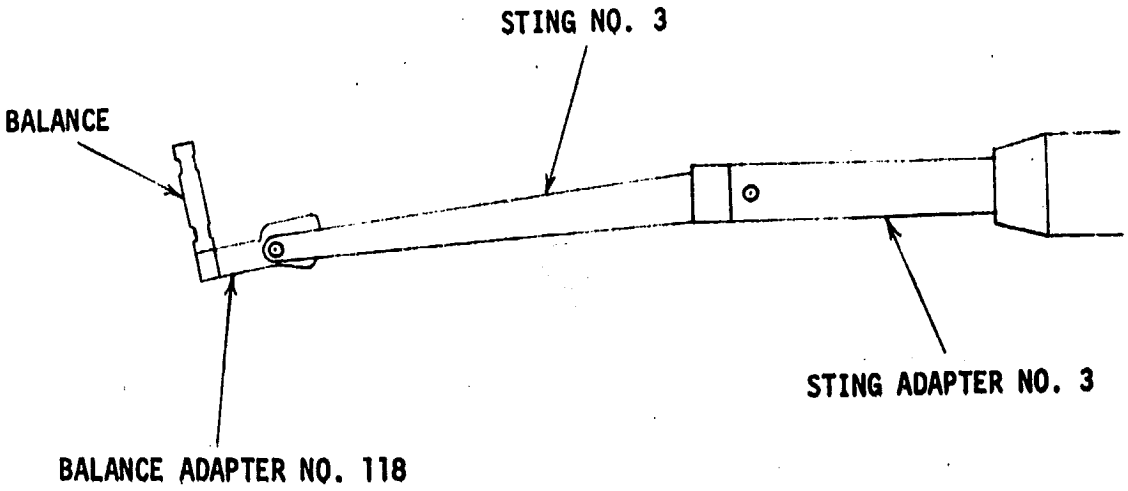


Figure 16. SUPPORT SETUP - SIDE MOUNT

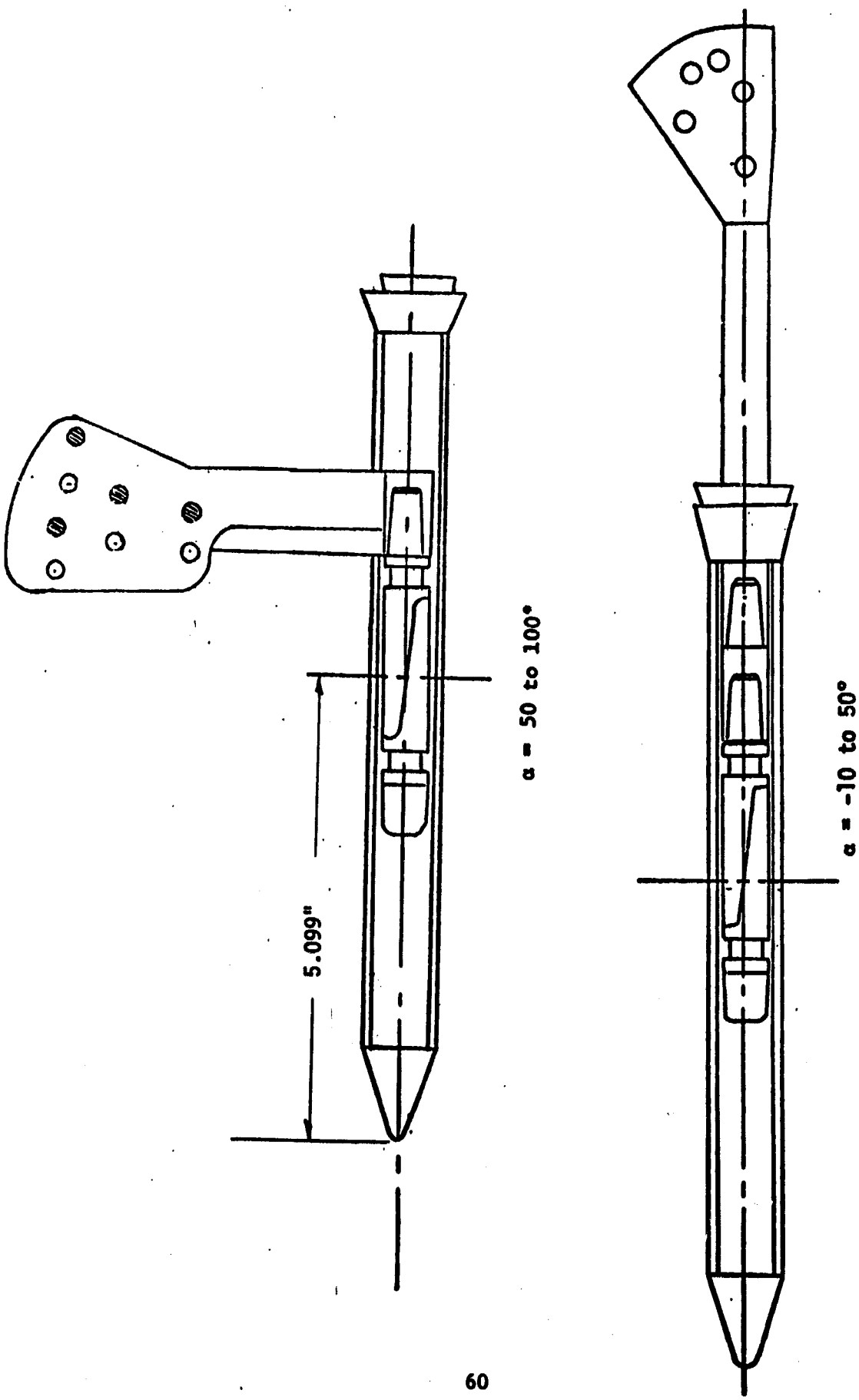


Figure 17. MOUNTING ARRANGEMENTS FOR ANGLE OF ATTACK -10 TO 100 DEGREES

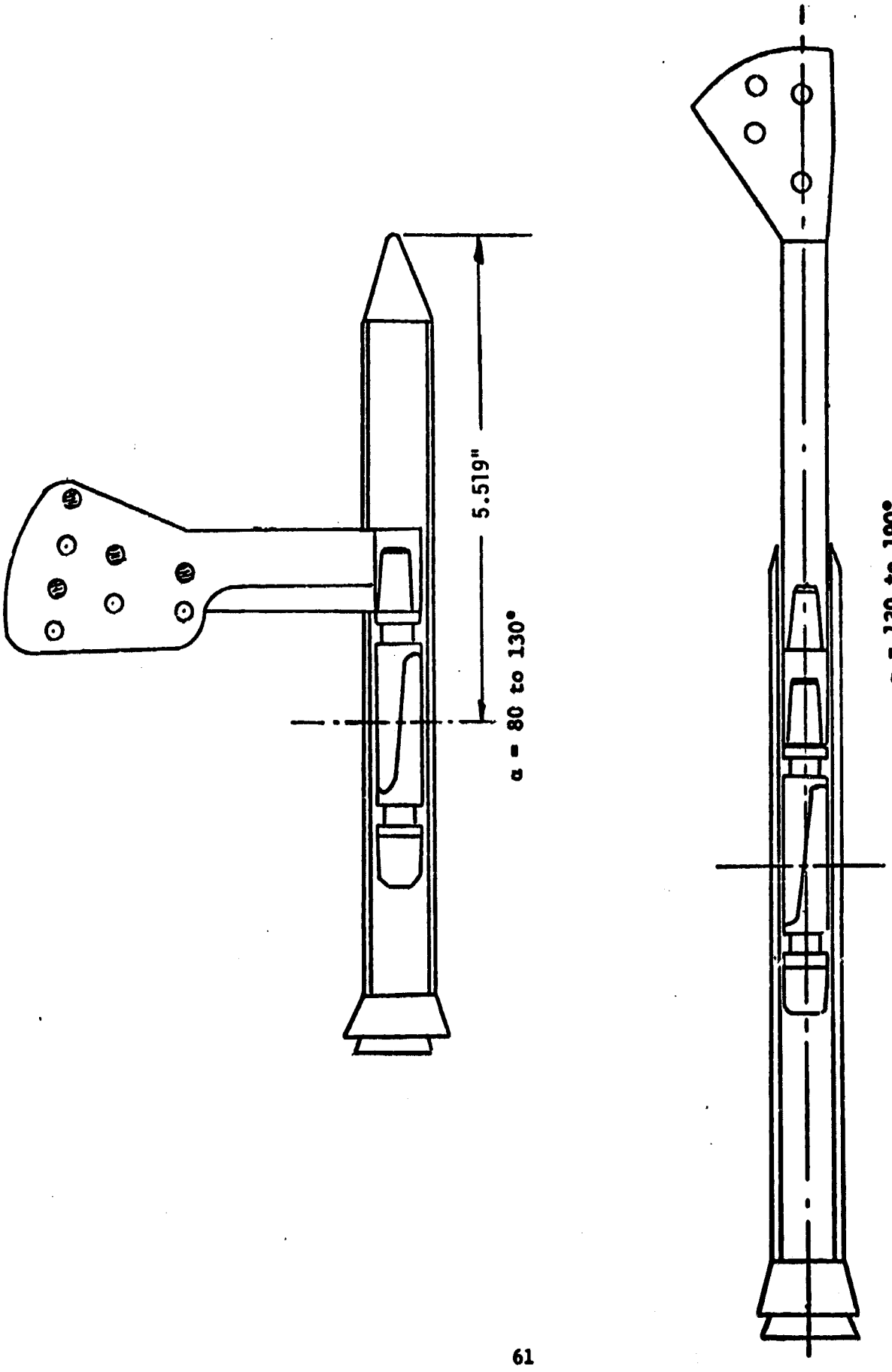


Figure 18. MOUNTING ARRANGEMENTS FOR ANGLE OF ATTACK 80 TO 190 DEGREES

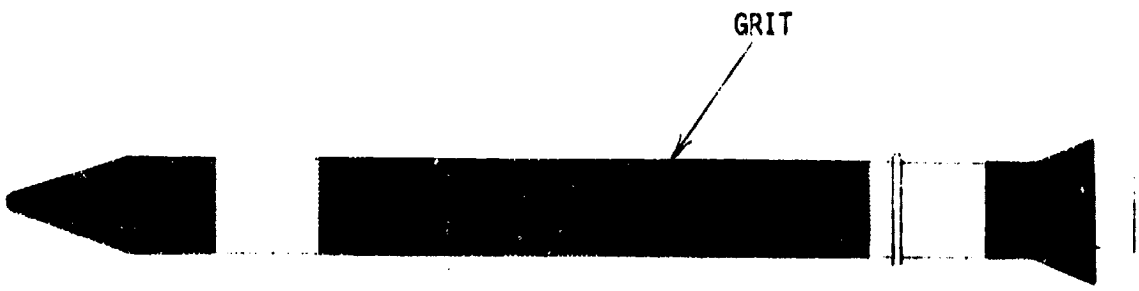


Figure 19. GRIT PATTERN

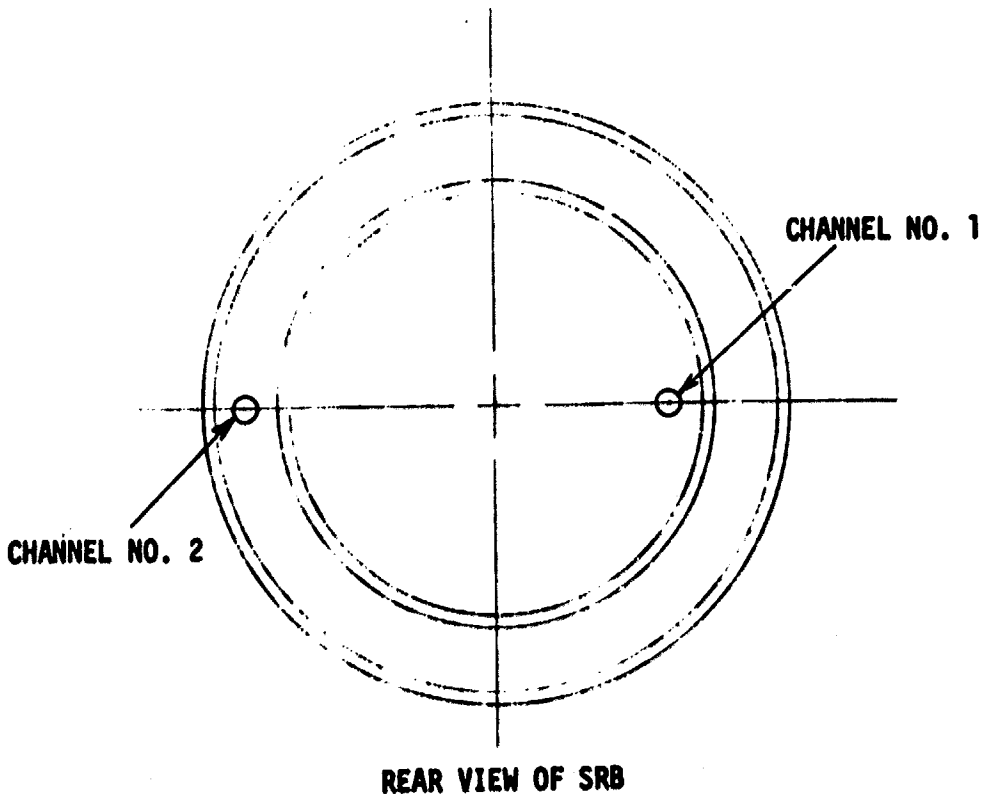


Figure 20. BASE PRESSURE LOCATIONS

DATA

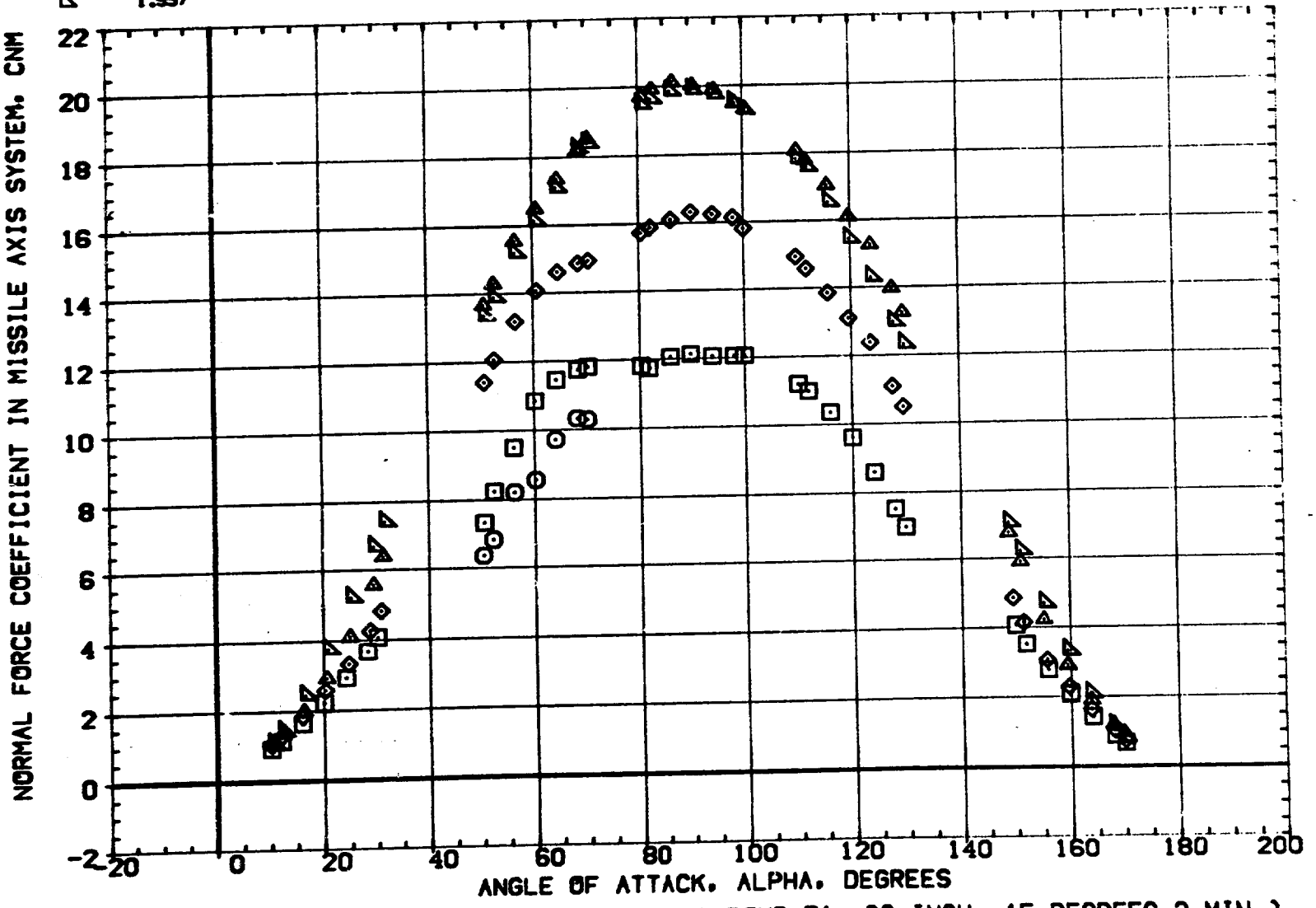
FIGURES

MSFC 578(SA10F) 142-IN SRB (139) NBE1 (B91100)

SYMBOL	MACH		PARAMETRIC VALUES		
○	.404	BETA	.000	PHI	.000
□	.594	FWDSTK	.000	AFTSTK	.000
◇	.898	ATHRNG	.100	ATHS	.000
△	1.197	CONFIG	1.000	SHDSTK	.000
▷	1.957				

REFERENCE INFORMATION

SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	



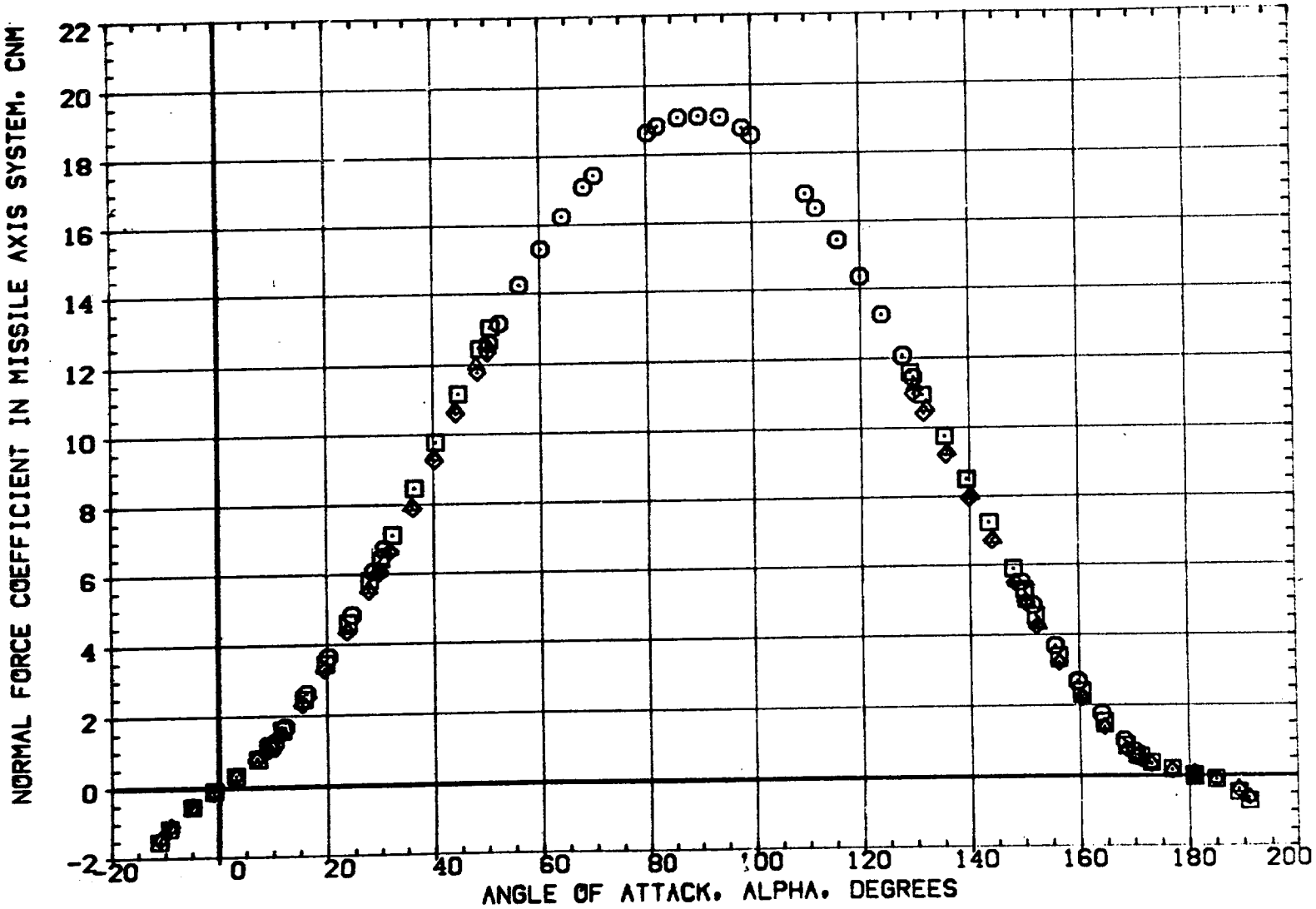
STABILITY CHARACTERISTICS OF SRB (BASIC SHROUD,E1, 93 INCH, 15 DEGREES 3 MIN.)

MSFC 578(SA10F) 142-IN SRB (139) NBE1 (B91100)

SYMBOL	MACH	PARAMETRIC VALUES			
○	3.479	BETA	.000	PHI	.000
□	4.000	FWDSTK	.000	AFTSTK	.000
◇	4.450	ATHRNG	.100	ATHS	.000
△	4.960	CONFIG	1.000	SHOSTK	.000

REFERENCE INFORMATION

SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	



STABILITY CHARACTERISTICS OF SRB (BASIC SHROUD,E1, 93 INCH, 15 DEGREES 3 MIN.)

MSFC 578(SA10F) 142-IN SRB (139) NBE1 (891100)

SYMBOL	MACH
○	.404
□	.594
◇	.898
△	1.197
▷	1.557

PARAMETRIC VALUES

BETA	.000	PHI	.000
FWDSTK	.000	AFTSTK	.000
ATHRNG	.100	ATHS	.000
CONFIG	1.000	SHOSTK	.000

REFERENCE INFORMATION

SREF	.5030	SQ. IN
LREF	.8000	IN.
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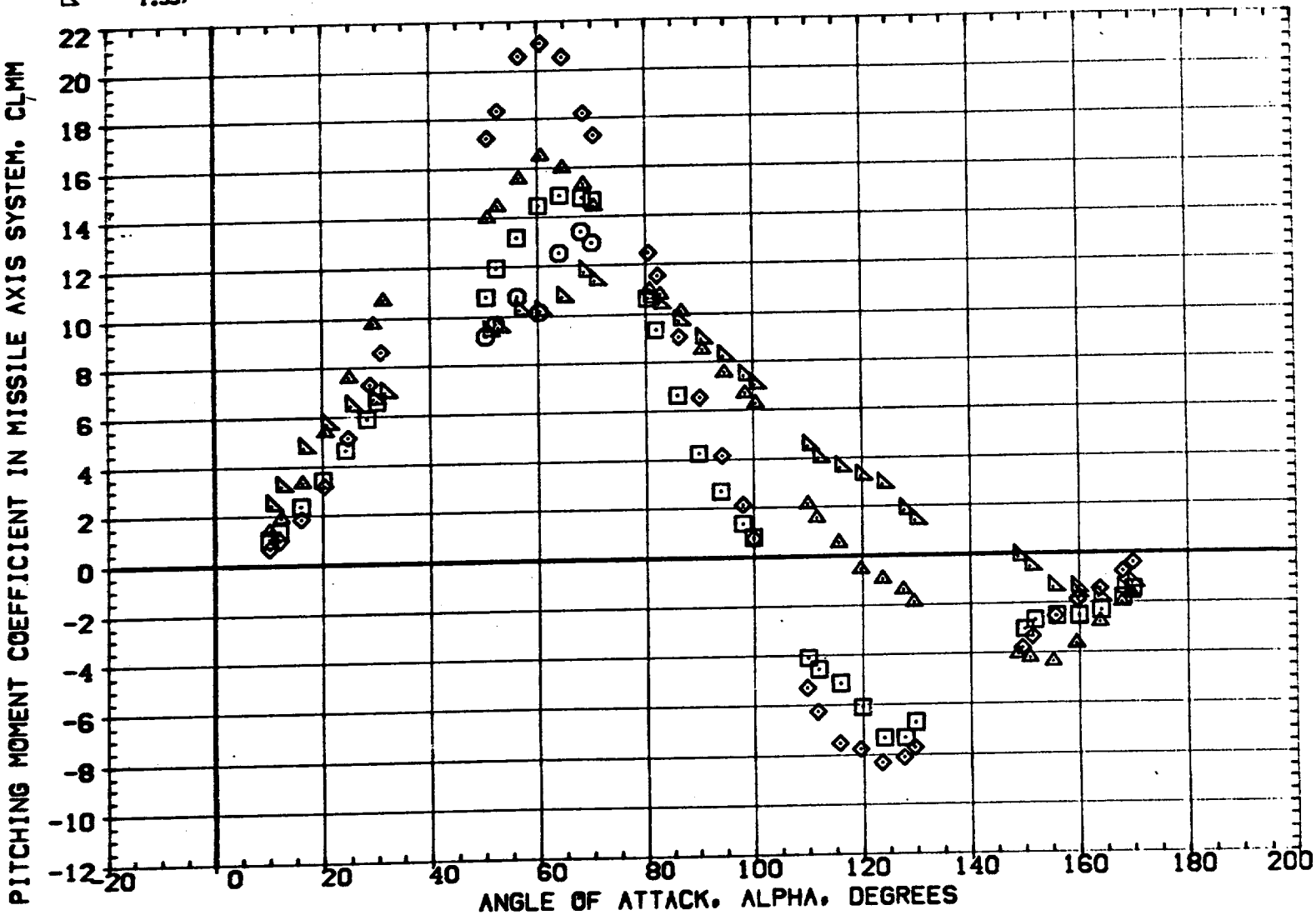
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	



STABILITY CHARACTERISTICS OF SRB (BASIC SHROUD,E1, 93 INCH, 15 DEGREES 3 MIN.)

MSFC 578(SA10F) 142-IN SRB (139) NBE1 (B91100)

SYMBOL	MACH		PARAMETRIC VALUES		
○	3.479	BETA	.000	PHI	.000
□	4.000	FVDSTK	.000	AFTSTK	.000
◇	4.450	ATHRNG	.100	ATHS	.000
△	4.960	CONFIG	1.000	SHDSTK	.000

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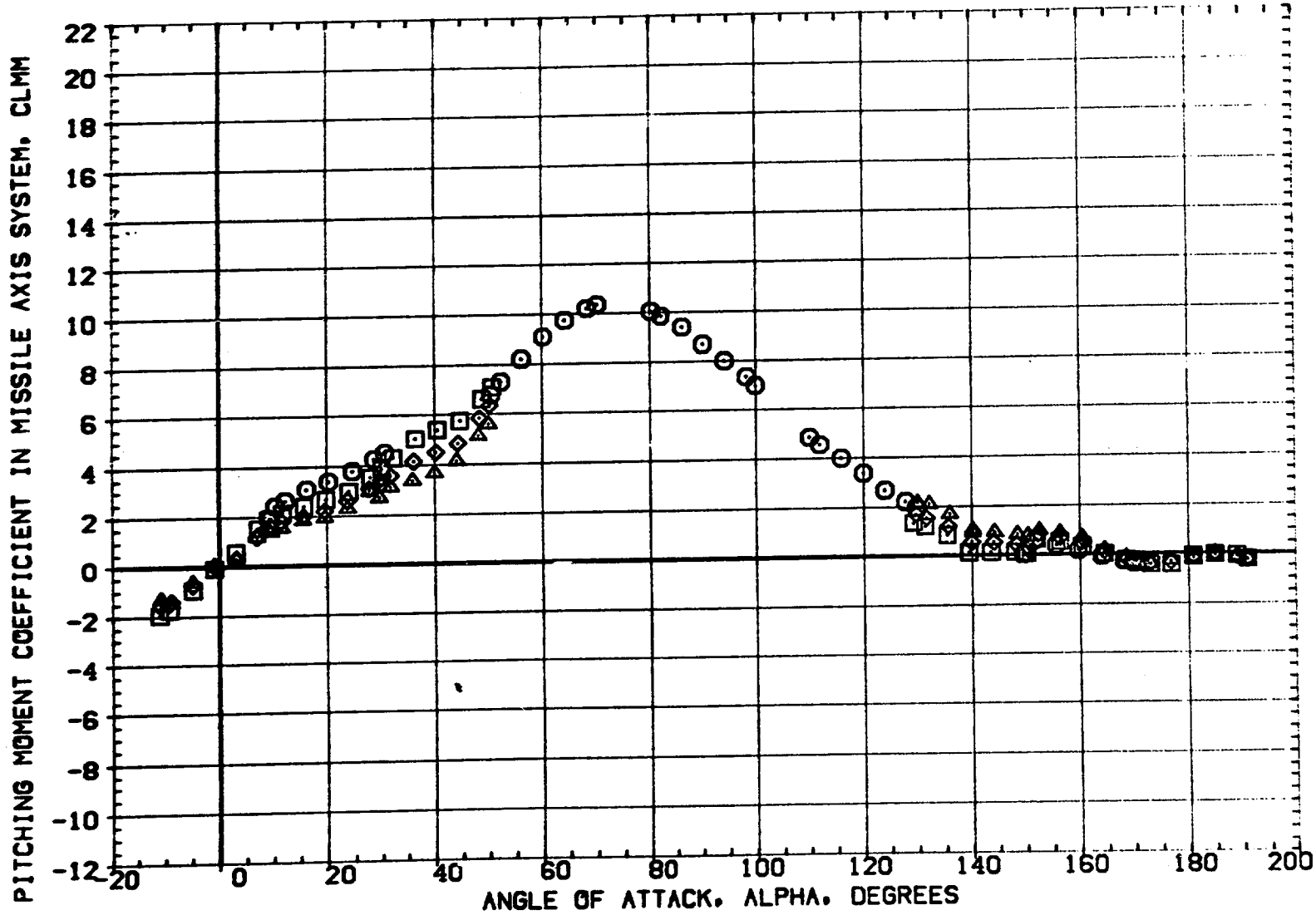

STABILITY CHARACTERISTICS OF SRB (BASIC SHROUD,E1, 93 INCH, 15 DEGREES 3 MIN.)

MSFC 578(SA10F) 142-IN SRB (139) NBE1 (B91100)

SYMBOL	MACH
○	.404
□	.594
◇	.898
△	1.197
▷	1.957

PARAMETRIC VALUES

BETA	.000	PHI	.000
FWDSTK	.000	AFTSTK	.000
ATHRNG	.100	ATHS	.000
CONFIG	1.000	SHDSTK	.000

REFERENCE INFORMATION

SREF	.5030	SQ. IN
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BREF	.8000	IN.
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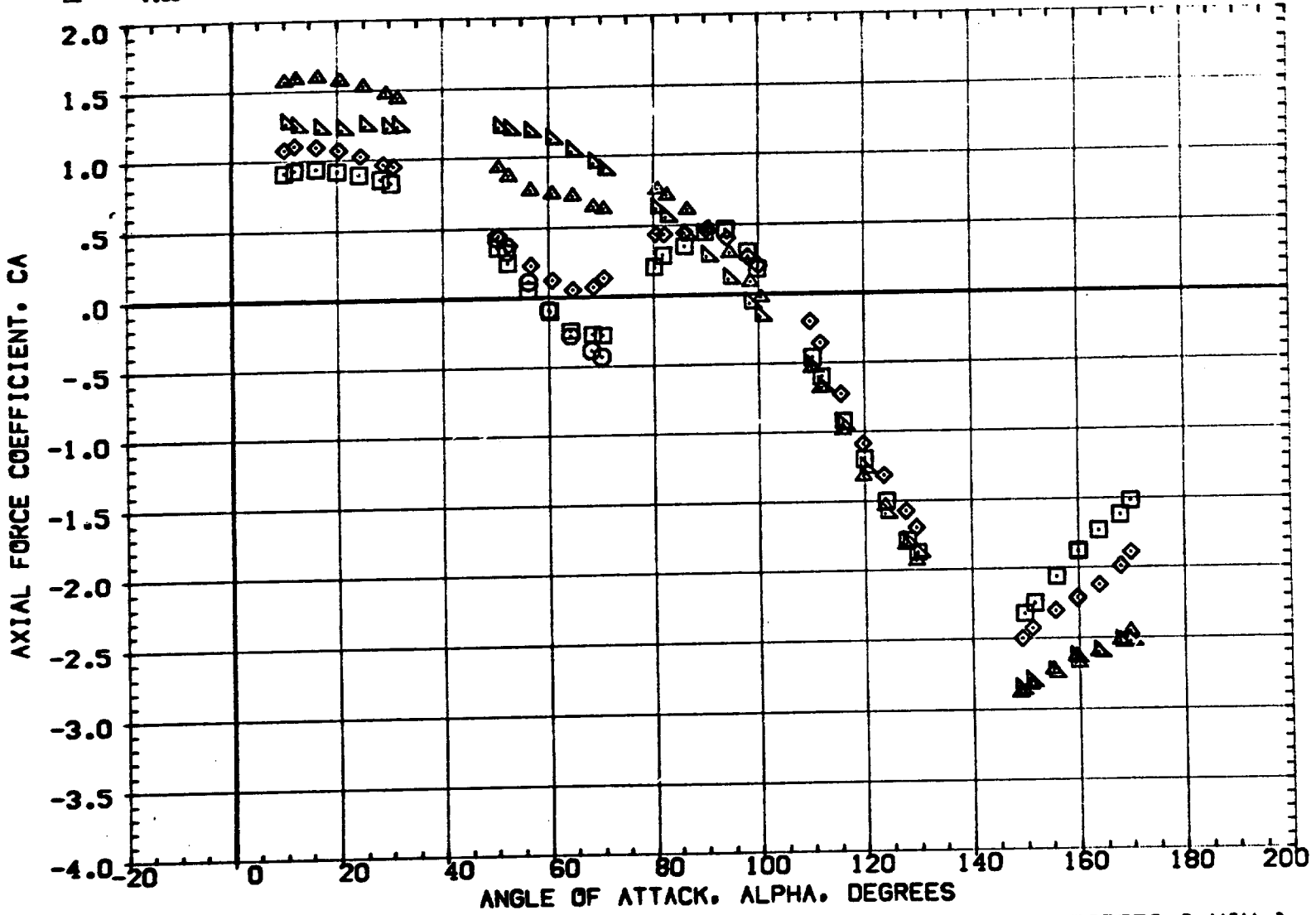
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	



STABILITY CHARACTERISTICS OF SRB (BASIC SHROUD,E1, 93 INCH, 15 DEGREES 3 MIN.)

MSFC 578(SA10F) 142-IN SRB (139) NBE1 (B91100)

SYMBOL	MACH		PARAMETRIC VALUES		
○	3.479	BETA	.000	PHI	.000
□	4.000	FWDSTK	.000	AFTSTK	.000
◇	4.450	ATHRNG	.100	ATHS	.000
△	4.960	CONFIG	1.000	SHOSTK	.000

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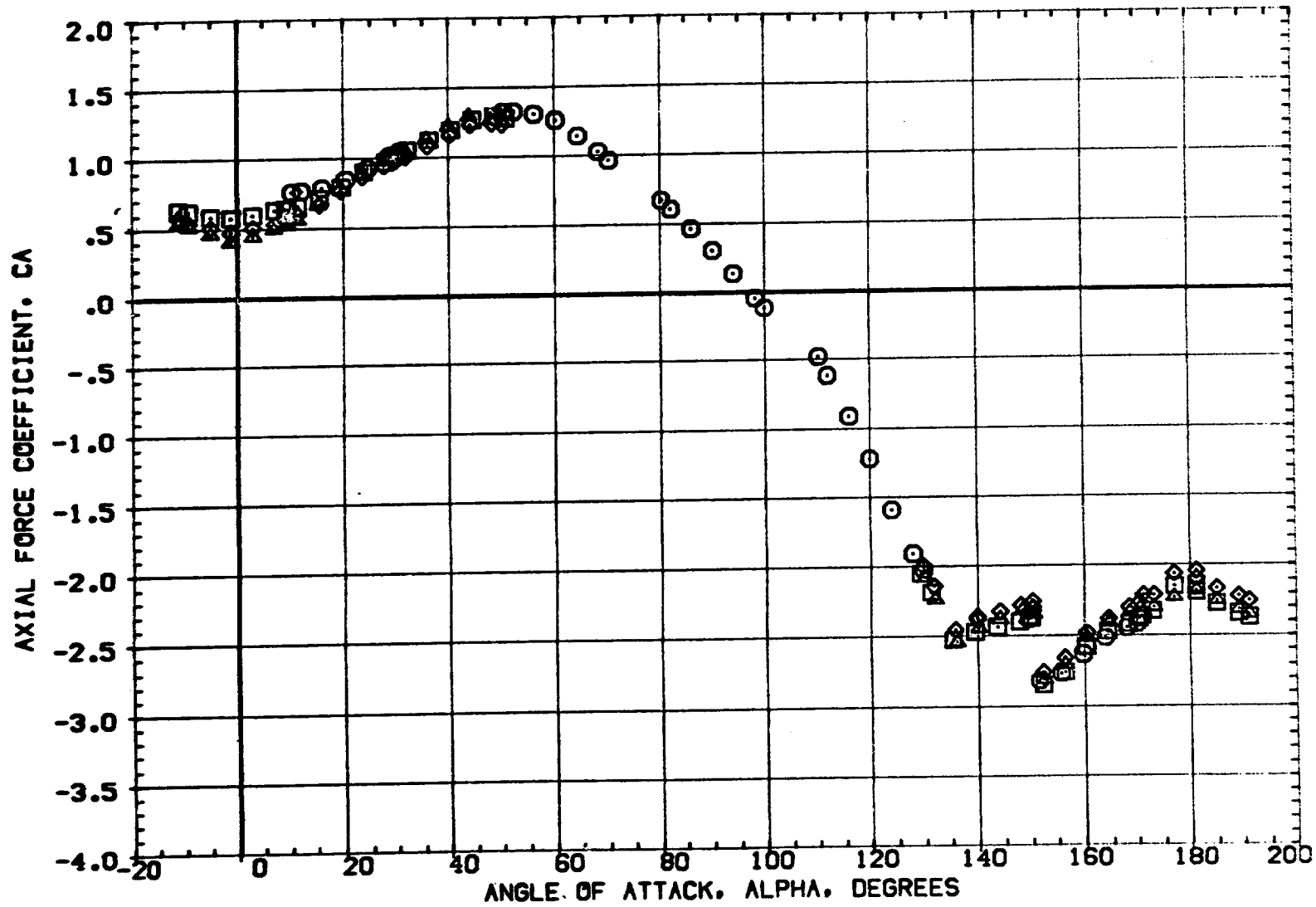

STABILITY CHARACTERISTICS OF SRB (BASIC SHROUD,E1, 93 INCH, 15 DEGREES 3 MIN.)

MSFC 578(SA10F) 142-IN SRB (139) NBE1 (B91100)

SYMBOL	MACH
○	.404
□	.594
◇	.898
△	1.197
▷	1.957

PARAMETRIC VALUES

BETA	.000	PHI	.000
FWDSTK	.000	AFTSTK	.000
ATHRNG	.100	ATHS	.000
CONFIG	1.000	SHDSTK	.000

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BREF	.8000	IN.
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YMRP	.0000	IN.
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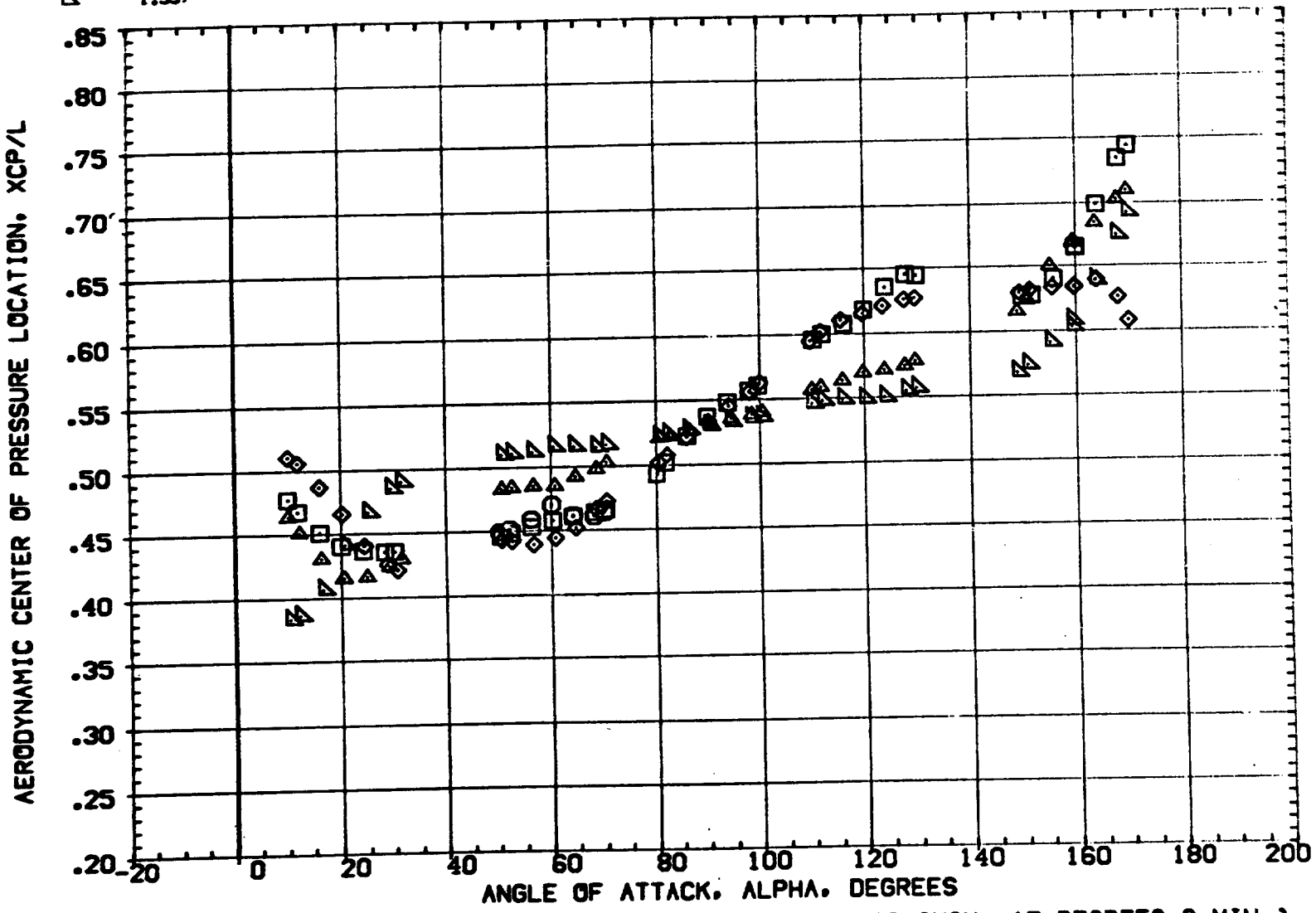
SCALE	.0056	



STABILITY CHARACTERISTICS OF SRB (BASIC SHROUD,E1, 93 INCH, 15 DEGREES 3 MIN.)

MSFC 578(SA10F) 142-IN SRB (139) NBE1 (B91100)

SYMBOL	MACH		PARAMETRIC VALUES		
○	3.479	BETA	.000	PHI	.000
□	4.000	FWDSTK	.000	AFTSTK	.000
◇	4.450	ATHRNG	.100	ATHS	.000
△	4.960	CONFIG	1.000	SHOSTK	.000

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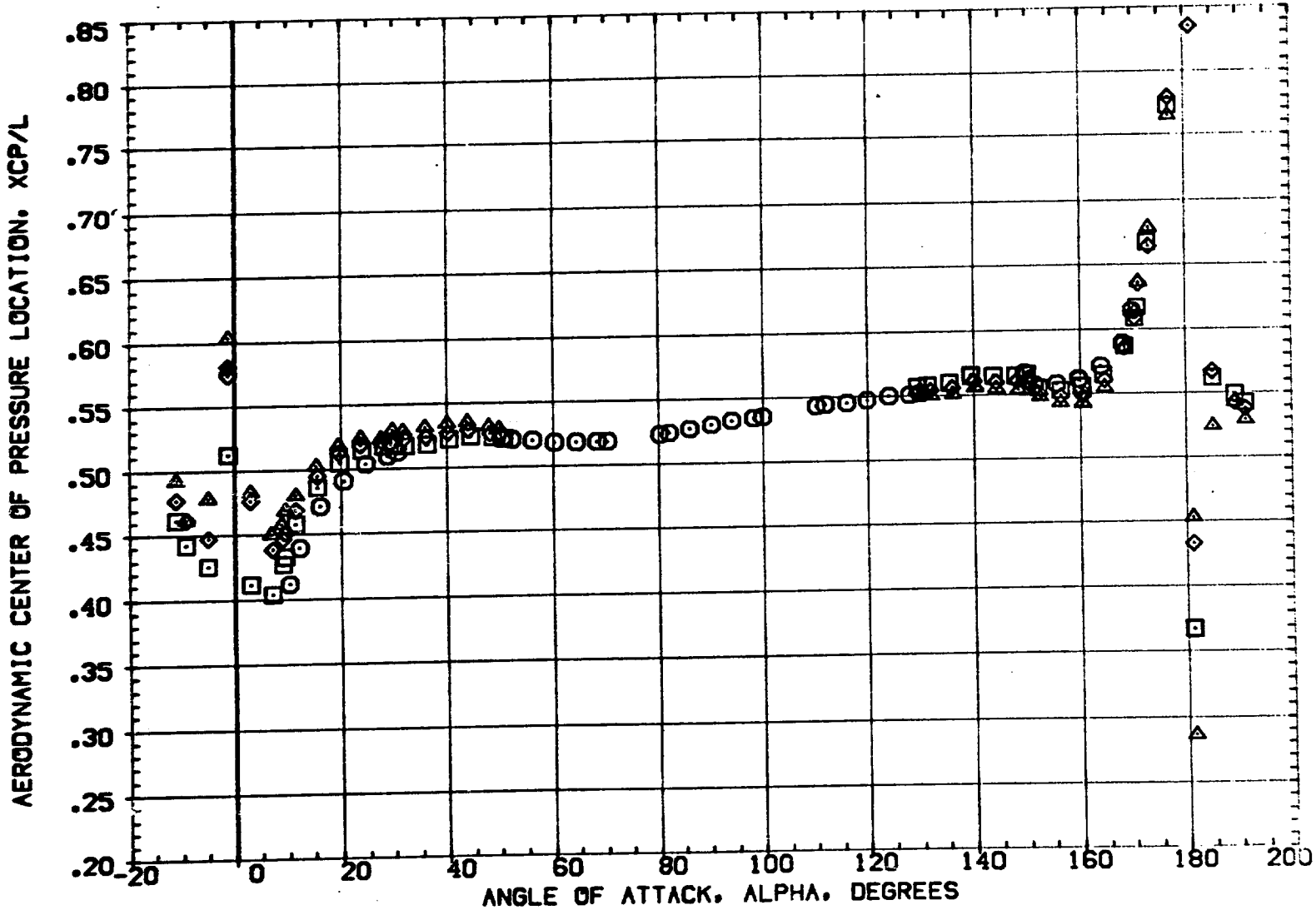

STABILITY CHARACTERISTICS OF SRB (BASIC SHROUD,E1, 93 INCH, 15 DEGREES 3 MIN.)

MSFC 578(SA10F) 142-IN SRB (139) NBE1 (B91100)

SYMBOL	MACH
○	.404
□	.594
◇	.898
△	1.197
▽	1.957

PARAMETRIC VALUES

BETA	.000	PHI	.000
FWDSTK	.000	AFTSTK	.000
ATHRNG	.100	ATHS	.000
CONFIG	1.000	SHDSTK	.000

REFERENCE INFORMATION

SREF	.5030	SQ. IN
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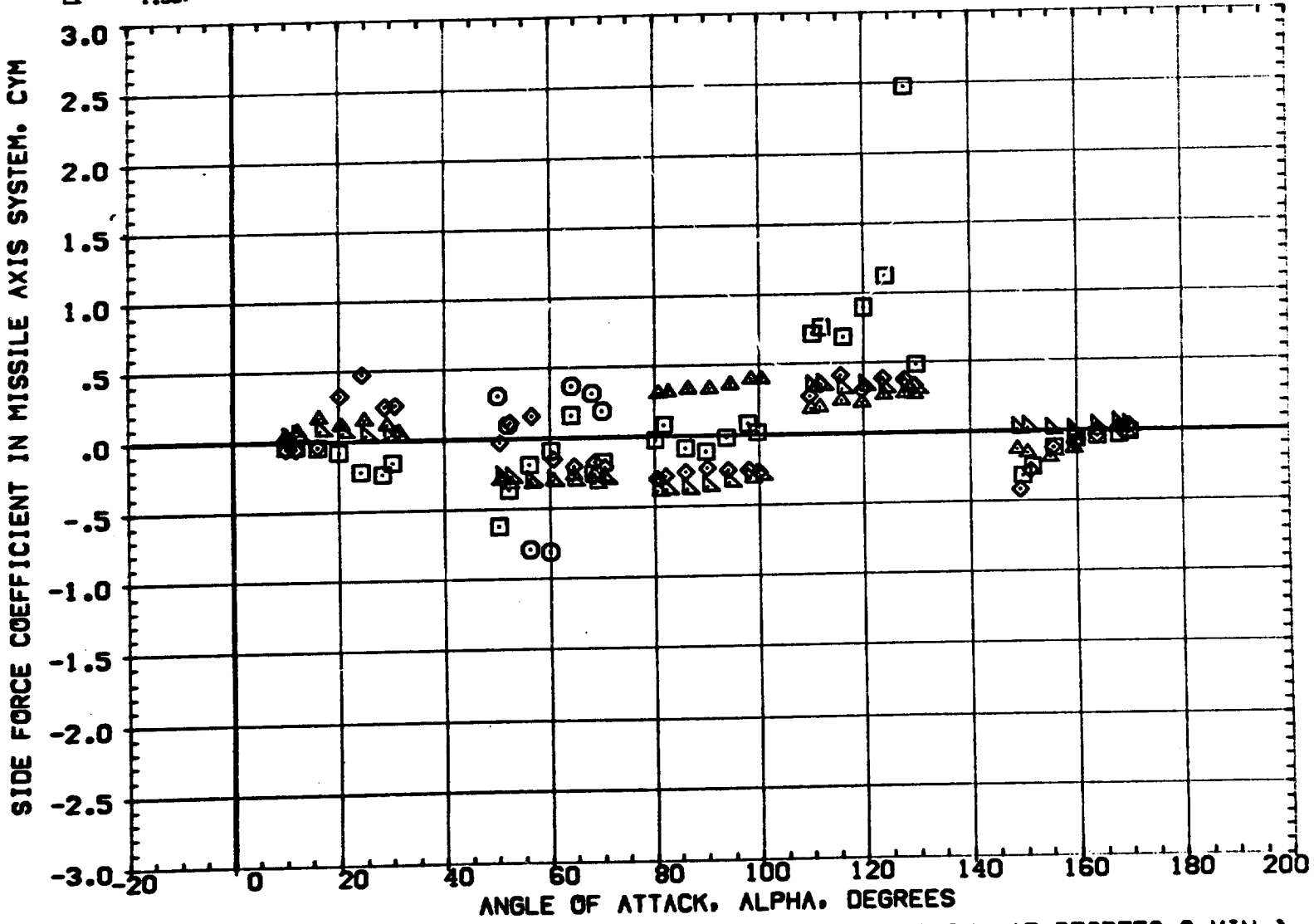
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	



STABILITY CHARACTERISTICS OF SRB (BASIC SHROUD,E1, 93 INCH, 15 DEGREES 3 MIN.)

MSFC 578(SA10F) 142-IN SRB (139) NBE1 (B91100)

SYMBOL	MACH		PARAMETRIC VALUES		
○	3.479	BETA	.000	PHI	.000
□	4.000	FVDSTK	.000	AFTSTK	.000
◇	4.450	ATHRNG	.100	ATHS	.000
△	4.950	CONFIG	1.000	SHDSTK	.000

REFERENCE INFORMATION

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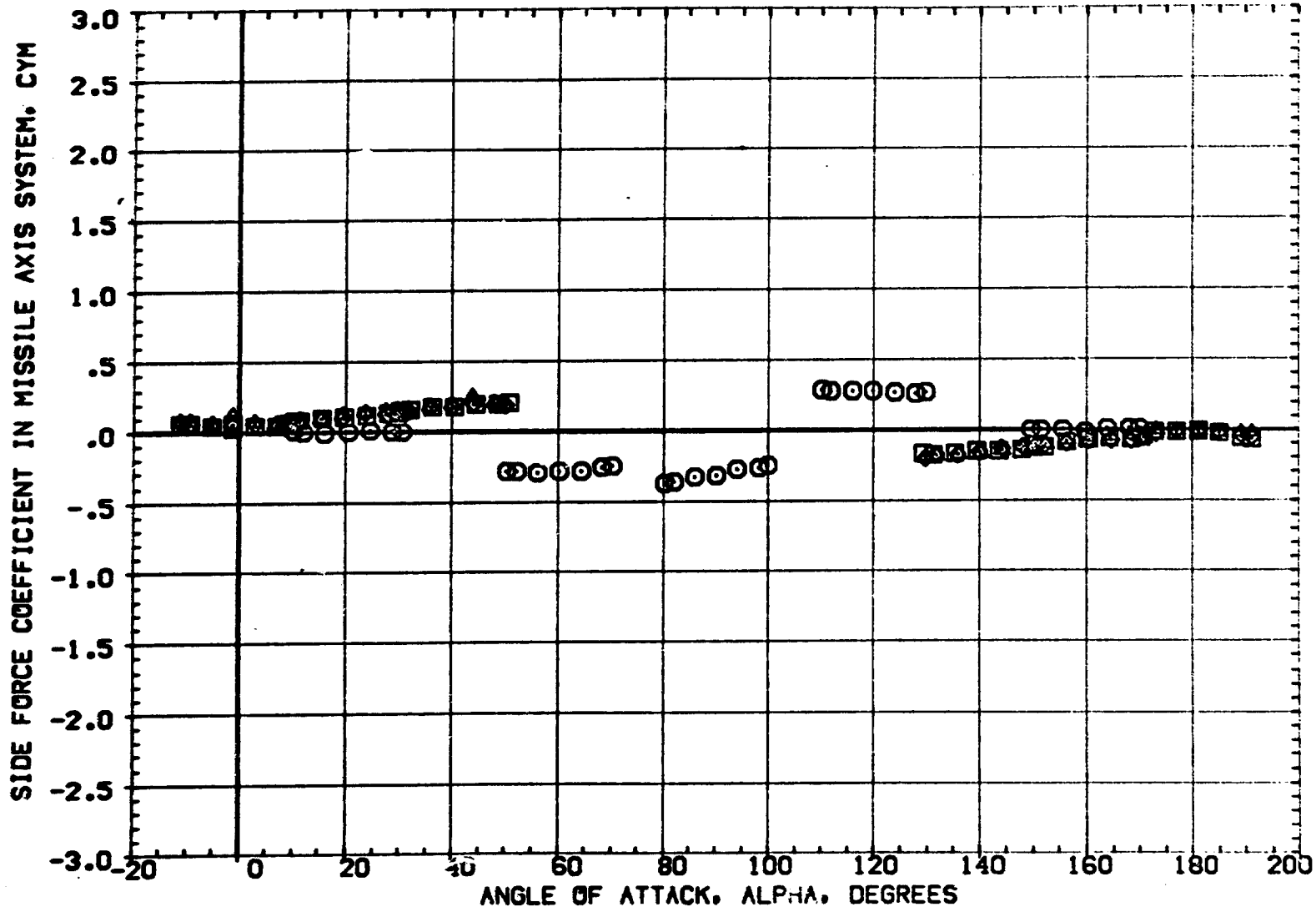
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	



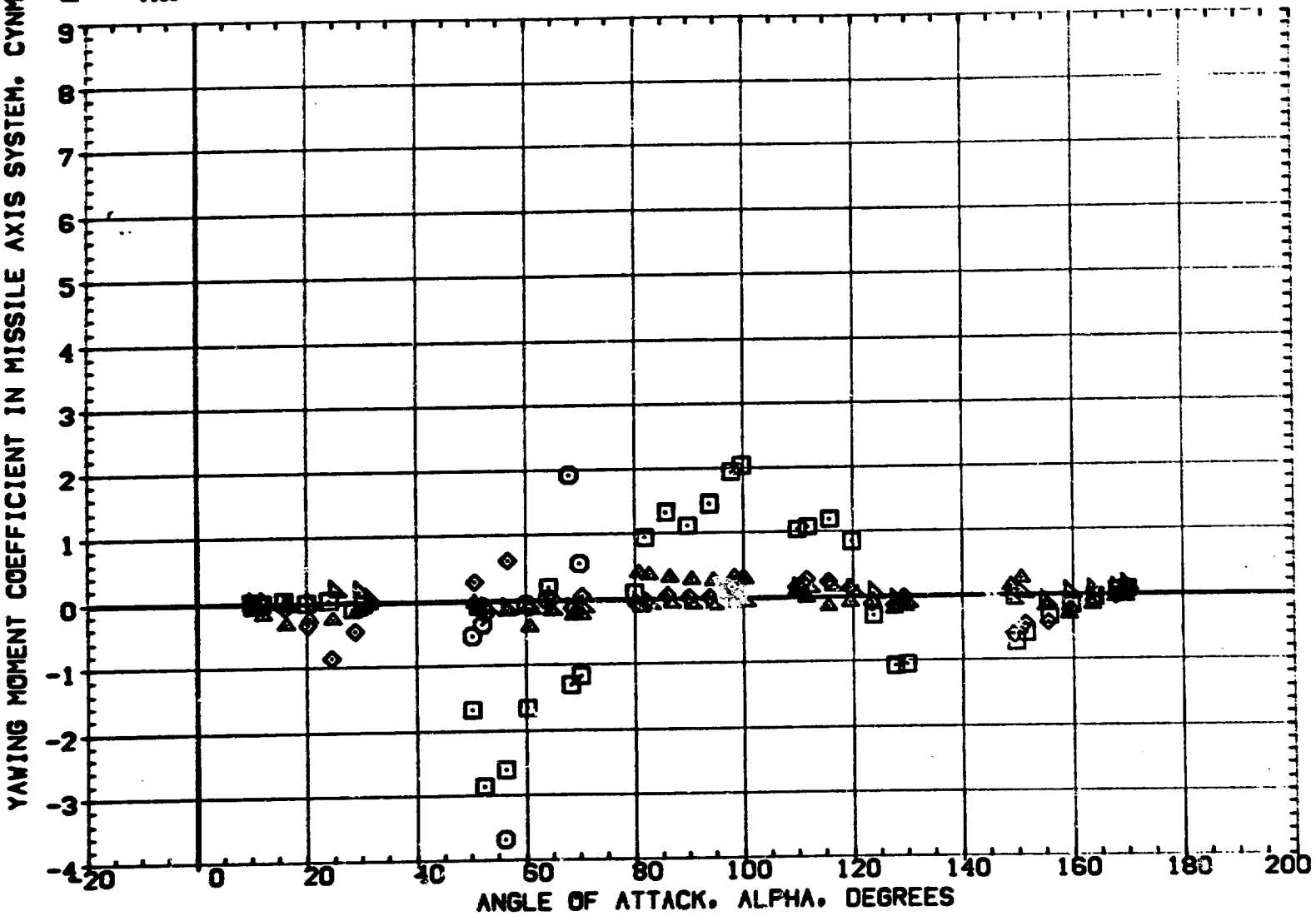
STABILITY CHARACTERISTICS OF SRB (BASIC SHROUD,E1, 93 INCH, 15 DEGREES 3 MIN.)

MSFC 578(SA10F) 142-IN SRB (139) NBE1 (B91100)

SYMBOL	MACH		PARAMETRIC VALUES		
○	.404	BETA	.000	PHI	.000
□	.594	FWDSTK	.000	AFTSTK	.000
◇	.898	ATHRNG	.100	ATHS	.000
△	1.197	CONFIG	1.000	SHDSTK	.000
▽	1.957				

REFERENCE INFORMATION

SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	



STABILITY CHARACTERISTICS OF SRB (BASIC SHROUD,E1, 93 INCH, 15 DEGREES 3 MIN.)

MSFC 578(SA10F) 142-IN SRB (139) NBE1 (B91100)

SYMBOL	MACH		PARAMETRIC VALUES		
○	3.479	BETA	.000	PHI	.000
□	4.000	FWDSTK	.000	AFTSTK	.000
◇	4.450	ATHRNG	.100	ATHS	.000
△	4.960	CONFIG	1.000	SHDSTK	.000

REFERENCE INFORMATION

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BREF	.8000	IN.
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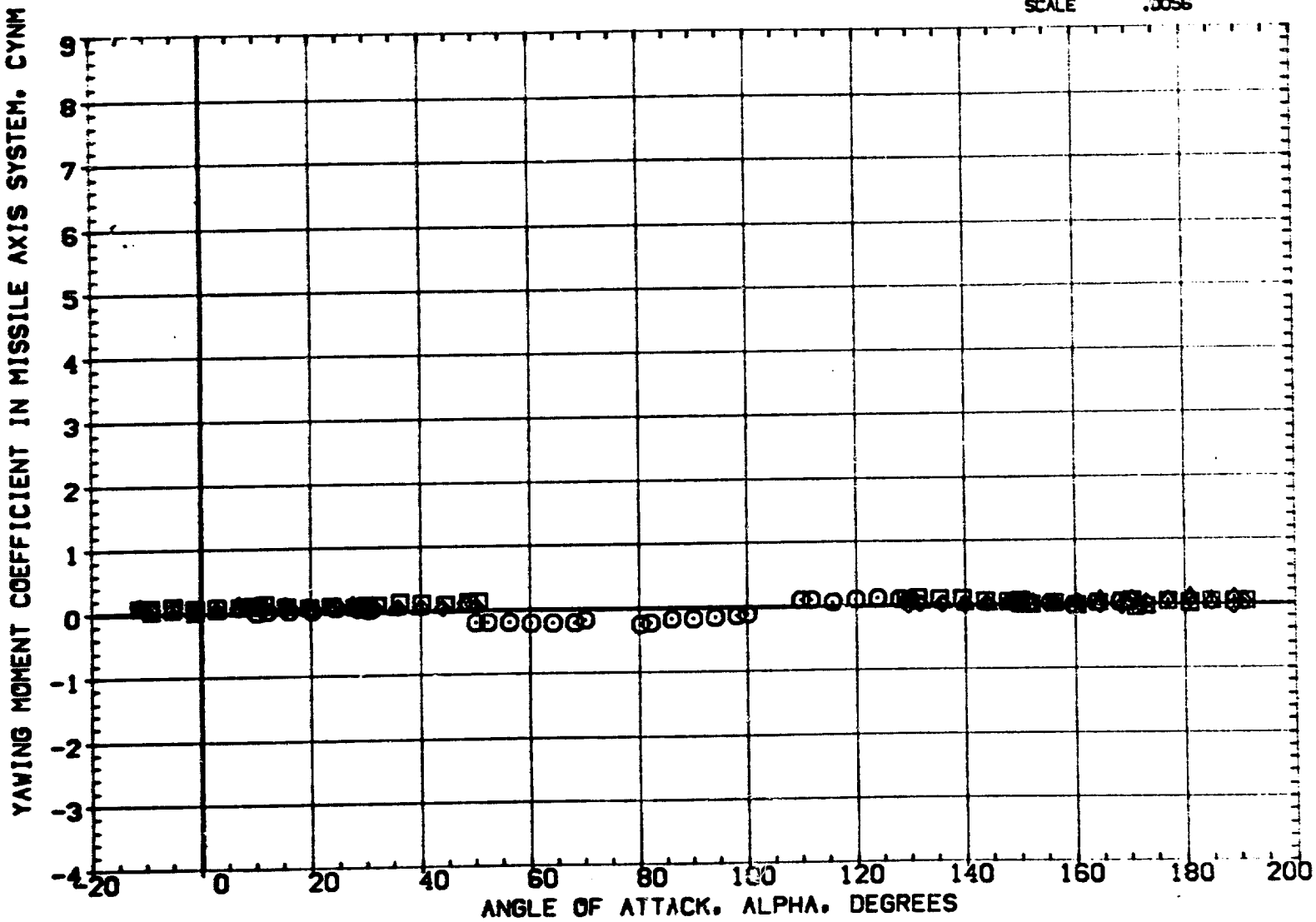
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	



STABILITY CHARACTERISTICS OF SRB (BASIC SHROUD,E1, 93 INCH, 15 DEGREES 3 MIN.)

MSFC 578(SA10F) 142-IN SRB (139) NBE1 (B91100)

SYMBOL	MACH
○	.404
□	.594
◇	.898
△	1.157
△	1.957

PARAMETRIC VALUES

BETA	.000	PHI	.000
FWDSTK	.000	AFTSTK	.000
ATHRNG	-100	ATHS	.000
CONFIG	1.000	SHDSTK	.000

REFERENCE INFORMATION

SREF	.5030	SQ. IN
LREF	.8000	IN.
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YMRP	.0000	IN.
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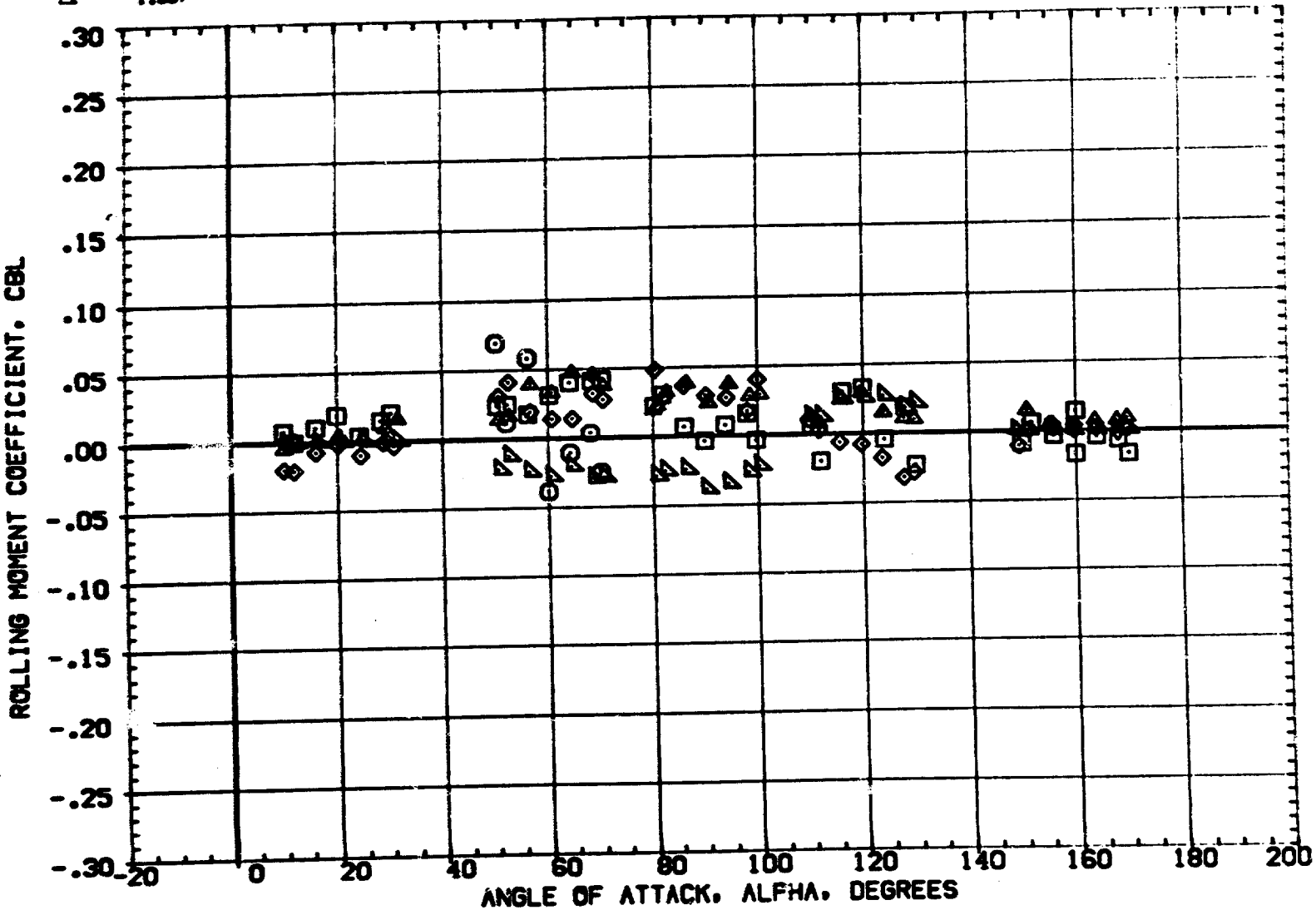
SCALE	.0056	



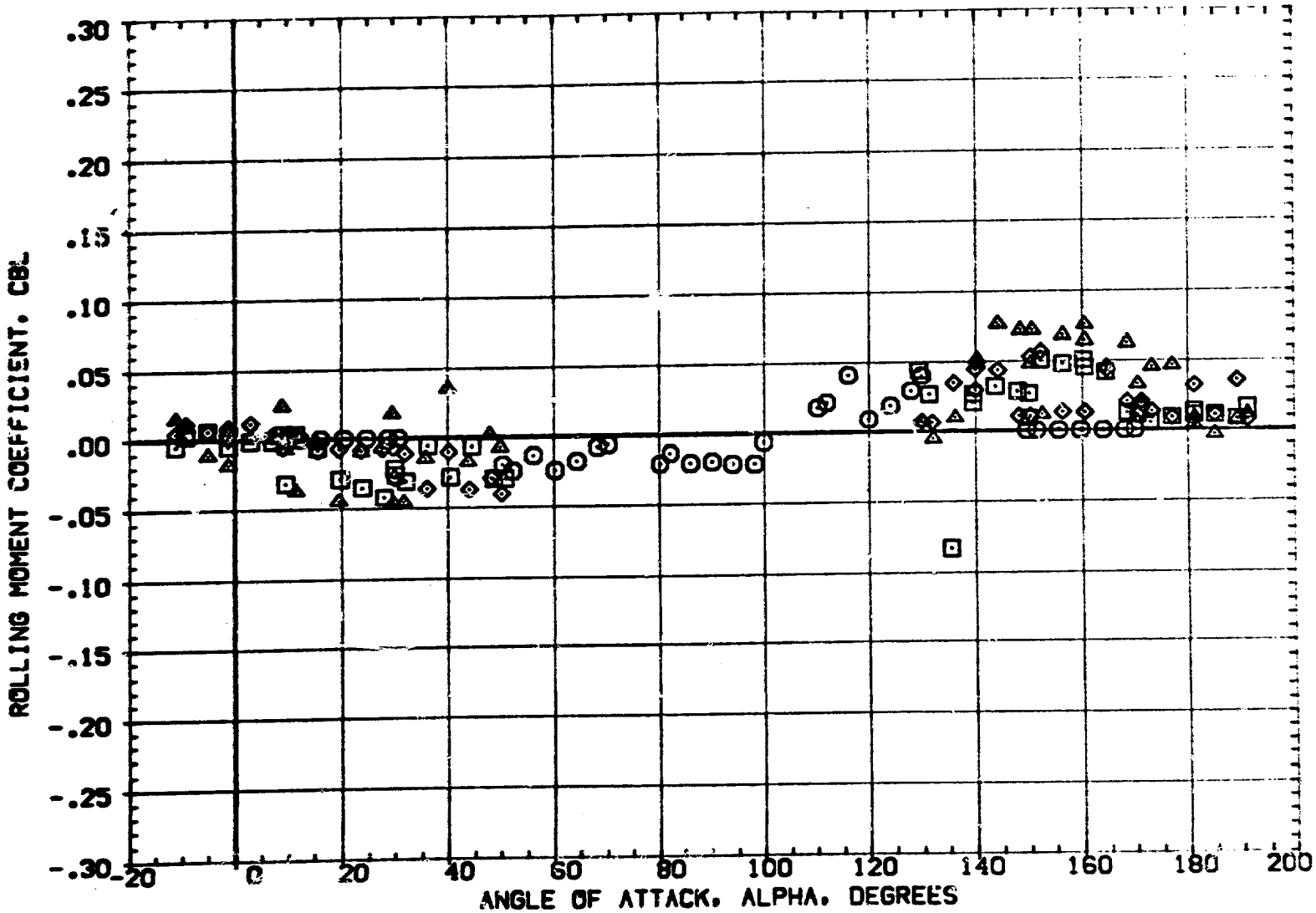
STABILITY CHARACTERISTICS OF SRB (BASIC SHROUD,E1, 93 INCH, 15 DEGREES 3 MIN.)

MSFC 578(SA10F) 142-IN SRB (139) NBE1 (891100)

SYMBOL	MACH		PARAMETRIC VALUES		
○	3.479	BETA	.000	PHI	.000
□	4.000	FWDSTK	.000	AFTSTK	.000
◇	4.450	ATHRNG	.100	ATHS	.000
△	4.960	CONFIG	1.000	SHDSTK	.000

REFERENCE INFORMATION

SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	



STABILITY CHARACTERISTICS OF SRB (BASIC SHROUD,E1, 93 INCH, 15 DEGREES 3 MIN.)

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	PHI	CONFIG	RN
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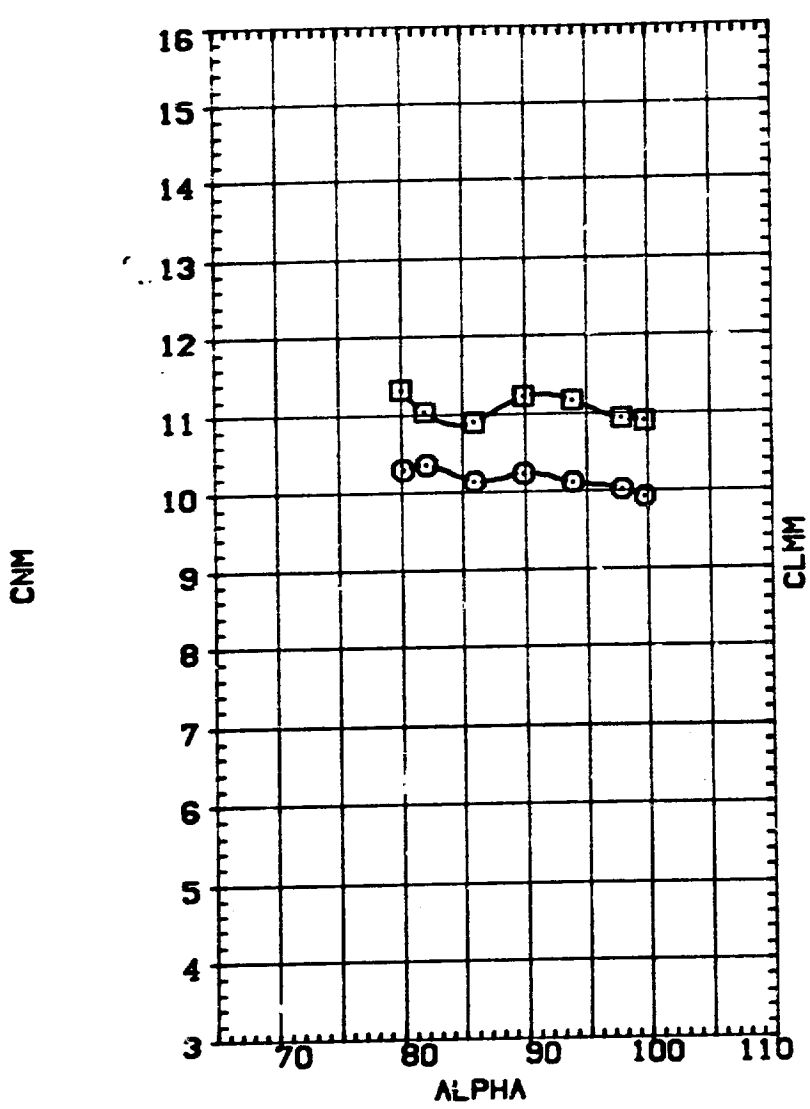
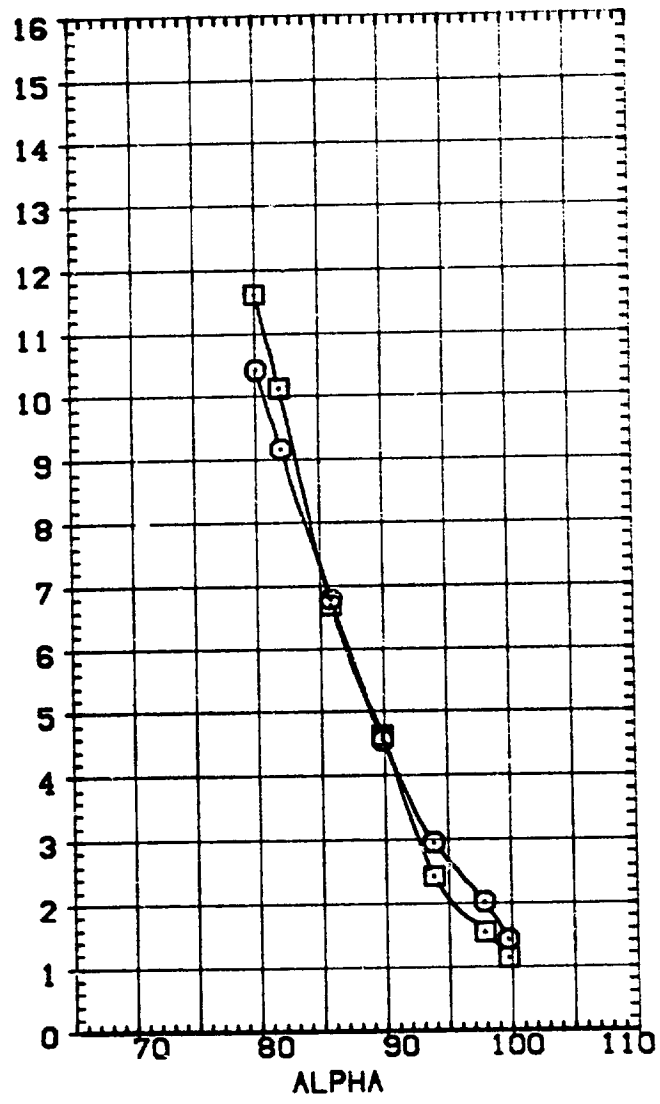
[D91A21]	MSFC 578(SA10F) 142-IN SRB (139) NBEI GRIT	.000	1.000	3.000

REFERENCE INFORMATION

SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	





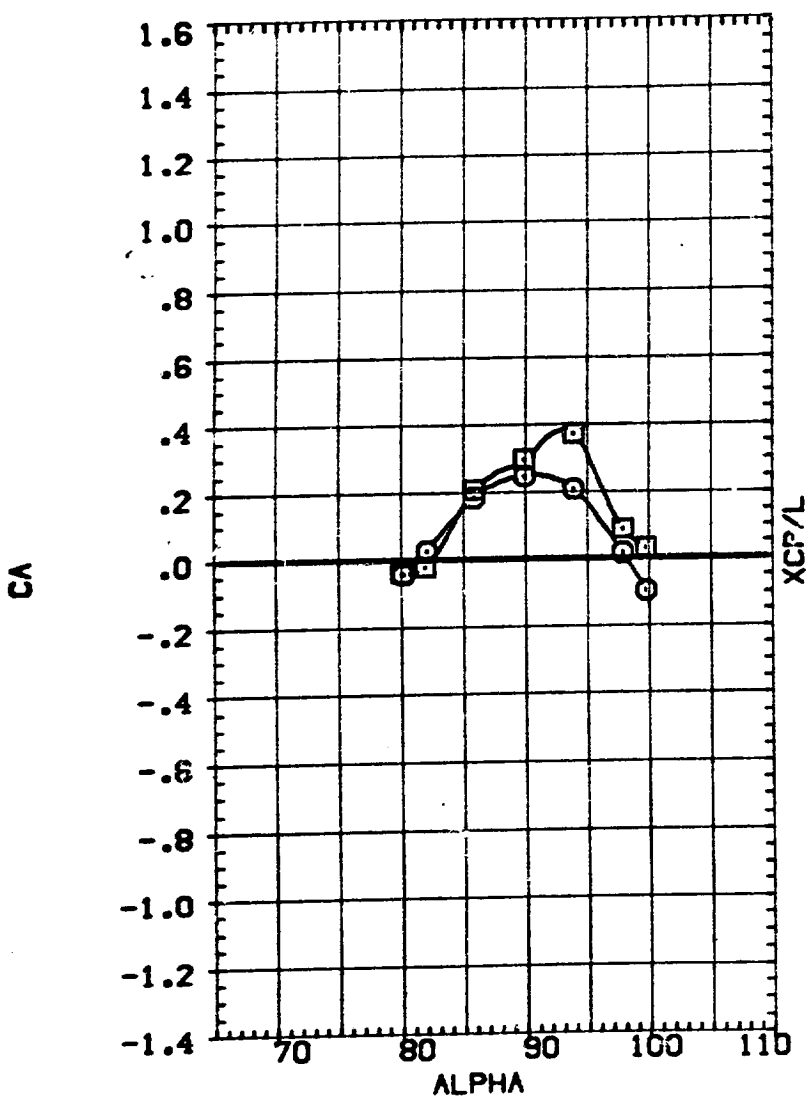
EFFECTS OF REYNOLDS NUMBER (WITH TRANSITION GRIT)

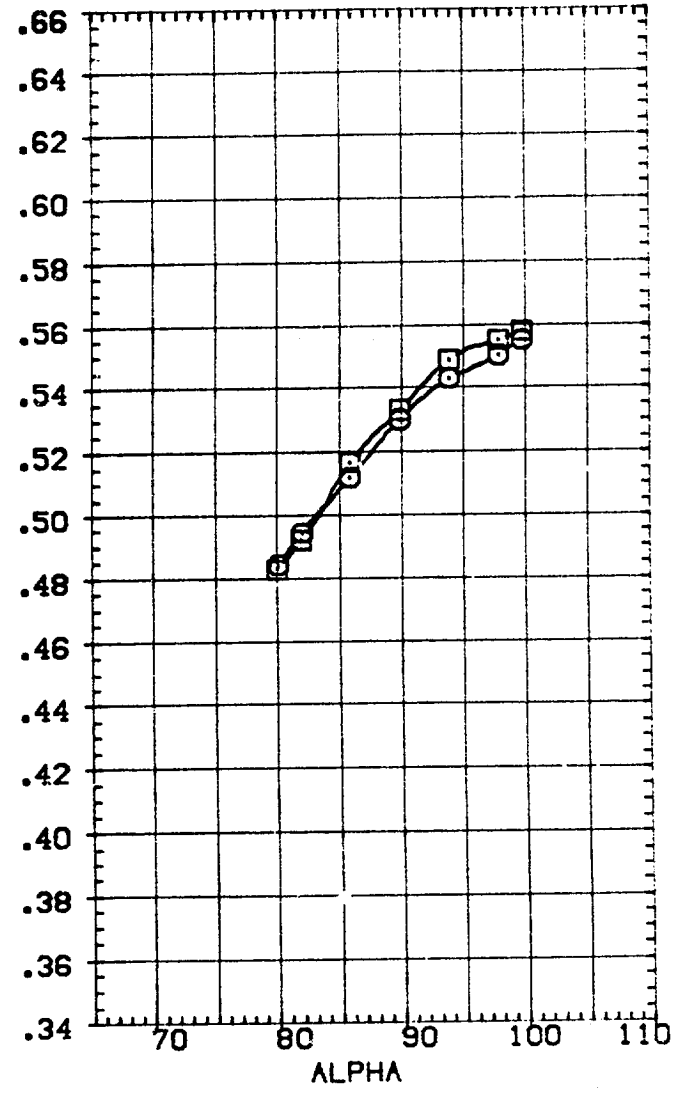
(A)MACH = .40

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	PHI	CONFIG	RN
[091A11]	MSFC 578[SA10F] 142-IN SRB [139] NBE1 GRIT	.000	1.000	5.400
[091A21]	MSFC 578[SA10F] 142-IN SRB [139] NBE1 GRIT	.000	1.000	3.000

REFERENCE INFORMATION

SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	





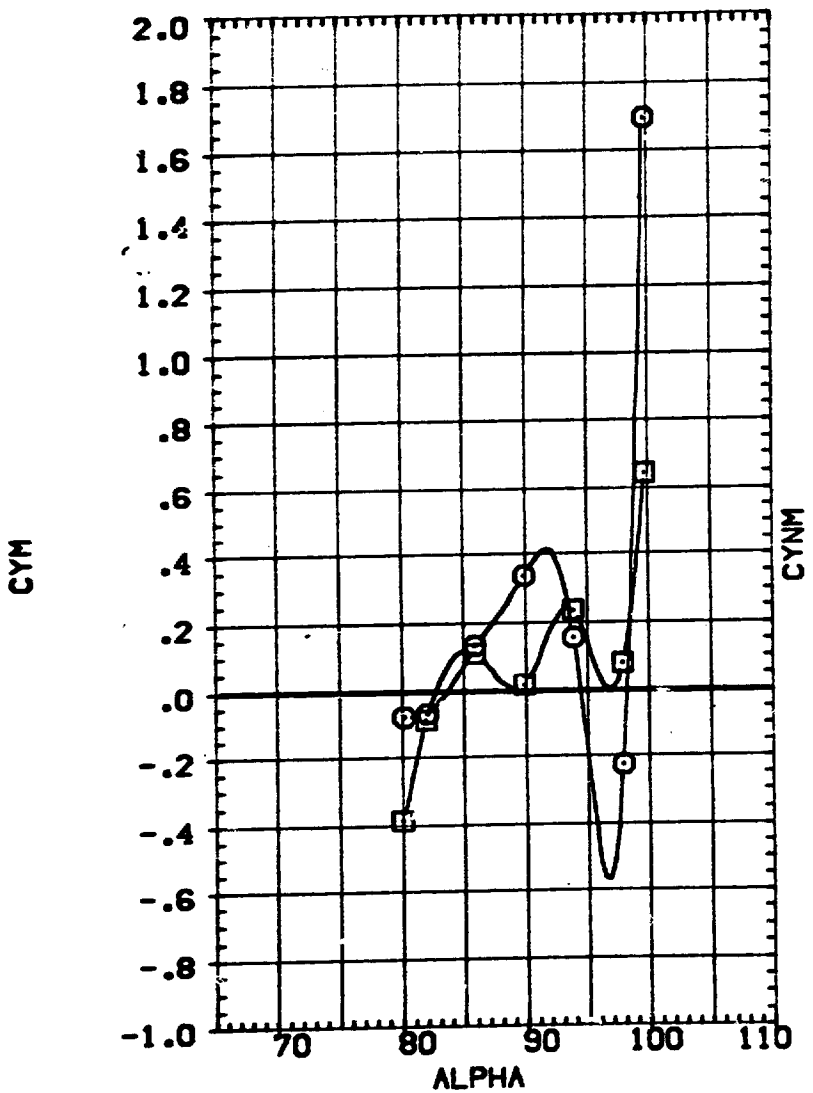
EFFECTS OF REYNOLDS NUMBER (WITH TRANSITION GRIT)

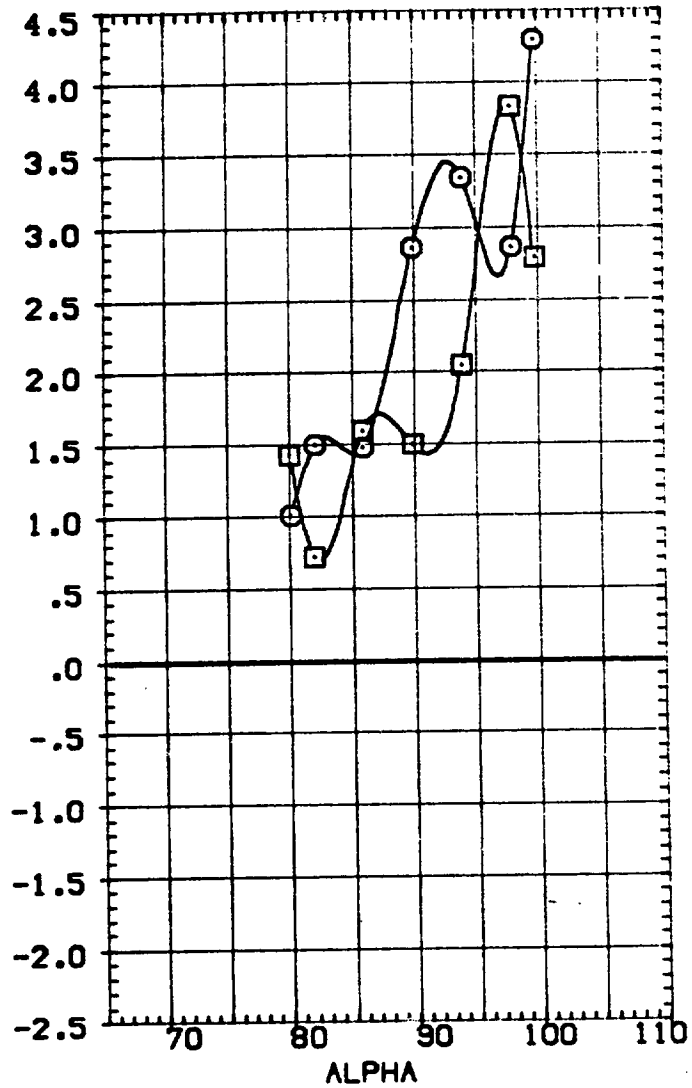
(A)MACH = .40

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	PHI	CONFIG	RN
[091A11]	MSFC 578(SA1DF) 142-IN SRB (139) NBEI GRIT	.000	1.000	5.400
[091A21]	MSFC 578(SA1DF) 142-IN SRB (139) NBEI GRIT	.000	1.000	3.000

REFERENCE INFORMATION

SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	





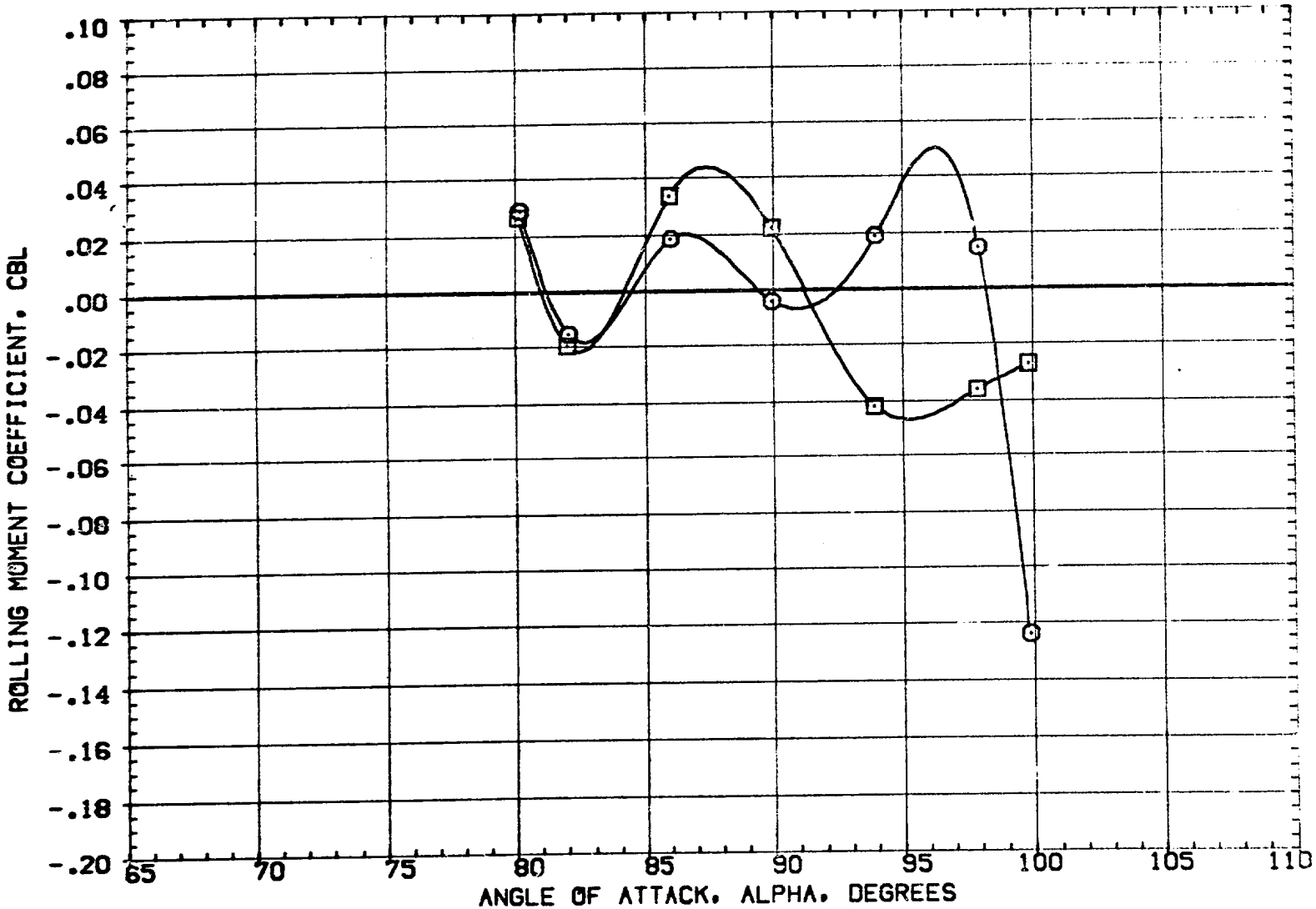
EFFECTS OF REYNOLDS NUMBER (WITH TRANSITION GRIT)

(A)MACH = .40

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	CONFIG	RN
[091A11]	○	MSFC 578[SA10F] 142-IN SRB [139] NBE] GRIT	.000	1.000	5.400
[091A21]	□	MSFC 578[SA10F] 142-IN SRB [139] NBE] GRIT	.000	1.000	3.000

REFERENCE INFORMATION

SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	



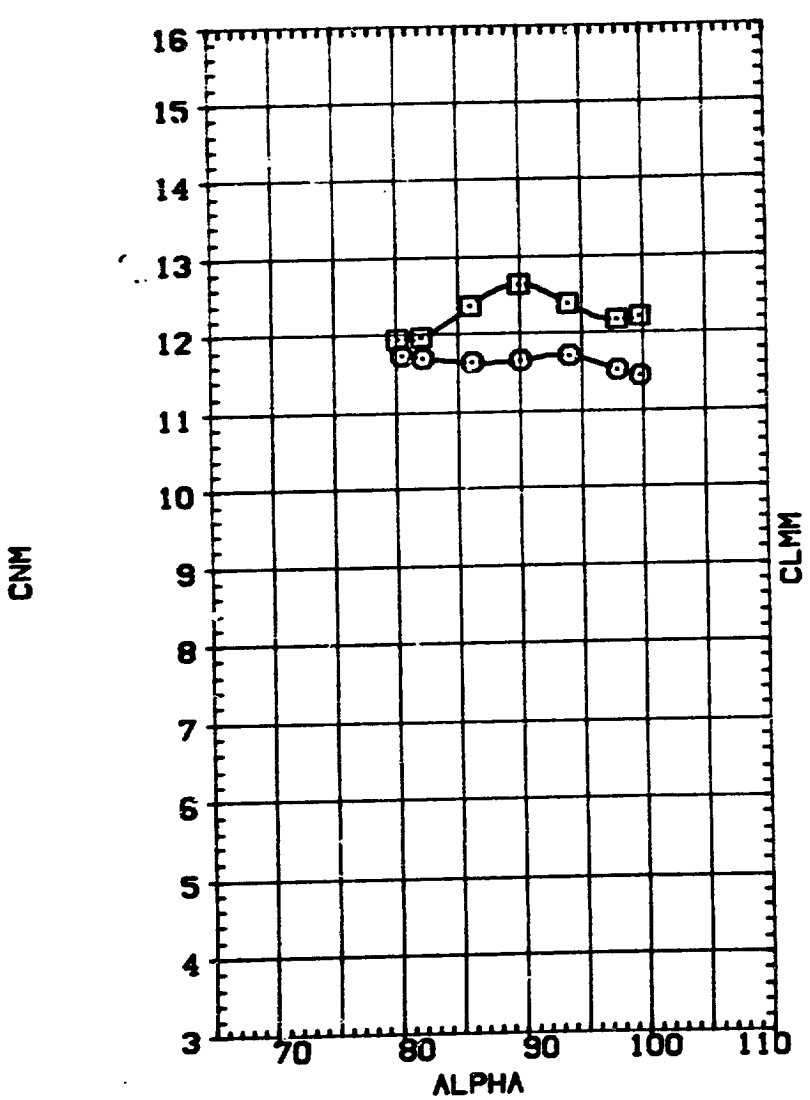
EFFECTS OF REYNOLDS NUMBER (WITH TRANSITION GRIT)

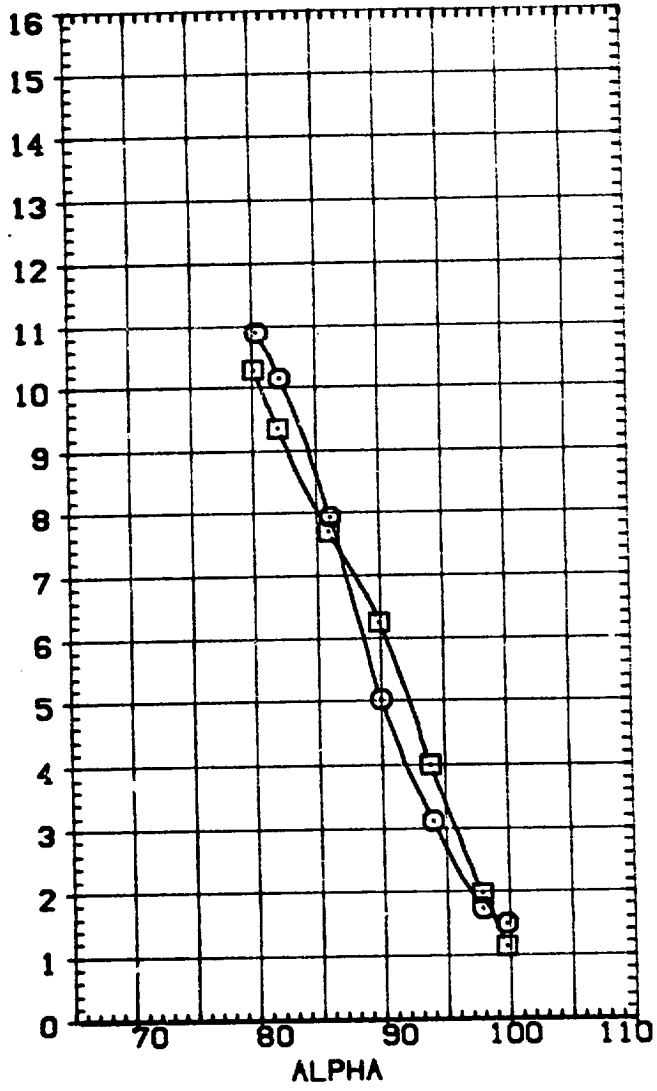
(A)MACH = .40

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	PHI	CONFIG	RN
[D91811]	MSFC 578[SA10F] 142-IN SRB [139] NBE1 GRIT	.000	1.000	8.600
[D91821]	MSFC 578[SA10F] 142-IN SRB [139] NBE1 GRIT	.000	1.000	4.100

REFERENCE INFORMATION

SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	





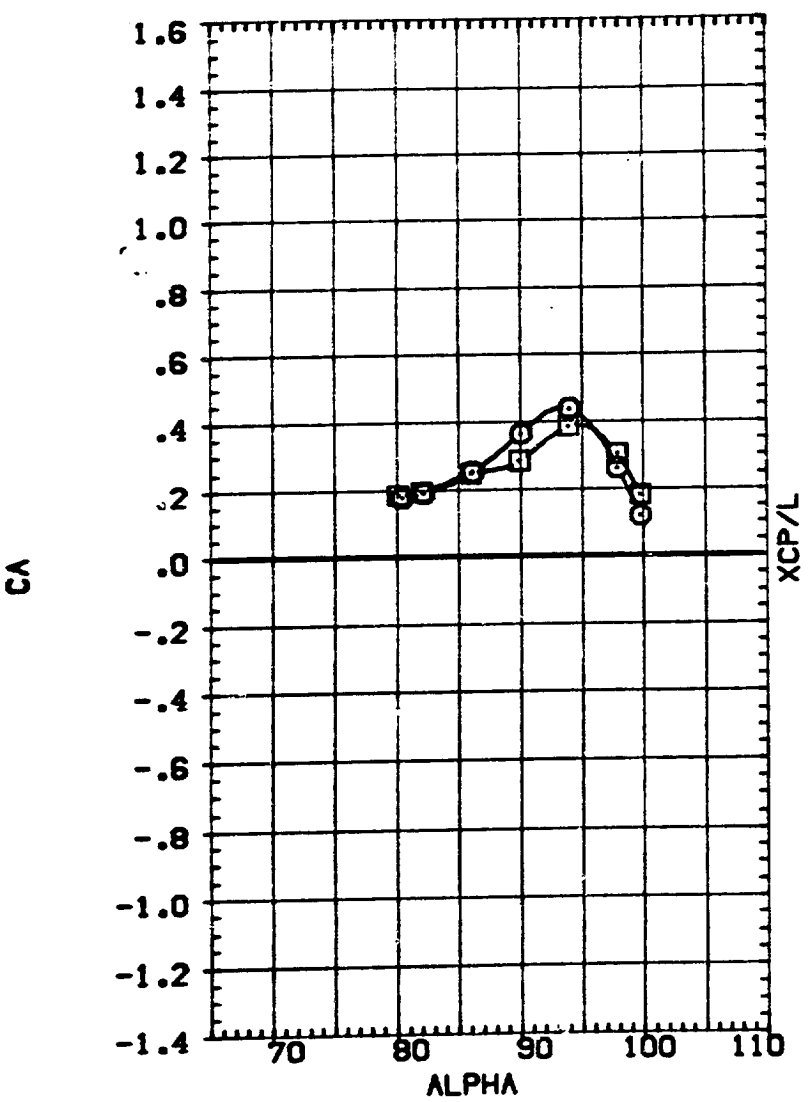
EFFECTS OF REYNOLDS NUMBER (WITH TRANSITION GRIT)

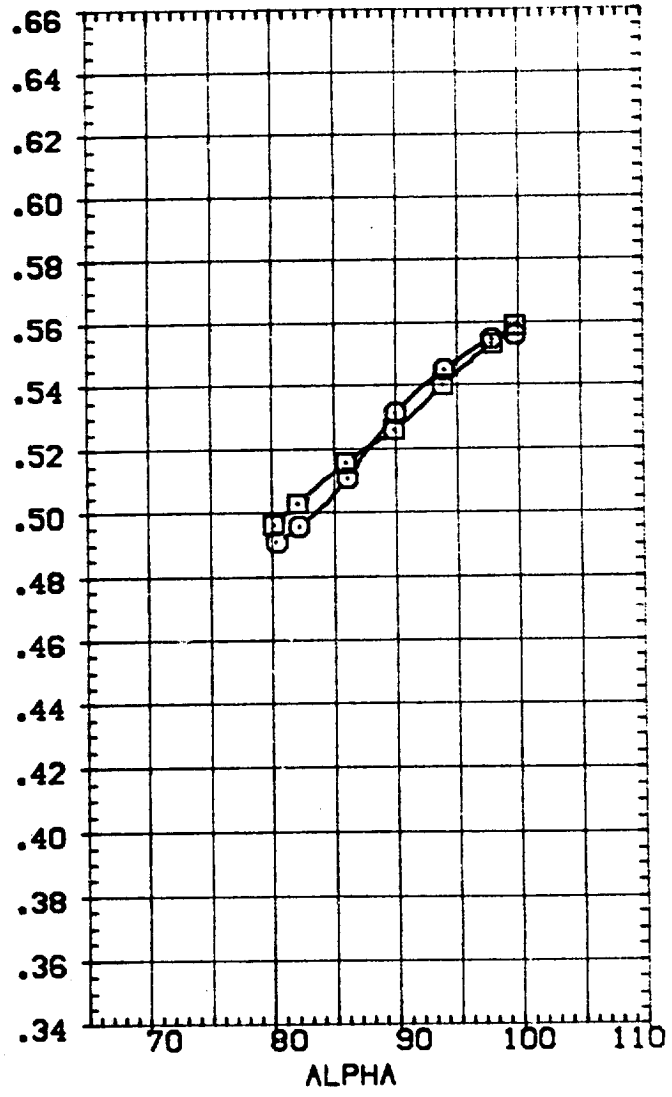
(A)MACH = .59

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	CONFIG	RN
(D9181)	○	MSFC 578(SA1OF) 142-IN SRB (139) NBE) GRIT	.000	1.000	8.600
(D9182)	□	MSFC 578(SA1OF) 142-IN SRB (139) NBE) GRIT	.000	1.000	4.100

REFERENCE INFORMATION

SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	





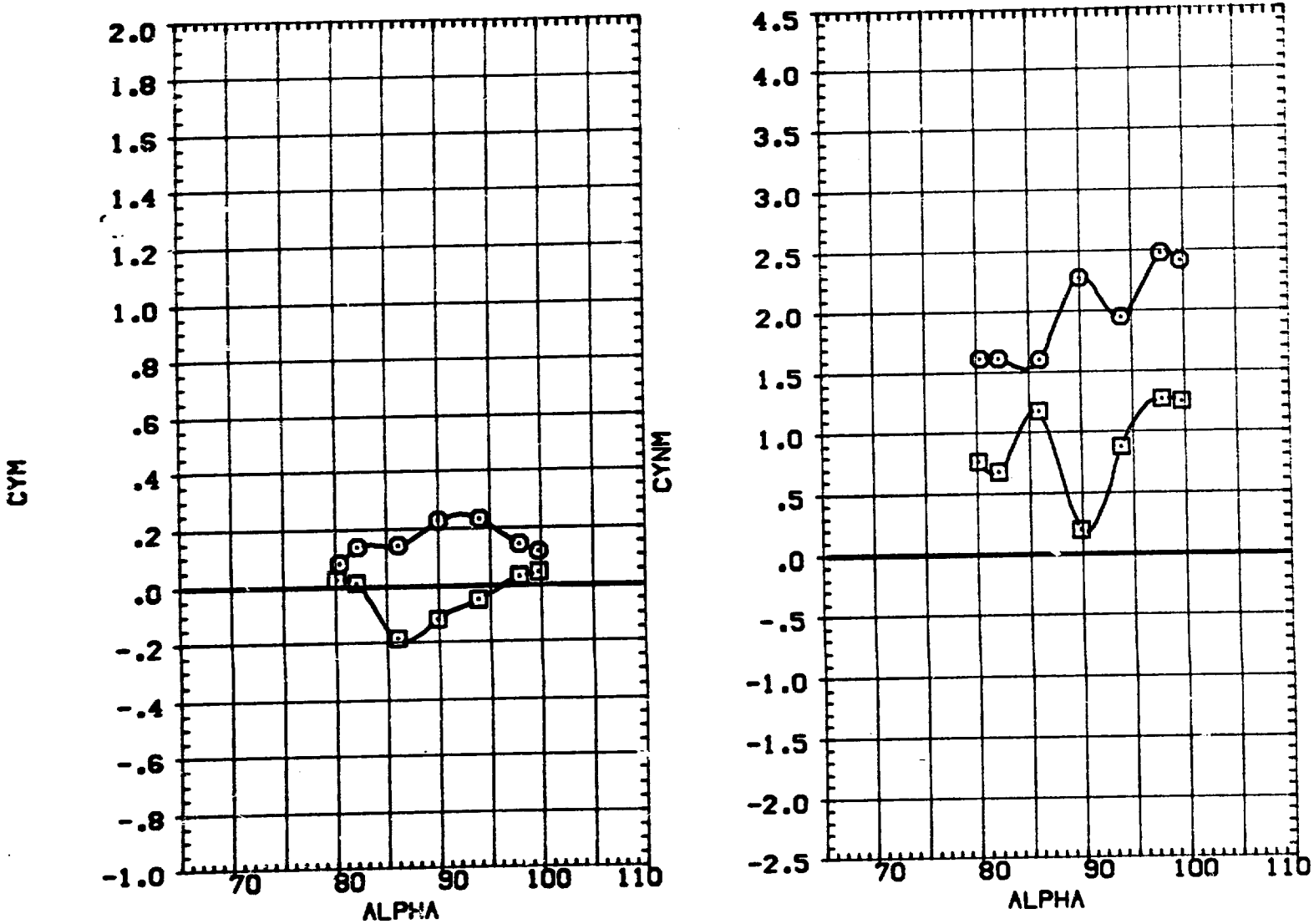
EFFECTS OF REYNOLDS NUMBER (WITH TRANSITION GRIT)

(A)MACH = .59

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	CONFIG	RN
[D91811]		MSFC 578[SA1OF] 142-IN SRB [139] NBE] GRIT	.000	1.000	8.600
[D91821]		MSFC 578[SA1OF] 142-IN SRB [139] NBE] GRIT	.000	1.000	4.100

REFERENCE INFORMATION

SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	



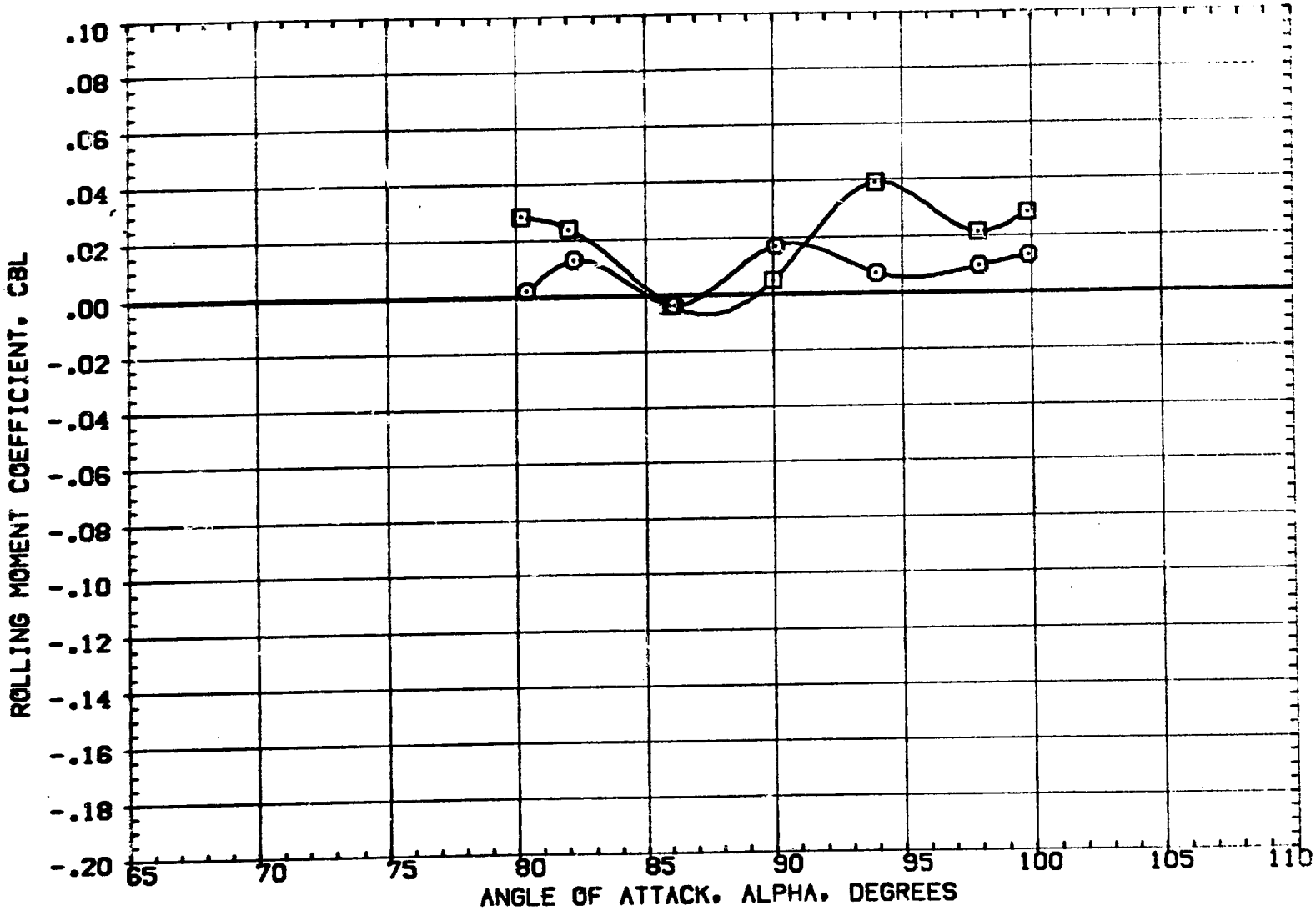
EFFECTS OF REYNOLDS NUMBER (WITH TRANSITION GRIT)

(A)MACH = .59

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	CONFIG	RN
[D91811]	⊡	MSFC 578[SA10F] 142-IN SRB [139] NBE1 GRIT	.000	1.000	6.600
[D91821]	⊟	MSFC 578[SA10F] 142-IN SRB [139] NBE1 GRIT	.000	1.000	4.100

REFERENCE INFORMATION

SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	



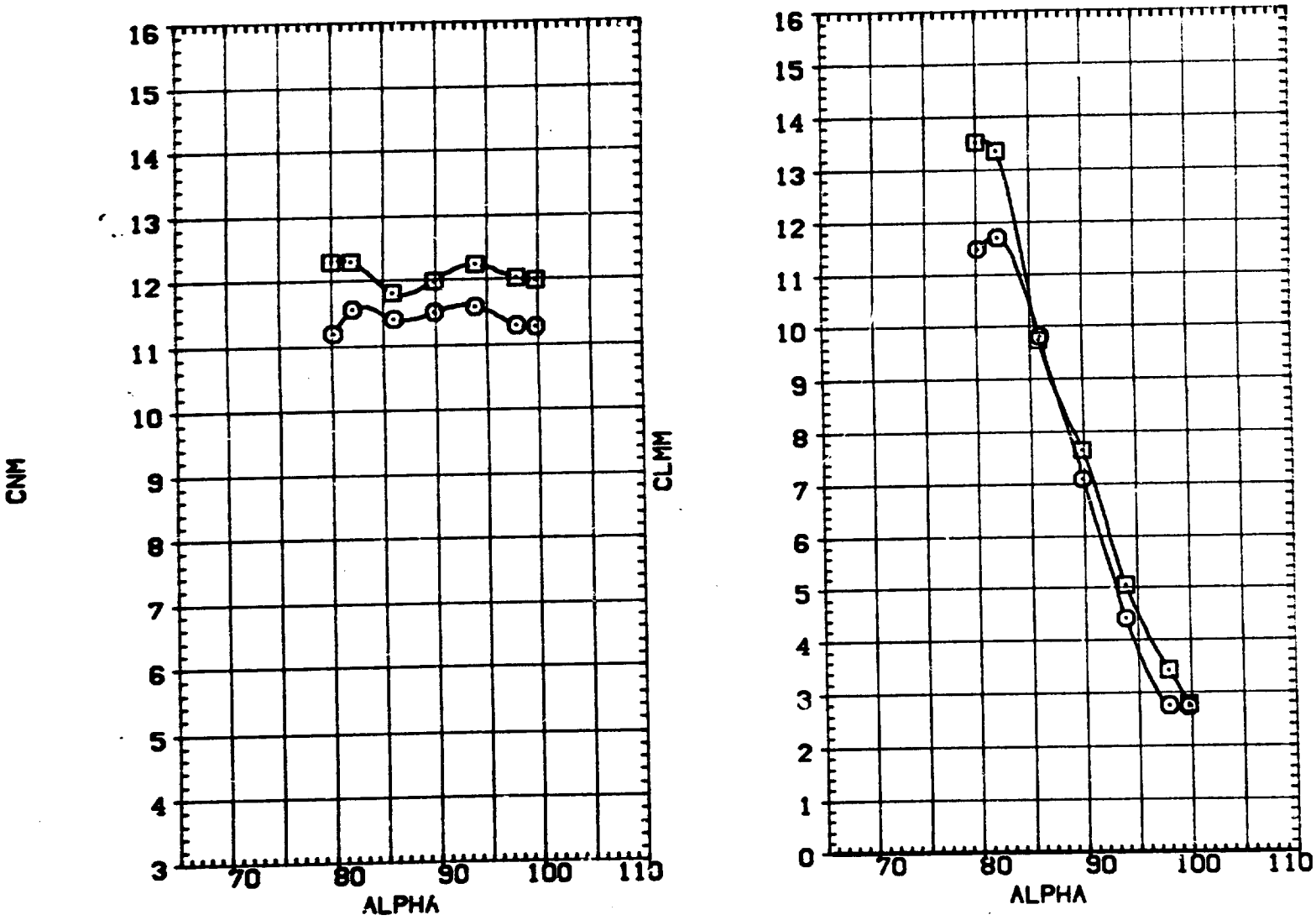
EFFECTS OF REYNOLDS NUMBER (WITH TRANSITION GRIT)

(A)MACH = .59

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	PHI	CONFIG	RN
[79]A12]	MSFC 578[SA]OF] 142-IN SRB [139] NBE]	.000	1.000	5.400
[[3]A22]	MSFC 578[SA]OF] 142-IN SRB [139] NBE]	.000	1.000	3.000

REFERENCE INFORMATION

SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	



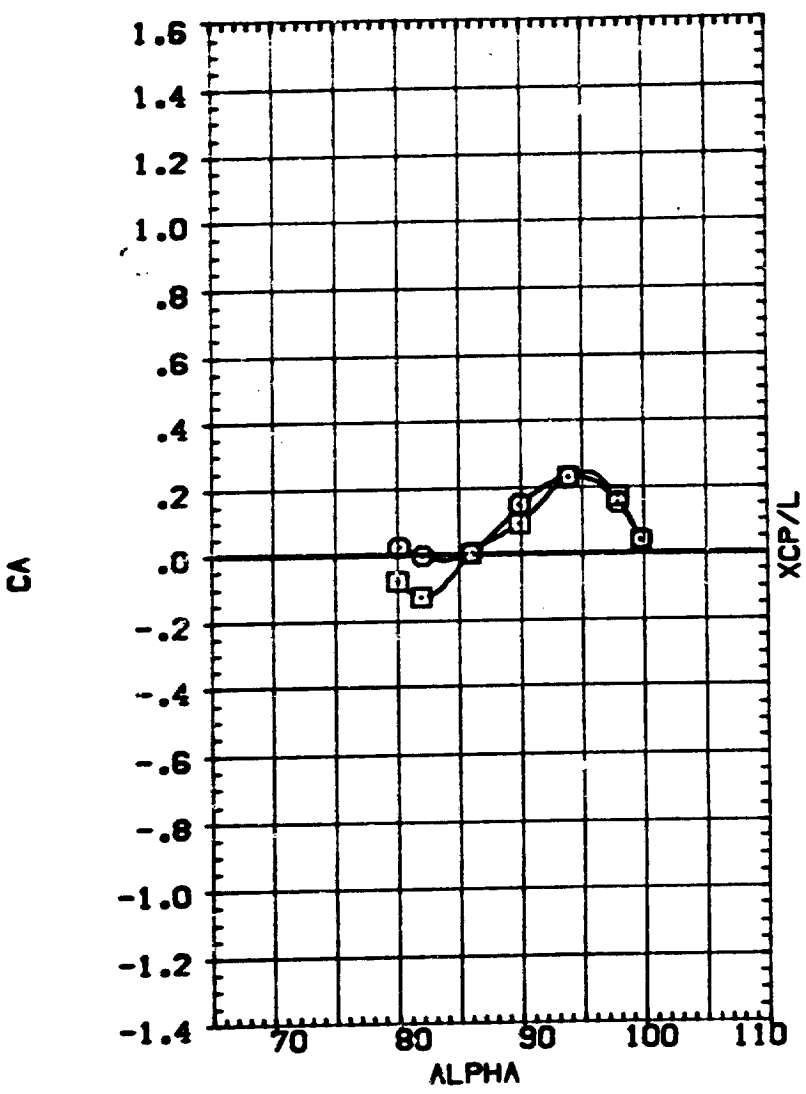
EFFECTS OF REYNOLDS NUMBER (WITHOUT TRANSITION GRIT)

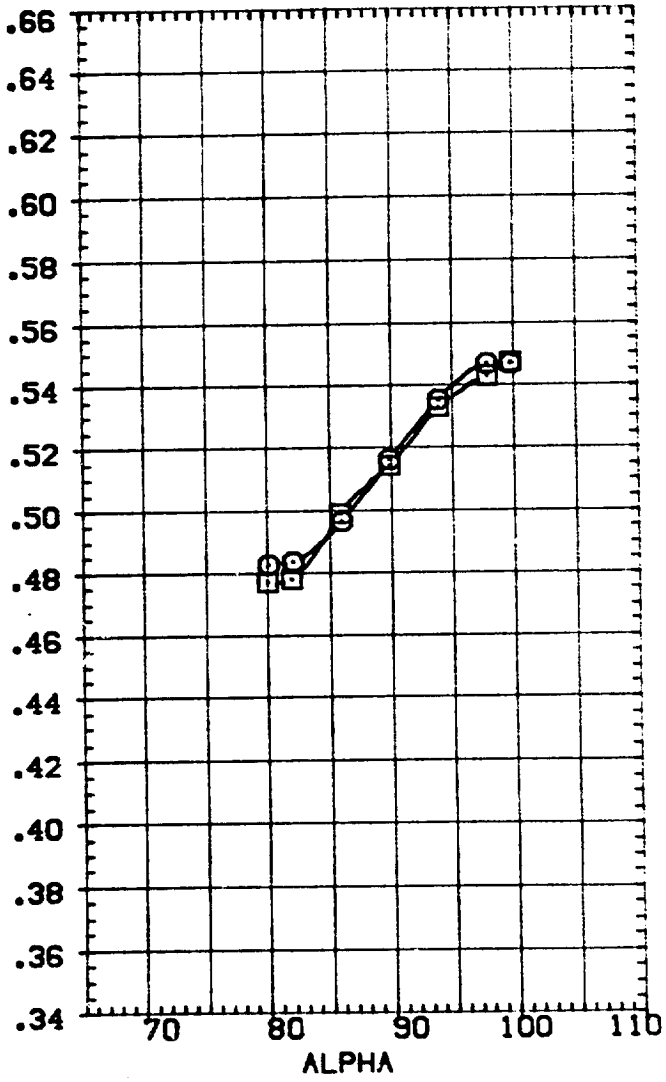
(A)MACH = .40

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	PHI	CONFIG	RN
(D91A12) ○	MSFC 578(SA1OF) 142-IN SRB (139) NBE1	.000	1.000	5.400
(D91A22) □	MSFC 578(SA1OF) 142-IN SRB (139) NBE1	.000	1.000	3.000

REFERENCE INFORMATION

SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	





EFFECTS OF REYNOLDS NUMBER (WITHOUT TRANSITION GRIT)

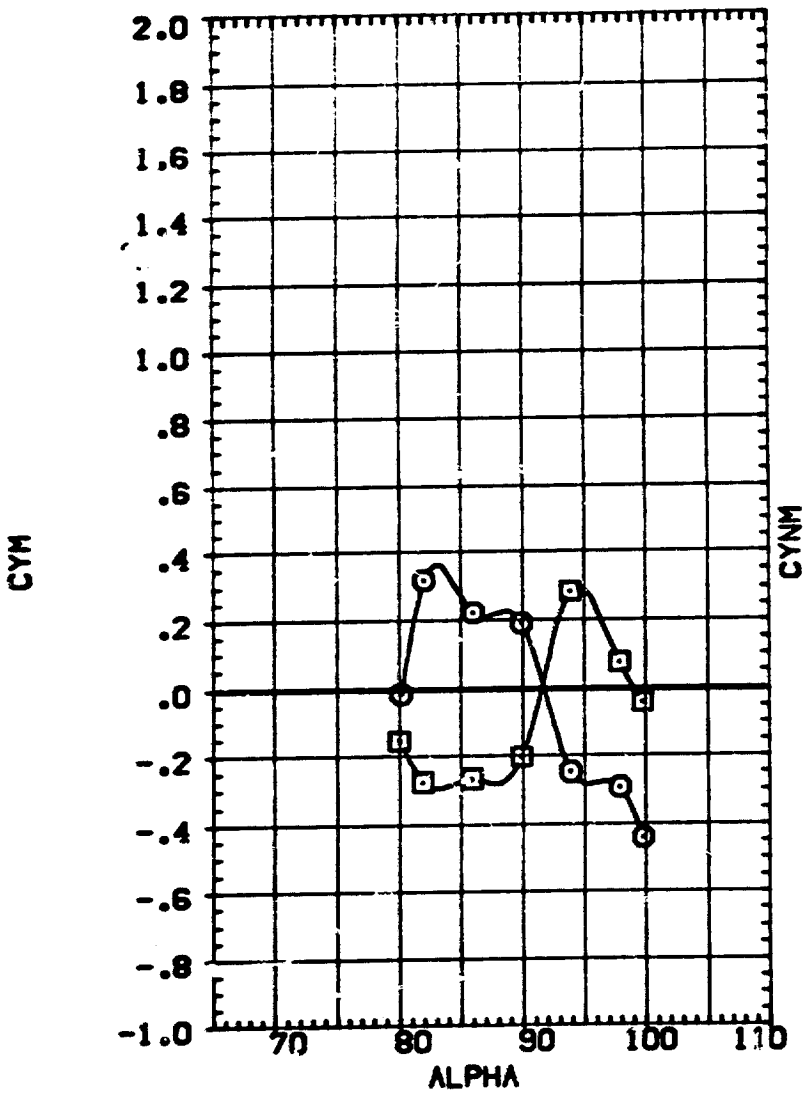
(A)MACH = .40

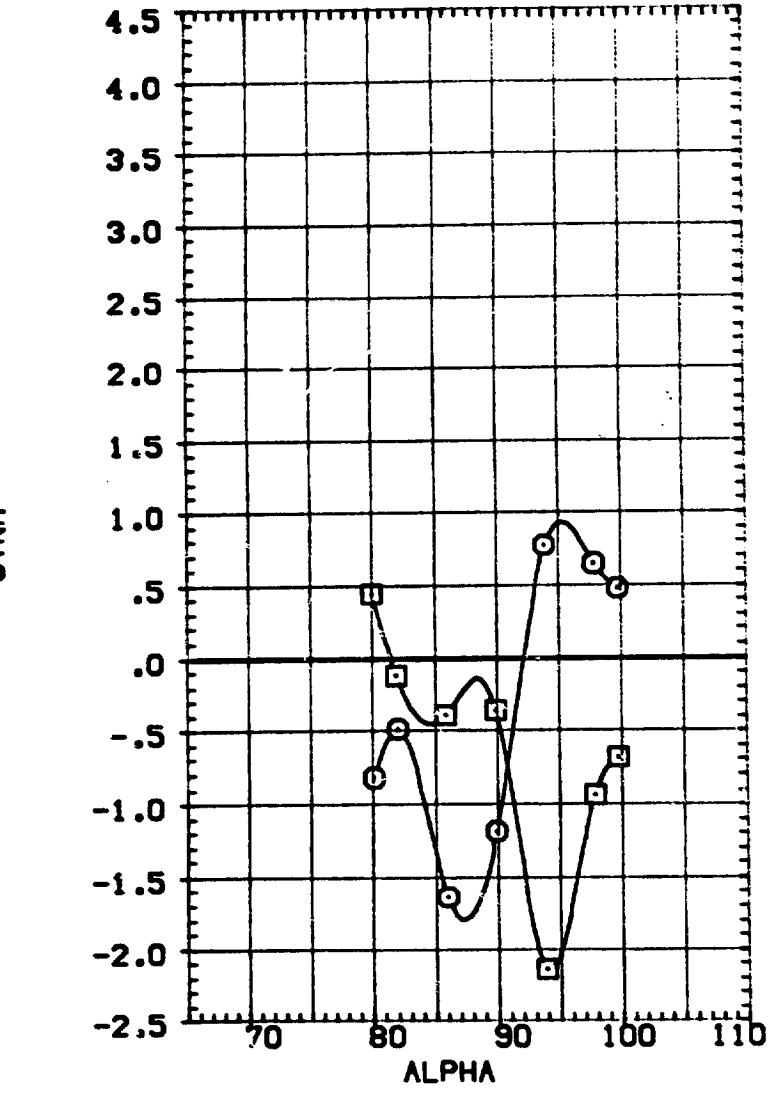
DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(D91A12)	MSFC 578(SA10F) 142-IN SRB (139) NBE)
(D91A22)	MSFC 578(SA10F) 142-IN SRB (139) NBE)

PHI	CONFIG	RN
.000	1.000	5.400
.000	1.000	3.000

REFERENCE INFORMATION

SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	





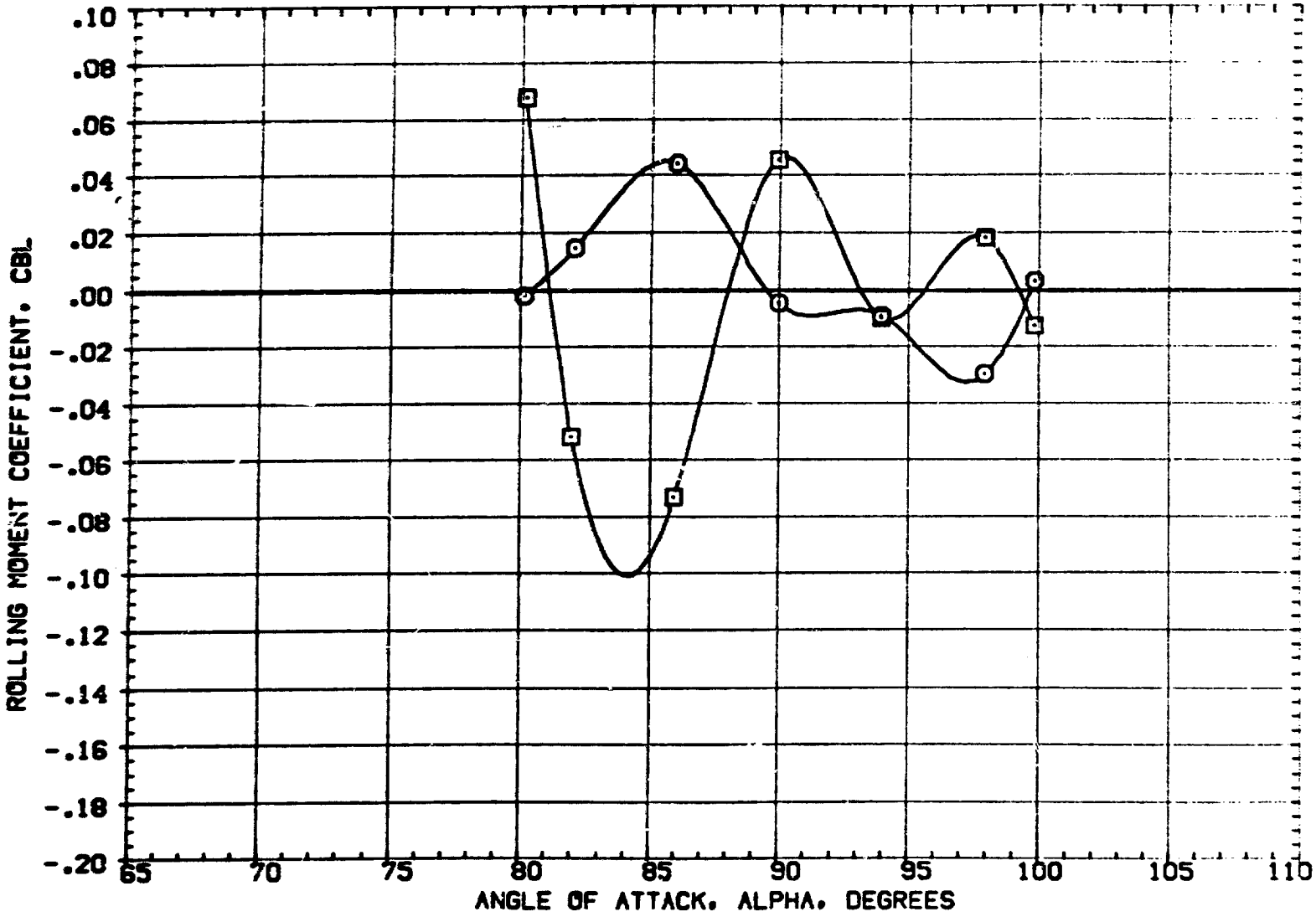
EFFECTS OF REYNOLDS NUMBER (WITHOUT TRANSITION GRIT)

(A)MACH = .40

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	CONFIG	RN
(D91A12)	○	MSFC 578(SA10F) 142-IN SRB (139) NBE	.000	1.000	5.400
(D91A22)	□	MSFC 578(SA10F) 142-IN SRB (139) NBE	.000	1.000	3.000

REFERENCE INFORMATION

SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	



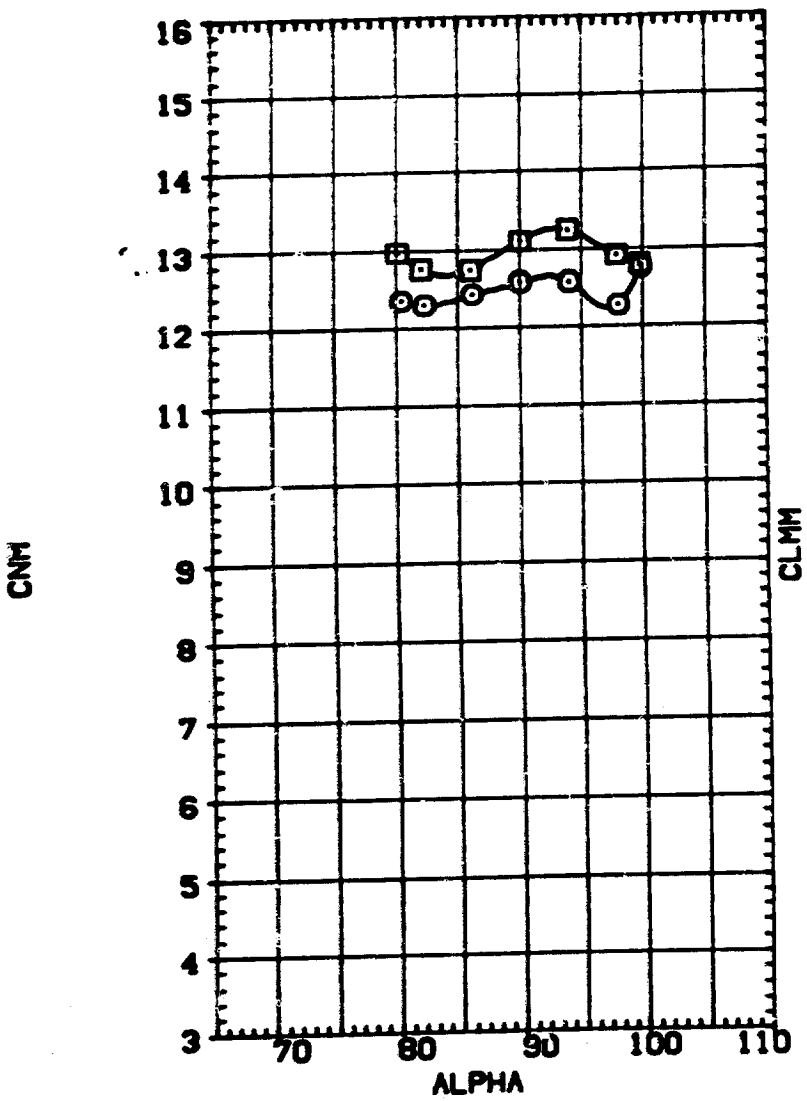
EFFECTS OF REYNOLDS NUMBER (WITHOUT TRANSITION GRIT)

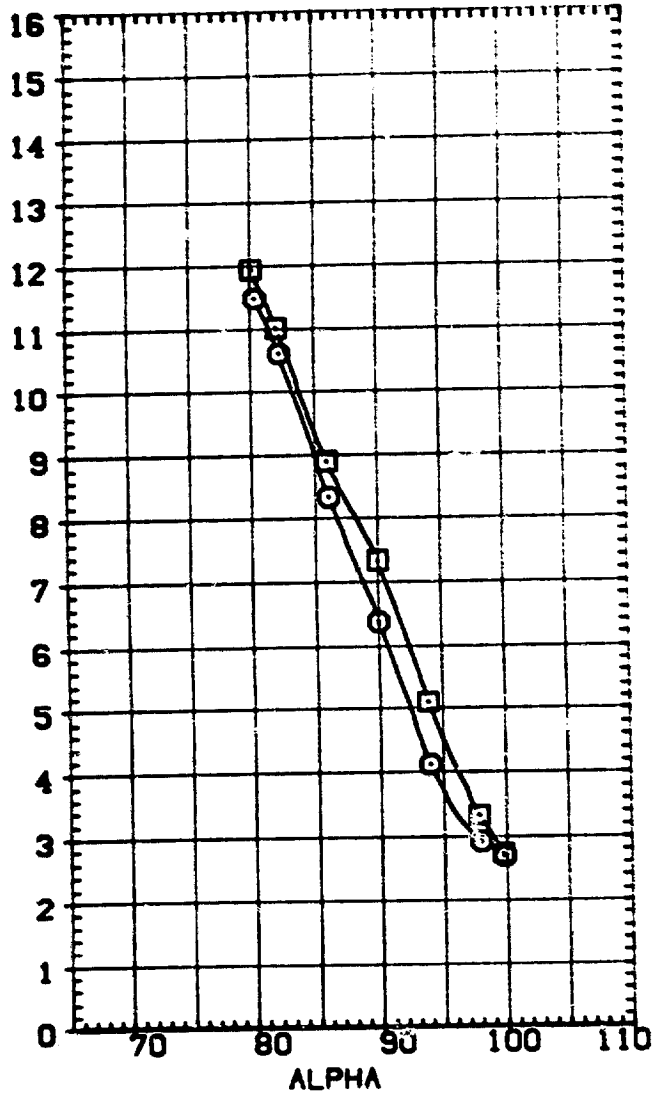
(A)MACH = .40

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	CONFIG	RN
(D91812)	○	MSFC STB(SA1OF) 142-IN SRB (139) NBE	.000	1.000	8.600
(D91822)	□	MSFC STB(SA1OF) 142-IN SRB (139) NBE	.000	1.000	4.100

REFERENCE INFORMATION

SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	



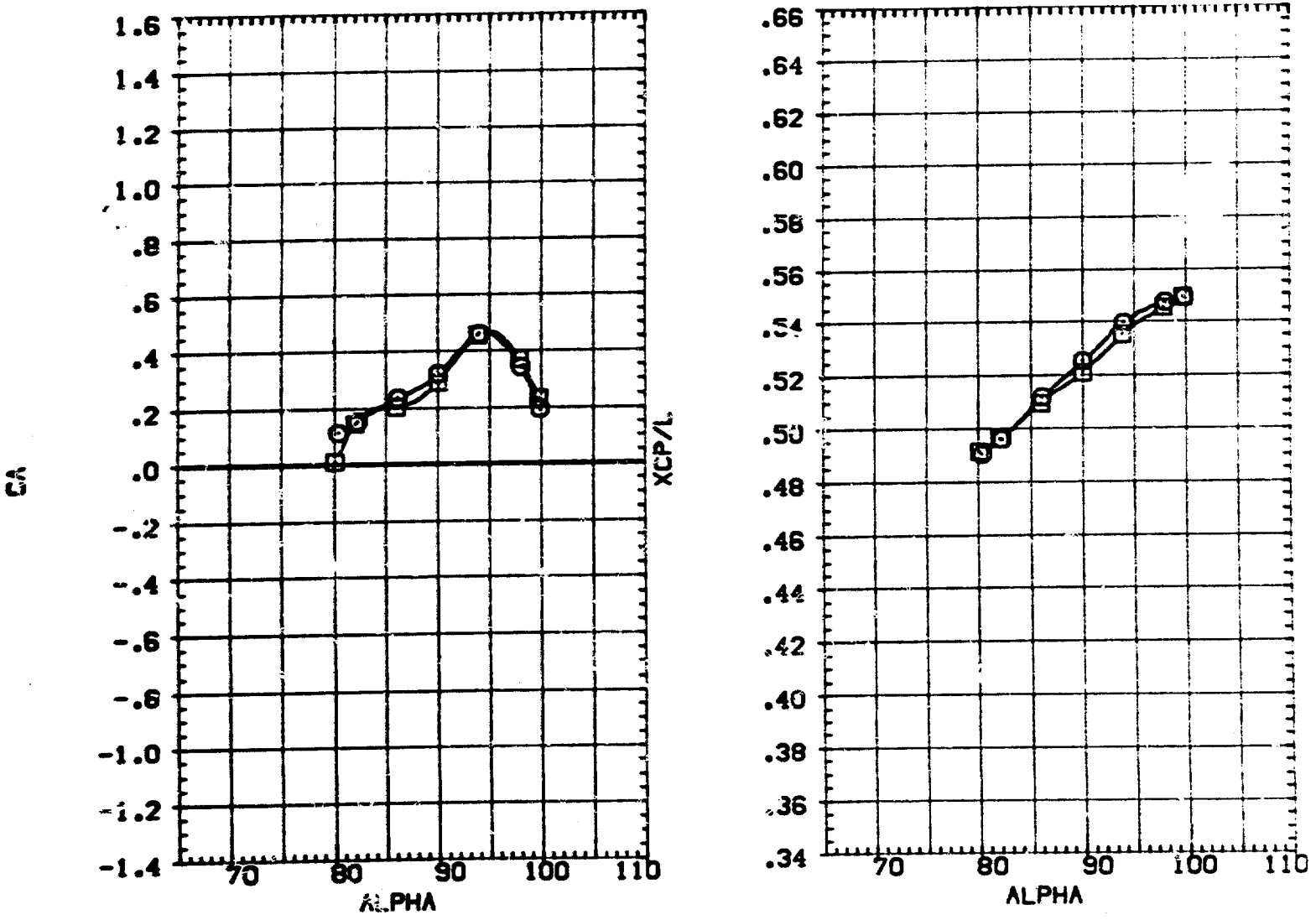


EFFECTS OF REYNOLDS NUMBER (WITHOUT TRANSITION GRIT)

(A)MACH = .60

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	PHI	CONFIG	RN
[091812]	MSFC 578(SA10F) 142-IN SRB [139] NBE1	.000	1.000	8.600
[091822]	MSFC 578(SA10F) 142-IN SRB [135] NBE1	.000	1.000	4.100

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	



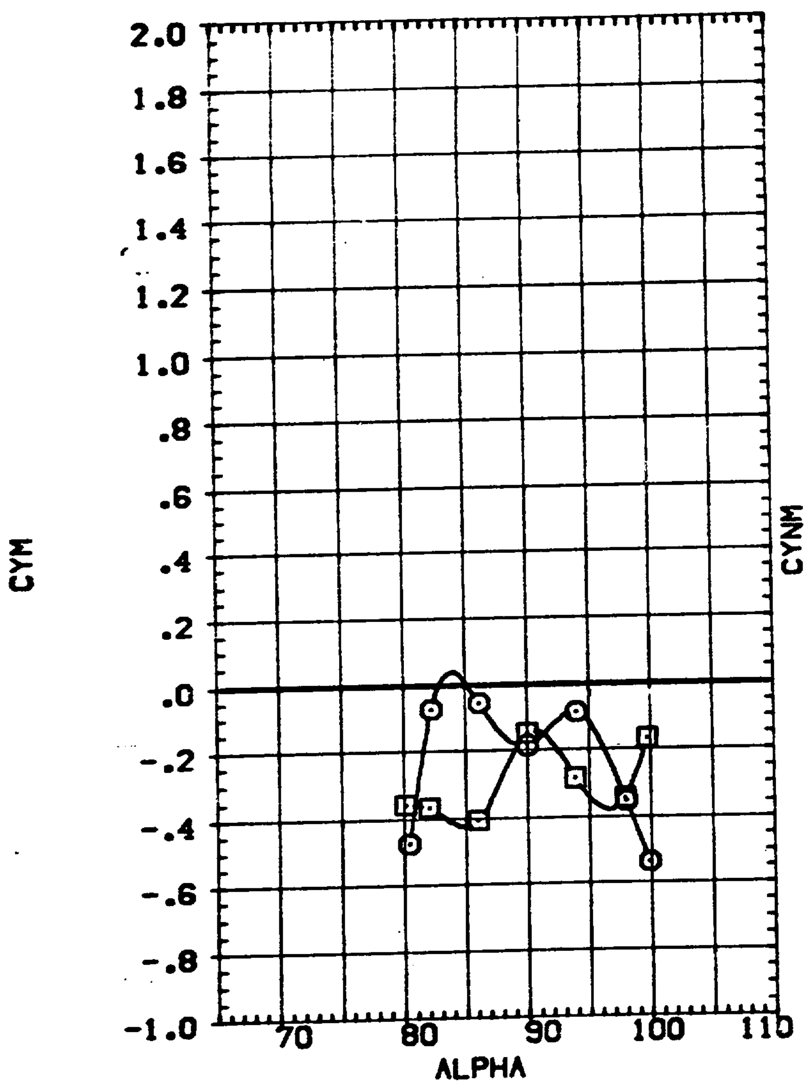
EFFECTS OF REYNOLDS NUMBER (WITHOUT TRANSITION GRIT)

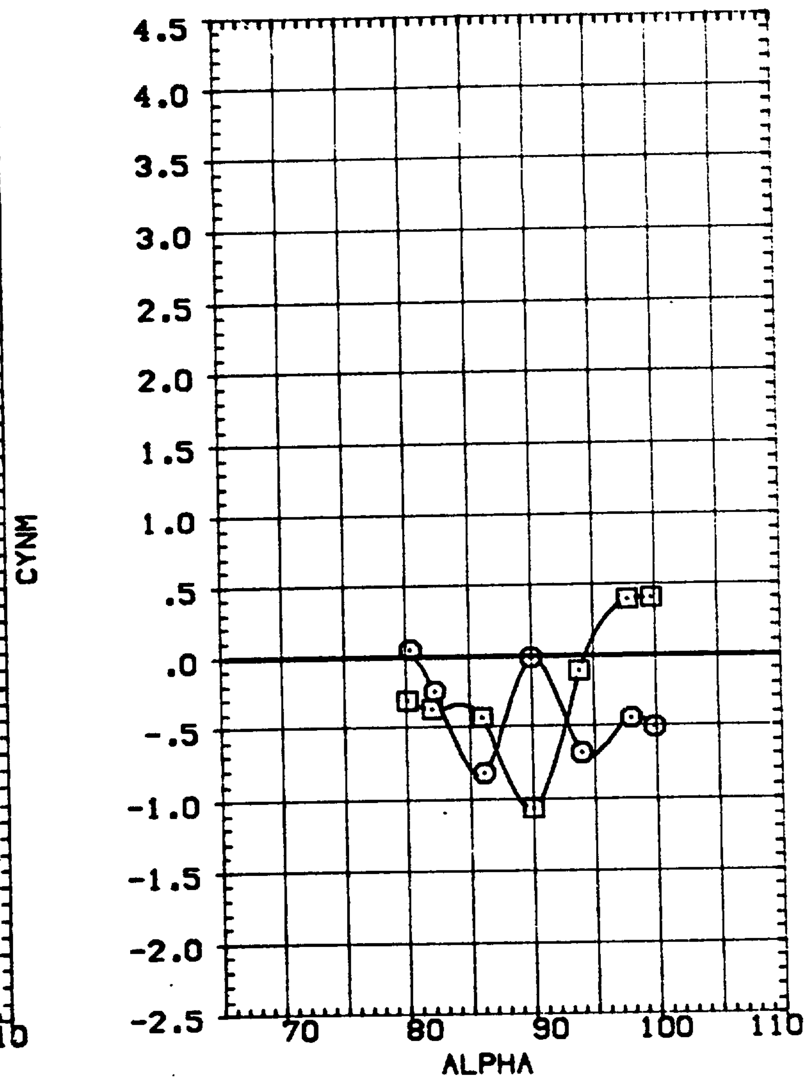
(A)MACH = .60

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	CONFIG	RN
(091B12)	○	MSFC 578(SA10F) 142-IN SRB (139) NBE)	.000	1.000	8.600
(091B22)	□	MSFC 578(SA10F) 142-IN SRB (139) NBE)	.000	1.000	4.100

REFERENCE INFORMATION

SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	





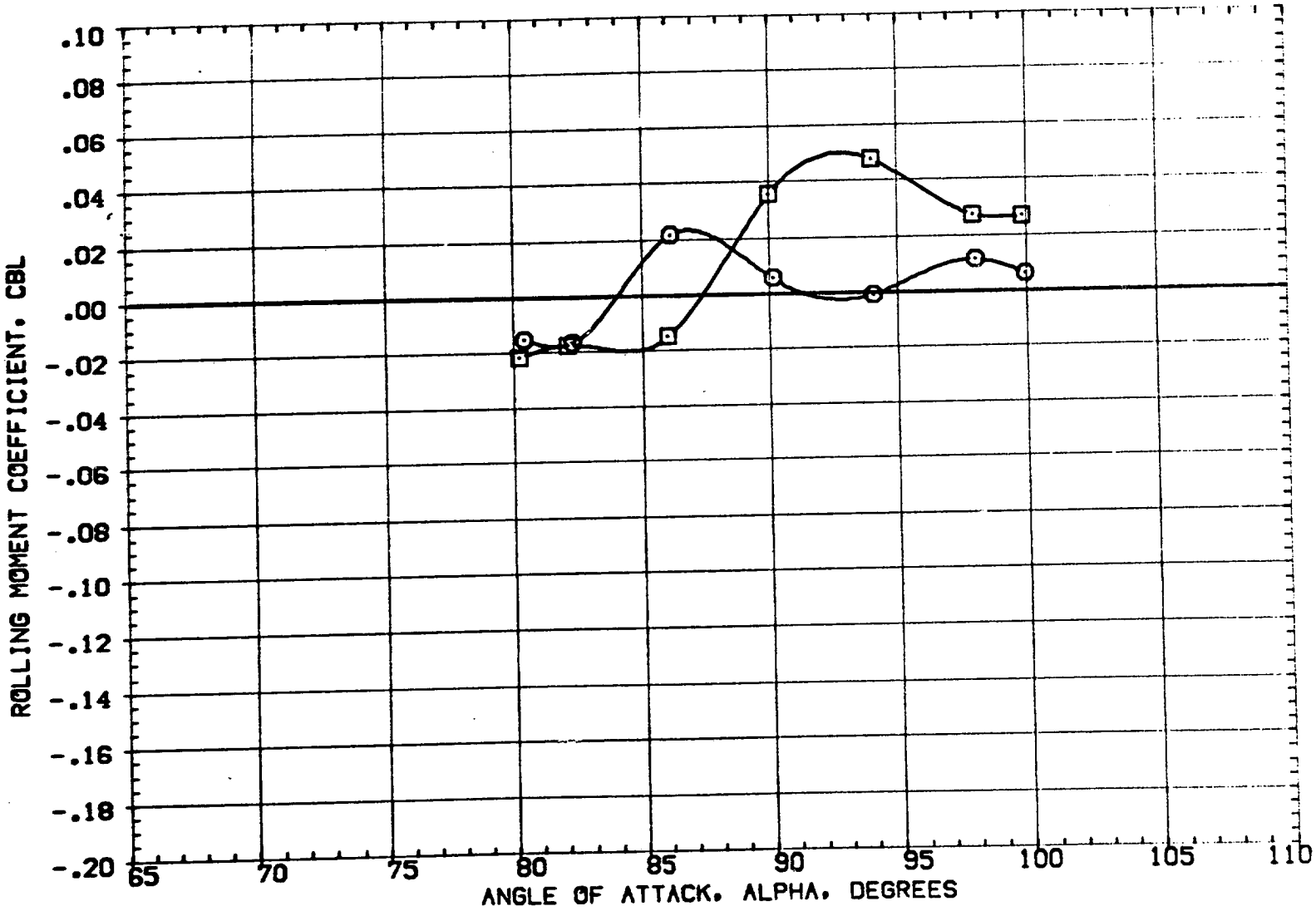
EFFECTS OF REYNOLDS NUMBER (WITHOUT TRANSITION GRIT)

(A)MACH = .60

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	CONFIG	RN
[091812]	○	MSFC 578[SA10F] 142-IN SRB [139] NBE]	.000	1.000	8.600
[091822]	□	MSFC 578[SA10F] 142-IN SRB [139] NBE]	.000	1.000	4.100

REFERENCE INFORMATION

SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

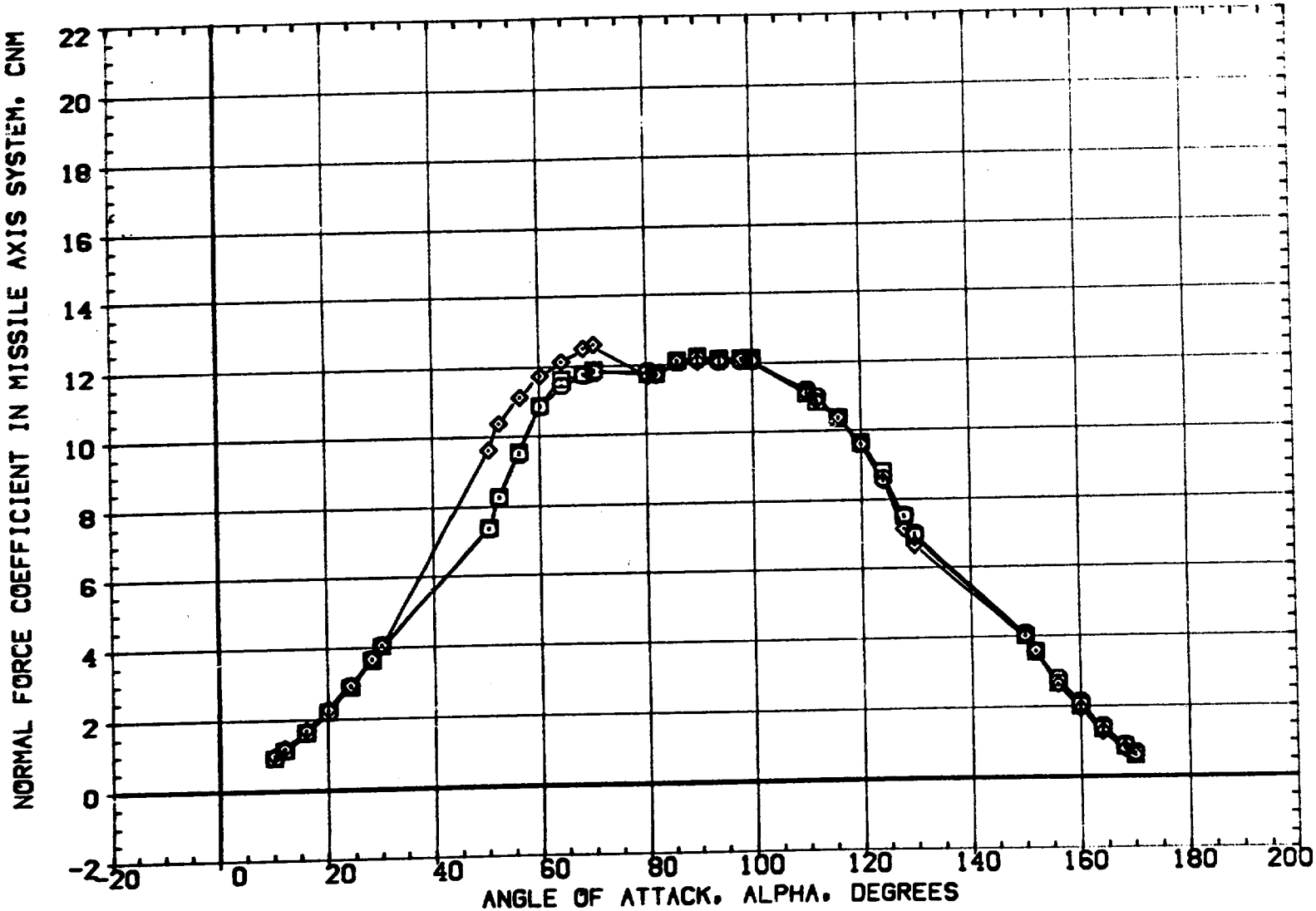


EFFECTS OF REYNOLDS NUMBER (WITHOUT TRANSITION GRIT)

(A)MACH = .60

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHING	CONFIG	SHOSTK
[891100] ○	MSFC 578(SA10F) 142-IN SRB (139) NBE1	.000	.100	1.000	.000
[891200] □	MSFC 578(SA10F) 142-IN SRB (139) NBE2	.000	.100	2.000	.000
[891300] ◇	MSFC 578(SA10F) 142-IN SRB (139) NBE3	.000	.100	3.000	.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

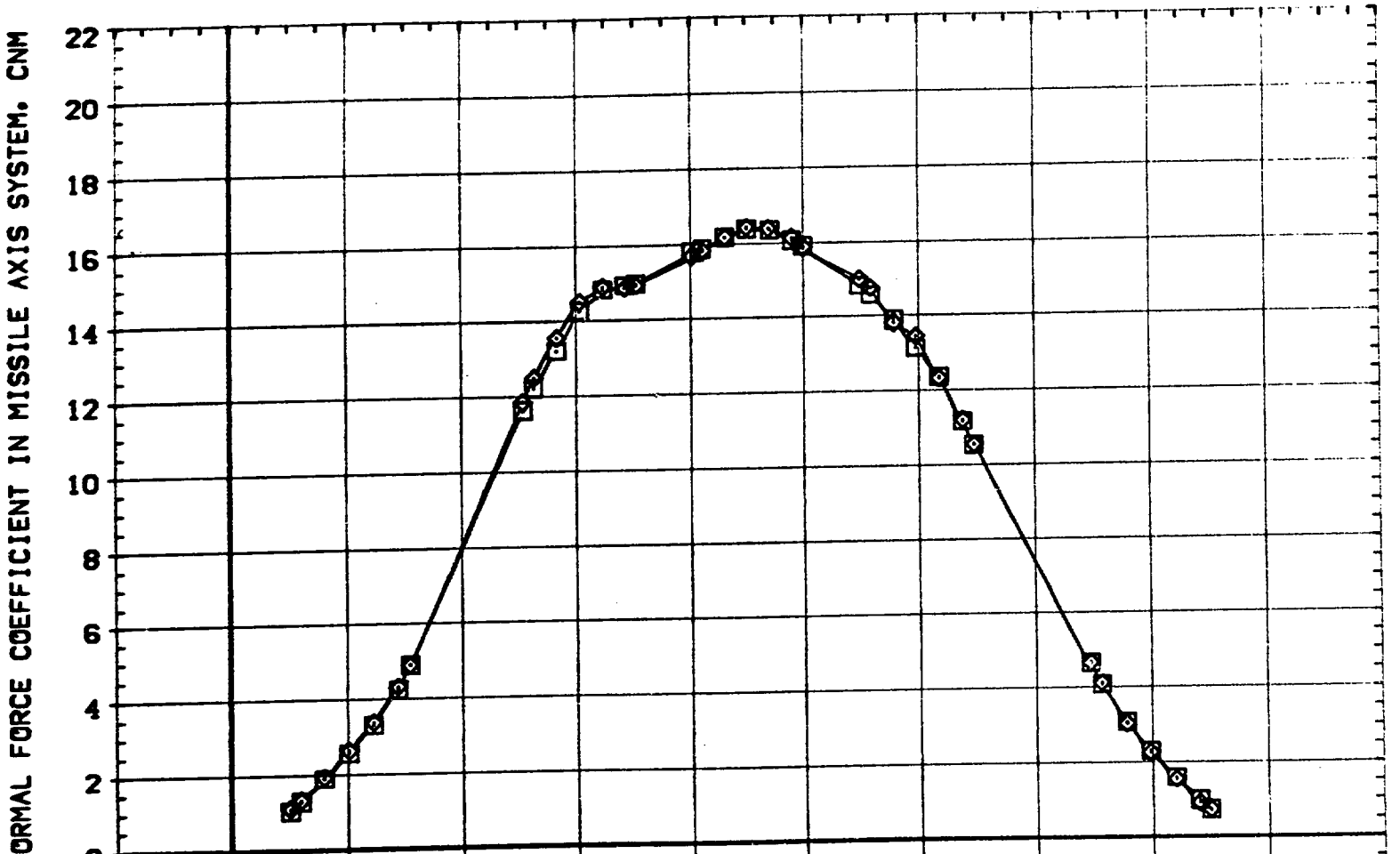


EFFECT OF SHROUD FLARE ANGLE ON AERODYNAMIC CHARACTERISTICS

(A)MACH = .59

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
[B91100] ○	DATA NOT AVAILABLE	.000	.100	1.000	.000
[B91200] □	MSFC 578(SA10F) 142-IN SRB (139) NBE2	.000	.100	2.000	.000
[B91300] ◇	MSFC 578(SA10F) 142-IN SRB (139) NBE3	.000	.100	3.000	.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

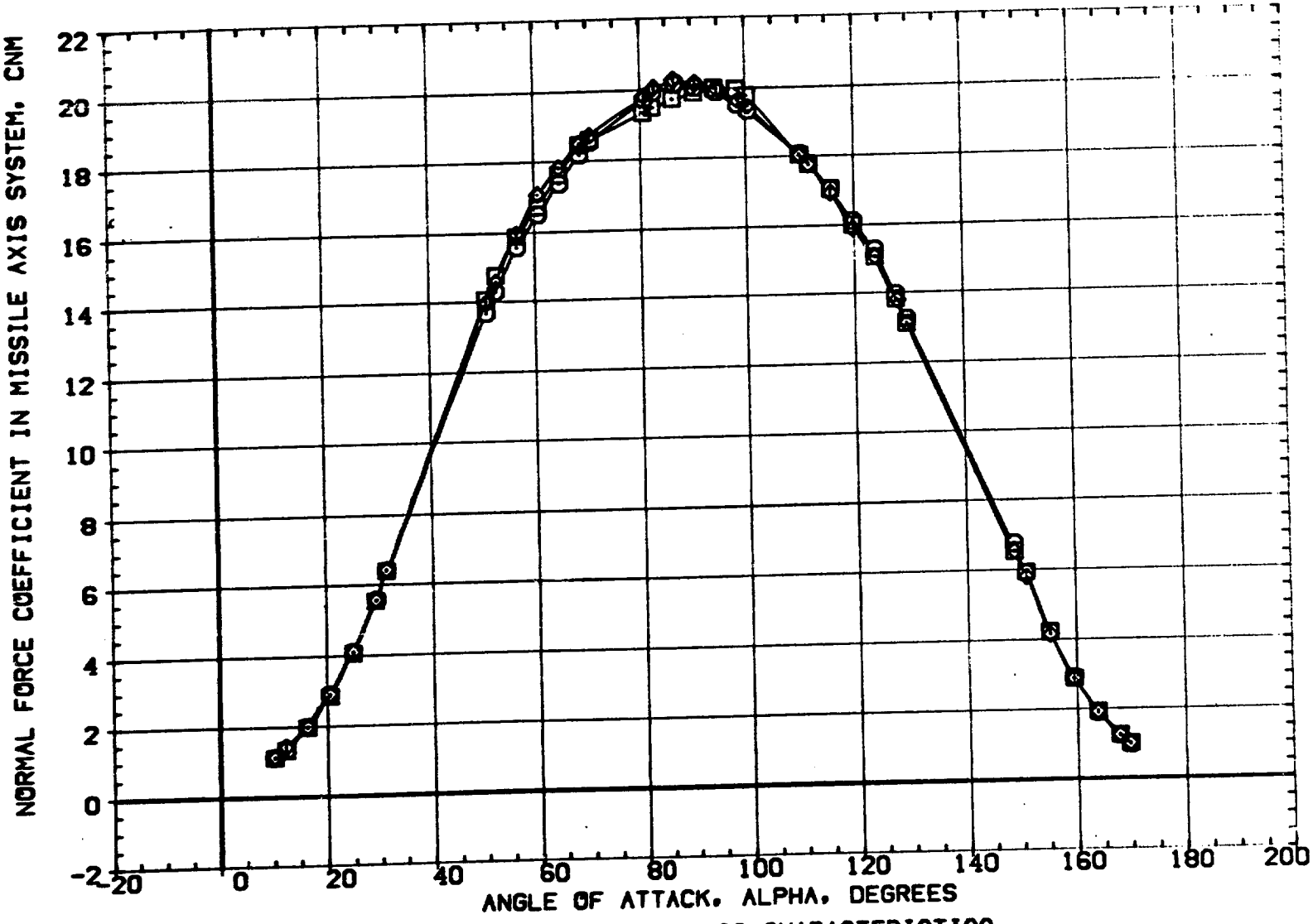


EFFECT OF SHROUD FLARE ANGLE ON AERODYNAMIC CHARACTERISTICS

(B)MACH = .91

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
[C]1100]	○	MSFC 578[SA10F] 142-IN SRB [139] NBE1	.000	.100	1.000	.000
[B]1200]	□	MSFC 578[SA10F] 142-IN SRB [139] NBE2	.000	.100	2.000	.000
[B]1300]	◇	MSFC 578[SA10F] 142-IN SRB [139] NBE3	.000	.100	3.000	.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

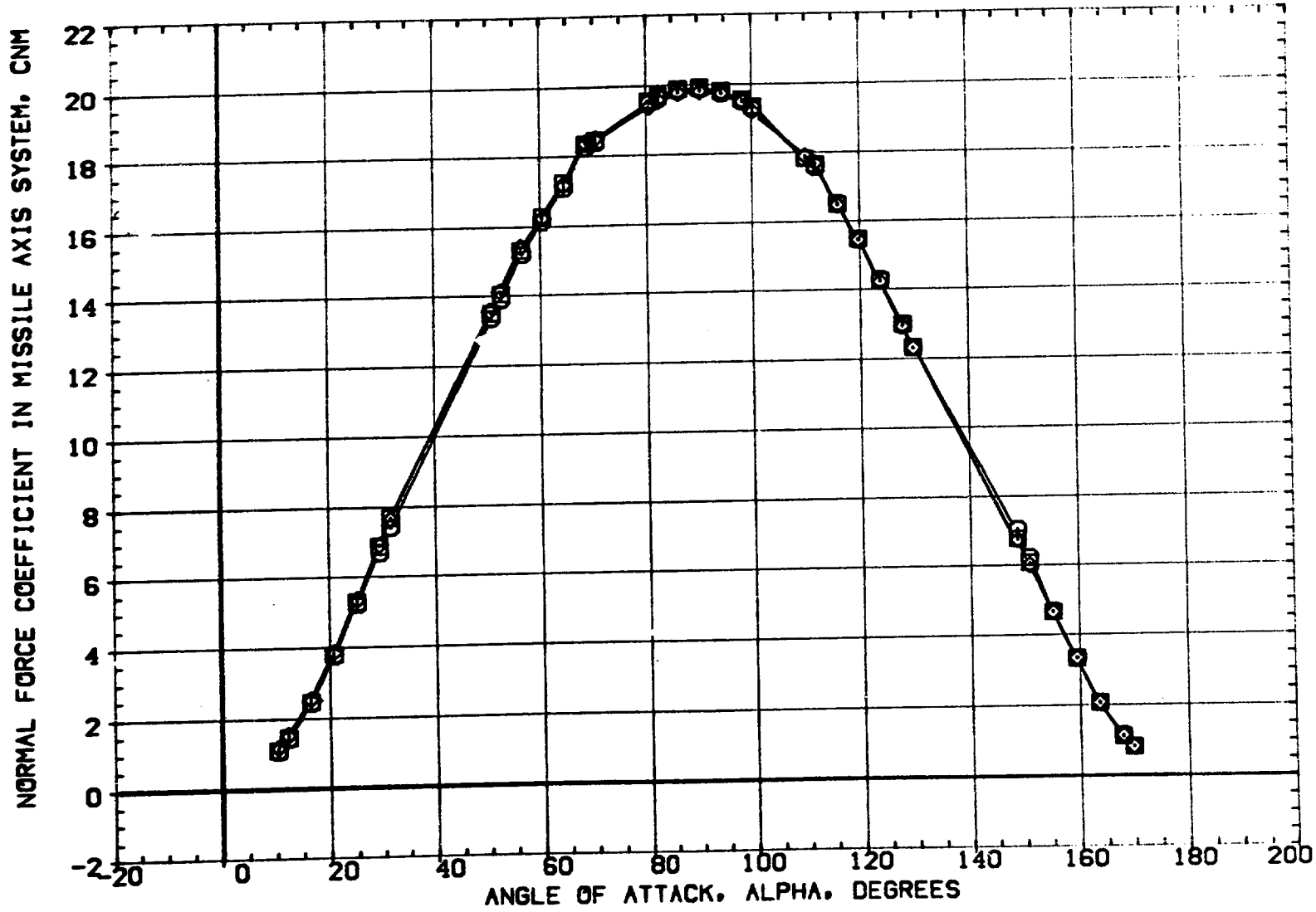


EFFECT OF SHROUD FLARE ANGLE ON AERODYNAMIC CHARACTERISTICS

(C)MACH = 1.20

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
(C91100)	MSFC 578(SA10F) 142-IN SRB (139) NBE1	.000	.100	1.000	.000
(B91200)	MSFC 578(SA10F) 142-IN SRB (139) NBE2	.000	.100	2.000	.000
(B91300)	MSFC 578(SA10F) 142-IN SRB (139) NBE3	.000	.100	3.000	.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	



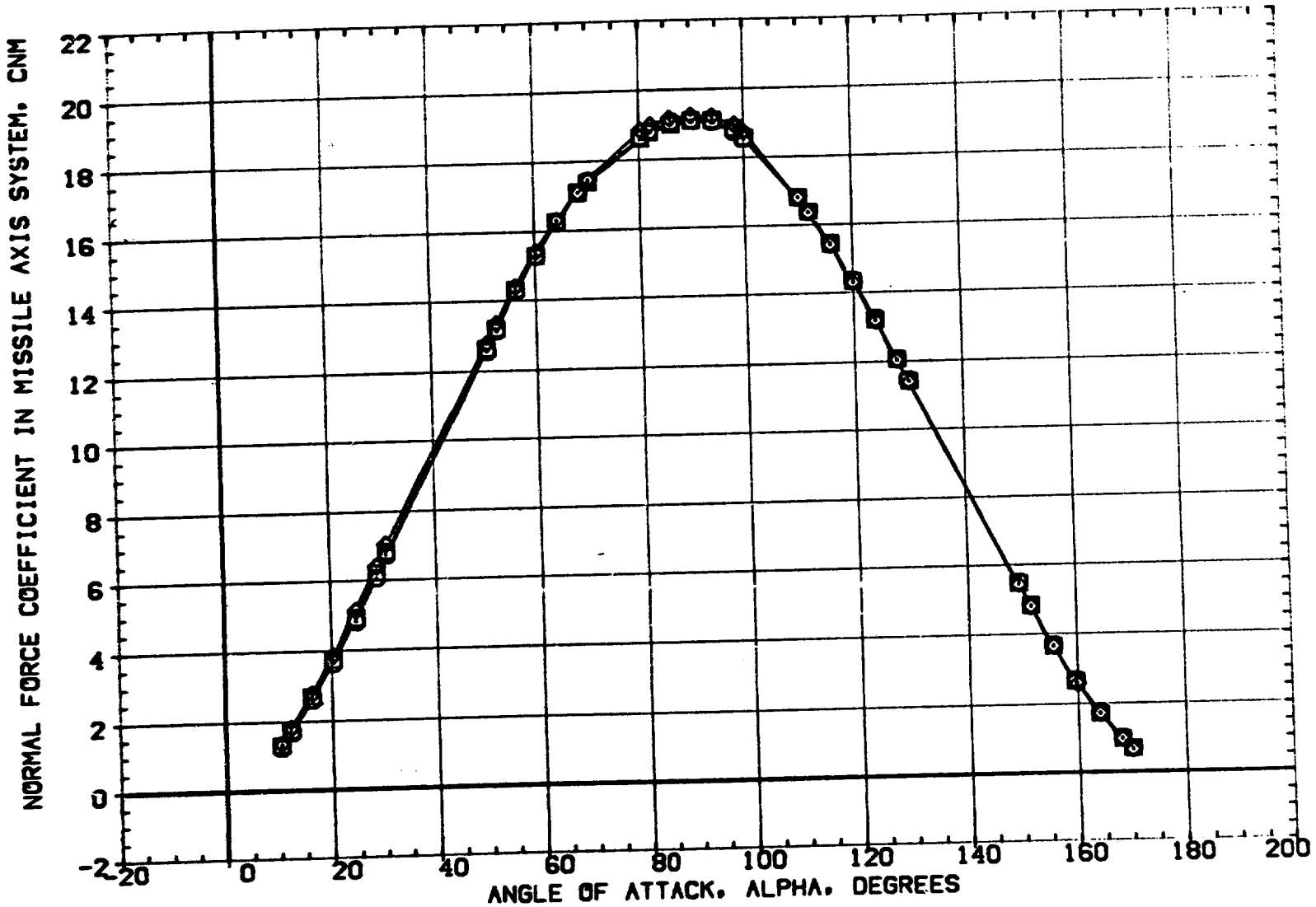
EFFECT OF SHROUD FLARE ANGLE ON AERODYNAMIC CHARACTERISTICS

(D)MACH = 1.96

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
(9)100)	○	MSFC 578(SA10F) 142-IN SRB (139) NBE1	.000	.100	1.000	.000
(8)200)	□	MSFC 578(SA10F) 142-IN SRB (139) NBE2	.000	.100	2.000	.000
(8)300)	◇	MSFC 578(SA10F) 142-IN SRB (139) NBE3	.000	.100	3.000	.000

REFERENCE INFORMATION

SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	



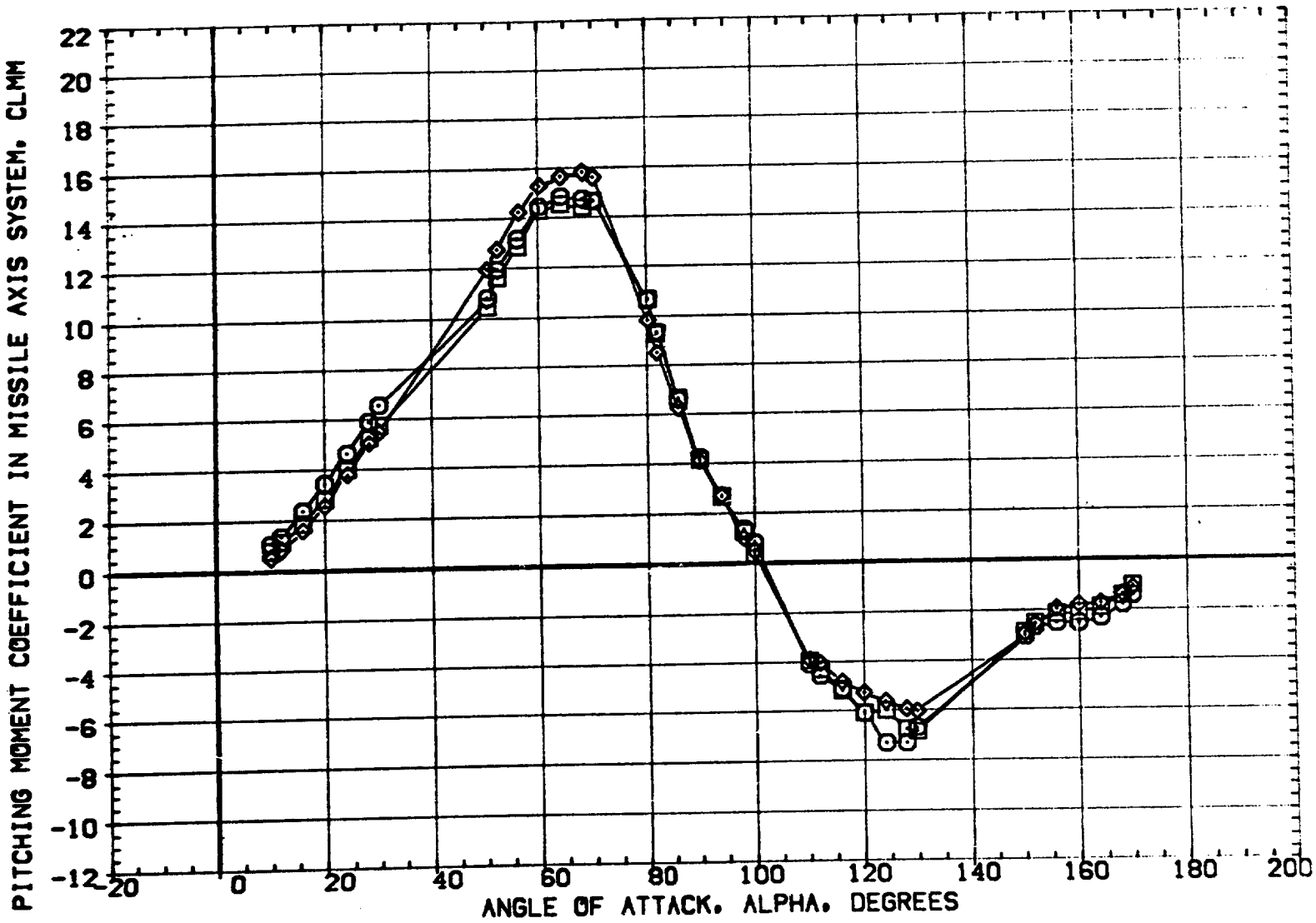
EFFECT OF SHROUD FLARE ANGLE ON AERODYNAMIC CHARACTERISTICS

(E)MACH = 3.48

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
[C91100]	MSFC 57B[SA1OF] 142-IN SRB [139] NBE1
[B91200]	MSFC 57B[SA1OF] 142-IN SRB [139] NBE2
[B91300]	MSFC 57B[SA1OF] 142-IN SRB [139] NBE3

PHI	ATHRNG	CONFIG	SHOSTK
.000	.100	1.000	.000
.000	.100	2.000	.000
.000	.100	3.000	.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	



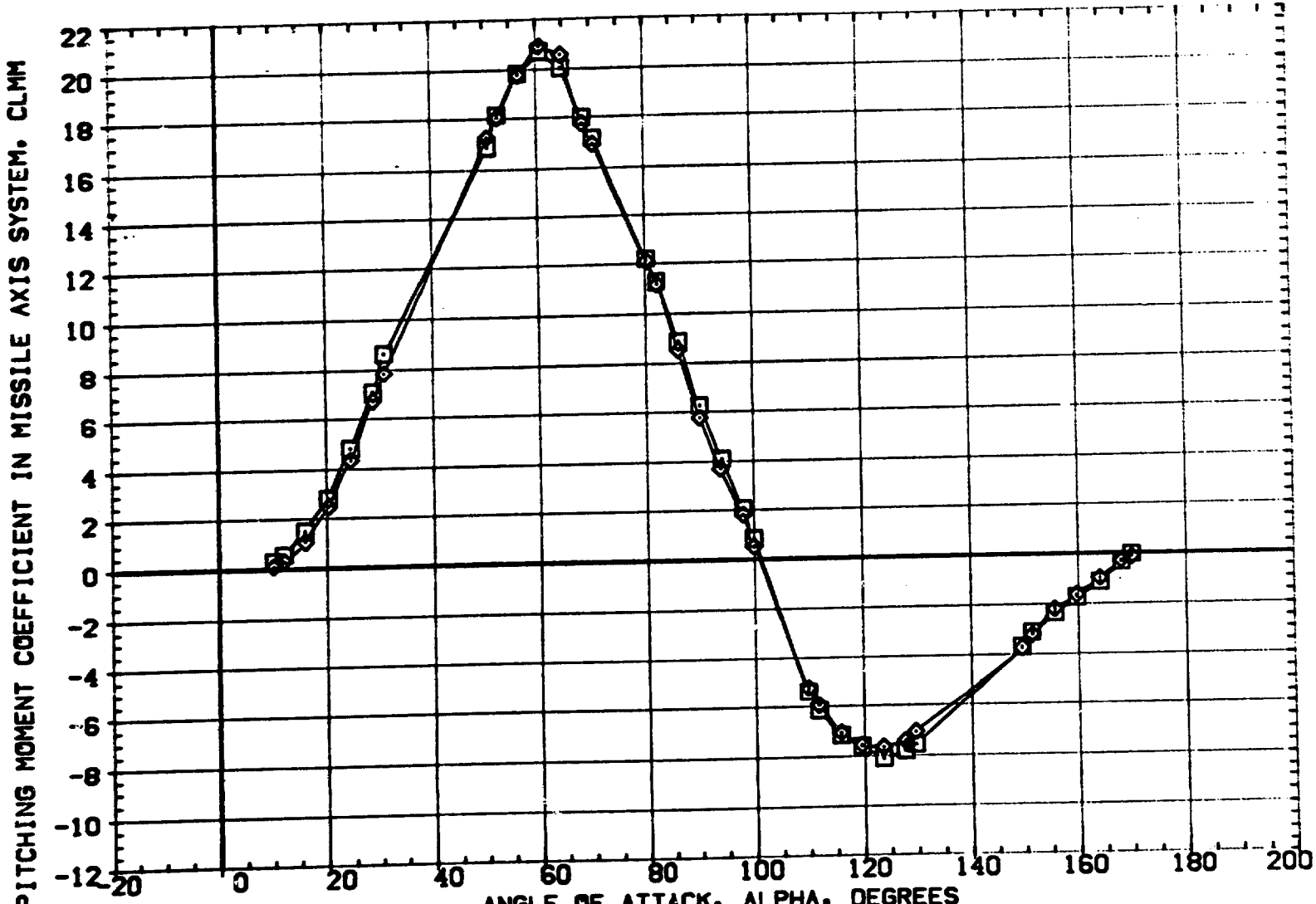
EFFECT OF SHROUD FLARE ANGLE ON AERODYNAMIC CHARACTERISTICS

(A)MACH = .59

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION
[B91100]	○	DATA NOT AVAILABLE
[B91200]	□	MSFC 578(SA1OF) 142-IN SRB (139) NBE2
[B91300]	◇	MSFC 578(SA1OF) 142-IN SRB (139) NBE3

PHI	ATHRNG	CONFIG	SHDSTK
.000	.100	1.000	.000
.000	.100	2.000	.000
.000	.100	3.000	.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

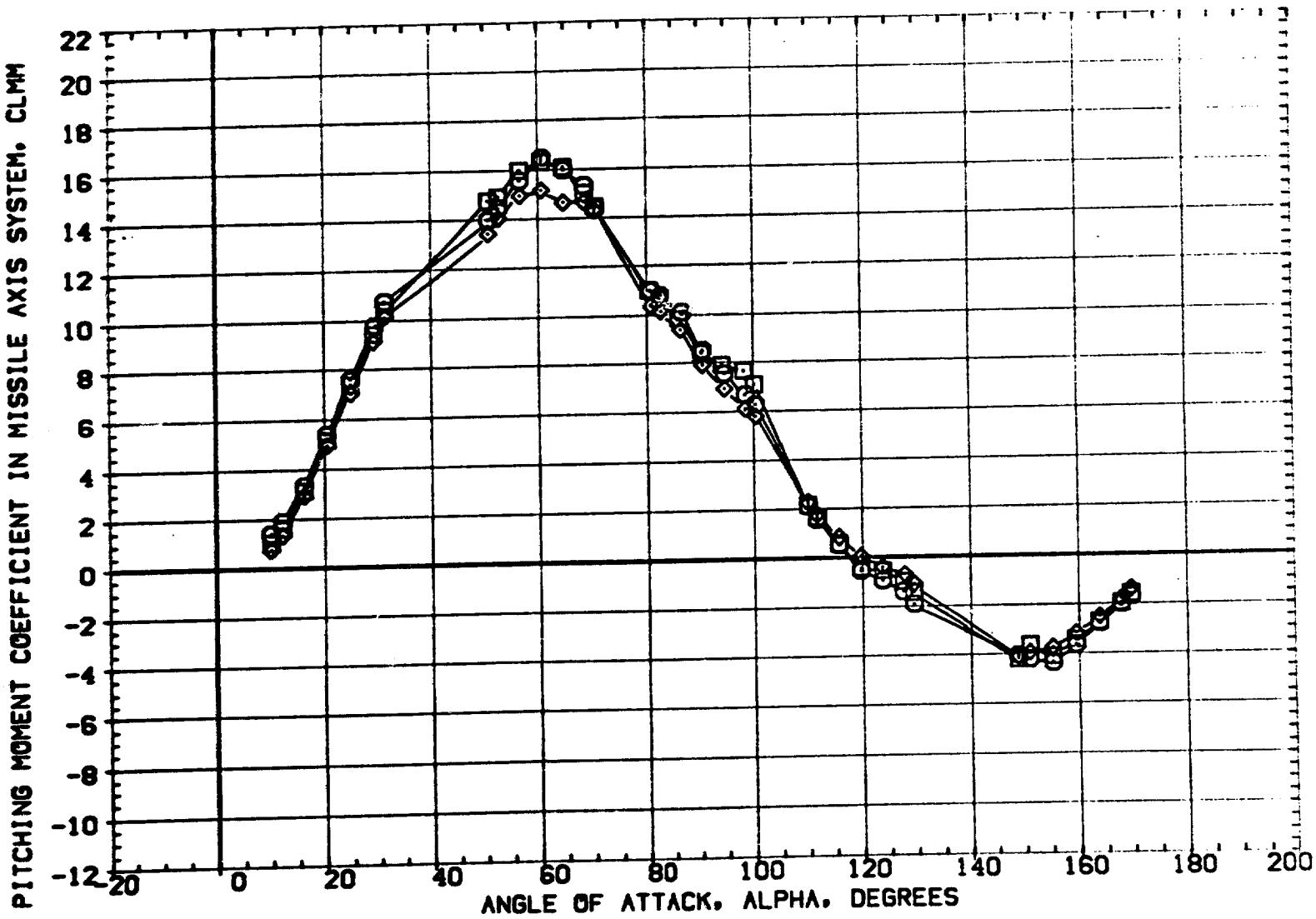


EFFECT OF SHROUD FLARE ANGLE ON AERODYNAMIC CHARACTERISTICS

(B)MACH = .91

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
[1100]	□	MSFC S7B[SA10F] 142-IN S7B [139] NBE1	.000	.100	1.000	.000
[1200]	▭	MSFC S7B[SA10F] 142-IN S7B [139] NBE2	.000	.100	2.000	.000
[1300]	◇	MSFC S7B[SA10F] 142-IN S7B [139] NBE3	.000	.100	3.000	.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

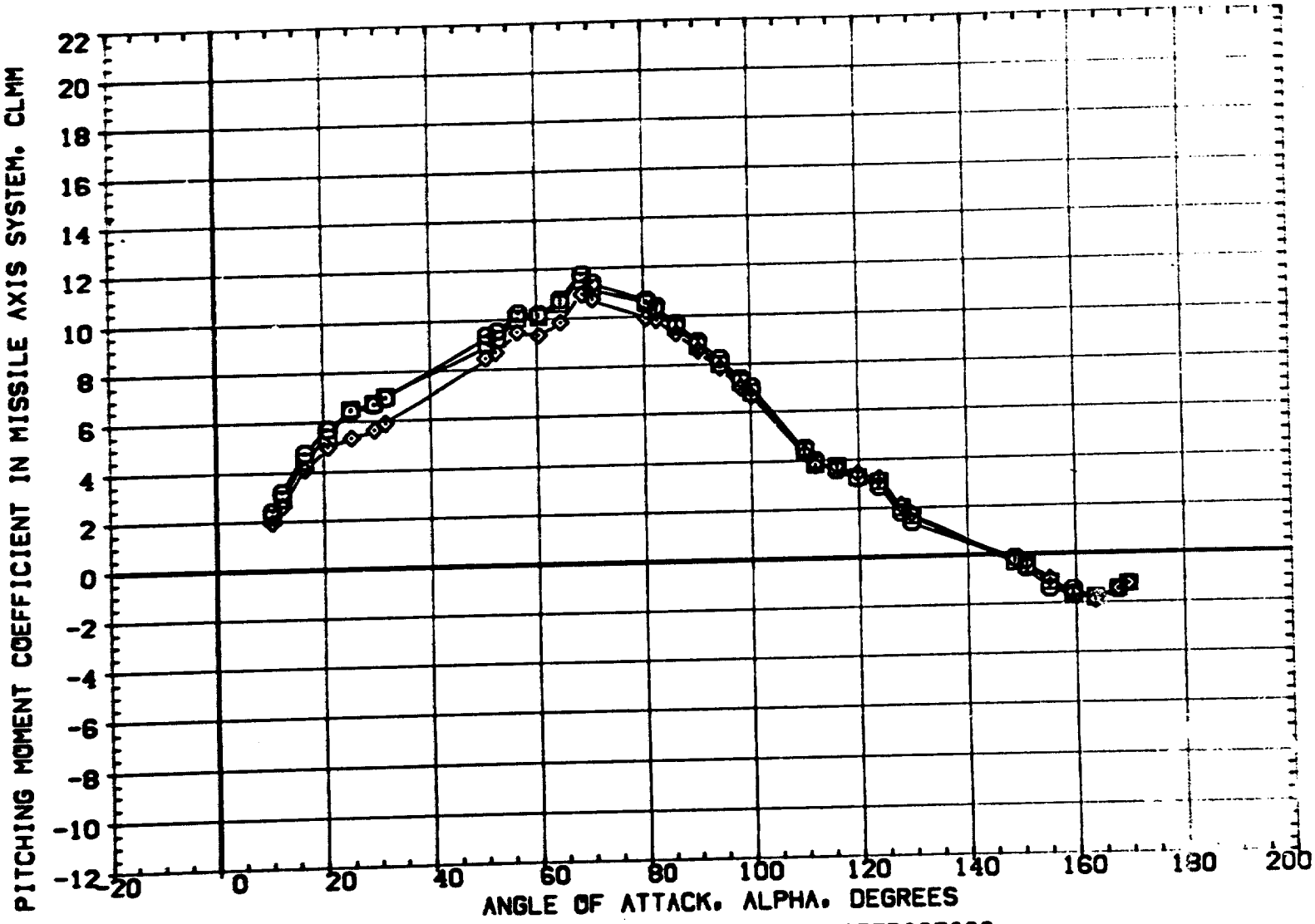


EFFECT OF SHROUD FLARE ANGLE ON AERODYNAMIC CHARACTERISTICS

(C)MACH = 1.20

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
(D)1100	○	MSFC 578(SA1DF) 142-IN SRB (139) NBE1	.000	.100	1.000	.000
(D)1200	□	MSFC 578(SA1DF) 142-IN SRB (139) NBE2	.000	.100	2.000	.000
(D)1300	◇	MSFC 578(SA1DF) 142-IN SRB (139) NBE3	.000	.100	3.000	.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

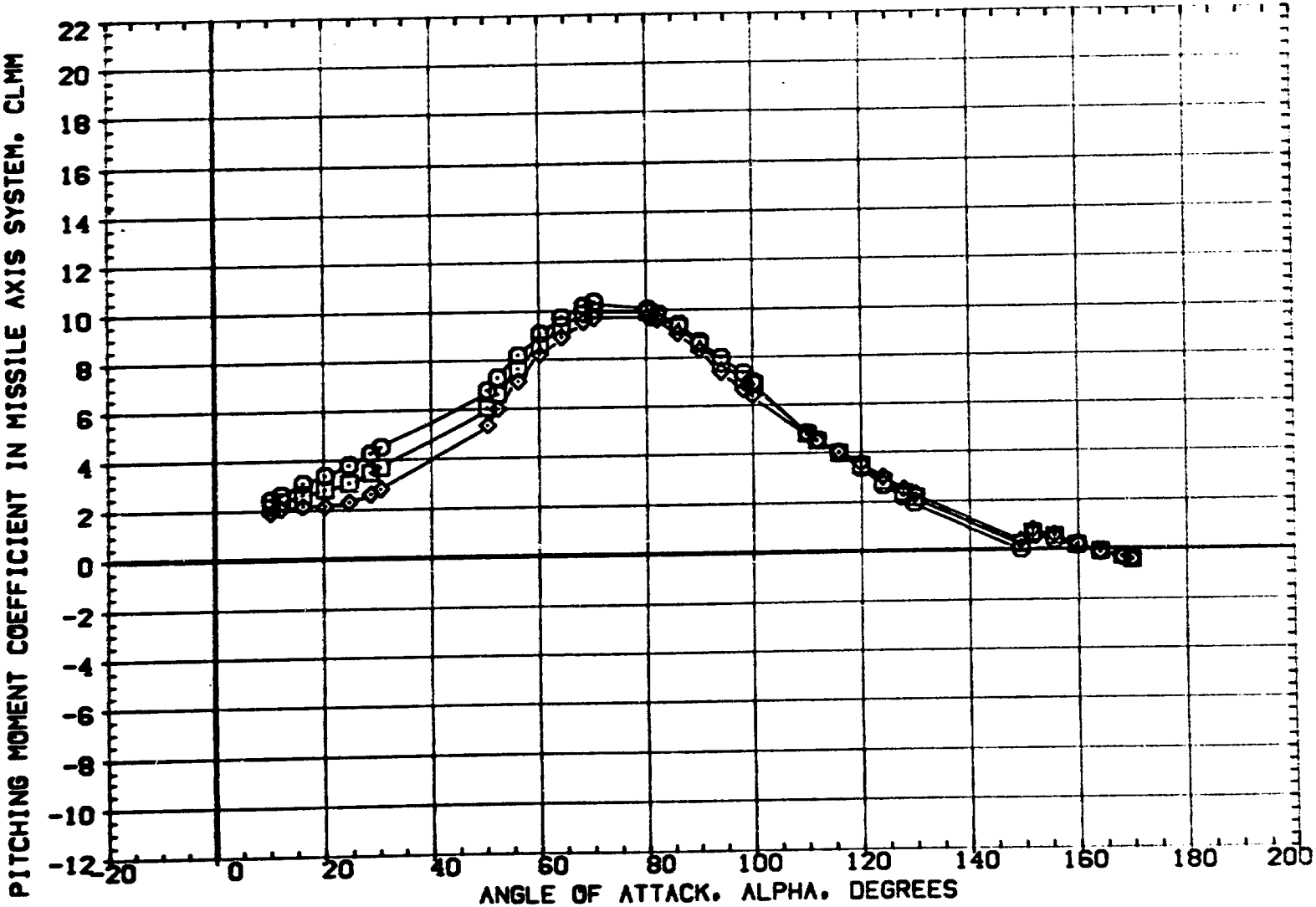


EFFECT OF SHROUD FLARE ANGLE ON AERODYNAMIC CHARACTERISTICS

(D)MACH = 1.96

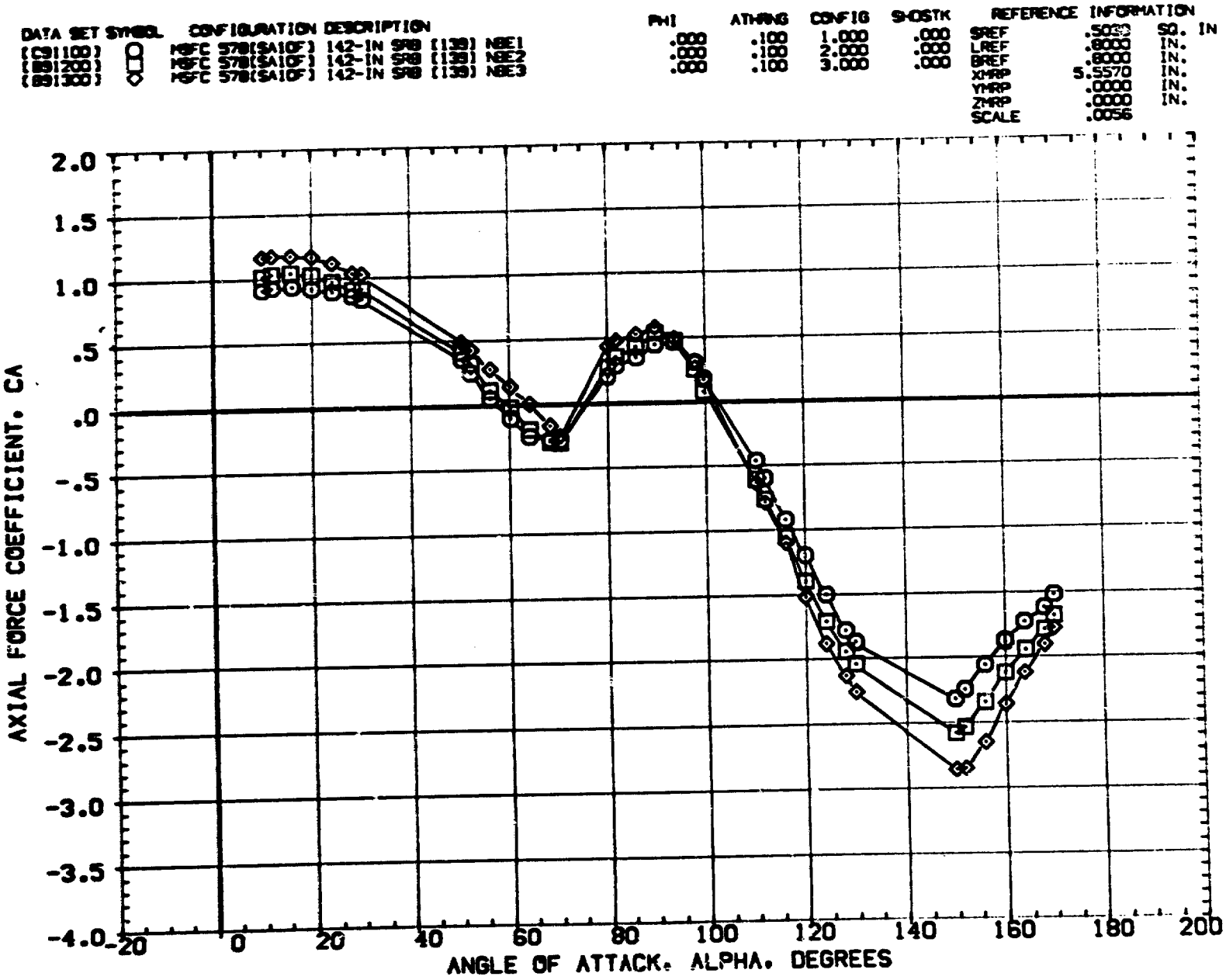
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
(891100)	□	MSFC 578(SA1OF) 142-IN SRB (139) NBE1	.000	.100	1.000	.000
(891200)	○	MSFC 578(SA1OF) 142-IN SRB (139) NBE2	.000	.100	2.000	.000
(891300)	◇	MSFC 578(SA1OF) 142-IN SRB (139) NBE3	.000	.100	3.000	.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	



EFFECT OF SHROUD FLARE ANGLE ON AERODYNAMIC CHARACTERISTICS

(E)MACH = 3.48

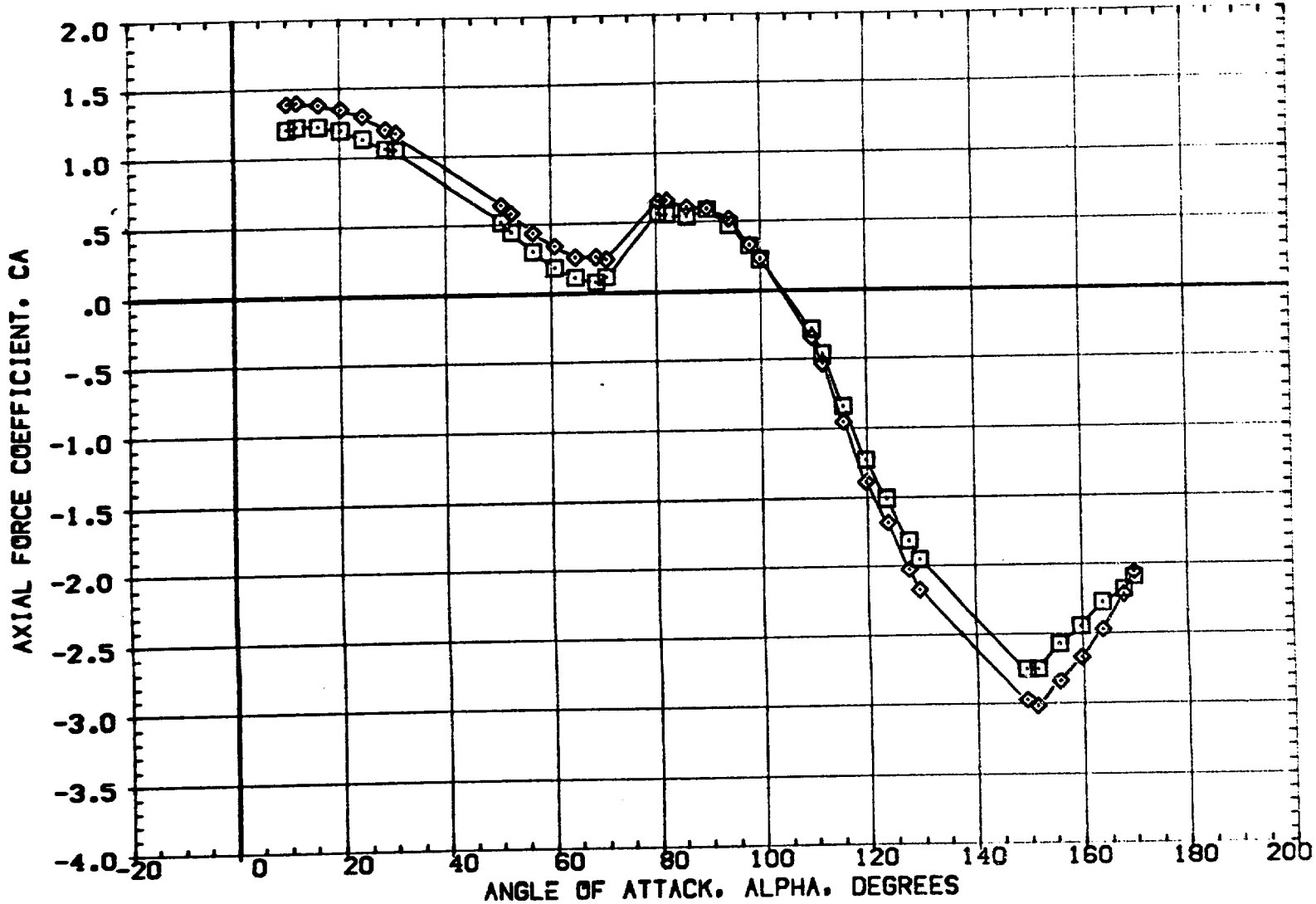


EFFECT OF SHROUD FLARE ANGLE ON AERODYNAMIC CHARACTERISTICS

(A)MACH = .59

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
[C91100]	DATA NOT AVAILABLE	.000	.100	1.000	.000
[B91200]	MSFC 578[SA10F] 142-IN SRB [139] NBE2	.000	.100	2.000	.000
[B91300]	MSFC 578[SA10F] 142-IN SRB [139] NBE3	.000	.100	3.000	.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

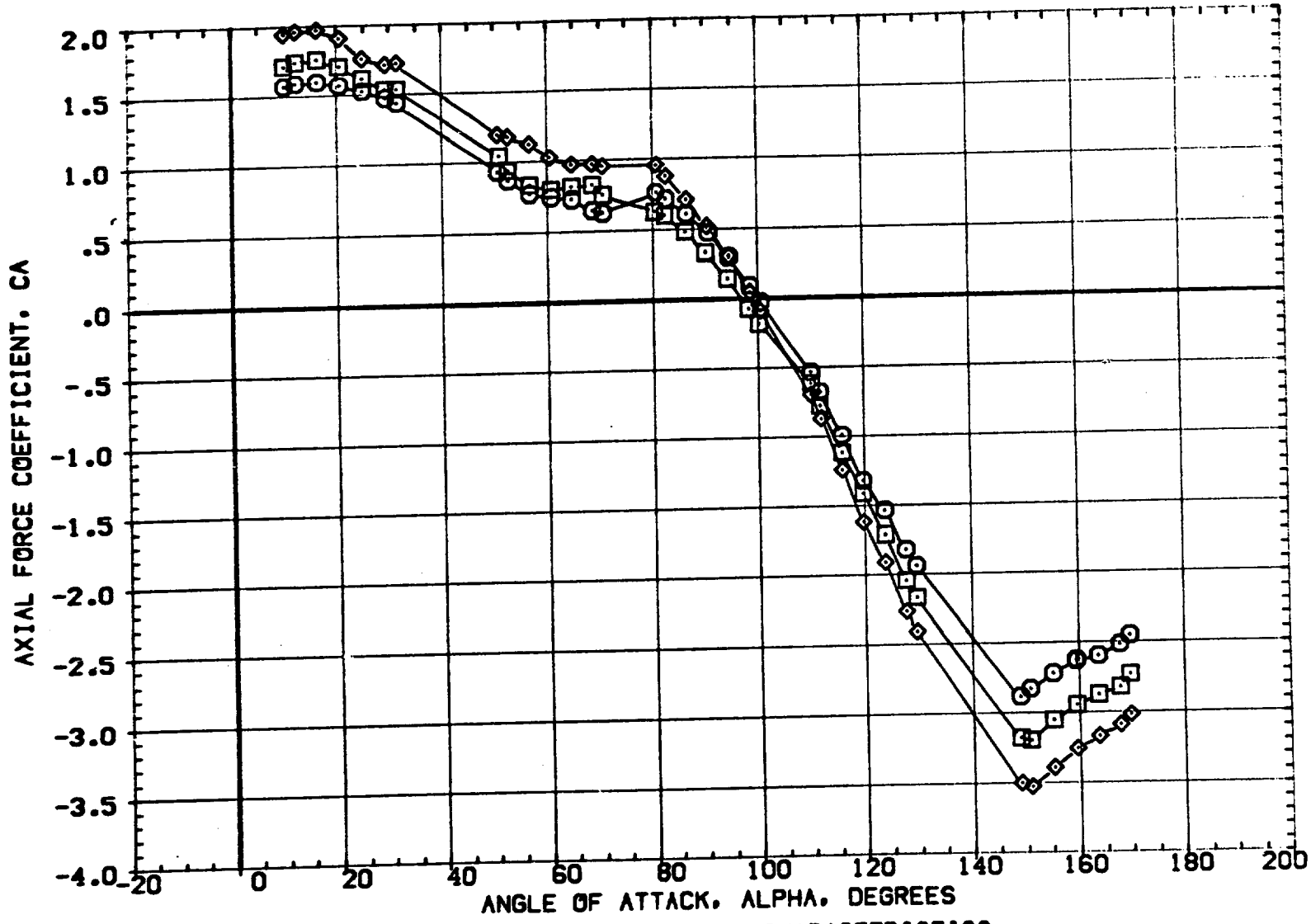


EFFECT OF SHROUD FLARE ANGLE ON AERODYNAMIC CHARACTERISTICS

(B)MACH = .91

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
(B9110D)	○	MSFC 57B(SA10F) 142-IN SRB (139) NBE1	.000	.100	1.000	.000
(B9120D)	□	MSFC 57B(SA10F) 142-IN SRB (139) NBE2	.000	.100	2.000	.000
(B9130D)	◇	MSFC 57B(SA10F) 142-IN SRB (139) NBE3	.000	.100	3.000	.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

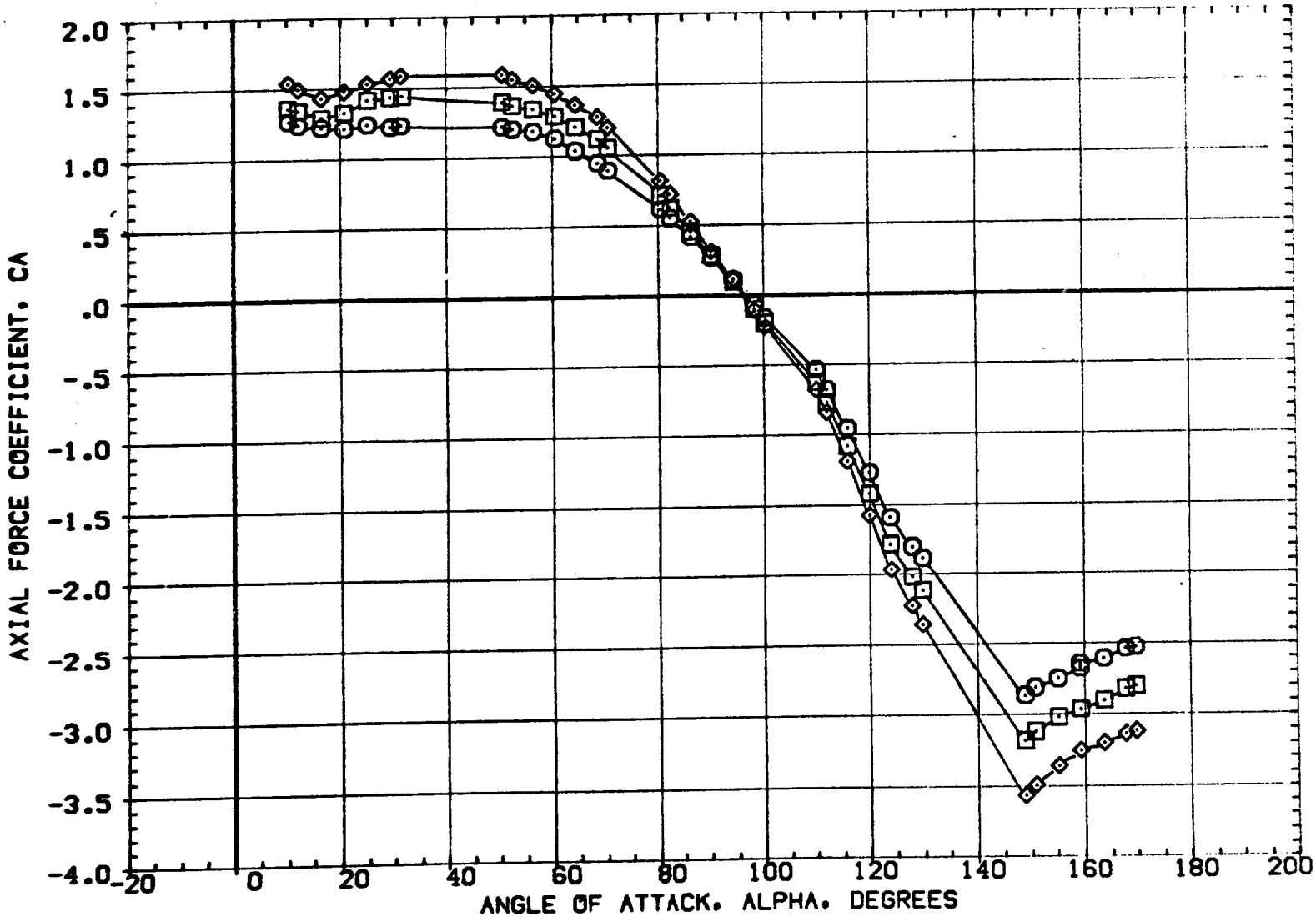


EFFECT OF SHROUD FLARE ANGLE ON AERODYNAMIC CHARACTERISTICS

(C)MACH = 1.20

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
[B91100]	○	MSFC 578[SA1OF] 142-IN SRB [139] NBE1	.000	.100	1.000	.000
[B91200]	□	MSFC 578[SA1OF] 142-IN SRB [139] NBE2	.000	.100	2.000	.000
[B91300]	◇	MSFC 578[SA1OF] 142-IN SRB [139] NBE3	.000	.100	3.000	.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	



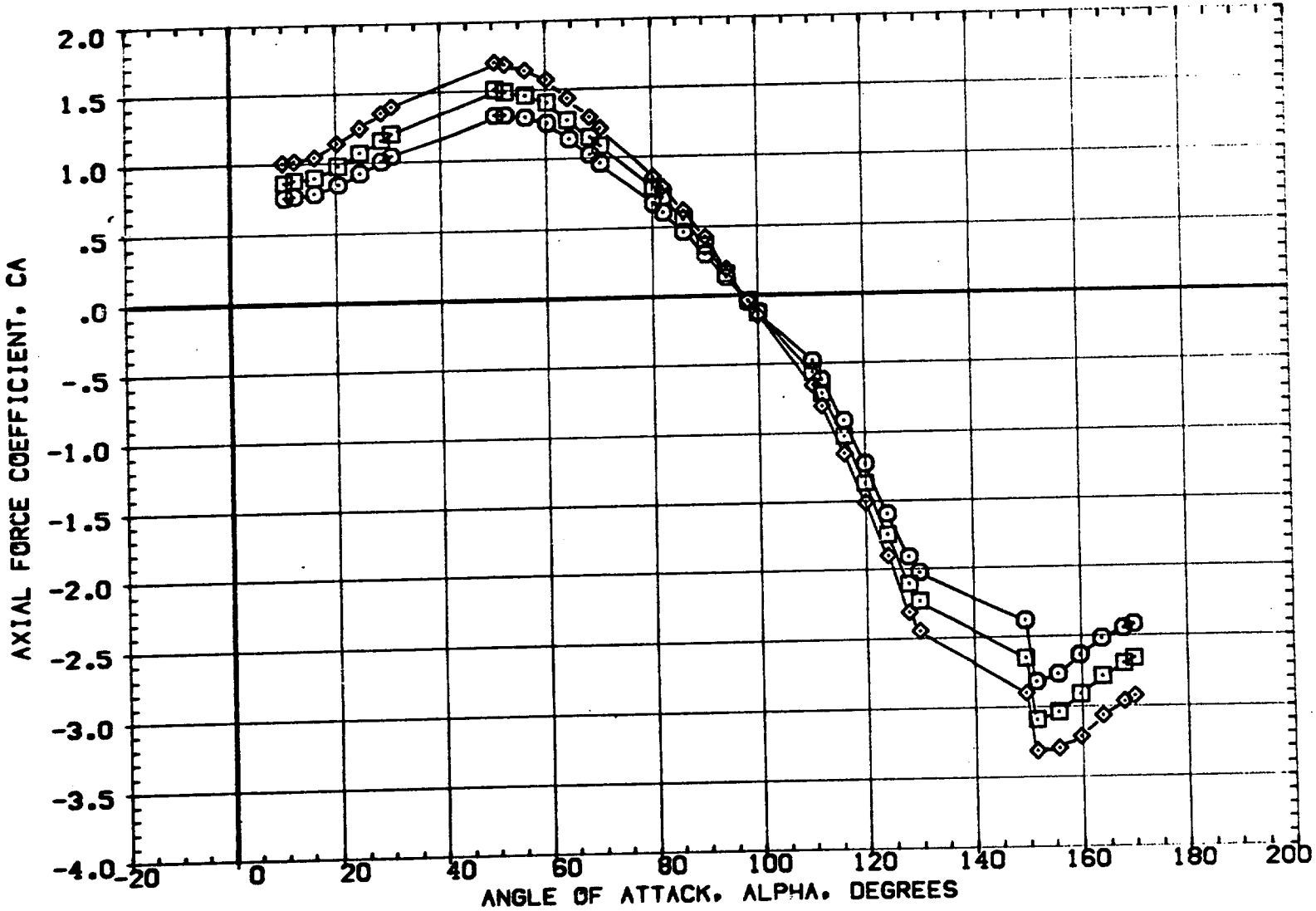
EFFECT OF SHROUD FLARE ANGLE ON AERODYNAMIC CHARACTERISTICS

[D]MACH = 1.96

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION
(C91100)	○	MSFC 578(SA1OF) 142-IN SRB (139) NBE1
(891200)	□	MSFC 578(SA1OF) 142-IN SRB (139) NBE2
(891300)	◇	MSFC 578(SA1OF) 142-IN SRB (139) NBE3

PHI	ATHRNG	CONFIG	SHOSTK
.000	.100	1.000	.000
.000	.100	2.000	.000
.000	.100	3.000	.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	3.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

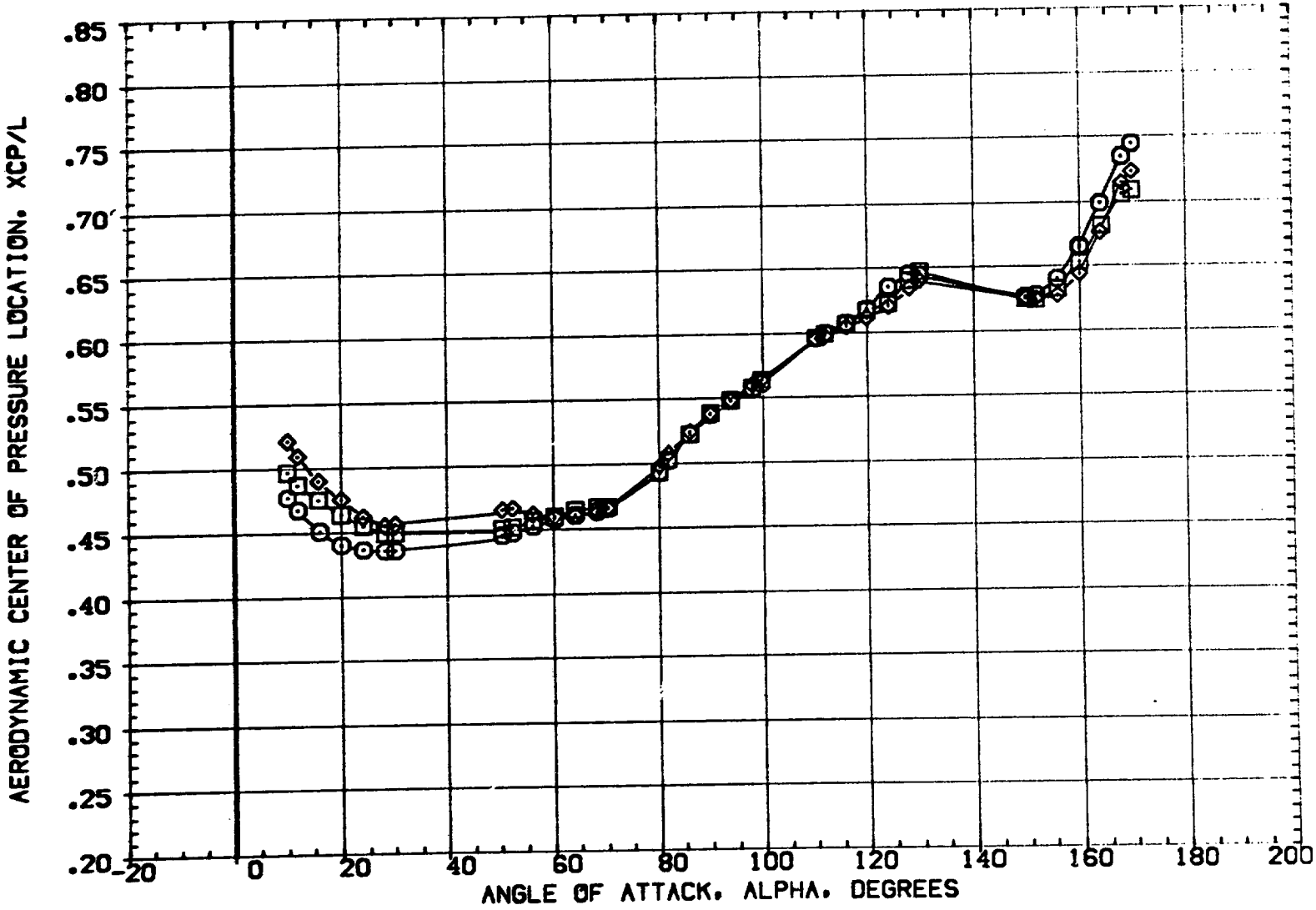


EFFECT OF SHROUD FLARE ANGLE ON AERODYNAMIC CHARACTERISTICS

(E)MACH = 3.48

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
(C91100)	○	MSFC 578(SA10F) 142-IN SRB (139) NBE1	.000	.100	1.000	.000
(891200)	□	MSFC 578(SA10F) 142-IN SRB (139) NBE2	.000	.100	2.000	.000
(891300)	◇	MSFC 578(SA10F) 142-IN SRB (139) NBE3	.000	.100	3.000	.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

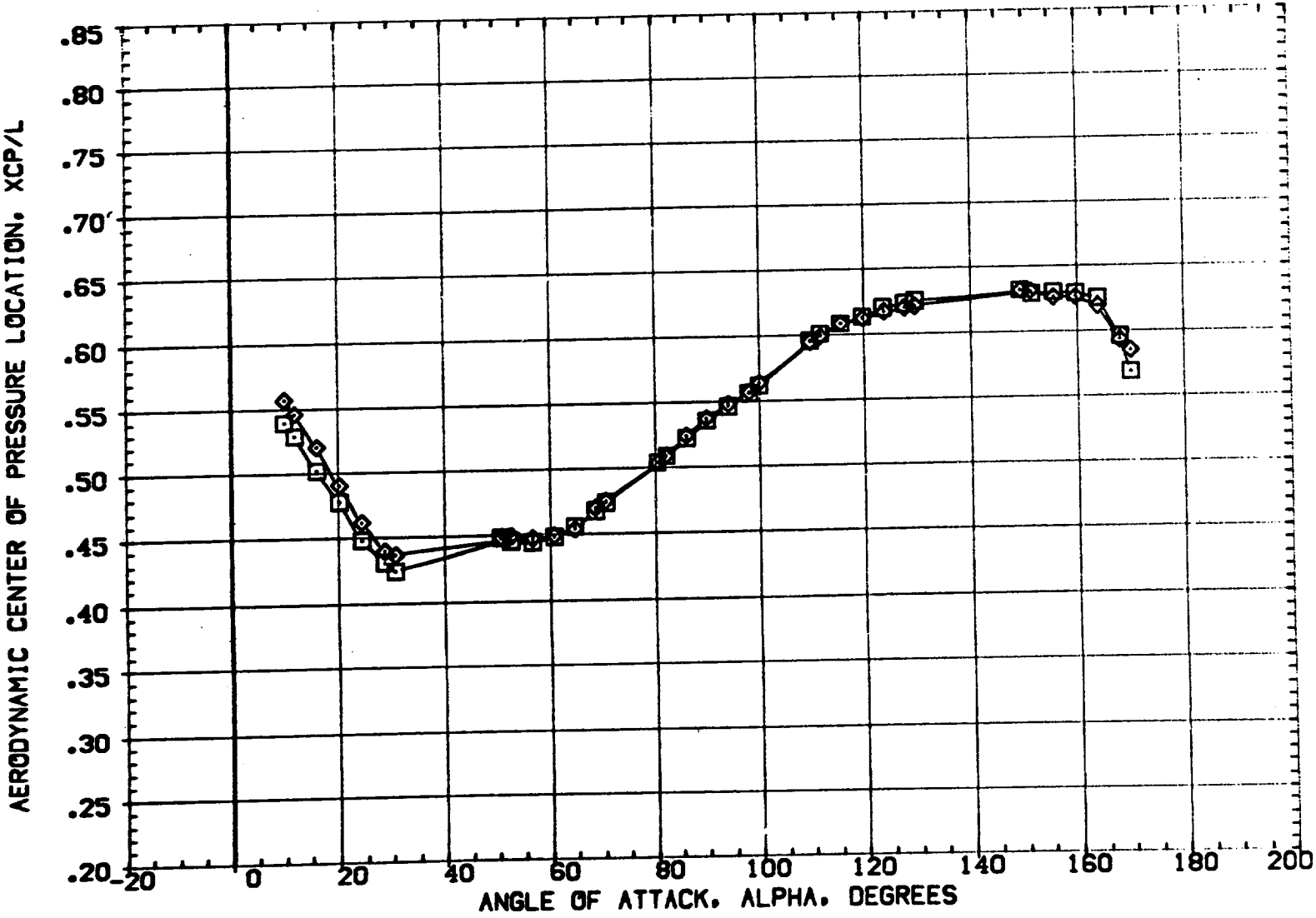


EFFECT OF SHROUD FLARE ANGLE ON AERODYNAMIC CHARACTERISTICS

(A)MACH = .59

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
(B)100)	○	DATA NOT AVAILABLE	.000	.100	1.000	.000
(B)1200)	□	MSFC 578(SA1OF) 142-IN SRB (139) NBE2	.000	.100	2.000	.000
(B)1300)	◇	MSFC 578(SA1OF) 142-IN SRB (139) NBE3	.000	.100	3.000	.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

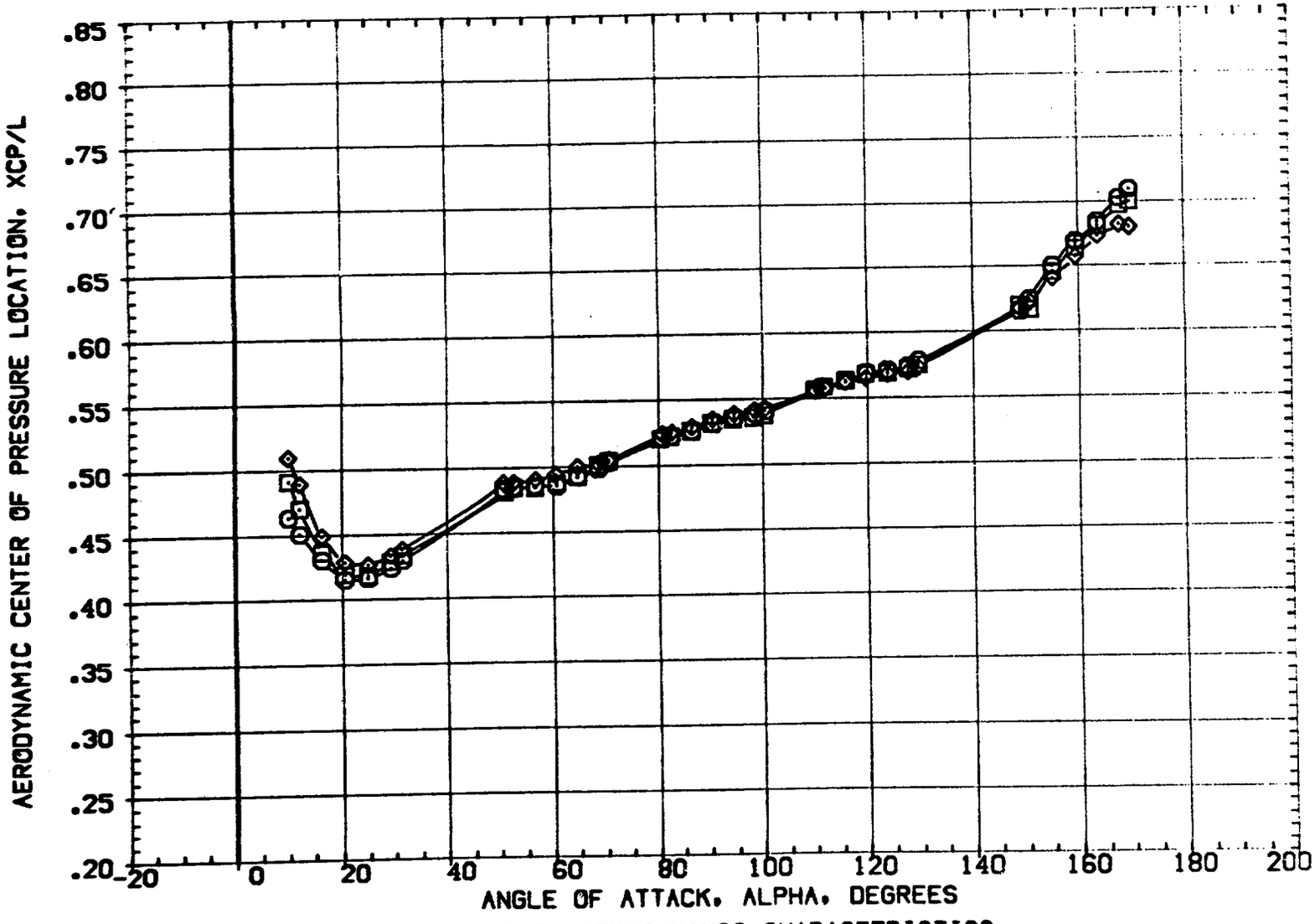


EFFECT OF SHROUD FLARE ANGLE ON AERODYNAMIC CHARACTERISTICS

(B)MACH = .91

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
(C)1100) ○	MSFC 578(SA1OF) 142-IN SRB (139) NBE1	.000	.100	1.000	.000
(891200) □	MSFC 578(SA1OF) 142-IN SRB (139) NBE2	.000	.100	2.000	.000
(891300) ◇	MSFC 578(SA1OF) 142-IN SRB (139) NBE3	.000	.100	3.000	.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

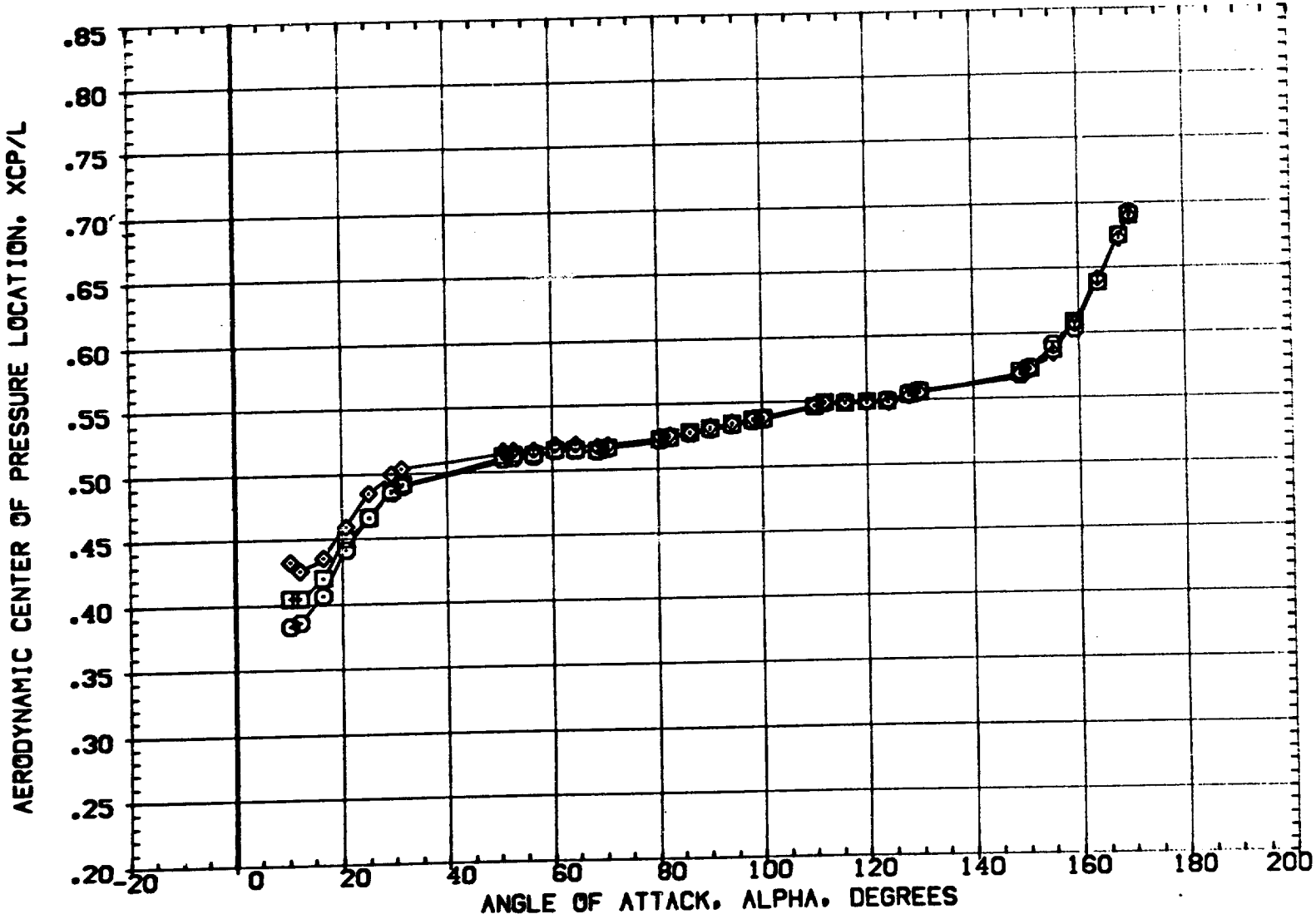


EFFECT OF SHROUD FLARE ANGLE ON AERODYNAMIC CHARACTERISTICS

(C)MACH = 1.20

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
(C91100)	○	MSFC 578(SA1OF) 142-IN SRB (139) NBE1	.000	.100	1.000	.000
(B91200)	□	MSFC 578(SA1OF) 142-IN SRB (139) NBE2	.000	.100	2.000	.000
(B91300)	◇	MSFC 578(SA1OF) 142-IN SRB (139) NBE3	.000	.100	3.000	.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

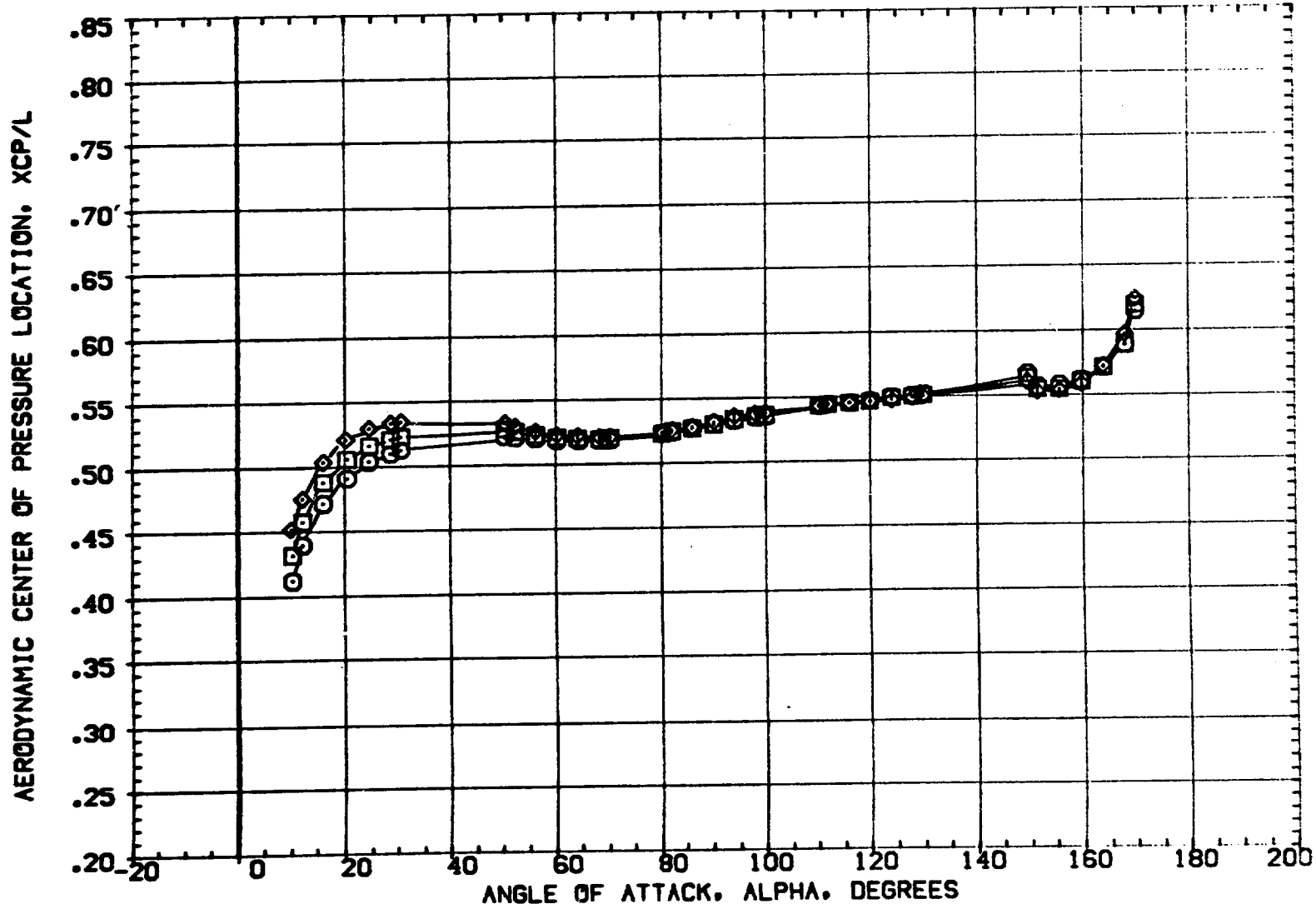


EFFECT OF SHROUD FLARE ANGLE ON AERODYNAMIC CHARACTERISTICS

(D)MACH = 1.96

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
(C)100)	○	MSFC S7B(SA1OF) 142-IN SRB (139) NBE1	.000	.100	1.000	.000
(B)200)	□	MSFC S7B(SA1OF) 142-IN SRB (139) NBE2	.000	.100	2.000	.000
(B)300)	◇	MSFC S7B(SA1OF) 142-IN SRB (139) NBE3	.000	.100	3.000	.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

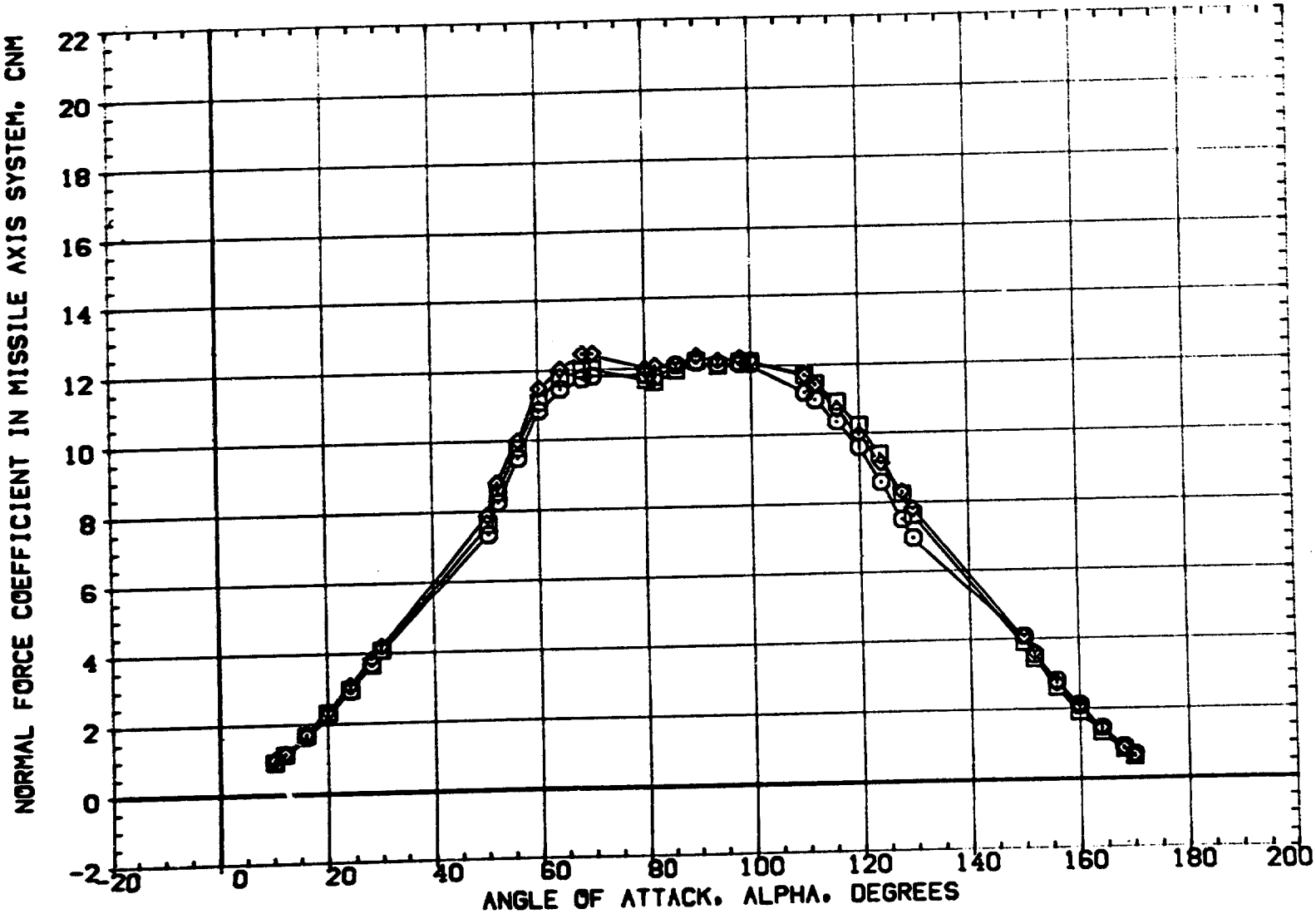


EFFECT OF SHROUD FLARE ANGLE ON AERODYNAMIC CHARACTERISTICS

(E)MACH = 3.48

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
[illegible]		MSFC 578(SA)OF) 142-IN SRB (139) NBE1	.000	.100	1.000	.000
[illegible]		MSFC 578(SA)OF) 142-IN SRB (139) NBE4	.000	.100	4.000	.000
[illegible]	◇	MSFC 578(SA)OF) 142-IN SRB (139) NBE5	.000	.100	5.000	.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	



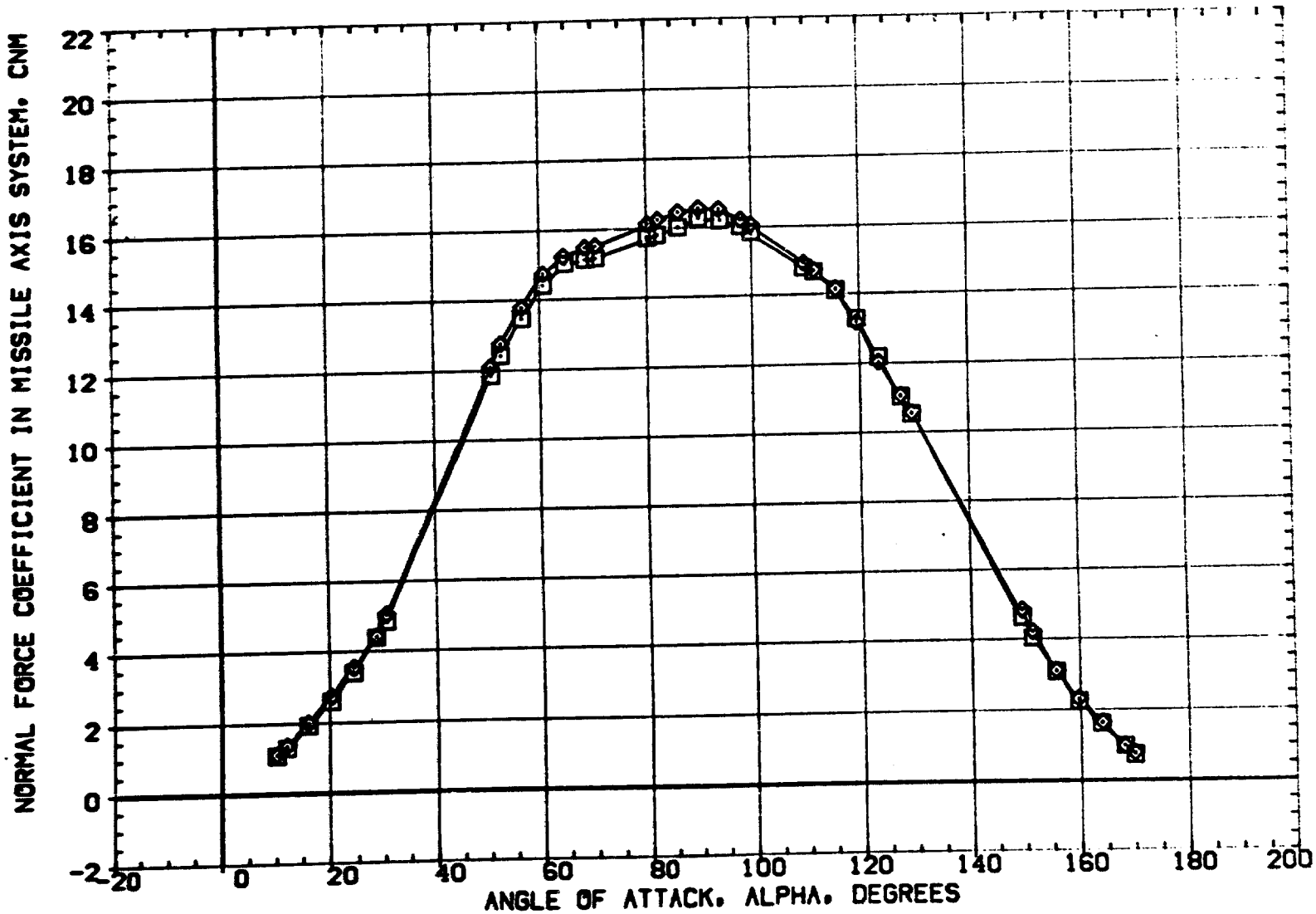
EFFECT OF SHROUD LENGTH ON AERODYNAMIC CHARACTERISTICS

(A)MACH = .59

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
[B]1100] ○	DATA NOT AVAILABLE	.000	.100	1.000	.000
[B]1400] □	MSFC 578[SA10F] 142-IN SRB [139] NBE4	.000	.100	4.000	.000
[B]1500] ◇	MSFC 578[SA10F] 142-IN SRB [139] NBE5	.000	.100	5.000	.000

REFERENCE INFORMATION

SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

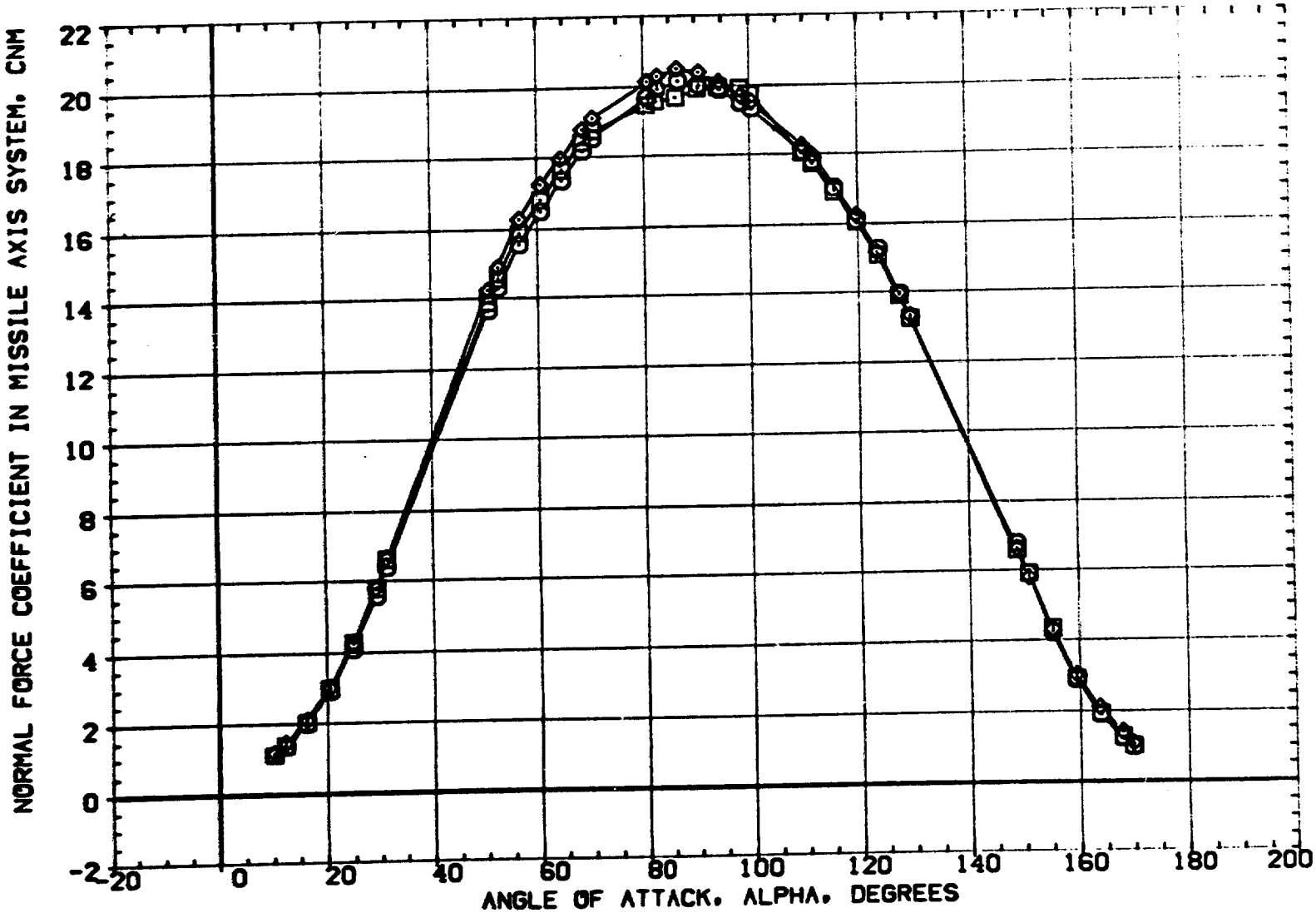


EFFECT OF SHROUD LENGTH ON AERODYNAMIC CHARACTERISTICS

(B)MACH = .90

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
(C)(100)	□	MSFC 578(SA10F) 142-IN SRB (139) NBE1	.000	.100	1.000	.000
(B)(400)	◇	MSFC 578(SA10F) 142-IN SRB (139) NBE4	.000	.100	4.000	.000
(B)(500)	◁	MSFC 578(SA10F) 142-IN SRB (139) NBE5	.000	.100	5.000	.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

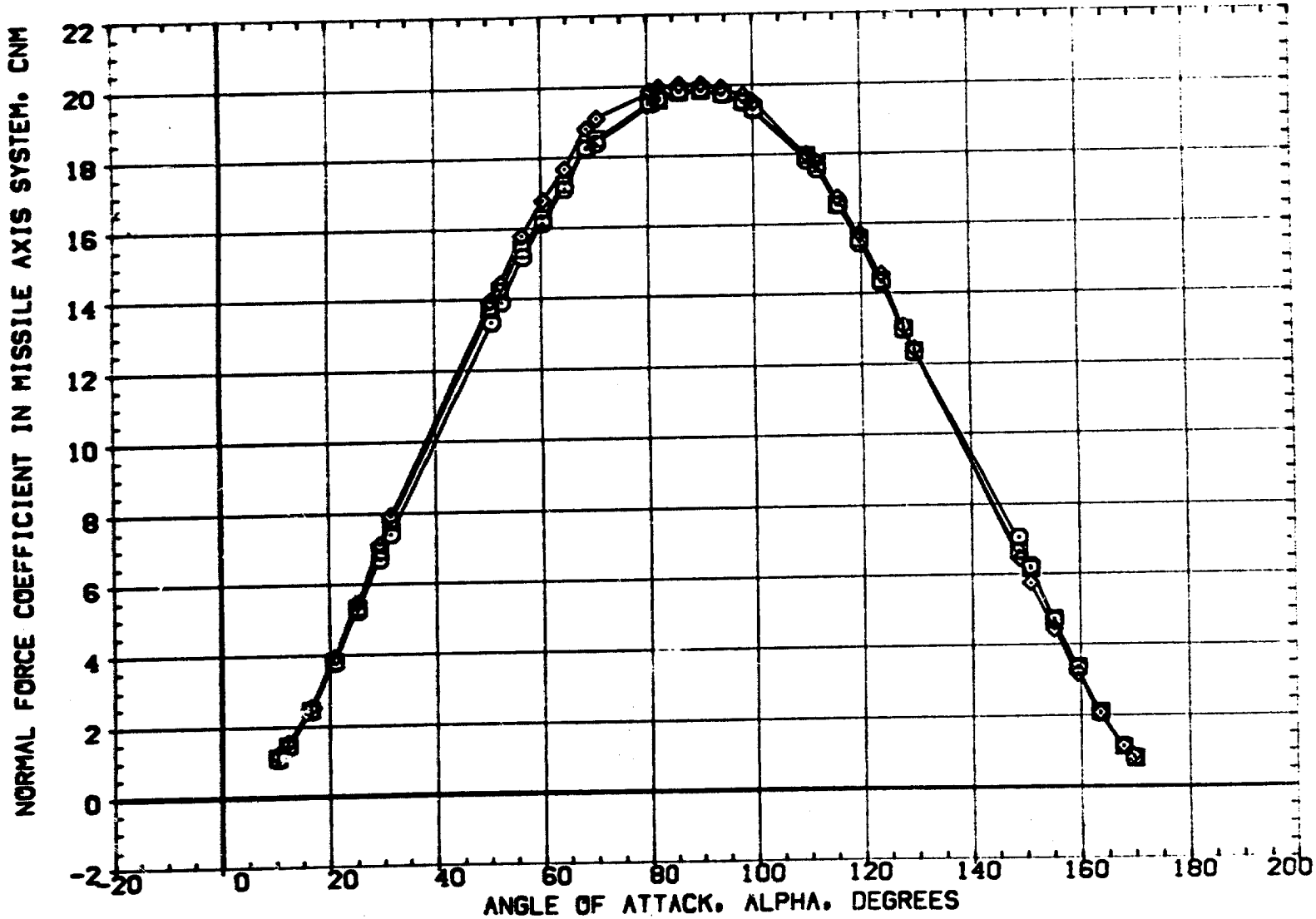


EFFECT OF SHROUD LENGTH ON AERODYNAMIC CHARACTERISTICS

(C)MACH = 1.20

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
[C]1100]	MSFC 578(SA10F) 142-IN SRB (130) NBE1	.000	.100	1.000	.000
[B]1400]	MSFC 578(SA10F) 142-IN SRB (130) NBE4	.000	.100	4.000	.000
[B]1500]	MSFC 578(SA10F) 142-IN SRB (130) NBE5	.000	.100	5.000	.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	



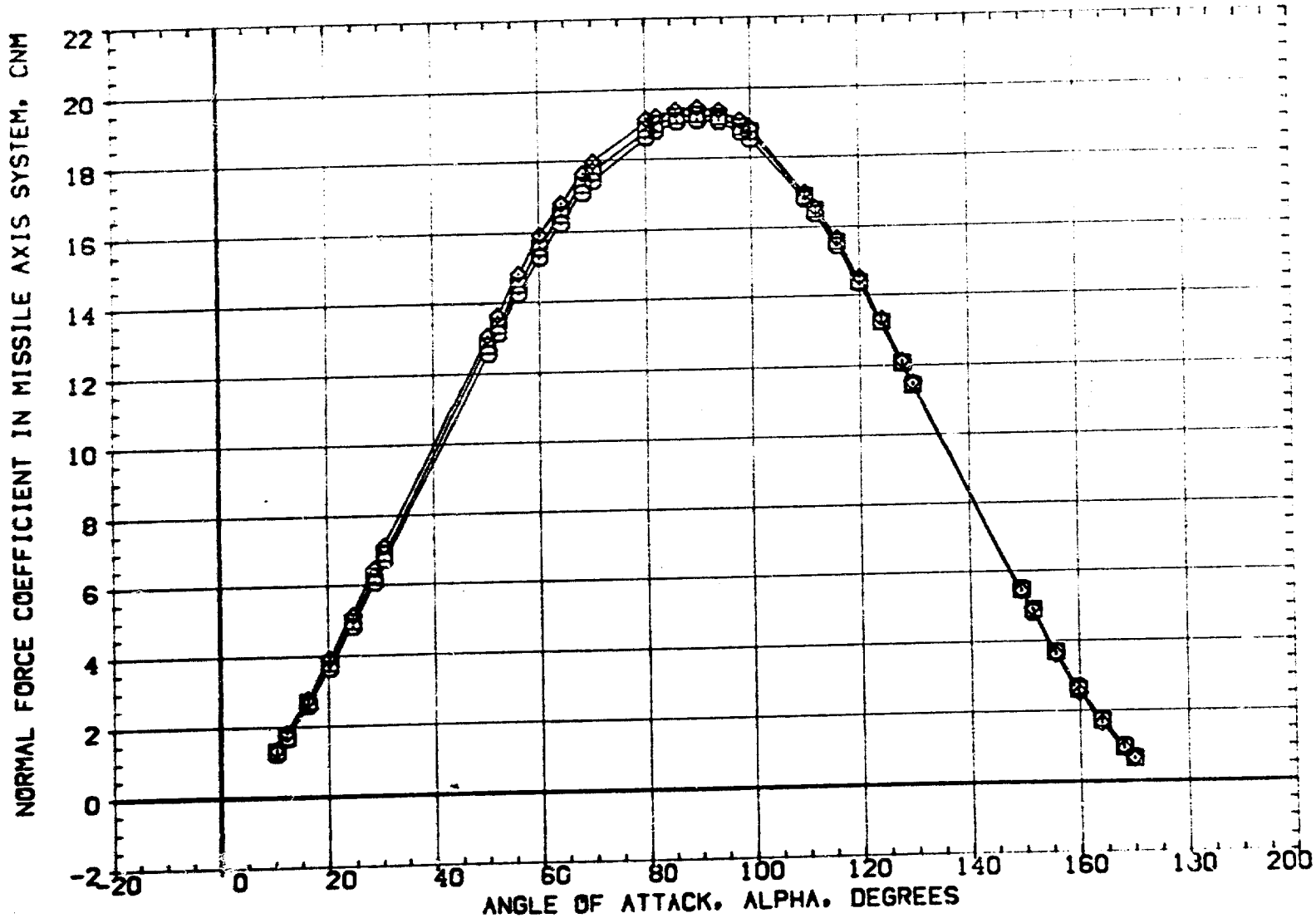
EFFECT OF SHROUD LENGTH ON AERODYNAMIC CHARACTERISTICS

(D)MACH = 1.96

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
[C9]100]	□	MSFC 578(SA10F) 142-IN SRB [139] NBE1	.000	.100	1.000	.000
[B8]400]	◇	MSFC 578(SA10F) 142-IN SRB [139] NBE4	.000	.100	4.000	.000
[B8]500]		MSFC 578(SA10F) 142-IN SRB [139] NBE5	.000	.100	5.000	.000

REFERENCE INFORMATION

SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

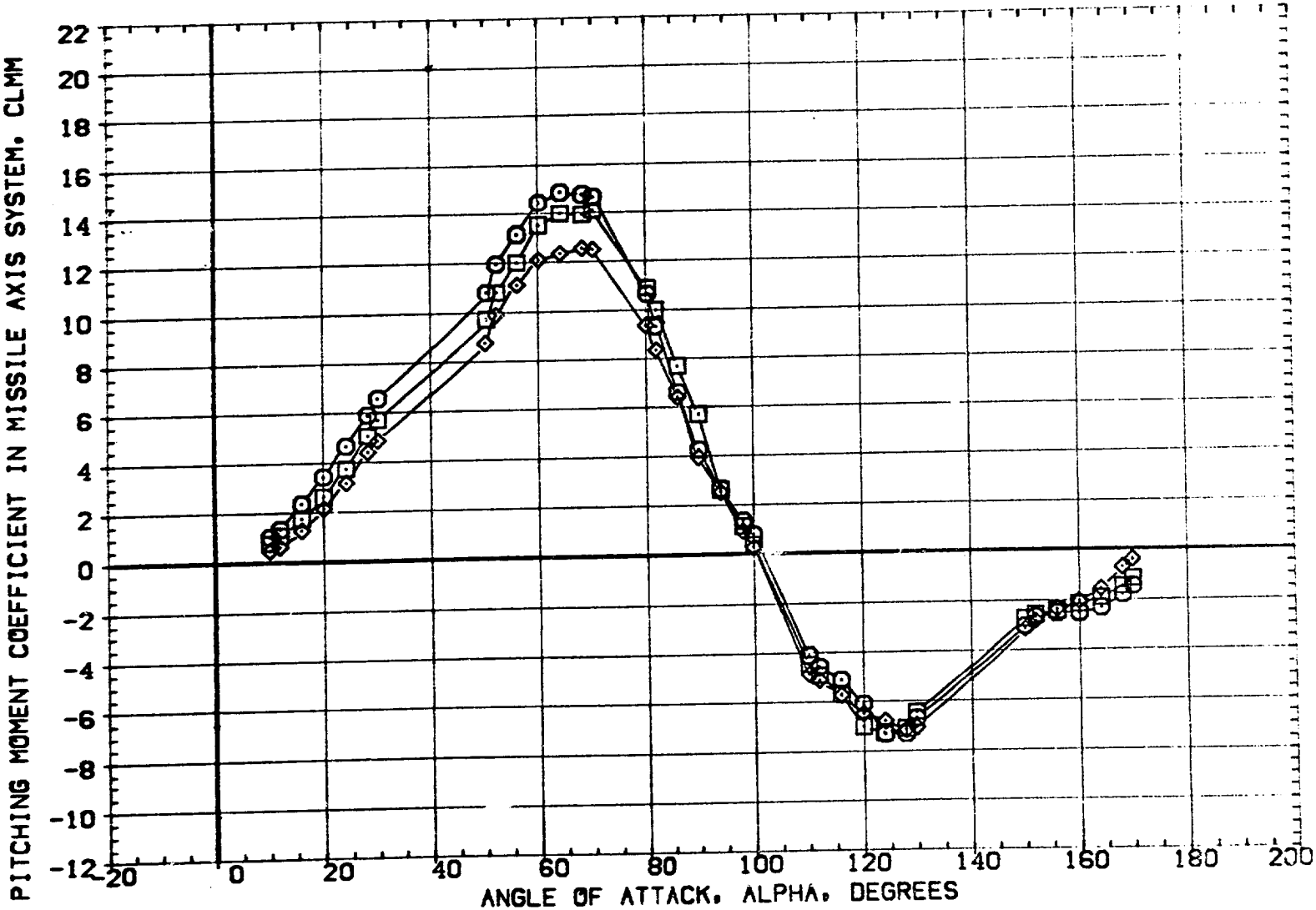


EFFECT OF SHROUD LENGTH ON AERODYNAMIC CHARACTERISTICS

(E)MACH = 3.48

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
[C91100]	○	MSFC 578[SA1OF] 142-IN SRB [139] NBE1	.000	.100	1.000	.000
[B91400]	□	MSFC 578[SA1OF] 142-IN SRB [139] NBE4	.000	.100	4.000	.000
[B91500]	◇	MSFC 578[SA1OF] 142-IN SRB [139] NBE5	.000	.100	5.000	.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	



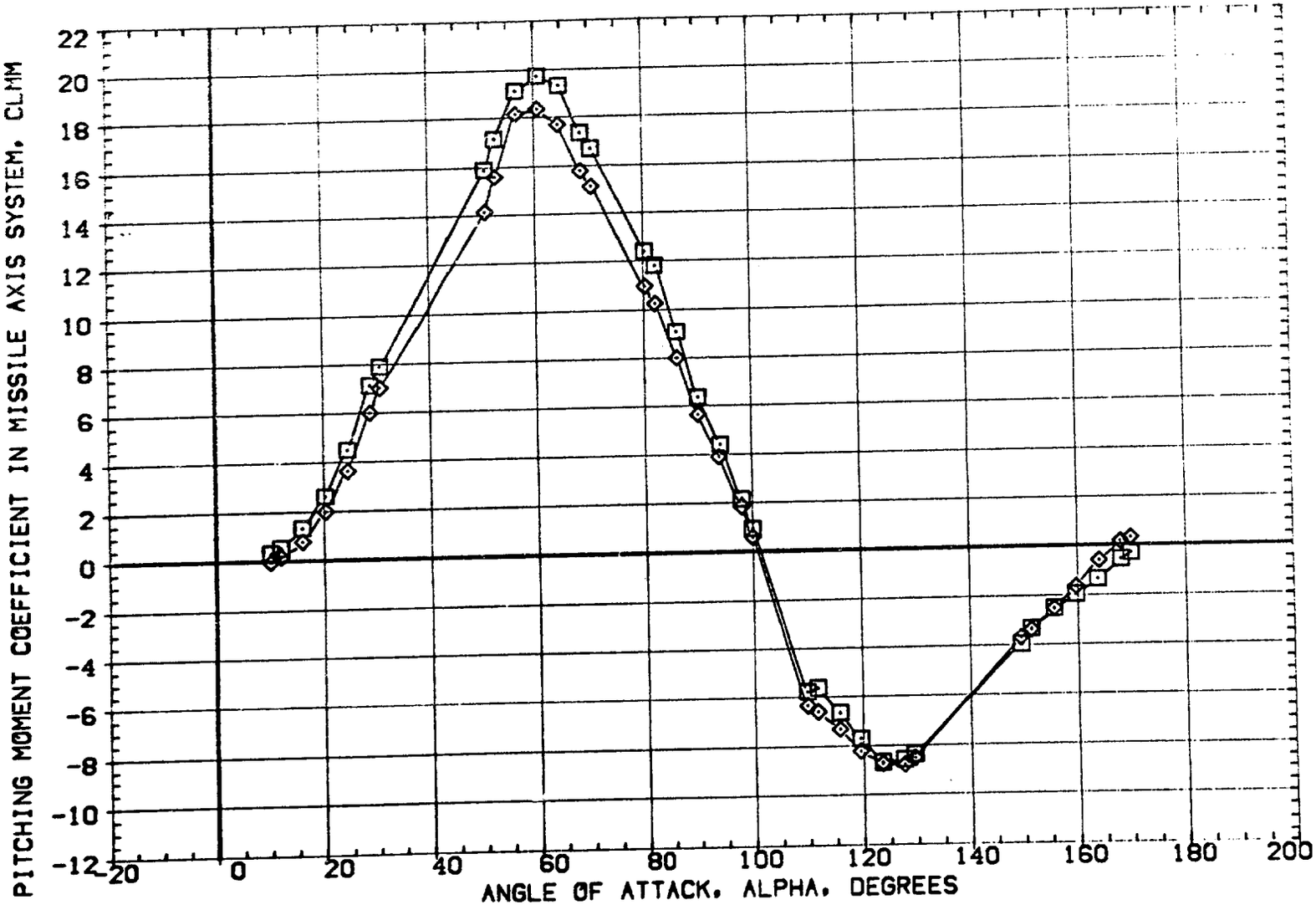
EFFECT OF SHROUD LENGTH ON AERODYNAMIC CHARACTERISTICS

(A)MACH = .59

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
[B]1100]	DATA NOT AVAILABLE
[B]1400]	MSFC 578[SA10F] 142-IN SRB [139] NBE4
[B]1500]	MSFC 578[SA10F] 142-IN SRB [139] NBE5

PHI	ATHRNG	CONFIG	SHOSTK
.000	.100	1.000	.000
.000	.100	4.000	.000
.000	.100	5.000	.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

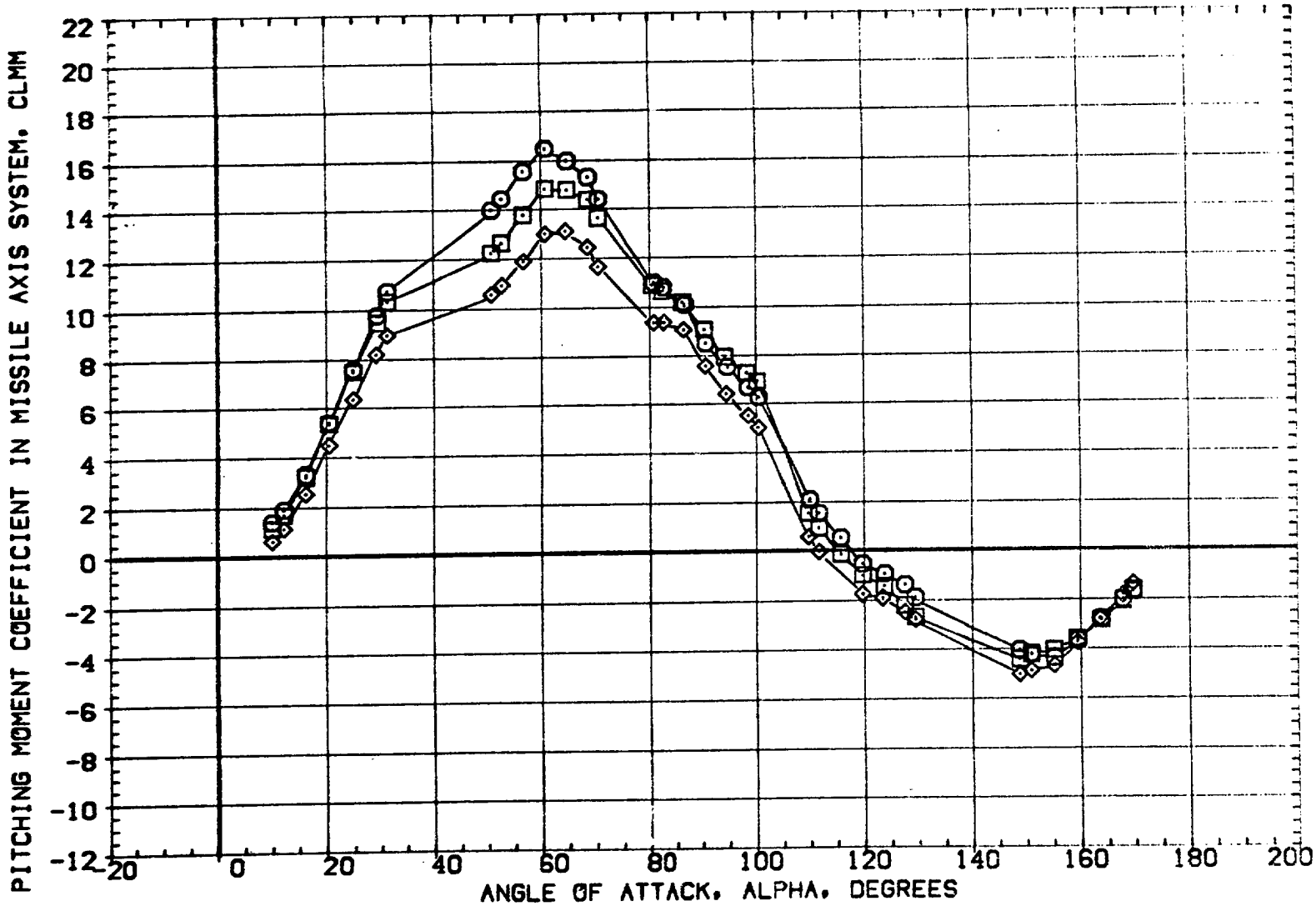


EFFECT OF SHROUD LENGTH ON AERODYNAMIC CHARACTERISTICS

(B)MACH = .90

DATA SET SYMBOL		CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
(C91100)	○	MSFC 578(SA1OF) 142-IN SRB (139) NBE1	.000	.100	1.000	.000
(B91400)	□	MSFC 578(SA1OF) 142-IN SRB (139) NBE4	.000	.100	4.000	.000
(B91500)	◇	MSFC 578(SA1OF) 142-IN SRB (139) NBE5	.000	.100	5.000	.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	



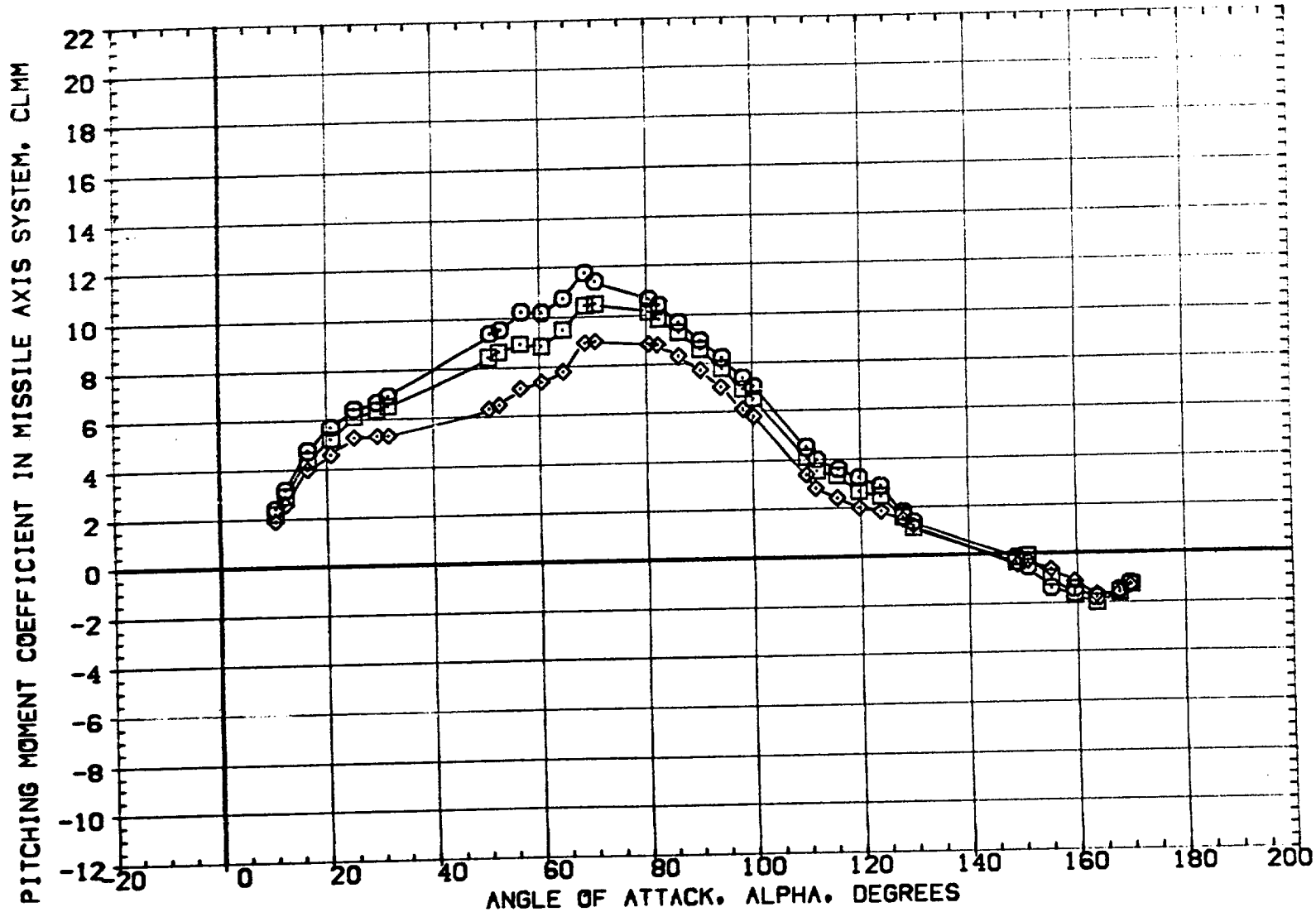
EFFECT OF SHROUD LENGTH ON AERODYNAMIC CHARACTERISTICS

(C)MACH = 1.20

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
(89)100)	○	MSFC 578(SA10F) 142-IN SRB (139) NBE1	.000	.100	1.000	.000
(89)400)	□	MSFC 578(SA10F) 142-IN SRB (139) NBE4	.000	.100	4.000	.000
(89)500)	◇	MSFC 578(SA10F) 142-IN SRB (139) NBE5	.000	.100	5.000	.000

REFERENCE INFORMATION

SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

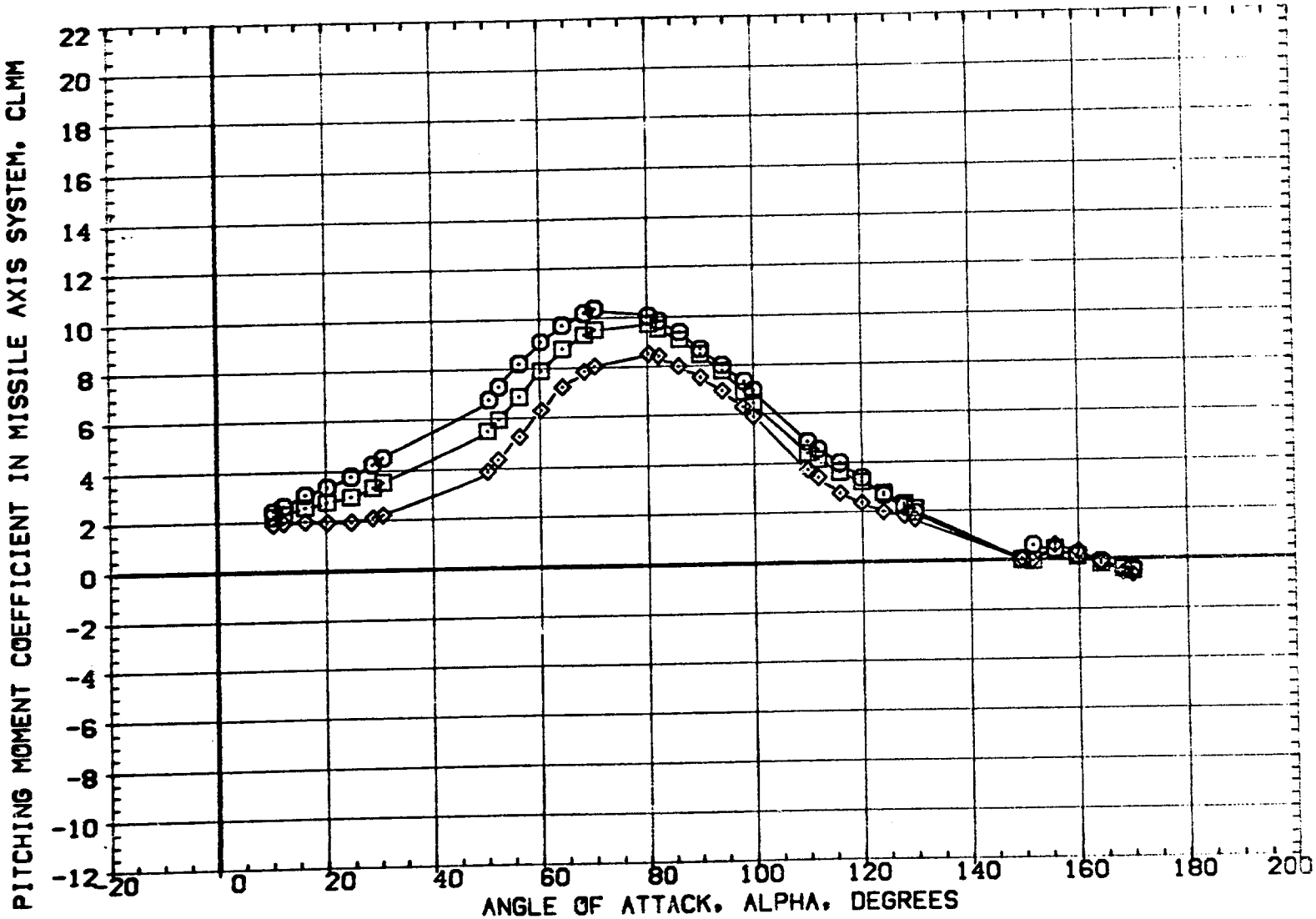


EFFECT OF SHROUD LENGTH ON AERODYNAMIC CHARACTERISTICS

(D)MACH = 1.96

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
[891100] ○	MSFC 578(SA10F) 142-IN SRB (139) NBE1	.000	.100	1.000	.000
[891400] □	MSFC 578(SA10F) 142-IN SRB (139) NBE4	.000	.100	4.000	.000
[891500] ◇	MSFC 578(SA10F) 142-IN SRB (139) NBE5	.000	.100	5.000	.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

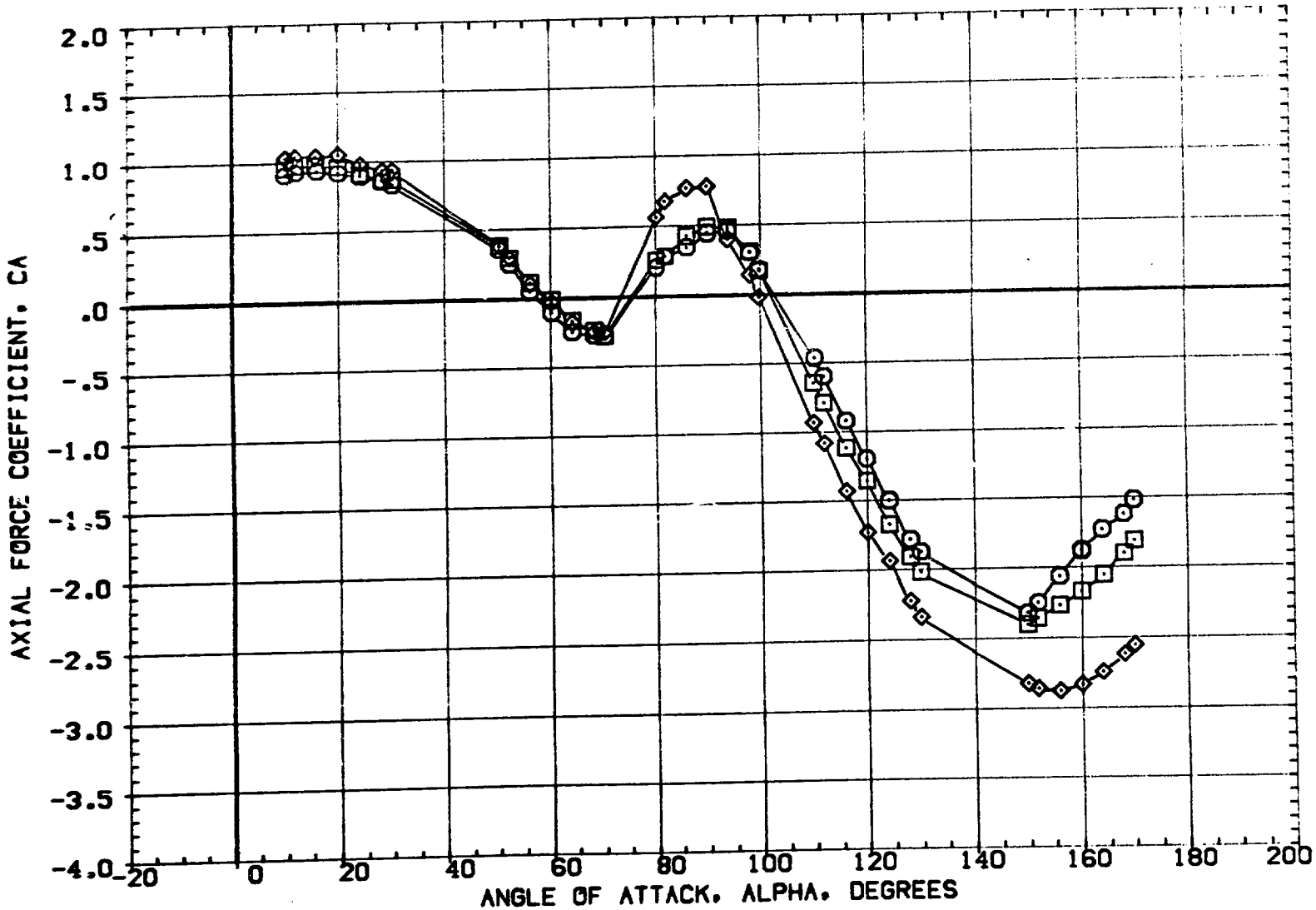


EFFECT OF SHROUD LENGTH ON AERODYNAMIC CHARACTERISTICS

(E)MACH = 3.48

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
[B91100]	○	MSFC 578[SA10F] 142-IN SRB [139] NBE1	.000	.100	1.000	.000
[B91400]	□	MSFC 578[SA10F] 142-IN SRB [139] NBE4	.000	.100	4.000	.000
[B91500]	◇	MSFC 578[SA10F] 142-IN SRB [139] NBE5	.000	.100	5.000	.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	



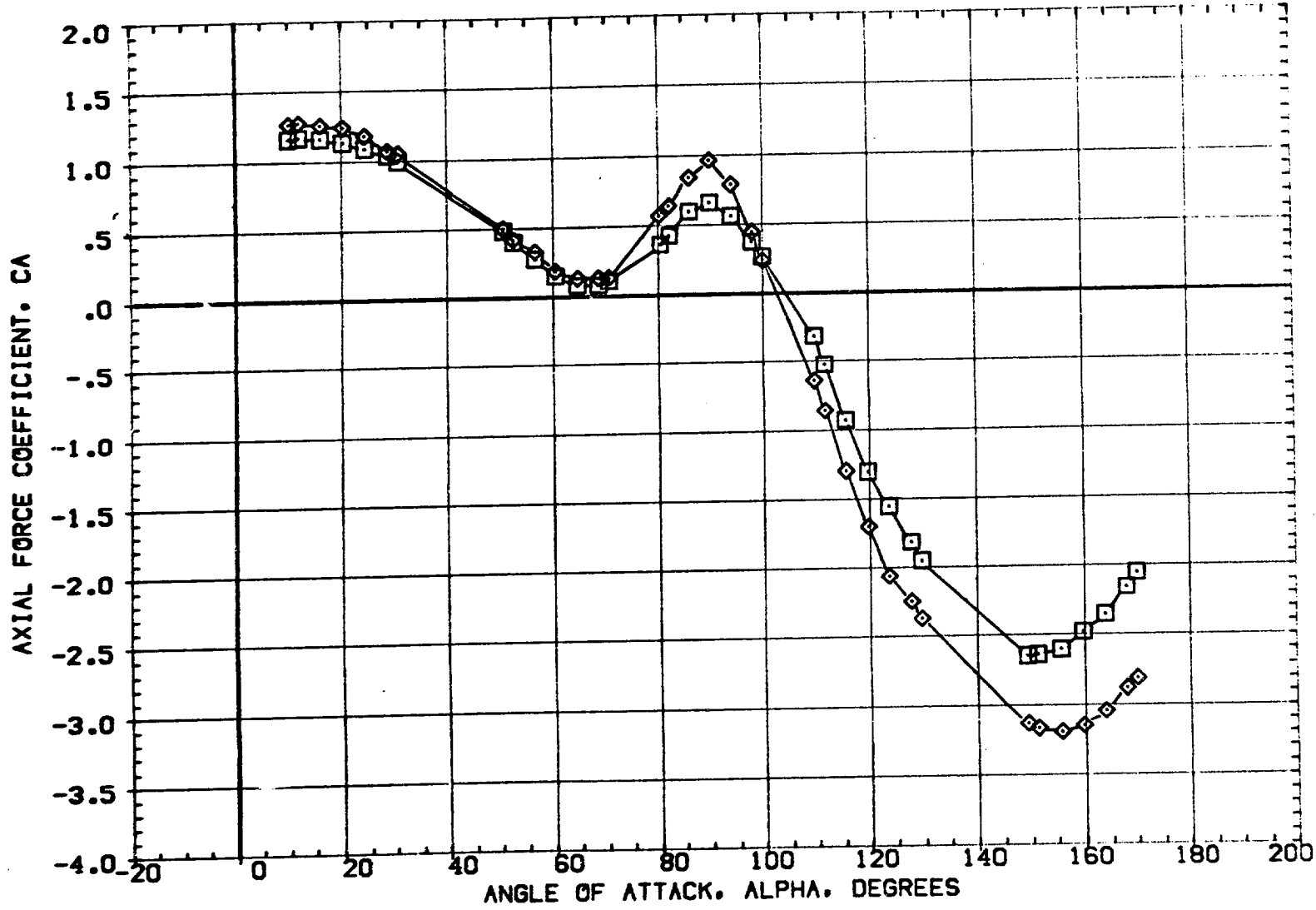
EFFECT OF SHROUD LENGTH ON AERODYNAMIC CHARACTERISTICS

(A)MACH = .59

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION
(891100)	○	DATA NOT AVAILABLE
(891400)	□	MSFC 578(SA10F) 142-IN SRB (139) NBE4
(891500)	◇	MSFC 578(SA10F) 142-IN SRB (139) NBE5

PHI	ATHRNG	CONFIG	SHOSTK
.000	.100	1.000	.000
.000	.100	4.000	.000
.000	.100	5.000	.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

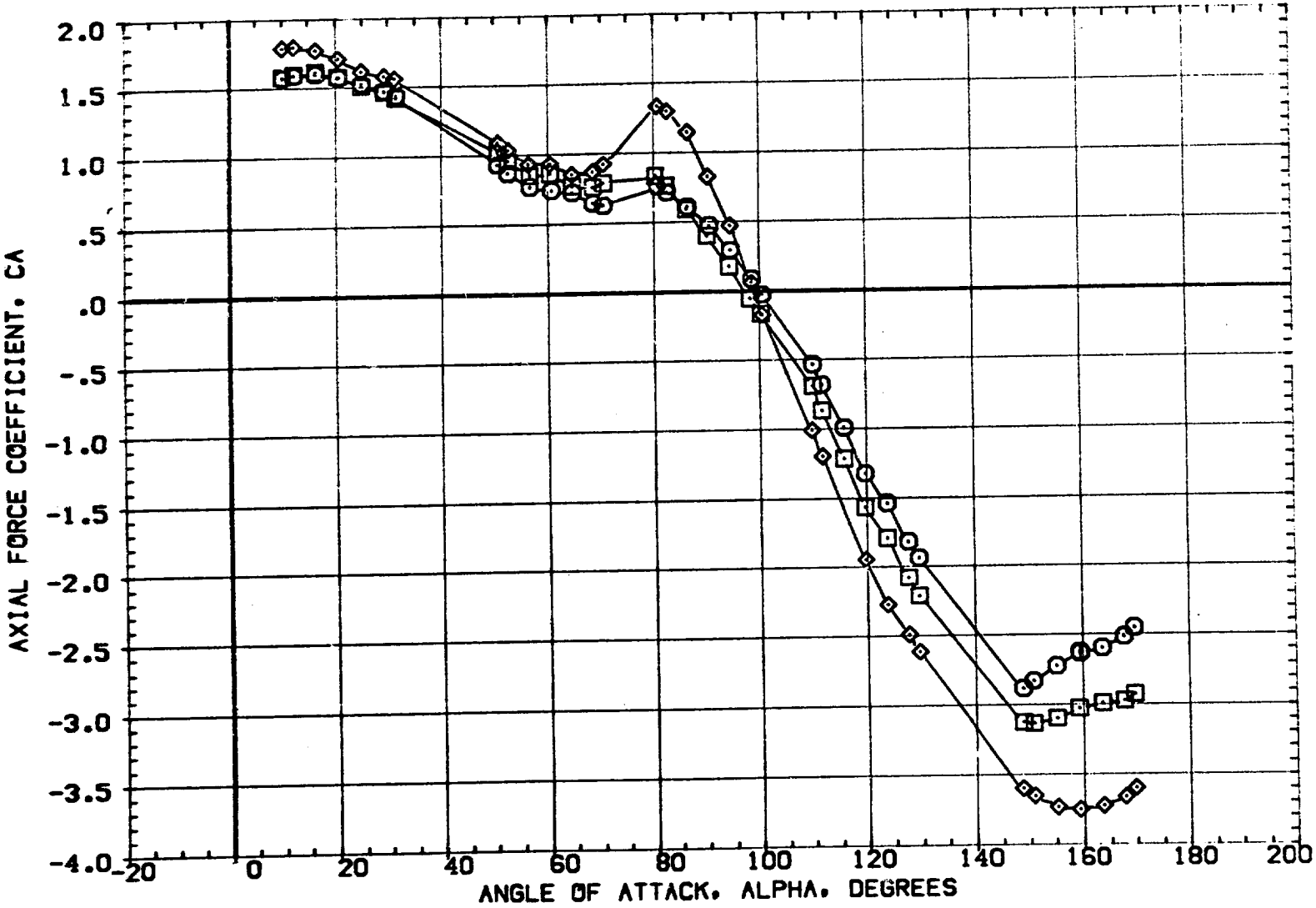


EFFECT OF SHROUD LENGTH ON AERODYNAMIC CHARACTERISTICS

(B)MACH = .90

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
[B9]100]	○	MSFC 578[SA10F] 142-IN SRB [139] NBE1	.000	.100	1.000	.000
[B9]400]	□	MSFC 578[SA10F] 142-IN SRB [139] NBE4	.000	.100	4.000	.000
[B9]500]	◇	MSFC 578[SA10F] 142-IN SRB [139] NBE5	.000	.100	5.000	.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

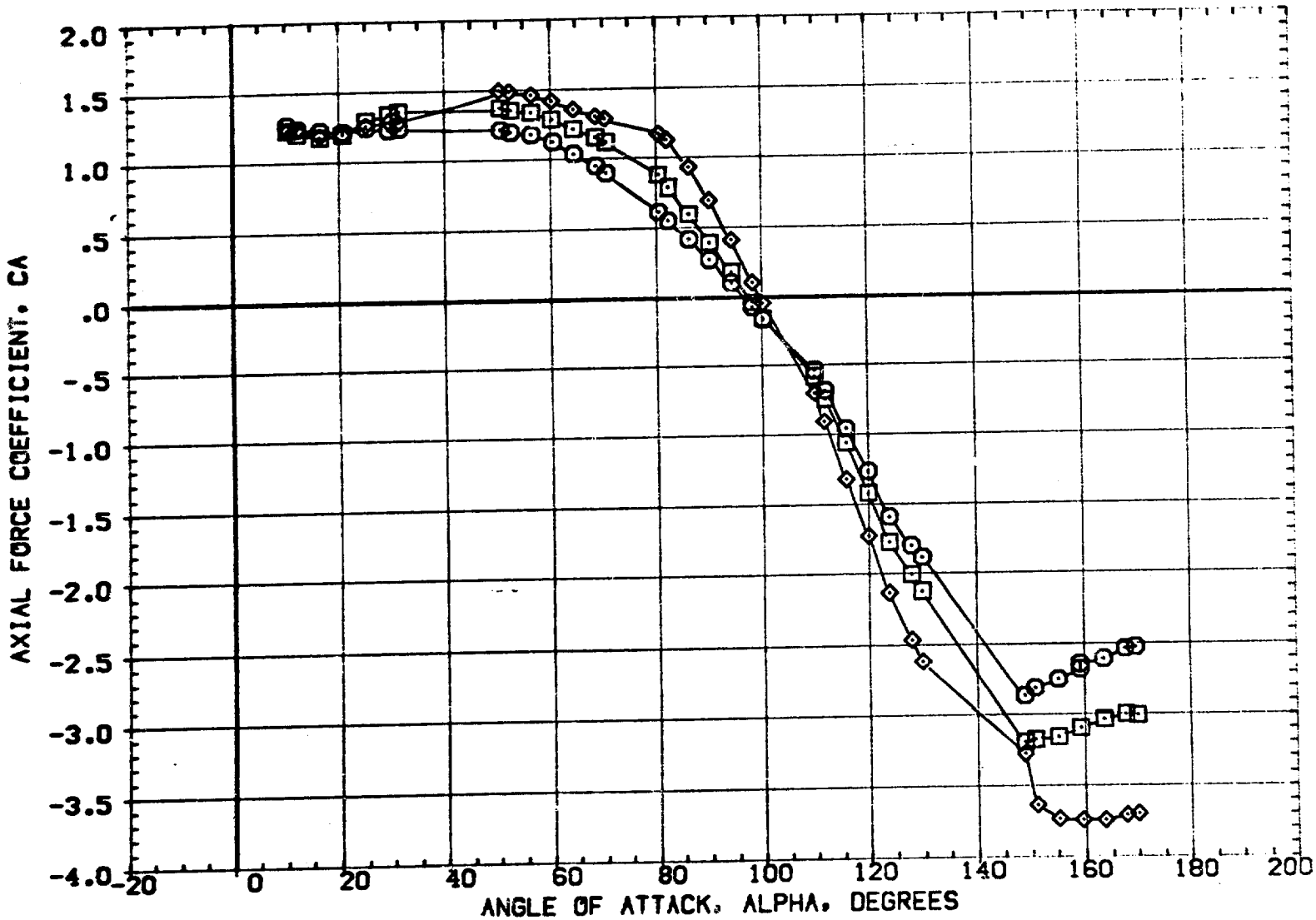


EFFECT OF SHROUD LENGTH ON AERODYNAMIC CHARACTERISTICS

(C)MACH = 1.20

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
(D)100)	□	MSFC 578(SA10F) 142-IN SRB (139) NBE1	.000	.100	1.000	.000
(B)400)	◇	MSFC 578(SA10F) 142-IN SRB (139) NBE4	.000	.100	4.000	.000
(B)500)	◇	MSFC 578(SA10F) 142-IN SRB (139) NBE5	.000	.100	5.000	.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

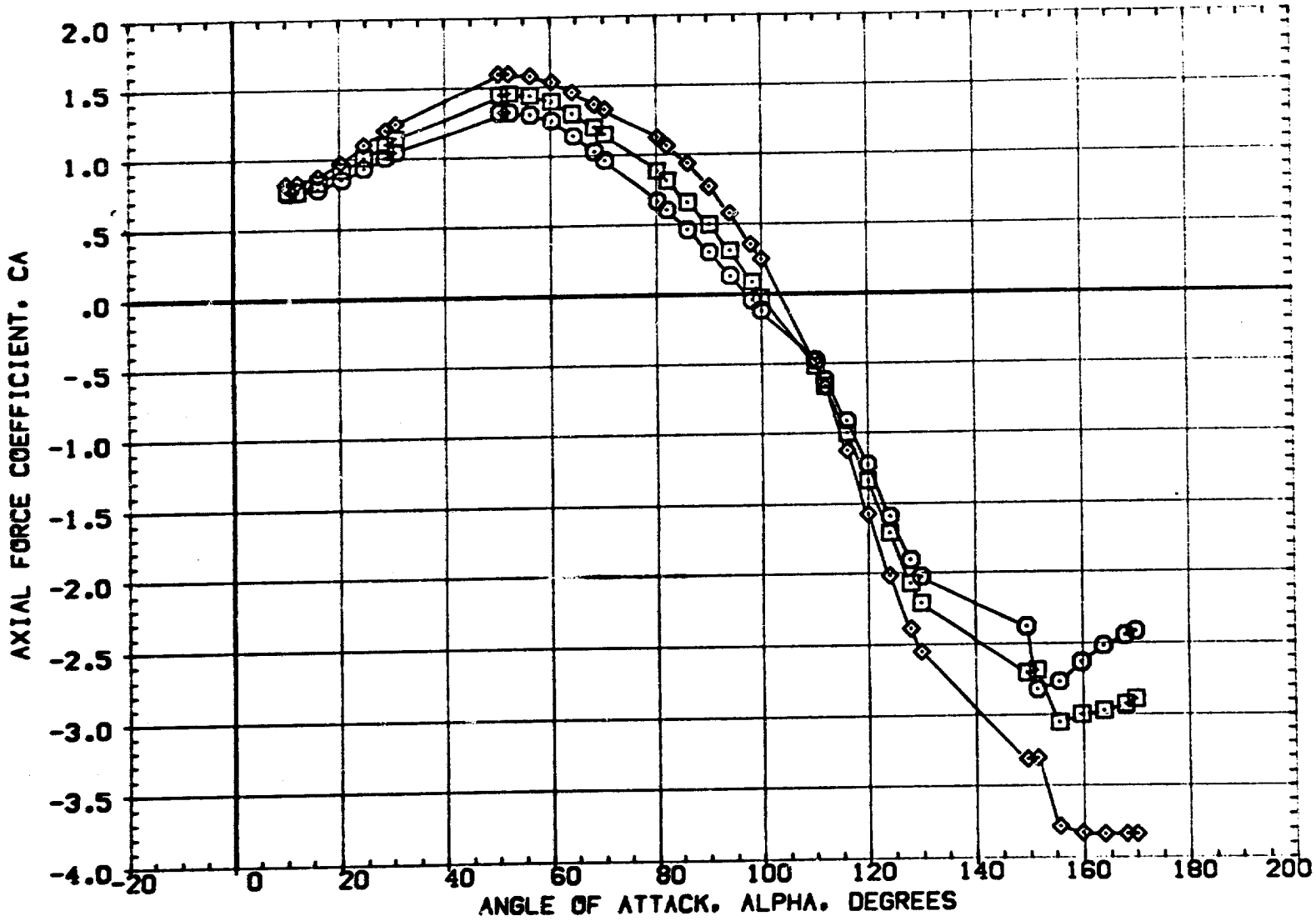


EFFECT OF SHROUD LENGTH ON AERODYNAMIC CHARACTERISTICS

(D)MACH = 1.96

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
(C)1100)	□	MSFC 578(SA10F) 142-IN SRB (139) NBE1	.000	.100	1.000	.000
(BB1400)	◁	MSFC 578(SA10F) 142-IN SRB (139) NBE4	.000	.100	4.000	.000
(BB1500)	◇	MSFC 578(SA10F) 142-IN SRB (139) NBE5	.000	.100	5.000	.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

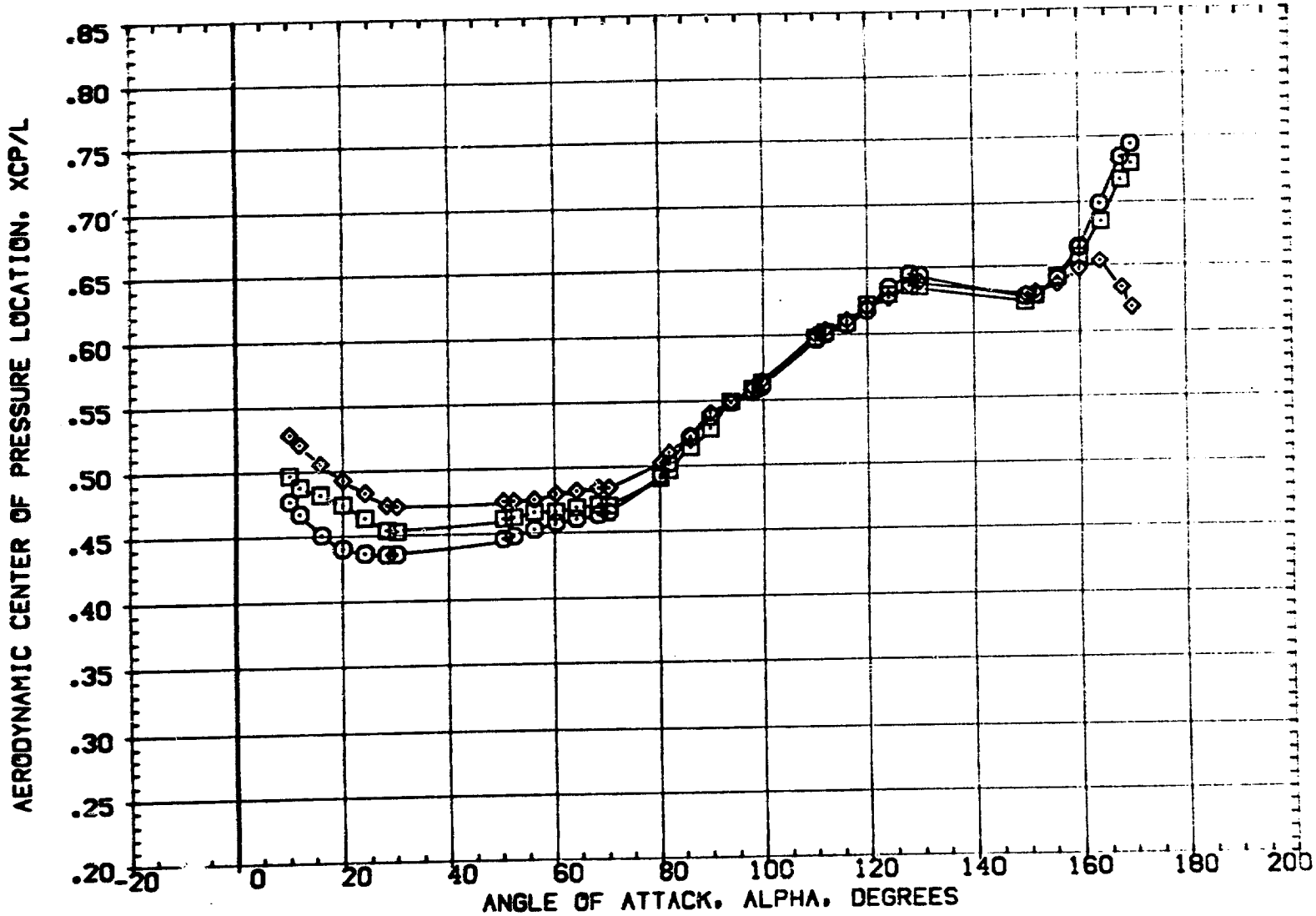


EFFECT OF SHROUD LENGTH ON AERODYNAMIC CHARACTERISTICS

(E)MACH = 3.48

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
[09100] ○	MSFC 578[SA10F] 142-IN SRB [139] NBE1	.000	.100	1.000	.000
[09400] □	MSFC 578[SA10F] 142-IN SRB [139] NBE4	.000	.100	4.000	.000
[09500] ◇	MSFC 578[SA10F] 142-IN SRB [139] NBE5	.000	.100	5.000	.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	



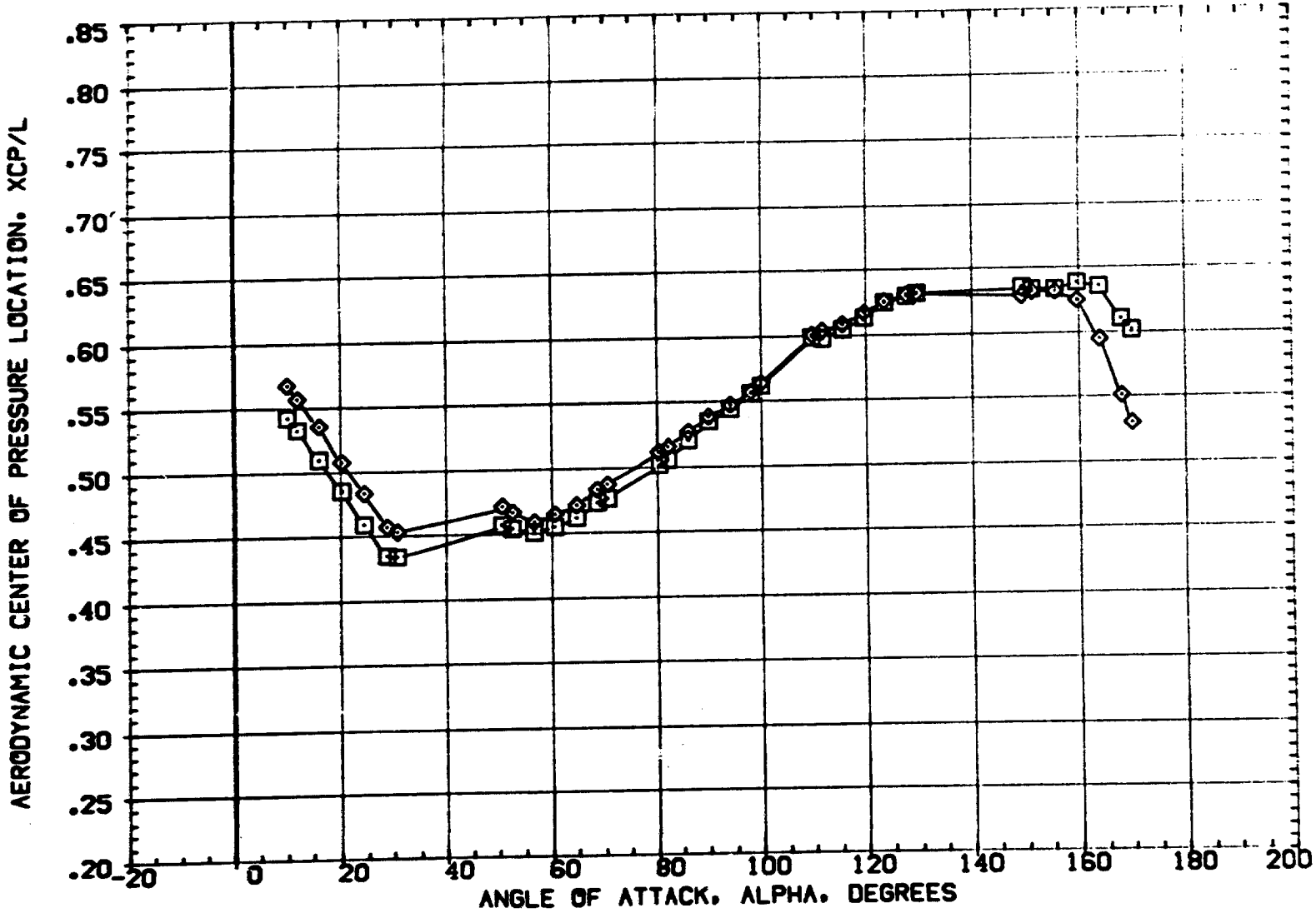
EFFECT OF SHROUD LENGTH ON AERODYNAMIC CHARACTERISTICS

(A)MACH = .59

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
[891100]	DATA NOT AVAILABLE	.000	.100	1.000	.000
[891400]	MSFC 578[SA1OF] 142-IN SRB [139] NBE4	.000	.100	4.000	.000
[891500]	MSFC 578[SA1OF] 142-IN SRB [139] NBE5	.000	.100	5.000	.000

REFERENCE INFORMATION

SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

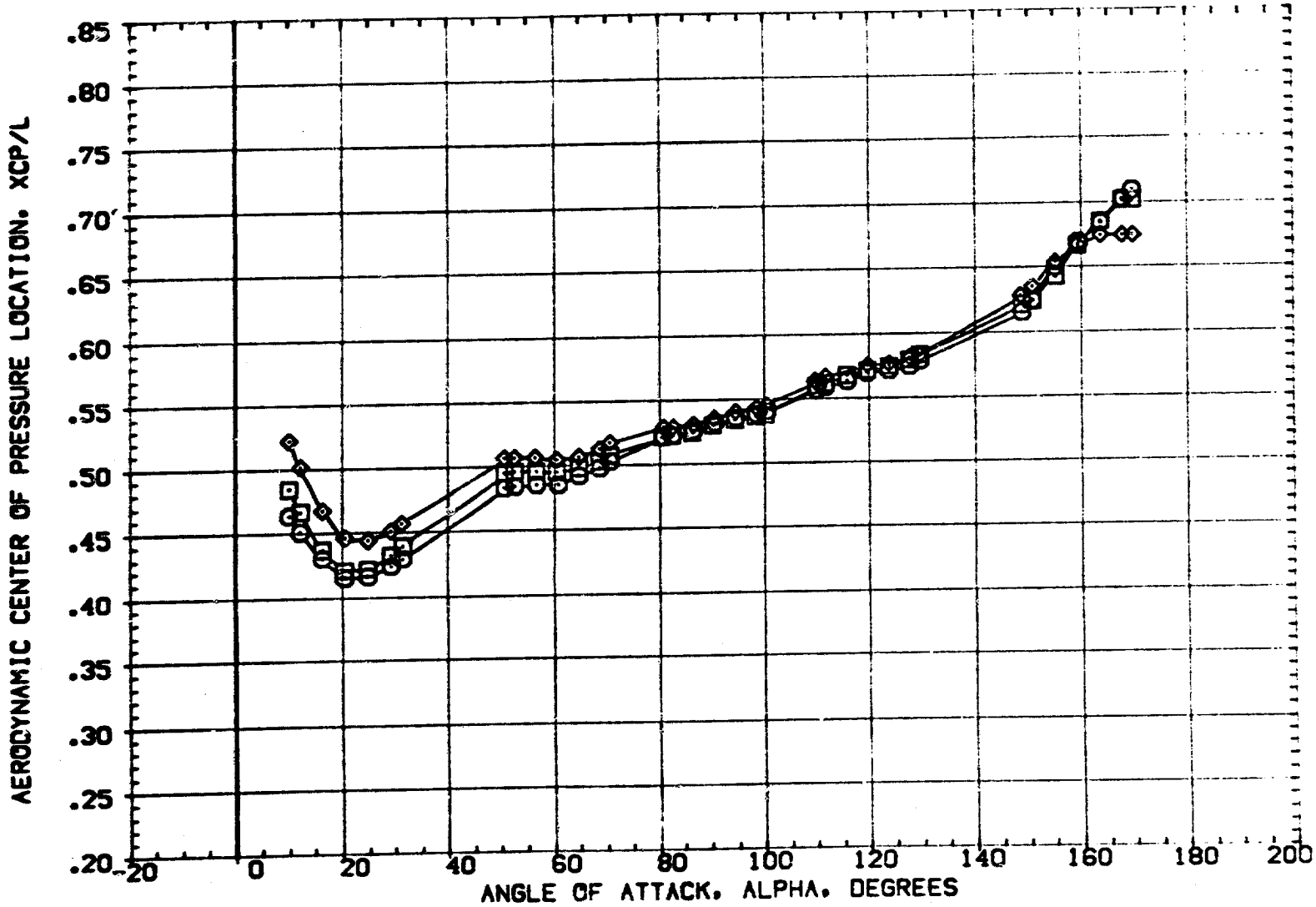


EFFECT OF SHROUD LENGTH ON AERODYNAMIC CHARACTERISTICS

(B)MACH = .90

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
(B91100)	○	MSFC 578(SA1DF) 142-IN SRB (139) NBE1	.000	.100	1.000	.000
(B91400)	□	MSFC 578(SA1DF) 142-IN SRB (139) NBE4	.000	.100	4.000	.000
(B91500)	◇	MSFC 578(SA1DF) 142-IN SRB (139) NBE5	.000	.100	5.000	.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

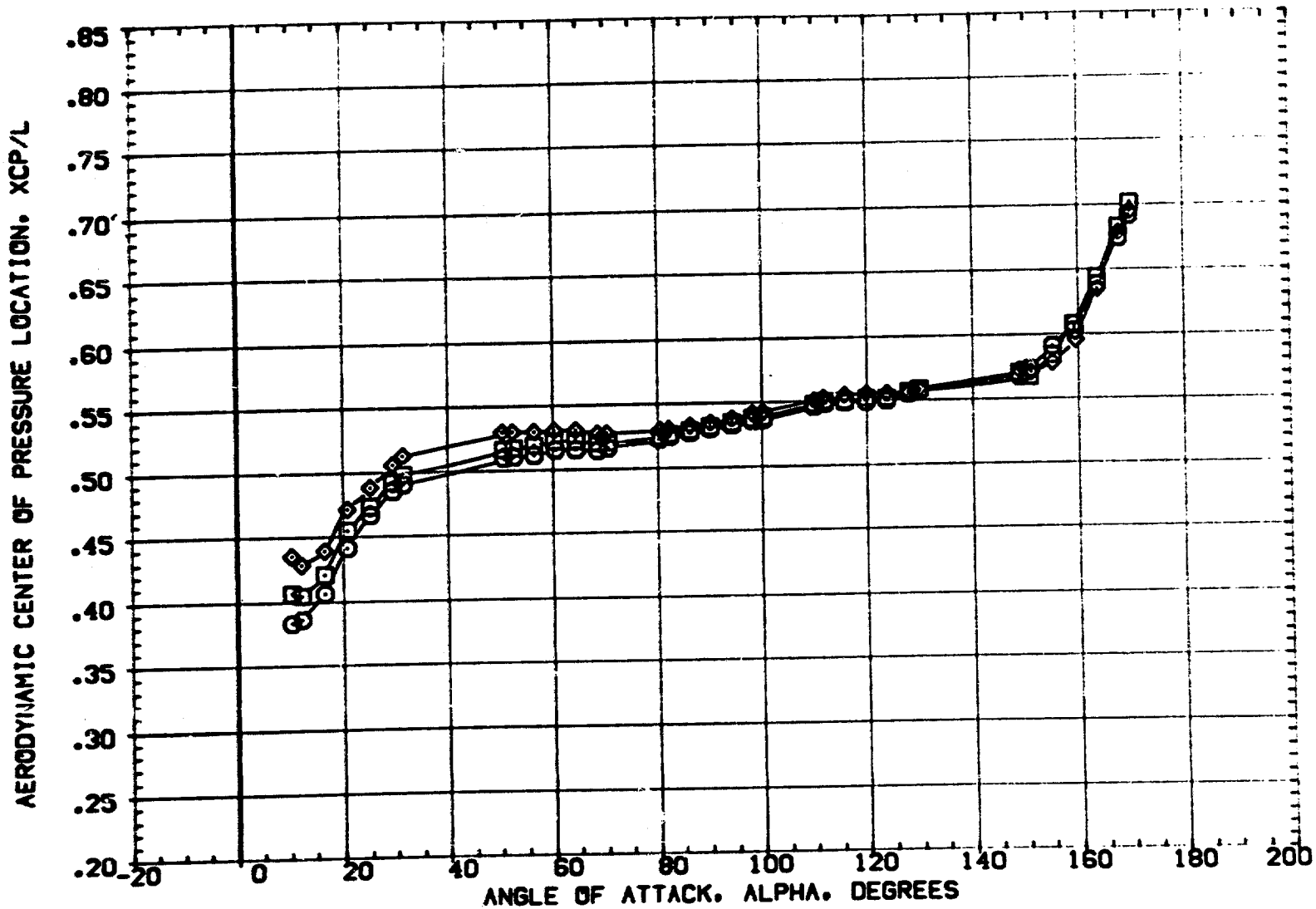


EFFECT OF SHROUD LENGTH ON AERODYNAMIC CHARACTERISTICS

(C)MACH = 1.20

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
(89110B)	□	MSFC 57B(SA10F) 142-IN SRB (13B) NBE1	.000	.100	1.000	.000
(89140B)	◇	MSFC 57B(SA10F) 142-IN SRB (13B) NBE4	.000	.100	4.000	.000
(89150B)	◁	MSFC 57B(SA10F) 142-IN SRB (13B) NBE5	.000	.100	5.000	.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

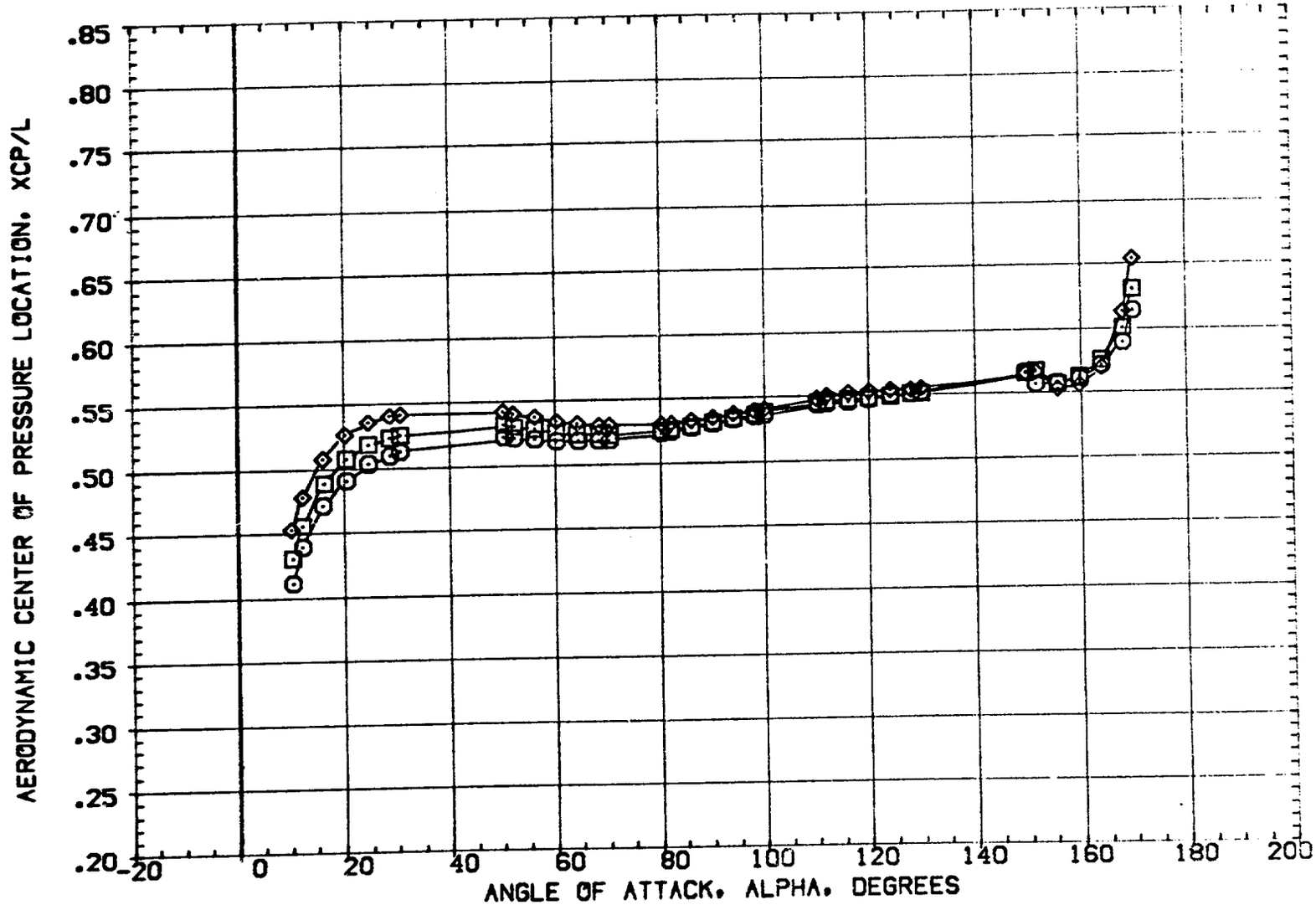


EFFECT OF SHROUD LENGTH ON AERODYNAMIC CHARACTERISTICS

(D)MACH = 1.96

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
(B91100)	□	MSFC 578(SA10F) 142-IN SRB (139) NBE1	.000	.100	1.000	.000
(B91400)	◇	MSFC 578(SA10F) 142-IN SRB (139) NBE4	.000	.100	4.000	.000
(B91500)	◇	MSFC 578(SA10F) 142-IN SRB (139) NBE5	.000	.100	5.000	.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

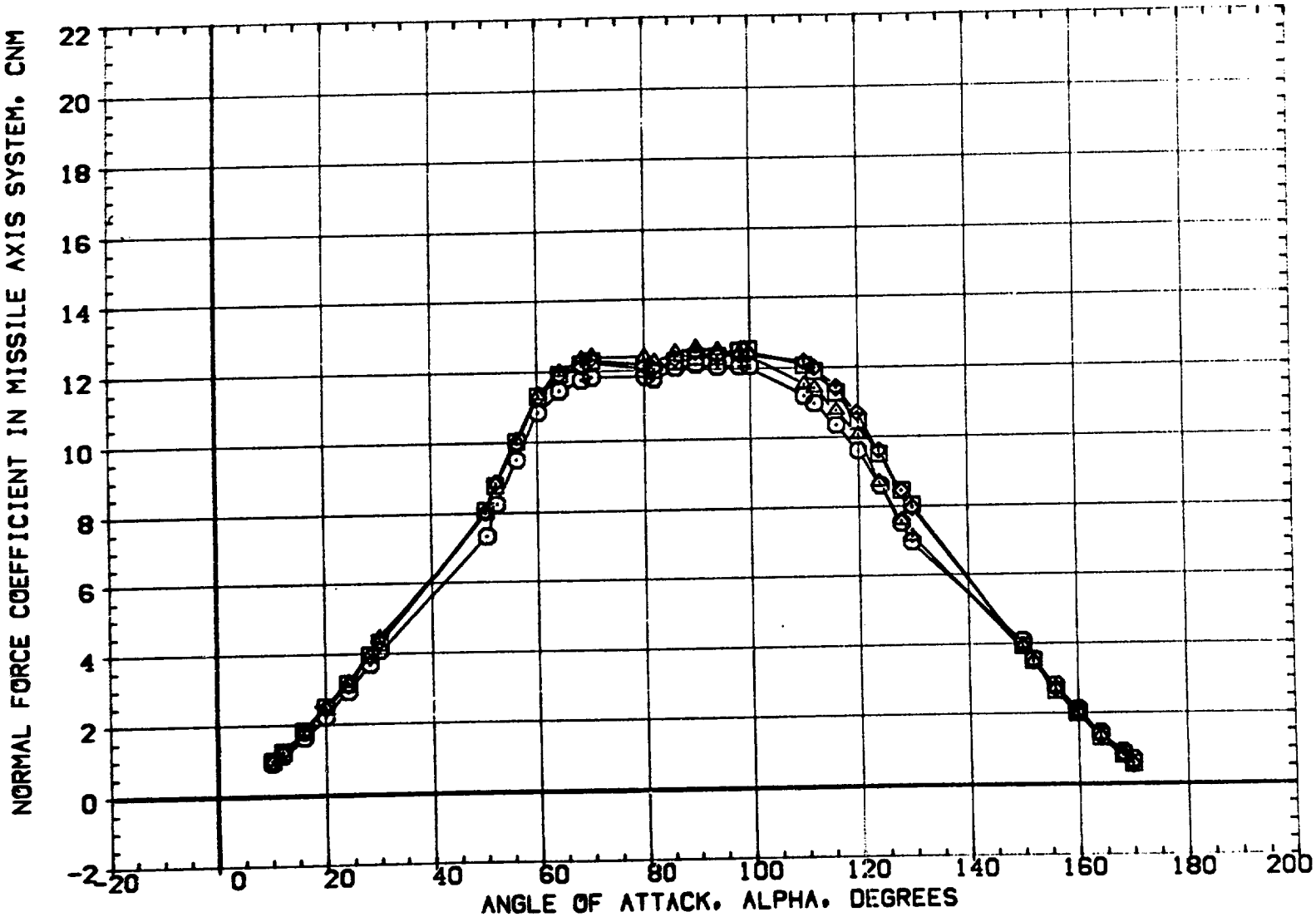


EFFECT OF SHROUD LENGTH ON AERODYNAMIC CHARACTERISTICS

(E)MACH = 3.48

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
(C91100) ○	MSFC 578(SA10F) 142-IN SRB (139) NBE1	.000	.100	1.000	.000
(B91A00) □	MSFC 578(SA10F) 142-IN SRB (139) NBE1S	.000	.100	6.000	8.000
(B91B00) ◇	MSFC 578(SA10F) 142-IN SRB (139) NBE1S	11.250	.100	6.000	8.000
(B91C00) △	MSFC 578(SA10F) 142-IN SRB (139) NBE1S	22.500	.100	6.000	8.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

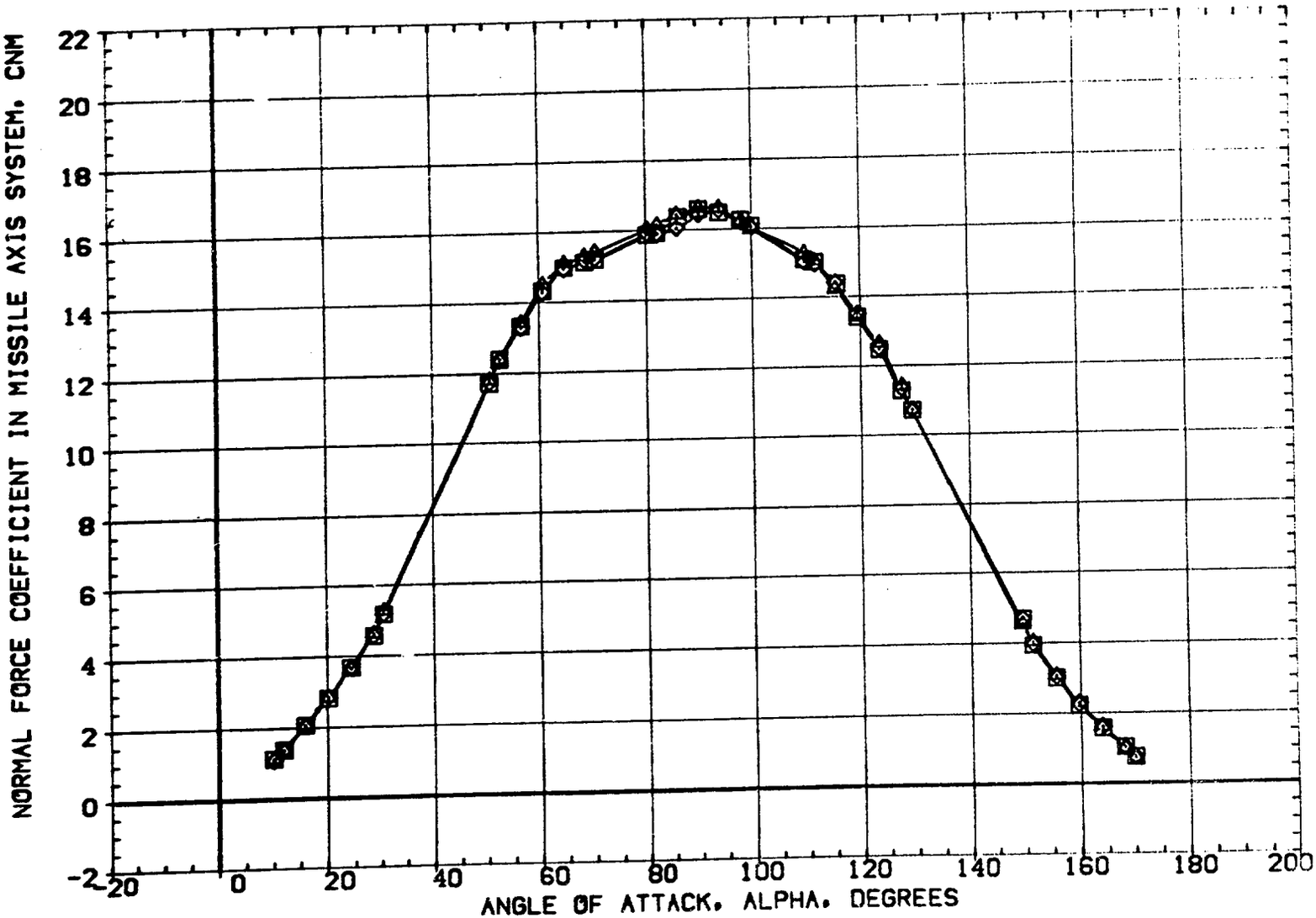


EFFECT OF STRAKES ON AERODYNAMIC CHARACTERISTICS

(A)MACH = .59

DATA SET SYMBOL		CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
(C91100)	○	DATA NOT AVAILABLE				
(B91A00)	□	MSFC 578(SA10F) 142-IN SRB (139) NBEIS	.000	.100	1.000	.000
(B91B00)	◇	MSFC 578(SA10F) 142-IN SRB (139) NBEIS	.000	.100	6.000	8.000
(B91C00)	△	MSFC 578(SA10F) 142-IN SRB (139) NBEIS	11.250	.100	6.000	8.000
			22.500	.100	6.000	8.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

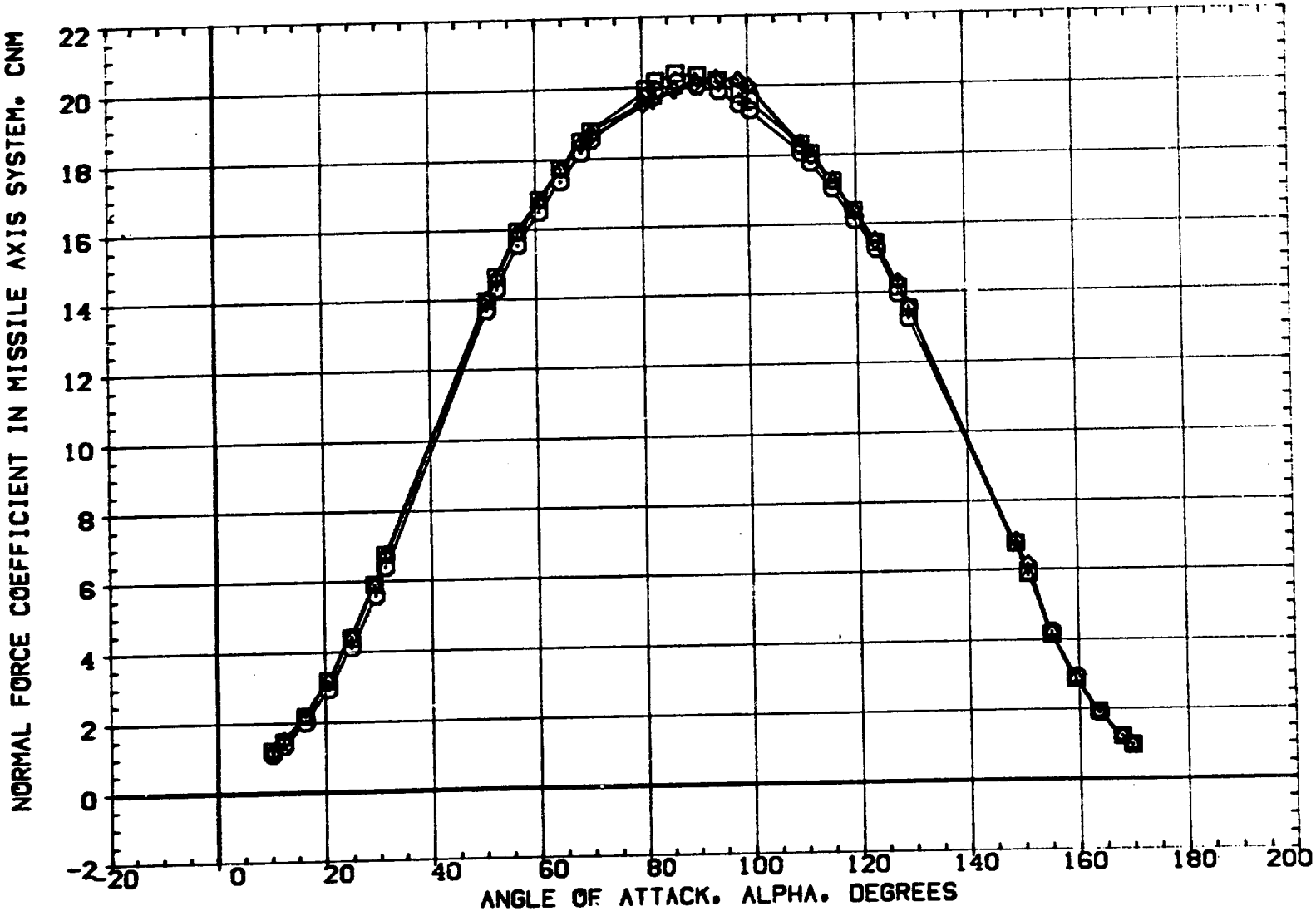


EFFECT OF STRAKES ON AERODYNAMIC CHARACTERISTICS

(B)MACH = .90

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
[C9I100]	□	MSFC 578[SA1OF] 142-IN SRB [139] NBE]	.000	.100	1.000	.000
[B9IA00]	□	MSFC 578[SA1OF] 142-IN SRB [139] NBEIS	.000	.100	6.000	8.000
[B9IB00]	⊠	MSFC 578[SA1OF] 142-IN SRB [139] NBEIS	11.250	.100	6.000	8.000
[B9IC00]	△	MSFC 578[SA1OF] 142-IN SRB [139] NBEIS	22.500	.100	6.000	8.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

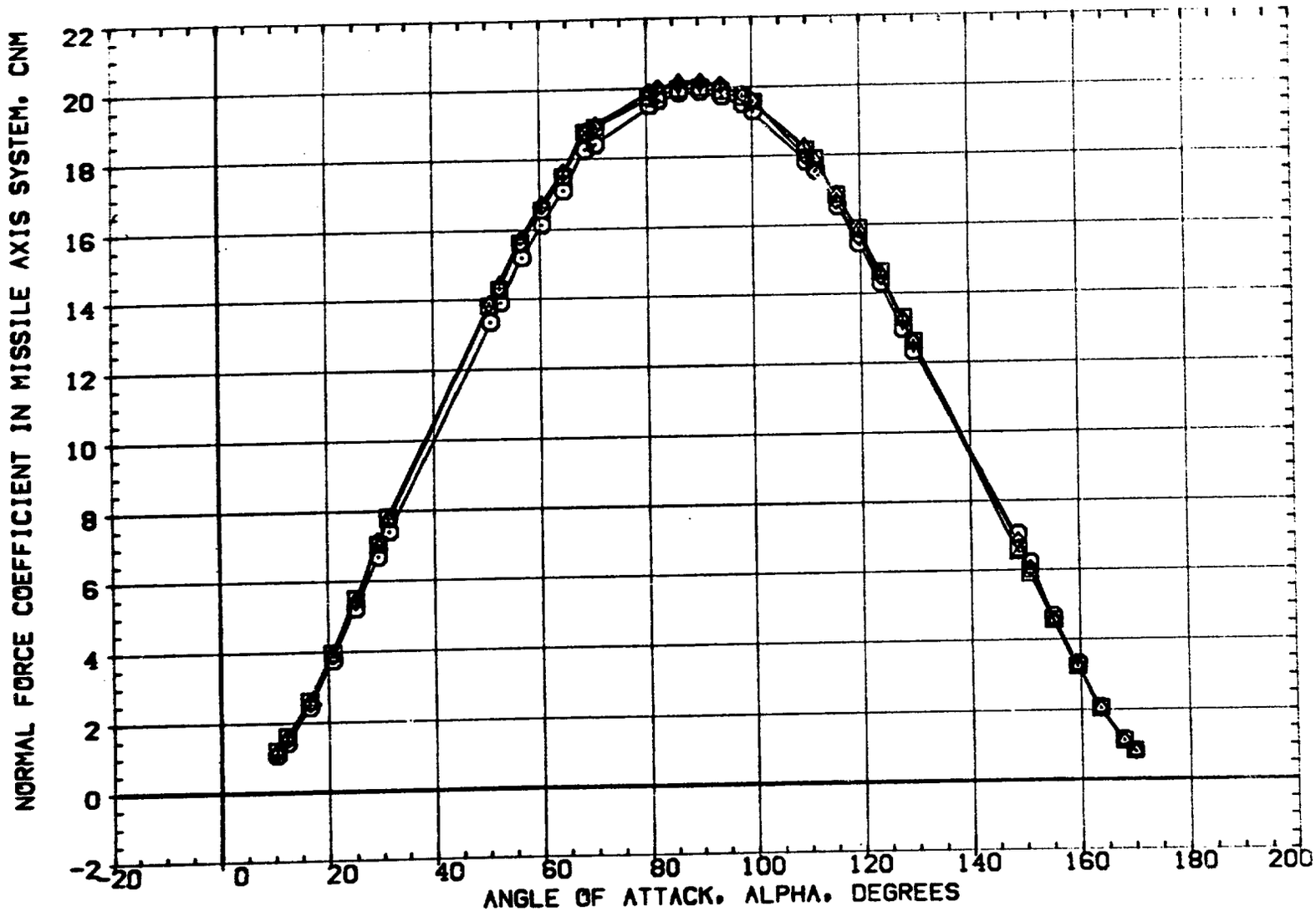


EFFECT OF STRAKES ON AERODYNAMIC CHARACTERISTICS

(C)MACH = 1.20

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
[091100] □	MSFC 578(SA10F) 142-IN SRB (139) NBEI	.000	.100	1.000	.000
[091A00] ◇	MSFC 578(SA10F) 142-IN SRB (139) NBEIS	.000	.100	6.000	8.000
[091B00] ⊠	MSFC 578(SA10F) 142-IN SRB (139) NBEIS	11.250	.100	6.000	8.000
[091C00] ⧖	MSFC 578(SA10F) 142-IN SRB (139) NBEIS	22.500	.100	6.000	8.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

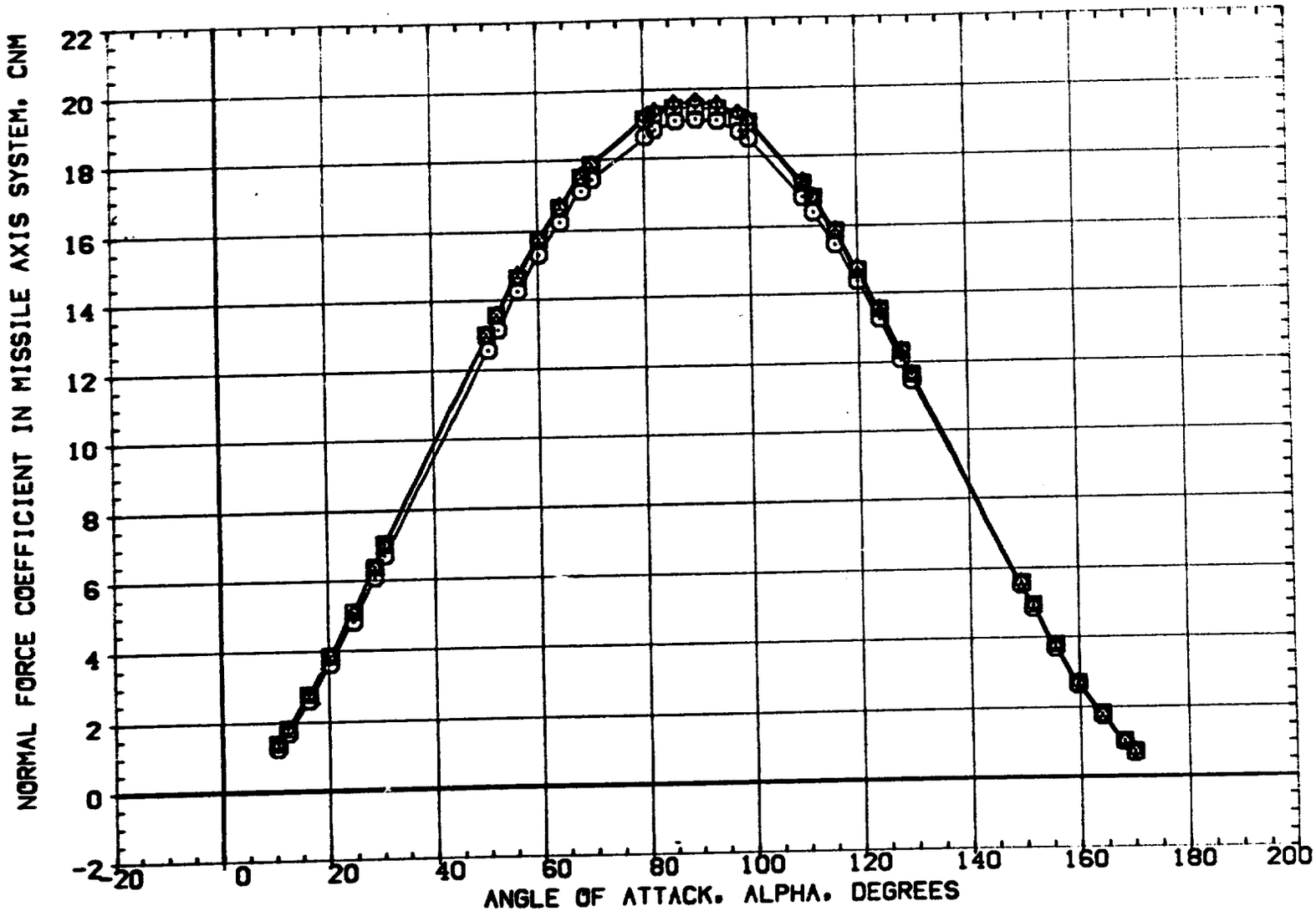


EFFECT OF STRAKES ON AERODYNAMIC CHARACTERISTICS

(D)MACH = 1.96

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
(89110B)	◇	MSFC 578(SA1OF) 142-IN SRB (139) NBE1	.000	.100	1.000	.000
(89IA0B)	□	MSFC 578(SA1OF) 142-IN SRB (139) NBE1S	.000	.100	6.000	8.000
(89180B)	⊠	MSFC 578(SA1OF) 142-IN SRB (139) NBE1S	11.250	.100	6.000	8.000
(89100B)	△	MSFC 578(SA1OF) 142-IN SRB (139) NBE1S	22.500	.100	6.000	8.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

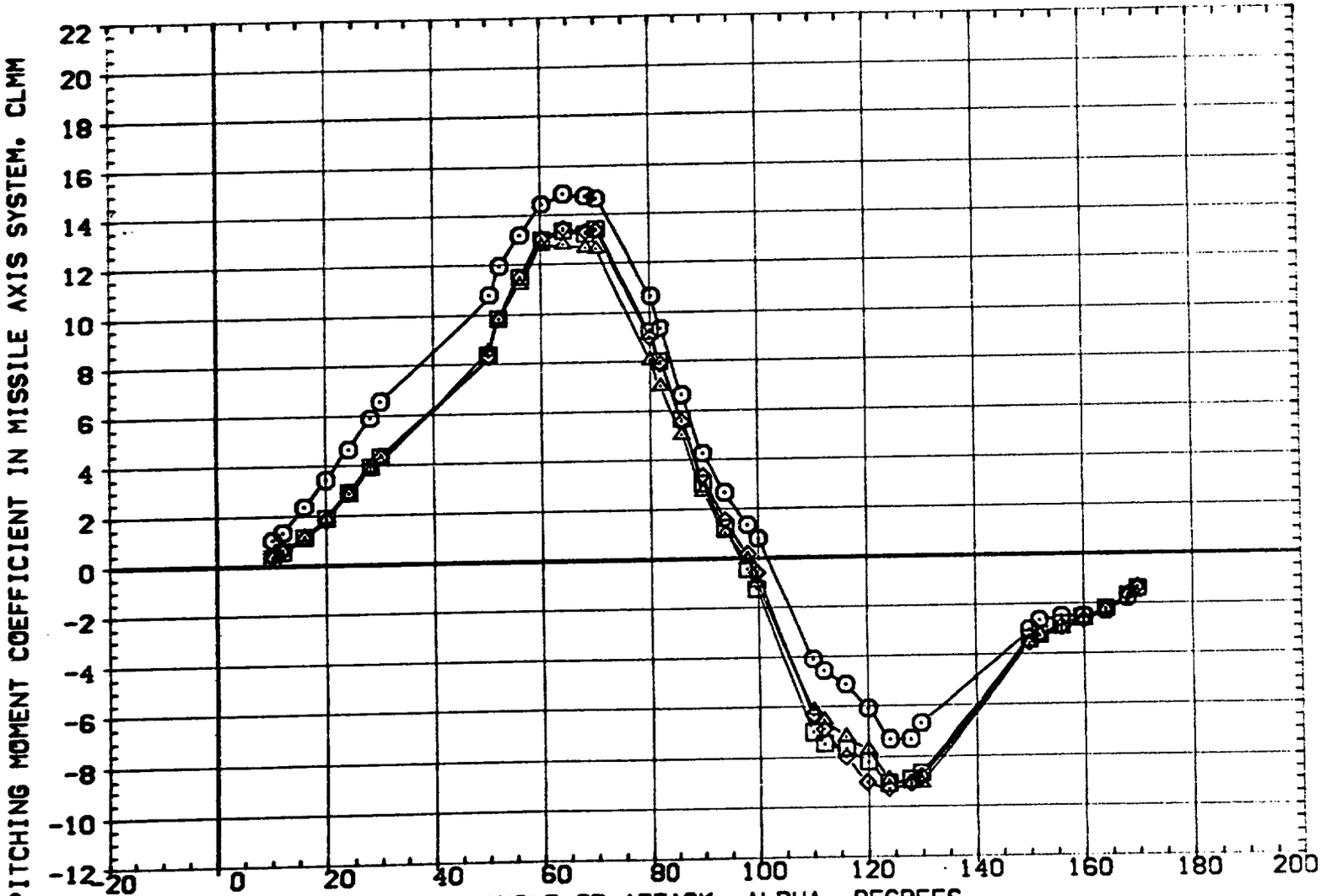


EFFECT OF STRAKES ON AERODYNAMIC CHARACTERISTICS

(E)MACH = 3.48

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
(B9100)	○	MSFC 578(SA10F) 142-IN SRB (139) NBEI	.000	.100	1.000	.000
(B91A00)	□	MSFC 578(SA10F) 142-IN SRB (139) NBEIS	.000	.100	6.000	8.000
(B91B00)	◇	MSFC 578(SA10F) 142-IN SRB (139) NBEIS	11.250	.100	6.000	8.000
(B91C00)	△	MSFC 578(SA10F) 142-IN SRB (139) NBEIS	22.500	.100	6.000	8.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

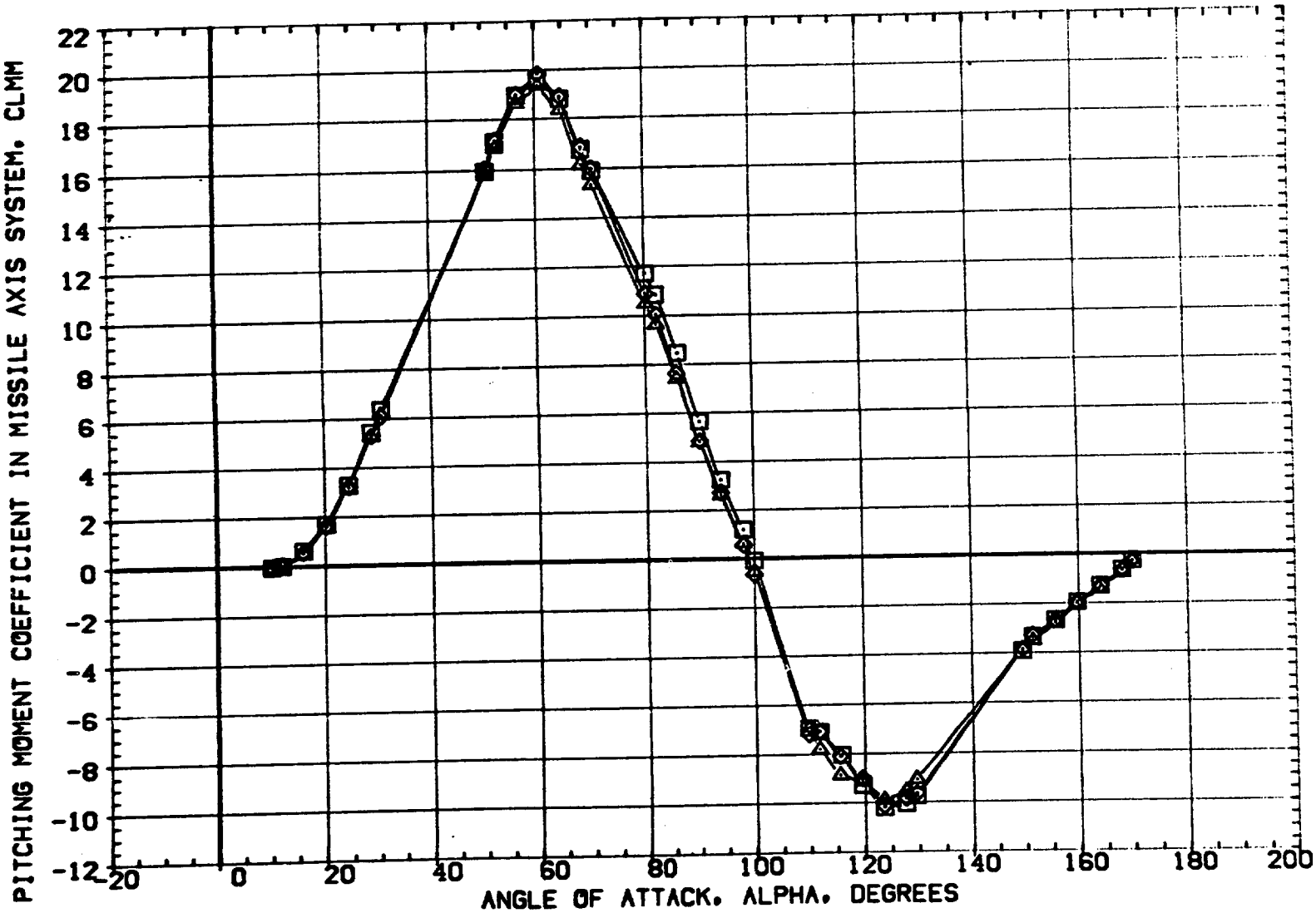


EFFECT OF STRAKES ON AERODYNAMIC CHARACTERISTICS

(A)MACH = .59

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
[89100]	DATA NOT AVAILABLE	.000	.100	1.000	.000
[89A00]	MSFC 578[SA10F] 142-IN SRB [139] NBEIS	.000	.100	6.000	0.000
[89800]	MSFC 578[SA10F] 142-IN SRB [139] NBEIS	11.250	.100	6.000	0.000
[89000]	MSFC 578[SA10F] 142-IN SRB [139] NBEIS	22.500	.100	6.000	0.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

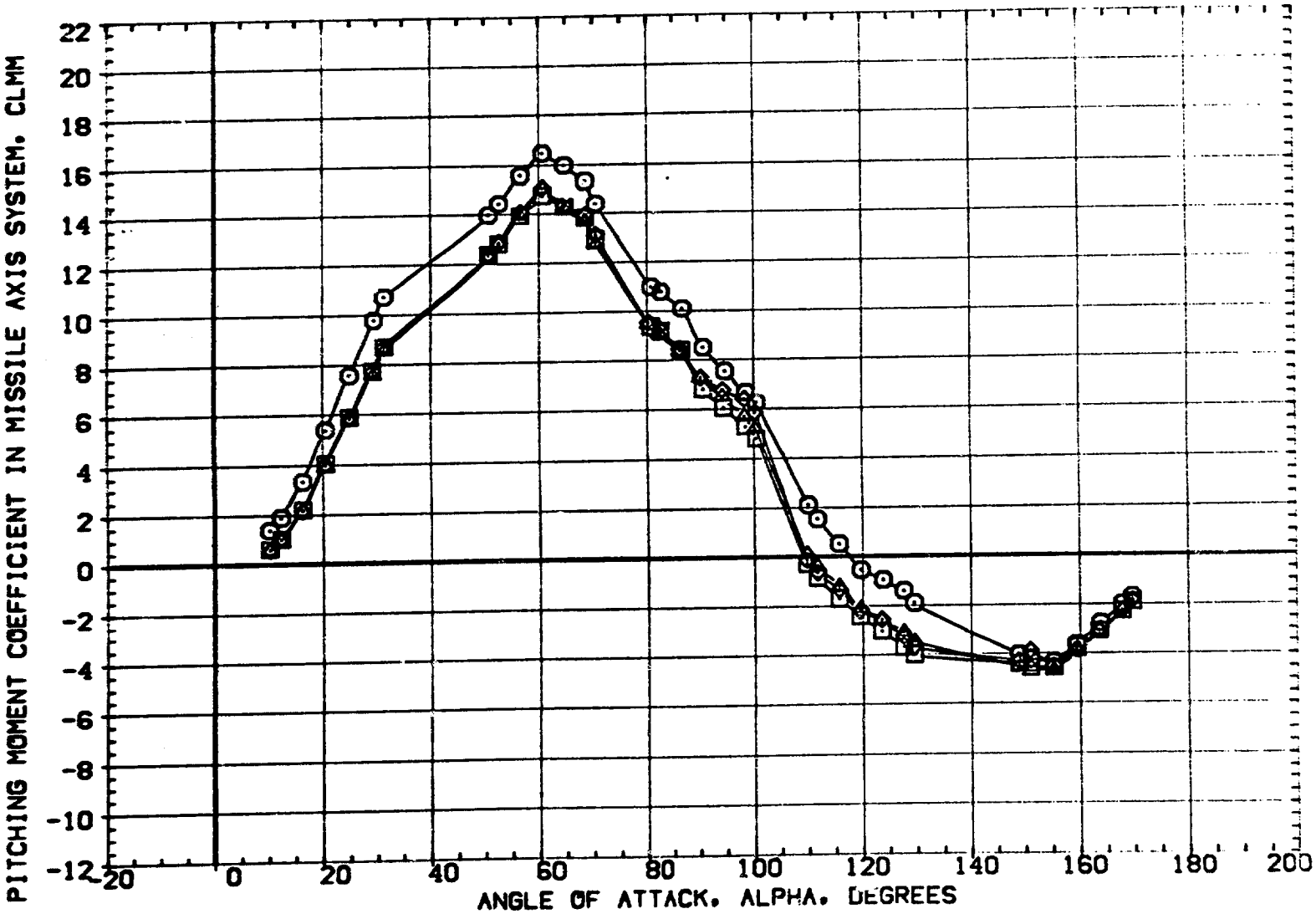


EFFECT OF STRAKES ON AERODYNAMIC CHARACTERISTICS

(B)MACH = .90

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
[C]1100]	○	MSFC 578[SA1OF] 142-IN SRB [139] NBE]	.000	.100	1.000	.000
[B]1A00]	□	MSFC 578[SA1OF] 142-IN SRB [139] NBEIS	.000	.100	6.000	0.000
[B]1B00]	⊠	MSFC 578[SA1OF] 142-IN SRB [139] NBEIS	11.250	.100	6.000	0.000
[B]1C00]	⊠	MSFC 578[SA1OF] 142-IN SRB [139] NBEIS	22.500	.100	6.000	0.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

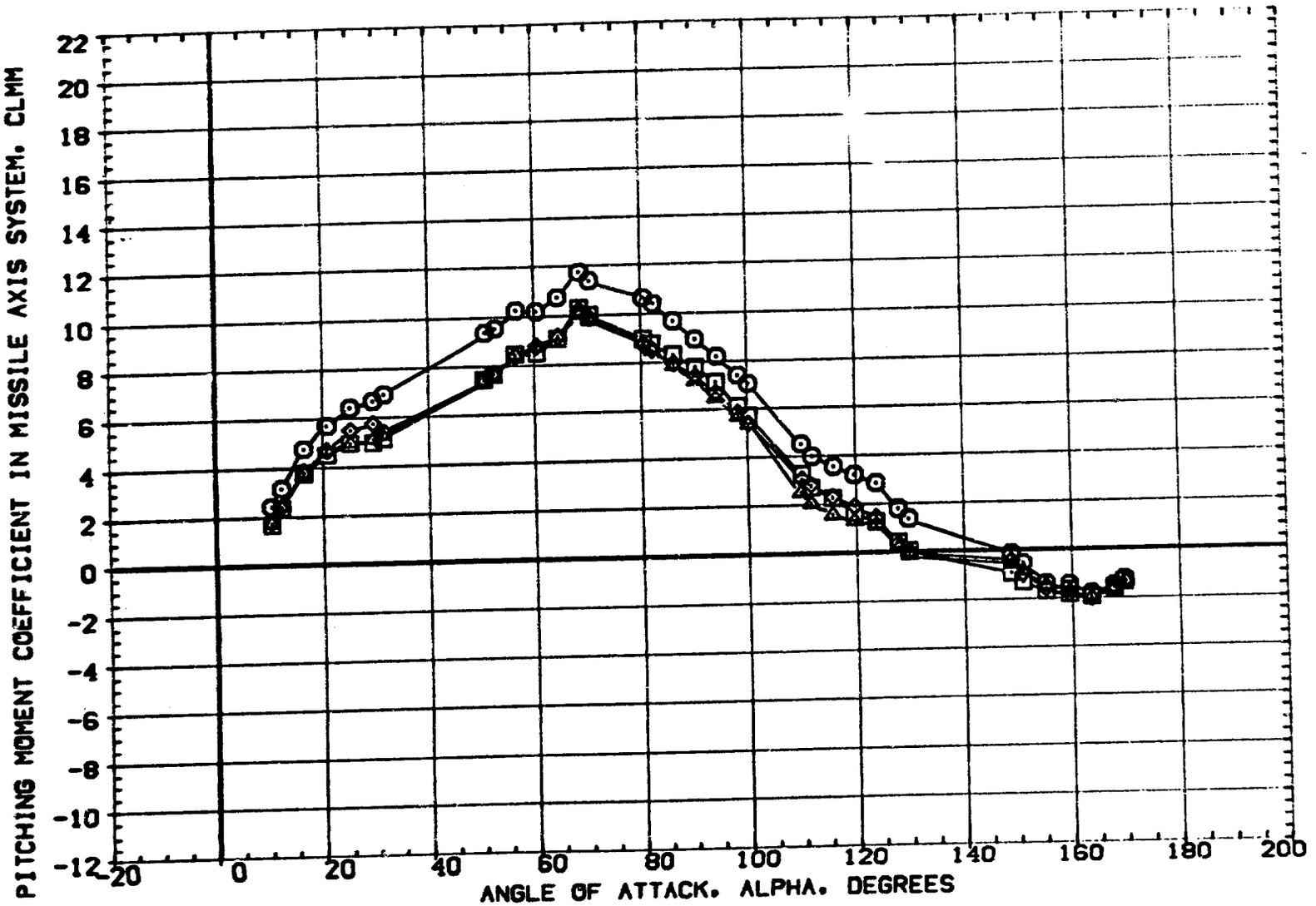


EFFECT OF STRAKES ON AERODYNAMIC CHARACTERISTICS

(C)MACH = 1.20

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
[illegible]	MSFC 578(SA10F) 142-IN SRB (139) NBE1	.000	.100	1.000	.000
[illegible]	MSFC 578(SA10F) 142-IN SRB (139) NBE1S	.000	.100	6.000	0.000
[illegible]	MSFC 578(SA10F) 142-IN SRB (139) NBE1S	11.250	.100	6.000	0.000
[illegible]	MSFC 578(SA10F) 142-IN SRB (139) NBE1S	22.500	.100	6.000	0.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

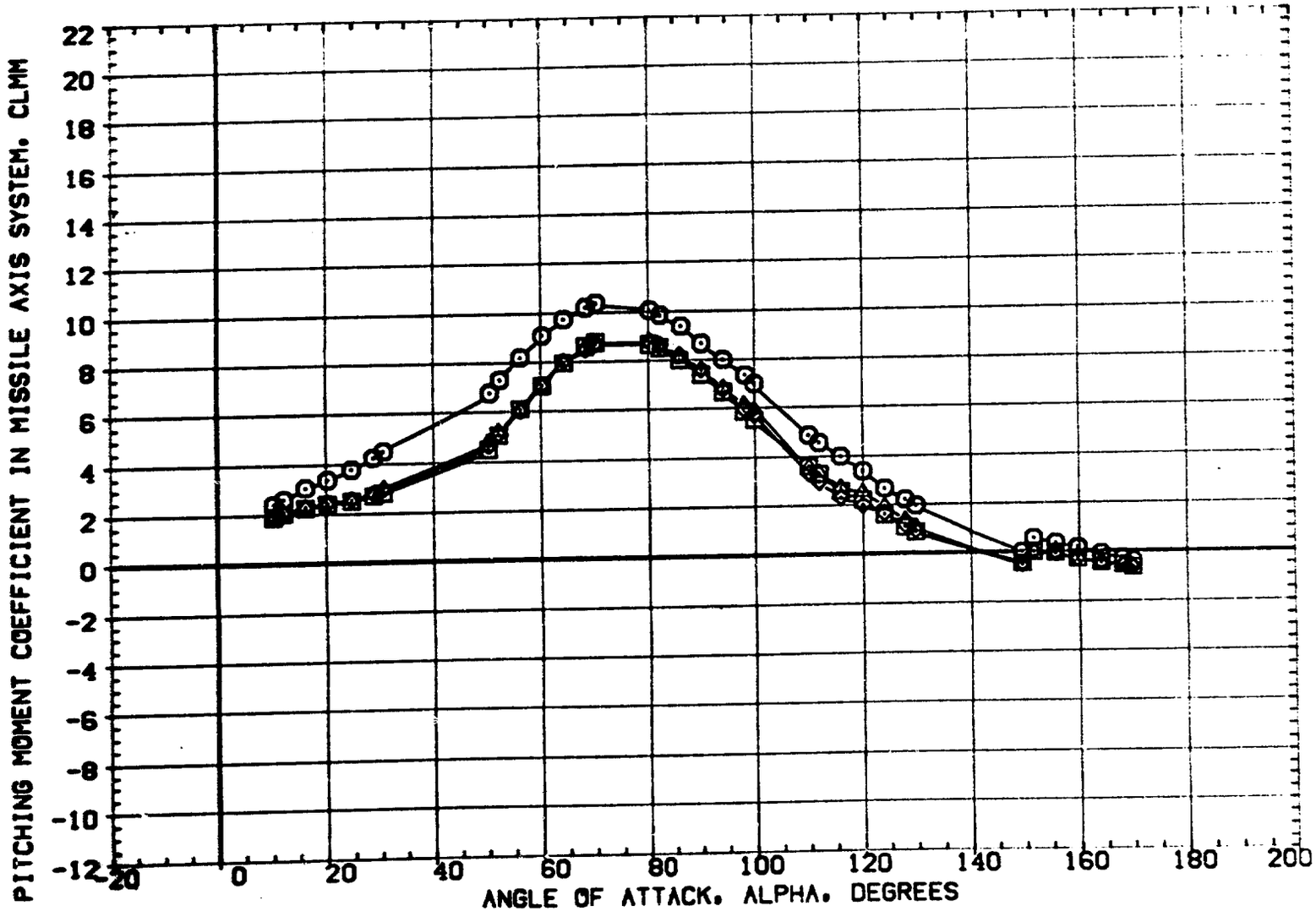


EFFECT OF STRAKES ON AERODYNAMIC CHARACTERISTICS

(D)MACH = 1.96

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
[illegible]		MSFC 578(SA10F) 142-IN SRB (139) NBE1	.000	.100	1.000	.000
[illegible]		MSFC 578(SA10F) 142-IN SRB (139) NBE1S	.000	.100	6.000	8.000
[illegible]		MSFC 578(SA10F) 142-IN SRB (139) NBE1S	11.250	.100	6.000	8.000
[illegible]		MSFC 578(SA10F) 142-IN SRB (139) NBE1S	22.500	.100	6.000	8.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

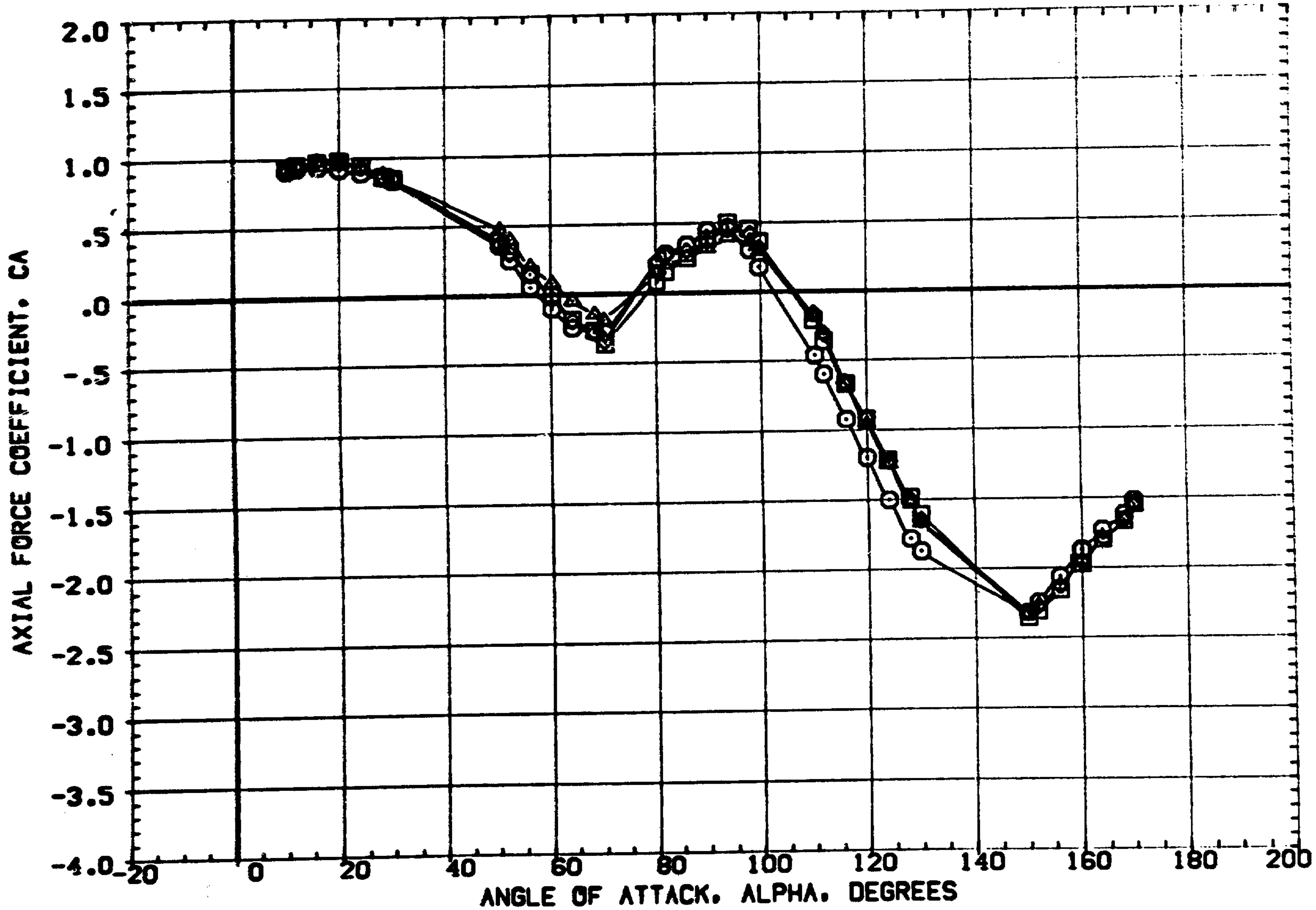


EFFECT OF STRAKES ON AERODYNAMIC CHARACTERISTICS

(E)MACH = 3.48

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
(C91100)	○	MSFC 578(SA10F) 142-IN SRB (139) NBE)	.000	.100	1.000	.000
(B91A00)	□	MSFC 578(SA10F) 142-IN SRB (139) NBEIS	.000	.100	6.000	8.000
(B91B00)	◇	MSFC 578(SA10F) 142-IN SRB (139) NBEIS	11.250	.100	6.000	8.000
(B91C00)	△	MSFC 578(SA10F) 142-IN SRB (139) NBEIS	22.500	.100	6.000	8.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

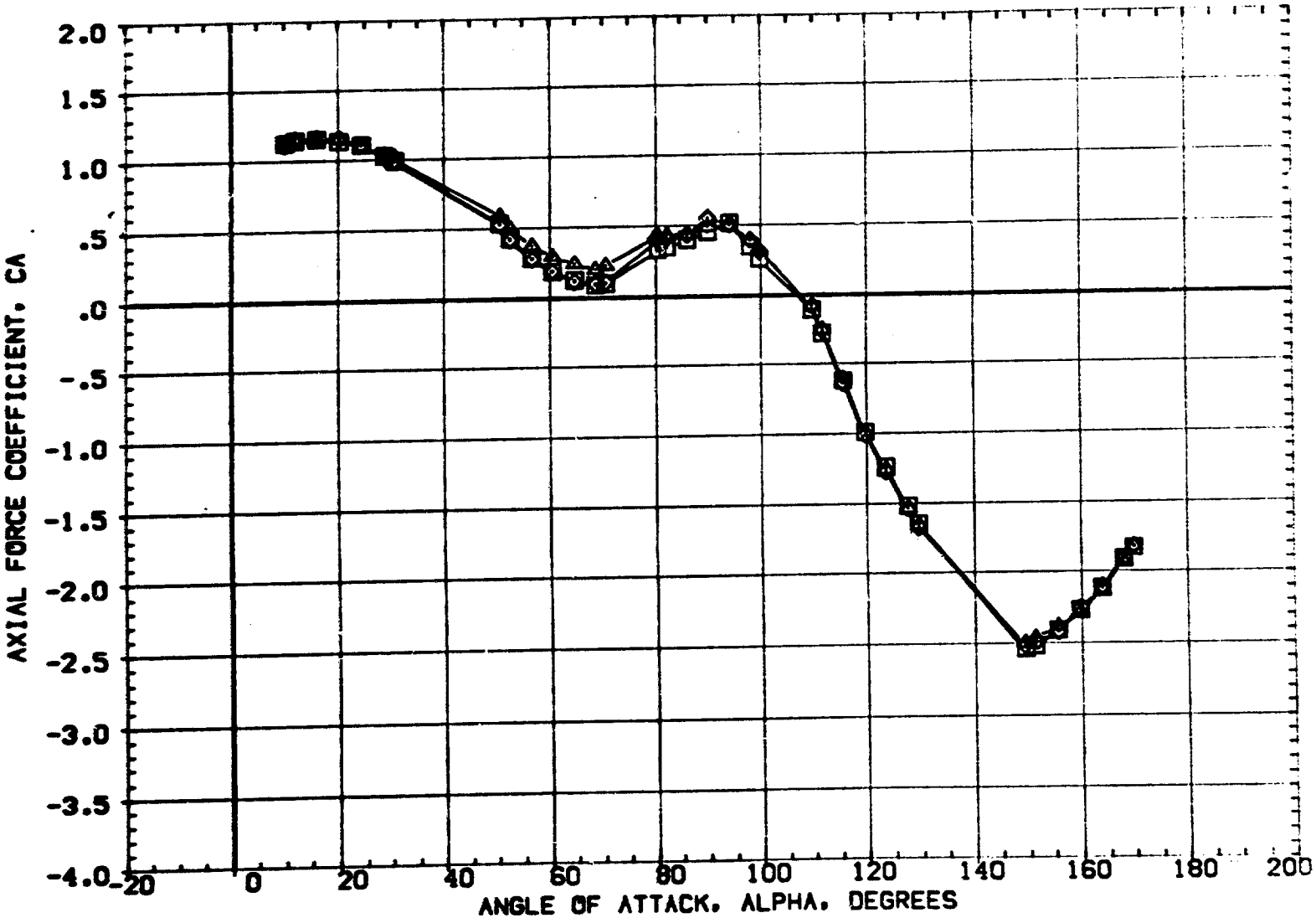


EFFECT OF STRAKES ON AERODYNAMIC CHARACTERISTICS

(A)MACH = .59

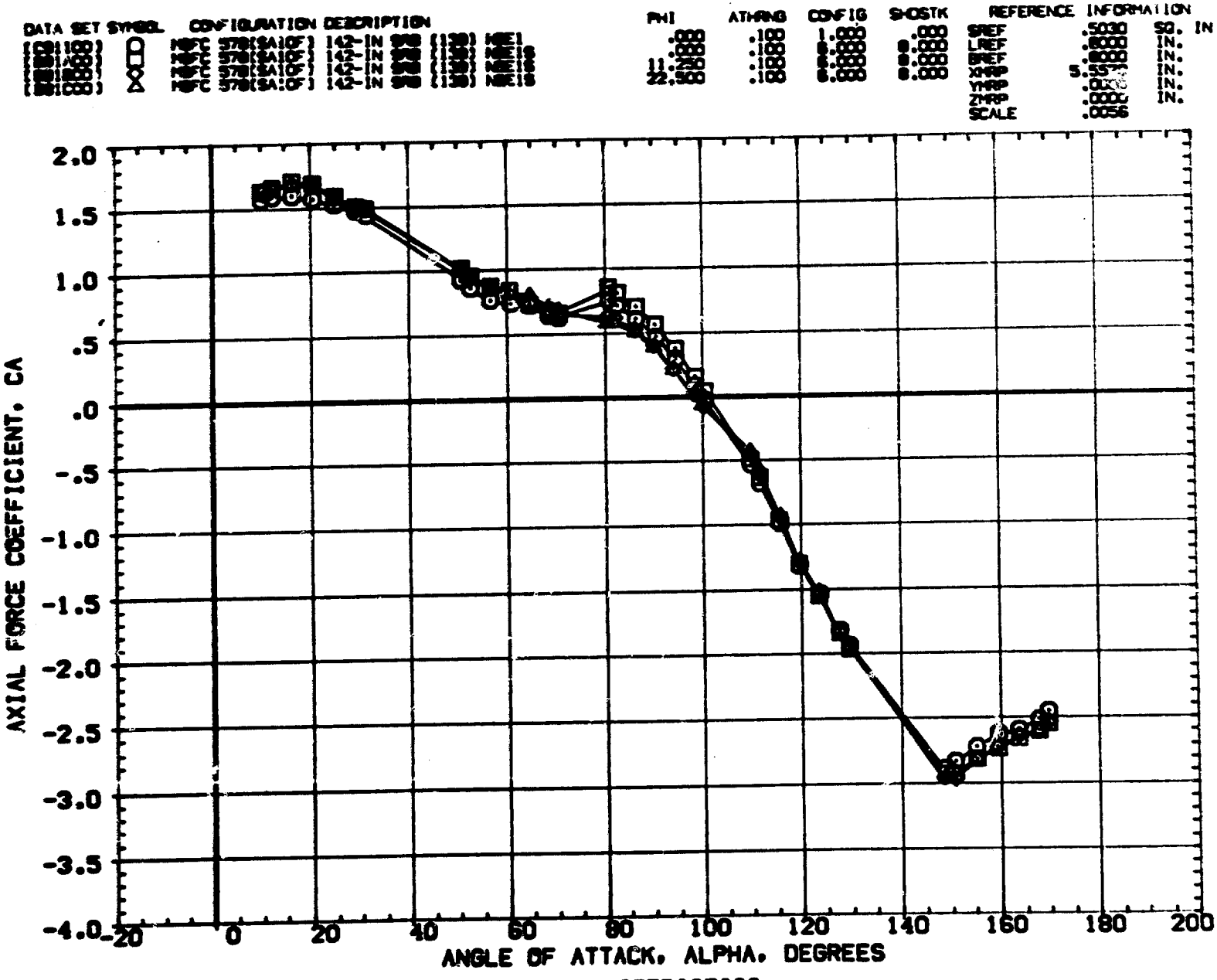
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
[illegible]		DATA NOT AVAILABLE				
[illegible]	□	MSFC 578(SA10F) 142-IN SRB (139) NBEIS	.000	.100	1.000	.000
[illegible]	◇	MSFC 578(SA10F) 142-IN SRB (139) NBEIS	.000	.100	6.000	8.000
[illegible]	△	MSFC 578(SA10F) 142-IN SRB (139) NBEIS	11.250	.100	6.000	8.000
			22.500	.100	6.000	8.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	



EFFECT OF STRAKES ON AERODYNAMIC CHARACTERISTICS

(B)MACH = .90

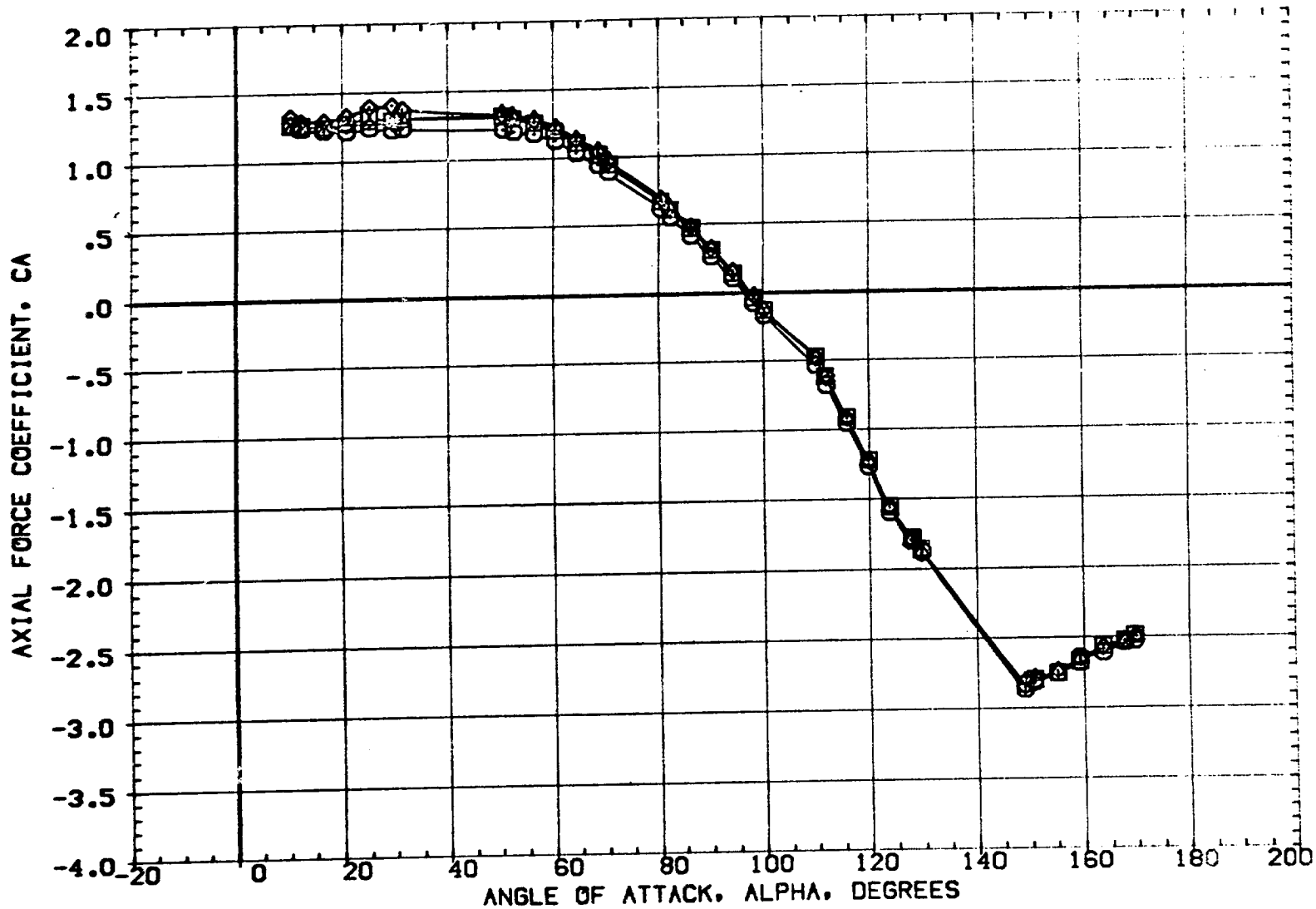


EFFECT OF STRAKES ON AERODYNAMIC CHARACTERISTICS

(C)MACH = 1.20

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
[C91100]	○	MSFC 578[SA10F] 142-IN SRB [139] NBEI	.000	.100	1.000	.000
[B81A00]	□	MSFC 578[SA10F] 142-IN SRB [139] NBEIS	.000	.100	6.000	0.000
[B81B00]	◇	MSFC 57E[SA10F] 142-IN SRB [139] NBEIS	11.250	.100	6.000	8.000
[B81C00]	△	MSFC 578[SA10F] 142-IN SRB [139] NBEIS	22.500	.100	6.000	8.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN.
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

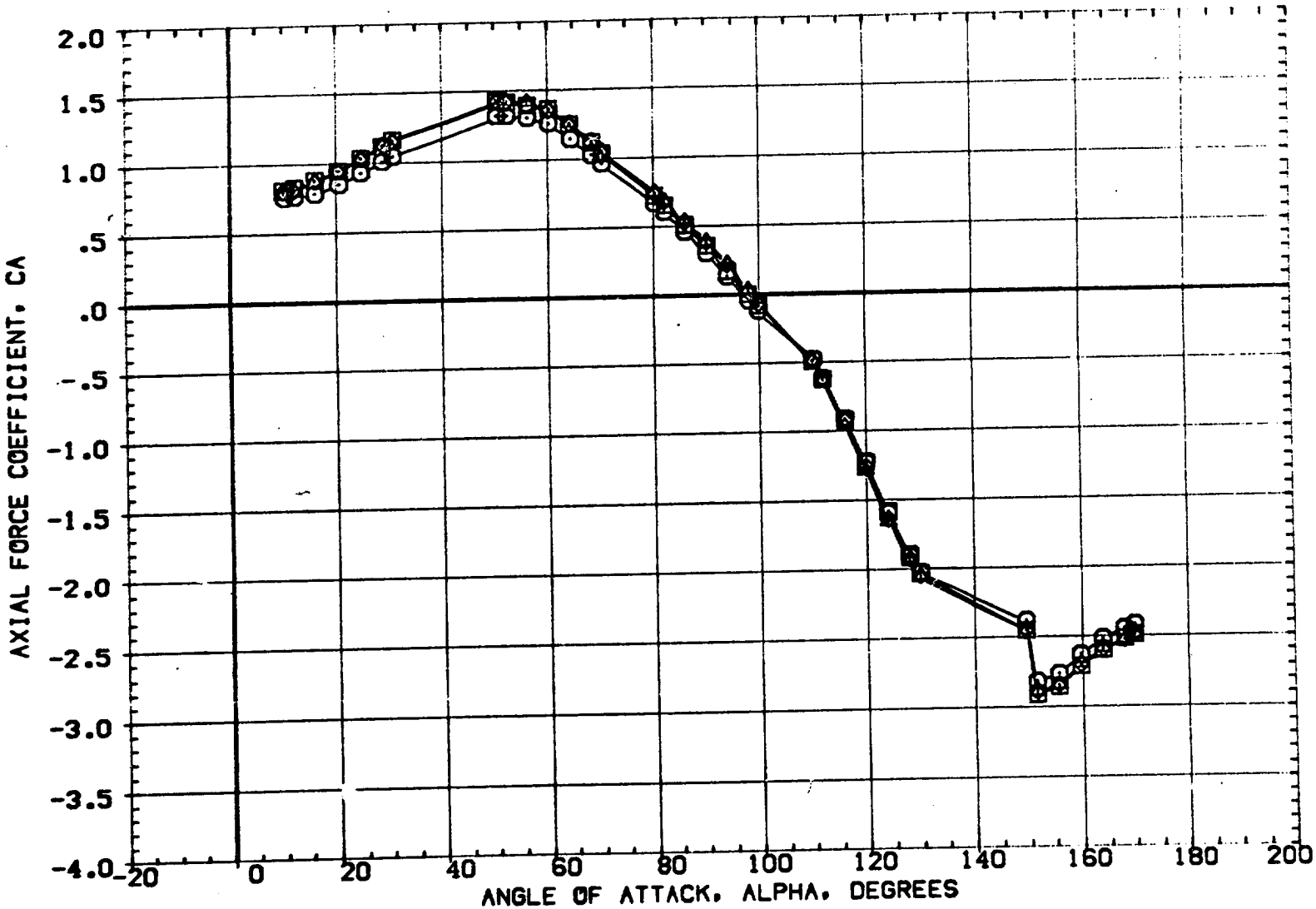


EFFECT OF STRAKES ON AERODYNAMIC CHARACTERISTICS

(D)MACH = 1.96

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
[C91100]	□	MSFC 578[SA1OF] 142-IN SRB [139] NBE]	.000	.100	1.000	.000
[891A00]	◇	MSFC 578[SA1OF] 142-IN SRB [139] NBE1S	.000	.100	6.000	8.000
[891B00]	⊠	MSFC 578[SA1OF] 142-IN SRB [139] NBE1S	11.250	.100	6.000	8.000
[891C00]	⧖	MSFC 578[SA1OF] 142-IN SRB [139] NBE1S	22.500	.100	6.000	8.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

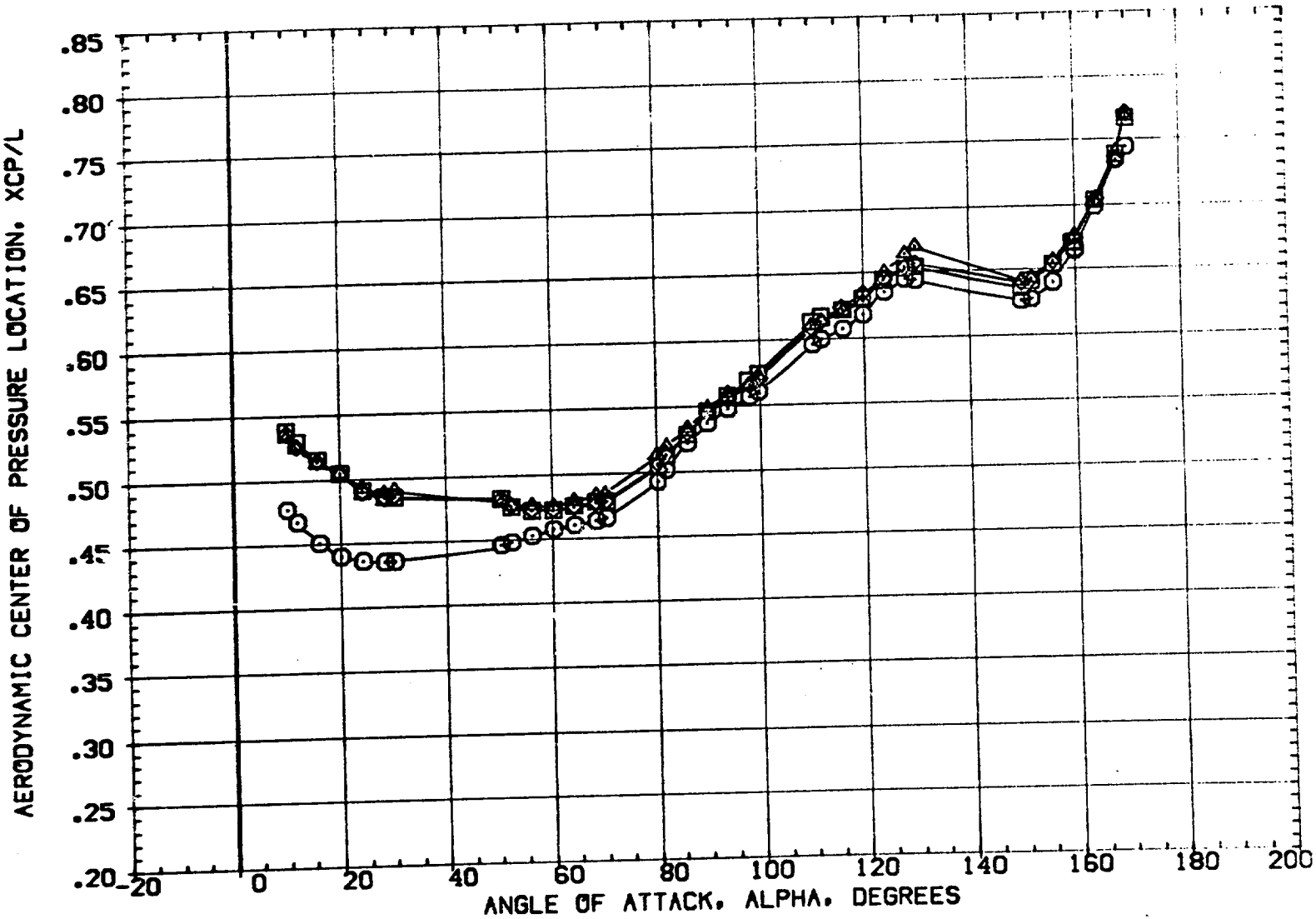


EFFECT OF STRAKES ON AERODYNAMIC CHARACTERISTICS

(E)MACH = 3.48

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
(C91100)	□	MSFC 578(SA10F) 142-IN SRB (139) NBE	.000	.100	1.000	.000
(B91A00)	⊠	MSFC 578(SA10F) 142-IN SRB (139) NBEIS	.000	.100	6.000	8.000
(B91B00)	⧖	MSFC 578(SA10F) 142-IN SRB (139) NBEIS	11.250	.100	6.000	8.000
(B91C00)	⧗	MSFC 578(SA10F) 142-IN SRB (139) NBEIS	22.500	.100	6.000	8.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	



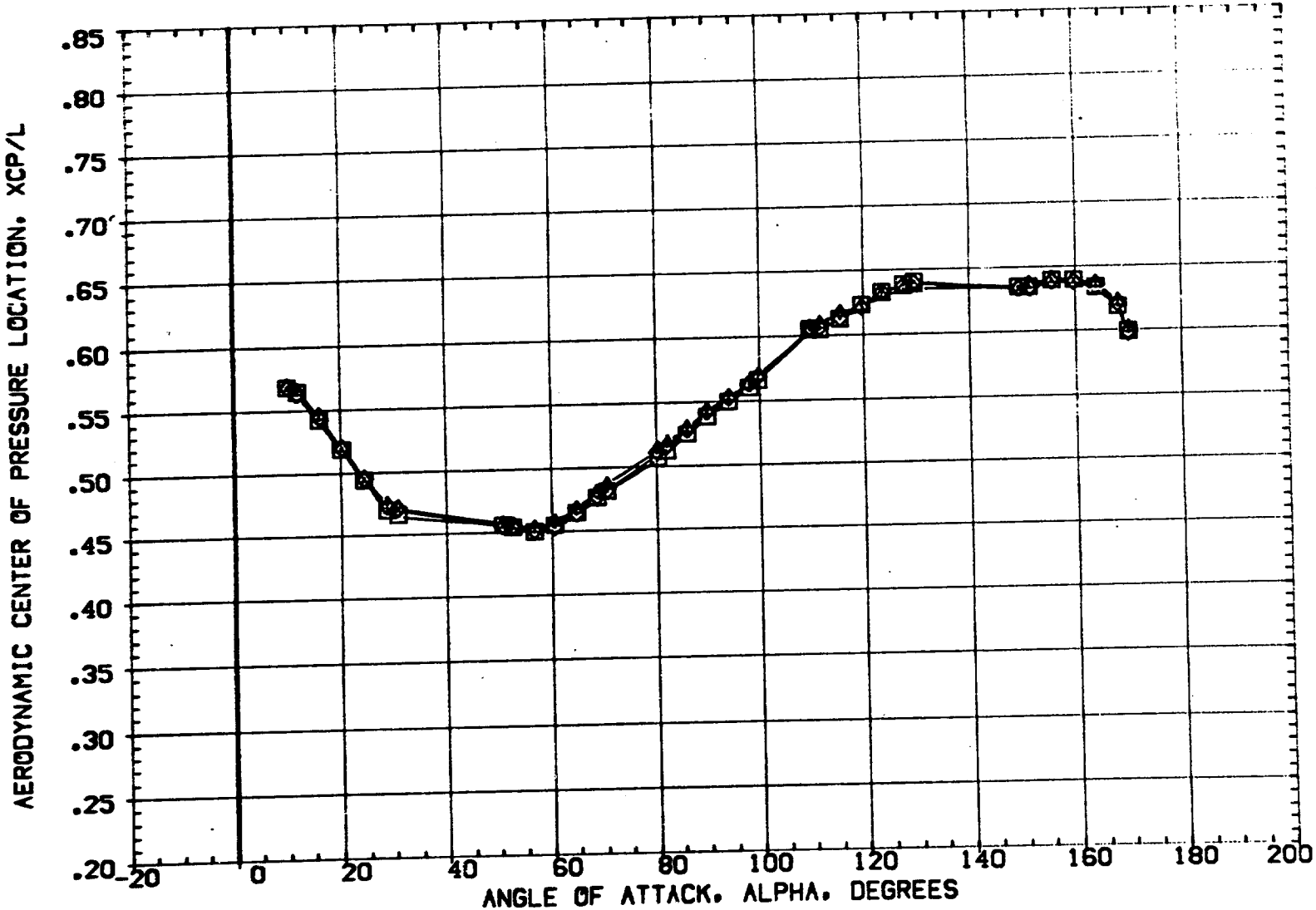
EFFECT OF STRAKES ON AERODYNAMIC CHARACTERISTICS

(A)MACH = .59

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
[C91100]	○	DATA NOT AVAILABLE	.000	.100	1.000	.000
[B91A00]	□	MSFC 578[SA10F] 142-IN SRB [139] NBEIS	.000	.100	6.000	8.000
[B91B00]	◇	MSFC 578[SA10F] 142-IN SRB [139] NBEIS	11.250	.100	6.000	8.000
[B91C00]	△	MSFC 578[SA10F] 142-IN SRB [139] NBEIS	22.500	.100	6.000	8.000

REFERENCE INFORMATION

SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

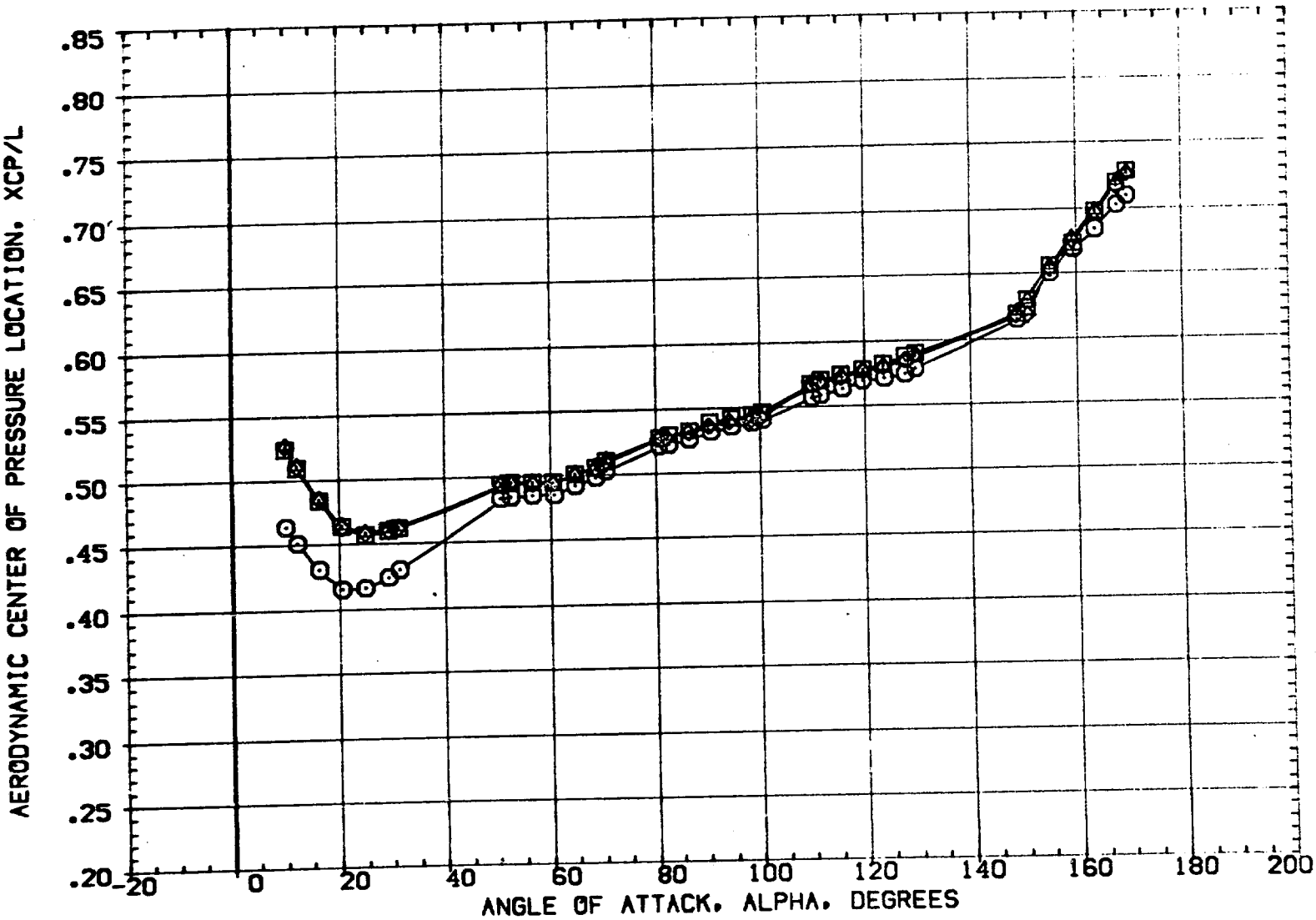


EFFECT OF STRAKES ON AERODYNAMIC CHARACTERISTICS

(B)MACH = .90

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CANTIG	SHOSTK
[091100]	MSFC 578[SA10F] 142-IN SRB [139] NBEI	.000	.100	1.000	.000
[091A00]	MSFC 578[SA10F] 142-IN SRB [139] NBEIS	.000	.100	6.000	8.000
[091B00]	MSFC 578[SA10F] 142-IN SRB [139] NBEIS	11.250	.100	6.000	8.000
[091C00]	MSFC 578[SA10F] 142-IN SRB [139] NBEIS	22.500	.100	6.000	8.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

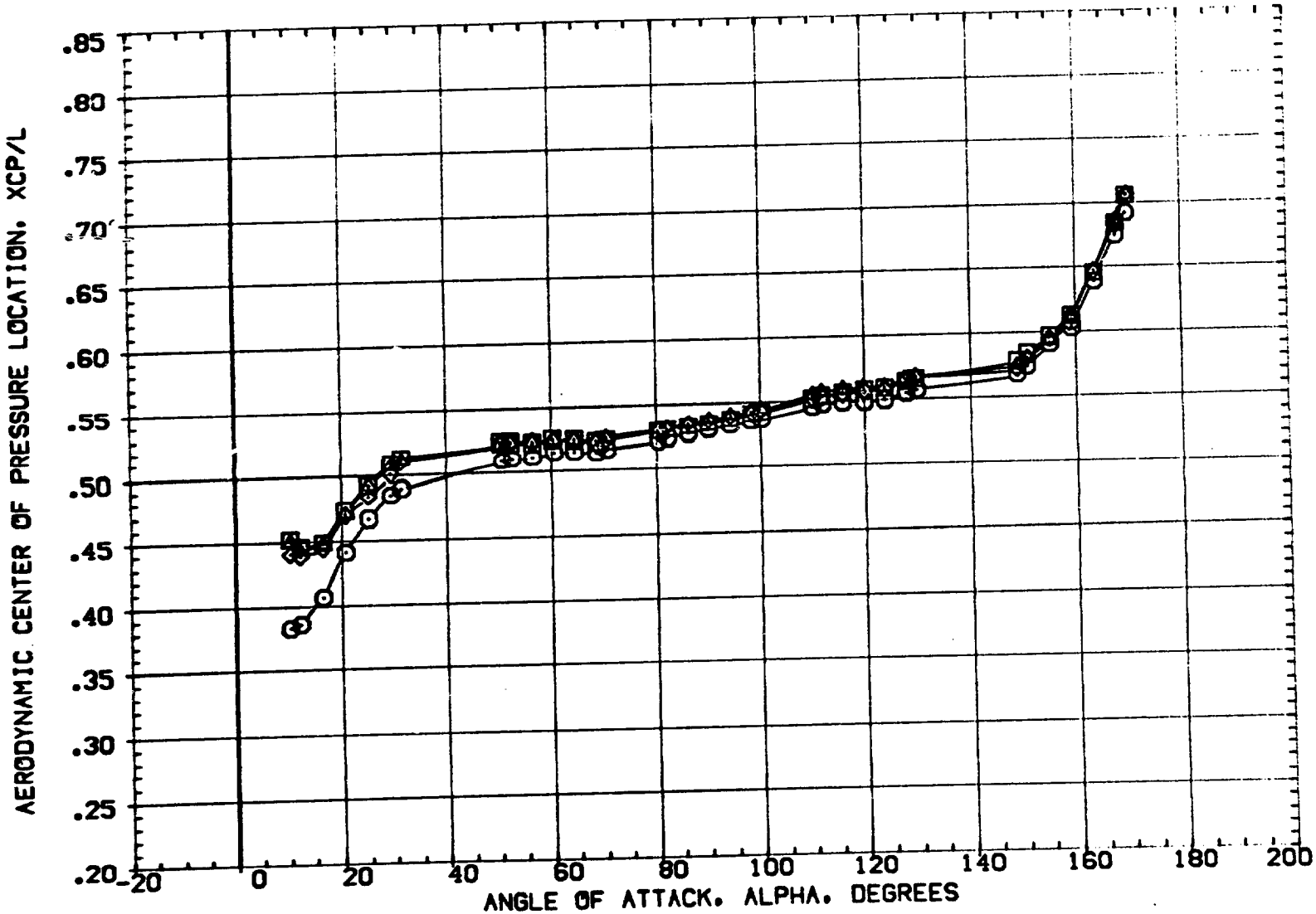


EFFECT OF STRAKES ON AERODYNAMIC CHARACTERISTICS

(C)MACH = 1.20

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
(B91100)	○	MSFC 578(SA10F) 142-IN SRB (139) NBE1	.000	.100	1.000	.000
(B91A00)	□	MSFC 578(SA10F) 142-IN SRB (139) NBE1S	.000	.100	6.000	0.000
(B91B00)	◇	MSFC 578(SA10F) 142-IN SRB (139) NBE1S	11.250	.100	6.000	0.000
(B91C00)	△	MSFC 578(SA10F) 142-IN SRB (139) NBE1S	22.500	.100	6.000	0.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

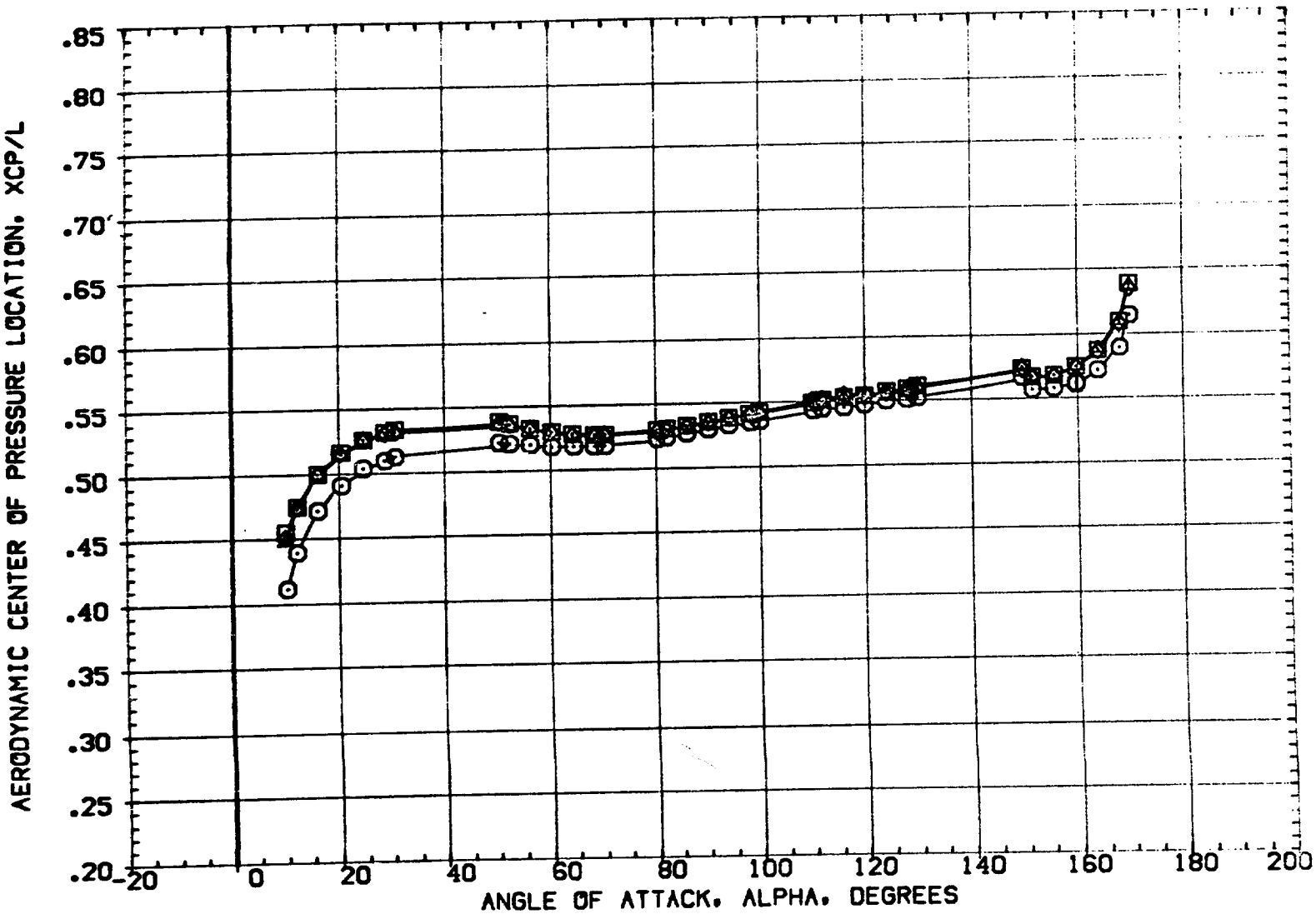


EFFECT OF STRAKES ON AERODYNAMIC CHARACTERISTICS

(D)MACH = 1.96

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
(B91100)	□	MSFC 578(SA10F) 142-IN SRB (139) NBE1	.000	.100	1.000	.000
(B91A00)	◇	MSFC 578(SA10F) 142-IN SRB (139) NBE1S	.000	.100	6.000	8.000
(B91B00)	◇	MSFC 578(SA10F) 142-IN SRB (139) NBE1S	11.250	.100	6.000	8.000
(B91C00)	△	MSFC 578(SA10F) 142-IN SRB (139) NBE1S	22.500	.100	6.000	8.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

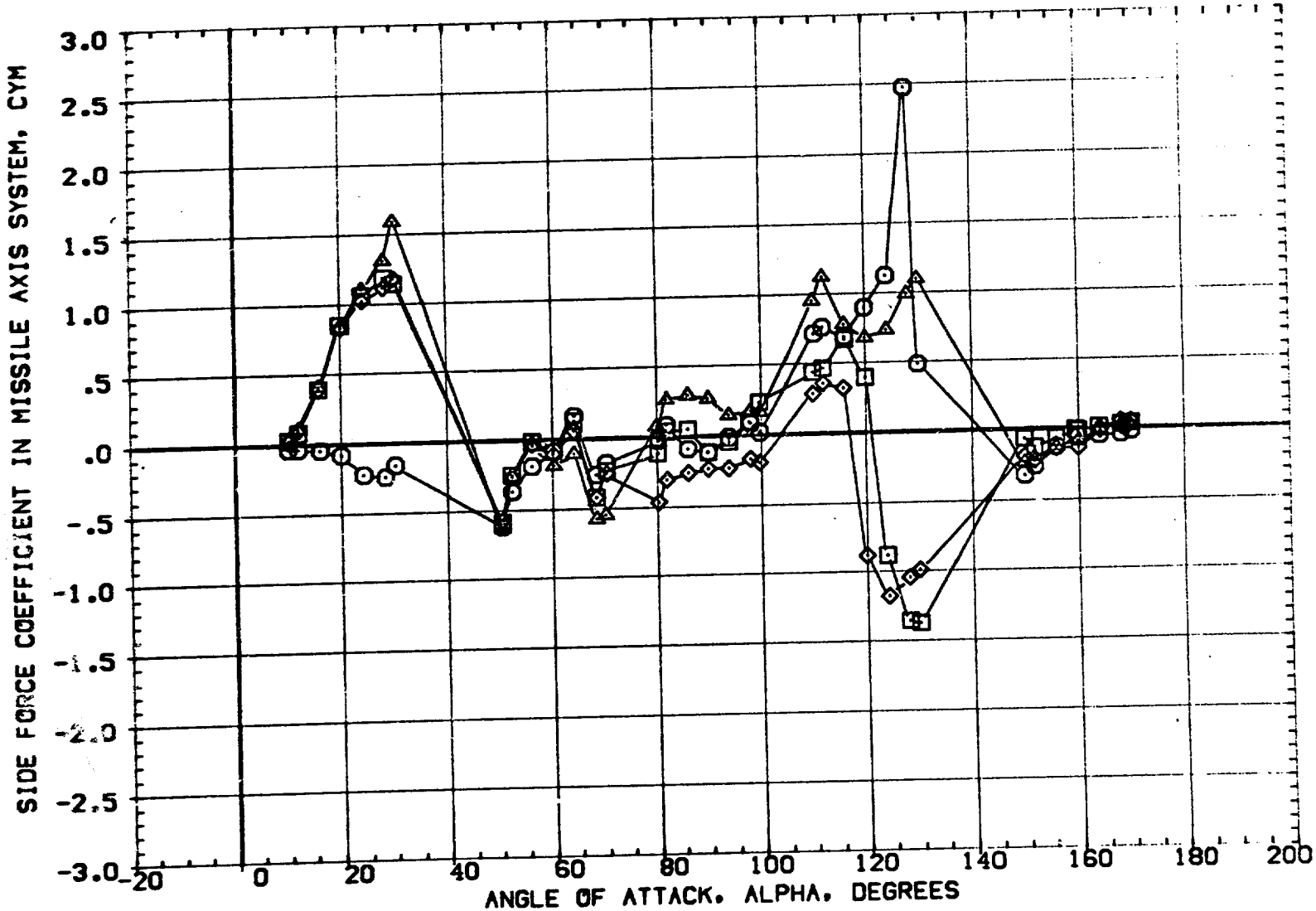


EFFECT OF STRAKES ON AERODYNAMIC CHARACTERISTICS

(E)MACH = 3.48

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
[89]100]	○	MSFC 578[SA10F] 142-IN SRB [139] NBEI	.000	.100	1.000	.000
[89]A00]	□	MSFC 578[SA10F] 142-IN SRB [139] NBEIS	.000	.100	6.000	8.000
[89]B00]	◇	MSFC 578[SA10F] 142-IN SRB [139] NBEIS	11.250	.100	6.000	8.000
[89]C00]	△	MSFC 578[SA10F] 142-IN SRB [139] NBEIS	22.500	.100	6.000	8.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

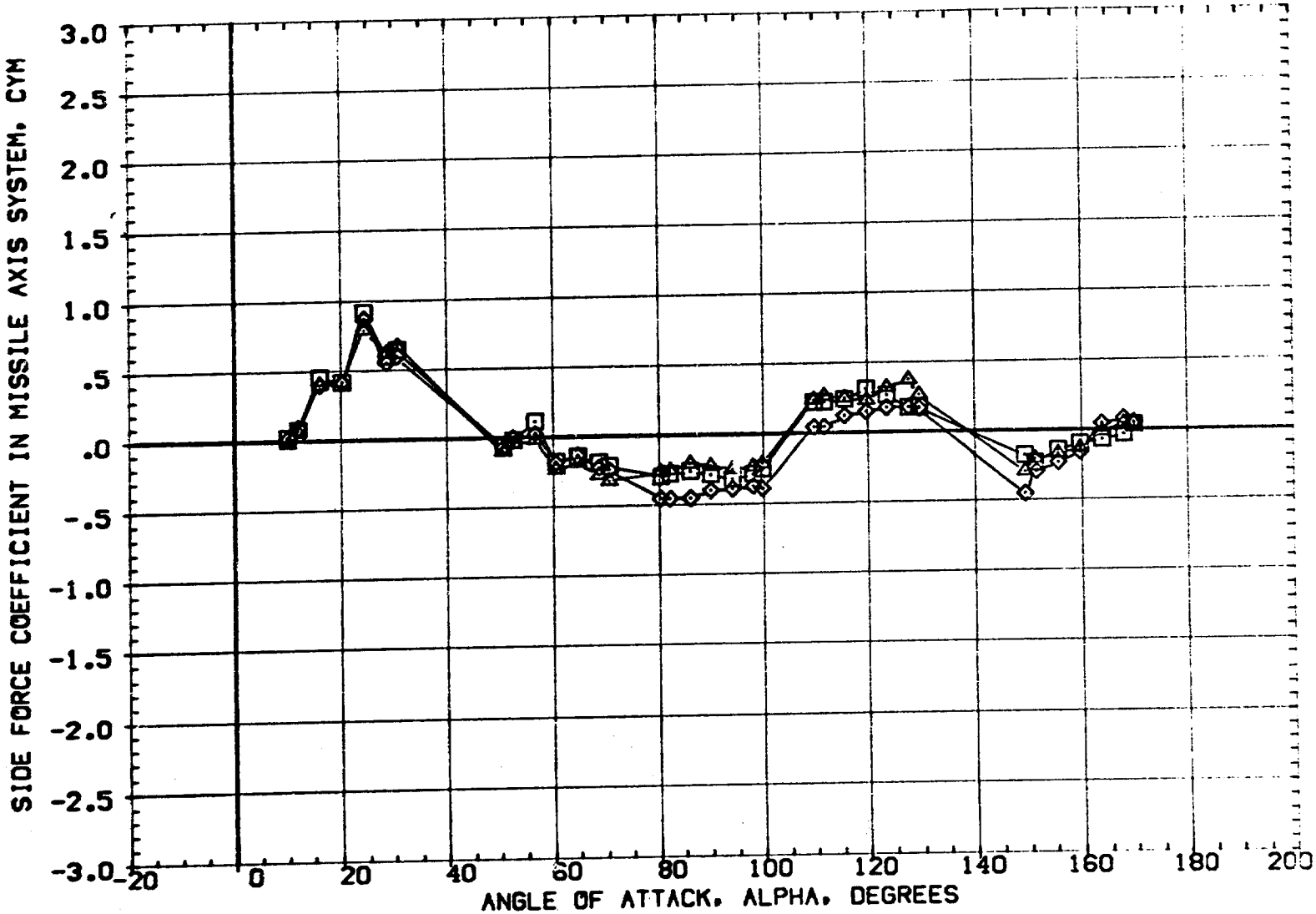


EFFECT OF STRAKES ON AERODYNAMIC CHARACTERISTICS

(A)MACH = .59

DATA SET SYMBOL		CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
(C91100)	○	DATA NOT AVAILABLE	.000	.100	1.000	.000
(B91A00)	□	MSFC 578(SA10F) 142-IN SRB (139) NBEIS	.000	.100	6.000	8.000
(B91B00)	◇	MSFC 578(SA10F) 142-IN SRB (139) NBEIS	11.250	.100	6.000	8.000
(B91C00)	△	MSFC 578(SA10F) 142-IN SRB (139) NBEIS	22.500	.100	6.000	8.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

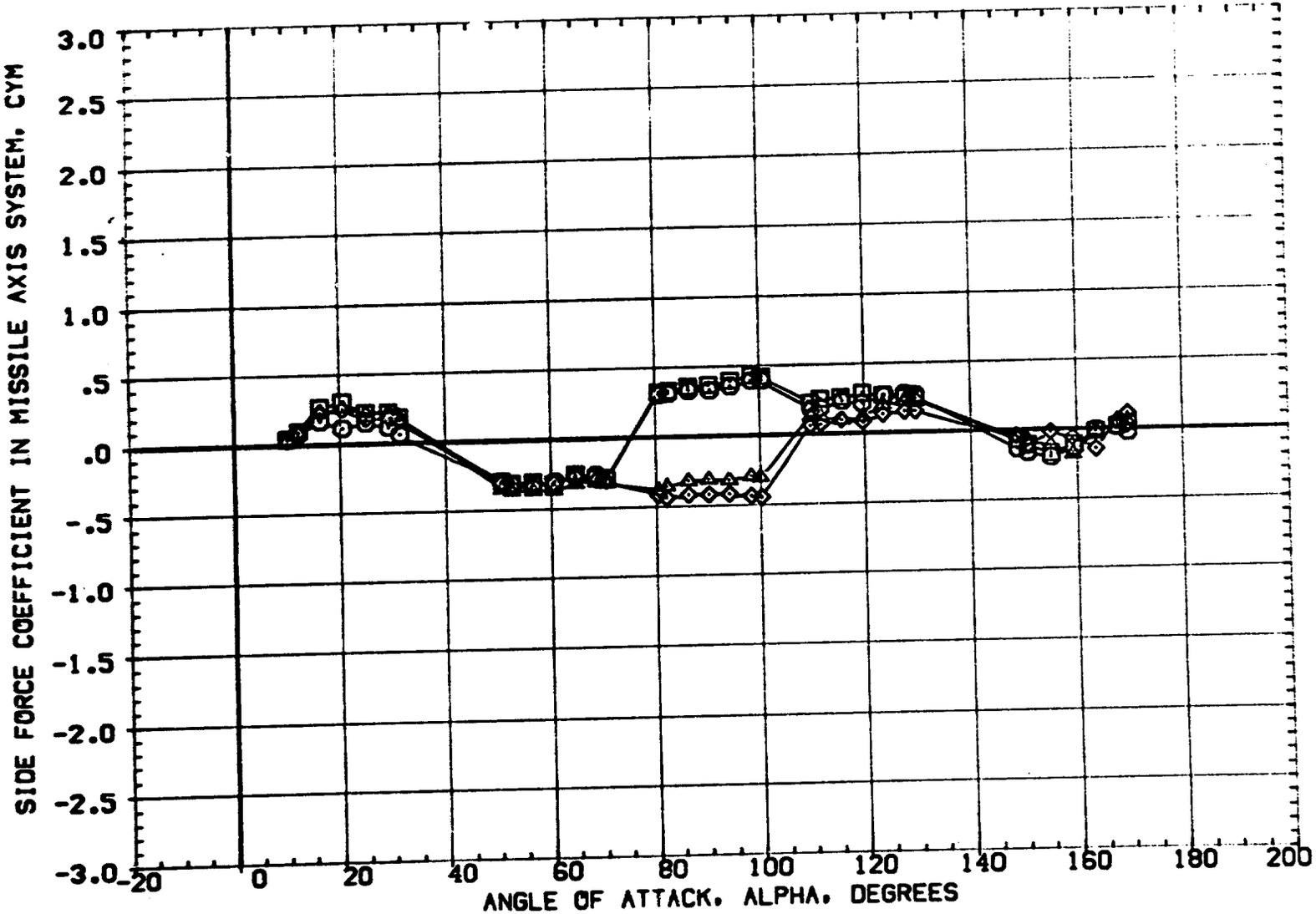


EFFECT OF STRAKES ON AERODYNAMIC CHARACTERISTICS

(B)MACH = .90

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
(C)1(00)	□	MSFC 578(SA1OF) 142-IN SRB (139) NBEI	.000	.100	1.000	.000
(B)1A00)	◇□	MSFC 578(SA1OF) 142-IN SRB (139) NBEIS	.000	.100	6.000	8.000
(B)1B00)	◇	MSFC 578(SA1OF) 142-IN SRB (139) NBEIS	11.250	.100	6.000	8.000
(B)1C00)	⋈	MSFC 578(SA1OF) 142-IN SRB (139) NBEIS	22.500	.100	6.000	8.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	



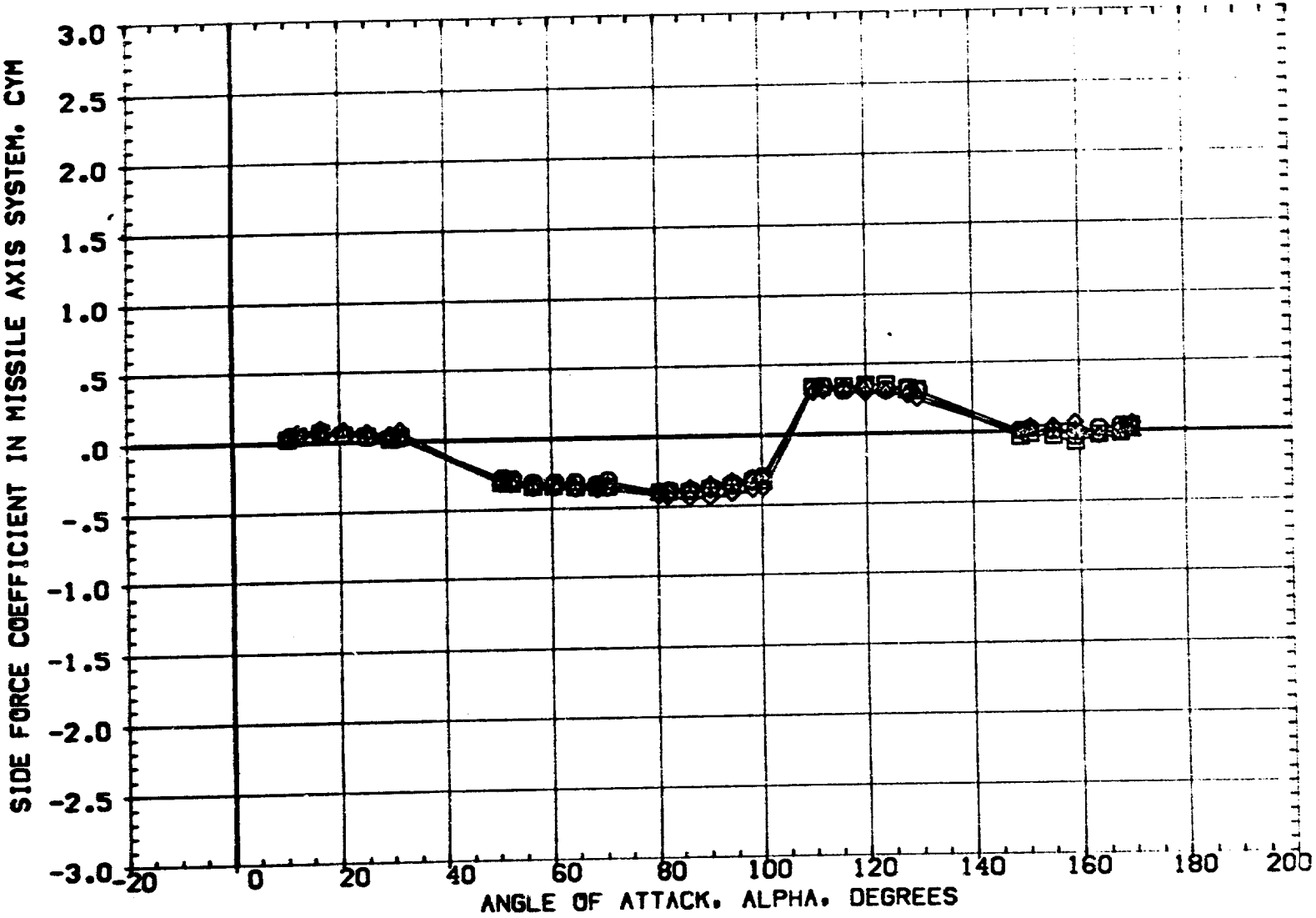
EFFECT OF STRAKES ON AERODYNAMIC CHARACTERISTICS

(C)MACH = 1.20

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
[891100]	○	MSFC 578[SA10F] 142-IN SRB [139] NBE]	.000	.100	1.000	.000
[891A00]	□	MSFC 578[SA10F] 142-IN SRB [139] NBE]S	.000	.100	6.000	8.000
[891B00]	◇	MSFC 578[SA10F] 142-IN SRB [139] NBE]S	11.250	.100	6.000	8.000
[891C00]	△	MSFC 578[SA10F] 142-IN SRB [139] NBE]S	22.500	.100	6.000	8.000

REFERENCE INFORMATION

SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

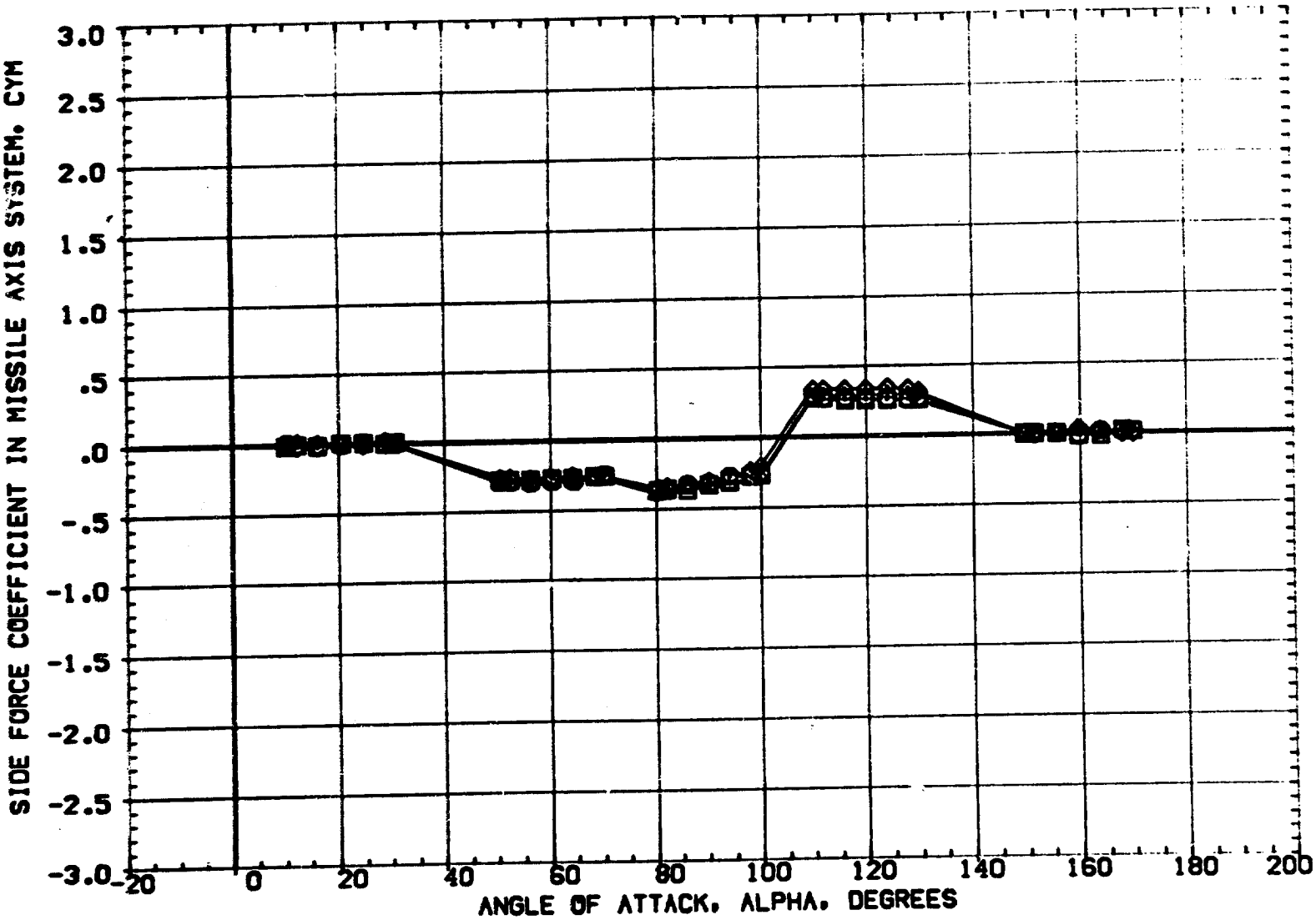


EFFECT OF STRAKES ON AERODYNAMIC CHARACTERISTICS

(D)MACH = 1.96

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHING	CONFIG	SHOSTK
(B)(100)	□	MSFC 578(SA10F) 142-IN S&B (139) NBE1	.000	.100	1.000	.000
(B)(A00)	◇□	MSFC 578(SA10F) 142-IN S&B (139) NBE1S	.000	.100	6.000	0.000
(B)(B00)	⊠	MSFC 578(SA10F) 142-IN S&B (139) NBE1S	11.250	.100	6.000	0.000
(B)(C00)	⊠	MSFC 578(SA10F) 142-IN S&B (139) NBE1S	22.500	.100	6.000	0.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

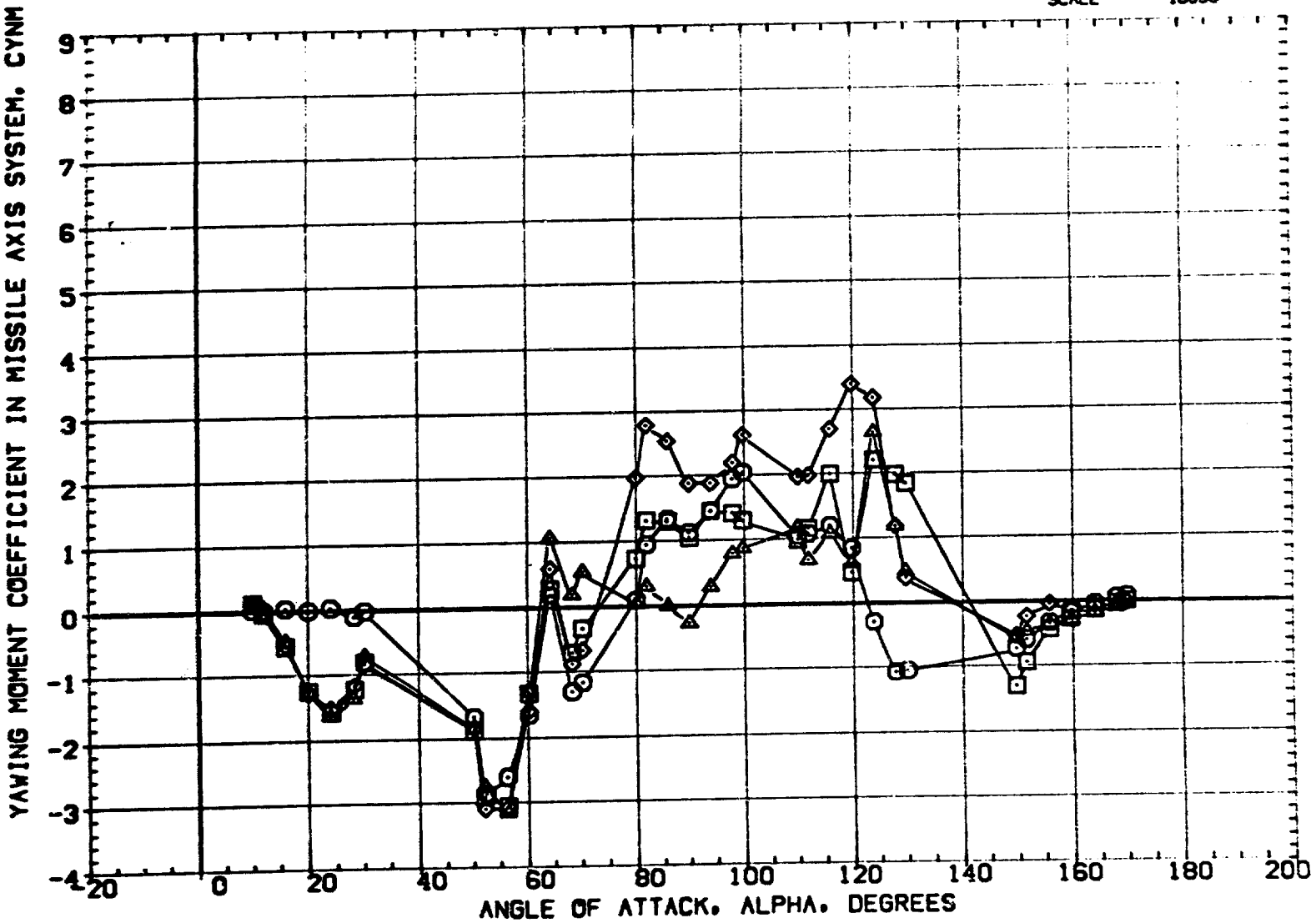


EFFECT OF STRAKES ON AERODYNAMIC CHARACTERISTICS

(E)MACH = 3.48

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
(89110B)	□	MSFC 578(SA10F) 142-IN SRB (139) NBE1	.000	.100	1.000	.000
(89A0B)	◇	MSFC 578(SA10F) 142-IN SRB (139) NBE1S	.000	.100	6.000	0.000
(89180B)	⊠	MSFC 578(SA10F) 142-IN SRB (139) NBE1S	11.250	.100	6.000	0.000
(89C0B)	△	MSFC 578(SA10F) 142-IN SRB (139) NBE1S	22.500	.100	6.000	0.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

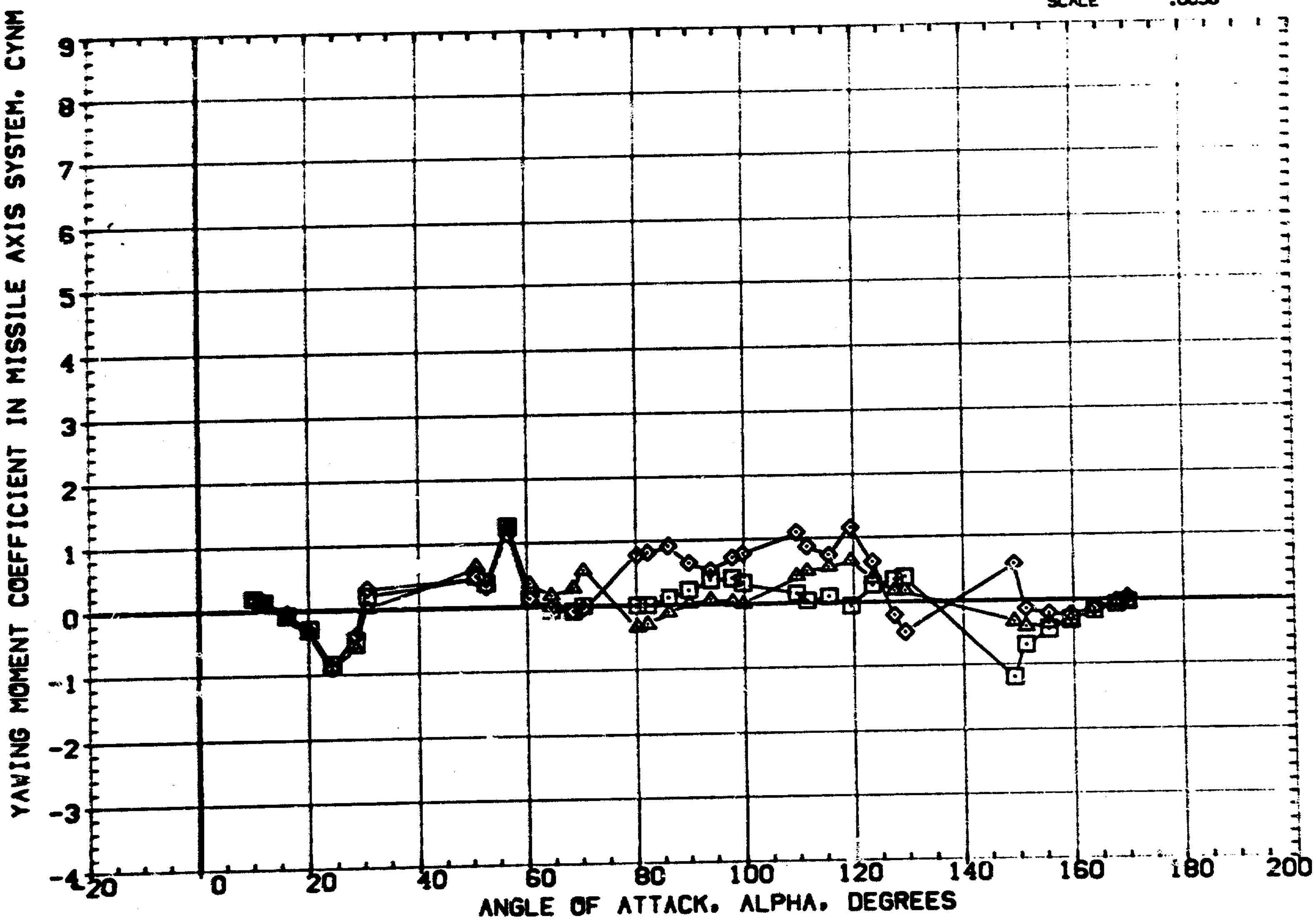


EFFECT OF STRAKES ON AERODYNAMIC CHARACTERISTICS

(A)MACH = .59

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
(C91100)	○	DATA NOT AVAILABLE	.000	.100	1.000	.000
(B51A00)	□	MSFC 578(SA1OF) 142-IN SRB (139) NBEIS	.000	.100	6.000	8.000
(B91B00)	◇	MSFC 578(SA1OF) 142-IN SRB (139) NBEIS	11.250	.100	6.000	8.000
(B91C00)	△	MSFC 578(SA1OF) 142-IN SRB (139) NBEIS	22.500	.100	6.000	8.000

REFERENCE	INFORMATION	
SREF	.5030	SQ. IN
LREF	.9000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

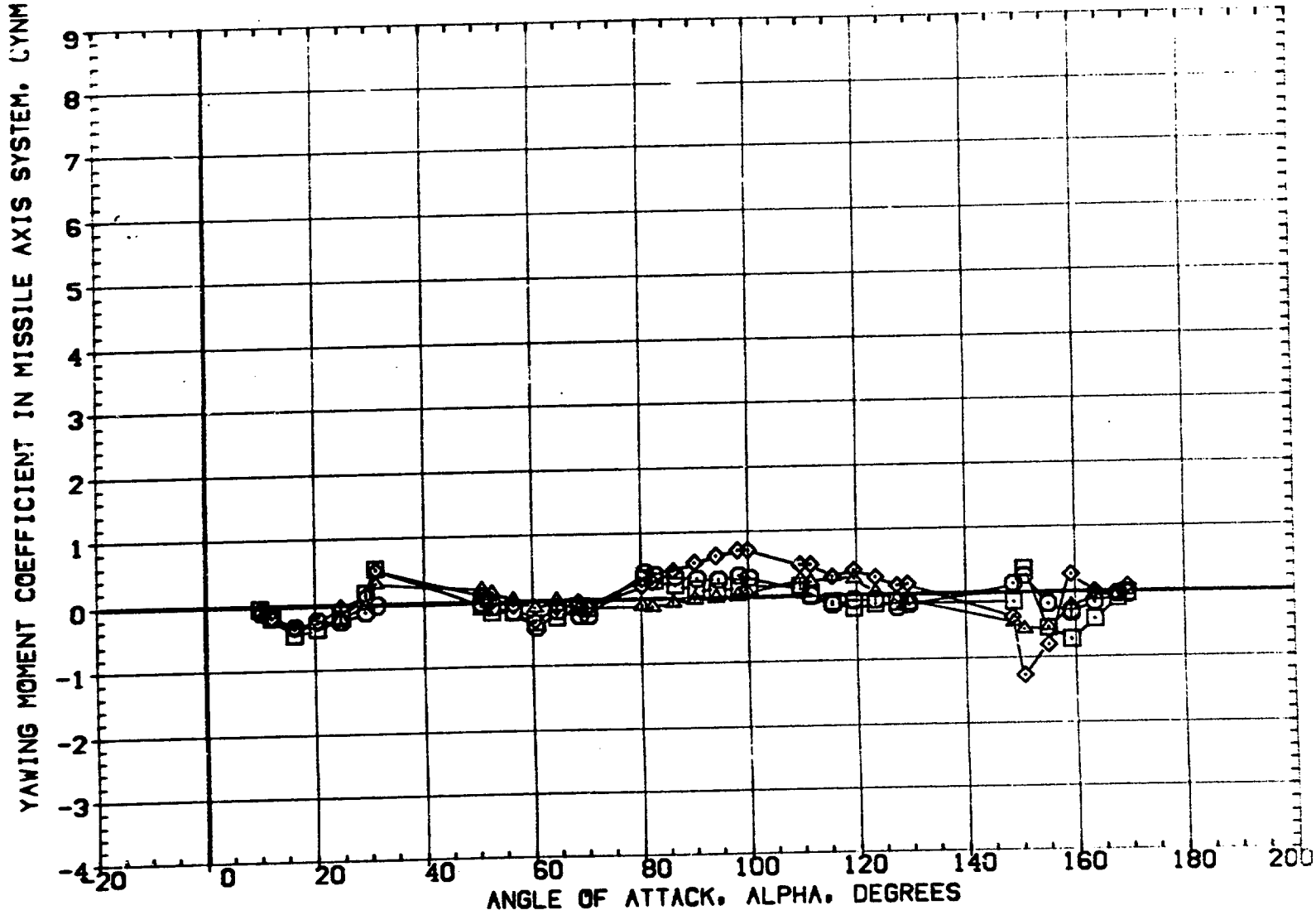


EFFECT OF STRAKES ON AERODYNAMIC CHARACTERISTICS

(B)MACH = .90

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
[091100]	MSFC 578[SA10F] 142-IN SRB [139] NBE]	.000	.100	1.000	.000
[891A00]	MSFC 578[SA10F] 142-IN SRB [139] NBEIS	.000	.100	6.000	8.000
[891B00]	MSFC 578[SA10F] 142-IN SRB [139] NBEIS	11.250	.100	6.000	8.000
[891C00]	MSFC 578[SA10F] 142-IN SRB [139] NBEIS	22.500	.100	6.000	8.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

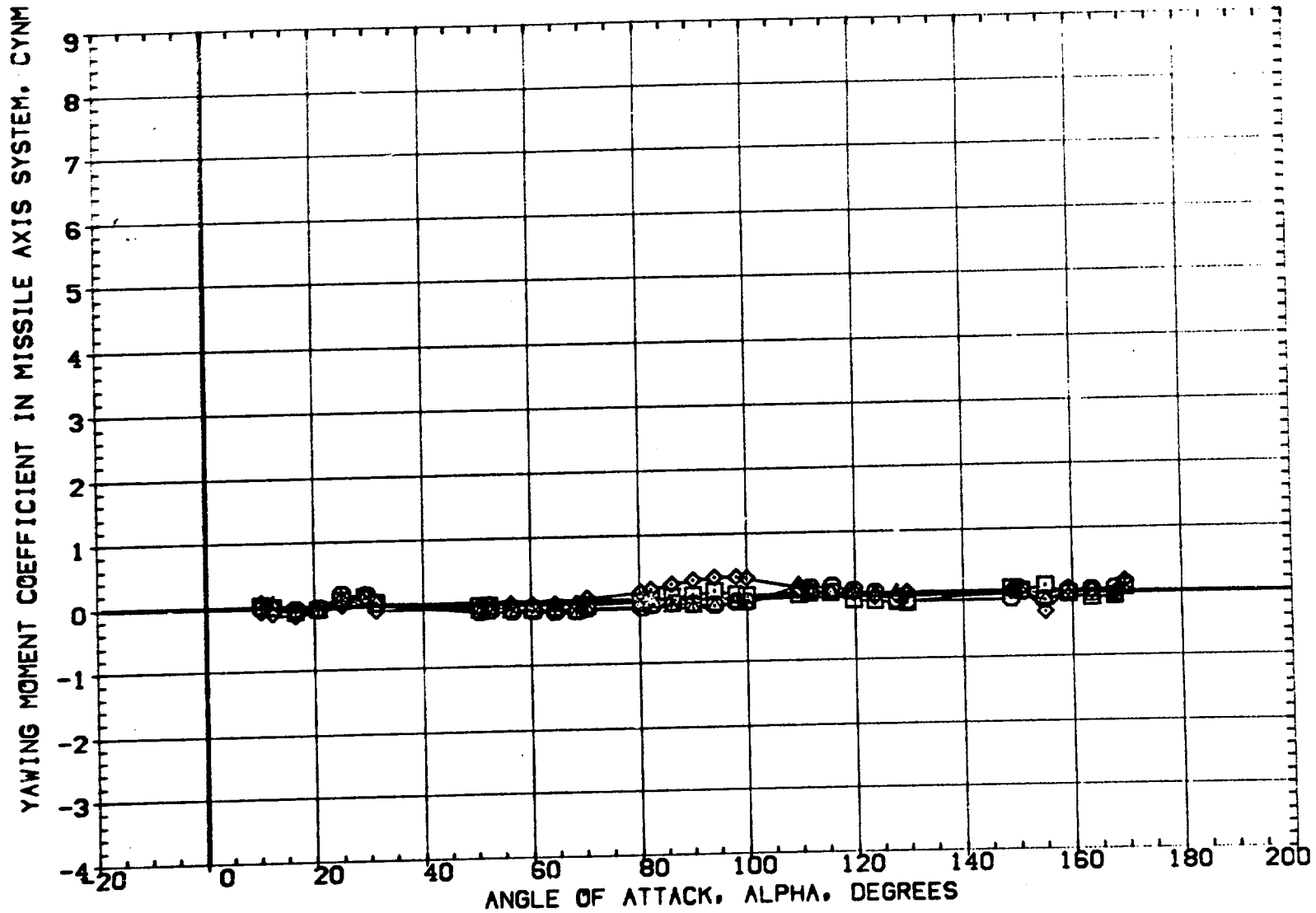


EFFECT OF STRAKES ON AERODYNAMIC CHARACTERISTICS

(C)MACH = 1.20

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
[B91100] ○	MSFC 578[SA10F] 142-IN SRB [139] NBE1	.000	.100	1.000	.000
[B91A00] □	MSFC 578[SA10F] 142-IN SRB [139] NBE1S	.000	.100	6.000	8.000
[B91B00] ◇	MSFC 578[SA10F] 142-IN SRB [139] NBE1S	11.250	.100	6.000	8.000
[B91C00] ⧖	MSFC 578[SA10F] 142-IN SRB [139] NBE1S	22.500	.100	6.000	8.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

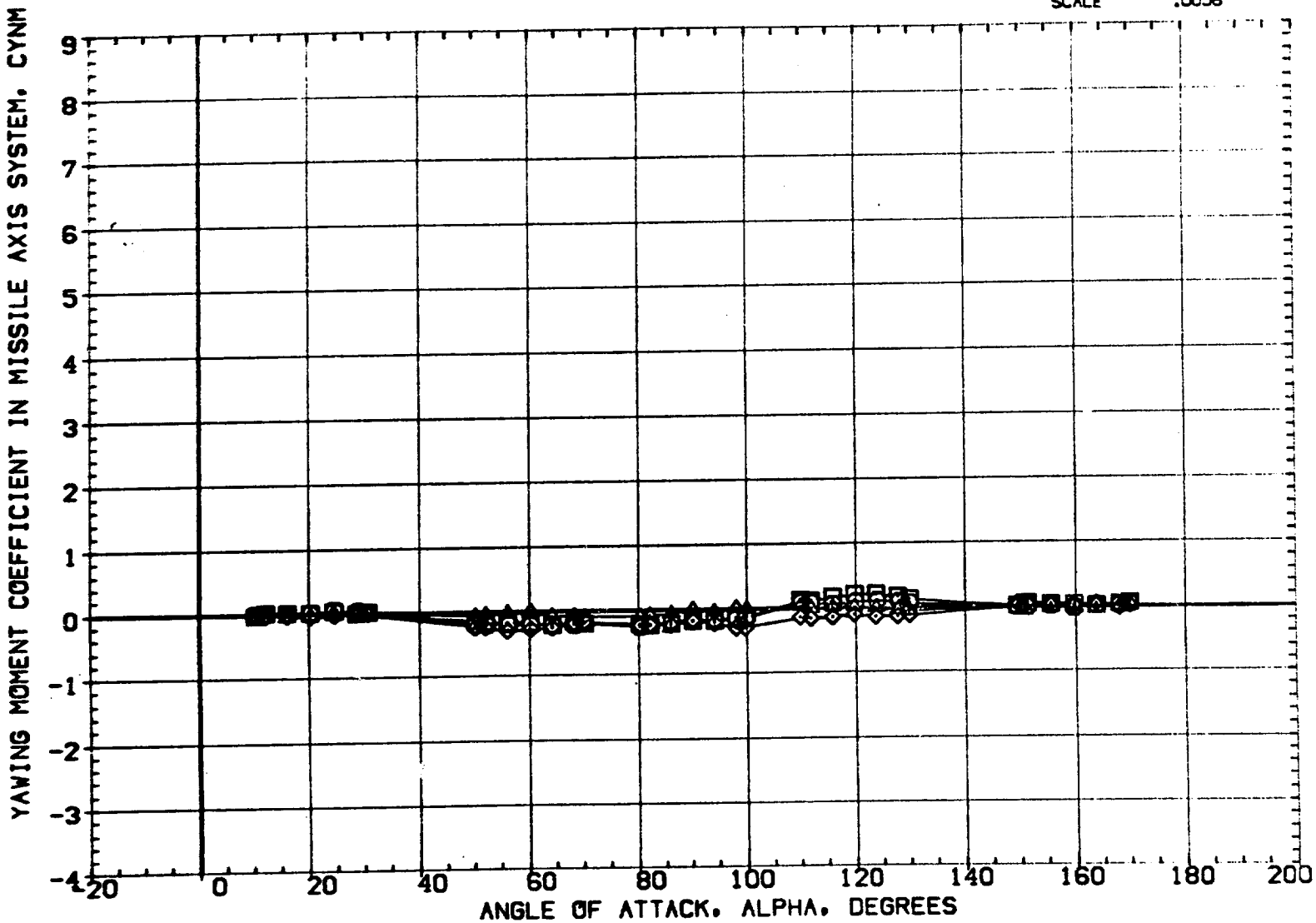


EFFECT OF STRAKES ON AERODYNAMIC CHARACTERISTICS

(D)MACH = 1.96

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
(C91100) ○	MSFC 578(SA10F) 142-IN SRB (139) NBEI	.000	.100	1.000	.000
(B91A00) □	MSFC 578(SA10F) 142-IN SRB (139) NBEIS	.000	.100	6.000	8.000
(B91B00) ◇	MSFC 578(SA10F) 142-IN SRB (139) NBEIS	11.250	.100	6.000	8.000
(B91C00) △	MSFC 578(SA10F) 142-IN SRB (139) NBEIS	22.500	.100	6.000	8.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

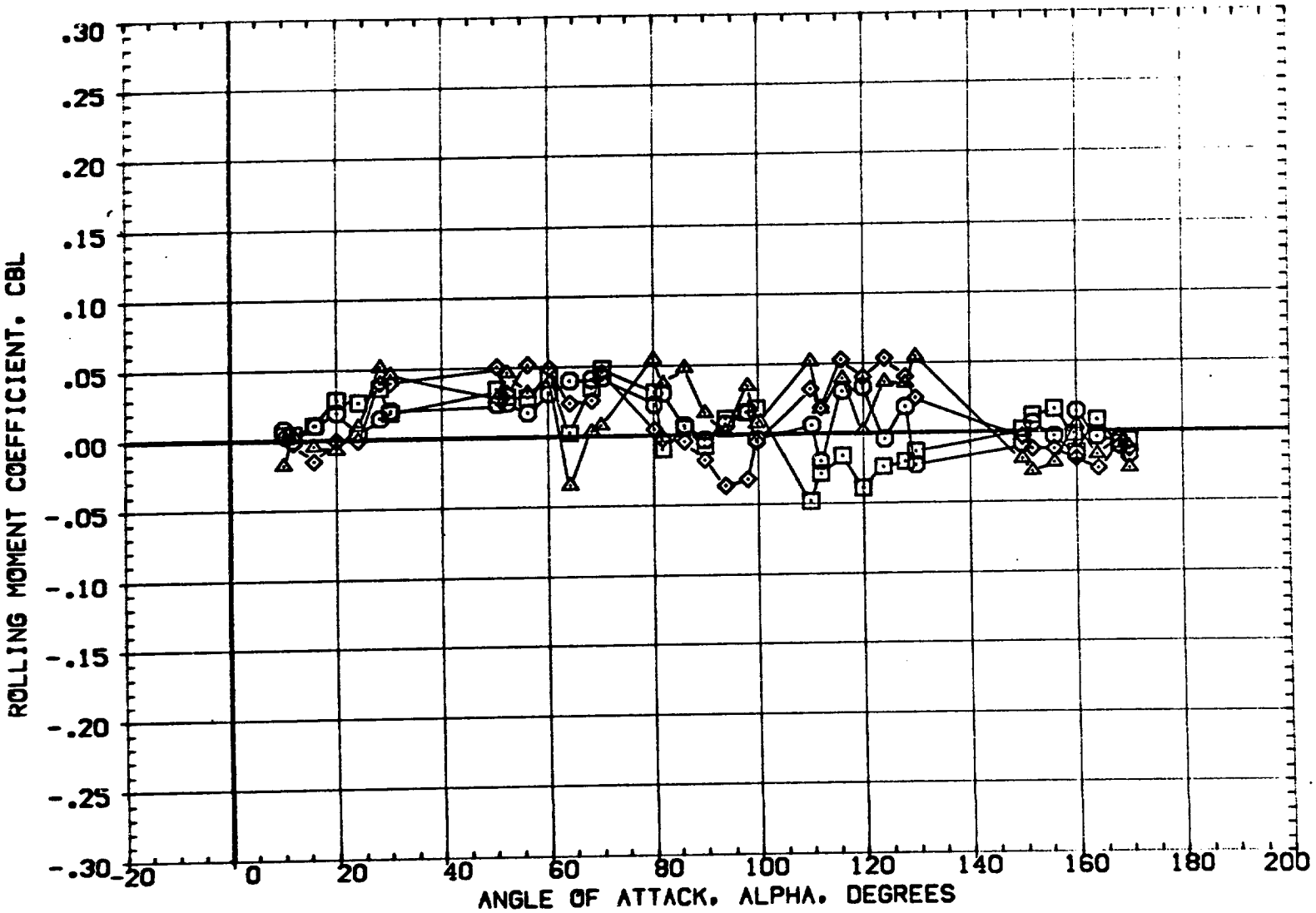


EFFECT OF STRAKES ON AERODYNAMIC CHARACTERISTICS

(E)MACH = 3.48

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
(C9(100)	○	MSFC 578(SA1OF) 142-IN SRB (139) NBEI	.000	.100	1.000	.000
(B8(A00)	□	MSFC 578(SA1OF) 142-IN SRB (139) NBEIS	.000	.100	6.000	8.000
(B8(B00)	◇	MSFC 578(SA1OF) 142-IN SRB (139) NBEIS	11.250	.100	6.000	8.000
(B8(C00)	△	MSFC 578(SA1OF) 142-IN SRB (139) NBEIS	22.500	.100	6.000	8.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

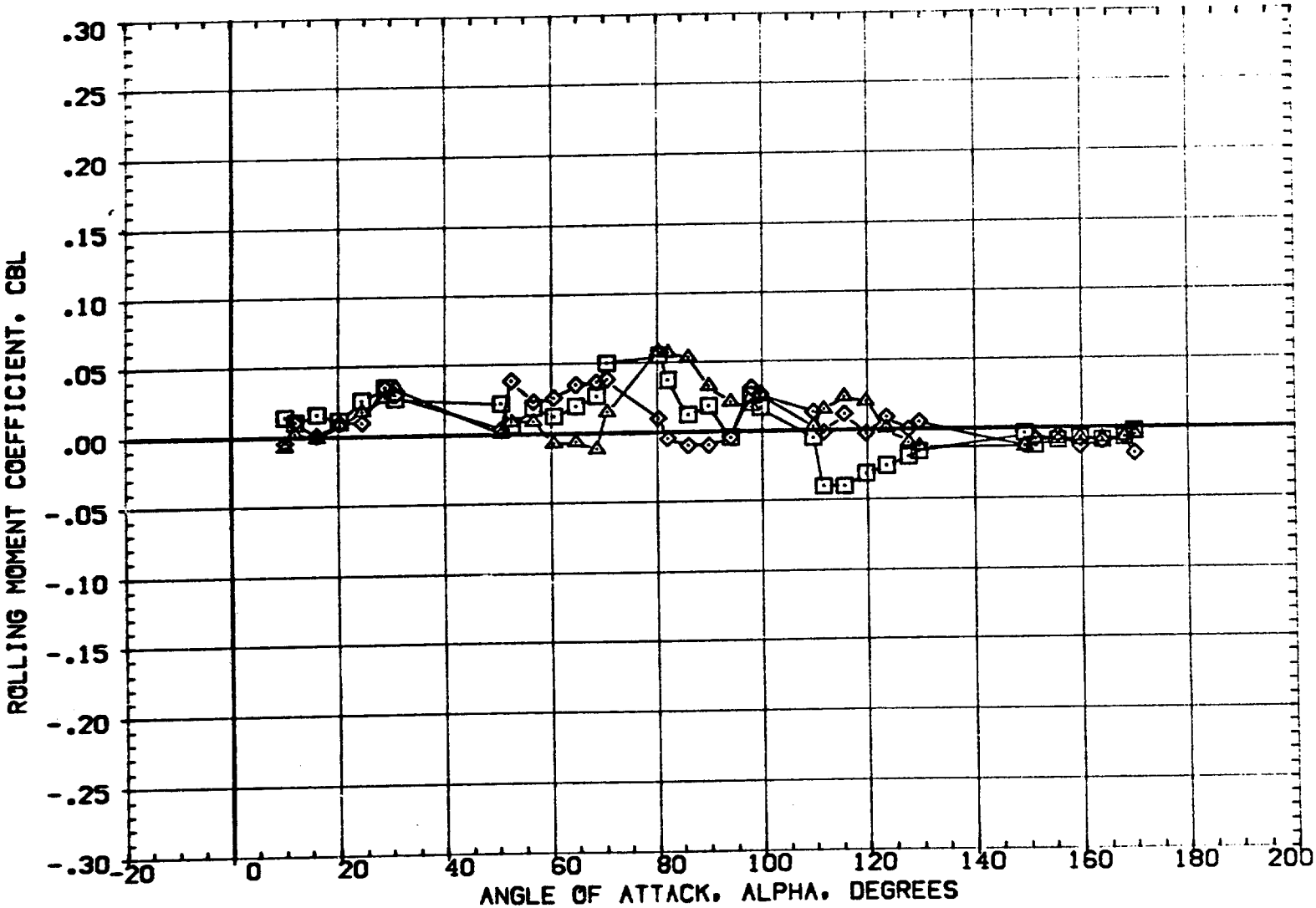


EFFECT OF STRAKES ON AERODYNAMIC CHARACTERISTICS

(A)MACH = .59

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
(C)(100)	DATA NOT AVAILABLE	.000	.100	1.000	.000
(B)(A00)	MSFC 578(SA10F) 142-IN SRB (139) NBEIS	.000	.100	6.000	8.000
(B)(B00)	MSFC 578(SA10F) 142-IN SRB (139) NBEIS	11.250	.100	6.000	8.000
(B)(C00)	MSFC 578(SA10F) 142-IN SRB (139) NBEIS	22.500	.100	6.000	8.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

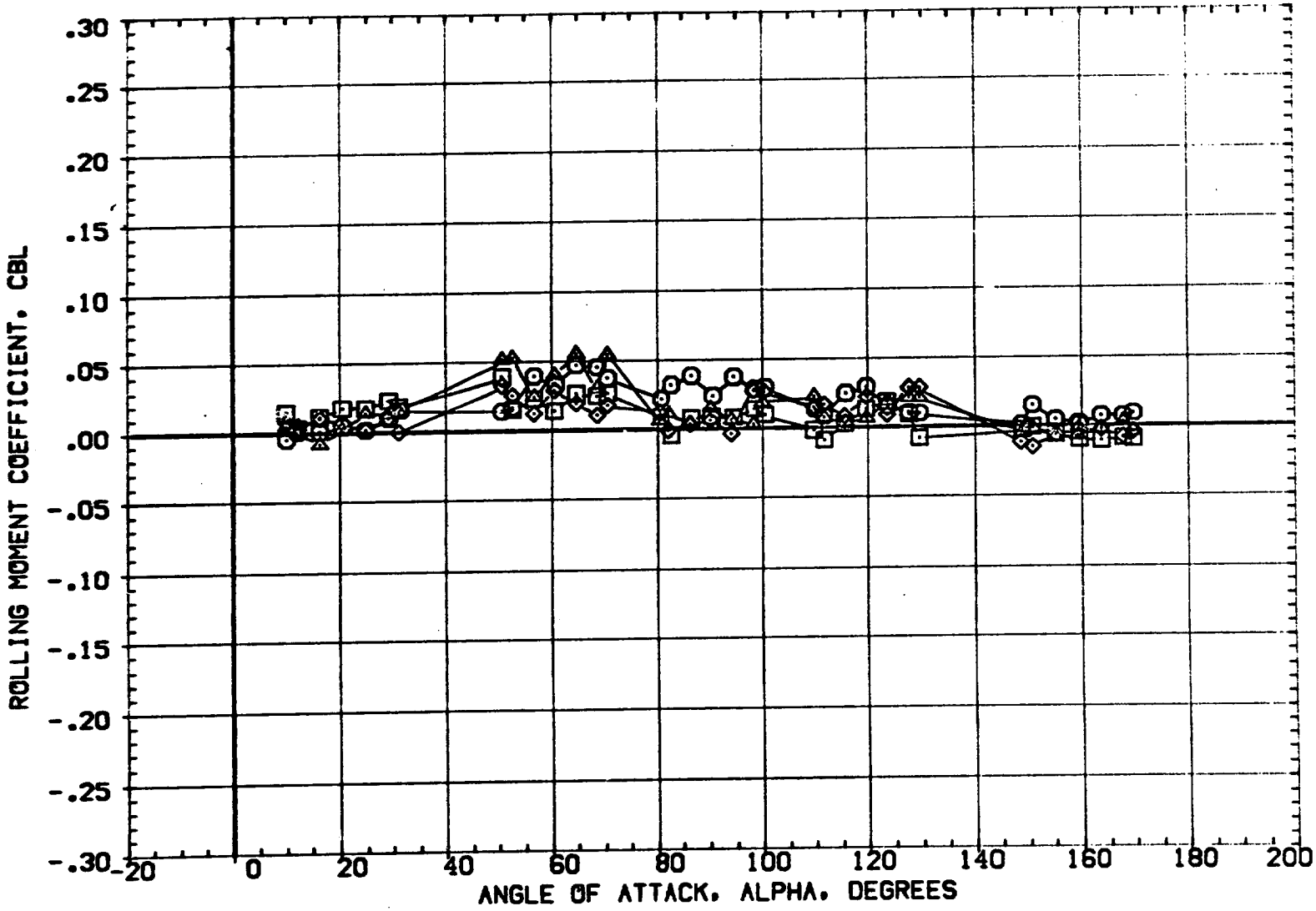


EFFECT OF STRAKES ON AERODYNAMIC CHARACTERISTICS

(B)MACH = .90

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
[C91100]	○	MSFC 578[SA10F] 142-IN SRB [139] NBEI	.000	.100	1.000	.000
[891A00]	□	MSFC 578[SA10F] 142-IN SRB [139] NBEIS	.000	.100	6.000	6.000
[891B00]	◇	MSFC 578[SA10F] 142-IN SRB [139] NBEIS	11.250	.100	6.000	8.000
[891C00]	△	MSFC 578[SA10F] 142-IN SRB [139] NBEIS	22.500	.100	6.000	8.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

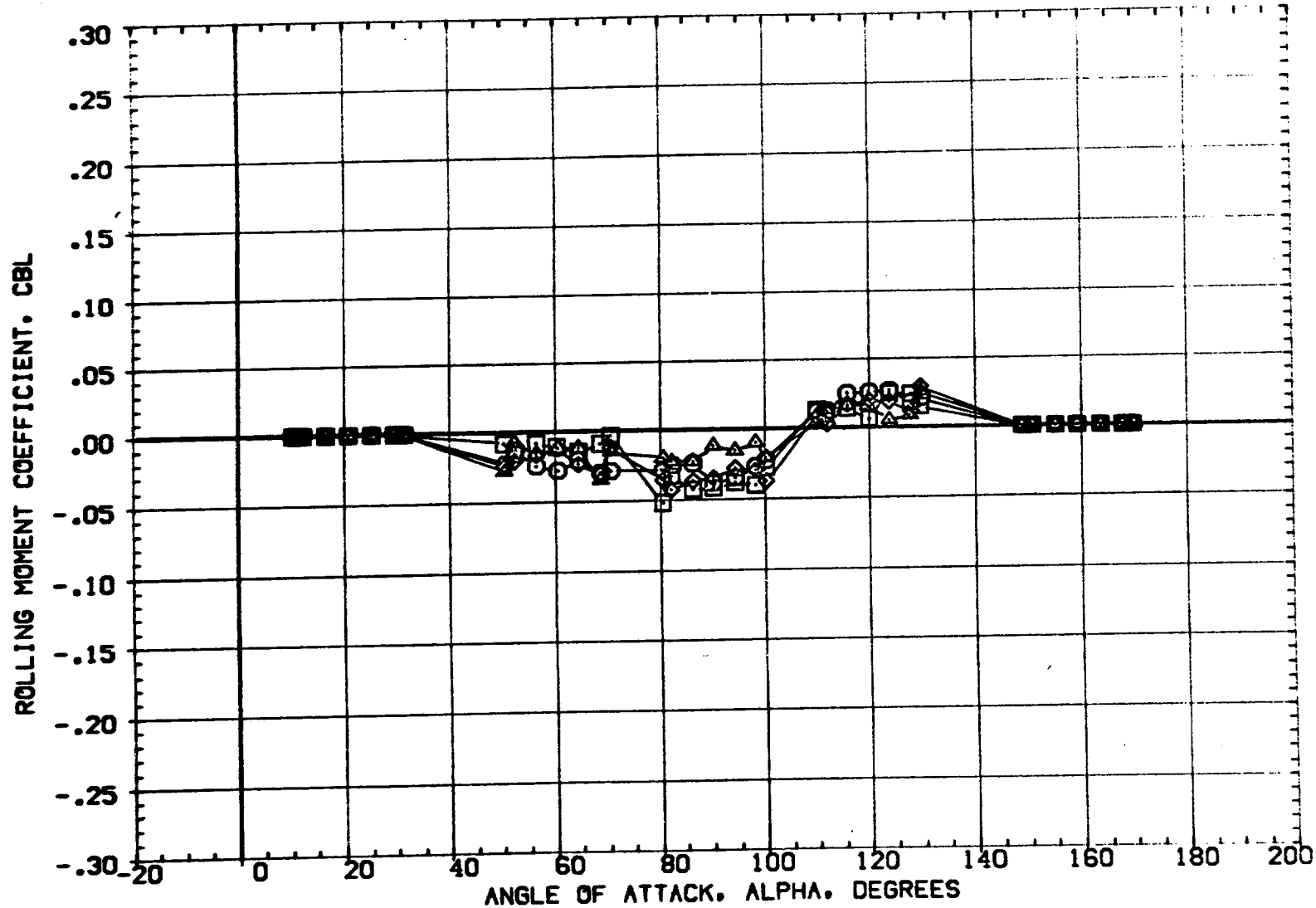


EFFECT OF STRAKES ON AERODYNAMIC CHARACTERISTICS

(C)MACH = 1.20

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
(C91100)	○	MSFC 578(SA10F) 142-IN SRB (139) NBEI	.000	.100	1.000	.000
(B91A00)	□	MSFC 578(SA10F) 142-IN SRB (139) NBEIS	.000	.100	6.000	8.000
(B91B00)	◇	MSFC 578(SA10F) 142-IN SRB (139) NBEIS	11.250	.100	6.000	8.000
(B91C00)	△	MSFC 578(SA10F) 142-IN SRB (139) NBEIS	22.500	.100	6.000	8.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

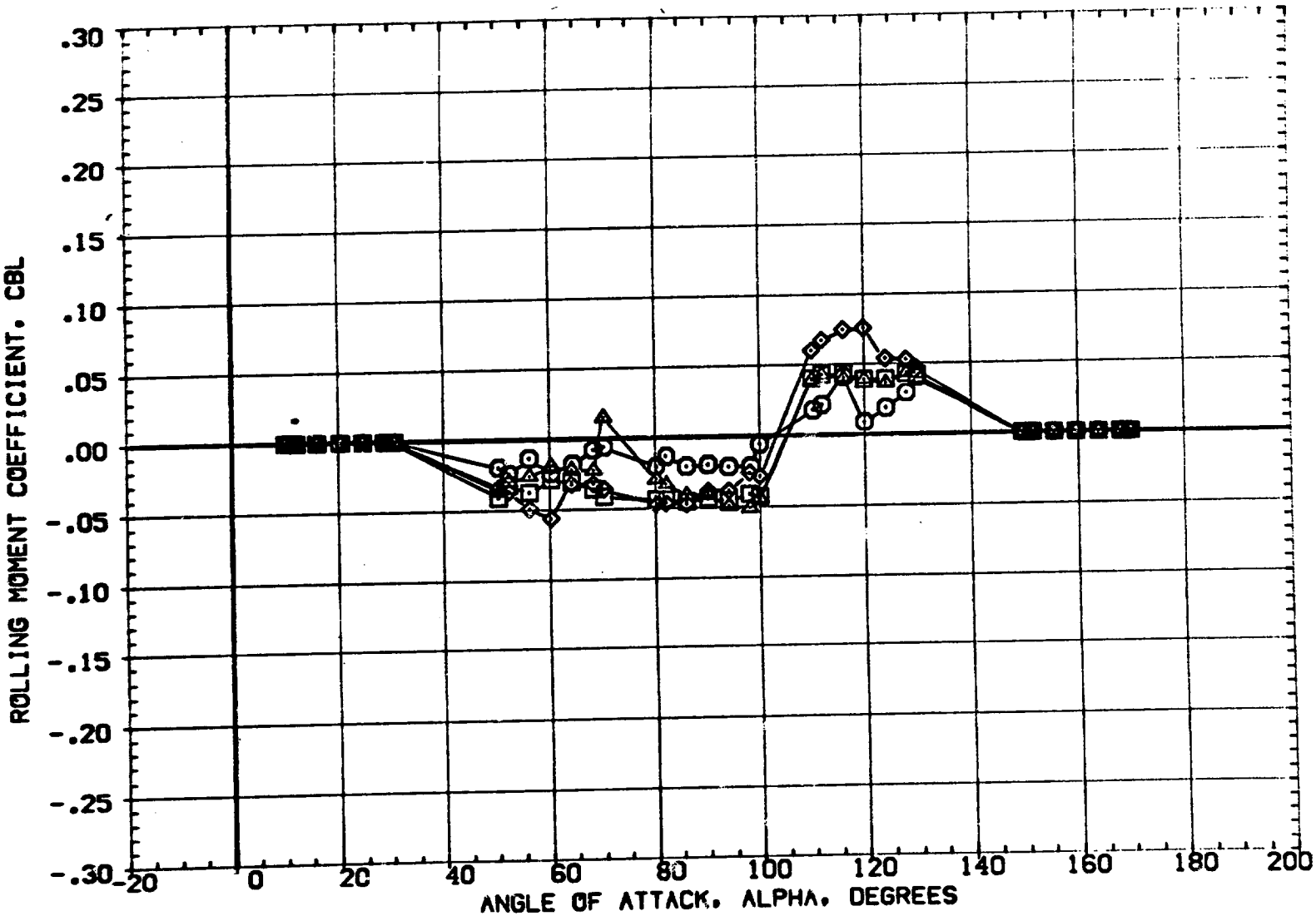


EFFECT OF STRAKES ON AERODYNAMIC CHARACTERISTICS

(D)MACH = 1.96

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
(C91100)	○	MSFC 578(SA10F) 142-IN SRB (139) NBE1	.000	.100	1.000	.000
(B91A00)	□	MSFC 578(SA10F) 142-IN SRB (139) NBE1S	.000	.100	6.000	8.000
(B91B00)	⊠	MSFC 578(SA10F) 142-IN SRB (139) NBE1S	11.250	.100	6.000	8.000
(B91C00)	⊠	MSFC 578(SA10F) 142-IN SRB (139) NBE1S	22.500	.100	6.000	8.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

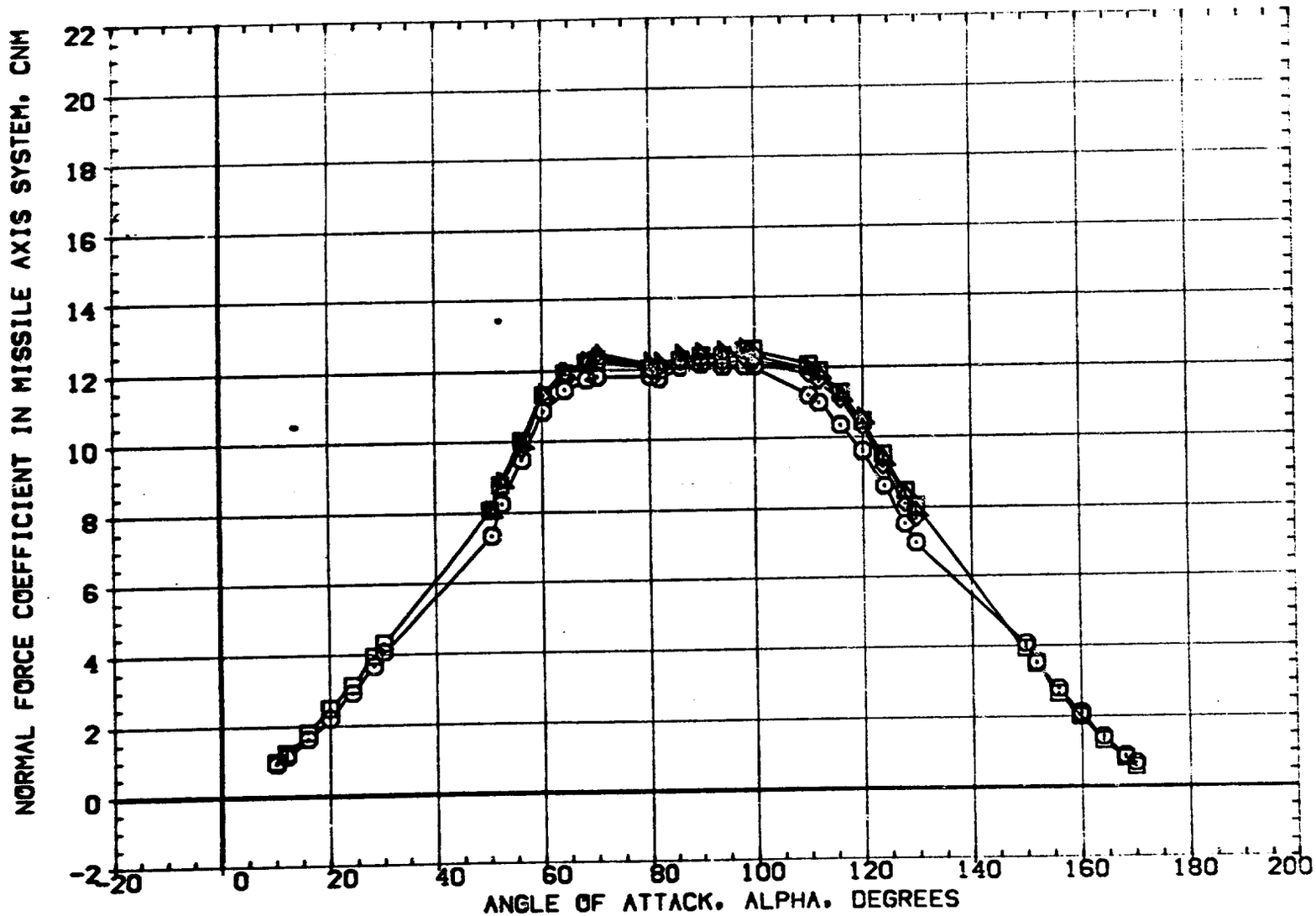


EFFECT OF STRAKES ON AERODYNAMIC CHARACTERISTICS

(E)MACH = 3.48

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
[C91100]	○	MSFC 578[SA1CF] 142-IN SRB [139] NBE1	.000	.100	1.000	.000
[C91A00]	□	MSFC 578[SA1CF] 142-IN SRB [139] NBE1S	.000	.100	6.000	8.000
[B91D00]	◇	MSFC 578[SA1CF] 142-IN SRB [139] NBE1 TVC S	.000	.100	7.000	.000
[B91E00]	△	MSFC 578[SA1CF] 142-IN SRB [139] NBE1 TVC S	45.000	.100	7.000	.000
[B91F00]	◁	MSFC 578[SA1CF] 142-IN SRB [139] NBE1 TVC S	90.000	.100	7.000	.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

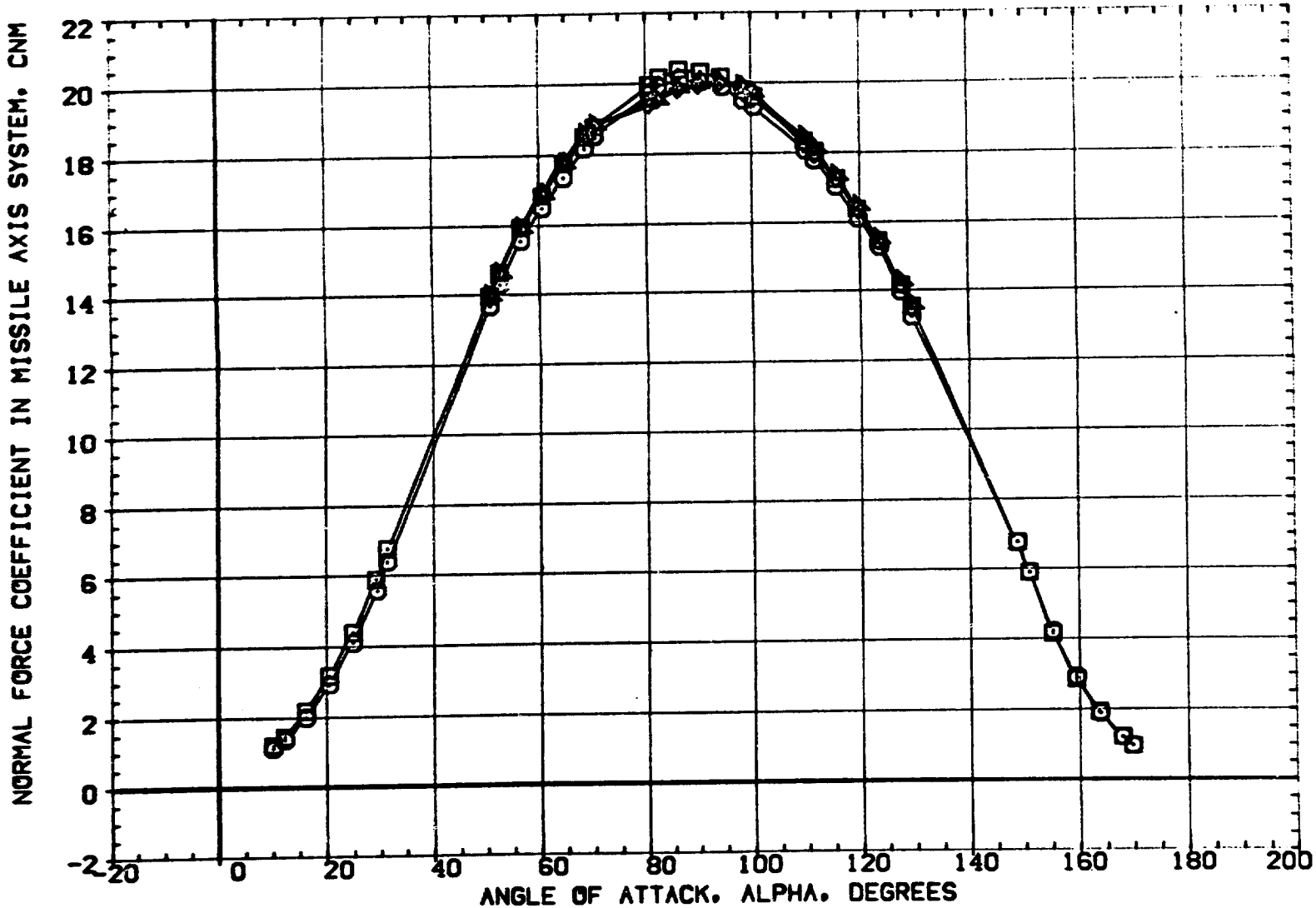


EFFECT OF TVC ON AERODYNAMIC CHARACTERISTICS

(A)MACH = .59

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
(B)1100	MSFC 578(SA1OF) 142-IN SRB (139) NBE1	.000	.100	1.000	.000
(B)1400	MSFC 578(SA1OF) 142-IN SRB (139) NBE1S	.000	.100	6.000	0.000
(B)1000	MSFC 578(SA1OF) 142-IN SRB (139) NBE1 TVC S	.000	.100	7.000	.000
(B)1E00	MSFC 578(SA1OF) 142-IN SRB (139) NBE1 TVC S	45.000	.100	7.000	.000
(B)1F00	MSFC 578(SA1OF) 142-IN SRB (139) NBE1 TVC S	90.000	.100	7.000	.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

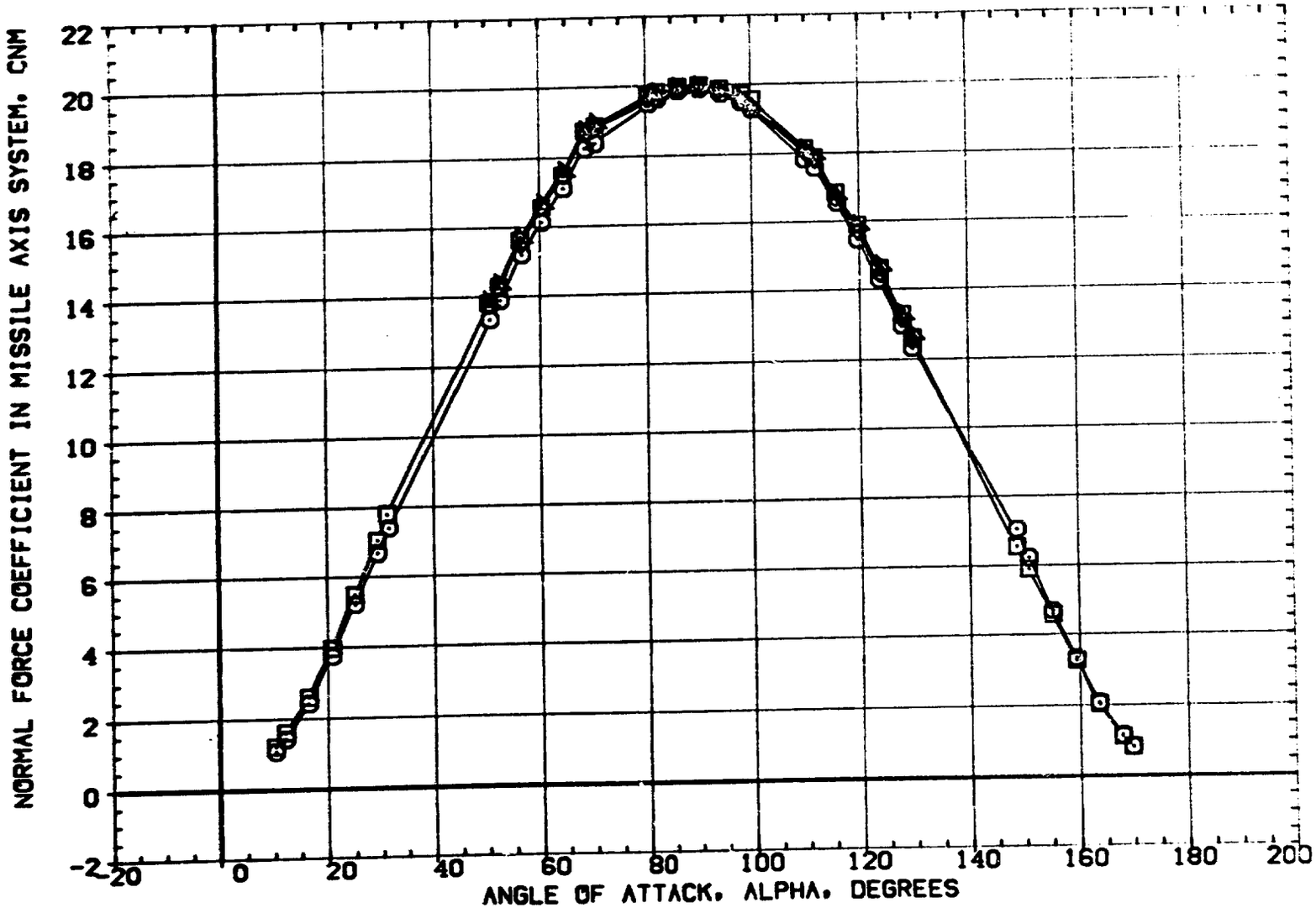


EFFECT OF TVC ON AERODYNAMIC CHARACTERISTICS

(B)MACH = 1.20

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
(C)1100)	□	MSFC 578(SA10F) 142-IN SRB (139) NBE)	.000	.100	1.000	.000
(C)1A00)	◇	MSFC 578(SA10F) 142-IN SRB (139) NBE)S	.000	.100	6.000	0.000
(B)1D00)	⊠	MSFC 578(SA10F) 142-IN SRB (139) NBE) TVC S	.000	.100	7.000	.000
(B)1E00)	⊿	MSFC 578(SA10F) 142-IN SRB (139) NBE) TVC S	45.000	.100	7.000	.000
(B)1F00)		MSFC 578(SA10F) 142-IN SRB (139) NBE) TVC S	90.000	.100	7.000	.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

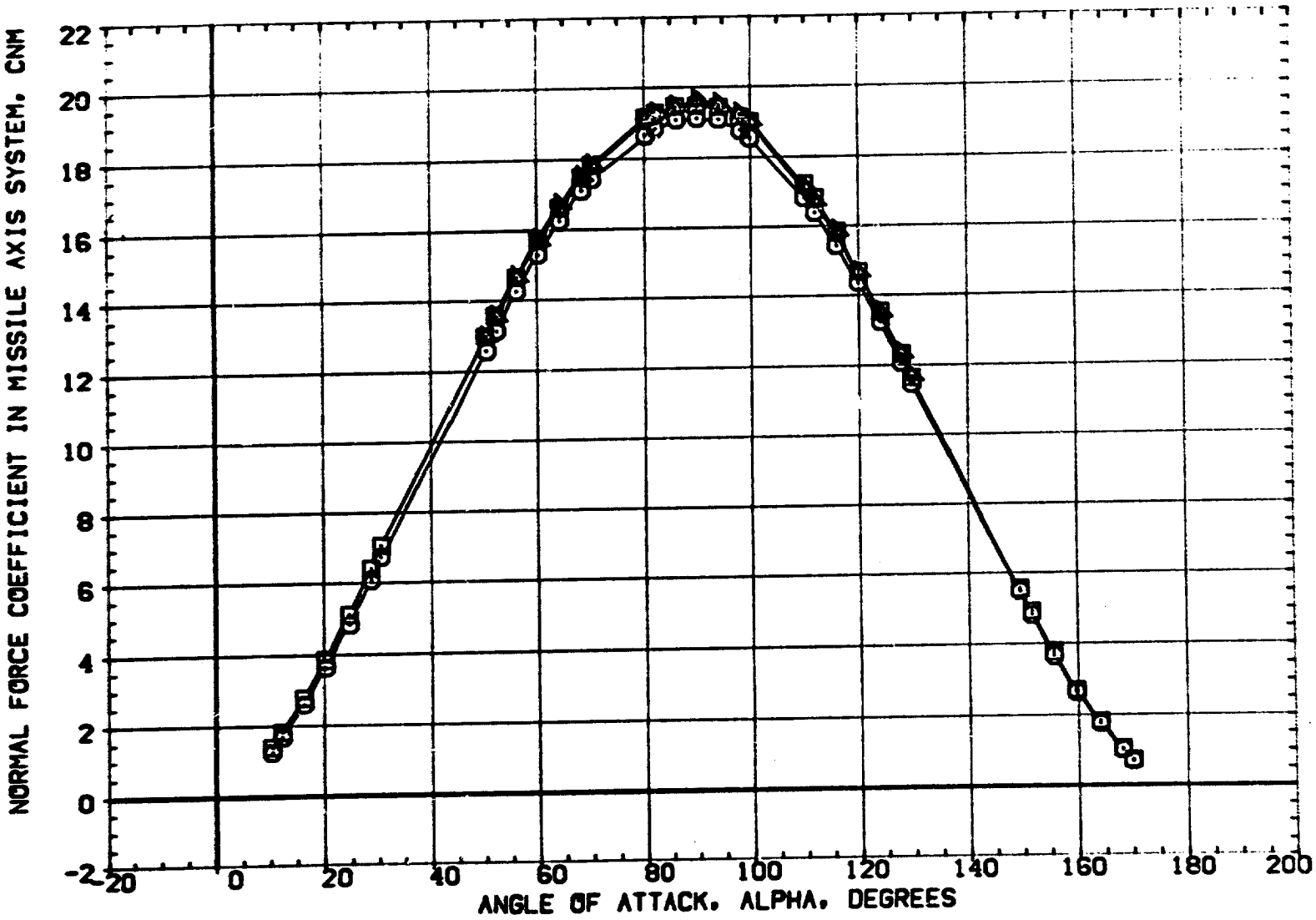


EFFECT OF TVC ON AERODYNAMIC CHARACTERISTICS

(C)MACH = 1.96

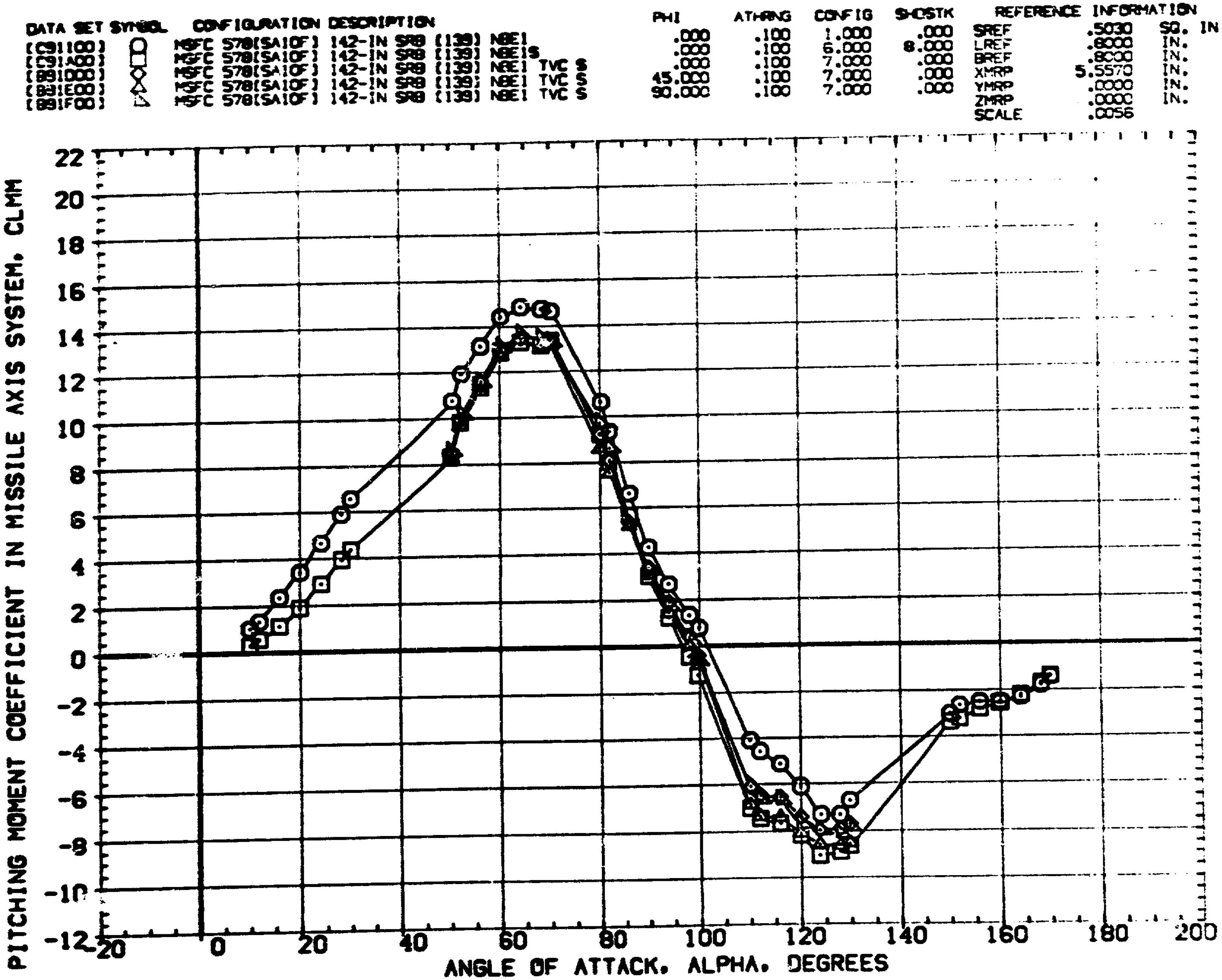
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
(C91100)	□	MSFC 578(SA10F) 142-IN SRB (139) NBE1	.000	.100	1.000	.000
(C91A00)	□	MSFC 578(SA10F) 142-IN SRB (139) NBE1S	.000	.100	6.000	8.000
(B91D00)	⋈	MSFC 578(SA10F) 142-IN SRB (139) NBE1 TVC S	.000	.100	7.000	.000
(B91E00)	⋈	MSFC 578(SA10F) 142-IN SRB (139) NBE1 TVC S	45.000	.100	7.000	.000
(B91F00)	△	MSFC 578(SA10F) 142-IN SRB (139) NBE1 TVC S	90.000	.100	7.000	.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	



EFFECT OF TVC ON AERODYNAMIC CHARACTERISTICS

(D)MACH = 3.48



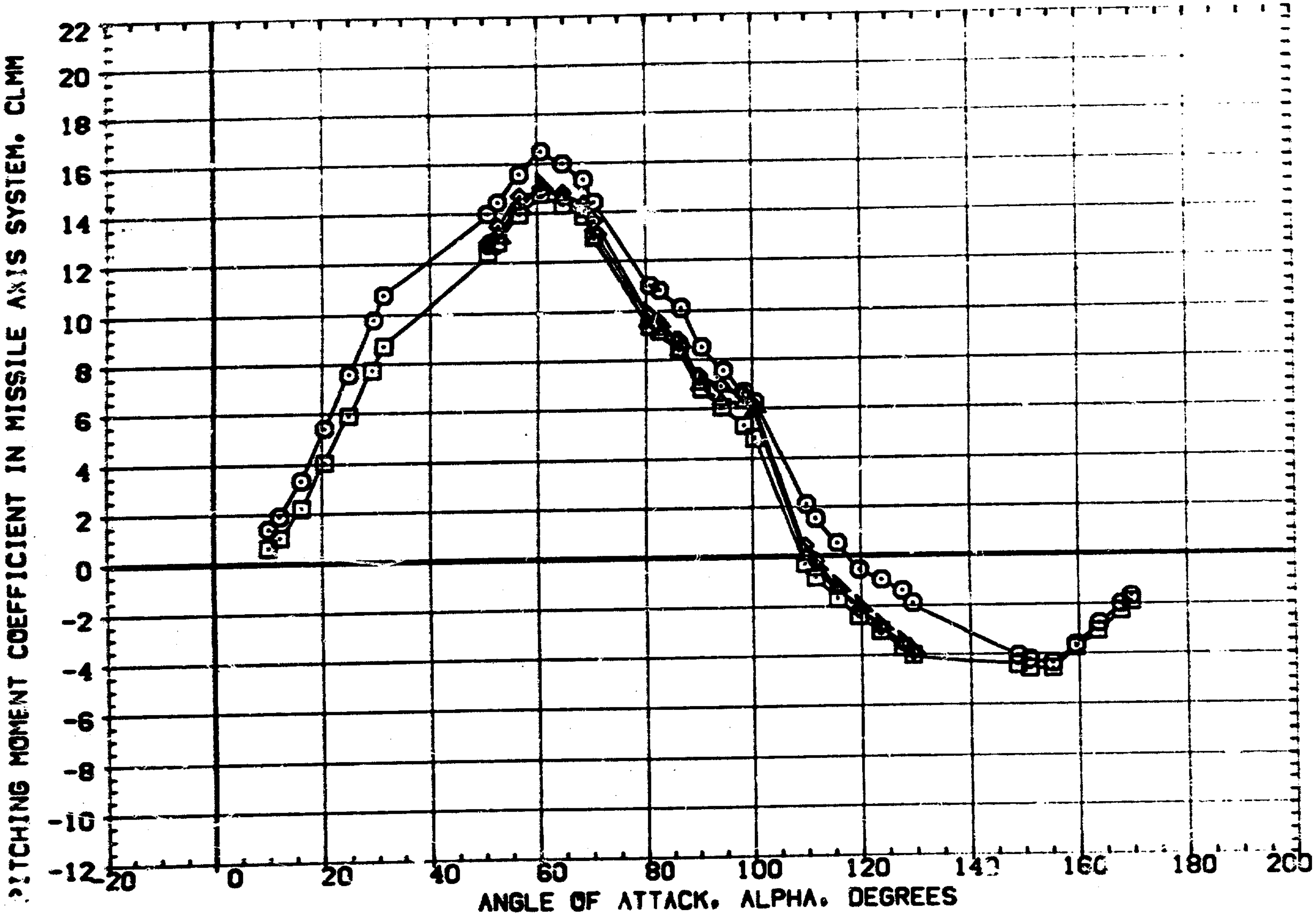
DATA SET SYMBOL CONFIGURATION DESCRIPTION
(C91100) MSFC 578(SA10F) 142-IN SRB (139) NBE1
(C91A00) MSFC 578(SA10F) 142-IN SRB (139) NBE1S
(B91D00) MSFC 578(SA10F) 142-IN SRB (139) NBE1 TVC S
(B91E00) MSFC 578(SA10F) 142-IN SRB (139) NBE1 TVC S
(B91F00) MSFC 578(SA10F) 142-IN SRB (139) NBE1 TVC S
PHI .000 .000 .000 45.000 90.000
ATHRNG .100 .100 .100 .100 .100
CONFIG 1.000 6.000 7.000 7.000 7.000
SHOSTK .000 8.000 .000 .000 .000
REFERENCE INFORMATION
SREF .5030 SQ. IN
LREF .8000 IN.
BREF .8000 IN.
XMRP 5.5570 IN.
YMRP .0000 IN.
ZMRP .0000 IN.
SCALE .0056
PITCHING MOMENT COEFFICIENT IN MISSILE AXIS SYSTEM, CLMM
ANGLE OF ATTACK, ALPHA, DEGREES

EFFECT OF TVC ON AERODYNAMIC CHARACTERISTICS

(A)MACH = .59

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
[C91100]	○	MSFC 578[SA1OF] 142-IN SRB (139) NBE1	.000	.100	1.000	.000
[C91A00]	□	MSFC 578[SA1OF] 142-IN SRB (139) NBE1S	.000	.100	6.000	8.000
[B91D00]	◇	MSFC 578[SA1OF] 142-IN SRB (139) NBE1 TVC S	.000	.100	7.000	.000
[B91E00]	✕	MSFC 578[SA1OF] 142-IN SRB (139) NBE1 TVC S	45.000	.100	7.000	.000
[B91F00]	△	MSFC 578[SA1OF] 142-IN SRB (139) NBE1 TVC S	90.000	.100	7.000	.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

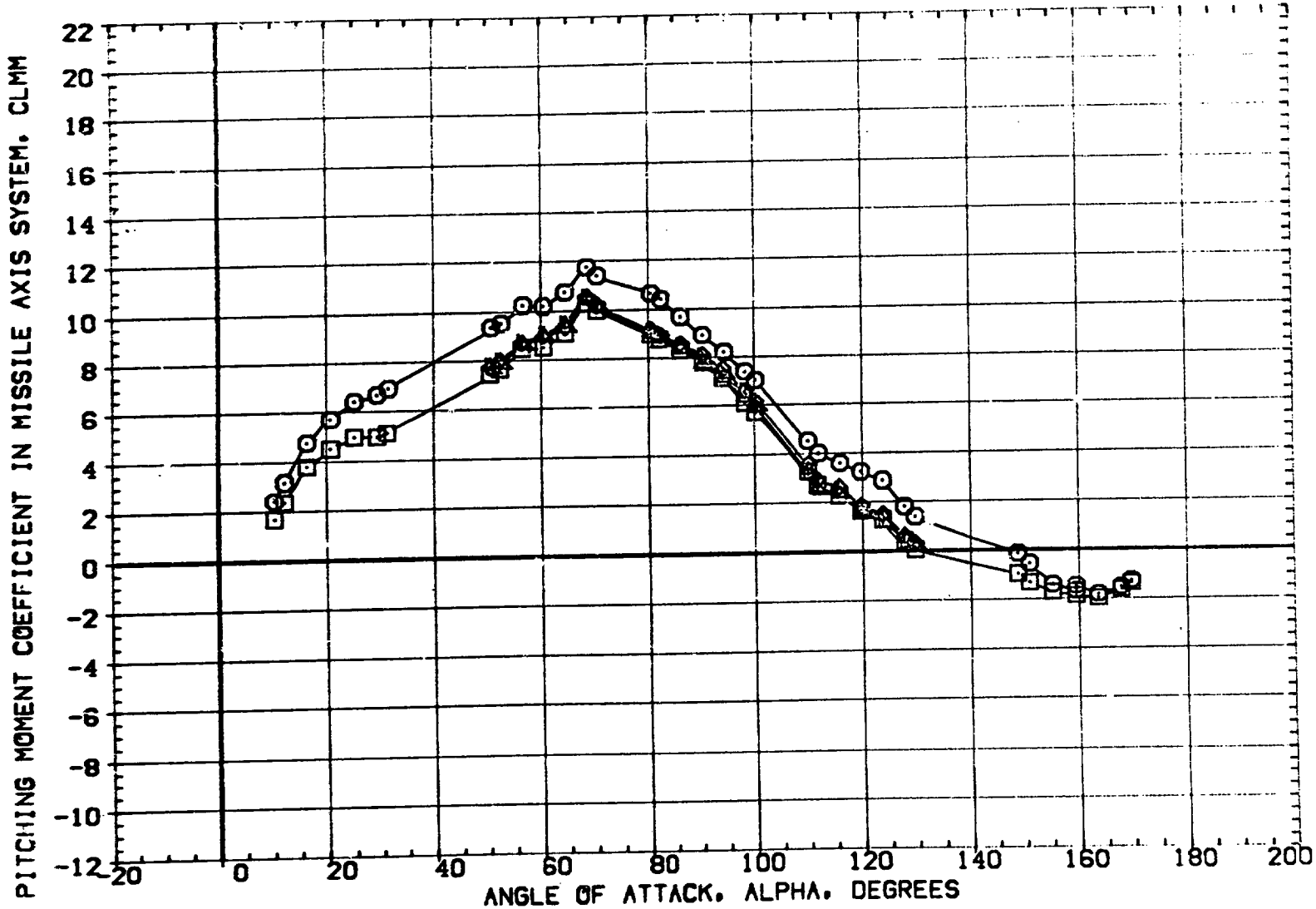


EFFECT OF TVC ON AERODYNAMIC CHARACTERISTICS

(B)MACH = 1.20

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
(B91J00)	□	MSFC 578(SA1OF) 142-IN SRB (139) NBEI	.000	.100	1.000	.000
(B91A00)	▣	MSFC 578(SA1OF) 142-IN SRB (139) NBEIS	.000	.100	6.000	8.000
(B91L00)	◇	MSFC 578(SA1OF) 142-IN SRB (139) NBEI TVC S	.000	.100	7.000	.000
(B91E00)	⧖	MSFC 578(SA1OF) 142-IN SRB (139) NBEI TVC S	45.000	.100	7.000	.000
(B91F00)	△	MSFC 578(SA1OF) 142-IN SRB (139) NBEI TVC S	90.000	.100	7.000	.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	
SCALE	.0056	

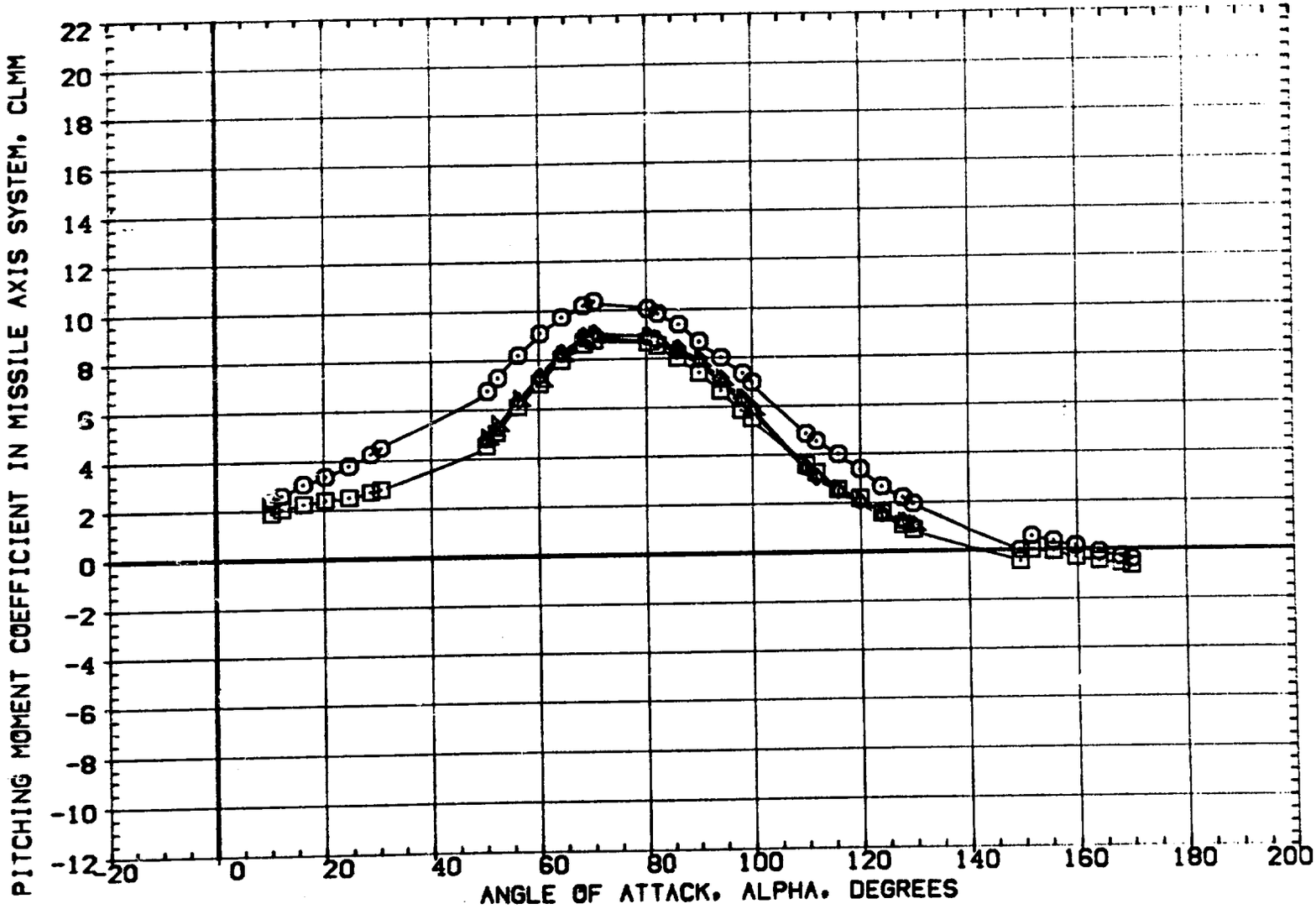


EFFECT OF TVC ON AERODYNAMIC CHARACTERISTICS

(C)MACH = 1.96

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNS	CONFIG	SHOSTK
[C9]100]	MSFC 578[SA10F] 142-IN SRB [139] NBE1	.000	.100	1.000	.000
[C9]A00]	MSFC 578[SA10F] 142-IN SRB [139] NBE1S	.000	.100	6.000	8.000
[B8]D00]	MSFC 578[SA10F] 142-IN SRB [139] NBE1 TVC S	.000	.100	7.000	.000
[B8]E00]	MSFC 578[SA10F] 142-IN SRB [139] NBE1 TVC S	45.000	.100	7.000	.000
[B8]F00]	MSFC 578[SA10F] 142-IN SRB [139] NBE1 TVC S	90.000	.100	7.000	.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

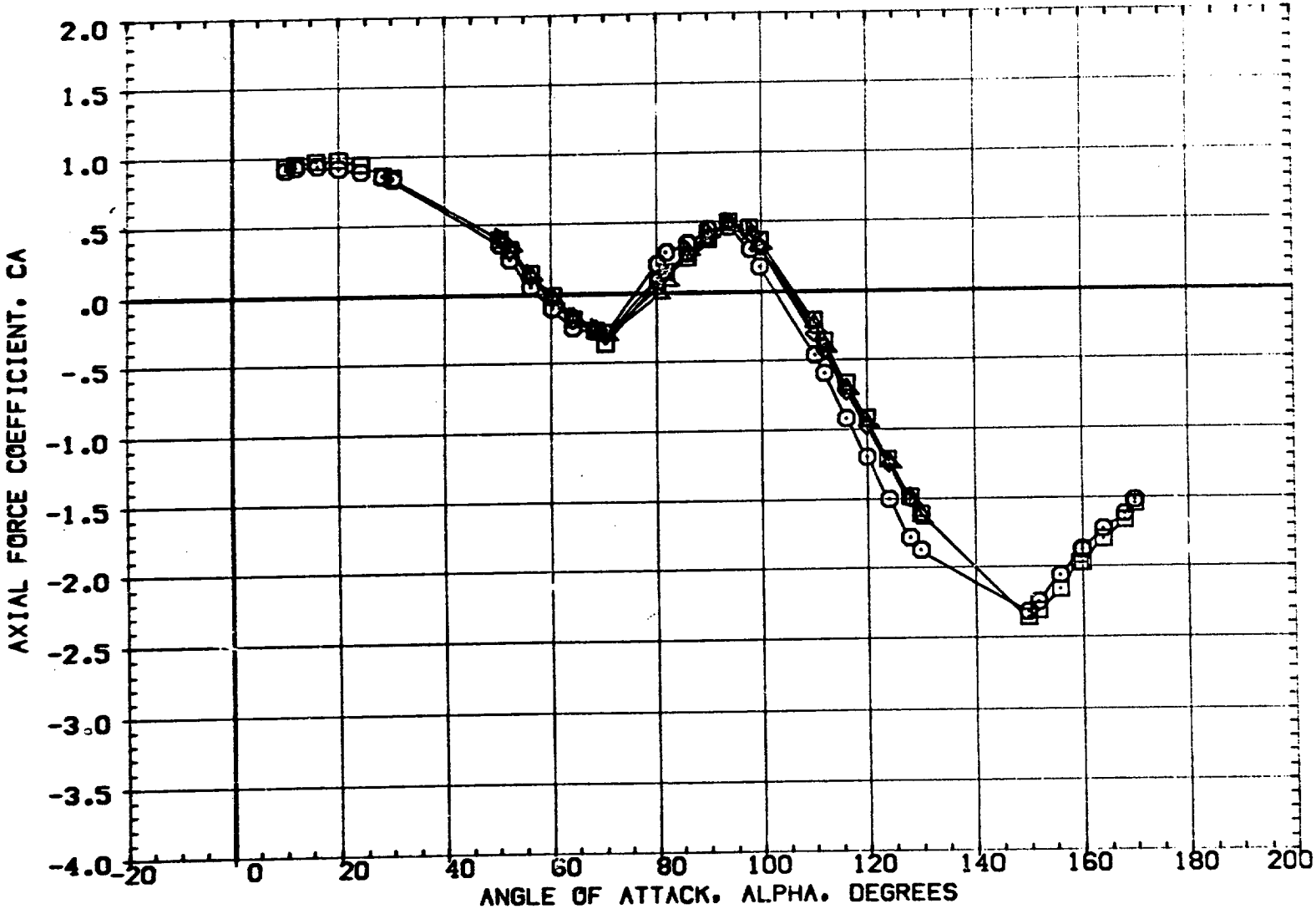


EFFECT OF TVC ON AERODYNAMIC CHARACTERISTICS

[D]MACH = 3.48

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHDSTK
(C91100)	○	MSFC 578(SA10F) 142-IN SRB (139) NBE)	.000	.100	1.000	.000
(C91A00)	□	MSFC 578(SA10F) 142-IN SRB (139) NBE)	.000	.100	6.000	8.000
(B91D00)	◇	MSFC 578(SA10F) 142-IN SRB (139) NBE, TVC S	.000	.100	7.000	.000
(B91E00)	△	MSFC 578(SA10F) 142-IN SRB (139) NBE, TVC S	45.000	.100	7.000	.000
(B91F00)	◺	MSFC 578(SA10F) 142-IN SRB (139) NBE) TVC S	90.000	.100	7.000	.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

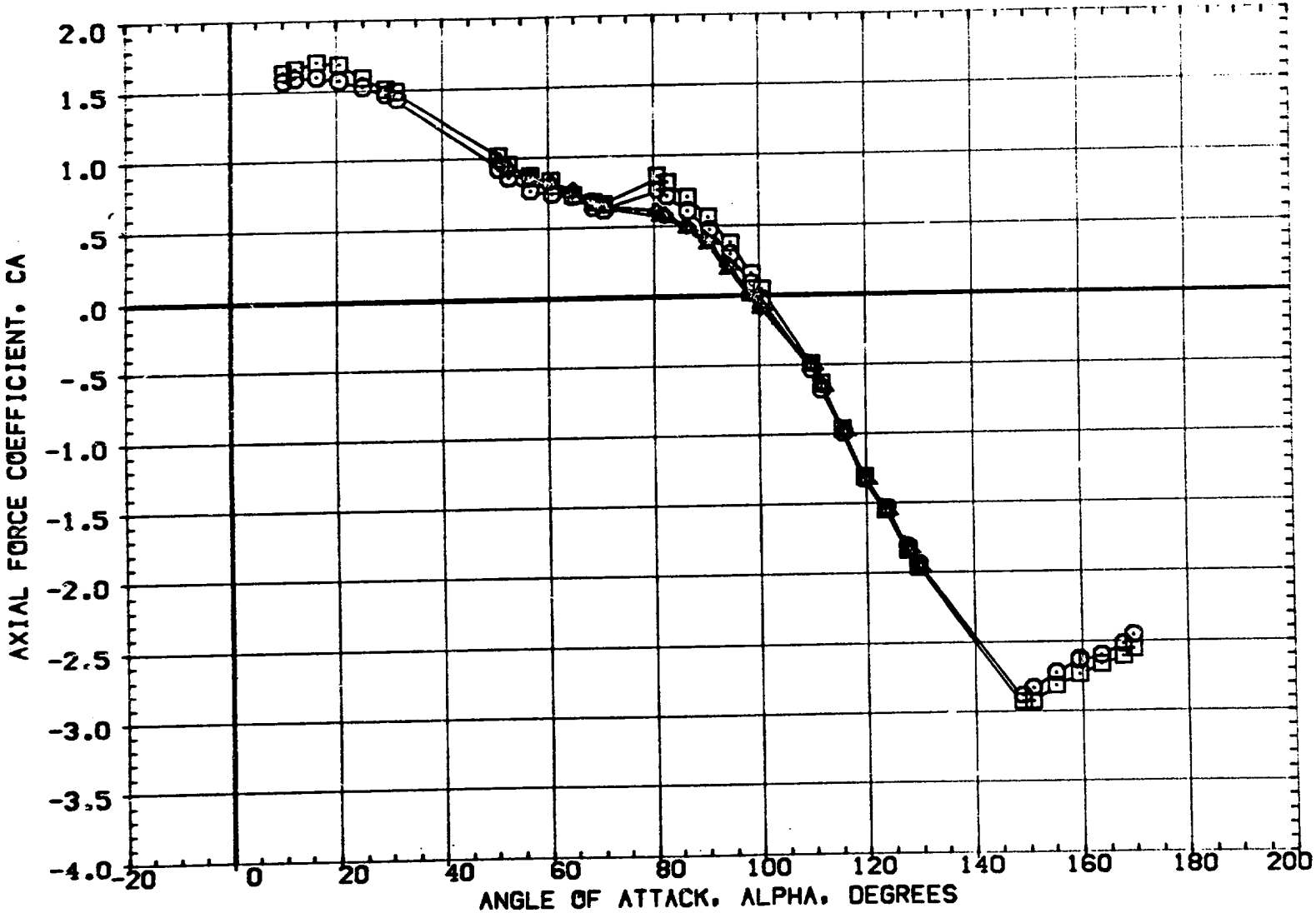


EFFECT OF TVC ON AERODYNAMIC CHARACTERISTICS

(A)MACH = .59

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
(C91100)	MSFC 578(SA1OF) 142-IN SRB (139) NBEI	.000	.100	1.000	.000
(C91A00)	MSFC 578(SA1OF) 142-IN SRB (139) NBEIS	.000	.100	6.000	8.000
(891D00)	MSFC 578(SA1OF) 142-IN SRB (139) NBEI TVC S	.000	.100	7.000	.000
(891E00)	MSFC 578(SA1OF) 142-IN SRB (139) NBEI TVC S	45.000	.100	7.000	.000
(891F00)	MSFC 578(SA1OF) 142-IN SRB (139) NBEI TVC S	90.000	.100	7.000	.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

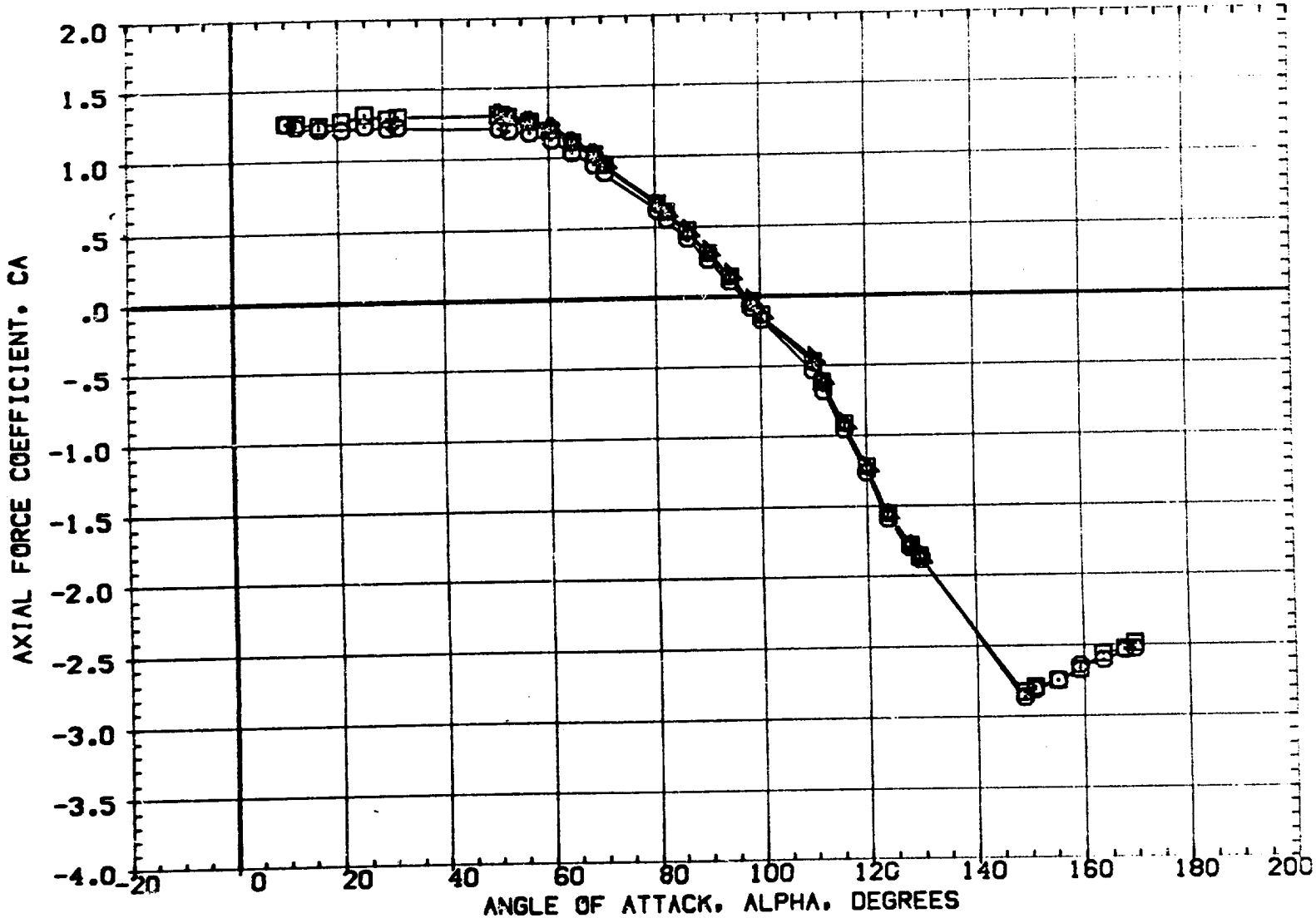


EFFECT OF TVC ON AERODYNAMIC CHARACTERISTICS

(B)MACH = 1.20

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
(C91100)	○	MSFC 578(SA1OF) 142-IN SRB (139) NBEI	.000	.100	1.000	.000
(C91A00)	□	MSFC 578(SA1OF) 142-IN SRB (139) NBEIS	.000	.100	6.000	8.000
(B91D00)	◇	MSFC 578(SA1OF) 142-IN SRB (139) NBEI TVC S	.000	.100	7.000	.000
(B91E00)	△	MSFC 578(SA1OF) 142-IN SRB (139) NBEI TVC S	45.000	.100	7.000	.000
(B91F00)	▷	MSFC 578(SA1OF) 142-IN SRB (139) NBEI TVC S	90.000	.100	7.000	.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	



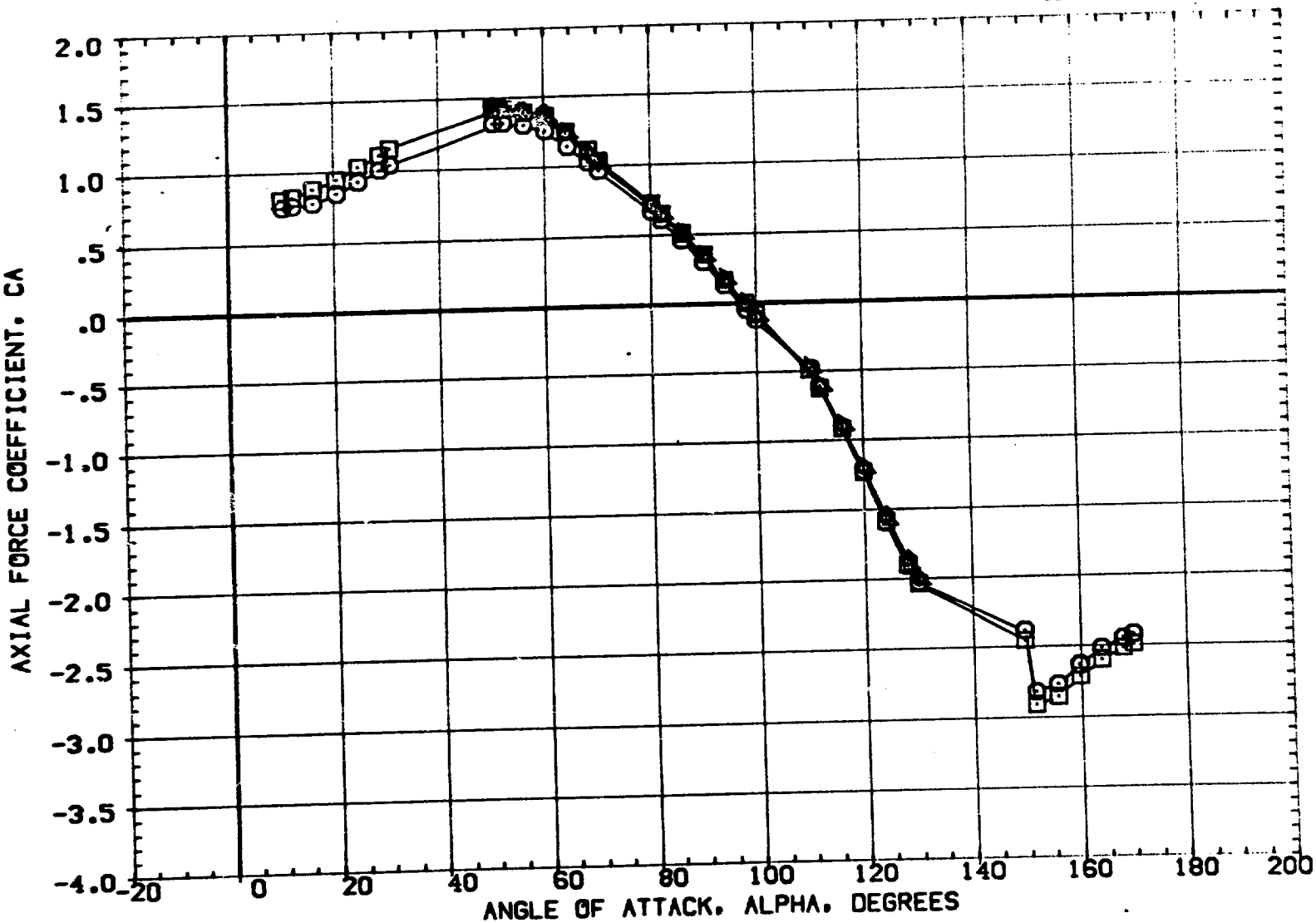
EFFECT OF TVC ON AERODYNAMIC CHARACTERISTICS

(C)MACH = 1.96

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
(C91100)	□	MSFC 578(SA10F) 142-IN SRB (139) NBE1	.000	.100	1.000	.000
(C91A00)	○	MSFC 578(SA10F) 142-IN SRB (139) NBE1S	.000	.100	6.000	8.000
(B81D00)	◇	MSFC 578(SA10F) 142-IN SRB (139) NBE1 TVC S	.000	.100	7.000	.000
(B81E00)	⋈	MSFC 578(SA10F) 142-IN SRB (139) NBE1 TVC S	45.000	.100	7.000	.000
(B81F00)	△	MSFC 578(SA10F) 142-IN SRB (139) NBE1 TVC S	90.000	.100	7.000	.000

REFERENCE INFORMATION

SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

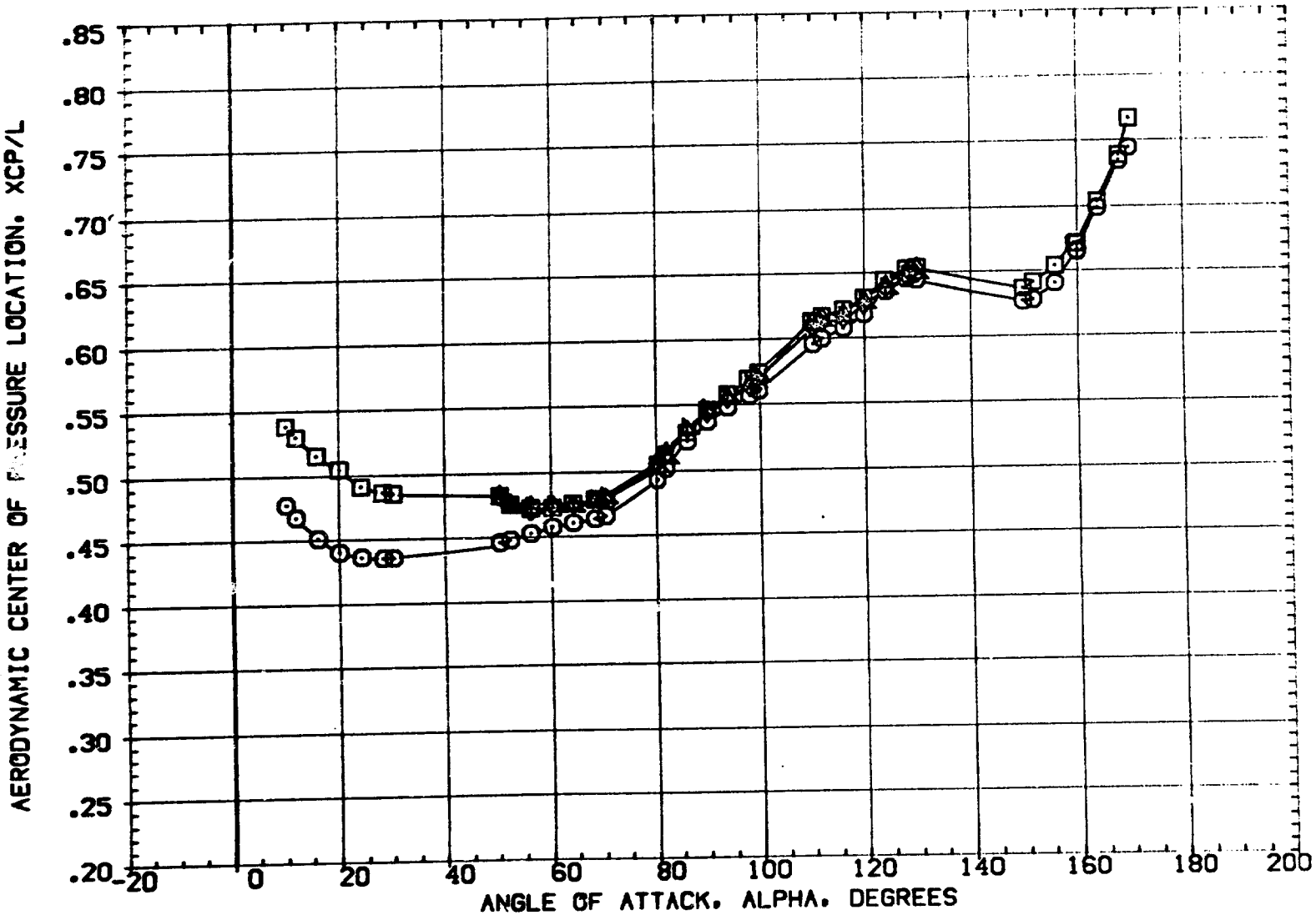


EFFECT OF TVC ON AERODYNAMIC CHARACTERISTICS

(D)MACH = 3.48

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
[C91100]	○	MSFC 578[SA10F] 142-IN SRB [139] NBE1	.000	.100	1.000	.000
[C91A00]	□	MSFC 578[SA10F] 142-IN SRB [139] NBE1S	.000	.100	6.000	8.000
[B91D00]	◇	MSFC 578[SA10F] 142-IN SRB [139] NBE1 TVC S	.000	.100	7.000	.000
[B91E00]	⋈	MSFC 578[SA10F] 142-IN SRB [139] NBE1 TVC S	45.000	.100	7.000	.000
[B91F00]	▷	MSFC 578[SA10F] 142-IN SRB [139] NBE1 TVC S	90.000	.100	7.000	.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

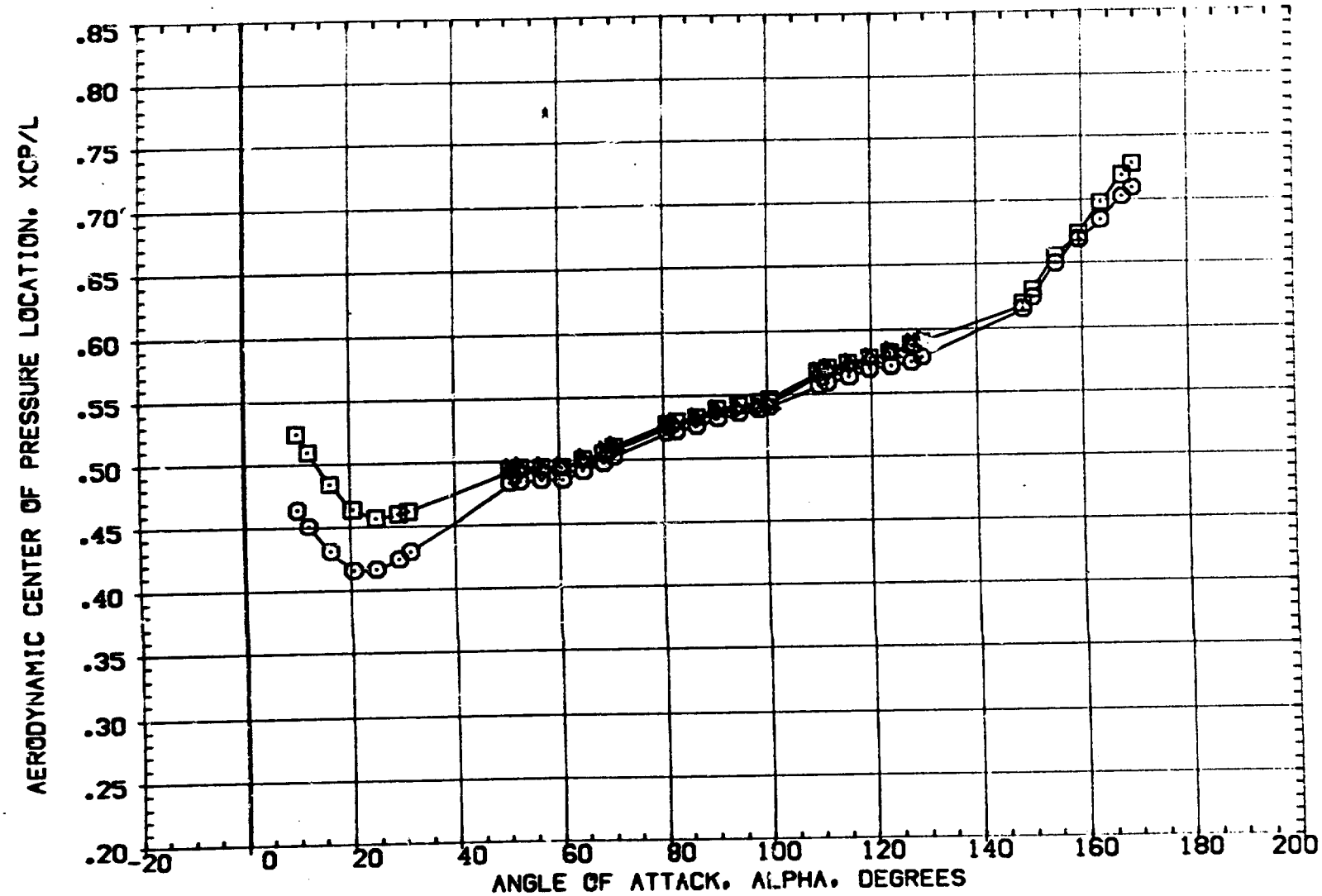


EFFECT OF TVC ON AERODYNAMIC CHARACTERISTICS

(A)MACH = .59

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
[891100]	○	MSFC 578[SA10F] 142-IN SRB [139] NBE1	.000	.100	1.000	.000
[891A00]	□	MSFC 578[SA10F] 142-IN SRB [139] NBE1S	.000	.100	6.000	0.000
[891D00]	◇	MSFC 578[SA10F] 142-IN SRB [139] NBE1 TVC S	.000	.100	7.000	.000
[891E00]	△	MSFC 578[SA10F] 142-IN SRB [139] NBE1 TVC S	45.000	.100	7.000	.000
[891F00]	▽	MSFC 578[SA10F] 142-IN SRB [139] NBE1 TVC S	90.000	.100	7.000	.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

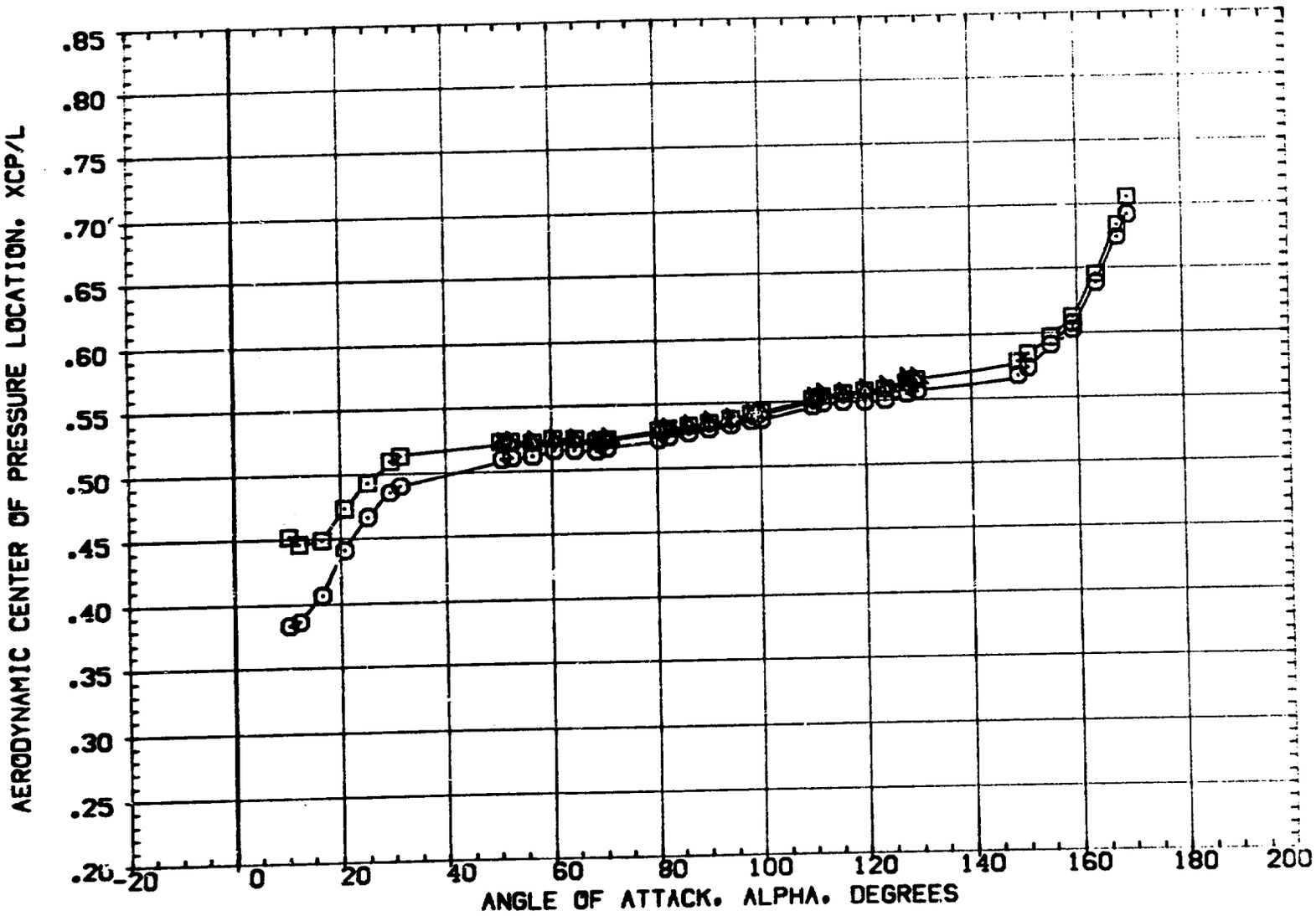


EFFECT OF TVC ON AERODYNAMIC CHARACTERISTICS

(B)MACH = 1.20

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHPNG	CONFIG	SHOSTK
[C91100]	□	MSFC 578[SA1OF] 142-IN SRB [139] NBE1	.000	.100	1.000	.000
[C91A00]	□	MSFC 578[SA1OF] 142-IN SRB [139] NBE1S	.000	.100	6.000	0.000
[B91D00]	◇	MSFC 578[SA1OF] 142-IN SRB [139] NBE1 TVC S	.000	.100	7.000	.000
[B91E00]	△	MSFC 578[SA1OF] 142-IN SRB [139] NBE1 TVC S	45.000	.100	7.000	.000
[B91F00]	▷	MSFC 578[SA1OF] 142-IN SRB [139] NBE1 TVC S	90.000	.100	7.000	.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

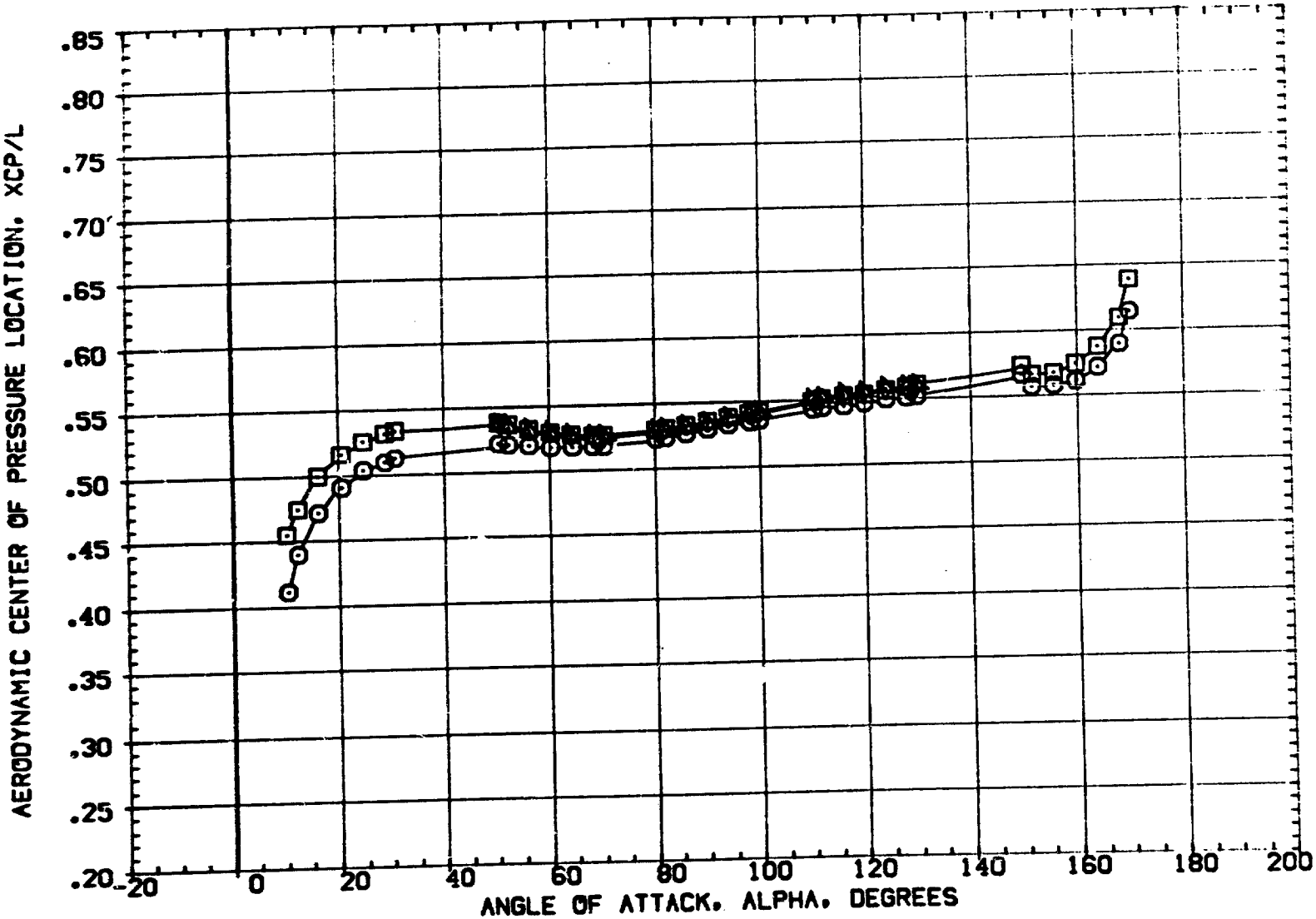


EFFECT OF TVC ON AERODYNAMIC CHARACTERISTICS

[C]MACH = 1.96

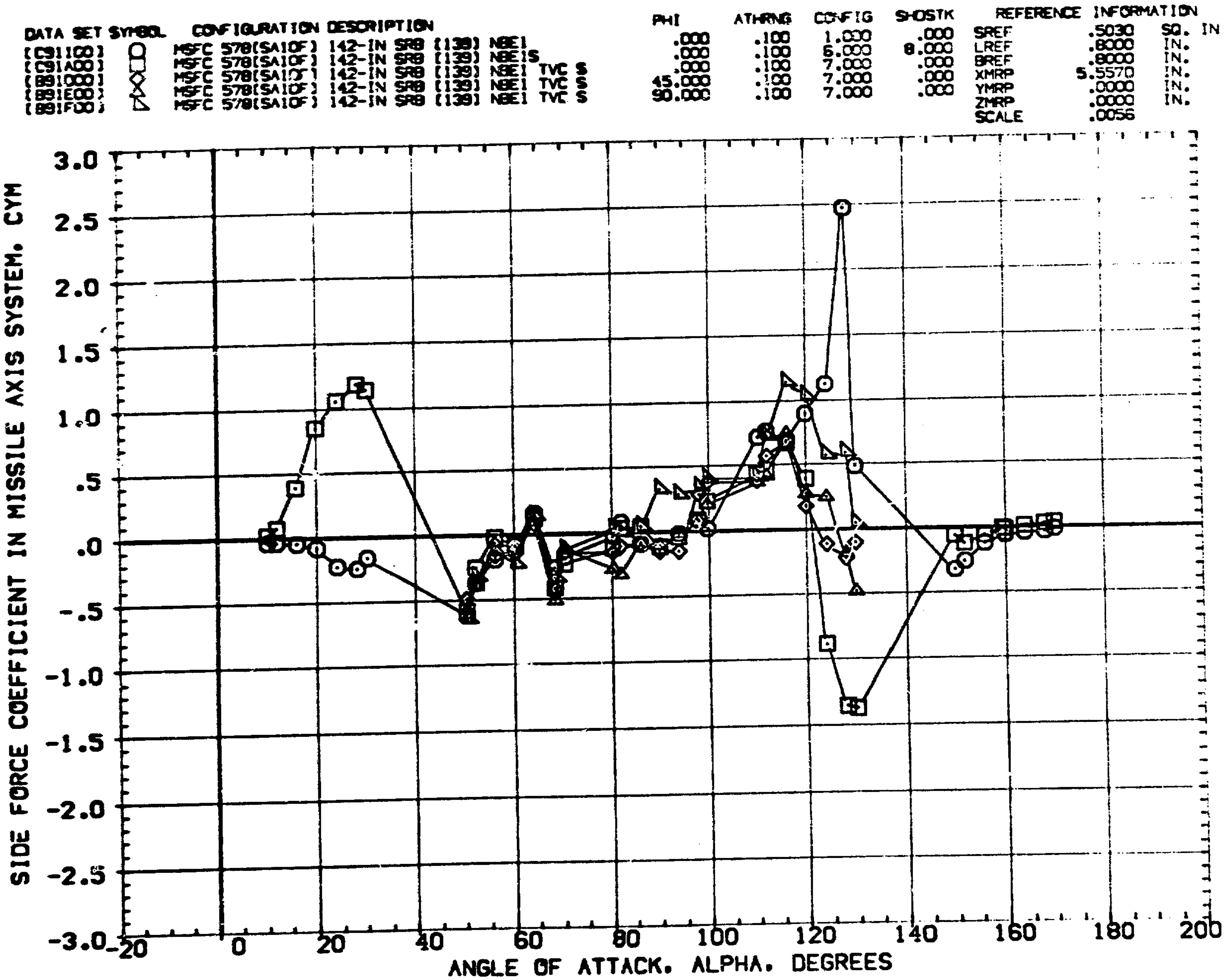
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
[C]100]	□	MSFC 578[SA1OF] 142-IN SRB [139] NBE]	.000	.100	1.000	.000
[C]1A00]	□	MSFC 578[SA1OF] 142-IN SRB [139] NBE]S	.000	.100	6.000	0.000
[B]1D00]	⊠	MSFC 578[SA1OF] 142-IN SRB [139] NBE] TVC S	.000	.100	7.000	.000
[B]1E00]	▷	MSFC 578[SA1OF] 142-IN SRB [139] NBE] TVC S	45.000	.100	7.000	.000
[B]1F00]	△	MSFC 578[SA1OF] 142-IN SRB [139] NBE] TVC S	90.000	.100	7.000	.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	



EFFECT OF TVC ON AERODYNAMIC CHARACTERISTICS

(D)MACH = 3.48

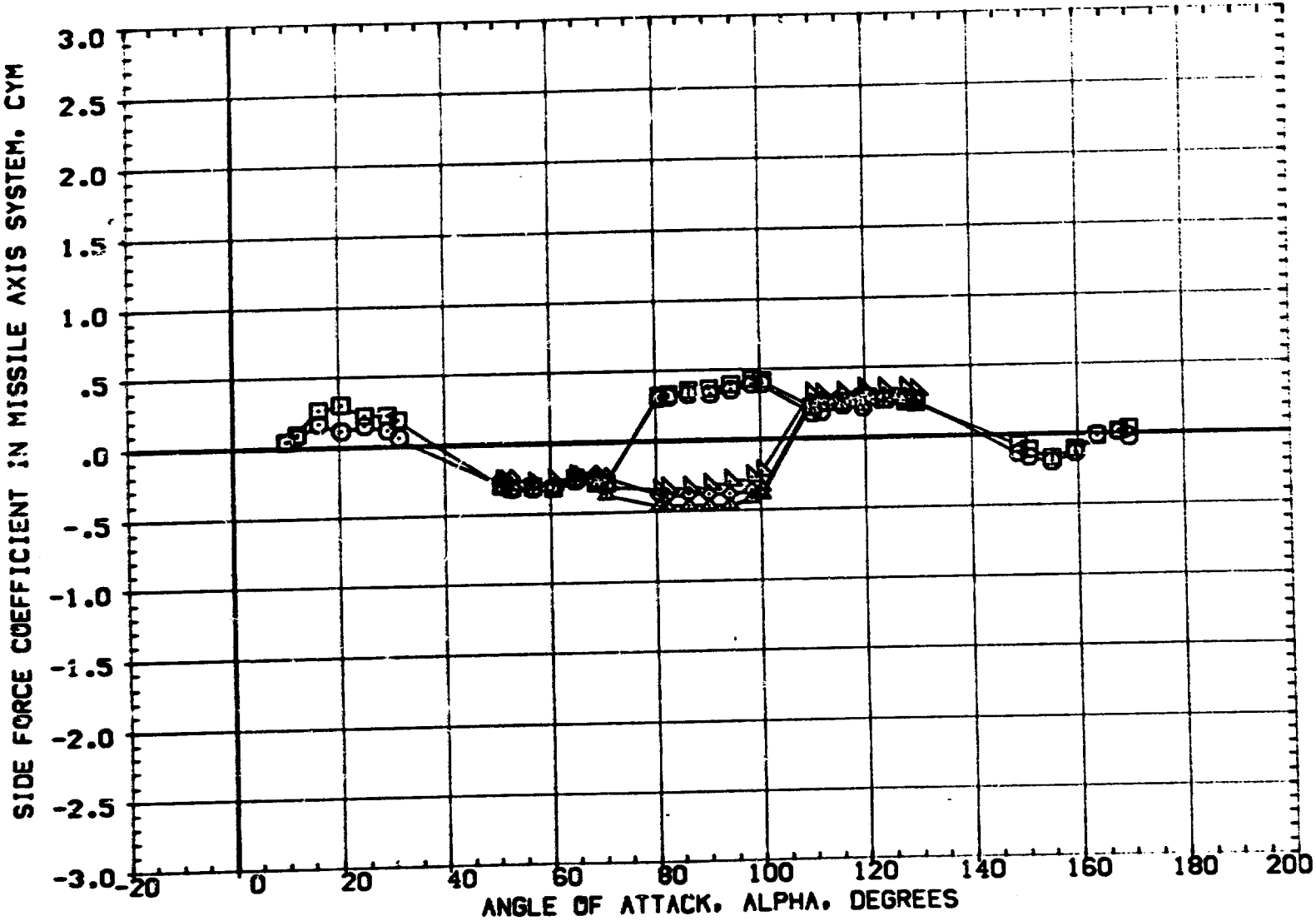

DATA SET SYMBOL CONFIGURATION DESCRIPTION PHI ATHRNG CONFIG SHOSTK
[C91IC0] ○ MSFC 578(SA1OF) 142-IN SRB (139) NBE1 .000 .100 1.000 .000
[C91AD0] □ MSFC 578(SA1OF) 142-IN SRB (139) NBE1S .000 .100 6.000 8.000
[B91DD0] ◇ MSFC 578(SA1OF) 142-IN SRB (139) NBE1 TVC S .000 .100 7.000 .000
[B91EE0] ✕ MSFC 578(SA1OF) 142-IN SRB (139) NBE1 TVC S 45.000 .100 7.000 .000
[B91FD0] △ MSFC 578(SA1OF) 142-IN SRB (139) NBE1 TVC S 90.000 .100 7.000 .000
REFERENCE INFORMATION
SREF .5030 SQ. IN
LREF .8000 IN.
BREF .8000 IN.
XMRP 5.5570 IN.
YMRP .0000 IN.
ZMRP .0000 IN.
SCALE .0056
SIDE FORCE COEFFICIENT IN MISSILE AXIS SYSTEM, CYM
3.0
2.5
2.0
1.5
1.0
.5
.0
-.5
-1.0
-1.5
-2.0
-2.5
-3.0
-20
0
20
40
60
80
100
120
140
160
180
200
ANGLE OF ATTACK, ALPHA, DEGREES

EFFECT OF TVC ON AERODYNAMIC CHARACTERISTICS

(A)MACH = .59

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	S-OSTK
[redacted]	□	MSFC 578(SA10F) 142-IN SRB (139) NBE1	.000	.100	1.000	.000
[redacted]	◇	MSFC 578(SA10F) 142-IN SRB (139) NBE1S	.000	.100	6.000	0.000
[redacted]	▽	MSFC 578(SA10F) 142-IN SRB (139) NBE1 TVC S	.000	.100	7.000	.000
[redacted]	◁	MSFC 578(SA10F) 142-IN SRB (139) NBE1 TVC S	45.000	.100	7.000	.000
[redacted]	△	MSFC 578(SA10F) 142-IN SRB (139) NBE1 TVC S	90.000	.100	7.000	.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

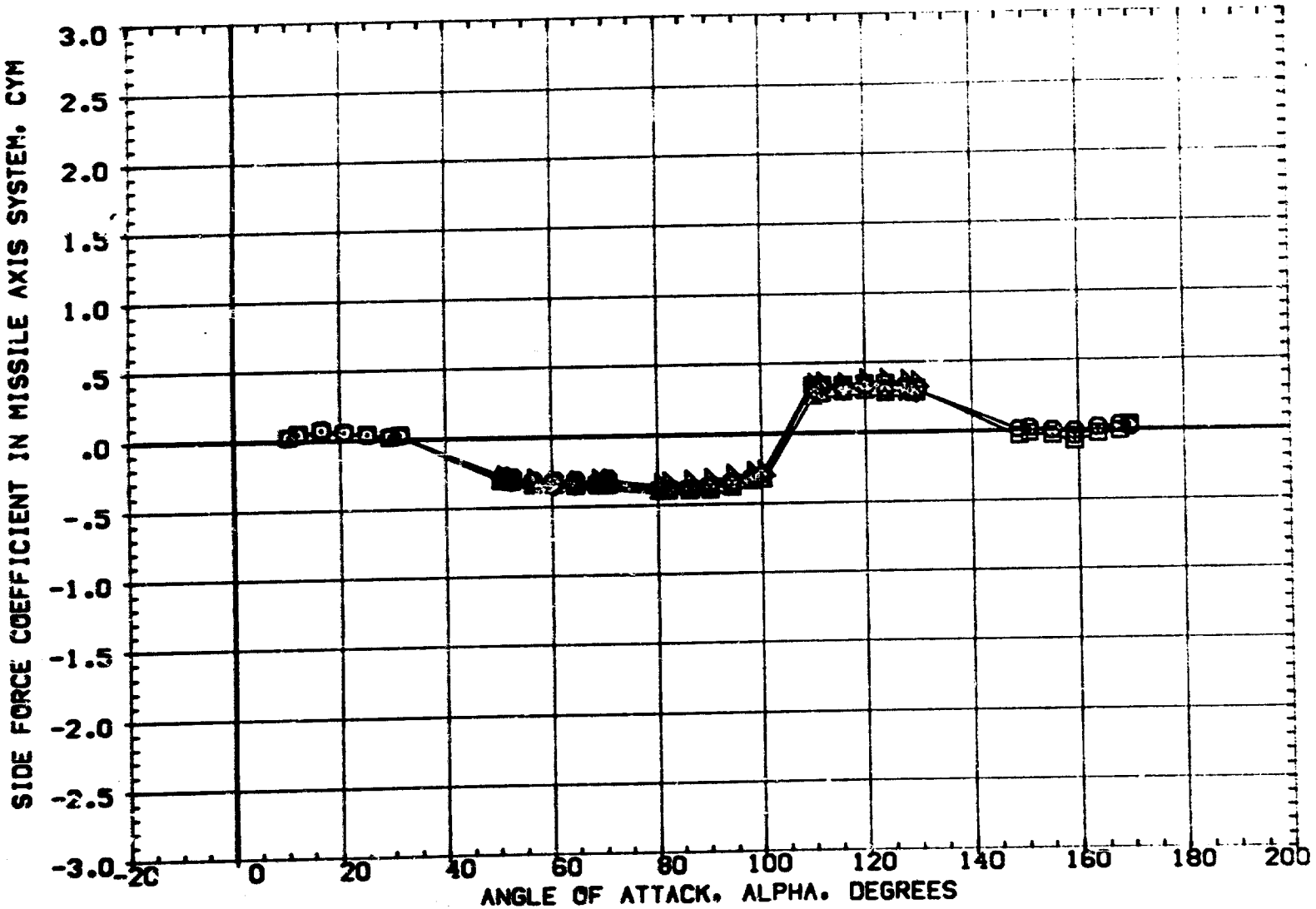


EFFECT OF TVC ON AERODYNAMIC CHARACTERISTICS

(B)MACH = 1.20

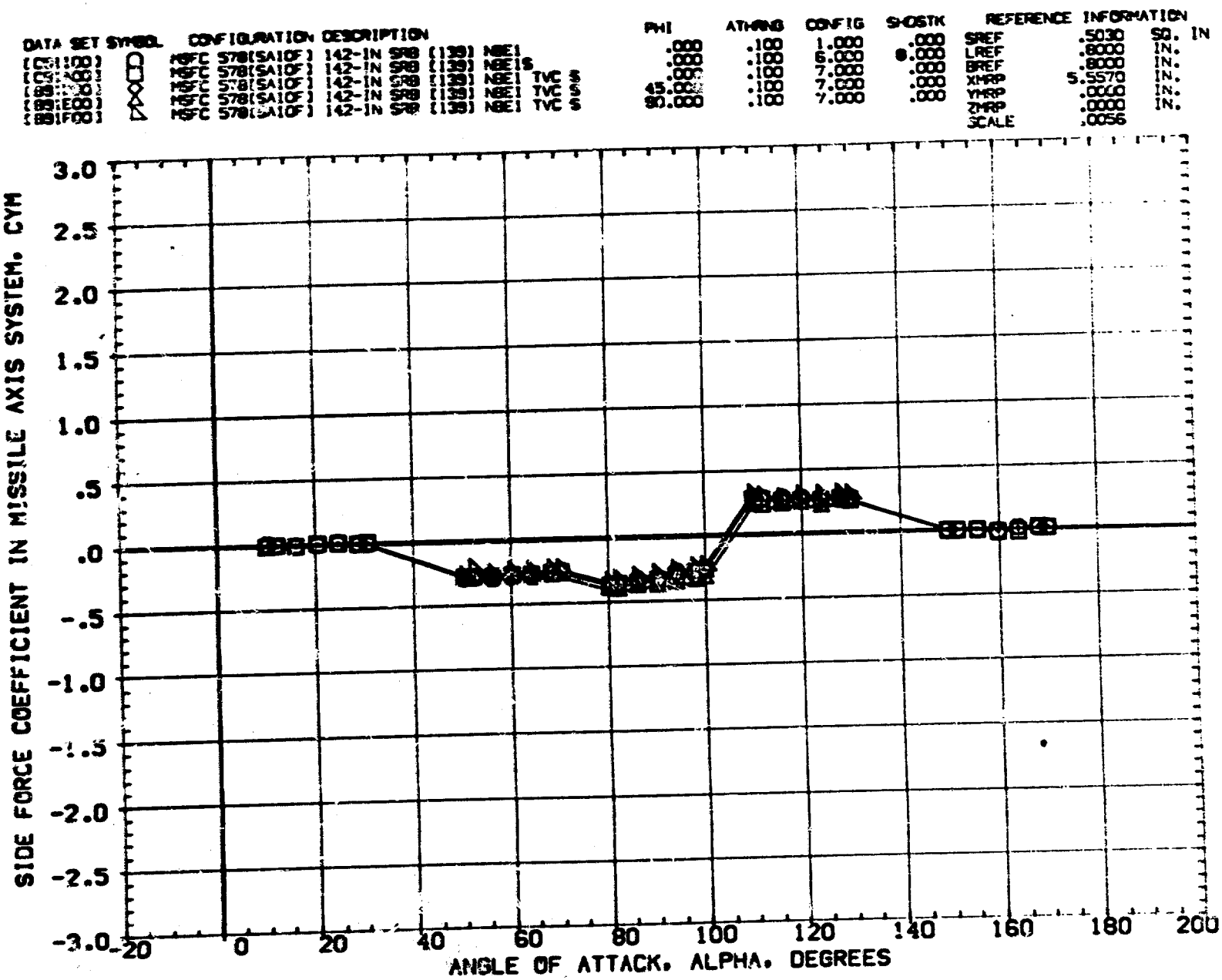
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
(C)1100	□	MSFC 578(SA1OF) 142-IN SRB (139) NBEI	.000	.100	1.000	.000
(C)1A00	◇	MSFC 578(SA1OF) 142-IN SRB (139) NBEIS	.000	.100	6.000	8.000
(B)1000	▷◁	MSFC 578(SA1OF) 142-IN SRB (139) NBEI TVC S	.000	.100	7.000	.000
(B)1E00	▽	MSFC 578(SA1OF) 142-IN SRB (139) NBEI TVC S	45.000	.100	7.000	.000
(B)1F00	△	MSFC 578(SA1OF) 142-IN SRB (139) NBEI TVC S	90.000	.100	7.000	.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	



EFFECT OF TVC ON AERODYNAMIC CHARACTERISTICS

(C)MACH = 1.96



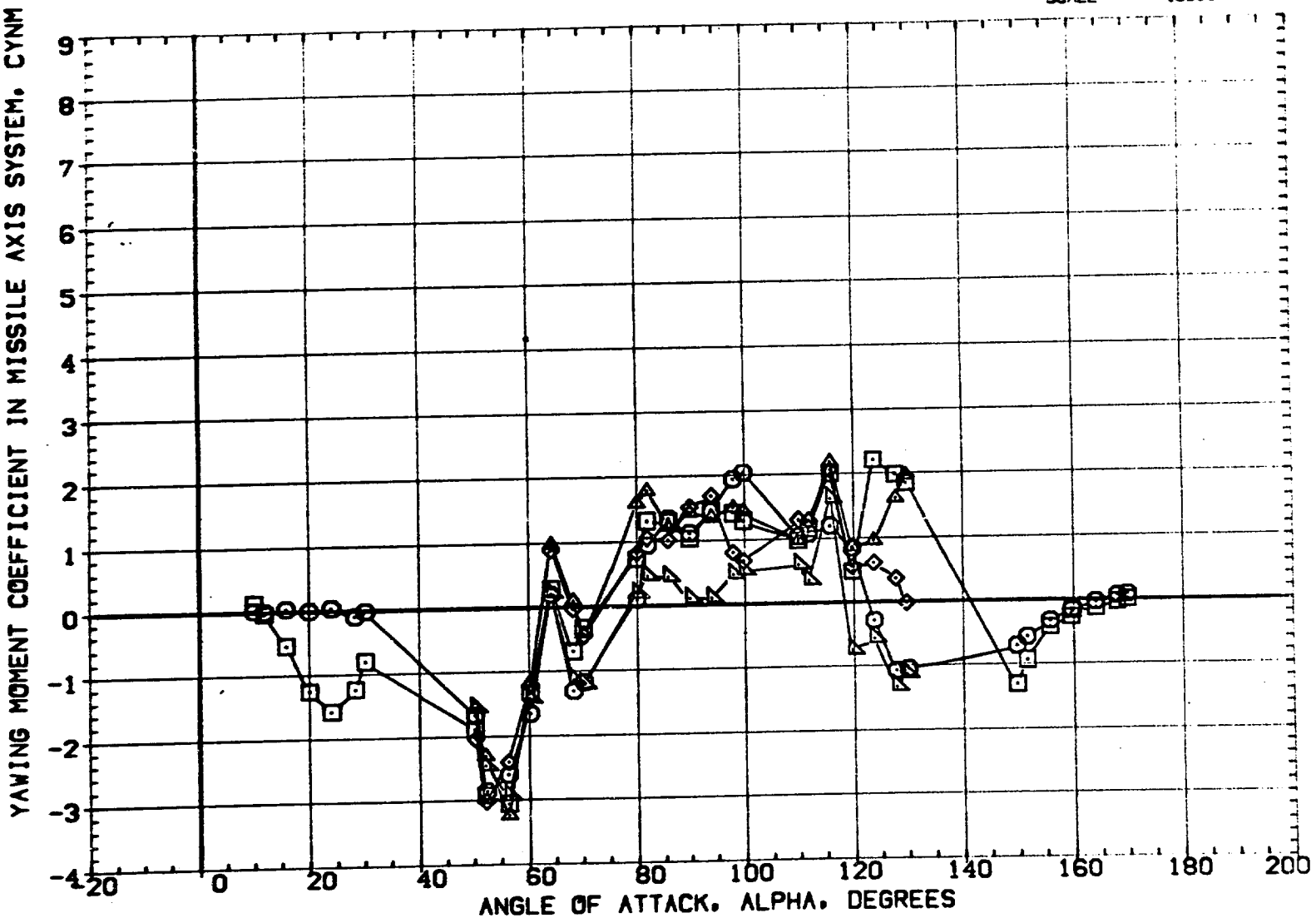
EFFECT OF TVC ON AERODYNAMIC CHARACTERISTICS

(D)MACH = 3.48

C-10

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
[C91100] □	MSFC 578[SA1OF] 142-IN SRB [139] NBEI	.000	.100	1.000	.000
[C91A00] ◇	MSFC 578[SA1OF] 142-IN SRB [139] NBEIS	.000	.100	6.000	8.000
[B81D00] ◇	MSFC 578[SA1OF] 142-IN SRB [139] NBEI TVC S	.000	.100	7.000	.000
[B81E00] △	MSFC 578[SA1OF] 142-IN SRB [139] NBEI TVC S	45.000	.100	7.000	.000
[B91F00] △	MSFC 578[SA1OF] 142-IN SRB [139] NBEI TVC S	90.000	.100	7.000	.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	



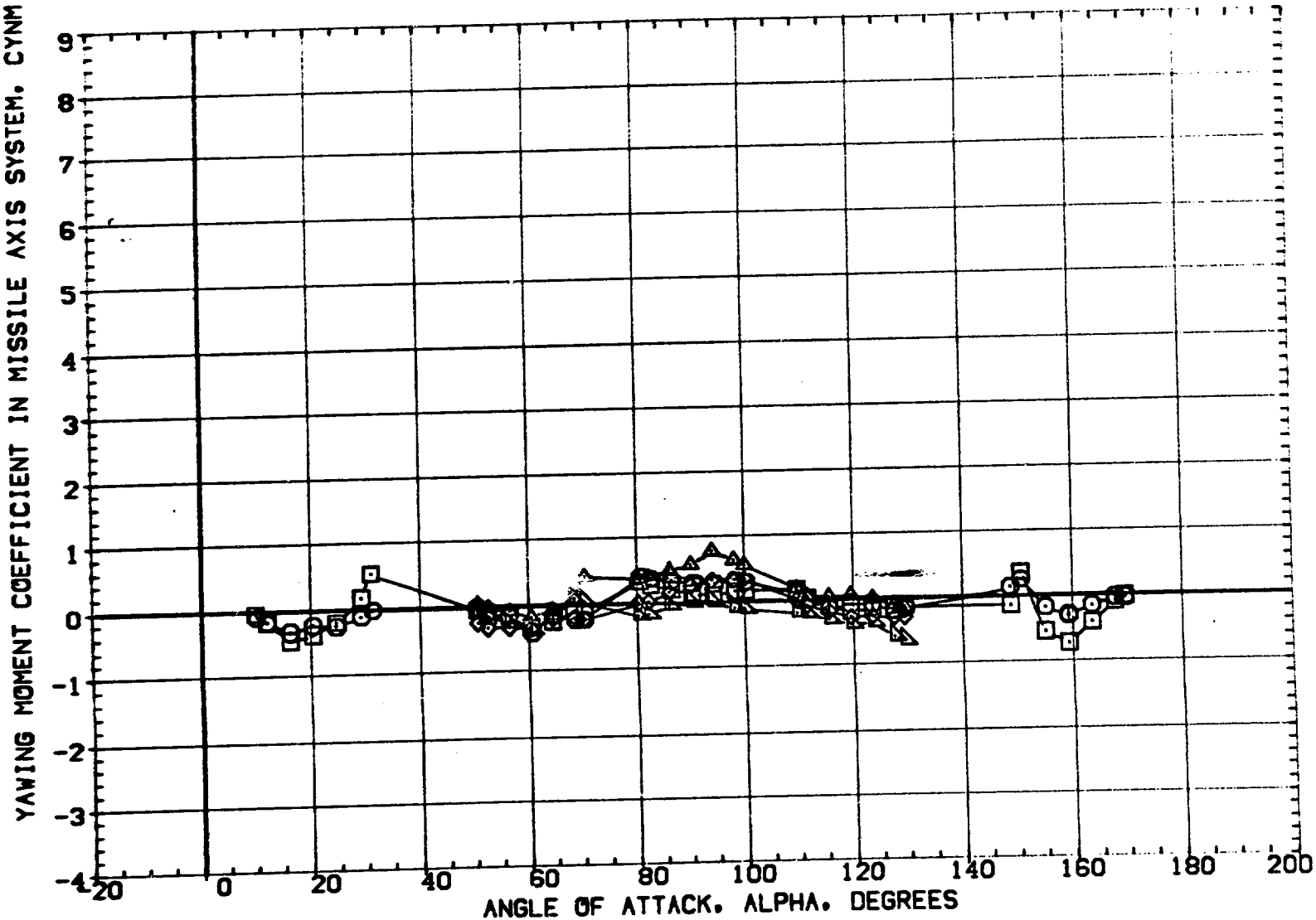
EFFECT OF TVC ON AERODYNAMIC CHARACTERISTICS

(A)MACH = .59

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
[B]1100]	MSFC 578[SA10F] 142-IN SRB [139] NBE]	.000	.100	1.000	.000
[B]1A00]	MSFC 578[SA10F] 142-IN SRB [139] NBE]S	.000	.100	6.000	0.000
[B]1D00]	MSFC 578[SA10F] 142-IN SRB [139] NBE] TVC S	.000	.100	7.000	.000
[B]1E00]	MSFC 578[SA10F] 142-IN SRB [139] NBE] TVC S	45.000	.100	7.000	.000
[B]1F00]	MSFC 578[SA10F] 142-IN SRB [139] NBE] TVC S	90.000	.100	7.000	.000

REFERENCE INFORMATION

SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

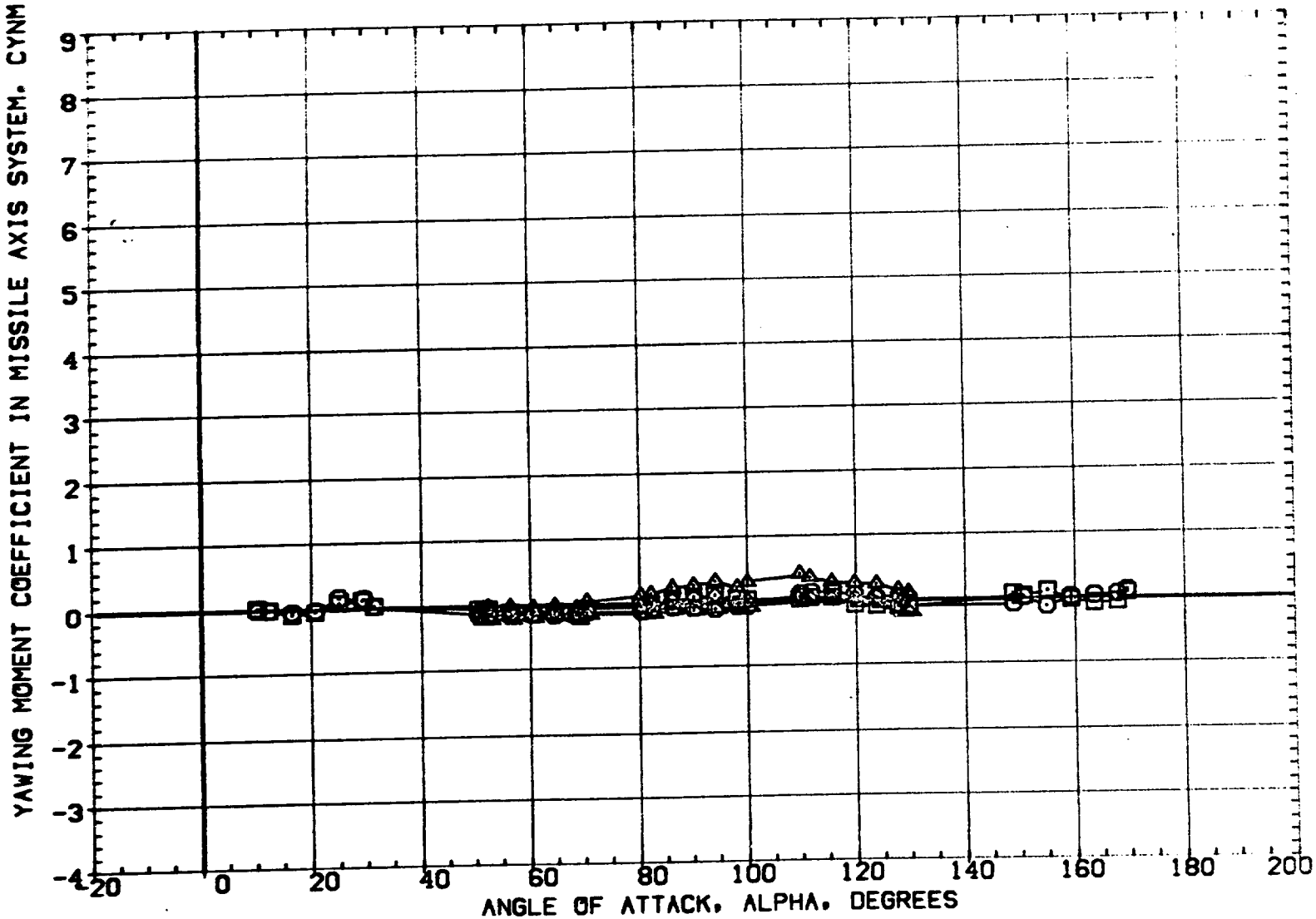


EFFECT OF TVC ON AERODYNAMIC CHARACTERISTICS

(B)MACH = 1.20

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
[C91100]	○	MSFC 578[SA10F] 142-IN SRB [139] NBEI	.000	.100	1.000	.000
[C91A00]	□	MSFC 578[SA10F] 142-IN SRB [139] NBEIS	.000	.100	6.000	8.000
[B91D00]	◇	MSFC 578[SA10F] 142-IN SRB [139] NBEI TVC S	.000	.100	7.000	.000
[B91E00]	△	MSFC 578[SA10F] 142-IN SRB [139] NBEI TVC S	45.000	.100	7.000	.000
[B91F00]	▷	MSFC 578[SA10F] 142-IN SRB [139] NBEI TVC S	90.000	.100	7.000	.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

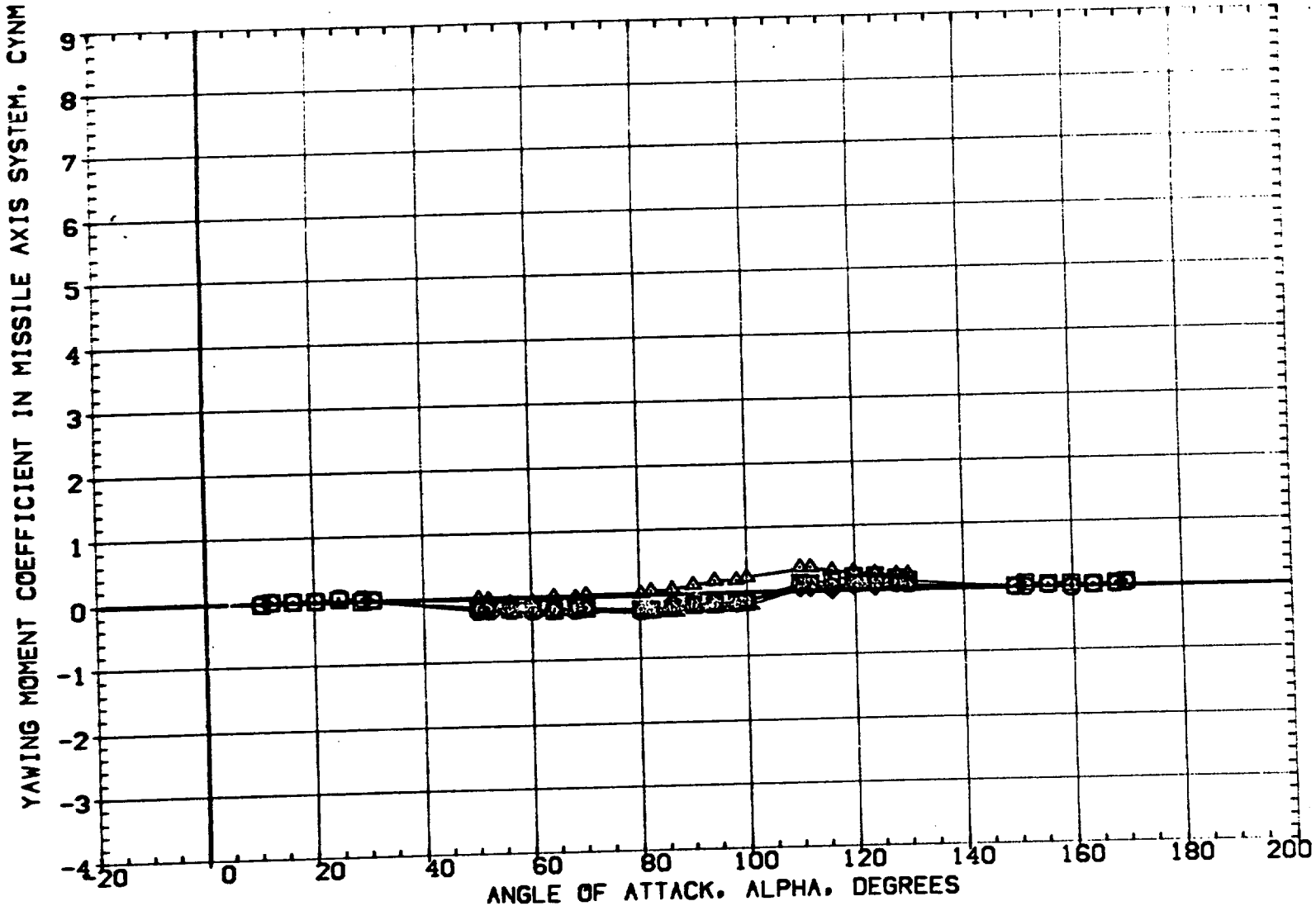


EFFECT OF TVC ON AERODYNAMIC CHARACTERISTICS

[C]MACH = 1.96

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
(C91100)	□	MSFC 578(SA1OF) 142-IN SRB (139) NBE1	.000	.100	1.000	.000
(C91A00)	◇	MSFC 578(SA1OF) 142-IN SRB (139) NBE1S	.000	.100	6.000	8.000
(B91D00)	⋈	MSFC 578(SA1OF) 142-IN SRB (139) NBE1 TVC S	.000	.100	7.000	.000
(B91E00)	◁	MSFC 578(SA1OF) 142-IN SRB (139) NBE1 TVC S	45.000	.100	7.000	.000
(B91F00)		MSFC 578(SA1OF) 142-IN SRB (139) NBE1 TVC S	90.000	.100	7.000	.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

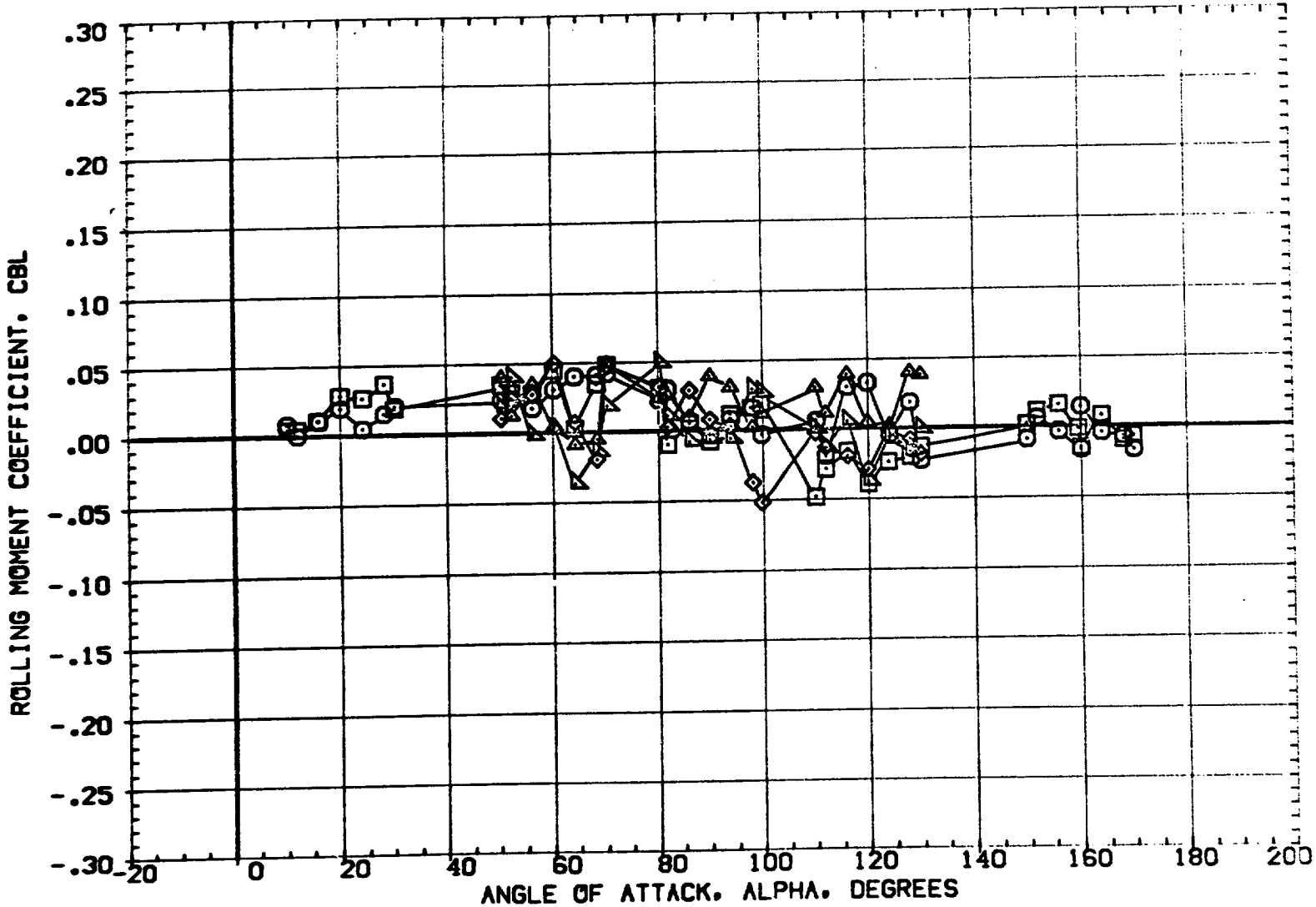


EFFECT OF TVC ON AERODYNAMIC CHARACTERISTICS

(D)MACH = 3.48

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
[C91100]		MSFC 578[SA1OF] 142-IN SRB [139] NBE]	.000	.100	1.000	.000
[C91A00]		MSFC 578[SA1OF] 142-IN SRB [139] NBE]S	.000	.100	6.000	6.000
[B91D00]		MSFC 578[SA1OF] 142-IN SRB [139] NBE] TVC S	.000	.100	7.000	.000
[B91E00]		MSFC 578[SA1OF] 142-IN SRB [139] NBE] TVC S	45.000	.100	7.000	.000
[B91F00]		MSFC 578[SA1OF] 142-IN SRB [139] NBE] TVC S	90.000	.100	7.000	.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

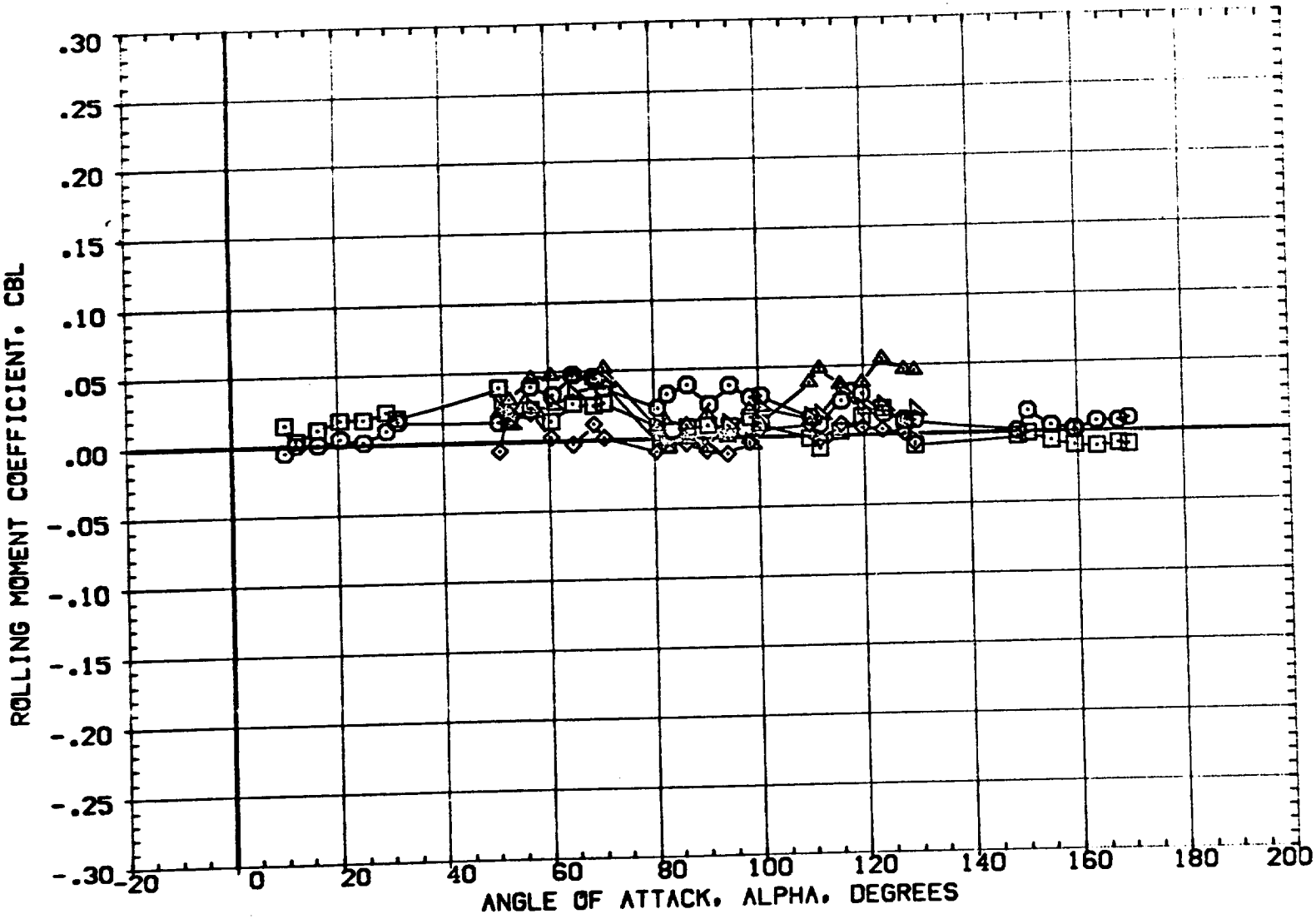


EFFECT OF TVC ON AERODYNAMIC CHARACTERISTICS

(A)MACH = .59

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
[B]1100]	○	MSFC 578[SA1OF] 142-IN SRB [139] NBE]	.000	.100	1.000	.000
[B]1A00]	□	MSFC 578[SA1OF] 142-IN SRB [139] NBE]S	.000	.100	6.000	0.000
[B]1D00]	⊠	MSFC 578[SA1OF] 142-IN SRB [139] NBE] TVC S	.000	.100	7.000	.000
[B]1E00]	⋈	MSFC 578[SA1OF] 142-IN SRB [139] NBE] TVC S	45.000	.100	7.000	.000
[B]1F00]	△	MSFC 578[SA1OF] 142-IN SRB [139] NBE] TVC S	90.000	.100	7.000	.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

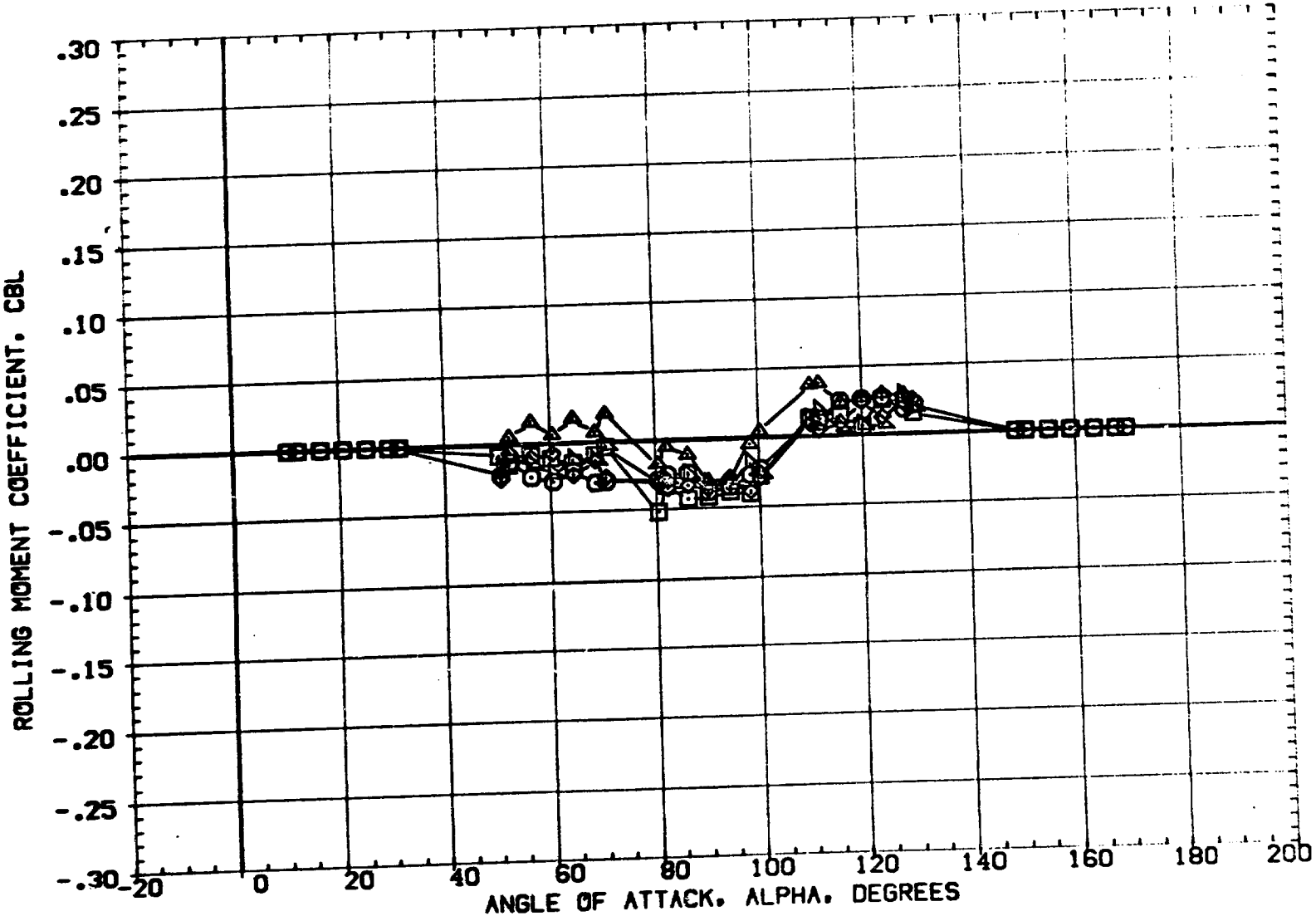


EFFECT OF TVC ON AERODYNAMIC CHARACTERISTICS

(B)MACH = 1.20

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
[C91100]	MSFC 578[SA1OF] 142-IN SRB [139] NBE]	.000	.100	1.000	.000
[C91A00]	MSFC 578[SA1OF] 142-IN SRB [139] NBE]S	.000	.100	6.000	8.000
[B91D00]	MSFC 578[SA1OF] 142-IN SRB [139] NBE] TVC S	.000	.100	7.000	.000
[B91E00]	MSFC 578[SA1OF] 142-IN SRB [139] NBE] TVC S	45.000	.100	7.000	.000
[B91F00]	MSFC 578[SA1OF] 142-IN SRB [139] NBE] TVC S	90.000	.100	7.000	.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	

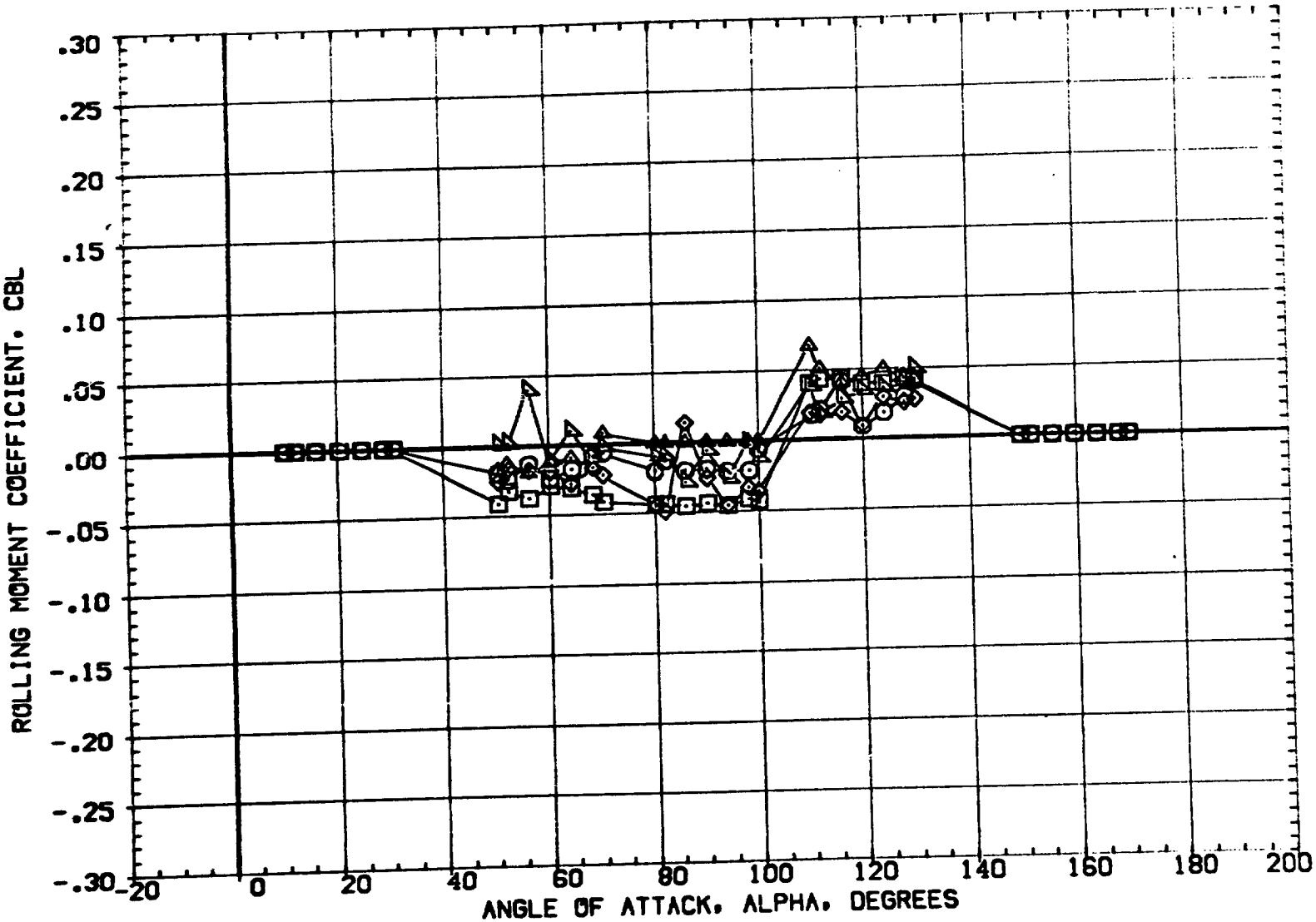


EFFECT OF TVC ON AERODYNAMIC CHARACTERISTICS

(C)MACH = 1.96

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI	ATHRNG	CONFIG	SHOSTK
(C9110D)		MSFC 578(SA10F) 142-IN SRB (139) NBEI	.000	.100	1.000	.000
(C91A0D)		MSFC 578(SA10F) 142-IN SRB (139) NBEIS	.000	.100	6.000	0.000
(8910D0)		MSFC 578(SA10F) 142-IN SRB (139) NBEI TVC S	.000	.100	7.000	.000
(89IE0D)		MSFC 578(SA10F) 142-IN SRB (139) NBEI TVC S	45.000	.100	7.000	.000
(89IF0D)		MSFC 578(SA10F) 142-IN SRB (139) NBEI TVC S	90.000	.100	7.000	.000

REFERENCE INFORMATION		
SREF	.5030	SQ. IN
LREF	.8000	IN.
BREF	.8000	IN.
XMRP	5.5570	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0056	



EFFECT OF TVC ON AERODYNAMIC CHARACTERISTICS

(D)MACH = 3.48

APPENDIX

TABULATED SOURCE DATA

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

MSFC 578(SA10F) 142-IN SRB (139) NBE1 (R911A1) (01 NOV 73)

REFERENCE DATA

SREF =	.5930 SQ. IN	XMRP =	5.5570 IN.		
LREF =	.8000 IN.	YMRP =	.0000 IN.		
BREF =	.8000 IN.	ZMRP =	.0000 IN.		
SCALE =	.0056				

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	1.000	SHDSTK =	.000

RUN NO. 273/ 0 RN/L = 6.16 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
4.000	-11.200	-1.52460	-1.95520	.63660	.06490	.08410	-.00470
4.000	-9.240	-1.16020	-1.76050	.62130	.06330	.09500	.00270
4.000	-5.150	-.54760	-.94650	.58450	.04920	.11540	.00660
4.000	-1.080	-.11030	-.07590	.57890	.04610	.06690	.00260
4.000	2.990	.30350	.57830	.59940	.04440	.08800	-.00110
4.000	7.060	.78680	1.56880	.62900	.04710	.09490	-.00130
4.000	9.020	1.10880	1.89640	.64200	.05830	.09570	.00320
4.000	-1.080	-.12170	-.08070	.58060	.05980	.07500	-.00410
	GRADIENT	.10167	.16025	.00504	-.00042	.00518	-.00091

RUN NO. 274/ 0 RN/L = 5.09 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
4.450	-11.120	-1.43680	-1.57020	.57410	.07170	.10440	.00440
4.450	-9.170	-1.10190	-1.41700	.54390	.06700	.07260	.01130
4.450	-5.120	-.55690	-.74210	.50660	.05800	.08770	.00590
4.450	-1.070	-.11840	.02180	.47270	.05920	.04610	.00220
4.450	2.970	.31490	.34720	.50400	.06250	.05710	.01140
4.450	7.010	.76960	1.20860	.53320	.06510	.06320	.00290
4.450	8.950	1.04370	1.53580	.56550	.08040	.06250	-.00560
4.450	-1.070	-.13460	.01310	.47800	.06560	.04050	.00920
	GRADIENT	.10725	.08054	.00775	.00082	.00272	.00228

RUN NO. 275/ 0 RN/L = 4.16 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
4.960	-11.070	-1.43060	-1.28510	.54020	.07990	.04660	.01480
4.960	-9.140	-1.12480	-1.44560	.51170	.08120	-.02570	.00950
4.960	-5.100	-.59280	-.64140	.46290	.06500	-.00390	-.01120
4.960	-1.070	-.15760	.02470	.40410	-.00200	-.04050	.00670
4.960	2.960	.31960	.32810	.44380	.07090	-.01220	.00050
4.960	6.980	.83030	1.18140	.50220	.05670	.12230	.00100
4.960	8.920	1.11870	1.48850	.52460	.06640	.11590	.02410
4.960	-1.070	-.13580	.06240	.40710	.12700	.00760	-.01760
	GRADIENT	.11851	.07529	.00985	.01809	.00702	-.00154

MSFC 578(SA10F) 142-IN SRB (139) NBE1 (R911B1) (01 NOV 73)

REFERENCE DATA

SREF =	.5939 SQ. IN	XMRP =	5.5579 IN.
LREF =	.8999 IN.	YMRP =	.0000 IN.
BREF =	.8999 IN.	ZMRP =	.0000 IN.
SCALE =	.9996		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	1.000	SHDSTK =	.000

RUN NO. 3/ 0 RN/L = 4.94 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.594	9.970	.92280	1.01390	.90710	-.03480	.00880	.00840
.594	11.940	1.12500	1.36500	.92840	-.03390	-.00540	-.00040
.594	15.960	1.64770	2.33350	.93780	-.04825	.02400	.01100
.594	20.050	2.21230	3.42500	.92210	-.06100	-.00630	.01970
.594	24.160	2.92380	4.66550	.89150	-.22320	.04020	.00410
.594	28.250	3.68740	5.93870	.85520	-.23930	-.11290	.01540
.594	30.180	4.07610	6.55900	.83370	-.16500	-.03380	.02060
.594	20.050	2.21890	3.40650	.91240	-.05830	-.06760	.01170
	GRADIENT	.15644	.27754	-.00413	-.01001	-.00335	.00060

RUN NO. 4/ 0 RN/L = 6.28 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.898	10.040	1.01370	.69230	1.08330	-.05410	-.01100	-.02010
.898	12.020	1.27420	.96000	1.10320	-.05290	-.00960	-.02020
.898	16.100	1.86750	1.82670	1.10150	-.03700	-.00895	-.00710
.898	20.270	2.58570	3.19270	1.06840	.32620	-.36410	-.00140
.898	24.480	3.34310	5.15350	1.02280	.47170	-.85370	-.00990
.898	28.720	4.24350	7.29860	.96570	.24220	-.46320	-.00130
.898	30.740	4.82950	8.59670	.95000	.25300	-.06980	-.00400
.898	20.280	2.60420	3.17850	1.07440	.32080	-.32890	-.00270
	GRADIENT	.18137	.38294	-.00737	.01990	-.01941	.00080

RUN NO. 5/ 0 RN/L = 6.72 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.197	10.130	1.09200	1.36950	1.57260	.04640	-.10110	-.00440
1.197	12.140	1.35450	1.92050	1.59100	.08490	-.18070	.00110
1.197	16.310	2.00430	3.34420	1.60000	.17390	-.33200	.00130
1.197	20.570	2.91590	5.39720	1.57560	.11400	-.24580	.00490
1.197	24.920	4.12680	7.59840	1.52820	.14800	-.26860	.00220
1.197	29.270	5.59070	9.75710	1.47360	.11270	-.11710	.00950
1.197	31.350	6.39890	10.72260	1.44290	.06420	-.03180	.01640
1.197	20.590	2.95250	5.50510	1.57700	.13100	-.21100	.01610
	GRADIENT	.24915	.45188	-.00661	.00073	.00389	.00072

MSFC 578(SA15F) 142-IN SRB (139) NBE1 (R911B1) (01 NOV 73)

REFERENCE DATA

SREF =	.5939 SQ. IN	XMRP =	5.5570 IN.
LREF =	.8999 IN.	YMRP =	.0000 IN.
BREF =	.8999 IN.	ZMRP =	.0000 IN.
SCALE =	.9956		

PARAMETRIC DATA

BETA =	.000	PHI =	.300
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	1.000	SHDSTK =	.000

RUN NO. 55/ 0 RN/. = 6.96 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLMM	CA	CYM	CYNN	CBL
1.957	10.250	1.07660	2.41560	1.27180	.02510	-.01580	.00000
1.957	12.280	1.42590	3.15720	1.23960	.04670	-.01380	.00000
1.957	16.540	2.42530	4.74600	1.22250	.07940	-.04160	.00000
1.957	20.830	3.74230	5.72380	1.21450	.06680	-.02310	.00000
1.957	25.160	5.23250	6.43600	1.23940	.03940	.15990	.00000
1.957	29.450	6.71740	6.66720	1.22160	.02850	.14550	.00000
1.957	31.480	7.43060	6.93470	1.23120	.02930	.03580	.00000
1.957	20.820	3.74980	5.65470	1.18990	.09180	-.03390	.00000
	GRADIENT	.30495	.29819	-.00125	-.00070	.00680	.00000

RUN NO. 86/ 0 RN/L = 7.03 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLMM	CA	CYM	CYNN	CBL
3.479	10.170	1.26150	2.39620	.75640	.00720	-.00910	.00000
3.479	12.130	1.68980	2.62330	.76830	-.00390	.00900	.00000
3.479	16.220	2.61620	3.05110	.78690	-.01160	.01710	.00000
3.479	20.370	3.64790	3.37580	.85130	.00340	.01120	.00000
3.479	24.550	4.83120	3.75630	.92980	.01300	.04390	.00000
3.479	28.720	6.10440	4.24180	1.00570	.00040	.03630	.00000
3.479	30.680	6.72730	4.47690	1.04280	-.00250	.02250	.00000
3.479	20.380	3.67490	3.41140	.85260	.00780	.03970	.00000
	GRADIENT	.26636	.09848	.01439	.00010	.00170	.00000

RUN NO. 267/ 0 RN/L = 6.20 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLMM	CA	CYM	CYNN	CBL
4.000	9.590	1.18640	1.94050	.64510	.06360	.10520	-.03110
4.000	11.570	1.60580	2.14260	.66030	.08080	.12670	.00380
4.000	15.670	2.46580	2.43280	.71410	.09570	.08710	-.00590
4.000	19.770	3.48150	2.65880	.79470	.10340	.08040	-.02900
4.000	23.910	4.62770	2.98660	.89760	.11680	.08330	-.03460
4.000	28.020	5.83390	3.50220	.97310	.13010	.06820	-.04180
4.000	30.010	6.44130	3.82760	1.01580	.13050	.09260	-.02170
4.000	19.770	3.48150	2.65850	.79680	.10390	.10610	-.00380
	GRADIENT	.25769	.08667	.01883	.00311	-.00166	-.00105

MSFC 578(SA19F) 142-IN SRB (139) NBE1 (R911B1) (01 NOV 73)

REFERENCE DATA

SREF =	.5930 SQ. IN	XMRP =	5.5970 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	1.000	SHDSTK =	.000

RUN NO. 268/ 0 RN/L = 5.13 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLNN	CA	CYN	CYNN	CBL
4.450	9.520	1.14020	1.61040	.57270	.07460	.08830	.00400
4.450	11.490	1.49220	1.79500	.69070	.09060	.09680	.00310
4.450	15.550	2.30650	2.02390	.66580	.10270	.06320	-.00840
4.450	19.610	3.29600	2.18630	.76450	.11060	.07180	-.00720
4.450	23.710	4.38280	2.59140	.86270	.13220	.08060	-.00780
4.450	27.780	5.50070	3.07050	.94700	.12700	.06480	-.00710
4.450	29.750	6.07920	3.44200	.98910	.13610	.07980	-.00660
4.450	19.610	3.27910	2.19560	.76580	.10975	.03450	-.04370
	GRADIENT	.24578	.08430	.02114	.00286	-.00074	-.00050

RUN NO. 269/ 0 RN/L = 4.19 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLNN	CA	CYN	CYNN	CBL
4.960	9.500	1.16510	1.40410	.52520	.07770	.06490	-.00610
4.960	11.440	1.47720	1.55570	.55880	.07130	.12990	-.03690
4.960	15.480	2.36060	1.84660	.66840	.09750	.11380	-.00310
4.960	19.520	3.31530	1.95490	.78270	.12410	.08240	-.04520
4.960	23.600	4.43780	2.29890	.89120	.14240	.07450	-.00920
4.960	27.640	5.58790	2.99220	.98580	.15130	.10560	-.00660
4.960	29.590	6.16330	3.45910	1.01450	.14520	.08770	.01810
4.960	19.520	3.31430	1.95410	.78270	.11410	.07640	-.00700
	GRADIENT	.25122	.09187	.02546	.00412	-.00035	.00127

MSFC 578(SA10F) 142-IN SRB (139) NBE1 (R911C1) (16 AUG 74)

REFERENCE DATA

SREF =	.5039 Sq. IN	XMRP =	5.5570 IN.		
LREF =	.8000 IN.	YMRP =	.0000 IN.		
BREF =	.8000 IN.	ZMRP =	.0000 IN.		
SCALE =	.0056				

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	1.000	SHDSTK =	.000

RUN NO. 54/ 0 RN/L = 3.54 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.396	30.090	3.35160	5.77310	.79860	.63910	-.39930	.00000
.396	32.080	3.77210	6.36450	.76770	.86780	-.10000	.00000
.396	36.100	4.59010	7.05160	.68010	1.42930	1.02620	.00000
.396	40.140	5.73610	7.51870	.60310	1.12270	3.90340	.00000
.396	44.210	6.55620	8.53780	.44250	.96740	4.25370	.00000
.396	48.270	7.77800	8.45940	.33170	.60510	4.07220	.00000
.396	50.170	8.25510	8.74900	.23670	.13600	4.19300	.00000
.396	40.140	5.77660	7.37620	.59970	1.13280	4.29160	.00000
	GRADIENT	.24519	.14464	-.02772	-.02473	.25424	.00000

RUN NO. 53/ 0 RN/L = 4.93 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.599	30.360	3.71000	6.11150	.76470	.88220	-.31740	.00000
.599	32.350	4.14030	6.69740	.74910	.96940	.09180	.00000
.599	36.440	5.09820	8.17990	.67680	1.32750	1.54790	.00000
.599	40.530	5.88290	9.40220	.56070	.62160	2.11890	.00000
.599	44.650	6.78230	10.51300	.42690	.05100	.52060	.00000
.599	48.750	7.91640	11.29090	.27040	.09730	-.83060	.00000
.599	50.680	8.47800	11.40190	.18780	-.00920	-1.45740	.00000
.599	40.540	5.92660	9.55670	.55510	.61770	2.13810	.00000
	GRADIENT	.23540	.26961	-.02886	-.05724	-.06229	.00000

RUN NO. 272/ 0 RN/L = 6.18 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
4.000	30.180	6.52940	3.90430	1.02240	.15370	.08060	-.02560
4.000	32.170	7.13800	4.28110	1.05660	.15820	.08880	-.03060
4.000	36.320	8.45330	5.02590	1.12320	.17760	.12290	-.00540
4.000	40.460	9.78730	5.38280	1.19890	.17840	.10510	-.02800
4.000	44.620	11.18640	5.77670	1.26870	.19790	.09150	-.00630
4.000	48.750	12.43710	6.63620	1.29290	.19860	.13570	-.03000
4.000	50.750	13.04550	7.07430	1.28060	.20300	.13770	-.02960
	GRADIENT	.31892	.14407	.01361	.00242	.00221	-.00019

MSFC 578(SA10F) 142-IN SRB (139) NBE1 (R911C1) (16 AUG 74)

REFERENCE DATA

SREF =	.5035 SQ. IN	XMRP =	5.5570 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	1.000	SHDSTK =	.000

RUN NO. 271/ 0 RN/L = 5.10 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
4.450	29.900	6.06030	3.20660	.97900	.15070	.03910	-.02810
4.450	31.870	6.65060	3.58500	1.01270	.15490	.04070	-.01110
4.450	35.960	7.89970	4.15560	1.08510	.17780	.06000	-.03580
4.450	40.060	9.25550	4.49020	1.16450	.18140	.04660	-.01020
4.450	44.170	10.59560	4.87110	1.23760	.19800	.03240	-.03650
4.450	48.260	11.79840	5.85650	1.24590	.20120	.10860	-.02910
4.450	50.200	12.34400	6.35830	1.22900	.19070	.05650	-.04000
	GRADIENT	.31287	.14317	.01357	.00232	.00166	-.00072

RUN NO. 270/ 0 RN/L = 4.18 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
4.960	29.730	6.08470	2.71980	1.01330	.16500	.08040	-.04660
4.960	31.690	6.70800	3.13590	1.05060	.15960	.07660	-.04560
4.960	35.750	7.97090	3.36410	1.13250	.17800	.01130	-.01400
4.960	39.810	9.40110	3.65920	1.22030	.19910	.01630	.03600
4.960	43.900	10.76130	4.13550	1.29510	.24900	.02710	-.01720
4.960	47.950	12.00470	5.15520	1.26970	.20840	.03100	.00210
4.960	49.900	12.58440	5.62590	1.25830	.19280	.03580	-.00730
	GRADIENT	.32531	.13250	.01333	.00262	-.00205	.00209

MSFC 578(SA15F) 142-IN SRB (139) NBE1 (R911D1) (01 NOV 73)

REFERENCE DATA

SREF =	.5939 SQ. IN	XMRP =	5.5570 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	1.000	SHDSTK =	.000

RUN NO. 217/ 0 RN/L = 3.68 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.404	50.200	6.39280	9.15850	.42810	.30920	-.54880	.06940
.404	52.110	6.83610	9.67020	.32570	.10230	-.37510	.01190
.404	56.120	8.20300	10.79200	.10810	-.79140	-3.67640	.05820
.404	60.110	8.57480	10.13530	-.09670	-.80690	-.06230	-.03840
.404	64.160	9.70780	12.51890	-.28280	.36390	.01040	-.01100
.404	68.170	10.33170	13.38800	-.38700	.31450	1.92530	.00400
.404	70.060	10.28520	12.93870	-.43510	.18810	.56380	-.02480
.404	60.130	8.99210	11.50520	-.14440	.64570	2.24100	-.02610
	GRADIENT	.20301	.20745	-.04426	.01440	.12363	-.00356

RUN NO. 216/ 0 RN/L = 4.99 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.593	50.340	7.33230	10.80020	.35700	-.62090	-1.67470	.02410
.593	52.250	8.24670	11.98050	.25000	-.36830	-2.86750	.02480
.593	56.270	9.50000	13.16350	.04770	-.18440	-2.61320	.01810
.593	60.300	10.87850	14.47380	-.10740	-.08750	-1.65600	.03180
.593	64.330	11.46660	14.84580	-.24470	.15840	.18890	.04000
.593	68.330	11.75350	14.77400	-.27730	-.26290	-1.30620	.04130
.593	70.220	11.84080	14.63990	-.28170	-.18240	-1.18110	.04190
.593	60.300	10.85170	14.38510	-.11060	-.09130	-1.55490	.03310
	GRADIENT	.22530	.18768	-.03275	.01836	.08002	.00111

RUN NO. 218/ 0 RN/L = 6.36 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.903	50.710	11.45080	17.26100	.44840	-.02430	.28670	.03170
.903	52.640	12.08710	18.35850	.36990	.11310	-.21270	.04120
.903	56.730	13.21050	20.57740	.22840	.15170	.61670	.01970
.903	60.740	14.10530	21.11410	.12290	-.14880	-.12330	.01470
.903	64.740	14.63120	20.54100	.04930	-.20690	.01090	.01430
.903	68.670	14.88860	18.21100	.06650	-.17910	-.12990	.03270
.903	70.540	14.95600	17.28990	.12630	-.21820	.04500	.02790
.903	60.760	14.18820	21.26690	.13530	-.17380	-.15700	.02340
	GRADIENT	.17652	-.00102	-.01783	-.01608	-.01164	-.00036

MSFC 578(SA10F) 142-IN SRB (139) NBE1 (R911D1) (01 NOV 73)

REFERENCE DATA

SREF =	.5030 Sq. IN	XMRP =	5.5570 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	1.000	SHDSTK =	.000

RUN NO. 219/ 0 RN/L = 6.78 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.196	50.720	13.69070	14.00170	.92580	-.29580	-.02130	.01400
1.196	52.640	14.30090	14.44720	.86410	-.32560	-.08780	.01660
1.196	56.690	15.55780	15.55410	.77020	-.31930	-.15980	.03960
1.196	60.730	16.47990	16.46550	.73550	-.30100	-.42160	.03330
1.196	64.730	17.36750	15.96970	.72240	-.27170	-.15970	.04790
1.196	68.710	18.16710	15.30960	.64160	-.25780	-.24520	.04550
1.196	70.570	18.52570	14.41080	.62570	-.28430	-.24110	.03730
1.196	60.730	16.39820	16.23510	.73450	-.31050	-.43500	.04390
	GRADIENT	.24093	.03591	-.01384	.00237	-.00968	.00139

RUN NO. 131/ 0 RN/L = 7.20 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.950	50.600	13.38840	9.35850	1.21350	-.28220	-.14130	-.02240
1.950	52.490	13.89880	9.54440	1.20130	-.28690	-.11520	-.01220
1.950	56.530	15.18800	10.23220	1.17790	-.31420	-.14600	-.02450
1.950	60.530	16.13680	10.17290	1.12630	-.31350	-.14060	-.02780
1.950	64.580	17.10310	10.72220	1.03700	-.31820	-.16000	-.02060
1.950	68.640	18.26540	11.77610	.94780	-.32780	-.16730	-.03000
1.950	70.510	18.38720	11.39680	.88860	-.30820	-.12230	-.02860
1.950	60.500	15.90820	9.75650	1.11470	-.30080	-.06960	-.02750
	GRADIENT	.25687	.11171	-.01621	-.00168	-.00081	-.00052

RUN NO. 87/ 1 RN/L = 6.97 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
3.479	50.340	12.56870	6.79060	1.31990	-.29000	-.19530	-.01960
3.479	52.280	13.14880	7.26640	1.31950	-.28980	-.20570	-.02450
3.479	56.270	14.26760	8.19190	1.30740	-.29300	-.20830	-.01370
3.479	60.320	15.31130	9.05840	1.26030	-.28600	-.22520	-.02390
3.479	64.360	16.25550	9.71350	1.14310	-.28290	-.22510	-.01770
3.479	68.380	17.09150	10.19820	1.02280	-.25820	-.21220	-.00850
3.479	70.260	17.43810	10.32960	.96160	-.25520	-.19110	-.00610
3.479	60.320	15.29450	9.06970	1.25670	-.31580	-.23830	-.02130
	GRADIENT	.24473	.18022	-.01835	.00178	-.00022	.00068

MSFC 578(SA10F) 142-IN SRB (139) NBE1 (R911F1) (22 FEB 74)

REFERENCE DATA

SREF =	.5030 Sq. IN	XMRP =	5.5570 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	1.000	SHDSTK =	.000

RUN NO. 222/ 0 RN/L = 5.05 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.595	80.290	11.82440	10.63760	.20300	-.02270	.09810	.02220
.595	82.070	11.77360	9.32380	.28090	.08260	.94560	.03080
.595	86.020	12.09590	6.60260	.34810	-.08630	1.33660	.00760
.595	89.970	12.16980	4.25290	.44090	-.11490	1.11970	-.00370
.595	93.960	12.07810	2.67810	.45750	-.01870	1.45840	.00800
.595	97.940	12.06700	1.34910	.30290	.07930	1.93500	.01630
.595	99.830	12.09700	.78890	.17930	.01720	2.02990	-.00390
.595	89.970	12.15760	4.25370	.43950	-.13810	1.17440	.03330
	GRADIENT	.01406	-.50110	.00104	.00183	.07796	-.00106

RUN NO. 221/ 0 RN/L = 6.39 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.901	80.450	15.75270	12.46420	.43750	-.30270	-.07420	.04800
.901	82.300	15.88910	11.53350	.43810	-.28910	-.04870	.02850
.901	86.210	16.08730	9.02450	.43950	-.26040	.04790	.03700
.901	90.130	16.31460	6.52150	.46240	-.23190	.00480	.02920
.901	94.070	16.23970	4.15370	.39700	-.25490	.01970	.02800
.901	98.000	16.13640	2.10820	.26640	-.25000	.17330	.01780
.901	99.850	15.82940	.74770	.19760	-.27200	.28070	.04020
.901	90.130	16.40630	6.57670	.46000	-.23970	.03760	.02460
	GRADIENT	.00956	-.60405	-.01123	.00183	.01483	-.00057

RUN NO. 254/ 0 RN/L = 6.78 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.197	100.440	19.34420	6.25850	-.03240	.39640	.28710	.02980
1.197	98.550	19.49030	6.66320	.08560	.39910	.32240	.02850
1.197	94.590	19.90770	7.56200	.29270	.35830	.25790	.03780
1.197	90.630	20.06100	8.52200	.47070	.33050	.29330	.02380
1.197	86.670	20.16280	10.07000	.60590	.33510	.32230	.03890
1.197	82.700	19.93840	10.78890	.71340	.31340	.36000	.03260
1.197	80.810	19.71340	11.00770	.75390	.30210	.40410	.02220
1.197	90.630	20.02670	8.48390	.47270	.33620	.27790	.03170
	GRADIENT	-.02340	-.25523	-.03985	.00485	-.00487	.00011

MSFC 578(SA10F) 142-IN SRB (139) NBE1 (R911F1) (22 FEB 74)

REFERENCE DATA

SREF =	.5039 SQ. IN	XMRP =	5.5570 IN.		
LREF =	.8000 IN.	YMRP =	.0000 IN.		
BREF =	.8000 IN.	ZMRP =	.0000 IN.		
SCALE =	.0056				

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	1.000	SHDSTK =	.000

RUN NO. 130/ 0 RN/L = 7.18 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.951	80.550	19.50540	10.62800	.61200	-.39040	-.12430	-.02860
1.951	82.420	19.65810	10.36740	.54930	-.38870	-.09590	-.02490
1.951	86.390	19.84830	9.68390	.41410	-.38550	-.07310	-.02460
1.951	90.350	19.99150	8.93600	.26570	-.36720	-.09020	-.03890
1.951	94.340	19.76000	8.21580	.10110	-.34040	-.09840	-.03500
1.951	98.300	19.49280	7.40550	-.07680	-.31100	-.05710	-.02730
1.951	100.180	19.28450	7.03640	-.16990	-.29590	-.05960	-.02280
1.951	90.350	19.75170	8.92450	.26050	-.35570	-.05410	-.03180
	GRADIENT	-.01095	-.18440	-.03965	.00492	.00229	-.00001

RUN NO. 88/ 0 RN/L = 6.94 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
3.479	80.320	18.66040	10.01060	.67050	-.37840	-.26630	-.02020
3.479	82.240	18.81700	9.84900	.60410	-.36560	-.23480	-.01350
3.479	86.180	19.06980	9.37680	.46040	-.33600	-.19030	-.02060
3.479	90.180	19.11470	8.65230	.29920	-.32380	-.18830	-.02000
3.479	94.180	19.06390	7.98510	.13100	-.27840	-.15470	-.02110
3.479	98.160	18.73810	7.31690	-.04540	-.26530	-.15000	-.02120
3.479	100.030	18.52200	7.00270	-.12490	-.25520	-.12470	-.00590
3.479	90.180	19.07160	8.68960	.29560	-.32040	-.19090	-.02080
	GRADIENT	-.00571	-.15686	-.04059	.00635	.00627	.00022

MSFC 578(SA10F) 142-IN SRB (139) NBE1 (R911M1) (01 NOV 73)

REFERENCE DATA

SREF =	.5030 Sq. IN	XMRP =	5.5570 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	1.000	SHDSTK =	.000

RUN NO. 155/ 0 RN/L = 5.01 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.596	129.890	7.00060	-6.71210	-1.86870	.48600	-1.05630	-.02340
.596	127.970	7.51690	-7.29700	-1.78380	2.47440	-1.06720	.01920
.596	123.960	8.59810	-7.31640	-1.50630	1.12250	-.30250	-.00410
.596	119.960	9.59310	-6.10460	-1.19740	.89680	.85100	.03360
.596	115.950	10.34150	-5.13670	-.92100	.69050	1.19540	.03030
.596	111.960	11.01680	-4.54820	-.59570	.76060	1.07690	-.01980
.596	110.060	11.21220	-4.07850	-.45920	.71970	1.05040	.00640
.596	119.970	9.48570	-5.89510	-1.28130	.83990	1.70390	-.01280
	GRADIENT	-.21511	-.15926	-.07238	.03678	-.12345	-.00034

RUN NO. 154/ 0 RN/L = 6.34 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.901	129.620	10.48940	-7.72870	-1.68830	.33510	-.03150	-.02910
.901	127.690	11.10840	-8.12020	-1.57340	.37490	-.14260	-.03220
.901	123.640	12.39890	-8.32770	-1.31670	.38960	-.10280	-.01770
.901	119.650	13.12360	-7.77810	-1.09030	.30750	.12540	-.00850
.901	115.620	13.88510	-7.48450	-.72550	.41350	.21780	-.00630
.901	111.650	14.59090	-6.25420	-.36490	.34580	.26580	.00280
.901	109.760	14.94590	-5.27010	-.20270	.26650	.15440	.01040
.901	119.650	13.10280	-7.72600	-1.08610	.30890	.09120	.01130
	GRADIENT	-.21835	-.11917	-.07488	.00227	-.01790	-.00201

RUN NO. 153/ 0 RN/L = 6.76 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.197	129.650	13.27000	-1.89530	-1.93390	.26560	-.15260	.00990
1.197	127.750	13.97590	-1.41390	-1.81930	.28080	-.19960	.01070
1.197	123.740	15.27910	-.95180	-1.53410	.26610	-.08560	.01530
1.197	119.730	16.09050	-.55520	-1.32730	.21510	-.08260	.03000
1.197	115.730	17.03010	.54680	-.99050	.23440	-.13740	.02490
1.197	111.750	17.79120	1.56450	-.67290	.19240	.00120	.00830
1.197	109.860	18.08860	2.09320	-.53120	.17640	.09450	.01350
1.197	119.740	15.99090	-.39730	-1.32110	.22480	-.06340	.03420
	GRADIENT	-.23947	-.19466	-.07088	.00482	-.01080	-.00016

MSFC 578(SA10F) 142-IN SRB (139) NBE1 (R911H1) (01 NOV 73)

REFERENCE DATA

SREF =	.5930 SQ. IN	XMRP =	5.5570 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	1.000	SHDSTK =	.000

RUN NO. 152/ 0 RN/L = 7.17 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.947	129.760	12.34870	1.37710	-1.87950	.30500	-.09680	.02190
1.947	127.680	12.98770	1.77500	-1.80070	.32030	-.08930	.01810
1.947	123.890	14.29630	2.86410	-1.59330	.31710	.04020	.02730
1.947	119.860	15.46080	3.24050	-1.26630	.32980	.06570	.02690
1.947	115.830	16.53130	3.58930	-.95820	.31650	.14600	.02530
1.947	111.810	17.56860	3.99410	-.67430	.33770	.12730	.01230
1.947	109.930	17.82740	4.47610	-.53570	.33440	.11050	.01240
1.947	119.890	15.22610	3.55480	-1.24190	.29120	.16940	.02070
	GRADIENT	-.27953	-.14364	-.06961	-.00120	-.01177	.00042

RUN NO. 110/ 0 RN/L = 7.10 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
3.479	129.930	11.47370	1.96980	-2.02390	.26890	.07850	.04080
3.479	128.000	12.09300	2.21260	-1.90840	.26020	.08550	.02970
3.479	124.010	13.26740	2.65140	-1.58830	.27310	.10560	.01840
3.479	120.010	14.36590	3.36980	-1.22680	.27890	.09770	.00940
3.479	115.990	15.46340	3.97090	-.91120	.27430	.06020	.04140
3.479	111.960	16.39260	4.54650	-.61500	.27370	.08450	.02160
3.479	110.080	16.79990	4.83680	-.48050	.28500	.09700	.01800
3.479	120.010	14.36590	3.36000	-1.22810	.27120	.11320	.01330
	GRADIENT	-.26871	-.14662	-.07939	-.00076	.00002	.00056

MSFC 578(SA10F) 142-IN SRB (139) NBE1 (R911I1) (01 NOV 73)

REFERENCE DATA

SREF =	.5039 SQ. IN	XMRP =	5.5570 IN.		
LREF =	.8000 IN.	YMRP =	.0000 IN.		
BREF =	.8000 IN.	ZMRP =	.0000 IN.		
SCALE =	.0056				

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	1.000	SHDSTK =	.000

RUN NO. 264/ 0 RN/L = 6.25 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
4.000	149.950	5.29250	.06720	-2.37090	-.12760	.05390	.00900
4.000	147.960	5.89930	.13020	-2.40100	-.14090	.03280	.02830
4.000	143.800	7.22240	.13630	-2.43290	-.15080	.04300	.03220
4.000	139.660	8.49540	.13950	-2.47070	-.15650	.09840	.02060
4.000	135.520	9.73580	.82200	-2.52430	-.16600	.08370	-.08380
4.000	131.400	10.98470	1.18720	-2.18220	-.17610	.10470	.02670
4.000	129.410	11.62240	1.35370	-2.04610	-.17130	.08350	.04380
4.000	139.650	8.50690	.10120	-2.46990	-.15180	.09250	.02660
	GRADIENT	-.30737	-.06482	-.01245	.00210	-.00279	.00036

RUN NO. 265/ 0 RN/L = 5.15 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
4.450	140.010	7.96940	.51080	-2.36530	-.15900	-.00020	.04510
4.450	150.180	4.93260	.39680	-2.25620	-.11700	.01620	.01110
4.450	148.210	5.50800	.41400	-2.28010	-.12800	.02390	.01050
4.450	144.110	6.72270	.50750	-2.32860	-.13670	.01290	.04400
4.450	140.020	7.95290	.54620	-2.37670	-.16540	-.01020	.02970
4.450	135.910	9.19380	1.20130	-2.45390	-.18260	.01920	.03460
4.450	131.840	10.43250	1.56500	-2.14180	-.17850	.01390	.00600
4.450	129.880	11.02010	1.68920	-1.99130	-.20270	.00110	.00700
	GRADIENT	-.30035	-.06791	-.00883	.00394	.00055	.00031

RUN NO. 266/ 0 RN/L = 4.22 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
4.960	150.310	4.89500	.79210	-2.29620	-.12710	.02650	.04820
4.960	148.360	5.51560	.82990	-2.32200	-.12160	.02580	.07210
4.960	144.290	6.78230	.93470	-2.38280	-.15010	-.01970	.07640
4.960	140.230	8.02540	1.03840	-2.44420	-.16920	-.02340	.05160
4.960	136.150	9.31150	1.70180	-2.54530	-.18010	.01020	.00990
4.960	132.110	10.61750	2.08820	-2.23660	-.19000	.00380	-.00510
4.960	130.160	11.21210	2.16670	-2.07220	-.19430	.00180	.00600
4.960	140.220	8.07420	.95850	-2.44690	-.17030	.01860	.04810
	GRADIENT	-.31341	-.07385	-.00620	.00368	.00083	.00535

MSFC 578(SA15F) 142-IN SRB (139) NBE1 (R911J1) (01 NOV 73)

REFERENCE DATA

SREF =	.5039 SQ. IN	XMRP =	5.5570 IN.		
LREF =	.8000 IN.	YMRP =	.0000 IN.		
BREF =	.8000 IN.	ZMRP =	.0000 IN.		
SCALE =	.0056				

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	1.000	SHDSTK =	.000

RUN NO. 8/ 0 RN/L = 5.01 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLNN	CA	CYN	CYNN	CBL
.599	170.010	.66590	-1.45160	-1.52330	-.01590	.06290	-.01730
.599	168.040	.87010	-1.79580	-1.61940	-.03440	.04850	-.00680
.599	164.000	1.43770	-2.32470	-1.72850	-.04760	-.04640	-.00450
.599	159.930	2.10810	-2.53150	-1.87860	-.05620	-.15260	-.01680
.599	155.850	2.77520	-2.52700	-2.06020	-.12190	-.33560	-.00380
.599	151.750	3.53230	-2.66730	-2.24820	-.26410	-.59800	.00610
.599	149.820	4.06760	-3.01080	-2.32190	-.31990	-.72390	-.00900
.599	159.930	2.07680	-2.52950	-1.87320	-.06140	-.16870	.01430
	GRADIENT	-.16629	.06397	.03932	.01417	.03893	-.00052

RUN NO. 7/ 0 RN/L = 6.34 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLNN	CA	CYN	CYNN	CBL
.908	170.000	.74740	-.37100	-1.88590	.02500	.03120	.00060
.908	167.980	1.02030	-.73960	-1.99040	.01450	-.02370	-.00180
.908	163.870	1.63060	-1.45290	-2.12030	-.04930	-.10860	.00180
.908	159.740	2.27440	-1.88030	-2.21230	-.08870	-.24210	.00320
.908	155.560	3.07900	-2.52520	-2.30430	-.12420	-.43050	.00490
.908	151.330	4.16110	-3.34950	-2.42540	-.29080	-.44790	.00070
.908	149.340	4.86350	-3.78810	-2.50960	-.42000	-.61690	-.01070
.908	159.740	2.28590	-1.90690	-2.22060	-.09850	-.24100	-.00020
	GRADIENT	-.19332	.15909	.02777	.01929	.02992	.00022

RUN NO. 6/ 0 RN/L = 6.72 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLNN	CA	CYN	CYNN	CBL
1.195	169.830	.96130	-1.68520	-2.44910	-.02900	-.05100	.00940
1.195	167.820	1.29060	-2.02270	-2.51830	.00560	-.04310	.00700
1.195	163.660	1.99470	-2.75390	-2.59510	-.00720	-.15630	.00750
1.195	159.410	2.89290	-3.64650	-2.62150	-.13050	-.32650	.00210
1.195	155.100	4.20870	-4.34230	-2.72630	-.19820	-.18140	.00410
1.195	150.760	5.92890	-4.18340	-2.83050	-.16070	.24660	.01550
1.195	148.730	6.75580	-4.03510	-2.88620	-.13150	.13630	.00100
1.195	159.410	2.91860	-3.64260	-2.63340	-.13360	-.35650	.00070
	GRADIENT	-.27525	.12322	.01937	.00816	-.01090	.00007

MSFC 578(SA19F) 142-IN SRB (139) NBE1 (R911J1) (01 NOV 73)

REFERENCE DATA

SREF =	.5059 Sq. IN	XMRP =	5.5579 IN.		
LREF =	.6999 IN.	YMRP =	.0000 IN.		
BREF =	.8999 IN.	ZMRP =	.0000 IN.		
SCALE =	.0056				

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	1.000	SHDSTK =	.000

RUN NO. 70/ 0 RN/L = 6.96 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.957	169.850	.82210	-1.26050	-2.52080	.02050	.10690	.00000
1.957	167.830	1.12360	-1.48340	-2.53300	.03470	.05350	.00000
1.957	163.640	2.06630	-1.83510	-2.60260	.01380	.03230	.00000
1.957	159.360	3.32740	-1.67990	-2.67340	-.00540	.02070	.00000
1.957	155.050	4.69780	-1.38460	-2.74890	.00440	-.12730	.00000
1.957	150.770	6.24560	-.55870	-2.81600	.02130	.02030	.00000
1.957	148.750	7.04360	-.12590	-2.86930	.00710	-.08380	.00000
1.957	159.380	3.31400	-1.46820	-2.64340	-.04270	-.00700	.00000
	GRADIENT	-.29796	-.05401	.01660	.00072	.00735	.00000

RUN NO. 71/ 0 RN/L = 6.99 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
3.479	170.000	.68620	-.39900	-2.41550	.00930	.02250	.00000
3.479	168.040	.99690	-.27720	-2.44840	.00700	.01580	.00000
3.479	163.960	1.75250	-.09860	-2.51770	.00900	.00320	.00000
3.479	159.820	2.65810	.16070	-2.62980	-.01970	-.02200	.00000
3.479	155.660	3.69200	.39360	-2.77110	-.00210	.00680	.00000
3.479	151.500	4.84760	.55760	-2.82180	.00050	-.00090	.00000
3.479	149.490	5.51160	.00810	-2.38230	-.00350	.00060	.00000
3.479	159.820	2.66670	.18190	-2.63030	-.01980	-.02230	.00000
	GRADIENT	-.23435	-.03431	.00991	.00060	.00090	.00000

RUN NO. 258/ 0 RN/L = 6.10 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
4.000	170.490	.57120	-.29210	-2.37780	-.06040	.05480	.01120
4.000	168.540	.85760	-.21140	-2.41470	-.07160	.04040	.01290
4.000	164.470	1.54100	.03450	-2.47300	-.06720	.01870	.04240
4.000	160.370	2.41220	.30160	-2.57900	-.06850	-.02280	.05080
4.000	156.250	3.41690	.54880	-2.75630	-.08610	.01160	.04830
4.000	152.140	4.33080	.65400	-2.84490	-.12170	-.00530	.05090
4.000	150.120	5.21350	.07540	-2.36300	-.12230	.04800	.02650
4.000	160.380	2.40170	.30110	-2.57800	-.07290	-.02950	.04590
	GRADIENT	-.22662	-.03438	.01204	.00298	.00124	-.00130

MSFC 578(SA10F) 142-IN SRB (139) NBE1 (R911J1) (01 NOV 73)

REFERENCE DATA

SREF =	.5039 SQ. IN	XMRP =	5.5370 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	1.000	SHDSTK =	.000

RUN NO. 259/ 0 RN/L = 5.06 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLMN	CA	CYN	CYNN	CBL
4.450	170.520	.51310	-.26350	-2.26720	-.06480	.05880	.01070
4.450	168.580	.75210	-.17830	-2.30470	-.07780	-.05410	.02100
4.450	164.540	1.37370	.10030	-2.37910	-.08310	-.02950	.04350
4.450	160.480	2.23670	.43020	-2.48040	-.08420	.02210	.01300
4.450	156.380	3.21110	.70450	-2.65840	-.09830	.01810	.01360
4.450	152.320	4.26740	.82220	-2.75560	-.11910	-.00350	.05750
4.450	150.330	4.91890	.24380	-2.30180	-.13000	.01710	.05410
4.450	160.480	2.20430	.48410	-2.47650	-.07720	.01280	.01330
	GRADIENT	-.21820	-.04249	.01393	.00286	-.00050	-.00166

RUN NO. 260/ 0 RN/L = 4.14 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLMN	CA	CYN	CYNN	CBL
4.960	170.530	.53010	-.30300	-2.31080	-.04490	.07420	.03330
4.960	168.600	.69620	-.15550	-2.33720	-.04520	.01740	.06290
4.960	164.570	1.36370	.19100	-2.40900	-.05150	.06860	.04540
4.960	160.540	2.22060	.65770	-2.51480	-.08710	.00640	.06450
4.960	156.470	3.22580	.90240	-2.70480	-.08360	-.05180	.06850
4.960	152.430	4.30260	.96580	-2.81300	-.10320	.02810	.01210
4.960	150.470	4.94430	.48320	-2.34580	-.10710	.03030	.07200
4.960	160.540	2.17450	.62610	-2.51890	-.06680	.00790	.07560
	GRADIENT	-.22206	-.05431	.01477	.00335	.00230	-.00019

MSFC 578(SA10F) 142-IN SRB (139) NBE1 (R911K1) (01 NOV 73)

REFERENCE DATA

SREF =	.5030 SQ. IN	XMRP =	5.5570 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.9950		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	1.000	SHDSTK =	.000

RUN NO. 263/ 0 RN/L = 6.17 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLNN	CA	CYN	CYNN	CBL
4.000	191.060	-.73330	-.22040	-2.37160	-.07350	.02350	.01640
4.000	189.120	-.45850	-.09760	-2.34480	-.06210	.03540	.00820
4.000	185.080	-.11760	-.00740	-2.27560	-.02770	.03590	.01070
4.000	181.060	-.00730	-.12580	-2.19610	-.00890	-.01360	.01330
4.000	177.010	.17140	-.43240	-2.14670	-.01540	.03940	.00910
4.000	173.010	.34020	-.42400	-2.32970	-.01980	-.03760	.00510
4.000	171.070	.53790	-.33550	-2.36150	-.04390	-.06550	.01470
4.000	181.060	.00190	-.08100	-2.13810	-.01420	.01750	.01060
	GRADIENT	-.05608	.01517	-.00206	-.00190	.00404	.00013

RUN NO. 262/ 0 RN/L = 5.09 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLNN	CA	CYN	CYNN	CBL
4.450	191.030	-.62270	-.22440	-2.25230	-.06240	.01380	.00740
4.450	189.090	-.40040	-.11660	-2.22350	-.04280	-.05110	.03620
4.450	185.070	-.11430	.00090	-2.16200	-.02640	.02220	.01120
4.450	181.060	.04600	-.15140	-2.09560	-.02150	.06050	.00720
4.450	177.030	.12690	-.33110	-2.06010	-.02150	.04330	.00860
4.450	173.030	.32200	-.38630	-2.20950	-.03550	.00590	.01340
4.450	171.100	.44080	-.37930	-2.21190	-.05490	-.06940	.02100
4.450	181.070	-.03580	-.05890	-2.04100	-.02090	.05980	.03200
	GRADIENT	-.04848	.01401	-.00257	-.00043	.00080	.00016

RUN NO. 261/ 0 RN/L = 4.14 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLNN	CA	CYN	CYNN	CBL
4.960	191.010	-.64060	-.29930	-2.35720	-.02600	.04910	.01100
4.960	189.080	-.37990	-.11090	-2.32130	-.02890	.08840	.00700
4.960	185.070	-.11090	-.06220	-2.25720	-.03030	.05960	-.00350
4.960	181.060	-.04770	-.16400	-2.17710	-.02040	.04700	.00890
4.960	177.030	.12220	-.29650	-2.23020	-.02140	.04810	.04650
4.960	173.040	.31590	-.43280	-2.29610	-.01090	-.08890	.04530
4.960	171.110	.45930	-.39700	-2.33700	-.03190	-.04890	.01840
4.960	181.070	-.14240	-.19730	-2.18050	-.01080	.10330	.00360
	GRADIENT	-.04874	.01252	-.00142	-.00036	.00681	-.00162

MSFC 578(SA15F) 142-IN SRB (139) NBE1 (NO GRIT) (R911D2) (01 NOV 73)

REFERENCE DATA

SREF =	.5550 SQ. IN	XMRP =	5.5570 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	1.000	SHDSTK =	.000

RUN NO. 252/ 0 RN/L = 6.69 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLNN	CA	CYN	CYNN	CBL
1.198	50.790	14.05800	15.12210	.92340	-.27840	-.49220	.01620
1.198	52.680	14.72580	15.31720	.82610	-.29310	-.50860	.01840
1.198	56.720	15.70400	16.31470	.75120	-.36750	-.34460	.00460
1.198	60.740	16.57330	16.72980	.67080	-.33410	-.44110	.03250
1.198	64.740	17.47750	16.14070	.71270	-.28830	-.26650	.01640
1.198	68.700	18.38980	15.21160	.65850	-.29780	-.27920	.05410
1.198	70.580	18.55700	14.65780	.60840	-.27330	-.27960	.02890
1.198	60.730	16.49840	16.39340	.68050	-.33060	-.40010	.02180
	GRADIENT	.22731	-.01688	-.01296	.00092	.01195	.00084

MSFC 578(SA10F) 142-IN SRB (139) NBE1 (R911F2) (22 FEB 74)

REFERENCE DATA

SREF =	.5650 SQ. IN	XMRP =	5.5570 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	1.000	SHDSTK =	.000

RUN NO. 220/ 0 RN/L = 6.79 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLNN	CA	CYN	CYNN	CBL
1.199	80.510	19.31740	11.09700	.48310	-.38790	-.11330	.01610
1.199	82.370	19.39570	10.75850	.49070	-.34100	-.19540	.02120
1.199	86.340	19.65700	10.03190	.39480	-.35510	-.05410	.01280
1.199	90.290	19.80830	8.63270	.27810	-.34830	-.00030	.01250
1.199	94.260	19.91430	8.07440	.11100	-.32680	.03170	.01450
1.199	98.270	19.93803	7.78190	-.08300	-.31650	.02800	.02490
1.199	100.150	19.74760	7.29140	-.17740	-.32790	.05740	.02610
1.199	90.280	19.77520	8.61630	.27760	-.34830	-.01220	.01590
	GRADIENT	.02721	-.19608	-.03473	.00256	.01081	.00038

MSFC 578(SA10F) 142-IN SRB (139) NBE2 (R912B1) (01 NOV 73)

REFERENCE DATA

SREF =	.5930 SQ. IN	XMRP =	5.5570 IN.		
LREF =	.8000 IN.	YMRP =	.0000 IN.		
BREF =	.8000 IN.	ZMRP =	.0000 IN.		
SCALE =	.0056				

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	2.000	SHDSTK =	.000

RUN NO. 52/ 0 RN/L = 4.92 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.597	9.990	.92950	.79230	1.01580	.01430	.06690	.00000
.597	11.930	1.15490	1.12260	1.03600	.07820	-.01750	.00000
.597	15.970	1.65820	1.85030	1.04520	.36330	-.53770	.00000
.597	20.040	2.22780	2.79590	1.02770	.75080	-1.17580	.00000
.597	24.140	2.91290	3.99110	.97030	1.09580	-1.55960	.00000
.597	28.250	3.63900	5.23880	.91380	1.18980	-1.12700	.00000
.597	30.180	4.02700	5.77450	.90690	1.26640	-.56990	.00000
.597	20.040	2.27160	2.62400	1.02660	.79770	-1.24120	.00000
	GRADIENT	.15303	.25018	-.00650	.06667	-.05292	.00000

RUN NO. 51/ 0 RN/L = 6.23 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.906	10.020	1.03810	.34640	1.21000	-.00650	.10860	.00000
.906	12.010	1.28820	.58890	1.22230	-.00960	.04020	.00000
.906	16.100	1.87550	1.48850	1.22040	-.00470	-.06840	.00000
.906	20.260	2.58340	2.83230	1.19990	.12490	-.22410	.00000
.906	24.470	3.31340	4.78850	1.13120	.35480	-.56650	.00000
.906	28.720	4.25290	7.09490	1.06110	.38450	-.39990	.00000
.906	30.770	4.92020	8.61440	1.05050	.41850	.07710	.00000
.906	20.250	2.52820	2.75900	1.17850	.09700	-.24000	.00000
	GRADIENT	.18243	.39554	-.00868	.02365	-.01547	.00000

RUN NO. 50/ 0 RN/L = 6.62 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	.M	CA	CYM	CYNM	CBL
1.195	10.080	1.08880	1.01450	1.72180	.02560	-.08610	.00000
1.195	12.120	1.33310	1.57300	1.74560	.07490	-.17910	.00000
1.195	16.290	1.96100	3.13250	1.75850	.20440	-.35980	.00000
1.195	20.550	2.66810	5.17210	1.70460	.22340	-.34410	.00000
1.195	24.900	4.07360	7.38790	1.61980	.19570	-.22250	.00000
1.195	29.250	5.56900	9.40560	1.54200	.24940	.01630	.00000
1.195	31.340	6.39640	10.38890	1.53820	.17410	.46740	.00000
1.195	20.570	2.90750	5.33050	1.71160	.22380	-.26670	.00000
	GRADIENT	.24880	.45178	-.01051	.00717	.02011	.00000

MSFC 578(SA10F) 142-IN SRB (139) NBE2 (R912B1) (01 NOV 73)

REFERENCE DATA

SREF =	.9539 SQ. IN	XMRP =	5.5570 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	2.000	SHDSTK =	.000

RUN NO. 56/ 0 RN/L = 6.99 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.951	10.220	1.11050	2.20560	1.36680	.02170	.03210	.00000
1.951	12.270	1.46700	2.91260	1.34700	.04030	.00100	.00000
1.951	16.510	2.47560	4.44990	1.29570	.07250	-.05520	.00000
1.951	20.820	3.79820	5.41990	1.33240	.05760	-.02740	.00000
1.951	25.180	5.31390	6.51380	1.42590	.03700	.13620	.00000
1.951	29.460	6.86940	6.71220	1.43800	-.00440	.25740	.00000
1.951	31.550	7.68970	6.99450	1.45100	.01100	.22870	.00000
1.951	29.810	3.79200	5.33680	1.30950	.07730	-.04100	.00000
	GRADIENT	.31224	.22423	.00540	-.00159	.01246	.00000

RUN NO. 85/ 0 RN/L = 7.02 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
3.479	10.150	1.31440	2.17690	.86730	.00730	-.04210	.00000
3.479	12.130	1.75080	2.33370	.88060	-.00360	-.01930	.00000
3.479	16.210	2.70240	2.60940	.90450	-.01440	-.00400	.00000
3.479	20.360	3.75970	2.82420	.98380	.00490	.00710	.00000
3.479	24.530	4.95950	3.05940	1.07500	.00370	.03150	.00000
3.479	28.700	6.24910	3.45150	1.16560	-.00130	.01820	.00000
3.479	30.660	6.85990	3.66920	1.20570	.00320	.01870	.00000
3.479	20.360	3.76850	2.82920	.98240	.00500	.00710	.00000
	GRADIENT	.27091	.06918	.01712	.00014	.00283	.00000

MSFC 578(SA10F) 142-IN SRB (139) NBE2 (R912D1) (22 FEB 74)

REFERENCE DATA

SREF =	.5039 SQ. IN	XMRP =	5.5570 IN.
LREF =	.8059 IN.	YMRP =	.0000 IN.
BREF =	.8059 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	2.000	SHDSTK =	.000

RUN NO. 215/ 0 RN/L = 4.98 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.593	50.320	7.39490	10.45350	.41080	-.68340	-1.64930	.04930
.593	52.240	8.28720	11.59910	.31610	-.30560	-3.00740	.04250
.593	56.270	9.58010	12.86710	.11520	-.15950	-2.88650	.03680
.593	60.300	10.90380	14.30700	-.02680	-.06040	-1.83980	.04150
.593	64.320	11.64030	14.56030	-.19700	.12350	.11370	.05360
.593	68.320	11.77850	14.37670	-.29430	-.20810	-1.30480	.03470
.593	70.220	11.91260	14.64370	-.29960	-.14800	-.92190	.07530
.593	60.300	10.87720	14.28760	-.02920	-.10370	-1.92720	.03220
	GRADIENT	.22619	.19712	-.03680	.02020	.09173	.00073

RUN NO. 214/ 0 RN/L = 6.30 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.902	50.700	11.65290	16.85510	.51640	-.01860	.10790	.02490
.902	52.640	12.22760	18.15800	.44640	.12420	-.22620	.04280
.902	56.700	13.24450	19.86070	.29620	.25050	.51520	.02640
.902	60.740	14.27510	20.71820	.18620	-.18490	-.03520	.02740
.902	64.730	14.84040	20.05360	.10970	-.14300	-.05170	.04060
.902	68.660	14.93390	18.02580	.07500	-.21640	.07620	.02090
.902	70.530	14.96910	17.15010	.11460	-.22740	.15950	.02180
.902	60.730	14.17420	20.57750	.17160	-.15500	-.01170	.01280
	GRADIENT	.17109	.00897	-.02163	-.01785	.00185	-.00042

RUN NO. 253/ 0 RN/L = 6.68 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.199	50.760	14.09600	14.74240	1.04860	-.29130	-.40510	.02510
1.199	52.660	14.77660	14.92160	.93590	-.31000	-.50130	.02110
1.199	56.710	15.88390	15.95590	.82660	-.37210	-.32380	.00740
1.199	60.750	16.71310	16.33880	.79760	-.33140	-.41140	.03830
1.199	64.740	17.61160	16.07170	.81270	-.27790	-.26920	.02860
1.199	68.700	18.48090	14.99420	.82120	-.31440	-.20150	.02840
1.199	70.570	18.61840	14.43270	.74680	-.29960	-.15320	.01120
1.199	60.720	16.64520	16.22200	.79410	-.32690	-.37690	.02320
	GRADIENT	.22813	-.00524	-.01113	.00072	.01432	.00002

MSFC 578(SA1OF) 142-IN SRB (139) NBE2 (R912D1) (22 FEB 74)

REFERENCE DATA

SREF =	.5039 SQ. IN	XMRP =	5.5570 IN.		
LREF =	.8000 IN.	YMRP =	.0000 IN.		
BREF =	.8000 IN.	ZMRP =	.0000 IN.		
SCALE =	.0056				

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	2.000	SHDSTK =	.000

RUN NO. 132/ 0 RN/L = 7.21 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.948	50.560	13.49870	8.99800	1.39470	-.29190	-.12560	-.01060
1.948	52.470	14.04200	9.20600	1.36890	-.29750	-.10340	-.00070
1.948	56.520	15.32300	10.01560	1.34420	-.33160	-.14850	-.00110
1.948	60.530	16.28650	10.09790	1.29090	-.33350	-.15070	-.01100
1.948	64.570	17.23260	10.56640	1.20190	-.33570	-.16180	-.00650
1.948	68.620	18.37380	11.48220	1.12030	-.33860	-.15840	-.01010
1.948	70.500	18.46430	11.19350	1.04990	-.31620	-.11510	-.00550
1.948	60.490	16.03580	9.54620	1.28360	-.30490	-.09090	-.01970
	GRADIENT	.25492	.11759	-.01664	-.00164	-.00109	-.00013

RUN NO. 90/ 0 RN/L = 6.93 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
3.479	50.340	12.65110	6.06390	1.50890	-.28810	-.18330	-.02330
3.479	52.260	13.21420	6.63270	1.49750	-.28820	-.18810	-.01390
3.479	56.250	14.33940	7.63960	1.47060	-.29240	-.23200	-.01580
3.479	60.300	15.31320	8.60300	1.40980	-.28190	-.22540	-.01070
3.479	64.350	16.26940	9.34820	1.28130	-.27520	-.23790	-.01540
3.479	68.370	17.09700	9.89000	1.15510	-.25080	-.23000	-.00200
3.479	70.270	17.40730	9.95830	1.08840	-.24860	-.24040	-.00680
3.479	60.300	15.31360	8.63470	1.40740	-.28580	-.23780	-.02060
	GRADIENT	.23956	.19924	-.02136	.00212	-.00257	.00073

MSFC 578(SA10F) 142-IN SRB (139) NBE2 (R912F1) (01 NOV 73)

REFERENCE DATA

SREF =	.5030 SQ. IN	XMRP =	5.5570 IN.
LREF =	.8500 IN.	YMRP =	.0000 IN.
BREF =	.8500 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	2.000	SHDSTK =	.000

RUN NO. 223/ 0 RN/L = 5.04 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.595	80.200	11.77280	10.65680	.27650	-.07410	.19020	.07330
.595	82.070	11.74340	9.24530	.35620	.14020	.89820	.04140
.595	86.020	12.13240	6.68100	.42170	.10030	.61300	.06330
.595	89.970	12.23310	4.15030	.53040	.12670	-.07910	.07070
.595	93.960	12.16740	2.68220	.47120	.27480	.21630	.04960
.595	97.930	12.14560	1.23330	.24540	.54310	.06380	.04250
.595	99.820	12.16820	.38120	.07490	.66550	-.69550	.04570
.595	89.970	12.14030	4.06960	.52940	.13820	-.04710	.09400
	GRADIENT	.02057	-.51506	-.00765	.03188	-.04826	-.00091

RUN NO. 224/ 0 RN/L = 6.38 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.899	80.420	15.79440	12.20100	.56150	-.28550	-.21890	.06340
.899	82.290	15.87250	11.30460	.55020	-.25270	-.15720	.07480
.899	86.210	16.16040	8.86350	.53010	-.22040	-.02430	.02990
.899	90.120	16.38540	6.27400	.58680	-.23900	-.00500	.02030
.899	94.070	16.35890	4.09230	.46810	-.26600	.07480	.02110
.899	98.000	16.07590	2.05890	.31600	-.28330	.28440	.01370
.899	99.860	15.91620	.82040	.21730	-.24890	.22380	.01920
.899	90.120	16.40700	6.31980	.58160	-.22810	.00150	.02380
	GRADIENT	.01034	-.58845	-.01583	-.00019	.02378	-.00275

RUN NO. 225/ 0 RN/L = 6.81 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.195	80.480	19.34210	11.01240	.62430	-.39230	-.05380	.01400
1.195	82.370	19.45630	10.62740	.59290	-.35840	-.08240	.02230
1.195	86.340	19.73600	9.84890	.47990	-.34260	.00340	.00900
1.195	90.270	19.88930	8.39470	.33080	-.34190	.05740	.00610
1.195	94.270	20.01720	7.91650	.14210	-.31500	.08900	.02510
1.195	98.260	19.98790	7.66220	-.07720	-.31530	.07080	.02510
1.195	100.140	19.80760	7.09350	-.17950	-.31900	.07400	.00920
1.195	90.280	19.86630	8.40610	.33110	-.34460	.05960	.01010
	GRADIENT	.02822	-.19863	-.04151	.00334	.00801	.00011

MSFC 578(SA19F) 142-IN SRB (139) NBE2 (R912F1) (01 NOV 73)

REFERENCE DATA

SREF =	.5039 SQ. IN	XMRP =	5.5570 IN.		
LREF =	.8000 IN.	YMRP =	.0000 IN.		
BREF =	.8000 IN.	ZMRP =	.0000 IN.		
SCALE =	.0556				

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	2.000	SHDSTK =	.000

RUN NO. 129/ 0 RN/L = 7.16 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.951	80.540	19.57990	10.51500	.71060	-.40200	-.12490	-.03370
1.951	82.410	19.71700	10.22790	.62670	-.39410	-.11870	-.03000
1.951	86.380	19.88750	9.50320	.45020	-.39530	-.10030	-.03810
1.951	90.340	19.93980	8.74640	.27950	-.37610	-.09320	-.04390
1.951	94.330	19.84500	8.00390	.09630	-.35370	-.09770	-.04200
1.951	98.290	19.58620	7.23820	-.10440	-.32780	-.08590	-.03330
1.951	100.170	19.35380	6.84550	-.20420	-.31200	-.07470	-.02450
1.951	90.340	19.83330	8.75350	.27610	-.37000	-.08110	-.04140
	GRADIENT	-.00985	-.18756	-.04621	.00450	.00218	.00014

RUN NO. 89/ 0 RN/L = 6.93 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
3.479	80.320	18.60440	9.87060	.78250	-.37160	-.26750	-.01710
3.479	82.230	18.78050	9.68050	.71080	-.35849	-.25130	-.02090
3.479	86.200	18.99750	9.25760	.54990	-.33700	-.21170	-.01360
3.479	90.180	19.10580	8.58090	.36630	-.32010	-.19660	-.01680
3.479	94.170	19.09730	7.76910	.16000	-.28910	-.16800	-.01690
3.479	98.150	18.86920	7.09580	-.04280	-.28270	-.17320	-.02510
3.479	100.050	18.55650	6.85760	-.12830	-.27340	-.14210	-.01410
3.479	90.180	19.08820	8.59130	.36550	-.32420	-.20910	-.02210
	GRADIENT	.00178	-.15924	-.04683	.00499	.00576	-.00004

MSFC 578(SA1GF) 142-IN SRB (139) NBE2 (R912H1) (01 NOV 73)

REFERENCE DATA

SREF =	.5030 SQ. IN	XMRP =	5.5570 IN.		
LREF =	.8000 IN.	YMRP =	.0000 IN.		
BREF =	.8000 IN.	ZMRP =	.0000 IN.		
SCALE =	.0056				

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	2.000	SHDSTK =	.000

RUN NO. 156/ 0 RN/L = 5.02 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.597	129.890	6.91940	-6.85680	-2.04350	.49200	2.24550	.01830
.597	127.980	7.47780	-6.75650	-1.93780	-.14070	3.09440	.01780
.597	123.980	8.83120	-5.96350	-1.70930	.55350	2.85810	.04410
.597	119.960	9.65570	-6.05420	-1.39150	.61360	1.10290	-.00330
.597	115.950	10.40800	-5.16240	-1.05070	.87920	1.76420	.02010
.597	111.960	10.87660	-4.30040	-.75650	.81820	1.44650	.01910
.597	110.070	11.12760	-3.95620	-.60400	.90770	.86400	.01590
.597	119.980	9.52240	-5.50610	-1.49310	.90800	.14780	-.00200
	GRADIENT	-.21085	-.14462	-.07368	-.03672	.08758	.00031

RUN NO. 157/ 0 RN/L = 6.34 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.902	129.620	10.53440	-7.53490	-1.95460	.33460	.01980	-.03220
.902	127.690	11.19730	-7.79880	-1.81380	.39600	-.11300	-.02200
.902	123.650	12.36130	-8.10840	-1.51000	.39460	-.25320	-.00430
.902	119.650	13.17340	-7.56970	-1.23220	.37040	-.17830	-.01680
.902	115.630	13.89510	-7.15600	-.83490	.26980	.09010	.01110
.902	111.650	14.59420	-6.11150	-.45770	.33700	.22990	.00660
.902	109.770	14.84980	-5.34780	-.28430	.27320	.19970	.01150
.902	119.650	13.29810	-7.52850	-1.24170	.37820	-.12120	-.02240
	GRADIENT	-.21289	-.10893	-.08428	.00442	-.01648	-.00203

RUN NO. 158/ 0 RN/L = 6.76 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.196	129.680	13.13670	-1.46990	-2.16980	.22390	-.15830	.02820
1.196	127.770	13.83110	-1.00790	-2.04050	.23510	-.16240	.02990
1.196	123.760	15.06410	-.56320	-1.71250	.24490	-.14870	.02640
1.196	119.740	15.99360	-.41620	-1.41210	.22190	-.15650	.03260
1.196	115.730	17.04510	.56770	-1.11890	.18580	.01720	.01240
1.196	111.750	17.75140	1.64890	-.77750	.19250	.00500	.00500
1.196	109.870	18.03050	2.17420	-.61740	.18850	.03630	.02150
1.196	119.750	15.91590	-.15190	-1.47980	.23430	-.18860	.02770
	GRADIENT	-.24622	-.17348	-.07813	.00260	-.01102	.00088

MSFC 578(SA10F) 142-IN SRB (139) NBE2 (R912H1) (01 NOV 73)

REFERENCE DATA

SREF =	.5039 SQ. IN	XMRP =	5.5570 IN.
LREF =	.8050 IN.	YMRP =	.0000 IN.
BREF =	.8050 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	2.000	SHDSTK =	.000

RUN NO. 151/ 0 RN/L = 7.17 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.945	129.770	12.34430	1.64670	-2.11090	.27870	.04080	.01910
1.945	127.890	12.99600	2.01120	-2.01760	.29210	.04120	.02540
1.945	123.900	14.25360	3.04900	-1.77720	.30480	.10160	.02670
1.945	119.870	15.48390	3.28350	-1.42430	.33900	.05240	.01490
1.945	115.830	16.50380	3.72560	-1.07950	.32120	.11540	.00680
1.945	111.800	17.65190	3.83420	-.77130	.32780	.12740	.00410
1.945	109.920	17.82750	4.41250	-.62070	.32640	.13170	.01480
1.945	119.900	15.20210	3.64280	-1.39700	.31280	.09350	.01710
	GRADIENT	-.28118	-.12482	-.07697	-.00230	-.00460	.00082

RUN NO. 109/ 0 RN/L = 7.09 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
3.479	129.940	11.44660	2.16910	-2.22550	.28530	.00060	.02860
3.479	128.010	12.07190	2.35040	-2.10060	.29540	.00340	.03520
3.479	124.020	13.22540	2.80470	-1.74500	.26140	.12590	.03680
3.479	120.010	14.33540	3.48680	-1.36490	.26300	.17450	-.01860
3.479	115.970	15.46110	3.96500	-1.03130	.25850	.11750	.03840
3.479	111.960	16.38970	4.51060	-.70980	.22610	.05900	.03260
3.479	110.080	16.82680	4.80860	-.56340	.28600	.03060	.03340
3.479	120.010	14.33890	3.47640	-1.36380	.25830	.19650	.04500
	GRADIENT	-.27085	-.13452	-.08520	.00157	-.00198	-.00009

MSFC 378(SA19F) 142-IN SRB (139) NBE2 (R912J1) (01 NOV 73)

REFERENCE DATA

SREF =	.5039 Sq. IN	XMRP =	5.5570 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	2.000	SHDSTK =	.000

RUN NO. 9/ 0 RN/L = 5.01 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.599	170.030	.60920	-1.05730	-1.68300	-.00330	.01180	.00850
.599	168.060	.83970	-1.42980	-1.79340	.01410	-.04120	.01270
.599	164.030	1.37080	-1.92230	-1.94070	-.04120	-.08180	.00590
.599	159.950	1.99300	-2.12510	-2.12120	-.06140	-.17170	.00970
.599	155.870	2.65910	-2.15570	-2.34270	-.12230	-.32330	.01800
.599	151.780	3.54700	-2.50930	-2.53790	-.25660	-.42800	-.00660
.599	149.840	4.00980	-2.87500	-2.57950	-.32200	-.53520	.01310
.599	159.950	1.95670	-2.06980	-2.11380	-.06650	-.18790	.00980
	GRADIENT	-.16664	.07598	.04532	.01557	.02613	.00003

RUN NO. 10/ 0 RN/L = 6.30 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.900	170.010	.69570	-.01550	-2.09000	.02170	.02890	-.00260
.900	168.000	.97230	-.35220	-2.18050	.00720	-.01250	-.01470
.900	163.910	1.58320	-1.12750	-2.27010	-.03260	-.09630	-.01300
.900	159.750	2.27750	-1.74370	-2.44140	-.11160	-.17880	-.00430
.900	155.580	3.06690	-2.36310	-2.57160	-.11870	-.26350	-.00500
.900	151.390	4.06290	-3.12070	-2.74830	-.31460	-.29370	-.00180
.900	149.390	4.66960	-3.71200	-2.75200	-.35030	-.29860	-.01230
.900	159.750	2.27420	-1.73820	-2.44560	-.10770	-.15790	-.01030
	GRADIENT	-.18885	.17198	.03322	.01784	.01663	-.00011

RUN NO. 11/ 0 RN/L = 6.68 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.200	169.650	.98490	-1.60940	-2.73170	-.02920	-.05900	-.00240
1.200	167.810	1.24440	-1.98400	-2.82110	-.03050	-.06470	-.00470
1.200	163.670	1.92700	-2.71250	-2.87240	-.06060	-.15520	.00180
1.200	159.420	2.90070	-3.45790	-2.94270	-.17200	-.21340	.00000
1.200	155.110	4.22020	-4.09600	-3.05120	-.16440	-.21640	.00270
1.200	150.800	5.96130	-3.66180	-3.19600	-.11010	-.35860	.00240
1.200	148.770	6.56020	-4.21430	-3.17690	-.08210	-.11160	.00370
1.200	159.420	2.91080	-3.46810	-2.95560	-.20040	-.19170	-.00350
	GRADIENT	-.26972	.11780	.02144	.00411	.00820	-.00032

MSFC 578(SA1SF) 142-IN SRB (139) NBE2 (R912J1) (01 NOV 73)

REFERENCE DATA

SREF =	.5030 SQ. IN	XMRP =	5.5570 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
DREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	2.000	SHDSTK =	.000

RUN NO. 69/ 0 RN/L = 6.96 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLMM	CA	CYM	CYNM	CBL
1.956	169.850	.81440	-1.23770	-2.80220	-.01410	.09480	.00000
1.956	167.850	1.11250	-1.47320	-2.82450	.00350	-.05660	.00000
1.956	163.640	2.07460	-1.83030	-2.89700	.01810	.06760	.00000
1.956	159.350	3.33130	-1.70910	-2.96250	.05030	-.03030	.00000
1.956	155.080	4.67180	-1.16860	-3.01390	-.01850	-.10210	.00000
1.956	150.810	6.10670	-.42680	-3.11900	-.00910	.09400	.00000
1.956	148.800	6.75420	-.30510	-3.18000	-.03150	.07720	.00000
1.956	159.380	3.31680	-1.51520	-2.92470	-.01220	-.01840	.00000
	GRADIENT	-.28809	-.05357	.01733	.00110	.00012	.00000

RUN NO. 72/ 0 RN/L = 7.01 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLMM	CA	CYM	CYNM	CBL
3.479	170.000	.67340	-.43750	-2.65700	-.00540	.02770	.00000
3.479	168.020	.97550	-.26570	-2.69790	.00360	.01110	.00000
3.479	163.960	1.73030	-.09670	-2.78270	-.01730	.02820	.00000
3.479	159.820	2.62810	.19120	-2.90930	-.00970	.04600	.00000
3.479	155.670	3.65850	.51720	-3.03800	.00520	.01750	.00000
3.479	151.500	4.83300	.67270	-3.08720	.00400	.01470	.00000
3.479	149.510	5.46940	.25530	-2.64810	-.00050	.04140	.00000
3.479	159.830	2.61650	.22520	-2.90970	-.07640	.02650	.00000
	GRADIENT	-.23384	-.04428	.01594	-.00040	-.00033	.00000

MSFC 578(SA10F) 142-IN SRB (139) NBE2 (NO GRIT) (R91202) (22 FEB 74)

REFERENCE DATA

SREF =	.5036 SQ. IN	XMRP =	5.5570 IN.
LREF =	.8050 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.5036		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	1.000	SHDSTK =	.000

RUN NO. 213/ 0 RN/L = 6.68 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLMN	CA	CYN	CYNN	CBL
1.199	50.700	13.71140	13.53710	1.04960	-.29940	-.03100	.01360
1.199	52.620	14.35970	13.92080	.98020	-.32760	-.02730	.02580
1.199	56.670	15.64900	14.97650	.86570	-.32080	-.09080	.02160
1.199	60.710	16.66740	15.94190	.84150	-.32480	-.29260	.01980
1.199	64.720	17.39980	15.59460	.81280	-.27490	-.14000	.01500
1.199	68.700	18.20640	15.98670	.82100	-.29010	-.09460	.01620
1.199	70.560	18.54140	14.10290	.77790	-.31280	-.07720	.01950
1.199	60.700	16.55760	15.56710	.85340	-.33890	-.32900	.01170
	GRADIENT	.23957	.04920	-.01170	.00098	-.00339	-.00013

MSFC 578(SA19F) 142-IN SRB (139) MBE3 (R913B1) (01 NOV 73)

REFERENCE DATA

SREF =	.9939 SQ. IN	XMRP =	5.5570 IN.		
LREF =	.8000 IN.	YMRP =	.0000 IN.		
BREF =	.8000 IN.	ZMRP =	.0000 IN.		
SCALE =	.0056				

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	3.000	SHDSTK =	.000

RUN NO. 47/ 0 RN/L = 4.93 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLNN	CA	CYN	CYNN	CBL
.598	9.960	.98290	.55100	1.17120	.02250	.15110	.00000
.598	11.930	1.19290	.84110	1.18190	.06110	-.02990	.00000
.598	15.970	1.69640	1.59780	1.17820	.36430	-.48040	.00000
.598	20.040	2.29850	2.56540	1.16830	.73440	-1.17140	.00000
.598	24.140	2.95120	3.77780	1.11290	1.08390	-1.55480	.00000
.598	28.250	3.69360	5.03760	1.03840	1.12570	-1.03230	.00000
.598	30.170	4.07980	5.51010	1.02620	1.16710	-.52200	.00000
.598	20.040	2.27730	2.53360	1.16290	.73760	-1.18970	.00000
	GRADIENT	.15329	.25159	-.00784	.06253	-.05214	.00000

RUN NO. 48/ 0 RN/L = 6.23 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLNN	CA	CYN	CYNN	CBL
.902	10.020	1.09040	.12250	1.39460	-.00830	.16490	.00000
.902	12.000	1.32240	.32770	1.40230	-.02880	.08520	.00000
.902	16.070	1.93060	1.09710	1.38430	.38020	-.05650	.00000
.902	20.250	2.63060	2.47740	1.35400	.32650	-.26890	.00000
.902	24.460	3.40610	4.35900	1.29570	.78100	-.78480	.00000
.902	28.690	4.32610	6.74560	1.19480	.54820	-.24050	.00000
.902	30.710	4.91320	7.84630	1.17410	.53910	.21520	.00000
.902	20.250	2.64360	2.53090	1.35140	.34690	-.25130	.00000
	GRADIENT	.16237	.37922	-.01131	.03121	-.01331	.00000

RUN NO. 49/ 0 RN/L = 6.63 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLNN	CA	CYN	CYNN	CBL
1.195	10.080	1.14730	.80300	1.93950	.02250	.00360	.00000
1.195	12.110	1.40860	1.33690	1.95890	.08010	-.08390	.00000
1.195	16.200	2.01720	2.89270	1.96590	.24950	-.36600	.00000
1.195	20.550	2.94360	4.96350	1.90590	.24660	-.31620	.00000
1.195	24.880	4.11470	7.02540	1.76350	.19470	-.22420	.00000
1.195	29.240	5.60160	9.12040	1.71980	.20420	.10520	.00000
1.195	31.320	6.43630	10.10960	1.72620	.18490	.51060	.00000
1.195	20.550	2.95220	4.97780	1.95180	.25270	-.30140	.00000
	GRADIENT	.24742	.44001	-.01270	.00565	.01887	.00000

MSFC 578(SA19F) 142-IN SRB (139) NBE3 (R913B1) (01 NOV 73)

REFERENCE DATA

SREF =	.5030 SQ. IN	XMRP =	5.5570 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.150	ATHS =	.000
CONFIG =	3.000	SHDSTK =	.000

RUN NO. 57/ 0 RN/L = 6.95 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLNN	CA	CYN	CYNN	CBL
1.964	10.210	1.17160	1.92690	1.54400	.03290	.04640	.00000
1.964	12.260	1.53240	2.63330	1.50480	.05160	.01170	.00000
1.964	16.490	2.53300	4.06490	1.44040	.07850	-.07310	.00000
1.964	20.610	3.65610	5.02540	1.48120	.06560	-.05400	.00000
1.964	25.100	5.35470	5.33100	1.53970	.04440	.15830	.00000
1.964	29.400	6.99730	5.65620	1.57180	.02430	.15580	.00000
1.964	31.420	7.65620	5.89310	1.59080	.03010	.03520	.00000
1.964	20.800	3.86230	4.97030	1.46120	.08990	-.08910	.00000
	GRADIENT	.31058	.17948	.00367	-.00101	.00517	.00000

RUN NO. 84/ 0 RN/L = 7.02 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLNN	CA	CYN	CYNN	CBL
3.479	10.140	1.35060	1.90990	1.00760	.00850	-.01810	.00000
3.479	12.120	1.82120	2.03060	1.02060	-.01010	-.03120	.00000
3.479	16.220	2.78740	2.15740	1.04740	-.00190	.00420	.00000
3.479	20.340	3.87790	2.17540	1.14490	.00260	-.02070	.00000
3.479	24.520	5.14020	2.32250	1.25330	.00930	.00220	.00000
3.479	28.680	6.41080	2.61070	1.36140	.01200	.01380	.00000
3.479	30.640	7.05100	2.79470	1.40800	.00170	-.01530	.00000
3.479	20.350	3.89810	2.19670	1.12600	-.03030	-.02450	.00000
	GRADIENT	.27806	.03817	.02040	.00042	.00103	.00000

MSFC 578(SA19F) 142-IN SRB (139) NBE3 (R91301) (01 NOV 73)

REFERENCE DATA

SREF =	.3550 SQ. IN	XMRP =	5.5578 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATNS =	.000
CONFIG =	3.000	SNDSTK =	.000

RUN NO. 210/ 1 RN/L = 4.92 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLNN	CA	CYN	CYNN	CBL
.594	50.350	9.65410	11.98790	.49200	.50170	7.22470	-.02450
.594	52.270	10.40460	12.78830	.42310	.43110	8.06340	-.02240
.594	56.390	11.13550	14.24130	.27250	-.00660	7.11430	-.01150
.594	60.320	11.74340	15.30600	.13480	-.31860	5.41540	-.01320
.594	64.350	12.13630	15.68250	.00490	-.48370	3.33490	.00310
.594	68.350	12.49360	15.82380	-.16790	-.63160	.79230	-.02800
.594	70.240	12.61270	15.63850	-.24740	-.84930	-.99420	-.00310
.594	60.320	11.66010	15.24130	.13050	-.32950	5.33460	-.03960
	GRADIENT	.13983	.18515	-.03668	-.07097	-.40174	.00063

RUN NO. 211/ 1 RN/L = 6.24 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLNN	CA	CYN	CYNN	CBL
.900	50.710	11.8[illegible]050	17.27200	.63690	-.14730	1.99060	.00400
.900	52.640	12.52600	18.07720	.57550	-.13910	1.79690	-.00140
.900	56.690	13.59340	19.80040	.43830	-.51630	.09860	-.01650
.900	60.740	14.50450	20.89460	.33250	-.36880	.07580	.00370
.900	64.750	14.91960	20.55930	.25870	-.29240	-.15050	.00210
.900	68.650	14.86180	17.74130	.25210	-.30910	-.05860	-.01450
.900	70.520	14.96350	16.89790	.23830	-.28880	.03450	-.01640
.900	60.740	14.49620	20.87290	.33280	-.38030	.11090	-.00450
	GRADIENT	.15343	-.00754	-.02040	-.00531	-.09672	-.00065

RUN NO. 212/ 1 RN/L = 6.67 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLNN	CA	CYN	CYNN	CBL
1.200	50.720	13.37710	13.43800	1.19790	-.25740	.12800	-.01980
1.200	52.630	14.59940	14.04260	1.18200	-.20720	-.01570	.00040
1.200	56.670	15.95870	14.96460	1.12320	-.42870	.04330	-.01720
1.200	60.680	17.08320	15.14450	1.02490	-.28630	.28490	-.01150
1.200	64.680	17.83490	14.64270	.97660	-.26690	.01670	-.01310
1.200	68.680	18.49290	14.67400	.97660	-.26090	-.05280	-.01150
1.200	70.570	18.72160	14.27910	.95750	-.26750	-.09540	-.00260
1.200	60.670	17.01470	14.90890	1.03260	-.29060	.25200	-.01680
	GRADIENT	.23995	.03401	-.01294	.00032	-.00730	.[illegible]126

MSFC 578(SA10F) 142-IN SRB (139) NBE3 (R913D1) (01 NOV 73)

REFERENCE DATA

SREF =	.5030 Sq. IN	XMRP =	5.5570 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	3.000	SHDSTK =	.000

RUN NO. 133/ 0 RN/L = 7.21 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.952	50.540	13.57740	8.44920	1.58780	-.29380	-.12210	-.02600
1.952	52.450	14.11950	8.64860	1.55880	-.30390	-.08540	-.01110
1.952	56.500	15.41620	9.45850	1.51320	-.33220	-.13090	-.00880
1.952	60.490	16.25980	9.30430	1.44730	-.31960	-.10000	-.01180
1.952	64.530	17.16910	9.81500	1.36860	-.32310	-.14900	-.02300
1.952	68.590	18.38860	10.93500	1.27910	-.34870	-.15290	-.00250
1.952	70.480	18.51710	10.76810	1.20140	-.32770	-.12340	-.02060
1.952	60.470	16.12120	9.07670	1.43830	-.31030	-.05820	-.01630
	GRADIENT	.25116	.11910	-.01852	-.00184	-.00175	.00018

RUN NO. 91/ 0 RN/L = 6.94 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
3.479	50.320	12.81390	5.36650	1.71270	-.29670	-.17240	-.03980
3.479	52.240	13.36850	5.99160	1.69410	-.29290	-.16420	-.02510
3.479	56.240	14.42410	7.12650	1.64850	-.30460	-.18050	-.02860
3.479	60.290	15.41600	8.18770	1.57230	-.27960	-.17980	-.03050
3.479	64.340	16.31850	8.92190	1.43710	-.27400	-.22410	-.01450
3.479	68.360	17.11170	9.53480	1.29170	-.25700	-.20930	-.03230
3.479	70.240	17.47440	9.69600	1.21870	-.25450	-.20920	-.02230
3.479	60.290	15.36600	8.24020	1.56650	-.28310	-.15060	-.01370
	GRADIENT	.23333	.21863	-.02497	.00231	-.00251	.00048

MSFC 578(SA10F) 142-IN SRB (139) NBE3 (R913F1) (22 FEB 74)

REFERENCE DATA

SREF =	.5030 SQ. IN	XMRP =	5.5570 IN.
LREF =	.8550 IN.	YMRP =	.0000 IN.
BREF =	.8050 IN.	ZMRP =	.0000 IN.
SCALE =	.0096		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	3.000	SHDSTK =	.000

RUN NO. 228/ 0 RN/L = 4.97 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.594	80.200	11.70250	9.81930	.43440	-.11680	.79450	.01890
.594	82.050	11.70830	8.50110	.46170	.03770	1.35060	.01850
.594	86.010	12.10690	6.26140	.52060	-.00790	1.08250	.02030
.594	89.970	12.09700	4.09050	.57670	-.08350	.94030	.01330
.594	93.960	12.08740	2.69260	.48580	.04180	.99790	.01140
.594	97.930	12.14000	1.00200	.31280	.33250	.62920	.04350
.594	99.820	12.07270	.46470	.16830	.22030	1.24350	-.01500
.594	89.980	12.16350	4.39450	.55510	-.13270	.89350	.01470
	GRADIENT	.01991	-.47253	-.01171	.01671	-.00222	-.00049

RUN NO. 227/ 0 RN/L = 6.40 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.899	80.410	15.69650	12.09700	.65120	-.28660	-.07050	.04550
.899	82.280	15.82440	11.17890	.65750	-.24280	-.14610	.04800
.899	86.190	16.18480	8.51810	.60590	-.19000	-.21480	.04010
.899	90.100	16.40730	5.75470	.59870	-.18610	-.15900	.03580
.899	94.050	16.40060	3.70300	.51710	-.20730	-.12320	.04480
.899	97.990	16.15180	1.81440	.32410	-.22480	.04770	.09820
.899	99.850	15.86950	.52910	.22520	-.21000	.09640	.02100
.899	90.100	16.35980	5.66570	.60250	-.19690	-.17030	.01010
	GRADIENT	.01480	-.59691	-.02073	.00238	.01023	-.00155

RUN NO. 255/ 0 RN/L = 6.79 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.193	100.400	19.46570	5.79150	-.09020	.39020	.32450	.01040
1.193	98.530	19.64010	6.12870	.04030	.36800	.36050	.00600
1.193	94.560	20.01570	6.93570	.29660	.34740	.30000	.00780
1.193	90.600	20.16710	7.91180	.51730	.31380	.31610	.02360
1.193	86.640	20.25200	9.35570	.70230	.31270	.39970	.01690
1.193	82.670	20.04480	10.12980	.87370	.29920	.41710	.01470
1.193	80.780	19.83680	10.36420	.95320	.30000	.43050	.01290
1.193	90.600	20.12830	7.88570	.51580	.30840	.32740	.00550
	GRADIENT	-.02225	-.24648	-.05277	.00494	-.00539	-.00037

MSFC 578(SA10F) 142-IN SRB (139) NBE3 (R913F1) (22 FEB 74)

REFERENCE DATA

SREF =	.5039 SQ. IN	XMRP =	5.5570 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	3.000	SHDSTK =	.000

RUN NO. 123/ 0 RN/L = 6.98 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.959	80.490	19.41090	9.95150	.81430	-.38940	-.04100	-.04460
1.959	82.390	19.56460	9.80640	.72290	-.38040	-.02340	-.04000
1.959	86.360	19.79330	9.28890	.52510	-.36570	-.03610	-.04050
1.959	90.330	19.82730	8.53260	.31340	-.35610	-.02540	-.02570
1.959	94.320	19.76210	7.82740	.13780	-.33290	-.01920	-.02590
1.959	98.280	19.50230	7.02900	-.11250	-.30990	-.03300	-.04080
1.959	100.160	19.22510	6.68790	-.22440	-.29120	-.02390	-.01670
1.959	90.330	19.76640	8.52830	.31000	-.34880	-.01610	-.02640
	GRADIENT	-.00695	-.17069	-.05269	.00471	.00045	.00093

RUN NO. 92/ 0 RN/L = 7.03 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
3.479	80.320	18.65260	9.73620	.86070	-.38710	-.24260	-.02200
3.479	82.210	19.01870	9.54900	.78300	-.37030	-.21410	-.01590
3.479	86.170	19.[illegible]950	9.02120	.61130	-.36050	-.20760	-.02850
3.479	90.170	19.26310	8.29560	.42470	-.33990	-.16440	-.02510
3.479	94.140	19.23630	7.39850	.19260	-.32020	-.15370	-.02890
3.479	98.140	18.95410	6.69900	-.04440	-.28780	-.11250	-.00910
3.479	100.010	18.73850	6.41460	-.14930	-.27800	-.10250	-.00900
3.479	90.170	19.24510	8.28480	.42770	-.33980	-.14920	-.00520
	GRADIENT	-.00424	-.17552	-.05164	.00537	.00682	.00051

MSFC 578(SA10F) 142-IN SRB (139) NBE3 (R913H1) (01 NOV 73)

REFERENCE DATA

SREF =	.3030 SQ. IN	XMRP =	5.5570 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.9056		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	3.000	SHDSTK =	.000

RUN NO. 161/ 0 RN/L = 5.03 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.599	129.890	6.67300	-6.04960	-2.25750	.45780	1.68690	.01800
.599	128.000	7.14110	-5.93410	-2.12650	.12730	1.78340	.02390
.599	123.990	8.53000	-5.62340	-1.87490	.51710	1.95700	.01550
.599	119.980	9.59760	-5.24960	-1.52190	.84750	.30780	.00270
.599	115.960	10.38390	-4.81930	-1.10250	.86940	.98890	.00460
.599	111.970	10.90720	-4.06400	-.78830	.96760	.96380	.03220
.599	110.070	11.11460	-3.87020	-.63010	.85590	1.14630	.00100
.599	119.990	9.51660	-4.78420	-1.57860	.89080	.75700	-.02510
	GRADIENT	-.22861	-.11147	-.08388	-.03386	.04426	.00041

RUN NO. 160/ 0 RN/L = 6.34 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.901	129.640	10.52300	-7.02970	-2.17570	.33660	-.06030	-.01180
.901	127.710	11.21180	-7.41050	-2.02190	.37230	-.13210	-.03990
.901	123.670	12.32570	-7.66850	-1.68000	.38070	-.07020	-.00550
.901	119.650	13.48080	-7.55310	-1.39840	.33850	-.07440	-.01860
.901	115.640	13.85590	-7.06470	-.95200	.43260	-.16780	-.00820
.901	111.650	14.77850	-5.91380	-.53180	.36860	.02740	.00000
.901	109.770	15.00960	-5.22760	-.34090	.28550	.00200	-.01130
.901	119.660	13.21410	-7.37810	-1.37860	.34870	-.18930	.00340
	GRADIENT	-.22138	-.08995	-.09233	.00091	-.00419	-.00088

RUN NO. 159/ 0 RN/L = 6.76 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.200	129.690	13.10790	-1.07670	-2.41160	.27110	-.26760	.02840
1.200	127.790	13.81090	-.69330	-2.26230	.29800	-.34120	.01300
1.200	123.770	15.05360	-.38250	-1.90360	.28720	-.27280	.02810
1.200	119.760	15.88850	.07890	-1.62320	.25180	-.14630	.00920
1.200	115.740	16.93770	.83810	-1.23870	.22740	-.14240	.01650
1.200	111.760	17.73700	1.76360	-.86810	.23960	-.17680	.01050
1.200	109.870	18.04290	2.25150	-.69430	.22710	-.14170	.02020
1.200	119.760	15.85810	.14820	-1.62020	.25220	-.15800	.02060
	GRADIENT	-.24626	-.16117	-.08641	.00320	-.00865	.00041

MSFC 578(SA10F) 142-IN SRB (139) NBE3 (R913H1) (01 NOV 73)

REFERENCE DATA

SREF =	.5030 Sq. IN	XMRP =	5.5570 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	3.000	SHDSTK =	.000

RUN NO. 150/ 0 RN/L = 7.16 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.947	129.780	12.33950	1.73830	-2.35260	.27630	.03090	.01830
1.947	127.900	12.95840	2.12820	-2.22050	.29800	.03470	.01730
1.947	123.920	14.22440	3.21520	-1.95660	.33070	-.03140	.02810
1.947	119.870	15.44340	3.41270	-1.57170	.35470	-.05290	.02070
1.947	115.840	16.46570	3.73440	-1.19260	.34750	-.05820	.01440
1.947	111.800	17.66670	3.79060	-.84280	.35020	.01340	.02530
1.947	109.920	17.87960	4.29590	-.67590	.34360	.04370	.00620
1.947	119.900	15.19480	3.69440	-1.54610	.34640	-.08260	.01500
	GRADIENT	-.28366	-.11361	-.08577	-.00321	.00041	.00031

RUN NO. 108/ 0 RN/L = 7.15 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
3.479	129.940	11.39360	2.28180	-2.44540	.25220	.18600	.02080
3.479	128.010	12.03960	2.49670	-2.30580	.24280	.21920	.02600
3.479	124.030	13.17890	3.03320	-1.89800	.23820	.17630	.02540
3.479	120.020	14.31140	3.59700	-1.50850	.27120	.11320	.03330
3.479	115.990	15.41880	4.02420	-1.15330	.27060	.07630	.03230
3.479	111.960	16.36700	4.48890	-.80470	.28540	.07060	.02780
3.479	110.080	16.80990	4.72990	-.64960	.28180	.07290	.03070
3.479	120.020	14.28430	3.60710	-1.51010	.26380	.12320	.01900
	GRADIENT	-.27213	-.12357	-.09173	-.00214	.00758	-.00039

MSFC 578(SA10F) 142-IN SRB (139) NBE3 (R913J1) (01 NOV 73)

REFERENCE DATA

SREF =	.5038 SQ. IN	XMRP =	5.5570 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	3.000	SHDSTK =	.000

RUN NO. 14/ 0 RN/L = 4.95 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.599	170.050	.59630	-1.14260	-1.78330	.01940	.05450	.00400
.599	168.060	.78600	-1.42300	-1.90170	.01280	.04020	-.00820
.599	164.020	1.29830	-1.75330	-2.11930	-.01160	-.07270	.00400
.599	159.970	1.91410	-1.82190	-2.36580	-.02660	-.13930	.00380
.599	155.880	2.59850	-1.96850	-2.64880	-.08690	-.32240	.00220
.599	151.780	3.36410	-2.57010	-2.85080	-.24120	-.34530	.00000
.599	149.820	4.02330	-2.94420	-2.85740	-.28550	-.31180	.00760
.599	159.970	1.88480	-1.79000	-2.36020	-.01440	-.14690	.01100
	GRADIENT	-.16903	.07683	.05602	.01476	.02122	-.00026

RUN NO. 13/ 0 RN/L = 6.24 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.898	170.020	.69340	-.15790	-2.05390	.02540	.03990	-.00380
.898	166.020	.90260	-.29330	-2.22090	.01130	-.01730	.00270
.898	163.930	1.53470	-.99250	-2.46800	-.04720	-.05950	.00720
.898	159.760	2.26830	-1.66000	-2.66630	-.05730	-.13880	-.00190
.898	155.590	3.05040	-2.21190	-2.84100	-.10680	-.28410	.01060
.898	151.350	4.12910	-3.24600	-3.01460	-.26650	-.16610	.00250
.898	149.360	4.66610	-3.74370	-2.97400	-.16420	-.03240	.01460
.898	159.760	2.26190	-1.61400	-2.66990	-.09140	-.14440	.00530
	GRADIENT	-.19190	.17247	.04562	.01169	.00751	-.00052

RUN NO. 12/ 0 RN/L = 6.66 GRADIENT INTERVAL = -5.00/ 5.0

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.195	169.840	.99700	-1.38970	-3.01970	-.00810	-.01650	.00060
1.195	167.820	1.26190	-1.76550	-3.08970	-.02240	-.06920	.00310
1.195	163.670	1.92730	-2.52870	-3.16760	-.01650	-.13450	.00540
1.195	159.440	2.88460	-3.20210	-3.26030	-.05770	-.33940	.00130
1.195	155.150	4.15790	-3.74650	-3.39910	-.11730	-.34070	.00110
1.195	150.800	5.78840	-3.94490	-3.52910	-.11030	-.14470	.01060
1.195	148.780	6.54620	-4.09570	-3.50100	-.10320	-.05970	.00900
1.195	159.440	2.88440	-3.23220	-3.26580	-.05830	-.31680	-.00050
	GRADIENT	-.26461	.12950	.02431	.00541	.00478	-.00033

MSFC 578(SA10F) 142-IN SRB (139) NBE3 (R913J1) (01 NOV 73)

REFERENCE DATA

SREF =	.5030 SQ. IN	XMRP =	5.5570 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	3.000	SHDSTK =	.000

RUN NO. 68/ 0 RN/L = 6.98 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.954	169.850	.83300	-1.25370	-3.11270	.00760	.11710	.00000
1.954	167.835	1.13280	-1.45670	-3.13750	.03020	.02620	.00000
1.954	163.630	2.07410	-1.91130	-3.19590	-.09580	-.22420	.00000
1.954	159.360	3.31840	-1.61350	-3.25520	.07260	-.03270	.00000
1.954	155.090	4.67190	-.99440	-3.35950	.01840	-.22100	.00000
1.954	150.840	6.02510	-.33930	-3.49330	.00800	-.00070	.00000
1.954	148.810	6.72790	-.19980	-3.56820	-.00540	.03070	.00000
1.954	159.390	3.31260	-1.39580	-3.21770	.00520	-.01800	.00000
	GRADIENT	-.28521	-.06102	.02118	-.00040	.00277	.00000

RUN NO. 73/ 0 RN/L = 7.01 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
3.479	170.000	.64380	-.45080	-2.92760	.00980	.01370	.00000
3.479	168.040	.96320	-.35860	-2.96770	-.00790	.03730	.00000
3.479	163.960	1.75900	-.12010	-3.06240	-.01300	.00330	.00000
3.479	159.830	2.58860	.22730	-3.21120	-.00160	.02100	.00000
3.479	155.670	3.63540	.56950	-3.29590	.00140	.02260	.00000
3.479	151.510	4.80620	.76970	-3.31540	-.01150	.04450	.00000
3.479	149.520	5.44450	.37130	-2.90300	.00340	.02550	.00000
3.479	159.830	2.59670	.24010	-3.20860	-.02070	.04040	.00000
	GRADIENT	-.23363	-.05406	.00937	.00009	-.00068	.00000

MSFC 578(SA10F) 142-IN SRB (139) NBE3 (R913F2) (22 FEB 74)

REFERENCE DATA

SREF =	.5039 Sq. IN	XMRP =	5.5570 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.5000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	3.000	SHDSTK =	.000

RUN NO. 226/ 0 RN/L = 6.81 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.196	80.460	19.42700	10.56910	.75430	-.37330	-.12590	.01590
1.196	82.350	19.47230	10.22760	.69010	-.33970	-.16970	.01940
1.196	86.320	19.80710	9.47510	.53830	-.32590	-.02740	.02200
1.196	90.260	19.95660	8.01980	.34960	-.31440	-.01000	.02550
1.196	94.260	20.10300	7.62710	.14050	-.30650	.03020	.01250
1.196	98.250	20.06560	7.30800	-.10130	-.32440	.10950	.01990
1.196	100.130	19.88360	6.81530	-.21160	-.32790	.11610	.03240
1.196	90.260	19.92470	7.99410	.35150	-.31720	-.01920	.00750
	GRADIENT	.02952	-.19189	-.04944	.00183	.01374	.00037

MSFC 578(SA19F) 142-IN SRB (139) NBE4 (R91481) (01 NOV 73)

REFERENCE DATA

SREF =	.5039 SQ. IN	XMRP =	5.5579 IN.
LREF =	.8999 IN.	YMRP =	.0000 IN.
BREF =	.8999 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	4.000	SHDSTK =	.000

RUN NO. 46/ 0 RN/L = 4.93 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.596	9.940	.91740	.78510	.95840	-.01510	.05760	.00000
.596	11.930	1.13010	1.08970	.97050	.06670	-.02520	.00000
.596	15.950	1.69010	1.75550	.98130	.38600	-.69470	.00000
.596	20.040	2.32250	2.61250	.96190	.87070	-1.44430	.00000
.596	24.140	2.95520	3.73140	.90650	1.15340	-1.78550	.00000
.596	28.230	3.63280	5.02930	.86160	1.02650	-1.26130	.00000
.596	30.180	4.08250	5.69960	.86280	1.07610	-.83270	.00000
.596	20.040	2.28640	2.57560	.95930	.85720	-1.45600	.00000
	GRADIENT	.15520	.24239	-.00583	.05924	-.06333	.00000

RUN NO. 45/ 0 RN/L = 6.24 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.902	10.020	1.05510	.30670	1.16430	.01660	.06880	.00000
.902	12.000	1.29000	.52940	1.17330	.00020	.01660	.00000
.902	16.100	1.93130	1.35120	1.15800	.42380	-.09660	.00000
.902	20.250	2.60900	2.60730	1.13120	.38690	-.35400	.00000
.902	24.460	3.39610	4.47390	1.08620	.70660	-.79700	.00000
.902	28.740	4.40090	7.13500	1.03910	.51650	-.30370	.00000
.902	30.690	4.85680	7.91220	.99000	.52120	.20120	.00000
.902	20.250	2.60180	2.57360	1.12690	.35700	-.30910	.00000
	GRADIENT	.18395	.37866	-.00831	.02749	-.01074	.00000

RUN NO. 44/ 0 RN/L = 6.65 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.201	10.090	1.10480	1.12130	1.58430	.03690	-.06310	.00000
1.201	12.130	1.38110	1.68780	1.60150	.08700	-.12440	.00000
1.201	16.310	2.03380	3.22770	1.61500	.21330	-.32210	.00000
1.201	20.590	3.00620	5.34740	1.58540	.28370	-.24330	.00000
1.201	24.930	4.24490	7.50920	1.51410	.30670	-.23880	.00000
1.201	29.290	5.79280	9.49050	1.46370	.25540	.15630	.00000
1.201	31.350	6.62720	10.32180	1.42300	.15610	.29620	.00000
1.201	20.610	3.02850	5.58110	1.54510	.22510	-.18220	.00000
	GRADIENT	.25884	.44652	-.00814	.00752	.01621	.00000

MSFC 578(SA10F) 142-IN SRB (139) NBE4 (R914B1) (01 NOV 73)

REFERENCE DATA

SREF =	.5039 Sq. IN	XMRP =	5.5570 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	4.000	SHDSTK =	.000

RUN NO. 58/ 0 RN/L = 6.97 GRADIENT INTERVAL = -5.00/ 5.0

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.952	10.220	1.11430	2.18550	1.23400	.02440	.03660	.00000
1.952	12.270	1.46010	2.90830	1.20480	.04030	-.00270	.00000
1.952	16.520	2.47760	4.49600	1.18360	.07540	-.04910	.00000
1.952	20.810	3.82040	5.21540	1.19950	.05590	-.01650	.00000
1.952	25.180	5.35290	6.12060	1.29470	.03990	.11790	.00000
1.952	29.500	6.96860	6.39410	1.34480	.02840	.25290	.00000
1.952	31.500	7.76570	6.52360	1.35620	.03720	.13860	.00000
1.952	28.820	5.84210	5.20450	1.18650	.06870	-.00230	.00000
	GRADIENT	.31698	.20264	.00726	-.00030	.00966	.00000

RUN NO. 83/ 0 RN/L = 7.01 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
3.479	10.150	1.33080	2.20870	.77750	-.00220	.02970	.00000
3.479	12.120	1.72250	2.32930	.77020	-.01050	.01800	.00000
3.479	16.230	2.70910	2.58560	.83030	-.02460	.03600	.00000
3.479	20.360	3.78460	2.75020	.91700	-.00190	.01250	.00000
3.479	24.510	4.98420	2.98520	1.00670	.00490	.03070	.00000
3.479	28.690	6.26480	3.30940	1.10150	-.00790	.04490	.00000
3.479	30.660	6.90490	3.54360	1.14670	.01180	.05340	.00000
3.479	28.360	3.78440	2.74970	.91410	.00180	.01980	.00000
	GRADIENT	.27294	.06146	.01902	.00074	.00115	.00000

MSFC 578(SA19F) 142-IN SRB (139) NBE4 (R914D1) (01 NOV 73)

REFERENCE DATA

SREF =	.9838 SQ. IN	XMRP =	5.5578 IN.
LREF =	.8888 IN.	YMRP =	.0000 IN.
BREF =	.8888 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	4.000	SHDSTK =	.000

RUN NO. 209/ 0 RN/L = 4.90 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLMN	CA	CYN	CYNN	CBL
.593	50.320	7.61830	9.75080	.38290	-.63500	-1.99180	.00810
.593	52.230	8.52510	10.79490	.29500	-.17920	-3.32590	.05290
.593	56.250	9.78990	12.00250	.10840	-.19770	-2.89100	.02030
.593	60.280	11.11580	13.55520	-.00900	-.11790	-1.90030	.03760
.593	64.310	11.79520	14.01370	-.16230	.06500	.34700	.02960
.593	68.310	12.02440	13.96140	-.24160	-.27580	-.90690	.03390
.593	70.210	12.03520	14.11380	-.28060	-.15630	-.88540	.03400
.593	60.280	11.12690	13.51430	-.01500	-.09100	-2.03020	.02360
	GRADIENT	.22295	.21410	-.03339	.01469	.12153	.00040

RUN NO. 208/ 0 RN/L = 6.25 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLMN	CA	CYN	CYNN	CBL
.902	50.690	11.87030	15.88470	.40180	-.08820	.36650	.02350
.902	52.610	12.45100	17.16740	.40040	.01340	.03300	.02060
.902	56.680	13.49520	19.13450	.27680	.27920	.82680	.00360
.902	60.700	14.43020	19.75030	.14490	-.13580	-.16650	.02920
.902	64.700	15.02510	19.34040	.07710	-.15140	-.16890	.02460
.902	68.630	15.12940	17.32440	.07860	-.12720	-.31900	.02910
.902	70.520	15.18300	16.69190	.10430	-.15750	-.22600	.04170
.902	68.710	14.56690	19.89240	.15820	-.14300	-.28090	.01950
	GRADIENT	.16956	.02963	-.01999	-.00989	-.03550	.00093

RUN NO. 207/ 0 RN/L = 6.63 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLMN	CA	CYN	CYNN	CBL
1.201	50.650	13.91590	12.28460	1.02040	-.30370	-.00770	.01850
1.201	52.570	14.58580	12.67080	.95220	-.33050	-.08020	.01360
1.201	56.620	15.88570	13.78490	.85190	-.31840	-.15950	.00710
1.201	60.670	16.82170	14.85670	.85350	-.34190	-.28610	-.00010
1.201	64.690	17.62580	14.82400	.76650	-.25430	-.21830	.01800
1.201	68.670	18.41950	14.41730	.75480	-.28190	-.12580	.02140
1.201	70.540	18.75540	13.64190	.78460	-.30110	-.16290	.01870
1.201	68.660	16.77460	14.64430	.86360	-.35180	-.29310	.00770
	GRADIENT	.23903	.08063	-.01130	.00187	-.00601	.00030

MSFC 578(SA10F) 142-IN SRB (139) NBE4 (R914D1) (01 NOV 73)

REFERENCE DATA

SREF =	.5039 SQ. IN	XMRP =	5.5579 IN.		
LREF =	.8000 IN.	YMRP =	.0000 IN.		
BREF =	.8000 IN.	ZMRP =	.0000 IN.		
SCALE =	.0056				

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	4.000	SHDSTK =	.000

RUN NO. 137/ 0 RN/L = 7.13 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLNN	CA	CYN	CYNN	CBL
1.954	50.540	13.71860	8.42580	1.37670	-.31260	-.12210	-.01240
1.954	52.450	14.24230	8.61140	1.36180	-.31330	-.11750	-.00780
1.954	56.470	15.41710	8.90990	1.34200	-.32510	-.11830	-.01980
1.954	60.460	16.27550	8.82050	1.29140	-.31970	-.09220	-.01890
1.954	64.520	17.23170	9.46600	1.21810	-.32670	-.11240	-.01790
1.954	68.570	18.29180	10.45670	1.14880	-.33510	-.11180	-.01200
1.954	70.470	18.54730	10.48650	1.11270	-.32730	-.09020	-.02010
1.954	60.450	16.16230	8.69770	1.28630	-.31140	-.04790	-.00740
	GRADIENT	.24398	.10458	-.01343	-.00091	.00156	-.00029

RUN NO. 94/ 0 RN/L = 7.03 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLNN	CA	CYN	CYNN	CBL
3.479	50.360	12.78730	5.48480	1.45110	-.29970	-.11760	-.02880
3.479	52.240	13.37040	5.95330	1.45390	-.29560	-.12580	-.02470
3.479	56.230	14.51830	6.89480	1.43940	-.29490	-.11540	-.02250
3.479	60.280	15.55760	7.91690	1.39640	-.29940	-.15370	-.03340
3.479	64.310	16.48620	8.78320	1.30790	-.29310	-.15500	-.03760
3.479	68.350	17.32340	9.33360	1.20780	-.29080	-.16050	-.03200
3.479	70.240	17.67860	9.54250	1.15430	-.25440	-.12340	-.03250
3.479	60.280	15.56660	7.94230	1.39310	-.29530	-.13560	-.02260
	GRADIENT	.24517	.29850	-.01515	.00138	-.00138	-.00043

MSFC 578(SA10F) 142-IN SRB (139) NBE4 (R914F1) (01 NOV 73)

REFERENCE DATA

SREF =	.9038 SQ. IN	XMRP =	5.5570 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.190	ATHS =	.000
CONFIG =	4.000	SHDSTK =	.000

RUN NO. 241/ 0 RN/L = 4.96 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLNN	CA	CYN	CYNN	CBL
.598	80.200	11.69740	10.89340	.25720	-.08980	.59260	.02790
.598	82.090	11.62340	9.97670	.28510	-.07660	1.53480	-.00960
.598	86.040	11.92360	7.68420	.42620	-.05150	1.36130	-.00290
.598	90.000	12.19040	5.68670	.49150	-.20210	1.19680	-.01000
.598	93.960	12.04640	2.61110	.48430	-.18300	1.66170	-.00470
.598	97.930	12.15840	1.13400	.30720	-.21450	2.05490	-.03090
.598	99.820	12.13910	.39940	.16350	-.18560	2.33320	-.03160
.598	89.980	12.10270	4.69040	.55670	-.17580	1.23960	-.00070
	GRADIENT	.02591	-.55268	-.00150	-.00731	.06411	-.00218

RUN NO. 242/ 0 RN/L = 6.25 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLNN	CA	CYN	CYNN	CBL
.898	80.420	15.73150	12.43040	.36760	-.35510	.06410	.01040
.898	82.300	15.80160	11.79660	.42970	-.34990	.11100	.03180
.898	86.210	16.01540	9.08380	.59970	-.30670	.13860	.03190
.898	90.120	16.29240	6.37020	.66250	-.28350	.13480	.03300
.898	94.030	16.19840	4.37360	.56330	-.29410	.18220	.01940
.898	98.000	16.01660	2.14730	.37180	-.27550	.20460	.02750
.898	99.860	15.84400	.95770	.26090	-.25590	.18560	.03380
.898	90.130	16.43930	6.57420	.65140	-.29240	.10590	.03610
	GRADIENT	.01017	-.59976	-.00478	.00465	.00609	.00042

RUN NO. 243/ 0 RN/L = 6.67 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLNN	CA	CYN	CYNN	CBL
1.193	80.500	19.46560	10.87200	.82030	-.37320	-.14300	-.01080
1.193	82.370	19.57120	10.65710	.76900	-.37550	-.15040	.00370
1.193	86.350	19.79330	10.20240	.58780	-.33550	-.06100	.00290
1.193	90.300	19.92030	9.06070	.39590	-.31380	-.03420	.00050
1.193	94.280	19.97560	7.96990	.17270	-.30880	-.03460	-.00060
1.193	98.250	19.95070	7.31180	-.05830	-.28660	-.02530	-.00060
1.193	100.130	19.77380	6.91730	-.16250	-.29850	.00420	.00760
1.193	90.300	19.90660	9.03690	.39520	-.31660	-.02840	.00830
	GRADIENT	.02032	-.21196	-.05108	.00441	.00658	.00036

MSFC 578(SA12F) 142-IN SRB (139) NBE4 (R914F1) (01 NOV 73)

REFERENCE DATA

SREF = .9938 SQ. IN XMRP = 5.5579 IN.
LREF = .8999 IN. YMRP = .0000 IN.
BREF = .8999 IN. ZMRP = .0000 IN.
SCALE = .0056

PARAMETRIC DATA

BETA = .000 PHI = .000
FWDSTK = .000 AFTSTK = .000
ATHRNG = .100 ATHS = .000
CONFIG = 4.000 SHDSTK = .000

RUN NO. 124/ 0 RN/L = 7.01 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLMN	CA	CYN	CYNM	CBL
1.955	80.500	19.56010	10.12970	.67480	-.38180	-.04740	-.03660
1.955	82.390	19.62380	9.84970	.70630	-.38050	-.04150	-.04450
1.955	86.370	19.83460	9.27990	.59900	-.37080	-.01580	-.03180
1.955	90.330	19.85820	8.55750	.38950	-.35970	-.02420	-.02850
1.955	94.320	19.77510	7.89710	.17250	-.33650	-.01460	-.03140
1.955	98.280	19.55830	6.95380	-.04320	-.31300	-.00830	-.02580
1.955	100.160	19.32320	6.53560	-.15260	-.29930	-.01540	-.03670
1.955	90.330	19.77450	8.53110	.38520	-.35020	-.01670	-.03910
	GRADIENT	-.00870	-.18282	-.05236	.00423	.00166	.00043

RUN NO. 93/ 0 RN/L = 7.03 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLMN	CA	CYN	CYNM	CBL
3.479	80.310	18.87810	9.71060	.88220	-.39040	-.22410	-.02470
3.479	82.230	19.01010	9.51540	.81410	-.38870	-.21490	-.02780
3.479	86.180	19.20880	9.08230	.66360	-.35650	-.18410	-.01800
3.479	90.120	19.25510	8.47210	.49350	-.34810	-.18350	-.02640
3.479	94.180	19.16810	7.79100	.31240	-.31790	-.15410	-.02130
3.479	98.150	18.95300	6.91780	.08900	-.29250	-.12840	-.01570
3.479	100.010	18.74660	6.46870	-.03030	-.27850	-.12240	-.01610
3.479	90.180	19.24600	8.47640	.49630	-.33670	-.15590	-.01620
	GRADIENT	-.00653	-.16376	-.04582	.00573	.00513	.00048

MSFC 578(SA10F) 142-IN SRB (139) NBE4 (R914H1) (28 NOV 73)

REFERENCE DATA

SREF =	.5038 SQ. IN	XMRP =	5.5570 IN.		
LREF =	.8000 IN.	YMRP =	.0000 IN.		
BREF =	.8000 IN.	ZMRP =	.0000 IN.		
SCALE =	.0056				

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	4.000	SHDSTK =	.000

RUN NO. 174/ 0 RN/L = 5.00 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.598	129.880	7.64170	-6.44610	-2.00940	-.77920	.08760	.00500
.598	127.960	8.25190	-7.09570	-1.90930	-.52060	-.39610	.02030
.598	123.940	9.39290	-7.25890	-1.67220	.64770	.70040	.02460
.598	119.940	10.26190	-6.98910	-1.36240	-.07570	2.36280	-.01000
.598	115.940	10.91640	-5.67410	-1.11730	.46740	3.26220	.01740
.598	111.940	11.47710	-4.92810	-.78760	.43120	1.47840	.02880
.598	110.050	11.72540	-4.45880	-.63750	.31540	1.62660	.01600
.598	119.940	10.11970	-6.76540	-1.40650	.02530	2.04790	.01690
	GRADIENT	-.20293	-.12149	-.06949	-.04979	-.11365	-.00042

RUN NO. 175/ 0 RN/L = 6.32 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.901	129.590	10.54200	-8.37950	-1.95160	.16050	-.23210	-.02320
.901	127.670	11.03510	-8.56220	-1.81880	.19240	-.09210	-.01790
.901	123.640	12.19410	-8.67920	-1.55970	.29650	.05120	-.02220
.901	119.650	13.30810	-7.70600	-1.30700	.28280	.33420	-.00230
.901	115.640	14.13740	-6.63120	-.92890	.22060	.30990	-.01350
.901	111.670	14.67980	-5.64200	-.52380	.18150	.12970	.00480
.901	109.760	14.75870	-5.77230	-.31620	.24170	.22280	.00440
.901	119.640	13.31930	-7.67350	-1.31150	.28770	.32750	-.00240
	GRADIENT	-.22088	-.16087	-.08157	-.00117	-.02056	-.00135

RUN NO. 176/ 0 RN/L = 6.75 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.198	129.620	13.25750	-2.69780	-2.20780	.23800	-.19530	.01830
1.198	127.720	13.91170	-2.21970	-2.07590	.25200	-.17600	.02390
1.198	123.720	15.10260	-1.47010	-1.79190	.26920	-.13640	.00790
1.198	119.710	16.06770	-1.02160	-1.56220	.26630	-.07160	-.00060
1.198	115.700	16.92520	-.14140	-1.21580	.26460	-.02410	.01530
1.198	111.730	17.71750	.95030	-.86220	.25780	-.01330	.00330
1.198	109.840	18.04770	1.55590	-.68790	.25710	-.02150	.01220
1.198	119.720	15.95600	-.79670	-1.54790	.27210	-.04510	-.00020
	GRADIENT	-.23935	-.20452	-.07604	-.00061	-.00976	.00055

MSFC 578(SA10F) 142-IN SRB (139) NBE4 (R914H1) (28 NOV 73)

REFERENCE DATA

SREF =	.5030 SQ. IN	XMRP =	5.5570 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	4.000	SHDSTK =	.000

RUN NO. 146/ 0 RN/L = 7.12 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.945	129.750	12.38510	1.15860	-2.12470	.28160	.04320	.01620
1.945	127.870	13.02890	1.59940	-2.00830	.29080	.04300	.01340
1.945	123.860	14.36190	2.45940	-1.77110	.31600	.06640	.00790
1.945	119.830	15.57730	2.66490	-1.41850	.32800	.07870	.01080
1.945	115.810	16.53810	3.34180	-1.06710	.32170	.09690	.02110
1.945	111.780	17.70490	3.51840	-.73670	.32250	.10470	.00650
1.945	109.910	17.95860	4.10990	-.57660	.31490	.13690	.02470
1.945	119.870	15.28670	3.14130	-1.38670	.30310	.11005	.02640
	GRADIENT	-.28346	-.13452	-.07924	-.00170	-.00431	-.00023

RUN NO. 107/ 0 RN/L = 6.94 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
3.479	129.930	11.44720	2.12330	-2.21130	.25800	.07810	.04260
3.479	128.010	12.08550	2.31610	-2.06920	.26410	.08570	.03950
3.479	124.040	13.25420	2.77830	-1.70800	.26220	.08980	.03500
3.479	120.000	14.42470	3.20930	-1.33970	.27520	.09950	.03360
3.479	115.970	15.54460	3.63600	-.99560	.26270	.08330	.04580
3.479	111.970	16.48210	4.14310	-.66290	.27360	.09300	.04970
3.479	110.070	16.89000	4.39340	-.51190	.27760	.09550	.05670
3.479	120.000	14.40690	3.19880	-1.33770	.27160	.09960	.03860
	GRADIENT	-.27495	-.11343	-.08657	-.00076	-.00057	-.00074

MSFC 578(SA10F) 142-IN SRB (139) NBE4 (R914J1) (01 NOV 73)

REFERENCE DATA

SREF =	.5030 SQ. IN	XMRP =	5.5570 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	4.000	SHDSTK =	.000

RUN NO. 16/ 0 RN/L = 4.95 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.599	170.050	.58300	-1.16590	-1.80760	.02190	-.06690	.00710
.599	168.060	.79910	-1.47180	-1.89290	.02090	-.07270	.01550
.599	164.040	1.31520	-1.91620	-2.05320	-.02280	-.09680	.00660
.599	159.960	1.99770	-2.14700	-2.16690	-.04950	-.13760	.01940
.599	155.870	2.59740	-2.42120	-2.26680	-.07610	-.21930	-.00110
.599	151.770	3.42410	-2.57170	-2.35240	-.18040	-.62690	.00340
.599	149.840	3.89210	-2.71560	-2.39920	-.25580	-.86870	.00690
.599	159.960	1.89450	-2.14960	-2.16540	-.03740	-.15340	.00530
	GRADIENT	-.16222	.07204	.02860	.01260	.03545	.00036

RUN NO. 17/ 0 RN/L = 6.22 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.896	170.010	.72520	-.31000	-2.04910	.01510	.03080	.00200
.896	168.000	.97040	-.52600	-2.15390	-.02290	-.04660	.00740
.896	163.880	1.60460	-1.36210	-2.35350	-.09520	-.11320	-.00700
.896	159.750	2.24800	-1.97840	-2.48130	-.11110	-.21710	.00780
.896	155.570	3.06250	-2.54020	-2.60360	-.11650	-.33750	.00610
.896	151.380	4.04990	-3.35850	-2.63830	-.25960	-.50340	.00320
.896	149.360	4.66260	-3.93970	-2.65260	-.35620	-.64900	.00000
.896	159.740	2.27970	-1.98080	-2.49620	-.10350	-.21960	.00780
	GRADIENT	-.18746	.17083	.02925	.01527	.03046	.00000

RUN NO. 18/ 0 RN/L = 6.65 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.202	169.820	.98880	-1.64010	-2.92410	-.02840	-.09720	-.00160
1.202	167.810	1.24080	-2.05770	-2.97530	-.02180	-.07500	-.00700
1.202	163.670	1.94070	-2.81280	-2.98730	-.01300	-.15580	-.00040
1.202	159.400	2.93940	-3.61280	-3.02930	-.08220	-.36960	-.00220
1.202	155.090	4.34030	-4.04570	-3.09420	-.17330	-.92010	.00450
1.202	150.780	5.91050	-4.17710	-3.13290	-.08090	-.21850	.00290
1.202	148.730	6.60490	-4.38550	-3.12710	-.05830	-.18670	.00510
1.202	159.400	2.94620	-3.61950	-3.03400	-.07420	-.34500	-.00110
	GRADIENT	-.27069	.12909	.00975	.00371	.01332	-.00044

MSFC 578(SA10F) 142-IN SRB (139) NBE4 (R914J1) (01 NOV 73)

REFERENCE DATA

SREF =	.5039 SQ. IN	XMRP =	5.5570 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	4.000	SHDSTK =	.000

RUN NO. 67/ 0 RN/L = 6.96 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.962	169.870	.78990	-1.31180	-3.00810	.00390	.07950	.00000
1.962	167.820	1.12050	-1.60940	-3.00080	-.00770	-.06140	.00000
1.962	163.630	2.09390	-1.98920	-3.03570	-.01720	.08040	.00000
1.962	159.350	3.35020	-1.69320	-3.10000	.12860	-.04310	.00000
1.962	155.080	4.72020	-1.00490	-3.15960	-.00690	-.20620	.00000
1.962	150.840	6.14660	-.07750	-3.17610	.00720	.12480	.00000
1.962	148.820	6.67480	-.31520	-3.19520	-.01490	.05470	.00000
1.962	159.380	3.31350	-1.51600	-3.05970	.03350	-.02600	.00000
	GRADIENT	-.28799	-.06894	.00991	.00007	-.00025	.00000

RUN NO. 74/ 0 RN/L = 7.00 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
3.479	170.000	.62580	-.49080	-2.89250	.00990	.01920	.00000
3.479	168.020	.95490	-.39870	-2.92800	.00690	.04360	.00000
3.479	163.960	1.70000	-.17810	-2.97640	.01390	.01030	.00000
3.479	159.820	2.59540	.10660	-3.00150	.01370	.00170	.00000
3.479	155.660	3.66860	.41120	-3.05390	.00960	-.01760	.00000
3.479	151.460	4.89440	-.04330	-2.68660	.00400	.03920	.00000
3.479	149.500	5.46940	.03410	-2.70065	.00000	.02200	.00000
3.479	159.820	2.59680	.10430	-3.00170	.05460	.00920	.00000
	GRADIENT	-.23705	-.02809	-.00962	.00037	.00031	.00000

MSFC 578(SA10F) 142-IN SRB (139) NBE5 (R91581) (01 NOV 75)

REFERENCE DATA

SREF =	.5030 SQ. IN	XMRP =	5.5570 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	5.000	SHDSTK =	.000

RUN NO. 41/ 0 RN/L = 5.06 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.599	9.940	.97850	.45360	1.03780	.02720	.12970	.01120
.599	11.920	1.17250	.65170	1.04530	.08270	-.06590	-.01220
.599	15.960	1.72640	1.29370	1.04880	.43400	-.73350	.00500
.599	20.030	2.36230	2.14510	1.05000	.87330	-1.37270	.01380
.599	24.150	3.07730	3.14970	.98330	1.21490	-1.76140	.02010
.599	28.240	3.82490	4.37250	.93970	1.27190	-1.22650	.01530
.599	30.160	4.19730	4.85960	.93990	1.24000	-.63170	-.00400
.599	20.030	2.35750	2.07640	1.04720	.88850	-1.42690	-.00020
	GRADIENT	.16092	.22236	-.00572	.06778	-.05752	.00036

RUN NO. 42/ 0 RN/L = 6.38 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.905	9.990	1.09190	-.01700	1.27350	.02230	.17100	.00770
.905	11.990	1.35680	.16550	1.28250	.01630	.11470	.00820
.905	16.090	1.99990	.76470	1.26410	.47390	-.08660	.00790
.905	20.240	2.73940	1.98770	1.24510	.38490	-.25690	.00080
.905	24.440	3.53960	3.63110	1.18200	.87070	-.87860	.00400
.905	28.690	4.44580	5.99690	1.07260	.59710	-.29450	.01440
.905	30.680	5.04390	7.02020	1.05790	.62020	.40560	.01490
.905	20.230	2.73210	2.00480	1.22960	.43760	-.32570	.00630
	GRADIENT	.18834	.34420	-.01117	.03260	-.01086	.00029

RUN NO. 43/ 0 RN/L = 6.79 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.198	10.090	1.17050	.63180	1.79350	.03610	-.00850	.00470
1.198	12.110	1.44430	1.14960	1.80110	.10440	-.12930	.01040
1.198	16.270	2.09200	2.53630	1.77490	.28920	-.45320	.01580
1.198	20.540	3.04450	4.50460	1.71210	.29250	-.38830	.00670
1.198	24.860	4.25450	6.39720	1.62090	.22350	-.24310	.01440
1.198	29.230	5.81520	8.19890	1.57930	.26880	.03490	.01280
1.198	31.270	6.67270	8.94380	1.56520	.17710	.57090	.00080
1.198	20.540	3.05700	4.53190	1.71190	.29620	-.37180	.01830
	GRADIENT	.25784	.40466	-.01222	.00634	.02101	-.00007

MSFC 578(SA19F) 142-IN SRB (139) NBE5 (R915B1) (01 NOV 73)

REFERENCE DATA

SREF =	.5039 Sq. IN	XMRP =	5.5579 IN.
LREF =	.8999 IN.	YMRP =	.0000 IN.
BREF =	.8999 IN.	ZMRP =	.0000 IN.
SCALE =	.9956		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	5.000	SHDSTK =	.000

RUN NO. 59/ 0 RN/L = 6.98 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.952	10.200	1.16860	1.87820	1.23460	.02460	.00280	.00000
1.952	12.250	1.52310	2.57590	1.23140	.04090	-.01910	.00000
1.952	16.490	2.55300	3.98370	1.18810	.07070	-.08470	.00000
1.952	20.790	3.93000	4.59820	1.19290	.06670	-.04990	.00000
1.952	25.150	5.49350	5.26580	1.25690	.04230	.12600	.00000
1.952	29.460	7.14760	5.30810	1.28320	.03710	.30470	.00000
1.952	31.470	7.91370	5.28560	1.27860	.03490	.24700	.00000
1.952	20.790	3.94680	4.54330	1.14310	.08040	.00230	.00000
	GRADIENT	.32273	.15843	.00296	-.00012	.01532	.00000

RUN NO. 62/ 0 RN/L = 7.01 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
3.479	10.140	1.36370	1.89800	.82350	.01320	.03050	.00000
3.479	12.120	1.81690	1.97020	.82680	-.00130	.04010	.00000
3.479	16.190	2.77520	2.00170	.87050	-.01230	.02740	.00000
3.479	20.340	3.92760	1.95040	.97620	.00800	.02620	.00000
3.479	24.500	5.15850	1.93540	1.09530	.00720	.04370	.00000
3.479	28.680	6.50130	2.09800	1.20760	.00720	.06790	.00000
3.479	30.620	7.12010	2.21730	1.25020	.00460	.06360	.00000
3.479	20.340	3.93660	1.94650	.99740	.01190	.03360	.00000
	GRADIENT	.28229	.01065	.02218	.00017	.00167	.00000

MSFC 578(SA10F) 142-IN SRB (139) NBE5 (R915D1) (01 NOV 73)

REFERENCE DATA

SREF =	.5930 SQ. IN	XMRP =	5.5570 IN.		
LREF =	.8500 IN.	YMRP =	.0000 IN.		
BREF =	.8000 IN.	ZMRP =	.0000 IN.		
SCALE =	.0556				

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	5.000	SHDSTK =	.000

RUN NO. 195/ 0 RN/L = 4.92 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.598	50.290	7.87840	8.77510	.37940	-.66630	-1.96350	.03130
.596	52.210	8.81700	9.85060	.28860	-.20060	-3.11260	.02330
.596	56.230	10.01090	11.08190	.10600	-.25810	-1.87680	-.00230
.596	60.250	11.50480	12.12080	-.02950	.10480	-1.92900	.03980
.596	64.280	12.05280	12.39370	-.17520	.36680	-.62990	.00640
.596	68.290	12.47680	12.57720	-.25110	-.10880	-2.12450	.01430
.596	70.190	12.46640	12.52030	-.25790	-.01340	-2.05320	.03680
.596	60.260	11.45390	12.01620	-.02850	.03990	-1.91590	.02410
	GRADIENT	.23163	.17912	-.03284	.02713	.03360	.00005

RUN NO. 196/ 0 RN/L = 6.22 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.899	50.630	12.19830	14.14580	.49490	-.03000	.39150	-.00060
.899	52.550	12.75310	15.55720	.41970	.10210	-.19210	.04530
.899	56.650	13.79260	16.14150	.33000	.06070	.42740	.04200
.899	60.650	14.74920	16.34450	.18720	-.22140	.12490	.02420
.899	64.650	15.24810	17.71070	.12750	-.20500	.18990	.01260
.899	68.580	15.47630	15.77330	.12860	-.25620	.05280	.01910
.899	70.460	15.54240	15.08950	.13230	-.21320	-.00350	.01050
.899	60.660	14.82460	16.46290	.19400	-.21760	.10820	.01790
	GRADIENT	.17316	.02794	-.01892	-.01613	-.00807	-.00062

RUN NO. 197/ 0 RN/L = 6.63 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.196	50.600	14.25860	10.57800	1.08970	-.27570	-.08740	.00740
1.196	52.500	14.90870	10.92860	1.03300	-.30180	-.11300	.00620
1.196	56.540	16.26030	11.88820	.92720	-.31200	-.09070	.01170
1.196	60.590	17.24720	13.03260	.92380	-.32770	-.15030	.02670
1.196	64.620	17.94920	13.13060	.84770	-.26280	-.12610	.04010
1.196	68.590	18.80560	12.49240	.86870	-.28640	-.01190	.02400
1.196	70.460	19.11070	11.65790	.91510	-.30580	-.06430	.00590
1.196	60.580	17.20740	12.68650	.93720	-.35320	-.16390	.01860
	GRADIENT	.24045	.07918	-.00942	.00006	.00249	.00068

MSFC 578(SA10F) 142-IN SRB (139) NBE5 (R915D1) (01 NOV 73)

REFERENCE DATA

SREF =	.5039 SQ. IN	XMRP =	5.5570 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	5.000	SHDSTK =	.000

RUN NO. 138/ 0 RN/L = 7.15 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.947	50.440	13.94970	6.30740	1.50170	-.31140	-.03850	-.03120
1.947	52.350	14.45760	6.46630	1.49020	-.31330	-.00400	-.01430
1.947	56.390	15.77420	7.12250	1.46690	-.33570	-.06320	-.02010
1.947	60.400	16.79320	7.36710	1.42340	-.34100	-.07410	-.01480
1.947	64.440	17.67580	7.77910	1.35570	-.34520	-.07820	-.02540
1.947	68.500	18.81370	8.91380	1.30660	-.35330	-.10140	-.02750
1.947	70.400	19.09590	8.96290	1.28570	-.34160	-.09080	-.03710
1.947	60.370	16.50270	6.82450	1.40520	-.31560	.00480	-.01510
	GRADIENT	.26918	.13520	-.01129	-.00183	-.00379	-.00052

RUN NO. 95/ 0 RN/L = 7.02 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
3.479	50.250	13.09080	3.86980	1.60270	-.30610	-.11760	-.03990
3.479	52.190	13.67390	4.33910	1.59990	-.30940	-.13010	-.03990
3.479	56.180	14.83020	5.25450	1.58250	-.30900	-.14060	-.03940
3.479	60.230	15.90460	6.31800	1.54220	-.29390	-.12030	-.02910
3.479	64.260	16.81580	7.22680	1.45620	-.29180	-.13930	-.02970
3.479	68.300	17.63620	7.86160	1.37070	-.28210	-.14880	-.08150
3.479	70.190	17.96510	8.06770	1.32790	-.27630	-.14160	-.02960
3.479	60.230	15.88680	6.31720	1.53860	-.29020	-.11790	-.03860
	GRADIENT	.24510	.21648	-.01411	.00162	-.00107	-.00054

MSFC 578(SA10F) 142-IN SRB (139) NOES (R915F1) (22 FEB 74)

REFERENCE DATA

SREF =	.5039 SQ. IN	XMRP =	5.5570 IN.		
LREF =	.8000 IN.	YMRP =	.0000 IN.		
BREF =	.8000 IN.	ZMRP =	.0000 IN.		
SCALE =	.0056				

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	5.000	SHDSTK =	.000

RUN NO. 240/ 0 RN/L = 4.95 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.596	80.170	12.01930	9.38810	.56300	-.04730	-.47930	.01300
.596	82.050	12.07990	8.34010	.67370	.13710	.21810	.02840
.596	86.020	12.11050	6.40860	.76940	.11170	.88730	-.00500
.596	89.970	12.32420	3.90800	.77890	.02350	.59820	.02220
.596	93.960	12.17610	2.53170	.40300	.04650	.54360	.01800
.596	97.930	12.24900	.95780	.14170	.14030	1.02830	.02140
.596	99.810	12.19620	.25350	-.02310	.20630	1.09250	.02790
.596	89.980	12.30950	4.84160	.72070	-.06330	.70760	.02680
	GRADIENT	.00954	-.46707	-.03265	.00645	.05850	.00052

RUN NO. 239/ 0 RN/L = 6.26 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.902	80.380	16.13410	10.94070	.57280	-.38070	.27430	.02520
.902	82.250	16.23880	10.21750	.63840	-.39240	.33500	.03260
.902	86.180	16.45200	7.99810	.83770	-.35760	.36720	.03750
.902	90.100	16.57280	5.65690	.96280	-.28920	.12490	.01080
.902	94.060	16.52600	3.86380	.78680	-.36620	.54960	.02540
.902	97.990	16.20670	1.85640	.44240	-.27390	.25800	.04120
.902	99.870	16.05130	.58290	.23930	-.28350	.31100	.04520
.902	90.110	16.80780	5.93160	.95860	-.30600	.18250	.03160
	GRADIENT	-.00226	-.53073	-.01451	.00535	.00138	.00062

RUN NO. 256/ 0 RN/L = 6.61 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.194	100.380	19.54380	4.97540	-.17270	.38550	.34910	-.00020
1.194	98.500	19.70610	5.50240	.05530	.40790	.25150	-.00630
1.194	94.540	20.10350	6.42510	.47020	.38320	.18870	-.00330
1.194	90.590	20.39850	7.60640	.82290	.34250	.23340	-.00110
1.194	86.630	20.49500	9.07540	1.14530	.31150	.38570	.00850
1.194	82.640	20.28740	9.35390	1.29600	.30050	.40930	.00620
1.194	80.740	20.16720	9.35430	1.33330	.29580	.40510	.00690
1.194	90.580	20.32370	7.52050	.82300	.31450	.37000	.01380
	GRADIENT	-.03504	-.24008	-.07799	.00576	-.00738	-.00062

MSFC 578(SA19F) 142-IN SRB (139) NBES (R915F1) (22 FEB 74)

REFERENCE DATA

SREF =	.5930 SQ. IN	XMRP =	5.5370 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	5.000	SHDSTK =	.000

RUN NO. 128/ 0 RN/L = 7.15 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.953	80.460	19.85070	8.82080	1.17130	-.39490	-.05380	-.04420
1.953	82.340	19.95820	8.74670	1.12310	-.38940	-.04190	-.03700
1.953	86.320	20.04910	8.32650	.93270	-.37140	-.09900	-.03910
1.953	90.390	20.05050	7.75740	.69430	-.34630	-.13590	-.04310
1.953	94.260	19.94090	7.03720	.40400	-.33110	-.12450	-.04460
1.953	98.240	19.73050	6.14290	.10020	-.31970	-.06190	-.02540
1.953	100.120	19.51090	5.79680	-.04730	-.30420	-.05070	-.02260
1.953	90.290	19.99100	7.75460	.69010	-.34330	-.11660	-.02660
	GRADIENT	-.01587	-.15811	-.06322	.00457	-.00068	.00080

RUN NO. 96/ 0 RN/L = 7.03 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
3.479	80.300	19.14020	8.52540	1.12690	-.37470	-.17020	-.03060
3.479	82.190	19.23010	8.38190	1.06650	-.37690	-.17820	-.03950
3.479	86.140	19.40920	7.98590	.93380	-.35280	-.14650	-.04280
3.479	90.150	19.48500	7.56220	.76420	-.32540	-.12840	-.03360
3.479	94.150	19.37300	6.99100	.57650	-.30700	-.12600	-.04350
3.479	98.130	19.08130	6.29600	.35850	-.28260	-.11000	-.02970
3.479	100.000	18.86590	5.94010	.24290	-.26510	-.10080	-.03980
3.479	90.160	19.46920	7.95910	.75610	-.32970	-.14450	-.04890
	GRADIENT	-.01142	-.13545	-.04469	.00570	.00371	-.00004

MSFC 578(SA1GF) 142-IN SRB (139) NOES (R915M1) (28 NOV 73)

REFERENCE DATA

SREF = .5030 SQ. IN XMRP = 5.5570 IN.
LREF = .8000 IN. YMRP = .0000 IN.
BREF = .8000 IN. ZMRP = .0000 IN.
SCALE = .0056

PARAMETRIC DATA

BETA = .000 PHI = .000
FWDSTK = .000 AFTSTK = .000
ATHRNG = .100 ATHS = .000
CONFIG = 5.000 SHDSTK = .000

RUN NO. 173/ 0 RN/L = 4.99 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLMN	CA	CYN	CYNN	CBL
.594	129.870	7.81210	-7.03380	-2.33580	1.50360	-.76820	.00000
.594	127.960	8.33160	-7.15270	-2.21640	1.53240	-1.10470	-.00430
.594	125.960	9.13220	-6.78840	-1.93490	.42760	.83440	.00910
.594	119.950	9.94990	-6.48820	-1.72340	.27520	1.52790	-.00530
.594	115.940	10.72010	-5.72300	-1.43060	.62100	2.51840	-.00630
.594	111.940	11.43030	-5.13240	-1.08330	.46750	1.05240	.00650
.594	110.040	11.71140	-4.83460	-.92800	.37960	.87470	-.03290
.594	119.950	9.96040	-6.55250	-1.72310	.31120	1.44150	-.00090
	GRADIENT	-.19561	-.11833	-.07017	.05293	-.11293	.00084

RUN NO. 172/ 0 RN/L = 6.31 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLMN	CA	CYN	CYNN	CBL
.900	129.560	10.59050	-8.53250	-2.37100	.14800	.01770	-.02400
.900	127.660	11.08820	-8.78970	-2.24790	.21080	.00460	-.02390
.900	123.640	12.03210	-8.74710	-2.05520	.28110	.19100	.00040
.900	119.640	13.19330	-8.29650	-1.79310	.28570	.25280	-.00510
.900	115.630	14.14820	-7.39020	-1.29670	.23880	.14300	-.00580
.900	111.630	14.79530	-6.69330	-.85340	.21960	.11150	-.00630
.900	109.730	14.91870	-6.33650	-.63840	.24340	.22480	-.00670
.900	119.630	13.24770	-8.17060	-1.69670	.28950	.25600	.01120
	GRADIENT	-.22506	-.12622	-.08788	-.00238	-.00762	-.00081

RUN NO. 171/ 0 RN/L = 6.73 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLMN	CA	CYN	CYNN	CBL
1.199	129.620	13.32180	-2.78370	-2.61670	.23940	-.16710	.01110
1.199	127.710	13.96940	-2.45970	-2.48570	.26140	-.14290	.00890
1.199	123.700	15.17700	-1.93030	-2.27400	.26270	-.12910	.01800
1.199	119.680	16.24200	-1.77160	-1.94270	.24330	-.07140	.01440
1.199	115.680	17.17550	-1.02630	-1.85640	.23470	-.15840	.78430
1.199	111.680	17.97500	-.02550	-1.19700	.23870	.11250	.00380
1.199	109.790	18.26100	.57460	-1.01330	.23210	.14300	-.00560
1.199	119.680	16.14430	-1.58330	-1.93420	.25240	-.04980	.01430
	GRADIENT	-.24940	-.15792	-.07809	.00103	-.01490	-.00817

MSFC 578(SA15F) 142-IN SRB (139) NBES (R915H1) (28 NOV 73)

REFERENCE DATA

SREF =	.5030 SQ. IN	XMRP =	5.5570 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.0096		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	5.000	SHDSTK =	.000

RUN NO. 145/ 0 RN/L = 7.12 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLNN	CA	CYN	CYNN	CBL
1.945	129.770	12.44350	1.21690	-2.61270	.28610	.03080	.01030
1.945	127.860	13.10300	1.31290	-2.46320	.30000	.03160	.02260
1.945	123.830	14.53950	1.84400	-2.13000	.32490	.05040	.02070
1.945	119.800	15.69260	1.99700	-1.72820	.34410	.02230	.02340
1.945	115.760	16.74910	2.41300	-1.32170	.33130	.07130	.00960
1.945	111.750	17.77120	2.83720	-.89900	.33640	.09300	.01190
1.945	109.870	17.98350	3.39790	-.69400	.32080	.09920	.05420
1.945	119.830	15.40280	2.49190	-1.69090	.31070	.09720	.01070
	GRADIENT	-.28211	-.09617	-.09699	-.00185	-.00349	.00053

RUN NO. 106/ 0 RN/L = 6.95 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLNN	CA	CYN	CYNN	CBL
3.479	129.920	11.50770	1.68140	-2.54830	.26230	.06150	.04610
3.479	127.990	12.14580	1.84440	-2.39060	.26460	.06930	.04790
3.479	123.990	13.37940	2.01780	-2.01030	.27030	.06480	.03920
3.479	119.980	14.54980	2.36060	-1.57340	.27620	.06430	.02960
3.479	115.940	15.67850	2.77540	-1.12430	.27450	.06350	.04370
3.479	111.940	16.57850	3.41570	-.67110	.27820	.06650	.03650
3.479	110.040	16.98580	3.71100	-.47090	.28250	.05280	.03730
3.479	119.980	14.54090	2.36070	-1.57170	.27240	.06450	.04380
	GRADIENT	-.27669	-.09986	-.10594	-.00091	.00032	.00040

MSFC 578(SA19F) 142-IN SRB (139) NBES (R915J1) (01 NOV 73)

REFERENCE DATA

SREF =	.3039 SQ. IN	XMRP =	5.5570 IN.
LREF =	.0000 IN.	YMRP =	.0000 IN.
BREF =	.0000 IN.	ZMRP =	.0000 IN.
SCALE =	.0036		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	5.000	SHDSTK =	.000

RUN NO. 21/ 0 RN/L = 4.92 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLNN	CA	CYN	CYNN	CBL
.599	170.050	.63510	-.39890	-2.55340	-.00300	-.06550	-.00330
.599	160.080	.83500	-.68670	-2.61690	-.00960	-.07980	.00610
.599	164.020	1.43780	-1.54920	-2.74020	-.01740	-.14750	-.00110
.599	159.950	2.06570	-2.05980	-2.83080	-.05710	-.13040	-.00700
.599	155.860	2.73160	-2.35360	-2.87760	-.07670	-.26110	-.00950
.599	151.760	3.61340	-2.84850	-2.85600	-.19860	-.95160	-.00150
.599	149.830	4.09440	-3.11720	-2.82210	-.23320	-1.15740	-.01890
.599	159.950	2.06860	-2.04680	-2.83750	-.05130	-.13040	-.01480
	GRADIENT	-.16967	.13049	.01409	.01109	.05022	.00068

RUN NO. 20/ 0 RN/L = 6.22 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLNN	CA	CYN	CYNN	CBL
.897	170.020	.73020	.33150	-2.81410	.03210	.00950	.01020
.897	160.030	.97300	.10670	-2.88160	.01350	-.01000	.00030
.897	163.910	1.64590	-.57530	-3.04430	-.09750	-.05980	-.00030
.897	159.750	2.31110	-1.66700	-3.15460	-.13880	-.07460	-.00390
.897	155.570	3.11030	-2.49820	-3.19870	-.14030	-.25910	.00340
.897	151.350	4.20780	-3.37270	-3.16620	-.40830	-.51360	.01200
.897	149.340	4.82330	-3.71330	-3.13180	-.48360	.03910	.00420
.897	159.750	2.32490	-1.70200	-3.17510	-.12750	-.06820	.00380
	GRADIENT	-.19459	.20512	.01621	.02331	.01242	-.00013

RUN NO. 19/ 0 RN/L = 6.63 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLNN	CA	CYN	CYNN	CBL
1.198	169.840	1.07360	-1.42410	-3.59940	-.02070	.02610	.00770
1.198	167.790	1.38830	-1.83570	-3.66550	-.13710	-.13360	.00800
1.198	163.620	2.09160	-2.77710	-3.72680	-.08070	-.19890	.00390
1.198	159.380	3.05070	-3.74370	-3.75550	-.07130	-.11340	.00310
1.198	155.060	4.29360	-4.63530	-3.73510	-.10220	-.23350	.00770
1.198	150.750	5.81140	-4.87420	-3.65550	-.06990	-.27200	.01060
1.198	148.690	6.61580	-4.98790	-3.60045	-.07970	-.21240	.01530
1.198	159.370	3.05580	-3.74980	-3.75570	-.06760	-.15130	.01320
	GRADIENT	-.26099	.17619	-.00015	.00035	.00949	-.00029

MSFC 978(SA10F) 142-IN SRR (139) NBES (R915J1) (01 NOV 73)

REFERENCE DATA

SREF =	.9030 SQ. IN	XMRP =	5.5570 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.6096		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	5.000	SHDSTK =	.000

RUN NO. 66/ 0 RN/L = 6.97 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLNM	CA	CYN	CYNM	CBL
1.953	169.860	.85440	-1.34950	-3.69660	.03120	.05780	.00000
1.953	167.830	1.15520	-1.60460	-3.71070	.00200	.05370	.00000
1.953	163.650	2.05540	-1.72950	-3.74230	-.06320	-.12360	.00000
1.953	159.420	3.19550	-1.15190	-3.74770	-.05370	-.17270	.00000
1.953	155.160	4.44960	-.63820	-3.73120	-.04240	.13830	.00000
1.953	150.900	5.77270	-.26890	-3.64120	-.00760	.00910	.00000
1.953	148.860	6.46300	-.44810	-3.27960	-.01780	.04200	.00000
1.953	159.430	3.20460	-1.05270	-3.74370	-.11650	-.32410	.00000
	GRADIENT	-.27009	-.06358	-.01258	.00125	-.00148	.00000

RUN NO. 75/ 0 RN/L = 7.00 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLNM	CA	CYN	CYNM	CBL
3.479	169.990	.51930	-.66500	-3.83750	-.00900	.04150	.00000
3.479	168.020	.91090	-.52150	-3.83830	-.00740	.02980	.00000
3.479	163.980	1.62400	-.06800	-3.83590	-.04170	-.03830	.00000
3.479	159.840	2.51830	.31110	-3.82530	-.00420	-.02470	.00000
3.479	155.680	3.60740	.57300	-3.77990	-.00210	.01810	.00000
3.479	151.450	4.94740	-.03360	-3.30710	-.00790	.04970	.00000
3.479	149.510	5.45090	.04960	-3.31050	-.00370	.02280	.00000
3.479	159.840	2.51830	.31220	-3.82550	-.00860	.01100	.00000
	GRADIENT	-.23917	-.03647	-.02641	-.00057	-.00057	.00000

MSFC 578(SA10F) 142-IN SRB (139) NBE5 (R915F2) (22 FEB 74)

REFERENCE DATA

SREF =	.5030 SQ. IN	XMRP =	5.5570 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	5.000	SHDSTK =	.000

RUN NO. 238/ 0 RN/L = 6.66 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.193	80.420	19.77100	9.53570	1.04750	-.40810	.00290	-.00320
1.193	82.320	19.67590	9.41640	1.03870	-.40750	.01020	-.00220
1.193	86.310	19.94050	9.24540	.96140	-.35890	.04620	-.00060
1.193	90.270	20.09520	8.32160	.69860	-.37420	.19850	.00300
1.193	94.240	20.12300	7.16540	.34900	-.35660	.26670	.01060
1.193	98.230	20.08560	6.75900	-.01270	-.35580	.30220	.00910
1.193	100.110	19.89920	6.25300	-.19650	-.37030	.32170	.00340
1.193	90.270	20.07730	8.28390	.70100	-.37050	.21580	-.00280
	GRADIENT	.01039	-.17536	-.06547	.00225	.01801	.00057

MSFC 578(SA10F) 142-IN SRB (139) NBE6 (R916J1) (01 NOV 73)

REFERENCE DATA

SREF =	.5030 SQ. IN	XMRP =	5.5570 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	8.000	SHDSTK =	.000

RUN NO. 15/ 0 RN/L = 4.95 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.599	170.080	.56210	.67970	-3.68980	-.00970	-.07150	.02410
.599	168.110	.79230	.35520	-3.81290	-.00430	-.10940	.02050
.599	164.080	1.42200	-.22750	-4.04940	-.04960	-.09990	.02380
.599	159.990	2.04350	-.74270	-4.25810	-.10020	-.10720	.02870
.599	155.890	2.72360	-1.12250	-4.40770	-.17210	-.28060	.02660
.599	151.800	3.52330	-1.75330	-4.45180	-.24550	-.42940	.00720
.599	149.840	4.00880	-2.20030	-4.44920	-.29520	-.46280	.02800
.599	159.990	2.03100	-.72840	-4.26020	-.07700	-.08980	.02570
	GRADIENT	-.16827	.13465	.03865	.01443	.01970	.00016

MSFC 578(SA10F) 142-IN SRB (139) NBE6 ATHRNG AFT (R916J2) (01 NOV 73)

REFERENCE DATA

SREF =	.5030 Sq. IN	XMRP =	5.5570 IN.
LREF =	.6000 IN.	YMRP =	.0000 IN.
BREF =	.6000 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	9.000	SHDSTK =	.000

RUN NO. 22/ 0 RN/L = 4.89 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLHM	CA	CYM	CYNM	CBL
.597	170.110	.50720	.74780	-3.63990	.01620	-.17750	.03130
.597	168.120	.76780	.42700	-3.76410	.01310	-.09340	.02500
.597	164.070	1.34590	-.08270	-3.99040	.01060	-.13930	.05980
.597	159.990	2.11170	-.48390	-4.25750	.00980	-.05500	.02390
.597	155.890	2.76210	-1.19070	-4.41730	.00190	-.15770	.07110
.597	151.770	3.57760	-1.93910	-4.47290	.03260	-.14340	.05350
.597	149.840	4.00960	-2.48610	-4.45320	.05480	-.19580	.05660
.597	159.990	2.06780	-.48040	-4.23650	.00260	.01870	.04750
	GRADIENT	-.17249	.15110	.04235	-.00138	.00180	-.00144

MSFC 578(SA19F) 142-IN SRB (139) NBE1S (R91AB1) (01 NOV 73)

REFERENCE DATA

SREF =	.5030 SQ. IN	XMRP =	5.5570 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	6.000	SHDSTK =	0.000

RUN NO. 40/ 0 RN/L = 5.04 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.597	9.960	1.01040	.34680	.93630	.02770	.12950	.00450
.597	11.920	1.26430	.56400	.95550	.07860	-.05450	.00480
.597	15.960	1.81460	1.13730	.97420	.39880	-.55420	.01110
.597	20.030	2.49990	1.88980	.98540	.85270	-1.25920	.02840
.597	24.130	3.15590	2.91160	.94730	1.05840	-1.57320	.02730
.597	28.240	3.96520	3.92790	.86980	1.17950	-1.22820	.03640
.597	30.160	4.34710	4.33160	.84550	1.14160	-.80280	.01840
.597	20.030	2.48430	1.88060	.98220	.81680	-1.25370	.02570
	GRADIENT	.16523	.20239	-.00467	.06184	-.06238	.00125

RUN NO. 39/ 0 RN/L = 6.37 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.902	10.040	1.14740	-.03610	1.12440	.02310	.18500	.01410
.902	11.990	1.39920	.03380	1.14540	.07820	.12030	.01070
.902	16.090	2.08910	.61160	1.14850	.45880	-.08180	.01610
.902	20.240	2.84130	1.69220	1.13810	.41850	-.29190	.01170
.902	24.440	3.68610	3.27170	1.10850	.91580	-.83570	.02590
.902	28.670	4.59210	5.46500	1.02520	.60520	-.47230	.03480
.902	30.670	5.19180	6.39280	.99480	.64570	.20210	.02690
.902	20.230	2.82970	1.64670	1.14150	.42070	-.27430	.01340
	GRADIENT	.19406	.31787	-.00651	.03282	-.02027	.00097

RUN NO. 38/ 0 RN/L = 6.77 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.199	10.100	1.20010	.63040	1.64080	.04660	-.04950	.01480
1.199	12.110	1.47870	1.04370	1.66740	.10060	-.18660	.00330
1.199	16.270	2.16110	2.20020	1.70480	.27100	-.45540	.01180
1.199	20.540	3.19540	4.02910	1.68950	.39320	-.37980	.01780
1.199	24.880	4.42140	5.91330	1.59020	.22630	-.20490	.01810
1.199	29.220	5.91740	7.76190	1.51140	.22570	.16130	.02300
1.199	31.290	6.76480	8.68580	1.49660	.18890	.54480	.01910
1.199	20.530	3.17760	3.99690	1.68200	.28390	-.37980	.02020
	GRADIENT	.26162	.38957	-.00828	.00578	.02569	.00059

MSFC 578(SA10F) 142-IN SRB (139) NBE1S (R91AB1) (01 NOV 73)

REFERENCE DATA

SREF =	.5030 SQ. IN	XMRP =	5.5570 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	6.000	SHDSTK =	8.000

RUN NO. 80/ 0 RN/L = 6.94 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.963	10.200	1.21480	1.70500	1.27200	.03070	.03600	.00000
1.963	12.250	1.59370	2.35320	1.26660	.04940	-.00950	.00000
1.963	16.480	2.61890	3.76140	1.25160	.07160	-.08290	.00000
1.963	20.790	3.96260	4.50620	1.27780	.05730	-.04940	.00000
1.963	25.110	5.50250	4.93600	1.32360	.04160	.08850	.00000
1.963	29.380	7.07480	4.95990	1.29770	.02060	.12040	.00000
1.963	31.390	7.79750	5.09060	1.30900	.03190	.02310	.00000
1.963	20.780	3.98770	4.44220	1.26300	.09220	-.06870	.00000
	GRADIENT	.31616	.15483	.00237	-.00086	.00421	.00000

RUN NO. 81/ 0 RN/L = 6.99 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
3.479	10.140	1.37260	1.88300	.81180	-.00610	-.02740	.00000
3.479	12.120	1.81760	2.04460	.82960	-.00210	.00410	.00000
3.479	16.200	2.78690	2.28050	.88290	-.00540	.01820	.00000
3.479	20.360	3.87850	2.41050	.94800	.01020	.00570	.00000
3.479	24.520	5.10550	2.51460	1.03240	.01300	.03130	.00000
3.479	28.680	6.40900	2.72790	1.11760	.00030	-.01350	.00000
3.479	30.640	7.07450	2.82030	1.15890	.00950	.00400	.00000
3.479	20.360	3.87660	2.40960	.94150	.00960	-.02560	.00000
	GRADIENT	.27792	.04252	.01720	.00067	.00060	.00000

MSFC 578(SA10F) 142-IN SRB (139) NOZ'S (R91AD1) (01 NOV 73)

REFERENCE DATA

SREF = .5030 SQ. IN XMRP = 5.5570 IN.
LREF = .8000 IN. YMRP = .0000 IN.
BREF = .8000 IN. ZMRP = .0000 IN.
SCALE = .0056

PARAMETRIC DATA

BETA = .000 PHI = .000
FWDSTK = .000 AFTSTK = .000
ATHRNG = .100 ATHS = .000
CONFIG = 6.000 SHDSTK = 8.000

RUN NO. 200/ 0 RN/L = 4.92 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.595	50.280	8.04780	8.35010	.39460	-.58490	-1.88880	.03540
.595	52.210	8.79060	9.80470	.32260	-.24780	-2.91250	.02950
.595	56.240	10.02670	11.52950	.14540	-.02190	-3.05890	.02900
.595	60.270	11.32730	12.99450	-.01640	-.08030	-1.33530	.04440
.595	64.300	11.94620	13.34810	-.18370	.12460	.27660	.00230
.595	68.300	12.22280	13.20280	-.26770	-.42590	-.69660	.03510
.595	70.200	12.28920	13.36100	-.36490	-.23020	-.34260	.04630
.595	60.270	11.32090	13.00030	-.02580	-.15170	-1.34340	.03100
	GRADIENT	.21545	.23493	-.03786	.00751	.12950	.00018

RUN NO. 199/ 0 RN/L = 6.22 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.898	50.660	11.73890	15.93740	.53450	-.06430	.50140	.02260
.898	52.600	12.38740	17.09110	.42950	-.01530	.37740	.00600
.898	56.670	13.33950	18.97200	.28060	.11280	1.26540	.01850
.898	60.690	14.32720	19.63420	.18390	-.18330	.12610	.01240
.898	64.690	14.99730	18.80000	.12380	-.14790	-.06900	.02010
.898	68.620	15.12230	16.73260	.08820	-.18660	-.08390	.02710
.898	70.490	15.21480	15.88950	.09110	-.21110	-.01410	.05060
.898	60.700	14.42270	19.76160	.20280	-.18060	.09890	.01410
	GRADIENT	.17685	-.05964	-.02178	-.01084	-.03959	.00126

RUN NO. 198/ 0 RN/L = 6.63 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.196	50.680	13.97400	12.42120	1.01890	-.29450	-.07140	.03980
1.196	52.580	14.65020	12.84970	.95670	-.31390	-.15830	.01500
1.196	56.620	15.94610	13.96940	.87220	-.30850	-.15280	.02370
1.196	60.660	16.86020	14.76820	.83930	-.32100	-.33260	.01450
1.196	64.660	17.75800	14.30230	.73220	-.25400	-.25310	.02670
1.196	68.650	18.50670	13.81980	.67690	-.28340	-.10320	.02490
1.196	70.510	18.79830	12.96440	.65640	-.29680	-.12170	.02700
1.196	60.660	16.80890	14.63820	.83790	-.32550	-.33180	.02570
	GRADIENT	.21057	.04097	-.01789	.00123	-.00133	-.00010

MSFC 578(SA19F) 142-IN SRB (139) NBE1S (R91AD1) (01 NOV 73)

REFERENCE DATA

SREF =	.5030 SQ. IN	XMRP =	5.5570 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.5056		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	6.000	SHDSTK =	8.000

RUN NO. 134/ 0 RN/L = 7.24 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.946	50.490	13.82760	7.42030	1.31480	-.30640	-.05120	-.00850
1.946	52.400	14.31900	7.63410	1.29290	-.31400	-.04010	-.01490
1.946	56.450	15.61800	8.45930	1.25600	-.34520	-.10470	-.00770
1.945	60.450	16.56020	8.50330	1.20010	-.33690	-.11380	-.01040
1.946	64.500	17.51560	9.06300	1.10640	-.35310	-.09860	-.01430
1.946	68.570	18.74980	10.27510	1.01600	-.35310	-.13790	-.00920
1.946	70.450	18.89990	9.98690	.94780	-.34640	-.07380	-.00380
1.946	60.430	16.37110	8.14010	1.19000	-.32650	-.05500	-.01650
	GRADIENT	.25967	.13642	-.01793	-.00206	-.00274	.00018

RUN NO. 98/ 0 RN/L = 7.03 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
3.479	50.290	13.00670	4.50260	1.42920	-.27870	-.14860	-.04140
3.479	52.210	13.59610	5.04630	1.42520	-.27490	-.15640	-.03270
3.479	56.210	14.68060	6.13860	1.39280	-.27510	-.17620	-.03790
3.479	60.260	15.75760	7.04690	1.36550	-.26810	-.18770	-.02910
3.479	64.300	16.65130	7.92230	1.24870	-.26630	-.22270	-.03090
3.479	68.350	17.50810	8.60540	1.11270	-.25940	-.17790	-.03550
3.479	70.210	17.85480	8.73720	1.03950	-.26080	-.20080	-.04090
3.479	60.260	15.73140	7.06180	1.35990	-.27190	-.18450	-.03770
	GRADIENT	.24304	.21616	-.01933	.00094	-.00244	.00003

MSFC 578(3A10F) 142-IN SRB (139) NBEIS (R91AF1) (22 FEB 74)

REFERENCE DATA

SREF =	.5930 SQ. IN	XMRP =	5.5570 IN.		
LREF =	.8000 IN.	YMRP =	.0000 IN.		
BREF =	.8500 IN.	ZMRP =	.0000 IN.		
SCALE =	.0056				

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	6.000	SHDSTK =	8.000

RUN NO. 229/ 0 RN/L = 4.95 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.594	80.170	12.06150	9.23070	.07430	-.11310	.73400	.03180
.594	82.050	12.01690	7.98880	.14700	.03480	1.31690	-.00980
.594	86.000	12.25530	5.64240	.24780	.04520	1.29840	.00500
.594	89.950	12.37050	3.03110	.38450	-.11360	1.04620	-.00610
.594	93.930	12.36970	1.25180	.49460	-.04480	1.44570	.01190
.594	97.900	12.52450	-.42040	.45350	.09290	1.41430	.01650
.594	99.790	12.56100	-1.24740	.36540	.23370	1.29000	.01920
.594	89.960	12.37120	3.62120	.34620	-.13800	1.07090	.01110
	GRADIENT	.02682	-.53449	.01791	.01005	.01949	.00032

RUN NO. 230/ 0 RN/L = 6.27 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.902	80.400	15.89220	11.70020	.33000	-.29900	-.00170	.05580
.902	82.270	15.93350	10.83280	.34550	-.28060	-.00060	.03750
.902	86.190	16.37500	8.43220	.39850	-.25930	.10080	.01280
.902	90.100	16.59680	5.64260	.45460	-.28900	.23160	.01880
.902	94.040	16.48960	3.22270	.51740	-.32420	.37260	-.00490
.902	97.970	16.28970	1.17010	.34530	-.28340	.41050	.02640
.902	99.830	16.09140	-.06600	.25960	-.25380	.31920	.01660
.902	90.100	16.54960	5.64270	.44300	-.28160	.23080	.00500
	GRADIENT	.01508	-.61432	-.00064	.00047	.02162	-.00157

RUN NO. 257/ 0 RN/L = 6.83 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.194	100.370	19.63090	4.78550	.04130	.42420	.13910	.01010
1.194	98.490	19.80460	5.31390	.15630	.42850	.15130	.01420
1.194	94.520	20.17170	6.97660	.37270	.39850	.09430	.00610
1.194	90.550	20.32650	8.62010	.55690	.36530	.13130	.00860
1.194	86.600	20.40560	8.42770	.70330	.35580	.19070	.00800
1.194	82.630	20.19840	9.14350	.81570	.33360	.25970	-.00440
1.194	80.740	19.97340	9.37130	.85220	.31940	.31650	.00900
1.194	90.550	20.31790	8.62920	.55810	.37390	.13500	.00060
	GRADIENT	-.02119	-.24209	-.04144	.00558	-.00853	.00045

MSFC 578(SA10F) 142-IN SRB (139) NBE1S (R91AF1) (22 FEB 74)

REFERENCE DATA

SREF =	.5030 SQ. IN	XMRP =	5.5570 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	6.000	SHDSTK =	8.000

RUN NO. 125/ 0 RN/L = 7.02 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.953	80.470	19.74360	8.98310	.67140	-.39680	-.03260	-.05180
1.953	82.340	19.84070	8.76760	.60790	-.39380	-.00150	-.03320
1.953	86.320	19.98680	8.28620	.47070	-.39700	.03370	-.04310
1.953	90.300	20.01090	7.80880	.31390	-.37720	.05350	-.04250
1.953	94.290	19.91370	7.14280	.13740	-.35680	.19720	-.03880
1.953	98.240	19.71810	6.13450	-.03730	-.33500	.05580	-.04060
1.953	100.120	19.57320	5.70000	-.13090	-.31950	.03890	-.02780
1.953	90.290	19.92220	7.77990	.31100	-.37060	.07010	-.04590
	GRADIENT	-.00837	-.16440	-.04083	.00395	.00413	.00055

RUN NO. 97/ 0 RN/L = 7.03 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
3.479	80.280	19.15950	8.65210	.72580	-.36830	-.22920	-.04360
3.479	82.200	19.30840	8.48710	.65300	-.36320	-.23340	-.04360
3.479	86.140	19.47280	7.97400	.51110	-.36440	-.22330	-.04530
3.479	90.140	19.46670	7.39530	.35260	-.33340	-.17760	-.04360
3.479	94.140	19.43280	6.69560	.16720	-.31090	-.18960	-.04560
3.479	98.130	19.15710	5.84730	-.00090	-.27850	-.15910	-.04100
3.479	99.980	19.01160	5.51400	-.08160	-.26470	-.16790	-.04290
3.479	90.140	19.47440	7.38760	.35770	-.32220	-.15530	-.03390
	GRADIENT	-.00799	-.16165	-.04119	.00541	.00377	.00007

MSFC 578(SA19F) 142-IN SRB (139) NBE1S (R91AM1) (01 NOV 73)

REFERENCE DATA

SREF = .5930 SQ. IN XMRP = 5.5570 IN.
LREF = .8000 IN. YMRP = .0000 IN.
BREF = .8000 IN. ZMRP = .0000 IN.
SCALE = .0056

PARAMETRIC DATA

BETA = .000 PHI = .000
FWDSTK = .000 AFTSTK = .000
ATHRNG = .100 ATHS = .000
CONFIG = 6.000 SMDSTK = 8.000

RUN NO. 168/ 0 RN/L = 5.03 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLNM	CA	CYM	CYNM	CBL
.600	129.630	8.03620	-8.67630	-1.60780	-1.37470	1.83550	-.01350
.600	127.920	8.44490	-8.93370	-1.48190	-1.35070	1.97530	-.02050
.600	123.910	9.49780	-9.06190	-1.21940	-.87960	2.19930	-.02440
.600	119.910	10.48420	-8.22960	-.92300	.39460	.48540	-.03930
.600	115.890	11.29460	-7.67660	-.66580	.67670	1.99560	-.01620
.600	111.880	11.88610	-7.42900	-.35960	.46870	1.16820	-.02890
.600	109.990	12.09530	-6.98740	-.21330	.43840	.98230	-.04870
.600	119.910	10.42510	-8.01640	-.98460	.31010	.61350	-.02930
	GRADIENT	-.20992	-.09611	-.07006	-.10854	.04400	.00107

RUN NO. 169/ 0 RN/L = 6.32 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLNM	CA	CYM	CYNM	CBL
.900	129.540	10.71200	-9.73930	-1.64840	.17940	.37710	-.01630
.900	127.620	11.29530	-10.02250	-1.51850	.18340	.34930	-.01960
.900	123.590	12.48670	-10.19790	-1.24620	.26510	.27310	-.02610
.900	119.600	13.42530	-9.27090	-.99150	.31260	-.05870	-.03110
.900	115.599	14.38460	-8.04650	-.62760	.24420	.09870	-.04050
.900	111.610	15.03650	-7.09250	-.27899	.22180	.02300	-.04080
.900	109.710	15.09490	-6.95800	-.10950	.22540	.15290	-.00570
.900	119.580	13.62060	-9.27520	-.99370	.31780	-.00530	-.01030
	GRADIENT	-.22711	-.16703	-.07750	-.00192	.01553	.00034

RUN NO. 170/ 0 RN/L = 6.74 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLNM	CA	CYM	CYNM	CBL
1.201	129.540	13.53420	-3.97400	-1.96340	.23870	-.13130	-.00820
1.201	127.650	14.17910	-3.68870	-1.83330	.25550	-.12620	.00900
1.201	123.650	15.43950	-3.03290	-1.55010	.27120	-.13670	.01860
1.201	119.640	16.37480	-2.43100	-1.30090	.28340	-.20790	.01320
1.201	115.630	17.23940	-1.71950	-.96740	.26050	-.11020	.00230
1.201	111.640	18.04420	-.82490	-.63410	.25200	.01790	-.00870
1.201	109.760	18.33720	-.27070	-.48580	.22380	.14570	-.00220
1.201	119.650	16.34270	-2.27970	-1.29830	.28280	-.19330	-.00560
	GRADIENT	-.24066	-.18209	-.07459	.00061	-.01123	.00041

MSFC 578(SA10F) 142-IN SRB (139) NOE1S (R91AH1) (01 NOV 73)

REFERENCE DATA

SREF =	.5030 Sq. IN	XMRP =	5.5570 IN.		
LREF =	.8000 IN.	YMRP =	.0000 IN.		
BREF =	.8000 IN.	ZMRP =	.0000 IN.		
SCALE =	.0036				

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	6.000	SHDSTK =	8.000

RUN NO. 147/ 0 RN/L = 7.12 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.946	129.710	12.62280	.05770	-1.86330	.31140	-.11450	.01480
1.946	127.810	13.28460	.43540	-1.78030	.31840	-.10730	.02430
1.946	123.800	14.62330	1.31080	-1.55570	.33070	-.09300	.02540
1.946	119.780	15.87830	1.66650	-1.22810	.33370	-.06750	.00620
1.946	115.750	16.85050	2.23990	-.90790	.33800	.04960	.01470
1.946	111.740	17.90160	2.69180	-.61170	.34490	.05440	.00970
1.946	109.860	18.14630	3.26100	-.47150	.33840	.03730	.01320
1.946	119.820	15.51430	2.12730	-1.19990	.33840	-.04230	.02130
	GRADIENT	-.28139	-.14962	-.07199	-.00120	-.00943	.00049

RUN NO. 105/ 0 RN/L = 6.96 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
3.479	129.890	11.63730	.86290	-2.02720	.25720	.13710	.04260
3.479	127.960	12.32870	1.09850	-1.89990	.26620	.15990	.04270
3.479	123.970	13.56880	1.61200	-1.58530	.25910	.21020	.03940
3.479	119.970	14.71110	2.19780	-1.23020	.26100	.21370	.03920
3.479	115.930	15.82960	2.56020	-.91780	.25660	.17230	.04390
3.479	111.910	16.80360	3.24900	-.62690	.27950	.11890	.04290
3.479	110.030	17.21950	3.56090	-.49260	.27590	.12600	.04080
3.479	119.970	14.69300	2.21880	-1.22740	.25720	.21890	.04830
	GRADIENT	-.28027	-.13357	-.07852	-.00079	.00166	-.00001

MSFC 578(SA10F) 142-IN SRB (139) NBE1S (R91AJ1) (01 NOV 73)

REFERENCE DATA

SREF =	.5030 SQ. IN	XMRP =	5.5570 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	6.000	SHDSTK =	0.000

RUN NO. 23/ 0 RN/L = 4.91 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLNN	CA	CYN	CYNN	CBL
.598	159.630	2.04070	-2.59670	-1.96960	-.01200	-.27200	-.00160
.598	170.040	.56960	-1.39990	-1.54800	.03890	-.09770	-.00750
.598	168.050	.80060	-1.69260	-1.66350	.02660	-.04700	-.01000
.598	164.010	1.32660	-2.22640	-1.79810	.00790	-.14990	.00820
.598	159.940	2.00090	-2.56740	-1.96540	-.01930	-.19120	-.01540
.598	155.850	2.65820	-2.84460	-2.15740	-.06630	-.43030	.01600
.598	151.740	3.49010	-3.21850	-2.30880	-.12750	-.93490	.01170
.598	149.820	3.92310	-3.37640	-2.35160	-.06410	-1.30300	.00160
	GRADIENT	-.16529	.09433	.04006	.09701	.05783	-.00081

RUN NO. 24/ 0 RN/L = 6.21 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLNN	CA	CYN	CYNN	CBL
.902	169.980	.74170	-.29370	-1.82250	.03690	-.04030	-.00300
.902	167.980	1.03200	-.65470	-1.90960	-.03260	-.08440	-.00690
.902	163.900	1.58410	-1.30640	-2.11530	-.06880	-.17360	-.00880
.902	159.750	2.21540	-1.97700	-2.26780	-.09450	-.31160	-.00760
.902	155.570	2.99680	-2.67490	-2.40480	-.14430	-.44680	-.00900
.902	151.370	3.94990	-3.31120	-2.51440	-.23520	-.68720	-.01230
.902	149.360	4.67370	-3.88070	-2.52990	-.[illegible]30	-1.19700	-.00340
.902	159.750	2.23080	-1.96740	-2.26390	-.[illegible]70	-.31540	-.01130
	GRADIENT	-.18354	.16808	.03507	.01097	.04698	.00013

RUN NO. 25/ 0 RN/L = 6.63 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLNN	CA	CYN	CYNN	CBL
1.198	169.810	.95430	-1.89240	-2.54740	.03510	-.03020	-.00950
1.198	167.800	1.21160	-2.27190	-2.66690	.01830	-.09860	-.00910
1.198	163.650	1.92390	-3.10190	-2.65660	-.02150	-.40990	-.01060
1.198	159.410	2.86860	-3.75420	-2.73220	-.10540	-.72250	-.01010
1.198	155.090	4.16110	-4.55510	-2.80980	-.17340	-.55930	-.00620
1.198	150.750	5.91450	-4.57520	-2.92940	-.10890	.37090	-.00080
1.198	148.710	6.78160	-4.40340	-2.92930	-.06080	-.14490	-.00240
1.198	159.420	2.85010	-3.72850	-2.73760	-.10150	-.77710	-.00920
	GRADIENT	-.27519	.12906	.01838	.00695	-.00574	-.00041

MSFC 578(SA19F) 142-IN SRB (139) NBE1S (R91AJ1) (01 NOV 73)

REFERENCE DATA

SREF =	.5030 SQ. IN	XMRP =	5.5570 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	6.000	SHDSTK =	0.000

RUN NO. 65/ 0 RN/L = 6.97 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLNN	CA	CYN	CYNN	CBL
1.956	169.850	.00280	-1.36930	-2.48790	.03640	.07040	.00000
1.956	167.850	1.10600	-1.59080	-2.52460	-.00750	-.06920	.00000
1.956	163.640	2.02100	-1.94710	-2.56480	-.02320	-.09330	.00000
1.956	159.360	3.26340	-1.84450	-2.66460	-.00110	-.02730	.00000
1.956	155.090	4.56900	-1.69570	-2.74760	-.03610	.10260	.00000
1.956	150.810	5.89780	-1.28270	-2.79100	-.01990	.02970	.00000
1.956	148.790	6.56700	-.95860	-2.82980	-.03360	.06640	.00000
1.956	159.370	3.26520	-1.79120	-2.67380	-.06630	-.05870	.00000
	GRADIENT	-.27867	-.02000	.01648	.00222	-.00407	.00000

RUN NO. 78/ 0 RN/L = 7.00 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLNN	CA	CYN	CYNN	CBL
3.479	170.000	.72550	-.64150	-2.48460	.00860	.05510	.00000
3.479	168.000	1.04580	-.55110	-2.51830	.02150	.03410	.00000
3.479	163.930	1.80980	-.45380	-2.59800	-.02100	.01440	.00000
3.479	159.790	2.72620	-.27760	-2.71030	-.02080	.03250	.00000
3.479	155.630	3.77620	-.03490	-2.85820	.00110	.02540	.00000
3.479	151.460	4.93920	.00560	-2.91140	-.00410	.04890	.00000
3.479	149.460	5.58430	-.46220	-2.45500	.00370	.01460	.00000
3.479	159.780	2.74430	-.27720	-2.71340	-.01340	.02770	.00000
	GRADIENT	-.23625	-.02136	.01050	.00044	.00065	.00000

MSFC 578(SA19F) 142-IN SRB (139) NOE1 S (R91AF2) (22 FEB 74)

REFERENCE DATA

SREF =	.5939 SQ. IN	XMRP =	5.5570 IN.		
LREF =	.8000 IN.	YMRP =	.0000 IN.		
BREF =	.8000 IN.	ZMRP =	.0000 IN.		
SCALE =	.0056				

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	6.000	SHDSTK =	8.000

RUN NO. 231/ 0 RN/L = 6.66 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLNN	CA	CYN	CYNN	CBL
1.195	80.440	19.45700	9.56960	.61230	-.34620	-.10300	-.00420
1.195	82.310	19.59110	9.32830	.59430	-.35290	-.08560	-.00810
1.195	86.280	19.87150	8.45250	.50920	-.31590	-.04620	.01390
1.195	90.220	20.08410	7.08170	.39110	-.32440	.07230	.01060
1.195	94.230	20.21400	6.92830	.20340	-.31190	.12050	.01820
1.195	98.210	20.12110	6.34080	-.00330	-.31350	.15820	.01650
1.195	100.090	19.97840	5.82780	-.10100	-.32520	.17140	.03960
1.195	90.240	20.03340	7.44170	.38810	-.31480	.04510	.01700
	GRADIENT	.03044	-.18956	-.03697	.00153	.01508	.00158

MSFC 576(SA10F) 142-IN SRB (139) MBE1S (R91881) (01 NOV 73)

REFERENCE DATA

SREF =	.5030 SQ. IN	XMRP =	5.5570 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
DREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	11.250
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	6.000	SHDSTK =	8.000

RUN NO. 35/ 0 RN/L = 5.02 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLMN	CA	CYN	CYNN	CBL
.599	9.960	.96080	.35360	.92840	.02670	.10390	.00240
.599	11.920	1.24170	.61710	.95630	.10200	-.00680	-.00150
.599	15.960	1.79610	1.14280	.98050	.39220	-.52270	-.01510
.599	20.030	2.46980	1.87020	.98570	.83500	-1.26570	-.00090
.599	24.130	3.12050	2.91970	.93940	1.02130	-1.51460	-.00070
.599	28.240	3.93230	3.91640	.86530	1.11610	-1.16500	.04070
.599	30.160	4.37840	4.33570	.85140	1.17740	-.84130	.04030
.599	20.030	2.45910	1.84780	.98750	.83660	-1.24290	.00840
	GRADIENT	.16702	.20084	-.00458	.06059	-.06259	.00213

RUN NO. 36/ 0 RN/L = 6.34 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLMN	CA	CYN	CYNN	CBL
.902	10.010	1.11230	-.03490	1.11990	.01550	.16140	-.03420
.902	11.990	1.40310	.06610	1.14430	.09890	.14670	.01040
.902	16.090	2.08640	.57120	1.15700	.40260	-.04380	.00060
.902	20.230	2.84460	1.65750	1.15310	.41980	-.31270	.01010
.902	24.450	3.67260	3.22790	1.10420	.87070	-.89190	.00950
.902	28.660	4.59800	5.29530	1.02220	.55250	-.39930	.03490
.902	30.660	5.10980	6.13340	.98860	.60500	.32630	.02960
.902	20.230	2.83420	1.63100	1.15410	.44250	-.31230	.02090
	GRADIENT	.19474	.30628	-.00673	.03048	-.01633	.00153

RUN NO. 37/ 0 RN/L = 6.76 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLMN	CA	CYN	CYNN	CBL
1.201	10.090	1.10710	.58450	1.63670	.03740	-.09780	.00830
1.201	12.110	1.48590	1.01590	1.65770	.09010	-.17390	.00580
1.201	16.260	2.17170	2.17820	1.69300	.23430	-.36120	.01050
1.201	20.530	3.17350	4.02460	1.68980	.24750	-.25720	.00710
1.201	24.860	4.42240	5.86980	1.58620	.17840	-.05510	.00250
1.201	29.220	5.92300	7.72480	1.51380	.18090	.13190	.01090
1.201	31.290	6.75190	8.69670	1.50250	.16320	.52510	-.00540
1.201	20.540	3.25870	4.05910	1.68720	.27500	-.22820	.01310
	GRADIENT	.26166	.39075	-.03769	.00467	.02604	-.00021

MSFC 576(SA10F) 142-IN SRB (139) NBE1S (R91BB1) (01 NOV 73)

REFERENCE DATA

SREF =	.5039 SQ. IN	XMRP =	5.5570 IN.		
LREF =	.8000 IN.	YMRP =	.0000 IN.		
BREF =	.8000 IN.	ZMRP =	.0000 IN.		
SCALE =	.0036				

PARAMETRIC DATA

BETA =	.000	PHI =	11.250
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	6.000	SHDSTK =	0.000

RUN NO. 61/ 0 RN/L = 6.97 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.953	10.200	1.15470	1.78030	1.33140	.05730	-.06680	.00000
1.953	12.240	1.52540	2.40260	1.29840	.07070	-.09700	.00000
1.953	16.500	2.55090	3.80890	1.29630	.10030	-.13310	.00000
1.953	20.790	3.99430	4.64710	1.32C.0	.08610	-.07390	.00000
1.953	25.160	5.46170	5.48680	1.39210	.07350	.02000	.00000
1.953	29.460	7.16490	5.77910	1.40740	.04950	.12180	.00000
1.953	31.420	7.76600	5.41920	1.37800	.07740	-.07640	.00000
1.953	20.790	3.92730	4.60130	1.31280	.09410	-.07510	.00000
	GRADIENT	.31959	.18236	.00450	-.00021	.00596	.00000

RUN NO. 80/ 0 RN/L = 6.99 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
3.479	10.140	1.38170	1.94930	.60440	.01230	-.01590	.00000
3.479	12.120	1.61780	2.05460	.81270	-.01390	-.02830	.00000
3.479	16.200	2.79590	2.28570	.87060	-.01730	-.02470	.00000
3.479	20.350	3.86740	2.41550	.94300	-.00190	-.04250	.00000
3.479	24.520	5.09560	2.55310	1.03820	-.01040	-.03350	.00000
3.479	28.690	6.41840	2.80590	1.12190	.01500	-.00930	.00000
3.479	30.650	7.04960	2.97260	1.15650	.00880	-.01040	.00000
3.479	28.360	3.89590	2.44070	.93980	.02810	-.01970	.00000
	GRADIENT	.27687	.04665	.01798	.0006[illegible]	.00047	.00000

MSFC 578(SA10F) 142-IN SRB (139) NBE1S (R91BD1) (01 NOV 73)

REFERENCE DATA

SREF =	.5039 SQ. IN	XMRP =	5.5570 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	11.250
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	6.000	SHDSTK =	8.000

RUN NO. 203/ 0 RN/L = 4.92 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.595	50.280	8.02140	8.32710	.37500	-.57200	-1.86240	.05070
.595	52.210	8.83750	9.80320	.30070	-.26340	-3.08980	.03220
.595	56.240	9.96370	11.48050	.13550	-.04020	-3.07240	.05190
.595	60.270	11.30130	13.01710	-.03190	-.10970	-1.59250	.04920
.595	64.300	11.89060	13.43210	-.18980	.05380	.59590	.02380
.595	68.300	12.15360	13.29200	-.27840	-.42380	-.88370	.02590
.595	70.200	12.35300	13.32450	-.34350	-.25520	-.67560	.04560
.595	60.270	11.27680	12.99150	-.03390	-.11820	-1.42180	.02000
	GRADIENT	.21543	.23808	-.03643	.00627	.12309	-.00060

RUN NO. 202/ 0 RN/L = 6.22 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.901	50.690	11.73680	16.03840	.52090	-.06820	.48150	.00390
.901	52.600	12.39180	17.12760	.41880	-.00300	.32270	.03900
.901	56.670	13.28590	19.01690	.27410	.02790	1.14760	.02360
.901	60.700	14.31080	19.82920	.18050	-.18890	.12940	.02610
.901	64.690	14.96290	18.93690	.10840	-.13530	-.03120	.03470
.901	68.620	15.21420	16.81960	.09130	-.22510	-.08410	.03640
.901	70.490	15.23180	15.95740	.10430	-.24370	-.04410	.03900
.901	60.720	14.44650	20.03240	.20200	-.20250	.08520	.03700
	GRADIENT	.17880	-.00835	-.02084	-.01170	-.03695	.00104

RUN NO. 201/ 0 RN/L = 6.62 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.197	50.680	13.96610	12.43470	1.00830	-.30530	.08100	.03330
1.197	52.580	14.60460	12.86310	.94580	-.33770	.01310	.02580
1.197	56.630	15.90590	14.08240	.86600	-.33210	-.06890	.01260
1.197	60.670	16.82890	15.04800	.83290	-.31670	-.30550	.02990
1.197	64.670	17.69650	14.36800	.73670	-.27070	-.11100	.01980
1.197	68.650	18.44240	13.91990	.67370	-.29650	-.04010	.01070
1.197	70.520	18.66090	13.15250	.64700	-.30310	-.11250	.01760
1.197	60.660	16.75899	14.71290	.83880	-.32500	-.28820	.02920
	GRADIENT	.23628	.04725	-.01756	.00167	-.00707	-.00069

MSFC 578(SA10F) 142-IN SRB (139) NBE1S (R918D1) (01 NOV 73)

REFERENCE DATA

SREF =	.5030 SQ. IN	XMRP =	5.5570 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	11.250
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	6.000	SHDSTK =	0.000

RUN NO. 135/ 0 RN/L = 7.18 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.942	50.490	13.85670	7.45690	1.32460	-.30960	-.06030	-.02430
1.942	52.410	14.35360	7.68880	1.30400	-.31660	-.03540	-.02020
1.942	56.450	15.61050	8.40400	1.28000	-.34690	-.02310	-.01620
1.942	60.470	16.65850	8.76590	1.22220	-.35160	-.04770	-.01200
1.942	64.510	17.59510	9.10200	1.12850	-.36220	-.03950	-.02340
1.942	68.570	18.75200	10.19110	1.03160	-.36620	-.04800	-.03020
1.942	70.450	18.92770	9.88620	.96510	-.36090	.03310	-.01130
1.942	60.430	16.38240	8.05510	1.20560	-.32440	.00250	-.02780
	GRADIENT	.25991	.13060	-.01767	-.00269	.00210	.00006

RUN NO. 99/ 0 RN/L = 7.04 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
3.479	50.300	13.00690	4.65030	1.42860	-.25870	-.24400	-.03370
3.479	52.210	13.58390	5.12240	1.42190	-.26210	-.24100	-.03700
3.479	56.200	14.70550	6.05260	1.39640	-.26600	-.29510	-.04910
3.479	60.250	15.75040	7.01410	1.35900	-.26590	-.28440	-.05630
3.479	64.310	16.64450	8.01350	1.25030	-.24870	-.26290	-.03200
3.479	68.320	17.49990	8.51870	1.11260	-.25960	-.19930	-.03250
3.479	70.210	17.87200	8.69540	1.04100	-.25660	-.18640	-.03560
3.479	60.250	15.74120	7.01790	1.35740	-.25450	-.25170	-.03630
	GRADIENT	.24341	.20943	-.01924	.00030	.00283	.00024

MSFC 578(SA10F) 142-IN SRB (139) NBE1S (R918F1) (01 NOV 73)

REFERENCE DATA

SREF =	.5030 SQ. IN	XMRP =	5.5570 IN.		
LREF =	.8000 IN.	YMRP =	.0000 IN.		
BREF =	.8000 IN.	ZMRP =	.0000 IN.		
SCALE =	.0036				

PARAMETRIC DATA

BETA =	.000	PHI =	11.250
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	6.000	SHDSTK =	8.000

RUN NO. 234/ 0 RN/L = 4.95 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.596	80.160	12.15440	8.94990	.22020	-.46380	1.97840	.00440
.596	82.040	12.04020	7.87590	.27660	-.30400	2.79510	-.00240
.596	86.000	12.33130	5.55540	.30280	-.26380	2.53590	-.00470
.596	89.950	12.52570	3.30580	.36890	-.23060	1.87690	-.01770
.596	93.940	12.41410	1.56570	.47450	-.23410	1.88270	-.03700
.596	97.910	12.41160	.16970	.41380	-.16840	2.18570	-.03210
.596	99.800	12.45540	-.59010	.32030	-.19500	2.61510	-.00580
.596	89.970	12.35190	3.98130	.32490	-.34380	2.08980	-.00020
	GRADIENT	.01777	-.48713	.00763	.01094	-.00333	-.00132

RUN NO. 233/ 0 RN/L = 6.24 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.894	80.370	15.93710	10.88880	.40060	-.46150	.79640	.01000
.894	82.240	15.89610	10.01330	.40550	-.46010	.82120	-.00440
.894	86.160	16.07330	7.66110	.43810	-.45330	.92280	-.00960
.894	90.070	16.46810	4.86550	.55280	-.39920	.64950	-.00950
.894	94.020	16.55200	2.70500	.50820	-.39170	.54010	-.00450
.894	97.950	16.20460	.59910	.39000	-.37930	.73960	.03180
.894	99.810	16.07830	-.61630	.30940	-.39190	.79290	.02660
.894	90.070	16.49330	4.86090	.55220	-.40890	.66760	-.01540
	GRADIENT	.01650	-.59794	-.00215	.00452	-.00634	.00136

RUN NO. 232/ 0 RN/L = 6.66 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.200	80.420	19.53990	9.51080	.62650	-.42170	.18620	.01300
1.200	82.310	19.65160	9.28840	.61080	-.43870	.23640	-.00070
1.200	86.280	19.92560	8.45110	.52410	-.42160	.41210	.00380
1.200	90.230	20.09270	7.30840	.39650	-.42210	.52870	.00610
1.200	94.230	20.17230	6.78420	.21840	-.41880	.63590	-.00450
1.200	98.210	20.17690	6.42900	.01980	-.43970	.71720	.02820
1.200	100.090	20.01740	5.86290	-.08010	-.45140	.71500	.02700
1.200	90.220	20.06600	7.11440	.39730	-.43260	.53700	-.00900
	GRADIENT	.02801	-.18553	-.03661	-.00982	.02820	.00696

MSFC 578(SA10F) 142-IN SRB (139' NBE1S (R918F1) (01 NOV 73)

REFERENCE DATA

SREF =	.5030 SQ. IN	XMRP =	5.3570 IN.		
LREF =	.8550 IN.	YMRP =	.0000 IN.		
BREF =	.8500 IN.	ZMRP =	.0000 IN.		
SCALE =	.9056				

PARAMETRIC DATA

BETA =	.000	PHI =	11.250
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	6.000	SHDSTK =	8.000

RUN NO. 126/ 0 RN/L = 7.02 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.954	80.440	19.89310	8.77570	.68320	-.42560	.11040	-.03550
1.954	82.330	20.02190	8.50930	.61840	-.43060	.14670	-.04310
1.954	86.300	20.11500	7.92530	.47730	-.43620	.21750	-.03720
1.954	90.280	20.16810	7.36720	.32280	-.43710	.29340	-.03510
1.954	94.260	20.06500	6.65620	.15650	-.40980	.32710	-.02780
1.954	98.230	19.80280	5.83870	-.02640	-.38880	.31840	-.02950
1.954	100.105	19.61720	5.40420	-.12740	-.37770	.30610	-.03750
1.954	90.270	20.05490	7.35480	.31720	-.41940	.30900	-.04350
	GRADIENT	-.01323	-.16913	-.04090	.00258	.01060	.00036

RUN NO. 100/ 0 RN/L = 7.04 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
3.479	80.310	19.20430	8.77380	.74060	- 34620	-.24080	-.04760
3.479	82.200	19.36200	8.58330	.67490	-.34460	-.23690	-.04640
3.479	86.170	19.57130	8.21150	.52900	-.32390	-.24380	-.04780
3.479	90.150	19.64410	7.58590	.38000	-.30310	-.17920	-.03840
3.479	94.140	19.53805	6.79200	.21010	-.27410	-.21320	-.03850
3.479	98.120	19.28040	5.98890	.01670	-.23270	-.29630	-.02600
3.479	99.990	19.07310	5.71060	-.07450	-.20460	-.29570	-.02910
3.479	90.150	19.65330	7.62270	.37940	-.30320	-.18440	-.03410
	GRADIENT	-.00589	-.16031	-.04126	.00705	-.00253	.00108

MSFC 578(SA10F) 142-IN SRB (139) NBE1S (R91BH1) (01 NOV 73)

REFERENCE DATA

SREF =	.5039 SQ. IN	XMRP =	5.5579 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	11.250
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.150	ATHS =	.000
CONFIG =	6.000	SHDSTK =	8.000

RUN NO. 167/ 0 RN/L = 5.02 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.599	129.810	7.94500	-8.84620	-1.64180	-.98710	.38900	.02480
.599	127.920	8.44900	-9.09280	-1.50670	-1.03840	1.17810	.04050
.599	123.920	9.61420	-9.30570	-1.22610	-1.17650	3.17420	.05340
.599	119.890	10.72910	-9.01220	-.90750	-.88150	3.39580	.04070
.599	115.880	11.43620	-8.01900	-.66300	.32230	2.70120	.05270
.599	111.900	12.01730	-6.87190	-.30560	.36070	1.98240	.01920
.599	110.000	12.19020	-6.33360	-.16100	.28890	1.95430	.03270
.599	119.900	10.54560	-8.66140	-.96990	-.79870	3.25860	.03820
	GRADIENT	-.21847	-.13403	-.07440	-.08368	-.05627	.00027

RUN NO. 166/ 0 RN/L = 6.33 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.902	129.540	10.72040	-9.63810	-1.67380	.17100	-.47040	.00520
.902	127.620	11.36950	-9.86350	-1.54150	.17600	-.22250	-.00040
.902	123.580	12.51070	-10.13020	-1.26520	.17970	.63580	.00930
.902	119.600	13.52710	-9.03820	-1.01210	.15100	1.15710	-.00070
.902	115.580	14.41470	-8.12930	-.63970	.12830	.74780	.01140
.902	111.610	14.96130	-7.08400	-.26520	.04230	.88230	-.00190
.902	109.710	15.02480	-7.19220	-.08100	.04870	1.09360	.01350
.902	119.590	13.59640	-9.11130	-1.01210	.14560	1.10350	.00550
	GRADIENT	-.22165	-.15264	-.07990	.00697	-.06960	-.00022

RUN NO. 165/ 0 RN/L = 6.75 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.202	129.570	13.57810	-3.71470	-1.95570	.15130	.15320	.02880
1.202	127.670	14.29220	-3.26670	-1.82580	.15170	.12570	.02890
1.202	123.660	15.47920	-2.55950	-1.51920	.13570	.27260	.00930
1.202	119.650	16.37040	-2.21760	-1.29420	.07950	.38130	.02220
1.202	115.640	17.21130	-1.34700	-.93980	.09570	.27990	.00770
1.202	111.650	17.95820	-.64930	-.61210	.06940	.47670	.01710
1.202	109.760	18.24620	-.15470	-.45440	.06080	.48440	.01510
1.202	119.660	16.28700	-2.09710	-1.28610	.08130	.41320	.00490
	GRADIENT	-.23144	-.17126	-.07545	.00481	-.01716	.00066

MSFC 578(SA10F) 142-IN SRB (139) NBE1S (R918H1) (01 NOV 73)

REFERENCE DATA

SREF =	.5039 SQ. IN	XMRP =	5.5570 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	11.250
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	6.000	SHDSTK =	0.000

RUN NO. 148/ 0 RN/L = 7.11 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.962	129.710	12.60410	.03480	-1.88530	.25140	.02320	.02920
1.962	127.810	13.24190	.36190	-1.80030	.27650	.00290	.01170
1.962	123.820	14.46700	1.45980	-1.55500	.30860	-.01870	.01920
1.962	119.800	15.63290	1.91070	-1.22910	.30000	.04500	.01980
1.962	115.760	16.65890	2.30870	-.91860	.31120	.05350	.01710
1.962	111.760	17.52290	2.63620	-.61080	.30970	.11050	.00250
1.962	109.660	17.94630	3.08040	-.47460	.30830	.13230	.00840
1.962	119.810	15.50450	1.93150	-1.21850	.32170	.02790	.00120
	GRADIENT	-.26850	-.14943	-.07288	-.00235	-.00625	.00081

RUN NO. 104/ 0 RN/L = 6.96 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
3.479	129.890	11.67250	.93610	-2.04500	.32160	-.12590	.04670
3.479	127.970	12.35560	1.17970	-1.92370	.34240	-.13380	.05330
3.479	123.970	13.59090	1.62700	-1.63270	.35110	-.13450	.05340
3.479	119.960	14.77610	2.02020	-1.25910	.33740	-.09890	.07500
3.479	115.920	15.87780	2.29060	-.92320	.34070	-.13480	.07400
3.479	111.920	16.86220	2.95970	-.62730	.34030	-.16260	.06770
3.479	110.030	17.26840	3.34460	-.48860	.34020	-.14570	.05970
3.479	119.960	14.75240	1.59830	-1.25490	.34110	-.09370	.06490
	GRADIENT	-.28163	-.11403	-.08011	-.00035	.00120	-.00091

MSFC 578(SA10F) 142-IN SRB (139) NBEIS (R91BJ1) (01 NOV 73)

REFERENCE DATA

SREF =	.5030 SQ. IN	XMRP =	5.5570 IN.		
LREF =	.8000 IN.	YMRP =	.0000 IN.		
BREF =	.8000 IN.	ZMRP =	.0000 IN.		
SCALE =	.0056				

PARAMETRIC DATA

BETA =	.000	PHI =	11.250
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	6.000	SHDSTK =	8.000

RUN NO. 28/ 0 RN/L = 4.97 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.598	170.050	.54580	-1.36500	-1.54720	.04590	-.03260	-.01340
.598	168.050	.80720	-1.65670	-1.65270	.05670	-.05450	-.01170
.598	164.030	1.33090	-2.24780	-1.79510	-.00530	-.07760	-.02660
.598	159.930	2.02150	-2.66780	-1.93540	-.13210	-.13870	-.01950
.598	155.840	2.69000	-2.94820	-2.13080	-.13250	-.04740	-.01220
.598	151.740	3.48100	-3.25220	-2.27520	-.22340	-.23190	-.01240
.598	149.810	3.94220	-3.55390	-2.31980	-.19120	-.53270	-.00360
.598	159.940	1.99280	-2.61970	-1.94190	-.12570	-.15490	.00340
	GRADIENT	-.16626	.10238	.03843	.01401	.01719	-.00041

RUN NO. 27/ 0 RN/L = 6.26 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.898	170.000	.74770	-.28380	-1.81930	.04960	.03190	-.01290
.898	167.980	1.01910	-.66380	-1.90520	.07700	-.02130	-.00680
.898	163.900	1.59550	-1.32320	-2.10570	.04190	-.14980	-.00980
.898	159.750	2.23900	-1.94840	-2.25320	-.15930	-.24920	-.01350
.898	155.560	3.05420	-2.68940	-2.41440	-.22910	-.22750	-.00520
.898	151.390	3.98330	-3.29470	-2.48740	-.29550	-.14220	-.00820
.898	149.350	4.69290	-3.85000	-2.51450	-.45480	.57810	-.01220
.898	159.750	2.25200	-2.00330	-2.28560	-.18710	-.24020	-.01640
	GRADIENT	-.19528	.16687	.03445	.02445	-.01130	-.00020

RUN NO. 26/ 0 RN/L = 6.65 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.197	169.420	.94340	-1.84800	-2.54090	.10890	.06270	-.00490
1.197	167.800	1.22030	-2.24270	-2.60510	.05660	-.05410	-.00840
1.197	163.650	1.92300	-3.07740	-2.64300	-.14440	-.00320	-.00310
1.197	159.400	2.87800	-3.82720	-2.72610	-.06610	.27170	-.00350
1.197	155.080	4.23480	-4.51570	-2.81240	-.01740	-.80350	-.00590
1.197	150.740	6.17500	-3.95690	-2.96280	-.11870	-1.26160	-.01500
1.197	146.690	6.85560	-4.30360	-2.95830	-.04500	-.38440	-.01140
1.197	159.410	2.86940	-3.81690	-2.73400	-.08880	.28560	-.00670
	GRADIENT	-.28320	.11373	.02021	.09630	.04576	.00034

MSFC 578(SA10F) 142-IN S&B (139) NBE1S (R918J1) (01 NOV 73)

REFERENCE DATA

SREF = .5030 SQ. IN XMRP = 5.5570 IN.
LREF = .8000 IN. YMRP = .0000 IN.
BREF = .8000 IN. ZMRP = .0000 IN.
SCALE = .0056

PARAMETRIC DATA

BETA = .000 PHI = 11.250
FWDSTK = .000 AFTSTK = .000
ATHRNG = .100 ATHS = .300
CONFIG = 6.000 SHDSTK = 8.000

RUN NO. 64/ 0 RN/L = 7.01 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLMN	CA	CYN	CYNN	CBL
1.945	169.870	.78520	-1.35000	-2.49260	.05750	.16570	.00000
1.945	167.850	1.11260	-1.58340	-2.52850	.01900	-.02260	.00000
1.945	163.630	2.02920	-1.98860	-2.56770	-.03530	.01670	.00000
1.945	159.350	3.27240	-1.85660	-2.64860	.05880	.04960	.00000
1.945	155.070	4.59860	-1.60200	-2.73500	.03580	-.29710	.00000
1.945	150.770	6.05730	-1.01860	-2.81860	.03660	.06830	.00000
1.945	148.760	6.83780	-.43750	-2.84770	-.00380	.04070	.00000
1.945	159.360	3.28290	-1.80830	-2.66440	.05720	.02540	.00000
	GRADIENT	-.28901	-.03986	.01713	.00048	.00463	.00000

RUN NO. 77/ 0 RN/L = 7.00 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLMN	CA	CYN	CYNN	CBL
3.479	170.000	.74270	-.61900	-2.48590	-.00530	.00800	.00000
3.479	168.000	1.02690	-.52080	-2.52250	-.00690	-.02410	.00000
3.479	163.930	1.80210	-.42390	-2.59240	.01610	.02680	.00000
3.479	159.780	2.74560	-.26810	-2.69990	.03150	.02010	.00000
3.479	155.620	3.77660	-.05420	-2.84710	.00100	.03610	.00000
3.479	151.460	4.94110	.01800	-2.99610	-.00780	.05400	.00000
3.479	149.460	5.58910	-.48000	-2.45100	.00320	.04070	.00000
3.479	159.790	2.73650	-.26800	-2.69990	.02390	.03000	.00000
	GRADIENT	-.23642	-.01935	.00988	-.00004	-.00267	.00000

MSFC 578(SA10F) 142-IN SRB (139) NBE1S (R91CB1) (01 NOV 73)

REFERENCE DATA

SREF =	.5030 SQ. IN	XMRP =	5.5570 IN.		
LREF =	.8000 IN.	YMRP =	.0000 IN.		
BREF =	.8000 IN.	ZMRP =	.0000 IN.		
SCALE =	.0056				

PARAMETRIC DATA

BETA =	.000	PHI =	22.500
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	6.000	SHDSTK =	8.000

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

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.597	9.960	.98810	.39030	.92590	.02740	.12240	-.01830
.597	11.920	1.24560	.63360	.95480	.10350	.05950	.00390
.597	15.960	1.83210	1.19500	.98190	.41270	-.46450	-.00490
.597	20.030	2.47690	1.89140	.98110	.83750	-1.26090	-.00760
.597	24.130	3.17230	2.65630	.93780	1.09980	-1.63470	.01010
.597	28.230	3.97880	3.79100	.88050	1.31350	-1.37640	.05220
.597	30.160	4.48170	4.13850	.85680	1.58600	-.79480	.04690
.597	20.030	2.49320	1.85410	.98630	.83730	-1.27330	-.00720
	GRADIENT	.17024	.18987	-.09452	.07670	-.06697	.00301

RUN NO. 33/ 0 RN/L = 6.31 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.900	10.010	1.12770	-.04340	1.12530	-.01440	.18160	-.00730
.900	11.990	1.40110	.01950	1.15250	.07530	.11910	.00240
.900	16.060	2.07640	.51620	1.15630	.40600	-.11500	-.00130
.900	20.230	2.84320	1.61790	1.15370	.41910	-.35190	.00770
.900	24.420	3.66660	3.17440	1.10210	.79080	-.87600	.01770
.900	28.680	4.66780	5.25340	1.03660	.63210	-.59910	.02810
.900	30.670	5.30500	6.14710	1.01440	.67210	.01580	.03460
.900	20.230	2.84670	1.59110	1.17240	.44780	-.30720	.01590
	GRADIENT	.19892	.30689	-.00607	.03434	-.02790	.00188

RUN NO. 32/ 0 RN/L = 6.70 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.196	10.090	1.18910	.58470	1.63360	.05260	-.06200	.00500
1.196	12.110	1.48300	1.00550	1.66530	.09150	-.11150	.00060
1.196	16.260	2.18080	2.17660	1.69500	.23730	-.36780	-.00770
1.196	20.530	3.16650	3.94980	1.67150	.26370	-.28330	.00310
1.196	24.850	4.42220	5.82630	1.58600	.22020	-.22250	.01430
1.196	29.210	5.91660	7.59800	1.49610	.22040	.00150	.01380
1.196	31.280	6.75660	8.56930	1.48470	.20110	.30640	.01480
1.196	20.530	3.18430	3.98380	1.66860	.26400	-.23530	.00700
	GRADIENT	.26172	.38456	-.00862	.00683	.01368	.00077

MSFC 578(SA10F) 142-IN SRB (139) NBE1S (R91CB1) (01 NOV 73)

REFERENCE DATA

SREF =	.5039 SQ. IN	XMRP =	5.5570 IN.		
LREF =	.8500 IN.	YMRP =	.0000 IN.		
BREF =	.8500 IN.	ZMRP =	.0000 IN.		
SCALE =	.0056				

PARAMETRIC DATA

BETA =	.000	PHI =	22.500
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	6.000	SHDSTK =	8.000

RUN NO. 62/ 0 RN/L = 6.94 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLMN	CA	CYN	CYNN	CBL
1.965	10.200	1.22040	1.73610	1.24060	.02340	.07060	.00000
1.965	12.250	1.59420	2.40990	1.22730	.04010	.05170	.00000
1.965	16.500	2.61360	3.79660	1.22200	.07620	-.08360	.00000
1.965	20.200	3.96380	4.67170	1.26780	.07340	-.08410	.00000
1.965	25.090	5.44250	4.93140	1.26950	.05180	.11030	.00000
1.965	29.380	7.02820	5.10230	1.28850	.02350	.16780	.00000
1.965	31.400	7.76650	5.24190	1.30070	.02940	.04270	.00000
1.965	20.790	3.96350	4.56760	1.24770	.09880	-.09250	.00000
	GRADIENT	.31369	.15938	.00334	-.00045	.00376	.00000

RUN NO. 79/ 0 RN/L = 7.00 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLMN	CA	CYN	CYNN	CBL
3.479	10.140	1.35490	1.96470	.78170	-.00270	-.02990	.00000
3.479	12.120	1.68850	2.09060	.82270	.01630	.01530	.00000
3.479	16.200	2.70640	2.29010	.87680	.00560	.01950	.00000
3.479	20.360	3.87880	2.46330	.94410	.00610	-.01700	.00000
3.479	24.520	5.07700	2.54120	1.03700	.01240	.01060	.00000
3.479	28.690	6.40070	2.82760	1.12600	.01500	-.00410	.00000
3.479	30.650	7.03190	3.00510	1.16190	.00860	-.01550	.00000
3.479	20.360	3.90260	2.45650	.93210	.01370	.00290	.00000
	GRADIENT	.27583	.04663	.01852	.00035	-.00013	.00000

MSFC 578(SA10F) 142-IN SRB (139) NBE1S (R91CD1) (01 NOV 73)

REFERENCE DATA

SREF =	.5030 SQ. IN	XMRP =	5.5570 IN.		
LREF =	.8000 IN.	YMRP =	.0000 IN.		
BREF =	.8000 IN.	ZMRP =	.0000 IN.		
SCALE =	.0056				

PARAMETRIC DATA

BETA =	.000	PHI =	22.500
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	6.000	SHDSTK =	2.000

RUN NO. 204/ 0 RN/L = 4.91 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLMN	CA	CYN	CYNN	CBL
.594	50.280	7.97360	8.59650	.47090	-.63130	-1.85610	.02830
.594	52.210	8.85170	9.80680	.39850	-.26360	-2.75150	.04670
.594	56.240	10.06080	11.17820	.20410	-.04650	-3.15420	.03190
.594	60.270	11.36650	12.73220	.07590	-.18670	-1.29930	.03990
.594	64.290	12.00080	12.79160	-.05240	-.11200	1.05360	-.03460
.594	68.280	12.38160	12.62160	-.14660	-.57610	.18590	.00320
.594	70.180	12.43350	12.58720	-.18920	-.54880	.53210	.00780
.594	60.270	11.76580	12.96040	.07470	-.12530	-1.06630	-.01500
	GRADIENT	.22421	.19420	-.03333	-.00536	.17880	-.00229

RUN NO. 205/ 0 RN/L = 6.22 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLMN	CA	CYN	CYNN	CBL
.899	50.660	11.82520	15.85350	.58650	-.10150	.64520	.00070
.899	52.600	12.39770	16.85210	.50010	-.04110	.42620	.00920
.899	56.660	13.44210	18.69390	.37430	-.01970	1.26290	.00910
.899	60.690	14.52990	19.37120	.29270	-.23550	.36870	-.00730
.899	64.680	15.13310	18.36560	.23820	-.18850	.16550	-.00600
.899	68.600	15.31790	16.12810	.19280	-.27610	.28010	-.01200
.899	70.470	15.42600	15.29330	.21740	-.32210	.56640	.01490
.899	60.690	14.54670	19.39220	.29250	-.23600	.38420	-.00610
	GRADIENT	.18505	-.03378	-.01868	-.01330	-.01782	-.00026

RUN NO. 206/ 0 RN/L = 6.62 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLMN	CA	CYN	CYNN	CBL
1.195	50.630	14.02530	12.32120	1.01300	-.34860	.19440	.05220
1.195	52.580	14.63460	12.89010	.94620	-.36810	.12360	.05310
1.195	56.630	15.87350	13.96340	.87020	-.36890	.01640	.02470
1.195	60.670	16.78340	15.04350	.83340	-.36890	-.09990	.04050
1.195	64.660	17.69560	14.21010	.80360	-.31890	-.00620	.05570
1.195	68.640	18.47650	13.69500	.71510	-.29220	-.13260	.03040
1.195	70.500	18.78780	12.76410	.68550	-.31850	-.12110	.05450
1.195	60.660	16.73310	14.65910	.84090	-.37750	-.13470	.02460
	GRADIENT	.23861	.03374	-.01500	.00309	-.01477	-.00010

MSFC 578(SA19F) 142-IN SRB (139) WBE18 (R91CD1) (01 NOV 73)

REFERENCE DATA

SREF =	.3939 SQ. IN	XMRP =	5.5570 IN.
LREF =	.6999 IN.	YMRP =	.0000 IN.
BREF =	.6999 IN.	ZMRP =	.0000 IN.
SCALE =	.0078		

PARAMETRIC DATA

BETA =	.000	PHI =	22.500
FWDSTK =	.000	AFTSTK =	.000
ATMRNG =	.100	ATMS =	.000
CONFIG =	6.000	SMDSTK =	0.000

RUN NO. 136/ 0 RN/L = 7.17 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLMN	CA	CYN	CYNN	CBL
1.943	50.490	13.90650	7.39300	1.34280	-.29980	-.15770	-.02770
1.943	52.410	14.43670	7.66530	1.32610	-.30330	-.11740	-.00710
1.943	56.459	15.72800	8.43150	1.29420	-.32920	-.17040	-.01540
1.943	60.470	16.73740	8.75410	1.23420	-.32900	-.15700	-.01180
1.943	64.510	17.63780	9.18310	1.14160	-.33400	-.15570	-.01210
1.943	68.550	18.78030	10.01920	1.05150	-.33570	-.13210	-.03460
1.943	70.440	18.96660	9.77160	.98060	-.33190	-.14450	-.01460
1.943	60.430	16.47440	8.03500	1.21440	-.30470	-.09790	-.01650
	GRADIENT	.25774	.12657	-.01781	-.00169	-.00115	-.00022

RUN NO. 102/ 0 RN/L = 7.01 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLMN	CA	CYN	CYNN	CBL
3.479	50.300	13.03720	4.79050	1.45910	-.29560	-.05900	-.03670
3.479	52.210	13.62570	5.19820	1.43220	-.30590	-.05050	-.02920
3.479	56.220	14.75840	6.05860	1.42040	-.30110	-.02250	-.02600
3.479	60.260	15.75940	7.03400	1.36820	-.29770	-.00450	-.01900
3.479	64.310	16.69760	8.01040	1.25900	-.28180	-.08210	-.02160
3.479	68.330	17.56870	8.56750	1.12590	-.26490	-.09410	-.02260
3.479	70.210	17.88970	8.65350	1.05220	-.27000	-.10460	.01520
3.479	60.250	15.75070	7.02910	1.36490	-.30540	-.02460	-.02910
	GRADIENT	.24368	.20371	-.01934	.00184	-.00290	.00162

MSFC 578(SA10F) 142-IN SRB (139) NBE1S (R91CF1) (01 NOV 73)

REFERENCE DATA

SREF =	.9039 SQ. IN	XMRP =	5.5579 IN.		
LREF =	.8999 IN.	YMRP =	.0000 IN.		
BREF =	.8999 IN.	ZMRP =	.0000 IN.		
SCALE =	.0356				

PARAMETRIC DATA

BETA =	.000	PHI =	22.500
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATMS =	.000
CONFIG =	6.000	SHDSTK =	8.000

RUN NO. 235/ 0 RN/L = 4.94 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.594	80.150	12.38720	8.04680	.13480	.07180	.03210	.05450
.594	82.050	12.24940	6.97740	.20590	.27070	.29620	.03760
.594	85.990	12.49970	4.97510	.25510	.29920	-.00960	.04800
.594	89.940	12.62010	2.70060	.31670	.26860	-.28630	.01630
.594	93.930	12.53730	1.01690	.39820	.14030	.28350	.00140
.594	97.910	12.45740	-.01250	.36680	.16400	.78090	.03460
.594	99.790	12.44030	-.99230	.29150	.19000	.07480	.05820
.594	89.950	12.65400	2.82850	.33190	.19860	-.29130	.04810
	GRADIENT	.00660	-.45638	.00965	-.00169	.03799	-.00189

RUN NO. 236/ 0 RN/L = 6.24 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.900	80.360	16.06950	10.48870	.43680	-.25680	-.33530	.05800
.900	82.230	16.16660	9.63070	.43160	-.25390	-.30040	.05760
.900	86.160	16.47420	7.41480	.43090	-.20760	-.11970	.05570
.900	90.070	16.64430	4.80930	.48470	-.22690	.01920	.03280
.900	94.020	16.63630	2.61990	.50220	-.25440	.07080	.02180
.900	97.950	16.24160	.61440	.38660	-.22890	.03170	.01770
.900	99.810	16.07160	-.52470	.30790	-.21210	-.00400	.02710
.900	90.070	15.68340	4.83010	.46710	-.23050	.03670	.03470
	GRADIENT	.00360	-.57279	-.00387	.00156	.01914	-.00215

RUN NO. 237/ 0 RN/L = 6.66 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.199	80.420	19.61610	9.45270	.58180	-.38740	-.09560	.00600
1.199	82.310	19.68670	9.09370	.58060	-.35640	-.11370	.01160
1.199	86.270	19.86730	8.36970	.50940	-.32250	-.05910	.00350
1.199	90.230	20.18670	7.28760	.38410	-.31370	-.01830	.01560
1.199	94.220	20.25370	5.50030	.21140	-.32230	-.00190	.00640
1.199	98.210	20.18380	5.73570	.02120	-.29770	.01260	.00280
1.199	100.060	20.01720	5.22820	-.07030	-.30370	.05670	.01870
1.199	90.230	20.20030	7.24570	.38200	-.31400	-.03020	.01120
	GRADIENT	.02572	-.21562	-.03431	.00368	.00777	.00019

MSFC 578(SA19F) 142-IN SRB (139) NBE1S (R91CF1) (01 NOV 73)

REFERENCE DATA

SREF =	.5030 SQ. IN	XMRP =	5.5570 IN.		
LREF =	.8000 IN.	YMRP =	.0000 IN.		
BREF =	.8000 IN.	ZMRP =	.0000 IN.		
SCALE =	.0556				

PARAMETRIC DATA

BETA =	.000	PHI =	22.500
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	6.000	SHDSTK =	8.000

RUN NO. 127/ 0 RN/L = 7.14 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.953	89.450	19.89400	8.81530	.69540	-.38270	-.11560	-.01980
1.953	82.330	20.00170	8.52730	.63130	-.37820	-.11510	-.02230
1.953	86.300	20.17350	7.84940	.48120	-.36990	-.12480	-.02210
1.953	90.270	20.19480	7.17670	.32450	-.34410	-.13420	-.01170
1.953	94.260	20.09810	6.48160	.15990	-.32470	-.12970	-.01530
1.953	98.220	19.78510	5.71700	-.02360	-.30320	-.08610	-.00970
1.953	100.100	19.60030	5.35100	-.12230	-.29740	-.10820	-.02100
1.953	90.270	20.07840	7.16500	.31890	-.34020	-.12010	-.02110
	GRADIENT	-.01398	-.17610	-.04136	.00460	.00081	.00033

RUN NO. 101/ 0 RN/L = 7.03 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
3.479	80.280	19.23310	8.71780	.74940	-.39100	-.10370	-.03000
3.479	82.200	19.39870	8.52000	.68260	-.38560	-.08710	-.03290
3.479	86.140	19.59840	8.06870	.53550	-.36060	-.06580	-.04160
3.479	90.150	19.66420	7.54460	.38670	-.34350	-.00790	-.04170
3.479	94.150	19.57640	6.82310	.22620	-.32940	-.04520	-.04970
3.479	98.120	19.25920	6.14650	.03310	-.30040	.01540	-.05150
3.479	100.020	19.04360	5.89450	-.06670	-.29140	-.01110	-.04520
3.479	90.150	19.64580	7.55320	.38600	-.34810	-.03640	-.03900
	GRADIENT	-.00869	-.14633	-.04090	.00505	.00513	-.00093

MSFC 578(SA10F) 142-IN SRB (139) NBE1S (R91CH1) (01 NOV 73)

REFERENCE DATA

SREF =	.5930 SQ. IN	XMRP =	5.5570 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	22.500
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	6.000	SHDSTK =	8.000

RUN NO. 162/ 0 RN/L = 5.03 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.599	129.820	7.12740	-9.08060	-1.66660	1.09100	.47040	.05440
.599	127.930	7.58300	-9.09300	-1.53360	.98450	1.18540	.03580
.599	123.920	8.69730	-8.93940	-1.24210	.73170	2.63320	.03660
.599	119.930	10.08000	-7.69460	-.95850	.68390	.61840	.00200
.599	115.910	10.78400	-7.19770	-.66630	.78460	1.07830	.03980
.599	111.910	11.43690	-6.55420	-.32270	1.11950	.66880	.01770
.599	110.020	11.55930	-6.15280	-.18030	.94820	1.17050	.05170
.599	119.930	9.97000	-7.41400	-1.00690	.87680	.49450	.02770
	GRADIENT	-.23314	-.15793	-.07497	.00034	.00959	.00044

RUN NO. 163/ 0 RN/L = 6.34 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.903	129.540	10.75800	-9.08920	-1.65910	.26480	.15960	-.01300
.903	127.620	11.42990	-9.53270	-1.54080	.37740	.16940	-.01020
.903	123.590	12.64540	-9.87190	-1.25840	.32110	.36080	.00050
.903	119.600	13.42030	-9.14030	-.99310	.23370	.66250	.02090
.903	115.570	14.23790	-8.87470	-.60980	.25020	.56340	.02460
.903	111.580	15.05370	-7.79470	-.25440	.26500	.49230	.01550
.903	109.700	15.26680	-6.95180	-.98270	.24310	.42840	.00300
.903	119.590	13.50460	-9.09230	-.99220	.23795	.68280	.02250
	GRADIENT	-.22564	-.10929	-.07984	.00392	-.01700	-.00129

RUN NO. 164/ 0 RN/L = 6.75 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.198	129.580	13.63560	-3.49410	-1.94150	.23900	-.07940	.02130
1.198	127.680	14.30780	-3.08170	-1.81440	.22230	-.09140	.02120
1.198	123.660	15.52680	-2.57550	-1.51590	.19940	.03400	.01850
1.198	119.660	16.34350	-2.11320	-1.27900	.11870	.24910	.00610
1.198	115.650	17.29250	-1.21160	-.92810	.10160	.27650	.00390
1.198	111.660	18.08580	-.38260	-.58100	.13000	.21260	.00690
1.198	109.770	18.37090	.14520	-.42680	.12690	.24380	.02350
1.198	119.660	16.26420	-1.97670	-1.27080	.13860	.19810	.02270
	GRADIENT	-.23623	-.17700	-.07637	.00631	-.01854	.00042

MSFC 578(SA10F) 142-IN SRB (139) NBE1S (R91CH1) (01 NOV 73)

REFERENCE DATA

SREF =	.5030 SQ. IN	XMRP =	5.5570 IN.		
LREF =	.8050 IN.	YMRP =	.0000 IN.		
BREF =	.8050 IN.	ZMRP =	.0000 IN.		
SCALE =	.5056				

PARAMETRIC DATA

BETA =	.000	PHI =	22.500
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATMS =	.000
CONFIG =	6.000	SHDSTK =	8.000

RUN NO. 149/ 0 RN/L = 7.15 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.951	129.700	12.60390	-.13490	-1.88250	.27800	.01070	.02570
1.951	127.800	13.22600	.20130	-1.79550	.28430	.03150	.00900
1.951	123.800	14.59540	1.17560	-1.56930	.30940	.03740	.00520
1.951	119.760	15.84950	1.34870	-1.23610	.33180	.01960	.01640
1.951	115.720	16.89290	1.60150	-.91740	.33620	.04250	.01630
1.951	111.710	17.90470	2.06950	-.62280	.33510	.06810	.01350
1.951	109.820	18.23620	2.51890	-.48430	.30950	.17790	.00420
1.951	119.790	15.57920	1.66910	-1.21870	.30030	.09830	.00930
	GRADIENT	-.28609	-.11987	-.07219	-.00231	-.00549	.00037

RUN NO. 103/ 0 RN/L = 6.96 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
3.479	129.900	11.59950	1.08170	-2.05670	.29840	-.06510	.04310
3.479	127.970	12.26360	1.38830	-1.94280	.30010	-.04270	.04370
3.479	123.980	13.48010	1.94010	-1.65270	.30070	-.00800	.03660
3.479	119.980	14.60410	2.50590	-1.29140	.29850	.02120	.03910
3.479	115.940	15.75030	2.71510	-.96250	.29350	.01680	.04080
3.479	111.940	16.76700	3.30630	-.63670	.29320	-.00530	.04330
3.479	110.040	17.17610	3.57670	-.49220	.26160	.02770	.03950
3.479	119.980	14.60430	2.46490	-1.28740	.29470	.02650	.03430
	GRADIENT	-.28098	-.12083	-.08038	.00070	-.00369	.00006

MSFC 578(SA10F) 142-IN SRB (139) NBE1S (R91CJ1) (01 NOV 73)

REFERENCE DATA

SREF = .9030 SQ. IN XMRP = 5.5370 IN.
LREF = .8000 IN. YMRP = .0000 IN.
BREF = .8000 IN. ZMRF = .0000 IN.
SCALE = .0056

PARAMETRIC DATA

BETA = .000 PHI = 22.500
FWDSTK = .000 AFTSTK = .000
ATHRNG = .100 ATHS = .000
CONFIG = 6.000 SHDSTK = 8.000

RUN NO. 29/ 0 RN/L = 5.00 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.600	170.020	.55190	-1.36180	-1.55310	.00970	-.01770	-.02650
.600	168.060	.76730	-1.63770	-1.66640	.01600	-.10450	-.00420
.600	164.020	1.36300	-2.26450	-1.79680	-.00340	-.18220	-.01740
.600	159.930	1.98450	-2.67820	-1.95340	-.08140	-.28930	.00490
.600	155.840	2.72360	-3.01120	-2.13160	-.12680	-.36620	-.02210
.600	151.740	3.47650	-3.27500	-2.27120	-.19980	-.48220	-.02900
.600	149.810	3.93320	-3.59910	-2.32410	-.23660	-.56440	-.01940
.600	159.930	1.98820	-2.66740	-1.95300	-.06400	-.28910	.00360
	GRADIENT	-.16676	.10520	.03801	.01282	.02524	.00041

RUN NO. 30/ 0 RN/L = 6.30 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.899	170.010	.71460	-.29840	-1.82790	.04140	-.06440	-.00560
.899	167.990	1.00230	-.68200	-1.92920	.04420	-.09120	-.00730
.899	163.890	1.62050	-1.39700	-2.12160	-.02070	-.15980	-.00850
.899	159.740	2.27750	-2.03720	-2.28640	-.13610	-.33230	-.00730
.899	155.550	3.08610	-2.78830	-2.38250	-.17030	-.37570	-.00910
.899	151.370	4.03840	-3.49260	-2.46570	-.20810	-.41610	-.00790
.899	149.370	4.54400	-3.82030	-2.49760	-.29480	-.33590	-.01310
.899	159.740	2.26000	-2.02910	-2.27660	-.12210	-.30620	-.01460
	GRADIENT	-.18369	.16975	.03226	.01604	.01657	.00022

RUN NO. 31/ 0 RN/L = 6.72 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.195	169.840	.95570	-1.87080	-2.53210	.04610	-.01430	-.00480
1.195	167.810	1.19370	-2.24440	-2.60830	.04000	-.05110	.00280
1.195	163.640	1.90750	-3.07310	-2.63690	-.01420	-.06530	-.00260
1.195	159.390	2.90770	-3.94930	-2.71760	-.18010	-.21480	-.00690
1.195	155.080	4.23240	-4.64170	-2.81430	-.11540	-.53720	-.00840
1.195	150.770	5.85290	-4.54930	-2.91990	-.08430	-.56960	-.00210
1.195	148.710	6.68960	-4.48410	-2.95670	-.05340	-.45730	-.00420
1.195	159.390	2.91200	-3.96190	-2.72490	-.17710	-.21830	-.01370
	GRADIENT	-.27244	.13291	.01952	.00622	.02746	.00015

MSFC 578(SA10F) 142-IN SRB (139) NOE1S (R91CJ1) (01 NOV 73)

REFERENCE DATA

SREF =	.5030 SQ. IN	XMRP =	5.5570 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	22.500
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	6.000	SHDSTK =	8.000

RUN NO. 63/ 0 RN/L = 6.94 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.964	169.870	.78130	-1.33450	-2.50100	-.01710	.01220	.00000
1.964	167.850	1.09010	-1.60090	-2.52590	-.04730	-.08200	.00000
1.964	163.640	2.02380	-2.01600	-2.56050	-.04100	-.08030	.00000
1.964	159.380	3.24580	-1.72650	-2.65100	-.02070	-.05220	.00000
1.964	155.110	4.53690	-1.44790	-2.74350	-.01670	-.11850	.00000
1.964	150.830	5.91880	-.89490	-2.77450	.01290	-.01870	.00000
1.964	148.830	6.53170	-.61100	-2.79930	-.01830	.04180	.00000
1.964	159.380	3.26810	-1.69750	-2.66650	-.02910	-.02560	.00000
	GRADIENT	-.27902	-.03994	.01499	-.00150	-.00171	.00000

RUN NO. 78/ 0 RN/L = 7.01 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
3.479	170.000	.72510	-.62020	-2.49040	-.00550	.02350	.00000
3.479	168.020	1.03680	-.54120	-2.52040	.00380	-.00790	.00000
3.479	163.930	1.81040	-.47360	-2.53840	-.01360	.02550	.00000
3.479	159.790	2.70910	-.24800	-2.69560	.00940	.01870	.00000
3.479	155.620	3.76780	-.07540	-2.84370	.00110	.03620	.00000
3.479	151.460	4.95010	.00810	-2.89690	-.00790	.05400	.00000
3.479	149.460	5.61850	-.52080	-2.45430	-.00060	.04590	.00000
3.479	159.790	2.71880	-.24710	-2.70130	-.00200	.02840	.00000
	GRADIENT	-.23739	-.01883	.00990	-.00004	-.00206	.00000

MSFC 578(SA1GF) 142-IN SRB (139) NBE1 GRIT (R91R11) (01 NOV 73)

REFERENCE DATA

SREF =	.5039 SQ. IN	XMRP =	5.5570 IN.		
LREF =	.8000 IN.	YMRP =	.0000 IN.		
BREF =	.8000 IN.	ZMRP =	.0000 IN.		
SCALE =	.0056				

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	1.000	SHDSTK =	.000
RN =	8.600	RN =	5.400

RUN NO. 245/ 0 RN/L = 5.43 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.401	80.140	10.39420	10.41450	-.04460	-.07770	1.00760	.02900
.401	82.020	10.35840	9.16310	.02470	-.06770	1.50690	-.01540
.401	85.990	10.14930	6.77160	.18690	.13090	1.48580	.01860
.401	89.950	10.24360	4.55160	.24930	.33710	2.86740	-.00410
.401	93.950	10.12230	2.94460	.20860	.15580	3.34370	.01890
.401	97.930	10.03340	2.02300	.01360	-.22520	2.86180	.01440
.401	99.830	9.92200	1.42130	-.09510	1.69680	4.29970	-.12390
.401	89.950	10.12040	4.42650	.24850	.34170	2.84760	.00490
	GRADIENT	-.01834	-.45588	-.00145	.04637	.14363	-.00360

RUN NO. 244/ 0 RN/L = 8.60 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.595	80.390	11.72540	10.88940	.17710	.08050	1.62000	.00190
.595	82.240	11.69350	10.15130	.19130	.13480	1.61530	.01260
.595	86.170	11.63180	7.92160	.25080	.14070	1.60680	-.00370
.595	90.070	11.65590	5.02750	.36630	.22510	2.27620	.01690
.595	94.030	11.71050	3.13130	.43770	.23250	1.94960	.00690
.595	97.980	11.52340	1.73750	.25950	.14070	2.47370	.00900
.595	99.870	11.45240	1.49550	.11910	.11550	2.41700	.01300
.595	90.070	11.68690	5.21620	.36130	.20960	2.20630	.01260
	GRADIENT	-.01072	-.51225	.00201	.00216	.04602	.00035

MSFC 578(SA19F) 142-IN SRB (139) NBE1 (R91R12) (01 NOV 73)

REFERENCE DATA

SREF =	.5039 SQ. IN	XMRP =	5.5579 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	1.000	SMDSTK =	.000
RN =	3.000	RN =	4.100

RUN NO. 250/ 0 RN/L = 5.43 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.401	80.160	11.19820	11.49180	.02520	-.01640	-.02440	-.00190
.401	82.060	11.56410	11.71120	-.00340	.31970	-.48410	.01450
.401	86.030	11.40940	9.80850	.00690	.22150	-1.63990	.04420
.401	89.990	11.50030	7.09750	.14710	.18960	-1.18620	-.00490
.401	93.970	11.58890	4.40170	.22970	-.24670	.76480	-.00900
.401	97.950	11.29500	2.75120	.15340	-.29320	.64650	-.03000
.401	99.850	11.25940	2.72830	.03970	-.44300	.47220	.00280
.401	89.990	11.42750	6.99370	.16580	.17840	-1.31320	.04210
	GRADIENT	-.00235	-.50887	.00646	-.03110	.08907	-.00148

RUN NO. 251/ 0 RN/L = 8.61 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.596	80.390	12.35450	11.49660	.11510	-.47420	.04370	-.01530
.596	82.260	12.29670	10.61260	.15580	-.07330	-.24830	-.01700
.596	86.180	12.42590	8.33520	.23540	-.05680	-.81670	.02190
.596	90.120	12.58480	6.37500	.31870	-.18750	-.01910	.00540
.596	94.060	12.58630	4.12500	.45810	-.08790	-.66070	-.00100
.596	98.020	12.28270	2.93280	.34150	-.35350	-.44220	.01130
.596	99.910	12.75920	2.70200	.19540	-.53670	-.50250	.00590
.596	90.120	12.06120	6.16390	.29160	-.19210	-.04930	.01250
	GRADIENT	.01294	-.47115	.00902	-.00855	-.01827	.00098

MSFC 578(SA15F) 142-IN SRB (139) NBE1 GRIT (R91R21) (01 NOV 73)

REFERENCE DATA

SREF =	.5939 SQ. IN	XMRP =	5.5570 IN.		
LREF =	.8000 IN.	YMRP =	.0000 IN.		
BREF =	.8000 IN.	ZMRP =	.0000 IN.		
SCALE =	.0056				

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	1.000	SHDSTK =	.000
RN =	4.100	RN =	3.000

RUN NO. 246/ 0 RN/L = 2.99 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.405	80.080	11.32970	11.61250	-.03840	-.38810	1.43170	.02650
.405	81.970	11.02640	10.12560	-.02010	-.08810	.72160	-.01940
.405	85.940	10.90740	6.68320	.20960	.10910	1.59360	.03400
.405	89.920	11.22520	4.62650	.29720	.01650	1.49730	.02200
.405	93.920	11.16480	2.42490	.37240	.23450	2.04640	-.04180
.405	97.910	10.93280	1.55380	.08710	.07730	3.84050	-.03610
.405	99.810	10.90620	1.13910	.05030	.64360	2.78840	-.02720
.405	89.920	11.14920	4.29340	.32240	.07910	1.17830	.00480
	GRADIENT	-.01097	-.53340	.00614	.03393	.11336	-.00273

RUN NO. 247/ 0 RN/L = 4.06 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.598	80.170	11.94830	10.30120	.18370	.02570	.75850	.02850
.598	82.040	11.97670	9.35720	.19360	.01120	.67270	.02420
.598	86.010	12.36860	7.68860	.24660	-.18780	1.17800	-.00360
.598	89.990	12.65700	6.25100	.28220	-.11660	.19320	.00460
.598	93.970	12.38790	4.00700	.38660	-.05240	.87630	.03920
.598	97.940	12.17600	1.98230	.30060	.02750	1.27700	.02140
.598	99.830	12.22240	1.12840	.18080	.04230	1.25460	.02800
.598	89.990	12.63230	6.13240	.27590	-.10730	.30840	.02250
	GRADIENT	.01239	-.46523	.00392	.00237	.02415	.00041

MSFC 578(SA10F) 142-IN SRB (139) NBE1 (R91R22) (01 NOV 73)

REFERENCE DATA

SREF =	.5038 SQ. IN	XMRP =	5.5570 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	1.000	SHDSTK =	.000
RN =	5.400	RN =	8.600

RUN NO. 249/ 0 RN/L = 2.98 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLNN	CA	CYN	CYNN	CBL
.405	80.120	12.29440	13.51730	-.07730	-.15540	.44920	.06780
.405	81.990	12.29510	13.35860	-.12980	-.27400	-.12310	-.05170
.405	85.960	11.80790	9.74530	.00230	-.26680	-.39610	-.07340
.405	89.950	11.99390	7.65160	.09250	-.20500	-.35730	.04570
.405	93.940	12.23360	5.05920	.23130	.28350	-2.13970	-.01000
.405	97.930	12.01910	3.43780	.17000	.07460	-.93190	.01820
.405	99.820	11.98520	2.79480	.03530	-.04220	-.68130	-.01300
.405	89.950	12.08410	7.75200	.09740	-.23680	-.51280	.01940
	GRADIENT	-.01004	-.57622	.01249	.01725	-.06945	.00004

RUN NO. 248/ 0 RN/L = 4.07 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLNN	CA	CYN	CYNN	CBL
.598	80.200	12.97070	11.93960	.00990	-.35750	-.30290	-.02170
.598	82.070	12.76200	11.00570	.14650	-.36720	-.37510	-.01770
.598	86.030	12.75150	8.90120	.20220	-.40600	-.43540	-.01520
.598	90.010	13.12330	7.33700	.28970	-.15150	-1.06490	.03580
.598	93.990	13.25490	5.10480	.45600	-.28630	-.10570	.04770
.598	97.960	12.91290	3.34000	.36940	-.34180	.38990	.02720
.598	99.850	12.80720	2.74780	.23120	-.16890	.49830	.02650
.598	90.010	13.14010	7.44300	.27640	-.21710	-.82260	.03770
	GRADIENT	.00454	-.47386	.01411	.00721	.04100	.00308

MSFC 578(SA10F) 142-IN SRB (139) NBE1 TVC S (R91DD1) (01 NOV 73)

REFERENCE DATA

SREF =	.5030 SQ. IN	XMRP =	5.5570 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	7.000	SHDSTK =	.000

RUN NO. 190/ 0 RN/L = 4.90 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.593	50.300	8.08920	8.44100	.39880	-.49590	-2.04580	.01090
.593	52.210	8.68830	9.92840	.31040	-.37670	-3.02245	.02500
.593	56.240	9.78290	11.58440	.12380	-.16530	-2.42460	.02740
.593	60.270	11.34260	12.92770	-.03270	-.14410	-1.20520	.05030
.593	64.300	11.92360	13.49850	-.18860	.08280	.88730	.00730
.593	68.350	12.21340	13.20820	-.26760	-.43360	-.04550	-.02010
.593	70.200	12.43220	13.38480	-.31210	-.14140	-.47700	.04870
.593	60.270	11.30520	12.85960	-.03960	-.13430	-1.08895	.00580
	GRADIENT	.21842	.23155	-.03608	.01133	.14793	-.00019

RUN NO. 189/ 0 RN/L = 6.62 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.196	50.690	14.03590	12.84010	.96920	-.24300	-.25040	-.00660
1.196	52.600	14.67020	13.46340	.93120	-.24350	-.34480	.02110
1.196	56.650	15.91800	14.69190	.87610	-.27430	-.33000	.02060
1.196	60.670	17.00190	14.92770	.82880	-.30080	-.35870	.00290
1.196	64.690	17.84110	14.80960	.76640	-.22850	-.22290	-.00260
1.196	68.670	18.57440	14.36110	.68770	-.22430	-.20410	.01170
1.196	70.540	18.83850	13.63820	.65820	-.24130	-.24300	.00170
1.196	60.660	16.96800	14.75260	.85860	-.30190	-.33250	-.00130
	GRADIENT	.24216	.04386	-.01530	.00098	.00455	-.00024

RUN NO. 139/ 0 RN/L = 7.13 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.945	50.510	13.75220	7.74630	1.32590	-.30270	-.08810	-.02530
1.945	52.420	14.28420	8.01930	1.31210	-.31960	-.05250	-.00660
1.945	56.460	15.49880	8.71060	1.28100	-.34160	-.07640	-.00960
1.945	60.480	16.57100	8.95650	1.23240	-.35700	-.05930	-.00690
1.945	64.520	17.47340	9.33110	1.12920	-.36010	-.09800	-.02310
1.945	68.580	18.67310	10.51930	1.03380	-.34740	-.13660	-.01330
1.945	70.460	18.83800	10.20090	.95780	-.35060	-.07410	-.02570
1.945	60.440	16.25480	8.29410	1.21090	-.32830	-.00530	-.01920
	GRADIENT	.26007	.13044	-.01805	-.00215	-.00175	-.00031

MSFC 578(SA19F) 142-IN SRB (139) NBE1 TVC S (R91D01) (01 NOV 73)

REFERENCE DATA

SREF =	.5030 SQ. IN	XMRP =	5.5570 IN.		
LREF =	.8000 IN.	YMRP =	.0000 IN.		
BREF =	.8000 IN.	ZMRP =	.0000 IN.		
SCALE =	.9036				

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	7.000	SHDSTK =	.000

RUN NO. 116/ 0 RN/L = 7.07 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLNN	CA	CYN	CYNN	CBL
3.479	50.300	12.96600	4.81280	1.44880	-.29410	-.14040	-.02550
3.479	52.220	13.55430	5.25140	1.43960	-.29910	-.14890	-.01660
3.479	56.230	14.67120	6.35150	1.41420	-.27540	-.15960	-.01820
3.479	60.270	15.73420	7.35600	1.39130	-.26840	-.17040	-.01890
3.479	64.340	16.57560	8.29220	1.25490	-.27040	-.18630	-.02790
3.479	68.360	17.43330	8.95460	1.09920	-.25290	-.16650	-.01720
3.479	70.240	17.78690	9.06920	1.03290	-.25050	-.17680	-.02210
3.479	60.260	15.63620	7.28670	1.36750	-.26950	-.16550	-.01850
	GRADIENT	.24062	.22156	-.02084	.00209	-.00169	-.00003

MSFC 578(SA10F) 142-IN SRB (139) NBE1 TVC S (R91DF1) (01 NOV 73)

REFERENCE DATA

SREF =	.5939 SQ. IN	XMRP =	5.5570 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	7.000	SHDSTK =	.000

RUN NO. 187/ 0 RN/L = 4.94 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLNN	CA	CYN	CYNN	CBL
.599	80.190	12.05370	9.22030	.10500	-.15530	.83810	.03190
.599	82.050	12.05920	8.09820	.15160	-.10850	1.06200	.00230
.599	86.000	12.23740	5.36590	.27540	-.08660	1.02740	.02960
.599	89.960	12.22040	3.39810	.39410	-.15000	1.51100	.00770
.599	93.950	12.16760	1.91110	.49800	-.15650	1.68210	.00270
.599	97.920	12.29850	.42590	.40730	.28860	.81240	-.03780
.599	99.800	12.18930	-.38970	.30800	.37410	.67180	-.05230
.599	89.960	12.17130	3.43030	.39290	-.18360	1.60620	-.00200
	GRADIENT	.00943	-.48254	.01400	.02309	-.00298	-.00358

RUN NO. 188/ 0 RN/L = 6.83 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLNN	CA	CYN	CYNN	CBL
1.196	80.440	19.39680	9.84600	.60670	-.38850	-.01120	-.00880
1.196	82.320	19.54820	9.59900	.58260	-.39240	.01530	-.00170
1.196	86.290	19.84040	8.78840	.49780	-.38720	.14110	-.00340
1.196	90.230	19.93640	7.32090	.39250	-.38250	.25230	-.00910
1.196	94.230	20.01550	6.92830	.21870	-.38580	.32500	-.01130
1.196	98.220	19.93100	6.61970	.01040	-.35650	.31780	-.00380
1.196	100.100	19.77650	6.12500	-.08090	-.35710	.33430	.00550
1.196	90.230	19.92070	7.27960	.39420	-.38840	.24470	-.00550
	GRADIENT	.02124	-.19251	-.03537	.00171	.01859	.00026

RUN NO. 120/ 0 RN/L = 6.96 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLNN	CA	CYN	CYNN	CBL
1.963	80.460	19.65530	9.14780	.65820	-.39770	-.04090	-.03180
1.963	82.350	19.69000	8.92410	.59220	-.38540	-.00410	-.03540
1.963	86.330	19.91600	8.56590	.45480	-.38250	.04640	-.03280
1.963	90.310	19.88980	8.15620	.30530	-.37120	.08510	-.03560
1.963	94.300	19.82140	7.51720	.14310	-.34130	.11750	-.02980
1.963	98.260	19.58830	6.61000	-.04720	-.30290	-.03010	-.03840
1.963	100.140	19.33250	6.16780	-.14320	-.29820	.00490	-.02890
1.963	90.310	19.83630	8.08930	.35370	-.37060	.10540	-.02540
	GRADIENT	-.01278	-.14746	-.04038	.00511	.00150	.00006

MSFC 570(SA10F) 142-IN SRB (139) MBE1 TVC S (R910F1) (01 NOV 73)

REFERENCE DATA

SREF =	.3930 SQ. IN	XMRP =	5.5570 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	7.000	SWDSTK =	.000

RUN NO. 117/ 0 RN/L = 7.04 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLNN	CA	CYN	CYNN	CBL
3.479	80.310	19.10010	8.91710	.71920	-.36550	-.23590	-.04500
3.479	82.180	19.24810	8.66870	.65460	-.35650	-.22760	-.04910
3.479	86.170	19.44850	8.38330	.51310	-.34320	-.19310	.01450
3.479	90.160	19.63910	7.93410	.35780	-.31430	-.15840	-.02620
3.479	94.160	19.59720	7.14340	.17350	-.29590	-.16220	-.04570
3.479	98.150	19.21670	6.38250	-.00600	-.31960	-.17820	-.03310
3.479	100.020	18.98100	5.98210	-.09670	-.26510	-.13930	-.03630
3.479	90.160	19.61270	7.92890	.35730	-.32580	-.16540	-.02070
	GRADIENT	-.00337	-.14747	-.04150	.00417	.00420	-.00008

MSFC 578(SA10F) 142-IN SRB (139) NBE1 TVC S (R910M1) (28 NOV 73)

REFERENCE DATA

SREF =	.5030 SQ. IN	XMRP =	5.5570 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.5056		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.150	ATHS =	.000
CONFIG =	7.000	SHDSTK =	.000

RUN NO. 178/ 0 RN/L = 4.99 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.593	129.860	7.67950	-7.70090	-1.62160	-.11080	-.02490	-.01880
.593	127.950	6.09240	-7.91750	-1.49970	-.22820	.37140	-.00800
.593	123.940	9.17530	-7.97630	-1.25240	-.11580	.61240	-.00210
.593	119.930	10.28930	-7.39830	-.98630	.18110	.55140	-.02950
.593	115.920	11.08510	-6.53840	-.73150	.68760	2.05890	-.02010
.593	111.910	11.59750	-6.44050	-.43520	.56990	1.27090	-.01320
.593	110.020	11.84660	-6.06610	-.30970	.38880	1.29340	-.00310
.593	119.940	10.20210	-7.20650	-1.03710	.03520	.66960	-.01420
	GRADIENT	-.21562	-.09458	-.06611	-.04077	-.07298	-.00012

RUN NO. 177/ 0 RN/L = 6.75 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.199	129.570	13.49620	-3.90370	-1.93440	.27330	-.30550	-.00640
1.199	127.660	14.16010	-3.55710	-1.80670	.28730	-.30110	.00050
1.199	123.650	15.42460	-2.88920	-1.53970	.29720	-.26990	.00350
1.199	119.650	16.36780	-2.16900	-1.31690	.32730	-.27510	.00520
1.199	115.650	17.23740	-1.25470	-.97740	.31580	-.18980	.00820
1.199	111.670	17.94490	-.18330	-.64350	.27580	-.08200	-.00250
1.199	109.790	18.24870	.43140	-.48890	.25410	-.00880	.00800
1.199	119.660	16.28670	-1.98860	-1.30730	.32840	-.27470	.00830
	GRADIENT	-.23780	-.21485	-.07270	.00058	-.01407	-.00039

RUN NO. 144/ 0 RN/L = 7.12 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.948	129.730	12.51150	.33410	-1.65480	.26900	.05670	.02470
1.948	127.820	13.14970	.62580	-1.77030	.28290	.04680	.02270
1.948	123.820	14.44270	1.49290	-1.54330	.31200	.05300	.01230
1.948	119.790	15.71010	1.83280	-1.22190	.33600	.02430	.02430
1.948	115.780	16.63680	2.59900	-.91260	.31690	.05850	.00940
1.948	111.750	17.83080	2.89780	-.62070	.33230	.04970	.00460
1.948	109.880	18.04240	3.55160	-.47990	.31640	.06660	.00900
1.948	119.820	15.37630	2.17850	-1.19440	.30530	.08880	.01220
	GRADIENT	-.26270	-.15239	-.07091	-.00248	-.00040	.00087

MSFC 578(SA1GF) 142-IN SRB (139) NBE1 TVC S (R910H1) (28 NOV 73)

REFERENCE DATA

SREF =	.5039 SQ. IN	XMRP =	5.5570 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	7.000	SHDSTK =	.000

RUN NO. 111/ 0 RN/L = 7.09 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
3.479	129.900	11.67370	1.09340	-1.99240	.26140	.07840	.02810
3.479	127.970	12.28960	1.25330	-1.84840	.27900	.07080	.02560
3.479	123.970	13.49510	1.55520	-1.53770	.28160	.02970	.02980
3.479	119.960	14.64600	2.07730	-1.19830	.28710	.04370	.01000
3.479	115.930	15.78100	2.49130	-.89210	.28650	-.00310	.01950
3.479	111.910	16.72860	3.04600	-.61180	.28550	.03190	.01760
3.479	110.030	17.11520	3.45090	-.47960	.29720	.02840	.01990
3.479	119.960	14.63460	2.05800	-1.19200	.28340	.04930	.03310
	GRADIENT	-.27572	-.11591	-.07682	-.00119	.00262	.00052

MSFC 578(SA10F) 142-IN SRB (139) NBE1 TVC S (R91ED1) (01 NOV 73)

REFERENCE DATA

SREF =	.5030 SQ. IN	XMRP =	5.3570 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.5056		

PARAMETRIC DATA

BETA =	.000	PHI =	45.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	7.000	SHDSTK =	.000

RUN NO. 191/ 0 RN/L = 4.90 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.593	50.290	8.05070	8.16370	.40180	-.57620	-1.57060	.04010
.593	52.200	8.89190	9.67380	.32920	-.39190	-2.31570	.01280
.593	56.240	9.98960	11.20720	.14730	-.06640	-3.23680	.03530
.593	60.270	11.34090	12.72660	-.01900	-.10090	-1.15190	.00430
.593	64.300	11.99880	13.43360	-.15470	.09720	.98220	-.00910
.593	68.290	12.24960	13.18470	-.24220	-.51560	.09610	-.00530
.593	70.200	12.49870	13.17490	-.31030	-.11910	-.43490	.04910
.593	60.270	11.35770	12.84000	-.01170	-.10760	-.96320	.03530
	GRADIENT	.22055	.24208	-.03584	.01175	.13248	-.00065

RUN NO. 192/ 0 RN/L = 6.63 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.198	50.670	13.95870	12.72690	.98700	-.30390	.02960	.02140
1.198	52.590	14.62480	13.20190	.93440	-.33140	-.03510	.03090
1.198	56.640	15.92050	14.35790	.86160	-.33300	-.08810	.04590
1.198	60.680	16.88020	15.10990	.82310	-.31880	-.19030	.04720
1.198	64.680	17.71430	14.63760	.74450	-.26520	-.07180	.04660
1.198	68.650	18.52810	14.02970	.66110	-.29630	.09530	.04350
1.198	70.510	18.87800	12.89710	.64730	-.37960	.41260	.05230
1.198	60.670	16.82000	14.86050	.82410	-.33080	-.17580	.05360
	GRADIENT	.24407	.02684	-.01685	-.00054	.01361	.00115

RUN NO. 140/ 0 RN/L = 7.15 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.939	50.510	13.86160	7.77340	1.33000	-.33420	-.04620	-.02050
1.939	52.420	14.37750	8.00780	1.30800	-.33400	-.01040	.00540
1.939	56.460	15.53730	8.72190	1.26830	-.35520	-.01460	.01620
1.939	60.480	16.63430	9.08700	1.21280	-.36390	-.03030	.00590
1.939	64.520	17.60660	9.46740	1.11720	-.37850	-.00830	.01800
1.939	68.580	18.71630	10.56370	1.01650	-.36900	-.03900	.00710
1.939	70.460	18.87350	10.20740	.94950	-.36740	.04400	.02080
1.939	60.440	16.31680	8.31060	1.19740	-.33680	.03360	.00740
	GRADIENT	.25797	.13251	-.01867	-.00196	.00191	.00120

MSFC 578(SA19F) 142-IN SRB (139) NBE1 TVC S (R91ED1) (01 NOV 73)

REFERENCE DATA

SREF =	.5930 SQ. IN	XMRP =	5.5570 IN.		
LREF =	.8000 IN.	YMRP =	.0000 IN.		
BREF =	.8000 IN.	ZMRP =	.0000 IN.		
SCALE =	.0056				

PARAMETRIC DATA

BETA =	.000	PHI =	45.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	7.000	SHDSTK =	.000

RUN NO. 115/ 0 RN/L = 7.00 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
3.479	50.300	13.00960	4.65780	1.42810	-.30590	-.01470	-.01740
3.479	52.190	13.58060	5.11790	1.42710	-.30570	-.02000	-.01260
3.479	56.230	14.68040	6.30300	1.40370	-.29240	-.09290	-.01950
3.479	60.260	15.66370	7.24740	1.35150	-.30040	-.08720	-.01220
3.479	64.310	16.61160	8.19420	1.23470	-.29610	-.00680	-.00890
3.479	68.330	17.46770	8.79500	1.09730	-.29750	-.01940	-.01730
3.479	70.240	17.84110	8.98310	1.02210	-.28710	.00610	.00780
3.479	68.260	15.70600	7.32340	1.35130	-.28900	-.06970	-.00280
	GRADIENT	.24147	.22239	-.02044	.00066	.00155	.00071

MSFC 578(SA10F) 142-IN SRB (139) NBE1 TVC S (R91EF1) (01 NOV 73)

REFERENCE DATA

SREF =	.5039 SQ. IN	XMRP =	5.5570 IN.		
LREF =	.8000 IN.	YMRP =	.0000 IN.		
BREF =	.8000 IN.	ZMRP =	.0000 IN.		
SCALE =	.0056				

PARAMETRIC DATA

BETA =	.000	PHI =	45.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	7.000	SHDSTK =	.000

RUN NO. 186/ 0 RN/L = 4.98 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.597	80.160	12.15570	8.60130	.04640	-.27380	1.58970	.02410
.597	82.040	12.07920	7.56420	.12340	-.32020	1.78440	.02610
.597	85.990	12.22330	5.19160	.24900	-.08350	1.23070	.00950
.597	89.950	12.39850	3.08900	.34770	-.11040	1.42430	.03990
.597	93.940	12.38220	1.43770	.46550	-.01660	1.35810	.03110
.597	97.910	12.39420	.09390	.40050	.08110	1.48190	.00180
.597	99.800	12.24380	-.50950	.30510	.20810	1.43110	.01200
.597	89.950	12.35560	3.11390	.33610	-.08940	1.31490	-.00910
	GRADIENT	.01139	-.46723	.01597	.02337	-.00983	-.00064

RUN NO. 185/ 0 RN/L = 6.76 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.199	80.420	19.46480	9.52370	.60940	-.46530	.36480	.00940
1.199	82.310	19.60950	9.18450	.57850	-.46950	.39930	.01380
1.199	86.270	19.92910	8.37420	.48050	-.46760	.49260	.00980
1.199	90.220	20.03030	6.96290	.36220	-.46640	.58240	.01670
1.199	94.210	20.08090	6.31550	.18740	-.46730	.76490	-.00040
1.199	98.210	19.97540	6.23240	-.00330	-.41990	.64320	.01930
1.199	100.090	19.77870	5.84890	-.09260	-.39150	.56500	.00970
1.199	90.220	19.98620	6.92990	.35960	-.47590	.56220	.00610
	GRADIENT	.01874	-.19279	-.03614	.00320	.01419	.00002

RUN NO. 121/ 0 RN/L = 6.98 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.963	80.450	19.62070	9.01980	.66670	-.42310	.12230	-.01730
1.963	82.340	19.76370	8.85390	.60270	-.42180	.15620	-.00430
1.963	86.320	19.92220	8.36030	.45830	-.42270	.23850	-.01080
1.963	90.290	20.01650	7.75740	.30760	-.42170	.27270	-.03080
1.963	94.290	19.87600	7.15520	.13670	-.40130	.33040	-.03000
1.963	98.250	19.58460	6.31120	-.04100	-.36960	.23300	-.00450
1.963	100.130	19.37450	5.91000	-.13680	-.35370	.30170	.00410
1.963	90.290	19.95480	7.72780	.30380	-.41710	.29500	-.01130
	GRADIENT	-.01144	-.15804	-.04065	.00357	.00779	.00038

MSFC 578(SA10F) 142-IN SRB (139) NBE1 TVC S (R91EF1) (01 NOV 73)

REFERENCE DATA

SREF =	.5030 SQ. IN	XMRP =	5.5570 IN.
LREF =	.8050 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	45.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	7.000	SHDSTK =	.000

RUN NO. 118/ 0 RN/L = 7.04 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLMM	CA	CYM	CYNM	CBL
3.479	80.310	19.07650	8.88800	.71560	-.40890	.01050	.00000
3.479	82.190	19.25160	8.73770	.65150	-.41770	.04950	.00000
3.479	86.175	19.45070	8.28430	.50410	-.39320	.06540	.00000
3.479	90.160	19.62390	7.80310	.34040	-.39730	.12550	.00000
3.479	94.150	19.51920	6.98740	.15620	-.37710	.19430	.00000
3.479	98.130	19.23560	6.21800	-.01710	-.35650	.19250	.00000
3.479	100.010	19.00970	5.81490	-.09950	-.34240	.23030	.00000
3.479	90.160	19.62350	7.83320	.34280	-.37090	.16260	.00000
	GRADIENT	-.00145	-.15736	-.04178	.00342	.01082	.00000

MSFC 578(SA10F) 142-IN SRB (139) NBE1 T/C S (R91EH1) (28 NOV 73)

REFERENCE DATA

SREF =	.5030 SQ. IN	XMRP =	5.5570 IN.
LREF =	.8050 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	45.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	7.000	SHDSTK =	.000

RUN NO. 179/ 0 RN/L = 5.00 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.595	129.840	7.90420	-8.56800	-1.59730	-.48060	1.95220	.03890
.595	127.930	8.36950	-8.68710	-1.47350	-.16710	1.59780	.04020
.595	123.920	9.41510	-8.60980	-1.22660	.25080	.95700	.00140
.595	119.910	10.48840	-8.12690	-.94440	.27430	.86130	.00440
.595	115.900	11.26600	-7.42050	-.69230	.74330	2.18810	.03970
.595	111.890	11.81890	-7.34810	-.37890	.42490	1.18740	.01190
.595	110.000	11.93800	-6.81960	-.22910	.37340	.99180	.03670
.595	119.920	10.41100	-7.92880	-1.01290	.23800	.90040	.00380
	GRADIENT	-.21002	-.09186	-.06849	-.04295	.02204	.00043

RUN NO. 180/ 0 RN/L = 6.74 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.200	129.560	13.60660	-3.87770	-1.96150	.22670	-.14290	.04580
1.200	127.660	14.25740	-3.52140	-1.83360	.23720	-.10370	.04650
1.200	123.650	15.49290	-2.85250	-1.56530	.24210	-.00560	.05460
1.200	119.660	16.46040	-2.10150	-1.33140	.22230	.04540	.03750
1.200	115.640	17.30980	-1.35690	-.98640	.23130	.03910	.03660
1.200	111.650	18.04770	-.60710	-.66080	.23370	.06060	.04840
1.200	109.770	18.35340	.00860	-.51540	.21440	.16450	.03670
1.200	119.660	16.39440	-1.91800	-1.32170	.24120	.03700	.03990
	GRADIENT	-.23758	-.19033	-.07306	.00054	-.01274	.00036

RUN NO. 143/ 0 RN/L = 7.12 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.947	129.790	12.59310	.18440	-1.85780	.26030	.11250	.01750
1.947	127.810	13.26060	.51460	-1.77250	.25870	.14040	.02890
1.947	123.810	14.55600	1.43940	-1.55790	.26260	.24830	.03000
1.947	119.780	15.84730	1.67100	-1.23950	.27360	.26380	.02670
1.947	115.760	16.82480	2.34940	-.92530	.27330	.27880	.02460
1.947	111.730	17.93140	2.59640	-.62200	.25830	.35600	.03880
1.947	109.860	18.14540	3.30230	-.48060	.24210	.41430	.03730
1.947	119.820	15.49510	2.16650	-1.20980	.25140	.29770	.02960
	GRADIENT	-.28387	-.14312	-.07101	.00039	-.01352	-.00071

MSFC 578(SA19F) 142-IN SRB (139) NBE1 TVC S (R91EM1) (20 NOV 73)

REFERENCE DATA

SREF =	.5030 SQ. IN	XMRP =	5.5579 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	45.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	7.000	SHDSTK =	.000

RUN NO. 112/ 0 RN/L = 7.09 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLMN	CA	CYN	CYNN	CBL
3.479	129.890	11.79140	.97480	-1.99040	.22490	.22340	.04170
3.479	127.960	12.33170	1.11360	-1.86790	.23860	.23160	.04290
3.479	123.970	13.53640	1.46000	-1.55970	.19910	.24660	.04990
3.479	119.960	14.66420	2.03420	-1.20250	.22620	.29170	.04440
3.479	115.930	15.78720	2.52260	-.89830	.21740	.29690	.04060
3.479	111.910	16.71710	3.10990	-.60940	.20470	.36220	.05090
3.479	110.030	17.12440	3.44130	-.47840	.21610	.35930	.06730
3.479	119.960	14.62870	2.03320	-1.20220	.23030	.29160	.03950
	GRADIENT	-.27374	-.12498	-.07750	.00080	-.00725	-.00079

MSFC 578(SA15F) 142-IN SRB (139) NBE1 TVC S (R91FD1) (01 NOV 73)

REFERENCE DATA

SREF = .5030 SQ. IN XMRP = 5.5570 IN.
LREF = .8000 IN. YMRP = .0000 IN.
BREF = .8000 IN. ZMRP = .0000 IN.
SCALE = .5556

PARAMETRIC DATA

BETA = .000 PHI = 90.000
FWDSTK = .000 AFTSTK = .000
ATHRNG = .100 ATHS = .000
CONFIG = 7.000 SHDSTK = .000

RUN NO. 194/ 0 RN/L = 4.93 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
.597	50.280	8.00830	8.56290	.39030	-.64570	-1.56300	.01840
.597	52.220	8.82510	10.13630	.33240	-.32150	-2.46690	.04010
.597	56.240	9.92140	11.54980	.12560	-.12570	-2.94910	-.00180
.597	60.280	11.32700	13.09210	-.04500	-.22250	-1.42140	.00310
.597	64.310	11.89510	13.64800	-.18640	.13970	.19750	-.03640
.597	68.300	12.18300	13.44620	-.26750	-.33920	-1.14120	-.01470
.597	70.200	12.28790	13.39420	-.31230	-.12250	-1.21180	.01860
.597	60.280	11.33360	13.11130	-.05200	-.21830	-1.22670	.01170
	GRADIENT	.21551	.22874	-.03632	.01708	.07456	-.00161

RUN NO. 193/ 0 RN/L = 6.64 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.195	50.660	13.97840	12.56190	.97410	-.27310	-.09980	.02430
1.195	52.580	14.63070	13.00230	.91450	-.29740	-.16660	.01230
1.195	56.630	15.90670	14.14080	.82780	-.28600	-.28170	.02380
1.195	60.670	16.90270	15.10430	.77270	-.26820	-.36940	.02580
1.195	64.670	17.74890	14.49380	.70030	-.24150	-.16290	.03280
1.195	68.650	18.56690	13.97820	.66040	-.28870	.06890	.04040
1.195	70.520	18.83800	13.21330	.64190	-.30590	.03730	.04160
1.195	60.650	16.87400	14.73900	.78550	-.29320	-.36260	.04380
	GRADIENT	.24350	.04437	-.01633	-.00021	.01032	.00121

RUN NO. 141/ 0 RN/L = 7.14 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CA	CYM	CYNM	CBL
1.941	50.520	13.84000	7.64350	1.30410	-.28860	-.22950	-.01670
1.941	52.410	14.35070	7.83540	1.28110	-.29540	-.21130	-.01000
1.941	56.450	15.66640	8.60420	1.25530	-.31670	-.21310	-.01470
1.941	60.470	16.64020	8.90600	1.19410	-.32570	-.20150	-.02240
1.941	64.520	17.58540	9.31160	1.09740	-.33070	-.18720	-.01220
1.941	68.580	18.73040	10.40660	1.00840	-.31900	-.24520	-.01340
1.941	70.450	18.93000	10.09050	.94570	-.32310	-.16840	-.00280
1.941	60.430	16.35220	8.16360	1.17960	-.33030	-.13560	-.01450
	GRADIENT	.25941	.13283	-.01773	-.00163	.00120	.00034

MSFC 576(SA10F) 142-IN SRB (139) NBE1 TVC S (R91FD1) (01 NOV 73)

REFERENCE DATA

SREF =	.5939 SQ. IN	XMRP =	5.5570 IN.		
LREF =	.8000 IN.	YMRP =	.0000 IN.		
BREF =	.8000 IN.	ZMRP =	.0000 IN.		
SCALE =	.0056				

PARAMETRIC DATA

BETA =	.000	PHI =	90.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	7.000	SHDSTK =	.000

RUN NO. 119/ 0 RN/L = 7.05 GRADIENT INTERVAL = -5.00/ 5.00

M&CH	ALPHA	CNM	CLMM	CA	CYN	CYNM	CBL
3.479	50.300	12.98190	4.74780	1.41420	-.27650	-.10750	.00120
3.479	52.290	13.53460	5.29050	1.40450	-.22840	-.17290	.00160
3.479	56.230	14.66930	6.29810	1.38350	-.26620	-.23800	.03930
3.479	60.260	15.71290	7.08230	1.35740	-.25450	-.22060	-.01040
3.479	64.310	16.69660	8.11430	1.23030	-.24790	-.21110	.00960
3.479	68.330	17.48150	8.71250	1.07890	-.23880	-.22710	-.00960
3.479	70.240	17.82850	8.85440	1.01170	-.24330	-.21060	-.00200
3.479	60.260	15.71310	7.09250	1.35570	-.25440	-.21320	-.01460
	GRADIENT	.24435	.25970	-.02008	.00089	-.05155	-.00067

MSFC 578(SA10F) 142-IN SRB (139) NBE1 TVC S (R91FF1) (01 NOV 73)

REFERENCE DATA

SREF =	.5039 SQ. IN	XMRP =	5.5570 IN.		
LREF =	.8000 IN.	YMRP =	.0000 IN.		
BREF =	.8000 IN.	ZMRP =	.0000 IN.		
SCALE =	.0056				

PARAMETRIC DATA

BETA =	.000	PHI =	90.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	7.000	SHDSTK =	.000

RUN NO. 183/ 0 RN/L = 5.02 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLNN	CA	CYN	CYNN	CBL
.599	80.180	12.15930	9.66420	-.01200	.02460	.18890	.04930
.599	82.060	12.15940	8.61140	.07610	-.00360	.45820	.01070
.599	86.000	12.35530	5.37410	.28890	.04850	.43830	-.00840
.599	89.960	12.39190	3.28110	.41490	.33450	.09220	-.00600
.599	93.940	12.42160	1.68160	.47580	.29100	.08520	-.00640
.599	97.920	12.49340	.26310	.42790	.34170	.46470	.02940
.599	99.800	12.49670	-.64300	.32650	.40060	.50970	.02730
.599	89.950	12.44720	3.24720	.42640	.28220	.04290	-.00340
	GRADIENT	.01508	-.52009	.01956	.02111	.00518	-.00016

RUN NO. 184/ 0 RN/L = 6.74 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLNN	CA	CYN	CYNN	CBL
1.193	80.430	19.46120	9.83010	.56550	-.34970	-.19710	-.00150
1.193	82.320	19.55540	9.46970	.56490	-.34410	-.17270	-.00630
1.193	86.280	19.88330	8.64590	.48960	-.33900	-.04720	-.00190
1.193	90.220	19.97710	7.16650	.38860	-.32470	-.00790	-.00720
1.193	94.230	20.03000	6.89290	.20930	-.29790	-.00290	.00900
1.193	98.220	19.91750	6.54810	.02000	-.26730	-.09890	-.00530
1.193	100.100	19.70540	6.03770	-.07580	-.23570	-.11370	.02170
1.193	90.220	19.92460	7.14810	.38870	-.32150	-.01830	.00560
	GRADIENT	.01664	-.19188	-.03545	.00540	.00448	.00079

RUN NO. 122/ 0 RN/L = 6.98 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLNN	CA	CYN	CYNN	CBL
1.961	80.450	19.64180	8.94490	.65370	-.35700	-.16300	-.03130
1.961	82.340	19.75990	8.81680	.59690	-.34850	-.16270	-.02840
1.961	86.320	19.88370	8.37910	.46430	-.34230	-.10710	-.02570
1.961	90.300	19.91930	7.89590	.31550	-.33250	-.12480	-.03320
1.961	94.290	19.80370	7.29250	.14480	-.30430	-.11120	-.03380
1.961	98.250	19.57350	6.45530	-.03670	-.28990	-.07600	-.01840
1.961	100.130	19.36020	5.95970	-.13130	-.27610	-.08710	-.02660
1.961	90.300	19.89170	7.89090	.31220	-.32930	-.11180	-.03600
	GRADIENT	-.01297	-.14911	-.03988	.00402	.00454	.00027

MSFC 578(SA19F) 142-IN SRB (139) NBE1 TVC S (R91FF1) (01 NOV 73)

REFERENCE DATA

SREF =	.5939 SQ. IN	XMRP =	5.5570 IN.
LREF =	.8599 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	90.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	7.000	SWDSTK =	.000

RUN NO. 114/ 0 RN/L = 7.04 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLNN	CA	CYM	CYNN	CBL
3.479	80.310	19.08960	8.77750	.70840	-.34820	-.29390	-.00990
3.479	82.180	19.25520	8.64160	.64020	-.32820	-.27850	-.01020
3.479	86.170	19.44570	8.19450	.49720	-.31110	-.27200	-.02860
3.479	90.160	19.60200	7.79910	.33710	-.29740	-.22670	-.00590
3.479	94.150	19.49590	7.03340	.16350	-.26780	-.22880	-.02680
3.479	98.130	19.21360	6.21680	-.01270	-.25490	-.20980	-.00210
3.479	100.010	18.98800	5.82370	-.10170	-.24040	-.20840	-.01250
3.479	90.160	19.61900	7.82870	.33840	-.29030	-.23270	.00180
	GRADIENT	-.00320	-.15029	-.04112	.00517	.00443	.00013

MSFC 578(SA19F) 142-IN SRB (139) NBE1 TVC S (R91FH1) (28 NOV 73)

REFERENCE DATA

SREF =	.9936 SQ. IN	XMRP =	5.3570 IN.
LREF =	.2000 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	90.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATHS =	.000
CONFIG =	7.000	SHDSTK =	.000

RUN NO. 182/ 0 RN/L = 5.02 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLNN	CA	CYN	CYNN	CBL
.598	129.850	7.84620	-7.88110	-1.65050	.04620	-1.13340	-.00130
.598	127.940	8.33680	-8.15140	-1.52250	.59320	-1.32890	-.01660
.598	123.930	9.30320	-8.01690	-1.24760	.57730	-.59680	-.00780
.598	119.920	10.48750	-7.69900	-.95940	1.02790	-.75560	-.03810
.598	115.910	11.15620	-6.69040	-.72440	1.14270	1.60990	.00540
.598	111.900	11.78270	-6.64330	-.41290	.72220	.34390	-.01360
.598	110.010	11.94100	-6.07910	-.27210	.41610	.59830	.00000
.598	119.930	10.32140	-7.34950	-1.03530	.93610	-.48560	-.03220
	GRADIENT	-.21165	-.09866	-.06898	-.01951	-.11031	-.00025

RUN NO. 181/ 0 RN/L = 6.74 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLNN	CA	CYN	CYNN	CBL
1.197	129.570	13.58350	-3.85250	-1.95750	.32200	-.65120	.01630
1.197	127.660	14.25320	-3.51860	-1.82940	.33770	-.58860	.00770
1.197	123.650	15.49800	-2.82170	-1.55940	.34210	-.37750	.02000
1.197	119.660	16.45590	-2.06960	-1.33010	.34270	-.39940	.01810
1.197	115.660	17.31130	-1.26030	-.98270	.31630	-.30930	.03240
1.197	111.660	18.12310	-.36560	-.65560	.30370	-.22100	.01450
1.197	109.770	18.43500	.16280	-.50290	.31380	-.19360	.01290
1.197	119.660	16.39360	-1.95500	-1.32070	.35260	-.39830	.03460
	GRADIENT	-.24229	-.29006	-.07331	.00128	-.02176	-.00020

RUN NO. 142/ 0 RN/L = 7.12 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLNN	CA	CYN	CYNN	CBL
1.947	129.710	12.67660	.17860	-1.87810	.35280	-.19310	.01850
1.947	127.790	13.25180	.15690	-1.80280	.35430	-.20470	.02750
1.947	123.790	14.65180	1.12690	-1.57110	.36590	-.06800	.00680
1.947	119.780	15.83160	1.61770	-1.23070	.36370	-.04310	.00660
1.947	115.760	16.75880	2.37000	-.91490	.33640	.02180	.00510
1.947	111.750	17.93870	2.51510	-.60650	.35280	.02820	.01770
1.947	109.860	18.07660	3.14320	-.45610	.33940	.02070	.01160
1.947	119.810	15.45080	1.98760	-1.19340	.32560	.00990	-.00400
	GRADIENT	-.27832	-.14887	-.07357	.00073	-.01214	.00043

MSFC 570(5410F) 142-IN SRB (139) NBE1 TVC S (R91FN1) (28 NOV 73)

REFERENCE DATA

SREF =	.5930 SQ. IN	XMRP =	5.5570 IN.
LREF =	.8000 IN.	YMRP =	.0000 IN.
BREF =	.8000 IN.	ZMRP =	.0000 IN.
SCALE =	.0056		

PARAMETRIC DATA

BETA =	.000	PHI =	90.000
FWDSTK =	.000	AFTSTK =	.000
ATHRNG =	.100	ATNS =	.000
CONFIG =	7.000	SWDSTK =	.000

RUN NO. 113/ 0 RN/L = 7.00 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNN	CLNN	CA	CYN	CYNN	CBL
3.479	129.890	11.68470	.97520	-2.81230	.28640	.02620	.04950
3.479	127.960	12.32390	1.08210	-1.90290	.29480	.02600	.03820
3.479	125.970	13.52050	1.42873	-1.58380	.28850	.06190	.03630
3.479	119.960	14.65340	2.01580	-1.21410	.29010	.08590	.03430
3.479	115.910	15.85920	2.46440	-.90320	.26980	.06920	.02850
3.479	111.910	16.70920	3.04770	-.61040	.28870	.07340	.01850
3.479	110.030	17.14130	3.38030	-.47670	.30450	.03440	.03760
3.479	119.960	14.66220	2.00680	-1.21400	.27830	.11680	.03250
	GRADIENT	-.27561	-.12226	-.07914	-.00010	-.05131	.00086