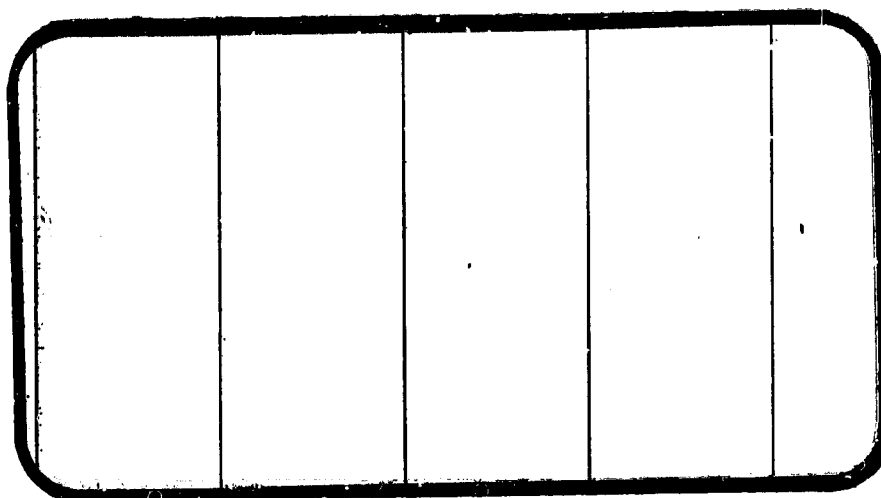




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REENTRY AERODYNAMIC CHARACTERISTICS OF A
SPACE SHUTTLE SOLID ROCKET BOOSTER MODEL 449
TESTED IN MSFC 14 X 14 INCH TWT (SA26F)

By

J. D. Johnson, NASA/MSFC
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Prepared under NASA Contract Number NAS9-13247

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REENTRY AERODYNAMIC CHARACTERISTICS OF A
SPACE SHUTTLE SOLID ROCKET BOOSTER MODEL 449
TESTED IN MSFC 14 X 14 INCH TWT (SA26F)

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ABSTRACT

Two force tests of a 0.563 percent scale Space Shuttle Solid Rocket Booster (SRB) model, MSFC Model 449, were conducted at the Marshall Space Flight Center 14 x 14 inch Trisonic Wind Tunnel. These tests, TWT-590 and TWT-595 (combined under NASA Series No. SA26F), occupied the tunnel for a total of 76 hours during November 1973 and January 1974, respectively. There were a total of 134 runs (pitch polars) made. Test Mach numbers were 0.6, 0.9, 1.2, 1.96, 2.74, 3.48, 4.00, 4.45, and 4.96; test angles of attack ranged from -10 degrees to 190 degrees; test Reynolds numbers ranged from 4.9 million per foot to 7.1 million per foot; and test roll angles were 0, 45, 90, and 135 degrees. The model was tested with three different engine nozzle/skirts. Two of these engine configurations differed from each other in the magnitude of the volume inside the nozzle and skirt. The third engine configuration had part of the nozzle removed. The model was tested with an electrical tunnel in combination with separation rockets of two different heights.

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PLOTTED COEFFICIENTS SCHEDULE:

- (A) CNM, CLMM, CA, XCP/L versus ALPHA
- (B) DCNM, DCLMM, DCA, DXCP/L versus ALPHA
- (C) CYM, CYNM, CBL, YCP/L versus ALPHA
- (D) DCYM, DCYNM, DCBL, DYCP/L versus ALPHA

NOMENCLATURE

<u>SYMBOL</u>	<u>PLOT SYMBOL</u>	<u>DEFINITION</u>	<u>UNITS</u>
A_{b1}		base areas	in. ²
AF		abbreviation for axial force	
b_{ref}	BREF	reference span (diameter of the cylindrical section of the model)	in.
C_A		total axial force coefficient in the body axis system	
C_{A_b}	CAB	base axial force coefficient (see text)	
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	
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, $M_{Z_m}/q_\infty S_{ref} \ell_{ref}$	

<u>SYMBOL.</u>	<u>PLOT SYMBOL</u>	<u>DEFINITION</u>	<u>UNITS</u>
$C_{P_{b1}}$		base pressure coefficient; $\frac{P_{b1} - P_{\infty}}{q_{\infty}}$	
C_Y		side force coefficient in the body axis system	
C_{Y_m}	CYM	side force coefficient in the missile axis system, $F_{Y_m}/q_{\infty} S_{ref}$	
δC_{A_m}	DCA	incremental axial force coefficient due to a specific difference in configuration	
δC_{ℓ}	DCBL	incremental rolling moment coefficient due to a specific difference in configuration	
δC_{m_m}	DCLMM	incremental pitching moment coefficient due to a specific difference in configuration	
δC_{N_m}	DCNM	incremental pitching moment coefficient due to a specific difference in configuration	
δC_{Y_m}	DCYM	incremental side force coefficient due to a specific difference in configuration	
δC_{m_m}	DCYNM	incremental yawing moment coefficient due to a specific difference in configuration	
	DSEPRT	parameter name describing the comparison of separation rocket height. The number 1.0 indicates that data from runs in which the S_2 rockets were mounted on the model were subtracted from data runs where the S_1 rockets were mounted	

<u>SYMBOL</u>	<u>PLOT SYMBOL</u>	<u>DEFINITION</u>	<u>UNITS</u>
$\delta X_{cp}/l_B$	DXCP/L	incremental longitudinal center of pressure location due to a specific difference in configuration	
$\delta Y_{cp}/l_B$	DYCP/L	incremental lateral center of pressure location due to a specific difference in configuration	
	ELT	parameter name describing the electrical tunnel. Number of 1.0 indicates an electrical tunnel is mounted on the SRB at an angular location as described by phi (ϕ). (Model roll angle is based on the position of electrical tunnel).	
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.
F_{Y_m}		side force in the missile axis system, positive in the positive direction of Y_m	lb.
l_{body}		length of body	in.
l_{ref}	LREF	reference length (diameter of the cylindrical section of the model)	in.
M	MACH	Mach number	
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

<u>SYMBOL</u>	<u>PLOT SYMBOL</u>	<u>DEFINITION</u>	<u>UNITS</u>
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
NF		abbreviation for normal force	
P_{b1}		base pressures	psi
P_t		free stream total pressure	psi
P_∞		free stream static pressure	psi
PM		abbreviation for pitching moment	
q_∞		free stream dynamic pressure	psi
RM		abbreviation for rolling moment	
S_{ref}	SREF	reference area (cross sectional area of the cylindrical section of the model)	in. ²
SF		abbreviation for side force	
	SEPRKT	parameter name describing the separation rockets. The number 1.0 indicates that the S_1 rockets were mounted on the model. The number 2.0 indicates that the S_2 rockets were mounted	
T_t		tunnel total temperature	$^{\circ}F$

<u>SYMBOL</u>	<u>PLOT SYMBOL</u>	<u>DEFINITION</u>	<u>UNITS</u>
X_{CP}/l_B	XCP/L	longitudinal center of pressure location in percent of body length from nose; $= \frac{XMRP}{l_{body}} - \left(\frac{C_{m_m}}{C_{N_m}} \right) \left(\frac{l_{ref}}{l_{body}} \right)$	
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.
Y_{CP}/l_B	YCP/L	lateral center of pressure location in percent of body length from nose; $= \frac{XMRP}{l_{body}} - \left(\frac{C_{n_m}}{C_{Y_m}} \right) \left(\frac{l_{ref}}{l_{body}} \right)$	
YM		abbreviation for yawing moment	
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 plot symbol describes the specific protuberance angular location in degrees (see Figure 7)	degrees
	BETA	sideslip angle, body axis system, degrees	
	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	

<u>SYMBOL</u>	<u>PLOT SYMBOL</u>	<u>DEFINITION</u>
	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
	SHDSTK	parameter name describing the shroud strakes; number indicates the presence of eight strakes; number 0.000 indicates no strakes.
	ATHRNG	parameter name describing the attachment ring; number indicates the presence of the ring
	ATHS	parameter name describing attachment hardware; number indicates the presence of attachment hardware
	CONFIG	configuration code numbered as follows: 1--NBRE ₁ A 2--NBRE ₁ 3--NBRE ₁ S ₁ ELT 4--NBRE ₁ S ₂ ELT 5--NBRE ₁ B

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

INTRODUCTION

The wind tunnel tests described herein are a continuation of a series of force tests (References 1, 2, 3, 4, and 5) conducted to evaluate the static aerodynamic stability of a Space Shuttle Solid Rocket Booster (SRB). All of these tests were designed to provide aerodynamic data under simulated reentry flight conditions of the SRBs after separation from the space shuttle launch configuration.

The model was tested with three different engine nozzle/skirt configurations. Two of these engine configurations differed from each other in the magnitude of the volume inside the nozzle and skirt. The third engine configuration had part of the nozzle removed. Separation rockets of two different heights, in conjunction with an electrical tunnel, were mounted on the model during some tests.

Test Mach numbers were 0.6, 0.9, 1.2, 1.96, 2.74, 3.48, 4.00, 4.45, and 4.96; test angles of attack ranged from -10 degrees to 190 degrees; test Reynolds numbers ranged from 4.9 million per foot to 7.1 million per foot; and test roll angles were 0, 45, 90, and 135 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 3 and Figures 2, 3, 4, 5, 6, and 7. 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.

Figures 3, 4, and 5 present the dimensions of the three engine nozzle/skirt configurations used during this test. The engine configurations differed in the extent of nozzle and skirt internal volume and in the length of the nozzle. They were used to investigate the effects of these variables on the aerodynamic static stability characteristics of the SRB.

Figures 6 and 7 present the dimensions of the separation rockets and the electrical tunnel. Figure 8 presents the location and roll sign convention of these protuberances. The separation rockets and the electrical tunnel are scaled representations of protuberances considered for use on the SRBs. They were used on the model only during selected parts of the test.

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

N	nose
B	cylindrical body
R	attachment ring
E ₁	engine nozzle/skirt
E _{1A}	engine nozzle/skirt with deep cutouts inside skirt and nozzle
E _{1B}	engine nozzle/skirt E _{1A} with 64.2 inches (full scale) removed from nozzle exit
S ₁	body and skirt mounted separation rockets, 44.75 inches (full scale) high
S ₂	body and skirt mounted separation rockets, 22.375 inches (full scale) high
ELT	electrical tunnel mounted on cylindrical body in same plane with separation rockets

Some significant features of the design and construction of this model are:

- o The model was made in three major sections: nose, body and engine nozzle/skirt
- o Nose and engine can be switched end for end in order to test at angles of attack above 90 degrees.
- o 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.
- o Both bodies are mounted in the same position relative to the balance and maintain that position when the nose and engine nozzle/skirt are switched end for end.

- o The attachment ring, which was affixed to the body throughout this test, has mounting locations on each end of both bodies so that it can maintain its position relative to the nose and engine.
- o A slotted ring was necessary for certain side mount cases.
- o Roll angles (applicable only when separation rockets and electrical tunnel are attached) were changed by rotating the nose section (to which the forward separation rockets were attached) to different angles, mounting the electrical tunnel at different locations on the body, and mounting the aft separation rockets at different locations on the skirt. The sign convention for roll angles is shown in Figure 8.
- o The E₁ engine 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 to eliminate flow through the balance cavity.
- o 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.
- o Engine E_{1A} was destroyed when the aft 0.362 inch of the nozzle was removed to make E_{1B}.

Figure 9 is a photograph of a typical nose mount tunnel installation.

Support Hardware Description

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

- 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 4 lists the combinations of support hardware and associated angle of attack ranges used in this test.

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

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

The "balancing 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.

The two support hardware combinations used in these tests (end mount and side mount) are shown in Figures 15 and 16. The four ways that the model can be mounted on these two support hardware combinations are illustrated in Figures 17 and 18.

CONFIGURATIONS INVESTIGATED

The run schedule, i.e., data set collation sheet, for these tests, MSFC TWT 590/595, is shown in Table 2. 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 5 presents a summary of Table 2 and also lists the collective data set identifiers (several angle of attack ranges grouped together).

Configuration NBRE₁ was a 0.563 percent scale model of a 142 inch diameter SRB configuration, less electrical tunnel and nose attachment hardware (Figures 2 and 3). NBRE₁ was tested in TWT 578 (Reference 5) and referred to in that test as NBE₁. NBRE₁ was used as the basis for comparison for the other four configurations.

Configuration NBRE_{1A} was made from NBRE₁ by replacing the nozzle/skirt with one that had a much more hollowed out skirt and nozzle (Figure 4).

Configuration NBRE_{1B} was made from NBRE_{1A} by removing the aft 64.2 inches (full scale) from the nozzle (Figure 5).

Configuration NBRE_{1S1}ELT was made from NBRE₁ by attaching separation rockets (Figure 6) and electrical tunnel (Figure 7). The separation rockets and electrical tunnel are positioned on the lee side of the SRB at zero roll angle and angle of attack between 0 and 180 degrees (Figure 8).

TEST FACILITY

The Marshall Space Flight Center 14" x 14" Transonic Wind Tunnel is an intermittent blowdown tunnel which operates by high pressure air flowing from storage to either vacuum or atmospheric conditions. A Mach number range from .2 to 5.85 is covered by utilizing two interchangeable test sections. The transonic section permits testing at Mach 0.20 through 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.

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

Downstream of the test section is a hydraulically controlled pitch sector that provides a total angle of attack range of 20° ($\pm 10^{\circ}$). Sting offsets are available for obtaining various maximum angles of attack up to 25° .

The diffuser section has movable floor and ceiling panels which are the primary means of controlling the subsonic Mach numbers and permit more efficient running supersonically. The sector assembly and supersonic diffuser telescope into the subsonic diffuser to allow easy access to the model and test section.

Tunnel flow is exhausted through an acoustically damped tower to atmosphere or into the vacuum field of 42,000 cubic feet. The vacuum tanks are evacuated by vacuum pumps driven by a total of 500 hp.

Data are recorded by a solid-state digital data acquisition system. The digital data are transferred to punched cards during the run to be reduced later by a computer to proper coefficient form.

DATA ACQUISITION AND REDUCTION

The parameters measured and recorded during this test were:

- o Wind tunnel conditions (P_∞ , P_t , 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 (Table 1); 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 19 shows the location of the pressure tubes. A tabulation of the base pressure coefficients ($C_{p_{bi}}$) is 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 are listed in Table 1. The six coefficients, C_{A_m} , C_{ξ_m} , C_{m_m} , C_{N_m} , C_{n_m} , and C_{y_m} , are coefficients in the missile axis system.

The missile axis system (X_M, Y_M, Z_M) is a non-rolling body axis system that is frequently used in wind tunnel tests and studies of missile flight dynamics. It is a system of axes that rotates with a missile or wind tunnel model through angles of attack but never through angles of roll; i.e., it never rotates about the missile or model longitudinal axis. The orientations of the missile axes coefficients are defined in Figure 1. The missile axis system is identical with the body axis system at zero roll angle.

Six-component static aerodynamic coefficients in the missile axis system may be converted to coefficients in the body axis system with the following six equations:

$$\begin{aligned}
 C_A &= C_{A_m} \\
 C_N &= C_{N_m} \cos \phi + C_{Y_m} \sin \phi \\
 C_Y &= -C_{N_m} \sin \phi + C_{Y_m} \cos \phi \\
 C_\ell &= C_{\ell_m} \\
 C_m &= C_{m_m} \cos \phi + C_{n_m} \sin \phi \\
 C_n &= -C_{m_m} \sin \phi + C_{n_m} \cos \phi
 \end{aligned}$$

The following reference dimensions were used to calculate the static stability coefficients:

<u>Parameter</u>	<u>Full Scale</u>	<u>Model Scale</u>
Reference Area (S_{ref})		
based on body cross section	109.98 ft ²	0.503 in. ²

<u>Parameter</u>	<u>Full Scale</u>	<u>Model Scale</u>
Reference Length (l_{ref}) = (b_{ref}) = model diameter	142 in.	0.800 in.
Moment Reference Center (from body nose)		
*XMRP	986.97 in.	5.537 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.

DATA PRESENTATION

Data are presented in two forms: (1) aerodynamic static 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 static stability coefficients, two base pressure coefficients, wind tunnel flow conditions, and model attitude (angle-of attack and roll angle).

Data Plots

The plots of the static stability coefficients and center of pressure location are presented in the following groups:

*Note: XMRP (56.69% of total length without portion of nozzle removed, measured from nose tip)

- o Aerodynamic characteristics of a Solid Rocket Booster (NBRE₁ at M = 2.74)
- o Aerodynamic characteristics of a SRB with different engine nozzle/skirts (E₁, E_{1A} and E_{1B})
- o Effect of truncated nozzle on SRB aerodynamic characteristics (E_{1B} - E_{1A})
- o Aerodynamic characteristics of a SRB with separation rockets and electrical tunnel (S₁)
- o Aerodynamic characteristics of a SRB with separation rockets and electrical tunnel (S₂)
- o Effect of separation rocket height (S₁ - S₂)

Table 6 presents, for each configuration or comparison of configurations, the coefficients which are plotted and the Mach numbers for which data are available.

Data Tables

Data tables, presented in the appendix as tabulated source data, are presented for each of the 134 runs that were made during these tests. 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 ($C_{p_{b1}}$) 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:

$$C_{\Lambda_b} = \left[\frac{C_{p_{b_1}} \cdot A_{b_1}}{S_{ref}} + \frac{C_{p_{b_2}} \cdot A_{b_2}}{S_{ref}} \right]$$

Base pressure data were taken only during runs where the model was tail mounted. Configurations NBRE₁ and NBRE₁S₁ELT were the only configurations tested in this manner. Their base areas are the same and are as follows:

$$A_{b_1} = 0.500 \text{ sq. in.}$$

$$A_{b_2} = 0.419 \text{ sq. in.}$$

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.
5. NASA CR-134,116 (DMS-DR-2087), "Effect of Engine Shroud Configuration on the Static Aerodynamic Characteristics of a 0.00563 Scale 142-inch Diameter Solid Rocket Booster", Johnson, J. D., Braddock, W. F.; August, 1974.

Table 1.

TEST: MSFC TWT 590/595			DATE: Jan., 1974																													
TEST CONDITIONS																																
MACH NUMBER	REYNOLDS NUMBER ($10^6/\text{ft}$)	DYNAMIC PRESSURE (pounds/sq. inch)	STAGNATION TEMPERATURE (degrees Fahrenheit)	STAGNATION PRESSURE (pounds/sq inch)																												
0.60	4.94	4.32	103	22																												
0.90	6.25	7.38	102	22																												
1.20	6.65	9.14	102	22																												
1.96	7.09	10.25	100	28																												
2.74	5.02	6.37	114	30																												
3.48	6.62	6.86	144	60																												
4.00	5.72	5.16	145	70																												
4.45	5.46	4.08	143	80																												
4.96	4.96	3.07	135	90																												
<p>BALANCE UTILIZED: <u>MSFC 237</u></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 30%;"></td> <td style="width: 30%;">CAPACITY:</td> <td style="width: 30%;">ACCURACY:</td> <td style="width: 10%;">COEFFICIENT TOLERANCE:</td> </tr> <tr> <td>NF</td> <td><u>200 lbs</u></td> <td>_____</td> <td>_____</td> </tr> <tr> <td>SF</td> <td><u>100 lbs</u></td> <td>_____</td> <td>_____</td> </tr> <tr> <td>AF</td> <td><u>20 lbs</u></td> <td>_____</td> <td>_____</td> </tr> <tr> <td>PM</td> <td><u>196 in.-lbs</u></td> <td>_____</td> <td>_____</td> </tr> <tr> <td>RM</td> <td><u>98 in.-lbs</u></td> <td>_____</td> <td>_____</td> </tr> <tr> <td>YM</td> <td><u>50 in.-lbs</u></td> <td>_____</td> <td>_____</td> </tr> </table> <p>COMMENTS:</p>						CAPACITY:	ACCURACY:	COEFFICIENT TOLERANCE:	NF	<u>200 lbs</u>	_____	_____	SF	<u>100 lbs</u>	_____	_____	AF	<u>20 lbs</u>	_____	_____	PM	<u>196 in.-lbs</u>	_____	_____	RM	<u>98 in.-lbs</u>	_____	_____	YM	<u>50 in.-lbs</u>	_____	_____
	CAPACITY:	ACCURACY:	COEFFICIENT TOLERANCE:																													
NF	<u>200 lbs</u>	_____	_____																													
SF	<u>100 lbs</u>	_____	_____																													
AF	<u>20 lbs</u>	_____	_____																													
PM	<u>196 in.-lbs</u>	_____	_____																													
RM	<u>98 in.-lbs</u>	_____	_____																													
YM	<u>50 in.-lbs</u>	_____	_____																													

Table 2.

TEST : MSFC TWT 590 (SAZ6F)		DATA SET / RUN NUMBER COLLATION SUMMARY							DATE : NOVEMBER 1975																													
DATA SET IDENTIFIER	CONFIGURATION	SCHD. PARAMETERS/VALUES		NO. OF RUNS	MACH NUMBERS (OR ALTERNATE INDEPENDENT VARIABLE)																																	
		α	β		0.6	0.9	1.2	1.96	2.74	3.48	4.00	4.45	4.92																									
R95001	NBRE ^{IA}	I	O	0	3																																	
002		IR			1																																	
003		J			3																																	
004		JR			1																																	
005		KR1			4																																	
006		KR2			4																																	
007		KR4			1																																	
008		KR3			1																																	
009	NBRE ^I	IR			1																																	
010		JR			1																																	
Y 011		KR	Y	Y	1																																	

75.76

67

61

55

49

43

37

31

25

19

13

7

CNM CLMM CYM CYNM CBL CA CAB XCP/T CPO1 CP02 W3GN M3PBA 1.0

IDVAR (1) IDVAR (2) NDV

COEFFICIENTS

SEE TABLE 4.

α OR β
SCHEDULES

Table 2. (Continued)

DATE: **NOVEMBER 1973**

TEST : MSFC TWT 590(SA26F)

DATA SET/RUN NUMBER COLLATION SUMMARY

DATA SET IDENTIFIER	CONFIGURATION	SCRD. PARAMETERS/VALUES		NO. OF RUNS	MACH NUMBERS (OR ALTERNATE INDEPENDENT VARIABLE)							TEST RUN NUMBERS						
		α	β		0.6	0.9	1.2	1.96	2.74	3.48	4.00	4.45	4.96	55	61	67	73	
R95012	NBRE ₁ S ₁ ELT	B	0	5	28%	29%	30%	51%										
013				5	33%	32%	31%	50%										
014		Y		5	34%	35%	36%	49%										
015		D		4	73%	74%	75%	57%										
016				5	90%	89%	88%	57%										
017		Y		5	91%	92%	93%	58%										
018		F		5	78%	77%	76%	53%										
019				5	85%	86%	87%	56%										
020		Y		5	96%	95%	94%	59%										
021		H		4	64%	65%	66%	63%										
022				4	69%	68%	67%	62%										
023		Y		4	70%	71%	72%	61%										
024		J		5	45%	44%	43%	46%										
025				5	40%	41%	42%	47%										
026	Y			5	39%	38%	37%	48%										
027	NBRE ₁ S ₂ ELT	F		5	79%	80%	81%	54%										
028				5	84%	83%	82%	55%										
Y 029	Y	Y		5	97%	98%	99%	60%										

SEE TABLE 4.

α OR β SCHEDULES

Table 3.
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: _____

<u>DIMENSIONS:</u>	<u>THEORETICAL</u>	
	<u>FULL-SCALE</u>	<u>MODEL SCALE</u>
Length	<u>188.0 in.</u>	<u>1.059 in.</u>
Max. Width	<u>142 in.</u>	<u>0.8 in.</u>
Max. Depth	<u>142 in.</u>	<u>0.8 in.</u>
Fineness Ratio	<u>1.32</u>	<u>1.32</u>
Area		
Max. Cross-Sectional	<u>109.98 ft²</u>	<u>0.503 in.²</u>
Planform	_____	_____
Wetted	_____	_____
Base	<u>109.98 ft²</u>	<u>0.503 in.²</u>
Length When Drilled for Sting Mounting (see Figure 6)		<u>0.271 in.</u>

Table 3. (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

<u>DIMENSIONS:</u>	<u>THEORETICAL</u>	
	<u>FULL-SCALE</u>	<u>MODEL SCALE</u>
Length	<u>1407.8 in.</u>	<u>7.931 in.</u>
Max. Width	<u>142 in.</u>	<u>0.8 in.</u>
Max. Depth	<u>142 in.</u>	<u>0.8 in.</u>
Fineness Ratio	<u>_____</u>	<u>_____</u>
Area		
Max. Cross-Sectional	<u>109.98 ft²</u>	<u>0.503 in.</u>
Planform	<u>_____</u>	<u>_____</u>
Wetted	<u>_____</u>	<u>_____</u>
Base	<u>109.98 ft²</u>	<u>0.503 in.</u>

Table 3. (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: _____

<u>DIMENSIONS:</u>	<u>THEORETICAL</u>		<u>ACTUAL MEASURED</u>
	<u>FULL-SCALE</u>	<u>MODEL SCALE</u>	<u>MODEL SCALE</u>
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 3. (Continued)

MODEL COMPONENT: Engine Nozzle/Skirt - E₁

GENERAL DESCRIPTION: 142 inch diameter SRB engine nozzle/skirt 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 1/8 inch inside the skirt and 0.867 inches inside the nozzle to simulate full scale.

DRAWING NUMBER:

<u>DIMENSIONS:</u>	<u>THEORETICAL</u>	
	<u>FULL-SCALE</u>	<u>MODEL SCALE</u>
<u>Engine Skirt</u>		
Flare Angle	<u>15°03'</u>	<u>15°03'</u>
Length	<u>93 in.</u>	<u>0.524 in.</u>
Max. Width	<u>192 in.</u>	<u>1.082 in.</u>
Max. Depth	<u>192 in.</u>	<u>1.082 in.</u>
Max. Cross Sectional Area	<u>201.1 ft²</u>	<u>.920 in.²</u>
<u>Engine Nozzle</u>		
Exposed Length	<u>52.2 in.</u>	<u>0.294 in.</u>
Max. Width	<u>141.6 in.</u>	<u>0.798 in.</u>
Max. Depth	<u>141.6 in.</u>	<u>0.798 in.</u>
Base Area	<u>109.52 ft²</u>	<u>0.500 in.²</u>

Table 3. (Continued)

MODEL COMPONENT: Engine Nozzle/Skirt - E_{1A}

GENERAL DESCRIPTION: 142 inch diameter SRB engine nozzle/skirt combination.

Both are symmetrical with the SRB body. The model was hollowed 0.524 inches inside the skirt and 1 1/4 inches inside the nozzle to simulate full scale.

DRAWING NUMBER:

<u>DIMENSIONS:</u>	<u>THEORETICAL</u>	
	<u>FULL-SCALE</u>	<u>MODEL SCALE</u>
Engine Skirt		
Flare Angle	<u>15°03'</u>	<u>15°03'</u>
Length	<u>93 in.</u>	<u>0.524 in.</u>
Max. Width	<u>192 in.</u>	<u>1.082 in.</u>
Max. Depth	<u>192 in.</u>	<u>1.082 in.</u>
Max. Cross Sectional Area	<u>201.1 ft²</u>	<u>.920 in.²</u>
Engine Nozzle		
Exposed Length	<u>52.2 in.</u>	<u>0.294 in.</u>
Max. Width	<u>141.6 in.</u>	<u>0.798 in.</u>
Max. Depth	<u>141.6 in.</u>	<u>0.798 in.</u>
Base Area	<u>109.52 ft²</u>	<u>0.500 in.²</u>

Table 3. (Continued)

MODEL COMPONENT: Engine Nozzle/Skirt - E_{1B}

GENERAL DESCRIPTION: 142 inch diameter SRB engine nozzle/skirt 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 0.524 inches inside the
skirt and 0.888 inches inside the nozzle to simulate full scale.

DRAWING NUMBER: _____

<u>DIMENSIONS:</u>	<u>THEORETICAL</u>	
	<u>FULL-SCALE</u>	<u>MODEL SCALE</u>
<u>Engine Skirt</u>		
Flare Angle	<u>15°03'</u>	<u>15°03'</u>
Length	<u>93 in.</u>	<u>0.524 in.</u>
Max. Width	<u>192 in.</u>	<u>1.082 in.</u>
Max. Depth	<u>192 in.</u>	<u>1.082 in.</u>
Max. Cross Sectional Area	<u>201.1 ft²</u>	<u>0.920 in.²</u>
<u>Engine Nozzle</u>		
Depth Inside Skirt	<u>12 in.</u>	<u>0.068 in.</u>
Max. Width	<u>109.6 in.</u>	<u>0.617 in.</u>
Max. Depth	<u>109.6 in.</u>	<u>0.617 in.</u>
Base Area	<u>65.52 ft²</u>	<u>0.299 in.²</u>

Table 3. (Continued)

MODEL COMPONENT: Separation Rockets - S₁

GENERAL DESCRIPTION: Two separation rocket pods (used to separate the SRB from the external tank) mounted in line with one another, one on the cylindrical body just behind the nose and the other on the engine skirt.

DRAWING NUMBER: 80M32621

<u>DIMENSIONS:</u>	<u>THEORETICAL</u>	
	<u>FULL-SCALE</u>	<u>MODEL SCALE</u>
Length	<u>72.8 in.</u>	<u>0.410 in.</u>
Max. Width	<u>13.0 in.</u>	<u>0.073 in.</u>
Max. Depth	<u>44.7 in.</u>	<u>0.252 in.</u>
Fineness Ratio	<u> </u>	<u> </u>
Area		
Max. Cross-Sectional	<u> </u>	<u> </u>
Planform	<u> </u>	<u> </u>
Wetted	<u> </u>	<u> </u>
Base	<u> </u>	<u> </u>

Table 3. (Continued)

MODEL COMPONENT: Separation Rockets - S₂

GENERAL DESCRIPTION: Two separation rocket pods (used to separate the SRB from the external tank) mounted in line with one another, one on the cylindrical body just behind the nose and the other on the engine skirt.

DRAWING NUMBER: _____

DIMENSIONS:	THEORETICAL	
	FULL-SCALE	MODEL SCALE
Length	<u>72.8 in.</u>	<u>0.410 in.</u>
Max. Width	<u>13.0 in.</u>	<u>0.073 in.</u>
Max. Depth	<u>22.4 in.</u>	<u>0.126 in.</u>
Fineness Ratio	_____	_____
Area		
Max. Cross-Sectional	_____	_____
Planform	_____	_____
Wetted	_____	_____
Base	_____	_____

Table 3. (Concluded)

MODEL COMPONENT: Electrical Tunnel - ELT

GENERAL DESCRIPTION: The electrical tunnel runs along the outside of the SRB cylindrical body to protect the various electrical cables from aerodynamic loading.

DRAWING NUMBER: _____

<u>DIMENSIONS:</u>	<u>THEORETICAL</u>	
	<u>FULL-SCALE</u>	<u>MODEL SCALE</u>
Length	<u>-1274 in.</u>	<u>-7.12 in.</u>
Max. Width	<u>13 in.</u>	<u>0.073 in.</u>
Max. Depth	<u>6 in.</u>	<u>0.034 in.</u>
Fineness Ratio	_____	_____
Area		
Max. Cross-Sectional	_____	_____
Planform	_____	_____
Wetted	_____	_____
Base	_____	_____

Table 4. SUPPORT HARDWARE COMBINATIONS

SCHEDULE	α SWEEP (deg)	STING ADAPTER			BALANCE ADAPTER			NOSE
		ADAPTER NO.	HOLE NO.	ADAPTER POSITION	STING NO.	ADAPTER NO.	HOLE NO.	
A	-10 to 10	1	53	7.5 in.	1	113	1	FWD
B	10 to 30	↓	51	↓	↓	↓	3	UP
C	30 to 50	↓	54	↓	3	118*	4	DOWN
D	50 to 70	↓	63	3.5 in.	↓	↓	A-3	
F	80 to 100	↓	61	↓	↓	↓	A-1	
G	110 to 90	↓	63	7.5 in.	↓	↓	B-5	
H	130 to 110	↓	54	↓	↓	↓	B-6	
I	150 to 130	↓	52	↓	↓	↓	4	AFT
IR	150 to 130 to 150	↓	↓	↓	↓	↓	↓	
IJ	157 to 137	↓	↓	↓	↓	↓	↓	
IJ1	157 to 152	↓	↓	↓	↓	↓	↓	
IJ2	151.5 to 147	↓	↓	↓	↓	↓	↓	
IJ3	146.5 to 137	↓	↓	↓	↓	↓	↓	
J	170 to 150	↓	51	↓	↓	↓	3	
JR	170 to 150 to 170	↓	↓	↓	↓	↓	↓	
K	190 to 170	↓	53	↓	↓	↓	↓	
KR	190 to 170 to 190	↓	↓	↓	↓	↓	↓	
KR1	190 to 180	↓	↓	↓	↓	↓	↓	
KR2	180 to 170	↓	↓	↓	↓	↓	↓	
KR3	170 to 180	↓	↓	↓	↓	↓	↓	
KR4	180 to 190	↓	↓	↓	↓	↓	↓	

*MSEC Sting No. 118

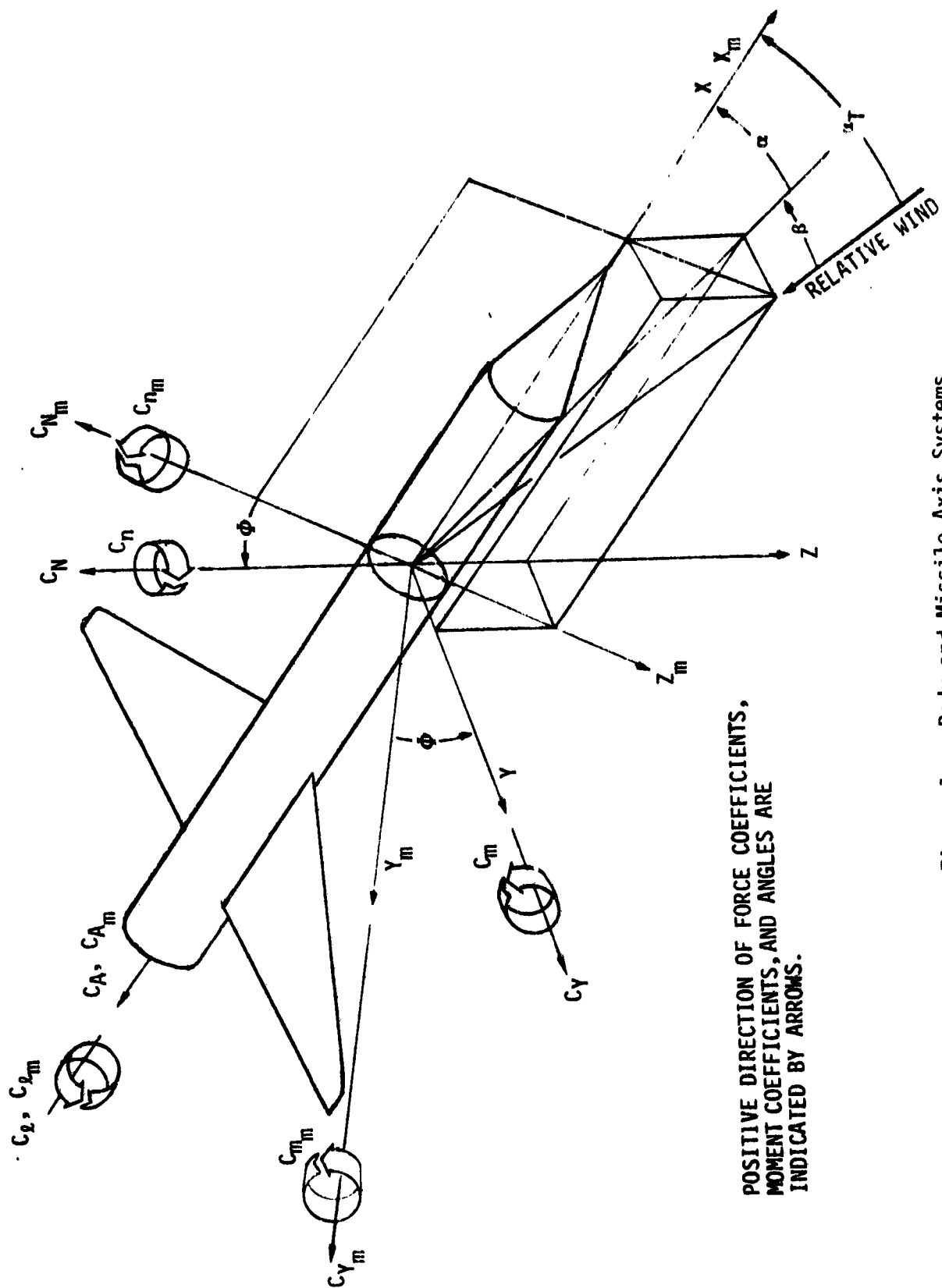
Table 5. TEST SUMMARY

COLLECTIVE DATA SET IDENTIFIER	INDIVIDUAL DATA SET IDENTIFIERS	CONFIGURATION SYMBOLS	ROLL ANGLE (ϕ) (DEGREES)	ANGLE OF ATTACK RANGE* (DEGREES)	MACH NUMBER RANGE
R95055	R95050 through R95054	NBRE ₁ B	-	90 to 190	0.6 to 4.96
R95101	R95001 through R95006 and R95034 through R95036	NBRE ₁ A	-	130 to 190 ↓	2.74 to 4.96
R95102	R95009 through R95011	NBRE ₁	-	↓	3.48
R95103	R95012, 015, 018, 021, and 024	NBRE ₁ S ₁ ELT	45	10 to 170	0.6 to 3.48
R95104	R95013, 016, 019, 022, and 025	↓	90	↓	↓
R95105	R95014, 017, 020, 022, and 026	↓	135	↓	↓
R95106	R95038 through R95040	NBRE ₁	-	-10 to 50	2.74

*Not all Mach numbers had tests at the full angle of attack range. See Tables 2 and 4 for details.

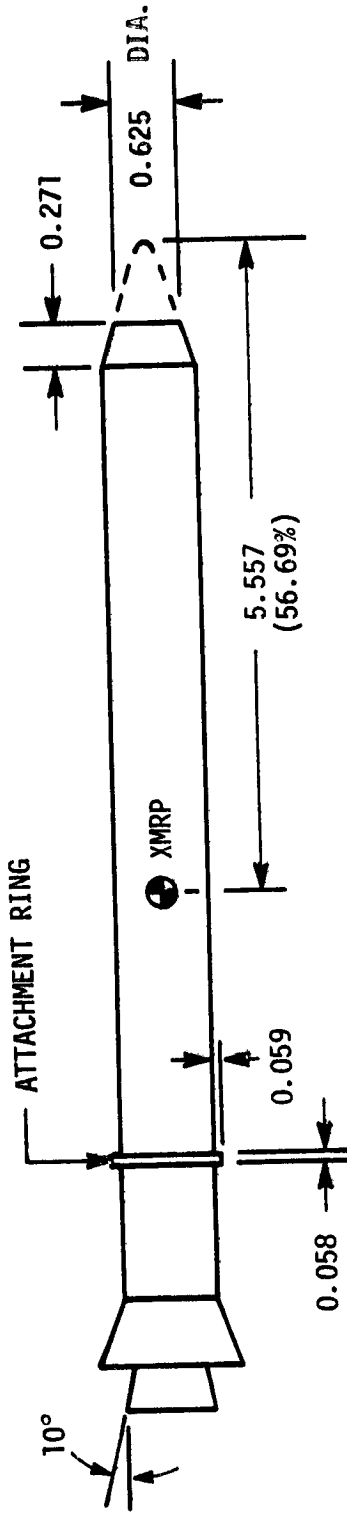
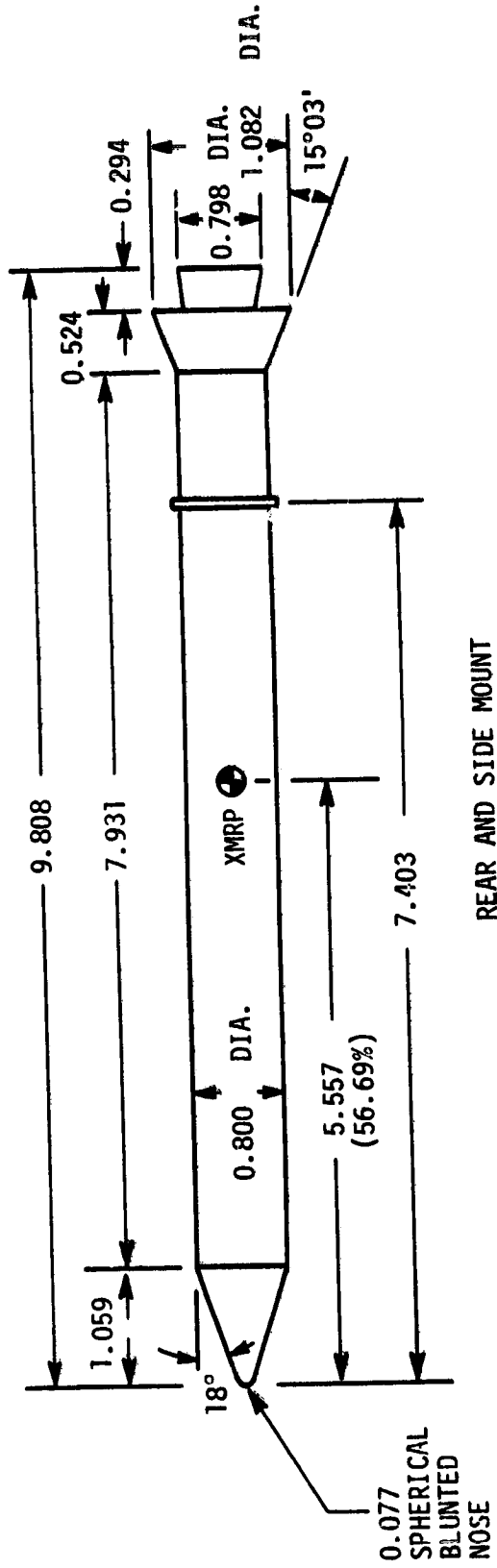
Table 6. PLOT SUMMARY

INVESTIGATION	COEFFICIENTS						MACH NUMBERS										
	CNM	CLMN	CA	XCP/L	CYM	CYVM	CBL	YCP/L	0.6	0.9	1.2	1.96	2.74	3.48	4.00	4.45	4.96
NBRE ₁ at M = 2.74	X	X	X	X	X							X					
Different engine nozzle/skirts	X	X	X	X				X	X	X	X	X	X	X	X	X	X
Effect of truncated nozzle	X	X	X	X								X	X	X			X
SRB with separation rocket S ₁	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
SRB with separation rocket S ₂	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Effect of separation rocket height	X	X	X	X	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



YMRP = 0
ZMRP = 0

NOSE MOUNT

(ENGINE NOZZLE/SKIRT SYMMETRICAL WITH BODY)

Figure 2. 0.00563 SCALE 142-INCH SRB GEOMETRY (MSFC MODEL 449) (NOZZLE/SKIRT E₁)

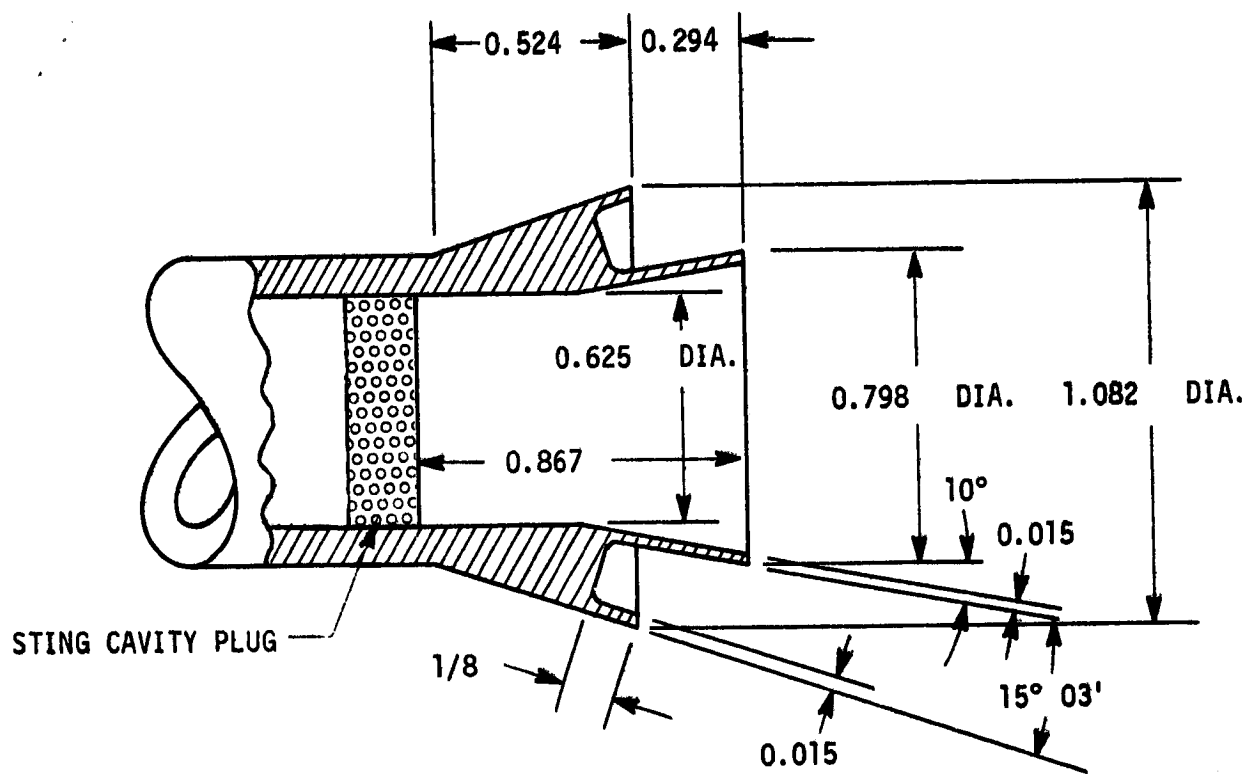


Figure 3. ENGINE NOZZLE/SKIRT E₁

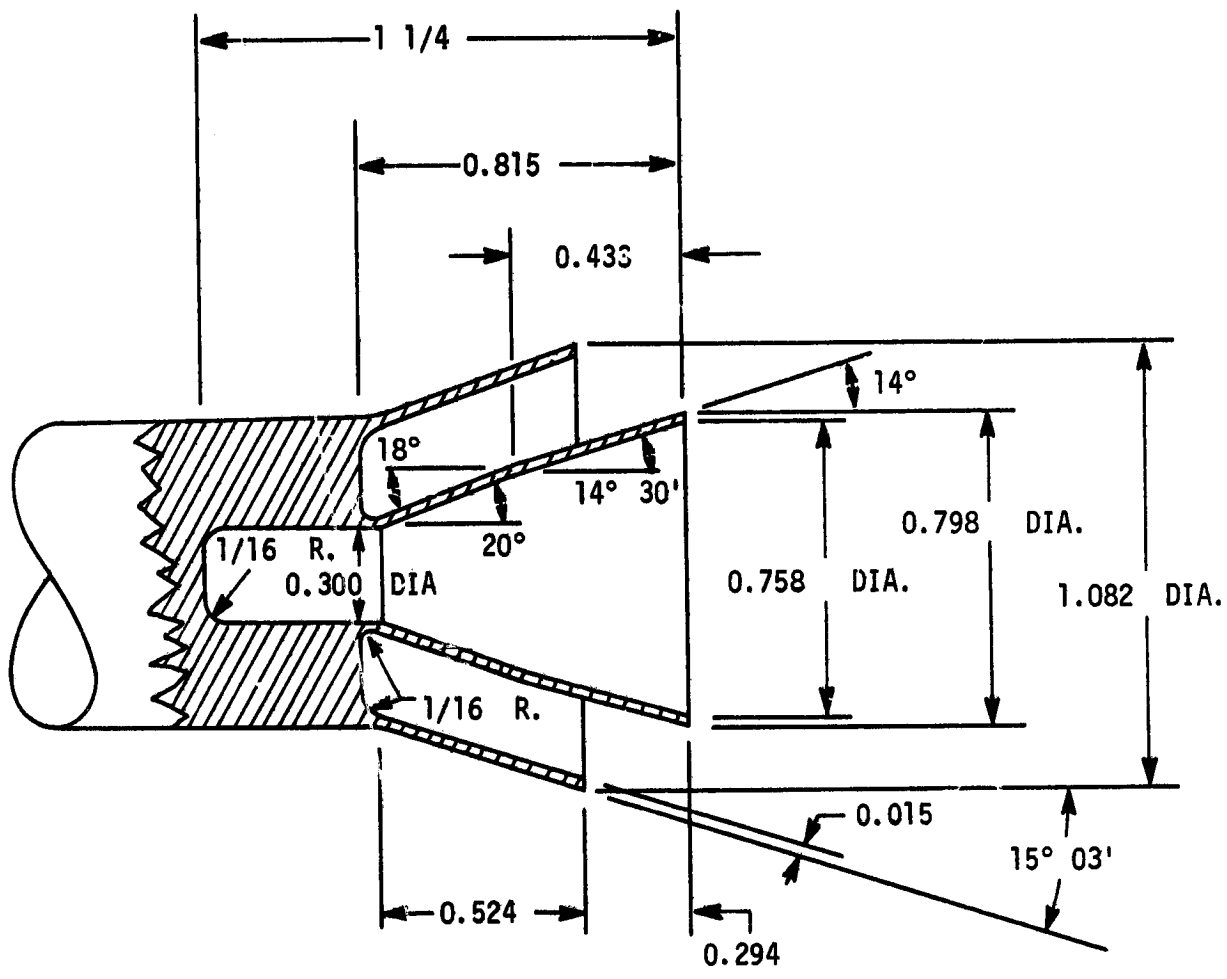


Figure 4. ENGINE NOZZLE/SKIRT E_{1A}

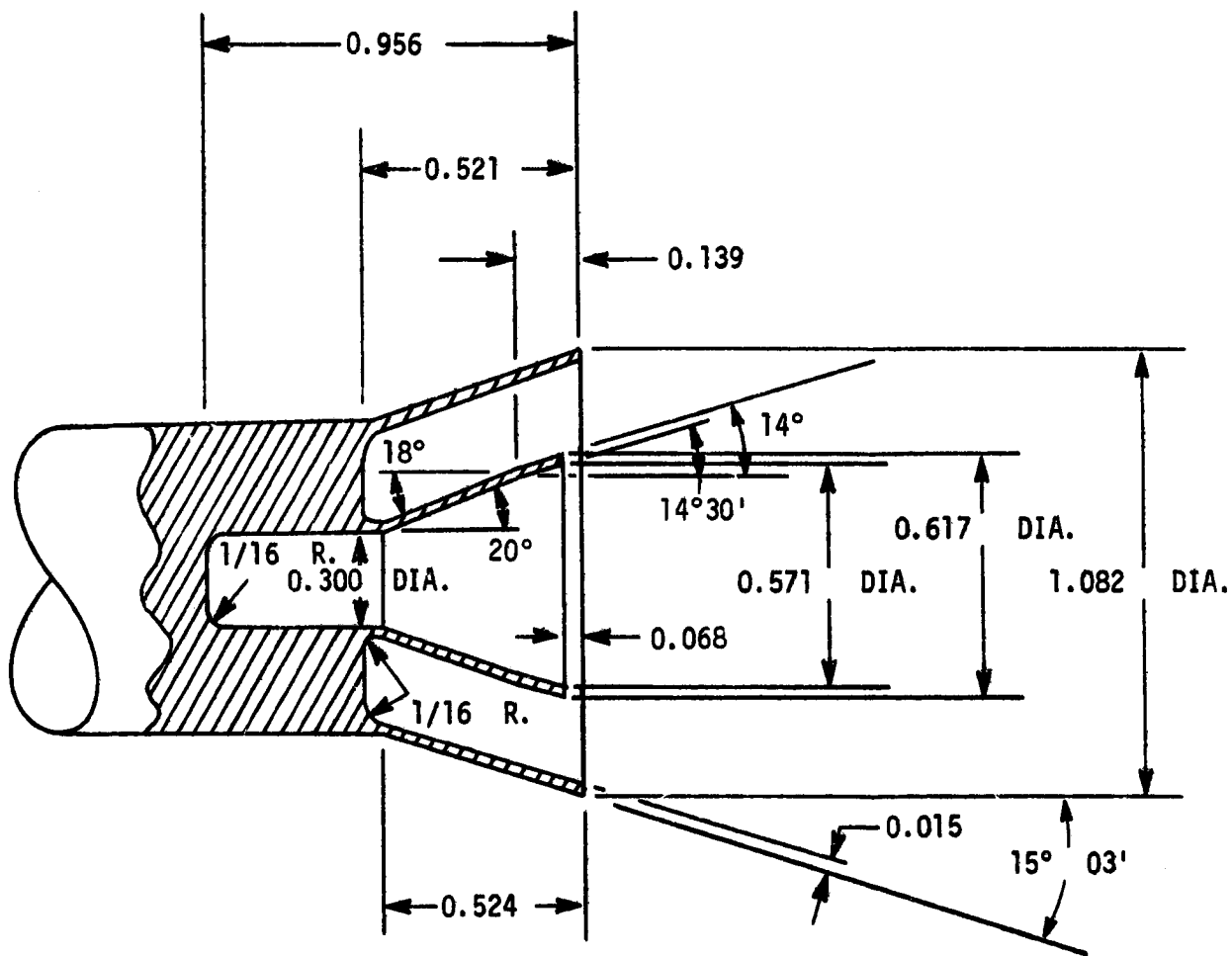
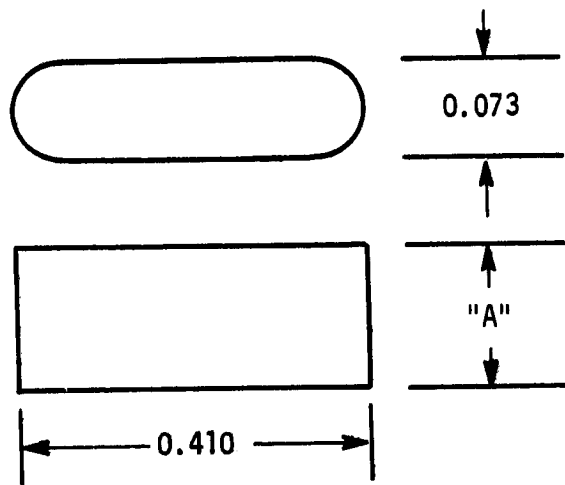


Figure 5. ENGINE NOZZLE/SKIRT E_{1B}



MODEL PART	"A"
S ₁	0.252 In
S ₂	0.126 In

Figure 6. SEPARATION ROCKETS

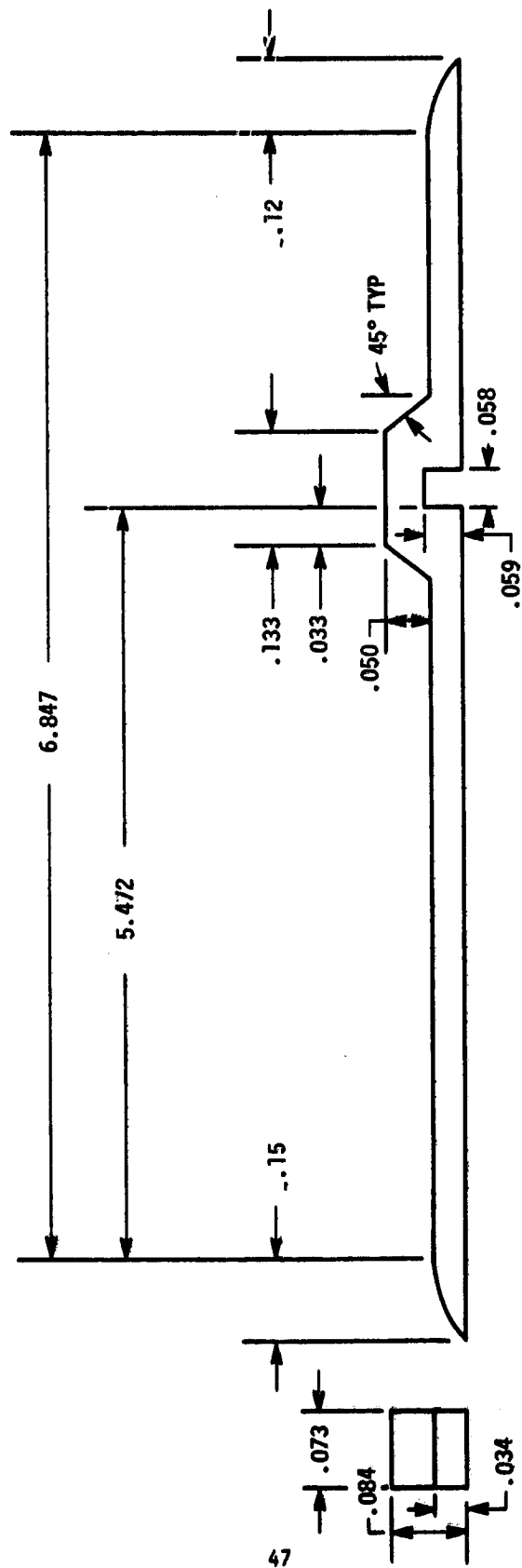


Figure 7. ELECTRICAL TUNNEL (ELT)

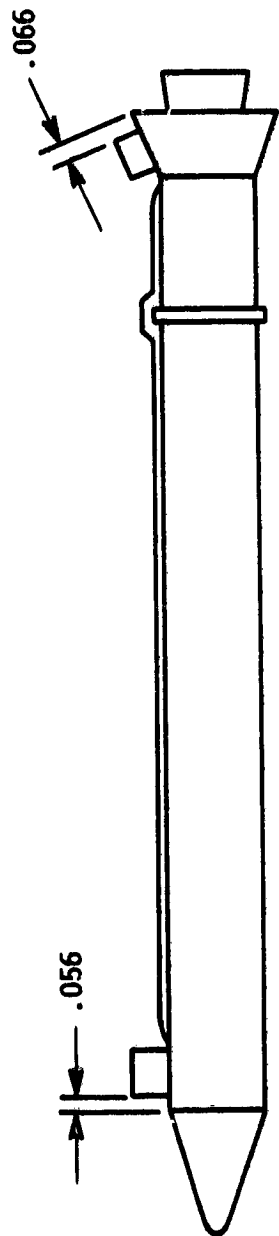
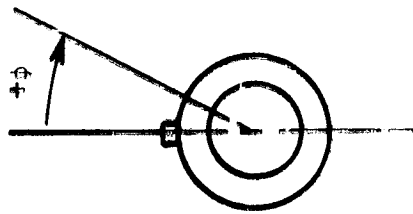


Figure 8. INSTALLATION OF SEPARATION ROCKETS AND ELECTRICAL TUNNEL

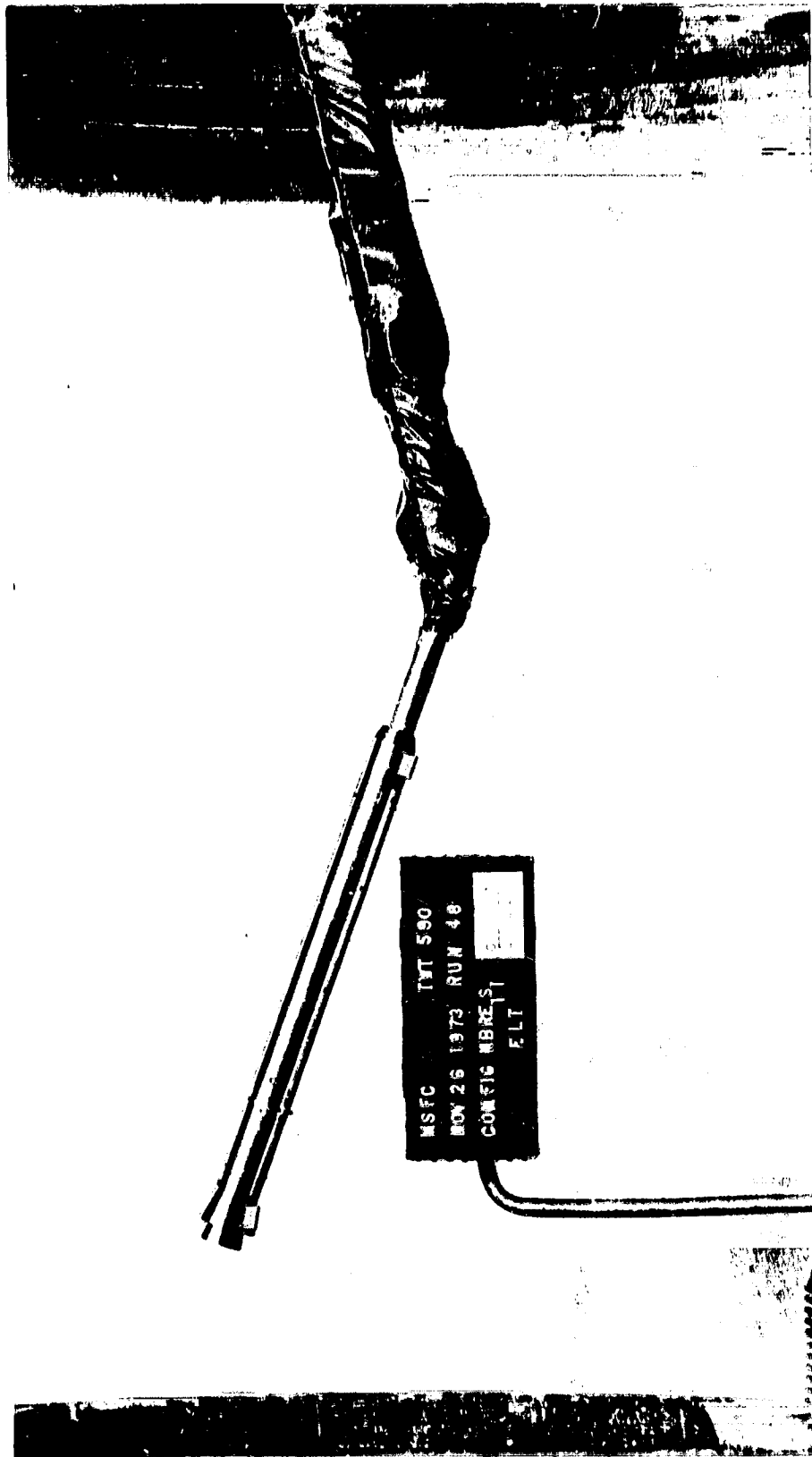
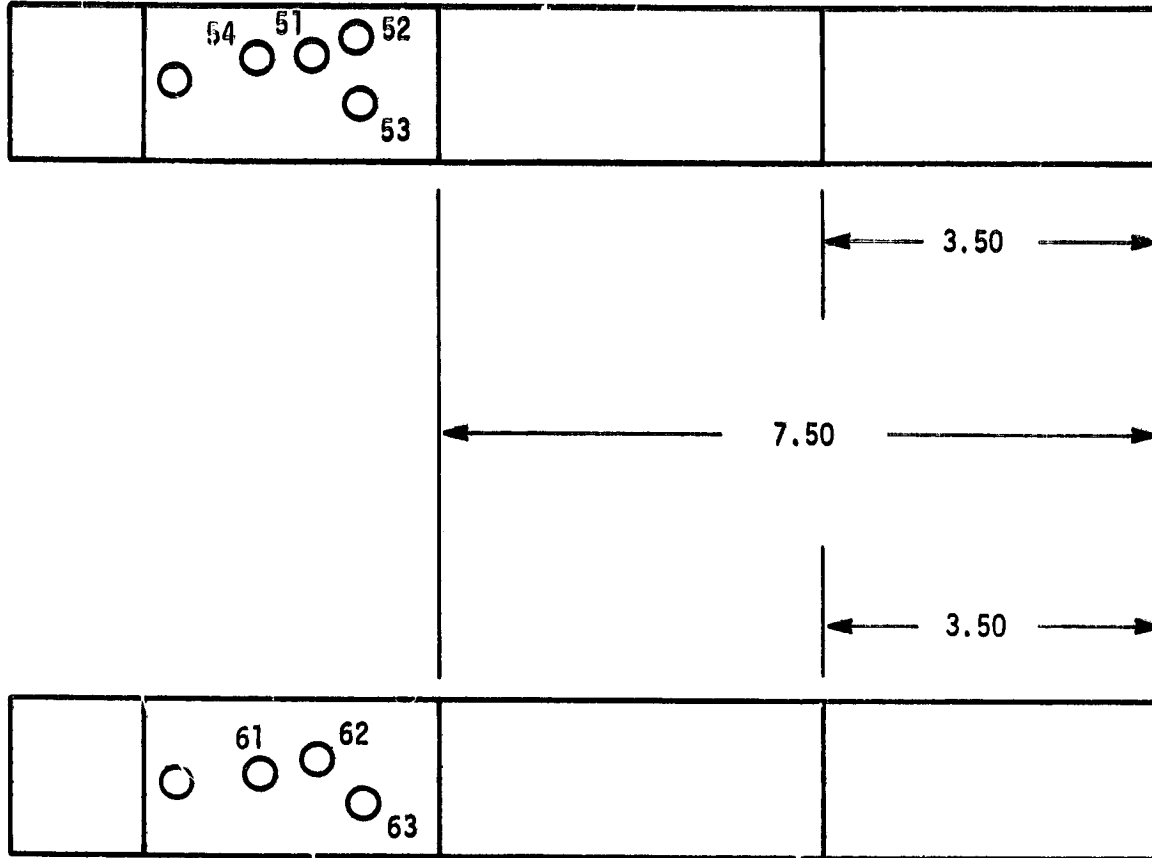


Figure 9. TYPICAL NOSE MOUNT INSTALLATION

STING ADAPTER 1



STING ADAPTER 3

Figure 10. STING ADAPTERS

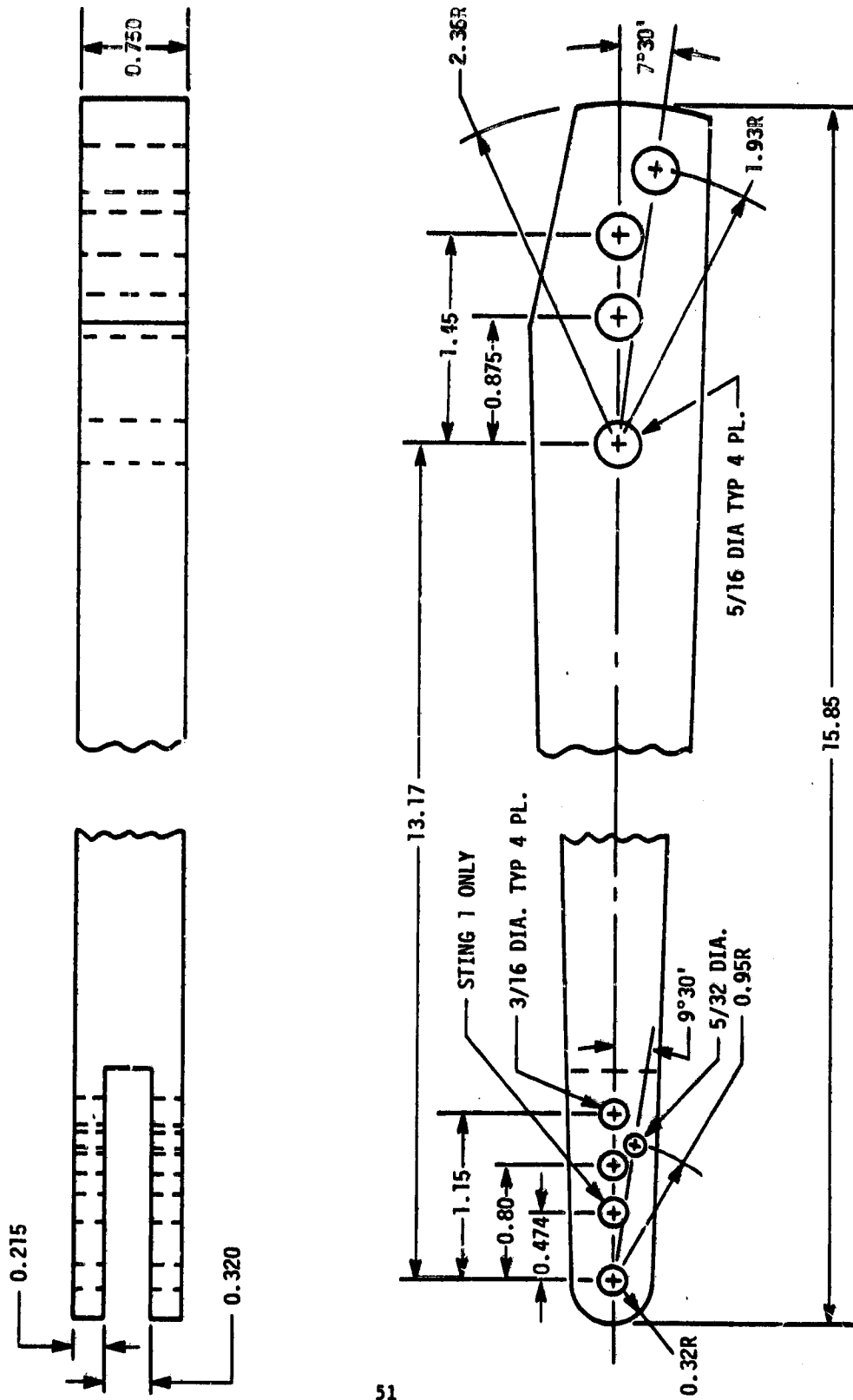


Figure 11. STINGS 1 & 3

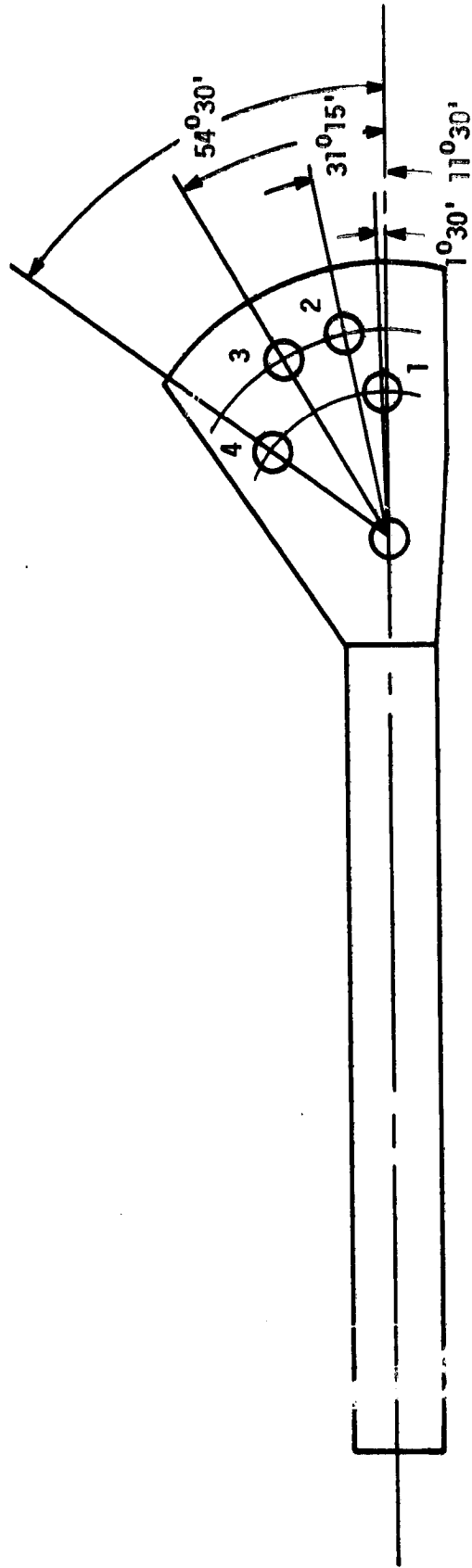
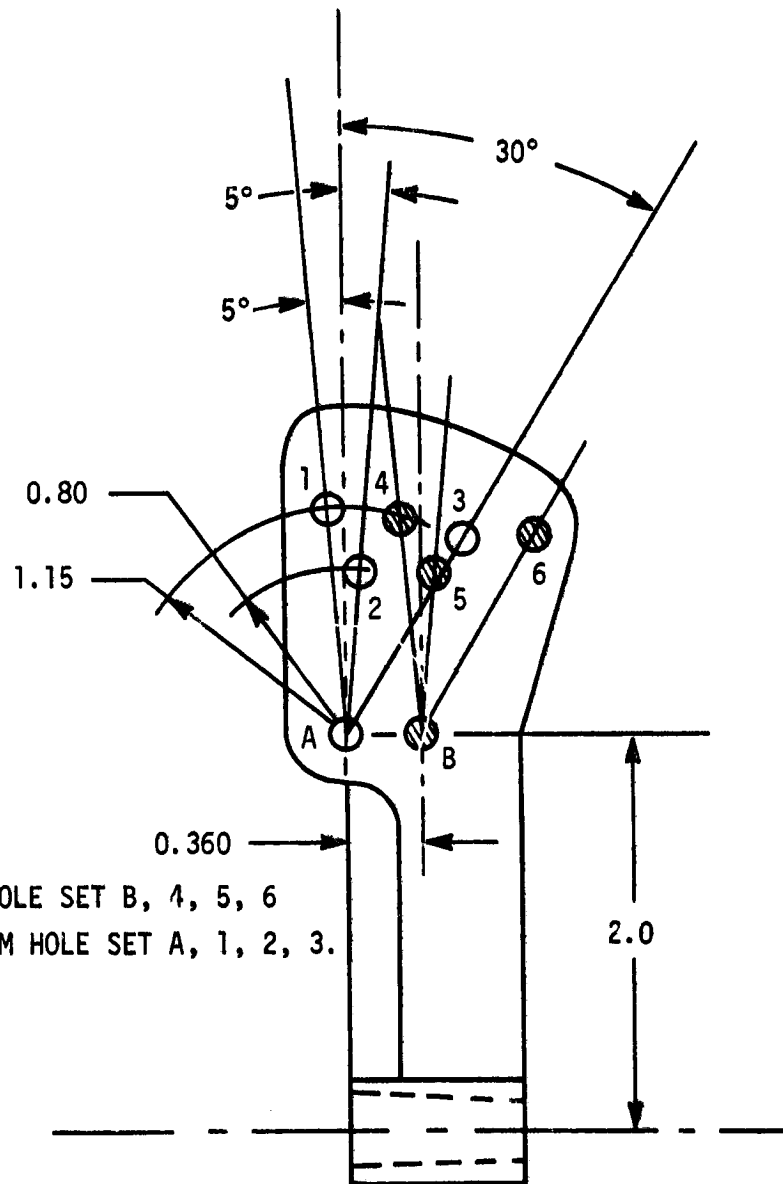


Figure 12. BALANCE ADAPTER 113 (FROM MSFC DWG. NO. 80M42541)



NOTE: ALTERNATE HOLE SET B, 4, 5, 6
 SHIFTEL 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)

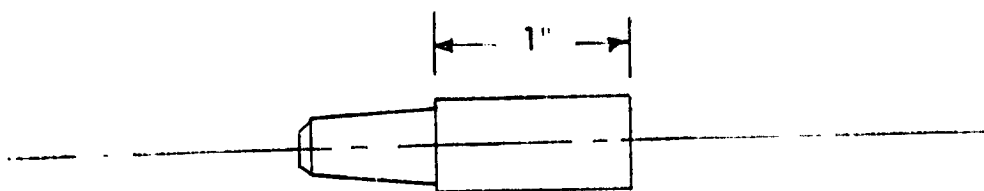
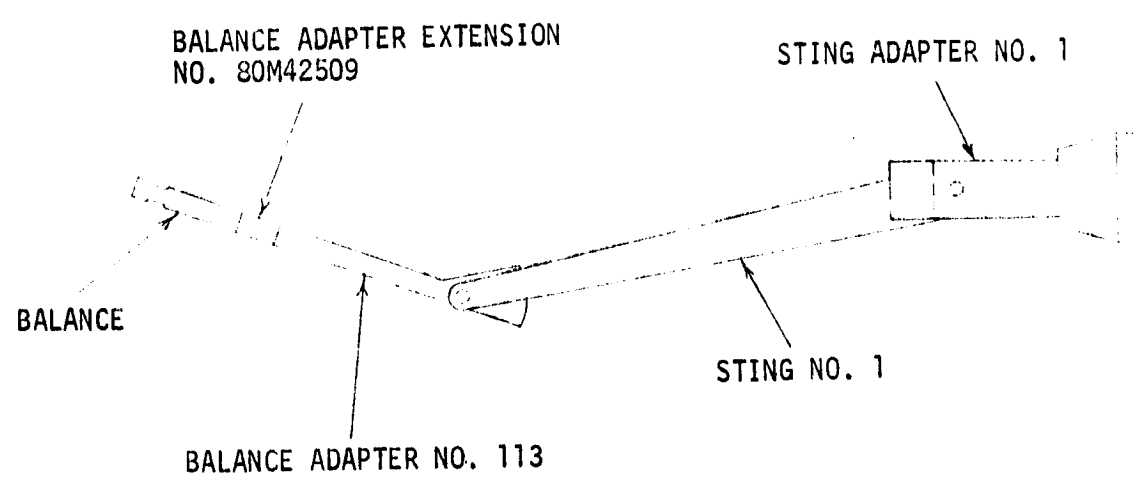


Figure 14. BALANCE ADAPTER (FROM MSFC DWG. NO. 80M425C9)



REPRODUCIBILITY OF
ORIGINAL PAGE IS FOUR

Figure 15. SUPPORT SETUP-END MOUNT

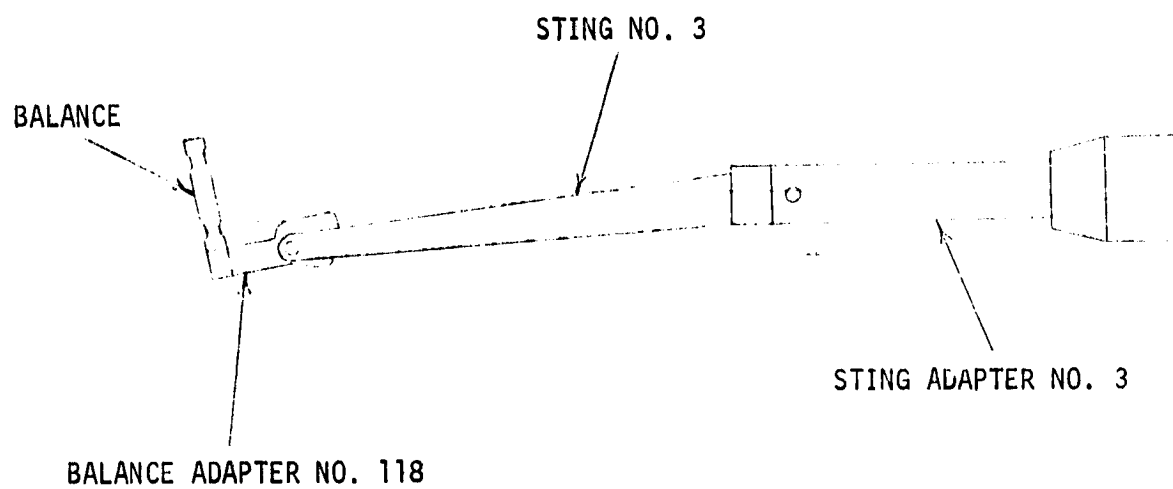


Figure 16. SUPPORT SETUP-SIDE MOUNT

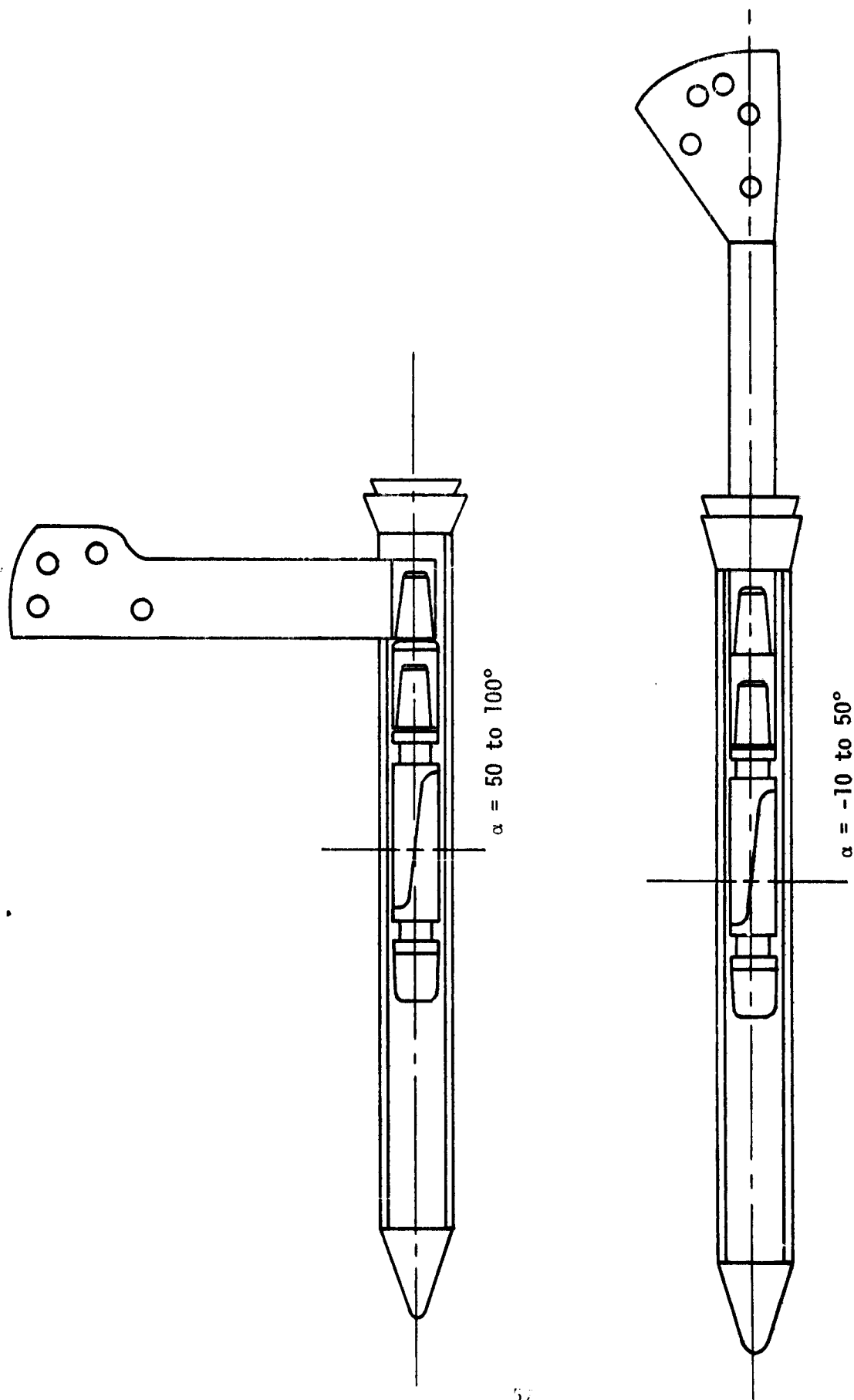


Figure 17. MOUNTING ARRANGEMENTS FOR ANGLE OF ATTACK - 10 to 100 DEGREES

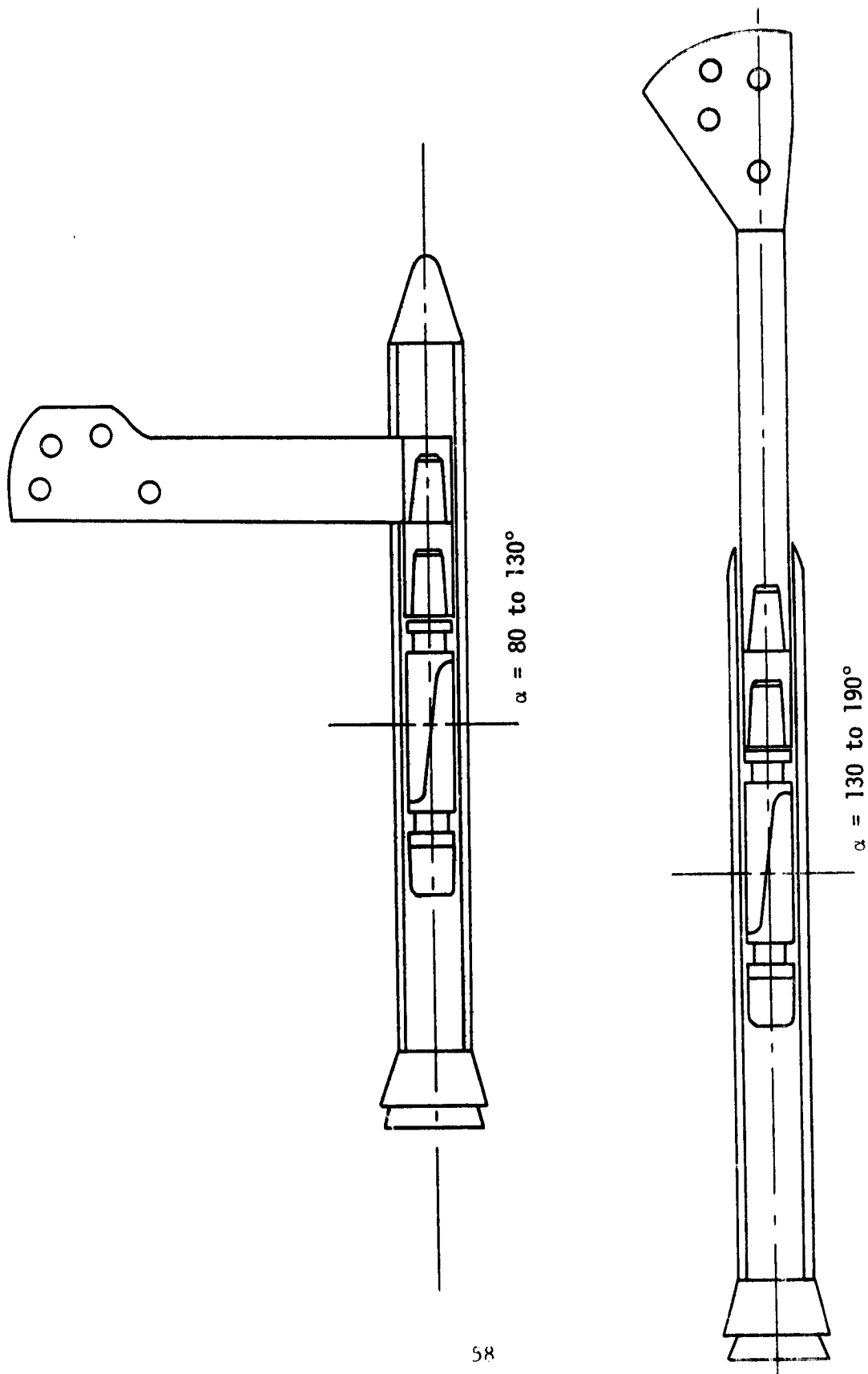


Figure 18. MOUNTING ARRANGEMENTS FOR ANGLE OF ATTACK 80 TO 190 DEGREES

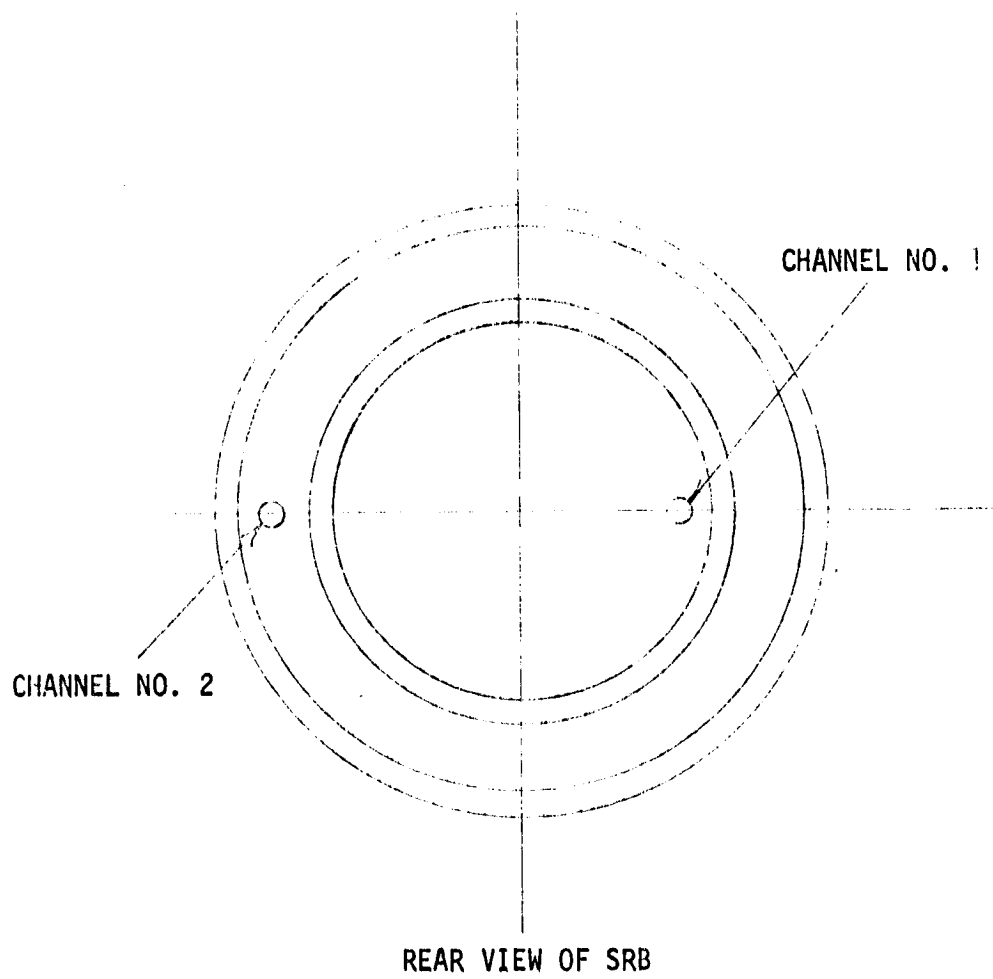
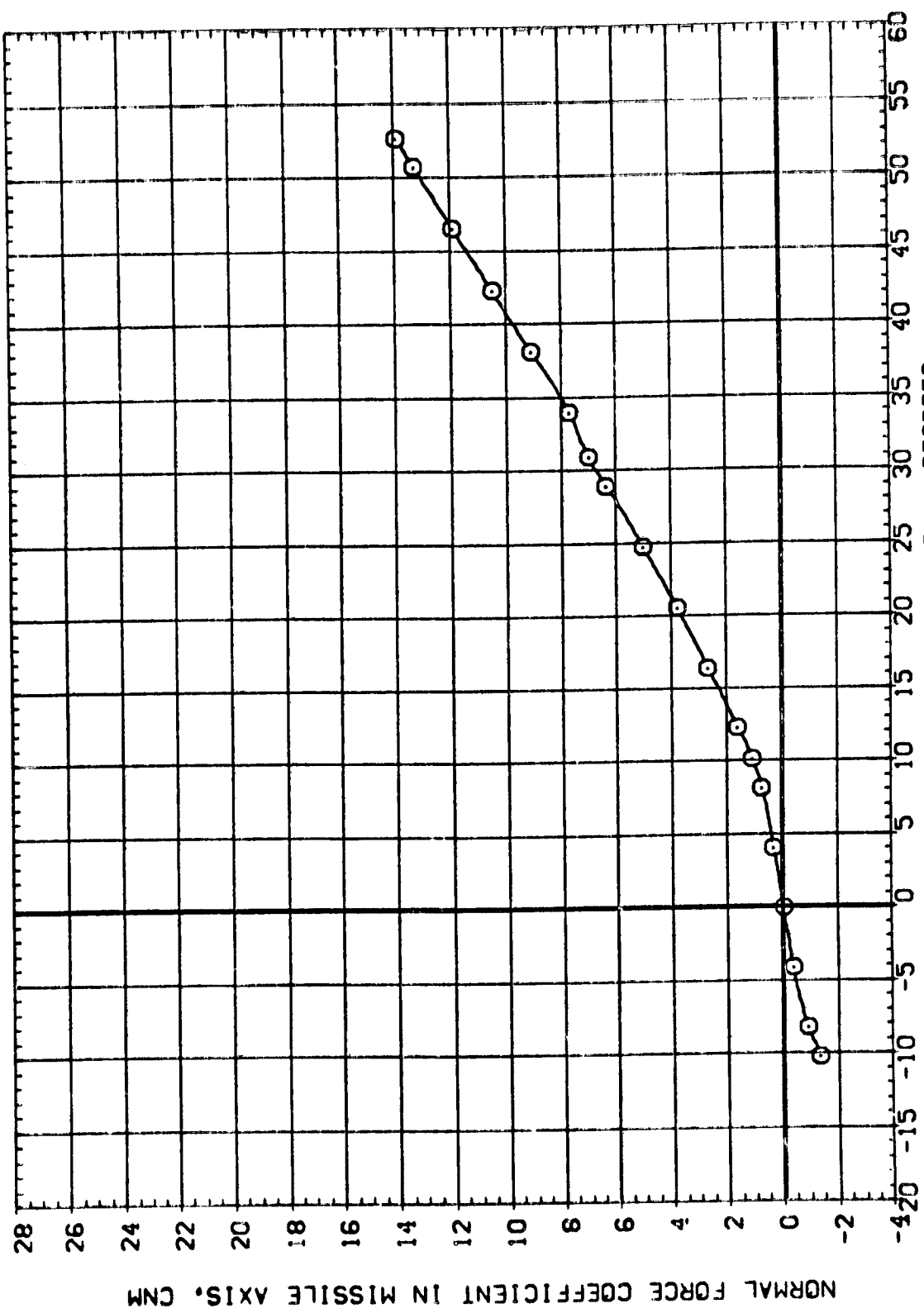


Figure 19. BASE PRESSURE LOCATIONS

DATA FIGURES

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 PHI: .000
 ELT: .000
 SEPRAT: .000
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 LREF: .8000
 BRREF: .8000
 XMRP: 5.5570
 YMRP: .0000
 ZMRP: .0000
 SCALE: .0056
 SQ: IN:



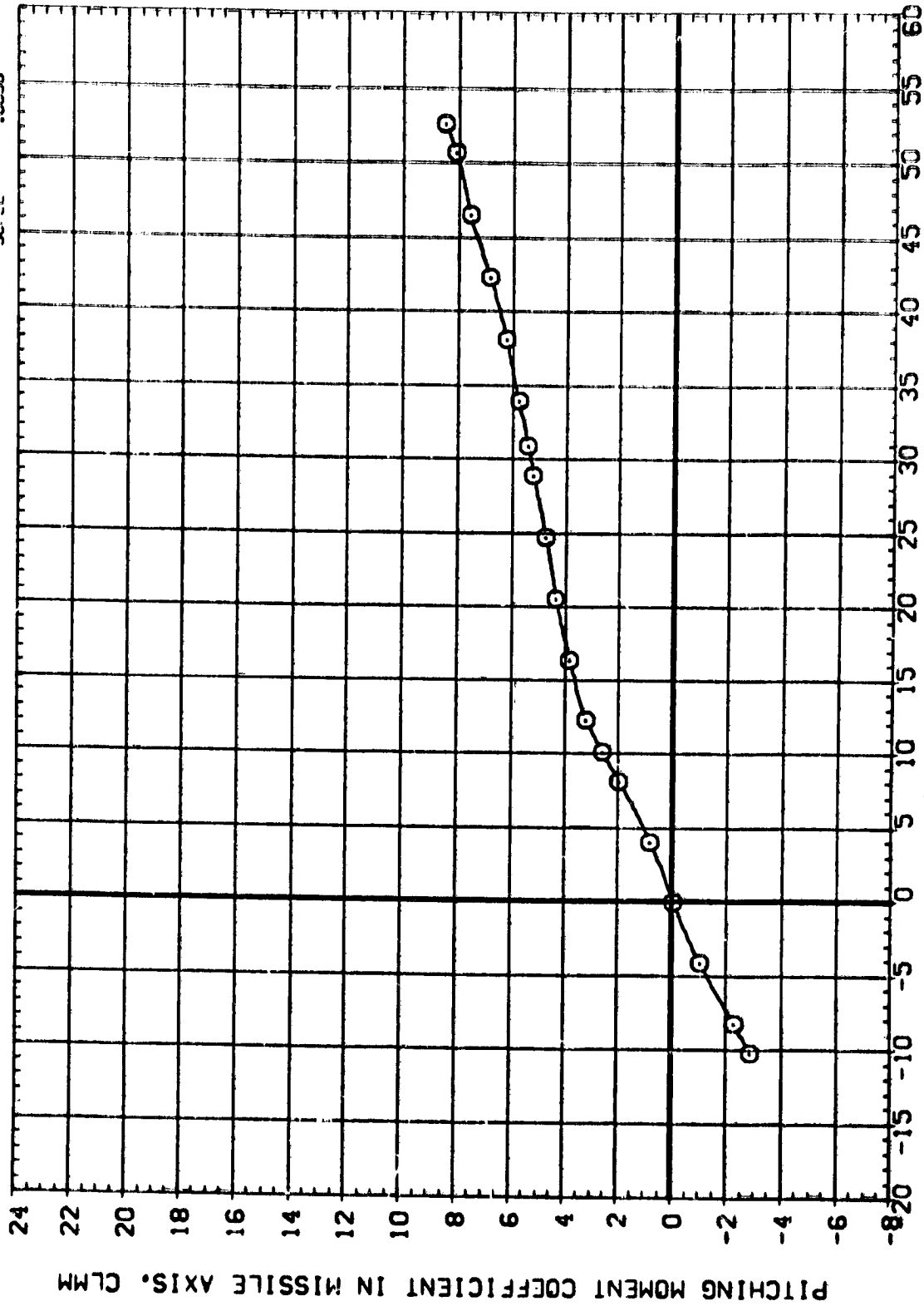
AERODYNAMIC CHARACTERISTICS OF A SOLID ROCKET BOOSTER

$C_{DMAC} = 2.74$

DATA SET SYMBOL: ○ CONFIGURATION DESCRIPTION: MSFC 590(SA26F) (42-IN. SRB(139) NBRE1)

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 BREF: .8000 IN: IN.
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 YMRP: .0000 IN: IN.
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 SCALE: .0006

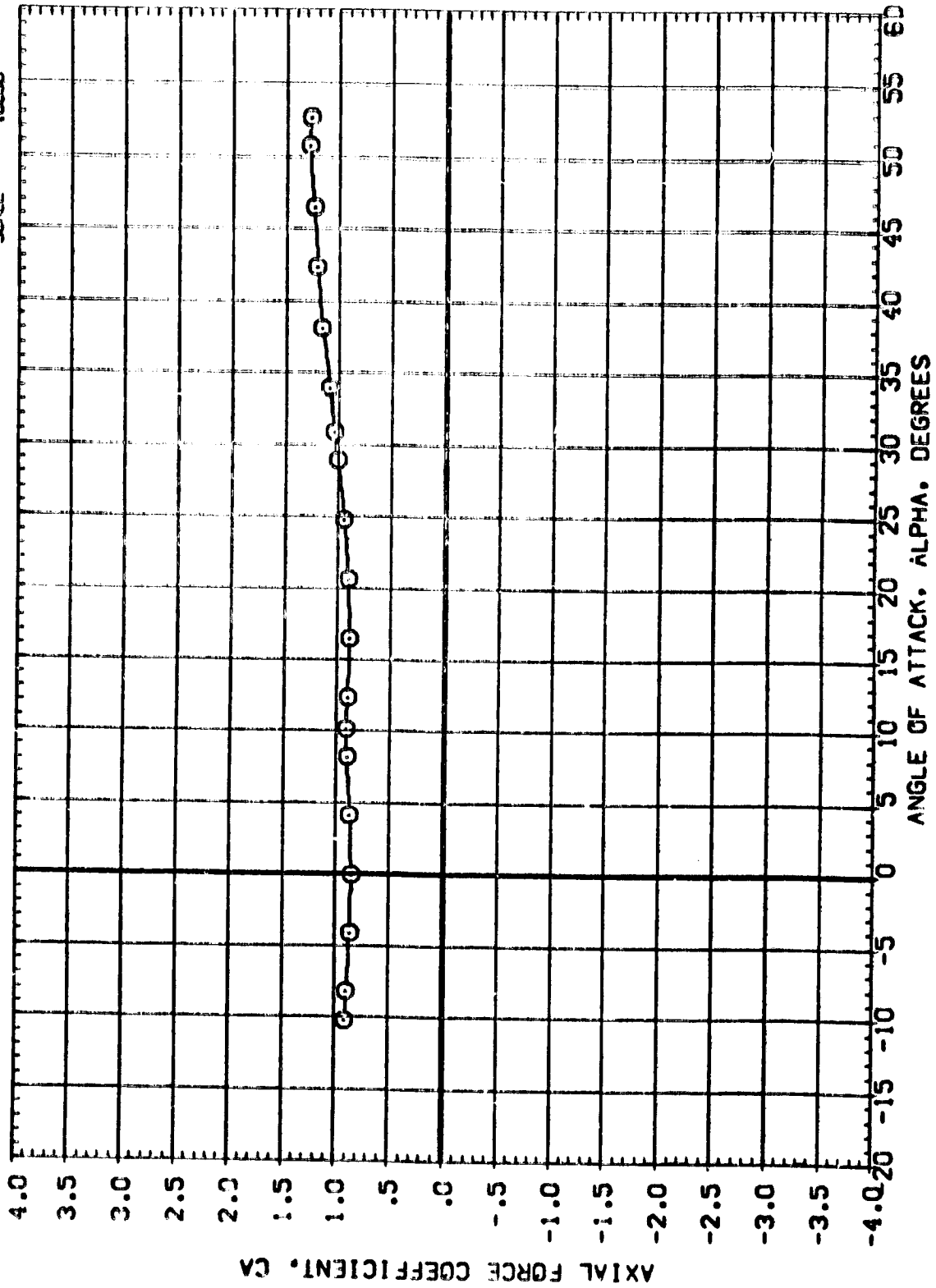


AERODYNAMIC CHARACTERISTICS OF A SOLID ROCKET BOOSTER

CAIYACH = 2.74

DATA SET SYMBOL: O CONFIGURATION DESCRIPTION: MSC 990(SA26F) 142-IN. SRB(139) NBR 1

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 LREF LREF LREF LREF
 BREF BREF BREF BREF
 YREF YREF YREF YREF
 ZREF ZREF ZREF ZREF
 SCALE SCALE



AERODYNAMIC CHARACTERISTICS OF A SOLID ROCKET BOOSTER

CA/MACH = 2.74

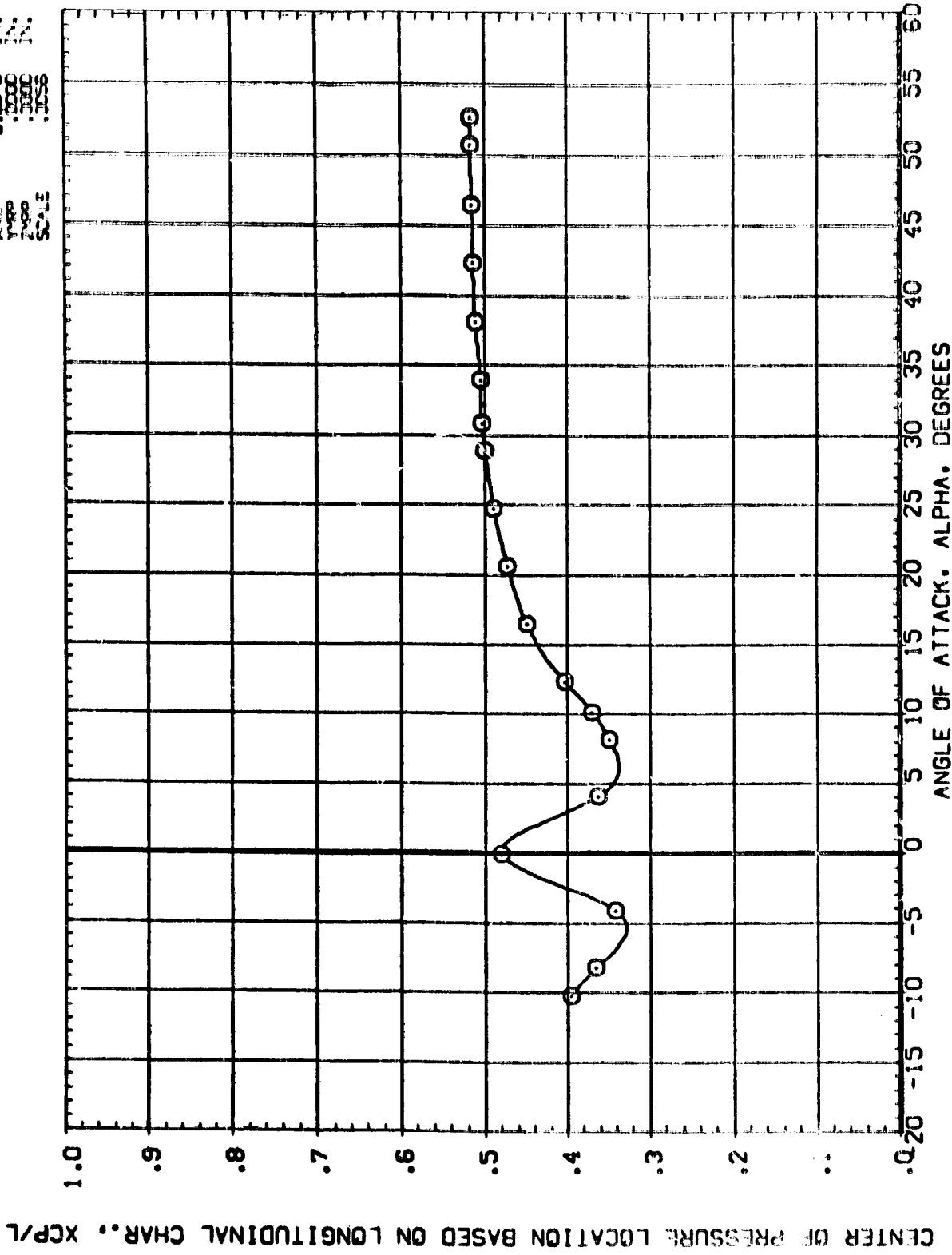
DATA SET SYMBOL: (A95106) \circ MSFC 580(SA26F) 142-IN. SRB(139) N8RE1

CONFIGURATION DESCRIPTION: 142-IN. SRB(139) N8RE1

BETA: .000 PHI: .000 ELT: .000 SEPRAT: .000

REFERENCE INFORMATION:

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XPROP	5
YPROP	5000
ZPROP	5000
SCALE	1.000



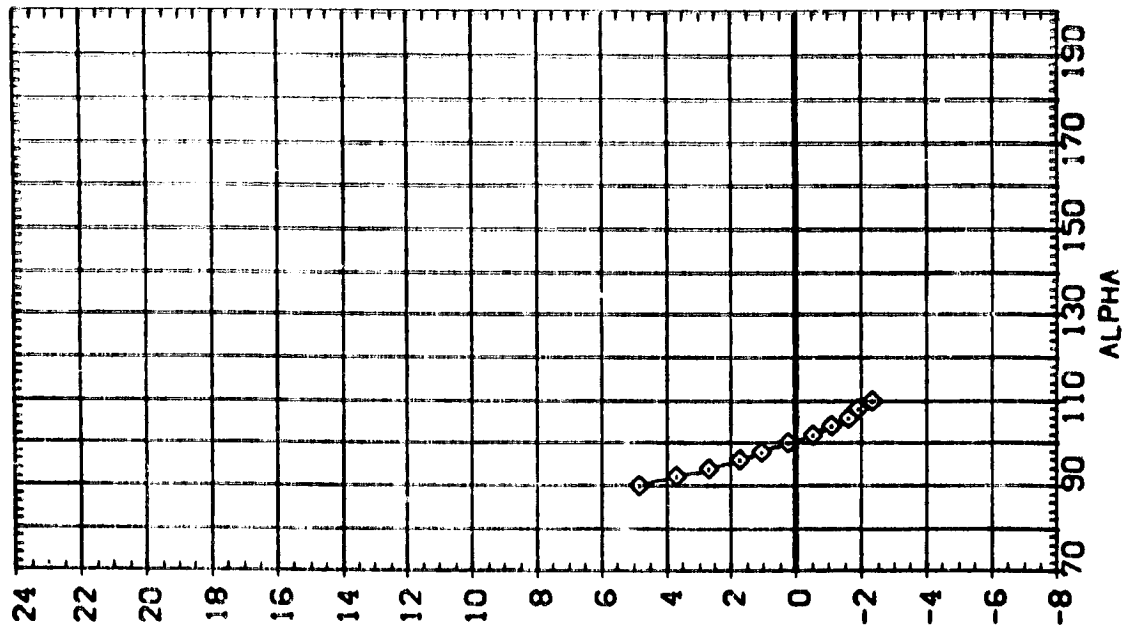
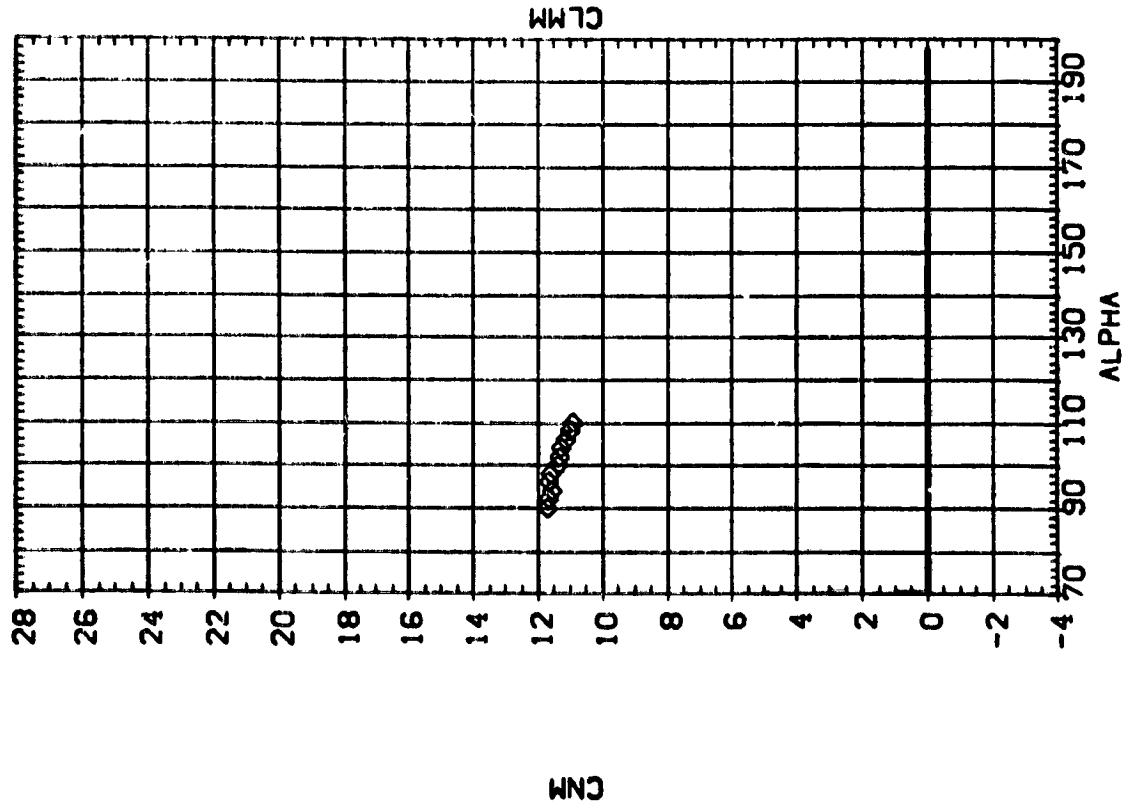
AERODYNAMIC CHARACTERISTICS OF A SOLID ROCKET BOOSTER

(A)MACH = 2.74



DATA SET SYMBOL: [A95102] CONFIGURATION DESCRIPTION: SRB(138) N8RE1B
 [A95101] DATA NOT AVAILABLE
 [A95055] MSC 585(SA26F) 142-IN. SRB(138) N8RE1B

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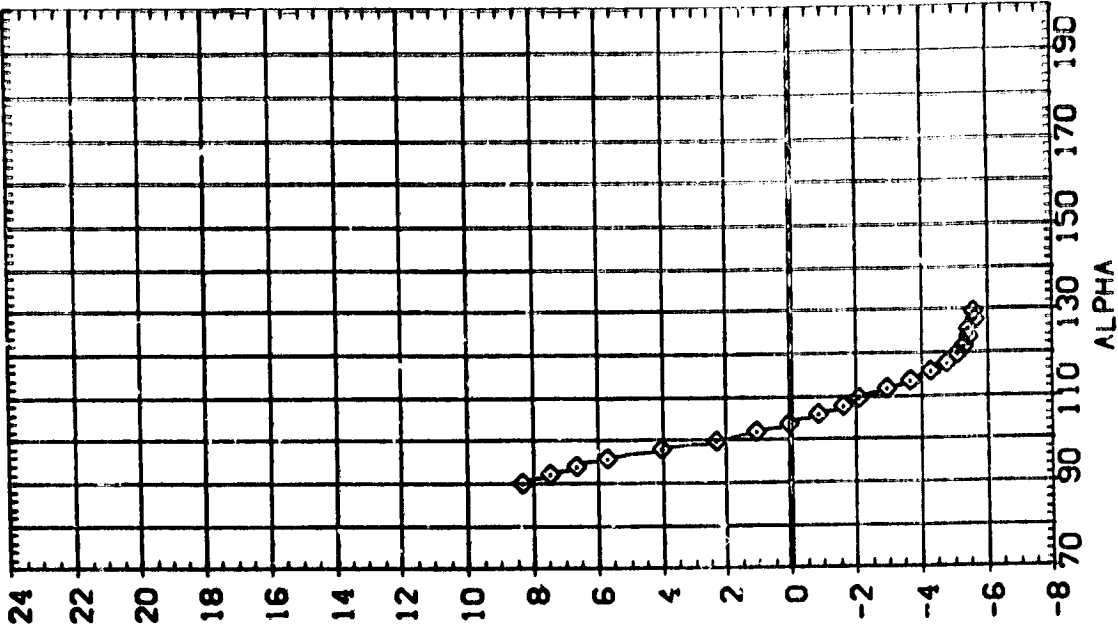
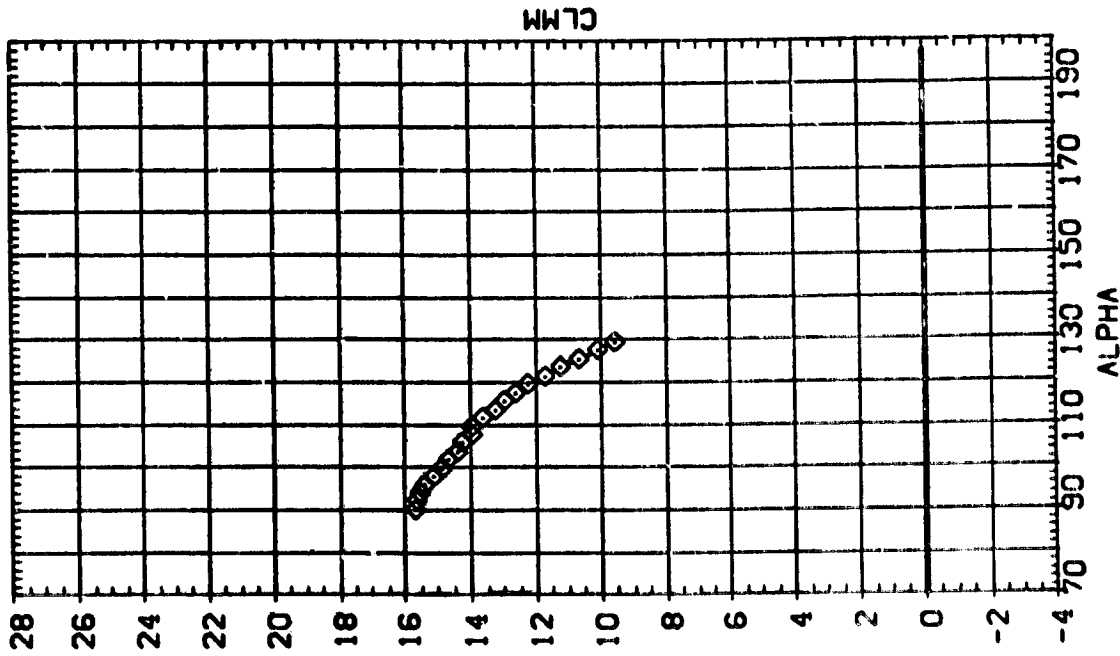


AERODYNAMIC CHARACTERISTICS OF A SRB WITH DIFFERENT NOZZLE / SKIRTS

CAJMACH = .60

DATA SET SYMBOL: (A55102)
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 (A55101) DATA NOT AVAILABLE
 (A55055) MSFC 595(SA26F), 142-IN. SRB(139) NG-ME1B

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 SCALE: .0056



AERODYNAMIC CHARACTERISTICS OF A SRB WITH DIFFERENT NOZZLE / SKIRTS

(B)MACH = .90

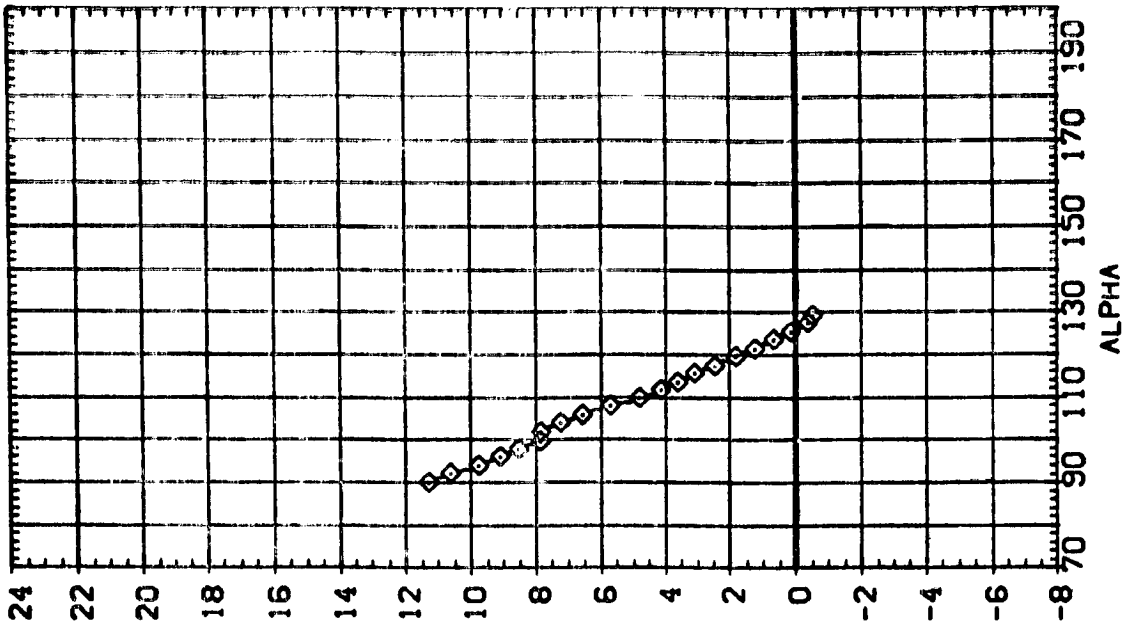
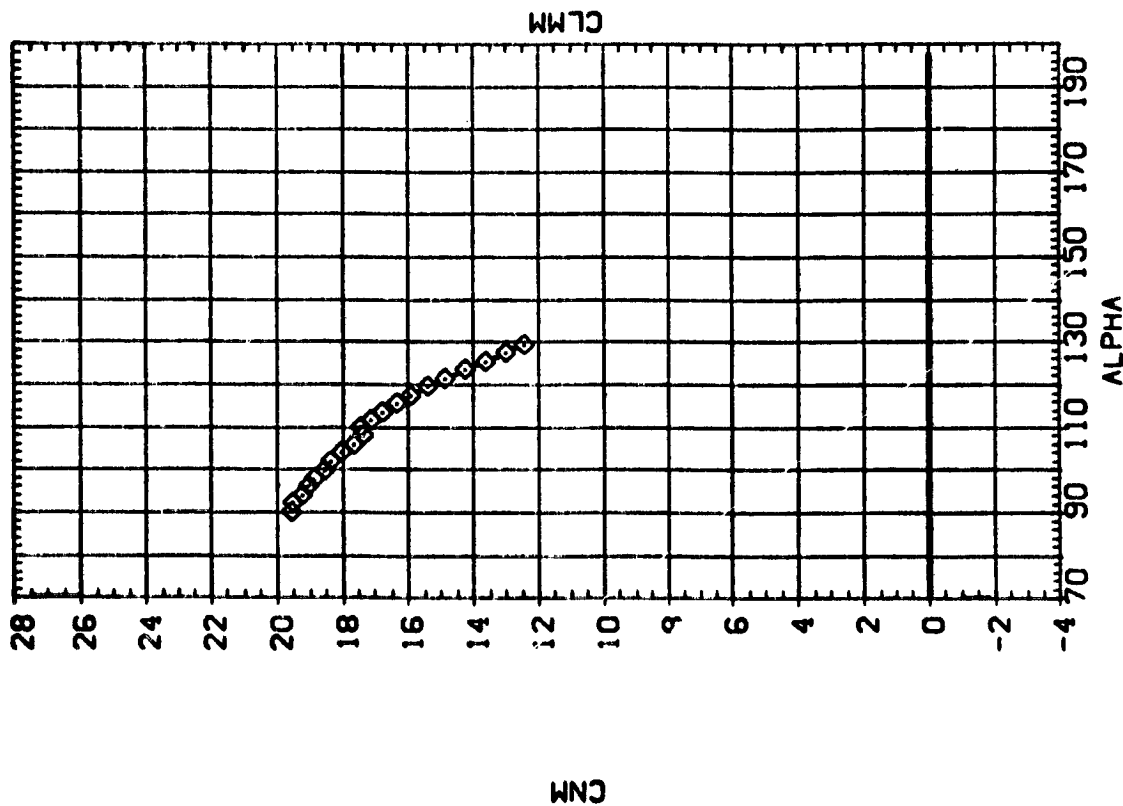
PAGE

6



DATA SET SYMBOL: (AS5102)
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 (AS5101) DATA NOT AVAILABLE
 (AS5055) MSFC 555(SA26F) 142-IN. SRB(139) NGR-1B

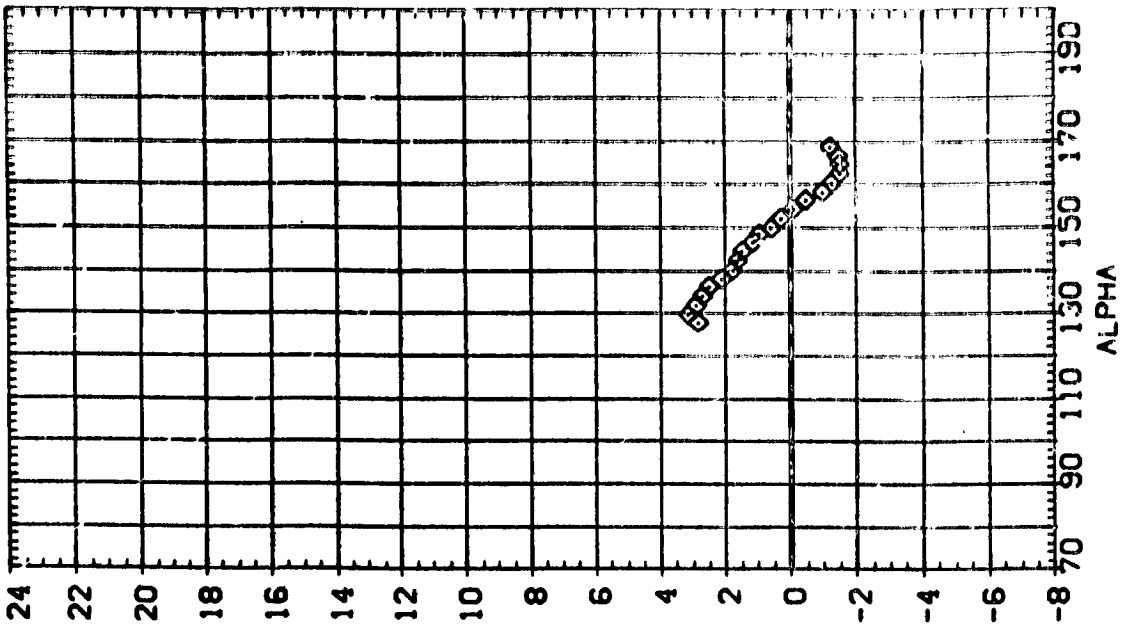
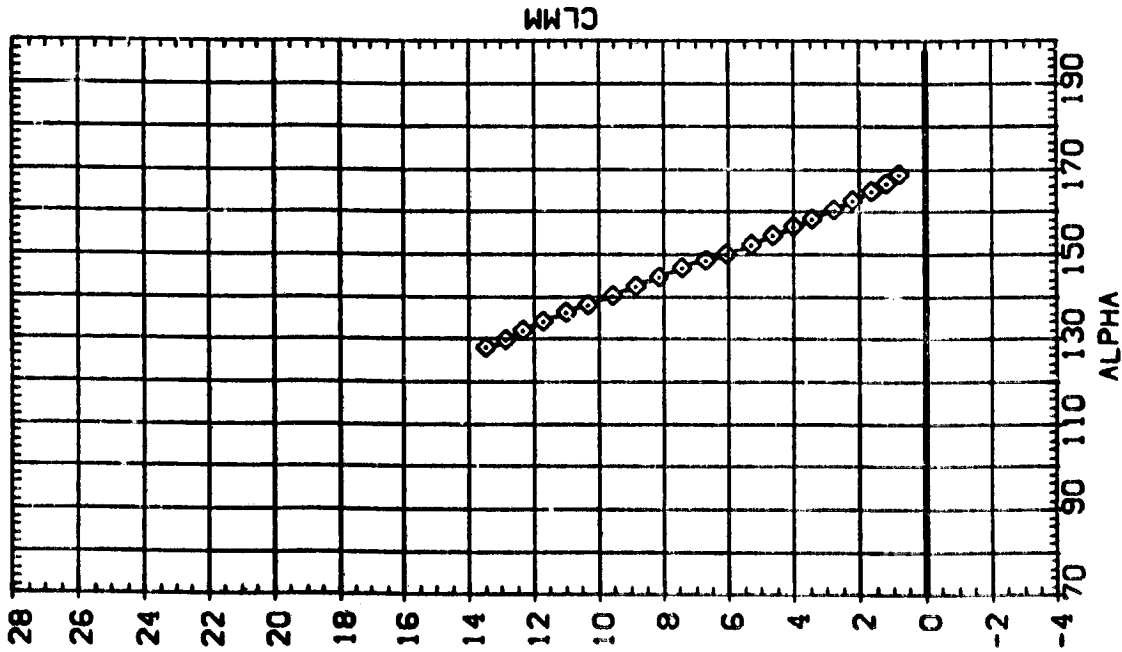
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 ZMRP: .0000 IN.
 SCALE: .0056



AERODYNAMIC CHARACTERISTICS OF A SRB WITH DIFFERENT NOZZLE / SKIRTS

DATA SET SYMBOL: CONFIGURATION DESCRIPTION
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 (A55101) DATA NOT AVAILABLE
 (A55055) MSFC 595(SA26F) 142-IN. SRB(139) N9RE1B

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 SEPRKT .000
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 YMRP .0000 IN.
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 SCALE .0056 IN.



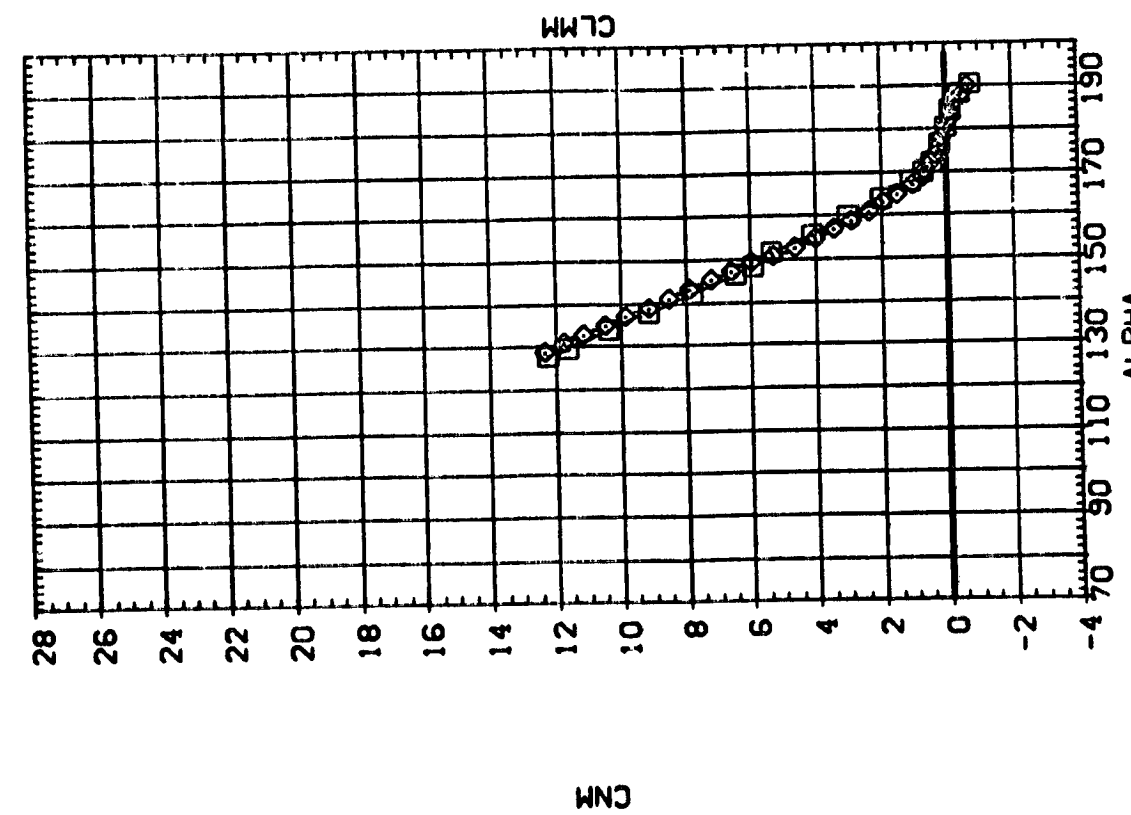
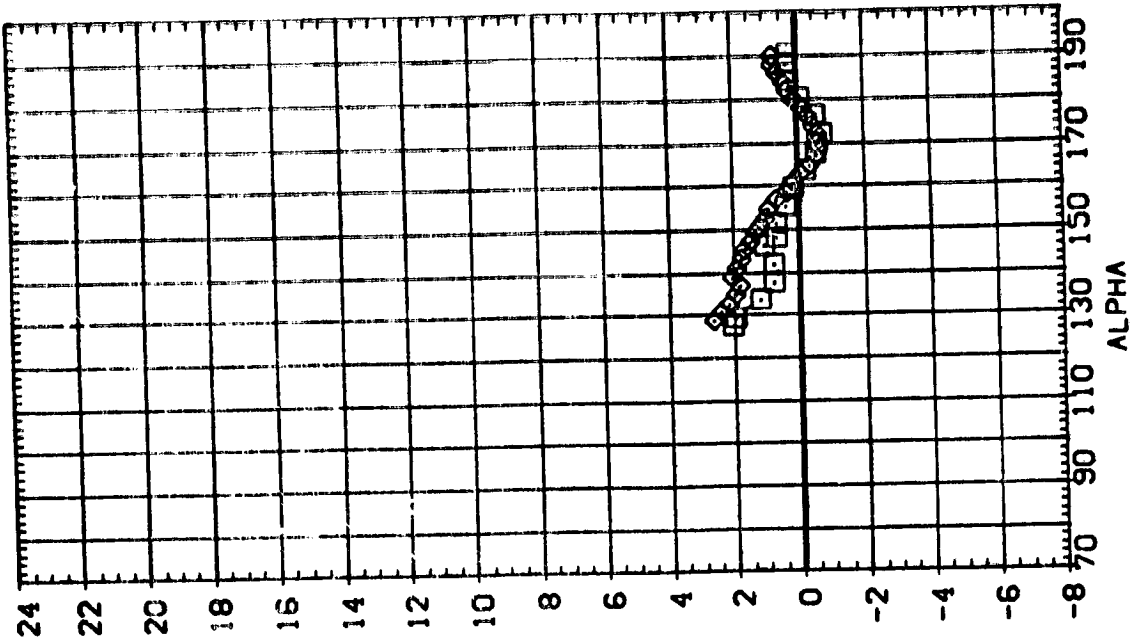
AERODYNAMIC CHARACTERISTICS OF A SRB WITH DIFFERENT NOZZLE / SKIRTS

(0)MACH = 1.96



DATA SET SYMBOL: (A95102)
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 (A95033) NSFC 585(SA26F) 142-IN. SRB(139) N8RE1B

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 YMRP: .0000
 ZMRP: .0000
 SCALE: .0056



AERODYNAMIC CHARACTERISTICS OF A SRB WITH DIFFERENT NOZZLE / SKIRTS

DATA SET SYMBOL: (ASS102) (ASS101) (ASS055)

CONFIGURATION DESCRIPTION: MFC 590(SA26F) 142-IN. SRB(139) NBR1A MFC 590(SA26F) 142-IN. SRB(139) NBR1A MFC 595(SA26F) 142-IN. SRB(139) NBR1B

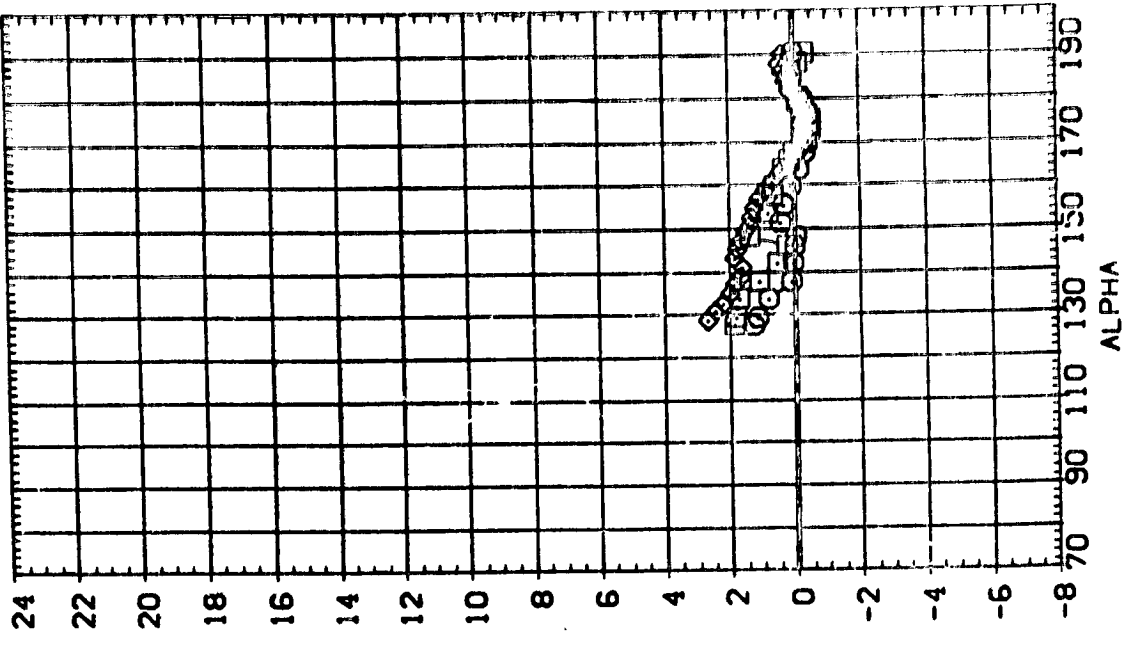
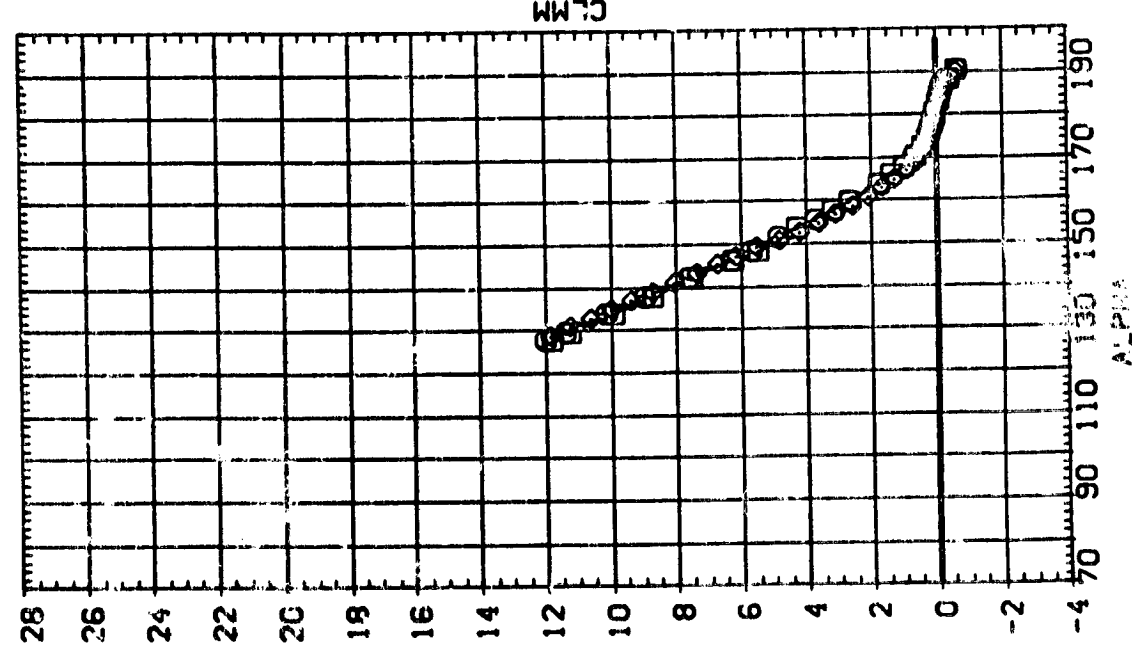
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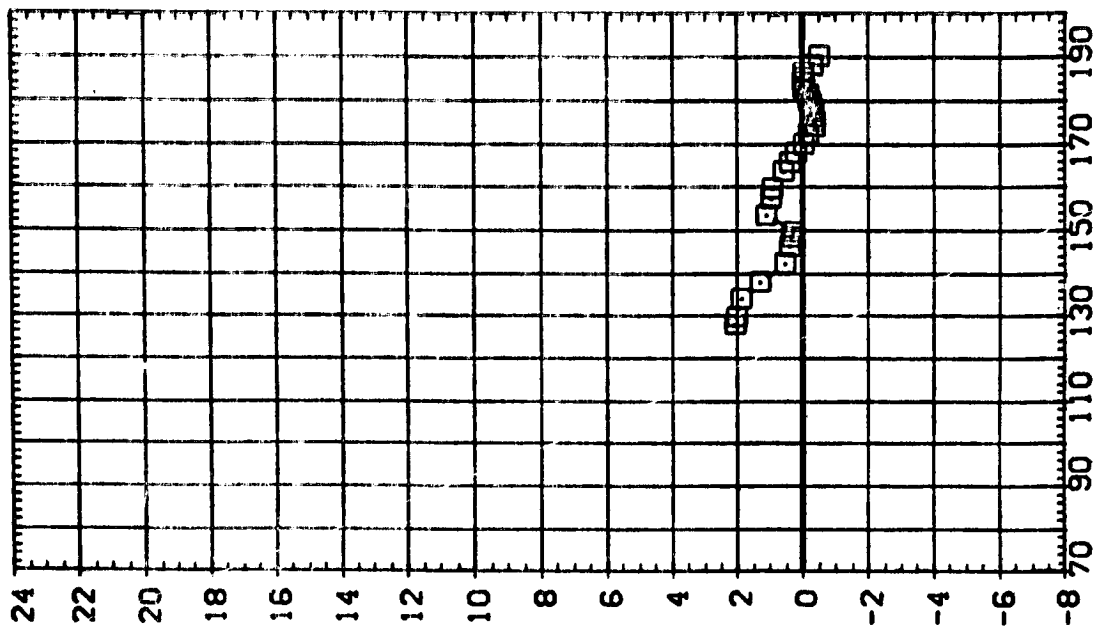
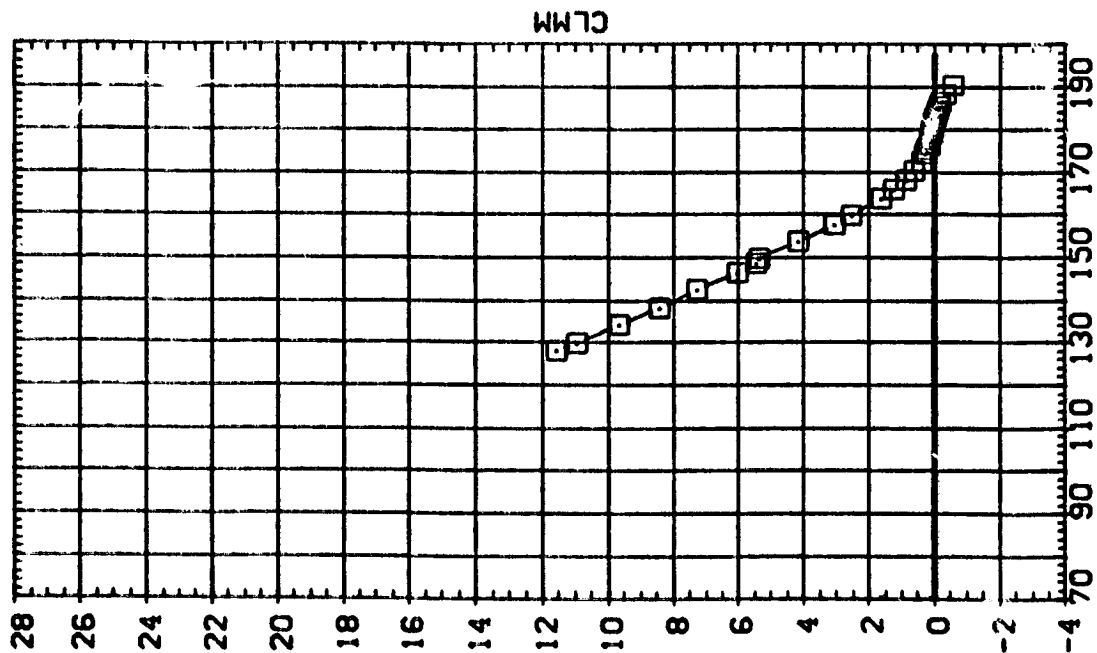
AERODYNAMIC CHARACTERISTICS OF A SRB WITH DIFFERENT NOZZLE / SKIRTS

(F)MACH = 3.48



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 (ASS101)
 (ASS055)
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 ELT: .000
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 SEPRRT: .000
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 BREF .8000 IN.
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 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0056

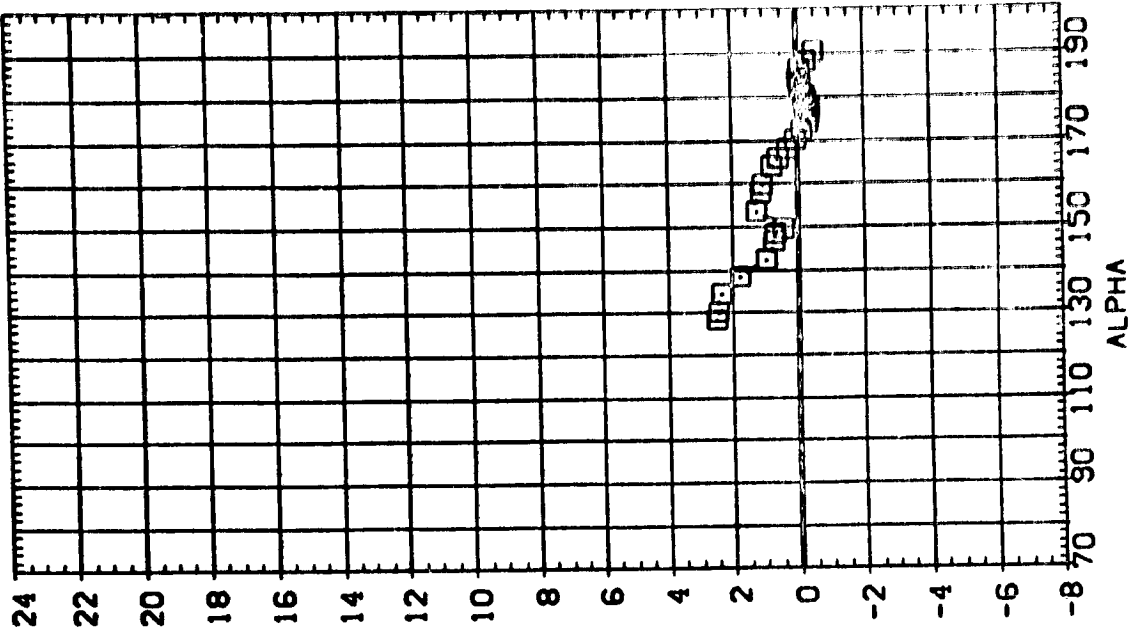
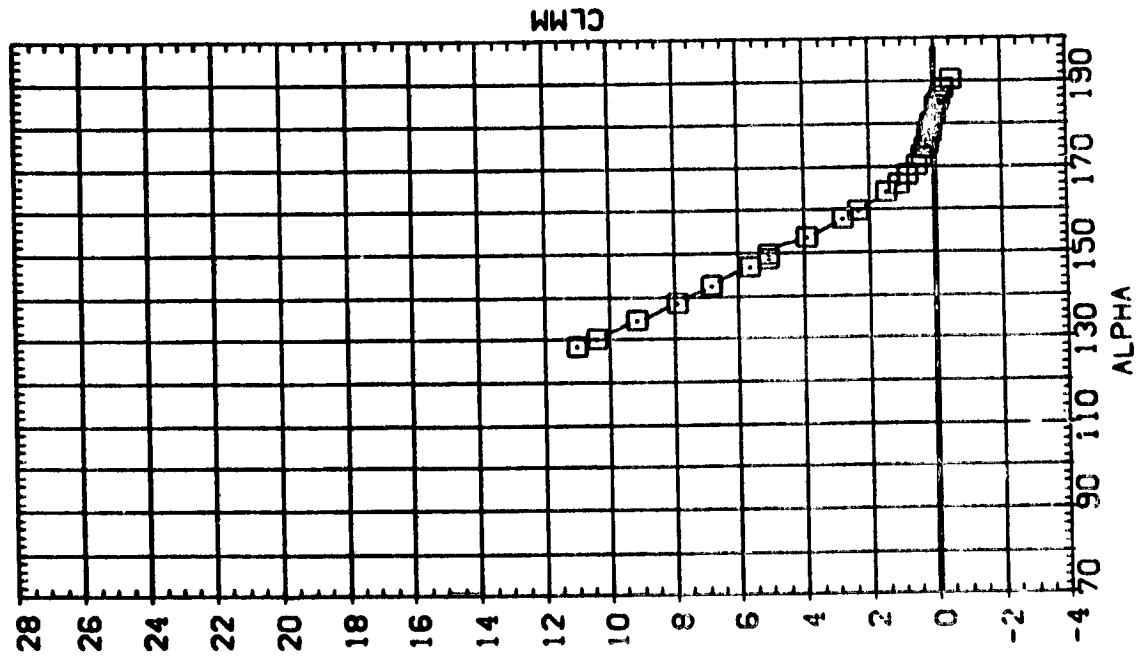


ALPHA ALPHA
 AERODYNAMIC CHARACTERISTICS OF A SRB WITH DIFFERENT NOZZLE / SKIRTS

(G)MACH = 4.00

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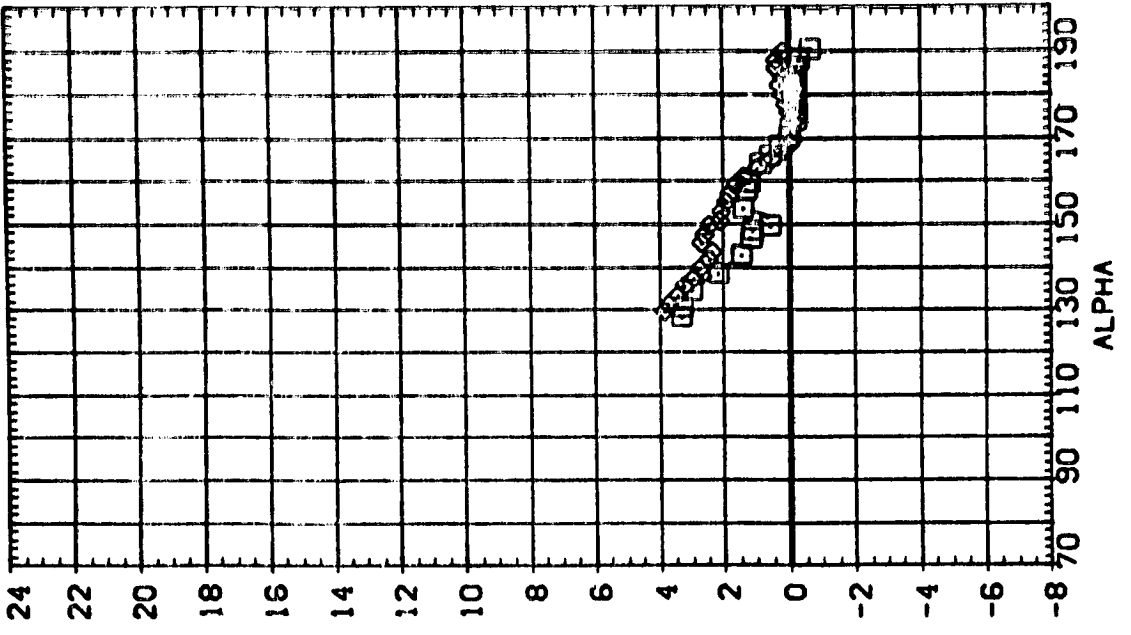
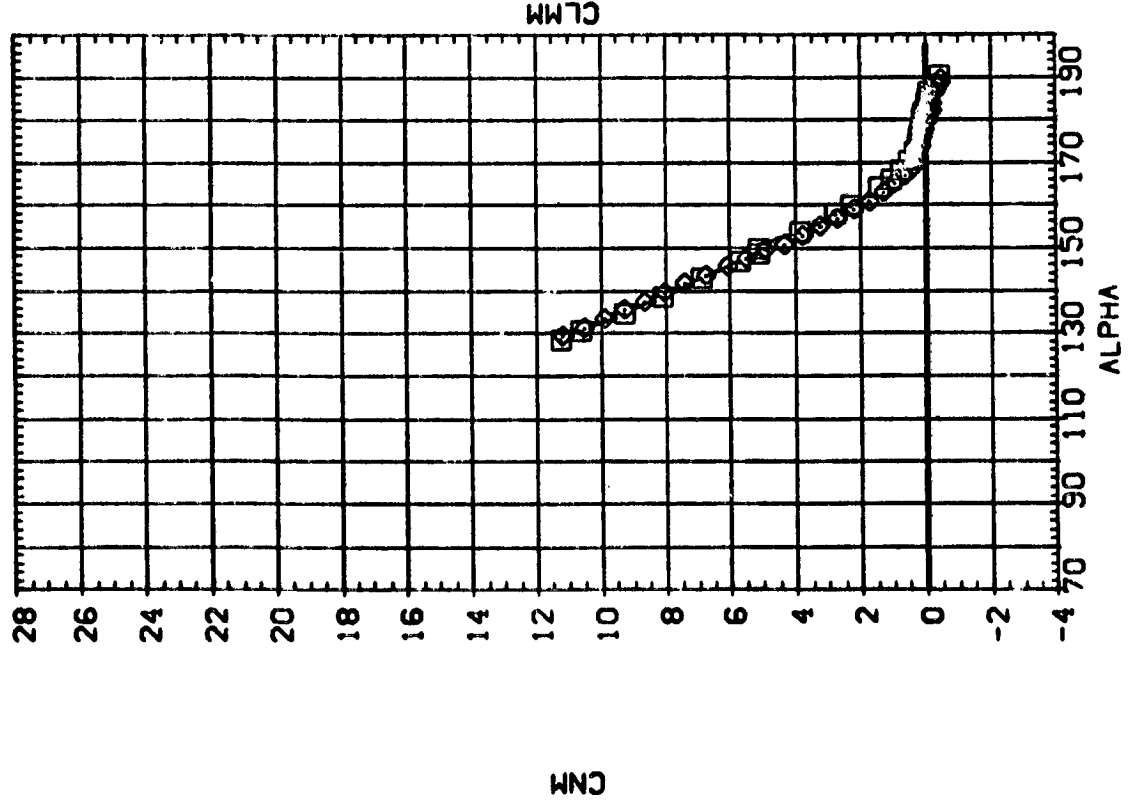
AERODYNAMIC CHARACTERISTICS OF A SRB WITH DIFFERENT NOZZLE / SKIRTS

(M)MACH = 4.45



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 (AS5055)
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 NSFC 595(SA26F) 142-IN. SRB(139) N8RE1B

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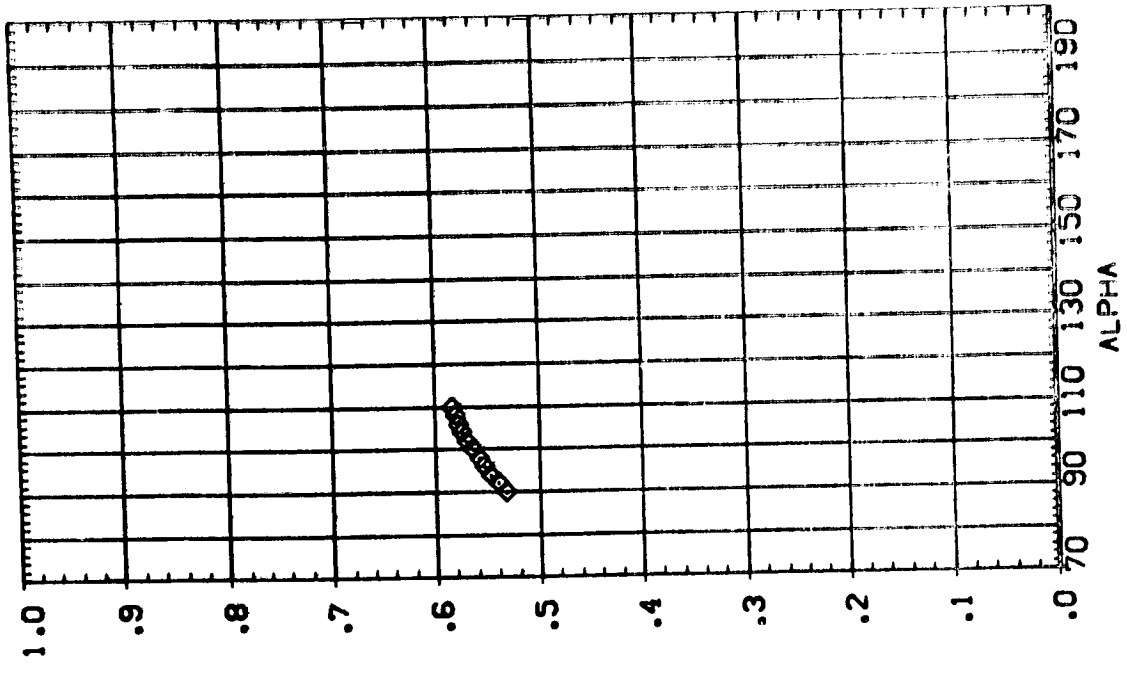
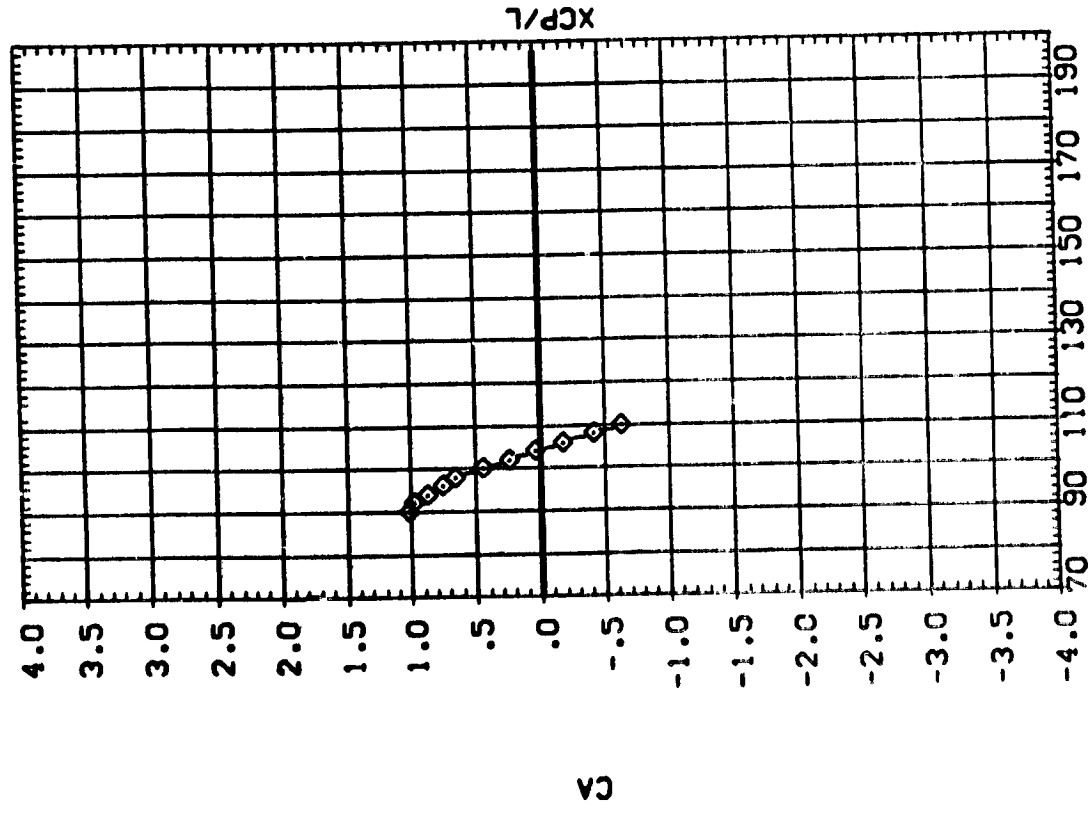


AERODYNAMIC CHARACTERISTICS OF A SRB WITH DIFFERENT NOZZLE / SKIRTS

CLIMACH = 4.96

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 (A95101) ◇ DATA NOT AVAILABLE
 (A95055) ◇ MSFC 595(SA26F) 142-IN. SRB(139) NB3E1B

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 ELT .000
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AERODYNAMIC CHARACTERISTICS OF A SRB WITH DIFFERENT NOZZLE / SKIRTS

CA/MACH = .60



DATA SET SYMBOL: (A95102)
 (A95101)
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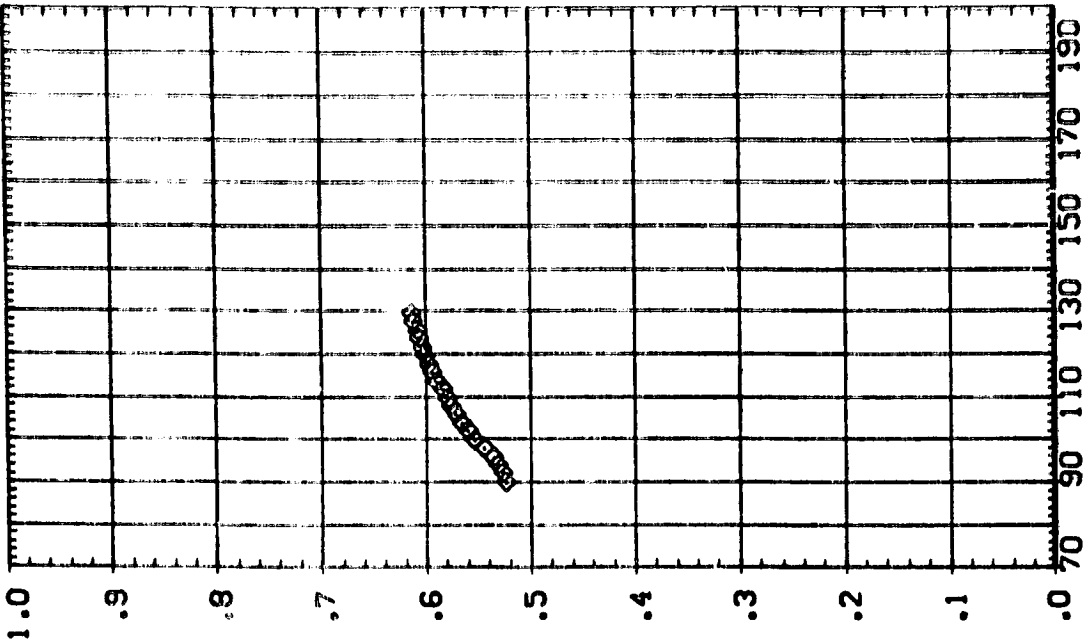
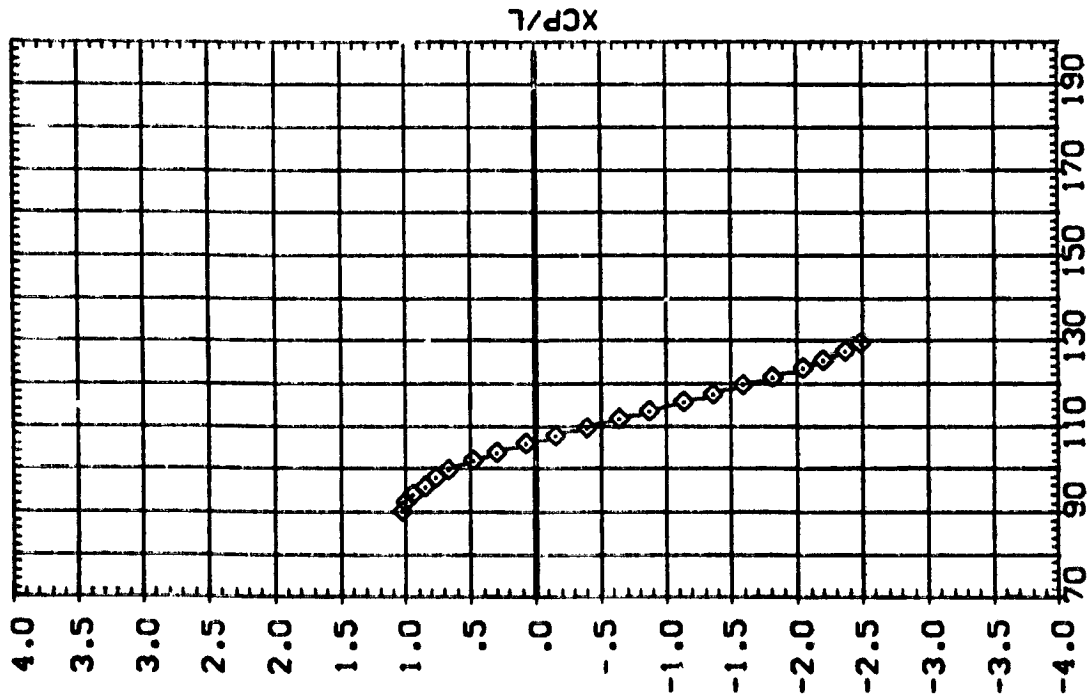
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SG: IN
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ALPHA ALPHA

AERODYNAMIC CHARACTERISTICS OF A SRB WITH DIFFERENT NOZZLE / SKIRTS

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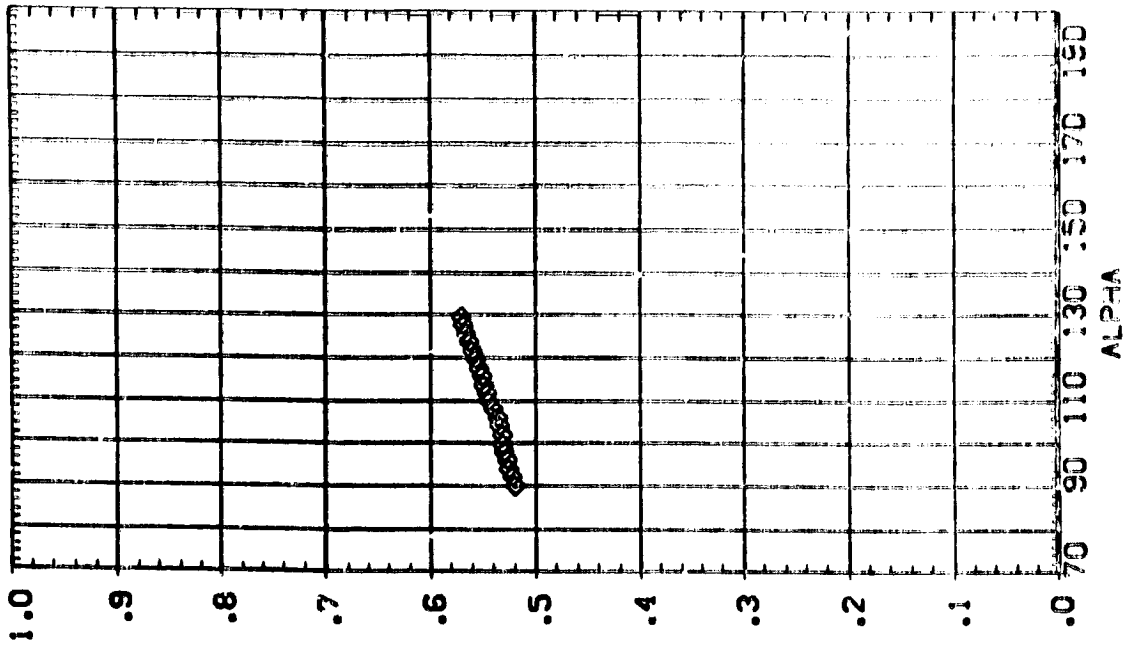
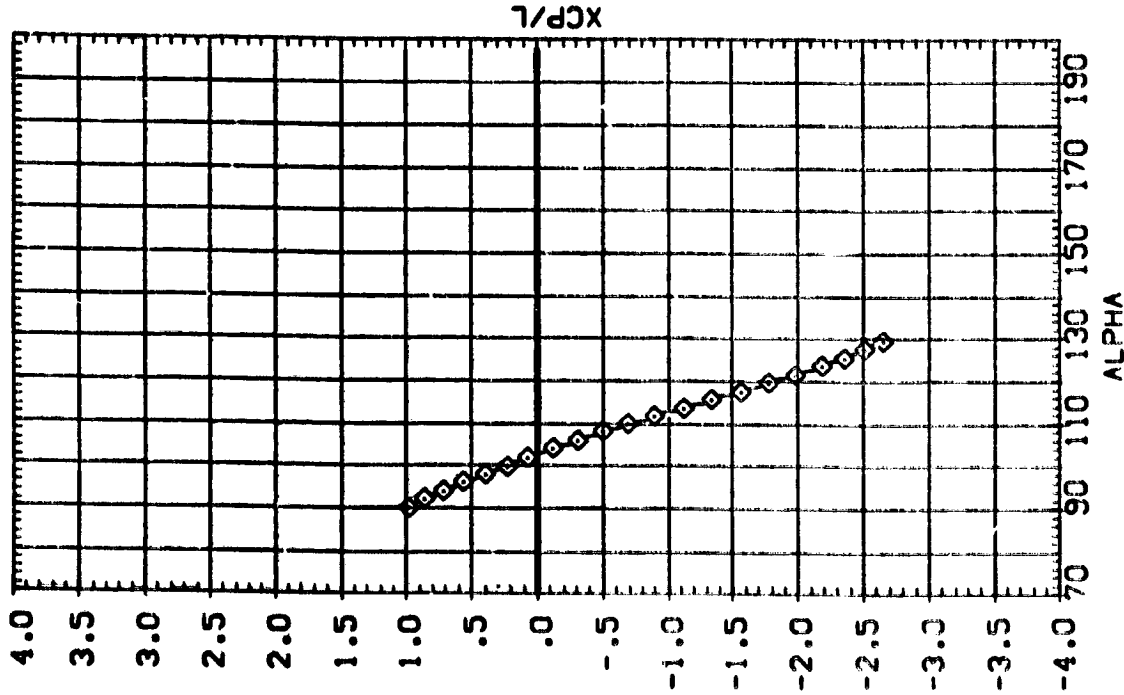
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 YMRP: 01.00 77. IN
 ZMRP: 02.00 77. IN
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CS

AERODYNAMIC CHARACTERISTICS OF A SRB WITH DIFFERENT NOZZLE / SKIRTS

(C)MACH = 1.20

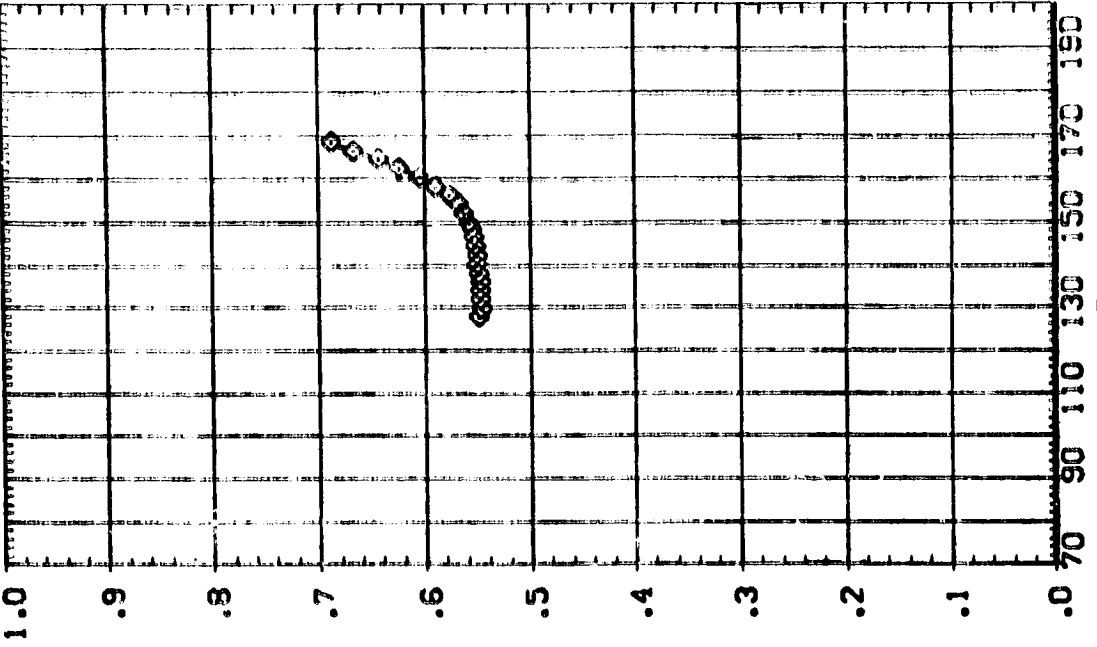
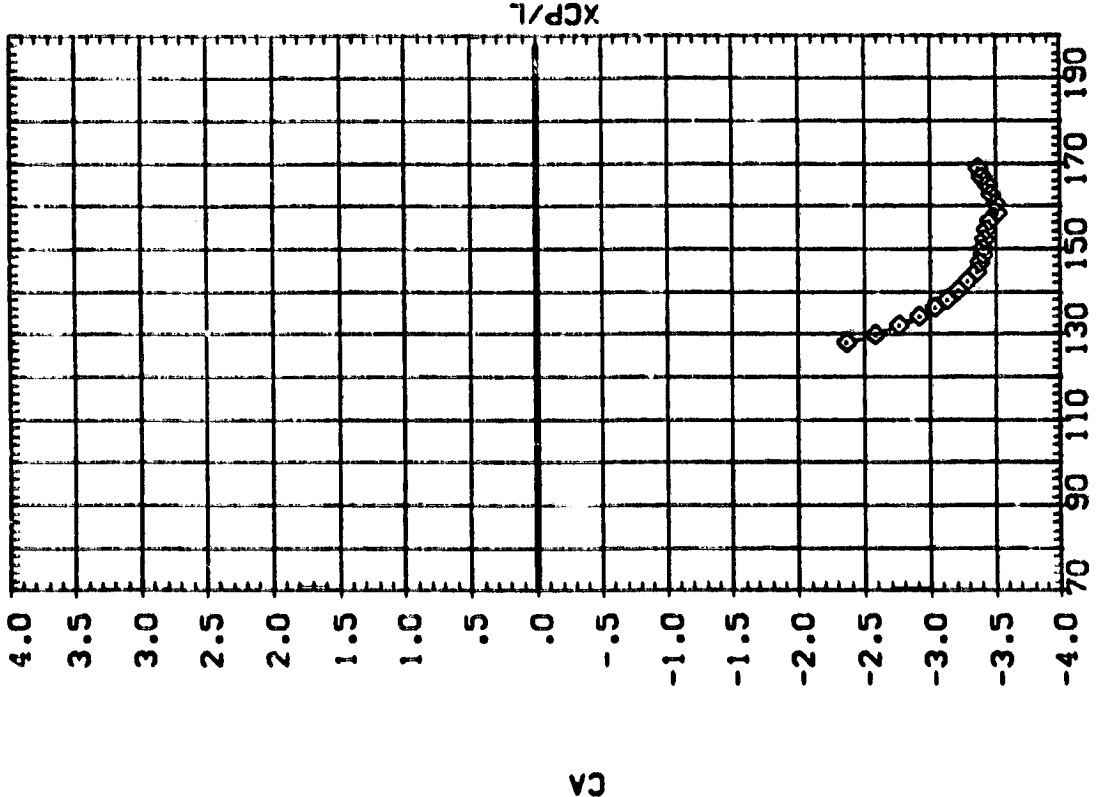
PAGE 16



DATA SET SYMBOL CONFIGURATION DESCRIPTION

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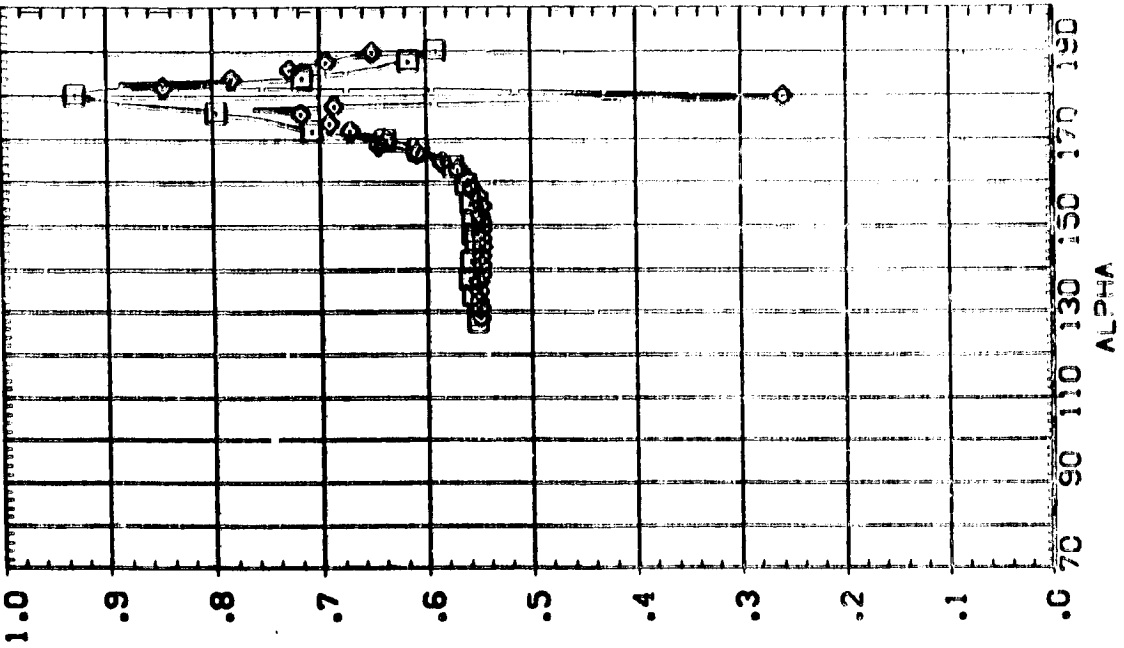
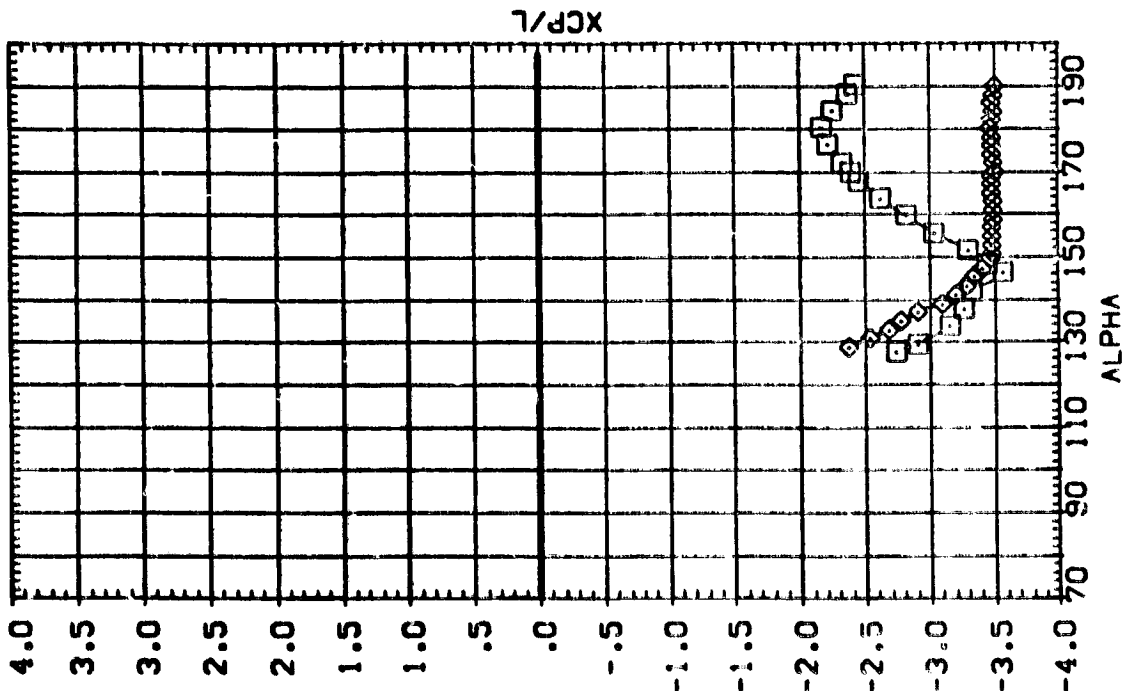


AERODYNAMIC CHARACTERISTICS OF A SRB WITH DIFFERENT NOZZLE / SKIRTS

COMACH = 1.96

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 (A95055) MSC 555(SA26F) 142-IN. SRB(139) N8RE1B

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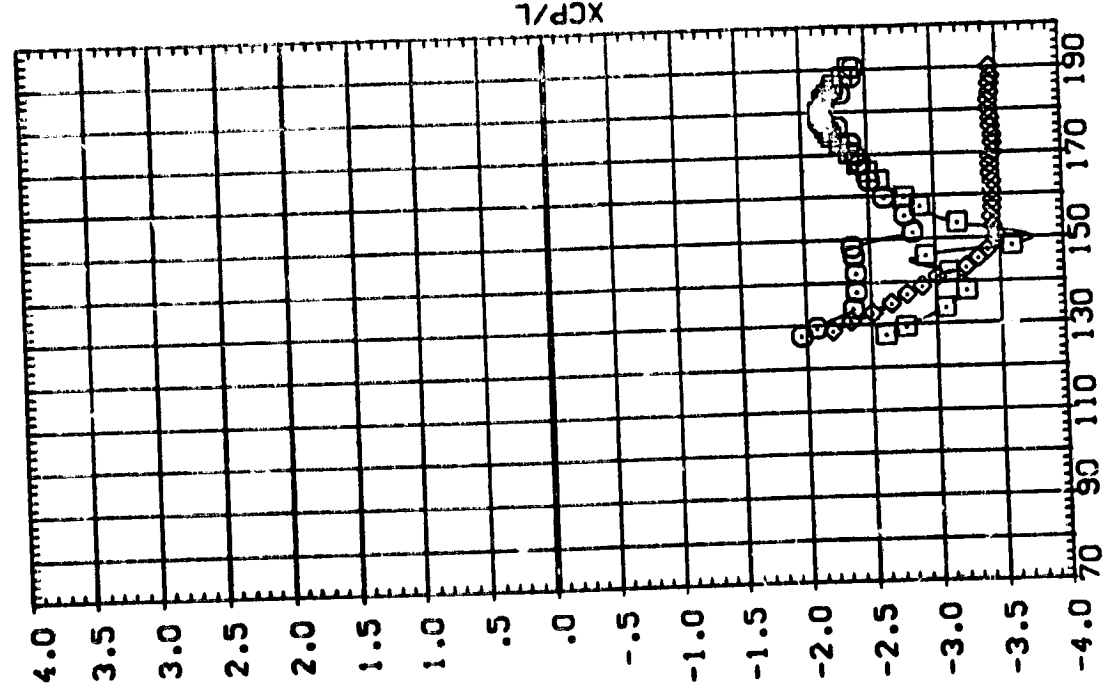
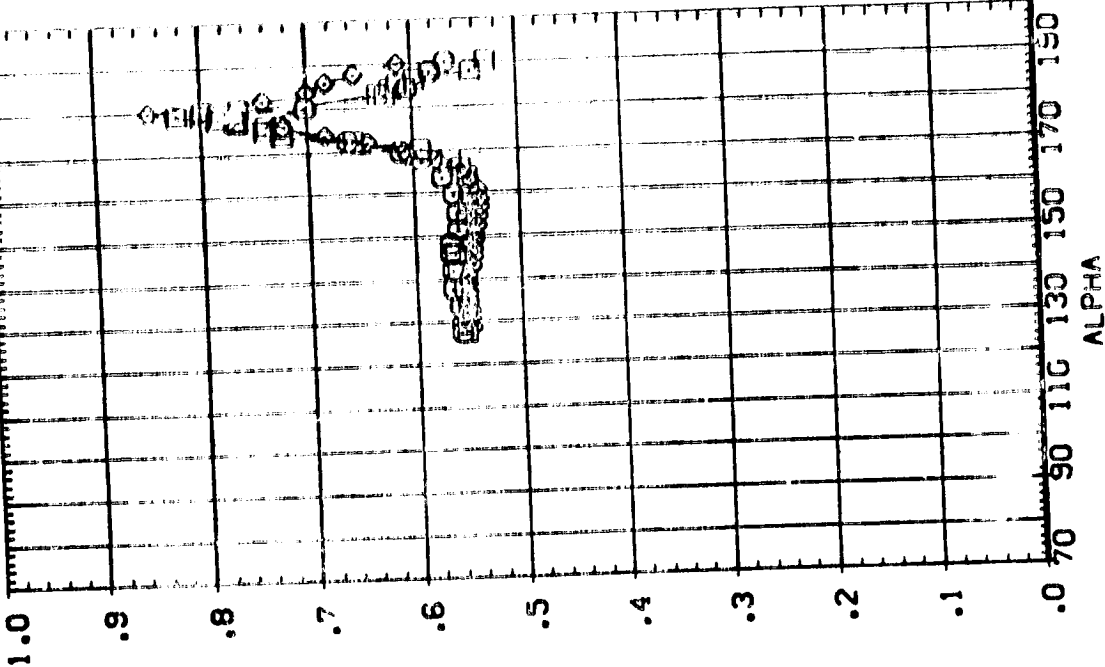
AERODYNAMIC CHARACTERISTICS OF A SRB WITH DIFFERENT NOZZLE / SKIRTS



DATA SET SYMBOL CONFIGURATION DESCRIPTION
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 (AS5055) Q SSC 595(SA26F) 142-IN. SRB(139) NGR1B

REFERENCE INFORMATION
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 SCALE .0056

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AERODYNAMIC CHARACTERISTICS OF A SRB WITH DIFFERENT NOZZLE / SKIRTS

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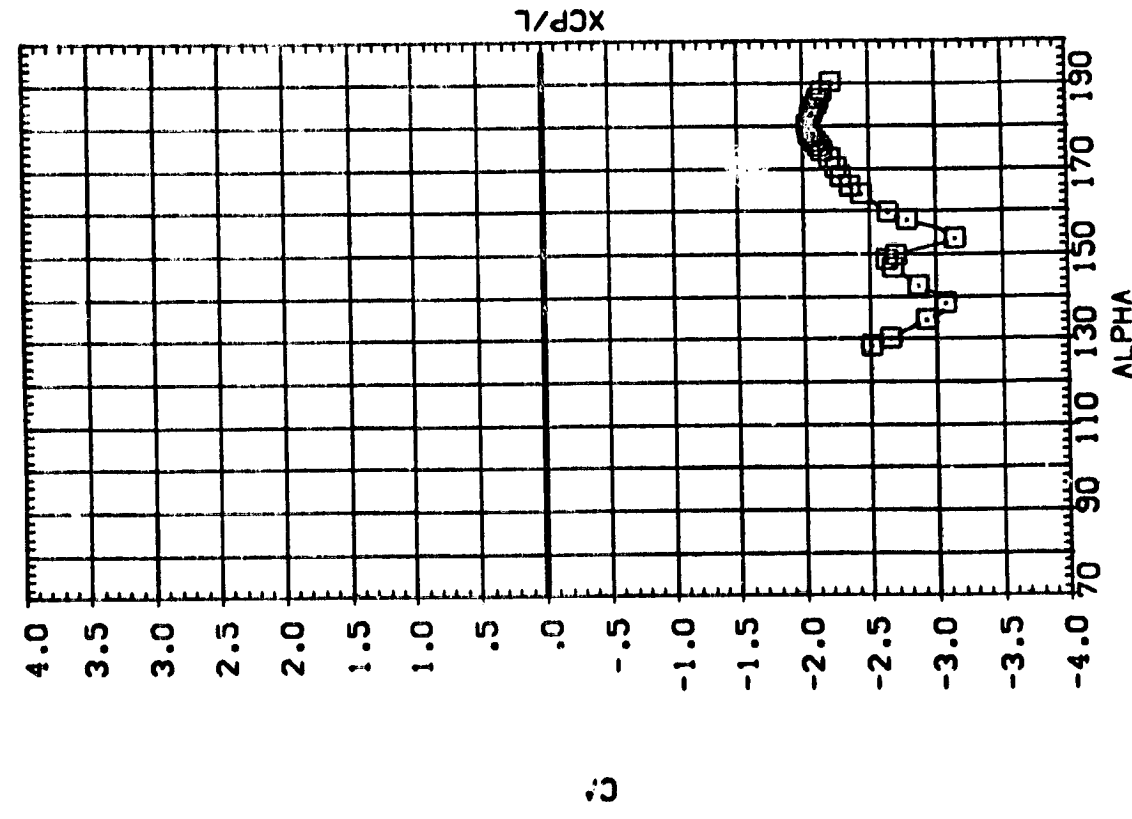
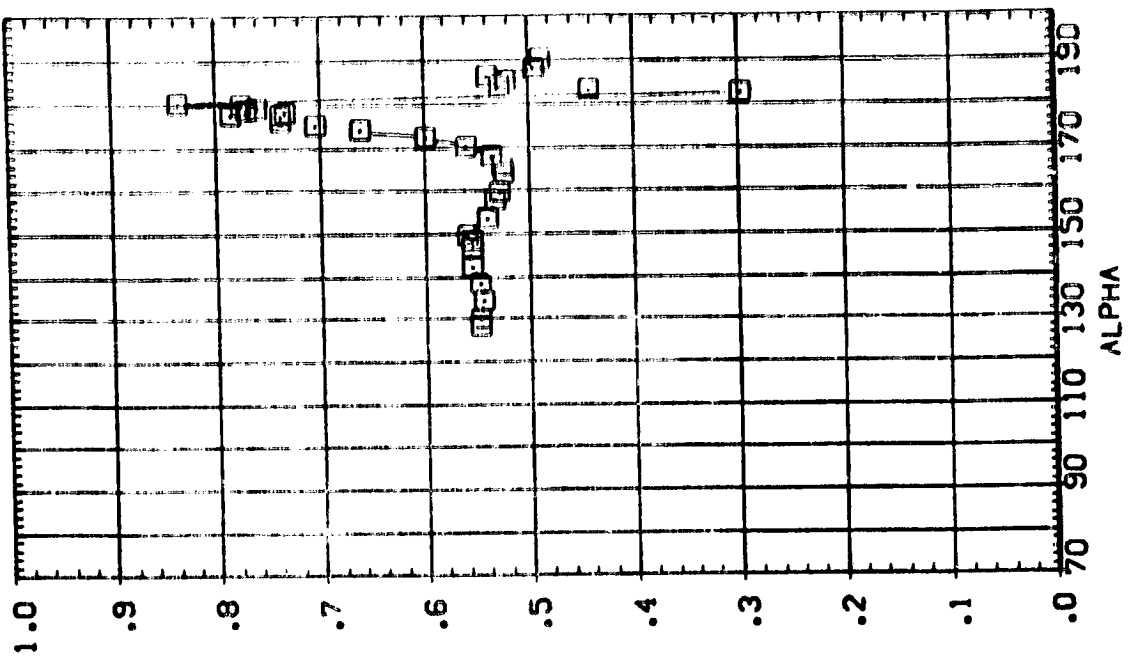
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 SCALE .0056

DATA SET SYMBOL (A55102)
 (A55101)
 (A55055)

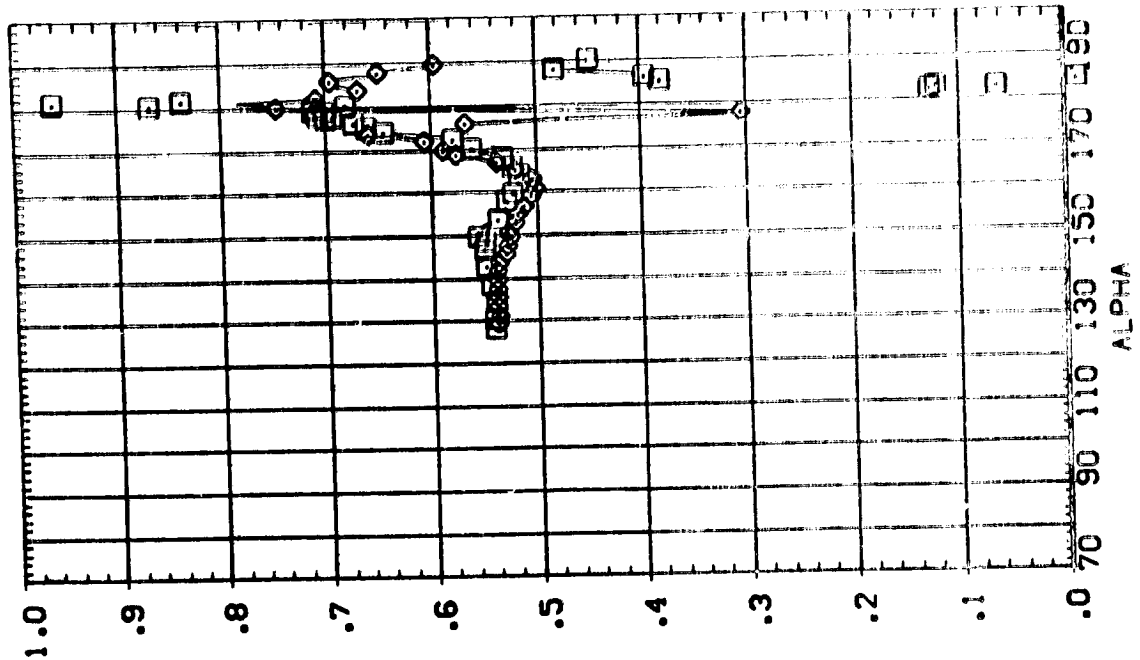
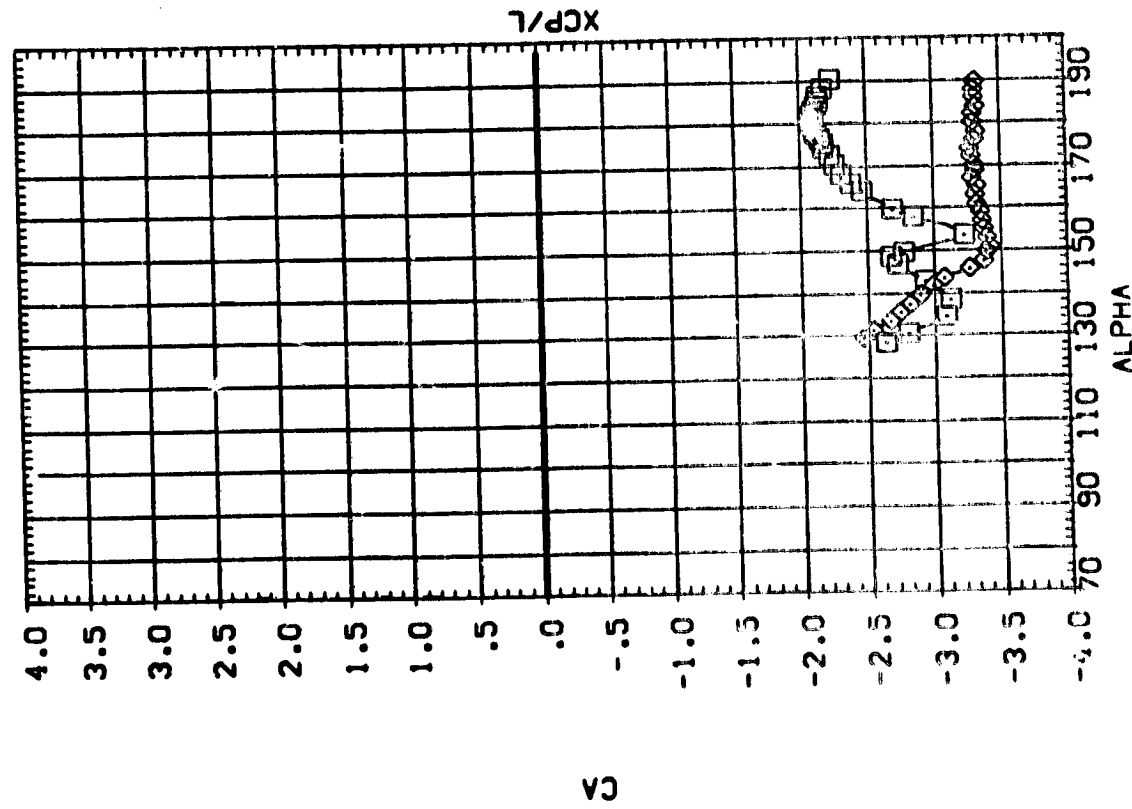
CONFIGURATION DESCRIPTION
 DATA NOT AVAILABLE
 PSFC 550(SA26F) 112-IN. SRB(138) N8RE1A
 DATA NOT AVAILABLE



AERODYNAMIC CHARACTERISTICS OF A SRB WITH DIFFERENT NOZZLE / SKIRTS

DATA SET SYMBOL:  CONFIGURATION DESCRIPTION
 (ASS102) DATA NOT AVAILABLE
 (ASS101) MSFC 590(SA26F) 142-IN. SRB(139) NBRE1A
 (ASS055) MSFC 595(SA26F) 142-IN. SRB(139) NBRE1B

BETA .000 .000 .000
 PHI .000 .000 .000
 ELT .000 .000 .000
 SEPRNT .000 .000 .000
 REFERENCE INFORMATION
 SCOR .50 IN
 SCOR .8000
 SCOR .8000
 SCOR .8000
 S. 5570
 XMRP
 YMRP
 ZMRP
 SCALE



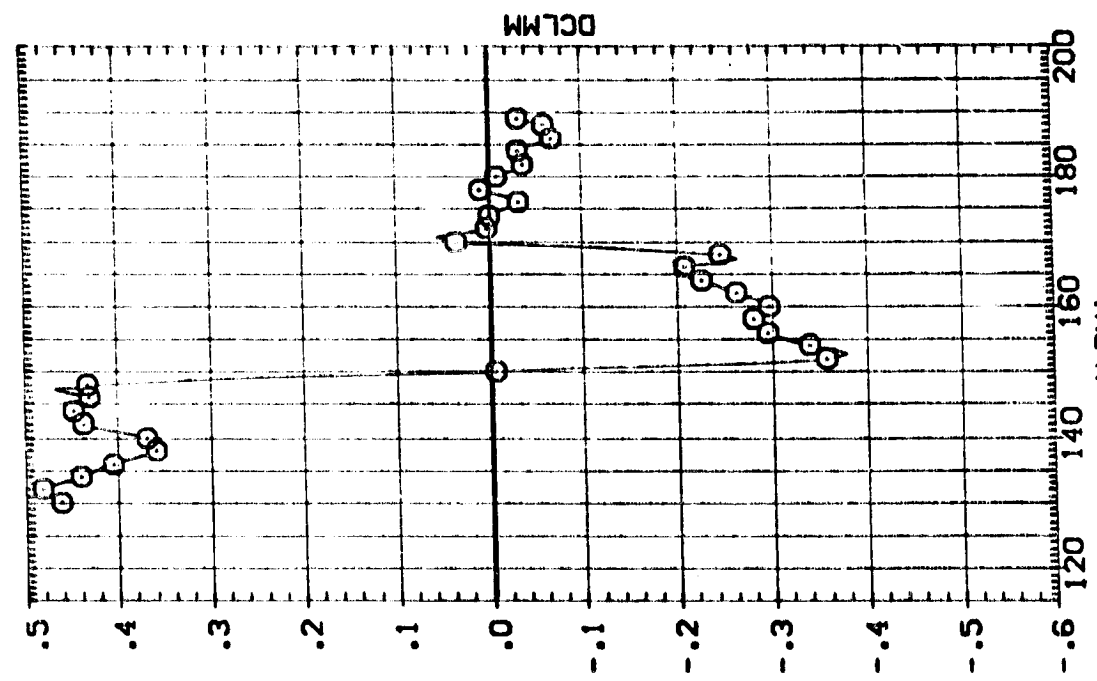
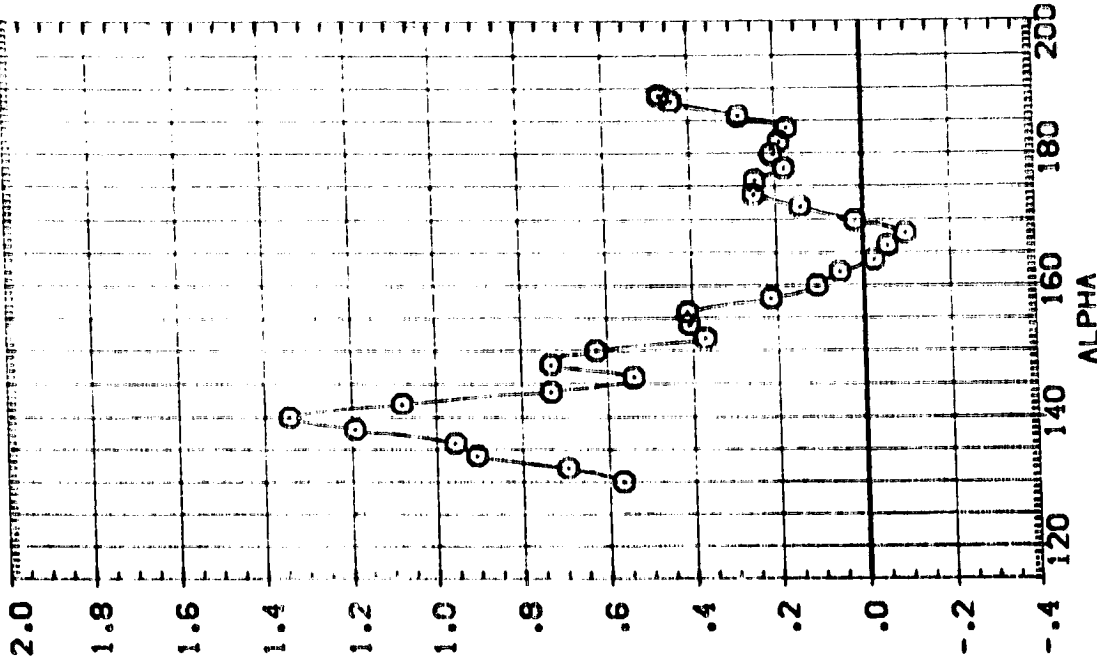
AERODYNAMIC CHARACTERISTICS OF A SRB WITH DIFFERENT NOZZLE / SKIRTS

(M)MACH = 4.96



DATA SET SYMBOL: (D95055) ○
 CONFIGURATION DESCRIPTION: MSFC 590/595 (S426°) EFFECT OF E19 - E1A

BETA .000 PHI .000 ELT .000 SEPARAT .000
 REFERENCE INFORMATION:
 SIZE IN. SQ. IN.
 REF IN. IN.
 REF IN. IN.
 VAPP IN. IN.
 ZAPP IN. IN.
 SCALE



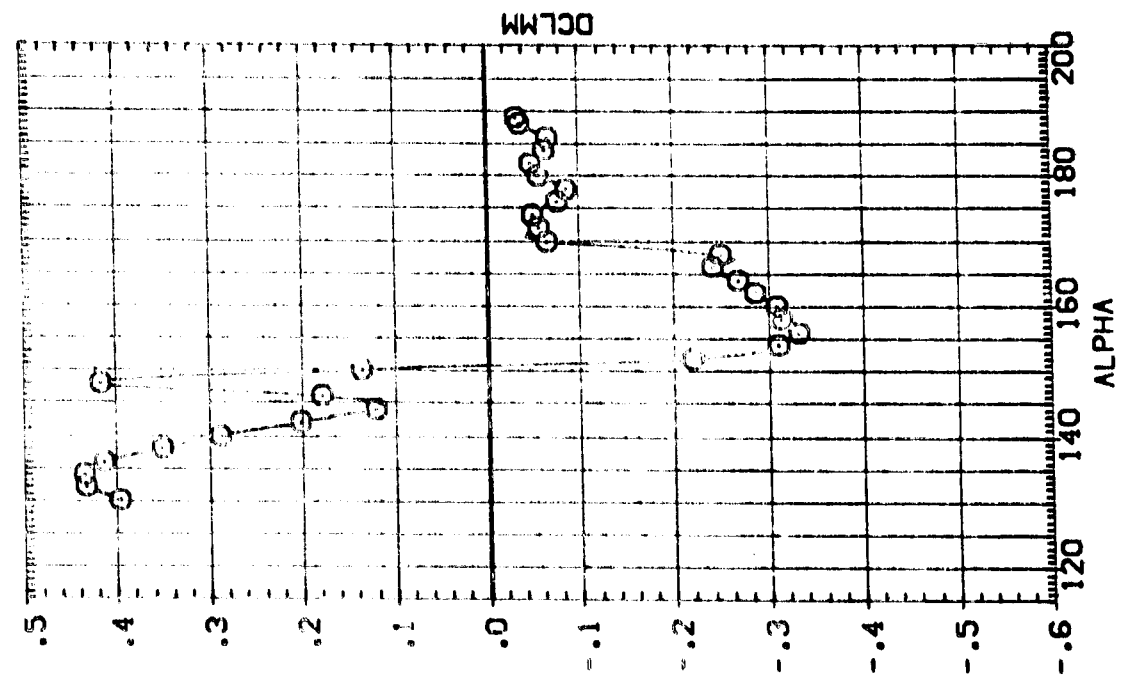
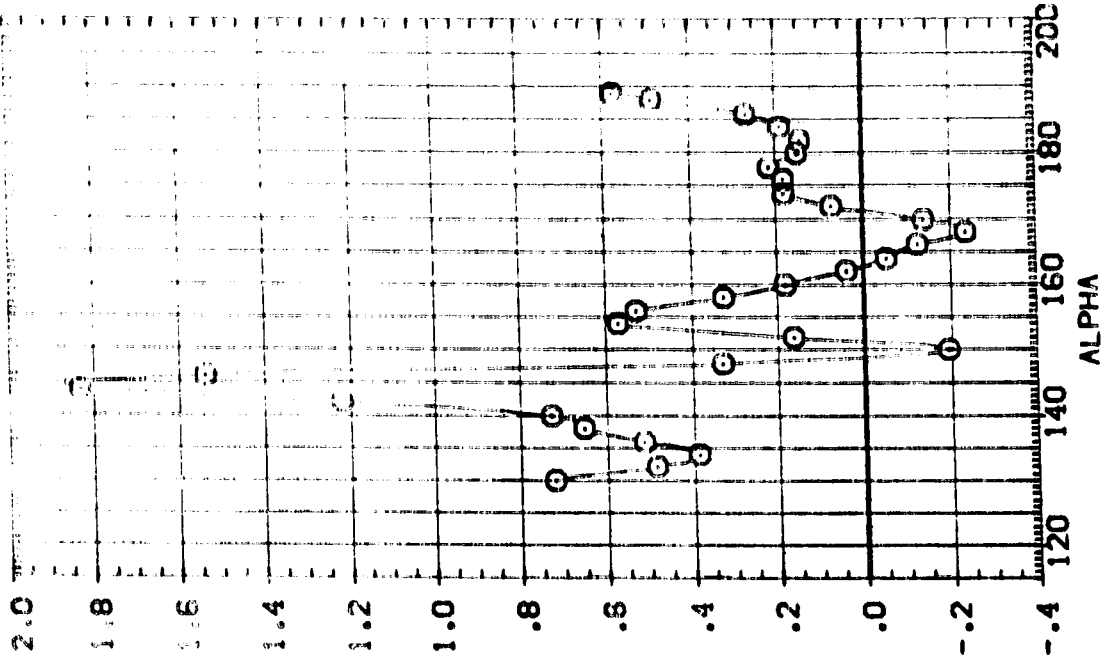
EFFECT OF TRUNCATED NOZZLE ON SRB AERODYNAMIC CHARACTERISTICS

CAJ MACH = 2.74



BETA .000 PHI .000 ELT .000 SERPT .000
 REFERENCE INFORMATION
 SPEC
 SCALING
 SCALE

DATA SET SYMBOL ○
 CONFIGURATION DESCRIPTION MSFC 590/595 (SA26F) EFFECT OF E19 - E1A



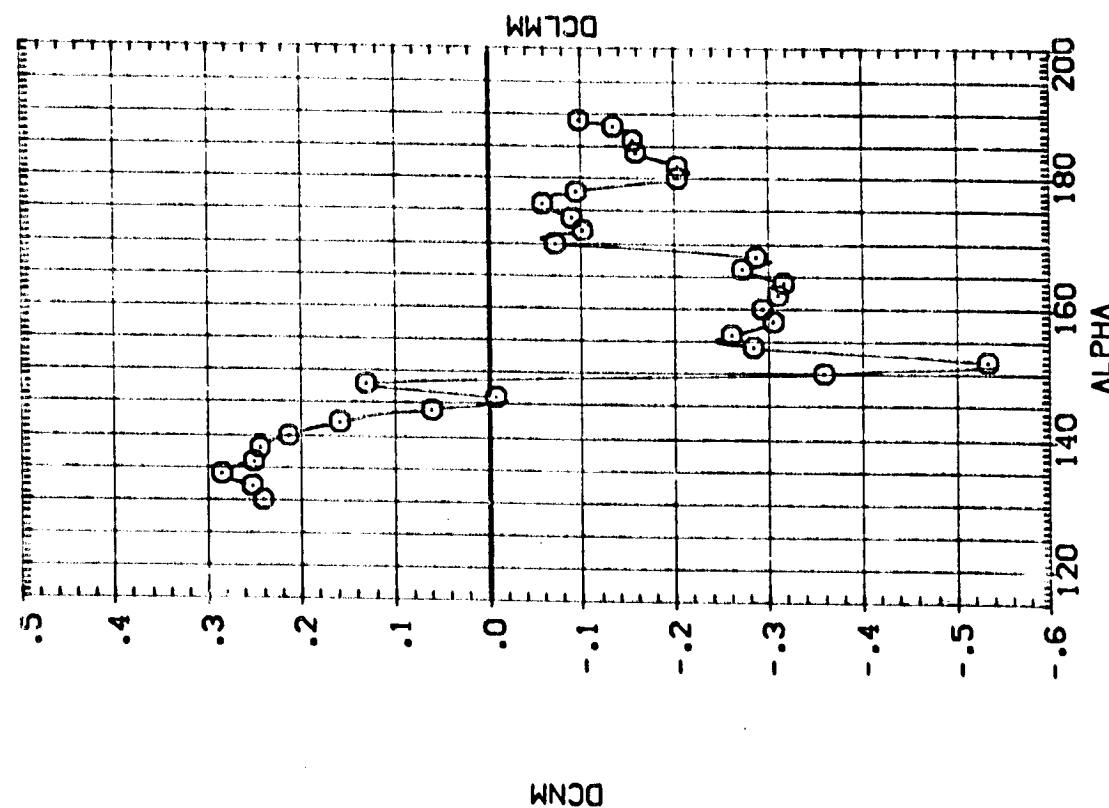
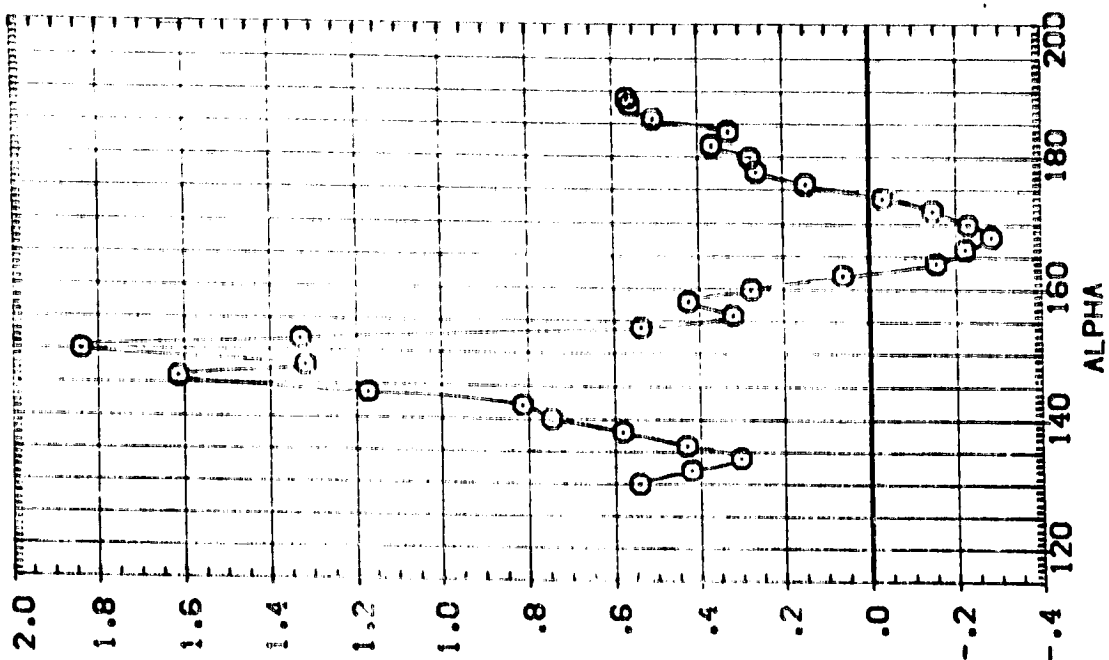
EFFECT OF TRUNCATED NOZZLE ON SRB AERODYNAMIC CHARACTERISTICS

CBJMACH = 3.48



DATA SET SYMBOL: (095055) ○
 CONFIGURATION DESCRIPTION: MSFC 590/595 (SA26F) EFFECT OF E1B - E1A

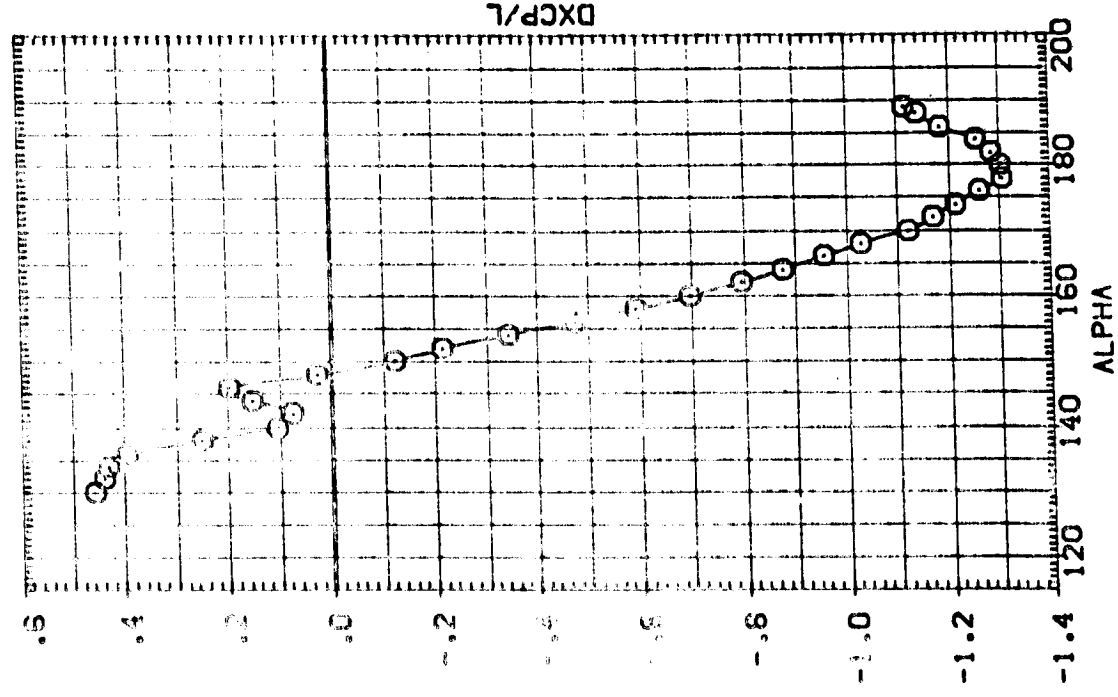
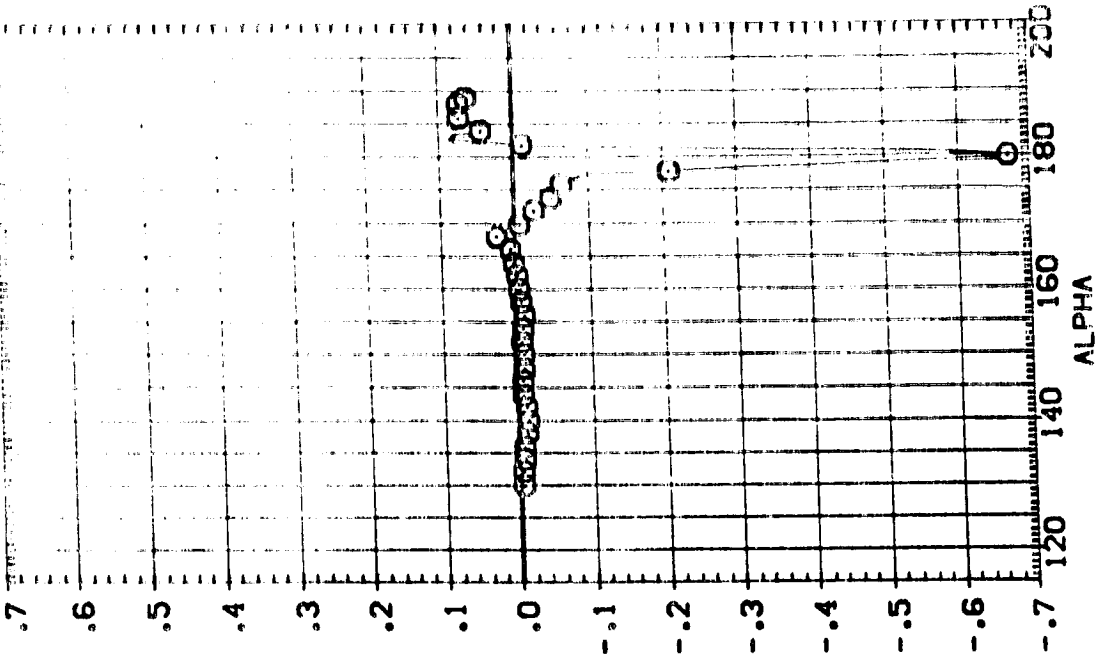
BETA: .000
 PHI: .000
 ELT: .000
 SEPRKT: .000
 REFERENCE INFORMATION:
 SREF: 5120
 LREF: .8000
 XREF: .8000
 YREF: 5.2570
 XWOP: .0000
 YWOP: .0000
 ZWOP: .0000
 SCALE: .0056



EFFECT OF TRUNCATED NOZZLE ON SRB AERODYNAMIC CHARACTERISTICS

(C)MACH = 4.96

DATA SET SYMBOL: (DS5055) \circ MSFC 590/596 (SA26F) EFFECT OF E1B - E1A
 CONFIGURATION DESCRIPTION
 BETA .000 PHI .000 EL .000
 SETPOINT .000
 REFERENCE: 10000
 10000
 10000
 10000
 10000
 10000
 10000
 10000
 10000
 10000
 SCALE



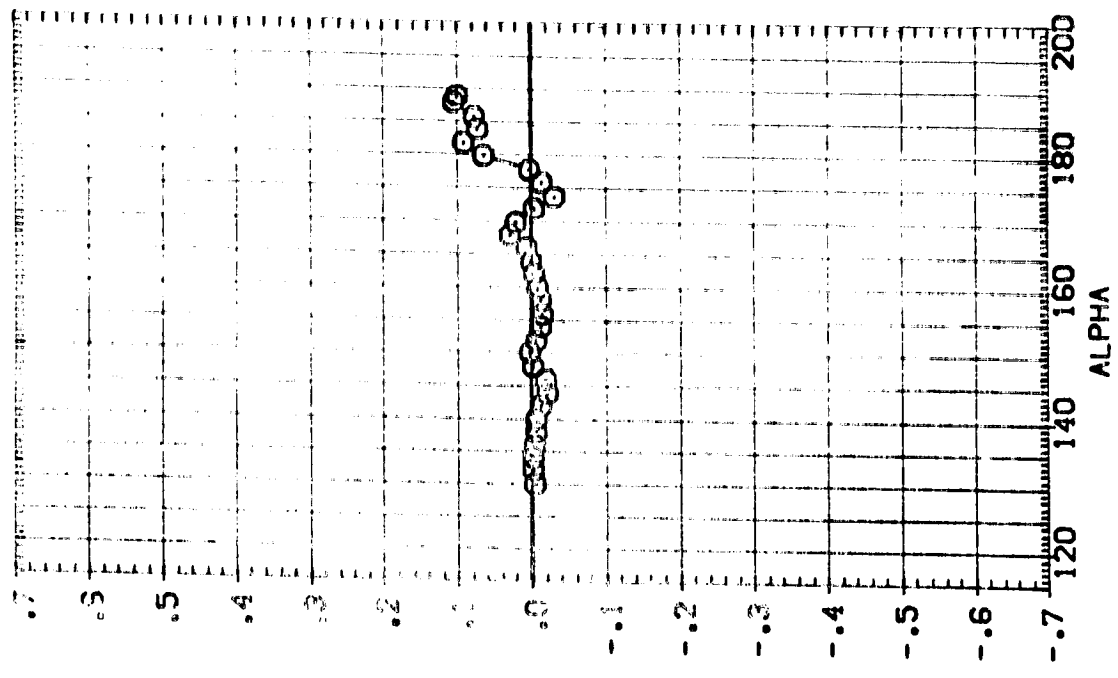
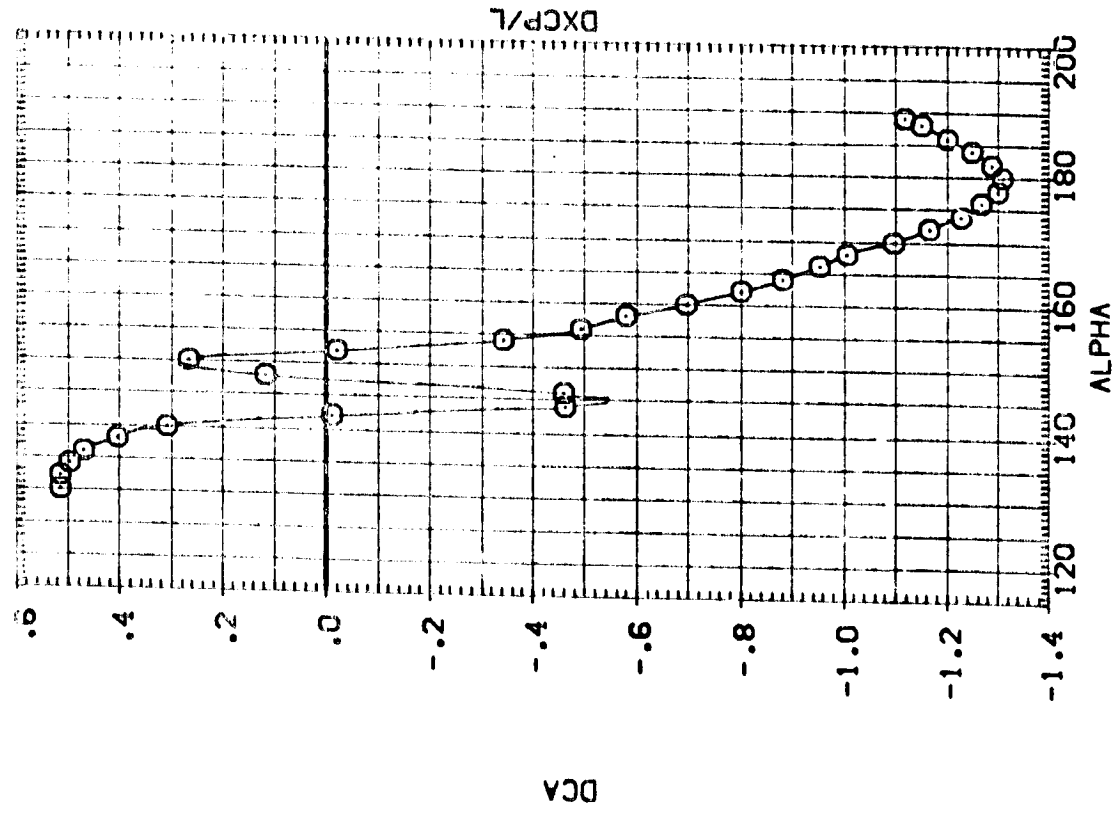
EFFECT OF TRUNCATED NOZZLE ON SRB AERODYNAMIC CHARACTERISTICS

CA/MACH = 2.74



DATA SET SYMBOL: (D95055) ○ MSFC 590/595 (S4267) EFFECT OF E1B - E1A

BETA .000 P-1 .000 ELT .000 SEPKT .000
 REFERENCE INFORMATION
 SREF 5.000 SG: IN
 LREF .8000 IN:
 BREF .8000 IN:
 XREF 5.5570 IN:
 YREF .0000 IN:
 ZREF .0000 IN:
 SCALE .0036



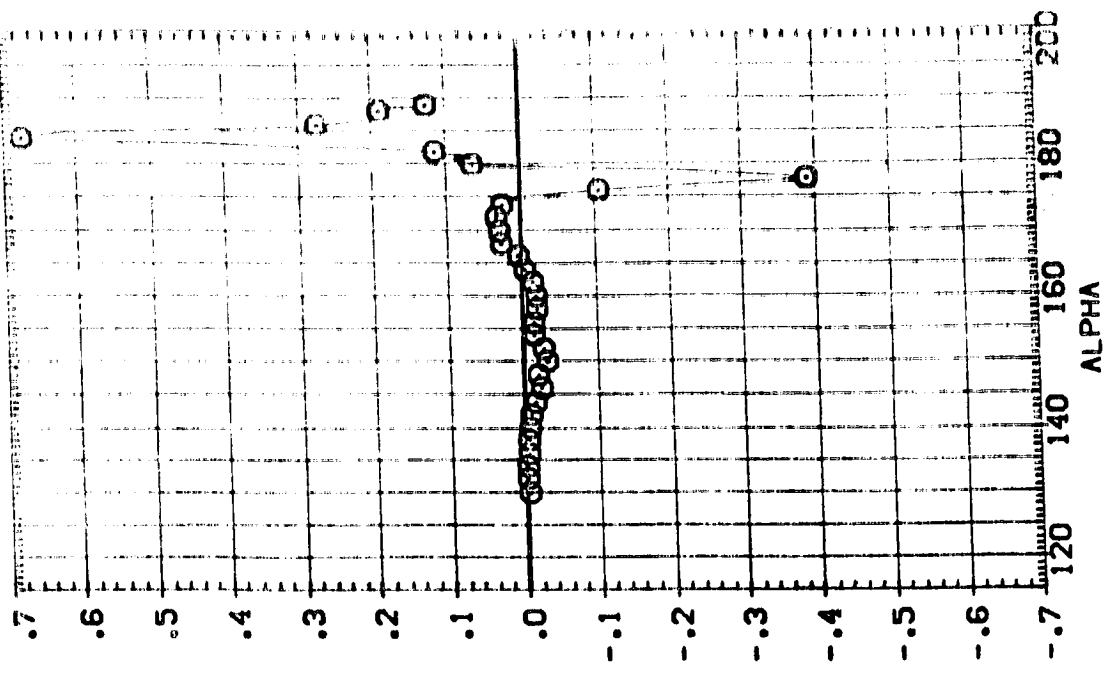
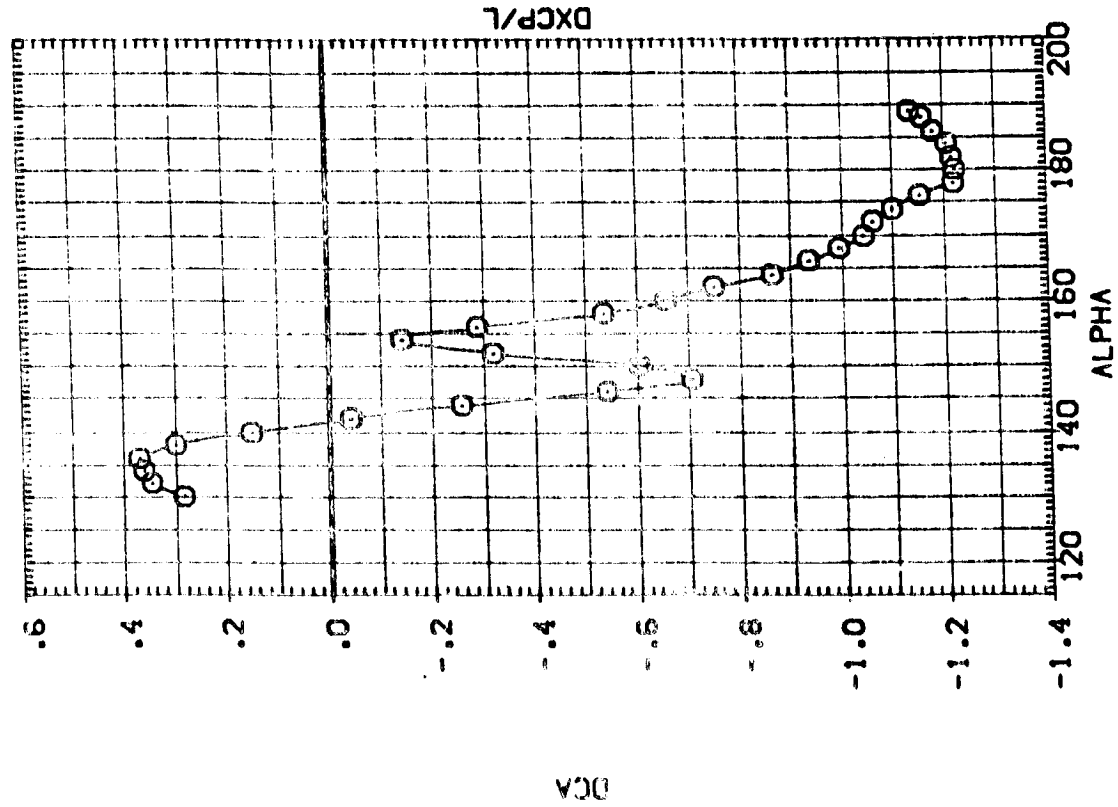
EFFECT OF TRUNCATED NOZZLE ON SRB AERODYNAMIC CHARACTERISTICS

(8)MACH = 3.48



DATA SET SYMBOL: ○
 CONFIGURATION DESCRIPTION: MSFC 590/595 (SA26F) EFFECT OF E18 - E1A

BETA: .000
 PHI: .000
 ELT: .000
 SEPRM: .000
 REFERENCE INFORMATION:
 SPEC: .5000
 LRF: .8000
 BRP: .3000
 XAP: 5.8770
 YAP: .7000
 ZAP: .1000
 SCALE: .0000

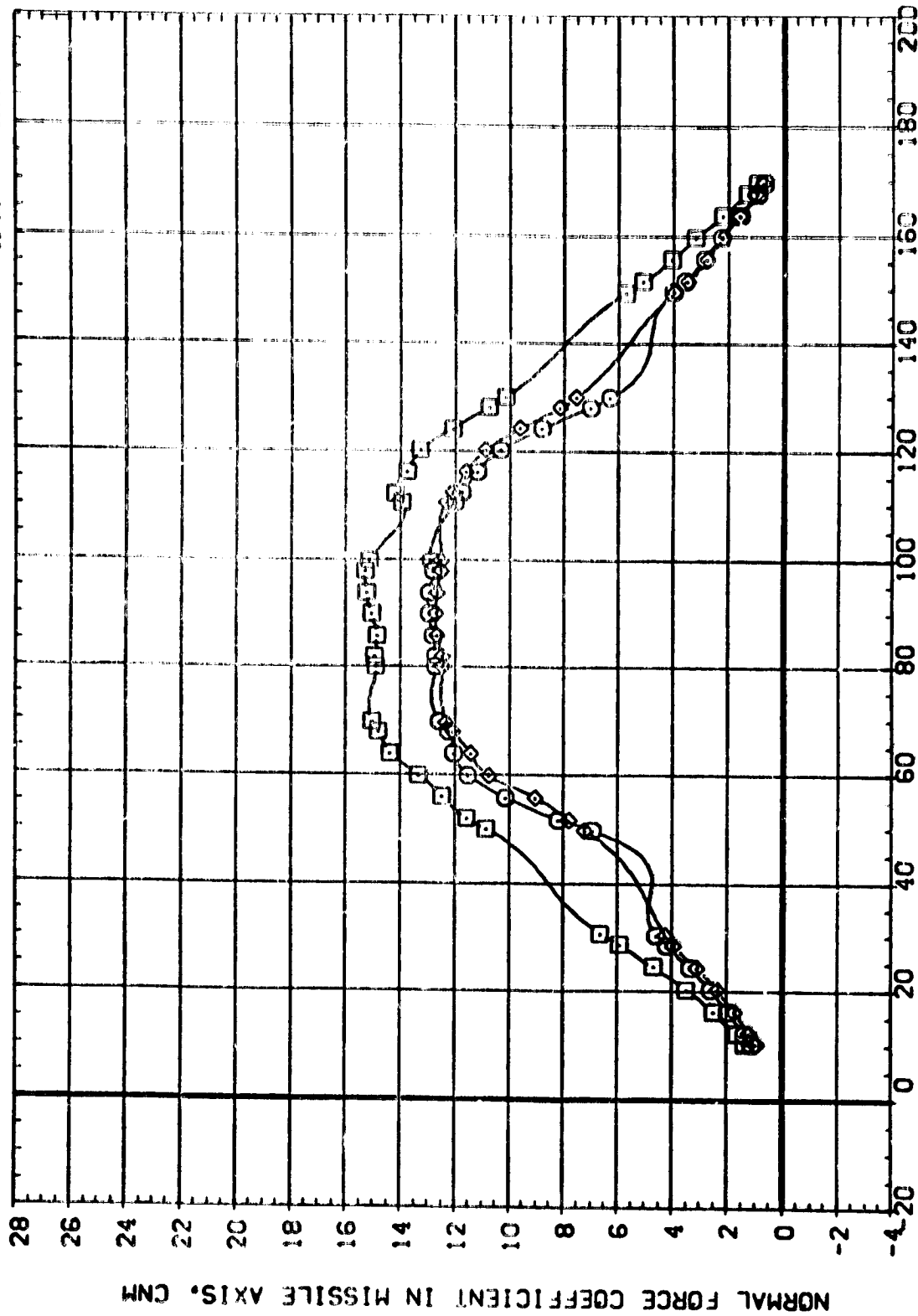


EFFECT OF TRUNCATED NOZZLE ON SRB AERODYNAMIC CHARACTERISTICS

CCJ MACH = 4.96

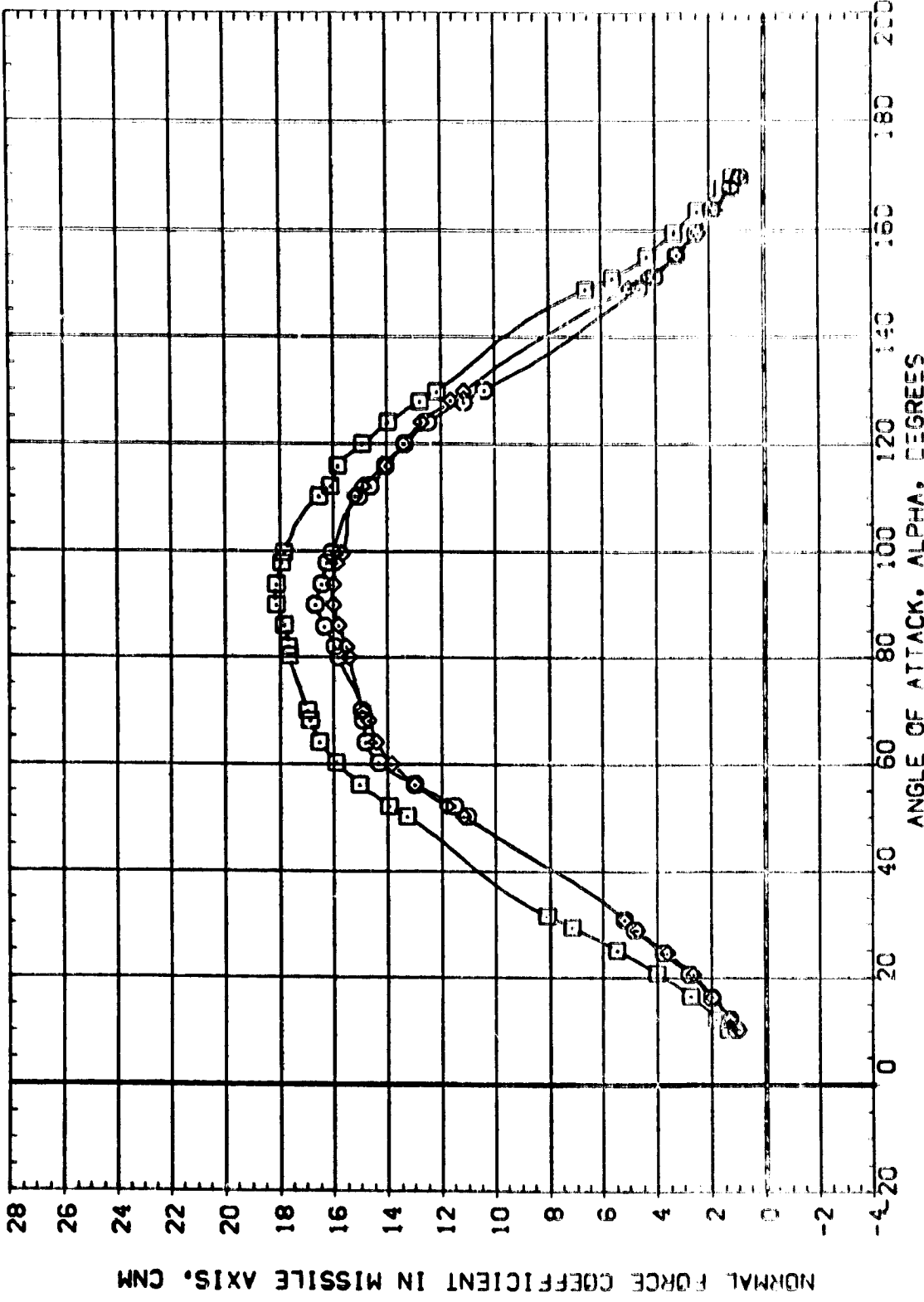


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	PHI	ELT	SEPKRT	REFERENCE INFORMATION
(C95103)	MSFC 590(SA26F) 142-IN. SRB(139) N8RE(15) ELT	.000	45.000	1.000	1.000	SREF 5030
(C95104)	MSFC 590(SA26F) 142-IN. SRB(139) N8RE(15) ELT	.000	90.000	1.000	1.000	LREF .8000
(C95105)	MSFC 590(SA26F) 142-IN. SRB(139) N8RE(15) ELT	.000	135.000	1.000	1.000	BREF .8000
						XREF S.5570
						YREF .0000
						ZREF .0000
						SCALE .0056



AERODYNAMIC CHARACTERISTICS OF A SRB WITH SEPARATION ROCKETS AND ELECT. TUNNEL

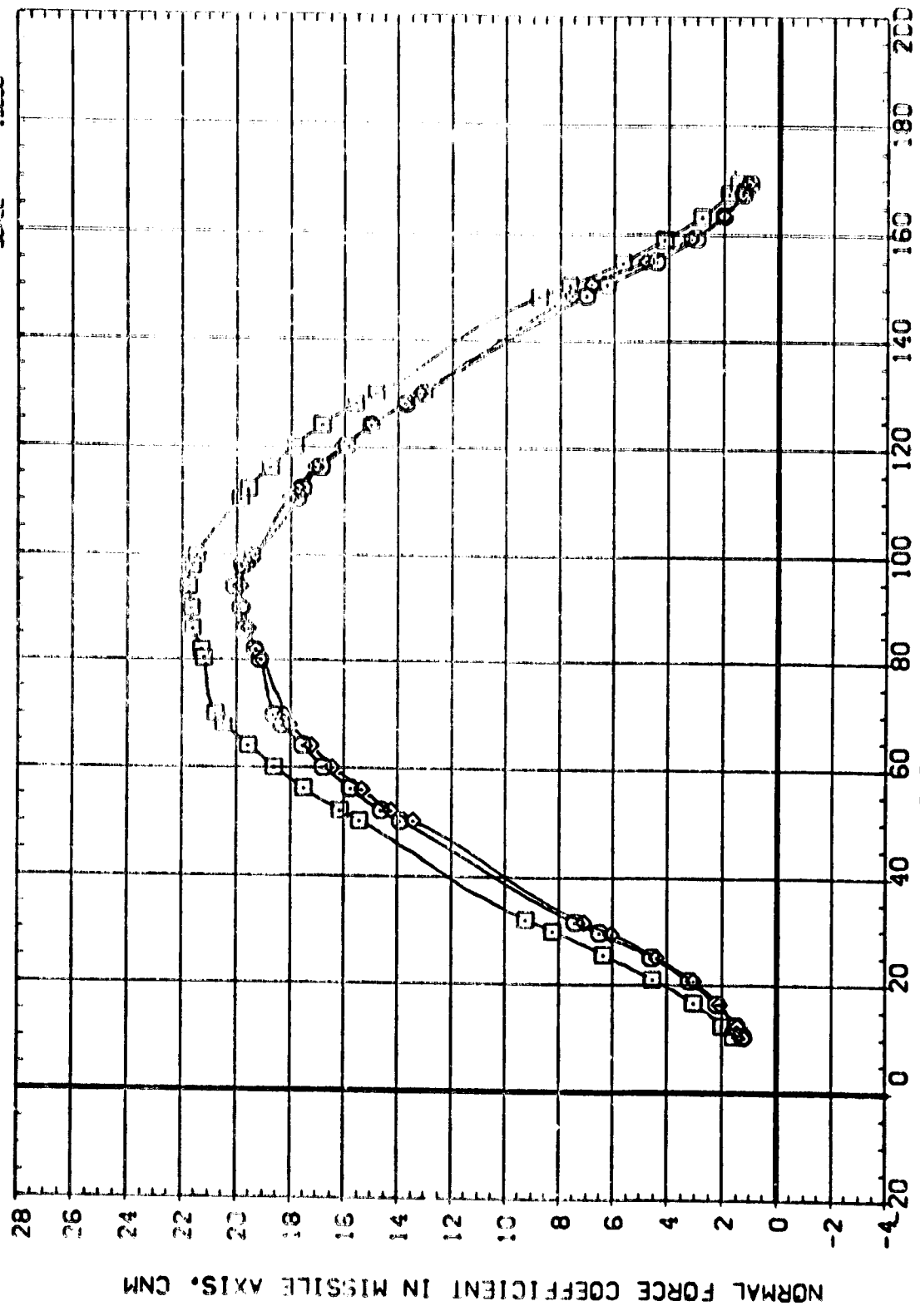
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	PHI	ELT	SECRET	REFERENCE INFORMATION
(C95103)	MSFC SRB(SA26) (42-IN. SRB(139) NRE(15) ELT	.000	45.000	1.000	1.000	SRB(SA26) SRB(139) NRE(15) ELT
(C95104)	MSFC SRB(SA26) (42-IN. SRB(139) NRE(15) ELT	.000	90.000	1.000	1.000	SRB(SA26) SRB(139) NRE(15) ELT
(C95105)	MSFC SRB(SA26) (42-IN. SRB(139) NRE(15) ELT	.000	135.000	1.000	1.000	SRB(SA26) SRB(139) NRE(15) ELT



AERODYNAMIC CHARACTERISTICS OF A SRB WITH SEPARATION ROCKETS AND ELECT. TUNNEL
 (B)MACH = .90 PAGE 90

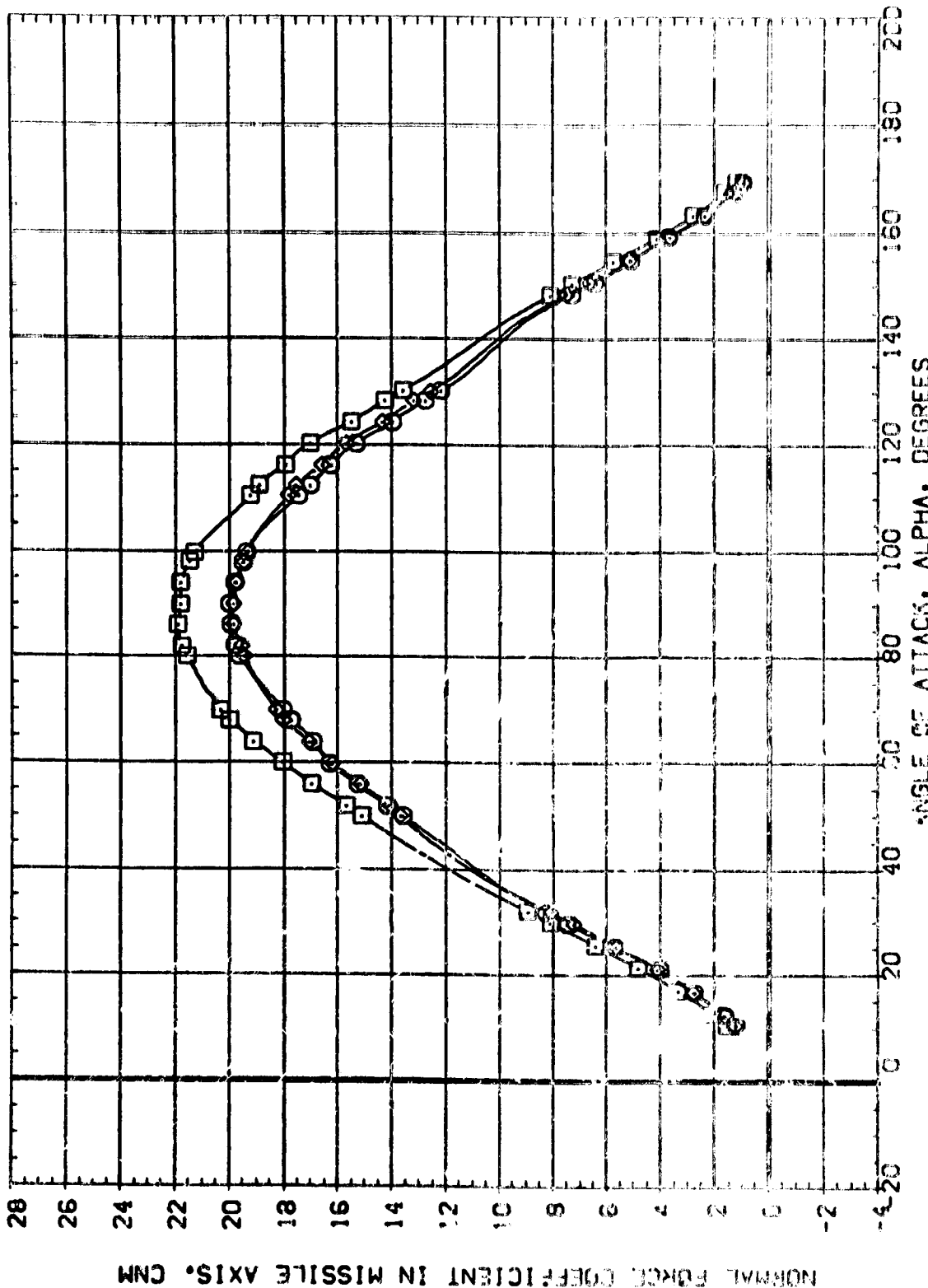


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	PHI	ELT	SEPRAT	REFERENCE INFORMATION
(CS103)	MSFC 590(SA26F) 142-IN. SRB(130)	.000	45.000	1.000	1.000	SREF 5030
(CS104)	MSFC 590(SA26F) 142-IN. SRB(130)	.000	90.000	1.000	1.000	LEFF 8000
(CS105)	MSFC 590(SA26F) 142-IN. SRB(130)	.000	135.000	1.000	1.000	BRFF 8000
						SR 222222
						S 5000
						YREF 5000
						ZREF 5000
						SCALE 1.000



AERODYNAMIC CHARACTERISTICS OF A SRB WITH SEPARATION ROCKETS AND ELECT. TUNNEL
 (C)MACH = 1.20
 PAGE 31

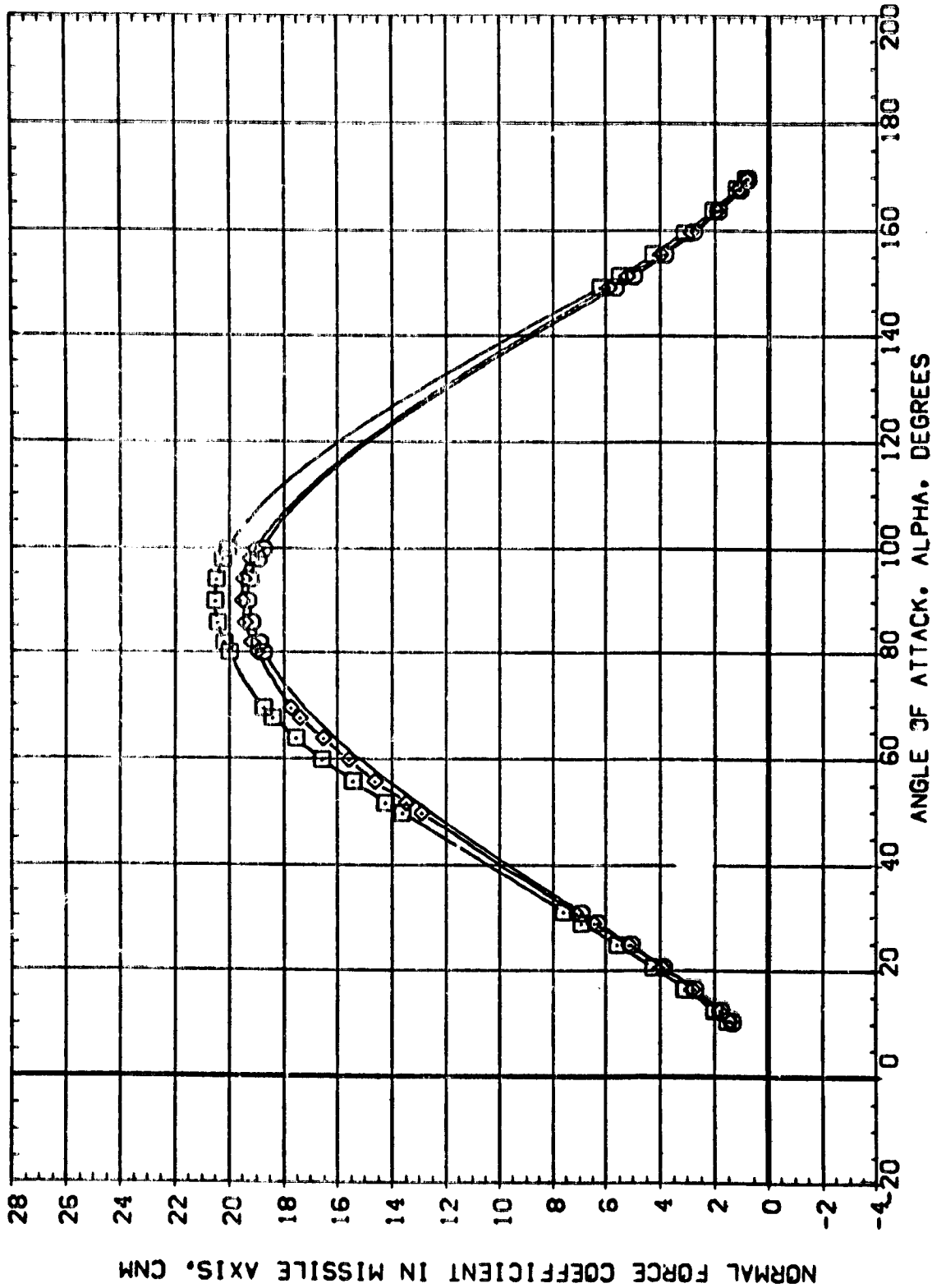
DATA SET SYMOL	CONFIGURATION DESCRIPTION	BETA	PHI	ELT	SEPARAT	REFERENCE INFORMATION
(CS103)	MSFC 590(SA26F) 142-IN. SRB(139)	.000	45.000	1.000	1.000	SFC
(CS104)	MSFC 590(SA26F) 142-IN. SRB(139)	.000	90.000	1.000	1.000	8000
(CS105)	MSFC 590(SA26F) 142-IN. SRB(139)	.000	135.000	1.000	1.000	16000



AERODYNAMIC CHARACTERISTICS OF A SRB WITH SEPARATION ROCKETS AND ELECT. TUNNEL
 (COMACH = 1.96) PAGE 32

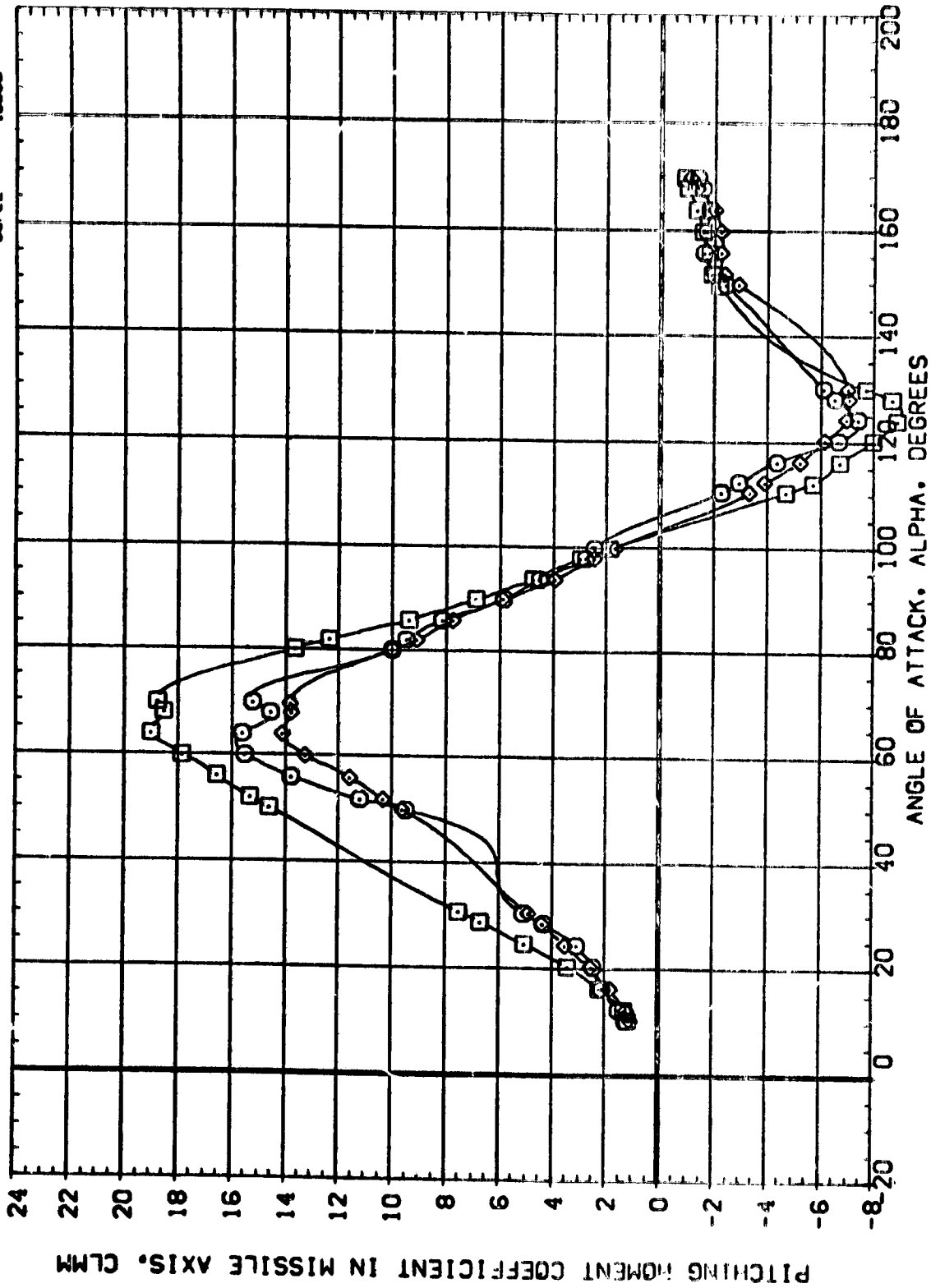


DATA SET SYMBOL: (C55103) (C55104) (C55105)
 CONFIGURATION DESCRIPTION: MSFC 590(SA26F) 142-IN. SRB(139) MSFC 590(SA26F) 142-IN. SRB(139) MSFC 590(SA26F) 142-IN. SRB(139)
 REFERENCE INFORMATION: SC90 .8000 IN. S0 .8000 IN. S1 .8000 IN. S2 .5570 IN. S3 .0000 IN. S4 .0000 IN. S5 .0056 IN. SCALE
 BETA: .000 45.000 .000 90.000 .000 135.000
 ELT: 1.000 1.000 1.000
 PH1: .000 .000 .000
 SERPNT: 1.000 1.000 1.000
 YMRP: .0000
 ZMRP: .0000



AERODYNAMIC CHARACTERISTICS OF A SRB WITH SEPARATION ROCKETS AND ELECT. TUNNEL

DATA SET SYMBOL: (CS5103) (CS5104) (CS5105)
 CONFIGURATION DESCRIPTION: MSFC 550(SA26F) 142-IN. SRB(139) N9RE(1S) ELT
 MSFC 550(SA26F) 142-IN. SRB(139) N9RE(1S) ELT
 MSFC 550(SA26F) 142-IN. SRB(139) N9RE(1S) ELT
 REFERENCE INFORMATION: SRFB 5030
 SRFB 8000
 SRFB 8000
 XREF \$5570
 YREF 3000
 ZREF 3000
 SCALE .0056
 SEPRNT 1.000
 ELT 1.000
 PH 45.000
 BETA .000
 .000
 .000
 N9RE(1S) ELT
 N9RE(1S) ELT
 N9RE(1S) ELT

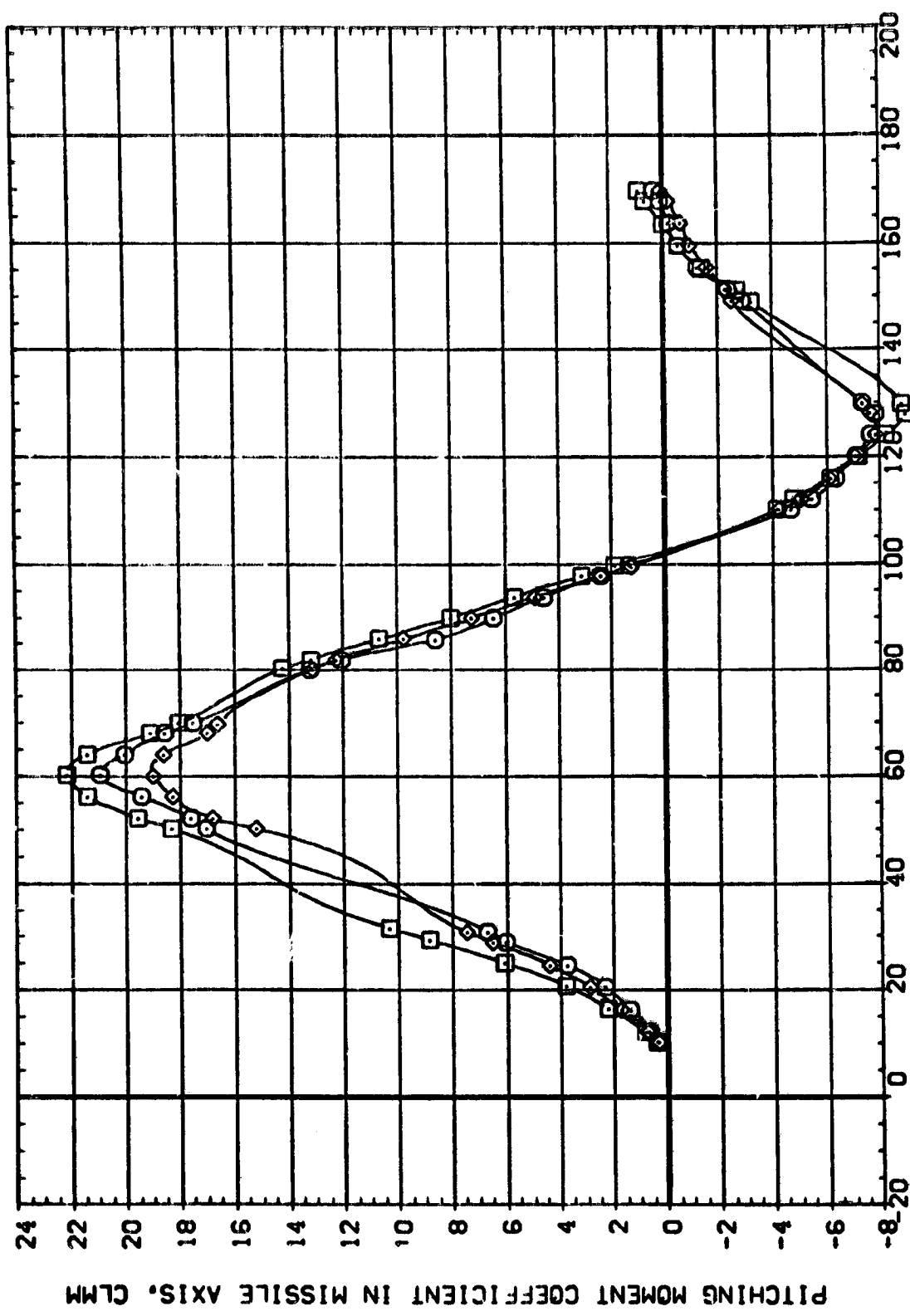


AERODYNAMIC CHARACTERISTICS OF A SRB WITH SEPARATION ROCKETS AND ELECT. TUNNEL

CAIMACH = .60



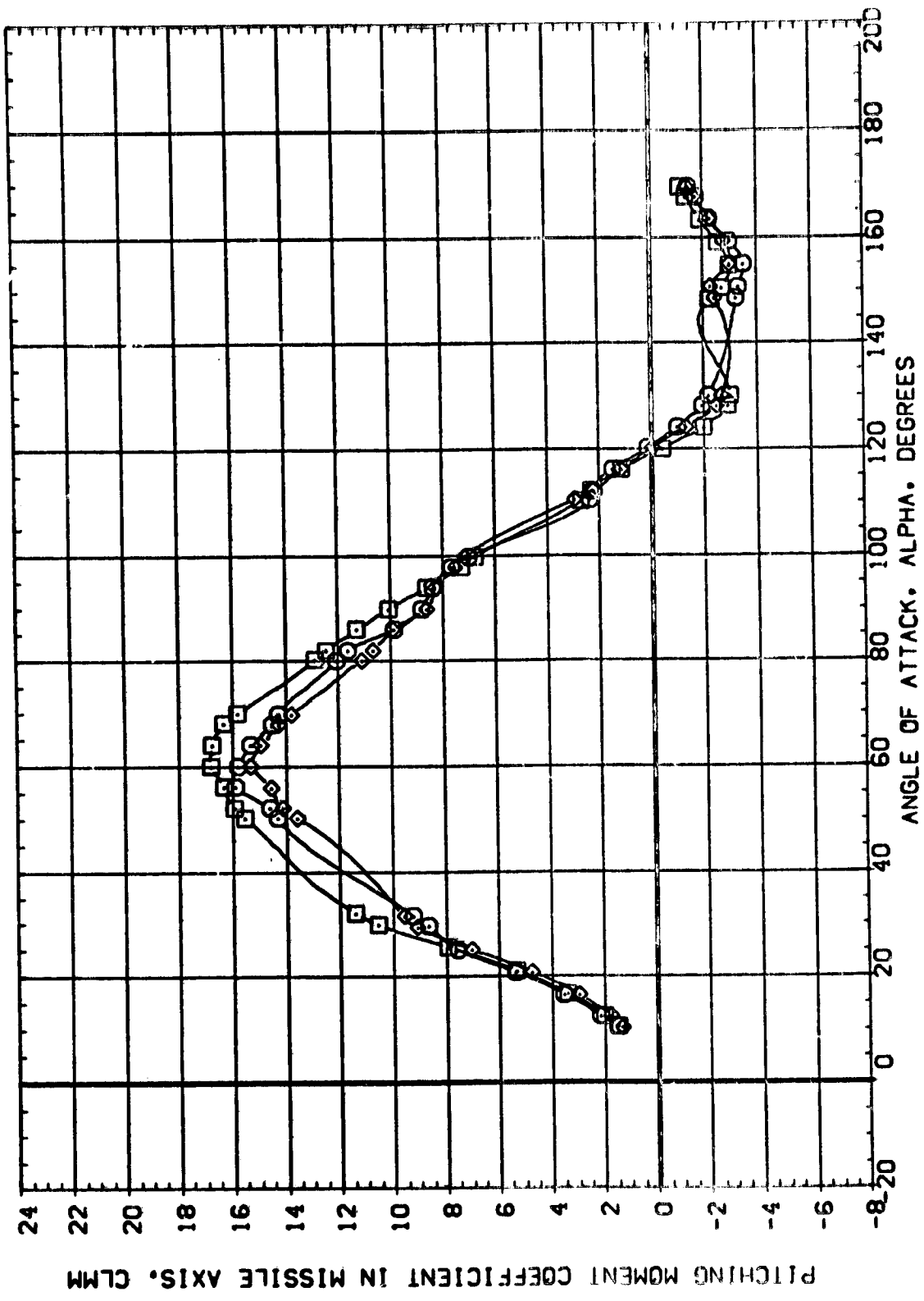
DATA SET SYMBO.	CONFIGURATION DESCRIPTION	BETA	PHI	ELT	SEPRAT	REFERENCE INFORMATION
(CS103)	MSFC 550(SA26F) 142-IN. SRB(139)	.000	45.000	1.000	1.000	SREF 5030
(CS104)	MSFC 550(SA26F) 142-IN. SRB(139)	.000	90.000	1.000	1.000	LREF 8000
(CS105)	MSFC 550(SA26F) 142-IN. SRB(139)	.000	135.000	1.000	1.000	BREF 8000
						XMRP 5.5570
						YMRP .0000
						ZMRP .0000
						SCALE .0056



AERODYNAMIC CHARACTERISTICS OF A SRB WITH SEPARATION ROCKETS AND ELECT. TUNNEL

(B)MACH = .90

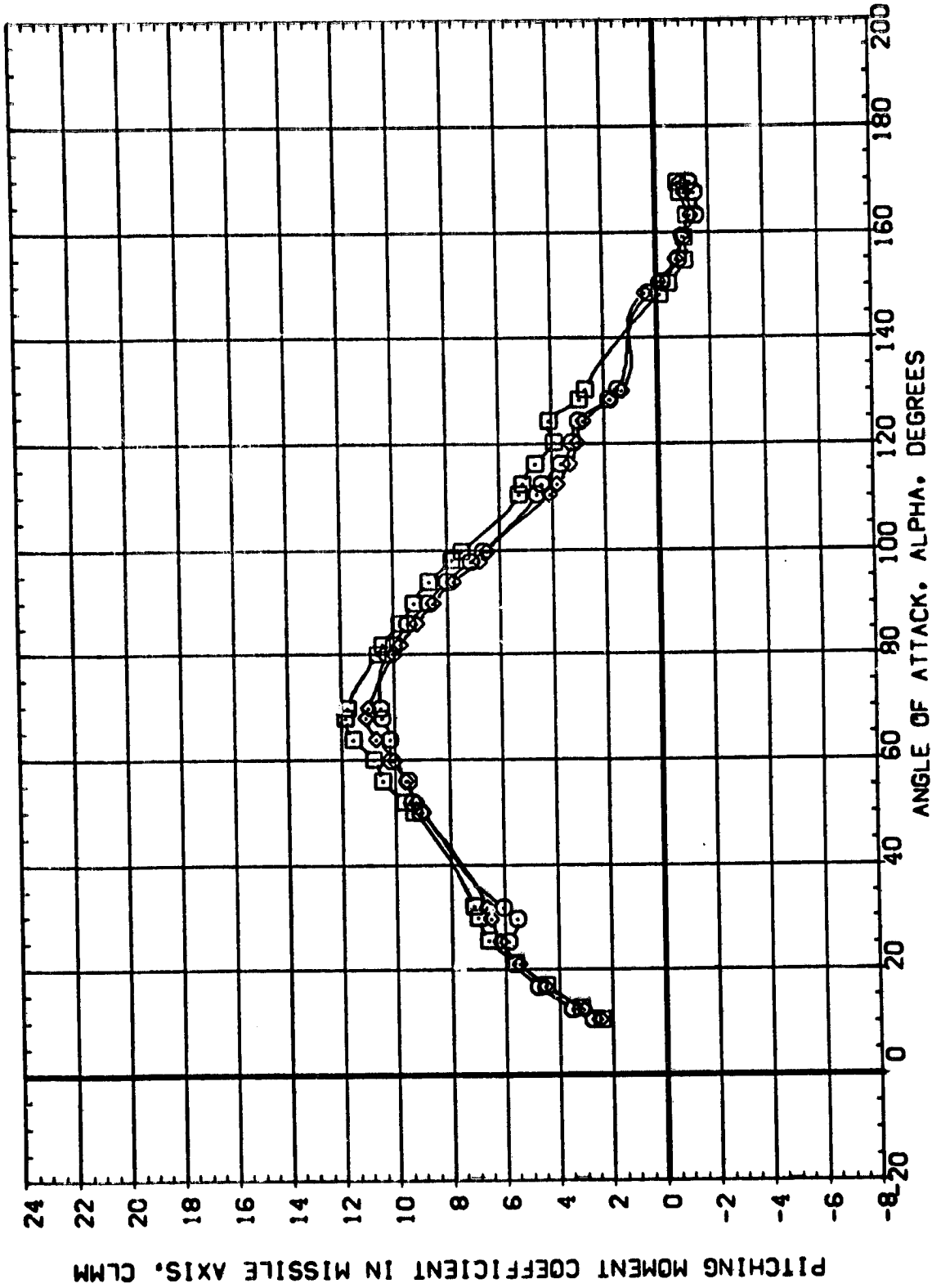
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	PHI	ELT	SEPKRT	REFERENCE INFORMATION
(C95103)	MSC 590(SA26F) 142-IN. SRB(139)	.000	45.000	1.000	1.000	S030
(C95104)	MSC 590(SA26F) 142-IN. SRB(139)	.000	50.000	1.000	1.000	8000
(C95105)	MSC 590(SA26F) 142-IN. SRB(139)	.000	135.000	1.000	1.000	8000
						5-5570
						2000
						0000
						ZIMP
						SCALE
						.0056



AERODYNAMIC CHARACTERISTICS OF A SRB WITH SEPARATION ROCKETS AND ELECT. TUNNEL

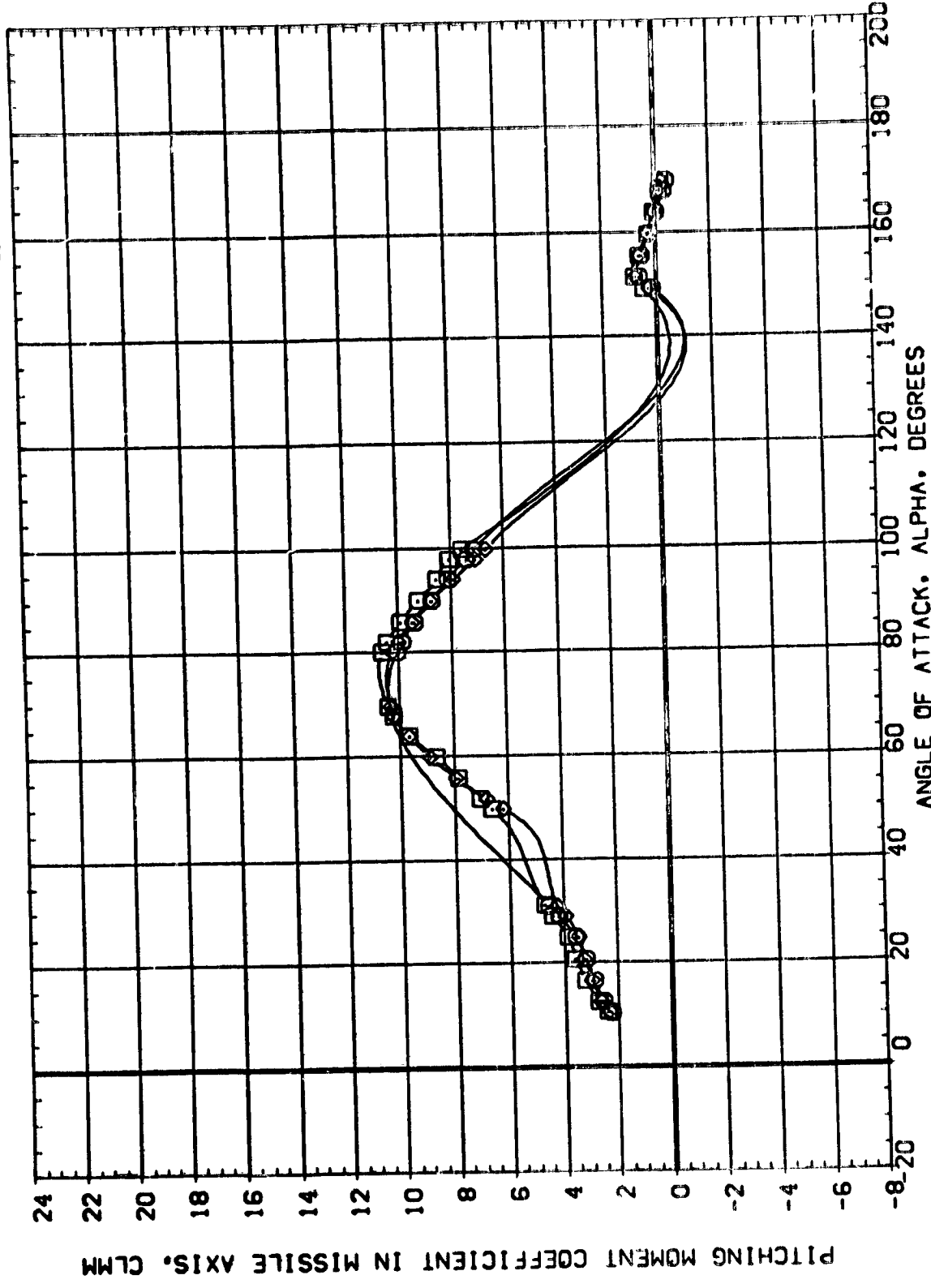


DATA SET SYMBO	CONFIGURATION DESCRIPTION	BETA	PHI	ELT	SEPRMT	REFERENCE INFORMATION
(CS9103)	MSFC 590(SA26F) 142-IN. SRB(138) NPRE(1) ELT	.000	45.000	1.000	1.000	S030
(CS9104)	MSFC 590(SA26F) 142-IN. SRB(138) NPRE(1) ELT	.000	90.000	1.000	1.000	LREF
(CS9105)	MSFC 590(SA26F) 142-IN. SRB(138) NPRE(1) ELT	.000	135.000	1.000	1.000	BREF
						XMRP
						YMRP
						ZMRP
						SCALE



AERODYNAMIC CHARACTERISTICS OF A SRB WITH SEPARATION ROCKETS AND ELECT. TUNNEL

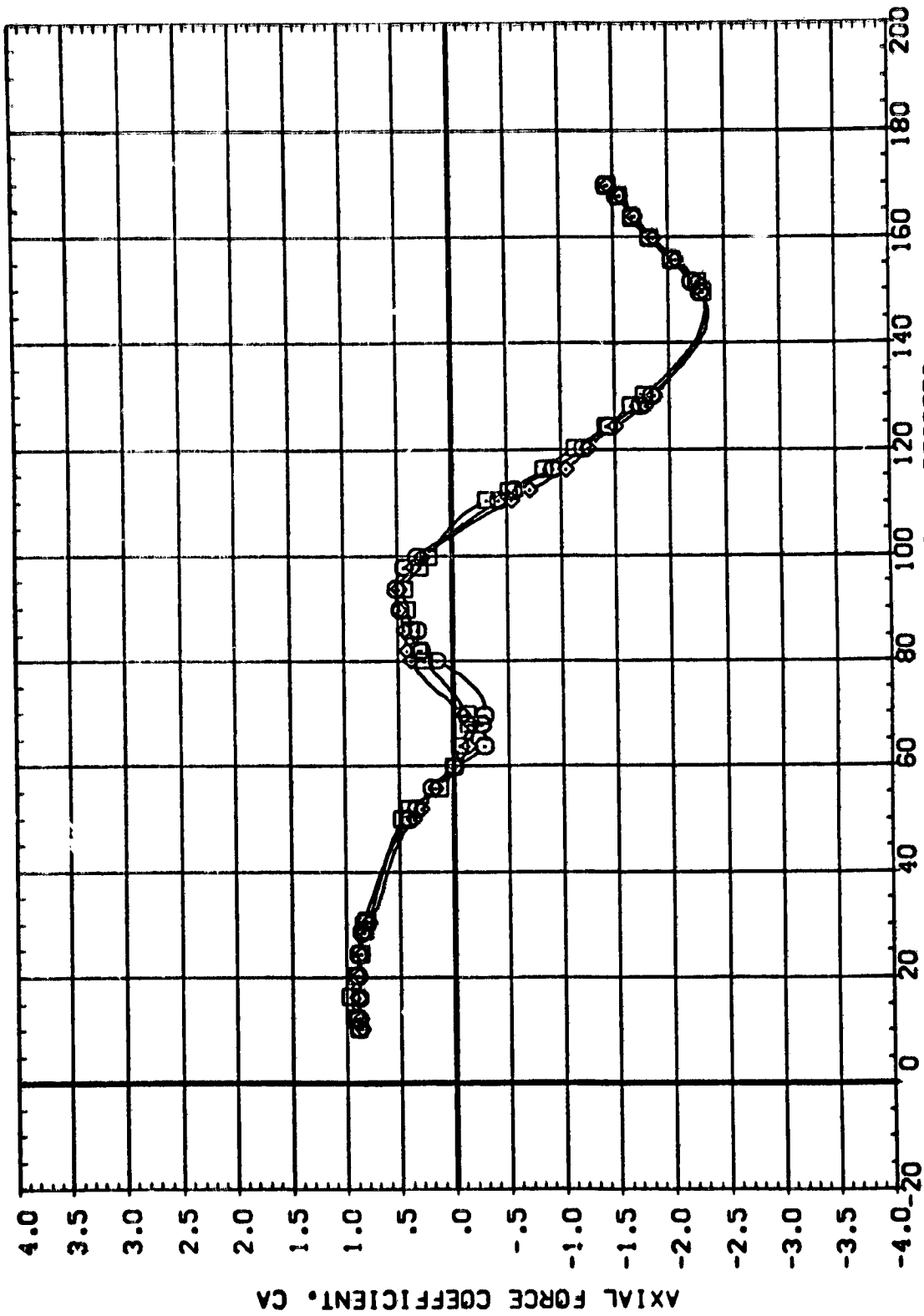
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	PHI	ELT	SEPRKT	REFERENCE INFORMATION	SO. IN.
(C95) (03)	MSFC 590 (SA26F) 142-IN. SRB (139)	.000	45.000	1.000	1.000	SREF	.5030
(C95) (04)	MSFC 590 (SA26F) 142-IN. SRB (139)	.000	90.000	1.000	1.000	LREF	.8000
(C95) (05)	MSFC 590 (SA26F) 142-IN. SRB (139)	.000	135.000	1.000	1.000	BREF	.8000
						XREF	5.5570
						YREF	.0000
						ZREF	.0000
						SCALE	.0056



AERODYNAMIC CHARACTERISTICS OF A SRB WITH SEPARATION ROCKETS AND ELECT. TUNNEL

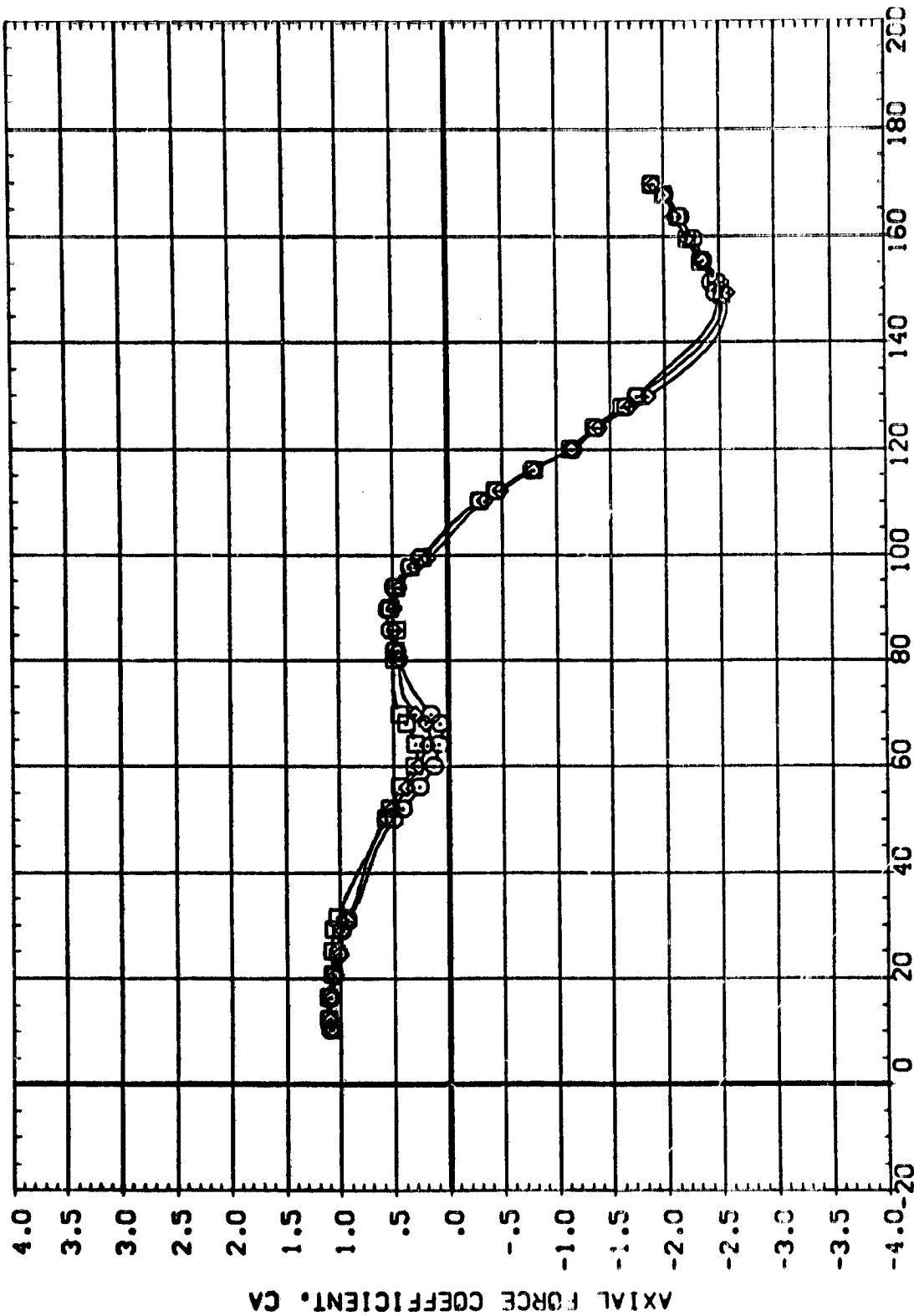


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	PHI	ELT	SEPRAT	REFERENCE INFORMATION
(CS103)	MSFC 590(SA26F) 142-IN. SRB(139) NERE(1) ELT	.000	45.000	1.000	1.000	SREF 5030 IN.
(CS104)	MSFC 590(SA26F) 142-IN. SRB(139) NERE(1) ELT	.000	90.000	1.000	1.000	LREF 8030 IN.
(CS105)	MSFC 590(SA26F) 142-IN. SRB(139) NERE(1) ELT	.000	135.000	1.000	1.000	BREF 8070 IN.
						S-5570 IN.
						YMRP .0000 IN.
						ZMRP .0000 IN.
						SCALE .0056



AERODYNAMIC CHARACTERISTICS OF A SRB WITH SEPARATION ROCKETS AND ELECT. TUNNEL

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	PHI	ELT	SEPRAT	REFERENCE INFORMATION
(CS103)	MSFC 590(SA26F) 142-IN. SRB(139)	.000	45.000	1.000	1.000	SREF .5030
(CS104)	MSFC 590(SA26F) 142-IN. SRB(139)	.000	90.000	1.000	1.000	LREF .8000
(CS105)	MSFC 590(SA26F) 142-IN. SRB(139)	.000	135.000	1.000	1.000	BREF .8000
						YREF 5.5570
						ZREF .0000
						ZREF .0000
						SCALE .0056

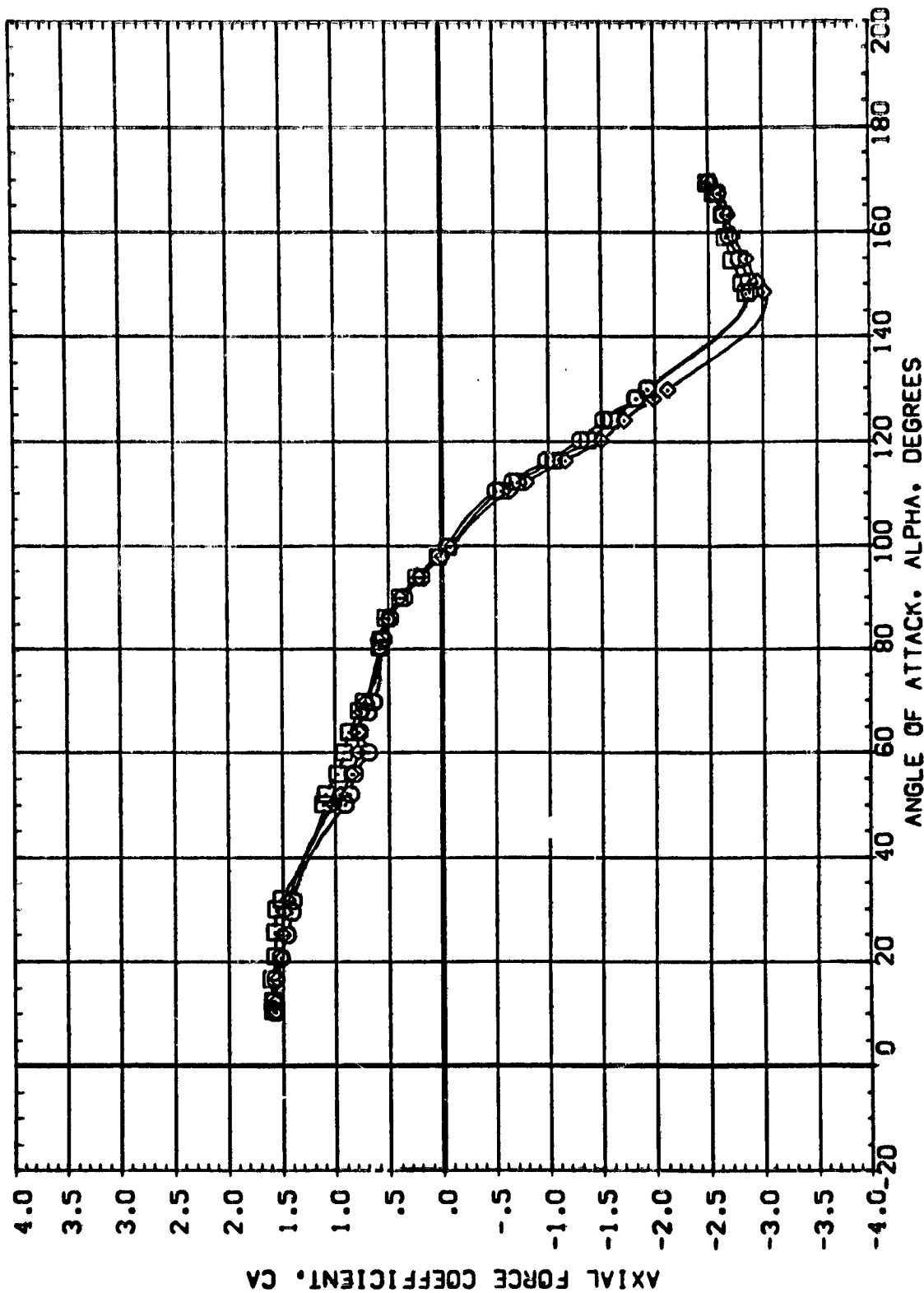


AERODYNAMIC CHARACTERISTICS OF A SRB WITH SEPARATION ROCKETS AND ELECT. TUNNEL

(B)YAC- = .90

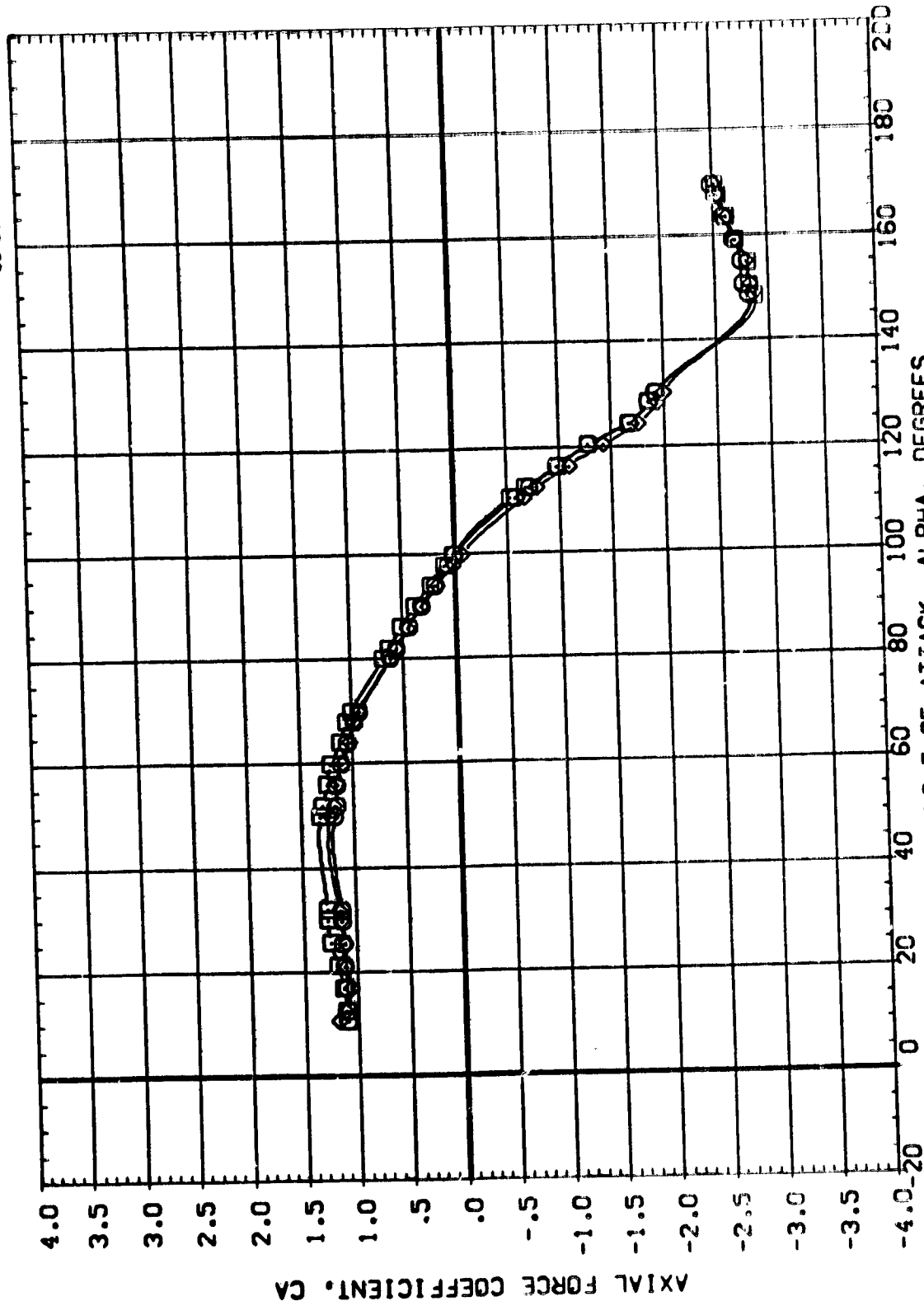


DATA SET SYMBO.	CONFIGURATION DESCRIPTION	BETA	PHI	ELT	SEPRKT	REFERENCE INFORMATION
(CS5103)	MFC 590(SA26F) 142-IN. SRB(129)	.000	45.000	1.000	1.000	SREF
(CS5104)	MFC 590(SA26F) 142-IN. SRB(129)	.000	90.000	1.000	1.000	LREF
(CS5105)	MFC 590(SA26F) 142-IN. SRB(129)	.000	135.000	1.000	1.000	BREF
						XMRP
						YMRP
						ZMRP
						SCALE
						.5000
						.8000
						.8000
						5.5570
						.0000
						.0000
						.0056



AERODYNAMIC CHARACTERISTICS OF A SRB WITH SEPARATION ROCKETS AND ELECT. TUNNEL

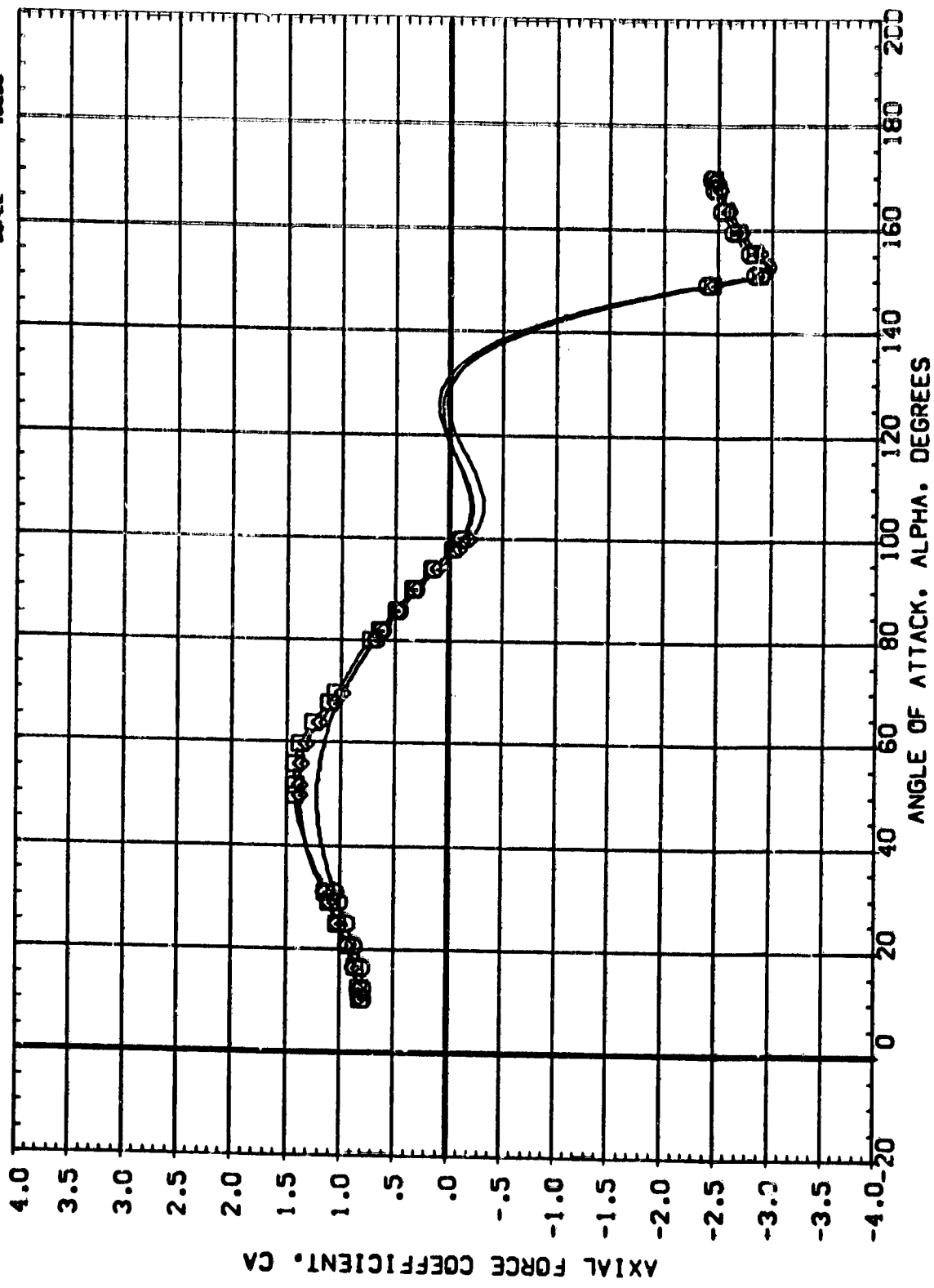
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	PHI	ELT	SEPRAT	REFERENCE INFORMATION
(C85103)	MSFC 590(SA26F) 142-IN. SRB(138) N8RE(15) ELT	.000	45.000	1.000	1.000	SC30
(C85104)	MSFC 590(SA26F) 142-IN. SRB(138) N8RE(15) ELT	.000	90.000	1.000	1.000	.8000
(C85105)	MSFC 590(SA26F) 142-IN. SRB(138) N8RE(15) ELT	.000	135.000	1.000	1.000	.8000
						5.5570
						.0000
						.0000
						.0056
						SCALE



AERODYNAMIC CHARACTERISTICS OF A SRB WITH SEPARATION ROCKETS AND ELECT. TUNNEL
 COJMACH = 1.96
 PAGE 42



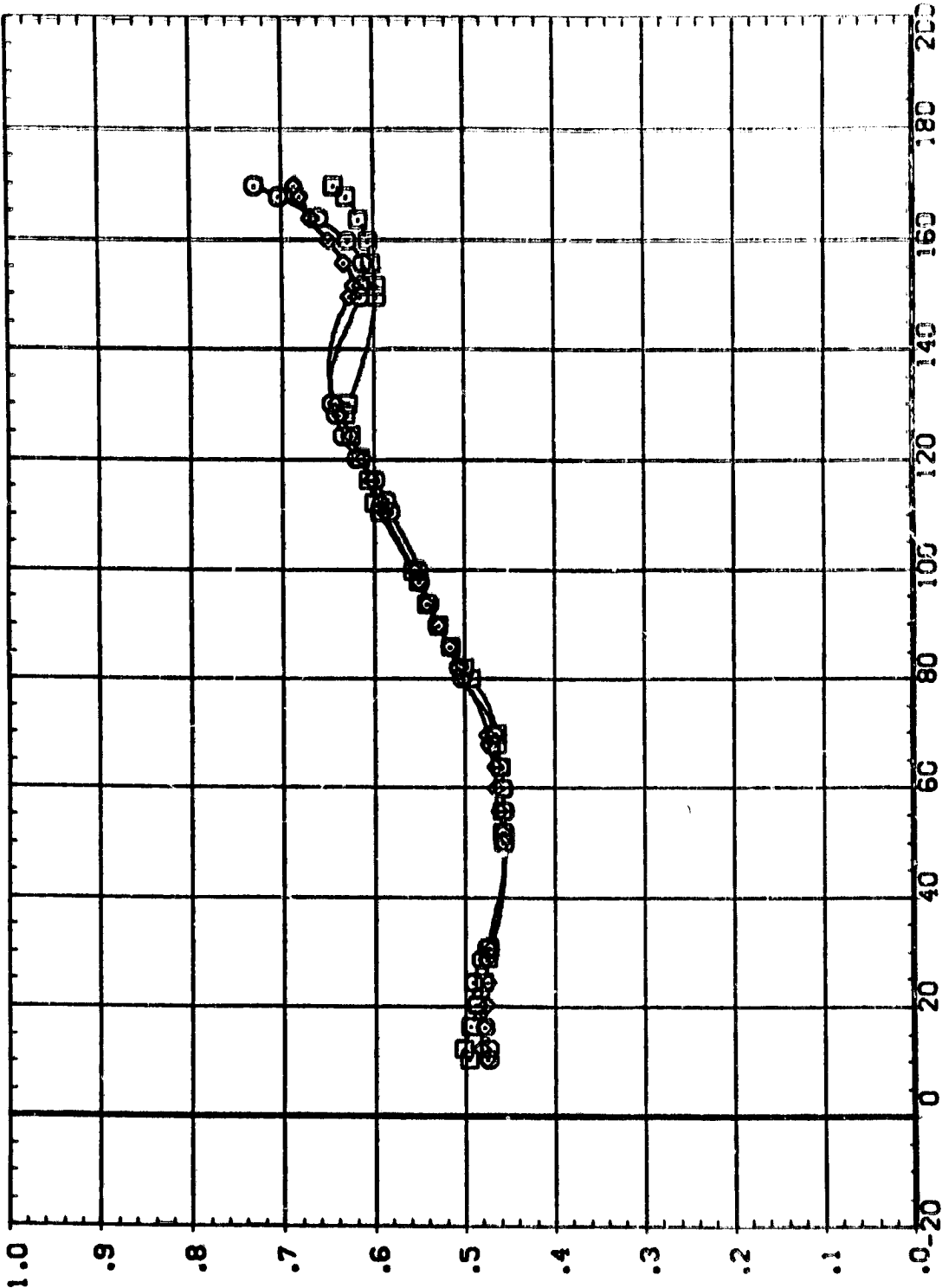
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	PMI	ELT	SEPRAT	REFERENCE INFORMATION
(CS103)	MSFC 590(SA25F) 142-IN. SRB(139) NPRE(15) ELT	.000	45.000	1.000	1.000	SREF .5000 SD. IN
(CS104)	MSFC 590(SA25F) 142-IN. SRB(139) NPRE(15) ELT	.000	90.000	1.000	1.000	LREF .8000 IN.
(CS105)	MSFC 590(SA25F) 142-IN. SRB(139) NPRE(15) ELT	.000	135.000	1.000	1.000	BREF .8000 IN.
						XPRP 5.5570 IN.
						YPRP .0000 IN.
						ZPRP .0000 IN.
						SCALE .0056



AERODYNAMIC CHARACTERISTICS OF A SRB WITH SEPARATION ROCKETS AND ELECT. TUNNEL

CENTER OF PRESSURE LOCATION BASED ON LONGITUDINAL CHAR., XCP/L

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	PHI	ELT	SEPERT	REFERENCE INFORMATION
(CS103)	MSFC 590(SA26F) 142-IN. SRB(139)	.000	45.000	1.000	1.000	5330
(CS104)	MSFC 590(SA26F) 142-IN. SRB(139)	.000	90.000	1.000	1.000	5300
(CS105)	MSFC 597(SA26F) 142-IN. SRB(139)	.000	135.000	1.000	1.000	5300
					X-REF	5.550
					Y-REF	1.000
					Z-REF	1.000
					SCALE	1.000



AERODYNAMIC CHARACTERISTICS OF A SRB WITH SEPARATION ROCKETS AND ELECT. TUNNEL

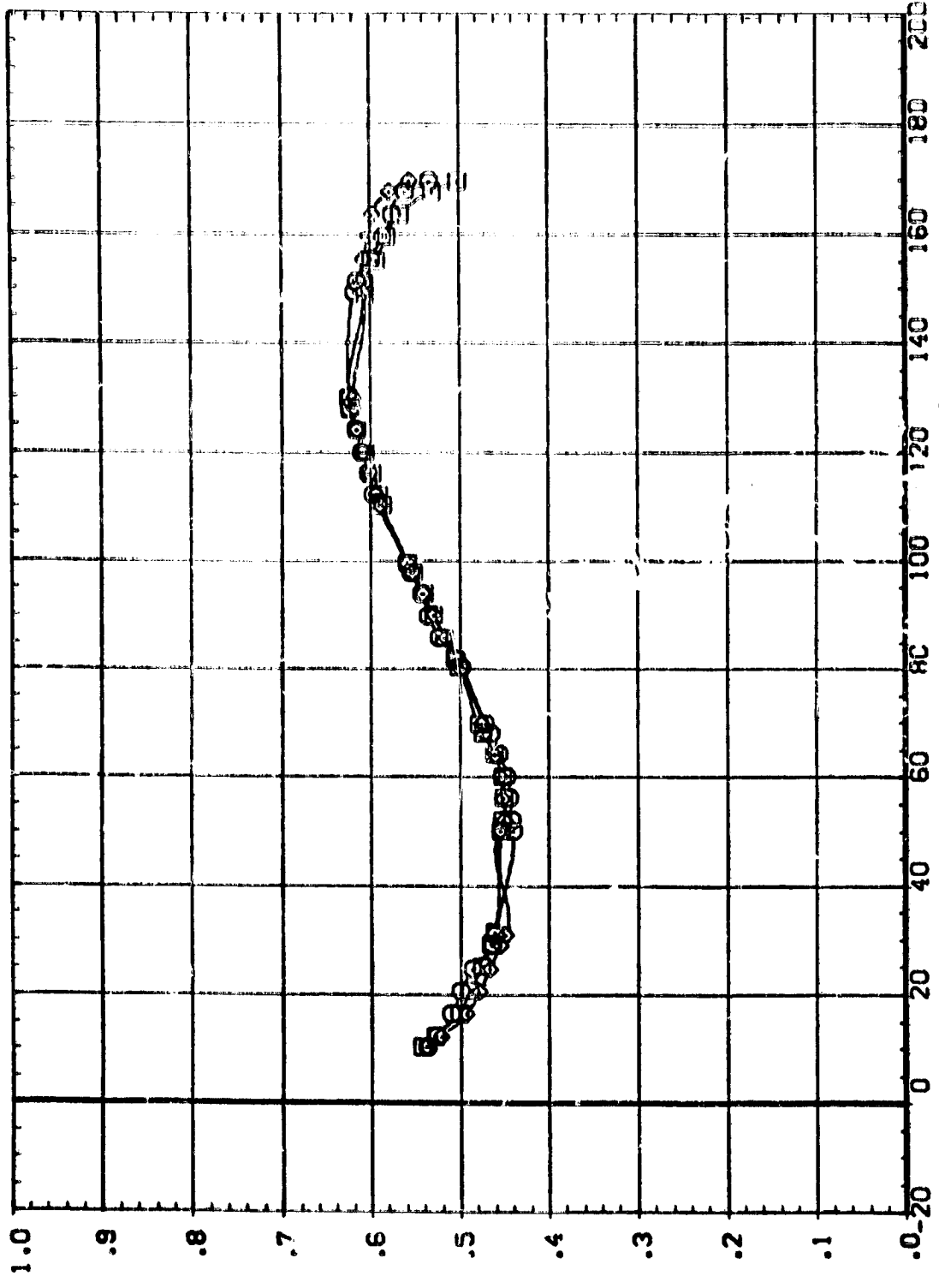
(A)MACH = .60 PAGE 44



DATA SET SYMBOL CONFIGURATION DESCRIPTION BETA PHI ELT SEPRAT REFERENCE INFORMATION

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	PHI	ELT	SEPRAT	REFERENCE INFORMATION
(095103)	M5FC 590(SA26F) 142-IN. SRB(1.39)	.000	45.000	1.000	1.000	SUBO
(095104)	M5FC 590(SA26F) 142-IN. SRB(1.39)	.000	90.000	1.000	1.000	LINE
(095105)	M5FC 590(SA26F) 142-IN. SRB(1.39)	.000	135.000	1.000	1.000	XREF
						TYPE
						ZPR
						SCALE

CENTER OF PRESSURE LOCATION BASED ON LONGITUDINAL CHAR., XCP/L



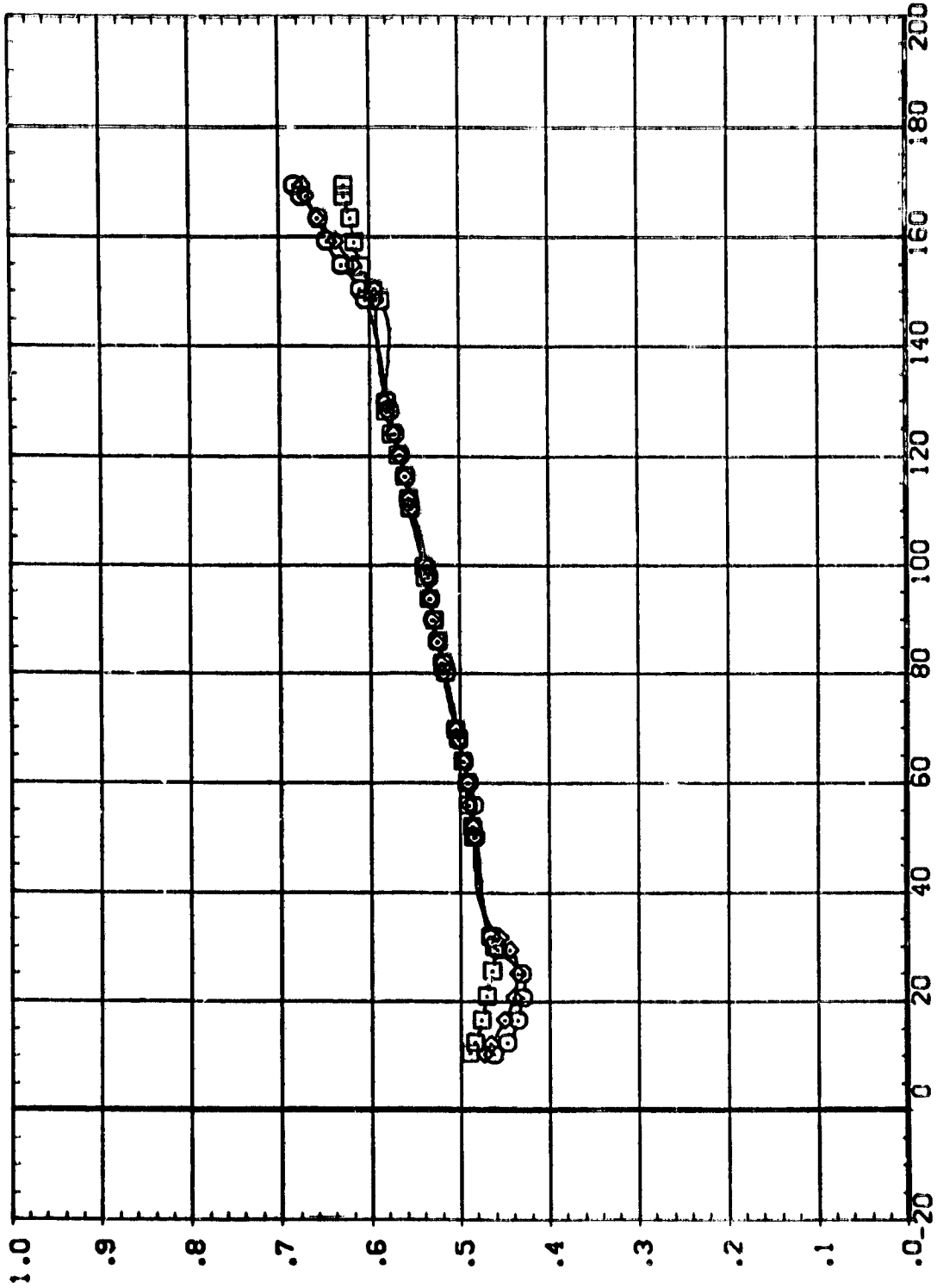
AERODYNAMIC CHARACTERISTICS OF A SRB WITH SEPARATION ROCKETS AND ELECTRICAL TUNNEL

(B)MACH = .90

CENTER OF PRESSURE LOCATION BASED ON LONGITUDINAL CHAR., XCP/L

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	PHI	ELT	SEPARAT	REFERENCE INFORMATION
(C95103)	MSFC 590(SA26F) 142-IN. SRB(139)	.000	45.000	1.000	1.000	SREF
(C95104)	MSFC 590(SA26F) 142-IN. SRB(139)	.000	90.000	1.000	1.000	LREF
(C95105)	MSFC 590(SA26F) 142-IN. SRB(139)	.000	135.000	1.000	1.000	BREF
						YPROP
						ZPROP
						SCALE

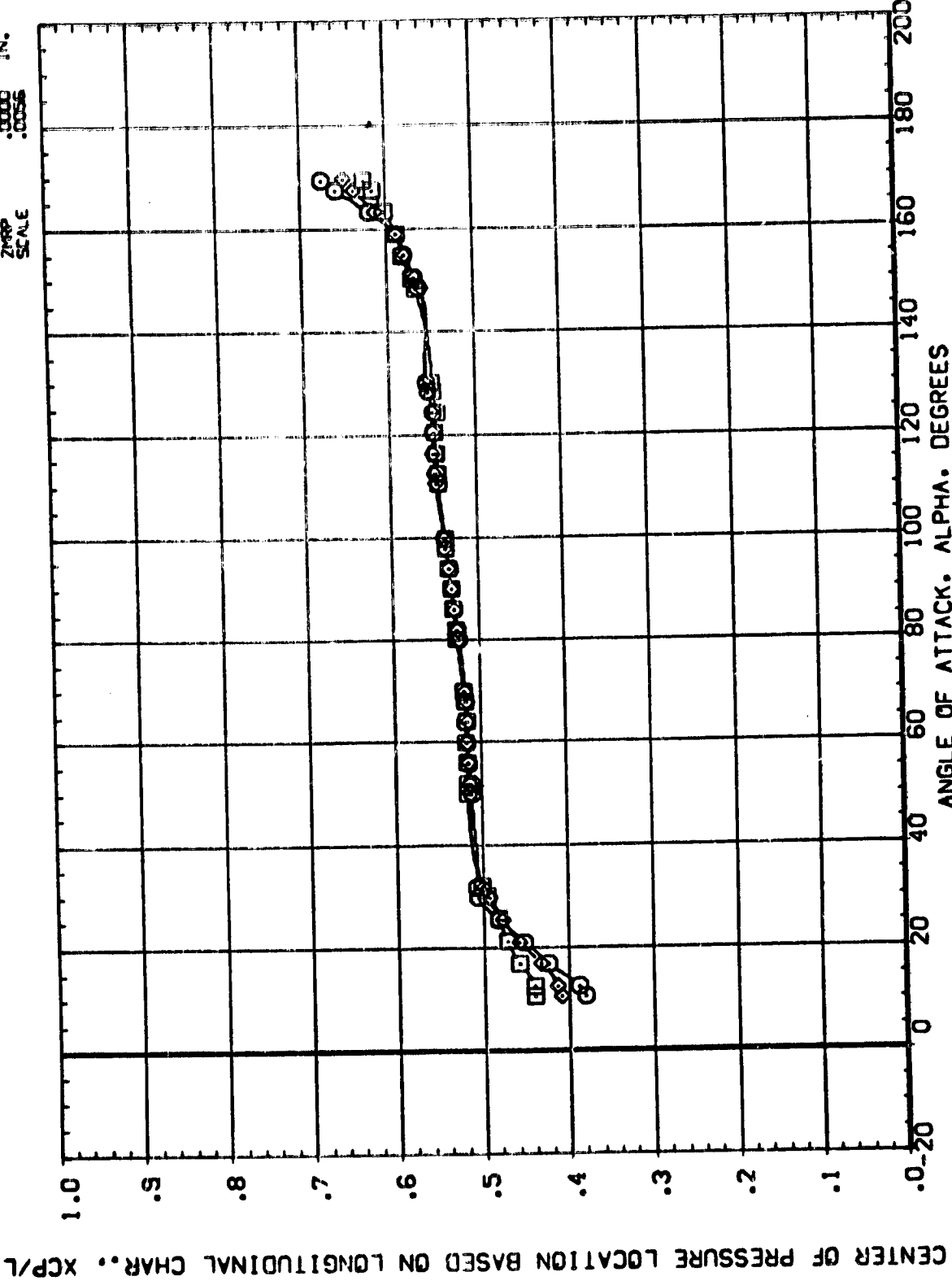
SA 142
SRB 139



AERODYNAMIC CHARACTERISTICS OF A SRB WITH SEPARATION ROCKETS AND ELECT. TUNNEL

CCMACH = 1.20

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	PHI	ELT	SEPRAT	REFERENCE INFORMATION
(C56103)	MSC 590(SA26F) 142-IN. SRB(139)	.000	45.000	1.000	1.000	SCALE
(C56104)	MSC 590(SA26F) 142-IN. SRB(139)	.000	90.000	1.000	1.000	SCALE
(C56105)	MSC 590(SA26F) 142-IN. SRB(139)	.000	135.000	1.000	1.000	SCALE



DATA SET SYMBOL: [C95103] [C95104] [C95105]

CONFIGURATION DESCRIPTION:
 MSFC 590(SA26F) 142-IN. SRB(139) N8RE(15) ELT
 MSFC 590(SA26F) 142-IN. SRB(139) N8RE(15) ELT
 MSFC 590(SA26F) 142-IN. SRB(139) N8RE(15) ELT

BETA: .000 45.000
 .000 90.000
 .000 135.000

SEPRKT: 1.000
 1.000
 1.000

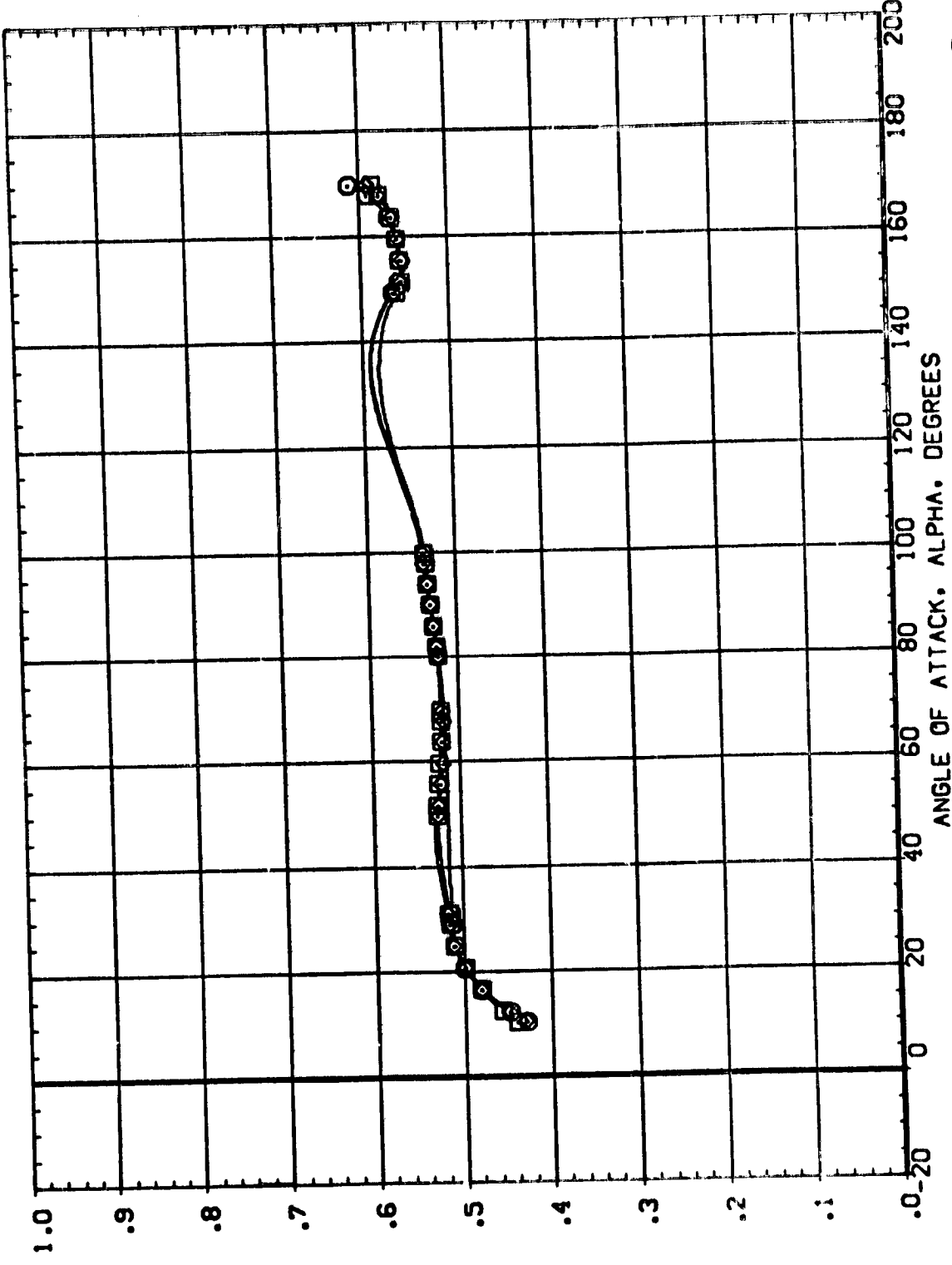
ELT: 1.000
 1.000
 1.000

PHI: 45.000
 90.000
 135.000

REFERENCE INFORMATION:
 SREF: 5030
 LREF: 8030
 BREF: 8030
 XMRP: 5.5570
 YMRP: .0000
 ZMRP: .0000
 SCALE: .0056

SD: IN.
 IN.
 IN.
 IN.
 IN.
 IN.

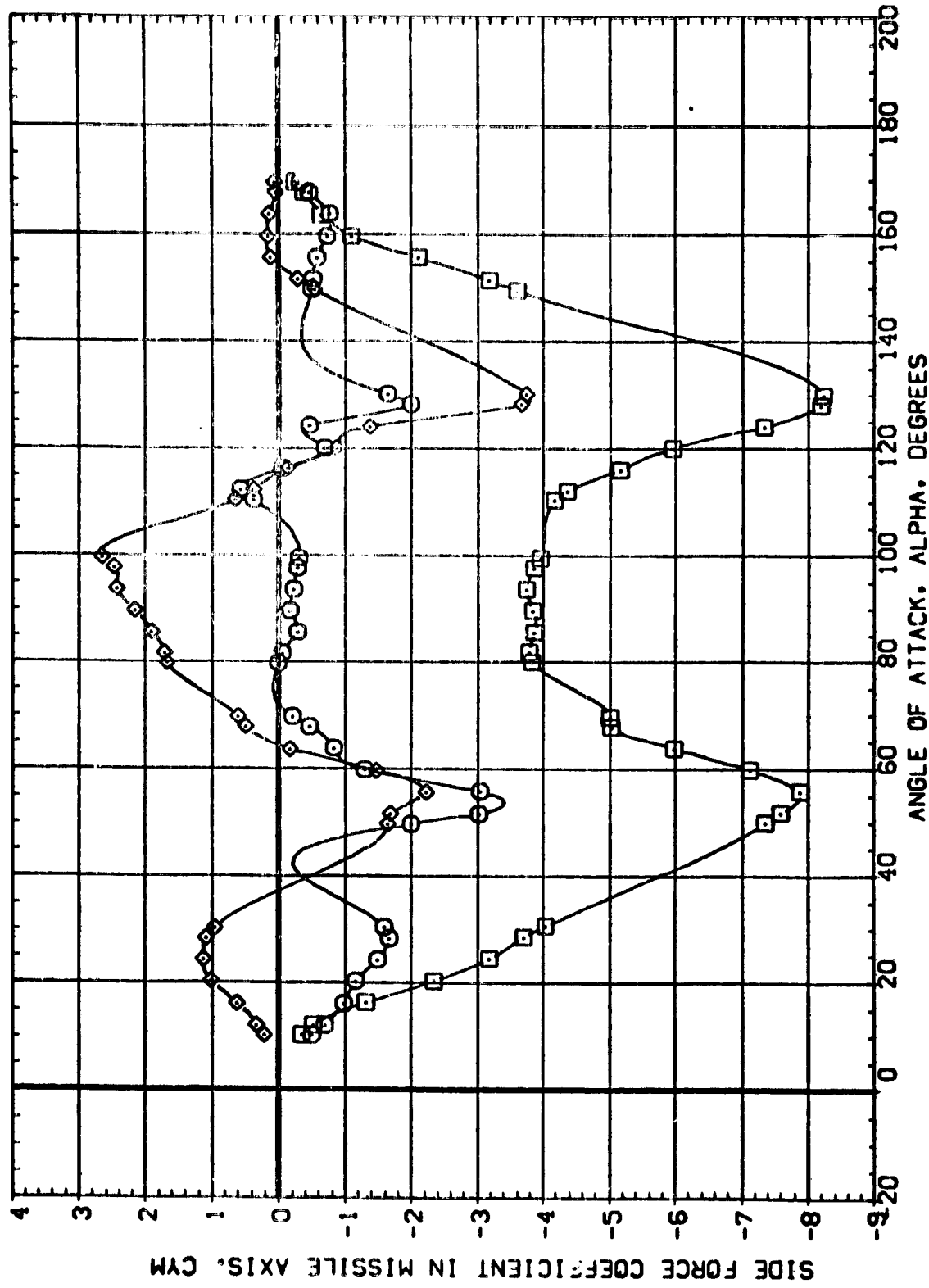
CENTER OF PRESSURE LOCATION BASED ON LONGITUDINAL CHAR. XCP/L



AERODYNAMIC CHARACTERISTICS OF A SRB WITH SEPARATION ROCKETS AND ELECT. TUNNEL
 (E)MACH = 3.48
 PAGE 48



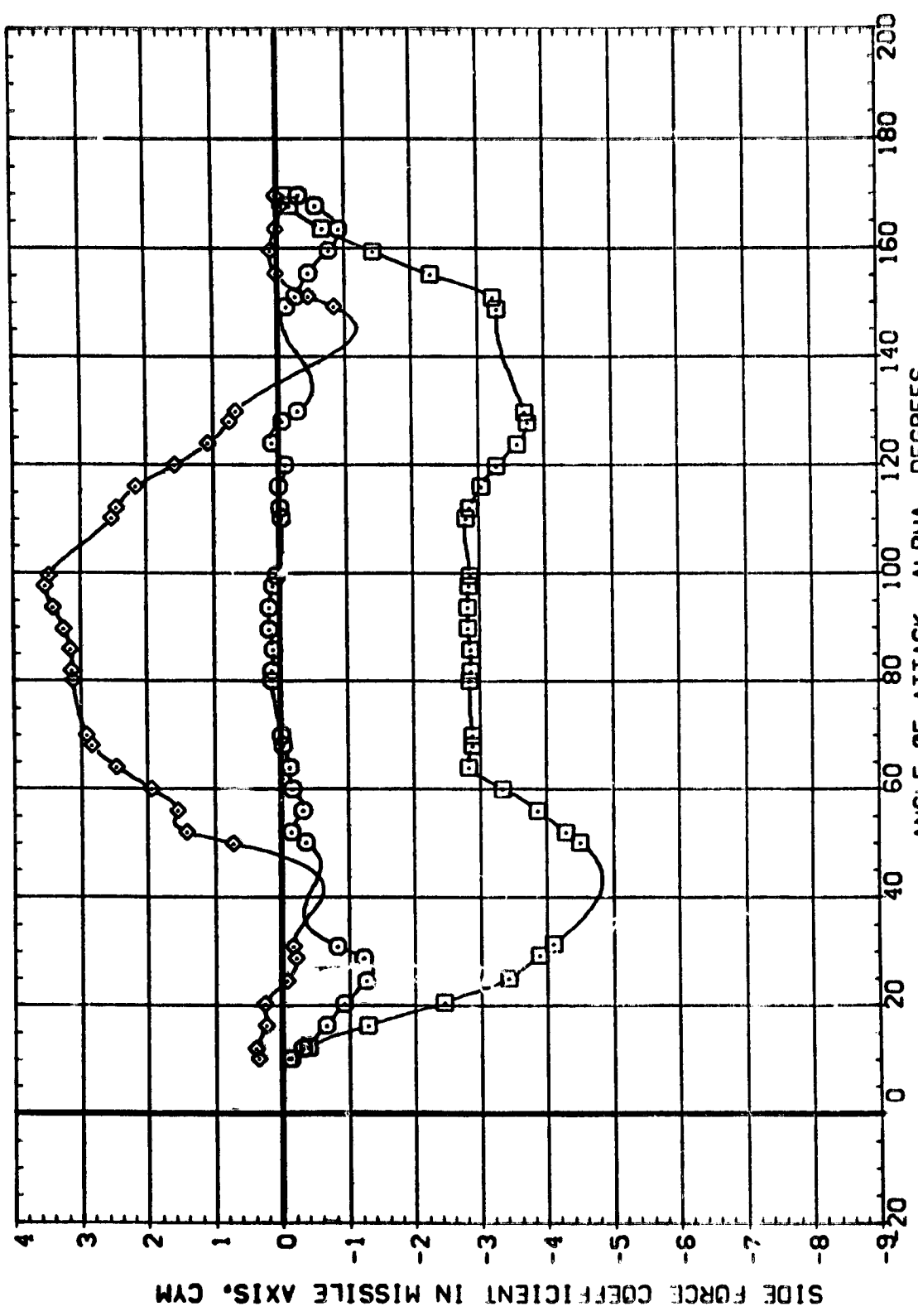
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	PHI	ELT	SEPRKT	REFERENCE INFORMATION
(C95103)	M5C 590(SA26F) 142-IN. SRB(138)	.000	45.000	1.000	1.000	SREF .5000 SQ. IN
(C95104)	M5C 590(SA26F) 142-IN. SRB(138)	.000	90.000	1.000	1.000	LREF .8000 IN.
(C95105)	M5C 590(SA26F) 142-IN. SRB(138)	.000	135.000	1.000	1.000	BREF .8000 IN.
						XPRP 5.5570 IN.
						YPRP .0000 IN.
						ZPRP .0000 IN.
						SCALE .0056



AERODYNAMIC CHARACTERISTICS OF A SRB WITH SEPARATION ROCKETS AND ELECT. TUNNEL

(M)MACH = .60

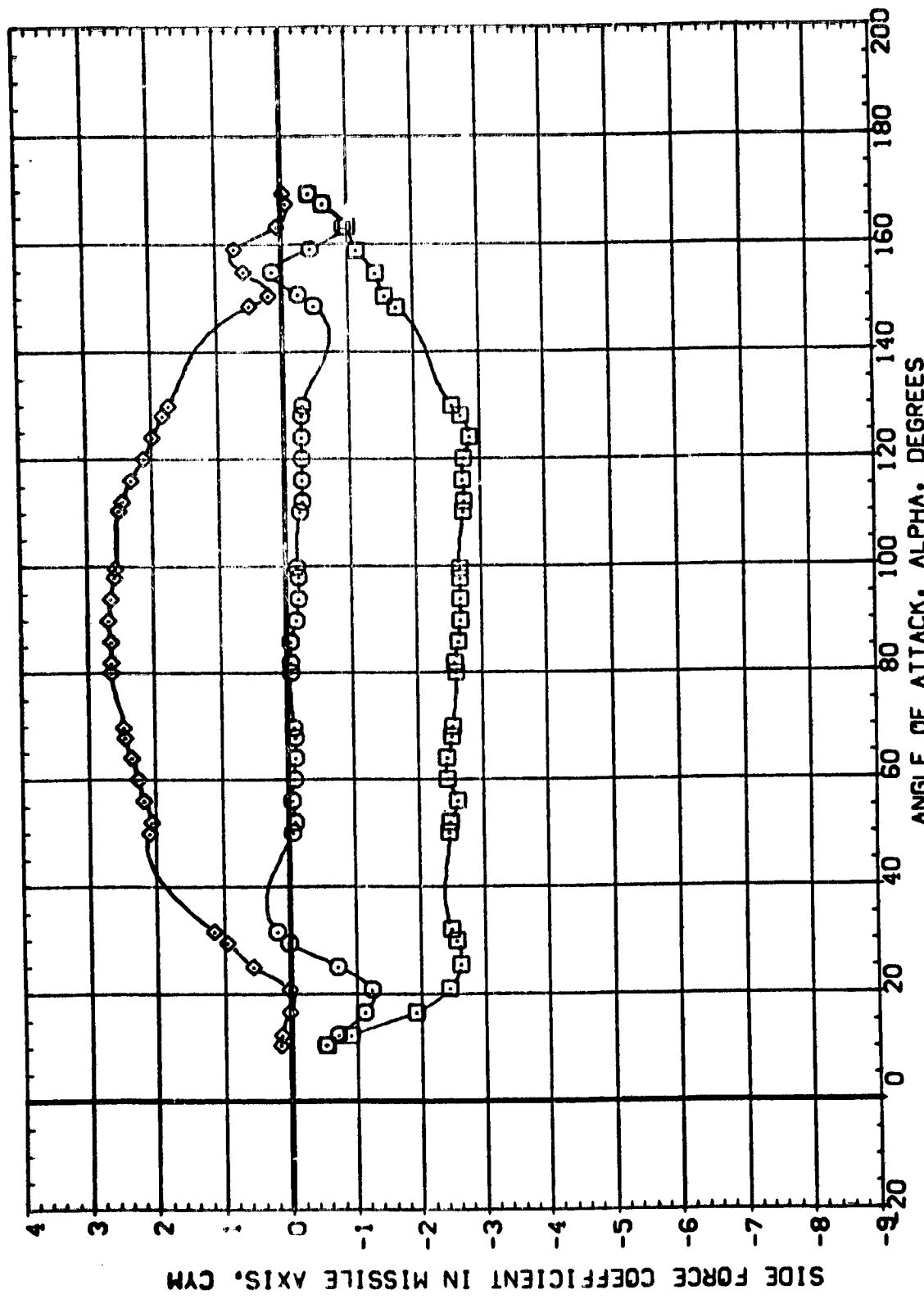
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	PHI	ELT	SEPRAT	REFERENCE INFORMATION	SO. IN.
(CS103)	MSFC 590(SA26F) 142-IN. SRB(139)	.000	45.000	1.000	1.000	SREF	.5000
(CS104)	MSFC 590(SA26F) 142-IN. SRB(139)	.000	90.000	1.000	1.000	LREF	.8000
(CS105)	MSFC 590(SA26F) 142-IN. SRB(139)	.000	135.000	1.000	1.000	BREF	.8000
						XMRP	5.5570
						YMRP	.0000
						ZMRP	.0000
						SCALE	.0056



AERODYNAMIC CHARACTERISTICS OF A SRB WITH SEPARATION ROCKETS AND ELECT. TUNNEL



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	PHI	ELT	SEPRKT	REFERENCE INFORMATION
(CS5103)	MSFC 590(SA26F) 142-IN. SRB(139) NERE(S) ELT	.000	45.000	1.000	1.000	SREF .5030 SQ. IN.
(CS5104)	MSFC 590(SA26F) 142-IN. SRB(139) NERE(S) ELT	.000	50.000	1.000	1.000	LREF .8000 IN.
(CS5105)	MSFC 590(SA26F) 142-IN. SRB(139) NERE(S) ELT	.000	135.000	1.000	1.000	BREF .8000 IN.
						XMRP 5.5570 IN.
						YMRP .0000 IN.
						ZMRP .0000 IN.
						SCALE .0056



ANGLE OF ATTACK, ALPHA, DEGREES

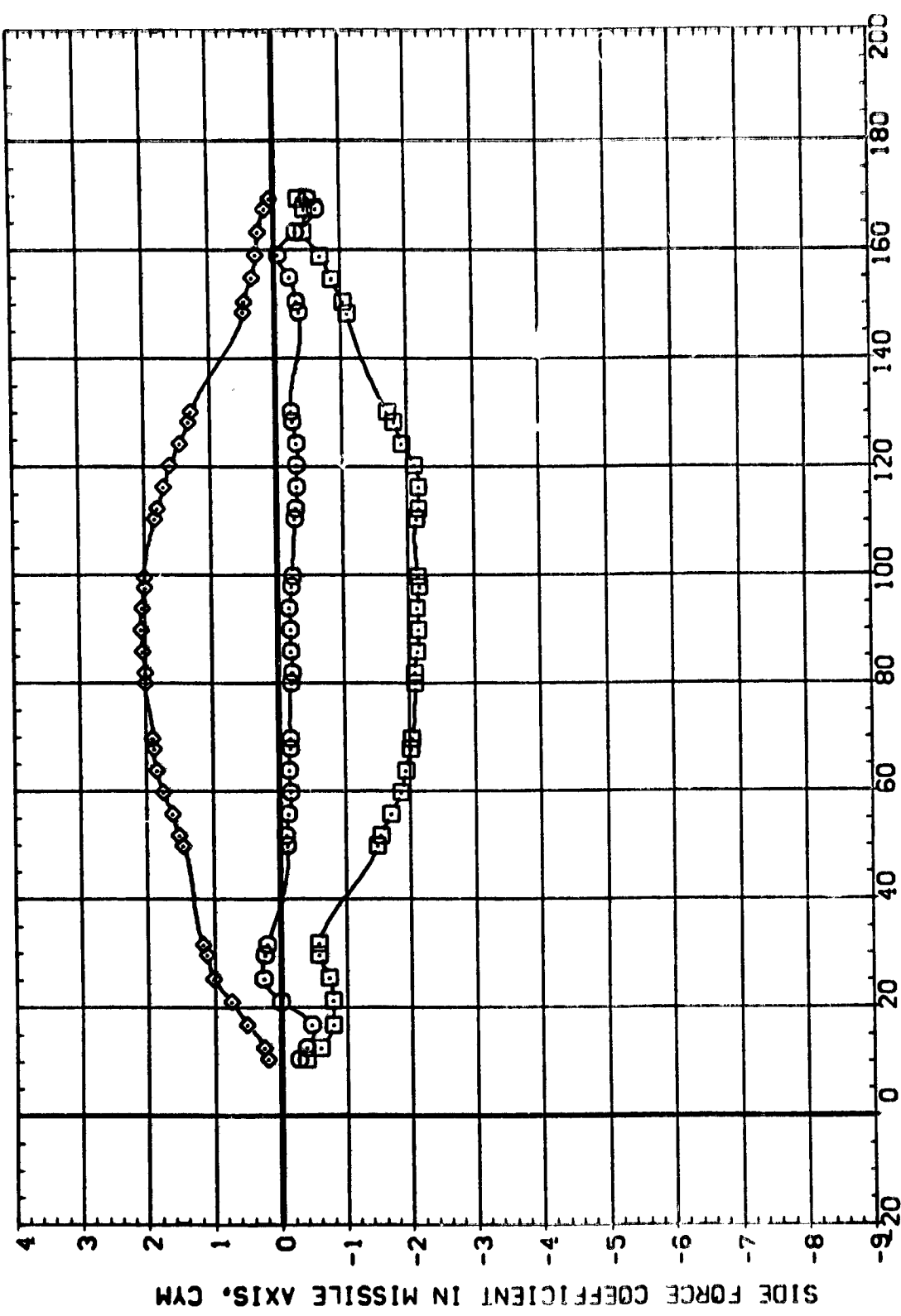
SIDE FORCE COEFFICIENT IN MISSILE AXIS, Cym

AERODYNAMIC CHARACTERISTICS OF A SRB WITH SEPARATION ROCKETS AND ELECT. TUNNEL

(C)MACH = 1.20

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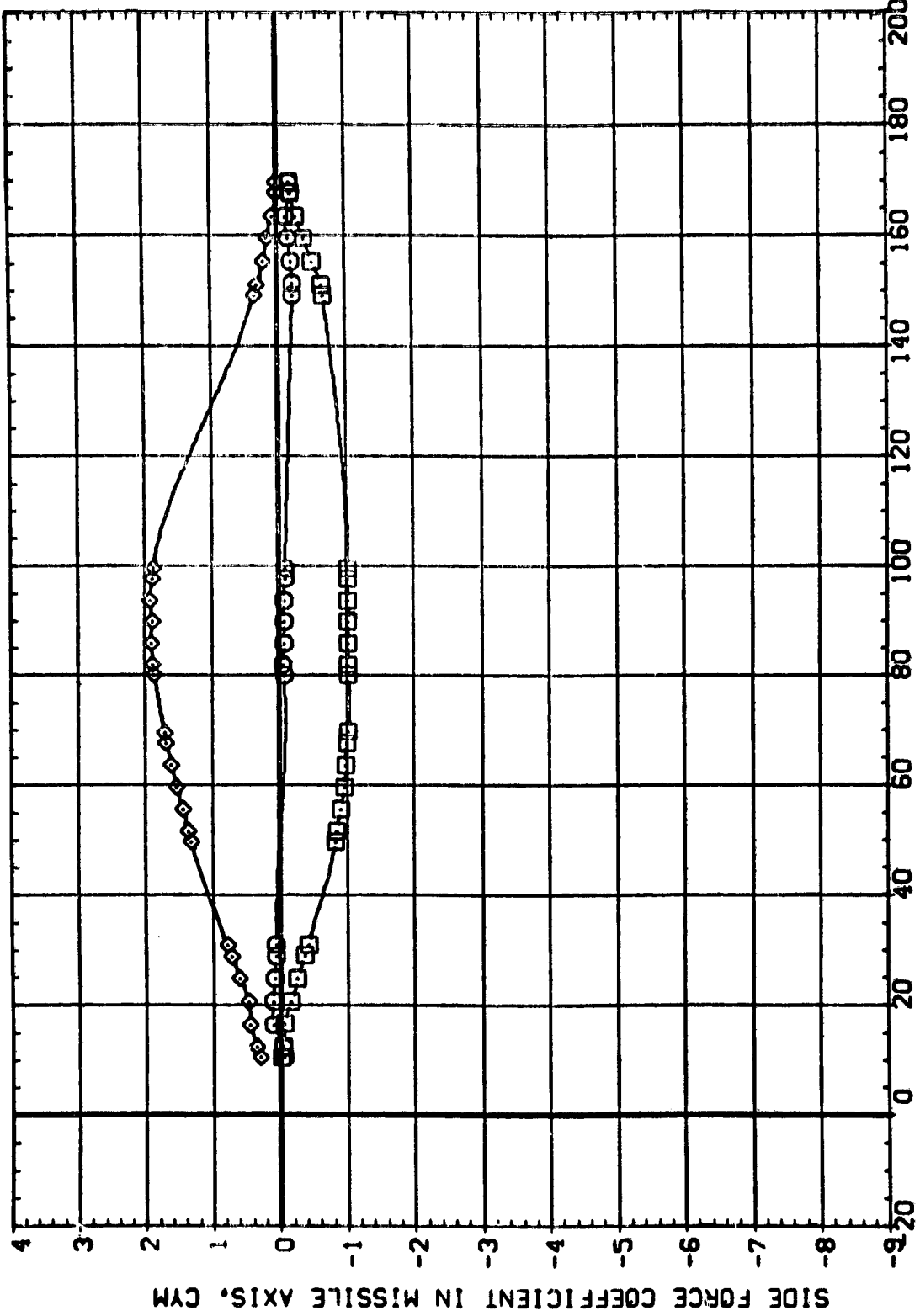
DATA SET SYMBO. CONFIGURATION DESCRIPTION BETA PHI ELT SEPRKT REFERENCE INFORMATION
 (CS5103) MSFC 590(SA26F) 142-IN. SRB(139) NBR(151) ELT .000 45.000 1.000 1.000 S030
 (CS5104) MSFC 590(SA26F) 142-IN. SRB(139) NBR(151) ELT .000 90.000 1.000 1.000 LREF 8000
 (CS5105) MSFC 590(SA26F) 142-IN. SRB(139) NBR(151) ELT .000 135.000 1.000 1.000 BREF 8000
 S 5570 XMRP .0000
 YMRP .0000 ZMRP .0000
 SCALE .0056



AERODYNAMIC CHARACTERISTICS OF A SRB WITH SEPARATION ROCKETS AND ELECT. TUNNEL



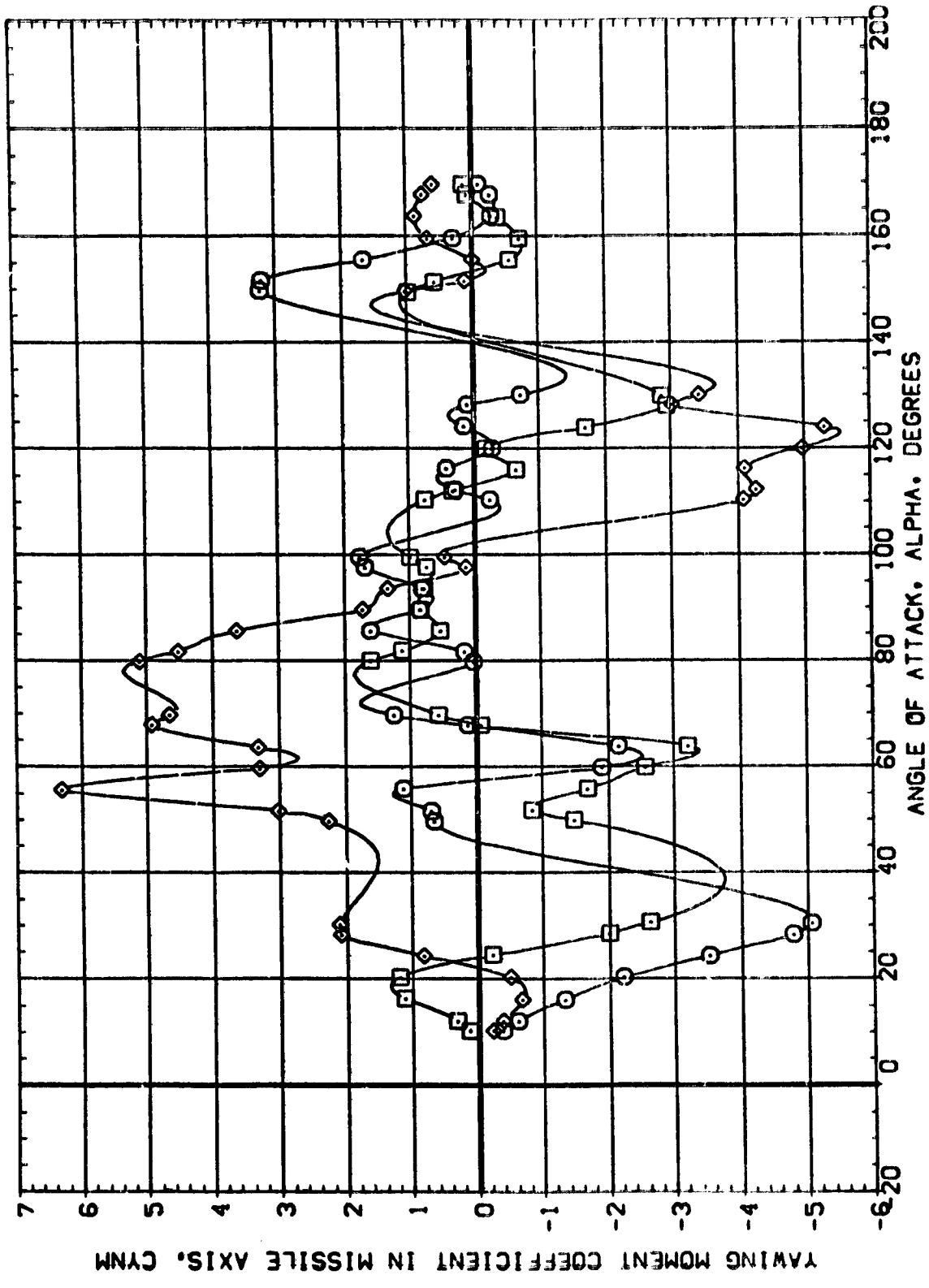
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	PHI	ELT	SEPRMT	REFERENCE INFORMATION
(C55103)	M57C SRB(SA26F) 142-IN. SRB(138) NONE(S) ELT	.000	45.000	1.000	1.000	SREF 5000 IN.
(C55104)	M57C SRB(SA26F) 142-IN. SRB(138) NONE(S) ELT	.000	90.000	1.000	1.000	LREF 8000 IN.
(C55105)	M57C SRB(SA26F) 142-IN. SRB(138) NONE(S) ELT	.000	135.000	1.000	1.000	BREF 8000 IN.
						XMRP 5.5670 IN.
						YMRP .0000 IN.
						ZMRP .0000 IN.
						SCALE .0056



AERODYNAMIC CHARACTERISTICS OF A SRB WITH SEPARATION ROCKETS AND ELECT. TUNNEL

(E)MACH = 3.48

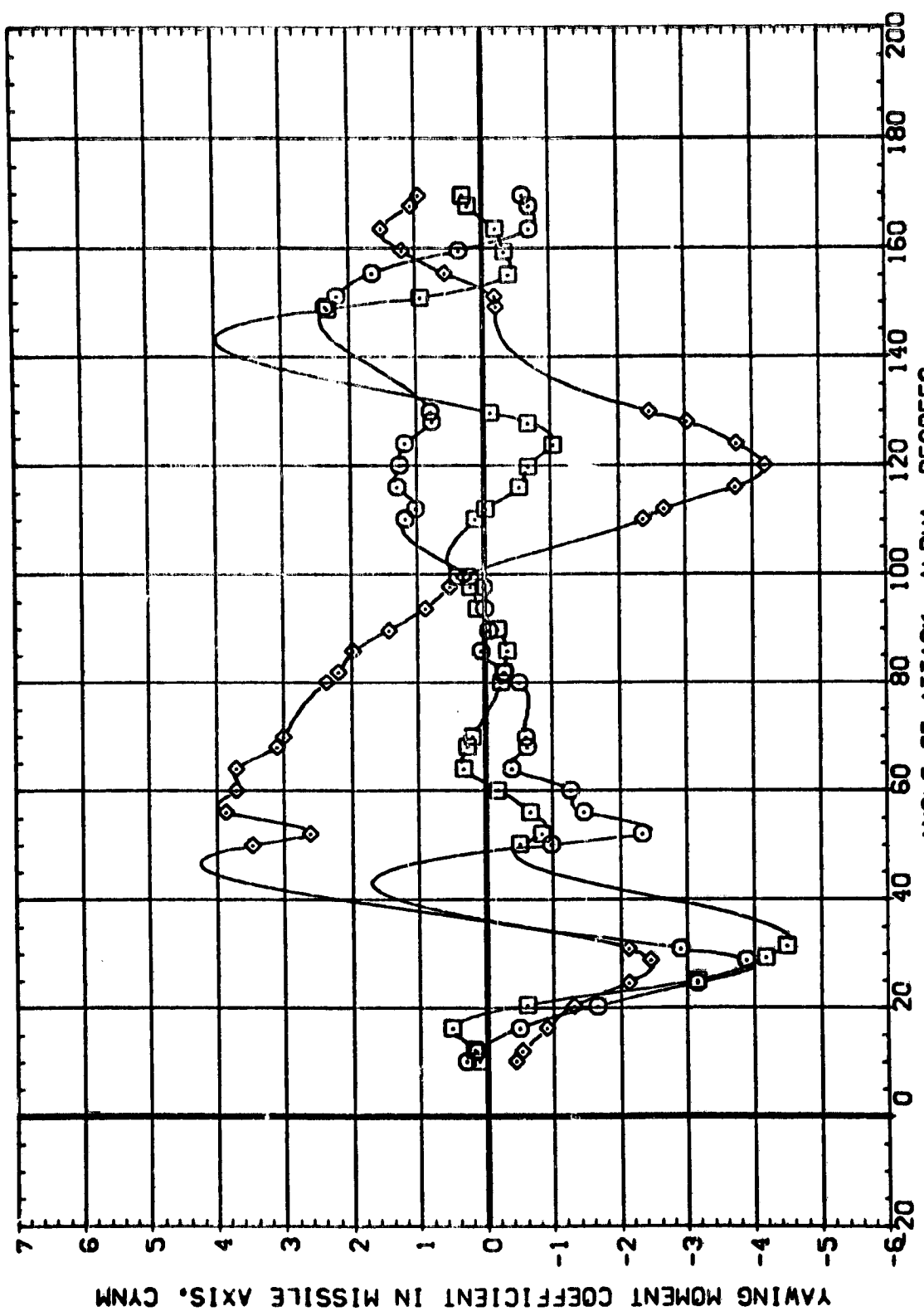
DATA SET SYMBOL: (CS103) (CS104) (CS105)
 CONFIGURATION DESCRIPTION: MSFC 590(SA26F) 142-IN. SRB(139) 142-IN. SRB(139) 142-IN. SRB(139) 142-IN. SRB(139)
 REFERENCE INFORMATION: SC300 .5000 SREF 1.0000 L1REF 1.0000 BREF 1.0000 XMRP 5.5570 YMRP 0.0000 ZMRP 0.0000 SCALE 0.0056
 BETA: .000 45.000 .000 90.000 .000 135.000
 SEPRNT: 1.000 1.000 1.000
 ELT: 1.000 1.000 1.000
 PHI: 45.000 90.000 135.000
 REFERENCE INFORMATION: SQ IN: 2.2 2.2 2.2 2.2 2.2 2.2



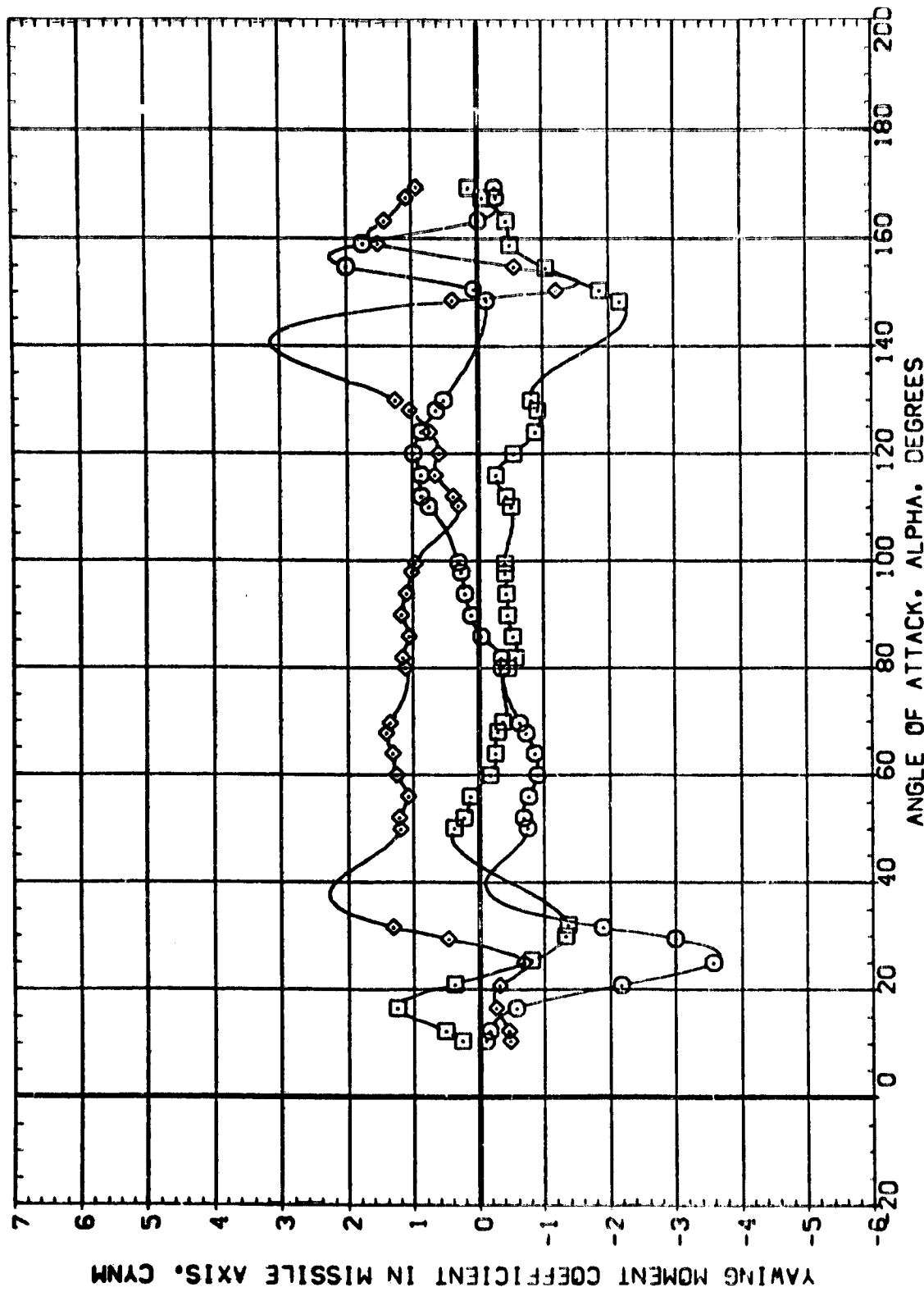
AERODYNAMIC CHARACTERISTICS OF A SRB WITH SEPARATION ROCKETS AND ELECT. TUNNEL



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	PHI	ELT	SEPRNT	REFERENCE INFORMATION
(CS103)	MSFC SRB(SA267) 142-IN. SRB(128) NRE(1) ELT	.000	45.000	1.000	1.000	5030 IN. 50. IN.
(CS104)	MSFC SRB(SA267) 142-IN. SRB(128) NRE(1) ELT	.000	90.000	1.000	1.000	8000 IN. 80. IN.
(CS105)	MSFC SRB(SA267) 142-IN. SRB(128) NRE(1) ELT	.000	135.000	1.000	1.000	5.5570 IN. 5.5570 IN.
						YMRP .0000 IN. ZMRP .0000 IN. SCALE .0056

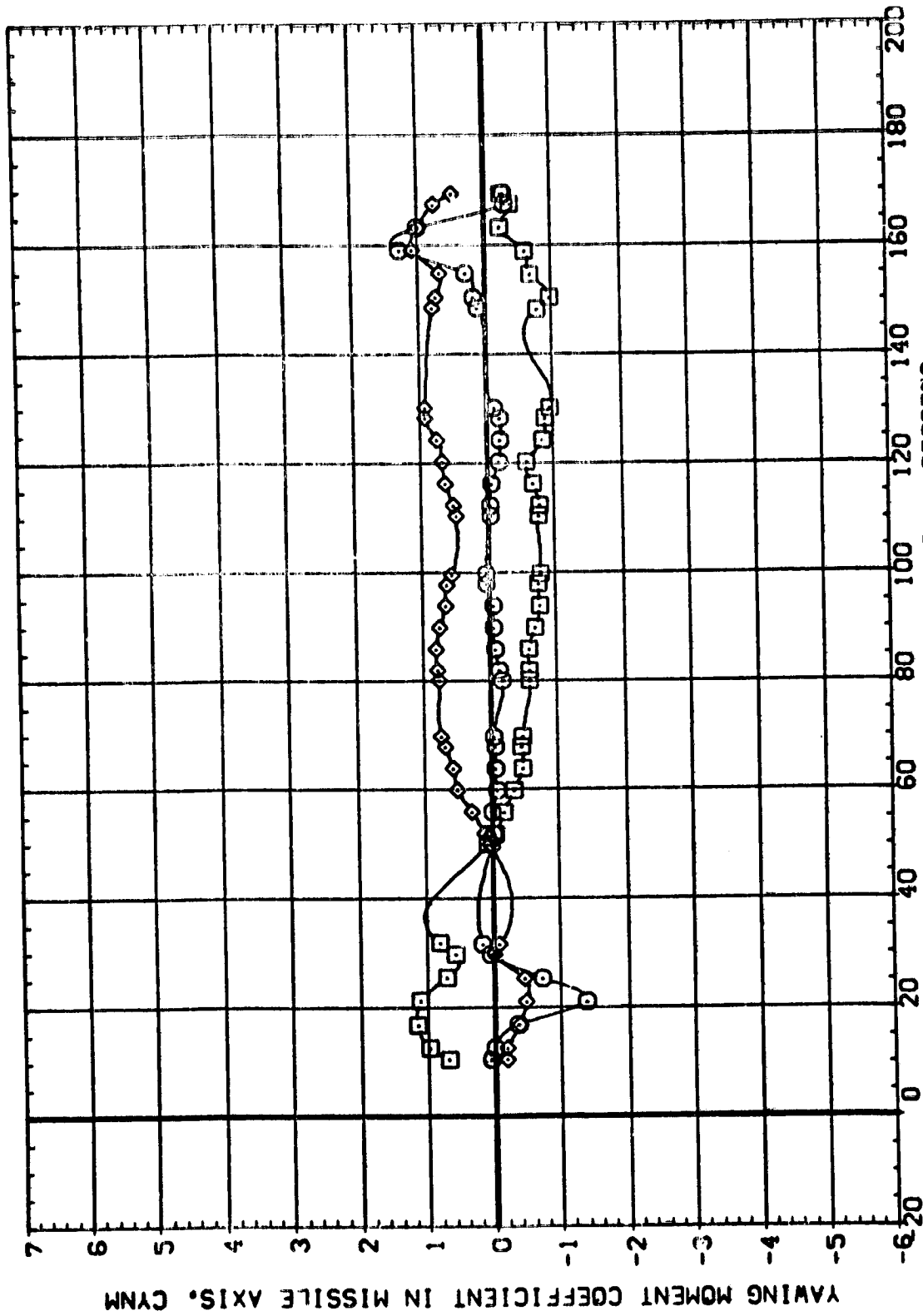


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	PHI	ELT	SEPRAT	REFERENCE INFORMATION
(C95103)	M5C 590(SA26F) 142-IN. SRB(139)	.000	45.000	1.000	1.000	SREF 5030
(C95104)	M5C 590(SA26F) 142-IN. SRB(139)	.000	90.000	1.000	1.000	LREF 8070
(C95105)	M5C 590(SA26F) 142-IN. SRB(139)	.000	135.000	1.000	1.000	SREF 8070
						XMRP 5.5570
						YMRP .0000
						ZMRP .0000
						SCALE .0056



AERODYNAMIC CHARACTERISTICS OF A SRB WITH SEPARATION ROCKETS AND ELECT. TUNNEL

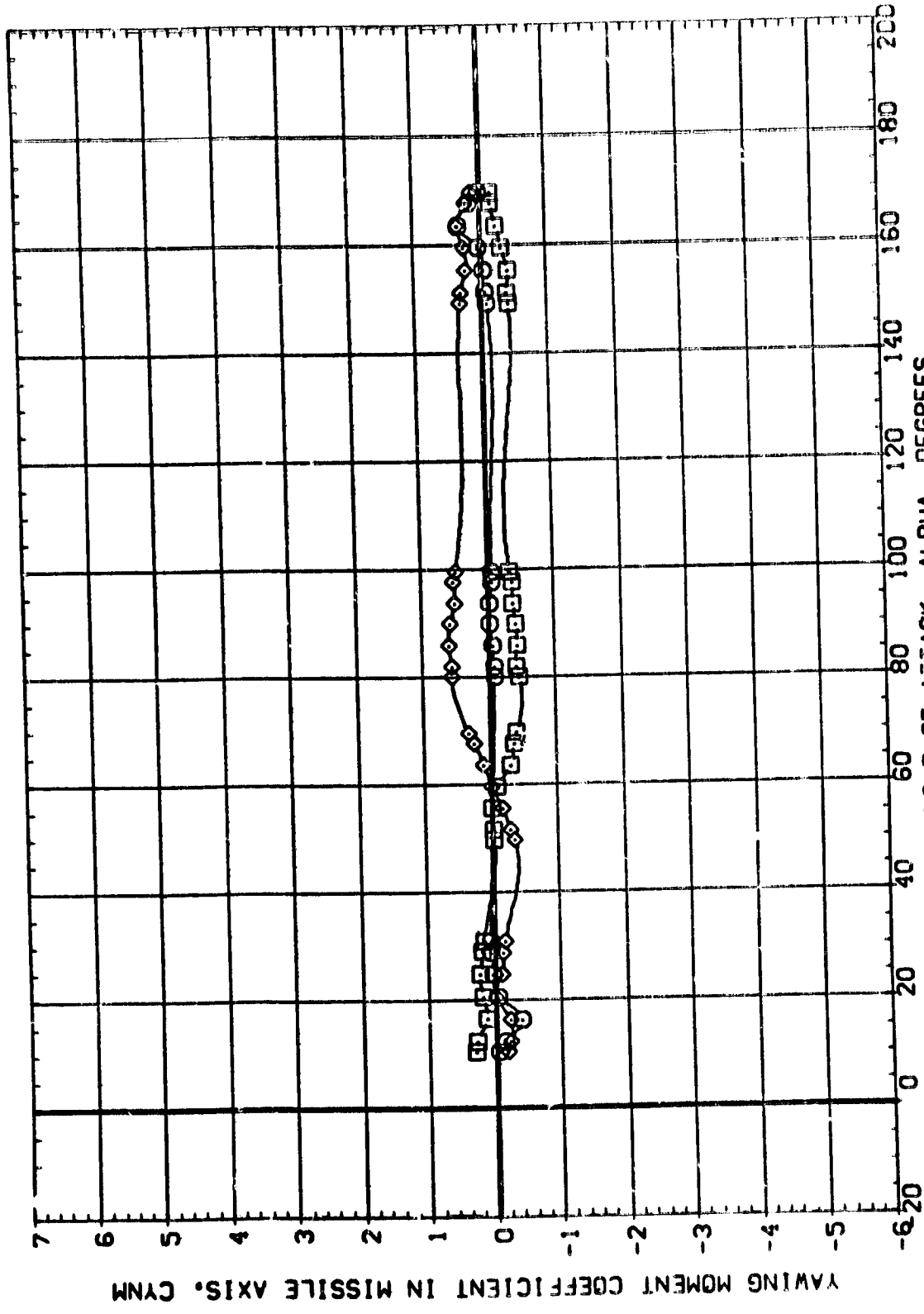
DATA SET SYMBL.	CONFIGURATION DESCRIPTION	BETA	PHI	ELT	SEPRKT	REFERENCE INFORMATION
(CS103)	MSFC 590(SA26F) 142-IN. SRB(129) N9RE1S1 ELT	.000	45.000	1.000	1.000	SREF 5030 SG. IN
(CS104)	MSFC 590(SA26F) 142-IN. SRB(129) N9RE1S1 ELT	.000	90.000	1.000	1.000	LREF 6000 IN.
(CS105)	MSFC 590(SA26F) 142-IN. SRB(129) N9RE1S1 ELT	.000	135.000	1.000	1.000	BREF 6000 IN.
						XTRP 5570 IN.
						YTRP .0000 IN.
						ZTRP .0000 IN.
						SCALE .0056



AERODYNAMIC CHARACTERISTICS OF A SRB WITH SEPARATION ROCKETS AND ELECT. TUNNEL

DATA SET SYMBOL:  CONFIGURATION DESCRIPTION: MSFC 590(SA267) 142-IN. SRB(139) MSFC 590(SA267) 142-IN. SRB(139) MSFC 590(SA267) 142-IN. SRB(139) MSFC 590(SA267) 142-IN. SRB(139)
 (C95103) (C95104) (C95105)

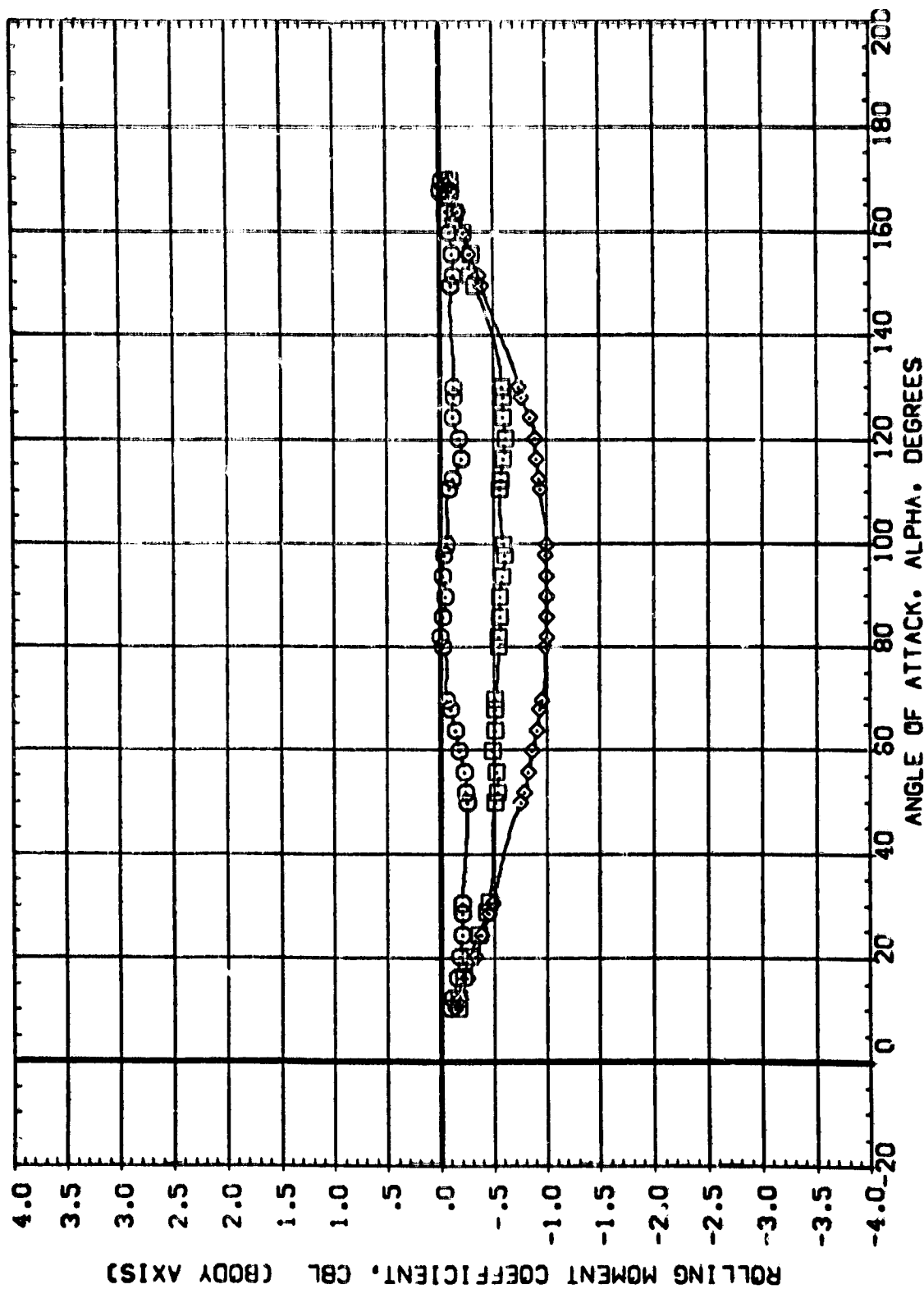
BETA: .000, .000, .000
 PHI: 45.000, 90.000, 135.000
 SEPRNT: 1.000, 1.000, 1.000
 ELT: 1.000, 1.000, 1.000
 REFERENCE INFORMATION: SORC: 59. IN, LREF: 2.000, BREF: 8.000, XPROP: 5.5270, YPROP: 0.0000, ZPROP: 0.0000, SCALE: 0.0056



AERODYNAMIC CHARACTERISTICS OF A SRB WITH SEPARATION ROCKETS AND ELECT. TUNNEL



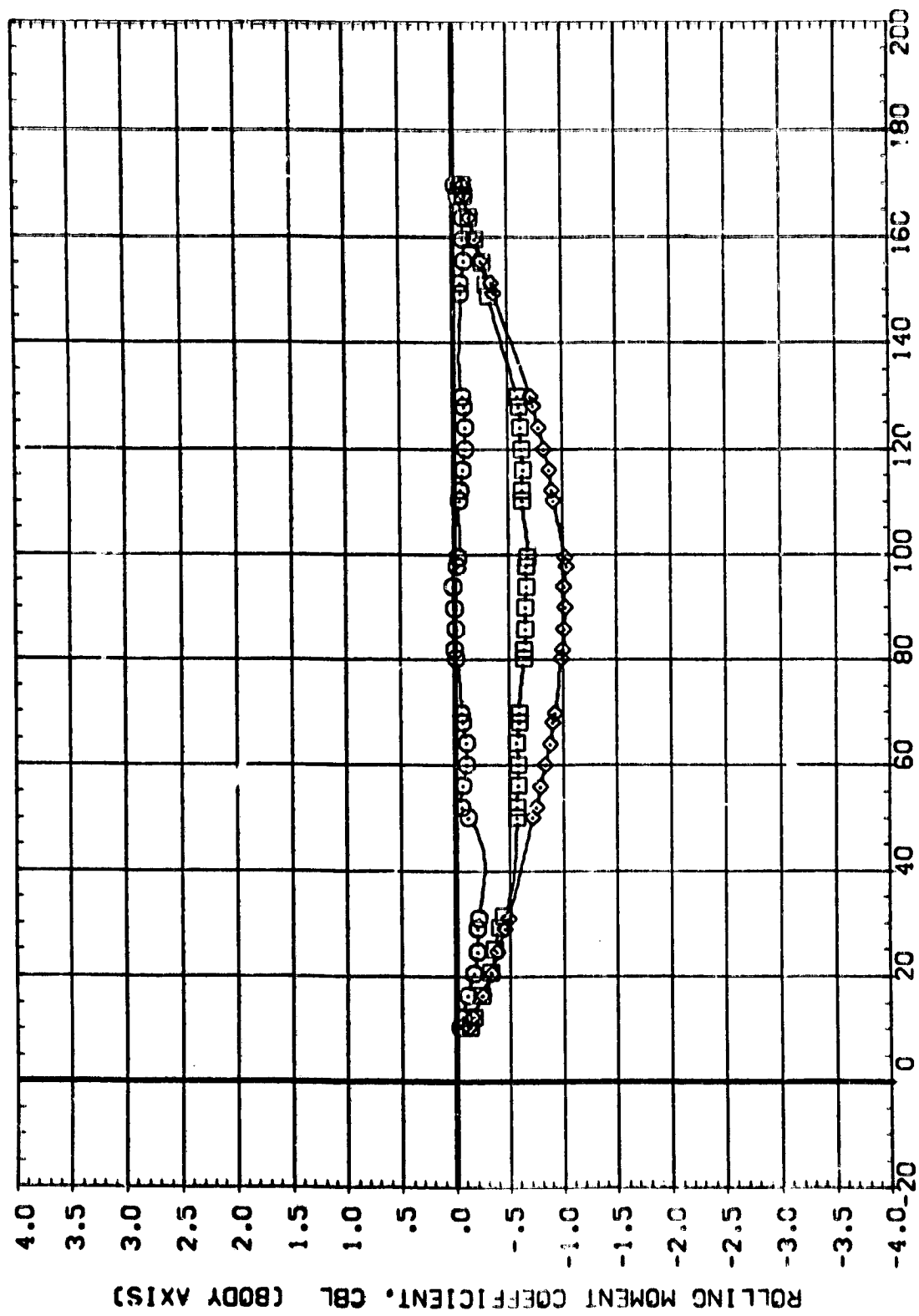
DATA SET SYMB.	CONFIGURATION DESCRIPTION	BETA	PHI	ELT	SEPRAT	REFERENCE INFORMATION
(CS103)	MFC 500(SA26F) 142-IN. SRB(139) NPRE(151) ELT	.000	45.000	1.000	1.000	SREF .5000 SQ. IN.
(CS104)	MFC 500(SA26F) 142-IN. SRB(139) NPRE(151) ELT	.000	90.000	1.000	1.000	LREF .8000 IN.
(CS105)	MFC 500(SA26F) 142-IN. SRB(139) NPRE(151) ELT	.000	135.000	1.000	1.000	BREF 5.5570 IN.
						YREF .0000 IN.
						ZREF .0000 IN.
						SCALE .0056



AERODYNAMIC CHARACTERISTICS OF A SRB WITH SEPARATION ROCKETS AND ELECT. TUNNEL

(A)MACH = .60 PAGE 59

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	PHI	ELT	SEPART	REFERENCE INFORMATION
(CS103)	MSFC 590(SA26F) 142-IN. SRB(139)	.000	45.000	1.000	1.000	SQ30
(CS104)	MSFC 590(SA26F) 142-IN. SRB(139)	.000	50.000	1.000	1.000	SQ30
(CS105)	MSFC 590(SA26F) 142-IN. SRB(139)	.000	135.000	1.000	1.000	SQ30
						SRF
						LREF
						BREF
						XREF
						YREF
						ZREF
						SCALE



ANGLE OF ATTACK, ALPHA, DEGREES

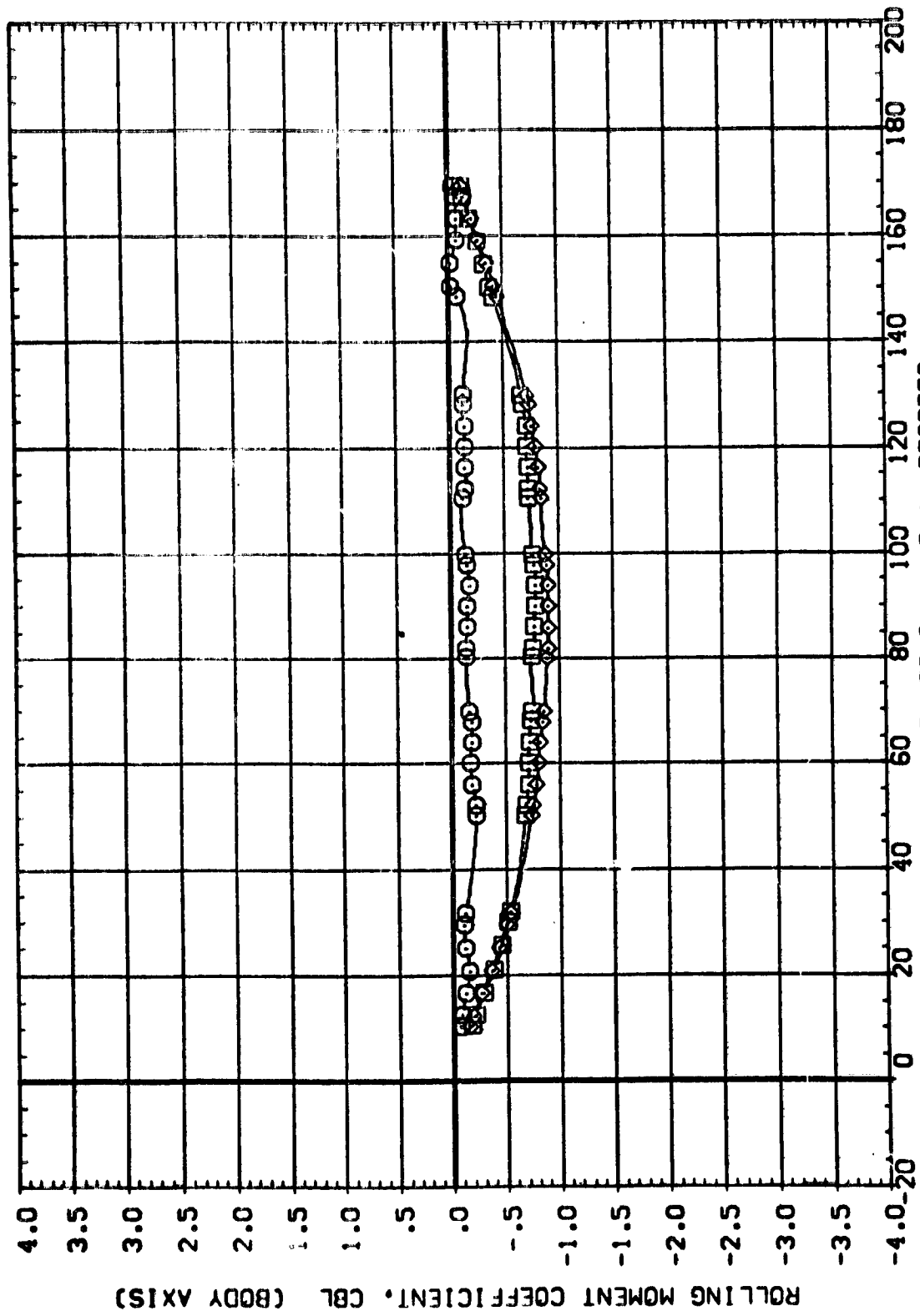
AERODYNAMIC CHARACTERISTICS OF A SRB WITH SEPARATION ROCKETS AND ELECT. TUNNEL

(B)MACH = .90

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DATA SET SYMB.	CONFIGURATION DESCRIPTION	BETA	PHI	ELT	SEPRAT	REFERENCE INFORMATION
(CS103)	MSFC 590(SA26) 142-IN. SRB(139)	.000	45.000	1.000	1.000	S000
(CS104)	MSFC 590(SA26) 142-IN. SRB(139)	.000	50.000	1.000	1.000	LREF
(CS105)	MSFC 590(SA26) 142-IN. SRB(139)	.000	135.000	1.000	1.000	BREF
						XPRP
						YPRP
						ZPRP
						SCALE
						S0. IN.
						L0. IN.
						B0. IN.
						S.5570
						.0000
						.0000
						.0056



AERODYNAMIC CHARACTERISTICS OF A SRB WITH SEPARATION ROCKETS AND ELECT. TUNNEL
 (C)MACH = 1.20
 PAGE 6:

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(035103)	MSFC 590(SA26F)	142-IN. SRB(139)	NORE(15)	ELT
(035104)	MSFC 590(SA26F)	142-IN. SRB(139)	NORE(15)	ELT
(035105)	MSFC 590(SA26F)	142-IN. SRB(139)	NORE(15)	ELT

BETA PHI

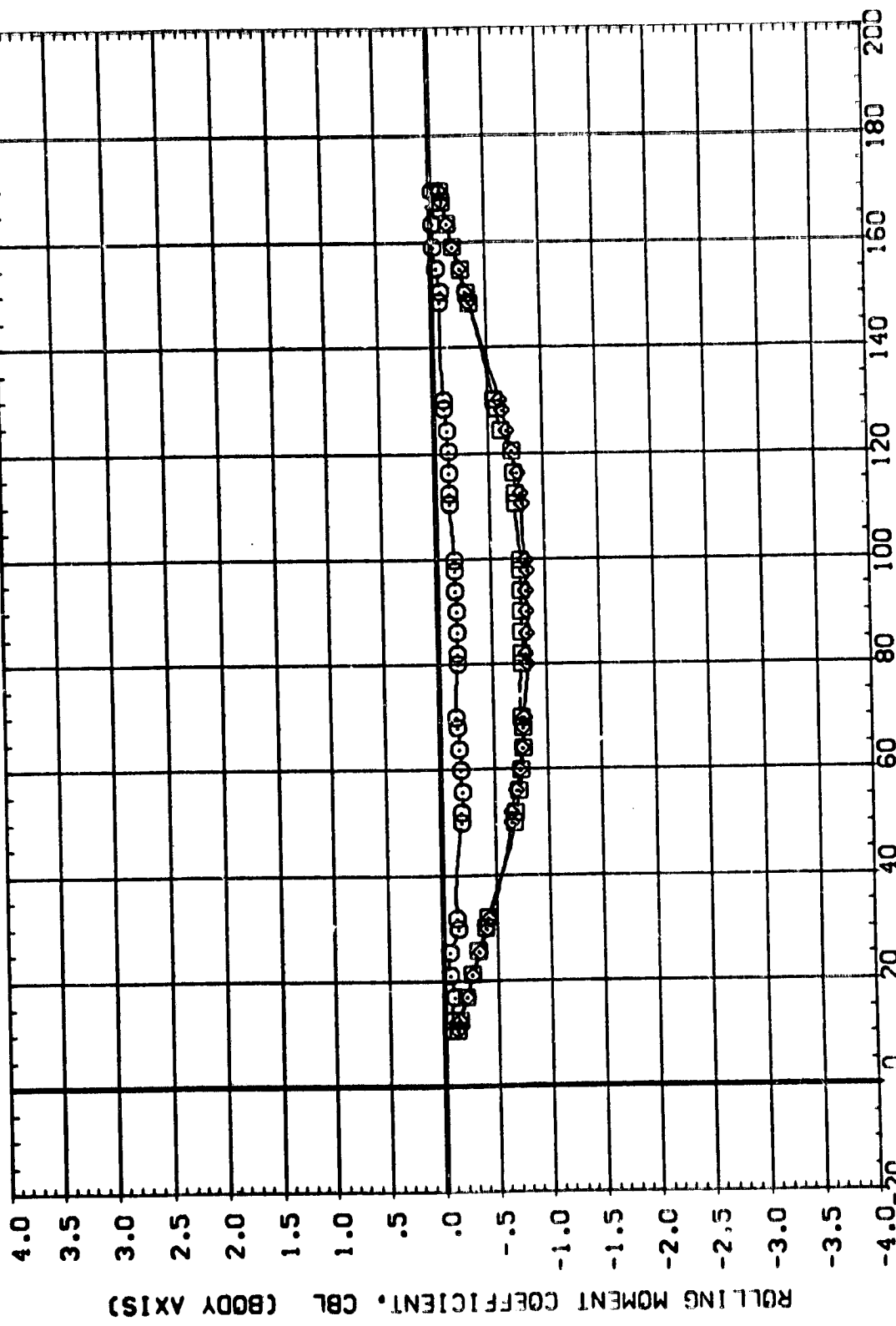
.000	45.000
.000	90.000
.000	135.000

SEPRKT
1.000
1.000
1.000

ELT
1.000
1.000
1.000

REFERENCE INFORMATION

SREF	5030	50
LREF	8000	122
BREF	8000	122
XREF	5.5570	222
YREF	.0000	222
ZREF	.0000	222
SCALE	.0006	



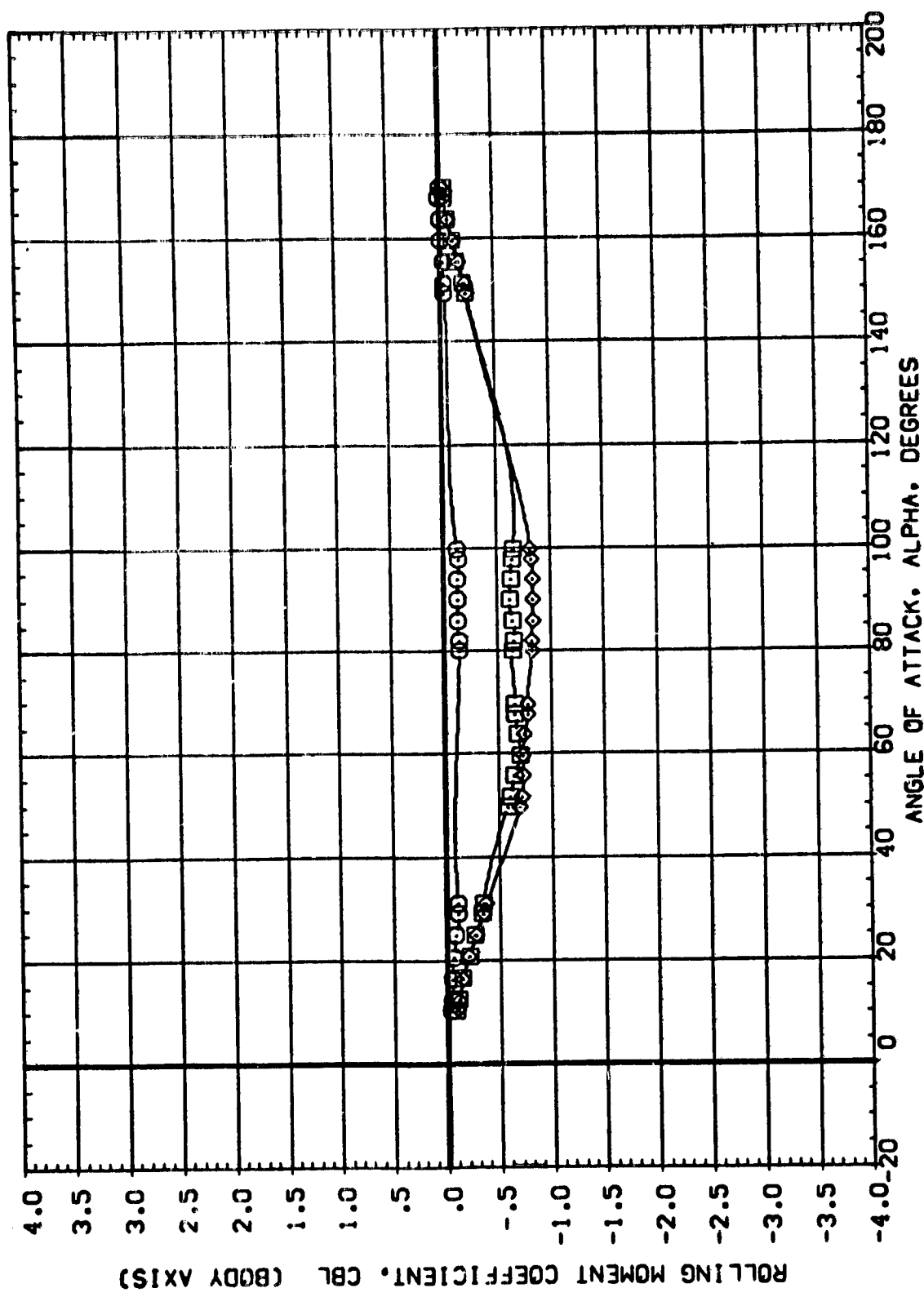
AERODYNAMIC CHARACTERISTICS OF A SRB WITH SEPARATION ROCKETS AND ELECT. TUNNEL

COMAC- = 1.96

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	PHI	ELT	SEPRNT	REFERENCE INFORMATION
(C9S103)	MSC 590(SA26F) 142-IN. SRB(139)	.000	45.000	1.000	1.000	SREF 5030
(C9S104)	MSC 590(SA26F) 142-IN. SRB(139)	.000	90.000	1.000	1.000	LREF 8000
(C9S105)	MSC 590(SA26F) 142-IN. SRB(139)	.000	135.000	1.000	1.000	BREF 8000
						XMRP 5.5570
						YMRP .0000
						ZMRP .0000
						SCALE .0056



AERODYNAMIC CHARACTERISTICS OF A SRB WITH SEPARATION ROCKETS AND ELECT. TUNNEL
 (CEJMACH = 3.48) PAGE 63

DATA SET SYMBOL: (C95)03
 (C95)04
 (C95)05

CONFIGURATION DESCRIPTION
 MSFC 580(SA26F) 142-IN. SRB(139) NRE(15) ELT
 MSFC 580(SA26F) 142-IN. SRB(139) NRE(15) ELT
 MSFC 580(SA26F) 142-IN. SRB(139) NRE(15) ELT

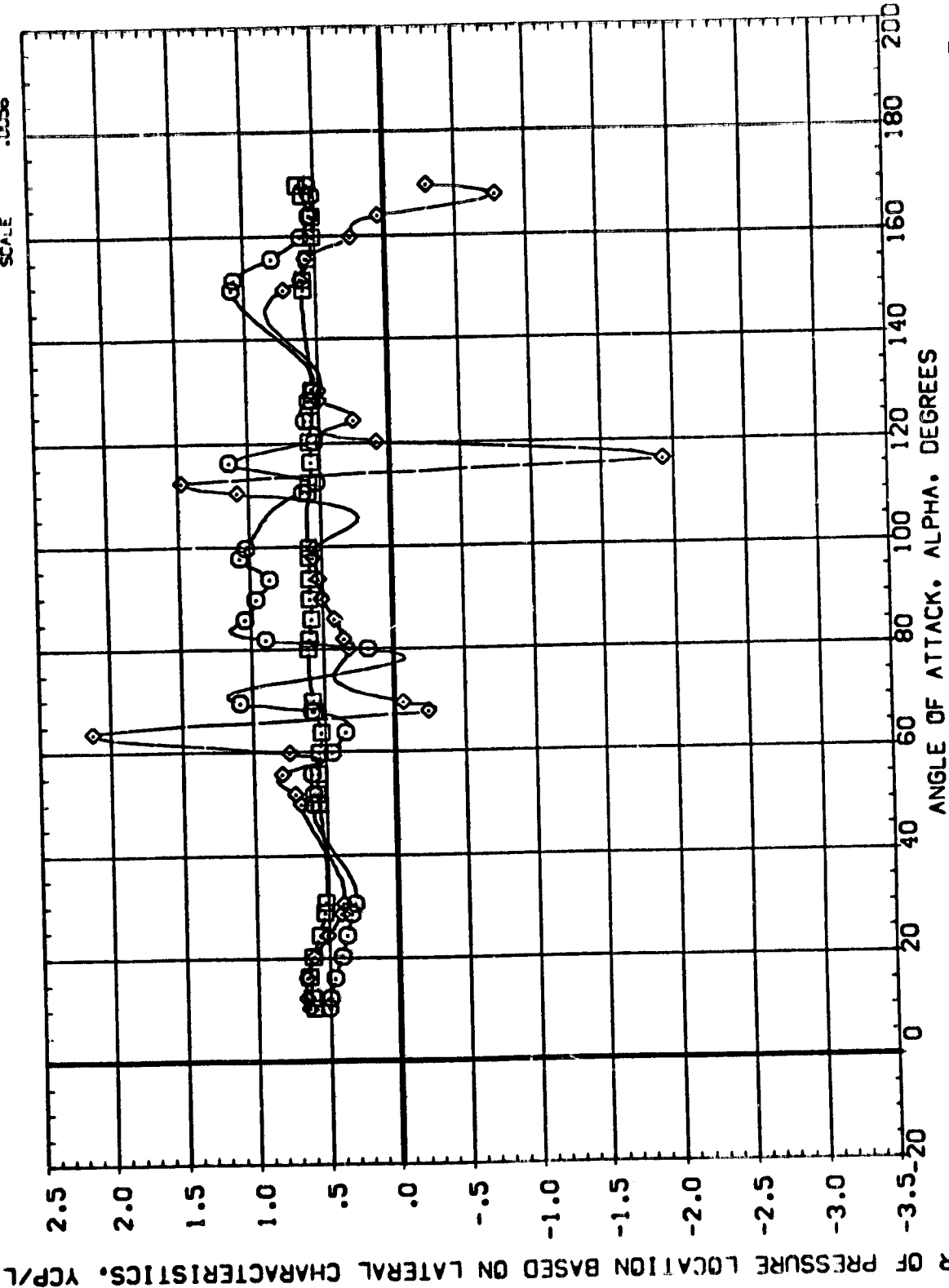
BETA .000
 .000
 .000

PHI 45.000
 90.000
 135.000

ELT 1.000
 1.000
 1.000

SEPRKT 1.000
 1.000
 1.000

REFERENCE INFORMATION
 SREF .5030
 LREF .8000
 BREF .8000
 XREF 5.5570
 YREF .0000
 ZREF .0000
 SCALE .0056

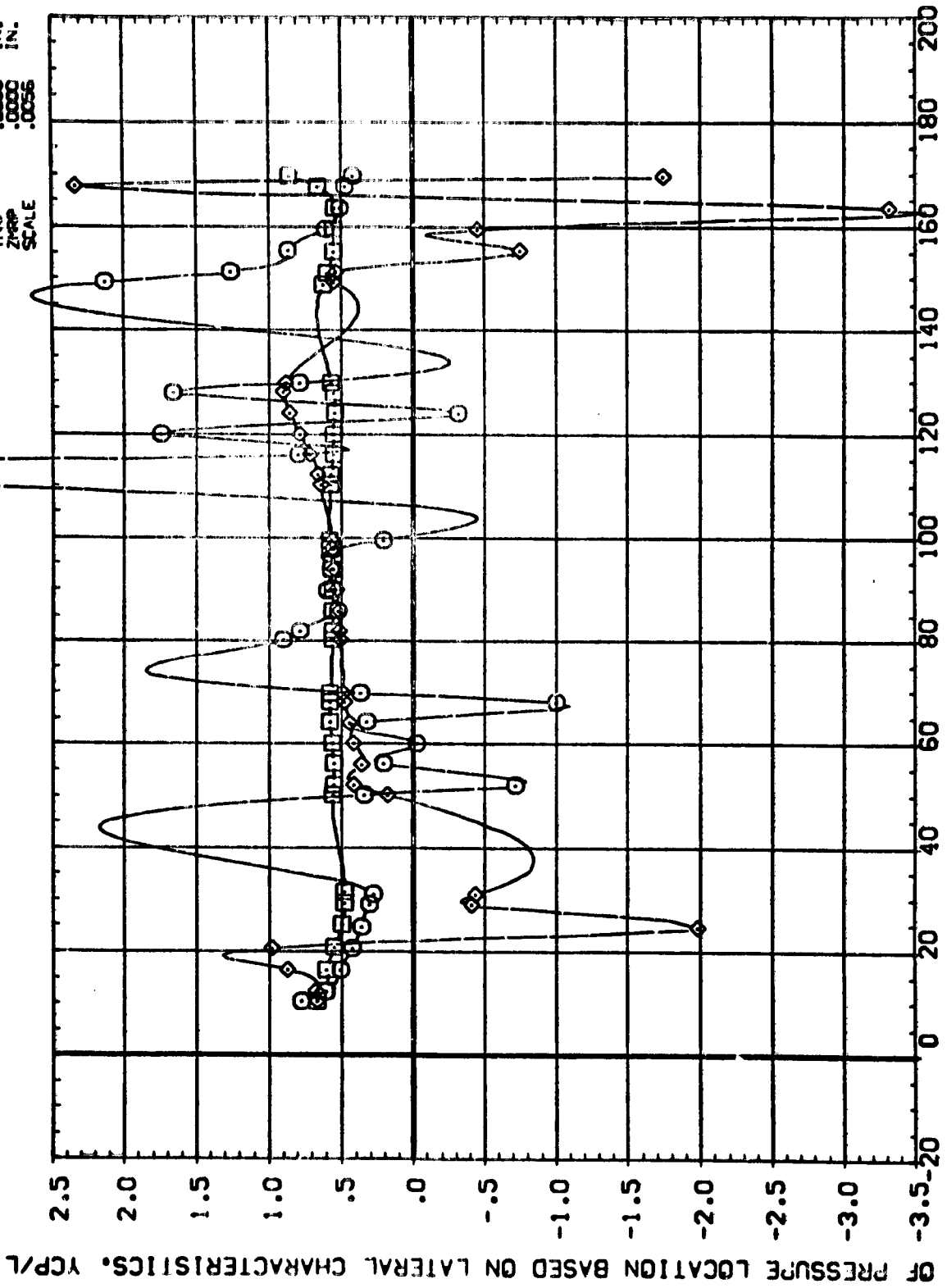


AERODYNAMIC CHARACTERISTICS OF A SRB WITH SEPARATION ROCKETS AND ELECT. TUNNEL

(A)MACH = .60

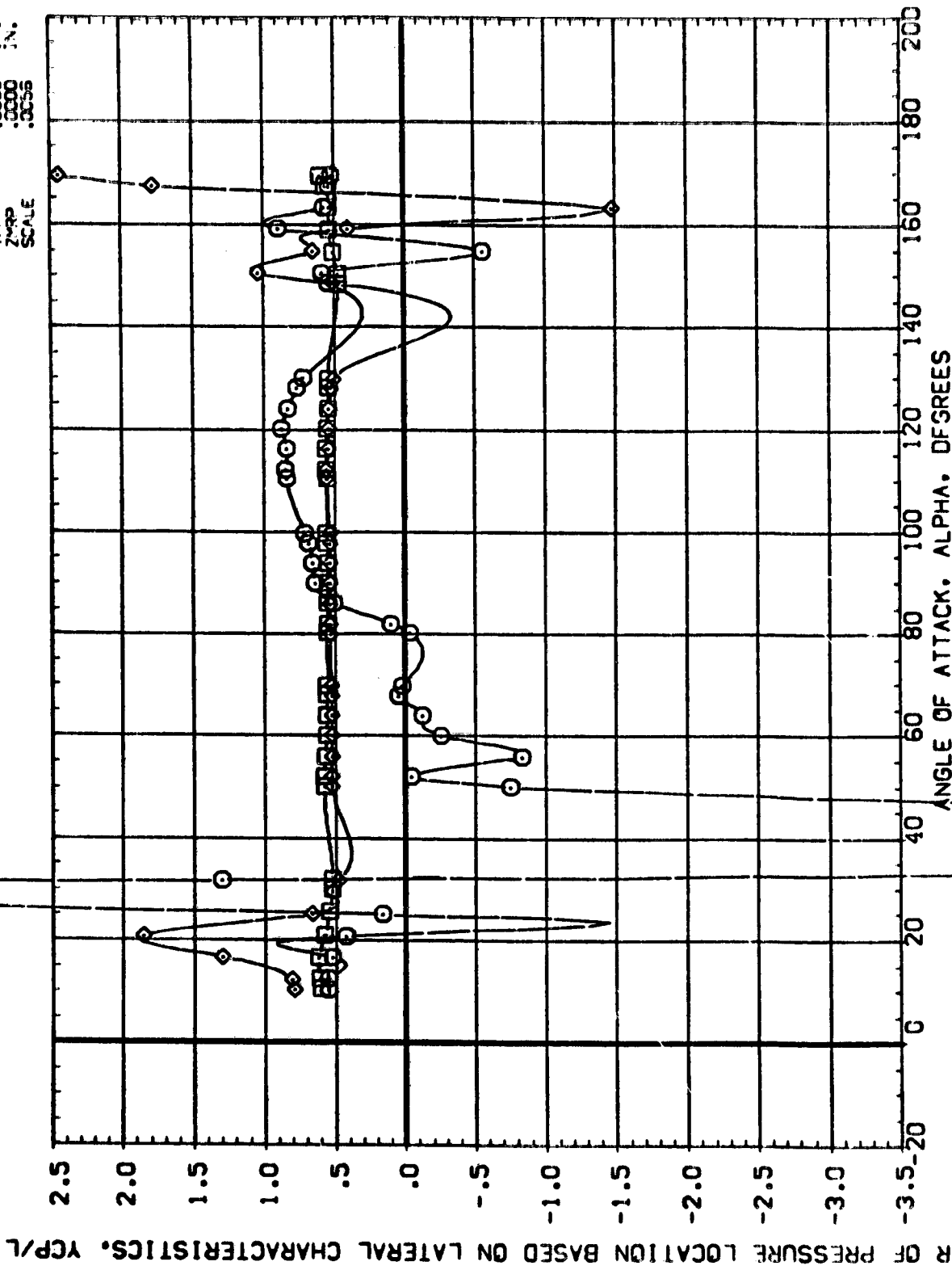


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	PHI	ELT	SEPRAT	REFERENCE INFORMATION
(CS5103)	MFC 500(SA26F) 142-IN. SRB(130)	.000	49.000	1.000	1.000	S030
(CS5104)	MFC 500(SA26F) 142-IN. SRB(130)	.000	97.000	1.000	1.000	.8000
(CS5105)	MFC 500(SA26F) 142-IN. SRB(130)	.000	135.000	1.000	1.000	.8000
						5.5670
						.0000
						.0000
						.0056



DATA SET SYMBL. CONFIGURATION DESCRIPTION
 (C95) (03) MSC 590(SA26F) (12-IN. SRB) (39) NRE (S) ELT
 (C95) (04) MSC 590(SA26F) (12-IN. SRB) (39) NRE (S) ELT
 (C95) (05) MSC 590(SA26F) (12-IN. SRB) (39) NRE (S) ELT

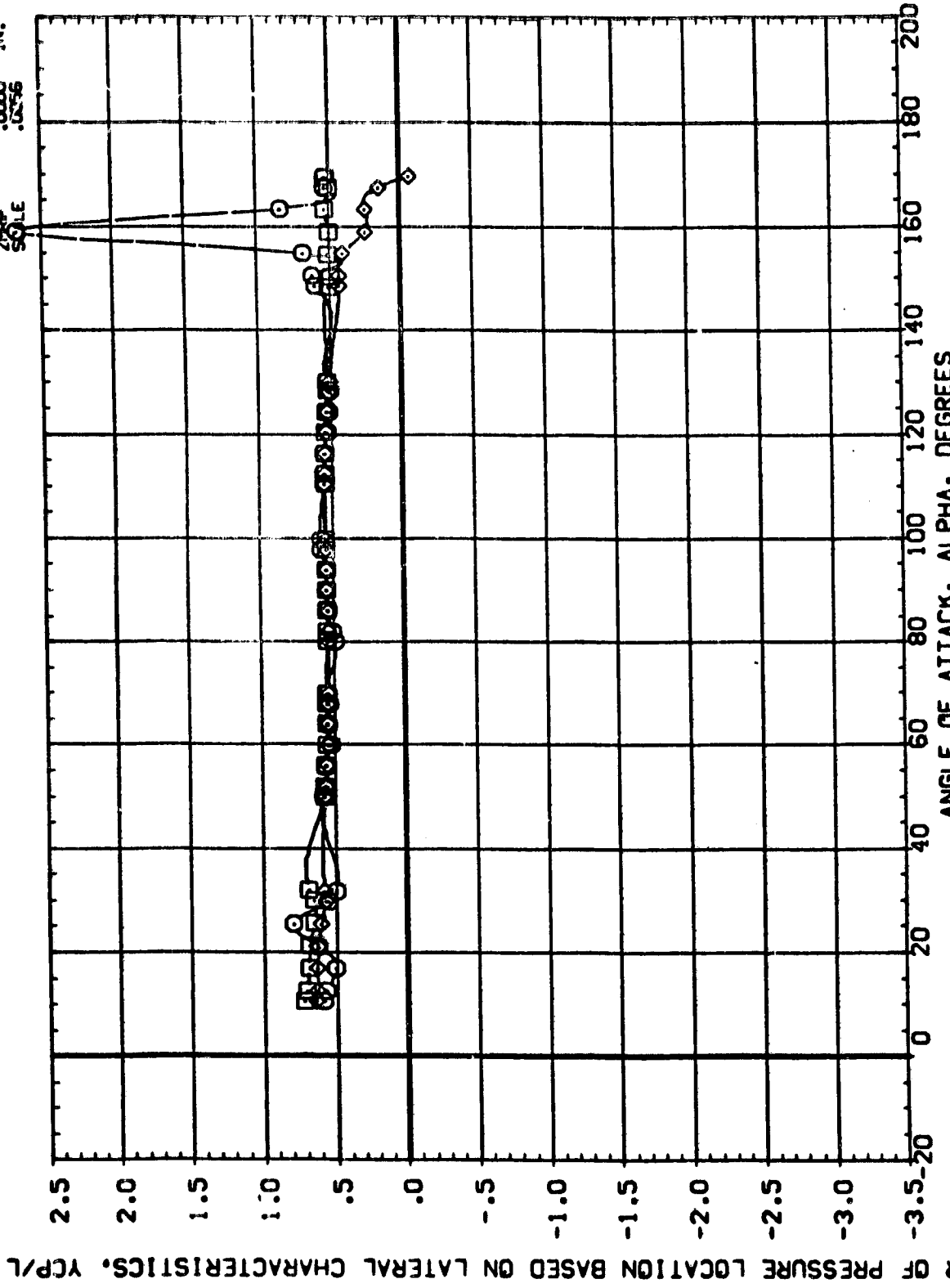
BETA PHI ELT SEPRAT REFERENCE INFORMATION
 .000 45.000 1.000 1.000 SREF SQ
 .000 90.000 1.000 1.000 LREF LREF
 .000 135.000 1.000 1.000 BREF BREF
 XMRP 5.5570 XMRP
 YMRP .0000 YMRP
 ZMRP .0000 ZMRP
 SCALE .0058 SCALE



AERODYNAMIC CHARACTERISTICS OF A SRB WITH SEPARATION ROCKETS AND ELECT. TUNNEL
 (C)MACH = 1.20
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DATA SET SYMBOL	CONFIGURATION	DESCRIPTION	BETA	PHI	ELT	SEPRAT	REFERENCE INFORMATION
(CS103)	MSFC SRB(SA26F)	142-IN. SRB(129)	.000	45.000	1.000	1.000	SREF .5000 SQ. IN.
(CS104)	MSFC SRB(SA26F)	142-IN. SRB(129)	.000	50.000	1.000	1.000	LREF .8000 IN.
(CS105)	MSFC SRB(SA26F)	142-IN. SRB(129)	.000	135.000	1.000	1.000	BREF .8000 IN.
							XMRP 5.5570 IN.
							YMRP .0000 IN.
							ZMRP .0000 IN.
							SCALE .14756

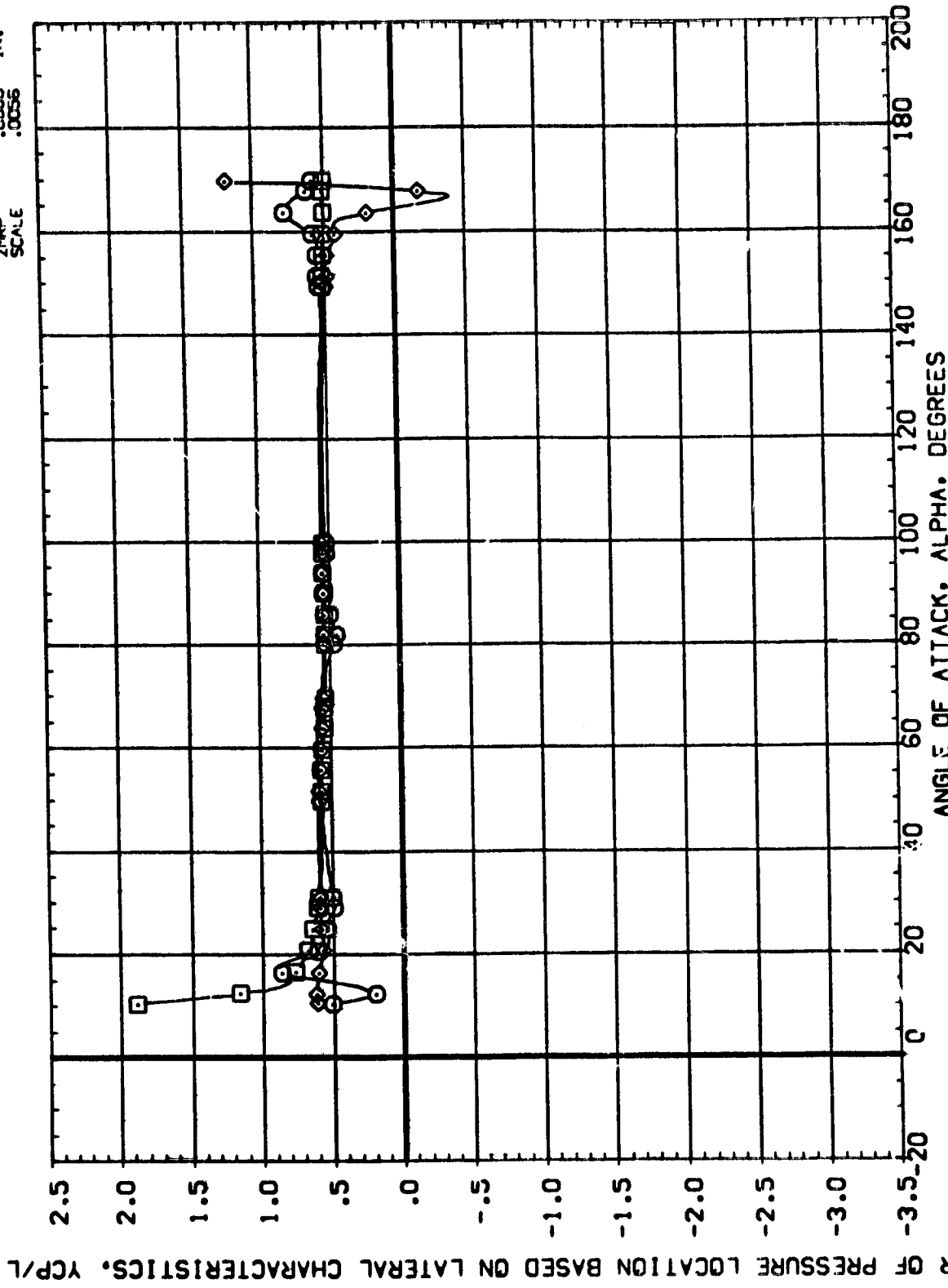


DATA SET SYMBL. CONFIGURATION DESCRIPTION

(C95103)	MSFC 590(SA26F) 142-IN.	SRB(138)	NBRE(1)	ELI
(C95104)	MSFC 590(SA26F) 142-IN.	SRB(138)	NBRE(1)	ELI
(C95105)	MSFC 590(SA26F) 142-IN.	SRB(138)	NBRE(1)	ELI

BETA PHI ELT SERPNT REFERENCE INFORMATION

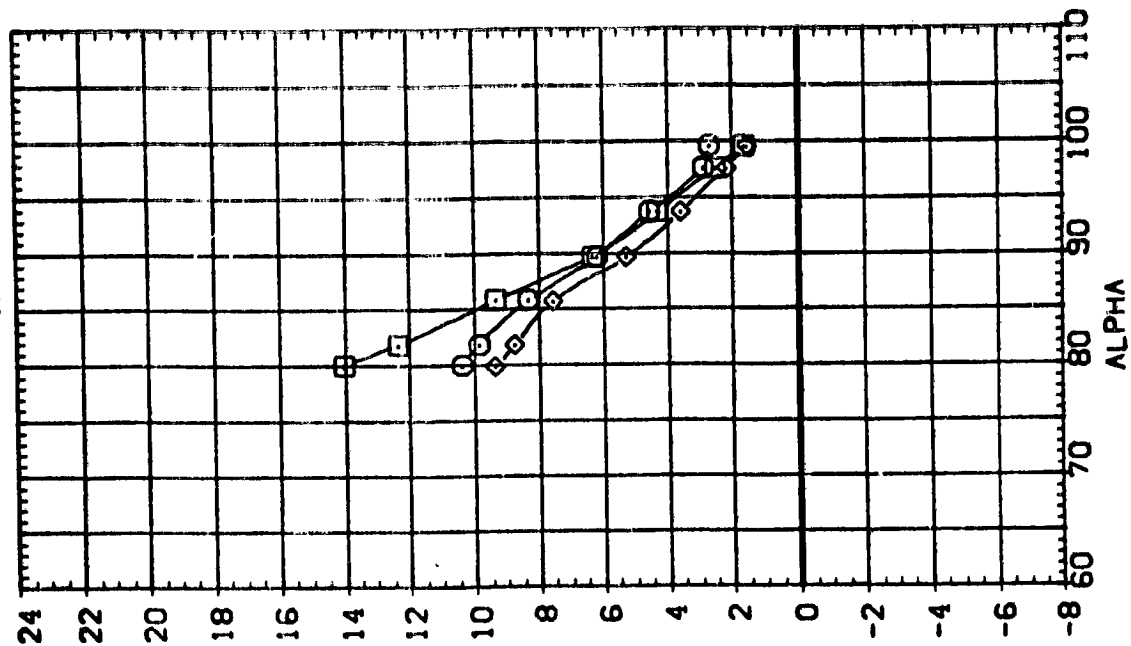
.000	45.000	1.000	1.000	SREF	5030	IN.
.000	90.000	1.000	1.000	LREF	.8000	IN.
.000	135.000	1.000	1.000	BREF	.8000	IN.
				XMRP	5.5570	IN.
				YMRP	.0000	IN.
				ZMRP	.0000	IN.
				SCALE	.0056	



AERODYNAMIC CHARACTERISTICS OF A SRB WITH SEPARATION ROCKETS AND ELECT. TUNNEL
 (E)MACH = 3.48 PAGE 68



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	PHI	ELT	SEPKAT	REFERENCE INFORMATION	
(C95027)	MSFC 590(SA26F) 142-IN. SRB(126) N8RE152 ELT	.000	45.000	1.000	2.000	SREF	.5030
(C95028)	MSFC 590(SA26F) 142-IN. SRB(126) N8RE152 ELT	.000	90.000	1.000	2.000	LREF	.8000
(C95029)	MSFC 590(SA26F) 142-IN. SRB(126) N8RE152 ELT	.000	135.000	1.000	2.000	BREF	.8000
						XPRP	5.5570
						YPRP	.0000
						ZPRP	.0000
						SCALE	.0056

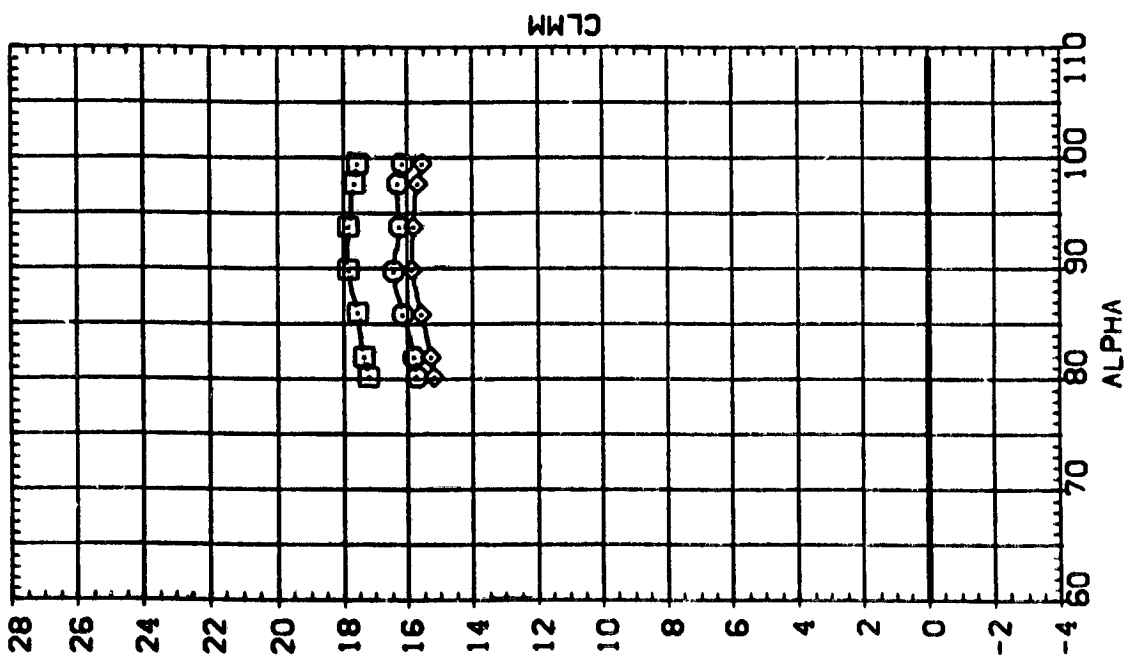
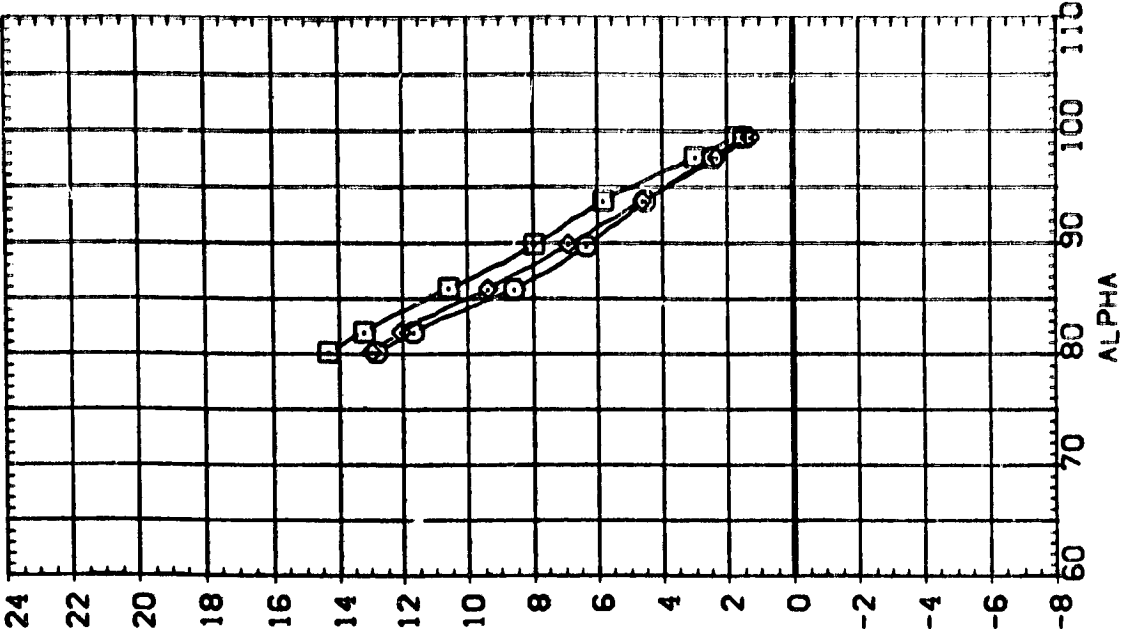


AERODYNAMIC CHARACTERISTICS OF A SRB WITH SEPARATION ROCKETS AND ELECT. TUNNEL

(A)MAC = .60

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DATA SET SYMBOL: (C95027) (C95028) (C95029)
 CONFIGURATION DESCRIPTION: MSFC 590(SA26F) 142-IN. SRB(139) MSFC 590(SA26F) 142-IN. SRB(139) MSFC 590(SA26F) 142-IN. SRB(139)
 REFERENCE INFORMATION: SREF 50000 LREF 50000 BREF 50000 XMRP 55570 YMRP 00000 ZMRP 00000 SCALE 00056
 SEPRAT: 2.000 2.000 2.000
 PHI: 45.000 90.000 135.000
 ELT: 1.000 1.000 1.000
 BETA: .000 .000 .000
 ALPHA: 70 80 90 100 110



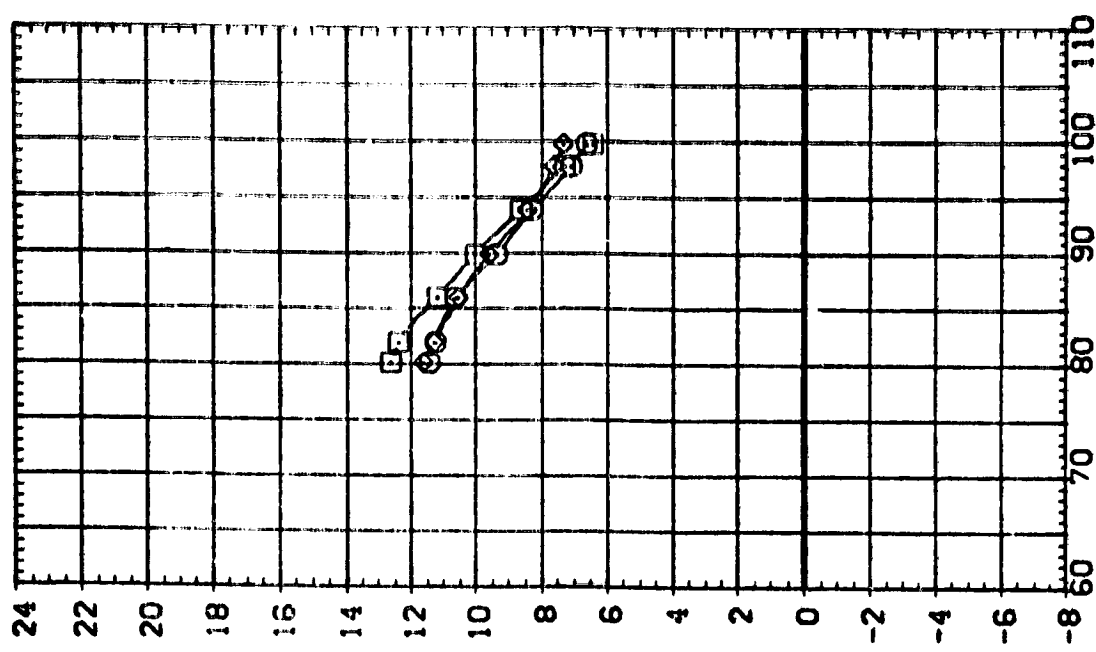
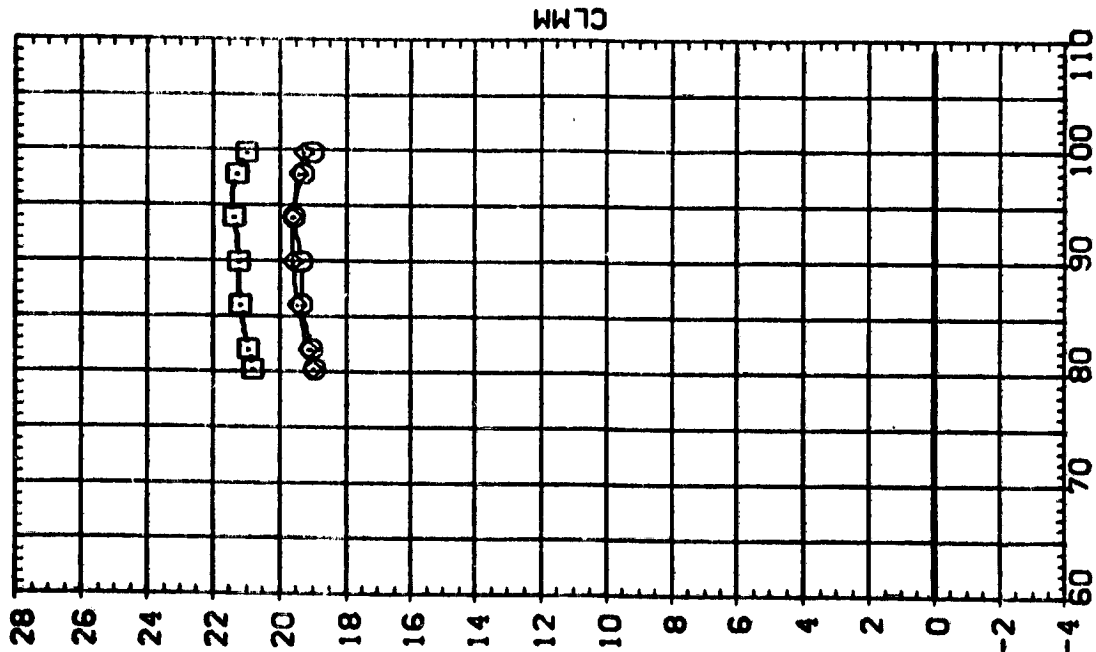
AERODYNAMIC CHARACTERISTICS OF A SRB WITH SEPARATION ROCKETS AND ELECT. TUNNEL
 (B)MACH = .90
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DATA SET SYMB. CONFIGURATION DESCRIPTION
 (C95077) (C95078) (C95079)

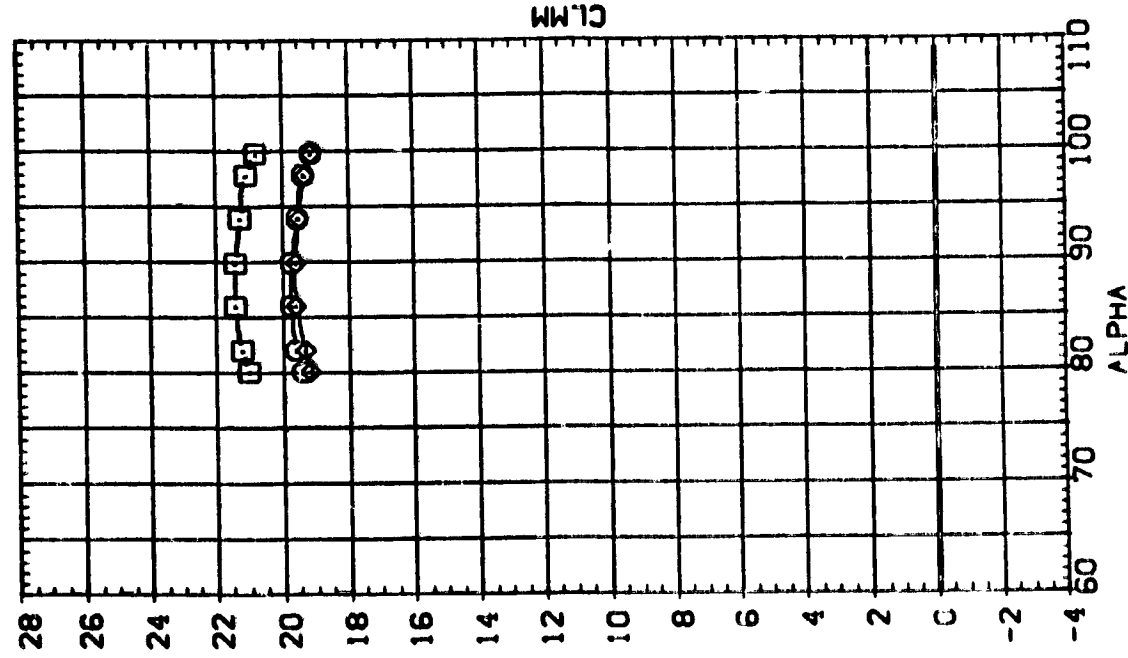
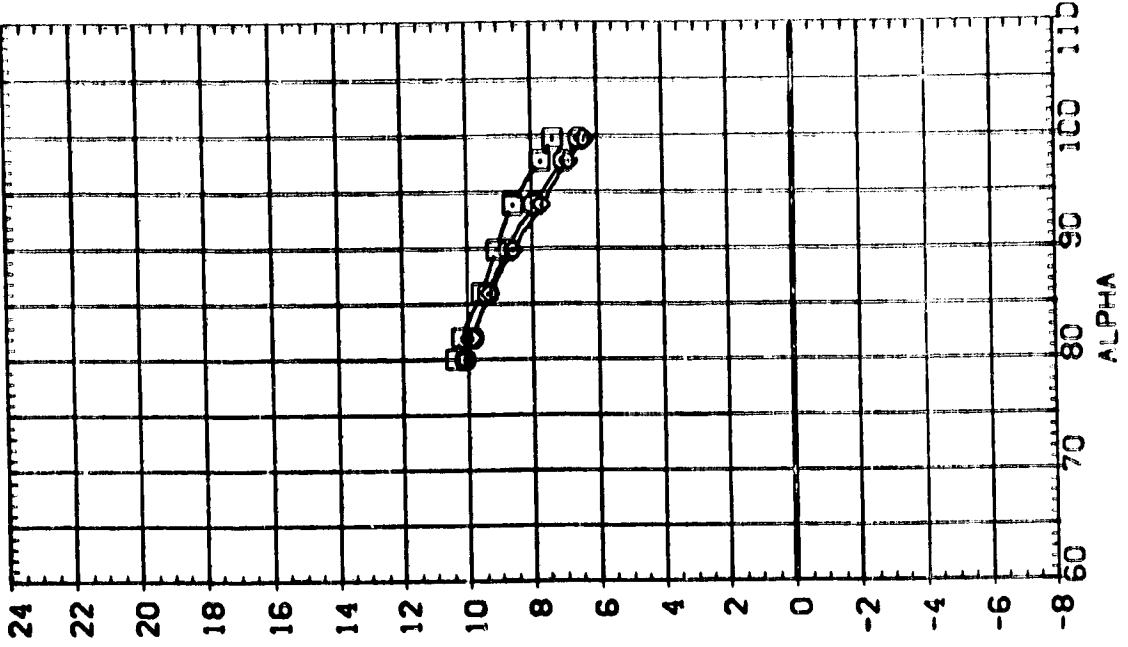
MSFC	SRB	IN.	SRB	IN.	SRB	IN.	SRB	IN.	SRB	IN.	SRB	IN.	SRB	IN.	SRB	IN.
5901	5901	142	5901	142	5901	142	5901	142	5901	142	5901	142	5901	142	5901	142
5901	5901	142	5901	142	5901	142	5901	142	5901	142	5901	142	5901	142	5901	142
5901	5901	142	5901	142	5901	142	5901	142	5901	142	5901	142	5901	142	5901	142

BETA .000 .000 .000
 PHI 45.000 90.000 135.000
 ELT 1.000 1.000 1.000
 SEPRKT 2.000 2.000 2.000
 REFERENCE INFORMATION
 SREF .5030 .5030 IN.
 LREF .8000 .8000 IN.
 BREF .8000 .8000 IN.
 YMRP 5.5570 5.5570 IN.
 ZMRP .0000 .0000 IN.
 SCALE .0056 .0056 IN.



BETA: PH: SEPRAT: REFERENCE INFORMATION:
 .000 45.000 2.000 SPC 5000 S: IN
 .000 90.000 2.000 LRF 8000
 .000 135.000 2.000 BRF 8000
 XPRB 5.2572
 YPRB 0.0000
 ZPRB 0.0000
 SCALE 0.0000

DATA SET SYMBL. CONFIGURATION DESCRIPTION
 [C95027] MSFC 590(SA26F) [42-IN. SR9(139) N9RE1S2 ELT
 [C95028] MSFC 590(SA26F) [42-IN. SR9(139) N9RE1S2 ELT
 [C95029] MSFC 590(SA26F) [42-IN. SR9(139) N9RE1S2 ELT



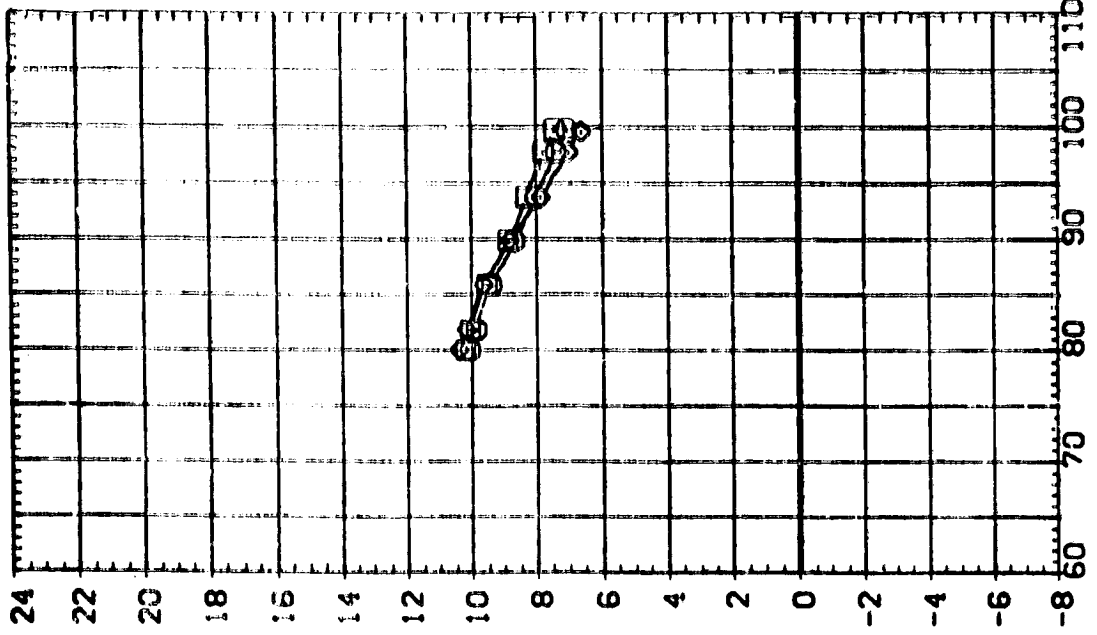
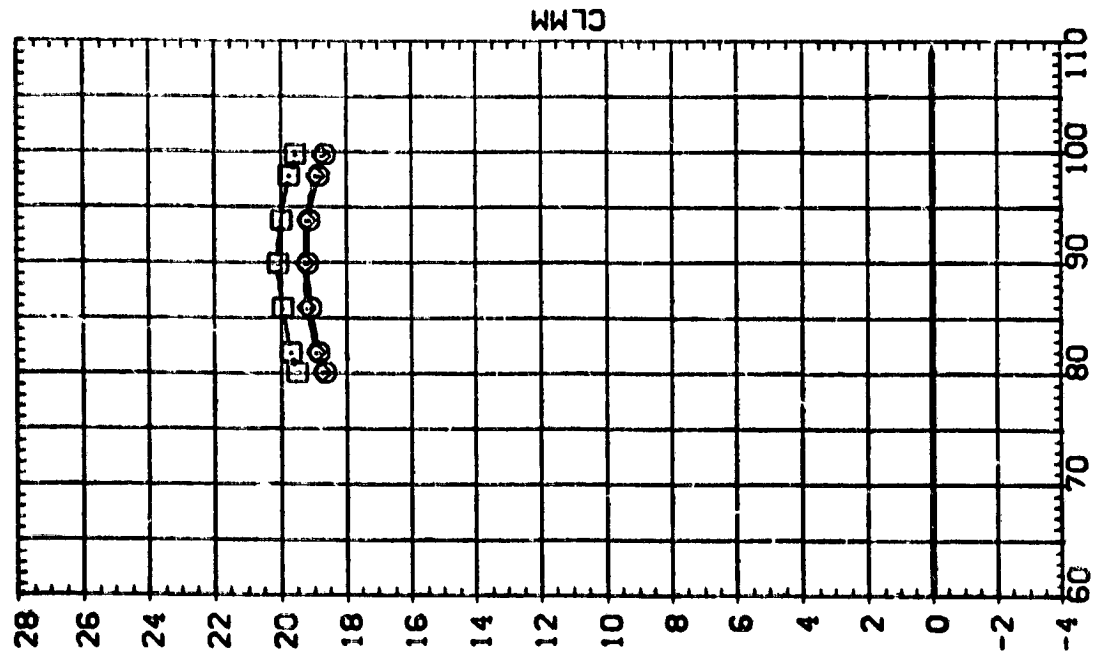
AERODYNAMIC CHARACTERISTICS OF A SRB WITH SEPARATION ROCKETS AND ELECT. TUNNEL

COMACH = 1.96



DATA SET SYMBOL: (CS5027) (CS5028) (CS5029)
 CONFIGURATION DESCRIPTION: 142-IN. SRB(138) NRE1S2 ELT
 142-IN. SRB(138) NRE1S2 ELT
 142-IN. SRB(138) NRE1S2 ELT
 REFERENCE INFORMATION: SREF: .5030 SRB IN.
 LREF: .8000 SRB IN.
 XREF: .6000 SRB IN.
 YREF: 5.5570 SRB IN.
 ZREF: .0000 SRB IN.
 SCALE: .0056

BETA: .000
 PHI: 45.000
 ELT: 1.000
 SEPRAT: 2.000
 REFERENCE INFORMATION: SREF: .5030 SRB IN.
 LREF: .8000 SRB IN.
 XREF: .6000 SRB IN.
 YREF: 5.5570 SRB IN.
 ZREF: .0000 SRB IN.
 SCALE: .0056



AEODYNAMIC CHARACTERISTICS OF A SRB WITH SEPARATION ROCKETS AND ELECT. TUNNEL

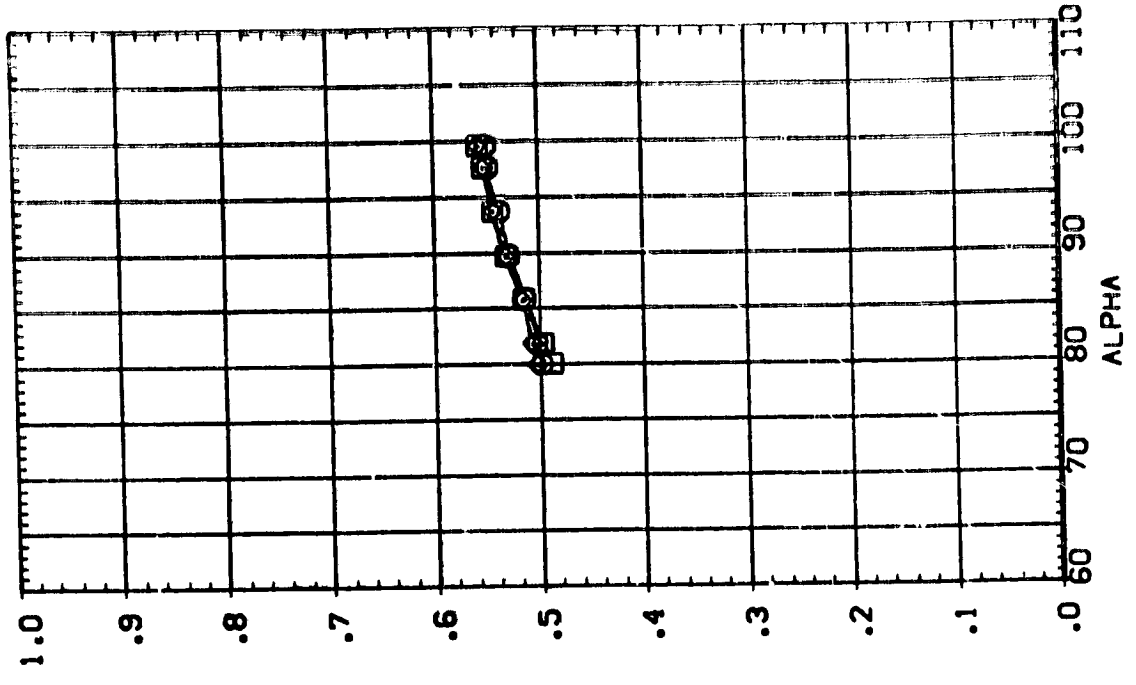
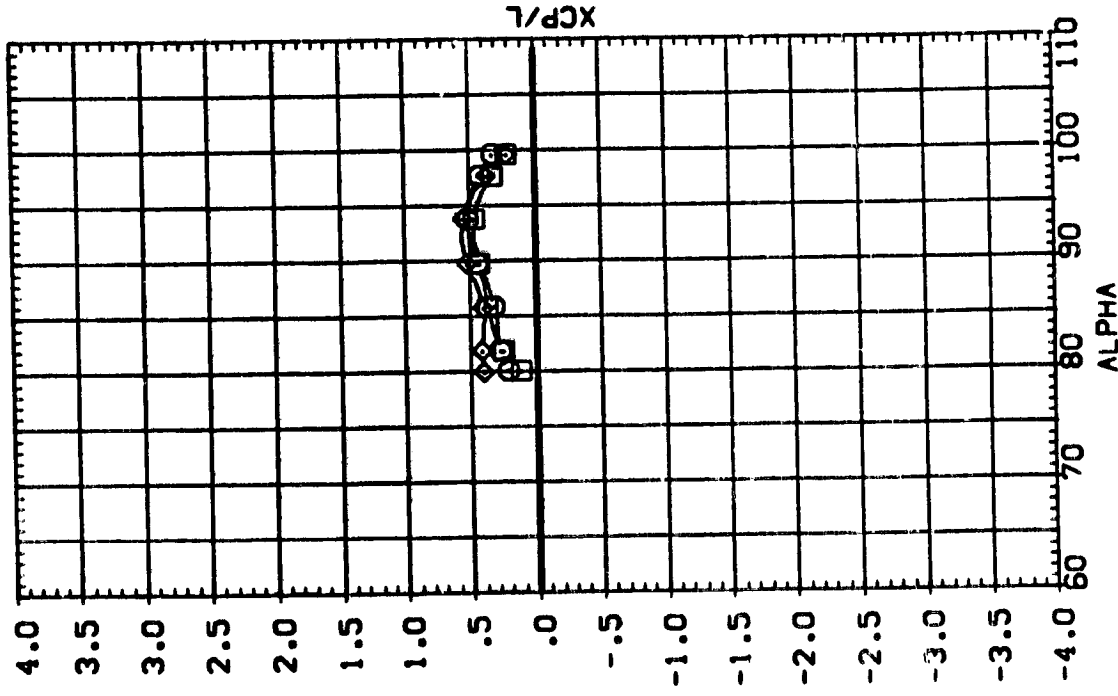
DATA SET SYMBOL:  CONFIGURATION DESCRIPTION

(C95077) NSFC 590(SA26F) 142-IN. SRB(139) N8RE152 ELT

(C95078) NSFC 590(SA26F) 142-IN. SRB(139) N8RE152 ELT

(C95079) NSFC 590(SA26F) 142-IN. SRB(139) N8RE152 ELT

BETA .000
 PHI 45.000
 ELT 1.000
 SEPRAT 2.000
 REFERENCE INFORMATION
 SCAL 50.000
 SREF 2.000
 SREF 2.000
 SREF 2.000
 XPROP 5
 YPROP
 ZPROP
 SCALE

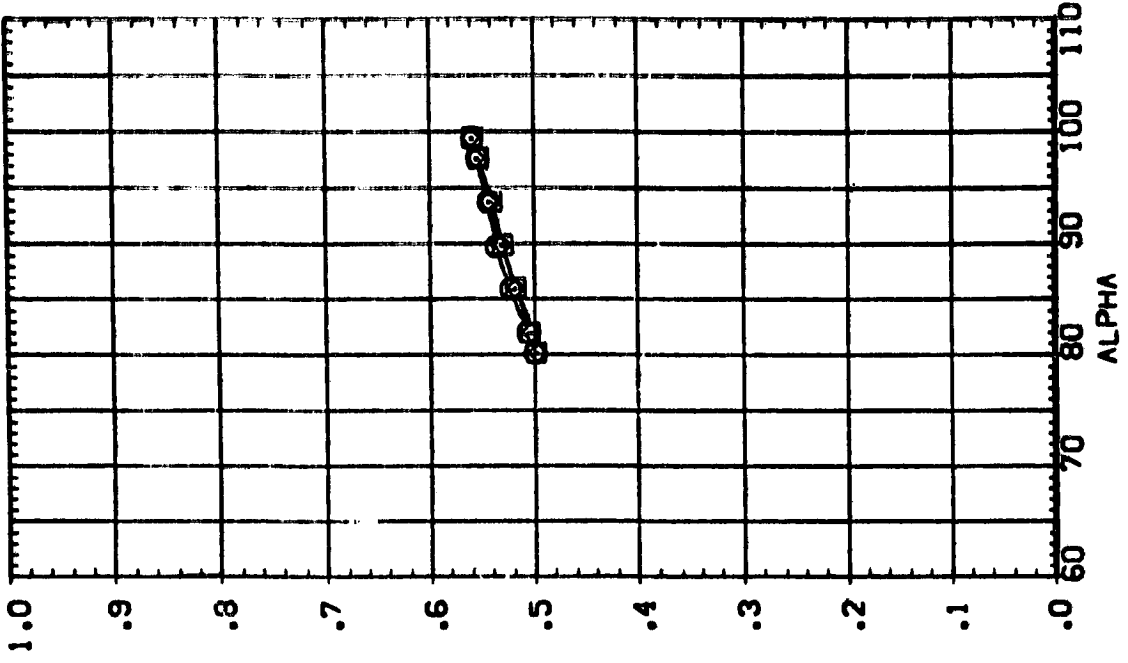
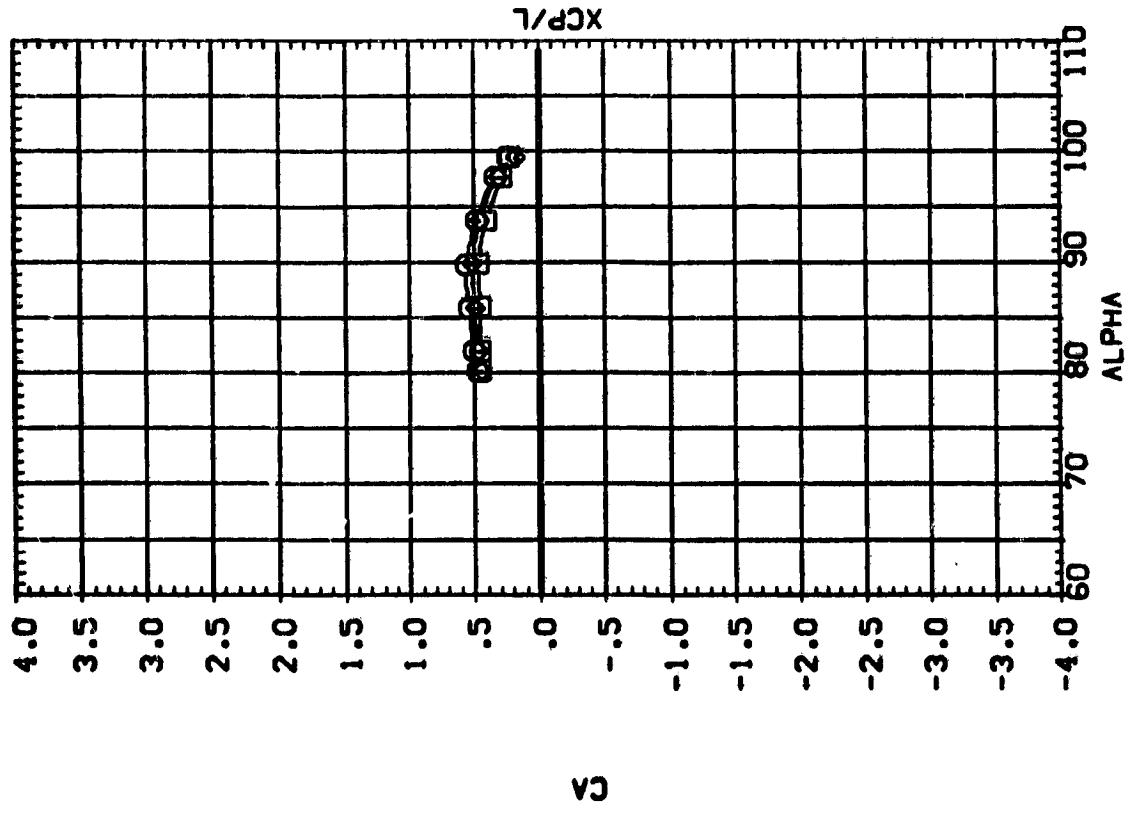


AERODYNAMIC CHARACTERISTICS OF A SRB WITH SEPARATION ROCKETS AND ELECT. TUNNEL

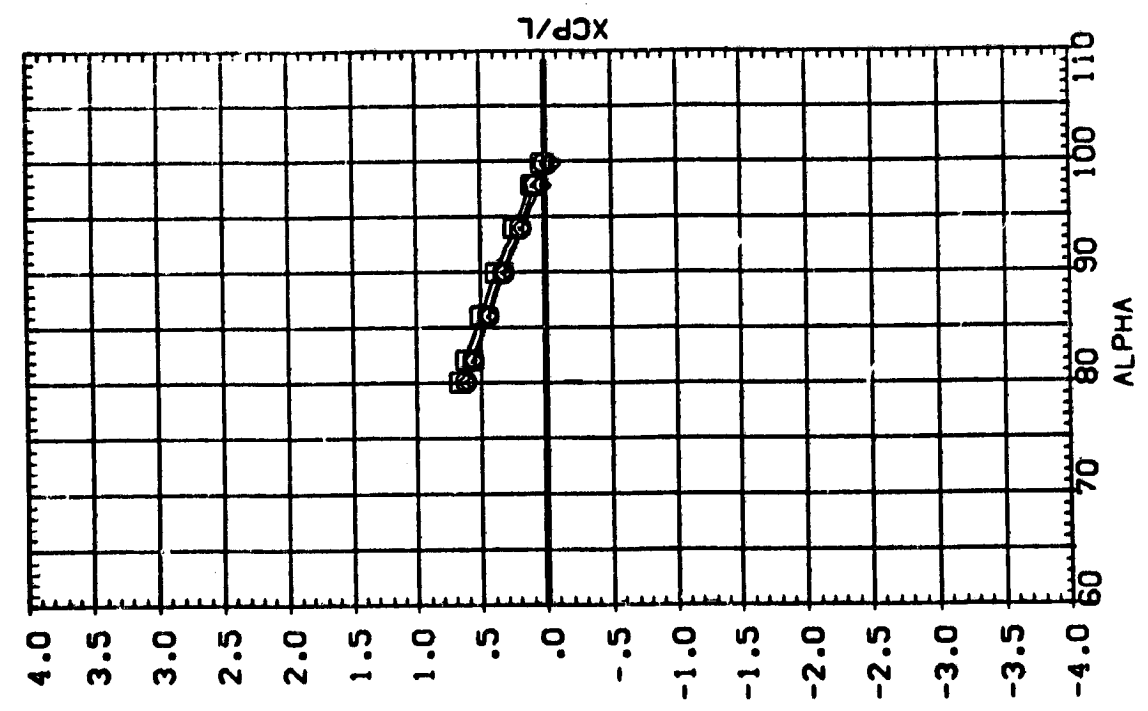
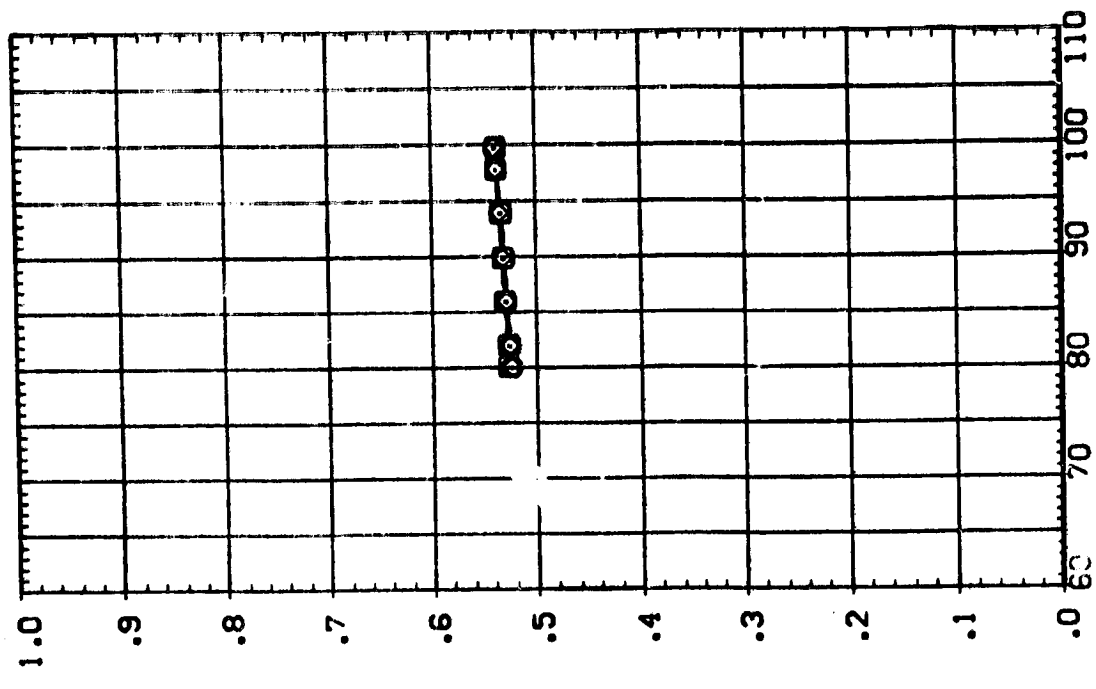
(A)MACH = .60



DATA SET SYMB.	CONF (GLORATION DESCRIPTION)	BETA	PHI	ELT	SEPRNT	REFERENCE INFORMATION
(C95027)	MSFC SRB(SA207) 142-IN. SRB(139) NBR(12) ELT	.000	45.000	1.000	2.000	SREF
(C95028)	MSFC SRB(SA207) 142-IN. SRB(139) NBR(12) ELT	.000	50.000	1.000	2.000	LES
(C95029)	MSFC SRB(SA207) 142-IN. SRB(139) NBR(12) ELT	.000	135.000	1.000	2.000	BREF
						XMRP
						YMRP
						ZMRP
						SCALE
						SO. IN.
						IN.
						IN.
						IN.
						IN.
						IN.

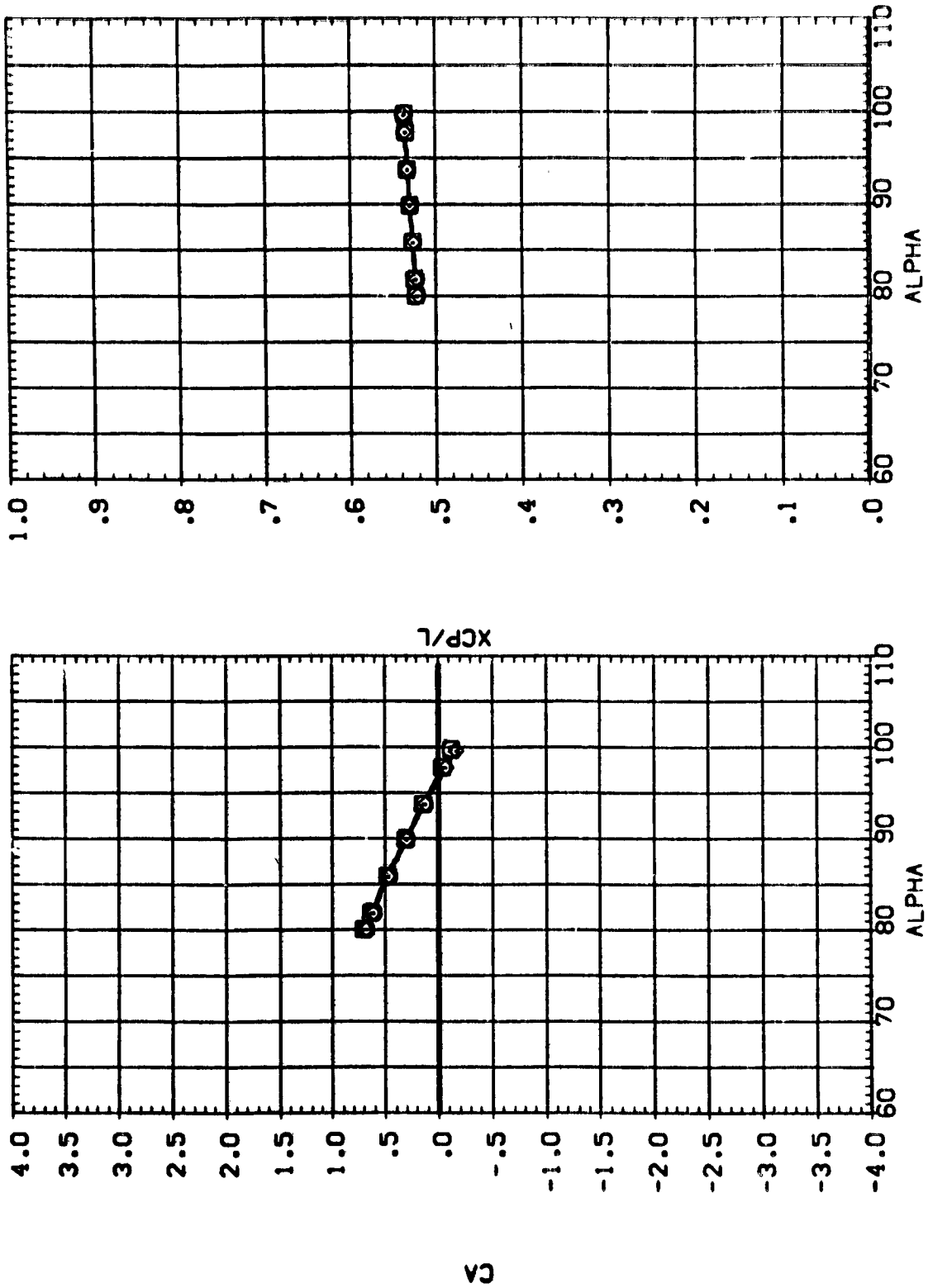


DATA SET SYMB. (C95027) (C95028) (C95029)
 CONFIGURATION DESCRIPTION MS-C 590(SA26F) 142-IN. SRB(139) MSRE(152) ELT
 MS-C 590(SA26F) 142-IN. SRB(139) MSRE(152) ELT
 MS-C 590(SA26F) 142-IN. SRB(139) MSRE(152) ELT
 BETA .000 .000 .000 PHJ 45.000 90.000 135.000 ELT 1.000 1.000 1.000
 SEPRAT 2.000 2.000 2.000 REFERENCE INFORMATION SQ. IN.
 SREF .5000 LREF .8000 BREF .8000 XMRP 5.5570 YMRP .0000 ZMRP .0000
 SCALE .0056



AERODYNAMIC CHARACTERISTICS OF A SRB WITH SEPARATION ON ROCKETS AND ELECT. TUNNEL

DATA SET SYMBOL	CONFIGURATION	DESCRIPTION	BETA	PHI	ELT	SEPKRT	REFERENCE INFORMATION
(C95027)	MSFC 590(SA26F)	142-IN. SRB(139)	.000	45.000	1.000	2.000	SC30
(C95028)	MSFC 590(SA26F)	142-IN. SRB(139)	.000	90.000	1.000	2.000	LR00
(C95029)	MSFC 590(SA26F)	142-IN. SRB(139)	.000	135.000	1.000	2.000	BR00
							5.5570
							YMRP
							ZMRP
							SCALE
							.0056



ALPHA

ALPHA

AERODYNAMIC CHARACTERISTICS OF A SRB WITH SEPARATION ROCKETS AND ELECT. TUNNEL

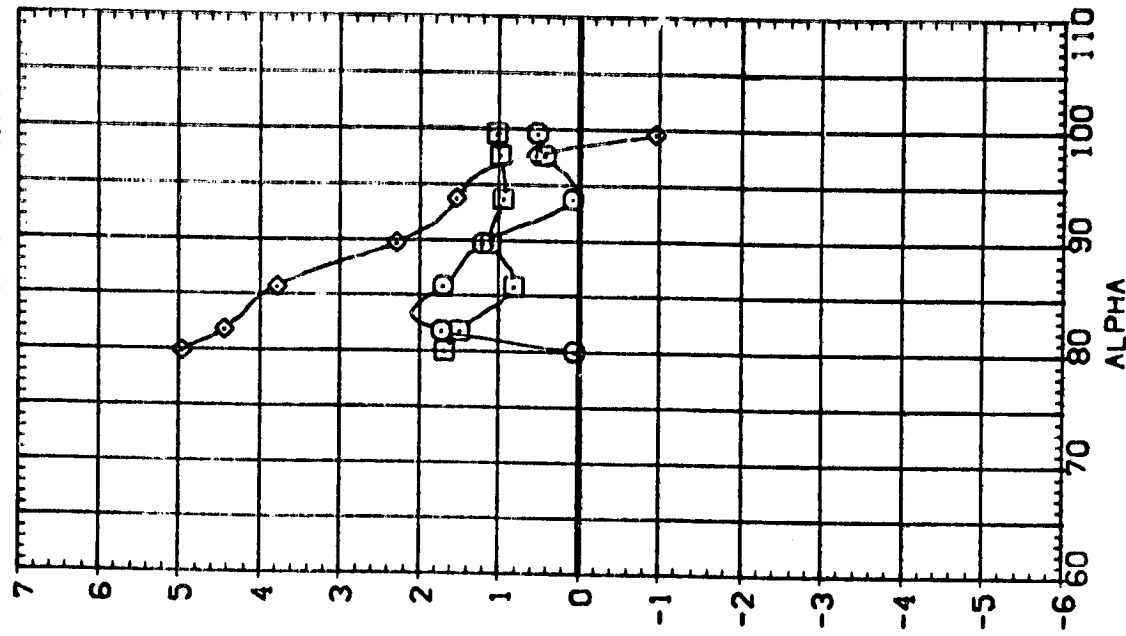
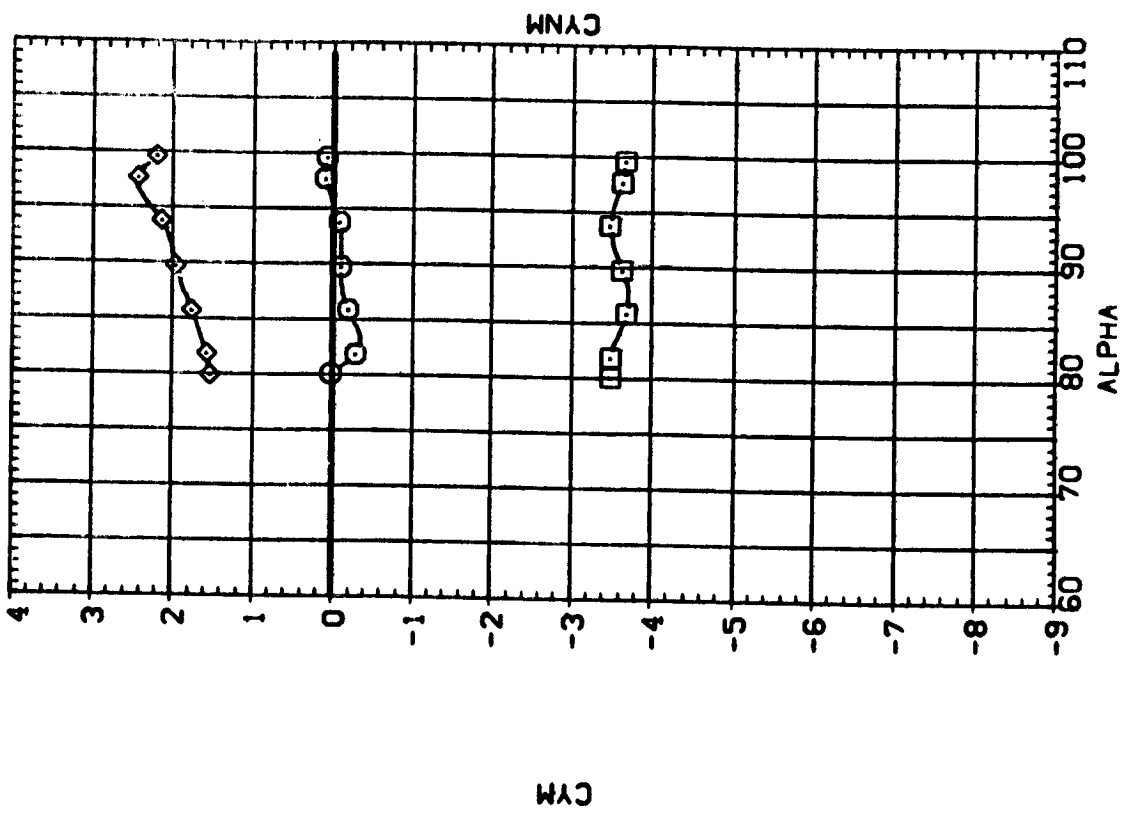
(C)MAC- = 3.48

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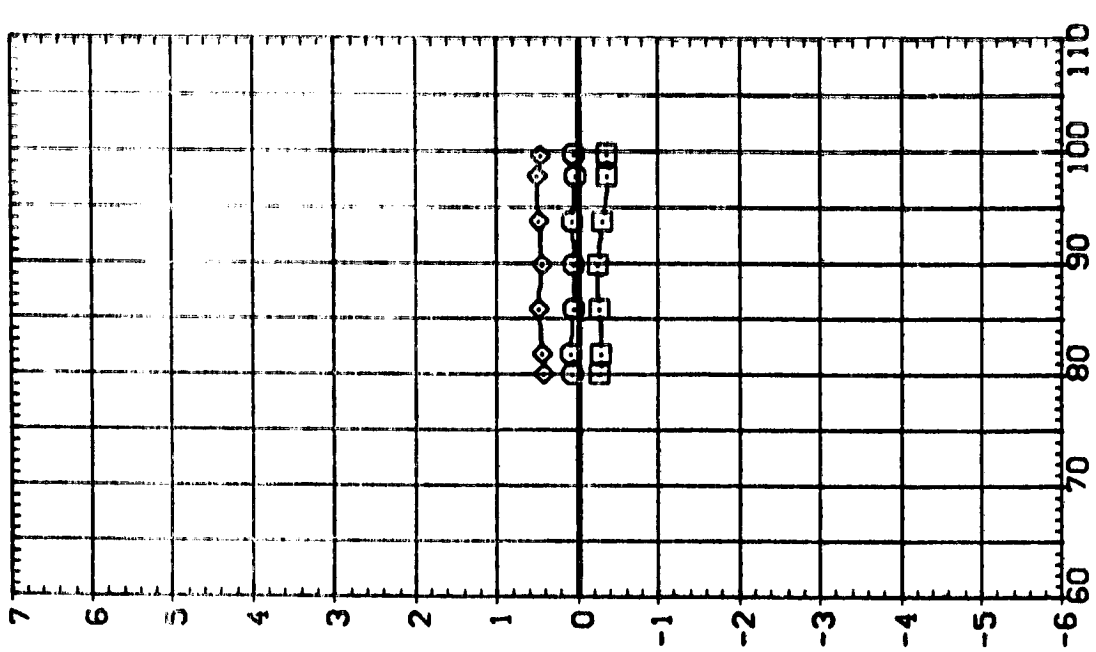
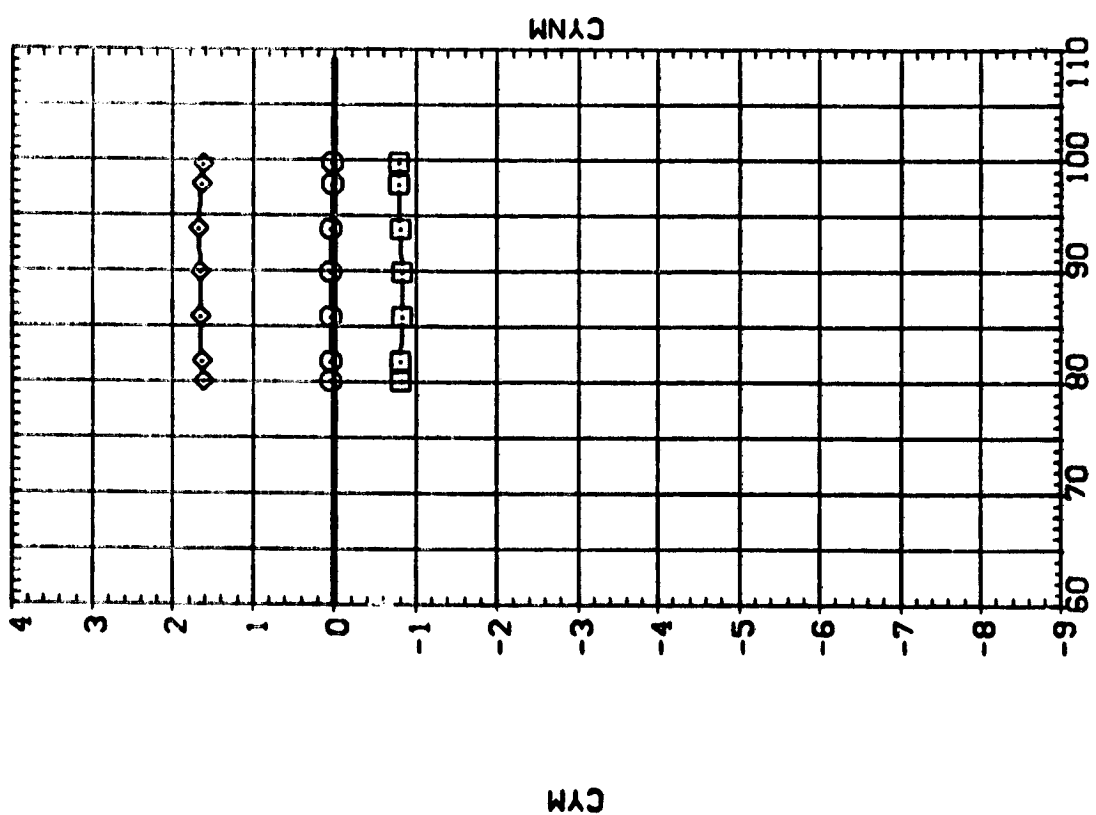


DATA SET SYMBO. CONFIGURATION DESCRIPTION
 (C95027) NSFC 590(SA26F) 142-IN. SRB(139) N8RE(S2 ELT
 (C95028) NSFC 590(SA26F) 142-IN. SRB(139) N8RE(S2 ELT
 (C95029) NSFC 590(SA26F) 142-IN. SRB(139) N8RE(S2 ELT

BETA PHI ELT SEPRKT REFERENCE INFORMATION
 .000 45.000 1.000 2.000 SREF .5030 SQ. IN
 .000 90.000 1.000 2.000 LREF .8000 IN.
 .000 135.000 1.000 2.000 BREF .8000 IN.
 XMRP 5.5570 IN.
 YMRP .0000 IN.
 ZMRP .0000 IN.
 SCALE .0056

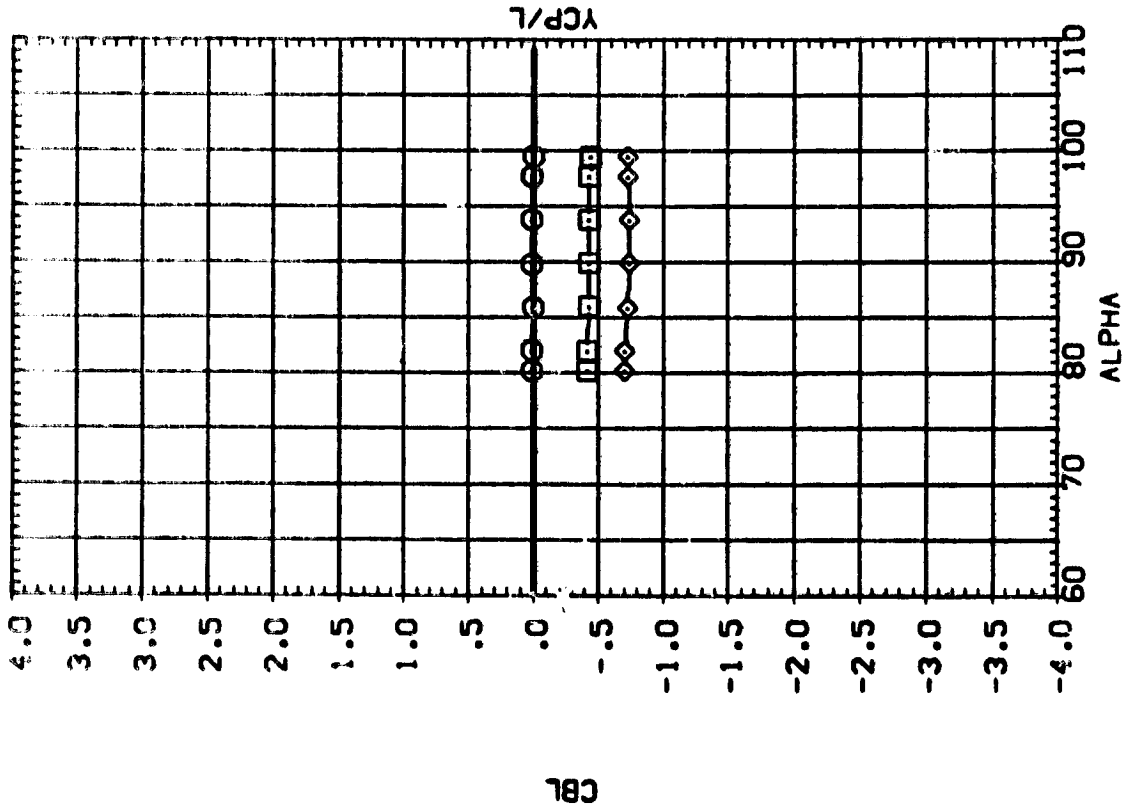


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	PHI	ELT	SEPRKT	REFERENCE INFORMATION
(C95027)	MSFC 580(SA26F) 142-IN. SRB(139) N8RE152 ELT	.000	45.000	1.000	2.000	SREF 5030 SD. IN.
(C95028)	MSFC 580(SA26F) 142-IN. SRB(139) N8RE152 ELT	.000	90.000	1.000	2.000	LREF .8000 IN.
(C95029)	MSFC 580(SA26F) 142-IN. SRB(139) N8RE152 ELT	.000	135.000	1.000	2.000	BREF .8000 IN.
						XTRP 5.5570 IN.
						YTRP .0000 IN.
						ZTRP .0000 IN.
						SCALE .0056

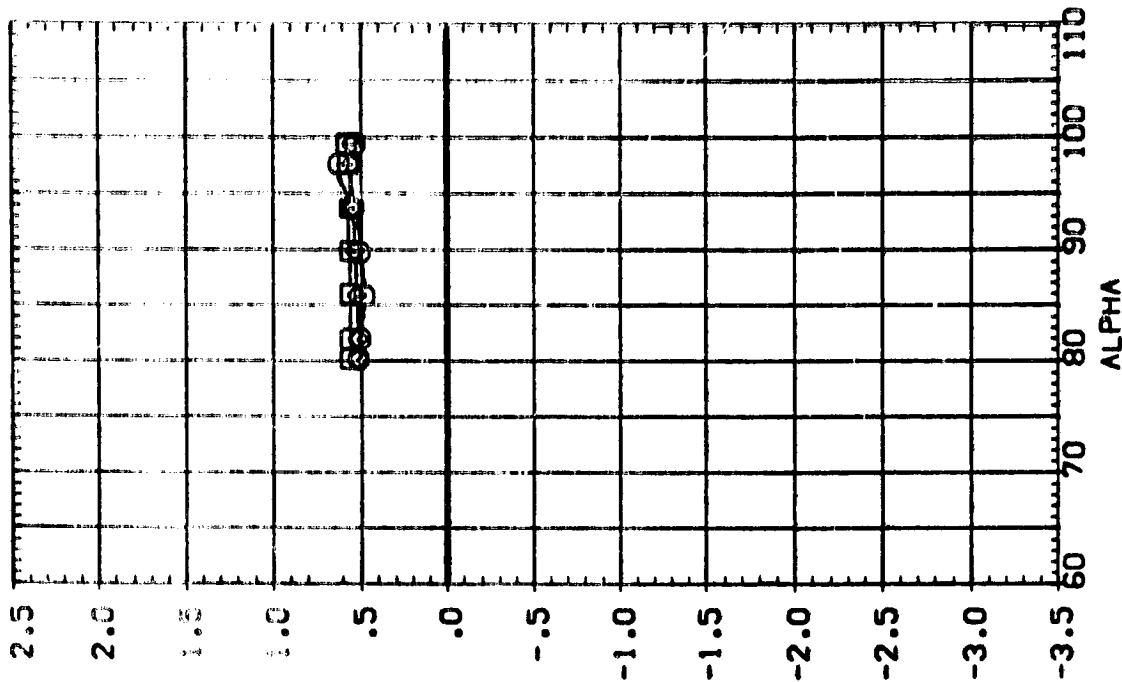


AERODYNAMIC CHARACTERISTICS OF A SRR WITH SEPARATION ROCKETS AND ELECT. TUNNEL

DATA SET SYMBOL: C95027
 CONFIGURATION DESCRIPTION: MSFC 590(SA26F) 142-IN. SRB(138) N8RE 152 ELT
 MSFC 590(SA26F) 142-IN. SRB(138) N8RE 152 ELT
 MSFC 590(SA26F) 142-IN. SRB(138) N8RE 152 ELT
 MSFC 590(SA26F) 142-IN. SRB(138) N8RE 152 ELT



BETA: .000
 .000
 .000
 PHI: 45.000
 90.000
 135.000
 ELT: 1.000
 1.000
 1.000
 SEPRKT: 2.000
 2.000
 2.000
 REFERENCE INFORMATION: SREF: .5000
 LREF: .8000
 BREF: .8000
 XREF: 5.9570
 YREF: .0000
 ZREF: .0000
 SCALE: .0056

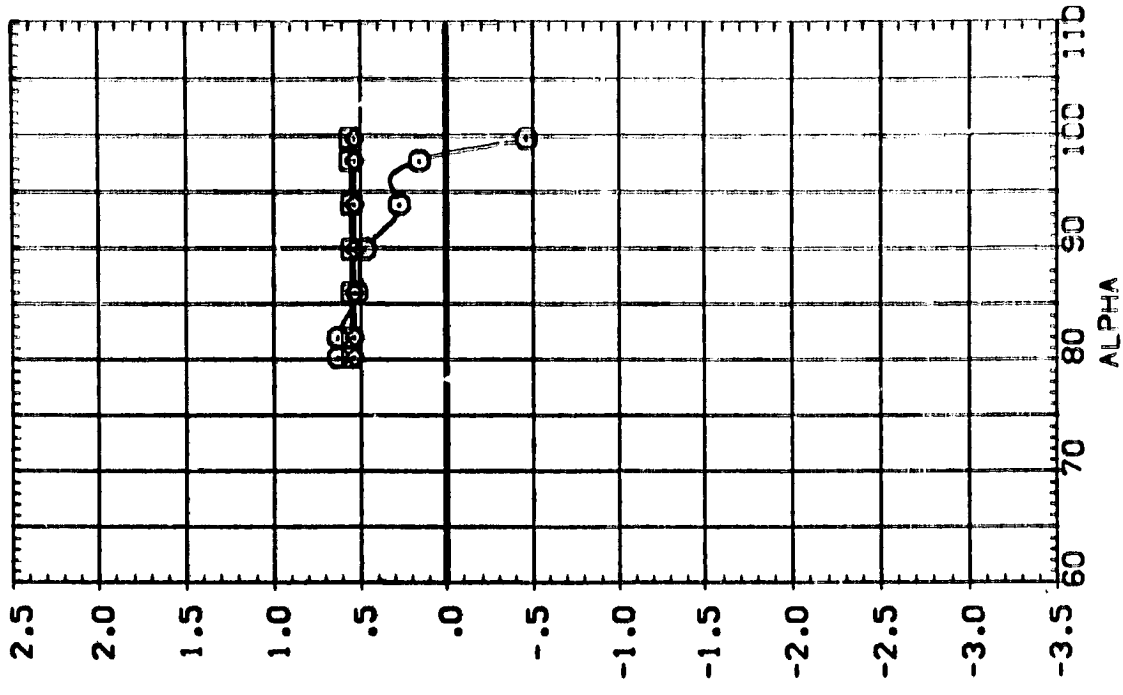
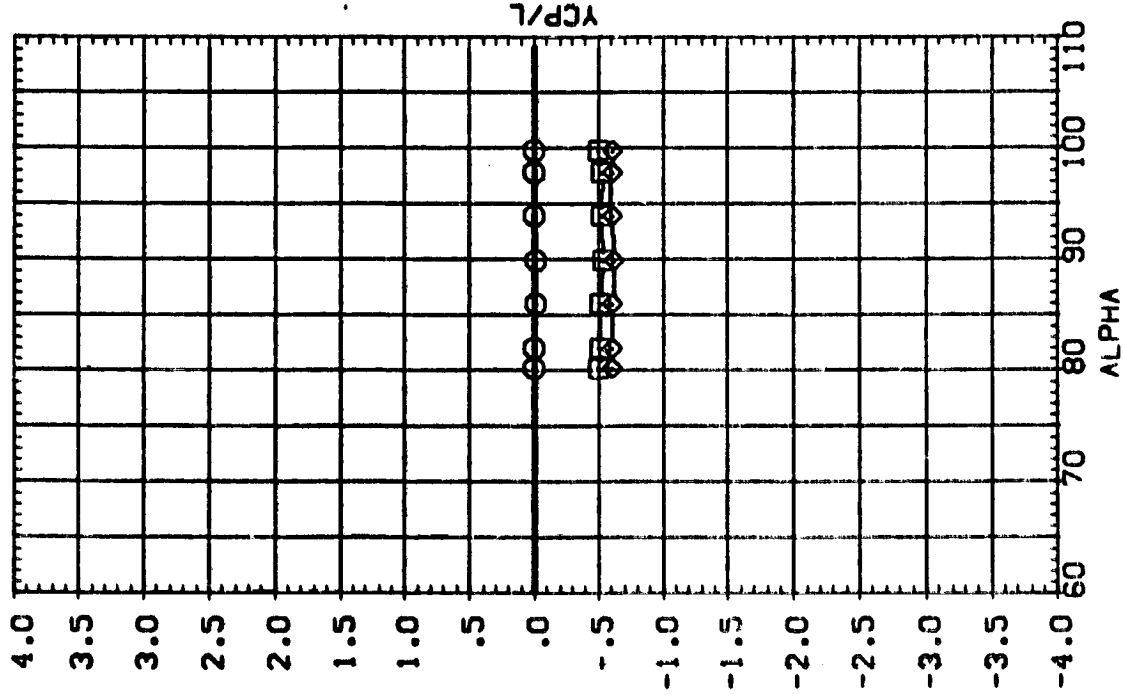


AERODYNAMIC CHARACTERISTICS OF A SRB WITH SEPARATION ROCKETS AND ELECT. TUNNEL

DATA SET SYMBOL: (C95027) (C95028) (C95029)

CONFIGURATION DESCRIPTION	BETA	PHI	ELT	SEPRNT	REFERENCE INFORMATION
MSFC 590(SA26F) (42-IN. SRB(139) NBR(152) ELT	.000	45.000	1.000	2.000	5000
MSFC 590(SA26F) (42-IN. SRB(139) NBR(152) ELT	.000	90.000	1.000	2.000	5000
MSFC 590(SA26F) (42-IN. SRB(139) NBR(152) ELT	.000	135.000	1.000	2.000	5000

YPRP 5.5570
 ZPRP 3.0000
 SCALE 2.0000

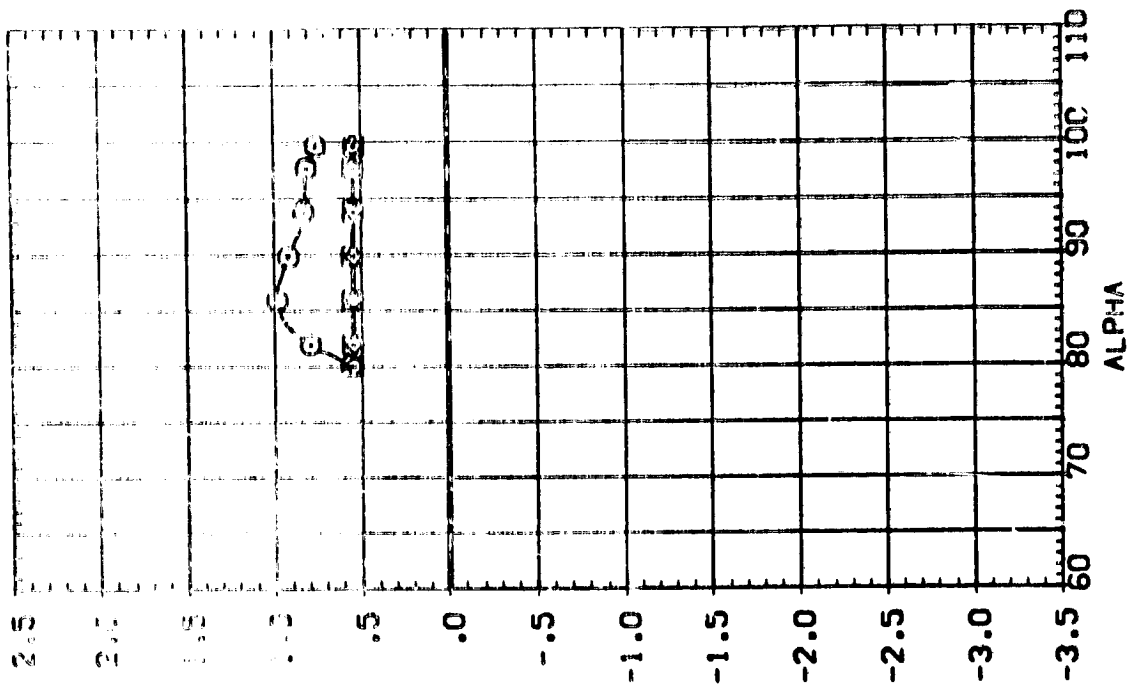
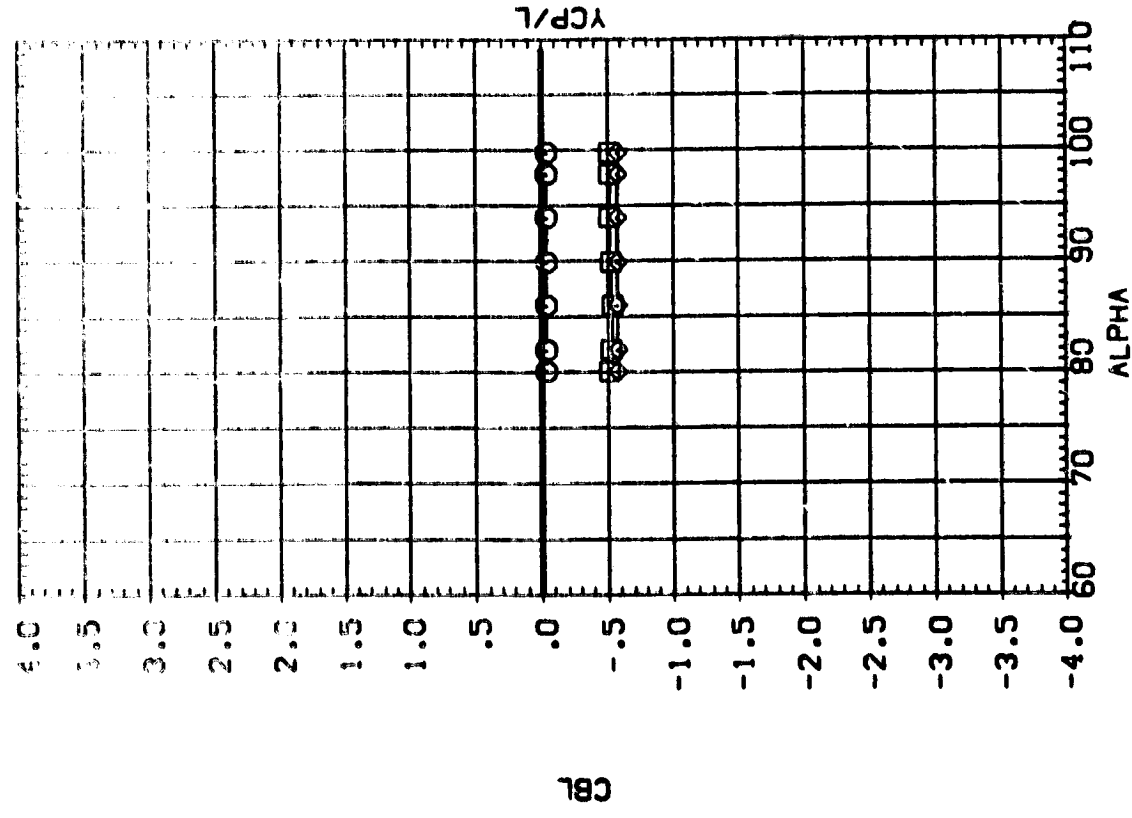


AERODYNAMIC CHARACTERISTICS OF A SRB WITH SEPARATION ROCKETS AND ELECT. TUNNEL

(C)MACH = 1.20



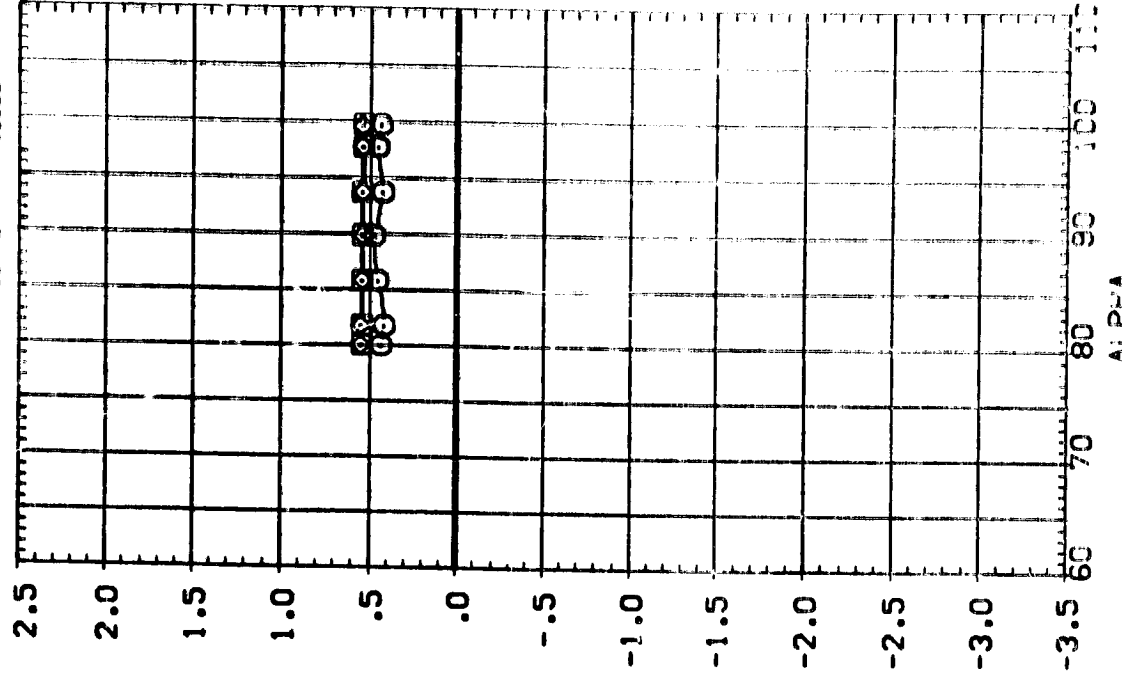
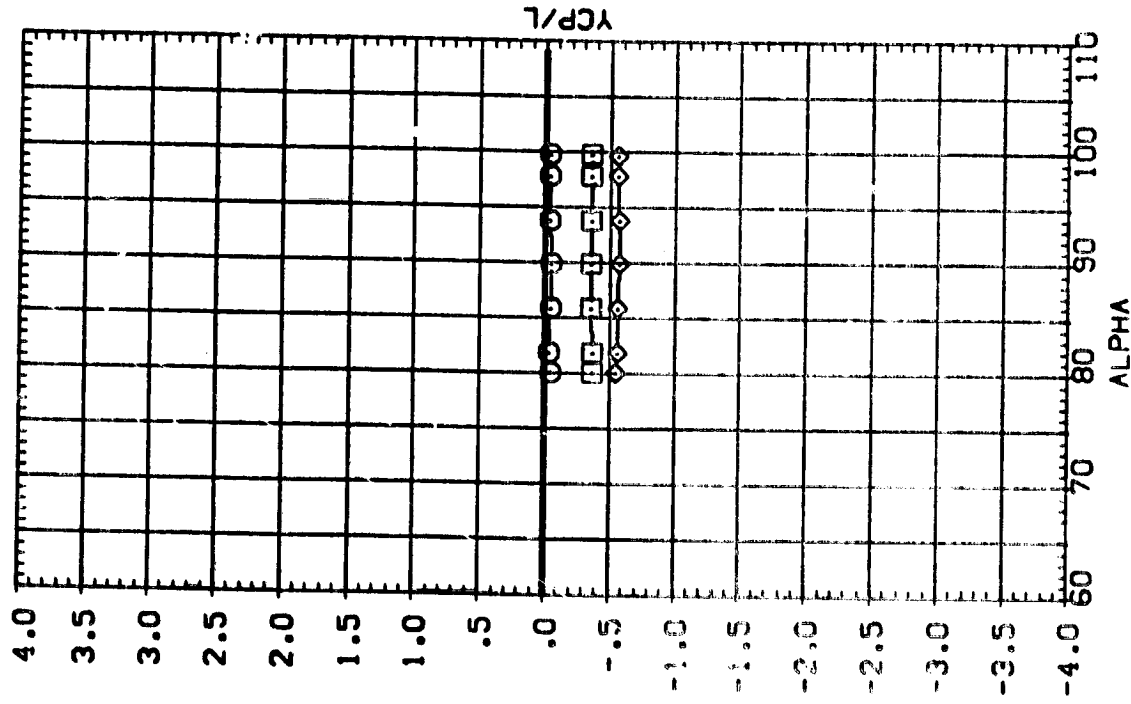
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	PHI	ELT	SEPRNT	REFERENCE INFORMATION
095027	590(SA26) 42-IN. SRB(26)	.000	45.000	1.000	2.000	5000
095028	590(SA26) 42-IN. SRB(26)	.000	30.000	1.000	2.000	5000
095029	590(SA26) 42-IN. SRB(26)	.300	35.000	1.000	2.000	5000



AERODYNAMIC CHARACTERISTICS OF A SRB WITH SEPARATION ROCKETS AND ELECT. TUNNEL

DATA SET SYMBO. CONFIGURATION DESCRIPTION
 (C95077) 0 MSC 590(SA267) 142-IN. SRB(139) N3RE152 ELT
 (C95078) 1 MSC 590(SA267) 142-IN. SRB(139) N3RE152 ELT
 (C95079) 2 MSC 590(SA267) 142-IN. SRB(139) N3RE152 ELT

BETA PHI ELI SEPRM REFERENCE
 .000 45.000 1.000 2.000 5.000
 .000 90.000 1.000 2.000 10.000
 .000 135.000 1.000 2.000 15.000
 XPROP YPROP ZPROP
 SCALE



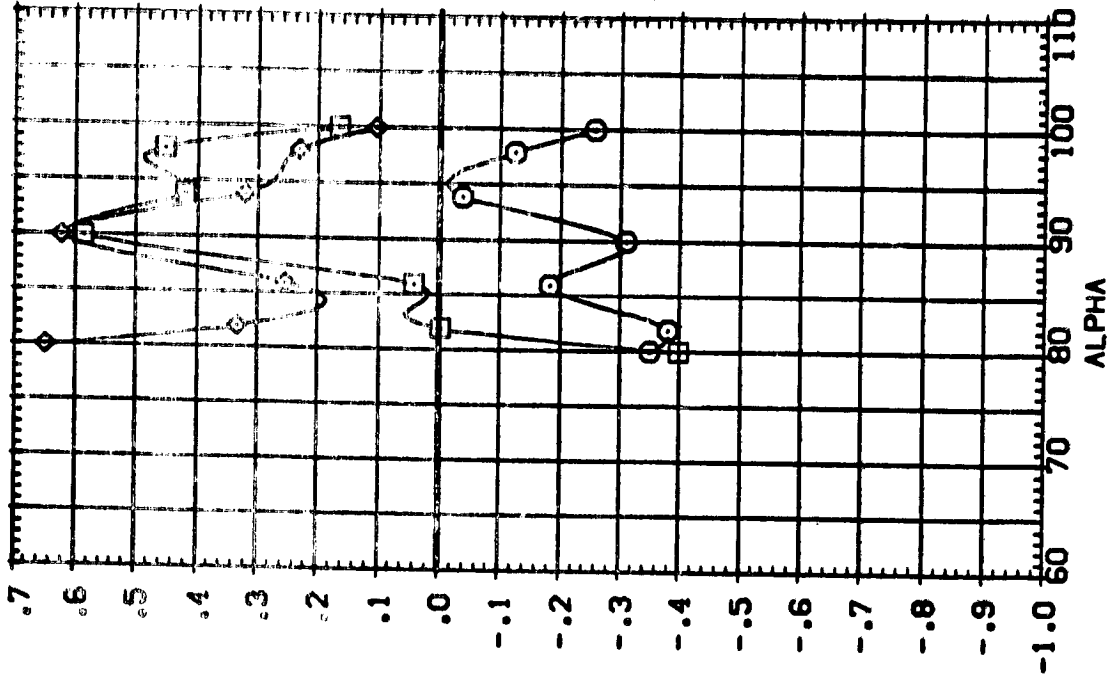
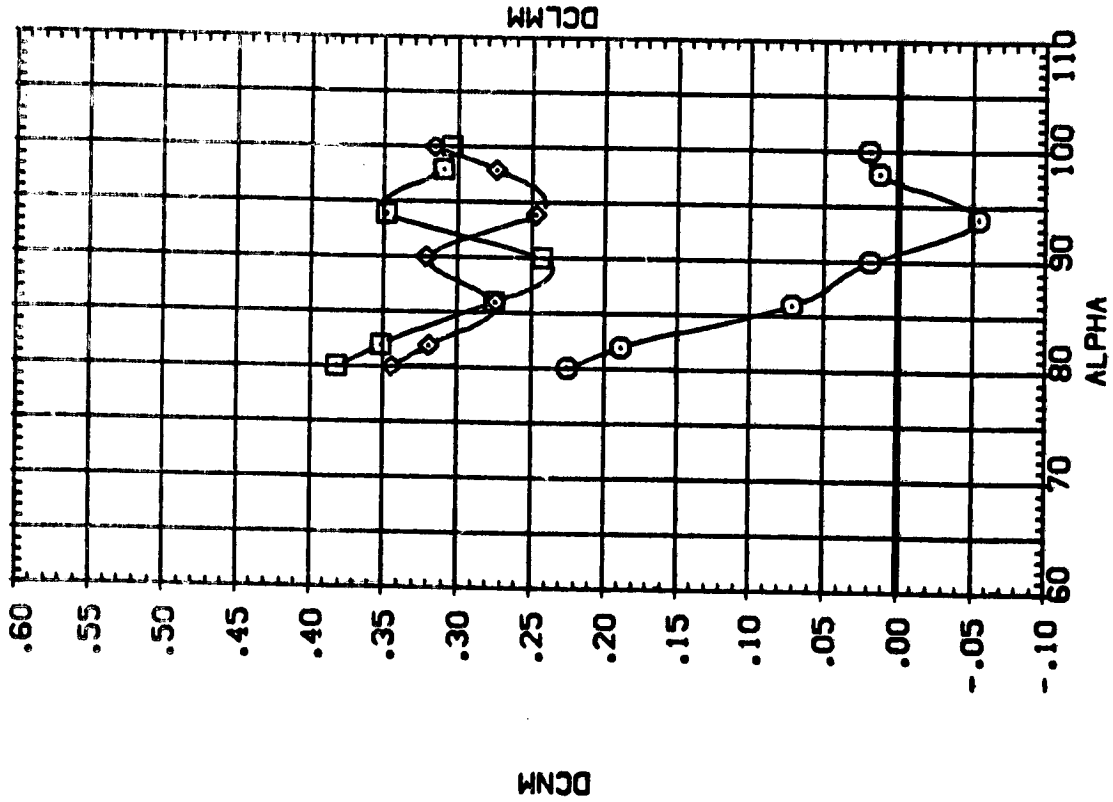
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AERODYNAMIC CHARACTERISTICS OF A SRB WITH SEPARATION ROCKETS AND ELECT. TUNNEL

(E)MACH = 3.48



DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	PHI	ELI	OSEPRT	REFERENCE INFORMATION
(E55018)	M5C 580(SA26F) 142-IN. SRB(138) EFFECT OF S1-S2	.000	45.000	1.000	1.000	SREF .5000 SO. IN.
(E55019)	M5C 580(SA26F) 142-IN. SRB(138) EFFECT OF S1-S2	.000	80.000	1.000	1.000	LREF .8000 IN.
(E55020)	M5C 580(SA26F) 142-IN. SRB(138) EFFECT OF S1-S2	.000	135.000	1.000	1.000	BREF .8000 IN.
						XMRP 5.5570 IN.
						YMRP .0000 IN.
						ZMRP .0000 IN.
						SCALE .0056

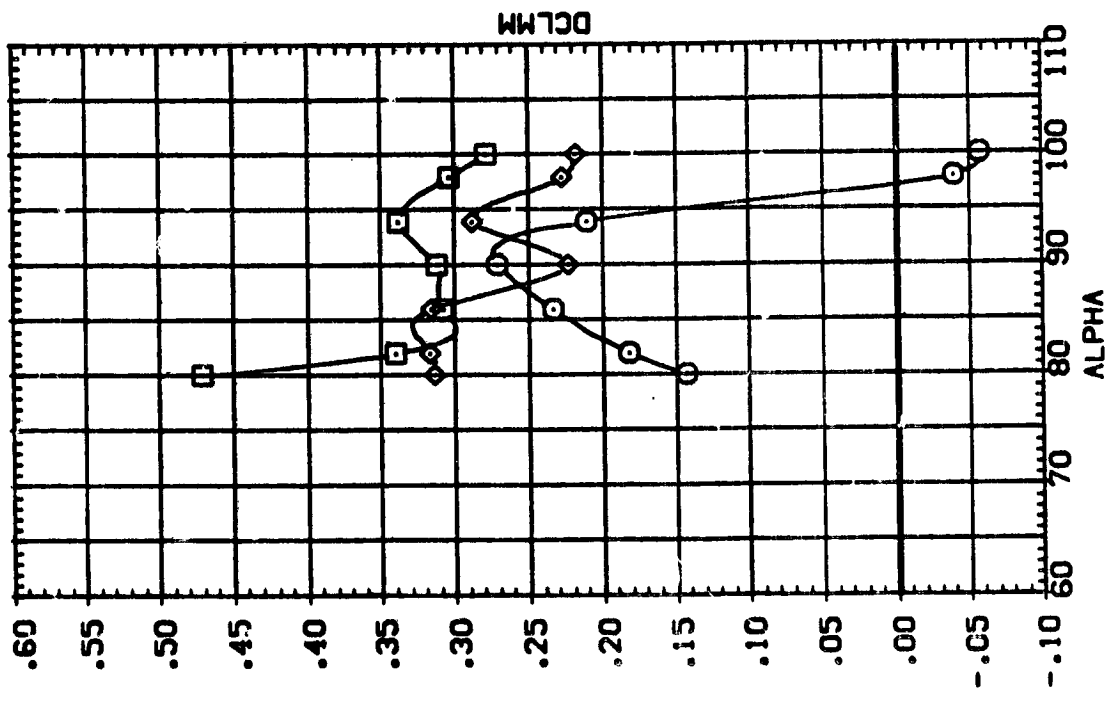
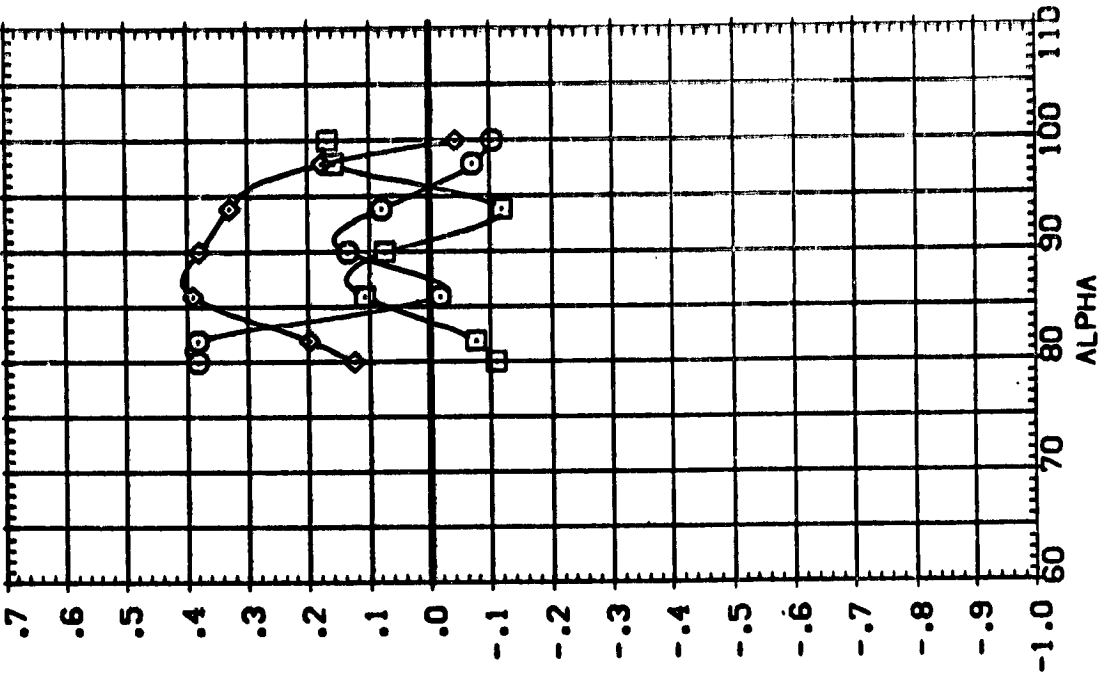


EFFECT OF SEPARATION ROCKET HEIGHT

(A)MACH = .60

DATA SET SYMBOL: (E95018) (E95019) (E95020)
 CONFIGURATION DESCRIPTION: MSFC 590(SA26F) 142-IN. SRB(130) EFFECT OF S1-S2; MSFC 590(SA26F) 142-IN. SRB(130) EFFECT OF S1-S2; MSFC 590(SA26F) 142-IN. SRB(130) EFFECT OF S1-S2
 REFERENCE INFORMATION: SREF 5000 IN.; LREF 2000 IN.; BREF 8000 IN.; XPRP 5.5570 IN.; YPRP .0000 IN.; ZPRP .0000 IN.; SCALE .0056

BETA: .000, .000, .000
 PHI: 45.000, 90.000, 135.000
 ELT: 1.000, 1.000, 1.000
 OSRPRT: 1.000, 1.000, 1.000

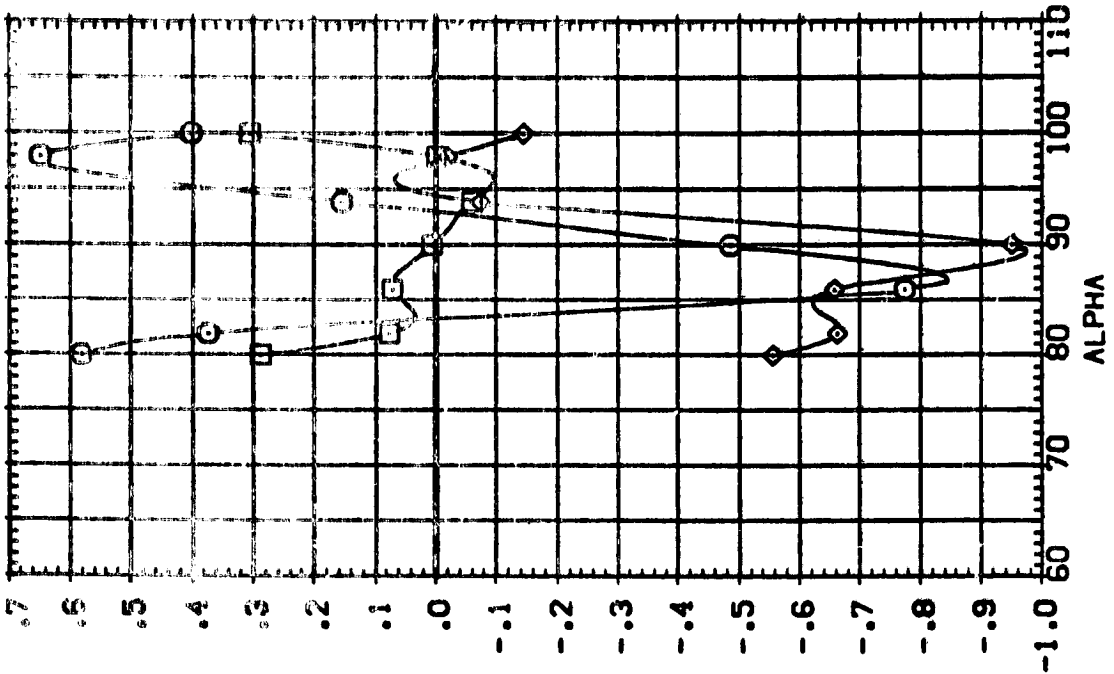
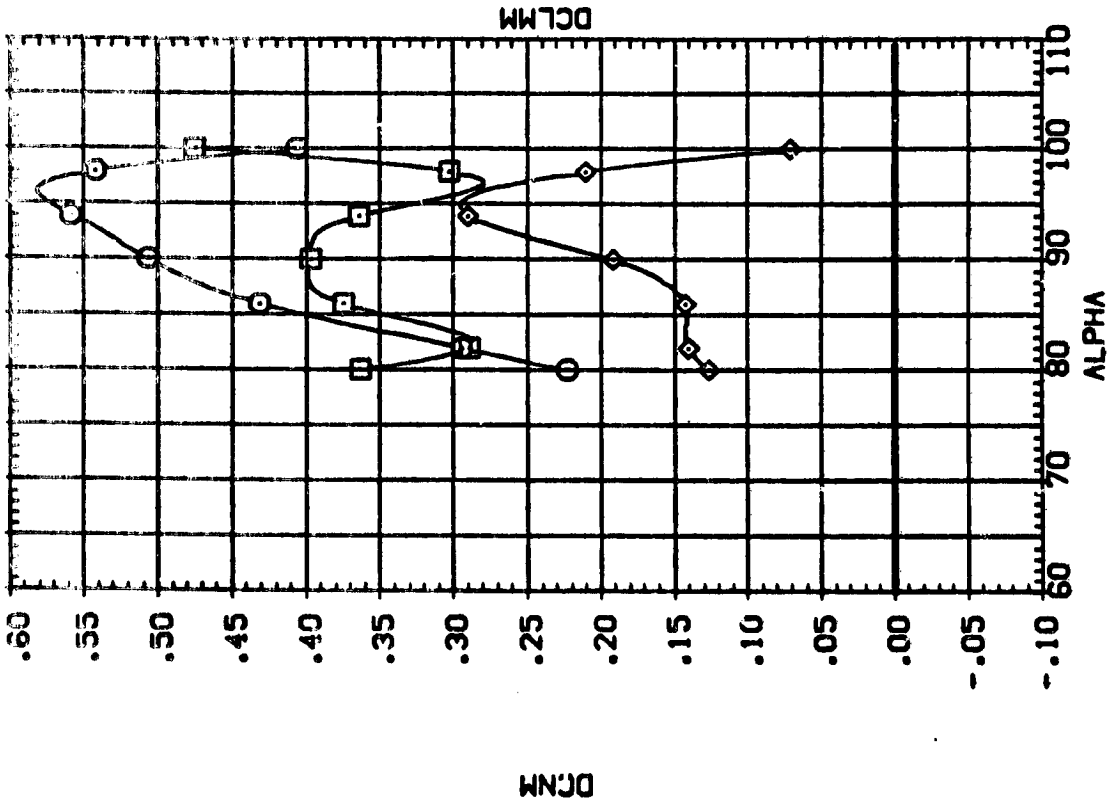


EFFECT OF SEPARATION ROCKET HEIGHT

(8)MACH = .90



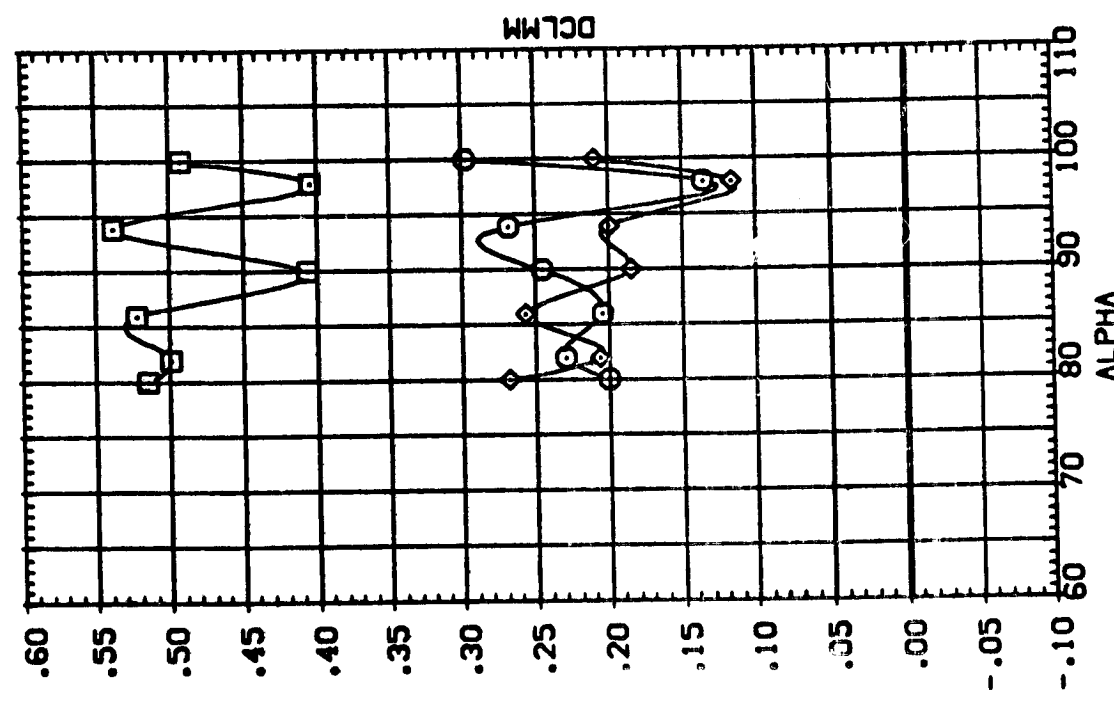
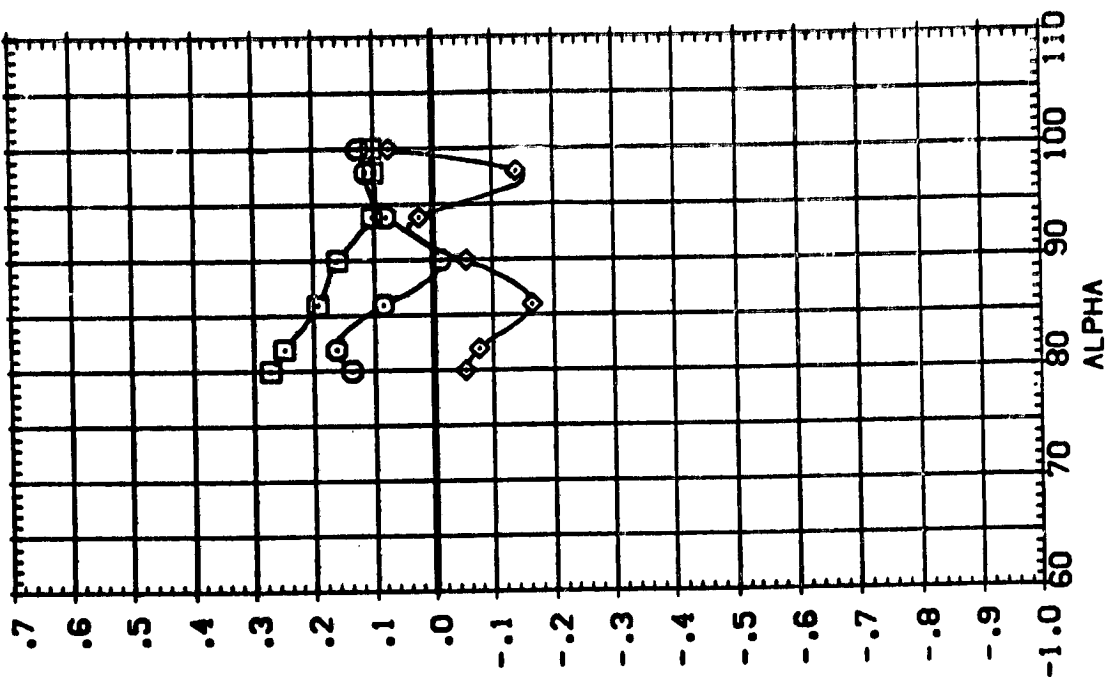
DATA SET SYMBO: (E55018) (E55019) (E55020)
 CONFIGURATION DESCRIPTION: MSFC 590(SA26F) 142-IN. SRB(136) EFFECT OF SI-52; MSFC 590(SA26F) 142-IN. SRB(136) EFFECT OF SI-52; MSFC 590(SA26F) 142-IN. SRB(136) EFFECT OF SI-52
 BETA: .000, .000, .000
 PHI: 45.000, 90.000, 135.000
 ELT: 1.000, 1.000, 1.000
 DSEPR1: 1.000, 1.000, 1.000
 REFERENCE INFORMATION: S03C 50. IN.; SREF 8000. IN.; LREF 6000. IN.; RREF 6000. IN.; XTRP 5.5570. IN.; YTRP .0000. IN.; ZTRP .0000. IN.; SCALE .0056



EFFECT OF SEPARATION ROCKET HEIGHT

(C)MACH = 1.20

DATA SET SYMBOL: (E95018) (E95019) (E95020)
 CONFIGURATION DESCRIPTION: MSFC 590(SA26F) 142-IN. SRB(139) EFFECT OF SI-52 MSFC 590(SA26F) 142-IN. SRB(139) EFFECT OF SI-52 MSFC 590(SA26F) 142-IN. SRB(139) EFFECT OF SI-52
 BETA PHI ELT OSEPRY REFERENCE INFORMATION SO IN
 .000 45.000 1.000 1.000 SREF .5000
 .000 90.000 1.000 1.000 LREF .8000
 .000 135.000 1.000 1.000 BREF .2000
 .000 .5570 IN. XMRP .0000
 .000 .0000 IN. ZMRP .0000
 .000 .0056 IN. SCALE

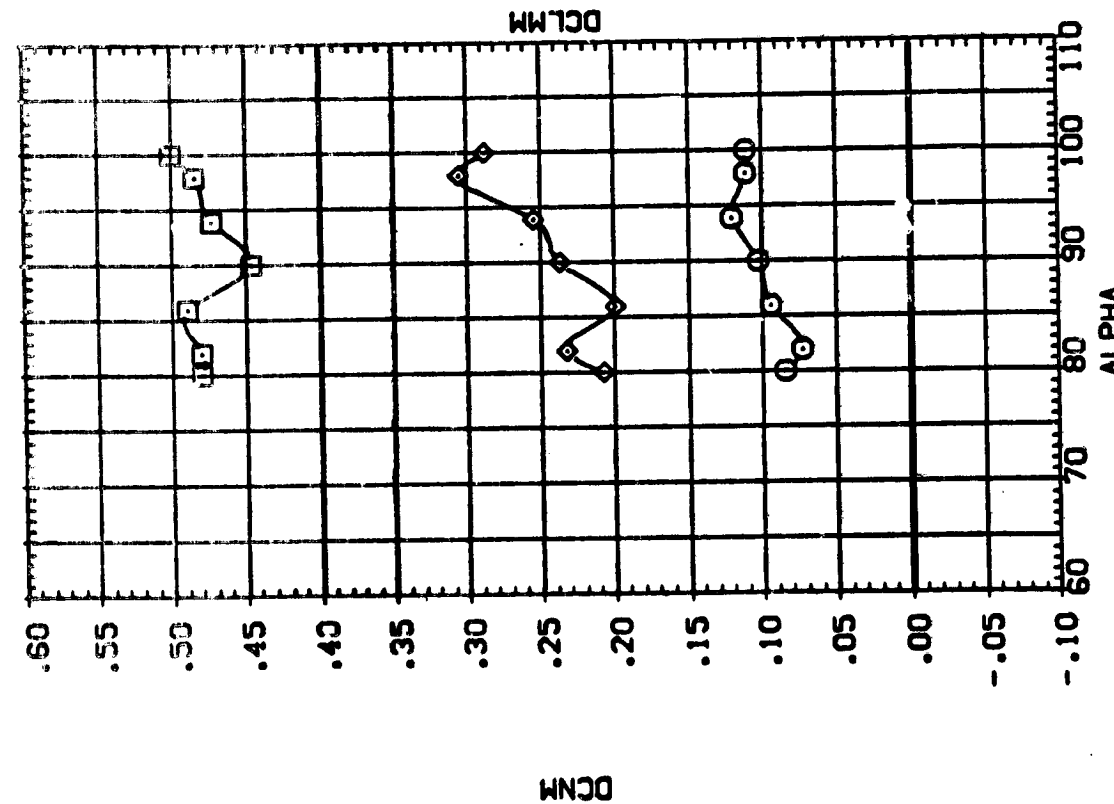
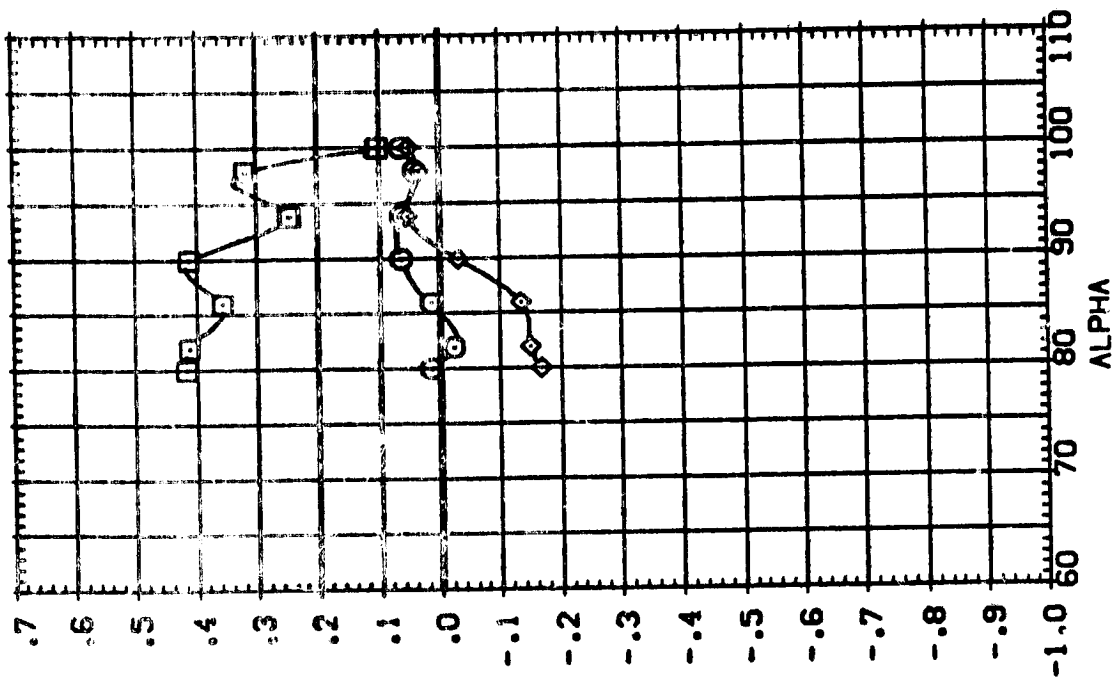


EFFECT OF SEPARATION ROCKET HEIGHT

(O)MACH = 1.96



DATA SET SYMBOL: (E95018) (E95019) (E95020)
 CONFIGURATION DESCRIPTION: 142-IN. SRB(139) EFFECT OF S1-S2
 142-IN. SRB(139) EFFECT OF S1-S2
 142-IN. SRB(139) EFFECT OF S1-S2
 BETA: .000 .000 .000
 PHI: 45.000 30.000 35.000
 ELT: 1.000 1.000 1.000
 DSEPR1: 1.000 1.000 1.000
 REFERENCE INFORMATION: SRFB .5030 50. IN.
 LREF .8000 IN.
 BRFB .8000 IN.
 XPRB 5.5570 IN.
 YPRB .0000 IN.
 ZPRB .0000 IN.
 SCALE .0056 IN.

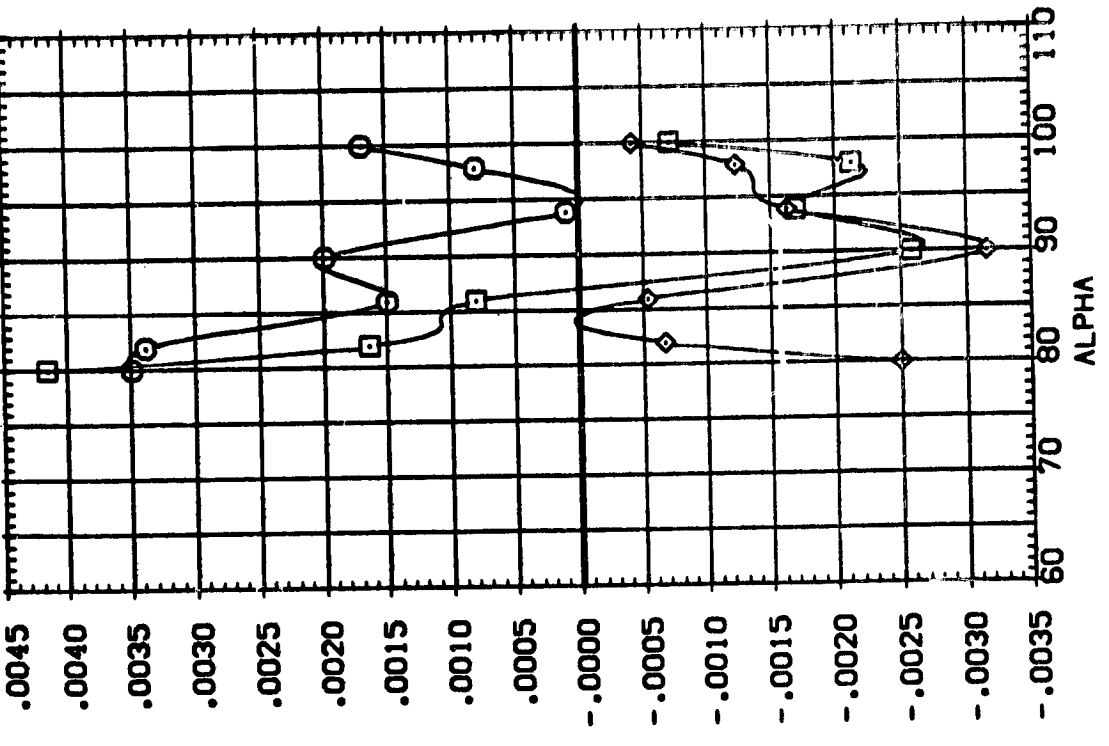
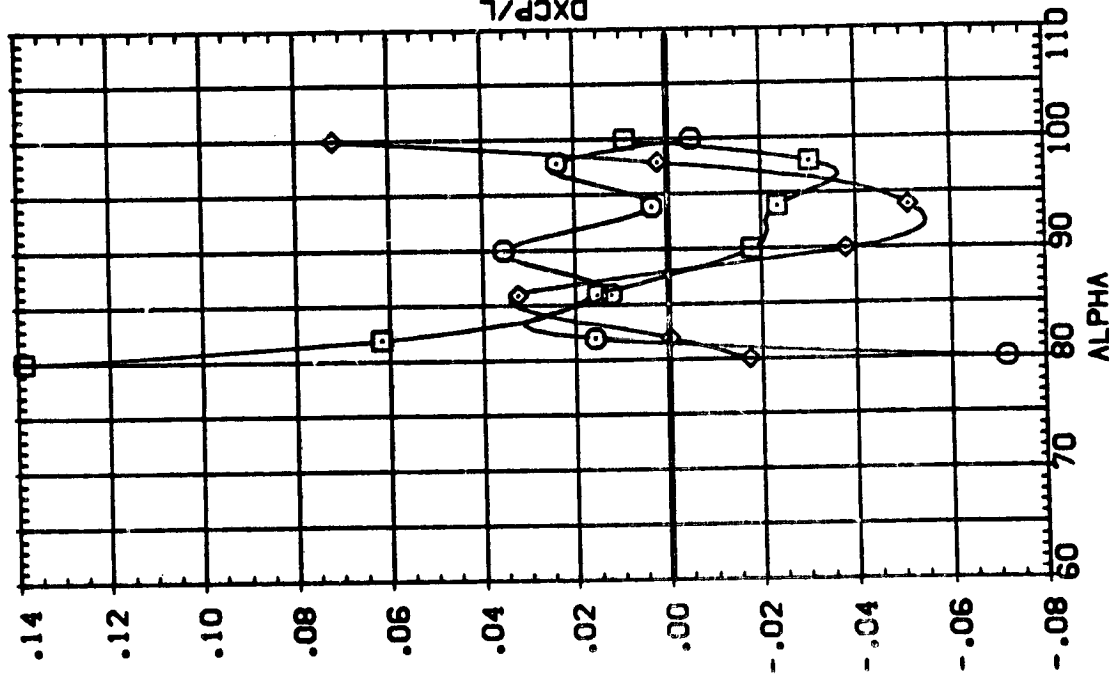


EFFECT OF SEPARATION ROCKET HEIGHT

(E)MACH = 3.48

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (E95018) MSFC 590(SA26F) 142-IN. S98(139) EFFECT OF S1-S2
 (E95019) MSFC 590(SA26F) 142-IN. S98(139) EFFECT OF S1-S2
 (E95020) MSFC 590(SA26F) 142-IN. S98(139) EFFECT OF S1-S2

BETA PHI ELT DSEPRY REFERENCE INFORMATION
 .000 45.000 1.000 1.000 SREF 5030
 .000 90.000 1.000 1.000 LREF .8000
 .000 135.000 1.000 1.000 BREF .8000
 .000 1.000 1.000 1.000 XPRP 5.5570
 .000 1.000 1.000 1.000 YPRP .0000
 .000 1.000 1.000 1.000 ZPRP .0000
 .000 1.000 1.000 1.000 SCALE .0056

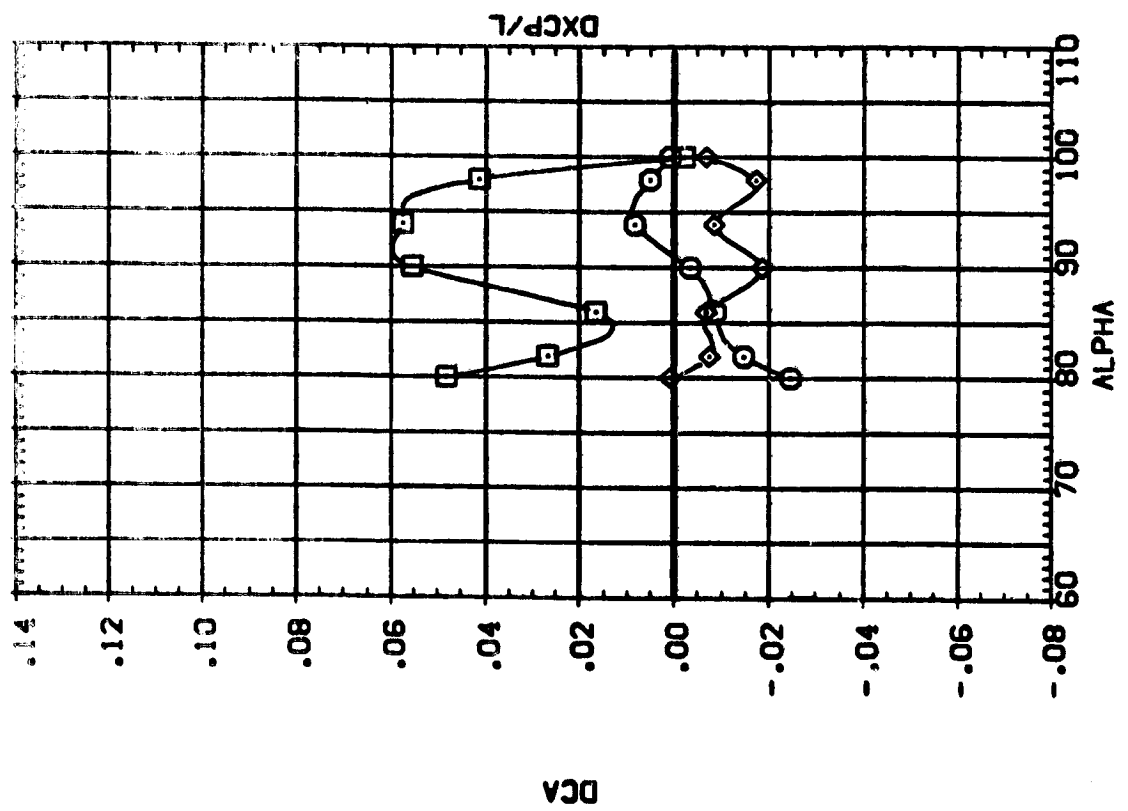
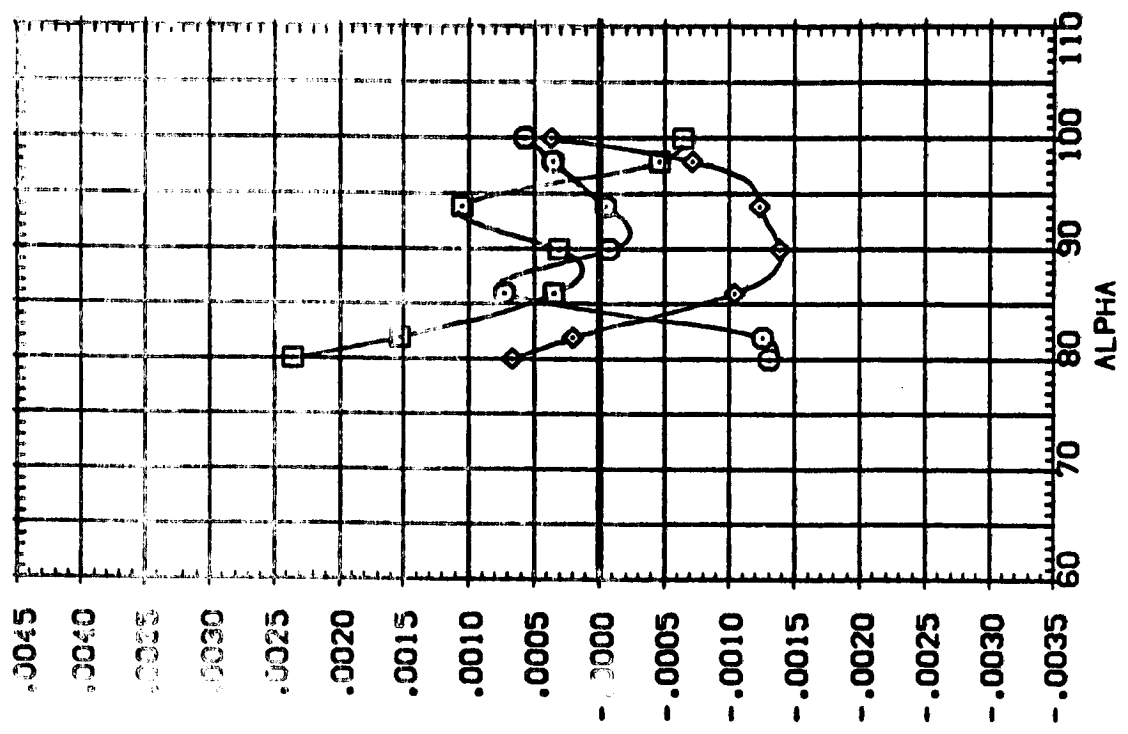


EFFECT OF SEPARATION ROCKET HEIGHT

(A)MACH = .60

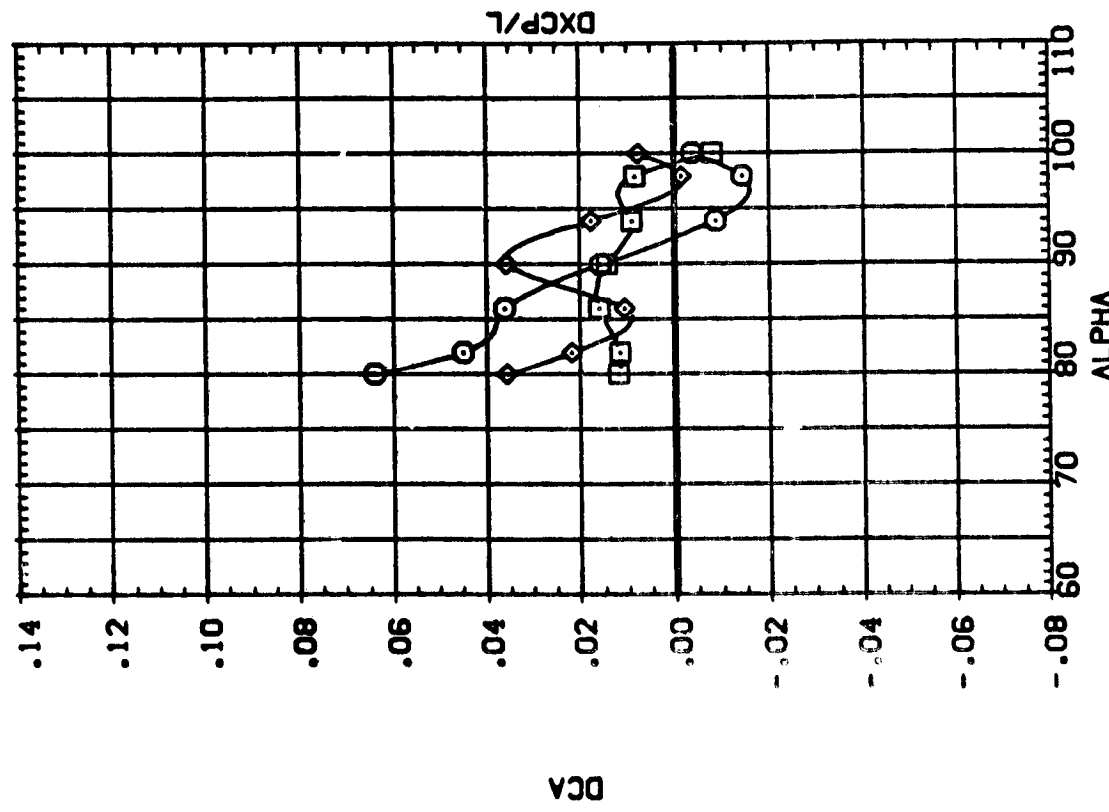
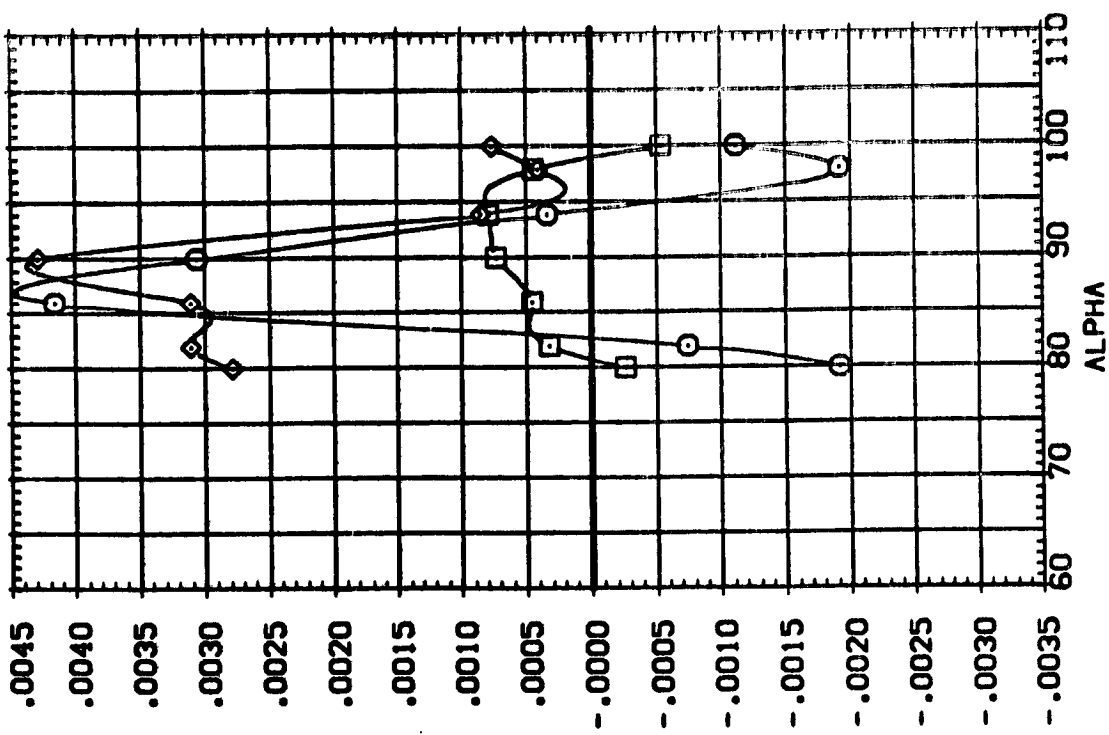


DATA SET SYMBOL: (ESEC18) (ESEC19) (ESEC20)
 CONFIGURATION: MSFC 960(SAZ6F) 142-IN. (S98(139))
 DESCRIPTION: 142-IN. (S98(139)) EFFECT OF S1-S2
 142-IN. (S98(139)) EFFECT OF S1-S2
 142-IN. (S98(139)) EFFECT OF S1-S2
 REFERENCE INFORMATION:
 SREF: .5000 SQ. IN.
 LREF: .8000 IN.
 BREF: .8000 IN.
 XMRP: 5.5570 IN.
 YMRP: .0000 IN.
 ZMRP: .0000 IN.
 SCALE: .0056



EFFECT OF SEPARATION ROCKET HEIGHT
 (8)MACH = .90

DATA SET SYMBOL: (E95019) (E95019) (E95020)
 CONFIGURATION DESCRIPTION: MSFC 590(SA26F) 142-IN. SR8(138) EFFECT OF SI-52 MSFC 590(SA26F) 142-IN. SR8(138) EFFECT OF SI-52 MSFC 590(SA26F) 142-IN. SR8(138) EFFECT OF SI-52
 BETA PHI ELT DSEPR1 REFERENCE INFORMATION SG IN
 .000 45.000 1.000 1.000 .5030 .3000
 .000 90.000 1.000 1.000 .3000 .6000
 .000 135.000 1.000 1.000 5.5570 .0000
 YMRP .0000
 ZMRP .0000
 SCALE .0055

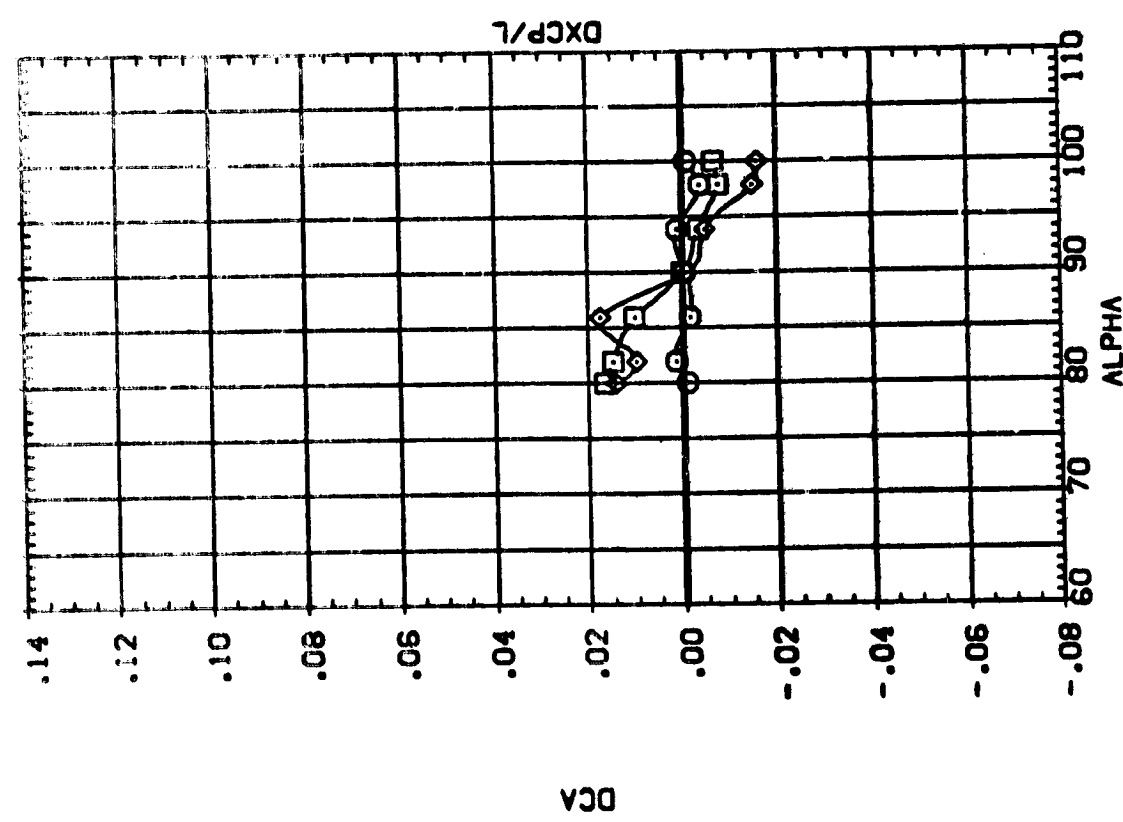
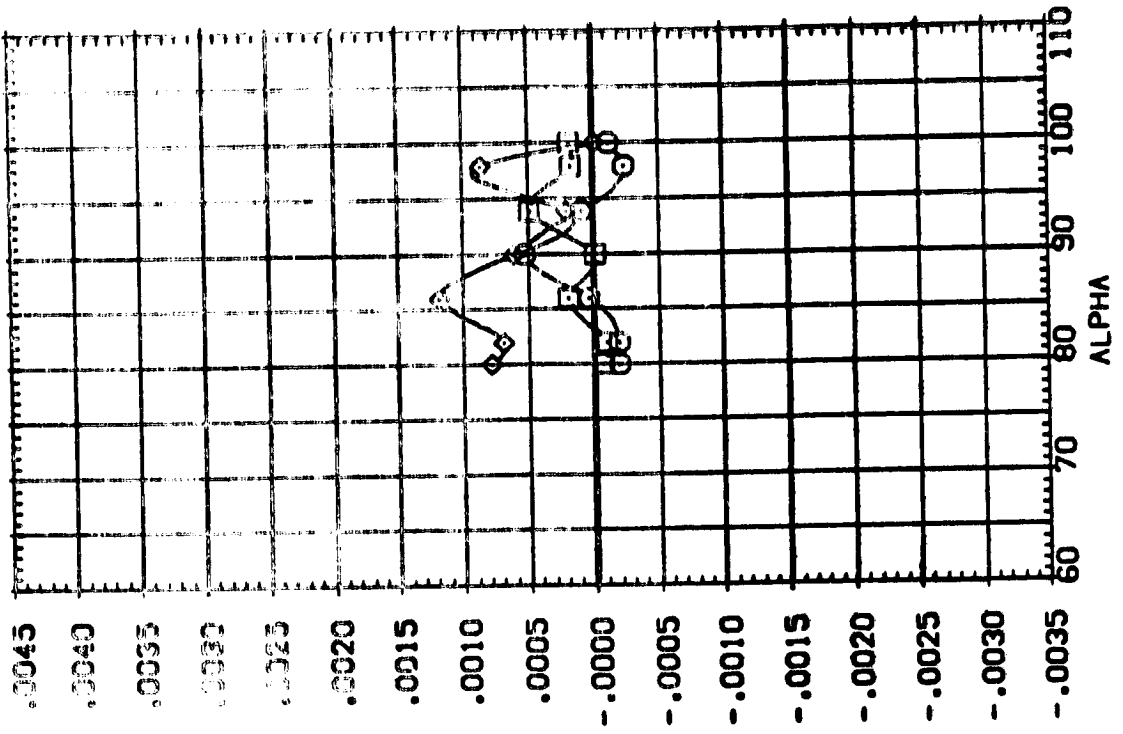


EFFECT OF SEPARATION ROCKET HEIGHT

(C)MACH = 1.20



DATA SET SYMBOL	CONFIGURATION	DESCRIPTION	BETA	PHI	ELT	OSPERT	REFERENCE INFORMATION
(E5018)	HFC 590(SA26F)	142-IN. SP8(138)	.000	45.000	1.000	1.000	SREF .5030
(E5019)	HFC 590(SA26F)	142-IN. SP8(138)	.000	90.000	1.000	1.000	LREF .8000
(E5020)	HFC 590(SA26F)	142-IN. SP8(138)	.000	135.000	1.000	1.000	BREF .8000
							XREF 5.5570
							YREF .0000
							ZREF .0000
							SCALE .0056

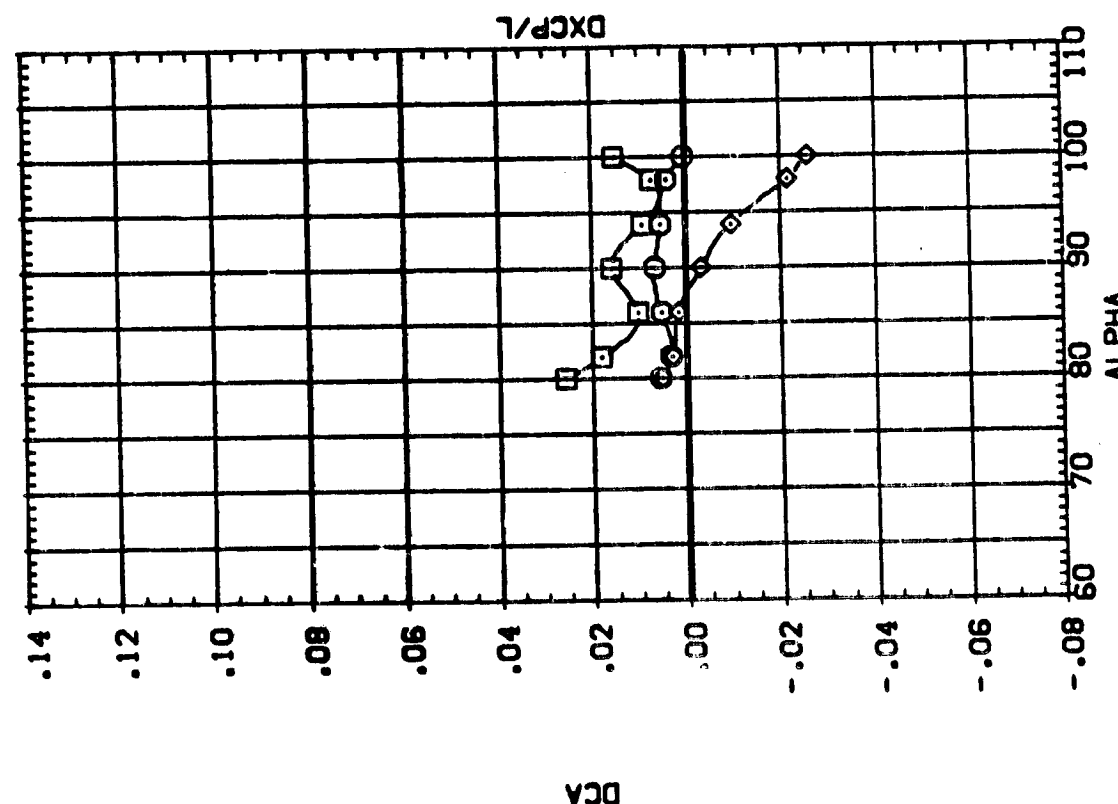
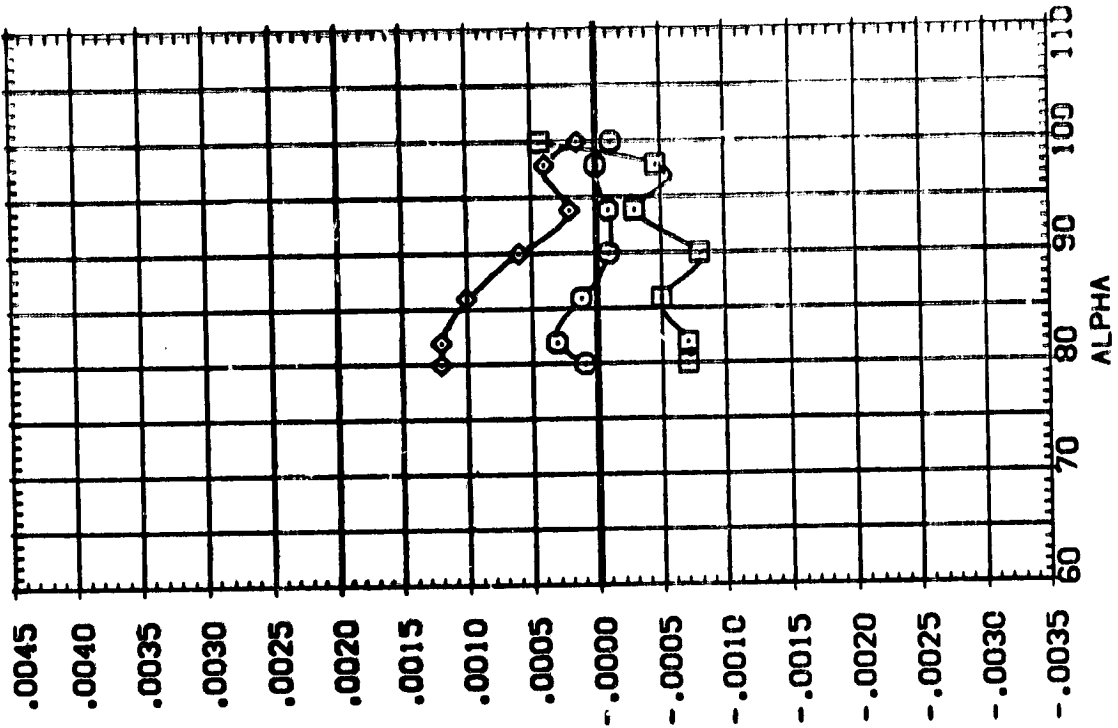


EFFECT OF SEPARATION ROCKET HEIGHT

(0)MACH = 1.96

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (E55018) MSC 590(SA26F) 142-IN. S98(139) EFFECT OF S1-S2
 (E55019) MSC 590(SA26F) 142-IN. S98(139) EFFECT OF S1-S2
 (E55020) MSC 590(SA26F) 142-IN. S98(139) EFFECT OF S1-S2

BETA PHI ELT DSEPRT REFERENCE INFORMATION
 .000 45.000 1.000 1.000 5000
 .000 90.000 1.000 1.000 5000
 .000 135.000 1.000 1.000 5000
 XMRP 5.5570
 YMRP .0000
 ZMRP .0000
 SCALE .0056

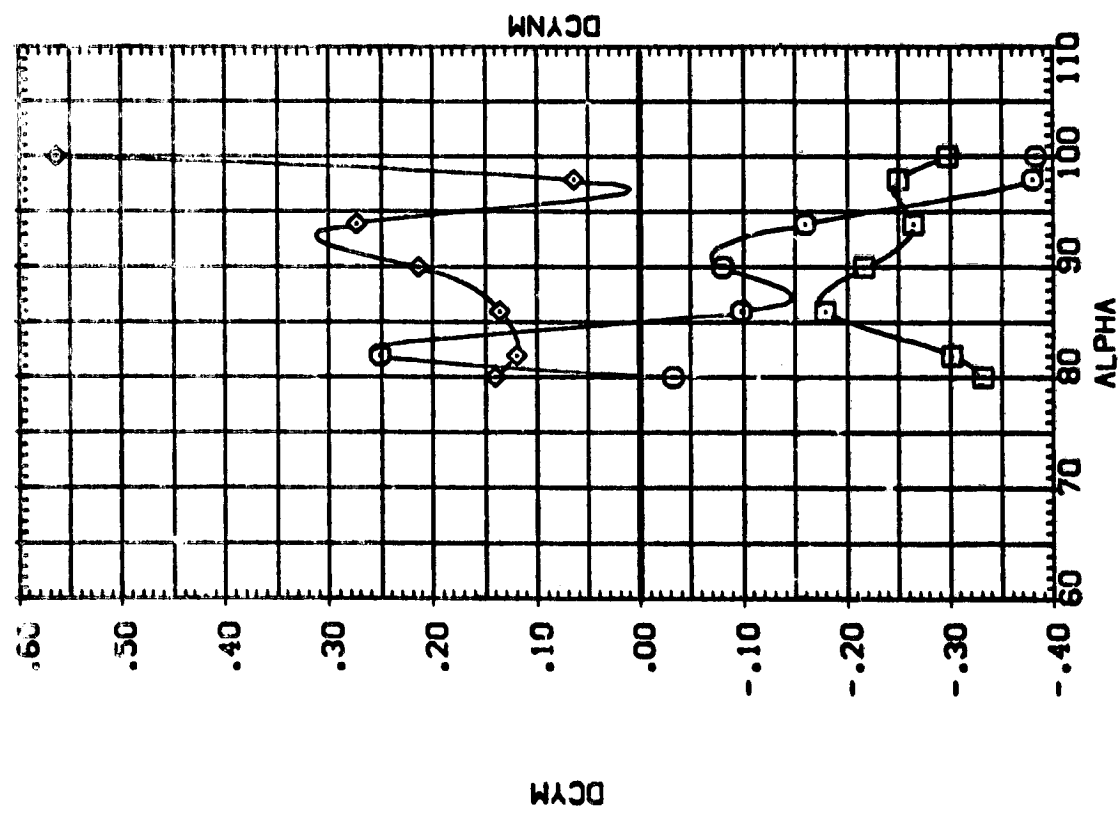
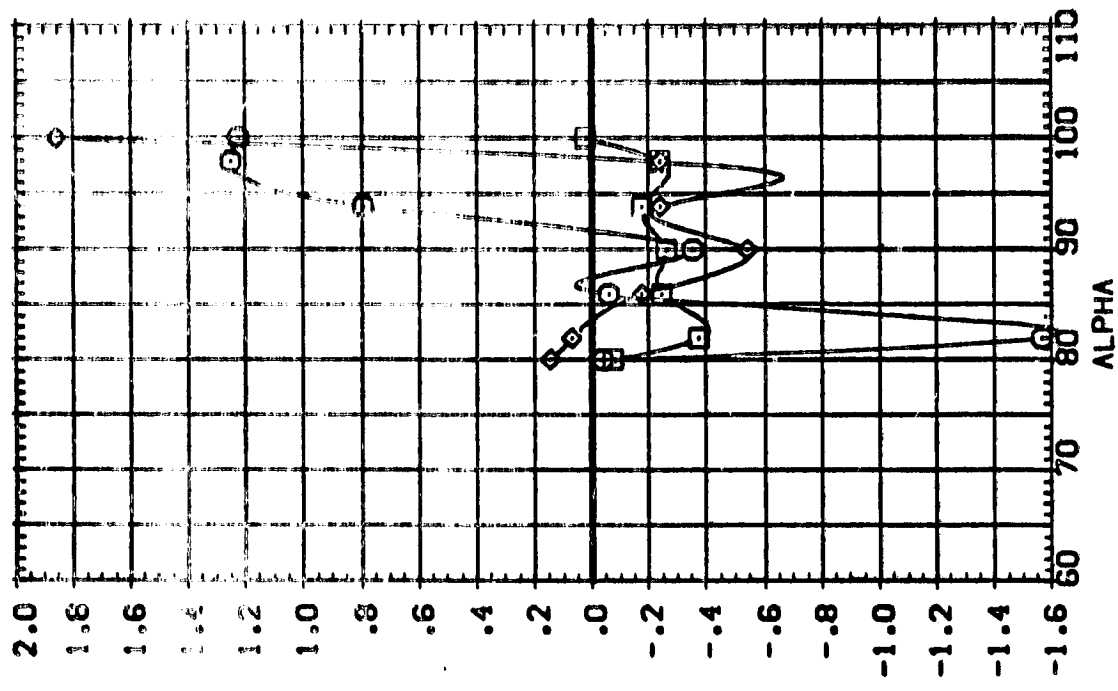


EFFECT OF SEPARATION ROCKET HEIGHT!

(E)MACH = 3.48



DATA SET SYMBO: (E95018) (E95019) (E95020)
 CONFIGURATION: MSFC 590(SA26F) 142-IN. MSFC 590(SA26F) 142-IN. MSFC 590(SA26F) 142-IN.
 DESCRIPTION: EFFECT OF S1-S2 EFFECT OF S1-S2 EFFECT OF S1-S2
 REFERENCE INFORMATION: BETA PHI ELT DEPRAT REF REF SC: IN
 .000 45.000 1.000 1.000 .5000
 .000 90.000 1.000 1.000 .8000
 .000 135.000 1.000 1.000 .8000
 S-5970
 YPRP .0000
 ZPRP .0000
 SCALE .0056



EFFECT OF SEPARATION ROCKET HEIGHT

(A)MACH = .60

DATA SET SYMBOL
 (E5019)
 (E5019)
 (E5020)

CONFIGURATION DESCRIPTION
 MSFC 590(SA26F) 142-IN. SRB(139) EFFECT OF S1-S2
 MSFC 590(SA26F) 142-IN. SRB(139) EFFECT OF S1-S2
 MSFC 590(SA26F) 142-IN. SRB(139) EFFECT OF S1-S2

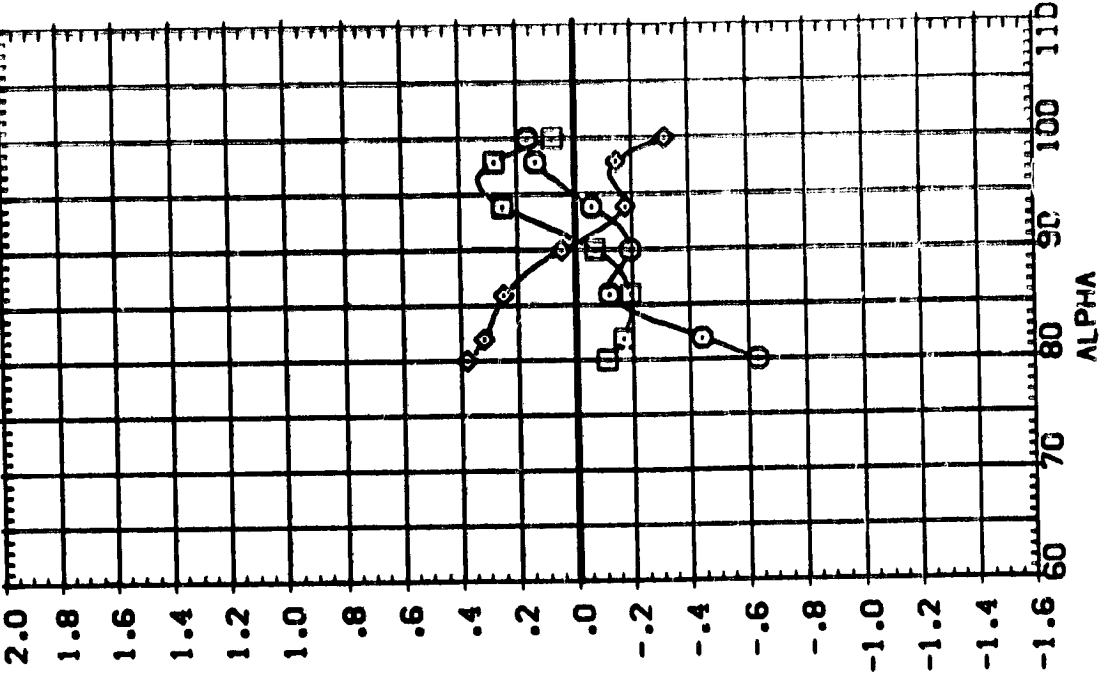
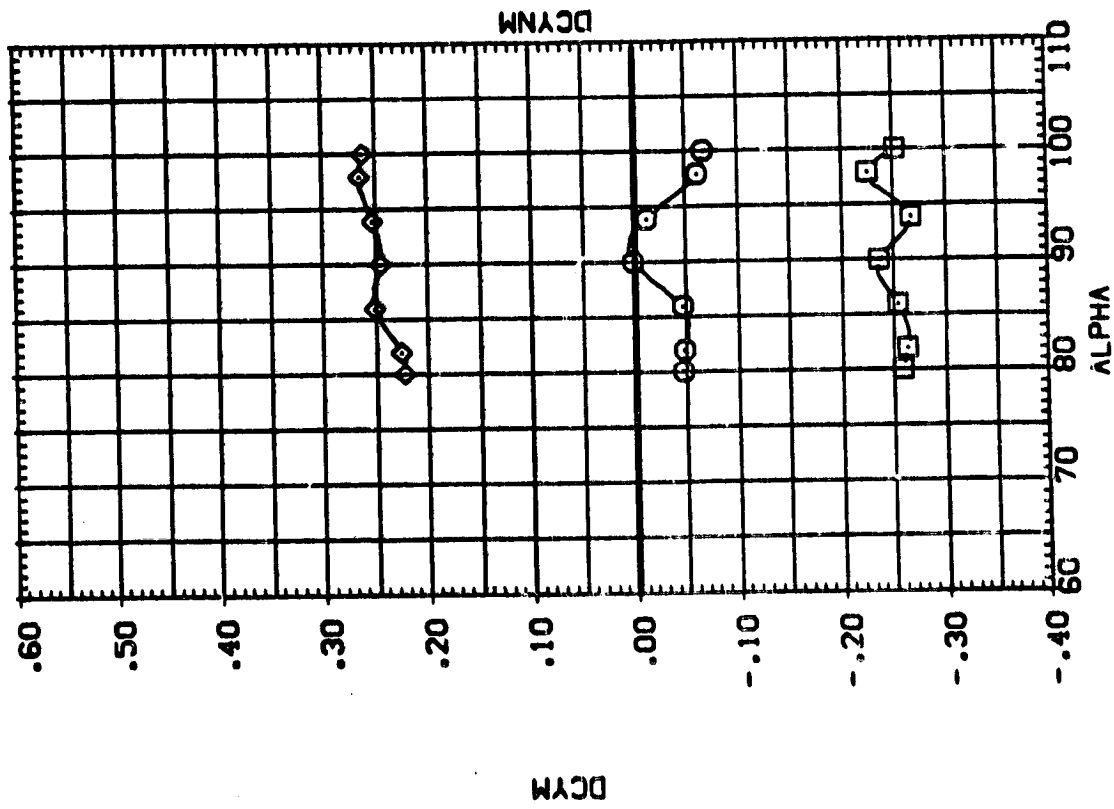
BETA
 .000
 .000
 .000

PHI
 45.000
 90.000
 135.000

ELT
 1.000
 1.000
 1.000

DEPART
 1.000
 1.000
 1.000

REFERENCE INFORMATION
 SREF .5033 SQ. IN.
 LREF .5000 IN.
 BREF .8000 IN.
 XREF 5.5570 IN.
 YREF .0000 IN.
 ZREF .0000 IN.
 SCALE .0036



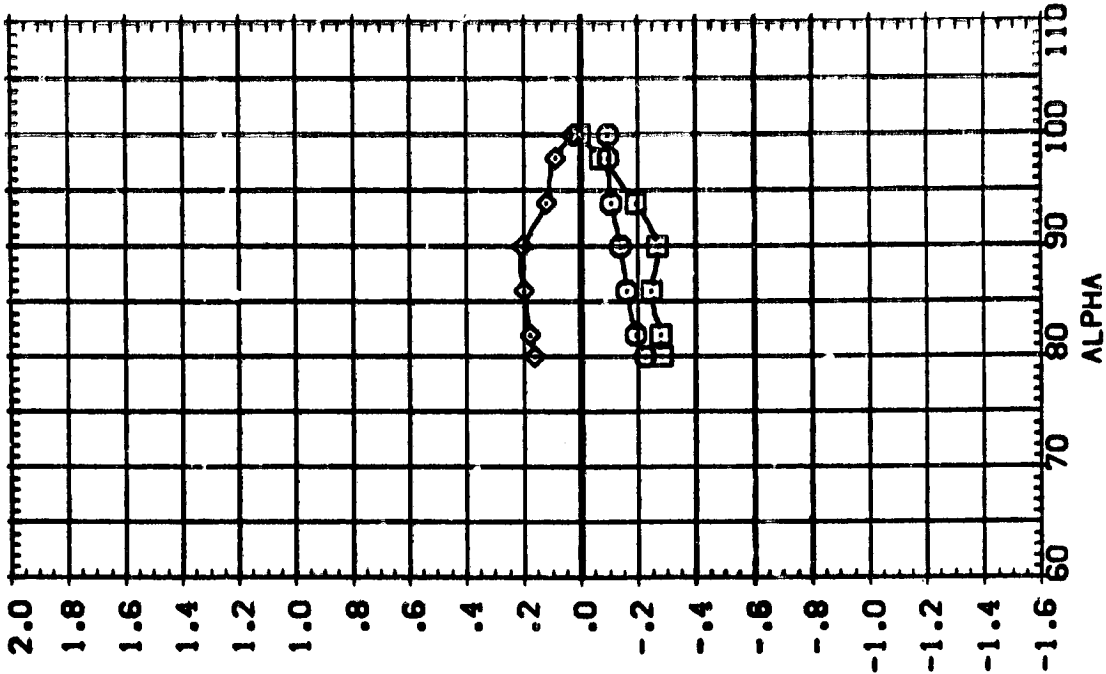
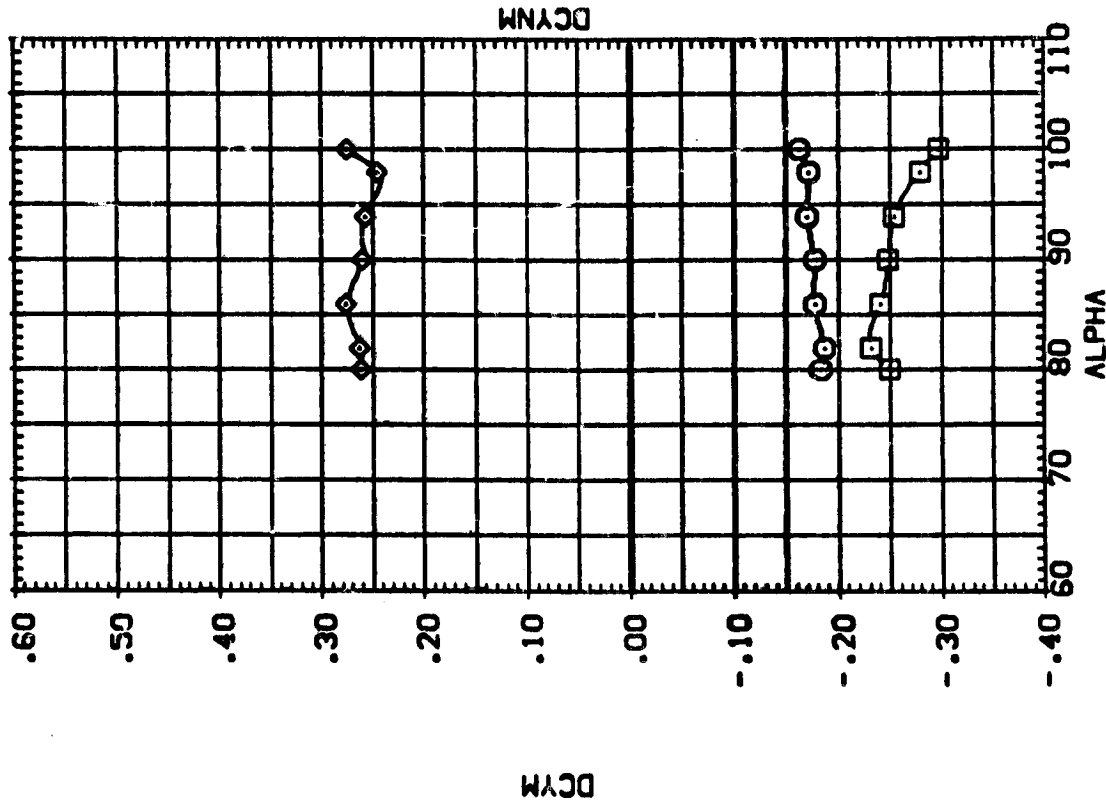
EFFECT OF SEPARATION ROCKET HEIGHT

(B)MACH = .90



DATA SET SYMBS: (E55018) (E55019) (E55020)
 CONFIGURATION DESCRIPTION: MSFC 590(SA26F) 142-IN. SRB(136) EFFECT OF S1-S2 (E55018) MSFC 590(SA26F) 142-IN. SRB(136) EFFECT OF S1-S2 (E55019) MSFC 590(SA26F) 142-IN. SRB(136) EFFECT OF S1-S2 (E55020)

BETA PHI ELT OSEPRIT REFERENCE INFORMATION
 .000 45.000 1.000 1.000 SREF 5000 50. IN.
 .000 90.000 1.000 1.000 LREF 5000 22. IN.
 .000 135.000 1.000 1.000 BREF 5000 11. IN.
 XPRP 5.0000 5.0000 5.0000 5.0000
 YPRP .0000 .0000 .0000 .0000
 ZPRP .0000 .0000 .0000 .0000
 SCALE .0056



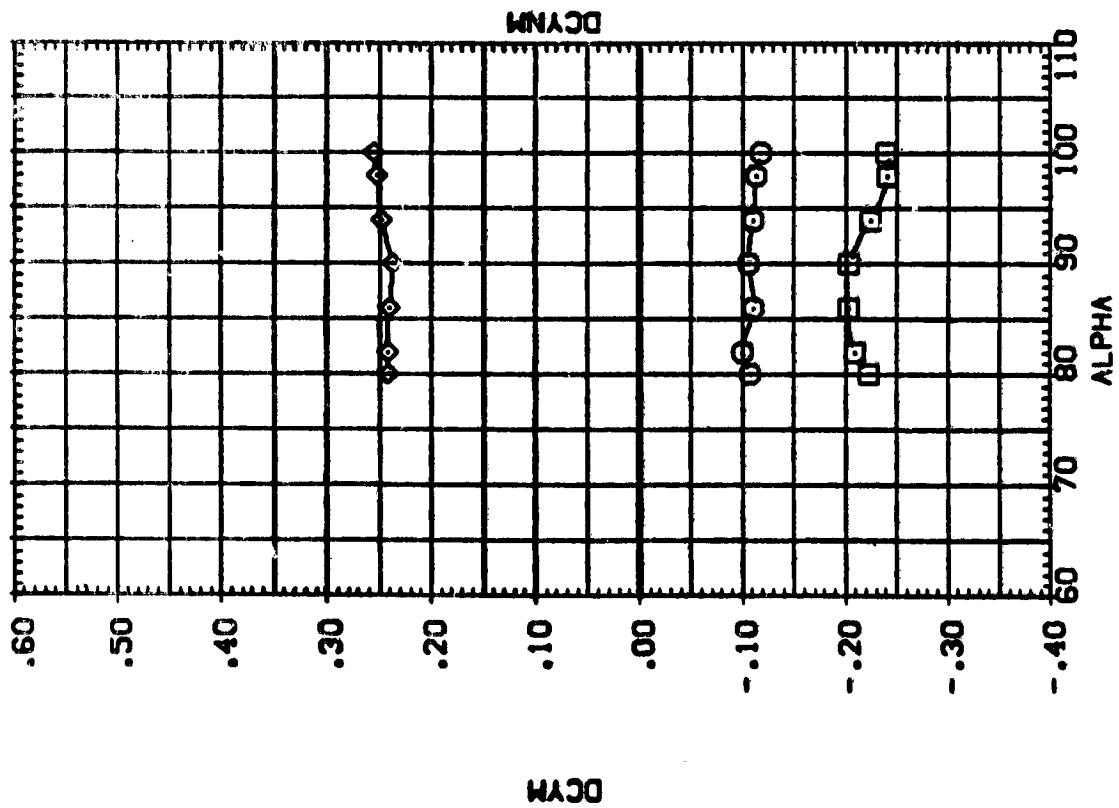
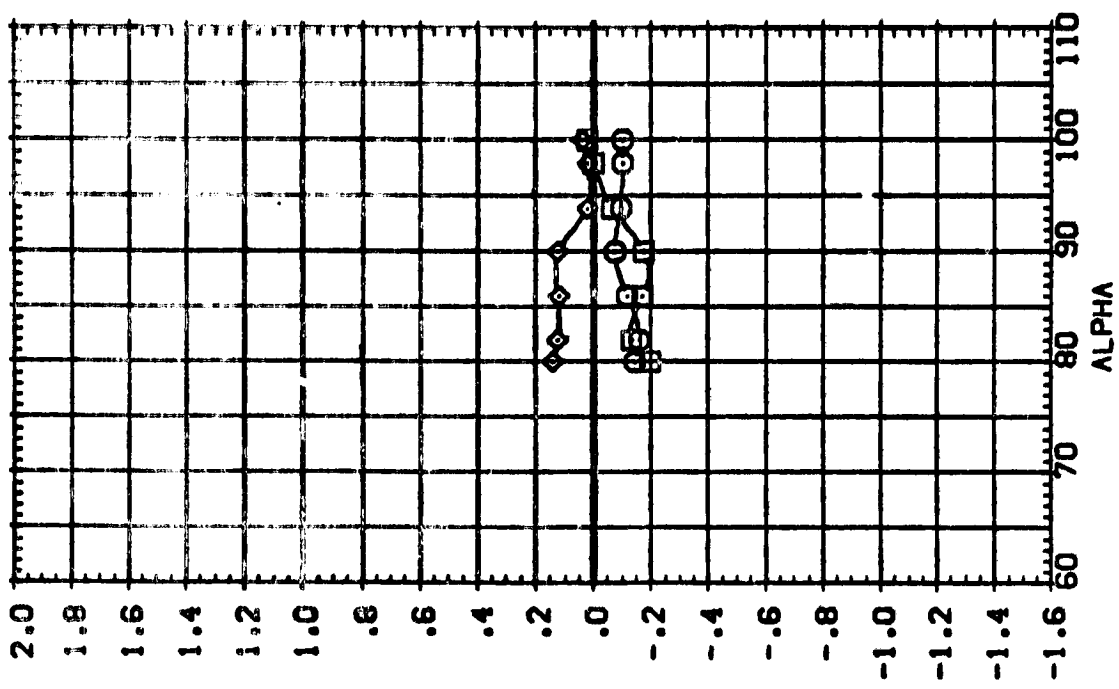
EFFECT OF SEPARATION ROCKET HEIGHT

(O)MACH = 1.96



DATA SET SYMB. CONFIGURATION DESCRIPTION
 (E95018) (E95019) (E95020) MSC 590(SA26F) 142-IN. SRB(139) EFFECT OF S1-52
 MSC 590(SA26F) 142-IN. SRB(139) EFFECT OF S1-52
 MSC 590(SA26F) 142-IN. SRB(139) EFFECT OF S1-52

BETA	PHI	ELT	DSEPT	REF	SCALE
.000	45.000	1.000	1.000	SREF	.5000
.000	90.000	1.000	1.000	LREF	.8000
.000	135.000	1.000	1.000	XREF	.6000
				YREF	5.5570
				ZREF	.0000
				SCALE	.0000

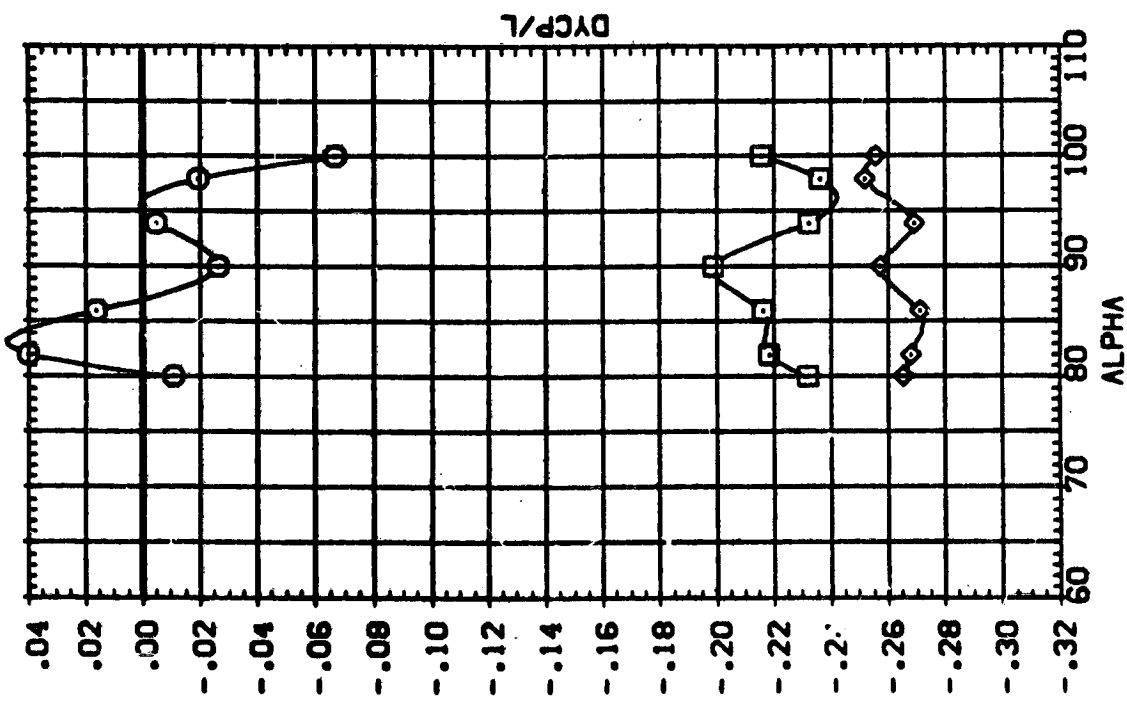
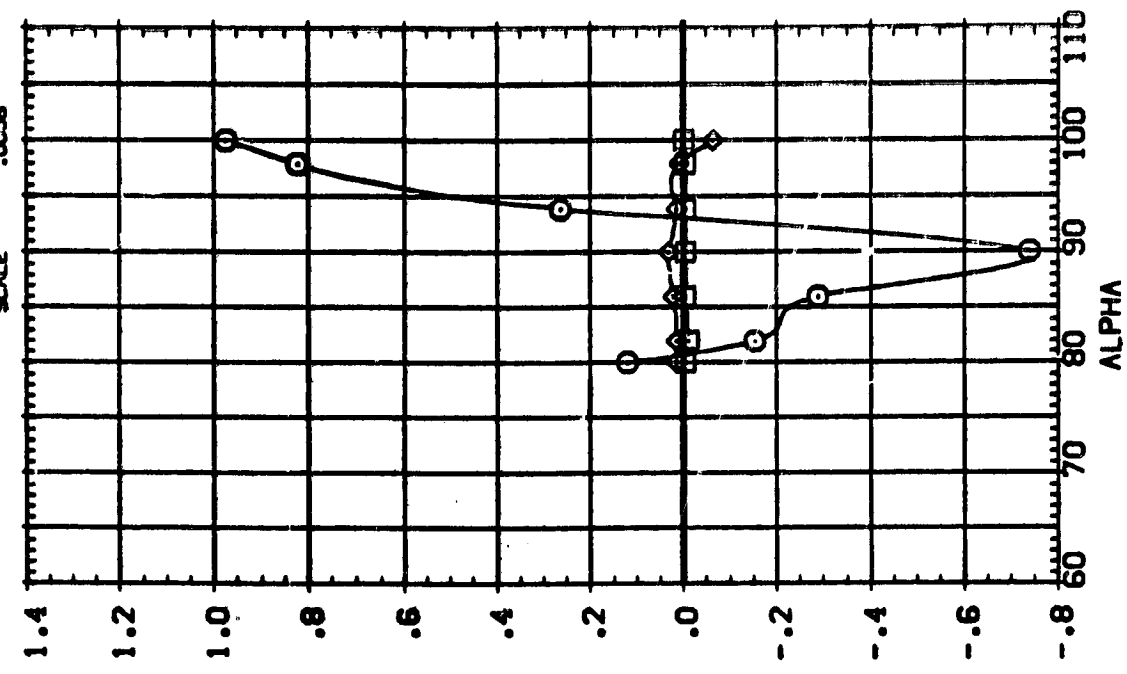


EFFECT OF SEPARATION ROCKET HEIGHT

(EJMACH = 3.48

DATA SET SYMBOL: (E95018) (E95019) (E95020)
 CONFIGURATION DESCRIPTION: MSFC 590(SA26F) 142-IN. SRB(130) EFFECT OF S1-52; MSFC 590(SA26F) 142-IN. SRB(130) EFFECT OF S1-52; MSFC 590(SA26F) 142-IN. SRB(130) EFFECT OF S1-52
 REFERENCE INFORMATION: SREF: .5000 SQ. IN.; LREF: .8000 IN.; BREF: .8000 IN.; XTRP: \$.5570 IN.; YTRP: .0000 IN.; ZTRP: .0000 IN.; SCALE: .0055

BETA: .000, .000, .000
 PHI: 45.000, 90.000, 135.000
 ELT: 1.000, 1.000, 1.000
 DSEPRT: 1.000, 1.000, 1.000

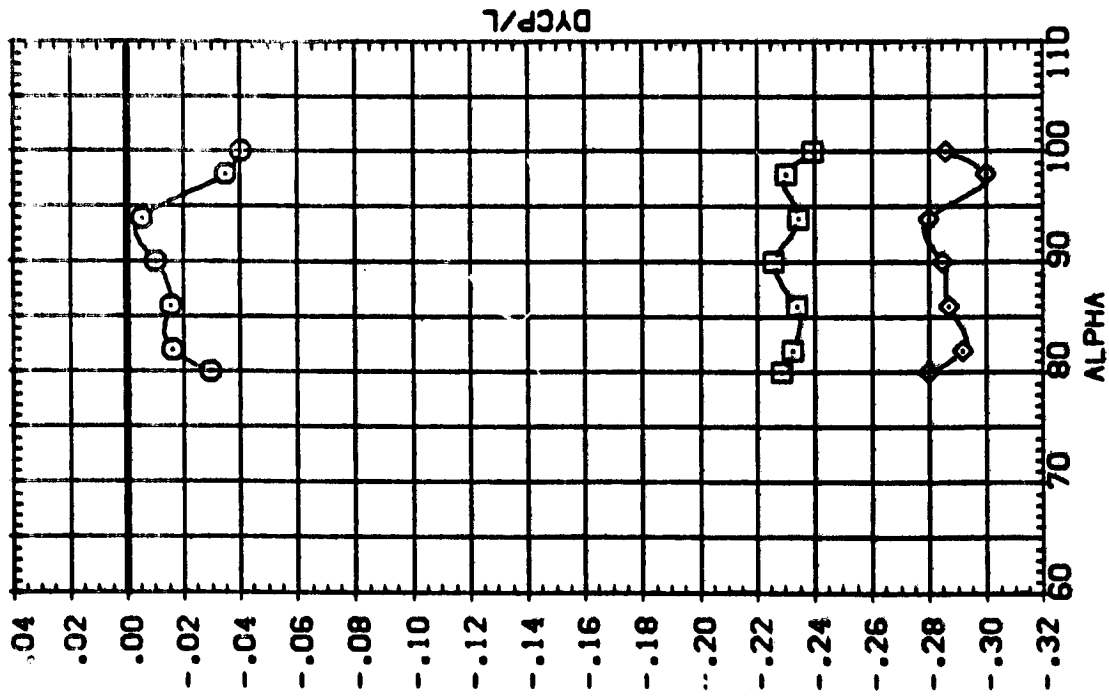
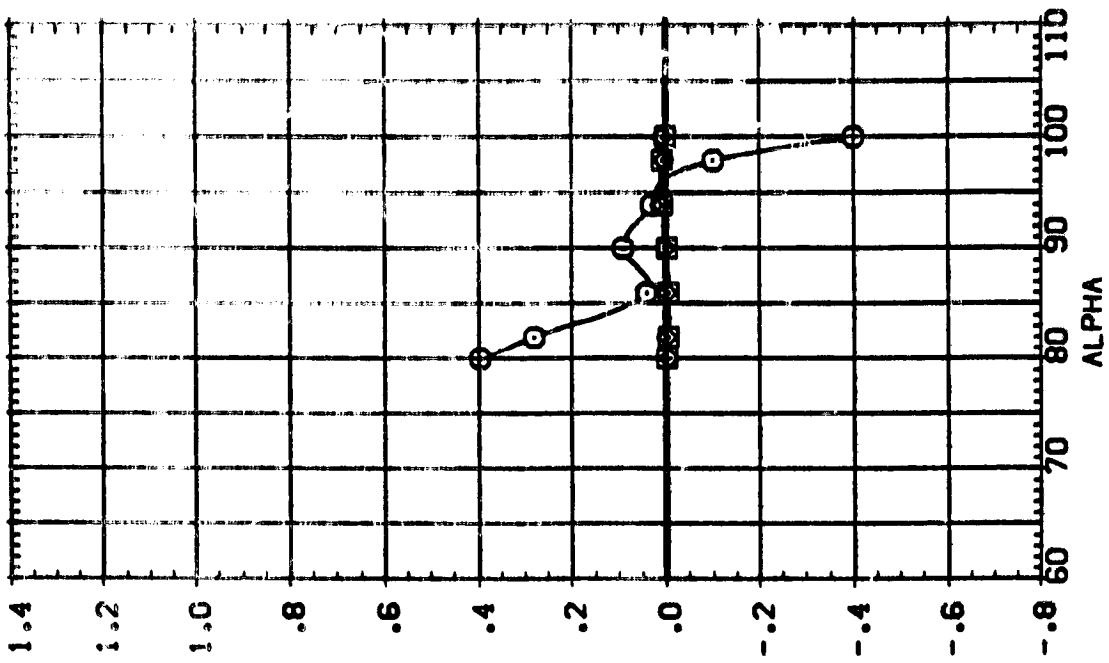


EFFECT OF SEPARATION ROCKET HEIGHT

(A)MACH = .60



DATA SET SYMBOL: (E95018) (E95019) (E95020)
 CONFIGURATION DESCRIPTION: MSFC 590(SA26) 142-IN. SRB(138) EFFECT OF SI-S2; MSFC 590(SA26) 142-IN. SRB(138) EFFECT OF SI-S2; MSFC 590(SA26) 142-IN. SRB(138) EFFECT OF SI-S2
 BETA: .000, .000, .000
 PHI: 45.000, 90.000, 135.000
 ELT: 1.000, 1.000, 1.000
 DSEPR1: 1.000, 1.000, 1.000
 REFERENCE INFORMATION: SREF: .5000, LREF: .8000, BREF: .8000, XTRP: 5.5570, YTRP: .0000, ZTRP: .0000, SCALE: .0056

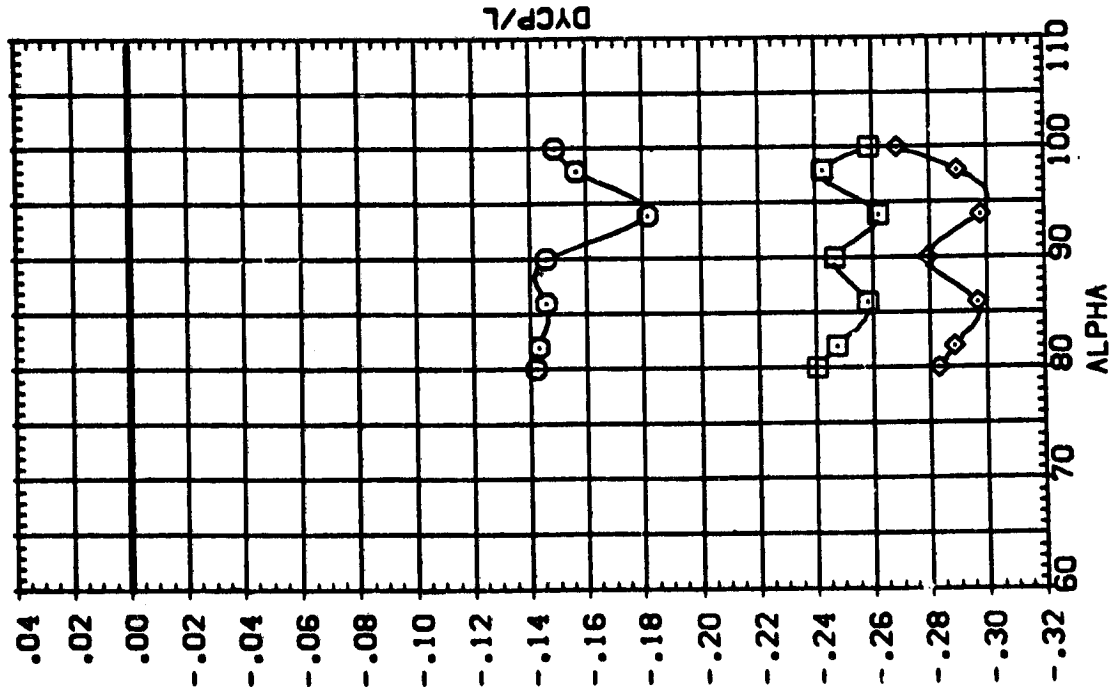
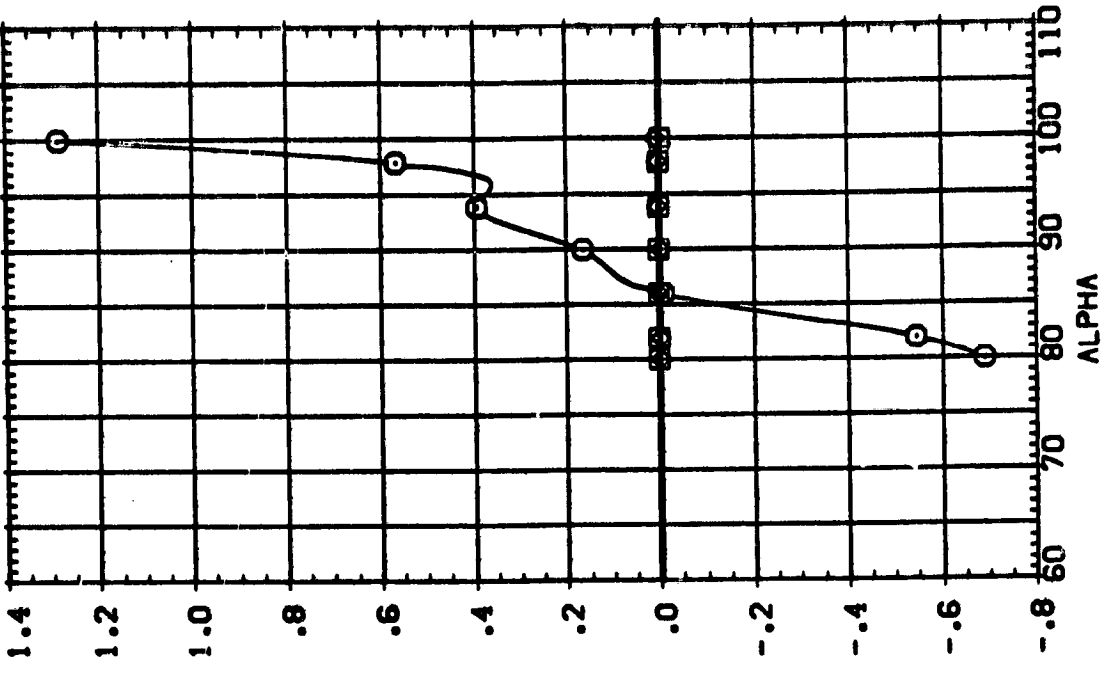


EFFECT OF SEPARATION ROCKET HEIGHT

(B)MACH = .90

DATA SET SYMBOL: (E95018) (E95019) (E95020)
 CONFIGURATION DESCRIPTION: MSFC 590(SA26F) 142-IN. SRB(130) EFFECT OF S1-52
 MSFC 590(SA26F) 142-IN. SRB(130) EFFECT OF S1-52
 MSFC 590(SA26F) 142-IN. SRB(130) EFFECT OF S1-52
 REFERENCE INFORMATION: SREF 5000 IN. S0. IN.
 LREF 8000 IN. IN.
 XMRP 5.5570 IN. IN.
 YMRP 0.0000 IN. IN.
 ZMRP 0.0000 IN. IN.
 SCALE 0.0056

BETA: .000 45.000 1.000 1.000 1.000
 PHI: .000 90.000 1.000 1.000 1.000
 ELT: .000 135.000 1.000 1.000 1.000
 DSEPR1: 1.000 1.000 1.000 1.000 1.000

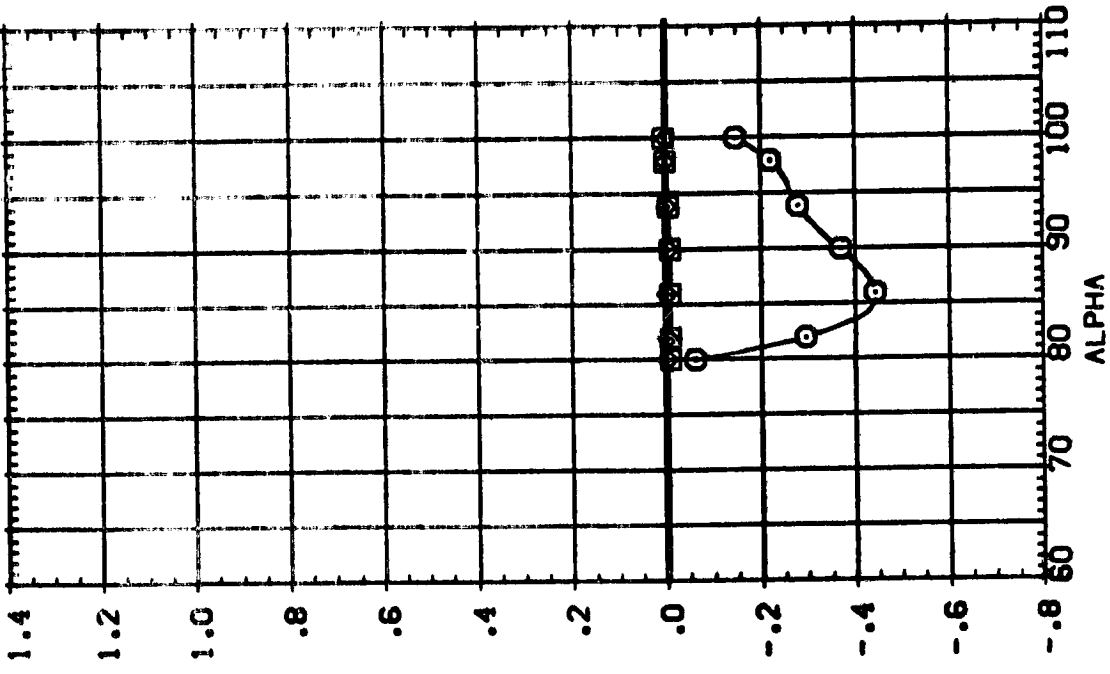
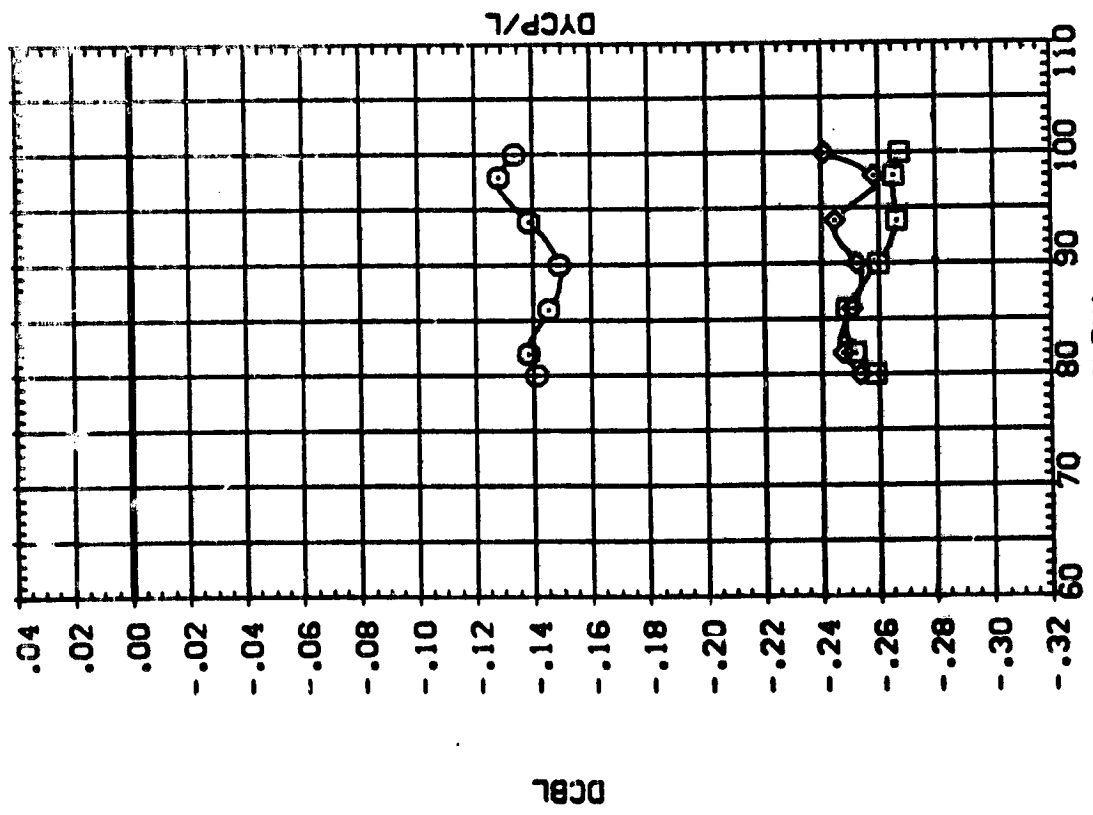


EFFECT OF SEPARATION ROCKET HEIGHT

(C)MACH = 1.20



DATA SET SYMBOL: (E5018) (E5019) (E5020)
 CONFIGURATION DESCRIPTION: MSFC 380(SA26F) 142-IN. SR8(138) EFFECT OF S1-S2; MSFC 380(SA26F) 142-IN. SR8(138) EFFECT OF S1-S2; MSFC 380(SA26F) 142-IN. SR8(138) EFFECT OF S1-S2
 BETA: .000, .000, .000
 PHI: 45.000, 90.000, 135.000
 ELT: 1.000, 1.000, 1.000
 DSEPR1: 1.000, 1.000, 1.000
 REFERENCE INFORMATION: SREF: .5000, .6000, .8000; LREF: .8000, .8000, .8000; XMRP: S.5570; YMRP: .0000, .0000, .0000; ZMRP: .0000, .0000, .0000; SCALE: .0056

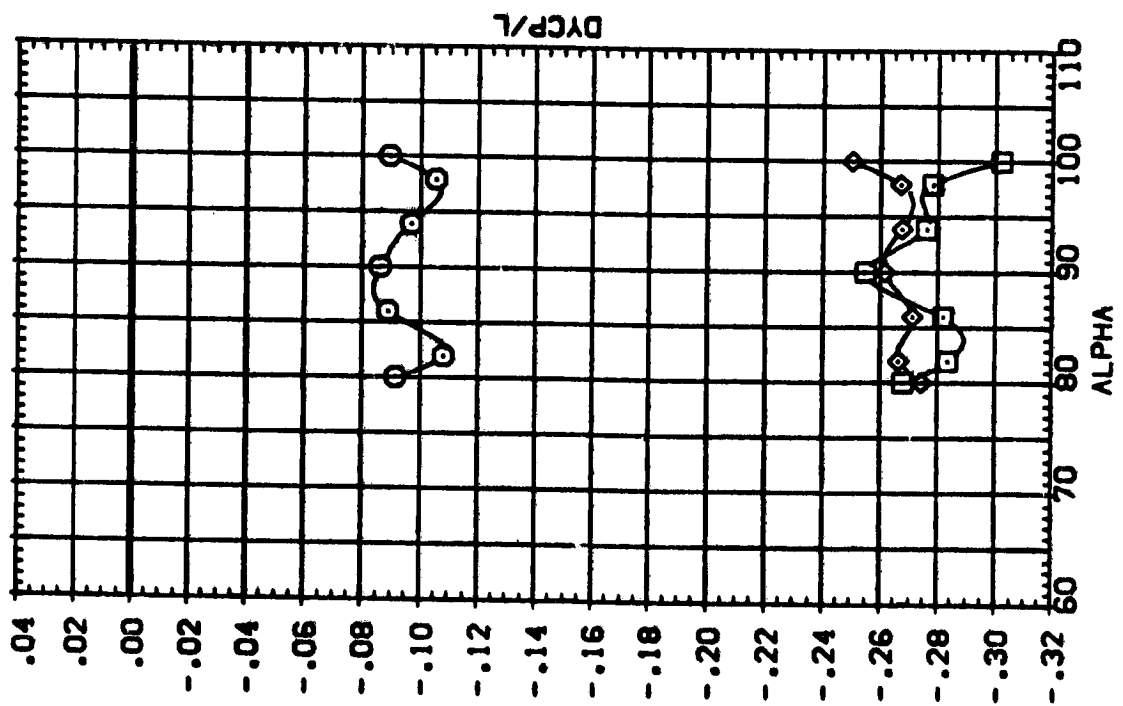
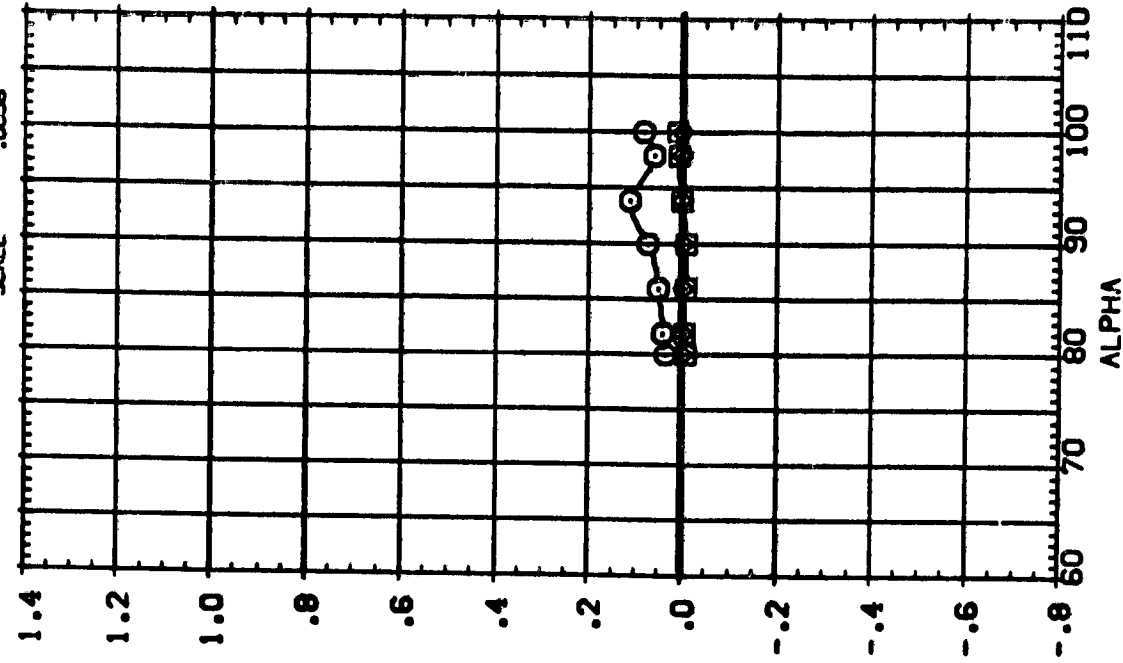


EFFECT OF SEPARATION ROCKET HEIGHT

(D)MACH = 1.96

DATA SET SYMBL. CONFIGURATION DESCRIPTION
 (E55018) MSFC 500(SA26F) 142-IN. SRB(138) EFFECT OF S1-S2
 (E55019) MSFC 500(SA26F) 142-IN. SRB(138) EFFECT OF S1-S2
 (E55020) MSFC 500(SA26F) 142-IN. SRB(138) EFFECT OF S1-S2

BETA PHI ELT DEPART REFERENCE INFORMATION
 .000 45.000 1.000 1.000 SREF .5030 SQ. IN.
 .000 50.000 1.000 1.000 LREF .8000 IN.
 .000 135.000 1.000 1.000 BREF .8000 IN.
 XPRP 5.5370 IN.
 YPRP .0000 IN.
 ZPRP .0000 IN.
 SCALE .0056



DCBL

EFFECT OF SEPARATION ROCKET HEIGHT

(E)MACH = 3.48



APPENDIX

TABULATED SOURCE DATA

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

MSFC 990 (SAR20F) 142-IN. SRB (139) NUREIA

(R990001) (11 DEC 73)

REFERENCE DATA

WREF = .0030 SQ. IN XMRP = 5.5370 IN.
 LREF = .0000 IN. YMRP = .0000 IN.
 SREF = .0000 IN. ZMRP = .0000 IN.
 SCALE = .0016

PARAMETRIC DATA

BETA = .000 PHI = .000
 FROSTK = .000 AFTSTK = .000
 ATHRNG = 1.000 ATMS = .000
 COMFIC = 1.000 SHDSTK = .000
 ELT = .000 SERPKT = .000

RUN NO. 2/ 0 RIVL = 5.68 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CMM	CLMM	CYM	CYMM	CBL	CA	CAB	XCP/L	CFB1	CFB2
4.002	149.395	5.43660	36620	-1.14790	-0.3380	.03990	-2.82590	.00000	.56190	.00000	.00000
4.000	148.450	6.02620	37430	-1.16230	-0.4190	.02070	-2.86950	.00000	.56150	.00000	.00000
4.000	142.370	7.25670	.53920	-1.18570	-0.5940	.01630	-3.04890	.00000	.56930	.00000	.00000
4.000	138.230	8.39910	1.29130	-1.19330	-0.8390	.02170	-3.22630	.00000	.55400	.00000	.00000
4.000	134.070	9.64310	1.89300	-1.21460	-0.99100	.02160	-3.37640	.00000	.55930	.00000	.00000
4.000	129.930	10.91160	2.01310	-1.21900	-0.9920	.03710	-2.76930	.00000	.55130	.00000	.00000
4.000	127.930	11.36430	2.06660	-1.22930	-0.7230	.04160	-2.51440	.00000	.55200	.00000	.00000
4.000	125.200	8.41000	1.29230	-1.19330	-0.3390	.02120	-3.22640	.00000	.55400	.00000	.00000
GRADIENT		-.29865	-.03639	.00372	.00242	-.00597	-.00772	.00000	.00017	.00000	.00000

RUN NO. 3/ 0 RIVL = 5.24 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CMM	CLMM	CYM	CYMM	CBL	CA	CAB	XCP/L	CFB1	CFB2
4.450	149.360	5.03910	.63990	-1.13630	-0.6530	.02090	-2.52670	.00000	.55990	.00000	.00000
4.450	146.630	3.64620	.72860	-1.14730	-0.3930	.02040	-2.66160	.00000	.55600	.00000	.00000
4.450	142.310	6.82940	.96670	-1.16830	-0.7230	.04540	-2.87220	.00000	.55500	.00000	.00000
4.450	139.440	7.90220	1.77350	-1.17070	-0.9690	.04620	-3.07700	.00000	.54920	.00000	.00000
4.450	134.330	9.12660	2.35480	-1.19870	-1.2250	.02350	-2.93340	.00000	.54550	.00000	.00000
4.450	130.230	10.39530	2.43730	-1.20900	-1.12900	.0270	-2.65230	.00000	.54720	.00000	.00000
4.450	128.280	11.00720	2.50770	-1.21300	-0.9320	.01730	-2.51020	.00000	.54790	.00000	.00000
4.450	126.440	7.97700	1.75500	-1.17610	-1.13200	.03740	-3.07320	.00000	.54840	.00000	.00000
GRADIENT		-.29085	-.10331	.00374	.00274	-.00037	-.00315	.00000	.00331	.00000	.00000

RUN NO. 4/ 0 RIVL = 4.92 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CMM	CLMM	CYM	CYMM	CBL	CA	CAB	XCP/L	CFB1	CFB2
4.980	148.870	3.11780	1.11270	-1.15900	-0.0710	.01670	-2.68200	.00000	.54880	.00000	.00000
4.980	146.750	3.67710	1.14510	-1.15030	-0.1930	-.00360	-2.72430	.00000	.55010	.00000	.00000
4.980	142.600	6.89160	1.46600	-1.17630	-0.2430	.05960	-2.92490	.00000	.54920	.00000	.00000
4.980	138.600	8.06630	2.18020	-1.18390	-0.3160	.04900	-3.12230	.00000	.54430	.00000	.00000
4.980	134.310	9.29160	2.96510	-1.21090	-0.11000	.05450	-3.07930	.00000	.54930	.00000	.00000
4.980	130.430	10.59560	3.24970	-1.22010	-1.13900	.04360	-2.87930	.00000	.54130	.00000	.00000
4.980	126.490	11.23290	3.30300	-1.22480	-1.14090	.02160	-2.63630	.00000	.54230	.00000	.00000
4.980	126.600	8.04710	2.10750	-1.18490	-0.6570	.05200	-3.13060	.00000	.54320	.00000	.00000
GRADIENT		-.30160	-.12259	.00362	.00723	-.00112	.00201	.00000	.00046	.00000	.00000

MSFC 390(SA26F) 142-IN. SRB(139) NREB1A

(R03002) 11 DEC 73

REFERENCE DATA

SREF 3 .0030 SQ. IN XMEP = 3.3370 IN.
 LREF 3 .0000 IN. YMEP = .0000 IN.
 BREF 3 .0000 IN. ZMEP = .0000 IN.
 SCALE 3 .0036

PARAMETRIC DATA

BETA = .000 PHI = .000
 PMOSTK = .000 AFTSTK = .000
 ATMENG = 1.000 ATMS = .000
 COMFIC = 1.000 SMOSTK = .000
 ELT = .000 SEPRAT = .000

RUN NO. 1/1 RML = 6.29 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CMM	CLMM	CYM	CYMM	CBL	CA	CAS	XCF/L	CFB1	CFB2
3.480	148.180	5.48830	1.38730	-1.17130	-0.93020	.03870	-3.60010	.00000	.54390	.00000	.00000
3.480	146.140	6.23250	.30380	-1.18270	-0.51170	.03690	-2.93780	.00000	.56230	.00000	.00000
3.480	141.970	7.32290	.53340	-1.20310	-0.66660	.02420	-3.11300	.00000	.56870	.00000	.00000
3.480	137.810	8.69150	1.13180	-1.22030	-0.84660	.04030	-3.24690	.00000	.55390	.00000	.00000
3.480	133.660	9.91050	1.72340	-1.23760	-0.93230	.03260	-3.07640	.00000	.53230	.00000	.00000
3.480	129.470	11.22310	1.81930	-1.25040	-0.8230	.03260	-2.76730	.00000	.53330	.00000	.00000
3.480	127.470	11.82630	1.88970	-1.25060	-0.89030	.03330	-2.69620	.00000	.53330	.00000	.00000
3.480	129.430	11.22300	1.83970	-1.24640	-0.78000	.03330	-2.76630	.00000	.53320	.00000	.00000
3.480	133.640	9.90220	1.78190	-1.23010	-0.81190	.04610	-3.07450	.00000	.54230	.00000	.00000
3.480	137.800	8.70070	1.10140	-1.22010	-0.9690	.04610	-3.23940	.00000	.56230	.00000	.00000
3.480	141.940	7.33300	.46130	-1.19690	-0.90000	.03640	-3.11130	.00000	.56130	.00000	.00000
3.480	146.120	6.28240	.23710	-1.17990	-0.90990	.01440	-2.93350	.00000	.56330	.00000	.00000
3.480	148.100	5.66630	.14890	-1.17130	-0.91300	.01490	-2.87790	.00000	.56440	.00000	.00000
GRADIENT		-.29878	-.07740	.00401	.00186	-.00037	-.01829	.00000	.00035	.00000	.00000

HSFC 596(SA26F) 142-IN. SRB(139) NRE91A

(R09003) (11 DEC 73)

REFERENCE DATA

WREF 1 .9030 SQ. IN XMRP = 5.3370 IN.
 WREF 2 .0000 IN. YMRP = .0000 IN.
 WREF 3 .9030 IN. ZMRP = .0000 IN.
 SCALE 4 .0036

BETA 3 .000 PMI = .000
 RADSTR 3 .000 AFTSTR = .000
 ATFRNG 3 1.000 THS = .000
 CONF1G 3 1.000 SHDSTR = .000
 ELT 3 .000 SEPRAT = .000

PARAMETRIC DATA

RUN NO. 10/ 0 RIVL = 5.76 GRADIENT INTERVAL = -3.00/ 3.00

MACH	ALPHA	CNM	CLMM	CYM	CYMM	CBL	CA	CAE	ACP/L	CP31	CP32
4.000	169.630	.63940	.04890	-.04950	-.01925	.01170	-2.32930	.00000	.50330	.00000	.00000
4.000	167.910	.65320	.22460	-.05350	-.03906	.00225	-2.35290	.00000	.54330	.00000	.00000
4.000	165.670	1.25290	.41290	-.07440	.01590	.06130	-2.45920	.00000	.53970	.00000	.00000
4.000	163.640	1.63130	.59410	-.08720	.01440	-.00350	-2.44910	.00000	.53730	.00000	.00000
4.000	159.750	2.31920	.95340	-.10390	.00390	.01620	-2.47760	.00000	.53730	.00000	.00000
4.000	157.680	3.04110	.86310	-.10750	-.00490	.01720	-2.49320	.00000	.54020	.00000	.00000
4.000	153.980	4.13190	1.69760	-.12330	-.01430	.00970	-2.52290	.00000	.54490	.00000	.00000
4.000	149.780	5.33070	.30700	-.14940	.01590	.01560	-2.58340	.00000	.56190	.00000	.00000
4.000	159.750	8.96690	.67910	-.10980	.01720	-.02350	-2.51620	.00000	.53110	.00000	.00000
GRADIENT		-.22310	-.02997	.00477	-.00104	-.00039	.00642		-.00319		.00000

RUN NO. 10/ 0 RIVL = 5.43 GRADIENT INTERVAL = -3.00/ 3.00

MACH	ALPHA	CNM	CLMM	CYM	CYMM	CBL	CA	CAE	ACP/L	CP31	CP32
4.430	169.630	.56970	.10140	-.04260	.03580	.00290	-2.21740	.00000	.53290	.00000	.00000
4.430	167.930	.60820	.30290	-.05330	-.02230	.01150	-2.29490	.00000	.53500	.00000	.00000
4.430	165.920	1.10630	.56290	-.05790	-.01990	.02010	-2.35040	.00000	.52510	.00000	.00000
4.430	163.690	1.45340	.77340	-.06790	-.03270	.00910	-2.43710	.00000	.52350	.00000	.00000
4.430	159.620	2.33430	1.07960	-.10050	.01440	-.00990	-2.54160	.00000	.52350	.00000	.00000
4.430	157.780	2.81590	1.13320	-.10360	.00490	.00000	-2.79070	.00000	.53360	.00000	.00000
4.430	153.670	3.69930	1.26490	-.11700	-.04090	.02070	-3.14910	.00000	.54010	.00000	.00000
4.430	149.670	5.09410	.47100	-.13940	.03090	-.01900	-2.75220	.00000	.53940	.00000	.00000
4.430	159.630	8.30360	1.09190	-.09790	.01520	-.01790	-2.54130	.00000	.52900	.00000	.00000
GRADIENT		-.22292	-.03397	.00476	-.00192	.00099	.03722		-.00362		.00000

RUN NO. 17/ 0 RIVL = 4.98 GRADIENT INTERVAL = -3.00/ 3.00

MACH	ALPHA	CNM	CLMM	CYM	CYMM	CBL	CA	CAE	ACP/L	CP31	CP32
4.980	169.650	.54440	.10260	-.04680	.03560	.00040	-2.24790	.00000	.53110	.00000	.00000
4.980	167.930	.74220	.32090	-.05390	-.00190	.01440	-2.30310	.00000	.53130	.00000	.00000
4.980	165.940	1.05940	.56790	-.05990	-.00970	.00950	-2.37610	.00000	.52290	.00000	.00000
4.980	163.920	1.43590	.69760	-.06900	-.10010	.01240	-2.46060	.00000	.51610	.00000	.00000
4.980	159.670	2.27390	1.23020	-.10040	-.03990	.02110	-2.69000	.00000	.52240	.00000	.00000
4.980	157.620	2.77330	1.12060	-.10410	-.06020	.02140	-2.64390	.00000	.52770	.00000	.00000
4.980	153.770	3.65630	1.41030	-.12120	-.01600	.03040	-3.23310	.00000	.53670	.00000	.00000
4.980	149.790	5.09110	.56970	-.14690	-.00200	.01590	-2.77340	.00000	.53740	.00000	.00000
4.980	159.690	8.23410	1.22490	-.09390	-.08110	.00110	-2.79910	.00000	.52190	.00000	.00000
GRADIENT		-.22543	-.04223	.00498	-.00169	-.00132	.04062		-.00062		.00000

MSFC 593 (SAR26F) 142-IN. SRB (139) NRE21A

(R99904) (11 DEC 73)

REFERENCE DATA

BREF = .0030 30. IN XMRP = 5.9370 IN.
 LREF = .0000 IN. YMRP = .0000 IN.
 BREF = .0000 IN. ZMRP = .0000 IN.
 SCALE = .0036

PARAMETRIC DATA

BETA = .0000 PHI = .0000
 PLDSTR = .0000 AFSTR = .0000
 ATWING = 1.0000 ATMS = .0000
 COMFC = 1.0000 S-OSTK = .0000
 E.T = .0000 SEPRNT = .0000

RUN NO. 20/ 0 RML = 0.30 GRADIENT INTERVAL = -3.00/ 5.00

WACH	ALPHA	CMH	CLMH	CTH	CTMH	CBL	CA	CAS	XCP/L	CFB1	CFB2
3.480	169.790	.65140	-.17910	-.06320	.03920	.00760	-2.35110	.00000	.59770	.00000	.00000
3.480	167.830	1.05180	.02330	-.07490	.02350	.01390	-2.42310	.00000	.56460	.00000	.00000
3.480	169.810	1.36000	.17710	-.09210	-.00290	.00780	-2.49990	.00000	.51930	.00000	.00000
3.480	163.760	1.75600	.36360	-.10980	-.01600	.00510	-2.57790	.00000	.54960	.00000	.00000
3.480	159.640	2.67330	.62890	-.11760	.02200	.00170	-2.77370	.00000	.54730	.00000	.00000
3.480	157.560	3.19040	.87460	-.12500	.01500	.01660	-2.69220	.00000	.54930	.00000	.00000
3.480	153.490	4.28690	.92840	-.13670	.00230	.00420	-3.10170	.00000	.53930	.00000	.00000
3.480	149.370	5.39060	1.20440	-.13240	-.01170	.00370	-3.39170	.00000	.54930	.00000	.00000
3.480	153.410	4.29760	.89900	-.13670	-.00240	.00470	-3.18710	.00000	.58120	.00000	.00000
3.480	157.570	3.17290	.67360	-.12900	.03630	.02910	-2.69960	.00000	.54920	.00000	.00000
3.480	159.540	2.65690	.61730	-.11770	.03230	.01490	-2.79260	.00000	.51760	.00000	.00000
3.490	163.760	1.73840	.33030	-.11300	-.03660	.00290	-2.51320	.00000	.55140	.00000	.00000
3.490	165.790	1.36330	.18990	-.09990	-.03430	.00540	-2.43270	.00000	.56490	.00000	.00000
3.490	157.850	.99170	.02660	-.09100	-.04200	.00620	-2.36940	.00000	.59750	.00000	.00000
3.480	169.790	.70310	-.16090	-.06090	.00230	.00670	-2.35460	.00000	.59750	.00000	.00000
GRADIENT		-.22710	-.06212	.03415	-.00037	-.00246			.00149		



DATE 05 NOV 76

TABULATED SOURCE DATA, NSPC TMT 300/500

PAGE 5

NSPC 393 (8428P) 148-IN. BRB (153) NUREIA

(80225) 11 DEC 76

REFERENCE DATA

BREF = .0030 IN ZWRP = 5.5970 IN.
 LREF = .0030 IN YWRP = .0000 IN.
 SREF = .0020 IN ZWRP = .0000 IN.
 SCALE = .0036

PARAMETRIC DATA

BETA = .000
 PLASTIC = .000
 ATOMIC = 1.000
 COMPIC = 1.000
 ELT = .000

RUN NO. 7/0 RVAL = 5.25 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CMV	CLMV	CM	CEM	CEL	CA	CAB	XCP/L	CP/L	CPR
3.400	190.330	-.03110	-.03090	-.03120	.00000	-2.37600	.00000	.00000	.00000	.00000	.00000
3.400	188.400	-.36690	-.04240	.03020	.00350	-2.32690	.00000	.00000	.00000	.00000	.00000
3.400	186.380	-.21140	-.02350	.03390	.00300	-2.26440	.00000	.00000	.00000	.00000	.00000
3.400	182.350	-.14940	-.02640	.03390	.00350	-2.24220	.00000	.00000	.00000	.00000	.00000
3.400	184.340	-.10330	-.02670	.03390	-.00390	-2.21720	.00000	.00000	.00000	.00000	.00000
3.400	183.340	-.07910	-.02690	.03330	.00350	-2.19490	.00000	.00000	.00000	.00000	.00000
3.400	182.650	-.06140	-.02690	.03390	.00320	-2.17420	.00000	.00000	.00000	.00000	.00000
3.400	182.330	-.04340	-.02340	.03390	.00310	-2.15080	.00000	.00000	.00000	.00000	.00000
3.400	181.920	-.02740	-.02390	.03220	.00260	-2.13370	.00000	.00000	.00000	.00000	.00000
3.400	181.320	-.03740	-.02350	.03390	.00390	-2.14320	.00000	.00000	.00000	.00000	.00000
3.400	180.920	-.05140	-.02350	.03390	.00350	-2.14320	.00000	.00000	.00000	.00000	.00000
3.400	183.310	-.05380	-.02030	.03230	-.00290	-2.14410	.00000	.00000	.00000	.00000	.00000
3.400	183.330	-.06350	-.01940	.03340	-.00130	-2.13910	.00000	.00000	.00000	.00000	.00000
GRADIENT		-.06177	-.00307	-.00440	-.00020	-.02431			-.00017		.00000

RUN NO. 11/0 RVAL = 5.70 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CMV	CLMV	CM	CEM	CEL	CA	CAB	XCP/L	CP/L	CPR
4.000	189.290	-.36370	-.03190	-.03470	.00730	.01040	-2.34320	.00000	.49550	.00000	.00000
4.000	189.370	-.34010	-.30150	-.04720	.02610	-.00490	-2.29090	.00000	.49420	.00000	.00000
4.000	186.340	-.17790	-.03220	-.03360	.01330	.00700	-2.23690	.00000	.54210	.00000	.00000
4.000	183.340	-.14260	-.02050	-.02910	.01330	.01210	-2.21440	.00000	.51490	.00000	.00000
4.000	184.330	-.06410	-.01370	-.03370	.03130	.00320	-2.19790	.00000	.53320	.00000	.00000
4.000	183.350	-.04660	-.03760	-.03370	.06330	-.01070	-2.17920	.00000	.50100	.00000	.00000
4.000	182.950	-.03670	-.03540	-.02390	.03220	.00910	-2.15920	.00000	.41440	.00000	.00000
4.000	182.330	-.02190	-.04950	-.03350	.03140	.00290	-2.14720	.00000	.41130	.00000	.00000
4.000	181.020	-.03100	-.03530	-.03530	.04340	.00940	-2.14410	.00000	-0.46920	.00000	.00000
4.000	181.310	-.04690	-.16890	-.02390	.04620	-.00290	-2.13770	.00000	.00000	.00000	.00000
4.000	183.010	-.04670	-.19610	-.03300	.02330	.01110	-2.13330	.00000	.00000	.00000	.00000
4.000	182.310	-.03920	-.23710	-.02360	.03290	.00400	-2.13490	.00000	.00000	.00000	.00000
4.000	183.330	-.05060	-.01050	-.03070	.02000	.03100	-2.16930	.00000	.00000	.00000	.00000
GRADIENT		-.05972	-.00263	-.00269	-.00164	.00327	-.02199		.14425		.00000

MSFC 390 (SAGEF) 142-IN. SRB(179) NRE1A

(R39255) (11 DEC 75)

REFERENCE DATA

MACH = .5030 SQ. IN XMRP = 3.5570 IN.
 LREF = .0000 IN. YMRP = .0000 IN.
 MREF = .0000 IN. ZMRP = .0000 IN.
 SCALE = .0036

PARAMETRIC DATA

BETA = .000 PH1 = .000
 FLDSR = .000 ATSTR = .000
 ATMNG = 1.000 ATMS = .000
 COFIC = 1.000 SOSTR = .000
 ELT = .000 SFRAT = .000

RUN NO. 13/ 0 RIVL = 3.34 GRADIENT INTERVAL = -3.00/ 3.00

MACH	ALPHA	CYM	CLMM	CYM	CEL	CA	CAB	KCF/L	CPB1	CPB2
4.93	190.260	-.51620	-.49470	-.03980	-.00150	-2.20320	.00000	.48970	.00000	.00000
4.93	189.360	-.29720	-.26210	-.03640	-.01070	-2.14600	.00000	.49460	.00000	.00000
4.93	188.340	-.18020	-.03980	-.03670	.00740	-2.11130	.00000	.33930	.00000	.00000
4.93	185.330	-.13470	-.07300	-.03820	-.00100	-2.10690	.00000	.32110	.00000	.00000
4.93	184.320	-.07570	-.03660	-.01840	-.00390	-2.07390	.00000	.32710	.00000	.00000
4.93	183.330	-.04540	-.06980	-.01200	-.00420	-2.05340	.00000	.44130	.00000	.00000
4.93	182.320	-.03070	-.10170	-.02500	-.00420	-2.03370	.00000	.29570	.00000	.00000
4.93	181.320	-.01520	-.15190	-.01920	.00340	-2.03930	.00000	-.24650	.00000	.00000
4.93	180.820	.04470	-.18230	-.02390	.00390	-2.03340	.00000	.99940	.00000	.00000
4.93	180.310	.07470	-.19730	-.03290	-.00390	-2.03630	.00000	.78170	.00000	.00000
4.93	183.330	-.04650	.00490	-.03900	.02915	-2.02740	.00000	.37320	.00000	.00000
GRADIENT		-.09236	-.02264	-.00296	-.00377	-.01677	.00000	.00591	.00000	.00000

RUN NO. 15/ 0 RIVL = 4.88 GRADIENT INTERVAL = -3.00/ 3.00

MACH	ALPHA	CYM	CLMM	CYM	CEL	CA	CAB	KCF/L	CPB1	CPB2
4.93	190.260	-.44470	-.63670	-.03930	-.00390	-2.23930	.00000	.48970	.00000	.00000
4.93	189.360	-.31010	-.32200	-.03620	.01610	-2.17420	.00000	.49190	.00000	.00000
4.93	188.340	-.11220	-.23490	-.04130	.00030	-2.14190	.00000	.39570	.00000	.00000
4.93	185.330	-.09240	-.21090	-.03390	.00090	-2.14000	.00000	.39040	.00000	.00000
4.93	184.320	-.03290	-.22910	-.02620	-.00462	-2.12770	.00000	-.01060	.00000	.00000
4.93	183.320	-.03300	-.19150	-.02330	.04070	-2.10920	.00000	.12320	.00000	.00000
4.93	182.840	-.03310	-.20420	-.02350	-.00180	-2.10640	.00000	.05310	.00000	.00000
4.93	182.320	-.03360	-.18160	-.02470	.00000	-2.09440	.00000	.03920	.00000	.00000
4.93	181.820	.04190	-.15270	-.01720	.00000	-2.09000	.00000	.03230	.00000	.00000
4.93	181.320	.04600	-.22330	-.02460	-.00390	-2.08740	.00000	.96230	.00000	.00000
4.93	180.820	.06640	-.24620	-.03760	-.00490	-2.08740	.00000	.85990	.00000	.00000
4.93	180.320	.06360	-.17760	-.03700	.00840	-2.08370	.00000	.78550	.00000	.00000
4.93	183.320	-.03390	-.20450	-.04990	-.00740	-2.10990	.00000	.07490	.00000	.00000
GRADIENT		-.01962	-.03249	-.00299	.00648	-.01408	.00000	-.00375	.00000	.00000

MSFC 590 (SA26F) 142-1b, 98B,139) MRELEA

(000000) (11 DEC 74)

REFERENCE DATA

WREF = .9030 SQ. IN XMRP = 5.9570 IN.
 WREF = .0000 IN. YMRP = .0000 IN.
 WREF = .0000 IN. ZMRP = .0000 IN.
 SCALE = .0036

PARAMETRIC DATA

BETA = .000 PHL = .000
 PMOSTR = .000 AFTSTR = .000
 AIRING = 1.000 ATMS = .000
 CONFIG = 1.000 SMOSTR = .000
 SLT = .000 SEPRAT = .000

RUN NO. 6/ 0 RIVL = 6.32 GRADIENT INTERVAL = -5.00/ 5.00

WACH	ALPHA	CMM	CLMM	CYM	CYMM	COL	CA	CAE	KCP/L	CPB1	CPB2
3.480	180.310	.04810	-.11220	-.02750	.06300	-.00300	-2.13670	.00000	.76490	.00000	.00000
3.480	179.810	.06490	-.10430	-.02000	.05680	.00760	-2.13770	.00000	.75930	.00000	.00000
3.480	179.310	.06320	-.20590	-.02010	.06210	.00720	-2.14060	.00000	.08240	.00000	.00000
3.480	179.800	.09240	-.26580	-.02910	.08270	-.00320	-2.14430	.00000	.00100	.00000	.00000
3.480	178.300	.11090	-.29690	-.02030	.06280	.01660	-2.14930	.00000	.73490	.00000	.00000
3.480	177.790	.12910	-.31750	-.02030	.05780	.02170	-2.15210	.00000	.76710	.00000	.00000
3.480	177.290	.13030	-.33950	-.02420	.06290	.00770	-2.15190	.00000	.75510	.00000	.00000
3.480	176.260	.19270	-.40980	-.02040	.04390	.00920	-2.15900	.00000	.73390	.00000	.00000
3.480	173.270	.22960	-.49210	-.02090	.03390	.00390	-2.20900	.00000	.74130	.00000	.00000
3.480	174.220	.26590	-.51310	-.02050	.02920	.00610	-2.23120	.00000	.72330	.00000	.00000
3.480	172.220	.41790	-.46630	-.02300	.00590	.01300	-2.29140	.00000	.65760	.00000	.00000
3.480	170.300	.62970	-.20690	-.04170	.00370	.00940	-2.36360	.00000	.59330	.00000	.00000
3.480	177.290	.14740	-.35950	-.02060	.06940	.00700	-2.16670	.00000	.76490	.00000	.00000
GRADIENT		-.03351	.02121	.00109	.00593	-.00033	.02223	.00000	.01942	.00000	.00000

RUN NO. 12/ 0 RIVL = 5.67 GRADIENT INTERVAL = -5.00/ 5.00

WACH	ALPHA	CMM	CLMM	CYM	CYMM	COL	CA	CAB	KCP/L	CPB1	CPB2
4.000	180.310	.05850	-.19430	-.02590	.03930	.00330	-2.12270	.00000	.83760	.00000	.00000
4.000	179.810	.09440	-.24910	-.03070	.02360	-.00120	-2.12600	.00000	.79090	.00000	.00000
4.000	179.310	.09460	-.24910	-.02370	.02590	.01070	-2.12330	.00000	.78040	.00000	.00000
4.000	178.800	.10690	-.27420	-.03150	.06700	.00760	-2.13140	.00000	.77590	.00000	.00000
4.000	178.300	.11800	-.28690	-.03690	.08740	.00000	-2.13390	.00000	.76310	.00000	.00000
4.000	177.780	.14300	-.31390	-.03700	.09760	.00010	-2.14320	.00000	.74530	.00000	.00000
4.000	177.300	.15520	-.32790	-.03190	.07430	.00710	-2.15120	.00000	.73990	.00000	.00000
4.000	176.300	.14420	-.34570	-.02620	.04030	.00980	-2.18090	.00000	.76210	.00000	.00000
4.000	175.290	.22770	-.36930	-.03210	.06090	.00230	-2.20710	.00000	.69990	.00000	.00000
4.000	174.240	.27570	-.35490	-.03660	.06760	-.00420	-2.24360	.00000	.67150	.00000	.00000
4.000	172.260	.36130	-.19840	-.04950	.07230	.00560	-2.29340	.00000	.60930	.00000	.00000
4.000	170.340	.60490	-.02170	-.05460	.03590	.00170	-2.33030	.00000	.58910	.00000	.00000
4.000	177.300	.15350	-.35640	-.02650	.05420	.00230	-2.15260	.00000	.74340	.00000	.00000
GRADIENT		-.04812	-.01206	-.00233	-.00094	-.00014	.02311	.00000	.02433	.00000	.00000

MSFC 590 (SA26F) 142-IN. SRB (133) MORETA

(R95956) (11 DEC 73)

REFERENCE DATA

WREF = .5030 SQ. IN XMRP = 9.9370 IN.
 LREF = .8000 IN. YMRP = .0000 IN.
 BRP = .8000 IN. ZMRP = .0000 IN.
 SCALE = .0036

PARAMETRIC DATA

BETA = .000 PHI = .000
 PLDSTK = .000 AFTSTK = .000
 ATMRNG = 1.000 ATMS = .000
 COMFIC = 1.000 SHDSTK = .000
 ELT = .000 SEPRKT = .000

RUN NO. 14/ 0 RIVL = 5.34 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYMH	CBL	CA	CAB	XCP/L	CPB1	CPB2
4.450	160.310	.06010	-.19330	-.02660	-.06570	.00690	-2.03600	.00000	.83580	.00000	.00000
4.450	179.810	.09030	-.23110	-.02730	.09190	-.00310	-2.03920	.00000	.77480	.00000	.00000
4.450	179.310	.09020	-.21430	-.03300	-.06940	.00730	-2.04410	.00000	.76070	.00000	.00000
4.450	178.810	.10390	-.26530	-.03360	.09190	.00520	-2.04680	.00000	.77100	.00000	.00000
4.450	178.310	.12080	-.24720	-.03960	.07410	.03030	-2.04920	.00000	.73370	.00000	.00000
4.450	177.810	.10390	-.28410	-.03930	.06570	.00790	-2.05640	.00000	.78520	.00000	.00000
4.450	177.300	.16890	-.35030	-.04630	.09180	-.00130	-2.06900	.00000	.73900	.00000	.00000
4.450	176.300	.16740	-.35130	-.04630	.10070	.02900	-2.06930	.00000	.73780	.00000	.00000
4.450	175.300	.19750	-.33510	-.03970	.05740	.00880	-2.11070	.00000	.70490	.00000	.00000
4.450	174.270	.27300	-.31530	-.03370	.04010	.00990	-2.13930	.00000	.68090	.00000	.00000
4.450	172.270	.36240	-.13970	-.02790	.01260	.00400	-2.19930	.00000	.59000	.00000	.00000
4.450	170.360	.52390	.04290	-.04160	.00170	.01330	-2.24690	.00000	.53990	.00000	.00000
4.450	177.300	.52000	-.31720	-.02720	.07540	.02980	-2.06870	.00000	.73670	.00000	.00000
GRADIENT		-.04281	-.01746	.00063	.00819	-.00033	.02174	.00000	.02472	.00000	.00000

RUN NO. 16/ 0 RIVL = 4.88 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYMH	CBL	CA	CAB	XCP/L	CPB1	CPB2
4.959	160.320	.10490	-.14730	-.02370	.00430	.01210	-2.07390	.00000	.69100	.00000	.00000
4.959	179.820	.08900	-.15100	-.02440	-.05310	.01710	-2.09730	.00000	.71140	.00000	.00000
4.959	179.320	.08990	-.15330	-.00790	-.03210	.00360	-2.11060	.00000	.71210	.00000	.00000
4.959	178.810	.10390	-.17900	-.01830	-.05240	.00820	-2.11010	.00000	.70140	.00000	.00000
4.959	178.310	.12680	-.22040	-.02630	-.02860	-.00160	-2.11380	.00000	.70930	.00000	.00000
4.959	177.810	.12670	-.19740	-.00020	-.02930	.00300	-2.11330	.00000	.69380	.00000	.00000
4.959	177.310	.14670	-.24080	-.03510	.05100	-.01180	-2.13130	.00000	.70040	.00000	.00000
4.959	176.310	.16710	-.21790	-.02670	.03990	.00960	-2.14920	.00000	.67290	.00000	.00000
4.959	175.310	.18730	-.21900	-.03470	.01630	.01220	-2.17670	.00000	.65190	.00000	.00000
4.959	174.270	.22740	-.21670	-.02670	.01660	.01160	-2.17760	.00000	.64430	.00000	.00000
4.959	172.300	.32600	-.05170	-.02690	-.03100	.01360	-2.22240	.00000	.57930	.00000	.00000
4.959	170.370	.50310	.02880	-.04610	.03630	.00060	-2.26390	.00000	.56190	.00000	.00000
4.959	177.310	.52670	-.19720	-.01730	.00340	.00140	-2.13190	.00000	.69330	.00000	.00000
GRADIENT		-.03759	-.01496	.00239	-.00374	-.00012	.01809	.00000	.01325	.00000	.00000

REFERENCE DATA

WARP = .0030 SQ. IN YMRP = 5.5570 IN.
 LMRP = .0000 IN. YMRP = .0000 IN.
 ZMRP = .0000 IN. ZMRP = .0000 IN.
 SCALE = .0234

PARAMETRIC DATA

BETA = .000 PHI = .000
 PWRSTR = .000 APTSTR = .000
 ATMRG = 1.000 ATMS = .000
 CWRFC = 1.000 SMDSTR = .000
 ELT = .000 SERPRT = .000

RUN NO. 10/ 0 RINL = 0.30 GRADIENT INTERVAL = -5.00/ 5.00

WARP	ALPHA	CMH	CLMH	CYN	CMNH	CSL	CA	CAB	XCRVL	CPBL	CSL
3.480	180.310	.04590	-.10193	-.02742	.05570	.05810	-2.1594E	.00000	.74870	.00000	.00000
3.480	180.820	.01900	-.07100	-.02270	.07610	-.02730	-2.1398E	.00000	.67480	.00000	.00000
3.480	181.320	-.00790	-.03270	-.02700	.09020	.02230	-2.1410E	.00000	.22460	.00000	.00000
3.480	181.830	-.01090	-.02330	-.03070	.04990	.00890	-2.1423E	.00000	.45230	.00000	.00000
3.480	182.330	-.02340	-.00455	-.02330	.05530	.00330	-2.1450E	.00000	.55190	.00000	.00000
3.480	182.830	-.03240	-.02400	-.02660	.03950	.00590	-2.1475E	.00000	.60390	.00000	.00000
3.480	183.360	-.06120	.04340	-.02630	.01940	.00970	-2.1464E	.00000	.62440	.00000	.00000
3.480	184.340	-.10360	.07100	-.03410	.05950	.00390	-2.20970	.00000	.62140	.00000	.00000
3.480	185.350	-.15000	.10730	-.02970	.03990	.00090	-2.25210	.00000	.62300	.00000	.00000
3.480	186.360	-.21150	.06030	-.03260	.03990	.00640	-2.26210	.00000	.59760	.00000	.00000
3.480	189.370	-.36080	-.12190	-.04230	.01990	-.00010	-2.32510	.00000	.33320	.00000	.00000
3.480	193.310	-.63070	-.28870	-.04930	.06270	-.00230	-2.37420	.00000	.33030	.00000	.00000
3.480	193.350	-.04320	.03460	-.02710	.06050	-.02130	-2.18750	.00000	.63170	.00000	.00000
	GRADIENT	-.06173	-.01264	-.00207	-.00190	-.00090	-.02327	.00000	-.00693	.00000	.00000

MSFC 590 (SAS26F) 142-IN. SRB (139) NRE1A

(R99008) (11 DEC 73)

REFERENCE DATA

WREP = .0030 SR. IN XMRP = 5.5370 IN.
 LREP = .0000 IN. MRP = .0000 IN.
 BREP = .0000 IN. ZMRP = .0000 IN.
 SCALE = .0036

PARAMETRIC DATA

BETA = .000 PHI = .000
 PMDSTR = .000 APTSTR = .000
 ATMANG = 1.000 ATMS = .000
 CONF1G = 1.000 SMDSTR = .000
 ELT = .000 SEPRAT = .000

RUN NO. 9/ 0 RIVL = 6.30 GRADIENT INTERVAL = -5.00/ 5.00

WACH	ALPHA	CMH	CMH	CMH	CMH	CBL	CA	CAS	KCP/L	CFB1	CFB2
3.480	170.320	.63660	-.25760	-.05230	-.01720	.00260	-2.35030	.00000	.99940	.00060	.00000
3.480	172.240	.42820	-.46490	-.03280	.02160	.00260	-2.28270	.00000	.65340	.00000	.00000
3.480	174.260	.27430	-.32230	-.02400	.01260	.00770	-2.22220	.00000	.72160	.00000	.00000
3.480	175.270	.22930	-.30160	-.02820	.03330	.00430	-2.19890	.00000	.74490	.00000	.00000
3.480	176.260	.18390	-.42030	-.02040	.04820	.00690	-2.18070	.00000	.75290	.00000	.00000
3.480	177.290	.13610	-.34830	-.02410	.03760	.00340	-2.16130	.00000	.77220	.00000	.00000
3.480	177.790	.12880	-.30840	-.02440	.07290	.00210	-2.15600	.00000	.76060	.00000	.00000
3.480	178.300	.11060	-.28990	-.02030	.06210	.02120	-2.14110	.00000	.77730	.00000	.00000
3.480	178.800	.09200	-.23430	-.02400	.08210	.02160	-2.13430	.00000	.77410	.00000	.00000
3.480	179.300	.06290	-.21400	-.02030	.06730	.00210	-2.13160	.00000	.77700	.00000	.00000
3.480	179.810	.03560	-.15320	-.02010	.06170	.00720	-2.13090	.00000	.79130	.00000	.00000
3.480	180.310	.04630	-.11190	-.02040	.07660	.00120	-2.13300	.00000	.76340	.00000	.00000
3.480	177.270	.14720	-.34810	-.02030	.03260	.00920	-2.16290	.00000	.75940	.00000	.00000
GRADIENT		-.03458	.02621	.00230	.00637	.00057	.02173	.00000	.01709	.00000	.00000



MSFC 990(SA26F) 142-IN. SRB(139) NRE1

(093000) (11 DEC 73)

REFERENCE DATA

SRF = .3030 SQ. IN XMRP = 5.5370 IN.
 LREF = .0000 IN. YMRP = .0000 IN.
 BRP = .0000 IN. ZMRP = .0000 IN.
 SCALE = .0036

BETA = .000 PHI = .000
 PDSSTK = .000 AFTSTK = .000
 ATHRNG = 1.000 ATMS = .000
 CONF1G = 2.000 SMSGSTK = .000
 ELT = .000 SEPRAT = .000

PARAMETRIC DATA

RUN NO. 5/ 1 PIVL = 6.30 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CMM	CLMM	CYM	CYMA	CBL	CA	CAB	XCP/L	CFP1	CFP2
3.480	148.090	9.67260	-.02170	-.17130	-.03240	.01626	-2.36735	.00000	.56680	.00000	.00000
3.480	148.130	6.27470	.01670	-.16680	-.01490	.01290	-2.37940	.00000	.56630	.00000	.00000
3.480	141.930	7.61750	.07310	-.21190	-.03180	.01390	-2.36780	.00000	.56570	.00000	.00000
3.480	137.730	6.92480	.11660	-.22890	-.00130	.01090	-2.35570	.00000	.56550	.00000	.00000
3.480	133.590	10.12740	.82120	-.23000	.01695	.01270	-2.37360	.00000	.55990	.00000	.00000
3.480	129.420	11.39460	1.17220	-.23100	-.03010	.03360	-2.57830	.00000	.55910	.00000	.00000
3.480	127.440	11.99760	1.28090	-.25210	-.08940	.01290	-1.96590	.00000	.55790	.00000	.00000
3.480	129.420	11.38610	1.14020	-.24700	-.06910	.03420	-2.07620	.00000	.55940	.00000	.00000
3.480	133.590	10.13640	.60070	-.24970	.00140	.01410	-2.37170	.00000	.56010	.00000	.00000
3.480	137.720	9.93430	.06300	-.22500	-.03620	.01570	-2.39320	.00000	.56590	.00000	.00000
3.480	141.910	7.61900	.05180	-.20420	-.01290	.04000	-2.36560	.00000	.56500	.00000	.00000
3.490	146.120	6.31060	-.00160	-.19710	-.01470	.03610	-2.37910	.00000	.56680	.00000	.00000
3.480	148.090	3.69720	-.05100	-.17920	.00260	.03030	-2.37190	.00000	.56730	.00000	.00000
	GRADIENT	-.30339	-.06620	.00415	.00231	.00513	-.01519	.00000	.00048	.00000	.00000

MSFC 990(SA20F) 142-IN. SR8(138) NBR1

(R95910) (11 DEC 75)

REFERENCE DATA

BREF = .9030 SQ. IN XMRP = 3.5370 IN.
 LREF = .8000 IN. YMRP = .0000 IN.
 ORF = .8000 IN. ZMRP = .0000 IN.
 SCALE = .0036

PARAMETRIC DATA

BETA = .000 PHI = .000
 FLDSTK = .000 AFTSTK = .000
 ATMRNG = 1.000 ATMS = .000
 CONF16 = 2.000 SMDSTK = .000
 ELT = .000 SEPRAT = .000

RUN NO. 81/ 0 RIVL = 9.27 GRADIENT INTERVAL = -5.00/ 3.00

WACH	ALPHA	CMH	CLMH	CYM	CYMH	CBL	CA	CAB	XCP/L	CP81	CP82
3.480	189.770	.71230	-.40130	-.06490	.02970	.00910	-2.40700	.00000	.61290	.00000	.00000
3.480	187.850	1.02300	-.32090	-.07440	.01260	.01090	-2.43960	.00000	.59210	.00000	.00000
3.480	183.750	1.78880	-.14040	-.09820	-.01690	.01400	-2.50590	.00000	.57290	.00000	.00000
3.480	159.610	2.89293	.10860	-.10570	.01980	.01940	-2.62160	.00000	.56320	.00000	.00000
3.480	155.470	3.73470	.33150	-.12070	-.00330	.01710	-2.77760	.00000	.55930	.00000	.00000
3.480	151.310	4.68010	.43500	-.14910	.01340	.01610	-2.83320	.00000	.55930	.00000	.00000
3.480	149.280	5.56730	-.08110	-.15290	.04070	.01160	-2.37390	.00000	.56770	.00000	.00000
3.480	151.270	4.96920	-.12980	-.14920	.02670	.02720	-2.36590	.00000	.57230	.00000	.00000
3.480	155.410	3.80500	-.27730	-.14010	.03590	.01200	-2.36130	.00000	.56390	.00000	.00000
3.480	159.610	2.69440	.08770	-.10600	.03140	.00950	-2.62990	.00000	.57310	.00000	.00000
3.480	163.750	1.76040	-.14230	-.09830	-.00130	.01740	-2.51470	.00000	.59270	.00000	.00000
3.480	157.850	1.00500	-.32300	-.06120	-.01350	.00890	-2.44930	.00000	.61260	.00000	.00000
3.480	189.770	.71220	-.40230	-.06470	.01940	.00340	-2.41790	.00000	.00000	.00000	.00000
GRADIENT		-.23369	-.02403	.00429	-.00111	-.00045	-.00566	.00000	.00207	.00000	.00000



REFERENCE DATA PARAMETRIC DATA

BETA = .000 PHI = .000
 FMASTK = .000 AFTSTK = .000
 ATHRMG = 1.000 ATMS = .000
 SMOSTR = 2.000 SMOSTR = .000
 SEPRAT = .000 SEPRAT = .000

RUN NO. 8/ 0 RVL = 8.23 GRADIENT INTERVAL = -5.00/ 5.00

ALPHA	CLMH	CYM	CYMH	CBL	CA	CAB	XCP/L	CPB1	CPB2
3.480	-.89040	.00910	-.08620	.00140	-2.41536	.00596	.56760	.00000	.00000
3.480	-.42370	-.11070	-.08070	.01100	-2.38710	.02062	.58790	.00000	.00000
3.480	-.11230	.03160	-.03320	.01860	-2.30930	.00000	.60480	.00000	.00000
3.480	.03540	-.09180	-.02420	.01590	-2.15420	.00000	.70190	.00000	.00000
3.480	.17620	-.34310	-.02410	.04240	-2.28540	.00000	.72590	.00000	.00000
3.480	.42640	-.50290	-.03630	.01190	-2.37420	.00000	.66220	.00000	.00000
3.480	.68320	-.42590	-.04560	.00520	-2.41340	.00000	.61720	.00000	.00000
3.480	.18520	-.34490	-.07690	.02130	-2.37990	.00000	.66440	.00000	.00000
3.480	.01980	-.07380	-.02030	.03750	-2.29590	.00000	.71640	.00000	.00000
3.480	-.09410	-.03130	-.02690	.02120	-2.15570	.00000	.97660	.00000	.00000
3.480	-.42320	.07890	-.05690	-.00220	-2.31430	.00000	.59370	.00000	.00000
3.480	-.69860	-.02390	-.09390	.00790	-2.39100	.00000	.58170	.00000	.00000
GRADIENT	-.03871	.02975	-.00146	-.00264	-2.41930	.00000	.56370	.00000	.00000

REFERENCE DATA PARAMETRIC DATA

BETA = .000 PHI = .000
 FMASTK = .000 AFTSTK = .000
 ATHRMG = 1.000 ATMS = .000
 SMOSTR = 3.000 SMOSTR = .000
 SEPRAT = 1.000 SEPRAT = 1.000

RUN NO. 28/ 0 RVL = 4.77 GRADIENT INTERVAL = -5.00/ 5.00

ALPHA	CLMH	CYM	CYMH	CBL	CA	CAB	XCP/L	CPB1	CPB2
3.480	1.09110	1.25700	-.49270	-.37330	.08910	.44900	.47260	-.22140	-.27320
3.480	1.31820	1.50930	-.65130	-.60340	.09830	.44130	.47310	-.20600	-.28390
3.480	1.94680	2.11210	-.98730	-1.33170	.09990	.46060	.47900	-.20910	-.30450
3.480	2.56700	2.47360	-1.16120	-1.75470	.09370	.55990	.47100	-.20220	-.34500
3.480	3.34190	3.07290	-1.48640	-3.52590	.09670	.61290	.49110	-.32120	-.40740
3.480	4.16220	4.33220	-1.65600	-4.79460	.09400	.75900	.48210	-.30220	-.45740
3.480	4.95620	5.10120	-1.99620	-5.06540	.09470	.81420	.47980	-.45310	-.49310
3.480	5.74890	2.49010	-1.14730	-2.70000	.09370	.86690	.48690	-.39750	-.45000
GRADIENT	.17412	.02975	-.05695	-.00264	-.00217	.01923	.00343	-.00015	-.00000

MSFC 390(SA28F) 142-IN. SRB(139) NREK151 ELT

(R93012) (13 DEC 73)

REFERENCE DATA

BREF = .5030 80. IN XMRP = 3.5370 IN.
 LMRP = .0000 IN. YMRP = .0000 IN.
 ZMRP = .5000 IN.
 SCALE = .0056

PARAMETRIC DATA

BETA = .000 PHI = 43.020
 PWDSTR = .000 AFTSTR = .000
 ATMRNG = 1.000 ATMS = .000
 COAFLC = 3.000 SMDSTR = .000
 ELT = 1.000 SEPRAT = 1.000

RUN NO. 89/ 0 RIVL = 6.07 GRADIENT INTERVAL = -3.00/ 3.00

MACH	ALPHA	CIN	CLIN	CYM	CYNH	CEL	CA	CAB	XCP/L	CFB1	CFB2
.900	10.250	1.10080	.39380	-.12320	.30880	-.04030	1.09840	.44900	.53720	-.23780	-.23320
.900	12.190	1.34770	.68400	-.31320	.14500	-.06150	1.11830	.46940	.52830	-.24490	-.27120
.900	15.310	2.71400	1.38830	-.64630	-.48760	-.10460	1.08830	.49730	.51030	-.23420	-.29160
.900	20.480	2.81880	2.29120	-.93440	-.86480	-.16490	1.06930	.53230	.50020	-.29740	-.32000
.900	24.650	3.78230	3.72620	-.1.24780	-1.14430	-.20430	1.03360	.61180	.49620	-.31810	-.35430
.900	28.900	4.81460	6.02200	-1.21610	-3.09340	-.20740	.99070	.70330	.46450	-.36990	-.49540
.900	30.880	5.20860	6.69900	-.03290	-2.69300	-.21650	.93200	.77000	.46160	-.40320	-.44000
.900	20.480	2.80720	2.30110	-.93370	-1.50000	-.14500	1.06370	.53930	.49970	-.29160	-.31130
GRADIENT	.80340	.30918	-.04471	-.20101	-.00890	-.00786	.01591	-.00361	-.00794	-.00361	-.00985

RUN NO. 30/ 0 RIVL = 6.51 GRADIENT INTERVAL = -3.00/ 3.00

MACH	ALPHA	CIN	CLIN	CYM	CYNH	CEL	CA	CAB	XCP/L	CFB1	CFB2
1.202	10.390	1.22610	1.56330	-.91430	-.10120	-.06890	1.36360	.47920	.46240	-.23790	-.28760
1.202	12.390	1.49800	2.17980	-.71820	-.16230	-.09120	1.37360	.49190	.44910	-.23760	-.27110
1.202	16.370	2.20770	3.33660	-1.12770	-.37310	-.11940	1.36800	.51230	.43990	-.26940	-.29390
1.202	20.820	3.21900	5.37840	-1.23730	-2.17330	-.13220	1.32300	.56970	.43010	-.29640	-.32920
1.202	23.160	4.36480	7.57870	-.71710	-3.39010	-.12140	1.45840	.64920	.43110	-.34570	-.38590
1.202	29.320	6.47780	9.66840	.02353	-3.09010	-.10960	1.41510	.79320	.45740	-.42540	-.44430
1.202	31.600	7.40840	9.22970	.20930	-1.88630	-.12270	1.40170	.94330	.45490	-.45300	-.47170
1.202	20.930	3.21910	5.45070	-1.21300	-2.08500	-.16100	1.31100	.57190	.42920	-.35310	-.32930
GRADIENT	.29002	.37724	.03922	-.13679	-.00198	-.00975	.01743	-.00263	-.00263	-.00263	-.00372

RUN NO. 31/ 0 RIVL = 7.21 GRADIENT INTERVAL = -3.00/ 3.00

MACH	ALPHA	CIN	CLIN	CYM	CYNH	CEL	CA	CAB	XCP/L	CFB1	CFB2
1.982	10.490	1.19330	2.73390	-.26430	.03030	-.03460	1.10090	.29970	.39000	-.15470	-.17510
1.982	12.310	1.39880	3.49930	-.38360	-.00240	-.05410	1.08670	.28550	.38950	-.14700	-.16720
1.982	16.790	2.72320	4.73040	-.45810	-.33380	-.09390	1.10690	.31890	.42420	-.16590	-.18490
1.982	21.090	4.02630	5.67060	.00140	-1.39200	-.03700	1.12270	.36930	.45170	-.19550	-.21020
1.982	23.390	5.67990	5.93770	.25920	-.71980	-.06010	1.41300	.41310	.46240	-.22000	-.23340
1.982	29.870	7.47480	5.52390	.24740	-.04720	-.14090	1.13070	.39290	.50630	-.29450	-.22740
1.982	31.760	8.29190	6.02960	.19390	-.16030	-.13380	1.13920	.38690	.50720	-.23310	-.22190
1.982	21.070	4.06020	5.56880	.03400	-1.39240	-.06400	1.06320	.32590	.45470	-.17590	-.19130
GRADIENT	.33776	.13936	.03263	.00021	-.00337	.00228	.00349	.00637	.00637	-.00302	-.00269

DATE 08 NOV 74

TABULATED SOURCE DATA, MSFC TWT 990/993

PAGE 13

(R09012) (11 DEC 75)

MSFC 990(SA28F) 142-IN. SRB(139) MORE151 ELT

REFERENCE DATA

MACH = .5030 SQ. IN YMRP = 3.5370 IN.
 LINEF = .0000 IN. YMRP = .0000 IN.
 MREF = .0000 IN. ZMRP = .0000 IN.
 SCALE = .0036

BETA = .000 PFI = 45.000
 FWDSTK = .000 AFTSTK = .000
 ATHRIC = 1.000 ATMS = .000
 CONFIC = 3.000 SHDSTK = .000
 ELT = 1.000 SEPRRT = 1.000

RUN NO. 27/ 0 RIVL = 6.80 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CMH	CLMM	CYM	CYH	CBL	CA	CAS	XCP/L	CPB1	CPB2
3.478	10.360	1.34390	2.28070	-0.3550	-0.04105	-0.03390	.78890	.17040	.42910	-.09940	-.09950
3.478	12.290	1.74400	2.53310	-0.3250	-1.1740	-0.04490	.78390	.16490	.44810	-.08460	-.09590
3.478	16.420	2.72370	2.89130	-0.2975	-1.40310	-0.04990	.90030	.15400	.49020	-.08250	-.09530
3.478	20.390	3.69610	3.18630	-0.2710	-1.6395	-0.05590	.96700	.14900	.49930	-.07920	-.08440
3.478	24.760	4.67690	3.40020	-0.2460	-1.8810	-0.06200	.94340	.13950	.53970	-.07210	-.07660
3.478	28.920	5.62960	4.18110	-0.2230	-2.1270	-0.06800	1.01410	.11690	.51240	-.06390	-.06790
3.478	30.920	6.91440	4.53910	-0.2030	-2.3770	-0.07400	1.09030	.11130	.51300	-.05940	-.05410
3.478	20.390	3.69020	3.16460	-0.2990	-1.5310	-0.05940	.84440	.12950	.49910	-.06710	-.07390
GRADIENT		.27299	.10309	.02494	.01165	-.02379	.01344	-.00277	.00399	.00135	.00167

(R09013) (11 DEC 75)

MSFC 990(SA28F) 142-IN. SRB(139) MORE151 ELT

REFERENCE DATA

MACH = .5030 SQ. IN YMRP = 3.5370 IN.
 LINEF = .0000 IN. YMRP = .0000 IN.
 MREF = .0000 IN. ZMRP = .0000 IN.
 SCALE = .0036

BETA = .000 PFI = 90.000
 FWDSTK = .000 AFTSTK = .000
 ATHRIC = 1.000 ATMS = .000
 CONFIC = 3.000 SHDSTK = .000
 ELT = 1.000 SEPRRT = 1.000

PARAMETRIC DATA

RUN NO. 33/ 0 RIVL = 4.74 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CMH	CLMM	CYM	CYH	CBL	CA	CAS	XCP/L	CPB1	CPB2
.397	10.230	1.33450	1.16260	-3.4360	.13990	-1.16270	.89330	.46690	.49590	-.24330	-.27810
.397	12.130	1.64090	1.32190	-3.1940	.32360	-1.16220	.91780	.44320	.50090	-.21000	-.27430
.397	16.240	2.49240	2.21840	-1.30850	1.11310	-1.21040	.96610	.51040	.49390	-.24720	-.31790
.397	20.390	3.49200	3.41130	-2.33050	1.19990	-1.27270	.91670	.53990	.48690	-.24720	-.33190
.397	24.490	4.69690	5.04700	-3.17070	-2.1220	-1.3340	.69920	.60970	.47990	-.29240	-.39720
.397	28.620	5.94960	6.68320	-3.70960	-2.09190	-1.42390	.70310	.47390	.47490	-.32520	-.45590
.397	30.590	6.62090	7.32480	-4.02690	-2.63240	-1.45230	.80760	.75620	.47390	-.34590	-.49590
.397	20.390	3.46840	3.46830	-2.37710	1.22730	-2.4140	.92250	.54990	.49540	-.25310	-.35910
GRADIENT		.26113	.32016	-.18934	-.14064	-.01516	-.00309	.01455	-.00132	-.00349	-.01091

MSFC 590(SA26F) 142-IN. SR0(139) N0RE151 ELT

(R93013) (11 DEC 73)

REFERENCE DATA

SREP = .9030 SQ. IN XMRP = 5.5570 IN.
 LREP = .8000 IN. YMRP = .0000 IN.
 BRP = .8000 IN. ZMRP = .0000 IN.
 SCALE = .0026

PARAMETRIC DATA

BETA = .000 PHI = 90.000
 FLDS TK = .000 FTSTR = .000
 ATMING = 1.000 ATMS = .000
 CCONF16 = 3.000 SMOSTR = .000
 ELT = 1.000 SEPRK = 1.000

RUN NO. 32/ 0 RIVL = 3.96 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CIW	CLIM	CIW	CIW	CIW	CA	CAS	XCF/L	CFB1	CFE2
.903	10.290	1.38650	.39330	-.08310	.10250	-.13350	1.08090	.42780	.34360	-.21780	-.23290
.903	12.260	1.80770	.63990	-.37260	.19010	-.16600	1.10790	.44430	.32960	-.22870	-.26690
.903	16.450	2.75920	2.19230	-1.28040	.51480	-.23460	1.11520	.46990	.30170	-.23420	-.29450
.903	20.080	4.01380	3.78770	-2.43720	-.60710	-.32330	1.07760	.48960	.26960	-.26260	-.32000
.903	24.890	5.47460	6.10420	-3.40510	-3.15300	-.36200	1.07840	.66940	.47560	-.34250	-.39370
.903	29.340	7.17940	8.86870	-3.87230	-4.17840	-.40910	1.06350	.79810	.46550	-.39990	-.44490
.903	31.420	8.08910	10.35660	-4.09350	-4.44640	-.44640	1.03140	.79940	.46180	-.40950	-.47990
.903	20.800	3.98830	3.76890	-2.43650	-.50030	-.32640	1.08020	.54750	.48920	-.27640	-.32740
GRADIENT	.31613	.47074	-.20039	-.25136	-.01437	-.00265	.01843		-.00372	-.00959	-.01059

RUN NO. 31/ 0 RIVL = 6.25 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CIW	CLIM	CIW	CIW	CIW	CA	CAS	XCF/L	CFB1	CFE2
1.200	10.410	1.55570	1.48160	-.54130	.26960	-.17630	1.59620	.47400	.49980	-.24110	-.28130
1.200	12.420	1.98130	1.99770	-.89850	.52300	-.21630	1.59120	.50060	.49430	-.26160	-.29370
1.200	16.860	3.06620	3.40990	-1.91100	1.26150	-.29240	1.59670	.57330	.47590	-.30730	-.32350
1.200	21.620	4.32370	5.32350	-2.45020	.39640	-.36390	1.56930	.65430	.47030	-.35390	-.35350
1.200	25.480	6.33370	7.94950	-2.61010	-.80420	-.45980	1.56490	.76210	.45420	-.41420	-.42350
1.200	29.930	8.22420	10.60170	-2.56610	-1.32720	-.51030	1.55410	.84940	.45140	-.45190	-.45950
1.200	32.010	9.21580	11.43290	-2.49520	-1.36270	-.53930	1.59410	.83730	.45330	-.45940	-.45120
1.200	21.630	4.54455	5.43190	-2.41540	.36870	-.37610	1.55620	.64630	.46920	-.35280	-.35240
GRADIENT	.35720	.47723	-.09049	-.10146	-.01707	-.00319	.51993		-.00119	-.01077	-.00979

RUN NO. 50/ 0 RIVL = 7.21 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CIW	CLIM	CIW	CIW	CIW	CA	CAS	XCF/L	CFB1	CFE2
1.961	10.520	1.53780	2.38360	-.38210	.70370	-.12080	1.10180	.25410	.44010	-.12720	-.15340
1.961	12.550	2.33170	3.15040	-.59640	.99070	-.14210	1.10910	.25550	.44020	-.13170	-.14950
1.961	16.830	3.32840	4.44200	-.78690	1.15660	-.20220	1.13640	.31120	.45770	-.16330	-.18230
1.961	21.210	4.92730	5.59730	-.79110	1.11940	-.26390	1.19600	.35530	.47260	-.17950	-.21190
1.961	23.570	6.42410	6.61890	-.73340	.70940	-.32620	1.24640	.39590	.48230	-.19310	-.22590
1.961	29.980	8.09460	6.97840	-.56790	.57370	-.39240	1.26890	.40550	.49520	-.21320	-.22540
1.961	31.940	8.94610	7.15010	-.37900	.60810	-.42300	1.27130	.40130	.50130	-.22070	-.21940
1.961	21.200	4.84140	5.54070	-.77560	1.09910	-.27010	1.15560	.33180	.47320	-.16790	-.19790
GRADIENT	.34823	.22439	-.00390	-.01064	-.01425	.00983	.50769		.60300	-.00452	-.00371



MSFC 590(SA26F) 142-IN. SFB(139) NREFS1 ELY

REFERENCE DATA

BREF = .5030 SQ. IN
 LREF = .0000 IN.
 WREF = .0572 IN.
 SCALE = .0036

BETA = .000
 PASTK = .000
 ATFRNG = 1.000
 COFFIC = 3.000
 ELY = 1.000

RUN NO. 26 0 RVL = 6.90 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CNM	CEL	CA	CEL	KCF/L	CFB1	CFB2
3.479	1.54180	2.39710	-0.0183	.29330	-.09310	.9176	.1677	.43370	-.02810	-.03320	-.03320
3.479	2.02440	2.72710	-0.04070	.29330	-.10340	.9297	.1581	.45270	-.07980	-.03320	-.03320
3.479	3.39430	3.23640	-0.05420	.13260	-.14790	.86310	.1420	.45270	-.07270	-.03320	-.03320
3.479	4.26930	3.58990	-0.19040	.19690	-.21170	.92330	.1230	.49270	-.03930	-.07770	-.07770
3.479	5.60790	3.86150	-0.23340	.21930	-.25110	1.02470	.1199	.51040	-.07350	-.07460	-.07460
3.479	6.94720	4.14990	-0.36990	.18220	-.33190	1.05910	.1180	.51450	-.06650	-.03320	-.03320
3.479	7.98650	4.69600	-0.41200	.15970	-.34610	1.14040	.1120	.51900	-.06400	-.03320	-.03320
3.479	4.27980	3.91700	-0.19030	.19130	-.20730	.91820	.1190	.49910	-.03470	-.07790	-.07790
GRADIENT	.29313	.10473	-0.01976	-.05319	-.01390	.01620	-.05210	.0000	.0000	.0000	.0000

MSFC 590(SA26F) 142-IN. SFB(139) NREFS1 ELY

REFERENCE DATA

BREF = .5030 SQ. IN
 LREF = .0000 IN.
 WREF = .0572 IN.
 SCALE = .0036

BETA = .000
 PASTK = .000
 ATFRNG = 1.000
 COFFIC = 3.000
 ELY = 1.000

RUN NO. 34 0 RVL = 4.89 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CNM	CEL	CA	CEL	KCF/L	CFB1	CFB2
.994	10.200	.97870	1.07210	.22530	-.13130	.86590	.43830	.47630	-.21970	-.25130	-.25130
.994	12.120	1.16120	1.22910	.32920	-.18110	.87530	.46020	.49170	-.23340	-.27390	-.27390
.994	16.170	1.73980	1.93200	.61940	-.24860	.87940	.51200	.47990	-.25800	-.30820	-.30820
.994	20.240	2.33130	2.56970	1.01970	-.32130	.91120	.65110	.47630	-.27390	-.35000	-.35000
.994	24.320	3.10380	3.48870	1.14090	-.39330	.86490	.66490	.47400	-.27200	-.39970	-.39970
.994	28.400	3.94180	4.36740	1.08880	-.46920	.83730	.74020	.47620	-.25520	-.43320	-.43320
.994	30.340	4.22920	4.88660	.98820	-.48440	.78970	.74100	.47200	-.24870	-.47340	-.47340
.994	20.230	2.30920	2.93500	1.02220	-.32910	.87950	.59230	.47620	-.29570	-.39920	-.39920
GRADIENT	.16512	.19171	-.04280	.13500	-.01731	-.05313	.01611	.0000	.0000	.0000	.0000

MSFC 990 (SAR26F) 142-IN. SR0 (139) NERE151 ELT

(R05014) 1 11 DEC 73

REFERENCE DATA

MACH = .0030 30. IN XMRP = 5.5370 IN.
 LMRP = .0000 IN. YMRP = .0000 IN.
 ZMRP = .0000 IN. ZMRP = .0000 IN.
 SCALE = .0036

PARAMETRIC DATA

BETA = .000 PHI = 133.000
 PACTR = .000 APTSTR = .000
 ATMRG = 1.000 ATMS = .000
 CONFIC = 3.000 SACSTR = .000
 ELT = 1.000 SEPRAT = 1.000

RUN NO. 35/ 0 RIVL = 6.17 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CMH	CLMH	CMH	CYMH	CEL	CA	CAS	XCP/L	CPB1	CPB2
.000	10.240	1.01730	.33600	.35010	-.42600	-.11600	1.00300	.44400	.33930	-.22070	-.23770
.000	12.190	1.31000	.71930	.39970	-.32740	-.15000	1.09700	.46190	.32170	-.24010	-.23740
.000	16.320	1.95000	1.71000	.23910	-.90170	-.24900	1.00420	.32250	.49450	-.29030	-.29250
.000	20.470	2.69010	2.90160	.29600	-1.30300	-.33720	1.04900	.37700	.47970	-.30970	-.32200
.000	24.600	3.63090	4.39740	-.06820	-2.12600	-.30120	1.00170	.64770	.43770	-.34220	-.35910
.000	28.910	4.73990	6.90860	-.20370	-2.49030	-.43100	.97090	.79990	.43450	-.31930	-.41000
.000	30.910	5.20120	7.49330	-.17210	-2.12330	-.48000	.93370	.74740	.44920	-.33210	-.42330
.000	20.470	2.69730	2.89200	.23970	-1.29420	-.32100	1.03900	.37620	.47940	-.31160	-.31990
GRADIENT		.20376	.34440	-.03043	-.09979	-.01763	-.00743	.01473	-.00414	-.00700	-.00941

RUN NO. 36/ 0 RIVL = 6.54 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CMH	CLMH	CMH	CYMH	CEL	CA	CAS	XCP/L	CPB1	CPB2
1.201	10.360	1.10040	1.33140	1.69800	-.47600	-.13970	1.56340	.46930	.47390	-.23040	-.27030
1.201	12.330	1.43100	1.79910	1.52400	-.44340	-.10970	1.55930	.47690	.46330	-.24370	-.29130
1.201	16.390	2.11200	2.99490	.02790	-.24900	-.26610	1.54630	.33100	.49090	-.29230	-.30730
1.201	20.760	3.07490	4.73220	.02030	-.32410	-.33600	1.51270	.37770	.44330	-.30150	-.32990
1.201	25.110	4.40740	7.03270	.59740	-.69130	-.42890	1.49390	.65100	.43540	-.34930	-.37030
1.201	29.490	6.07740	9.11060	.93200	-.47070	-.49770	1.48030	.77330	.44430	-.40120	-.44970
1.201	31.970	7.06220	9.90970	1.15720	1.31540	-.53710	1.45130	.79270	.45990	-.40330	-.43320
1.201	20.770	3.11920	4.83290	.08340	-.40190	-.34990	1.50430	.35930	.44020	-.30140	-.30040
GRADIENT		.27396	.40963	.04039	.06167	-.01793	-.00339	.31521	-.00103	-.00753	-.00913

RUN NO. 49/ 0 RIVL = 7.21 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CMH	CLMH	CMH	CYMH	CEL	CA	CAS	XCP/L	CPB1	CPB2
1.982	10.400	1.23000	2.43230	.20390	-.10900	-.11690	1.17010	.31770	.40950	-.19490	-.19700
1.982	12.490	1.63630	3.00830	.29330	-.10330	-.14690	1.12320	.29370	.41260	-.14390	-.19700
1.982	16.770	2.74700	4.51410	.50790	-.30390	-.21600	1.05930	.29200	.43230	-.32540	-.33190
1.982	21.080	4.12030	5.40230	.74940	-.46740	-.26990	1.10730	.30710	.43920	-.17770	-.19040
1.982	23.410	5.63990	6.20330	1.02310	-.43020	-.33330	1.11740	.29340	.47710	-.14230	-.19030
1.982	29.700	7.20340	8.30620	1.10920	-.01240	-.40430	1.14240	.31240	.48290	-.15190	-.19190
1.982	31.760	8.08370	6.63560	1.17270	-.09700	-.43090	1.15030	.31220	.49340	-.19240	-.19320
1.982	21.070	4.14470	5.41500	.79990	-.47000	-.27300	1.04340	.25790	.45370	-.12930	-.15490
GRADIENT		.32333	.19015	.04032	.00343	-.01443	.00300	.30149	-.00449	-.00149	-.00233

MSFC 590(SA267) 142-IN. 3RD(139) REPERIOD ELY

(080513) 11 23 73

REFERENCE DATA

REF 1 .5030 SQ. IN XMEP 1 5.5370 IN.
 REF 2 .0000 IN. YMEF 1 .0000 IN.
 REF 3 .0000 IN. ZMEP 1 .0000 IN.
 SCALE 1 .0036

BETA 1 .0000
 FACTRY 1 .0000
 AT-000 1 .0000
 00-010 1 .0000
 ELY 1 .0000

RUN NO. 81/ 6 RVL 1 9.00 GRADIENT INTERVAL 1 -1.00 3.00

MACH	ALPHA	CM	CLM	CMH	CMV	CMW	CMX	CMY	CMZ
3.473	15.190	1.45380	3.38990	1.05930	-1.00000	1.00000	1.00000	1.00000	1.00000
3.476	12.130	1.45380	3.38990	1.05930	-1.00000	1.00000	1.00000	1.00000	1.00000
3.478	10.480	2.81540	2.93760	1.44910	-1.00000	1.00000	1.00000	1.00000	1.00000
3.479	20.920	3.20330	3.27010	1.68230	-1.00000	1.00000	1.00000	1.00000	1.00000
3.478	24.790	3.14940	3.43390	1.60450	-1.00000	1.00000	1.00000	1.00000	1.00000
3.476	28.920	6.43440	3.94320	1.71120	-1.00000	1.00000	1.00000	1.00000	1.00000
3.478	30.990	7.10250	4.05310	1.79170	-1.00000	1.00000	1.00000	1.00000	1.00000
3.478	20.990	3.39240	3.27370	1.49210	-1.00000	1.00000	1.00000	1.00000	1.00000
GRADIENT		.27924	.38332	.52331	-.25480	-.01412	-.01412	-.01412	-.01412

REFERENCE DATA

REF 1 .5030 SQ. IN XMEP 1 5.5370 IN.
 REF 2 .0000 IN. YMEF 1 .0000 IN.
 REF 3 .0000 IN. ZMEP 1 .0000 IN.
 SCALE 1 .0036

RUN NO. 73/ 6 RVL 1 4.95 GRADIENT INTERVAL 1 -1.00 3.00

MACH	ALPHA	CM	CLM	CMH	CMV	CMW	CMX	CMY	CMZ
.598	49.000	6.94640	9.47940	-1.99840	.68200	-.24580	.41830	.41830	.41830
.598	51.730	6.16930	11.21480	-3.02760	.70210	-.23940	.34650	.34650	.34650
.598	53.760	10.15310	13.60100	-3.03080	1.11600	-.22490	.20450	.20450	.20450
.598	59.930	11.33930	15.90330	-1.93020	-1.91760	-.17920	-.01670	-.01670	-.01670
.598	63.000	12.02190	15.65540	-.02730	-2.15780	-.13770	-.25190	-.25190	-.25190
.598	67.760	12.23520	14.53420	-.46790	-.42380	-.09120	-.26230	-.26230	-.26230
.598	69.690	12.33300	15.21090	-.19990	1.26630	-.06350	-.29330	-.29330	-.29330
.598	59.950	11.49450	15.52130	-1.39520	-1.99730	-.16790	-.01430	-.01430	-.01430
GRADIENT		.26764	.23390	.13178	-.03328	.00926	-.03954	-.03954	-.03954

PARAMETRIC DATA

BETA 1 .0000
 FACTRY 1 .0000
 AT-000 1 .0000
 00-010 1 .0000
 ELY 1 .0000

MSFC 590(SA267) 142-IN. 3RD(139) REPERIOD ELY

(080513) 11 23 73

MSFC 390 (3A20F) 142-IN. 883 (133) REBEG1 ELT

(393213) 11 DEC 73

REFERENCE DATA

REF 0 .9730 SC. IN XMRP 0 3.5570 IN.
REF 0 .9000 IN. YMRP 0 .0000 IN.
REF 0 .8000 IN. ZMRP 0 .0000 IN.
SCALE 0 .0018

PARAMETRIC DATA

BETA 0
RABETA 0
ATMPC 0
CONFIC 0
ELT 0

RUN NO. 74/ 0 RIVL = 6.25 GRADIENT INTERVAL = -5.00/ 3.00

ALPHA	QIM	CLMM	CYM	CYH	CYH	CEL	CA	CAS	KCP/L	CP31	CP32
.903	30.130	11.02890	17.03230	-.35340	-.97330	-.12050	.49830	.00000	.40000	.00000	.00000
.903	32.000	11.90720	17.60290	-.14810	-2.32980	-.05770	.41940	.00000	.44100	.00000	.00000
.903	36.110	13.00370	19.42960	-.33010	-1.46440	-.07650	.28430	.00000	.44400	.00000	.00000
.903	60.100	14.35320	20.98450	-.17390	-1.26230	-.10730	.13370	.00000	.46730	.00000	.00000
.903	64.100	14.50680	20.54810	-.13170	-.39680	-.10370	.06140	.00000	.43510	.00000	.00000
.903	68.080	14.91450	19.53200	-.03280	-.62330	-.07100	.07230	.00000	.45510	.00000	.00000
.903	69.930	14.93730	17.32290	-.00900	-.60600	-.06240	.19370	.00000	.47100	.00000	.00000
.903	60.130	14.47200	20.62230	-.16620	-1.16430	-.21000	.14110	.00000	.44970	.00000	.00000
GRADIENT	.20564	.04278	.00435	.08246	.00296	-.01947			.00110		.00000

RUN NO. 73/ 0

RIVL = 6.06 GRADIENT INTERVAL = -5.00/ 3.00

ALPHA	QIM	CLMM	CYM	CYH	CYH	CEL	CA	CAS	KCP/L	CP31	CP32
1.200	13.91480	14.30770	.94390	-.73920	-.22800	.91230	.00000	.00000	.49280	.00000	.00000
1.200	14.65310	14.60490	-.09190	.69920	-.22590	.91630	.00000	.00000	.48320	.00000	.00000
1.200	15.76220	15.49880	-.04420	-.76100	-.19820	.92470	.00000	.00000	.49430	.00000	.00000
1.200	16.15490	15.77510	-.08940	-.85670	-.19130	.89720	.00000	.00000	.49390	.00000	.00000
1.200	17.16740	15.31920	-.10730	-.86730	-.19990	.78330	.00000	.00000	.49340	.00000	.00000
1.200	17.33170	14.51760	-.11450	-.76870	-.19020	.69940	.00000	.00000	.50190	.00000	.00000
1.200	19.37770	14.27920	-.09490	-.63390	-.17730	.64670	.00000	.00000	.50390	.00000	.00000
1.200	16.69000	15.32180	-.09380	-.86540	-.16460	.70650	.00000	.00000	.49270	.00000	.00000
GRADIENT	.23327	-.00924	-.00233	.07074	.00243	-.01147			.00109		.00000

RUN NO. 52/ 0

RIVL = 7.30 GRADIENT INTERVAL = -5.00/ 3.00

ALPHA	QIM	CLMM	CYM	CYH	CYH	CEL	CA	CAS	KCP/L	CP31	CP32
1.981	13.51320	9.08400	-.10780	.01190	-.16630	1.16290	.00000	.00000	.51200	.00000	.00000
1.981	17.14310	9.39410	-.09680	-.01010	-.19190	1.16330	.00000	.00000	.51200	.00000	.00000
1.981	15.27340	9.32980	-.13730	-.01180	-.19390	1.13960	.00000	.00000	.51590	.00000	.00000
1.981	16.31790	9.13880	-.14630	-.08190	-.19380	1.11300	.00000	.00000	.51590	.00000	.00000
1.981	16.90300	10.13970	-.14600	-.03490	-.28290	1.03130	.00000	.00000	.51740	.00000	.00000
1.981	17.71010	10.49080	-.13280	-.26130	-.17120	.97670	.00000	.00000	.51630	.00000	.00000
1.981	19.03730	13.35070	-.18100	-.03330	-.13730	.93180	.00000	.00000	.51690	.00000	.00000
1.981	19.92640	9.31000	-.14390	.07640	-.17400	1.10360	.00000	.00000	.51990	.00000	.00000
GRADIENT	.22224	.07276	-.00300	.00559	.01152	-.01242			.00034		.00000



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TABULATED SOURCE DATA: MSFC TMT 390/393

PAGE 2

MSFC 390 (SAGEF) 142-IN. SRB (139) NRE131 ELT

(R03016) (11 DEC 73)

REFERENCE DATA

XREP = .0030 SA. IN XMRP = 5.5370 IN.
 YREP = .0000 IN. YMRP = .0000 IN.
 ZREP = .0000 IN. ZMRP = .0000 IN.
 SCALE = .0036

RUN NO. 96/ 0 RIVL = 4.96 GRADIENT INTERVAL = -3.00/ 5.00

MACH	ALPHA	CMM	CLMM	CYM	CYMM	CBL	CA	CAE	KCP/L	CP31	CF32
.998	49.690	16.81150	14.80270	-7.58320	-1.47610	-3.1930	.0000	.00000	.45640	.00000	.00000
.998	51.600	11.50380	15.31820	-7.39340	-1.64490	-3.3170	.00000	.00000	.45670	.00000	.00000
.998	53.520	12.48110	16.37040	-7.28440	-1.70900	-3.2740	.00000	.00000	.45910	.00000	.00000
.998	55.840	13.38140	17.03590	-7.11570	-2.37370	-3.69390	.00000	.00000	.45780	.00000	.00000
.998	65.840	14.40970	19.00990	-5.93300	-3.21080	-3.1690	.00000	.00000	.45990	.00000	.00000
.998	67.850	14.81970	18.53760	-5.02470	-3.28870	-3.3190	.00000	.00000	.46430	.00000	.00000
.998	69.760	15.05470	18.77160	-4.99760	-3.5220	-3.1670	.00000	.00000	.45480	.00000	.00000
.998	59.850	13.45850	17.87030	-7.14590	-2.52170	-3.0900	.00000	.00000	.45920	.00000	.00000
GRADIENT		.21088	.21907	.14436	.05745	.00265	-.03167	.00000	.00000	.00000	.00000

RUN NO. 99/ 0 RIVL = 6.25 GRADIENT INTERVAL = -3.00/ 3.00

MACH	ALPHA	CMM	CLMM	CYM	CYMM	CBL	CA	CAB	KCP/L	CP31	CF32
.902	50.170	13.31030	16.34600	-4.50330	-1.50760	-3.7670	.00000	.00000	.45410	.00000	.00000
.902	52.110	13.94130	19.53330	-4.20620	-1.64490	-3.7670	.00000	.00000	.45210	.00000	.00000
.902	56.170	15.04120	21.45090	-3.85430	-1.65750	-3.8160	.00000	.00000	.45020	.00000	.00000
.902	60.180	15.90630	22.10460	-3.33270	-1.89000	-3.8430	.00000	.00000	.45290	.00000	.00000
.902	64.140	16.54130	21.44260	-2.83990	-3.3380	-3.7930	.00000	.00000	.46090	.00000	.00000
.902	66.070	16.86530	19.05700	-2.69350	-2.6110	-3.9470	.00000	.00000	.47420	.00000	.00000
.902	69.940	16.98220	18.56660	-2.69330	-1.8445	-3.9590	.00000	.00000	.47970	.00000	.00000
.902	60.190	16.00710	22.35050	-3.25620	-1.1190	-3.9990	.00000	.00000	.45290	.00000	.00000
GRADIENT		.18341	-.01600	.06766	.05332	-.00105	-.03995	.00000	.00132	.00000	.00000

RUN NO. 09/ 0 RIVL = 6.65 GRADIENT INTERVAL = -3.00/ 3.00

MACH	ALPHA	CMM	CLMM	CYM	CYMM	CBL	CA	CAB	KCP/L	CP31	CF32
1.197	50.160	15.43970	15.54340	-2.46590	-3.7540	-.69390	1.10660	.00000	.49440	.00000	.00000
1.197	52.070	16.17730	15.95	-2.48400	-2.2690	-.69390	1.09230	.00000	.48610	.00000	.00000
1.197	56.080	17.31490	16.314..	-2.59620	-1.2560	-.71200	.98330	.00000	.49050	.00000	.00000
1.197	60.090	18.39990	16.78460	-2.43630	-1.7250	-.71760	.92180	.00000	.49290	.00000	.00000
1.197	64.060	19.54930	16.73610	-2.44490	-2.6670	-.72670	.87050	.00000	.49670	.00000	.00000
1.197	68.030	20.47670	16.30010	-2.52740	-2.2950	-.74290	.77350	.00000	.50160	.00000	.00000
1.197	69.930	20.76120	15.80690	-2.54200	-3.9370	-.75620	.72560	.00000	.50440	.00000	.00000
1.197	60.090	16.63150	16.68270	-2.42030	-1.6440	-.71330	.91910	.00000	.49270	.00000	.00000
GRADIENT		.26787	-.01998	-.00139	-.03722	-.00328	-.01905	.00000	.00337	.00000	.00000

PARAMETRIC DATA

BETA = .000 PMI = 93.000
 PMOSTR = .000 AFSTR = .000
 ATWING = 1.000 ATMS = .000
 COMFC = 3.000 S4DSTR = .000
 ELT = 1.000 SEPRT = 1.000

TABULATED SOURCE DATA, MSFC TWT 590/593

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(R93016) (11 DEC 75)

MSFC 590(SA20F) 142-IN. SRB(139) MORE191 ELT

PARAMETRIC DATA

BETA = .000 PHI = 90.000
 FWDSTK = .000 AFTSTK = .000
 ATHING = 1.000 ATMS = .000
 COMFLC = 3.000 SMOSTK = .000
 ELT = 1.000 SEPRKT = 1.000

REFERENCE DATA

SRP = .9030 SO. IN XMRP = 5.3570 IN.
 LRP = .0000 IN. YMRP = .0000 IN.
 ZMRP = .0000 IN.
 SCALE = .0036

RUN NO. 577 0 RIVL = 7.03 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CLMM	CYM	CYMM	CBL	CA	CAB	XCP/L	CFB1	CFB2
1.931	49.940	15.11600	9.33870	-1.49300	.06410	-.88180	1.31390	.00000	.51610	.00000	.00000
1.931	51.850	15.87970	9.69300	-1.34740	-.04480	-.69350	1.28970	.00000	.51610	.00000	.00000
1.931	53.870	16.95500	10.47360	-1.70710	-.17420	-.73330	1.24340	.00000	.51770	.00000	.00000
1.931	55.890	18.02820	10.80210	-1.85980	-.34370	-.77730	1.20550	.00000	.51710	.00000	.00000
1.931	63.910	19.10070	11.98770	-1.94290	-.46840	-.77680	1.11230	.00000	.51610	.00000	.00000
1.931	67.910	19.97810	11.83390	-2.00900	-.46810	-.77320	1.08850	.00000	.51920	.00000	.00000
1.931	69.810	20.31360	11.79820	-2.03850	-.46670	-.76140	1.08850	.00000	.51920	.00000	.00000
1.931	59.870	17.93660	10.82460	-1.83810	-.32350	-.75030	1.19800	.00000	.00000	.00000	.00000
GRADIENT		.26427	.12906	-.02793	-.02730	-.00445	-.01317	.00000	.00000	.00000	.00000

RUN NO. 103/ 0 RIVL = 7.14 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CLM	CLMM	CYM	CYMM	CBL	CA	CAB	XCP/L	CFB1	CFB2
3.479	49.760	13.61700	6.61320	-.82240	-.03360	-.58580	1.42140	.00000	.52690	.00000	.00000
3.479	51.870	14.23320	7.04020	-.84680	-.01690	-.61330	1.42600	.00000	.52620	.00000	.00000
3.479	53.870	15.44790	7.87970	-.91100	-.01430	-.69030	1.42130	.00000	.52490	.00000	.00000
3.479	59.710	16.37310	8.68360	-.96590	-.07920	-.70330	1.37370	.00000	.52390	.00000	.00000
3.479	63.720	17.35570	9.66530	-.98160	-.29880	-.68100	1.23390	.00000	.52160	.00000	.00000
3.479	67.790	18.39380	10.25930	-.99860	-.33290	-.65820	1.11360	.00000	.52100	.00000	.00000
3.479	69.690	18.75910	10.44360	-1.01870	-.39780	-.63830	1.04640	.00000	.52110	.00000	.00000
3.479	59.710	16.56420	6.65790	-.96980	-.08690	-.70330	1.37430	.00000	.52390	.00000	.00000
GRADIENT		.23890	.19790	-.00962	-.02077	-.00336	-.01924	.00000	-.00000	.00000	.00000



MSFC 590 (SAC26F) 142-IN. SBB (139) NBREISE ELT

REFERENCE DATA

BREF = .5030 SQ. IN XMRP = 5.5570 IN.
 LREF = .0000 IN. YMRP = .0000 IN.
 BREF = .0000 IN. ZMRP = .0000 IN.
 SCALE = .0039

PARAMETRIC DATA

BETA = .000 PHI = 133.000
 FMSTK = .000 AFTSTR = .000
 ATMRNG = 1.000 ATMS = .000
 CONFIC = 3.000 SHDSTK = .000
 ELT = 1.000 SEPRKT = 1.000

RUN NO. 91/ 0 RIVL = 4.94 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CMH	CLMH	CTH	CYMH	CBL	CA	CAB	XCP/L	CPB1	CPB2
.998	49.810	7.20790	9.60770	-1.64080	2.26940	-7.75980	.37240	.00000	.45780	.00000	.00000
.998	51.720	7.80940	10.32490	-1.69830	3.03430	-7.9492	.29390	.00000	.45870	.00000	.00000
.998	55.740	9.01360	11.59640	-2.22390	6.30260	-.93100	.17190	.00000	.46160	.00000	.00000
.998	59.760	10.76970	13.26140	-1.46400	3.26990	-.86170	-.02380	.00000	.46610	.00000	.00000
.998	63.760	11.41950	14.11680	-1.17320	3.31160	-.91220	-.14610	.00000	.46370	.00000	.00000
.998	67.770	12.09150	13.78300	-.49620	4.93950	-.93860	-.16210	.00000	.47360	.00000	.00000
.998	69.670	12.31540	13.62890	.61070	4.66690	-.96070	-.09100	.00000	.47490	.00000	.00000
.998	59.760	10.77300	13.39960	-1.55560	3.32660	-.87160	-.02130	.00000	.46510	.00000	.00000
GRADIENT		.26434	.22263	.13421	.07348	-.00982	-.02663	.00000	.00000	.00000	.00000

RUN NO. 92/ 0 RIVL = 6.26 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CMH	CLMH	CTH	CYMH	CBL	CA	CAB	XCP/L	CPB1	CPB2
.905	50.080	11.19740	15.20370	.73140	3.47160	-.72320	.37990	.00000	.45990	.00000	.00000
.905	52.040	11.81580	16.81180	1.42260	2.61800	-.74910	.31370	.00000	.45930	.00000	.00000
.905	56.050	12.99680	18.28220	1.55720	3.66400	-.79310	.38170	.00000	.45180	.00000	.00000
.905	60.100	13.68880	19.00720	1.95200	3.71090	-.83390	.28000	.00000	.45490	.00000	.00000
.905	64.080	14.44590	18.62670	2.46500	3.71290	-.88030	.19030	.00000	.46140	.00000	.00000
.905	68.020	14.73270	16.97460	2.64170	-.10470	-.91460	.20340	.00000	.47260	.00000	.00000
.905	69.920	14.69720	16.60620	2.92310	2.99810	-.93360	.29470	.00000	.47560	.00000	.00000
.905	66.100	13.79940	16.93030	1.93370	3.74370	-.82720	.27240	.00000	.45460	.00000	.00000
GRADIENT		.18494	.04754	-.10307	-.00374	-.01056	-.01706	.00000	.00115	.00000	.00000

RUN NO. 93/ 0 RIVL = 6.66 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CMH	CLMH	CTH	CYMH	CBL	CA	CAB	XCP/L	CPB1	CPB2
1.203	50.100	13.42940	13.57940	2.11160	1.20810	-.74030	1.01640	.00000	.43410	.00000	.00000
1.203	52.010	14.25260	14.14410	2.06950	1.21180	-.75910	.95560	.00000	.48560	.00000	.00000
1.203	56.020	15.34620	14.57220	2.17950	1.08760	-.78940	.84310	.00000	.48910	.00000	.00000
1.203	60.040	16.44510	15.30720	2.23840	1.26050	-.80900	.79320	.00000	.49060	.00000	.00000
1.203	64.020	17.20730	14.91450	2.35770	1.31640	-.83010	.78190	.00000	.49590	.00000	.00000
1.203	67.990	18.00610	14.26250	2.45630	1.42260	-.83200	.75590	.00000	.50190	.00000	.00000
1.203	69.870	18.20640	13.77270	2.47130	1.35420	-.86130	.71700	.00000	.50490	.00000	.00000
1.203	66.030	16.49880	15.42490	2.29210	1.19290	-.79930	.79420	.00000	.49030	.00000	.00000
GRADIENT		.23956	.01220	.02075	.01137	-.06132	-.01359	.00000	.00102	.00000	.00000

MSFC 590(SA20F) 142-IN. SRB(150) NBR2101 ELT

(R05017) (11 DEC 73)

REFERENCE DATA

BRP = .5000 SQ. IN YMRP = 5.3570 IN.
 LRP = .6000 IN. YMRP = .0000 IN.
 BRP = .6000 IN. ZMRP = .0000 IN.
 SCALE = .0016

PARAMETRIC DATA

BETA = .000 PH1 = 1339.000
 PMOSTK = .000 APT8TK = .000
 ATRNG = 1.000 ATHS = .000
 COMPC = 3.000 SMOSTK = .000
 ELT = 1.000 SEPRKT = 1.000

RUN NO. 96/ 0 RML = 7.07 GRADIENT INTERVAL = -3.00/ 5.00

MACH	ALPHA	CMH	CLMH	CM	CYM	CBL	CA	CAB	XCP/L	CPB1	CPB2
1.947	49.930	13.07200	6.88330	1.46370	.03160	-.69210	1.21320	.00000	.51290	.00000	.00000
1.947	51.040	14.06360	6.22410	1.52560	.12020	-.66120	1.18670	.00000	.51300	.00000	.00000
1.947	55.030	15.13600	9.64000	1.62330	.30220	-.70180	1.13060	.00000	.51460	.00000	.00000
1.947	59.060	16.16360	10.03790	1.76210	.51140	-.74610	1.10420	.00000	.51600	.00000	.00000
1.947	63.090	17.07000	10.73690	1.85610	.66530	-.76270	1.02680	.00000	.51520	.00000	.00000
1.947	67.090	18.01160	11.08690	1.89820	.68730	-.77920	.97470	.00000	.51630	.00000	.00000
1.947	69.730	18.27360	10.99730	1.90360	.74610	-.76330	.92680	.00000	.51740	.00000	.00000
1.947	59.030	18.06900	9.77710	1.73270	.53230	-.73230	1.10130	.00000	.51690	.00000	.00000
GRADIENT		.23770	.10990	.02317	.03926	-.00696	-.01413	.00000	.00021	.00000	.00000

RUN NO. 102/ 0 RML = 7.13 GRADIENT INTERVAL = -3.00/ 5.00

MACH	ALPHA	CMH	CLMH	CM	CYM	CBL	CA	CAB	XCP/L	CPB1	CPB2
3.479	49.760	12.91330	6.17210	1.33120	-.33520	-.69390	1.37360	.00000	.52730	.00000	.00000
3.479	51.070	13.48390	6.82760	1.37300	-.27730	-.71240	1.37020	.00000	.52327	.00000	.00000
3.479	55.700	14.61960	7.94500	1.43330	-.13440	-.73420	1.36970	.00000	.52220	.00000	.00000
3.479	59.720	15.60990	8.86920	1.54010	-.01230	-.73150	1.32110	.00000	.52010	.00000	.00000
3.479	63.720	16.35510	9.07610	1.61910	.10370	-.74460	1.20150	.00000	.51890	.00000	.00000
3.479	67.730	17.41070	10.25530	1.69090	.25190	-.77220	1.06330	.00000	.51890	.00000	.00000
3.479	69.640	17.73060	10.35970	1.71690	.32460	-.77330	.99700	.00000	.51990	.00000	.00000
3.479	59.720	15.61930	6.93650	1.54000	-.02260	-.73750	1.31660	.00000	.51990	.00000	.00000
GRADIENT		.24298	.21208	.01962	.03300	-.00365	-.01916	.00000	-.00043	.00000	.00000

MBPC 990 (8426F) 142-IN. SRB(139) WERE191 ELT

(019010) (11 DEC 73)

REFERENCE DATA

MBEP = .0030 SQ. IN XMRP = 9.5370 IN.
 LABP = .0000 IN. YMRP = .0000 IN.
 WREP = .0000 IN. ZMRP = .0000 IN.
 SCALE = .0036

BETA = .000 PHI = 45.000
 PLOGSTR = .000 AFTSTR = .000
 ATRNG = 1.000 ATMS = .000
 CCONF16 = 3.000 SHDSTR = .000
 ELT = 1.000 SEPRAT = 1.000

PARAMETRIC DATA

RUN NO. 76/ 0 RIVL = 4.94 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CMH	CLMH	CYH	CYMH	CBL	CA	CAB	XCP/L	CPB1	CPB2
.995	79.990	12.71950	10.00900	.00110	.02690	-.02890	.14440	.0002	.50240	.00000	.00000
.995	81.000	12.71000	9.45960	-.04240	.17120	.00420	.28910	.0000L	.50390	.00000	.00000
.995	83.030	12.82720	8.12250	-.27640	1.00740	-.02760	.32890	.00000	.51490	.00000	.00000
.995	85.010	12.99560	5.85480	-.17480	.84390	-.04390	.47680	.00000	.52970	.00000	.00000
.995	87.760	12.97030	4.51070	-.22690	.81970	-.02260	.51640	.00000	.53920	.00000	.00000
.995	97.750	12.61510	2.60200	-.27960	1.09490	-.03910	.44070	.00000	.54670	.00000	.00000
.995	99.640	12.09010	2.47360	-.31150	1.76440	-.05390	.32450	.00000	.55990	.00000	.00000
.995	99.010	15.03570	5.90890	-.14410	.82450	-.04080	.47240	.00000	.52960	.00000	.00000
GRADIENT		.00858	-.40208	-.01349	.07435	-.00143	.01060	.00000	.00239	.00000	.00000

RUN NO. 77/ 0 RIVL = 6.26 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CMH	CLMH	CYH	CYMH	CBL	CA	CAB	XCP/L	CPB1	CPB2
.901	80.160	15.84400	13.22300	.12460	-.50990	-.01740	.43100	.00000	.49950	.00000	.00000
.901	82.040	12.97050	12.05740	.11390	-.30460	-.00570	.48520	.00000	.50500	.00000	.00000
.901	83.900	16.34050	8.57750	.10760	.05660	-.01260	.53090	.00000	.52370	.00000	.00000
.901	85.820	16.68300	6.41670	.15520	-.00990	.00920	.55430	.00000	.53520	.00000	.00000
.901	93.770	16.43750	4.56740	.16680	-.00810	.00600	.48620	.00000	.54390	.00000	.00000
.901	97.710	16.28260	2.36360	.10790	.02210	-.01900	.34740	.00000	.55460	.00000	.00000
.901	99.580	16.06290	1.36600	.04590	.20390	-.03990	.24740	.00000	.55960	.00000	.00000
.901	99.030	16.51230	6.36650	.15440	-.04460	-.01090	.53140	.00000	.55510	.00000	.00000
GRADIENT		.01434	-.60403	-.00186	.02695	-.00070	-.00948	.00000	.00310	.00000	.00000

RUN NO. 76/ 0 RIVL = 6.65 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CMH	CLMH	CYH	CYMH	CBL	CA	CAB	XCP/L	CPB1	CPB2
1.195	80.160	19.13190	12.04330	-.04910	-.36190	-.14490	.57090	.00000	.51520	.00000	.00000
1.195	82.070	19.31110	11.64320	-.06080	-.34780	-.14490	.53440	.00000	.51740	.00000	.00000
1.195	83.990	19.72060	9.84190	-.03760	-.04370	-.15440	.48470	.00000	.52580	.00000	.00000
1.195	85.940	19.82090	6.83670	-.14150	.11960	-.16010	.36230	.00000	.53020	.00000	.00000
1.195	93.900	20.09820	6.38800	-.19320	.20640	-.16020	.19640	.00000	.53230	.00000	.00000
1.195	97.890	19.79990	7.56940	-.17900	.26210	-.15760	.01830	.00000	.53490	.00000	.00000
1.195	99.770	19.39650	6.99990	-.17450	.30350	-.14310	-.04940	.00000	.53710	.00000	.00000
1.195	99.960	19.86480	9.32610	-.13140	.04330	-.15710	.35050	.00000	.52820	.00000	.00000
GRADIENT		.02275	-.24848	-.00763	.03344	-.00055	-.03290	.00000	.00109	.00000	.00000

MSFC 590 (SAREF) 142-IN. SRB (159) NRE151 ELT

(R05018) (11 DEC 73)

REFERENCE DATA

WREF = .0030 SQ. IN YMRP = 5.5370 IN.
 LREF = .0000 IN. YMRP = .0000 IN.
 WREF = .0000 IN. ZMRP = .0000 IN.
 SCALE = .0036

PARAMETRIC DATA

BETA = .000 PHT = 45.000
 PADSTK = .000 AFTSTK = .070
 ATMRNG = 1.000 ATMS = .070
 CONFIC = 3.000 SHDSTK = .900
 ELT = 1.000 SEPRKT = 1.000

RUN NO. 35/ 0 RIVL = 7.16 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CWM	CLMM	CYM	CYMH	CBL	CA	CAB	XCP/L	CFP1	CFP2
1.965	90.130	19.63370	10.23090	-19790	-18430	-17590	.61750	.00000	.52390	.00000	.00000
1.965	92.020	19.61710	10.01830	-20100	-19090	-17720	.56340	.00000	.52330	.00000	.00000
1.965	94.000	19.54200	9.48940	-19410	-07420	-17670	.44360	.00000	.52780	.00000	.00000
1.965	96.980	19.96690	8.73070	-19360	-06300	-18140	.32700	.00000	.53090	.00000	.00000
1.965	93.930	19.60570	9.01430	-17410	-05760	-16940	.18940	.00000	.53350	.00000	.00000
1.965	97.890	19.30770	7.07330	-21180	.02630	-16330	.06300	.00000	.53700	.00000	.00000
1.965	95.770	19.38160	6.63090	-22190	.03770	-16300	-.00370	.00000	.53860	.00000	.00000
1.965	99.980	19.90790	9.73270	-19870	-03700	-17090	.32460	.00000	.53880	.00000	.00000
GRADIENT		-.01560	-.16468	-.00097	.01043	.00073	-.03169	.00000	.00074	.00000	.00000

RUN NO. 307/ 0 RIVL = 7.16 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CWM	CLMM	CYM	CYMH	CBL	CA	CAB	XCP/L	CFP1	CFP2
3.479	80.040	18.72340	10.05980	-06490	-07330	-14130	.69350	.00000	.52270	.00000	.00000
3.479	81.930	18.69830	9.65900	-05590	-07740	-14180	.61670	.00000	.52400	.00000	.00000
3.479	85.900	19.16030	9.40310	-06760	-05740	-13200	.46720	.00000	.52650	.00000	.00000
3.479	89.690	18.29390	8.71370	-06490	-02370	-13220	.30930	.00000	.52970	.00000	.00000
3.479	93.630	19.24390	8.07830	-07190	-02660	-13460	.13770	.00000	.53230	.00000	.00000
3.479	97.650	18.95610	7.40190	-08490	-05890	-13920	-.03900	.00000	.53470	.00000	.00000
3.479	95.750	18.76650	7.06390	-08980	-05910	-12870	-.12010	.00000	.53570	.00000	.00000
3.479	89.690	19.27800	8.68260	-07280	-04450	-13290	.30800	.00000	.52980	.00000	.00000
GRADIENT		.00346	-.15360	-.00140	.00123	.00039	-.04104	.00000	.00067	.00000	.00000

MSFC 990(9929F); 142-IN. 888(139) NRES151 ELT

(R09019) (11 DEC 73)

REFERENCE DATA

WREF = .9036 99. IN XMRP = 3.5570 IN.
 LRFP = .0000 IN. YMRP = .0000 IN.
 BRFP = .0000 IN. ZMRP = .0000 IN.
 SCALE = .0036

BETA = .000 PHI = 90.000
 PLASTK = .000 AFTSTK = .000
 ATMRG = 1.000 ATMS = .000
 COAFLG = 3.000 SHDSTK = .000
 ELT = 1.000 SEPRKT = 1.000

PARAMETRIC DATA

RUN NO. 05/ 0 P = 4.96 GRADIENT INTERVAL = -5.00/ 5.00

WACH	ALPHA	OW	CLM	JVM	CVM	CBL	CA	CAB	XCP/L	CFB1	CFB2
.599	00.000	14.92780	13.63480	-3.82830	1.59900	-.54890	.23970	.00000	.49190	.00000	.00000
.599	01.930	14.90790	12.34970	-3.75010	1.11820	-.54930	.31620	.00000	.49930	.00000	.00000
.599	03.860	14.88930	9.39100	-3.86910	.54670	-.56730	.38400	.00000	.51510	.00000	.00000
.599	05.820	15.07620	6.92090	-3.84560	.82560	-.55920	.41490	.00000	.52910	.00000	.00000
.599	07.780	15.26880	4.73390	-3.74320	.71000	-.59020	.44000	.00000	.54120	.00000	.00000
.599	09.740	15.30150	2.97100	-3.86300	.72810	-.81320	.29360	.00000	.53070	.00000	.00000
.599	09.620	15.15920	1.87620	-3.93070	.99130	-.59810	.21470	.00000	.53640	.00000	.00000
.599	09.820	15.10360	6.89870	-3.87860	.88830	-.56730	.42130	.00000	.52930	.00000	.00000
GRADIENT	.01842		-.59755	-.00373	-.02337	-.07309	-.00116	.00000	.00229	.00000	.00000

RUN NO. 06/ 0 RIN/L = 6.24 GRADIENT INTERVAL = -5.00/ 5.00

WACH	ALPHA	OW	CLM	CVM	CVM	CBL	CA	CAB	XCP/L	CFB1	CFB2
.898	00.200	17.82925	14.20370	-2.83340	-.24670	-.84210	.49390	.00000	.90080	.00000	.00000
.898	02.070	17.87830	13.15620	-2.86680	-.27930	-.84870	.47870	.00000	.90380	.00000	.00000
.898	03.980	17.83440	10.67070	-2.89930	-.32760	-.86310	.46930	.00000	.91770	.00000	.00000
.898	05.890	18.12630	8.00130	-2.83210	-.19980	-.86020	.52340	.00000	.93030	.00000	.00000
.898	07.790	18.11980	5.63360	-2.83240	.11160	-.86640	.46320	.00000	.94110	.00000	.00000
.898	09.730	17.93610	3.10090	-2.84660	.20330	-.86520	.33600	.00000	.93240	.00000	.00000
.898	09.590	17.81430	1.88790	-2.89960	.40920	-.87590	.23220	.00000	.93790	.00000	.00000
.898	09.890	18.11400	8.00380	-2.83100	-.21320	-.86460	.51790	.00000	.93030	.00000	.00000
GRADIENT	.01443		-.63928	.00060	.03473	-.00136	-.01077	.00000	.00295	.00000	.00000

RUN NO. 07/ 0 RIN/L = 6.66 GRADIENT INTERVAL = -5.00/ 5.00

WACH	ALPHA	OW	CLM	CVM	CVM	CBL	CA	CAB	XCP/L	CFB1	CFB2
1.202	00.200	21.17530	12.89100	-2.59470	-.44700	-.74980	.58940	.00000	.51690	.00000	.00000
1.202	02.090	21.27460	12.44690	-2.58510	-.56360	-.76510	.57230	.00000	.51860	.00000	.00000
1.202	03.910	21.60190	11.28940	-2.63930	-.53090	-.77830	.52490	.00000	.52390	.00000	.00000
1.202	05.890	21.66920	10.04990	-2.66870	-.49330	-.78490	.39930	.00000	.52870	.00000	.00000
1.202	07.830	21.76570	8.60040	-2.67410	-.44030	-.79030	.23330	.00000	.53430	.00000	.00000
1.202	09.760	21.83140	7.30370	-2.68060	-.40980	-.77190	.03630	.00000	.53900	.00000	.00000
1.202	09.740	21.46670	6.74310	-2.66580	-.40400	-.76060	-.06330	.00000	.54090	.00000	.00000
1.202	09.970	21.60690	9.85260	-2.63320	-.45970	-.78170	.39940	.00000	.52930	.00000	.00000
GRADIENT	.01819		-.32119	-.00464	.00377	-.02060	-.03394	.00000	.00125	.00000	.00000

MSFC 590 (SA28F) 142-IN. SRB (138) NRE2151 ELT

(R95019) (11 DEC 73)

REFERENCE DATA

BREF = .3030 36. IN XMRP = 5.5570 IN.
 LREF = .0000 IN. YMRP = .0000 IN.
 BREF = .0000 IN. ZMRP = .0000 IN.
 SCALE = .0036

PARAMETRIC DATA

BETA = .000 PH1 = 90.000
 FADSTK = .090 AFTSTK = .030
 ATHRG = 1.000 ATHS = .030
 CGFLG = 3.000 SHDSTK = .030
 ELT = 1.000 SEPRAT = 1.530

RUN NO. 56/ 0 RVL = 7.06 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNH	CLMH	CYH	CYH	CYH	CBL	CA	CAB	XCP/L	CFP1	CFP2
1.934	80.140	21.50340	10.63440	-2.06930	-2.06930	-2.06930	-2.06930	.69820	.00000	.52620	.00000	.00000
1.934	82.030	21.73580	10.44960	-2.08860	-2.08860	-2.08860	-2.08860	.63140	.00000	.52730	.00000	.00000
1.934	83.990	21.91430	9.78330	-2.13740	-2.13740	-2.13740	-2.13740	.51060	.00000	.53010	.00000	.00000
1.934	85.970	21.81970	9.26030	-2.15730	-2.15730	-2.15730	-2.15730	.38160	.00000	.53190	.00000	.00000
1.934	87.940	21.79690	8.67100	-2.13920	-2.13920	-2.13920	-2.13920	.23190	.00000	.53410	.00000	.00000
1.934	89.900	21.48950	7.91060	-2.16140	-2.16140	-2.16140	-2.16140	.09230	.00000	.53690	.00000	.00000
1.934	91.790	21.28790	7.41210	-2.15270	-2.15270	-2.15270	-2.15270	.01790	.00000	.53910	.00000	.00000
1.934	89.970	21.82310	9.30160	-2.14930	-2.14930	-2.14930	-2.14930	.37390	.00000	.53180	.00000	.00000
GRADIENT		-.01434	-.16311	-.00336	-.01031	-.00001	-.03413		.00000	.00060	.00000	.00000

RUN NO. 104/ 0 RVL = 7.14 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNH	CLMH	CYH	CYH	CYH	CBL	CA	CAB	XCP/L	CFP1	CFP2
3.479	80.030	20.00110	15.63890	-1.02800	-1.02800	-1.02800	-1.02800	.72820	.00000	.52310	.00000	.00000
3.479	81.940	20.16360	10.45130	-1.02340	-1.02340	-1.02340	-1.02340	.65020	.00000	.52430	.00000	.00000
3.479	83.920	20.43710	9.89410	-1.02660	-1.02660	-1.02660	-1.02660	.49360	.00000	.52700	.00000	.00000
3.479	85.900	20.53710	9.25430	-1.02660	-1.02660	-1.02660	-1.02660	.32910	.00000	.52990	.00000	.00000
3.479	87.880	20.45080	8.52730	-1.02730	-1.02730	-1.02730	-1.02730	.15110	.00000	.53230	.00000	.00000
3.479	89.870	20.21990	8.07120	-1.02640	-1.02640	-1.02640	-1.02640	-.03170	.00000	.53400	.00000	.00000
3.479	91.790	20.03370	7.53860	-1.02870	-1.02870	-1.02870	-1.02870	-.10680	.00000	.53590	.00000	.00000
3.479	89.900	20.52830	9.23920	-1.02480	-1.02480	-1.02480	-1.02480	.32870	.00000	.52970	.00000	.00000
GRADIENT		.00174	-.15533	-.00010	.00496	.00014	-.04260		.00000	.00064	.00000	.00000



MSFC 390(SA26F) 142-IN. SRB(139) NRE161 ELT

(R193020) (11 DEC 73)

REFERENCE DATA

WREP = .5030 30. IN XMRP = 2.5370 IN.
 LMRP = .6000 IN. YMRP = .0000 IN.
 WREP = .6000 IN. ZMRP = .0000 IN.
 SCALE = .0036

PARAMETRIC DATA

BETA = .000 PHI = 135.000
 FLASTK = .000 AFTSTR = .925
 ATWRNG = 1.000 ATMS = .222
 COAFLG = 3.000 SHDSTR = .000
 ELT = 1.000 SEPRRT = 1.000

RUN NO. 08/ 0 RIVL = 3.00 GRADIENT INTERVAL = -3.00/ 3.00

WCH	ALPHA	CMH	CLMH	CYH	CTMH	CBL	CA	CAB	XCP/L	CPB1	CPB2
.999	78.990	12.46880	10.01820	1.69390	3.11020	-.99690	.38830	.00000	.50100	.00000	.00000
.999	81.890	12.47620	9.99390	1.70910	4.31390	-1.00010	.41300	.00000	.50710	.00000	.00000
.999	83.930	12.63430	7.77900	1.91080	3.62410	-1.00860	.45930	.00000	.51640	.00000	.00000
.999	89.810	12.74080	3.67190	2.17030	1.73090	-.99900	.48910	.00000	.52890	.00000	.00000
.999	93.730	12.69600	3.94990	2.43740	1.32990	-1.00760	.49360	.00000	.54120	.00000	.00000
.999	97.40	12.94100	2.42760	2.46920	-.99430	-.99430	.36220	.00000	.53970	.00000	.00000
.999	99.610	12.51280	1.69120	2.65570	-.45390	-1.00300	.27020	.00000	.55370	.00000	.00000
.999	99.790	12.71610	3.90390	2.13100	1.68730	-1.00260	.50320	.00000	.52970	.00000	.00000
GRADIENT	.00311	-.42929	.00047	-.25627	-.00310	-.00391	.00000	.00000	.00290	.00000	.00000

RUN NO. 05/ 0 RIVL = 6.33 GRADIENT INTERVAL = -3.00/ 3.00

WCH	ALPHA	CMH	CLMH	CYH	CTMH	CBL	CA	CAB	XCP/L	CPB1	CPB2
.093	60.180	15.45360	13.11650	3.12210	2.35360	-.99910	.44320	.00000	.49730	.00000	.00000
.093	62.030	15.33990	12.29370	3.13680	2.19280	-1.00390	.43710	.00000	.50230	.00000	.00000
.093	63.940	15.82380	9.76660	3.15140	1.97480	-1.01930	.48830	.00000	.51620	.00000	.00000
.093	69.690	16.02140	7.23730	3.24920	1.42790	-1.02440	.49400	.00000	.52970	.00000	.00000
.093	93.780	16.03640	4.67230	3.40650	-.89330	-1.02130	.44360	.00000	.54170	.00000	.00000
.093	97.720	15.83330	2.41940	3.51600	.31230	-1.03340	.29460	.00000	.55410	.00000	.00000
.093	99.540	15.67420	1.27260	3.47190	.30230	-1.02430	.17920	.00000	.53990	.00000	.00000
.093	99.860	15.94960	7.16130	3.24150	1.40360	-1.02320	.48710	.00000	.52990	.00000	.00000
GRADIENT	.01548	-.61857	.02161	-.10948	-.00173	-.01190	.00000	.00000	.00326	.00000	.00000

RUN NO. 94/ 0 RIVL = 6.73 GRADIENT INTERVAL = -3.00/ 3.00

WCH	ALPHA	CMH	CLMH	CYH	CTMH	CBL	CA	CAB	XCP/L	CPB1	CPB2
1.193	60.130	19.05390	11.13290	2.63130	1.11720	-.89700	.58830	.00000	.51890	.00000	.00000
1.193	62.010	19.24910	10.66390	2.64140	1.16920	-.90470	.59940	.00000	.52130	.00000	.00000
1.193	63.970	19.54230	9.99430	2.65690	1.03430	-.91110	.50380	.00000	.52320	.00000	.00000
1.193	69.930	19.76230	6.61270	2.69690	1.18210	-.90700	.39670	.00000	.53100	.00000	.00000
1.193	93.900	19.64900	4.28740	2.65330	1.09640	-.90410	.20980	.00000	.53230	.00000	.00000
1.193	97.860	19.39360	7.33270	2.59340	1.03300	-.89660	.00390	.00000	.53320	.00000	.00000
1.193	99.760	19.32290	7.12240	2.56410	.97160	-.88220	-.08730	.00000	.53630	.00000	.00000
1.193	99.520	19.72100	6.66760	2.66260	1.16480	-.90710	.39280	.00000	.53070	.00000	.00000
GRADIENT	.01873	-.20177	-.00356	-.00669	-.00669	-.03376	.00000	.00000	.00089	.00000	.00000

TABULATED SOURCE DATA, MSFC TWT 980/995

(R95080) (11 DEC 73)

MSFC 590(SA20F) 142-IN. SRB(139) N0RE191 EL1

REFERENCE DATA

WRP = .0030 SQ. IN YMRP = 5.5570 IN. BETA = .000 FFI = 135.000
 LWRP = .0000 IN. YMRP = .0000 IN. PWOSTR = .000 AFTSTR = .000
 WRP = .0000 IN. YMRP = .0000 IN. ATHING = 1.000 ATMS = .000
 SCALE = .0036 COAFC = 3.000 SHOSTR = .000
 ELT = 1.000 SERRT = 1.000

PARAMETRIC DATA

RUN NO. 99/ 0 RIVL = 7.05 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNH	CLMH	CYM	CYH	CBL	CA	CAB	XCP/L	CPB1	CPB2
1.934	80.130	19.44560	10.02930	2.01140	.77940	-.82230	.62390	.00000	.32490	.00000	.00000
1.934	82.020	19.56160	9.76130	2.01180	.79320	-.81360	.56720	.00000	.32370	.00000	.00000
1.934	83.980	19.66370	9.13890	2.03820	.80360	-.82690	.43770	.00000	.32690	.00000	.00000
1.934	85.920	19.63630	8.32360	2.05760	.73360	-.82570	.31680	.00000	.33130	.00000	.00000
1.934	87.920	19.73050	7.76360	2.04870	.66300	-.82190	.16990	.00000	.33440	.00000	.00000
1.934	87.670	19.44140	6.76160	2.00670	.63930	-.83230	.01120	.00000	.33920	.00000	.00000
1.934	89.760	19.32730	6.49130	2.00650	.56700	-.81920	-.06890	.00000	.33910	.00000	.00000
1.934	89.960	19.78190	6.75110	2.03690	.75600	-.82350	.29760	.00000	.33040	.00000	.00000
GRADIENT		-.00734	-.19330	-.00013	-.01105	-.00022	-.03334	.00000	.00076	.00000	.00000

RUN NO. 101/ 0 RIVL = 7.12 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNH	CLMH	CYM	CYH	CBL	CA	CAB	XCP/L	CPB1	CPB2
3.479	80.040	19.96940	10.24160	1.86460	.56760	-.82370	.68790	.00000	.32230	.00000	.00000
3.479	81.840	19.15230	10.01500	1.88530	.56240	-.82620	.61530	.00000	.32390	.00000	.00000
3.479	83.920	19.40390	9.47390	1.90690	.60350	-.83290	.46320	.00000	.32670	.00000	.00000
3.479	85.690	19.50690	8.77900	1.92090	.57440	-.83310	.29710	.00000	.32990	.00000	.00000
3.479	83.630	19.47160	7.92600	1.92320	.58430	-.83600	.10890	.00000	.33340	.00000	.00000
3.479	87.940	19.24360	7.04010	1.90040	.51230	-.82690	-.09790	.00000	.33670	.00000	.00000
3.479	89.730	19.02910	6.67950	1.87930	.49790	-.81640	-.19220	.00000	.33790	.00000	.00000
3.479	89.690	19.49790	6.73320	1.90040	.54800	-.84930	.29380	.00000	.32990	.00000	.00000
GRADIENT		.00448	-.18463	.00094	-.00449	.00016	-.04476	.00000	.00090	.00000	.00000



REFERENCE DATA

MACH = .9030 90. 1M XMRP = 5.5570 IN.
 WREF = .0000 1M. YMRP = .0000 IN.
 WREF = .0000 1M. ZMRP = .0000 IN.
 SCALE = .0010

PARAMETRIC DATA

BETA = .0000 PH1 = 49.000
 PADSTR = .0000 APTSTR = .0000
 ATHRNG = 1.0000 ATMS = .0000
 COMFLC = 3.0000 SHDSTR = .0000
 DLT = 1.0000 SEPRKT = 1.0000

RUN NO. 64/ 0 RIVL = 4.00 GRADIENT INTERVAL = -9.00/ 9.00

MACH	ALPHA	OM	CLM	CYM	CBL	CA	CAS	XCPVL	CPVL	CPSE
.900	130.170	6.86730	-6.11370	-1.04090	-1.18300	-1.04400	.00000	.64590	.00000	.00000
.900	128.260	7.04170	-6.52700	-1.09390	-1.13140	-1.17910	.00000	.64810	.00000	.00000
.900	124.240	6.76900	-7.38170	-1.43560	-1.11400	-1.44400	.00000	.63500	.00000	.00000
.900	120.230	10.31300	-6.68840	-1.09700	-1.17700	-1.21300	.00000	.61930	.00000	.00000
.900	116.260	11.20300	-4.30320	-0.60000	-1.19880	-0.93900	.00000	.59840	.00000	.00000
.900	112.290	11.73620	-2.97360	.56190	-1.19300	-0.77540	.00000	.58720	.00000	.00000
.900	110.400	12.00300	-2.27460	.37030	-0.84410	-0.43430	.00000	.58200	.00000	.00000
.900	120.230	10.17320	-6.22620	-1.00730	-0.90200	-1.11300	.00000	.61630	.00000	.00000
GRADIENT								.60343	.00000	.00000

RUN NO. 65/ 0 RIVL = 6.20 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	OM	CLM	CYM	CBL	CA	CAS	XCPVL	CPVL	CPSE
.900	129.930	10.39810	-7.37120	-0.29030	-0.86030	-1.17360	.00000	.62440	.00000	.00000
.900	126.020	11.13610	-7.81190	-0.37900	-0.97300	-1.63740	.00000	.62160	.00000	.00000
.900	124.010	12.47090	-7.63740	-1.09000	-1.08400	-1.37320	.00000	.61630	.00000	.00000
.900	120.010	13.33500	-7.10060	-0.67130	-1.03900	-1.15400	.00000	.61000	.00000	.00000
.900	116.030	14.06010	-6.32930	-0.00600	-0.82300	-0.77660	.00000	.60320	.00000	.00000
.900	112.050	14.62910	-5.46030	-0.14600	-0.61200	-0.43350	.00000	.59790	.00000	.00000
.900	110.170	15.04410	-4.65630	-0.28600	-0.45300	-0.30060	.00000	.59180	.00000	.00000
.900	120.010	13.44560	-7.21640	-1.23200	-1.07900	-1.15290	.00000	.61030	.00000	.00000
GRADIENT								.62166	.00000	.00000

RUN NO. 66/ 0 RIVL = 6.70 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	OM	CLM	CYM	CBL	CA	CAS	XCPVL	CPVL	CPSE
1.201	130.020	13.08600	-2.19330	-0.26860	-1.13140	-1.93010	.00000	.58920	.00000	.00000
1.201	126.120	13.72240	-1.94810	-0.26760	-1.30000	-1.61480	.00000	.57910	.00000	.00000
1.201	124.140	15.03300	-1.00900	-0.27190	-1.39000	-1.52190	.00000	.57200	.00000	.00000
1.201	120.170	15.91840	.14560	-0.26160	-1.42300	-1.30740	.00000	.56390	.00000	.00000
1.201	116.230	16.69420	1.47940	-0.26660	-1.48400	-0.99080	.00000	.55940	.00000	.00000
1.201	112.230	17.54010	2.20920	-0.23990	-1.44900	-0.66970	.00000	.55630	.00000	.00000
1.201	110.330	17.73640	2.33330	-0.22310	-1.23390	-0.31610	.00000	.55590	.00000	.00000
1.201	120.170	15.90760	.28410	-0.26290	-1.46900	-1.30340	.00000	.56310	.00000	.00000
GRADIENT								.60132	.00000	.00000

MSFC 990 (SA26F) 142-IN. SRB (139) REBELS1 ELT

REFERENCE DATA

BREF = .2030 SQ. IN XMRP = 3.5570 IN.
 LREF = .6000 IN. YMRP = .0000 IN.
 BRER = .8000 IN. ZMRP = .0000 IN.
 SCALE = .0036

BETA = .0000 PMI = 45.000
 PLASTK = .0000 AFTSK = .0000
 ATHEMG = 1.0000 ATMS = .0000
 COAFIC = 3.0000 SMOSTR = .0000
 ELT = 1.0000 SEPRAT = 1.0000

RUN NO. 63/ 0 RVL = 7.04 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CMW	CLMW	CYM	CYMW	CSL	CA	CAS	XCP/L	CPB1	CPB2
1.933	130.190	12.17460	1.51410	-2.1770	-1.1350	-1.09360	-1.91880	.000000	.53640	.00000	.00000
1.933	126.300	12.77630	1.62840	-2.3630	-1.9290	-1.10010	-1.85780	.000000	.53490	.00000	.00000
1.933	124.310	13.98320	2.99060	-3.1290	-2.80310	-1.1940	-1.67400	.000000	.54910	.00000	.00000
1.933	120.290	15.29890	3.19600	-3.9500	-3.7000	-1.2600	-1.28450	.000000	.54930	.00000	.00000
1.933	116.290	16.27870	3.62890	-3.1280	-3.06470	-1.1330	-1.98330	.000000	.54930	.00000	.00000
1.933	112.290	17.03800	4.35770	-2.7870	-2.8150	-1.13480	-2.2030	.000000	.54370	.00000	.00000
1.933	110.390	17.42980	4.55300	-2.6970	-2.04240	-1.13150	-1.98770	.000000	.54330	.00000	.00000
1.933	120.320	15.04390	3.03560	-2.9250	-3.1190	-1.12440	-1.34030	.000000	.54630	.00000	.00000
GRADIENT		-.26774	-.14839	.00239	-.001679	.00199	-.07031	.000000	.00033	.00000	.00000

(R93022) (11 DEC 75)

MSFC 990 (SA26F) 142-IN. SRB (139) REBELS1 ELT

REFERENCE DATA

BREF = .2030 SQ. IN XMRP = 3.5570 IN.
 LREF = .6000 IN. YMRP = .0000 IN.
 BRER = .8000 IN. ZMRP = .0000 IN.
 SCALE = .0036

BETA = .0000 PMI = 90.000
 PLASTK = .0000 AFTSK = .0000
 ATHEMG = 1.0000 ATMS = .0000
 COAFIC = 3.0000 SMOSTR = .0000
 ELT = 1.0000 SEPRAT = 1.0000

RUN NO. 69/ 0 RVL = 5.11 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CMW	CLMW	CYM	CYMW	CSL	CA	CAS	XCP/L	CPB1	CPB2
.996	130.110	10.13380	-7.68280	-6.23420	-2.85480	-5.8820	-1.77100	.000000	.62840	.00000	.00000
.996	126.180	10.74970	-6.64900	-6.18720	-2.93240	-5.9300	-1.65170	.000000	.61220	.00000	.00000
.996	124.170	12.10690	-6.81340	-7.34210	-1.72060	-5.9910	-1.42730	.000000	.62530	.00000	.00000
.996	120.180	13.29080	-7.98120	-5.95130	-1.7900	-6.2290	-1.13910	.000000	.61550	.00000	.00000
.996	116.220	13.79200	-6.73260	-5.16630	-1.64130	-5.9290	-.85290	.000000	.60530	.00000	.00000
.996	112.210	14.19730	-5.73060	-4.37150	.31670	-5.7290	-.52260	.000000	.59930	.00000	.00000
.996	110.390	13.93000	-4.70920	-4.17750	.74790	-5.6770	-.32820	.000000	.59410	.00000	.00000
.996	120.190	12.94730	-7.36410	-5.81770	-.20540	-6.1120	-1.19590	.000000	.61290	.00000	.00000
GRADIENT		-.20321	-.17180	-.22359	-.18959	-.00109	-.07211	.000000	.00191	.00000	.00000



TABULATED SOURCE DATA: MSFC TWT 980/989

(093023) (11 DEC 73)

MSFC 980 (SAR26F) 142-IN. SRB(139) NERE151 ELT

PARAMETRIC DATA

BETA = .000 PHI = 139.000
 PARSK = .000 AFTSTR = .000
 ATMNG = 1.000 ATMS = .000
 CONF16 = 3.000 SMOSTR = .000
 ELT = 1.000 SEPRRT = 1.000

REFERENCE DATA

WREP = .5030 SA. IN XMRP = 5.9970 IN.
 WREP = .0000 IN. YMRP = .0000 IN.
 WREP = .0000 IN. ZMRP = .0000 IN.
 SCALE = .0036

RUN NO. 617 0 RIVL = 7.03 GRADIENT INTERVAL = -5.00/ 9.00

MACH	ALPHA	CMH	CLMH	CYM	CYH	CBL	CA	CAB	KCP/L	CFP1	CFP2
1.932	130.160	12.56410	1.36200	1.26160	.93160	-.61000	-1.99610	.00000	-.57770	.00000	.00000
1.932	126.270	13.18050	1.76740	1.32930	.93120	-.63470	-1.94200	.00000	-.55560	.00000	.00000
1.932	124.310	14.36300	2.79000	1.47290	.74310	-.67370	-1.76130	.00000	-.53070	.00000	.00000
1.932	120.270	15.66130	3.00940	1.61200	.69030	-.71930	-1.41900	.00000	-.50090	.00000	.00000
1.932	117.270	16.60790	3.31930	1.71350	.62970	-.76060	-1.09730	.00000	-.50000	.00000	.00000
1.932	112.250	17.56060	3.77630	1.80460	.51410	-.76030	-.75190	.00000	-.54900	.00000	.00000
1.932	110.360	17.64020	4.06010	1.89110	.46890	-.79990	-.66750	.00000	-.54900	.00000	.00000
1.932	107.290	15.47320	3.31060	1.56030	.72630	-.72090	-1.43030	.00000	-.54910	.00000	.00000
GRADIENT		-.27000	-.12393	-.02960	.02295	.09971	-.07024	.00000	.00048	.00000	.00000

MSFC 980 (SAR26F) 142-IN. SRB(139) NERE151 ELT

(093024) (11 DEC 73)

PARAMETRIC DATA

BETA = .000 PHI = 43.000
 PARSK = .000 AFTSTR = .000
 ATMNG = 1.000 ATMS = .000
 CONF16 = 3.000 SMOSTR = .000
 ELT = 1.000 SEPRRT = 1.000

REFERENCE DATA

WREP = .5030 SA. IN XMRP = 5.9970 IN.
 WREP = .0000 IN. YMRP = .0000 IN.
 WREP = .0000 IN. ZMRP = .0000 IN.
 SCALE = .0036

RUN NO. 457 0 RIVL = 3.01 GRADIENT INTERVAL = -5.00/ 9.00

MACH	ALPHA	CMH	CLMH	CYM	CYH	CBL	CA	CAB	KCP/L	CFP1	CFP2
.983	169.790	.69130	-1.36970	-.32230	-.11060	-.01930	-1.43370	.00000	.73030	.00000	.00000
.983	167.670	.63410	-1.36640	-.46430	-.26260	-.01710	-1.33390	.00000	.70330	.00000	.00000
.983	163.600	1.26520	-1.80530	-.76920	-.30600	-.03400	-1.67070	.00000	.63940	.00000	.00000
.983	159.740	2.24460	-1.69160	-.73300	.26120	-.09190	-1.62313	.00000	.62900	.00000	.00000
.983	155.690	2.97290	-1.61260	-.57720	1.66220	-.12400	-2.03120	.00000	.61230	.00000	.00000
.983	151.610	3.97200	-1.99290	-.51660	3.20210	-.12620	-2.21050	.00000	.61230	.00000	.00000
.983	149.660	4.03470	-2.41060	-.50390	3.22230	-.11360	-2.26420	.00000	.61330	.00000	.00000
.983	159.740	2.24200	-1.67750	-.77390	.31770	-.06380	-1.63340	.00000	.62760	.00000	.00000
GRADIENT		-.16403	.03326	.00403	-.19021	.09376	-.54212	.00000	.03569	.00000	.00000

MSFC 590 (SAR20F) 142-IN. SRB (139) WIRE151 ELT

(R93024) (11 DEC 73)

REFERENCE DATA

WRP = .9030 SQ. IN XMRP = 5.5570 IN.
 LWRP = .8000 IN. YMRP = .0000 IN.
 BRP = .8000 IN. ZMRP = .0000 IN.
 SCALE = .0038

PARAMETRIC DATA

BETA = .000 PHI = 45.000
 FLASTR = .000 AFTSTR = .000
 ATWING = 1.000 ATMS = .000
 CONFIG = 3.000 SHDSTR = .000
 ELT = 1.000 SEPRKT = 1.000

RUN NO. 44/ 0 RIVL = 0.32 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CM	CLM	CYH	CYM	CBL	CA	CAB	XCP/L	CPB1	CPB2
.899	169.700	.64730	.34690	-.53260	-.60240	-.02140	-1.09160	.00000	.53300	.00000	.00000
.899	167.620	1.16890	.09100	-.36200	-.70210	-.04360	-2.00390	.00000	.56020	.00000	.00000
.899	163.690	1.89750	-.18390	-.92650	-.71010	-.09090	-2.14750	.00000	.57440	.00000	.00000
.899	159.590	2.50430	-.55110	-.76430	.34800	-.09960	-2.26630	.00000	.59430	.00000	.00000
.899	155.440	3.18470	-1.26710	-.45970	1.64900	-.10560	-2.39550	.00000	.59920	.00000	.00000
.899	151.260	4.03240	-2.39030	-.25620	2.17350	-.07540	-2.45760	.00000	.61490	.00000	.00000
.899	149.240	4.59440	-2.92630	-.12310	2.35000	-.07310	-2.48840	.00000	.61860	.00000	.00000
.899	159.580	2.48030	-.53190	-.75310	.34800	-.10020	-2.26140	.00000	.59400	.00000	.00000
GRADIENT	-.17648	.15364	-.01786	-.16791	.00222	.02667	.00000	.00000	-.00375	.00000	.00000

RUN NO. 43/ 0 RIVL = 0.70 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CM	CLM	CYH	CYM	CBL	CA	CAB	XCP/L	CPB1	CPB2
1.197	169.610	1.02480	-1.47640	-.42170	-.27740	-.05060	-2.51560	.00000	.68420	.00000	.00000
1.197	167.640	1.29390	-1.74090	-.63770	-.29660	-.06970	-2.57710	.00000	.67630	.00000	.00000
1.197	163.470	2.00990	-2.21740	-.94830	-.02250	-.09040	-2.64190	.00000	.65660	.00000	.00000
1.197	159.230	3.00340	-3.01160	-.43360	1.74120	-.07920	-2.69060	.00000	.64630	.00000	.00000
1.197	154.920	4.43670	-3.54430	-.14430	1.99730	-.02620	-2.78170	.00000	.63170	.00000	.00000
1.197	150.590	6.23680	-3.34100	-.25000	.05310	-.02700	-2.87160	.00000	.61020	.00000	.00000
1.197	149.530	7.01030	-3.24940	-.49140	-.13930	-.08110	-2.89030	.00000	.59430	.00000	.00000
1.197	159.220	3.02290	-3.03960	-.42620	1.79330	-.09120	-2.69400	.00000	.64930	.00000	.00000
GRADIENT	-.20259	.09373	-.01616	-.03152	-.00069	.01722	.00000	.00000	.00375	.00000	.00000

RUN NO. 46/ 0 RIVL = 7.19 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CM	CLM	CYH	CYM	CBL	CA	CAB	XCP/L	CPB1	CPB2
1.960	169.600	.95670	-1.27100	-.51890	-.29130	-.02220	-2.48900	.00000	.67490	.00000	.00000
1.960	167.620	1.26150	-1.45300	-.63350	-.30930	-.03570	-2.52030	.00000	.65990	.00000	.00000
1.960	163.390	2.33670	-1.50990	-.31790	1.00620	-.02630	-2.59880	.00000	.61940	.00000	.00000
1.960	159.130	3.66970	-1.02090	-.04960	3.27800	-.02090	-2.68100	.00000	.59920	.00000	.00000
1.960	154.630	5.05210	-.85250	-.22640	.29220	-.04210	-2.75460	.00000	.58030	.00000	.00000
1.960	150.580	6.40890	-.21600	-.32900	.17330	-.09090	-2.76590	.00000	.56930	.00000	.00000
1.960	148.530	7.26260	.24350	-.36910	.10480	-.07710	-2.81470	.00000	.56390	.00000	.00000
1.960	159.150	3.65860	-.91520	-.03240	1.20890	-.03040	-2.64030	.00000	.59690	.00000	.00000
GRADIENT	-.30164	-.07273	-.01127	-.00254	.01533	.00000	.00000	.00000	.00520	.00000	.00000



MSFC 990(SA26F) 142-IN. SRB(199) NRE191 ELT

(R99024) (11 DEC 73)

PARAMETRIC DATA

BETA = .000 PHI = 43.000
 PLDSTR = .000 AFTSTR = .000
 ATMRNG = 1.000 ATMS = .000
 COMFLG = 3.000 SMOSTR = .000
 ELT = 1.000 SERRAT = 1.000

REFERENCE DATA

.9030 SQ. IN XMRP = 3.3370 IN.
 .6000 IN. YMRP = .0000 IN.
 .6000 IN. ZMRP = .0020 IN.
 .0016

RUN NO. 82/ 0 RIVL = 6.30 GRADIENT INTERVAL = -3.00/ 3.00

MACH	ALPHA	CMX	CLMX	CYM	CYMA	CEL	CA	CAB	XCPVL	CPR1	CPR2
3.475	189.170	.74410	-.41390	-.19140	.01740	-.00920	-2.43890	.00000	.61210	.00000	.00000
3.475	187.830	1.04690	-.31140	-.20360	.14480	-.00360	-2.46820	.00000	.59040	.00000	.00000
3.475	183.730	1.64020	-.02430	-.13140	.33190	-.01370	-2.53220	.00000	.56760	.00000	.00000
3.475	159.610	2.75320	.26000	-.16240	.02680	-.01490	-2.64340	.00000	.53980	.00000	.00000
3.475	133.470	3.80100	.31460	-.20240	-.03120	-.03420	-2.79760	.00000	.51590	.00000	.00000
3.475	131.200	4.97400	.61690	-.22940	-.06040	-.03310	-2.85200	.00000	.50640	.00000	.00000
3.475	149.290	3.63980	.16200	-.22360	-.07980	-.03880	-2.39990	.00000	.56420	.00000	.00000
3.475	159.610	2.74440	.24890	-.16670	-.02670	-.01420	-2.65110	.00000	.59910	.00000	.00000
GRADIENT		-.23632	-.04149	.00227	.01127	.00161	.01013	.00000	.00216	.00220	.00000

MSFC 990(SA26F) 142-IN. SRB(199) NRE191 ELT

(R99025) (11 DEC 73)

PARAMETRIC DATA

BETA = .000 PHI = 90.000
 PLDSTR = .000 AFTSTR = .000
 ATMRNG = 1.000 ATMS = .000
 COMFLG = 3.000 SMOSTR = .000
 ELT = 1.000 SERRAT = 1.000

REFERENCE DATA

.5030 SQ. IN XMRP = 3.3370 IN.
 .6000 IN. YMRP = .0000 IN.
 .6000 IN. ZMRP = .0000 IN.
 .0036

RUN NO. 40/ 0 RIVL = 5.01 GRADIENT INTERVAL = -3.00/ 3.00

MACH	ALPHA	CMX	CLMX	CYM	CYMA	CEL	CA	CAB	XCPVL	CPR1	CPR2
.599	189.760	.94820	-.69390	-.24350	-.12690	-.10440	-1.49230	.00000	.64370	.00000	.00000
.599	187.830	1.28480	-1.00710	-.37330	.06320	-.10440	-1.53360	.00000	.63030	.00000	.00000
.599	183.760	2.18330	-1.32370	-.64170	-.39160	-.19820	-1.67710	.00000	.61600	.00000	.00000
.599	159.660	3.20130	-1.57300	-1.10690	-.71970	-.23090	-1.83130	.00000	.60660	.00000	.00000
.599	133.370	4.08030	-1.60000	-2.10360	-.56090	-.29490	-2.03400	.00000	.60230	.00000	.00000
.599	131.470	3.09370	-1.69980	-3.17400	.57060	-.29290	-2.26230	.00000	.59690	.00000	.00000
.599	149.510	3.73330	-2.16830	-3.59820	.97800	-.33000	-2.30630	.00000	.59740	.00000	.00000
.599	159.630	3.22020	-1.59090	-1.09670	-.72820	-.23680	-1.82420	.00000	.60680	.00000	.00000
GRADIENT		-.23442	.03944	.16866	-.03244	.01163	.04267	.00000	.00213	.00000	.00000

MSFC 990 (SAR20F) 142-IN. SSB (139) MREISS1 ELT

(R99025) (11 DEC 73)

REFERENCE DATA

REF # .9030 SQ. IN XMRP = 5.5570 IN.
 REF # .8000 IN. YMRP = .0000 IN.
 REF # .8000 IN. ZMRP = .0000 IN.
 SCALE # .0036

BETA = .000 PHI = 90.000
 FMOSTK = .000 AFTSTK = .000
 AIRING = 1.000 ATMS = .000
 COMFLG = 3.000 SMOSTK = .000
 ELT = 1.000 SERRKT = 1.000

PARAMETRIC DATA

RUN NO. 41/ 0 RVL = 6.32 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CM	CLM	CYM	CYM	CBL	CA	CAB	XCP/L	CPB1	CPB2
.897	169.760	1.13820	.90110	-.08080	.20360	-.09400	-1.09340	.00000	.50200	.00000	.00000
.897	167.000	1.47770	.60080	-.18280	.20390	-.11100	-1.99170	.00000	.33010	.00000	.00000
.897	163.640	2.41750	.01550	-.67690	-.19220	-.16090	-2.12860	.00000	.56600	.00000	.00000
.897	159.450	3.30900	-.56830	-1.42640	-.33870	-.22120	-2.20940	.00000	.58050	.00000	.00000
.897	155.260	4.32150	-1.41770	-2.30300	-.39130	-.27510	-2.33110	.00000	.59330	.00000	.00000
.897	151.000	5.59770	-2.69540	-3.24700	-.92630	-.31620	-2.47970	.00000	.60580	.00000	.00000
.897	148.920	6.58440	-3.23460	-3.29700	2.31320	-.33650	-2.51970	.00000	.62680	.00000	.00000
.897	148.440	7.34140	-.54630	-1.42640	-.32630	-.22220	-2.23200	.00000	.57990	.00000	.00000
GRADIENT		-.25269	.19720	.16904	-.06772	.01202	.02916	.00000	-.00467	.00000	.00000

RUN NO. 42/ 0 RVL = 6.76 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CM	CLM	CYM	CYM	CBL	CA	CAB	XCP/L	CPB1	CPB2
1.201	169.540	1.47200	-1.12200	-.42540	.12860	-.12770	-2.48210	.00000	.62870	.00000	.00000
1.201	167.560	1.82900	-1.37850	-.62890	-.08320	-.14910	-2.54700	.00000	.62800	.00000	.00000
1.201	163.330	2.81120	-1.89060	-.99590	-.45690	-.20910	-2.63080	.00000	.62140	.00000	.00000
1.201	159.040	4.14310	-2.57520	-1.13420	-.51950	-.27260	-2.65920	.00000	.61680	.00000	.00000
1.201	154.710	5.69070	-3.07400	-1.43090	-1.05040	-.33800	-2.71990	.00000	.60960	.00000	.00000
1.201	150.560	7.65090	-2.69400	-1.56700	-1.67590	-.38630	-2.80170	.00000	.59530	.00000	.00000
1.201	148.270	8.72480	-2.24950	-1.75120	-2.17890	-.41900	-2.84170	.00000	.58760	.00000	.00000
1.201	148.030	9.51000	-2.54100	-1.19470	-.51490	-.26990	-2.65290	.00000	.61610	.00000	.00000
GRADIENT		-.33982	.06798	.05931	.10355	.01394	.01568	.00000	.00187	.00000	.00000

RUN NO. 47. 0 RVL = 7.19 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CM	CLM	CYM	CYM	CBL	CA	CAB	XCP/L	CPB1	CPB2
1.932	169.590	1.18640	-.86360	-.36330	-.24820	-.08980	-2.51740	.00000	.62590	.00000	.00000
1.932	167.590	1.59930	-.93760	-.46910	-.40170	-.11150	-2.54970	.00000	.61540	.00000	.00000
1.932	163.340	2.75140	-1.17000	-.64900	-.37590	-.15870	-2.61810	.00000	.60120	.00000	.00000
1.932	159.030	4.12980	-1.09010	-.69130	-.60980	-.20900	-2.70740	.00000	.59790	.00000	.00000
1.932	154.660	5.71800	-1.09960	-.66950	-.68340	-.26920	-2.80590	.00000	.58220	.00000	.00000
1.932	150.370	7.23710	-.48240	-1.03360	-.97200	-.32430	-2.82330	.00000	.57200	.00000	.00000
1.932	148.320	8.06410	-1.07900	-1.09260	-.78780	-.35040	-2.87250	.00000	.56760	.00000	.00000
1.932	148.050	8.12320	-.93610	-.69850	-.63120	-.21670	-2.67760	.00000	.58550	.00000	.00000
GRADIENT		-.32710	-.03030	.03509	.03033	.01234	.01690	.00000	.00261	.00000	.00000



MSFC 990(SA26F) 142-IN. SRB(139) NERE131 ELT

(099029) (11 DEC 73)

REFERENCE DATA

WREF = .9030 SQ. IN XMRP = 5.5570 IN.
 LREF = .0000 IN. YMRP = .0000 IN.
 BRP = .0000 IN. ZMRP = .0000 IN.
 SCALE = .0056

BETA = .000 PHI = 90.000
 FADSTK = .000 AFTSTK = .000
 ATWRNG = 1.000 ATMS = .000
 CCAFLG = 3.000 SMOSTK = .000
 ELT = 1.000 SEPRKT = 1.000

PARAMETRIC DATA

RUN NO. 23/ 0 RIVL = 6.30 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CM	CLM	CYM	CBL	CA	CAB	XCP/L	CPB1	CPB2
3.479	169.760	.87540	-.20350	-.16200	-.04210	-2.43830	.00000	.36370	.00000	.00000
3.479	167.830	1.21320	-.17450	-.21060	-.03000	-2.49720	.00000	.57630	.00000	.00000
3.479	163.720	2.04300	.03340	-.26220	-.07590	-2.57120	.00000	.56460	.00000	.00000
3.479	159.560	3.06960	.31360	-.40360	-.11790	-2.69390	.00000	.53030	.00000	.00000
3.479	155.410	4.23210	.62060	-.51510	-.16090	-2.84120	.00000	.55460	.00000	.00000
3.479	151.260	5.48020	.81960	-.64750	-.21100	-2.99370	.00000	.55430	.00000	.00000
3.479	149.220	6.19150	.46980	-.67450	-.23400	-2.44730	.00000	.56810	.00000	.00000
3.479	159.570	3.06310	.33240	-.48390	-.12340	-2.70090	.00000	.53770	.00000	.00000
GRADIENT		-.23654	-.04627	.02519	.01373	.01116	.00000	.00131	.00000	.00000

MSFC 990(SA26F) 142-IN. SRB(139) NERE131 ELT

(099028) (11 DEC 73)

REFERENCE DATA

WREF = .9030 SQ. IN XMRP = 5.5570 IN.
 LREF = .0000 IN. YMRP = .0000 IN.
 BRP = .0000 IN. ZMRP = .0000 IN.
 SCALE = .0056

BETA = .000 PHI = 135.000
 FADSTK = .000 AFTSTK = .000
 ATWRNG = 1.000 ATMS = .000
 CCAFLG = 3.000 SMOSTK = .000
 ELT = 1.000 SEPRKT = 1.000

PARAMETRIC DATA

RUN NO. 39/ 0 RIVL = 4.90 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CM	CLM	CYM	CBL	CA	CAB	XCP/L	CPB1	CPB2
.993	169.600	.74430	-1.09990	.05370	-.10618	-1.45700	.00000	.68690	.00000	.00000
.993	167.660	.99080	-1.38500	.04520	-.11820	-1.56610	.00000	.68070	.00000	.00000
.993	163.790	1.53960	-1.99330	.13490	-.18530	-1.69950	.00000	.66890	.00000	.00000
.993	159.730	2.19630	-2.22800	.17040	-.23040	-1.86760	.00000	.64930	.00000	.00000
.993	155.690	2.76600	-2.53460	.11940	-.27390	-2.06480	.00000	.63390	.00000	.00000
.993	151.610	3.47910	-2.39250	-.29340	-.11720	-2.25990	.00000	.62260	.00000	.00000
.993	149.630	3.94350	-2.92610	-.53690	1.02740	-2.30950	.00000	.62710	.00000	.00000
.993	159.740	2.16210	-2.19040	.16980	-.39870	-2.30950	.00000	.64920	.00000	.00000
GRADIENT		-.15396	-.07519	.02394	.01156	.04269	.00000	.00331	.00000	.00000

NSFC 590(SA26F) 142-IN. SR8(139) NRE181 ELT

REFERENCE DATA

MACH 0 .5030 50. IN XMRP 0 5.5570 IN.
 MACH 0 .6000 100. IN. YMRP 0 .0000 IN.
 MACH 0 .8000 150. IN. ZMRP 0 .0000 IN.
 SCALE 0 .0036

BETA 0 .000 PM1 0 139.000
 PMOSTR 0 .000 AFTSTR 0 .000
 ATMRNG 0 1.000 ATMS 0 .000
 CMFLG 0 9.000 SMOSTR 0 .000
 ELT 0 1.000 SERPRT 0 1.000

PARAMETRIC DATA

RUN NO. 38/ 0 RIVL 0 6.23 GRADIENT INTERVAL 0 -5.00/ 5.00

MACH	ALPHA	CMW	CLMH	CYM	CYMH	CBL	CA	CAB	XCP/L	CPB1	CPB2
.889	189.760	.80220	.12950	.03340	.94640	-.10070	-1.90990	.00000	.55490	.00000	.00000
.889	187.800	1.16970	-.16190	-.04950	1.07100	-.11370	-2.00350	.00000	.37780	.00000	.00000
.889	183.690	1.76530	-.67070	.03190	1.51330	-.15740	-2.09320	.00000	.59720	.00000	.00000
.889	159.570	2.39650	-1.01270	.09640	1.20450	-.20000	-2.21740	.00000	.60110	.00000	.00000
.889	155.430	3.17750	-1.60120	.03460	.59650	-.26070	-2.33730	.00000	.60760	.00000	.00000
.889	151.220	4.26470	-2.30610	-.45140	-.17300	-.35340	-2.52830	.00000	.61060	.00000	.00000
.889	149.200	4.98230	-2.55980	-.83370	-.20170	-.36310	-2.56820	.00000	.60810	.00000	.00000
.889	159.560	2.45900	-1.02900	.10470	1.19490	-.19830	-2.23850	.00000	.60080	.00000	.00000
GRADIENT		-.19170	.12617	.03264	.06533	.01395	.03179	.00000	-.00229	.00000	.00000

RUN NO. 37/ 0 RIVL 0 6.87 GRADIENT INTERVAL 0 -5.00/ 5.00

MACH	ALPHA	CMW	CLMH	CYM	CYMH	CBL	CA	CAB	XCP/L	CPB1	CPB2
1.197	189.530	1.08320	-1.45590	-.04280	.93680	-.15030	-2.52220	.00000	.67480	.00000	.00000
1.197	187.490	1.32720	-1.69610	-.07300	1.28990	-.15450	-2.59320	.00000	.67090	.00000	.00000
1.197	183.470	2.30370	-2.53360	.05810	1.60620	-.22150	-2.65240	.00000	.65540	.00000	.00000
1.197	159.210	3.17760	-2.77390	.03490	1.20790	-.25020	-2.73040	.00000	.63770	.00000	.00000
1.197	154.980	4.02170	-3.02250	.57460	-.57490	-.36160	-2.84110	.00000	.61770	.00000	.00000
1.197	150.530	6.04550	-2.27620	.20900	-1.25570	-.42370	-2.95090	.00000	.59470	.00000	.00000
1.197	148.490	7.57540	-2.41970	.49010	.38290	-.45490	-3.01390	.00000	.59120	.00000	.00000
1.197	159.210	3.21330	-2.78430	.70690	1.49200	-.23190	-2.73070	.00000	.63790	.00000	.00000
GRADIENT		-.31330	.04552	-.02497	.08403	.01558	.02197	.00000	.00419	.00000	.00000

RUN NO. 46/ 0 RIVL 0 7.20 GRADIENT INTERVAL 0 -5.00/ 5.00

MACH	ALPHA	CMW	CLMH	CYM	CYMH	CBL	CA	CAB	XCP/L	CPB1	CPB2
1.980	189.530	.93780	-.96020	.06220	.49540	-.06350	-2.52430	.00000	.65010	.00000	.00000
1.980	187.540	1.28230	-1.11190	.14530	.74320	-.11320	-2.55110	.00000	.63720	.00000	.00000
1.980	148.510	7.43490	.44760	.47210	.78340	-.33790	-2.85590	.00000	.56160	.00000	.00000
1.980	159.150	3.62370	-.99260	.26930	1.07730	-.20390	-2.69700	.00000	.59990	.00000	.00000
1.980	163.400	2.33090	-1.32170	.24470	.97800	-.15920	-2.63330	.00000	.61280	.00000	.00000
1.980	159.140	3.62920	-1.08770	.29070	1.01200	-.19740	-2.72280	.00000	.59100	.00000	.00000
1.980	154.830	5.09440	-.76340	.34180	.67910	-.25990	-2.79710	.00000	.57990	.00000	.00000
1.980	150.560	6.57650	-.06920	.45110	.73200	-.30760	-2.83190	.00000	.56740	.00000	.00000
GRADIENT		-.30991	-.06468	-.01613	-.00428	.01172	.01624	.00000	.00413	.00000	.00000

REFERENCE DATA

BREF = .9030 94. IN YMRP = 5.5570 IN.
 LREF = .6000 IN. YMRP = .0000 IN.
 BREF = .6000 IN. ZMRP = .0000 IN.
 SCALE = .0036

PARAMETRIC DATA

BETA = .000 PHI = 133.000
 FLDSTK = .000 AFTSTK = .000
 ATFRNG = 1.000 ATMS = .000
 CONFIC = 3.000 SMOSTK = .000
 ELT = 1.000 SEPRKT = 1.000

RUN NO. 24/ 0 RIVL = 6.31 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CMW	CLM	CYM	CEL	CA	CAB	KCP/L	CPB1	CPB2
3.476	169.770	.76330	-.23840	.00670	-.04160	-2.47360	.00000	.59110	.00000	.00000
3.476	167.690	1.11340	-.14330	.00260	-.05310	-2.35030	.00000	.57700	.00000	.00000
3.476	163.740	1.90010	.07730	.07230	-.08330	-2.60260	.00000	.56320	.00000	.00000
3.476	159.590	2.67080	.32230	.13330	-.13710	-2.72740	.00000	.55740	.00000	.00000
3.476	155.430	3.97510	.65730	.20030	-.17670	-2.86860	.00000	.55300	.00000	.00000
3.476	151.260	5.19630	.79120	.29730	-.22840	-2.93320	.00000	.55410	.00000	.00000
3.476	149.260	5.98060	.50700	.33320	-.24670	-2.46780	.00000	.56230	.00000	.00000
3.476	159.800	2.66190	.32190	.12620	-.13190	-2.73320	.00000	.55740	.00000	.00000
GRADIENT		-.24794	-.04107	-.01676	-.01062	.01177	.00000	.00136	.00000	.00000

MSFC 990(SA26F) 142-IN. SRB(199) NREISE181 ELT

REFERENCE DATA

BREF = .9030 94. IN YMRP = 5.5570 IN.
 LREF = .6000 IN. YMRP = .0000 IN.
 BREF = .6000 IN. ZMRP = .0000 IN.
 SCALE = .0036

PARAMETRIC DATA

BETA = .000 PHI = 45.000
 FLDSTK = .000 AFTSTK = .000
 ATFRNG = 1.000 ATMS = .000
 CONFIC = 4.000 SMOSTK = .000
 ELT = 1.000 SEPRKT = 2.000

RUN NO. 79/ 0 RIVL = 4.94 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CMW	CLM	CYM	CEL	CA	CAB	KCP/L	CPB1	CPB2
.997	60.000	12.31230	10.39230	.03530	-.01660	.21940	.00000	.49820	.00000	.00000
.997	61.690	12.54770	9.67270	-.26970	-.03370	-.27760	.00000	.50240	.00000	.00000
.997	63.660	12.77600	8.31740	1.69760	-.04590	.31740	.00000	.51340	.00000	.00000
.997	69.610	12.66790	6.17570	-.08480	-.01630	.44140	.00000	.52740	.00000	.00000
.997	93.760	13.04660	4.53360	-.07420	-.01530	.51370	.00000	.53810	.00000	.00000
.997	97.790	12.62360	2.69430	.10730	-.01460	.41320	.00000	.54610	.00000	.00000
.997	99.630	12.66790	2.66300	.08040	.00460	.32390	.00000	.54950	.00000	.00000
.997	99.610	12.93650	6.06400	-.09860	-.00300	.44680	.00000	.52640	.00000	.00000
GRADIENT		.01984	-.41686	.01153	-.03490	.00623	.00000	.00274	.00000	.00000

TABULATED SOURCE DATA, MSFC TWT 590/503

(R93027) (11 DEC 73)

MSFC 590 (SAS20F) 148-IN. SR2(130) NMR192 ELT

PARAMETRIC DATA

BETA = .000 PHI = 45.000
 FMSSTK = .000 AFTSTK = .000
 ATHING = 1.000 ATHS = .000
 COMFIC = 4.000 SHOSTK = .000
 ELT = 1.000 SEPRIK = 2.000

REFERENCE DATA

MSFC 590 148 IN XMRP = 5.5570 IN.
 YMRP = .0000 IN.
 ZMRP = .0000 IN.
 SCALE = .0030

RUN NO. 60/ 0 RIVL = 6.26 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMH	CYM	CYMH	CBL	CA	CAB	XCP/L	CFB1	CFB2
.904	80.170	15.73210	12.84610	.17280	.10420	.01130	.47370	.00000	.49900	.00000	.00000
.904	82.030	15.82750	11.69040	.16920	.12160	.01090	.50060	.00000	.50630	.00000	.00000
.904	83.920	16.14470	8.59110	.15590	.17030	.00330	.54030	.00000	.52310	.00000	.00000
.904	85.840	16.44680	6.31240	.15710	.12760	.01610	.53730	.00000	.53520	.00000	.00000
.904	87.760	16.24830	4.50780	.17670	.06640	.01060	.47690	.00000	.54390	.00000	.00000
.904	89.580	16.32660	2.47350	.16000	-.10230	.01590	.33970	.00000	.54420	.00000	.00000
.904	91.400	16.17020	1.48910	.11200	.04750	.00070	.24360	.00000	.53900	.00000	.00000
.904	93.220	16.52360	6.36930	.13630	.21210	.01260	.55260	.00000	.53500	.00000	.00000
GRADIENT		.0250:	-.58018	-.00161	-.00795	-.00012	-.01103	.00000	.00391	.00000	.00000

RUN NO. 61/ 0 RIVL = 6.65 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMH	CYM	CYMH	CBL	CA	CAB	XCP/L	CFB1	CFB2
1.198	80.160	16.92810	11.45500	.15170	-.11490	-.00440	.51060	.00000	.51720	.00000	.00000
1.198	82.050	19.03970	11.27380	.14730	-.11080	-.00300	.51060	.00000	.51620	.00000	.00000
1.198	86.020	19.31670	10.61520	.12930	-.08460	-.01060	.44750	.00000	.52170	.00000	.00000
1.198	89.970	19.34020	9.34140	.12690	.14940	-.01690	.34370	.00000	.52710	.00000	.00000
1.198	93.920	19.17030	6.29120	.07130	.26060	-.00140	.20120	.00000	.53200	.00000	.00000
1.198	97.970	19.26370	7.07550	.06010	.50100	-.00200	.03190	.00000	.53660	.00000	.00000
1.198	99.760	19.00300	6.62300	.02360	.32570	-.04610	-.04610	.00000	.53810	.00000	.00000
1.198	99.950	19.26090	9.92870	.11650	.19710	-.00420	.35710	.00000	.52970	.00000	.00000
GRADIENT		.01034	-.23765	-.00616	.02374	.00039	-.02932	.00000	.00112	.00000	.00000

RUN NO. 54/ 0 RIVL = 7.07 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMH	CYM	CYMH	CBL	CA	CAB	XCP/L	CFB1	CFB2
1.964	80.130	19.43450	10.11430	-.00480	.04010	-.03590	.61900	.00000	.52410	.00000	.00000
1.964	82.020	19.59140	9.93720	-.01530	.04280	-.03960	.56250	.00000	.52530	.00000	.00000
1.964	83.960	19.74270	9.36120	-.01750	.09900	-.03390	.44590	.00000	.52760	.00000	.00000
1.964	89.960	19.72780	6.74130	-.01830	.07780	-.03290	.32770	.00000	.53040	.00000	.00000
1.964	93.930	19.54240	7.94110	-.00530	.03550	-.03150	.18780	.00000	.53340	.00000	.00000
1.964	97.990	19.59320	6.97410	-.04210	.12410	-.03550	.06630	.00000	.53720	.00000	.00000
1.964	99.770	19.11320	6.51980	-.03890	.13410	-.03240	-.00490	.00000	.53970	.00000	.00000
1.964	99.960	19.70380	6.70610	-.02110	.06550	-.03670	.32690	.00000	.53050	.00000	.00000
GRADIENT		-.01593	-.18237	-.00199	.00407	-.00022	-.03165	.00000	.00074	.00000	.00000

DATE 06 NOV 74

TABULATED SOURCE DATA, MSFC TWT 990/595

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MSFC 590(SA26F) 142-IN. SRB(139) NRE182 ELT

(893027) (11 DEC 73)

REFERENCE DATA

BREF = .5030 SQ. IN XMRP = 5.5570 IN.
LREF = .0000 IN. YMRP = .0000 IN.
BREF = .0000 IN. ZMRP = .0000 IN.
SCALE = .0036

BETA = .000 PHI = 45.000
FADSTK = .000 AFTSTK = .000
ATHRNG = 1.000 ATMS = .000
CONF16 = 4.000 SMOSTK = .000
ELT = 1.000 SEPRKT = 2.000

PARAMETRIC DATA

RUN NO. 106/ 0 RIVL = 7.16 GRADIENT INTERVAL = -5.00/ 5.00

MAON	ALPHA	CMH	CLMH	CYM	CYMH	CBL	CA	CAB	XCP/L	CFB1	CFB2
3.478	60.040	18.63910	10.04490	.04280	.06850	-.04970	.67990	.00000	.52260	.00000	.00000
3.478	61.930	18.02470	9.96220	.04470	.06320	-.03370	.61340	.00000	.52370	.00000	.00000
3.478	63.920	19.06630	9.38470	.04330	.06240	-.04270	.46110	.00000	.52640	.00000	.00000
3.478	65.690	19.19430	6.64930	.05100	.05100	-.04610	.30250	.00000	.52980	.00000	.00000
3.478	93.850	19.12650	6.01340	.03630	.06620	-.03820	.13220	.00000	.53240	.00000	.00000
3.478	97.650	18.61570	7.36350	.02900	.04130	-.03330	-.04330	.00000	.53470	.00000	.00000
3.478	99.750	18.65630	7.02480	.02600	.04490	-.03710	-.12100	.00000	.53580	.00000	.00000
3.478	69.690	18.16760	6.65330	.04910	.06200	-.03520	.30640	.00000	.52970	.00000	.00000
GRADIENT		.00160	-.15676	-.00082	-.00156	.00041	-.04093	.00000	.00069	.00000	.00000

MSFC 590(SA26F) 142-IN. SRB(139) NRE182 ELT

(893028) (11 DEC 73)

REFERENCE DATA

BREF = .5030 SQ. IN XMRP = 5.5570 IN.
LREF = .0000 IN. YMRP = .0000 IN.
BREF = .0000 IN. ZMRP = .0000 IN.
SCALE = .0036

BETA = .000 PHI = 90.000
FADSTK = .000 AFTSTK = .000
ATHRNG = 1.000 ATMS = .000
CONF16 = 4.000 SMOSTK = .000
ELT = 1.000 SEPRKT = 2.000

PARAMETRIC DATA

RUN NO. 04/ 0 RIVL = 4.95 GRADIENT INTERVAL = -5.00/ 5.00

MAON	ALPHA	CMH	CLMH	CYM	CYMH	CBL	CA	CAB	XCP/L	CFB1	CFB2
.398	60.060	14.54030	14.23770	-3.49760	1.69390	-.31720	.12230	.00000	.48780	.00000	.00000
.398	61.930	14.60740	12.35110	-3.48920	1.49460	-.33020	.25190	.00000	.49760	.00000	.00000
.398	63.670	14.60260	9.34210	-3.68270	.80260	-.39060	.36790	.00000	.51430	.00000	.00000
.398	69.610	14.62700	6.34390	-3.63670	1.09390	-.36040	.43220	.00000	.53160	.00000	.00000
.398	93.750	14.91350	4.31180	-3.46110	.94860	-.35930	.46290	.00000	.54290	.00000	.00000
.398	97.730	14.98240	2.50200	-3.61950	.99370	-.37480	.32790	.00000	.55290	.00000	.00000
.398	99.620	14.84600	1.65390	-3.66740	1.02890	-.37770	.21390	.00000	.53740	.00000	.00000
.398	69.610	14.75750	6.40520	-3.66980	1.02110	-.34690	.42940	.00000	.53110	.00000	.00000
GRADIENT		.02067	-.62992	-.00334	-.02842	-.00282	.00336	.00000	.00334	.00000	.00000

REFERENCE DATA

BRPF = .3030 SQ. IN XMRP = 5.5570 IN.
 LREF = .8000 IN. YMRP = .0000 IN.
 BRPF = .8000 IN. ZMRP = .0000 IN.
 SCALE = .0036

BETA = .000 PHI = 90.000
 PASTK = .000 AFTSTK = .000
 ATHING = 1.000 ATMS = .000
 CONF16 = 4.000 SHDSTK = .000
 ELT = 1.000 SEPRKT = 2.000

PARAMETRIC DATA

RUN NO. 03/ 0 RVL = 6.25 GRADIENT INTERVAL = -3.00/ 5.00

MACH	ALPHA	CNH	CLMH	CYM	CYH	CYH	CYH	CYH	CBL	CA	CAB	XCP/L	CFB1	CFB2
.901	60.210	17.20810	14.29970	-2.58890	-1.4220	-41400	.49000	.00000	.00000	.49870	.00000	.49870	.00000	.00000
.901	62.070	17.37000	13.23080	-2.59710	-1.2310	-41710	.45410	.00000	.00000	.50440	.00000	.50440	.00000	.00000
.901	65.980	17.58260	10.37610	-2.59930	-1.4260	-43020	.45370	.00000	.00000	.51740	.00000	.51740	.00000	.00000
.901	69.690	17.85020	7.93990	-2.59120	-1.2730	-43510	.46840	.00000	.00000	.53020	.00000	.53020	.00000	.00000
.901	73.600	17.61740	5.79570	-2.59300	-1.2680	-43290	.40660	.00000	.00000	.54000	.00000	.54000	.00000	.00000
.901	77.720	17.66440	2.98590	-2.61370	-1.0070	-43630	.28950	.00000	.00000	.55270	.00000	.55270	.00000	.00000
.901	79.580	17.56820	1.75480	-2.60790	-.27700	-43910	.22360	.00000	.00000	.55940	.00000	.55940	.00000	.00000
.901	89.690	17.63980	7.88890	-2.59230	-.45390	-45390	.46420	.00000	.00000	.55950	.00000	.55950	.00000	.00000
GRADIENT	.01972	-.64690	-.00950	-.00264	-.00116	-.01076	.00000	.00000	.00000	.00307	.00000	.00307	.00000	.00000

RUN NO. 02/ 0 RVL = 6.65 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNH	CLMH	CYM	CYH	CYH	CYH	CYH	CBL	CA	CAB	XCP/L	CFB1	CFB2
1.198	60.200	20.78480	12.65130	-2.36140	-1.46490	-50770	.57870	.00000	.00000	.51690	.00000	.51690	.00000	.00000
1.198	62.030	20.94920	12.39230	-2.39680	-.49920	-51610	.55970	.00000	.00000	.51830	.00000	.51830	.00000	.00000
1.198	66.030	21.18930	11.20910	-2.42840	-.48400	-51880	.50820	.00000	.00000	.52340	.00000	.52340	.00000	.00000
1.198	69.980	21.23700	10.01970	-2.45950	-.45320	-53680	.39660	.00000	.00000	.52900	.00000	.52900	.00000	.00000
1.198	73.900	21.36220	8.62630	-2.43620	-.44300	-52700	.22700	.00000	.00000	.53360	.00000	.53360	.00000	.00000
1.198	77.670	21.29730	7.26600	-2.46860	-.36930	-52850	.03180	.00000	.00000	.53970	.00000	.53970	.00000	.00000
1.198	79.730	20.98330	6.42920	-2.45250	-.29330	-50330	-.05390	.00000	.00000	.54150	.00000	.54150	.00000	.00000
1.198	89.970	21.24710	9.68760	-2.45310	-.40700	-53030	.98900	.00000	.00000	.52930	.00000	.52930	.00000	.00000
GRADIENT	.01931	-.32162	-.00430	-.00826	-.00026	-.03306	.00000	.00000	.00000	.00127	.00000	.00127	.00000	.00000

RUN NO. 55/ 0 RVL = 7.08 GRADIENT INTERVAL = -3.00/ 5.00

MACH	ALPHA	CNH	CLMH	CYM	CYH	CYH	CYH	CYH	CBL	CA	CAB	XCP/L	CFB1	CFB2
1.932	60.130	21.05460	10.38430	-1.83860	-.31710	-51360	.67200	.00000	.00000	.52830	.00000	.52830	.00000	.00000
1.932	62.020	21.24400	10.20180	-1.85860	-.31240	-53040	.61690	.00000	.00000	.52740	.00000	.52740	.00000	.00000
1.932	65.990	21.39820	9.59890	-1.88930	-.34210	-53330	.50070	.00000	.00000	.52990	.00000	.52990	.00000	.00000
1.932	69.070	21.41930	9.10830	-1.91180	-.42780	-.52060	.38180	.00000	.00000	.53190	.00000	.53190	.00000	.00000
1.932	73.940	21.26730	8.37430	-1.88700	-.38560	-51360	.23330	.00000	.00000	.53360	.00000	.53360	.00000	.00000
1.932	77.900	21.09530	7.72070	-1.88360	-.36380	-51360	.09970	.00000	.00000	.53670	.00000	.53670	.00000	.00000
1.932	79.790	20.81480	7.31620	-1.86040	-.36850	-51120	.02390	.00000	.00000	.53790	.00000	.53790	.00000	.00000
1.932	89.960	21.33400	9.04330	-1.90430	-.45670	-.52010	.37900	.00000	.00000	.53206	.00000	.53206	.00000	.00000
GRADIENT	-.01137	-.13365	-.00108	-.00237	-.00072	-.03287	.00000	.00000	.00000	.00358	.00000	.00358	.00000	.00000

MSFC 390 (S426F) 142-IN. SRB(139) NRE182 ELT

REFERENCE DATA
 .0030 SQ. IN XMRP = 3.5370 IN.
 .0000 IN. YMRP = .0000 IN.
 .0000 IN. ZMRP = .0000 IN.
 .0056
 BETA = .000 PHE = 90.000
 PLASTK % .000 AFTSTR = .070
 ATMRNG = 1.000 ATMS = .000
 CCAFTIC = 4.000 SMOSTR = .020
 ELT = 1.000 SEPRAT = 2.020

PARAMETRIC DATA

RUN NO. 103/ 0 RIVL = 7.16 GRADIENT INTERVAL = -5.00/ 5.00

WACH	ALPHA	COM	CLUM	CYM	CYIM	CBL	CA	CAB	KCP/L	CPB1	CPB2
3.478	80.040	10.51930	10.22410	- .60390	- .23680	- .37900	.70230	.00000	.52360	.00000	.00000
3.478	81.930	10.70440	10.04070	- .91530	- .28070	- .36990	.63230	.00000	.52360	.00000	.00000
3.478	83.920	10.84720	9.54000	- .82370	- .23970	- .36040	.48330	.00000	.52360	.00000	.00000
3.478	85.890	20.09130	9.04330	- .82490	- .24330	- .36130	.31370	.00000	.53060	.00000	.00000
3.478	87.860	19.97830	8.27300	- .80420	- .30280	- .35790	.14160	.00000	.53280	.00000	.00000
3.478	89.790	19.73330	7.74700	- .76820	- .36430	- .36360	-.03610	.00000	.53490	.00000	.00000
3.478	89.790	19.53900	7.48900	- .78910	- .38130	- .35340	-.12090	.00000	.53590	.00000	.00000
3.478	89.890	20.07870	8.81060	- .82840	- .28190	- .36710	.31400	.00000	.53070	.00000	.00000
GRADIENT	.00148		-.14423	.00130	-.09330	.00077	-.04201	.00000	.00060	.00000	.00000

REFERENCE DATA
 .5030 SQ. IN XMRP = 3.5376 IN.
 .0000 IN. YMRP = .0000 IN.
 .0000 IN. ZMRP = .0000 IN.
 .0056
 BETA = .000 PHE = 135.000
 PLASTK = .000 AFTSTR = .000
 ATMRNG = 1.000 ATMS = .000
 CCAFTIC = 4.000 SMOSTR = .000
 ELT = 1.000 SEPRAT = 2.020

PARAMETRIC DATA

RUN NO. 97/ 0 RIVL = 9.00 GRADIENT INTERVAL = -5.00/ 5.00

WACH	ALPHA	COM	CLUM	CYM	CYIM	CBL	CA	CAB	KCP/L	CPB1	CPB2
.999	78.980	12.12200	9.36960	1.54320	4.97040	- .73100	.40390	.00000	.70330	.00000	.00000
.999	81.630	12.15430	8.75510	1.56790	4.43430	- .73230	.41670	.00000	.70780	.00000	.00000
.999	83.620	12.38090	7.34560	1.77630	3.76480	- .73710	.40330	.00000	.51680	.00000	.00000
.999	85.600	12.41870	5.23600	1.96370	2.29140	- .74210	.52410	.00000	.73200	.00000	.00000
.999	93.750	12.43820	3.60980	2.14340	1.53160	- .73610	.54560	.00000	.54290	.00000	.00000
.999	97.740	12.27170	2.18580	2.44190	.34230	- .74240	.36730	.00000	.55200	.00000	.00000
.999	99.610	12.20480	1.55890	2.20100	-.95920	- .75070	.21240	.00000	.55610	.00000	.00000
.999	89.780	12.44820	5.32490	1.97340	2.18230	- .73080	.52340	.00000	.53160	.00000	.00000
GRADIENT	.00359		-.41233	.04193	-.29033	-.09079	-.00496	.00000	.00277	.00000	.00000

MSFC 390 (S426F) 142-IN. SRB(139) NRE182 ELT (11 DEC 75)

TABULATED SOURCE DATA, WOPC TWT 980/989

WOPC 980 (BASEF) 148-IN. SIB (198) MONTEBELL ELT

(090988) (11 DEC 73)

PARAMETRIC DATA

BETA = .000 PHI = 139.000
 FADSTR = .000 AFTSTR = .000
 ATMRG = 1.000 ATMS = .000
 CONFIC = 4.000 SHDSTR = .000
 ELT = 1.000 SEPRKT = 2.000

REFERENCE DATA

REF = .0030 30. IN YMRP = 5.5570 IN.
 LREF = .0000 IN. YMRP = .0000 IN.
 WREF = .0000 IN. ZMRP = .0000 IN.
 SCALE = .0016

RUN NO. 98/ 0 RIVL = 6.30 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNH	CLMH	CYM	CYH	CYMH	CBL	CA	CAB	XCP/L	CFB1	CFB2
.898	80.130	15.21170	12.99020	2.90870	1.94420	1.94420	-.70860	.44770	.00000	.49690	.00000	.00000
.898	82.030	15.31720	12.06240	2.91940	1.84230	1.84230	-.71080	.48680	.00000	.50230	.00000	.00000
.898	83.930	15.38080	9.40670	2.90730	1.70090	1.70090	-.73110	.49370	.00000	.51730	.00000	.00000
.898	85.870	15.47480	6.68960	3.00640	1.36420	1.36420	-.73830	.51190	.00000	.53110	.00000	.00000
.898	87.770	15.63030	4.59970	3.13780	1.03600	1.03600	-.74120	.49120	.00000	.54280	.00000	.00000
.898	89.710	15.70200	2.26670	3.25080	.63300	.63300	-.73330	.30900	.00000	.55470	.00000	.00000
.898	91.560	15.52840	1.31960	3.20630	.57720	.57720	-.73330	.18230	.00000	.55960	.00000	.00000
.898	89.830	15.77320	6.66030	3.01220	1.35380	1.35380	-.72630	.50360	.00000	.53110	.00000	.00000
GRADIENT		.02067	-.61108	.01894	-.07333	-.07333	-.00139	-.01168	.00000	.90325	.00000	.00000

RUN NO. 99/ 0 RIVL = 6.71 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNH	CLMH	CYM	CYH	CYMH	CBL	CA	CAB	XCP/L	CFB1	CFB2
1.197	80.170	16.96460	11.65770	2.33620	.91660	.91660	-.61230	.55610	.00000	.31640	.00000	.00000
1.197	82.030	19.14870	11.26930	2.32300	.94440	.94440	-.61460	.57960	.00000	.31850	.00000	.00000
1.197	83.930	18.43870	10.53580	2.37530	.94040	.94040	-.61320	.49400	.00000	.32230	.00000	.00000
1.197	85.870	19.60360	9.35900	2.33900	.96200	.96200	-.62610	.38860	.00000	.32690	.00000	.00000
1.197	87.910	19.59890	6.40900	2.29180	1.01730	1.01730	-.60330	.18860	.00000	.33130	.00000	.00000
1.197	89.700	19.41310	7.60470	2.28270	1.02410	1.02410	-.60410	.00430	.00000	.33460	.00000	.00000
1.197	89.770	19.26850	7.32070	2.23240	1.03350	1.03350	-.60890	-.09630	.00000	.33330	.00000	.00000
1.197	89.970	19.57310	9.83860	2.31460	.99330	.99330	-.61300	.33020	.00000	.32530	.00000	.00000
GRADIENT		.01633	-.22932	-.00427	.00396	.00396	.00042	-.03466	.00000	.00101	.00000	.00000

RUN NO. 60/ 0 RIVL = 7.03 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNH	CLMH	CYM	CYH	CYMH	CBL	CA	CAB	XCP/L	CFB1	CFB2
1.981	80.130	19.16200	10.09320	1.73060	.61370	.61370	-.56930	.61130	.00000	.32360	.00000	.00000
1.981	82.020	19.33430	9.86620	1.74990	.61730	.61730	-.56830	.55610	.00000	.32490	.00000	.00000
1.981	83.990	19.58650	9.31580	1.76270	.60790	.60790	-.57620	.43930	.00000	.32770	.00000	.00000
1.951	85.960	19.62880	6.96730	1.79600	.54660	.54660	-.57720	.31940	.00000	.33090	.00000	.00000
1.981	83.920	19.50410	7.70780	1.79300	.53980	.53980	-.57730	.17590	.00000	.33430	.00000	.00000
1.981	87.880	19.30140	6.63600	1.76360	.54020	.54020	-.57400	.02760	.00000	.33750	.00000	.00000
1.981	89.760	19.10800	6.39470	1.73910	.52170	.52170	-.57600	-.05090	.00000	.33920	.00000	.00000
1.981	89.970	18.58950	6.76130	1.79180	.53220	.53220	-.56400	.30200	.00000	.33000	.00000	.00000
GRADIENT		-.00316	-.19012	.00038	-.00516	-.00516	-.00033	-.03334	.00000	.00000	.00000	.00000

TABULATED SOURCE DATA, MSFC TMF 590/595

(R95029) (11 DEC 75)

DATE 08 NOV 74

MSFC 590(SA26F) 142-IN. SR8(139) NRE1S2 ELT

REFERENCE DATA

SREF = .5035 50. IN XMRP = 5.5370 IN.
 LREF = .6000 1N. YMRP = .0000 1N.
 WREF = .6000 1N. ZMRP = .0000 1N.
 SCALE = .0036

PARAMETRIC DATA

BETA = .000 PHI = 135.000
 PASTK = .000 AFTSTK = .000
 ATMRG = 1.000 ATMS = .000
 CONF1 = 4.000 SHOSTK = .000
 ELT = 1.000 SEPRAT = 2.000

RUN NO. 100/ 0 RIVL = 7.11 GRADIENT INTERVAL = -3.00/ 3.00

WICH	ALPHA	CMH	CLMH	CMH	CTMH	CBH	CA	CAB	XCP/L	CPB1	CPB2
3.476	60.050	18.78240	10.40360	1.62260	-.42390	-.54830	.60280	.00000	.52130	.00000	.00000
3.476	61.940	18.91960	10.10380	1.64300	-.43630	-.59950	.61240	.00000	.52270	.00000	.00000
3.476	63.920	19.20840	9.60960	1.66800	-.46300	-.56160	.46140	.00000	.52370	.00000	.00000
3.476	66.900	19.27150	9.01050	1.68260	-.47040	-.57150	.29960	.00000	.52920	.00000	.00000
3.476	63.930	18.21690	7.83340	1.67320	-.47920	-.56910	.11610	.00000	.53320	.00000	.00000
3.476	97.940	18.93790	7.00760	1.64840	-.49030	-.55910	-.07670	.00000	.53630	.00000	.00000
3.476	99.710	18.74023	6.63460	1.62460	-.43340	-.56360	-.16390	.00000	.53770	.00000	.00000
3.476	66.900	19.26260	6.81530	1.66650	-.47790	-.56670	.39110	.00000	.52920	.00000	.00000
GRADIENT	-.00003	-.00003	-.00007	.00028	.00193	-.00048	-.04322	.00000	.00083	.00000	.00000

MSFC 590(SA26F) 142-IN. SR8(139) NRE1A

(R95030) (11 DEC 75)

REFERENCE DATA

SREF = .5035 50. IN XMRP = 5.5370 IN.
 LREF = .6000 1N. YMRP = .0000 1N.
 WREF = .6000 1N. ZMRP = .0000 1N.
 SCALE = .0036

PARAMETRIC DATA

BETA = .000 PHI = .000
 PASTK = .000 AFTSTK = .000
 ATMRG = 1.000 ATMS = .000
 CONF1 = 1.000 SHOSTK = .000
 ELT = .000 SEPRAT = .000

RUN NO. 100/ 0 RIVL = 7.13 GRADIENT INTERVAL = -3.00/ 3.00

WICH	ALPHA	CMH	CLMH	CMH	CTMH	CBH	CA	CAB	XCP/L	CPB1	CPB2
3.480	136.810	3.37730	.73560	-.14710	-.07430	.00690	-2.92390	.00000	.54660	.00000	.00000
3.480	136.190	3.49160	.76160	-.15160	-.07470	.01690	-2.95560	.00000	.54670	.00000	.00000
3.480	135.970	3.62330	.76810	-.16230	-.06900	.00190	-2.39440	.00000	.54920	.00000	.00000
3.480	135.160	3.75930	.77420	-.15760	-.03990	.01165	-3.02840	.00000	.54970	.00000	.00000
3.480	134.640	3.80840	.64370	-.16590	-.07140	.00370	-3.06240	.00000	.54990	.00000	.00000
3.480	134.120	4.02600	.65760	-.16280	-.09210	.00930	-3.09920	.00000	.54910	.00000	.00000
3.480	133.600	4.19350	.67630	-.16420	-.08220	-.00070	-3.15330	.00000	.54950	.00000	.00000
3.480	133.080	4.34710	.67220	-.17630	-.09330	.00370	-5.20660	.00000	.55020	.00000	.00000
3.480	132.560	4.48990	.68870	-.17340	-.10370	.01100	-3.24400	.00000	.55040	.00000	.00000
3.480	132.040	4.63280	.90360	-.17440	-.10920	.00230	-3.30680	.00000	.55060	.00000	.00000
3.480	131.530	4.78420	.94060	-.17920	-.10900	.00270	-3.36370	.00000	.55050	.00000	.00000
3.480	134.100	4.01690	.65910	-.17020	-.09740	.00010	-3.10310	.00000	.54910	.00000	.00000
GRADIENT	-.27692	-.03353	-.03353	.00377	.00932	.00124	.08496	.00000	-.00039	.00000	.00000

MSFC 990 (SA28F) 142-IN. SRB (139) N9R61A

(0990381) (11 DEC 73)

REFERENCE DATA

SREF = .5030 SO. IN YMRP = 3.3570 IN.
 LREF = .0000 IN. YMRP = .0000 IN.
 MREF = .0000 IN. ZMRP = .0000 IN.
 SCALE = .0056

PARAMETRIC DATA

BETA = .000 PHI = .000
 PLDSTR = .000 AFTSTR = .000
 ATWING = 1.000 ATMS = .000
 COAFLC = 1.000 SHDSTR = .000
 ELT = .000 SERRKT = .000

RUN NO. 109/ 0 RIVL = 7.16 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CMH	CLJM	CYN	CYMH	CBL	CA	CAB	XCP/L	CFB1	CFB2
3.478	150.980	4.93380	.97060	-.10120	-.07390	.01370	-3.40510	.00000	-.57030	.00000	.00000
3.478	150.480	5.08870	1.07840	-.17440	-.10020	.02010	-3.49920	.00000	-.54920	.00000	.00000
3.478	149.980	5.22820	1.17840	-.18290	-.10140	.01600	-3.50580	.00000	-.54810	.00000	.00000
3.478	149.480	5.37030	1.24690	-.17640	-.11210	.00700	-3.53840	.00000	-.54760	.00000	.00000
3.478	148.980	5.51160	1.30770	-.18840	-.12890	.02300	-3.53120	.00000	-.54720	.00000	.00000
3.478	148.330	5.79380	.21250	-.20610	-.00340	.00210	-2.86770	.00000	-.56350	.00000	.00000
3.478	147.810	5.94860	.24230	-.21450	-.1670	-.00120	-2.87810	.00000	-.56320	.00000	.00000
3.478	147.290	6.12670	.23270	-.21960	-.00170	-.00230	-2.89140	.00000	-.56340	.00000	.00000
3.478	146.770	6.27770	.23130	-.22030	-.03320	.00020	-2.90190	.00000	-.56330	.00000	.00000
3.478	146.250	6.42610	.29090	-.22170	-.01810	-.00100	-2.92330	.00000	-.56290	.00000	.00000
3.478	145.930	5.90260	1.31770	-.18840	-.12370	.01330	-3.54980	.00000	-.54700	.00000	.00000
		-.32204	.24645	.01159	-.02250	.00476	-.16493	.00000	-.00412	.00000	.00000



DATE 06 NOV 74

TABLATED SOURCE DATA, W8FC TWT 590/595

PAGE 48

(093032) (11 DEC 73)

W8FC 590 (S26F) 142-IN. SRB (136) W8RE1A

REFERENCE DATA

WREF = .5030 SQ. IN XMRP = 9.9370 IN.
 LREF = .6000 IN. YMRP = .0000 IN.
 WREF = .6000 IN. ZMRP = .0000 IN.
 SCALE = .0036

PARAMETRIC DATA

BETA = .000 PHI = .000
 FADSTR = .000 AFTSTR = .000
 ATWRNG = 1.000 ATMS = .000
 COMFLG = 1.000 SHOSTR = .000
 ELT = .000 SEPRKT = .000

RUN NO. 110/ 0 RIVL = 7.11 GRADIENT INTERVAL = -5.00/ 5.00

PACK	ALPHA	CMW	CLWN	CYM	CYWA	COL	CA	CAB	XCP/L	CFB1	CFB2
3.480	145.700	6.02450	.31300	-.21550	-.03370	.01350	-2.93140	.00000	.56270	.00000	.00000
3.480	145.180	6.78180	3.4230	-.21630	-.04980	.01010	-2.94850	.00000	.56240	.00000	.00000
3.480	144.130	7.13090	.41340	-.22280	-.05620	.01540	-3.00060	.00000	.56180	.00000	.00000
3.480	143.110	7.48670	.43040	-.22930	-.06340	.02000	-3.04470	.00000	.56160	.00000	.00000
3.480	142.070	7.72590	.56060	-.23070	-.06360	.02060	-3.08350	.00000	.56060	.00000	.00000
3.480	141.030	8.01890	.63910	-.23310	-.05430	.00570	-3.12760	.00000	.56000	.00000	.00000
3.480	140.000	8.31070	.63080	-.23310	-.07680	.00740	-.17930	.00000	.55940	.00000	.00000
3.480	139.970	8.30730	1.04660	-.24160	-.05290	.00959	-3.20300	.00000	.55660	.00000	.00000
3.480	137.330	8.90220	1.22310	-.23970	-.06330	.00710	-3.17800	.00000	.55530	.00000	.00000
3.480	136.910	9.14830	1.51930	-.23830	-.07730	-.00360	-3.18980	.00000	.55300	.00000	.00000
3.480	135.960	9.42190	1.66480	-.24390	-.09430	.00670	-3.14750	.00000	.55210	.00000	.00000
3.480	141.030	6.01000	.62860	-.23700	-.03900	-.00450	-3.12300	.00000	.56010	.00000	.00000
GRADIENT		-.28660	-.13928	.00279	.00332	.00117	.02692	.00000	.00111	.00000	.00000

MSFC 990(SA26F) 148-IN. SRB(139) NREB1A

(R93033) (11 DEC 73)

REFERENCE DATA

BREF = .3030 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
FMOSTK = .000 AFTSTK = .000
ATHRMG = 1.000 ATMS = .000
CONF1G = 1.000 SMOSTK = .000
ELT = .000 SEPRKT = .000

RUN NO. 111/ 0 RVL = 0.07 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CMH	CLMH	CYM	CYMH	CBL	CA	CAB	XCP/L	CPB1	CPB2
4.45C	138.840	3.03970	1.19730	-1.13470	-0.09320	.01820	-2.83330	.00000	.33440	.00000	.00000
4.450	134.890	3.36640	1.21820	-1.17400	-0.08830	.00370	-3.02310	.00000	.53870	.00000	.00000
4.450	132.850	4.10480	1.31100	-1.17440	-0.08210	.00270	-3.19400	.00000	.54030	.00000	.00000
4.450	130.800	4.87700	1.32800	-1.17770	-0.12330	.00040	-3.38440	.00000	.53990	.00000	.00000
4.450	148.710	5.40930	.51950	-1.08680	-0.08600	-.00510	-2.70950	.00000	.53870	.00000	.00000
4.450	146.660	5.99330	.56790	-1.20340	-0.09820	-.00430	-2.77730	.00000	.53530	.00000	.00000
4.450	144.620	6.60720	.74330	-1.22260	-0.09110	-.00340	-2.87990	.00000	.53740	.00000	.00000
4.450	142.550	7.20710	.87670	-1.22740	-0.07360	-.02030	-3.02750	.00000	.53660	.00000	.00000
4.450	140.530	7.77470	1.33950	-1.18910	-0.08610	-.01490	-3.16170	.00000	.53230	.00000	.00000
4.450	138.490	8.79560	2.04120	-2.32290	-0.09630	-.01230	-3.12070	.00000	.54760	.00000	.00000
4.450	136.450	9.93220	2.11510	-2.47950	-0.13000	-.01300	-2.86140	.00000	.54920	.00000	.00000
4.450	146.870	5.99320	.60520	-2.11700	-0.06870	-.01170	-2.78270	.00000	.53930	.00000	.00000
GRADIENT		-.32236	-.03052	.00496	.00079	.00139	-.00064	.00000	-.00079	.00000	.00000

MSFC 990(SA26F) 142-IN. SRB(139) NREB1A

(R93034) (11 DEC 73)

REFERENCE DATA

BREF = .5030 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
FMOSTK = .000 AFTSTK = .000
ATHRMG = 1.000 ATMS = .000
CONF1G = 1.000 SMOSTK = .000
ELT = .000 SEPRKT = .000

RUN NO. 113/ 0 RVL = 5.20 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CMH	CLMH	CYM	CYMH	CBL	CA	CAB	XCP/L	CPB1	CPB2
2.740	146.210	5.92000	.69660	-2.39330	-1.12040	.01460	-3.44840	.00000	.53690	.00000	.00000
2.740	146.230	6.46380	1.05930	-2.39660	-1.12900	.00970	-3.58880	.00000	.53320	.00000	.00000
2.740	142.080	7.77680	.77080	-2.64200	-0.09730	.02120	-3.32340	.00000	.53940	.00000	.00000
2.740	137.980	9.13450	.77310	-2.90700	-0.07350	.01370	-3.26230	.00000	.53960	.00000	.00000
2.740	133.710	10.39290	1.21230	-3.04300	-0.05210	-.00030	-3.13300	.00000	.53700	.00000	.00000
2.740	129.970	11.62980	1.96100	-3.10700	-0.03260	.00670	-2.90460	.00000	.53200	.00000	.00000
2.740	127.800	12.24120	2.09080	-3.30340	-0.04300	.00360	-2.73310	.00000	.53260	.00000	.00000
2.740	137.880	9.13440	.77340	-2.94700	-0.07370	.01400	-3.26230	.00000	.53960	.00000	.00000
GRADIENT		-.30830	-.06133	.00373	-.00420	.00146	-.03319	.00000	-.00014	.00000	.00000

TABULATED SOURCE DATA, MSFC TWT 590/908

MSFC 590(SA26F) 142-IN. SR8(139) NEREIA

DATE 09 NOV 74

(R19088) (11 DEC 73)

REFERENCE DATA

BREF = .5030 SA. IN XMRP = 5.5570 IN.
 LREF = .6000 IN. YMRP = .0000 IN.
 SREF = .6000 IN. ZMRP = .0000 IN.
 SCALE = .0016

PARAMETRIC DATA

BETA = .000 PHI = .0000
 PLASTK = .000 AFTSTK = .0000
 ATPRNG = 1.000 ATVS = .000
 COMFIC = 1.000 SMOSTK = .000
 ELT = .080 SEPRKT = .000

RUN NO. 114/ 0 RIVL = 5.20 GRADIENT INTERVAL = -5.00/ 9.00

WAOH	ALPHA	CMH	CLMH	CYH	CYMH	CBL	CA	CAB	XCP/L	CPH1	CPH2
8.740	169.770	71840	-63360	-04280	.10720	.00980	-2.39310	.07000	.63650	.07000	.07000
8.740	167.620	1.09020	-54830	-08400	.03130	.00460	-2.45980	.00000	.67460	.07000	.00000
8.740	163.720	1.95970	-20600	-15400	-.03190	.00900	-2.08190	.00000	.57500	.00000	.00000
8.740	159.600	2.99410	-15020	-17580	.07990	.00000	-2.01660	.00000	.56240	.00000	.00000
8.740	155.440	4.10840	-60780	-16740	.02600	-.00330	-3.04240	.00070	.55840	.00000	.00000
8.740	151.290	5.33560	-67980	-19160	-.03320	-.00070	-3.30510	.00200	.55810	.00200	.00000
8.740	149.310	5.84960	-62840	-19670	-.11260	-.01550	-3.47280	.00000	.55320	.00000	.00000
8.740	159.600	2.94840	-14770	-17170	.08360	-.00360	-2.02040	.00000	.56240	.00000	.00000
GRADIENT									.00333	.00080	.00000

MSFC 590(SA26F) 142-IN. SR8(139) NEREIA

(R19088) (11 DEC 73)

REFERENCE DATA

BREF = .5030 SA. IN XMRP = 5.5570 IN.
 LREF = .6000 IN. YMRP = .0000 IN.
 SREF = .6000 IN. ZMRP = .0000 IN.
 SCALE = .0016

PARAMETRIC DATA

BETA = .000 PHI = .000
 PLASTK = .000 AFTSTK = .000
 ATPRNG = 1.000 ATVS = .000
 COMFIC = 1.000 SMOSTK = .000
 ELT = .000 SEPRKT = .000

RUN NO. 115/ 0 RIVL = 5.20 GRADIENT INTERVAL = -5.00/ 9.00

WAOH	ALPHA	CMH	CLMH	CYH	CYMH	CBL	CA	CAB	XCP/L	CPH1	CPH2
8.740	190.340	-76650	.23190	-.04720	.01320	-.00470	-2.43220	.00000	.99120	.00000	.00000
8.740	186.400	-45220	.27970	-.04190	.02920	-.00220	-2.37020	.00000	.61780	.00000	.00000
8.740	184.350	-13760	.23390	-.03710	.07910	.00210	-2.24600	.00000	.71700	.00000	.00000
8.740	180.320	.01760	-.07680	-.03370	.07600	.00700	-2.16890	.00000	.93080	.00000	.00000
8.740	178.260	.19530	-.5310	-.04650	.06450	-.00720	-2.21070	.00000	.79720	.00000	.00000
8.740	172.190	.43970	-.75930	-.03360	.07530	-.00680	-2.31970	.00000	.70740	.00000	.00000
8.740	170.290	.63300	-.67500	-.02530	.07520	-.00270	-2.39890	.00000	.63350	.00000	.00000
8.740	180.320	.00810	-.10190	-.03790	.09260	-.01410	-2.16670	.00000	1.59470	.00000	.00000
GRADIENT									-.00457	.00000	.00000

MSFC 990(SA26F) 142-IN. SRB(139) NRE1A

(R09037) (11 DEC 73)

REFERENCE DATA

BREF = .3030 SQ. IN XMRP = 3.5970 IN.
LREF = .0000 IN. YMRP = .0000 IN.
SRF = .0000 IN. ZMRP = .0000 IN.
SCALE = .0036

BETA = .000 PHI = .000
FWDSTK = .000 AFTSTK = .000
ATHRNG = 1.000 ATMS = .000
CGNFIC = 1.000 SMDSTK = .000
ELT = .000 SEPRKT = .000

PARAMETRIC DATA

RUN NO. 112/ 0 RIVL = 5.22 GRADIENT INTERVAL = -5.00/ 3.00

MACH	ALPHA	CIM	CLIM	CYM	CYIM	CBL	CA	CAB	XCP/L	CFP1	CFB2
2.740	156.590	3.83110	.55150	-.17260	-.01290	.00170	-2.94630	.00000	.55490	.00000	.00000
2.740	154.670	4.39930	.69220	-.16470	-.03190	.00660	-3.06660	.00000	.55370	.00000	.00000
2.740	150.470	5.63790	1.04330	-.16690	-.14200	.00760	-3.33690	.00000	.55150	.00000	.00000
2.740	146.320	6.84120	1.72230	-.21690	-.09350	-.00090	-3.59080	.00000	.54600	.00000	.00000
2.740	142.090	8.26610	1.90220	-.24910	-.09730	.00360	-3.23620	.00000	.55370	.00000	.00000
2.740	137.900	9.59670	1.53870	-.27230	.00040	-.00060	-3.20640	.00000	.55310	.00000	.00000
2.740	135.950	10.16970	1.66910	-.24040	-.01740	.00290	-3.13150	.00000	.55150	.00000	.00000
2.740	146.290	6.91010	1.22620	-.22670	-.09140	.00960	-3.34210	.00000	.55200	.00000	.00000
GRADIENT		-.30908	-.05606	.00431	-.00140	.00021	.00691	.00000	.00000	.00000	.00000

MSFC 990(SA26F) 142-IN. SRB(139) NRE1A

(R99038) (11 DEC 73)

REFERENCE DATA

BREF = .3030 SQ. IN XMRP = 3.5970 IN.
LREF = .0000 IN. YMRP = .0000 IN.
SRF = .0000 IN. ZMRP = .0000 IN.
SCALE = .0036

BETA = .000 PHI = .000
FWDSTK = .000 AFTSTK = .000
ATHRNG = 1.000 ATMS = .000
CGNFIC = 2.000 SMDSTK = .000
ELT = .000 SEPRKT = .000

PARAMETRIC DATA

RUN NO. 118/ 0 RIVL = 5.20 GRADIENT INTERVAL = -5.00/ 3.00

MACH	ALPHA	CIM	CLIM	CYM	CYIM	CBL	CA	CAB	XCP/L	CFP1	CFB2
2.740	32.610	7.00400	5.57370	.27600	.19590	.00000	1.04230	.20100	.50160	-.10540	-.11540
2.740	33.990	7.68000	5.77470	.26310	.18450	.02960	1.06280	.20790	.50320	-.10560	-.12350
2.740	36.160	9.08900	6.24930	.30560	.18140	-.00640	1.15640	.22260	.51040	-.11320	-.13240
2.740	42.330	10.49730	6.65160	.32430	.19910	-.00010	1.20260	.22110	.51320	-.10610	-.13990
2.740	46.530	11.89720	7.57140	.33990	.21530	.00130	1.23600	.21620	.51460	-.09720	-.14340
2.740	50.730	13.27640	8.09560	.34490	.19720	.01120	1.27410	.21010	.51680	-.09190	-.14270
2.740	52.690	13.69100	8.45950	.33710	.17470	-.00390	1.27190	.19590	.51690	-.07840	-.14160
2.740	42.330	10.47900	6.65630	.31690	.24530	.01460	1.20000	.22320	.51320	-.10560	-.14190
GRADIENT		.33372	.14099	.00326	.00007	-.00041	.01107	-.00016	.00070	.00119	-.00123

TABULATED SOURCE DATA, MSFC TWT 990/995

MSFC 990 (SA26F) 142-IN. SRB(1) NBRE1

DATE 08 NOV 74

(R95039) (11 DEC 73)

REFERENCE DATA

BREF = .9030 SQ. IN YMRP = 5.5370 IN.
 LREF = .0000 IN. YMRP = .0000 IN.
 BREF = .0000 IN. ZMRP = .0000 IN.
 SCALE = .0056

PARAMETRIC DATA

BETA = .000 PMI = .000
 FLDSTK = .000 AFTSTK = .000
 ATMRNG = 1.000 ATMS = .000
 COAF16 = 2.000 SMOSTK = .000
 ELT = .000 SEPRRT = .000

RUN NO. 116/ 0 RIVL = 5.19 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CVM	CLJM	CYM	CYMA	CEL	CA	CAB	XCP/L	CFB1	CFB2
2.740	-10.190	-1.3480Z	-2.83500	.09900	.16100	.00290	.90300	.29080	.39490	-.13100	-.14470
2.740	-8.220	-.92090	-2.27820	.07670	.20680	.00450	.89110	.24870	.36490	-.12720	-.14670
2.740	-4.130	-.37440	-1.03250	.04340	.21770	.00660	.88440	.23080	.34160	-.11040	-.14530
2.740	-.030	-.04050	-.04260	.09000	.14720	.00100	.85410	.22020	.48070	-.10270	-.14170
2.740	4.050	.32170	.80540	.06070	.19820	.00460	.86990	.22070	.36250	-.19320	-.14170
2.740	6.170	.74460	1.98280	.06640	.19210	-.01240	.90010	.23760	.34930	-.11870	-.14350
2.740	10.130	1.07440	2.58840	.09150	.16390	-.08290	.90070	.24230	.37900	-.12790	-.14560
2.740	-.040	-.06060	-.08790	.07350	.13370	.00290	.83390	.21970	.44930	-.10220	-.14170
GRADIENT		.08509	.22470	-.00062	-.00240	-.00025	.00955	-.00124	.00256	.00398	.00044

REFERENCE DATA

BREF = .9030 SQ. IN YMRP = 5.5370 IN.
 LREF = .0000 IN. YMRP = .0000 IN.
 BREF = .0000 IN. ZMRP = .0000 IN.
 SCALE = .0056

PARAMETRIC DATA

BETA = .000 PMI = .000
 FLDSTK = .000 AFTSTK = .000
 ATMRNG = 1.000 ATMS = .000
 COAF16 = 2.000 SMOSTK = .000
 ELT = .000 SEPRRT = .000

MSFC 990 (SA26F) 142-IN. SRB(199) NBRE1

(R95040) (11 DEC 73)

RUN NO. 117/ 0 RIVL = 5.19 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CVM	CLJM	CYM	CYMA	CEL	CA	CAB	XCP/L	CFB1	CFB2
2.740	10.320	1.17040	2.75250	.12480	.22410	.01810	.88860	.23970	.37470	-.12340	-.14090
2.740	12.300	1.60480	3.21460	.13220	.23160	.00470	.89750	.24310	.40310	-.12650	-.14090
2.740	16.420	2.65940	3.81750	.17090	.22170	-.00090	.88340	.23090	.44940	-.11350	-.13940
2.740	20.590	3.79110	4.35330	.19590	.26070	.00290	.86340	.21060	.47250	-.10650	-.12630
2.740	24.760	5.01180	4.73910	.24020	.23630	.00340	.94040	.19310	.48940	-.09960	-.11290
2.740	28.940	6.34980	5.20750	.23530	.27320	.01110	1.01030	.18920	.49960	-.09830	-.10940
2.740	30.900	6.99970	5.40370	.24760	.24420	.08310	1.04420	.18560	.50360	-.09810	-.10570
2.740	20.590	3.77120	4.31930	.20340	.24810	.00900	.89630	.20630	.47310	-.10490	-.12240
GRADIENT		.26384	.12389	.00626	.00117	-.00019	.00721	-.00304	.00596	.00145	.00192

MSFC 593(SA26F) 142-IN. SRB(139) N8RE18

(R93030) (07 MAR 74)

REFERENCE DATA

SREF = .5030 SQ. IN XMRP = 5.5570 IN.
 LREF = .8000 IN. YMRP = .0000 IN.
 SREF = .8000 IN. ZMRP = .0000 IN.
 SCALE = .0036

PARAMETRIC DATA

BETA = .000 PHI = .000
 FLASTK = .000 AFTSTK = .000
 ATWRNG = 1.000 ATMS = .000
 CRAFTC = 5.000 SHDSTK = .000
 ELT = .000 SEPRRT = .000

RUN NO. 12/ 1 RIVL = 4.92 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CMH	CLMH	CYM	CYHM	CBL	CA	CAB	XCP/L	CPB1	CFB2
.997	109.830	10.88910	-2.30980	-0.4680	1.18030	-1.8230	-0.2930	.00000	.56390	.00000	.00000
.997	107.940	11.00660	-1.90690	-0.5160	1.12200	-1.6100	-0.4190	.00000	.58070	.00000	.00000
.997	105.960	11.15080	-1.60570	-0.6630	.99810	-1.8270	-1.17910	.00000	.57630	.00000	.00000
.997	103.990	11.25940	-1.10430	-0.8960	1.00060	-1.5610	.03200	.00000	.57450	.00000	.00000
.997	101.980	11.34830	-0.51160	-1.4350	.94300	-1.4020	.23460	.00000	.57020	.00000	.00000
.997	99.980	11.39910	.26930	-1.9340	1.01390	-1.5280	.44110	.00000	.56460	.00000	.00000
.997	97.990	11.62 10	1.07720	-1.9790	1.15690	-1.5180	.63390	.00000	.55900	.00000	.00000
.997	96.000	11.67890	1.73420	-1.2100	1.29670	-1.4840	.79920	.00000	.55440	.00000	.00000
.997	94.040	11.58270	2.67770	-1.17320	1.36630	-1.3690	.87180	.00000	.54770	.00000	.00000
.997	92.040	11.65030	3.71290	-1.6220	1.38760	-1.4330	.98350	.00000	.54050	.00000	.00000
.997	90.160	11.70320	4.83270	-1.5330	1.44330	-1.1180	1.01990	.00000	.53270	.00000	.00000
.997	88.000	11.48400	.39120	-1.1780	1.01380	-1.1360	.45760	.00000	.56390	.00000	.00000
GRADIENT		-.04161	-.36030	.00640	-.01973	-.00259	-.08674	.00000	.00237	.00000	.00000

RUN NO. 13/ 1 RIVL = 6.22 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CMH	CLMH	CYM	CYHM	CBL	CA	CAB	XCP/L	CPB1	CFB2
.900	109.660	13.69370	-2.22860	.12970	.44680	-1.0700	-.39330	.00000	.57980	.00000	.00000
.900	107.770	13.96280	-1.60480	.12100	.43130	-1.2190	-.13390	.00000	.57590	.00000	.00000
.900	105.810	14.23960	-.82730	.11620	.46190	-1.2240	.07030	.00000	.57130	.00000	.00000
.900	103.840	14.39930	.06490	.11930	.43900	-1.1890	.30200	.00000	.56620	.00000	.00000
.900	101.870	14.65720	1.08970	.10420	.45030	-1.2740	.48390	.00000	.56050	.00000	.00000
.900	99.890	14.87690	2.28900	.10170	.48330	-1.2020	.66400	.00000	.55400	.00000	.00000
.900	97.940	15.10180	4.04190	.19030	.60940	-1.1340	.76690	.00000	.54470	.00000	.00000
.900	95.980	15.41290	5.68710	.15490	.60810	-1.0620	.85130	.00000	.53170	.00000	.00000
.900	94.030	15.59070	6.64120	.14420	.56020	-.08490	.94040	.00000	.52730	.00000	.00000
.900	92.060	15.64410	7.47810	.12600	.58380	-.09350	1.00140	.00000	.52320	.00000	.00000
.900	90.170	15.66370	8.32090	.11350	.63230	-.10010	1.02330	.00000	.5160	.00000	.00000
.900	99.910	15.01380	2.53390	.14640	.54390	-.07260	.65160	.00000	.52370	.00000	.00000
GRADIENT		-.10700	-.38393	-.00066	-.01062	-.00139	-.07293	.00000	.00312	.00000	.00000

(093030) (07 MAR 74)

MSFC 595(SAREF) 142-IN. SRB(139) NBR10

PARAMETRIC DATA

BETA = .000 PBI = .000
 FLASTR = .000 AFTSTR = .000
 ATWING = 1.000 ATMS = .000
 CCAFTG = 5.000 S4DSTR = .000
 ELT = .000 SEPRKT = .000

REFERENCE DATA

GRZF = .9025 53. IN XMRP = 5.5370 IN.
 LMRP = .0000 IN. YMRP = .0000 IN.
 ZMRP = .0000 IN. ZMRP = .0000 IN.
 SCALE = .0036

RUN NO. 14/ 1 RIVL = 6.63 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CPM	CLPM	CYN	CYM	CSL	CA	CAS	XCP/L	CP81	CP82
1.186	109.790	17.10770	5.03830	.17620	.17440	-.03620	-.70030	.00000	.54230	.00000	.00000
1.186	107.930	17.36460	5.68930	.17890	.22820	-.03220	-.90360	.00000	.33980	.00000	.00000
1.186	105.930	17.63970	6.37800	.19660	.28200	-.03900	-.31420	.00000	.53610	.00000	.00000
1.186	103.930	18.04930	7.22200	.21610	.39430	-.03440	-.12490	.00000	.53390	.00000	.00000
1.186	101.990	18.37240	7.64700	.23940	.47760	-.02860	.08990	.00000	.53170	.00000	.00000
1.186	99.870	18.53040	7.86210	.25520	.42370	-.03790	.23190	.00000	.53190	.00000	.00000
1.186	97.990	18.63000	8.31710	.23690	.42140	-.03660	.39470	.00000	.52960	.00000	.00000
1.186	96.000	19.01370	9.10410	.24100	.39880	-.03770	.59670	.00000	.52730	.00000	.00000
1.186	94.030	19.23690	9.79190	.23660	.41610	-.03000	.71990	.00000	.52500	.00000	.00000
1.186	92.060	19.49660	10.63310	.23000	.37430	-.02300	.89660	.00000	.52200	.00000	.00000
1.186	90.180	19.58020	11.30210	.23460	.36170	-.02700	.98190	.00000	.51940	.00000	.00000
1.186	99.960	18.49070	7.69060	.21930	.35730	-.02960	.23430	.00000	.53230	.00000	.00000
GRADIENT		-.12882	-.29996	-.00332	-.00664	-.00042	-.09389	.00000	.00109	.00000	.00000

TABULATED SOURCE DATA, MSFC TWT 300/300

DATE 08 NOV 74

(R03051) (07 MAR 74)

MSFC 300 (SAR0F) 148-IN. SRB (130) NRELE0

REFERENCE DATA

MACH = .3030 SQ. IN XMRP = 9.5970 IN.
 LREF = .0000 IN. YMRP = .0000 IN.
 BRFP = .0000 IN. ZMRP = .0000 IN.
 SCALE = .0036

PARAMETRIC DATA

BETA = .000 PHI = .000
 FLGSTRK = .000 AFTSTRK = .000
 ATMRNG = 1.000 ATMS = .000
 COMFLG = 1.000 SHDSTRK = .000
 ELT = .000 SEPRNT = .000

RUN NO. 16/ 0 RIVL = 6.25 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CMH	CLMH	CYM	CYMH	CBL	CA	CAB	XCP/L	CFB1	CFB2
.901	129.490	9.55280	-5.59140	.01140	.20420	-.03340	-2.48080	.00000	.61430	.00000	.00000
.901	127.540	10.06860	-5.61620	.02230	.29190	-.04630	-2.36230	.00000	.61200	.00000	.00000
.901	125.590	10.63710	-5.45130	.02520	.30090	-.04120	-2.19960	.00000	.60930	.00000	.00000
.901	123.520	11.22400	-5.41730	.02640	.30080	-.03160	-2.04060	.00000	.60590	.00000	.00000
.901	121.520	11.70860	-5.26140	.02760	.24370	-.04330	-1.81930	.00000	.60330	.00000	.00000
.901	119.510	12.25060	-5.09440	.02910	.32200	-.02340	-1.59600	.00000	.60040	.00000	.00000
.901	117.490	12.60130	-4.78230	.03490	.31490	-.02590	-1.38630	.00000	.59790	.00000	.00000
.901	115.520	12.94770	-4.29410	.04700	.30900	-.02600	-1.13450	.00000	.59360	.00000	.00000
.901	113.540	13.23270	-.64990	.06620	.35830	-.02640	-.87940	.00000	.59090	.00000	.00000
.901	111.530	13.61660	-2.97130	.10370	.38200	-.02830	-.64000	.00000	.59430	.00000	.00000
.901	109.630	13.97390	-2.09930	.10420	.39910	-.03970	-.39210	.00000	.57880	.00000	.00000
.901	119.510	12.20320	-5.14790	.06690	.30320	-.04830	-1.59810	.00000	.60090	.00000	.00000
GRADIENT	-.22102	-.16476	-.00491	-.00811	-.00120	-.10769			.00172		.00000

RUN NO. 15/ 0 RIVL = 6.67 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CMH	CLMH	CYM	CYMH	CBL	CA	CAB	XCP/L	CFB1	CFB2
1.197	129.510	12.44720	-.32840	.11250	.15440	-.06160	-2.63360	.00000	.57090	.00000	.00000
1.197	127.590	13.05620	-.38530	.15660	.15270	-.04730	-2.51420	.00000	.56890	.00000	.00000
1.197	125.610	13.61320	-.40330	.17660	.19170	-.03930	-2.35010	.00000	.56370	.00000	.00000
1.197	123.600	14.24370	-.66330	.20380	.18020	-.03290	-2.19360	.00000	.56270	.00000	.00000
1.197	119.620	14.84720	1.23180	.20390	.19920	-.04350	-1.99080	.00000	.55970	.00000	.00000
1.197	117.610	15.90090	1.83190	.21390	.18110	-.04110	-1.77640	.00000	.55670	.00000	.00000
1.197	115.640	16.39030	2.44360	.21330	.23340	-.03330	-1.56340	.00000	.55400	.00000	.00000
1.197	113.660	16.76200	3.06530	.22930	.26440	-.04070	-1.33320	.00000	.55120	.00000	.00000
1.197	111.670	17.13390	3.59910	.23920	.27290	-.04100	-1.12100	.00000	.54910	.00000	.00000
1.197	109.770	17.47200	4.77360	.24640	.29390	-.03880	-.98230	.00000	.54690	.00000	.00000
1.197	119.620	15.38720	1.97930	.25920	.32300	-.04190	-.69410	.00000	.54420	.00000	.00000
GRADIENT	-.25633	-.27963	-.00812	-.00676	-.00068	-.10119			.00136		.00000



MSFC 395(SA26F) 142-IN. 388(139) N8RE18

(07 MAR 74)

REFERENCE DATA

BREP = .5000 80. IN XMRP = 5.5370 IN.
 LREP = .5000 IN. YMRP = .5000 IN.
 WREP = .0000 IN. ZMRP = .0000 IN.
 SCALE = .0016

PARAMETRIC DATA

BETA = .000 PHI = .000
 FLASTK = .000 AFTSTK = .000
 ATMRG = 1.000 ATMS = .000
 CONF1 = 5.000 SMOSTK = .000
 ELT = .000 SEPRKT = .000

RUN NO. 11/ 0 RVL = 6.78 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CMH	CLMH	CYM	CYMH	CBL	CA	CAS	XCP/L	CFB1	CFB2
1.938	149.700	6.69320	1.86560	.02360	-.01940	-.00178	-3.46320	.02000	.53480	.00000	.00000
1.938	146.680	7.39740	1.13290	.00910	-.02970	-.00330	-3.39130	.02000	.53390	.00000	.00000
1.938	144.800	8.14840	1.49410	.04730	-.02900	-.00450	-3.35650	.02000	.53160	.00000	.00000
1.938	142.400	8.64000	1.63530	.03500	-.02210	-.01290	-3.29270	.02000	.53140	.00000	.00000
1.938	140.350	9.54040	1.60140	.09420	.11460	-.01160	-3.22170	.02000	.53110	.00000	.00000
1.938	138.240	10.31620	2.13960	.06320	.05170	-.01520	-3.13560	.02000	.54960	.00000	.00000
1.938	136.150	10.97920	2.31710	.07260	.01700	-.02440	-3.03560	.02000	.54780	.00000	.00000
1.938	134.050	11.72410	2.67170	.10370	.05960	-.03010	-2.91300	.02000	.54790	.00000	.00000
1.938	132.520	12.35420	2.88970	.11940	.03190	-.02900	-2.76490	.02000	.54730	.00000	.00000
1.938	129.880	12.66920	3.13440	.12150	.05190	-.02430	-2.57610	.02000	.54670	.00000	.00000
1.938	127.630	13.46120	2.83360	.17750	.20390	-.04790	-2.36770	.02000	.54940	.00000	.00000
1.938	136.260	10.19370	2.08700	.10000	.14000	-.03070	-3.12470	.02000	.54990	.00000	.00000
GRADIENT		-.32792	-.10515	-.00647	-.00636	.00187	-.04810	.00200	.07034	.00000	.00000

RUN NO. 4/ 0 RVL = 4.60 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CMH	CLMH	CYM	CYMH	CBL	CA	CAS	XCP/L	CFB1	CFB2
2.740	149.170	5.99340	1.36740	.01690	.00430	-.02690	-3.46860	.00000	.54790	.00000	.00000
2.740	147.210	6.61460	1.51700	.04000	-.03930	-.00910	-3.40600	.00000	.54760	.00000	.00000
2.740	145.150	7.23930	1.68980	.04430	-.03110	-.00610	-3.35290	.00000	.54750	.00000	.00000
2.740	143.090	7.90030	1.77720	.03670	-.03320	-.03620	-3.29190	.00000	.54820	.00000	.00000
2.740	141.030	8.53160	1.92900	.03510	-.04930	-.03690	-3.28130	.00000	.54610	.00000	.00000
2.740	138.970	9.13230	2.05670	.06020	-.03080	-.03800	-3.09920	.00000	.54820	.00000	.00000
2.740	136.890	9.63320	1.64660	.03990	-.02350	-.05730	-2.90440	.00000	.55120	.00000	.00000
2.740	134.830	10.47820	1.99670	.06490	-.03760	-.06940	-2.77310	.00000	.55100	.00000	.00000
2.740	132.790	11.13920	2.16920	.07770	-.02900	-.07670	-2.67440	.00000	.55000	.00000	.00000
2.740	130.710	11.75460	2.38090	.08170	-.04130	-.07390	-2.53890	.00000	.55000	.00000	.00000
2.740	128.740	12.32820	2.65770	.09370	-.03350	-.06680	-2.36470	.00000	.54990	.00000	.00000
2.740	136.970	9.15090	2.01470	.06020	-.02160	-.09160	-3.10130	.00000	.54860	.00000	.00000
GRADIENT		-.31162	-.05175	-.00293	.00118	.00392	-.03473	.00000	-.07014	.00000	.00000

MSFC 995 (SAGEF) 142-IN. SR0 (199) MORE18

(R95032) (07 MAR 74)

REFERENCE DATA

SREP = .0030 SQ. IN XMRP = 5.5370 IN.
 LREF = .0000 IN. YMRP = .0000 IN.
 SREF = .0000 IN. ZMRP = .0000 IN.
 SCALE = .0036

PARAMETRIC DATA

BETA = .000 PMI = .000
 FWDSTK = .000 AFTSTK = .000
 ATMRG = 1.000 ATMS = .000
 CONF16 = 5.000 SMOSTK = .000
 ELT = .000 SEPRKT = .000

RUN NO. 5/ 0 RIVL = 6.30 GRADIENT INTERVAL = -5.00/ 3.00

MACH	ALPHA	CMH	CLMH	CYM	CYMH	CBL	CA	CAB	XCP/L	CFP1	CFP2
3.480	149.180	5.56190	1.54800	.06080	.01430	-.03070	-3.46340	.00000	-.54360	.00000	.00000
3.480	147.220	6.16090	1.66900	.06380	.00140	-.04170	-3.40830	.00000	-.54440	.00000	.00000
3.480	145.180	6.75830	1.76990	.07860	-.00130	-.06030	-3.34190	.00000	-.54490	.00000	.00000
3.480	143.100	7.35920	1.89090	.08390	-.01430	-.07650	-3.24630	.00000	-.54560	.00000	.00000
3.480	141.030	8.03640	1.61440	.09330	-.03700	-.06930	-3.00990	.00000	-.55010	.00000	.00000
3.480	139.940	8.88160	1.67900	.09900	-.04960	-.06970	-2.89800	.00000	-.55090	.00000	.00000
3.480	138.870	9.35890	1.83340	.10160	-.02270	-.07410	-2.77300	.00000	-.55040	.00000	.00000
3.480	134.810	9.98760	2.01500	.10560	-.01590	-.09230	-2.65090	.00000	-.55010	.00000	.00000
3.480	132.760	10.63230	2.19400	.10910	-.01790	-.08960	-2.50910	.00000	-.54970	.00000	.00000
3.480	130.700	11.24370	2.43100	.12060	-.04910	-.09390	-2.34990	.00000	-.54980	.00000	.00000
3.480	128.730	11.84210	2.67000	.12260	-.01290	-.10960	-2.19940	.00000	-.54910	.00000	.00000
3.480	136.940	6.70000	1.69300	.11500	-.03110	-.11310	-2.09670	.00000	-.55060	.00000	.00000
GRADIENT		-.30912	-.04637	-.00297	.00165	.00297	-.06402	.00000	-.00000	.00000	.00000

RUN NO. 6/ 0 RIVL = 4.97 GRADIENT INTERVAL = -5.00/ 3.00

MACH	ALPHA	CMH	CLMH	CYM	CYMH	CBL	CA	CAB	XCP/L	CFP1	CFP2
4.939	149.340	4.90340	2.44330	.08670	.00630	-.03760	-3.39630	.00000	-.52390	.00000	.00000
4.939	147.620	5.48030	2.58030	.06690	.02470	-.07060	-3.37440	.00000	-.52810	.00000	.00000
4.939	145.590	6.05560	2.71370	.06360	.02200	-.03360	-3.26940	.00000	-.53000	.00000	.00000
4.939	143.530	6.74390	2.36300	.10140	.02030	-.04920	-3.07700	.00000	-.53790	.00000	.00000
4.939	141.520	7.39030	2.43170	.09030	.01630	-.05990	-2.94630	.00000	-.53930	.00000	.00000
4.939	139.490	8.02940	2.72610	.11220	-.02780	-.03640	-2.89390	.00000	-.53990	.00000	.00000
4.939	137.460	8.65090	2.94090	.09740	.03440	-.03330	-2.81430	.00000	-.53890	.00000	.00000
4.939	135.440	9.26380	3.20690	.10030	.01110	-.04210	-2.75930	.00000	-.53830	.00000	.00000
4.939	133.430	9.91630	3.38710	.11340	.03110	-.08330	-2.66520	.00000	-.53870	.00000	.00000
4.939	131.390	10.52480	3.69490	.10930	.00640	-.05710	-2.53370	.00000	-.53790	.00000	.00000
4.939	129.430	11.17460	3.83000	.12160	.04670	-.09670	-2.45940	.00000	-.53860	.00000	.00000
4.939	139.300	7.96940	2.76320	.09240	.01530	-.05060	-2.09020	.00000	-.53820	.00000	.00000
GRADIENT		-.31230	-.07908	-.00218	-.00123	.00099	-.04021	.00000	-.00000	.00000	.00000

MSFC 985(SA28F) 142-IN. SRB (139) NRE18

(099033) (07 MAR 74)

REFERENCE DATA

SREF = .0030 SQ. IN XMRP = 5.9570 IN.
 LREF = .0000 IN. YMRP = .0000 IN.
 BREF = .0000 IN. ZMRP = .0000 IN.
 SCALE = .0056

PARAMETRIC DATA

BETA = .000 PHI = .000
 FMOSTR = .000 AFTSTR = .000
 ATMRNG = 1.000 ATMS = .000
 COMFIC = 5.000 SMOSTR = .000
 ELT = .000 SEPRAT = .000

RUN NO. 10/ 0 RINVL = 6.75 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CM	CLM	CYM	CLM	CYM	CBL	CA	CAB	XCP/L	CFP1	CFP2
1.935	160.740	.01860	-1.22410	.00980	-.17350	-.00680	-3.37810	.00000	.68830	.00000	.00000	.00000
1.935	166.750	1.16730	-1.45790	-.13990	.17960	.02870	-3.39180	.00000	.66670	.00000	.00000	.00000
1.935	164.690	1.62700	-1.53450	-.14600	-.35980	-.00220	-3.44860	.00000	.64350	.00000	.00000	.00000
1.935	162.580	2.17150	-1.51780	-.14170	-.32330	-.00260	-3.46690	.00000	.62330	.00000	.00000	.00000
1.935	160.490	2.77230	-1.20740	-.07020	-.06410	.02040	-3.50290	.00000	.60440	.00000	.00000	.00000
1.935	158.400	3.41480	-.99060	-.06520	.09040	.00920	-3.51230	.00000	.59020	.00000	.00000	.00000
1.935	156.330	4.01330	-.47450	.02640	.13340	.01170	-3.43700	.00000	.57620	.00000	.00000	.00000
1.935	154.290	4.62970	-.06350	.02910	.11350	.01260	-3.45700	.00000	.56220	.00000	.00000	.00000
1.935	150.030	6.03560	.58330	.03490	-.07560	.00010	-3.41390	.00000	.55860	.00000	.00000	.00000
1.935	148.030	6.74190	.78940	.03160	-.03940	.00230	-3.39360	.00000	.55700	.00000	.00000	.00000
1.935	150.440	3.36040	-.65280	-.02940	.14120	.01830	-3.42360	.00000	.55240	.00000	.00000	.00000
GRADIENT		-.28979	-.11991	-.02412	-.00676	-.00027	-.02001	.00000	.00644	.00000	.00000	.00000

RUN NO. 3/ 0 RINVL = 4.81 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CM	CLM	CYM	CLM	CYM	CBL	CA	CAB	XCP/L	CFP1	CFP2
2.740	169.840	.70040	-.67490	.04060	.02790	-.01620	-3.48430	.00000	.64510	.00000	.00000	.00000
2.740	166.900	1.06810	-.56220	.09640	.11420	.01570	-3.48210	.00000	.60930	.00000	.00000	.00000
2.740	164.860	1.90970	-.35870	-.03250	-.08300	-.00210	-3.47930	.00000	.59590	.00000	.00000	.00000
2.740	162.830	1.95800	-.10480	-.06990	-.13070	-.02830	-3.49450	.00000	.57090	.00000	.00000	.00000
2.740	160.790	2.39340	.15660	-.03350	-.06450	-.01020	-3.49150	.00000	.56120	.00000	.00000	.00000
2.740	158.740	2.91560	.35380	-.01390	.03860	-.01930	-3.49220	.00000	.55650	.00000	.00000	.00000
2.740	156.700	3.45530	.67610	.01510	.02770	-.02150	-3.47990	.00000	.55020	.00000	.00000	.00000
2.740	154.650	4.03080	.90740	.04140	-.16350	-.01410	-3.48340	.00000	.54820	.00000	.00000	.00000
2.740	152.610	4.63810	.99990	.04310	.00000	-.04210	-3.46300	.00000	.54930	.00000	.00000	.00000
2.740	150.530	5.31320	1.19420	.02950	.01790	-.03880	-3.48340	.00000	.54820	.00000	.00000	.00000
2.740	148.500	5.92250	1.32320	.03190	.02370	-.04840	-3.47490	.00000	.54630	.00000	.00000	.00000
2.740	156.750	2.69890	.41730	-.01420	.02680	-.05240	-3.50020	.00000	.55480	.00000	.00000	.00000
GRADIENT		-.23743	-.10351	-.02129	.00037	.00217	-.02030	.00000	.00399	.00000	.00000	.00000

MSFC 595(SA26F) 142-IN. SR8 (159) N0RE18

(R25033) (07 MAR 74)

REFERENCE DATA

REF 0 .5030 SQ. IN XMRP = 5.5570 IN.
 LINE 0 .0000 IN. YMRP = .0000 IN.
 REF 0 .0000 IN. ZMRP = .0000 IN.
 SCALE 0 .0056

PARAMET'IC DATA

BETA = .000 PHI = .000
 PLASTK = .000 AFTSTK = .000
 ATWRNG = 1.000 ATMS = .000
 COMFLG = 3.000 SHDSTK = .000
 ELT = .000 SEPRKT = .000

RUN NO. 0 / 0 RIVL = 0.00 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CMH	CLMH	CYM	CYMH	CBL	CA	CAB	KCP/L	CP91	CP92
3.400	168.830	.61800	-.28970	.04110	.08330	-.02820	-3.44340	.00000	.68470	.00000	.00000
3.400	168.930	.92170	-.09390	.00720	-.00370	-.02840	-3.44020	.00000	.57490	.00000	.00000
3.400	164.920	1.27780	.16460	.02720	-.02320	-.01390	-3.44920	.00000	.55470	.00000	.00000
3.400	162.670	1.66170	.42090	-.00800	-.06770	-.02960	-3.45230	.00000	.54590	.00000	.00000
3.400	160.930	2.09360	.70070	-.00370	-.02960	-.02960	-3.45330	.00000	.53930	.00000	.00000
3.400	158.730	2.56290	.92120	-.01070	-.00170	-.02260	-3.45990	.00000	.53720	.00000	.00000
3.400	156.110	3.10100	1.12170	.05920	-.06190	-.04920	-3.45110	.00000	.53700	.00000	.00000
3.400	154.690	3.64690	1.28090	.04920	-.07320	-.04960	-3.44620	.00000	.53930	.00000	.00000
3.400	152.640	4.21260	1.36490	.05990	-.01730	-.02360	-3.45010	.00000	.54010	.00000	.00000
3.400	150.530	4.82220	1.40700	.04960	-.01770	-.03440	-3.47750	.00000	.54270	.00000	.00000
3.400	148.370	5.45110	1.34810	.05290	-.02390	-.03260	-3.46270	.00000	.54340	.00000	.00000
3.400	156.780	2.37630	.93970	-.01010	-.03190	-.03580	-3.45040	.00000	.53690	.00000	.00000
3.400	GRADIENT	-.23992	-.09267	-.00223	.00039	.00103	.00116	.00000	.00220	.00000	.00000

RUN NO. 1 / 0 RIVL = 5.02 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CMH	CLMH	CYM	CYMH	CBL	CA	CAB	KCP/L	CP91	CP92
4.959	168.810	.39670	-.04930	-.02290	-.21940	-.00140	-3.30790	.00000	.57670	.00000	.00000
4.959	167.610	.61340	.21970	-.01070	-.13300	.00200	-3.29020	.00000	.53740	.00000	.00000
4.959	155.000	.93780	.53900	-.00240	-.34320	-.03010	-3.32370	.00000	.52000	.00000	.00000
4.959	162.950	1.29570	.97670	-.00940	.00140	.03090	-3.30870	.00000	.50300	.00000	.00000
4.959	160.970	1.73240	1.37740	.03930	.00090	.01340	-3.32140	.00000	.50170	.00000	.00000
4.959	158.970	2.19330	1.64220	-.02020	.03980	-.02220	-3.35360	.00000	.50390	.00000	.00000
4.959	156.930	2.69810	1.92100	-.02460	.06100	-.01010	-3.35910	.00000	.51150	.00000	.00000
4.959	154.910	3.23900	1.91140	-.02800	.09980	-.04110	-3.36690	.00000	.51840	.00000	.00000
4.959	152.900	3.78780	2.09960	.07910	-.02960	.00770	-3.39020	.00000	.52150	.00000	.00000
4.959	150.860	4.36290	2.13350	.05820	.00870	-.03030	-3.41910	.00000	.52660	.00000	.00000
4.959	148.910	4.93930	2.26990	.07360	-.03330	.01840	-3.40160	.00000	.52910	.00000	.00000
4.959	156.960	2.26330	1.73100	.03390	-.00290	-.03470	-3.35960	.00000	.50240	.00000	.00000
4.959	GRADIENT	-.23126	-.11859	-.00407	-.00723	.00029	.00606	.00000	.00107	.00000	.00000

MSFC 985 (BAROP) 142-IN. SRB (199) MRELEB

REFERENCE DATA

MCFP = .0030 SQ. IN XPRP = 9.5570 IN.
 LREF = .0000 IN. YMRP = .0000 IN.
 WRFP = .0000 IN. ZMRP = .0000 IN.
 SCALE = .0050

PARAMETRIC DATA

BETA = .000 P41 = .020
 FLGSTR = .000 APTSTR = .020
 ATWING = 1.000 ATMS = .020
 COPIC = 3.000 S-DSTR = .200
 ELT = .020 SEPRKT = .020

RUN NO. 0/0 RIVL = 4.81 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CMH	CLMH	CYM	CYM	CBL	CA	CAS	XCP/L	CPH1	CPH2
2.740	189.930	-.69890	.70760	.06030	.09370	-.02692	-3.30790	.00000	.69030	.00000	.00000
2.740	188.030	-.46370	.72660	.04300	.03940	-.02170	-3.49620	.00000	.69430	.00000	.00000
2.740	185.890	-.25030	.57720	.03620	.01690	-.01960	-3.47790	.00000	.72962	.00000	.00000
2.740	183.990	-.13420	.40700	.02270	.04390	-.02940	-3.49200	.00000	.78160	.00000	.00000
2.740	181.970	-.09130	.27970	.02950	.01440	-.02330	-3.47590	.00000	.84990	.00000	.00000
2.740	179.930	.02340	.08030	.04180	.01270	-.03400	-3.47100	.00000	.29960	.00000	.00000
2.740	177.910	.12760	-.18910	.03620	.02120	-.03920	-3.49460	.00000	.69670	.00000	.00000
2.740	175.900	.18100	-.33730	.04720	-.07030	-.03750	-3.47840	.00000	.71860	.00000	.00000
2.740	173.920	.31690	-.48670	.01360	.03620	-.02350	-3.48130	.00000	.69160	.00000	.00000
2.740	171.880	.47330	-.61330	.01450	.02800	-.03110	-3.49620	.00000	.67220	.00000	.00000
2.740	169.940	.71980	-.63160	.05690	.04920	-.02340	-3.50660	.00000	.63910	.00000	.00000
2.740	179.980	.02370	.06670	.04240	.00180	-.03670	-3.47530	.00000	.33710	.00000	.00000
GRADIENT		-.06599	.07765	.00031	.00149	.00043	-.00007	.00000	.00246	.00000	.00000

RUN NO. 0/0 RIVL = 6.28 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CMH	CLMH	CYM	CYM	CBL	CA	CAS	XCP/L	CPH1	CPH2
3.480	189.940	-.62360	.33600	.03660	.05490	-.02620	-3.45340	.00000	.61340	.00000	.00000
3.480	188.010	-.38140	.41800	.04300	.06330	-.03320	-3.46380	.00000	.65610	.00000	.00000
3.480	185.980	-.23300	.32830	.03630	.02330	-.02360	-3.45730	.00000	.69210	.00000	.00000
3.480	183.960	-.15900	.25970	.00430	.05110	-.02330	-3.45630	.00000	.59370	.00000	.00000
3.480	181.970	-.07490	.16090	.03960	.01160	-.02730	-3.44610	.00000	.74160	.00000	.00000
3.480	179.950	.00460	-.01620	.03200	.03120	-.00170	-3.44320	.00000	.83030	.00000	.00000
3.480	177.930	.03730	-.09340	.03310	.02980	-.02240	-3.45370	.00000	.77350	.00000	.00000
3.480	175.930	.13270	-.23380	.01050	.03740	-.03140	-3.44560	.00000	.72250	.00000	.00000
3.480	173.940	.22960	-.33240	.01110	.04640	-.03210	-3.46380	.00000	.69460	.00000	.00000
3.480	171.900	.39390	-.37030	.04340	.04590	-.03990	-3.46360	.00000	.64320	.00000	.00000
3.480	169.950	.60470	-.50910	.06310	.06370	-.02480	-3.46780	.00000	.60810	.00000	.00000
3.480	179.950	.02220	.00350	.04000	.02970	-.03910	-3.44920	.00000	.53340	.00000	.00000
GRADIENT		-.05159	.04464	-.00034	-.00065	.00026	.00045	.00000	-.00003	.00000	.00000

MSFC 985 (SARBP) 142-1M, 888 (138) NRE18

(089854) (07 MAR 74)

REFERENCE DATA

MREF = .0030 80. 1M XMRP = 5.3970 1M.
 LREF = .0000 1M. YMRP = .0000 1M.
 WREF = .0000 1M. ZMRP = .0000 1M.
 SCALE = .0033

BETA = .000 PHI = .000
 PLOSTR = .000 AFTSTR = .000
 ATWRING = 1.000 ATMS = .000
 COMFIG = 3.000 SHOSTR = .000
 ELT = .000 SEPRKT = .000

PARAMETRIC DATA

RUN NO. 7 / 0 RWL = 4.95 GRADIENT INTERVAL = -3.00/ 3.00

MACH	ALPHA	CMH	CLMH	CM	CYM	CYH	CYHM	CBL	CA	CAS	KCP/L	CPH1	CPH2
4.958	189.880	-1.20170	.18160	.00350	.15900	-.06210	-3.32480	.00000	.00000	.00000	.59610	.00000	.00000
4.958	187.880	-1.39380	.39900	-.01500	.05810	-.02790	-3.31380	.00000	.00000	.00000	.64880	.00000	.00000
4.958	185.870	-1.23100	.39780	-.01410	.00430	-.04740	-3.31350	.00000	.00000	.00000	.69390	.00000	.00000
4.958	183.970	-1.17880	.22370	-.01410	.09030	-.06650	-3.32140	.00000	.00000	.00000	.68870	.00000	.00000
4.958	181.970	-1.17720	.31020	.00470	.00410	-.04860	-3.30360	.00000	.00000	.00000	.70930	.00000	.00000
4.958	179.980	-1.09480	.22000	.06290	-.12890	-.04090	-3.29640	.00000	.00000	.00000	.74670	.00000	.00000
4.958	177.940	-.04070	.13100	.00890	-.08770	-.08710	-3.32970	.00000	.00000	.00000	.30420	.00000	.00000
4.958	175.950	.11690	-.00040	.09390	-.13090	-.03190	-3.30750	.00000	.00000	.00000	.36690	.00000	.00000
4.958	173.960	.15350	-.17700	.06740	-.13000	-.03140	-3.27710	.00000	.00000	.00000	.66030	.00000	.00000
4.958	171.940	.26040	-.12850	.06310	.00210	-.04010	-3.29140	.00000	.00000	.00000	.60680	.00000	.00000
4.958	170.010	.47160	-.12740	.00630	.08660	-.03540	-3.30950	.00000	.00000	.00000	.58860	.00000	.00000
4.958	178.980	-.10370	.22100	.00630	-.02070	-.09330	-3.32390	.00000	.00000	.00000	.74020	.00000	.00000
GRADIENT		-.04332	.02740	-.00353	.00898	.00017	-.00134	.00000	.00000	.00000	.00422	.00000	.00000

