NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

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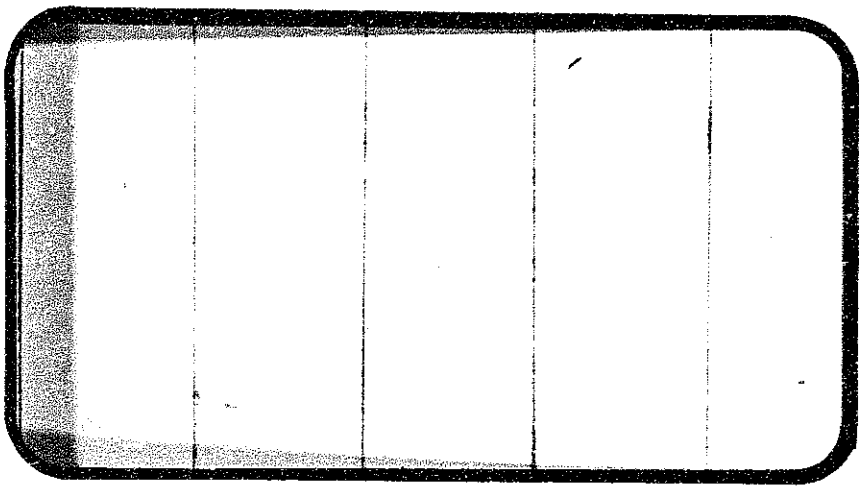
134420



(NASA-CR-134420) STATIC STABILITY CHARACTERISTICS OF THE SPACE SHUTTLE EXTERNAL TANK (MSFC MODEL 458) DURING REENTRY IN THE MSFC 14-INCH (Chrysler Corp.) 181 p HC $7.00 CSCL 2B G3/18

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SPACE SHUTTLE

AEROTHERMODYNAMIC DATA REPORT

JOHNSON SPACE CENTER

HOUSTON, TEXAS

DATA MANagement services

SPACE DIVISION CHRYSLER CORPORATION

October 1974

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STATIC STABILITY CHARACTERISTICS OF THE SPACE SHUTTLE EXTERNAL TANK (MSFC MODEL 458) DURING REENTRY IN THE MSFC 14-INCH TWT (TA1F)

By

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Prepared Under NASA Contract Number NAS9-13247

by

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Johnson Space Center
National Aeronautics and Space Administration
Houston, Texas

WIND TUNNEL TEST SPECIFICS:

Test Number: MSFC TWT 583
NASA Series No.: TA1F
Model Number: 458
Test Dates: February 19 - March 5, 1974
Occupancy Hours: 96

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STATIC STABILITY CHARACTERISTICS OF THE SPACE SHUTTLE EXTERNAL TANK (MSFC MODEL 458) DURING REENTRY IN THE MSFC 14-INCH TWT (TA1F)

By

Paul E. Ramsey*, Michael K. Robertson** and Gary W. Winkler**

ABSTRACT

This report documents data obtained in a wind tunnel test of a 0.003-scale modified MCR 0200 Space Shuttle External Tank (ET) model, MSFC Model 458, tested at reentry conditions in the MSFC 14-inch trisonic Wind Tunnel (TWT). This test is a continuation of a series of tests conducted to evaluate the aerodynamic characteristics of the ET during reentry. The test started on February 19, 1974, and was completed on March 5, 1974. Three Mach numbers were investigated: 1.96, 3.48, and 4.96. The angle-of-attack range was -10° to 190°. Eight roll positions of the model from 0° to 315° were tested. The run schedule consisted of 162 runs. No. 120 grit was applied randomly over the model throughout the test.

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Schedule of Coefficients Plotted:

A) CNM, CLMM, CA, XCP/L, CYM, CYNM, CBL vs. ALPHA

B) CNM, CLMM, CA, XCP/L vs. ALPHA

NOMENCLATURE

SYMBOL	PLOT SYMBOL	DEFINITION	UNITS
A_b		base area; cross-sectional area of the cylindrical section of the model	in^2
A_c		cavity area, area of the opening required for the balance and sting	in^2
BMC	BMC	Balance Moment Center	
b_{ref}	BREF	reference span (diameter of the cylindrical section of the model)	in.
ℓ_{body}		length of the body	in.
ℓ_{ref}	LREF	reference length (diameter of the cylindrical section of the model)	in.
M	MACH	Mach number	
MRP	MRP	Moment Reference Point (located by XMRP, YMRP, and ZMRP)	
P_{b_i}		base pressures	psi
P_t		free stream total pressure	psi
P_∞		free stream static pressure	psi
q_∞		free stream dynamic pressure	psi
R_N		Reynolds number based on ℓ_{ref}	
R_N/ft	RN/L	Reynolds number per unit length	per ft.
S_{ref}	SREF	reference area (cross sectional area of the cylindrical section of the model)	$in.^2$
T_t		tunnel total temperature	°F
C_{pc}	CPC	pressure coefficient of balance cavity	

SYMBOL	PLOT SYMBOL	DEFINITION	UNITS
X,Y,Z		body axes system coordinates (for an airplane, the X, Z-plane is the plane of symmetry, the origin of the axes system is the center of gravity or any other convenient point, and the X axis is the airplane longitudinal axis)	in.
$X_{c.g.}$		distance of center of gravity from nose of body	in.
X_m, Y_m, Z_m		missile axes (see text)	in.
XMRP, YMRP, ZMRP	XMRP, YMRP, ZMRP	Abbreviations for the location of the Moment Reference Point in the missile axis system	in.
α_T	ALPHA	angle-of-attack, angle between the X_m-axis and a vector in the direction of the relative wind	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).	degrees
C_A	CA	total axial force coefficient in the body axis system	
C_{A_b}	CAB	base axial force coefficient (same in both missile and body axis systems)	
$C_{A_{fm}}$	CAF	forebody axial force coefficient, $C_A - C_{A_b}$	
C_{A_m}	CA	total axial force coefficient in the missile axis system, $F_{A_m}/q_\infty S_{ref}$	
C_ℓ	CBL	rolling moment coefficient in the body axis system	
C_{ℓ_m}	CBL	rolling moment coefficient in the missile axis system, $M_{X_m}/q_\infty S_{ref} \ell_{ref}$	

SYMBOL	PLOT SYMBOL	DEFINITION	UNITS
C_m	CLM	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	CN	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	CYN	yawing moment coefficient in the body axis system	
C_{n_m}	CYNM	yawing moment coefficient in the missile axis system, $M_{Z_m}/q_\infty S_{ref} \ell_{ref}$	
$C_{P_{bl}}$		base pressure coefficient: $\frac{P_{bl}-P_\infty}{q_\infty}$	
C_Y	CY	side force coefficient in the body axis system	
C_{Y_m}	CYM	side force coefficient in the missile axis system, $F_{Y_m}/q_\infty S_{ref}$	
X_{cp}/ℓ	XCP/L	center of pressure location in fraction of body length from nose; $\frac{X_{c.g.}}{\ell_{body}} - \frac{C_{m_m}}{C_{N_m}} \left/ \frac{\ell_{ref}}{\ell_{body}}\right.$	
F_{Y_m}	SF	side force in the missile axis system, positive in the positive direction of Y_m	lb
F_{A_m}	AF	total axial force in the missile axis system, positive in the negative direction of X_m	lb
F_{N_m}	NF	normal force in the missile axis system, positive in the negative direction of Z_m	lb

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

SUBSCRIPTS

b	base
c	cavity
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 test described herein is a continuation of a series of tests conducted to evaluate the aerodynamic characteristics of the Space Shuttle External Tank (ET) during reentry.

The basic configuration of the model is a 0.003-scale representation of the ET with fuel lines, forward and aft SRB and Orbiter attach hardware, and including the ET/Orbiter rectangular crossbar attach structure. The model was designated MSFC no. 458.

Three Mach numbers were investigated: 1.96, 3.48, and 4.96. The angle-of-attack range was -10° to 190°. The model was tested at eight roll positions from 0 to 315 degrees. The run schedule consisted of 162 runs.

MSFC balance #237 was used to obtain six-component force and moment data.

MODEL DESCRIPTION AND TEST HARDWARE

The model tested was MSFC number 458, a 0.003-scale representation of the 324-inch diameter MCR 0200 Space Shuttle External Tank. With one exception, all of the model parts were made according to the configuration specified by Rockwell drawing VL78-000041 "B". The exception was a rectangular crossbar which was added to the aft orbiter/ET attach structure according to Martin Marietta memo SA-A-74-9. The general arrangement of the model is shown in the 3-view drawing, Figure 2.

The model had a frontal area at 0° angle-of-attack of approximately 0.742 square inch, roughly 1% tunnel blockage at M = 5.0. However, at

$\alpha = 90^\circ$, the frontal area was approximately 5.1 square inches, or 6.8% blockage. The offset sting used at the α's close to 90° brought the blockage up to about 9% for the worst case. The model was designed so that the balance center was always located close to the centerline of the tunnel

Model 458 actually consisted of two tank models, one with protuberances (fuel lines, orbiter attach structures, etc.) and one without. The model with protuberances was tested at angles-of-attack from -10° to 190° by using both straight and offset stings. For testing at α's from -10° to 90°, the model was tail mounted. The straight sting, Figure 3, was used for α's from -10° to 30°; and for α's from 50° to 100°, the offset sting, Figure 4, was used. For the α range from 80° to 190°, the model was reversed and nose mounted. The offset sting, Figure 4, was used for α's from 80° to 130°; and the straight sting, Figure 3, was used for α's from 130° to 190°. The model was tested at eight different roll positions. The "clean" model (without protuberances) was tested from 50° to 100° only, Figure 7.

MSFC balance #237 was mounted inside the external tank, on the ET centerline. Installation photographs presented in Figures 3 through 7 show the five arrangements of tank and supporting hardware. The dimensions of each of the model parts are presented in Table I, Model Component Dimensions.

Model stations are sometimes used to describe the x, y, and z axes location of various components of the model. When used, these stations will be given in inches model scale, and the zero reference points will

be same as shown in Rockwell drawing VL72-000088"D".

In an attempt to minimize Reynolds number effects, #120 grit was applied randomly over the model throughout the test.

CONFIGURATIONS INVESTIGATED

The two tank configurations investigated are identified below.

T_1	MCR 0200 configuration modified to include a rectangular crossbar as part of the aft ET/ Orbiter attach structure. It consisted of the following Rockwell-numbered model components: T_{12} AT_5 AT_6 AT_7 AT_8 AT_9 PT_1 PT_2 PT_3 FL_1 FL_2 and FR_6.
T_2	"Clean" MCR 0200 ET configuration, equivalent to Rockwell component T_{12}

Brief descriptions of each component are presented below. Refer to the Model Component Dimensions, Table I, for dimensional data.

T_{12}	Baseline 324-inch diameter external oxygen hydrogen tank without protuberances
AT_5	Forward orbiter/ET attach structure
AT_6	Left rear orbiter/ET attach structure
AT_7	Right rear orbiter/ET attach structure
AT_8	Forward SRB/ET attach structure
AT_9	Aft SRB/ET attach structure
PT_1	LOX vent line fairing
PT_2	LOX feed line
PT_3	LH_2 feed line

FL_1 LOX feed line

FL_2 LH_2 feed line

FR_6 Rectangular crossbar at aft orbiter/ET attach structure

TEST PROGRAM

The Mach numbers for which data were obtained are 1.96, 3.48, and 4.96. Table II presents the nominal test conditions for each Mach number. The full range of obtainable angles-of-attack is -10° to 190°. Angle-of-attack nomenclature is presented in Table III. Models at roll angles of 0°, 45°, 90°, 135°, 180°, 225°, 270°, and 315° were investigated. The run schedule is presented in Table IV.

DATA REDUCTION AND PRESENTATION

Six-component force and moment data were measured using MSFC strain-gage balance #237 mounted inside the external tank. These data were resolved in the missile axis system and are presented as non-dimensionalized coefficients. An axis system diagram showing sign conventions is shown in Figure 1. The reference dimensions used for data reduction are presented in Table V. The Moment Reference Point (MRP) was taken to be the ET's dry weight center of gravity at station X_T = 1395.4 inches full scale. This put the MRP 3.259 inches from the model's nose, on the tank centerline. The transfer distances from the balance moment center to the MRP for the various model arrangements are shown in Table VI. Tunnel conditions are listed in Table II. No base or cavity pressure measurements were made; therefore, no base drag corrections were made to the

axial force data. All data were corrected for weight tares and sting deflections.

Schlieren photographs were made to check interference of any shocks reflected off tunnel walls or for separation of the tunnel boundary layer. No significant condition of reflected shocks off tunnel walls or separation of tunnel boundary layer was encountered during the test.

REFERENCES

1. NASA TMX-53185. The George C. Marshall Space Flight Center's 14 x 14 Inch Trisonic Wind Tunnel Technical Handbook. Edwin Simon. December 22, 1964. NASA, George C. Marshall Space Flight Center.

2. S&E-AERO-AA-70-16. "Standard Aerodynamic Nomenclature for Space Shuttle". Edward L. Linsley. April 21, 1970.

3. S&E-AERO-AA-70-44. "Pretest/Post Test Requirements for Phase B Space Shuttle Wind Tunnel Tests Conducted by S&E-AERO-AAE (Including Support Contractor Personnel)". Kenneth L. Blackwell and James F. Weaver. December 31, 1970.

4. S&E-AERO-AA-73-21. "Pretest Report for an Investigation to Determine the Pressure Distribution Over the NA MCR 0074 Baseline Launch Configuration". Paul E. Ramsey. April 13, 1973.

5. S&E-AERO-AA-73-18. "Guidelines for the Use of the Aerothermodynamic Data Management System in Relation to Conducting Wind Tunnel Tests at MSFC Facilities". Jim Weaver.

6. SA-A-74-9. "Space Shuttle External Tank Entry Force and Moment Wind Tunnel Test Requirements". D. J. Michna. February 8, 1974. Michoud Operations, Martin Marietta Corporation.

7. SD-73-SH-0263. "Pretest Information for the 0.015-Scale Space Shuttle Integrated Vehicle Tests IA41 and IA42 in the LRC UPWT and the LRC 8-Foot TPT". R. B. Hardin and R. R. Burrows. 5 October 1973.

8. NSI M-72-9241-47. "MSFC Double Knuckle Stings". Paul Cole. 1 March 1972.

9. NSI-M-9230-73-240. "A Hypersonic Aerodynamic Analysis of the Space Shuttle External Tank During Reentry". D. H. Uken. 20 November 1973.

10. Martin Marietta Memo SA-A-74-9. "Space Shuttle External Tank Entry Force and Moment Wind Tunnel Test Requirements"

DRAWINGS

1. VL72-000106, 8-6-73; SRB to ET Aft Attach, Approved Link Concept, Shuttle Study; Rockwell International.

2. VL72-000088 "D", 8-3-73; Shuttle Configuration Control, MCR 0200 Baseline Rev. III, Dated 7-2-73; Rockwell International.

3. VL78-000031 "A", 6-29-73; Thermal Protection-External Tank MCR 0200 Baseline Dated 4-11-73; Rockwell International.

4. VL77-000051 "A", 9-10-73; SRB Single Pt.-Fwd Thrust Fitting (MCR 0190 Rev. 3 Baseline 8-13-73); Rockwell International.

5. SS-A01176 (Wind Tunnel Model Group); Details - .015 Scale EOHT Attachments (140 A/B)(67-OTS) 11-20-73; Rockwell International.

6. VL78-000041 "A", 5-30-73; External Tank Configuration Control MCR 0200 Revision 1 Dated 5-16-73; Rockwell International.

TABLE I. MODEL COMPONENT DIMENSIONS

MODEL COMPONENT: EXTERNAL TANK - T_{12}

GENERAL DESCRIPTION: EXTERNAL OXYGEN - HYDROGEN TANK WITH OGIVE NOSE AND SEMI-ELIPTICAL TAIL. BEGINNING AT MODEL TANK STATION 0.927 AND ENDING AT STATION 6.522

MODEL SCALE: 0.003

REFERENCE DRAWING: VL78-000041B

DIMENSIONS:	THEORETICAL FULL-SCALE	THEORETICAL MODEL SCALE
Length IN. (NOSE @ X_T=309)	1865	5.595
Max. Width, IN. (DIA.)	324	0.972
Max. Depth		
Fineness Ratic	5.756	5.756
Area		
Max. Cross-Sectional	572.555 FT^2	0.742 $IN.^2$
Planform		
Wetted		
Base	572.555 FT^2	0.742 $IN.^2$
WL OF TANK CENTERLINE, IN.	400	1.200

Table I Continued

MODEL COMPONENT: ATTACH STRUCTURE - AT_5

GENERAL DESCRIPTION: FORWARD ORBITER/ET ATTACH STRUCTURE

(2 MEMBERS)

MODEL SCALE = 0.003

MODEL SCALE:

REFERENCE DRAWING: VL72-000088D

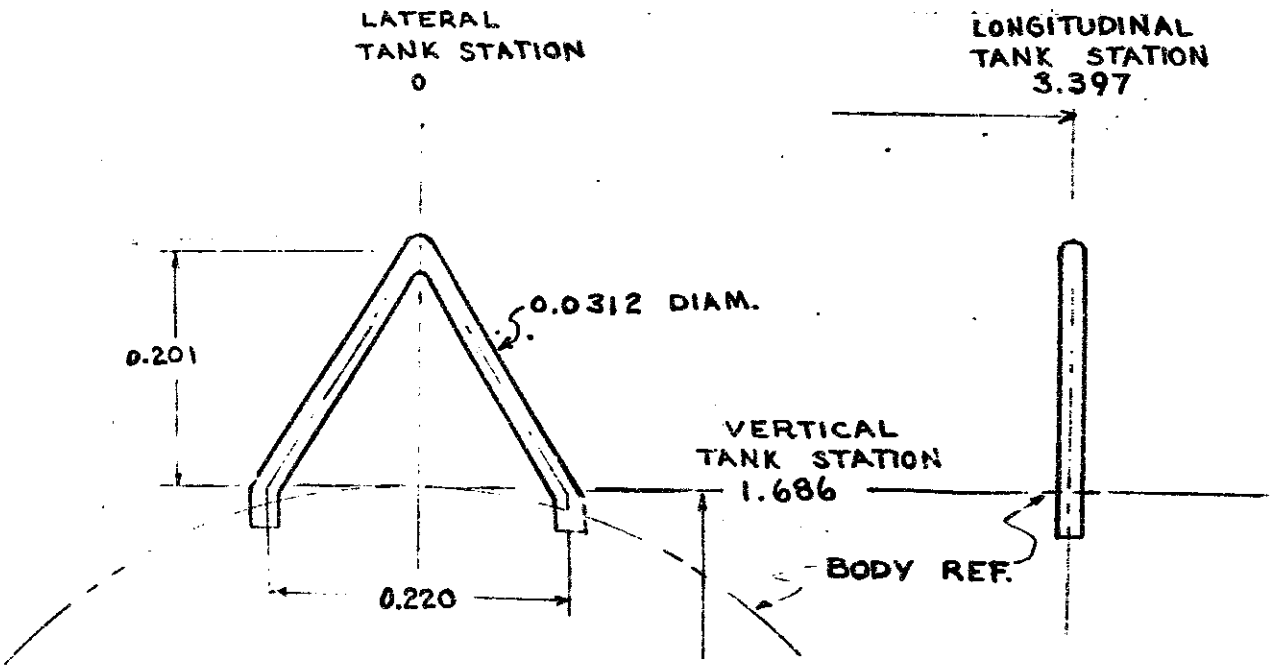


Table I Continued

MODEL COMPONENT: ATTACH STRUCTURE - AT_6

GENERAL DESCRIPTION: LEFT REAR ORBITER/ET ATTACH STRUCTURE (2 MEMBERS)

MODEL SCALE: 0.003

REFERENCE DRAWING: VL78-000050

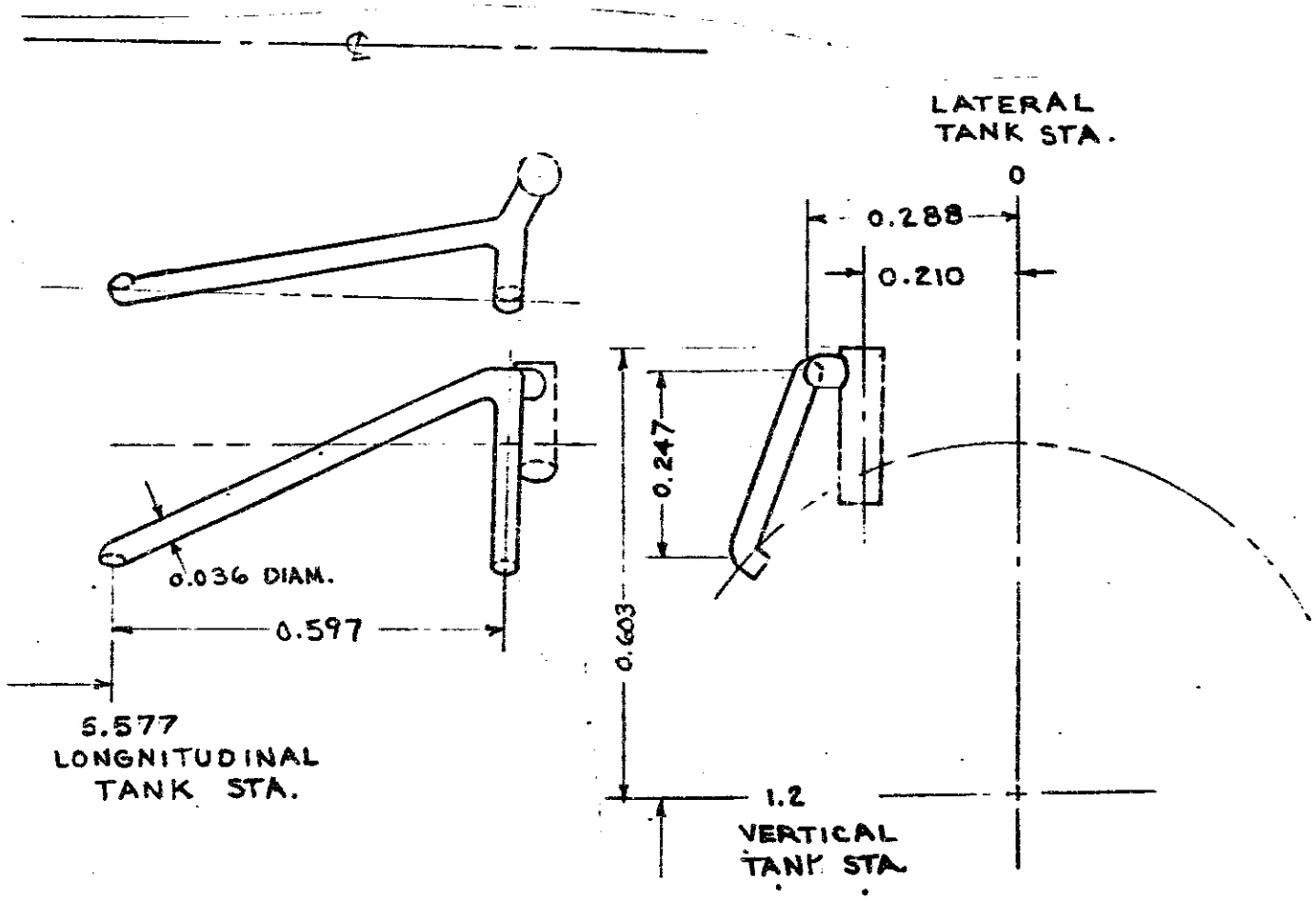


Table I Continued

MODEL COMPONENT: ATTACH STRUCTURE - AT_7

GENERAL DESCRIPTION: RIGHT REAR ORBITER/ET ATTACH STRUCTURE (3 MEMBERS)

MODEL SCALE: 0.003

REFERENCE DRAWING: VL78-000050

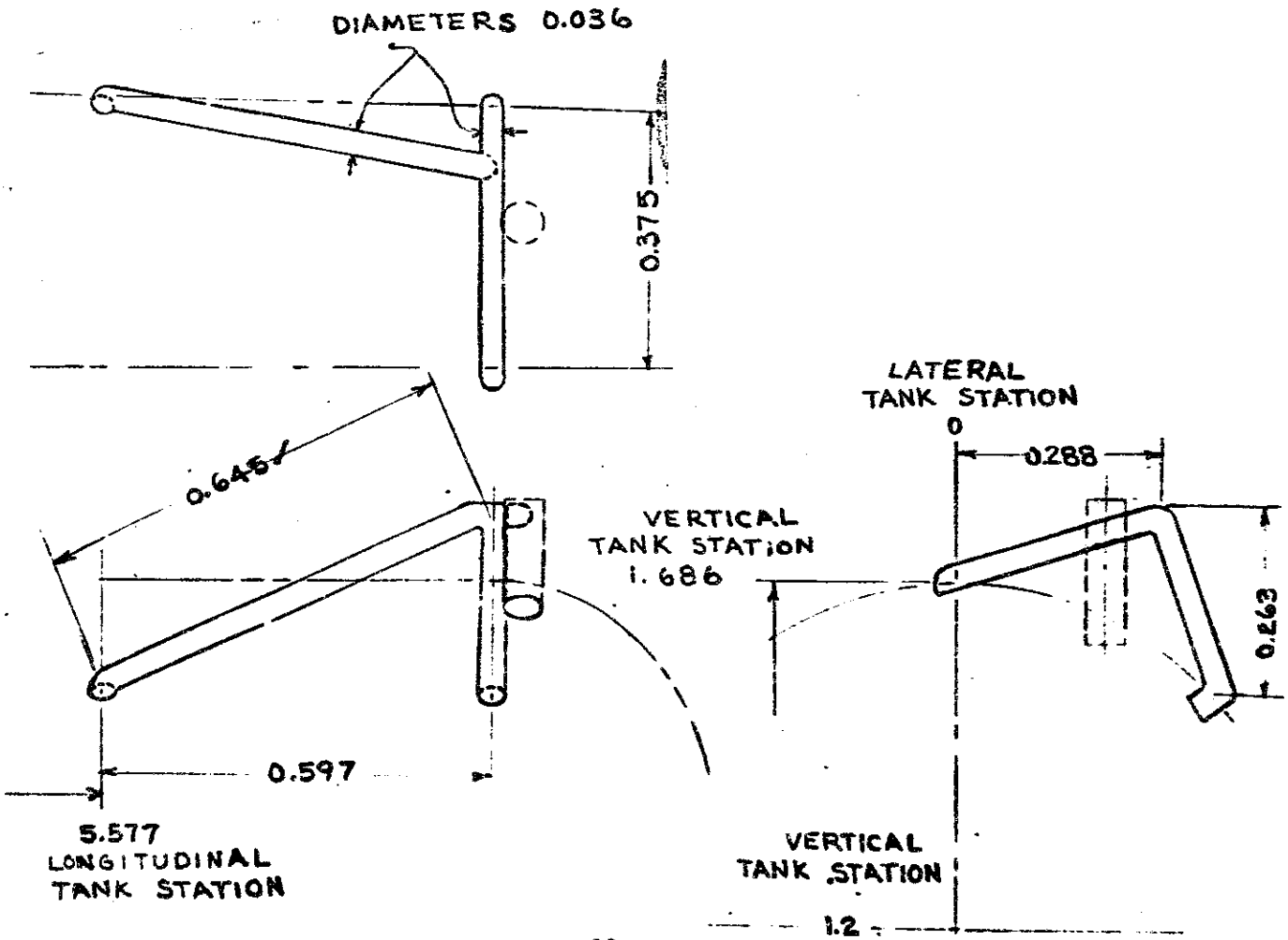


Table I Continued

MODEL COMPONENT: ATTACH STRUCTURE - AT_8

GENERAL DESCRIPTION: FORWARD SRB/ET ATTACH STRUCTURE (ET PORTION TESTED ONLY)

MODEL SCALE: 0.003

REFERENCE DRAWING: VL77-000051A

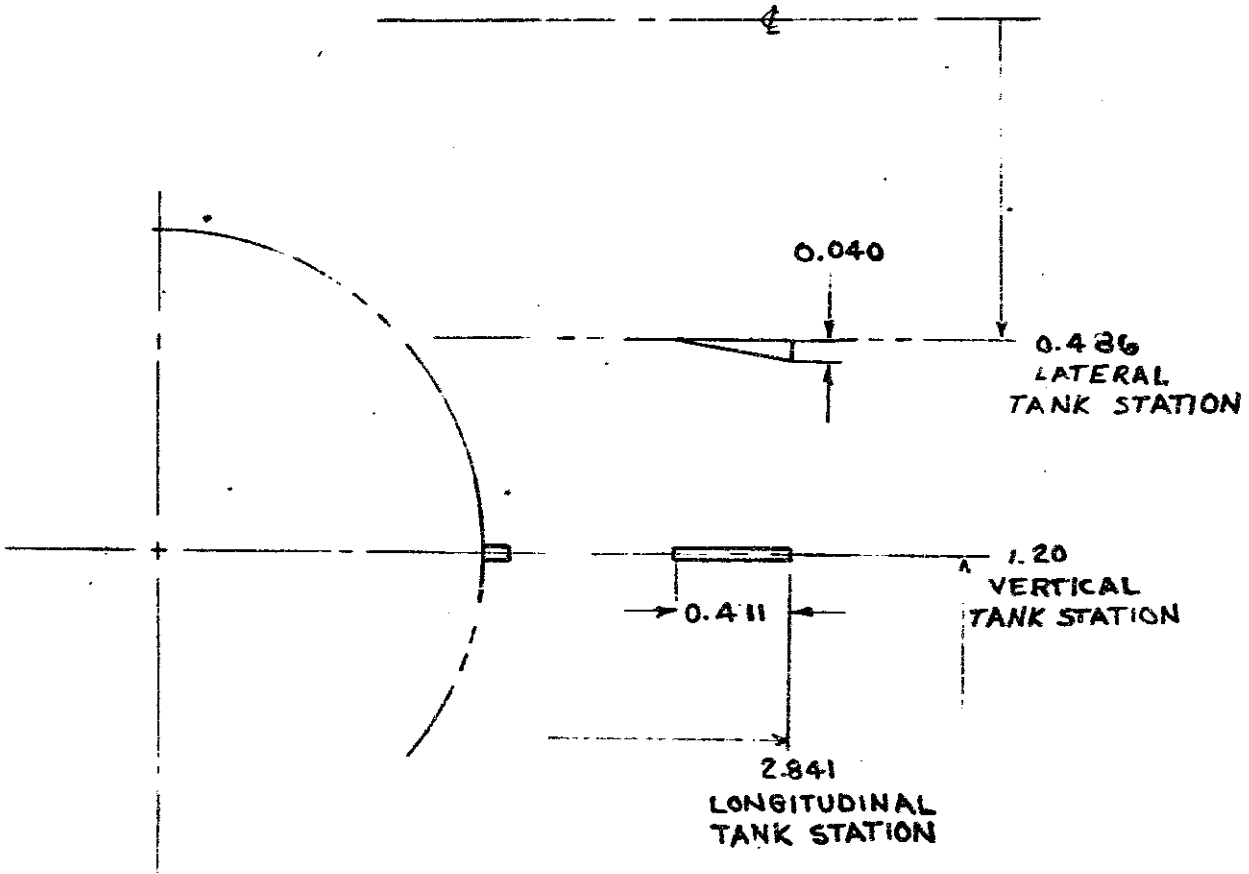


Table I Continued

MODEL COMPONENT: ATTACH STRUCTURE - AT9

GENERAL DESCRIPTION: AFT SRB/ET ATTACH STRUCTURE (3 MEMBERS) (ET PORTION TESTED ONLY)

MODEL SCALE: 0.003

REFERENCE DRAWING: VL72-000106

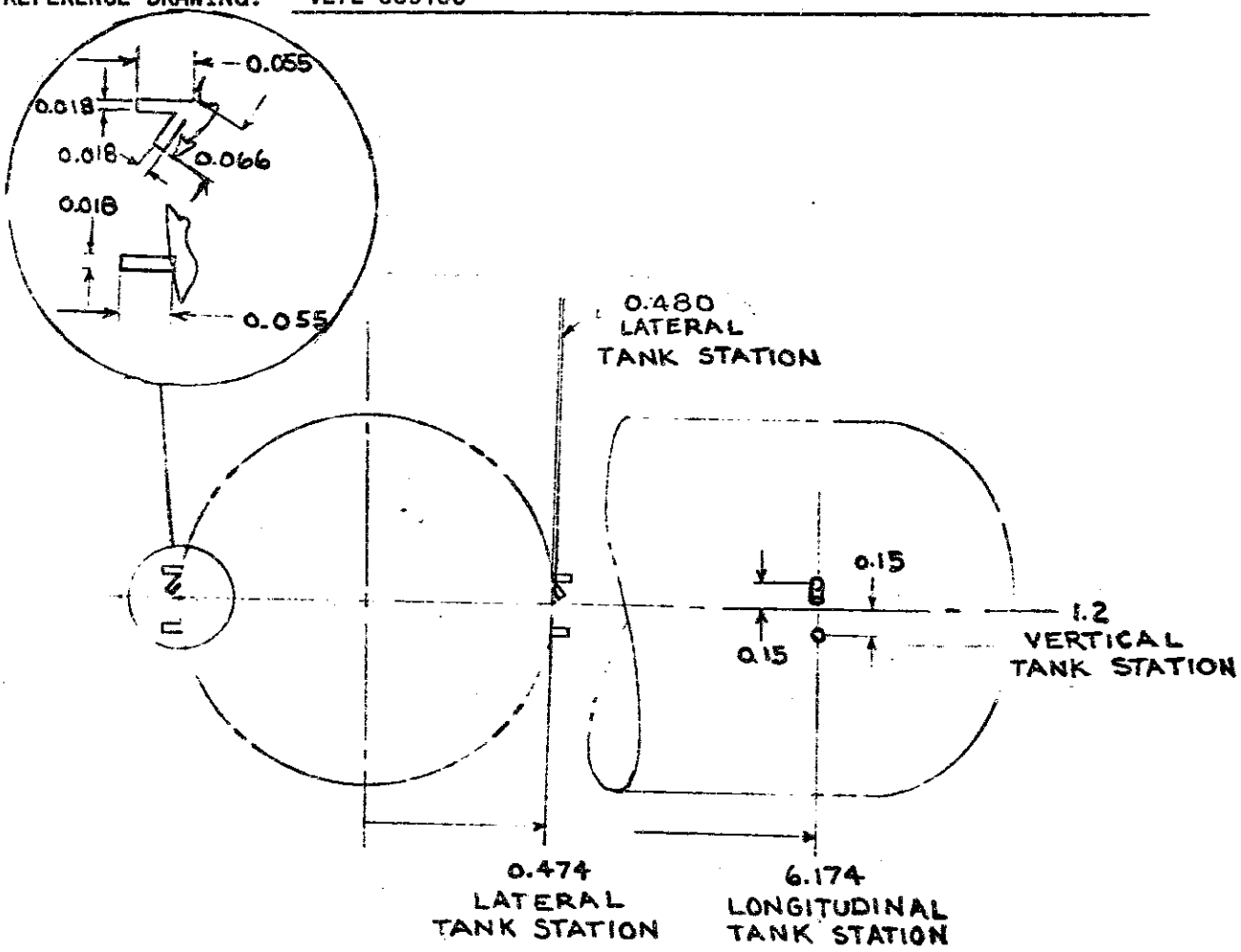


Table I Continued

MODEL COMPONENT: LOX VENT LINE FAIRING - PT_1

GENERAL DESCRIPTION: VENT LINE ALONG UPPER RIGHT SIDE OF ET OGIVE NOSE BEGINNING AT MODEL STATIONS X_T = 0.927, Y_T = 0, AND Z_T = 1.2; TERMINATING AT X_T = 2.841, Y_T = 0.162, Z_T = 1.658

MODEL SCALE: 0.003

REFERENCE DRAWING: VL78-000031A

DIMENSIONS:	THEORETICAL FULL-SCALE	THEORETICAL MODEL SCALE
Length	638	1.914
Max. Width	17.7	0.053
Max. Depth	9.3	0.028
Fineness Ratio		
Area		
Max. Cross-Sectional		
Planform		
Wetted		
Base		
Radial Position	19 1/2°	19 1/2°

Table I Continued

MODEL COMPONENT: LOX FEED LINE - PT_2

GENERAL DESCRIPTION: LONGITUDINAL FUEL LINE ALONG UPPER RIGHT SIDE OF ET BEGINNING AT MODEL STATIONS X_T = 2.841, $-Y_T$ = 0.194, AND Z_T = 1.645; TERMINATING AT X_T = 6.116, $-Y_T$ = 0.194, AND Z_T = 1.645

MODEL SCALE: 0.003

REFERENCE DRAWING: VL78-000031A

DIMENSIONS:	THEORETICAL FULL-SCALE	THEORETICAL MODEL SCALE
Length	1092	3.275
Max. Width	30.7	0.092
Max. ~~Depth~~ Height	28	0.084
Fineness Ratio		
Area		
Max. Cross-Sectional		
Planform		
Wetted		
Base		
Radial Position	23 1/2°	23 1/2°

Table I Continued

MODEL COMPONENT: LH_2 FEED LINE - PT_3

GENERAL DESCRIPTION: LONGITUDINAL FUEL LINE ALONG UPPER LEFT SIDE OF ET BEGINNING AT MODEL STATIONS X_T = 2.841, Y_T = 0.275, AND Z_T = 1.601 TERMINATING AT STATIONS X_T = 6.116, Y_T = 0.275, AND Z_T = 1.601

MODEL SCALE: 0.003

REFERENCE DRAWING: VL78-000031A

DIMENSIONS:	THEORETICAL FULL-SCALE	THEORETICAL MODEL SCALE
Length	1092	3.275
Max. Width	25.7	0.077
Max. Depth	14.7	0.044
Fineness Ratio		
Area		
Max. Cross-Sectional		
Planform		
Wetted		
Base		
Radial Position	-33°	-33°

Table I Continued

MODEL COMPONENT: LH_2 FEED LINE - PT_3

GENERAL DESCRIPTION: LONGITUDINAL FUEL LINE ALONG UPPER LEFT SIDE OF ET BEGINNING AT MODEL STATIONS X_T = 2.841, Y_T = 0.275, AND Z_T = 1.601 TERMINATING AT STATIONS X_T = 6.116, Y_T = 0.275, AND Z_T = 1.601

MODEL SCALE: 0.003

REFERENCE DRAWING: VL78-000031A

DIMENSIONS:	THEORETICAL FULL-SCALE	THEORETICAL MODEL SCALE
Length	1092	3.275
Max. Width	25.7	0.077
Max. Depth	14.7	0.044
Fineness Ratio		
Area		
Max. Cross-Sectional		
Planform		
Wetted		
Base		
Radial Position	-33°	-33°

Table I Continued

MODEL COMPONENT: LOX FEED LINE - FL_1

GENERAL DESCRIPTION: 18-INCH DIAMETER VERTICAL FUEL LINE AT AFT END OF ET ON RIGHT

MODEL SCALE: 0.003

REFERENCE DRAWING: VL78-000050

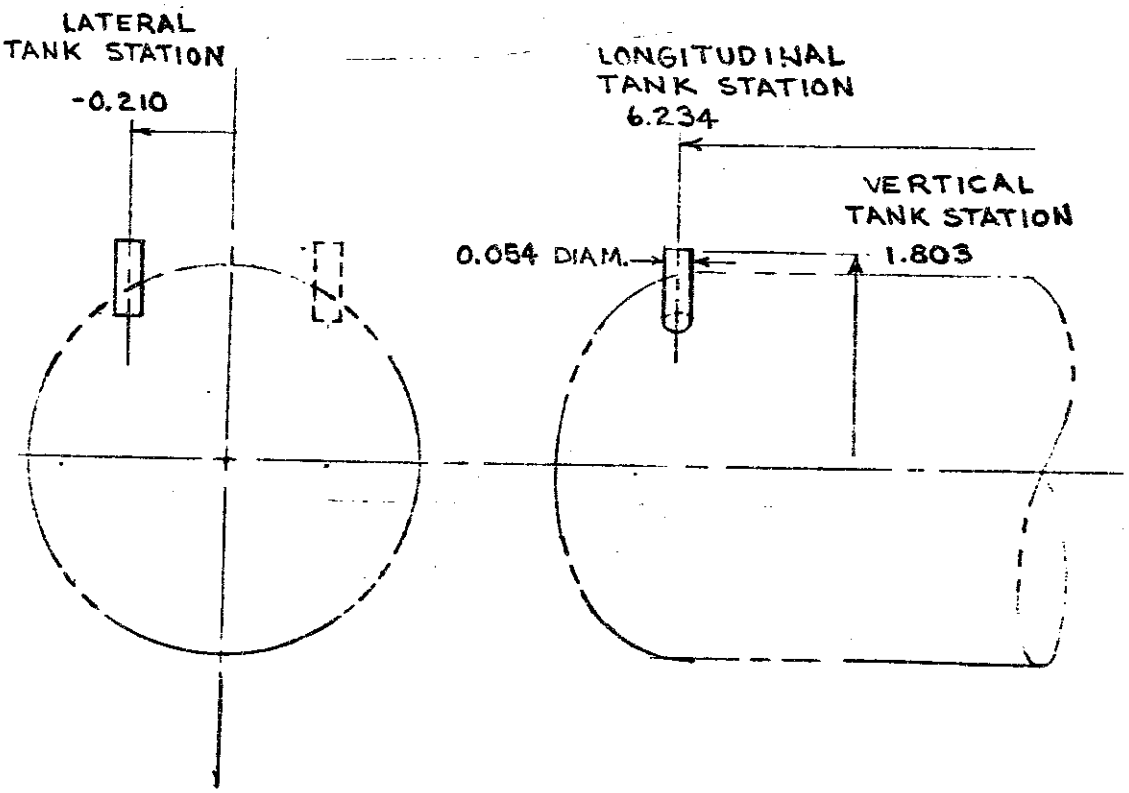


Table I. Continued

MODEL COMPONENT: LH_2 FEED LINE - FL_2

GENERAL DESCRIPTION: 18-INCH DIAMETER VERTICAL FUEL LINE AT AFT END OF ET ON LEFT

MODEL SCALE: 0.003

REFERENCE DRAWING: VL78-000050

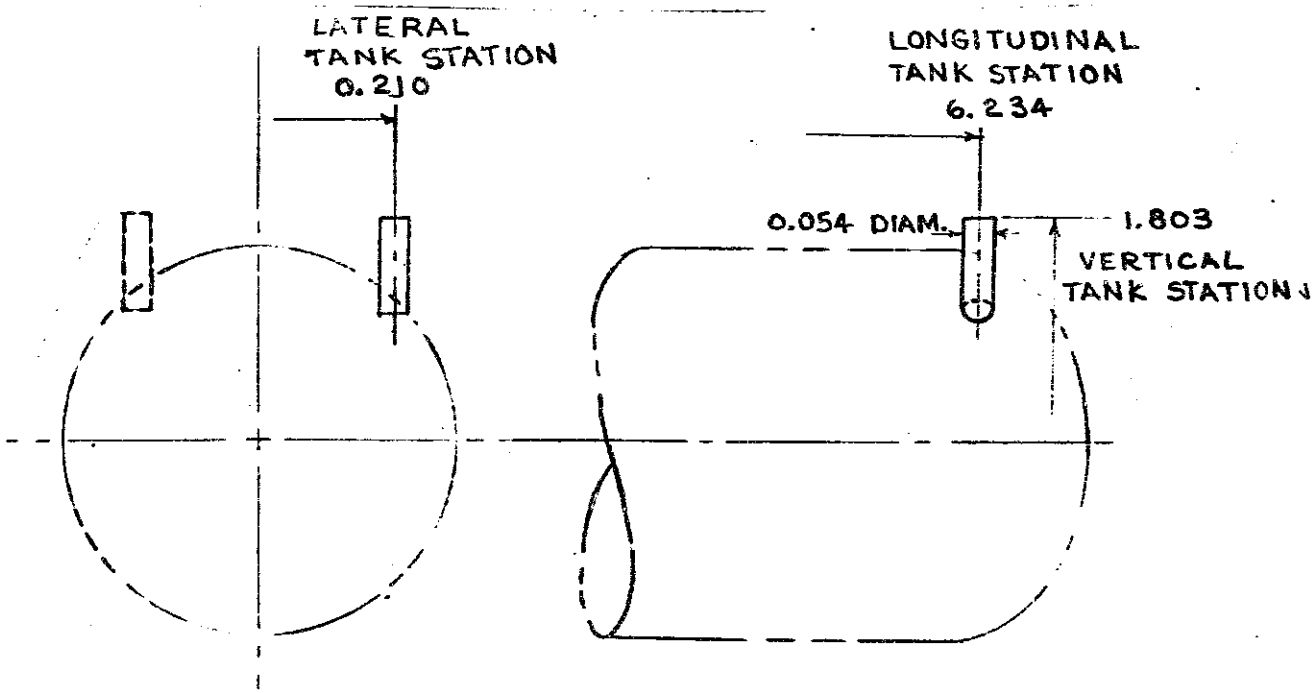


TABLE I. Continued

MODEL COMPONENT: ATTACH STRUCTURE - FR_6

GENERAL DESCRIPTION: AFT ET/ORBITER CROSS MEMBER (CROSS SECTION 11 IN. x 15 IN.)

LOCATED AT ET-STATION 2050.5

MODEL SCALE: 0.003

REFERENCE DRAWING: FIGURE 3, MARTIN MARIETTA MEMO SA-A-74-9

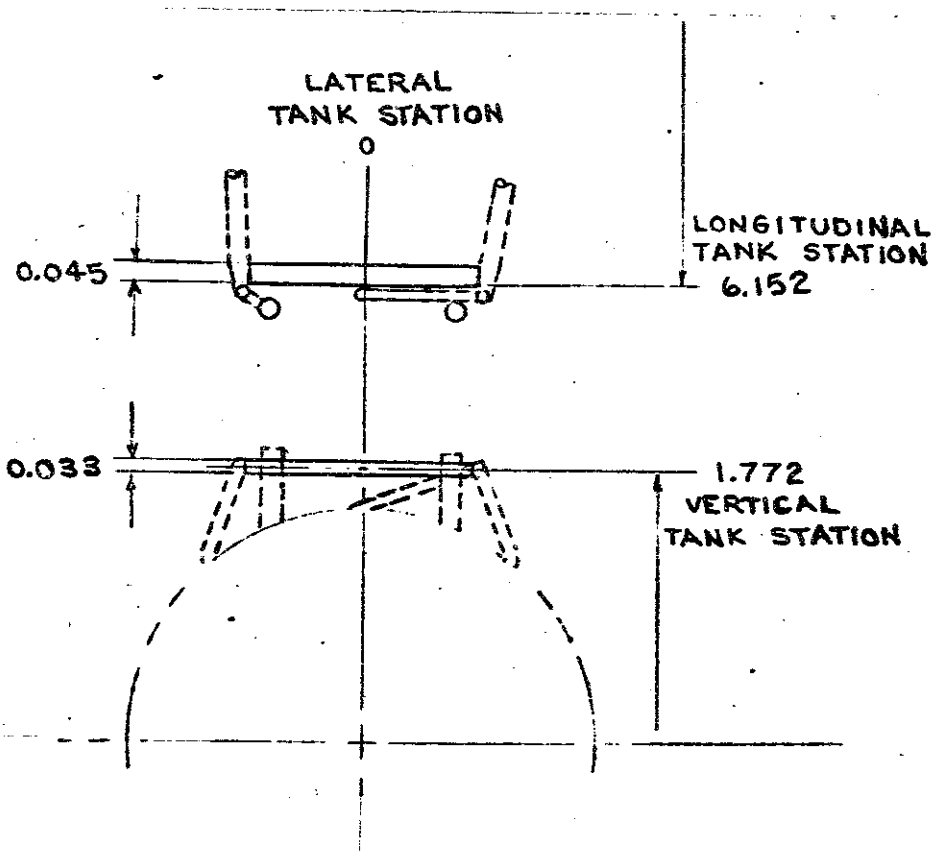


TABLE II

TEST: MSFC TWT 583 DATE: March 1974

TEST CONDITIONS

MACH NUMBER	REYNOLDS NUMBER (per ft)	DYNAMIC PRESSURE (pounds/sq. inch)	STAGNATION TEMPERATURE (degrees Fahrenheit)	STAGNATION PRESSURE (pounds/sq inch)
1.96	7.0×10^6	10.24	100	28
3.50	6.2×10^6	6.74	143	60
4.96	4.8×10^6	3.07	132	90

BALANCE UTILIZED: MSFC 237

	CAPACITY:	ACCURACY:	COEFFICIENT TOLERANCE: q=10 psi
NF	200 lbs	±1.00 lbs	±0.016
SF	107 lbs	±0.54 lbs	±0.009
AF	50 lbs	±0.25 lbs	±0.004
PM	200 in.-lbs	±1.00 in.-lbs	±0.003
RM	50 in.-lbs	±0.25 in.-lbs	±0.001
YM	107 in.-lbs	±0.54 in.-lbs	±0.002

COMMENTS: Accuracy based on ±0.5% of balance capacity

TABLE III. ANGLE OF ATTACK NOMENCLATURE

ANGLE OF ATTACK DESIGNATOR	ANGLE OF ATTACK RANGE AND INCREMENT*
A	-10° to 10° by $\Delta\alpha$ = 4°
B	10° to 30°
C	30° to 50°
D	50° to 70°
E	70° to 90°
F	80° to 100°
G	90° to 110°
H	110° to 130°
I	130° to 150°
J	150° to 170°
K	170° to 190°

* Sector Angles to be -10, -8, -4, 0, 4, 8, 10, and 0°

TABLE IV.

TEST: MSFC TWT 583 — DATA SET/RUN NUMBER COLLATION SUMMARY — DATE: 5 MARCH 1974

DATA SET IDENTIFIER	CONFIGURATION	SCHD. α	SCHD. β	PARAMETERS/VALUES φ	NO. OF RUNS	MACH NUMBERS (OR ALTERNATE INDEPENDENT VARIABLE) 1.96	3.48	4.96	STING CLMB.	NOSE	REF SET	TEST RUN NUMBERS
R99001	T1 (MCR 0200 ET	A	0	0	3	133/0	1/0	4/0	AA	FWD	0	
002	PER 41 "B" LINES	B			3	134/0	2/0	3/0	BB	FWD	20	
003	WITH CROSSBAR	D			3	97/0	95/0	96/0	II	UP	60	
004	ADDED, PLUS	F			3	98/0	94/0	93/0	KK	UP	90	
067	#120 GRIT)	G			3	111/0	113/0	114/0	JJ	DN	100	
005		H			3	112/0	61/0	62/0	II	DN	120	
006		I			3	130/0	60/0	59/0	CC	AFT	140	
007		J			3	131/0	57/0	58/0	BB	AFT	160	
008		K		↓	3	132/0	56/0	55/0	AA	AFT	180	
009		A		45	1			5/0	AA	FWD	0	
010		B			1			6/0	BB	FWD	20	
011		D			1			91/0	II	UP	60	
012		F			1			92/0	KK	UP	90	
013		H			1			63/0	II	DN	120	
014		I			1			52/0	CC	AFT	140	
015		J			1			53/0	BB	AFT	160	
016	↓	K	↓	↓	1			54/0	AA	AFT	180	

MISSILE AXIS SYSTEM

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

CNM CLMM CYM CYNM CBL GA CAB XCP/L CPBL CFC MACH ALPHA 1.0

α OR β SCHEDULES

COEFFICENTS

A: -10° → 10°, D: 50° → 70°, G: 90° → 110°, I: 130° → 150°, K: 170° → 190°

B: 10° → 30°, F: 80° → 100°, H: 110° → 130°, J: 150° → 170°

IDVAR (1) IDVAR (2) NDV

SECTOR ANGLES FOR ALL OF THE α SCHEDULES WERE -10°, -8°, -4°, 0°, 4°, 8°, 10°, 0°

TABLE IV - Continued

TEST: MSFC TWT 583 — DATA SET/RUN NUMBER COLLATION SUMMARY — DATE: 5 MARCH 1974

DATA SET IDENTIFIER	CONFIGURATION	SCHD. α	SCHD. β	PARAMETERS/VALUES φ	NO. OF RUNS	MACH NUMBERS (OR ALTERNATE INDEPENDENT VARIABLE) 1.96	3.48	4.96	STING COMB.	NOSE	REF SET
R99017	T1	A	0	90	3	136/0	9/0	8/0	AA	FWD	0
018		B			3	135/0	10/0	7/0	BB	FWD	20
019		D			3	100/0	89/0	90/0	II	UP	60
020		F			3	99/0	88/0	87/0	KK	UP	90
068		G			3	110/0	116/0	115/0	JJ	DN	100
021		H			3	109/0	65/0	64/0	II	DN	120
022		I			3	129/0	51/0	50/0	CC	AFT	140
023		J			3	128/0	48/0	49/0	BB	AFT	160
024		K			3	127/0	47/0	46/0	AA	AFT	180
025		A		135	1			12/0	AA	FWD	0
026		B			1			11/0	BB	FWD	20
027		D			1			85/0	II	UP	60
028		F			1			86/0	KK	UP	90
029		H			1			/0	II	DN	120
030		I			1			4 /0	CC	AFT	140
031		J			1			44/0	BB	AFT	160
032		K			1			45/0	AA	AFT	180

TEST RUN NUMBERS

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

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

α OR β SCHEDULES

TABLE IV - Continued

TEST: MSFC TWT 583 — DATA SET/RUN NUMBER COLLATION SUMMARY — DATE: 5 MARCH 1974

DATA SET IDENTIFIER	CONFIGURATION	SCHD. α	SCHD. β	PARAMETERS/VALUES φ	NO. OF RUNS	MACH NUMBERS (OR ALTERNATE INDEPENDENT VARIABLE) 1.96	3.48	4.96	STING COMB.	NOSE	AFT SET	TEST RUN NUMBERS
R99033	T_1	A	0	180	3	137/0	16/0	13/0	AA	FWD	0	
034		B			3	138/0	15/0	14/0	BB	FWD	20	
035		D			3	101/0	83/0	84/0	II	UP	60	
036		F			3	102/0	82/0	81/0	KK	UP	90	
069		G			3	107/0	117/0	118/0	JJ	DN	100	
037		H			3	108/0	68/0	67/0	II	DN	120	
038		I			3	124/0	42/0	41/0	CC	AFT	140	
039		J			3	125/0	39/0	40/0	BB	AFT	160	
040		K		↓	3	126/0	38/0	37/0	AA	AFT	180	
041		A		225	1			17/0	AA	FWD	0	
042		B			1			18/0	BB	FWD	20	
043		D			1			79/0	II	UP	60	
044		F			1			80/0	KK	UP	90	
045		H			1			69/0	II	DN	120	
046		I			1			34/0	CC	AFT	140	
047		J			1			35/0	BB	AFT	160	
↓ 048	↓	K	↓	↓	1			36/0	AA	AFT	180	

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

α OR β SCHEDULES — COEFFICENTS — IDVAR (1) IDVAR (2) NDV

TABLE IV - CONTINUED

TEST: MSFC TWT 583 — DATA SET/RUN NUMBER COLLATION SUMMARY — DATE: 5 MARCH 1974

DATA SET IDENTIFIER	CONFIGURATION	SCHD. α	SCHD. β	PARAMET φ	NO. OF RUNS	MACH NUMBERS (OR ALTERNATE INDEPENDENT VARIABLE) 1.96	3.48	4.96	STING COMB.	NOSE	SEP SET	TEST RUN NUMBERS
R99049	Ti	A	0	270	3	140/0	21/0	22/0	AA	FWD	0	
050		B			3	139/0	20/0	19/0	BB	FWD	20	
051		D			3	104/0	77/0	78/0	II	UP	60	
052		F			3	103/0	76/0	75/0	KK	UP	90	
070		G			3	106/0	120/0	119/0	JJ	DN	100	
053		H			3	105/0	71/0	70/0	II	DN	120	
054		I			3	123/0	33/0	32/0	CC	AFT	140	
055		J			3	122/0	30/0	31/0	BB	AFT	160	
056		K			3	121/0	29/0	28/0	AA	AFT	180	
057		A		315	1			23/0	AA	FWD	0	
058		B			1			24/0	BB	FWD	20	
059		D			1			73/0	II	UP	60	
060		F			1			74/0	KK	UP	90	
061		H			1			72/0	II	DN	120	
062		I			1			26/0	CC	AFT	140	
063		J			1			25/0	BB	AFT	160	
064		K			1			27/0	AA	AFT	180	

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

COEFFICENTS

α OR β SCHEDULES

IDVAR (1) IDVAR (2) NDV

TABLE IV. Continued

TEST: MSFC TWT 583 — DATA SET/RUN NUMBER COLLATION SUMMARY — DATE: 5 MARCH 1974

DATA SET IDENTIFIER	CONFIGURATION	SCHD. α	SCHD. β	PARAMETERS/VALUES q	NO. OF RUNS	MACH NUMBERS (OR ALTERNATE INDEPENDENT VARIABLE) 1.96	3.48	4.96	STING COMB.	NOSE	O/F SET
R99073	T2 (SAME AS T1	A	0	0	1			147/0	AA	FWD	0
074	BUT WITHOUT	B			1			148/0	BB	FWD	20
071	PROTUBERANCES,	D			3	159/0	155/0	154/0	II	UP	60
072	WITH #120	F			3	158/0	156/0	157/0	KK	UP	90
075	GRIT)	G			1			152/0	JJ	DN	100
076		H			1			153/0	II	DN	120
077		I			1			151/0	CC	AFT	140
078		J			1			150/0	BB	AFT	160
079		K			1			149/0	AA	AFT	180
R99065	T2 (SAME AS T2	D	0	0	3	141/0	146/0	145/0	DD	UP	60
066	ABOVE, BUT	F	0	0	3	142/0	143/0	144/0	FF	UP	90
	SIDE-MOUNTED)										

TEST RUN NUMBERS

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

α OR β SCHEDULES — COEFFICENTS — IDVAR (1) IDVAR (2) NDV

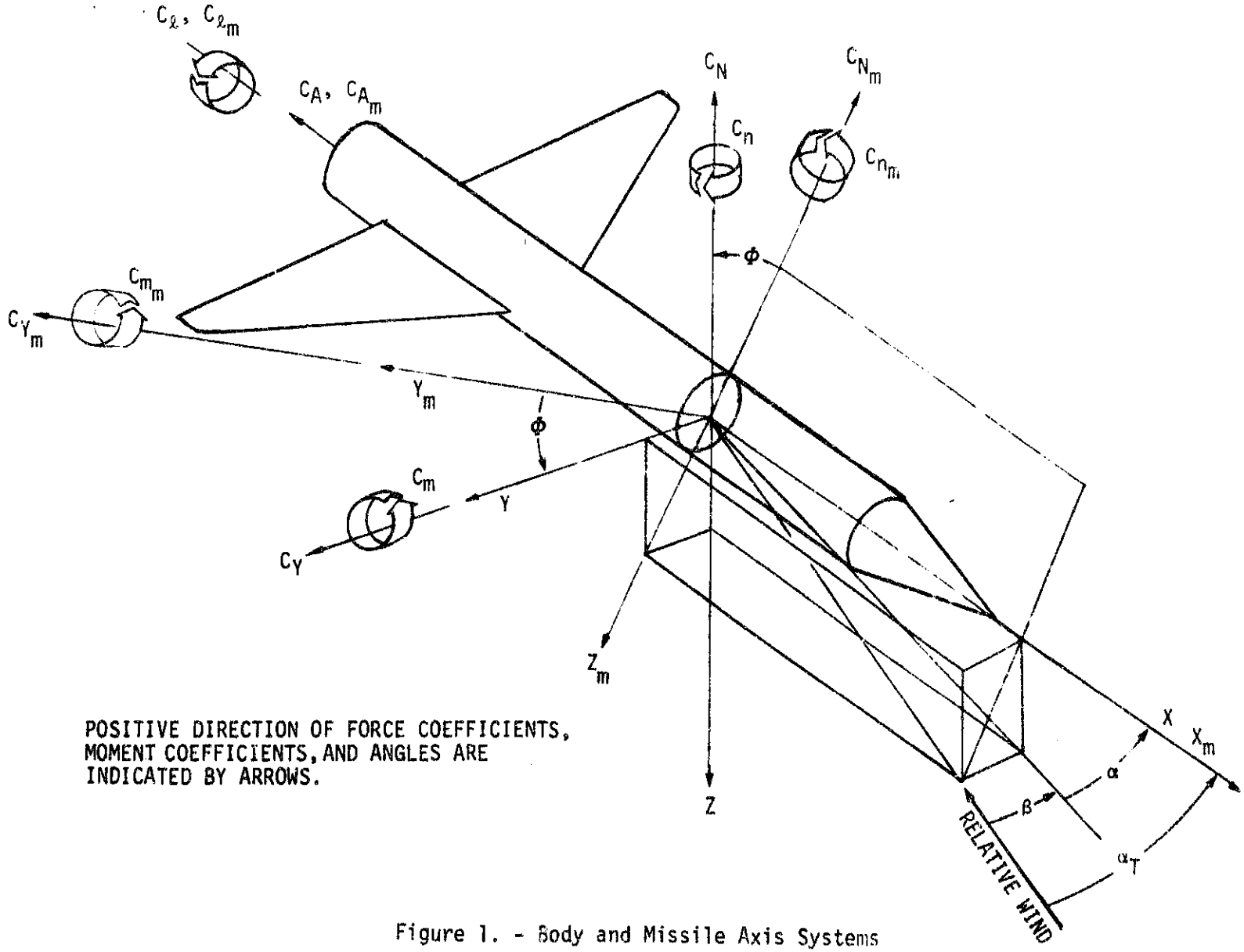
TABLE V. 0.003-SCALE 324-INCH ET REFERENCE DIMENSIONS

DIMENSION	FULL SCALE	MODEL SCALE
Reference Area, S_{ref} (cross-sectional area of ET)	572.555 ft^2	0.742 $in.^2$
Reference Length, ℓ_{ref} (ET diameter)	324 in.	0.972 in.
Reference Span, b_{ref} (ET diameter)	324 in.	0.972 in.
Moment Reference Point, MRP (dry weight c.g.)		
XMRP (from nose)	1086.4 in.	3.259 in.
YMRP	0	0
ZMRP	0	0
Base Area, A_b (cross-sectional area of ET)	572.555 ft^2	0.742 in^2

TABLE VI. MOMENT TRANSFER DISTANCES

MODEL ARRANGEMENT	TRANSFER DISTANCE		
	XMRP	YMRP	ZMRP
Tail-mounted (α = -10° to 100°)	0.243 upstream of BMC	0	0
Nose-mounted (α = 80° to 190°)	0.792 upstream of BMC	0	0
Side-mounted (α = 50° to 100°)	0.320 downstream of BMC	0	0

NOTE: Distances are based on actual model measurements



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

Figure 1. - Body and Missile Axis Systems

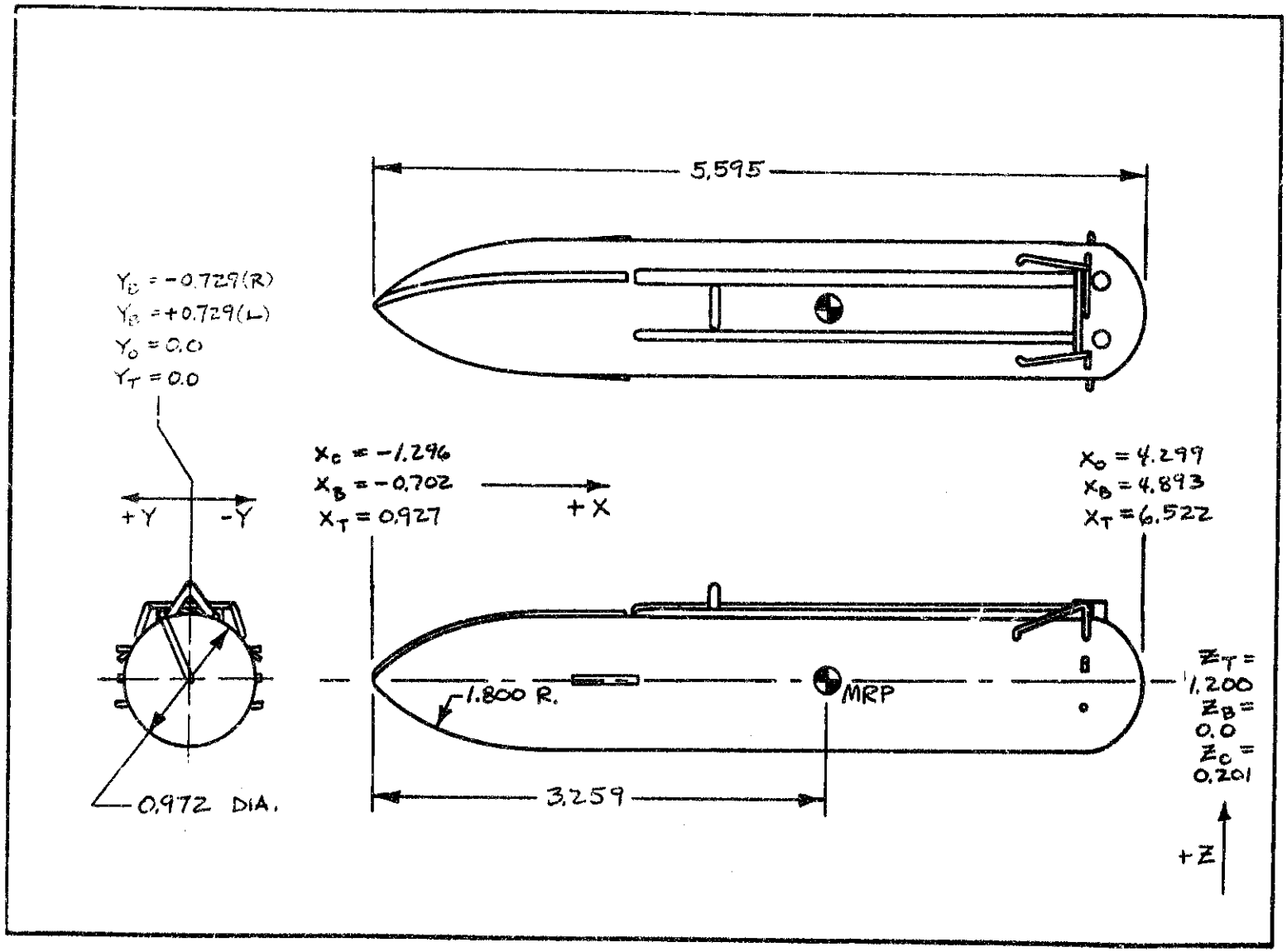


Figure 2. GENERAL ARRANGEMENT OF MSFC MODEL NO. 458, CONFIGURATION T, EXTERNAL TANK WITH PROTUBERANCES

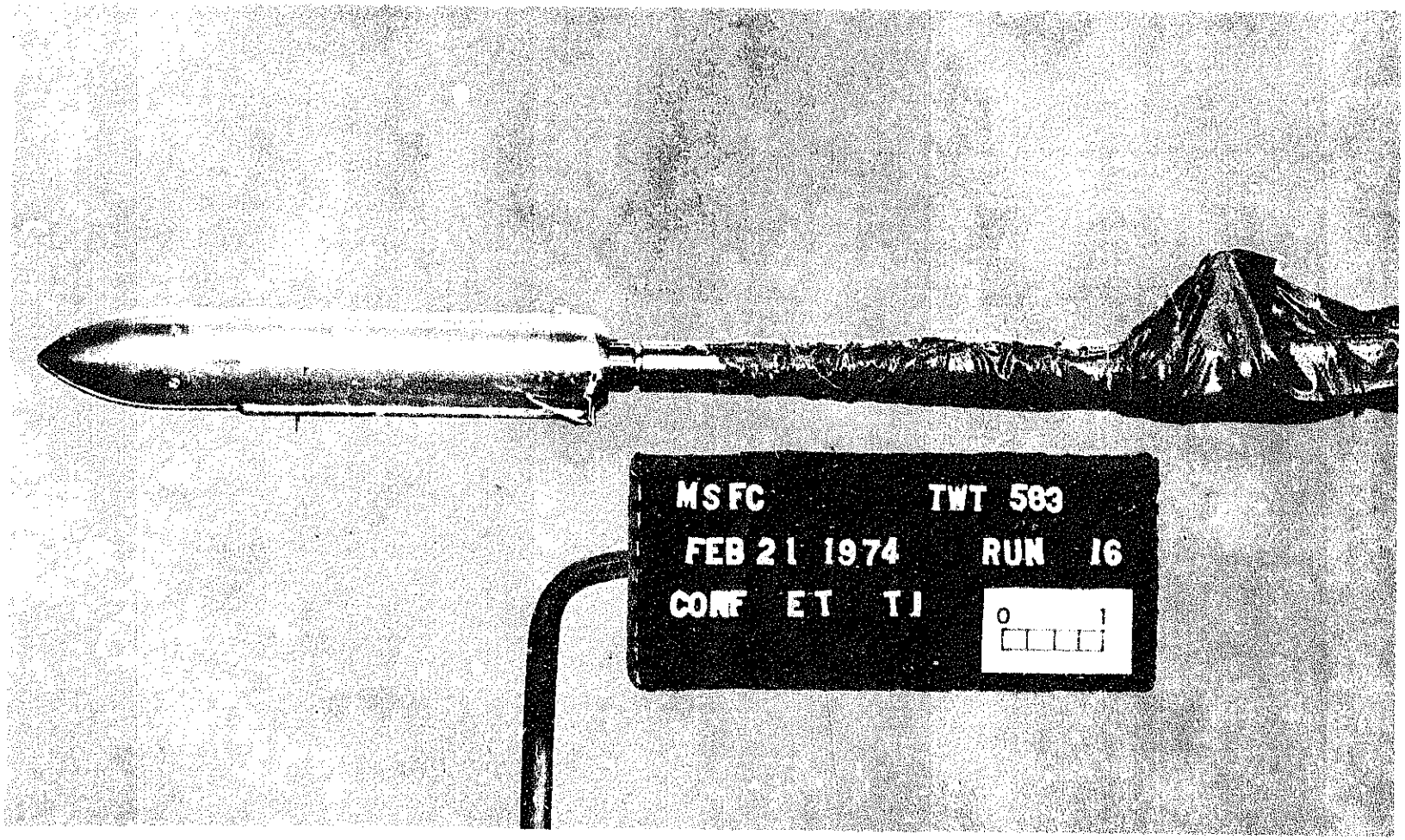


FIGURE 3. EXTERNAL TANK MODEL NO. 458 AT $\phi = 180°$, STING COMBINATION AA, NOSE FORWARD

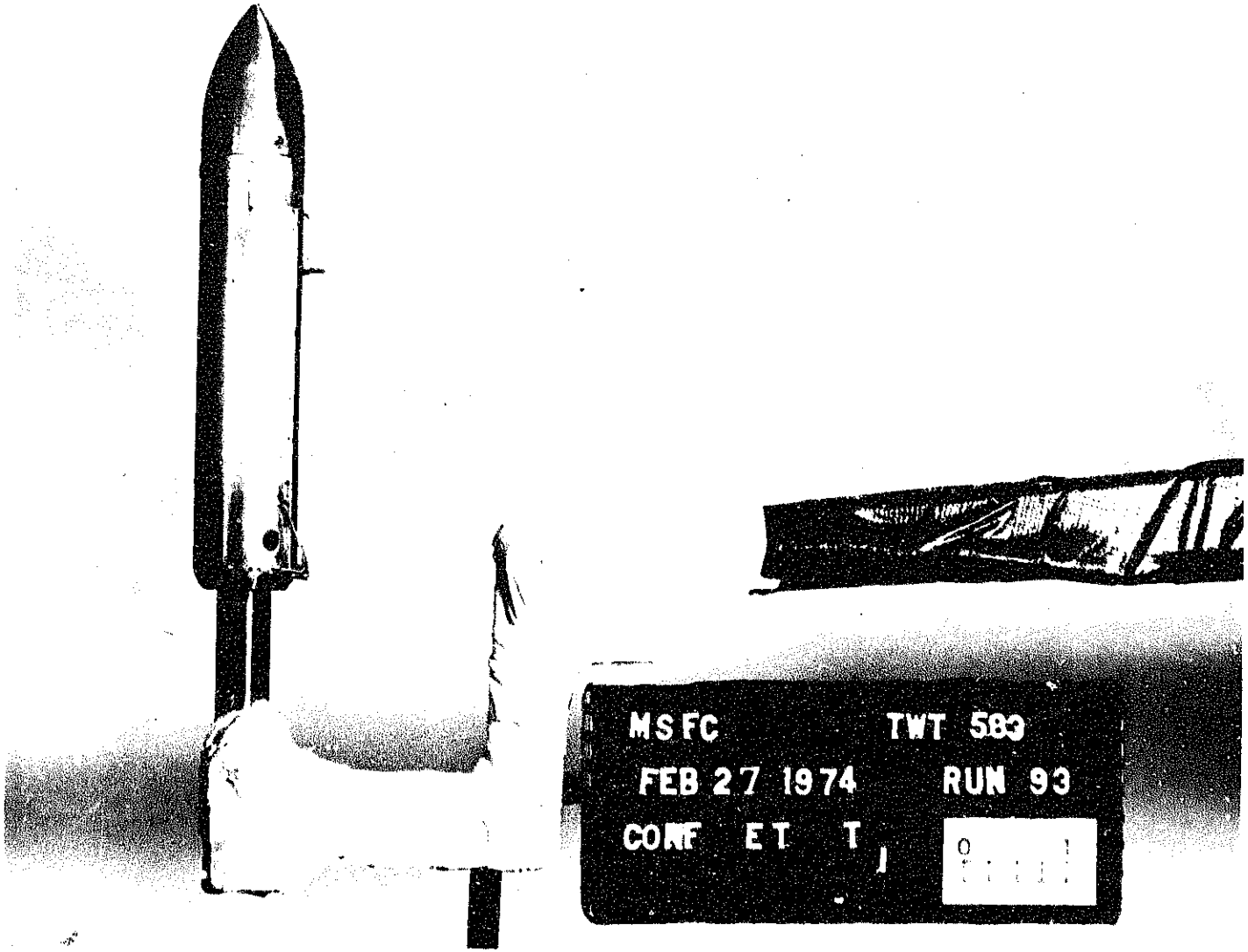


FIGURE 4. EXTERNAL TANK MODEL NO. 458 AT $\phi = 0°$, STING COMBINATION KK, NOSE UP

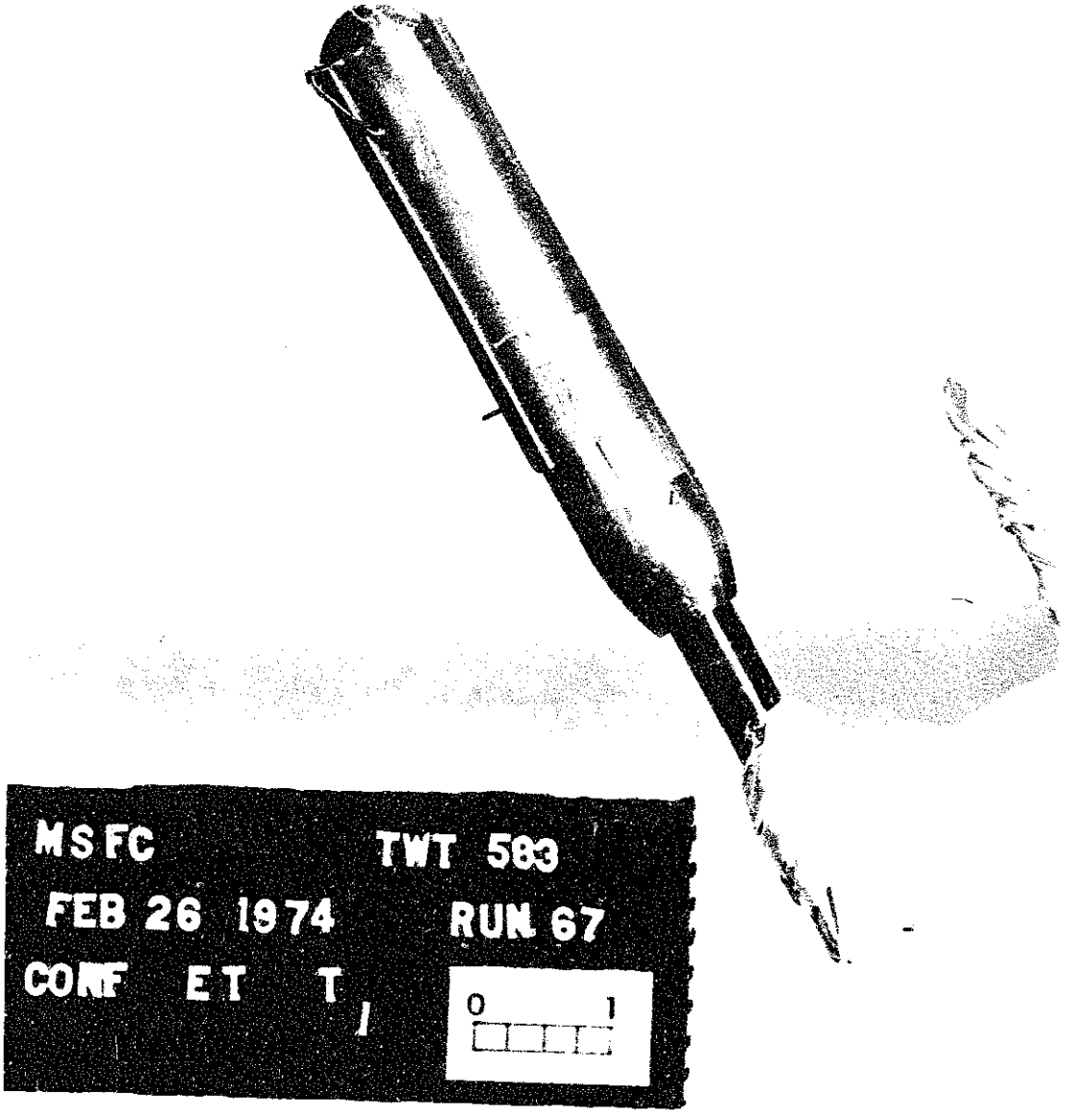


FIGURE 5. EXTERNAL TANK MODEL NO. 458 AT : = 180°, SEING COMBINATION II, NOSE DOWN

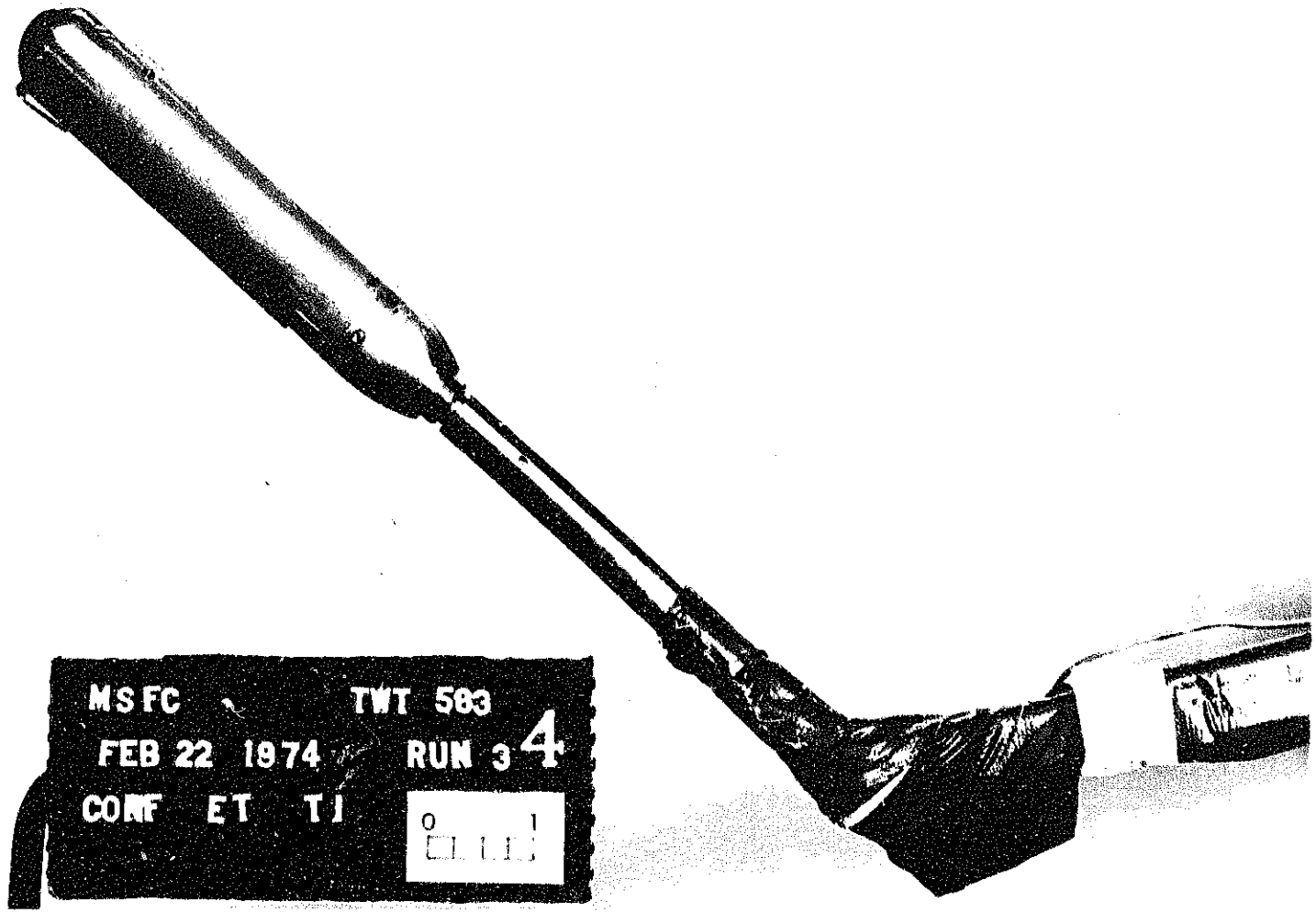


FIGURE 6. EXTERNAL TANK MODEL NO. 458 AT ϕ = 225°, STING COMBINATION CC, NOSE AFT

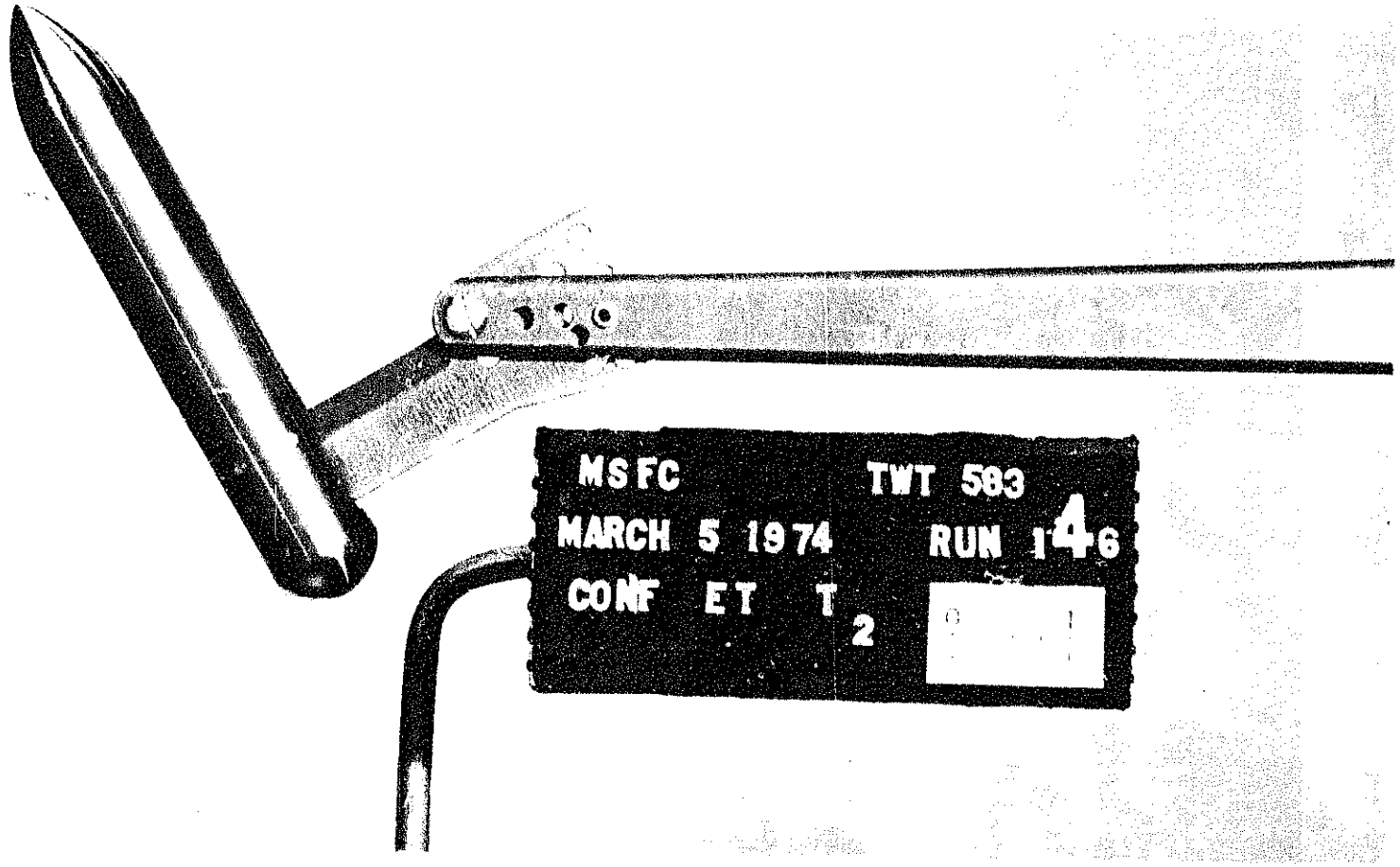


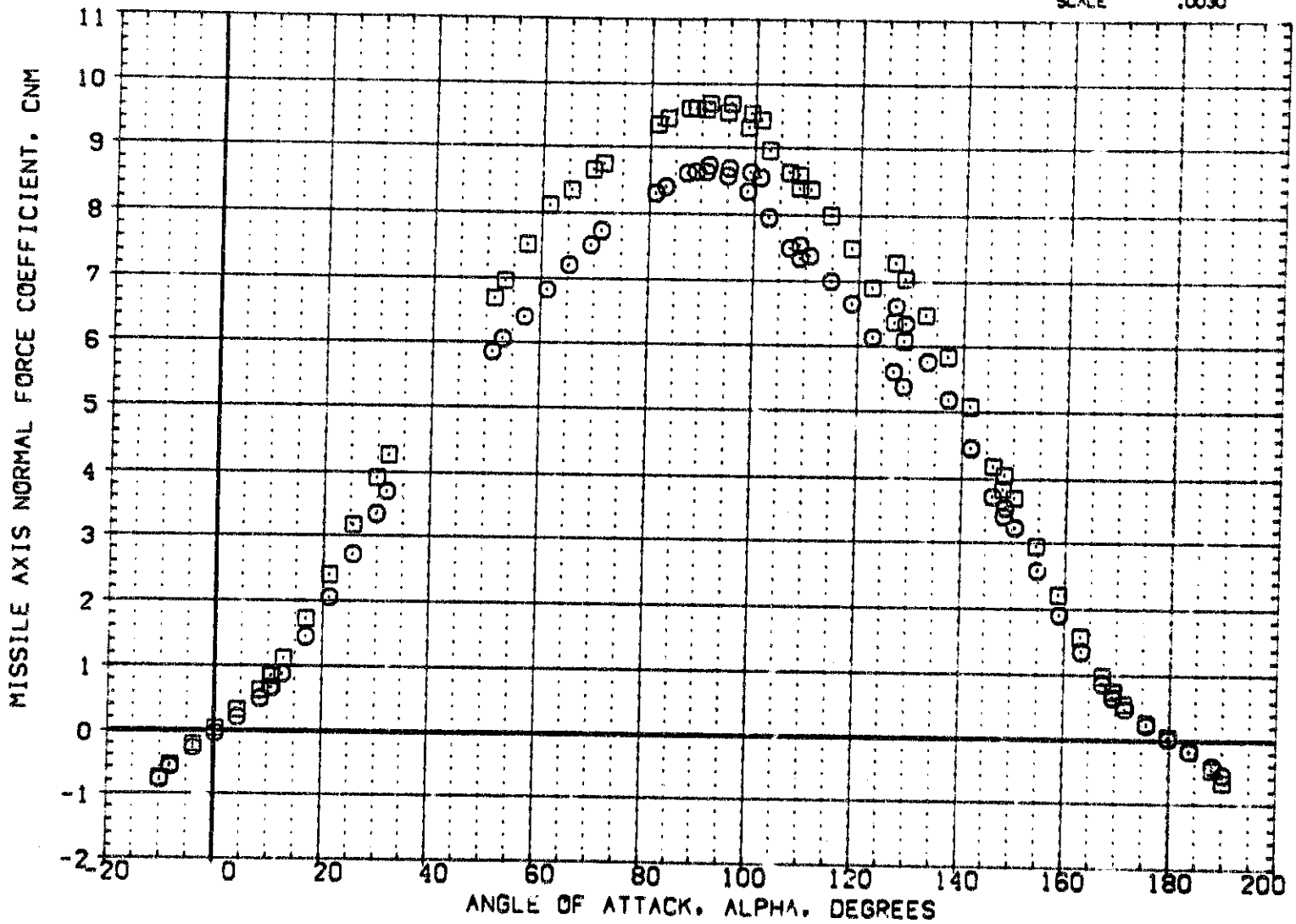
FIGURE 7. EXTERNAL TANK MODEL NO. 458, CLEAN CONFIGURATION, STING COMBINATION DD, NOSE UP

DATA FIGURES

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI
(B99A01)	○	MSFC 583 (TAIF) EXTERNAL TANK TI, TAIL MOUNTED	.000
(B99A02)	○	MSFC 583 (TAIF) EXTERNAL TANK TI, NOSE MOUNTED	.000
(B99C01)	□	MSFC 583 (TAIF) EXTERNAL TANK TI, TAIL MOUNTED	90.000
(B99C02)	□	MSFC 583 (TAIF) EXTERNAL TANK TI, NOSE MOUNTED	90.000

REFERENCE INFORMATION

SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	

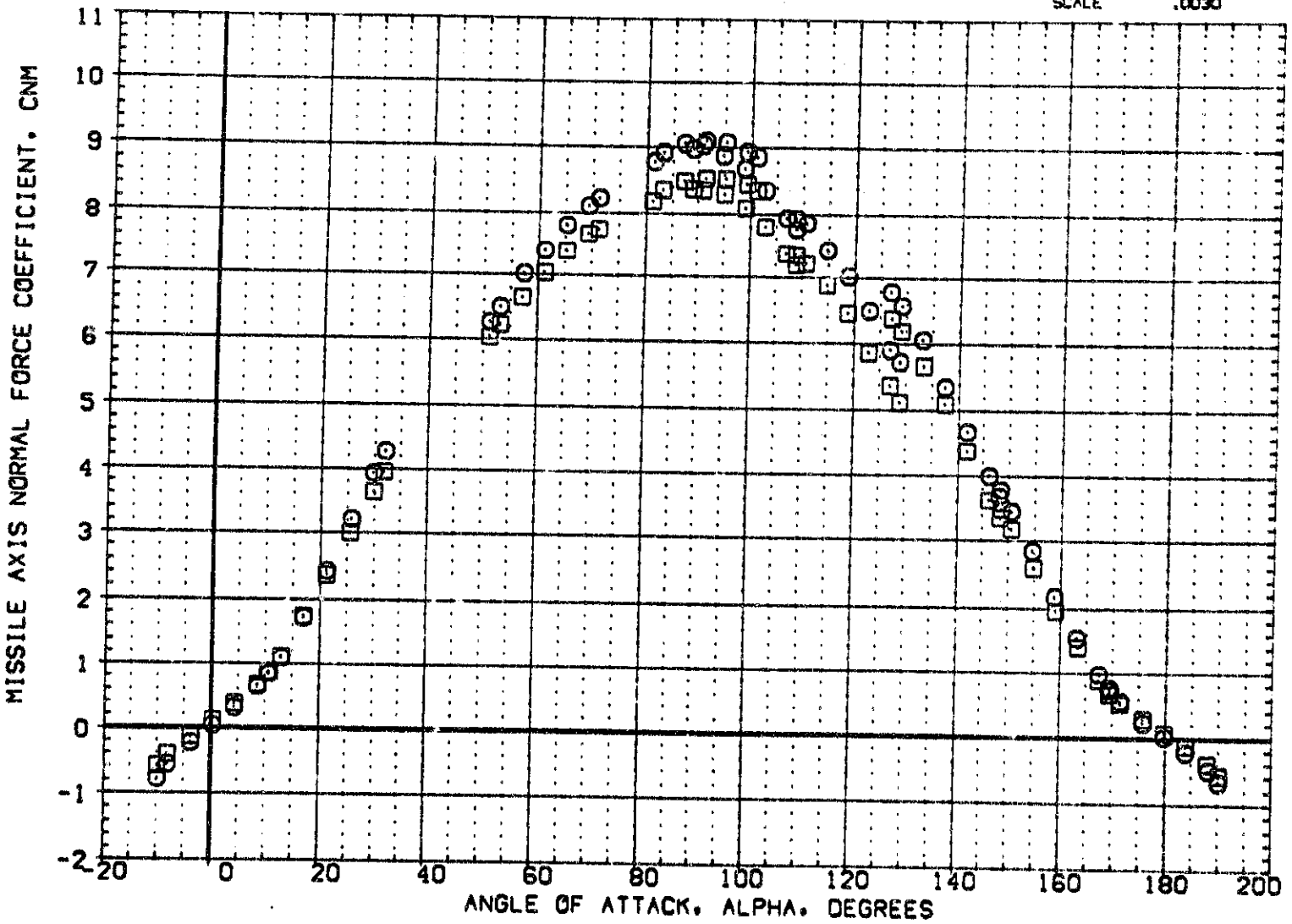


EFFECT OF ROLL POSITION ON STATIC STABILITY

(A)MACH = 1.96

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI
(B99G01)	○	MSFC 583 (TAIF) EXTERNAL TANK T1, TAIL MOUNTED	270.000
(B99G02)	□	MSFC 583 (TAIF) EXTERNAL TANK T1, NOSE MOUNTED	270.000
(B99E01)	○	MSFC 583 (TAIF) EXTERNAL TANK T1, TAIL MOUNTED	180.000
(B99E02)	□	MSFC 583 (TAIF) EXTERNAL TANK T1, NOSE MOUNTED	180.000

REFERENCE INFORMATION		
SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	

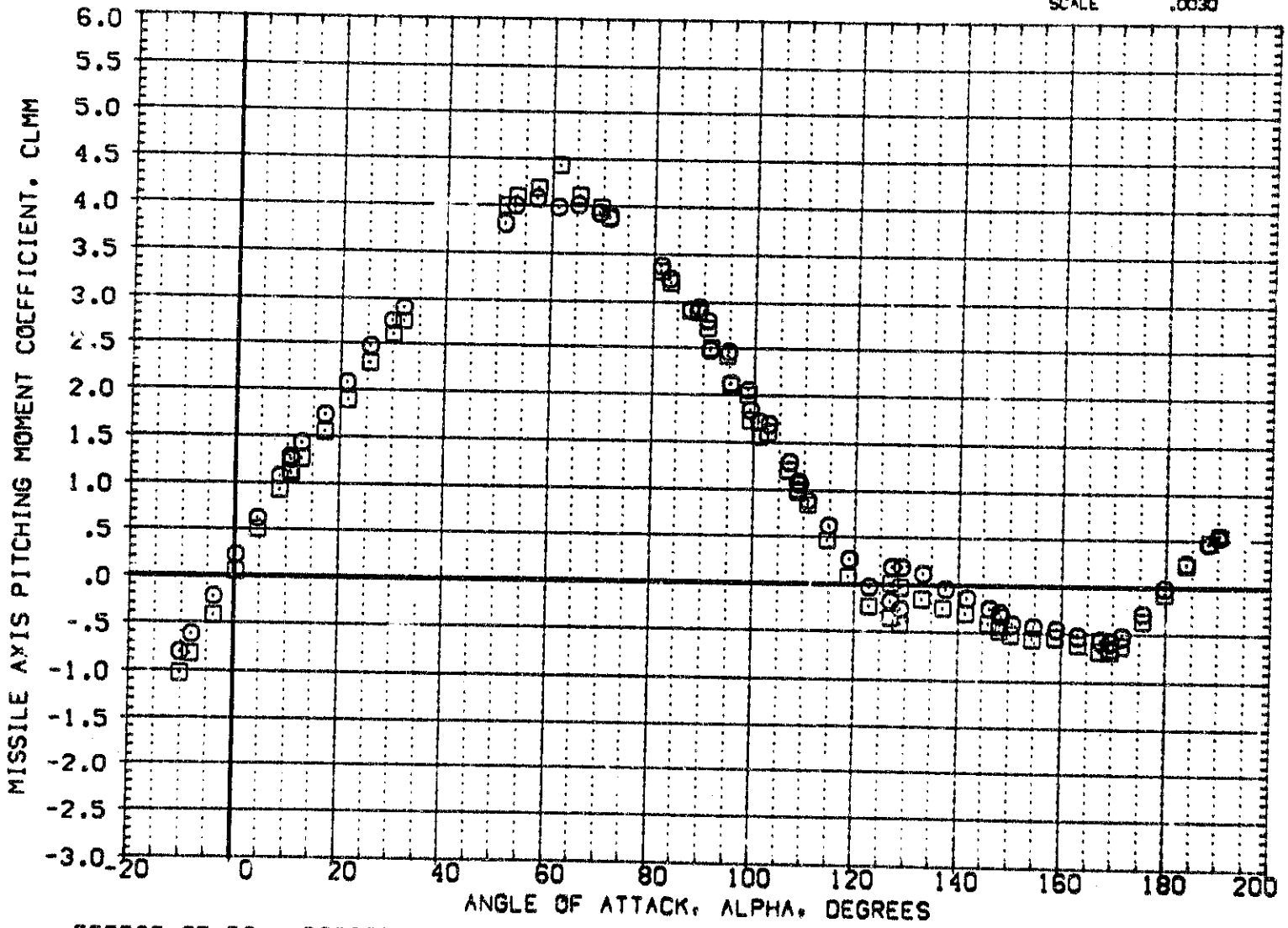


EFFECT OF ROLL POSITION ON STATIC STABILITY

(A)MACH = 1.95

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI
(B99A01)	○	MSFC 583 (TAIF) EXTERNAL TANK T1, TAIL MOUNTED	.000
(B99A02)	□	MSFC 583 (TAIF) EXTERNAL TANK T1, NOSE MOUNTED	.000
(B99C01)	○	MSFC 583 (TAIF) EXTERNAL TANK T1, TAIL MOUNTED	90.000
(B99C02)	□	MSFC 583 (TAIF) EXTERNAL TANK T1, NOSE MOUNTED	90.000

REFERENCE INFORMATION		
SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	



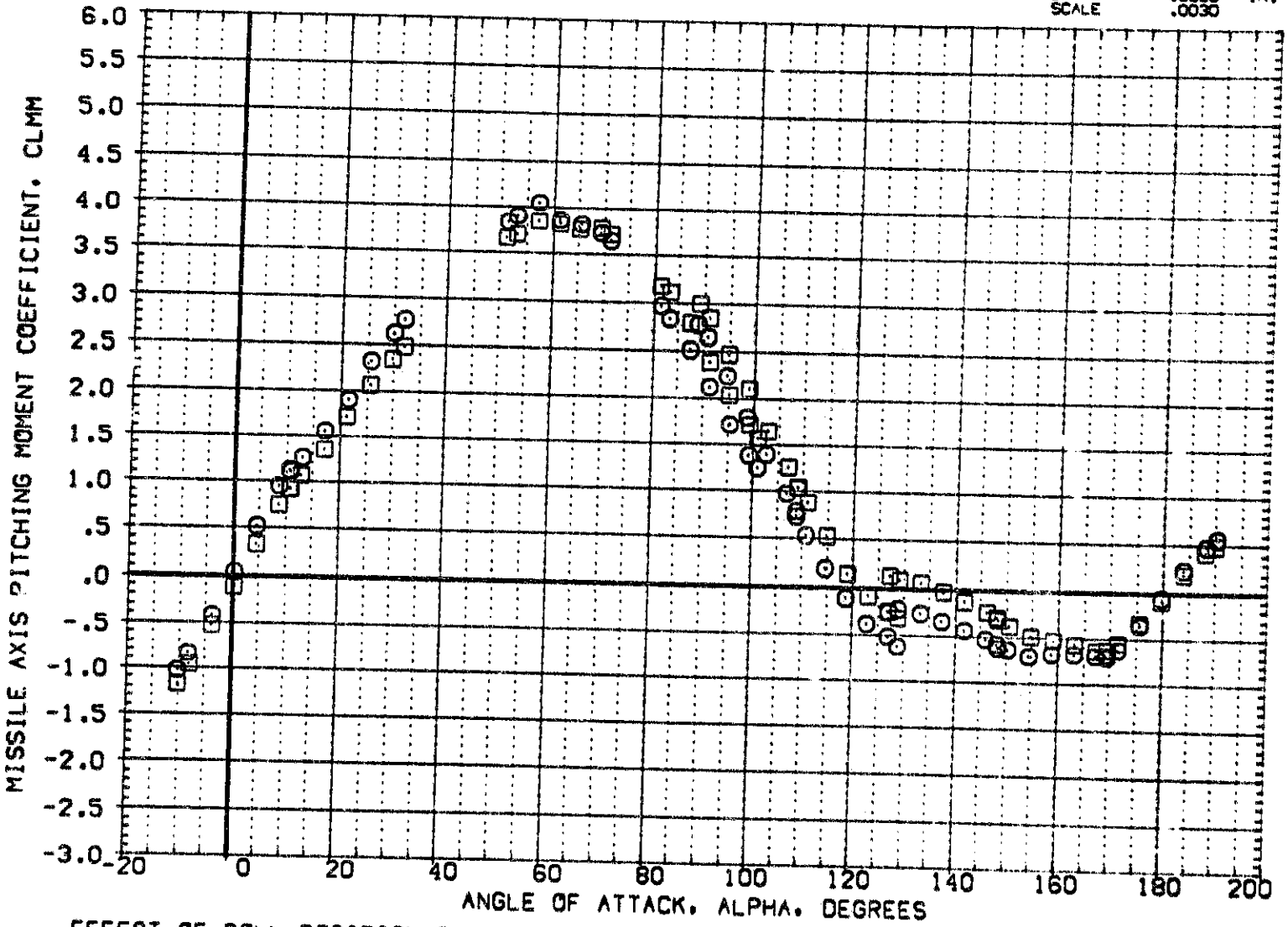
EFFECT OF ROLL POSITION ON STATIC STABILITY

(A)MACH = 1.96

DATA SET SYMBOL		CONFIGURATION DESCRIPTION	PHI
(B99G01)	○	MSFC 583 (TAIF) EXTERNAL TANK T1, TAIL MOUNTED	270.000
(B99G02)	□	MSFC 583 (TAIF) EXTERNAL TANK T1, NOSE MOUNTED	270.000
(B99E01)	○	MSFC 583 (TAIF) EXTERNAL TANK T1, TAIL MOUNTED	180.000
(B99E02)	□	MSFC 583 (TAIF) EXTERNAL TANK T1, NOSE MOUNTED	180.000

REFERENCE INFORMATION

SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	



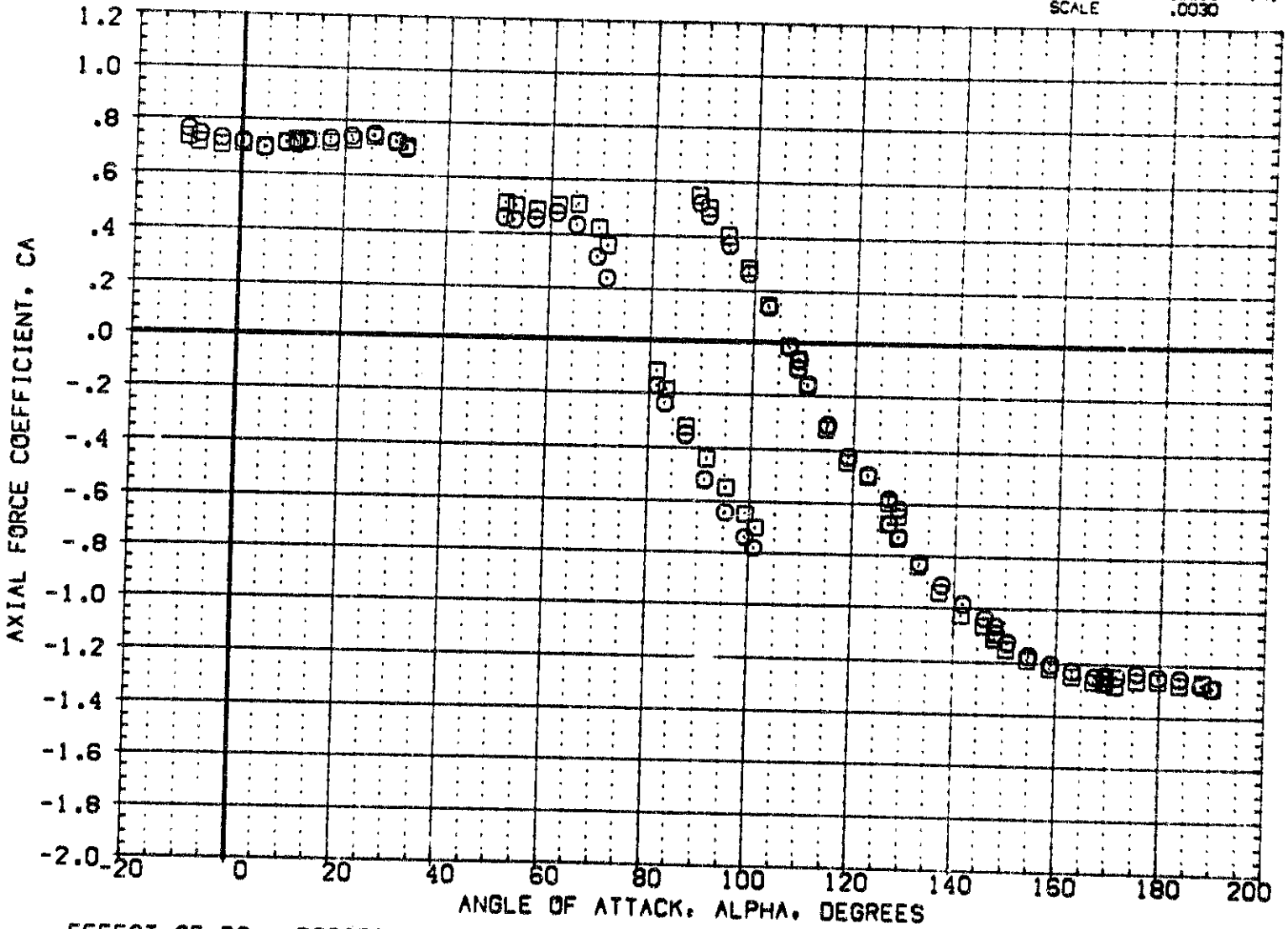
EFFECT OF ROLL POSITION ON STATIC STABILITY

(A)MACH = 1.95

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI
(B99A01)	○	MSFC 583 (TAIF) EXTERNAL TANK T1. TAIL MOUNTED	.000
(B99A02)	□	MSFC 583 (TAIF) EXTERNAL TANK T1. NOSE MOUNTED	.000
(B99C01)	○	MSFC 583 (TAIF) EXTERNAL TANK T1. TAIL MOUNTED	90.000
(B99C02)	□	MSFC 583 (TAIF) EXTERNAL TANK T1. NOSE MOUNTED	90.000

REFERENCE INFORMATION

SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	



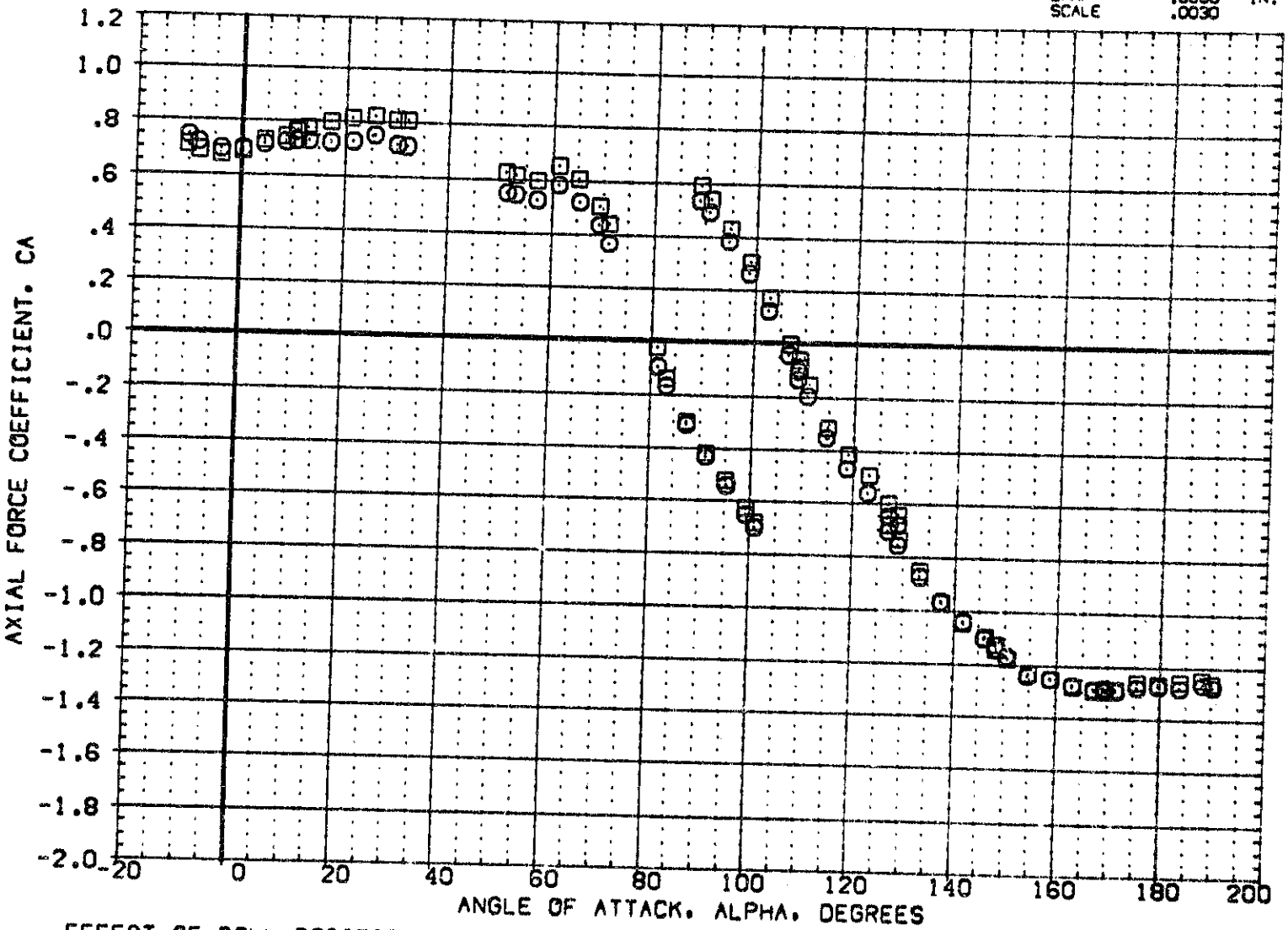
EFFECT OF ROLL POSITION ON STATIC STABILITY

(A)MACH = 1.96

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	PHI
(899G01)	MSFC 583 (TAIF) EXTERNAL TANK T1, TAIL MOUNTED	270.000
(899G02)	MSFC 583 (TAIF) EXTERNAL TANK T1, NOSE MOUNTED	270.000
(899E01)	MSFC 583 (TAIF) EXTERNAL TANK T1, TAIL MOUNTED	180.000
(899E02)	MSFC 583 (TAIF) EXTERNAL TANK T1, NOSE MOUNTED	180.000

REFERENCE INFORMATION

SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	



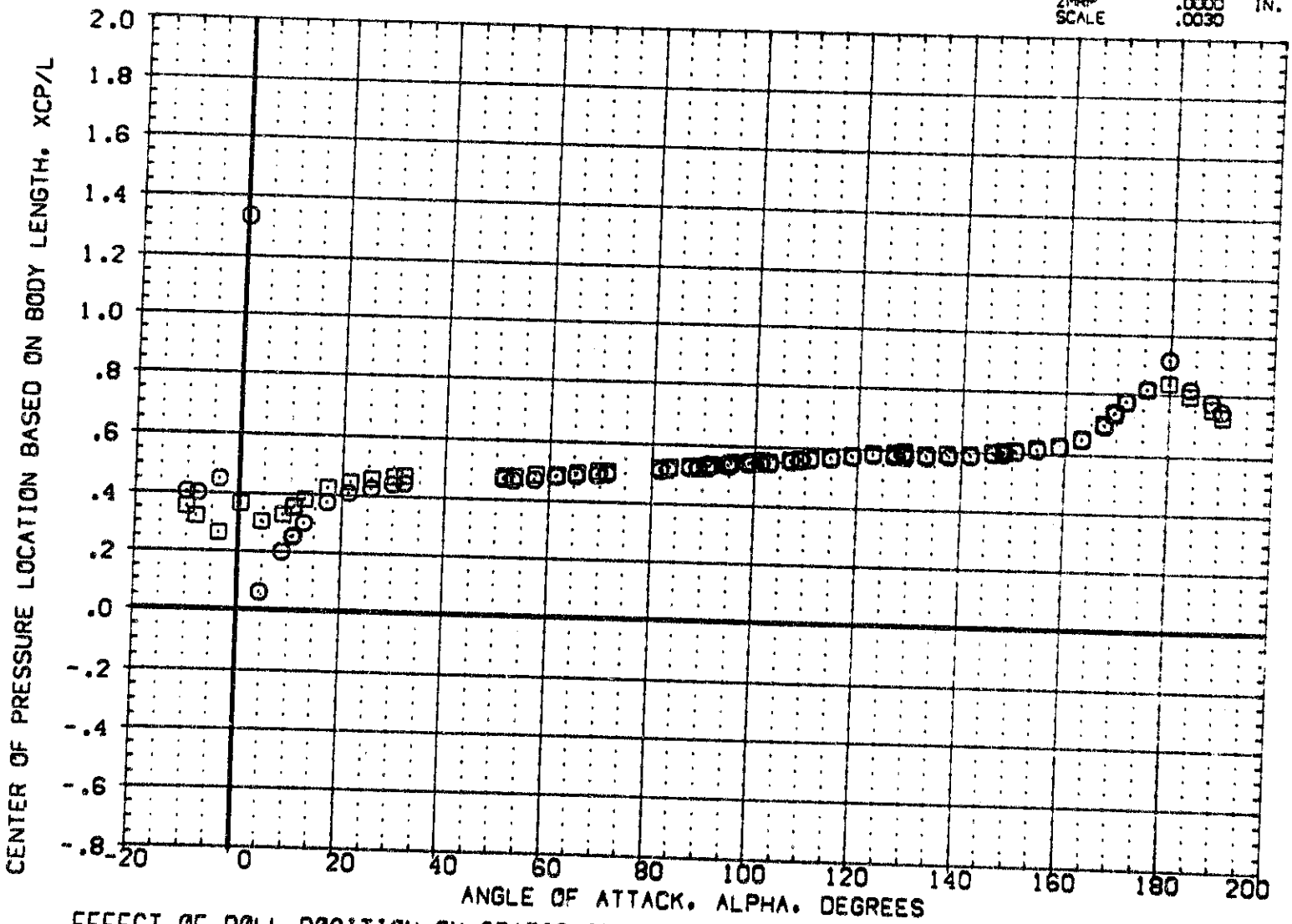
EFFECT OF ROLL POSITION ON STATIC STABILITY

(A)MACH = 1.95

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI
(B99A01)	○	MSFC 583 (TAIF) EXTERNAL TANK T1. TAIL MOUNTED	.000
(B99A02)	○	MSFC 583 (TAIF) EXTERNAL TANK T1. NOSE MOUNTED	.000
(B99C01)	□	MSFC 583 (TAIF) EXTERNAL TANK T1. TAIL MOUNTED	90.000
(B99C02)	□	MSFC 583 (TAIF) EXTERNAL TANK T1. NOSE MOUNTED	90.000

REFERENCE INFORMATION

SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	



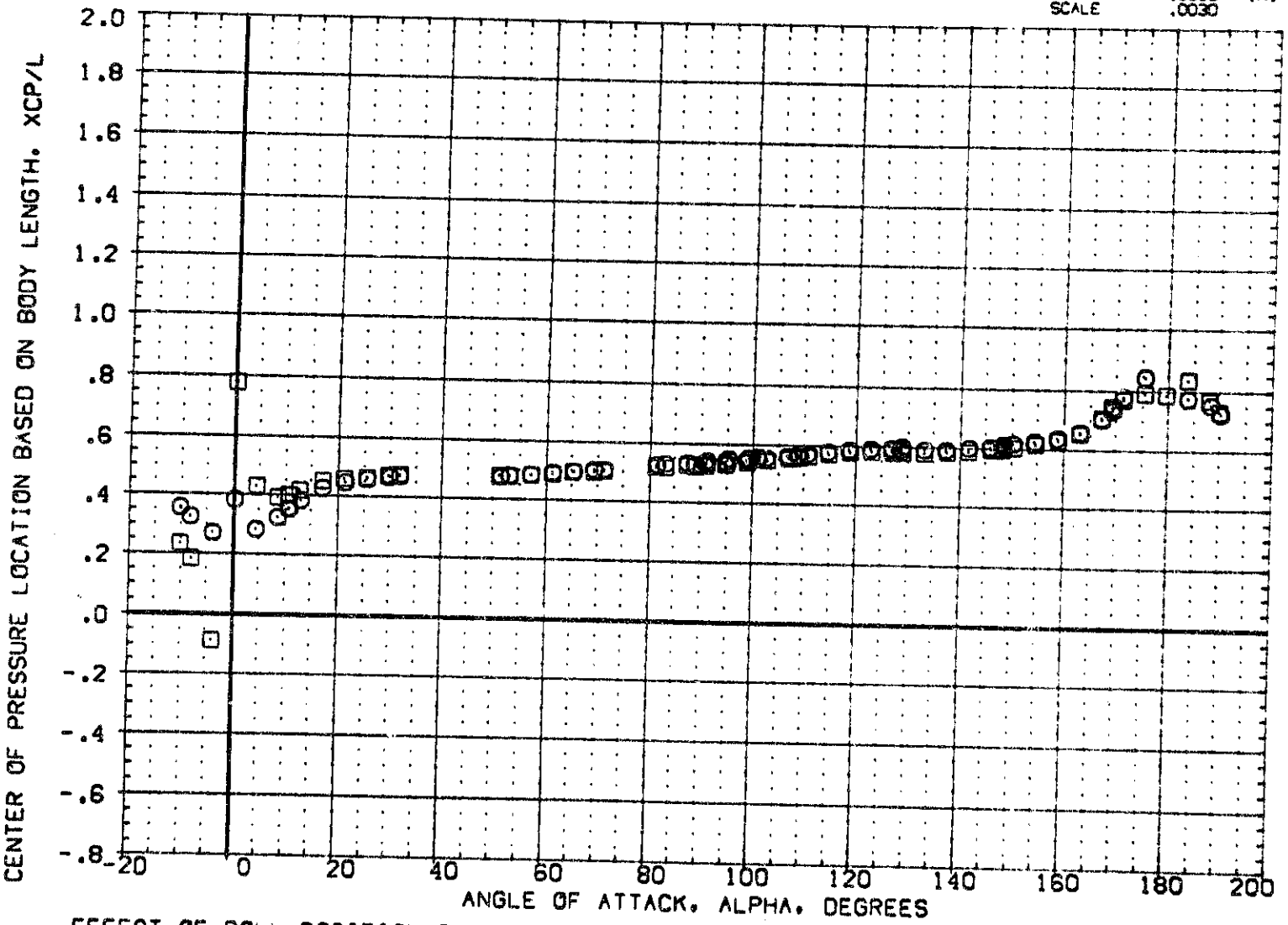
EFFECT OF ROLL POSITION ON STATIC STABILITY

(A)MACH = 1.96

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI
(B99G01)	○	MSFC 583 (TAIF) EXTERNAL TANK TI. TAIL MOUNTED	270.000
(B99G02)	□	MSFC 583 (TAIF) EXTERNAL TANK TI. NOSE MOUNTED	270.000
(B99E01)	○	MSFC 583 (TAIF) EXTERNAL TANK TI. TAIL MOUNTED	180.000
(B99E02)	□	MSFC 583 (TAIF) EXTERNAL TANK TI. NOSE MOUNTED	180.000

REFERENCE INFORMATION

SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	



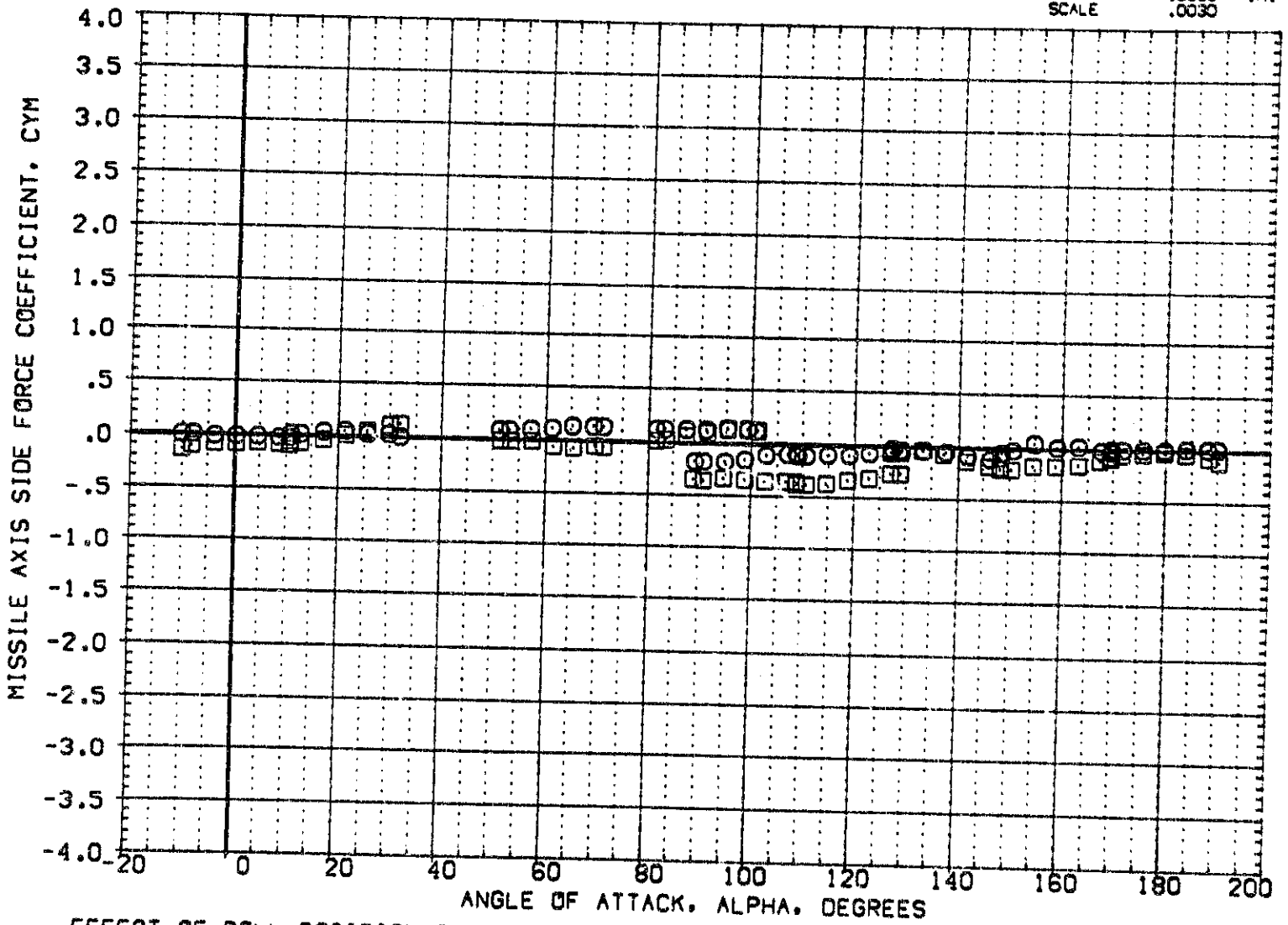
EFFECT OF ROLL POSITION ON STATIC STABILITY

(A)MACH = 1.95

DATA SET SYMBOL		CONFIGURATION DESCRIPTION	PHI
(899A01)	○	MSFC 583 (TAIF) EXTERNAL TANK T1, TAIL MOUNTED	.000
(899A02)	□	MSFC 583 (TAIF) EXTERNAL TANK T1, NOSE MOUNTED	.000
(899C01)	○	MSFC 583 (TAIF) EXTERNAL TANK T1, TAIL MOUNTED	90.000
(899C02)	□	MSFC 583 (TAIF) EXTERNAL TANK T1, NOSE MOUNTED	90.000

REFERENCE INFORMATION

SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	



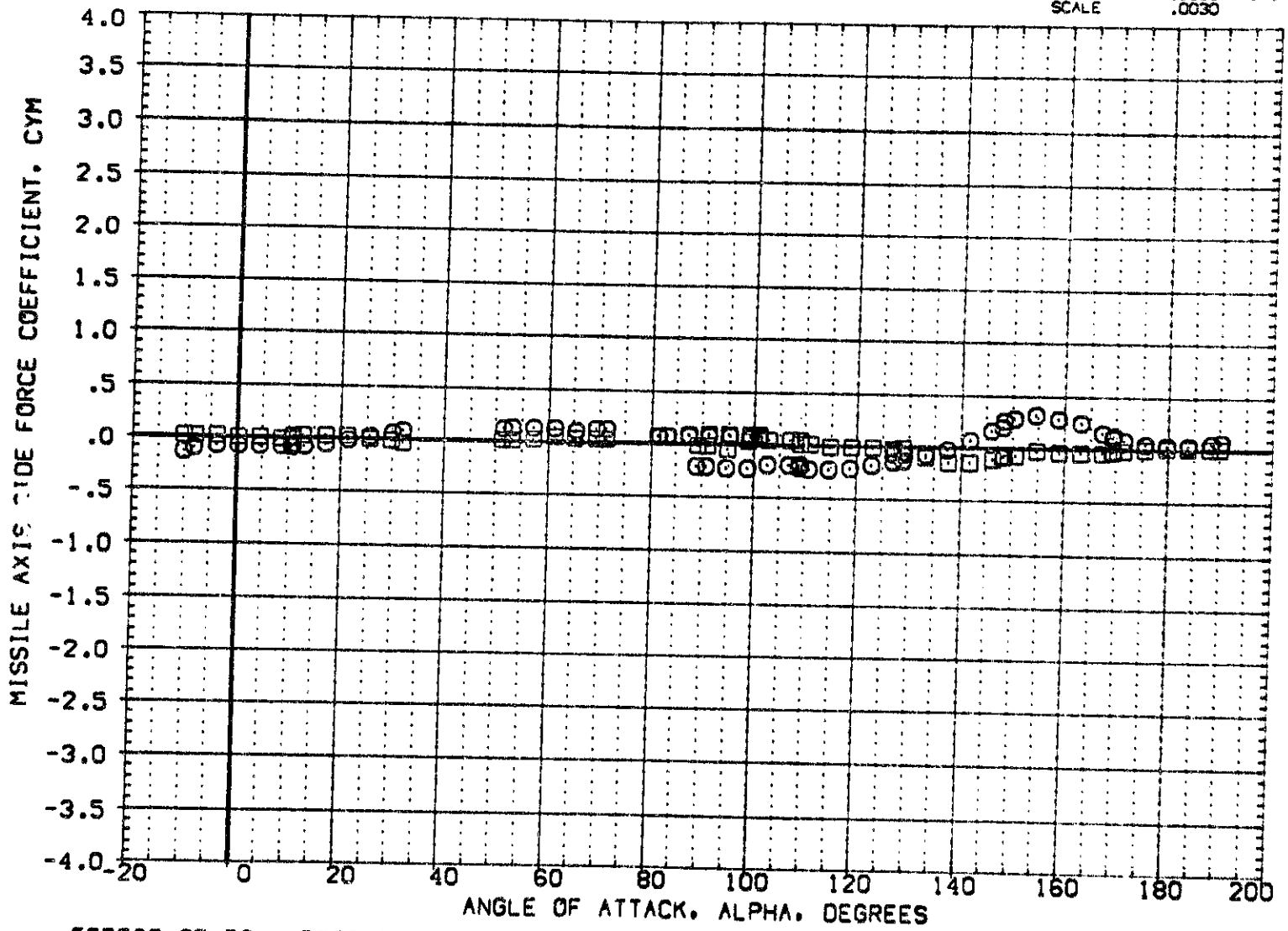
EFFECT OF ROLL POSITION ON STATIC STABILITY

(A)MACH = 1.96

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI
(899G01)	○	MSFC 583 (TAIF) EXTERNAL TANK TI. TAIL MOUNTED	270.000
(899G02)	○	MSFC 583 (TAIF) EXTERNAL TANK TI. NOSE MOUNTED	270.000
(899E01)	□	MSFC 583 (TAIF) EXTERNAL TANK TI. TAIL MOUNTED	180.000
(899E02)	□	MSFC 583 (TAIF) EXTERNAL TANK TI. NOSE MOUNTED	180.000

REFERENCE INFORMATION

SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	



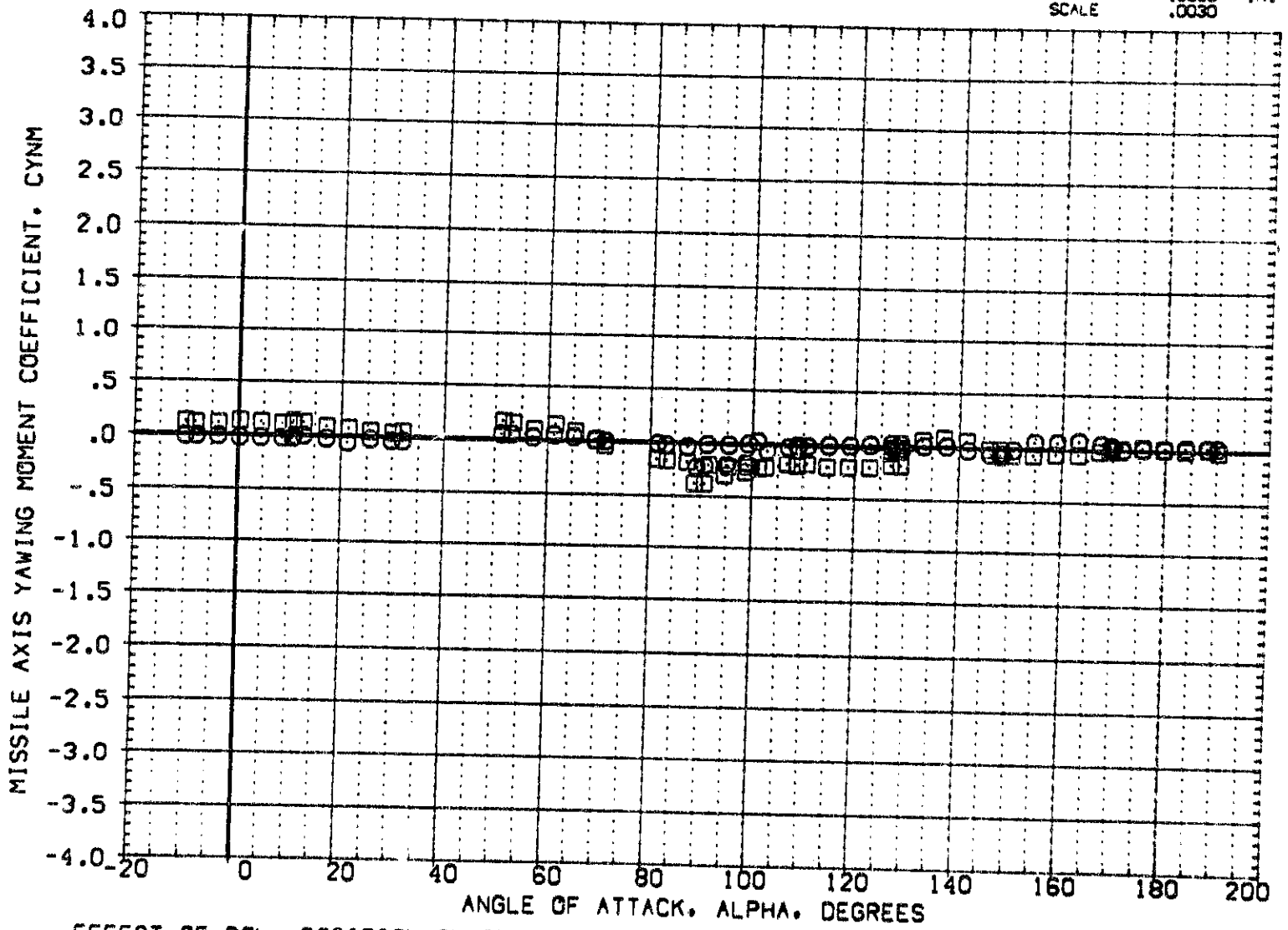
EFFECT OF ROLL POSITION ON STATIC STABILITY

(A)MACH = 1.95

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI
(899A01)	○	MSFC 583 (TAIF) EXTERNAL TANK TI. TAIL MOUNTED	.000
(899A02)	□	MSFC 583 (TAIF) EXTERNAL TANK TI. NOSE MOUNTED	.000
(899C01)	○	MSFC 583 (TAIF) EXTERNAL TANK TI. TAIL MOUNTED	90.000
(899C02)	□	MSFC 583 (TAIF) EXTERNAL TANK TI. NOSE MOUNTED	90.000

REFERENCE INFORMATION

SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	



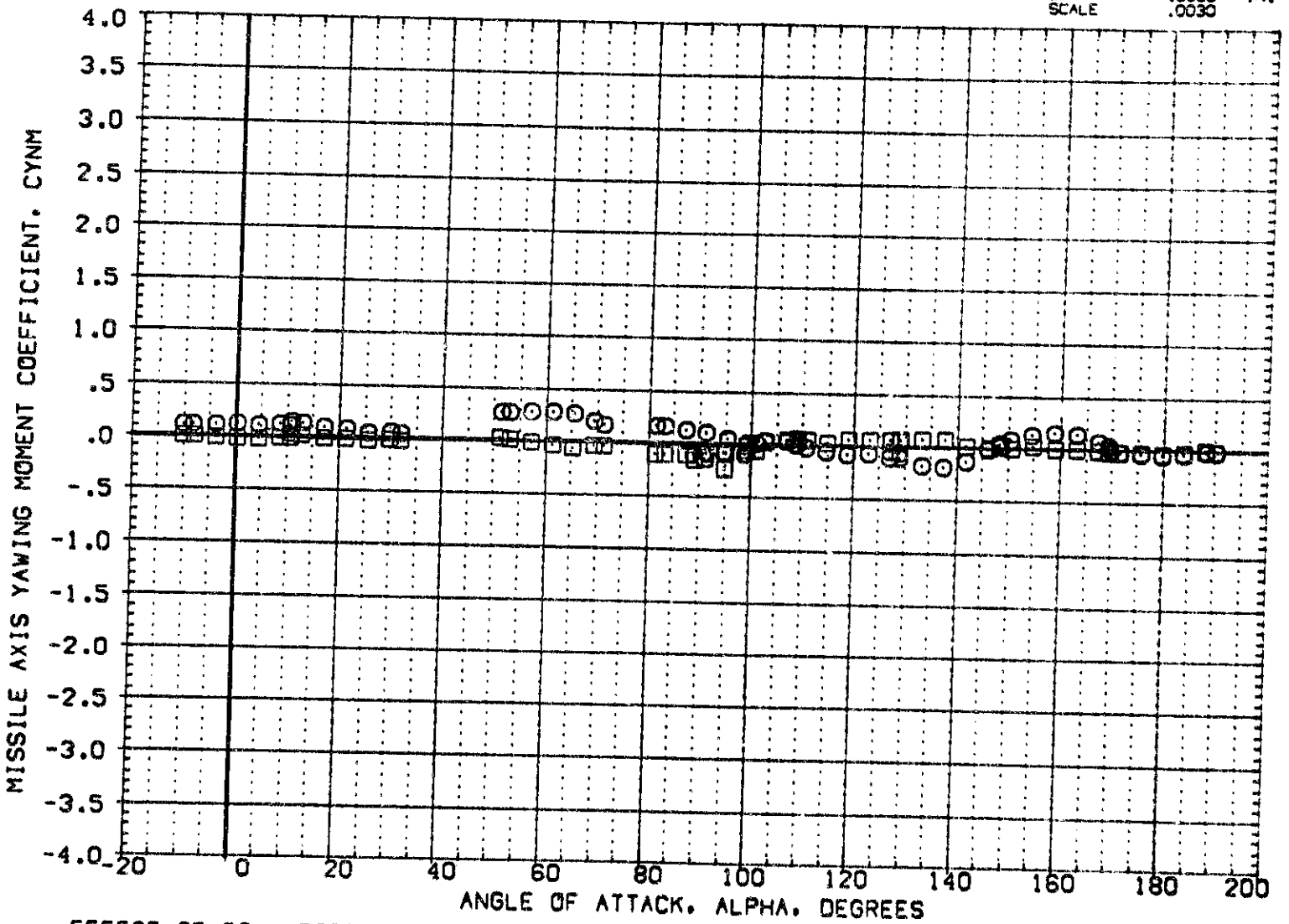
EFFECT OF ROLL POSITION ON STATIC STABILITY

(A)MACH = 1.96

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI
(B99G01)	○	MSFC 583 (TAIF) EXTERNAL TANK TI. TAIL MOUNTED	270.000
(B99G02)	○	MSFC 583 (TAIF) EXTERNAL TANK TI. NOSE MOUNTED	270.000
(B99E01)	□	MSFC 583 (TAIF) EXTERNAL TANK TI. TAIL MOUNTED	180.000
(B99E02)	□	MSFC 583 (TAIF) EXTERNAL TANK TI. NOSE MOUNTED	180.000

REFERENCE INFORMATION

SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2580	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	



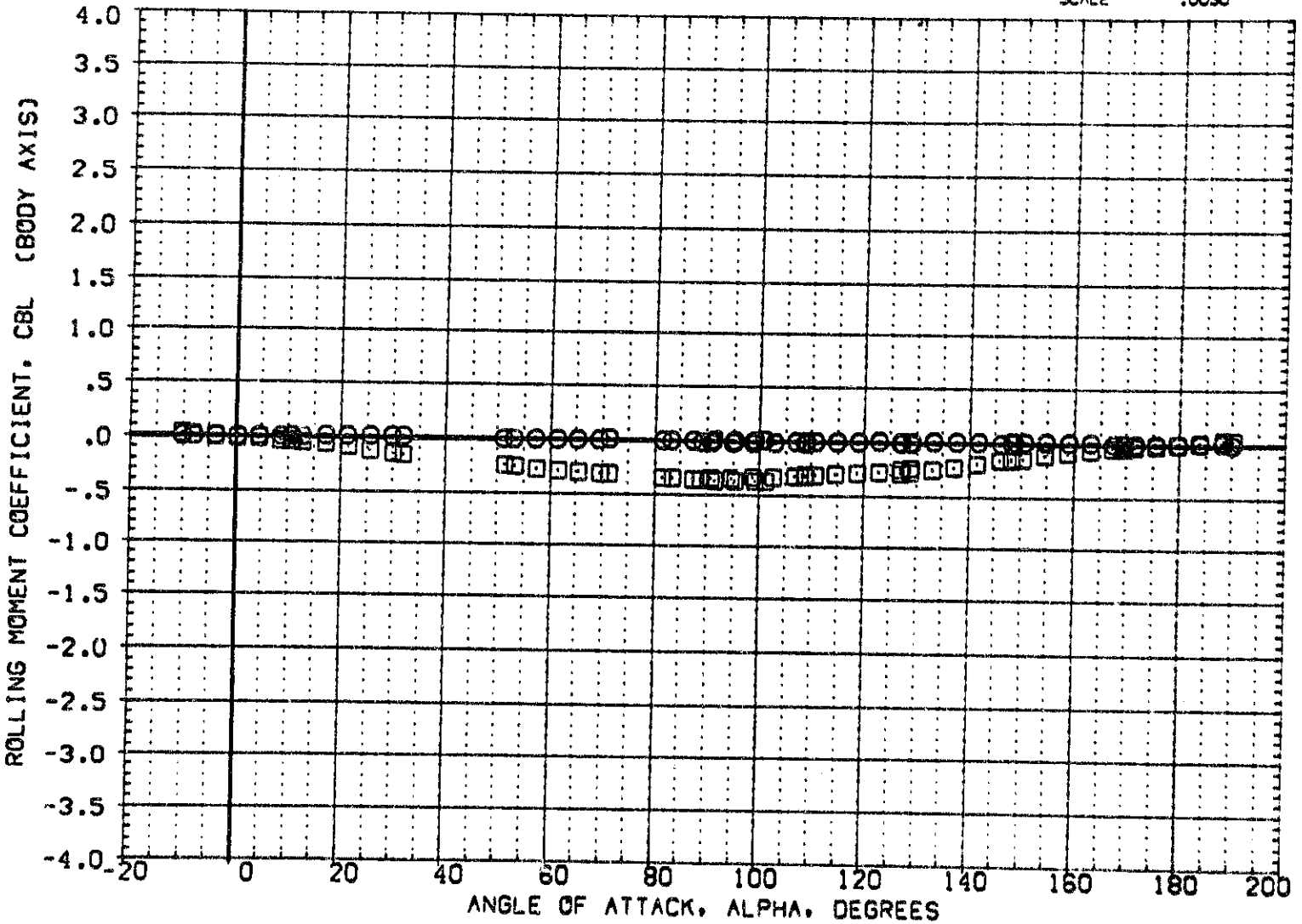
EFFECT OF ROLL POSITION ON STATIC STABILITY

(A)MACH = 1.95

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI
(B99A01)	○	MSFC 583 (TAIF) EXTERNAL TANK TI. TAIL MOUNTED	.000
(B99A02)	□	MSFC 583 (TAIF) EXTERNAL TANK TI. NOSE MOUNTED	.000
(B99C01)	○	MSFC 583 (TAIF) EXTERNAL TANK TI. TAIL MOUNTED	90.000
(B99C02)	□	MSFC 583 (TAIF) EXTERNAL TANK TI. NOSE MOUNTED	90.000

REFERENCE INFORMATION

SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	



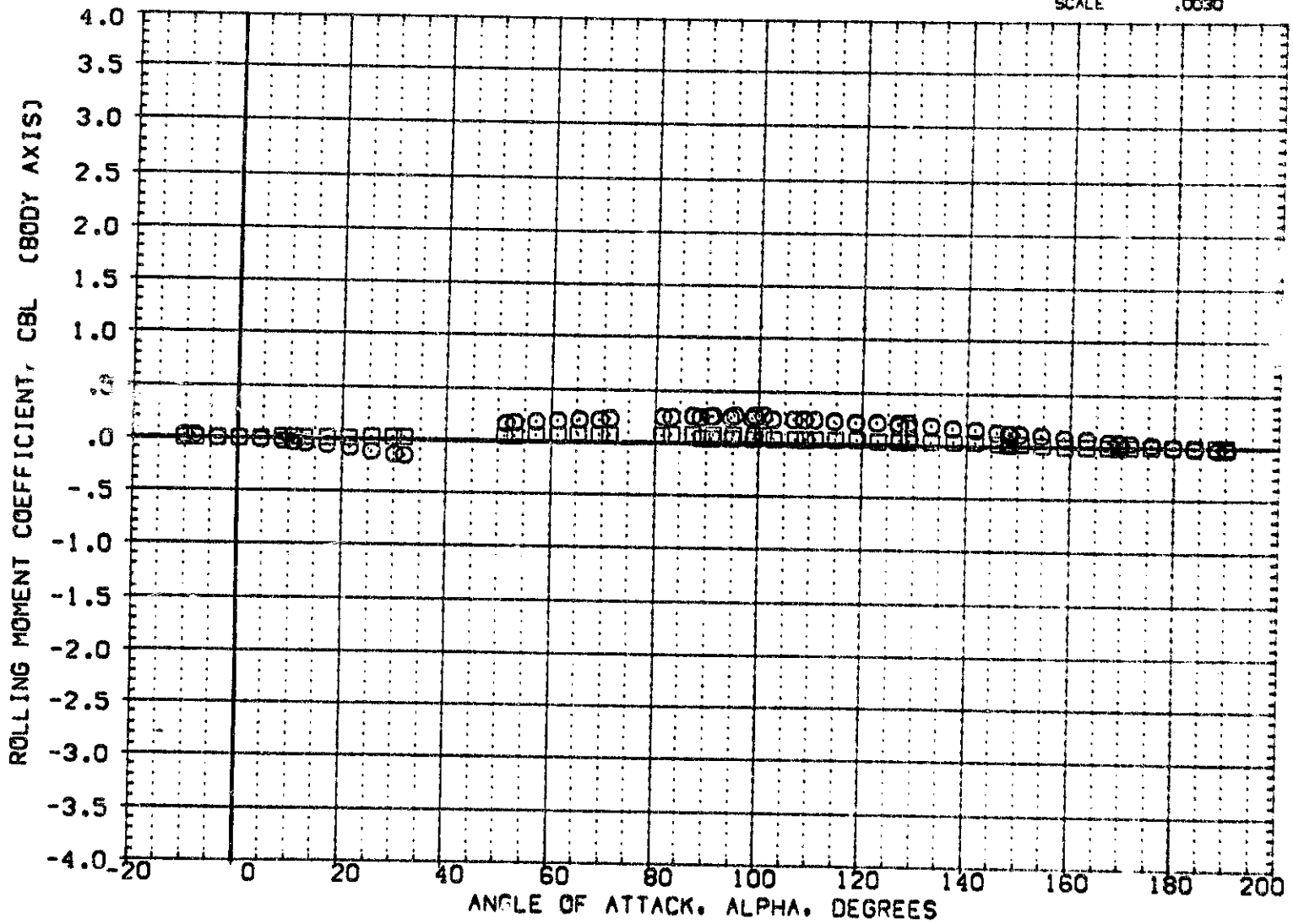
EFFECT OF ROLL POSITION ON STATIC STABILITY

(A)MACH = 1.96

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI
(B99G01)	○	MSFC 583 (TAIF) EXTERNAL TANK T1, TAIL MOUNTED	270.000
(B99G02)	□	MSFC 583 (TAIF) EXTERNAL TANK T1, NOSE MOUNTED	270.000
(B99E01)	○	MSFC 583 (TAIF) EXTERNAL TANK T1, TAIL MOUNTED	180.000
(B99E02)	□	MSFC 583 (TAIF) EXTERNAL TANK T1, NOSE MOUNTED	180.000

REFERENCE INFORMATION

SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	



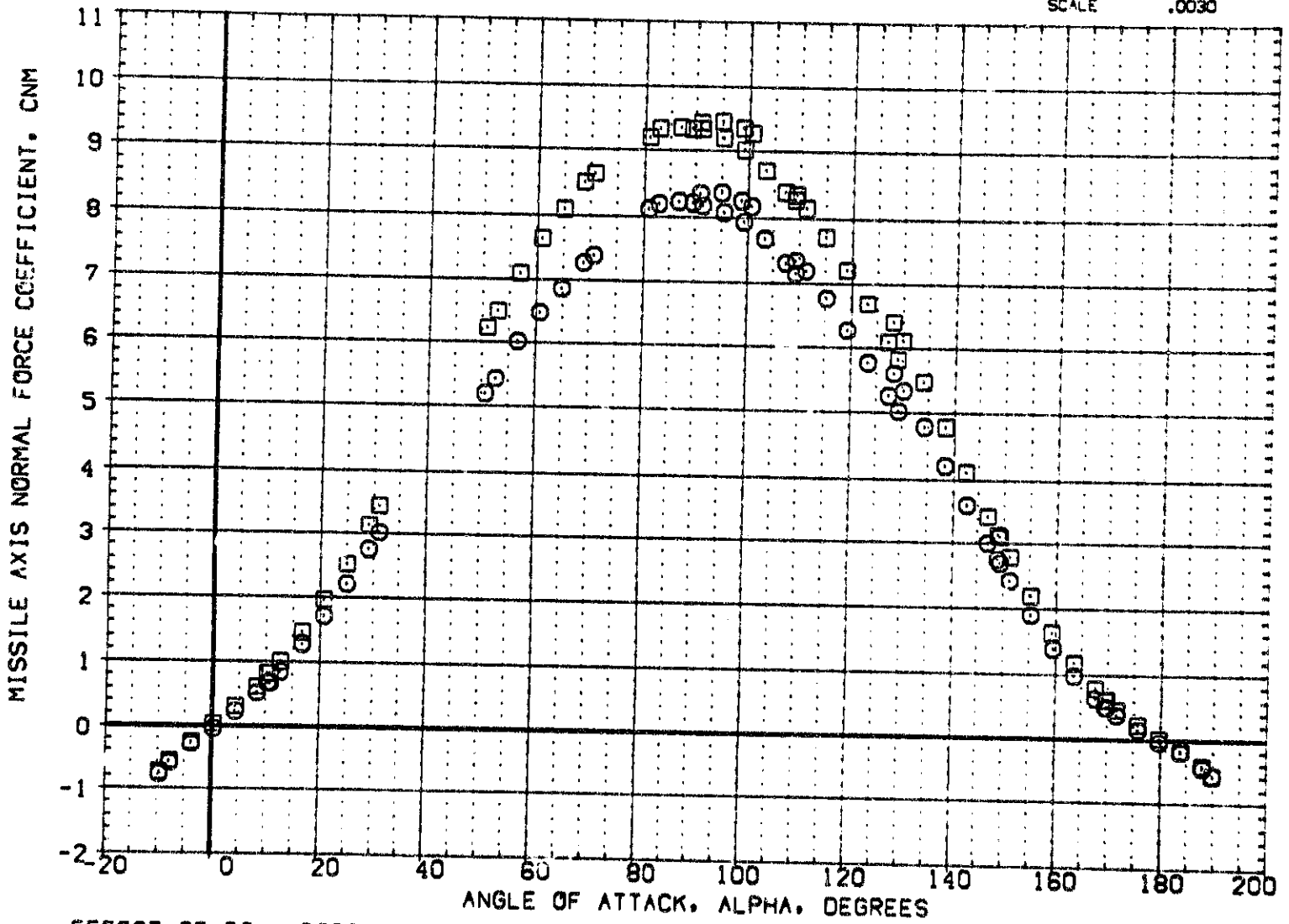
EFFECT OF ROLL POSITION ON STATIC STABILITY

(A)MACH = 1.95

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI
(C99A01)	○	MSFC 583 (TAIF) EXTERNAL TANK TI. TAIL MOUNTED	.000
(C99A02)	□	MSFC 583 (TAIF) EXTERNAL TANK TI. NOSE MOUNTED	.000
(C99C01)	○	MSFC 583 (TAIF) EXTERNAL TANK TI. TAIL MOUNTED	90.000
(C99C02)	□	MSFC 583 (TAIF) EXTERNAL TANK TI. NOSE MOUNTED	90.000

REFERENCE INFORMATION

SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	



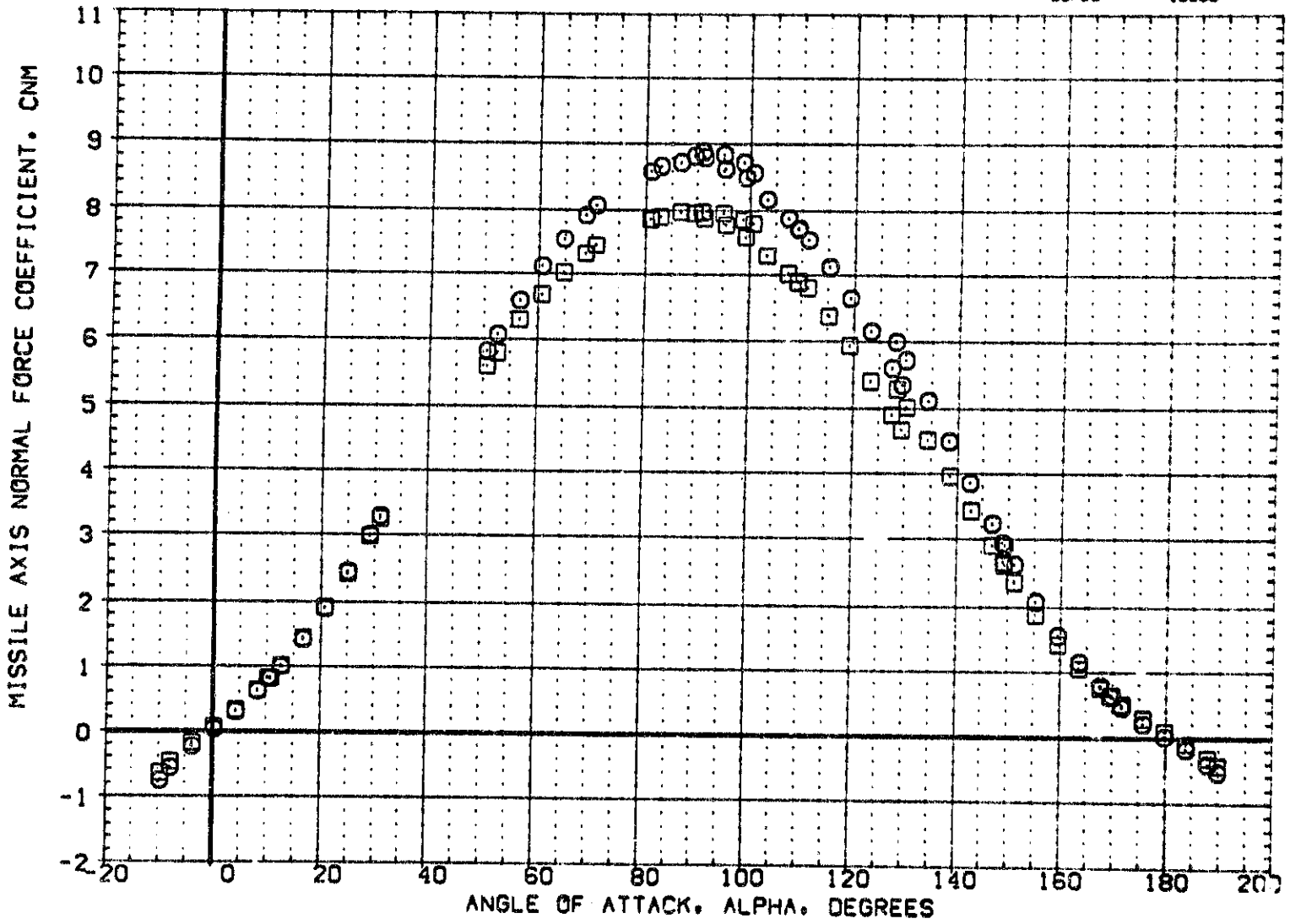
EFFECT OF ROLL POSITION ON STATIC STABILITY

(A)MACH = 3.48

DATA SET SYMBOL		CONFIGURATION DESCRIPTION	PHI
(C99G01)	○	MSFC 583 (TAIF) EXTERNAL TANK T1, TAIL MOUNTED	270.000
(C99G02)	□	MSFC 583 (TAIF) EXTERNAL TANK T1, NOSE MOUNTED	270.000
(C99E01)	○	MSFC 583 (TAIF) EXTERNAL TANK T1, TAIL MOUNTED	180.000
(C99E02)	□	MSFC 583 (TAIF) EXTERNAL TANK T1, NOSE MOUNTED	180.000

REFERENCE INFORMATION

SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	



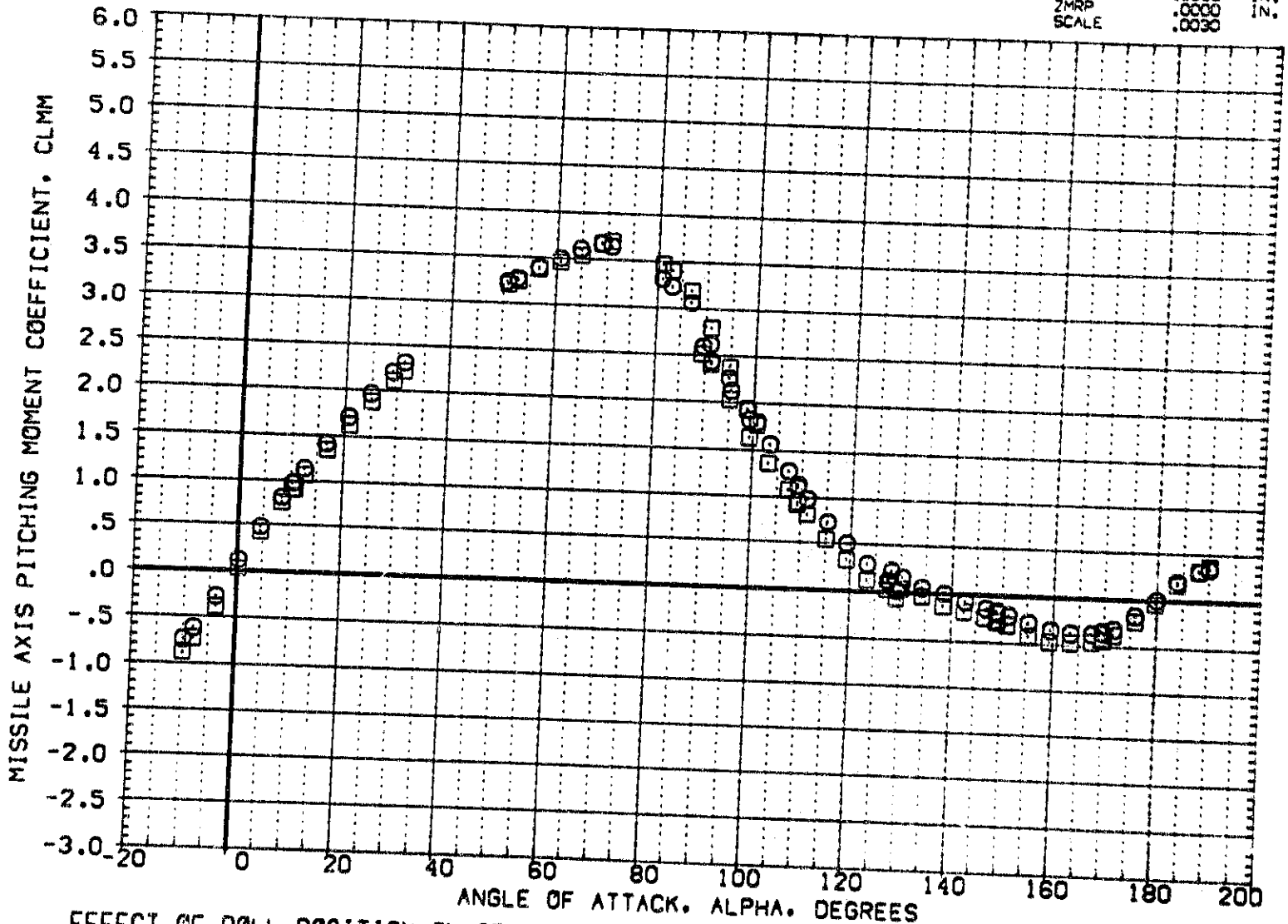
EFFECT OF ROLL POSITION ON STATIC STABILITY

(A)MACH = 3.48

DATA SET SYMBOL		CONFIGURATION DESCRIPTION	PHI
(C99A01)	○	MSFC 583 (TAIF) EXTERNAL TANK TI. TAIL MOUNTED	.000
(C99A02)	□	MSFC 583 (TAIF) EXTERNAL TANK TI. NOSE MOUNTED	.000
(C99C01)	○	MSFC 583 (TAIF) EXTERNAL TANK TI. TAIL MOUNTED	90.000
(C99C02)	□	MSFC 583 (TAIF) EXTERNAL TANK TI. NOSE MOUNTED	90.000

REFERENCE INFORMATION

SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2580	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	



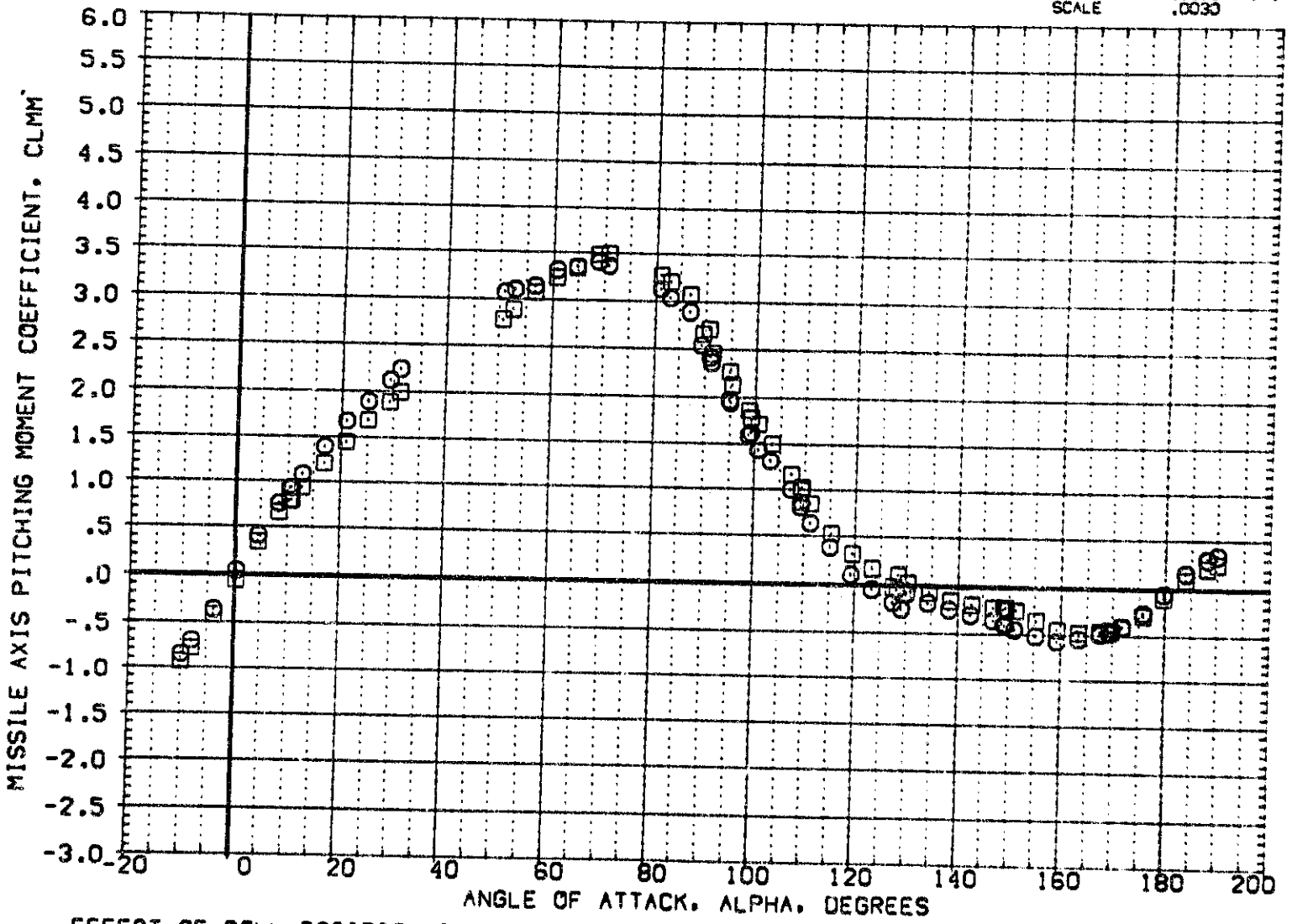
EFFECT OF ROLL POSITION ON STATIC STABILITY

(A)MACH = 3.48

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI
(C99G01)	○	MSFC 583 (TAIF) EXTERNAL TANK T1, TAIL MOUNTED	270.000
(C99G02)	□	MSFC 583 (TAIF) EXTERNAL TANK T1, NOSE MOUNTED	270.000
(C99E01)	○	MSFC 583 (TAIF) EXTERNAL TANK T1, TAIL MOUNTED	180.000
(C99E02)	□	MSFC 583 (TAIF) EXTERNAL TANK T1, NOSE MOUNTED	180.000

REFERENCE INFORMATION

SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	

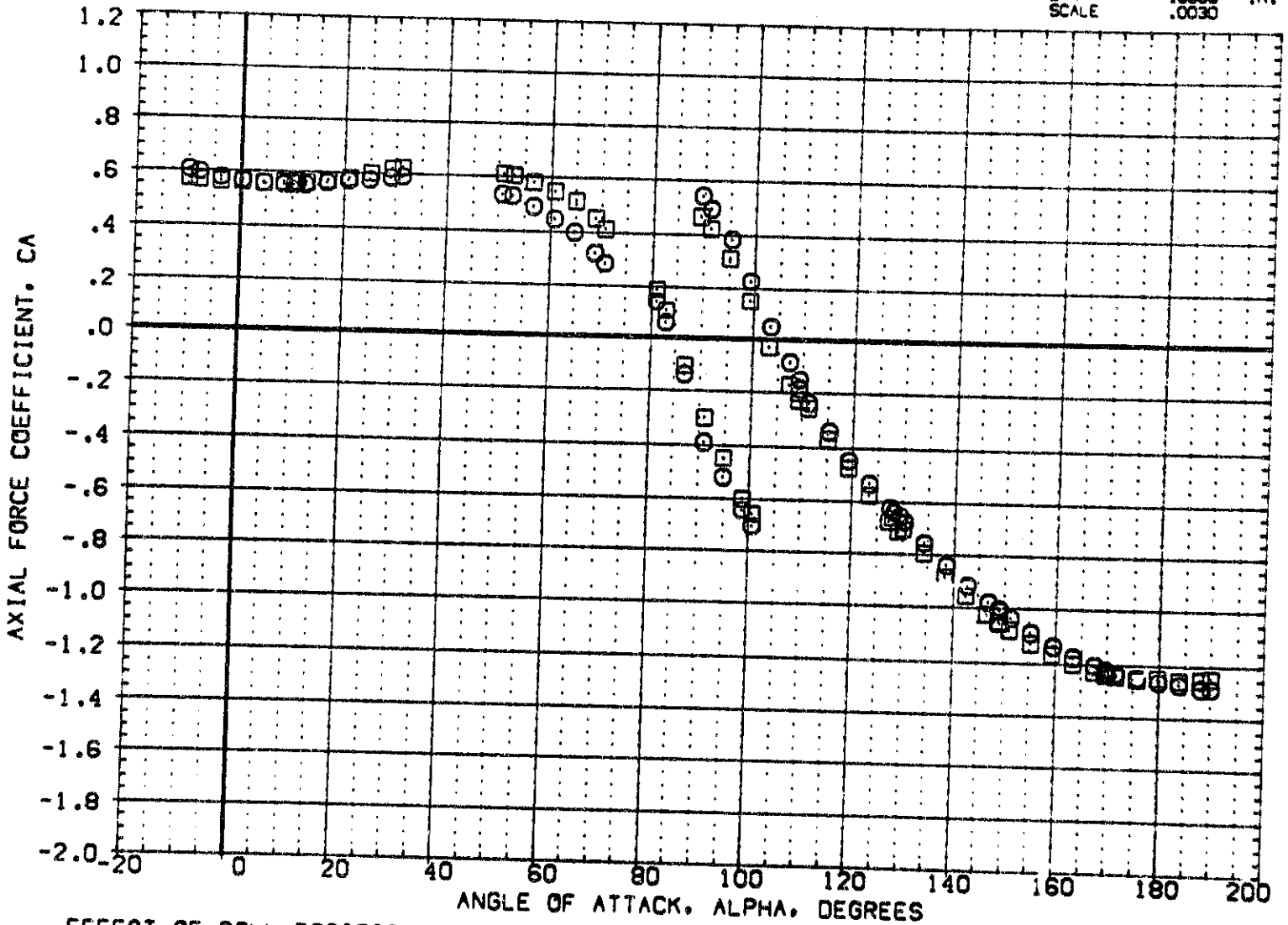


EFFECT OF ROLL POSITION ON STATIC STABILITY

(A)MACH = 3.48

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI
(C99A01)	○	MSFC 583 (TAIF) EXTERNAL TANK T1, TAIL MOUNTED	.000
(C99A02)	□	MSFC 583 (TAIF) EXTERNAL TANK T1, NOSE MOUNTED	.000
(C99C01)	○	MSFC 583 (TAIF) EXTERNAL TANK T1, TAIL MOUNTED	90.000
(C99C02)	□	MSFC 583 (TAIF) EXTERNAL TANK T1, NOSE MOUNTED	90.000

REFERENCE INFORMATION		
SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	



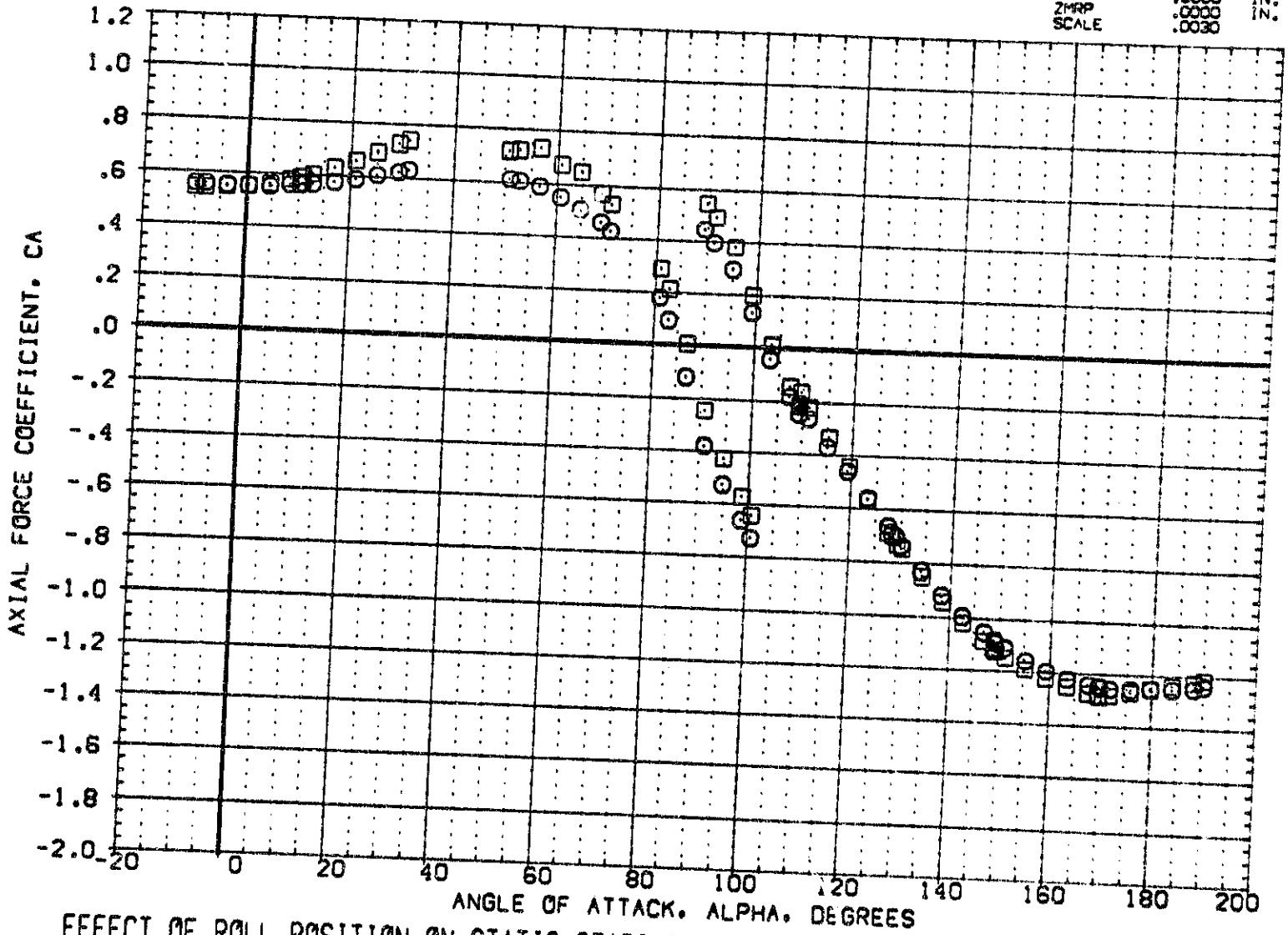
EFFECT OF ROLL POSITION ON STATIC STABILITY

(A)MACH = 3.48

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	PHI
(C99G01)	MSFC 583 (TAIF) EXTERNAL TANK TI. TAIL MOUNTED	270.000
(C99G02)	MSFC 583 (TAIF) EXTERNAL TANK TI. NOSE MOUNTED	270.000
(C99E01)	MSFC 583 (TAIF) EXTERNAL TANK TI. TAIL MOUNTED	180.000
(C99E02)	MSFC 583 (TAIF) EXTERNAL TANK TI. NOSE MOUNTED	180.000

REFERENCE INFORMATION

SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	



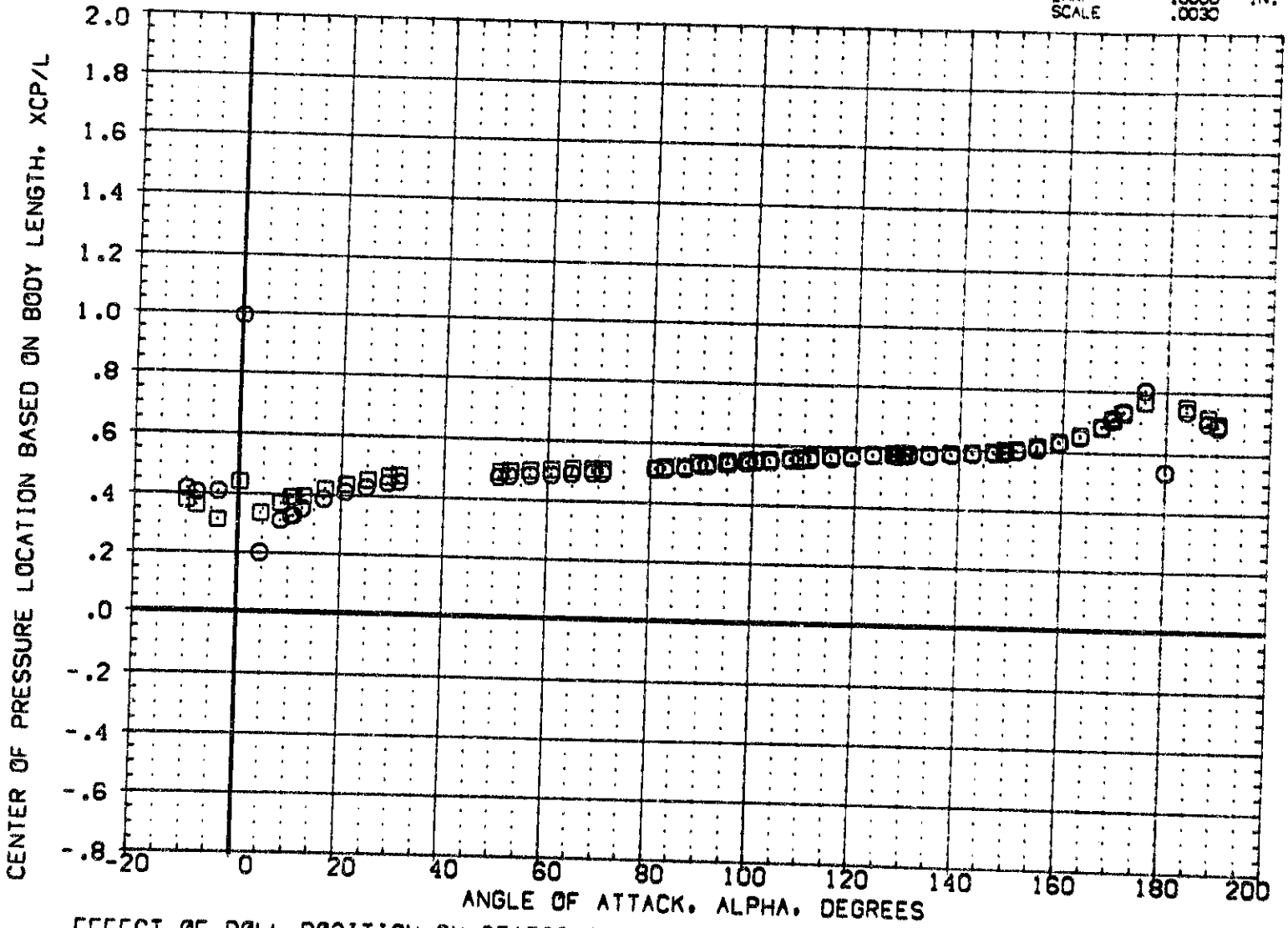
EFFECT OF ROLL POSITION ON STATIC STABILITY

(A)MACH = 3.48

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI
(C99A01)	○	MSFC 583 (TAIF) EXTERNAL TANK T1. TAIL MOUNTED	.000
(C99A02)	○	MSFC 583 (TAIF) EXTERNAL TANK T1. NOSE MOUNTED	.000
(C99C01)	□	MSFC 583 (TAIF) EXTERNAL TANK T1. TAIL MOUNTED	90.000
(C99C02)	□	MSFC 583 (TAIF) EXTERNAL TANK T1. NOSE MOUNTED	90.000

REFERENCE INFORMATION

SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	



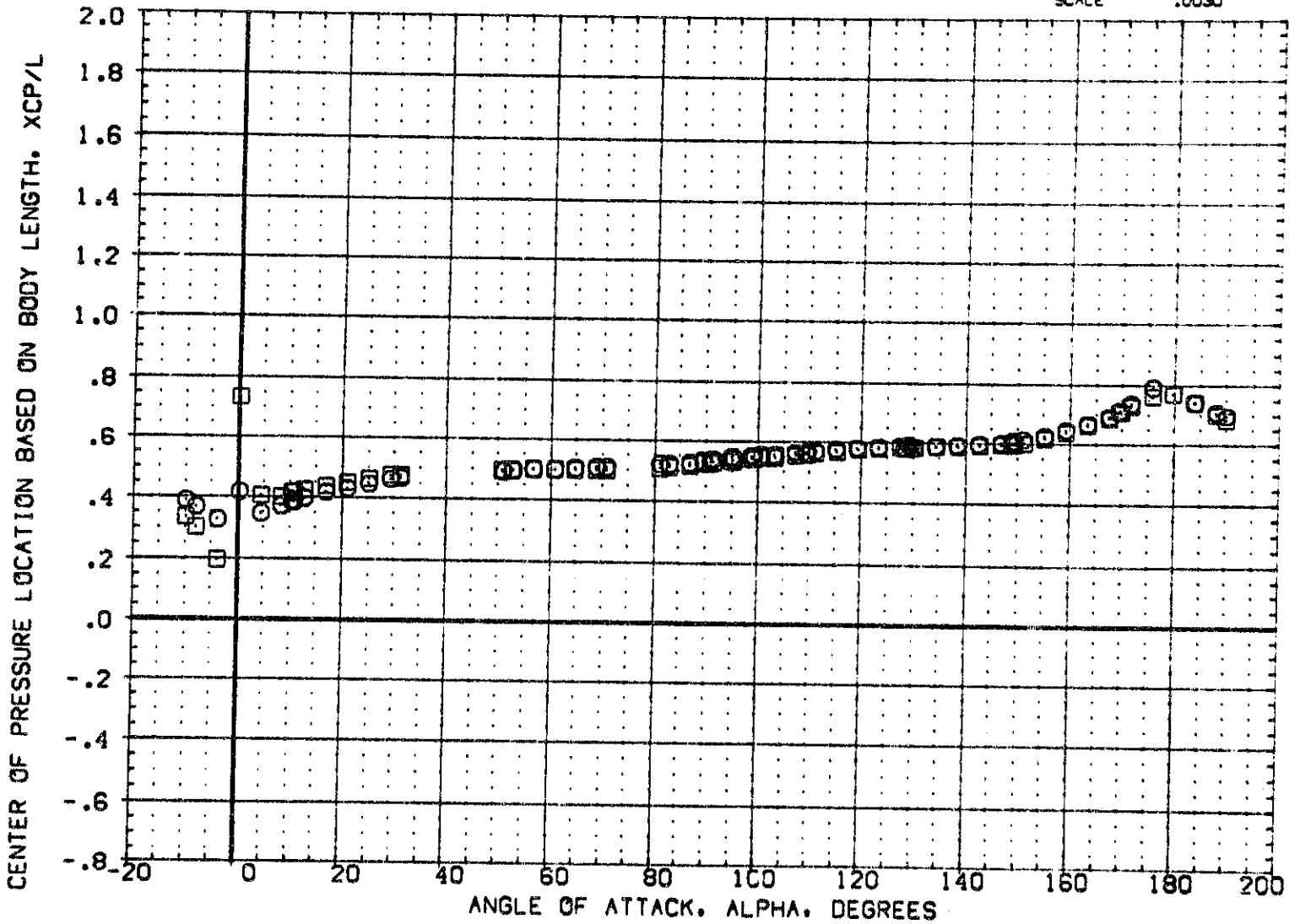
EFFECT OF ROLL POSITION ON STATIC STABILITY

(A)MACH = 3.48

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI
(C99G01)	○	MSFC 583 (TAIF) EXTERNAL TANK TI, TAIL MOUNTED	270.000
(C99G02)	○	MSFC 583 (TAIF) EXTERNAL TANK TI, NOSE MOUNTED	270.000
(C99E01)	□	MSFC 583 (TAIF) EXTERNAL TANK TI, TAIL MOUNTED	180.000
(C99E02)	□	MSFC 583 (TAIF) EXTERNAL TANK TI, NOSE MOUNTED	180.000

REFERENCE INFORMATION

SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	



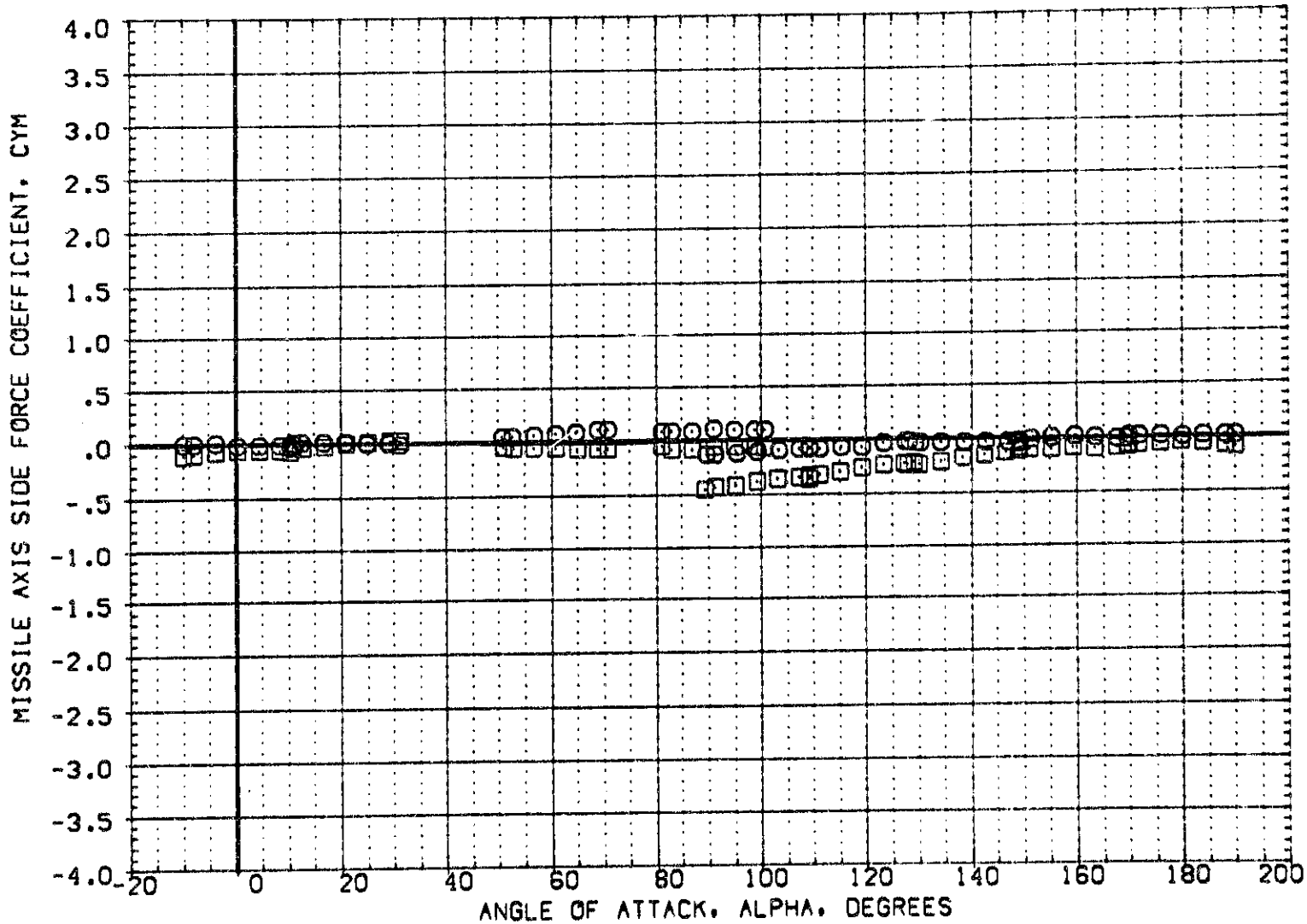
EFFECT OF ROLL POSITION ON STATIC STABILITY

(A)MACH = 3.48

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI
(C99A01)	○	MSFC 583 (TAIF) EXTERNAL TANK T1. TAIL MOUNTED	.000
(C99A02)	□	MSFC 583 (TAIF) EXTERNAL TANK T1. NOSE MOUNTED	.000
(C99C01)	○	MSFC 583 (TAIF) EXTERNAL TANK T1. TAIL MOUNTED	90.000
(C99C02)	□	MSFC 583 (TAIF) EXTERNAL TANK T1. NOSE MOUNTED	90.000

REFERENCE INFORMATION

SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	

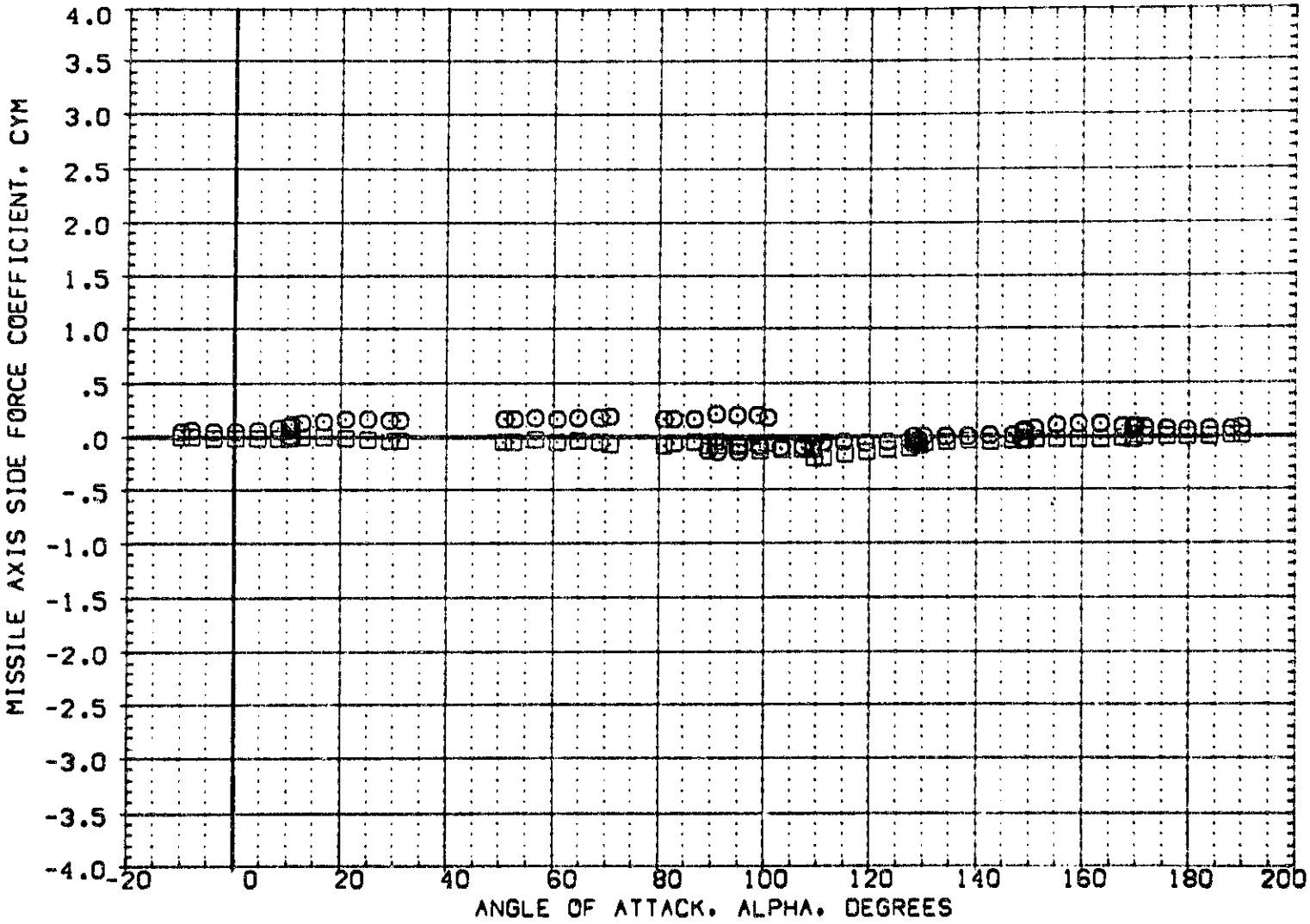


EFFECT OF ROLL POSITION ON STATIC STABILITY

(A)MACH = 3.48

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI
(C99G01)	○	MSFC 583 (TAIF) EXTERNAL TANK T1, TAIL MOUNTED	270.000
(C99G02)	□	MSFC 583 (TAIF) EXTERNAL TANK T1, NOSE MOUNTED	270.000
(C99E01)	○	MSFC 583 (TAIF) EXTERNAL TANK T1, TAIL MOUNTED	180.000
(C99E02)	□	MSFC 583 (TAIF) EXTERNAL TANK T1, NOSE MOUNTED	180.000

REFERENCE INFORMATION		
SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	



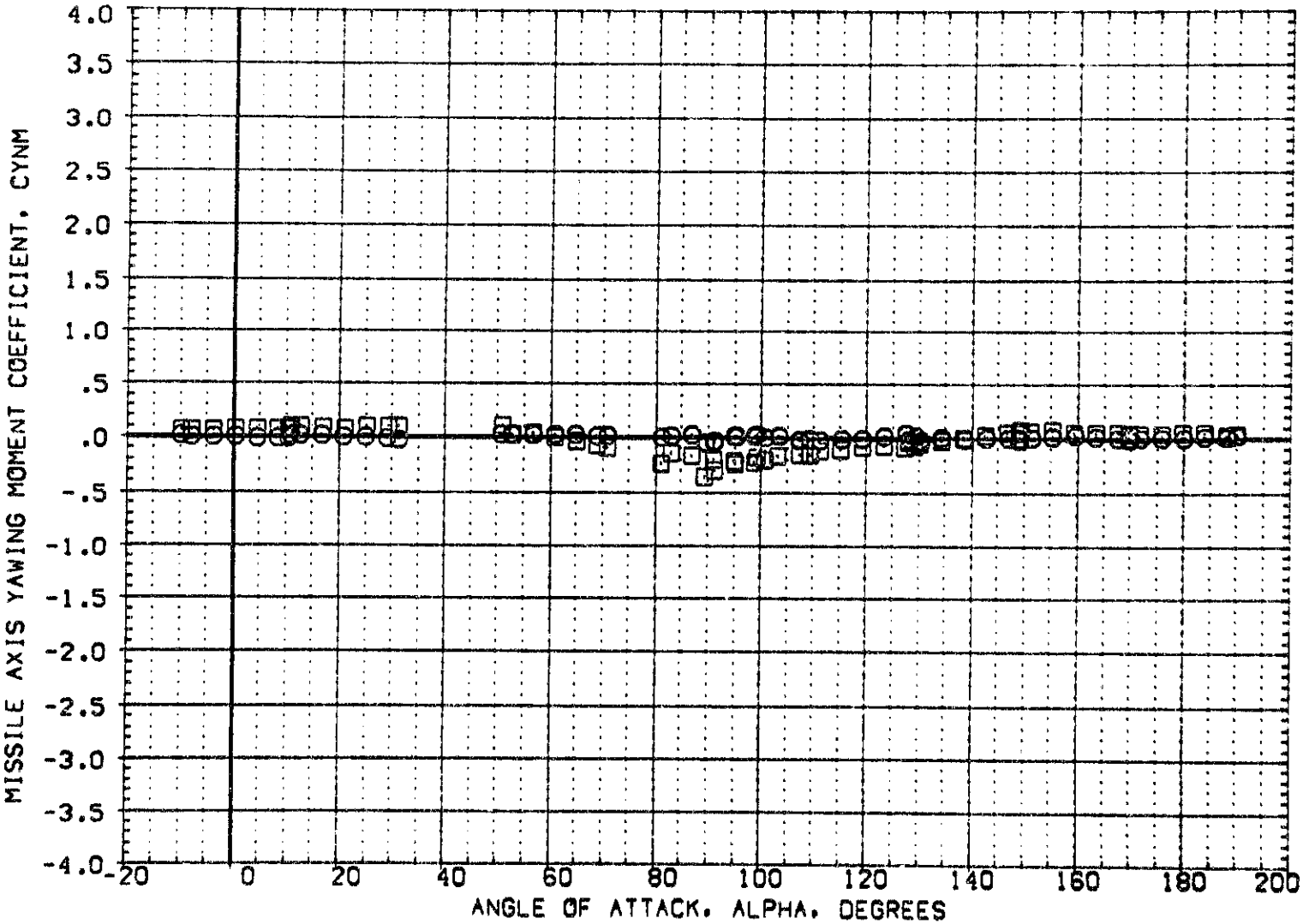
EFFECT OF ROLL POSITION ON STATIC STABILITY

(A)MACH = 3.48

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI
(C99A01)	○	MSFC 583 (TAIF) EXTERNAL TANK T1. TAIL MOUNTED	.000
(C99A02)	□	MSFC 583 (TAIF) EXTERNAL TANK T1. NOSE MOUNTED	.000
(C99C01)	○	MSFC 583 (TAIF) EXTERNAL TANK T1. TAIL MOUNTED	90.000
(C99C02)	□	MSFC 583 (TAIF) EXTERNAL TANK T1. NOSE MOUNTED	90.000

REFERENCE INFORMATION

SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	

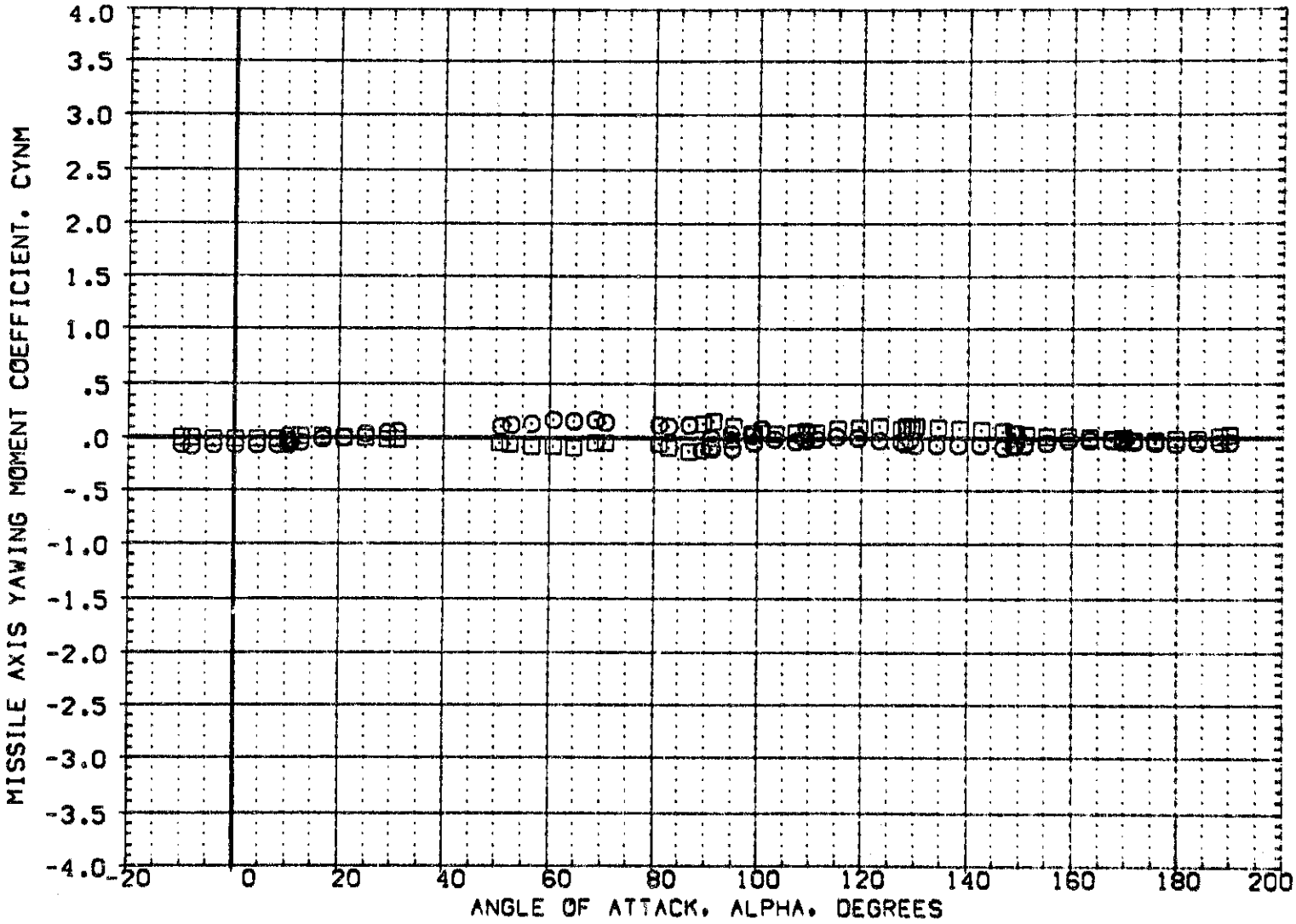


EFFECT OF ROLL POSITION ON STATIC STABILITY

(A)MACH = 3.48

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI
(C99G01)	○	MSFC 583 (TAIF) EXTERNAL TANK T1, TAIL MOUNTED	270.000
(C99G02)	□	MSFC 583 (TAIF) EXTERNAL TANK T1, NOSE MOUNTED	270.000
(C99E01)	⊡	MSFC 583 (TAIF) EXTERNAL TANK T1, TAIL MOUNTED	180.000
(C99E02)	⊡	MSFC 583 (TAIF) EXTERNAL TANK T1, NOSE MOUNTED	180.000

REFERENCE INFORMATION		
SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	



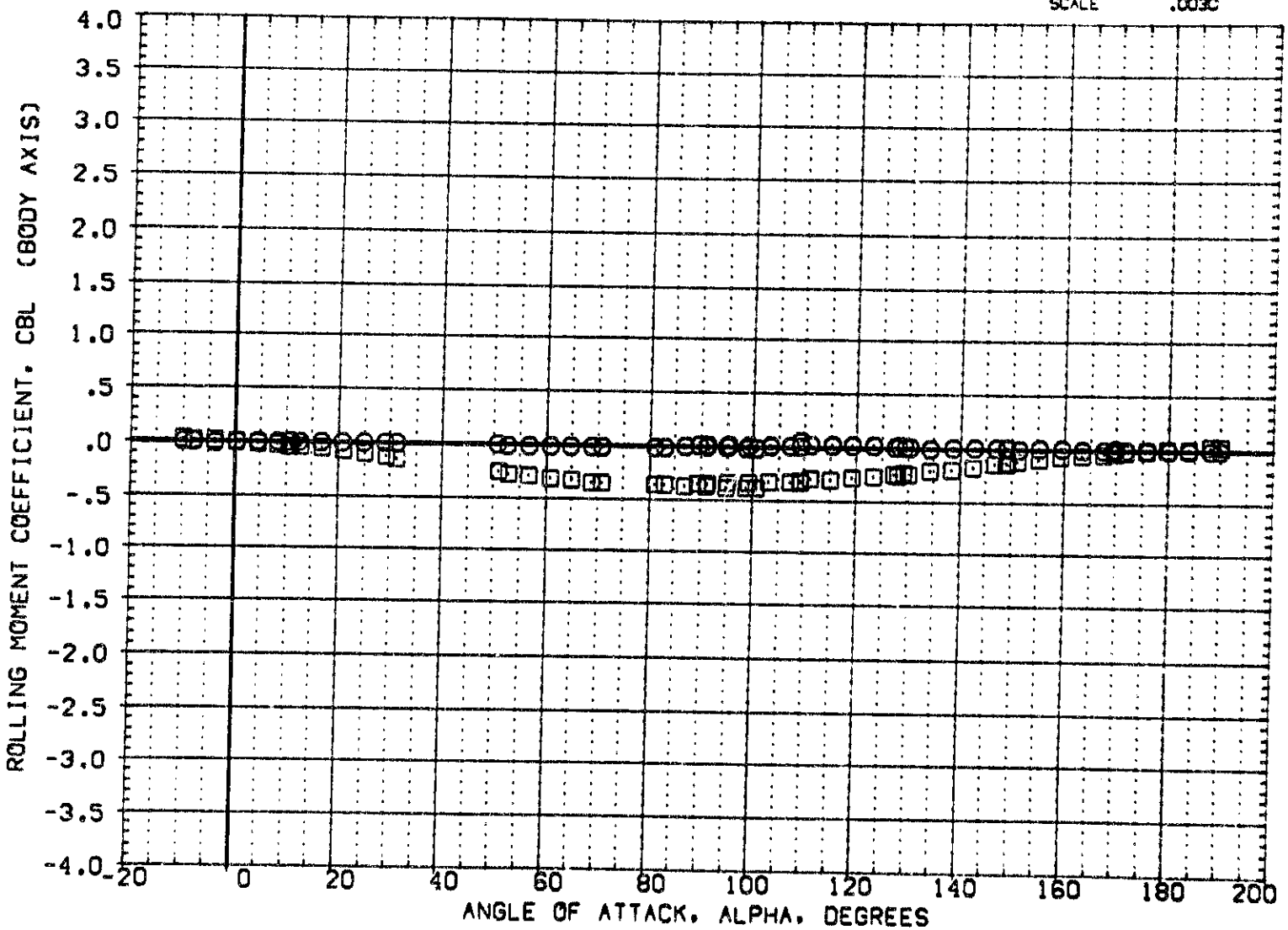
EFFECT OF ROLL POSITION ON STATIC STABILITY

(A)MACH = 3.48

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI
(C99A01)	○	MSFC 583 (TAIF) EXTERNAL TANK T1, TAIL MOUNTED	.000
(C99A02)	○	MSFC 583 (TAIF) EXTERNAL TANK T1, NOSE MOUNTED	.000
(C99C01)	□	MSFC 583 (TAIF) EXTERNAL TANK T1, TAIL MOUNTED	90.000
(C99C02)	□	MSFC 583 (TAIF) EXTERNAL TANK T1, NOSE MOUNTED	90.000

REFERENCE INFORMATION

SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.003C	

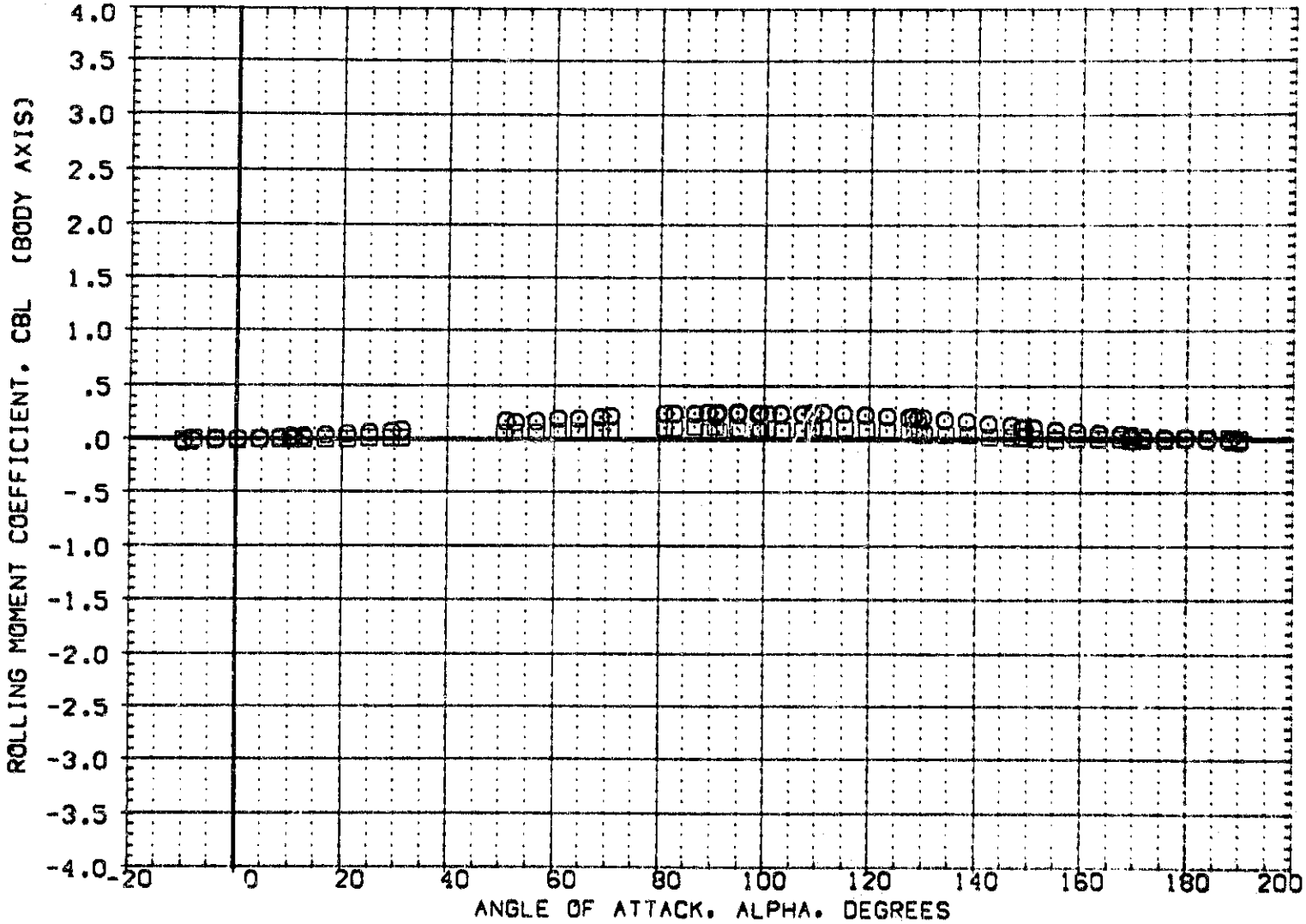


EFFECT OF ROLL POSITION ON STATIC STABILITY

(A)MACH = 3.48

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI
(C99G01)	○	MSFC 583 (TAIF) EXTERNAL TANK T1, TAIL MOUNTED	270.000
(C99G02)	□	MSFC 583 (TAIF) EXTERNAL TANK T1, NOSE MOUNTED	270.000
(C99E01)	◇	MSFC 583 (TAIF) EXTERNAL TANK T1, TAIL MOUNTED	180.000
(C99E02)	△	MSFC 583 (TAIF) EXTERNAL TANK T1, NOSE MOUNTED	180.000

REFERENCE INFORMATION		
SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	

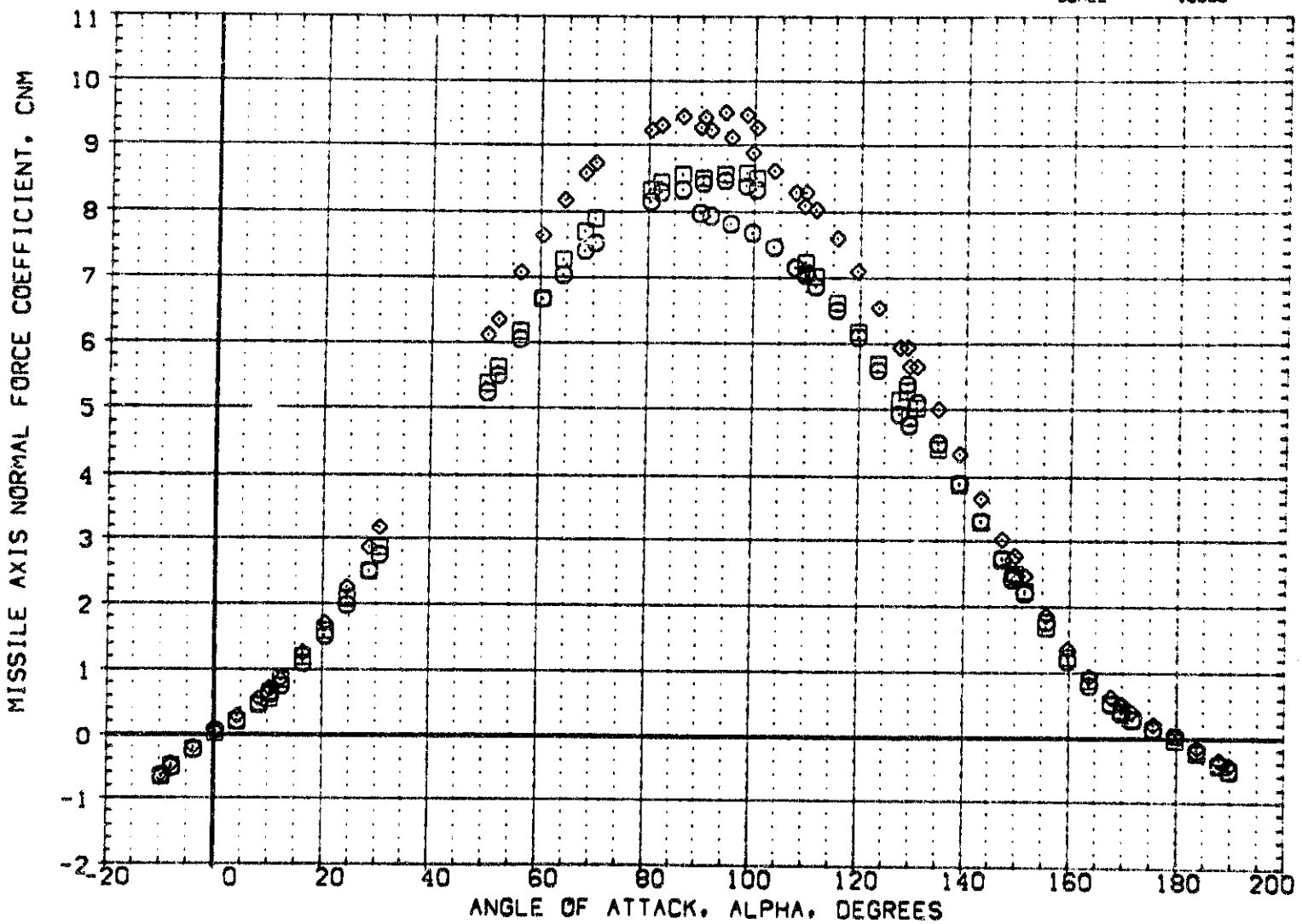


EFFECT OF ROLL POSITION ON STATIC STABILITY

(A)MACH = 3.48

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI
(D99A01)	○	MSFC 583 (TAIF) EXTERNAL TANK T1. TAIL MOUNTED	.000
(D99A02)	□	MSFC 583 (TAIF) EXTERNAL TANK T1. NOSE MOUNTED	.000
(A99B01)	◇	MSFC 583 (TAIF) EXTERNAL TANK T1. TAIL MOUNTED	45.000
(A99B02)	◇	MSFC 583 (TAIF) EXTERNAL TANK T1. NOSE MOUNTED	45.000
(D99C01)	◇	MSFC 583 (TAIF) EXTERNAL TANK T1. TAIL MOUNTED	90.000
(D99C02)	◇	MSFC 583 (TAIF) EXTERNAL TANK T1. NOSE MOUNTED	90.000

REFERENCE INFORMATION		
SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	

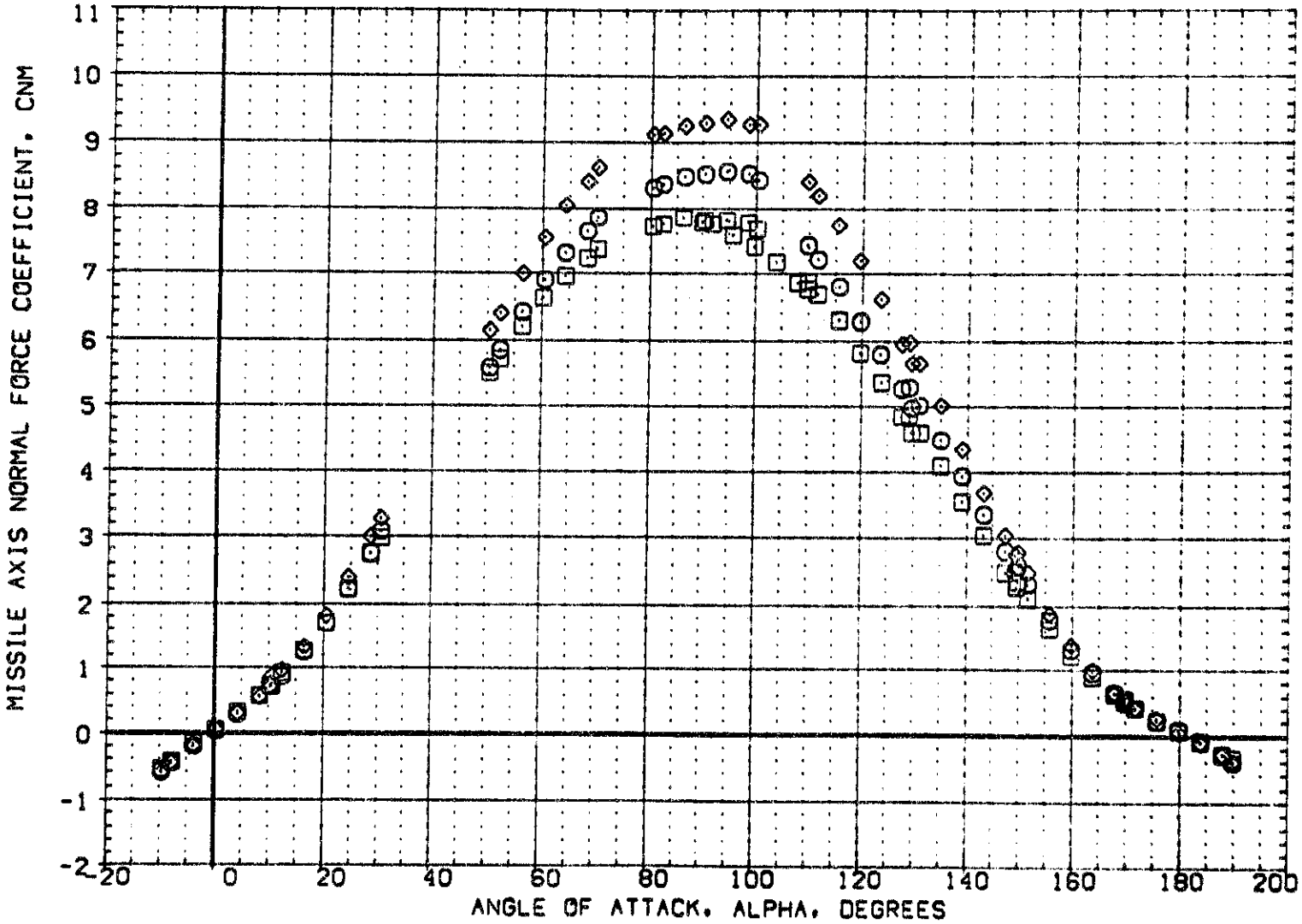


EFFECT OF ROLL POSITION ON STATIC STABILITY

(A)MACH = 4.96

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI
(A99001)	○	MSFC 583 (TAIF) EXTERNAL TANK TI. TAIL MOUNTED	135.000
(A99D02)	□	MSFC 583 (TAIF) EXTERNAL TANK TI. NOSE MOUNTED	135.000
(D99E01)	□	MSFC 583 (TAIF) EXTERNAL TANK TI. TAIL MOUNTED	180.000
(D99E02)	□	MSFC 583 (TAIF) EXTERNAL TANK TI. NOSE MOUNTED	180.000
(A99F01)	◇	MSFC 583 (TAIF) EXTERNAL TANK TI. TAIL MOUNTED	225.000
(A99F02)	◇	MSFC 583 (TAIF) EXTERNAL TANK TI. NOSE MOUNTED	225.000

REFERENCE INFORMATION		
SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	



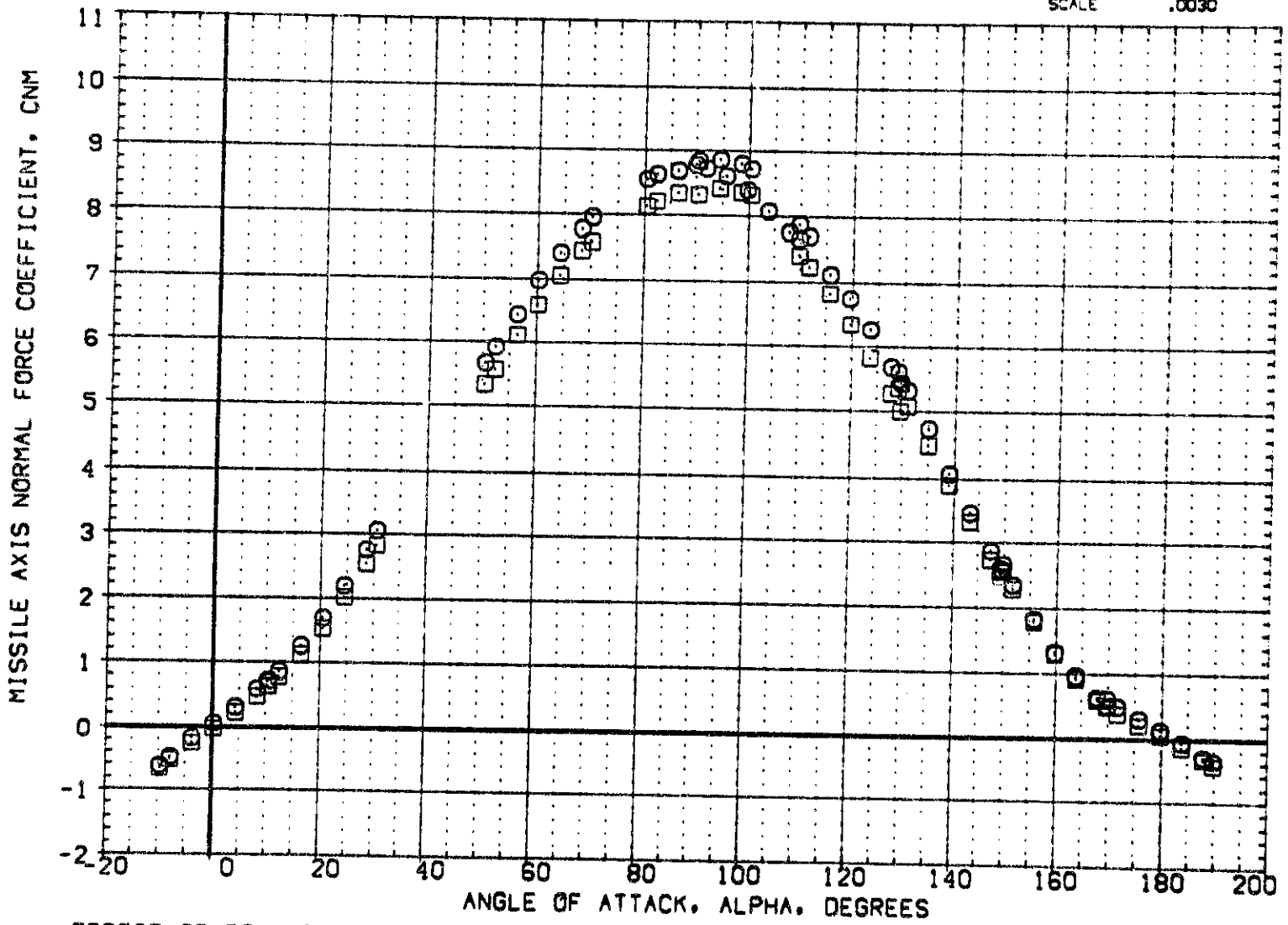
EFFECT OF ROLL POSITION ON STATIC STABILITY

(A)MACH = 4.96

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI
(D99G01)	○	MSFC 583 (TAIF) EXTERNAL TANK T1, TAIL MOUNTED	270.000
(D99G02)	□	MSFC 583 (TAIF) EXTERNAL TANK T1, NOSE MOUNTED	270.000
(A99H01)	○	MSFC 583 (TAIF) EXTERNAL TANK T1, TAIL MOUNTED	315.000
(A99H02)	□	MSFC 583 (TAIF) EXTERNAL TANK T1, NOSE MOUNTED	315.000

REFERENCE INFORMATION

SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	

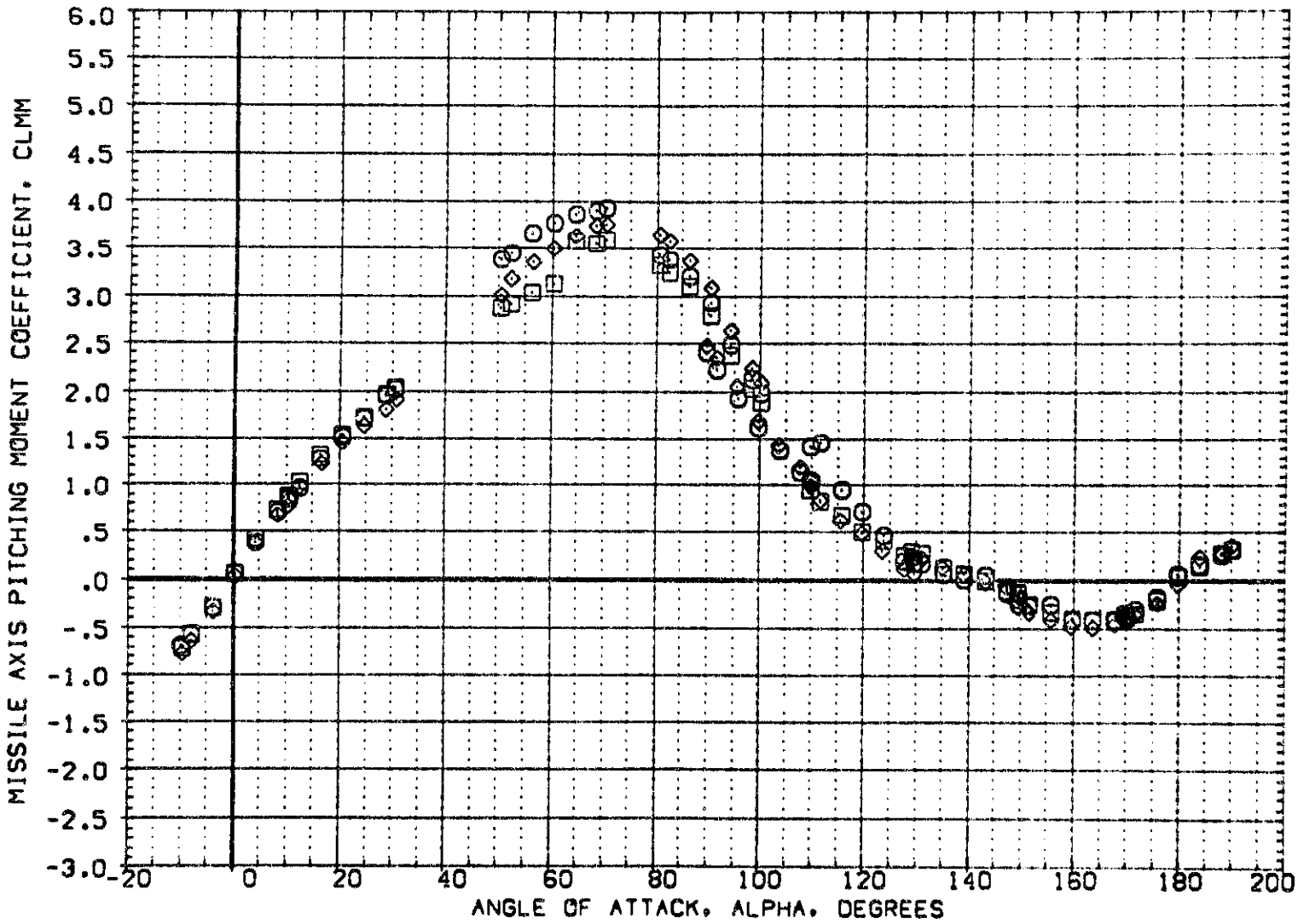


EFFECT OF ROLL POSITION ON STATIC STABILITY

(A)MACH = 4.96

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI
(D99A01)	○	MSFC 583 (TAIF) EXTERNAL TANK T1. TAIL MOUNTED	.000
(D99A02)	○	MSFC 583 (TAIF) EXTERNAL TANK T1. NOSE MOUNTED	.000
(A99B01)	□	MSFC 583 (TAIF) EXTERNAL TANK T1. TAIL MOUNTED	45.000
(A99B02)	□	MSFC 583 (TAIF) EXTERNAL TANK T1. NOSE MOUNTED	45.000
(D99C01)	◇	MSFC 583 (TAIF) EXTERNAL TANK T1. TAIL MOUNTED	90.000
(D99C02)	◇	MSFC 583 (TAIF) EXTERNAL TANK T1. NOSE MOUNTED	90.000

REFERENCE INFORMATION		
SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	

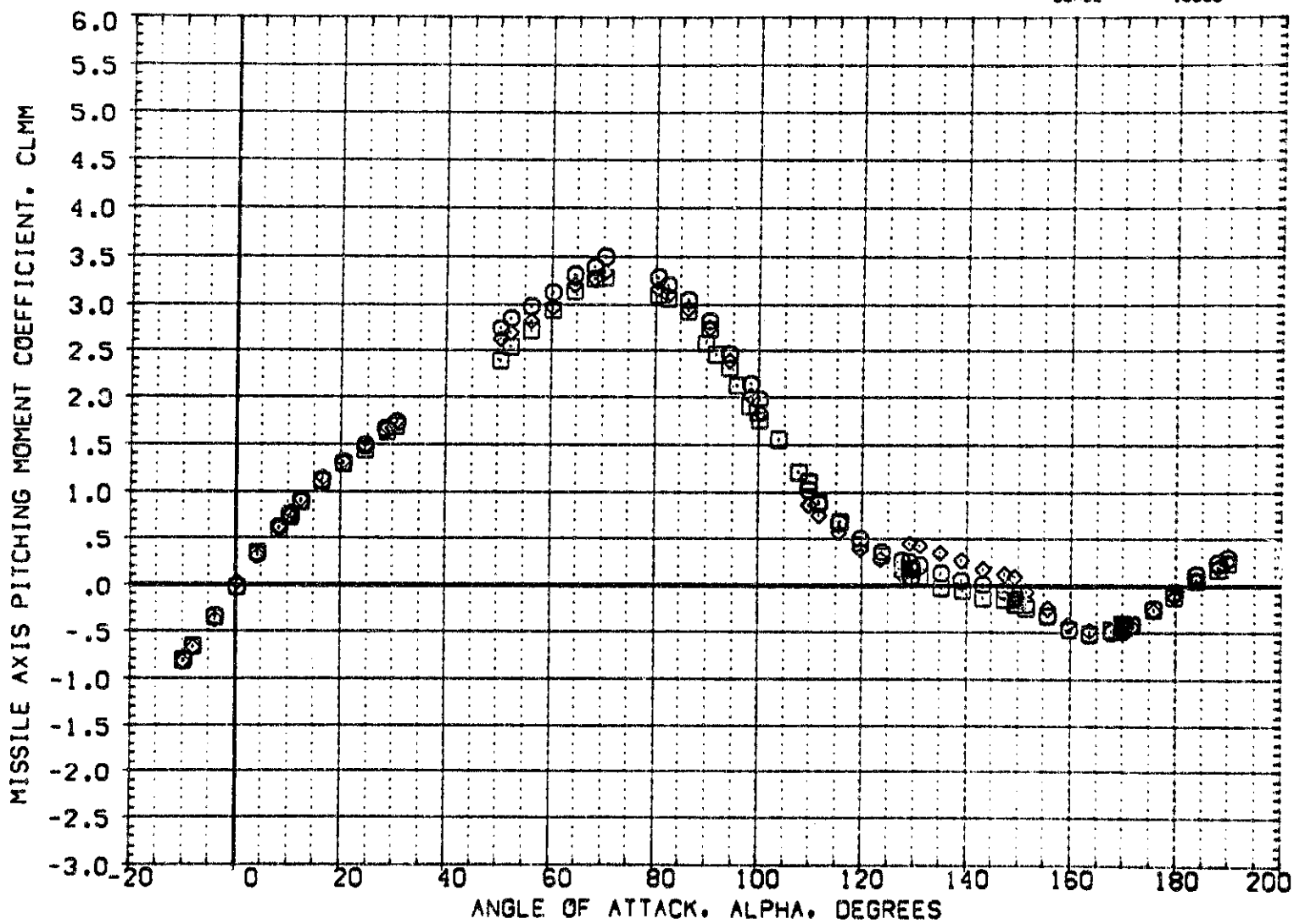


EFFECT OF ROLL POSITION ON STATIC STABILITY

(A)MACH = 4.96

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI
(A99001)	○	MSFC 583 (TA1F) EXTERNAL TANK T1, TAIL MOUNTED	135.000
(A99002)	□	MSFC 583 (TA1F) EXTERNAL TANK T1, NOSE MOUNTED	135.000
(D99E01)	○	MSFC 583 (TA1F) EXTERNAL TANK T1, TAIL MOUNTED	180.000
(D99E02)	□	MSFC 583 (TA1F) EXTERNAL TANK T1, NOSE MOUNTED	180.000
(A99F01)	◇	MSFC 583 (TA1F) EXTERNAL TANK T1, TAIL MOUNTED	225.000
(A99F02)	◇	MSFC 583 (TA1F) EXTERNAL TANK T1, NOSE MOUNTED	225.000

REFERENCE INFORMATION		
SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	



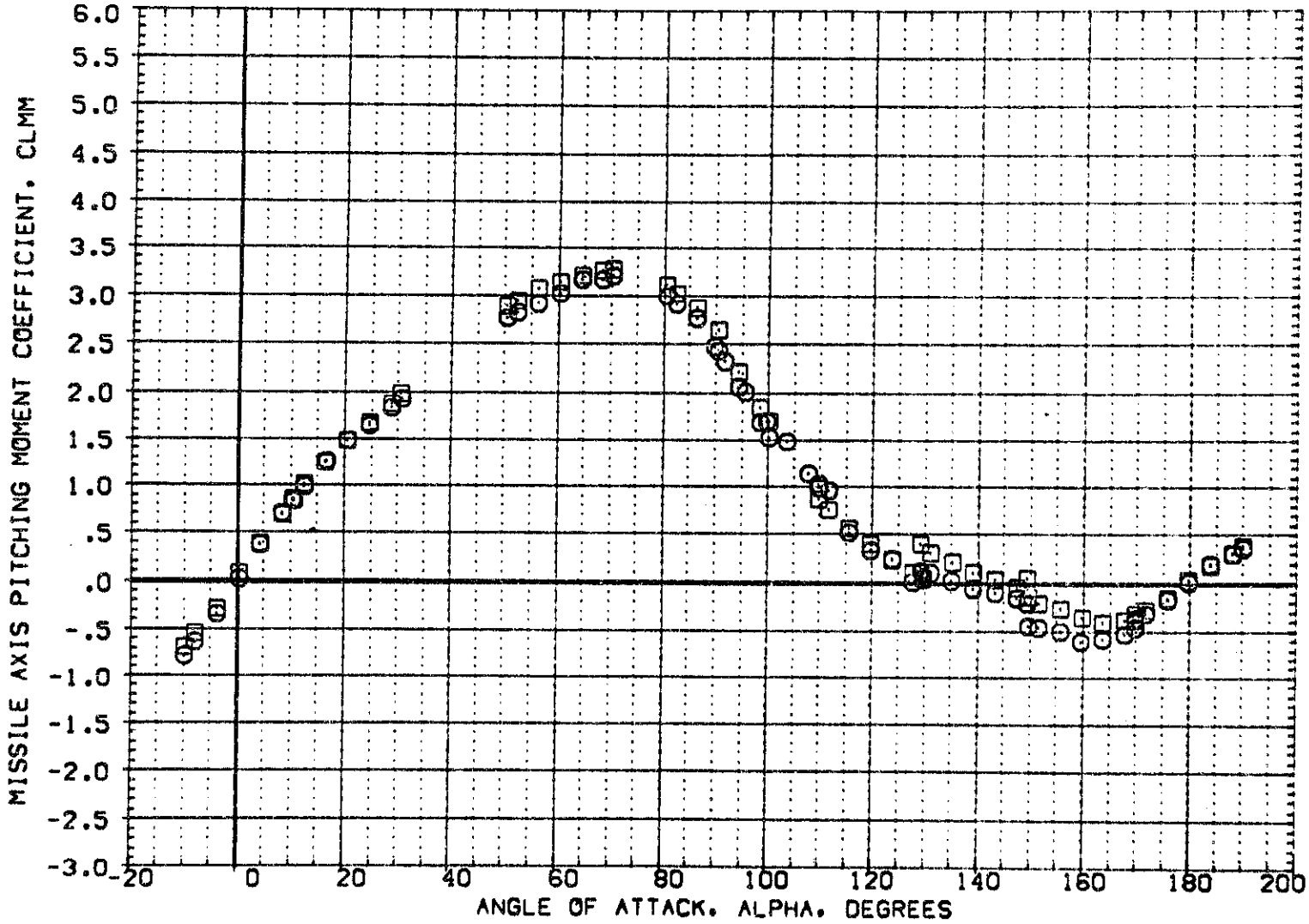
EFFECT OF ROLL POSITION ON STATIC STABILITY

(A)MACH = 4.96

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI
(D99G01)	○	MSFC 583 (TAIF) EXTERNAL TANK TI. TAIL MOUNTED	270.000
(D99G02)	□	MSFC 583 (TAIF) EXTERNAL TANK TI. NOSE MOUNTED	270.000
(A99H01)	○	MSFC 583 (TAIF) EXTERNAL TANK TI. TAIL MOUNTED	315.000
(A99H02)	□	MSFC 583 (TAIF) EXTERNAL TANK TI. NOSE MOUNTED	315.000

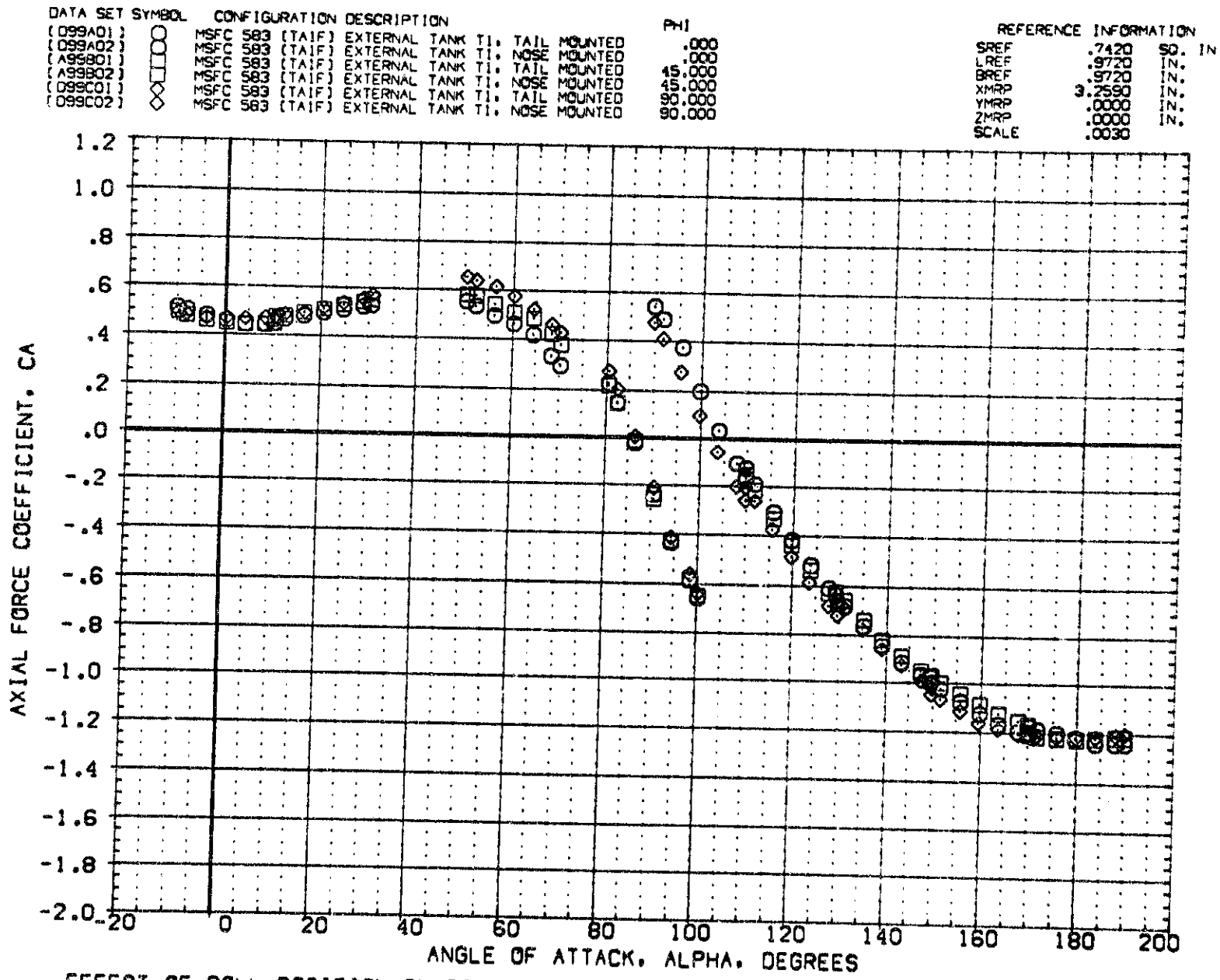
REFERENCE INFORMATION

SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	



EFFECT OF ROLL POSITION ON STATIC STABILITY

(A)MACH = 4.96



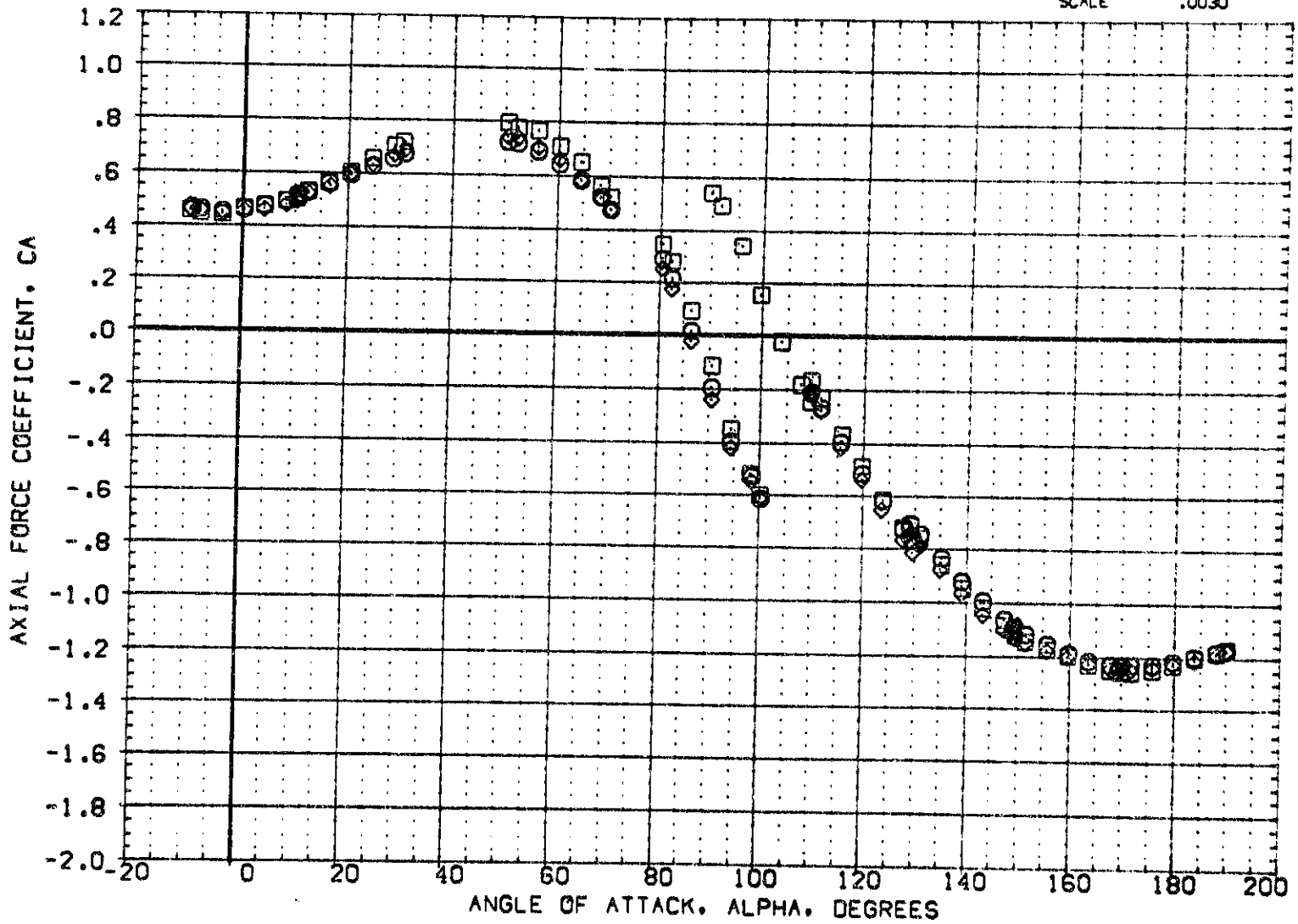
EFFECT OF ROLL POSITION ON STATIC STABILITY

(A)MACH = 4.96

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI
(A99001)	○	MSFC 583 (TAIF) EXTERNAL TANK T1, TAIL MOUNTED	135.000
(A99002)	○	MSFC 583 (TAIF) EXTERNAL TANK T1, NOSE MOUNTED	135.000
(099E01)	□	MSFC 583 (TAIF) EXTERNAL TANK T1, TAIL MOUNTED	180.000
(099E02)	□	MSFC 583 (TAIF) EXTERNAL TANK T1, NOSE MOUNTED	180.000
(A99F01)	◇	MSFC 583 (TAIF) EXTERNAL TANK T1, TAIL MOUNTED	225.000
(A99F02)	◇	MSFC 583 (TAIF) EXTERNAL TANK T1, NOSE MOUNTED	225.000

REFERENCE INFORMATION

SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	



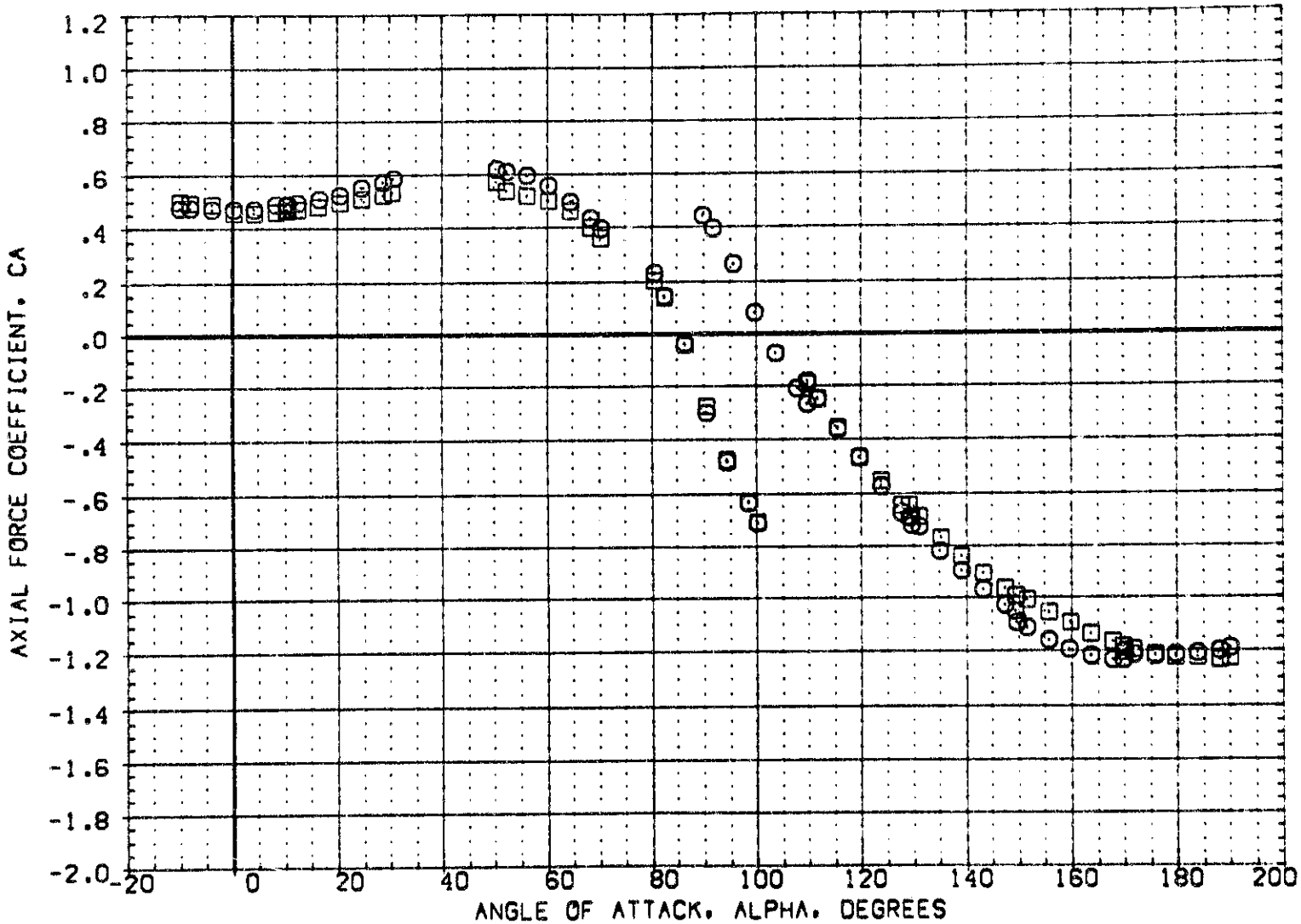
EFFECT OF ROLL POSITION ON STATIC STABILITY

(A)MACH = 4.96

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI
(D99G01)	○	MSFC 583 (TAIF) EXTERNAL TANK T1, TAIL MOUNTED	270.000
(D99G02)	○	MSFC 583 (TAIF) EXTERNAL TANK T1, NOSE MOUNTED	270.000
(A99H01)	□	MSFC 583 (TAIF) EXTERNAL TANK T1, TAIL MOUNTED	315.000
(A99H02)	□	MSFC 583 (TAIF) EXTERNAL TANK T1, NOSE MOUNTED	315.000

REFERENCE INFORMATION

SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2580	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	



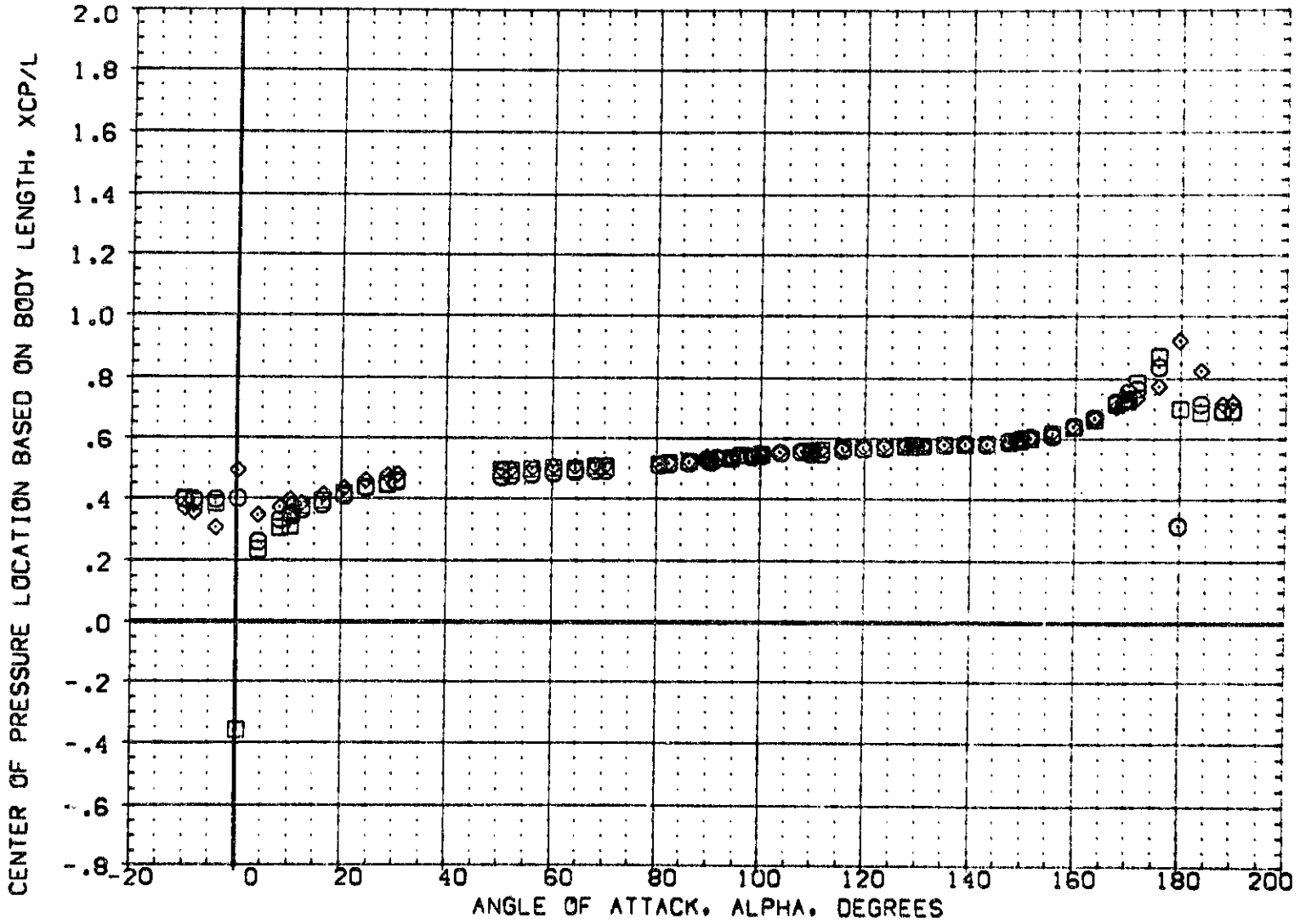
EFFECT OF ROLL POSITION ON STATIC STABILITY

(A)MACH = 4.96

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI
(099A01)	○	MSFC 583 (TAIF) EXTERNAL TANK T1, TAIL MOUNTED	.000
(099A02)	○	MSFC 583 (TAIF) EXTERNAL TANK T1, NOSE MOUNTED	.000
(A99B01)	□	MSFC 583 (TAIF) EXTERNAL TANK T1, TAIL MOUNTED	45.000
(A99B02)	□	MSFC 583 (TAIF) EXTERNAL TANK T1, NOSE MOUNTED	45.000
(099C01)	◇	MSFC 583 (TAIF) EXTERNAL TANK T1, TAIL MOUNTED	90.000
(099C02)	◇	MSFC 583 (TAIF) EXTERNAL TANK T1, NOSE MOUNTED	90.000

REFERENCE INFORMATION

SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	



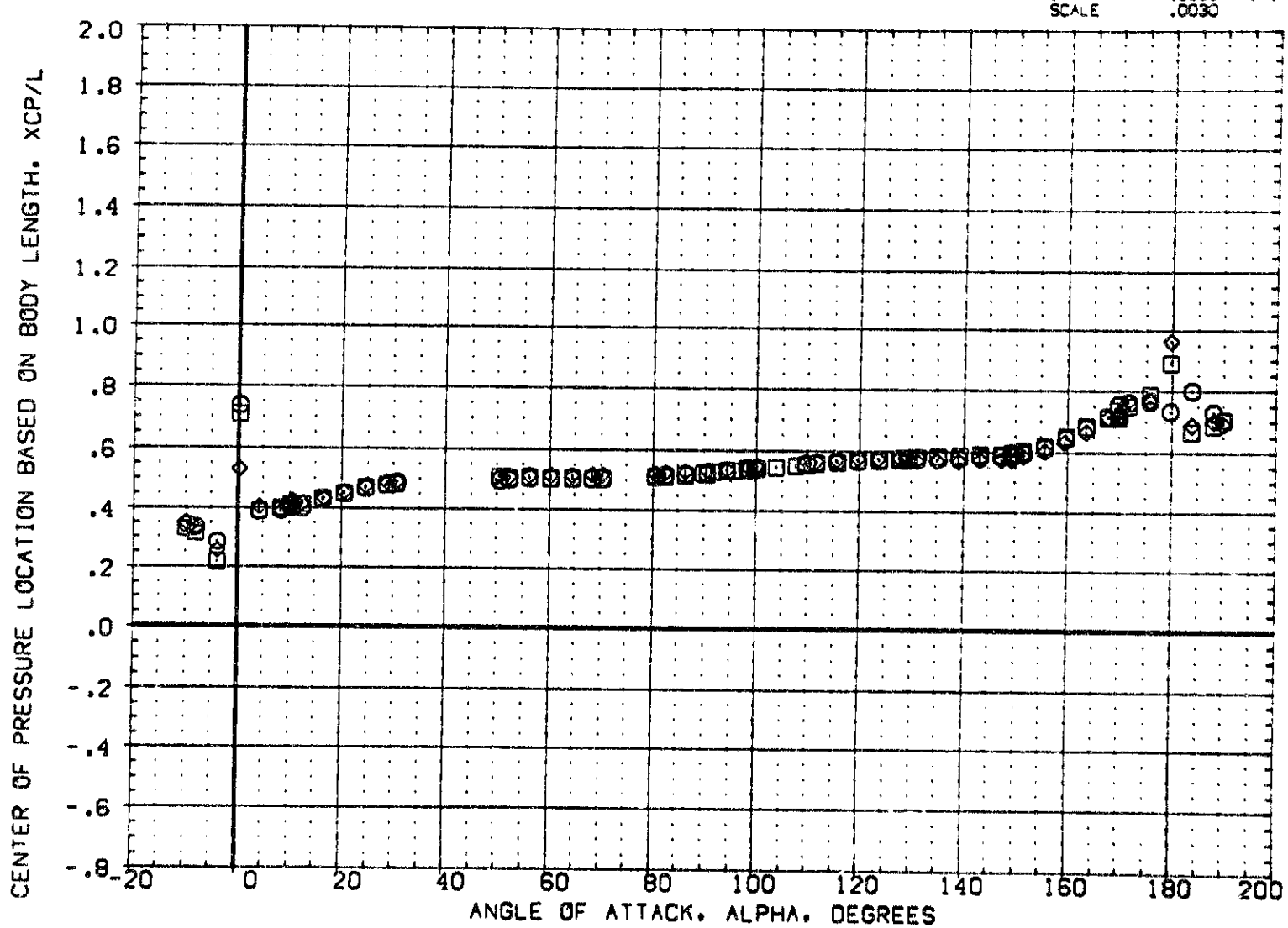
EFFECT OF ROLL POSITION ON STATIC STABILITY

(A)MACH = 4.96

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI
(A99D01)	○	MSFC 583 (TAIF) EXTERNAL TANK T1. TAIL MOUNTED	135.000
(A99D02)	□	MSFC 583 (TAIF) EXTERNAL TANK T1. NOSE MOUNTED	135.000
(D99E01)	○	MSFC 583 (TAIF) EXTERNAL TANK T1. TAIL MOUNTED	180.000
(D99E02)	□	MSFC 583 (TAIF) EXTERNAL TANK T1. NOSE MOUNTED	180.000
(A99F01)	◇	MSFC 583 (TAIF) EXTERNAL TANK T1. TAIL MOUNTED	225.000
(A99F02)	◇	MSFC 583 (TAIF) EXTERNAL TANK T1. NOSE MOUNTED	225.000

REFERENCE INFORMATION

SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	



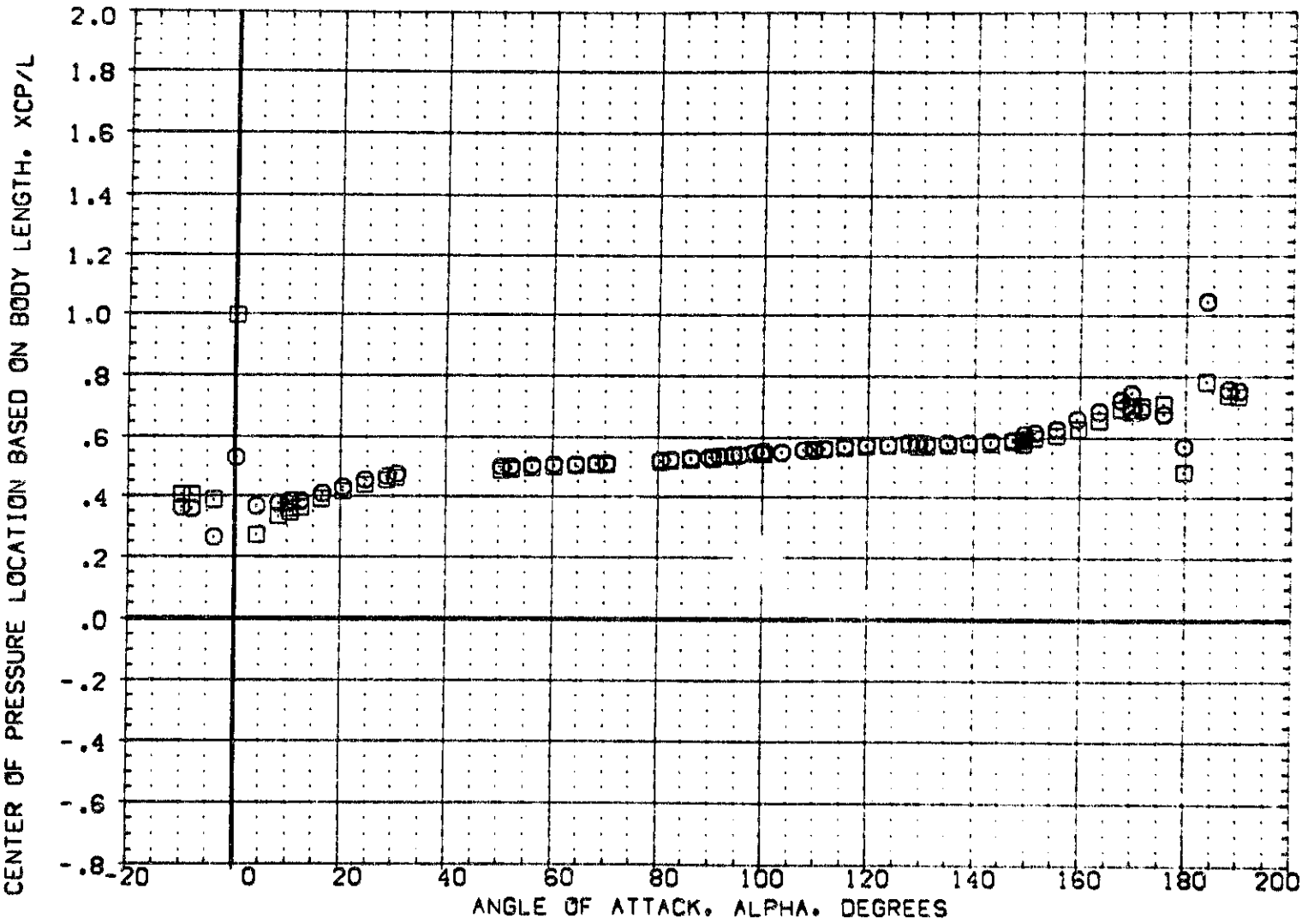
EFFECT OF ROLL POSITION ON STATIC STABILITY

(A)MACH = 4.96

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI
(D99G01)	○	MSFC 583 (TAIF) EXTERNAL TANK T1, TAIL MOUNTED	270.000
(D99G02)	□	MSFC 583 (TAIF) EXTERNAL TANK T1, NOSE MOUNTED	270.000
(A99H01)	⊙	MSFC 583 (TAIF) EXTERNAL TANK T1, TAIL MOUNTED	315.000
(A99H02)	⊡	MSFC 583 (TAIF) EXTERNAL TANK T1, NOSE MOUNTED	315.000

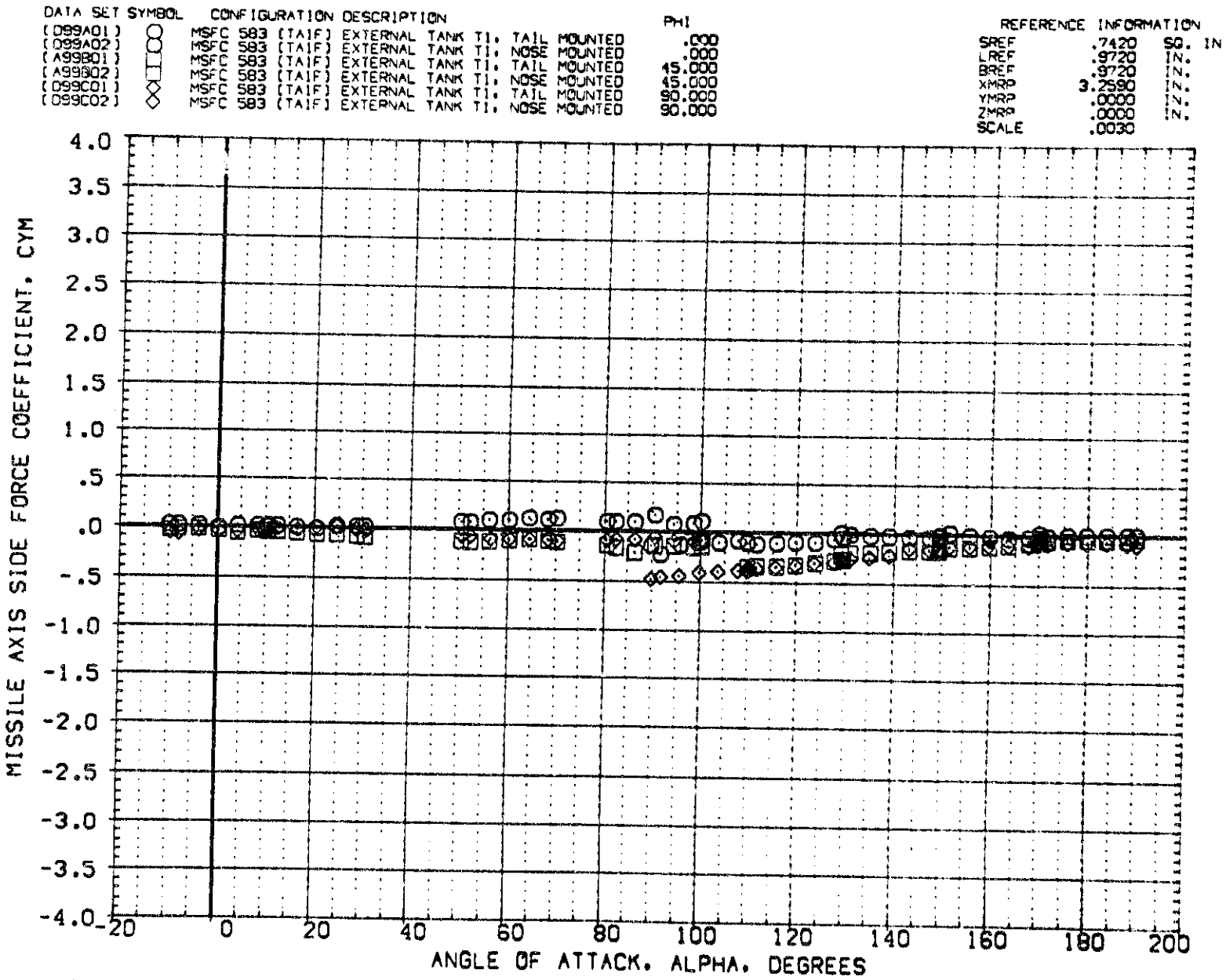
REFERENCE INFORMATION

SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	



EFFECT OF ROLL POSITION ON STATIC STABILITY

(A)MACH = 4.96

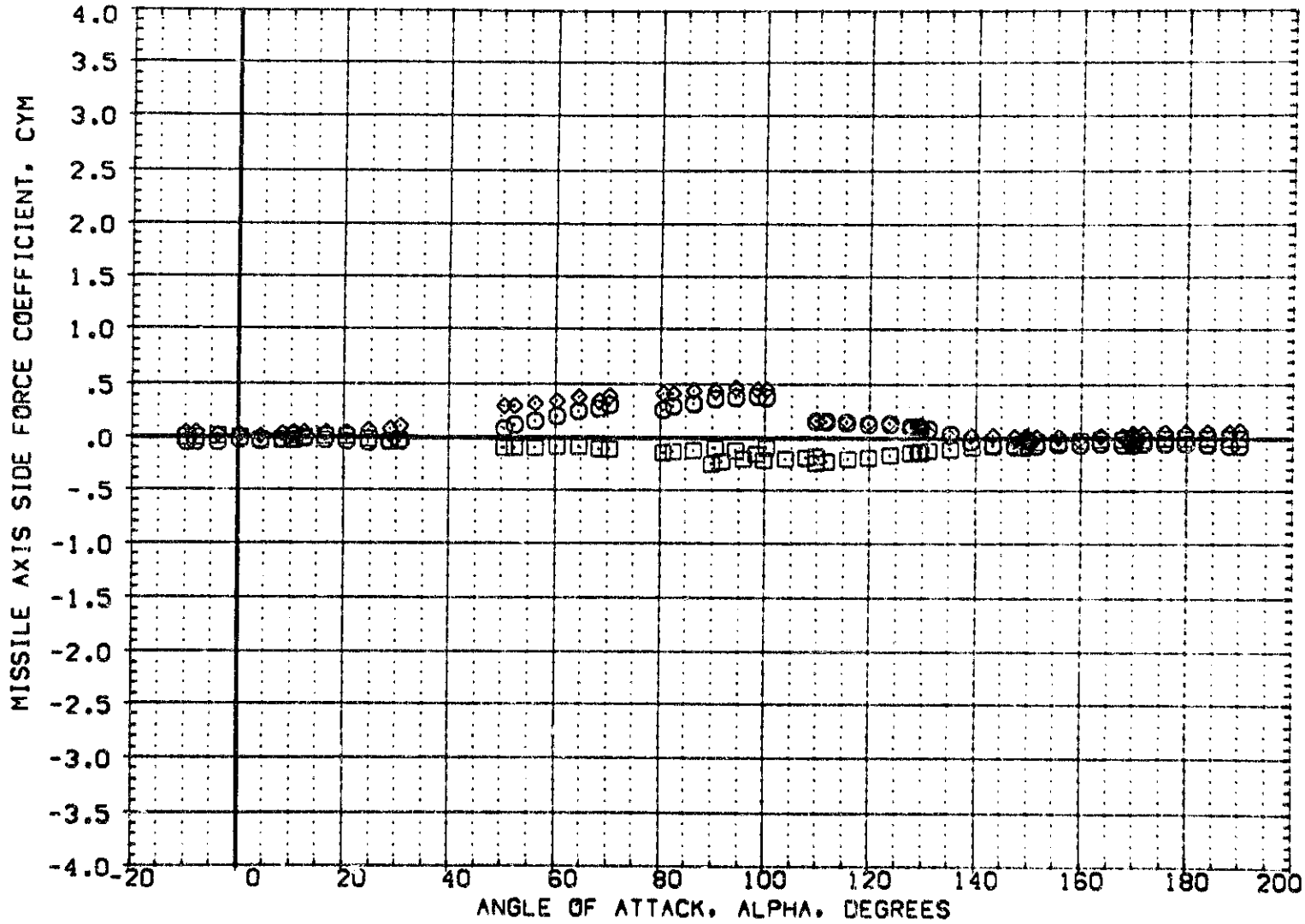


EFFECT OF ROLL POSITION ON STATIC STABILITY

(A)MACH = 4.96

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI
(A99D01)	○	MSFC 583 (TAIF) EXTERNAL TANK T1, TAIL MOUNTED	135.000
(A99D02)	□	MSFC 583 (TAIF) EXTERNAL TANK T1, NOSE MOUNTED	135.000
(D99E01)		MSFC 583 (TAIF) EXTERNAL TANK T1, TAIL MOUNTED	180.000
(D99E02)		MSFC 583 (TAIF) EXTERNAL TANK T1, NOSE MOUNTED	180.000
(A99F01)	◇	MSFC 583 (TAIF) EXTERNAL TANK T1, TAIL MOUNTED	225.000
(A99F02)	◇	MSFC 583 (TAIF) EXTERNAL TANK T1, NOSE MOUNTED	225.000

REFERENCE INFORMATION		
SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	



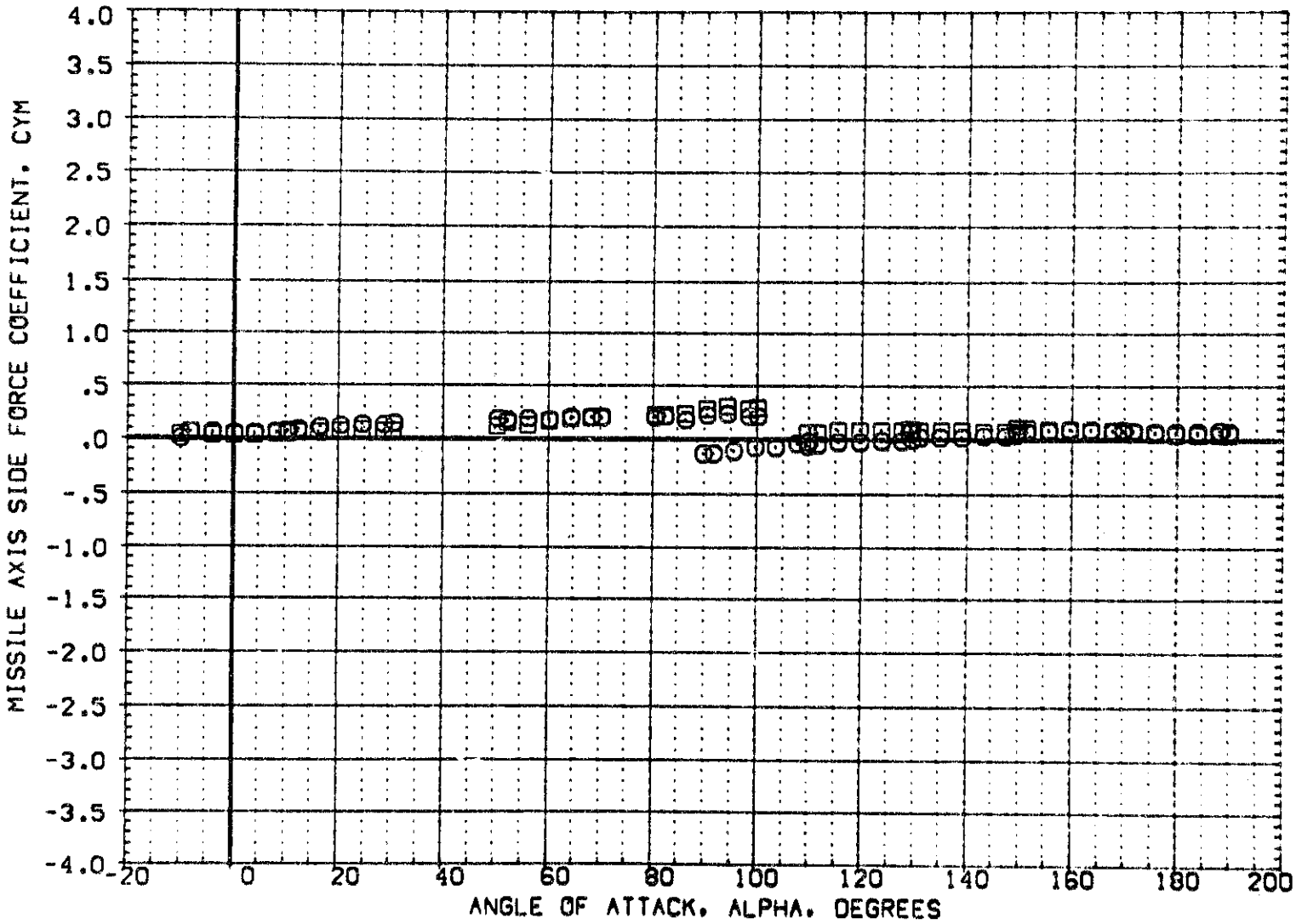
EFFECT OF ROLL POSITION ON STATIC STABILITY

(A)MACH = 4.96

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI
(099G01)	○	MSFC 583 (TAIF) EXTERNAL TANK T1. TAIL MOUNTED	270.000
(099G02)	□	MSFC 583 (TAIF) EXTERNAL TANK T1. NOSE MOUNTED	270.000
(A99H01)	◇	MSFC 583 (TAIF) EXTERNAL TANK T1. TAIL MOUNTED	315.000
(A99H02)	△	MSFC 583 (TAIF) EXTERNAL TANK T1. NOSE MOUNTED	315.000

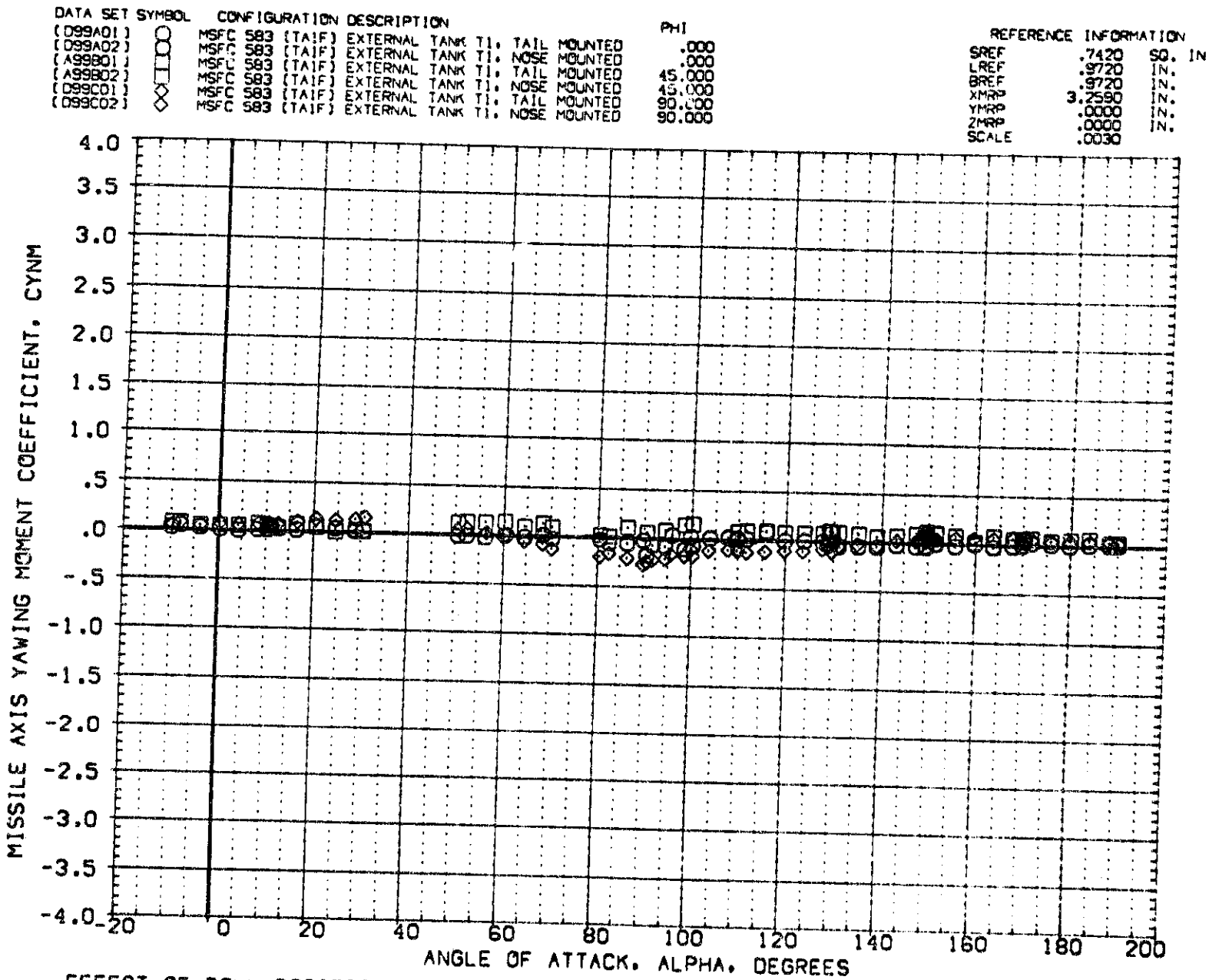
REFERENCE INFORMATION

SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	



EFFECT OF ROLL POSITION ON STATIC STABILITY

(A)MACH = 4.96



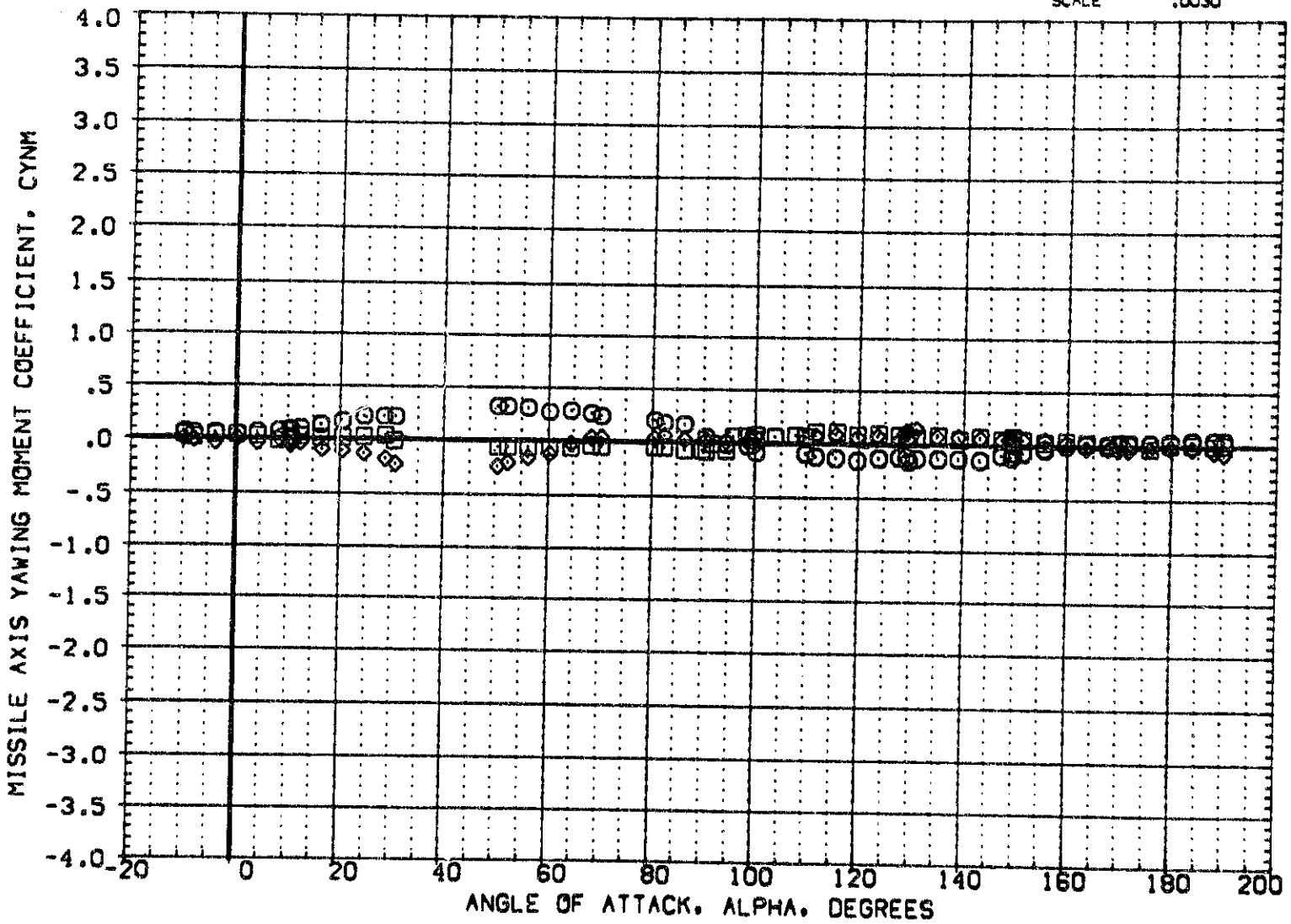
EFFECT OF ROLL POSITION ON STATIC STABILITY

(A)MACH = 4.96

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI
(A99001)	○	MSFC 583 (TAIF) EXTERNAL TANK T1. TAIL MOUNTED	135.000
(A99002)	□	MSFC 583 (TAIF) EXTERNAL TANK T1. NOSE MOUNTED	135.000
(D99E01)	△	MSFC 583 (TAIF) EXTERNAL TANK T1. TAIL MOUNTED	180.000
(D99E02)	▽	MSFC 583 (TAIF) EXTERNAL TANK T1. NOSE MOUNTED	180.000
(A99F01)	◇	MSFC 583 (TAIF) EXTERNAL TANK T1. TAIL MOUNTED	225.000
(A99F02)	◇	MSFC 583 (TAIF) EXTERNAL TANK T1. NOSE MOUNTED	225.000

REFERENCE INFORMATION

SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	



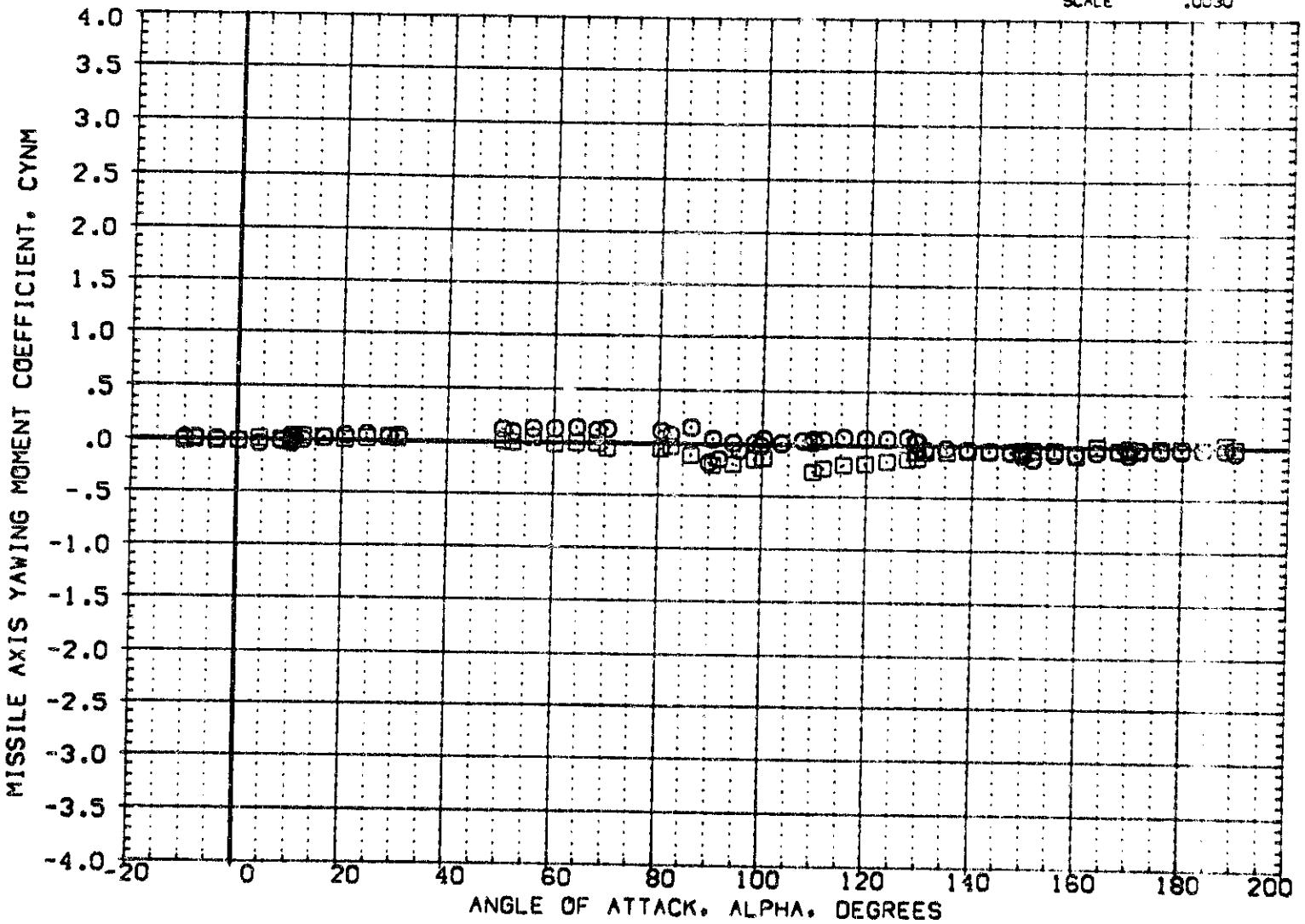
EFFECT OF ROLL POSITION ON STATIC STABILITY

(A)MACH = 4.96

DATA SET SYMBOL		CONFIGURATION DESCRIPTION	PHI
(D99G01)	○	MSFC 583 (TAIF) EXTERNAL TANK T1. TAIL MOUNTED	270.000
(D99G02)	□	MSFC 583 (TAIF) EXTERNAL TANK T1. NOSE MOUNTED	270.000
(A99H01)	○	MSFC 583 (TAIF) EXTERNAL TANK T1. TAIL MOUNTED	315.000
(A99H02)	□	MSFC 583 (TAIF) EXTERNAL TANK T1. NOSE MOUNTED	315.000

REFERENCE INFORMATION

SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2690	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	

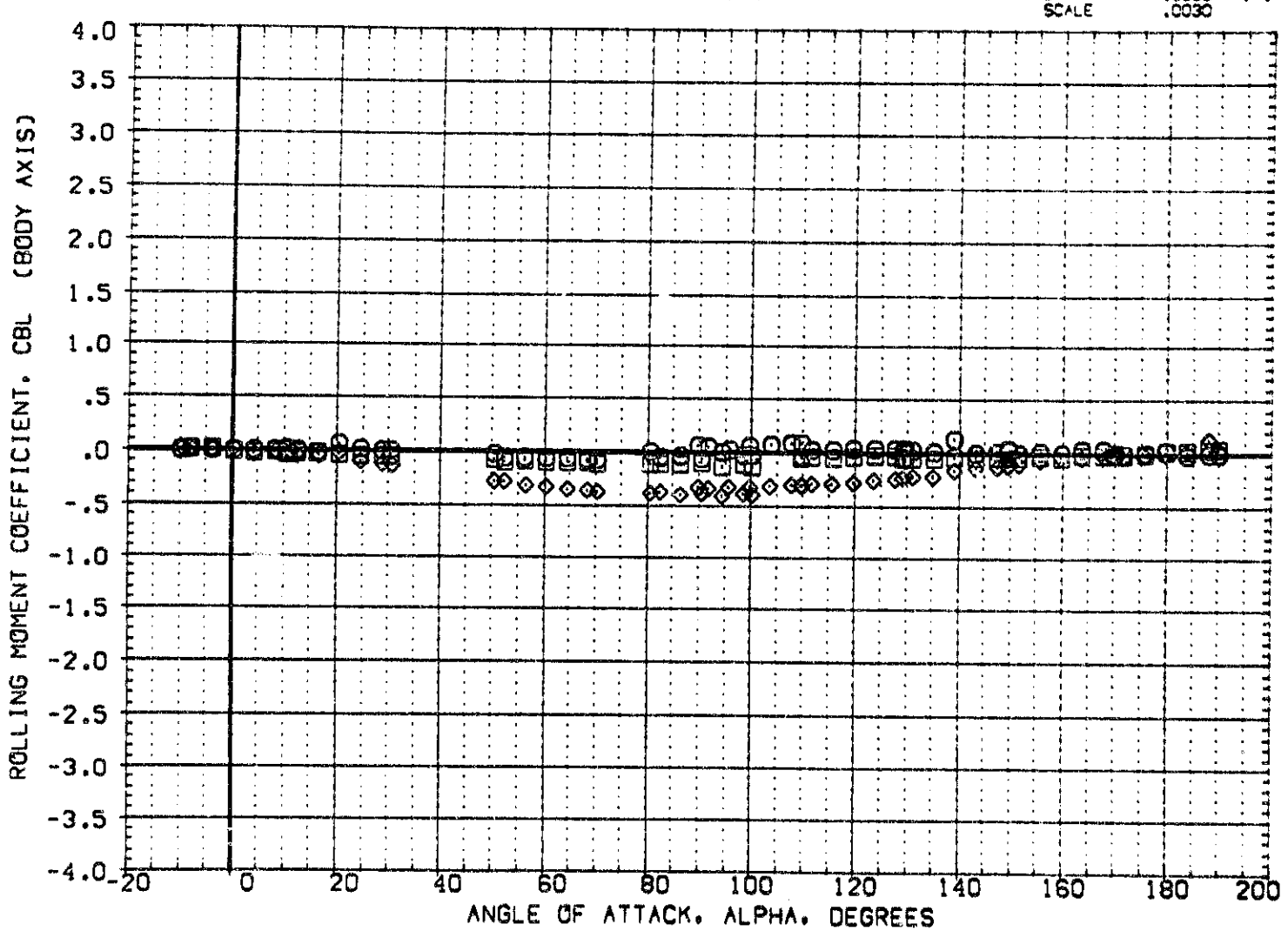


EFFECT OF ROLL POSITION ON STATIC STABILITY

(A)MACH = 4.96

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI
(099A01)	□	MSFC 583 (TAIF) EXTERNAL TANK T1. TAIL MOUNTED	.000
(099A02)		MSFC 583 (TAIF) EXTERNAL TANK T1. NOSE MOUNTED	.000
(A99B01)		MSFC 583 (TAIF) EXTERNAL TANK T1. TAIL MOUNTED	45.000
(A99B02)		MSFC 583 (TAIF) EXTERNAL TANK T1. NOSE MOUNTED	45.000
(099C01)		MSFC 583 (TAIF) EXTERNAL TANK T1. TAIL MOUNTED	90.000
(099C02)	◇	MSFC 583 (TAIF) EXTERNAL TANK T1. NOSE MOUNTED	90.000

REFERENCE INFORMATION		
SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	

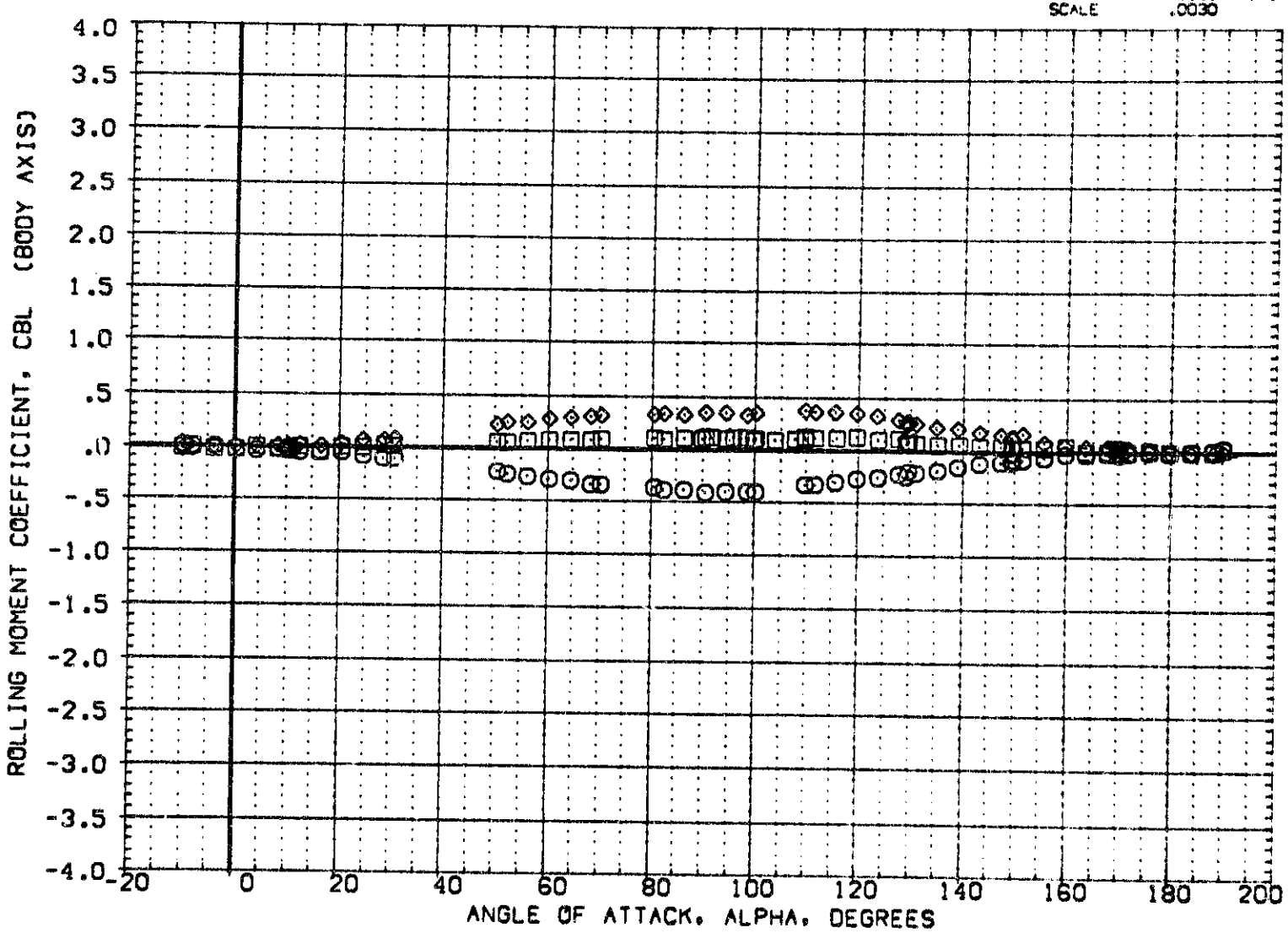


EFFECT OF ROLL POSITION ON STATIC STABILITY

(A)MACH = 4.96

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI
(A99001)	○	MSFC 583 (TAIF) EXTERNAL TANK T1, TAIL MOUNTED	135.000
(A99002)	□	MSFC 583 (TAIF) EXTERNAL TANK T1, NOSE MOUNTED	135.000
(D99E01)	□	MSFC 583 (TAIF) EXTERNAL TANK T1, TAIL MOUNTED	180.000
(D99E02)	□	MSFC 583 (TAIF) EXTERNAL TANK T1, NOSE MOUNTED	180.000
(A99F01)	◇	MSFC 583 (TAIF) EXTERNAL TANK T1, TAIL MOUNTED	225.000
(A99F02)	◇	MSFC 583 (TAIF) EXTERNAL TANK T1, NOSE MOUNTED	225.000

REFERENCE INFORMATION		
SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	



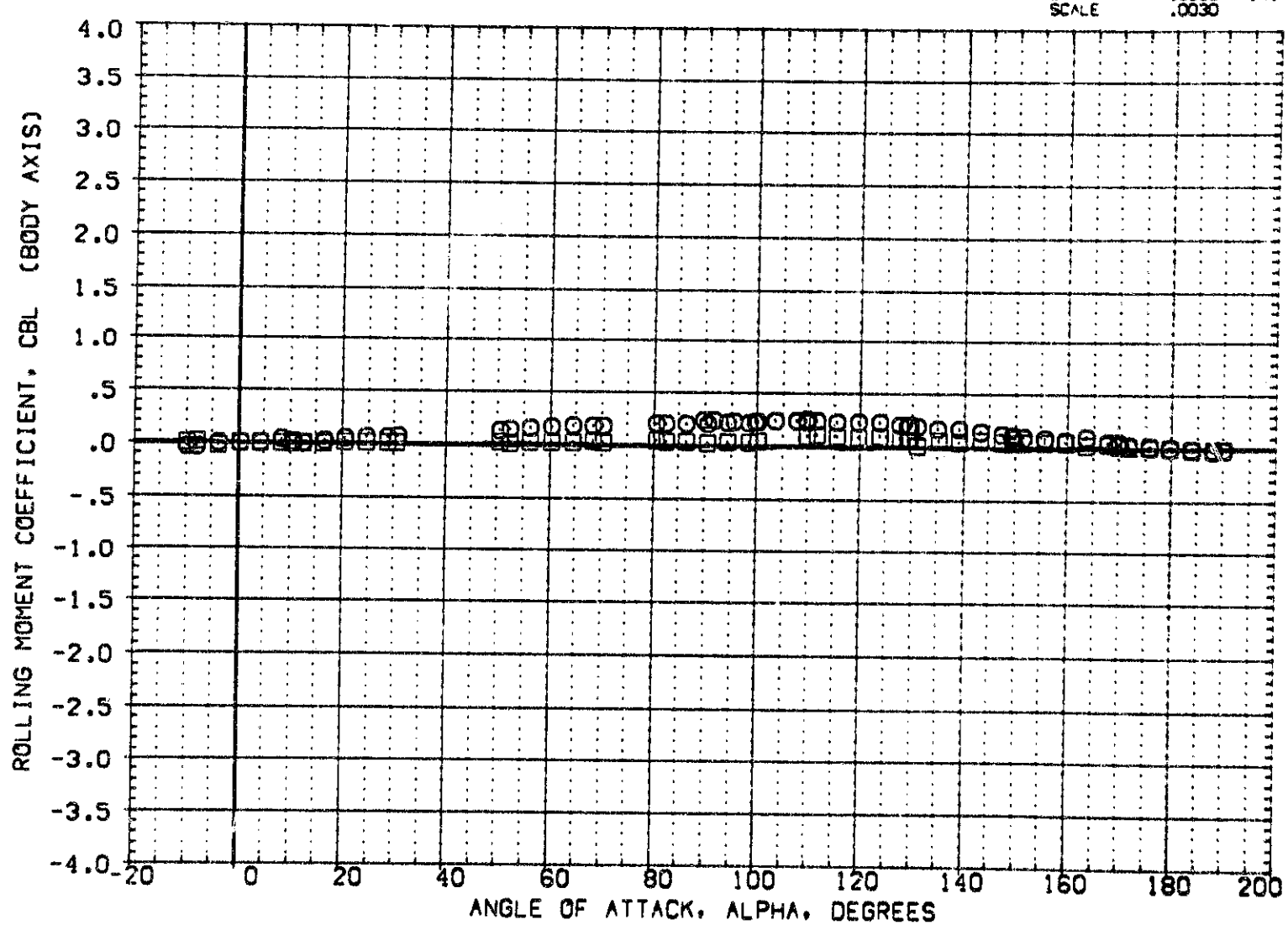
EFFECT OF ROLL POSITION ON STATIC STABILITY

(A)MACH = 4.96

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI
(D99G01)	○	MSFC 583 (TAIF) EXTERNAL TANK TI, TAIL MOUNTED	270.000
(D99G02)	□	MSFC 583 (TAIF) EXTERNAL TANK TI, NOSE MOUNTED	270.000
(A99H01)	◇	MSFC 583 (TAIF) EXTERNAL TANK TI, TAIL MOUNTED	315.000
(A99H02)	△	MSFC 583 (TAIF) EXTERNAL TANK TI, NOSE MOUNTED	315.000

REFERENCE INFORMATION

SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	



EFFECT OF ROLL POSITION ON STATIC STABILITY

(A)MACH = 4.96

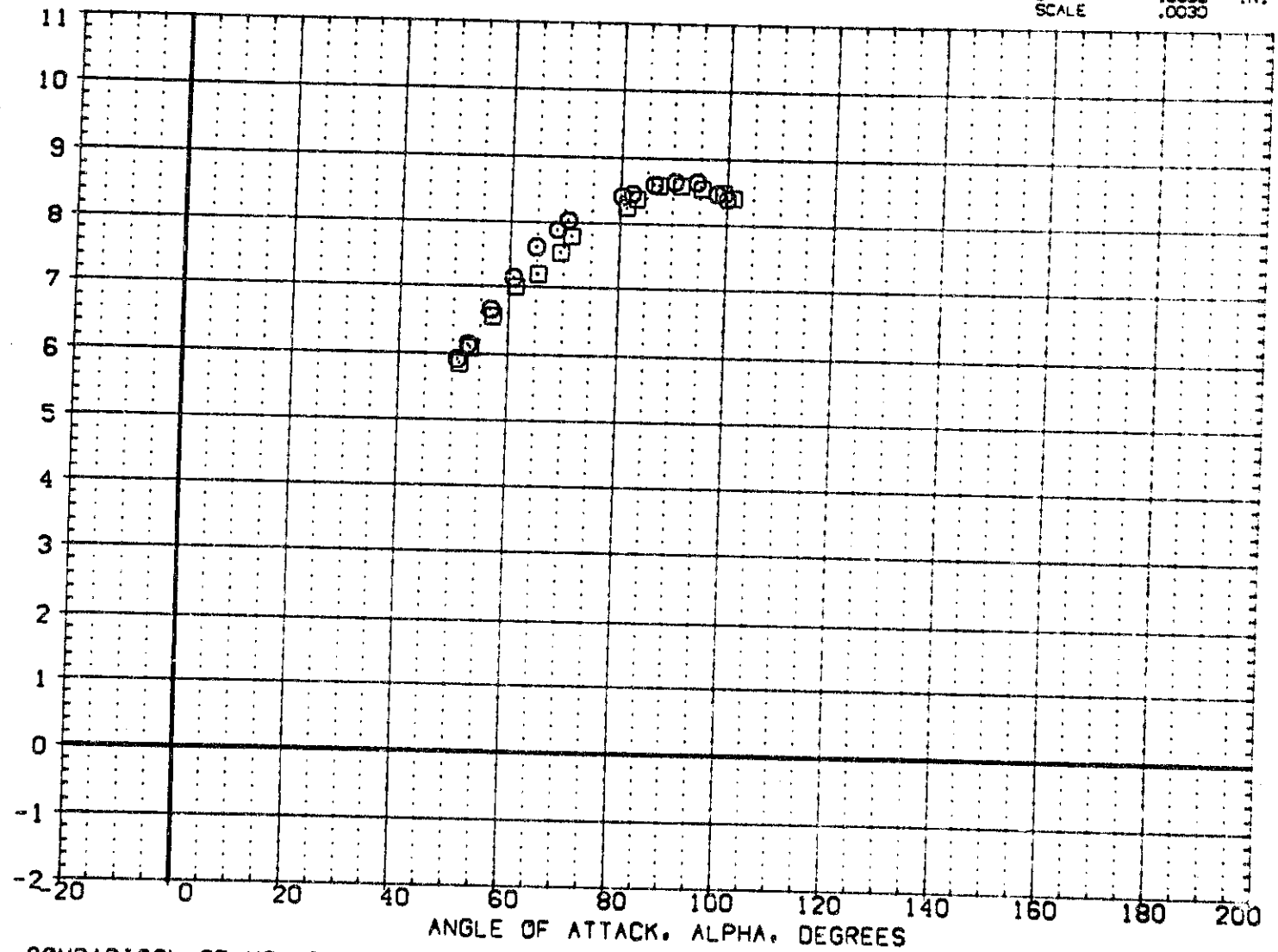
DATA SET SYMBOL CONFIGURATION DESCRIPTION PHI

(899K01) MSFC 583 (TAIF) EXTERNAL TANK T2, SIDE MOUNTED .000

(899K02) MSFC 583 (TAIF) EXTERNAL TANK T2, TAIL MOUNTED .000

REFERENCE INFORMATION

SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	

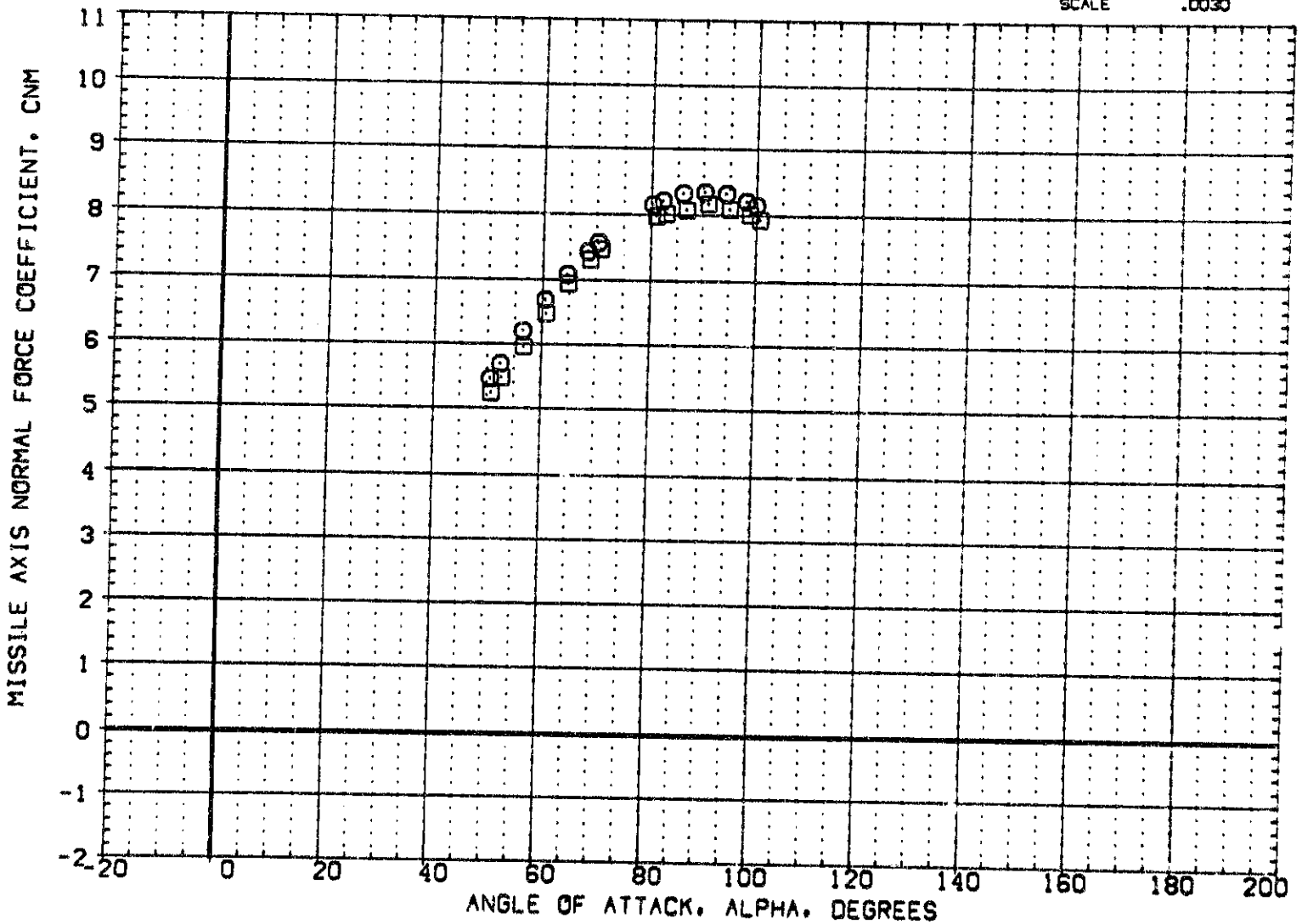


COMPARISON OF MOUNTING ARRANGEMENTS OF TANKS WITHOUT PROTUBERANCES

(A)MACH = 1.95

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	PHI
(899K01) ○	MSFC 583 (TAIF) EXTERNAL TANK T2, SIDE MOUNTED	.000
(899K02) □	MSFC 583 (TAIF) EXTERNAL TANK T2, TAIL MOUNTED	.000

REFERENCE INFORMATION		
SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	



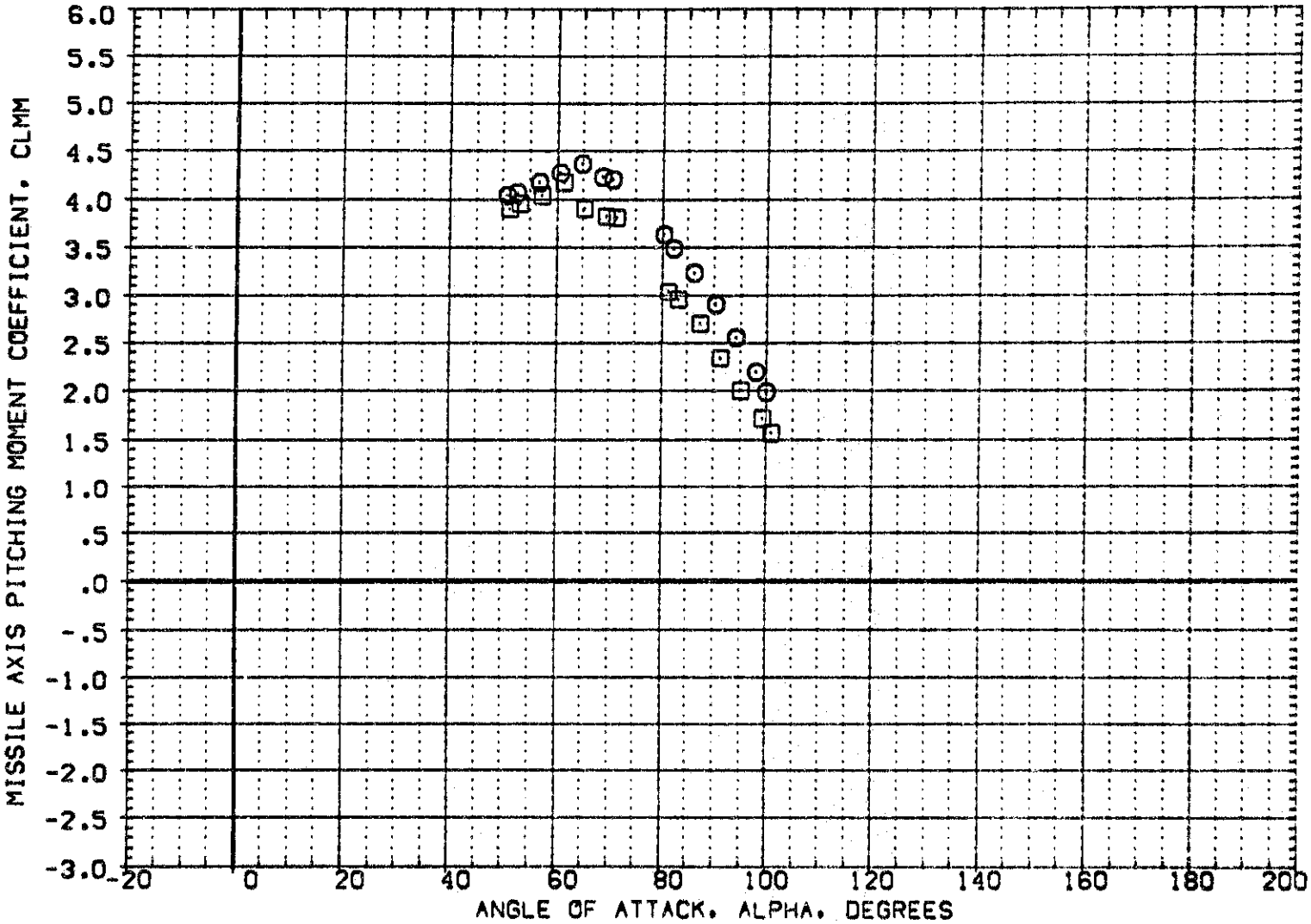
COMPARISON OF MOUNTING ARRANGEMENTS OF TANKS WITHOUT PROTUBERANCES

(8)MACH = 3.48

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	PHI
(B99K01) ○	MSFC 583 (TAIF) EXTERNAL TANK T2, SIDE MOUNTED	.000
(B99K02) □	MSFC 583 (TAIF) EXTERNAL TANK T2, TAIL MOUNTED	.000

REFERENCE INFORMATION

SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	



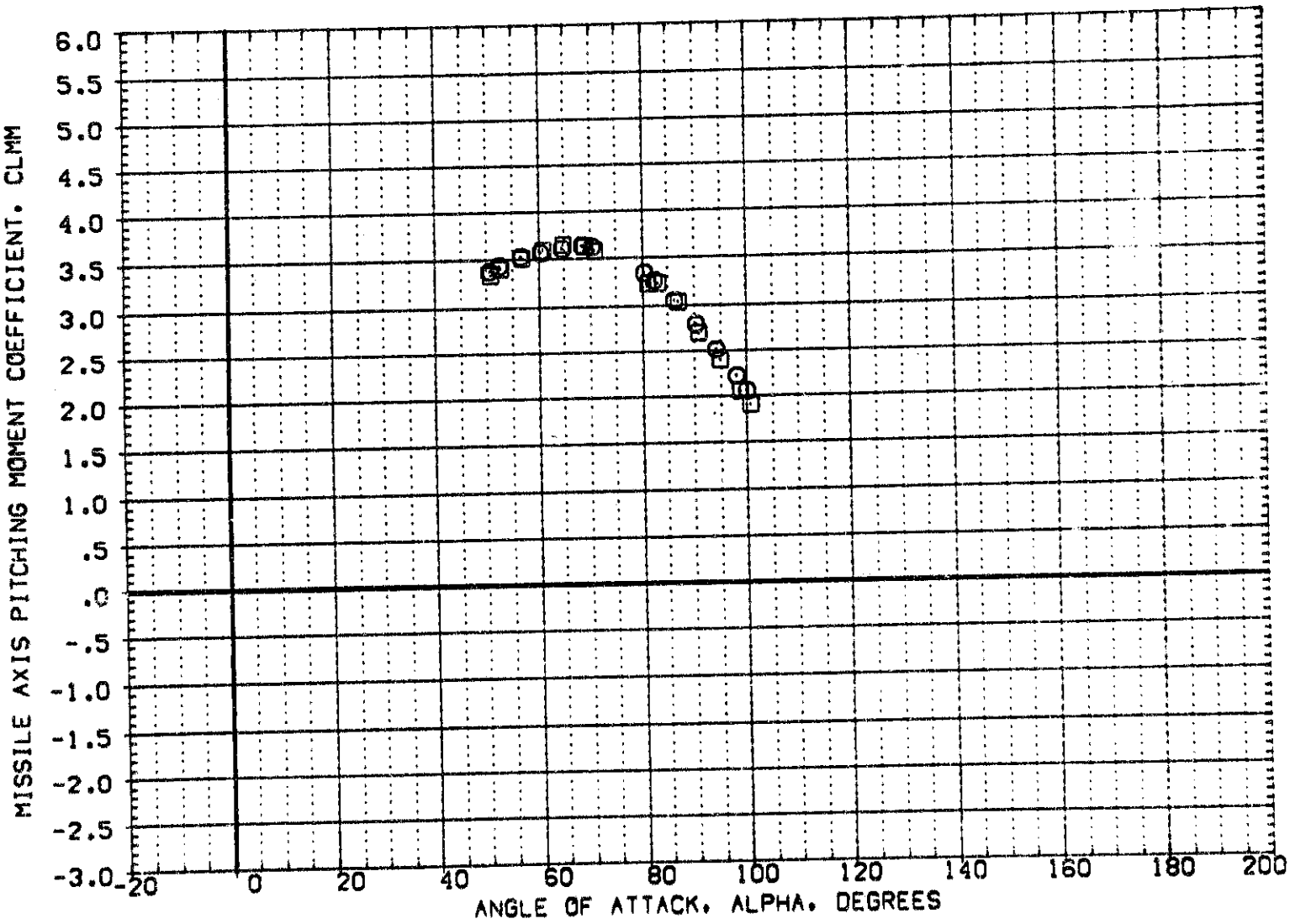
COMPARISON OF MOUNTING ARRANGEMENTS OF TANKS WITHOUT PROTUBERANCES

(A)MACH = 1.95

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	PHI
(B99K01) ○	MSFC 583 (TAIF) EXTERNAL TANK T2, SIDE MOUNTED	.000
(B99K02) □	MSFC 583 (TAIF) EXTERNAL TANK T2, TAIL MOUNTED	.000

REFERENCE INFORMATION

SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	



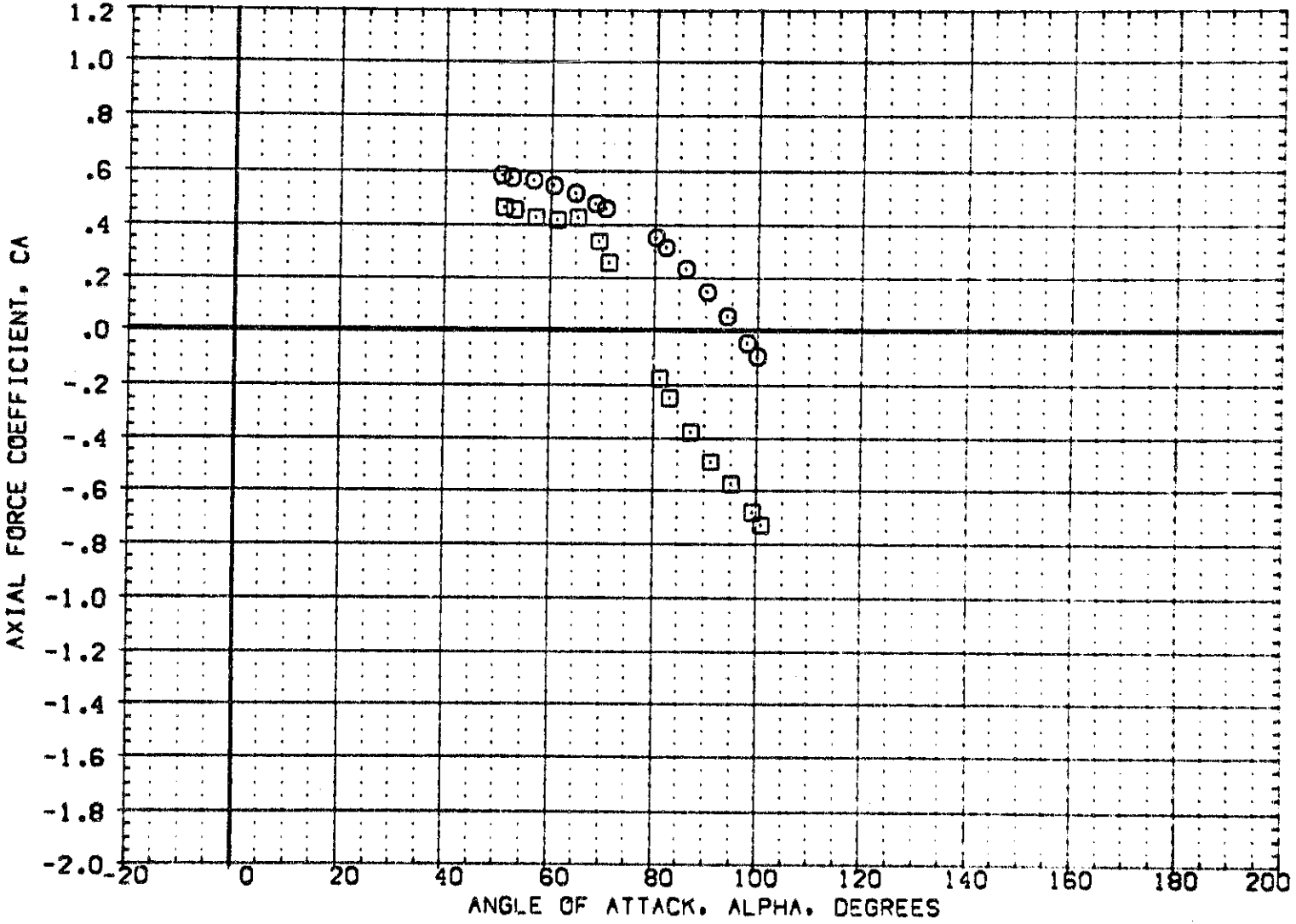
COMPARISON OF MOUNTING ARRANGEMENTS OF TANKS WITHOUT PROTUBERANCES

(B)MACH = 3.48

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI
(899K01)	○	MSFC 583 (TAIF) EXTERNAL TANK T2, SIDE MOUNTED	.000
(899K02)	□	MSFC 583 (TAIF) EXTERNAL TANK T2, TAIL MOUNTED	.000

REFERENCE INFORMATION

SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	



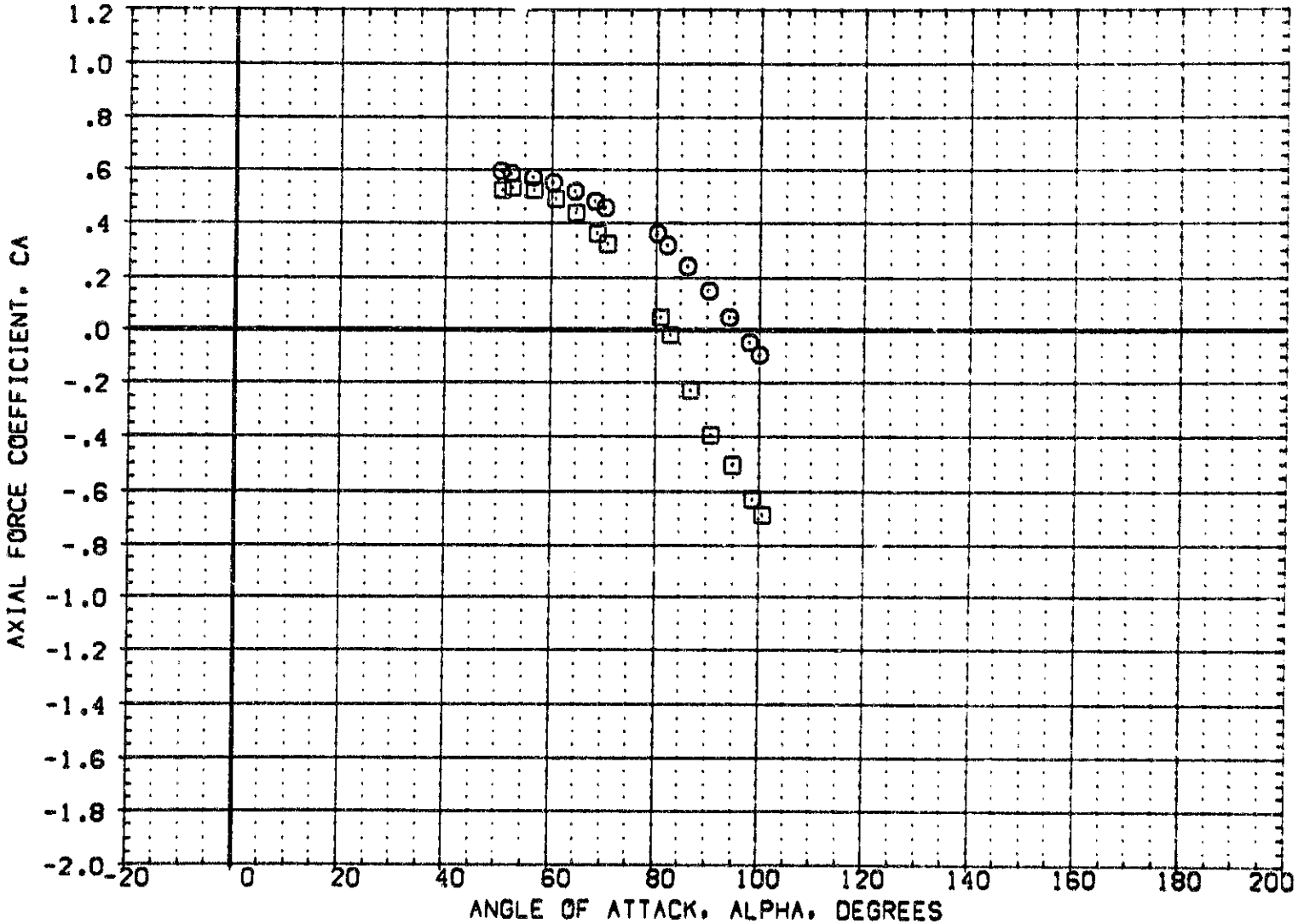
COMPARISON OF MOUNTING ARRANGEMENTS OF TANKS WITHOUT PROTUBERANCES

(A)MACH = 1.95

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI
(899K01)	○	MSFC 583 (TAIF) EXTERNAL TANK T2, SIDE MOUNTED	.000
(899K02)	□	MSFC 583 (TAIF) EXTERNAL TANK T2, TAIL MOUNTED	.000

REFERENCE INFORMATION

SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	



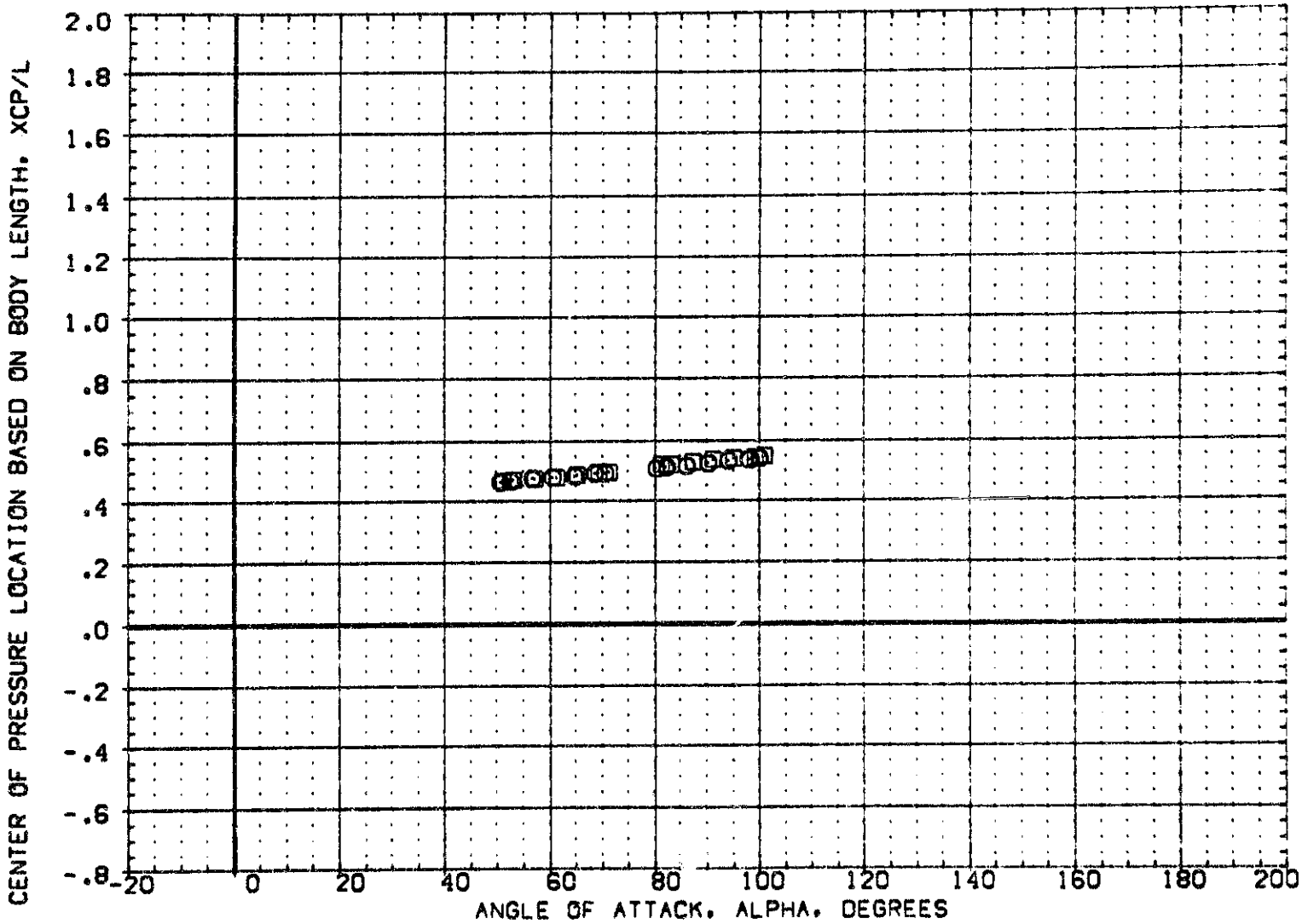
COMPARISON OF MOUNTING ARRANGEMENTS OF TANKS WITHOUT PROTUBERANCES

(B)MACH = 3.48

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI
(899K01)	○	MSFC 583 (TAIF) EXTERNAL TANK T2, SIDE MOUNTED	.000
(899K02)	□	MSFC 583 (TAIF) EXTERNAL TANK T2, TAIL MOUNTED	.000

REFERENCE INFORMATION

SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	



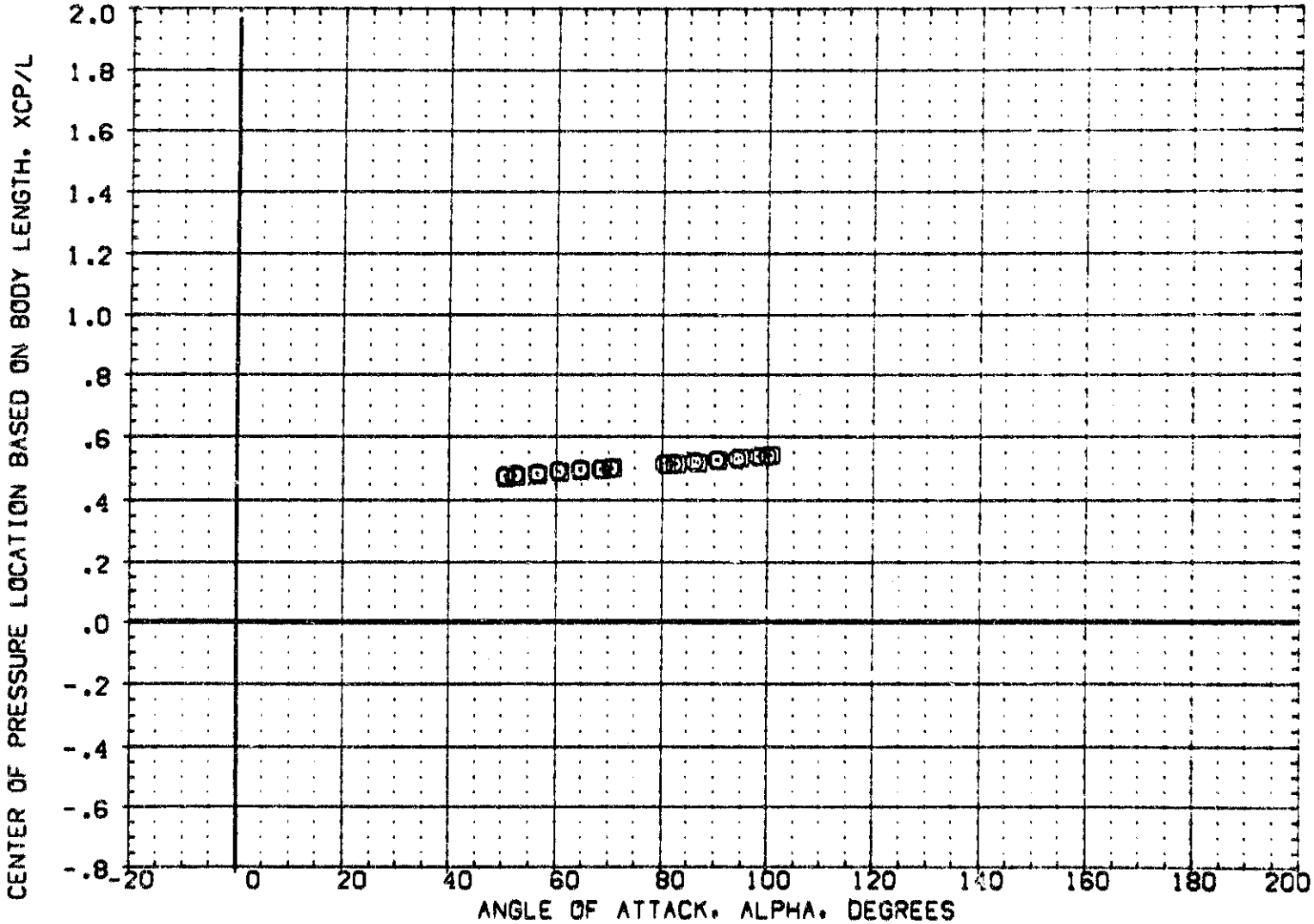
COMPARISON OF MOUNTING ARRANGEMENTS OF TANKS WITHOUT PROTUBERANCES

(A)MACH = 1.95

DATA SET SYMBOL		CONFIGURATION DESCRIPTION	PHI
(899K01)	○	MSFC 583 (TAIF) EXTERNAL TANK T2, SIDE MOUNTED	.000
(899K02)	□	MSFC 583 (TAIF) EXTERNAL TANK T2, TAIL MOUNTED	.000

REFERENCE INFORMATION

SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	

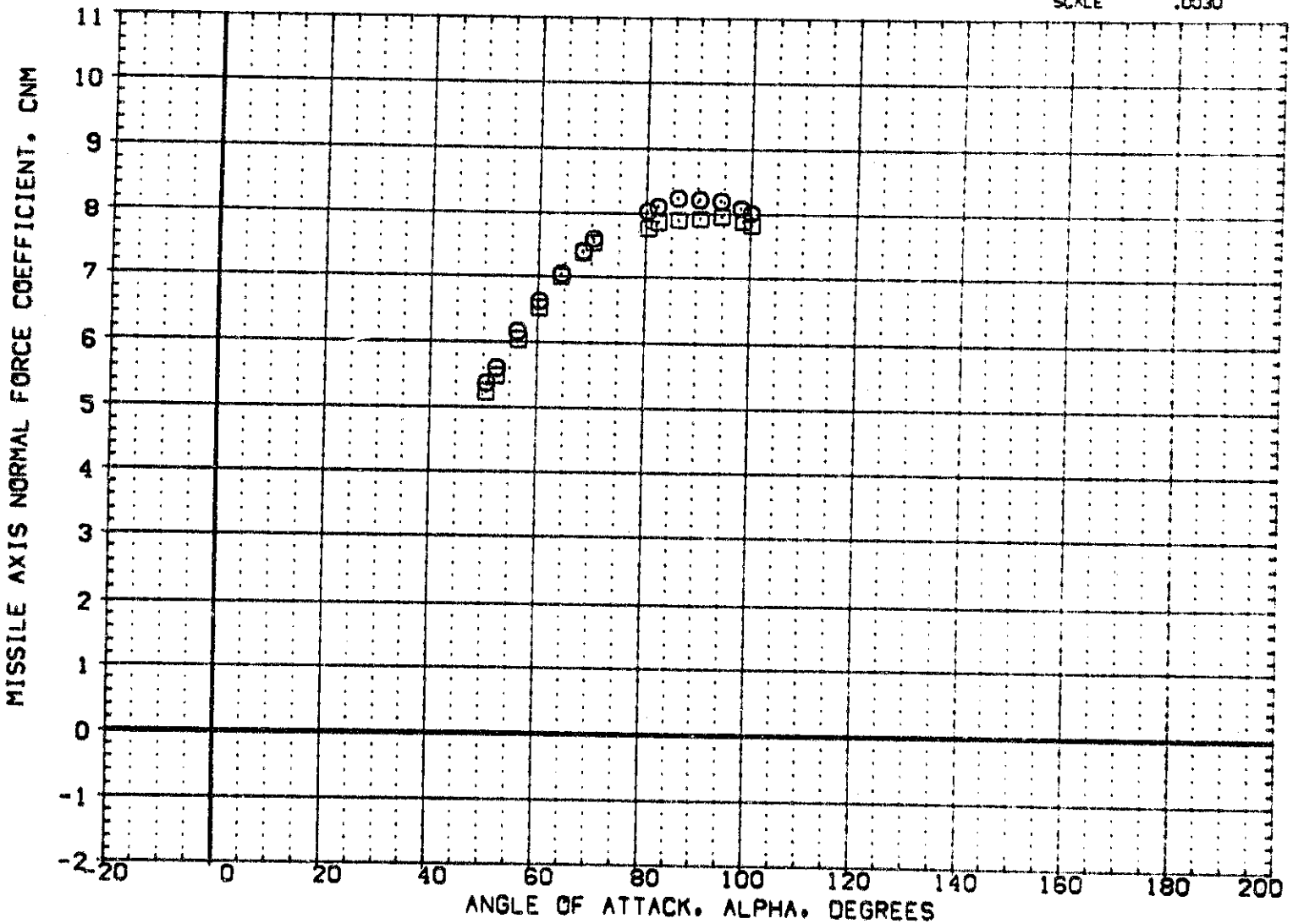


COMPARISON OF MOUNTING ARRANGEMENTS OF TANKS WITHOUT PROTUBERANCES

(B)MACH = 3.48

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	PHI
(C99K01) ○	MSFC 503 (TAIF) EXTERNAL TANK T2, SIDE MOUNTED	.000
(C99K02) □	MSFC 503 (TAIF) EXTERNAL TANK T2, TAIL MOUNTED	.000

REFERENCE INFORMATION		
SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	



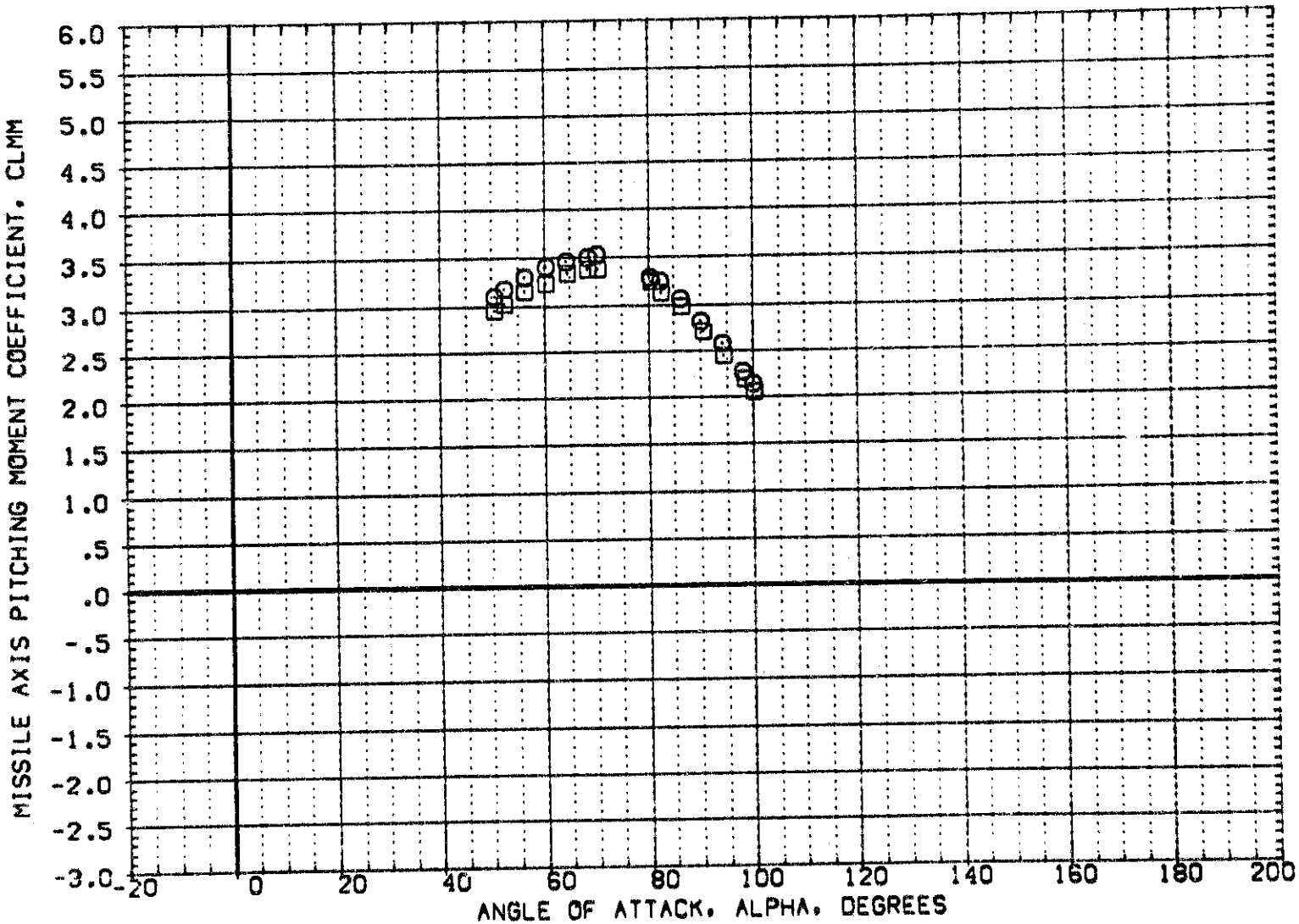
COMPARISON OF MOUNTING ARRANGEMENTS OF TANKS WITHOUT PROTUBERANCES

(A)MACH = 4.96

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI
(C99K01)	○	MSFC 583 (TAIF) EXTERNAL TANK T2, SIDE MOUNTED	.000
(C99K02)	□	MSFC 583 (TAIF) EXTERNAL TANK T2, TAIL MOUNTED	.000

REFERENCE INFORMATION

SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	



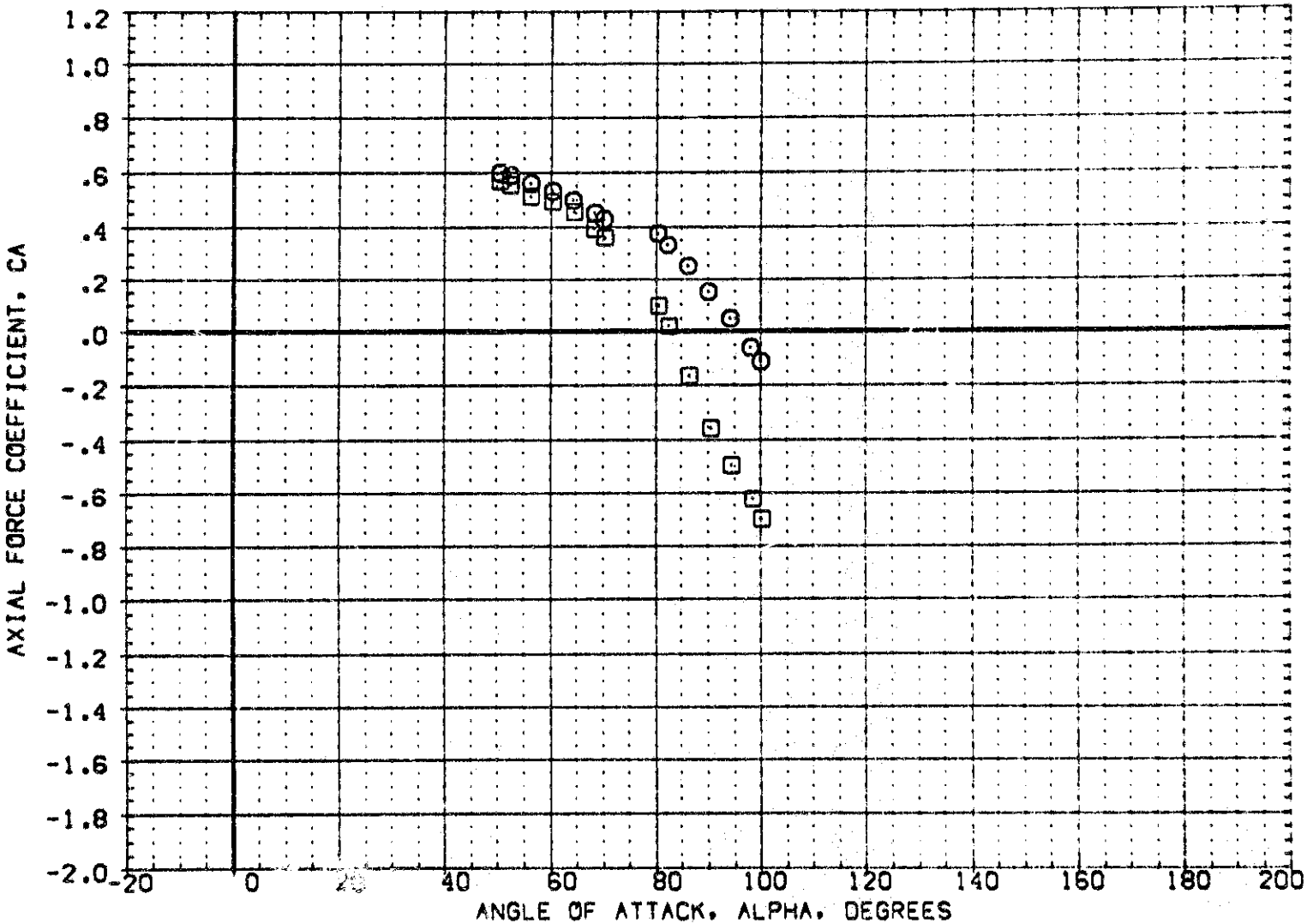
COMPARISON OF MOUNTING ARRANGEMENTS OF TANKS WITHOUT PROTUBERANCES

(A)MACH = 4.96

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI
(C99K01)	○	MSFC 583 (TAIF) EXTERNAL TANK T2, SIDE MOUNTED	.000
(C99K02)	□	MSFC 583 (TAIF) EXTERNAL TANK T2, TAIL MOUNTED	.000

REFERENCE INFORMATION

SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	



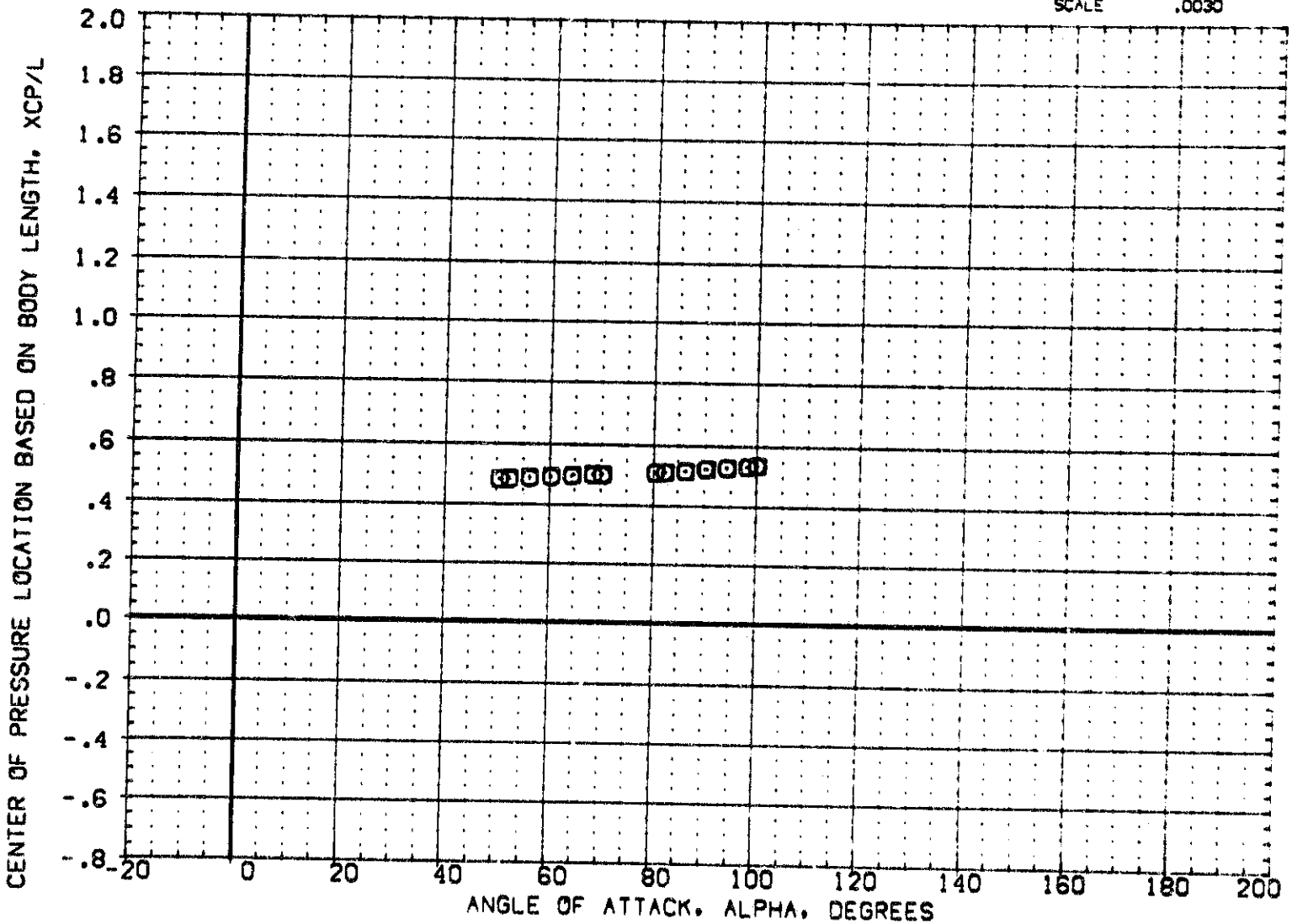
COMPARISON OF MOUNTING ARRANGEMENTS OF TANKS WITHOUT PROTUBERANCES

(A)MACH = 4.96

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI
(C99K01)	○	MSFC 583 (TAIF) EXTERNAL TANK T2, SIDE MOUNTED	.000
(C99K02)	□	MSFC 583 (TAIF) EXTERNAL TANK T2, TAIL MOUNTED	.000

REFERENCE INFORMATION

SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2550	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	



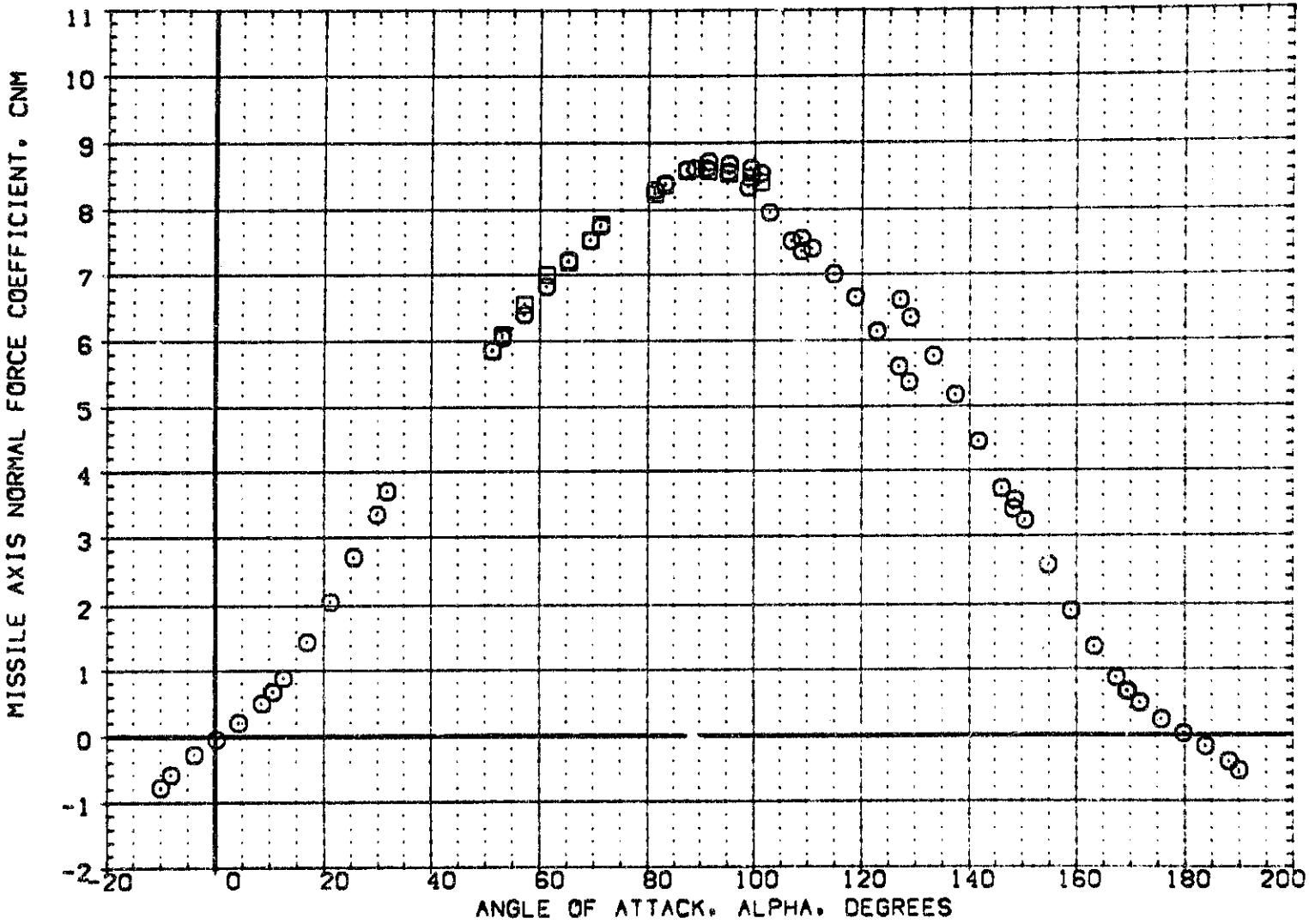
COMPARISON OF MOUNTING ARRANGEMENTS OF TANKS WITHOUT PROTUBERANCES

(A)MACH = 4.96

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI
(A99A01)	○	MSFC 583 (TAIF) EXTERNAL TANK T1, TAIL MOUNTED	.000
(A99A02)	□	MSFC 583 (TAIF) EXTERNAL TANK T1, NOSE MOUNTED	.000
(A99K02)	□	MSFC 583 (TAIF) EXTERNAL TANK T2, TAIL MOUNTED	.000
(A99K05)	□	DATA NOT AVAILABLE	.000

REFERENCE INFORMATION

SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	



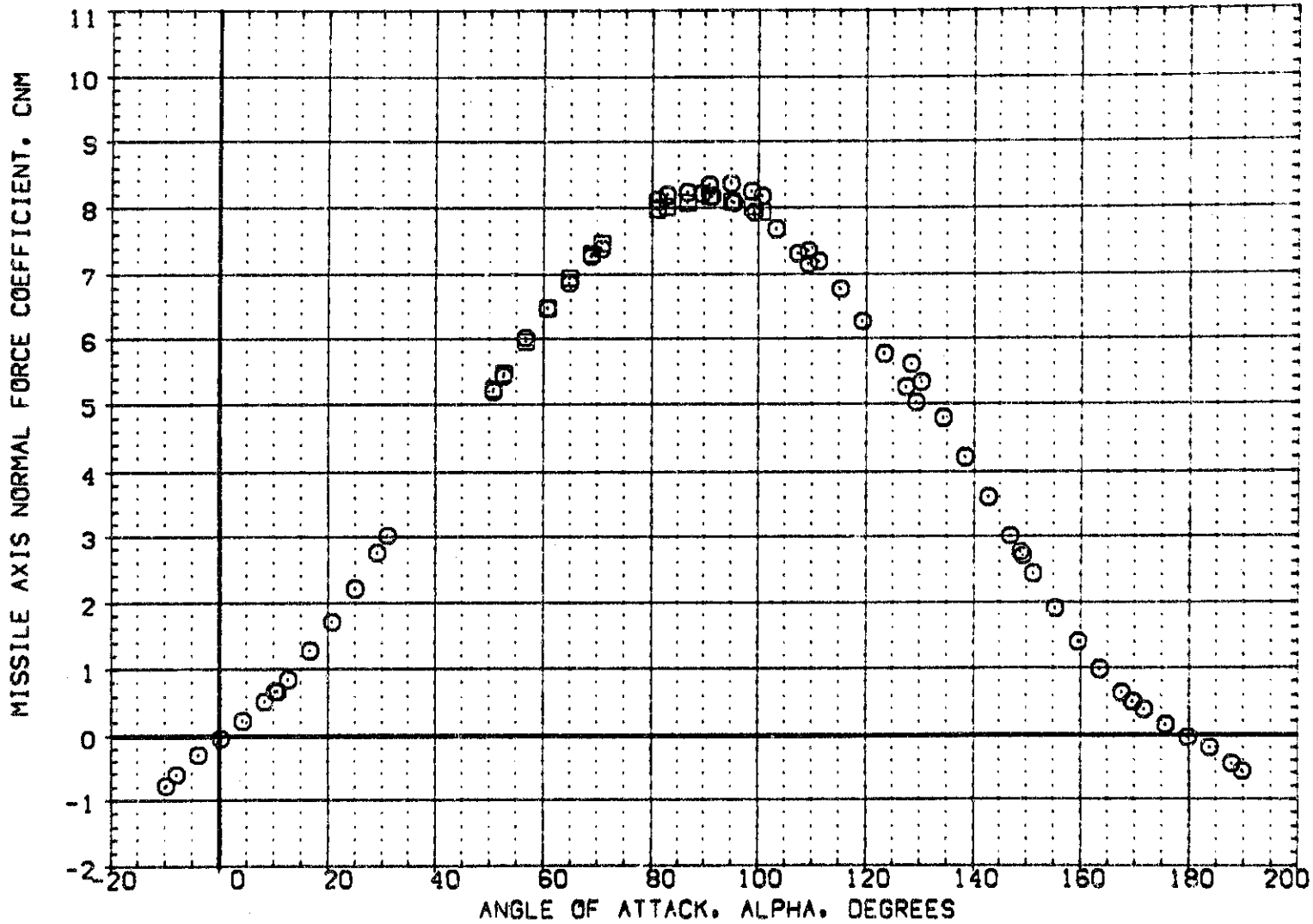
EFFECT OF PROTUBERANCES

(A)MACH = 1.96

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI
(A99A01)	○	MSFC 583 (TAIF) EXTERNAL TANK T1, TAIL MOUNTED	.000
(A99A02)	□	MSFC 583 (TAIF) EXTERNAL TANK T1, NOSE MOUNTED	.000
(A99K02)	□	MSFC 583 (TAIF) EXTERNAL TANK T2, TAIL MOUNTED	.000
(A99K05)	□	DATA NOT AVAILABLE	.000

REFERENCE INFORMATION

SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	



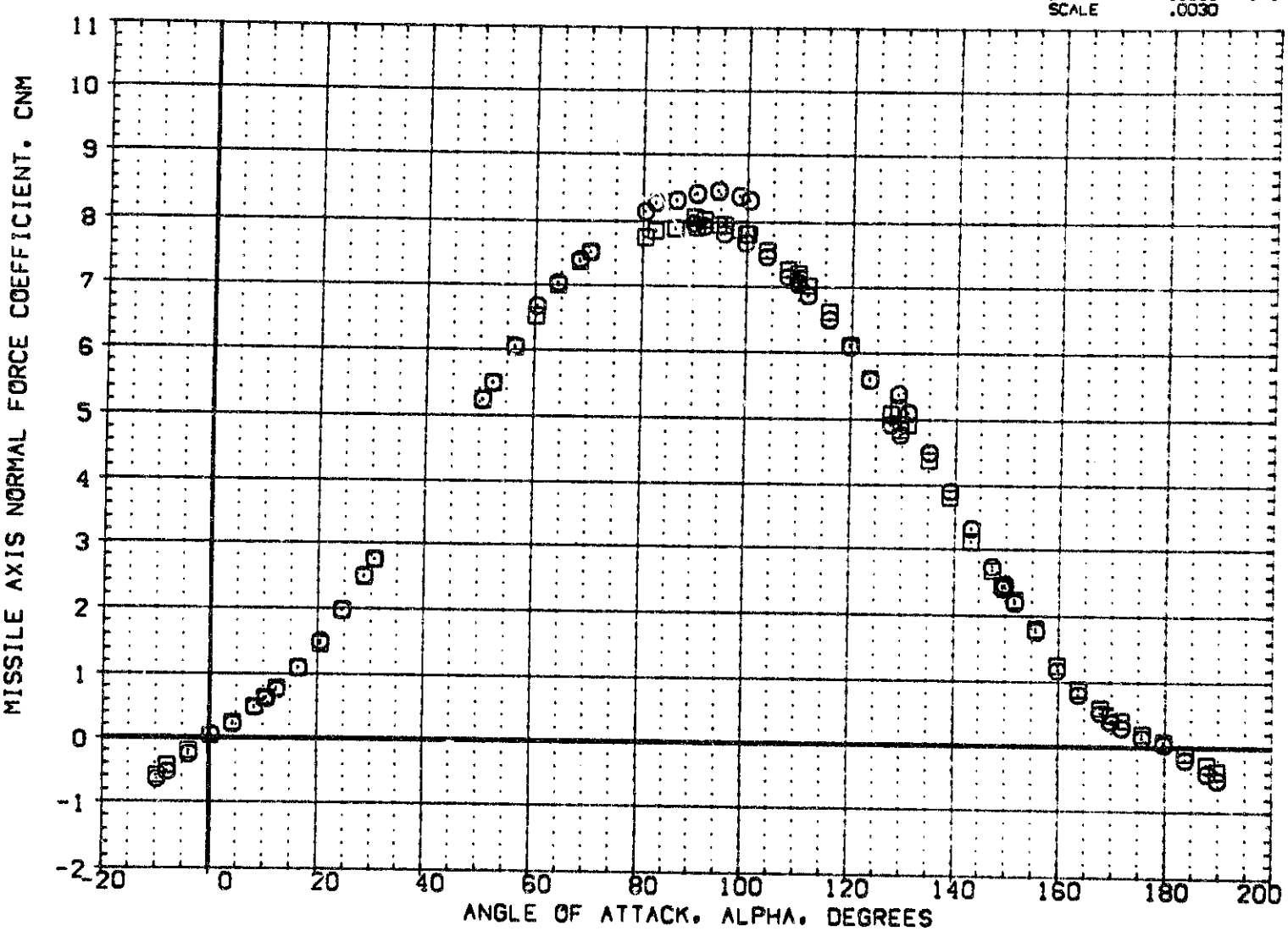
EFFECT OF PROTUBERANCES

(B)MACH = 3.48

DATA SET SYMBOL		CONFIGURATION DESCRIPTION	PHI
(A99A01)	○	MSFC 583 (TAIF) EXTERNAL TANK T1. TAIL MOUNTED	.000
(A99A02)	□	MSFC 583 (TAIF) EXTERNAL TANK T1. NOSE MOUNTED	.000
(A99K02)	◇	MSFC 583 (TAIF) EXTERNAL TANK T2. TAIL MOUNTED	.000
(A99K05)	△	MSFC 583 (TAIF) EXTERNAL TANK T2. TAIL/NOSE MTD	.000

REFERENCE INFORMATION

SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2580	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	

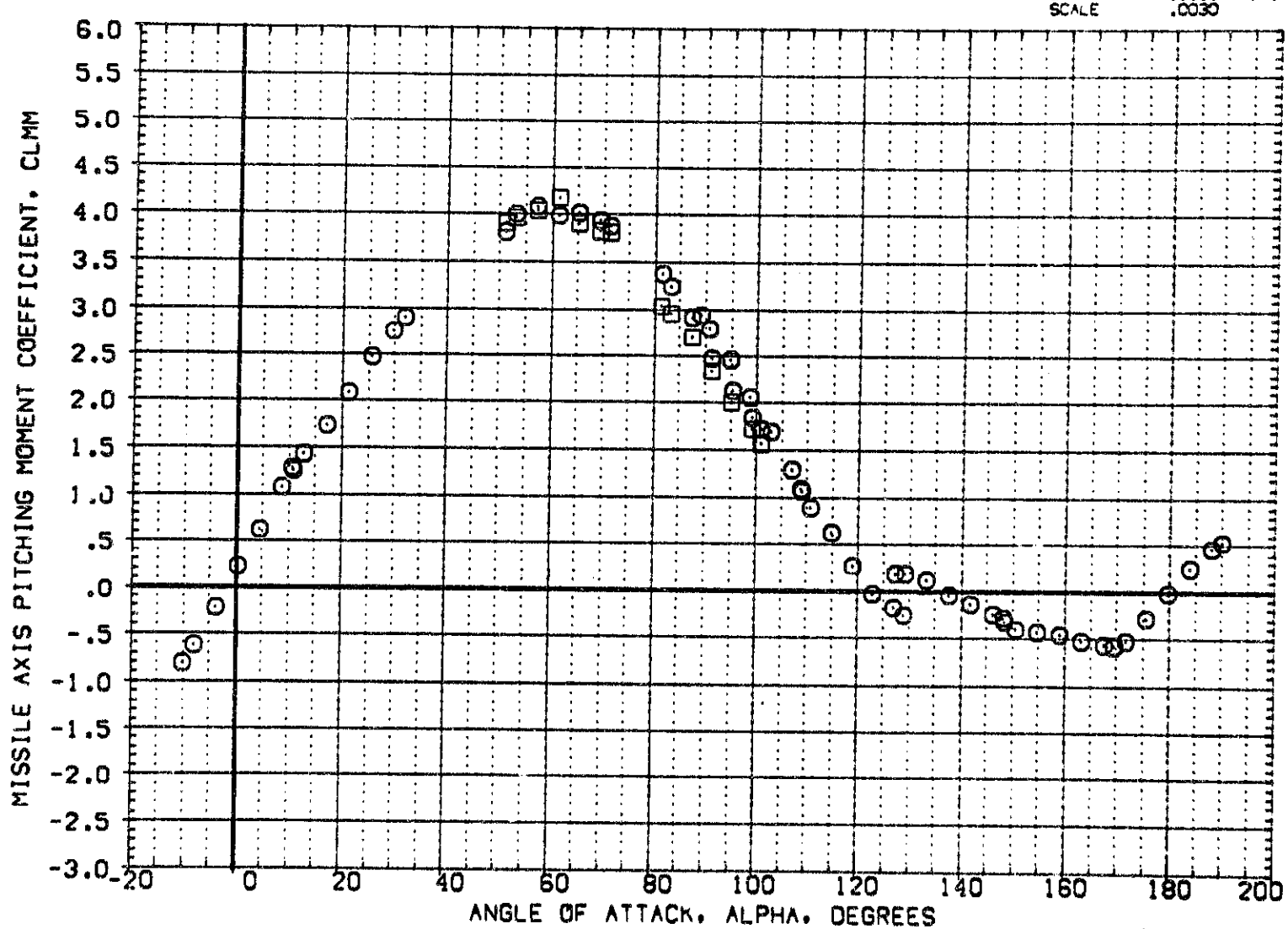


EFFECT OF PROTUBERANCES

(C)MACH = 4.96

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI
(A99A01)	○	MSFC 583 (TAIF) EXTERNAL TANK T1, TAIL MOUNTED	.000
(A99A02)	□	MSFC 583 (TAIF) EXTERNAL TANK T1, NOSE MOUNTED	.000
(A99K02)	⊡	MSFC 583 (TAIF) EXTERNAL TANK T2, TAIL MOUNTED	.000
(A99K05)	⊡	DATA NOT AVAILABLE	.000

REFERENCE INFORMATION		
SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	

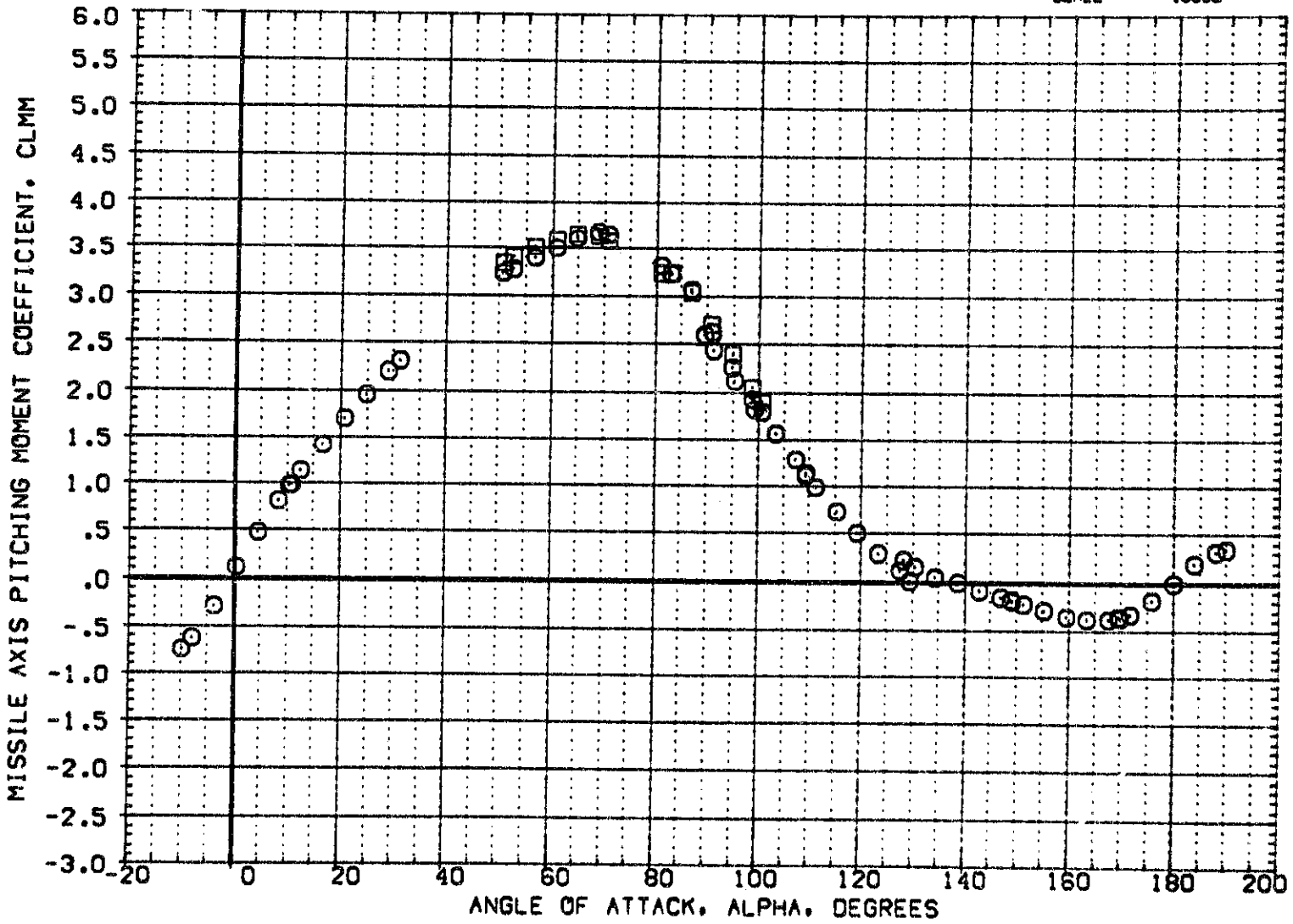


EFFECT OF PROTUBERANCES

(A)MACH = 1.96

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI
(A99A01)	○	MSFC 583 (TAIF) EXTERNAL TANK T1, TAIL MOUNTED	.000
(A99A02)	○	MSFC 583 (TAIF) EXTERNAL TANK T1, NOSE MOUNTED	.000
(A99K02)	□	MSFC 583 (TAIF) EXTERNAL TANK T2, TAIL MOUNTED	.000
(A99K05)	□	DATA NOT AVAILABLE	.000

REFERENCE INFORMATION		
SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	



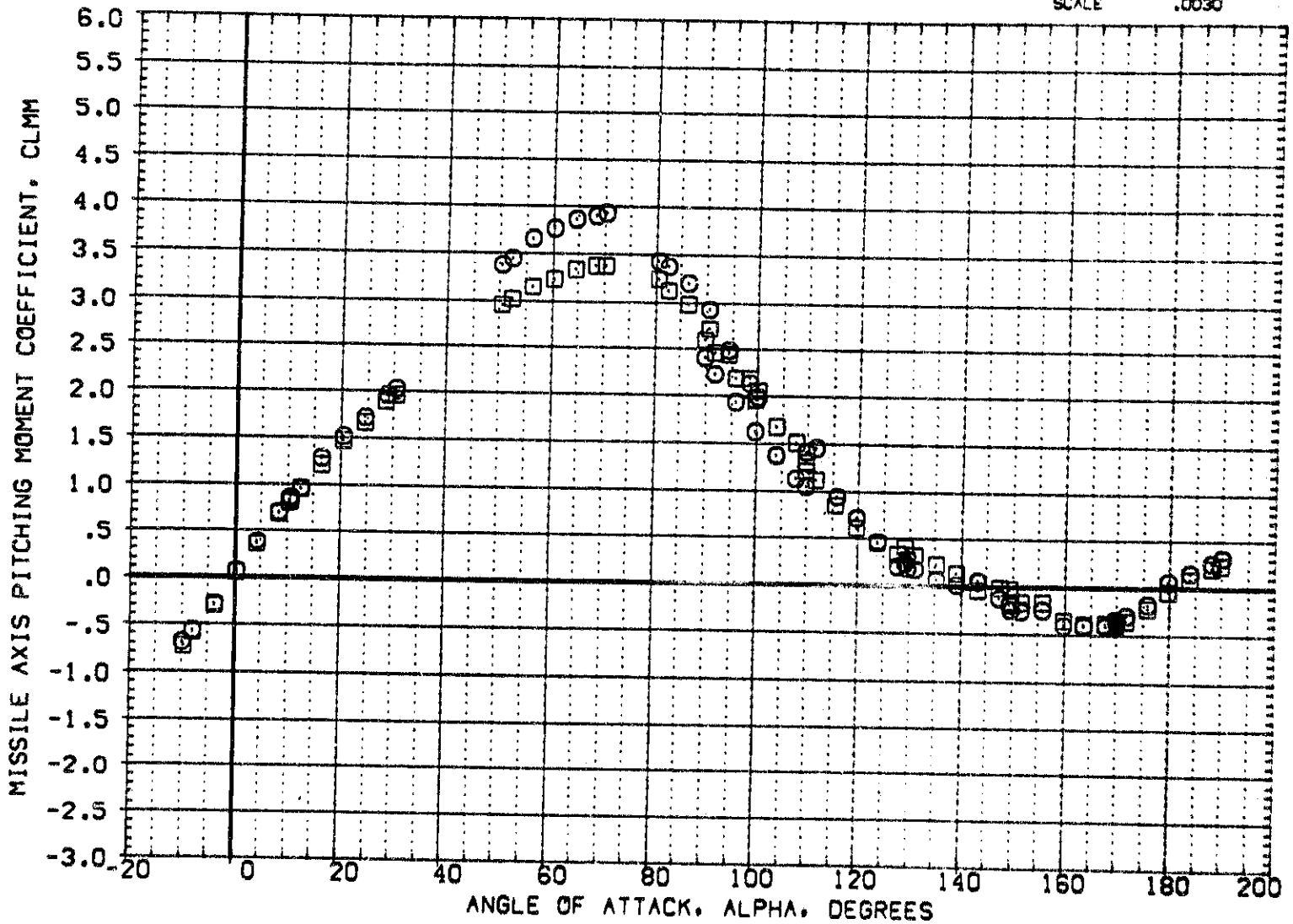
EFFECT OF PROTUBERANCES

(B)MACH = 3.48

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI
(A99A01)	○	MSFC 583 (TAIF) EXTERNAL TANK T1, TAIL MOUNTED	.000
(A99A02)	□	MSFC 583 (TAIF) EXTERNAL TANK T1, NOSE MOUNTED	.000
(A99K02)	◇	MSFC 583 (TAIF) EXTERNAL TANK T2, TAIL MOUNTED	.000
(A99K05)	⬡	MSFC 583 (TAIF) EXTERNAL TANK T2, TAIL/NOSE MTD	.000

REFERENCE INFORMATION

SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	



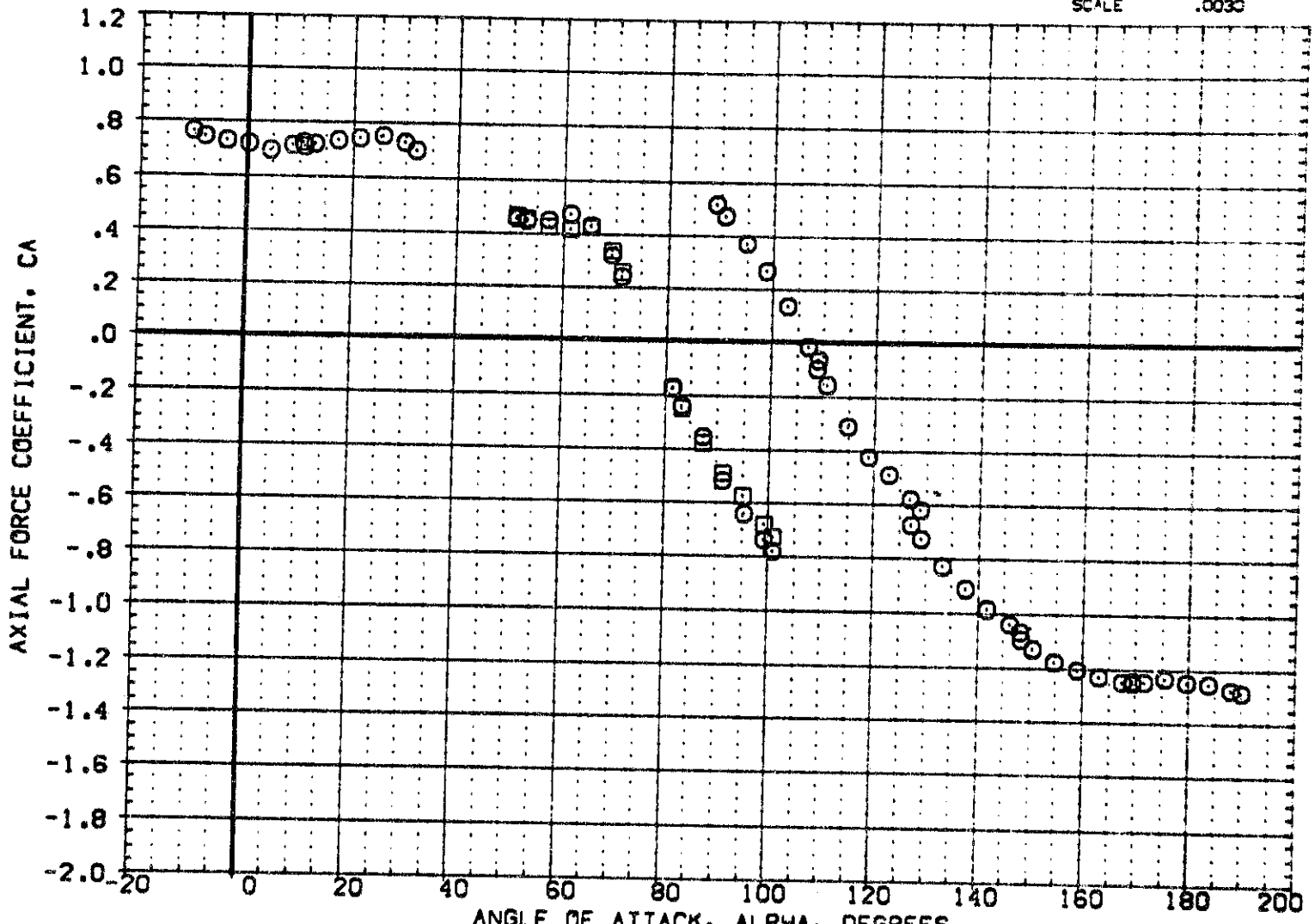
EFFECT OF PROTUBERANCES

(C)MACH = 4.96

DATA SET SYMBOL		CONFIGURATION DESCRIPTION	PHI
(A99A01)	○	MSFC 583 (TAIF) EXTERNAL TANK T1, TAIL MOUNTED	.000
(A99A02)	□	MSFC 583 (TAIF) EXTERNAL TANK T1, NOSE MOUNTED	.000
(A99K02)	□	MSFC 583 (TAIF) EXTERNAL TANK T2, TAIL MOUNTED	.000
(A99K05)		DATA NOT AVAILABLE	.000

REFERENCE INFORMATION

SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	



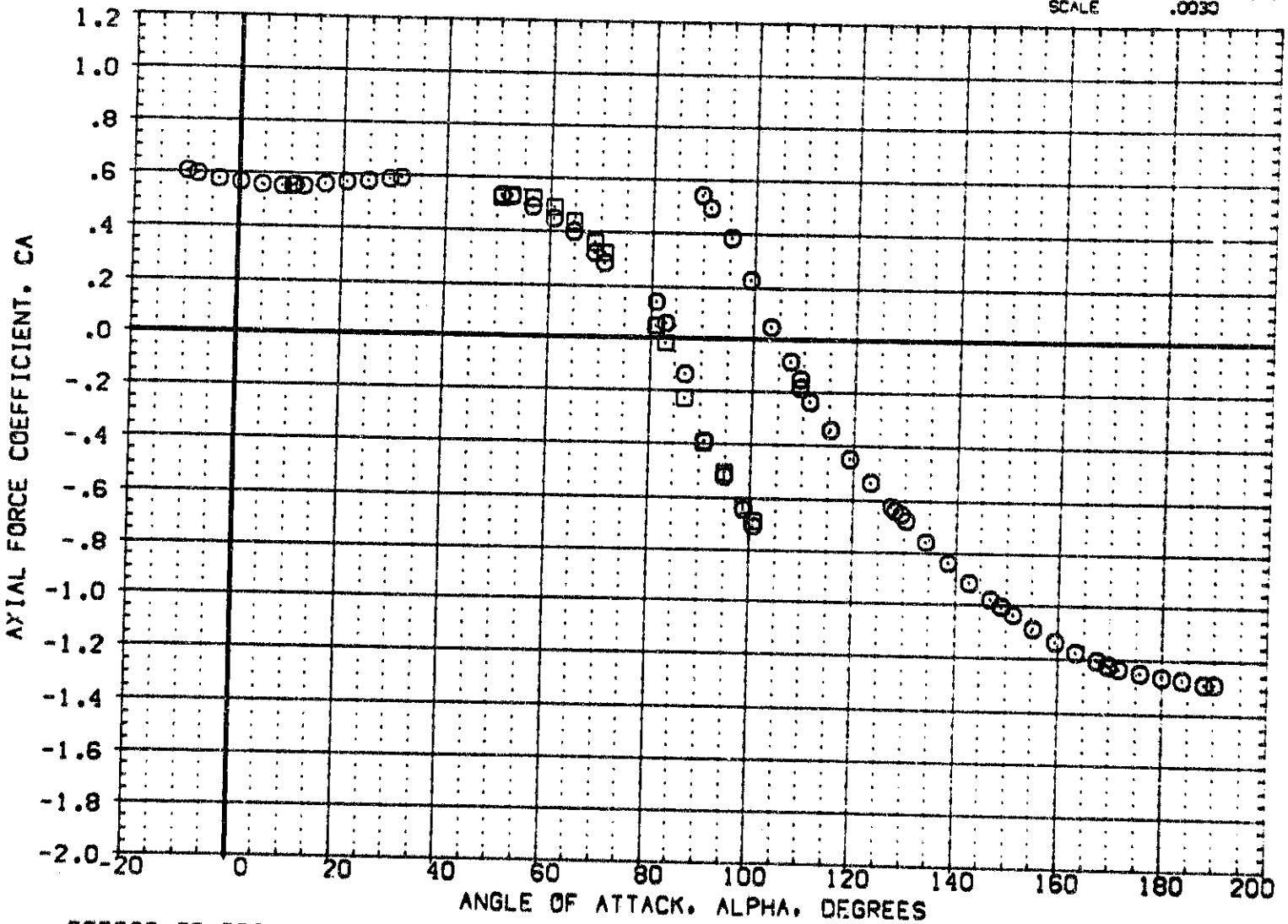
EFFECT OF PROTUBERANCES

(A)MACH = 1.96

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI
(A99A01)	○	MSFC 583 (TAIF) EXTERNAL TANK T1. TAIL MOUNTED	.000
(A99A02)	□	MSFC 583 (TAIF) EXTERNAL TANK T1. NOSE MOUNTED	.000
(A99K02)	▽	MSFC 583 (TAIF) EXTERNAL TANK T2. TAIL MOUNTED	.000
(A99K05)	□	DATA NOT AVAILABLE	.000

REFERENCE INFORMATION

SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	



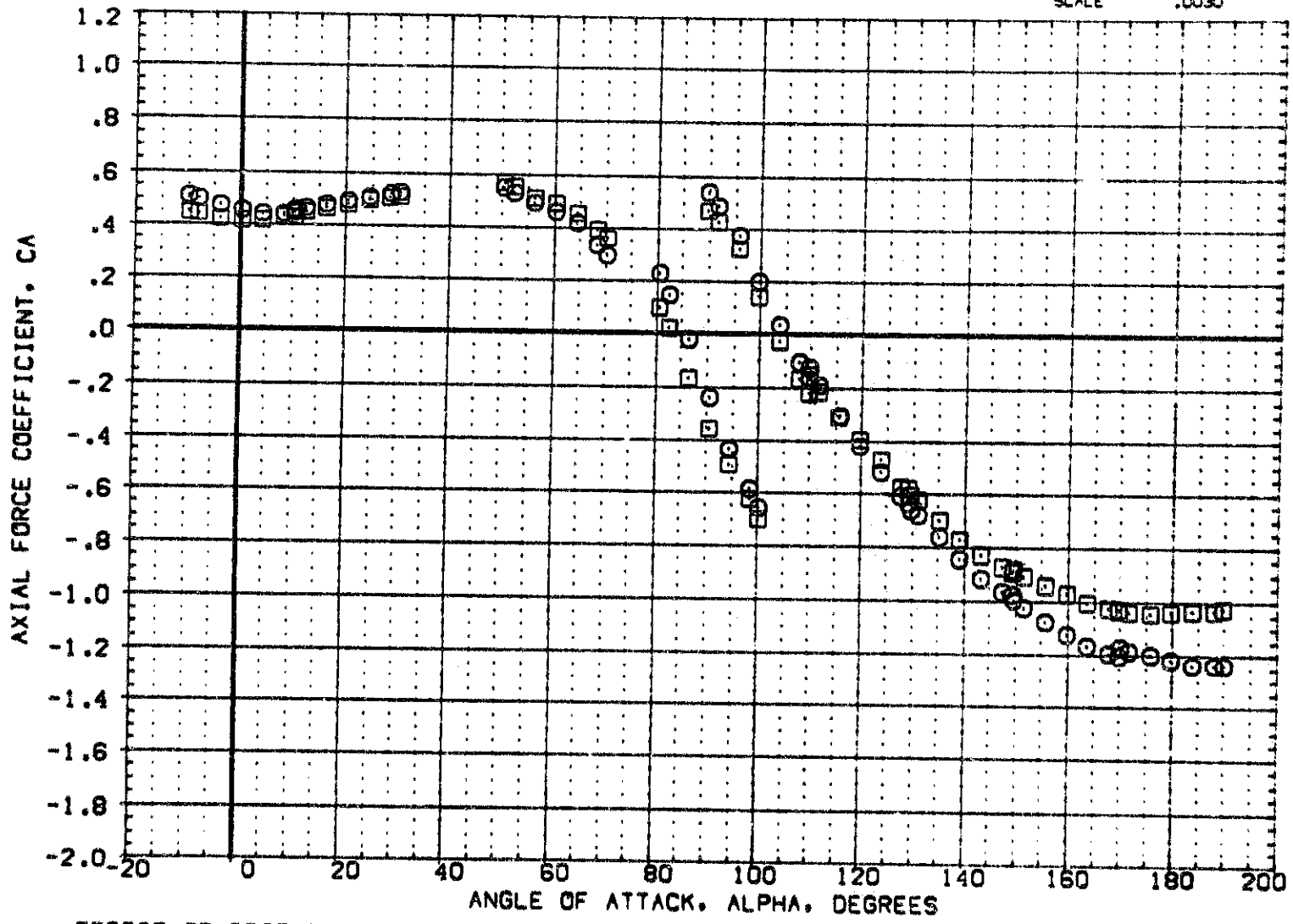
EFFECT OF PROTUBERANCES

(B)MACH = 3.48

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI
(A99A01)	○	MSFC 583 (TAIF) EXTERNAL TANK T1, TAIL MOUNTED	.000
(A99A02)	⊡	MSFC 583 (TAIF) EXTERNAL TANK T1, NOSE MOUNTED	.000
(A99K02)	□	MSFC 583 (TAIF) EXTERNAL TANK T2, TAIL MOUNTED	.000
(A99K05)	□	MSFC 583 (TAIF) EXTERNAL TANK T2, TAIL/NOSE MTD	.000

REFERENCE INFORMATION

SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	



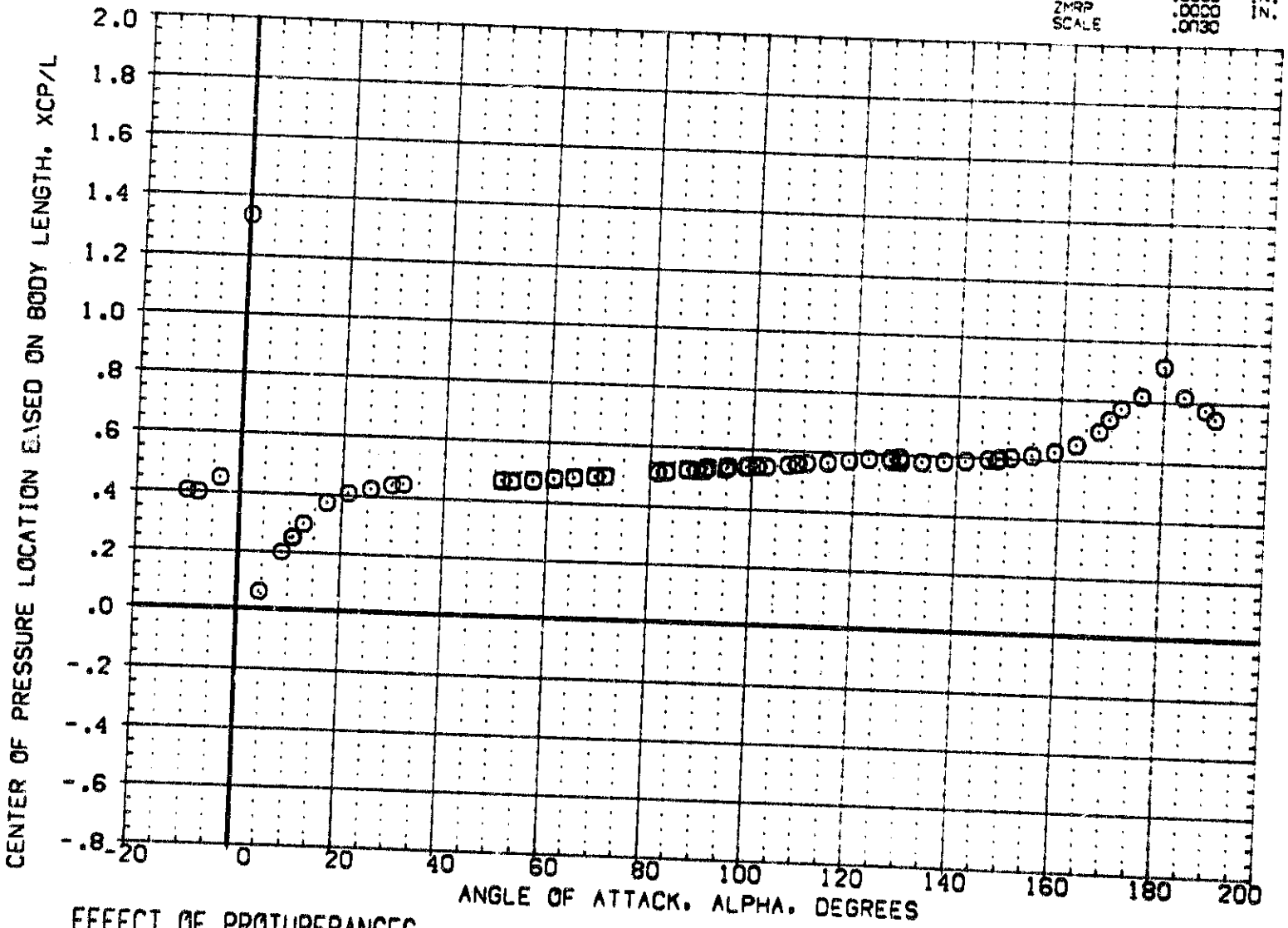
EFFECT OF PROTUBERANCES

(C)MACH = 4.96

DATA SET SYMBOL		CONFIGURATION DESCRIPTION	PHI
(A99A01)	○	MSFC 583 (TAIF) EXTERNAL TANK T1, TAIL MOUNTED	.000
(A99A02)	□	MSFC 583 (TAIF) EXTERNAL TANK T1, NOSE MOUNTED	.000
(A99K02)	○	MSFC 583 (TAIF) EXTERNAL TANK T2, TAIL MOUNTED	.000
(A99K05)	□	DATA NOT AVAILABLE	.000

REFERENCE INFORMATION

SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0130	



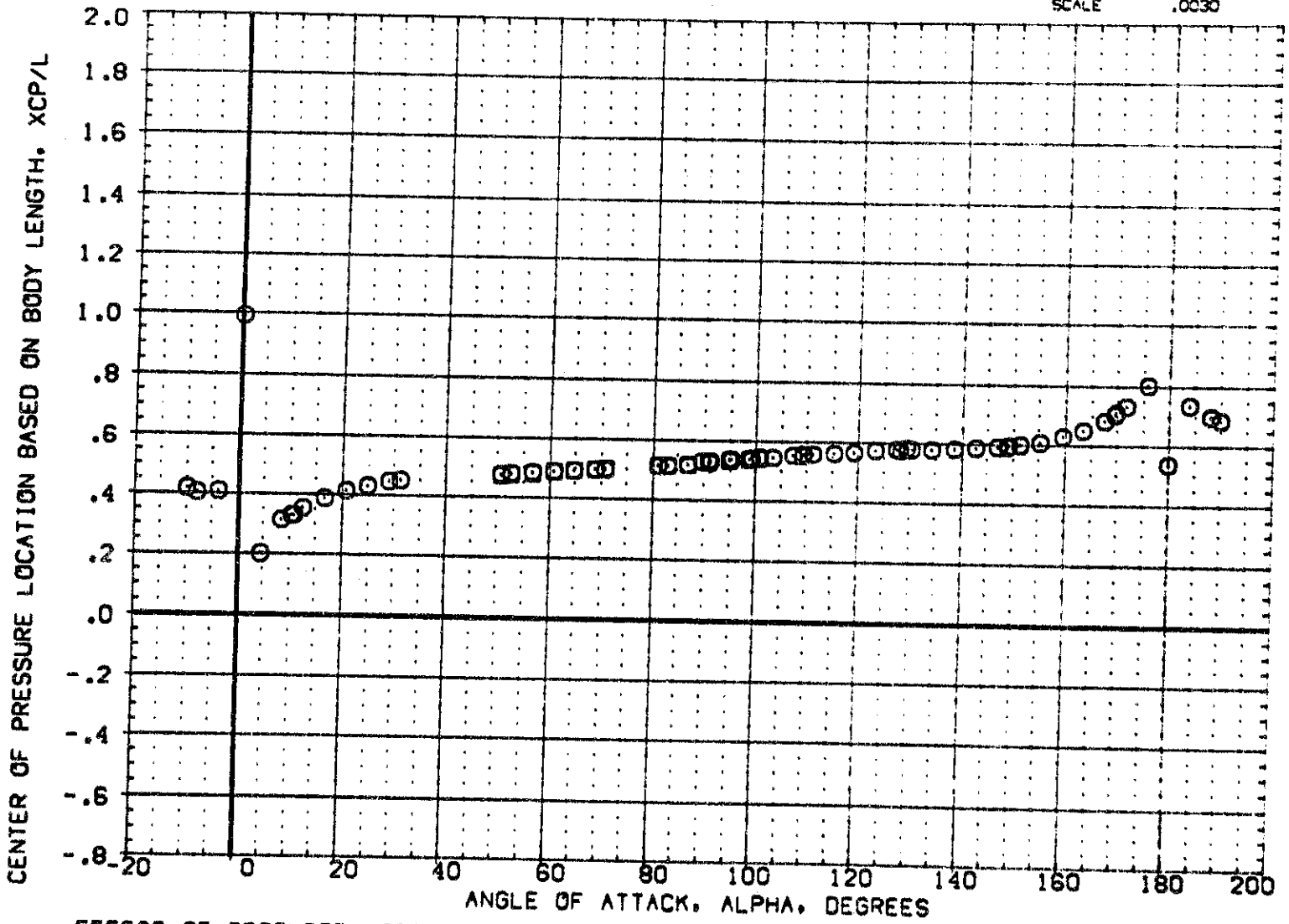
EFFECT OF PROTUBERANCES

(A)MACH = 1.96

DATA SET SYMBOL		CONFIGURATION DESCRIPTION	PHI
(A99A01)	○	MSFC 583 (TAIF) EXTERNAL TANK T1, TAIL MOUNTED	.000
(A99A02)	□	MSFC 583 (TAIF) EXTERNAL TANK T1, NOSE MOUNTED	.000
(A99K02)	⊟	MSFC 583 (TAIF) EXTERNAL TANK T2, TAIL MOUNTED	.000
(A99K05)		DATA NOT AVAILABLE	.000

REFERENCE INFORMATION

SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	



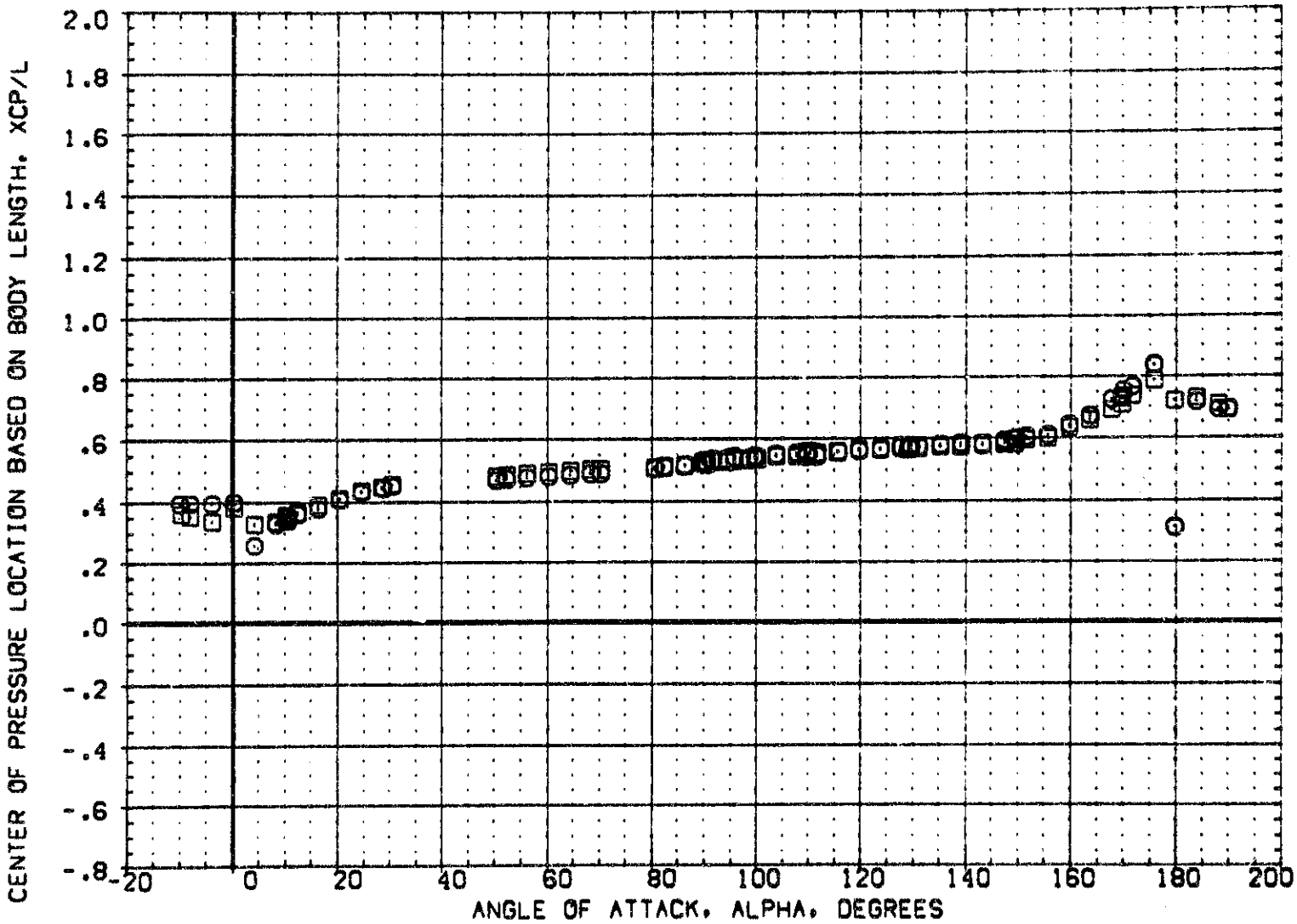
EFFECT OF PROTUBERANCES

(B)MACH = 3.48

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	PHI
(A99A01)	○	MSFC 503 (TAIF) EXTERNAL TANK T1, TAIL MOUNTED	.000
(A99A02)	○	MSFC 503 (TAIF) EXTERNAL TANK T1, NOSE MOUNTED	.000
(A99K02)	□	MSFC 503 (TAIF) EXTERNAL TANK T2, TAIL MOUNTED	.000
(A99K05)	□	MSFC 503 (TAIF) EXTERNAL TANK T2, TAIL/NOSE MTD	.000

REFERENCE INFORMATION

SREF	.7420	SQ. IN
LREF	.9720	IN.
BREF	.9720	IN.
XMRP	3.2590	IN.
YMRP	.0000	IN.
ZMRP	.0000	IN.
SCALE	.0030	



EFFECT OF PROTUBERANCES

(C)MACH = 4.96

APPENDIX

TABULATED SOURCE DATA

Plotted data listings are available on request from Data Management Services.

TABULATED SOURCE DATA, MSFC TWT 563

MSFC 563(TAIF) 324 IN. DIA. ET(418 MOD) W/GRIT

(R99001) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = .000

RUN NO. 133/ 0 RN/L = 6.95 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
1.958	-10.070	-.77740	-.81090	-.00260	-.01480	.00300	.76010	.10140	.40130	.00000	.63860
1.958	-8.080	-.59100	-.62690	-.00160	-.01350	.00130	.74240	.09650	.39820	.00000	.64590
1.958	-3.920	-.28580	-.22140	-.01040	-.01540	-.00390	.72960	.08580	.44780	.00000	.64370
1.958	.200	-.05010	.21640	-.01130	-.02290	-.00140	.72030	.07530	1.33190	.00000	.64490
1.958	4.370	.20880	.62570	-.01680	-.01820	.00060	.69610	.07850	.06210	.00000	.61760
1.958	8.500	.49120	1.08690	-.01910	-.02710	.00110	.71470	.08710	.19810	.00000	.62760
1.958	10.490	.66750	1.28620	-.02160	-.02710	.00460	.72200	.09690	.24780	.00000	.62510
	.210	-.03590	.20650	-.01640	-.01850	-.00060	.68560	.08000	1.56020	.00000	.60560
	GRADIENT	.05967	.10218	-.00077	-.00033	.00054	-.00404	-.00088	-.04705	.00000	-.00316

RUN NO. 1/ 0 RN/L = 6.38 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
3.479	-9.940	-.78360	-.74680	-.00150	.00600	-.00160	.60350	.04290	.41690	.00000	.56060
3.479	-8.010	-.60700	-.62260	.00450	.00570	.00070	.59560	.04210	.40430	.00000	.55350
3.479	-3.890	-.29420	-.29350	.00600	-.00010	-.01030	.57470	.04140	.40910	.00000	.53330
3.479	.190	-.04690	.11070	-.00810	-.00470	.00000	.56460	.04000	.99230	.00000	.52460
3.479	4.310	.21790	.48110	-.00960	-.00960	-.00320	.55500	.04060	.19890	.00000	.51440
3.479	8.390	.52490	.81830	-.01320	-.01730	-.00400	.55200	.04250	.31170	.00000	.50940
3.479	10.330	.67220	.97960	-.01240	-.01610	-.00140	.55290	.04370	.32930	.00000	.50920
	.190	-.05320	.11170	.00200	.00150	.00000	.56290	.04020	.94690	.00000	.52270
	GRADIENT	.06245	.09446	-.00190	-.00116	.00086	-.00240	-.00010	-.02591	.00000	-.00231

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

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	-9.810	-.64840	-.69410	.01420	.02320	-.00030	.50710	-.00090	.39650	.00000	.50810
4.960	-7.890	-.52490	-.56950	.01550	.04980	.00760	.49760	.01230	.39400	.00000	.48520
4.960	-3.830	-.26460	-.28350	.01610	.02010	-.00070	.47380	.01410	.39630	.00000	.45960
4.960	.200	.05160	.05460	-.01640	.01170	-.00030	.45790	.01080	.39860	.00000	.44700
4.960	4.250	.20360	.37990	.00650	.00280	-.00220	.44280	.01250	.25870	.00000	.43020
4.960	8.270	.47880	.70180	.00810	.01180	-.00170	.44320	.01230	.32790	.00000	.43080
4.960	10.190	.61620	.83730	.00320	.01420	.00430	.44670	.01410	.34640	.00000	.43260
	.190	-.03000	.06130	.00000	.00780	-.00130	.45590	.01520	.93670	.00000	.44070
	GRADIENT	.05795	.08210	-.00118	-.00214	-.00019	-.00384	-.00020	-.01704	.00000	-.00364

MSFC 583(TA1F) 324 IN. DIA. ET(418 MOD) W/GRIT (R99002) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = .000

RUN NO. 134/ 0 RN/L = 6.95 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
1.963	10.770	.66580	1.26440	.01280	-.00090	.00040	.70960	.09840	.25260	.00000	.61110
1.963	12.740	.87950	1.43640	.01750	.00120	.00550	.72040	.10630	.29840	.00000	.61410
1.963	16.990	1.45190	1.72840	.03570	-.02620	.00950	.73180	.12060	.37570	.00000	.61110
1.963	21.250	2.05110	2.08410	.05220	-.05470	.00810	.74500	.12890	.40600	.00000	.61610
1.963	25.530	2.70670	2.46660	.02090	-.02700	.01320	.75410	.13240	.42410	.00000	.62170
1.963	29.760	3.35200	2.75150	.02640	-.03630	.00750	.72700	.13330	.43990	.00000	.59360
1.963	31.800	3.69940	2.89850	.00150	-.03910	.00650	.69780	.13160	.44640	.00000	.56610
1.963	21.220	2.03660	2.08070	.05120	-.04140	.01310	.73410	.12700	.40520	.00000	.60710
	GRADIENT	.14486	.07830	-.00027	-.00180	.00024	.00006	.00156	.00856	.00000	-.00150

RUN NO. 2/ 0 RN/L = 6.34 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
3.479	10.630	.67250	.99040	.00600	.01700	-.00190	.55560	.04090	.32660	.00000	.51460
3.479	12.560	.85580	1.13700	.00940	.00880	.00490	.55270	.04110	.35170	.00000	.51160
3.479	16.700	1.26480	1.41330	.01430	.01010	-.00030	.55930	.04280	.38840	.00000	.51650
3.479	20.820	1.70530	1.69570	.01160	-.00120	.00380	.57030	.04220	.40970	.00000	.52800
3.479	24.970	2.21190	1.95460	-.00280	.00430	.00230	.57510	.04100	.42900	.00000	.53400
3.479	29.090	2.74830	2.19480	-.00490	-.01060	.00120	.58640	.04160	.44370	.00000	.54470
3.479	31.060	3.02720	2.30520	-.00600	-.02390	-.00230	.58960	.04220	.45020	.00000	.54730
3.479	20.810	1.68710	1.69400	.01160	.00450	-.00080	.56730	.04380	.40800	.00000	.52350
	GRADIENT	.11492	.06432	-.00082	-.00159	-.00006	.00182	.00003	.00577	.00000	.00179

RUN NO. 3/ 0 RN/L = 5.01 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	BL	CA	CAB	XCP/L	CPB1	CPC
4.960	10.490	.63040	.87270	.00970	.04530	.01240	.46280	.01370	.34200	.00000	.44910
4.960	12.390	.75340	.95990	.00980	.02040	-.00130	.46520	.01110	.36110	.00000	.45400
4.960	16.450	1.09650	1.27900	.00590	.01790	-.01900	.47840	.00800	.37990	.00000	.47040
4.960	20.500	1.50630	1.51700	-.00770	.04880	.05960	.49660	.00420	.40750	.00000	.49230
4.960	24.580	1.96940	1.71460	.01170	.03350	.01690	.50740	.00570	.43120	.00000	.50160
4.960	28.620	2.50110	1.96100	.01450	.01590	-.00200	.52160	.00950	.44630	.00000	.51210
4.960	30.550	2.76010	2.02790	.01620	.01610	.00370	.52650	.01110	.45480	.00000	.51850
4.960	20.500	1.49320	1.50720	-.01410	.02490	-.02340	.49380	.01230	.40710	.00000	.48150
	GRADIENT	.10683	.05870	.00035	-.00073	.00014	.00332	-.00013	.00555	.00000	.00345

MSFC 583(TA1F) 324 IN. DIA. ET(41B MOD) W/GRIT (R99003) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = .000

RUN NO. 97/ 0 RN/L = 6.74 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
1.955	51.160	5.86730	3.80980	.08350	.04630	-.00160	.45770	.00000	.46970	.00000	.45770
1.955	53.120	6.04510	3.99940	.08270	.04560	.00000	.44530	.00000	.46750	.00000	.44530
1.955	57.170	6.40990	4.07910	.09810	.02230	.00100	.45030	.00000	.47190	.00000	.45030
1.955	61.240	6.82990	3.98330	.11310	.04770	.00470	.47510	.00000	.46110	.00000	.47510
1.955	65.320	7.22660	4.01510	.13040	.04110	.00210	.43080	.00000	.48590	.00000	.43080
1.955	69.310	7.52940	3.93540	.13210	.01730	.00250	.31910	.00000	.49170	.00000	.31910
1.955	71.230	7.75430	3.87800	.13340	.00310	.00880	.23450	.00000	.49560	.00000	.23450
1.955	61.200	6.73790	3.99180	.10780	.04020	.00250	.46860	.00000	.47950	.00000	.46860
	GRADIENT	.09380	-.00024	.00283	-.00160	.00035	-.00013	.00000	.00140	.00000	-.00913

RUN NO. 95/ 0 RN/L = 6.25 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
3.479	50.730	5.20520	3.23340	.05180	.02350	-.00240	.53350	.00000	.47450	.00000	.53350
3.479	52.650	5.44200	3.27290	.05070	.01820	-.01310	.52670	.00000	.47800	.00000	.52670
3.479	56.710	6.01230	3.39540	.06230	.02760	-.00970	.48990	.00000	.48440	.00000	.48990
3.479	60.770	6.47950	3.50290	.07290	.02270	-.01270	.44850	.00000	.48850	.00000	.44850
3.479	64.830	6.87690	3.61750	.08830	.02840	-.01770	.40010	.00000	.49110	.00000	.40010
3.479	68.830	7.27040	3.67750	.11070	.00610	-.01730	.32420	.00000	.49460	.00000	.32420
3.479	70.740	7.39410	3.65360	.10660	.00970	-.01650	.28350	.00000	.49660	.00000	.28350
3.479	60.760	6.51570	3.50480	.09100	.02450	-.04440	.45020	.00000	.48900	.00000	.45020
	GRADIENT	.11045	.02302	.00313	-.00064	-.00057	-.01237	.00000	.00105	.00000	-.01237

RUN NO. 96/ 0 RN/L = 4.87 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	50.390	5.24110	3.38850	.07590	-.01150	-.02410	.55070	.00000	.47020	.00000	.55070
4.960	52.300	5.48570	3.45650	.07740	-.01750	-.05940	.53250	.00000	.47300	.00000	.53250
4.960	56.320	6.05640	3.66330	.09230	-.01930	-.05400	.49560	.00000	.47740	.00000	.49560
4.960	60.370	6.66260	3.77990	.09120	-.00510	-.05800	.46090	.00000	.48420	.00000	.46090
4.960	64.410	7.04630	3.86690	.11590	-.01670	-.05960	.41610	.00000	.48710	.00000	.41610
4.960	68.360	7.41390	3.90140	.10790	.01770	-.07320	.33240	.00000	.49100	.00000	.33240
4.960	70.260	7.52180	3.93810	.11900	-.02320	-.07700	.29510	.00000	.49150	.00000	.29510
4.960	60.350	6.59970	3.81260	.08980	-.03670	-.06660	.46010	.00000	.48210	.00000	.46010
	GRADIENT	.11728	.02743	.00214	.00049	-.00183	-.01243	.00000	.00110	.00000	-.01243

MSFC 583(TA1F) 324 IN. DIA. ET(418 MOD) W/GRIT (R99004) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = .000

RUN NO. 98/ 0 RN/L = 6.79 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
1.953	81.390	8.31060	3.38450	.11430	-.01740	.00010	-.17260	.00000	.51170	.00000	-.17260
1.953	83.290	8.40920	3.24590	.12010	-.02910	-.00400	-.23840	.00000	.51540	.00000	-.23840
1.953	87.300	8.61040	2.90710	.12350	-.03400	-.00170	-.35000	.00000	.52380	.00000	-.35000
1.953	91.270	8.72900	2.46370	.12060	-.00710	.00200	-.52060	.00000	.53340	.00000	-.52060
1.953	95.250	8.69970	2.12110	.13420	-.01610	.00330	-.64200	.00000	.54010	.00000	-.64200
1.953	99.160	8.63350	1.84200	.13270	.00550	.00590	-.73890	.00000	.54540	.00000	-.73890
1.953	101.050	8.55370	1.71850	.12460	.02410	.00990	-.78180	.00000	.54760	.00000	-.78180
1.953	91.230	8.67970	2.43020	.12220	-.00750	.00200	-.53960	.00000	.53380	.00000	-.53960
	GRADIENT	.01294	-.08732	.00070	.00214	.00055	-.03169	.00000	.00187	.00000	-.03169

RUN NO. 94/ 0 RN/L = 6.25 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
3.479	80.970	8.10740	3.31510	.08380	-.00490	-.01520	.13870	.00000	.51140	.00000	.13870
3.479	82.870	8.18830	3.23990	.08220	.00640	-.01370	.05880	.00000	.51370	.00000	.05880
3.479	86.880	8.22730	3.06110	.08810	.02120	.00130	-.13860	.00000	.51780	.00000	-.13860
3.479	90.860	8.34720	2.62260	.10610	-.03200	-.00220	-.38840	.00000	.52790	.00000	-.38840
3.479	94.860	8.36670	2.25510	.09760	.01050	.00280	-.51730	.00000	.53560	.00000	-.51730
3.479	98.790	8.25030	1.92980	.09750	.01410	-.00900	-.64310	.00000	.54180	.00000	-.64310
3.479	100.670	8.16920	1.78950	.09690	.00460	-.00940	-.70730	.00000	.54440	.00000	-.70730
3.479	90.840	8.32270	2.66270	.13570	-.05580	-.01590	-.40100	.00000	.52690	.00000	-.40100
	GRADIENT	.00473	-.08129	.00082	.00032	.00029	-.04377	.00000	.00176	.00000	-.04377

RUN NO. 93/ 0 RN/L = 4.92 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	80.540	8.15180	3.44090	.09010	-.02760	-.00500	.22590	.00000	.50910	.00000	.22590
4.960	82.440	8.29660	3.38610	.09610	-.06140	-.04240	.14730	.00000	.51160	.00000	.14730
4.960	86.430	8.33300	3.21100	.09090	-.06170	-.04130	-.02320	.00000	.51550	.00000	-.02320
4.960	90.430	8.41910	2.93070	.16280	-.17760	-.06450	-.23950	.00000	.52200	.00000	-.23950
4.960	94.440	8.46950	2.47890	.07550	-.08400	-.00490	-.43400	.00000	.53160	.00000	-.43400
4.960	98.400	8.39510	2.13720	.08640	-.10220	-.02910	-.58630	.00000	.53820	.00000	-.58630
4.960	100.300	8.32420	1.98030	.10390	-.06900	-.02650	-.65850	.00000	.54110	.00000	-.65850
4.960	90.430	8.40500	2.93360	.17400	-.18040	-.04190	-.24850	.00000	.52180	.00000	-.24850
	GRADIENT	.00856	-.07704	-.00001	-.00233	.00011	-.04578	.00000	.00167	.00000	-.04578

MSFC 583(TA1F) 324 IN. DIA. ET(41B MOD) W/GRIT (R99005) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = .000

RUN NO. 112/ 0 RN/L = 6.98 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
1.955	126.920	5.37390	-.25620	-.05380	.02150	.00560	-.61790	.00000	.59070	.00000	-.61790
1.955	127.010	5.80450	-.18140	-.05700	.02100	.00530	-.58100	.00000	.58810	.00000	-.58100
1.955	122.910	6.12450	-.03400	-.07380	.00600	.00760	-.49240	.00000	.58340	.00000	-.49240
1.955	118.840	6.65600	.25770	-.09400	-.00540	.00070	-.42480	.00000	.57570	.00000	-.42480
1.955	114.790	7.01010	.61960	-.09340	-.00030	-.00060	-.31010	.00000	.56710	.00000	-.31010
1.955	110.770	7.39570	.90050	-.10270	-.01200	-.00240	-.15670	.00000	.56130	.00000	-.15670
1.955	108.850	7.55250	1.06940	-.10380	-.01530	-.00450	-.06640	.00000	.55790	.00000	-.06640
1.955	118.890	6.45040	.26260	-.08320	-.00210	.00570	-.41310	.00000	.57540	.00000	-.41310
	GRADIENT	-.10925	-.06754	.00260	.00181	.00054	-.02653	.00000	.00167	.00000	-.02655

RUN NO. 61/ 0 RN/L = 8.26 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
3.479	129.320	5.02050	.01330	-.03100	.01070	.01690	-.65350	.00000	.58200	.00000	-.65350
3.479	127.400	5.26310	.11960	-.02290	.03170	.01480	-.62380	.00000	.57850	.00000	-.62380
3.479	123.350	5.77200	.28980	-.04140	.01490	.02850	-.53420	.00000	.57370	.00000	-.53420
3.479	119.290	6.27050	.50180	-.06980	-.01330	.01960	-.44710	.00000	.56850	.00000	-.44710
3.479	115.240	6.76710	.75800	-.07320	-.01300	.01880	-.34290	.00000	.56350	.00000	-.34290
3.479	111.230	7.20250	.98830	-.08110	-.02530	.01900	-.23710	.00000	.55860	.00000	-.23710
3.479	109.320	7.36580	1.10740	-.08250	-.02330	.05480	-.18290	.00000	.55630	.00000	-.18290
3.479	119.290	6.23340	.45520	-.10710	-.04890	.01980	-.44330	.00000	.56980	.00000	-.44330
	GRADIENT	-.11872	-.05439	.00307	.00252	-.00103	-.02367	.00000	.00126	.00000	-.02367

RUN NO. 62/ 0 RN/L = 5.00 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	129.850	4.77400	.18560	-.04700	.01300	.04140	-.66080	.00000	.57570	.00000	-.66080
4.960	127.760	4.92540	.20100	-.05910	.00370	.03590	-.61050	.00000	.57540	.00000	-.61050
4.960	123.710	5.58590	.46570	-.09230	-.00240	.03560	-.52040	.00000	.56800	.00000	-.52040
4.960	119.690	6.09950	.72070	-.10160	-.00310	.03480	-.41790	.00000	.56190	.00000	-.41790
4.960	115.660	6.50310	.94250	-.10670	.09580	.01960	-.30310	.00000	.55730	.00000	-.30310
4.960	111.670	6.87800	1.45950	-.12500	.00770	.02580	-.18920	.00000	.54560	.00000	-.18920
4.960	109.760	7.08230	1.42040	-.10330	.01300	-.03270	-.12420	.00000	.54760	.00000	-.12420
	119.700	6.01730	.79650	-.07850	.00790	.04550	-.41450	.00000	.55930	.00000	-.41450
	GRADIENT	-.11779	-.06761	.00319	-.00119	.00245	-.02669	.00000	.00156	.00000	-.02669

MSFC 583(TA1F) 324 IN. DIA. ET(418 MOD) W/GRIT (R99006) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = .000

RUN NO. 130/ 0 RN/L = 6.99 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
1.948	148.170	3.41360	-.28870	-.09850	-.06930	.01460	-1.06320	.00000	.59710	.00000	-1.06320
1.948	146.170	3.71480	-.25150	-.10750	-.06240	.00350	-1.03390	.00000	.59420	.00000	-1.03390
1.948	141.840	4.45450	-.13790	-.08630	-.02300	.01030	-.98290	.00000	.58780	.00000	-.98290
1.948	137.550	5.17680	-.04430	-.04230	.01560	.00680	-.91420	.00000	.58390	.00000	-.91420
1.948	133.320	5.76230	.11170	-.03060	.00660	.01080	-.83000	.00000	.57910	.00000	-.83000
1.948	129.090	6.34500	.18630	-.03030	-.01690	.00370	-.73140	.00000	.57730	.00000	-.73140
1.948	127.080	6.62490	.18360	-.01840	-.01610	.00350	-.67940	.00000	.57760	.00000	-.67940
	GRADIENT	-.15303	-.02418	-.00431	-.00266	.00028	-.01799	.00000	.00096	.00000	-.01799

RUN NO. 60/ 0 RN/L = 6.25 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
3.479	148.820	2.74720	-.17710	-.04210	-.00880	.01510	-1.00470	.00000	.59360	.00000	-1.00470
3.479	146.870	3.00890	-.16040	-.03620	.00250	.01400	-.97880	.00000	.59170	.00000	-.97880
3.479	142.690	3.59960	-.09010	-.03980	-.00420	.01420	-.91500	.00000	.58680	.00000	-.91500
3.479	138.530	4.20560	-.01040	-.03570	-.01630	.01480	-.84100	.00000	.58290	.00000	-.84100
3.479	134.360	4.78320	.04110	-.03440	-.00480	.00300	-.75890	.00000	.58100	.00000	-.75890
3.479	130.240	5.33600	.15150	-.03240	-.02200	.01700	-.67620	.00000	.57750	.00000	-.67620
3.479	128.270	5.61180	.22510	-.01910	-.01080	.01640	-.63690	.00000	.57550	.00000	-.63690
3.479	136.530	4.20810	-.03320	-.03090	-.00070	.01620	-.84290	.00000	.58380	.00000	-.84290
	GRADIENT	-.13983	-.01893	-.00076	.00059	-.00003	-.01808	.00000	.00085	.00000	-.01808

RUN NO. 59/ 0 RN/L = 4.97 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	149.280	2.41010	-.19540	-.03640	-.03850	.03630	-.97390	.00000	.59650	.00000	-.97390
4.960	147.360	2.73640	-.12510	-.03290	-.03480	.00680	-.96410	.00000	.59040	.00000	-.96410
4.960	143.280	3.30550	.04190	-.03120	-.02560	-.00010	-.91500	.00000	.58020	.00000	-.91500
4.960	139.200	3.90600	.00120	-.02270	-.04680	.13500	-.84580	.00000	.58240	.00000	-.84580
4.960	135.130	4.50290	.06160	-.02650	-.04840	.00660	-.76310	.00000	.58010	.00000	-.76310
4.960	131.080	5.10110	.16220	-.00750	-.04380	.02930	-.68220	.00000	.57690	.00000	-.68220
4.960	129.130	5.37270	.22960	.00160	-.02910	.02780	-.63680	.00000	.57500	.00000	-.63680
4.960	139.200	3.91840	.07460	.00000	-.04910	.03650	-.84360	.00000	.57910	.00000	-.84360
	GRADIENT	-.14631	-.01816	-.00166	.00019	-.00034	-.01705	.00000	.00089	.00000	-.01705

MSFC 583(TA1F) 324 IN. DIA. ET(41B MOD) W/GRIT (R99007) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 5.2580 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = .000

RUN NO. 131/ 0 RN/L = 6.98 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
1.953	169.390	.65300	-.58430	-.02110	.03120	-.00030	-1.24960	.00000	.73790	.00000	-1.24960
1.953	167.430	.86250	-.56810	-.01590	.04770	.00170	-1.24630	.00000	.69690	.00000	-1.24630
1.953	163.220	1.34790	-.52890	.01830	.07530	.01010	-1.22850	.00000	.65060	.00000	-1.22850
1.953	158.980	1.90220	-.47050	.01180	.05420	.01160	-1.20340	.00000	.62540	.00000	-1.20340
1.953	154.700	2.56960	-.44390	.04610	.06230	.01440	-1.17360	.00000	.61250	.00000	-1.17360
1.953	150.440	3.23550	-.40940	-.02220	-.01720	.01320	-1.12750	.00000	.60440	.00000	-1.12750
1.953	148.440	3.54670	-.32830	-.04570	-.05110	.00880	-1.09300	.00000	.59850	.00000	-1.09300
1.953	159.010	1.89730	-.45840	.01540	.05330	.00820	-1.18910	.00000	.62440	.00000	-1.18910
	GRADIENT	-.13920	-.01098	.00047	.00369	-.00053	-.00721	.00000	.00601	.00000	-.00721

RUN NO. 57/ 0 RN/L = 6.25 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
3.479	169.560	.50570	-.35560	-.01550	.00380	.00510	-1.21860	.00000	.70470	.00000	-1.21860
3.479	167.640	.63980	-.38010	-.01360	.00030	.00540	-1.20510	.00000	.68560	.00000	-1.20510
3.479	163.530	.98720	-.38750	.00180	.01450	.00160	-1.17440	.00000	.65060	.00000	-1.17440
3.479	159.420	1.40030	-.36290	.00680	.02310	.01370	-1.13460	.00000	.62750	.00000	-1.13460
3.479	155.270	1.89870	-.28700	-.00380	.01330	.01410	-1.09050	.00000	.60870	.00000	-1.09050
3.479	151.150	2.42700	-.22640	-.01460	.00340	.00410	-1.03790	.00000	.59870	.00000	-1.03790
3.479	149.180	2.69930	-.19420	-.01860	-.00730	.01780	-1.00960	.00000	.59500	.00000	-1.00960
3.479	159.420	1.39400	-.33930	.00690	.01730	.01680	-1.13630	.00000	.62470	.00000	-1.13630
	GRADIENT	-.10611	-.00882	.00017	.00025	-.00045	-.01020	.00000	.00531	.00000	-.01020

RUN NO. 58/ 0 RN/L = 4.98 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	169.670	.38470	-.34650	-.01900	-.00140	.00550	-1.20420	.00000	.73890	.00000	-1.20420
4.960	167.770	.50800	-.41430	-.01940	-.00680	.04080	-1.19540	.00000	.72410	.00000	-1.19540
4.960	163.710	.80680	-.41630	-.03820	-.02030	.03590	-1.16540	.00000	.67210	.00000	-1.16540
4.960	159.670	1.17410	-.41460	-.02940	-.00510	-.00030	-1.12130	.00000	.64380	.00000	-1.12130
4.960	155.600	1.75640	-.25070	-.00990	-.02010	.00640	-1.07260	.00000	.60720	.00000	-1.07260
4.960	151.550	2.18040	-.26880	.01000	-.00190	-.00090	-1.01960	.00000	.60390	.00000	-1.01960
4.960	149.620	2.46540	-.24320	-.01370	-.03690	.03080	-.99290	.00000	.59960	.00000	-.99290
4.960	159.670	1.18790	-.39220	-.01170	-.02970	.00770	-1.12820	.00000	.63980	.00000	-1.12820
	GRADIENT	-.10477	-.00791	-.00111	.00092	.00056	-.01073	.00000	.00721	.00000	-.01073

MSFC 583(TA1F) 324 IN. DIA. ET(418 NOD) W/GRIT (R99008) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0050

PARAMETRIC DATA

BETA = .000 PHI = .000

RUN NO. 132/ 0 RN/L = 6.94 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
1.963	190.030	-.56120	.53300	.01210	.02650	.00260	-1.28700	.00000	.74740	.00000	-1.28700
1.963	188.060	-.41510	.45990	.01510	.02480	.00800	-1.27620	.00000	.77490	.00000	-1.27620
1.963	185.930	-.17810	.24300	.00860	.02000	.00850	-1.24910	.00000	.81940	.00000	-1.24910
1.963	179.800	.01060	-.02060	-.00210	.01230	-.00090	-1.24590	.00000	.91840	.00000	-1.24590
1.963	175.680	.21880	-.29370	-.00470	.01330	.00090	-1.23440	.00000	.81560	.00000	-1.23440
1.963	171.560	.47790	-.52670	-.00560	.00390	.00380	-1.24690	.00000	.77390	.00000	-1.24690
1.963	169.580	.64660	-.58170	.00510	.01750	-.00410	-1.24370	.00000	.73870	.00000	-1.24370
	179.810	.02690	-.01440	-.00080	.02330	-.00190	-1.23800	.00000	.67550	.00000	-1.23800
	GRADIENT	-.05630	.05735	.00074	.00077	.00035	-.00196	.00000	.00029	.00000	-.00196

RUN NO. 56/ 0 RN/L = 6.29 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
3.479	189.940	-.57920	.34640	.01260	.02110	.00330	-1.28500	.00000	.68630	.00000	-1.28500
3.479	188.000	-.45080	.31080	.01450	.01790	.00360	-1.28370	.00000	.70220	.00000	-1.28370
3.479	183.900	-.21200	.19120	.01330	.01620	.00390	-1.27250	.00000	.73910	.00000	-1.27250
3.479	179.840	-.03970	-.01070	.00000	.00510	-.00020	-1.25900	.00000	.83540	.00000	-1.25900
3.479	175.750	.14520	-.18630	.01460	.00480	.00260	-1.24560	.00000	.80520	.00000	-1.24560
3.479	171.690	.37200	-.32700	.00840	-.00070	.00060	-1.23150	.00000	.73510	.00000	-1.23150
3.479	169.750	.49430	-.36700	.01050	-.00680	.00630	-1.22190	.00000	.71140	.00000	-1.22190
	179.840	-.05170	-.01520	.00790	.00000	.00280	-1.26000	.00000	.53120	.00000	-1.26000
	GRADIENT	-.05135	.03767	.00018	.00130	-.00000	-.00317	.00000	-.00214	.00000	-.00317

RUN NO. 55/ 0 RN/L = 4.99 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	189.820	-.50910	.31720	.00220	.01140	.00380	-1.23600	.00000	.69070	.00000	-1.23600
4.960	187.910	-.41310	.26530	-.00410	.01370	-.00200	-1.23630	.00000	.69400	.00000	-1.23630
4.960	183.860	-.20720	.15930	-.00520	.01490	-.00780	-1.23700	.00000	.71600	.00000	-1.23700
4.960	179.820	.03930	.06110	-.00040	.00170	.02230	-1.21910	.00000	.31210	.00000	-1.21910
4.960	175.780	.12360	-.18120	-.00090	.01660	-.00180	-1.20100	.00000	.83690	.00000	-1.20100
4.960	171.800	.28640	-.30620	-.00750	.01960	-.00790	-1.18430	.00000	.76690	.00000	-1.18430
4.960	169.860	.38310	-.38350	.01460	.03220	.00280	-1.17000	.00000	.75540	.00000	-1.17000
	179.830	-.06840	-.02470	-.00130	.07190	-.00090	-1.21930	.00000	.51960	.00000	-1.21930
	GRADIENT	-.04401	.03567	-.00031	-.00072	.00009	-.00343	.00000	-.00474	.00000	-.00343

MSFC 583(TA1F) 324 IN. DIA. ET(41B MOD) W/GRIT (R99009) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = 45.000

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

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	-9.790	-.67460	-.71430	-.03000	.07210	.00570	.49200	.01830	.39850	.00000	.47360
4.960	-7.690	-.51060	-.57360	-.02910	.07320	.01160	.47750	.01820	.38750	.00000	.45930
4.960	-3.630	-.25020	-.28740	-.02830	.04990	.00940	.45830	.01680	.38290	.00000	.44140
4.960	.200	.01160	.06330	-.03840	.04930	-.01360	.44660	.01400	-.35780	.00000	.43260
4.960	4.250	.20620	.41870	-.06040	.04490	-.01910	.44180	.01440	.22970	.00000	.42730
4.960	8.270	.45370	.73370	-.04170	.06920	-.01230	.44250	.01490	.30150	.00000	.42760
4.960	10.190	.55040	.86680	-.05310	.04730	-.01960	.44620	.01640	.30890	.00000	.42970
	.160	-.12380	.07150	-.03980	.03020	.00210	.44700	.01470	.68270	.00000	.43230
	GRADIENT	.05648	.08739	-.00397	-.00062	-.00353	-.00204	-.00030	-.01882	.00000	-.00174

MSFC 583(TA1F) 324 IN. DIA. ET(41B MOD) W/GRIT (R99010) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = 45.000

RUN NO. 6/ 0 RN/L = 5.01 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	10.490	.69930	.88020	-.04110	.04480	-.03200	.47350	.02220	.35060	.00000	.45120
4.960	12.400	.85100	1.02650	-.04570	.04080	-.02060	.47690	.02240	.37250	.00000	.45690
4.960	16.460	1.19450	1.32180	-.06020	.06630	-.01800	.49540	.02290	.39020	.00000	.47250
4.960	20.510	1.59090	1.53750	-.07510	.05270	-.03020	.51100	.02310	.41460	.00000	.48780
4.960	24.590	2.06780	1.73380	-.07330	.00260	-.04610	.52870	.02370	.43660	.00000	.50490
4.960	28.620	2.50440	1.97680	-.08160	.01980	-.05020	.54360	.02340	.44530	.00000	.52010
4.960	30.560	2.87140	2.04280	-.09050	.01610	-.04410	.55240	.02330	.45890	.00000	.52900
	20.510	1.57650	1.51440	-.07530	.04600	-.03070	.50690	.02370	.41560	.00000	.48310
	GRADIENT	.10699	.05746	-.00230	-.00196	-.00130	.00397	.00006	.00510	.00000	.00390

MSFC 583(TA1F) 324 IN. DIA. ET(41B MOD) W/GRIT (R99011) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = 45.000

RUN NO. 91/ 0 RN/L = 4.93 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPBI	CPC
4.960	50.360	5.37690	2.87780	-.12310	.11550	-.07420	.58150	.00000	.48950	.00000	.58150
4.960	52.290	5.62150	2.90740	-.13240	.13100	-.08970	.57360	.00000	.49260	.00000	.57360
4.960	56.330	6.16410	3.03050	-.12310	.12990	-.08390	.54130	.00000	.49710	.00000	.54130
4.960	60.350	6.67970	3.13370	-.11360	.14790	-.09400	.50730	.00000	.50100	.00000	.50730
4.960	64.410	7.26030	3.58190	-.09440	.09550	-.09350	.48650	.00000	.49700	.00000	.48650
4.960	68.380	7.69990	3.56450	-.11320	.13200	-.09470	.42450	.00000	.50200	.00000	.42450
4.960	70.290	7.89150	3.59460	-.11830	.10130	-.10270	.38040	.00000	.50330	.00000	.38040
4.960	60.350	6.83280	3.45010	-.11460	.07990	-.10020	.53700	.00000	.49470	.00000	.53700
	GRADIENT	.12841	.04067	.00088	-.00076	-.00101	-.00950	.00000	.00059	.00000	-.00950

MSFC 583(TA1F) 324 IN. DIA. ET(41B MOD) W/GRIT (R99012) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = 45.000

RUN NO. 92/ 0 RN/L = 4.92 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPBI	CPC
4.960	80.340	8.33330	3.33420	-.14480	.02800	-.10650	.21620	.00000	.51300	.00000	.21620
4.960	82.440	8.43780	3.25140	-.16690	.01310	-.10630	.14570	.00000	.51550	.00000	.14570
4.960	85.460	8.55740	3.10650	-.21460	.10700	-.10690	-.01430	.00000	.51940	.00000	-.01430
4.960	90.430	8.50730	2.79130	-.14190	.06120	-.10070	-.25840	.00000	.52550	.00000	-.25840
4.960	94.440	8.55440	2.37650	-.14600	.08470	-.12620	-.42970	.00000	.53420	.00000	-.42970
4.960	98.410	8.57810	2.03860	-.16090	.14320	-.10790	-.57960	.00000	.54120	.00000	-.57960
4.960	100.300	8.50740	1.89490	-.14380	.15740	-.13010	-.65020	.00000	.54380	.00000	-.65020
4.960	90.430	8.51000	2.79170	-.15290	.07680	-.10480	-.26060	.00000	.52550	.00000	-.26060
	GRADIENT	.00799	-.07559	.00093	.00628	-.00091	-.04515	.00000	.00160	.00000	-.04515

MSFC 583 (TA1F) 324 IN. DIA. ET (41B MOD) W/GRIT (R99013) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = 45.000

RUN NO. 63/ 0 RN/L = 4.99 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	129.640	4.69290	.16230	-.26200	.09240	-.03090	-.67280	.00000	.57670	.00000	-.67280
4.960	127.750	5.15020	.24420	-.26920	.08080	-.02440	-.62790	.00000	.57420	.00000	-.62790
4.960	123.710	5.69200	.40520	-.30150	.08200	-.02540	-.53840	.00000	.57010	.00000	-.53840
4.960	119.680	6.16000	.50960	-.32190	.08630	-.03810	-.43940	.00000	.56810	.00000	-.43940
4.960	115.660	6.62630	.68450	-.33660	.09450	-.04550	-.33150	.00000	.56450	.00000	-.33150
4.960	111.670	7.01660	.82860	-.33910	.09320	-.04020	-.21240	.00000	.56190	.00000	-.21240
4.960	109.740	7.23430	.94260	-.35180	.08300	-.05150	-.15280	.00000	.55980	.00000	-.15280
	119.680	6.15370	.43680	-.32190	.09980	-.02760	-.43800	.00000	.57010	.00000	-.43800
	GRADIENT	-.11700	-.03777	.00444	-.00016	.00115	-.02599	.00000	.00081	.00000	-.02599

MSFC 583 (TA1F) 324 IN. DIA. ET (41B MOD) W/GRIT (R99014) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = 45.000

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

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	149.280	2.43350	-.12800	-.16610	.08870	-.02220	-.96910	.00000	.59160	.00000	-.96910
4.960	147.360	2.71980	-.10270	-.16810	.09480	-.04030	-.94780	.00000	.58900	.00000	-.94780
4.960	143.270	3.30400	-.00220	-.17120	.06860	-.03270	-.89010	.00000	.58260	.00000	-.89010
4.960	139.210	3.87470	.06290	-.18040	.06350	-.03270	-.82060	.00000	.57960	.00000	-.82060
4.960	135.120	4.43170	.13110	-.19010	.08350	-.04660	-.74010	.00000	.57730	.00000	-.74010
4.960	131.100	5.02910	.27080	-.19420	.09480	-.04240	-.66060	.00000	.57310	.00000	-.66060
4.960	129.170	5.27570	.29070	-.20760	.11090	-.04980	-.62340	.00000	.57290	.00000	-.62340
4.960	139.210	3.84810	.02910	-.18670	.09730	-.02980	-.82490	.00000	.58110	.00000	-.82490
	GRADIENT	-.14126	-.02119	.00192	-.00077	.00096	-.01747	.00000	.00092	.00000	-.01747

MSFC 563(TA1F) 324 IN. DIA. ET(41B MOD) W/GRIT (R99015) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = 45.000

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

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	169.660	.42420	-.36040	-.06100	.06160	-.00610	-1.16660	.00000	.73000	.00000	-1.16660
4.960	167.770	.53330	-.41320	-.07680	.06140	-.00630	-1.15090	.00000	.71700	.00000	-1.15090
4.960	163.700	.88680	-.40880	-.10440	.08130	-.01420	-1.12260	.00000	.66250	.00000	-1.12260
4.960	159.660	1.22610	-.39220	-.11660	.02140	-.03250	-1.08560	.00000	.63800	.00000	-1.08560
4.960	155.610	1.68840	-.32390	-.12680	.08600	-.02690	-1.03900	.00000	.61580	.00000	-1.03900
4.960	151.550	2.23210	-.24260	-.13860	.11240	-.03530	-.99560	.00000	.60130	.00000	-.99560
4.960	149.610	2.50400	-.18960	-.13270	.11640	-.04160	-.97250	.00000	.59560	.00000	-.97250
4.960	159.660	1.21200	-.41390	-.16860	.04440	-.01170	-1.09210	.00000	.64180	.00000	-1.09210
	GRADIENT	-.10369	-.00942	.00350	-.00269	.00176	-.00971	.00000	.00677	.00000	-.00971

MSFC 583(TA1F) 324 IN. DIA. ET(41B MOD) W/GRIT (R99016) (20 MAR 74)

REFERENCE DATA

BREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = 45.000

RUN NO. 54/ 0 RN/L = 4.98 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	169.820	-.31010	.32060	-.03830	.03050	.04240	-1.21110	.00000	.69160	.00000	-1.21110
4.960	167.910	-.42790	.27100	-.05050	.04100	.03560	-1.21150	.00000	.69250	.00000	-1.21150
4.960	165.860	-.23500	.14150	-.04650	.07210	.02160	-1.21900	.00000	.68700	.00000	-1.21900
4.960	179.830	-.05640	.03880	-.04710	.06060	.02270	-1.22270	.00000	.70210	.00000	-1.22270
4.960	175.800	.12330	-.20520	-.05320	.04560	.00100	-1.21640	.00000	.87140	.00000	-1.21640
4.960	171.800	.28660	-.34290	-.06050	.07420	-.00700	-1.21080	.00000	.78660	.00000	-1.21080
4.960	169.860	.41100	-.34750	-.06620	.04450	.00110	-1.20440	.00000	.72930	.00000	-1.20440
4.960	179.830	-.06270	-.02290	-.04610	.02970	.04290	-1.23490	.00000	.53430	.00000	-1.23490
	GRADIENT	-.04539	.03599	.00107	-.00083	.00252	-.00025	.00000	-.00824	.00000	-.00025

MSFC 583(TA1F) 324 IN. DIA. ET(418 MOD) W/GRIT (R99017) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
XSCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = 90.000

RUN NO. 136/ 0 RN/L = 6.95 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
1.963	-10.090	-.77150	-1.02560	-.14020	.11460	.02510	.73150	.09960	.35160	.00000	.63190
1.963	-8.090	-.55400	-.83260	-.11100	.10200	.01590	.71270	.09130	.32140	.00000	.62130
1.963	-3.930	-.22560	-.41750	-.08460	.11240	-.00010	.70660	.08040	.26100	.00000	.62640
1.963	.230	.03930	.04940	-.08320	.13360	-.00740	.70960	.07350	.36390	.00000	.63600
1.963	4.390	.31740	.50630	-.07580	.12270	-.01780	.70130	.06100	.30430	.00000	.62030
1.963	8.540	.63840	.93890	-.08450	.10880	-.03290	.72120	.09380	.32700	.00000	.62730
1.963	10.540	.85520	1.13010	-.09500	.11280	-.03750	.72760	.10160	.35290	.00000	.62600
	.220	.04730	.06210	-.08270	.12520	-.00660	.68530	.07490	.35450	.00000	.61030
	GRADIENT	.06526	.11127	.00106	.00124	-.00213	-.00066	.00007	.00520	.00000	-.00073

RUN NO. 9/ 0 RN/L = 6.32 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
3.479	-9.930	-.75270	-.88220	-.10850	.06470	.02360	.57180	.04900	.37890	.00000	.52280
3.479	-8.010	-.57560	-.72900	-.09240	.06240	.01230	.56600	.04820	.36250	.00000	.51770
3.479	-3.890	-.25120	-.39120	-.06810	.05400	.01040	.55910	.04250	.31200	.00000	.51660
3.479	.200	.03240	.02660	-.05640	.06660	-.00220	.56060	.04060	.43960	.00000	.51990
3.479	4.320	.30390	.43020	-.05510	.07290	-.01240	.55720	.04340	.33660	.00000	.51370
3.479	8.400	.62320	.75880	-.06110	.07150	-.02550	.56130	.04820	.37100	.00000	.51310
3.479	10.360	.81950	.90840	-.06750	.07450	-.03280	.56060	.04850	.38990	.00000	.51200
	.200	.03240	.02660	-.05660	.06380	-.01020	.55970	.04100	.44000	.00000	.51870
	GRADIENT	.06781	.10005	.00158	.00230	-.00278	-.00023	.00011	.00296	.00000	-.00035

RUN NO. 8/ 0 RN/L = 4.97 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	-9.790	-.62070	-.77860	-.06400	.05360	.01140	.48890	.02330	.36460	.00000	.46960
4.960	-7.890	-.48350	-.64440	-.06840	.07550	.01350	.47920	.02330	.35100	.00000	.45590
4.960	-3.830	-.20980	-.33590	-.03940	.04570	.00360	.46390	.02160	.30440	.00000	.44220
4.960	.200	.03240	.02800	-.04310	.07580	.00620	.46570	.02070	.48970	.00000	.44490
4.960	4.260	.27380	.37690	-.04840	.05470	-.03040	.46510	.02090	.34340	.00000	.44410
4.960	8.280	.56230	.68260	-.04070	.07510	-.01760	.47270	.02280	.37160	.00000	.44980
4.960	10.200	.71260	.77600	-.04590	.05790	-.03040	.47250	.02340	.39330	.00000	.44900
	.200	.03900	.04430	-.04340	.06960	.00570	.46310	.02150	.38510	.00000	.44150
	GRADIENT	.05977	.08811	-.00111	.00110	-.00423	.00015	-.00009	.00477	.00000	.00023

MSFC 583(TAIF) 324 IN. DIA. ET(41B MOD) W/GRIT (R99018) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = 90.000

RUN NO. 135/ 0 RN/L = 6.94 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
1.962	10.820	.85980	1.11210	-.06440	.13310	-.04070	.72130	.10470	.35780	.00000	.61660
1.962	12.800	1.11100	1.26660	-.06830	.12170	-.04510	.72820	.11220	.38440	.00000	.61600
1.962	17.060	1.71940	1.55230	-.03630	.08930	-.06310	.72160	.11940	.42560	.00000	.60220
1.962	21.350	2.40550	1.68750	.00660	.06920	-.08550	.73050	.13110	.44610	.00000	.59930
1.962	25.670	3.17290	2.29560	.05020	.05200	-.11700	.74480	.13370	.45680	.00000	.61100
1.962	29.940	3.91300	2.60830	.10190	.04160	-.14520	.72170	.13840	.46670	.00000	.58320
1.962	31.970	4.27080	2.74990	.11640	.04660	-.15490	.70850	.14280	.47060	.00000	.56570
1.962	21.310	2.39620	1.88190	.02070	.07670	-.08440	.72080	.12950	.44600	.00000	.59120
	GRADIENT	.16278	.07856	.00924	-.00432	-.00364	-.00022	.00169	.00498	.00000	-.00192

RUN NO. 10/ 0 RN/L = 6.34 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
3.479	10.650	.81940	.91340	-.04170	.09440	-.03210	.56130	.04860	.38880	.00000	.51260
3.479	12.590	1.00280	1.07100	-.03610	.09780	-.03980	.56290	.04880	.39690	.00000	.51410
3.479	16.730	1.44950	1.35760	-.01800	.08410	-.05230	.57180	.04850	.41980	.00000	.52330
3.479	20.870	1.94760	1.62750	-.00250	.07410	-.07190	.57960	.04860	.43730	.00000	.53100
3.479	25.030	2.51440	1.87110	.00650	.09150	-.09410	.60080	.05120	.45320	.00000	.54950
3.479	29.170	3.14850	2.10480	.02330	.09240	-.11810	.61920	.05200	.46630	.00000	.56710
3.479	31.150	3.45760	2.20690	.02800	.10080	-.13820	.62550	.05090	.47160	.00000	.57460
3.479	20.870	1.95380	1.63750	-.00230	.07990	-.07140	.58040	.04880	.43690	.00000	.53160
	GRADIENT	.12893	.06271	.00347	.00014	-.00500	.00326	.00016	.00409	.00000	.00310

RUN NO. 7/ 0 RN/L = 4.99 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	10.500	.71300	.84020	-.02500	.07240	-.03020	.47670	.02270	.37780	.00000	.45390
4.960	12.400	.85040	.97550	-.01670	.07230	-.04000	.48470	.02330	.38520	.00000	.46130
4.960	16.470	1.26060	1.22510	-.01920	.10110	-.05130	.49500	.02360	.41360	.00000	.47140
4.960	20.520	1.71080	1.46530	-.00450	.12560	-.02080	.51480	.02400	.43370	.00000	.49070
4.960	24.600	2.25540	1.63010	.01560	.11640	-.09200	.53710	.02390	.45690	.00000	.51320
4.960	28.650	2.86880	1.80480	-.01590	.13180	-.11830	.55750	.02370	.47320	.00000	.53370
4.960	30.560	3.16920	1.91310	-.02840	.15570	-.12730	.57230	.02330	.47760	.00000	.54900
4.960	20.520	1.71050	1.45180	.01210	.11530	-.06880	.51460	.02400	.43500	.00000	.49050
	GRADIENT	.12301	.05224	.00030	.00377	-.00467	.00470	.00003	.00521	.00000	.00487

MSFC 583(TA1F) 324 IN. DIA. ET(41B MOD) W/GRIT (R99019) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = 90.000

RUN NO. 100/ 0 RN/L = 7.01 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
1.946	51.300	6.69770	4.00030	-.01370	.16370	-.23910	.50680	.00000	.47870	.00000	.50680
1.946	53.220	6.97180	4.09530	-.01210	.15230	-.24890	.50080	.00000	.48040	.00000	.50080
1.946	57.320	7.52620	4.18730	-.00750	.09110	-.27590	.48260	.00000	.48580	.00000	.48260
1.946	61.440	8.11520	4.43100	-.05980	.14120	-.28560	.50620	.00000	.48760	.00000	.50620
1.946	65.450	8.34990	4.10690	-.07080	.07900	-.29730	.51120	.00000	.49700	.00000	.51120
1.946	69.460	8.65990	3.99400	-.04650	.01180	-.31070	.42090	.00000	.50230	.00000	.42090
1.946	71.360	8.75440	3.89330	-.05530	-.03230	-.31440	.36040	.00000	.50520	.00000	.36040
1.946	61.350	7.82400	4.06970	-.05650	.13420	-.27820	.53090	.00000	.49210	.00000	.53090
	GRADIENT	.10302	-.00596	-.00261	-.00861	-.00370	-.00550	.00000	.00134	.00000	-.00550

RUN NO. 89/ 0 RN/L = 6.23 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
3.479	50.810	6.23460	3.20210	-.04690	.11220	-.25030	.60860	.00000	.49320	.00000	.60860
3.479	52.740	6.50150	3.24250	-.05970	.02340	-.27030	.60460	.00000	.49580	.00000	.60460
3.479	56.790	7.09990	3.37850	-.06280	.03660	-.28960	.58090	.00000	.49980	.00000	.58090
3.479	60.860	7.64580	3.46330	-.06460	.00590	-.30970	.54760	.00000	.50360	.00000	.54760
3.479	64.910	8.10410	3.54180	-.06730	-.03030	-.32800	.51440	.00000	.50650	.00000	.51440
3.479	68.930	8.49930	3.67840	-.07300	-.06830	-.34370	.45160	.00000	.50730	.00000	.45160
3.479	70.840	8.64450	3.70420	-.06760	-.09810	-.35140	.41250	.00000	.50800	.00000	.41250
3.479	60.850	7.63160	3.49330	-.08270	-.00100	-.30710	.55220	.00000	.50290	.00000	.55220
	GRADIENT	.12175	.02529	-.00091	-.00856	-.00403	-.00952	.00000	.00074	.00000	-.00952

RUN NO. 90/ 0 RN/L = 4.94 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	50.410	6.12130	3.00540	-.06840	.05370	-.27890	.65040	.00000	.49720	.00000	.65040
4.960	52.320	6.34360	3.18590	-.07280	.05630	-.27860	.63700	.00000	.49520	.00000	.63700
4.960	56.350	7.09100	3.35150	-.09700	.01860	-.30950	.61620	.00000	.50040	.00000	.61620
4.960	60.400	7.65010	3.51120	-.09950	-.00500	-.32860	.57600	.00000	.50270	.00000	.57600
4.960	64.420	8.16570	3.64110	-.09720	-.05590	-.35000	.52510	.00000	.50500	.00000	.52510
4.960	68.420	8.58620	3.74140	-.10060	-.08000	-.36310	.46160	.00000	.50680	.00000	.46160
4.960	70.320	8.73240	3.75460	-.10640	-.13000	-.37260	.42700	.00000	.50780	.00000	.42700
4.960	60.380	7.66390	3.52140	-.11100	-.01520	-.32320	.57580	.00000	.50260	.00000	.57580
	GRADIENT	.13428	.03636	-.00167	-.00895	-.00493	-.01110	.00000	.00060	.00000	-.01110

MSFC 583(TA1F) 324 IN. DIA. ET(418 MOD) W/GRIT (R99020) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = 90.000

RUN NO. 99/ 0 RN/L = 6.80 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
1.962	81.500	9.35680	3.32630	.00730	-.15200	-.34100	-.11140	.00000	.52070	.00000	-.11140
1.962	83.390	9.45110	3.21480	.02310	-.16980	-.34820	-.18530	.00000	.52340	.00000	-.18530
1.962	87.380	9.60530	2.90440	.06360	-.17920	-.35710	-.32390	.00000	.52990	.00000	-.32390
1.962	91.350	9.68560	2.49020	.09330	-.20180	-.36570	-.43990	.00000	.53780	.00000	-.43990
1.962	95.330	9.68110	2.10420	.12930	-.21230	-.37240	-.54850	.00000	.54470	.00000	-.54850
1.962	99.250	9.53620	1.73300	.12700	-.21610	-.37030	-.65100	.00000	.55090	.00000	-.65100
1.962	101.130	9.43670	1.56380	.12470	-.22280	-.36580	-.69960	.00000	.55370	.00000	-.69960
1.962	91.340	9.66990	2.47030	.12500	-.22970	-.36410	-.42240	.00000	.53610	.00000	-.42240
	GRADIENT	.00507	-.09212	.00640	-.00341	-.00137	-.02960	.00000	.00172	.00000	-.02960

RUN NO. 88/ 0 RN/L = 6.26 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
3.479	81.060	9.21130	3.48000	-.04600	-.24010	-.36010	.19010	.00000	.51680	.00000	.19010
3.479	82.960	9.33430	3.40680	-.07850	-.14940	-.36110	.10510	.00000	.51910	.00000	.10510
3.479	86.950	9.36330	3.19320	-.08070	-.16720	-.37150	-.10120	.00000	.52320	.00000	-.10120
3.479	90.950	9.43580	2.79180	-.06260	-.20300	-.37390	-.30080	.00000	.53110	.00000	-.30080
3.479	94.920	9.44820	2.37360	-.05700	-.21580	-.37920	-.44690	.00000	.53680	.00000	-.44690
3.479	98.870	9.35710	1.93450	-.05730	-.23040	-.38440	-.60020	.00000	.54650	.00000	-.60020
3.479	100.750	9.27640	1.77030	-.07210	-.19930	-.38070	-.66050	.00000	.54930	.00000	-.66050
3.479	90.930	9.43080	2.83360	-.08000	-.18410	-.37680	-.29890	.00000	.53030	.00000	-.29890
	GRADIENT	.00332	-.09030	.00002	-.00124	-.00119	-.04363	.00000	.00170	.00000	-.04363

RUN NO. 87/ 0 RN/L = 4.92 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	80.580	9.23490	3.65130	-.09870	-.20370	-.37820	.27470	.00000	.51380	.00000	.27470
4.960	82.480	9.32530	3.58270	-.08580	-.16870	-.36940	.20400	.00000	.51570	.00000	.20400
4.960	86.470	9.45530	3.37020	-.08000	-.21680	-.38990	.00620	.00000	.52050	.00000	.00620
4.960	90.490	9.43450	3.08940	-.05780	-.25030	-.38080	-.20940	.00000	.52560	.00000	-.20940
4.960	94.470	9.52200	2.62590	-.08970	-.22070	-.40440	-.41590	.00000	.53450	.00000	-.41590
4.960	98.440	9.47750	2.23670	-.09990	-.18320	-.38810	-.56230	.00000	.54140	.00000	-.56230
4.960	100.330	9.28190	2.08560	-.08940	-.17490	-.39300	-.64090	.00000	.54340	.00000	-.64090
4.960	90.470	9.42090	3.13260	-.03630	-.29360	-.39710	-.20380	.00000	.52470	.00000	-.20380
	GRADIENT	.00550	-.08227	-.00016	.00045	-.00100	-.04753	.00000	.00136	.00000	-.04753

MSFC 583(TAIF) 324 IN. DIA. ET(418 HOD) W/GRIT (R99021) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = 90.000

RUN NO. 109/ 0 RN/L = 7.01 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
1.951	126.790	6.06930	-.42850	-.26460	-.18370	-.23660	-.64800	.00000	.59470	.00000	-.64800
1.951	126.060	6.36840	-.36320	-.25890	-.18480	-.24850	-.59690	.00000	.59240	.00000	-.59690
1.951	122.750	6.91560	-.24050	-.31600	-.20340	-.26980	-.49700	.00000	.58850	.00000	-.49700
1.951	118.660	7.51810	.07490	-.33590	-.20000	-.29070	-.44260	.00000	.58070	.00000	-.44260
1.951	114.590	7.99820	.46080	-.37170	-.20350	-.30410	-.32370	.00000	.57240	.00000	-.32370
1.951	110.580	8.39410	.85610	-.37960	-.18260	-.31550	-.16080	.00000	.56470	.00000	-.16080
1.951	108.650	8.60480	1.02140	-.37720	-.16680	-.32410	-.06180	.00000	.56180	.00000	-.06180
1.951	116.700	7.40350	.09650	-.32280	-.18130	-.28620	-.43970	.00000	.58020	.00000	-.43970
	GRADIENT	-.12601	-.07425	.00636	.00006	.00425	-.02755	.00000	.00169	.00000	-.02755

RUN NO. 65/ 0 RN/L = 6.25 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
3.479	129.200	5.82290	-.07200	-.21550	-.07040	-.22970	-.71640	.00000	.58460	.00000	-.71640
3.479	127.300	6.09190	.02500	-.22460	-.08620	-.23930	-.67700	.00000	.58170	.00000	-.67700
3.479	123.210	6.69080	.12070	-.24390	-.06880	-.26220	-.57510	.00000	.57930	.00000	-.57510
3.479	119.160	7.21770	.32920	-.26740	-.08470	-.27740	-.47780	.00000	.57450	.00000	-.47780
3.479	115.100	7.72890	.54550	-.30070	-.10860	-.29700	-.37120	.00000	.57020	.00000	-.37120
3.479	111.080	8.15510	.81020	-.32140	-.12530	-.28110	-.25550	.00000	.56520	.00000	-.25550
3.479	109.170	8.34170	.94740	-.33210	-.15200	-.32360	-.19760	.00000	.56270	.00000	-.19760
3.479	119.160	7.20650	.28540	-.25500	-.06000	-.27410	-.47580	.00000	.57560	.00000	-.47580
	GRADIENT	-.12643	-.05011	.00598	.00355	.00389	-.02586	.00000	.00107	.00000	-.02586

RUN NO. 64/ 0 RN/L = 4.92 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	129.800	5.64270	.06080	-.26750	-.10230	-.20560	-.72120	.00000	.58060	.00000	-.72120
4.960	127.700	5.94120	.11160	-.28130	-.08680	-.23640	-.68190	.00000	.57920	.00000	-.68190
4.960	123.660	6.53710	.30300	-.30200	-.10240	-.25330	-.58760	.00000	.57440	.00000	-.58760
4.960	119.630	7.10600	.48580	-.31700	-.10710	-.27700	-.48690	.00000	.57060	.00000	-.48690
4.960	115.590	7.60680	.62750	-.34850	-.12490	-.28220	-.37450	.00000	.56810	.00000	-.37450
4.960	111.610	8.03890	.84300	-.36260	-.13600	-.28790	-.25650	.00000	.56420	.00000	-.25650
4.960	109.690	8.28190	.99200	-.36450	-.12500	-.30680	-.20200	.00000	.56160	.00000	-.20200
4.960	119.630	7.08000	.45810	-.29990	-.09300	-.26050	-.49280	.00000	.57170	.00000	-.49280
	GRADIENT	-.13176	-.04570	.00502	.00198	.00427	-.02623	.00000	.00093	.00000	-.02623

MSFC 583(TA1F) 324 IN. DIA. ET(41B NOD) W/GRIT (R99022) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = 90.000

RUN NO. 129/ 0 RN/L = 6.93 GRADIENT INTERVAL = -5.00/ 5.00

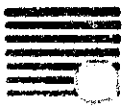
MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
1.959	147.980	3.84290	-.44340	-.19200	-.01400	-.14300	-1.09490	.00000	.60250	.00000	-1.09490
1.959	145.960	4.18950	-.40950	-.18180	-.00740	-.15750	-1.06670	.00000	.59940	.00000	-1.06670
1.959	141.580	5.07690	-.30450	-.13600	.05480	-.19150	-1.02710	.00000	.59290	.00000	-1.02710
1.959	137.230	5.83830	-.25540	-.07330	.08150	-.22590	-.94110	.00000	.59010	.00000	-.94110
1.959	132.990	6.48700	-.15600	-.03390	.05850	-.25420	-.84200	.00000	.58660	.00000	-.84200
1.959	128.820	7.04390	-.03640	-.05550	-.03140	-.27760	-.73290	.00000	.58330	.00000	-.73290
1.959	126.630	7.28900	.00100	-.06310	-.05860	-.28750	-.67640	.00000	.58240	.00000	-.67640
1.959	137.410	5.59540	-.27260	-.06440	.09000	-.22150	-.92360	.00000	.59090	.00000	-.92360
	GRADIENT	-.16446	-.02094	-.00710	.00158	.00694	-.01981	.00000	.00093	.00000	-.01981

RUN NO. 51/ 0 RN/L = 8.26 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
3.479	148.720	3.13060	-.28180	-.12270	.05150	-.11780	-1.05000	.00000	.59810	.00000	-1.05000
3.479	146.740	3.44020	-.25460	-.13230	.05040	-.13620	-1.02050	.00000	.59530	.00000	-1.02050
3.479	142.540	4.12030	-.19730	-.15360	.02080	-.16280	-.95650	.00000	.59080	.00000	-.95650
3.479	138.370	4.78820	-.13700	-.18030	.00110	-.18780	-.88130	.00000	.58740	.00000	-.88130
3.479	134.190	5.46420	-.05370	-.20950	-.02350	-.20740	-.79630	.00000	.58420	.00000	-.79630
3.479	130.040	6.10540	.02830	-.23330	-.04420	-.23480	-.70670	.00000	.58160	.00000	-.70670
3.479	128.040	6.41190	.07480	-.23530	-.03950	-.25380	-.66510	.00000	.58040	.00000	-.66510
3.479	138.360	4.80060	-.15020	-.18040	.00410	-.18550	-.88380	.00000	.58790	.00000	-.88380
	GRADIENT	-.15921	-.01713	.00577	.00494	.00622	-.01873	.00000	.00084	.00000	-.01873

RUN NO. 50/ 0 RN/L = 5.02 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	149.260	2.72160	-.12240	-.13780	.02220	-.10910	-1.01060	.00000	.59030	.00000	-1.01060
4.960	147.330	3.01950	-.07240	-.15700	.02710	-.11560	-.98670	.00000	.58660	.00000	-.98670
4.960	143.250	3.67290	-.01990	-.13800	.02560	-.13510	-.92470	.00000	.58340	.00000	-.92470
4.960	139.150	4.33700	.05740	-.21540	-.03400	-.15810	-.85830	.00000	.58020	.00000	-.85830
4.960	135.070	5.00250	.12300	-.24280	-.02150	-.21220	-.77840	.00000	.57820	.00000	-.77840
4.960	131.020	5.64090	.21770	-.25190	-.04600	-.21650	-.69230	.00000	.57570	.00000	-.69230
4.960	129.080	5.93960	.25560	-.26530	-.04290	-.22870	-.64990	.00000	.57500	.00000	-.64990
4.960	139.150	4.32380	.03410	-.21600	-.00230	-.17820	-.86050	.00000	.58110	.00000	-.86050
	GRADIENT	-.16019	-.01828	.00673	.00391	.00636	-.01794	.00000	.00071	.00000	-.01794



MSFC 583(TA1F) 324 IN. DIA. ET(41B MOD) W/GRIT (R99023) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = 90.000

RUN NO. 128/ 0 RN/L = 7.04 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
1.956	169.340	.75680	-.65810	-.08650	.00480	-.03010	-1.26670	.00000	.73350	.00000	-1.26670
1.956	167.340	.98550	-.67880	-.10520	-.00940	-.04120	-1.26530	.00000	.70210	.00000	-1.26530
1.956	163.120	1.56630	-.61700	-.15830	-.05050	-.05790	-1.24700	.00000	.65090	.00000	-1.24700
1.956	158.850	2.21580	-.54010	-.16560	-.04520	-.07950	-1.21710	.00000	.62480	.00000	-1.21710
1.956	154.510	2.99010	-.55210	-.17270	-.05750	-.11030	-1.18810	.00000	.61500	.00000	-1.18810
1.956	150.240	3.70510	-.51750	-.20890	-.05500	-.14170	-1.14960	.00000	.60670	.00000	-1.14960
1.956	146.210	4.04470	-.48350	-.20580	-.06310	-.14990	-1.11140	.00000	.60320	.00000	-1.11140
1.956	158.870	2.22250	-.53360	-.16270	-.03890	-.08380	-1.21350	.00000	.62420	.00000	-1.21350
	GRADIENT	-.15734	-.00861	.00538	.00279	.00578	-.00710	.00000	.00576	.00000	-.00710

RUN NO. 48/ 0 RN/L = 6.26 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
3.479	169.520	.61470	-.44520	-.08900	.04090	-.01670	-1.23190	.00000	.70770	.00000	-1.23190
3.479	167.600	.77940	-.46050	-.09520	.04260	-.02990	-1.22690	.00000	.68510	.00000	-1.22690
3.479	163.470	1.18070	-.48100	-.10270	.04410	-.04320	-1.20060	.00000	.65320	.00000	-1.20060
3.479	159.340	1.63080	-.47380	-.10050	.05070	-.05430	-1.16750	.00000	.63290	.00000	-1.16750
3.479	155.200	2.16380	-.41720	-.10180	.06860	-.08730	-1.12910	.00000	.61560	.00000	-1.12910
3.479	151.060	2.78480	-.32150	-.10270	.05790	-.10760	-1.08130	.00000	.60250	.00000	-1.08130
3.479	149.080	3.09480	-.29460	-.09970	.06700	-.12670	-1.05490	.00000	.59900	.00000	-1.05490
3.479	159.340	1.63700	-.48050	-.10310	.05150	-.05700	-1.17030	.00000	.63340	.00000	-1.17030
	GRADIENT	-.12132	-.00775	.00044	-.00130	.00513	-.00871	.00000	.00513	.00000	-.00871

RUN NO. 49/ 0 RN/L = 5.03 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	169.670	.50690	-.41180	-.10150	.05600	-.01740	-1.21020	.00000	.72360	.00000	-1.21020
4.960	167.750	.63000	-.45350	-.10840	.07720	-.01340	-1.20520	.00000	.70750	.00000	-1.20520
4.960	163.710	.94320	-.48440	-.10990	.05850	-.03510	-1.18550	.00000	.67170	.00000	-1.18550
4.960	159.640	1.35170	-.47600	-.11250	.06460	-.04160	-1.16070	.00000	.64360	.00000	-1.16070
4.960	155.580	1.85440	-.41590	-.12130	.05960	-.06480	-1.11310	.00000	.62140	.00000	-1.11310
4.960	151.540	2.45230	-.33070	-.12500	.05230	-.09360	-1.06690	.00000	.60590	.00000	-1.06690
4.960	149.600	2.76620	-.27070	-.07060	.09690	-.10870	-1.04340	.00000	.59950	.00000	-1.04340
4.960	159.640	1.35190	-.50120	-.11280	.07760	-.05430	-1.15350	.00000	.64690	.00000	-1.15350
	GRADIENT	-.11248	-.00735	-.00035	-.00058	.00461	-.00844	.00000	.00621	.00000	-.00844

MSFC 583(TA1F) 324 IN. DIA. ET(41B MOD) W/GRIT (R99024) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = 90.000

RUN NO. 127/ 0 RN/L = 7.01 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
1.958	190.080	-.66590	.56290	-.11010	-.01490	.03590	-1.28300	.00000	.72930	.00000	-1.28300
1.958	188.090	-.47950	.47680	-.07240	.00770	.03110	-1.26720	.00000	.75520	.00000	-1.26720
1.958	183.930	-.18710	.22960	-.03540	.00570	.01630	-1.27600	.00000	.79570	.00000	-1.27600
1.958	179.770	.05160	-.07630	-.02790	.00750	-.00070	-1.26030	.00000	.83920	.00000	-1.26030
1.958	175.650	.26700	-.36440	-.03100	.02550	-.01400	-1.26110	.00000	.81950	.00000	-1.26110
1.958	171.510	.56020	-.62690	-.05080	.01250	-.02300	-1.27890	.00000	.77680	.00000	-1.27890
1.958	169.520	.75230	-.67790	-.06730	.00430	-.03470	-1.26930	.00000	.73900	.00000	-1.26930
1.958	179.790	.04760	-.09010	-.02880	.02490	-.00060	-1.23490	.00000	.91080	.00000	-1.23490
	GRADIENT	-.06546	.06360	-.00167	-.00083	.00339	-.00028	.00000	-.00099	.00000	-.00028

RUN NO. 47/ 0 RN/L = 6.32 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
3.479	189.940	-.56430	.37290	-.09300	.03110	.03490	-1.24550	.00000	.69730	.00000	-1.24550
3.479	187.990	-.41720	.32280	-.07840	.02960	.03270	-1.24910	.00000	.71680	.00000	-1.24910
3.479	183.910	-.17740	.17340	-.06210	.04520	.01610	-1.25420	.00000	.75230	.00000	-1.25420
3.479	179.820	.00220	-.04760	-.05000	.04690	.01100	-1.24810	.00000	4.29660	.00000	-1.24810
3.479	175.740	.22360	-.24020	-.06110	.03690	-.00330	-1.25110	.00000	.76910	.00000	-1.25110
3.479	171.680	.45630	-.38760	-.06990	.03210	-.01060	-1.24180	.00000	.73000	.00000	-1.24180
3.479	169.720	.60890	-.43740	-.07610	.03970	-.02430	-1.23770	.00000	.70720	.00000	-1.23770
3.479	179.810	.03250	-.05190	-.05540	.05050	.00040	-1.25070	.00000	.85930	.00000	-1.25070
	GRADIENT	-.05561	.04227	-.00066	-.00020	.00278	-.00041	.00000	-.00081	.00000	-.00041

RUN NO. 46/ 0 RN/L = 5.07 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	189.810	-.44400	.35180	-.09620	.02930	.03610	-1.19730	.00000	.72010	.00000	-1.19730
4.960	187.920	-.36000	.27700	-.08520	.04600	.12780	-1.20550	.00000	.71610	.00000	-1.20550
4.960	183.880	-.16860	.23530	-.07520	.04860	.02900	-1.21300	.00000	.82460	.00000	-1.21300
4.960	179.820	.02550	-.04970	-.07010	.04320	.00090	-1.21460	.00000	.92040	.00000	-1.21460
4.960	175.790	.20490	-.22920	-.07100	.04500	-.01640	-1.21470	.00000	.77680	.00000	-1.21470
4.960	171.780	.39730	-.35830	-.07790	.05450	-.01710	-1.20860	.00000	.73910	.00000	-1.20860
4.960	169.870	.50700	-.41160	-.07300	.06590	-.01800	-1.20130	.00000	.72350	.00000	-1.20130
4.960	179.820	.02890	-.05030	.05370	.14270	-.00650	-1.21480	.00000	.88480	.00000	-1.21480
	GRADIENT	-.04728	.04040	-.00086	-.00116	.00526	.00020	.00000	-.00009	.00000	.00020

MSFC 583(TA1F) 324 IN. DIA. ET(41B MOD) W/GRIT (R99025) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = 135.000

RUN NO. 12/ 0 RN/L = 5.02 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	-9.790	-.38150	-.81640	-.04660	.05570	.01110	.46480	.02250	.33060	.00000	.44250
4.960	-7.890	-.45770	-.66480	-.04630	.04420	.00420	.46140	.02240	.33020	.00000	.43900
4.960	-3.830	-.19640	-.33990	-.04480	.05340	.00470	.45270	.02100	.28180	.00000	.45160
4.960	.200	.03760	-.03330	-.02710	.03940	-.02640	.46230	.02060	.73620	.00000	.44160
4.960	4.260	.28660	.32190	-.03120	.05660	-.03090	.47760	.02160	.38730	.00000	.45590
4.960	8.260	.57530	.62850	-.02930	.07190	-.01830	.49420	.02300	.39270	.00000	.47110
4.960	10.200	.71250	.75120	-.02870	.06650	-.02470	.50250	.02370	.39930	.00000	.47870
4.960	.200	.05130	-.03710	-.03210	.05980	-.01280	.46020	.02190	.70810	.00000	.43620
	GRADIENT	.09971	.08181	.00168	.00040	-.00440	.00308	.00007	.01292	.00000	.00300

MSFC 583(TA1F) 324 IN. DIA. ET(41B MOD) W/GRIT (R99026) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = 135.000

RUN NO. 11/ 0 RN/L = 5.09 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	10.500	.72560	.73470	-.02260	.07790	-.03560	.51920	.02360	.40660	.00000	.49540
4.960	12.400	.86420	.90910	-.01590	.09740	-.04600	.52910	.02370	.39970	.00000	.50530
4.960	16.460	1.26100	1.12470	-.02410	.12750	-.04900	.56290	.02450	.42750	.00000	.53840
4.960	20.510	1.69610	1.31690	-.03160	.16330	-.05150	.59500	.02450	.44770	.00000	.57050
4.960	24.590	2.21700	1.48650	-.04960	.22110	-.08640	.62930	.02390	.46580	.00000	.60550
4.960	26.610	2.74810	1.65750	-.04080	.22080	-.10990	.65930	.02310	.47770	.00000	.63610
4.960	30.570	3.08610	1.73020	-.03850	.22100	-.10990	.67470	.02270	.48510	.00000	.65200
4.960	20.510	1.69820	1.31710	-.03200	.15700	-.06360	.59720	.02420	.44770	.00000	.57290
	GRADIENT	.11716	.04792	-.00127	.00770	-.00387	.00789	-.00005	.00431	.00000	.00794

MSFC 563(TA1F) 324 IN. DIA. ET(41B MOD) W/GRIT (R99027) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = 135.000

RUN NO. 85/ 0 RN/L = 4.95 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	50.380	5.99350	2.74390	.08160	.31670	-.22790	.72400	.00000	.49720	.00000	.72400
4.960	52.290	6.85150	2.84760	.11720	.31780	-.25260	.72090	.00000	.49790	.00000	.72090
4.960	56.320	6.42090	2.97650	.16050	.30880	-.27210	.69280	.00000	.50190	.00000	.69280
4.960	60.360	6.90870	3.12480	.20830	.27960	-.29940	.64370	.00000	.50390	.00000	.64370
4.960	64.400	7.31590	3.31790	.25070	.28420	-.31210	.58720	.00000	.50370	.00000	.58720
4.960	68.370	7.65420	3.39850	.28080	.26520	-.34360	.52250	.00000	.50530	.00000	.52250
4.960	70.260	7.85730	3.50100	.30980	.23990	-.35250	.47400	.00000	.50510	.00000	.47400
4.960	60.340	6.90940	3.20260	.21950	.27760	-.30020	.64860	.00000	.50190	.00000	.64860
	GRADIENT	.11291	.03707	.01098	-.00363	-.00593	-.01252	.00000	.00040	.00000	-.01252

MSFC 563(TA1F) 324 IN. DIA. ET(41B MOD) W/GRIT (R99028) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = 135.000

RUN NO. 86/ 0 RN/L = 4.94 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	80.340	8.32730	3.28420	.26730	.20320	-.37000	.28820	.00000	.51390	.00000	.28820
4.960	82.440	8.37900	3.21470	.29550	.17690	-.39620	.21280	.00000	.51580	.00000	.21280
4.960	86.430	8.50920	3.04050	.31900	.16350	-.39720	.01670	.00000	.52040	.00000	.01670
4.960	90.430	8.54480	2.81420	.36790	.04700	-.41390	-.19400	.00000	.52520	.00000	-.19400
4.960	94.440	8.57770	2.45750	.37860	-.01010	-.40640	-.39410	.00000	.53270	.00000	-.39410
4.960	98.410	8.54210	2.13230	.38980	-.02200	-.40680	-.52850	.00000	.53910	.00000	-.52850
4.960	100.300	8.44370	1.97140	.38220	-.08620	-.40570	-.61440	.00000	.54190	.00000	-.61440
4.960	90.430	8.52840	2.77820	.36770	.04670	-.40800	-.19060	.00000	.52590	.00000	-.19060
	GRADIENT	.00769	-.06749	.00600	-.01449	-.00134	-.04645	.00000	.00144	.00000	-.04645

MSFC 583(TA1F) 324 IN. DIA. ET(41B MOD) W/GRIT (R99028) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = 135.000

RUN NO. 66/ 0 RN/L = 4.94 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPBI	CPC
4.960	129.640	4.99250	.17710	.08190	-.16140	-.20910	-.76650	.00000	.57630	.00000	-.76650
4.960	127.740	5.27760	.26860	.10200	-.11910	-.23040	-.72400	.00000	.57360	.00000	-.72400
4.960	123.700	5.79510	.35450	.13370	-.13750	-.25820	-.61970	.00000	.57180	.00000	-.61970
4.960	119.680	6.29610	.50770	.13090	-.15830	-.28040	-.51500	.00000	.56840	.00000	-.51500
4.960	115.630	6.80900	.67330	.14420	-.13400	-.31220	-.39430	.00000	.56530	.00000	-.39430
4.960	111.640	7.21590	.88050	.15260	-.12100	-.33160	-.26770	.00000	.56130	.00000	-.26770
4.960	109.730	7.45160	1.03400	.15630	-.09910	-.33980	-.20710	.00000	.55830	.00000	-.20710
4.960	119.680	6.30900	.53020	.12620	-.20730	-.27630	-.51510	.00000	.56790	.00000	-.51510
	GRADIENT	-.12203	-.04090	-.00330	-.00172	.00648	-.02817	.00000	.00084	.00000	-.02817

MSFC 583(TA1F) 324 IN. DIA. ET(41B MOD) W/GRIT (R99030) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = 135.000

RUN NO. 43/ 0 RN/L = 5.14 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPBI	CPC
4.960	149.290	2.51710	-.08910	-.08190	-.10170	-.08020	-1.08360	.00000	.58860	.00000	-1.08360
4.960	147.350	2.80350	-.06400	-.07800	-.09760	-.10390	-1.06230	.00000	.58640	.00000	-1.06230
4.960	143.270	3.35960	.00080	-.06900	-.13990	-.12380	-.99510	.00000	.58240	.00000	-.99510
4.960	139.200	3.93200	.05200	-.03250	-.13440	-.15930	-.91900	.00000	.58010	.00000	-.91900
4.960	135.140	4.47650	.13250	.03280	-.13180	-.18850	-.83460	.00000	.57730	.00000	-.83460
4.960	131.090	5.02050	.21360	.08110	-.13650	-.21730	-.74570	.00000	.57510	.00000	-.74570
4.960	129.160	5.29090	.25430	.10210	-.12540	-.24730	-.70390	.00000	.57410	.00000	-.70390
4.960	139.200	3.90430	.01680	-.02080	-.13760	-.15680	-.91630	.00000	.58170	.00000	-.91630
	GRADIENT	-.13724	-.01698	-.00967	.00142	.00779	-.01916	.00000	.00070	.00000	-.01916

MSFC 583(TA1F) 324 IN. DIA. ET(418 MOD) W/GRIT (R99031) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = 135.000

RUN NO. 44/ 0 RN/L = 5.08 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	169.670	.49510	-.49040	-.05440	.01700	-.01340	-1.23440	.00000	.75450	.00000	-1.23440
4.960	167.750	.64500	-.49830	-.05510	.01080	-.01290	-1.22770	.00000	.71670	.00000	-1.22770
4.960	163.690	.95900	-.52680	-.05140	.01570	-.01910	-1.21080	.00000	.67820	.00000	-1.21080
4.960	159.650	1.31170	-.47430	-.06470	-.00010	-.02390	-1.18550	.00000	.64330	.00000	-1.18550
4.960	155.600	1.77260	-.33330	-.05560	-.03050	-.05640	-1.15180	.00000	.61510	.00000	-1.15180
4.960	151.560	2.31540	-.20260	-.07550	-.07080	-.08830	-1.11240	.00000	.59770	.00000	-1.11240
4.960	149.630	2.58670	-.15040	-.06560	-.07490	-.09390	-1.09350	.00000	.59250	.00000	-1.09350
4.960	159.650	1.29790	-.46010	-.05880	-.00840	-.03480	-1.18610	.00000	.64400	.00000	-1.18610
	GRADIENT	-.10360	-.01807	.00081	.00488	.00430	-.00709	.00000	.00779	.00000	-.00709

MSFC 583(TA1F) 324 IN. DIA. ET(418 MOD) W/GRIT (R99032) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = 135.000

RUN NO. 45/ 0 RN/L = 5.10 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	169.810	-.40190	.28270	-.06810	.05250	.03430	-1.16780	.00000	.70460	.00000	-1.16780
4.960	167.910	-.27860	.23910	-.06890	.05290	.01690	-1.17680	.00000	.73150	.00000	-1.17680
4.960	163.840	-.08560	.10780	-.05840	.05060	-.00570	-1.19540	.00000	.80120	.00000	-1.19540
4.960	179.810	.08070	-.07110	-.04730	.03620	-.00980	-1.21320	.00000	.73560	.00000	-1.21320
4.960	175.790	.23310	-.24750	-.04760	.02540	-.00280	-1.22670	.00000	.76690	.00000	-1.22670
4.960	171.780	.41260	-.42780	-.04220	.00640	-.01250	-1.22670	.00000	.76260	.00000	-1.22670
4.960	169.860	.54890	-.42090	-.04340	.01900	-.01940	-1.22950	.00000	.71560	.00000	-1.22950
4.960	179.820	.05240	.02250	-.04670	.01650	.02650	-1.21550	.00000	.50770	.00000	-1.21550
	GRADIENT	-.04521	.03825	-.00140	.00224	.00211	.00321	.00000	-.00061	.00000	.00321

MSFC 583(TAIF) 324 IN. DIA. ET(418 MOD) W/GRIT (R99033) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = 180.000

RUN NO. 137/ 0 RN/L = 6.96 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
1.960	-10.050	-.56250	-1.18270	.00630	-.00470	-.00250	.71050	.09030	.22980	.00000	.62010
1.960	-8.060	-.41530	-.95550	.01050	-.00370	.00420	.69030	.08560	.18290	.00000	.60460
1.960	-3.910	-.13900	-.53450	.00810	-.01680	-.00050	.67710	.08280	-.08520	.00000	.59430
1.960	.240	.10660	-.11990	.00200	-.02720	-.00330	.69270	.08310	.77790	.00000	.60950
1.960	4.390	.36750	.32830	-.00370	-.02960	.00120	.72910	.09390	.42730	.00000	.63520
1.960	8.520	.66820	.74440	-.01040	-.01490	.00760	.74470	.09450	.38690	.00000	.65010
1.960	10.520	.87110	.92220	-.01430	-.01440	.00930	.76390	.10290	.39850	.00000	.66100
	.220	.11170	-.09560	.00080	-.00740	.00360	.68480	.08440	.73110	.00000	.60040
	GRADIENT	.06102	.10395	-.00142	-.00154	.00020	.00627	.00134	.06175	.00000	.00493

RUN NO. 16/ 0 RN/L = 6.32 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
3.479	-9.930	-.64610	-.93550	.00460	.00000	-.00950	.54190	.04670	.33170	.00000	.49510
3.479	-7.990	-.48270	-.78410	.00300	.00170	-.00160	.54330	.04640	.30030	.00000	.49690
3.479	-3.870	-.18710	-.41990	-.00830	-.00930	-.00230	.54710	.04390	.19270	.00000	.50310
3.479	.210	.06580	-.05720	-.00990	-.01720	-.01100	.55190	.04190	.73360	.00000	.51000
3.479	4.320	.33140	.34300	-.01110	-.01050	.00470	.56090	.04330	.40270	.00000	.51760
3.479	8.400	.63690	.66980	-.01200	-.01020	.00450	.58070	.04680	.40040	.00000	.53180
3.479	10.360	.82810	.78660	-.01640	-.02820	-.00460	.58930	.04940	.41750	.00000	.53980
	.210	.07160	-.05900	.00010	-.01960	-.01420	.55210	.04170	.72550	.00000	.51040
	GRADIENT	.06331	.09316	-.00034	-.00014	.00086	.00169	-.00007	.02551	.00000	.00177

RUN NO. 13/ 0 RN/L = 5.01 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	-9.800	-.55570	-.81150	.00400	.03740	-.01560	.45540	.02190	.32880	.00000	.43340
4.960	-7.890	-.43240	-.67260	-.00150	.01420	.00000	.44790	.02160	.31220	.00000	.42620
4.960	-3.830	-.17100	-.36110	.01150	.03350	-.02230	.44390	.02030	.21580	.00000	.42350
4.960	.200	.03050	-.03700	.00110	.03260	-.02610	.46450	.02090	.70970	.00000	.44350
4.960	4.260	.31320	.34200	-.02030	.02830	.00100	.47710	.02190	.39280	.00000	.45520
4.960	8.280	.57430	.60440	-.01980	-.00790	-.01970	.49450	.02340	.39960	.00000	.47100
4.960	10.200	.73880	.73370	-.02460	-.01190	-.02580	.50480	.02360	.41000	.00000	.48110
	.200	.05010	-.04960	.00100	.02600	.00030	.46270	.02210	.75450	.00000	.44060
	GRADIENT	.05986	.08692	-.00393	-.00064	.00289	.00410	.00020	.02175	.00000	.00392

MSFC 583(TA1F) 324 IN. DIA. ET(41B NOD) W/GRIT (R99034) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = 180.000

RUN NO. 138/ 0 RN/L = 6.94 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
1.962	10.600	.67090	.92220	.01690	.01850	.00750	.76520	.10380	.39850	.00000	.66140
1.962	12.600	1.11650	1.06520	.02160	.00880	.00650	.77650	.11010	.41670	.00000	.66630
1.962	17.040	1.73630	1.34950	.02510	-.00720	.00680	.79970	.12280	.44740	.00000	.67690
1.962	21.320	2.36220	1.71420	.02350	-.01590	.01640	.81540	.13000	.45640	.00000	.68540
1.962	25.580	3.00620	2.06070	.00170	-.02200	.01850	.82520	.13370	.46340	.00000	.69150
1.962	29.810	3.64260	2.34660	-.01440	-.01460	.02340	.80990	.12980	.47050	.00000	.68000
1.962	31.830	3.95790	2.48350	-.03470	-.02080	.02550	.80870	.13040	.47350	.00000	.67820
1.962	21.270	2.34250	1.68040	.01480	-.02030	.01330	.80000	.12850	.45780	.00000	.67140
	GRADIENT	.14758	.07546	-.00236	-.00168	.00095	.00211	.00123	.00327	.00000	.00088

RUN NO. 15/ 0 RN/L = 6.32 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
3.479	10.650	.82870	.80330	.00710	.00660	-.00260	.59300	.04930	.41410	.00000	.54370
3.479	12.580	1.02360	.93510	.00590	.01380	-.00200	.60620	.05020	.42380	.00000	.55590
3.479	16.720	1.44630	1.19950	-.00160	.01500	.00080	.63410	.05020	.43840	.00000	.58380
3.479	20.840	1.91040	1.44760	-.00930	-.00110	.00220	.66390	.04960	.45080	.00000	.61420
3.479	25.000	2.42910	1.68200	-.02120	.00060	.00800	.69490	.04890	.46220	.00000	.64600
3.479	29.120	2.97640	1.88540	-.03330	-.01220	.01520	.72950	.04670	.47240	.00000	.68270
3.479	31.090	3.25050	1.99260	-.03920	-.01290	.01790	.74250	.04620	.47600	.00000	.69620
3.479	20.840	1.88660	1.45360	-.01930	.00990	.00610	.66390	.04950	.44860	.00000	.61430
	GRADIENT	.11636	.05793	-.00231	-.00125	.00100	.00737	-.00017	.00298	.00000	.00754

RUN NO. 14/ 0 RN/L = 5.01 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	10.500	.73920	.75910	.00980	.01240	-.03680	.51460	.02340	.40410	.00000	.49110
4.960	12.400	.91720	.89800	.00550	.02740	-.00060	.53170	.02360	.41240	.00000	.50810
4.960	16.460	1.27290	1.11090	.00730	.01650	-.04820	.56740	.02370	.43090	.00000	.54360
4.960	20.510	1.70910	1.29180	.01000	.01090	.00340	.60450	.02390	.45120	.00000	.58060
4.960	24.590	2.22760	1.45290	-.00890	.02350	.00520	.65500	.02420	.46920	.00000	.63080
4.960	28.630	2.74640	1.64020	-.03370	.03110	.01840	.70290	.02340	.47870	.00000	.67940
4.960	30.560	2.97730	1.66870	-.02740	-.00840	.00900	.71930	.02220	.46390	.00000	.69700
4.960	20.510	1.69630	1.28170	-.00690	.01520	-.05940	.60210	.02390	.45120	.00000	.57810
	GRADIENT	.11251	.04573	-.00207	-.00041	.00227	.01038	-.00003	.00408	.00000	.01041

MSFC 503(TA1F) 324 IN. DIA. ET(418 MOD) W/GRIT (R99035) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = 180.000

RUN NO. 101/ 0 RN/L = 7.01 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
1.945	51.190	6.03300	3.67070	.01420	.02510	.05110	.62830	.00000	.47680	.00000	.62830
1.945	53.090	6.21960	3.70490	.01670	.00900	.05150	.61850	.00000	.47900	.00000	.61850
1.945	57.180	6.64960	3.85030	.02410	-.00800	.06030	.60140	.00000	.48190	.00000	.60140
1.945	61.240	7.03810	3.82190	.04300	-.04020	.06310	.65500	.00000	.48810	.00000	.65500
1.945	65.300	7.38720	3.77760	.03670	-.05480	.06620	.60990	.00000	.49360	.00000	.60990
1.945	69.310	7.66820	3.78460	.04050	-.04070	.07480	.50730	.00000	.49670	.00000	.50730
1.945	71.220	7.75410	3.72030	.03790	-.04020	.07520	.44110	.00000	.49910	.00000	.44110
1.945	61.190	6.86150	3.67650	.03540	-.03550	.06120	.64990	.00000	.48940	.00000	.64990
	GRADIENT	.08761	.00234	.00132	-.00342	.00124	-.00750	.00000	.00113	.00000	-.00750

RUN NO. 83/ 0 RN/L = 6.33 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
3.479	50.730	5.61540	2.78240	-.05270	-.04260	.05590	.71990	.00000	.49640	.00000	.71990
3.479	52.660	5.81030	2.89100	-.04680	-.05490	.05720	.72180	.00000	.49600	.00000	.72180
3.479	56.710	6.21460	3.07990	-.02910	-.08130	.06480	.73280	.00000	.49770	.00000	.73280
3.479	60.730	6.70380	3.22980	-.04430	-.07980	.07110	.67660	.00000	.49680	.00000	.67660
3.479	64.810	7.02560	3.34010	-.03780	-.10110	.07700	.65110	.00000	.49990	.00000	.65110
3.479	66.820	7.31520	3.49670	-.05010	-.05110	.08220	.57150	.00000	.49940	.00000	.57150
3.479	70.730	7.45160	3.49900	-.06680	-.04430	.08630	.53110	.00000	.50090	.00000	.53110
3.479	60.750	6.67950	3.22440	-.03950	-.08380	.06790	.67980	.00000	.49860	.00000	.67980
	GRADIENT	.09193	.03610	-.00056	-.00019	.00153	-.00944	.00000	.00022	.00000	-.00944

RUN NO. 84/ 0 RN/L = 5.02 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	50.370	5.50420	2.39410	-.09700	-.05670	.06070	.79500	.00000	.50690	.00000	.79500
4.960	52.260	5.72550	2.53540	-.10160	-.06090	.06060	.77830	.00000	.50550	.00000	.77830
4.960	56.300	6.21500	2.71220	-.09840	-.06030	.07240	.76540	.00000	.50660	.00000	.76540
4.960	60.320	6.64020	2.94310	-.08450	-.05540	.07840	.70870	.00000	.50550	.00000	.70870
4.960	64.360	6.96710	3.14470	-.08630	-.05930	.08430	.65020	.00000	.50400	.00000	.65020
4.960	66.350	7.23720	3.27900	-.10870	-.03400	.08180	.56630	.00000	.50370	.00000	.56630
4.960	70.260	7.38550	3.29180	-.10220	-.04200	.09260	.52520	.00000	.50500	.00000	.52520
4.960	60.320	6.61130	2.94940	-.08480	-.06160	.07780	.71300	.00000	.50500	.00000	.71300
	GRADIENT	.09425	.04630	-.00019	.00102	.00150	-.01349	.00000	-.00012	.00000	-.01349

MSFC 503(TA1F) 324 IN. DIA. ET(41B MOD) W/GRIT (R99036) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = 180.000

RUN NO. 102/ 0 RN/L = 6.98 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
1.957	81.360	8.19170	3.17500	.06720	-.10430	.07620	-.02350	.00000	.51510	.00000	-.02350
1.957	83.250	8.37030	3.11500	.07180	-.10740	.07800	-.13690	.00000	.51780	.00000	-.13690
1.957	87.250	8.49710	2.79270	.08000	-.10560	.08270	-.29940	.00000	.52540	.00000	-.29940
1.957	91.220	8.53890	2.39430	.09120	-.09880	.07850	-.41820	.00000	.53370	.00000	-.41820
1.957	95.210	8.55000	2.03720	.09730	-.07920	.08240	-.52320	.00000	.54110	.00000	-.52320
1.957	99.140	8.46690	1.71660	.09940	-.06240	.07960	-.63090	.00000	.54720	.00000	-.63090
1.957	101.020	8.36270	1.57030	.09730	-.06060	.07840	-.68000	.00000	.54980	.00000	-.68000
1.957	91.210	8.50480	2.39500	.09120	-.09540	.08440	-.41610	.00000	.53350	.00000	-.41610
	GRADIENT	.00760	-.08511	.00166	.00253	.00010	-.03210	.00000	.00181	.00000	-.03210

RUN NO. 82/ 0 RN/L = 6.33 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
3.479	80.950	7.66810	3.26030	-.08170	-.05990	.10810	.28930	.00000	.51000	.00000	.28930
3.479	82.030	7.89350	3.21360	-.06210	-.09680	.10980	.21140	.00000	.51170	.00000	.21140
3.479	86.840	7.97450	3.07060	-.04430	-.12790	.11540	.00440	.00000	.51560	.00000	.00440
3.479	90.820	7.98100	2.71050	-.05280	-.08780	.11550	-.24080	.00000	.52350	.00000	-.24080
3.479	94.810	7.96310	2.26630	-.07060	-.00880	.11150	-.42780	.00000	.53300	.00000	-.42780
3.479	98.760	7.86010	1.86360	-.05690	.03970	.11360	-.57040	.00000	.54130	.00000	-.57040
3.479	100.640	7.80330	1.71610	-.05670	.05030	.10460	-.64470	.00000	.54420	.00000	-.64470
3.479	90.820	7.89610	2.72590	-.04610	-.09800	.11000	.24000	.00000	.52000	.00000	-.24090
	GRADIENT	-.00268	-.08326	.00052	.00750	-.00006	-.04865	.00000	.00182	.00000	-.04865

RUN NO. 81/ 0 RN/L = 4.98 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	80.510	7.71790	3.10710	-.13940	-.04790	.11250	.34620	.00000	.51250	.00000	.34620
4.960	82.390	7.76100	3.05540	-.12770	-.04460	.10120	.27770	.00000	.51410	.00000	.27770
4.960	86.410	7.86020	2.92620	-.11610	-.07440	.11080	.09410	.00000	.51780	.00000	.09410
4.960	90.400	7.81530	2.72980	-.09380	-.08800	.12140	-.11410	.00000	.52180	.00000	-.11410
4.960	94.410	7.81890	2.31090	-.11520	-.06710	.10830	-.34860	.00000	.53110	.00000	-.34860
4.960	98.360	7.77430	1.90720	-.15170	.05390	.11570	-.52140	.00000	.53980	.00000	-.52140
4.960	100.270	7.68890	1.75310	-.10070	.06640	.10350	-.60060	.00000	.54280	.00000	-.60060
4.960	90.400	7.77460	2.71500	-.08840	-.08930	.11530	-.10680	.00000	.52180	.00000	-.10680
	GRADIENT	-.00096	-.07044	.00055	.00547	.00005	-.04933	.00000	.00157	.00000	-.04933

MSFC 583(TA1F) 324 IN. DIA. ET(418 MOD) W/GRIT (R99037) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = 180.000

RUN NO. 106/ 0 RN/L = 6.99 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPBI	CPC
1.953	126.960	5.11990	-.32270	-.01200	.07460	.03660	-.64390	.00000	.59340	.00000	-.64390
1.953	127.050	5.37000	-.25370	-.01850	.06200	.03740	-.60050	.00000	.59070	.00000	-.60050
1.953	122.950	5.86890	-.08160	-.01670	.06180	.03840	-.49750	.00000	.58490	.00000	-.49750
1.953	118.860	6.46540	.13590	-.00910	.06380	.04410	-.41290	.00000	.57880	.00000	-.41290
1.953	114.850	6.89560	.53760	-.01500	.02310	.04290	-.31270	.00000	.56890	.00000	-.31270
1.953	110.790	7.22630	.68050	.01070	.04490	.04880	-.15300	.00000	.56130	.00000	-.15300
1.953	108.880	7.36400	1.04320	.00790	.04410	.04820	-.05930	.00000	.55780	.00000	-.05930
1.953	116.920	6.24460	.23780	-.01080	.05400	.03840	-.42710	.00000	.57580	.00000	-.42710
	GRADIENT	-.11395	-.06933	-.00121	.00164	-.00062	-.02795	.00000	.00180	.00000	-.02795

RUN NO. 68/ 0 RN/L = 6.22 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPBI	CPC
3.479	129.340	4.67060	-.07530	-.08730	.08930	.07250	-.73710	.00000	.58550	.00000	-.73710
3.479	127.410	4.91510	-.01430	-.10170	.08420	.08040	-.69100	.00000	.58300	.00000	-.69100
3.479	123.370	5.40960	.16580	-.11580	.10540	.08800	-.56610	.00000	.57710	.00000	-.56610
3.479	119.310	5.95090	.31340	-.13970	.09890	.09550	-.44490	.00000	.57330	.00000	-.44490
3.479	115.250	6.39050	.53780	-.16820	.08220	.10630	-.33480	.00000	.56780	.00000	-.33480
3.479	111.250	6.80690	.85450	-.19880	.04850	.10810	-.22000	.00000	.56070	.00000	-.22000
3.479	109.340	6.91330	1.03170	-.19940	.03560	.11130	-.15950	.00000	.55650	.00000	-.15950
3.479	113.310	5.92480	.29710	-.14710	.09020	.09880	-.44240	.00000	.57370	.00000	-.44240
	GRADIENT	-.11475	-.05390	.00583	.00253	-.00189	-.02894	.00000	.00139	.00000	-.02894

RUN NO. 67/ 0 RN/L = 4.90 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPBI	CPC
4.960	129.650	4.59850	.09400	-.13870	.05600	.10150	-.77010	.00000	.57890	.00000	-.77010
4.960	127.740	4.85630	.16420	-.14100	.08070	.11650	-.72250	.00000	.57660	.00000	-.72250
4.960	123.720	5.37060	.31720	-.16780	.09900	.10240	-.61550	.00000	.57220	.00000	-.61550
4.960	119.700	5.81670	.45430	-.19320	.07980	.12630	-.48610	.00000	.56890	.00000	-.48610
4.960	115.660	6.31670	.68720	-.20880	.10640	.11730	-.36520	.00000	.56360	.00000	-.36520
4.960	111.670	6.69380	.91170	-.22290	.10790	.12200	-.22570	.00000	.55880	.00000	-.22570
4.960	109.760	6.88110	1.10590	-.23470	.05920	.13720	-.16630	.00000	.55450	.00000	-.16630
4.960	119.700	5.81710	.45420	-.17630	.09330	.11950	-.48620	.00000	.56890	.00000	-.48620
	GRADIENT	-.11485	-.04886	.00495	-.00078	-.00128	-.03062	.00000	.00117	.00000	-.03062

MSFC 583(TA1F) 324 IN. DIA. ET(418 MOD) W/GRIT (R99038) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = 180.000

RUN NO. 124/ 0 RN/L = 6.96 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
1.944	148.190	3.34560	-.29590	-.08620	.01960	.02500	-1.12190	.00000	.59780	.00000	-1.12190
1.944	146.180	3.02500	-.24060	-.10820	-.00520	.02670	-1.09410	.00000	.59400	.00000	-1.09410
1.944	141.860	4.38580	-.12240	-.14100	.00690	.03320	-1.04110	.00000	.58750	.00000	-1.04110
1.944	137.560	5.09850	-.02780	-.14000	.07330	.03720	-.96750	.00000	.58340	.00000	-.96750
1.944	133.330	5.65700	.05820	-.09290	.07490	.03710	-.85430	.00000	.58070	.00000	-.85430
1.944	129.150	6.19490	.08830	-.06520	.05490	.04200	-.73570	.00000	.58000	.00000	-.73570
1.944	127.170	6.37820	.13120	-.04600	.05520	.04350	-.68210	.00000	.57890	.00000	-.68210
1.944	137.720	4.85020	-.04860	-.10560	.05580	.03460	-.94430	.00000	.58420	.00000	-.94430
	GRADIENT	-.14717	-.02005	-.00245	-.00293	-.00085	-.02104	.00000	.00086	.00000	-.02104

RUN NO. 42/ 0 RN/L = 6.44 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
3.479	148.860	2.65140	-.23020	-.04000	.04170	.01910	-1.11120	.00000	.59750	.00000	-1.11120
3.479	146.890	2.90200	-.21760	-.03420	.05610	.02560	-1.08480	.00000	.59550	.00000	-1.08480
3.479	142.730	3.42470	-.20030	-.04540	.06640	.02940	-1.01760	.00000	.59260	.00000	-1.01760
3.479	138.590	3.95970	-.14960	-.04160	.08590	.04300	-.93960	.00000	.58900	.00000	-.93960
3.479	134.440	4.51830	-.07840	-.05040	.09210	.04960	-.84820	.00000	.58550	.00000	-.84820
3.479	130.330	5.03420	.02230	-.05410	.10770	.05290	-.74890	.00000	.58170	.00000	-.74890
3.479	128.370	5.29470	.09800	-.06090	.10280	.05550	-.70150	.00000	.57920	.00000	-.70150
3.479	136.580	3.97240	-.17430	-.03410	.09500	.04230	-.93980	.00000	.59010	.00000	-.93980
	GRADIENT	-.12918	-.01534	.00105	-.00304	-.00179	-.02013	.00000	.00087	.00000	-.02013

RUN NO. 41/ 0 RN/L = 5.30 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	149.310	2.28920	-.19360	-.06650	.04650	.03510	-1.10490	.00000	.59710	.00000	-1.10490
4.960	147.390	2.50590	-.15860	-.06200	.04440	.04670	-1.07960	.00000	.59340	.00000	-1.07960
4.960	143.300	3.05160	-.14080	-.07180	.07140	.04410	-1.01930	.00000	.59050	.00000	-1.01930
4.960	139.240	3.55390	-.06610	-.08030	.05360	.06250	-.94430	.00000	.58570	.00000	-.94430
4.960	135.180	4.08250	-.03160	-.10730	.08580	.05910	-.85880	.00000	.58380	.00000	-.85880
4.960	131.140	4.59860	.08100	-.12160	.06310	.06610	-.75760	.00000	.57940	.00000	-.75760
4.960	129.210	4.86830	.16170	-.12930	.07050	.07670	-.70980	.00000	.57670	.00000	-.70980
4.960	139.240	3.55330	-.09150	-.08540	.06020	.06770	-.94340	.00000	.58690	.00000	-.94340
	GRADIENT	-.12836	-.01624	.00343	-.00123	-.00173	-.01972	.00000	.00094	.00000	-.01972

TABULATED SOURCE DATA, MSFC TWT 563

MSFC 563(TA1F) 324 IN. DIA. ET(41B MOD) W/GRIT (R99039) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = 180.000

RUN NO. 125/ 0 RN/L = 7.00 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
1.947	169.370	.68090	-.63610	-.02700	-.01150	.00180	-1.29360	.00000	.74470	.00000	-1.29360
1.947	167.390	.87630	-.63310	-.03170	-.00880	.00150	-1.29340	.00000	.70790	.00000	-1.29340
1.947	163.430	1.40240	-.57230	-.04040	-.00260	.00390	-1.27790	.00000	.65330	.00000	-1.27790
1.947	158.950	1.95870	-.52570	-.03540	.00490	.00510	-1.24920	.00000	.62910	.00000	-1.24920
1.947	154.680	2.59350	-.48610	-.02420	.02500	.01360	-1.23190	.00000	.61500	.00000	-1.23190
1.947	150.470	3.18820	-.37970	-.07500	.00240	.01800	-1.17280	.00000	.60310	.00000	-1.17280
1.947	148.460	3.48090	-.31590	-.07220	.00920	.01720	-1.14290	.00000	.59820	.00000	-1.14290
1.947	146.980	1.95020	-.50250	-.03210	.00370	.00510	-1.23560	.00000	.62720	.00000	-1.23560
	GRADIENT	-.13545	-.01472	.00194	-.00108	-.00084	-.00702	.00000	.00648	.00000	-.00702

RUN NO. 39/ 0 RN/L = 6.32 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
3.479	169.520	.62390	-.45590	-.02090	-.00770	-.00120	-1.27960	.00000	.70940	.00000	-1.27960
3.479	167.600	.75790	-.46900	-.01640	-.01480	.00710	-1.27490	.00000	.68990	.00000	-1.27490
3.479	163.500	1.06790	-.48230	-.02370	-.00480	.00610	-1.25310	.00000	.66090	.00000	-1.25310
3.479	159.400	1.42640	-.45030	-.02620	.00600	.01270	-1.22210	.00000	.63730	.00000	-1.22210
3.479	155.270	1.88150	-.35150	-.02680	.01540	.00380	-1.18810	.00000	.61490	.00000	-1.18810
3.479	151.160	2.36710	-.25050	-.02490	.02110	.01600	-1.14430	.00000	.60080	.00000	-1.14430
3.479	149.200	2.61660	-.22650	-.01920	.03820	.02480	-1.12290	.00000	.59750	.00000	-1.12290
3.479	159.400	1.43940	-.45240	-.02130	.01290	.00440	-1.22550	.00000	.63700	.00000	-1.22550
	GRADIENT	-.09609	-.01244	.00017	-.00225	-.00087	-.00781	.00000	.00548	.00000	-.00781

RUN NO. 40/ 0 RN/L = 5.01 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	169.640	.55000	-.40970	-.00980	.01460	.00450	-1.25270	.00000	.71180	.00000	-1.25270
4.960	167.750	.63280	-.47300	-.00890	.00260	.00560	-1.24890	.00000	.71230	.00000	-1.24890
4.960	163.700	.90540	-.52230	-.01680	.03390	-.00210	-1.22710	.00000	.68260	.00000	-1.22710
4.960	159.660	1.21800	-.47320	-.02480	.03820	.04280	-1.19340	.00000	.64990	.00000	-1.19340
4.960	155.590	1.65180	-.32770	-.03300	.01970	.03820	-1.17140	.00000	.61690	.00000	-1.17140
4.960	151.560	2.10040	-.24690	-.03070	.04250	.04180	-1.14100	.00000	.60290	.00000	-1.14100
4.960	149.630	2.35680	-.20420	-.02150	.07010	.03350	-1.11580	.00000	.59750	.00000	-1.11580
4.960	159.660	1.19100	-.48410	-.01300	.02600	-.01420	-1.19890	.00000	.65310	.00000	-1.19890
	GRADIENT	-.09065	-.01285	.00101	-.00237	-.00205	-.00678	.00000	.00630	.00000	-.00678

MSFC 583(TA1F) 324 IN. DIA, ET(418 MOD) W/GRIT (R99040) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = 180.000

RUN NO. 126/ 0 RN/L = 6.99 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
1.958	190.020	-.56480	.49010	.00800	-.01500	.00430	-1.25980	.00000	.73320	.00000	-1.25980
1.958	186.040	-.39010	.42080	.01540	-.00380	.00170	-1.24680	.00000	.76980	.00000	-1.24680
1.958	183.910	-.13380	.19740	.01460	-.02260	-.00490	-1.25590	.00000	.83860	.00000	-1.25590
1.958	179.780	.07260	-.08600	.00730	-.03490	.00160	-1.26460	.00000	.78750	.00000	-1.26460
1.958	175.650	.27550	-.33380	-.00220	-.02840	-.00210	-1.26210	.00000	.79290	.00000	-1.26210
1.958	171.540	.51340	-.56310	-.00850	-.02670	.00140	-1.28800	.00000	.77300	.00000	-1.28800
1.958	169.570	.66780	-.61910	-.00930	-.02630	.00320	-1.28690	.00000	.74350	.00000	-1.28690
1.958	179.780	.08150	-.09790	.00880	-.02260	-.00310	-1.23650	.00000	.79110	.00000	-1.23650
	GRADIENT	-.05733	.05708	.00117	.00087	.00001	.00175	.00000	.00015	.00000	.00175

RUN NO. 38/ 0 RN/L = 6.26 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
3.479	189.870	-.43380	.25400	.01190	.01910	.00330	-1.21450	.00000	.68420	.00000	-1.21450
3.479	187.950	-.31720	.21390	.00900	.00620	.01480	-1.22360	.00000	.69960	.00000	-1.22360
3.479	183.860	-.09630	.08960	.00060	-.01270	.00620	-1.23880	.00000	.74400	.00000	-1.23880
3.479	179.790	.08910	-.09800	-.00010	-.01370	.01700	-1.25090	.00000	.77350	.00000	-1.25090
3.479	175.700	.27430	-.28600	-.00330	-.02250	.00500	-1.26400	.00000	.76360	.00000	-1.26400
3.479	171.630	.49360	-.41580	-.00450	-.02130	.00090	-1.28200	.00000	.72820	.00000	-1.28200
3.479	169.710	.62450	-.45680	.00720	-.00510	.00390	-1.28350	.00000	.70950	.00000	-1.28350
3.479	179.790	.08940	-.11570	.00750	-.01320	.00660	-1.25210	.00000	.80710	.00000	-1.25210
	GRADIENT	-.05091	.03744	.00047	.00138	.00032	.00345	.00000	-.00154	.00000	.00345

RUN NO. 37/ 0 RN/L = 5.01 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	189.800	-.33200	.23110	.00120	.01230	.02100	-1.16760	.00000	.70340	.00000	-1.16760
4.960	187.890	-.27670	.17090	.00130	.00020	.00470	-1.17980	.00000	.68980	.00000	-1.17980
4.960	183.840	-.08380	.04070	-.00560	.00970	-.00160	-1.19840	.00000	.66680	.00000	-1.19840
4.960	179.810	.06890	-.12320	-.00050	.00970	.00450	-1.22580	.00000	.69300	.00000	-1.22580
4.960	175.770	.22090	-.26220	-.00030	-.02670	.00790	-1.24680	.00000	.78860	.00000	-1.24680
4.960	171.760	.42770	-.41650	-.00820	.02090	-.00170	-1.25590	.00000	.75240	.00000	-1.25590
4.960	169.840	.52420	-.46990	-.00300	.02620	.03270	-1.25330	.00000	.73820	.00000	-1.25330
4.960	179.810	.06910	-.13600	-.00030	.00360	.02250	-1.22530	.00000	.92410	.00000	-1.22530
	GRADIENT	-.04271	.03585	.00027	-.00044	-.00029	.00460	.00000	-.00372	.00000	.00460

MSFC 583(TA1F) 324 IN. DIA. ET(41B MOD) W/GRIT (R99041) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = 225.000

RUN NO. 17/ 0 RN/L = 4.97 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	-9.810	-.61100	-.82350	.04790	-.00520	-.02690	.46000	.02270	.34840	.00000	.43730
4.960	-7.690	-.46020	-.67860	.04280	-.01550	-.02760	.45430	.02310	.32640	.00000	.43110
4.960	-5.630	-.19910	-.37790	.02670	-.03480	.00010	.45310	.02150	.25270	.00000	.43150
4.960	.200	.04990	.01500	.02870	.00060	.00270	.45660	.02100	.53030	.00000	.43550
4.960	4.260	.29750	.30630	.01780	-.03270	.00010	.46190	.02190	.40360	.00000	.43990
4.960	8.280	.55920	.63180	.03120	-.00060	.01360	.48050	.02310	.38620	.00000	.45730
4.960	10.200	.70970	.75240	.03110	-.03810	.01610	.49320	.02430	.39830	.00000	.46880
4.960	.200	.07670	.00820	.02670	-.00580	.00220	.45200	.02240	.56380	.00000	.42960
	GRADIENT	.06138	.08456	-.00110	.00025	-.00000	.00109	.00005	.01859	.00000	.00104

MSFC 583(TA1F) 324 IN. DIA. ET(41B MOD) W/GRIT (R99042) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = 225.000

RUN NO. 18/ 0 RN/L = 4.97 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	10.510	.85910	.78150	.04290	-.05990	.00210	.50860	.02430	.42440	.00000	.48430
4.960	12.410	.95610	.92690	.04400	-.03310	.02160	.52370	.02420	.41400	.00000	.49950
4.960	16.470	1.33620	1.14740	.05060	-.09050	.01630	.55260	.02430	.43350	.00000	.52620
4.960	20.530	1.81520	1.53130	.05340	-.10230	.03840	.59380	.02460	.45510	.00000	.56910
4.960	24.610	2.39970	1.48690	.06780	-.13660	.06980	.63510	.02510	.47470	.00000	.60990
4.960	28.660	2.99800	1.66850	.08770	-.17830	.07130	.67350	.02520	.48580	.00000	.64820
4.960	30.590	3.26270	1.74270	.11100	-.22840	.08940	.68920	.02550	.49020	.00000	.66360
4.960	20.530	1.82860	1.35370	.06480	-.10490	.05510	.59110	.02550	.45390	.00000	.56550
	GRADIENT	.12337	.04653	.00302	-.00834	.00408	.00918	.00006	.00385	.00000	.00911

MSFC 583(TA1F) 324 IN. DIA. ET(41B MOD) W/GRIT (R99043) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = 225.000

RUN NO. 79/ 0 RN/L = 4.98 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	50.400	6.14680	2.61840	.29920	-.23420	.22750	.74510	.00000	.50850	.00000	.74510
4.960	52.290	6.40510	2.68260	.30140	-.20850	.25300	.73660	.00000	.50970	.00000	.73660
4.960	56.330	7.00420	2.81770	.31780	-.15980	.25700	.70660	.00000	.51260	.00000	.70660
4.960	60.360	7.54450	2.96390	.35040	-.12150	.28260	.66040	.00000	.51420	.00000	.66040
4.960	64.400	8.06110	3.20520	.37830	-.02960	.30140	.58690	.00000	.51340	.00000	.58690
4.960	68.400	8.43040	3.27960	.34250	.03090	.30860	.52070	.00000	.51490	.00000	.52070
4.960	70.310	8.63040	3.34130	.38920	.03960	.31930	.47570	.00000	.51520	.00000	.47570
4.960	60.360	7.50620	2.97480	.35030	-.11490	.28320	.66500	.00000	.51360	.00000	.66500
	GRADIENT	.12561	.03764	.00408	.01437	.00427	-.01360	.00000	.00031	.00000	-.01360

MSFC 583(TA1F) 324 IN. DIA. ET(41B MOD) W/GRIT (R99044) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = 225.000

RUN NO. 80/ 0 RN/L = 4.98 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	80.560	9.12840	3.16670	.41530	.03180	.33080	.25270	.00000	.52220	.00000	.25270
4.960	82.440	9.15360	3.10300	.42190	.06190	.34510	.17330	.00000	.52360	.00000	.17330
4.960	86.460	9.25450	2.94850	.43880	.02450	.33640	-.02350	.00000	.52710	.00000	-.02350
4.960	90.450	9.30580	2.74270	.44510	.02120	.35450	-.23880	.00000	.53130	.00000	-.23880
4.960	94.460	9.35270	2.38260	.46260	.00760	.35970	-.42070	.00000	.53820	.00000	-.42070
4.960	98.430	9.27670	2.01600	.45140	.01380	.33850	-.54710	.00000	.54470	.00000	-.54710
4.960	100.320	9.28950	1.84170	.45130	-.00710	.36030	-.61700	.00000	.54800	.00000	-.61700
4.960	90.450	9.28950	2.73180	.44520	.03400	.35550	-.24290	.00000	.53140	.00000	-.24290
	GRADIENT	.00837	-.06771	.00194	-.00236	.00093	-.04490	.00000	.00132	.00000	-.04490

MSFC 583(TA1F) 324 IN. DIA. ET(41B MOD) W/GRIT (R99045) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = 225.000

RUN NO. 69/ 0 RN/L = 4.89 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPBI	CPC
4.960	129.600	5.65860	.05810	.10730	.06020	.28360	-.81720	.00000	.58070	.00000	-.81720
4.960	127.680	5.95920	.10890	.11130	.05160	.29570	-.76620	.00000	.57930	.00000	-.76620
4.960	123.650	6.62170	.27940	.14080	.07090	.33410	-.65580	.00000	.57510	.00000	-.65580
4.960	119.630	7.19190	.38610	.14300	.06170	.36750	-.53910	.00000	.57310	.00000	-.53910
4.960	115.580	7.74770	.57300	.15020	.08160	.37250	-.41540	.00000	.56960	.00000	-.41540
4.960	111.560	8.20750	.76020	.15860	.07600	.37210	-.27330	.00000	.56640	.00000	-.27330
4.960	109.670	8.42370	.86140	.16910	.05240	.37960	-.20410	.00000	.56470	.00000	-.20410
4.960	119.620	7.20660	.31940	.13700	.07050	.35680	-.55530	.00000	.57470	.00000	-.55530
	GRADIENT	-.13914	-.04000	-.00287	-.00045	-.00479	-.03062	.00000	.00079	.00000	-.03062

MSFC 583(TA1F) 324 IN. DIA. ET(41B MOD) W/GRIT (R99046) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = 225.000

RUN NO. 34/ 0 RN/L = 5.03 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPBI	CPC
4.960	149.240	2.75120	.08740	.01080	.03820	.12900	-1.11630	.00000	.57690	.00000	-1.11630
4.960	147.330	3.05150	.11150	.00870	.05080	.15100	-1.09880	.00000	.57610	.00000	-1.09880
4.960	143.240	3.67770	.16870	.02160	.05770	.18500	-1.04160	.00000	.57450	.00000	-1.04160
4.960	139.160	4.34390	.25980	.02860	.06610	.21290	-.96840	.00000	.57210	.00000	-.96840
4.960	135.060	5.02450	.33760	.00700	.07710	.22300	-.87950	.00000	.57080	.00000	-.87950
4.960	131.000	5.66500	.42160	.05300	.14250	.26370	-.78850	.00000	.56950	.00000	-.78850
4.960	129.070	5.97790	.44400	.06300	.11970	.27710	-.74080	.00000	.56950	.00000	-.74080
4.960	139.150	4.34680	.13160	.02870	.08000	.21200	-.96580	.00000	.57720	.00000	-.96580
	GRADIENT	-.16042	-.01842	-.00224	-.00446	-.00694	-.01892	.00000	.00039	.00000	-.01892

MSFC 583(TA1F) 324 IN. DIA. ET(41B MOD) W/GRIT (R99047) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = 225.000

RUN NO. 35/ 0 RN/L = 5.02 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	169.640	.56470	-.42660	.02670	-.03380	.03220	-1.24780	.00000	.71370	.00000	-1.24780
4.960	167.750	.66100	-.49050	.02590	-.02030	.04850	-1.24080	.00000	.71130	.00000	-1.24080
4.960	163.690	1.00140	-.48590	.01820	-.02480	.04870	-1.22380	.00000	.66670	.00000	-1.22380
4.960	159.640	1.38140	-.42010	-.00800	.01350	.05660	-1.19850	.00000	.63530	.00000	-1.19850
4.960	155.570	1.86480	-.24420	.01630	.05360	.08200	-1.17620	.00000	.60500	.00000	-1.17620
4.960	151.520	2.49570	-.06990	.01240	.05260	.16300	-1.14660	.00000	.58730	.00000	-1.14660
4.960	149.580	2.78310	-.13570	.01680	.03860	.13520	-1.12760	.00000	.59090	.00000	-1.12760
4.960	159.640	1.38210	-.44620	-.00800	.01370	.05660	-1.20270	.00000	.63850	.00000	-1.20270
	GRADIENT	-.11133	-.02000	.00059	-.00447	-.00573	-.00591	.00000	.00680	.00000	-.00591

MSFC 583(TA1F) 324 IN. DIA. ET(41B MOD) W/GRIT (R99048) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = 225.000

RUN NO. 36/ 0 RN/L = 5.01 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	189.600	-.39950	.24880	.07240	-.06660	-.00060	-1.17150	.00000	.69060	.00000	-1.17150
4.960	187.890	-.28970	.19510	.05990	-.04970	-.00780	-1.16270	.00000	.69940	.00000	-1.16270
4.960	183.840	-.11000	.06700	.06400	-.01850	-.01020	-1.20610	.00000	.68820	.00000	-1.20610
4.960	179.810	.05630	-.12350	.05750	-.00830	.00070	-1.22360	.00000	.96290	.00000	-1.22360
4.960	175.760	.26320	-.28180	.05660	-.01920	.00770	-1.23890	.00000	.76840	.00000	-1.23890
4.960	171.760	.41520	-.44470	.04500	-.03900	.03860	-1.24580	.00000	.76850	.00000	-1.24580
4.960	169.640	.53810	-.46130	.04400	-.02610	.03750	-1.24370	.00000	.73140	.00000	-1.24370
4.960	179.820	.04240	-.12230	.05220	-.03180	-.00300	-1.22610	.00000	1.08250	.00000	-1.22610
	GRADIENT	-.04573	.03773	.00120	-.00135	-.00228	.00376	.00000	-.00356	.00000	.00376

MSFC 503(TA1F) 324 IN. DIA. ET(41P MOD) W/GRIT (R99049) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = 270.000

RUN NO. 140/ 0 RN/L = 6.96 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
1.955	-10.100	-.77890	-1.03500	-.14630	.11170	.02840	.74180	.09870	.35170	.00000	.64310
1.955	-8.100	-.56980	-.84740	-.11350	.10380	.02300	.72050	.09070	.32410	.00000	.62980
1.955	-3.930	-.23500	-.42560	-.08670	.11110	.00350	.69340	.08140	.26790	.00000	.61200
1.955	.230	.03060	.03540	-.08340	.12390	-.00470	.69580	.07490	.36180	.00000	.62080
1.955	4.395	.29900	.52080	-.08060	.11150	-.01300	.71530	.07930	.27990	.00000	.63590
1.955	8.340	.63630	.94720	-.08900	.11920	-.02650	.72620	.09580	.32590	.00000	.63030
1.955	10.340	.85250	1.12650	-.10140	.11210	-.03880	.72970	.10200	.35290	.00000	.62760
1.955	.220	.04280	.04330	-.08250	.12270	-.00670	.68210	.07530	.40670	.00000	.60670
	GRADIENT	.06416	.11375	.00073	.00005	-.00220	.00263	-.00025	.00144	.00000	.00287

RUN NO. 21/ 0 RN/L = 6.34 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
3.479	-9.940	-.75770	-.85540	.05260	-.07410	-.03100	.55720	.04940	.38640	.00000	.50770
3.479	-8.010	-.56800	-.70970	.05860	-.07990	-.02660	.55850	.04840	.36540	.00000	.51010
3.479	-3.880	-.24900	-.37000	.05290	-.07540	-.01060	.55210	.04380	.32440	.00000	.50820
3.479	.200	.02860	.02720	.04910	-.07380	-.00280	.55410	.04220	.41700	.00000	.51190
3.479	4.320	.29960	.41350	.05550	-.06900	.00210	.55100	.04350	.34280	.00000	.50740
3.479	8.400	.61850	.75950	.06240	-.07530	.01070	.55920	.04730	.36920	.00000	.51180
3.479	10.360	.82010	.91860	.09900	-.06630	.02110	.56310	.04860	.38790	.00000	.51440
3.479	.200	.02850	.02730	.05150	-.08020	-.00350	.55410	.04240	.41580	.00000	.51170
	GRADIENT	.06690	.09555	.00032	.00078	.00155	-.00014	-.00004	.00221	.00000	-.00010

RUN NO. 22/ 0 RN/L = 4.97 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	-9.810	-.62260	-.79290	.00280	.01220	-.03530	.47510	.02370	.36120	.00000	.45130
4.960	-7.890	-.46640	-.63300	.05450	.01430	-.03150	.47370	.02370	.35640	.00000	.44990
4.960	-3.830	-.18520	-.34320	.05600	.00370	-.00360	.47040	.02250	.26060	.00000	.44780
4.960	.200	.04960	.01550	.05100	-.01100	-.00490	.47000	.02130	.52620	.00000	.44860
4.960	4.260	.29780	.37120	.05150	-.04010	-.00190	.47170	.02130	.36590	.00000	.45030
4.960	8.280	.58650	.70320	.06510	-.00810	.03470	.48790	.02280	.37420	.00000	.46500
4.960	10.200	.71000	.84190	.07070	-.03380	.00320	.48660	.02430	.37650	.00000	.46220
4.960	.200	.06310	.01250	.05110	-.01110	.00650	.47460	.02220	.54800	.00000	.45230
	GRADIENT	.05971	.06831	-.00056	-.00542	.00021	.00016	-.00015	.01295	.00000	.00031

MSFC 583(TA1F) 324 IN. DIA. ET(41B MOD) W/GRIT (R99050) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0039

PARAMETRIC DATA

BETA = .000 PHI = 270.000

RUN NO. 139/ 0 RN/L = 6.96 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
1.953	10.610	.64320	1.11290	-.07060	.14550	-.04080	.72650	.10370	.35320	.00000	.62280
1.953	12.620	1.09640	1.25950	-.07980	.12980	-.04890	.73040	.11020	.38330	.00000	.62010
1.953	17.060	1.72900	1.55790	-.05630	.09770	-.06300	.72560	.12240	.42590	.00000	.60320
1.953	21.360	2.41460	1.89690	-.01480	.07850	-.08860	.72840	.12770	.44600	.00000	.60060
1.953	25.700	3.21800	2.32040	.02520	.05210	-.11880	.75240	.13410	.45720	.00000	.61830
1.953	29.950	3.93210	2.62190	.05690	.05620	-.14040	.71960	.13320	.46660	.00000	.58630
1.953	31.990	4.29450	2.76920	.07930	.04800	-.15570	.71260	.13540	.47040	.00000	.57710
1.953	21.320	2.41490	1.87530	-.01180	.07240	-.08310	.71810	.12740	.44760	.00000	.59060
	GRADIENT	.16472	.07961	.00762	-.00455	-.00549	-.00030	.00143	.00511	.00000	-.00173

RUN NO. 20/ 0 RN/L = 6.31 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
3.479	10.650	.80820	.93860	.11700	-.05310	.01630	.56440	.04880	.38070	.00000	.51560
3.479	12.590	.99710	1.08290	.13330	-.05000	.02630	.56650	.04830	.39380	.00000	.51610
3.479	16.730	1.43710	1.39200	.14940	-.01370	.03640	.57470	.04710	.41420	.00000	.52750
3.479	20.860	1.89510	1.67980	.16520	.00500	.04770	.58940	.04800	.42850	.00000	.54140
3.479	25.020	2.43130	1.89620	.16920	.03160	.06030	.60870	.04980	.44700	.00000	.55690
3.479	29.140	3.00690	2.11890	.16060	.05250	.07040	.62540	.04980	.46010	.00000	.57550
3.479	31.120	3.30270	2.23580	.15510	.06320	.08460	.63550	.05080	.46500	.00000	.58450
3.479	20.860	1.90040	1.67770	.16260	.00840	.05070	.59030	.04830	.42910	.00000	.54190
	GRADIENT	.12159	.06280	.00183	.00585	.00305	.00356	.00012	.00406	.00000	.00344

RUN NO. 19/ 0 RN/L = 4.95 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	10.500	.72340	.83760	.07700	-.00950	.00500	.48770	.02330	.38130	.00000	.46440
4.960	12.400	.86050	.96560	.08920	-.00450	.00480	.49330	.02370	.38350	.00000	.46950
4.960	16.470	1.25800	1.25300	.10920	.01890	.02340	.50850	.02390	.40940	.00000	.48460
4.960	20.520	1.68020	1.48540	.11810	.05110	.04310	.52360	.02360	.42890	.00000	.49990
4.960	24.600	2.19670	1.64430	.13290	.05560	.05460	.55130	.02450	.45240	.00000	.52680
4.960	28.640	2.75460	1.83280	.13590	.03090	.05830	.56940	.02420	.46690	.00000	.54510
4.960	30.570	3.05400	1.92830	.13810	.04410	.07100	.58460	.02370	.47260	.00000	.56080
4.960	20.510	1.65240	1.46660	.11170	.02670	.04130	.52390	.02420	.42850	.00000	.49970
	GRADIENT	.11626	.05300	.00297	.00266	.00334	.00482	.00003	.00463	.00000	.00479

MSFC 503(TA1F) 324 IN. DIA. ET(41B MOD) W/GRIT (R99051) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = 270.000

RUN NO. 104/ 0 RN/L = 7.01 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
1.948	51.230	6.26040	3.84690	.12430	.27160	.17170	.55230	.00000	.47570	.00000	.55230
1.948	53.140	6.50530	3.91010	.12600	.28070	.18310	.54800	.00000	.47600	.00000	.54800
1.948	57.250	7.02530	4.05550	.12740	.28710	.19220	.52940	.00000	.46220	.00000	.52940
1.948	61.290	7.46370	3.86250	.12730	.28780	.20560	.56300	.00000	.49180	.00000	.56300
1.948	65.360	7.79670	3.82540	.10950	.27750	.21280	.52440	.00000	.49720	.00000	.52440
1.948	69.360	8.11310	3.72780	.13190	.20140	.22050	.43630	.00000	.50260	.00000	.43630
1.948	71.270	8.22710	3.65010	.13510	.16560	.22790	.36530	.00000	.50540	.00000	.36530
1.948	61.240	7.23770	3.73970	.12570	.28050	.19890	.57860	.00000	.49270	.00000	.57860
	GRADIENT	.09826	-.01196	.00025	-.00476	.00260	-.00766	.00000	.00153	.00000	-.00766

RUN NO. 77/ 0 RN/L = 6.27 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
3.479	50.770	5.61220	3.07090	.16170	.11190	.16750	.61450	.00000	.49070	.00000	.61450
3.479	52.690	6.06700	3.10530	.16080	.12480	.15300	.61000	.00000	.49350	.00000	.61000
3.479	56.740	6.59400	3.14130	.17500	.13170	.16680	.59250	.00000	.49970	.00000	.59250
3.479	60.790	7.12290	3.31430	.16080	.16550	.18590	.54960	.00000	.50160	.00000	.54960
3.479	64.830	7.55620	3.36300	.17660	.15780	.19330	.51050	.00000	.50510	.00000	.51050
3.479	68.860	7.92260	3.41150	.18400	.16160	.20670	.46070	.00000	.50770	.00000	.46070
3.479	70.770	8.06690	3.36810	.19220	.14200	.21020	.42790	.00000	.50990	.00000	.42790
3.479	60.790	7.09610	3.34050	.16380	.17260	.18160	.55030	.00000	.50070	.00000	.55030
	GRADIENT	.11403	.01746	.00119	.00194	.00266	-.00937	.00000	.00090	.00000	-.00937

RUN NO. 78/ 0 RN/L = 4.98 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	50.380	5.66500	2.76250	.19050	.11600	.13410	.62110	.00000	.49770	.00000	.62110
4.960	52.270	5.92290	2.81560	.18050	.09940	.14460	.61050	.00000	.49990	.00000	.61050
4.960	56.320	6.45200	2.91600	.19610	.13510	.15930	.59260	.00000	.50390	.00000	.59260
4.960	60.340	6.98140	3.01710	.17680	.12760	.16570	.55430	.00000	.50740	.00000	.55430
4.960	64.380	7.41530	3.16470	.20250	.14190	.17790	.49450	.00000	.50830	.00000	.49450
4.960	68.370	7.79370	3.17160	.20460	.12200	.18250	.43400	.00000	.51180	.00000	.43400
4.960	70.280	7.95620	3.20670	.20580	.12840	.18320	.39450	.00000	.51240	.00000	.39450
4.960	60.340	6.96830	3.04570	.18290	.15210	.16750	.55590	.00000	.50650	.00000	.55590
	GRADIENT	.11592	.02302	.00103	.00095	.00241	-.01130	.00000	.00072	.00000	-.01130

HSFC 583(TAIF) 324 IN. DIA. ET(418 MOD) W/GRIT (R99052) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = 270.000

RUN NO. 103/ 0 RN/L = 6.98 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
1.955	81.400	8.79550	2.96540	.06940	.16630	.25050	-.09280	.00000	.52390	.00000	-.09280
1.955	83.280	8.92650	2.82900	.07370	.16370	.24970	-.16360	.00000	.52740	.00000	-.16360
1.955	87.290	9.06880	2.51430	.07950	.13370	.26070	-.30900	.00000	.53430	.00000	-.30900
1.955	91.250	9.11490	2.11920	.08150	.11350	.26890	-.43400	.00000	.54210	.00000	-.43400
1.955	95.230	9.08100	1.71590	.07870	.04780	.27450	-.54280	.00000	.54960	.00000	-.54280
1.955	99.160	8.94470	1.37910	.07600	.01760	.27100	-.65140	.00000	.55570	.00000	-.65140
1.955	101.040	8.87310	1.24730	.07400	.01730	.27860	-.70230	.00000	.55800	.00000	-.70230
1.955	91.240	9.07370	2.11990	.07790	.11100	.26600	-.43220	.00000	.54190	.00000	-.43220
	GRADIENT	.00276	-.09003	.00017	-.00846	.00143	-.03078	.00000	.00177	.00000	-.03078

RUN NO. 76/ 0 RN/L = 6.28 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
3.479	80.990	8.60240	3.13450	.16500	.12050	.23460	.17900	.00000	.51920	.00000	.17900
3.479	82.870	8.67090	3.03330	.17050	.11280	.23700	.09160	.00000	.52170	.00000	.09160
3.479	86.690	8.72900	2.89010	.16870	.12130	.23880	-.11960	.00000	.52490	.00000	-.11960
3.479	90.660	8.86420	2.42030	.21080	.00420	.24440	-.38150	.00000	.53510	.00000	-.38150
3.479	94.630	8.85410	1.96580	.20180	.03490	.24600	-.52720	.00000	.54390	.00000	-.52720
3.479	98.600	8.72770	1.59840	.20120	.02960	.24080	-.66280	.00000	.55060	.00000	-.66280
3.479	100.680	8.58650	1.43910	.17410	.08130	.23940	-.73140	.00000	.55330	.00000	-.73140
3.479	90.660	8.81960	2.42830	.22790	.00030	.24060	-.38350	.00000	.53460	.00000	-.38350
	GRADIENT	.00228	-.09023	.00133	-.00396	.00030	-.04711	.00000	.00182	.00000	-.04711

RUN NO. 75/ 0 RN/L = 5.02 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	80.540	8.56080	2.99520	.20440	.12030	.20730	.22900	.00000	.52170	.00000	.22900
4.960	82.420	8.63940	2.90630	.21550	.08470	.20430	.14520	.00000	.52400	.00000	.14520
4.960	86.430	8.70430	2.76130	.17830	.15690	.20140	-.03520	.00000	.52730	.00000	-.03520
4.960	90.430	8.84390	2.42700	.22240	.04670	.20920	-.29780	.00000	.53480	.00000	-.29780
4.960	94.440	8.87720	2.07060	.23380	.01520	.21310	-.47970	.00000	.54190	.00000	-.47970
4.960	98.400	8.81650	1.68730	.21680	.00940	.21440	-.63290	.00000	.54920	.00000	-.63290
4.960	100.300	8.73230	1.52070	.21170	.04780	.22420	-.71150	.00000	.55220	.00000	-.71150
4.960	90.430	8.81970	2.44750	.22790	.04590	.17980	-.28940	.00000	.53420	.00000	-.28940
	GRADIENT	.01072	-.07626	.00086	-.00531	.00083	-.04871	.00000	.00158	.00000	-.04871

MSFC 583(TA1F) 324 IN. DIA. ET(41B MOD) W/GRIT (R98053) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0050

PARAMETRIC DATA

BETA = .000 PHI = 270.000

RUN NO. 105/ 0 RN/L = 6.99 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
1.946	128.620	9.72910	-.62040	-.13000	-.05560	.18430	-.68420	.00000	.60130	.00000	-.68420
1.946	126.920	8.90810	-.51460	-.14390	-.05130	.19110	-.64910	.00000	.59760	.00000	-.64910
1.946	122.800	6.50430	-.37710	-.18470	-.07730	.21240	-.56110	.00000	.59250	.00000	-.56110
1.946	118.720	7.02700	-.11960	-.21380	-.07840	.22110	-.47330	.00000	.58540	.00000	-.47330
1.946	114.640	7.43680	.19880	-.22740	-.06320	.22730	-.35300	.00000	.57780	.00000	-.35300
1.946	110.640	7.85360	.53680	-.22420	-.02000	.23760	-.19280	.00000	.57060	.00000	-.19280
1.946	108.750	7.93770	.73400	-.21710	.00410	.23340	-.10010	.00000	.56640	.00000	-.10010
1.946	118.790	6.80410	-.05490	-.20630	-.05630	.21160	-.47280	.00000	.58390	.00000	-.47280
	GRADIENT	-.11391	-.06668	.00464	-.00248	-.00254	-.02837	.00000	.00172	.00000	-.02837

RUN NO. 71/ 0 RN/L = 6.22 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
3.479	129.240	5.34880	-.25110	-.03490	-.02200	.19180	-.70720	.00000	.59060	.00000	-.70720
3.479	127.320	5.60970	-.17590	-.03640	-.03410	.20300	-.66680	.00000	.58790	.00000	-.66680
3.479	123.260	6.15000	-.04870	-.04300	-.02070	.21940	-.56200	.00000	.58380	.00000	-.56200
3.479	119.210	6.65020	.10190	-.05460	-.00300	.23280	-.46170	.00000	.57980	.00000	-.46170
3.479	115.160	7.11620	.38250	-.05320	.00950	.24400	-.37030	.00000	.57310	.00000	-.37030
3.479	111.140	7.54640	.64430	-.06370	-.01040	.25250	-.26030	.00000	.56760	.00000	-.26030
3.479	109.230	7.71680	.80810	-.06750	-.01110	.25470	-.20550	.00000	.56430	.00000	-.20550
3.479	119.210	6.64410	.10230	-.05200	-.00380	.22770	-.46590	.00000	.57980	.00000	-.46590
	GRADIENT	-.11697	-.05214	.00162	-.00116	-.00310	-.02496	.00000	.00129	.00000	-.02496

RUN NO. 70/ 0 RN/L = 4.89 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	129.610	5.43420	.02960	-.00540	.03270	.19740	-.71880	.00000	.58150	.00000	-.71880
4.960	127.690	5.67950	.01190	-.00780	.07090	.19970	-.67160	.00000	.58210	.00000	-.67160
4.960	123.670	6.26190	.23160	-.01720	.05800	.22320	-.57350	.00000	.57600	.00000	-.57350
4.960	119.650	6.76360	.33450	-.02620	.05880	.22830	-.46720	.00000	.57390	.00000	-.46720
4.960	115.610	7.12640	.52080	-.02920	.07590	.22600	-.36070	.00000	.56980	.00000	-.36070
4.960	111.610	7.70780	.96030	-.05020	.05190	.24430	-.24790	.00000	.56080	.00000	-.24790
4.960	109.710	7.88330	1.02920	-.05700	.04670	.25010	-.18110	.00000	.55980	.00000	-.18110
4.960	119.650	6.69480	.35620	-.04230	.02610	.23680	-.46880	.00000	.57320	.00000	-.46880
	GRADIENT	-.12275	-.05207	.00251	-.00016	-.00249	-.02672	.00000	.00115	.00000	-.02672

MSFC 383(TAIF) 324 IN. DIA. ET(41B MOD) W/GRIT (R99054) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = 270.000

RUN NO. 123/ 0 RN/L = 6.69 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
1.965	148.020	3.69050	-.58380	.19850	.02680	.12060	-1.12200	.00000	.60990	.00000	-1.12200
1.965	145.990	3.99420	-.53600	.16590	-.01190	.13010	-1.09690	.00000	.60580	.00000	-1.09690
1.965	141.730	4.67430	-.44160	.06610	-.13540	.14990	-1.03630	.00000	.59690	.00000	-1.03630
1.965	137.450	5.36370	-.34630	-.01840	-.18840	.16700	-.96630	.00000	.59370	.00000	-.96630
1.965	133.160	6.05650	-.26720	-.06660	-.17340	.19290	-.87410	.00000	.59010	.00000	-.87410
1.965	128.990	6.57660	-.21530	-.07170	-.11160	.21970	-.75940	.00000	.58810	.00000	-.75940
1.965	127.000	6.78450	-.24880	-.06960	-.10510	.22050	-.70480	.00000	.58880	.00000	-.70480
1.965	137.520	5.28670	-.38730	-.03360	-.18150	.16650	-.96060	.00000	.59520	.00000	-.96060
	GRADIENT	-.15020	-.01740	.01345	.00598	-.00496	-.01976	.00000	.00102	.00000	-.01976

RUN NO. 33/ 0 RN/L = 8.36 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
3.479	148.740	2.95200	-.38480	.04340	-.08080	.11360	-1.07820	.00000	.60510	.00000	-1.07820
3.479	146.790	3.24550	-.35480	.01360	-.09510	.12740	-1.05290	.00000	.60140	.00000	-1.05290
3.479	142.650	3.85970	-.30420	.01180	-.07700	.14370	-.99080	.00000	.59610	.00000	-.99080
3.479	138.430	4.50420	-.25130	.00490	-.06870	.16330	-.91670	.00000	.59210	.00000	-.91670
3.479	134.250	5.12410	-.17720	.00080	-.06980	.18110	-.83090	.00000	.58850	.00000	-.83090
3.479	130.120	5.71970	-.08760	-.00310	-.06830	.20360	-.73960	.00000	.58510	.00000	-.73960
3.479	126.150	5.98710	-.04130	-.00250	-.06120	.21070	-.69410	.00000	.58360	.00000	-.69410
3.479	138.440	4.49220	-.26100	.00760	-.07210	.16980	-.91250	.00000	.59250	.00000	-.91250
	GRADIENT	-.14813	-.01631	.00171	-.00118	-.00465	-.01875	.00000	.00101	.00000	-.01875

RUN NO. 32/ 0 RN/L = 4.97 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	149.250	2.59060	-.21240	.04870	-.04590	.10190	-1.05070	.00000	.59670	.00000	-1.05070
4.960	147.340	2.87600	-.16100	.04150	-.05710	.12000	-1.02720	.00000	.59220	.00000	-1.02720
4.960	143.250	3.47430	-.09960	.03740	-.04480	.14760	-.97060	.00000	.58740	.00000	-.97060
4.960	139.180	4.07260	-.06320	.02770	-.03690	.16390	-.89980	.00000	.58510	.00000	-.89980
4.960	135.080	4.72650	.01750	.02310	-.01870	.16770	-.82030	.00000	.58180	.00000	-.82030
4.960	131.030	5.32280	.10590	.01960	-.03210	.19140	-.72760	.00000	.57900	.00000	-.72760
4.960	129.100	5.61010	.12020	.07350	.03810	.19140	-.68950	.00000	.57870	.00000	-.68950
4.960	139.180	4.07350	-.10160	.03340	-.03200	.16930	-.89660	.00000	.58680	.00000	-.89680
	GRADIENT	-.15021	-.01626	-.00003	-.00313	-.00424	-.01813	.00000	.00084	.00000	-.01813

MSFC 583(TA1F) 324 IN. DIA. ET(418 MOD) W/GRIT (R99055) (20 MAR 74)

REFERENCE DATA

BREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = 270.000

RUN NO. 122/ 0 RN/L = 6.89 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
1.953	169.330	.76360	-.67440	.10750	.03220	.04300	-1.28530	.00000	.73590	.00000	-1.28530
1.953	167.340	.99020	-.68830	.15510	.07360	.05050	-1.28880	.00000	.70320	.00000	-1.28880
1.953	163.110	1.54760	-.67930	.25330	.14920	.06770	-1.27630	.00000	.65870	.00000	-1.27630
1.953	158.840	2.16660	-.68110	.29170	.15190	.08150	-1.25300	.00000	.63710	.00000	-1.25300
1.953	154.530	2.85400	-.70030	.32220	.12610	.10250	-1.23950	.00000	.62510	.00000	-1.23950
1.953	150.340	3.44840	-.64570	.28720	.08020	.11430	-1.16470	.00000	.61500	.00000	-1.16470
1.953	146.300	3.78890	-.61900	.26800	.05260	.12300	-1.13750	.00000	.61080	.00000	-1.13750
1.953	158.690	2.13590	-.64410	.27310	.13540	.08000	-1.23210	.00000	.63480	.00000	-1.23210
	GRADIENT	-.14491	-.00212	-.00771	-.00042	-.00381	-.00688	.00000	.00549	.00000	-.00688

RUN NO. 30/ 0 RN/L = 6.35 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
3.479	169.520	.62610	-.47540	.08740	-.02110	.03460	-1.24580	.00000	.71430	.00000	-1.24580
3.479	167.590	.78510	-.49210	.09940	-.02210	.04260	-1.24120	.00000	.69130	.00000	-1.24120
3.479	163.470	1.15170	-.54900	.12040	-.02310	.05640	-1.22190	.00000	.66530	.00000	-1.22190
3.479	159.350	1.57200	-.56640	.12040	-.02390	.06620	-1.19460	.00000	.64500	.00000	-1.19460
3.479	155.200	2.07010	-.51940	.10500	-.04880	.08610	-1.15510	.00000	.62600	.00000	-1.15510
3.479	151.080	2.61030	-.45430	.07630	-.06990	.10550	-1.10930	.00000	.61270	.00000	-1.10930
3.479	149.100	2.90790	-.41380	.06410	-.07010	.11050	-1.08730	.00000	.60720	.00000	-1.08730
	GRADIENT	-.11127	-.00282	.00130	.00264	-.00372	-.00788	.00000	.00502	.00000	-.00788

RUN NO. 31/ 0 RN/L = 5.03 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	169.650	.49730	-.47000	.06850	-.07750	.04790	-1.23150	.00000	.74660	.00000	-1.23150
4.960	167.750	.63500	-.52690	.08380	-.03170	.04420	-1.23320	.00000	.72660	.00000	-1.23320
4.960	163.690	.96330	-.58510	.09950	-.04250	.09170	-1.21900	.00000	.68790	.00000	-1.21900
4.960	159.640	1.31710	-.60860	.09210	-.06590	.06450	-1.19240	.00000	.66270	.00000	-1.19240
4.960	155.570	1.81970	-.51000	.08340	-.07740	.08840	-1.15880	.00000	.63110	.00000	-1.15880
4.960	151.520	2.35040	-.46710	.07530	-.11390	.09700	-1.11260	.00000	.61700	.00000	-1.11260
4.960	149.590	2.64910	-.45560	.06700	-.08700	.08280	-1.09240	.00000	.61230	.00000	-1.09240
4.960	159.640	1.31730	-.63460	.10390	-.07550	.07710	-1.19130	.00000	.66610	.00000	-1.19130
	GRADIENT	-.10655	-.00256	.00041	.00247	-.00209	-.00716	.00000	.00674	.00000	-.00716

MSFC 583(TA1F) 324 IN. DIA. ET(41B MOD) W/GRIT (R99056) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = 270.000

RUN NO. 121/ 0 RN/L = 6.85 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
1.956	190.080	-.67860	.55680	.07610	-.01180	-.02480	-1.27460	.00000	.72500	.00000	-1.27460
1.956	188.090	-.46640	.48050	.06140	-.01640	-.02110	-1.26370	.00000	.75410	.00000	-1.26370
1.956	183.950	-.21440	.24110	.03940	-.03220	-.00720	-1.27980	.00000	.77770	.00000	-1.27980
1.956	179.820	.00440	-.05520	.03370	-.05230	.00340	-1.27500	.00000	2.75050	.00000	-1.27500
1.956	175.640	.23180	-.35200	.04460	-.03650	.01990	-1.28030	.00000	.84620	.00000	-1.28030
1.956	171.520	.54740	-.61930	.08890	-.02570	.03370	-1.29610	.00000	.77900	.00000	-1.29610
1.956	169.520	.73860	-.70300	.13110	.01560	.03930	-1.29600	.00000	.74780	.00000	-1.29600
1.956	179.820	-.00030	-.05730	.04090	-.04380	.00260	-1.24800	.00000	.00000	.00000	-1.24800
	GRADIENT	-.06521	.06401	-.00213	-.00049	-.00320	.00126	.00000	-.00185	.00000	.00126

RUN NO. 29/ 0 RN/L = 6.37 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
3.479	189.910	-.53670	.34920	.08330	-.04300	-.02440	-1.23750	.00000	.69550	.00000	-1.23750
3.479	187.980	-.40820	.29630	.07250	-.05340	-.01570	-1.24480	.00000	.70860	.00000	-1.24480
3.479	183.890	-.17480	.15990	.06620	-.05030	-.00280	-1.25340	.00000	.74140	.00000	-1.25340
3.479	179.820	.00420	-.05500	.05550	-.06490	.00630	-1.25090	.00000	2.84400	.00000	-1.25090
3.479	175.720	.21450	-.25730	.06690	-.04430	.01010	-1.25830	.00000	.79080	.00000	-1.25830
3.479	171.660	.46690	-.41390	.08870	-.03870	.02050	-1.25490	.00000	.73640	.00000	-1.25490
3.479	169.710	.61410	-.46330	.09820	-.03850	.03360	-1.25170	.00000	.71350	.00000	-1.25170
3.479	179.820	.00460	-.07820	.05810	-.06260	.00620	-1.25340	.00000	3.50510	.00000	-1.25340
	GRADIENT	-.05493	.04238	-.00077	-.00051	-.00252	.00066	.00000	-.00157	.00000	.00066

RUN NO. 28/ 0 RN/L = 5.02 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	189.800	-.35930	.35830	.07750	-.05040	-.00780	-1.19120	.00000	.75570	.00000	-1.19120
4.960	187.890	-.29000	.29740	.08190	-.02010	-.02760	-1.19850	.00000	.76060	.00000	-1.19850
4.960	183.840	-.07030	.18920	.07530	-.02960	-.00930	-1.21040	.00000	1.04960	.00000	-1.21040
4.960	179.810	.12270	.00800	.06870	-.03220	-.00310	-1.21170	.00000	.57110	.00000	-1.21170
4.960	175.780	.30250	-.17170	.07390	-.03640	.00930	-1.21600	.00000	.68100	.00000	-1.21600
4.960	171.750	.49540	-.31380	.08420	-.02770	.02600	-1.21130	.00000	.69250	.00000	-1.21130
4.960	169.830	.60550	-.38040	.09500	-.02430	.03170	-1.20390	.00000	.69160	.00000	-1.20390
4.960	179.810	.12280	.01980	.08080	-.05480	.00470	-1.21440	.00000	.55430	.00000	-1.21440
	GRADIENT	-.04825	.03800	-.00052	-.00045	-.00249	.00070	.00000	.00739	.00000	.00070

MSFC 583(TA1F) 324 IN. DIA. ET(418 MOD) W/GRIT (R99057) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = 315.000

RUN NO. 23/ 0 RN/L = 4.96 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	-9.810	-.66310	-.69110	.04160	-.00900	-.00410	.50030	.02400	.40140	.00000	.47670
4.960	-7.890	-.52600	-.54360	.05390	.00220	.00780	.49240	.02360	.40300	.00000	.46880
4.960	-3.830	-.25120	-.26570	.03240	-.00930	-.02140	.49170	.02280	.38490	.00000	.46880
4.960	.190	-.03090	.07590	.03910	-.00770	-.00430	.45770	.02160	.99810	.00000	.43600
4.960	4.250	.21690	.38950	.04070	.00760	.00250	.45830	.02060	.27060	.00000	.43760
4.960	8.270	.47810	.68930	.04190	.00370	.00190	.45920	.02240	.33200	.00000	.43680
4.960	10.200	.65650	.85340	.04320	.01780	.00870	.46650	.02240	.35670	.00000	.44410
4.960	.200	.02300	.06010	.05120	.00860	-.00330	.46240	.02190	.12900	.00000	.44040
	GRADIENT	.05794	.08355	.00103	.00209	.00296	-.00413	-.00027	-.01442	.00000	-.00385

MSFC 583(TA1F) 324 IN. DIA. ET(418 MOD) W/GRIT (R99058) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = 315.000

RUN NO. 24/ 0 RN/L = 4.97 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	10.490	.62950	.85970	.06040	.03320	-.00220	.46990	.02280	.34520	.00000	.44710
4.960	12.390	.79400	1.01400	.05570	.03580	.00360	.47070	.02280	.36060	.00000	.44780
4.960	16.450	1.12210	1.24540	.06310	.02980	-.00280	.47940	.02270	.38970	.00000	.45660
4.960	20.500	1.53150	1.46310	.07660	.01590	.00700	.49230	.02280	.41420	.00000	.46940
4.960	24.580	2.02190	1.67450	.08550	.02210	.00720	.51030	.02340	.43860	.00000	.48690
4.960	28.620	2.53980	1.87220	.07770	.03230	.01430	.52390	.02420	.45440	.00000	.49970
4.960	30.550	2.82600	1.98420	.07360	.02140	.01360	.53190	.02430	.46050	.00000	.50750
4.960	20.500	1.53130	1.46300	.08220	.01460	.00660	.49230	.02390	.41420	.00000	.46830
	GRADIENT	.10892	.05461	.00110	-.00049	.00078	.00322	.00008	.00576	.00000	.00314

MSFC 583(TA1F) 324 IN. DIA. ET(41B MOD) W/GRIT (R99059) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = 315.000

RUN NO. 73/ 0 RN/L = 4.91 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	50.370	5.32680	2.88560	.12320	.01130	.02300	.57260	.00000	.48840	.00000	.57260
4.960	52.280	5.55990	2.94370	.15840	-.00290	.01480	.53920	.00000	.49050	.00000	.53920
4.960	56.310	6.10420	3.08010	.13470	.04240	.02580	.51820	.00000	.49480	.00000	.51820
4.960	60.330	6.59150	3.14060	.16510	-.00930	.02650	.50110	.00000	.49970	.00000	.50110
4.960	64.370	7.06570	3.21450	.18560	.00570	.02720	.45880	.00000	.50340	.00000	.45880
4.960	68.360	7.44440	3.25980	.19930	-.00370	.03800	.39740	.00000	.50640	.00000	.39740
4.960	70.270	7.59290	3.27360	.19920	-.04860	.02280	.35820	.00000	.50760	.00000	.35820
4.960	60.330	6.57870	3.15650	.14870	.02040	.02950	.50090	.00000	.49910	.00000	.50090
	GRADIENT	.11551	.01931	.00359	-.00208	.00053	-.00976	.00000	.00098	.00000	-.00976

MSFC 583(TA1F) 324 IN. DIA. ET(41B MOD) W/GRIT (R99060) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = 315.000

RUN NO. 74/ 0 RN/L = 4.92 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	80.530	8.12780	3.11650	.23130	-.05130	.04580	.20280	.00000	.51580	.00000	.20280
4.960	82.430	8.22110	3.02410	.22150	-.02380	.03740	.13950	.00000	.51860	.00000	.13950
4.960	86.420	8.35130	2.86550	.23760	-.10640	.03070	-.04340	.00000	.52280	.00000	-.04340
4.960	90.420	8.32990	2.63710	.29230	-.19860	.02170	-.27410	.00000	.52750	.00000	-.27410
4.960	94.430	8.41630	2.21340	.31060	-.19370	.03450	-.47690	.00000	.53680	.00000	-.47690
4.960	98.400	8.37000	1.85120	.28380	-.13900	.04140	-.63040	.00000	.54400	.00000	-.63040
4.960	100.290	8.32620	1.70110	.29520	-.13010	.04210	-.70750	.00000	.54700	.00000	-.70750
4.960	98.420	8.32680	2.58510	.30920	-.20310	.02650	-.27500	.00000	.52850	.00000	-.27500
	GRADIENT	.00962	-.07316	.00401	-.00578	.00003	-.04757	.00000	.00160	.00000	-.04757

MSFC 583(TA1F) 324 IN. DIA. ET(41B MOD) W/GRIT (R99061) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = 315.000

RUN NO. 72/ 0 RN/L = 4.91 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	129.630	4.93560	.04390	.09860	-.12550	.08390	-.68850	.00000	.58090	.00000	-.68850
4.960	127.720	5.28170	.09670	.07960	-.12700	.07780	-.64480	.00000	.57930	.00000	-.64480
4.960	123.690	5.82290	.23050	.08820	-.15720	.09140	-.55200	.00000	.57560	.00000	-.55200
4.960	119.670	6.35130	.39210	.08510	-.17790	.08680	-.46500	.00000	.57170	.00000	-.46500
4.960	115.630	6.82510	.56280	.08790	-.18770	.09850	-.35610	.00000	.56810	.00000	-.35610
4.960	111.630	7.24350	.76650	.06310	-.23310	.11310	-.24690	.00000	.56410	.00000	-.24690
4.960	109.730	7.41810	.87250	.06250	-.25960	.09170	-.18810	.00000	.56200	.00000	-.18810
	119.670	6.35640	.34260	.09110	-.17920	.09280	-.46160	.00000	.57310	.00000	-.46160
	GRADIENT	-.12204	-.04159	.00137	.00642	-.00108	-.02492	.00000	.00093	.00000	-.02492

MSFC 583(TA1F) 324 IN. DIA. ET(41B MOD) W/GRIT (R99062) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = 315.000

RUN NO. 26/ 0 RN/L = 5.09 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	149.280	2.47750	.04840	.07760	-.04520	.04920	-.99390	.00000	.57910	.00000	-.99390
4.960	147.360	2.73730	-.05060	.07620	-.04430	.04910	-.96510	.00000	.58570	.00000	-.96510
4.960	143.270	3.33520	.03590	.07240	-.04500	.05450	-.90700	.00000	.58060	.00000	-.90700
4.960	139.210	3.90630	.10060	.08020	-.04300	.04820	-.84210	.00000	.57800	.00000	-.84210
4.960	135.120	4.50370	.21340	.08250	-.05850	.06070	-.76620	.00000	.57420	.00000	-.76620
4.960	131.090	5.07510	.30440	.07890	-.05980	.00800	-.68660	.00000	.57200	.00000	-.68660
4.960	129.140	5.35910	.39580	.09420	-.05940	.06580	-.64280	.00000	.56960	.00000	-.64280
	139.200	3.90630	.08710	.08040	-.04930	.03140	-.84640	.00000	.57860	.00000	-.84640
	GRADIENT	-.14332	-.01930	-.00063	.00088	.00038	-.01730	.00000	.00063	.00000	-.01730

MSFC 583(TA1F) 324 IN. DIA. ET(41B MOD) W/GRIT (R99063) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = 315.000

RUN NO. 25/ 0 RN/L = 5.12 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	169.650	.49510	-.36320	.06680	-.01550	.02480	-1.18260	.00000	.70990	.00000	-1.18260
4.960	167.760	.59080	-.38950	.07810	-.03150	.03200	-1.16740	.00000	.69700	.00000	-1.16740
4.960	163.700	.93170	-.40950	.08680	-.00320	.02960	-1.13640	.00000	.65880	.00000	-1.13640
4.960	159.650	1.29800	-.35860	.09230	-.08760	.04240	-1.09500	.00000	.63040	.00000	-1.09500
4.960	155.600	1.77390	-.26770	.09960	-.04140	.04400	-1.05310	.00000	.60870	.00000	-1.05310
4.960	151.540	2.27720	-.20730	.10770	-.03280	.04880	-1.00980	.00000	.59830	.00000	-1.00980
4.960	149.610	2.56230	-.14350	.10590	-.03350	.04290	-.99120	.00000	.59220	.00000	-.99120
4.960	159.650	1.29840	-.35730	.09120	-.04330	.04440	-1.09740	.00000	.63030	.00000	-1.09740
	GRADIENT	-.10354	-.01165	-.00187	.00095	-.00103	-.00968	.00000	.00598	.00000	-.00968

MSFC 583(TA1F) 324 IN. DIA. ET(41B MOD) W/GRIT (R99064) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = 315.000

RUN NO. 27/ 0 RN/L = 5.06 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	189.810	-.42740	.38130	.04220	-.00820	-.01160	-1.22900	.00000	.73740	.00000	-1.22900
4.960	187.900	-.33050	.30390	.05250	.02060	-.01380	-1.23310	.00000	.74210	.00000	-1.23310
4.960	183.850	-.15210	.17560	.05240	-.00960	-.01110	-1.22280	.00000	.78300	.00000	-1.22280
4.960	179.820	.05430	.03120	.05130	-.00800	.00040	-1.22280	.00000	.48240	.00000	-1.22280
4.960	175.770	.20670	-.15690	.06230	-.00960	.00670	-1.21120	.00000	.71430	.00000	-1.21120
4.960	171.770	.38500	-.27210	.06770	-.03550	.00900	-1.19620	.00000	.70520	.00000	-1.19620
4.960	169.850	.50830	-.31440	.07850	-.03230	.02630	-1.18230	.00000	.68990	.00000	-1.18230
4.960	179.820	.04020	.08530	.05650	.01490	.00420	-1.22210	.00000	.21450	.00000	-1.22210
	GRADIENT	-.04575	.03573	-.00145	.00191	-.00175	-.00224	.00000	.00290	.00000	-.00224

MSFC 583(TA1F) 324 IN. DIA. ET(41B MOD) (R99065) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = .000

RUN NO. 141/ 0 RN/L = 6.95 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
1.953	50.710	5.91160	4.03960	.02340	.02700	-.00870	.58330	.00000	.46380	.00000	.58330
1.953	52.610	6.13800	4.07460	.01480	.01940	-.00820	.57500	.00000	.46710	.00000	.57500
1.953	56.640	6.66520	4.17660	.00220	.01720	-.00650	.56710	.00000	.47360	.00000	.56710
1.953	60.680	7.14200	4.27740	.00090	.01520	-.00230	.54940	.00000	.47840	.00000	.54940
1.953	64.690	7.61260	4.36770	.00800	.01230	-.00580	.51900	.00000	.48280	.00000	.51900
1.953	68.670	7.88190	4.23670	.01210	.02710	-.00420	.47980	.00000	.48910	.00000	.47980
1.953	70.370	8.04350	4.20490	.00180	.02260	-.00320	.46040	.00000	.49160	.00000	.46040
1.953	60.650	7.14340	4.26500	-.00390	.01730	-.00510	.55190	.00000	.47870	.00000	.55190
	GRADIENT	.10875	.01037	-.00059	-.00001	.00025	-.00607	.00000	.00137	.00000	-.00607

RUN NO. 146/ 0 RN/L = 6.30 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
3.479	50.490	5.44810	3.37670	.02270	.02340	-.01390	.59330	.00000	.47480	.00000	.59330
3.479	52.380	5.68960	3.43860	.01730	.03830	-.01180	.58640	.00000	.47750	.00000	.58640
3.479	56.410	6.20780	3.53430	.01320	.01520	-.01780	.56880	.00000	.48360	.00000	.56880
3.479	60.420	6.68940	3.57070	.00960	.02360	-.01340	.54960	.00000	.48970	.00000	.54960
3.479	64.440	7.08040	3.60560	.01230	.01150	-.01650	.51770	.00000	.49400	.00000	.51770
3.479	68.430	7.42940	3.63760	.01260	.01610	-.01850	.48040	.00000	.49740	.00000	.48040
3.479	70.330	7.57030	3.62420	.01380	.01870	-.01760	.45640	.00000	.49930	.00000	.45640
3.479	60.420	6.67430	3.57800	.00940	.02080	-.01890	.55140	.00000	.48930	.00000	.55140
	GRADIENT	.10764	.01213	-.00036	-.00067	-.00017	-.00674	.00000	.00124	.00000	-.00674

RUN NO. 145/ 0 RN/L = 4.99 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	50.340	5.37620	3.10730	.00400	.02440	-.03120	.59990	.00000	.48210	.00000	.59990
4.960	52.230	5.60920	3.18330	.00610	.04390	-.01780	.59040	.00000	.48390	.00000	.59040
4.960	56.250	6.14640	3.30860	.00970	.02450	-.04220	.56150	.00000	.48900	.00000	.56150
4.960	60.260	6.60860	3.40780	.00200	.02700	-.02890	.53090	.00000	.49290	.00000	.53090
4.960	64.280	7.03610	3.46990	-.01120	.03580	-.02640	.49800	.00000	.49680	.00000	.49800
4.960	68.260	7.40040	3.50880	.01920	.02360	-.04090	.44920	.00000	.50010	.00000	.44920
4.960	70.160	7.58950	3.53130	-.00700	.03320	-.03150	.42680	.00000	.50160	.00000	.42680
4.960	60.260	6.57960	3.37160	.00190	.02680	-.04050	.53120	.00000	.49340	.00000	.53120
	GRADIENT	.11157	.02089	-.00025	-.00011	-.00035	-.00868	.00000	.00099	.00000	-.00868

MSFC 503(TAIF) 324 IN. DIA. ET(41B MOD) (R98068) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = .000

RUN NO. 142/ 0 RN/L = 6.96 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
1.955	80.350	8.43470	3.64060	.01900	.02150	-.00300	.34930	.00000	.50750	.00000	.34930
1.955	82.240	8.47010	3.49400	.01760	.01620	-.00640	.31190	.00000	.51080	.00000	.31190
1.955	86.220	8.62550	3.23530	.02080	.01300	-.00600	.23240	.00000	.51730	.00000	.23240
1.955	90.190	8.65560	2.89990	.00970	.00500	-.00830	.14640	.00000	.52430	.00000	.14640
1.955	94.160	8.65840	2.54450	.01030	.00070	-.00260	.05510	.00000	.53140	.00000	.05510
1.955	98.130	8.48970	2.18130	.00580	-.00270	-.00370	-.04690	.00000	.53780	.00000	-.04690
1.955	100.010	8.39980	1.98790	-.00290	-.00090	-.00420	-.09220	.00000	.54130	.00000	-.09220
1.955	90.180	8.52230	2.83990	.01170	.01970	-.00590	.14580	.00000	.52460	.00000	.14580
	GRADIENT	-.00015	-.08378	-.00100	-.00119	.00007	-.02248	.00000	.00172	.00000	-.02248

RUN NO. 143/ 0 RN/L = 6.91 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
3.479	80.290	8.14690	3.34560	.01130	.02170	-.00240	.35900	.00000	.51110	.00000	.35900
3.479	82.180	8.21790	3.26820	.01170	.01240	-.00810	.31940	.00000	.51340	.00000	.31940
3.479	86.170	8.31960	3.04730	.01050	.01550	-.00430	.23900	.00000	.51880	.00000	.23900
3.479	90.170	8.34400	2.79450	.00360	.00860	-.03730	.14780	.00000	.52430	.00000	.14780
3.479	94.160	8.32490	2.50390	.00360	.00310	-.00840	.05120	.00000	.53020	.00000	.05120
3.479	98.120	8.21830	2.21260	.00600	.01630	.00090	-.04670	.00000	.53570	.00000	-.04670
3.479	100.010	8.14390	2.04590	-.00190	.00950	.00400	-.09320	.00000	.53880	.00000	-.09320
3.479	90.150	8.34350	2.78890	.00590	.00890	-.00620	.14930	.00000	.52440	.00000	.14930
	GRADIENT	-.00000	-.06621	-.00057	-.00039	.00033	-.02299	.00000	.00140	.00000	-.02299

RUN NO. 144/ 0 RN/L = 5.11 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	80.240	8.03620	3.28560	.00820	.04080	-.03090	.37630	.00000	.51140	.00000	.37630
4.960	82.130	8.12060	3.24660	-.00230	.03640	-.03580	.33370	.00000	.51300	.00000	.33370
4.960	86.130	8.25180	3.06390	-.00640	.04560	-.02220	.24940	.00000	.51800	.00000	.24940
4.960	90.120	8.23370	2.81830	-.00080	.03250	-.02310	.15100	.00000	.52300	.00000	.15100
4.960	94.140	8.21730	2.57440	-.06860	-.01220	-.02580	.04800	.00000	.52800	.00000	.04800
4.960	98.110	8.10310	2.26860	-.01800	.02210	-.02100	-.06120	.00000	.53380	.00000	-.06120
4.960	100.010	8.01800	2.13330	-.02950	.02380	-.02530	-.11490	.00000	.53620	.00000	-.11490
4.960	90.120	8.23440	2.93130	-.01730	.04630	-.02620	.15070	.00000	.52270	.00000	.15070
	GRADIENT	-.00129	-.05959	-.00211	-.00145	.00045	-.02482	.00000	.00127	.00000	-.02482

MSFC 583(TA1F) 324 IN. DIA. ET(418 MOD) W/GRIT (R99067) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = .000

RUN NO. 111/ 0 RN/L = 7.00 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
1.949	108.820	7.36290	1.09690	-.08780	-.01620	-.00770	-.09980	.00000	.55650	.00000	-.09980
1.949	106.930	7.52130	1.30150	-.09060	-.01920	-.00280	-.01550	.00000	.55240	.00000	-.01550
1.949	102.870	7.95110	1.68990	-.11320	-.06560	-.01060	.13610	.00000	.54550	.00000	.13610
1.949	98.830	8.34760	2.05120	-.16060	-.18510	-.00850	.26340	.00000	.53980	.00000	.26340
1.949	94.810	8.58140	2.45780	-.17700	-.20370	-.01130	.37220	.00000	.53270	.00000	.37220
1.949	90.850	8.64700	2.79570	-.18150	-.21710	-.01290	.47460	.00000	.52630	.00000	.47460
1.949	86.970	8.64800	2.93610	-.17980	-.22230	-.01450	.51780	.00000	.52350	.00000	.51780
1.949	98.850	8.25200	2.02780	-.15720	-.18280	-.00700	.26150	.00000	.53980	.00000	.26150
	GRADIENT	-.06793	-.09294	.00530	.01170	.00042	-.03073	.00000	.00164	.00000	-.03073

RUN NO. 113/ 0 RN/L = 6.46 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
3.479	109.230	7.16990	1.13320	-.07360	-.01750	.01520	-.15310	.00000	.55500	.00000	-.15310
3.479	107.320	7.32600	1.28210	-.07980	-.02010	.01750	-.08280	.00000	.55200	.00000	-.08280
3.479	103.300	7.69080	1.56900	-.09860	.01030	.01120	.05120	.00000	.54700	.00000	.05120
3.479	99.290	7.93080	1.82200	-.10600	.02660	.01120	.22740	.00000	.54250	.00000	.22740
3.479	95.270	8.06990	2.11660	-.11460	.00700	.01440	.38420	.00000	.53690	.00000	.38420
3.479	91.300	8.18090	2.43350	-.13000	-.03900	.01220	.49430	.00000	.53080	.00000	.49430
3.479	69.410	8.21800	2.58980	-.12760	-.05250	.01560	.54150	.00000	.52770	.00000	.54150
	99.290	7.91040	1.76850	-.10580	.02730	.01390	.22450	.00000	.54360	.00000	.22450
	GRADIENT	-.05257	-.07242	.00281	.00143	.00007	-.03598	.00000	.00133	.00000	-.03598

RUN NO. 114/ 0 RN/L = 5.05 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	109.660	7.04760	1.05220	-.09690	.01550	.07810	-.16780	.00000	.55650	.00000	-.16780
4.960	107.780	7.15510	1.14330	-.08640	.02360	.06870	-.10290	.00000	.55470	.00000	-.10290
4.960	103.750	7.47710	1.37520	-.11150	.01600	.07090	.03540	.00000	.55050	.00000	.03540
4.960	99.740	7.69010	1.62340	-.11340	.02620	.06310	.19640	.00000	.54580	.00000	.19640
4.960	95.720	7.83120	1.93260	-.12650	.03920	.02590	.37470	.00000	.53960	.00000	.37470
4.960	91.750	7.93480	2.23160	-.22830	-.06990	.04530	.49190	.00000	.53360	.00000	.49190
4.960	89.650	7.97500	2.39570	-.14390	-.02280	.06460	.54240	.00000	.53030	.00000	.54240
	99.740	7.66980	1.64880	-.11320	.01340	.07580	.19590	.00000	.54520	.00000	.19590
	GRADIENT	-.04724	-.06798	.00462	.00290	.00186	-.03688	.00000	.00132	.00000	-.03688

MSFC 583(TA1F) 324 IN. DIA. ET(41B MOD) W/GRIT (R99068) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = 90.000

RUN NO. 110/ 0 RN/L = 7.01 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
1.950	108.620	8.41310	.99020	-.35670	-.18870	-.31250	-.09550	.00000	.56200	.00000	-.09550
1.950	106.700	8.63270	1.22190	-.35790	-.18100	-.31850	-.01160	.00000	.55790	.00000	-.01160
1.950	102.660	8.97670	1.60300	-.36240	-.21250	-.33380	.14400	.00000	.55140	.00000	.14400
1.950	98.660	9.31950	1.99640	-.35160	-.26510	-.34070	.28220	.00000	.54520	.00000	.28220
1.950	94.620	9.54970	2.41700	-.33360	-.29520	-.35090	.40130	.00000	.53850	.00000	.40130
1.950	90.680	9.59110	2.71330	-.35690	-.38820	-.34960	.50340	.00000	.53330	.00000	.50340
1.950	88.600	9.61480	2.88790	-.34560	-.38790	-.35380	.54540	.00000	.53030	.00000	.54540
1.950	98.680	9.24650	1.97570	-.34840	-.27020	-.33930	.27600	.00000	.54530	.00000	.27600
	GRADIENT	-.06135	-.09528	-.00066	.01110	.00204	-.03224	.00000	.00158	.00000	-.03224

RUN NO. 116/ 0 RN/L = 6.38 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
3.479	109.090	8.26830	.92750	-.35460	-.15860	-.31520	-.22680	.00000	.56300	.00000	-.22680
3.479	107.210	8.39090	1.08490	-.35030	-.15870	-.31810	-.17160	.00000	.56000	.00000	-.17160
3.479	103.170	8.71370	1.37080	-.36000	-.17300	-.32580	-.02540	.00000	.55510	.00000	-.02340
3.479	99.150	9.03310	1.63530	-.37990	-.17810	-.33690	.14930	.00000	.55100	.00000	.14930
3.479	95.130	9.19790	2.02200	-.41330	-.24130	-.34070	.31440	.00000	.54430	.00000	.31440
3.479	91.160	9.33900	2.39730	-.43130	-.29540	-.34220	.42050	.00000	.53790	.00000	.42050
3.479	89.270	9.33660	2.51290	-.45550	-.36470	-.34720	.46630	.00000	.53570	.00000	.46650
3.479	99.150	9.01690	1.64760	-.38480	-.17930	-.33670	.14450	.00000	.55070	.00000	.14450
	GRADIENT	-.05636	-.08071	.00521	.00954	.00160	-.03632	.00000	.00137	.00000	-.03632

RUN NO. 115/ 0 RN/L = 5.06 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	109.600	8.10200	1.05340	-.38140	-.09470	-.30350	-.25810	.00000	.55990	.00000	-.25810
4.960	107.700	8.28040	1.18400	-.38800	-.11310	-.30240	-.19720	.00000	.55760	.00000	-.19720
4.960	103.690	8.61510	1.42900	-.39610	-.11370	-.31500	-.05680	.00000	.55360	.00000	-.05680
4.960	99.680	8.89620	1.69310	-.40970	-.11260	-.32200	.09830	.00000	.54940	.00000	.09830
4.960	95.640	9.12060	2.05430	-.43690	-.17020	-.32430	.27300	.00000	.54330	.00000	.27300
4.960	91.660	9.23730	2.35140	-.45600	-.22460	-.33230	.41060	.00000	.53820	.00000	.41060
4.960	89.780	9.27270	2.46300	-.48370	-.27340	-.32860	.47360	.00000	.53630	.00000	.47380
4.960	99.660	8.86860	1.70860	-.40880	-.14440	-.31930	.09520	.00000	.54900	.00000	.09520
	GRADIENT	-.05943	-.07234	.00485	.00809	.00147	-.03766	.00000	.00121	.00000	-.03766

MSFC 583(TA1F) 324 IN. DIA. ET(418 MCD) W/GRIT (H99069) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = 180.000

RUN NO. 107/ 0 RN/L = 7.01 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
1.947	108.840	7.20070	1.04810	.04490	.05980	.04410	-.09130	.00000	.55720	.00000	-.09150
1.947	106.930	7.36830	1.26240	.04880	.04690	.04970	-.00270	.00000	.55270	.00000	-.00270
1.947	102.890	7.6[illegible]90	1.64310	.04760	.02190	.04530	.16710	.00000	.54590	.00000	.16710
1.947	98.880	8.08980	2.10020	.04060	-.01050	.05020	.30490	.00000	.53740	.00000	.30490
1.947	94.860	8.30160	2.46250	-.04440	-.24160	.05120	.43150	.00000	.53090	.00000	.43150
1.947	90.910	8.37190	2.64000	-.01180	-.14860	.04760	.54340	.00000	.52350	.00000	.54340
1.947	89.020	8.38340	2.90860	-.01700	-.15940	.04980	.59510	.00000	.52050	.00000	.59510
1.947	98.900	8.01250	2.07910	.03620	-.00090	.04790	.30480	.00000	.53740	.00000	.30480
	GRADIENT	-.06099	-.09849	.00411	.01344	-.00018	-.03429	.00000	.00184	.00000	-.03429

RUN NO. 117/ 0 RN/L = 6.40 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
3.479	109.280	6.89420	1.00640	-.12000	.05840	.07900	-.21210	.00000	.55710	.00000	-.21210
3.479	107.370	7.02620	1.15830	-.11830	.05060	.08690	-.14130	.00000	.55380	.00000	-.14130
3.479	103.340	7.30140	1.49570	-.12530	.03790	.07910	.01020	.00000	.54690	.00000	.01020
3.479	99.310	7.59280	1.78290	-.13010	.03620	.07550	.19870	.00000	.54170	.00000	.19870
3.479	95.310	7.78070	2.12920	-.10020	.11050	.08110	.37810	.00000	.53490	.00000	.37810
3.479	91.340	7.88030	2.46160	-.08430	.15280	.07400	.49650	.00000	.52820	.00000	.49650
3.479	89.440	7.95420	2.65050	-.08470	.13420	.07520	.54790	.00000	.52460	.00000	.54790
3.479	99.330	7.59260	1.78270	-.13770	.03020	.07860	.19450	.00000	.54170	.00000	.19450
	GRADIENT	-.05399	-.08199	-.00202	-.00520	.00037	-.03954	.00000	.00161	.00000	-.03954

RUN NO. 118/ 0 RN/L = 5.02 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	109.670	6.77010	1.11500	-.17660	.05960	.10290	-.24020	.00000	.55380	.00000	-.24020
4.960	107.770	6.86320	1.22140	-.18920	.07490	.10690	-.17830	.00000	.55150	.00000	-.17830
4.960	103.750	7.17210	1.55860	-.20280	.06260	.10100	-.02240	.00000	.54470	.00000	-.02240
4.960	99.740	7.41130	1.84140	-.20980	.05630	.09630	.15400	.00000	.53930	.00000	.15400
4.960	95.720	7.59670	2.12090	-.20060	.06180	.12200	.34340	.00000	.53400	.00000	.34340
4.960	91.760	7.76680	2.46180	-.22320	-.01650	.11590	.49210	.00000	.52740	.00000	.49210
4.960	89.660	7.77750	2.57670	-.24520	-.06740	.10230	.54090	.00000	.52490	.00000	.54090
4.960	99.760	7.39810	1.83020	-.20400	.03470	.11390	.14950	.00000	.53950	.00000	.14950
	GRADIENT	-.05305	-.07477	.00264	.00558	-.00042	-.04086	.00000	.00146	.00000	-.04086

MSFC 583(TA1F) 324 IN. DIA. ET(41B MOD) W/GRIT (R99070) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = 270.000

RUN NO. 106/ 0 RN/L = 7.02 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
1.942	108.710	7.75600	.78200	-.19330	.01550	.23410	-.13100	.00000	.56490	.00000	-.13100
1.942	106.820	7.94760	.97290	-.19180	.03180	.23560	-.04320	.00000	.56120	.00000	-.04320
1.942	102.760	8.37230	1.39770	-.19300	.03140	.24390	.12350	.00000	.55350	.00000	.12350
1.942	98.740	8.70530	1.80030	-.23160	-.09090	.24900	.26060	.00000	.54650	.00000	.26060
1.942	94.730	8.90110	2.23600	-.22660	-.08690	.25240	.38470	.00000	.53880	.00000	.38470
1.942	90.760	9.04550	2.64890	-.22110	-.10150	.25800	.49270	.00000	.53160	.00000	.49270
1.942	86.890	8.98570	2.77550	-.21420	-.10650	.25160	.53790	.00000	.52880	.00000	.53790
1.942	98.760	8.62380	1.77260	-.22690	-.09630	.25110	.25990	.00000	.54670	.00000	.25990
	GRADIENT	-.06472	-.10229	.00162	.00771	-.00108	-.03351	.00000	.00183	.00000	-.03351

RUN NO. 120/ 0 RN/L = 6.44 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
3.479	109.150	7.73060	.87200	-.09050	-.02170	.22940	-.24470	.00000	.56290	.00000	-.24470
3.479	107.240	7.87200	1.00030	-.09890	-.03730	.23550	-.18130	.00000	.56040	.00000	-.18130
3.479	103.230	8.18210	1.31770	-.10450	-.01380	.23770	-.04060	.00000	.55450	.00000	-.04060
3.479	99.210	8.49760	1.62070	-.10100	-.04920	.24220	.12880	.00000	.54930	.00000	.12880
3.479	95.190	8.64200	1.93730	-.14210	-.11240	.24890	.29450	.00000	.54350	.00000	.29450
3.479	91.220	8.80990	2.36650	-.13870	-.11200	.25300	.39610	.00000	.53580	.00000	.39610
3.479	89.330	8.83580	2.55350	-.13650	-.11430	.25030	.44710	.00000	.53260	.00000	.44710
3.479	99.210	8.49130	1.63350	-.10890	-.04400	.24950	.13030	.00000	.54900	.00000	.13030
	GRADIENT	-.05691	-.08375	.00259	.00535	-.00110	-.03593	.00000	.00152	.00000	-.03593

RUN NO. 119/ 0 RN/L = 5.07 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	109.620	7.66490	.98890	-.02070	.02970	.22900	-.26710	.00000	.56000	.00000	-.26710
4.960	107.720	7.77130	1.13150	-.03310	.03200	.23410	-.20800	.00000	.55720	.00000	-.20800
4.960	103.720	8.07800	1.46090	-.06950	.00790	.23480	-.07280	.00000	.55060	.00000	-.07280
4.960	99.710	8.40040	1.78010	-.07130	-.01320	.22980	.08420	.00000	.54730	.00000	.08420
4.960	95.680	8.61150	2.01280	-.10650	-.05590	.23210	.26430	.00000	.54180	.00000	.26430
4.960	91.710	8.74150	2.31990	-.12880	-.14020	.23820	.39290	.00000	.53640	.00000	.39290
4.960	89.810	8.79320	2.46810	-.13400	-.18410	.24150	.44410	.00000	.53370	.00000	.44410
4.960	99.710	8.34630	1.66940	-.07110	-.00650	.24090	.08400	.00000	.54770	.00000	.08400
	GRADIENT	-.05912	-.07374	.00571	.01052	-.00041	-.03703	.00000	.00130	.00000	-.03703

MSFC 583(TAIF) 324 IN. DIA. ET(418 MOD) (R98071) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = .000

RUN NO. 159/ 0 RN/L = 6.67 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPBI	CPC
1.953	51.190	5.85730	3.90740	.08380	.07760	.00780	.46660	.00000	.46660	.00000	.46660
1.953	53.130	6.08570	3.95680	.08340	.07730	.00620	.45720	.00000	.46950	.00000	.45720
1.953	57.190	6.55960	4.04630	.08970	.06980	.01090	.42870	.00000	.47530	.00000	.42870
1.953	61.290	7.01510	4.17390	.07300	.04260	.01100	.41610	.00000	.47910	.00000	.41610
1.953	65.300	7.20100	3.90680	.07650	.02660	.01030	.42850	.00000	.48620	.00000	.42850
1.953	69.290	7.53640	3.82770	.08670	.00420	.01200	.33900	.00000	.49430	.00000	.33900
1.953	71.230	7.76310	3.81520	.10540	-.05200	.01030	.25600	.00000	.49730	.00000	.25600
1.953	61.200	6.75740	4.00550	.07020	.03190	.01050	.42510	.00000	.47950	.00000	.42510
	GRADIENT	.09238	-.00690	.00052	-.00564	.00019	-.00841	.00000	.00154	.00000	-.00841

RUN NO. 155/ 0 RN/L = 8.32 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPBI	CPC
3.479	50.740	5.24580	3.34620	.08220	.02560	.00420	.52460	.00000	.47160	.00000	.52460
3.479	52.640	5.46350	3.41450	.07600	.02170	.00410	.53440	.00000	.47390	.00000	.53440
3.479	56.710	5.94930	3.51910	.08450	.03160	.01020	.52390	.00000	.47970	.00000	.52390
3.479	60.780	6.48350	3.59940	.07290	.03170	.01370	.48930	.00000	.48600	.00000	.48930
3.479	64.820	6.95030	3.64920	.06280	.01370	.03650	.43530	.00000	.49120	.00000	.43530
3.479	68.830	7.32560	3.64400	.06790	.00400	.00750	.35920	.00000	.49600	.00000	.35920
3.479	70.740	7.48210	3.57990	.06620	-.01040	.00410	.32170	.00000	.49930	.00000	.32170
3.479	60.760	6.54010	3.47410	.06010	-.00070	.00380	.49130	.00000	.49020	.00000	.49130
	GRADIENT	.11409	.01299	-.00086	-.00158	.00037	-.01045	.00000	.00158	.00000	-.01045

RUN NO. 154/ 0 RN/L = 4.93 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPBI	CPC
4.960	50.370	5.24810	2.95640	.03820	.03890	-.02930	.57050	.00000	.48460	.00000	.57050
4.960	52.260	5.49700	3.02660	.04050	.06470	-.02130	.55560	.00000	.48680	.00000	.55560
4.960	56.310	6.04000	3.14910	.04410	.06500	-.03250	.51180	.00000	.49190	.00000	.51180
4.960	60.330	6.51320	3.23740	.04710	.05850	-.02700	.49410	.00000	.49610	.00000	.49410
4.960	64.370	7.00130	3.34740	.06730	.06110	-.02720	.45760	.00000	.49940	.00000	.45760
4.960	68.360	7.38090	3.37990	.04710	.05350	-.06720	.39620	.00000	.50290	.00000	.39620
4.960	70.270	7.52690	3.38030	.05360	.04520	-.02140	.36020	.00000	.50450	.00000	.36020
4.960	60.320	6.29650	3.29080	.06790	.04760	-.03490	.49330	.00000	.49170	.00000	.49330
	GRADIENT	.11591	.02184	.00083	-.00012	-.00075	-.00998	.00000	.00099	.00000	-.00998

MSFC 583(TA1F) 324 IN. DIA. ET(41B MOD) (R9907E) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
B = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = .000

RUN NO. 158/ 0 RN/L = 6.62 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
1.955	81.350	8.25190	3.03240	.13400	-.05550	.01220	-.17540	.00000	.51860	.00000	-.17540
1.955	83.240	8.38210	2.94990	.13500	-.04650	.01510	-.24650	.00000	.52130	.00000	-.24650
1.955	87.260	8.59770	2.69610	.13000	-.04480	.01120	-.37500	.00000	.52800	.00000	-.37500
1.955	91.240	8.60220	2.33190	.11790	-.02100	.01130	-.49030	.00000	.53540	.00000	-.49030
1.955	95.220	8.55660	2.00210	.09980	-.00350	.02310	-.57730	.00000	.54180	.00000	-.57730
1.955	99.150	8.50560	1.71300	.09640	-.00440	.01860	-.68080	.00000	.54750	.00000	-.68080
1.955	101.030	8.42610	1.57270	.08930	-.00940	.01710	-.72780	.00000	.55000	.00000	-.72780
1.955	91.200	8.52270	2.31860	.09300	.01560	.02080	-.47500	.00000	.53520	.00000	-.47500
	GRADIENT	.00724	-.07662	-.00246	.00271	.00035	-.02756	.00000	.00163	.00000	-.02756

RUN NO. 156/ 0 RN/L = 6.31 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
3.479	80.950	7.97170	3.23790	.12240	-.04650	.01370	.05010	.00000	.51190	.00000	.05010
3.479	82.840	8.02630	3.23130	.11330	-.02110	.01140	-.01940	.00000	.51250	.00000	-.01940
3.479	86.850	8.07090	3.02800	.11860	-.03790	.00570	-.22870	.00000	.51730	.00000	-.22870
3.479	90.850	8.16900	2.69770	.11710	-.03990	.01450	-.39310	.00000	.52510	.00000	-.39310
3.479	94.830	8.08570	2.39210	.11980	-.02830	.01620	-.50500	.00000	.53110	.00000	-.50500
3.479	98.780	8.01130	2.05270	.10280	-.00070	.01240	-.62800	.00000	.53790	.00000	-.62800
3.479	100.660	7.94580	1.90440	.09530	.01430	.01960	-.68480	.00000	.54060	.00000	-.68480
3.479	90.830	8.13330	2.73550	.11480	-.01880	.01120	-.38680	.00000	.52400	.00000	-.38680
	GRADIENT	-.00087	-.07098	-.00098	.00226	.00031	-.03738	.00000	.00154	.00000	-.03738

RUN NO. 157/ 0 RN/L = 4.97 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	80.520	7.76520	3.25170	.13470	.05030	.01770	.09620	.00000	.50970	.00000	.09620
4.960	82.420	7.85750	3.13410	.12930	.02490	.01050	.02210	.00000	.51320	.00000	.02210
4.960	86.410	7.89430	2.96410	.10170	.03650	.01950	-.16460	.00000	.51680	.00000	-.16460
4.960	90.410	7.92760	2.71710	.13080	.04600	.10160	-.35490	.00000	.52290	.00000	-.35490
4.960	94.420	7.95070	2.44160	.12610	.05260	-.05920	-.49690	.00000	.52910	.00000	-.49690
4.960	98.390	7.87730	2.19280	.12580	.04970	.02260	-.62560	.00000	.53410	.00000	-.62560
4.960	100.280	7.82040	2.04700	.11410	.03840	.01680	-.70050	.00000	.53700	.00000	-.70050
4.960	90.410	7.94200	2.75190	.14210	.03790	.01910	-.35430	.00000	.52230	.00000	-.35430
	GRADIENT	.00263	-.06085	-.00038	.00041	-.00064	-.04051	.00000	.00137	.00000	-.04051

MSFC 583 (TA1F) 324 IN. DIA. ET (41B MOD) (R99073) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = .000

RUN NO. 147/ 0 RN/L = 4.95 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	-9.780	-.58200	-.73900	-.00290	-.00530	-.02490	.44660	-.27700	.36190	.00000	.72360
4.960	-7.860	-.44460	-.59150	-.00170	.01490	.00000	.44120	-.27660	.35150	.00000	.71810
4.960	-3.830	-.21120	-.29930	-.00030	.02380	.00620	.42460	-.27730	.33640	.00000	.70190
4.960	.220	.03660	.04180	.00080	.02670	.00040	.41560	-.27740	.38430	.00000	.69310
4.960	4.250	.24370	.35550	.00120	.00380	-.00170	.41830	-.27710	.32910	.00000	.69540
4.960	8.270	.49220	.69760	.00250	.01320	-.01870	.43170	-.27670	.33630	.00000	.70640
4.960	10.190	.62910	.82000	.00330	.01410	-.00130	.43340	-.27660	.35610	.00000	.71030
4.960	.200	.02310	.05800	.00090	.03320	.01840	.41310	-.27700	.14770	.00000	.69010
	GRADIENT	.05630	.08104	.00019	-.00247	-.00098	-.00078	.00002	-.00089	.00000	-.00081

MSFC 583 (TA1F) 324 IN. DIA. ET (41B MOD) (R99074) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = .000

RUN NO. 148/ 0 RN/L = 4.96 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	10.490	.62960	.83360	.00690	.01300	-.01920	.45000	-.27720	.35250	.00000	.72720
4.960	12.410	.78040	.96600	.00400	.00890	-.00200	.45350	-.27680	.36740	.00000	.73040
4.960	16.450	1.09560	1.21320	.00610	.02380	-.02990	.46640	-.27680	.39010	.00000	.74330
4.960	20.520	1.47830	1.47070	.00810	.01280	-.02520	.48110	-.27700	.40960	.00000	.75810
4.960	24.570	1.96860	1.66250	.01130	.01380	-.00200	.49710	-.27560	.43580	.00000	.77280
4.960	28.610	2.48660	1.86490	.01510	.04100	-.02300	.50770	-.27680	.45080	.00000	.78450
4.960	30.540	2.75870	1.96060	.01670	.03500	-.03510	.51190	-.27730	.45900	.00000	.78920
4.960	20.500	1.47810	1.45770	.00860	.03180	.00530	.46400	-.27710	.41110	.00000	.76120
	GRADIENT	.10399	.05631	.00052	.00120	-.00059	.00324	.00001	.00528	.00000	.00323

MSFC 583(TA1F) 324 IN. DIA. ET(41B MOD) (R99075) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = .000

RUN NO. 152/ 0 RN/L = 4.96 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	109.660	7.13880	1.31740	-.05220	.02940	-.02160	-.21690	.00000	.55040	.00000	-.21690
4.960	107.760	7.26570	1.51780	-.05330	.02120	-.00970	-.16540	.00000	.54630	.00000	-.16540
4.960	103.750	7.56810	1.67740	-.05480	.00060	-.00880	-.02800	.00000	.54400	.00000	-.02800
4.960	99.720	7.82120	1.95800	-.06200	-.01930	-.01400	.13970	.00000	.53900	.00000	.13970
4.960	95.720	7.95200	2.19220	-.06300	-.02800	-.02020	.32230	.00000	.53460	.00000	.32230
4.960	91.750	8.04240	2.45270	-.06270	-.08120	-.02230	.42850	.00000	.52950	.00000	.42850
4.960	89.850	8.06740	2.59240	-.05710	-.09070	-.01020	.47260	.00000	.52660	.00000	.47260
4.960	99.750	7.79390	1.96160	-.06200	-.01300	-.02040	.13440	.00000	.53870	.00000	.13440
	GRADIENT	-.04712	-.06219	.00044	.00595	.00009	-.03643	.00000	.00114	.00000	-.03643

MSFC 583(TA1F) 324 IN. DIA. ET(41B MOD) (R99076) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = .000

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

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	129.650	4.85400	.27970	-.03100	.03790	-.00150	-.60780	.00000	.57240	.00000	-.60780
4.960	127.740	5.08210	.32660	-.03300	.05640	-.00910	-.57580	.00000	.57130	.00000	-.57580
4.960	123.710	5.61380	.45130	-.03650	.06150	-.01020	-.47020	.00000	.56850	.00000	-.47020
4.960	119.670	6.11540	.61660	-.03970	.05350	-.01010	-.39490	.00000	.56490	.00000	-.39490
4.960	115.630	6.61600	.85970	-.04290	.04480	-.00430	-.30800	.00000	.55990	.00000	-.30800
4.960	111.660	7.03410	1.12710	-.04340	.02320	-.00330	-.21210	.00000	.55460	.00000	-.21210
4.960	109.750	7.22340	1.22020	-.04710	.04140	.01210	-.15250	.00000	.55310	.00000	-.15250
4.960	119.690	6.08700	.62170	-.04070	.10430	.01450	-.40230	.00000	.56470	.00000	-.40230
	GRADIENT	-.12036	-.04845	.00079	.00085	-.00057	-.02253	.00000	.00100	.00000	-.02253

MSFC 583(TA1F) 324 IN. DIA. ET(41B MOD) (R99077) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = .000

RUN NO. 151/ 0 RN/L = 4.96 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	149.280	2.43410	-.03960	-.01560	.03480	.02360	-.89370	.00000	.58530	.00008	-.89370
4.960	147.350	2.66530	-.01990	-.01680	.02200	.02480	-.87490	.00000	.58360	.00008	-.87490
4.960	143.290	3.12820	-.04540	-.01820	-.03450	.03520	-.82980	.00000	.58500	.00008	-.82980
4.960	139.200	3.79370	.12360	-.02420	.03330	.01720	-.77270	.00000	.57680	.00000	-.77270
4.960	135.130	4.37830	.22640	-.01150	.06490	.03160	-.70150	.00000	.57350	.00000	-.70150
4.960	131.090	4.92100	.32150	-.03170	.04410	.03850	-.62630	.00000	.57110	.00000	-.62630
4.960	129.160	5.17810	.41520	-.03260	.01150	.03520	-.58370	.00000	.56850	.00000	-.58370
4.960	139.220	3.78000	.12570	-.02410	.03330	.02880	-.77080	.00000	.57670	.00008	-.77080
	GRADIENT	-.13874	-.02298	.00072	-.00095	-.00057	-.01539	.00000	.00087	.00008	-.01539

MSFC 583(TA1F) 324 IN. DIA. ET(41B MOD) (R99078) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = .000

RUN NO. 150/ 0 RN/L = 4.98 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLMM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	169.650	.47720	-.40420	-.00168	-.02538	.03020	-1.02640	.00000	.72960	.00000	-1.02640
4.960	167.740	.59960	-.36220	-.00270	-.01288	.02910	-1.02130	.00000	.69320	.00000	-1.02130
4.960	163.700	.88560	-.29480	-.00540	.02518	.00250	-1.00270	.00000	.65990	.00000	-1.00270
4.960	159.660	1.25260	-.35450	-.00770	.02488	.00230	-.96810	.00000	.63160	.00000	-.96810
4.960	155.580	1.79540	-.17230	-.01100	.01050	.00310	-.94040	.00000	.59910	.00000	-.94040
4.960	151.550	2.21760	-.16440	-.01430	.04210	.00020	-.90650	.00000	.59530	.00000	-.90650
4.960	149.630	2.42160	-.16650	-.01498	.01718	.03130	-.88510	.00000	.59440	.00000	-.88510
4.960	159.660	1.23960	-.36530	-.00760	.02500	.01970	-.96820	.00000	.63360	.00000	-.96820
	GRADIENT	-.09949	-.01385	.00069	-.00222	.00060	-.00713	.00000	.00656	.00000	-.00713

TABULATED SOURCE DATA, MSFC TWT 583

MSFC 583(TA1F) 324 IN. DIA. ET(418 MOD)

(R99079) (20 MAR 74)

REFERENCE DATA

SREF = .7420 SQ. IN XMRP = 3.2590 IN.
LREF = .9720 IN. YMRP = .0000 IN.
BREF = .9720 IN. ZMRP = .0000 IN.
SCALE = .0030

PARAMETRIC DATA

BETA = .000 PHI = .000

RUN NO. 149/ 0 RN/L = 4.99 GRADIENT INTERVAL = -5.00/ 5.00

MACH	ALPHA	CNM	CLNM	CYM	CYNM	CBL	CA	CAB	XCP/L	CPB1	CPC
4.960	189.780	-.37680	.24110	.00250	-.03260	-.02790	-1.02240	.00000	.59360	.00000	-1.02240
4.960	187.870	-.28090	.20180	-.00360	-.03660	-.02170	-1.02970	.00000	.70730	.00000	-1.02970
4.960	183.840	-.10200	.08680	.00080	-.02460	-.03420	-1.03100	.00000	.73040	.00000	-1.03100
4.960	179.800	.06340	-.05130	-.00610	-.00230	-.03600	-1.03600	.00000	.72300	.00000	-1.03600
4.960	175.750	.18840	-.22380	-.00040	-.02130	-.03400	-1.03860	.00000	.78880	.00000	-1.03860
4.960	171.760	.39490	-.35430	-.00240	.01790	-.03730	-1.03730	.00000	.73830	.00000	-1.03730
4.960	169.850	.49000	-.35440	-.00840	.00720	-.02480	-1.03130	.00000	.70810	.00000	-1.03130
4.980	179.820	.05020	-.06210	-.00040	.00230	-.02470	-1.03600	.00000	.79760	.00000	-1.03600
	GRADIENT	-.04225	.03252	.00029	-.00235	.00026	.00050	.00000	-.00175	.00000	.00050