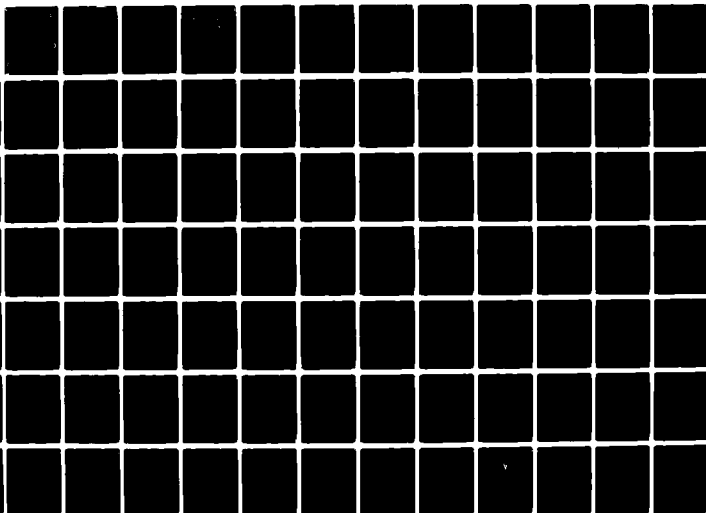


AD-A083 846

NIELSEN ENGINEERING AND RESEARCH INC MOUNTAIN VIEW CALIF F/G 20/4
DATA REPORT FOR AN EXTENSIVE STORE SEPARATION TEST PROGRAM COND--ETC(U)
DEC 79 F K 6000WIN: C L DYER F33615-76-C-3077
NEAR-TR-205 AFFDL-TR-79-3130 NL

UNCLASSIFIED

1 of 4
AD-A
Substar



AFFDL-TR-79-3130

2
LEVEL II

ADA 083848

DATA REPORT FOR AN EXTENSIVE STORE
SEPARATION TEST PROGRAM CONDUCTED
AT SUPERSONIC SPEEDS

by

Frederick K. Goodwin
Nielsen Engineering & Research, Inc.

and

Calvin L. Dyer
Air Force Flight Dynamics Laboratory (FGC)

December 1979

TECHNICAL REPORT AFFDL-TR-79-3130
FINAL REPORT FOR PERIOD JUNE 1975 - AUGUST 1979

DTIC
ELECTE
S MAY 5 1980 D
A

Approved for Public Release, Distribution Unlimited

THIS DOCUMENT IS BEST QUALITY PRACTICABLE.
THE COPY FURNISHED TO DDC CONTAINED A
SIGNIFICANT NUMBER OF PAGES WHICH DO NOT
REPRODUCE LEGIBLY.

AIR FORCE FLIGHT DYNAMICS LABORATORY
AIR FORCE WRIGHT AERONAUTICAL LABORATORIES
AIR FORCE SYSTEMS COMMAND
WRIGHT-PATTERSON AIR FORCE BASE, OHIO 45433

80 5 2 023

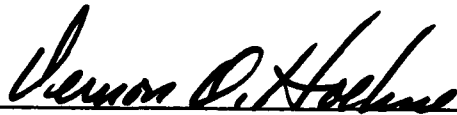
DDC FILE COPY

NOTICE

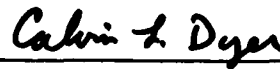
When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor any obligation whatsoever; and the fact that the government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data, is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

This report has been reviewed by the Information Office (PA) and is releasable to the National Technical Information Service (NTIS). At NTIS, it will be available to the general public, including foreign nations.

This technical report has been reviewed and is approved for publication.

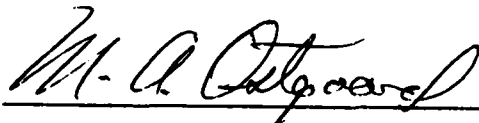


VERNON O. HOEHNE, Acting Chief
Control Dynamics Branch
Flight Control Division



CALVIN L. DYER
Project Engineer
Control Dynamics Branch
Flight Control Division

FOR THE COMMANDER



MORRIS A. OSTGAARD
Acting Chief
Flight Control Division

"If your address has changed, if you wish to be removed from our mailing list, or if the addressee is no longer employed by your organization please notify AEFDL/FGC, W-PAFB, OH 45433 to help us maintain a current mailing list".

Copies of this report should not be returned unless return is required by security considerations, contractual obligations, or notice on the specific document.

DISCLAIMER NOTICE

**THIS DOCUMENT IS BEST QUALITY
PRACTICABLE. THE COPY FURNISHED
TO DTIC CONTAINED A SIGNIFICANT
NUMBER OF PAGES WHICH DO NOT
REPRODUCE LEGIBLY.**

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

5/12

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE(When Data Entered)

20. (Continued)

configuration without pylons and racks to a noncircular fuselage with wing, flow through engine inlets, and pylons and racks. The parent configuration was built up component by component so model component effects could be isolated. Flow-field survey, store pressure-distribution, store force-and-moment and store trajectory data were obtained. The stores tested were circular and elliptical in cross section with various fin arrangements. The data obtained during five wind-tunnel entries are summarized in this report. The data have been collected on magnetic tapes and FORTRAN computer programs have been written which retrieve the data from the tapes. This report also describes the use of these programs and tapes and describes the tabulated output from the programs.

Accession For	
NTIS G.A.I.	☒
DTIC TAB	☐
Unannounced	☐
Justification	☐
By	
Distribution/	
Availability Codes	
Dist.	Avail and/or special
A	22

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE(When Data Entered)

FOREWORD

This report describes an extensive store separation test program conducted at supersonic speeds in Tunnel A of the von Kármán Gas Dynamics Facility at Arnold Engineering Development Center. The Mach number range covered was 1.5 to 2.5. The purpose of the program was to provide a systematic set of data which could be used to evaluate and improve analytical techniques for predicting supersonic store separation trajectories. Parent aircraft configurations tested ranged from a simple circular body, mid-wing configuration without pylons and racks to a noncircular fuselage with wing, flow through engine inlets, and pylons and racks. The parent configuration was built up component by component so model component effects could be isolated. Flow-field survey, store pressure-distribution, store force-and-moment and store trajectory data were obtained. The stores tested were circular and elliptical in cross section with various fin arrangements.

The data obtained during five wind-tunnel entries are summarized in this report. The data have been collected on magnetic tapes and FORTRAN computer programs have been written which retrieve the data from the tapes. This report also describes the use of these programs and tapes and describes the tabulated output from the programs. The magnetic tapes and computer programs are available upon request from Mr. Calvin L. Dyer, AFFDL/FGC, Wright-Patterson AFB, Ohio, 45433.

The work was carried out by Nielsen Engineering & Research, Inc., 510 Clyde Avenue, Mountain View, California, 94043, under Contract No. F33615-76-C-3077. The contract was initiated under Project 2403, Task 240305, of the Air Force Flight Dynamics Laboratory. The Air Force Project Engineer on the contract was Calvin L. Dyer, AFFDL/FGC. The report number assigned by Nielsen Engineering & Research, Inc. is NEAR TR 205.

TABLE OF CONTENTS

<u>Section</u>	<u>Page No.</u>
LIST OF FIGURES	vii
LIST OF TABLES	ix
LIST OF SYMBOLS	xii
MODEL COMPONENT NOMENCLATURE	xv
1. INTRODUCTION	1
2. PURPOSE AND SCOPE OF THE TEST PROGRAM	2
3. TEST APPARATUS	3
3.1 Wind Tunnel	3
3.2 Model Support Systems	4
3.3 Parent Aircraft Model Components	6
4. TEST CONDITIONS	9
4.1 Entry V41A-B4A	9
4.2 Entry V41A-L5A	10
4.3 Entry V41A-M9A	11
4.4 Entry V41A-T9A	11
4.5 Entry V41A-V6A	12
5. FLOW-FIELD SURVEY TESTS	12
5.1 Summary of Tests	13
5.2 Data Uncertainties	14
5.3 Flow-Field Test Data Retrieval	16
5.3.1 Use of the computer program	16
5.3.2 Description of tabulated data	17
6. PRESSURE DISTRIBUTION TESTS	22
6.1 Summary of Tests	24
6.1.1 Ogive-cylinder store	24
6.1.2 Elliptic store	25
6.2 Data Uncertainties	26
6.3 Pressure Test Data Retrieval	27
6.3.1 Use of the computer programs	27
6.3.2 Description of tabulated data	28
6.3.2.1 Ogive-cylinder store	28
6.3.2.2 Elliptic store	31

<u>Section</u>	<u>Page No.</u>
7. FORCE AND MOMENT TESTS	36
7.1 Summary of Tests	38
7.2 Balance and Associated Data Uncertainties	39
7.3 Force and Moment Test Data Retrieval	45
7.3.1 Use of the computer program	45
7.3.2 Description of tabulated data	46
8. TRAJECTORY TESTS	49
8.1 Summary of Tests	51
8.2 Data Uncertainties	52
8.3 Trajectory Test Data Retrieval	53
8.3.1 Use of the computer program	53
8.3.2 Description of tabulated data	53
FIGURES 1 THROUGH 24	58
TABLES I THROUGH LXVIII	88
APPENDIX A: FLOW-FIELD CALIBRATION DATA	179
APPENDIX B: DATA REDUCTION EQUATIONS	195
APPENDIX C: FLOW-FIELD DATA RETRIEVAL PROGRAM	215
APPENDIX D: PRESSURE DISTRIBUTION DATA RETRIEVAL PROGRAMS	227
APPENDIX E: FORCE AND MOMENT DATA RETRIEVAL PROGRAM	255
APPENDIX F: TRAJECTORY DATA RETRIEVAL PROGRAM	269
REFERENCES	280

LIST OF FIGURES

<u>Figure</u>	<u>Page No.</u>
1. Artist's conception of the VKF/CTS installed in Tunnel A	58
2. Configuration N_1B_2W	59
3. Short fuselage, B_1	60
4. Noncircular nose, N_3	61
5. Noncircular fuselage adapter, A_3	62
6. Duct assembly for $M_\infty = 1.5$, A_4	64
7. Duct assembly for $M_\infty = 2.0$, A_5	66
8. Location of duct plugs	68
9. Ogive-cylinder force and moment store in the carriage position at the fuselage centerline, 1/3 semispan, and 2/3 semispan pylon stations	69
10. Double-wedge pylon, P_2	70
11. Swept pylon, P_3	71
12. Triple ejection rack, T	72
13. Dummy ogive-cylinder store, S_{DOC} , S_{DOC2} , or S_{DOC3}	73
14. Details and dimensions of fairing, F	74
15. Fairing location on parent aircraft	75
16. Flow field rake	76
17. Orientation of rake and location of pressure taps on the 40° total angle conical probe as seen from the aft end of the parent configuration	77
18. Wing-body (parent aircraft) axis system showing positive directions of axes and velocities	78
19. Ogive-cylinder pressure distribution model, S_p	79
20. Elliptic pressure distribution models	80

<u>Figure</u>	<u>Page No.</u>
21. Axis system for store showing positive sense of axes, forces and moments	82
22. Ogive-cylinder force and moment stores	83
23. Elliptic force and moment model, S_E	86
24. Simulated ejector force curves	87

LIST OF TABLES

<u>Table</u>	<u>Page No.</u>
I Summary of Flow Field Survey Data	88
II Flow Field Survey Data - $N_1 B_1$	89
III Flow Field Survey Data - $N_1 B_2 W$	90
IV Flow Field Survey Data - $N_1 B_2 W(P_2)_c$	93
V Flow Field Survey Data - $N_1 B_2 W(P_2)_{1/3}$	95
VI Flow Field Survey Data - $N_1 B_2 W(P_3)_{1/3}$	96
VII Flow Field Survey Data - $N_1 B_2 W(P_2)_{2/3}$	97
VIII Flow Field Survey Data - $N_1 B_2 W(P_2)_{1/3} S_{DCC}$	98
IX Flow Field Survey Data - $N_1 B_2 W(P_2)_{1/3} T$	98
X Flow Field Survey Data - $N_1 B_2 W(P_2)_{1/3} TS_{DOC2} S_{DOC3}$	98
XI Flow Field Survey Data - $N_3 B_1 A_3$	99
XII Flow Field Survey Data - $N_3 B_2 W A_3$	100
XIII Flow Field Survey Data - $N_3 B_2 W A_3 (P_2)_c$	103
XIV Flow Field Survey Data - $N_3 B_2 W A_3 (P_3)_{1/3}$	103
XV Flow Field Survey Data - $N_3 B_2 W A_3 F$	104
XVI Flow Field Survey Data - $N_3 B_2 W A_4$	106
XVII Flow Field Survey Data - $N_3 B_2 W A_4 (P_2)_c$	109
XVIII Flow Field Survey Data - $N_3 B_2 W A_4 (P_3)_{1/3}$	109
XIX Flow Field Survey Data - $N_3 B_2 W A_4 F$	110
XX Flow Field Survey Data - $N_3 B_2 W A_5$	111
XXI Flow Field Survey Data - $N_3 B_2 W A_5 (P_2)_c$	113
XXII Flow Field Survey Data - $N_3 B_2 W A_5 (P_3)_{1/3}$	113
XXIII Flow Field Survey Data - $N_3 B_2 W A_5 F$	114
XXIV Summary of Pressure Distribution Data on Store S_p	115

<u>Table</u>	<u>Page No.</u>
XXV S_P Pressure Distribution Data - Store Alone	116
XXVI S_P Pressure Distribution Data - $N_1 B_2 W$	117
XXVII S_P Pressure Distribution Data - $N_1 B_2 W (P_2)_C$	120
XXVIII S_P Pressure Distribution Data - $N_1 B_2 W (P_2)_{1/3}$	121
XXIX S_P Pressure Distribution Data - $N_1 B_2 W (P_3)_{1/3}$	122
XXX S_P Pressure Distribution Data - $N_1 B_2 W (P_2)_{2/3}$	123
XXXI S_P Pressure Distribution Data - $N_1 B_2 W (P_2)_{1/3}^T$	123
XXXII S_P Pressure Distribution Data - $N_1 B_2 W (P_2)_{1/3}^T S_{DOC2} S_{DOC3}$	124
XXXIII S_P Pressure Distribution Data - $N_3 B_2 W A_3$	124
XXXIV S_P Pressure Distribution Data - $N_3 B_2 W A_4$	125
XXXV S_P Pressure Distribution Data - $N_3 B_2 W A_4 (P_3)_{1/3}$	125
XXXVI S_P Pressure Distribution Data - $N_3 B_2 W A_5$	126
XXXVII S_P Pressure Distribution Data - $N_3 B_2 W A_5 (P_3)_{1/3}$	126
XXXVIII Summary of Pressure Distribution Data on Store S_{EP}	127
XXXIX S_{EP} Pressure Distribution Data - Store Alone	128
XL S_{EP} Pressure Distribution Data - $N_1 B_2 W (P_2)_C$	129
XLI S_{EP} Pressure Distribution Data - $N_1 B_2 W (P_2)_{1/3}$	130
XLII S_{EP} Pressure Distribution Data - $N_3 B_2 W A_3$	131
XLIII S_{EP} Pressure Distribution Data - $N_3 B_2 W A_3 (P_2)_C$	132
XLIV S_{EP} Pressure Distribution Data - $N_3 B_2 W A_3^F$	133
XLV S_{EP} Pressure Distribution Data - $N_3 B_2 W A_4$	134
XLVI S_{EP} Pressure Distribution Data - $N_3 B_2 W A_4 (P_2)_C$	135
XLVII S_{EP} Pressure Distribution Data - $N_3 B_2 W A_4^F$	136
XLVIII Summary of Force and Moment Tests	137
XLIX Isolated Store Force and Moment Data	138

<u>Table</u>		<u>Page No.</u>
L	S_{LFN} Force and Moment Data	142
LI	S_{LFF} Force and Moment Data	145
LII	S_{COC} Force and Moment Data	147
LIII	S_{POC} Force and Moment Data	163
LIV	S_{TOC} Force and Moment Data	164
LV	S_E Force and Moment Data	165
LVI	Table of CTS Zero Points for Force and Moment Tests	167
LVII	Values of ΔZ_p Used in Various Sweeps	168
LVIII	Values of α_s Used in Various Sweeps	169
LIX	Values of β_s Used in Various Sweeps	170
LX	Values of Z_T Used in Free-Stream Sweeps	171
LXI	Summary of Trajectory Tests	171
LXII	S_{LFN} Trajectory Data	172
LXIII	S_{COC} Trajectory Data	173
LXIV	S_{POC} Trajectory Data	174
LXV	S_{TOC} Trajectory Data	174
LXVI	S_E Trajectory Data	175
LXVII	Table of CTS Zero Points for Trajectory Tests	176
LXVIII	Trajectory Codes	177

LIST OF SYMBOLS

C_A	axial-force coefficient, positive in the negative X-direction (see Fig. 21), axial force/ $q_\infty S$
C_{A_t}	axial-force coefficient uncorrected for base pressure
C_ℓ	rolling-moment coefficient, positive right wing down as seen by pilot (see Fig. 21), rolling moment/ $q_\infty Sd$
C_m	pitching-moment coefficient, positive nose up as seen by pilot and referenced to store moment center (see Fig. 21), pitching moment/ $q_\infty Sd$
C_n	yawing-moment coefficient, positive nose right as seen by pilot and referenced to store moment center (see Fig. 21), yawing moment/ $q_\infty Sd$
C_N	normal-force coefficient, positive in the negative Z-direction (see Fig. 21), normal force/ $q_\infty S$
C_Y	side-force coefficient, positive in the positive Y-direction (see Fig. 21), side force/ $q_\infty S$
d	store reference length; $d = 0.75$ in. for ogive-cylinder stores, $d = 1.061$ in. for elliptical stores
F	ejector force, lbs
F.S.	fuselage station, in.
I_{xx}, I_{yy}, I_{zz}	moments of inertia about X, Y, Z axes of Figure 21; taken about store moment center, slug-ft ²
I_{yz}, I_{xz}, I_{xy}	products of inertia about X, Y, Z axes of Figure 21; taken about store moment center, slug-ft ²
ℓ_p	duct plug position (see Fig. 8), in.
m	store mass, slugs
M_ℓ	local Mach number in flow field
M_∞	free-stream Mach number
p	pressure, psia

p_o	tunnel stagnation pressure, psia
p'_o	cone probe pitot pressure, psia
p_∞	free-stream static pressure, psia
$\bar{p}$	average cone surface static pressure, psia
q_∞	free-stream dynamic pressure, psia
Re/ft	Reynolds number per foot, ft^{-1}
S	store reference area; $S = 0.4418 \text{ in.}^2$ for ogive-cylinder stores, $S = 0.884 \text{ in.}^2$ for elliptical stores
t	time, sec
T_o	tunnel stagnation temperature, °R or °F
u,v,w	components of local velocity vector, positive directions as shown in Figure 18, ft/sec
V_{duct}	velocity in duct, ft/sec
V_∞	free-stream velocity, ft/sec
X,Y,Z	Cartesian coordinate system fixed at store moment center (see Fig. 21)
XL_1	full scale ejector foot location measured relative to store moment center, positive forward of this point, ft
X_p, Y_p, Z_p	Cartesian coordinate system fixed at parent aircraft nose (see Fig. 18)
$\Delta X_p, \Delta Y_p, \Delta Z_p$	location of store in parent aircraft coordinate system relative to carriage position
X_T, Y_T, Z_T	wind-tunnel coordinate system
α	angle of attack, deg
α_{c_s}	total angle of attack of store, deg
α_p	angle of attack of parent aircraft, deg
α_s	angle of attack of store, deg
β_s	store yaw angle, positive nose to the right, deg

$\Delta p_{1,3}$ pressure differential between taps 1 and 3 on probe (see Fig. 17), psia

$\Delta p_{2,4}$ pressure differential between taps 2 and 4 on probe (see Fig. 17), psia

η linearity factor for flow-field angle evaluation, i.e.,

$$\frac{\eta}{\bar{p}} = \frac{1}{2} \frac{d}{d\alpha} \sqrt{\left(\frac{\Delta p_{1,3}}{\bar{p}}\right)^2 + \left(\frac{\Delta p_{2,4}}{\bar{p}}\right)^2}, \text{ deg}^{-1}$$

σ_ℓ local sidewash angle, deg

ϕ roll angle, deg

ϕ_s store roll angle, deg

ψ flow-field rake yaw angle, deg

MODEL COMPONENT NOMENCLATURE

A_3	noncircular fuselage adapter (Fig. 5)
A_4	fuselage duct assembly for $M_\infty = 1.5$ (Fig. 6)
A_5	fuselage duct assembly for $M_\infty = 2.0$ (Fig. 7)
B_1	short fuselage without wing (Fig. 3)
B_2	long fuselage with wing (Fig. 2)
F	fairing (Fig. 14)
N_1	circular cross-section nose (Fig. 2)
N_3	noncircular cross-section nose (Fig. 4)
P_2	double-wedge pylon (Fig. 10)
P_3	swept pylon (Fig. 11)
S_{COC}	ogive-cylinder store with swept cruciform fins [Fig. 22(c)]
S_{DOC}	dummy ogive-cylinder store (Fig. 13)
S_{DOC2}	
S_{DOC3}	
S_E	elliptic force and moment store (Fig. 23)
S_{EP1}	elliptic pressure model no. 1 [Fig. 20(a)]
S_{EP2}	elliptic pressure model no. 2 [Fig. 20(b)]
S_{LFF}	ogive-cylinder store with rectangular fins [Fig. 22(b)]
S_{LFN}	ogive-cylinder store without fins [Fig. 22(a)]
S_P	ogive-cylinder pressure model (Fig. 19)
S_{POC}	ogive-cylinder store with swept planar fins [Fig. 22(d)]
S_{TOC}	ogive-cylinder store with swept triform fins [Fig. 22(e)]
T	triple ejection rack (Fig. 12)
W	wing (Fig. 2)

1. INTRODUCTION

This report and the related magnetic tapes and data retrieval computer programs present data obtained during an extensive external store test program. The purpose of the program was to provide systematic data at supersonic speeds for use in evaluating and improving analytical techniques for predicting store separation trajectories. The program was conducted under Air Force Contracts F33615-75-C-3053 and F33615-76-C-3077. Five wind-tunnel entries were made during the period from June 1975 through February 1978.

The test program was conducted in Tunnel A of the von Kármán Gas Dynamics Facility (VKF) at Arnold Engineering Development Center (AEDC) at nominal Mach numbers of 1.5, 1.6, 2.0, and 2.5 with most testing done at 1.5 and 2.0. Four types of data were obtained; flow-field survey data, store pressure-distribution data, store force-and-moment data, and store separation trajectories. Numerous parent aircraft configurations were used. They varied from a simple circular fuselage with or without a wing to a complex noncircular fuselage with engine inlets and pylons. The parent aircraft configurations were built up component by component in order to isolate interference effects.

A large amount of data was taken during the five wind-tunnel entries. To facilitate the distribution and use of these data, they have been recorded on magnetic tape and a series of FORTRAN programs have been written for use in retrieving the desired data.

The remainder of this report will expand further on the purpose and scope of the test program, describe the test apparatus,

and present the test conditions. This will be followed by a series of sections, each one devoted to describing a specific type of data. Information is presented which will allow the user to determine the AEDC "entry" number and "group" number for the data he is interested in. These numbers are used in conjunction with the magnetic tapes and computer programs to retrieve the data. Instructions for doing this are presented and the computer output is described.

2. PURPOSE AND SCOPE OF THE TEST PROGRAM

The purpose of the test program was to provide a systematic set of data which could be used in evaluating and improving analytical techniques and associated computer programs for predicting store separation trajectories for supersonic flight conditions. The prediction of a trajectory requires that the aerodynamic forces and moments acting on the store be predicted as it traverses the interference flow field produced by the parent aircraft. The calculation of the forces and moments requires knowledge of the flow field in which the store is immersed. For this reason all four types of data, trajectory, force and moment, pressure distribution, and flow field, were obtained.

The scope of the program was to obtain these four types of data for a range of supersonic flight conditions and parent aircraft configurations. The parent aircraft configurations ranged from a circular cross-section fuselage with or without a wing to a complex configuration with a noncircular fuselage cross section, engine inlets, and pylons. The complex configuration was built up component by component so that the effects of each added component could be determined. For example, the circular fuselage with wing

configuration was tested with and without a wing pylon. Differences in the data show the effect of the wing pylon on the flow field, store pressure distribution, and store forces and moments.

The test program was accomplished in five entries into Tunnel A of VKF at AEDC. The first entry was in June 1975 and the last entry was completed in February 1978. The following table lists by entry the AEDC project number and the reference number, in the list of references at the end of this report, of the AEDC report describing the testing done during the entry.

<u>Entry No.</u>	<u>AEDC Project No.</u>	<u>Reference</u>
1	V41A-B4A	1
2	V41A-L5A	2
3	V41A-M9A	3
4	V41A-T9A	4
5	V41A-V6A	5

In the following sections of this report, the data obtained during the five entries will be identified using the three characters following the dash in the above list of AEDC project numbers; e.g., B4A, L5A, etc.

3. TEST APPARATUS

3.1 Wind Tunnel

Tunnel A is a continuous, closed-circuit, variable density wind tunnel with an automatically driven flexible-plate-type nozzle and a 40- by 40-in. test section. The tunnel can be

operated at Mach numbers from 1.5 to 6.0 at maximum stagnation pressures from 29 to 200 psia, respectively, and stagnation temperatures up to 750°R ($M_\infty = 6$). Minimum operating pressures range from about one-tenth to one-twentieth of the maximum at each Mach number. The tunnel is equipped with a model injection system which allows removal of the model from the test section while the tunnel remains in operation. A description of the tunnel and air-flow calibration information may be found in Reference 6.

3.2 Model Support Systems

Two separate and independent support systems were used to support the models during the test. The parent model was inverted in the test section and supported by an offset sting and strut assembly, attached to the main model support system (see Fig. 1). The flow-field probe and store models were supported on the VKF Captive Trajectory System (CTS). The standard CTS Grid Program was used for data acquisition and model attitude positioning.

The VKF-CTS is a six-degree-of-freedom model support system with electromechanical drive units. The axial and vertical movements are obtained with linear drive units while lateral movement is obtained by rotating the roll-pitch-yaw support arm about the vertical support axis of the CTS and compensating for the resulting yaw angle with counter rotation of the forward yaw mechanism. Pitch motions are obtained through a forward knuckle joint which is oriented 90° from the forward yaw knuckle joint. The most forward component of the CTS is the roll mechanism capable of rolling $\pm 180^\circ$. A more complete description is presented in Section 2 of Reference 7. The translational and rotational envelopes and rates of travel of the CTS in Tunnel A are given as follows:

CTS MOTION CAPABILITIES IN TUNNEL A

<u>Motion</u>	<u>Travel Limits*</u>	<u>Max Rate of Travel+</u>
Axial, x	40 in.	1 in./sec
Vertical, z	+15 in.**	1 in./sec
Lateral, y	+15 in.**	2 in./sec
Pitch, α	+14.8 deg	10 deg/sec
Yaw, ψ	+30 deg	10 deg/sec
Roll, ϕ	+180 deg	20 deg/sec

*All travel limits are set up as a function of model size and sting geometry.

**Measured from tunnel centerline.

+Rates are continuously variable up to the rates shown in the table.

The CTS six degrees of freedom are sensed by potentiometers and read by a multiplexed analog-to-digital converter. The uncertainties in these measurements are summarized below. These estimates were made based on the uncertainties quoted for each degree of freedom and the equations of motion; i.e., an uncertainty in pitch causes an additional uncertainty in z.

CTS ATTITUDE AND POSITION UNCERTAINTIES

<u>Motion</u>	<u>Drive System Uncertainty</u>	<u>Model Attitude and Position Uncertainty</u>
x	± 0.005 in.	± 0.050 in.
y*	-----	± 0.080 in.
z	± 0.005 in.	± 0.060 in.
α	± 0.05 deg	± 0.10 deg
ψ^*	± 0.05 deg	± 0.10 deg
ϕ	± 0.10 deg	± 0.10 deg
η^*	± 0.03 deg	-----

*The yaw angles ψ and η are used to obtain both yaw angle and lateral displacement, y.

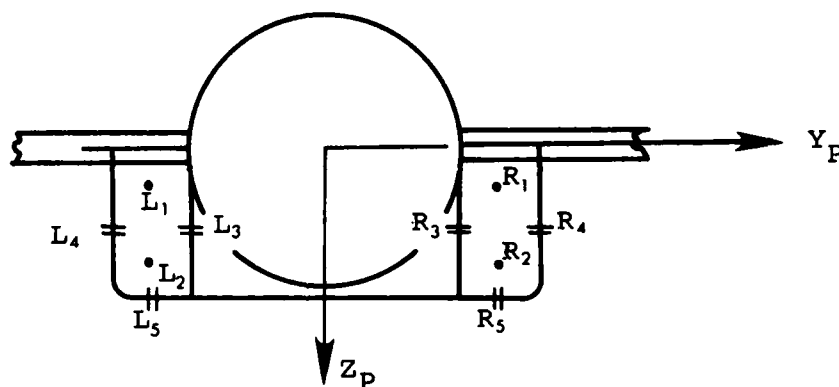
3.3 Parent Aircraft Model Components

The basic wing-fuselage combination N_1B_2W used in the test program is shown in Figure 2. It consists of nose N_1 , body B_2 , and wing W . The wing has an uncambered NACA 65A006 airfoil section. Nose N_1 was combined with body B_1 shown in Figure 3 to form a circular body-alone configuration, N_1B_1 . A noncircular body-alone configuration $N_3B_1A_3$ was tested. This was made up of nose N_3 shown in Figure 4 with the noncircular fuselage adapter A_3 shown in Figure 5 attached to body B_1 .

Three noncircular wing-fuselage combinations were tested. These are designated $N_3B_2WA_3$, $N_3B_2WA_4$, and $N_3B_2WA_5$. Model components A_4 and A_5 are duct assemblies and are shown in Figures 6 and 7. The A_4 and A_5 ducts differed only in the shape of the inlets. A_4 was designed for a Mach number, M_∞ , of 1.5 and A_5 was

designed for $M_\infty = 2.0$. Moveable plugs, as shown in Figure 7, were placed at the aft ends of the ducts for both A_4 and A_5 . By varying their location, the velocity in the ducts could be varied. An enlargement of the duct plug region is shown in Figure 8. The distance l_p is defined as the duct plug position and during the testing values of $l_p = 0.81, 1.63, \text{ and } 3.25$ were used. Some testing was done with the plugs removed.

The inlet velocity was determined from pressure measurements made in the ducts. Pressure orifices were installed at fuselage station (FS) 24.68 as shown in the following sketch. Two total



pressures and three static pressures were measured in each duct. The static pressures and the total pressures in each duct were averaged and the following expression used to calculate the ratio of duct velocity to free-stream velocity. This assumes the total

$$\frac{v_{\text{duct}}}{v_\infty} = \left[\frac{1.0 - \left(\frac{p}{p_t} \right)_{\text{duct}}^{0.28571}}{1.0 - \left(\frac{p}{p_t} \right)_\infty^{0.28571}} \right]^{1/2}$$

temperature in the ducts to be equal to the tunnel total temperature. The nominal velocity ratios obtained as a function of plug position for the two Mach numbers are listed in the following table.

ℓ_p	<u>INLET VELOCITY RATIO</u>	
	$M_\infty = 1.5$	$M_\infty = 2.0$
0.81	0.40	0.41
1.63	0.81	0.94
3.25	0.81	0.94
Off	0.81	-

The parent aircraft model had provisions for mounting pylons on the fuselage centerline and left wing 1/3 semispan or 2/3 semispan positions. Figure 9 shows these positions. The centerline of the wing pylons is located on the 40 percent chord. The centerline of the fuselage pylon is located at fuselage station (FS) 19.42.

Two different pylon configurations were tested. The double-wedge pylon (P_2) shown in Figure 10 was tested at the three pylon positions. The model component designations are (P_2)_C, (P_2)_{1/3}, and (P_2)_{2/3}. These pylons are located as shown in Figure 9. The swept pylon (P_3) was tested only at the 1/3 semispan position, (P_3)_{1/3}. This pylon is shown in Figure 11.

Some tests were conducted with the triple ejector rack, T, shown in Figure 12 attached to (P_2)_{1/3}. When attached, the rack centerline shown in Figure 12 is aligned with the pylon centerline shown in Figure 10.

Dummy ogive-cylinder stores were used in conjunction with pylon $(P_2)_{1/3}$ and rack T. The store is shown in Figure 13. When attached to $(P_2)_{1/3}$, the store midpoint is aligned with the pylon centerline shown in Figure 10. When used with the rack T, the stores, S_{DOC2} and S_{DOC3} , were attached at the two shoulder locations with the midpoints aligned with the rack centerline shown in Figure 12.

The last model component used was a wedge-shaped fairing, F. Provisions were made for mounting this fairing on the bottom of model components A_3 , A_4 , or A_5 . Figures 14 and 15 show the details and dimensions of the fairing and its location on the model.

4. TEST CONDITIONS

A summary of nominal test conditions and their uncertainties is presented by tunnel entry. Uncertainties in basic tunnel parameters p_0 and T_0 and a two sigma deviation in Mach number, determined from test section flow calibrations, were used to estimate uncertainties in the other free-stream properties using the Taylor series method of error propagation (Ref. 5).

4.1 Entry V41A-B4A

NOMINAL TEST CONDITIONS

<u>M_∞</u>	<u>p_0, psia</u>	<u>T_0, °F</u>	<u>q_∞, psia</u>	<u>p_∞, psia</u>	<u>Re/ft $\times 10^{-6}$</u>
1.5	13.8	100	5.9	3.7	3.9
1.76*	14.9	↓	6.0	2.8	↓
2.0	16.4	↓	5.9	2.1	↓
2.5	20.9	↓	5.4	1.2	↓

*Probe calibrations only.

UNCERTAINTY (+), PERCENT

<u>M_∞</u>	<u>M_∞</u>	<u>P_O</u>	<u>T_O</u>	<u>P_∞</u>	<u>q_∞</u>	<u>Re/ft</u>
1.505	1.3	0.2	0.5	2.9	0.3	0.8
1.756	1.1	↓	↓	3.0	0.8	1.0
2.005	1.0	↓	↓	↓	1.1	1.1
2.503	0.8	↓	↓	↓	1.5	1.3

4.2 Entry V41A-L5A

NOMINAL TEST CONDITIONS

<u>M_∞</u>	<u>P_O, psia</u>	<u>T_O, °F</u>	<u>q_∞, psia</u>	<u>P_∞, psia</u>	<u>Re/ft</u> <u>x 10⁻⁶</u>
1.5	14.8	120	6.4	4.0	4.1
2.0	17.3	120	6.2	2.2	4.0
2.5	21.9	120	5.6	1.3	4.0

UNCERTAINTY (+), PERCENT

<u>M_∞</u>	<u>M_∞</u>	<u>P_O</u>	<u>T_O</u>	<u>P_∞</u>	<u>q_∞</u>	<u>Re/ft</u>
1.50	1.3	0.20	0.5	2.9	0.3	0.8
2.00	1.0	↓	↓	3.0	1.1	1.1
2.50	0.8	↓	↓	3.0	1.5	1.3

4.3 Entry V41A-M9A

NOMINAL TEST CONDITIONS

M_∞	p_O , psia	T_O , °F	q_∞ , psia	p_∞ , psia	Re/ft $\times 10^{-6}$
1.51	14.5	120	6.21	3.89	4.0
1.63*	18.8	↓	7.87	4.23	5.0
1.63*	14.0		5.86	3.15	3.7
1.65**	18.8		7.82	4.11	5.0
2.00	17.2		6.16	2.20	4.0

*Nominal $M_\infty = 1.60$ Nozzle Contour

**Nominal $M_\infty = 1.625$ Nozzle Contour

UNCERTAINTY (+), PERCENT

<u>M_∞</u>	<u>p_O</u>	<u>M_∞</u>	<u>p_O</u>	<u>T_O</u>	<u>p_∞</u>	<u>q_∞</u>	<u>Re/ft</u>			
1.51	14.5	1.7	0.2	0.5	3.6	0.4	0.9			
1.63	18.8	1.0	↓	↓	3.0	0.6	↓			
1.63	14.0	↓			↓	↓				
1.65	18.8									
2.00	17.2	0.8			2.5	0.9				

4.4 Entry V41A-T9A

NOMINAL TEST CONDITIONS

M_∞	p_O , psia	T_O , °F	q_∞ , psia	p_∞ , psia	Re/ft $\times 10^{-6}$
1.51	14.5	120	6.21	3.89	4.0
2.00	17.2	↓	6.16	2.20	4.0
1.95	16.5		6.07	2.28	3.9

UNCERTAINTY (+), PERCENT

<u>M_∞</u>	<u>P_O</u>	<u>M_∞</u>	<u>P_O</u>	<u>T_O</u>	<u>P_∞</u>	<u>q_∞</u>	<u>Re/ft</u>
1.51	14.5	1.7	0.2	0.5	3.6	0.4	0.9
2.00	17.2	0.8	↓	↓	2.5	0.9	1.0
1.95	16.5	0.8	↓	↓	2.5	0.9	1.0

4.5 Entry V41A-V6A

NOMINAL TEST CONDITIONS

<u>M_∞</u>	<u>p_O, psia</u>	<u>T_O, °F</u>	<u>q_∞, psia</u>	<u>p_∞, psia</u>	<u>Re/ft</u> <u>x 10⁻⁶</u>
1.51	14.5	120	6.21	3.89	4.0
1.63	14.2	↓	5.97	3.21	3.8
2.00	17.2	↓	6.16	2.20	4.0

UNCERTAINTY (+), PERCENT

<u>M_∞</u>	<u>P_O</u>	<u>M_∞</u>	<u>P_∞</u>	<u>q_∞</u>	<u>Re/ft</u>
1.51	14.5	1.7	3.6	0.4	0.9
1.63	14.2	1.0	3.0	0.6	0.9
2.00	17.2	0.8	2.5	0.9	1.0

5. FLOW-FIELD SURVEY TESTS

The flow-field data were taken with the flow-field rake, shown in Figure 16, attached to the CTS. The rake is made up of three 20° half angle conically tipped probes with four equally spaced static pressure orifices on the cone surface and a total pressure

orifice at the cone apex. The probes are spaced 1.5 inches apart, centerline to centerline.

The orientation of the rake in the tunnel is shown in Figure 17. It was always positioned in a vertical plane parallel with the plane of symmetry of the parent aircraft configuration. Nearly all of the data were taken with the probes at the same nominal angle of attack as the parent configuration. A limited amount of data were taken during entry V6A with the rake at a slightly larger angle of attack than the parent. This was done to alleviate clearance problems and allow data to be obtained closer to the parent aircraft.

The calibration of the three probes on the flow-field rake is described in Section 4.1 of Reference 1. The calibration described there is for the Mach number range from 1.25 to about 3.0. Since local Mach numbers in the flow field of the parent configuration less than 1.25 were expected, calibration data from Reference 8 were used to extend the data reduction procedure into the subsonic speed range. The data obtained during the present test program for use in calibrating the probes are described in Appendix A. The data reduction equations are presented in Section B.1 of Appendix B.

5.1 Summary of Tests

The flow-field survey data taken with a parent aircraft configuration present are summarized in Table I. Column 1 lists all of the parent configurations tested. The model component nomenclature was presented in Section 3.3. The second column of Table I gives the number of the table where all of the test conditions for that parent configuration are listed.

These tables, Table II through Table XXIII, all have the same format. Column 1 lists the Mach number, M_∞ , and column 2 the angle of attack of the parent aircraft. Columns 3, 4, and 5 list the

coordinates of probe 1 of the points at which data were taken. The X_p , Y_p , Z_p coordinate system has its origin fixed in the nose of the parent configuration and is shown in Figure 18. Testing was done under the fuselage centerline, $Y_p = 0$, or under the left wing, negative Y_p . Column 6 only applies to parent configurations containing A_4 or A_5 and specifies the location of the duct plugs measured as shown in Figure 8. Columns 7 and 8 contain the AEDC test number and group number(s) which contain the data. Sometimes two group numbers were required to handle all of the data taken in the X_p traverse. These last two columns provide the input data to the data retrieval computer program.

5.2 Data Uncertainties

The cone probe pressures were measured with 15-psid transducers with a variable reference. The variable reference was also measured with another 15-psid transducer referenced to a near vacuum. These transducers were calibrated daily over a range of 0.3 to 12.0 psia using an air dead weight tester. Least squares straight line curve fits through these data points were used in determining a single scale factor for the 15-psid range of each transducer. The measurement precision is estimated to be 0.05 percent of reading.

This uncertainty in the pressure measurements was used to estimate the corresponding uncertainty that may exist in the cone probe calibration data and in the flow-field survey results presented in this report. The Taylor series method of error propagation was used in this analysis.

The following tables list the uncertainties for entries B4A and L5A.

PROBE PRESSURES

Uncertainty (+), Percent				
M_∞	P	P/P_∞	P'_O	P/P'_O
1.51	0.05	3.0	0.1	0.3
1.76	↓	↓	↓	0.3
2.01	↓	↓	↓	0.4
2.50	↓	↓	↓	0.5

LOCAL MACH NUMBER EVALUATIONS

Uncertainty (+), Absolute		
M_∞	P/P'_O	M_ℓ
1.51	0.0012	0.004
1.76	0.0012	0.006
2.01	0.0012	0.006
2.50	0.0026	0.026

FLOW ANGULARITY PARAMETERS

Uncertainty (+), Absolute			
M_∞	$\Delta p_{1,3}/\bar{P}$ and $\Delta p_{2,4}/\bar{P}$	$\eta/\bar{P}$	α_ℓ, σ_ℓ deg
1.51	0.003	0.0003	0.2
1.76	0.003	0.0004	↓
2.01	0.004	0.0005	↓
2.50	0.006	0.0007	↓

The uncertainties for entries M9A, T9A, and V6A are now discussed. The uncertainty in local Mach number (M_ℓ) measured by the probes of the flow-field rake is believed to be about the same as the uncertainty in free-stream Mach number (M_∞) given in section 4. Uncertainty in local flow angles (α_ℓ and σ_ℓ) is estimated to be about $\pm 0.2^\circ$. The uncertainty in model pressures normalized by free-stream static pressure (p_∞) is the same as the uncertainty in p_∞ listed in Section 4.

5.3 Flow-Field Test Data Retrieval

Flow-field data from the first, second, fourth, and fifth entries (B4A, L5A, T9A, V6A) are recorded on two flow-field data tapes. AEDC was unable to provide a magnetic tape of the M9A data. This is unfortunate since the M9A flow-field data represented a substantial portion of the flow-field data that were taken during the five entries. The data have been written on the tapes in a standardized format so a single computer program could be written for data retrieval. This standardized format necessitated filling the space normally occupied by valid data with dummy values when data for a given entry was unavailable or did not apply to the configurations tested during a particular entry. These values have been set equal to zero.

5.3.1 Use of the computer program

A listing of the computer program used in retrieval of the flow-field data is presented in Appendix C. The input to the program consists of two cards both read under 16I5 format. Two values are entered on the first card in the first two 5-character fields. The first value is the number of groups of data to be retrieved. This value is limited to less than 17 solely because of the dimensioning of the variable F in the retrieval program. The second value on the first card is an integer designating which

entry the data are to be retrieved for (1 = B4A, 2 = L5A, 4 = T9A, 5 = V6A). The second card contains the group numbers of the data to be retrieved. This information is obtained from the tables described in Section 5.1.

The first tape upon which the data is written is a multi-file tape. The second tape consists of a single file. The first file on the first tape contains data from B4A. The second file on the first tape contains data from L5A and the third file on the first tape contains data from T9A. The first and only file on the second tape has the data from V6A. In order to get the proper data the tape must be positioned at the beginning of the file that contains the data for the entry in question; e.g., to retrieve data from entry T9A the first two files on the first tape must be skipped and the tape must be positioned at the beginning of the third file on the tape.

5.3.2 Description of tabulated data

There will be four or five pages of output for each group of data depending on whether or not the parent configuration had simulated engine inlets, model components A_4 or A_5 ; four pages for parent configurations without inlets and five pages if the parent configuration has engine inlets. Sample output for a configuration with inlets follows the program listing in Appendix C. The first line of each page tells the type of data, the entry number, the time period of the entry, and the AEDC document that pertains to the data being retrieved. The second line shows the group number and page number. The third line gives the tunnel operating conditions and the parent configuration code. The fourth line gives the angle of attack of the parent and the flow-field rake as well as the lateral and vertical locations of the flow-field rake. Also on the fourth line is information on the inlet plug position. These four lines of headings are printed on each

page. The reference pressure, the angle of attack of the rake, and the plug position information is valid only for the T9A and V6A entries.

Page 1 shows the longitudinal location of the probe closest to the parent and pressure information from all three probes. The assumption as to location of the point at which the flow field was measured changed between L5A and M9A. Originally, it was assumed that the flow field was being measured at the total pressure orifice. Later it was assumed that the flow field was being measured at the static pressure orifice. If the angle of attack of the parent and the probe are not identical, then the longitudinal location for each probe will be different. Page 2 contains data for the probe closest to the parent. Page 3 gives data for the middle probe, and page 4 gives data for the probe furthest from the parent. For entries T9A and V6A the engine inlet data is presented on the fifth page.

On pages 2 through 4, the local flow-field angle of attack (ALP and ALPL) is calculated two independent ways as is the local side-wash (SIG and SIGL). For entries B4A and L5A the values of ALP and SIG were calculated incorrectly, so those data should be ignored for those entries.

The data reduction equations are presented in Section B.2 of Appendix B. Some of the equations presented in Section B.1 are also used; e.g., ML_n .

The nomenclature used in the tabulated output is contained in the following table.

ALPHA (PAR)	Angle of attack of parent, deg
ALPHA (RAKE)	Mechanical angle of attack of the probe rake, deg
ALPn n = 1,2,3	Local flow-field angle of attack of the n th probe based on DP13, deg
ALPLn n = 1,2,3	Local flow-field angle of attack of the n th probe in X _p - Z _p plane, deg (see Fig. 18); positive for positive w
ALTn n = 1,2,3	Total angle of attack of the n th probe, deg
CONF (PAR)	Parent model configuration code
DP13/PBn n = 1,2,3	Pressure differential in pitch plane of the n th probe normalized by average cone surface pressure
DP24/PBn n = 1,2,3	Pressure differential in yaw plane of the n th probe normalized by average cone surface pressure
DVn/V8 n = 1,2,3	Normalized incremental change in local velocity of the n th probe relative to free-stream velocity
GROUP	Data group number

LP	Inlet plug position aft of fully closed, in.
MACH	Free-stream Mach number
MLn n = 1,2,3	Local Mach number of the n th probe, MLn = F(PBn/Pn5)
(P/PT)R or L	Inlet average static pressure normalized by inlet average total pressure for the right or left inlet, respectively
PBn/P8 n = 1,2,3	Average cone surface pressure of the n th probe normalized by free-stream static pressure
Pn5/PBn n = 1,2,3	Cone pitot pressure of the n th probe normalized by average cone surface pressure
PHIn n = 1,2,3	Probe total angle of roll as sensed by the n th probe, deg
PLi i = 3,4,5	Static pressures measured in the left inlet, psia
PO, PSIA	Free-stream stagnation pressure, psia
PRi i = 3,4,5	Static pressures measured in the right inlet, psia
PREF, PSIA	Reference pressure for probe pressures, psia
PTLi i = 1,2	Total pressures measured in the left inlet, psia
PTRi i = 1,2	Total pressures measured in the right inlet, psia

PT_n/PB_n $n = 1, 2, 3$	Interpolation or extrapolation of P_{n5}/P_{Bn} of the n^{th} probe to obtain a value at the same axial location as the probe reference point (ξ of static taps)
$P_8, PSIA$	Free-stream static pressure, psia
$Q_8, PSIA$	Free-stream dynamic pressure, psia
QL_n/Q_8 $n = 1, 2, 3$	Local stream dynamic pressure of the n^{th} probe normalized by free-stream dynamic pressure
$RE/FT \times 10^{**6}$	Free-stream Reynolds number $\times 10^{-6}$ per ft, ft^{-1}
SIG_n $n = 1, 2, 3$	Local sidewash angle of the n^{th} probe based on DP24, deg
$SIGL_n$ $n = 1, 2, 3$	Local sidewash angle of the n^{th} probe in $X_p - Y_p$ plane, deg (see Fig. 18); positive for positive v
$T_0, DEG (R)$	Free-stream stagnation temperature, $^{\circ}R$
$T_8, DEG (R)$	Free-stream static temperature, $^{\circ}R$
U_n/V_8 $n = 1, 2, 3$	Local u velocity determined by the n^{th} probe normalized by V_8 (see Fig. 18)
$(V/V_8)_R$ or L	Inlet flow velocity normalized by free-stream velocity for the right or left inlet, respectively, based on $(P/PT)_R$ or L
V_n/V_8 $n = 1, 2, 3$	Local v velocity determined by the n^{th} probe normalized by V_8 (see Fig. 18)

V8, FT/SEC	Free-stream velocity, ft/sec
Wn/V8 n = 1,2,3	Local w velocity determined by the n th probe normalized by V8 (see Fig. 18)
Xn(IN) n = 1,2,3	Axial location X _p of the n th probe reference point (probe tip for B4A and L5A; ξ of static taps for M9A, T9A, and V6A) relative to the parent reference point (nose), in.
Y1 (IN)	Lateral location Y _p of all probe reference points (probe longitudinal ξ) relative to the parent reference point (longitudinal ξ), in.
Zn(IN) n = 1,2,3	Vertical location Z _p of the n th probe reference point (probe longitudinal ξ at static tap ξ) relative to the parent reference point (longitudinal ξ), in.

6. PRESSURE DISTRIBUTION TESTS

Pressure distribution data were obtained from the first, third, fourth, and fifth entries (B4A, M9A, T9A, and V6A). No pressure distribution data were taken during the second entry (L5A). Pressure distributions measured during B4A, M9A, and T9A were on the finless ogive-cylinder store, S_p, shown in Figure 19. Longitudinal pressure variations were obtained by virtue of 19 pressure orifices located along one meridian of the store. Circumferential pressure distributions were obtained by rolling the store about its longitudinal axis through 360° in increments of 10°. Longitudinal loading distributions were obtained by integrating the circumferential pressure distributions. Store loads were obtained by longitudinal integration of the loading distributions. The moment reference location is shown in Figure 19. The equations used in the integrations are presented in Section B.3 of Appendix B.

During the V6A entry, a finless store with an elliptical cross section, S_{EP} , was tested. There were two store pressure models which made up S_{EP} . Both were 2:1 ellipses at all longitudinal stations, see Figure 20. Figure 20(a) shows S_{EP1} and Figure 20(b) shows S_{EP2W} . During the V6A tests, the wings were removed and the store designated S_{EP2} . Each model has two longitudinal rows of pressure orifices, taps 1 through 29. Taps 30 through 33 on one model matched locations on the other model and provided redundant measurements for comparison. At a specific position or attitude in the stream or interference flow field, four groups of pressure data were combined to describe the surface pressure distribution on the model. This provided data at eight circumferential positions at each of 14 axial stations. For example, when S_{EP1} was at 0° roll, pressure data were obtained at two circumferential positions, 0° and 270° , at each of the 14 axial stations. By rolling S_{EP1} 180° data were obtained at 90° and 180° . S_{EP2} is next positioned at the same place and attitude in the free-stream or interference flow field as S_{EP1} was for the previously described two groups of data. With S_{EP2} at 0° roll data are obtained at 55° and 305° . Next, S_{EP2} is rolled 180° to obtain data at 125° and 235° . If a measured pressure was found to be incorrect because of a leak or restriction in the pressure tube or noise in the transducer signal, the value of the pressure was set to zero. During the pressure integrations linear interpolation in the longitudinal direction was used to determine a value for pressures that had been zeroed.

The pressure integrations were performed, as for the ogive-cylinder store, to obtain longitudinal loading distributions and the overall store loads. The equations used are presented in Section B.4 of Appendix B. Since only eight pressures were measured at each longitudinal station, the authors recommend that the results of these integrations be used with extreme caution.

6.1 Summary of Tests

6.1.1 Ogive-cylinder store

The pressure distribution data taken on the ogive-cylinder store are summarized in Table XXIV. Column 1 lists all of the parent configurations tested. The model nomenclature was presented in Section 3.3. The second column of Table XXIV gives the number of the table where all of the test conditions for that parent configuration are listed.

These tables, Tables XXV through XXXVII, all have the same format. Column 1 lists the Mach number. Column 2 gives the parent configuration angle of attack, α_p , and columns 3 and 4 list the store angle of attack, α_s , and yaw angle, β_s . Positive β_s is nose toward the parent when under the left wing.

The next three columns specify the store position. Column 6 gives the Y_p location of the store moment center. Columns 5 and 7 specify the X_p and Z_p coordinates of the store moment center relative to the carriage position on a pylon or the TER rack. The carriage position at the three pylon locations is shown in Figure 9. The X_p and Z_p coordinates of the moment center for $\Delta X_p = \Delta Z_p = 0$ for the various Y_p locations used are

<u>Y_p, in.</u>	<u>X_p, in.</u>	<u>Z_p, in.</u>
0.0	-19.42	2.82
-4.0	-20.84	1.37
-4.75	-20.84	1.37
-8.0	-24.52	1.30

With the TER, model component T, attached to $(P_2)_{1/3}$ at $Y_p = -4.0$ inches

$$X_p = -20.84 \text{ in.}$$

$$Z_p = 2.08 \text{ in.}$$

Column 8 only applies to parent configurations containing A_4 or A_5 and specifies the location of the duct plugs measured as shown in Figure 8. Columns 9 and 10 list the AEDC test number and group number which contains the data for each test condition. These columns provide the input data to the data retrieval computer program.

6.1.2 Elliptic store

The pressure distribution data taken on the elliptic store are summarized in Table XXXVIII in the same manner as was used for the ogive-cylinder store. The test conditions for the various parent configurations are presented in Tables XXXIX through XLVII.

Table XXXIX lists the store free-stream, or store alone, data. Tables XL through XLVII list the test conditions with various parent configurations present. Columns 1 through 9 of Tables XL through XLVII present the same information as was previously described for the ogive-cylinder store. The following table lists by table number the X_p and Z_p coordinates of the moment center, see Figure 20(a), for $\Delta X_p = \Delta Z_p = 0$.

<u>Table No.</u>	<u>X_p, in.</u>	<u>Z_p, in.</u>
XL	-18.34	2.82
XLI	-19.76	1.37
XLII	-22.00	2.43
XLIII	-18.34	2.82
XLIV	-22.00	2.43
XLV	-22.00	2.43
XLVI	-18.34	2.82
XLVII	-22.00	2.43

The four columns following column 9 list the four AEDC group numbers which contain the pressure data taken on the two pressure models at the two roll attitudes. The $\phi = 0^\circ$ roll orientation of the two stores will now be defined. Figure 21 shows an X,Y,Z coordinate system with its origin at the store moment center. When the store is oriented such that $\alpha_s = \alpha_p$ and $\beta_s = 0$, the system is parallel to the X_p, Y_p, Z_p system shown in Figure 18. The zero degrees roll orientation, $\phi = 0^\circ$, for the elliptic stores (see Fig. 20) puts the major axis of the ellipse in the $Z = 0$ plane. For pressure model S_{EP1} orifices 16 through 29 are on the side closest to the parent aircraft. For pressure store S_{EP2} orifices 1 through 29 are on the side closest to the parent aircraft.

The free-stream elliptic store test conditions are listed in Table XXXIX. The combined angle of attack of the store, α_{cs} , is listed in column 2 and the store roll angle, ϕ_s , in column 3. The $\phi_s = 0^\circ$ orientation has the major axis of the ellipse horizontal in the wind tunnel. In this orientation orifices 16 through 29 on S_{EP1} and orifices 1 through 29 on S_{EP2} are on the leeward side at positive α_{cs} . Positive ϕ_s is a clockwise rotation of the model when viewed from the rear.

The last column of Tables XXXIX through XLVII lists the group number containing the longitudinal load distributions and total loads calculated by integrating the pressure distributions. The last five columns of these tables provide the input data to the data retrieval computer programs.

6.2 Data Uncertainties

The uncertainties in the pressures measured on the model are the same as those given in Section 5.2 for the flow-field rake. The ogive-cylinder store was tested during entries B4A, M9A, and T9A. The elliptic store was used only during entry V6A.

It is difficult to establish a percentage uncertainty for the loading distributions and the overall loads which were determined by integration of the pressure distributions. One statement that can be made is that the results for the ogive-cylinder store should be much more accurate than those obtained for the elliptic store. The elliptic store only had eight circumferential pressures at a given axial location while the other had 36. The elliptic store data should be used with extreme caution.

6.3 Pressure Test Data Retrieval

Due to the fact that one group of data defined the axial and circumferential pressure distribution for the ogive-cylinder store while four groups were needed to perform the same task for the elliptical store, three separate computer programs are required for data retrieval. Program PDCYL retrieves data for the ogive-cylinder store. Program PDE retrieves the pressure distribution data for the elliptical store, while program PDEI is used to retrieve the integrated pressure data for the elliptical store. The information on the magnetic tape is contained on five files. The first three files contain the data from B4A, M9A, and T9A, respectively. The fourth file has the pressure distribution data from V6A, and the fifth file has the pressure integration results from V6A.

6.3.1 Use of the computer programs

Listings of the computer programs used to retrieve the data are contained in Appendix D. The input to all three programs is similar. Two cards of input are required for each program. These cards are read under 1615 format. Two values are read from the first card. The first value is the number of groups of data to be retrieved. The second value is the entry number (1 = B4A, 3 = M9A, 4 = T9A, 5 = V6A). The entry number is optional for the elliptical store data (V6A). These two values are entered in the first two

5-character fields. The second card contains the group numbers (<17) of the data to be retrieved. This information is obtained from the tables described in Section 6.1. As discussed earlier the tape is a multi-file tape and must be positioned at the beginning of the proper file in order to get the desired data.

6.3.2 Description of tabulated data

6.3.2.1 Ogive-cylinder store.- For the ogive-cylinder store the data for each group require three pages of output. A sample follows the listing of program PDCYL in Appendix D. The first line of output on each page tells the type of data, the entry number, the time period of the entry, and the applicable AEDC document. The next line gives the group number and page number of this group. The third line gives the tunnel operating conditions and the fourth line gives the parent and store configurations. The information on the parent configuration was only available for the T9A entry as was the information on the fifth line designated LP. Also on line five is the parent and store angles of attack and store position. These first five lines are repeated on all three pages of output for each group. Pages one and two contain the pressure data as a function of roll attitude and axial location. The 0° roll attitude places the orifices on the top of the store. Positive roll is clockwise viewed from the rear. Page three gives the distributed and total loads derived from pressure integrations. The directions of positive forces and moments are shown in Figure 21.

The nomenclature used in the tabulated output is contained in the following table.

ALPHA (PAR)	Angle of attack of parent, deg
ALPHA (STORE)	Angle of attack of CTS pressure model, deg

CA1	Axial-force coefficient (axial integration), Force/(Q8 · S)
CA2	Axial-force coefficient (radial integration), Force/(Q8 · S)
CLN	Resultant yawing-moment coefficient, CLN = CLNA + CLNY
CLNA	Yawing-moment coefficient due to axial force loading, yawing moment/(Q8 · S · L)
CLNY	Yawing-moment coefficient due to side force loading, yawing moment/(Q8 · S · L)
CLN/CY	Ratio of CLNY to CY
CM	Resultant pitching-moment coefficient, CM = CMA + CMN
CMA	Pitching-moment coefficient due to axial force distribution, pitching moment/(Q8 · S · L)
CMN	Pitching-moment coefficient due to normal force loading, pitching moment/(Q8 · S · L)
CM/CN	Ratio of CMN to CN
CN	Normal-force coefficient, normal force/(Q8 · S)
CONF (PAR)	Parent model configuration code
CY	Side-force coefficient, side force/(Q8 · S)

DX,DY,DZ	Coordinate of store model reference point (midpoint of store model $\mathcal{E}$) relative to store reference point in its carriage position in the X_p , Y_p , and Z_p directions, positive upstream, out the right wing, and away from the parent model, respectively, in.
GROUP	Data group number
L, ℓ	Moment coefficient reference length, $\ell = 0.75$ in.
LCA	Local axial-force coefficient per unit length, in^{-1} [local axial force/($Q_8 \cdot S$)]
LCLN	Local yawing-moment coefficient per unit length, in^{-1} [local yawing moment/($Q_8 \cdot S \cdot L$)]
LCM	Local pitching-moment coefficient per unit length, in^{-1} [local pitching moment/($Q_8 \cdot S \cdot L$)]
LCN	Local normal-force coefficient per unit length, in^{-1} [local normal force/($Q_8 \cdot S$)]
LCY	Local side-force coefficient per unit length, in^{-1} [local side force/($Q_8 \cdot S$)]
LP	Inlet plug position measured from the fully closed position, in.
MACH	Free-stream Mach number
P_n/P_8 $n = 1-19$	Pressure as sensed by the n^{th} tap normalized by free-stream static pressure

PHI	Store model roll angle, deg
PO, PSIA	Free-stream stagnation pressure, psia
PREF, PSIA	Reference pressure, psia
P8, PSIA	Free-stream static pressure, psia
Q8, PSIA	Free-stream dynamic pressure, psia
RE/FT*10**6	Free-stream Reynolds number x 10 ⁻⁶ , ft ⁻¹
S	Force and moment coefficient reference area, in. ² (S = 0.4418 in. ²)
TO, DEG (R)	Free-stream stagnation temperature, °R
T8, DEG (R)	Free-stream static temperature, °R
V8, FT/SEC	Free-stream velocity, ft/sec
X/L	Distance from the store body nose to the surface pressure tap normalized by the store body length (L = 6.375 in.)

6.3.2.2 Elliptic store.- The fourth file on the pressure tape contains the pressure data taken with the elliptical store during the V6A entry. The fifth file contains the integrated pressure data from V6A. The authors recommend that the integrated loads from V6A be used with extreme caution. It is felt that the 8 circumferential pressures at 14 axial stations are insufficient to define the store loading at all test conditions. Each group of pressure data is presented on one page of output. A sample follows the listing of program PDE in Appendix D. The first line gives the type of data,

the entry number, the time period of the entry, and the pertinent AEDC document. The next four lines give the group number, tunnel operating conditions, parent and store configurations, and the location and orientation of the store model. This information is followed by the data.

The following table presents the nomenclature used in the tabulated output.

ALPHA (PAR)	Parent model angle of attack, deg
ALPHA (STORE)	Pressure-distribution store model angle of attack, deg
CONF (PAR)	Parent model configuration code
CONF (STORE)	Store model configuration, SEP1 or SEP2
DX,DY,DZ	Displacement of the store moment center from the reference point in the X_p , Y_p , and Z_p directions, positive upstream, out the right wing and away from the parent model, respectively, in.
GROUP	Data group numbers
LP	Inlet plug position measured from the fully closed position, in.
MACH	Tunnel free-stream Mach number
MODEL TAP	Number associated with each pressure measuring tap on the store model, (see Fig. 20)

P	Value of the pressure from a specific model tap, psia
P/P8	Model pressure referenced to free-stream static pressure
PHI (STORE)	Store model roll angle used to get two rays of pressure distributions at one DX, DY, DX, ALPHA (STORE), YAW (STORE), and PHI position, deg (see Fig. 20)
P0	Tunnel stilling chamber pressure, psia
PREF	Reference pressure on the scanivalve transducer, psia
P8	Tunnel free-stream static pressure, psia
Q8	Tunnel free-stream dynamic pressure, psia
RE/FT*10**6	Tunnel free-stream Reynolds number $\times 10^{-6}$, ft^{-1}
T0	Tunnel stilling chamber temperature, $^{\circ}\text{R}$
T8	Tunnel free-stream static temperature, $^{\circ}\text{R}$
V8	Tunnel free-stream velocity, ft/sec
X/L	Store model tap location from the model nose normalized by the model length ($L = 6.0$ in.)
YAW (STORE)	Pressure-distribution store model yaw angle, deg

Each group of integrated pressure data is presented on one page of output. A sample follows the listing of program PDEI in Appendix D. The top of the page presents the same information as was listed for the pressure data. Following this the pressures used in the integrations are listed as a function of axial location, X/L, and polar angle, PHI(RAY). PHI(RAY) = 0.0 is on the top of the store and PHI is positive clockwise around the store when viewed from the rear. After the pressures the loading distributions and total loads are listed. The last line lists the pressure data group numbers which contained the data used in the integrations.

The nomenclature used in the tabulated output is defined in the following list.

ALPHA (PAR)	Parent model angle of attack, deg
ALPHA (STORE)	Pressure-distribution store model angle of attack, deg
CA	Axial-force coefficient (axial integration uncorrected for base pressure), axial force/ ($Q_8 \cdot S$)
CN	Normal-force coefficient, normal force/($Q_8 \cdot S$)
CLM	Pitching-moment coefficient, pitching moment/ ($Q_8 \cdot S \cdot L$)
CLN	Yawing-moment coefficient, yawing moment/ ($Q_8 \cdot S \cdot L$)
CY	Side-force coefficient, side force/($Q_8 \cdot S$)

DCA/DX	Local axial-force coefficient, in.^{-1} [local axial force/(Q8 · S)]
DCLM/DX	Local pitching-moment coefficient, in.^{-1} [local pitching moment/(Q8 · S · L)]
DCLN/DX	Local yawing-moment coefficient, in.^{-1} [local yawing moment/(Q8 · S · L)]
DCN/DX	Local normal-force coefficient, in.^{-1} [local normal force/(Q8 · S)]
DCY/DX	Local side-force coefficient, in.^{-1} [local side force/(Q8 · S)]
DX,DY,DZ	Displacement of the store moment center from the reference point in the X_p , Y_p , and Z_p directions, positive upstream, out the right wing and away from the parent model, respectively, in.
GROUP	Data group number
L	Moment coefficient reference length, $L = 1.061$ in.
LP	Inlet plug position measured from the fully closed position, in.
MACH	Tunnel free-stream Mach number
PARENT CONFIG	Parent model configuration
PHI	Pressure distribution store model true roll angle, deg

PHI (RAY)	Circumferential roll positions of rays of pressure measurements, deg
P0	Tunnel stilling chamber pressure, psia
P/P8	Model pressure referenced to free-stream static pressure
P8	Tunnel free-stream static pressure, psia
Q8	Tunnel free-stream dynamic pressure, psia
RE/FT*10**6	Tunnel free-stream Reynolds number $\times 10^{-6}$, ft^{-1}
S	Force and moment coefficient reference area, (S = 0.884 in. ²)
TO	Tunnel stilling chamber temperature, °R
T8	Tunnel free-stream static temperature, °R
V8	Tunnel free-stream velocity, ft/sec
X/L	Store model tap location from the model nose normalized by the model length (L = 6.0 in.)
YAW (STORE)	Pressure-distribution store model yaw angle, deg

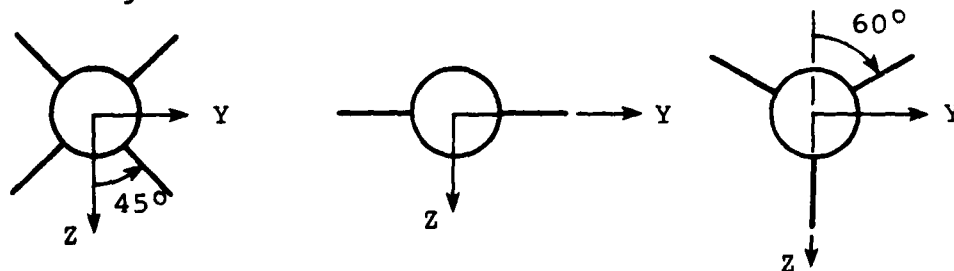
7. FORCE AND MOMENT TESTS

The force phase of the test consisted of taking six-component force and moment data on several different store models. Data

were taken in a grid pattern in the flow field of the generalized fighter-bomber aircraft. The grid data were taken as the parent aircraft was built up from a simple ogive-cylinder fuselage with mid wing to a realistic fighter-bomber aircraft with noncircular cross section including flow through inlets. Store models were tested on pylons under the fuselage and wing. Free-stream forces and moments were also measured for all of the store configurations.

The store models used during the test program are shown in Figures 22 and 23. Figure 22 shows a series of ogive-cylinder stores. All of the store bodies are identical. A finless model, S_{LFN} , is shown in Figure 22(a). Two models with cruciform fins are shown in Figures 22(b) and 22(c). Store S_{LFF} was used during entries B4A and L5A. Store S_{COC} was used during the last three entries, M9A, T9A, and V6A. Planar, S_{POC} , and triform, S_{TOC} , versions of S_{COC} are shown in Figures 22(d) and 22(e).

The store coordinate system is shown in Figure 21 along with the positive sense of the force and moment coefficients. The system has its origin at the store moment center (moment reference location). In the carriage or zero point location, the store X, Y, Z system is parallel to the parent aircraft X_p, Y_p, Z_p system shown in Figure 18. The orientations of the fins on the finned stores when in the carriage positions, viewed from the rear, are shown in the following sketch.



The sixth store, S_E , used in the test program is shown in Figure 23. It consists of a body which is a 2 to 1 ellipse, a monoplane wing, and an interdigitated cruciform tail. In the carriage position the wing is in the $Z = 0$ plane.

7.1 Summary of Tests

The force and moment tests are summarized in Table XLVIII. Column 1 lists the store tested and column 2 gives the table number where all of the parent aircraft configurations used with that store are listed as are the test conditions. All of the isolated store data (no parent configuration present) have been grouped together in Table XLIX.

The data obtained on the various stores shown in Figures 22 and 23 in the presence of various parent aircraft configurations are listed in Tables L through LV. The first item listed is the parent configuration (the model nomenclature was presented in Section 3.3). The next four columns list the Mach number, M_∞ , the parent aircraft angle of attack, α_p , the store angle of attack, α_s , and the store yaw angle, β_s . Positive β_s is nose to the right viewed from the rear. Column 8 lists the CTS zero point, or reference point, from which ΔX_p , ΔY_p , and ΔZ_p given in columns 9 through 11 are measured.

The zero points are listed in Table LVI. Column 1 lists the zero point number and the second column defines the store location. The last column gives the coordinates of the store moment reference point (moment center) in the X_p , Y_p , Z_p system shown in Figure 18 when $\Delta X_p = \Delta Y_p = \Delta Z_p = 0$.

Column 12 in Tables L through LV gives the duct plug location and is only applicable to parent configurations containing A_4 or A_5 . Columns 13 and 14 list the AEDC test number and group number which contains the data. These last two columns provide the input data to the data retrieval computer program.

For each "group" of data listed in Tables L through LV one of the following three parameters, ΔZ_p , α_s , or β_s , is designated

with a two letter identifier. For a particular group, that is the quantity which was varied. The values of these quantities used for the various two letter designations are listed in Tables LVII through LIX.

Table XLIX lists the isolated store data. Column 1 gives the store designation and column 2 lists the Mach number, M_∞ . The third column gives the store roll angle, ϕ_s , measured relative to the fin orientation on the balance. Positive ϕ_s is clockwise when viewed from the rear. Columns 4 and 5 give the store angles of attack and yaw. The values associated with the two letter identifiers are listed in Tables LVIII and LIX. When $\phi_s \neq 0^\circ$ and $\beta_s = 0^\circ$, α_s is the total or combined angle of attack, the angle between the store longitudinal axis and the free-stream velocity vector.

For some tests with store S_{COC} , the store location in the wind tunnel was varied. Columns 6 through 8 give the X_T , Y_T , Z_T tunnel coordinates. With $Y_T = Z_T = 0$ the store is on the tunnel center-line. The $X_T = 0$ location is defined in Reference 5. The values of Z_T used when Z_T is specified as AZT are given in Table LX.

The last two columns of Table XLIX give the test number and group number containing the data. These are input to the data retrieval computer program.

7.2 Balance and Associated Data Uncertainties

Model forces and moments were measured with six-component, moment type, strain-gage balances calibrated by VKF personnel. Prior to the test, static loads in each plane and combined static loads were applied to the balance to simulate the range of loads and center of pressure locations anticipated during the test. The uncertainties presented here represent the bands which enclose 95 percent of the measured residuals, based on differences between the

applied loads and the corresponding values calculated from the balance calibration equations included in the final data reduction.

Balance and base pressure uncertainties were combined with uncertainties in the tunnel parameters, using the Taylor series method of error propagation, to estimate the uncertainty of the aerodynamic coefficients which are presented below. They are taken from References 1 through 5.

For entries M9A, T9A, and V6A the basic precision of the aerodynamic coefficients was also computed using only the balance and base pressure uncertainties along with the nominal test conditions, using the assumption that the free-stream flow non-uniformity is a bias type of uncertainty which is constant for all test runs. These values therefore represent the data repeatability expected and are especially useful for detailed discrimination purposes in parametric model studies.

V41A-B4A

PWT Balance Number 6-.40-.010-.40M-G

<u>Component</u>	<u>Balance Design Loads</u>	<u>Calibration Load Range</u>	<u>Range of Check Loads</u>	<u>Measurement Uncertainty</u>
Normal Force, lb	10	4	+2.5	+0.025
Pitching Moment,* in.-lb	20	10	+1.6	+0.050
Side Force, lb	10	4	+1.0	+0.025
Yawing Moment,* in.-lb	20	10	+0.6	+0.050
Rolling Moment, in.-lb	2.25	0.9	+0.45	+0.006
Axial Force, lb	6	3	0-1.5	+0.015

*About balance forward moment bridge.

Absolute Uncertainty
Near Balance Minimum Load, $\pm$, (Body Axes)

M_∞	C_N	C_m	C_Y	C_n	C_ℓ	C_A	C_{At}
1.51	0.010	0.028	0.010	0.028	0.006	0.016	0.006
2.01	0.010	0.028	0.010	0.028	0.006	0.016	0.006
2.50	0.010	0.028	0.010	0.028	0.006	0.016	0.006

V41A-L5A

PWT Balance Number 6-.40-.010-.40M4

<u>Component</u>	<u>Balance Design Loads</u>	<u>Calibration Load Range</u>	<u>Range of Check Loads</u>	<u>Measurement Uncertainty</u>
Normal Force, lb	10	4	± 2.5	± 0.050
Pitching Moment, * in.-lb	20	10	± 1.6	± 0.100
Side Force, lb	10	4	± 1.0	± 0.050
Yawing Moment, * in.-lb	20	10	± 0.6	± 0.100
Rolling Moment, in.-lb	2.25	0.9	± 0.45	± 0.011
Axial Force, lb	6	3	0-1.5	± 0.03

* About balance forward moment bridge.

Uncertainty ($\pm$) at Maximum
Measured Coefficient Value, Percent (Body Axes)

M_∞	C_N	C_m	C_Y	C_n	C_ℓ^*	C_A	C_{At}
2.00	0.48	0.42	1.3	1.2	---	1.3	0.52
2.50	0.50	0.45	2.0	1.2	---	1.0	0.60

* Because of the low loads, use the "Absolute Uncertainty" value on the following page.

Absolute Uncertainty
Near Balance Minimum Load, $\pm$, (Body Axes)

$\underline{M_\infty}$	$\underline{C_N}$	$\underline{C_m}$	$\underline{C_Y}$	$\underline{C_n}$	$\underline{C_\ell}$	$\underline{C_A}$	$\underline{C_{At}}$
2.00	0.0012	0.013	0.0012	0.0057	0.0028	0.0043	0.0019
2.50	0.0013	0.010	0.0013	0.0059	0.0030	0.0034	0.0021

V41A-M9A

PWT Balance Number 6-.4-.020-.4M"C"

<u>Component</u>	<u>Balance Design Loads</u>	<u>Calibration Load Range</u>	<u>Range of Check Loads</u>	<u>Measurement Uncertainty</u>
Normal Force, lb	20	20	± 8.0	± 0.05
Pitching Moment, * in.-lb	40	40	± 0.45	± 0.08
Side Force, lb	20	20	± 3.0	± 0.05
Yawing Moment, * in.-lb	40	40	± 0.16	± 0.08
Rolling Moment, in.-lb	6	6	± 0.5	± 0.02
Axial Force, lb	6	6	0-5.0	± 0.03

* About balance forward moment bridge.

Uncertainty
Measured Coefficient Value, $\pm$ Percent

$\underline{M_\infty}$	$\underline{C_N}$	$\underline{C_m}$	$\underline{C_Y}$	$\underline{C_n}$	$\underline{C_{At}}$	$\underline{C_A}$
1.63	0.71	0.86	1.00	1.10	1.15	2.94

Repeatability (+)

Measured Coefficient Value

$\underline{M_\infty}$	$\underline{C_N}$	$\underline{C_m}$	$\underline{C_Y}$	$\underline{C_n}$	$\underline{C_\ell}$	$\underline{C_{At}}$	$\underline{C_A}$
1.63	0.014	0.031	0.014	0.031	0.008	0.009	0.010

V41A-T9A

PWT Balance Number 6-.4-.020-.4M"C"

<u>Component</u>	<u>Balance Design Loads</u>	<u>Calibration Load Range</u>	<u>Range of Check Loads</u>	<u>Measurement Uncertainty</u>
Normal Force, lb	20	20	± 10.0	± 0.05
Pitching Moment, * in.-lb	40	40	± 10.0	± 0.10
Side Force, lb	20	20	± 5.0	± 0.05
Yawing Moment, * in.-lb	40	40	± 5.0	± 0.10
Rolling Moment, in.-lb	6	6	± 0.5	± 0.02
Axial Force, lb	6	6	0-5.0	± 0.06

*About balance forward moment bridge.

Uncertainty

Measured Coefficient Value, $\pm$ Percent

$\underline{M_\infty}$	$\underline{C_N}$	$\underline{C_m}$	$\underline{C_Y}$	$\underline{C_n}$	$\underline{C_{At}}$	$\underline{C_A}$
1.51	0.45	1.00	0.46	1.10	2.31	4.85
2.00	0.95	1.35	0.95	1.35	2.84	4.18

Repeatability (+)

Measured Coefficient Value

$\underline{C_N}$	$\underline{C_m}$	$\underline{C_Y}$	$\underline{C_n}$	$\underline{C_\ell}$	$\underline{C_{At}}$	$\underline{C_A}$
0.019	0.068	0.019	0.068	0.010	0.022	0.023

V41A-V6A

VKF Balance Number 4.00-Y-36-064

<u>Component</u>	<u>Balance Design Loads</u>	<u>Calibration Load Range</u>	<u>Range of Check Loads</u>	<u>Measurement Uncertainty</u>
Normal Force, lb	25	25	+20.0	+0.06
Pitching Moment, * in.-lb	52	52	+20.0	+0.13
Side Force, lb	25	25	+16.0	+0.06
Yawing Moment, * in.-lb	52	52	+32.0	+0.13
Rolling Moment, in.-lb	8	8	+6.0	+0.02
Axial Force, lb	8	8	0-5.0	+0.04

* About balance forward moment bridge.

Maximum Coefficient Uncertainty, + Percent

<u>M_∞</u>	<u>Store Model</u>	<u>C_N</u>	<u>C_m</u>	<u>C_Y</u>	<u>C_n</u>	<u>C_{At}</u>	<u>C_A</u>
1.51	S _E	0.48	1.13	0.61	1.26	0.95	4.65
1.51	S _{TOC}	0.51	1.11	0.54	1.14	1.60	4.36
1.63	S _{COC}	1.40	2.62	1.90	3.39	2.53	5.05
2.00	S _E	0.97	1.45	1.04	1.70	1.36	3.15

Repeatability (+)
Measured Coefficient Value

<u>Store Model</u>	<u>C_N</u>	<u>C_m</u>	<u>C_Y</u>	<u>C_n</u>	<u>C_l</u>	<u>C_{At}</u>	<u>C_A</u>
S _E	0.023	0.045	0.023	0.045	0.007	0.007	0.008
S _{TOC} }	0.046	0.157	0.046	0.157	0.019	0.015	0.016
S _{COC} }							

7.3 Force and Moment Test Data Retrieval

All the force and moment data for the five tunnel entries have been collected and stored on a magnetic tape. The data have been written on the tape in a standardized format so that one program could be written to retrieve data from all five entries. This necessitated filling the space normally occupied by valid data with dummy values when data for a given entry were unavailable or did not apply to configurations tested during a particular entry. These values have been set equal to zero. The values for PARENT CONFIG, STORE CONFIG, LP, and PB(2) are only meaningful for the T9A and V6A entries. Consequently these values have been set to zero for the B4A, L5A, and M9A entries.

7.3.1 Use of the computer program

A listing of the computer program used in retrieval of force data is given in Appendix E. The input to the program consists of two cards both read under 16I5 format. The first card contains two values in the first two fields of 5 characters. The first value is the number of groups of data to be retrieved. This value is limited to less than 17 solely because of the dimensioning of variable D in the program. The second value on the first card is an integer designating which entry the data to be retrieved is from (1 = B4A, 2 = L5A, 3 = M9A, 4 = T9A, 5 = V6A). The second card contains the group numbers of the data to be retrieved. This information is obtained from the tables described in Section 7.1.

The tape upon which the data are written is a multi-file tape. The file number corresponds to the integer designation of the entry, i.e., the second value on the first card of input to the retrieval program. In order to get the proper data, the tape must be positioned at the beginning of the file that contains the data for the entry in question; e.g., to retrieve data from M9A the

first two files on the tape must be skipped and the tape must be positioned at the beginning of the third file on the data tape.

7.3.2 Description of tabulated data

There is one page of output for each group of data. Samples for the five tunnel entries are presented in Appendix E following the program listing. The first line of output identifies the type of data, in this case force; the AEDC entry code, e.g., V41A-B4A; the time period during which the data were taken; and the AEDC document which is pertinent to the test, e.g., AEDC-TSR-78-V2. The second line lists the group number, the tunnel operating conditions, and the store roll relative to the reference position. The third line specifies the parent configuration and its angle of attack. The last line of heading information lists the store configuration and the duct plug position, LP. LP = ***** indicates that the inlets were not on the parent model for this group of data.

After the four lines of heading information, the data are tabulated. The store coordinate system and the positive sense of the forces and moments measured in this coordinate system are shown in Figure 21. As the store pitches, yaws, and rolls, the coordinate system moves with the store.

The nomenclature used in the tabulated output is contained in the following table.

AB	Store model base area (0.4418 in^2 for stores with circular cross sections, 0.884 in^2 for stores with elliptical cross sections)
ALPHA	Store model angle of attack, positive is nose up as seen by the pilot or in the free-stream nose to the top of the tunnel, deg

ALPHA(PAR)	Parent model angle of attack, positive is nose up as seen by the pilot, deg
CA, C_A	Axial-force coefficient corrected for base pressure, $CAT + CPB \cdot AB/S$
CAT	Axial-force coefficient uncorrected for base pressure, uncorrected axial force/($Q_8 \cdot S$)
CLL, C_ℓ	Rolling-moment coefficient, rolling moment/($Q_8 \cdot S \cdot L$)
CLM, C_m	Pitching-moment coefficient, pitching moment/($Q_8 \cdot S \cdot L$)
CLM/CN, C_m/C_N	Pitching-moment coefficient divided by normal-force coefficient; center of pressure location from model moment reference point normalized by L
CLN, C_n	Yawing-moment coefficient, yawing moment/($Q_8 \cdot S \cdot L$)
CN, C_N	Normal-force coefficient, normal force/($Q_8 \cdot S$)
CPB	Base-pressure coefficient, $(PB/P_8 - 1.0) \cdot P_8/Q_8$
CY, C_Y	Side-force coefficient, side force/($Q_8 \cdot S$)
DX	Longitudinal separation distance from the store carriage position, positive is upstream, in.
DY	Lateral separation distance from the store carriage position, positive is right as seen by the pilot, in.

DZ	Vertical separation distance from the store carriage position, positive is down as seen by the pilot, in.
GROUP	Number associated with a group of data points that have one position variable with all others remaining constant
L, ℓ	Moment coefficient reference length ($\ell = 0.75$ in. for ogive-cylinder models, $\ell = 1.061$ in. for elliptical models)
LP	Inlet plug position measured from the fully closed position, in.
MACH	Free-stream Mach number
PARENT CONFIG	Parent model configuration nomenclature
PB(1,2)/P8	Ratio of base pressure to free-stream static pressure
P0	Tunnel stilling chamber pressure, psia
PREF	Reference pressure for the base pressure transducer, psia
P8	Free-stream static pressure, psia
Q8	Free-stream dynamic pressure, psia
RE/FT*10**6	Free-stream Reynolds number $\times 10^{-6}$, ft^{-1}
ROLL	Store model roll angle, deg

S	Force and moment coefficient reference area, store cross-section area, in ² (S = 0.4418 in ² for ogive-cylinder models, S = 0.884 in ² for elliptical models)
STORE CONFIG	Store model configuration nomenclature
T0	Tunnel stilling chamber temperature, °R
T8	Free-stream static temperature, °R
V8	Free-stream velocity, ft/sec
XT	Longitudinal tunnel station, positive is upstream, in. Zero is 7.0 in. upstream of Pin A
YAW,	Store model yaw angle, positive is nose right as seen by the pilot or when in the free-stream nose to the right, looking upstream, deg
YT	Lateral tunnel station, positive is right looking upstream, in. Zero when on tunnel longitudinal centerline
ZT	Vertical tunnel station, positive is down, in. Zero when on tunnel longitudinal centerline

8. TRAJECTORY TESTS

The trajectory phase of the test program consisted of obtaining simulated full-scale store separation trajectories using the CTS trajectory mode which is described in Section 2.2.2 of Reference 7. All trajectories were run assuming a scale factor of 20 between

the full scale aircraft and the wind-tunnel model, i.e., the full scale aircraft and store are twenty times larger than the wind-tunnel model.

All trajectories were run at a simulated altitude of 40,000 feet. This was accomplished by using a standard atmosphere table to determine the air density and speed of sound at 40,000 ft. This sound speed and the Mach number in the wind tunnel were used to determine the aircraft velocity at 40,000 ft. This calculated velocity plus appropriate components of the store velocity relative to the aircraft, the density at altitude, and the full scale reference area and length were used to dimensionalize the wind tunnel measured force and moment coefficients for use in the equations of motion. Twelve parent aircraft configurations in conjunction with the five store models were used in this phase of the testing. A few trajectories were run without a parent model being in the wind tunnel.

For all trajectories, the aerodynamic damping coefficients in the equations of motion were set to zero. Also, for all trajectories the plunge option was used. This option is discussed in Section 2.2.3 of Reference 7 and includes the store translational velocities in the CTS angle settings when measuring forces and moments.

Only trajectory data taken during the last two tunnel entries (T9A and V6A) are recorded on the data tape. Some trajectory data were taken during earlier entries but those data were used for validating the CTS trajectory mode in tunnel A. The quality of this earlier data cannot be assured. The stores used are the same as those used in the force and moment tests and are shown in Figures 22 and 23. The orientations of the finned stores on the balance in the carriage or initial position are the same as described in Section 7.

8.1 Summary of Tests

The trajectory tests are summarized in Table LXI. Column 1 lists the store tested and column 2 gives the table number where the parent aircraft configurations used with that store are listed as are the test conditions.

The trajectories obtained for the various stores are listed in Tables LXII through LXVI. The first item listed is the parent configuration (the model nomenclature was presented in Section 3.3). The next column gives the parent aircraft free-stream Mach number, M_∞ . Column 5 lists the parent aircraft angle of attack, α_p . At the beginning of a trajectory the store is at the same angle of attack relative to the free stream and at 0° yaw and roll.

Column 6 lists the type of start, launch, L, or post-launch, PL. For launch trajectories the store is in the position listed in Table LXVII at zero velocity relative to the parent aircraft. For post-launch, PL, trajectories the store is located 0.24 feet full scale (0.144 inches model scale) below the initial position and has an initial downward velocity of 6.7053 feet per second. The trajectory starts at time, t , equal to 0.075 seconds.

Columns 7 and 8 are associated with the ejector force used for launch trajectories. The ejector has one foot which strikes the store at XL_1 . This position is measured relative to the full scale store moment center (moment reference location) and is positive forward of this point. Two ejector forces were used and are designated "A" and "B". They are shown graphically in Figure 24 and specified by the following equations for the time interval from 0.0 to 0.075 seconds.

$$\begin{aligned}
 \text{"A"} \quad F = & 1.41448 \times 10^5 t + 2.68614 \times 10^6 t^2 \\
 & -2.2209 \times 10^8 t^3 + 3.52968 \times 10^9 t^4 \\
 & -1.70086 \times 10^{10} t^5, \text{ LBS}
 \end{aligned}$$

$$\text{"B"} \quad F = 1,200 \text{ LBS}$$

Column 9 indicates whether store rolling motion was included in the equations of motion. For all trajectories the balance was measuring the store rolling moment. A "No" in column 9 indicates it was set to zero in the equations of motion.

Column 10 lists the CTS zero point (reference point) from which the trajectory was started. The zero points are listed in Table LXVII. Column 1 lists the zero point number and column 2 defines the store location. The last column gives the coordinates, in model scale, of the store moment reference point (moment center) at the beginning of a launch trajectory in the X_p , Y_p , Z_p coordinate system shown in Figure 18. For post-launch trajectories, the values of Z_p should be increased by 0.144.

Column 11 in Tables LXII through LXVI specifies a trajectory code. The various codes are listed in Table LXVIII and specify the full-scale store mass and inertia characteristics used in the equations of motion. The last two columns of the trajectory data tables list the AEDC test number and the group number which contains the trajectory data. These columns provide the input data to the data retrieval computer program.

8.2 Data Uncertainties

Data uncertainties associated with the trajectory tests are of three types; test conditions, CTS attitude and position, and aerodynamic coefficients. These were discussed in Sections 4, 3.2, and 7.2, respectively. No attempts have been made to define an uncer-

tainty in store attitude and position at a specific point in a trajectory.

8.3 Trajectory Test Data Retrieval

All of the trajectory data obtained during tunnel entries T9A and V6A have been written on a magnetic tape. The data have been written in a standardized format so that one computer program could be written to retrieve the data.

8.3.1 Use of the computer program

A listing of the computer program used to retrieve the trajectory data is continued in Appendix F. The input to the program consists of two cards both read under 16I5 format. The first card requires two values to be entered in the first two fields of 5 characters. The first value is the number of groups of data to be retrieved. This value is limited to less than 17 solely because of dimensioning of the variable D in the retrieval program. The second value on the first card is an integer designating which entry the data to be retrieved is from (4 = T9A, 5 = V6A). The second card contains the group numbers of the data to be retrieved. This information is obtained from the tables described in Section 8.1.

The tape upon which the data is written is a multi-file tape. The first file has the data from T9A and the second file contains the data from V6A. In order to get the proper data the tape must be positioned at the beginning of the file that contains the data for the entry of interest.

8.3.2 Description of tabulated data

The number of pages of output for a trajectory varies depending on the length of the trajectory. Sample output is presented in

Appendix F following the program listing. The first line on each page of data identifies the type of data, the entry number, the time period of the entry, and the AEDC document that pertains to that entry. The second line gives the group number and page number. The page number is relative to the beginning of the particular group of data, i.e., trajectory. The third line provides tunnel operating conditions and the simulated free-stream velocity and density. The fourth line provides the parent aircraft configuration and angle of attack in degrees. The fifth line tells the store configuration and the inlet plug position. These first five lines are repeated for each page of a given group of data. Following the five lines of heading information 16 trajectory variables are tabulated as a function of time.

The nomenclature used in the tabulated output is contained in the following table. The parent aircraft coordinate system is shown in Figure 18 and the store coordinate system is shown in Figure 21.

ALPHAK	Plunging pitch angle due to store vertical motion, positive is nose up as seen by the pilot, deg
ALPHAP	Current value in the integration loop of the angle of attack of the store body axes, positive is nose up as seen by the pilot, deg
ALPHA(PAR)	Parent model angle of attack, positive is nose up as seen by the pilot, deg
CAT, C_{A_t}	Total axial-force coefficient, total axial force/ ($Q_8 \cdot S$)
CLL, C_ℓ	Rolling-moment coefficient, rolling moment/ ($Q_8 \cdot S \cdot L$)

CLM, C_m	Pitching-moment coefficient, pitching moment/ ($Q_8 \cdot S \cdot L$)
CLN, C_n	Yawing-moment coefficient, yawing moment/ ($Q_8 \cdot S \cdot L$)
CN, C_N	Normal-force coefficient, normal force/($Q_8 \cdot S$)
CY, C_Y	Side-force coefficient, side force/($Q_8 \cdot S$)
GROUP	Number associated with a trajectory
L, ℓ	Moment coefficient reference length, store diameter (in model scale, $\ell = 0.75$ in. for ogive-cylinder models, $\ell = 1.061$ in. for elliptical model)
LP	Inlet plug position measured from fully closed, in.
MACH	Free-stream Mach number
PARENT CONFIG	Parent model configuration nomenclature
PHI	Current value in the integration loop of the roll angle of the store body axes from the orientation at the carriage position, positive is clockwise (looking upstream), deg
PO	Tunnel stilling chamber pressure, psia
P8	Tunnel free-stream static pressure, psia
QS	Dynamic pressure that the store sees at the simulated altitude, psfa
Q8	Tunnel free-stream dynamic pressure, psia

RE/FT*10**6	Tunnel free-stream Reynolds number $\times 10^{-6}$, ft^{-1}
RHOS	Density at the altitude being simulated, slugs/ft^3
S	Force and moment coefficient reference area, store cross-section area (in model scale, $S = 0.4418 \text{ in.}^2$ for ogive-cylinder models, $S = 0.884 \text{ in.}^2$ for elliptical model)
STORE CONFIG	Store model configuration nomenclature
TIME	Trajectory integration time, sec
TO	Tunnel stilling chamber temperature, $^{\circ}\text{R}$
TRAJECTORY CODE	Number associated with Table LXVIII
T8	Tunnel free-stream static temperature, $^{\circ}\text{R}$
VA	Velocity of parent aircraft at the altitude being simulated, ft/sec
VS	Velocity of the store at the altitude being simulated, ft/sec
V8	Tunnel free-stream velocity, ft/sec
X	Current value in the integration loop of the full scale X_p displacement of the full scale store moment center from the carriage position in the parent axes, positive is upstream, ft

Y Current value in the integration loop of the full scale Y_p displacement of the full scale store moment center from the carriage position in the parent axes, positive is to the right as seen by the pilot, ft

YAWK Plunging yaw angle due to store lateral motion, positive is nose right as seen by the pilot, deg

YAW2P Current value in the integration loop of the yaw angle of the store body axes from the orientation at the carriage position, positive is nose right as seen by the pilot, deg

Z Current value in the integration loop of the full scale Z_p displacement of the full scale store moment center from the carriage position in the parent axes, positive is down as seen by the pilot, ft

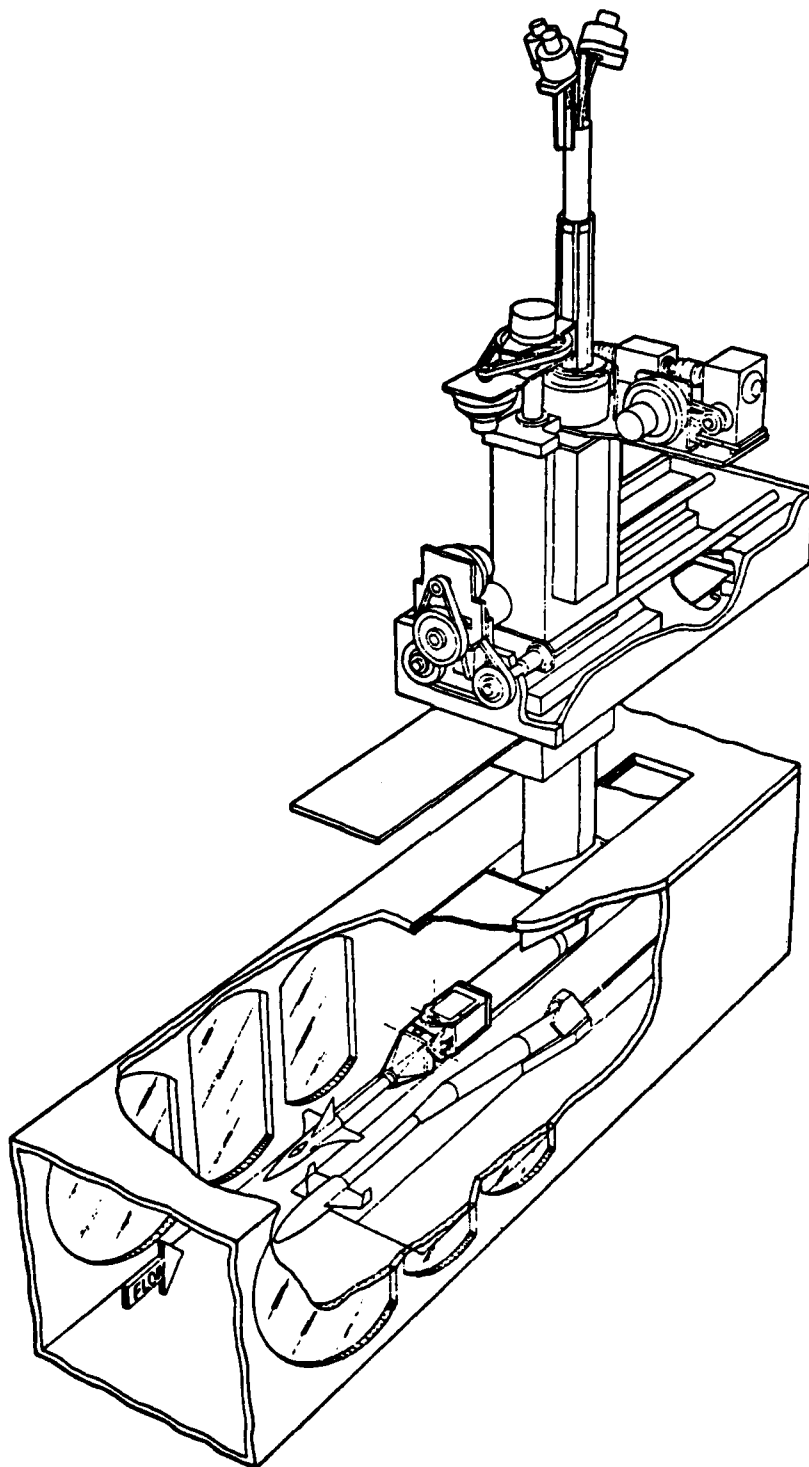


Figure 1.- Artist's conception of the VKF/CTS
installed in Tunnel A.

NACA 65A006

AIRFOIL COORDINATES		
X, % CHORD	Y, % CHORD	SEE SEC.
0.00	0.000	
0.30	0.453	
0.75	0.563	
1.25	0.710	
2.50	0.981	
5.00	1.313	
7.50	1.521	
10.00	1.623	
15.00	2.196	
20.00	2.474	
25.00	2.687	
30.00	2.842	
35.00	2.943	
40.00	2.992	
45.00	2.992	
50.00	2.923	
55.00	2.783	
60.00	2.602	
65.00	2.364	
70.00	2.087	
75.00	1.773	
80.00	1.437	
85.00	1.083	
90.00	0.727	
95.00	0.370	
100.00	0.013	
LE RADIUS 0.229% CHD.		
TE RADIUS 0.014% CHD.		

BODY COORDINATES		
STATION	RADIUS	PERCENT LENGTH
0.00	0.00	0.00
3.28	0.91	1.71
6.87	1.71	3.41
9.86	2.41	5.00
13.15	3.00	6.59
16.43	3.50	8.18
19.72	3.90	9.77
23.01	4.21	11.36
26.29	4.43	12.95
29.58	4.53	14.54
32.80	4.57	16.13
36.04	4.57	17.72
39.28	4.54	19.31
42.52	4.38	20.90
45.76	4.18	22.49
49.00	3.95	24.08
52.24	3.72	25.67
55.48	3.49	27.26
58.72	3.26	28.85
61.96	3.02	30.44
65.20	2.78	32.03
68.44	2.54	33.62
71.68	2.30	35.21
74.92	2.06	36.80
78.16	1.82	38.39
81.40	1.58	39.98
84.64	1.34	41.57
87.88	1.10	43.16
91.12	0.86	44.75
94.36	0.62	46.34
97.60	0.38	47.93
100.00	0.14	49.52

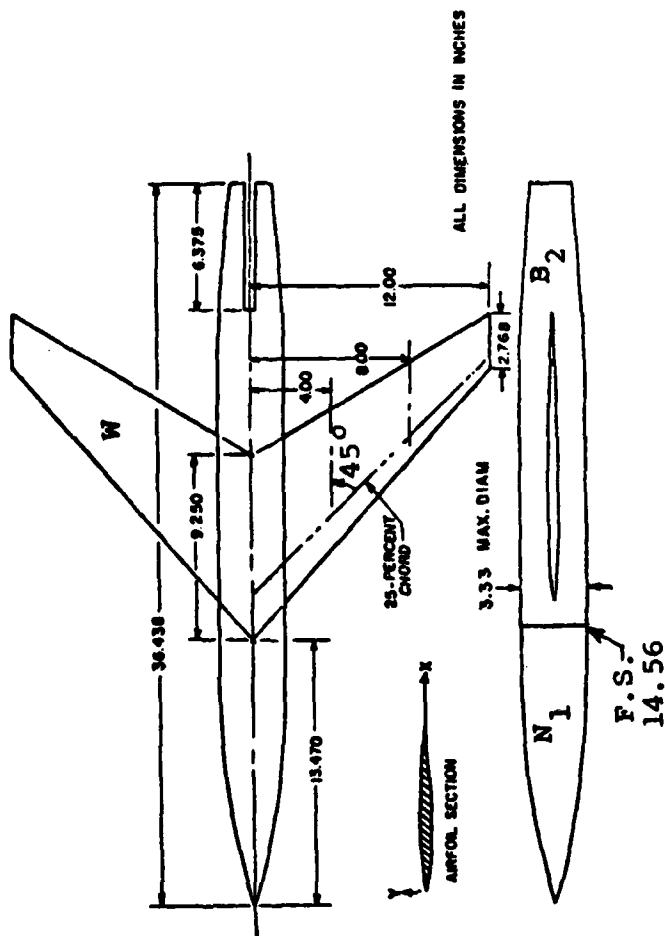


Figure 2.- Configuration N₁B₂W.

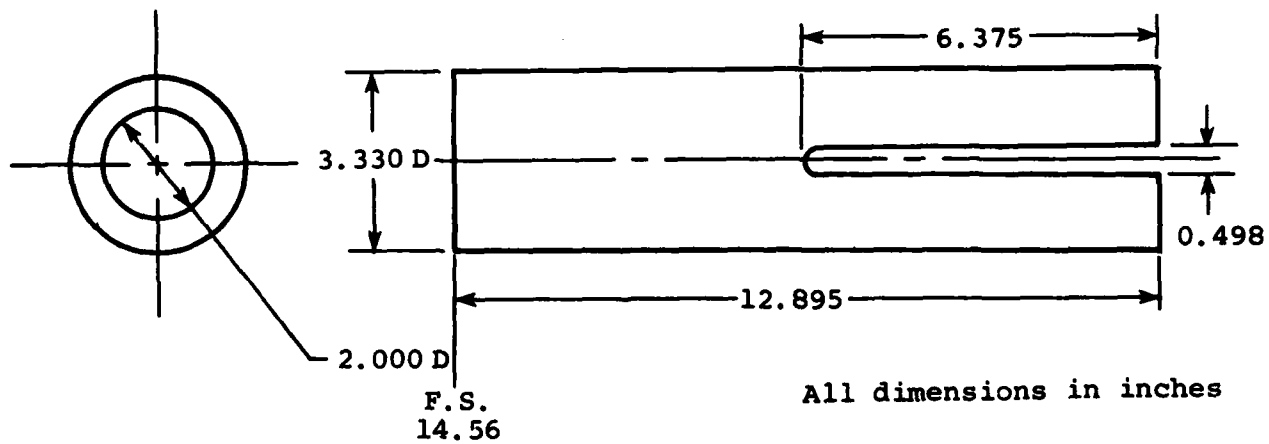
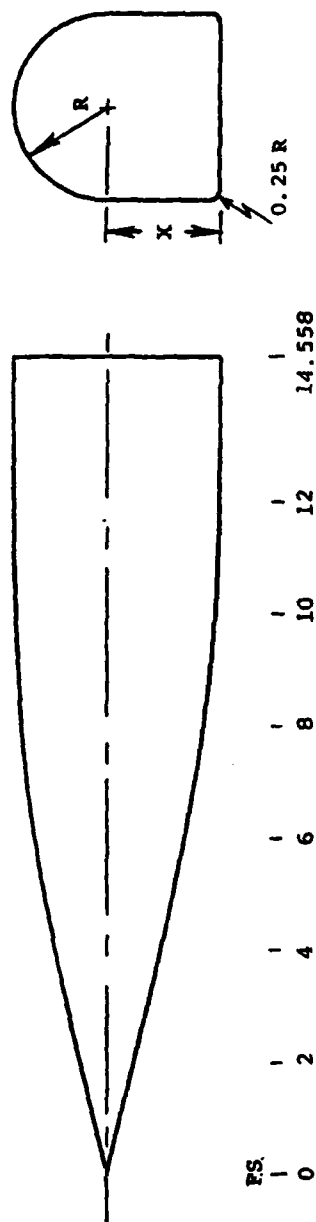
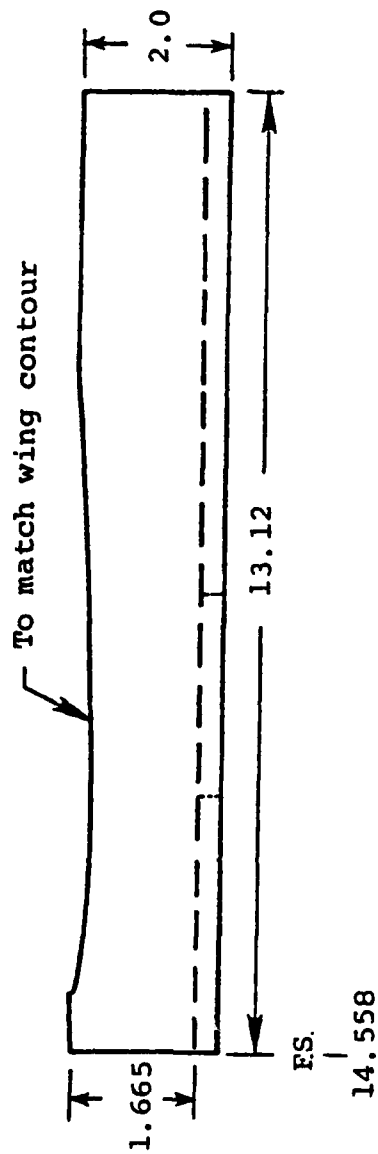


Figure 3.- Short fuselage, B₁.

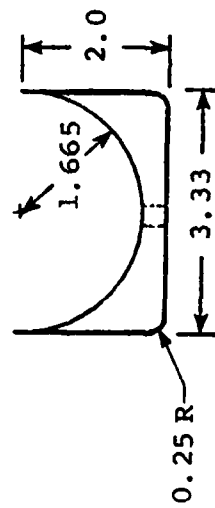


All dimensions in inches

Figure 4.- Noncircular nose, N_3 .



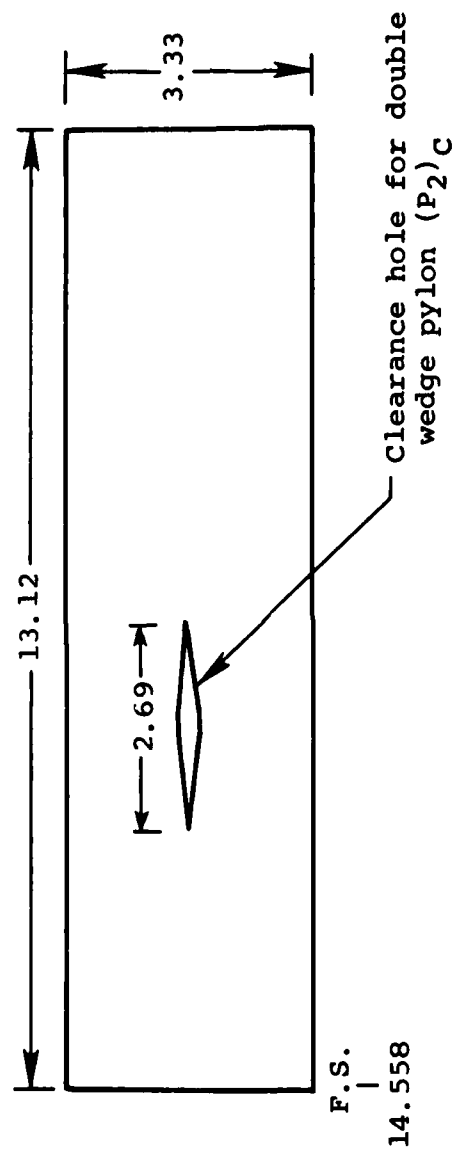
(a) Side view.



(b) Front view.

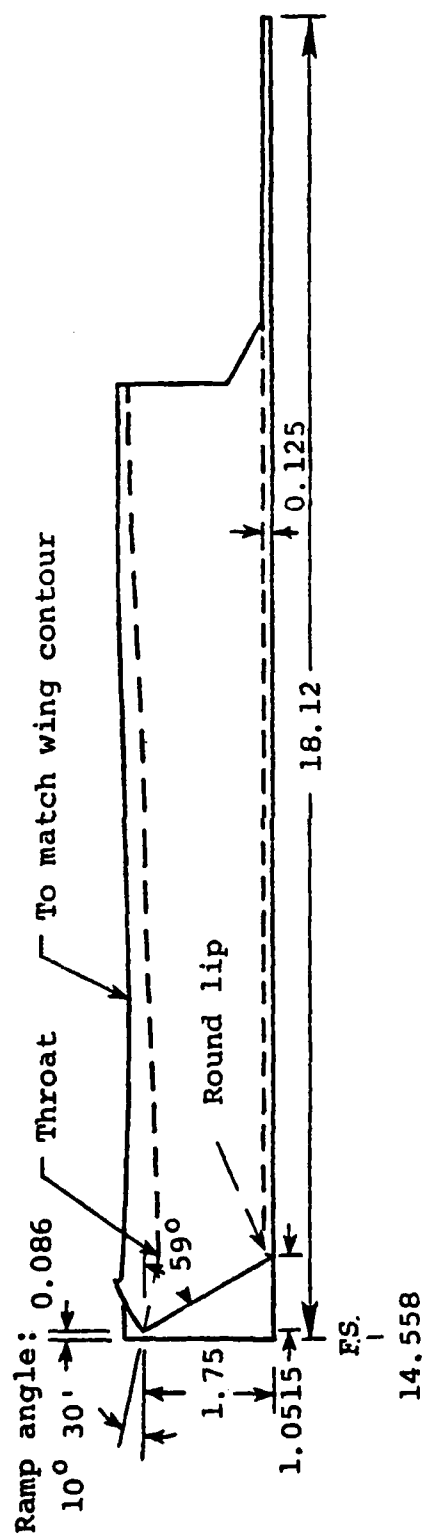
All dimensions in inches

Figure 5.- Noncircular fuselage adapter, A₃.

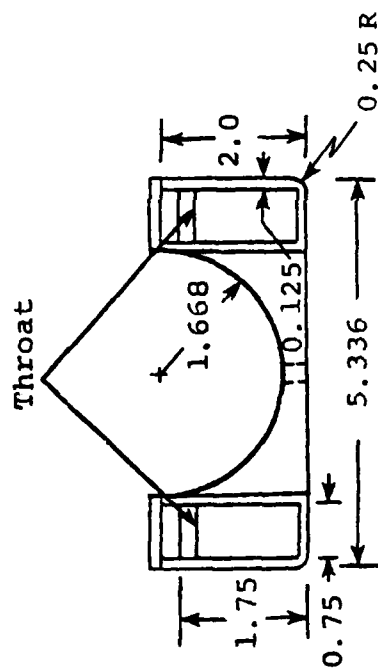


(c) Top view.

Figure 5.- Concluded.



(a) Side view.



(b) Front view.

All dimensions in inches

Figure 6.- Duct assembly for $M_\infty = 1.5$, A_4 .

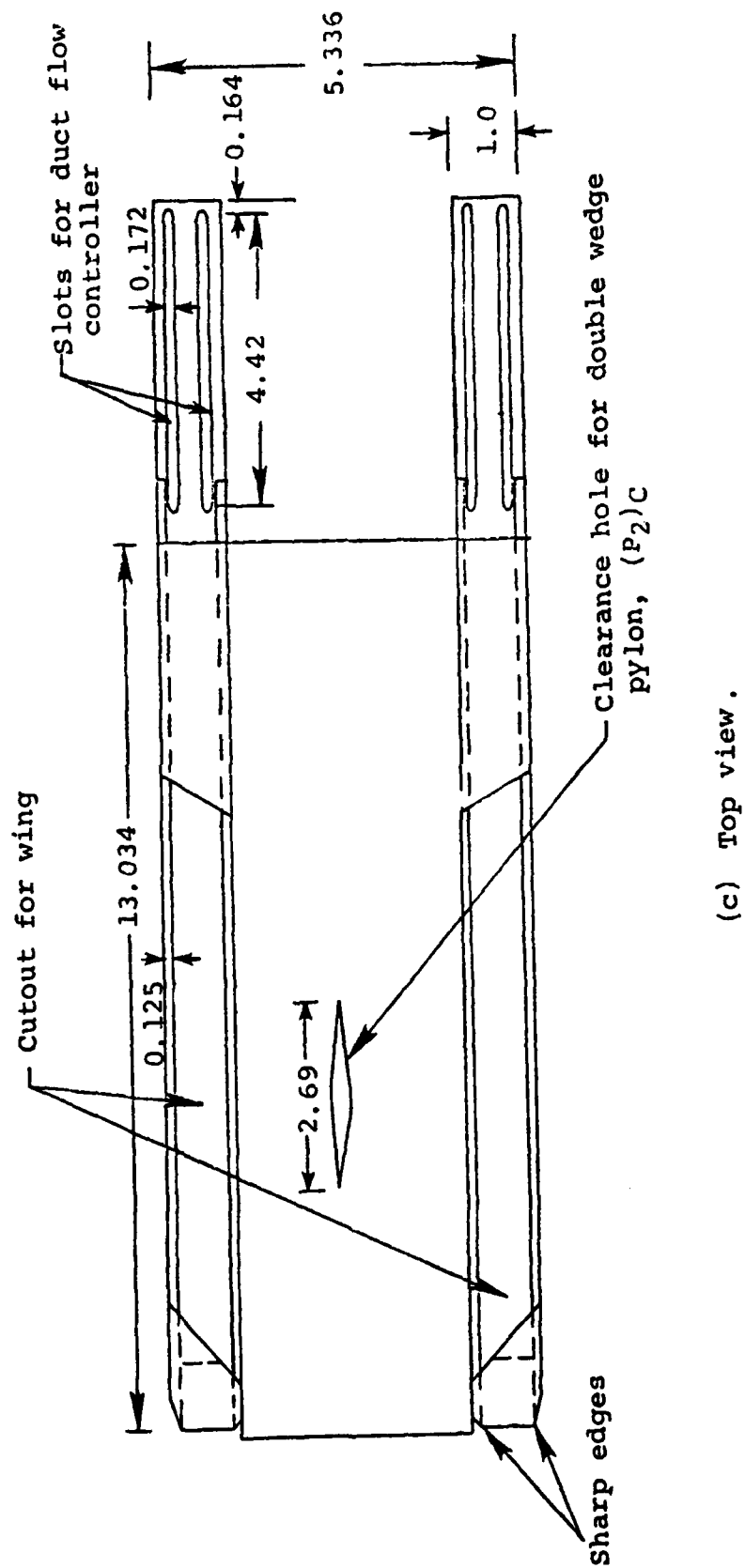


Figure 6.- Concluded.

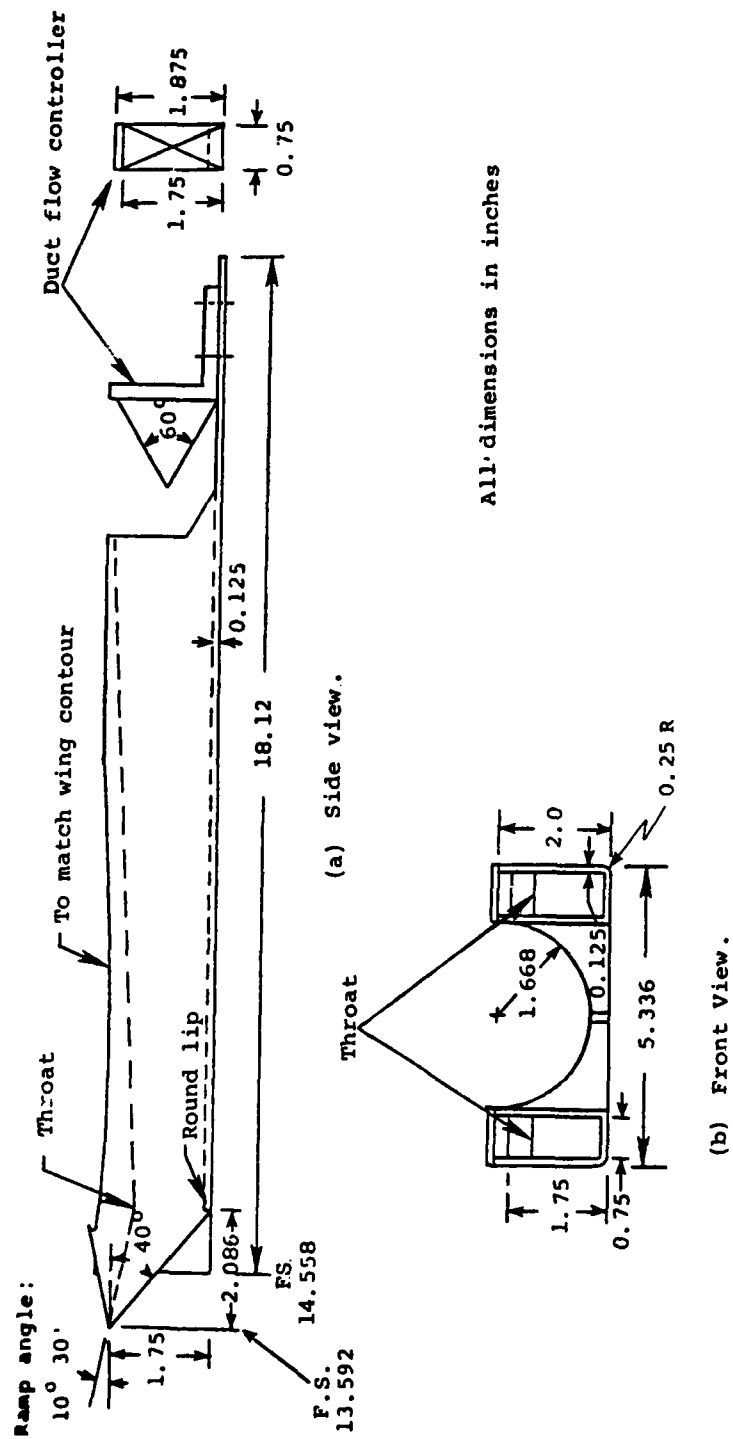
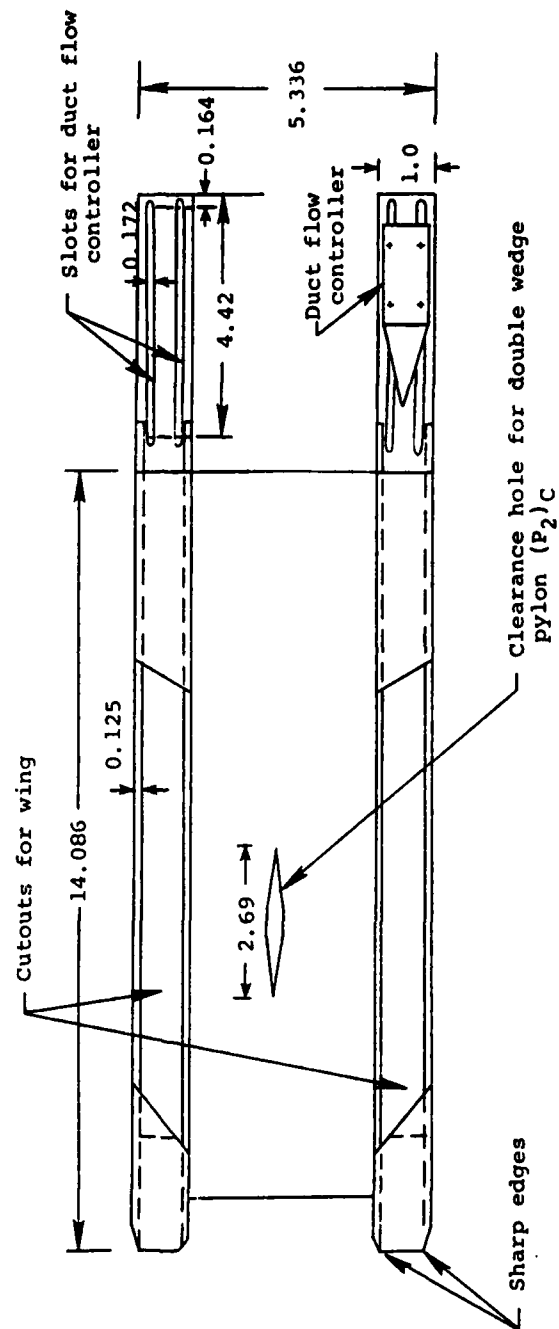


Figure 7.- Duct assembly for $M_\infty = 2.0$, A_5 .



(c) Top view.

Figure 7.- Concluded.

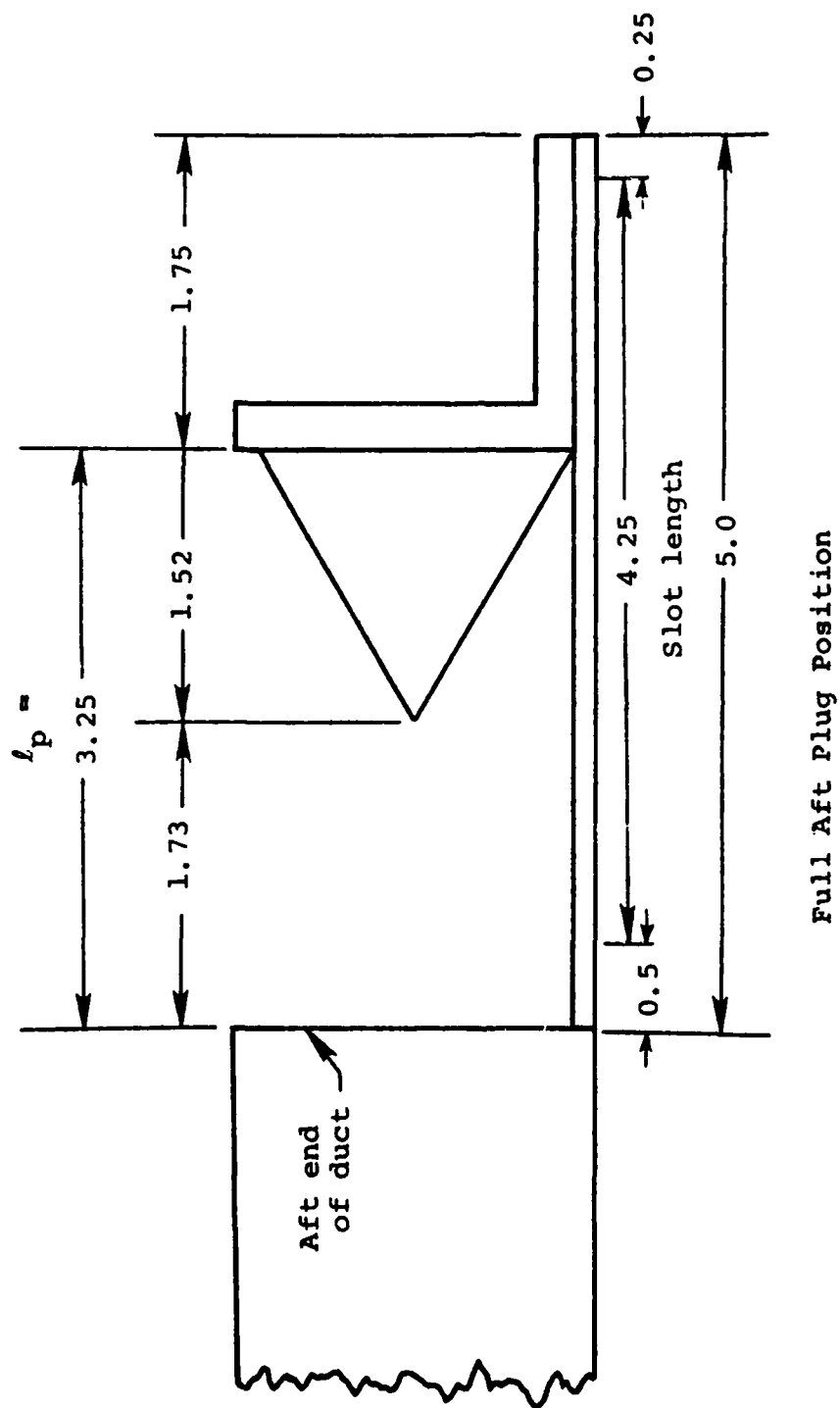


Figure 8.- Location of duct plugs.

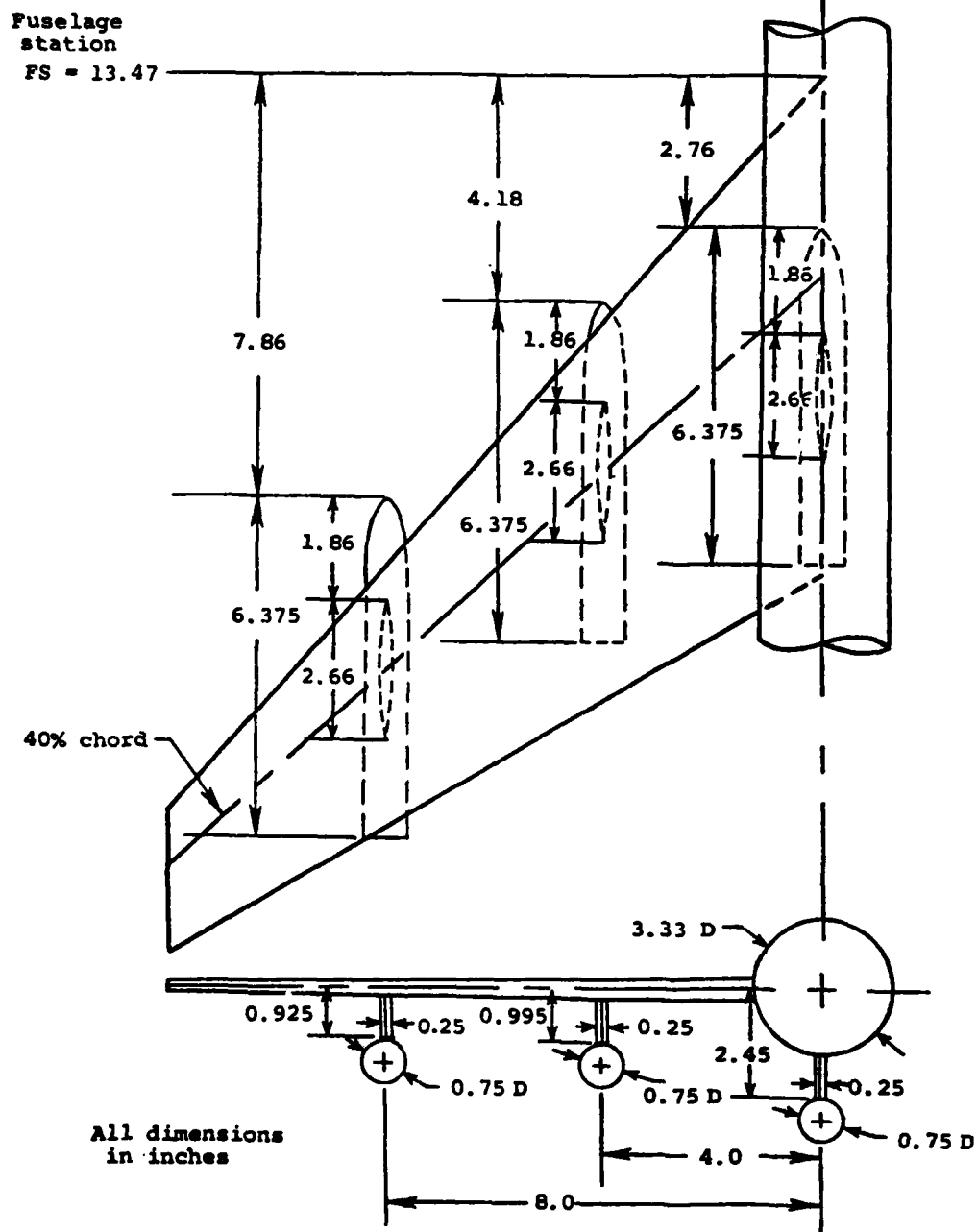


Figure 9.- Ogive-cylinder force and moment store in the carriage position at the fuselage centerline, 1/3 semispan, and 2/3 semispan pylon stations.

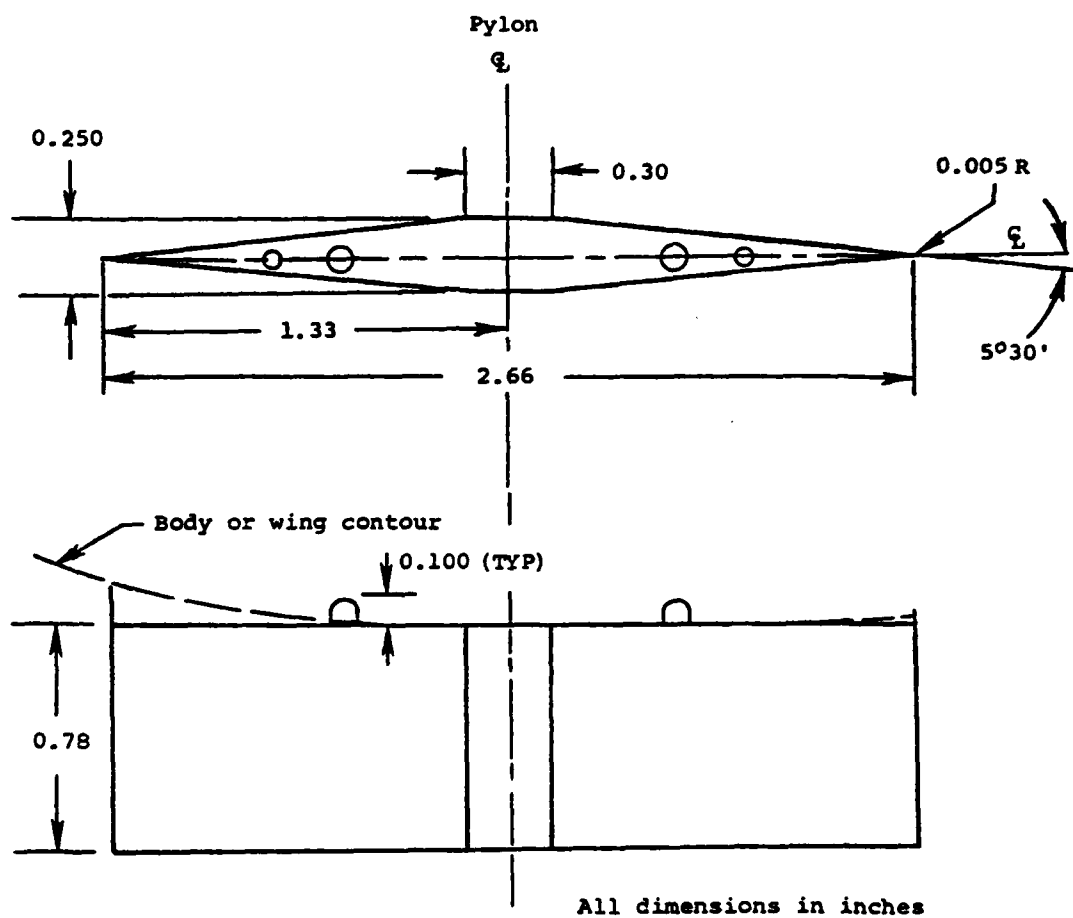


Figure 10.- Double-wedge pylon, P_2 .

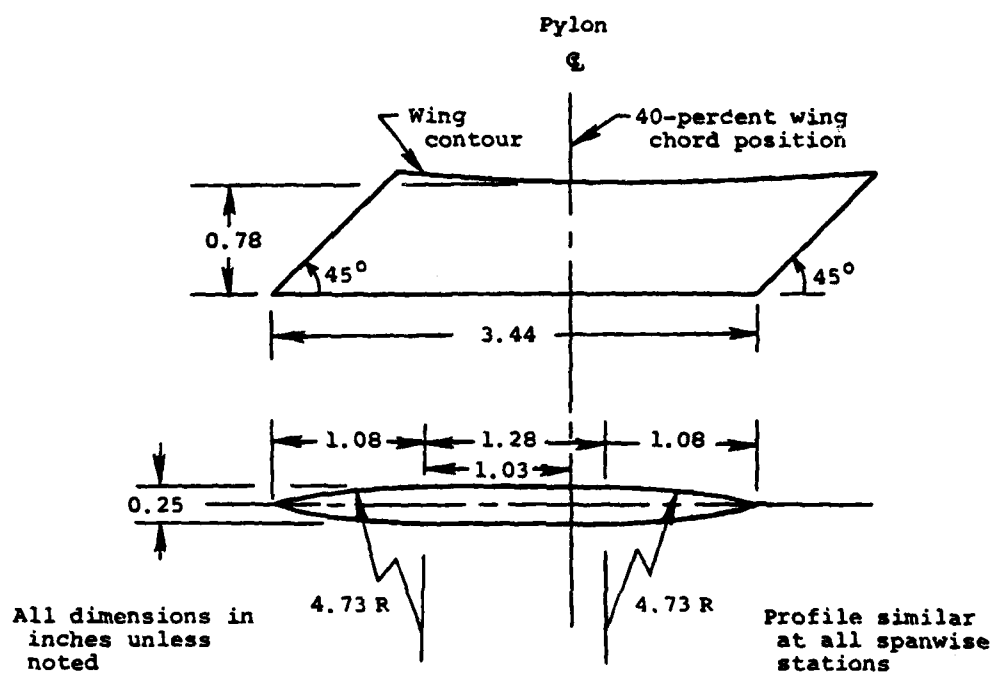
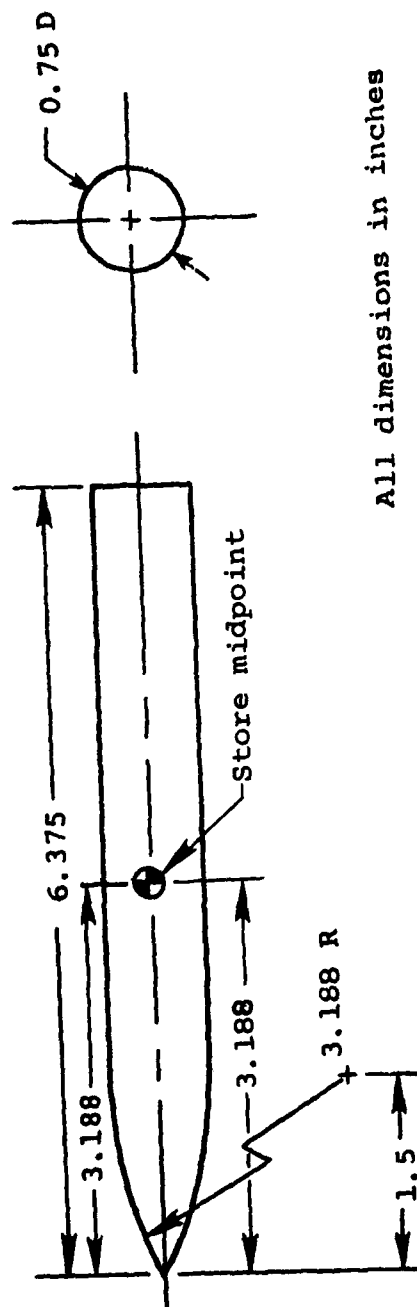


Figure 11.- Swept pylon, P₃.



All dimensions in inches

Figure 13.- Dummy ogive-cylinder store, S_{DOC} , S_{DOC2} , or S_{DOC3} .

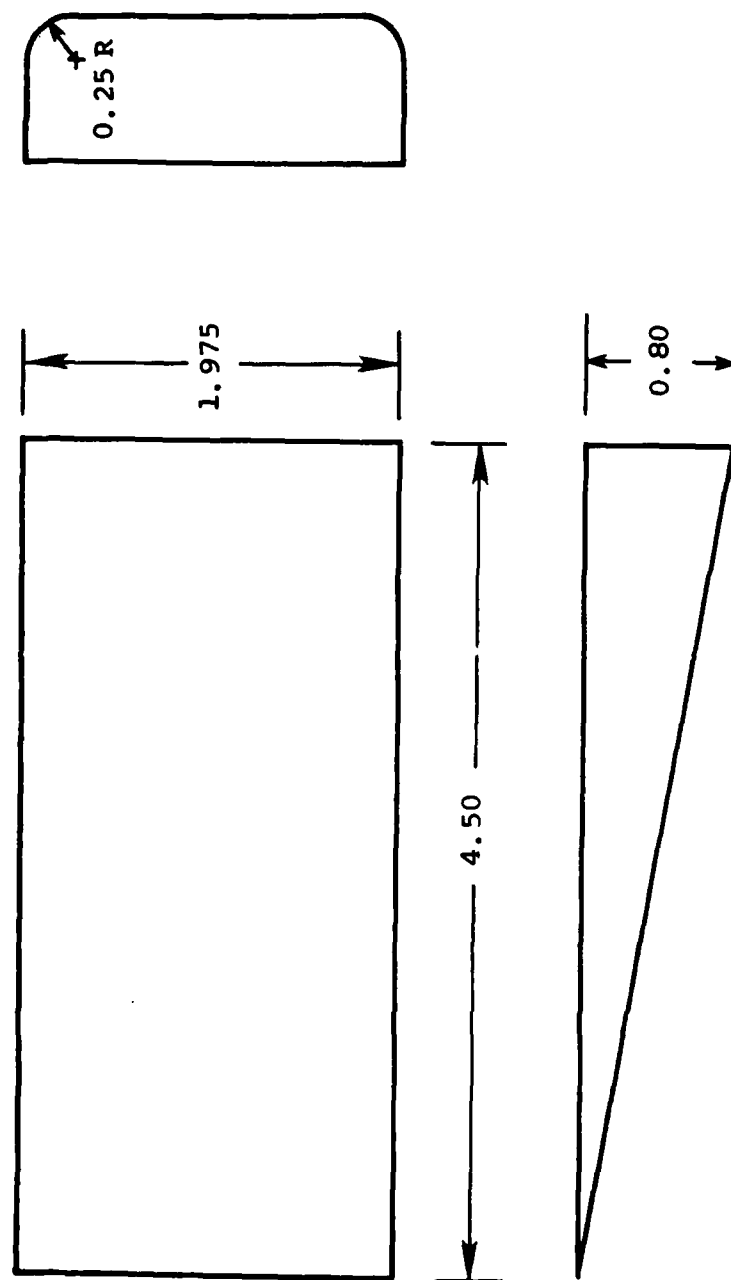


Figure 14.- Details and dimensions of fairing, F.

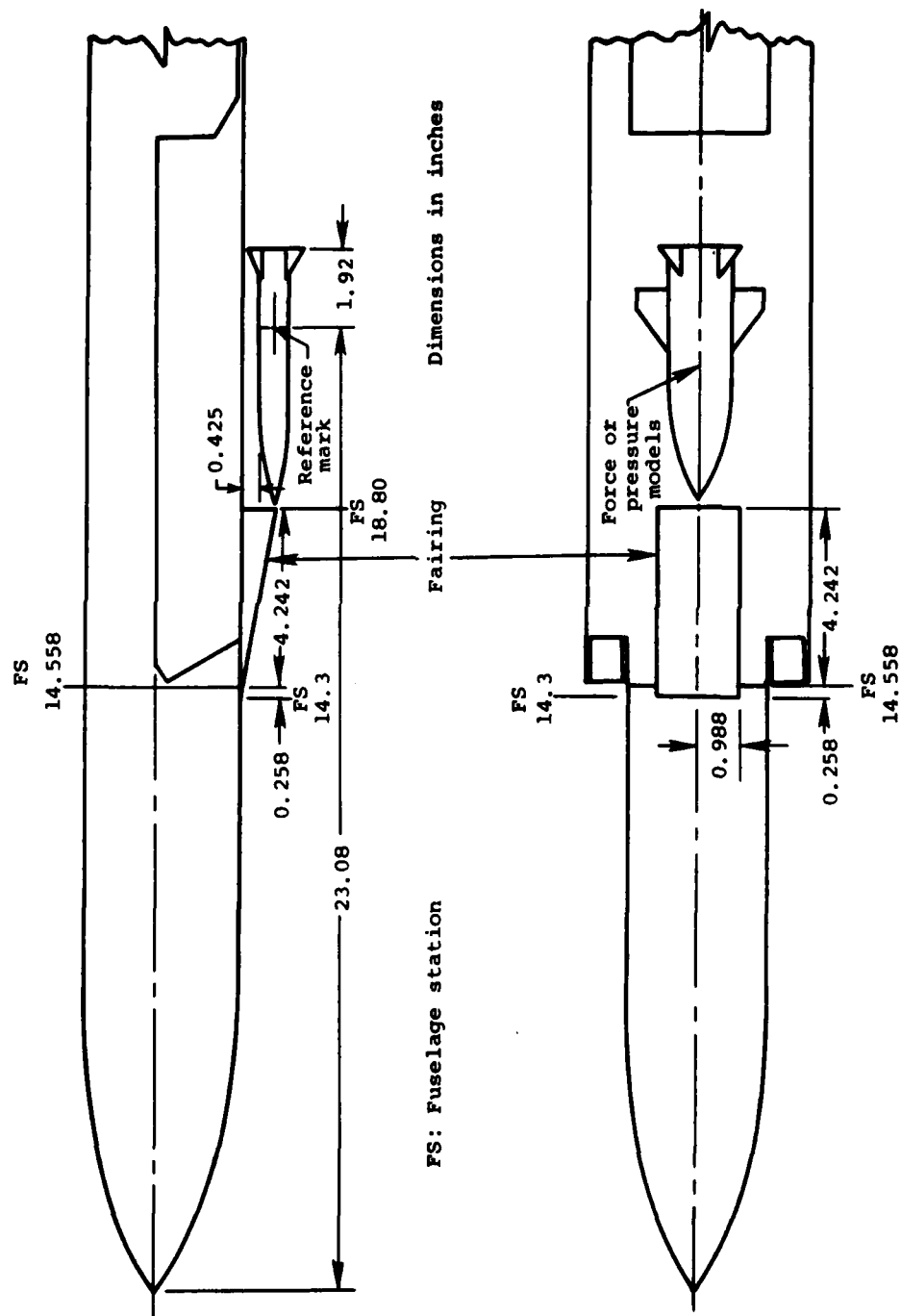


Figure 15.- Fairing location on parent aircraft

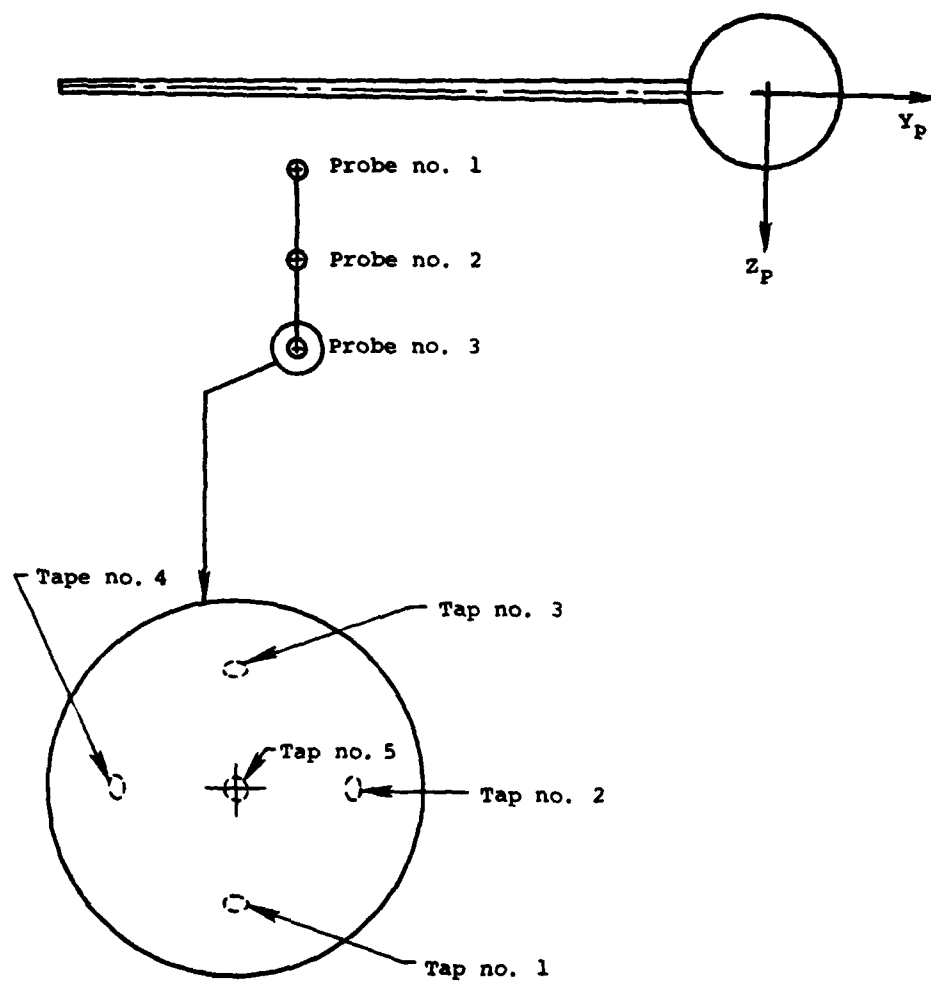


Figure 17.- Orientation of rake and location of pressure taps on the 40° total angle conical probe as seen from the aft end of the parent configuration.

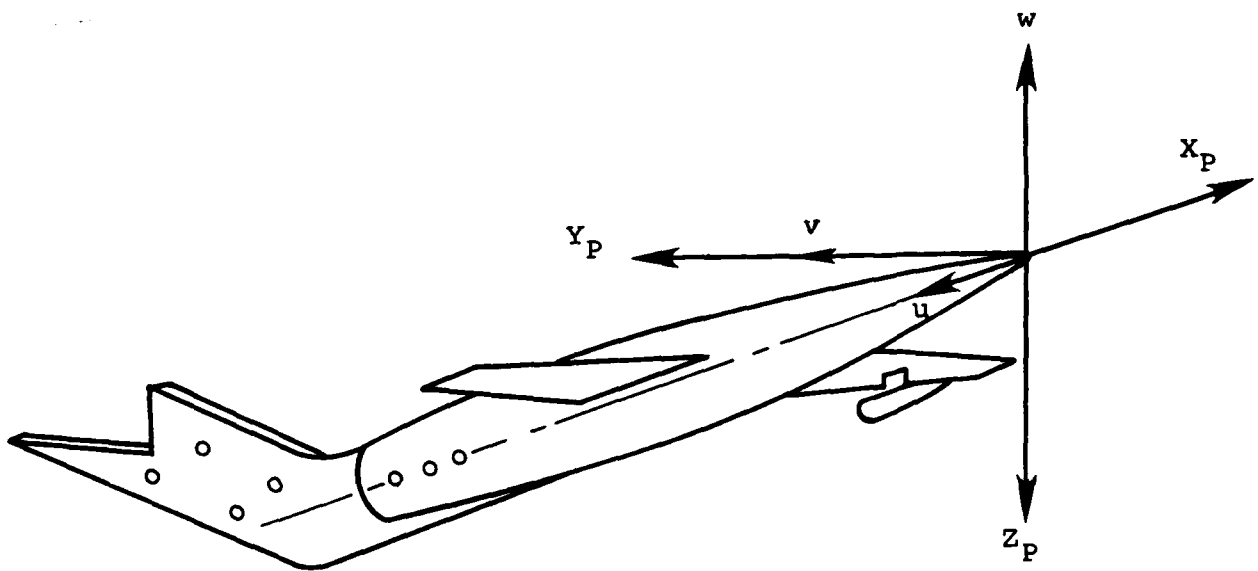


Figure 18.- Wing-body (parent aircraft) axis system showing positive directions of axes and velocities.

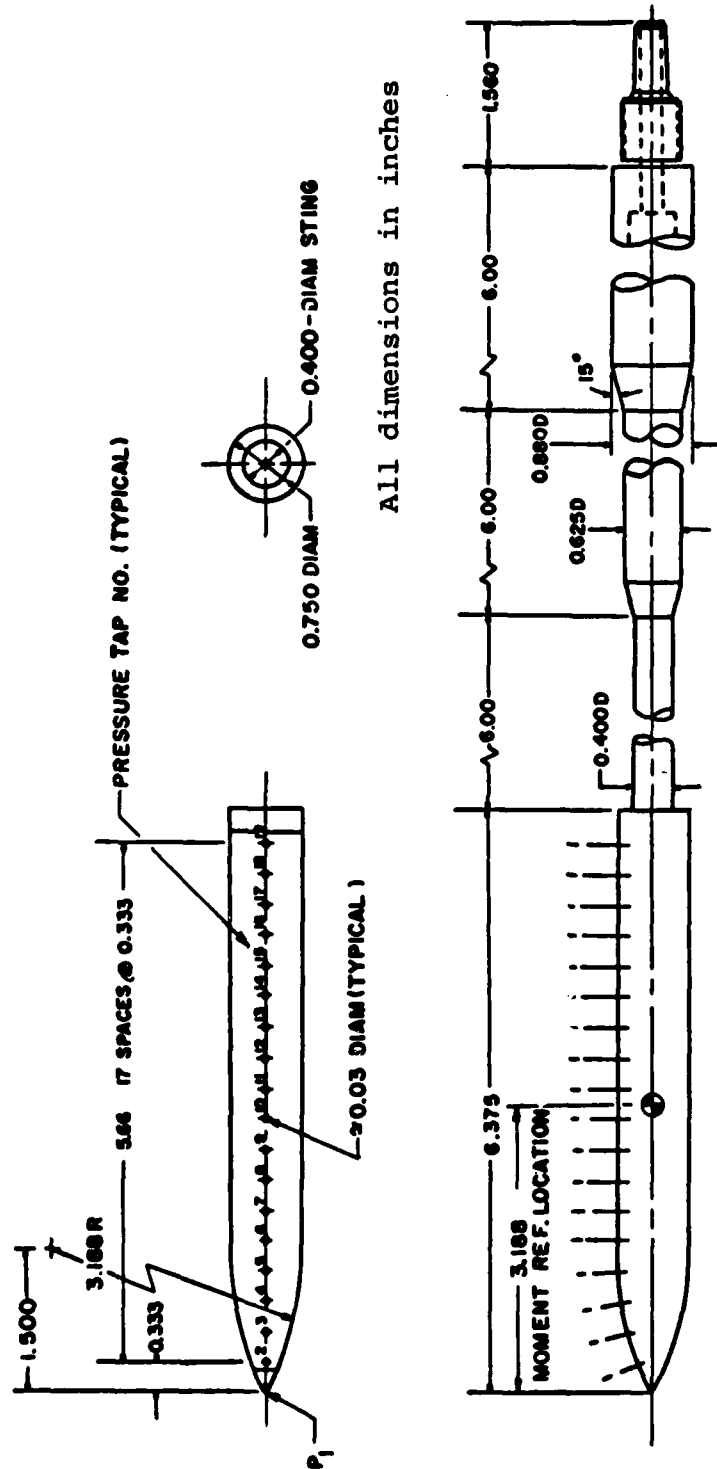


Figure 19.- Ogive-cylinder pressure distribution model, Sp.

AD-A083 848

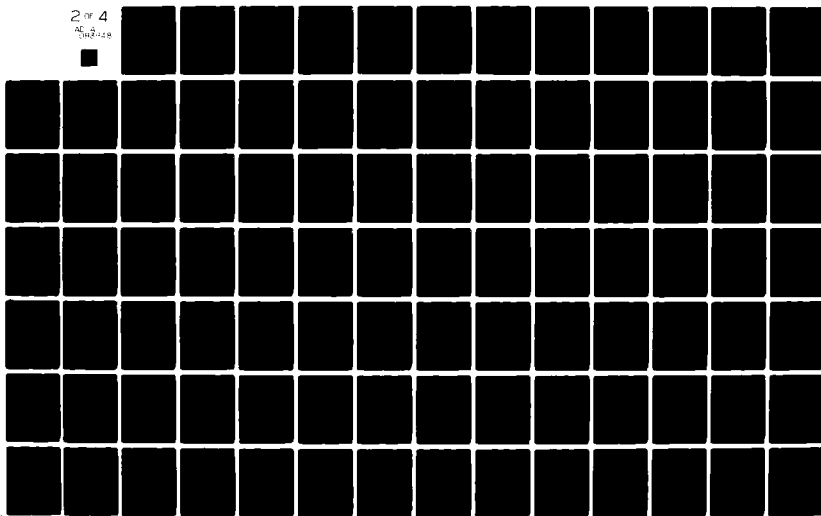
NIELSEN ENGINEERING AND RESEARCH INC MOUNTAIN VIEW CALIF F/G 20/4
DATA REPORT FOR AN EXTENSIVE STORE SEPARATION TEST PROGRAM COND--ETC(U)
DEC 79 F K GOODWIN, C L DYER F33615-76-C-3077
NEAR-TR-205 AFFDL-TR-79-3130 NL

UNCLASSIFIED

2 of 4

AL 3

CH 2-28



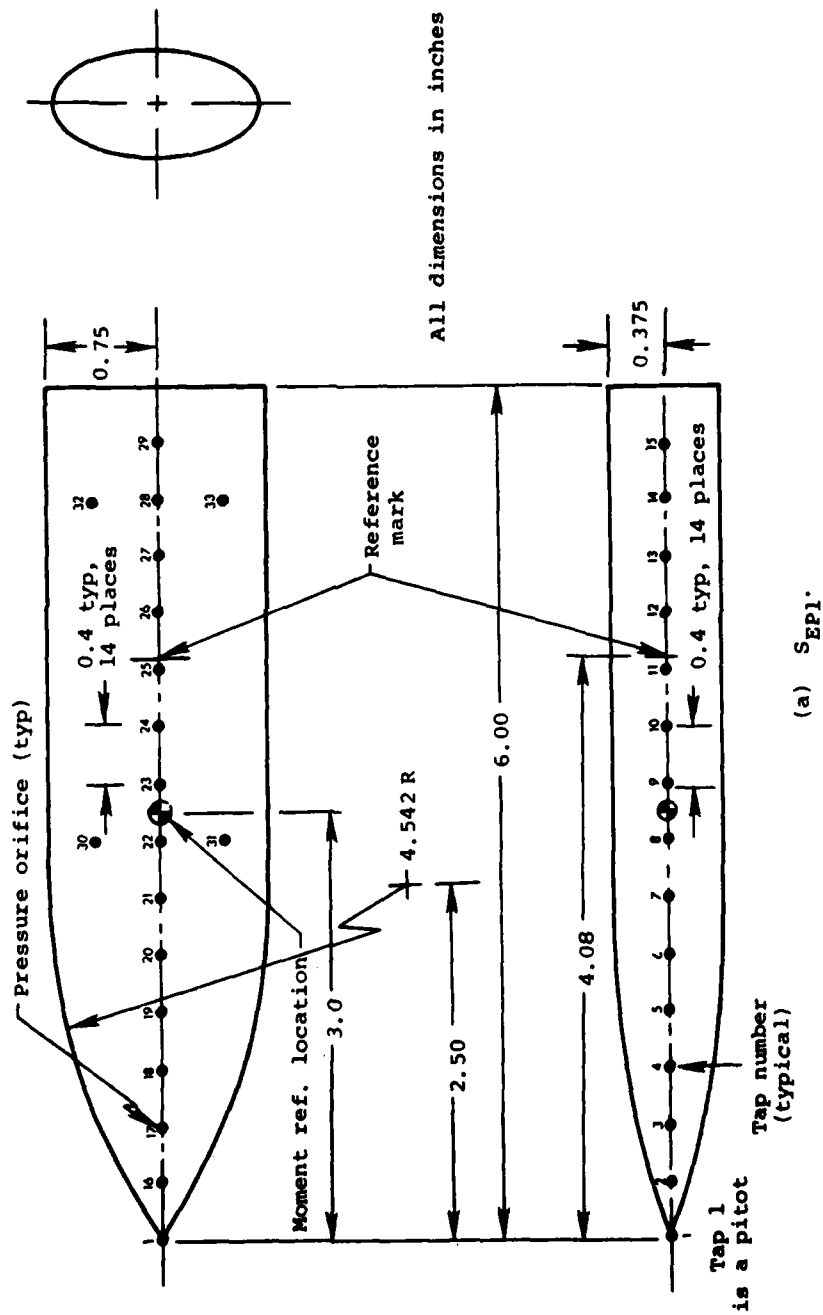
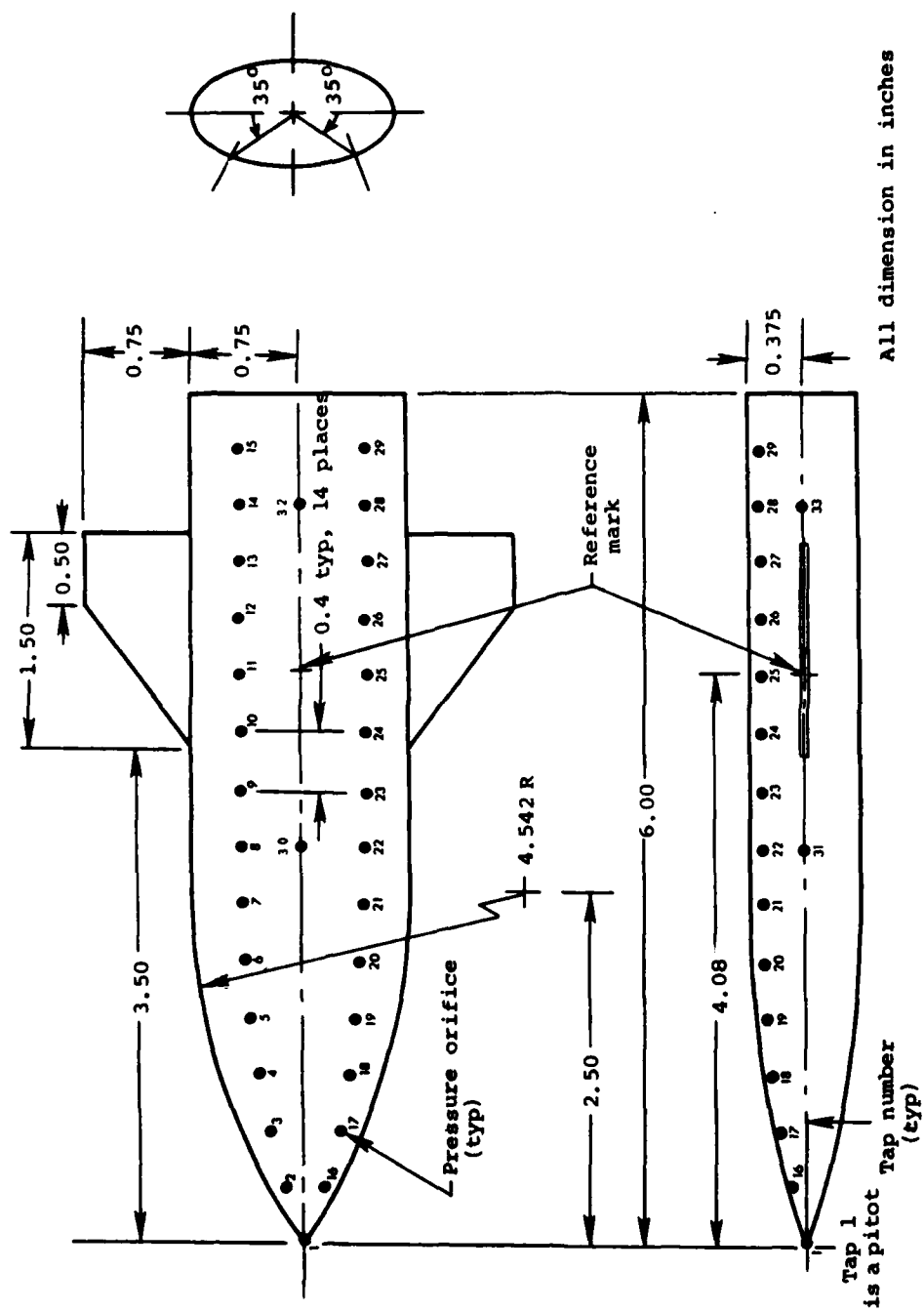


Figure 20.- Elliptic pressure distribution models.



All dimension in inches

(b) S_{Ep2W} with wing, S_{Ep2} without wings.

Figure 20.- Concluded.

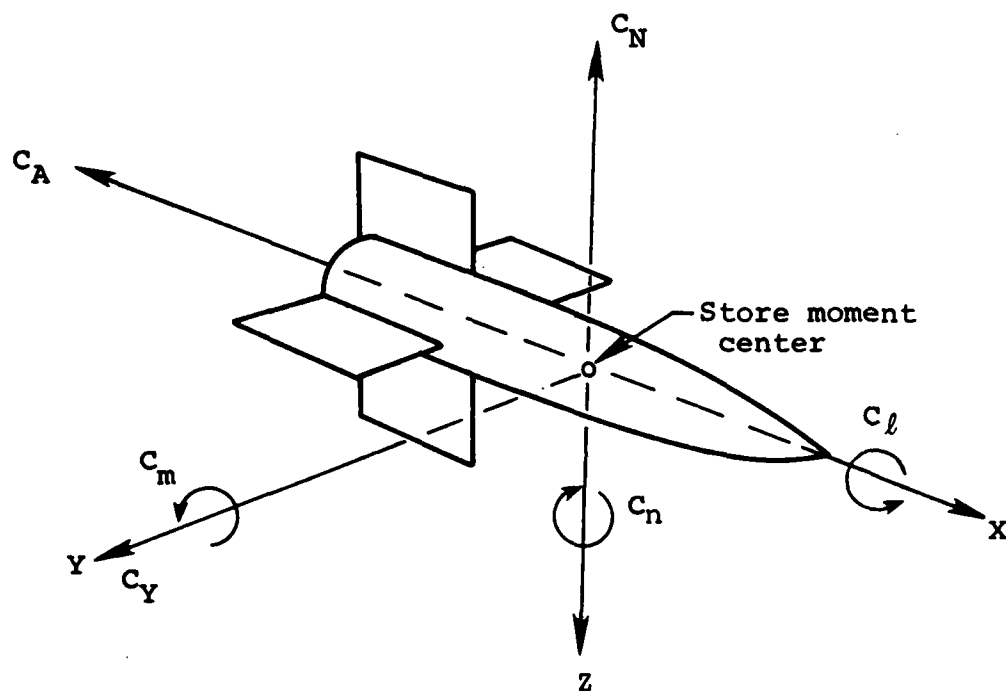


Figure 21.- Axis system for store showing positive sense of axes, forces and moments.

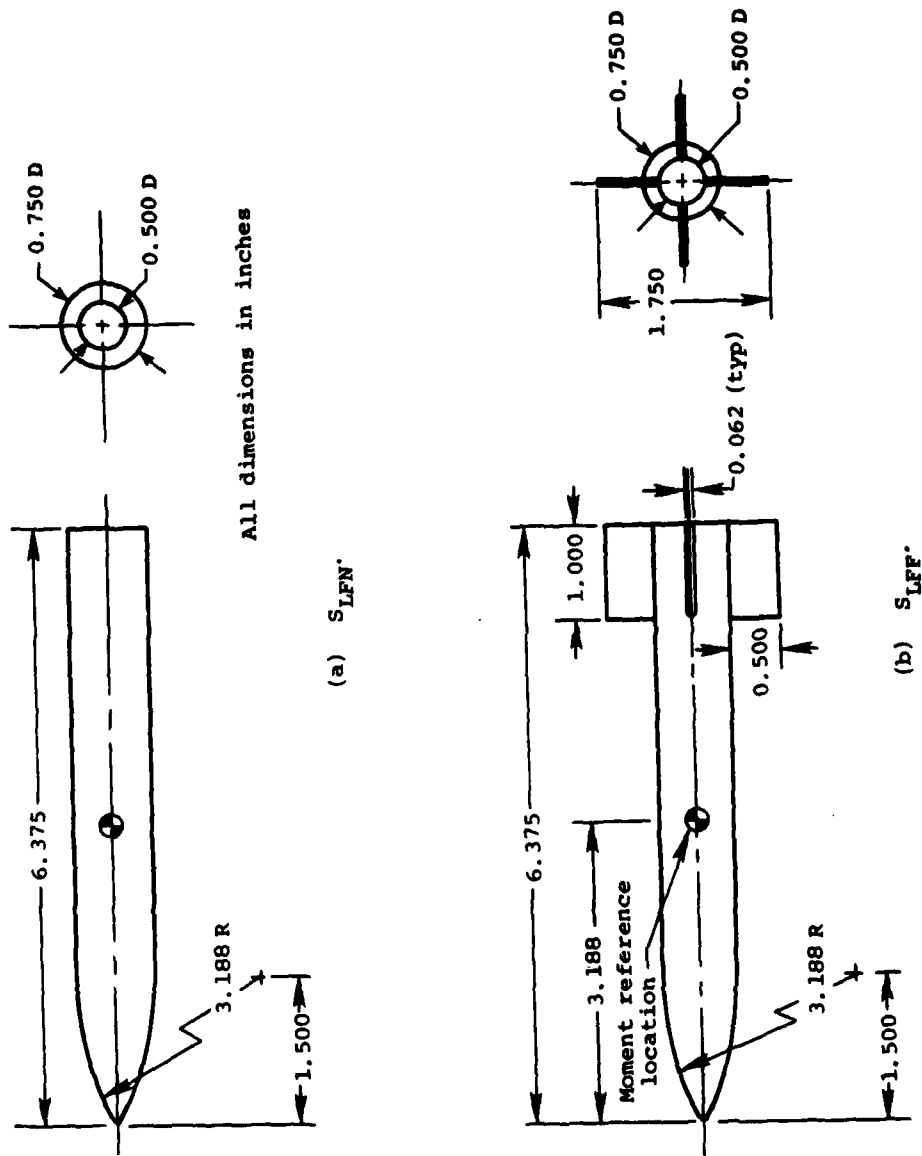
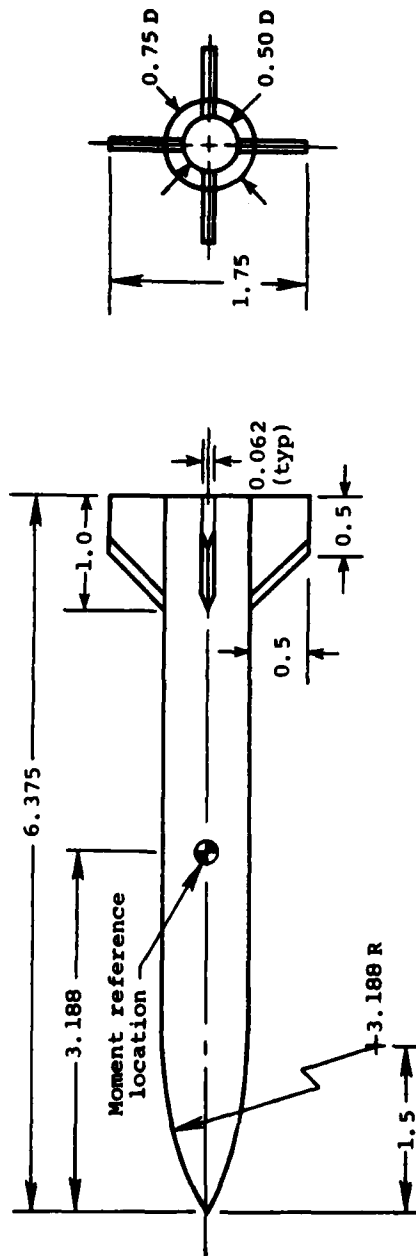
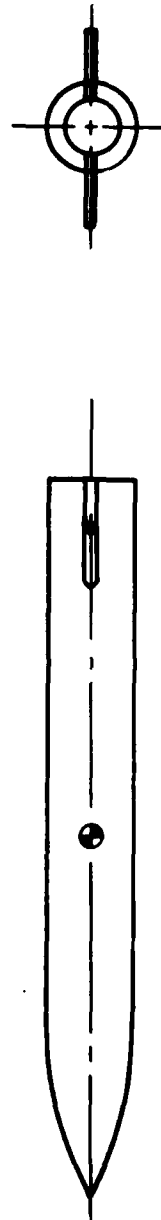


Figure 22.- Ogive-cylinder force and moment stores.



All dimensions in inches

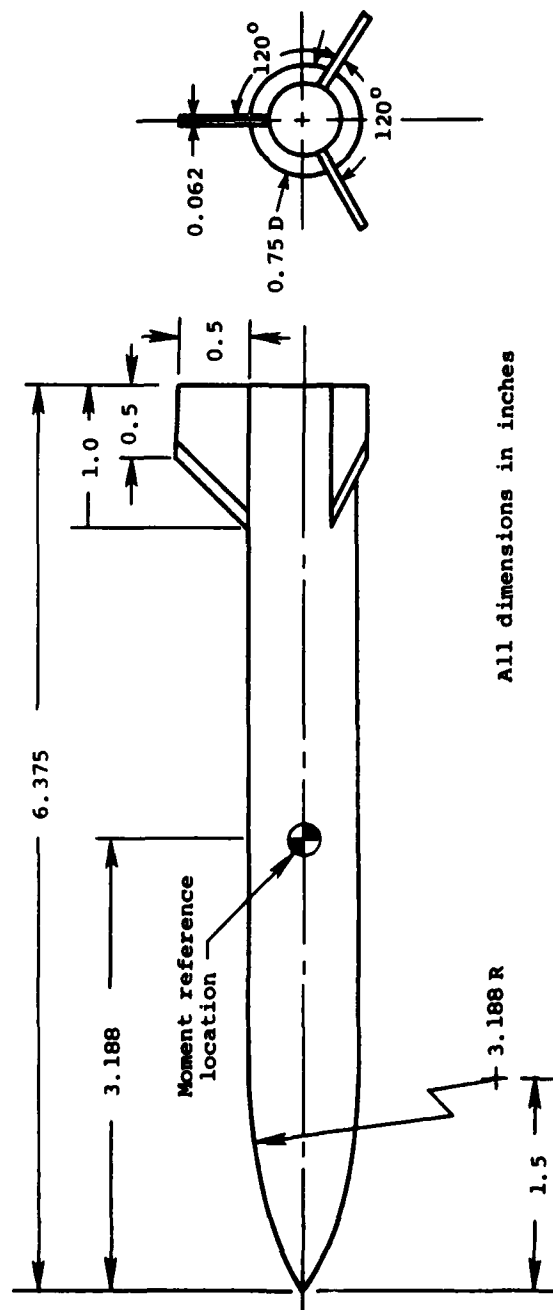
(c) Cruciform ogive-cylinder store, S_{COC}



All dimensions same as above

(d) Planar ogive-cylinder store, S_{POC}

Figure 22.- Continued.



All dimensions in inches

(e) Triform ogive-cylinder store, S_{70C}.

Figure 22.- Concluded.

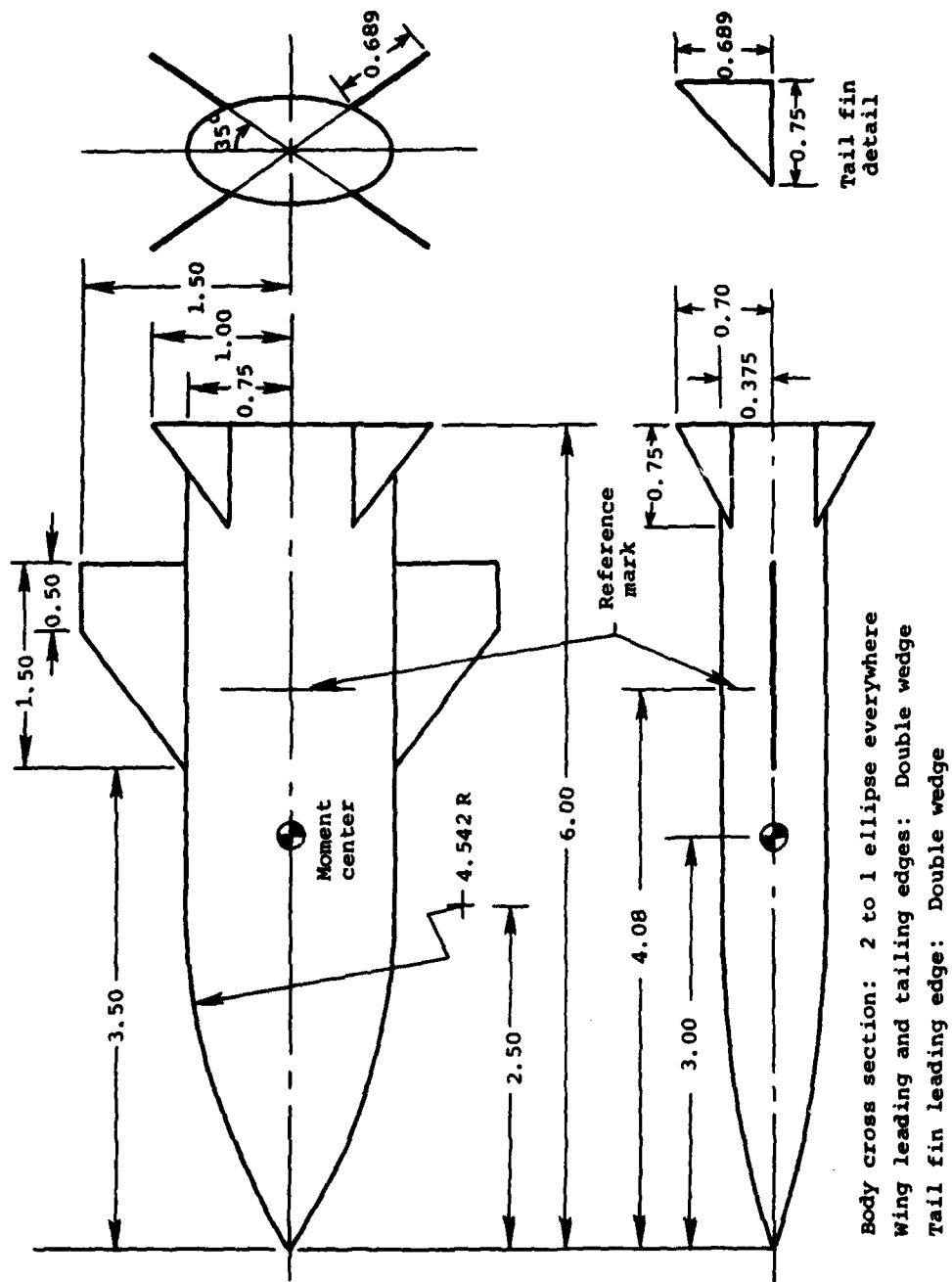


Figure 23.- Elliptic force and moment model, Sg.

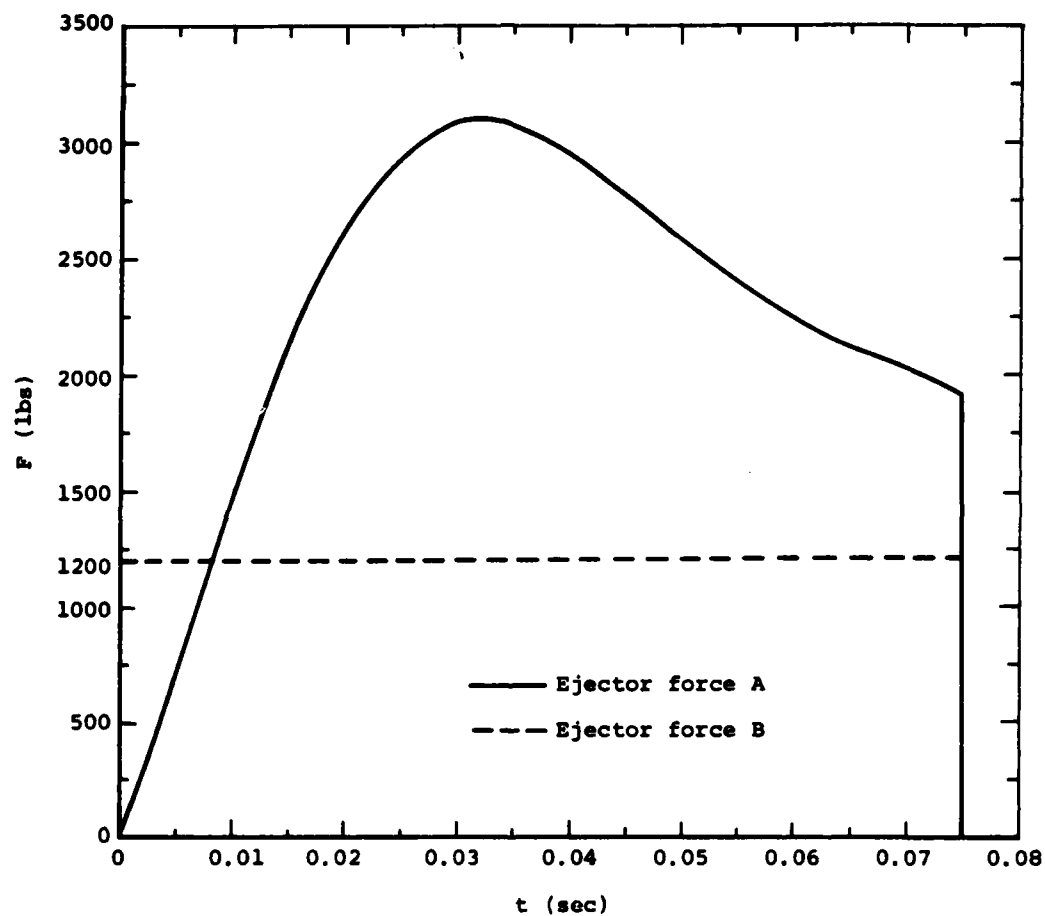


Figure 24.- Simulated ejector force curves.

TABLE I

SUMMARY OF FLOW FIELD
SURVEY DATA

Parent Aircraft Configuration	Test Conditions Table Number
$N_1 B_1$	II
$N_1 B_2 W$	III
$N_1 B_2 W (P_2)_c$	IV
$N_1 B_2 W (P_2)_{1/3}$	V
$N_1 B_2 W (P_3)_{1/3}$	VI
$N_1 B_2 W (P_2)_{2/3}$	VII
$N_1 B_2 W (P_2)_{1/3} S_{DOC}$	VIII
$N_1 B_2 W (P_2)_{1/3} T$	IX
$N_1 B_2 W (P_2)_{1/3} T S_{DOC2} S_{DOC3}$	X
$N_3 B_1 A_3$	XI
$N_3 B_2 W A_3$	XII
$N_3 B_2 W A_3 (P_2)_c$	XIII
$N_3 B_2 W A_3 (P_3)_{1/3}$	XIV
$N_3 B_2 W A_3 F$	XV
$N_3 B_2 W A_4$	XVI
$N_3 B_2 W A_4 (P_2)_c$	XVII
$N_3 B_2 W A_4 (P_3)_{1/3}$	XVIII
$N_3 B_2 W A_4 F$	XIX
$N_3 B_2 W A_5$	XX
$N_3 B_2 W A_5 (P_2)_c$	XXI
$N_3 B_2 W A_5 (P_3)_{1/3}$	XXII
$N_3 B_2 W A_5 F$	XXIII

TABLE II
FLOW FIELD SURVEY DATA - $N_1 B_1$

1	2	3	4	5	6	7	8
M_∞	α	X_P RANGE	Y_P	Z_P	l_P	TEST NO.	GROUP NO.
1.5	0.0	-1,-22	0.0	2.87	-	M9A	299&300
			0.0	3.62			301&302
			-2.5	0.62			303
	↓		-2.5	1.37			304
	5.0		0.0	2.87			329
			0.0	3.62			330
			-1.0	2.87			331
			-1.0	3.62			332
			-1.75	2.87			333
			-1.75	3.62			334
			-2.5	0.62			335
			-2.5	1.37			336
			-3.5	0.62			337
			-3.5	1.37			338
			-4.0	0.62			339
↓			-4.0	1.37			340
2.0			0.0	2.87			342
			0.0	3.62			343
			-1.0	2.87			344
			-1.0	3.62			345
			-1.75	2.87			346
			-1.75	3.62			347
			-2.5	0.62			348
			-2.5	1.37			349
			-3.5	0.62			350
			-3.5	1.37			351
			-4.0	0.62			352
↓	↓	↓	-4.0	1.37	↓	↓	353

TABLE III
FLOW FIELD SURVEY DATA - N_1B_2W

1	2	3	4	5	6	7	8
M_∞	α	x_p RANGE	y_p	z_p	l_p	TEST NO.	GROUP NO.
1.5	0.0	-13,-26	0.0	2.83	-	B4A	136
		-15,-28		2.87		M9A	69
		-13,-26		3.58		B4A	137
		-15,-28	-1.0	2.87		M9A	70
			-1.0	3.62			71
			-1.75	2.87			72
			-1.75	3.62			73
		-15,-30	-2.5	1.37			74
			-2.5	2.12			75
			-3.5	1.37			76
			-3.5	2.12			77
		-16,-28	-4.0	1.37		B4A	142
		-16,-32				L5A	8&9
		-16,-32				M9A	78
		-16,-28		2.12		B4A	143
			-4.5	1.37			145
			-4.5	2.12			144
		-20,-31	-8.0	1.37			153
		-20,-34		1.37		M9A	79
		-20,-31		2.12		B4A	154
	5.0	-13,-26	0.0	2.83		B4A	204
		-15,-28		2.87		M9A	213
		-13,-26		3.58		B4A	205
		-15,-28	-1.0	2.87		M9A	214
			-1.0	3.62			215
			-1.75	2.87			216
			-1.75	3.62			217
		-15,-30	-2.5	1.37			218
			-2.5	2.12			219
			-3.5	1.37			220
			-3.5	2.12			221
		-16,-28	-4.0	1.37		B4A	212
		-16,-32				L5A	29&30
		-16,-32				M9A	222
		-16,-28		2.12		B4A	213
			-4.5	1.37			215
			-4.5	2.12			214

TABLE III (Continued)

1	2	3	4	5	6	7	8
M_∞	α	X_P RANGE	Y_P	Z_P	l_P	TEST NO.	GROUP NO.
1.5	5.0	-20,-31	-8.0	1.37	-	B4A	223
		-20,-34		1.37		M9A	223
		-20,-31		2.12		B4A	224
2.0	0.0	-13,-26	0.0	2.83			174
		-13,-26	0.0	3.58			175
		-16,-28	-4.0	1.37			164
		-17,-34		1.37		L5A	54&55
		-16,-28		2.12		B4A	165
			-4.5	1.37			167
			-4.5	2.12			166
		-20,-31	-8.0	1.37			186
		-20,-31	-8.0	2.12			187
	5.0	-13,-26	0.0	2.83			251
		-16,-28		2.87		M9A	245
		-13,-26		3.58		B4A	252
		-16,-28	-1.0	2.87		M9A	246
			-1.0	3.62			247
			-1.75	2.87			248
			-1.75	3.62			249
		-16,-30	-2.5	1.37			250
			-2.5	2.12			251
			-3.5	1.37			252
			-3.5	2.12			253
		-16,-28	-4.0	1.37		B4A	231
		-16,-32				L5A	78&79
		-17,-32				M9A	254
		-16,-28		2.12		B4A	232
			-4.5	1.37			234
			-4.5	2.12			233
		-20,-31	-8.0	1.37			242
		-21,-34		1.37		M9A	255
		-20,-31		2.12		B4A	243
2.5	0.0	-13,-26	0.0	2.83			36
		-13,-26	0.0	3.58			37
		-16,-28	-4.0	1.37			45
			-4.0	2.12			46
			-4.5	1.37			48
			-4.5	2.12			47
		-20,-31	-8.0	1.37			56
		-20,-31	-8.0	2.12			57
	5.0	-13,-26	0.0	2.83			259

TABLE III (Concluded)

1	2	3	4	5	6	7	8
M_∞	α	X_P RANGE	Y_P	Z_P	l_P	TEST NO.	GROUP NO.
2.5	5.0	-13, -26	0.0	3.58	-	B4A	260
		-16, -28	-4.0	1.37			267
			-4.0	2.12			268
			-4.5	1.37			270
			-4.5	2.12			269
		-20, -31	-8.0	1.37			278
		-20, -31	-8.0	2.12			279

TABLE IV
FLOW FIELD SURVEY DATA - $N_1 B_2 W(P_2)_C$

1	2	3	4	5	6	7	8
M_∞	α	X_P RANGE	Y_P	Z_P	l_P	TEST NO.	GROUP NO.
1.5	0.0	-16,-24	0.5	2.83	-	B4A	130
			0.5	3.58			131
			0.0	2.83			133
		-17,-26		2.87		M9A	67
		-16,-24		3.58		B4A	132
		-17,-26		3.62		M9A	68
		-16,-24	-0.5	2.83		B4A	134
		-16,-24	-0.5	3.58		B4A	135
		-17,-26	-1.0	2.87		M9A	65
		-17,-26	-1.0	3.62		M9A	66
	5.0	-16,-24	0.5	2.83		B4A	198
			0.5	3.58			199
			0.0	2.83			201
		-17,-26		2.87		M9A	207
		-16,-24		3.58		B4A	200
		-17,-26		3.62		M9A	208
		-16,-24	-0.5	2.83		B4A	202
		-16,-24	-0.5	3.58		B4A	203
		-17,-26	-1.0	2.87		M9A	211
		-17,-26	-1.0	3.62		M9A	212
2.0	0.0	-16,-24	0.5	2.83		B4A	168
			0.5	3.58			169
			0.0	2.83			171
		-17,-26		2.87		M9A	289
		-16,-24		3.58		B4A	170
		-17,-26		3.62		M9A	290
		-16,-24	-0.5	2.83		B4A	172
		-16,-24	-0.5	3.58		B4A	173
		-17,-26	-1.0	2.87		M9A	291
		-17,-26	-1.0	3.62		M9A	292
	5.0	-16,-24	0.5	2.83		B4A	245
			0.5	3.58			246
			0.0	2.83			248
		-17,-26		2.87		M9A	241
		-16,-24		3.58		B4A	247
		-17,-26		3.62		M9A	242
		-16,-24	-0.5	2.83		B4A	249

TABLE IV (Concluded)

1	2	3	4	5	6	7	8
M_∞	α	X_P RANGE	Y_P	Z_P	l_P	TEST NO.	GROUP NO.
2.0	5.0	-16,-24	-0.5	3.58	-	B4A	250
		-17,-26	-1.0	2.87		M9A	243
		-17,-26	-1.0	3.62		M9A	244
2.5	0.0	-16,-24	0.5	2.83		B4A	29
			0.5	3.58			30
			0.0	2.83			32
			0.0	3.58			31
			-0.5	2.83			33
			-0.5	3.58			34
	5.0		0.5	2.83			253
			0.5	3.58			254
			0.0	2.83			256
			0.0	3.58			255
			-0.5	2.83			257
			-0.5	3.58			258

TABLE V
FLOW FIELD SURVEY DATA - $N_1 B_2 W(P_2)^{1/3}$

1	2	3	4	5	6	7	8
M_∞	α	X_P RANGE	Y_P	Z_P	L_P	TEST NO.	GROUP NO.
1.5	0.0	-17,-25	-3.5	1.37	-	B4A	138
			-3.5	2.12			156
			-4.0	1.37			139
		-16,-32		1.37		L5A	6&7
		-17,-25		2.12		B4A	157
			-4.5	1.37			140
			-4.5	2.12			141
	5.0		-3.5	1.37			206
			-3.5	2.12			207
			-4.0	1.37			209
		-16,-32		1.37		L5A	26,27&28
		-17,-25		2.12		B4A	208
			-4.5	1.37			210
			-4.5	2.12			211
2.0	0.0		-3.5	1.37			158
			-3.5	2.12			163
			-4.0	1.37			159
		-16,-32		1.37		L5A	47&48
		-17,-25		2.12		B4A	162
			-4.5	1.37			160
			-4.5	2.12			161
	5.0		-3.5	1.37			225
			-3.5	2.12			226
			-4.0	1.37			228
		-16,-32		1.37		L5A	76&77
		-17,-25		2.12		B4A	227
			-4.5	1.37			229
			-4.5	2.12			230
2.5	0.0		-3.5	1.37			39
			-3.5	2.12			44
			-4.0	1.37			40
			-4.0	2.12			43
			-4.5	1.37			41
			-4.5	2.12			42
	5.0		-3.5	1.37			261
			-3.5	2.12			262
			-4.0	1.37			264
			-4.0	2.12			263
			-4.5	1.37			265
			-4.5	2.12			266

TABLE VI
FLOW FIELD SURVEY DATA - $N_1 B_2 W(P_3)_{1/3}$

1	2	3	4	5	6	7	8
M_∞	α	x_p RANGE	y_p	z_p	l_p	TEST NO.	GROUP NO.
1.5	0.0	-17,-28	-3.5	1.37	-	M9A	84
			-3.5	2.12			85
			-4.0	1.37			80&81
			-4.0	2.12			82&83
			-4.75	1.37			86
			-4.75	2.12			87
	5.0		-3.5	1.37			229
			-3.5	2.12			230
			-4.0	1.37			225&226
			-4.0	2.12			227&228
			-4.75	1.37			231
			-4.75	2.12			232
2.0			-3.5	1.37			237
			-3.5	2.12			238
			-4.0	1.37			233&234
			-4.0	2.12			235&236
			-4.75	1.37			239
			-4.75	2.12			240

TABLE VII
FLOW FIELD SURVEY DATA - $N_1 B_2 W(P_2)^{2/3}$

1	2	3	4	5	6	7	8
M_∞	α	X_P RANGE	Y_P	Z_P	ℓ_P	TEST NO.	GROUP NO.
1.5	0.0	-21, -29	-7.5	1.37	-	B4A	146
			-7.5	2.12			151
			-8.0	1.37			147
			-8.0	2.12			150
			-8.5	1.37			148
	↓		-8.5	2.12			149
	5.0		-7.5	1.37			217
			-7.5	2.12			218
			-8.0	1.37			220
			-8.0	2.12			219
			-8.5	1.37			221
	↓		-8.5	2.12			222
2.0	0.0		-7.5	1.37			180
			-7.5	2.12			185
			-8.0	1.37			181
			-8.0	2.12			184
			-8.5	1.37			182
	↓		-8.5	2.12			183
	5.0		-7.5	1.37			238
			-7.5	2.12			239
			-8.0	1.37			236
			-8.0	2.12			237
			-8.5	1.37			240
	↓		-8.5	2.12			241
2.5	0.0		-7.5	1.37			50
			-7.5	2.12			55
			-8.0	1.37			51
			-8.0	2.12			54
			-8.5	1.37			52
			-8.5	2.12			53
	5.0		-7.5	1.37			272
			-7.5	2.12			273
			-8.0	1.37			275
			-8.0	2.12			274
			-8.5	1.37			276
↓	↓	↓	-8.5	2.12	↓	↓	277

TABLE VIII
FLOW FIELD SURVEY DATA - $N_1 B_2 W(P_2)^{1/3} S_{DOC}$

1	2	3	4	5	6	7	8
M_∞	α	X_P RANGE	Y_P	Z_P	I_P	TEST NO.	GROUP NO.
1.5	0.0	-17,-32	-4.0	2.12	-	L5A	10&14
			-4.0	2.87			11&15
			-4.5	2.12			13&17
			-4.5	2.87			12&16
	5.0		-4.0	2.12			39&43
			-4.0	2.87			40&44
			-4.5	2.12			42&46
			-4.5	2.87			41&45
2.0	0.0	-17,-34	-4.0	2.12			64&68
			-4.0	2.87			65&69
			-4.5	2.12			67&71
			-4.5	2.87			66&70

TABLE IX
FLOW FIELD SURVEY DATA - $N_1 B_2 W(P_2)^{1/3} T$

1	2	3	4	5	6	7	8
M_∞	α	X_P RANGE	Y_P	Z_P	I_P	TEST NO.	GROUP NO.
1.5	0.0	-17,-32	-4.0	2.12	-	L5A	18&20
	0.0			2.87			19&21
	5.0			2.12			31&33
	5.0			2.87			32&34
2.0	0.0	-17,-34		2.12			56&58
2.0	0.0	-17,-34		2.87			57&59

TABLE X
FLOW FIELD SURVEY DATA - $N_1 B_2 W(P_2)^{1/3} T S_{DOC2} S_{DOC3}$

1	2	3	4	5	6	7	8
M_∞	α	X_P RANGE	Y_P	Z_P	I_P	TEST NO.	GROUP NO.
1.5	0.0	-17,-32	-4.0	2.12	-	L5A	22&24
	0.0			2.87			23&25
	5.0			2.12			35&37
	5.0			2.87			36&38
2.0	0.0	-17,-34		2.12			60&62
2.0	0.0	-17,-34		2.87			61&63

TABLE XI
FLOW FIELD SURVEY DATA - $N_3B_1A_3$

1	2	3	4	5	6	7	8
M_∞	α	X_P RANGE	Y_P	Z_P	l_P	TEST NO.	GROUP NO.
1.5	0.0	-1,-22	0.0	2.87	-	M9A	305
			0.0	3.62			306
			-1.0	2.87			307
			-1.0	3.62			308
			-1.75	2.87			309
			-1.75	3.62			310
			-2.5	0.62			311
			-2.5	1.37			312
			-3.5	0.62			313
			-3.5	1.37			314
			-4.0	0.62			315
			-4.0	1.37			316
	5.0		0.0	2.87			317
			0.0	3.62			318
			-1.0	2.87			319
			-1.0	3.62			320
			-1.75	2.87			321
			-1.75	3.62			322
			-2.5	0.62			323
			-2.5	1.37			324
			-3.5	0.62			325
			-3.5	1.37			326
			-4.0	0.62			327
			-4.0	1.37			328
2.0		-2,-22	0.0	2.87			362
			0.0	3.62			363
			-1.0	2.87			364
			-1.0	3.62			365
			-1.75	2.87			366
			-1.75	3.62			367
			-2.5	0.62			368
			-2.5	1.37			369
			-3.5	0.62			370
			-3.5	1.37			371
			-4.0	0.62			372
			-4.0	1.37			373

TABLE XII
FLOW FIELD SURVEY DATA - $N_3B_2WA_3$

1	2	3	4	5	6	7	8
M_∞	α	X_P RANGE	Y_P	Z_P	l_P	TEST NO.	GROUP NO.
1.5	0.0	-14,-24	0.0	2.30	-	V6A	99
				2.60			103
				2.87			106
		-15,-28		2.87		M9A	32
		-19,-24		3.25		V6A	108
		-15,-28		3.62		M9A	33
		-14,-24	-0.5	2.30		V6A	100
				2.60			104
				2.87			107
		-19,-24		3.25			109
		-14,-24	-1.0	2.30			101
		-14,-24		2.60			105
		-15,-28		2.87		M9A	34
		-19,-24		3.25		V6A	110
		-15,-28		3.62		M9A	35
		-14,-24	-1.75	2.30		V6A	102
		-15,-28		2.87		M9A	36
		-19,-24		3.25		V6A	111
		-15,-28		3.62		M9A	37
		-15,-30	-2.5	1.37		M9A	38
		-14,-24		1.75		V6A	112
		-15,-30		2.12		M9A	39
		-14,-24		2.30		V6A	113
		-15,-30	-3.5	1.37		M9A	40
		-15,-30	-3.5	2.12			41
		-16,-32	-4.0	1.37			42
		-16,-32	-4.0	2.12			43
		-20,-34	-8.0	1.37			44
		-20,-34	-8.0	2.12			45
	5.0	-14,-24	0.0	2.30		V6A	140
				2.60			144
				2.87			147
		-15,-28		2.87		M9A	178
		-19,-24		3.25		V6A	149
		-15,-28		3.62		M9A	179
		-14,-24	-0.5	2.30		V6A	141
				2.60			145
				2.87			148
		-19,-24		3.25			150
		-14,-24	-1.0	2.30			142
		-14,-24		2.60			146
		-15,-28		2.87		M9A	180
		-19,-24		3.25		V6A	151

TABLE XII (Continued)

1	2	3	4	5	6	7	8
M_∞	α	x_p RANGE	y_p	z_p	l_p	TEST NO.	GROUP NO.
1.5	5.0	-15,-28	-1.0	3.62	-	M9A	181
		-14,-24	-1.75	2.30		V6A	143
		-15,-28		2.87		M9A	182
		-19,-24		3.25		V6A	152
		-15,-28		3.62		M9A	183
		-15,-30	-2.5	1.37		M9A	184
		-14,-24		1.75		V6A	153
		-15,-30		2.12		M9A	185
		-14,-24		2.30		V6A	154
		-15,-30	-3.5	1.37		M9A	186
		-15,-30	-3.5	2.12			187
		-16,-32	-4.0	1.37			188
		-16,-32	-4.0	2.12			189
		-20,-34	-8.0	1.37			190
		-20,-34	-8.0	2.12			191
2.0	0.0	-14,-24	0.0	2.30		V6A	274
				2.60			278
				2.87			281
		-16,-28		2.87		M9A	293
		-19,-24		3.25		V6A	283
		-16,-28		3.62		M9A	294
		-14,-24	-0.5	2.30		V6A	275
				2.60			279
				2.87			282
		-19,-24		3.25			284
		-14,-24	-1.0	2.30			276
				2.60			280
		-16,-28		2.87		M9A	295
		-19,-24		3.25		V6A	285
		-16,-28		3.62		M9A	296
		-14,-24	-1.75	2.30		V6A	277
		-16,-28		2.87			293
		-14,-24		3.25			286
		-16,-28		3.62			294
		-16,-30	-2.5	1.37		M9A	297
		-14,-24		1.75		V6A	287
		-16,-30		2.12		M9A	298
		-14,-24		2.30		V6A	288
		-16,-30	-3.5	1.37			289
		-16,-30	-3.5	2.12			290
		-17,-32	-4.0	1.37			291
		-17,-32	-4.0	2.12			292
	5.0	-16,-28	0.0	2.87		M9A	264

TABLE XII (Concluded)

1	2	3	4	5	6	7	8
M_{∞}	α	X_P RANGE	Y_P	Z_P	l_P	TEST NO.	GROUP NO.
2.0	5.0	-16,-28	0.0	3.62	-	M9A	265
			-1.0	2.87			266
			-1.0	3.62			267
			-1.75	2.87			268
			-1.75	3.62			269
		-16,-30	-2.5	1.37			270
			-2.5	2.12			271
			-3.5	1.37			272
			-3.5	2.12			273
		-17,-32	-4.0	1.37			274
		-17,-32	-4.0	2.12			275
		-21,-34	-8.0	1.37			276
↓	↓	-21,-34	-8.0	2.12	↓	↓	277

TABLE XIII
FLOW FIELD SURVEY DATA - $N_3B_2WA_3(P_2)_C$

1	2	3	4	5	6	7	8
M_∞	α	X_P RANGE	Y_P	Z_P	L_P	TEST NO.	GROUP NO.
1.5	0.0	-17. -26	0.0	2.87	—	M9A	56
			0.0	3.62			57
			-1.0	2.87			58
			-1.0	3.62			59
	5.0		0.0	2.87			174
			0.0	3.62			175
			-1.0	2.87			176
			-1.0	3.62			177
2.0			0.0	2.87			260
			0.0	3.62			261
			-1.0	2.87			262
			-1.0	3.62			263

TABLE XIV
FLOW FIELD SURVEY DATA - $N_3B_2WA_3(P_3)_{1/3}$

1	2	3	4	5	6	7	8
M_∞	α	X_P RANGE	Y_P	Z_P	L_P	TEST NO.	GROUP NO.
1.5	0.0	-17. -26	-3.5	1.37	—	M9A	46
			-3.5	2.12			47
			-4.0	1.37			50 & 51
			-4.0	2.12			52 & 53
			-4.75	1.37			48
			-4.75	2.12			49
	5.0		-3.5	1.37			196
			-3.5	2.12			197
			-4.0	1.37			192 & 193
			-4.0	2.12			194 & 195
			-4.75	1.37			198
			-4.75	2.12			199
2.0			-3.5	1.37			282
			-3.5	2.12			283
			-4.0	1.37			278 & 279
			-4.0	2.12			280 & 281
			-4.75	1.37			284
			-4.75	2.12			285

TABLE XV
FLOW FIELD SURVEY DATA - $N_3B_2WA_3F$

1	2	3	4	5	6	7	8
M_∞	α	X_P RANGE	Y_P	Z_P	l_P	TEST NO.	GROUP NO.
1.5	0.0	-19, -25	0.0	2.30	—	V6A	118
				2.60			121
				2.87			126
				3.25			127
			-0.5	2.30			119
				2.60			122
				2.87			125
				3.25			128
			-1.0	2.30			120
				2.60			123
				2.87			124
				3.25			129
		-14, -24	-1.75	2.30			131
		-14, -24	-1.75	2.87			133
		-15, -24	-4.0	1.37			135
	5.0	-19, -25	0.0	2.30			156
				2.60			159
				2.87			164
				3.25			165
			-0.5	2.30			157
				2.60			160
				2.87			163
				3.25			166
			-1.0	2.30			158
				2.60			161
				2.87			162
				3.25			167
		-14, -24	-1.75	2.30			169
		-14, -24	-1.75	2.87			171
		-15, -24	-4.0	1.37			173
2.0	0.0	-19, -25	0.0	2.30			296
				2.60			299
				2.87			304
				3.25			305
			-0.5	2.30			297
				2.60			300
				2.87			303
				3.25			306

TABLE XV (Concluded)

1	2	3	4	5	6	7	8
M_∞	α	X_P RANGE	Y_P	Z_P	l_P	TEST NO.	GROUP NO.
2.0	0.0	-19,-25	-1.0	2.30	—	V6A	298
				2.60			301
				2.87			302
				3.25			307
		↓	↓				
		-14,-24	-1.75	2.30			309
		-14,-24	-1.75	2.87			311
↓	↓	-15,-24	-4.0	1.37	↓	↓	313

TABLE XVI
FLOW FIELD SURVEY DATA - $N_3B_2WA_4$

1	2	3	4	5	6	7	8
M_∞	α	X_P RANGE	Y_P	Z_P	l_P	TEST NO.	GROUP NO.
1.5	0.0	-14,-24	0.0	2.30	0.81	V6A	52
				2.60			58
				2.87			61
		-14,-22				M9A	18
		-14,-24				T9A	141
		-19,-24		3.25		V6A	62
		-14,-24		3.62		T9A	146
			-0.5	2.30		V6A	53
				2.60			59
				2.87			60
		-19,-24		3.25			63
		-14,-24	-1.0	2.30			54
				2.60			70
				2.87		T9A	142
		-19,-24		3.25		V6A	64
		-14,-24		3.62		T9A	145
			-1.75	2.30		V6A	55
				2.87		T9A	143
		-19,-24		3.25		V6A	65
		-14,-24		3.62		T9A	144
		-14,-22	-2.0	2.87		M9A	19
		-14,-26	-2.5	2.30		V6A	56
		-14,-22		2.87		M9A	20
		-14,-26		2.87		V6A	71
		-19,-26		3.25			66
		-14,-26		3.62			72
			-3.0	2.30			57
				2.87			68
		-19,-26		3.25			67
		-14,-26	-3.5	1.37			74
		-14,-22		1.37		M9A	21
		-14,-26		2.12		V6A	75
		-15,-28	-4.0	1.37		V6A	76
		-14,-22		1.37		M9A	22
		-15,-28		2.12		V6A	77
		-14,-22	0.0	2.87	1.63	M9A	10
			-2.0				11
			-2.5				12
			-3.5	1.37			13
			-4.0	1.37			14
			0.0	2.87	3.25		15
			-2.0				16
			-2.5				17

TABLE XVI (Continued)

1	2	3	4	5	6	7	8
M_∞	α	X_P RANGE	Y_P	Z_P	I_P	TEST NO.	GROUP NO.
1.5	0.0	-14,-24	0.0	2.87	OFF	T9A	48
			0.0	3.62			53
			-1.0	2.87			49
			-1.0	3.62			52
			-1.75	2.87			50
			-1.75	3.62			51
		-14,-26	-2.5	2.87			54
			-2.5	3.62			55
			-3.5	1.37			56
			-3.5	2.12			57
		-15,-28	-4.0	1.37			58
		-15,-28	-4.0	2.12			59
		-19,-30	-8.0	1.37			60
		-19,-30	-8.0	2.12			61
	5.0	-14,-24	0.0	2.30	0.81	V6A	4
				2.60			10
				2.87			13
				2.87		T9A	25
		-19,-24		3.25		V6A	14
		-14,-24		3.62		T9A	30
			-0.5	2.30		V6A	5
				2.60			11
				2.87			12
		-19,-24		3.25			15
		-14,-24	-1.0	2.30			6
				2.60			22
				2.87		T9A	26
		-19,-24		3.25		V6A	16
		-14,-24		3.62		T9A	29
			-1.75	2.30		V6A	7
				2.87		T9A	27
		-19,-24		3.25		V6A	17
		-14,-24		3.62		T9A	28
		-14,-26	-2.5	2.30		V6A	8
		-14,-26		2.87		T9A	44
		-19,-26		3.25		V6A	18
		-14,-26		3.62		T9A	45
			-3.0	2.30		V6A	9
				2.87			20
		-19,-26		3.25			19
		-14,-26	-3.5	1.37		T9A	42
		-14,-26	-3.5	2.12			43
		-15,-28	-4.0	1.37			35

TABLE XVI (Concluded)

1	2	3	4	5	6	7	8
M_∞	α	X_P RANGE	Y_P	Z_P	I_P	TEST NO.	GROUP NO.
1.5	5.0	-15,-28	-4.0	2.12	0.81	T9A	36
↓	↓	-19,-30	-8.0	1.37	↓	↓	37
↓	↓	-19,-30	-8.0	2.12	↓	↓	38

TABLE XVII
FLOW FIELD SURVEY DATA - $N_3B_2WA_4(P_2)_{\dot{c}}$

1	2	3	4	5	6	7	8
M_{∞}	α	X_P RANGE	Y_P	Z_P	l_P	TEST NO.	GROUP NO.
1.5	0.0	-14, -24	0.0	2.87	0.81	T9A	137
			0.0	3.62			138
			-1.0	2.87			139
			-1.0	3.62			140
	5.0		0.0	2.87			19
			0.0	3.62			20
			-1.0	2.87			21
			-1.0	3.62			22

TABLE XVIII
FLOW FIELD SURVEY DATA - $N_3B_2WA_4(P_3)_{1/3}$

1	2	3	4	5	6	7	8
M_{∞}	α	X_P RANGE	Y_P	Z_P	l_P	TEST NO.	GROUP NO.
1.5	0.0	-15, -28	-3.5	1.37	0.81	T9A	129
			-3.5	2.12			130
			-4.0	1.37			131&133
			-4.0	2.12			132&134
	5.0		-3.5	1.37			10
			-3.5	2.12			14
			-4.0	1.37			15 & 17
			-4.0	2.12			16 & 18
			-4.75	1.37			12
			-4.75	2.12			13

TABLE XIX
FLOW FIELD SURVEY DATA - $N_3B_2WA_4F$

1	2	3	4	5	6	7	8
M_∞	α	X_P RANGE	Y_P	Z_P	l_P	TEST NO.	GROUP NO.
1.5	0.0	-19, -25	0.0	2.30	0.81	V6A	79
				2.60			82
				2.87			88
			↓	3.25			89
			-0.5	2.30			80
				2.60			83
				2.87			86
			↓	3.25			90
			-1.0	2.30			81
				2.60			84
				2.87			85
		↓	↓	3.25			91
		-14, -24	-1.75	2.30			93
		-14, -24	-1.75	2.87			95
	↓	-15, -24	-4.0	1.37			97
	5.0	-19, -25	-0.0	2.30			30
				2.60			33
				2.87			38
			↓	3.25			39
			-0.5	2.30			31
				2.60			34
				2.87			37
			↓	3.25			40
			-1.0	2.30			32
				2.60			35
				2.87			36
		↓	↓	3.25			41
		-14, -24	-1.75	2.30			44
↓	↓	-14, -24	-1.75	2.87	↓	↓	46

TABLE XX
FLOW FIELD SURVEY DATA - N₃B₂WA₅

1	2	3	4	5	6	7	8
M _∞	α	X _P RANGE	Y _P	Z _P	L _P	TEST NO.	GROUP NO.
2.0	0.0	-14,-24	0.0	2.30	0.81	V6A	222
				2.60			228
		↓		2.87		↓	231
		-14,-22				M9A	160
		-14,-24		↓		T9A	107
		-19,-24		3.25		V6A	232
		-14,-24	↓	3.62		T9A	112
			-0.5	2.30		V6A	223
				2.60			229
		↓		2.87			230
		-19,-24	↓	3.25			233
		-14,-24	-1.0	2.30			224
				2.60		↓	240
		↓		2.87		T9A	108
		-19,-24		3.25		V6A	234
		-14,-24	↓	3.62		T9A	111
			-1.75	2.30		V6A	225
		↓		2.87		T9A	109
		-19,-24		3.25		V6A	235
		-14,-24	↓	3.62		T9A	110
		-14,-22	-2.0	2.87		M9A	161
		-14,-26	-2.5	2.30		V6A	226
		-14,-22		2.87		M9A	162
		-14,-26		2.87		T9A	113
		-19,-26		3.25		V6A	236
		-14,-26	↓	3.62		T9A	114
			-3.0	2.30		V6A	227
		↓		2.87			238
		-19,-26	↓	3.25		↓	237
		-14,-22	-3.5	1.37		M9A	163
		-14,-26		1.37		T9A	115
		-14,-26	↓	2.12		T9A	116
		-14,-22	-4.0	1.37		M9A	164
		-15,-28		1.37		T9A	117
		-15,-28	↓	2.12	↓	T9A	118
		-14,-22	0.0	2.87	1.63	M9A	150
			-2.0				151
			-2.5	↓			152
			-3.5	1.37			153
			-4.0	1.37	↓		154
			0.0	2.87	3.25		155
			-2.0				156
↓	↓	↓	-2.5	↓	↓	↓	157

TABLE XX (Concluded)

1	2	3	4	5	6	7	8
M_{∞}	α	X_P RANGE	Y_P	Z_P	l_P	TEST NO.	GROUP NO.
2.0	5.0	-14, -24	0.0	2.30	0.81	V6A	176
				2.60			182
				2.87			185
				2.87		T9A	83
		-19, -24		3.25		V6A	186
		-14, -24		3.62		T9A	88
			-0.5	2.30		V6A	177
				2.60			183
				2.87			184
		-19, -24		3.25			187
		-14, -24	-1.0	2.30			178
				2.60			194
				2.87		T9A	84
		-19, -24		3.25		V6A	188
		-14, -24		3.62		T9A	87
			-1.75	2.30		V6A	179
				2.87		T9A	85
		-19, -24		3.25		V6A	189
		-14, -24		3.62		T9A	86
		-14, -26	-2.5	2.30		V6A	180
		-14, -26		2.87		T9A	89
		-19, -26		3.25		V6A	190
		-14, -26		3.62		T9A	90
			-3.0	2.30		V6A	181
				2.87			192
		-19, -26		3.25			191
		-14, -26	-3.5	1.37		T9A	93
		-14, -26	-3.5	2.12			94
		-15, -28	-4.0	1.37			95
		-15, -28	-4.0	2.12			96
		-19, -30	-8.0	1.37			97
		-19, -30	-8.0	2.12			98

TABLE XXI
FLOW FIELD SURVEY DATA - $N_3B_2WA_5(P_2)_c$

1	2	3	4	5	6	7	8
M_∞	α	X_P RANGE	Y_P	Z_P	l_P	TEST NO.	GR NO.
2.0	0.0	-14, -24	0.0	2.87	0.81	T9A	103
			0.0	3.62			104
			-1.0	2.87			105
			-1.0	3.62			106
	5.0		0.0	2.87			77
			0.0	3.62			78
			-1.0	2.87			79
↓	↓	↓	-1.0	3.62	↓	↓	80

TABLE XXII
FLOW FIELD SURVEY DATA - $N_3B_2WA_5(P_3)_{1/3}$

1	2	3	4	5	6	7	8
M_∞	α	X_P RANGE	Y_P	Z_P	l_P	TEST NO.	GROUP NO.
2.0	0.0	-15, -28	-3.5	1.37	0.81	T9A	121
			-3.5	2.12			122
			-4.0	1.37			123&125
	↓		-4.0	2.12			124&126
	5.0		-3.5	1.37			66
			-3.5	2.12			69
			-4.0	1.37			70 & 72
			-4.0	2.12			71 & 73
			-4.75	1.37			67
↓	↓	↓	-4.75	2.12	↓	↓	68

TABLE XXIII
FLOW FIELD SURVEY DATA - $N_3B_2WA_5F$

1	2	3	4	5	6	7	8
M_∞	α	X_P RANGE	Y_P	Z_P	l_P	TEST NO.	GROUP NO.
2.0	0.0	-19, -25	0.0	2.30	0.81	V6A	244
				2.60			247
				2.87			252
			↓	3.25			253
			-0.5	2.30			245
				2.60			248
				2.87			251
			↓	3.25			254
			-1.0	2.30			246
				2.60			249
				2.87			250
		↓	↓	3.25			257
		-14, -24	-1.75	2.30			259
		-14, -24	-1.75	2.87			261
	↓	-15, -24	-4.0	1.37			263
	5.0	-19, -25	0.0	2.30			201
				2.60			204
				2.87			209
			↓	3.25			210
			-0.5	2.30			202
				2.60			205
				2.87			208
			↓	3.25			211
			-1.0	2.30			203
				2.60			206
				2.87			207
		↓	↓	3.25			212
		-14, -24	-1.75	2.30			214
		-14, -24	-1.75	2.87			216
↓	↓	-15, -24	-4.0	1.37	↓	↓	218

TABLE XXIV

SUMMARY OF PRESSURE DISTRIBUTION
DATA ON STORE S_p

Parent Aircraft Configuration	Test Conditions Table Number
None	XXV
$N_1 B_2 W$	XXVI
$N_1 B_2 W (P_2)_C$	XXVII
$N_1 B_2 W (P_2)_{1/3}$	XXVIII
$N_1 B_2 W (P_3)_{1/3}$	XXIX
$N_1 B_2 W (P_2)_{2/3}$	XXX
$N_1 B_2 W (P_2)_{1/3}^T$	XXXI
$N_1 B_2 W (P_2)_{1/3}^{TS} DOC2^S DOC3$	XXXII
$N_3 B_2 WA_3$	XXXIII
$N_3 B_2 WA_4$	XXXIV
$N_3 B_2 WA_4 (P_3)_{1/3}$	XXXV
$N_3 B_2 WA_5$	XXXVI
$N_3 B_2 WA_5 (P_3)_{1/3}$	XXXVII

TABLE XXV
 S_p PRESSURE DISTRIBUTION DATA - STORE ALONE

1	2	3	4	5	6	7	8	9	10
M_∞	α_p	α_s	β_s	Δx_p	y_p	Δz_p	l_p	TEST NO.	GROUP NO.
1.5	-	0.0	0.0	-	-	-	-	B4A	346
		0.0						M9A	446
		2.0						M9A	447
		2.5						B4A	347
		4.0						M9A	448
		5.0						B4A	348
		6.0						M9A	449
		7.5						B4A	349
↓		10.0							350
2.0		0.0							322
		2.5							323
		5.0							324
		7.5							325
↓		10.0							326
2.5		0.0							297
		2.5							298
		5.0							299
		7.5							300
↓	↓	10.0	↓	↓	↓	↓	↓	↓	301

TABLE XXVI
 S_p PRESSURE DISTRIBUTION DATA - N_1B_2W

1	2	3	4	5	6	7	8	9	10
M_∞	α_p	α_s	β_s	Δx_p	y_p	Δz_p	l_p	TEST NO.	GROUP NO.
1.5	0.0	0.0	0.0	0.0	0.0	0.10	-	B4A	351
						0.37			352
						0.75			353
						1.50		T9A	186
						3.00			187
				7.0		0.10			188
						0.75			189
						1.50			190
						2.25			191
						3.00			192
				0.0	-4.0	0.10		B4A	357
						0.10		M9A	411
						0.37		B4A	358
						0.75		B4A	359
						0.75		M9A	412
						1.50			413
						2.25			414
						3.00			415
				4.0		0.75			419
				-4.0					420
				-8.0					421
		-10.0		0.0					424
		10.0							425
		0.0	-10.0						427
			10.0						428
			0.0		-4.75	0.10			416
						0.75			417
						2.25			418
	5.0	5.0			0.0	0.10		B4A	366
						0.37			367
						0.75			368
					-4.0	0.10			372
						0.10		M9A	465
						0.37		B4A	373
						0.75		B4A	374
						0.75		M9A	466
						1.50			467
						2.25			468
						3.00			469
				4.0		0.75			473
				-4.0					474
				-8.0					475
				0.0	-4.75	0.10			470

TABLE XXVI (Continued)

1	2	3	4	5	6	7	8	9	10
M_∞	α_p	α_s	β_s	ΔX_p	Y_p	ΔZ_p	I_p	TEST NO.	GROUP NO.
1.5	5.0	5.0	0.0	0.0	-4.75	0.75	-	M9A	471
					-4.75	2.25		M9A	472
					-8.0	0.10		B4A	378
						0.37			379
						0.75			380
2.0	0.0	0.0			0.0	0.10			327
						0.37			328
						0.75			329
					-4.0	0.10			334
						0.37			335
						0.75			336
						1.50		T9A	241
						3.00			242
		-10.0				0.75			243
		10.0							244
		0.0	-10.0						245
			10.0						246
			0.0		-8.0	0.10		B4A	340
						0.37			341
						0.75			342
	5.0	5.0			0.0	0.10			384
						0.37			385
						0.75			386
					-4.0	0.10			390
						0.37			391
						0.75			392
					-8.0	0.10			396
						0.37			397
						0.75			398
2.5	0.0	0.0			0.0	0.10			302
						0.37			303
						0.75			304
					-4.0	0.10			308
						0.37			309
						0.75			310
					-8.0	0.10			316
						0.37			317
						0.75			318
	5.0	5.0			0.0	0.10			402
						0.37			403
						0.75			404
					-4.0	0.10			408
					-4.0	0.37			409

TABLE XXVI (Concluded)

1	2	3	4	5	6	7	8	9	10
M_∞	α_p	α_s	β_s	Δx_p	y_p	Δz_p	l_p	TEST NO.	GROUP NO.
2.5	5.0	5.0	0.0	0.0	-4.0	0.75	-	B4A	410
					-8.0	0.10			414
						0.37			415
						0.75			416

TABLE XXVII

 S_p PRESSURE DISTRIBUTION DATA - $N_1 B_2 W(P_2)_c$

1	2	3	4	5	6	7	8	9	10
M_∞	α_p	α_s	β_s	Δx_p	y_p	Δz_p	l_p	TEST NO.	GROUP NO.
1.5	0.0	0.0	0.0	0.0	0.0	0.10	-	B4A	343
						0.37			344
						0.75			345
						1.50		T9A	184
						3.00		T9A	185
	5.0	5.0				0.10		B4A	363
						0.37			364
						0.75			365
						1.50		T9A	194
						3.00		T9A	195
2.0	0.0	0.0				0.10		B4A	319
						0.37			320
						0.75			321
	5.0	5.0				0.10			381
						0.37			382
						0.75			383
2.5	0.0	0.0				0.10			294
						0.37			295
						0.75			296
	5.0	5.0				0.10			399
						0.37			400
						0.75			401

TABLE XXVIII
 S_p PRESSURE DISTRIBUTION DATA - $N_1 B_2 W(P_2)^{1/3}$

1	2	3	4	5	6	7	8	9	10
M_∞	α_p	α_s	β_s	Δx_p	y_p	Δz_p	l_p	TEST NO.	GROUP NO.
1.5	0.0	0.0	0.0	0.0	-4.0	0.10	-	B4A	354
						0.37			355
						0.75			356
						1.50		T9A	177
						3.00		T9A	178
	5.0	5.0				0.10		B4A	369
						0.37			370
						0.75			371
2.0	0.0	0.0				0.10			331
						0.37			332
	5.0	5.0				0.10			387
						0.37			388
						0.75			389
2.5	0.0	0.0				0.10			305
						0.37			306
						0.75			307
	5.0	5.0				0.10			405
						0.37			406
						0.75			407

TABLE XXIX

 S_p PRESSURE DISTRIBUTION DATA - $N_1 B_2 W(P_3)^{1/3}$

1	2	3	4	5	6	7	8	9	10
M_∞	α_p	α_s	β_s	ΔX_p	Y_p	ΔZ_p	l_p	TEST NO.	GROUP NO.
1.5	0.0	0.0	0.0	0.0	-4.0	0.10	-	M9A	398
						0.75			399
						1.50			400
						2.25			401
						3.00			402
					-4.75	0.10			408
						0.75			409
						1.50			410
						2.25			406
						3.00			407
	5.0	5.0			-4.0	0.10			455
						0.75			456
						1.50			457
						2.25			458
						3.00			459
					-4.75	0.10			460
						0.75			461
						1.50			462
						2.25			463
						3.00			464
2.0	0.0	0.0			-4.0	0.10		T9A	236
						0.75			237
						1.50			238
						2.25			239
						3.00			240

TABLE XXX

 S_p PRESSURE DISTRIBUTION DATA - $N_1 B_2 W(P_2)^{2/3}$

1	2	3	4	5	6	7	8	9	10
M_∞	α_p	α_s	β_s	Δx_p	y_p	Δz_p	l_p	TEST NO.	GROUP NO.
1.5	0.0	0.0	0.0	0.0	-8.0	0.10	-	B4A	360
						0.37			361
						0.75			362
	5.0	5.0				0.10			375
						0.37			376
						0.75			377
2.0	0.0	0.0				0.10			337
						0.37			338
						0.75			339
	5.0	5.0				0.37			393
						0.37			394
						0.75			395
2.5	0.0	0.0				0.10			311
						0.37			312
						0.75			313
	5.0	5.0				0.10			411
						0.37			412
						0.75			413

TABLE XXXI

 S_p PRESSURE DISTRIBUTION DATA - $N_1 B_2 W(P_2)^{1/3} T$

1	2	3	4	5	6	7	8	9	10
M_∞	α_p	α_s	β_s	Δx_p	y_p	Δz_p	l_p	TEST NO.	GROUP NO.
1.5	0.0	0.0	0.0	0.0	-4.0	0.10	---	T9A	179
						0.75			180
						1.50			181
						2.25			182
						3.00			183
	5.0	5.0				0.10		M9A	476
						0.75			477
						1.50			478
						2.25			479
						3.00			480

TABLE XXXII

 S_p PRESSURE DISTRIBUTION DATA - $N_1 B_2 W(P_2)_{1/3} T S_{DOC2} S_{DOC3}$

1	2	3	4	5	6	7	8	9	10
M_∞	α_p	α_s	β_s	ΔX_p	Y_p	ΔZ_p	l_p	TEST NO.	GROUP NO.
1.5	0.0	0.0	0.0	0.0	-4.0	0.10	---	M9A	429
						0.75			430
						1.50			431
						2.25			432
						3.00			433
	5.0	5.0				0.10			450
						0.75			451
						1.50			452
						2.25			453
						3.00			454

TABLE XXXIII

 S_p PRESSURE DISTRIBUTION DATA - $N_3 B_2 W A_3$

1	2	3	4	5	6	7	8	9	10
M_∞	α_p	α_s	β_s	ΔX_p	Y_p	ΔZ_p	l_p	TEST NO.	GROUP NO.
1.5	0.0	0.0	0.0	0.0	0.0	0.10	---	M9A	434
						0.75			435
						1.50			436
					-4.0	0.10			437
						0.75			438
						1.50			439
	5.0	5.0			0.0	0.10			440
						0.75			441
						1.50			442
					-4.0	0.10			443
						0.75			444
						1.50			445
2.0	0.0	0.0			0.0	0.10		T9A	233
						0.75			234
						1.50			235
					-4.0	0.10			230
						0.75			231
						1.50			232

TABLE XXXIV
 S_p PRESSURE DISTRIBUTION DATA - $N_3B_2WA_4$

1	2	3	4	5	6	7	8	9	10
M_∞	α_p	α_s	β_s	Δx_p	y_p	Δz_p	l_p	TEST NO.	GROUP NO.
1.5	0.0	0.0	0.0	0.0	0.0	0.10	0.81	T9A	171
						1.50			172
						3.00			173
					-4.0	0.10			168
						1.50			169
						3.00			170
	5.0	5.0			0.0	0.10			160
						1.50			162
						3.00			161
					-4.0	0.10			157
						1.00			159
						3.00			158

TABLE XXXV
 S_p PRESSURE DISTRIBUTION DATA - $N_3B_2WA_4(P_3)^{1/3}$

1	2	3	4	5	6	7	8	9	10
M_∞	α_p	α_s	β_s	Δx_p	y_p	Δz_p	l_p	TEST NO.	GROUP NO.
1.5	0.0	0.0	0.0	0.0	-4.0	0.10	0.81	T9A	164
						0.75			165
						1.50			166
						3.00			167
	5.0	5.0				0.10			153
						0.75			154
						1.50			155
						3.00			156

TABLE XXXVI
S_p PRESSURE DISTRIBUTION DATA - N₃B₂WA₅

1	2	3	4	5	6	7	8	9	10
M _∞	α _p	α _s	β _s	Δx _p	y _p	Δz _p	l _p	TEST NO.	GROUP NO.
2.0	0.0	0.0	0.0	0.0	0.0	0.10	0.81	T9A	213
						1.50			214
						3.00			215
					-4.0	0.10			221
						1.50			222
						3.00			223
	5.0	5.0			0.0	0.10			210
						1.50			212
						3.00			211
					-4.0	0.10			204
						1.50			206
						3.00			205

TABLE XXXVII
S_p PRESSURE DISTRIBUTION DATA - N₃B₂WA₅ (P₃)^{1/3}

1	2	3	4	5	6	7	8	9	10
M _∞	α _p	α _s	β _s	Δx _p	y _p	Δz _p	l _p	TEST NO.	GROUP NO.
2.0	0.0	0.0	0.0	0.0	-4.0	0.10	0.81	T9A	217
						0.75			218
						1.50			219
						3.00			220
	5.0	5.0				0.10			200
						0.75			201
						1.50			202
						3.00			203

TABLE XXXVIII

SUMMARY OF PRESSURE DISTRIBUTION
DATA ON STORE S_{EP}

Parent Aircraft Configuration	Test Conditions Table Number
None	XXXIX
$N_1 B_2 W(P_2)_C$	XL
$N_1 B_2 W(P_2)_{1/3}$	XLI
$N_3 B_2 WA_3$	XLII
$N_3 B_2 WA_3(P_2)_C$	XLIII
$N_3 B_2 WA_3^F$	XLIV
$N_3 B_2 WA_4$	XLV
$N_3 B_2 WA_4(P_2)_C$	XLVI
$N_3 B_2 WA_4^F$	XLVII

TABLE XXXIX

S_{EP} PRESSURE DISTRIBUTION DATA - STORE ALONE

1	2	3	4	5	6	7	8	9
				PRESSURE DATA GROUP NUMBERS				
M _∞	α _{C_S}	φ _S	TEST NO.	SEP1 φ=φ _S	SEP1 φ=φ _S +180	SEP2 φ=φ _S	SEP2 φ=φ _S +180	INT. GROUP NO.
1.5	0.0	0.0	V6A	804	783	861	989	1
	2.5			805	782	862	988	2
	5.0			806	781	863	987	3
	7.5			807	780	864	986	4
	10.0			808	779	865	985	5
	12.5			809	778	866	984	6
	15.0	↓		513	777	867	983	7
	0.0	22.5		581	784	947	1019	8
	2.5			580	718	946	1020	9
	5.0			579	719	945	1021	10
	7.5			578	720	944	1022	11
	10.0			577	721	943	1023	12
	12.5			576	722	942	1024	13
	15.0	↓		575	723	941	1025	14
	0.0	45.0		582	730	948	1061	15
	2.5			583	729	949	1060	16
	5.0			584	728	950	1059	17
	7.5			585	727	951	1058	18
	10.0			586	726	952	1057	19
	12.5			587	725	953	1056	20
	15.0	↓		588	724	954	1055	21
	0.0	67.5		702	731	961	1062	22
	2.5			701	732	960	1063	23
	5.0			700	733	959	1064	24
	7.5			699	734	958	1065	25
	10.0			698	735	957	1066	26
	12.5			697	736	956	1067	27
	15.0	↓		696	737	955	1068	28
	0.0	90.0		703	744	976	1075	29
	2.5			704	743	977	1074	30
	5.0			705	742	978	1073	31
	7.5			706	741	979	1072	32
	10.0			707	740	980	1071	33
	12.5			708	739	981	1070	34
↓	15.0	↓	↓	709	738	982	1069	35

TABLE XL
 S_{EP} PRESSURE DISTRIBUTION DATA - $N_1 B_2 W(P_2)_c$

1	2	3	4	5	6	7	8	9	PRESSURE DATA GROUP NUMBERS				14
M_∞	α_2	α_s	β_s	ΔX_p	Y_p	ΔZ_p	L_p	TEST NO.	S_{EP1} $\phi=0^\circ$	S_{EP1} $\phi=180^\circ$	S_{EP2} $\phi=0^\circ$	S_{EP2} $\phi=180^\circ$	INT. GROUP NO.
1.5	0.0	0.0	0.0	0.0	0.0	0.10		V6A	748	759	1077	1088	120
						0.75			747	761	1090	1089	121
						1.50			749	758	1078	1087	122
						2.25			750	757	1079	1086	123
						3.00			751	756	1080	1085	124
						3.75			752	755	1081	1084	125
						4.50			753	754	1082	1083	126
	5.0					0.10			812	823	1127	1138	127
						0.75			811	824	1126	1139	128
						1.50			813	822	1128	1137	129
						2.25			814	821	1129	1136	130
						3.00			815	820	1130	1135	131
						3.75			816	819	1131	1134	132
						4.50			817	818	1132	1133	133

TABLE XLI
 S_{EP} PRESSURE DISTRIBUTION DATA - $N_1 B_2 W(P_2)^{1/3}$

1	2	3	4	5	6	7	8	9	PRESSURE DATA GROUP NUMBERS				14
M_{∞}	α_P	α_S	β_S	ΔX_P	Y_P	ΔZ_P	L_P	TEST NO.	S_{EP1} $\phi=0^\circ$	S_{EP1} $\phi=180^\circ$	S_{EP2} $\phi=0^\circ$	S_{EP2} $\phi=180^\circ$	INT. GROUP NO.
1.5	0.0	0.0	0.0	0.0	-4.0	0.10	-	V6A	846	857	1092	1109	134
						0.75			845	858	1105	1110	135
						1.50			847	856	1093	1108	136
						2.25			848	855	1094	1107	137
						3.00			859	854	1095	1106	138
						3.75			860	853	1096	1099	139
						4.50			851	852	1097	1098	140
	5.0					0.10			832	843	1112	1123	141
						0.75			831	844	1111	1125	142
						1.50			833	842	1113	1122	143
						2.25			834	841	1114	1121	144
						3.00			835	840	1115	1120	145
						3.75			836	839	1116	1119	146
						4.50			837	838	1117	1118	147

TABLE XLII
 S_{EP} PRESSURE DISTRIBUTION DATA - $N_3 B_2 WA_3$

1	2	3	4	5	6	7	8	9	PRESSURE DATA GROUP NUMBERS				14
M_∞	α_P	α_S	β_S	ΔX_P	Y_P	ΔZ_P	L_P	TEST NO.	S_{EP1} $\phi=0^\circ$	S_{EP1} $\phi=180^\circ$	S_{EP2} $\phi=0^\circ$	S_{EP2} $\phi=180^\circ$	INT. GROUP NO.
1.5	0.0	0.0	0.0	0.0	0.0	0.10	-	V6A	668	679	1027	1038	106
						0.75			695	680	1054	1039	107
						1.50			669	678	1028	1037	108
						2.25			670	677	1029	1036	109
						3.00			671	676	1030	1035	110
						3.75			672	675	1031	1034	111
						4.50			673	674	1032	1033	112
						0.10			693	682	1052	1041	113
				-2.0		0.75			694	681	1053	1040	114
						1.50			692	683	1051	1042	115
						2.25			691	684	1050	1043	116
						3.00			690	685	1049	1044	117
						3.75			689	686	1048	1045	118
						4.50			688	687	1047	1046	119

TABLE XLIII
SEP PRESSURE DISTRIBUTION DATA - $N_3B_2WA_3(P_2)_C$

1	2	3	4	5	6	7	8	9	PRESSURE DATA GROUP NUMBERS				14
M_w	α_P	α_S	β_S	ΔX_P	Y_P	ΔZ_P	I_P	TEST NO.	SEP1 $\phi=0^\circ$	SEP1 $\phi=180^\circ$	SEP2 $\phi=0^\circ$	SEP2 $\phi=180^\circ$	INT. GROUP NO.
1.5	0.0	0.0	0.0	0.0	0.0	0.10	-	V6A	624	635	963	974	78
						0.75			623	637	962	975	79
						1.50			625	634	964	973	80
						2.25			626	633	965	972	81
						3.00			627	632	966	971	82
						3.75			628	631	967	970	83
						4.50			629	630	968	969	84
	5.0					0.10			786	797	1157	1168	85
						0.75			799	798	1170	1169	86
						1.50			787	796	1158	1167	87
						2.25			788	795	1159	1166	88
						3.00			789	794	1160	1165	89
						3.75			790	793	1161	1164	90
						4.50			791	792	1162	1163	91

TABLE XLIV
 S_{EP} PRESSURE DISTRIBUTION DATA - $N_3P_2WA_3F$

1	2	3	4	5	6	7	8	9	PRESSURE DATA GROUP NUMBERS				14
M_w	α_P	α_S	β_S	ΔX_P	Y_P	ΔZ_P	l_P	TEST NO.	S_{EP1} $\phi=0^\circ$	S_{EP1} $\phi=180^\circ$	S_{EP2} $\phi=0^\circ$	S_{EP2} $\phi=180^\circ$	INT. GROUP NO.
1.5	0.0	0.0	0.0	0.0	0.0	0.10	-	V6A	639	650	991	1002	92
						0.75			666	651	1018	1003	93
						1.50			640	649	992	1001	94
						2.25			641	648	993	1000	95
						3.00			642	647	994	999	96
						3.75			643	646	995	998	97
						4.50			644	645	996	997	98
				-2.0		0.10			664	653	1016	1005	99
						0.75			665	652	1017	1004	100
						1.50			663	654	1015	1006	101
						2.25			662	655	1014	1007	102
						3.00			661	656	1013	1008	103
						3.75			660	657	1012	1009	104
						4.50			659	658	1011	1010	105

TABLE XLV
S_{EP} PRESSURE DISTRIBUTION DATA - N₃B₂WA₄

1	2	3	4	5	6	7	8	9	PRESSURE DATA GROUP NUMBERS				14
M ₀	α _P	α _S	β _S	ΔX _P	Y _P	ΔZ _P	I _P	TEST NO.	S _{EP1} φ=0°	S _{EP1} φ=180°	S _{EP2} φ=0°	S _{EP2} φ=180°	INT. GROUP NO.
1.5	0.0	0.0	0.0	0.0	0.0	0.10	0.81	V6A	548	559	913	924	64
						0.75			547	560	940	925	65
						1.50			549	558	914	923	66
						2.25			550	557	915	922	67
						3.00			551	556	916	921	68
						3.75			552	555	917	920	69
						4.50			553	554	918	919	70
						0.10			573	562	938	927	71
				-2.0		0.75			574	561	939	926	72
						1.50			572	563	937	928	73
						2.25			571	564	936	929	74
						3.00			570	565	935	930	75
						3.75			569	566	934	931	76
						4.50			568	567	933	932	77

TABLE XLVI
SEP PRESSURE DISTRIBUTION DATA - N₃B₂WA₄(P₂)_c

1	2	3	4	5	6	7	8	9	PRESSURE DATA GROUP NUMBERS				14
M _∞	a _P	a _S	β _S	ΔX _P	Y _P	ΔZ _P	I _P	TEST NO.	SEP1 φ=0°	SEP1 φ=180°	SEP2 φ=0°	SEP2 φ=180°	INT. GROUP NO.
1.5	0.0	0.0	0.0	0.0	0.0	0.10	0.81	V6A	493	504	869	880	36
						0.75			506	505	868	881	37
						1.50			494	503	870	879	38
						2.25			495	502	871	878	39
						3.00			496	501	872	877	40
						3.75			497	500	873	876	41
						4.50			498	499	874	875	42
						0.10			764	775	1142	1153	43
	5.0	5.0				0.75			763	776	1155	1154	44
						1.50			765	774	1143	1152	45
						2.25			766	773	1144	1151	46
						3.00			767	772	1145	1150	47
						3.75			768	771	1146	1149	48
						4.50			769	770	1147	1148	49

TABLE XLVII
 S_{EP} PRESSURE DISTRIBUTION DATA - $N_2B_2WA_4F$

1	2	3	4	5	6	7	8	9	PRESSURE DATA GROUP NUMBERS				10
M_w	α_p	α_s	β_s	ΔX_p	Y_p	ΔZ_p	I_p	TEST NO.	S_{EP1} $\phi=0^\circ$	S_{EP1} $\phi=180^\circ$	S_{EP2} $\phi=0^\circ$	S_{EP2} $\phi=180^\circ$	INT. GROUP NO.
1.5	0.0	0.0	0.0	0.0	0.0	0.10	0.81	V6A	520	531	883	896	50
						0.75			519	532	882	897	51
						1.50			521	530	884	894	52
						2.25			522	529	885	893	53
						3.00			523	528	886	891	54
						3.75			524	527	887	890	55
						4.50			525	526	888	889	56
				-2.0		0.10			545	534	910	899	57
						0.75			546	533	911	898	58
						1.50			544	535	909	900	59
						2.25			543	536	908	901	60
						3.00			542	537	907	902	61
						3.75			541	538	906	903	62
						4.50			540	539	905	904	63

TABLE XLVIII
SUMMARY OF FORCE AND MOMENT TESTS

STORE TESTED	TEST CONDITIONS TABLE NUMBER
Isolated Store Data for all Stores	XLIX
S_{LFN}	L
S_{LFF}	LI
S_{COC}	LII
S_{POC}	LIII
S_{TOC}	LIV
S_E	LV

TABLE XLIX
ISOLATED STORE FORCE AND MOMENT DATA

1	2	3	4	5	6	7	8	9	10
STORE	M_{∞}	ϕ_s	α_s	β_s	x_T	y_T	z_T	TEST NO.	GROUP NO.
S _{LFN}	1.5	0.0	AA	0.0	--	--	--	B4A	437
	1.5		CA					T9A	312
	2.0		BA					B4A	428
			CA					T9A	374
			CA						387
			DA						388
	2.5		AA					B4A	420
S _{LFF}	1.5		AA						467
	1.5		BA						469
	2.0							L5A	100
									104
									105
	2.5								118
									119
									120
									121
S _{COC}	1.5		LA		17.0	0.0	3.0	M9A	1030
			BA		10.0		-1.0	M9A	1031
			MA					T9A	252
			NA						253
		11.25							254
		22.50							255
		33.75							256
		45.00							257
		56.25							258
		67.50							259
		78.75							260
		90.00							261
	1.63	0.0	0.0		17.0	-1.5	A2T	M9A	514
					15.5				515
					14.0				516
					12.5				517
					11.0				518
					9.5				519
					8.0	0.0			520
					8.0				521
					9.5				522
					11.0				523
					12.5				524
					14.0				525
					15.5				526
					17.0				527
					17.0	1.5			528

TABLE XLIX (Continued)

1	2	3	4	5	6	7	8	9	10
STORE	M_{∞}	ϕ_S	α_S	β_S	X_T	Y_T	Z_T	TEST NO.	GROUP NO.
S_{COC}	1.63	0.0	0.0	0.0	15.5	1.5	AZT	M9A	529
					14.0				530
					12.5				531
					11.0				532
					9.5				533
					8.0				534
					8.0	3.0			535
					9.5				536
					11.0				537
					12.5				538
					14.0				539
					15.5				540
					17.0				541
					17.0	6.0			542
					15.5				543
					14.0				544
					12.5				545
					11.0				546
					9.5				547
					8.0				548
				FB	17.0	0.0	0.0		550
				FB			3.0		552
				GB			3.0		807
			LA	0.0			0.0		549
							3.0		551
							3.0		806
			BA		--	--	--	V6A	314
			0.0	DB				V6A	315
	2.0		NA	0.0				T9A	313
		11.25							314
		22.50							315
		33.75							316
		45.00							317
		56.25							318
		67.50							319
		78.75							320
		90.00							321
S_{POC}	1.5	0.0	DA	0.0					396
		11.25							397
		22.50							398
		33.75							399
		45.00							400
		56.25							401

TABLE XLIX (Continued)

1	2	3	4	5	6	7	8	9	10
STORE	M_{∞}	ϕ_s	α_s	β_s	x_T	y_T	z_T	TEST NO.	GROUP NO.
S_{POC}	1.5	67.50	DA	0.0	--	--	--	T9A	402
		78.75							403
		90.00							404
		101.25							405
		112.50							406
		123.75							407
		135.00							408
		146.25							409
		157.50							410
		168.75							411
↓		180.00	↓					↓	412
S_{TOC}		0.0	FA					V6A	432
		↓							433
		10.0							471
		10.0							434
		20.0							472
		20.0							435
		30.0							473
		40.0							436
		50.0							437
		60.0							438
		70.0							439
		80.0							440
		90.0							441
		100.0							442
		110.0							443
		120.0							444
		130.0							445
		140.0							446
		150.0							447
		160.0							448
		170.0							449
↓		180.0	↓						450
S_E		0.0	GA						451
		↓							317
									368
									386
		↓							391
		10.0							402
		20.0	↓						318
		30.0	HA						319
↓	↓	40.0	HA	↓	↓	↓	↓	↓	320
									321

TABLE XLIX (Concluded)

1	2	3	4	5	6	7	8	9	10
STORE	M_{∞}	ϕ_s	α_s	β_s	x_T	y_T	z_T	TEST NO.	GROUP NO.
S_E	1.5	50.0	IA	0.0	--	--	--	V6A	322
		60.0	JA						323
		60.0	KA						336
		70.0	JA						324
		80.0	KA						325
		90.0	FA						326
		↓	↓						357
		↓	↓						358
		100.0	KA						327
		110.0	↓						328
		120.0	↓						329
		120.0	↓						337
		130.0	IA						330
		140.0	HA						331
		150.0	HA						332
		160.0	GA						333
		170.0	↓						334
	↓	180.0	↓						335
	2.0	0.0	↓						338
		↓	↓						421
		↓	↓						482
		10.0	↓						339
		20.0	↓						340
		30.0	HA						341
		40.0	HA						342
		50.0	IA						343
		60.0	KA						344
		70.0	↓						345
		80.0	↓						346
		90.0	FA						347
		100.0	KA						348
		110.0	↓						349
		120.0	↓						350
		130.0	IA						351
		140.0	HA						352
		150.0	HA						353
		160.0	GA						354
		170.0	↓						355
↓	↓	180.0	↓	↓	↓	↓	↓	↓	356

TABLE L
SLFN FORCE AND MOMENT DATA

1	2	3	4	5	6	7	8	9	10	11	12	13	14
	PARENT CONFIGURATION		M_o	a_p	a_s	β_s	CTS ZERO PT.	Δx_p	Δy_p	Δz_p	L_p	TEST NO.	GROUP NO.
	N_1B_2W		1.5	0.0	0.0	0.0	1	0.0	0.0	AZ	-	B4A	442
							2						443
							3						444
				5.0	5.0		1						448
							2						449
							3						450
			2.0	0.0	0.0		1						431
							2						432
							3						433
				5.0	5.0		1						455
							2						456
							3						457
			2.5	0.0	0.0		1						423
							2						424
							3						425
				5.0	5.0		1						465
							2						464
							3						463
	$N_1B_2W(P_2)_c$		1.5	0.0	0.0		1						435
			1.5	5.0	5.0								445
			2.0	0.0	0.0								426
			2.0	5.0	5.0								452
			2.5	0.0	0.0								417
			2.5	5.0	5.0								461
	$N_1B_2W(P_2)_{1/3}$		1.5	0.0	0.0		2						438
			1.5	5.0	5.0								446
			2.0	0.0	0.0								429
			2.0	5.0	5.0								451
			2.5	0.0	0.0								421
			2.5	5.0	5.0								458

TABLE L (Continued)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
	PARENT CONFIGURATION		M_∞	α_p	α_s	β_s	CTS ZERO PT.	Δx_p	Δy_p	Δz_p	L_p	TEST NO.	GROUP NO.
	$N_1 B_2 W(P_3) 1/3$		2.0	0.0	0.0	0.0	4	0.0	0.0	BZ	-	T9A	389
								-1.5	0.0				390
								-1.5	-0.75				391
								0.0	-0.75				392
									0.0	0.75			393
	$N_1 B_2 W(P_2) 2/3$		1.5		0.0	AB				0.75			394
			1.5	5.0	0.0	0.0	3			AZ		B4A	440
			2.0	0.0	0.0								447
			2.0	5.0	5.0								430
			2.5	0.0	0.0								453
			2.5	5.0	5.0								422
	$N_3 B_2 W A_4 (P_2) C$		1.5	0.0	0.0		1			BZ	0.81	T9A	462
								-1.5					306
								-1.5	-0.75				307
								0.0	-0.75				308
									0.0	0.75			309
									0.0	0.75			310
	$N_3 B_2 W A_4 (P_3) 1/3$				0.0	AB				0.75			311
						0.0	4			BZ			298
								-1.5					299
								-1.5	-0.75				300
								0.0	-0.75				301
									0.0	0.75			302
									0.0	0.75			303
										BZ			294
								-1.5					295
								-1.5	-0.75				296
								0.0	-0.75				297

TABLE 1 (Concluded)

1	2	3	4	5	6	7	8	9	10	11	12	13	14			
PARENT CONFIGURATION			M_{∞}	α_P	α_S	β_S	CTS ZERO PT.	ΔX_P	ΔY_P	ΔZ_P	L_P	TEST NO.	GROUP NO.			
$N_3B_2MA_5$			2.0	0.0	0.0	0.0	1	0.0	0.0	BZ	0.91	T9A	375			
								-1.5	0.0					376		
									-1.5	-0.75					377	
									0.0	-0.75					378	
						EA				0.0	0.75				379	
						0.0	AB				0.75				380	
								0.0	4			BZ			381	
										-1.5					382	
										-1.5	-0.75					383
										0.0	-0.75					384
$N_3B_2MA_5(P_2)_C$									0.0	0.75			385			
						BA					0.75			386		
						0.0	BB					BZ			368	
								0.0	1						369	
										-1.5					370	
										-1.5	-0.75				371	
										0.0	-0.75				372	
						EA					0.0	0.75			373	
						0.0	AB					0.75			360	
									0.0	4			BZ		361	
$N_3B_2MA_5(P_3)_{1/3}$								-1.5					362			
									-1.5	-0.75					363	
									0.0	-0.75					364	
						BA					0.0	0.75			365	
								0.0	BB			0.75			356	
						5.0	0.0					BZ			357	
										-1.5					358	
										-1.5	-0.75				359	
										0.0	-0.75					359

TABLE LI
SLFF FORCE AND MOMENT DATA

1	2	3	4	5	6	7	8	9	10	11	12	13	14
	PARENT CONFIGURATION		M_o	α_p	α_s	β_s	CTS ZERO PT.	ΔX_p	ΔY_p	ΔZ_p	L_p	TEST NO.	GROUP NO.
	$N_1 B_2 W$		1.5	0.0	0.0	0.0	1	0.0	0.0	AZ	-	B4A	474
				0.0	0.0		2						475
				5.0	5.0		2						468
			2.0	0.0	0.0		1			BZ		L5A	98
							2						95
							3						97
							1						109
				5.0	5.0		2						111
							3						108
							1						123
			2.5	0.0	0.0		2						115
							3						122
							1						473
	$N_1 B_2 W(P_2)_c$		1.5	0.0	0.0		1			AZ		B4A	470
			1.5	5.0	5.0					AZ		B4A	470
			2.0	0.0	0.0					BZ		L5A	103
			2.0	5.0	5.0								106
			2.5	0.0	0.0								116
			1.5	0.0	0.0		2			AZ		B4A	472
	$N_1 B_2 W(P_2)_{1/3}$		1.5	5.0	5.0					AZ		B4A	466
			2.0	0.0	0.0					BZ		L5A	82
													83
													101
													84
								-0.5					85
								-1.0					86
								-1.5					87
								0.0	-0.5				88
								-0.5					89
								-1.0					90
								-1.5					91
								0.0	0.5				

TABLE LI (Concluded)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
		PARENT CONFIGURATION	M_{∞}	α_p	α_s	β_s	CTS ZERO PT.	ΔX_p	ΔY_p	ΔZ_p	L_p	TEST NO.	GROUP NO.
		$N_1 B_2 W(P_2) 1/3$	2.0	0.0	0.0	0.0	2	-0.5	0.5	BZ	-	L5A	92
								-1.0					93
								-1.5					94
								0.0	0.0				110
		$N_1 B_2 W(P_2) 2/3$	2.5	0.0	0.0								114
			2.0	0.0	0.0		3						96
			2.0	5.0	5.0								107
			2.5	0.0	0.0								117

TABLE LII
S_{COC} FORCE AND MOMENT DATA

1	2	3	4	5	6	7	8	9	10	11	12	13	14
	PARENT CONFIGURATION		M _∞	a _p	a _s	β _s	CTS ZERO PT.	Δx _p	Δy _p	Δz _p	ℓ _p	TEST NO.	GROUP NO.
	N ₁ B ₂ W		1.5	0.0	0.0	0.0	4	0.0	0.0	BZ	-	M9A	1043
								-0.75					1044
								-1.5	✓				1045
								-1.5	-0.75				1046
								-0.75					1047
								0.0	✓				1048
								0.0	0.75				1049
								-0.75					1050
								-1.50	✓	✓			1051
								0.0	0.0	0.75			1052
	✓		✓				✓			0.75			1053
	N ₁ B ₂ W(P ₂)c		1.63				1	✓		CZ			556
								-1.0					557
								-2.0					558
								-3.0					559
								-4.0					560
								-5.0	✓				561
								-5.0	1.0				562
								-4.0					563
								-3.0					564
								-2.0					565
								-1.0					566
								0.0	✓				567
								0.0	2.0				568
								-1.0					569
								-2.0					570
								-3.0					571
								-4.0					572
	✓		✓				✓	-5.0	✓	✓	✓	✓	573

TABLE LII (Continued)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
	PARENT CONFIGURATION		M_∞	α_p	α_s	β_s	CTS ZERO PT.	ΔX_p	ΔY_p	ΔZ_p	L_p	TEST NO.	GROUP NO.
	$N_1 B_2 W(P_2)_C$		1.63	0.0	0.0	0.0	1	-5.0	-1.0	CZ	-	M9A	574
								-4.0					575
								-3.0					576
								-2.0					577
								-1.0					578
								0.0					579
								0.0	-2.0				580
								-1.0					581
								-2.0					582
								-3.0					583
								-4.0					584
								-5.0					585
						5.0		-5.0					586
								-4.0					587
								-3.0					588
								-2.0					589
								-1.0					590
								0.0					591
								0.0	-1.0				592
								-1.0					593
								-2.0					594
								-3.0					595
								-4.0					596
								-5.0					597
								-5.0	2.0				598
								-4.0					599
								-3.0					600
								-2.0					601
								-1.0					602
								0.0					603

TABLE LII (Continued)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
	PARENT CONFIGURATION		M_{∞}	α_P	α_S	β_S	CTS ZERO PT.	ΔX_P	ΔY_P	ΔZ_P	L_P	TEST NO.	GROUP NO.
	$N_1 B_2 W(P_2)_C$		1.63	0.0	0.0	5.0	1	0.0	1.0	CZ	-	M9A	604
								-1.0					605
								-2.0					606
								-3.0					607
								-4.0					608
								-5.0					609
								-5.0	0.0				610
								-4.0					611
								-3.0					612
								-2.0					613
								-1.0					614
								0.0					615
								0.0					616
								-1.0					617
								-2.0					618
								-3.0					619
								-4.0					620
								-5.0					621
								-5.0	1.0				622
								-4.0					623
								-3.0					624
								-2.0					625
								-1.0					626
								0.0					627
								0.0	2.0				628
								-1.0					629
								-2.0					630
								-3.0					631
								-4.0					632
								-5.0					633

TABLE LII (Continued)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
	PARENT CONFIGURATION		M_{∞}	α_P	α_S	β_S	CTS ZERO PT.	ΔX_P	ΔY_P	ΔZ_P	L_P	TEST NO.	GROUP NO.
	$N_1 P_2 W(P_2)_C$		1.63	0.0	0.0	-5.0	1	-5.0	-1.0	CZ	-	M9A	634
								-4.0					635
								-3.0					636
								-2.0					637
								-1.0					638
								0.0					639
								0.0	-2.0				640
								-1.0					641
								-2.0					642
								-3.0					643
								-4.0					644
								-5.0					645
								0.0	0.0	DZ			646
								-2.5	1.0	EZ			767
								-5.0		EZ			768
								-2.5		FZ			769
								-1.0					770
								-2.0					771
								-3.0					772
								-4.0					773
								-5.0					774
								-5.0	-1.0				775
								-4.0					776
								-3.0					777
								-2.0					778
								-1.0					779
								0.0					780
								2.0					781
								-1.0					782
								-2.0					783

TABLE LII (Continued)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
	PARENT CONFIGURATION		M_s	α_p	α_s	β_s	CTS ZERO PT.	ΔX_p	ΔY_p	ΔZ_p	L	TEST NO.	GROUP NO.
	$N_1 B_2 W(P_2) C$		1.63	0.0	-2.5	2.0	1	-3.0	-1.0	PZ	-	M9A	784
								-4.0					785
								-5.0					786
								-5.0	1.0				787
								-4.0					788
								-3.0					789
								-2.0					790
								-1.0					791
								0.0					792
						-2.0		0.0					793
								-1.0					794
								-2.0					795
								-3.0					796
								-4.0					797
								-5.0					798
								-5.0	-1.0				799
								-4.0					800
								-3.0					801
								-2.0					802
								-1.0					803
								0.0					804
								0.0	1.0	GZ			808
								-1.0					809
								-2.0					810
								-3.0					811
								-4.0					812
								-5.0					813
								-5.0	-1.0				814
								-4.0					815
								-3.0					816

TABLE LII (Continued)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
PARENT CONFIGURATION			M_c	α_p	α_s	β_s	CTS ZERO PT.	ΔX_p	ΔY_p	ΔZ_p	L_p	TEST NO.	GROUP NO.
			1.63	0.0	-5.0	0.0	1	-2.0	-1.0	GZ	-	M9A	817
								-1.0					818
								0.0					819
						2.0		0.0					820
								-1.0					821
								-2.0					822
								-3.0					823
								-4.0					824
								-5.0					825
								-5.0	1.0				826
								-4.0					827
								-3.0					828
								-2.0					829
								-1.0					830
								0.0					831
						-2.0		0.0					832
								-1.0					833
								-2.0					834
								-3.0					835
								-4.0					836
								-5.0					837
								-5.0	-1.0				838
								-4.0					839
								-3.0					840
								-2.0					841
								-1.0					842
								0.0					843
								0.0	0.0				844
								-1.0					845
								-2.0					846

TABLE LII (Continued)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
	PARENT CONFIGURATION		M_{∞}	α_p	α_s	β_s	CTS ZERO PT.	ΔX_p	ΔY_p	ΔZ_p	L_p	TEST NO.	GROUP NO.
	$N_1 B_2 M(P_2)_c$		1.63	0.0	-2.5	0.0	1	-3.0	0.0	G2	-	M9A	847
								-4.0					848
						✓		-5.0					849
						2.0		-5.0					850
								-4.0					851
								-3.0					852
								-2.0					853
								-1.0					854
						✓		0.0					855
						-2.0		0.0					856
								-1.0					857
								-2.0					858
								-3.0					859
								-4.0					860
					✓			-5.0					861
					-5.0			-5.0					862
								-4.0					863
								-3.0					864
								-2.0					865
								-1.0					866
						✓		0.0					867
						2.0		0.0					868
								-1.0					869
								-2.0					870
								-3.0					871
								-4.0					872
						✓		-5.0					873
						0.0		-5.0					874
								-4.0					875
	✓		✓	✓	✓	✓	✓	-3.0	✓	✓	✓	✓	876

TABLE LII (Continued)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
PARENT CONFIGURATION			M_{∞}	α_P	α_S	β_S	CTS ZERO PT.	ΔX_P	ΔY_P	ΔZ_P	L_P	TEST NO.	GROUP NO.
	$N_1 B_2 W(P_2) C$		1.63	0.0	-5.0	0.0	1	-2.0	0.0	GZ	-	M9A	877
								-1.0					878
								0.0					879
	$N_1 B_2 W(P_3) 1/3$		1.5		0.0		4	0.0		BZ			1032
								-0.75					1033
								-1.5					1034
								-1.5	-0.75				1035
								-0.75					1036
								0.0					1037
								0.0	0.75				1038
								-0.75					1039
								-1.5					1040
								0.0	0.0	0.75			1041
										0.75			1042
										BZ		T9A	458
								-1.5					459
								-1.5	-0.75				460
								0.0	-0.75				461
								0.0	0.0	HZ		M9A	652
								-1.0					653
								-2.0					654
								-3.0					655
								-4.0					656
								-5.0					657
								-5.0	1.0				658
								-4.0					659
								-3.0					660
								-2.0					661
								-1.0					662
								0.0					663

TABLE LII (Continued)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
PARENT CONFIGURATION			N_{∞}	α_p	α_s	β_s	CTS ZERO PT.	ΔX_p	ΔY_p	ΔZ_p	L_p	TEST NO.	GROUP NO.
$N_1 B_2 W(F_3)_{1/3}$			1.63	0.0	0.0	0.0	4	0.0	2.0	HZ	-	M9A	664
								-1.0		HZ			665
								-2.0		JZ			666
								-2.0		KZ			667
								-3.0		LZ			668
								-4.0					669
								-5.0					670
								-5.0	-1.0				671
								-4.0					672
								-3.0					673
								-2.0					674
								-1.0					675
								0.0					676
								0.0	-2.0				677
								-1.0					678
								-2.0					679
								-3.0					680
								-4.0					681
								-5.0					682
								0.0	0.0	HZ			683
								-1.0					684
								-2.0					685
								-3.0					686
								-4.0					687
								-5.0					688
								-5.0					689
								-4.0					690
								-3.0					691
								-2.0					692
								-1.0					693

TABLE LII (Continued)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
	PARENT CONFIGURATION		N_{∞}	α_P	α_S	β_S	CTS ZERO PT.	ΔX_P	ΔY_P	ΔZ_P	L_P	TEST NO.	GROUP NO.
	$N_1 B_2 W(P_3) 1/3$		1.63	0.0	0.0	-5.0	4	0.0	0.0	HZ	-	M9A	694
						5.0		0.0	-1.0				695
								-1.0					696
								-2.0					697
								-3.0					698
								-4.0					699
								-5.0	✓				700
								-5.0	-2.0				701
								-4.0					702
								-3.0					703
								-2.0					704
								-1.0					705
						✓		0.0					706
						-5.0		0.0					707
								-1.0					708
								-2.0					709
								-3.0					710
								-4.0					711
								-5.0	✓				712
								-5.0	-1.0				713
								-4.0					714
								-3.0					715
								-2.0					716
								-1.0					717
						✓		0.0	✓				718
						5.0		0.0	1.0	MZ			719
								-1.0					720
								-2.0					721
								-3.0					722
	✓		✓	✓	✓	✓	✓	-4.0	✓	✓	✓	✓	723

TABLE LII (Continued)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
	PARENT CONFIGURATION		M_{∞}	α_p	α_s	β_s	CTS ZERO PT.	ΔX_p	ΔY_p	ΔZ_p	L_p	TEST NO.	GROUP NO.
	$N_1 B_2 W(P_3) 1/3$		1.63	0.0	0.0	5.0	4	-5.0	1.0	MZ	-	M9A	724
								-5.0	2.0				725
								-4.0					726
								-3.0					727
								-2.0					728
								-1.0					729
								0.0					730
								0.0					731
								-1.0					732
								-2.0					733
								-3.0					734
								-4.0					735
								-5.0					736
								-5.0	1.0				737
								-4.0					738
								-3.0					739
								-2.0					740
								-1.0					741
								0.0					742
								-2.0	2.0	HZ			882
								0.0	0.0	LZ			920
								-1.0					921
								-2.0					922
								-3.0					923
								-4.0					924
								-5.0					925
								-5.0	1.0				926
								-4.0					927
								-3.0					928
								-2.0					929

TABLE LII (Continued)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
	PARENT CONFIGURATION		M_{∞}	α_P	α_S	β_S	CTS ZERO PT.	ΔX_P	ΔY_P	ΔZ_P	L_P	TEST NO.	GROUP NO.
	N1B2M(P3) 1/3		1.63	0.0	-7.5	0.0	4	-1.0	1.0	L2	-	M9A	930
								0.0	1.0				931
								0.0	-1.0				932
								-1.0					933
								-2.0					934
								-3.0					935
								-4.0					936
								-5.0					937
								-5.0					938
						-2.0		-4.0					939
								-3.0					940
								-2.0					941
								-1.0					942
								0.0					943
								0.0	1.0				944
								-1.0					945
								-2.0					946
								-3.0					947
								-4.0					948
								-5.0					949
								-5.0	0.0				950
								-4.0					951
								-3.0					952
								-2.0					953
								-1.0					954
								0.0					955
						2.0		0.0					956
								-1.0					957
								-2.0					958
								-3.0					959

TABLE LII (Continued)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
	PARENT CONFIGURATION		M_{∞}	α_p	α_s	β_s	CTS ZERO PT.	ΔX_p	ΔY_p	ΔZ_p	L_p	TEST NO.	GROUP NO.
	N1B2W(P3) 1/3		1.63	0.0	-7.5	2.0	4	-4.0	0.0	Lz	-	M9A	960
								-5.0	0.0				961
								-5.0	1.0				962
								-4.0					963
								-3.0					964
								-2.0					965
								-1.0					966
								0.0					967
								0.0	-1.0				968
								-1.0					969
								-2.0					970
								-3.0					971
								-4.0					972
								-5.0					973
								0.0	0.0	Nz			974
								-1.0					975
								-2.0					976
								-3.0					977
								-4.0					978
								-5.0					979
								-5.0	1.0				980
								-4.0					981
								-3.0					982
								-2.0					983
								-1.0					984
								0.0					985
								0.0	-1.0				986
								-1.0					987
								-2.0					988
								-3.0					989

TABLE LII (Continued)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
	PARENT CONFIGURATION		M_{∞}	α_p	α_s	β_s	CTS ZERO PT.	ΔX_p	ΔY_p	ΔZ_p	L_p	TEST NO.	GROUP NO.
	$M_{182W}(P_3)_{1/3}$		1.63	0.0	-15.0	0.0	4	-4.0	-1.0	NZ	-	M9A	990
						0.0		-5.0					991
						-2.0		-5.0					992
								-4.0					993
								-3.0					994
								-2.0					995
								-1.0					996
								0.0	✓				997
								0.0	1.0				998
								-1.0					999
								-2.0					1000
								-3.0					1001
								-4.0					1002
								-5.0	✓				1003
								-5.0	0.0				1004
								-4.0					1005
								-3.0					1006
								-2.0					1007
								-1.0					1008
						✓		0.0					1009
						2.0		0.0					1010
								-1.0					1011
								-2.0					1012
								-3.0					1013
								-4.0					1014
								-5.0	✓				1015
								-5.0	1.0				1016
								-4.0					1017
								-3.0					1018
								-2.0	✓				1019

TABLE LII (Continued)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
	PARENT CONFIGURATION		M_{∞}	α_p	α_s	β_s	CTS ZERO PT.	Δx_p	Δy_p	Δz_p	ℓ_p	TEST NO.	GROUP NO.
	N1B2W(P3) 1/3		1.63	0.0	-15.0	2.0	4	-1.0	1.0	NZ	-	M9A	1020
								0.0	1.0				1021
								0.0	-1.0				1022
								-1.0					1023
								-2.0					1024
								-3.0					1025
								-4.0					1026
								-5.0					1027
	N3B2WA4(P2) c		1.5		0.0	0.0	1	0.0	0.0	BZ	0.81	T9A	466
								-1.5	0.0				467
								-1.5	-0.75				468
								0.0	-0.75				469
									0.0	0.75			470
										0.75			471
										BZ			284
								-1.5					285
								-1.5	-0.75				286
								0.0	-0.75				287
	N3B2WA4(P3) 1/3			0.0	0.0		4	0.0	0.0				271
								-1.5	0.0				272
								-1.5	-0.75				273
								0.0	-0.75				274
									0.0	0.75			275
										0.75			276
										BZ			277
								-1.5					278
								-1.5	-0.75				279
								0.0	-0.75				280

TABLE LII (Concluded)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
	PARENT CONFIGURATION		M_{∞}	α_P	α_S	β_S	CTS ZERO PT.	ΔX_P	ΔY_P	ΔZ_P	L_P	TEST NO.	GROUP NO.
	$N_3B_2WA_5(P_2)_C$		2.0	0.0	0.0	0.0	1	0.0	0.0	BZ	0.81	T9A	322
								-1.5	0.0				323
								-1.5	-0.75				324
								0.0	-0.75				325
					EA				0.0	0.75			326
					0.0	AB				0.75			327
				5.0	5.0	0.0				BZ			345
								-1.5					346
								-1.5	-0.75				347
								0.0	-0.75				348
	$N_3B_2WA_5(P_3)_1/3$			0.0	0.0		4	0.0	0.0				332
								-1.5	0.0				333
								-1.5	-0.75				334
								0.0	-0.75				335
					BA				0.0	0.75			336
					0.0	BB				0.75			337
				5.0	5.0	0.0				BZ			338
								-1.5					339
								-1.5	-0.75				340
								0.0	-0.75				341

TABLE LIII
S_{POC} FORCE AND MOMENT DATA

1	2	3	4	5	6	7	8	9	10	11	12	13	14
	PARENT CONFIGURATION		M _∞	α _P	α _S	β _S	CTS ZERO PT.	ΔX _P	ΔY _P	ΔZ _P	ℓ _P	TEST NO.	GROUP NO.
	N ₁ B ₂ W(P ₃) ^{1/3}		1.5	0.0	0.0	0.0	4	0.0	0.0	BZ	--	T9A	439
								-1.5	0.0				440
								-1.5	-0.75				441
								0.0	-0.75	Y			442
					AA	Y			0.0	0.75			443
					0.0	AB				0.75			444
					5.0	0.0				BZ			454
								-1.5	Y				455
								-1.5	-0.75				456
								0.0	-0.75				457
	N ₃ B ₂ WA ₄ (P ₃) ^{2/3}			0.0	0.0		1	0.0	0.0		0.81		433
								-1.5	0.0				434
								-1.5	-0.75				435
								0.0	-0.75	Y			436
					EA	Y			0.0	0.75			437
					0.0	AB				0.75			438
					5.0	0.0				BZ			413
								-1.5	Y				414
								-1.5	-0.75				415
								0.0	-0.75				416
	N ₃ B ₂ WA ₄ (P ₃) ^{1/3}			0.0	0.0		4	0.0	0.0				424
								-1.5	0.0				425
								-1.5	-0.75				426
								0.0	-0.75	Y			427
					BA	Y			0.0	0.75			428
					0.0	BB				0.75			429
					5.0	0.0				BZ			420
								-1.5	Y				421
								-1.5	-0.75				422
								0.0	-0.75	Y			423

TABLE LIV
S_{TOC} FORCE AND MOMENT DATA

1	2	3	4	5	6	7	8	9	10	11	12	13	14
PARENT CONFIGURATION			M ₂₀	α _P	α _S	β _S	CTS ZERO PT.	ΔX _P	ΔY _P	ΔZ _P	L _P	TEST NO.	GROUP NO.
N ₃ B ₂ WA ₄ (P ₂)C			1.5	0.0	0.0	0.0	1	0.0	0.0	BZ	0.81	V6A	452
								-1.5	0.0				453
								-1.5	-0.75				454
								0.0	-0.75	Y			455
					EA				0.0	0.75			456
					0.0	AB				0.75			457
				5.0	5.0	0.0		Y		BZ			475
								-1.5	Y				476
								-1.5	-0.75				477
								0.0	-0.75				478
N ₃ B ₂ WA ₄ (P ₃)1/3				0.0	0.0		4	0.0	0.0				460
								-1.5	0.0				461
								-1.5	-0.75				462
								0.0	-0.75	Y			463
					BA				0.0	0.75			464
					0.0	CB				0.75			465
				5.0	5.0	0.0		Y		BZ			466
								-1.5	Y				467
								-1.5	-0.75				468
								0.0	-0.75	Y			469

TABLE LV
S_E FORCE AND MOMENT DATA

1	2	3	4	5	6	7	8	9	10	11	12	13	14
	PARENT CONFIGURATION		M _o	α _P	α _S	β _S	CTS ZERO PT.	ΔX _P	ΔY _P	ΔZ _P	ℓ _P	TEST NO.	GROUP NO.
	N ₁ B ₂ W(P ₂) _C		1.5	0.0	0.0	0.0	1	0.0	0.0	BZ	--	V6A	419
				0.0	0.0			-2.26					420
				5.0	5.0			0.0					410
	N ₁ B ₂ W(P ₂) _{1/3}			5.0	5.0		2	-2.26					411
				0.0	0.0			0.0					415
				0.0	0.0			-1.0					416
				5.0	5.0			0.0					412
	N ₃ B ₂ WA ₃			5.0	5.0			-1.0					413
				0.0	0.0		5	0.0					397
								-1.0					398
								-2.0					399
							1	0.0					400
								-2.66					401
				5.0	5.0			0.0					406
	N ₃ B ₂ WA ₃ (P ₂) _C			5.0	5.0			-2.66					407
				0.0	0.0			0.0					389
				0.0	0.0			-2.66					390
				5.0	5.0			0.0					403
				5.0	5.0			-2.66					404
			2.0	0.0	0.0			0.0					485
				0.0	0.0			-2.66					486
				5.0	5.0			0.0					490
	N ₃ B ₂ WA ₃			5.0	5.0			-2.66					491
			1.5	0.0	0.0		5	0.0					392
								-1.0					393
	N ₃ B ₂ WA ₄							-2.0					394
							1	0.0			0.81		374
								-2.66					375
								-2.66	-1.75				376
								0.0	-1.75				377

TABLE LV (Concluded)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
	PARENT CONFIGURATION		M_{∞}	α_P	α_B	β_B	CTS ZERO PT.	ΔX_P	ΔY_P	ΔZ_P	L_P	TEST NO.	GROUP NO.
	$N_3 B_2 WA_4$		1.5	5.0	5.0	0.0	1	0.0	0.0	BZ	0.81	V6A	364
								-2.66	0.0				365
								-2.66	-1.75				366
								0.0	-1.75				367
				0.0	0.0		5	0.0	0.0				378
								-1.0					379
								-2.0					380
	$N_3 B_2 WA_4 (P_2) C$						1	0.0					369
								-2.66					370
								-2.66	-1.75				371
								0.0	-1.75				372
				5.0	5.0			0.0	0.0				359
								-2.66	0.0				360
								-2.66	-1.75				361
	$N_3 B_2 WA_4 F$							0.0	-1.75				362
				0.0	0.0		5	0.0	0.0				383
								-1.0					384
								-2.0					385
	$N_3 B_2 WA_5 (P_2) C$		2.0				1	0.0					428
								-2.66					429
								-2.66	-1.75				430
								0.0	-1.75				431
				5.0	5.0			0.0	0.0				422
								-2.66	0.0				423
								-2.66	-1.75				424
								0.0	-1.75				425
	$N_3 B_2 WA_5 F$			0.0	0.0		5	0.0	0.0				479
								-1.0					480
								-2.0					481

TABLE LVI
TABLE OF CTS ZERO POINTS FOR
FORCE AND MOMENT TESTS

ZERO POINT NUMBER	INITIAL STORE LOCATION	X_P, Y_P, Z_P COORDINATES OF STORE MOMENT REFERENCE POINT WHEN $\Delta X_P = \Delta Y_P = \Delta Z_P = 0$
1	Below Double-Wedge Pylon on Fuselage Centerline	All Stores Except S_E $X_P = -19.42, Y_P = 0.0, Z_P = 2.82$ Store S_E $X_P = -18.34, Y_P = 0.0, Z_P = 2.82$
2	Below Double-Wedge Pylon at Wing 1/3 Semispan	All Stores Except S_E $X_P = -20.84, Y_P = -4.0, Z_P = 1.37$ Store S_E $X_P = -19.76, Y_P = -4.0, Z_P = 1.37$
3	Below Double-Wedge Pylon at Wing 2/3 Semispan	All Stores Except S_E $X_P = -24.52, Y_P = -8.0, Z_P = 1.30$
4	Below Swept Pylon At Wing 1/3 Semispan	All Stores Except S_E $X_P = -20.84, Y_P = -4.0, Z_P = 1.37$
5	Fuselage Centerline Station Behind Fairing	Store S_E $X_P = -22.0, Y_P = 0.0, Z_P = 2.43$

TABLE LVII
VALUES OF ΔZ_p USED IN VARIOUS SWEEPS

1	2	3	4	5	6	7	8	9	10	11	12	13	14
ΔZ	BZ	CZ	DZ	EZ	FZ	GZ	HZ	IZ	JZ	KZ	LZ	MZ	NZ
0.10	0.10	0.05	0.10	0.10	0.05	0.25	0.05	0.05	0.10	0.25	0.15	0.75	0.50
0.25	0.25	0.10	0.25	0.25	0.10	0.50	0.10	0.10	0.25	0.50	0.50	1.00	0.75
0.50	0.50	0.25	0.50	0.50	0.25	0.75	0.25	0.25	0.50	0.75	0.75	1.25	1.00
0.75	0.75	0.50	0.75	0.75	0.50	1.00	0.50	0.50	0.75	1.00	1.00	1.50	1.25
1.00	1.00	0.75	1.00	1.00	0.75	1.25	0.75	0.75			1.25	2.0	1.50
1.25	1.25	1.00	1.25	1.25	1.00	1.50	1.00	1.00			1.50	2.5	2.0
1.50	1.50	1.25	1.50	1.50	1.25	2.0	1.25	1.25			2.0	3.0	2.5
1.75	1.75	1.50	2.0	2.0	1.50	2.5	1.50	1.50			2.5	3.5	3.0
2.00	2.00	2.0	2.5	2.5	2.0	3.0	2.0	2.0			3.0	4.0	3.5
2.25	2.25	2.5	3.0	3.0	2.5	3.5	2.5	2.5			3.5	4.5	4.0
2.50	2.50	3.0	3.5	3.5	3.0	4.0	3.0	3.0			4.0	5.0	4.5
2.75	2.75	3.5	4.0	4.0	3.5	4.5	3.5	3.5			4.5	6.0	5.0
3.00	3.00	4.0	4.5	4.5	4.0	5.0	4.0	4.0			5.0	7.0	6.0
3.25	3.25	4.5	5.0	5.0	4.5		4.5	4.5			6.0	8.0	7.0
3.50	3.50	5.0	6.0		5.0		5.0	5.0			7.0	9.0	8.0
3.75	3.75	6.0	7.0				6.0	6.0			8.0		9.0
4.00	4.00	7.0					7.0	7.0					
4.25	4.25						8.0	8.0					
4.50	4.50							9.0					
	4.75												
	5.00												
	5.25												
	5.50												
	5.75												
	6.00												

TABLE LVIII
VALUES OF α_s USED IN VARIOUS SWEEPS

1	2	3	4	5	6	7	8	9	10	11	12	13	14
AA	BA	CA	DA	EA	FA	GA	HA	IA	JA	KA	LA	MA	NA
7.5	10.0	-22.0	30.0	-5.0	-18.0	-12.0	-14.0	-18.0	-22.0	-18.0	-15.0	-26.0	-30.0
5.0	7.5	-18.0	26.0	-2.5	-14.0	-10.0	-12.0	-16.0	-20.0	-16.0	-12.5	-22.0	-26.0
2.5	5.0	-14.0	22.0	0.0	-12.0	-8.0	-10.0	-14.0	-18.0	-14.0	-10.0	-18.0	-22.0
0.0	2.5	-12.0	18.0	2.5	-10.0	-6.0	-8.0	-12.0	-16.0	-12.0	-7.5	-14.0	-18.0
-2.5	0.0	-10.0	14.0	5.0	-8.0	-4.0	-6.0	-10.0	-14.0	-10.0	-5.0	-12.0	-14.0
-5.0	-2.5	-8.0	12.0	7.5	-6.0	-2.0	-4.0	-8.0	-12.0	-8.0	-3.0	-10.0	-12.0
-7.5	-5.0	-6.0	10.0	10.0	-4.0	0.0	-2.0	-6.0	-10.0	-6.0	-2.0	-8.0	-10.0
-10.0	-7.5	-4.0	8.0		-2.0	2.0	0.0	-4.0	-8.0	-4.0	-1.0	-6.0	-8.0
	-10.0	-2.0	6.0		0.0	4.0	2.0	-2.0	-6.0	-2.0	0.0	-4.0	-6.0
		0.0	4.0		2.0	6.0	4.0	0.0	-4.0	0.0	1.0	-2.0	-4.0
		2.0	2.0		4.0	8.0	6.0	2.0	-2.0	2.0	2.0	0.0	-2.0
		4.0	0.0		6.0	10.0	8.0	4.0	0.0	4.0	3.0	2.0	0.0
		6.0	-2.0		8.0	12.0	10.0	6.0	2.0	6.0	5.0	4.0	2.0
		8.0	-4.0		10.0		12.0	8.0	4.0	8.0	7.5	6.0	4.0
		10.0	-6.0		12.0		14.0	10.0	6.0	10.0	10.0	8.0	6.0
		12.0	-8.0		14.0			12.0	8.0	12.0	12.5	10.0	8.0
		14.0	-10.0		18.0			14.0	10.0	14.0	15.0	12.0	10.0
		18.0	-12.0		22.0			16.0	12.0	16.0		14.0	12.0
		22.0	-14.0		26.0			18.0	14.0	18.0		18.0	14.0
		26.0	-18.0						16.0	20.0		22.0	18.0
			-22.0						18.0	22.0		26.0	22.0
			-26.0										26.0
			-30.0										

TABLE LIX
VALUES OF β_s USED IN VARIOUS SWEEPS

AB	BB	CB	DB	EB	FB	GB
-10.0	10.0	-2.5	-1.0	-10.0	-7.5	-7.5
- 7.5	7.5	0.0	0.0	- 7.5	-5.0	-5.0
- 5.0	5.0	2.5	1.0	- 5.0	-3.0	-3.0
- 2.5	2.5	5.0	2.0	- 2.5	-2.0	-2.0
0.0	0.0		3.0	0.0	-1.0	-1.0
2.5	-2.5		4.0	2.5	0.0	0.0
5.0			5.0	5.0	1.0	1.0
7.5			7.5	7.5	2.0	2.0
10.0					3.0	3.0
					5.0	5.0
					7.5	7.5
						10.0

TABLE LX
VALUES OF z_T USED IN FREE-STREAM SWEEPS

AZT

3.0
1.5
0.0
-1.5
-3.0
-4.5
-6.0
-7.5

TABLE LXI
SUMMARY OF TRAJECTORY TESTS

STORE TESTED	TEST CONDITIONS TABLE NUMBER
S_{LFN}	LXII
S_{COC}	LXIII
S_{POC}	LXIV
S_{TOC}	LXV
S_E	LXVI

TABLE LXII
SLFN TRAJECTORY DATA

1	2	3	4	5	6	7	8	9	10	11	12	13
	PARENT CONFIGURATION		M_{∞}	a_p	TYPE START	X_{L_1}	EJECTOR FORCE	CTS ROLL	CTS ZERO POINT	TRAJ. CODE	TEST NO.	GROUP NO.
	$N_1B_2W(P_3)^{1/3}$		2.0	0.0	L	-1.5	A	NO	3	6	T9A	395
	$N_3B_2WA_4(P_2)_C$		1.5	0.0	L	0.0	A	YES	1	6	T9A	305
			1.5	5.0	L	0.0	A	YES	1	6	T9A	292
	$N_3B_2WA_4(P_3)^{1/3}$		1.5	0.0	L	-1.5	A	YES	3	6	T9A	304
			1.5	5.0	L	-1.5	A	YES	3	6	T9A	293
	$N_3B_2WA_5(P_2)_C$		2.0	0.0	L	0.0	A	NO	1	6	T9A	367
	$N_3B_2WA_5(P_3)^{1/3}$		2.0	0.0	L	-1.5	A	NO	3	6	T9A	366
			2.0	5.0	L	-1.5	A	NO	3	6	T9A	355

TABLE LXIII
S_{COC} TRAJECTORY DATA

1	2	3	4	5	6	7	8	9	10	11	12	13
PARENT CONFIGURATION			M _∞	α _p	TYPE START	X _{L1}	EJECTOR FORCE	CTS ROLL	CTS ZERO POINT	TRAJ. CODE	TEST NO.	GROUP NO.
		NONE	1.63	-	L	-0.5	A	NO	6	5	V6A	316
		N ₁ B ₂ W(P ₃) _{1/3}	1.5	5.0	L	-1.5	A	NO	3	6	T9A	462
		N ₃ B ₂ WA ₄ (P ₂) _c	1.5	0.0	L	0.0	A	YES	1	6	T9A	463
			1.5	5.0	L	0.0		YES	1	6	T9A	472
		N ₃ B ₂ WA ₄ (P ₃) _{1/3}	1.5	0.0	L	-1.5	A	YES	3	6	T9A	464
			1.5	0.0	PL	-	-	YES	3	6	T9A	465
			1.5	5.0	L	-1.5	A	YES	3	6	T9A	281
			1.5	5.0	PL	-	-	YES	3	6	T9A	282
		N ₃ B ₂ WA ₅ (P ₂) _c	2.0	0.0	L	0.0	A	NO	1	6	T9A	329
			2.0	5.0	L	0.0	A	NO	1	6	T9A	344
		N ₃ B ₂ WA ₅ (P ₃) _{1/3}	2.0	0.0	L	-1.5	A	NO	3	6	T9A	330
			2.0	0.0	PL	-	-	NO	3	6	T9A	331
			2.0	5.0	L	-1.5	A	NO	3	6	T9A	342
			2.0	5.0	PL	-	-	NO	3	6	T9A	343

TABLE LXIV
S_{POC} TRAJECTORY DATA

1	2	3	4	5	6	7	8	9	10	11	12	13
PARENT CONFIGURATION			M _∞	α _P	TYPE START	X _{L1}	EJECTOR FORCE	CTS ROLL	CTS ZERO POINT	TRAJ. CODE	TEST NO.	GROUP NO.
N ₁ B ₂ W(P ₃) _{1/3}			1.5	0.0	L	-1.5	A	NO	3	6	T9A	445
			1.5	5.0	L	-1.5	A	NO	3	6	T9A	453
N ₁ B ₂ W(P ₃) _{1/3} ^T S _{DOC2} S _{DOC3}			1.5	0.0	PL	-	-	NO	4	6	T9A	449
			1.5	0.0	PL	-	-	NO	4	6	T9A	450
			1.5	5.0	L	-4.5	B	NO	4	6	T9A	452
N ₃ B ₂ WA ₄ (P ₂) _C			1.5	0.0	L	0.0	A	NO	1	6	T9A	432
			1.5	5.0	L	0.0	A	NO	1	6	T9A	418
N ₃ B ₂ WA ₄ (P ₃) _{1/3}			1.5	0.0	L	-1.5	A	NO	3	6	T9A	431
			1.5	5.0	L	-1.5	A	NO	3	6	T9A	419

TABLE LXV
S_{TOC} TRAJECTORY DATA

1	2	3	4	5	6	7	8	9	10	11	12	13
PARENT CONFIGURATION			M _∞	α _P	TYPE START	X _{L1}	EJECTOR FORCE	CTS ROLL	CTS ZERO POINT	TRAJ. CODE	TEST NO.	GROUP NO.
N ₃ B ₂ WA ₄ (P ₂) _C			1.5	0.0	L	0.0	A	NO	1	3	V6A	458
			1.5	5.0	L	0.0	A	NO	1	3	V6A	474
N ₃ B ₂ WA ₄ (P ₃) _{1/3}			1.5	0.0	L	-1.5	A	YES	3	4	V6A	459
			1.5	5.0	L	-1.5	A	YES	3	4	V6A	470

TABLE LXVI
S_E TRAJECTORY DATA

1	2	3	4	5	6	7	8	9	10	11	12	13
PARENT CONFIGURATION			M _∞	α _P	TYPE START	X _{L1}	EJECTOR FORCE	CTS ROLL	CTS ZERO POINT	TRAJ. CODE	TEST NO.	GROUP NO.
	NONE		1.5	-	L	-0.5	A	NO	6	5	V6A	387
			1.5	-	L	-0.5	A	NO	5	5	V6A	408
	N ₁ B ₂ W(P ₂) _C		1.5	0.0	L	-1.0	A	NO	1	1	V6A	418
			1.5	5.0	L	-1.0	A	NO	1	1	V6A	409
	N ₁ B ₂ W(P ₂) _{1/3}		1.5	0.0	L	-1.0	A	NO	2	7	V6A	417
			1.5	5.0	L	-1.0	A	NO	2	7	V6A	414
	N ₃ B ₂ WA ₃ (P ₂) _C		1.5	0.0	L	-1.0	A	NO	1	1	V6A	388
			1.5	5.0	L	-1.0	A	NO	1	1	V6A	405
			2.0	0.0	L	-1.0	A	NO	1	2	V6A	484
			2.0	5.0	L	-1.0	A	NO	1	2	V6A	489
	N ₃ B ₂ WA ₃ F		1.5	0.0	L	1.0	A	NO	5	10	V6A	395
			1.5	0.0	L	1.0	A	NO	5	10	V6A	396
	N ₃ B ₂ WA ₄		1.5	0.0	L	-1.0	A	NO	5	1	V6A	381
	N ₃ B ₂ WA ₄ (P ₂) _C		1.5	0.0	L	-1.0	A	NO	1	1	V6A	373
			1.5	5.0	L	-1.0	A	NO	1	1	V6A	363
	N ₃ B ₂ WA ₄ F		1.5	0.0	L	0.0	A	NO	5	9	V6A	382
	N ₃ B ₂ WA ₅ (P ₂) _C		2.0	0.0	L	-1.0	A	NO	1	2	V6A	487
			2.0	5.0	L	-1.0	A	NO	1	2	V6A	488

AD-A083 848

NIELSEN ENGINEERING AND RESEARCH INC MOUNTAIN VIEW CALIF F/G 20/4
DATA REPORT FOR AN EXTENSIVE STORE SEPARATION TEST PROGRAM COND--ETC(U)
DEC 79 F K GOODWIN, C L DYER F33615-76-C-3077
NEAR-TR-205 AFFDL-TR-79-3130 NL

UNCLASSIFIED

3 OF 4

AD-A083 848

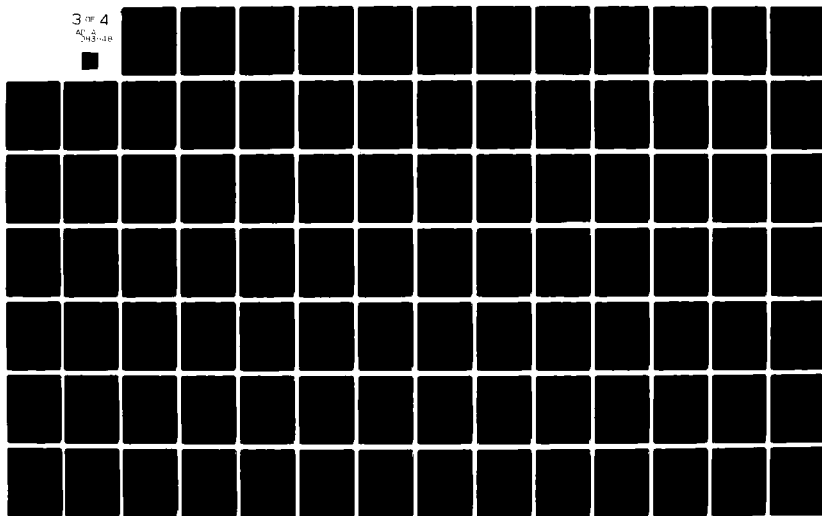


TABLE LXVII
TABLE OF CTS ZERO POINTS FOR
TRAJECTORY TESTS

ZERO POINT NUMBER	INITIAL STORE LOCATION	X_P, Y_P, Z_P COORDINATES* OF STORE MOMENT REFERENCE POINT WHEN IN INITIAL POSITION
1	Below Double-Wedge Pylon on Fuselage Centerline	All Stores Except S_E $X_P = -19.42, Y_P = 0.0, Z_P = 2.87$ Store S_E $X_P = -18.34, Y_P = 0.0, Z_P = 2.87$
2	Below Double-Wedge Pylon at Wing 1/3 Semispan	Store S_E $X_P = -19.76, Y_P = -4.0, Z_P = 1.42$
3	Below Swept Pylon at Wing 1/3 Semispan	All Stores Except S_E $X_P = -20.84, Y_P = -4.0, Z_P = 1.42$
4	Below TER at Wing 1/3 Semispan	All Stores Except S_E $X_P = -20.84, Y_P = -4.0, Z_P = 2.13$
5	Fuselage Centerline Station Behind Fairing	Store S_E $X_P = -22.0, Y_P = 0.0, Z_P = 2.48$
6	Store Moment Reference Point at $X_T = 17.0,$ $Y_T = 0.0, Z_T = -3.0$	—

*inches model scale

TABLE LXVIII
TRAJECTORY CODES

TRAJ. CODE	m SLUGS	I_{xx} SLUG-FT ²	I_{yy} SLUG-FT ²	I_{zz} SLUG-FT ²
1	20	20	250	250
2	↓	↓	↓	↓
3	40	↓	700	700
4	↓	↓	↓	↓
5	↓	↓	70	70,000
6	↓	↓	700	700
7	20	↓	250	250
8	↓	↓	↓	↓
9	↓	↓	↓	↓
10	↓	↓	↓	↓

FOR ALL TRAJECTORY CODES

$$I_{xz} = I_{yz} = I_{xy} = 0.0$$

APPENDIX A
FLOW-FIELD CALIBRATION DATA

The flow-field calibration data obtained during the B4A, L5A, T9A, and V6A tunnel entries are presented in this appendix for completeness. AEDC was unable to provide a magnetic tape of the M9A data. The following sections will summarize the tests, describe the use of the data retrieval program, and describe the tabulated output.

A.1 SUMMARY OF TESTS

The following table lists by tunnel entry the Mach numbers at which flow-field calibration data were obtained and the group numbers containing the data. The data in each group were obtained by making a pitch angle, α , sweep at constant yaw angle, ψ , or by making a ψ sweep at constant α . The positive senses of these angles are shown in Figure A-1. The X_p , Y_p , Z_p coordinate system is shown in Figure 18.

CALIBRATION DATA

<u>Entry</u>	<u>Mach No.</u>	<u>Group Numbers</u>
B4A	1.5	103-124
	1.75	81-102
	2.0	59-80
	2.5	1-22
L5A	1.5	1-5
	2.0	49-53
T9A	1.5	4-9, 23, 24, 46, 47, 62, 63, 135, 136
	2.0	74-76, 81, 82, 99-102, 119, 120, 127, 128
V6A	1.5	2, 3, 27, 28, 50, 51, 98 114-116, 136-139
	2.0	195-198, 219-221, 242 270-273

A.2 FLOW-FIELD CALIBRATION DATA RETRIEVAL

All of the flow-field calibration data listed in the preceding table have been collected and stored on a magnetic tape. The data from all four entries have been written on the tape in a standardized format so a single computer program could be written for data retrieval. The reference pressure which is output on the third line of each page was not recorded on the first two entries (B4A and L5A) so its value has been arbitrarily set to zero for those entries.

A.2.1 Use of the Computer Program

A listing of the computer program used to retrieve the flow-field calibration data is presented at the end of this appendix. The input to the program consists of two cards both read under 16I5 format. The first card contains the number of groups of data to be retrieved. Enter this number in the first field of 5 characters. The number of groups of data to be retrieved is limited to less than 17 solely because of the dimensioning of F in the retrieval program. The second value on the first card is an integer designating which entry the data is to be retrieved for (1 = B4A, 2 = L5A, 4 = T9A, 5 = V6A). The second card contains the group numbers of the data to be retrieved. This information is obtained from the table in Section A.1.

The tape upon which the data is written is a multi-file tape. The first file contains data from B4A. The second file contains data from L5A. The third file contains data from T9A, and the fourth file has the data from V6A. In order to get the proper data the tape must be positioned at the beginning of the file that contains the data for the entry of interest; e.g., to retrieve data for V6A the first three files must be skipped and the tape positioned at the beginning of the fourth file.

A.2.2 Description of the Tabulated Output

Each group of data is presented on four pages of output. Sample output is presented at the end of this appendix following the program listing. The first four lines of output for each group are repeated on all four pages. The first line tells the type of data, the entry number, the time period of the entry, and the AEDC document that pertains to the data being retrieved. The second line gives the group number and page number. The third line shows the tunnel operating conditions. The fourth line shows the location of the probe in the tunnel.

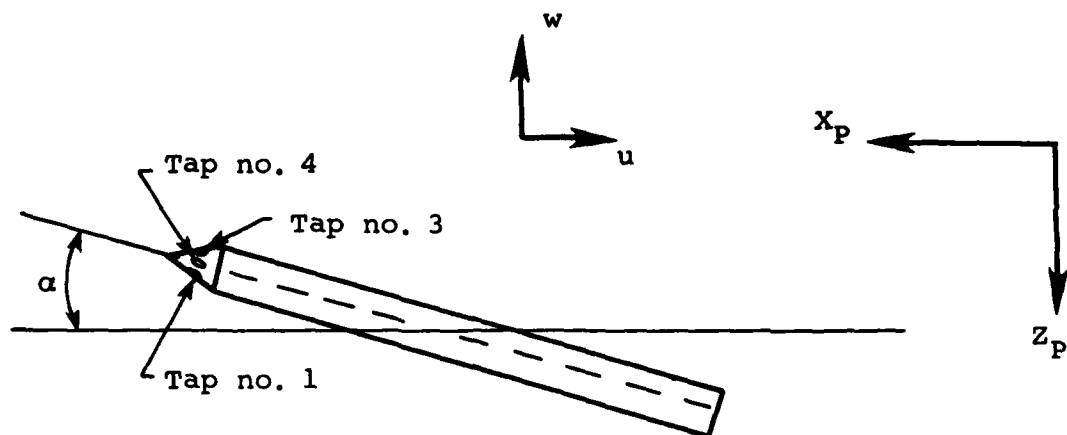
The first three pages of output present data for each of the three probes with page 3 also containing some summary information. The primary summary information is tabulated on page 4. The nomenclature used in the tabulated output is presented in the following table. The methods used in calculating these quantities are given in Section B.1 of Appendix B.

ALPHA	Mechanical angle of attack of the probe rake (Fig. A-1), deg
ALPn n=1,2,3	Corrected Mechanical angle of attack of the n th probe, ALPHA-(TANG) pitch, deg
ALPTn n=1,2,3	Total angle of attack of the n th probe computed using ALP or YAW, deg
DP13/PBn n=1,2,3	Pressure differential in pitch plane (Fig. A-1) of the n th probe normalized by average cone surface pressure
DP24/PBn n=1,2,3	Pressure differential in yaw plane (Fig. A-1) of the n th probe normalized by average cone surface pressure
DPSQn n=1,2,3	Square root of $[(DP13/PB)^2 + (DP24/PB^2)]$

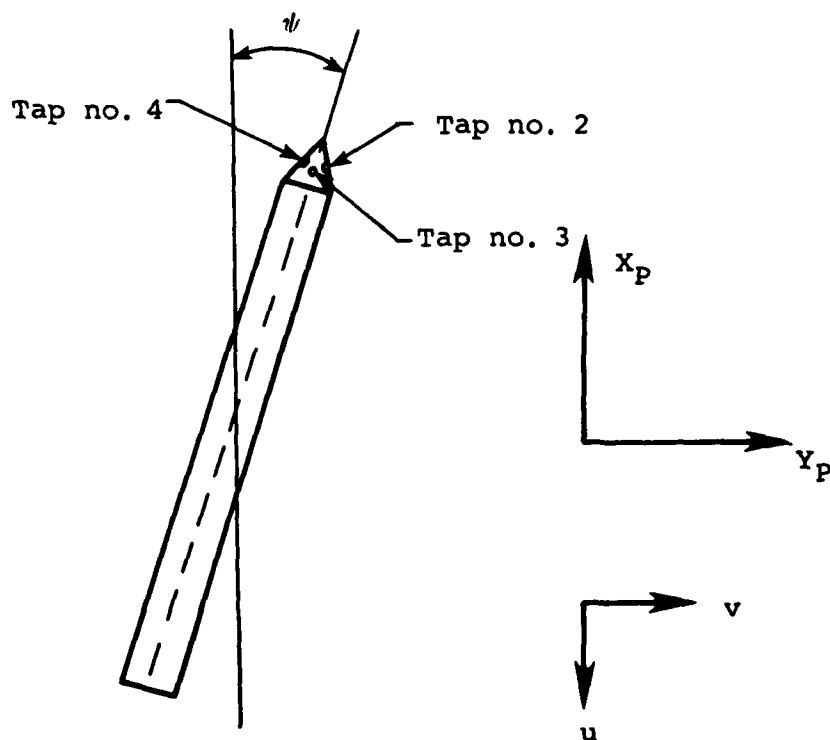
DVn/V8 n=1,2,3	Normalized incremental change in local velocity of the n th probe relative to free-stream velocity
DV/V8 (AVG)	Average value of DVn/V8 over the angle of attack (yaw) range of each probe
DX	Distance from tunnel station zero of probe 1 tip, positive upstream along tunnel centerline, in.
DY	Distance right of tunnel centerline of probe 1 tip, looking upstream, in.
DZ	Distance down from tunnel centerline of probe tip 1, (DX, DY, and DZ form right hand coordinate system), in.
ETA/PBDn n=1,2,3	Slope of DPSQ per degree in total angle of attack, deg ⁻¹
GROUP	Data group number
MACH	Free-stream Mach number
MLn n=1,2,3	Local Mach number based on PBN and cone pitot pressure of the n th probe
ML (AVG)	Average local Mach number over the angle of attack (yaw) range of each probe
Pnm/P8 n=1,2,3;m=1-5	Cone probe pressure normalized by free-stream static pressure (n = probe number, m = tap number)

PB _n /P ₈ n=1,2,3	Average cone surface pressure of the n th probe normalized by free-stream static pressure
PB (AVG)/P ₈	Average cone surface pressure of the n th probe normalized by free-stream static pressure, averaged over the angle of attack (yaw) range of each probe
PHID _n n=1,2,3	Roll angle of the n th probe as sensed by the differential pressures in the pitch and yaw plane (i.e., on DP13/PB _n and DP24/PB _n), deg
PHIT _n n=1,2,3	Roll angle of the n th probe based on ALP _n and YAW _n , deg
P ₀ , PSIA	Stagnation pressure, psia
PREF, PSIA	Reference pressure for probe pressures, psia
PROBE NO.	Probe identification number; probe one is nearest the parent model (see Figure 17)
P ₈ , PSIA	Free-stream static pressure, psia
Q ₈ , PSIA	Free-stream dynamic pressure, psia
RE/FT*10**6	Free-stream Reynolds number x 10 ⁻⁶ per ft, ft ⁻¹
TANG _m m=1,2,3	Angle of pitch and/or yaw which produces a zero pressure differential (DP13 or DP24) for each probe, deg

TO, DEG	Free-stream stagnation temperature, °R
T8, DEG (R)	Free-stream static temperature, °R
V8, FT/SEC	Free-stream velocity, ft/sec
YAW	Mechanical yaw angle of the probe rake (fig. A-1), deg
YAWn n=1,2,3	Corrected mechanical yaw angle of the n th probe, YAW-(TANG) yaw, deg



(a) 40° Probe at positive pitch angle, α .



(b) 40° Probe at positive yaw angle, ψ .

Figure A-1.- Definitions of positive pitch and yaw angles.

PROGRAM LISTING

&

SAMPLE OUTPUT

```

1  PROGRAM FFCAL (INPUT,OUTPUT,TAPE1,TAPE6=OUTPUT)
   DIMENSION AH(24),TC(40,5),PROB(40,3,16),PRCA(3,6)
   INTFCO G(20),F(16)
   ICOUNT=0
5  READ 29,INUM
   READ(1,32) G(1),I=1,INUM
24  READ(1,32) G(1),I=1,20
   IF(EOF(1)) 2,3
3  M=AH(1)
   READ(1,34) (AH(I),I=21,24)
   DO 35 I=1,M
35  READ(1,36) (TC(I,K),K=1,5)
   DO 10 J=1,3
   DO 13 I=1,M
13  READ(1,3) (PROB(I,J,K),K=1,10)
10  READ(1,9) (PRCA(I,J,K),K=1,16)
   ICROUP=AH(2)
   DO 33 I=1,INUM
33  IF(IGROUP.EQ.F(I)) GO TO 31
30  CONTINUE
   GO TO 24
31  CONTINUE
   ICOUNT=ICOUNT+1
   IPAGE=1
   DO 37 J=1,3
   WRITE(6,33) (G(I),I=1,20)
   WRITE(6,4) IGROUP,IPAGE
   IPAGE=IPAGE+1
   WRITE(6,7)
   WRITE(6,8)
   WRITE(6,5)
   WRITE(6,6) (TC(I,K),K=3,5)
   WRITE(6,11) J,J,J,J,J,J,J,J
   DO 14 I=1,M
14  WRITE(6,12) (TC(I,K),K=1,2), (PROB(I,J,K),K=1,10)
37  CONTINUE
   WRITE(6,39)
   WRITE(6,40)
   DO 43 I=1,3
43  WRITE(6,41) I,IPRCA(I,J),J=2,6)
   WRITE(6,50) (AH(I),I=1,14)
   WRITE(6,33) (G(I),I=1,20)
   WRITE(6,4) IGROUP,IPAGE
   WRITE(6,7)
   WRITE(6,8)
   WRITE(6,5)
   WRITE(6,6) (TC(I,K),K=3,5)
   WRITE(6,42)
   DO 45 I=1,M
45  WRITE(6,44) (TC(I,K),K=1,2), (PROB(I,J,K),K=1,16),
      14,20,20(I,2,K),K=1,16)
   WRITE(6,45)
   DO 46 I=1,M
46  WRITE(6,44) (TC(I,K),K=1,2), (PROB(I,J,K),K=1,16),

```


FLOW FIELD CALIBRATION DATA FROM V41A-V6A JAN-FEB 1978 ENTRY AEDC-JSR-78-V2

GROUP 2 PAGE 1

MACH PO,PSIA TO,DEG(D) RE/FT*10**6 P8,PSIA T8,DEG(R) Q8,PSIA V8,FT/SEC PREF,PSIA
1.51 14.454 580.67 3.99 3.081 398.81 6.144 1478.3 .1565

OX(IIN) DY(IIN) OZ(IIN)
21.35 -.01 .00

ALPHA	YAW	P11/P8	P12/P8	P13/P8	P14/P8	P15/P8	P81/P8	DP13/P81	DP24/P81	ML1	OV1/V8
(DEG)	(DEG)										
-12.58	-.01	1.334	1.441	2.153	1.534	3.437	1.6254	-.56375	-.03217	1.511	-.0003
-9.99	.00	1.344	1.516	2.145	1.584	3.453	1.6372	-.40365	-.02941	1.509	-.0005
-5.00	-.01	1.490	1.611	1.831	1.638	3.447	1.6420	-.20271	-.02263	1.504	-.0026
-2.50	-.00	1.559	1.616	1.737	1.654	3.447	1.6416	-.10441	-.02277	1.506	-.0028
-1.00	-.01	1.636	1.624	1.646	1.656	3.451	1.6430	-.04917	-.01970	1.506	-.0016
-.50	.00	1.623	1.627	1.671	1.659	3.454	1.6447	-.02896	-.01926	1.566	-.0016
0.00	.01	1.640	1.625	1.653	1.640	3.456	1.6443	-.00832	-.02089	1.508	-.0010
.50	.01	1.651	1.621	1.632	1.638	3.445	1.6404	.01129	-.02200	1.507	-.0016
.99	.00	1.669	1.624	1.620	1.654	3.453	1.6444	.04971	-.02417	1.506	-.0018
2.49	.01	1.712	1.619	1.576	1.656	3.451	1.6406	.08293	-.02279	1.509	-.0026
4.99	.00	1.803	1.614	1.512	1.642	3.445	1.6403	.17706	-.02334	1.505	-.0022
9.99	.00	2.011	1.550	1.346	1.508	3.453	1.6355	.37715	-.02323	1.511	-.0003
12.49	-.00	2.122	1.527	1.346	1.544	3.450	1.6295	.47624	-.02282	1.513	-.0015

FLW FIFLD CALIBRATION DATA FROM V41A-V6A JAN-FEB 1976 ENTRY AEDC-ISR-78-V2

GROUP 2 PAGE 2

MACH PO,PSIA T0,DEG(R) RE/FT*10**6 P0,PSIA T0,DEG(R) Q0,PSIA V0,FT/SEC PREF,PSIA
1.51 14.454 546.67 1.99 3.001 390.01 6.194 1478.3 .1565

DX(TN) OX(TN) DZ(TN)
21.35 -.01 .00

ALPHA	YAW	P21/PA	P22/PA	P23/PA	P24/PA	P25/PA	P02/PA	DP13/PB2	DP24/PB2	ML2	OV2/V0
(DEG)	(DEG)										
-12.50	-.01	1.339	1.469	2.148	1.533	3.429	1.6222	-.59868	-.03967	1.498	.0057
-9.99	.00	1.793	1.520	2.070	1.540	3.448	1.6329	-.39400	-.03642	1.498	.0055
-5.00	-.01	1.497	1.545	1.826	1.639	3.444	1.6369	-.24077	-.03318	1.496	.0065
-2.50	-.00	1.562	1.607	1.776	1.662	3.444	1.6417	-.16581	-.03376	1.492	.0082
-1.00	-.01	1.806	1.617	1.687	1.675	3.447	1.6463	-.04883	-.03489	1.490	.0094
-.50	.00	1.623	1.624	1.672	1.676	3.451	1.6489	-.02976	-.03114	1.489	.0090
0.00	.01	1.639	1.612	1.658	1.677	3.453	1.6515	-.01133	-.02707	1.487	.0105
.50	.01	1.652	1.627	1.637	1.671	3.442	1.6466	.00892	-.02710	1.487	.0103
.99	.00	1.672	1.633	1.625	1.675	3.458	1.6514	.02820	-.02542	1.486	.0111
2.49	.01	1.718	1.628	1.540	1.661	3.447	1.6467	.00346	-.02020	1.489	.0097
4.99	.00	1.804	1.611	1.514	1.658	3.442	1.6467	.17619	-.02075	1.486	.0112
9.99	.00	2.011	1.568	1.398	1.566	3.449	1.6368	.17451	.00137	1.496	.0062
12.49	-.00	2.122	1.576	1.354	1.510	3.447	1.6325	.47022	.00063	1.496	.0063

CONFIDENTIAL

NAME	DO,PSIA	TO,AFG(P)	OF/FT,CGS	CA,PSIA	TA,DFG(12)	NA,PSIA	VA,FT/SEC	PREF,PSIA
1.51	1.454	546.67	1.99	1.441	398.41	6.194	1474.3	.1565

[illegible]

NAME	YAM	Q11/08	Q12/08	P17/08	Q14/08	F35/08	Q83/08	NP13/08T	NP24/08J	ML3	OW3/V0
12025	-01	1.349	1.576	2.167	1.522	3.441	1.6438	-.49754	.00441	1.481	.0131
12026	.00	1.401	1.594	2.055	1.569	3.455	1.6521	-.39615	.00907	1.482	.0127
12027	-01	1.501	1.515	1.878	1.536	3.444	1.6523	-.20309	.00962	1.483	.0126
12028	-01	1.504	1.445	1.744	1.651	3.456	1.6520	-.16584	-.03345	1.488	.0102
12029	-01	1.602	1.644	1.805	1.663	3.453	1.6521	-.05624	-.00886	1.487	.0104
12030	.01	1.620	1.653	1.680	1.669	3.454	1.6553	-.04653	-.01980	1.484	.0119
12031	.00	1.637	1.652	1.668	1.675	3.457	1.6603	-.04863	-.00743	1.481	.0135
12032	.00	1.647	1.651	1.658	1.669	3.446	1.6541	-.00190	-.01073	1.481	.0131
12033	.00	1.663	1.651	1.641	1.672	3.444	1.6573	.04249	-.01307	1.479	.0141
12034	.01	1.704	1.646	1.705	1.664	3.447	1.6517	.09577	.01215	1.484	.0121
12035	.00	1.701	1.675	1.675	1.655	3.447	1.6485	.16249	-.01805	1.486	.0109
12036	.00	1.988	1.557	1.419	1.564	3.437	1.6329	.35451	-.00958	1.493	.0076
12037	-00	2.103	1.556	1.365	1.514	3.434	1.6281	.49325	-.00558	1.495	.0071

• • • ADVANCE CULTURE CLUB • • •

WAVELENGTH, NM.	PERCENT TRANSMISSION	WAVELENGTH, NM.	PERCENT TRANSMISSION
1	1.5391	0.0194	1.5078
2	1.4416	0.0131	1.4091
3	1.4007	0.0176	1.4882
AVERAGE	1.4433	0.0190	1.4008

GROUP 2 PAGE 4

WICH	PO,PSIA	T7,DEG(F)	T7/F701,005	0A,PSIA	T8,DEG(R)	0A,PSIA	V8,FT/SEC	PREF,PSIA
14.51	14.454	500.67	1.000	1.991	390.91	6.194	1470.1	.1565

00X(IN)	7V(IN)	0V(IN)
21.35	-0.71	-0.60

ALPHA (DEG)	BETA (DEG)	DELTA (DEG)	ALP1	BET1	DEL1	ALPT	BET1	DEL1	ALP2	BET2	DEL2	ALP2	BET2	DEL2
-12.5	-0	-50.478	176.4	-12.74	.47	-12.74	177.9	-.5026	175.5	-12.82	.34	-12.82	178.5	
-10.0	0	-41.472	175.8	-10.23	.44	-10.25	177.3	-.39644	174.7	-10.31	.35	-10.32	178.5	
-5.0	-0	-20.197	173.6	-5.24	.44	-5.26	174.9	-.20349	170.6	-5.32	.34	-5.33	176.4	
-2.5	-0	-11.078	168.1	-2.74	.44	-2.74	170.1	-.11107	162.3	-2.82	.35	-2.84	173.0	
-1.0	-0	-.05297	158.2	-1.24	.47	-1.33	159.1	-.06082	144.5	-1.32	.34	-1.36	155.4	
-0.5	0	-.01472	146.3	-.74	.44	-.84	146.9	-.04107	133.7	-.82	.35	-.89	156.8	
0.0	0	-.02249	111.7	-.24	.44	-.54	116.2	-.02934	114.7	-.32	.36	-.40	131.9	
.5	0	-.02490	62.9	.26	.49	.55	62.0	.22953	71.8	.18	.36	.40	63.4	
1.0	0	.01430	14.1	.74	.49	.49	32.5	.03797	42.0	.67	.35	.76	27.5	
2.5	0	.04690	15.4	7.25	.49	2.31	12.2	.04625	13.6	2.17	.36	2.20	9.3	
5.0	0	.17465	7.5	6.75	.44	4.74	5.4	.17852	9.3	4.67	.35	4.69	4.3	
10.0	0	.37797	3.5	0.75	.44	0.77	2.8	.37452	-	9.67	.35	9.68	2.1	
12.5	-0	.47639	2.7	12.25	.44	12.26	2.2	.47734	-1.3	12.17	.35	12.18	1.6	

ALPHA	VAM	NO507	PHIN3	ALP3	VAM1	ALP13	OMIT3
12.5	-0.0	-69761	141.0	-12.74	-0.0	-12.74	100.4
-10.0	0	-13625	141.3	-17.23	-0.7	-10.23	100.4
-5.0	0	-21399	173.8	-5.24	0.0	-5.24	100.4
-2.5	-0.0	-17063	174.2	-2.74	-0.7	-2.74	101.5
-1.0	-0.0	-05693	171.1	-1.24	-0.4	-1.24	103.5
0.0	0	-01742	145.0	-0.74	-0.7	-0.74	105.2
0.0	0	-02005	154.3	-2.24	-0.6	-2.24	104.8
0.5	0	-01088	99.5	2.6	-0.6	2.7	-13.2
1.0	0	-01040	46.3	0.75	-0.7	0.76	-5.2
2.5	0	-05640	10.5	2.25	-0.7	2.25	-1.6
5.0	0	14349	6.3	4.75	-0.7	4.75	-0.0
10.0	0	35461	1	7.75	-0.7	9.75	-0.4
12.5	-0.0	65370	-7	12.25	-0.7	12.25	-0.3

APPENDIX B

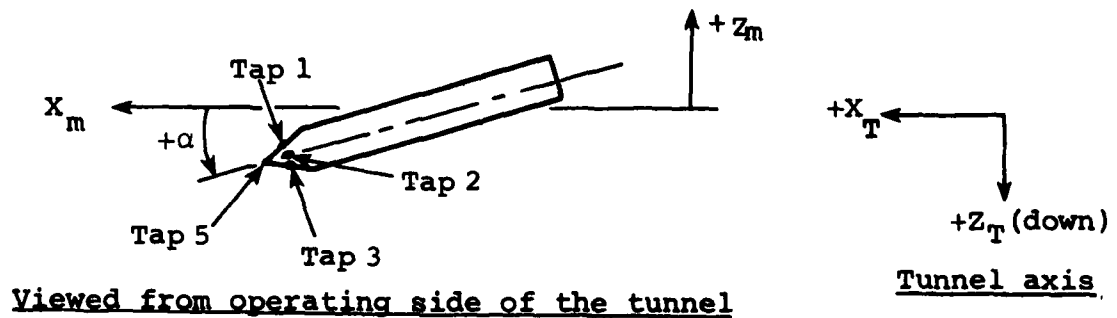
DATA REDUCTION EQUATIONS

This appendix presents the equations used in the data reduction for the flow-field tests and store pressure-distribution tests. They are included in this report for completeness and have been taken almost word for word from the AEDC reports, References 1 through 5.

B.1 PROBE CALIBRATION

1. Pressure Differentials and Associated Flow Angles

a. Pitch Angle



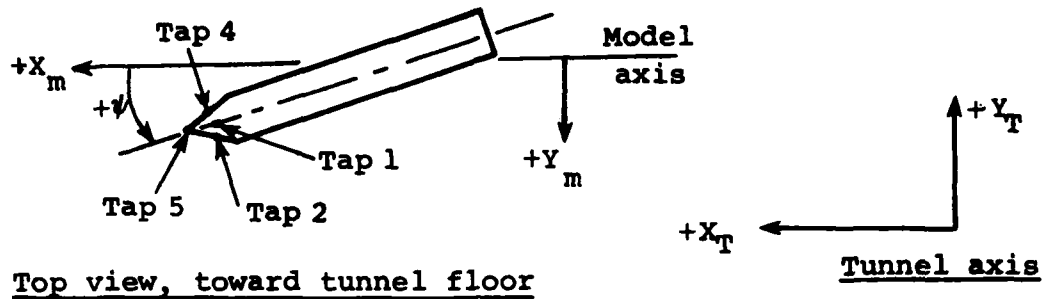
Subscript n refers to probe number ($n = 1, 2, 3$)

α = probe angle of attack (ALPHA), positive as shown, deg

$DP_{13} = P_1 - P_3$, as shown a positive α produces a positive pressure differential, psia

P_1, P_3 = cone static pressure taps 1 and 3, respectively, psia

b. Yaw Angle



ψ = probe yaw angle (YAW), positive as shown, deg

DP24 = $P_2 - P_4$, as shown, a positive angle of yaw produces a negative pressure differential, psia

P_2, P_4 = cone static pressure of taps 2 and 4, respectively, psia

2. Equivalent Cone Static Pressure at Zero Angle of Attack

PB_n = equivalent cone surface static pressure on the n^{th} probe, psia

$PB_n = (P_{n1} + P_{n2} + P_{n3} + P_{n4})/4$ where P_{nm} is the cone surface static pressure of the n^{th} probe and m^{th} pressure tap on that cone. In this test, three probes were used (i.e., $n = 1, 2$, and 3) and each probe had five pressure taps (i.e., $m = 1, 2, 3, 4$, and 5). The fifth pressure tap (P_{n5}) on each probe was a pitot pressure tap.

3. Local Stream Mach Number (Calibration curves extend from $M_\ell = 0.6 \rightarrow M_\ell = 3.0$; outside these ranges data are deleted and replaced by "****" values.)

$$ML_n = \{1 + [A_0 + A_1 (PB_n/PT_n) + A_2 (PB_n/PT_n)^2 + A_3 (PB_n/PT_n)^3 + A_4 (PB_n/PT_n)^4 + A_5 (PB_n/PT_n)^5]^{-3}\}^{\frac{1}{2}} \dots \dots \dots PB_n/P_{n5} < 0.615$$

or $ML_n = 0.3841 (PB_n/PT_n)^{-2.44} \dots \dots \dots PB_n/P_{n5} \geq 0.615$

where PT_n is the probe pitot pressure (P_{n5}). For M9A, T9A, and V6A it is interpolated or extrapolated to the same axial location as the probe cone static taps. This is a curve fit of the probe data and the coefficients A_0 through A_5 for the three probes used in the data reduction were as follows:

	Coefficients	
	<u>Probe No. 1</u>	<u>Probe Nos. 2 & 3</u>
A_0	3.35933	2.57318
A_1	-47.9986	-37.6524
A_2	293.596	241.392
A_3	-835.398	-709.356
A_4	1142.53	997.148
A_5	-600.20	-536.021

$$ML_n = ML_n \text{ (initial value)} / (1 - \Delta M)$$

$$\Delta M = m \cdot |\alpha|^{1.70} \text{ where } \alpha \text{ is defined as}$$

PROBE
CALIBRATION $ALPT_n$ from (9)
or
FLOW FIELD
SURVEY ALT from (6)

$$m = -1.5118 \times 10^{-4} + 2.0946 \times 10^{-5} (ML_n)^{3.5}$$

ML_n is iterated until $|ML_{n_i} - ML_{n_{i-1}}| \leq 0.005$

If: $(PB_n/P_{n5}) \geq 0.615$

Then: $ML_n = 0.3841 (PB_n/PT_n)^{-2.44}$

No iteration of this expression is required.

4. Local Normalized Resultant Velocity Ratio

$V_{\ell n}/V_\infty$ = Ratio of resultant local stream velocity normalized by the free-stream velocity

$$V_{\ell n}/V_\infty = (M_{\ell n}/M_\infty) \sqrt{T_{\ell n}/T_\infty}$$

$$T_{\ell n}/T_\infty = (1 + 0.2 M_\infty^2)/(1 + 0.2 M_{\ell n}^2)$$

5. Incremental Difference Between the Local Stream and Free-Stream Velocities

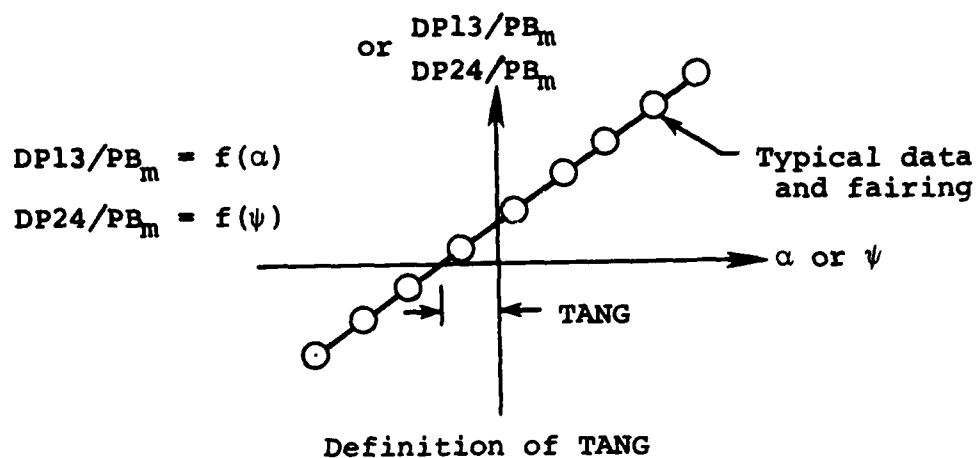
$$DV_n/V_8 = 1 - (V_{\ell n}/V_\infty) \text{ or } (V_\infty - V_{\ell n})/V_\infty$$

6. Parameter Relating Cone Surface Pressure Differential to Flow Angle

$$(ETA/PB) \text{ Pitch} = 1/2 \cdot d(DP13/PB_n) d\alpha \text{ for } \psi \text{ constant}$$

$$(ETA/PB) \text{ Yaw} = -1/2 \cdot d(DP24/PB_n) d\psi \text{ for } \alpha \text{ constant}$$

This slope was defined by means of a linear least squares fit through the data over a $\pm 10^\circ$ range. Also the intercept of this curve with the pitch or yaw ordinate at zero $DP13/PB_n$ or $DP24/PB_n$ were defined and denoted as (TANG) pitch or (TANG) yaw.



Note a positive DP24/PB produces a negative flow angle.

ETA/PB = cone parameter based on the slope

$$(1/2) d(DP13/PB_n) / d(\text{ALPHA}) \quad \text{deg}^{-1}$$

or

$$(1/2) d(DP24/PB_n) / d(\text{YAW}) \quad \text{deg}^{-1}$$

$$(\text{ETA}/\text{PB})_{\text{pitch or yaw}} = E_0 + E_1 M_{\ell n}^{5/3} + E_2 M_{\ell n}^{10/3}, \text{ when}$$

$$PB_n / P_{n5} < 0.615$$

or if

$$PB_n / P_{n5} \geq 0.615$$

$$(\text{ETA}/\text{PB})_{\text{pitch or yaw}} = \frac{0.02}{\frac{PB_n}{P_{n5}}} * 0.7 M_{\ell n}^2 (1 + 0.2 M_{\ell n}^2)^{-3.5}$$

ALT, α_T = total angle of attack, deg

$$\alpha_T = +[1/2(DPSQ_n)/(ETA/PB) - ACORR1 - ACORR2]$$

ACORR1 = correction for nonlinear variation of DPSQn with angle of attack, deg

$$ACORR1 = C|DPSQ_n|^{2.5}$$

$$C = (0.5)^{2.5} \cdot 318.5 M_{\ell n}^{-5} \cdot (DPSQ_n)/|DPSQ_n|$$

ACORR2 = correction for variations due to the effective roll angle of the probe, deg

$$ACORR2 = P_0 + P_1 \cos \phi_T + P_2 (\cos \phi_T)^2 + P_3 (\cos \phi_T)^3 \\ + P_4 (\cos \phi_T)^4 + P_5 (\cos \phi_T)^5$$

$$P_0 = 0.0640565$$

$$P_1 = -0.2562000$$

$$P_2 = -0.1979040$$

$$P_3 = -0.9707050$$

$$P_4 = 0.2111070$$

$$P_5 = 1.45475$$

The parameters ACORR1 and ACORR2 are based on empirical curve fits of the cone flow calibration data as a function of total angle of attack and roll of the cone probe for Mach numbers > 1.257. For the calibration below $M_\ell = 1.257$ these corrections are identically zero.

7. Average Values

Values such as PB(AVG)/P8, ML(AVG), and DV/V8(AVG) represent the average value over the angle of attack (yaw) range of the data group.

* ALT has been tabulated to $\pm 25^\circ$ although actual calibration was $\pm 16^\circ$; values over $\pm 25^\circ$ have been replaced by '*'; uncertainty in ALT between $16^\circ \rightarrow 25^\circ$ is undefined.

8. Corrected Angles of Pitch and Yaw

ALP_n^* = corrected angle of pitch for the n^{th} probe, deg

ALP_n = ALPHA - TANG(n)pitch where TANG(n)pitch is the probe correction based on pitching the probe at zero yaw.

YAW_n = YAW - TANG(n)yaw where TANG(n)yaw is the probe correction based on yawing the probe at zero angle of pitch.

YAW_n = corrected angle of yaw for the n^{th} probe, deg

PROBE MISALIGNMENT FACTOR (TANG)⁺

Probe	(TANG)pitch, deg	(TANG)yaw, deg
1	+0.24	-0.48
2	+0.32	-0.35
3	+0.24	+0.07

9. Total Angle of Attack, deg

$$ALPT_n^* = \tan^{-1} \sqrt{|\tan(ALP_n)|^2 + |\tan(Yaw_n)|^2}$$

$$ALPT_n^* = \frac{ALP_n}{|ALP_n|} \cdot ALPT_n$$

10. Roll angle of Probe

a. Roll angle based on probe pitch and yaw angle, i.e., on ALP_n and YAW_n , deg

* See note about ALT which applies to these calculated angles

⁺ Subject to change from one test installation to another test installation

$$\text{PHIT}_n = \tan^{-1} [\tan(\text{YAW}_n) / \tan(\text{ALP}_n)] \\ + 90^\circ [1 - \tan(\text{ALP}_n) / |\tan(\text{ALP}_n)|]$$

- b. Roll angle based on the probe differential pressure values, namely on DP13/PB and DP24/PB, deg

$$\text{PHID}_n = \tan^{-1} [(-\text{DP24}/\text{PB}_n) / (\text{DP13}/\text{PB}_n)] \\ + 90^\circ [1 - (\text{DP13}/\text{PB}_n) / |\text{DP13}/\text{PB}_n|]$$

11. Resultant Pressure Differential

$$\text{DPSQ}_n = (|\text{DP13}/\text{PB}_n|^2 + |\text{DP24}/\text{PB}_n|^2)^{\frac{1}{2}} * \frac{\text{ALPT}_n}{|\text{ALPT}_n|}$$

for probe calibrations.

$$\text{DPSQ}_n = |\text{DPSQ}_n| \text{ for flow-field surveys}$$

12. Parameter Relating Resultant Cone Surface Pressure Differential to Total Flow Angle, deg^{-1}

$$\text{ETA/PBD} = d(\text{DPSQ}_n) / d(\text{ALPT}_n)$$

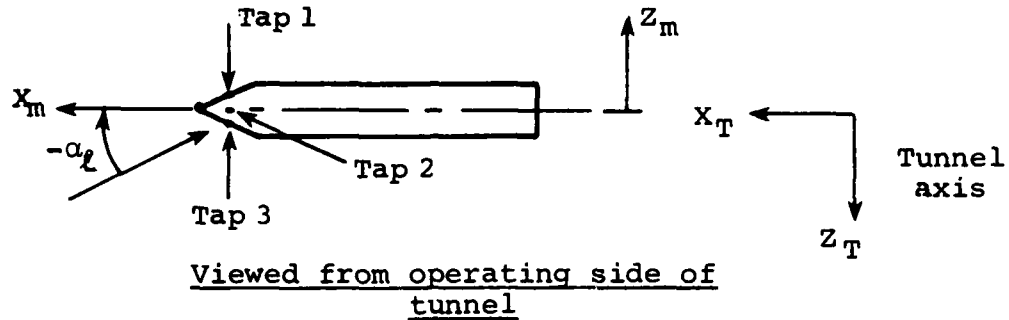
At least four points between $\pm 10^\circ$ in total angle of attack are required before the slope will be defined. Again a linear least squares fit was used to define this slope.

B.2 FLOW-FIELD SURVEY

13. Pressure Differentials and Associated Flow Angles (as defined in the tabulated data).*

* All angles calculated outside calibrated range ($16 \rightarrow 25^\circ$ and $-16 \rightarrow -25^\circ$) are only estimates with undefined uncertainty; '*' appears for angle calculations greater than $\pm 25^\circ$.

a. Pitch Angles



$$ALP_n = + [1/2(DP13/PB_n)/(ETA/PB)pitch - BCORR1 - ACORR2 \\ \times \cos(PHIT_n)] + TANG(n)pitch - DALPHA$$

$BCORR1 = C|DP13/PB_n|^{2.5}$ - This correction accounts for the nonlinearity in the variation of the cone static pressure differential with flow angularity for angles greater than 6° to 10° .

$$C = (0.5)^{2.5} \cdot 318.5 M_\ell^{-5} \cdot (DP13/PB_n)/|DP13/PB_n|$$

$TANG(n)pitch$ = Angle correction associated with misalignment in pitch of the cone nose relative to the cylindrical section of the probe support system, deg.

$$DALPHA = \alpha' - \alpha_p$$

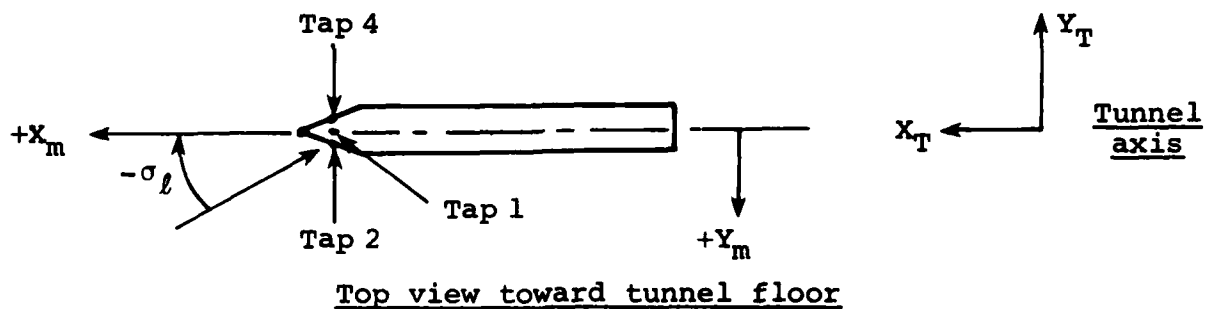
$$\phi_T = \tan^{-1} [-DP24/PB_n/(DP13/PB_n)] \\ + 90^\circ [1 - (DP13/PB_n)/|DP13/PB_n|]$$

(Note: $\phi_T \equiv PHIT$)

$ALPL_n^*$ - Flow angle based on total angle of attack and roll angle, deg

$$ALPL_n^* = \tan^{-1}[\tan(\alpha_T) \cdot \cos(\phi_T)] + [TANG(n)pitch - DALPHA]$$

b. Yaw Angle (angle of sidewash), deg



$$SIG_n^* = [1/2(-DP24/PB_n)/(ETA/PB)yaw - CCORR1 - ACORR2 \cdot \sin(PHIT_n)] + TANG(n)yaw$$

$$CCORR1 = C |DP24/PB_n|^{2.5}$$

and

$$C = (0.5)^{2.5} \cdot 318.5 M_\ell^{-5} \cdot (DP24/PB_n)/|DP24/PB_n|$$

$TANG(n)yaw$ = Angle correction associated with misalignment in yaw of the cone nose relative to the cylindrical section of the probe support system, deg

* See note about ALT which applies to these calculated and tabulated flow angles.

$$\text{SIGL}_n^* = \text{TAN}^{-1} [\text{Tan}(\alpha_T) \text{Sin}(\phi_T)] + \text{TANG}(n)\text{yaw}$$

14. Local Stream Velocity Ratios (See figure 21 for positive directions of velocities.)

$$\text{ALT}_n = \text{Tan}^{-1} [|\text{Tan}(\text{ALPL}_n)|^2 + |\text{Tan}(\text{SIGL}_n)|^2]^{\frac{1}{2}}$$

$$\begin{aligned} \text{PHI}_n &= \text{Tan}^{-1} [\text{Tan}(\text{SIGL}_n)/\text{Tan}(\text{ALPL}_n)] \\ &+ 90^\circ [1 - \text{Tan}(\text{ALPL}_n)/|\text{Tan}(\text{ALPL}_n)|] \end{aligned}$$

- a. Axial Velocity Component

$$U_n/V_8 = (V_{\ell n}/V_\infty) \cos(\text{ALT}_n)$$

- b. Vertical Velocity Component

$$W_n/V_8 = (V_{\ell n}/V_\infty) \sin(\text{ALT}_n) \cos(\text{PHI}_n)$$

- c. Lateral Velocity or Outwash Velocity Component

$$V_n/V_8 = (V_{\ell n}/V_\infty) \sin(\text{ALT}_n) \sin(\text{PHI}_n)$$

15. Local to Free-Stream Dynamic Pressure Ratio

$$Q_{L_n}/Q_8 = (1.4/2) P_{\ell} M_{\ell n}^2 / q_\infty \quad q_\infty = 0.7 P_\infty M_\infty^2$$

$$P_{\ell} = P_{T_n} \cdot \left[[5/(6M_{\ell n}^2)]^{3.5} [(7M_{\ell n}^2 - 1)/6]^{2.5} \right]$$

The flow-through inlet data reduction equations are shown for the right inlet. Those for the left inlet are similar. Inlet pressure tap locations are described in section 3.3.

* See note about ALT which applies to these calculated and tabulated flow angles.

$(P/PT)R$ - Ratio of right inlet average static to average total pressures.

$$(P/PT)R = \frac{(PR3 + PR4 + PR5)}{(PTR1 + PTR2)} \cdot \frac{2}{3}$$

$(V/V_\infty)R$ - Average inlet velocity ratio, assuming the inlet total temperature is equal to the tunnel T_0 .

$$(V/V_\infty)R = \left[\frac{1.0 - (A)^{0.28571}}{1.0 - (1.0 + 0.2 M_\infty^2)^{-1}} \right]^{1/2}$$

if $(P/PT)R \geq 0.5283$: $A = (P/PT)R$

if $(P/PT)R < 0.5283$:

$$A = (P/PT)R \cdot \left(\frac{6M_I^2}{M_I^2 + 5} \right)^{7/2} \cdot \left(\frac{6}{7M_I^2 - 1} \right)^{5/2}$$

where M_I is the average inlet Mach number obtained from an iteration of the following:

$$(PT/P)R = \left(\frac{6M_I^2}{5} \right)^{7/2} \cdot \left(\frac{6}{7M_I^2 - 1} \right)^{5/2}$$

B.3 OGIVE-CYLINDER STORE PRESSURE INTEGRATIONS

The numerical scheme employed to evaluate the local loading coefficients on the store from the model surface pressure data is summarized below so that the local and resultant loading coefficients are clearly defined. At each point in the test grid, consisting of a fixed angle-of-attack and position in the flow field, the store was rolled 360° in 10° increments while surface pressure data along one ray of the store were recorded. These pressure data were

integrated as a function of roll angle to define the local force and moment coefficients per unit length (per inch).

The local normal-force coefficient and the local pitching-moment coefficient attributed to the normal-force loading per inch at model station x_n are

$$LCN_n = -K \int_{-\pi}^{\pi} (P/P_{\infty})_n r_n \cos\phi \, d\phi$$

and

$$LCM_n = -LCN_n (x_n - 3.188)/(2r_B)$$

where

$$K = 2/(\gamma\pi M_{\infty}^2 r_B^2)$$

r_B = body radius at base

r_n = local body radius

Similarly, the local side-force and yawing-moment coefficients per inch were defined as follows:

$$LCY_n = -K \int_{-\pi}^{\pi} (P/P_{\infty})_n r_n \sin\phi \, d\phi$$

and

$$LCN_n = -LCY_n (x_n - 3.188)/(2r_B)$$

The local axial-force coefficient per unit length of the store (i.e., per inch) was defined as follows:

$$LCA_n = K \int_{-\pi}^{\pi} (P/P_{\infty} - 1)_n (r_n \tan\delta_n) \, d\phi$$

where

δ_n = local slope of the body contour

The resultant aerodynamic coefficients were evaluated as follows:

$$CN = \int_0^L LCN_n dx_n$$

$$CM = \int_0^L LCM_n dx_n - \frac{1}{2r_B} \int_0^{1.5} r_n \tan \delta_n LCN_n dx_n$$

The second integral term used in evaluating the pitching-moment coefficient corresponds to the moment produced by the axial-force component of the surface loading on the store.

$$CY = \int_0^L LCY_n dx_n$$

$$CLN = \int_0^L LCLN_n dx_n - \frac{1}{2r_B} \int_0^{1.5} r_n \tan \delta_n LCY_n dx_n$$

The resultant pressure drag coefficient of the store was evaluated using both of the following techniques

$$CA1 = \int_0^{1.5} LCA_n dx_n \quad CA2 = \int_0^{r_B} \frac{LCA_n}{\tan \delta} dr_n$$

The numerical procedure for evaluating these integrals consisted of curve fitting three consecutive points in the distribution with a quadratic expression and then integrating this expression to define the magnitude of the integrand between two of the three consecutive points in the distribution. These integrands were then summed to ultimately define a particular coefficient.

B.4 ELLIPTIC STORE PRESSURE INTEGRATIONS

B.4.1 Pressure Distribution Measurements

The pressure-distribution data are presented in absolute form and ratioed to the free-stream static pressure. During this phase of the test a discrepancy was observed between the known pressure applied to the Scanivalve and the measured value. Repeatability checks indicated that the pressure measurements could be made consistent by shifting all the pressure measurements by the difference in the known and measured values. This data reduction scheme was applied to all the data. In addition, if a measured pressure was found to be incorrect because of a leak or restriction in the pressure tube or noise in the transducer signal, the value of this pressure was set to zero.

B.4.2 Pressure Distribution Integrations

The numerical scheme employed to evaluate the local loading coefficients on the store from the model surface pressure data is summarized as follows. At a specific position or attitude in the free stream or interference flow field, four groups of pressure distribution data were combined to describe the surface pressure loadings on the store at eight (8) circumferential positions at each of 14 axial stations. For example, when SEP1 was at 0° roll an axial ray of pressure data is obtained at the two circumferential positions of 0° and 270° while at 180° roll, data at the two positions of 90° and 180° are obtained. When SEP2 is at the same position and attitude in the free-stream or interference flow field as the two groups of SEP1 data and at 0° roll, positions of 55° and 305° are obtained while at 180° roll, the 125° and 235° positions are obtained. If there were pressures set to zero for some reason, values for these pressures were obtained from a straight line interpolation or extrapolation in the x-direction using the two good pressures nearest to them.

To find the local force coefficient at each axial station, the following equations were used:

$$\frac{dC_N}{dx} = \frac{2}{\gamma M_\infty^2 S p_\infty} \frac{dF_z}{dx} \quad \text{Local normal-force coefficient, in.}^{-1}$$

$$\frac{dC_y}{dx} = \frac{2}{\gamma M_\infty^2 S p_\infty} \frac{dF_y}{dx} \quad \text{Local side-force coefficient, in.}^{-1}$$

$$\frac{dC_A}{dx} = \frac{2}{\gamma M_\infty^2 S p_\infty} \frac{dF_x}{dx} \quad \text{Local axial-force coefficient, in.}^{-1}$$

where

γ = ratio of specific heats for air (1.4)

$\frac{dF_x}{dx}$ = force per in. in x-direction, lbf/in.

$\frac{dF_y}{dx}$ = force per in. in y-direction, lbf/in.

$\frac{dF_z}{dx}$ = force per in. in z-direction, lbf/in.

At each axial station, the force per inch equations can be written as

$$\frac{dF_z}{dx} = - \sum_{n=1}^N p_n S_n \cos \theta_n$$

$$\frac{dF_y}{dx} = - \sum_{n=1}^N p_n S_n \sin \theta_n$$

$$\frac{dF_x}{dx} = - \sum_{n=1}^N (p_n - p_\infty) S_n \tan \delta_n$$

where

N = Number of divisions the circumferential pressure distribution is divided into ($N = 36$: $\Delta\phi = 10^\circ$)

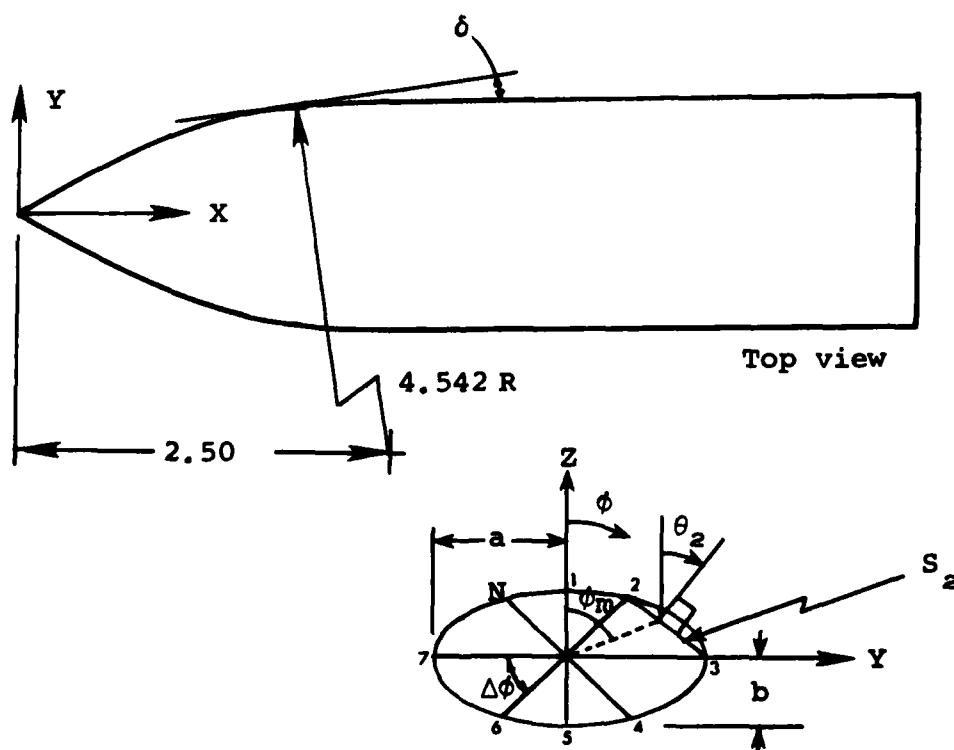
p_n = Value of the pressure at the center of the circumferential division

S_n = Length of the line representing the circumferential division

θ_n = Angle between the normal to S_n and the positive Z axis

δ_n = Body contour slope at the center of the circumferential division

ϕ_m = Angle at the center of the circumferential division = $(n - 1/2)\Delta\phi$



Looking upstream at any cross-section

Simplifying the coefficient equations yields the following:

$$\frac{dC_N}{dx} = \frac{-2}{\gamma M_\infty^2 S} \sum_{n=1}^N \frac{p_n}{p_\infty} S_n \cos \theta_n$$

$$\frac{dC_Y}{dx} = \frac{-2}{\gamma M_\infty^2 S} \sum_{n=1}^N \frac{p_n}{p_\infty} S_n \sin \theta_n$$

$$\frac{dC_{\delta}}{dx} = \frac{2}{\gamma M_\infty^2 S} \sum_{n=1}^N \left(\frac{p_n}{p_\infty} - 1 \right) S_n \tan \delta_n$$

p_n/p_∞ comes from evaluating p/p_∞ at ϕ_m , which is determined from a straight line interpolation between the two measured values on either side of it. For example, p/p_∞ at $\phi_m = 60^\circ$ is derived using p/p_∞ at 55° and p/p_∞ at 90° .

The equations for evaluating S_n , θ_n , and δ_n are given below:

$$S_n = \sqrt{(y_{n+1} - y_n)^2 + (z_{n+1} - z_n)^2}$$

$$\theta_n = \tan^{-1} \left[\frac{z_n - z_{n+1}}{y_{n+1} - y_n} \right]$$

$$\delta_n = \tan^{-1} \left[\frac{\cos (\phi_m - \theta_n)}{\sqrt{4 \cos^2 \phi_m + \sin^2 \phi_m}} \frac{da}{dx} \right]$$

where

$$y_n = r_n \sin \phi_n$$

$$z_n = r_n \cos \phi_n$$

$$\phi_n = (n-1)\Delta\phi$$

$$r_n = \left(\frac{\cos^2 \phi_n}{b^2} + \frac{\sin^2 \phi_n}{a^2} \right)^{-1/2}$$

$$a = -3.792 + \sqrt{-x^2 + 5x + 14.38}$$

$$b = a/2$$

APPENDIX C

FLOW-FIELD DATA RETRIEVAL PROGRAM

```

1  PROGRAM FLOW (INPUT,OUTPUT,TAPCK=OUTPUT,TAPF1)
   DIMENSION AC(20),R(70,30),C(70,3,16),I(20,RE(1),M(4))
   INTEGER N(20),F(16)
   DIMENSION NUMR(27,5),I(20,CON(5),CONF(130))
   DO 137 I=1,5
     DO 132 J=1,20
       NUMR(J,I)=26
       I(20,CON(1))=5
       I(20,CON(2))=9
       I(20,CON(3))=15
       I(20,CON(4))=19
       I(20,CON(5))=15
       NUMR(1,1)=1
       NUMR(2,1)=2
       NUMR(3,1)=7
       NUMR(4,1)=6
       NUMR(5,1)=5
       NUMR(20,1)=26
       NUMR(1,2)=1
       NUMR(2,2)=2
       NUMR(3,2)=4
       NUMR(4,2)=6
       NUMR(5,2)=7
       NUMR(6,2)=8
       NUMR(7,2)=7
       NUMR(8,2)=4
       NUMR(9,2)=5
       NUMR(20,2)=26
       NUMR(1,3)=1
       NUMR(2,3)=0
       NUMR(3,3)=10
       NUMR(4,3)=11
       NUMR(5,3)=12
       NUMR(6,3)=13
       NUMR(7,3)=2
       NUMR(8,3)=26
       NUMR(9,3)=15
       NUMR(10,3)=16
       NUMR(11,3)=9
       NUMR(12,3)=17
       NUMR(13,3)=7
       NUMR(14,3)=4
       NUMR(15,3)=8
       NUMR(16,3)=11
       NUMR(17,4)=11
       NUMR(18,4)=16
       NUMR(19,4)=12
       NUMR(20,4)=20
       NUMR(1,4)=21
       NUMR(2,4)=13
       NUMR(3,4)=16
       NUMR(4,4)=15
       NUMR(5,4)=12
       NUMR(6,4)=15
       NUMR(7,4)=14
       NUMR(8,4)=10
       NUMR(9,4)=10
       NUMR(10,4)=9
       NUMR(11,4)=17
       NUMR(12,4)=17
       NUMR(13,4)=17
       NUMR(14,4)=17
       NUMR(15,4)=17
       NUMR(16,4)=17
       NUMR(17,4)=17
       NUMR(18,4)=17
       NUMR(19,4)=17
       NUMR(20,4)=17
       NUMR(21,4)=17
       NUMR(22,4)=17
       NUMR(23,4)=17
       NUMR(24,4)=17
       NUMR(25,4)=17
       NUMR(26,4)=17
       NUMR(27,4)=17
       NUMR(28,4)=17
       NUMR(29,4)=17
       NUMR(30,4)=17
       NUMR(31,4)=17
       NUMR(32,4)=17
       NUMR(33,4)=17
       NUMR(34,4)=17
       NUMR(35,4)=17
       NUMR(36,4)=17
       NUMR(37,4)=17
       NUMR(38,4)=17
       NUMR(39,4)=17
       NUMR(40,4)=17
       NUMR(41,4)=17
       NUMR(42,4)=17
       NUMR(43,4)=17
       NUMR(44,4)=17
       NUMR(45,4)=17
       NUMR(46,4)=17
       NUMR(47,4)=17
       NUMR(48,4)=17
       NUMR(49,4)=17
       NUMR(50,4)=17
       NUMR(51,4)=17
       NUMR(52,4)=17
       NUMR(53,4)=17
       NUMR(54,4)=17
       NUMR(55,4)=17
       NUMR(56,4)=17
       NUMR(57,4)=17

```

60 NUMB(14,4)=2
 NUMB(15,4)=7
 NUMB(16,4)=4
 NUMB(17,4)=8
 NUMB(18,4)=7
 NUMB(19,4)=1
 NUMB(20,4)=26
 NUMB(11,5)=1
 NUMB(12,5)=18
 NUMB(13,5)=11
 NUMB(14,5)=23
 NUMB(15,5)=16
 NUMB(16,5)=13
 NUMB(17,5)=24
 NUMB(18,5)=7
 NUMB(19,5)=4
 NUMB(20,5)=2
 NUMB(11,6)=28
 NUMB(12,6)=25
 NUMB(13,6)=19
 NUMB(14,6)=16
 NUMB(15,6)=12
 NUMB(16,6)=26
 CONF(1)=4H NO
 CONF(2)=4H PARE
 CONF(3)=4H NT
 CONF(4)=4H
 CONF(5)=4H
 CONF(6)=4H N1-R
 CONF(7)=4H 2-W
 CONF(8)=4H
 CONF(9)=4H
 CONF(10)=4H
 CONF(11)=4H N1-9
 CONF(12)=4H 2-W-
 CONF(13)=4H (P2)
 CONF(14)=4H C
 CONF(15)=4H
 CONF(16)=4H N1-R
 CONF(17)=4H 2-W-
 CONF(18)=4H (P2)
 CONF(19)=4H 1/3
 CONF(20)=4H
 CONF(21)=4H N1-0
 CONF(22)=4H 2-W-
 CONF(23)=4H (P2)
 CONF(24)=4H 2/3
 CONF(25)=4H
 CONF(26)=4H N1-9
 CONF(27)=4H 2-W-
 CONF(28)=4H (P2)
 CONF(29)=4H 1/3-
 CONF(30)=4H S
 CONF(31)=4H N1-B
 CONF(32)=4H 2-W-
 CONF(33)=4H (P2)
 CONF(34)=4H 1/3T
 FLOW 58
 FLOW 59
 FLOW 60
 FLOW 61
 FLOW 62
 FLOW 63
 FLOW 64
 FLOW 65
 FLOW 66
 FLOW 67
 FLOW 68
 FLOW 69
 FLOW 70
 FLOW 71
 FLOW 72
 FLOW 73
 FLOW 74
 FLOW 75
 FLOW 76
 FLOW 77
 FLOW 78
 FLOW 79
 FLOW 80
 FLOW 81
 FLOW 82
 FLOW 83
 FLOW 84
 FLOW 85
 FLOW 86
 FLOW 87
 FLOW 88
 FLOW 89
 FLOW 90
 FLOW 91
 FLOW 92
 FLOW 93
 FLOW 94
 FLOW 95
 FLOW 96
 FLOW 97
 FLOW 98
 FLOW 99
 FLOW 100
 FLOW 101
 FLOW 102
 FLOW 103
 FLOW 104
 FLOW 105
 FLOW 106
 FLOW 107
 FLOW 108
 FLOW 109
 FLOW 110
 FLOW 111
 FLOW 112
 FLOW 113
 FLOW 114

115	CONF(35)=4MS2ST	FLOWF115
	CONF(16)=4MN1-B	FLOWF116
	CONF(17)=4M2-M	FLOWF117
	CONF(18)=4M102)	FLOWF118
120	CONF(19)=4M1/3-	FLOWF119
	CONF(40)=4MT	FLOWF120
	CONF(41)=4MN1-R	FLOWF121
	CONF(42)=4M1	FLOWF122
	CONF(43)=4M	FLOWF123
	CONF(44)=4M	FLOWF124
125	CONF(45)=4M	FLOWF125
	CONF(46)=4MN3-R	FLOWF126
	CONF(47)=4M1-A3	FLOWF127
	CONF(48)=4M	FLOWF128
	CONF(49)=4M	FLOWF129
130	CONF(50)=4M	FLOWF130
	CONF(51)=4MN3-B	FLOWF131
	CONF(52)=4M2-M-	FLOWF132
	CONF(53)=4M46	FLOWF133
135	CONF(54)=4M	FLOWF134
	CONF(55)=4M	FLOWF135
	CONF(56)=4MN3-B	FLOWF136
	CONF(57)=4M2-M-	FLOWF137
	CONF(58)=4M45	FLOWF138
	CONF(59)=4M	FLOWF139
140	CONF(60)=4M	FLOWF140
	CONF(61)=4MN3-B	FLOWF141
	CONF(62)=4M2-M-	FLOWF142
	CONF(63)=4M4T	FLOWF143
	CONF(64)=4M	FLOWF144
145	CONF(65)=4M	FLOWF145
	CONF(66)=4MN1-B	FLOWF146
	CONF(67)=4M2-M-	FLOWF147
	CONF(68)=4MP3-1	FLOWF148
150	CONF(69)=4M/3	FLOWF149
	CONF(70)=4M	FLOWF150
	CONF(71)=4MN3-B	FLOWF151
	CONF(72)=4M2-M-	FLOWF152
	CONF(73)=4M43-D	FLOWF153
155	CONF(74)=4M3-1/	FLOWF154
	CONF(75)=4MT	FLOWF155
	CONF(76)=4MN3-R	FLOWF156
	CONF(77)=4M2-M-	FLOWF157
	CONF(78)=4M43-I	FLOWF158
	CONF(79)=4MP21-	FLOWF159
160	CONF(80)=4MC	FLOWF160
	CONF(81)=4MN1-B	FLOWF161
	CONF(82)=4M2-M-	FLOWF162
	CONF(83)=4M101)	FLOWF163
165	CONF(84)=4M- 2/	FLOWF164
	CONF(45)=4MT	FLOWF165
	CONF(86)=4MN3-R	FLOWF166
	CONF(87)=4M2-M-	FLOWF167
	CONF(88)=4M46-I	FLOWF168
	CONF(89)=4MP2)-	FLOWF169
170	CONF(90)=4MC	FLOWF170
	CONF(91)=4MN1-B	FLOWF171

FLOW FIELD DATA FROM V41A-19A SEPTEMBER 1977 TUNNEL ENTRY AENC-9R-77-98

GROUP 10 PAGE 1

MACH	PO,PSIA	TO,DEG(R)	DE/FT*10**6	PA,PSIA	TO,DEG(R)	QA,PSIA	V8,FT/SEC	PREF,PSIA	CONF(PAR)
1.51	16.482	581.41	3.99	3.988	399.31	6.206	1479.6	-0.012	NJ-B2-M-A4-(P3)-1/3
ALPHA(PAR)	ALPHA(RAKE)	Y1(IN)	Z1(IN)	Y2(IN)	Z2(IN)	LP			
5.00	5.00	-7.50	1.37	2.87	4.37	.81			
Y1(IN)	P81/PA	DP13/P81	DP24/P81	P82/P8	DP13/P82	DP24/P82	P83/PA	DP13/P83	DP24/P83
-15.804	1.901	.1640	.3199	1.552	.2331	.0256	1.615	.1880	.0486
-15.584	2.147	.1657	.2529	1.533	.2315	.0381	1.572	.2045	.0491
-16.804	2.105	.1564	.2625	2.235	-.0258	.1866	1.540	.2210	.0407
-16.584	1.641	.2699	.1250	1.957	.0439	.1575	1.530	.2314	.0256
-17.805	1.261	.7978	-.1393	1.691	.1236	.0947	1.948	-.1519	.2313
-17.584	1.192	.3712	-.1042	1.599	.1386	.0291	1.918	.0972	.0972
-18.805	1.640	.0059	.0477	1.478	.2513	-.0810	1.802	.0719	.0213
-18.584	2.812	.0252	.0778	1.573	.2136	.0944	1.684	.1345	.0293
-19.804	2.233	-.0551	.0506	1.582	.2801	.1025	1.684	.1763	.0373
-19.584	2.185	-.1092	.0694	1.563	.2842	.1181	1.664	.1063	.0978
-20.804	2.287	-.1071	.0760	1.851	.0457	.1122	1.639	.1585	.0928
-20.581	1.975	-.0475	.0756	2.090	-.1250	.0461	1.592	.1832	.0830
-21.800	1.886	-.0447	.1619	2.021	-.0398	.0393	1.591	.1994	.0765
-21.581	1.638	.0218	.0642	1.928	-.1235	.0327	1.761	.0018	.0711
-22.800	1.575	.1298	.0418	1.831	.0113	.0247	2.024	-.0203	.0447
-22.581	1.453	.1209	.0527	1.745	.0485	.0231	1.940	.0097	.0353
-23.999	1.479	.1357	.0372	1.668	.0543	.0200	1.853	.0363	.0268
-23.581	1.524	.1679	-.0047	1.652	.1054	.0286	1.916	.0318	.0367
-24.800	1.454	.2315	-.0292	1.657	.1233	.0316	1.775	.0756	.0288
-24.580	1.524	.1849	-.0579	1.623	.1515	.0383	1.722	.1009	.0268
-26.801	1.650	.2128	.0358	1.644	.1964	.0753	1.729	.1112	.0555
-26.499	1.654	.2013	.0304	1.753	.1144	.0815	1.690	.1238	.0479
-27.800	1.657	.2492	.0767	1.711	.1304	.0773	1.681	.1226	.0427
-27.581	1.652	.2157	.0727	1.709	.1386	.0798	1.668	.1315	.0485
-28.800	1.633	.2240	.0292	1.690	.1521	.0917	1.659	.1358	.0644

FLOW FIELD DATA FROM V41A-T9A SEPTEMBER 1977 TUNNEL ENTRY AEDC-DR-77-9A

GROUP 10 PAGE 2

WCM	PO,PSIA	T,DEG(P)	DE/FT*10**6	PA,PSIA	T,DEG(R)	QA,PSIA	W,FT/SEC	PREF,PSIA	CONF(PAR)				
1.51	24.482	541.41	3.99	1.884	399.31	6.206	1479.6	-861.2	NJ-82-M-44-(P3)-1/3				
ALPHA(PAR)	ALPHA(RAKE)	Y(LIN)	Z(LIN)	ALPI	SIG1	ML1	DVI/V8	U1/V8	V1/V8	W1/V8	QL1/Q8	P15/P81	PT1/P81
5.00	5.00	-3.50	1.37	2.87	4.37	.81							
Y(LIN)	ALPI	OMI1	ALPI1	OMI1	ALPI1	OMI1	ALPI1	OMI1	ALPI1	OMI1	ALPI1	OMI1	ALPI1
-15.804	11.49	-65.24	4.27	-13.45	5.16	-12.36	1.296	.1041	.0780	-.1620	.9413	1.7736	1.8157
-15.504	10.76	-57.19	5.48	-9.07	6.14	-10.44	1.246	.1303	.8544	-.1355	.9656	1.6923	1.6013
-16.004	10.42	-59.54	5.54	-9.36	5.81	-10.82	1.247	.1298	.8547	-.1608	.9510	1.6938	1.6079
-16.584	7.94	-27.48	7.37	-3.63	7.11	-3.88	1.587	.8613	.9891	-.1028	1.0821	2.1552	2.1845
-17.085	8.10	16.17	7.78	2.27	7.83	2.39	1.792	-.1175	1.1064	.8430	.9658	2.5781	2.5196
-17.504	7.48	12.04	7.31	1.57	7.33	1.64	1.797	-.1154	1.1099	.8304	.9188	2.5851	2.5281
-18.005	1.06	-74.74	.16	-1.83	.36	-1.84	1.482	.0519	.9487	-.0302	.9085	1.8846	1.9648
-18.503	3.18	-71.23	1.19	-3.28	1.10	-3.26	1.270	.1175	.8889	-.0693	.9497	1.7505	1.7475
-19.004	3.10	225.79	-2.12	-2.36	-2.34	-2.41	1.161	.1767	.8219	-.0339	.9855	1.5670	1.5734
-19.504	5.51	217.29	-4.19	-3.34	-4.63	-3.56	1.024	.2519	.7427	-.0434	.8453	1.4921	1.4968
-20.004	4.66	218.87	-3.63	-2.93	-3.72	-3.01	1.251	.1275	.8697	-.0445	.9644	1.6296	1.6226
-20.501	3.43	217.56	-2.59	-2.83	-2.61	-2.90	1.283	.1109	.8871	-.0439	.9529	1.7869	1.7779
-21.008	2.41	251.73	-1.14	-2.12	-1.15	-2.15	1.378	.0666	.9326	-.0345	.9889	1.9313	1.9203
-21.501	2.40	-68.97	.76	-2.24	.87	-2.26	1.485	.0116	.9875	-.0387	.9776	2.0038	2.0722
-22.000	2.01	-57.88	1.77	-1.71	1.97	-1.71	1.514	-.0019	1.0013	-.8298	.9637	2.1280	2.1102
-22.501	3.49	-28.78	3.76	-1.64	3.06	-1.70	1.686	.0425	1.0465	-.8365	.9587	2.2493	2.2332
-23.009	1.66	-21.83	3.41	-1.31	3.82	-1.33	1.554	-.0214	1.0193	-.8234	.9381	2.1508	2.1679
-23.501	4.13	-4.44	4.12	-.32	4.12	-.32	1.542	-.0144	1.0117	-.8057	.9546	2.1529	2.1473
-24.000	5.12	2.34	5.11	-.22	5.12	-.23	1.613	-.0452	1.0487	.8840	.9673	2.2323	2.2429
-24.500	4.75	11.76	4.66	.97	4.66	1.00	1.555	-.0204	1.0165	.8172	.9649	2.1580	2.1643
-25.001	5.49	-13.36	5.74	-1.37	5.74	-1.40	1.459	.0238	.9711	-.8232	.9638	2.0435	2.0487
-25.499	5.49	-14.85	5.70	-1.46	5.58	-1.49	1.460	.0233	.9719	-.8244	.9672	2.0412	2.0410
-26.000	5.42	-17.43	5.65	-1.40	5.65	-1.43	1.454	.0261	.9689	-.8236	.9641	2.0310	2.0343
-27.501	5.00	-12.45	5.76	-1.24	5.76	-1.30	1.465	.0207	.9741	-.8217	.9738	2.0517	2.0498
-28.000	6.08	-11.25	5.48	-1.17	5.49	-1.20	1.477	.0158	.9796	-.8231	.9697	2.0677	2.0650

FLOW FIELD DATA FROM V41A-19A SEPTEMBER 1977 TUNNEL ENRTY AENC-OR-77-98

GROUP 19 PAGE 3

MACH	PO,PSIA	TO,DEG(R)	OF,FT/SEC	P8,PSIA	T8,DEG(R)	Q8,PSIA	V8,FT/SEC	PREF,PSIA	CONF(PAR)				
1.51	14.002	501.41	3.99	3.99A	399.31	6.206	1479.6	-0.012	NJ-82-W-A4-(P3)-1/3				
ALPHA(PAN)	ALPHA(BRAKE)	V1(IN)	Z1(IN)	Z2(IN)	Z3(IN)	LP							
5.8C	5.8C	-1.50	1.37	2.07	4.37	.A1							
XZ(IN)	ALT2 (OEG)	W12 (OEG)	ALP2 (OEG)	SIGL2 (DFC)	SIG2 (OEG)	ML2	OV2/V8	U2/V8	V2/V8	W2/V8	QL2/Q8	P25/P82	PT2/P82
-15.004	5.68	-9.12	5.61	-9.0	5.61	-9.2	1.550	-0.160	1.0134	-0.160	.9861	2.1757	2.17457
-15.504	5.53	-12.21	5.41	-1.17	5.41	-1.20	1.505	-0.331	1.0281	-0.331	1.0012	2.1943	2.2197
-16.004	7.11	201.41	-4.2	-7.16	-4.2	-7.01	1.148	-0.660	.8276	-0.660	.9200	1.5679	1.5841
-16.504	5.69	-74.09	1.57	-5.47	1.60	-5.77	1.367	-0.977	0.8978	-0.977	.9867	1.8057	1.8406
-17.005	4.73	-39.45	3.66	-3.41	3.67	-3.46	1.467	-0.198	0.9768	-0.198	1.0023	2.0794	2.0662
-17.504	3.67	-16.03	3.53	-1.62	3.53	-1.63	1.518	-0.001	.9901	-0.001	.9831	2.1395	2.1216
-18.005	6.88	14.79	5.48	1.54	5.81	1.68	1.619	-0.074	1.0421	-0.074	.9863	2.2715	2.2664
-18.503	6.19	-25.06	5.61	-2.63	5.63	-2.71	1.508	-0.010	.9932	-0.010	.9655	2.1043	2.1199
-19.004	6.48	-25.04	6.14	-2.89	6.19	-3.00	1.524	-0.062	.9992	-0.062	1.079	2.1489	2.1409
-19.504	6.03	-27.63	6.05	-3.18	6.08	-3.30	1.567	-0.0254	1.0181	-0.0254	.9843	2.1629	2.1969
-20.004	4.28	-67.90	1.58	-3.98	1.60	-4.01	1.353	-0.752	.9223	-0.752	.9827	1.9140	1.9104
-20.501	4.71	284.06	-4.11	-1.93	-4.32	-1.97	1.249	-0.1295	.8695	-0.1295	.9457	1.6688	1.6823
-21.000	1.48	234.21	-1.05	-1.66	-1.67	-1.67	1.281	-0.1117	.8879	-0.1117	.9783	1.7988	1.7845
-21.501	1.28	246.58	-0.51	-1.17	-0.51	-1.18	1.312	-0.0955	.9043	-0.0955	.9756	1.8269	1.8446
-22.000	1.29	-66.62	.51	-1.18	.51	-1.18	1.362	-0.0704	.9294	-0.0704	.9817	1.9289	1.9229
-22.501	1.45	-32.29	1.56	-0.99	1.56	-0.99	1.421	-0.0414	.9591	-0.0414	.9923	2.0099	2.0050
-22.999	2.77	-21.88	2.57	-1.03	2.57	-1.04	1.471	-0.0178	.9811	-0.0178	.9918	2.0786	2.0780
-23.501	3.04	-28.11	2.42	-1.03	2.82	-1.04	1.480	-0.0139	.9808	-0.0139	.9897	2.0799	2.0819
-24.000	3.47	-18.69	3.29	-1.11	3.29	-1.12	1.479	-0.0140	.9802	-0.0140	.9926	2.0024	2.0016
-24.500	4.12	-17.81	3.92	-1.26	3.92	-1.28	1.504	-0.0026	.9866	-0.0026	.9925	2.1125	2.1134
-25.001	5.75	-23.34	5.24	-2.28	5.29	-2.35	1.483	-0.0122	.9828	-0.0122	.9885	2.0862	2.0880
-25.500	4.68	-37.62	3.65	-2.41	3.66	-2.47	1.399	-0.0522	.9447	-0.0522	.9766	1.9739	1.9764
-26.000	4.66	-33.84	3.41	-2.55	3.92	-2.60	1.436	-0.0346	.9622	-0.0346	.9863	2.0443	2.0254
-27.001	4.44	-32.31	4.18	-2.59	4.11	-2.65	1.442	-0.0316	.9649	-0.0316	.9908	2.0355	2.0337
-28.000	5.27	-33.21	4.42	-2.49	4.41	-2.47	1.455	-0.0257	.9702	-0.0257	.9914	2.0523	2.0505

FLOW FIELD DATA FROM V61A-T9A SEPTEMBER 1977 TUNNEL EMPTY AEDC-DR-77-9A

GROUP 10 PAGE 4

MACH PO,PSIA TO,DEG(1) QE/FT*10**6 PR,PSIA T8,DEG(1) Q8,PSIA V8,FT/SEC PREF,PSIA CONF(PAR)
 1.51 14.442 581.41 3.99 3.888 399.31 6.216 1479.6 -.8012 N3-B2-M-A4-(P3)-1/3

ALPHA(PAR)	ALPHA(RAKE)	V1(IN)	Z1(IN)	Z2(IN)	Z3(IN)	LP	DVT/V8	U3/V8	V3/V8	W3/V8	QL3/Q8	P35/P83	PT3/P83
5.88	5.88	-3.50	1.37	2.67	4.37	.81							
X3(IN)	ALT3	PMT3	ALPT3	SIGL3	ALPT3	SIGL3	ML3						
(DEG)	(DEG)	(DEG)	(DEG)	(DEG)	(DEG)	(DEG)							
-15.884	4.82	-12.98	4.70	-1.09	4.70	-1.12	1.504	.0426	.9939	-.0108	.0817	2.1184	2.1148
-15.584	5.05	-12.04	4.94	-1.06	4.94	-1.09	1.535	-.0111	1.8071	-.0106	.0870	2.1598	2.1539
-16.884	5.28	-9.99	5.14	-.81	5.14	-.84	1.564	-.0243	1.0201	-.0145	.0917	2.1929	2.1928
-16.584	5.28	-4.95	5.26	-.45	5.26	-.46	1.578	-.0304	1.0260	-.0080	.0945	2.2127	2.2114
-17.885	8.77	236.84	-4.92	-7.29	-5.12	-8.38	1.267	.1190	.8707	-.1114	-.0750	2.2632	1.7311
-17.584	3.12	-79.15	.59	-3.06	.59	-3.15	1.313	.0951	.9035	-.0403	.0933	1.8562	1.8472
-18.885	2.89	-13.89	2.34	-.47	2.04	-.48	1.377	.0633	.9361	-.0078	.0333	1.9815	1.9439
-18.583	3.56	-18.19	3.50	-.63	3.51	-.64	1.453	.0264	.9717	-.0107	.0595	2.0587	2.0475
-19.884	4.28	-10.86	4.21	-.79	4.21	-.81	1.588	.0011	.9962	-.0137	.0732	2.1197	2.1186
-19.584	4.18	-61.21	3.09	-2.78	3.18	-2.77	1.458	.0242	.9733	-.0459	.0525	2.0466	2.0539
-20.884	4.89	-29.12	4.27	-2.38	4.29	-2.46	1.489	.0096	.9868	-.0411	.0737	2.1034	2.0951
-20.581	5.11	-23.88	4.70	-2.01	4.71	-2.07	1.514	-.0020	.9980	-.0350	.0820	2.1266	2.1279
-21.888	5.31	-19.69	5.10	-1.79	5.01	-1.85	1.523	-.0058	1.0015	-.0313	.0876	2.1433	2.1388
-21.581	1.99	-89.98	.09	-1.99	.08	-2.02	1.372	.0655	.9340	-.0324	.0800	1.9191	1.9375
-22.888	1.44	242.17	-.67	-1.27	-.67	-1.29	1.262	.1218	.6780	-.4195	-.4103	1.7248	1.7344
-22.581	1.11	-74.29	.19	-1.17	.30	-1.08	1.309	.0972	.9026	-.0169	.0047	1.8425	1.8309
-22.994	1.52	-37.91	1.28	-.93	1.28	-.83	1.350	.0765	.9231	-.0133	.0236	1.9890	1.9849
-23.881	2.03	-32.59	1.71	-1.09	1.71	-1.10	1.374	.0645	.9349	-.0179	.0280	1.9413	1.9405
-24.888	2.27	-17.83	2.16	-.69	2.16	-.70	1.404	.0501	.9492	-.0115	.0358	1.9855	1.9813
-24.588	2.74	-11.76	2.68	-.56	2.68	-.57	1.433	.0358	.9631	-.0094	.0451	2.0212	2.0212
-26.881	3.57	-25.15	3.24	-1.52	3.24	-1.55	1.419	.0427	.9554	-.0254	.0548	2.0884	2.0825
-26.499	1.56	-19.23	3.16	-1.17	3.37	-1.20	1.453	.0263	.9718	-.0199	.0571	2.0482	2.0478
-27.888	1.44	-17.16	3.29	-1.02	3.30	-1.04	1.454	.0259	.9723	-.0173	.0559	2.0495	2.0488
-27.581	3.49	-14.75	1.58	-1.16	3.51	-1.19	1.467	.0198	.9782	-.0199	.0599	2.0686	2.0659
-28.888	4.84	-23.76	1.69	-1.63	3.70	-1.67	1.469	.0187	.9788	-.0278	.0632	2.0718	2.0698

FLOW FIELD DATA FROM VALA-T9A SEPTEMBER 1977 TUNNEL ENRTY AE0C-0R-77-98

GROUP 10 04GF 5

MACH PO,PSIA TO,DEG(R) RE/FT*10**6 P1,PSIA T0,DEG(R) Q0,PSIA V0,FT/SEC PREF,PSIA CONF(PAR)
 1.51 14.442 501.41 3.99 3.000 399.31 6.206 1479.6 -0012 N3-B2-M-A4-(P3)-1/3

ALPHA(PAR)	ALPHA(RAKE)	V1(IN)	Z1(IN)	Z2(IN)	Z3(IN)	LP	PT1	PT2	PT3	PT4	PT5	(P/PT1R	(V/V01R
5.00	5.00	-1.50	1.37	2.87	4.37	.01							
-15.00	12.9130	13.0668	10.0670	0.0000	10.0650	.0307	13.0200	12.5040	10.6070	10.6630	10.6540	.0359	.3992
-15.50	12.9778	12.9838	10.0170	0.0000	10.0130	.0305	12.9540	12.4130	10.6270	10.6010	10.5970	.0364	.3986
-16.00	13.0380	13.0770	10.0440	0.0000	10.0300	.0302	12.9390	12.4270	10.6140	10.5980	10.5940	.0355	.3980
-16.50	13.1058	13.1940	10.0210	0.0000	10.0130	.0277	13.0180	12.5110	10.6760	10.6520	10.6450	.0350	.4005
-17.01	13.0950	13.1070	10.0470	0.0000	10.0400	.0277	13.0280	12.4950	10.6790	10.6520	10.6470	.0356	.3997
-17.50	13.0520	13.0550	10.0040	0.0000	10.0790	.0274	13.0170	12.4980	10.6670	10.6420	10.6370	.0350	.4005
-18.01	13.0690	13.0630	10.0340	0.0000	10.0250	.0269	13.0850	12.5340	10.6570	10.6720	10.6650	.0336	.4023
-18.50	13.0910	13.1050	10.0250	0.0000	10.0170	.0262	13.0170	12.4960	10.6240	10.6000	10.5930	.0346	.4009
-19.00	13.0880	13.0700	10.0080	0.0000	10.0800	.0261	12.9850	12.4260	10.6260	10.6010	10.5950	.0349	.4006
-19.50	13.0740	13.0930	10.0220	0.0000	10.0150	.0269	13.0340	12.4560	10.6570	10.6310	10.6250	.0346	.4009
-20.00	13.1550	13.1360	10.0610	0.0000	10.0520	.0259	13.0720	12.5070	10.6900	10.6650	10.6590	.0344	.4012
-20.50	13.1090	13.1240	10.0410	0.0000	10.0430	.0263	13.0250	12.4720	10.6630	10.6380	10.6310	.0349	.4005
-21.00	13.1300	13.1240	10.0690	0.0000	10.0600	.0277	13.1210	12.5610	10.7330	10.7070	10.7000	.0343	.4013
-21.50	13.1670	13.1130	10.0640	0.0000	10.0590	.0261	13.0340	12.4880	10.6810	10.6370	10.6290	.0342	.4014
-22.00	13.1050	13.1110	10.0420	0.0000	10.0330	.0260	12.9530	12.4250	10.6150	10.5910	10.5850	.0351	.4002
-22.50	13.1340	13.1210	10.0470	0.0000	10.0360	.0250	13.0660	12.4540	10.6470	10.6220	10.6150	.0349	.4005
-23.00	13.1940	13.1630	10.0440	0.0000	10.0740	.0255	12.9940	12.4560	10.6420	10.6170	10.6100	.0340	.4007
-23.50	13.2400	13.2190	10.0210	0.0000	10.0130	.0252	13.0900	12.5460	10.7220	10.6900	10.6890	.0350	.4004
-24.00	13.2350	13.2300	10.0310	0.0000	10.0230	.0250	13.0900	12.5310	10.7090	10.6840	10.6770	.0345	.4011
-24.50	13.1000	13.1030	10.0670	0.0000	10.0790	.0256	13.0500	12.5140	10.6970	10.6620	10.6540	.0349	.4005
-25.00	13.1340	13.0990	10.0490	0.0000	10.0400	.0268	13.0740	12.4920	10.6820	10.6550	10.6490	.0341	.4016
-26.50	13.1110	13.1720	10.0340	0.0000	10.0250	.0263	13.0230	12.4620	10.6950	10.6290	10.6250	.0347	.4008
-27.00	13.2240	13.2050	10.0190	0.0000	10.0110	.0259	13.0530	12.5100	10.6920	10.6570	10.6480	.0342	.4014
-27.50	13.1370	13.1160	10.0640	0.0000	10.0550	.0273	13.1020	12.5340	10.7250	10.7010	10.6940	.0353	.4001
-28.00	13.1310	13.0930	10.0340	0.0000	10.0250	.0260	13.1110	12.5460	10.7240	10.6960	10.6920	.0344	.4012

APPENDIX D

PRESSURE DISTRIBUTION DATA RETRIEVAL PROGRAMS

03/21/79 12.11.15

FTN 4,6+446

PROGRAM PDCYL 74/74 OPT=1

```

1  PROGRAM PDCYL (INPUT,OUTPUT,TAPE1,TAPE6=OUTPUT)
   DIMENSION NUMS(26,5),IPRCOM(5),CONF(130)
   DIMENSION NUMS(12,5),ISTCOM(5),COMFS(60)
   DIMENSION A(20),G(70,30),C(26,60),N(2,1),E(6)
   INTEGER F(10),G(20)
   DO 110 J=1,5
     DO 110 I=1,12
       NUMS(I,J)=12
       ISTCOM(I)=4
       YSTCOM(2)=1
       YSTCOM(3)=2
       YSTCOM(4)=6
       YSTCOM(5)=11
       NUMS(12,1)=5
       NUMS(17,1)=3
       NUMS(16,1)=4
       NUMS(11,2)=4
       NUMS(11,3)=1
       NUMS(12,3)=2
       NUMS(11,4)=1
       NUMS(12,4)=3
       NUMS(17,4)=5
       NUMS(16,4)=2
       NUMS(13,5)=1
       NUMS(14,5)=2
       NUMS(15,5)=7
       NUMS(16,5)=6
       NUMS(17,5)=7
       NUMS(14,5)=8
       NUMS(19,5)=9
       NUMS(10,5)=10
       NUMS(11,5)=11
       COMFS(1)=4MSFC
       COMFS(2)=4M PHI
       COMFS(3)=4M=45.
       COMFS(4)=4M DEG
       COMFS(5)=4M.
       COMFS(6)=4MSPOC
       COMFS(7)=4M PHI
       COMFS(8)=4M=0.0
       COMFS(9)=4M DEG
       COMFS(10)=4M.
       COMFS(11)=4MSLFW
       COMFS(12)=4M PHI
       COMFS(13)=4M=0.0
       COMFS(14)=4M DEG
       COMFS(15)=4M.
       COMFS(16)=4MSLFF
       COMFS(17)=4M PHI
       COMFS(18)=4M=45.
       COMFS(19)=4M DEG
       COMFS(20)=4M.
       COMFS(21)=4MCIAC
       COMFS(22)=4MUAAC
       COMFS(23)=4M POC
       COMFS(24)=4MSS.
       COMFS(25)=4MTOF

```

PDCYL 1
PDCYL 2
PDCYL 3
PDCYL 4
PDCYL 5
PDCYL 6
PDCYL 7
PDCYL 8
PDCYL 9
PDCYL 10
PDCYL 11
PDCYL 12
PDCYL 13
PDCYL 14
PDCYL 15
PDCYL 16
PDCYL 17
PDCYL 18
PDCYL 19
PDCYL 20
PDCYL 21
PDCYL 22
PDCYL 23
PDCYL 24
PDCYL 25
PDCYL 26
PDCYL 27
PDCYL 28
PDCYL 29
PDCYL 30
PDCYL 31
PDCYL 32
PDCYL 33
PDCYL 34
PDCYL 35
PDCYL 36
PDCYL 37
PDCYL 38
PDCYL 39
PDCYL 40
PDCYL 41
PDCYL 42
PDCYL 43
PDCYL 44
PDCYL 45
PDCYL 46
PDCYL 47
PDCYL 48
PDCYL 49
PDCYL 50
PDCYL 51
PDCYL 52
PDCYL 53
PDCYL 54
PDCYL 55
PDCYL 56
PDCYL 57

12.11.15

FTN 4.54465

76/74 001=1

CONF S126)=4MSTOC
CONF S127)=4M PHT
CONF S128)=4MSE0
CONF S129)=4M NEG
CONF S130)=4M
CONF S131)=4MSTOC
CONF S132)=4M PHT
CONF S133)=4MSE0
CONF S134)=4M NEG
CONF S135)=4M
CONF S136)=4MSE0
CONF S137)=4M PHT
CONF S138)=4MSE0
CONF S139)=4M NEG
CONF S140)=4M
CONF S141)=4MSE0
CONF S142)=4M
CONF S143)=4M
CONF S144)=4M
CONF S145)=4M
CONF S146)=4MSE0
CONF S147)=4M
CONF S148)=4M
CONF S149)=4M
CONF S150)=4M
CONF S151)=4MSE0
CONF S152)=4M
CONF S153)=4M
CONF S154)=4M
CONF S155)=4M
CONF S156)=4M
CONF S157)=4M
CONF S158)=4M
CONF S159)=4M
CONF S160)=4M
NO 102 1=1.5
NO 102 2=1.26
102 NUMB12,1)=1
102 NUMB13)=1
102 NUMB14)=1
102 NUMB15)=1
102 NUMB16)=1
102 NUMB17)=1
102 NUMB18)=1
102 NUMB19)=1
102 NUMB20)=1
102 NUMB21)=1
102 NUMB22)=1
102 NUMB23)=1
102 NUMB24)=1
102 NUMB25)=1
102 NUMB26)=1
102 NUMB27)=1
102 NUMB28)=1
102 NUMB29)=1
102 NUMB30)=1
102 NUMB31)=1
102 NUMB32)=1
102 NUMB33)=1
102 NUMB34)=1
102 NUMB35)=1
102 NUMB36)=1
102 NUMB37)=1
102 NUMB38)=1
102 NUMB39)=1
102 NUMB40)=1
102 NUMB41)=1
102 NUMB42)=1
102 NUMB43)=1
102 NUMB44)=1
102 NUMB45)=1
102 NUMB46)=1
102 NUMB47)=1
102 NUMB48)=1
102 NUMB49)=1
102 NUMB50)=1
102 NUMB51)=1
102 NUMB52)=1
102 NUMB53)=1
102 NUMB54)=1
102 NUMB55)=1
102 NUMB56)=1
102 NUMB57)=1
102 NUMB58)=1
102 NUMB59)=1
102 NUMB60)=1
102 NUMB61)=1
102 NUMB62)=1
102 NUMB63)=1
102 NUMB64)=1
102 NUMB65)=1
102 NUMB66)=1
102 NUMB67)=1
102 NUMB68)=1
102 NUMB69)=1
102 NUMB70)=1
102 NUMB71)=1
102 NUMB72)=1
102 NUMB73)=1
102 NUMB74)=1
102 NUMB75)=1
102 NUMB76)=1
102 NUMB77)=1
102 NUMB78)=1
102 NUMB79)=1
102 NUMB80)=1
102 NUMB81)=1
102 NUMB82)=1
102 NUMB83)=1
102 NUMB84)=1
102 NUMB85)=1
102 NUMB86)=1
102 NUMB87)=1
102 NUMB88)=1
102 NUMB89)=1
102 NUMB90)=1
102 NUMB91)=1
102 NUMB92)=1
102 NUMB93)=1
102 NUMB94)=1
102 NUMB95)=1
102 NUMB96)=1
102 NUMB97)=1
102 NUMB98)=1
102 NUMB99)=1
102 NUMB100)=1
102 NUMB101)=1
102 NUMB102)=1
102 NUMB103)=1
102 NUMB104)=1
102 NUMB105)=1
102 NUMB106)=1
102 NUMB107)=1
102 NUMB108)=1
102 NUMB109)=1
102 NUMB110)=1
102 NUMB111)=1
102 NUMB112)=1
102 NUMB113)=1
102 NUMB114)=1

12.11.15

FTN 4.54465

NOT=1

76/74

PROGRAM PNCVL

115 POCYL115
POCYL116
POCYL117
POCYL118
POCYL119
POCYL120
POCYL121
POCYL122
POCYL123
POCYL124
POCYL125
POCYL126
POCYL127
POCYL128
POCYL129
POCYL130
POCYL131
POCYL132
POCYL133
POCYL134
POCYL135
POCYL136
POCYL137
POCYL138
POCYL139
POCYL140
POCYL141
POCYL142
POCYL143
POCYL144
POCYL145
POCYL146
POCYL147
POCYL148
POCYL149
POCYL150
POCYL151
POCYL152
POCYL153
POCYL154
POCYL155
POCYL156
POCYL157
POCYL158
POCYL159
POCYL160
POCYL161
POCYL162
POCYL163
POCYL164
POCYL165
POCYL166
POCYL167
POCYL168
POCYL169
POCYL170
POCYL171

125 NUM819,2)=5
NUM819,2)=26
NUM811,3)=1
NUM812,3)=9
NUM813,3)=10
NUM814,3)=11
NUM815,3)=12
NUM816,3)=13
NUM817,3)=2
NUM818,3)=14
NUM819,3)=15
NUM811,3)=16
NUM812,3)=17
NUM813,3)=7
NUM814,3)=6
NUM815,3)=8
NUM816,3)=26
NUM811,3)=11
NUM812,3)=18
NUM813,3)=19
NUM814,3)=12
NUM815,3)=20
NUM816,3)=21
NUM817,3)=13
NUM818,3)=16
NUM819,3)=15
NUM811,3)=14
NUM812,3)=9
NUM813,3)=17
NUM814,3)=2
NUM815,3)=3
NUM816,3)=6
NUM817,3)=7
NUM818,3)=1
NUM819,3)=26
NUM811,3)=1
NUM812,3)=18
NUM813,3)=11
NUM814,3)=23
NUM815,3)=16
NUM816,3)=13
NUM817,3)=24
NUM818,3)=7
NUM819,3)=4
NUM811,3)=2
NUM812,3)=20
NUM813,3)=25
NUM814,3)=19
NUM815,3)=14
NUM816,3)=12
NUM817,3)=26
CONF11)=4M NO
CONF12)=4MPAGE
CONF13)=4MUT

135

145

155

165

175

CONF(4)=4M
CONF(5)=4M
CONF(6)=4M1-8
CONF(7)=4M2-M
CONF(8)=4M
CONF(9)=4M
CONF(10)=4M
CONF(11)=4M1-8
CONF(12)=4M2-M
CONF(13)=4M(P2)
CONF(14)=4M
CONF(15)=4M
CONF(16)=4M1-8
CONF(17)=4M2-M
CONF(18)=4M(P2)
CONF(19)=4M1/3
CONF(20)=4M
CONF(21)=4M1-8
CONF(22)=4M2-M
CONF(23)=4M(P2)
CONF(24)=4M2/3
CONF(25)=4M
CONF(26)=4M1-8
CONF(27)=4M2-M
CONF(28)=4M(P2)
CONF(29)=4M1/3
CONF(30)=4M5
CONF(31)=4M1-8
CONF(32)=4M2-M
CONF(33)=4M(P2)
CONF(34)=4M1/3
CONF(35)=4M2S3
CONF(36)=4M1-8
CONF(37)=4M2-M
CONF(38)=4M(P2)
CONF(39)=4M1/3
CONF(40)=4M
CONF(41)=4M1-8
CONF(42)=4M1
CONF(43)=4M
CONF(44)=4M
CONF(45)=4M
CONF(46)=4M1-8
CONF(47)=4M1-8
CONF(48)=4M
CONF(49)=4M
CONF(50)=4M
CONF(51)=4M1-8
CONF(52)=4M2-M
CONF(53)=4M1-8
CONF(54)=4M
CONF(55)=4M
CONF(56)=4M1-8
CONF(57)=4M2-M
CONF(58)=4M1-8
CONF(59)=4M
CONF(60)=4M

POCYL172
POCYL173
POCYL174
POCYL175
POCYL176
POCYL177
POCYL178
POCYL179
POCYL180
POCYL181
POCYL182
POCYL183
POCYL184
POCYL185
POCYL186
POCYL187
POCYL188
POCYL189
POCYL190
POCYL191
POCYL192
POCYL193
POCYL194
POCYL195
POCYL196
POCYL197
POCYL198
POCYL199
POCYL200
POCYL201
POCYL202
POCYL203
POCYL204
POCYL205
POCYL206
POCYL207
POCYL208
POCYL209
POCYL210
POCYL211
POCYL212
POCYL213
POCYL214
POCYL215
POCYL216
POCYL217
POCYL218
POCYL219
POCYL220
POCYL221
POCYL222
POCYL223
POCYL224
POCYL225
POCYL226
POCYL227
POCYL228

175

189

195

190

195

209

205

210

215

229

225


```

CONF(118)=4MA3-F
CONF(119)=4M
CONF(120)=4M
CONF(121)=4M3-0
CONF(122)=4M2-W-
CONF(123)=4MA5-F
CONF(124)=4M
CONF(125)=4M
CONF(126)=4MUNK
CONF(127)=4HOMN
CONF(128)=4M
CONF(129)=4M
CONF(130)=4M
ICOUNT=0
READ 29,INUP,IENTRY
READ 29,(F(I),I=1,INUM)
READ(1,32) (G(I),I=1,20)
E(1)=4M2/L
F(1)=4MLCLM
F(2)=4MLCV
F(3)=4MLCLN
E(6)=4MLCLN
24 READ(1,1) (A(I),I=1,20)
IF(EOF(1)) 2,3
7 M=0(1)
IF(A(19).LT.0.25.OR.A(19).GT.3.53) A(19)=999999999.
IF(A(19).GT.0.25.AND.A(19).LT.1.50) A(19)=0.1
IF(A(19).GT.1.50.AND.A(19).LT.2.50) A(19)=1.63
IF(A(19).GT.2.50.AND.A(19).LT.3.50) A(19)=3.25
INX=26
ICONFG=A(17)
IL=IERCON(IENTRY)
DO 101 I=1,IL
IF(ICONFG.EQ.I) IDN=I
101 CONTINUE
IDN=NUMR(FOX,IENTRY)
IDN=15*(IDN+1)-5
IDN=21
DO 25 I=1,M
25 READ(1,1) (M(I),J=1,20)
DO 26 I=1,20
26 READ(1,27) (C(I),J=1,6)
READ(1,24) (N(I),I=1,12)
ICROUP=A(12)
DO 30 I=1,INUM
IF(IGROUP.EQ.F(I)) GO TO 31
30 CONTINUE
GO TO 24
31 WRITE(6,33) (G(I),I=1,20)
ICOUNT=ICOUNT+1
IPAGE=1
WRITE(6,4) IGROUP,IPAGE
PAGE=PAGE+1
WRITE(6,7)
WRITE(6,9)
WRITE(6,9)
(8(I),I=1,11)
POCYL286
POCYL297
POCYL288
POCYL289
POCYL290
POCYL291
POCYL292
POCYL293
POCYL294
POCYL295
POCYL296
POCYL297
POCYL298
POCYL299
POCYL300
POCYL301
POCYL302
POCYL303
POCYL304
POCYL305
POCYL306
POCYL307
POCYL308
POCYL309
POCYL310
POCYL311
POCYL312
POCYL313
POCYL314
POCYL315
POCYL316
POCYL317
POCYL318
POCYL319
POCYL320
POCYL321
POCYL322
POCYL323
POCYL324
POCYL325
POCYL326
POCYL327
POCYL328
POCYL329
POCYL330
POCYL331
POCYL332
POCYL333
POCYL334
POCYL335
POCYL336
POCYL337
POCYL338
POCYL339
POCYL340
POCYL341
POCYL342

```

```

INIOXS=IOXS+4
INIOXS=IOXS+4
WRITE(16,10) (CONF(I),I=IOXS,INIOXS),(CONF(I),I=IOXS,INIOXS)
WRITE(16,5)
WRITE(16,5) (A(I),I=12,16),A(19)
WRITE(16,11)
DO 14 I=1,M
14 WRITE(16,12) (B(I,J),J=1,11)
WRITE(16,13) (C(I,J),J=1,10)
WRITE(16,33) (G(I),I=1,20)
WRITE(16,4) IGROUP,IPAGE
IPAGE=IPAGE+1
WRITE(16,7)
WRITE(16,8) (A(I),I=3,11)
WRITE(16,9)
WRITE(16,10) (CONF(I),I=IOXS,INIOXS),(CONF(I),I=IOXS,INIOXS)
WRITE(16,5)
WRITE(16,6) (A(I),I=12,16),A(19)
WRITE(16,16)
DO 15 I=1,M
15 WRITE(16,12) (B(I,J),J=1,11)
WRITE(16,13) (C(I,J),J=1,10)
WRITE(16,33) (G(I),I=1,20)
WRITE(16,4) IGROUP,IPAGE
WRITE(16,7)
WRITE(16,8) (A(I),I=3,11)
WRITE(16,9)
WRITE(16,10) (CONF(I),I=IOXS,INIOXS),(CONF(I),I=IOXS,INIOXS)
WRITE(16,5)
WRITE(16,6) (A(I),I=12,16),A(19)
WRITE(16,19)
DO 14 I=2,6
14 WRITE(16,17) E(I),(C(I,J),J=1,10)
WRITE(16,19) E(I),(C(I,J),J=1,10)
DO 21 I=2,6
21 WRITE(16,17) E(I),(C(I,J),J=1,10)
WRITE(16,23) (H(I),I=7,12)
TF(I)COUNT=EQ.INUM GO TO 2
GO TO 24
2 STOP
1 FORMAT(10E12.4)
4 FORMAT(1X,5HPGROUP,15,2X,4HPAGE,13)
5 FORMAT(1X,10HALPHA(IPAR),2X,12HALPHA(ISTOR),1X,6HDX(IN),
12X,6HDX(IN),3X,5HDX(IN) 4X,2HLP)
6 FORMAT(13Y,F6.2,F13.2,F10.2,F6.2,F9.2,4X,F5.2)
7 FORMAT(1X,4HMAC,2X,7HPO,PSIA,2X,
19H70,NEG(P),2X,11H9F/FT,1C,56,2X,7HPR,PSIA,2X,
29H70,NEG(P),2X,7H08,PSIA,2X,9HVB,FT/SEC,2X,
39HPRF,PSIA)
8 FORMAT(1X 4F5.2,F9.3,F10.2,F11.2,F11.3,F11.2,F10.3,
1F10.1,F11.4)
9 FORMAT(1X,5X,9HCONF(IPAR),11X,9HCONF(CTS))
10 FORMAT(1X,54X,2X,54X)
11 FORMAT(1X,4X,3H08,15X,5H01/PA,1X,5H02/PA,1X,5H03/PA,

```

PDCVL363
PDCVL364
PDCVL365
PDCVL366
PDCVL367
PDCVL368
PDCVL369
PDCVL370
PDCVL371
PDCVL372
PDCVL373
PDCVL374
PDCVL375
PDCVL376
PDCVL377
PDCVL378
PDCVL379
PDCVL380
PDCVL381
PDCVL382
PDCVL383
PDCVL384
PDCVL385
PDCVL386
PDCVL387
PDCVL388
PDCVL389
PDCVL390
PDCVL391
PDCVL392
PDCVL393
PDCVL394
PDCVL395
PDCVL396
PDCVL397
PDCVL398
PDCVL399

FTN 4.6446

PROGRAM PDCVL 74/74 OPT=1

PDCYL40J
PDCYL40I
PDCYL402
PDCYL403
PDCYL404
PDCYL405
PDCYL406
PDCYL407
PDCYL408
PDCYL409
PDCYL410
PDCYL411
PDCYL412
PDCYL413
PDCYL414
PDCYL415
PDCYL416
PDCYL417
PDCYL418
PDCYL419

A3X,5HP4/PA,3X,5HP5/PA,3X,5HP6/PA,3X,5HP7/PA,3X,5HP8/PA,3X,
B5HP9/PA,2X,6HP10/PA)
12 FORMAT(1X,1F8.1)
17 FORMAT(1X,1F8.1)
19 FORMAT(1X,1F8.1)
20 FORMAT(1X,1F8.1)
16 FORMAT(1X,1F8.1)
A6HP14/PA,2X,6HP15/PA,2X,6HP16/PA,2X,6HP17/PA,2X,6HP18/PA,
R2X,6HP19/PA)
22 FORMAT(1X,1F8.1)
A7X,3MCA1(1X,1F8.1)
23 FORMAT(1X,1F8.1)
A5X,3MCA2(1X,1F8.1)
27 FORMAT(1X,1F8.1)
28 FORMAT(1X,1F8.1)
29 FORMAT(1X,1F8.1)
32 FORMAT(1X,1F8.1)
33 FORMAT(1X,1F8.1)
34 FORMAT(1X,1F8.1)
END

40J
40I
402
403
404
405
406
407
408
409
410
411
412
413
414
415
416
417
418
419

PRESSURE DISTRIBUTION DATA FROM W-1A-19A SEPTEMBER 1977 ENPTY AEDC-OR-77-98

GROUP 152 PAGE 1

MACH PO,PSIA TO,DEG(R) RE/FT*10**6 P8,PSIA T8,DEG(R) O9,PSIA V8,FT/SEC PREF,PSIA
1.51 14.617 578.50 4.06 3.930 397.31 6.272 1475.9 .1615

NO PARENT NO PARENT CIRCULAR PRESS STORE

ALPHA(PAR) ALPHA(STORE) DX(IN) DY(IN) OZ(IN) LP
5.00 .00 19.00 .01 .Cn *****

PHI	P1/PA	P2/P8	P3/PA	P4/P8	P5/PA	P6/P8	P7/P8	P8/PA	P9/P8	P10/P8
-179.980	3.450	1.665	1.329	1.073	.852	.850	.903	.939	.939	.984
-169.980	3.449	1.665	1.329	1.072	.851	.849	.903	.938	.962	.984
-159.980	3.450	1.664	1.329	1.071	.851	.848	.902	.938	.961	.984
-149.980	3.459	1.668	1.333	1.074	.853	.850	.904	.940	.964	.989
-139.970	3.462	1.670	1.335	1.075	.855	.852	.908	.943	.967	.993
-129.970	3.443	1.663	1.334	1.070	.851	.849	.903	.940	.964	.989
-119.970	3.440	1.659	1.327	1.068	.848	.844	.908	.934	.957	.982
-109.980	3.446	1.661	1.328	1.068	.848	.843	.908	.934	.957	.981
-99.991	3.460	1.667	1.333	1.072	.850	.846	.901	.937	.960	.984
-89.991	3.446	1.662	1.330	1.070	.849	.844	.908	.933	.957	.981
-79.991	3.458	1.669	1.334	1.072	.851	.845	.909	.934	.958	.983
-69.995	3.443	1.660	1.328	1.066	.847	.842	.905	.931	.953	.978
-59.995	3.444	1.665	1.331	1.071	.849	.844	.906	.932	.954	.979
-49.995	3.453	1.668	1.332	1.072	.850	.844	.906	.931	.954	.978
-39.995	3.449	1.668	1.332	1.073	.850	.845	.905	.931	.953	.977
-29.995	3.451	1.669	1.331	1.073	.850	.845	.905	.930	.953	.974
-19.995	3.450	1.671	1.332	1.075	.851	.846	.906	.930	.953	.973
-9.995	3.456	1.672	1.333	1.076	.851	.847	.907	.930	.952	.972
0.000	3.457	1.675	1.335	1.078	.853	.848	.908	.931	.954	.974
9.951	3.444	1.664	1.331	1.075	.852	.846	.906	.929	.951	.972
19.940	3.447	1.669	1.331	1.075	.851	.846	.905	.928	.951	.972
29.934	3.435	1.664	1.327	1.071	.849	.843	.903	.925	.948	.969
39.931	3.443	1.666	1.329	1.073	.850	.845	.904	.928	.950	.971
49.921	3.447	1.668	1.330	1.073	.851	.846	.905	.929	.952	.972
59.927	3.450	1.671	1.333	1.076	.853	.848	.908	.932	.955	.975
69.934	3.445	1.668	1.330	1.074	.851	.846	.906	.930	.954	.974
79.949	3.435	1.661	1.325	1.069	.848	.844	.904	.927	.951	.970
89.935	3.446	1.666	1.329	1.073	.850	.846	.907	.930	.955	.974
99.945	3.452	1.668	1.333	1.073	.851	.847	.907	.931	.956	.976
109.930	3.449	1.664	1.331	1.076	.852	.849	.909	.934	.959	.979
119.930	3.459	1.669	1.331	1.075	.852	.848	.908	.934	.959	.979
129.920	3.449	1.661	1.324	1.072	.849	.845	.907	.932	.956	.976
139.930	3.435	1.658	1.322	1.071	.847	.844	.906	.931	.955	.975
149.930	3.424	1.653	1.319	1.070	.845	.843	.904	.930	.953	.973
159.930	3.438	1.659	1.323	1.074	.848	.846	.908	.933	.957	.977
169.930	3.443	1.661	1.324	1.071	.848	.846	.908	.933	.958	.978
179.930	3.438	1.656	1.322	1.073	.847	.845	.908	.933	.957	.977
W/L	0.030	.052	.114	.156	.209	.261	.314	.366	.419	.471

GROUP 152 PAGE 2

WACH PO,PSIA TO,DEG(P) RE/FT*10**6 PA,PSIA TA,DFG(P) OA,PSIA VA,FI/SEC PREF,PSIA
1.51 14.637 578.5C 4.06 3.930 397.31 6.272 1475.9 .1615

CONF(PAR) NO PARENT CIRCULAR PRESS STORE

CONF(CYS) ALPHA(PAR) ALPHA(STORE) DI(IN) DI(IN) 07(IN) LP
5.00 .00 1A.00 .01 .00 *****

P11/P8	P12/P8	P13/P8	P14/P8	P15/P8	P16/P8	P17/P8	P18/P8	P19/P8
PHI								
-179.980	.998	1.000	1.002	1.004	1.006	1.008	1.010	1.012
-169.980	.996	.997	.999	1.001	1.003	1.005	1.007	1.009
-159.980	.995	.996	.998	1.000	1.002	1.004	1.006	1.008
-149.980	.996	.998	1.000	1.002	1.004	1.006	1.008	1.010
-139.978	1.001	1.003	1.005	1.007	1.009	1.011	1.013	1.015
-129.978	.996	.998	1.000	1.002	1.004	1.006	1.008	1.010
-119.978	.999	.999	.999	.999	.999	.999	.999	.999
-110.880	.989	.992	.995	.998	1.001	1.004	1.007	1.010
-100.880	.993	.996	.999	1.002	1.005	1.008	1.011	1.014
-89.991	.989	.993	.996	1.000	1.003	1.006	1.009	1.012
-80.819	.998	.999	.999	1.000	1.001	1.002	1.003	1.004
-70.821	.996	.991	.996	.998	1.000	1.002	1.004	1.006
-60.814	.987	.992	.997	1.000	1.002	1.004	1.006	1.008
-49.995	.988	.993	.998	1.001	1.003	1.005	1.007	1.009
-40.801	.989	.994	.999	1.001	1.003	1.005	1.007	1.009
-30.815	.990	.994	.998	1.001	1.003	1.005	1.007	1.009
-20.805	.989	.994	.998	1.001	1.003	1.005	1.007	1.009
-10.806	.991	.996	.999	1.001	1.003	1.005	1.007	1.009
-1.738	.991	.996	.999	1.001	1.003	1.005	1.007	1.009
9.951	.987	.995	.998	1.001	1.003	1.005	1.007	1.009
19.940	.985	.995	.998	1.001	1.003	1.005	1.007	1.009
29.934	.982	.992	.995	.997	1.004	1.006	1.008	1.010
39.951	.986	.997	.998	.999	1.005	1.007	1.009	1.011
49.971	.985	.994	.999	1.001	1.003	1.005	1.007	1.009
59.977	.988	.996	1.001	1.004	1.006	1.008	1.010	1.012
69.978	.987	.994	.999	1.001	1.003	1.005	1.007	1.009
79.949	.986	.991	.996	.998	1.002	1.004	1.006	1.008
89.975	.988	.995	.999	1.001	1.003	1.005	1.007	1.009
99.945	.989	.995	1.001	1.004	1.006	1.008	1.010	1.012
109.938	.991	.998	1.001	1.004	1.006	1.008	1.010	1.012
119.898	.992	.999	1.002	1.005	1.007	1.009	1.011	1.013
129.920	.989	.996	.997	.999	1.001	1.003	1.005	1.007
139.930	.988	.995	.996	.996	1.001	1.003	1.005	1.007
149.980	.985	.992	.992	.993	.998	1.001	1.003	1.005
159.980	.991	.996	.996	.998	1.001	1.003	1.005	1.007
169.938	.993	.995	.996	.997	1.002	1.004	1.006	1.008
179.890	.991	.994	.995	.996	1.000	1.002	1.004	1.006
X/L	.523	.575	.628	.680	.731	.785	.837	.889

CONGRESS OF THE UNITED STATES
 HOUSE OF REPRESENTATIVES
 COMMITTEE ON SELECT COMMITTEES
 SUBCOMMITTEE ON INVESTIGATIONS
 HEARING ON THE
 ACTIVITY OF THE
 NATIONAL ASSOCIATION OF
 AMERICAN UNIVERSITY STUDENTS
 IN THE
 UNITED STATES
 SEPTEMBER 1977
 ENRITY A:DC-DR-77-98

GROUP 152 PAGE 3

WACH	00.051A	T7.NFG(0)	06/FY10006	PA.P51A	TA.NFG(0)	QA.P51A	V0.FY/SEC	P0EF.P51A
1.51	1.617	570.50	4.06	3.930	397.31	6.272	1475.9	.1615

CONF (OAP)	CONF (CYS)
NO PARENT	CIRCULAR PRESS STONE

ALPHA(PAR)	ALPHA(STORF)	DX(IN)	DY(IN)	DZ(IN)	LP
5.00	.00	19.05	.01	.00	0000

X/L	A. 1980	.9522	.1041	.1564	.2089	.2613	.3139	.3664	.4185	.4707
C.	-3.501E-03	-4.246E-01	-2.767E-01	-2.100E-03	3.441E-04	3.452E-03	5.208E-03	6.467E-03	6.912E-03	
B.	-1.317E-02	-1.442E-02	-8.667E-03	-5.290E-03	6.982E-04	5.463E-03	5.916E-03	4.484E-03	1.723E-03	
C.	4.808E-06	2.891E-03	-1.991E-03	-2.743E-04	-5.740E-04	2.481E-03	4.004E-03	3.398E-03	7.704E-03	
B.	1.810E-05	7.978E-03	-5.816E-03	-6.792E-04	-1.155E-03	3.927E-03	4.549E-03	2.356E-03	1.941E-03	
C.	3.531E-01	2.999E-01	3.444E-02	-2.611E-02	0.	).	0.	0.	0.	

[illegible]

CM	CMW	CWA	CLM	CM/CN	CA1
1.049E-04	5.67E-03	3.19E-04	5.99E-03	-1.86E+01	2.00E-01

```

1  PROGRAM PDE      (INPUT,OUTPUT,TAPE1,TAPEN=OUTPUT)
2  DIMENSION NUMS(2,5),IPCONIS),CONF(1,10)
3  DIMENSION NUMS(12,5),ISTCONIS),CONF(1,50)
4  DIMENSION A(154),F(6)
5  INTEGER F(16),G(20)
6  DO 110 I=1,5
7  DO 110 J=1,12
8  NUMS(I,J)=12
9  ISTCON(I)=4
10 ISTCON(2)=1
11 ISTCON(3)=2
12 ISTCON(4)=4
13 ISTCON(5)=11
14 NUMS(12,1)=6
15 NUMS(13,1)=3
16 NUMS(14,1)=4
17 NUMS(15,2)=4
18 NUMS(16,3)=1
19 NUMS(17,3)=2
20 NUMS(18,4)=1
21 NUMS(19,4)=7
22 NUMS(20,4)=5
23 NUMS(21,4)=2
24 NUMS(22,5)=1
25 NUMS(23,5)=2
26 NUMS(24,5)=7
27 NUMS(25,5)=6
28 NUMS(26,5)=7
29 NUMS(27,5)=8
30 NUMS(28,5)=9
31 NUMS(29,5)=10
32 NUMS(30,5)=11
33 CONF(11)=4MSROC
34 CONF(12)=4M PHI
35 CONF(13)=4M=45.
36 CONF(14)=4M DEG
37 CONF(15)=4M.
38 CONF(16)=4MSROC
39 CONF(17)=4M PHI
40 CONF(18)=4M=0.7
41 CONF(19)=4M NEG
42 CONF(20)=4M.
43 CONF(21)=4MSLFF
44 CONF(22)=4M PHI
45 CONF(23)=4M=0.0
46 CONF(24)=4M DEG
47 CONF(25)=4M.
48 CONF(26)=4MSLFF
49 CONF(27)=4M PHI
50 CONF(28)=4M=45.
51 CONF(29)=4M NEG
52 CONF(30)=4M.
53 CONF(31)=4MSLFF
54 CONF(32)=4M PHI
55 CONF(33)=4M=45.
56 CONF(34)=4M NEG
57 CONF(35)=4M.

```

240

115 NUMB(10,2)=5
NUMB(26,7)=26
NUMB(11,3)=1
NUMB(12,7)=9
NUMB(13,7)=10
NUMB(14,7)=11
NUMB(15,7)=12
NUMB(16,7)=13
NUMB(17,7)=2
NUMB(18,7)=14
NUMB(19,7)=15
NUMB(11,3)=3
NUMB(12,3)=17
NUMB(13,3)=7
NUMB(14,3)=4
NUMB(15,3)=8
NUMB(26,7)=26
NUMB(11,4)=11
NUMB(12,4)=18
NUMB(17,4)=19
NUMB(14,4)=12
NUMB(15,4)=20
NUMB(16,4)=21
NUMB(17,4)=13
NUMB(18,4)=16
NUMB(19,4)=15
NUMB(18,4)=14
NUMB(11,4)=10
NUMB(12,4)=9
NUMB(13,4)=17
NUMB(14,4)=2
NUMB(15,4)=3
NUMB(16,4)=6
NUMB(17,4)=8
NUMB(19,4)=1
NUMB(26,4)=26
NUMB(11,5)=1
NUMB(12,5)=18
NUMB(17,5)=11
NUMB(14,5)=23
NUMB(15,5)=16
NUMB(16,5)=13
NUMB(17,5)=24
NUMB(18,5)=7
NUMB(19,5)=6
NUMB(11,5)=2
NUMB(12,5)=28
NUMB(17,5)=25
NUMB(13,5)=19
NUMB(14,5)=14
NUMB(15,5)=12
NUMB(16,5)=26
CONF(1)=64 NO
CONF(2)=64 PAGE
CONF(3)=64 NPT

PDF 115
PDF 116
PDF 117
PDF 118
PDF 119
PDF 120
PDF 121
PDF 122
PDF 123
PDF 124
PDF 125
PDF 126
PDF 127
PDF 128
PDF 129
PDF 130
PDF 131
PDF 132
PDF 133
PDF 134
PDF 135
PDF 136
PDF 137
PDF 138
PDF 139
PDF 140
PDF 141
PDF 142
PDF 143
PDF 144
PDF 145
PDF 146
PDF 147
PDF 148
PDF 149
PDF 150
PDF 151
PDF 152
PDF 153
PDF 154
PDF 155
PDF 156
PDF 157
PDF 158
PDF 159
PDF 160
PDF 161
PDF 162
PDF 163
PDF 164
PDF 165
PDF 166
PDF 167
PDF 168
PDF 169
PDF 170
PDF 171

CONF (4)=4M	PDE 172
CONF (5)=4M	PDE 173
CONF (6)=4MNI-9	PDE 174
CONF (7)=4M2-M	PDE 175
CONF (8)=4M	PDE 176
CONF (9)=4M	PDE 177
CONF (10)=4M	PDE 178
CONF (11)=4MNI-9	PDE 179
CONF (12)=4M2-M	PDE 180
CONF (13)=4M(P2)	PDE 181
CONF (14)=4MC	PDE 182
CONF (15)=4M	PDE 183
CONF (16)=4MNI-9	PDE 184
CONF (17)=4M2-M	PDE 185
CONF (18)=4M(P2)	PDE 186
CONF (19)=4M1/3	PDE 187
CONF (20)=4M	PDE 188
CONF (21)=4MNI-8	PDE 189
CONF (22)=4M2-M	PDE 190
CONF (23)=4M(P2)	PDE 191
CONF (24)=4M2/3	PDE 192
CONF (25)=4M	PDE 193
CONF (26)=4MNI-9	PDE 194
CONF (27)=4M2-M	PDE 195
CONF (28)=4M(P2)	PDE 196
CONF (29)=4M1/3-	PDE 197
CONF (30)=4MS	PDE 198
CONF (31)=4MNI-9	PDE 199
CONF (32)=4M2-M	PDE 200
CONF (33)=4M(P2)	PDE 201
CONF (34)=4M1/3T	PDE 202
CONF (35)=4MS2S1	PDE 203
CONF (36)=4MNI-9	PDE 204
CONF (37)=4M2-M	PDE 205
CONF (38)=4M(P2)	PDE 206
CONF (39)=4M1/3-	PDE 207
CONF (40)=4MT	PDE 208
CONF (41)=4MNI-9	PDE 209
CONF (42)=4M1	PDE 210
CONF (43)=4M	PDE 211
CONF (44)=4M	PDE 212
CONF (45)=4M	PDE 213
CONF (46)=4MNI-9	PDE 214
CONF (47)=4M1-A3	PDE 215
CONF (48)=4M	PDE 216
CONF (49)=4M	PDE 217
CONF (50)=4M	PDE 218
CONF (51)=4MNI-8	PDE 219
CONF (52)=4M2-M	PDE 220
CONF (53)=4MA6	PDE 221
CONF (54)=4M	PDE 222
CONF (55)=4M	PDE 223
CONF (56)=4MNI-9	PDE 224
CONF (57)=4M2-M	PDE 225
CONF (58)=4MA5	PDE 226
CONF (59)=4M	PDE 227
CONF (60)=4M	PDE 228

230	CONF 161)=4MN1-7 CONF 162)=4M2-M- CONF 163)=4MA3 CONF 164)=4M CONF 165)=4M CONF 166)=4MN1-8 CONF 167)=4M2-M- CONF 168)=4MP3-1 CONF 169)=4M/3 CONF 170)=4M CONF 171)=4MN1-8 CONF 172)=4M2-M- CONF 173)=4MA3-P CONF 174)=4M3-1/ CONF 175)=4M3 CONF 176)=4MN1-8 CONF 177)=4M2-M- CONF 178)=4MA3-1 CONF 179)=4MP2) - CONF 180)=4MC CONF 181)=4MN1-8 CONF 182)=4M2-M- CONF 183)=4MP3) CONF 184)=4M- 2/ CONF 185)=4M3 CONF 186)=4MN1-8 CONF 187)=4M2-M- CONF 188)=4MA4-1 CONF 189)=4MP2) - CONF 190)=4MC CONF 191)=4MN1-8 CONF 192)=4M2-M- CONF 193)=4MA4-1 CONF 194)=4MP3) - CONF 195)=4M1/3 CONF 196)=4MN1-9 CONF 197)=4M2-M- CONF 198)=4MA5-1 CONF 199)=4MP2) - CONF 200)=4MC CONF 201)=4MN1-9 CONF 202)=4M2-M- CONF 203)=4MA5-1 CONF 204)=4MP3) - CONF 205)=4M1/3 CONF 206)=4M CONF 207)=4M CONF 208)=4M CONF 209)=4M CONF 210)=4MN1-9 CONF 211)=4M2-M- CONF 212)=4MA4-F CONF 213)=4M CONF 214)=4M CONF 215)=4M CONF 216)=4MN1-8 CONF 217)=4M2-M-	PDE 229 PDE 230 PDE 231 PDE 232 PDE 233 PDE 234 PDE 235 PDE 236 PDE 237 PDE 238 PDE 239 PDE 240 PDE 241 PDE 242 PDE 243 PDE 244 PDE 245 PDE 246 PDE 247 PDE 248 PDE 249 PDE 250 PDE 251 PDE 252 PDE 253 PDE 254 PDE 255 PDE 256 PDE 257 PDE 258 PDE 259 PDE 260 PDE 261 PDE 262 PDE 263 PDE 264 PDE 265 PDE 266 PDE 267 PDE 268 PDE 269 PDE 270 PDE 271 PDE 272 PDE 273 PDE 274 PDE 275 PDE 276 PDE 277 PDE 278 PDE 279 PDE 280 PDE 281 PDE 282 PDE 283 PDE 284 PDE 285
-----	---	---

Line	Code	Statement	Address
290	COMF	COMF(1120)=4M43-F	PDE 286
	COMF	COMF(1120)=4M	PDE 291
	COMF	COMF(1120)=4M43-B	PDE 294
	COMF	COMF(1120)=4M2-M	PDE 299
	COMF	COMF(1120)=4M45-F	PDE 291
	COMF	COMF(1120)=4M	PDE 292
	COMF	COMF(1120)=4M	PDE 293
	COMF	COMF(1120)=4M4M4N	PDE 294
	COMF	COMF(1120)=4M4M4M	PDE 295
	COMF	COMF(1120)=4M	PDE 296
	COMF	COMF(1120)=4M	PDE 297
	COMF	COMF(1130)=4M	PDE 298
	ICOUNT	ICOUNT=0	PDE 299
300	DEAN	DEAN 29, INUM, JENTRY	PDE 300
	JENTRY	JENTRY=5	PDE 301
	95AD	95AD 29, (F(1), I=1, INUM)	PDE 302
	95AD	95AD(1, 30) (G(1), I=1, 20)	PDE 303
	Z(1)	Z(1)=4M4Z/L	PDE 304
	Z(1)	Z(1)=4M4L/M	PDE 305
	E(1)	E(1)=4M4L/CV	PDE 306
	E(1)	E(1)=4M4L/CV	PDE 307
	E(1)	E(1)=4M4L/CV	PDE 308
	E(1)	E(1)=4M4L/CV	PDE 309
310	24	24 READ(1, 1) (A(1), I=1, 154)	PDE 310
	YF	YF(CF(1)) 2, 3	PDE 311
	CONTINUE	CONTINUE	PDE 312
	IF	IF(A(120).LT.8.25.OR.A(120).GT.3.50) A(120)=999999999.	PDE 313
	IF	IF(A(120).GT.8.25.AND.A(120).LT.1.50) A(120)=4.41	PDE 314
	IF	IF(A(120).GT.1.50.AND.A(120).LT.2.50) A(120)=1.63	PDE 315
	IF	IF(A(120).GT.2.50.AND.A(120).LT.3.50) A(120)=4.25	PDE 316
	IOX	IOX=24	PDE 317
	ICNFG	ICNFG=A(119)	PDE 318
	IL	IL=IPCON(ENTRY)	PDE 319
	IO	IO 131 I=1, IL	PDE 320
	IF	IF(ICONFG.EQ.1) IOX=I	PDE 321
101	CONTINUE	CONTINUE	PDE 322
	IOXS	IOXS=NUMS(10X, IENTRY)	PDE 323
	IOXS	IOXS=(5*IOXS+1)-5	PDE 324
	ICNFS	ICNFS=A(118)	PDE 325
	IOXS	IOXS=12	PDE 326
	IL	IL=ISTCON(ENTRY)	PDE 327
	IO	IO 11? I=1, IL	PDE 328
	IF	IF(ICONFG.EQ.1) IOXS=I	PDE 329
112	CONTINUE	CONTINUE	PDE 330
	IOXS	IOXS=NUMS(10XS, IENTRY)	PDE 331
	IOXS	IOXS=(5*IOXS+1)-5	PDE 332
	ICNUP	ICNUP=A(11)	PDE 333
	IO	IO 30 I=1, INUM	PDE 334
	IF	IF(ICONFG.FO.F(1)) GO TO 31	PDE 335
31	CONTINUE	CONTINUE	PDE 336
	GO	GO TO 24	PDE 337
31	WRITE	WRITE(6, 33) (G(1), I=1, 20)	PDE 338
	ICOUNT	ICOUNT=ICOUNT+1	PDE 339
	WRITE	WRITE(6, 6) (G(1), I=1, 20)	PDE 340
	WRITE	WRITE(6, 7)	PDE 341
	WRITE	WRITE(6, 4)	PDE 342

```

345      WRITE (6,9)
        INTDX=INTX*4
        INTDC=INTXS*4
        WRITE (6,10) (CONF(I),I=IOX,IMDX), (CONF(S(I),I=IDX,INTXS)
        WRITE (6,5)
        WRITE (6,6) (A(I),I=1,3,17),A(20)
        WRITE (6,11)
        I1=22
        I2=66
        I3=110
        DO 14 I=1,11
          J=4(I1+1)
          K=A(I2+1)
          L=A(I3+1)
          WRITE (6,12) J, (A(I1+J),J=2,4),K, (A(I2+J),J=2,4),L, (A(I3+J),J=2,4)
          I1=114
          I2=134
          I3=134
14      IF (ICOUNT.EQ.INUM) GO TO 2
          GO TO 24
2      STOP
          1 FORMAT(10E12.4)
          4 FORMAT(1,1X,5HGROUP,15)
          5      FORMAT(1,2X,10HALPHA(PAR),2X,12HALPHA(STORE),1X,6HDX(IN),
            12X,6HDX(IN),1X,6HDX(IN),4X,2HLP)
          6      FORMAT(1X,F6.2,F13.2,F10.2,F8.2,F9.2,3X,F5.2)
          7      FORMAT(1,2X,4HMMACH,2X,7HPO,PSIA,2X,
            19H10,DFG(0),2X,11HRE/F*10**6,2X,7HPO,PSIA,2X,
            29H10,DEG(0),2X,7HPO,PSIA,2X,9HV8,FT/SEC,2X,
            39HREF,PSIA,2X,9HVM,STORE,2X,9HPMI,STORE)
          8      FORMAT(1X,F5.2,F9.3,F10.2,F11.2,F11.3,F11.2,F10.3,
            1F10.1,F11.4,F10.2,F11.2)
          9      FORMAT(1,6X,9MCONF(PAP),13X,11MCONF(STORE))
          10     FORMAT(1X,5A4,9X,5A4)
          11     FORMAT(1,13IX,5HMODEL,3X,3HX/L,5X,1MP,6X,4HP/P8,2X),/,
            13(1X,7HTAP,10X,6H(PSIA),9X)
          12     FORMAT(1,2X,12,F9.4,2F8.3,1X)
          24     FORMAT(16I5)
          32     FORMAT(2A4)
          33     FORMAT(1M1,1X,25A4)
          END
346      PDE 343
347      PDE 344
348      PDE 345
349      PDE 346
350      PDE 347
351      PDE 348
352      PDE 349
353      PDE 350
354      PDE 351
355      PDE 352
356      PDE 353
357      PDE 354
358      PDE 355
359      PDE 356
360      PDE 357
361      PDE 358
362      PDE 359
363      PDE 360
364      PDE 361
365      PDE 362
366      PDE 363
367      PDE 364
368      PDE 365
369      PDE 366
370      PDE 367
371      PDE 368
372      PDE 369
373      PDE 370
374      PDE 371
375      PDE 372
376      PDE 373
377      PDE 374
378      PDE 375
379      PDE 376
380      PDE 377
381      PDE 378
382      PDE 379
383      PDE 380
384      PDE 381
385      PDE 382
386      PDE 383

```

WREASURE DISTRIBUTION DATA FROM VA1A-VA6 JAN-FEB 1978 AEDC-TSR-78-V2

GROUP 492

MACH PO,PSIA TO,DEG(P) RE/FT+10% PA,PSIA TO,DEG(P) QA,PSIA V8,FT/SEC PREF,PSIA YAW,STORE PHI,STORE
1.58 14.598 582.67 4.12 3.97 481.84 6.260 1474.1 .0803 --.02 .09

CONF(PAR) CONF(STOPE) SEP1

N3-82-W-A-(P2)-C

ALPHA(PAR) ALPHA(STORE) OX(IN) OY(IN) OZ(IN) LP
0.80 .00 .01 -.01 .75 .81

MODEL	X/L	P	P/PA	MODEL	X/L	P	P/PA	MODEL	X/L	P	P/PA
TAP		(PSIA)		TAP		(PSIA)		TAP		(PSIA)	
1	0.000	0.000	0.000	12	.7137	1.693	.929	23	.5333	2.815	.708
2	.0667	7.690	1.915	13	.8009	3.519	.885	24	.6000	3.794	.955
3	.1333	6.142	1.596	14	.8667	3.402	.856	25	.6667	3.498	.880
4	.2000	5.405	1.363	15	.9333	3.289	.827	26	.7333	3.507	.882
5	.2667	4.837	1.217	16	.0667	4.596	2.163	27	.8000	3.321	.836
6	.3333	4.630	.913	17	.1333	6.968	1.753	28	.8667	2.817	.709
7	.4000	3.574	.773	18	.2030	5.813	1.463	29	.9333	2.538	.639
8	.4667	2.989	.752	19	.2667	4.641	1.169	30	.4667	2.854	.718
9	.5333	3.143	.743	20	.3333	4.953	1.020	31	.4667	2.847	.716
10	.6000	3.637	.915	21	.4000	3.125	.786	32	.8667	2.939	.739
11	.6667	3.798	.956	22	.4667	2.864	.721	33	.8667	2.861	.720

PRESSURE DISTRIBUTION DATA FROM V41A-V6A JAN-FEB 1978 AEOC-TOR-78-V2

GROUP 493

MACH 90,PSIA 70,DFG(C) 0F/FT,10006 P8,PSIA 70,DEG(P) 04,PSIA V8,F7/SEC PREF,PSIA VAM,STORE PHI,STORE
1.58 14.598 582.67 4.32 3.976 401.84 6.263 1474.1 .0663 -.01 .08

CONF(PAR)
M3-R2-W-44-(P2)-C
CONF(STOPE)
SEPI

ALPHA(PAR) ALPHA(STOPE) OX(IN) NY(IN) OZ(IN) LP
0.00 .00 .01 .01 .01 .01

MODEL	X/L	P	P/PA	MODEL	X/L	P	P/PA	MODEL	X/L	P	P/PA
TAP		(PSIA)		TAP		(PSIA)		TAP		(PSIA)	
1	0.0000	0.000	6.300	12	.7333	3.426	.861	23	.5333	3.590	.905
2	.3667	7.703	1.937	13	.8000	3.290	.827	24	.6000	3.152	.793
3	.1333	6.112	1.537	14	.8667	3.184	.801	25	.6667	3.179	.799
4	.2000	4.979	1.252	15	.9333	3.209	.807	26	.7333	2.680	.676
5	.2667	4.180	1.024	16	.0667	8.591	2.160	27	.8100	2.051	.516
6	.3333	3.255	.819	17	.1333	5.943	1.495	28	.8667	2.812	.657
7	.4000	3.001	.755	18	.2003	4.670	1.174	29	.9333	3.649	.910
8	.4667	3.449	.767	19	.2667	4.061	1.021	30	.4667	2.986	.751
9	.5333	3.280	.825	20	.3333	3.688	.927	31	.4667	2.951	.742
10	.6000	3.456	.869	21	.4000	3.201	.805	32	.8667	2.371	.596
11	.6667	3.473	.877	22	.4667	3.216	.809	33	.8667	2.396	.603

```

1  P-OGHAM ONE INPUT, OUTPUT, TAPE, TAPE=OUTPUT, TAPE=INPUT)
2  DIMENSION ICOM(4), TC(8), A, PH(2), XOL(14), PHIPAY(9), PRES(9,14)
3  SUM(3,14)
4  DIMENSION NUM9(26,5), IPRCON(1), ONF(130)
5  INTERSECT F(14)
6  DO 102 I=1,5
7  DO 102 J=1,26
8  NUM9(I,J)=0
9  IPRCON(I)=5
10 IPRCON(2)=9
11 IPRCON(3)=15
12 IPRCON(4)=19
13 IPRCON(5)=14
14 NUM9(1,1)=1
15 NUM9(2,1)=2
16 NUM9(3,1)=3
17 NUM9(4,1)=4
18 NUM9(5,1)=5
19 NUM9(6,1)=6
20 NUM9(7,1)=7
21 NUM9(8,1)=8
22 NUM9(9,1)=9
23 NUM9(10,1)=10
24 NUM9(11,1)=11
25 NUM9(12,1)=12
26 NUM9(13,1)=13
27 NUM9(14,1)=14
28 NUM9(15,1)=15
29 NUM9(16,1)=16
30 NUM9(17,1)=17
31 NUM9(18,1)=18
32 NUM9(19,1)=19
33 NUM9(20,1)=20
34 NUM9(21,1)=21
35 NUM9(22,1)=22
36 NUM9(23,1)=23
37 NUM9(24,1)=24
38 NUM9(25,1)=25
39 NUM9(26,1)=26
40 NUM9(1,2)=1
41 NUM9(2,2)=2
42 NUM9(3,2)=3
43 NUM9(4,2)=4
44 NUM9(5,2)=5
45 NUM9(6,2)=6
46 NUM9(7,2)=7
47 NUM9(8,2)=8
48 NUM9(9,2)=9
49 NUM9(10,2)=10
50 NUM9(11,2)=11
51 NUM9(12,2)=12
52 NUM9(13,2)=13
53 NUM9(14,2)=14
54 NUM9(15,2)=15
55 NUM9(16,2)=16
56 NUM9(17,2)=17
57 NUM9(18,2)=18
58 NUM9(19,2)=19
59 NUM9(20,2)=20
60 NUM9(21,2)=21
61 NUM9(22,2)=22
62 NUM9(23,2)=23
63 NUM9(24,2)=24
64 NUM9(25,2)=25
65 NUM9(26,2)=26
66 NUM9(1,3)=1
67 NUM9(2,3)=2
68 NUM9(3,3)=3
69 NUM9(4,3)=4
70 NUM9(5,3)=5
71 NUM9(6,3)=6
72 NUM9(7,3)=7
73 NUM9(8,3)=8
74 NUM9(9,3)=9
75 NUM9(10,3)=10
76 NUM9(11,3)=11
77 NUM9(12,3)=12
78 NUM9(13,3)=13
79 NUM9(14,3)=14
80 NUM9(15,3)=15
81 NUM9(16,3)=16
82 NUM9(17,3)=17
83 NUM9(18,3)=18
84 NUM9(19,3)=19
85 NUM9(20,3)=20
86 NUM9(21,3)=21
87 NUM9(22,3)=22
88 NUM9(23,3)=23
89 NUM9(24,3)=24
90 NUM9(25,3)=25
91 NUM9(26,3)=26
92 NUM9(1,4)=1
93 NUM9(2,4)=2
94 NUM9(3,4)=3
95 NUM9(4,4)=4
96 NUM9(5,4)=5
97 NUM9(6,4)=6
98 NUM9(7,4)=7
99 NUM9(8,4)=8
100 NUM9(9,4)=9
101 NUM9(10,4)=10
102 NUM9(11,4)=11
103 NUM9(12,4)=12
104 NUM9(13,4)=13
105 NUM9(14,4)=14
106 NUM9(15,4)=15
107 NUM9(16,4)=16
108 NUM9(17,4)=17
109 NUM9(18,4)=18
110 NUM9(19,4)=19
111 NUM9(20,4)=20
112 NUM9(21,4)=21
113 NUM9(22,4)=22
114 NUM9(23,4)=23
115 NUM9(24,4)=24
116 NUM9(25,4)=25
117 NUM9(26,4)=26
118 NUM9(1,5)=1
119 NUM9(2,5)=2
120 NUM9(3,5)=3
121 NUM9(4,5)=4
122 NUM9(5,5)=5
123 NUM9(6,5)=6
124 NUM9(7,5)=7
125 NUM9(8,5)=8
126 NUM9(9,5)=9
127 NUM9(10,5)=10
128 NUM9(11,5)=11
129 NUM9(12,5)=12
130 NUM9(13,5)=13
131 NUM9(14,5)=14
132 NUM9(15,5)=15
133 NUM9(16,5)=16
134 NUM9(17,5)=17
135 NUM9(18,5)=18
136 NUM9(19,5)=19
137 NUM9(20,5)=20
138 NUM9(21,5)=21
139 NUM9(22,5)=22
140 NUM9(23,5)=23
141 NUM9(24,5)=24
142 NUM9(25,5)=25
143 NUM9(26,5)=26
144 NUM9(1,6)=1
145 NUM9(2,6)=2
146 NUM9(3,6)=3
147 NUM9(4,6)=4
148 NUM9(5,6)=5
149 NUM9(6,6)=6
150 NUM9(7,6)=7
151 NUM9(8,6)=8
152 NUM9(9,6)=9
153 NUM9(10,6)=10
154 NUM9(11,6)=11
155 NUM9(12,6)=12
156 NUM9(13,6)=13
157 NUM9(14,6)=14
158 NUM9(15,6)=15
159 NUM9(16,6)=16
160 NUM9(17,6)=17
161 NUM9(18,6)=18
162 NUM9(19,6)=19
163 NUM9(20,6)=20
164 NUM9(21,6)=21
165 NUM9(22,6)=22
166 NUM9(23,6)=23
167 NUM9(24,6)=24
168 NUM9(25,6)=25
169 NUM9(26,6)=26
170 NUM9(1,7)=1
171 NUM9(2,7)=2
172 NUM9(3,7)=3
173 NUM9(4,7)=4
174 NUM9(5,7)=5
175 NUM9(6,7)=6
176 NUM9(7,7)=7
177 NUM9(8,7)=8
178 NUM9(9,7)=9
179 NUM9(10,7)=10
180 NUM9(11,7)=11
181 NUM9(12,7)=12
182 NUM9(13,7)=13
183 NUM9(14,7)=14
184 NUM9(15,7)=15
185 NUM9(16,7)=16
186 NUM9(17,7)=17
187 NUM9(18,7)=18
188 NUM9(19,7)=19
189 NUM9(20,7)=20
190 NUM9(21,7)=21
191 NUM9(22,7)=22
192 NUM9(23,7)=23
193 NUM9(24,7)=24
194 NUM9(25,7)=25
195 NUM9(26,7)=26
196 NUM9(1,8)=1
197 NUM9(2,8)=2
198 NUM9(3,8)=3
199 NUM9(4,8)=4
200 NUM9(5,8)=5
201 NUM9(6,8)=6
202 NUM9(7,8)=7
203 NUM9(8,8)=8
204 NUM9(9,8)=9
205 NUM9(10,8)=10
206 NUM9(11,8)=11
207 NUM9(12,8)=12
208 NUM9(13,8)=13
209 NUM9(14,8)=14
210 NUM9(15,8)=15
211 NUM9(16,8)=16
212 NUM9(17,8)=17
213 NUM9(18,8)=18
214 NUM9(19,8)=19
215 NUM9(20,8)=20
216 NUM9(21,8)=21
217 NUM9(22,8)=22
218 NUM9(23,8)=23
219 NUM9(24,8)=24
220 NUM9(25,8)=25
221 NUM9(26,8)=26
222 NUM9(1,9)=1
223 NUM9(2,9)=2
224 NUM9(3,9)=3
225 NUM9(4,9)=4
226 NUM9(5,9)=5
227 NUM9(6,9)=6
228 NUM9(7,9)=7
229 NUM9(8,9)=8
230 NUM9(9,9)=9
231 NUM9(10,9)=10
232 NUM9(11,9)=11
233 NUM9(12,9)=12
234 NUM9(13,9)=13
235 NUM9(14,9)=14
236 NUM9(15,9)=15
237 NUM9(16,9)=16
238 NUM9(17,9)=17
239 NUM9(18,9)=18
240 NUM9(19,9)=19
241 NUM9(20,9)=20
242 NUM9(21,9)=21
243 NUM9(22,9)=22
244 NUM9(23,9)=23
245 NUM9(24,9)=24
246 NUM9(25,9)=25
247 NUM9(26,9)=26
248 NUM9(1,10)=1
249 NUM9(2,10)=2
250 NUM9(3,10)=3
251 NUM9(4,10)=4
252 NUM9(5,10)=5
253 NUM9(6,10)=6
254 NUM9(7,10)=7
255 NUM9(8,10)=8
256 NUM9(9,10)=9
257 NUM9(10,10)=10
258 NUM9(11,10)=11
259 NUM9(12,10)=12
260 NUM9(13,10)=13
261 NUM9(14,10)=14
262 NUM9(15,10)=15
263 NUM9(16,10)=16
264 NUM9(17,10)=17
265 NUM9(18,10)=18
266 NUM9(19,10)=19
267 NUM9(20,10)=20
268 NUM9(21,10)=21
269 NUM9(22,10)=22
270 NUM9(23,10)=23
271 NUM9(24,10)=24
272 NUM9(25,10)=25
273 NUM9(26,10)=26
274 NUM9(1,11)=1
275 NUM9(2,11)=2
276 NUM9(3,11)=3
277 NUM9(4,11)=4
278 NUM9(5,11)=5
279 NUM9(6,11)=6
280 NUM9(7,11)=7
281 NUM9(8,11)=8
282 NUM9(9,11)=9
283 NUM9(10,11)=10
284 NUM9(11,11)=11
285 NUM9(12,11)=12
286 NUM9(13,11)=13
287 NUM9(14,11)=14
288 NUM9(15,11)=15
289 NUM9(16,11)=16
290 NUM9(17,11)=17
291 NUM9(18,11)=18
292 NUM9(19,11)=19
293 NUM9(20,11)=20
294 NUM9(21,11)=21
295 NUM9(22,11)=22
296 NUM9(23,11)=23
297 NUM9(24,11)=24
298 NUM9(25,11)=25
299 NUM9(26,11)=26
300 NUM9(1,12)=1
301 NUM9(2,12)=2
302 NUM9(3,12)=3
303 NUM9(4,12)=4
304 NUM9(5,12)=5
305 NUM9(6,12)=6
306 NUM9(7,12)=7
307 NUM9(8,12)=8
308 NUM9(9,12)=9
309 NUM9(10,12)=10
310 NUM9(11,12)=11
311 NUM9(12,12)=12
312 NUM9(13,12)=13
313 NUM9(14,12)=14
314 NUM9(15,12)=15
315 NUM9(16,12)=16
316 NUM9(17,12)=17
317 NUM9(18,12)=18
318 NUM9(19,12)=19
319 NUM9(20,12)=20
320 NUM9(21,12)=21
321 NUM9(22,12)=22
322 NUM9(23,12)=23
323 NUM9(24,12)=24
324 NUM9(25,12)=25
325 NUM9(26,12)=26
326 NUM9(1,13)=1
327 NUM9(2,13)=2
328 NUM9(3,13)=3
329 NUM9(4,13)=4
330 NUM9(5,13)=5
331 NUM9(6,13)=6
332 NUM9(7,13)=7
333 NUM9(8,13)=8
334 NUM9(9,13)=9
335 NUM9(10,13)=10
336 NUM9(11,13)=11
337 NUM9(12,13)=12
338 NUM9(13,13)=13
339 NUM9(14,13)=14
340 NUM9(15,13)=15
341 NUM9(16,13)=16
342 NUM9(17,13)=17
343 NUM9(18,13)=18
344 NUM9(19,13)=19
345 NUM9(20,13)=20
346 NUM9(21,13)=21
347 NUM9(22,13)=22
348 NUM9(23,13)=23
349 NUM9(24,13)=24
350 NUM9(25,13)=25
351 NUM9(26,13)=26
352 NUM9(1,14)=1
353 NUM9(2,14)=2
354 NUM9(3,14)=3
355 NUM9(4,14)=4
356 NUM9(5,14)=5
357 NUM9(6,14)=6
358 NUM9(7,14)=7
359 NUM9(8,14)=8
360 NUM9(9,14)=9
361 NUM9(10,14)=10
362 NUM9(11,14)=11
363 NUM9(12,14)=12
364 NUM9(13,14)=13
365 NUM9(14,14)=14
366 NUM9(15,14)=15
367 NUM9(16,14)=16
368 NUM9(17,14)=17
369 NUM9(18,14)=18
370 NUM9(19,14)=19
371 NUM9(20,14)=20
372 NUM9(21,14)=21
373 NUM9(22,14)=22
374 NUM9(23,14)=23
375 NUM9(24,14)=24
376 NUM9(25,14)=25
377 NUM9(26,14)=26
378 NUM9(1,15)=1
379 NUM9(2,15)=2
380 NUM9(3,15)=3
381 NUM9(4,15)=4
382 NUM9(5,15)=5
383 NUM9(6,15)=6
384 NUM9(7,15)=7
385 NUM9(8,15)=8
386 NUM9(9,15)=9
387 NUM9(10,15)=10
388 NUM9(11,15)=11
389 NUM9(12,15)=12
390 NUM9(13,15)=13
391 NUM9(14,15)=14
392 NUM9(15,15)=15
393 NUM9(16,15)=16
394 NUM9(17,15)=17
395 NUM9(18,15)=18
396 NUM9(19,15)=19
397 NUM9(20,15)=20
398 NUM9(21,15)=21
399 NUM9(22,15)=22
400 NUM9(23,15)=23
401 NUM9(24,15)=24
402 NUM9(25,15)=25
403 NUM9(26,15)=26
404 NUM9(1,16)=1
405 NUM9(2,16)=2
406 NUM9(3,16)=3
407 NUM9(4,16)=4
408 NUM9(5,16)=5
409 NUM9(6,16)=6
410 NUM9(7,16)=7
411 NUM9(8,16)=8
412 NUM9(9,16)=9
413 NUM9(10,16)=10
414 NUM9(11,16)=11
415 NUM9(12,16)=12
416 NUM9(13,16)=13
417 NUM9(14,16)=14
418 NUM9(15,16)=15
419 NUM9(16,16)=16
420 NUM9(17,16)=17
421 NUM9(18,16)=18
422 NUM9(19,16)=19
423 NUM9(20,16)=20
424 NUM9(21,16)=21
425 NUM9(22,16)=22
426 NUM9(23,16)=23
427 NUM9(24,16)=24
428 NUM9(25,16)=25
429 NUM9(26,16)=26
430 NUM9(1,17)=1
431 NUM9(2,17)=2
432 NUM9(3,17)=3
433 NUM9(4,17)=4
434 NUM9(5,17)=5
435 NUM9(6,17)=6
436 NUM9(7,17)=7
437 NUM9(8,17)=8
438 NUM9(9,17)=9
439 NUM9(10,17)=10
440 NUM9(11,17)=11
441 NUM9(12,17)=12
442 NUM9(13,17)=13
443 NUM9(14,17)=14
444 NUM9(15,17)=15
445 NUM9(16,17)=16
446 NUM9(17,17)=17
447 NUM9(18,17)=18
448 NUM9(19,17)=19
449 NUM9(20,17)=20
450 NUM9(21,17)=21
451 NUM9(22,17)=22
452 NUM9(23,17)=23
453 NUM9(24,17)=24
454 NUM9(25,17)=25
455 NUM9(26,17)=26
456 NUM9(1,18)=1
457 NUM9(2,18)=2
458 NUM9(3,18)=3
459 NUM9(4,18)=4
460 NUM9(5,18)=5
461 NUM9(6,18)=6
462 NUM9(7,18)=7
463 NUM9(8,18)=8
464 NUM9(9,18)=9
465 NUM9(10,18)=10
466 NUM9(11,18)=11
467 NUM9(12,18)=12
468 NUM9(13,18)=13
469 NUM9(14,18)=14
470 NUM9(15,18)=15
471 NUM9(16,18)=16
472 NUM9(17,18)=17
473 NUM9(18,18)=18
474 NUM9(19,18)=19
475 NUM9(20,18)=20
476 NUM9(21,18)=21
477 NUM9(22,18)=22
478 NUM9(23,18)=23
479 NUM9(24,18)=24
480 NUM9(25,18)=25
481 NUM9(26,18)=26
482 NUM9(1,19)=1
483 NUM9(2,19)=2
484 NUM9(3,19)=3
485 NUM9(4,19)=4
486 NUM9(5,19)=5
487 NUM9(6,19)=6
488 NUM9(7,19)=7
489 NUM9(8,19)=8
490 NUM9(9,19)=9
491 NUM9(10,19)=10
492 NUM9(11,19)=11
493 NUM9(12,19)=12
494 NUM9(13,19)=13
495 NUM9(14,19)=14
496 NUM9(15,19)=15
497 NUM9(16,19)=16
498 NUM9(17,19)=17
499 NUM9(18,19)=18
500 NUM9(19,19)=19
501 NUM9(20,19)=20
502 NUM9(21,19)=21
503 NUM9(22,19)=22
504 NUM9(23,19)=23
505 NUM9(24,19)=24
506 NUM9(25,19)=25
507 NUM9(26,19)=26
508 NUM9(1,20)=1
509 NUM9(2,20)=2
510 NUM9(3,20)=3
511 NUM9(4,20)=4
512 NUM9(5,20)=5
513 NUM9(6,20)=6
514 NUM9(7,20)=7
515 NUM9(8,20)=8
516 NUM9(9,20)=9
517 NUM9(10,20)=10
518 NUM9(11,20)=11
519 NUM9(12,20)=12
520 NUM9(13,20)=13
521 NUM9(14,20)=14
522 NUM9(15,20)=15
523 NUM9(16,20)=16
524 NUM9(17,20)=17
525 NUM9(18,20)=18
526 NUM9(19,20)=19
527 NUM9(20,20)=20
528 NUM9(21,20)=21
529 NUM9(22,20)=22
530 NUM9(23,20)=23
531 NUM9(24,20)=24
532 NUM9(25,20)=25
533 NUM9(26,20)=26
534 NUM9(1,21)=1
535 NUM9(2,21)=2
536 NUM9(3,21)=3
537 NUM9(4,21)=4
538 NUM9(5,21)=5
539 NUM9(6,21)=6
540 NUM9(7,21)=7
541 NUM9(8,21)=8
542 NUM9(9,21)=9
543 NUM9(10,21)=10
544 NUM9(11,21)=11
545 NUM9(12,21)=12
546 NUM9(13,21)=13
547 NUM9(14,21)=14
548 NUM9(15,21)=15
549 NUM9(16,21)=16
550 NUM9(17,21)=17
551 NUM9(18,21)=18
552 NUM9(19,21)=19
553 NUM9(20,21)=20
554 NUM9(21,21)=21
555 NUM9(22,21)=22
556 NUM9(23,21)=23
557 NUM9(24,21)=24
558 NUM9(25,21)=25
559 NUM9(26,21)=26
560 NUM9(1,22)=1
561 NUM9(2,22)=2
562 NUM9(3,22)=3
563 NUM9(4,22)=4
564 NUM9(5,22)=5
565 NUM9(6,22)=6
566 NUM9(7,22)=7
567 NUM9(8,22)=8
568 NUM9(9,22)=9
569 NUM9(10,22)=10
570 NUM9(11,22)=11
571 NUM9(12,22)=12
572 NUM9(13,22)=13
573 NUM9(14,22)=14
574 NUM9(15,22)=15
575 NUM9(16,22)=16
576 NUM9(17,22)=17
577 NUM9(18,22)=18
578 NUM9(19,22)=19
579 NUM9(20,22)=20
580 NUM9(21,22)=21
581 NUM9(22,22)=22
582 NUM9(23,22)=23
583 NUM9(24,22)=24
584 NUM9(25,22)=25
585 NUM9(26,22)=26
586 NUM9(1,23)=1
587 NUM9(2,23)=2
588 NUM9(3,23)=3
589 NUM9(4,23)=4
590 NUM9(5,23)=5
591 NUM9(6,23)=6
592 NUM9(7,23)=7
593 NUM9(8,23)=8
594 NUM9(9,23)=9
595 NUM9(10,23)=10
596 NUM9(11,23)=11
597 NUM9(12,23)=12
598 NUM9(13,23)=13
599 NUM9(14,23)=14
600 NUM9(15,23)=15
601 NUM9(16,23)=16
602 NUM9(17,23)=17
603 NUM9(18,23)=18
604 NUM9(19,23)=19
605 NUM9(20,23)=20
606 NUM9(21,23)=21
607 NUM9(22,23)=22
608 NUM9(23,23)=23
609 NUM9(24,23)=24
610 NUM9(25,23)=25
611 NUM9(26,23)=26
612 NUM9(1,24)=1
613 NUM9(2,24)=2
614 NUM9(3,24)=3
615 NUM9(4,24)=4
616 NUM9(5,24)=5
617 NUM9(6,24)=6
618 NUM9(7,24)=7
619 NUM9(8,24)=8
620 NUM9(9,24)=9
621 NUM9(10,24)=10
622 NUM9(11,24)=11
623 NUM9(12,24)=12
624 NUM9(13,24)=13
625 NUM9(14,24)=14
626 NUM9(15,24)=15
627 NUM9(16,24)=16
628 NUM9(17,24)=17
629 NUM9(18,24)=18
630 NUM9(19,24)=19
631 NUM9(20,24)=20
632 NUM9(21,24)=21
633 NUM9(22,24)=22
634 NUM9(23,24)=23
635 NUM9(24,24)=24
636 NUM9(25,24)=25
637 NUM9(26,24)=26
638 NUM9(1,25)=1
639 NUM9(2,25)=2
640 NUM9(3,25)=3
641 NUM9(4,25)=4
642 NUM9(5,25)=5
643 NUM9(6,25)=6
644 NUM9(7,25)=7
645 NUM9(8,25)=8
646 NUM9(9,25)=9
647 NUM9(10,25)=10
648 NUM9(11,25)=11
649 NUM9(12,25)=12
650 NUM9(13,25)=13
651 NUM9(14,25)=14
652 NUM9(15,25)=15
653 NUM9(16,25)=16
654 NUM9(17,25)=17
655 NUM9(18,25)=18
656 NUM9(19,25)=19
657 NUM9(20,25)=20
658 NUM9(21,25)=21
659 NUM9(22,25)=22
660 NUM9(23,25)=23
661 NUM9(24,25)=24
662 NUM9(25,25)=25
663 NUM9(26,25)=26
664 NUM9(1,26)=1
665 NUM9(2,26)=2
666 NUM9(3,26)=3
667 NUM9(4,26)=4
668 NUM9(5,26)=5
669 NUM9(6,26)=6
670 NUM9(7,26)=7
671 NUM9(8,26)=8
672 NUM9(9,26)=9
673 NUM9(10,26)=10
674 NUM9(11,26)=11
675 NUM9(12,26)=12
676 NUM9(13,26)=13
677 NUM9(14,26)=14
678 NUM9(15,26)=15
679 NUM9(16,26)=16
680 NUM9(17,26)=17
681 NUM9(18,26)=18
682 NUM9(19,26)=19
683 NUM9(20,26)=20
684 NUM9(21,26)=21
685 NUM9(22,26)=22
686 NUM9(23,26)=23
687 NUM9(24,26)=24
688 NUM9(25,26)=25
689 NUM9(26,26)=26
690 NUM9(1,27)=1
691 NUM9(2,27)=2
692 NUM9(3,27)=3
693 NUM9(4,27)=4
694 NUM9(5,27)=5
695 NUM9(6,27)=6
696 NUM9(7,27)=7
697 NUM9(8,27)=8
698 NUM9(9,27)=9
699 NUM9(10,27)=10
700 NUM9(11,27)=11
701 NUM9(12,27)=12
702 NUM9(13,27)=13
703 NUM9(14,27)=14
704 NUM9(15,27)=15
705 NUM9(16,27)=16
706 NUM9(17,27)=17
707 NUM9(18,27)=18
708 NUM9(19,27)=19
709 NUM9(20,27)=20
710 NUM9(21,27)=21
711 NUM9(22,27)=22
712 NUM9(23,27)=23
713 NUM9(24,27)=24
714 NUM9(25,27)=25
715 NUM9(26,27)=26
716 NUM9(1,28)=1
717 NUM9(2,28)=2
718 NUM9(3,28)=3
719 NUM9(4,28)=4
720 NUM9(5,28)=5
721 NUM9(6,28)=6
722 NUM9(7,28)=7
723 NUM9(8,28)=8
724 NUM9(9,28)=9
725 NUM9(10,28)=10
726 NUM9(11,28)=11
727 NUM9(12,28)=12
728 NUM9(13,28)=13
729 NUM9(14,28)=14
730 NUM9(15,28)=15
731 NUM9(16,28)=16
732 NUM9(17,28)=17
733 NUM9(18,28)=18
734 NUM9(19,28)=19
735 NUM9(20,28)=20
736 NUM9(21,28)=21
737 NUM9(22,28)=22
738 NUM9(23,28)=23
739 NUM9(24,28)=24
740 NUM9(25,28)=25
741 NUM9(26,28)=26
742 NUM9(1,29)=1
743 NUM9(2,29)=2
744 NUM9(3,29)=3
745 NUM9(4,29)=4
746 NUM9(5,29)=5
747 NUM9(6,29)=6
748 NUM9(7,29)=7
749 NUM9(8,29)=8
750 NUM9(9,29)=9
751 NUM9(10,29)=10
752 NUM9(11,29)=11
753 NUM9(12,29)=12
754 NUM9(13,29)=13
755 NUM9(14,29)=14
756 NUM9(15,29)=15
757 NUM9(16,29)=16
758 NUM9(17,29)=17
759 NUM9(18,29)=18
760 NUM9(19,29)=19
761 NUM9(20,29)=20
762 NUM9(21,29)=21
763 NUM9(22,29)=22
764 NUM9(23,29)=23
765 NUM9(24,29)=24
766 NUM9(25,29)=25
767 NUM9(26,29)=26
768 NUM9(1,30)=1
769 NUM9(2,30)=2
770 NUM9(3,30)=3
771 NUM9(4,30)=4
772 NUM9(5,30)=5
773 NUM9(6,30)=6
774 NUM9(7,30)=7
775 NUM9(8,30)=8
776 NUM9(9,30)=9
777 NUM9(10,30)=10
778 NUM9(11,30)=11
779 NUM9(12,30)=12
780 NUM9(13,30)=13
781 NUM9(14,30)=14
782 NUM9(15,30)=15
783 NUM9(16,30)=16
784 NUM9(17,30)=17
785 NUM9(18,30)=18
786 NUM9(19,30)=19
787 NUM9(20,30)=20
788 NUM9(21,30)=21
789 NUM9(22,30)=22
790 NUM9(23,30)=23
791 NUM9(24,30)=24
792 NUM9(25,30)=25
793 NUM9(26,30)=26
794 NUM9(1,31)=1
795 NUM9(2,31)=2
796 NUM9(3,31)=3
797 NUM9(4,31)=4
798 NUM9(5,31)=5
799 NUM9(6,31)=6
800 NUM9(7,31)=7
801 NUM9(8,31)=8
802 NUM9(9,31)=9
803 NUM9(10,31)=10
804 NUM9(11,31)=11
805 NUM9(12,31)=12
806 NUM9(13,31)=13
807 NUM9(14,31)=14
808 NUM9(15,31)=15
809 NUM9(16,31)=16
810 NUM9(17,31)=17
811 NUM9(18,31)=18
812 NUM9(19,31)=19
813 NUM9(20,31)=20
814 NUM9(21,31)=21
815 NUM9(22,31)=22
816 NUM9(23,31)=23
817 NUM9(24,31)=24
818 NUM9(25,31)=25
819 NUM9(26,31)=26
820 NUM9(1,32)=1
821 NUM9(2,32)=2
822 NUM9(3,32)=3
823 NUM9(4,32)=4
824 NUM9(5,32)=5
825 NUM9(6,32)=6
826 NUM9(7,32)=7
827 NUM9(8,32)=8
828 NUM9(9,32)=9
829 NUM9(10,32)=10
830 NUM9(11,32)=11
831 NUM9(12,32)=12
832 NUM9(13,32)=13
833 NUM9(14,32)=14
834 NUM9(15,32)=15
835 NUM9(16,32)=16
836 NUM9(17,32)=17
837 NUM9(18,32)=18
838 NUM9(19,32)=19
839 NUM9(20,32)=20
840 NUM9(21,32)=21
841 NUM9(22,32)=22
842 NUM9(23,32)=23
843 NUM9(24,32)=24
844 NUM9(25,32)=25
845 NUM9(26,32)=26
846 NUM9(1,33)=1
847 NUM9(2,33)=2
848 NUM9(3,33)=3
849 NUM9(4,33)=4
850 NUM9(5,33)=5
851 NUM9(6,33)=6
852 NUM9(7,33)=7
853 NUM9(8,33)=8
854 NUM9(9,33)=9
855 NUM9(10,33)=10
856 NUM9(11,33)=11
857 NUM9(12,33)=12
858 NUM9(13,33)=13
859 NUM9(14,33)=14
860 NUM9(15,33)=15
861 NUM9(16,33)=16
862 NUM9(17,33)=17
863 NUM9(18,33)=18
864 NUM9(19,33)=19
865 NUM9(20,33)=20
866 NUM9(21,33)=21
867 NUM9(22,33)=22
868 NUM9(23,33)=23
869 NUM9(2
```

03/23/79 13.27.42

FTN 4.6446

PROGRAM P1E1 74/74 OPT=1

```

NUMB(11,4)=17
NUMB(14,4)=2
NUMB(15,4)=3
NUMB(16,4)=4
NUMB(17,4)=5
NUMB(18,4)=7
NUMB(19,4)=1
NUMB(20,4)=25
NUMB(21,4)=1
NUMB(22,4)=10
NUMB(23,4)=11
NUMB(24,4)=23
NUMB(25,4)=1
NUMB(26,4)=13
NUMB(27,4)=24
NUMB(28,4)=3
NUMB(29,4)=4
NUMB(30,4)=2
NUMB(31,4)=20
NUMB(32,4)=25
NUMB(33,4)=19
NUMB(34,4)=14
NUMB(35,4)=12
NUMB(36,4)=26
CONF(1)=4M NO
CONF(2)=4MPARE
CONF(3)=4MNT
CONF(4)=4M
CONF(5)=4M
CONF(6)=4M1-3
CONF(7)=4M2-M
CONF(8)=4M
CONF(9)=4M
CONF(10)=4
CONF(11)=4M1-0
CONF(12)=4M2-M-
CONF(13)=4M1P2)
CONF(14)=4MC
CONF(15)=4M
CONF(16)=4M1-0
CONF(17)=4M2-M-
CONF(18)=4M1P2)
CONF(19)=4M1/3
CONF(20)=4M
CONF(21)=4M1-0
CONF(22)=4M2-M-
CONF(23)=4M1P2)
CONF(24)=4M2/3
CONF(25)=4M
CONF(26)=4M1-0
CONF(27)=4M2-M-
CONF(28)=4M1P2)
CONF(29)=4M1/3-
CONF(30)=4MS
CONF(31)=4M1-0
CONF(32)=4M2-M-
CONF(33)=4M1P2)

POLI 58
POLI 59
POLI 60
POLI 61
POLI 62
POLI 63
POLI 64
POLI 65
POLI 66
POLI 67
POLI 68
POLI 69
POLI 70
POLI 71
POLI 72
POLI 73
POLI 74
POLI 75
POLI 76
POLI 77
POLI 78
POLI 79
POLI 80
POLI 81
POLI 82
POLI 83
POLI 84
POLI 85
POLI 86
POLI 87
POLI 88
POLI 89
POLI 90
POLI 91
POLI 92
POLI 93
POLI 94
POLI 95
POLI 96
POLI 97
POLI 98
POLI 99
POLI 100
POLI 101
POLI 102
POLI 103
POLI 104
POLI 105
POLI 106
POLI 107
POLI 108
POLI 109
POLI 110
POLI 111
POLI 112
POLI 113
POLI 114

```

115	CONF(34)=441/3T CONF(35)=44S2S3 CONF(36)=44H1-8 CONF(37)=442-M- CONF(38)=44H(P2) CONF(39)=441/3- CONF(40)=44H CONF(41)=44H1-8 CONF(42)=44H CONF(43)=44 CONF(44)=44 CONF(45)=44 CONF(46)=44H3-8 CONF(47)=441-A3 CONF(48)=44 CONF(49)=44 CONF(50)=44 CONF(51)=44 CONF(52)=44H3-8 CONF(53)=442-M- CONF(54)=44A6 CONF(55)=44 CONF(56)=44 CONF(57)=44H3-8 CONF(58)=442-M- CONF(59)=44A5 CONF(60)=44 CONF(61)=44H3-9 CONF(62)=442-M- CONF(63)=44A3 CONF(64)=44 CONF(65)=44 CONF(66)=44H1-8 CONF(67)=442-M- CONF(68)=44H3-1 CONF(69)=44H/3 CONF(70)=44 CONF(71)=44H3-8 CONF(72)=442-M- CONF(73)=44H3-P CONF(74)=44H3-1/3 CONF(75)=443 CONF(76)=44H3-8 CONF(77)=442-M- CONF(78)=44H3-1 CONF(79)=44H2-1 CONF(80)=44H CONF(81)=44H1-9 CONF(82)=442-M- CONF(83)=44H(P3) CONF(84)=44H-2/ CONF(85)=44H CONF(86)=44H3-8 CONF(87)=442-M- CONF(88)=44H3-1 CONF(89)=44H2-1 CONF(90)=44H/3	PDEI 115 PDEI 116 PDEI 117 PDEI 118 PDEI 119 PDEI 120 PDEI 121 PDEI 122 PDEI 123 PDEI 124 PDEI 125 PDEI 126 PDEI 127 PDEI 128 PDEI 129 PDEI 130 PDEI 131 PDEI 132 PDEI 133 PDEI 134 PDEI 135 PDEI 136 PDEI 137 PDEI 138 PDEI 139 PDEI 140 PDEI 141 PDEI 142 PDEI 143 PDEI 144 PDEI 145 PDEI 146 PDEI 147 PDEI 148 PDEI 149 PDEI 150 PDEI 151 PDEI 152 PDEI 153 PDEI 154 PDEI 155 PDEI 156 PDEI 157 PDEI 158 PDEI 159 PDEI 160 PDEI 161 PDEI 162 PDEI 163 PDEI 164 PDEI 165 PDEI 166 PDEI 167 PDEI 168 PDEI 169 PDEI 170 PDEI 171
120		
125		
130		
135		
140		
145		
150		
155		
160		
165		
170		

```

CONF(191)=4MN3-3
CONF(192)=442-M-
CONF(193)=4446-(
CONF(194)=4MF3)-
CONF(195)=4M1/3
CONF(196)=4MN3-9
CONF(197)=4M2-M-
CONF(198)=4M45-(
CONF(199)=4MP2)-
CONF(100)=4HC
CONF(101)=4M13-8
CONF(102)=4M2-M-
CONF(103)=4M45-(
CONF(104)=4MP3)-
CONF(105)=4M1/3
CONF(106)=4M
CONF(107)=4M
CONF(108)=4M
CONF(109)=4M
CONF(110)=4M
CONF(111)=4MN3-9
CONF(112)=4M2-M-
CONF(113)=4M46-F
CONF(114)=4M
CONF(115)=4M
CONF(116)=4MN3-9
CONF(117)=4M2-M-
CONF(118)=4M45-F
CONF(119)=4M
CONF(120)=4M
CONF(121)=4MN3-9
CONF(122)=4M2-M-
CONF(123)=4M45-F
CONF(124)=4M
CONF(125)=4M
CONF(126)=4M4N
CONF(127)=4M4N
CONF(128)=4M
CONF(129)=4M
CONF(130)=4M
ICOUNT=6
MFAUS(26) INUM, IENTRY
IENTRY=3
READ(5,25) (F(I),I=1,INJM)
READ(1,2) IGM,M,ICODE,NP,NSTAT,IPLUG,(ICOMB(I),I=1,4)
FORMAT(310)
IF (FOP(1))22,23
READ(1,3)(FC(I),I=1,8)
FORMAT(11)(PE12,6)
READ(1,3) (ALPHA(I),I=1,2),P,I,(AM,OX,OY,OZ
MFAUS(3) (XOL(I),I=1,15)
DO = I-1,NP
P,AM(1,3)P-1KAY(1), (PRES(I,1),J=1,NSTAT)
IPLUG=IPLUG
IF (IPLUG=1,0.25,OP.FIPLUG,31.7) FIPLUG=999999999.
IF (IPLUG=1,0.25,ANU.FIPLUG,1.50) FIPLUG=0.41
IF (IPLUG=1,1.50,ANU.FIPLUG,1.2,50) FIPLUG=1.63

```

POFI 172
 POFI 173
 POFI 174
 POFI 175
 POFI 176
 POFI 177
 POFI 178
 POFI 179
 POFI 180
 POFI 181
 POFI 182
 POFI 183
 POFI 184
 POFI 185
 POFI 186
 POFI 187
 POFI 188
 POFI 189
 POFI 190
 POFI 191
 POFI 192
 POFI 193
 POFI 194
 POFI 195
 POFI 196
 POFI 197
 POFI 198
 POFI 199
 POFI 200
 POFI 201
 POFI 202
 POFI 203
 POFI 204
 POFI 205
 POFI 206
 POFI 207
 POFI 208
 POFI 209
 POFI 210
 POFI 211
 POFI 212
 POFI 213
 POFI 214
 POFI 215
 POFI 216
 POFI 217
 POFI 218
 POFI 219
 POFI 220
 POFI 221
 POFI 222
 POFI 223
 POFI 224
 POFI 225
 POFI 226
 POFI 227
 POFI 228

```

233      IF (FIPLG.GT.2.50.AND.FIPLG.LT.3.50) FIPLG=3.25
        CN=0.
        CV=0.
        CLM=0.
        CLM=C.
        CA=1.
        DO 5 I=1,3
          PLAD(I)=SUM(I,J),J=1,NSTAT
        DO 20 I=1,INUM
          IF (F(I).EQ.IGNCW) GO TO 24
          20 CONTINUE
          GO TO 1
          29 ICOUNT=ICOUNT+1
          DO 6 J=1,14
            DXK=-2/3.
            IF (I.EQ.1.OR.I.EQ.14) DXK=-1
            DXK=DXK*.0
            FI=1
            SUM(15,I)=SUM(2,I)*DXK*(1.5-(FI+2./3.*.13))*(6./75)
            SUM(4,I)=SUM(1,I)*DXK*(1.5-(FI+2./3.*.13))*(6.0/75)
            CY=CN+SUM(1,I)
            CLM=CLM+SUM(4,I)
            CLN=CLN+SUM(15,I)
            CA=CA+SUM(3,I)
            5      DXK=25
            ICONF=ICODE
            IL=IPRCN(IENTRY)
            DO 101 I=1,IL
              IF (ICONG.EQ.I) IDK=I
              101 CONTINUE
              IXX=NUM8(IX,IENTRY)
              IXX=(5+IXX+1)-5
              WRITE(6,75)
              WRITE(6,7)
              WRITE(6,24)
              WRITE(6,27) IGMEV, (TC(I),I=1,3), IG(7), (TC(I),I=4,6), TC(8)
              INIDXX=IXX%
              WRITE(6,8) (CONF(I),I=IDXX,HI(I),FIPLG,ALPHA(I)
              WRITE(6,3) PH1,ALPHA(2),YAW,X,Y,DZ
              WRITE(6,10)
              WRITE(6,11) (XOL(I),I=1,14)
              WRITE(6,10)
              WRITE(6,12)
              DO 13 J=1,9
                WRITE(6,14) PMIRAY(I), (PRES(I,J),J=1,NSTAT)
                WRITE(6,10)
                WRITE(6,15) (SUM(1,I),I=1,NSTAT)
                WRITE(6,16) (SUM(2,I),I=1,NSTAT)
                WRITE(6,17) (SUM(3,I),I=1,NSTAT)
                WRITE(6,13) (SUM(4,I),I=1,NSTAT)
                WRITE(6,19) (SUM(5,I),I=1,NSTAT)
                WRITE(6,20) CV,CY,CA,CLM,CLN
                WRITE(6,21) (ICM9(I),I=1,5)
                IF (ICOUNT.EQ.INUM) GO TO 22
                22      GO TO 1
              STOP

```


GROUP	WACH	PO,PSIA	TO,OFGR	RE/FT+10**6	PS,PSIA	IO,DEGR	Q6,PSIA	W8,FT/SEC
1	1.50	14.400	501.67	4.00	3.347	401.15	6.216	147.6.8

PARENT CONFIG = NO PARENT LP = ***** ALPHA(PAR) = 5.00

PHI = .07 ALPHA(STORE) = .01 YAW(STORF) = -.01 DX,IN = 10.00 DY,IN = -.01 DZ,IN = 2.00

X/L	.0667	.1333	.2000	.2667	.3333	.4000	.4667	.5333	.6000	.6667	.7333	.8000	.8667	.9333
1														
2														
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														
13														
14														
15														
16														
17														
18														
19														
20														
21														
22														
23														
24														
25														
26														
27														
28														
29														
30														
31														
32														
33														
34														
35														
36														
37														
38														
39														
40														
41														
42														
43														
44														
45														
46														
47														

PMI(RAT)	P/P0	P/P0	P/P0	P/P0	C/P0	P/P0	P/P0	P/P0	P/P0	P/P0	P/P0	P/P0	P/P0	P/P0
0.0	1.495	1.310	1.172	1.027	.955	.952	.863	.803	.913	.945	.965	.970	.979	.990
55.0	1.527	1.361	1.195	1.050	.941	.954	.887	.916	.942	.961	.972	.982	.991	1.005
90.0	1.760	1.485	1.269	1.075	.925	.773	.890	.926	.932	.949	.957	.966	.975	.986
125.0	1.521	1.325	1.175	1.039	.942	.950	.872	.906	.924	.944	.958	.965	.974	.993
160.0	1.503	1.323	1.182	1.040	.971	.966	.875	.889	.920	.941	.955	.960	.974	.984
235.0	1.517	1.315	1.184	1.030	.957	.864	.888	.911	.923	.942	.952	.967	.971	.986
270.0	1.744	1.470	1.265	1.064	.925	.860	.880	.917	.926	.943	.949	.959	.965	.982
305.0	1.537	1.337	1.145	1.046	.946	.865	.879	.913	.935	.958	.973	.985	.991	1.016
360.0	1.495	1.310	1.172	1.027	.955	.952	.863	.803	.913	.945	.965	.970	.979	.990

	OCM/DX	OCV/DX	OCA/DX	OCLW/DX	OCMLW/DX	OCM/DX	OCV/DX	OCA/DX	OCLW/DX	OCMLW/DX	OCM/DX	OCV/DX	OCA/DX	OCLW/DX	OCMLW/DX	OCM/DX	OCV/DX	OCA/DX	OCLW/DX	OCMLW/DX
1	-0.0010	-0.0091	-0.0027	0.0013	0.0077	0.0036	0.0013	-0.0021	-0.0071	-0.0110	-0.0136	-0.0114	-0.0127	-0.0145	-0.0165	-0.0010	-0.0091	-0.0027	0.0013	0.0077
2	-0.0011	-0.0045	-0.0007	-0.0017	0.0024	0.0003	-0.0016	-0.0019	-0.0023	-0.0023	-0.0027	-0.0011	-0.0030	-0.0005	-0.0005	-0.0011	-0.0045	-0.0007	-0.0017	0.0024
3	0.0047	0.0045	0.0093	0.0155	-0.0104	0.0051	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0047	0.0045	0.0093	0.0155	-0.0104
4	-0.0036	-0.0035	-0.0026	0.0010	0.0041	0.0012	0.0001	0.0002	0.0023	0.0059	0.0133	0.0110	0.0150	0.0302	0.0302	-0.0036	-0.0035	-0.0026	0.0010	0.0041
5	-0.0022	-0.0053	-0.0007	-0.0013	0.0013	0.0001	-0.0002	0.0002	0.0007	0.0012	0.0020	0.0010	0.0036	0.0010	0.0010	-0.0022	-0.0053	-0.0007	-0.0013	0.0013

$$C_N = -.07 \quad C_Y = -.02 \quad C_A = .39 \quad C_L = .07 \quad C_W = .00$$

PRESSURE DISTRIBUTION GROUP	NUMBERS USED	7.3	961	989
-----------------------------	--------------	-----	-----	-----

APPENDIX E

FORCE AND MOMENT DATA RETRIEVAL PROGRAM

```

1  PROGRAM FORCE (INPUT,OUTPUT,TAP5=OUTPUT,TAP6=1)
   DIMENSION A(20),B(70,20)
   DIMENSION NMS(12,5),ISTCON(5),CONFS(6,4)
   INTEGER C(20),D(16)
   DIMENSION NUM(26,5),IPRCON(5),CONF(130)
   DO 110 I=1,5
     DO 110 J=1,12
       110 NMS(I,J)=12
       ISTCON(I)=4
       ISTCON(2)=1
       ISTCON(3)=2
       ISTCON(4)=4
       ISTCON(5)=11
       NMS(12,1)=5
       NMS(14,1)=3
       NMS(16,1)=4
       NMS(18,1)=1
       NMS(20,1)=2
       NMS(22,1)=3
       NMS(24,1)=3
       NMS(26,1)=2
       NMS(28,1)=2
       NMS(30,1)=1
       NMS(32,1)=2
       NMS(34,1)=2
       NMS(36,1)=2
       NMS(38,1)=2
       NMS(40,1)=2
       NMS(42,1)=2
       NMS(44,1)=2
       NMS(46,1)=2
       NMS(48,1)=2
       NMS(50,1)=2
       NMS(52,1)=2
       NMS(54,1)=2
       NMS(56,1)=2
       NMS(58,1)=2
       NMS(60,1)=2
       NMS(62,1)=2
       NMS(64,1)=2
       NMS(66,1)=2
       NMS(68,1)=2
       NMS(70,1)=2
       NMS(72,1)=2
       NMS(74,1)=2
       NMS(76,1)=2
       NMS(78,1)=2
       NMS(80,1)=2
       NMS(82,1)=2
       NMS(84,1)=2
       NMS(86,1)=2
       NMS(88,1)=2
       NMS(90,1)=2
       NMS(92,1)=2
       NMS(94,1)=2
       NMS(96,1)=2
       NMS(98,1)=2
       NMS(100,1)=2
       NMS(102,1)=2
       NMS(104,1)=2
       NMS(106,1)=2
       NMS(108,1)=2
       NMS(110,1)=2
       NMS(112,1)=2
       NMS(114,1)=2
       NMS(116,1)=2
       NMS(118,1)=2
       NMS(120,1)=2
       NMS(122,1)=2
       NMS(124,1)=2
       NMS(126,1)=2
       NMS(128,1)=2
       NMS(130,1)=2
       CONF(1)=4M
       CONF(2)=4M
       CONF(3)=4M
       CONF(4)=4M
       CONF(5)=4M
       CONF(6)=4M
       CONF(7)=4M
       CONF(8)=4M
       CONF(9)=4M
       CONF(10)=4M
       CONF(11)=4M
       CONF(12)=4M
       CONF(13)=4M
       CONF(14)=4M
       CONF(15)=4M
       CONF(16)=4M
       CONF(17)=4M
       CONF(18)=4M
       CONF(19)=4M
       CONF(20)=4M
       CONF(21)=4M
       CONF(22)=4M
       CONF(23)=4M
       CONF(24)=4M
       CONF(25)=4M
       CONF(26)=4M
       CONF(27)=4M
       CONF(28)=4M
       CONF(29)=4M
       CONF(30)=4M
       CONF(31)=4M
       CONF(32)=4M
       CONF(33)=4M
       CONF(34)=4M
       CONF(35)=4M
       CONF(36)=4M
       CONF(37)=4M
       CONF(38)=4M
       CONF(39)=4M
       CONF(40)=4M
       CONF(41)=4M
       CONF(42)=4M
       CONF(43)=4M
       CONF(44)=4M
       CONF(45)=4M
       CONF(46)=4M
       CONF(47)=4M
       CONF(48)=4M
       CONF(49)=4M
       CONF(50)=4M
       CONF(51)=4M
       CONF(52)=4M
       CONF(53)=4M
       CONF(54)=4M
       CONF(55)=4M
       CONF(56)=4M
       CONF(57)=4M
       CONF(58)=4M
       CONF(59)=4M
       CONF(60)=4M
       CONF(61)=4M
       CONF(62)=4M
       CONF(63)=4M
       CONF(64)=4M
       CONF(65)=4M
       CONF(66)=4M
       CONF(67)=4M
       CONF(68)=4M
       CONF(69)=4M
       CONF(70)=4M
       CONF(71)=4M
       CONF(72)=4M
       CONF(73)=4M
       CONF(74)=4M
       CONF(75)=4M
       CONF(76)=4M
       CONF(77)=4M
       CONF(78)=4M
       CONF(79)=4M
       CONF(80)=4M
       CONF(81)=4M
       CONF(82)=4M
       CONF(83)=4M
       CONF(84)=4M
       CONF(85)=4M
       CONF(86)=4M
       CONF(87)=4M
       CONF(88)=4M
       CONF(89)=4M
       CONF(90)=4M
       CONF(91)=4M
       CONF(92)=4M
       CONF(93)=4M
       CONF(94)=4M
       CONF(95)=4M
       CONF(96)=4M
       CONF(97)=4M
       CONF(98)=4M
       CONF(99)=4M
       CONF(100)=4M
       CONF(101)=4M
       CONF(102)=4M
       CONF(103)=4M
       CONF(104)=4M
       CONF(105)=4M
       CONF(106)=4M
       CONF(107)=4M
       CONF(108)=4M
       CONF(109)=4M
       CONF(110)=4M
       CONF(111)=4M
       CONF(112)=4M
       CONF(113)=4M
       CONF(114)=4M
       CONF(115)=4M
       CONF(116)=4M
       CONF(117)=4M
       CONF(118)=4M
       CONF(119)=4M
       CONF(120)=4M
       CONF(121)=4M
       CONF(122)=4M
       CONF(123)=4M
       CONF(124)=4M
       CONF(125)=4M
       CONF(126)=4M
       CONF(127)=4M
       CONF(128)=4M
       CONF(129)=4M
       CONF(130)=4M
   
```

FTN 4.60445

74/74 OPY=1

69	CONF S(126)=4NSTOC CONF S(127)=4N PHI CONF S(128)=4N=0.0 CONF S(129)=4N NEG CONF S(130)=4N. CONF S(131)=4NSTOC CONF S(132)=4N PHI CONF S(133)=4N=60. CONF S(134)=4N NEG CONF S(135)=4N. CONF S(136)=4NSF P CONF S(137)=4NMI=0 CONF S(138)=4N.0 7 CONF S(139)=4NEG. CONF S(140)=4N CONF S(141)=4NSEP1 CONF S(142)=4N CONF S(143)=4N CONF S(144)=4N CONF S(145)=4N CONF S(146)=4NSEP2 CONF S(147)=4N CONF S(148)=4N CONF S(149)=4N CONF S(150)=4N CONF S(151)=4NSEP2 CONF S(152)=4N CONF S(153)=4N CONF S(154)=4N CONF S(155)=4N CONF S(156)=4NUNK CONF S(157)=4NUNK CONF S(158)=4N CONF S(159)=4N CONF S(160)=4N NO 102 I=1.5 NO 102 J=1.26 1*2 NUMB(1,J,I)=1 I*2 CONF(1)=5 I*2 CONF(2)=9 I*2 CONF(3)=15 I*2 CONF(4)=19 I*2 CONF(5)=15 NUMB(1,1)=1 NUMB(12,1)=2 NUMB(1,1)=3 NUMB(16,1)=4 NUMB(15,1)=5 NUMB(126,1)=26 NUMB(1,2)=1 NUMB(7,2)=2 NUMB(13,2)=4 NUMB(16,2)=6 NUMB(15,2)=7 NUMB(16,2)=8 NUMB(17,2)=7 NUMB(19,2)=6	FORCE 59 FORCE 59 FORCE 60 FORCE 61 FORCE 62 FORCE 63 FORCE 64 FORCE 65 FORCE 66 FORCE 67 FORCE 68 FORCE 69 FORCE 70 FORCE 71 FORCE 72 FORCE 73 FORCE 74 FORCE 75 FORCE 76 FORCE 77 FORCE 78 FORCE 79 FORCE 79 FORCE 80 FORCE 81 FORCE 82 FORCE 83 FORCE 84 FORCE 85 FORCE 86 FORCE 87 FORCE 88 FORCE 89 FORCE 90 FORCE 91 FORCE 92 FORCE 93 FORCE 94 FORCE 95 FORCE 96 FORCE 97 FORCE 97 FORCE 98 FORCE 99 FORCE 100 FORCE 101 FORCE 102 FORCE 103 FORCE 104 FORCE 105 FORCE 106 FORCE 107 FORCE 108 FORCE 109 FORCE 110 FORCE 111 FORCE 112 FORCE 113 FORCE 114
69		
65		
73		
75		
87		
85		
90		
95		
100		
105		
110		

```

115 NUMB(19,2)=5
    NUMB(26,2)=26
    NUMB(11,3)=1
    NUMB(2,7)=9
    NUMB(1,8)=10
    NUMB(14,3)=11
    NUMB(15,4)=12
    NUMB(16,3)=13
    NUMB(7,8)=2
    NUMB(19,3)=14
    NUMB(19,3)=15
    NUMB(11,3)=15
    NUMB(11,3)=1
    NUMB(12,7)=17
    NUMB(13,7)=7
    NUMB(14,3)=4
    NUMB(15,3)=8
    NUMB(26,3)=26
    NUMB(11,4)=11
    NUMB(7,8)=18
    NUMB(13,4)=19
    NUMB(14,4)=12
    NUMB(15,4)=20
    NUMB(16,4)=21
    NUMB(17,4)=17
    NUMB(18,4)=16
    NUMB(19,4)=15
    NUMB(10,4)=14
    NUMB(11,4)=17
    NUMB(12,4)=9
    NUMB(13,4)=17
    NUMB(14,4)=2
    NUMB(15,4)=3
    NUMB(16,4)=4
    NUMB(17,4)=8
    NUMB(18,4)=7
    NUMB(19,4)=1
    NUMB(26,4)=24
    NUMB(11,5)=1
    NUMB(12,5)=18
    NUMB(7,5)=11
    NUMB(14,5)=23
    NUMB(15,5)=16
    NUMB(16,5)=13
    NUMB(17,5)=24
    NUMB(18,5)=3
    NUMB(19,5)=4
    NUMB(10,5)=2
    NUMB(11,5)=20
    NUMB(12,5)=25
    NUMB(13,5)=19
    NUMB(14,5)=14
    NUMB(15,5)=12
    NUMB(16,5)=26
    CONF(1)=44 NO
    CONF(2)=44BAPC
    CONF(3)=44MT
    FORCE115
    FORCE116
    FORCE117
    FORCE118
    FORCE119
    FORCE120
    FORCE121
    FORCE122
    FORCE123
    FORCE124
    FORCE125
    FORCE126
    FORCE127
    FORCE128
    FORCE129
    FORCE130
    FORCE131
    FORCE132
    FORCE133
    FORCE134
    FORCE135
    FORCE136
    FORCE137
    FORCE138
    FORCE139
    FORCE140
    FORCE141
    FORCE142
    FORCE143
    FORCE144
    FORCE145
    FORCE146
    FORCE147
    FORCE148
    FORCE149
    FORCE150
    FORCE151
    FORCE152
    FORCE153
    FORCE154
    FORCE155
    FORCE156
    FORCE157
    FORCE158
    FORCE159
    FORCE160
    FORCE161
    FORCE162
    FORCE163
    FORCE164
    FORCE165
    FORCE166
    FORCE167
    FORCE168
    FORCE169
    FORCE170
    FORCE171

```

175	CONF 14)=4M CONF 15)=4M CONF 16)=4M1-B CONF 17)=4M2-M CONF 18)=4M CONF 19)=4M CONF 110)=4M CONF 111)=4M1-B CONF 112)=4M2-M CONF 113)=4M1(P2) CONF 114)=4MC CONF 115)=4M CONF 116)=4M1-9 CONF 117)=4M2-M CONF 118)=4M1(P2) CONF 119)=4M1/3 CONF 120)=4M CONF 121)=4M1-B CONF 122)=4M2-M CONF 123)=4M1(P2) CONF 124)=4M2/3 CONF 125)=4M CONF 126)=4M1-9 CONF 127)=4M2-M CONF 128)=4M1(P2) CONF 129)=4M1/3 CONF 130)=4MS CONF 131)=4M1-B CONF 132)=4M2-M CONF 133)=4M1(P2) CONF 134)=4M1/3T CONF 135)=4MS2S1 CONF 136)=4M1-9 CONF 137)=4M2-M CONF 138)=4M1(P2) CONF 139)=4M1/3 CONF 140)=4MT CONF 141)=4M1-B CONF 142)=4M1 CONF 143)=4M CONF 144)=4M CONF 145)=4M CONF 146)=4M1-B CONF 147)=4M1-A3 CONF 148)=4M CONF 149)=4M CONF 150)=4M CONF 151)=4M1-B CONF 152)=4M2-M CONF 153)=4M4 CONF 154)=4M CONF 155)=4M CONF 156)=4M1-B CONF 157)=4M2-M CONF 158)=4M4S CONF 159)=4M CONF 160)=4M	FORCE172 FORCE173 FORCE174 FORCE175 FORCE176 FORCE177 FORCE178 FORCE179 FORCE180 FORCE181 FORCE182 FORCE183 FORCE184 FORCE185 FORCE186 FORCE187 FORCE188 FORCE189 FORCE190 FORCE191 FORCE192 FORCE193 FORCE194 FORCE195 FORCE196 FORCE197 FORCE198 FORCE199 FORCE200 FORCE201 FORCE202 FORCE203 FORCE204 FORCE205 FORCE206 FORCE207 FORCE208 FORCE209 FORCE210 FORCE211 FORCE212 FORCE213 FORCE214 FORCE215 FORCE216 FORCE217 FORCE218 FORCE219 FORCE220 FORCE221 FORCE222 FORCE223 FORCE224 FORCE225 FORCE226 FORCE227 FORCE228
-----	---	--

276	CONF 1511=4HN3-B CONF 1521=4H2-M- CONF 1531=4HA3 CONF 1541=4M CONF 1551=4M CONF 1561=4HN1-B CONF 1571=4H2-M- CONF 1581=4HP1-1 CONF 1591=4H13 CONF 1701=4M CONF 1711=4HN1-B CONF 1721=4H2-M- CONF 1731=4HA1-B CONF 1741=4H3-1/ CONF 1751=4H3 CONF 1761=4HN1-B CONF 1771=4H2-M- CONF 1781=4HA3-1 CONF 1791=4HP2-1 CONF 1801=4HC CONF 1811=4HN1-B CONF 1821=4H2-M- CONF 1831=4H1(P3) CONF 1841=4M- 2/ CONF 1851=4M3 CONF 1861=4HN3-B CONF 1871=4H2-M- CONF 1881=4HA4-1 CONF 1891=4HP2-1 CONF 1901=4HC CONF 1911=4HN3-B CONF 1921=4H2-M- CONF 1931=4HA4-1 CONF 1941=4HP3-1 CONF 1951=4H13 CONF 1961=4HN3-B CONF 1971=4H2-M- CONF 1981=4HA5-1 CONF 1991=4HP2-1 CONF 1101=4HC CONF 1111=4HN3-B CONF 1121=4H2-M- CONF 1131=4HA5-1 CONF 1141=4HP3-1 CONF 1151=4H13 CONF 1161=4M CONF 1171=4M CONF 1181=4M CONF 1191=4M CONF 11101=4M CONF 11111=4HN3-B CONF 11121=4H2-M- CONF 11131=4HA4-F CONF 11141=4M CONF 11151=4M CONF 11171=4HN3-B CONF 11161=4HN3-B	FORCE229 FORCE231 FORCE231 FORCE232 FORCE233 FORCE234 FORCE235 FORCE236 FORCE237 FORCE238 FORCE239 FORCE240 FORCE241 FORCE242 FORCE244 FORCE245 FORCE246 FORCE247 FORCE248 FORCE249 FORCE250 FORCE251 FORCE252 FORCE253 FORCE254 FORCE255 FORCE256 FORCE257 FORCE258 FORCE259 FORCE260 FORCE261 FORCE262 FORCE263 FORCE264 FORCE265 FORCE266 FORCE267 FORCE268 FORCE269 FORCE270 FORCE271 FORCE272 FORCE273 FORCE274 FORCE275 FORCE276 FORCE277 FORCE278 FORCE279 FORCE280 FORCE281 FORCE282 FORCE283 FORCE284 FORCE285
277		
278		
279		
280		
281		
282		
283		
284		
285		

03/19/79 16.32.57

FTN 4.04445

PROGRAM FORCE 74/74 OPT=1

```

CONF(118)=4MAT-F
CONF(119)=4M
CONF(120)=4M
CONF(121)=4M3-R
CONF(122)=4M2-M-
CONF(123)=4M45-F
CONF(124)=4M
CONF(125)=4M
CONF(126)=4MUNKM
CONF(127)=4MOMM
CONF(128)=4M
CONF(129)=4M
CONF(130)=4M
TPRINT=0
ICOUNT=0
READ(1,12) (C(I),I=1,20)
READ 14,INUM,IENTRY
READ 14,(N(I),I=1,INUM)
9 READ(1,1) (A(I),I=1,18)
IF(EOF(1)) 2,3
3 M=A(1)
IF(A(16).LT.0.25.OR.A(16).GT.3.50) A(16)=999.
IF(A(16).GT.0.25.AND.A(16).LT.1.50) A(16)=4.41
IF(A(16).GT.1.50.AND.A(16).LT.2.50) A(16)=1.63
IF(A(16).GT.2.50.AND.A(16).LT.3.50) A(16)=J.75
IGROUP=A(2)
DO 6 I=1,M
6 READ(1,1) (B(I,J),J=1,10)
DO 7 I=1,M
7 READ(1,1) (R(I,J),J=11,16)
DO 15 I=1,INUM
IF(IGROUP.EQ.0(I)) TPRINT=1
15 CONTINUE
IF (TPRINT.EQ.0) GO TO 9
ICOUNT=ICOUNT+1
ICNFS=A(15)
INXS=12
IL=ISTCON(IENTRY)
DO 112 I=1,IL
IF(ICNFS.EQ.I) IXS=I
112 CONTINUE
IXS=NUMS(IXS,IENTRY)
IXS=(5*INXS+1)-5
IXS=26
ICNFG=A(14)
IL=IPRCON(IENTRY)
DO 101 I=1,IL
IF(ICNFG.EQ.I) IXS=I
101 CONTINUE
IXS=NUMS(IXS,IENTRY)
IXS=(5*IXS+1)-5
WRITE(6,4) (C(I),I=1,20)
WRITE(6,4)
WRITE(6,5) IGROUP,(A(I),I=3,11),A(13)
INFOXX=IXS*4
WRITE(6,16) (CONF(I),I=10XX,INTDXX),A(12)
INTDXX=IXS*4

```

```

105 WRITE(6,17) (CONF5(I),I=INXS,INIOXS),A(16)
    WRITE(6,18)
    WRITE(6,19)
    DO 1J I=1,M
10 WRITE(6,11) (BIT(J),J=1,16)
    IPRINT=0
    IF(IICOUNT.EQ.INUM) GO TO 2
    GO TO 9
2 STOP
1 FORMAT(10E12.4)
4 FORMAT(2X,5MGROUP,2X,4MMACH,2X,7MPO,PSIA,2X,
    19MTO,NEG(P),2X,11HRE/FT*10**6,2X,7MPS,PSIA,2X,
    29MTO,NEG(P),2X,7MPO,PSIA,2X,9MVB,FT/SEC,2X,
    39MREF,PSIA,2X,4HROLL,DEG)
5 FORMAT(2X,16,F7.2,F9.3,F10.2,F11.3,F1.2,F10.3,
    1F10.1,F11.4,F9.2)
11 FORMAT(1X,F6.2,F7.2,14F8.3)
12 FORMAT(2A6)
13 FORMAT(1M1,1X,20A4)
14 FORMAT(16I5)
16 FORMAT(1,1X,14HPARENT CONFIG=,5A4,5X,11HALPHA(PAN)=,F5.1)
17 FORMAT(1,1X,14MSTORE CONFIG=,5A4,5X,3HLP=,F5.2)
18 FORMAT(1,3X,5HALPHA,3X,3HYAM,3X,6HDX(IN),2X,6HDV(IN),2X,
    16MIZ(IN),4X,2HCPN,5X,3HCLM,3X,6HCLM/CN,4X,2HCV,6X,3HCLN,
    25X,3HCLL,5X,3HCAT,2X,8HPR(1)/PA,2X,3HCPB,5X,2MCA)
19 FORMAT(1X,5H(DEG),2X,5H(DEG))
    END

```

105

351

355

360

165

FORCE DATA FROM V41A-84A JUNE-JULY 1975 TUNNEL ENTRY VKF-TR-75-164

GROUP MACH P0,PSIA T0,DEG(R) RE/FT*10**6 P8,PSIA T8,DEG(R) Q8,PSIA V8,FT/SEC PREF,PSIA ROLL,DEG
 417 2.56 28.983 623.03 3.45 1.228 276.89 5.373 2039.4 .6416 0.66

PARENT CONFIG=UNKNOWN ALPHA(PAR)= 0.0

STORE CONFIG=UNKNOWN LP=*****

ALPHA 10*G)	YAW (DEG)	DX(IN)	DY(IN)	DZ(IN)	CN	CLM	CLM/CN	CY	CLN	CLL	CAT	PB(1)/P8	PB(2)/P8	CPB	CA
-.02	.00	.002	.006	.470	.078	-.451	*****	-.019	.022	.003	.346	.581	6.000	-.096	.251
.32	.01	.002	.007	.621	.051	-.346	*****	-.020	.033	.032	.337	.588	0.000	-.094	.243
.02	.00	.003	.004	.871	-.006	-.035	*****	-.016	.030	.032	.311	.590	0.000	-.094	.237
.02	.00	.002	.005	1.120	-.073	.129	*****	-.011	.022	.002	.324	.614	0.000	-.091	.234
.01	.01	.002	.007	1.371	-.031	.240	*****	-.017	.012	.003	.327	.594	0.000	-.093	.234
.02	.00	.003	.006	1.620	-.017	.354	*****	-.005	.014	.002	.324	.612	0.000	-.089	.235
.02	.00	.003	.005	1.871	-.015	.506	*****	-.004	.008	.002	.318	.650	0.000	-.080	.238
.01	.00	.002	.003	2.119	.026	.151	*****	-.004	.014	.002	.321	.672	0.000	-.075	.246
.01	.01	.002	.007	2.371	.056	.040	.713	-.004	.013	.002	.328	.659	0.000	-.078	.250
.01	.01	.002	.017	2.620	.053	-.008	-.122	-.004	.015	.003	.344	.635	0.000	-.083	.260
.00	.01	.002	.017	2.870	.055	-.060	-.916	-.003	.016	.002	.352	.618	0.000	-.087	.265
.00	.01	.002	.037	3.119	.070	-.141	-2.013	-.003	.016	.003	.360	.612	0.000	-.089	.272
.00	.00	.002	.007	3.370	.072	-.203	-2.826	-.004	.014	.003	.368	.609	0.000	-.089	.279
.00	.00	.002	.007	3.621	.070	-.272	-3.888	-.003	.015	.003	.377	.602	0.000	-.091	.286
.00	.01	.002	.039	3.871	.065	-.321	-4.928	-.003	.015	.003	.380	.602	0.000	-.091	.290
.00	.01	.003	.019	4.120	.054	-.364	*****	-.003	.013	.003	.385	.606	0.000	-.091	.294
.00	.01	.002	.019	4.371	.044	-.400	*****	-.003	.010	.003	.390	.608	0.000	-.090	.300
.00	.01	.003	.004	4.620	.032	-.441	*****	-.002	.010	.003	.394	.624	0.000	-.086	.308
.00	.01	.002	.009	4.870	.018	-.474	*****	-.001	.011	.003	.396	.628	0.000	-.085	.311

FORCE DATA FROM V41A-LSA AUGUST 1976 TUNNEL ENTRY AEDC-DR-76-02

GROUP MACH PO,PSIA TO,DEG(R) RE/FT*10**6 PB,PSIA T0,DEG(R) QB,PSIA V0,FT/SEC PREF,PSIA ROLL,DEG
 42 2.08 17.164 500.00 3.99 2.194 322.22 6.142 1759.2 .0034 45.60

PARFNT CONFIG=UNKNOWN ALPHA(PAP)= 0.0

STORE CONFIG=UNKNOWN LP=*****

ALPHA (DEG)	YAW (DEG)	OX(TN)	OY(TN)	OZ(TN)	CN	CLM	CLM/CN	CY	CLN	CLL	CAT	PB(1)/PB	PB(2)/PB	CPB	CA
.01	.03	-.009	.023	.098	.452	-2.859	*****	.244	-1.010	-.014	.096	.379	0.000	-.222	.674
.02	.02	-.009	.117	.252	.325	-2.463	*****	.235	-.971	-.019	.077	.360	0.000	-.220	.648
.05	.03	-.009	.012	.505	.077	-1.525	*****	.222	-.914	-.023	.096	.331	0.000	-.239	.657
.05	.03	-.008	.019	.752	-.071	-.841	*****	.210	-.844	-.023	.076	.363	0.000	-.220	.648
.04	.02	-.009	.018	1.002	-.170	-.355	2.092	.189	-.766	-.022	.064	.395	0.000	-.216	.648
.02	.03	-.009	.020	1.250	-.215	-.118	.551	.156	-.639	-.021	.061	.417	0.000	-.208	.652
.04	.04	-.009	.022	1.501	-.311	.355	-1.142	.126	-.548	-.021	.075	.402	0.000	-.213	.662
.04	.03	-.008	.028	1.750	-.396	.798	-2.015	.102	-.449	-.017	.063	.425	0.000	-.205	.658
.03	.03	-.009	.021	1.999	-.445	1.098	-2.467	.074	-.338	-.016	.042	.443	0.000	-.199	.643
.03	.03	-.008	.022	2.249	-.456	1.245	-2.731	.050	-.262	-.015	.023	.469	0.000	-.190	.633
.02	.03	-.009	.020	2.499	-.447	1.323	-2.958	.021	-.049	-.012	.012	.496	0.000	-.180	.632
.01	.03	-.008	.017	2.748	-.418	1.318	-3.155	-.011	-.074	-.009	.036	.52	0.000	-.178	.628
.01	.04	-.008	.024	2.998	-.385	1.274	-3.305	-.039	-.211	-.007	.015	.497	0.000	-.180	.635
.01	.03	-.008	.023	3.249	-.347	1.213	-3.491	-.057	.303	-.004	.017	.485	0.000	-.184	.633
.01	.03	-.009	.023	3.497	-.282	1.052	-3.729	-.049	.300	-.003	.008	.485	0.000	-.184	.624
-.01	.02	-.010	.020	3.748	-.208	.809	-3.891	-.048	.223	-.018	.799	.498	0.000	-.179	.620
-.00	.02	-.008	.021	3.997	-.135	.572	-4.234	.019	.049	-.024	.747	.504	0.000	-.177	.620
-.01	.01	-.009	.019	4.246	-.051	.253	-4.938	.046	-.344	-.001	.795	.508	0.000	-.176	.620
-.00	.02	-.010	.020	4.497	.032	-.083	-5.551	.063	-.112	.009	.795	.511	0.000	-.178	.616
.00	.03	-.009	.024	4.748	.053	-.168	-3.151	.044	-.106	-.003	.812	.476	0.000	-.187	.625
.00	.02	-.010	.019	4.998	.071	-.248	-3.519	.070	-.149	-.003	.833	.437	0.000	-.201	.631
-.00	.02	-.009	.019	5.248	.041	-.323	-4.013	.074	-.105	-.003	.832	.427	0.000	-.205	.628
.01	.02	-.008	.019	5.498	.045	-.334	-3.927	.073	-.200	-.004	.846	.429	0.000	-.204	.642
.00	.02	-.009	.018	5.748	.090	-.375	-4.153	.074	-.219	-.004	.856	.426	0.000	-.205	.651
.00	.02	-.009	.017	5.997	.049	-.402	-4.502	.069	-.217	-.003	.862	.426	0.000	-.205	.657

FORCE DATA FROM VAIA-W9A JAN-FEB 1977 TUNNEL ENTRY AEDC-OP-77-29

GROUP MACH PO,PSIA TO,DEG(P) RE/FT*10**6 PR,PSIA T8,DEG(P) Q8,PSIA V8,FT/SEC PREF,PSIA ROLL,DEG
 514 1.63 18.778 583.50 5.31 4.223 379.00 7.855 1555.0 .0248 45.00

PARFMT CONFIG=UNKNOWN

ALPHA(PAR)= 0.0

STORE CONFIG=UNKNOWN

LP=*****

ALPHA (DEG)	YAW (DEG)	YAW (IN)	DX(IN)	DY(IN)	DZ(IN)	CN	CLM	CLM/CN	CY	CLN	CLL	CAT	PB(1)/P8	PB(2)/P8	CP8	CA
.01	-.03	16.990	-1.520	2.999	.012	.009	.777	-.005	-.005	-.006	-.006	.681	.544	0.000	-.245	.436
.01	-.03	16.990	-1.517	1.503	.041	-.072	-1.760	-.044	-.044	-.006	-.006	.683	.552	0.000	-.241	.442
.01	-.01	16.990	-1.517	.002	.065	-.130	-2.811	-.011	-.011	-.005	-.005	.683	.551	0.000	-.242	.441
.00	-.01	16.990	-1.510	-1.497	.069	-.142	-2.053	-.044	-.044	-.006	-.006	.690	.555	0.000	-.239	.451
.00	-.04	16.990	-1.526	-2.996	.067	-.154	-2.295	-.045	-.045	-.004	-.004	.689	.559	0.000	-.237	.452
.01	-.01	16.990	-1.518	-4.494	.076	-.195	-2.578	-.040	-.040	-.004	-.004	.689	.569	0.000	-.232	.457
-.00	-.01	16.990	-1.518	-5.994	.069	-.167	-2.419	.003	.003	-.035	-.035	.687	.568	0.000	-.232	.455
-.00	-.01	16.990	-1.514	-7.495	.040	-.065	-1.617	.001	.001	-.034	-.034	.690	.563	0.000	-.235	.455

FORCE DATA FROM V01A-T9A SEPT. 1977 TUNNEL ENTRY AEOC-OR-77-9A

GROUP MACH P0,PSIA T0,DEG(R) R0,FT/10**6 P0,PSIA T0,DEG(R) Q0,PSIA V0,FT/SEC PREF,PSIA ROLL,DEG
 252 1.51 14.576 501.11 4.02 1.913 399.11 6.246 1479.1 .1400 -.02

PARENT CONFIG= NO PARENT

ALPHA(PARENT)= 0.0

STOPE CONFIG=STOC PHI=45. DEG.

LP=*****

ALPHA (DEG)	YAW (DEG)	DX(LIN)	DY(LIN)	DZ(LIN)	CN	CLM	CLM/CN	CY	CLN	CLL	CAT	PB(11)/PB	PB(21)/PB	CPB	CA
-25.96	.01	-.002	-.001	-.005	-5.973	5.762	-.965	.072	-.048	.079	.716	.518	0.000	-.302	.414
-22.00	.00	-.003	.000	.007	-6.772	5.207	-1.091	.040	.031	.066	.690	.559	0.000	-.276	.414
-17.99	.01	-.003	.007	.006	-3.602	4.636	-1.207	.034	-.027	.014	.681	.593	0.000	-.255	.426
-14.00	.01	-.004	.006	.005	-2.592	3.973	-1.533	.033	-.075	.005	.684	.607	0.000	-.246	.438
-11.94	.03	-.002	.023	-.001	-2.144	3.460	-1.611	.037	-.086	.001	.683	.614	0.000	-.242	.442
-9.94	-.02	-.002	-.012	-.001	-1.722	2.804	-1.675	.037	-.089	-.008	.681	.610	0.000	-.245	.437
-7.96	.01	-.003	.002	-.001	-1.337	2.305	-1.723	.036	-.053	-.007	.690	.611	0.000	-.244	.446
-5.97	-.02	-.000	-.026	-.001	-.975	1.705	-1.750	.022	-.043	-.008	.694	.597	0.000	-.252	.442
-3.97	-.03	-.001	-.015	-.002	-.623	1.088	-1.746	.025	-.043	-.012	.702	.617	0.000	-.240	.462
-1.97	-.04	-.001	-.029	-.001	-.293	.449	-1.504	.022	-.045	-.013	.712	.609	0.000	-.245	.467
.01	-.02	-.002	-.021	-.005	.052	-.176	-3.399	.024	-.042	-.015	.708	.612	0.000	-.243	.465
2.02	.02	-.004	.008	-.005	.392	-.014	-2.078	.014	-.021	-.015	.698	.621	0.000	-.238	.460
4.02	.03	-.005	.022	-.005	.738	-1.466	-1.905	.014	-.034	-.016	.681	.613	0.000	-.232	.449
6.02	.02	-.004	.016	-.005	1.048	-2.115	-1.945	.014	-.031	-.020	.679	.613	0.000	-.242	.437
8.01	-.02	-.006	-.017	-.007	1.457	-2.747	-1.805	.046	.133	-.027	.672	.611	0.000	-.244	.428
10.02	.02	-.005	.007	-.007	1.855	-3.320	-1.790	-.048	.096	-.041	.663	.613	0.000	-.243	.420
12.04	.01	-.006	.007	-.008	2.271	-3.852	-1.697	-.012	.144	-.056	.662	.613	0.000	-.242	.420
14.04	.02	-.007	.012	-.010	2.714	-4.316	-1.508	-.015	.146	-.066	.669	.604	0.000	-.248	.421
16.04	.00	-.004	.009	-.003	3.147	-5.132	-1.355	-.012	.144	-.075	.671	.591	0.000	-.256	.414
18.04	.01	-.005	.008	-.004	4.932	-5.714	-1.158	.014	.100	-.085	.674	.584	0.000	-.260	.414
20.00	.01	-.006	.007	-.003	6.063	-6.216	-1.025	.044	.007	-.062	.685	.543	0.000	-.286	.399

FORCE DATA FROM V61A-V6A JAN-FEB 1978 ENTRY AEDC-TSP-78-V2

GROUP MACH PO,PSIA TO,DEGR) PF,FT/10**6 P8,PSIA T8,DEGR) Q8,PSIA V8,FT/SEC PREF,PSIA ROLL,DEG
 314 1.63 14.280 580.67 3.79 3.195 379.18 5.943 1556.0 .0011 -.01

PARENT CONFIG= NO PARENT

ALPHA(PARI)= 0.0

STORE CONFIG=SCOC PHI=45. DEG.

LP=*****

ALPHA (DEG)	YAM	RY(TN)	DY(TN)	DZ(TN)	CN	CLM	CLM/CN	CY	CLM	CLL	CAT	P8(1)/P8	P8(2)/P8	CP8	CA
-9.98	-0.00	-0.002	-0.011	.002	-1.667	2.661	-1.596	.002	.004	-.001	.594	.591	.632	-.289	.385
-7.50	-0.01	-0.003	-0.014	.006	-1.223	2.052	-1.678	-.042	.014	-.001	.603	.617	.629	-.203	.400
-5.00	-0.01	-0.003	.010	.005	-.787	1.363	-1.732	-.006	.025	.000	.613	.633	.650	-.193	.420
-2.96	.001	-0.002	.004	-.014	-.622	1.088	-1.751	-.007	.030	-.001	.606	.638	.655	-.190	.416
-2.96	.001	-0.002	.003	-.005	-.456	.811	-1.780	-.009	.025	-.002	.612	.635	.658	-.198	.422
-1.97	.01	-0.003	.005	-.016	-.299	.542	-1.814	-.009	.028	-.003	.613	.639	.654	-.190	.423
-1.96	.01	-0.004	.008	-.005	-.142	.271	-1.917	-.004	.024	-.004	.611	.632	.647	-.194	.417
.00	.00	-0.003	.002	-.007	.010	.011	1.052	-.005	.015	-.007	.612	.627	.639	-.197	.415
1.03	.01	-0.003	.004	-.008	.169	-.266	-1.581	-.005	.016	-.005	.605	.624	.632	-.200	.405
2.03	.01	-0.004	.004	-.008	.332	-.553	-1.668	-.003	.017	-.004	.606	.624	.641	-.198	.408
3.03	.01	-0.005	.005	-.009	.495	-.843	-1.702	-.007	.034	-.005	.597	.623	.639	-.198	.399
4.03	.01	-0.005	.005	-.008	.660	-1.117	-1.692	-.009	.039	-.006	.599	.631	.639	-.196	.403
5.03	.00	-0.006	-.008	-.010	.832	-1.409	-1.694	-.011	.037	-.006	.597	.636	.638	-.197	.399
7.59	.00	-0.009	-.002	-.024	1.240	-2.081	-1.626	-.021	.068	-.007	.592	.648	.640	-.194	.398
9.99	.00	-0.005	.002	-.003	1.731	-2.648	-1.538	-.019	.071	-.014	.575	.614	.611	-.208	.367

APPENDIX F

TRAJECTORY DATA RETRIEVAL PROGRAM

```

1  PROGRAM T04J  (INPUT,OUTPUT,TAPES=OUTPUT,TAPE1)
   DIMENSION A(17),B(275,24)
   INT=GER C(20),0(20)
   DIMENSION NUMB(20,5),IPRCON(5),CONF(13)
   DIMENSION NUMS(12,5),ISTCON(5),CONFS(6)
   DO 112 I=1,5
     DO 102 J=1,2,
       DO 104 KJ=1,26
         DO 110 I=1,5
           DO 111 J=1,12
             NUMS(IJ,I)=12
             ISTCON(IJ)=4
             ISTDON(IJ)=1
             ISTDON(IJ)=2
             ISTDON(IJ)=4
             NUMS(I2,I)=11
             NUMS(I3,I)=7
             NUMS(I4,I)=4
             NUMS(I1,2)=4
             NUMS(I1,3)=1
             NUMS(I7,3)=2
             NUMS(I1,4)=1
             NUMS(I2,4)=7
             NUMS(I3,4)=5
             NUMS(I4,4)=2
             NUMS(I5,4)=1
             NUMS(I4,5)=2
             NUMS(I5,5)=3
             NUMS(I6,5)=6
             NUMS(I7,5)=7
             NUMS(I8,5)=8
             NUMS(I9,5)=9
             NUMS(I10,5)=10
             NUMS(I11,5)=11
             CONFS(I1)=4HSCDC
             CONFS(I2)=4H PHI
             CONFS(I3)=4H=45.
             CONFS(I4)=4H DEG
             CONFS(I5)=4H.
             CONFS(I6)=4HSP6C
             CONFS(I7)=4H PHI
             CONFS(I8)=4H=0.0
             CONFS(I9)=4H DEG
             CONFS(I10)=4H.
             CONFS(I11)=4HSLFN
             CONFS(I12)=4H PHI
             CONFS(I13)=4H=0.0
             CONFS(I14)=4H DEG
             CONFS(I15)=4H.
             CONFS(I16)=4HSLFF
             CONFS(I17)=4H PHI
             CONFS(I18)=4H=45.
             CONFS(I19)=4H DEG
             CONFS(I20)=4H.
             CONFS(I21)=4H=45.
             CONFS(I22)=4H=0.0

```

J3/28/79 13.00.29

FTN 4.7476

PROGRAM T9AJ 74/74 OPT=1

67	CONF51231=4M PRE	TRAJ 58
	CONF51241=4MSS S	TRAJ 59
	CONF51251=4MSTORE	TRAJ 60
	CONF51261=4MSTOC	TRAJ 61
	CONF51271=4M PHI	TRAJ 62
	CONF51281=4M=0.0	TRAJ 63
	CONF51291=4M DEG	TRAJ 64
68	CONF51301=4M.	TRAJ 65
	CONF51311=4MSTOC	TRAJ 66
	CONF51321=4M PHI	TRAJ 67
	CONF51331=4M=60.	TRAJ 68
	CONF51341=4M DEG	TRAJ 69
70	CONF51351=4M.	TRAJ 70
	CONF51361=4MSE P	TRAJ 71
	CONF51371=4MHI=0	TRAJ 72
	CONF51381=4M.0 D	TRAJ 73
	CONF51391=4MEG.	TRAJ 74
75	CONF51401=4M	TRAJ 75
	CONF51411=4MSEPI	TRAJ 76
	CONF51421=4M	TRAJ 77
	CONF51431=4M	TRAJ 78
	CONF51441=4M	TRAJ 79
80	CONF51451=4M	TRAJ 80
	CONF51461=4MSEPI	TRAJ 81
	CONF51471=4M	TRAJ 82
	CONF51481=4M	TRAJ 83
	CONF51491=4M	TRAJ 84
85	CONF51501=4M	TRAJ 85
	CONF51511=4MSEPI	TRAJ 86
	CONF51521=4M	TRAJ 87
	CONF51531=4M	TRAJ 88
90	CONF51541=4M	TRAJ 89
	CONF51551=4M	TRAJ 90
	CONF51561=4MUNK	TRAJ 91
	CONF51571=4MOWN	TRAJ 92
	CONF51581=4M	TRAJ 93
95	CONF51591=4M	TRAJ 94
	CONF51601=4M	TRAJ 95
	IPPCON(1)=5	TRAJ 96
	IPPCON(2)=9	TRAJ 97
	IPPCON(3)=15	TRAJ 98
	IPPCON(4)=19	TRAJ 99
100	IPPCON(5)=15	TRAJ 100
	NUMA(1,1)=1	TRAJ 101
	NUMB(2,1)=2	TRAJ 102
	NUMC(3,1)=3	TRAJ 103
	NUMD(4,1)=4	TRAJ 104
105	NUME(5,1)=5	TRAJ 105
	NUMF(6,1)=6	TRAJ 106
	NUMG(7,1)=7	TRAJ 107
	NUMH(8,1)=8	TRAJ 108
	NUMI(9,1)=9	TRAJ 109
110	NUMJ(10,1)=10	TRAJ 110
	NUMK(11,1)=11	TRAJ 111
	NUML(12,1)=12	TRAJ 112
	NUMM(13,1)=13	TRAJ 113
	NUMN(14,1)=14	TRAJ 114

115	NUM819,21=5	TRAJ 115
	NUM820,21=26	TRAJ 116
	NUM811,31=1	TRAJ 117
	NUM812,31=9	TRAJ 118
120	NUM813,31=10	TRAJ 119
	NUM814,31=11	TRAJ 120
	NUM815,31=12	TRAJ 121
	NUM816,31=13	TRAJ 122
	NUM817,31=2	TRAJ 123
125	NUM818,31=14	TRAJ 124
	NUM819,31=15	TRAJ 125
	NUM821,31=16	TRAJ 126
	NUM811,31=3	TRAJ 127
	NUM812,31=17	TRAJ 128
130	NUM813,31=7	TRAJ 129
	NUM814,31=4	TRAJ 130
	NUM815,31=8	TRAJ 131
	NUM820,31=26	TRAJ 132
	NUM811,41=11	TRAJ 133
135	NUM812,41=10	TRAJ 134
	NUM817,41=19	TRAJ 135
	NUM816,41=12	TRAJ 136
	NUM815,41=20	TRAJ 137
	NUM816,41=21	TRAJ 138
140	NUM817,41=13	TRAJ 139
	NUM818,41=16	TRAJ 140
	NUM819,41=15	TRAJ 141
	NUM811,41=14	TRAJ 142
	NUM811,41=10	TRAJ 143
145	NUM812,41=9	TRAJ 144
	NUM813,41=17	TRAJ 145
	NUM814,41=2	TRAJ 146
	NUM815,41=3	TRAJ 147
	NUM816,41=4	TRAJ 148
150	NUM817,41=8	TRAJ 149
	NUM819,41=7	TRAJ 150
	NUM819,41=1	TRAJ 151
	NUM820,41=26	TRAJ 152
155	NUM811,51=1	TRAJ 153
	NUM812,51=19	TRAJ 154
	NUM813,51=11	TRAJ 155
	NUM814,51=23	TRAJ 156
	NUM815,51=16	TRAJ 157
	NUM816,51=13	TRAJ 158
160	NUM817,51=24	TRAJ 159
	NUM818,51=3	TRAJ 160
	NUM819,51=4	TRAJ 161
	NUM8110,51=2	TRAJ 162
165	NUM8111,51=20	TRAJ 163
	NUM8112,51=25	TRAJ 164
	NUM8113,51=19	TRAJ 165
	NUM8114,51=14	TRAJ 166
	NUM8115,51=12	TRAJ 167
	NUM8120,51=26	TRAJ 168
170	CONF11=44M NO	TRAJ 169
	CONF12=44MPARE	TRAJ 170
	CONF13=44MNT	TRAJ 171

239	CONF 161)=4MH3-8 CONF 162)=4M2-M- CONF 163)=4MA3 CONF 164)=4M CONF 165)=4M CONF 166)=4MH1-8 CONF 167)=4M2-M- CONF 168)=4MP3-1 CONF 169)=4M/3 CONF 170)=4M CONF 171)=4MH3-8 CONF 172)=4M2-M- CONF 173)=4MA3-P CONF 174)=4MH3-1/ CONF 175)=4M3 CONF 176)=4MH3-8 CONF 177)=4M2-M- CONF 178)=4MA3-1 CONF 179)=4MP2)- CONF 180)=4MC CONF 181)=4MH1-8 CONF 182)=4M2-M- CONF 183)=4H(P3) CONF 184)=4M- 2/ CONF 185)=4M3 CONF 186)=4MH3-8 CONF 187)=4M2-M- CONF 188)=4MA4-1 CONF 189)=4MP2)- CONF 190)=4MC CONF 191)=4MH3-8 CONF 192)=4M2-M- CONF 193)=4MA4-1 CONF 194)=4MP3)- CONF 195)=4M1/3 CONF 196)=4MH3-8 CONF 197)=4M2-M- CONF 198)=4MA5-1 CONF 199)=4MP2)- CONF 200)=4MC CONF 201)=4MH3-8 CONF 202)=4M2-M- CONF 203)=4MA5-1 CONF 204)=4MP3)- CONF 205)=4M1/3 CONF 206)=4M CONF 207)=4M CONF 208)=4M CONF 209)=4MH3-8 CONF 210)=4M2-M- CONF 211)=4M2-M- CONF 212)=4MA4-F CONF 213)=4M4-1 CONF 214)=4M CONF 215)=4M CONF 216)=4MH3-8 CONF 217)=4M2-M-	TRAJ 229 TRAJ 230 TRAJ 231 TRAJ 232 TRAJ 233 TRAJ 234 TRAJ 235 TRAJ 236 TRAJ 237 TRAJ 238 TRAJ 239 TRAJ 240 TRAJ 241 TRAJ 242 TRAJ 243 TRAJ 244 TRAJ 245 TRAJ 246 TRAJ 247 TRAJ 248 TRAJ 249 TRAJ 250 TRAJ 251 TRAJ 252 TRAJ 253 TRAJ 254 TRAJ 255 TRAJ 256 TRAJ 257 TRAJ 258 TRAJ 259 TRAJ 260 TRAJ 261 TRAJ 262 TRAJ 263 TRAJ 264 TRAJ 265 TRAJ 266 TRAJ 267 TRAJ 268 TRAJ 269 TRAJ 270 TRAJ 271 TRAJ 272 TRAJ 273 TRAJ 274 TRAJ 275 TRAJ 276 TRAJ 277 TRAJ 278 TRAJ 279 TRAJ 280 TRAJ 281 TRAJ 282 TRAJ 283 TRAJ 284 TRAJ 285
235		
240		
245		
250		
255		
260		
265		
270		
275		
280		
285		

```

290 CONF(119)=4MA3-F
    CONF(119)=4M
    CONF(120)=4M
    CONF(121)=4M3-8
    CONF(122)=4M2-M-
    CONF(123)=4MA5-F
    CONF(124)=4M
    CONF(125)=4M
    CONF(126)=4MUNK
    CONF(127)=4MOM
    CONF(128)=4M
    CONF(129)=4M
    CONF(130)=4M
    IP=INT=8
    ICOUNT=0
    READ(1,12) (C(I),I=1,20)
    READ 14,INUM,IENTRY
    READ 14,(D(I),I=1,INUM)
9 READ(1,1) (A(I),I=1,17)
    IF(COF(1)) 2,3
3 4=A(12)
    IF(A(17).LT.0.25.OR.A(7).GT.3.50) A(7)=9999.
    IF(A(17).GT.0.25.AND.A(7).LT.1.50) A(7)=0.01
    IF(A(17).GT.1.50.AND.A(7).LT.2.50) A(7)=1.63
    IF(A(17).GT.2.50.AND.A(7).LT.3.50) A(7)=3.25
    IPAGE=1
    ICOUNT=ICOUNT+1
    DO 6 I=1,M
        READ(1,1) (B(I,J),J=1,10)
        READ(1,1) (B(I,J),J=11,20)
6 READ(1,1) (B(I,J),J=21,24)
    DO 15 I=1,INUM
        IF(IGROUP.EQ.0(I)) IPRINT=1
15 CONTINUE
    IF (IP=INT.EQ.0) GO TO 9
    ICOUNT=ICOUNT+1
    RE=A(15)*.00001
    IT=A(1)
    ALD=B(1,5)
    ICONF=AI(4)
    IDX=2
    IL=IPRCON(IENTRY)
    DO 101 I=1,IL
        IF(ICONFG.EQ.1) IDX=I
101 CONTINUE
    IDXX=NUMB(IDX,IENTRY)
    IDXX=(5*IDXX+1)-5
    ICONF=AI(5)
    IDXS=12
    IL=1STCON(IENTRY)
    DO 112 I=1,IL
        IF(ICONFS.EQ.1) IDXS=I
112 CONTINUE
    IOXS=NUMB(IDXS,IENTRY)
    IOXS=(5*IOXS+1)-5
20 IN=(IPAGE-1)*45+1
    IL=IPAGE*45
TRAJ 286
TRAJ 287
TRAJ 288
TRAJ 289
TRAJ 290
TRAJ 291
TRAJ 292
TRAJ 293
TRAJ 294
TRAJ 295
TRAJ 296
TRAJ 297
TRAJ 298
TRAJ 299
TRAJ 300
TRAJ 301
TRAJ 302
TRAJ 303
TRAJ 304
TRAJ 305
TRAJ 306
TRAJ 307
TRAJ 308
TRAJ 309
TRAJ 310
TRAJ 311
TRAJ 312
TRAJ 313
TRAJ 314
TRAJ 315
TRAJ 316
TRAJ 317
TRAJ 318
TRAJ 319
TRAJ 320
TRAJ 321
TRAJ 322
TRAJ 323
TRAJ 324
TRAJ 325
TRAJ 326
TRAJ 327
TRAJ 328
TRAJ 329
TRAJ 330
TRAJ 331
TRAJ 332
TRAJ 333
TRAJ 334
TRAJ 335
TRAJ 336
TRAJ 337
TRAJ 338
TRAJ 339
TRAJ 340
TRAJ 341
TRAJ 342

```


AD-A083 848

NIELSEN ENGINEERING AND RESEARCH INC MOUNTAIN VIEW CALIF F/G 20/4
DATA REPORT FOR AN EXTENSIVE STORE SEPARATION TEST PROGRAM COND--ETC(U)
DEC 79 F K GOODWIN, C L DYER F33615-76-C-3077
NEAR-TR-205 AFFDL-TR-79-3130 NL

UNCLASSIFIED

4 of 4
AD-A
National



END
DATE
FILMED
6-80
DTIC

CAPTIVE TRAJECTORY DATA FROM V01A-Y0A SEPTEMBER ENTRY AFDC-04-77-90

GROUP 251 PAGE 1

WACH PO,PSIA TO,DEG(P) GE,FT/SEC PA,PSIA TA,DEG(P) OA,PSIA VA,FT/SEC TRAJECTORY CODE VA PHOS
 1.51 14.614 540.31 4.33 3.924 394.56 6.262 1470.3 4 1462.24 5.925E-04

PARENT CONFIG N3-U2-N-44-(P)-1/3 ALPHA(PAP)= 5.0

STORE CONFIG SCOC PHI=45.756. LP= .01

TIME SEC	X FT.	Y FT.	7 FT.	ALPHAP DEG.	WACH DEG.	PHI DEG.	CN	CLM	CY	CLN	CLL	CAT	QS PSF	VS FT/SEC	ALPHAK DEG.	VANK DEG.
0.00	0.00	0.00	0.00	5.01	-0.00	-0.00	.052	-3.590	-250	-2.440	.244	.740	634.52	1459.7	.01	-0.00
0.05	-0.00	-0.00	0.00	5.06	-0.01	.01	.058	-3.607	-208	-2.532	.252	.740	634.52	1459.7	.01	-0.00
0.10	-0.00	-0.00	0.00	5.08	-0.01	.03	.054	-3.586	-217	-2.492	.252	.751	636.01	1459.7	.02	-0.00
0.15	-0.00	-0.00	0.00	4.99	-0.02	.06	.054	-3.610	-222	-2.505	.255	.751	638.05	1464.3	.03	-0.00
0.20	-0.00	-0.00	0.00	4.90	-0.03	.11	.055	-3.636	-210	-2.501	.245	.746	637.35	1464.4	.03	-0.00
0.25	-0.00	-0.00	0.00	4.80	-0.05	.16	.054	-3.622	-217	-2.468	.241	.737	635.18	1459.6	.05	-0.00
0.30	-0.00	-0.00	0.00	4.66	-0.07	.23	.058	-3.605	-225	-2.479	.249	.745	635.41	1459.6	.06	-0.00
0.35	-0.00	-0.00	0.00	4.55	-0.09	.30	.056	-3.625	-233	-2.478	.252	.749	635.62	1462.7	.07	-0.01
0.40	-0.00	-0.00	0.00	4.44	-0.12	.39	.073	-3.636	-236	-2.406	.231	.736	638.71	1464.0	.09	-0.01
0.45	-0.00	-0.00	0.00	4.34	-0.15	.49	.070	-3.658	-240	-2.360	.214	.736	636.75	1462.3	.10	-0.01
0.50	-0.00	-0.00	0.00	4.24	-0.18	.59	.080	-3.663	-248	-2.314	.202	.730	636.22	1458.0	.12	-0.01
0.55	-0.00	-0.00	0.00	4.13	-0.21	.71	.085	-3.668	-261	-2.306	.207	.733	635.46	1462.3	.13	-0.01
0.60	-0.00	-0.00	0.00	4.03	-0.25	.83	.086	-3.705	-266	-2.246	.190	.724	634.90	1458.7	.15	-0.01
0.65	-0.00	-0.00	0.00	3.93	-0.23	.96	.086	-3.712	-273	-2.242	.187	.724	637.41	1461.6	.16	-0.01
0.70	-0.00	-0.00	0.00	3.83	-0.33	1.10	.080	-3.711	-284	-2.178	.179	.717	637.30	1458.8	.17	-0.01
0.75	-0.00	-0.00	0.00	3.73	-0.38	1.25	.082	-3.735	-292	-2.141	.172	.713	639.77	1455.0	.18	-0.01
0.80	-0.00	-0.00	0.00	3.63	-0.43	1.41	.088	-3.753	-304	-2.093	.163	.720	636.74	1460.7	.19	-0.01
0.85	-0.00	-0.00	0.00	3.53	-0.49	1.57	.082	-3.741	-315	-2.029	.144	.707	637.35	1462.5	.20	-0.01
0.90	-0.00	-0.00	0.00	3.43	-0.53	1.74	.086	-3.763	-327	-1.946	.145	.710	636.40	1460.3	.21	-0.02
0.95	-0.00	-0.00	0.00	3.33	-0.59	1.92	.074	-3.768	-342	-1.919	.129	.707	636.86	1462.8	.22	-0.02
1.00	-0.00	-0.00	0.00	3.23	-0.65	2.10	.071	-3.748	-350	-1.869	.119	.709	635.56	1462.6	.22	-0.02
1.05	-0.00	-0.00	0.00	3.13	-0.71	2.28	.063	-3.735	-372	-1.795	.106	.704	634.38	1458.4	.22	-0.02
1.10	-0.00	-0.00	0.00	3.03	-0.78	2.47	.055	-3.728	-387	-1.736	.096	.706	636.76	1462.4	.22	-0.02
1.15	-0.00	-0.00	0.00	2.93	-0.84	2.67	.049	-3.698	-403	-1.658	.079	.704	635.62	1460.8	.23	-0.02
1.20	-0.00	-0.00	0.00	2.83	-0.91	2.87	.049	-3.656	-424	-1.597	.067	.706	635.81	1460.1	.23	-0.02
1.25	-0.00	-0.00	0.00	2.73	-1.06	3.07	.056	-3.608	-457	-1.482	.047	.711	636.53	1463.3	.24	-0.02
1.30	-0.00	-0.00	0.00	2.63	-1.21	3.27	.072	-3.497	-493	-1.353	.021	.706	634.39	1458.0	.24	-0.03
1.35	-0.00	-0.00	0.00	2.53	-1.37	3.47	.077	-3.396	-533	-1.243	.001	.713	636.76	1462.4	.25	-0.03
1.40	-0.00	-0.00	0.00	2.43	-1.54	3.67	.091	-3.242	-563	-1.111	.013	.693	635.15	1456.7	.25	-0.03
1.45	-0.00	-0.00	0.00	2.33	-1.72	3.87	.082	-3.158	-590	-0.991	.025	.686	638.38	1464.2	.26	-0.04
1.50	-0.00	-0.00	0.00	2.23	-1.90	4.07	.069	-3.041	-633	-0.884	.034	.682	634.99	1458.8	.26	-0.04
1.55	-0.00	-0.00	0.00	2.13	-2.09	4.27	.056	-2.901	-675	-0.754	.047	.674	634.54	1460.1	.27	-0.04
1.60	-0.00	-0.00	0.00	2.03	-2.29	4.47	.044	-2.766	-710	-0.631	.058	.671	634.56	1460.1	.28	-0.05
1.65	-0.00	-0.00	0.00	1.93	-2.49	4.67	.033	-2.643	-748	-0.530	.064	.672	634.47	1460.1	.28	-0.05
1.70	-0.00	-0.00	0.00	1.83	-2.69	4.87	.023	-2.538	-780	-0.404	.075	.670	634.24	1460.3	.29	-0.05
1.75	-0.00	-0.00	0.00	1.73	-2.89	5.07	.015	-2.446	-815	-0.282	.088	.667	633.81	1460.3	.30	-0.06
1.80	-0.00	-0.00	0.00	1.63	-3.10	5.27	.008	-2.368	-845	-0.169	.102	.662	633.24	1455.0	.31	-0.06
1.85	-0.00	-0.00	0.00	1.53	-3.32	5.47	.001	-2.307	-883	-0.056	.117	.664	631.64	1455.0	.31	-0.07
1.90	-0.00	-0.00	0.00	1.43	-3.53	5.67	.000	-2.252	-914	.038	.133	.666	634.70	1463.5	.32	-0.07
1.95	-0.00	-0.00	0.00	1.33	-3.74	5.87	.000	-2.203	-944	.134	.145	.665	631.11	1458.3	.33	-0.08
2.00	-0.00	-0.00	0.00	1.23	-3.96	6.07	.000	-2.159	-984	.227	.156	.659	631.88	1458.3	.34	-0.08
2.05	-0.00	-0.00	0.00	1.13	-4.18	6.27	.000	-2.128	-1.015	.327	.166	.665	632.56	1456.0	.35	-0.09
2.10	-0.00	-0.00	0.00	1.03	-4.40	6.47	.000	-2.098	-992	.433	.174	.672	635.17	1460.1	.36	-0.09
2.15	-0.00	-0.00	0.00	0.93	-4.63	6.67	.000	-2.077	-1.070	.533	.181	.677	636.39	1466.6	.37	-0.10
2.20	-0.00	-0.00	0.00	0.83	-4.85	6.87	.000	-2.066	-1.113	.639	.185	.685	634.51	1458.6	.38	-0.11

CAPTIVE TRAJECTORY DATA FOR VAIA-TQA SEPTEMBER ENTRY ALIC-DS-77-38

GROUP 281 0455 2

MACH 0.85 PSIA 10.076 (K) 11.771 (K) 6.83 3.924 394.56 6.262 1478.3 1462.20 5.925E-04
1.51 14.614 540.31 4.03

PARENT CONFIG N1-12-N-44-(P1)-1/3 ALPHA(PAR)= 5.0

STORE CONFIG SCOC PHI=45. DEG. LP= .01

TIME	Y	Y	Z	ALPHA	YAN2P	PHI	CN	CLM	CY	CLN	CLL	CAT	OS	VS	ALPHA	YANK
SFC	FT.	FT.	FT.	DEG.	DEG.	DEG.							PSF	FT/SEC	DEG.	DEG.
.266	-1.60	-1.28	1.56	4.5	-5.02	9.07	-2.87	-4.41	-1.131	.777	-1.73	.689	634.52	1458.9	.39	-1.1
.274	-1.63	-1.30	1.56	4.5	-5.23	9.07	-3.67	-3.12	-1.139	.934	-1.53	.689	634.15	1460.7	.46	-1.2
.278	-1.65	-1.32	1.56	4.5	-5.33	9.07	-3.73	-2.28	-1.154	.974	-1.61	.696	633.82	1461.4	.51	-1.2
.282	-1.67	-1.33	1.56	4.5	-5.43	9.07	-3.99	-1.64	-1.154	1.001	-1.62	.693	631.22	1454.5	.41	-1.3
.286	-1.69	-1.34	1.75	4.5	-5.53	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.290	-1.71	-1.36	1.75	4.5	-5.62	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.294	-1.73	-1.37	1.75	4.5	-5.72	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.298	-1.75	-1.38	1.75	4.5	-5.82	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.302	-1.77	-1.40	1.93	4.5	-5.91	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.306	-1.79	-1.41	1.97	4.5	-6.00	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.310	-1.81	-1.43	2.02	4.5	-6.09	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.314	-1.83	-1.44	2.05	4.5	-6.18	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.318	-1.85	-1.46	2.11	4.5	-6.26	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.322	-1.88	-1.48	2.15	4.5	-6.35	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.326	-1.90	-1.50	2.20	4.5	-6.44	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.330	-1.92	-1.51	2.25	4.5	-6.51	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.334	-1.94	-1.52	2.30	4.5	-6.58	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.338	-1.96	-1.53	2.34	4.5	-6.66	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.342	-1.98	-1.54	2.39	4.5	-6.73	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.346	-1.99	-1.55	2.44	4.5	-6.80	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.350	-2.01	-1.56	2.49	4.5	-6.87	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.354	-2.03	-1.57	2.54	4.5	-6.94	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.358	-2.05	-1.58	2.59	4.5	-7.01	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.362	-2.07	-1.59	2.64	4.5	-7.08	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.366	-2.09	-1.60	2.69	4.5	-7.15	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.370	-2.11	-1.61	2.74	4.5	-7.22	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.374	-2.13	-1.62	2.79	4.5	-7.29	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.378	-2.15	-1.63	2.84	4.5	-7.36	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.382	-2.17	-1.64	2.89	4.5	-7.43	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.386	-2.19	-1.65	2.94	4.5	-7.50	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.390	-2.21	-1.66	2.99	4.5	-7.57	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.394	-2.23	-1.67	3.04	4.5	-7.64	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.398	-2.25	-1.68	3.09	4.5	-7.71	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.402	-2.27	-1.69	3.14	4.5	-7.78	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.406	-2.29	-1.70	3.19	4.5	-7.85	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.410	-2.31	-1.71	3.24	4.5	-7.92	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.414	-2.33	-1.72	3.29	4.5	-7.99	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.418	-2.35	-1.73	3.34	4.5	-8.06	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.422	-2.37	-1.74	3.39	4.5	-8.13	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.426	-2.39	-1.75	3.44	4.5	-8.20	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.430	-2.41	-1.76	3.49	4.5	-8.27	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.434	-2.43	-1.77	3.54	4.5	-8.34	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.438	-2.45	-1.78	3.59	4.5	-8.41	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.442	-2.47	-1.79	3.64	4.5	-8.48	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.446	-2.49	-1.80	3.69	4.5	-8.55	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.450	-2.51	-1.81	3.74	4.5	-8.62	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.454	-2.53	-1.82	3.79	4.5	-8.69	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.458	-2.55	-1.83	3.84	4.5	-8.76	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.462	-2.57	-1.84	3.89	4.5	-8.83	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.466	-2.59	-1.85	3.94	4.5	-8.90	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.470	-2.61	-1.86	3.99	4.5	-8.97	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.474	-2.63	-1.87	4.04	4.5	-9.04	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.478	-2.65	-1.88	4.09	4.5	-9.11	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.482	-2.67	-1.89	4.14	4.5	-9.18	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.486	-2.69	-1.90	4.19	4.5	-9.25	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.490	-2.71	-1.91	4.24	4.5	-9.32	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.494	-2.73	-1.92	4.29	4.5	-9.39	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.498	-2.75	-1.93	4.34	4.5	-9.46	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.502	-2.77	-1.94	4.39	4.5	-9.53	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.506	-2.79	-1.95	4.44	4.5	-9.60	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.510	-2.81	-1.96	4.49	4.5	-9.67	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.514	-2.83	-1.97	4.54	4.5	-9.74	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.518	-2.85	-1.98	4.59	4.5	-9.81	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.522	-2.87	-1.99	4.64	4.5	-9.88	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.526	-2.89	-2.00	4.69	4.5	-9.95	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.530	-2.91	-2.01	4.74	4.5	-10.02	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.534	-2.93	-2.02	4.79	4.5	-10.09	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.538	-2.95	-2.03	4.84	4.5	-10.16	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.542	-2.97	-2.04	4.89	4.5	-10.23	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.546	-2.99	-2.05	4.94	4.5	-10.30	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.550	-3.01	-2.06	4.99	4.5	-10.37	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.554	-3.03	-2.07	5.04	4.5	-10.44	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.558	-3.05	-2.08	5.09	4.5	-10.51	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3
.562	-3.07	-2.09	5.14	4.5	-10.58	9.07	-4.31	-0.67	-1.166	1.062	-1.63	.693	634.50	1459.7	.42	-1.3

CAPTIVE TRAJECTORY DATA FROM V41A-19A SEPTEMBER ENTRY AEDC-DR-77-94

GROUP 281 PAGE 3

NACH PO,PSIA TO,DEG(P) RE/FT*10**6 PA,PSIA TO,DEG(P) Q8,PSIA V8,FT/SEC TRAJECTORY CODE VA RHOS
 1.51 10.614 588.31 4.63 3.924 398.56 6.262 1478.3 4 1462.20 5.925E-04

PARENT CONFIG N1-B2-W-A4-(P3)-1/3 ALPHA(PAPI)= 5.0

STORE CONFIG SCOC PHI=45.05G.

LP= .81

TIME SEC	X FT.	Y FT.	Z FT.	ALPHAP DEG.	YAW2P DEG.	PHI DEG.	CN	CLN	CY	CLM	CLL	CAT	QS PSF	VS FT/SEC	ALPHAK DEG.	YAWK DEG.
.578	-3.87	-2.44	6.76	-6.77	-5.81	-3.51	-1.467	2.887	-1.329	2.311	-.621	.740	626.61	1452.9	1.03	-.43
.594	-3.26	-2.62	7.17	-6.63	-5.37	-4.66	-1.437	2.849	-1.293	2.271	-.017	.731	628.29	1453.3	1.07	-.45
.610	-3.46	-2.88	7.59	-6.43	-4.88	-5.83	-1.486	2.849	-1.247	2.214	-.017	.710	627.42	1450.2	1.11	-.46
.618	-3.57	-2.98	7.81	-6.31	-4.63	-6.42	-1.395	2.863	-1.224	2.198	-.018	.707	628.78	1453.1	1.13	-.47
.626	-3.67	-2.99	8.03	-6.17	-4.36	-7.81	-1.378	2.867	-1.187	2.155	-.017	.700	628.85	1452.1	1.15	-.47
.634	-3.77	-3.09	8.26	-6.02	-4.09	-7.61	-1.362	2.868	-1.164	2.135	-.016	.694	628.63	1454.7	1.17	-.48
.642	-3.84	-3.19	8.49	-5.85	-3.81	-8.21	-1.325	2.836	-1.114	2.075	-.015	.688	628.89	1447.6	1.18	-.48
.658	-3.99	-3.29	8.72	-5.66	-3.51	-8.81	-1.384	2.829	-1.084	2.031	-.013	.678	625.57	1454.0	1.20	-.49
.666	-4.18	-3.19	8.96	-5.46	-3.21	-9.41	-1.272	2.843	-1.038	1.989	-.012	.668	627.38	1451.0	1.22	-.49
.674	-4.21	-3.49	9.20	-5.24	-2.93	-10.02	-1.238	2.770	-.997	1.946	-.012	.663	628.08	1453.1	1.24	-.50
.682	-4.32	-3.59	9.44	-5.00	-2.59	-10.63	-1.195	2.722	-.946	1.897	-.012	.658	626.48	1450.4	1.26	-.50
.690	-4.55	-3.79	9.69	-4.75	-2.27	-11.24	-1.155	2.676	-.896	1.839	-.012	.653	627.13	1451.2	1.27	-.51
.698	-4.66	-3.98	9.94	-4.49	-1.94	-11.84	-1.111	2.610	-.850	1.776	-.010	.644	626.97	1451.6	1.29	-.51
.706	-4.78	-4.00	10.19	-4.21	-1.61	-12.46	-1.066	2.545	-.777	1.667	-.010	.648	626.39	1450.4	1.31	-.51
.714	-4.90	-4.11	10.45	-3.91	-1.28	-13.07	-1.017	2.486	-.729	1.623	-.008	.646	626.75	1452.5	1.33	-.52
.722	-5.02	-4.21	10.71	-3.60	-.93	-13.68	-.959	2.376	-.661	1.522	-.008	.646	628.78	1445.6	1.34	-.52
.730	-5.14	-4.32	10.97	-3.28	-.59	-14.29	-.895	2.284	-.616	1.449	-.008	.645	628.18	1453.1	1.36	-.52
.738	-5.26	-4.42	11.24	-2.94	-.24	-14.90	-.828	2.116	-.554	1.392	-.005	.636	625.94	1449.8	1.37	-.52
.746	-5.38	-4.53	11.51	-2.60	.12	-15.51	-.742	1.918	-.478	1.283	-.002	.648	626.54	1447.2	1.39	-.53
.754	-5.50	-4.63	11.78	-2.24	.47	-16.12	-.662	1.719	-.394	1.144	-.001	.643	629.27	1452.1	1.41	-.53
.758	-5.44	-4.58	11.92	-2.05	.65	-16.42	-.619	1.623	-.356	1.059	-.002	.646	628.87	1452.1	1.41	-.53

REFERENCES

1. Strike, W. T., Jr., Penney, T. R., and Porter, J. H.: The AFFDL-Nielsen Flow-Field Study. AEDC-TR-76-18, Apr. 1976.
2. Penney, T. R., Strike, W. T., and Baker, S. S.: AFFDL/Nielsen Store Separation CTS Test. AEDC-DR-76-82, Oct. 1976.
3. Jordan, J. L., Best, J. T., and Penney, T. R.: Flow-Field, Pressure-Distribution, Force and Moment, and Trajectory CTS Tests on the AFFDL/Nielsen Store Separation Configurations at Mach 1.5, 1.6, and 2.0. AEDC-DR-77-29, Apr. 1977.
4. Best, J. T., Jordan, J. L., and Penney, T. R.: Flow-Field, Pressure-Distribution, Force and Moment, and Trajectory CTS Tests on the AFFDL/Nielsen Store Separation Configurations at Mach 1.5 and 2.0. AEDC-DR-77-98, Nov. 1977.
5. Penney, T. R., Best, J. T., and Jordan, J. L.: Documentation of the AFFDL/Nielsen CTS Store Separation Test Conducted in Tunnel A at Mach 1.5, 1.6, and 2.0. AEDC-TSR-78-V2, May 1978.
6. Test Facilities Handbook (Tenth Edition). von Kármán Gas Dynamics Facility, Vol. 3. Arnold Engineering Development Center, May 1974.
7. Billingsley, J. P., Burt, R. H., and Best, J. T.: Store Separation Testing Techniques at the Arnold Engineering Development Center. Volume III, Description and Validation of Captive Trajectory Store Separation Testing in the von Kármán Facility. AEDC-TR-79-1, Mar. 1979.
8. Black, J. A., Carleton, W. E., and Anderson, C. F.: Calibration of Four Conically Tipped Flow Survey Rakes at Transonic Speeds. AEDC-TDR-63-134, July 1963.