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SUBSONIC WIND-TUNNEL INVESTIGATION OF THE
PROPOSED GENERAL DYNAMICS/CONVAIR DIVISION
SPECIALIZED CLOSE AIR SUPPORT (A-X) AIRPLANE MODEL

By Edward J. Ray and W. Pelham Phillips

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GROUP 4
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SUBSONIC WIND-TUNNEL INVESTIGATION OF THE
PROPOSED GENERAL DYNAMICS/CONVAIR DIVISION
SPECIALIZED CLOSE AIR SUPPORT (A-X) AIRPLANE MODEL

By Edward J. Ray and W. Pelham Phillips

SUMMARY

A subsonic wind-tunnel investigation has been made of an unpowered 1/12-scale model of the proposed General Dynamics/Convair Division A-X airplane. The investigation was made at Mach numbers ranging from 0.25 to 0.65 in the Langley High-Speed 7- by 10-Foot Tunnel. The static experimental and analytical results indicate that the configuration should provide adequate longitudinal stability and control characteristics throughout the test conditions investigated. The static lateral-directional stability and control characteristics were determined for several of the test configurations and the results are presented herein.

INTRODUCTION

At the request of the Air Force, the National Aeronautics and Space Administration has conducted a series of wind-tunnel investigations on unpowered scaled models of specialized close air support aircraft (A-X) which have been proposed by four airframe manufacturers. These investigations were made; to investigate critical aerodynamic problems, to provide data to the Air Force for validation of the contractor's performance estimates, and to provide credibility to the A-X concept formulation studies. The purpose of the present paper is to present the results obtained on the 1/12-scale General Dynamics/Convair model. This model represents a single-engine turboprop concept having a twisted and cambered, high-aspect ratio wing and a conventional empennage. The tests were made in the Langley High-Speed 7- by 10-Foot Wind Tunnel at Mach numbers of 0.25, 0.40, 0.55, 0.65 which correspond to Reynolds numbers (per foot) of 1.60×10^6 , 2.44×10^6 , 3.10×10^6 , and 3.43×10^6 , respectively. The angle of attack range at the lowest Mach number generally extended from -4° to 17° . At the highest Mach number the angle of attack range was in general limited to -3° to 5° . Sideslip tests from approximately -6° to 6° were made with the model at an angle of attack of about 4° .

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SYMBOLS

The coefficients of forces and moments for the plotted data are referred to the stability axis system for the longitudinal results and to the body axis system for the lateral-directional characteristics. In addition, a tabulation of the test results utilizing both axis systems is presented herein. The moments were referred to the quarter chord point of the wing mean geometric chord. (See figure 1(a)). The symbols used in this document are defined as follows:

b	wing span, 50.75 in.
C_A	axial force coefficient, $\frac{\text{Axial Force}}{qS}$
C_D	drag coefficient, $\frac{\text{Drag}}{qS}$
$C_{D_{\min}}$	minimum drag coefficient
C_L	lift coefficient, $\frac{\text{Lift}}{qS}$
$\alpha_{C_{L=0}}$	angle of attack at zero lift
C_{L_a}	lift-curve slope, per deg
C_l	rolling-moment coefficient, $\frac{\text{Rolling Moment}}{qSb}$
$C_{l_{\delta_a}}$	rolling-moment effectiveness, due to aileron deflection $\partial C_l / \partial \delta_a$, per deg.
C_m	pitching-moment coefficient, $\frac{\text{Pitching Moment}}{qSc}$
C_{m_0}	pitching-moment coefficient at zero lift
C_{mC_L}	static margin, $\partial C_m / \partial C_L$
$C_{m\delta_e}$	elevator effectiveness parameter, $\partial C_m / \partial \delta_e$ at $C_L = 0$, per deg
C_n	yawing-moment coefficient, $\frac{\text{Yawing Moment}}{qSb}$

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$C_{n\beta}$	directional stability parameter, $\partial C_n / \partial \beta$, per deg
$C_{n\delta_a}$	yawing-moment effectiveness parameter due to aileron deflection, $\partial C_n / \partial \delta_a$, per deg
$C_{n\delta_r}$	yawing-moment effectiveness parameter due to rudder deflection, $\partial C_n / \partial \delta_r$, per deg
C_Y	side force coefficient, $\frac{\text{Side Force}}{qS}$
\bar{c}	mean geometric chord, 8.79 in.
M	free-stream Mach number
q	free-stream dynamic pressure, lb/ft^2
R	Reynolds number, per foot
S	wing reference area, 2.985 sq ft
L/D	lift-to-drag ratio
α	angle of attack, deg
β	angle of sideslip, deg
δ_a	aileron deflection angle, deg (positive: right aileron trailing edge up and left aileron trailing edge down)
δ_e	elevator deflection angle, deg (positive: trailing-edge down)
δ_r	rudder deflection angle, deg, (positive: trailing-edge left)

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max	maximum
min	minimum

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MODEL

This unpowered model represented a single engine, low wing, moderately high tail configuration incorporating a twisted and cambered aspect ratio 6 wing. A three view drawing of the basic configuration with landing gear pods is presented in figure 1(a). It should be noted here that the assumed model reference line was parallel to the chord line of the wing root section.

The landing gear pods which are shown in figure 1(a) are not considered as part of the basic configuration and were tested only as an alternate arrangement. Sketches of the various external store configurations are presented as figure 1(b). The store drawings shown do not represent all of the various combinations of stores, however, the overall dimensions and locations of each type of store is presented. Photographs of the basic 1/12-scale model with six M-117 bombs distributed along the underside of the wing are shown in figure 2. The geometric characteristics of the various model components are listed in Table I.

Longitudinal control was provided by a .30 chord elevator which was incorporated with a conventional horizontal stabilizer arrangement. The model was not equipped with wing flaps. Lateral-directional control was provided by .30 chord ailerons located at the wing tips and a .25 chord rudder located at the trailing-edge of the vertical tail.

The wind-tunnel model closely approximates a scaled version of the proposed General Dynamics/Convair (TP-1) airplane. The differences existing between the model and the proposed airplane which are considered to be significant are as follows:

1. The model was unpowered and engine components such as intake ducts were not simulated in the fuselage forebody.
2. The model canopy and possibly the vertical tail are slightly larger than the versions envisioned for the actual configuration.
3. The fuselage afterbody was expanded on the model to accommodate the sting support.
4. Guns, antennas, and other external protuberances were not simulated on the model.
5. The airplane aileron is envisioned as a .277 chord surface whereas the model aileron was a .30 chord control.
6. The airplane flap system was not incorporated on the scaled model.

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TEST CONDITIONS

The test conditions, based on the average stagnation temperatures, for this investigation were as follows:

M	STAGNATION TEMPERATURE, °F	DYNAMIC PRESSURE, LB/SQ FT	R/FT
0.25	83	90	1.60×10^6
0.40	93	214	2.44×10^6
0.55	100	367	3.10×10^6
0.65	105	477	3.43×10^6

The angle-of-attack ranges of the investigation varied from about -4° to 17° at the low Mach number to approximately -3° to 5° at the highest Mach number. The sideslip tests were made with the model at an angle of attack of about 4° . Sideslip angles were varied from about -6° to 6° . The variations in Reynolds numbers due to temperature changes at the test Mach numbers are shown in figure 3.

MEASUREMENTS AND CORRECTIONS

The static aerodynamic forces and moments were measured by means of a six-component electrical strain-gage balance (731) which was installed within the model. Transition strips of No. 100 Carborundum grains were placed 0.70 inches behind the leading edge of all model components in the manner described in reference 1 to insure turbulent flow in the model boundary layer for all test conditions. Visual observations, utilizing fluorescent oil, were made at the lowest Mach number, 0.25, to determine if the Carborundum grit had caused transition to occur. The visual study indicated that the grit size and location was effective in "tripping" the flow over the model components at the lowest Mach number, thereby insuring turbulent flow throughout the Mach number range.

The angles of attack and sideslip were measured with an accelerometer which was mounted within the fuselage nose; therefore, sting and balance bending corrections were not required for the majority of the tests. The combined sting and balance bending corrections were applied to the angle-of-attack (4° without corrections) which was selected for the brief sideslip investigation, since the sideslip tests were made with the model rolled 90° .

The balance cavity pressures were monitored throughout the investigation by means of differential pressure gages, and the drag data have been adjusted to correspond to the condition of free-stream static pressure at the base of the model.

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The model was tested upright and inverted in order to determine the tunnel flow misalignment angle. The study did not reveal any significant flow singularity in the region of the model and therefore misalignment corrections were not required.

Jet-boundary and blockage corrections were applied as outlined in references 2 and 3.

ACCURACY

The accuracy of the data presented herein has been evaluated and verified on the basis of calibrated balance accuracies and repeatability of data. Repeat points were taken for each run at zero angle of attack following the completion of each run. In addition, several configurations were retested to further evaluate repeatability as is indicated in the run log presented in Table II. The tabulated data included in this report, Table III, are estimated to be accurate within the following values at a Mach number of 0.55.

$$\begin{array}{lll} C_N = \pm .010 & C_l = \pm .0003 & M = \pm .001 \\ C_m = \pm .007 & C_n = \pm .0004 & \alpha = \pm .06 \text{ deg} \\ C_A = \pm .0005 & C_Y = \pm .0014 & \beta = \pm .06 \text{ deg} \end{array}$$

The degree of accuracy quoted here will increase at the higher test Mach number and diminish at the lower test Mach numbers as a result of the change in dynamic pressure. The plotted data presented herein were machine plotted and therefore are subject to additional inaccuracies. For detailed analysis, the attention of the reader is directed to the tabulated results contained in Table III.

PRESENTATION OF RESULTS

Table II presents a test log for the data obtained in the Langley High-Speed 7- by 10-Foot Wind Tunnel. The tabulated results are presented in Table III.

The figure content is outlined in the following tables:

Figure

Longitudinal Characteristics

Effect of model components	4
Effect of various external store arrangements	5
Control effectiveness of basic configuration without bombs	6
Control effectiveness of basic configuration with six M-117 bombs	7

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Figure

Longitudinal Characteristics (Continued)

Control effectiveness of basic configuration with ten M-117 bombs	8
Summary characteristics	9
Comparison of experimental with estimated results	10

Lateral-Directional Characteristics

Effect of asymmetric bomb arrangements.	11
Aileron effectiveness of basic configuration with six M-117 bombs	12
Rudder effectiveness of basic configuration with six M-117 bombs	13
Effect of vertical tail and addition of bombs	14
Summary of control characteristics.	15
Summary characteristics	16

SUMMARY OF RESULTS

The data presented herein represent the results obtained for the 1/12-scale General Dynamics/Convair A-X model. Power effects and Reynolds number corrections have not been considered in this report due to the accelerated time schedule of the USAF A-X studies.

In order to expedite the publication of these data, the results are presented without detailed analysis. A few remarks have been presented concerning static aerodynamic characteristics which are believed to be significant.

Longitudinal Characteristics

The effects of the various model components on the longitudinal aerodynamic characteristics of the basic configuration at Mach numbers of 0.25 and 0.55 are shown in figure 4. As mentioned previously in the model section, the canopy of the General Dynamics/Convair Division proposed A-X airplane is smaller than the scaled version tested. Figures 4(a) and 4(b) indicate the effects of the addition of the canopy to the fuselage wing combination. The results indicate that the addition of the canopy does not significantly affect the static longitudinal aerodynamic characteristics of the model with the exception of the nose-up pitching-moment contribution. The addition of the vertical tail, as shown in figures 4(c) and 4(d), results in an expected drag rise and a slight nose down pitching-moment increment. The nose down moment is presumed to be

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due to negative pressures induced on the aft fuselage and horizontal tail by the vertical-tail thickness induced flow field. The addition of the horizontal tail results in an increase in the lift-curve slope and a stable contribution to the pitching-moment variation with lift coefficient. The static margin, $\partial C_m / \partial C_L$, of the complete basic configuration is about 23 percent \bar{c} at Mach 0.25 and approximately 21 percent \bar{c} at a Mach number of 0.55. (See summary figure 9.)

The effects of several different external store arrangements on the longitudinal characteristics of the basic configuration at Mach numbers of 0.25 and 0.55 are shown in figure 5. The results indicate that in addition to increasing the drag at a given lift coefficient, the addition of six M-117 bomb models (or four M-117 bombs and two auxiliary fuel tank models) reduced the lift at a given angle of attack with only a small effect on the longitudinal stability. The addition of the six stores resulted in an increase in the angle of attack, and a consequent reduction in pitching-moment coefficient, at zero lift. Incorporation of the TER's and ten M-117 bomb models with the basic configuration produces large increases in drag and sizable changes to other static longitudinal characteristics of the basic configuration. The lift-curve slope is significantly reduced and the static margin is increased from 23 percent \bar{c} , for the basic configuration, to about 29 percent \bar{c} . (The static margin levels discussed herein are derived by assuming a constant center-of-gravity location and airplane center-of-gravity shifts due to store loadings have not been considered.) The angle-of-attack and pitching-moment coefficient for zero lift is approximately equal to the values indicated for the configuration without stores. The addition of the alternate landing gear pod arrangement, (see figures 5(c) and 5(d)), to the configuration having ten M-117 bombs results in incremental changes to the longitudinal characteristics which are similar to the effects previously noted for the addition of the six of the simulated bombs to the clean configuration. The effect of the addition of bomb pylons and individual bomb loadings on the longitudinal characteristics are presented in figures 5(e) and 5(f) without further discussion.

The longitudinal control effectiveness of the basic configuration, without stores, at Mach numbers of 0.25, 0.40, 0.55 and 0.65 is shown in figure 6. These results indicate the relatively linear variations of lift and moment characteristics for this configuration at angles of attack below the wing stall angle. Elevator deflection angles ranging from about 4.0° (interpolated) to -5.0° enable the basic configuration to trim over a lift coefficient range from 0 to 0.85 at Mach numbers of 0.25, 0.40, and 0.55. The longitudinal control effectiveness is essentially invariant throughout the Mach number range investigated as is shown in summary figure 9. The addition of the six M-117 bomb models to the underside of the wing reduced the longitudinal control power by about 10 percent. (See figure 7 and summary figure 9.) Incorporation of the TER arrangement with four additional bombs resulted in further reductions in the longitudinal control effectiveness of the configuration (figures 8 and 9).

Estimations of the longitudinal characteristics of this concept were included in the present study and these results are compared with experimental data in figure 10. It should be noted that the estimates shown for C_{m_0} and

TABLE I
MODEL GEOMETRY

Wing

Area, sq. ft.	
Reference	2.985
Wetted	5.570
Volume, cu. ft.	0.218
Span, in.	50.750
Root chord, in.	11.300
Tip chord, in.	5.650
Aspect Ratio	6.000
Mean Geometric Chord, in.	8.789
Quarter Chord Sweepback, deg	4.500
Dihedral (quarter chord), deg	5.000
Incidence, deg	
Root	4.000
Tip	1.000
Thickness ratio (percent chord)	
Root	18.000
Tip	15.000
Airfoil Section	
Root	63A-418
Tip	63A-415
Fuselage	
Length, in.	41.040
Wetted area, sq. ft.	3.774
Volume, cu. ft.	0.403

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The aileron and rudder control results indicated for the configuration with six M-117 bombs are presented in figures 12 and 13, respectively. The sideslip characteristics indicated for the basic configuration with and without vertical tail and the configuration with six M-117 bombs are presented in figure 14. Summaries of these lateral-directional control effectiveness and sideslip characteristics are presented as figures 15 and 16, respectively. The summary of the lateral-directional control effectiveness of the basic configuration with bombs, figure 15, indicates that the control effectiveness is essentially the same at Mach numbers of 0.25 and 0.55. Positive deflections of the rudder were shown to result in sizable positive rolling-moment coefficients.

The sideslip summary, figure 16, indicates that the basic configuration (with vertical tail) exhibits about the same degree of positive effective dihedral, $-C_{l\beta}$, and static directional stability, $C_{n\beta}$, with or without the six M-117 bombs under the wing.

This abbreviated lateral-directional study did not indicate any critical areas in the range of variables investigated insofar as static lateral-directional stability and control are concerned.

CONCLUDING REMARKS

A subsonic wind-tunnel investigation has been made in the Langley High-Speed 7- by 10-Foot Tunnel at Mach numbers ranging from 0.25 to 0.65 on the unpowered 1/12-scale General Dynamics/Convair Division A-X proposal. The results indicate that the configuration should provide adequate longitudinal stability and control. The basic configuration with and without six M-117 bombs exhibited positive effective dihedral and static directional stability.

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$\alpha_{CL} = 0$ for the horizontal-tail off configuration, as shown in figure 10(a), were calculated by the method of reference 4 and do not include the effects of the fuselage or vertical tail. The tail-off experimental data for these comparisons were determined from tests of the wing-fuselage vertical-tail combination. In addition, it should also be noted that the estimated C_{m_0} values for the wing alone have been corrected for the vertical displacement of the wing quarter-chord point from the model center-of-gravity location by utilizing the estimated wing skin-friction drag and form factor discussed below. The estimates shown in figure 10(a) for the lift-curve slopes, $C_{L\alpha}$, and static margin, C_{mCL} , were determined by the method discussed in reference 5. Herein the wing-fuselage combination is defined as a flat plate planar area. Reference 5 was also utilized to compute the isolated horizontal-tail $C_{L\alpha}$ and center of load. The flow field behind the wing fuselage system was calculated by the method of reference 6 which places the horizontal tail in the theoretical flow field of the wing fuselage combination. A comparison was made between the $C_{L\alpha}$ estimates determined by the methods of references 4 and 6 and for this isolated case there was essentially no difference.

A review of figure 10(a) indicates that, in general, there is good agreement between the experimental and estimated results with the exception of the angle of attack for zero lift, $\alpha_{CL} = 0$, at the higher Mach numbers.

The discussion contained in reference 7 indicates that leading-edge suction values of about 95 percent can be obtained for Reynolds numbers (based on wing leading-edge radii) exceeding 20,000. Since the Reynolds number of this configuration exceeds 20,000 at all of the test conditions, a leading-edge suction value of 95 percent was assumed in the drag estimates shown in figures 10(b) and 10(c). The skin-friction drag indicated on the figure for each condition was computed by equations taken from reference 8 and the form factors for wing thickness and body fineness ratio were estimated by the method of reference 9. In general, there is good agreement between the estimated and experimental drag values. The estimates shown for the configuration with six bombs under the wing are understandably low since the theory does not account for the interference drag produced by the stores.

Lateral-Directional Stability and Control Characteristics

The effect of two asymmetric bomb loadings on the lateral-directional characteristics of the basic configuration at Mach numbers of 0.25 and 0.55 are shown in figure 11. These results show that only small asymmetries are produced by the addition of one, or even two, M-117 bomb models to the right wing panel of the basic configuration (equivalent of about 2° aileron to trim).

A sizable "roll-off" might be expected for asymmetric TER loading in view of the fact that the lift results as discussed previously indicated that substantial lift increments result in the moderate to high angle-of-attack range when the TER M-117 combinations are incorporated.

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TABLE I - CONTINUED

Horizontal Tail

Volume, cu. ft.	0.025
Span, in.	21.500
Aspect ratio	4.500
Root chord, in.	6.383
Tip chord, in.	3.192
Quarter chord sweepback, deg	6.500
Incidence, deg	0.000
Dihedral angle, deg	0.000
Thickness ratio (percent chord)	14.000
Airfoil Section	NACA0014-63

Vertical Tail

Area sq. ft.	0.415
Wetted area, sq. ft.	0.700
Volume, cu. ft.	0.017
Span, in.	9.433
Aspect ratio	1.500
Root chord, in.	9.000
Tip chord, in.	3.600
Quarter chord sweepback, deg	30.330
Thickness ratio (percent chord)	14.00
Airfoil section	NACA0014-63

Pylon for M-117 Bombs

Reference length, in.	3.193
Wetted area, sq. in.	4.800
Volume, cu. in.	.800

Pylon for Aux Fuel Tank

Reference length, in.	4.453
Wetted area, sq. in.	11.000
Volume, cu. in.	1.400

M-117 Bomb

Reference length, in.	7.269
Wetted area, sq. in.	22.000
Volume, cu. in.	6.4

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TER

Reference length, in.	5.555
Wetted area, sq. in.	10.5
Volume, cu. in.	1.600

Aux. Fuel Tank

Reference length, in.	14.000
Wetted area, sq. in.	65.300
Volume, cu. in.	27.000

TABLE II

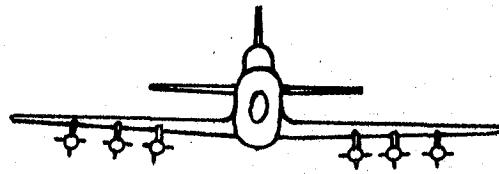
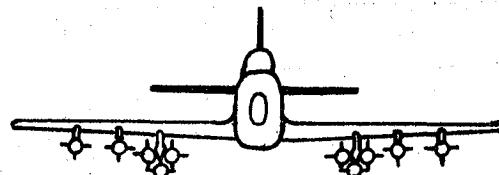
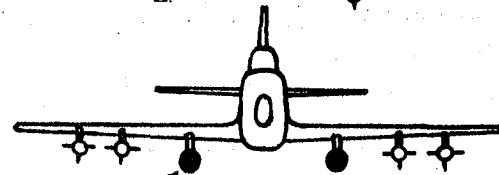
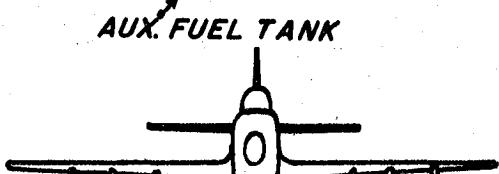
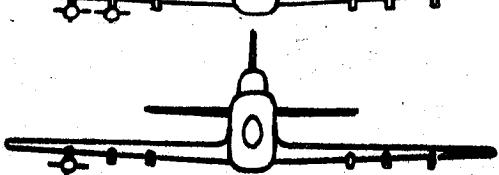
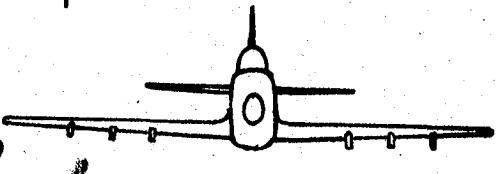
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WIND TUNNEL TEST PROGRAM FOR THE 1/12 SCALE GENERAL DYNAMICS/CONVAIR

DIVISION A-X MODEL IN THE LANGLEY HIGH-SPEED 7- BY 10-FOOT TUNNEL

CONFIGURATION CODE

- W Wing
- F Fuselage (without canopy)
- C Canopy
- V Vertical tail
- r Rudder
- H Horizontal tail
- P Alternate Landing Gear Pod Assemblies

S₁S₂S₃S₄S₅S₆

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TABLE II - Continued

Run	Approximate Mach	Configuration	α , deg	β , deg	δ_e , deg	δ_a , deg	δ_r , deg
Complete, Clean Configuration - Longitudinal Control Effectiveness Study							
1	.25	FWCVH	Range	0	0	0	0
2	.40						
3	.55						
4	.65						
5	.25				+5.0		
6	.40						
7	.55						
8	.65						
9	.25				+2.5		
10	.40						
11	.55						
12	.65						
13	.25				-2.5		
14	.40						
15	.55						
16	.65						
17	.25				-5.0		
18	.40						
19	.55						
20	.65						

TABLE II - Continued

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Run	Approximate Mach	Configuration	α , deg	β , deg	δ_e , deg	δ_a , deg	δ_r , deg
21 *1	.25	FWCVH	Range	0	0	0	0
22 *1	.55						
23 *2	.25						
24 *2	.55		↓	↓	↓	↓	↓

Store Configurations - Longitudinal Control Effectiveness Study

25	.25	FWCVH S ₁	Range	0	0	0	0
26	.40						
27	.55						
28	.65						
29	.25			+5.0			
30	.40						
31	.55						
32	.65						
33	.25			+2.5			
34	.40						
35	.55						
36	.65						
37	.25						
38	.40						
39	.55						
40	.65		↓	↓	↓	↓	↓

*₁ Repeat Tests*₂ Inverted Runs

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TABLE II - CONTINUED

Run	Approximate Mach	Configuration	α , deg	β , deg	δ_e , deg	δ_a , deg	δ_r , deg
41	.25	FWCVH S ₁	Range	0	-5.0	0	0
42	.40						
43	.55						
44	.65						
45	.25	FWCVH S ₂			-5.0		
46	.55						
47	.25				-2.5		
48	.55						
49	.25				0	0	0
50	.55						

Store Configurations Breakdown

51	.25	FWCVH P S ₂	Range	0	0	0	0
52	.55						
53	.25	FWCVH S ₃					
54	.55						
55	.25	FWCVH S ₄					
56	.55						
57	.25	FWCVH S ₅					

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TABLE II - CONTINUED

Run	Approximate Mach	Configuration	α , deg	β , deg	δ_e , deg	δ_a , deg	δ_r , deg
58	.55	FWCVH S ₅	Range	0	0	0	0
59	.25	FWCVH S ₆					
60	.55		↓	↓	↓	↓	↓

Directional-Lateral Control Study

61	.25	FWCVH S ₁	Range	0	0	0	+5
62	.55						↓
63	.25						+10
64	.55		↓	↓	↓	↓	↓
65	.25	FWCVH S ₁	Range	0	0	-10	0
66	.55					↓	
67	.25					-20	
68	.55		↓	↓	↓	↓	↓

Directional-Lateral Stability Characteristics

69	.25	FWCVH S ₁	Approx. 4°	Range	0	0	0
70	.55		↓		↓	↓	↓
71	.25	FWCVH			0	0	0
72	.55		↓		↓	↓	↓
73	.25	FWCH			0	0	Off
74	.55		↓	↓	↓	↓	↓

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TABLE II - CONCLUDED

Run	Approximate Mach	Configuration	α , deg	β , deg	δ_e , deg	δ_a , deg	δ_r , deg
Component Breakdown							
75	.25	FWCH	Range	0	0	0	Off
76	.55						
81	.25	FWC	Range	0	Off	0	Off
82	.55						
83	.25	FW		0	Off	0	Off
84	.55						
85	.25	FWCV	Range	0	Off	0	0
86	.40						
87	.55						
88	.65						

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TABLE III
TABULATED DATA

The symbols used on the tabulated displays are defined as follows:

STABILITY AXIS

Mach	Mach number
Q	Free-Stream Dynamic Pressure, lbs/ft ²
Beta	Angle of sideslip, deg
Alpha	Angle of attack, deg
C _L	Lift coefficient
C _D	Drag coefficient
CPM	Pitching-moment coefficient
CRM	Rolling-moment coefficient
CYM	Yawing-moment coefficient
CSF	Side-force coefficient
L/D	Lift to drag ratio

BODY AXIS

CNF	Normal-force coefficient
CAF	Axial-force coefficient

REFERENCE DIMENSIONS
(used in the reduction of all data)

Area, sq. ft.	2.985
Span, in.	50.750
Mean geometric chord, in. .	8.789

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NASA

*** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***
GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL

TEST 790

RUN 2

BALANCE 731

09/21/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CYM	CSF	L/D
.402	214.325	.00	.20	.0778	.0210	.0947	.0004	.0006	.0036	3.705
.401	213.973	.00	-4.31	-.3159	.0296	.1835	.0005	.0005	.0046	-10.685
.402	214.431	.00	-3.23	-.2221	.0256	.1631	.0007	.0006	.0040	-8.685
.401	213.777	.00	-2.11	-.1213	.0229	.1399	.0005	.0005	.0042	-5.302
.402	214.144	.00	-.97	-.0237	.0213	.1174	.0005	.0005	.0043	-1.116
.401	213.397	.00	.19	.0781	.0209	.0947	.0004	.0006	.0039	3.745
.401	213.859	.00	1.33	.1760	.0219	.0725	.0005	.0006	.0040	8.032
.401	213.763	.00	2.49	.2779	.0242	.0497	.0003	.0007	.0034	11.500
.402	214.040	.00	3.70	.3795	.0279	.0264	.0002	.0007	.0036	13.625
.401	213.855	.00	4.87	.4793	.0328	.0034	-.0004	.0007	.0034	14.609
.400	212.927	.00	6.07	.5806	.0393	-.0199	-.0003	.0010	.0028	14.791
.402	214.043	.00	7.26	.6781	.0469	-.0420	.0001	.0011	.0018	14.468
.401	213.861	.00	8.45	.7742	.0556	-.0663	-.0003	.0011	.0016	13.925
.401	213.776	.00	9.60	.8641	.0655	-.0904	-.0003	.0013	.0008	13.201
.401	213.411	.00	10.71	.9508	.0757	-.1166	-.0005	.0012	.0009	12.561
.401	213.242	.00	11.89	1.0322	.0880	-.1479	-.0012	.0011	.0008	11.735
.403	214.947	.00	12.96	1.0936	.1014	-.1894	-.0033	.0008	.0044	10.786
.401	213.782	.00	14.03	1.1354	.1137	-.2205	-.0044	.0003	.0069	9.983
.402	214.296	.00	15.04	1.1691	.1267	-.2527	-.0050	-.0000	.0064	9.226
.402	214.459	.00	16.08	1.1849	.1407	-.2754	-.0052	.0001	.0053	8.419
.402	214.048	.00	.19	.0800	.0211	.0948	.0004	.0005	.0043	3.792

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CYM	CSF
.402	214.325	.00	.20	.0778	.0207	.0947	.0004	.0006	.0036
.401	213.973	.00	-4.31	-.3172	.0058	.1835	.0005	.0005	.0046
.402	214.431	.00	-3.23	-.2231	.0130	.1631	.0007	.0005	.0040
.401	213.777	.00	-2.11	-.1220	.0184	.1399	.0005	.0005	.0042
.402	214.144	.00	-.97	-.0261	.0209	.1174	.0005	.0005	.0043
.401	213.397	.00	.19	.0781	.0206	.0947	.0004	.0006	.0039
.401	213.855	.00	1.33	.1765	.0178	.0725	.0005	.0006	.0040
.401	213.763	.00	2.49	.2786	.0121	.0497	.0003	.0007	.0034
.402	214.040	.00	3.70	.3804	.0033	.0264	.0001	.0008	.0036
.401	213.855	.00	4.87	.4803	-.0080	.0034	-.0005	.0007	.0034
.400	212.927	.00	6.07	.5814	-.0223	-.0199	-.0004	.0009	.0028
.402	214.043	.00	7.26	.6784	-.0392	-.0420	-.0000	.0011	.0018
.401	213.861	.00	8.45	.7738	-.0587	-.0663	-.0005	.0011	.0016
.401	213.776	.00	9.60	.8626	-.0796	-.0904	-.0005	.0012	.0008
.401	213.411	.00	10.71	.9480	-.1023	-.1166	-.0007	.0010	.0009
.401	213.242	.00	11.89	1.0277	-.1264	-.1479	-.0014	.0008	.0008
.403	214.947	.00	12.96	1.0880	-.1463	-.1894	-.0034	-.0000	.0044
.401	213.782	.00	14.03	1.1285	-.1647	-.2205	-.0043	-.0008	.0069
.402	214.296	.00	15.04	1.1612	-.1807	-.2527	-.0048	-.0013	.0064
.402	214.459	.00	16.08	1.1767	-.1928	-.2754	-.0051	-.0013	.0053
.402	214.048	.00	.19	.0800	.0208	.0948	.0004	.0005	.0043

RECORDED
*** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***

*** NASA CONFIDENTIAL *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***
 GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL TEST 790 RUN 1 BALANCE 731 09/21/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CYM	CSF	L/D
.251	89.477	.00	.07	.0771	.0216	.0970	.0008	.0007	.0042	3.561
.251	89.774	.00	-4.09	-.2770	.0278	.1827	.0006	.0004	.0061	-9.975
.251	89.578	.00	-3.07	-.1892	.0249	.1608	.0006	.0006	.0060	-7.586
.252	89.967	.00	-2.03	-.1014	.0228	.1389	.0006	.0007	.0056	-4.439
.251	89.477	.00	-.97	-.0118	.0216	.1180	.0009	.0007	.0050	-.547
.251	89.768	.00	.07	.0797	.0212	.0962	.0005	.0007	.0052	3.768
.251	89.767	.00	1.14	.1721	.0221	.0753	.0004	.0007	.0053	7.794
.251	89.669	.00	2.21	.2636	.0241	.0542	.0003	.0007	.0058	10.920
.251	89.767	.00	3.30	.3515	.0273	.0331	.0001	.0008	.0058	12.857
.251	89.669	.00	4.36	.4372	.0311	.0129	.0000	.0008	.0058	14.065
.251	89.376	.00	5.45	.5311	.0364	-.0085	-.0001	.0008	.0055	14.595
.251	89.767	.00	6.55	.6187	.0425	-.0303	-.0002	.0009	.0051	14.572
.251	89.572	.00	7.64	.7087	.0495	-.0519	-.0005	.0010	.0048	14.312
.251	89.672	.00	8.73	.7906	.0578	-.0718	-.0004	.0011	.0045	13.689
.251	89.478	.00	9.81	.8763	.0669	-.0949	-.0005	.0012	.0035	13.091
.251	89.578	.00	10.93	.9624	.0770	-.1194	-.0004	.0013	.0032	12.492
.251	89.387	.00	12.00	1.0388	.0877	-.1450	-.0012	.0012	.0037	11.840
.251	89.494	.00	13.11	1.0989	.0996	-.1787	-.0031	.0008	.0063	11.029
.251	89.666	.00	14.14	1.1426	.1117	-.2086	-.0041	.0005	.0090	10.232
.251	89.528	.00	15.24	1.1747	.1248	-.2415	-.0038	.0002	.0088	9.415
.251	89.475	.00	17.20	1.2240	.1516	-.2920	-.0027	.0004	.0085	8.073
.252	90.061	.00	.08	.0805	.0210	.0967	.0004	.0006	.0069	3.836

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CYM	CSF
.251	89.477	.00	.07	.0771	.0215	.0970	.0008	.0007	.0042
.251	89.774	.00	-4.09	-.2783	.0080	.1827	.0007	.0003	.0061
.251	89.578	.00	-3.07	-.1902	.0148	.1608	.0006	.0005	.0060
.252	89.967	.00	-2.03	-.1022	.0192	.1389	.0006	.0007	.0056
.251	89.477	.00	-.97	-.0122	.0214	.1180	.0009	.0007	.0050
.251	89.768	.00	.07	.0797	.0211	.0962	.0005	.0007	.0052
.251	89.767	.00	1.14	.1724	.0186	.0753	.0004	.0008	.0053
.251	89.669	.00	2.21	.2643	.0160	.0542	.0003	.0007	.0058
.251	89.767	.00	3.30	.3524	.0070	.0331	.0001	.0008	.0058
.251	89.669	.00	4.36	.4382	-.0022	.0129	-.0001	.0008	.0058
.251	89.376	.00	5.45	.5321	-.0142	-.0085	-.0002	.0008	.0055
.251	89.767	.00	6.55	.6194	-.0284	-.0303	-.0003	.0009	.0051
.251	89.572	.00	7.64	.7088	-.0451	-.0519	-.0006	.0009	.0048
.251	89.672	.00	8.73	.7900	-.0629	-.0718	-.0006	.0011	.0045
.251	89.478	.00	9.81	.8746	-.0833	-.0949	-.0007	.0011	.0035
.251	89.578	.00	10.93	.9592	-.1068	-.1194	-.0006	.0012	.0032
.251	89.387	.00	12.00	1.0339	-.1301	-.1450	-.0014	.0009	.0037
.251	89.494	.00	13.11	1.0923	-.1521	-.1787	-.0032	.0001	.0063
.251	89.606	.00	14.14	1.1347	-.1706	-.2086	-.0041	-.0004	.0090
.251	89.528	.00	15.24	1.1654	-.1883	-.2415	-.0037	-.0007	.0088
.251	89.475	.00	17.20	1.2132	-.2169	-.2920	-.0027	-.0004	.0065
.252	90.061	.00	.08	.0805	.0209	.0967	.0004	.0006	.0069

UNCLASSIFIED

CONFIDENTIAL *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***

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*** NASA CONFIDENTIAL *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***
 GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

09/21/67

HIGH SPEED TUNNEL

TEST 790

RUN 4

BALANCE 731

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CYM	CSF	L/D
.655	476.916	.00	.36	.0841	.0228	.0915	.0000	.0007	.0037	3.693
.654	476.325	.00	-2.56	-.1915	.0269	.1442	.0008	.0007	.0037	-7.116
.655	477.517	.00	-1.15	-.0565	.0234	.1182	.0006	.0006	.0037	-2.419
.655	477.092	.00	-.44	.0115	.0227	.1054	-.0001	.0005	.0041	.505
.654	476.433	.00	-.36	.0838	.0228	.0916	.0001	.0007	.0041	3.678
.655	477.241	.00	1.05	.1509	.0234	.0779	-.0002	.0007	.0036	6.436
.655	477.647	.00	1.83	.2267	.0249	.0627	-.0004	.0009	.0029	9.096
.655	476.994	.00	2.63	.3042	.0271	.0466	-.0005	.0009	.0029	11.226
.655	477.080	.00	3.37	.3752	.0300	.0328	-.0007	.0010	.0027	12.497
.654	476.271	.00	4.15	.4499	.0339	.0177	-.0010	.0010	.0027	13.274
.654	476.196	.00	4.90	.5288	.0388	.0036	-.0010	.0010	.0024	13.641
.654	476.432	.00	.35	.0827	.0229	.0916	-.0002	.0007	.0043	3.615

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CYM	CSF
.655	476.916	.00	.36	.0842	.0222	.0915	.0000	.0007	.0037
.654	476.325	.00	-2.56	-.1925	.0183	.1442	.0008	.0006	.0037
.655	477.517	.00	-1.15	-.0570	.0222	.1182	.0006	.0006	.0037
.655	477.092	.00	-.44	.0113	.0228	.1054	-.0001	.0005	.0041
.654	476.433	.00	-.36	.0839	.0222	.0916	.0001	.0007	.0036
.655	477.241	.00	1.05	.1513	.0207	.0779	-.0002	.0007	.0029
.655	477.647	.00	1.83	.2273	.0177	.0627	-.0004	.0009	.0029
.655	476.994	.00	2.63	.3051	.0131	.0466	-.0006	.0009	.0029
.655	477.080	.00	3.37	.3763	.0079	.0328	-.0007	.0009	.0027
.654	476.271	.00	4.15	.4511	.0012	.0177	-.0011	.0009	.0027
.654	476.196	.00	4.90	.5301	-.0066	.0036	-.0010	.0010	.0024
.654	476.432	.00	.35	.0828	.0224	.0916	-.0002	.0007	.0043

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CONFIDENTIAL *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***

*** NASA CONFIDENTIAL *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***
 GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL TEST 790 RUN 3 BALANCE 731 09/21/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CYM	CSF	L/D
.553	368.394	.00	.34	.0837	.0214	.0926	.0004	.0006	.0027	3.910
.552	367.659	.00	-3.51	-.2674	.0281	.1670	.0000	.0006	.0031	-9.518
.553	368.589	.00	-2.28	-.1522	.0240	.1428	.0002	.0006	.0029	-6.343
.552	367.117	.00	-1.01	-.0358	.0218	.1176	.0004	.0006	.0027	-1.647
.552	367.365	.00	.35	.0873	.0214	.0917	.0003	.0006	.0030	4.069
.552	367.359	.00	1.60	.2001	.0229	.0676	.0003	.0007	.0028	8.743
.552	367.958	.00	2.97	.3228	.0264	.0414	.0002	.0008	.0024	12.238
.552	367.183	.00	4.31	.4411	.0316	.0154	-.0001	.0009	.0022	13.967
.551	366.413	.00	5.60	.5563	.0385	-.0098	-.0003	.0010	.0017	14.465
.551	366.335	.00	6.89	.6668	.0469	-.0353	-.0004	.0012	.0006	14.217
.552	367.808	.00	8.22	.7770	.0575	-.0644	-.0004	.0013	.0001	13.507
.552	366.973	.00	9.45	.8756	.0692	-.0966	-.0008	.0013	-.0007	12.658
.552	367.352	.00	10.63	.9645	.0818	-.1344	-.0007	.0013	-.0012	11.821
.552	367.195	.00	.34	.0908	.0217	.0921	.0005	.0006	.0033	4.191

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CYM	CSF
.553	368.394	.00	.34	.0838	.0209	.0926	.0004	.0006	.0027
.552	367.659	.00	-3.51	-.2685	.0117	.1670	.0001	.0006	.0031
.553	368.589	.00	-2.28	-.1530	.0179	.1428	.0003	.0006	.0029
.552	367.117	.00	-1.01	-.0362	.0211	.1176	.0004	.0006	.0027
.552	367.365	.00	.35	.0874	.0209	.0917	.0003	.0006	.0030
.552	367.359	.00	1.60	.2006	.0173	.0676	.0003	.0007	.0028
.553	367.958	.00	2.97	.3237	.0096	.0414	.0001	.0008	.0024
.552	367.183	.00	4.31	.4422	-.0016	.0154	-.0002	.0009	.0022
.551	366.413	.00	5.60	.5573	-.0160	-.098	-.0004	.0010	.0017
.551	366.335	.00	6.89	.6674	-.0333	-.0353	-.0005	.0011	.0006
.553	367.808	.00	8.22	.7770	-.0541	-.0644	-.0006	.0012	.0001
.552	366.973	.00	9.45	.8748	-.0755	-.0966	-.0010	.0011	-.0007
.552	367.352	.00	10.63	.9645	-.0979	-.1344	-.0009	.0011	-.0012
.552	367.195	.00	.34	.0909	.0211	.0921	.0005	.0006	.0033

CONT *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***

~~UNCLASSIFIED~~

*** NASA CONFIDENTIAL *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***
 GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL

TEST 790

RUN 6

BALANCE 731

09/21/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CYM	CSF	L/D
.401	214.242	.00	.21	.1104	.0206	-.0456	-.0001	.0002	.0009	5.366
.401	213.508	.00	-4.28	-.2793	.0258	.0446	.0001	-.0000	.0015	-10.814
.402	214.432	.00	-3.23	-.1879	.0227	.0226	.0002	.0000	.0011	-8.266
.401	214.245	.00	-2.12	-.0901	.0209	-.0008	.0000	.0000	.0008	-4.316
.401	214.150	.00	-.98	.0089	.0200	-.0231	-.0001	.0001	.0006	.444
.401	214.055	.00	.22	.1151	.0205	-.0464	.0001	.0002	-.0000	5.616
.401	214.241	.00	1.33	.2100	.0223	-.0680	-.0002	.0002	.0001	9.410
.402	214.426	.00	2.51	.3121	.0253	-.0908	-.0005	.0003	-.0002	12.321
.401	214.056	.00	3.71	.4145	.0299	-.1138	-.0006	.0003	-.0002	13.884
.401	213.963	.00	4.89	.5184	.0355	-.1367	-.0004	.0005	-.0005	14.592
.401	213.968	.00	6.08	.6141	.0426	-.1581	-.0008	.0006	-.0013	14.414
.401	213.787	.00	7.27	.7118	.0509	-.1812	-.0009	.0007	-.0016	13.972
.401	213.886	.00	8.42	.8062	.0604	-.2038	-.0011	.0008	-.0026	13.346
.401	213.987	.00	9.60	.8981	.0709	-.2277	-.0010	.0009	-.0032	12.668
.401	214.050	.00	10.73	.9858	.0823	-.2533	-.0012	.0009	-.0037	11.977
.401	214.200	.00	11.90	1.0676	.0950	-.2828	-.0015	.0008	-.0032	11.238
.402	214.514	.00	12.98	1.1222	.1081	-.3191	-.0038	.0004	.0000	10.383
.401	214.000	.00	14.07	1.1690	.1215	-.3471	-.0050	-.0001	.0024	9.622
.401	214.241	.00	.21	.1142	.0205	-.0455	-.0001	.0002	-.0000	5.576

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CYM	CSF
.401	214.242	.00	.21	.1105	.0202	-.0456	-.0001	.0002	.0009
.401	213.508	.00	-4.28	-.2804	.0049	.0446	.0001	-.0000	.0015
.402	214.432	.00	-3.23	-.1888	.0121	.0226	.0002	-.0000	.0011
.401	214.245	.00	-2.12	-.0908	.0175	-.0008	.0000	.0000	.0008
.401	214.150	.00	-.98	.0085	.0202	-.0231	-.0001	.0001	-.0000
.401	214.055	.00	.22	.1152	.0201	-.0464	.0001	.0002	-.0000
.401	214.241	.00	1.33	.2104	.0174	-.0680	-.0002	.0002	.0001
.402	214.426	.00	2.51	.3128	.0116	-.0908	-.0005	.0003	-.0002
.401	214.056	.00	3.71	.4155	.0030	-.1138	-.0006	.0003	-.0002
.401	213.963	.00	4.89	.5194	-.0088	-.1367	-.0004	.0004	-.0005
.401	213.968	.00	6.08	.6150	-.0226	-.1581	-.0008	.0005	-.0013
.401	213.787	.00	7.27	.7123	-.0395	-.1812	-.0009	.0006	-.0016
.401	213.886	.00	8.42	.8061	-.0583	-.2038	-.0012	.0007	-.0026
.401	213.987	.00	9.60	.8970	-.0798	-.2277	-.0012	.0008	-.0032
.401	214.050	.00	10.73	.9835	-.1026	-.2533	-.0014	.0007	-.0037
.401	214.200	.00	11.90	1.0638	-.1272	-.2828	-.0016	.0005	-.0032
.402	214.514	.00	12.98	1.1172	-.1466	-.3191	-.0038	-.0004	.0000
.401	214.000	.00	14.07	1.1627	-.1662	-.3471	-.0049	-.0013	.0024
.401	214.241	.00	.21	.1142	.0201	-.0455	-.0001	.0002	-.0000

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CONFIDENTIAL *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***

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*** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***

GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL

TEST 790

RUN 5

BALANCE 731

09/21/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CYM	CSF	L/D
.250	89.281	.00	.12	.1141	.0210	-.0446	-.0001	.0002	.0002	5.434
.250	89.186	.00	-4.03	-.2409	.0248	.0404	.0002	.0001	.0010	-9.705
.250	89.088	.00	-3.01	-.1552	.0227	.0190	-.0000	.0002	.0005	-6.838
.251	89.478	.00	-1.97	-.0652	.0212	-.033	-.0002	.0002	.0000	-3.081
.250	88.989	.00	-.93	.0221	.0205	-.0240	-.0001	.0002	.0001	1.078
.251	89.574	.00	.13	.1127	.0210	-.0453	-.0002	.0003	-.0001	5.369
.251	89.769	.00	1.19	.2057	.0226	-.0667	-.0002	.0004	-.0008	9.096
.250	88.988	.00	2.26	.2925	.0252	-.0877	-.0005	.0003	.0000	11.623
.250	89.281	.00	3.35	.3862	.0287	-.1090	-.0004	.0004	.0006	13.473
.250	88.891	.00	4.40	.4700	.0332	-.1290	-.0007	.0005	-.0013	14.169
.250	89.281	.00	5.50	.5615	.0387	-.1508	-.0008	.0005	-.0013	14.495
.251	89.478	.00	6.61	.6513	.0458	-.1720	-.0010	.0007	-.0013	14.236
.251	89.675	.00	7.72	.7403	.0536	-.1938	-.0009	.0008	-.0019	13.823
.250	89.188	.00	8.80	.8236	.0619	-.2141	-.0010	.0009	-.0026	13.295
.250	89.288	.00	9.90	.9068	.0713	-.2351	-.0013	.0010	-.0029	12.713
.251	89.487	.00	10.99	.9908	.0821	-.2582	-.0017	.0010	-.0036	12.067
.251	89.491	.00	12.07	1.0690	.0934	-.2846	-.0020	.0008	-.0035	11.450
.250	89.207	.00	13.20	1.1280	.1051	-.3164	-.0033	.0007	-.0004	10.732
.250	89.025	.00	14.22	1.1690	.1167	-.3391	-.0046	.0002	.0015	10.019
.251	89.337	.00	15.32	1.2063	.1301	-.3633	-.0043	-.0000	.0016	9.270
.251	89.651	.00	16.32	1.2246	.1421	-.3826	-.0038	.0001	.0011	8.616
.251	89.383	.00	17.27	1.2456	.1560	-.4051	-.0031	.0004	-.0002	7.983
.251	89.476	.00	12	.1088	.0209	-.0453	-.0005	.0003	-.0016	5.213

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CYM	CSF
.250	89.281	.00	.12	.1141	.0207	-.0446	-.0001	.0002	.0002
.250	89.186	.00	-4.03	-.2421	.0078	.0404	.0002	.0001	.0010
.250	89.088	.00	-3.01	-.1562	.0145	.0190	-.0000	.0002	.0005
.251	89.478	.00	-1.97	-.0659	.0189	-.0033	-.0002	.0002	.0000
.250	88.989	.00	-.93	.0218	.0208	-.0240	-.0001	.0002	.0001
.251	89.574	.00	.13	.1127	.0207	-.0453	-.0002	.0003	-.0001
.251	89.765	.00	1.19	.2061	.0183	-.0667	-.0002	.0004	-.0008
.250	88.988	.00	2.26	.2933	.0136	-.0877	-.0005	.0002	-.0000
.250	89.281	.00	3.35	.3872	.0060	-.1090	-.0004	.0004	-.0006
.250	88.891	.00	4.40	.4710	-.0030	-.1290	-.0007	.0004	-.0013
.250	89.281	.00	5.50	.5625	-.0153	-.1508	-.0008	.0004	-.0013
.251	89.478	.00	6.61	.6521	-.0295	-.1720	-.0010	.0006	-.0013
.251	89.675	.00	7.72	.7406	-.0464	-.1938	-.0010	.0006	-.0019
.250	89.188	.00	8.80	.8231	-.0647	-.2141	-.0011	.0007	-.0026
.250	89.288	.00	9.90	.9052	-.0855	-.2351	-.0015	.0007	-.0029
.251	89.487	.00	10.99	.9879	-.1083	-.2582	-.0018	.0006	-.0036
.251	89.491	.00	12.07	1.0644	-.1321	-.2846	-.0021	.0004	-.0035
.250	89.207	.00	13.20	1.1216	-.1550	-.3184	-.0034	-.0001	-.004
.250	89.025	.00	14.22	1.1611	-.1738	-.3391	-.0045	-.0009	.0015
.251	89.337	.00	15.32	1.1970	-.1929	-.3633	-.0042	-.0011	.0016
.251	89.651	.00	16.32	1.2143	-.2074	-.3826	-.0037	-.0009	.0011
.251	89.383	.00	17.27	1.2348	-.2206	-.4051	-.0031	-.0006	-.002
.251	89.476	.00	12	.1088	.0206	-.0453	-.0005	.0003	-.0016

*** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***

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*** NASA [REDACTED] *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***
 GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL TEST 790 RUN 8 BALANCE 731 09/21/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CYM	CSF	L/D
.655	477.833	.00	.27	.1048	.0218	-.0518	-.0009	.0003	.0004	4.812
.655	478.505	.00	-2.67	-.1765	.0237	.0010	-.0001	.0000	.0012	-7.443
.655	478.816	.00	-1.28	-.0421	.0213	-.0240	-.0004	.0001	.0008	-1.974
.655	478.153	.00	-.53	.0256	.0211	-.0358	-.0006	.0003	.0005	1.213
.655	477.915	.00	.28	.1046	.0218	-.0511	-.0009	.0003	.0005	4.798
.655	477.593	.00	.99	.1758	.0230	-.0655	-.0011	.0003	.0003	7.641
.655	478.490	.00	1.78	.2522	.0251	-.0800	-.0010	.0004	-.0003	10.060
.654	477.521	.00	2.53	.3237	.0277	-.0941	-.0014	.0005	-.0003	11.681
.654	477.689	.00	3.28	.3957	.0312	-.1078	-.0013	.0006	-.0008	12.694
.654	477.536	.00	4.04	.4689	.0353	-.1222	-.0015	.0006	-.0008	13.285
.655	478.772	.00	4.79	.5439	.0406	-.1379	-.0017	.0006	-.0008	13.398
.655	477.996	.00	.28	.1064	.0218	-.0518	-.0010	.0003	.0002	4.883

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CYM	CSF
.655	477.833	.00	.27	.1049	.0213	-.0518	-.0009	.0003	.0004
.655	478.505	.00	-2.67	-.1774	.0155	.0010	-.0001	.0000	.0012
.655	478.816	.00	-1.28	-.0426	.0204	-.0240	-.0004	.0001	.0008
.655	478.153	.00	-.53	.0254	.0214	-.0358	-.0006	.0003	.0005
.655	477.915	.00	.28	.1047	.0213	-.0511	-.0009	.0003	.0005
.654	477.593	.00	.99	.1761	.0200	-.0655	-.0011	.0003	.0003
.655	478.490	.00	1.78	.2528	.0172	-.0800	-.0010	.0004	-.0003
.654	477.521	.00	2.53	.3246	.0134	-.0941	-.0014	.0004	-.0003
.654	477.689	.00	3.28	.3968	.0085	-.1078	-.0014	.0005	-.0008
.654	477.536	.00	4.04	.4701	.0022	-.1222	-.0015	.0005	-.0008
.655	478.772	.00	4.79	.5453	-.0050	-.1379	-.0017	.0004	-.0008
.655	477.996	.00	.28	.1065	.0213	-.0518	-.0010	.0003	.0002

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*** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***

*** NASA [REDACTED] *** TX 10 FT TUNNELS *** NASA PRELIMINARY ***
 GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL TEST 790 RUN 7 BALANCE 731 09/21/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPR	CRM	CYM	CSF	L/D
.553	369.151	.00	.27	.1121	.0209	-.0484	-.0003	.0002	.0007	5.361
.553	369.074	.00	-3.57	-.2416	.0244	.0268	-.0002	.0000	.0014	-9.918
.554	369.755	.00	-2.36	-.1303	.0215	.0025	-.0002	.0000	.0012	-6.049
.552	368.463	.00	-1.11	-.0145	.0203	-.0215	-.0003	.0001	.0008	-7.15
.552	368.551	.00	.27	.1120	.0209	-.0483	-.0005	.0002	.0006	5.350
.554	369.923	.00	1.56	.2318	.0234	-.0743	-.0005	.0003	.0001	9.924
.552	368.551	.00	2.93	.3548	.0277	-.0999	-.0006	.0004	-.0001	12.809
.552	368.301	.00	4.25	.4735	.0340	-.1253	-.0007	.0004	-.0003	13.946
.552	367.963	.00	5.56	.5865	.0415	-.1489	-.0006	.0006	-.0008	14.137
.553	368.833	.00	6.87	.7006	.0511	-.1752	-.0009	.0007	-.0019	13.715
.553	368.935	.00	8.18	.8090	.0623	-.2031	-.0008	.0009	-.0027	12.990
.552	367.591	.00	9.40	.9065	.0744	-.2339	-.0009	.0010	-.0041	12.190
.552	368.316	.00	10.57	.9981	.0877	-.2690	-.0007	.0010	-.0049	11.378
.554	370.606	.00	.26	.1124	.0209	-.0482	-.0002	.0002	.0007	5.387

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPR	CRM	CYM	CSF
.553	369.151	.00	.27	.1122	.0204	-.0484	-.0003	.0002	.0007
.553	369.074	.00	-3.57	-.2426	.0093	.0268	-.0002	.0000	.0014
.554	369.755	.00	-2.36	-.1311	.0162	.0025	-.0002	.0001	.0012
.552	368.463	.00	-1.11	-.0149	.0200	-.0215	-.0003	.0001	.0008
.552	368.551	.00	.27	.1121	.0204	-.0483	-.0005	.0002	.0006
.554	369.923	.00	1.56	.2323	.0170	-.0743	-.0005	.0003	.0001
.552	368.551	.00	2.93	.3557	.0096	-.0999	-.0006	.0004	-.0001
.552	368.301	.00	4.25	.4746	-.0012	-.1253	-.0007	.0004	-.0003
.552	367.963	.00	5.56	.5877	-.0155	-.1489	-.0006	.0005	-.0008
.553	368.833	.00	6.87	.7015	-.0330	-.1752	-.0010	.0006	-.0019
.553	368.935	.00	8.18	.8094	-.0534	-.2031	-.0009	.0007	-.0027
.552	367.591	.00	9.40	.9061	-.0747	-.2339	-.0011	.0008	-.0041
.552	368.316	.00	10.57	.9983	-.0967	-.2690	-.0009	.0009	-.0049
.554	370.606	.00	.26	.1125	.0204	-.0482	-.0002	.0002	.0007

*** TX 10 FT TUNNELS *** NASA PRELIMINARY ***

UNCLASSIFIEDNASA **CONFIDENTIAL** *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***
GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL

TEST 790

RUN 9

BALANCE 731

09/21/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CYM	CSF	L/D
.252	90.359	.00	.07	.0813	.0214	.0291	.0006	.0009	.0003	3.796
.252	90.267	.00	-4.10	-.2753	.0278	.1148	.0007	.0005	.0010	-9.919
.252	90.558	.00	-3.07	-.1869	.0247	.0929	.0008	.0006	.0010	-7.578
.252	90.557	.00	-2.02	-.0957	.0226	.0704	.0007	.0007	.0008	-4.232
.252	90.653	.00	-.98	-.0096	.0216	.0498	.0007	.0007	.0004	-.445
.253	90.945	.00	.08	.0828	.0214	.0287	.0004	.0007	.0003	3.870
.253	90.544	.00	1.14	.1719	.0223	.0078	.0005	.0008	-.0002	7.715
.253	90.944	.00	2.19	.2577	.0243	-.0124	.0003	.0009	.0000	10.586
.252	90.552	.00	3.28	.3517	.0274	-.0342	.0003	.0009	-.0002	12.820
.252	90.260	.00	4.34	.4372	.0313	-.0540	.0003	.0009	-.0006	13.957
.252	90.161	.00	5.43	.5280	.0363	-.0757	-.0001	.0010	-.0011	14.563
.252	90.162	.00	6.54	.6154	.0424	-.0968	.0001	.0011	-.0012	14.511
.252	90.260	.00	7.61	.7001	.0492	-.1176	-.0001	.0012	-.0015	14.239
.252	90.458	.00	8.72	.7858	.0576	-.1387	-.0003	.0012	-.0022	13.648
.252	90.557	.00	9.84	.8722	.0666	-.1613	-.0006	.0012	-.0028	13.101
.252	90.365	.00	10.93	.9567	.0769	-.1848	-.0009	.0013	-.0026	12.437
.252	90.467	.00	12.01	1.0334	.0878	-.2119	-.0013	.0012	-.0020	11.775
.252	90.477	.00	13.14	1.0929	.0997	-.2445	-.0031	.0009	-.0003	10.968
.252	90.294	.00	14.17	1.1400	.1111	-.2707	-.0041	.0006	.0017	10.257
.253	90.858	.00	15.27	1.1777	.1244	-.3003	-.0036	.0003	.0022	9.467
.253	90.919	.00	16.25	1.1975	.1364	-.3235	-.0030	.0004	.0014	8.782
.252	90.748	.00	17.23	1.2245	.1509	-.3492	-.0024	.0006	.0005	8.117
.252	90.457	.00	.09	.0812	.0214	.0277	.0006	.0008	-.0000	3.802

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CYM	CSF
.252	90.359	.00	.07	.0814	.0213	.0291	.0006	.0009	.0003
.252	90.267	.00	-4.10	-.2766	.0080	.1148	.0007	.0005	.0010
.252	90.558	.00	-3.07	-.1880	.0146	.0929	.0008	.0006	.0010
.252	90.557	.00	-2.02	-.0964	.0192	.0704	.0007	.0007	.0008
.252	90.653	.00	-.98	-.0100	.0214	.0498	.0008	.0007	.0004
.253	90.945	.00	.08	.0828	.0213	.0287	.0004	.0007	.0003
.253	90.944	.00	1.14	.1723	.0189	.0078	.0005	.0008	-.0002
.253	90.944	.00	2.19	.2584	.0145	-.0124	-.0003	.0009	.0000
.252	90.552	.00	3.28	.3526	.0073	-.0342	-.0003	.0009	-.0002
.252	90.260	.00	4.34	.4383	-.0018	-.0540	-.0003	.0010	-.0006
.252	90.161	.00	5.43	.5290	-.0139	-.0757	-.0001	.0010	-.0011
.252	90.162	.00	6.54	.6161	-.0279	-.0968	-.0000	.0011	-.0012
.252	90.260	.00	7.61	.7003	-.0440	-.1176	-.0002	.0012	-.0015
.252	90.458	.00	8.72	.7852	-.0622	-.1387	-.0004	.0012	-.0022
.252	90.557	.00	9.84	.8704	-.0834	-.1613	-.0008	.0011	-.0028
.252	90.365	.00	10.93	.9536	-.1058	-.1848	-.0011	.0011	-.0026
.252	90.467	.00	12.01	1.0286	-.1290	-.2119	-.0015	.0009	-.0020
.252	90.477	.00	13.14	1.0864	-.1513	-.2445	-.0032	.0002	-.0003
.252	90.294	.00	14.17	1.1319	-.1712	-.2707	-.0041	-.0004	.0017
.253	90.858	.00	15.27	1.1682	-.1899	-.3003	-.0035	-.0006	.0022
.253	90.919	.00	16.25	1.1870	-.2041	-.3235	-.0030	-.0005	.0014
.252	90.748	.00	17.23	1.2133	-.2183	-.3492	-.0025	-.0001	.0005
.252	90.457	.00	.09	.0812	.0212	.0277	.0006	.0008	-.0000

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7 X 10 FT TUNNELS *** NASA PRELIMINARY ***

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*** NASA *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***
GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL TEST 790 RUN 10 BALANCE 731 09/23/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CYM	CSF	L/D
.401	214.631	.00	.16	-.0838	.0208	.0281	.0008	.0007	.0000	4.019
.401	214.648	.00	-4.33	-.3092	.0287	.1179	.0006	.0004	.0014	-10.757
.402	214.921	.00	-3.28	-.2184	.0251	.0970	.0007	.0005	.0011	-8.713
.402	215.009	.00	-2.16	-.1187	.0224	.0741	.0008	.0005	.0006	-5.302
.402	215.005	.00	-1.03	-.0213	.0209	.0521	.0007	.0006	.0005	-1.019
.402	215.002	.00	.15	-.0827	.0208	.0284	.0004	.0006	.0002	3.978
.402	215.093	.00	1.28	.1807	.0219	.0065	.0002	.0007	-.0001	8.231
.402	215.051	.00	2.45	.2816	.0245	-.0165	.0001	.0008	-.0001	11.499
.401	214.626	.00	3.64	.3829	.0283	-.0390	.0000	.0008	-.0005	13.555
.401	214.441	.00	4.82	.4832	.0333	-.0611	-.0002	.0008	-.0003	14.493
.401	214.255	.00	6.03	.5845	.0397	-.0842	.0001	.0010	-.0008	14.729
.402	214.909	.00	7.22	.6808	.0475	-.1073	-.0003	.0011	-.0018	14.327
.401	214.077	.00	8.38	.7742	.0561	-.1302	-.0004	.0012	-.0021	13.805
.401	213.899	.00	9.55	.8677	.0663	-.1546	-.0005	.0013	-.0026	13.080
.401	214.559	.00	10.67	.9520	.0770	-.1807	-.0009	.0012	-.0024	12.360
.401	214.576	.00	11.83	1.0350	.0896	-.2130	-.0014	.0011	-.0017	11.557
.402	214.888	.00	12.92	1.0915	.1022	-.2485	-.0034	.0008	.0006	10.678
.401	214.649	.00	14.01	1.1395	.1150	-.2799	-.0043	.0003	.0026	9.909
.402	214.791	.00	15.00	1.1699	.1274	-.3062	-.0046	.0001	.0024	9.186
.402	214.909	.00	.13	.0820	.0209	.0295	.0008	.0007	.0002	3.934

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CYM	CSF
.401	214.631	.00	.16	-.0838	.0206	.0281	.0008	.0007	.0000
.402	214.648	.00	-4.33	-.3104	.0053	.1179	.0007	.0004	.0014
.402	214.921	.00	-3.28	-.2194	.0126	.0970	.0007	.0004	.0011
.402	215.009	.00	-2.16	-.1194	.0179	.0741	.0008	.0005	.0006
.402	215.005	.00	-1.03	-.0217	.0205	.0521	.0007	.0006	.0005
.402	215.002	.00	.15	-.0828	.0206	.0284	.0004	.0006	.0002
.402	215.093	.00	1.28	.1811	.0179	.0065	.0002	.0007	-.0001
.402	215.091	.00	2.45	.2824	.0124	-.0165	.0000	.0008	-.0001
.401	214.626	.00	3.64	.3839	.0039	-.0390	-.0000	.0008	-.0005
.401	214.441	.00	4.82	.4842	.0074	-.0611	-.0003	.0008	-.0003
.401	214.255	.00	6.03	.5853	.0219	-.0842	-.0000	.0010	-.0008
.402	214.905	.00	7.22	.6812	.0384	-.1073	-.0004	.0011	-.0018
.401	214.077	.00	8.38	.7739	.0573	-.1302	-.0006	.0011	-.0021
.401	213.899	.00	9.55	.8666	.0786	-.1546	-.0007	.0012	-.0026
.401	214.559	.00	10.67	.9494	.1005	-.1807	-.0011	.0010	-.0024
.401	214.576	.00	11.83	1.0310	.1244	-.2130	-.0016	.0008	-.0017
.402	214.888	.00	12.92	1.0862	.1443	-.2485	-.0035	.0000	.0006
.401	214.649	.00	14.01	1.1328	.1641	-.2799	-.0043	-.0007	.0026
.402	214.791	.00	15.00	1.1622	.1796	-.3062	-.0044	-.0011	.0024
.402	214.905	.00	.13	.0821	.0207	.0295	.0008	.0007	.0002

*** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***

*** NASA [REDACTED] *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***
 GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL

TEST 790

RUN 12

BALANCE 731

09/21/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CY _M	CSF	L/D
.654 477.353	.00	.24		.0825	.0220	.0251	-.0002	.0006	.0007	3.746
.654 477.342	.00	-2.67		-.1944	.0255	.0782	.0007	.0005	.0014	-7.622
.656 479.772	.00	-2.01		-.1299	.0237	.0656	.0004	.0006	.0010	-5.478
.656 479.761	.00	-1.30		-.0619	.0225	.0525	.0000	.0006	.0010	-2.758
.656 479.425	.00	-.56		.0060	.0219	.0400	-.0002	.0006	.0010	.274
.655 478.607	.00	.23		.0843	.0221	.0248	-.0002	.0006	.0010	3.822
.654 477.956	.00	.94		.1531	.0228	.0112	-.0004	.0007	.0007	6.703
.656 479.502	.00	1.75		.2349	.0246	-.0050	-.0005	.0008	.0003	9.542
.656 479.423	.00	2.52		.3084	.0269	-.0196	-.0004	.0009	-.0000	11.451
.656 479.957	.00	3.26		.3811	.0300	-.0334	-.0007	.0008	.0001	12.691
.655 479.026	.00	4.03		.4535	.0338	-.0479	-.0010	.0009	.0001	13.412
.655 478.953	.00	4.80		.5316	.0389	-.0625	-.0013	.0009	.0001	13.659
.655 478.329	.00	5.50		.5997	.0447	-.0784	-.0012	.0010	-.0004	13.409
.655 478.702	.00	6.07		.6427	.0505	-.1038	-.0011	.0012	-.0016	12.715
.656 479.423	.00	.23		.0870	.0221	.0247	-.0001	.0006	.0013	3.938

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CY _M	CSF
.654 477.353	.00	.24		.0826	.0217	.0251	-.0002	.0006	.0007
.654 477.342	.00	-2.67		-.1953	.0164	.0782	.0007	.0005	.0014
.656 479.772	.00	-2.01		-.1307	.0192	.0656	.0004	.0005	.0010
.656 479.761	.00	-1.30		-.0624	.0210	.0525	.0001	.0006	.0010
.656 479.425	.00	-.56		.0058	.0219	.0400	-.0002	.0006	.0010
.655 478.607	.00	.23		.0844	.0217	.0248	-.0002	.0006	.0010
.654 477.956	.00	.94		.1535	.0203	.0112	-.0004	.0007	.0007
.656 479.502	.00	1.75		.2355	.0174	-.0050	-.0005	.0008	.0003
.656 479.423	.00	2.52		.3093	.0134	-.0196	-.0005	.0009	-.0000
.656 479.997	.00	3.26		.3821	.0083	-.0334	-.0007	.0008	.0001
.655 479.026	.00	4.03		.4546	.0019	-.0479	-.0010	.0008	.0001
.655 478.953	.00	4.80		.5329	-.0057	-.0625	-.0014	.0007	.0001
.655 478.329	.00	5.50		.6013	-.0129	-.0784	-.0013	-.0009	-.0044
.655 478.702	.00	6.07		.6443	-.0177	-.1038	-.0012	.0011	-.0016
.656 479.423	.00	.23		.0871	.0217	.0247	-.0001	.0006	.0013

CLASSIFIED

*** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***

*** NASA *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***
 GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL TEST 790 RUN 11 BALANCE 731 09/21/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CY _M	CSF	L/D
.552	368.568	.00	.23	.0845	.0210	.0276	.0005	.0006	.0006	4.023
.552	367.997	.00	-3.58	-.2620	.0268	.1007	.0002	.0005	.0009	-9.779
.553	368.929	.00	-2.38	-.1511	.0231	.0770	.0004	.0005	.0007	-6.542
.553	369.349	.00	-1.10	-.0341	.0212	.0523	.0004	.0005	.0007	-1.610
.552	368.313	.00	.21	.0848	.0211	.0276	.0004	.0005	.0010	4.027
.553	369.253	.00	1.51	.2016	.0228	.0024	.0004	.0008	.0002	8.855
.553	368.910	.00	2.88	.3252	.0264	-.0236	.0000	.0009	-.0004	12.302
.553	369.862	.00	4.22	.4442	.0320	-.0492	-.0002	.0010	-.0007	13.894
.553	369.181	.00	5.52	.5602	.0390	-.0741	-.0006	.0011	-.0011	14.346
.553	369.359	.00	6.81	.6729	.0477	-.1006	-.0006	.0012	-.0020	14.057
.554	370.237	.00	8.13	.7804	.0586	-.1294	-.0006	.0014	-.0031	13.318
.553	369.323	.00	9.36	.8789	.0706	-.1625	-.0009	.0014	-.0039	12.453
.553	369.539	.00	10.51	.9656	.0835	-.2021	-.0007	.0013	-.0027	11.560
.553	369.610	.00	.21	.0881	.0212	.0274	.0004	.0006	.0010	4.162

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CY _M	CSF
.552	368.568	.00	.23	.0846	.0207	.0276	.0005	.0006	.0006
.552	367.997	.00	-3.58	-.2631	.0104	.1007	.0002	.0005	.0009
.553	368.929	.00	-2.38	-.1519	.0168	.0770	.0004	.0005	.0007
.553	369.349	.00	-1.10	-.0345	.0205	.0523	.0004	.0005	.0007
.552	368.313	.00	.21	.0849	.0207	.0276	.0004	.0005	.0010
.553	369.253	.00	1.51	.2021	.0175	.0024	.0004	.0008	.0002
.553	368.910	.00	2.88	.3260	.0101	-.0236	-.0000	.0009	-.0004
.553	369.862	.00	4.22	.4452	-.0008	-.0492	-.0002	.0010	-.0007
.553	369.181	.00	5.52	.5612	-.0150	-.0741	-.0007	.0010	-.0011
.553	369.359	.00	6.81	.6737	-.0324	-.1006	-.0007	.0012	-.0020
.554	370.237	.00	8.13	.7806	-.0523	-.1294	-.0008	.0013	-.0031
.553	369.323	.00	9.36	.8783	-.0733	-.1625	-.0011	.0012	-.0039
.553	369.539	.00	10.51	.9643	-.0939	-.2021	-.0009	.0012	-.0027
.553	369.610	.00	.21	.0882	.0209	.0274	.0004	.0006	.0010

*** NASA *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***

*** NASA CONFIDENTIAL *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***
GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL TEST 790 RUN 14 BALANCE 731 09/21/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CYM	CSF	L/D
.401	214.648	.00	.25	.0281	.0223	.1504	-.0003	.0006	.0010	1.258
.399	212.899	.00	-4.25	-.3630	.0323	.2371	-.0002	.0002	.0025	-11.225
.401	214.751	.00	-3.15	-.2685	.0280	.2162	-.0003	.0002	.0024	-9.581
.402	215.118	.00	-2.04	-.1705	.0249	.1952	-.0005	.0003	.0021	-6.851
.401	214.373	.00	-.92	-.0726	.0230	.1730	-.0007	.0003	.0018	-3.151
.401	214.184	.00	.23	.0261	.0223	.1508	-.0005	.0005	.0013	1.170
.401	214.368	.00	1.38	.1313	.0229	.1268	.0000	.0006	.0010	5.723
.401	214.728	.00	2.55	.2318	.0248	.1041	-.0002	.0007	.0004	9.363
.401	214.458	.00	3.75	.3346	.0280	.0815	-.0002	.0007	.0005	11.962
.401	214.272	.00	4.94	.4349	.0325	.0584	-.0005	.0008	-.0000	13.382
.400	213.623	.00	6.14	.5357	.0383	.0359	-.0006	.0009	-.0007	13.985
.401	214.180	.00	7.33	.6365	.0454	.0125	-.0005	.0010	-.0007	14.027
.401	214.555	.00	8.53	.7347	.0539	-.0109	-.0004	.0011	-.0016	13.631
.401	214.469	.00	9.68	.8252	.0632	-.0349	-.0006	.0012	-.0020	13.053
.401	214.476	.00	10.83	.9156	.0736	-.0610	-.0006	.0012	-.0023	12.432
.401	214.584	.00	12.00	.9993	.0856	-.0907	-.0012	.0011	-.0024	11.669
.401	214.432	.00	13.05	1.0517	.0976	-.1314	-.0034	.0007	.0011	10.772
.401	214.473	.00	14.15	1.1026	.1110	-.1698	-.0046	.0002	.0035	9.933
.401	214.242	.00	15.14	1.1340	.1231	-.2025	-.0048	.0000	.0035	9.212
.401	214.648	.00	.26	.0314	.0223	.1490	-.0003	.0005	.0012	1.407

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CYM	CSF
.401	214.648	.00	.25	.0282	.0222	.1504	-.0003	.0006	.0010
.399	212.899	.00	-4.25	-.3643	.0054	.2371	-.0002	.0002	.0025
.401	214.751	.00	-3.15	-.2696	.0132	.2162	-.0003	.0002	.0024
.402	215.118	.00	-2.04	-.1712	.0188	.1952	-.0005	.0003	.0021
.401	214.373	.00	-.92	-.0730	.0219	.1730	-.0007	.0004	.0018
.401	214.184	.00	.23	.0262	.0222	.1508	-.0005	.0005	.0013
.401	214.368	.00	1.38	.1318	.0198	.1268	.0000	.0006	.0010
.401	214.728	.00	2.55	.2327	.0144	.1041	-.0003	.0007	.0004
.401	214.458	.00	3.75	.3357	.0060	.0815	-.0002	.0007	.0005
.401	214.272	.00	4.94	.4360	-.0050	.0584	-.0005	.0008	-.0000
.400	213.623	.00	6.14	.5366	-.0192	-.0359	-.0007	.0008	-.0007
.401	214.180	.00	7.33	.6370	-.0362	.0125	-.0006	.0009	-.0007
.401	214.555	.00	8.53	.7343	-.0556	-.0109	-.0005	.0011	-.0016
.401	214.469	.00	9.68	.8239	-.0764	-.0349	-.0008	.0011	-.0020
.401	214.476	.00	10.83	.9128	-.0997	-.0610	-.0008	.0011	-.0023
.401	214.584	.00	12.00	.9948	-.1240	-.0907	-.0014	.0008	-.0024
.401	214.432	.00	13.05	1.0460	-.1423	-.1314	-.0035	-.0001	.0011
.401	214.473	.00	14.15	1.0956	-.1618	-.1698	-.0045	-.0009	.0035
.401	214.242	.00	15.14	1.1261	-.1771	-.2025	-.0047	-.0012	.0035
.401	214.648	.00	.26	.0315	.0222	.1490	-.0003	.0005	.0012

UNCLASSIFIED

*** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***

*** NASA

*** 7 X 10 FT TUNNELS *** NASA PRELIMINARY **

GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL

TEST 790

RUN 13

BALANCE 731

09/21/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CYM	CSF	L/D
.250	89.192	.00	.12	.0328	.0226	.1509	-.0001	.0007	.0009	1.445
.250	89.490	.00	-4.05	-.3212	.0310	.2343	.0004	.0004	.0016	-10.372
.251	89.684	.00	-3.02	-.2361	.0275	.2150	.0003	.0005	.0025	-8.577
.251	89.976	.00	-1.99	-.1505	.0252	.1934	-.0001	.0006	.0012	-5.979
.251	89.974	.00	-.94	-.0609	.0234	.1716	.0000	.0006	.0010	-2.602
.251	89.680	.00	.12	.0307	.0226	.1500	.0002	.0007	.0008	1.354
.251	89.777	.00	1.18	.1199	.0229	.1296	-.0000	.0007	.0013	5.227
.251	89.874	.00	2.25	.2085	.0245	.1088	-.0000	.0009	.0003	8.504
.251	89.971	.00	3.33	.2989	.0269	.0875	-.0000	.0008	.0001	11.128
.251	89.678	.00	4.40	.3847	.0303	.0665	-.0001	.0009	-.0001	12.717
.251	89.677	.00	5.49	.4746	.0345	.0459	-.0003	.0010	-.0005	13.737
.251	89.677	.00	6.58	.5635	.0399	.0244	-.0003	.0010	-.0009	14.136
.251	89.873	.00	7.70	.6529	.0467	.0026	-.0005	.0010	-.0004	13.979
.251	89.777	.00	8.79	.7406	.0542	-.0193	-.0004	.0012	-.0013	13.671
.251	89.777	.00	9.87	.8248	.0623	-.0410	-.0008	.0012	-.0020	13.247
.251	89.877	.00	11.02	.9190	.0726	-.0643	-.0007	.0013	-.0029	12.662
.251	89.879	.00	12.05	.9924	.0819	-.0902	-.0012	.0012	-.0021	12.118
.251	89.790	.00	13.16	1.0545	.0930	-.1248	-.0034	.0007	.0010	11.335
.251	89.608	.00	14.21	1.0977	.1044	-.1574	-.0042	.0005	-.0038	10.516
.250	89.334	.00	15.31	1.1310	.1170	-.1945	-.0044	.0001	.0043	9.666
.250	89.159	.00	16.31	1.1625	.1304	-.2239	-.0037	.0001	-.0038	8.917
.249	88.791	.00	17.28	1.1826	.1437	-.2514	-.0029	.0004	.0026	8.231
.252	90.266	.00	.14	.0295	.0225	.1488	.0001	.0007	.0006	1.307

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CYM	CSF
.250	89.192	.00	.12	.0328	.0226	.1509	-.0001	.0007	.0009
.250	89.490	.00	-4.05	-.3226	.0082	.2343	.0004	.0004	.0016
.251	89.684	.00	-3.02	-.2372	.0150	.2150	.0003	.0005	.0025
.251	89.976	.00	-1.99	-.1512	.0199	.1934	-.0000	.0006	.0012
.251	89.974	.00	-.94	-.0612	.0224	.1716	.0000	.0006	.0010
.251	89.680	.00	.12	.0307	.0226	.1500	.0002	.0007	.0018
.251	89.777	.00	1.18	.1203	.0205	.1296	-.0000	.0007	.0013
.251	89.874	.00	2.25	.2093	.0163	.1088	-.0000	.0009	.0003
.251	89.971	.00	3.33	.2999	.0095	.0675	-.0001	.0008	.0001
.251	89.678	.00	4.40	.3859	.0007	.0665	-.0002	.0009	-.0001
.251	89.677	.00	5.49	.4757	-.0110	.0459	-.0004	.0009	-.0005
.251	89.677	.00	6.58	.5642	-.0250	.0244	-.0004	.0010	-.0009
.251	89.873	.00	7.70	.6531	-.0411	.0026	-.0007	.0009	-.0004
.251	89.777	.00	8.79	.7400	-.0596	-.0193	-.0005	.0012	-.0013
.251	89.777	.00	9.87	.8230	-.0800	-.0410	-.0010	.0010	-.0020
.251	89.877	.00	11.02	.9156	-.1043	-.0643	-.0009	.0012	-.0029
.251	89.879	.00	12.05	.9873	-.1270	-.0902	-.0014	.0010	-.0021
.251	89.790	.00	13.16	1.0475	-.1494	-.1248	-.0035	-.0001	.0010
.251	89.608	.00	14.21	1.0892	-.1681	-.1574	-.0042	-.0006	-.0038
.250	89.334	.00	15.31	1.1211	-.1855	-.1945	-.0043	-.0011	.0043
.250	89.159	.00	16.31	1.1516	-.2012	-.2239	-.0036	-.0009	.0026
.249	88.791	.00	17.28	1.1711	-.2138	-.2514	-.0029	-.0005	.0026
.252	90.266	.00	.14	.0295	.0225	.1488	.0001	.0007	.0006

* * * 7 X 10 FT TUNNELS *** NASA PRELIMINARY **

UNCLASSIFIED

*** NASA [REDACTED] *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***
 GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL TEST 790 RUN 16 BALANCE 731 09/21/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CYM	CSF	L/D
.656	479.918	.00	.46	.0392	.0239	.1492	-.0007	.0005	.0011	1.640
.656	480.138	.00	-2.41	-.2302	.0287	.1981	-.0004	.0004	.0015	-8.012
.656	480.526	.00	-1.70	-.1638	.0264	.1876	-.0002	.0004	.0014	-6.195
.656	480.184	.00	-1.01	-.0999	.0249	.1762	-.0004	.0004	.0016	-4.006
.655	479.276	.00	-.27	-.0314	.0240	.1631	-.0007	.0005	.0012	-1.305
.655	479.265	.00	.43	.0371	.0239	.1501	-.0007	.0005	.0012	1.554
.655	479.514	.00	1.20	.1136	.0244	.1344	-.0007	.0005	.0010	4.650
.656	479.924	.00	2.05	.1965	.0259	.1183	-.0006	.0006	.0006	7.598
.656	480.661	.00	2.82	.2723	.0281	.1037	-.0009	.0007	.0002	9.695
.657	480.910	.00	3.57	.3460	.0308	.0893	-.0009	.0007	-.0001	11.236
.656	480.511	.00	4.34	.4222	.0346	.0748	-.0013	.0007	-.0002	12.193
.656	480.119	.00	5.12	.4995	.0396	.0589	-.0013	.0008	-.0003	12.622
.656	479.987	.00	5.77	.5553	.0447	.0412	-.0010	.0010	-.0011	12.423
.656	479.873	.00	6.37	.5943	.0502	.0155	-.0010	.0011	-.0021	11.839
.656	479.681	.00	.47	.0409	.0240	.1492	-.0006	.0005	.0013	1.707

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CYM	CSF
.656	479.918	.00	.46	.0394	.0236	.1492	-.0007	.0005	.0011
.656	480.138	.00	-2.41	-.2312	.0190	.1981	-.0004	.0004	.0015
.656	480.526	.00	-1.70	-.1645	.0216	.1876	-.0002	.0004	.0014
.656	480.184	.00	-1.01	-.1003	.0232	.1762	-.0004	.0004	.0016
.655	479.276	.00	-.27	-.0315	.0239	.1631	-.0007	.0005	.0012
.655	479.265	.00	.43	.0372	.0236	.1501	-.0007	.0005	.0012
.655	479.514	.00	1.20	.1140	.0220	.1344	-.0007	.0005	.0010
.656	479.924	.00	2.05	.1973	.0188	.1183	-.0006	.0006	.0006
.656	480.661	.00	2.82	.2733	.0146	.1037	-.0009	.0007	.0002
.657	480.910	.00	3.57	.3472	.0092	.0893	-.0009	.0007	-.0001
.656	480.511	.00	4.34	.4236	.0026	.0748	-.0014	.0006	-.0002
.656	480.119	.00	5.12	.5010	-.0051	.0589	-.0013	.0007	-.0003
.656	479.987	.00	5.77	.5569	-.0113	.0412	-.0011	.0009	-.0011
.656	479.873	.00	6.37	.5961	-.0160	.0155	-.0011	.0010	-.0021
.656	479.681	.00	.47	.0411	.0237	.1492	-.0006	.0005	.0013

UNCLASSIFIED

*** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***

*** NASA [REDACTED] *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***
GROUP**4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL

TEST 790

RUN 15

BALANCE 731

09/21/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CYM	CSF	L/D
.552	368.793	.00	.40	.0383	.0227	.1498	-.0001	.0004	.0018	1.689
.551	367.877	.00	-3.39	-.3049	.0300	.2196	.0003	.0003	.0020	-10.171
.553	369.583	.00	-2.19	-.1937	.0259	.1983	.0002	.0003	.0019	-7.492
.553	369.402	.00	-.91	-.0773	.0234	.1742	.0000	.0003	.0017	-3.302
.552	369.051	.00	.37	.0389	.0227	.1494	-.0004	.0004	.0015	1.718
.553	369.562	.00	1.70	.1606	.0238	.1240	-.0001	.0005	.0013	6.749
.553	369.992	.00	3.08	.2853	.0269	.0973	-.0003	.0007	.0004	10.602
.552	369.136	.00	4.44	.4060	.0318	.0713	-.0005	.0007	.0003	12.754
.552	369.051	.00	5.73	.5207	.0383	.0463	-.0006	.0009	-.0007	13.597
.552	368.627	.00	7.04	.6353	.0465	.0201	-.0000	.0011	-.0014	13.668
.553	369.240	.00	8.38	.7478	.0567	-.0088	-.0004	.0013	-.0026	13.180
.552	368.839	.00	9.61	.8437	.0681	-.0394	-.0007	.0012	-.0037	12.385
.552	369.047	.00	10.81	.9378	.0810	-.0762	-.0007	.0012	-.0045	11.582
.552	368.620	.00	.39	.0393	.0228	.1501	-.0001	.0004	.0015	1.725

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNE	CAF	CPM	CRM	CYM	CSF
.552	368.793	.00	.40	.0384	.0224	.1498	-.0001	.0004	.0018
.551	367.877	.00	-3.39	-.3061	.0119	.2196	.0003	.0003	.0020
.553	369.583	.00	-2.19	-.1945	.0184	.1983	.0002	.0003	.0019
.553	369.402	.00	-.91	-.0776	.0222	.1742	.0000	.0003	.0017
.552	369.051	.00	.37	.0391	.0224	.1494	-.0004	.0004	.0015
.553	369.562	.00	1.70	.1612	.0190	.1240	-.0001	.0005	.0013
.553	369.992	.00	3.08	.2863	.0116	.0973	-.0003	.0007	.0014
.552	369.136	.00	4.44	.4072	.0003	.0713	-.0006	.0007	.0013
.552	369.051	.00	5.73	.5218	-.0139	.0463	-.0007	.0009	-.0017
.552	368.627	.00	7.04	.6361	-.0318	.0201	-.0002	.0011	-.0014
.553	369.240	.00	8.38	.7479	-.0528	-.0088	-.0006	.0012	-.0026
.552	368.839	.00	9.61	.8430	-.0737	-.0394	-.0009	.0011	-.0037
.552	369.047	.00	10.81	.9360	-.0963	-.0762	-.0009	.0011	-.0045
.552	368.620	.00	.39	.0394	.0225	.1501	-.0001	.0004	.0015

*** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***

*** NASA *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***
 GROUP 4 DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL TEST 790 RUN 18 BALANCE 731 09/21/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CYM	CSF	L/D
.402	214.841	.00	.26	.0057	.0237	.2092	-.0003	.0007	.0004	.242
.402	215.324	.00	-4.25	-.3794	.0350	.2904	-.0000	.0003	.0023	-10.850
.402	215.504	.00	-3.16	-.2869	.0304	.2713	-.0001	.0003	.0021	-9.448
.402	215.035	.00	-2.05	-.1925	.0270	.2527	-.0004	.0004	.0014	-7.130
.402	215.309	.00	-.92	-.0941	.0247	.2319	-.0004	.0005	.0009	-3.815
.402	214.934	.00	.24	.0049	.0237	.2097	-.0002	.0006	.0006	.208
.402	214.839	.00	1.38	.1062	.0240	.1871	-.0002	.0007	.0003	4.434
.402	215.116	.00	2.55	.2070	.0254	.1645	-.0002	.0007	.0002	8.167
.402	214.929	.00	3.78	.3136	.0284	.1414	-.0000	.0008	-.0001	11.055
.402	215.299	.00	4.95	.4134	.0326	.1190	-.0002	.0009	-.0007	12.693
.402	215.021	.00	6.15	.5128	.0380	.0961	-.0003	.0009	-.0010	13.505
.402	215.208	.00	7.34	.6137	.0447	.0723	-.0003	.0011	-.0017	13.725
.402	215.489	.00	8.52	.7092	.0527	.0491	-.0005	.0012	-.0021	13.469
.402	215.400	.00	9.69	.8044	.0618	.0248	-.0002	.0013	-.0028	13.019
.402	215.502	.00	10.83	.8903	.0717	-.0009	-.0004	.0013	-.0031	12.413
.402	215.144	.00	12.00	.9756	.0834	-.0319	-.0012	.0011	-.0026	11.702
.402	215.270	.00	13.06	1.0306	.0953	-.0755	-.0034	.0007	-.0008	10.812
.402	215.125	.00	14.15	1.0798	.1083	-.1143	-.0043	.0003	.0027	9.973
.402	214.935	.00	.28	.0082	.0237	.2090	-.0002	.0007	.0004	.348

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CYM	CSF
.402	214.841	.00	.26	.0058	.0237	.2092	-.0003	.0007	.0004
.402	215.324	.00	-4.25	-.3809	.0068	.2904	-.0000	.0003	.0023
.402	215.504	.00	-3.16	-.2881	.0145	.2713	-.0001	.0003	.0021
.402	215.035	.00	-2.05	-.1933	.0201	.2527	-.0004	.0004	.0014
.402	215.309	.00	-.92	-.0945	.0232	.2319	-.0004	.0006	.0006
.402	214.934	.00	.24	.0050	.0236	.2097	-.0002	.0007	.0003
.402	214.839	.00	1.38	.1067	.0214	.1871	-.0002	.0007	.0003
.402	215.116	.00	2.55	.2079	.0162	.1645	-.0002	.0007	.0002
.402	214.929	.00	3.78	.3147	.0076	.1414	-.0001	.0008	-.0001
.402	215.299	.00	4.95	.4146	-.0032	.1190	-.0003	.0009	-.0007
.402	215.021	.00	6.15	.5138	-.0171	.0961	-.0004	.0009	-.0010
.402	215.208	.00	7.34	.6142	-.0340	.0723	-.0005	.0010	-.0017
.402	215.489	.00	8.52	.7090	-.0529	.0491	-.0007	.0011	-.0021
.402	215.400	.00	9.69	.8030	-.0745	.0248	-.0004	.0012	-.0028
.402	215.502	.00	10.83	.8876	-.0967	-.0009	-.0006	.0012	-.0031
.402	215.144	.00	12.00	.9712	-.1212	-.0319	-.0014	.0008	-.0026
.402	215.270	.00	13.06	1.0250	-.1399	-.0755	-.0035	-.0000	.0008
.402	215.125	.00	14.15	1.0729	-.1588	-.1143	-.0042	-.0007	.0027
.402	214.935	.00	.28	.0083	.0236	.2090	-.0002	.0007	.0004

CLASSIFIED

7 X 10 FT TUNNELS *** NASA PRELIMINARY ***

~~UNCLASSIFIED~~

*** NASA [REDACTED] *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***
 GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGHSPEED TUNNEL TEST 790 RUN 17 BALANCE 731 09/21/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CYM	CSF	L/D
.251	89.879	.00	.09	.0036	.0245	.2105	-.0002	.0008	-.0001	.146
.251	89.689	.00	-4.07	-.3497	.0338	.2909	.0001	.0006	.0010	-10.340
.251	89.786	.00	-3.04	-.2570	.0302	.2707	.0003	.0007	.0002	-8.510
.251	89.980	.00	-2.00	-.1735	.0277	.2515	.0001	.0007	.0004	-6.253
.251	89.881	.00	-.95	-.0830	.0257	.2300	.0002	.0007	-.0001	-3.226
.251	89.879	.00	.09	.0076	.0246	.2096	.0002	.0008	-.0002	.307
.251	89.878	.00	1.15	.0957	.0244	.1895	-.0004	.0010	-.0012	3.924
.251	89.779	.00	2.22	.1857	.0255	.1689	.0001	.0010	-.0013	7.284
.251	89.778	.00	3.31	.2774	.0273	.1481	.0002	.0010	-.0010	10.144
.251	89.778	.00	4.37	.3642	.0305	.1281	-.0001	.0011	-.0011	11.938
.251	89.777	.00	5.47	.4520	.0345	.1078	-.0002	.0010	-.0013	13.098
.251	89.777	.00	6.57	.5437	.0398	.0849	-.0001	.0011	-.0018	13.662
.251	89.777	.00	7.66	.6306	.0458	.0637	-.0003	.0012	-.0020	13.781
.251	89.680	.00	8.76	.7193	.0529	.0416	-.0003	.0013	-.0027	13.590
.251	89.682	.00	9.83	.8005	.0610	.0192	-.0009	.0013	-.0034	13.128
.251	89.487	.00	10.97	.8918	.0704	-.0047	-.0007	.0014	-.0034	12.673
.250	89.393	.00	12.05	.9666	.0799	-.0305	-.0012	.0013	-.0035	12.098
.250	89.303	.00	13.15	1.0281	.0906	-.0647	-.0030	.0008	-.0010	11.347
.251	89.510	.00	14.21	1.0807	.1025	-.0999	-.0042	.0005	.0030	10.544
.251	89.626	.00	15.30	1.1180	.1153	-.1385	-.0041	.0002	.0036	9.694
.251	89.647	.00	16.29	1.1477	.1283	-.1725	-.0035	.0002	.0030	8.943
.251	89.866	.00	17.27	1.1667	.1417	-.2021	-.0027	.0003	.0017	8.232
.251	89.683	.00	.12	.0025	.0242	.2092	-.0001	.0009	.0002	.105

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CYM	CSF
.251	89.879	.00	.09	.0036	.0245	.2105	-.0002	.0008	-.0001
.251	89.689	.00	-4.07	-.3511	.0089	.2909	.0002	.0005	.0010
.251	89.786	.00	-3.04	-.2581	.0165	.2707	.0003	.0007	.0002
.251	89.980	.00	-2.00	-.1743	.0217	.2515	.0002	.0007	.0004
.251	89.881	.00	-.95	-.0834	.0243	.2300	.0002	.0007	-.0001
.251	89.879	.00	.09	.0076	.0245	.2096	.0002	.0008	-.0002
.251	89.878	.00	1.15	.0961	.0224	.1895	-.0004	.0010	-.0012
.251	89.779	.00	2.22	.1865	.0183	.1689	.0001	.0011	-.0013
.251	89.778	.00	3.31	.2785	.0113	.1481	.0001	.0010	-.0010
.251	89.778	.00	4.37	.3654	.0027	.1281	-.0002	.0011	-.0011
.251	89.777	.00	5.47	.4532	-.0087	.1078	-.0003	.0010	-.0013
.251	89.777	.00	6.57	.5446	-.0226	.0849	-.0002	.0010	-.0018
.251	89.777	.00	7.66	.6309	-.0387	.0637	-.0004	.0012	-.0020
.251	89.680	.00	8.76	.7188	-.0572	.0416	-.0005	.0012	-.0027
.251	89.682	.00	9.83	.7989	-.0766	.0192	-.0011	.0011	-.0034
.251	89.487	.00	10.97	.8886	-.1005	-.0047	-.0010	.0012	-.0024
.250	89.393	.00	12.05	.9616	-.1236	-.0305	-.0014	.0010	-.0035
.250	89.303	.00	13.15	1.0213	-.1456	-.0647	-.0031	.0001	-.0010
.251	89.510	.00	14.21	1.0722	-.1658	-.0999	-.0042	-.0005	.0030
.251	89.626	.00	15.30	1.1082	-.1835	-.1385	-.0040	-.0009	.0036
.251	89.647	.00	16.29	1.1369	-.1986	-.1725	-.0034	-.0008	.0030
.251	89.866	.00	17.27	1.1554	-.2108	-.2021	-.0027	-.0005	.0017
.251	89.683	.00	.12	.0026	.0242	.2092	-.0001	.0009	.0002

~~UNCLASSIFIED~~

*** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***

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*** NASA ~~CONFIDENTIAL~~ *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***
GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL TEST 790 RUN 20 BALANCE 731 09/21/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CY _M	CSF	L/D
.654	478.034	.00	.55	.0222	.0255	.2086	-.0006	.0006	.0005	.874
.654	478.009	.00	-2.30	-.2474	.0311	.2568	.0001	.0004	.0013	-7.957
.655	478.976	.00	-1.61	-.1780	.0297	.2465	.0001	.0004	.0012	-6.199
.655	480.182	.00	-.94	-.1137	.0271	.2353	-.0002	.0004	.0013	-4.196
.655	478.856	.00	-.22	-.0507	.0260	.2235	-.0006	.0006	.0007	-1.953
.655	478.192	.00	.54	.0226	.0255	.2088	-.0008	.0006	.0007	.887
.655	478.110	.00	1.27	.0934	.0258	.1950	-.0008	.0006	.0007	3.619
.655	478.277	.00	2.09	.1754	.0269	.1787	-.0005	.0007	.0001	6.520
.655	478.114	.00	2.88	.2512	.0287	.1637	-.0007	.0007	-.0000	8.751
.655	478.369	.00	3.63	.3245	.0313	.1494	-.0009	.0008	-.0004	10.356
.655	478.857	.00	4.40	.4021	.0348	.1348	-.0011	.0008	-.0005	11.550
.655	478.627	.00	5.20	.4858	.0399	.1199	-.0012	.0008	-.0006	12.169
.655	478.741	.00	5.91	.5537	.0459	.1027	-.0012	.0010	-.0014	12.051
.655	478.375	.00	6.46	.5927	.0508	.0772	-.0010	.0014	-.0042	11.871
.655	478.192	.00	.52	.0223	.0256	.2089	-.0004	.0007	.0005	.870

BODY AXIS COEFFICIENTS

MACH	C	BETA	ALPHA	C _{NF}	C _{AF}	CPM	CRM	CY _M	CSF
.654	478.034	.00	.55	.0225	.0253	.2086	-.0006	.0006	.0005
.654	478.009	.00	-2.30	-.2484	.0211	.2568	.0002	.0004	.0013
.655	478.976	.00	-1.61	-.1787	.0237	.2465	.0001	.0004	.0012
.656	480.182	.00	-.94	-.1141	.0252	.2353	-.0001	.0004	.0013
.655	478.856	.00	-.22	-.0508	.0258	.2235	-.0006	.0006	.0007
.655	478.192	.00	.54	.0228	.0253	.2088	-.0008	.0006	.0007
.655	478.110	.00	1.27	.0939	.0237	.1950	-.0008	.0006	.0067
.655	478.277	.00	2.09	.1763	.0205	.1787	-.0005	.0007	.0001
.654	478.114	.00	2.88	.2523	.0161	.1637	-.0008	.0007	-.0000
.655	478.369	.00	3.63	.3258	.0108	.1494	-.0009	.0007	-.0004
.655	478.857	.00	4.40	.4035	.0038	.1348	-.0012	.0007	-.0005
.655	478.627	.00	5.20	.4873	-.0043	.1199	-.0013	.0007	-.0066
.655	478.741	.00	5.91	.5554	-.0113	.1027	-.0013	.0009	-.0014
.655	478.375	.00	6.46	.5944	-.0162	.0772	-.0011	.0013	-.0042
.655	478.192	.00	.52	.0225	.0254	.2089	-.0004	.0006	.0005

~~UNCLASSIFIED~~

*** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***

~~CLASSIFIED~~

*** NASA *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***
 GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL TEST 790 RUN 19 BALANCE 731 09/21/67

STABILITY AXIS COEFFICIENTS

MACH	C	BETA	ALPHA	CL	CD	CPM	CRM	CYM	CSF	L/D
.553	369.594	.00	.45	.0167	.0241	.2095	-.0005	.0006	.0007	.694
.553	370.054	.00	-3.38	-.3277	.0325	.2753	-.0003	.0003	.0020	-10.093
.554	371.074	.00	-2.16	-.2162	.0280	.2564	-.0001	.0004	.0015	-7.714
.553	370.206	.00	-.89	-.1002	.0251	.2336	-.0004	.0004	.0011	-3.987
.553	369.250	.00	.41	.0151	.0241	.2094	-.0003	.0006	.0007	.626
.553	369.419	.00	1.72	.1353	.0249	.1845	-.0005	.0006	.0005	5.443
.553	369.762	.00	3.11	.2626	.0275	.1574	-.0001	.0007	-.0002	9.562
.554	370.449	.00	4.50	.3865	.0321	.1309	-.0001	.0009	-.0007	12.039
.553	369.678	.00	5.78	.5000	.0382	.1059	-.0004	.0010	-.0014	13.089
.553	369.686	.00	7.10	.6144	.0463	.0805	-.0005	.0012	-.0022	13.274
.553	369.441	.00	8.42	.7238	.0559	.0520	-.0005	.0013	-.0030	12.937
.553	369.638	.00	9.67	.8236	.0671	.0198	-.0005	.0013	-.0039	12.268
.553	369.928	.00	10.88	.9189	.0798	-.0186	-.0006	.0013	-.0051	11.517
.553	369.993	.00	10.26	.8721	.0731	.0010	-.0004	.0014	-.0048	11.923
.552	369.077	.00	.44	.0185	.0242	.2093	-.0005	.0006	.0007	.761

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CYM	CSF
.553	369.594	.00	.45	.0169	.0240	.2095	-.0005	.0006	.0007
.553	370.054	.00	-3.38	-.3290	.0131	.2753	-.0002	.0003	.0020
.554	371.074	.00	-2.16	-.2170	.0199	.2564	-.0001	.0004	.0015
.553	370.206	.00	-.89	-.1006	.0236	.2336	-.0004	.0004	.0011
.553	369.250	.00	.41	.0152	.0240	.2094	-.0003	.0006	.0007
.553	369.419	.00	1.72	.1360	.0208	.1845	-.0005	.0006	.0005
.553	369.762	.00	3.11	.2637	.0132	.1574	-.0000	.0008	-.0002
.554	370.449	.00	4.50	.3878	.0017	.1309	-.0002	.0009	-.0007
.553	369.678	.00	5.78	.5012	-.0124	.1059	-.0005	.0010	-.0014
.553	369.686	.00	7.10	.6153	-.0300	.0805	-.0006	.0011	-.0022
.553	369.441	.00	8.42	.7239	-.0506	.0520	-.0007	.0012	-.0030
.553	369.638	.00	9.67	.8229	-.0721	.0198	-.0007	.0012	-.0039
.553	369.928	.00	10.88	.9171	-.0950	-.0186	-.0008	.0012	-.0051
.553	369.993	.00	10.26	.8709	-.0833	.0010	-.0007	.0013	-.0048
.552	369.077	.00	.44	.0186	.0241	.2093	-.0005	.0006	.0007

~~CLASSIFIED~~

*** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***

~~UNCLASSIFIED~~

*** NASA [REDACTED] *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***
 GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL TEST 790 RUN 22 BALANCE 731 09/21/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CYM	CSF	L/D
.553	369.283	.00	.31	.0559	.0215	.0922	-.0006	.0006	.0008	2.597
.553	369.478	.00	-3.49	-.2901	.0279	.1651	-.0005	.0003	.0019	-10.381
.553	370.069	.00	-2.27	-.1787	.0241	.1422	-.0002	.0003	.0015	-7.408
.552	369.020	.00	-1.01	-.0624	.0219	.1174	-.0006	.0004	.0015	-2.843
.552	368.679	.00	.31	.0557	.0216	.0925	-.0004	.0005	.0010	2.585
.553	369.451	.00	1.66	.1814	.0231	.0658	-.0001	.0007	.0004	7.868
.553	369.539	.00	3.04	.3076	.0265	.0386	-.0002	.0008	-.0001	11.613
.552	368.770	.00	4.38	.4251	.0318	.0136	-.0004	.0009	-.0005	13.362
.553	369.457	.00	5.68	.5415	.0386	-.0115	-.0002	.0010	-.0014	14.028
.553	369.125	.00	6.99	.6531	.0472	-.0376	-.0004	.0011	-.0019	13.823
.552	368.965	.00	8.30	.7670	.0578	-.0664	-.0006	.0012	-.0024	13.279
.552	368.562	.00	9.54	.8652	.0693	-.0977	-.0005	.0013	-.0038	12.483
.553	369.452	.00	10.73	.9592	.0821	-.1351	-.0007	.0012	-.0040	11.690
.552	368.937	.00	.34	.0600	.0216	.0919	-.0003	.0005	.0009	2.783

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CYM	CSF
.553	369.283	.00	.31	.0560	.0212	.0922	-.0006	.0006	.0018
.553	369.478	.00	-3.49	-.2912	.0103	.1651	-.0004	.0004	.0019
.553	370.069	.00	-2.27	-.1755	.0170	.1422	-.0002	.0003	.0015
.552	369.030	.00	-1.01	-.0628	.0208	.1174	-.0006	.0004	.0015
.552	368.676	.00	.31	.0558	.0213	.0925	-.0004	.0005	.0010
.553	369.451	.00	1.66	.1820	.0178	.0658	-.0001	.0007	.0004
.553	369.539	.00	3.04	.3086	.0101	.0386	-.0003	.0008	-.0011
.552	368.770	.00	4.38	.4262	-.0008	.0136	-.0004	.0008	-.0005
.553	369.457	.00	5.68	.5425	-.0152	-.0115	-.0003	.0010	-.0014
.553	369.125	.00	6.99	.6538	-.0326	-.0376	-.0005	.0011	-.0019
.552	368.965	.00	8.30	.7671	-.0536	-.0664	-.0008	.0011	-.0024
.552	368.562	.00	9.54	.8644	-.0751	-.0977	-.0007	.0012	-.0038
.553	369.452	.00	10.73	.9573	-.0978	-.1351	-.0009	.0011	-.0040
.552	368.937	.00	.34	.0602	.0212	.0919	-.0003	.0005	.0009

~~UNCLASSIFIED~~

[REDACTED] *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***

*** NASA

*** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***

GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

09/21/67

HIGH SPEED TUNNEL

TEST 790

RUN 21

BALANCE 731

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CYM	CSF	L/D
.250	89.188	.00	.07	.0531	.0219	.0942	-.0003	.0008	-.0004	2.425
.250	89.388	.00	-4.09	-.3013	.0290	.1793	.0005	.0006	.0012	-10.377
.251	89.582	.00	-3.06	-.2112	.0259	.1567	.0005	.0006	.0011	-8.139
.251	89.775	.00	-2.04	-.1197	.0233	.1351	.0004	.0006	.0010	-5.145
.250	89.384	.00	-.98	-.0310	.0220	.1135	.0001	.0008	-.0000	-1.413
.250	89.188	.00	.07	.0561	.0218	.0929	.0000	.0008	.0002	2.571
.250	88.992	.00	1.11	.1423	.0225	.0731	-.0005	.0009	-.0012	6.313
.250	89.284	.00	2.19	.2352	.0243	.0517	-.0003	.0010	-.0007	9.694
.250	89.185	.00	3.29	.3269	.0268	.0307	.0001	.0010	-.0012	12.203
.250	89.185	.00	4.35	.4153	.0306	.0108	-.0001	.0010	-.0014	13.571
.250	89.283	.00	5.44	.5021	.0352	-.0105	-.0003	.0011	-.0016	14.264
.250	89.185	.00	6.53	.5910	.0410	-.0318	-.0002	.0011	-.0014	14.415
.250	88.990	.00	7.62	.6789	.0477	-.0536	-.0003	.0012	-.0017	14.241
.250	88.992	.00	8.73	.7676	.0558	-.0755	-.0008	.0012	-.0018	13.766
.250	88.758	.00	9.81	.8534	.0645	-.0977	-.0006	.0012	-.0018	13.237
.250	88.799	.00	10.94	.9405	.0742	-.1220	-.0009	.0013	-.0038	12.676
.250	88.997	.00	12.02	1.0225	.0850	-.1492	-.0012	.0011	-.0020	12.033
.250	89.104	.00	13.15	1.0799	.0962	-.1839	-.0033	.0008	-.0007	11.229
.250	88.824	.00	14.17	1.1248	.1077	-.2133	-.0043	.0004	-.0037	10.448
.250	88.940	.00	15.27	1.1625	.1210	-.2469	-.0041	.0001	-.0042	9.607
.250	89.254	.00	16.26	1.1848	.1334	-.2715	-.0035	.0002	-.0034	8.879
.250	89.181	.00	17.23	1.2040	.1469	-.2962	-.0028	.0004	-.0018	8.196
.250	89.090	.00	.07	.0511	.0216	-.0921	-.0001	.0008	-.0002	2.368

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CYM	CSF
.250	89.188	.00	.07	.0531	.0218	.0942	-.0003	.0008	-.0004
.250	89.388	.00	-4.09	-.3026	.0075	.1793	.0005	.0005	.0012
.251	89.582	.00	-3.06	-.2122	.0146	.1567	.0006	.0006	.0011
.251	89.775	.00	-2.04	-.1205	.0190	.1351	.0004	.0006	.0010
.250	89.384	.00	-.98	-.0314	.0214	.1135	.0001	.0008	-.0000
.250	89.188	.00	.07	.0561	.0218	.0929	.0000	.0008	-.0002
.250	88.992	.00	1.11	.1427	.0198	.0731	-.0005	.0009	-.0012
.250	89.284	.00	2.19	.2360	.0153	.0517	-.0004	.0010	-.0007
.250	89.185	.00	3.29	.3279	.0080	.0307	-.0000	.0010	-.0012
.250	89.185	.00	4.35	.4164	-.0010	.0108	-.0002	.0010	-.0014
.250	89.283	.00	5.44	.5031	-.0125	-.0105	-.0004	.0010	-.0016
.250	89.185	.00	6.53	.5917	-.0264	-.0318	-.0004	.0011	-.0014
.250	88.990	.00	7.62	.6791	-.0428	-.0536	-.0004	.0011	-.0017
.250	88.992	.00	8.73	.7669	-.0614	-.0755	-.0009	.0010	-.0018
.250	88.758	.00	9.81	.8516	-.0819	-.0977	-.0008	.0011	-.0018
.250	88.799	.00	10.94	.9372	-.1056	-.1220	-.0011	.0011	-.0038
.250	88.997	.00	12.02	1.0174	-.1297	-.1492	-.0014	.0008	-.0020
.250	89.104	.00	13.15	1.0730	-.1519	-.1839	-.0034	.0001	-.0007
.250	88.824	.00	14.17	1.1164	-.1708	-.2133	-.0043	-.0006	-.0037
.250	88.940	.00	15.27	1.1527	-.1892	-.2469	-.0040	-.0010	-.0042
.250	89.254	.00	16.26	1.1740	-.2035	-.2715	-.0034	-.0008	-.0024
.250	89.181	.00	17.23	1.1926	-.2161	-.2962	-.0028	-.0004	-.0018
.250	89.090	.00	.07	.0512	.0215	-.0921	-.0001	.0008	-.0002

*** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***

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** * 7 X 10 FT TUNNELS ** * NASA PRELIMINARY ** *
GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS.

HIGH SPEED TUNNEL TEST 790 RUN 24 BALANCE 731 09/21/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CYM	CSF	L/D
.552	368.416	.00	.34	.0766	.0214	.0907	-.0009	.0019	-.0060	3.582
.552	368.558	.00	-5.12	-.4206	.0363	.1925	-.0014	.0019	-.0050	-11.582
.552	368.876	.00	-3.76	-.3044	.0292	.1692	-.0011	.0018	-.0049	-10.425
.552	368.861	.00	-2.37	-.1739	.0243	.1427	-.0010	.0019	-.0055	-7.144
.552	368.423	.00	-.97	-.0449	.0219	.1160	-.0009	.0018	-.0054	-2.048
.552	368.586	.00	.35	.0763	.0214	.0902	-.0007	.0020	-.0061	3.561
.552	368.751	.00	1.66	.1966	.0228	.0647	-.0008	.0020	-.0064	8.631
.553	368.917	.00	3.01	.3185	.0261	.0388	-.0011	.0019	-.0066	12.216
.552	368.741	.00	4.36	.4391	.0312	.0126	-.0015	.0019	-.0068	14.080
.552	368.141	.00	5.65	.5526	.0379	-.0120	-.0015	.0020	-.0075	14.591
.553	369.788	.00	.36	.0763	.0215	.0907	-.0007	.0019	-.0061	3.555

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CYM	CSF
.552	368.416	.00	.34	.0767	.0209	.0907	-.0009	.0019	-.0060
.552	368.558	.00	-5.12	-.4221	-.0014	.1925	-.0012	.0020	-.0050
.552	368.876	.00	-3.76	-.3056	.0092	.1692	-.0010	.0019	-.0049
.552	368.861	.00	-2.37	-.1748	.0171	.1427	-.0010	.0019	-.0055
.552	368.423	.00	-.97	-.0452	.0211	.1160	-.0009	.0019	-.0054
.552	368.586	.00	.35	.0764	.0210	.0902	-.0007	.0020	-.0061
.552	368.751	.00	1.66	.1972	.0171	.0647	-.0008	.0020	-.0064
.553	368.917	.00	3.01	.3193	.0093	.0388	-.0011	.0019	-.0066
.552	368.741	.00	4.36	.4401	-.0023	.0126	-.0016	.0018	-.0068
.552	368.141	.00	5.65	.5535	-.0167	-.0120	-.0017	.0019	-.0075
.553	369.788	.00	.36	.0765	.0210	.0907	-.0007	.0019	-.0061

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*** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***

*** NASA *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***
GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL TEST 790 RUN 23 BALANCE 731 09/21/67

STABILITY AXIS COEFFICIENTS

MACH	C	BETA	ALPHA	CL	CD	CPM	CRM	CYM	CSF	L/D
.251	89.479	.00	.07	.0664	.0214	.0917	-.0008	.0021	-.0068	3.106
.250	89.094	.00	-4.33	-.3089	.0293	.1833	-.0009	.0020	-.0058	-10.549
.251	89.386	.00	-3.21	-.2163	.0256	.1605	-.0009	.0019	-.0054	-8.434
.250	89.091	.00	-2.12	-.1192	.0231	.1360	-.0009	.0019	-.0059	-5.152
.251	89.480	.00	-1.00	-.0235	.0216	.1134	-.0008	.0020	-.0063	-1.089
.251	89.381	.00	.07	.0685	.0213	.0915	-.0007	.0021	-.0065	3.212
.250	88.794	.00	1.15	.1584	.0220	.0699	-.0005	.0021	-.0071	7.216
.251	89.672	.00	2.25	.2515	.0239	.0493	-.0007	.0021	-.0072	10.536
.251	89.378	.00	3.34	.3437	.0266	.0282	-.0006	.0020	-.0069	12.911
.251	89.475	.00	4.43	.4326	.0303	.0072	-.0004	.0021	-.0075	14.278
.251	89.576	.00	.09	.0693	.0212	.0909	-.0004	.0021	-.0065	3.276

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CYM	CSF
.251	89.479	.00	.07	.0664	.0213	.0917	-.0008	.0021	-.0068
.250	89.094	.00	-4.33	-.3102	.0059	.1833	-.0008	.0020	-.0058
.251	89.386	.00	-3.21	-.2174	.0135	.1605	-.0008	.0019	-.0054
.250	89.091	.00	-2.12	-.1200	.0187	.1360	-.0008	.0019	-.0059
.251	89.480	.00	-1.00	-.0239	.0212	.1134	-.0008	.0020	-.0063
.251	89.381	.00	.07	.0685	.0213	.0915	-.0007	.0021	-.0065
.250	88.794	.00	1.15	.1588	.0188	.0699	-.0005	.0021	-.0071
.251	89.672	.00	2.25	.2522	.0140	.0493	-.0007	.0020	-.0072
.251	89.378	.00	3.34	.3446	.0065	.0282	-.0008	.0019	-.0069
.251	89.475	.00	4.43	.4336	-.0032	.0072	-.0006	.0021	-.0075
.251	89.576	.00	.09	.0694	.0211	.0909	-.0004	.0021	-.0065

*** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***

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*** NASA [REDACTED] TX 10 FT TUNNELS *** NASA PRELIMINARY ***
 GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL TEST 790 RUN 26 BALANCE 731 09/21/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CYM	CSF	L/D
.401	213.959	.00	.09	.0208	.0263	.0931	.0002	.0005	.0022	.790
.401	213.376	.00	-4.36	-.3638	.0384	.1827	.0007	.0002	.0034	-9.476
.402	214.389	.00	-3.28	-.2697	.0335	.1606	.0007	.0002	.0027	-8.054
.402	214.382	.00	-2.18	-.1746	.0299	.1380	.0007	.0003	.0026	-5.837
.401	214.191	.00	-1.05	-.0782	.0275	.1153	.0001	.0004	.0023	-2.843
.402	214.278	.00	.09	.0212	.0263	.0935	.0003	.0004	.0018	.805
.402	214.737	.00	1.25	.1220	.0264	.0699	.0001	.0005	.0017	4.625
.402	214.271	.00	2.40	.2214	.0279	.0479	-.0002	.0007	.0011	7.927
.401	213.857	.00	3.59	.3243	.0307	.0250	-.0001	.0007	.0010	10.562
.402	214.359	.00	4.78	.4242	.0349	.0020	-.0003	.0008	.0006	12.160
.401	214.080	.00	5.99	.5273	.0404	-.0211	-.0001	.0009	-.0001	13.038
.401	213.895	.00	7.19	.6267	.0474	-.0442	.0001	.0010	-.0006	13.233
.402	214.270	.00	8.38	.7215	.0554	-.0677	-.0002	.0011	-.0010	13.029
.401	213.810	.00	9.54	.8152	.0645	-.0925	-.0004	.0012	-.0015	12.637
.400	213.167	.00	10.65	.9014	.0744	-.1179	-.0006	.0011	-.0021	12.110
.402	214.301	.00	11.84	.9809	.0865	-.1506	-.0018	.0009	-.0015	11.344
.401	214.055	.00	12.89	1.0393	.0989	-.1910	-.0033	.0005	.0021	10.510
.401	213.633	.00	13.99	1.0877	.1120	-.2270	-.0042	.0001	.0036	9.713
.402	214.557	.00	.10	.0207	.0264	.0933	.0001	.0005	.0018	.786

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CYM	CSF
.401	213.959	.00	.09	.0208	.0263	.0931	.0002	.0005	.0022
.401	213.376	.00	-4.36	-.3656	.0106	.1827	.0007	.0002	.0034
.402	214.389	.00	-3.28	-.2711	.0180	.1606	.0007	.0002	.0027
.402	214.382	.00	-2.18	-.1756	.0233	.1380	.0007	.0003	.0026
.401	214.191	.00	-1.05	-.0787	.0261	.1153	.0001	.0004	.0023
.402	214.278	.00	.09	.0212	.0263	.0935	.0003	.0004	.0018
.402	214.737	.00	1.25	.1225	.0237	.0699	.0001	.0005	.0017
.402	214.271	.00	2.40	.2223	.0186	.0479	-.0002	.0007	.0011
.401	213.857	.00	3.59	.3255	.0103	.0250	-.0002	.0007	.0010
.402	214.359	.00	4.78	.4256	-.0006	.0020	-.0004	.0007	.0016
.401	214.080	.00	5.99	.5285	-.0148	-.0211	-.0002	.0009	-.0001
.401	213.895	.00	7.19	.6276	-.0314	-.0442	-.0000	.0010	-.0006
.402	214.270	.00	8.38	.7217	-.0504	-.0677	-.0004	.0010	-.0010
.401	213.810	.00	9.54	.8143	-.0715	-.0925	-.0006	.0011	-.0015
.400	213.167	.00	10.65	.8993	-.0934	-.1179	-.0008	.0010	-.0021
.402	214.301	.00	11.84	.9774	-.1166	-.1506	-.0020	.0005	-.0015
.401	214.055	.00	12.89	1.0346	-.1354	-.1910	-.0033	-.0002	.0021
.401	213.633	.00	13.99	1.0820	-.1541	-.2270	-.0041	-.0009	.0026
.402	214.557	.00	.10	.0208	.0263	.0933	.0001	.0005	.0018

~~UNCLASSIFIED~~

** TX 10 FT TUNNELS *** NASA PRELIMINARY ***

*** NASA CO *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***
 GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL TEST 790 RUN 25 BALANCE 731 09/21/67
 STABILITY AXIS COEFFICIENTS

MACH	C	BETA	ALPHA	CL	CD	CPM	CRM	CYM	CSF	L/D
.251	89.255	.00	.06	.0337	.0265	.0911	.0005	.0006	.0007	1.270
.250	89.108	.00	-4.11	-.3178	.0360	.1779	.0007	.0006	.0013	-8.817
.250	89.203	.00	-3.08	-.2311	.0323	.1557	.0008	.0005	.0010	-7.163
.251	89.299	.00	-2.05	-.1468	.0296	.1343	.0008	.0006	.0006	-4.955
.250	89.100	.00	-1.00	-.0531	.0272	.1119	.0006	.0007	.0005	-1.955
.250	89.002	.00	.06	.0318	.0265	.0908	.0004	.0006	.0010	1.198
.250	89.000	.00	1.11	.1226	.0266	.0702	.0004	.0007	.0003	4.611
.251	89.389	.00	2.17	.2118	.0278	.0489	-.0000	.0008	-.0003	7.632
.250	89.095	.00	3.27	.3026	.0301	.0289	.0000	.0009	-.0007	10.064
.250	88.956	.00	4.33	.3911	.0331	.0084	-.0002	.0010	-.0010	11.824
.250	88.956	.00	5.41	.4823	.0374	-.0123	-.0004	.0010	-.0010	12.886
.250	89.151	.00	6.53	.5749	.0432	-.0338	-.0006	.0011	-.0017	13.321
.251	89.386	.00	7.58	.6547	.0490	-.0542	-.0008	.0011	-.0015	13.349
.250	89.094	.00	8.69	.7424	.0565	-.0748	-.0004	.0011	-.0019	13.143
.250	88.998	.00	9.76	.8229	.0644	-.0965	-.0007	.0012	-.0026	12.787
.250	88.902	.00	10.90	.9096	.0742	-.1206	-.0010	.0012	-.0037	12.258
.250	88.613	.00	11.95	.9858	.0843	-.1469	-.0018	.0010	-.0024	11.694
.250	88.721	.00	13.06	1.0455	.0958	-.1817	-.0034	.0007	.0005	10.915
.250	89.028	.00	14.09	1.0892	.1075	-.2153	-.0041	.0003	.0034	10.130
.251	89.339	.00	15.19	1.1294	.1208	-.2493	-.0043	-.0000	.0039	9.349
.250	89.067	.00	16.20	1.1573	.1340	-.2741	-.0036	.0000	.0040	8.637
.250	88.898	.00	17.16	1.1758	.1482	-.2953	-.0023	.0002	.0032	7.931
.250	89.197	.00	.05	.0317	.0264	.0909	.0003	.0006	-.0003	1.199

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CYM	CSF
.251	89.295	.00	.06	.0337	.0265	.0911	.0005	.0006	.0067
.250	89.108	.00	-4.11	-.3195	.0132	.1779	.0007	.0005	.0013
.250	89.203	.00	-3.08	-.2325	.0198	.1557	.0009	.0004	.0010
.251	89.299	.00	-2.05	-.1478	.0244	.1343	.0008	.0005	.0006
.250	89.100	.00	-1.00	-.0536	.0263	.1119	.0006	.0006	.0015
.250	89.002	.00	.06	.0318	.0265	.0908	.0004	.0006	.0010
.250	89.000	.00	1.11	.1230	.0242	.0702	.0004	.0007	.0003
.251	89.389	.00	2.17	.2127	.0197	.0489	-.0000	.0008	-.0003
.250	89.095	.00	3.27	.3038	.0128	.0289	-.0000	.0009	-.0007
.250	88.956	.00	4.33	.3924	.0034	.0084	-.0003	.0009	-.0010
.250	88.996	.00	5.41	.4836	-.0082	-.0123	-.0005	.0009	-.0010
.250	89.191	.00	6.53	.5760	-.0225	-.0338	-.0007	.0010	-.0017
.251	89.386	.00	7.58	.6553	-.0378	-.0542	-.0009	.0010	-.0015
.250	89.094	.00	8.69	.7422	-.0563	-.0748	-.0005	.0011	-.0019
.250	88.958	.00	9.76	.8216	-.0761	-.0965	-.0009	.0011	-.0026
.250	88.902	.00	10.90	.9069	-.0990	-.1206	-.0012	.0010	-.0037
.250	88.613	.00	11.95	.9815	-.1216	-.1469	-.0020	.0006	-.0024
.250	88.721	.00	13.06	1.0396	-.1428	-.1817	-.0034	-.0001	.0005
.250	89.028	.00	14.09	1.0820	-.1607	-.2153	-.0041	-.0006	.0034
.251	89.339	.00	15.19	1.1209	-.1791	-.2493	-.0041	-.0011	.0029
.250	89.067	.00	16.20	1.1480	-.1940	-.2741	-.0035	-.0010	.0040
.250	88.898	.00	17.16	1.1664	-.2050	-.2953	-.0022	-.0004	.0032
.250	89.157	.00	.05	.0317	.0264	.0909	.0003	.0006	-.0003

*** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***

UNCLASSIFIED

*** NASA [REDACTED] *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***
GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL

TEST 790

RUN 28

BALANCE 731

09/21/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CYM	CSF	L/D
.655	478.479	.00	.12	.0069	.0317	.0922	-.0005	.0005	.0021	.217
.655	479.1C7	.00	-2.40	-.1441	.0449	.1467	-.0000	.0005	-.0001	-3.207
.655	479.046	.00	-1.18	-.0854	.0365	.1183	-.0001	.0005	.0012	-2.342
.656	479.412	.00	-.54	-.0435	.0338	.1050	-.0007	.0006	.0007	-1.286
.655	478.394	.00	.12	.0078	.0317	.0923	-.0006	.0005	.0020	.246
.655	478.377	.00	.86	.0757	.0308	.0776	-.0006	.0005	.0025	2.457
.655	478.774	.00	1.60	.1454	.0309	.0631	-.0009	.0006	.0021	4.710
.654	478.201	.00	2.37	.2159	.0318	.0489	-.0012	.0007	.0016	6.792
.655	479.170	.00	3.16	.2916	.0337	.0337	-.0013	.0007	.0008	8.665
.655	478.678	.00	3.92	.3659	.0363	.0190	-.0011	.0008	.0007	10.083
.655	478.433	.00	4.69	.4374	.0399	.0053	-.0018	.0008	.0005	10.967
.654	477.828	.00	.13	.0102	.0316	.0917	-.0006	.0005	.0024	.323

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CYM	CSF
.655	478.479	.00	.12	.0069	.0317	.0922	-.0005	.0005	.0021
.655	479.1C7	.00	-2.40	-.1459	.0389	.1467	-.0000	.0005	-.0001
.655	479.046	.00	-1.18	-.0861	.0347	.1183	-.0001	.0005	.0012
.656	479.412	.00	-.54	-.0438	.0334	.1050	-.0007	.0006	.0007
.655	478.394	.00	.12	.0079	.0316	.0923	-.0006	.0005	.0020
.655	478.377	.00	.86	.0761	.0297	.0776	-.0006	.0005	.0025
.655	478.774	.00	1.60	.1462	.0268	.0631	-.0009	.0005	.0021
.654	478.201	.00	2.37	.2170	.0228	.0489	-.0012	.0006	.0016
.655	479.170	.00	3.16	.2930	.0175	.0337	-.0013	.0007	.0008
.655	478.678	.00	3.92	.3674	.0112	.0190	-.0011	.0007	.0007
.655	478.433	.00	4.69	.4391	.0040	.0053	-.0019	.0006	.0005
.654	477.828	.00	.13	.0103	.0316	.0917	-.0006	.0005	.0024

UNCLASSIFIED

[REDACTED] 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***

*** NASA CONFIDENTIAL *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***
GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL TEST 790 RUN 27 BALANCE 731 09/21/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CYM	CSF	L/D
.552	368.100	.00	.14	.0151	.0273	.0928	.0001	.0004	.0026	.553
.552	367.404	.00	-3.59	-.3053	.0389	.1672	.0011	.0001	.0034	-7.847
.553	369.346	.00	-2.40	-.2069	.0332	.1434	.0007	.0002	.0028	-6.232
.553	368.888	.00	-1.13	-.0962	.0291	.1177	.0002	.0002	.0029	-3.306
.553	369.213	.00	.15	.0163	.0273	.0926	.0000	.0004	.0025	.596
.553	368.777	.00	1.47	.1343	.0275	.0667	.0000	.0005	.0024	4.889
.553	368.685	.00	2.86	.2601	.0298	.0398	.0000	.0007	.0017	8.733
.553	368.939	.00	4.23	.3819	.0341	.0138	-.0005	.0007	.0012	11.212
.553	369.280	.00	5.50	.4933	.0398	-.0111	-.0003	.0008	.0005	12.400
.552	367.999	.00	6.83	.6104	.0478	-.0381	-.0005	.0009	-.0002	12.775
.552	367.455	.00	8.13	.7190	.0572	-.0662	-.0004	.0010	-.0007	12.575
.553	368.809	.00	9.38	.8165	.0682	-.0978	-.0005	.0011	-.0015	11.979
.553	369.276	.00	10.58	.9132	.0811	-.1366	-.0008	.0011	-.0021	11.264
.552	368.359	.00	.14	.0161	.0275	.0927	.0001	.0004	.0027	.586

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CYM	CSF
.552	368.100	.00	.14	.0152	.0273	.0928	.0001	.0004	.0026
.552	367.404	.00	-3.59	-.3071	.0197	.1672	.0011	.0001	.0034
.553	369.346	.00	-2.40	-.2081	.0245	.1434	.0007	.0002	.0028
.553	368.888	.00	-1.13	-.0968	.0272	.1177	.0002	.0002	.0029
.553	369.213	.00	.15	.0163	.0273	.0926	.0000	.0004	.0025
.553	368.777	.00	1.47	.1350	.0240	.0667	.0000	.0005	.0024
.553	368.685	.00	2.86	.2612	.0168	.0398	.0000	.0007	.0017
.553	368.939	.00	4.23	.3833	.0058	.0138	-.0005	.0007	.0012
.553	369.280	.00	5.50	.4948	-.0077	-.0111	-.0004	.0008	.0005
.552	367.999	.00	6.83	.6116	-.0251	-.0381	-.0006	.0009	-.0002
.552	367.455	.00	8.13	.7197	-.0450	-.0662	-.0005	.0010	-.0007
.553	368.809	.00	9.38	.8165	-.0657	-.0978	-.0007	.0010	-.0015
.553	369.276	.00	10.58	.9121	-.0880	-.1366	-.0010	.0010	-.0021
.552	368.359	.00	.14	.0161	.0274	.0927	.0000	.0004	.0027

*** NASA CONFIDENTIAL *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***

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NASA * 7 X 10 FT TUNNELS *** NASA PRELIMINARY **
GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL

TEST 790

RUN 30

BALANCE 731

09/21/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CYM	CSF	L/D
.402	214.550	.00	.07	.0744	.0255	-.0366	-.0001	-.0000	.0034	2.918
.401	214.014	.00	-4.40	-.3164	.0345	.0544	.0005	-.0003	.0046	-9.158
.402	214.472	.00	-3.31	-.2213	.0305	.0309	.0001	-.0002	.0042	-7.249
.402	214.559	.00	-2.19	-.1241	.0276	.0076	.0000	-.0002	.0041	-4.495
.401	214.277	.00	-1.06	-.0235	.0261	-.0157	-.0002	-.0001	.0037	-.902
.402	214.829	.00	.06	.0743	.0255	-.0371	-.0003	-.0000	.0032	2.911
.402	214.455	.00	1.22	.1733	.0266	-.0601	-.0007	-.0001	.0027	6.525
.402	214.453	.00	2.40	.2745	.0288	-.0817	-.0005	.0002	.0026	9.543
.402	214.359	.00	3.62	.3785	.0325	-.1044	-.0006	.0003	.0022	11.640
.401	214.173	.00	4.80	.4792	.0375	-.1260	-.0009	.0003	.0020	12.782
.401	213.895	.00	5.99	.5803	.0438	-.1486	-.0008	.0005	.0015	13.263
.401	213.804	.00	7.18	.6753	.0512	-.1702	-.0009	.0005	.0011	13.193
.400	213.251	.00	8.35	.7722	.0600	-.1942	-.0010	.0005	.0008	12.870
.401	213.721	.00	9.51	.8642	.0698	-.2182	-.0011	.0007	-.0004	12.387
.401	214.195	.00	10.65	.9501	.0807	-.2445	-.0011	.0007	.0002	11.766
.402	214.403	.00	11.79	1.0238	.0929	-.2740	-.0025	.0005	.0007	11.019
.401	213.972	.00	12.86	1.0825	.1058	-.3085	-.0040	.0001	.0035	10.233
.402	214.571	.00	13.94	1.1270	.1186	-.3372	-.0048	-.0003	.0052	9.505
.401	214.179	.00	.07	.0758	.0255	-.0371	-.0003	-.0000	.0031	2.567

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CYM	CSF
.402	214.550	.00	.07	.0744	.0254	-.0366	-.0001	-.0000	.0034
.401	214.014	.00	-4.40	-.3180	.0102	.0544	.0004	-.0004	.0046
.402	214.472	.00	-3.31	-.2226	.0177	.0309	.0001	-.0002	.0042
.402	214.559	.00	-2.19	-.1250	.0228	.0076	.0000	-.0002	.0041
.401	214.277	.00	-1.06	-.0240	.0256	-.0157	-.0002	-.0001	.0037
.402	214.829	.00	.06	.0743	.0254	-.0371	-.0003	-.0000	.0032
.402	214.455	.00	1.22	.1738	.0229	-.0601	-.0007	.0001	.0027
.402	214.453	.00	2.40	.2754	.0172	-.0817	-.0005	.0002	.0026
.402	214.359	.00	3.62	.3798	.0086	-.1044	-.0007	.0002	.0022
.401	214.173	.00	4.80	.4805	-.0027	-.1260	-.0009	.0003	.0020
.401	213.895	.00	5.99	.5815	-.0170	-.1486	-.0009	.0004	.0015
.401	213.804	.00	7.18	.6763	-.0336	-.1702	-.0009	.0004	.0011
.400	213.251	.00	8.35	.7725	-.0527	-.1942	-.0011	.0004	.0008
.401	213.721	.00	9.51	.8635	-.0740	-.2182	-.0012	.0005	-.0004
.401	214.195	.00	10.65	.9482	-.0961	-.2445	-.0012	.0004	.0012
.402	214.403	.00	11.79	1.0207	-.1182	-.2740	-.0026	-.0000	.0017
.401	213.972	.00	12.86	1.0783	-.1376	-.3085	-.0040	-.0008	.0035
.402	214.571	.00	13.94	1.1217	-.1562	-.3372	-.0046	-.0014	.0052
.401	214.179	.00	.07	.0758	.0254	-.0371	-.0003	-.0000	.0031

* 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***

*** NASA CONFIDENTIAL *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***
 GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL TEST 790 RUN 29 BALANCE 731 09/21/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CYM	CSF	L/D
.251	89.292	.00	.05	.0899	.0260	-.0419	-.0002	.0003	.0015	3.455
.250	89.066	.00	-4.12	-.2618	.0324	.0449	.0004	.0000	.0029	-8.084
.251	89.786	.00	-3.09	-.1787	.0297	.0228	.0003	-.0000	.0031	-6.007
.251	89.256	.00	-2.05	-.0886	.0274	.0010	.0002	.0001	.0026	-3.231
.251	89.391	.00	-1.00	-.0008	.0262	-.0207	-.0002	.0001	.0026	-.030
.250	89.194	.00	.05	.0889	.0258	-.0417	-.0002	.0002	.0015	3.442
.251	89.389	.00	1.11	.1801	.0269	-.0626	-.0005	.0003	.0014	6.705
.251	89.582	.00	2.19	.2693	.0285	-.0836	-.0004	.0003	.0017	9.465
.251	89.288	.00	3.28	.3620	.0314	-.1040	-.0008	.0004	.0007	11.523
.251	89.288	.00	4.34	.4459	.0355	-.1240	-.0006	.0004	.0013	12.576
.250	89.053	.00	5.41	.5370	.0405	-.1447	-.0007	.0005	.0007	13.260
.250	89.053	.00	6.52	.6268	.0467	-.1657	-.0005	.0005	.0009	13.428
.250	89.053	.00	7.60	.7121	.0535	-.1858	-.0008	.0007	.0008	13.300
.250	89.055	.00	8.71	.7954	.0617	-.2069	-.0011	.0007	-.0005	12.894
.250	88.961	.00	9.79	.8839	.0708	-.2278	-.0011	.0008	-.0012	12.489
.250	88.806	.00	10.90	.9678	.0813	-.2503	-.0013	.0009	-.0017	11.912
.250	89.007	.00	11.99	1.0363	.0917	-.2772	-.0024	.0006	-.0001	11.306
.250	89.116	.00	13.11	1.0946	.1041	-.3104	-.0041	.0002	.0034	10.516
.251	89.619	.00	14.13	1.1355	.1159	-.3356	-.0048	-.0003	.0055	9.800
.251	89.442	.00	15.22	1.1702	.1285	-.3604	-.0047	-.0004	.0056	9.103
.250	89.268	.00	16.22	1.1989	.1424	-.3782	-.0039	-.0003	.0053	8.419
.250	89.001	.00	17.17	1.2139	.1562	-.3971	-.0028	-.0000	.0039	7.774
.251	89.389	.00	.05	.0848	.0255	-.0404	-.0004	.0002	.0015	3.319

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CYM	CSF
.251	89.292	.00	.05	.0899	.0259	-.0419	-.0002	.0003	.0015
.250	89.066	.00	-4.12	-.2634	.0135	.0449	.0004	-.0000	.0029
.251	89.786	.00	-3.09	-.1800	.0201	.0228	.0003	-.0000	.0021
.251	89.256	.00	-2.05	-.0895	.0242	.0010	.0002	.0000	.0026
.251	89.391	.00	-1.00	-.0012	.0262	-.0207	-.0002	.0001	.0026
.250	89.194	.00	.05	.0890	.0258	-.0417	-.0002	.0002	.0015
.251	89.389	.00	1.11	.1806	.0234	-.0626	-.0005	.0003	.0014
.251	89.582	.00	2.19	.2702	.0182	-.0836	-.0004	.0003	.0017
.251	89.288	.00	3.28	.3632	.0107	-.1040	-.0008	.0004	.0007
.251	89.288	.00	4.34	.4473	.0016	-.1240	-.0006	.0004	.0013
.250	89.053	.00	5.41	.5383	-.0103	-.1447	-.0007	.0005	.0007
.250	89.053	.00	6.52	.6279	-.0247	-.1657	-.0006	.0005	.0009
.250	89.053	.00	7.60	.7127	-.0411	-.1858	-.0009	.0006	.0018
.250	89.055	.00	8.71	.7953	-.0595	-.2069	-.0012	.0005	-.0065
.250	88.901	.00	9.79	.8828	-.0805	-.2278	-.0012	.0006	-.0012
.250	88.866	.00	10.90	.9653	-.1032	-.2503	-.0014	.0006	-.0017
.250	89.007	.00	11.99	1.0323	-.1254	-.2772	-.0024	.0001	-.0001
.250	89.116	.00	13.11	1.0891	-.1467	-.3104	-.0041	-.0007	.0034
.251	89.619	.00	14.13	1.1288	-.1647	-.3356	-.0046	-.0014	.0055
.251	89.442	.00	15.22	1.1621	-.1829	-.3604	-.0044	-.0016	.0056
.250	89.268	.00	16.22	1.1902	-.1979	-.3782	-.0037	-.0013	.0053
.250	89.001	.00	17.17	1.2049	-.2089	-.3971	-.0027	-.0008	.0039
.251	89.389	.00	.05	.0848	.0255	-.0404	-.0004	.0002	.0015

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CONFIDENTIAL *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***

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*** NASA ~~CONFIDENTIAL~~ *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***
 GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL . TEST 790 . RUN 32 . BALANCE 731 . 09/21/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CYM	CSF	L/D
.655	478.548	.00	.02	.0509	.0310	-.0336	-.0008	.0001	.0036	1.644
.655	478.512	.00	-2.50	-.1008	.0430	.0221	-.0004	-.0000	.0008	-2.346
.655	478.599	.00	-1.90	-.0762	.0384	.0065	-.0003	.0001	.0020	-1.985
.655	478.782	.00	-1.30	-.0438	.0351	-.0065	-.0004	.0001	.0023	-1.250
.654	477.924	.00	-.67	-.0038	.0324	-.0202	-.0010	.0000	.0024	-.117
.654	477.571	.00	.01	-.0500	.0308	-.0332	-.0012	.0001	.0032	1.623
.655	478.530	.00	.71	.1154	.0305	-.0470	-.0011	.0001	.0033	3.787
.655	478.360	.00	1.48	.1835	.0310	-.0604	-.0014	.0002	.0029	5.922
.655	478.924	.00	2.28	.2580	.0325	-.0749	-.0012	.0003	.0026	7.948
.654	478.187	.00	3.02	.3263	.0345	-.0881	-.0016	.0004	.0016	9.449
.654	478.183	.00	3.78	.3981	.0375	-.1018	-.0019	.0004	.0013	10.609
.655	478.513	.00	4.55	.4733	.0415	-.1157	-.0017	.0004	.0020	11.412
.655	478.468	.00	.02	.0518	.0309	-.0337	-.0011	.0001	.0034	1.677

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CYM	CSF
.655	478.548	.00	.02	.0509	.0309	-.0336	-.0008	.0001	.0036
.655	478.512	.00	-2.50	-.1025	.0385	.0221	-.0004	-.0000	.0068
.655	478.599	.00	-1.90	-.0774	.0358	.0065	-.0003	.0001	.0020
.655	478.782	.00	-1.30	-.0446	.0341	-.0065	-.0004	.0001	.0023
.654	477.924	.00	-.67	-.0042	.0324	-.0202	-.0010	.0001	.0024
.654	477.571	.00	.01	-.0500	.0308	-.0332	-.0012	.0001	.0022
.655	478.530	.00	.71	.1158	.0291	-.0470	-.0011	.0001	.0023
.655	478.360	.00	1.48	.1842	.0262	-.0604	-.0014	.0002	.0029
.655	478.924	.00	2.28	.2590	.0222	-.0749	-.0013	.0002	.0026
.654	478.187	.00	3.02	.3276	.0173	-.0881	-.0016	.0003	.0016
.654	478.183	.00	3.78	.3996	.0112	-.1018	-.0019	.0003	.0013
.655	478.513	.00	4.55	.4750	.0038	-.1157	-.0018	.0002	.0020
.655	478.468	.00	.02	.0518	.0309	-.0337	-.0011	.0001	.0034

~~UNCLASSIFIED~~

~~CONFIDENTIAL~~ *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***

~~CONFIDENTIAL~~ *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***
GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL TEST 790 RUN 31 BALANCE 731 09/21/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CYM	CSF	L/D
.552	368.435	.00	.07	.0611	.0266	-.0348	-.0004	-.0001	.0038	2.302
.552	368.329	.00	-3.71	-.2630	.0357	.0398	.0004	-.0003	.0048	-7.362
.553	369.329	.00	-2.50	-.1640	.0308	.0148	-.0002	-.0003	.0039	-5.323
.552	368.363	.00	-1.24	-.0549	.0276	-.0103	-.0002	-.0002	.0039	-1.989
.552	368.008	.00	.08	.0648	.0266	-.0359	-.0004	-.0001	.0037	2.439
.553	369.200	.00	1.38	.1813	.0276	-.0602	-.0006	.0000	.0033	6.581
.553	368.557	.00	2.77	.3031	.0307	-.0857	-.0007	.0001	.0031	9.881
.552	368.081	.00	4.11	.4236	.0356	-.1106	-.0006	.0003	.0025	11.883
.552	367.567	.00	5.41	.5394	.0423	-.1351	-.0006	.0004	.0021	12.757
.552	368.348	.00	6.74	.6532	.0510	-.1618	-.0008	.0004	.0018	12.806
.550	366.216	.00	8.03	.7576	.0609	-.1878	-.0013	.0006	.0006	12.450
.552	368.219	.00	9.27	.8570	.0727	-.2203	-.0011	.0007	.0004	11.794
.553	369.199	.00	10.44	.9478	.0853	-.2550	-.0013	.0006	.0004	11.116
.553	368.782	.00	.08	.0635	.0266	-.0356	-.0005	-.0001	.0038	2.385

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CYM	CSF
.552	368.435	.00	.07	.0612	.0265	-.0348	-.0004	-.0001	.0038
.552	368.329	.00	-3.71	-.2647	.0186	.0398	.0004	-.0003	.0048
.553	369.329	.00	-2.50	-.1652	.0236	.0148	-.0002	-.0003	.0039
.552	368.363	.00	-1.24	-.0555	.0264	-.0103	-.0002	-.0002	.0039
.552	368.008	.00	.08	.0648	.0265	-.0359	-.0004	-.0001	.0037
.553	369.200	.00	1.38	.1819	.0232	-.0602	-.0006	.0000	.0033
.553	368.557	.00	2.77	.3041	.0160	-.0857	-.0007	.0001	.0031
.552	368.081	.00	4.11	.4250	.0052	-.1106	-.0006	.0002	.0025
.552	367.567	.00	5.41	.5408	-.0088	-.1351	-.0006	.0003	.0021
.552	368.348	.00	6.74	.6545	-.0260	-.1618	-.0008	.0003	.0018
.550	366.216	.00	8.03	.7584	-.0455	-.1878	-.0013	.0004	.0006
.552	368.219	.00	9.27	.8572	-.0663	-.2203	-.0012	.0005	.0004
.553	369.199	.00	10.44	.9472	-.0878	-.2550	-.0014	.0004	.0004
.553	368.782	.00	.08	.0635	.0265	-.0356	-.0005	-.0001	.0038

~~CONFIDENTIAL~~ *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***

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*** NASA CONFIDENTIAL *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***
GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL

TEST 790

RUN 34

BALANCE 731

09/21/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CYM	CSF	L/D
.402	214.739	.00	.09	.0506	.0256	.0197	.0004	.0002	.0033	1.977
.402	214.764	.00	-4.38	-.3356	.0361	.1101	.0008	-.0000	.0041	-9.307
.402	214.756	.00	-3.32	-.2443	.0316	.0884	.0005	-.0000	.0044	-7.718
.402	214.564	.00	-2.18	-.1482	.0284	.0654	.0005	.0000	.0043	-5.224
.402	214.373	.00	-1.06	-.0502	.0263	.0429	.0004	.0001	.0035	-1.904
.402	214.461	.00	.09	.0519	.0256	.0198	.0003	.0002	.0033	2.030
.402	214.457	.00	1.24	.1496	.0261	-.0022	.0005	.0003	.0028	5.738
.402	214.455	.00	2.42	.2528	.0281	-.0251	.0002	.0004	.0024	9.004
.402	214.453	.00	3.60	.3539	.0314	-.0474	.0003	.0005	.0022	11.284
.401	214.266	.00	4.80	.4570	.0360	-.0700	.0002	.0005	.0018	12.684
.401	214.360	.00	5.98	.5538	.0418	-.0914	.0005	.0006	.0015	13.237
.402	214.455	.00	7.16	.6497	.0490	-.1133	.0001	.0007	.0011	13.268
.401	214.087	.00	8.34	.7444	.0572	-.1359	.0005	.0008	.0003	13.017
.402	214.465	.00	9.51	.8361	.0668	-.1598	.0006	.0008	.0001	12.511
.402	214.382	.00	10.63	.9217	.0772	-.1862	.0002	.0008	-.0002	11.932
.402	214.681	.00	11.75	.9987	.0893	-.2181	-.0010	.0006	.0008	11.181
.402	214.808	.00	12.87	1.0593	.1024	-.2541	-.0029	.0002	.0037	10.348
.402	214.573	.00	13.98	1.1055	.1154	-.2865	-.0038	-.0002	.0054	9.577
.402	214.555	.00	.08	.0515	.0256	.0201	.0004	.0002	.0034	2.014

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CYM	CSF
.402	214.739	.00	.09	.0507	.0255	.0197	.0004	.0002	.0033
.402	214.764	.00	-4.38	-.3374	.0103	.1101	.0008	-.0001	.0041
.402	214.756	.00	-3.32	-.2456	.0175	.0884	.0005	-.0001	.0044
.402	214.564	.00	-2.18	-.1492	.0227	.0654	.0005	-.0000	.0043
.402	214.373	.00	-1.06	-.0506	.0254	.0429	.0004	.0001	.0035
.402	214.461	.00	.09	.0520	.0255	.0198	.0003	.0002	.0033
.402	214.457	.00	1.24	.1502	.0228	-.0022	.0005	.0003	.0028
.402	214.455	.00	2.42	.2537	.0174	-.0251	.0002	.0004	.0024
.402	214.453	.00	3.60	.3551	.0091	-.0474	.0003	.0005	.0022
.401	214.266	.00	4.80	.4583	-.0024	-.0700	.0002	.0005	.0018
.401	214.360	.00	5.98	.5550	-.0161	-.0914	.0004	.0006	.0015
.402	214.455	.00	7.16	.6506	-.0324	-.1133	.0001	.0007	.0011
.401	214.087	.00	8.34	.7446	-.0513	-.1359	.0004	.0009	.0033
.402	214.465	.00	9.51	.8354	-.0721	-.1598	.0005	.0009	.0001
.402	214.382	.00	10.63	.9198	-.0940	-.1862	.0001	.0008	-.0002
.402	214.681	.00	11.75	.9954	-.1164	-.2181	-.0011	.0004	.0008
.402	214.808	.00	12.87	1.0550	-.1359	-.2541	-.0029	-.0004	.0037
.402	214.573	.00	13.98	1.1000	-.1550	-.2865	-.0036	-.0011	.0054
.402	214.555	.00	.08	.0515	.0255	.0201	.0004	.0002	.0034

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CONFIDENTIAL *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***

*** NASA CONFIDENTIAL *** TX 10 FT TUNNELS *** NASA PRELIMINARY ***

GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL

TEST 790

RUN 33

BALANCE 731

09/21/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CYM	CSF	L/D
.251	89.586	.00	.06	-.0624	.0261	.0179	.0007	.0004	.0020	2.393
.251	89.300	.00	-4.11	-.2882	.0338	.1049	.0010	.0002	.0037	-8.533
.251	89.689	.00	-3.10	-.2011	.0304	.0815	.0012	.0003	.0033	-6.621
.251	89.687	.00	-2.06	-.1134	.0278	.0606	.0010	.0002	.0031	-4.074
.251	89.783	.00	-1.01	-.0259	.0265	.0392	.0007	.0003	.0024	-.978
.251	89.576	.00	.05	.0622	.0259	.0187	.0005	.0003	.0026	2.398
.252	90.073	.00	1.10	.1518	.0263	-.0020	.0007	.0005	.0015	5.764
.251	89.583	.00	2.17	.2403	.0279	-.0225	.0009	.0006	.0016	8.609
.251	89.387	.00	3.27	.3326	.0305	-.0439	.0006	.0006	.0012	10.921
.250	89.151	.00	4.32	.4193	.0339	-.0633	.0006	.0007	.0012	12.365
.251	89.484	.00	5.43	.5076	.0387	-.0838	.0008	.0007	.0008	13.133
.251	89.678	.00	6.53	.6026	.0447	-.1059	.0005	.0007	.0007	13.485
.251	89.484	.00	7.59	.6820	.0509	-.1252	.0006	.0008	.0004	13.387
.251	89.485	.00	8.70	.7709	.0591	-.1463	.0002	.0008	-.0000	13.046
.251	89.780	.00	9.78	.8504	.0674	-.1662	.0003	.0009	-.0007	12.616
.251	89.978	.00	10.90	.9324	.0772	-.1885	.0004	.0009	-.0008	12.079
.251	89.886	.00	11.96	1.0044	.0876	-.2153	-.0009	.0007	-.0001	11.468
.251	89.701	.00	13.10	1.0685	.1001	-.2519	-.0029	.0003	.0030	10.673
.251	89.714	.00	14.10	1.1126	.1113	-.2799	-.0037	-.0000	.0052	9.992
.251	89.831	.00	15.22	1.1489	.1248	-.3100	-.0040	-.0004	.0064	9.204
.251	89.853	.00	16.22	1.1749	.1380	-.3309	-.0035	-.0003	.0058	8.517
.251	89.684	.00	17.19	1.1961	.1529	-.3535	-.0022	.0001	.0045	7.623
.251	89.976	.00	.06	.0592	.0257	.0184	.0006	.0003	.0023	2.305

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CYM	CSF
.251	89.586	.00	.06	.0624	.0260	.0179	.0007	.0004	.0020
.251	89.300	.00	-4.11	-.2898	.0130	.1049	.0010	.0001	.0037
.251	89.689	.00	-3.10	-.2024	.0195	.0815	.0012	.0002	.0033
.251	89.687	.00	-2.06	-.1143	.0238	.0606	.0010	.0002	.0031
.251	89.783	.00	-1.01	-.0264	.0260	.0392	.0007	.0003	.0024
.251	89.976	.00	.05	.0622	.0259	.0187	.0005	.0003	.0026
.252	90.073	.00	1.10	.1523	.0234	-.0020	.0007	.0005	.0015
.251	89.583	.00	2.17	.2412	.0188	-.0225	.0009	.0006	.0016
.251	89.387	.00	3.27	.3337	.0115	-.0439	.0006	.0007	.0012
.250	89.191	.00	4.32	.4206	.0023	-.0633	.0005	.0007	.0012
.251	89.484	.00	5.43	.5089	-.0095	-.0838	.0007	.0008	.0008
.251	89.678	.00	6.53	.6037	-.0241	-.1059	.0005	.0008	.0007
.251	89.484	.00	7.59	.6826	-.0396	-.1252	.0004	.0009	.0004
.251	89.485	.00	8.70	.7708	-.0582	-.1463	.0001	.0009	-.0000
.251	89.780	.00	9.78	.8492	-.0779	-.1662	.0002	.0010	-.0007
.251	89.978	.00	10.90	.9298	-.1004	-.1885	.0002	.0010	-.0008
.251	89.886	.00	11.96	1.0003	-.1224	-.2153	-.0010	.0005	-.0001
.251	89.701	.00	13.10	1.0629	-.1445	-.2519	-.0029	-.0003	.0030
.251	89.714	.00	14.10	1.1056	-.1629	-.2799	-.0036	-.0009	.0052
.251	89.831	.00	15.22	1.1407	-.1810	-.3100	-.0038	-.0014	.0064
.251	89.853	.00	16.22	1.1659	-.1955	-.3309	-.0033	-.0012	.0058
.251	89.684	.00	17.19	1.1870	-.2071	-.3535	-.0021	-.0005	.0045
.251	89.976	.00	.06	.0592	.0256	.0184	.0006	.0003	.0023

CONFIDENTIAL *** TX 10 FT TUNNELS *** NASA PRELIMINARY ***

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*** NASA CONFIDENTIAL *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***
GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEFD TUNNEL TEST 790 RUN 36 BALANCE 731 09/21/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CYM	CSF	L/C
.655	478.660	.00	.05	.0296	.0310	.0224	-.0002	.0002	.0033	.952
.655	479.363	.00	-2.45	-.1194	.0437	.0770	-.0002	.0001	.0009	-2.730
.654	477.888	.00	-1.85	-.0982	.0386	.0614	.0002	.0001	.0025	-2.542
.655	479.141	.00	-1.26	-.0640	.0356	.0489	.0001	.0002	.0023	-1.801
.655	478.606	.00	-.63	-.0253	.0329	.0358	-.0005	.0002	.0020	-.770
.655	478.659	.00	.06	.0290	.0311	.0221	-.0005	.0002	.0033	.932
.654	478.066	.00	.76	.0925	.0303	.0086	-.0003	.0002	.0032	3.051
.655	479.204	.00	1.51	.1611	.0307	-.0051	-.0003	.0003	.0027	5.253
.656	479.684	.00	2.34	.2370	.0319	-.0199	-.0004	.0004	.0025	7.426
.655	479.114	.00	3.08	.3077	.0337	-.0340	-.0003	.0004	.0018	9.120
.655	478.947	.00	3.82	.3766	.0365	-.0470	-.0005	.0005	.0015	10.312
.655	479.359	.00	4.59	.4520	.0405	-.0615	-.0004	.0005	.0017	11.162
.655	478.907	.00	.06	.0303	.0310	.0220	-.0002	.0002	.0034	.975

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CYM	CSF
.655	478.660	.00	.05	.0296	.0310	.0224	-.0002	.0002	.0033
.655	479.363	.00	-2.45	-.1211	.0386	.0770	-.0002	.0001	.0009
.654	477.888	.00	-1.85	-.0994	.0354	.0614	.0002	.0001	.0025
.655	479.141	.00	-1.26	-.0648	.0341	.0489	.0001	.0002	.0023
.655	478.606	.00	-.63	-.0257	.0326	.0358	-.0005	.0002	.0020
.655	478.659	.00	.06	.0290	.0311	.0221	-.0005	.0002	.0033
.654	478.066	.00	.76	.0929	.0291	.0086	-.0003	.0002	.0032
.655	479.204	.00	1.51	.1618	.0264	-.0051	-.0003	.0003	.0027
.656	479.684	.00	2.34	.2381	.0222	-.0199	-.0004	.0004	.0025
.655	479.114	.00	3.08	.3090	.0172	-.0340	-.0003	.0004	.0018
.655	478.947	.00	3.82	.3781	.0114	-.0470	-.0005	.0005	.0015
.655	479.359	.00	4.59	.4537	.0042	-.0615	-.0004	.0005	.0017
.655	478.907	.00	.06	.0303	.0310	.0220	-.0002	.0002	.0034

~~UNCLASSIFIED~~ *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***

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*** NASA CONFIDENTIAL *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***
 GROUP 4 - DOWNGRADING AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL TEST 790 RUN 35 BALANCE 731 09/21/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CYM	CSF	L/D
.553	368.754	.00	.11	.0404	.0267	.0215	.0001	.0001	.0038	1.515
.553	368.952	.00	-3.67	-.2839	.0371	.0963	.0007	-.0001	.0044	-7.652
.553	369.605	.00	-2.46	-.1845	.0316	.0716	.0002	-.0001	.0035	-5.833
.553	369.066	.00	-1.22	-.0765	.0281	.0465	.0001	-.0001	.0041	-2.725
.553	369.137	.00	.10	.0389	.0266	.0217	.0001	.0001	.0039	1.463
.553	369.645	.00	1.38	.1545	.0272	-.0030	-.0000	.0002	.0034	5.677
.553	369.384	.00	2.78	.2806	.0299	-.0296	.0002	.0004	.0025	9.385
.553	368.867	.00	4.13	.3999	.0346	-.0547	.0001	.0004	.0024	11.565
.552	368.527	.00	5.42	.5123	.0408	-.0784	.0003	.0005	.0020	12.557
.553	368.705	.00	6.74	.6244	.0487	-.1041	.0004	.0006	.0012	12.826
.553	369.453	.00	8.05	.7340	.0588	-.1324	.0004	.0007	.0006	12.477
.553	368.750	.00	9.28	.8298	.0700	-.1641	.0006	.0008	.0008	11.854
.552	368.266	.00	10.49	.9252	.0825	-.1957	.0008	.0009	-.0010	11.215
.553	369.141	.00	.10	.0399	.0267	.0215	-.0000	.0001	.0036	1.496

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CYM	CSF
.553	368.754	.00	.11	.0405	.0266	.0215	.0001	.0001	.0038
.553	368.952	.00	-3.67	-.2856	.0189	.0963	.0007	-.0001	.0044
.553	369.605	.00	-2.46	-.1857	.0237	.0716	.0002	-.0001	.0035
.553	369.066	.00	-1.22	-.0770	.0264	.0465	.0001	-.0001	.0041
.553	369.137	.00	.10	.0390	.0265	.0217	.0001	.0001	.0039
.553	369.645	.00	1.38	.1551	.0235	-.0030	-.0000	.0002	.0034
.553	369.384	.00	2.78	.2817	.0163	-.0296	.0002	.0004	.0025
.553	368.867	.00	4.13	.4013	.0057	-.0547	.0001	.0005	.0024
.552	368.527	.00	5.42	.5138	-.0077	-.0784	.0002	.0006	.0020
.553	368.705	.00	6.74	.6257	-.0249	-.1041	.0003	.0007	.0012
.553	369.453	.00	8.05	.7348	-.0445	-.1324	.0003	.0008	.0006
.553	368.750	.00	9.28	.8299	-.0647	-.1641	.0004	.0009	.0008
.552	368.266	.00	10.49	.9244	-.0872	-.1957	.0006	.0010	-.0010
.553	369.141	.00	.10	.0399	.0266	.0215	-.0000	.0001	.0036

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CONFIDENTIAL * 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***

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*** NASA ~~CONFIDENTIAL~~ *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***
 GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL

TEST 790

RUN 37

BALANCE 731

09/21/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CYM	CSF	L/D
.250	89.298	.00	.07	.0063	.0275	.1444	.0007	.0006	.0005	.228
.250	89.209	.00	-4.08	-.3409	.0382	.2286	.0012	.0004	.0025	-8.931
.251	89.695	.00	-3.05	-.2551	.0339	.2078	.0013	.0004	.0017	-7.516
.251	89.693	.00	-2.01	-.1704	.0310	.1875	.0012	.0005	.0010	-5.492
.251	89.984	.00	-.56	-.0817	.0289	.1656	.0011	.0005	.0008	-2.829
.251	89.884	.00	.07	.0053	.0274	.1446	.0007	.0006	.0005	.193
.251	89.980	.00	1.16	.0970	.0273	.1235	.0006	.0006	.0010	3.555
.252	90.271	.00	2.22	.1866	.0281	.1026	.0005	.0007	.0004	6.640
.252	90.465	.00	3.31	.2789	.0299	.0823	.0009	.0008	-.0000	9.323
.251	89.487	.00	4.37	.3666	.0326	.0614	.0007	.0009	-.0009	11.255
.251	89.389	.00	5.46	.4558	.0367	.0408	.0006	.0010	-.0006	12.411
.251	89.780	.00	6.56	.5469	.0421	.0201	.0008	.0010	-.0010	13.000
.251	89.779	.00	7.65	.6297	.0475	-.0001	.0007	.0010	-.0011	13.246
.251	89.585	.00	8.74	.7160	.0547	-.0217	.0004	.0011	-.0021	13.100
.251	89.586	.00	9.83	.7992	.0626	-.0427	.0005	.0011	-.0025	12.773
.251	89.393	.00	10.95	.8835	.0718	-.0652	.0005	.0012	-.0026	12.297
.251	89.690	.00	12.02	.9578	.0818	-.0916	-.0004	.0010	-.0022	11.715
.251	89.757	.00	13.12	1.0177	.0929	-.1278	-.0022	.0006	-.0000	10.960
.251	89.518	.00	14.16	1.0649	.1046	-.1627	-.0035	.0003	.0032	10.180
.251	89.634	.00	15.27	1.1043	.1178	-.2008	-.0036	-.0000	.0045	9.372
.251	89.949	.00	16.27	1.1363	.1316	-.2302	-.0033	-.0000	.0044	8.633
.251	89.877	.00	17.24	1.1522	.1452	-.2522	-.0024	.0002	.0033	7.935
.252	90.079	.00	.06	.0043	.0272	.1440	.0006	.0007	.0002	.157

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CYM	CSF
.250	89.298	.00	.07	.0063	.0275	.1444	.0007	.0006	.0005
.250	89.209	.00	-4.08	-.3427	.0138	.2286	.0012	.0003	.0025
.251	89.695	.00	-3.05	-.2565	.0203	.2078	.0013	.0003	.0017
.251	89.693	.00	-2.01	-.1714	.0250	.1875	.0013	.0005	.0010
.251	89.984	.00	-.56	-.0822	.0275	.1656	.0011	.0005	.0008
.251	89.884	.00	.07	.0053	.0274	.1446	.0007	.0006	.0005
.251	89.980	.00	1.16	.0975	.0253	.1235	.0006	.0006	.0010
.252	90.271	.00	2.22	.1876	.0209	.1026	.0004	.0008	.0004
.252	90.465	.00	3.31	.2801	.0138	.0823	.0008	.0009	-.0000
.251	89.487	.00	4.37	.3680	.0045	.0614	.0006	.0010	-.0009
.251	89.385	.00	5.46	.4572	-.0068	.0408	.0005	.0010	-.0016
.251	89.780	.00	6.56	.5480	-.0207	.0201	.0007	.0011	-.0010
.251	89.779	.00	7.65	.6303	-.0367	-.0001	.0005	.0011	-.0011
.251	89.585	.00	8.74	.7158	-.0547	-.0217	.0002	.0011	-.0021
.251	89.586	.00	9.83	.7979	-.0748	-.0427	.0003	.0012	-.0025
.251	89.393	.00	10.95	.8807	-.0572	-.0652	.0003	.0012	-.0026
.251	89.690	.00	12.02	.9534	-.1193	-.0916	-.0006	.0009	-.0022
.251	89.757	.00	13.12	1.0117	-.1405	-.1278	-.0023	.0001	.0000
.251	89.518	.00	14.16	1.0576	-.1588	-.1627	-.0034	-.0005	.0032
.251	89.634	.00	15.27	1.0957	-.1769	-.2008	-.0035	-.0009	.0045
.251	89.949	.00	16.27	1.1269	-.1918	-.2302	-.0032	-.0009	.0044
.251	89.877	.00	17.24	1.1427	-.2025	-.2522	-.0023	-.0005	.0033
.252	90.079	.00	.06	.0043	.0272	.1440	.0006	.0007	.0002

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CONFIDENTIAL *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***

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*** NASA CONFIDENTIAL *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***
 GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL TEST 790 RUN 38 BALANCE 731 09/21/67
 STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CYM	CSF	L/D
.401	214.384	.00	.12	-.0016	.0271	.1426	.0005	.0004	.0025	-.057
.401	214.318	.00	-4.31	-.3816	.0402	.2287	.0009	.0002	.0032	-9.485
.402	214.681	.00	-3.24	-.2903	.0352	.2089	.0010	.0003	.0031	-8.249
.402	214.767	.00	-2.12	-.1948	.0313	.1869	.0009	.0003	.0027	-6.220
.402	214.668	.00	-.99	-.0953	.0286	.1642	.0006	.0004	.0021	-3.337
.401	214.251	.00	.11	-.0028	.0272	.1434	.0004	.0005	.0019	-.102
.402	214.565	.00	1.29	.1002	.0271	.1203	.0004	.0005	.0019	3.705
.401	214.375	.00	2.46	.2011	.0281	.0978	.0004	.0007	.0012	7.144
.402	214.466	.00	3.68	.3053	.0308	.0747	.0004	.0008	.0005	9.909
.402	214.464	.00	4.84	.4039	.0346	.0531	.0004	.0008	.0005	11.662
.401	214.185	.00	6.04	.5036	.0398	.0310	.0005	.0009	.0001	12.652
.401	214.371	.00	7.24	.6023	.0463	.0080	.0006	.0010	-.0003	13.021
.401	214.094	.00	8.41	.6971	.0538	-.0146	.0005	.0010	-.0009	12.953
.401	213.916	.00	9.58	.7876	.0629	-.0380	.0004	.0011	-.0013	12.519
.401	214.109	.00	10.71	.8737	.0725	-.0638	.0005	.0011	-.0016	12.043
.401	214.405	.00	11.87	.9535	.0840	-.0949	-.0006	.0009	-.0019	11.346
.402	214.531	.00	12.94	1.0133	.0965	-.1364	-.0026	.0005	.0014	10.498
.401	214.387	.00	14.04	1.0634	.1095	-.1766	-.0034	.0002	.0035	9.714
.402	214.478	.00	.10	-.0032	.0273	.1439	.0003	.0004	.0021	-.117

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CYM	CSF
.401	214.384	.00	.12	-.0015	.0271	.1426	.0005	.0004	.0025
.401	214.318	.00	-4.31	-.3834	.0114	.2287	.0009	.0002	.0032
.402	214.681	.00	-3.24	-.2917	.0187	.2089	.0010	.0002	.0031
.402	214.767	.00	-2.12	-.1958	.0241	.1869	.0009	.0003	.0027
.402	214.668	.00	-.99	-.0957	.0269	.1642	.0006	.0004	.0021
.401	214.251	.00	.11	-.0027	.0272	.1434	.0004	.0005	.0019
.402	214.565	.00	1.29	.1008	.0248	.1203	.0004	.0005	.0019
.401	214.375	.00	2.46	.2021	.0195	.0978	.0004	.0007	.0012
.402	214.466	.00	3.68	.3066	.0112	.0747	.0004	.0008	.0005
.402	214.464	.00	4.84	.4053	.0004	.0531	.0003	.0009	.0005
.401	214.185	.00	6.04	.5049	-.0134	.0310	.0004	.0010	.0001
.401	214.371	.00	7.24	.6032	-.0300	.0080	.0005	.0010	-.0003
.401	214.094	.00	8.41	.6972	-.0487	-.0146	.0003	.0011	-.0009
.401	213.916	.00	9.58	.7869	-.0690	-.0380	.0002	.0011	-.0013
.401	214.109	.00	10.71	.8716	-.0910	-.0638	.0003	.0011	-.0016
.401	214.405	.00	11.87	.9500	-.1138	-.0949	-.0008	.0008	-.0019
.402	214.531	.00	12.94	1.0087	-.1328	-.1364	-.0027	-.0000	.0014
.401	214.387	.00	14.04	1.0577	-.1516	-.1766	-.0033	-.0006	.0035
.402	214.478	.00	.10	-.0031	.0273	.1439	.0003	.0004	.0021

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CONFIDENTIAL *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***

*** NASA CONFIDENTIAL *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY **
GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL TEST 790 RUN 40 BALANCE 731 09/21/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CYM	CSF	L/D
.654	478.362	.00	.25	-.0072	.0326	.1412	.0000	.0005	.0025	-.221
.655	479.159	.00	-2.30	-.1646	.0464	.1931	.0002	.0005	.0003	-3.551
.655	479.408	.00	-1.70	-.1363	.0415	.1806	.0007	.0005	.0017	-3.284
.655	479.105	.00	-1.11	-.1055	.0380	.1688	.0001	.0005	.0012	-2.777
.655	478.808	.00	-.47	-.0646	.0350	.1553	-.0001	.0005	.0015	-1.847
.655	478.445	.00	.26	-.0063	.0327	.1408	-.0001	.0005	.0022	-.192
.655	478.753	.00	.95	.0577	.0318	.1274	.0002	.0006	.0021	1.818
.655	478.740	.00	1.67	.1242	.0317	.1139	.0000	.0006	.0019	3.923
.655	479.554	.00	2.46	.1971	.0325	.0991	.0001	.0007	.0016	6.063
.655	479.218	.00	3.22	.2682	.0338	.0849	.0000	.0008	.0009	7.931
.655	478.808	.00	4.00	.3436	.0362	.0700	-.0000	.0008	.0006	9.485
.655	479.631	.00	4.76	.4157	.0398	.0561	-.0002	.0008	.0008	10.437
.655	478.771	.00	.25	-.0070	.0327	.1409	-.0002	.0005	.0024	-.215

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CYM	CSF
.654	478.362	.00	.25	-.0071	.0326	.1412	.0000	.0005	.0025
.655	479.159	.00	-2.30	-.1663	.0397	.1931	.0003	.0005	.0003
.655	479.408	.00	-1.70	-.1375	.0375	.1806	.0007	.0004	.0017
.655	479.105	.00	-1.11	-.1062	.0360	.1688	.0001	.0005	.0012
.655	478.808	.00	-.47	-.0649	.0345	.1553	-.0001	.0005	.0015
.655	478.445	.00	.26	-.0061	.0327	.1408	-.0001	.0005	.0022
.655	478.753	.00	.95	.0582	.0308	.1274	.0002	.0006	.0021
.655	478.740	.00	1.67	.1250	.0290	.1139	.0000	.0006	.0019
.655	479.554	.00	2.46	.1983	.0240	.0991	.0001	.0007	.0016
.655	479.218	.00	3.22	.2696	.0187	.0849	.0000	.0008	.0009
.655	478.808	.00	4.00	.3453	.0122	.0700	-.0001	.0008	.0006
.655	479.631	.00	4.76	.4175	.0052	.0561	-.0003	.0008	.0008
.655	478.771	.00	.25	-.0069	.0327	.1409	-.0002	.0005	.0024

CONFIDENTIAL *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY **

*** NASA ~~CONFIDENTIAL~~ *** TX 10 FT TUNNELS *** NASA PRELIMINARY ***
 GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL TEST 790 RUN 39 BALANCE 731 09/21/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CY _M	CSF	L/D
.553	368.954	.00	.25	-.0016	.0282	.1419	.0004	.0004	.0023	-.058
.552	368.391	.00	-3.54	-.3215	.0408	.2135	.0011	.0002	.0031	-7.882
.554	369.901	.00	-2.33	-.2224	.0347	.1901	.0006	.0003	.0019	-6.400
.553	368.844	.00	-1.08	-.1139	.0304	.1663	.0006	.0003	.0027	-3.745
.552	368.651	.00	.25	-.0002	.0282	.1416	.0002	.0004	.0028	-.008
.553	369.330	.00	1.51	.1143	.0281	.1168	.0004	.0005	.0024	4.066
.553	369.066	.00	2.89	.2369	.0300	.0906	.0002	.0006	.0015	7.897
.553	369.148	.00	4.25	.3585	.0339	.0651	.0003	.0008	.0013	10.562
.553	368.976	.00	5.57	.4728	.0395	.0406	.0006	.0009	.0006	11.556
.553	368.725	.00	6.87	.5840	.0469	.0154	.0006	.0010	.0001	12.464
.552	368.649	.00	8.18	.6921	.0560	-.0113	.0008	.0010	-.0006	12.352
.552	367.859	.00	9.40	.7876	.0662	-.0415	.0006	.0011	-.0017	11.896
.552	368.278	.00	10.59	.8808	.0783	-.0774	.0010	.0012	-.0023	11.243
.553	369.509	.00	.24	-.0004	.0284	.1419	.0004	.0004	.0025	-.014

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CY _M	CSF
.553	368.954	.00	.25	-.0015	.0283	.1419	.0004	.0004	.0023
.552	368.391	.00	-3.54	-.3233	.0209	.2135	.0011	.0002	.0031
.554	369.901	.00	-2.33	-.2236	.0257	.1901	.0006	.0003	.0019
.553	368.844	.00	-1.08	-.1145	.0283	.1663	.0006	.0003	.0027
.552	368.651	.00	.25	-.0001	.0282	.1416	.0002	.0004	.0028
.553	369.330	.00	1.51	.1150	.0251	.1168	.0004	.0005	.0024
.553	369.066	.00	2.89	.2381	.0180	.0906	.0002	.0006	.0015
.553	369.148	.00	4.25	.3600	.0073	.0651	.0003	.0008	.0013
.553	368.976	.00	5.57	.4743	-.0065	.0406	.0005	.0009	.0016
.553	368.725	.00	6.87	.5853	-.0233	.0154	.0005	.0010	.0001
.552	368.649	.00	8.18	.6928	-.0430	-.0113	.0006	.0011	-.0016
.552	367.859	.00	9.40	.7876	-.0633	-.0415	.0004	.0012	-.0017
.552	368.278	.00	10.59	.8799	-.0849	-.0774	.0008	.0014	-.0023
.553	369.509	.00	.24	-.0003	.0284	.1419	.0004	.0004	.0025

~~CONFIDENTIAL~~ *** TX 10 FT TUNNELS *** NASA PRELIMINARY ***

*** NASA ~~CONFIDENTIAL~~ *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***
 GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

REF ID: A618347

09/21/67

HIGH SPEED TUNNEL

TEST 790

RUN 41

BALANCE 731

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CY _M	CSF	L/D
.251	89.789	.00	.07	-.0140	.0287	.2018	.0005	.0006	.0022	-.487
.251	89.701	.00	-4.08	-.3612	.0405	.2816	.0012	.0004	.0030	-8.520
.252	90.480	.00	-3.05	-.2759	.0362	.2618	.0012	.0004	.0025	-7.616
.252	90.282	.00	-2.02	-.1904	.0329	.2425	.0011	.0004	.0024	-5.794
.252	90.183	.00	-.97	-.1036	.0305	.2215	.0012	.0006	.0020	-3.401
.252	90.278	.00	.07	-.0158	.0287	.2004	.0007	.0006	.0013	-.552
.252	90.081	.00	1.15	-.0748	.0282	.1806	.0003	.0006	.0018	2.649
.252	90.176	.00	2.22	-.1657	.0286	.1603	.0006	.0007	.0011	5.785
.252	90.175	.00	3.21	-.2557	.0303	.1391	.0010	.0009	.0005	8.437
.252	90.076	.00	4.37	-.3431	.0329	.1186	.0005	.0009	.0011	10.427
.251	89.978	.00	5.46	-.4327	.0365	.0981	.0007	.0010	.0005	11.852
.252	90.075	.00	6.55	-.5211	.0413	.0785	.0006	.0010	.0004	12.613
.252	90.075	.00	7.65	-.6044	.0467	.0573	.0001	.0010	-.0006	12.937
.251	89.977	.00	8.75	-.6948	.0536	.0370	.0007	.0012	-.0010	12.968
.251	89.978	.00	9.83	-.7805	.0614	.0150	.0005	.0012	-.0014	12.715
.251	89.980	.00	10.95	-.8625	.0701	-.0081	.0005	.0012	-.0021	12.300
.252	90.179	.00	12.01	-.9345	.0793	-.0350	-.0005	.0009	-.0011	11.791
.251	89.855	.00	13.12	-.9974	.0906	-.0717	-.0023	.0006	.0020	11.003
.251	90.088	.00	14.16	1.0476	1.031	-.1109	-.0033	.0003	.0043	10.158
.251	89.928	.00	15.26	1.0873	1.1157	-.1506	-.0036	.0001	.0044	9.394
.252	90.046	.00	16.25	1.1187	1.1290	-.1833	-.0033	.0000	.0046	8.674
.252	90.072	.00	17.22	1.1363	1.1426	-.2065	-.0023	.0002	.0041	7.571
.251	89.789	.00	.06	-.0180	.0285	.2006	.0007	.0006	.0016	-.630

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CY _M	CSF
.251	89.789	.00	.07	-.0139	.0287	.2018	.0005	.0006	.0022
.251	89.701	.00	-4.08	-.3631	.0147	.2816	.0013	.0003	.0020
.252	90.480	.00	-3.05	-.2774	.0215	.2618	.0012	.0004	.0025
.252	90.282	.00	-2.02	-.1914	.0261	.2425	.0011	.0004	.0024
.252	90.183	.00	-.97	-.1041	.0287	.2215	.0012	.0006	.0020
.252	90.278	.00	.07	-.0158	.0287	.2004	.0007	.0006	.0013
.252	90.081	.00	1.15	.0753	.0267	.1806	.0003	.0006	.0018
.252	90.176	.00	2.22	.1667	.0222	.1603	.0006	.0007	.0011
.252	90.175	.00	3.31	.2570	.0155	.1391	.0009	.0009	.0015
.252	90.076	.00	4.37	.3445	.0067	.1186	.0004	.0009	.0011
.251	89.978	.00	5.46	.4341	-.0049	.0981	.0006	.0010	.0015
.252	90.075	.00	6.55	.5223	-.0184	.0785	.0005	.0011	.0014
.252	90.075	.00	7.65	.6051	-.0341	.0573	.0000	.0010	-.0006
.251	89.977	.00	8.75	.6946	-.0527	.0370	.0005	.0013	-.0010
.251	89.978	.00	9.83	.7793	-.0727	.0150	.0003	.0012	-.0014
.251	89.980	.00	10.95	.8598	-.0949	-.0081	-.0003	.0013	-.0021
.252	90.179	.00	12.01	.9301	-.1168	-.0350	-.0007	.0008	-.0011
.251	89.855	.00	13.12	.9915	-.1380	-.0717	-.0024	.0001	.0020
.251	90.006	.00	14.16	1.0405	-.1561	-.1109	-.0033	-.0005	.0043
.251	89.928	.00	15.26	1.0788	-.1743	-.1506	-.0035	-.0008	.0044
.252	90.046	.00	16.25	1.1093	-.1891	-.1833	-.0032	-.0009	.0046
.252	90.072	.00	17.22	1.1268	-.1999	-.2065	-.0023	-.0004	.0041
.251	89.789	.00	.06	-.0179	.0285	.2006	.0007	.0006	.0016

~~CONFIDENTIAL~~ *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***

REF ID: A618347

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* * * NASA ~~CONFIDENTIAL~~ * * * 7 X 10 FT TUNNELS * * * NASA PRELIMINARY * * *

GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL TEST 790 RUN 42 BALANCE 731 09/22/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CYM	CSF	L/D
.401	214.301	.00	.14	-.0205	.0287	.1973	.0004	.0004	.0028	-.714
.401	213.587	.00	-4.29	-.3981	.0428	.2786	.0006	.0002	.0039	-9.303
.402	214.785	.00	-3.21	-.3081	.0375	.2596	.0008	.0003	.0036	-8.215
.402	214.777	.00	-2.10	-.2123	.0333	.2392	.0007	.0003	.0032	-6.373
.402	214.677	.00	-.97	-.1146	.0303	.2183	.0007	.0003	.0032	-3.782
.402	214.764	.00	.14	-.0196	.0286	.1969	.0002	.0004	.0029	-.686
.401	213.645	.00	1.32	.0805	.0281	.1749	.0003	.0005	.0026	2.861
.402	215.126	.00	2.48	.1838	.0290	.1525	.0006	.0007	.0020	6.332
.401	214.381	.00	3.69	.2851	.0313	.1298	.0005	.0007	.0014	9.122
.402	214.657	.00	4.89	.3854	.0348	.1075	.0005	.0009	.0006	11.080
.402	214.563	.00	6.07	.4825	.0397	.0860	.0003	.0009	.0006	12.163
.401	214.378	.00	7.28	.5836	.0460	.0634	.0006	.0010	.0002	12.689
.402	214.566	.00	8.44	.6779	.0533	.0407	.0005	.0010	.0002	12.719
.402	214.571	.00	9.61	.7663	.0616	.0168	.0008	.0012	-.0010	12.433
.401	214.022	.00	10.73	.8528	.0711	-.0088	.0005	.0012	-.0011	11.995
.402	214.596	.00	11.89	.9312	.0822	-.0408	-.0009	.0009	-.0010	11.333
.401	214.442	.00	12.96	.9918	.0944	-.0835	-.0024	.0005	.0029	10.504
.401	214.299	.00	14.07	1.0430	.1077	-.1263	-.0034	.0002	.0048	9.686
.402	214.671	.00	14	-.0221	.0286	.1978	.0002	.0004	.0029	-.771

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CYM	CSF
.401	214.301	.00	.14	-.0204	.0287	.1973	.0004	.0004	.0028
.401	213.587	.00	-4.29	-.4001	.0129	.2786	.0006	.0002	.0039
.402	214.785	.00	-3.21	-.3096	.0202	.2596	.0008	.0002	.0036
.402	214.777	.00	-2.10	-.2133	.0255	.2392	.0007	.0003	.0032
.402	214.677	.00	-.97	-.1151	.0284	.2183	.0007	.0003	.0032
.402	214.764	.00	.14	-.0195	.0286	.1969	.0002	.0004	.0029
.401	213.645	.00	1.32	.0811	.0263	.1749	.0003	.0005	.0026
.402	215.126	.00	2.48	.1848	.0210	.1525	.0006	.0007	.0020
.401	214.381	.00	3.69	.2865	.0129	.1298	.0005	.0008	.0014
.402	214.657	.00	4.89	.3868	.0018	.1075	.0005	.0009	.0012
.402	214.563	.00	6.07	.4839	-.0115	.0860	.0002	.0009	.0006
.401	214.378	.00	7.28	.5846	-.0283	.0634	.0005	.0011	.0002
.402	214.566	.00	8.44	.6782	-.0468	.0407	.0004	.0011	.0002
.402	214.571	.00	9.61	.7656	-.0671	.0168	.0006	.0013	-.0010
.401	214.022	.00	10.73	.8508	-.0888	-.0088	.0003	.0013	-.0011
.402	214.596	.00	11.89	.9278	-.1114	-.0408	-.0010	.0007	-.0010
.401	214.442	.00	12.96	.9872	-.1303	-.0835	-.0024	-.0000	.0029
.401	214.299	.00	14.07	1.0374	-.1489	-.1263	-.0033	-.0006	.0048
.402	214.671	.00	14	-.0220	.0287	.1978	.0002	.0004	.0029

~~CONFIDENTIAL~~ * * * 7 X 10 FT TUNNELS * * * NASA PRELIMINARY * *

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*** NASA CONFIDENTIAL *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***
GR C U R 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL TEST 790 RUN 44 BALANCE 731 09/22/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	C _D	CPM	CRM	CYM	CSF	L/D
.655	479.300	.00	.25	-.0307	.0345	.1966	-.0002	.0005	.0028	-.892
.652	476.412	.00	-2.26	-.1870	.0476	.2435	.0005	.0004	.0015	-3.927
.654	478.224	.00	-1.65	-.1573	.0433	.2332	.0006	.0004	.0022	-3.631
.655	479.141	.00	-1.04	-.1231	.0396	.2215	.0002	.0004	.0018	-3.110
.655	479.251	.00	-0.40	-.0798	.0366	.2084	.0001	.0005	.0020	-2.182
.655	479.054	.00	.25	-.0319	.0344	.1963	-.0001	.0005	.0027	-.928
.655	478.701	.00	.99	.0378	.0330	.1815	-.0001	.0005	.0028	1.144
.655	478.778	.00	1.73	.1068	.0328	.1673	-.0002	.0005	.0025	3.254
.655	479.093	.00	2.53	.1822	.0334	.1525	.0002	.0007	.0018	5.452
.653	476.726	.00	3.29	.2527	.0346	.1383	-.0002	.0007	.0014	7.306
.655	479.656	.00	4.08	.3274	.0370	.1232	-.0003	.0008	.0012	8.843
.656	479.740	.00	4.83	.3980	.0403	.1090	-.0000	.0008	.0014	9.880
.655	478.474	.00	.25	-.0295	.0342	.1959	.0001	.0005	.0029	-.863

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CYM	CSF
.655	479.300	.00	.25	-.0306	.0346	.1966	-.0002	.0005	.0028
.652	476.412	.00	-2.26	-.1887	.0402	.2435	.0005	.0004	.0015
.654	478.224	.00	-1.65	-.1585	.0388	.2332	.0006	.0004	.0022
.655	479.141	.00	-1.04	-.1238	.0374	.2215	.0002	.0004	.0018
.655	479.251	.00	-0.40	-.0801	.0360	.2084	.0001	.0005	.0020
.655	479.054	.00	.25	-.0317	.0345	.1963	-.0001	.0005	.0027
.655	478.701	.00	.99	.0384	.0324	.1815	-.0001	.0005	.0028
.655	478.778	.00	1.73	.1077	.0296	.1673	-.0002	.0005	.0025
.655	479.093	.00	2.53	.1835	.0253	.1525	.0002	.0007	.0018
.653	476.726	.00	3.29	.2542	.0200	.1383	-.0003	.0007	.0014
.655	479.656	.00	4.08	.3291	.0136	.1232	-.0004	.0007	.0012
.656	479.740	.00	4.83	.3999	.0066	.1090	-.0000	.0008	.0014
.655	478.474	.00	.25	-.0294	.0343	.1959	.0001	.0005	.0029

~~UNCLASSIFIED~~

~~CONFIDENTIAL~~ 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***

~~CLASSIFIED~~

*** NASA ~~CONFIDENTIAL~~ *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***
 GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL TEST 790 RUN 43 BALANCE 731 09/22/67
 STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CY _M	CSF	L/D
.553	368.755	.00	.22	-.0265	.0297	.1969	.0002	.0003	.0033	-.893
.549	365.489	.00	-3.48	-.3366	.0429	.2624	.0010	.0003	.0035	-7.852
.553	369.062	.00	-2.27	-.2390	.0366	.2422	.0006	.0002	.0027	-6.530
.553	369.636	.00	-1.03	-.1323	.0321	.2187	.0007	.0003	.0029	-4.127
.553	368.927	.00	.23	-.0257	.0297	.1966	.0004	.0004	.0031	-.868
.553	369.346	.00	1.58	.0965	.0291	.1703	.0004	.0005	.0026	3.312
.553	369.595	.00	2.93	.2186	.0307	.1449	.0005	.0006	.0022	7.116
.553	369.334	.00	4.32	.3413	.0343	.1189	.0002	.0007	.0015	9.950
.553	368.734	.00	5.63	.4531	.0396	.0948	.0003	.0008	.0011	11.441
.552	368.310	.00	6.92	.5649	.0466	.0699	.0007	.0010	.0002	12.117
.552	368.236	.00	8.24	.6717	.0554	.0426	.0006	.0010	-.0000	12.125
.551	366.885	.00	9.47	.7690	.0655	.0130	.0007	.0011	-.0011	11.737
.553	369.667	.00	10.67	.8630	.0775	-.0252	.0009	.0012	-.0019	11.129
.553	368.844	.00	.23	-.0257	.0298	.1972	.0003	.0003	.0036	-.864

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CY _M	CSF
.553	368.755	.00	.22	-.0264	.0298	.1969	.0002	.0003	.0033
.549	365.489	.00	-3.48	-.3385	.0223	.2624	.0010	.0002	.0035
.553	369.062	.00	-2.27	-.2402	.0271	.2422	.0006	.0002	.0027
.553	369.636	.00	-1.03	-.1328	.0297	.2187	.0007	.0003	.0029
.553	368.927	.00	.23	-.0256	.0298	.1966	.0004	.0004	.0031
.553	369.346	.00	1.58	.0973	.0265	.1703	.0004	.0005	.0026
.553	369.595	.00	2.93	.2198	.0195	.1449	.0004	.0007	.0022
.553	369.334	.00	4.32	.3429	.0085	.1189	.0002	.0007	.0015
.553	368.734	.00	5.63	.4548	-.0050	.0948	.0003	.0008	.0011
.552	368.310	.00	6.92	.5663	-.0218	.0699	.0005	.0011	.0002
.552	368.236	.00	8.24	.6726	-.0414	.0426	.0005	.0011	-.0000
.551	366.885	.00	9.47	.7691	-.0618	.0130	.0005	.0012	-.0011
.553	369.667	.00	10.67	.8621	-.0835	-.0252	.0007	.0013	-.0019
.553	368.844	.00	.23	-.0256	.0299	.1972	.0003	.0003	.0036

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~~DECLASSIFIED~~

*** NASA CONFIDENTIAL *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***
 GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL

TEST 790

RUN 46

BALANCE 731

09/22/67

STABILITY AXIS COEFFICIENTS

MACH	C	BETA	ALPHA	CL	CD	CPM	CRM	CYM	CSF	L/D
.552	366.842	.00	.35	.0575	.0465	.2214	.0000	.0005	.0018	1.237
.553	367.864	.00	-3.36	-.2275	.0628	.2913	.0004	.0003	.0020	-3.622
.553	367.542	.00	-2.14	-.1352	.0555	.2698	.0000	.0003	.0022	-2.438
.552	366.888	.00	-.89	-.C403	.0501	.2479	-.0002	.0004	.0019	-.806
.553	367.444	.00	-.36	.0582	.0465	.2209	.0001	.0005	.0017	1.251
.553	367.581	.00	1.61	.1540	.0447	.1942	.0004	.0007	.0008	3.441
.553	367.805	.00	2.50	.2528	.0440	.1649	.0004	.0008	.0009	5.739
.552	366.921	.00	4.21	.3448	.0450	.1349	.0002	.0009	.0002	7.659
.553	367.247	.00	5.43	.4306	.0475	.1043	-.0001	.0009	.0001	9.073
.553	367.151	.00	6.48	.5319	.0523	.0758	.0004	.0010	-.0004	10.162
.552	366.978	.00	7.56	.6377	.0596	.0462	.0005	.0011	-.0008	10.702
.553	367.507	.00	9.19	.7361	.0687	.0147	.0002	.0011	-.0013	10.721
.553	367.186	.00	10.39	.8294	.0792	-.0237	.0003	.0011	-.0020	10.471
.552	367.017	.00	.37	.0609	.0466	.2209	.0000	.0006	.0015	1.307

BODY AXIS COEFFICIENTS

MACH	C	BETA	ALPHA	CNF	CAF	CPM	CRM	CYM	CSF
.552	366.842	.00	.35	-.0578	.0462	.2214	.0000	.0005	.0018
.553	367.864	.00	-2.36	-.2307	.0454	.2913	.0004	.0003	.0020
.553	367.542	.00	-2.14	-.1371	.0504	.2698	.0000	.0003	.0022
.552	366.888	.00	-.89	-.0411	.0454	.2479	-.0002	.0004	.0019
.553	367.444	.00	.36	.0584	.0461	.2209	.0001	.0005	.0017
.553	367.581	.00	1.61	.1551	.0464	.1942	.0004	.0008	.0008
.553	367.805	.00	2.90	.2546	.0312	.1649	.0004	.0008	.0009
.552	366.921	.00	4.21	.3471	.0196	.1349	.0002	.0010	.0002
.553	367.247	.00	5.43	.4330	.0065	.1043	-.0002	.0009	.0001
.553	367.151	.00	6.48	.5343	-.0098	.0758	.0002	.0011	-.0004
.552	366.978	.00	7.96	.6396	-.0292	.0462	.0003	.0011	-.0008
.553	367.507	.00	9.19	.7374	-.0457	.0147	.0001	.0012	-.0013
.553	367.186	.00	10.39	.8297	-.0716	-.0237	.0001	.0011	-.0020
.552	367.017	.00	.37	.0612	.0462	.2209	.0000	.0006	.0015

~~CONFIDENTIAL~~ *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***

~~CONFIDENTIAL~~ *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***
 GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL			TEST 790		RUN 45		BALANCE 731		09/22/67	
MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CYM	CSF	L/D
STABILITY AXIS COEFFICIENTS										
.250	88.737	.00	.C7	-.0101	.0419	.2138	.0008	.0009	-.0002	.241
.250	88.856	.00	-4.C7	-.3324	.0579	.2983	.0006	.0005	.0015	-5.744
.250	88.851	.00	-3.04	-.2510	.0531	.2781	.0009	.0006	.0013	-4.728
.251	89.441	.00	-2.C1	-.1675	.0483	.2575	.0010	.0007	.0015	-3.469
.250	88.640	.00	-.57	-.0880	.0449	.2359	.0005	.0008	-.0000	.1960
.250	88.634	.00	.C6	-.0072	.0419	.2122	.0006	.0010	-.0004	.171
.250	88.731	.00	1.13	-.C746	.0396	.1900	.0004	.0008	.0003	1.883
.250	88.823	.00	2.16	.1484	.0379	.1642	.0004	.0009	-.0006	3.920
.250	88.819	.00	3.24	.2335	.0383	.1417	.0004	.0009	-.0000	6.092
.251	89.012	.00	4.30	.3210	.0399	.1205	-.0000	.0009	-.0003	8.035
.250	88.718	.00	5.39	.4063	.0431	.0996	.0002	.0010	.0017	10.413
.250	88.619	.00	6.47	.4918	.0472	.0775	-.0004	.0010	-.0012	11.102
.250	88.521	.00	7.57	.5800	.0522	.0572	-.0000	.0011	-.0016	11.452
.251	88.910	.00	8.66	.6649	.0581	.0350	.0002	.0012	-.0024	11.471
.250	88.618	.00	9.74	.7498	.0654	.0131	-.0000	.0012	-.0022	11.349
.250	88.814	.00	10.85	.E359	.0737	-.0123	.0001	.0012	-.0022	10.974
.250	88.818	.00	11.93	.5035	.0823	-.0413	-.0009	.0010	-.0019	10.417
.250	88.626	.00	13.05	.5728	.0934	-.0815	.0026	.0007	-.0002	9.748
.250	88.839	.00	14.05	1.0175	.1044	-.1202	.0035	.0005	.0026	8.989
.250	88.760	.00	15.17	1.6600	.1179	-.1601	-.0039	.0003	.0044	8.304
.250	88.781	.00	16.18	1.8877	.1310	-.1884	-.0030	.0005	.0040	7.644
.250	88.769	.00	17.12	1.1063	.1447	-.2126	-.0018	.0005	.0025	
.250	88.542	.00	.C6	-.C102	.0422	.2138	.0005	.0009	-.0008	-.241

MACH	C	BETA	ALPHA	CNF	CAF	CPM	CRM	CYM	CSF
.250	88.737	.00	.07	-.0101	.0419	.2138	.0008	.0009	-.0002
.250	88.856	.00	-4.07	-.3356	.0341	.2983	.0007	.0005	.0015
.250	88.851	.00	-3.04	-.2534	.0397	.2781	.0010	.0005	.0013
.251	89.041	.00	-2.01	-.1691	.0424	.2575	.0010	.0006	.0015
.250	88.840	.00	-.57	-.0887	.0434	.2359	.0005	.0008	-.0000
.250	88.834	.00	.06	-.0071	.0419	.2122	.0006	.0010	-.0004
.250	88.731	.00	1.13	.0753	.0381	.1900	.0004	.0009	.0003
.250	88.823	.00	2.16	.1497	.0323	.1642	.0004	.0009	-.0006
.250	88.819	.00	3.24	.2353	.0251	.1417	.0003	.0009	-.0000
.251	89.012	.00	4.30	.3230	.0158	.1205	-.0001	.0009	-.0003
.250	88.718	.00	5.39	.4085	.0047	.0996	.0001	.0010	-.0006
.250	88.619	.00	6.47	.4939	-.0085	.0775	-.0005	.0010	-.0017
.250	88.521	.00	7.57	.5817	-.0246	.0572	-.0002	.0011	-.0012
.251	88.910	.00	8.66	.6658	-.0427	.0350	-.0000	.0012	-.0016
.250	88.618	.00	9.74	.7498	-.0624	.0131	-.0002	.0012	-.0024
.250	88.814	.00	10.85	.8345	-.0849	-.0123	-.0001	.0012	-.0026
.250	88.818	.00	11.93	.9006	-.1061	-.0413	-.0010	.0008	-.0019
.250	88.826	.00	13.05	.9683	-.1287	-.0815	-.0027	.0001	-.0002
.250	88.839	.00	14.05	1.0119	-.1457	-.1202	-.0035	-.0003	.0026
.250	88.760	.00	15.17	1.0533	-.1633	-.1601	-.0039	-.0007	.0044
.250	88.781	.00	16.18	1.0804	-.1771	-.1884	-.0030	-.0004	.0040
.250	88.769	.00	17.12	1.0991	-.1872	-.2126	-.0019	-.0001	.0025
.250	88.542	.00	.06	-.0101	.0422	.2138	.0004	.0009	-.0008

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*** NASA *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***
GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL TEST 790 RUN 48 BALANCE 731 09/22/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CYM	CSF	L/D
.553	366.319	.00	.34	.0888	.0447	.1535	.0008	.0005	.0027	1.988
.552	366.215	.00	-3.35	-.1991	.0594	.2286	.0008	.0002	.0032	3.352
.552	366.069	.00	-2.15	-.1086	.0527	.2062	.0008	.0004	.0029	-2.061
.554	367.309	.00	-.93	-.0100	.0481	.1819	.0007	.0004	.0024	-.208
.553	366.320	.00	.23	.0910	.0447	.1535	.0006	.0005	.0023	2.033
.553	366.886	.00	1.56	.1854	.0434	.1268	.0008	.0006	.0018	4.272
.552	365.822	.00	2.66	.2807	.0431	.0972	.0006	.0007	.0018	6.519
.553	367.085	.00	4.16	.3734	.0445	.0676	.0007	.0008	.0016	8.383
.552	365.657	.00	5.25	.4569	.0473	.0383	.0003	.0009	.0011	9.659
.552	365.861	.00	6.62	.5600	.0529	.0100	.0003	.0010	.0003	10.585
.552	365.947	.00	7.88	.6630	.0602	-.0185	.0005	.0011	-.0001	11.005
.553	367.078	.00	9.14	.7631	.0700	-.0502	.0005	.0011	.0001	10.899
.552	365.640	.00	10.33	.8560	.0806	-.0871	.0005	.0011	-.0011	10.621
.553	366.405	.00	.36	.0943	.0448	.1533	.0005	.0005	.0028	2.105

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CYM	CSF
.553	366.319	.00	.34	.0890	.0441	.1535	.0008	.0005	.0027
.552	366.215	.00	-3.35	-.2022	.0477	.2286	.0008	.0002	.0032
.552	366.069	.00	-2.15	.1105	.0466	.2062	.0008	.0003	.0029
.554	367.309	.00	-.93	-.0108	.0480	.1819	.0007	.0004	.0024
.553	366.320	.00	.33	.0912	.0442	.1535	.0006	.0005	.0023
.553	366.886	.00	1.56	.1865	.0384	.1268	.0008	.0007	.0018
.552	365.822	.00	2.86	.2825	.0250	.0972	.0005	.0007	.0018
.553	367.085	.00	4.16	.3755	.0173	.0676	.0006	.0008	.0016
.552	365.657	.00	5.35	.4592	.0045	.0383	.0002	.0009	.0011
.552	365.861	.00	6.62	.5622	-.0120	.0100	.0001	.0010	.0003
.552	365.947	.00	7.88	.6648	-.0312	-.0185	.0003	.0011	-.0001
.553	367.078	.00	9.14	.7642	-.0521	-.0502	.0003	.0012	-.0001
.552	365.640	.00	10.33	.8562	-.0742	-.0871	.0003	.0012	-.0011
.553	366.405	.00	.36	.0946	.0442	.1533	.0005	.0005	.0028

~~UNCLASSIFIED~~

~~CONFIDENTIAL~~ *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***

*** NASA CONFIDENTIAL *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***
 GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL

TEST 790

RUN 47

BALANCE 731

09/22/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CYM	CSF	L/D
.251	89.417	.00	.03	.0222	.0408	.1515	.0008	.0009	.0006	.543
.251	89.342	.00	-4.13	-.3111	.0562	.2430	.0010	.0005	.0035	-5.540
.252	89.532	.00	-3.10	-.2219	.0508	.2195	.0009	.0007	.0012	-4.365
.252	89.526	.00	-2.07	-.1414	.0467	.1964	.0009	.0007	.0011	-3.028
.251	89.325	.00	-1.04	-.0603	.0433	.1738	.0007	.0009	.0008	-1.392
.251	89.319	.00	.02	.0221	.0404	.1503	.0005	.0009	.0010	.547
.251	89.411	.00	1.07	.1033	.0386	.1283	.0007	.0009	.0011	2.676
.251	89.406	.00	2.12	.1797	.0374	.1018	.0003	.0009	.0005	4.809
.251	89.304	.00	3.20	.2655	.0380	.0788	.0005	.0010	.0001	6.990
.251	89.498	.00	4.27	.3574	.0404	.0584	.0002	.0011	.0001	8.837
.252	89.594	.00	5.34	.4384	.0435	.0370	.0002	.0011	.0004	10.075
.251	89.495	.00	6.44	.5292	.0481	.0160	.0003	.0011	.0005	11.006
.251	89.493	.00	7.53	.6119	.0531	-.0052	.0002	.0011	.0010	11.531
.251	89.298	.00	8.61	.6982	.0595	-.0270	.0001	.0012	.0011	11.726
.251	89.494	.00	9.71	.7836	.0672	-.0489	-.0000	.0013	.0019	11.657
.251	89.202	.00	10.81	.8655	.0756	-.0742	.0004	.0013	.0011	11.444
.251	89.304	.00	11.89	.9387	.0851	-.1031	-.0008	.0010	.0008	11.027
.251	89.311	.00	13.02	1.0018	.0958	-.1417	-.0025	.0007	.0012	10.462
.251	89.227	.00	14.02	1.0484	.1074	-.1780	-.0035	.0005	.0040	9.762
.251	89.345	.00	15.12	1.0895	.1212	-.2126	-.0036	.0003	.0058	8.988
.251	89.268	.00	16.13	1.1163	.1341	-.2372	-.0028	.0004	.0050	8.324
.251	89.197	.00	17.10	1.1289	.1476	-.2601	-.0012	.0004	.0039	7.649
.251	89.220	.00	.05	.0241	.0399	.1500	.0008	.0009	.0013	.604

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CYM	CSF
.251	89.417	.00	.03	.0222	.0408	.1515	.0008	.0009	.0006
.251	89.342	.00	-4.13	-.3143	.0336	.2430	.0011	.0005	.0035
.252	89.532	.00	-3.10	-.2242	.0388	.2195	.0009	.0006	.0012
.252	89.526	.00	-2.07	-.1430	.0416	.1964	.0009	.0007	.0011
.251	89.325	.00	-1.04	-.0610	.0422	.1738	.0007	.0008	.0008
.251	89.319	.00	.02	.0221	.0404	.1503	.0005	.0009	.0010
.251	89.411	.00	1.07	.1040	.0367	.1283	.0007	.0009	.0011
.251	89.406	.00	2.12	.1809	.0307	.1018	.0003	.0009	.0005
.251	89.304	.00	3.20	.2671	.0231	.0788	.0004	.0010	-.0001
.251	89.498	.00	4.27	.3593	.0137	.0584	.0002	.0011	-.0001
.252	89.594	.00	5.34	.4405	.0025	.0370	.0001	.0011	-.0004
.251	89.495	.00	6.44	.5312	-.0116	.0160	.0002	.0012	-.0005
.251	89.493	.00	7.53	.6134	-.0276	-.0052	.0001	.0012	-.0010
.251	89.298	.00	8.61	.6990	-.0457	-.0270	-.0001	.0012	-.0011
.251	89.494	.00	9.71	.7834	-.0659	-.0489	-.0002	.0013	-.0019
.251	89.202	.00	10.81	.8640	-.0880	-.0742	-.0001	.0013	-.0011
.251	89.304	.00	11.89	.9357	-.1100	-.1031	-.0010	.0008	-.0008
.251	89.311	.00	13.02	.9971	-.1324	-.1417	-.0026	.0001	.0012
.251	89.227	.00	14.02	1.0426	-.1497	-.1780	-.0035	-.0004	.0040
.251	89.345	.00	15.12	1.0827	-.1670	-.2126	-.0035	-.0006	.0058
.251	89.268	.00	16.13	1.1089	-.1810	-.2372	-.0028	-.0004	.0050
.251	89.197	.00	17.10	1.1215	-.1907	-.2601	-.0013	-.0001	.0039
.251	89.220	.00	.05	.0241	.0399	.1500	.0008	.0009	.0013

7 X 10 FT TUNNELS *** NASA PRELIMINARY ***

~~UNCLASSIFIED~~

*** NASA ~~CONFIDENTIAL~~ *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY **

GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS.

HIGH SPEED TUNNEL TEST 790 RUN 50 BALANCE 731 09/22/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CY _M	CSF	L/D
.553	366.375	.00	.37	.1149	.0439	.1054	.0006	.0005	.0029	2.619
.553	366.272	.00	-3.43	-.1852	.0581	.1859	.0009	.0003	.0034	-3.189
.553	366.214	.00	-2.24	-.0916	.0516	.1615	.0007	.0004	.0032	-1.775
.552	365.904	.00	-1.00	.0063	.0468	.1348	.0004	.0005	.0028	.135
.553	366.117	.00	.37	.1152	.0438	.1052	.0004	.0005	.0031	2.628
.553	366.686	.00	1.50	.2027	.0427	.0757	.0008	.0006	.0023	4.745
.553	366.568	.00	2.82	.3001	.0428	.0507	.0008	.0007	.0022	7.013
.553	366.543	.00	4.07	.3902	.0444	.0219	.0006	.0008	.0021	8.798
.552	365.667	.00	5.26	.4748	.0473	-.0075	.0005	.0009	.0022	10.043
.553	366.606	.00	6.54	.5773	.0530	-.0372	.0004	.0009	.0017	10.894
.551	364.803	.00	7.82	.6802	.0607	-.0651	.0006	.0011	.0006	11.206
.552	365.593	.00	9.06	.7798	.0705	-.0968	.0006	.0011	.0003	11.060
.553	366.735	.00	10.26	.8737	.0818	-.1341	.0004	.0012	-.0011	10.684
.552	366.033	.00	.38	.1181	.0439	.1046	.0007	.0005	.0031	2.690

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CY _M	CSF
.553	366.375	.00	.37	.1151	.0431	.1054	.0006	.0005	.0029
.553	366.272	.00	-3.43	-.1883	.0469	.1859	.0009	.0003	.0034
.553	366.214	.00	-2.24	-.0935	.0480	.1615	.0008	.0003	.0032
.552	365.904	.00	-1.00	-.0059	.0469	.1348	.0004	.0004	.0028
.553	366.117	.00	.37	.1154	.0431	.1052	.0004	.0005	.0031
.553	366.686	.00	1.50	.2037	.0374	.0797	.0008	.0007	.0023
.553	366.568	.00	2.82	.3017	.0280	.0507	.0007	.0008	.0022
.553	366.543	.00	4.07	.3923	.0165	.0219	.0005	.0009	.0021
.552	365.667	.00	5.26	.4770	.0035	-.0075	.0004	.0009	.0022
.553	366.606	.00	6.54	.5794	-.0131	-.0372	.0003	.0009	.0017
.551	364.803	.00	7.82	.6820	-.0324	-.0651	.0004	.0012	.0006
.552	365.593	.00	9.06	.7809	-.0532	-.0968	.0005	.0012	.0003
.553	366.735	.00	10.26	.8739	-.0751	-.1341	.0002	.0012	-.0011
.552	366.033	.00	.38	.1184	.0431	.1046	.0007	.0005	.0031

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*** NASA CONFIDENTIAL *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***
 GROUP 4 - DECLASSIFIED AT 3-YR. INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL TEST 790 RUN 49 BALANCE 731 09/22/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CYM	CSF	L/D
.251	89.119	.00	.08	.0567	.0394	.0994	.0009	.0009	.0011	1.440
.250	88.653	.00	-4.21	-.2829	.0539	.1952	.0013	.0006	.0027	-5.245
.251	89.137	.00	-3.19	-.2032	.0493	.1718	.0014	.0006	.0029	-4.085
.251	88.935	.00	-2.15	-.1177	.0450	.1484	.0014	.0007	.0028	-2.617
.251	88.930	.00	-1.11	-.0358	.0419	.1255	.0014	.0007	.0023	-0.855
.251	88.923	.00	.08	.0559	.0392	.0996	.0011	.0009	.0020	1.425
.251	88.918	.00	.59	.1294	.0376	.0780	.0005	.0008	.0022	3.447
.251	89.107	.00	2.03	.2019	.0362	.0528	.0008	.0008	.0031	5.573
.251	89.202	.00	3.12	.2894	.0374	.0306	.0006	.0009	.0025	7.745
.251	88.809	.00	4.18	.3748	.0396	.0092	.0004	.0009	.0016	9.461
.250	88.612	.00	5.26	.4651	.0433	-.0116	.0007	.0011	.0013	10.745
.250	88.610	.00	6.36	.5514	.0479	-.0331	.0004	.0010	.0018	11.520
.251	88.503	.00	7.44	.6358	.0534	-.0534	.0002	.0011	.0011	11.913
.250	88.511	.00	8.54	.7233	.0600	-.0760	.0003	.0012	.0003	12.063
.250	88.707	.00	9.62	.8065	.0675	-.0975	.0006	.0013	.0002	11.943
.250	88.709	.00	10.14	.8901	.0766	-.1226	.0000	.0012	.0003	11.616
.250	88.614	.00	11.80	.5599	.0857	-.1516	-.0011	.0010	.0007	11.200
.250	88.721	.00	12.92	1.0254	.0974	-.1886	-.0025	.0006	.0026	10.528
.250	88.638	.00	13.55	1.0683	.1090	-.2243	-.0036	.0003	.0060	9.802
.250	88.558	.00	15.05	1.1083	.1222	-.2570	-.0035	.0002	.0072	9.067
.251	88.775	.00	16.05	1.1317	.1350	-.2775	-.0026	.0003	.0067	8.382
.250	88.704	.00	17.01	1.1493	.1494	-.3000	-.0012	.0004	.0060	7.692
.250	88.531	.00	.08	.5590	.0386	.0982	.0011	.0008	.0039	1.528

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CYN	CSF
.251	89.119	.00	.08	.0568	.0393	.0994	.0009	.0009	.0011
.250	88.653	.00	-4.21	-.2860	.0330	.1952	.0013	.0005	.0027
.251	89.137	.00	-3.19	-.2036	.0380	.1718	.0014	.0006	.0029
.251	88.935	.00	-2.15	-.1193	.0405	.1484	.0014	.0006	.0028
.251	88.930	.00	-1.11	-.0366	.0412	.1255	.0015	.0007	.0023
.251	88.923	.00	.08	.0559	.0391	.0996	.0011	.0009	.0020
.251	88.918	.00	.59	.1300	.0353	.0780	.0005	.0008	.0022
.251	89.107	.00	2.03	.2031	.0290	.0528	.0008	.0008	.0031
.251	89.202	.00	3.12	.2910	.0216	.0306	.0005	.0009	.0025
.251	88.809	.00	4.18	.3767	.0122	.0092	.0003	.0010	.0016
.250	88.612	.00	5.26	.4670	.0005	-.0116	.0006	.0011	.0013
.250	88.610	.00	6.36	.5532	-.0135	-.0331	.0003	.0011	.0018
.251	88.903	.00	7.44	.6372	-.0294	-.0534	.0001	.0011	.0011
.250	88.511	.00	8.54	.7240	-.0481	-.0760	.0002	.0012	.0003
.250	88.707	.00	9.62	.8061	-.0681	-.0975	.0003	.0013	.0002
.250	88.709	.00	10.74	.8885	-.0905	-.1226	-.0002	.0012	.0003
.250	88.614	.00	11.80	.9567	-.1123	-.1516	-.0013	.0007	.0007
.250	88.721	.00	12.92	1.0208	-.1342	-.1886	-.0026	.0001	.0026
.250	88.638	.00	13.95	1.0625	-.1517	-.2243	-.0035	-.0005	.0060
.250	88.558	.00	15.05	1.1013	-.1696	-.2570	-.0034	-.0007	.0072
.251	88.775	.00	16.05	1.1242	-.1829	-.2775	-.0026	-.0004	.0067
.250	88.704	.00	17.01	1.1419	-.1931	-.3000	-.0013	.0001	.0060
.250	88.531	.00	.08	.0591	.0385	.0982	.0011	.0008	.0039

CONFIDENTIAL *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***

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GROUP 4 - ECWN GRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL

TEST 790

RUN 52

BALANCE 731

09/22/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CYB	CSF	L/D
.553	365.916	.00	.23	-.0710	.0490	.0984	.0004	.0005	.0020	1.450
.551	364.279	.00	-3.40	-.2155	.0655	.1747	.0006	.0003	.0024	-3.289
.554	367.222	.00	-2.23	-.1230	.0582	.1511	.0007	.0004	.0021	-2.113
.553	366.050	.00	-1.03	-.0260	.0527	.1255	.0008	.0005	.0020	-4.493
.553	366.429	.00	.24	-.0763	.0489	.0968	.0006	.0005	.0021	1.560
.553	366.561	.00	1.49	.1747	.0470	.0700	.0008	.0007	.0017	3.716
.554	367.132	.00	2.77	.2709	.0471	.0420	.0007	.0009	.0004	5.756
.554	367.104	.00	4.06	.3622	.0481	.0130	.0006	.0011	-.0002	7.529
.553	366.056	.00	5.27	.4414	.0501	-.0169	.0006	.0011	-.0003	8.804
.553	366.219	.00	6.47	.5243	.0543	-.0487	.0005	.0011	-.0001	9.661
.554	367.251	.00	7.73	.6255	.0612	-.0799	.0006	.0011	-.0001	10.220
.552	365.282	.00	8.87	.7273	.0697	-.1129	.0004	.0011	-.0007	10.432
.553	366.077	.00	9.77	.8144	.0795	-.1534	-.0004	.0005	.0010	10.248
.553	366.345	.00	.25	.0766	.0491	.0976	.0007	.0005	.0022	1.559

BODY AXIS COEFFICIENTS

MACH	C	BETA	ALPHA	CNF	CAF	CPM	CRM	CYB	CSF
.553	365.916	.00	.23	.0712	.0487	.0984	.0004	.0005	.0020
.551	364.279	.00	-3.40	.2190	.0526	.1747	.0006	.0003	.0024
.554	367.222	.00	-2.23	.1252	.0534	.1511	.0007	.0004	.0021
.553	366.050	.00	-1.03	.0269	.0523	.1255	.0008	.0005	.0020
.553	366.429	.00	.24	.0765	.0486	.0968	.0006	.0005	.0021
.553	366.561	.00	1.49	.1759	.0425	.0700	.0008	.0007	.0017
.554	367.132	.00	2.77	.2728	.0339	.0420	.0006	.0009	.0004
.554	367.104	.00	4.06	.3646	.0223	.0130	.0005	.0011	-.0002
.553	366.056	.00	5.27	.4440	.0054	-.0169	.0005	.0012	-.0003
.553	366.219	.00	6.47	.5270	-.0051	-.0487	.0004	.0011	.0001
.554	367.251	.00	7.73	.6278	-.0234	-.0799	.0005	.0011	-.0001
.552	365.282	.00	8.87	.7291	-.0432	-.1129	.0003	.0012	-.0007
.553	366.077	.00	9.77	.8158	-.0559	-.1534	-.0005	.0004	.0010
.553	366.345	.00	.25	.0768	.0488	.0976	.0007	.0005	.0022

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CONFIDENTIAL * 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***

*** NASA ~~CONFIDENTIAL~~ *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***
 GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL TEST 790 RUN 51 BALANCE 731 09/22/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CN	CD	CPM	CRM	CYM	CSF	L/D
.251	88.836	.00	-4.4	.0207	.0441	.0911	.0015	.0008	.0010	.470
.251	88.859	.00	-4.10	-.3099	.0599	.1818	.0016	.0005	.0021	-5.173
.251	89.048	.00	-3.49	-.2281	.0545	.1592	.0013	.0006	.0018	-4.189
.251	89.043	.00	-2.66	-.1481	.0504	.1366	.0015	.0007	.0011	-2.939
.251	88.841	.00	-1.01	-.0634	.0465	.1129	.0015	.0008	.0008	-1.363
.251	88.836	.00	.05	-.0206	.0438	.0902	.0012	.0009	.0011	.471
.251	89.026	.00	1.48	.1002	.0420	.0680	.0012	.0008	.0012	2.388
.251	88.118	.00	2.13	.1798	.0406	.0440	.0008	.0009	.0005	4.424
.251	88.818	.00	3.22	.2552	.0395	.0167	.0007	.0009	.0003	6.455
.251	88.913	.00	4.26	.3350	.0413	-.0044	.0005	.0010	.0002	8.114
.251	89.009	.00	5.36	.4246	.0446	-.0261	.0004	.0011	.0007	9.527
.251	88.910	.00	6.44	.5088	.0487	-.0485	.0005	.0012	.0008	10.454
.251	88.812	.00	7.54	.5965	.0541	-.0689	.0004	.0012	.0010	11.024
.250	88.422	.00	8.62	.6817	.0605	-.0911	.0003	.0011	-.0011	11.266
.250	88.520	.00	9.70	.7606	.0674	-.1138	.0001	.0011	.0019	11.278
.251	88.914	.00	10.83	.8494	.0772	-.1431	.0002	.0009	-.0008	11.001
.251	89.018	.00	11.90	.9234	.0878	-.1737	.0010	.0007	-.0001	10.520
.251	89.324	.00	13.02	.5804	.0997	-.2047	-.0023	.0006	.0008	9.832
.250	88.658	.00	14.05	1.0281	-.1137	-.2304	-.0030	.0006	.0005	9.045
.251	88.782	.00	15.18	1.0685	1.3035	-.2551	-.0027	.0008	.0001	8.188
.251	89.009	.00	16.16	1.0992	1.4882	-.2773	-.0018	.0009	-.0004	7.410
.251	88.551	.00	17.12	1.1114	1.675	-.3026	-.0003	.0007	-.0003	6.633
.250	88.347	.00	.04	.0136	.0437	.0908	.0010	.0008	.0014	.312

BODY AXIS COEFFICIENTS

MACH	C	BETA	ALPHA	CNF	CAF	CPM	CRM	CYM	CSF
.251	88.836	.00	.04	.0207	.0441	.0911	.0015	.0008	.0010
.251	88.859	.00	-4.10	-.3133	.0376	.1818	.0016	.0004	.0021
.251	89.048	.00	-3.09	-.2307	.0421	.1592	.0013	.0006	.0018
.251	89.043	.00	-2.06	-.1497	.0450	.1366	.0015	.0007	.0011
.251	88.841	.00	-1.01	-.0642	.0454	.1129	.0015	.0008	.0008
.251	88.836	.00	.05	.0207	.0438	.0902	.0012	.0009	.0011
.251	89.026	.00	1.08	.1010	.0461	.0680	.0012	.0008	.0012
.251	89.118	.00	2.13	.1811	.0339	.0449	.0008	.0009	.0005
.251	88.818	.00	3.22	.2570	.0251	.0167	.0007	.0009	.0003
.251	88.913	.00	4.26	.3370	.0163	-.0044	.0004	.0011	.0002
.251	85.009	.00	5.36	.4268	.0047	-.0261	.0003	.0011	-.0007
.251	88.910	.00	6.44	.5110	-.0087	-.0485	.0004	.0012	-.0008
.251	88.812	.00	7.54	.5983	-.0246	-.0689	.0002	.0012	-.0010
.250	88.422	.00	8.62	.6829	-.0424	-.0911	.0002	.0012	-.0011
.250	88.520	.00	9.70	.7608	-.0617	-.1138	-.0001	.0011	-.0019
.251	88.914	.00	10.83	.8484	-.0837	-.1431	-.0001	.0009	-.0008
.251	89.018	.00	11.90	.9212	-.1044	-.1737	-.0011	.0005	-.0001
.251	89.324	.00	13.02	.9772	-.1236	-.2047	-.0024	.0001	.0008
.250	88.658	.00	14.05	1.0244	-.1391	-.2304	-.0031	-.0001	.0005
.251	88.782	.00	15.18	1.0647	-.1536	-.2551	-.0028	-.0001	.0001
.251	89.009	.00	16.16	1.0962	-.1634	-.2773	-.0019	.0003	-.0004
.251	88.551	.00	17.12	1.1106	-.1668	-.3026	-.0005	.0006	-.0003
.250	88.347	.00	.04	.0137	.0437	.0908	.0010	.0008	.0014

~~CONFIDENTIAL~~ *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***

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*** NASA ~~CONFIDENTIAL~~ *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***
 GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL

TEST 790

RUN 54

BALANCE 731

09/22/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CYM	CSF	L/D
.552	365.303	.00	.07	-.0172	.0282	.0887	.0006	.0006	.0022	-.608
.554	366.851	.00	-3.66	-.3292	.0418	.1584	.0019	.0005	.0034	-7.885
.553	366.297	.00	-2.46	-.2329	.0351	.1358	.0013	.0006	.0018	-6.627
.552	365.065	.00	-1.21	-.1254	.0306	.1119	.0009	.0005	.0018	-4.103
.552	365.130	.00	.08	-.0160	.0281	.0882	.0006	.0006	.0022	-.567
.553	366.322	.00	1.36	-.1009	.0278	.0638	.0008	.0007	.0017	3.632
.553	366.487	.00	2.72	-.2220	.0294	.0390	.0005	.0008	.0008	7.543
.553	365.799	.00	4.11	-.3447	.0332	.0140	.0005	.0009	.0007	10.379
.553	366.573	.00	5.41	-.4594	.0389	-.0092	.0004	.0010	.0000	11.809
.552	365.291	.00	6.71	-.5717	.0461	-.0340	.0006	.0011	-.0004	12.411
.553	366.075	.00	8.05	-.6842	.0554	-.0608	.0007	.0012	-.0011	12.346
.553	366.445	.00	9.30	-.7840	.0662	-.0904	.0009	.0012	-.0013	11.843
.553	365.880	.00	10.49	-.8758	.0782	-.1272	.0004	.0012	-.0021	11.200
.553	366.163	.00	.08	-.0142	.0283	.0884	.0006	.0006	.0017	-.501

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CYM	CSF
.552	365.303	.00	.07	-.0171	.0282	.0887	.0006	.0006	.0022
.554	366.851	.00	-3.66	-.3312	.0206	.1584	.0019	.0004	.0034
.553	366.297	.00	-2.46	-.2342	.0251	.1358	.0013	.0005	.0018
.552	365.065	.00	-1.21	-.1260	.0279	.1119	.0009	.0005	.0018
.552	365.130	.00	.08	-.0159	.0282	.0882	.0006	.0006	.0022
.553	366.322	.00	1.36	-.1015	.0254	.0638	.0008	.0007	.0017
.553	366.487	.00	2.72	-.2231	.0189	.0390	.0005	.0009	.0008
.553	365.799	.00	4.11	-.3461	.0284	.0140	.0005	.0010	.0007
.553	366.573	.00	5.41	-.4609	-.0046	-.0092	.0003	.0010	.0000
.552	365.291	.00	6.71	-.5730	-.0211	-.0340	.0004	.0012	-.0004
.553	366.075	.00	8.05	-.6850	-.0409	-.0608	.0005	.0013	-.0011
.553	366.445	.00	9.30	-.7841	-.0613	-.0904	.0007	.0013	-.0013
.553	365.880	.00	10.49	-.8750	-.0825	-.1272	.0002	.0013	-.0021
.553	366.163	.00	.08	-.0141	.0283	.0884	.0006	.0006	.0017

~~CONFIDENTIAL~~

CONFIDENTIAL *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***

*** NASA ~~CONFIDENTIAL~~ *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY **
 GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL TEST 790 RUN 53 BALANCE 731 09/22/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CYM	CSF	L/D
.250	88.407	.00	-C4	.0104	.0272	.0889	.0009	.0007	.0004	.383
.250	88.514	.00	-4.11	-.3398	.0380	.1726	.0013	.0005	.0029	-8.949
.250	88.512	.00	-3.11	-.2555	.0340	.1516	.0016	.0006	.0018	-7.505
.250	88.509	.00	-2.06	-.1653	.0308	.1291	.0020	.0008	.0003	-5.379
.250	88.507	.00	-1.02	-.0784	.0285	.1085	.0013	.0008	.0003	-2.757
.251	88.700	.00	-C4	.0114	.0271	.0885	.0012	.0008	.0008	.421
.250	88.405	.00	1.10	.1032	.0269	.0676	.0014	.0009	.0003	3.839
.250	88.404	.00	2.16	.1878	.0279	.0479	.0012	.0010	-.0003	6.720
.250	88.598	.00	3.25	.2787	.0299	.0278	.0010	.0011	-.0004	9.318
.250	88.500	.00	4.31	.3705	.0328	.0076	.0011	.0012	-.0014	11.289
.250	88.597	.00	5.39	.4555	.0369	-.0120	.0011	.0012	-.0015	12.332
.250	88.402	.00	6.49	.5448	.0420	-.0330	.0011	.0013	-.0019	12.966
.250	88.304	.00	7.59	.6324	.0481	-.0529	.0010	.0012	-.0020	13.142
.250	88.304	.00	8.68	.7204	.0551	-.0736	.0007	.0012	-.0021	13.082
.251	88.891	.00	9.77	.8063	.0631	-.0949	.0007	.0013	-.0030	12.772
.250	88.601	.00	10.88	.8850	.0721	-.1159	.0003	.0013	-.0031	12.270
.250	88.214	.00	11.94	.9612	.0820	-.1425	-.0001	.0012	-.0026	11.721
.250	88.419	.00	13.07	1.0229	.0937	-.1761	-.0026	.0007	.0015	10.914
.250	88.530	.00	14.12	1.0743	.1058	-.2066	-.0039	.0003	.0040	10.157
.250	88.559	.00	15.21	1.1098	.1184	-.2358	-.0039	.0001	.0041	9.372
.250	88.375	.00	16.20	1.1353	.1322	-.2572	-.0032	.0003	.0025	8.589
.250	88.499	.00	17.17	1.1520	.1462	-.2761	-.0024	.0004	.0020	7.877
.250	88.309	.00	17.17	1.0220	.0270	.0881	-.0008	.0008	.0008	.085

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CYM	CSF
.250	88.407	.00	-.04	.0104	.0272	.0889	.0009	.0007	.0006
.250	88.514	.00	-4.11	-.3416	.0135	.1726	.0013	.0004	.0029
.250	88.512	.00	-3.11	-.2569	.0201	.1516	.0016	.0005	.0018
.250	88.509	.00	-2.06	-.1663	.0248	.1291	.0020	.0007	.0003
.250	88.507	.00	-1.02	-.0789	.0270	.1085	.0013	.0007	.0003
.251	88.700	.00	-.04	.0114	.0271	.0885	.0012	.0008	.0008
.250	88.405	.00	1.10	.1037	.0249	.0676	.0014	.0009	.0003
.250	88.404	.00	2.16	.1887	.0209	.0479	.0011	.0010	-.0003
.250	88.598	.00	3.25	.2799	.0141	.0278	.0009	.0011	.0004
.250	88.500	.00	4.31	.3719	.0049	.0076	.0010	.0013	.0014
.250	88.597	.00	5.39	.4569	-.0060	-.0120	.0010	.0013	-.0015
.250	88.402	.00	6.49	.5460	-.0198	-.0330	.0010	.0014	-.0019
.250	88.304	.00	7.59	.6330	-.0358	-.0529	.0008	.0013	.0020
.250	88.304	.00	8.68	.7203	-.0543	-.0736	.0005	.0013	-.0021
.251	88.891	.00	9.77	.8051	-.0745	-.0949	.0004	.0014	-.0030
.250	88.601	.00	10.88	.8823	-.0961	-.1159	.0001	.0013	-.0031
.250	88.214	.00	11.94	.9570	-.1186	-.1425	-.0003	.0011	.0026
.250	88.419	.00	13.07	1.0171	-.1400	-.1761	-.0027	.0001	.0015
.250	88.530	.00	14.12	1.0671	-.1594	-.2066	-.0038	-.0006	.0040
.250	88.059	.00	15.21	1.1013	-.1767	-.2358	-.0038	-.0009	.0041
.250	88.375	.00	16.20	1.1264	-.1897	-.2572	-.0031	-.0006	.0025
.250	88.499	.00	17.17	1.1430	-.2001	-.2761	-.0024	-.0003	.0020
.250	88.309	.00	.02	.0023	.0270	.0881	-.0008	.0008	.0008

~~CONFIDENTIAL~~ *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***

~~UNCLASSIFIED~~

*** NASA CONFIDENTIAL *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***
GROUP 4 - CGWNG FADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL

TEST 790

RUN 56

BALANCE 731

09/22/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CFM	CRM	CYR	CSF	L/D
.552	365.174	.00	.26	.0432	.0239	.0970	.0029	.0012	.0009	1.802
.551	364.281	.00	-3.47	-.2883	.0326	.1673	.0023	.0012	.0012	-8.855
.553	366.234	.00	-2.25	-.1804	.0278	.1444	.0029	.0012	.0004	-6.490
.552	365.702	.00	-1.00	-.0702	.0249	.1202	.0026	.0012	.0005	-2.815
.552	365.606	.00	.26	.0417	.0240	.0972	.0030	.0012	.0007	1.735
.553	366.028	.00	1.64	.0684	.0250	.0705	.0032	.0012	.0009	6.733
.553	366.713	.00	3.01	.2920	.0281	.0453	.0030	.0013	.0006	10.395
.551	364.652	.00	4.34	.4099	.0328	.0205	.0032	.0013	.0010	12.479
.552	365.341	.00	5.66	.5254	.0395	-.0033	.0032	.0014	.0008	13.313
.552	365.519	.00	6.56	.6379	.0476	-.0295	.0034	.0013	.0014	13.397
.552	365.364	.00	8.23	.7409	.0574	-.0557	.0034	.0013	.0014	12.913
.552	365.645	.00	9.47	.8405	.0687	-.0864	.0034	.0013	.0017	12.233
.552	365.428	.00	10.67	.9296	.0813	-.1219	.0032	.0013	.0013	11.438
.552	365.517	.00	.27	.0455	.0241	.0964	.0027	.0012	.0006	1.886

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CYR	CSF
.552	365.174	.00	.26	.0433	-.0237	.0970	.0029	.0012	.0009
.551	364.281	.00	-3.47	-.2897	.0150	.1673	.0023	.0010	.0012
.553	366.234	.00	-2.25	-.1814	.0207	.1444	.0029	.0011	.0004
.552	365.702	.00	-1.00	-.0706	.0237	.1202	.0026	.0011	.0005
.552	365.606	.00	.26	.0418	.0238	.0972	.0030	.0012	.0007
.553	366.028	.00	1.64	.0691	.0202	-.0705	.0031	.0013	.0009
.553	366.713	.00	3.01	.2930	.0127	.0453	.0029	.0015	.0006
.551	364.652	.00	4.34	.4111	.0018	.0205	.0031	.0015	.0010
.552	365.341	.00	5.66	.5266	-.0125	-.0033	.0030	.0017	.0008
.552	365.519	.00	6.96	.6388	-.0300	-.0295	.0032	.0017	.0014
.552	365.364	.00	8.23	.7413	-.0452	-.0557	.0032	.0018	.0014
.552	365.645	.00	9.47	.8401	-.075	-.0864	.0031	.0018	.0017
.552	365.428	.00	10.67	.9281	-.0922	-.1219	.0029	.0018	.0013
.552	365.517	.00	.27	.0457	.0239	.0964	.0027	.0012	.0006

~~CONFIDENTIAL *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***~~

*** NASA CONFIDENTIAL *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***
 GROUP 4 - CCWN GRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL TEST 790 RUN 55 BALANCE 731 09/22/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CYM	CSF	L/D
.250	88.595	.00	.08	.0500	.0238	.0976	.0031	.0014	-.0001	2.100
.250	88.210	.00	-4.07	.03027	.0318	.1812	.0033	.0013	.0000	-9.533
.251	88.697	.00	-3.03	.02137	.0283	.1590	.0033	.0013	-.0004	-7.549
.250	88.305	.00	-1.59	.01242	.0259	.1372	.0032	.0014	.0002	-4.804
.250	88.303	.00	-.94	.00380	.0242	.1168	.0030	.0013	-.0000	-1.568
.251	88.692	.00	.08	.0489	.0236	.0970	.0028	.0014	-.0004	2.070
.250	88.300	.00	1.16	.01419	.0240	.0745	.0029	.0014	-.0009	5.903
.250	88.494	.00	2.24	.02326	.0255	.0552	.0029	.0015	-.0002	9.106
.250	88.395	.00	3.32	.03239	.0280	.0338	.0029	.0014	.0004	11.551
.251	88.786	.00	4.39	.04091	.0316	.0138	.0028	.0014	.0003	12.938
.251	88.786	.00	5.46	.04977	.0363	-.0063	.0027	.0014	.0013	13.721
.250	88.004	.00	6.57	.05911	.0421	-.0283	.0029	.0015	.0010	14.034
.251	88.688	.00	7.67	.06760	.0484	-.0480	.0029	.0014	.0013	13.961
.251	88.786	.00	8.76	.07637	.0561	-.0689	.0028	.0014	.0013	13.612
.251	88.788	.00	9.87	.08492	.0648	-.0906	.0028	.0014	.0010	13.105
.251	88.180	.00	10.58	.09407	.0751	-.1146	.0027	.0014	.0013	12.533
.250	88.403	.00	12.05	.10040	.0842	-.1396	.0018	.0012	.0026	11.930
.251	88.705	.00	13.15	.10653	.0958	-.1771	-.0005	.0009	.0072	11.122
.251	88.719	.00	14.19	.11057	.1072	-.2070	-.0015	.0006	.0085	10.311
.251	88.738	.00	15.28	.11448	.1206	-.2409	-.0015	.0004	.0086	9.493
.251	88.955	.00	16.27	.11696	.1336	-.2645	-.0007	.0005	.0099	8.751
.251	88.784	.00	17.23	.11883	.1471	-.2870	-.0006	.0008	.0086	8.081
.251	88.887	.00	17.7	.0437	.0233	.0967	.0029	.0014	-.0004	1.877

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CYM	CSF
.250	88.595	.00	.08	.0500	.0237	.0976	.0031	.0014	-.0001
.250	88.210	.00	-4.07	.03042	.0102	.1812	.0034	.0011	.0000
.251	88.697	.00	-3.03	.02149	.0170	.1590	.0033	.0011	.0004
.250	88.305	.00	-1.99	.01250	.0215	.1372	.0033	.0013	.0002
.250	88.303	.00	-.94	.00384	.0236	.1168	.0030	.0013	-.0000
.251	88.692	.00	.08	.0489	.0235	.0970	.0028	.0014	-.0004
.250	88.300	.00	1.16	.01423	.0212	.0745	.0029	.0014	-.0009
.250	88.494	.00	2.24	.02334	.0164	.0552	.0028	.0016	-.0002
.250	88.395	.00	3.32	.03249	.0052	.0338	.0028	.0015	.0004
.251	88.786	.00	4.39	.04102	.0003	.0138	.0027	.0016	.0003
.251	88.786	.00	5.46	.04988	-.0113	-.0063	.0025	.0016	.0013
.250	88.004	.00	6.57	.05919	-.0257	-.0283	.0027	.0018	.0010
.251	88.688	.00	7.67	.06762	-.0423	-.0480	.0027	.0017	.0013
.251	88.786	.00	8.76	.07631	-.0618	-.0689	.0025	.0018	.0013
.251	88.788	.00	9.87	.08475	-.0816	-.0906	.0025	.0019	.0010
.251	88.180	.00	10.58	.09375	-.1055	-.1146	.0024	.0019	.0013
.250	88.403	.00	12.05	.09990	-.1271	-.1396	.0015	.0015	.0026
.251	88.705	.00	13.15	.10586	-.1489	-.1771	-.0007	.0007	.0072
.251	88.719	.00	14.19	.10976	-.1669	-.2070	-.0016	.0002	.0085
.251	88.738	.00	15.28	.11355	-.1851	-.2409	-.0016	.0000	.0086
.251	88.955	.00	16.27	.11594	-.1951	-.2645	-.0008	.0002	.0099
.251	88.784	.00	17.23	.11777	-.2112	-.2870	-.0003	.0009	.0086
.251	88.887	.00	.07	.0437	.0232	.0967	.0029	.0014	-.0004

*** NASA CONFIDENTIAL *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***

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*** NASA ~~CONFIDENTIAL~~ *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***
 GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL

TEST 790

RUN 58

BALANCE 731

09/22/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CYM	CSF	L/D
.553	365.951	.00	.31	.C551	.0233	.0965	.0018	.0009	.0008	2.369
.552	365.050	.00	-3.46	-.2822	.0311	.1671	.0019	.0008	.0014	-9.084
.553	366.232	.00	-2.25	-.1746	.0265	.1440	.0020	.0009	.0007	-6.583
.553	366.132	.00	-.59	-.C599	.0239	.1205	.0018	.0008	.0010	-2.509
.553	365.951	.00	.30	.C537	.0233	.0968	.0020	.0009	.0011	2.308
.553	366.633	.00	1.63	.1753	.0243	.0715	.0020	.0010	.0011	7.203
.552	365.343	.00	3.01	.2999	.0274	.0450	.0020	.0011	.0005	10.959
.553	366.716	.00	4.36	.4204	.0325	.0199	.0018	.0011	.0005	12.939
.552	365.519	.00	5.64	.5316	.0389	-.0034	.0019	.0012	.0003	13.654
.552	365.267	.00	6.95	.6444	.0472	-.0290	.0022	.0012	.0005	13.649
.553	366.569	.00	8.27	.7538	.0576	-.0565	.0021	.0012	.0002	13.081
.552	365.568	.00	9.50	.8487	.0689	-.C871	.0023	.0013	.0002	12.316
.552	365.179	.00	10.67	.9378	.0813	-.1229	.0021	.0012	.0004	11.535
.553	365.953	.00	.29	.C546	.0233	.0967	.0018	.0010	.0008	2.346

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CYM	CSF
.553	365.951	.00	.31	.0552	.0220	.0965	.0018	.0010	.0008
.552	365.050	.00	-3.46	-.2835	.0140	.1671	.0019	.0007	.0014
.553	366.232	.00	-2.25	-.1755	.0157	.1440	.0020	.0008	.0007
.553	366.132	.00	-.59	-.0603	.0228	.1205	.0018	.0008	.0010
.553	365.951	.00	.30	.0538	.0230	.0968	.0020	.0009	.0011
.553	366.633	.00	1.63	.1759	.0193	.0715	.0019	.0010	.0011
.552	365.343	.00	3.01	.3009	.0116	.0450	.0019	.0012	.0005
.553	366.716	.00	4.36	.4216	.0004	.0199	.0017	.0012	.0005
.552	365.519	.00	5.64	.5328	-.0135	-.0034	.0018	.0014	.0003
.552	365.267	.00	6.95	.6452	-.0311	-.0290	.0020	.0014	.0005
.553	366.569	.00	8.27	.7540	-.0514	-.0565	.0019	.0015	.0002
.552	365.568	.00	9.50	.8481	-.0721	-.0871	.0020	.0016	.0002
.552	365.179	.00	10.67	.9362	-.0937	-.1229	.0018	.0015	.0004
.553	365.953	.00	.29	.0548	.0230	.0967	.0018	.0010	.0008

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CONFIDENTIAL *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***

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 *** NASA [REDACTED] *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***
 GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH-SPEED TUNNEL				TEST 790		RUN 57		BALANCE 731		09/22/67	
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STABILITY AXIS COEFFICIENTS

MACH	G	BETA	ALPHA	CL	CD	CPM	CRM	CYM	CSF	L/D
.250	88.593	.00	.09	.0570	.0229	.0976	.0021	.0011	.0004	2.488
.250	88.599	.00	-4.06	-.2946	.0307	.1809	.0018	.0009	.0003	-9.602
.250	88.207	.00	-3.05	-.2094	.0162	.1607	.0022	.0009	.0008	-7.636
.251	88.694	.00	-2.02	-.1220	.0208	.1391	.0021	.0009	.0007	-4.842
.251	88.692	.00	-.97	-.0315	.0235	.1181	.0024	.0010	.0007	-1.341
.251	88.788	.00	.09	.0559	.0229	.0980	.0020	.0010	.0003	2.437
.251	88.85	.00	1.13	.1440	.0237	.0776	.0021	.0011	.0000	6.086
.251	88.786	.00	2.20	.2366	.0251	.0566	.0019	.0011	.0005	9.416
.251	88.589	.00	3.29	.3288	.0275	.0358	.0021	.0012	.0001	11.943
.251	88.785	.00	4.35	.4134	.0312	.0157	.0017	.0013	.0002	13.266
.251	88.666	.00	5.44	.5014	.0356	-.0045	.0019	.0012	.0009	14.096
.250	88.588	.00	6.54	.5954	.0413	-.0260	.0019	.0013	.0002	14.415
.250	88.588	.00	7.63	.6812	.0478	-.0474	.0019	.0013	.0001	14.250
.251	88.784	.00	8.74	.7715	.0558	-.0677	.0020	.0013	.0002	13.835
.251	88.688	.00	9.81	.8544	.0644	-.0883	.0019	.0013	.0002	13.260
.251	88.787	.00	10.83	.9376	.0735	-.1108	.0017	.0013	.0009	12.761
.251	88.693	.00	12.01	1.0127	.0839	-.1380	.0008	.0011	.0009	12.069
.251	88.802	.00	13.11	1.0700	.0957	-.1748	.0017	.0007	.0048	11.176
.251	88.815	.00	14.14	1.1103	.1069	-.2035	.0025	.0004	.0065	10.390
.251	89.029	.00	15.26	1.1497	.1203	-.2395	.0025	.0001	.0069	9.557
.251	89.050	.00	16.25	1.1768	.1333	-.2659	.0017	.0002	.0064	8.831
.251	88.879	.00	17.22	1.1973	.1473	-.2889	.0009	.0005	.0051	8.130
.251	89.081	.00	18.10	.0527	.0228	.0973	.0020	.0011	.0000	2.314

BODY AXIS COEFFICIENTS

MACH	G	BETA	ALPHA	CNF	CAF	CPM	CRM	CYM	CSF
.250	88.593	.00	.09	.0570	.0228	.0976	.0021	.0011	.0004
.250	88.599	.00	-4.06	-.2959	.0097	.1809	.0019	.0008	.0003
.250	88.207	.00	-3.05	-.2094	.0162	.1607	.0022	.0008	.0008
.251	88.694	.00	-2.02	-.1220	.0208	.1391	.0022	.0008	.0007
.251	88.692	.00	-.97	-.0319	.0230	.1181	.0024	.0009	.0007
.251	88.788	.00	.09	.0559	.0228	.0980	.0020	.0010	.0003
.251	88.885	.00	1.13	.1444	.0208	.0776	.0021	.0011	.0000
.251	88.786	.00	2.20	.2374	.0160	.0566	.0019	.0012	.0005
.250	88.589	.00	3.29	.3298	.0086	.0358	.0020	.0013	.0001
.251	88.785	.00	4.35	.4145	-.0003	.0157	.0016	.0014	.0002
.251	88.686	.00	5.44	.5024	-.0121	-.0045	.0018	.0014	.0009
.250	88.588	.00	6.54	.5961	-.0268	-.0260	.0018	.0015	.0002
.250	88.588	.00	7.63	.6814	-.0431	-.0474	.0018	.0015	-.0001
.251	88.784	.00	8.74	.7708	-.0621	-.0677	.0018	.0016	-.0001
.251	88.688	.00	9.81	.8526	-.0821	-.0883	.0017	.0016	-.0002
.251	88.787	.00	10.93	.9341	-.1055	-.1108	.0014	.0016	-.0009
.251	88.693	.00	12.01	1.0075	-.1285	-.1380	.0006	.0012	-.0009
.251	88.802	.00	13.11	1.0633	-.1494	-.1748	-.0018	.0003	.0048
.251	88.815	.00	14.14	1.1022	-.1675	-.2035	-.0026	-.0002	.0065
.251	89.029	.00	15.26	1.1401	-.1864	-.2395	-.0025	.0005	.0069
.251	89.050	.00	16.25	1.1663	-.2012	-.2659	-.0017	-.0002	.0064
.251	88.879	.00	17.22	1.1863	-.2136	-.2889	-.0010	.0003	.0051
.251	89.081	.00	18.10	.0527	.0227	.0973	.0020	.0011	.0000

~~CONFIDENTIAL~~
 *** NASA [REDACTED] *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***

~~CLASSIFIED~~

*** NASA ~~CONFIDENTIAL~~ *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***
 GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS.

HIGH SPEED TUNNEL TEST 790 RUN 60 BALANCE 731 09/22/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CYM	CSF	L/D
.553	365.749	.00	.27	.0511	.0226	.0975	.0005	.0006	.0007	2.260
.552	365.353	.00	-3.39	-.2768	.0295	.1654	.0008	.0005	.0014	-9.367
.553	366.454	.00	-2.18	-.1675	.0254	.1426	.0010	.0005	.0011	-6.598
.553	365.927	.00	-.92	-.0546	.0231	.1191	.0006	.0005	.0013	2.366
.552	365.320	.00	.25	.0502	.0227	.0977	.0004	.0007	.0006	2.215
.552	364.627	.00	1.71	.1831	.0239	.0695	.0005	.0007	.0003	7.652
.553	366.172	.00	3.09	.3082	.0275	.0438	.0004	.0009	-.0006	11.224
.553	366.346	.00	4.42	.4242	.0327	.0196	.0004	.0010	-.0008	12.992
.552	365.230	.00	5.71	.5382	.0392	-.0052	.0004	.0010	-.0011	13.718
.552	364.896	.00	7.02	.6505	.0478	-.0299	.0007	.0011	-.0015	13.600
.553	365.685	.00	8.33	.7583	.0581	-.0581	.0009	.0012	-.0019	13.043
.553	365.544	.00	9.55	.8538	.0697	-.0883	.0007	.0013	-.0024	12.250
.553	366.183	.00	10.76	.9465	.0828	-.1255	.0006	.0012	-.0028	11.435
.552	365.315	.00	.25	.0512	.0227	.0976	.0005	.0007	.0006	2.252

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CYM	CSF
.553	365.749	.00	.27	.0512	.0224	.0975	.0005	.0006	.0007
.552	365.353	.00	-3.39	-.2780	.0131	.1654	.0009	.0004	.0014
.553	366.454	.00	-2.18	-.1683	.0190	.1426	.0010	.0005	.0011
.553	365.927	.00	-.92	-.0549	.0222	.1191	.0006	.0005	.0013
.552	365.320	.00	.25	.0503	.0224	.0977	.0004	.0007	.0006
.552	364.627	.00	1.71	.1837	.0185	.0695	.0005	.0007	.0003
.553	366.172	.00	3.09	.3091	.01C8	.0438	.0003	.0009	-.0006
.553	366.346	.00	4.42	.4254	-.0001	.0196	.0003	.0010	-.0008
.552	365.230	.00	5.71	.5393	-.0145	-.0052	.0003	.0011	-.0011
.552	364.896	.00	7.02	.6513	-.0320	-.0299	.0006	.0012	-.0015
.553	365.685	.00	8.33	.7585	-.0523	-.0581	.0007	.0013	-.0019
.553	365.544	.00	9.55	.8532	-.0729	-.0883	.0005	.0014	-.0024
.553	366.183	.00	10.76	.9449	-.0953	-.1255	.0004	.0013	-.0028
.552	365.315	.00	.25	.0513	.0225	.0976	.0005	.0007	.0006

~~UNCLASSIFIED~~

~~CONFIDENTIAL~~ *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***

*** NASA ~~CONFIDENTIAL~~ *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***
 GROUP 4 - UPGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL TEST 790 RUN 59 BALANCE 731 09/22/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CYM	CSF	L/D
.251	89.276	.00	.07	.6545	.0229	.0983	.0007	.0008	.0000	2.374
.252	89.380	.00	-4.06	-.2962	.0304	.1809	.0013	.0005	.0014	-9.733
.252	89.475	.00	-3.01	-.2075	.0269	.1600	.0010	.0006	.0011	-7.727
.252	89.571	.00	-1.58	-.1183	.0244	.1382	.0010	.0007	.0007	-4.848
.251	89.277	.00	-.93	-.0275	.0232	.1170	.0009	.0008	-.0002	-1.186
.252	89.313	.00	.06	.0534	.0226	.0978	.0008	.0008	-.0004	2.362
.252	89.372	.00	1.18	.1490	.0232	.0757	.0008	.0009	-.0004	6.423
.252	89.469	.00	2.25	.2379	.0249	.0559	.0006	.0010	-.0001	9.540
.252	89.468	.00	3.33	.3318	.0276	.0350	.0006	.0011	-.0007	12.040
.252	89.370	.00	4.41	.4143	.0310	.0153	.0008	.0012	-.0013	13.355
.252	89.467	.00	5.49	.5077	.0358	.0064	.0007	.0011	-.0008	14.170
.252	89.369	.00	6.60	.5960	.0415	.0271	.0006	.0012	.0017	14.367
.252	89.370	.00	7.69	.6849	.0483	.0473	.0007	.0012	-.0015	14.172
.252	89.370	.00	8.78	.7719	.0561	-.0685	.0007	.0013	-.0022	13.767
.252	89.372	.00	9.86	.8502	.0642	-.0891	.0007	.0013	-.0023	13.234
.251	89.380	.00	11.02	.9426	.0745	-.1136	.0005	.0013	.0028	12.644
.252	89.377	.00	12.07	1.0139	.0845	-.1400	-.0004	.0011	-.0017	12.000
.251	89.193	.00	13.17	1.0685	.0960	-.1771	-.0029	.0006	.0024	11.125
.251	89.108	.00	14.20	1.1182	.1079	-.2077	-.0038	.0004	.0040	10.363
.251	89.127	.00	15.31	1.1513	.1209	-.2419	-.0039	.0001	.0032	9.520
.251	89.050	.00	16.22	1.1790	.1338	-.2702	-.0031	.0003	.0024	8.810
.251	89.270	.00	17.28	1.1985	.1475	-.2935	-.0026	.0005	.0019	8.123
.251	88.884	.00	.06	.0486	.0224	.0980	.0010	.0008	-.0000	2.174

BODY AXIS COEFFICIENTS

MACH	C	BETA	ALPHA	CNF	CAF	CPM	CRM	CYM	CSF
.251	89.276	.00	.07	.0545	.0229	.0983	.0007	.0008	.0000
.252	89.380	.00	-4.06	-.2976	.0094	.1809	.0013	.0004	.0014
.252	89.475	.00	-3.01	-.2086	.0159	.1600	.0011	.0006	.0011
.252	89.571	.00	-1.58	-.1190	.0203	.1382	.0010	.0006	.0007
.251	89.277	.00	-.93	-.0279	.0227	.1170	.0009	.0008	-.0002
.252	89.373	.00	.06	.0534	.0225	.0978	.0008	.0008	.0004
.252	89.372	.00	1.18	.1494	.0201	.0757	.0008	.0009	-.0004
.252	89.469	.00	2.25	.2386	.0156	.0559	.0006	.0010	-.0001
.252	89.468	.00	3.33	.3328	.0082	.0350	.0006	.0011	-.0007
.252	89.370	.00	4.41	.4154	-.0009	.0153	.0007	.0012	-.0013
.252	89.467	.00	5.49	.5087	-.0129	-.0064	.0006	.0012	-.0008
.252	89.369	.00	6.60	.5967	-.0272	-.0271	.0005	.0013	-.0017
.252	89.370	.00	7.69	.6850	-.0437	-.0473	.0005	.0013	-.0015
.252	89.370	.00	8.78	.7712	-.0624	-.0685	.0005	.0014	-.0022
.252	89.372	.00	9.86	.8484	-.0822	-.0891	.0005	.0014	-.0023
.251	89.380	.00	11.02	.9391	-.1069	-.1136	.0003	.0014	-.0028
.252	89.377	.00	12.07	1.0087	-.1292	-.1400	-.0007	.0010	-.0017
.251	89.193	.00	13.17	1.0617	-.1457	-.1771	-.0030	-.0000	.0024
.251	89.108	.00	14.20	1.1098	-.1696	-.2077	-.0038	-.0006	.0040
.251	89.127	.00	15.31	1.1417	-.1871	-.2419	-.0038	-.0009	.0032
.251	89.050	.00	16.32	1.1683	-.2026	-.2702	-.0030	-.0006	.0024
.251	89.270	.00	17.28	1.1873	-.2148	-.2935	-.0026	-.0003	.0019
.251	88.884	.00	.06	.0487	.0223	.0980	.0010	.0008	-.0000

~~UNCLASSIFIED~~

*** NASA ~~CONFIDENTIAL~~ *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***
 GROUP 4 - ENHANCED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL TEST 790 RUN 62 BALANCE 731 09/22/67

STABILITY AXIS COEFFICIENTS

MACH	C	BETA	ALPHA	CL	CD	CFM	CRM	CYM	CSF	L/D
.552	365.094	.00	.18	.C138	.0274	.0970	.0027	-.0070	.0183	.504
.552	365.175	.00	-3.54	-.3032	.0391	.1694	.0040	-.0071	.0193	-7.756
.554	366.772	.00	-2.36	-.2065	.0333	.1450	.0033	-.0070	.0182	-6.199
.553	366.059	.00	-1.09	-.0981	.0292	.1208	.0031	-.0071	.0182	-3.358
.553	365.525	.00	.19	.C140	.0274	.0971	.0025	-.0070	.0184	.513
.553	366.117	.00	1.51	.C140	.0276	.0718	.0025	-.0070	.0181	4.859
.553	365.512	.00	2.87	.2564	.0299	.0460	.0021	-.0069	.0175	8.581
.552	364.594	.00	4.25	.3787	.0343	.0209	.0022	-.0068	.0170	11.055
.552	364.596	.00	5.54	.4916	.0402	-.0026	.0020	-.0068	.0167	12.215
.553	366.117	.00	6.66	-.0031	.0480	-.0282	.0018	-.0068	.0162	12.566
.552	365.016	.00	8.16	.7111	.0574	-.0557	.0013	-.0069	.0162	12.383
.552	365.125	.00	9.41	.8108	.0684	-.0865	.0010	-.0068	.0156	11.853
.553	365.678	.00	10.60	.9017	.0808	-.1210	.0010	-.0067	.0146	11.156
.553	365.433	.00	.19	.C153	.0275	.0971	.0027	-.0070	.0187	.556

BODY AXIS COEFFICIENTS

MACH	C	BETA	ALPHA	CNF	CAF	CPM	CRM	CYM	CSF
.552	365.094	.00	.18	.0139	.0273	.0970	.0027	-.0070	.0183
.552	365.175	.00	-3.54	-.3049	.0203	.1694	.0036	-.0073	.0193
.554	366.772	.00	-2.36	-.2077	.0248	.1450	.0030	-.0072	.0182
.553	366.059	.00	-1.09	-.0986	.0273	.1208	.0030	-.0071	.0182
.552	365.525	.00	.19	.0141	.0273	.0971	.0026	-.0070	.0184
.552	366.117	.00	1.51	.1346	.0240	.0718	.0027	-.0069	.0181
.553	365.512	.00	2.87	.2576	.0170	.0460	.0025	-.0068	.0175
.552	364.594	.00	4.25	.3801	.0061	.0209	.0026	-.0067	.0170
.552	364.996	.00	5.54	.4931	-.0074	-.0026	.0027	-.0066	.0167
.553	366.117	.00	6.86	.6044	-.0243	-.0282	.0025	-.0065	.0162
.552	365.016	.00	8.16	.7119	-.0440	-.0557	.0022	-.0066	.0162
.552	365.125	.00	9.41	.8107	-.0651	-.0865	.0021	-.0065	.0156
.553	365.678	.00	10.60	.9008	-.0864	-.1210	.0022	-.0064	.0146
.553	365.433	.00	.19	.0154	.0274	.0971	.0027	-.0070	.0187

~~CONFIDENTIAL~~ 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***

~~Classified~~ *** NASA CONFIDENTIAL *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***
 GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL TEST 790 RUN 61 BALANCE 731 09/22/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CYM	CSF	L/D
.250	88.406	.00	.05	.C286	.0270	.0975	.0031	-.0071	.0183	1.058
.250	88.315	.00	-4.10	-.3257	.0365	.1814	.0041	-.0073	.0201	8.931
.250	88.411	.00	-3.08	-.2392	.0327	.1598	.0042	-.0072	.0201	-7.278
.250	88.409	.00	-2.04	-.1514	.0244	.1397	.0041	-.0073	.0194	-5.053
.250	88.505	.00	-.59	-.0608	.0268	.1170	.0036	-.0071	.0185	-2.165
.250	88.406	.00	.06	.0276	.0271	.0968	.0034	-.0072	.0188	1.019
.251	88.794	.00	1.12	.1188	.0270	.0763	.0031	-.0071	.0193	4.395
.251	88.850	.00	2.19	.2080	.0279	.0551	.0027	-.0071	.0185	7.467
.250	88.011	.00	3.27	.2972	.0302	.0349	.0026	-.0070	.0176	9.826
.250	88.302	.00	4.33	.3861	.0332	.0154	.0023	-.0070	.0173	11.615
.250	88.302	.00	5.42	.4750	.0375	-.0055	.0022	-.0071	.0170	12.661
.250	88.009	.00	6.52	.5634	.0429	.0263	.0020	-.0070	.0166	13.143
.249	87.813	.00	7.61	.6529	.0492	-.0473	.0017	-.0071	.0170	13.265
.250	88.107	.00	8.71	.7408	.0566	-.0686	.0015	-.0070	.0166	13.090
.250	88.010	.00	9.79	.8189	.0642	-.0891	.0013	-.0070	.0161	12.754
.250	88.012	.00	10.52	.9064	.0736	-.1128	.0011	-.0069	.0164	12.308
.249	87.528	.00	11.58	.9688	.0827	-.1398	-.0008	-.0072	.0174	11.710
.250	87.929	.00	13.09	1.0338	.0948	-.1769	-.0028	-.0075	.0209	10.901
.250	88.137	.00	14.14	1.0823	.1068	-.2099	-.0036	-.0078	.0218	10.137
.250	88.449	.00	15.22	1.1211	.1199	-.2447	-.0041	-.0080	.0228	9.348
.249	87.786	.00	16.22	1.1505	.1335	-.2703	-.0038	-.0076	.0213	8.620
.250	87.909	.00	17.19	1.1686	.1473	-.2917	-.0028	-.0072	.0196	7.934
.249	87.721	.00	.06	.0226	.0267	.0964	.0031	-.0072	.0187	.846

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CYM	CSF
.250	88.406	.00	.05	.C286	.0270	.0975	.0031	-.0071	.0183
.250	88.315	.00	-4.10	-.3274	.0131	.1814	.0035	-.0076	.0201
.250	88.411	.00	-3.08	-.2392	.0199	.1598	.0039	-.0074	.0201
.250	88.409	.00	-2.04	-.1514	.0244	.1397	.0038	-.0074	.0194
.250	88.505	.00	-.59	-.0608	.0268	.1170	.0035	-.0072	.0185
.250	88.406	.00	.06	.0276	.0270	.0968	.0034	-.0072	.0188
.251	88.794	.00	1.12	.1193	.0247	.0763	.0033	-.0071	.0193
.251	88.890	.00	2.19	.2088	.0199	.0551	.0029	-.0070	.0185
.250	88.011	.00	3.27	.2984	.0133	.0349	.0030	-.0069	.0176
.250	88.302	.00	4.33	.3875	.0040	.0154	.0028	-.0068	.0173
.250	88.302	.00	5.42	.4763	-.0075	-.0055	.0029	-.0069	.0170
.250	88.009	.00	6.52	.5645	-.0213	-.0263	.0028	-.0068	.0166
.249	87.813	.00	7.61	.6535	-.0376	-.0473	.0026	-.0068	.0170
.250	88.107	.00	8.71	.7406	-.0562	-.0686	.0025	-.0067	.0166
.250	88.010	.00	9.79	.8177	-.0759	-.0891	.0025	-.0067	.0161
.250	88.012	.00	10.92	.9036	-.0953	-.1128	.0023	-.0066	.0164
.249	87.528	.00	11.98	.5644	-.1200	-.1398	-.0006	-.0072	.0174
.250	87.929	.00	13.09	1.0279	-.1416	-.1769	-.0010	-.0080	.0209
.250	88.137	.00	14.14	1.0750	-.1608	-.2099	-.0017	-.0084	.0218
.250	88.449	.00	15.22	1.1126	-.1783	-.2447	-.0020	-.0088	.0228
.249	87.786	.00	16.22	1.1412	-.1930	-.2703	-.0015	-.0084	.0213
.250	87.909	.00	17.19	1.1590	-.2044	-.2917	-.0006	-.0077	.0196
.249	87.721	.00	.06	.0226	.0267	.0964	.0031	-.0072	.0187

CONFIDENTIAL *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***

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*** NASA ~~CONFIDENTIAL~~ *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***
GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL TEST 790 RUN 64 BALANCE 731 09/26/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CYH	CSF	L/D
.553	365.183	.00	.13	.0200	.0282	.0963	.0045	-.0127	.0299	.711
.553	366.040	.00	-3.67	-.3050	.0405	.1692	.0057	-.0127	.0308	-7.527
.553	366.090	.00	-2.46	-.2053	.0345	.1456	.0051	-.0128	.0302	-5.956
.553	366.062	.00	-1.22	-.0982	.0303	.1213	.0047	-.0128	.0299	-3.237
.553	365.184	.00	.10	.0181	.0282	.0970	.0046	-.0127	.0301	.641
.553	366.117	.00	1.36	.1293	.0283	.0739	.0042	-.0127	.0300	4.568
.553	365.253	.00	2.72	.2521	.0303	.0485	.0037	-.0126	.0293	8.328
.553	365.507	.00	4.08	.3733	.0344	.0230	.0033	-.0126	.0290	10.849
.552	366.991	.00	5.37	.4852	.0400	-.0005	.0026	-.0126	.0287	12.144
.552	364.740	.00	6.68	.5966	.0475	-.0257	.0027	-.0125	.0280	12.557
.553	365.439	.00	8.00	.7061	.0569	-.0530	.0020	-.0126	.0275	12.403
.553	365.807	.00	9.25	.8080	.0680	-.0828	.0016	-.0126	.0271	11.883
.553	365.236	.00	10.43	.8996	.0796	-.1166	.0013	-.0124	.0258	11.296
.552	365.012	.00	.08	.0203	.0282	.0976	.0045	-.0128	.0304	.720

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CYH	CSF
.553	365.183	.00	.13	.0201	.0281	.0963	.0045	-.0127	.0299
.553	366.040	.00	-3.67	-.3069	.0209	.1692	.0049	-.0130	.0308
.553	366.090	.00	-2.46	-.2065	.0256	.1456	.0046	-.0130	.0302
.553	366.062	.00	-1.22	-.0988	.0282	.1213	.0044	-.0129	.0299
.553	365.184	.00	.10	.0181	.0282	.0970	.0046	-.0127	.0301
.553	366.117	.00	1.36	.1299	.0252	.0739	.0045	-.0126	.0300
.553	365.253	.00	2.72	.2533	.0183	.0485	.0043	-.0124	.0293
.553	365.507	.00	4.08	.3748	.0077	.0230	.0041	-.0123	.0290
.552	364.991	.00	5.37	.4867	-.0057	-.0005	.0037	-.0123	.0287
.552	364.740	.00	6.68	.5980	-.0222	-.0257	.0041	-.0122	.0280
.553	365.439	.00	8.00	.7070	-.0418	-.0530	.0037	-.0122	.0275
.553	365.807	.00	9.25	.8081	-.0627	-.0828	.0036	-.0122	.0271
.553	365.236	.00	10.43	.8988	-.0845	-.1166	.0035	-.0120	.0258
.552	365.012	.00	.08	.0204	.0282	.0976	.0045	-.0128	.0304

~~UNCLASSIFIED~~

*** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***

*** NASA ~~CONFIDENTIAL~~ *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***
 GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL TEST 790 RUN 63 BALANCE 731 09/26/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CYM	CSF	L/D
.250	87.918	.00	.01	.0254	.0275	.0959	.0054	-.0137	.0320	.923
.249	87.733	.00	-4.16	-.3270	.0381	.1819	.0067	-.0138	.0337	-8.582
.250	88.121	.00	-3.16	-.2408	.0342	.1599	.0065	-.0138	.0331	-7.045
.250	88.217	.00	-2.13	-.1551	.0313	.1379	.0062	-.0137	.0324	-4.958
.250	88.312	.00	-1.07	-.0658	.0291	.1164	.0056	-.0137	.0322	-2.261
.251	88.602	.00	-.02	.0232	.0277	.0960	.0054	-.0137	.0320	.839
.250	88.503	.00	1.03	.1129	.0278	.0757	.0050	-.0138	.0319	4.059
.250	88.112	.00	2.10	.2013	.0289	.0558	.0045	-.0138	.0314	6.364
.249	87.426	.00	3.18	.2904	.0306	.0363	.0045	-.0138	.0310	9.489
.251	88.988	.00	4.26	.3863	.0342	.0144	.0037	-.0140	.0316	11.280
.251	88.597	.00	5.34	.4683	.0379	-.0058	.0035	-.0139	.0309	12.371
.250	88.401	.00	6.44	.5567	.0428	-.0269	.0029	-.0139	.0302	12.993
.250	88.499	.00	7.52	.6427	.0491	-.0476	.0026	-.0140	.0305	13.093
.250	88.401	.00	8.64	.7341	.0565	-.0682	.0020	-.0140	.0302	12.984
.250	88.305	.00	9.73	.8170	.0646	-.0892	.0018	-.0140	.0300	12.655
.251	88.697	.00	10.82	.9012	.0736	-.1117	.0015	-.0139	.0295	12.243
.251	88.701	.00	11.87	.9688	.0830	-.1384	-.0003	-.0140	.0305	11.678
.250	88.516	.00	13.02	1.0306	.0949	-.1758	-.0025	-.0142	.0336	10.863
.250	88.529	.00	14.03	1.0742	.1061	-.2072	-.0036	-.0142	.0351	10.126
.251	88.840	.00	15.13	1.1167	.1194	-.2418	-.0040	-.0141	.0346	9.354
.251	88.763	.00	16.13	1.1462	.1324	-.2673	-.0037	-.0136	.0332	8.657
.251	88.690	.00	17.09	1.1644	.1462	-.2893	-.0032	-.0133	.0328	7.964
.251	88.700	.00	.01	.0243	.0277	.0968	.0055	-.0137	.0319	.875

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CYM	CSF
.250	87.918	.00	.01	.0254	.0275	.0959	.0054	-.0137	.0320
.249	87.733	.00	-4.16	-.3289	.0143	.1819	.0057	-.0142	.0337
.250	88.121	.00	-3.16	-.2423	.0209	.1599	.0058	-.0141	.0331
.250	88.217	.00	-2.13	-.1562	.0255	.1379	.0057	-.0139	.0324
.250	88.312	.00	-1.07	-.0663	.0279	.1164	.0053	-.0138	.0322
.251	88.602	.00	-.02	.0232	.0277	.0960	.0054	-.0137	.0320
.250	88.503	.00	1.03	.1134	.0258	.0757	.0052	-.0137	.0319
.250	88.112	.00	2.10	.2022	.0215	.0558	.0050	-.0136	.0314
.249	87.426	.00	3.18	.2916	.0144	.0343	.0052	-.0135	.0310
.251	88.988	.00	4.26	.3877	.0055	.0144	.0047	-.0137	.0316
.251	88.597	.00	5.34	.4697	-.0059	-.0058	.0047	-.0135	.0309
.250	88.401	.00	6.44	.5579	-.0199	-.0269	.0044	-.0135	.0302
.250	88.499	.00	7.52	.6434	-.0355	-.0476	.0044	-.0136	.0305
.250	88.401	.00	8.64	.7341	-.0544	-.0682	.0041	-.0136	.0302
.250	88.305	.00	9.73	.8158	-.0744	-.0892	.0040	-.0135	.0300
.251	88.697	.00	10.82	.8986	-.0968	-.1117	.0040	-.0134	.0295
.251	88.701	.00	11.87	.9647	-.1181	-.1384	.0025	-.0138	.0305
.250	88.516	.00	13.02	1.0250	-.1397	-.1758	.0007	-.0144	.0336
.250	88.529	.00	14.03	1.0673	-.1574	-.2072	-.0001	-.0146	.0351
.251	88.840	.00	15.13	1.1084	-.1761	-.2418	-.0002	-.0146	.0346
.251	88.763	.00	16.13	1.1371	-.1910	-.2673	.0001	-.0141	.0332
.251	88.690	.00	17.09	1.1551	-.2022	-.2893	.0008	-.0137	.0328
.251	88.700	.00	.01	.0243	.0277	.0968	.0055	-.0137	.0319

~~CONFIDENTIAL *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***~~

~~CONFIDENTIAL~~

*** NASA ~~CONFIDENTIAL~~ *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***
 GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL TEST 790 RUN 66 BALANCE 731 09/26/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CY _M	CSF	L/D
.553	365.447	.00	.06	.0059	.0285	.0987	-.0153	.0002	-.0001	.209
.553	365.266	.00	-3.70	-.3135	.0408	.1712	-.0150	-.0009	.0005	-7.687
.553	365.320	.00	-2.53	-.2168	.0349	.1469	-.0159	-.0006	-.0002	-6.218
.553	365.980	.00	-1.28	-.1096	.0306	.1234	-.0156	-.0002	-.0003	-3.579
.553	365.530	.00	.06	.0057	.0285	.0987	-.0156	.0001	.0003	.199
.553	365.949	.00	1.28	.1144	.0283	.0760	-.0152	.0005	-.0002	4.039
.554	366.286	.00	2.65	.2365	.0303	.0511	-.0151	.0011	-.0003	7.815
.553	365.427	.00	4.03	.3572	.0343	.0259	-.0156	.0015	-.0003	10.404
.552	365.084	.00	5.33	.4725	.0400	.0021	-.0154	.0020	-.0008	11.822
.552	364.831	.00	6.64	.5861	.0474	-.0226	-.0151	.0025	-.0017	12.374
.553	365.274	.00	7.96	.6954	.0566	-.0491	-.0149	.0029	-.0019	12.287
.553	365.637	.00	9.21	.7962	.0672	-.0776	-.0145	.0033	-.0027	11.846
.553	365.500	.00	10.40	.8912	.0796	-.1118	-.0139	.0037	-.0030	11.200
.553	365.361	.00	.07	.0079	.0285	.0989	-.0154	.0002	.0003	.277

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CY _M	CSF
.553	365.447	.00	.06	.0060	.0285	.0987	-.0153	.0002	-.0001
.553	365.266	.00	-3.70	-.3154	.0204	.1712	-.0150	.0001	.0005
.553	365.320	.00	-2.53	-.2180	.0253	.1469	-.0159	.0001	-.0002
.553	365.980	.00	-1.28	-.1103	.0282	.1234	-.0156	.0002	-.0003
.553	365.530	.00	.06	.0057	.0284	.0987	-.0156	.0001	.0003
.553	365.949	.00	1.28	.1150	.0258	.0760	-.0152	.0002	.0002
.554	366.286	.00	2.65	.2376	.0193	.0511	-.0152	.0004	-.0003
.553	365.427	.00	4.03	.3587	.0092	.0259	-.0156	.0005	-.0003
.552	365.084	.00	5.33	.4741	-.0041	.0021	-.0155	.0006	-.0008
.552	364.831	.00	6.64	.5875	-.0207	-.0226	-.0153	.0008	-.0017
.553	365.274	.00	7.96	.6964	-.0403	-.0491	-.0152	.0009	-.0019
.553	365.637	.00	9.21	.7965	-.0610	-.0776	-.0148	.0010	-.0027
.553	365.500	.00	10.40	.8905	-.0826	-.1118	-.0144	.0012	-.0030
.553	365.361	.00	.07	.0079	.0285	.0989	-.0154	.0002	.0003

~~CONFIDENTIAL~~ *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***

*** NASA CONFIDENTIAL *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***
 GROUP 4 - DOWNGRADED AT 3-YR INTERVALS. DECLASSIFIED AFTER 12 YRS.

HIGH SPEED TUNNEL TEST 790 RUN 65 BALANCE 731 09/26/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CYR	CSF	L/D
.250	88.407	.00	-.08	.0232	.0278	.0979	-.0171	.0002	-.0010	.834
.250	88.221	.00	-4.23	-.3295	.0379	.1838	-.0176	-.0010	.0001	-8.682
.250	88.511	.00	-3.21	-.2390	.0337	.1610	-.0173	-.0006	-.0007	-7.086
.251	88.705	.00	-2.17	-.1524	.0310	.1400	-.0170	-.0003	-.0006	-4.916
.251	88.702	.00	-1.13	-.0656	.0288	.1192	-.0171	-.0000	-.0007	-2.273
.251	88.798	.00	-.08	.0261	.0275	.0983	-.0172	.0003	-.0012	.947
.251	89.089	.00	.99	.1161	.0276	.0779	-.0169	.0006	-.0008	4.212
.252	89.381	.00	2.04	.2035	.0289	.0577	-.0169	.0009	-.0002	7.053
.252	89.575	.00	3.13	.2914	.0309	.0369	-.0169	.0012	-.0003	9.442
.252	89.574	.00	4.20	.3798	.0338	.0176	-.0172	.0015	-.0004	11.232
.252	89.574	.00	5.28	.4652	.0381	-.0022	-.0169	.0019	-.0008	12.222
.252	89.475	.00	6.39	.5551	.0431	-.0235	-.0165	.0022	-.0006	12.892
.252	89.476	.00	7.47	.6437	.0493	-.0437	-.0163	.0026	-.0006	13.045
.252	89.672	.00	8.57	.7308	.0569	-.0639	-.0165	.0028	-.0006	12.848
.252	89.575	.00	9.65	.8095	.0642	-.0850	-.0160	.0032	-.0012	12.601
.251	88.894	.00	10.76	.8963	.0739	-.1070	-.0158	.0035	-.0009	12.132
.251	88.605	.00	11.86	.9711	.0839	-.1329	-.0162	.0036	-.0009	11.580
.250	88.322	.00	12.94	1.0313	.0953	-.1693	-.0174	.0035	-.0032	10.819
.250	88.334	.00	13.57	1.0780	.1068	-.2011	-.0170	.0033	.0067	10.096
.250	88.548	.00	15.08	1.1209	.1202	-.2350	-.0165	.0034	.0077	9.322
.251	88.667	.00	16.11	1.1488	.1338	-.2615	-.0152	.0038	.0075	8.589
.251	88.594	.00	17.05	1.1672	.1473	-.2829	-.0135	.0043	.0074	7.923
.251	88.992	.00	17.05	1.1672	.1473	-.2829	-.0135	.0003	.0004	1.037

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CYR	CSF
.250	88.407	.00	-.08	.0231	.0278	.0979	-.0171	.0002	-.0010
.250	88.221	.00	-4.23	-.3313	.0136	.1838	-.0176	.0002	.0001
.250	88.511	.00	-3.21	-.2404	.0203	.1610	-.0173	.0004	-.0007
.251	88.705	.00	-2.17	-.1534	.0252	.1400	-.0170	.0003	-.0006
.251	88.702	.00	-1.13	-.0661	.0275	.1192	-.0171	.0003	-.0007
.251	88.798	.00	-.08	.0260	.0276	.0983	-.0172	.0004	-.0012
.251	89.089	.00	.99	.1166	.0256	.0779	-.0169	.0003	-.0008
.252	89.381	.00	2.04	.2044	.0216	.0577	-.0170	.0003	-.0002
.252	89.575	.00	3.13	.2926	.0149	.0369	-.0169	.0003	-.0003
.252	89.574	.00	4.20	.3812	.0059	.0176	-.0172	.0003	-.0004
.252	89.574	.00	5.28	.4667	-.0049	-.0022	-.0170	.0004	-.0008
.252	89.475	.00	6.39	.5563	-.0190	-.0235	-.0167	.0004	-.0006
.252	89.476	.00	7.47	.6445	-.0347	-.0437	-.0165	.0005	-.0006
.252	89.672	.00	8.57	.7309	-.0527	-.0639	-.0167	.0004	-.0006
.252	89.575	.00	9.65	.8085	-.0723	-.0850	-.0163	.0005	-.0012
.251	88.894	.00	10.76	.8940	-.0946	-.1070	-.0162	.0006	-.0009
.251	88.605	.00	11.86	.9672	-.1174	-.1329	-.0166	.0002	.0032
.250	88.322	.00	12.94	1.0260	-.1380	-.1693	-.0178	-.0004	.0067
.250	88.334	.00	13.97	1.0713	-.1566	-.2011	-.0173	-.0007	.0077
.250	88.548	.00	15.08	1.1129	-.1754	-.2350	-.0168	-.0009	.0075
.251	88.667	.00	16.11	1.1401	-.1900	-.2615	-.0157	-.0004	.0074
.251	88.594	.00	17.05	1.1583	-.2012	-.2829	-.0142	.0002	.0074
.251	88.992	.00	17.05	1.1672	1.0280	-.0271	-.0986	-.0169	.0004

CONFIDENTIAL *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***

~~CONFIDENTIAL~~ *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***
GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL TEST 790 RUN 68 BALANCE 731 09/26/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CYM	CSF	L/D
.553	365.409	.00	-.01	-.0051	.0326	.1013	-.0303	-.0001	-.0027	-.155
.553	366.010	.00	-3.81	-.3295	.0461	.1753	-.0284	-.0019	-.0023	-7.148
.552	365.025	.00	-2.61	-.2311	.0395	.1514	-.0302	-.0013	-.0032	-5.845
.553	365.343	.00	-1.37	-.1251	.0352	.1271	-.0303	-.0007	-.0029	-3.555
.553	365.410	.00	-.02	-.0048	.0326	.1012	-.0303	-.0000	-.0026	-.148
.553	366.000	.00	1.21	.1043	.0322	.0784	-.0305	.0006	-.0025	3.234
.553	365.991	.00	2.57	.2262	.0339	.0531	-.0309	.0014	-.0026	6.682
.553	366.074	.00	3.97	.3484	.0376	.0280	-.0312	.0021	-.0025	9.267
.553	365.301	.00	5.25	.4611	.0429	.0046	-.0317	.0028	-.0027	10.750
.552	365.220	.00	6.58	.5759	.0503	-.0205	-.0321	.0037	-.0035	11.459
.552	364.626	.00	7.88	.6872	.0591	-.0473	-.0319	.0044	-.0039	11.634
.553	365.245	.00	9.17	.7890	.0695	-.0760	-.0314	.0050	-.0043	11.350
.553	365.615	.00	10.38	.8881	.0816	-.1115	-.0308	.0057	-.0052	10.885
.553	365.581	.00	-.00	-.0016	.0326	.1016	-.0299	.0000	-.0030	-.048

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CYM	CSF
.553	365.409	.00	-.01	-.0051	.0326	.1013	-.0303	-.0000	-.0027
.553	366.010	.00	-3.81	-.3317	.0241	.1753	-.0285	-.0000	-.0023
.552	365.025	.00	-2.61	-.2326	.0290	.1514	-.0302	.0000	-.0032
.553	365.343	.00	-1.37	-.1259	.0322	.1271	-.0303	.0000	-.0029
.553	365.410	.00	-.02	-.0048	.0326	.1012	-.0303	-.0000	-.0026
.553	366.000	.00	1.21	.1049	.0300	.0784	-.0305	-.0000	-.0025
.553	365.991	.00	2.57	.2275	.0237	.0531	-.0309	-.0000	-.0026
.553	366.074	.00	3.97	.3501	.0134	.0280	-.0313	-.0000	-.0025
.553	365.301	.00	5.25	.4630	.0005	.0046	-.0318	-.0000	-.0027
.552	365.220	.00	6.58	.5777	-.0160	-.0205	-.0323	.0001	-.0035
.552	364.626	.00	7.88	.6886	-.0357	-.0473	-.0322	.0001	-.0039
.553	365.245	.00	9.17	.7897	-.0571	-.0760	-.0318	.0001	-.0043
.553	365.615	.00	10.38	.8879	-.0797	-.1115	-.0313	.0002	-.0052
.553	365.581	.00	-.00	-.0016	.0326	.1016	-.0299	.0000	-.0030

~~CONFIDENTIAL~~ *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***

*** NASA CONFIDENTIAL *** 7 X 10 FT TUNNELS *** NASA PRELIMINARY ***
 GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL TEST 790 RUN 67 BALANCE 731 09/26/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CYR	CSF	L/D
.251	88.611	.00	-.12	.0089	.0313	.1022	-.0329	-.0001	-.0034	.286
.250	88.425	.00	-4.26	-.3327	.0418	.1858	-.0342	-.0024	-.0039	-7.953
.251	88.910	.00	-3.24	-.2499	.0379	.1662	-.0343	-.0019	-.0044	-6.599
.251	88.908	.00	-2.21	-.1651	.0348	.1438	-.0337	-.0013	-.0036	-4.745
.251	88.809	.00	-1.17	-.0796	.0329	.1240	-.0333	-.0007	-.0035	-2.422
.250	88.415	.00	-.11	.0110	.0312	.1021	-.0329	-.0002	-.0032	.352
.251	88.804	.00	.93	.0993	.0310	.0821	-.0326	.0003	-.0030	3.199
.251	88.901	.00	2.00	.1854	.0318	.0622	-.0323	.0009	-.0028	5.827
.251	88.802	.00	3.09	.2737	.0339	.0422	-.0324	.0015	-.0019	8.081
.251	88.801	.00	4.16	.3628	.0367	.0223	-.0325	.0021	-.0023	9.881
.251	88.703	.00	5.24	.4514	.0408	.0017	-.0322	.0027	-.0022	11.065
.250	88.410	.00	6.33	.5393	.0458	-.0189	-.0322	.0032	-.0017	11.767
.250	88.410	.00	7.42	.6269	.0518	-.0389	-.0322	.0038	-.0020	12.114
.250	88.215	.00	8.52	.7122	.0588	-.0597	-.0323	.0043	-.0013	12.112
.251	88.607	.00	9.63	.7996	.0671	-.0808	-.0323	.0050	-.0019	11.921
.251	88.608	.00	10.71	.8824	.0758	-.1039	-.0320	.0055	-.0010	11.647
.251	88.611	.00	11.79	.9593	.0853	-.1300	-.0321	.0058	-.0002	11.249
.251	88.620	.00	12.90	1.0202	.0962	-.1666	-.0324	.0058	.0043	10.604
.250	88.340	.00	13.93	1.0644	.1073	-.1980	-.0308	.0059	.0075	9.922
.250	88.554	.00	15.05	1.1095	.1215	-.2274	-.0279	.0064	.0087	9.131
.250	88.577	.00	16.04	1.1349	.1351	-.2497	-.0244	.0071	.0094	8.399
.251	88.799	.00	17.01	1.1444	.1482	-.2717	-.0204	.0077	.0088	7.724
.251	88.610	.00	18.08	.0129	.0307	.1016	-.0330	-.0002	-.0018	.421

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CYR	CSF
.251	88.611	.00	-.12	.0089	.0313	.1022	-.0329	-.0001	-.0034
.250	88.425	.00	-4.26	-.3348	.0170	.1858	-.0343	.0000	-.0039
.251	88.910	.00	-3.24	-.2516	.0237	.1662	-.0343	-.0000	-.0044
.251	88.908	.00	-2.21	-.1663	.0284	.1438	-.0337	-.0001	-.0036
.251	88.809	.00	-1.17	-.0802	.0312	.1240	-.0333	-.0001	-.0035
.250	88.415	.00	-.11	.0109	.0312	.1021	-.0329	-.0002	-.0032
.251	88.804	.00	.93	.0998	.0294	.0821	-.0326	-.0002	-.0030
.251	88.901	.00	2.00	.1864	.0253	.0622	-.0323	-.0001	-.0028
.251	88.802	.00	3.09	.2751	.0191	.0422	-.0324	-.0002	-.0019
.251	88.801	.00	4.16	.3644	.0103	.0223	-.0326	-.0002	-.0023
.251	88.703	.00	5.24	.4532	-.0006	.0017	-.0323	-.0002	-.0022
.250	88.410	.00	6.33	.5410	-.0139	-.0189	-.0323	-.0003	-.0017
.250	88.410	.00	7.42	.6282	-.0296	-.0389	-.0324	-.0003	-.0020
.250	88.215	.00	8.52	.7128	-.0473	-.0597	-.0326	-.0004	-.0013
.251	88.607	.00	9.63	.7993	-.0675	-.0808	-.0327	-.0003	-.0019
.251	88.608	.00	10.71	.8808	-.0895	-.1039	-.0324	-.0004	-.0010
.251	88.611	.00	11.79	.9560	-.1124	-.1300	-.0326	-.0008	-.0002
.251	88.620	.00	12.90	1.0155	-.1339	-.1666	-.0329	-.0014	.0043
.250	88.340	.00	13.93	1.0583	-.1521	-.1980	-.0313	-.0015	.0075
.250	88.554	.00	15.05	1.1023	-.1705	-.2274	-.0287	-.0009	.0087
.250	88.577	.00	16.04	1.1273	-.1835	-.2497	-.0255	.0002	.0094
.251	88.799	.00	17.01	1.1368	-.1929	-.2717	-.0217	.0016	.0088
.251	88.610	.00	18.08	.0129	.0308	.1016	-.0330	-.0002	-.0018

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GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL TEST 790 RUN 70 BALANCE 731 09/26/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CYH	CSF	L/D
.552	364.847	.04	5.54	.5314	.0378	-.0128	-.0001	.0016	-.0038	14.074
.552	365.123	-4.07	5.54	.5348	.0352	-.0220	.0056	-.0089	.0600	15.172
.553	365.882	-3.02	5.55	.5367	.0363	-.0187	.0043	-.0066	.0454	14.783
.553	365.620	-2.01	5.55	.5334	.0370	-.0156	.0028	-.0039	.0286	14.412
.553	365.963	-1.04	5.55	.5330	.0376	-.0134	.0015	-.0010	.0124	14.161
.553	365.875	.04	5.55	.5330	.0376	-.0133	-.0000	.0016	-.0035	14.172
.553	365.792	1.06	5.55	.5332	.0375	-.0141	-.0015	.0044	-.0198	14.226
.553	365.455	2.12	5.55	.5339	.0370	-.0166	-.0031	.0074	-.0364	14.444
.553	365.979	3.15	5.55	.5358	.0362	-.0206	-.0044	.0102	-.0537	14.808
.553	365.904	4.17	5.54	.5366	.0351	-.0250	-.0055	.0126	-.0693	15.305
.553	365.790	.00	5.56	.5349	.0378	-.0131	-.0001	.0017	-.0038	14.151

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CYH	CSF
.552	364.847	.04	5.54	.5324	-.0138	-.0128	-.0003	.0016	-.0038
.552	365.123	-4.07	5.54	.5356	-.0165	-.0220	.0064	-.0084	.0600
.553	365.882	-3.02	5.55	.5376	-.0158	-.0187	.0049	-.0062	.0454
.553	365.620	-2.01	5.55	.5344	-.0147	-.0156	.0031	-.0036	.0286
.553	365.963	-1.04	5.55	.5340	-.0141	-.0134	.0016	-.0009	.0124
.553	365.875	.04	5.55	.5341	-.0141	-.0133	-.0002	.0016	-.0035
.553	365.792	1.06	5.55	.5342	-.0143	-.0141	-.0019	.0042	-.0198
.553	365.455	2.12	5.55	.5349	-.0148	-.0166	-.0038	.0071	-.0364
.553	365.979	3.15	5.55	.5367	-.0158	-.0206	-.0054	.0097	-.0537
.553	365.904	4.17	5.54	.5374	-.0169	-.0250	-.0067	.0120	-.0693
.553	365.790	.00	5.56	.5359	-.0142	-.0131	-.0002	.0016	-.0038

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 GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL TEST 790 RUN 69 BALANCE 731 09/26/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CYM	CSF	L/D
.251	89.272	.03	4.40	.4120	.0314	.0070	.0000	.0015	-.0017	13.124
.251	88.792	-5.92	4.40	.4220	.0258	-.0103	.0077	-.0135	.0900	16.354
.251	89.083	-4.95	4.39	.4181	.0279	-.0054	.0065	-.0108	.0742	15.004
.251	88.885	-3.93	4.40	.4204	.0289	-.0011	.0052	-.0083	.0594	14.561
.251	88.590	-2.93	4.40	.4191	.0298	.0019	.0040	-.0059	.0441	14.055
.251	88.980	-1.96	4.40	.4153	.0306	.0048	.0027	-.0036	.0290	13.571
.251	89.077	-.94	4.40	.4148	.0311	.0056	.0014	-.0010	.0140	13.350
.251	89.076	.07	4.40	.4130	.0312	.0070	-.0002	.0015	-.0020	13.246
.251	88.979	1.07	4.39	.4127	.0308	.0060	-.0012	.0040	-.0169	13.397
.251	89.078	2.09	4.39	.4144	.0306	.0033	-.0027	.0066	-.0322	13.536
.251	89.079	3.09	4.40	.4177	.0299	.0005	-.0041	.0089	-.0471	13.964
.251	88.983	4.11	4.40	.4204	.0287	-.0029	-.0050	.0112	-.0612	14.623
.251	88.888	5.13	4.39	.4220	.0274	-.0077	-.0062	.0139	-.0786	15.402
.251	88.990	6.10	4.39	.4227	.0264	-.0130	-.0076	.0164	-.0944	16.002
.251	88.979	.03	4.40	.4143	.0313	.0056	-.0002	.0015	-.0013	13.233

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CYM	CSF
.251	89.272	.03	4.40	.4132	-.0003	.0070	-.0001	.0015	-.0017
.251	88.792	-5.92	4.40	.4227	-.0066	-.0103	.0087	-.0128	.0900
.251	89.083	-4.95	4.39	.4189	-.0042	-.0054	.0073	-.0103	.0742
.251	88.885	-3.93	4.40	.4213	-.0034	-.0011	.0058	-.0079	.0594
.251	88.590	-2.93	4.40	.4201	-.0024	.0019	.0045	-.0056	.0441
.251	88.980	-1.96	4.40	.4164	-.0013	.0048	-.0029	-.0034	.0290
.251	89.077	-.94	4.40	.4159	-.0008	.0056	-.0014	-.0009	.0140
.251	89.076	.07	4.40	.4141	-.0006	.0070	-.0000	.0015	-.0020
.251	88.979	1.07	4.39	.4138	-.0009	.0060	-.0015	.0039	-.0169
.251	89.078	2.09	4.39	.4155	-.0012	.0033	-.0032	.0063	-.0322
.251	89.079	3.09	4.40	.4187	-.0022	.0005	-.0047	.0086	-.0471
.251	88.983	4.11	4.40	.4213	-.0036	-.0029	-.0058	.0108	-.0612
.251	88.888	5.13	4.39	.4228	-.0050	-.0077	-.0072	.0134	-.0786
.251	88.990	6.10	4.39	.4234	-.0060	-.0130	-.0087	.0157	-.0944
.251	88.979	.03	4.40	.4154	-.0005	.0056	-.0003	.0015	-.0013

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 GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL TEST 790 RUN 72 BALANCE 731 09/26/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CYM	CSF	L/D
.552	364.783	-.04	5.70	.5853	.0366	-.0136	-.0002	.0018	-.0054	16.012
.552	364.618	-4.06	5.70	.5888	.0343	-.0216	.0050	-.0083	.0439	17.154
.553	365.124	-3.02	5.71	.5892	.0351	-.0184	.0039	-.0061	.0325	16.768
.552	364.776	-2.02	5.71	.5874	.0358	-.0161	.0025	-.0035	.0198	16.418
.552	364.776	-1.03	5.70	.5858	.0361	-.0140	.0013	-.0007	.0071	16.215
.552	364.864	-.00	5.71	.5862	.0363	-.0136	-.0001	.0017	-.0049	16.143
.553	365.553	1.00	5.71	.5865	.0363	-.0143	-.0014	.0043	-.0175	16.169
.553	365.470	2.01	5.70	.5866	.0358	-.0167	-.0029	.0071	-.0304	16.366
.552	364.875	3.06	5.70	.5884	.0351	-.0203	-.0040	.0098	-.0437	16.766
.552	364.542	4.06	5.70	.5899	.0343	-.0240	-.0052	.0121	-.0558	17.202
.552	364.777	-.00	5.71	.5880	.0365	-.0138	-.0002	.0019	-.0059	16.112

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CYM	CSF
.552	364.783	-.04	5.70	.5860	-.0218	-.0136	-.0004	.0018	-.0054
.552	364.618	-4.06	5.70	.5892	-.0243	-.0216	.0058	-.0077	.0439
.553	365.124	-3.02	5.71	.5896	-.0236	-.0184	.0045	-.0057	.0325
.552	364.776	-2.02	5.71	.5879	-.0228	-.0161	.0028	-.0032	.0198
.552	364.776	-1.03	5.70	.5864	-.0223	-.0140	.0014	-.0006	.0071
.552	364.864	-.00	5.71	.5868	-.0221	-.0136	-.0002	.0017	-.0049
.553	365.553	1.00	5.71	.5871	-.0222	-.0143	-.0018	.0041	-.0175
.553	365.470	2.01	5.70	.5871	-.0226	-.0167	-.0035	.0068	-.0304
.552	364.875	3.06	5.70	.5889	-.0235	-.0203	-.0050	.0094	-.0437
.552	364.542	4.06	5.70	.5903	-.0244	-.0240	-.0064	.0116	-.0558
.552	364.777	-.00	5.71	.5886	-.0222	-.0138	-.0004	.0019	-.0059

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GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL TEST 790 RUN 71 BALANCE 731 09/26/67

STABILITY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CY _M	CSF	L/D
.251	88.975	-.16	4.43	.4465	.0313	.0087	-.0002	.0015	-.0042	14.288
.250	88.490	-6.09	4.43	.4548	.0258	-.0065	.0071	-.0126	.0678	17.624
.250	88.098	-5.10	4.43	.4526	.0273	-.0022	.0059	-.0102	.0559	16.598
.251	88.780	-4.12	4.43	.4519	.0285	.0014	.0050	-.0078	.0434	15.862
.251	88.778	-3.10	4.43	.4536	.0291	.0041	.0037	-.0057	.0314	15.566
.250	88.485	-2.09	4.43	.4504	.0296	.0064	.0024	-.0034	.0205	15.195
.251	88.678	-.99	4.43	.4508	.0294	.0078	.0012	-.0009	.0081	15.355
.251	88.778	-.16	4.43	.4505	.0309	.0086	-.0001	.0014	-.0037	14.598
.251	88.872	1.04	4.43	.4541	.0289	.0073	-.0014	.0039	-.0163	15.707
.251	88.873	2.06	4.43	.4510	.0286	.0067	-.0026	.0063	-.0284	15.796
.251	88.974	2.98	4.43	.4544	.0289	.0029	-.0039	.0087	-.0401	15.750
.251	88.976	3.95	4.43	.4543	.0282	-.0004	-.0049	.0109	-.0515	16.093
.251	88.880	4.94	4.43	.4567	.0275	-.0050	-.0062	.0134	-.0633	16.607
.251	88.883	5.95	4.43	.4585	.0264	-.0100	-.0074	.0158	-.0764	17.400
.251	88.873	-.00	4.43	.4491	.0293	.0085	.0000	.0014	-.0037	15.332

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CY _M	CSF
.251	88.975	-.16	4.43	.4475	-.0033	.0087	-.0003	.0015	-.0042
.250	88.490	-6.09	4.43	.4554	-.0094	-.0065	.0080	-.0121	.0678
.250	88.098	-5.10	4.43	.4533	-.0077	-.0022	.0067	-.0097	.0559
.251	88.780	-4.12	4.43	.4527	-.0065	.0014	.0055	-.0074	.0434
.251	88.778	-3.10	4.43	.4544	-.0060	.0041	.0041	-.0054	.0314
.250	88.485	-2.09	4.43	.4512	-.0052	.0064	.0026	-.0032	.0205
.251	88.678	-.99	4.43	.4516	-.0056	.0078	.0012	-.0008	.0081
.251	88.778	-.16	4.43	.4515	-.0040	.0086	-.0002	.0014	-.0037
.251	88.872	1.04	4.43	.4549	-.0063	.0073	-.0016	.0038	-.0163
.251	88.873	2.06	4.43	.4518	-.0064	.0067	-.0031	.0061	-.0284
.251	88.974	2.98	4.43	.4552	-.0063	.0029	-.0046	.0083	-.0401
.251	88.976	3.95	4.43	.4551	-.0069	-.0004	-.0057	.0105	-.0515
.251	88.880	4.94	4.43	.4574	-.0079	-.0050	-.0072	.0129	-.0633
.251	88.883	5.95	4.43	.4591	-.0091	-.0100	-.0086	.0152	-.0764
.251	88.873	-.00	4.43	.4500	-.0055	.0085	-.0001	.0014	-.0037

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 GROUP 4 - DOWNGRADED AT 3-YR INTERVALS, DECLASSIFIED AFTER 12 YRS

HIGH SPEED TUNNEL TEST 790 RUN 73 BALANCE 731 09/26/67

STABILITY AXIS COEFFICIENTS

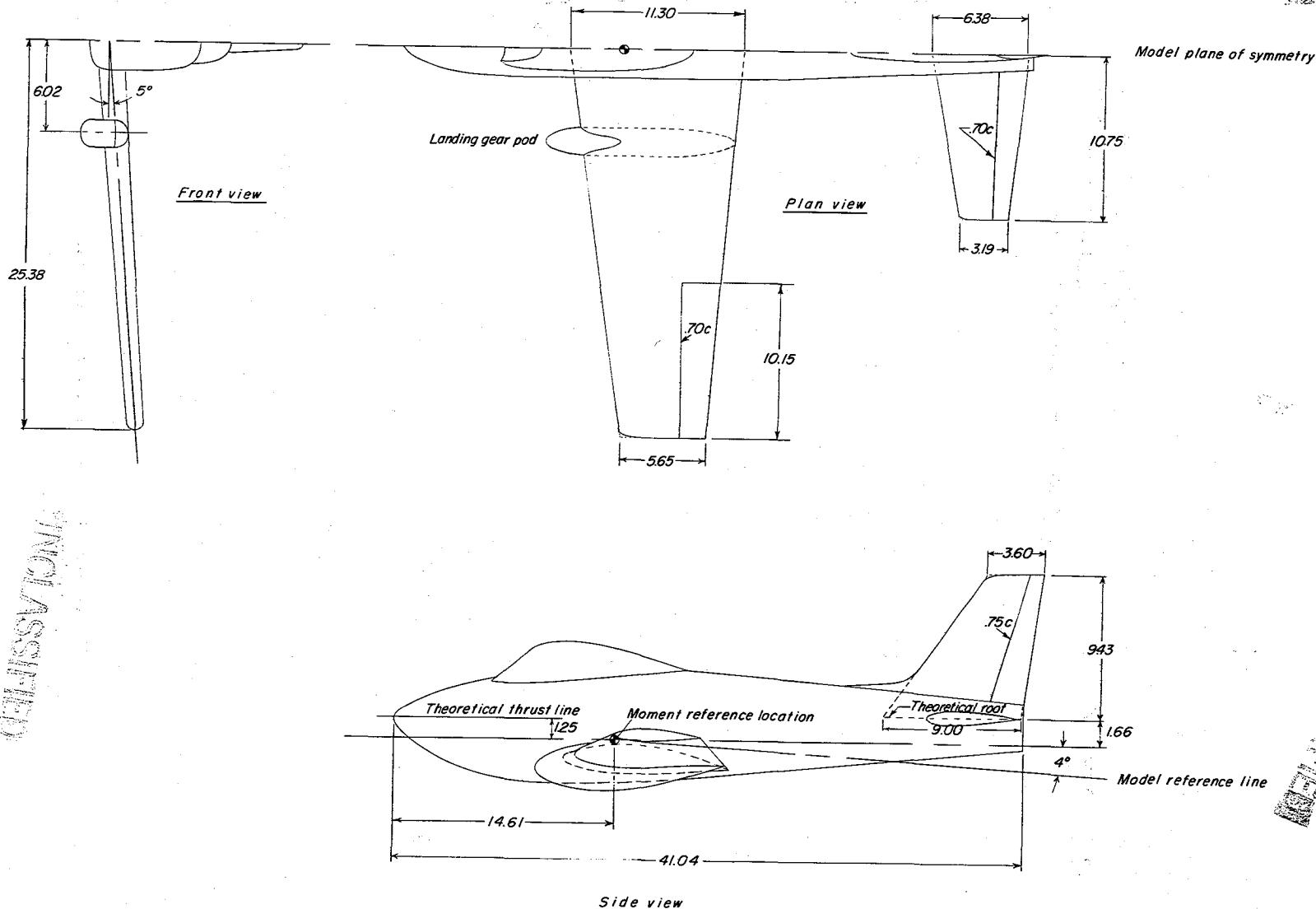
MACH	Q	BETA	ALPHA	CL	CD	CPM	CRM	CYM	CSF	L/D
.250	88.284	-.02	4.43	.4474	.0276	.0258	.0001	.0001	-.0013	16.204
.248	87.114	-6.01	4.43	.4500	.0261	.0213	.0039	.0051	.0243	17.257
.248	87.114	-4.99	4.43	.4475	.0265	.0222	.0036	.0043	.0211	16.895
.251	88.772	-3.99	4.44	.4528	.0270	.0238	.0029	.0036	.0163	16.773
.250	88.480	-3.00	4.44	.4508	.0275	.0257	.0024	.0028	.0123	16.422
.251	88.577	-2.00	4.44	.4489	.0277	.0264	.0016	.0020	.0084	16.226
.251	88.967	-1.00	4.44	.4495	.0278	.0263	.0010	.0011	.0042	16.146
.250	88.380	-.00	4.43	.4470	.0272	.0263	.0002	.0002	-.0005	16.445
.250	88.282	1.04	4.44	.4504	.0271	.0258	-.0003	-.0007	-.0050	16.610
.250	88.281	2.14	4.43	.4482	.0260	.0253	-.0008	-.0016	-.0094	17.270
.250	88.283	3.07	4.43	.4481	.0265	.0232	-.0014	-.0025	-.0133	16.879
.250	88.380	4.10	4.43	.4501	.0260	.0222	-.0022	-.0033	-.0177	17.341
.250	88.381	5.13	4.44	.4537	.0256	.0209	-.0029	-.0041	-.0222	17.689
.250	88.382	6.15	4.44	.4552	.0253	.0191	-.0036	-.0049	-.0270	17.957
.251	88.575	-.01	4.44	.4490	.0272	.0261	-.0004	.0002	-.0005	16.516

BODY AXIS COEFFICIENTS

MACH	Q	BETA	ALPHA	CNF	CAF	CPM	CRM	CYM	CSF
.250	88.284	-.02	4.43	.4482	-.0071	.0258	.0001	.0001	-.0013
.248	87.114	-6.01	4.43	.4506	-.0088	.0213	.0035	.0054	.0243
.248	87.114	-4.99	4.43	.4482	-.0082	.0222	.0032	.0046	.0211
.251	88.772	-3.99	4.44	.4535	-.0081	.0238	.0026	.0038	.0163
.250	88.480	-3.00	4.44	.4516	-.0075	.0257	.0021	.0030	.0123
.251	88.577	-2.00	4.44	.4497	-.0071	.0264	.0014	.0021	.0084
.251	88.967	-1.00	4.44	.4503	-.0070	.0263	.0009	.0012	.0042
.250	88.380	-.00	4.43	.4477	-.0075	.0263	.0002	.0002	-.0005
.250	88.282	1.04	4.44	.4510	-.0078	.0258	-.0002	-.0008	-.0050
.250	88.281	2.14	4.43	.4488	-.0088	.0253	-.0006	-.0017	-.0094
.250	88.283	3.07	4.43	.4488	-.0082	.0232	-.0012	-.0026	-.0133
.250	88.380	4.10	4.43	.4507	-.0089	.0222	-.0020	-.0034	-.0177
.250	88.381	5.13	4.44	.4542	-.0095	.0209	-.0025	-.0043	-.0222
.250	88.382	6.15	4.44	.4557	-.0099	.0191	-.0032	-.0051	-.0270
.251	88.575	-.01	4.44	.4497	-.0076	.0261	-.0004	.0003	-.0005

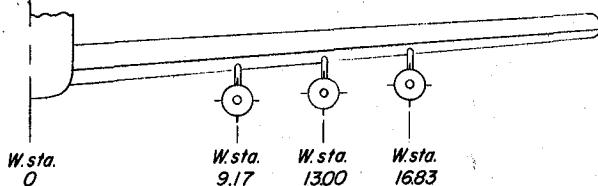
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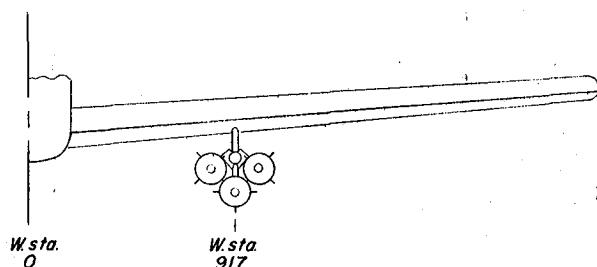
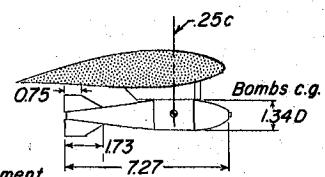


(a) Three-view drawing of basic configuration with alternate landing gear pod arrangement.
Figure 1.- Details of model. All linear dimensions are in inches.

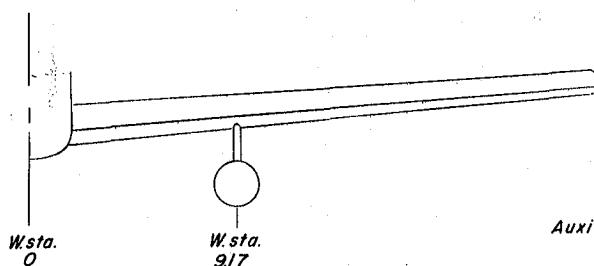
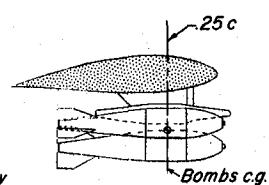
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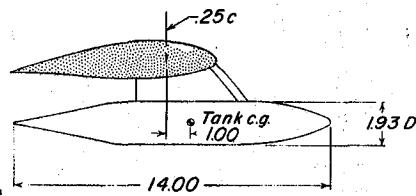
Basic M-117 bomb arrangement



T.E.R. - M-117 bomb assembly



Auxiliary fuel tank arrangement

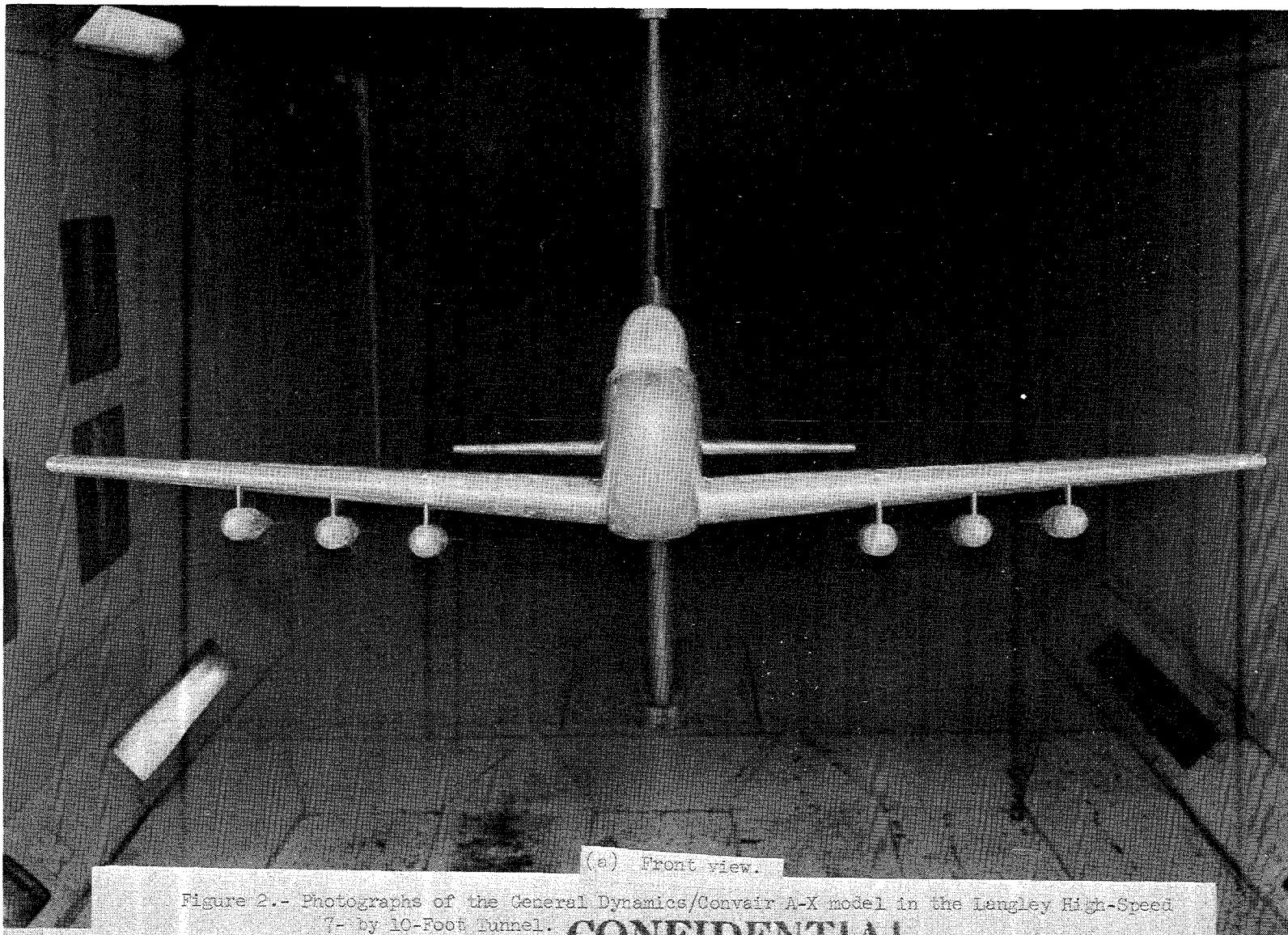


Rear views

Side views

(b) Details of various store arrangements.
Figure 1.- Concluded

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(a) Front view.

Figure 2.- Photographs of the General Dynamics/Convair A-X model in the Langley High-Speed 7- by 10-Foot Tunnel.

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(b) Three-quarter front view.
Figure 2.- Concluded.

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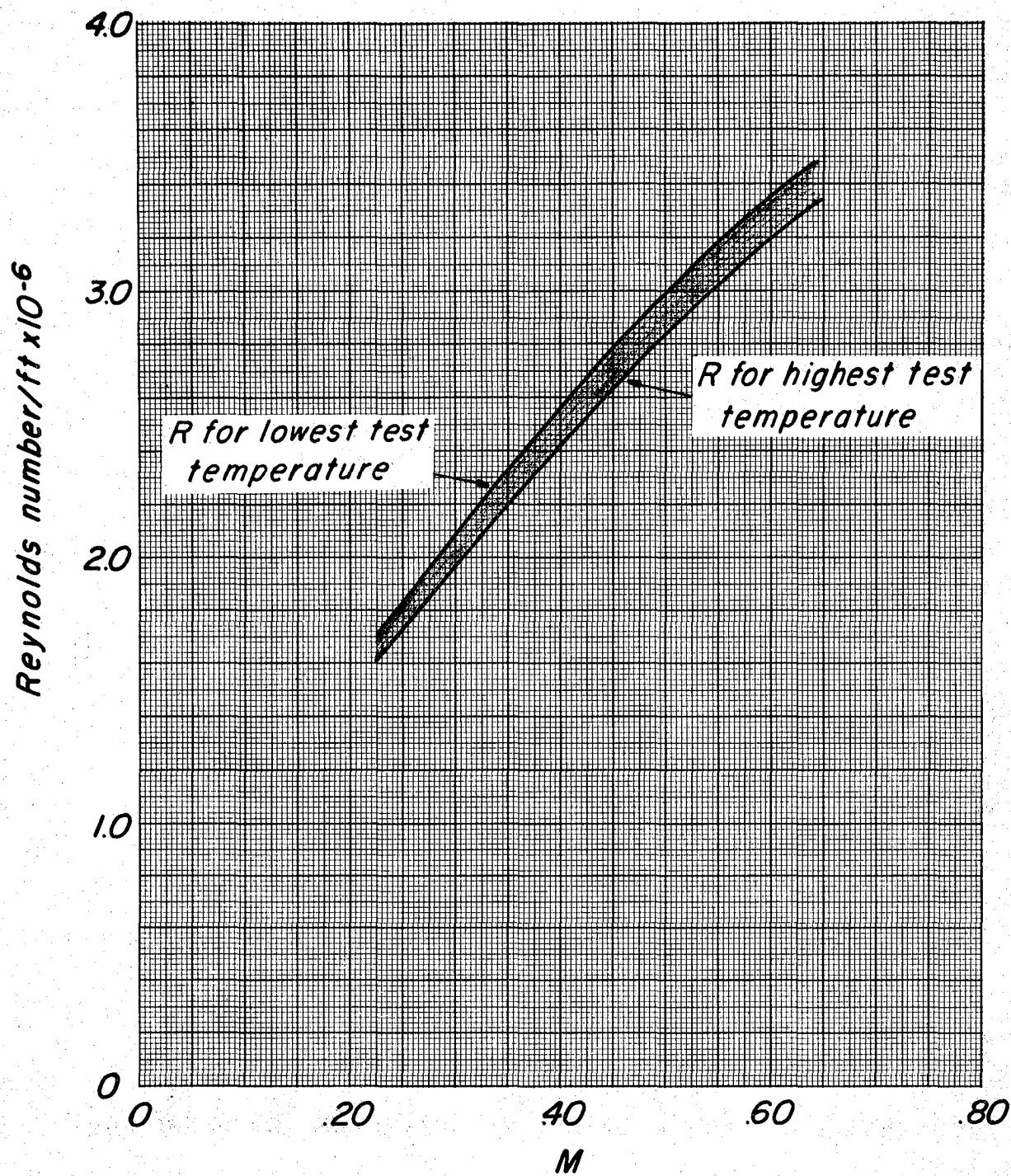


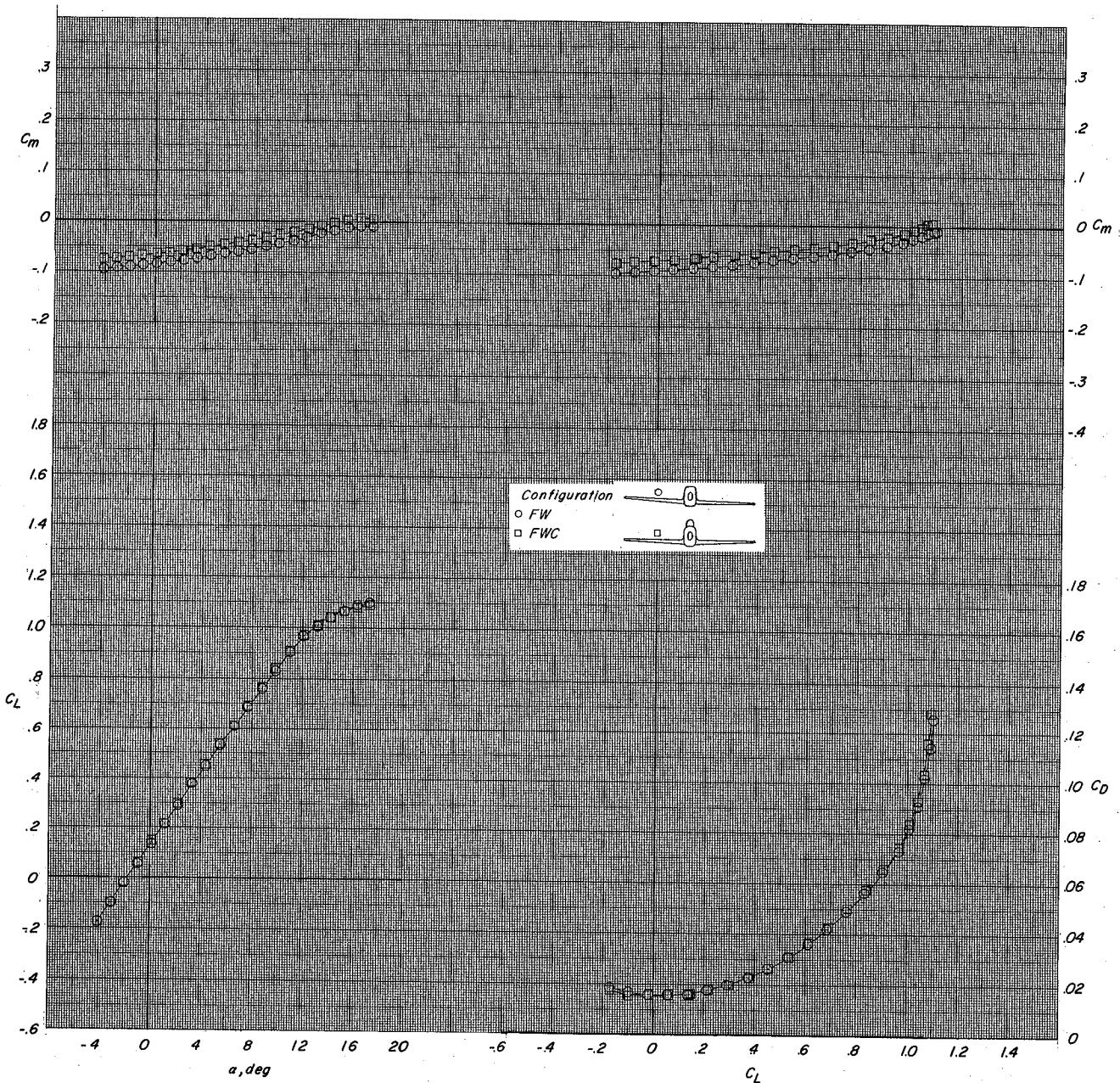
Figure 3.- Variation of test Reynolds number with Mach number.

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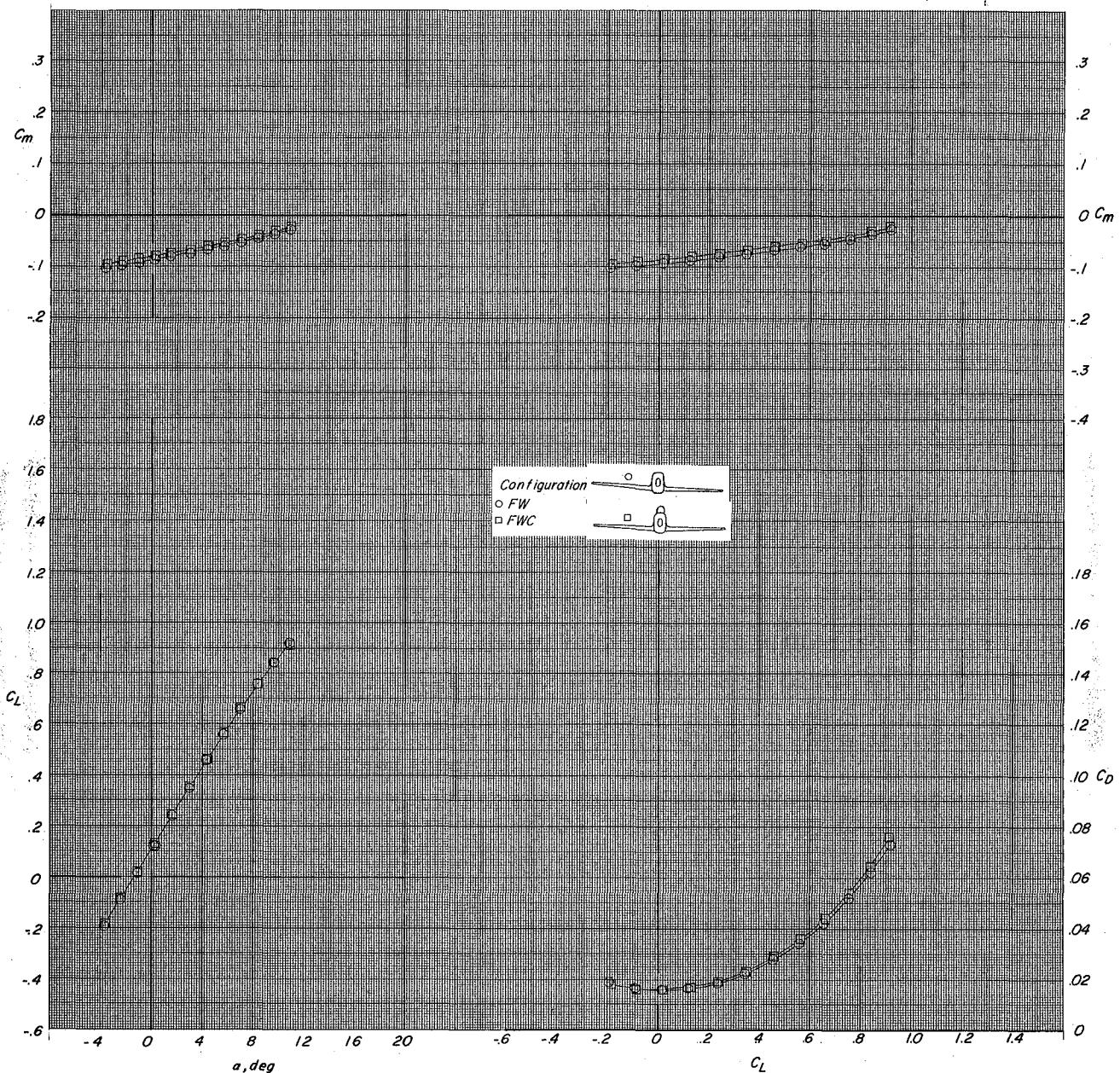


(a) FW and FWC at $M = 0.25$

Figure 4.- Effects of various model components on the longitudinal aerodynamic characteristics of the basic configuration FWCVH.

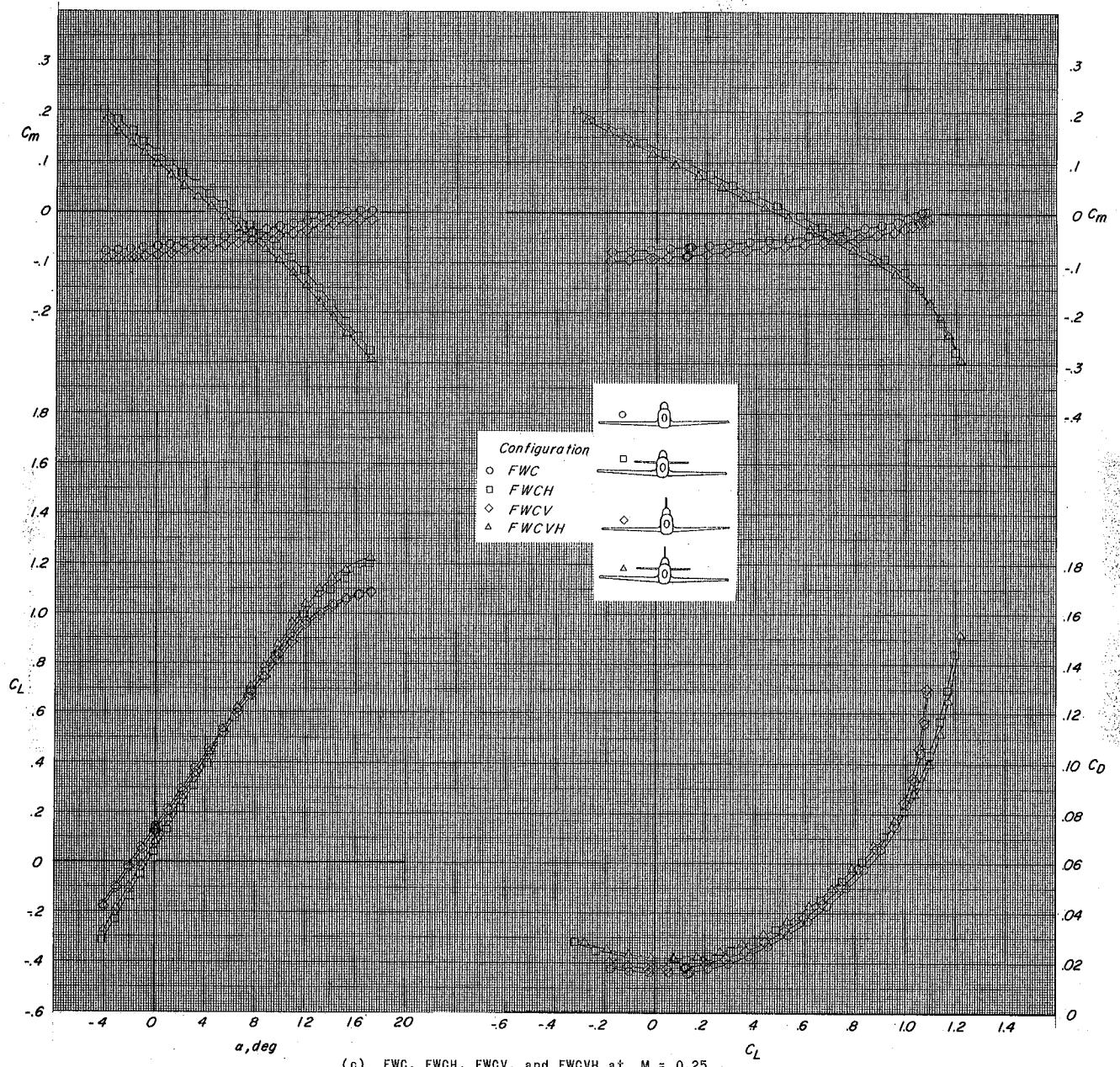
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(b) FW and FWC at $M = 0.55$
Figure 4.- Continued.

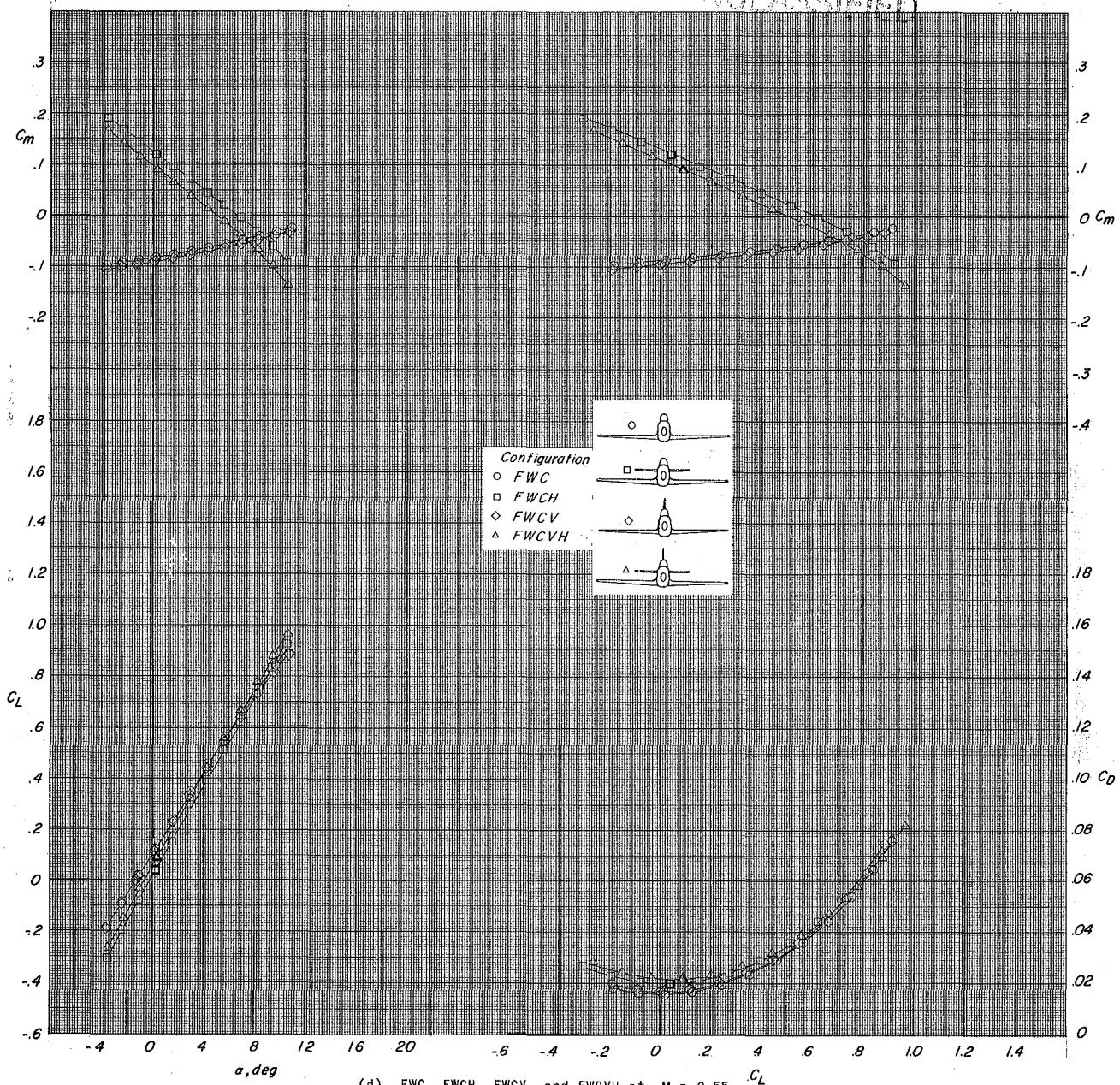
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(c) FWC, FWCH, FWCV, and FWCVH at $M = 0.25$
Figure 4.- Continued.

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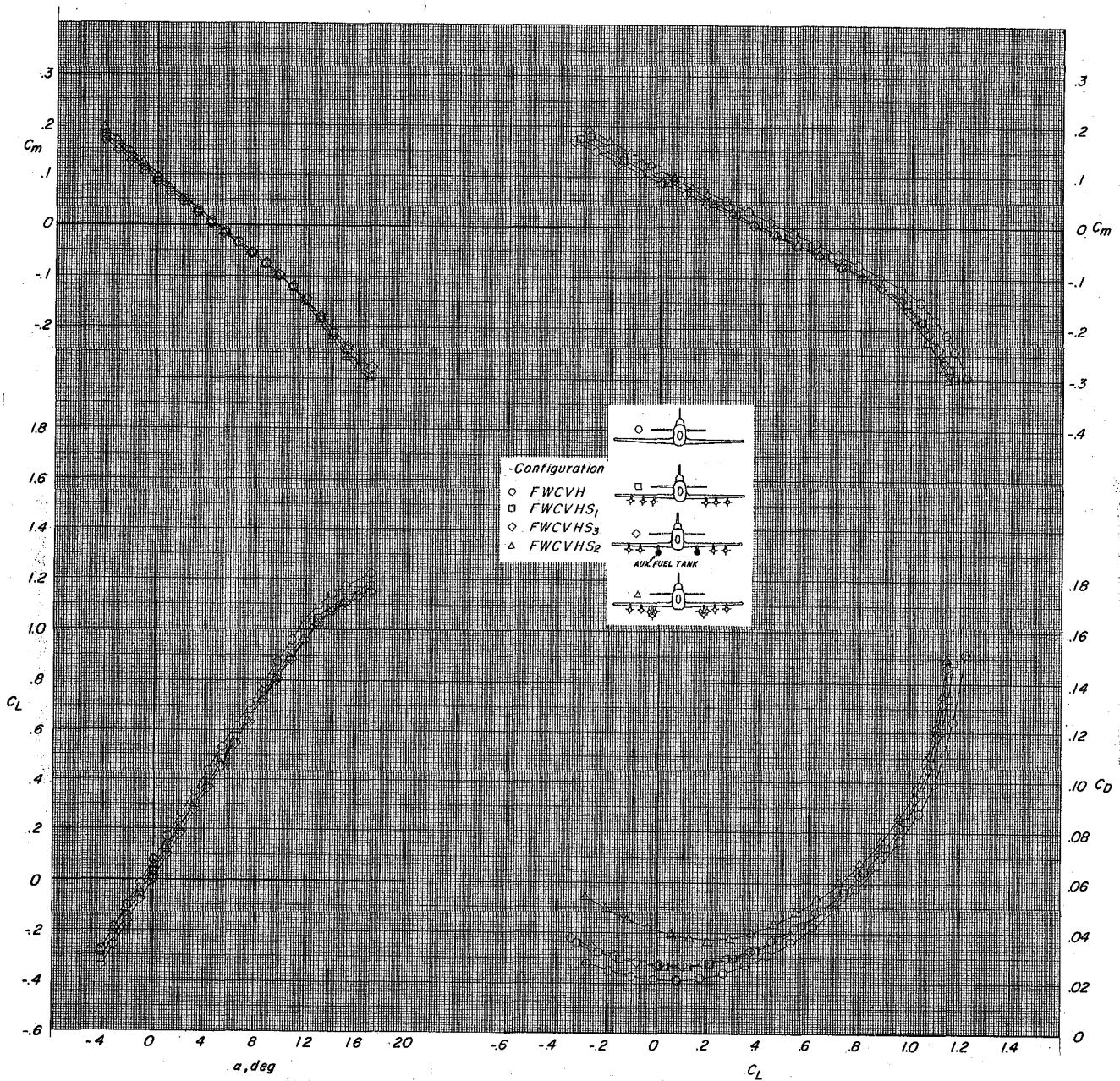


(d) FWC, FWCH, FWCV, and FWCVH at $M = 0.55$
Figure 4.- Concluded.

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(a) FWCVH, FWCVHS₁, FWCVHS₂ and FWCVHS₃ at $M = 0.25$
Figure 5.- Effect of various external store arrangements on the longitudinal aerodynamic characteristics of the basic configuration FWCVH.

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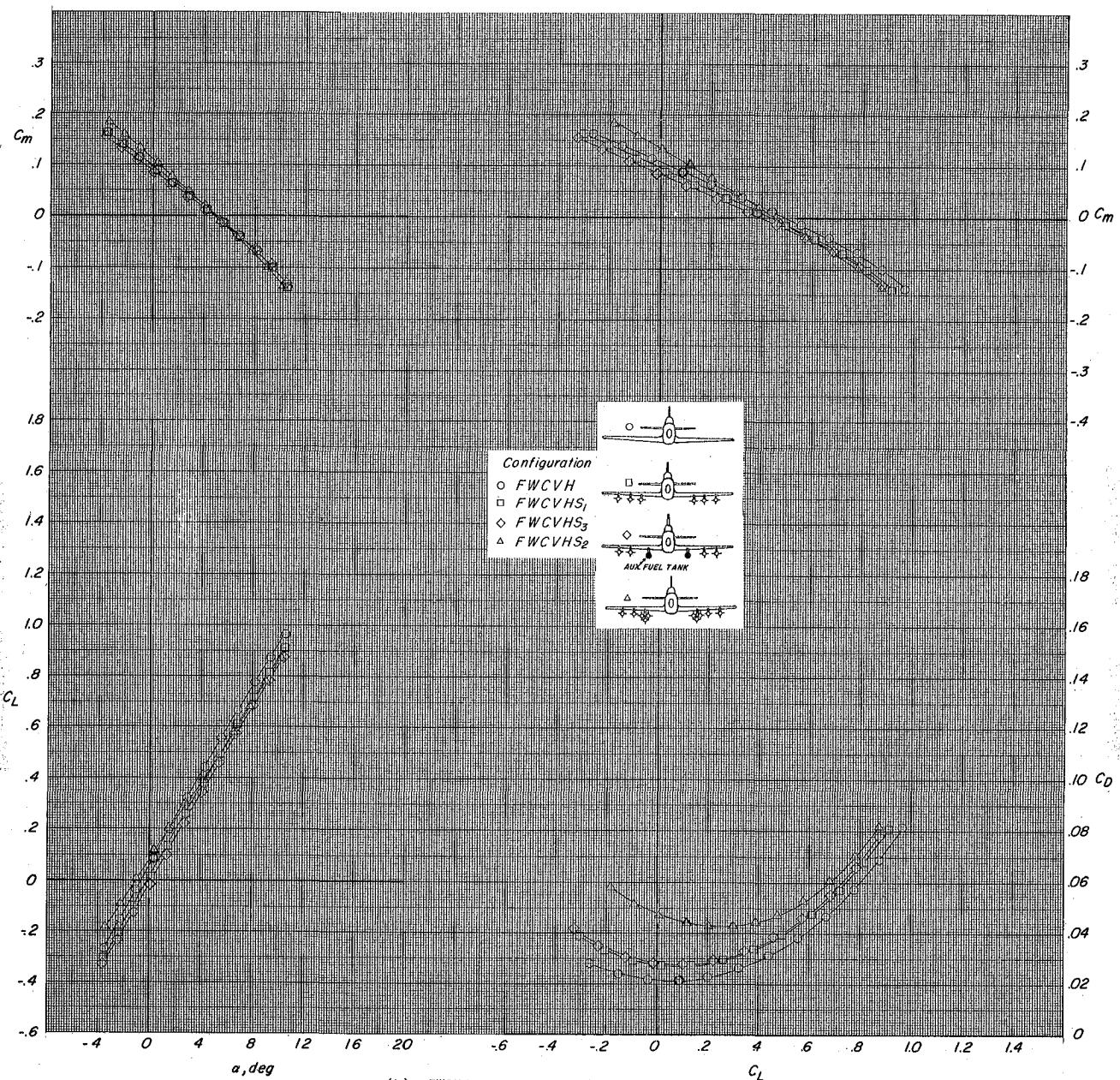
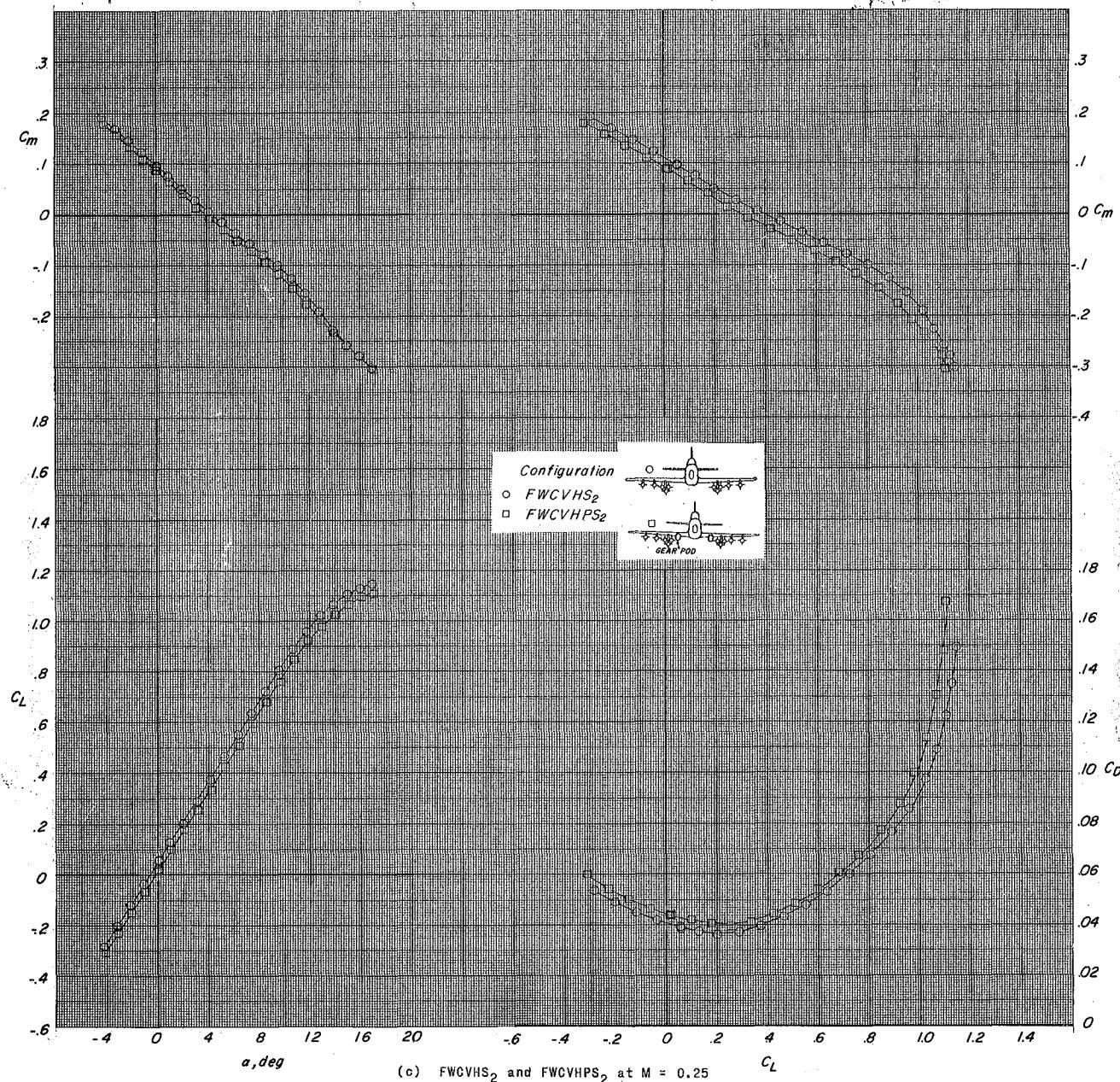


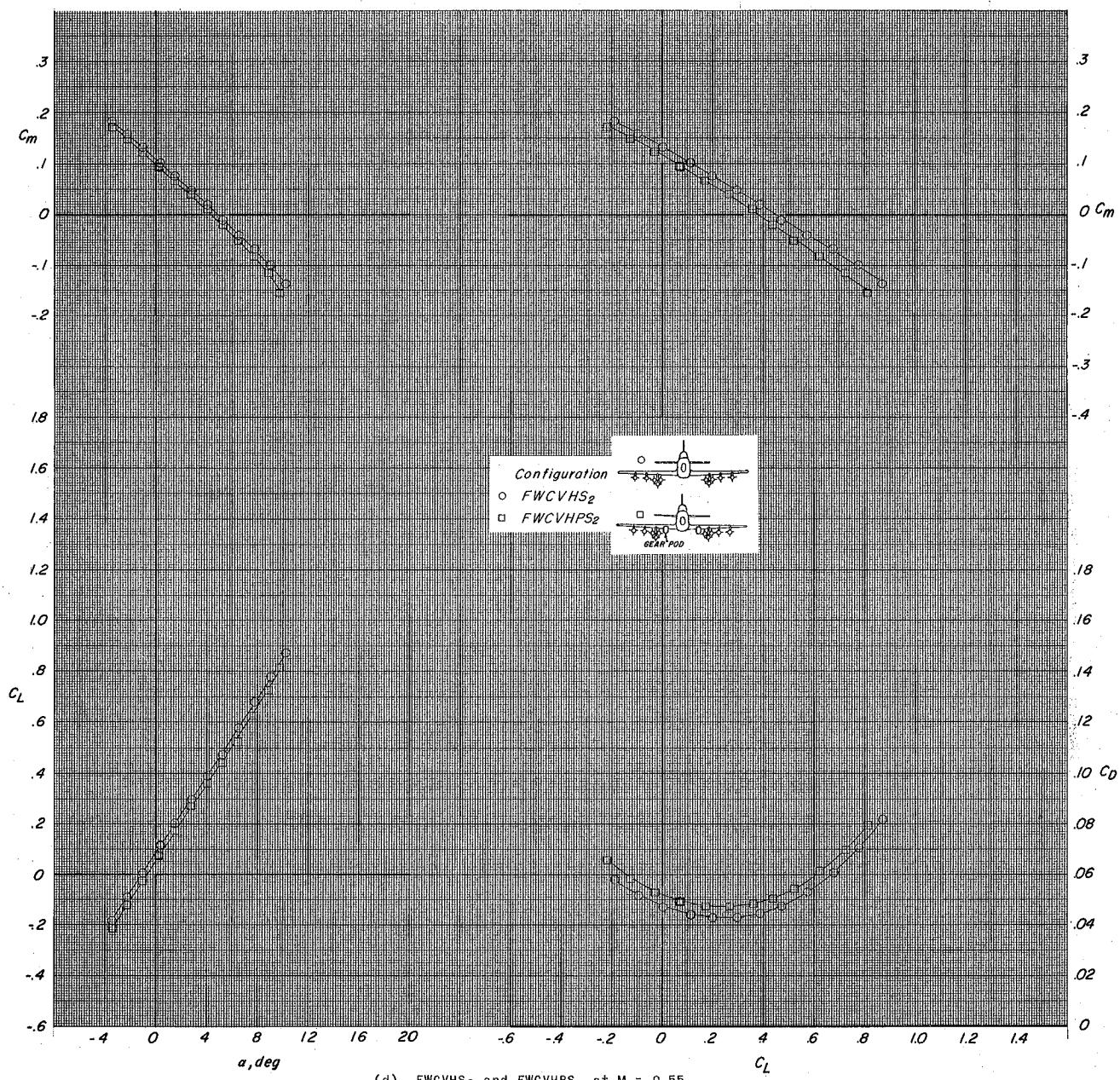
Figure 5.- Continued.

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(c) FWCVHS₂ and FWCVHPS₂ at $M = 0.25$
Figure 5.- Continued.

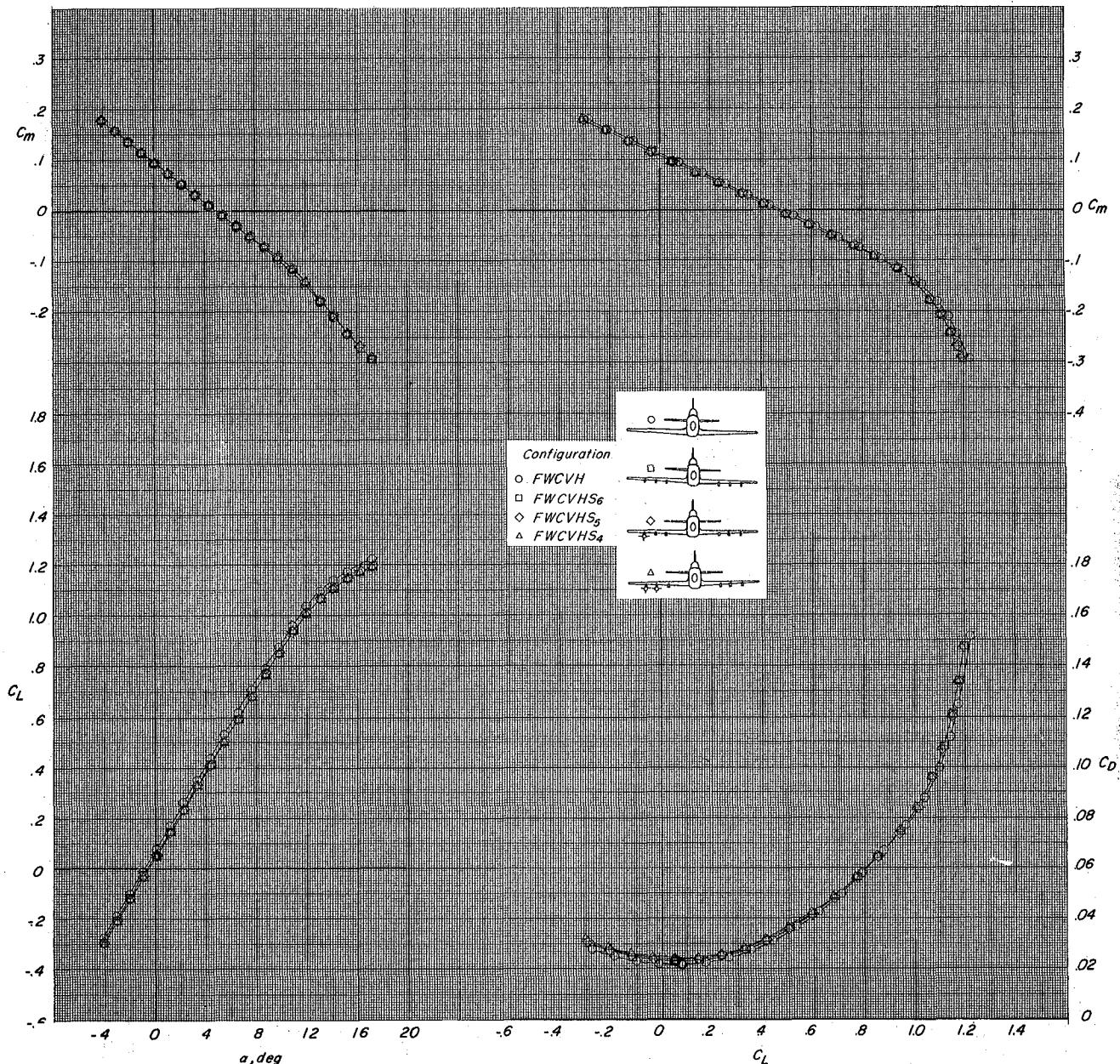
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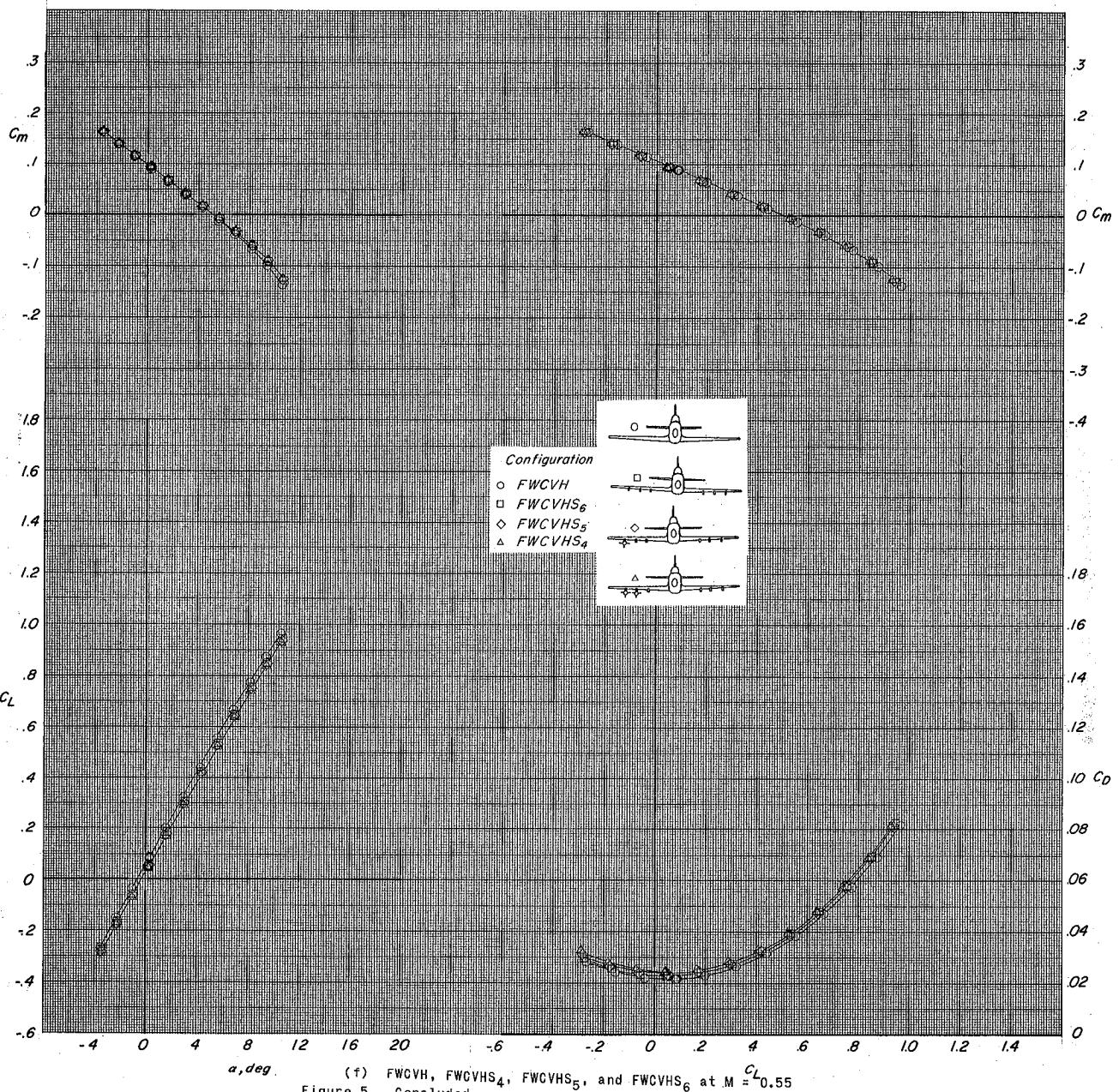
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(e) FWCVH, FWCVHS₄, FWCVHS₅, and FWCVHS₆ at $M = 0.25$
Figure 5.- Continued.

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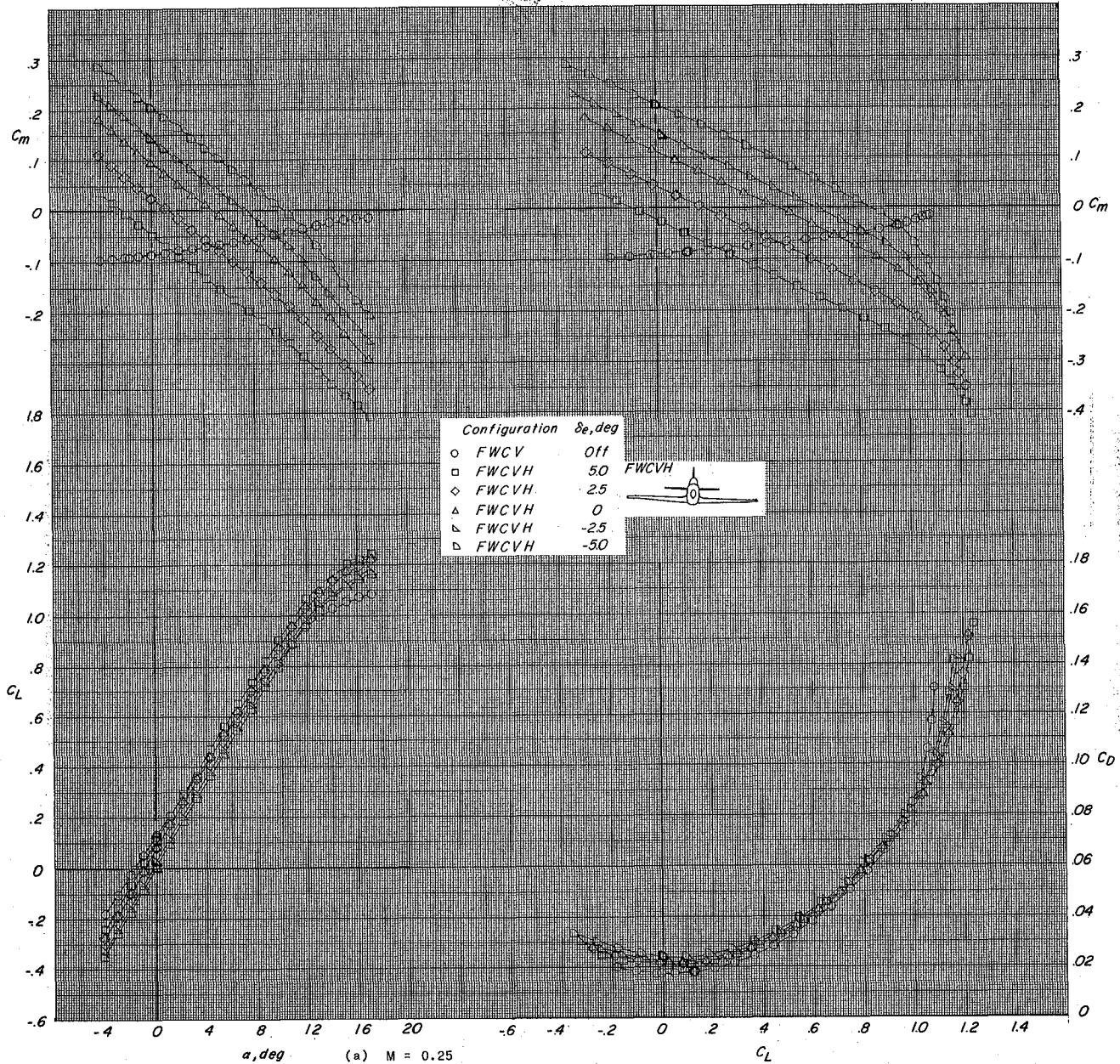
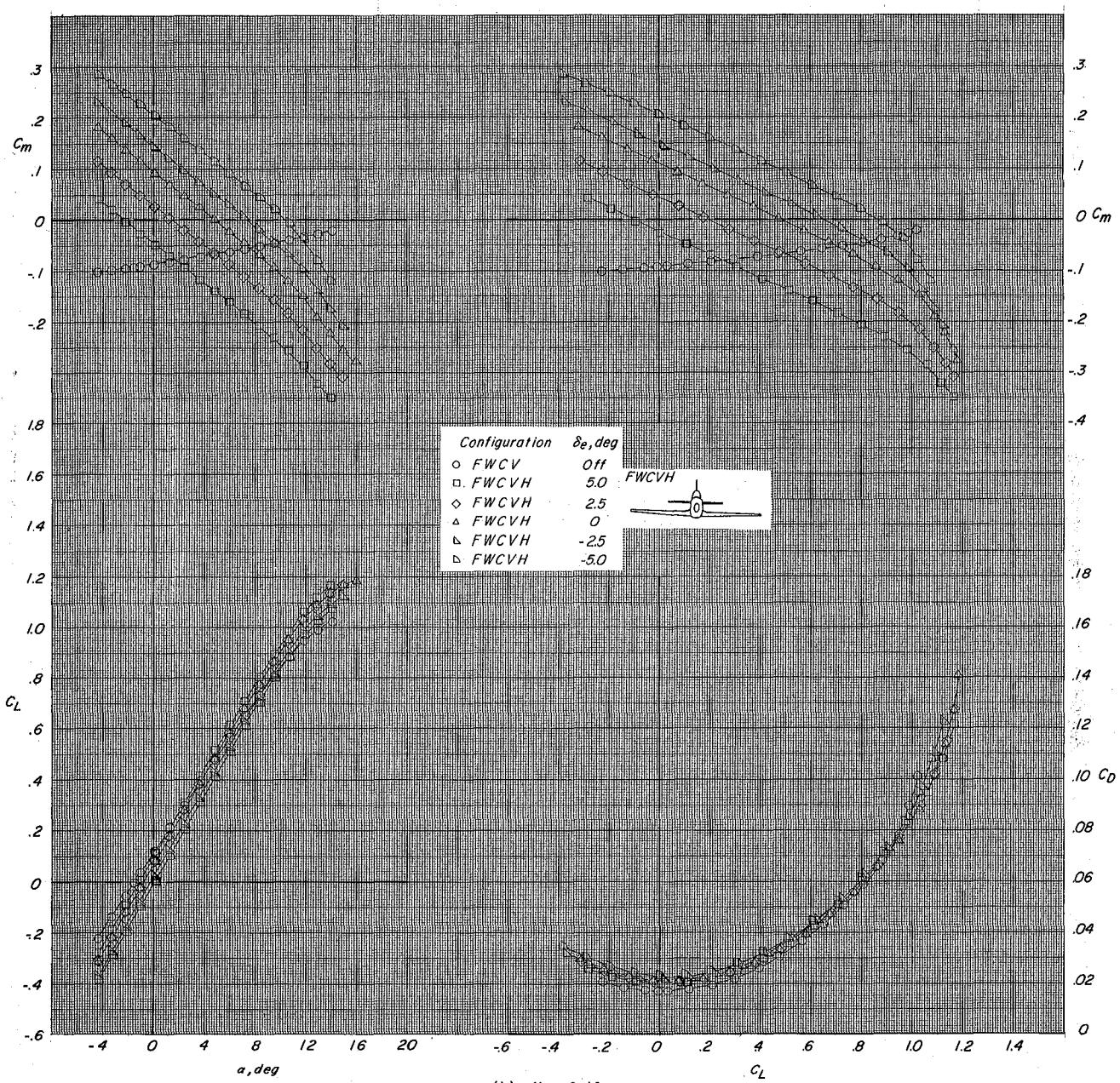


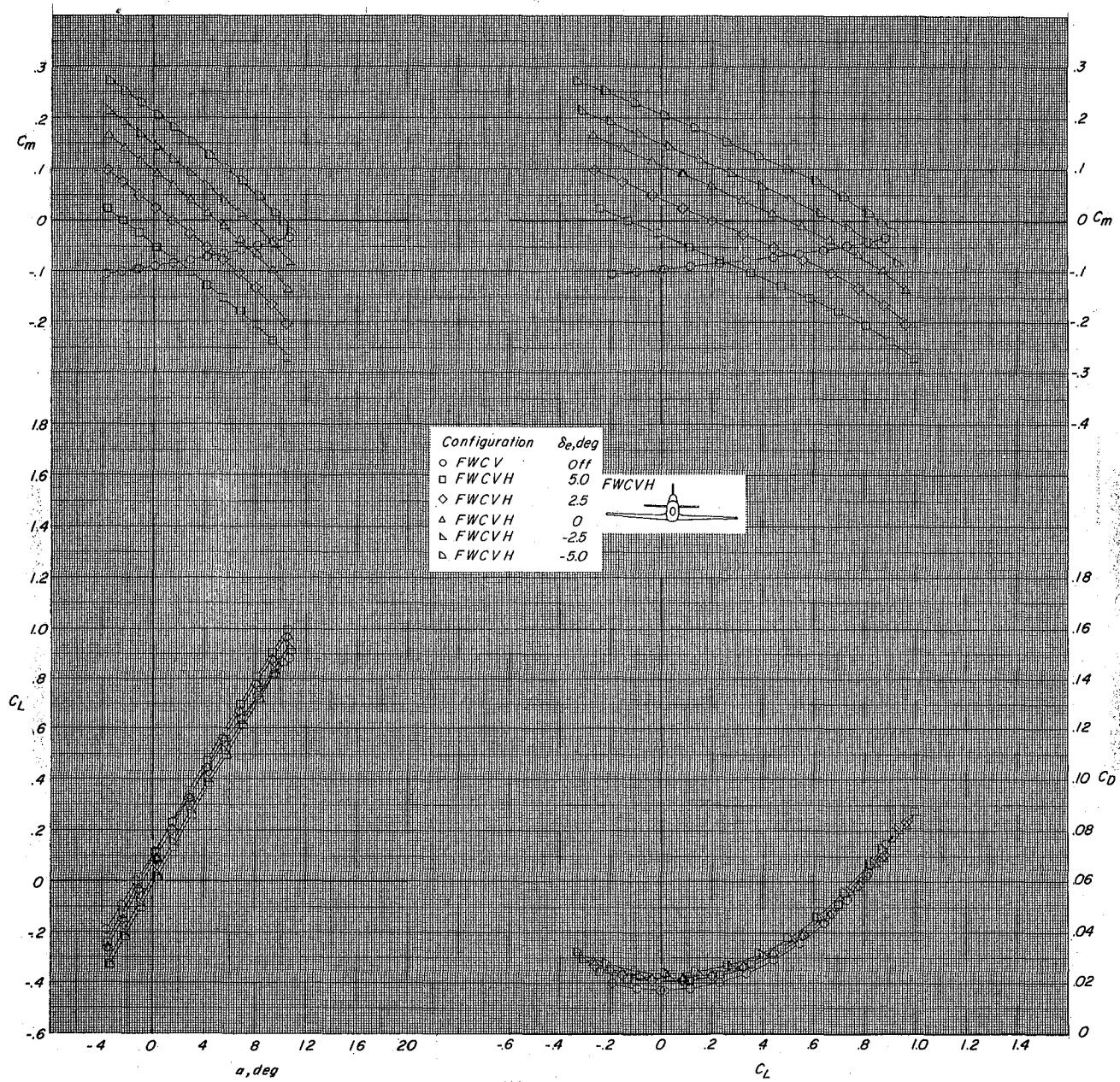
Figure 6.- Longitudinal control effectiveness of basic configuration FWCVH without stores.

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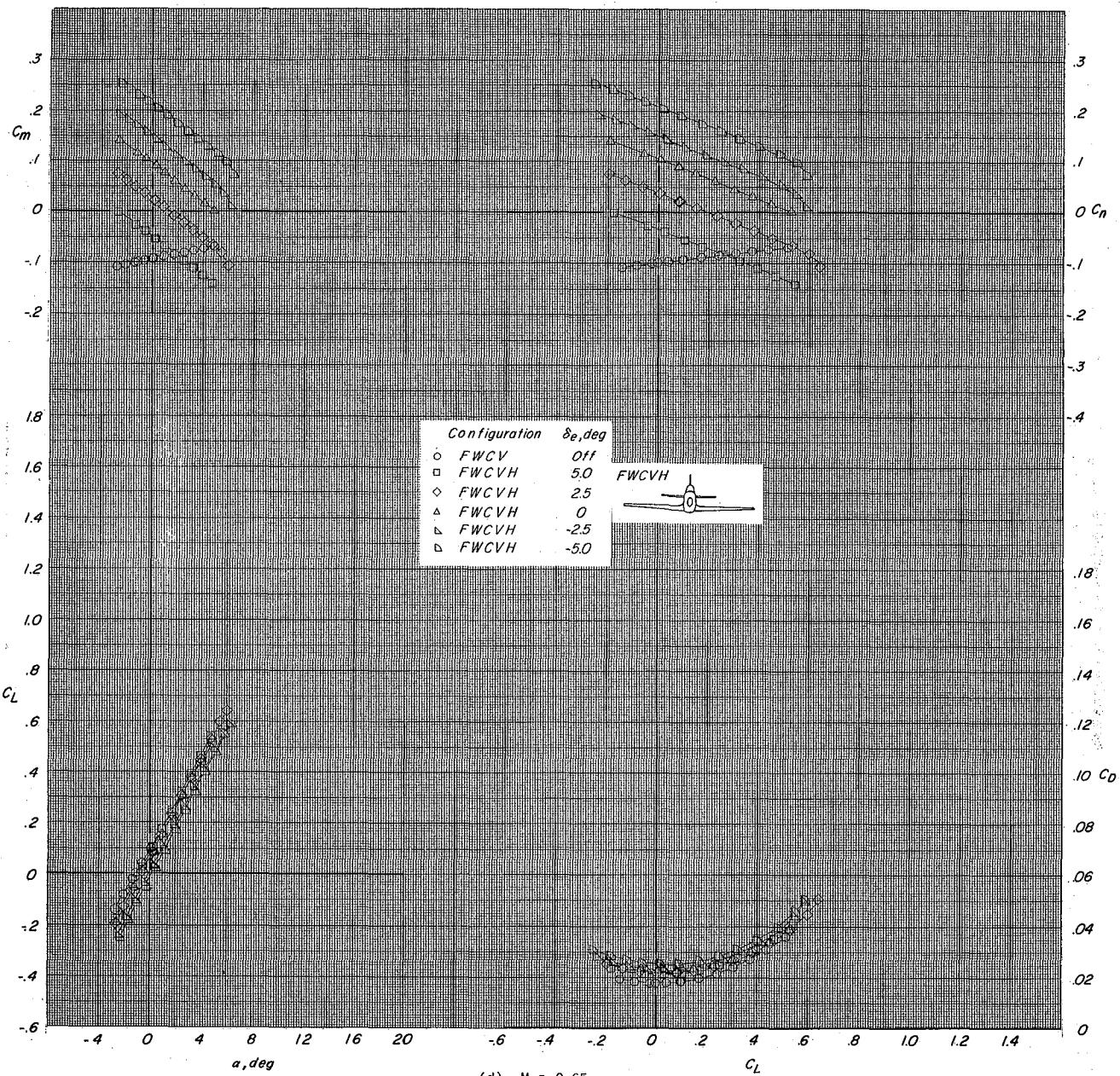
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(c) $M = 0.55$
Figure 6.4 Continued.

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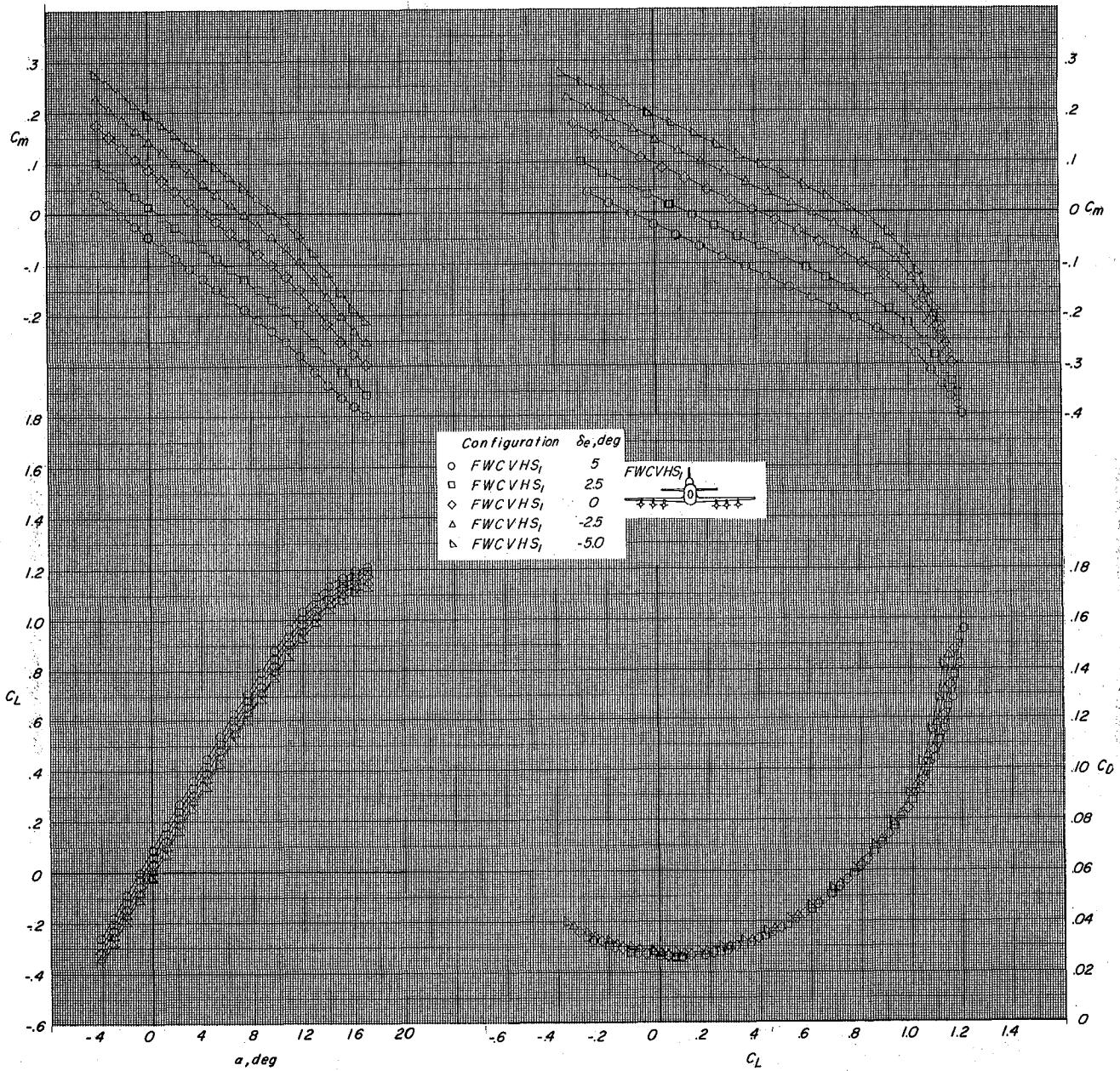


(d) $M = 0.65$
Figure 6.- Concluded.

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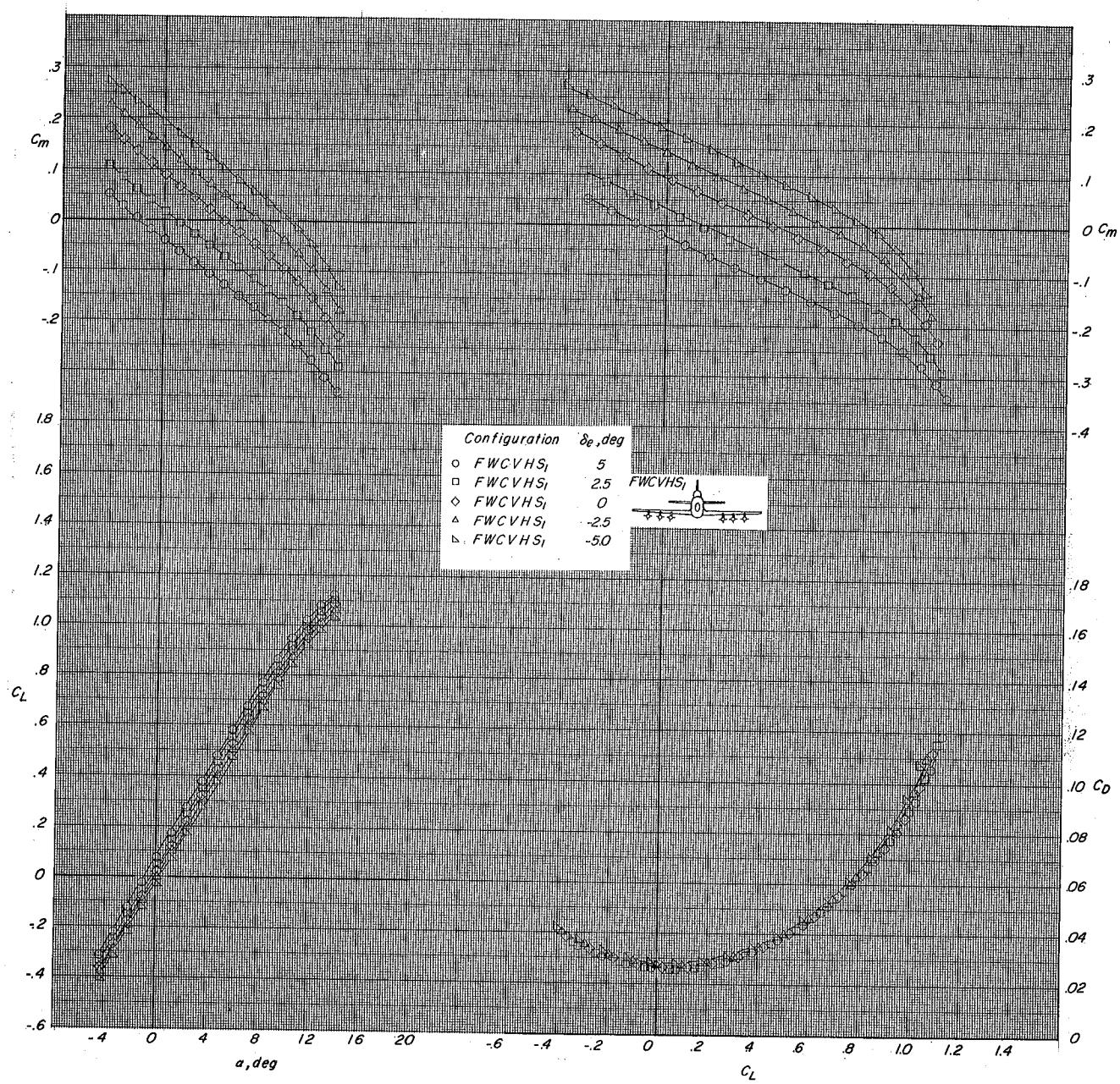
(a) $M = 0.25$

Figure 7.- Longitudinal control effectiveness of basic configuration FWCVH with six M-117 bombs mounted under the wings.

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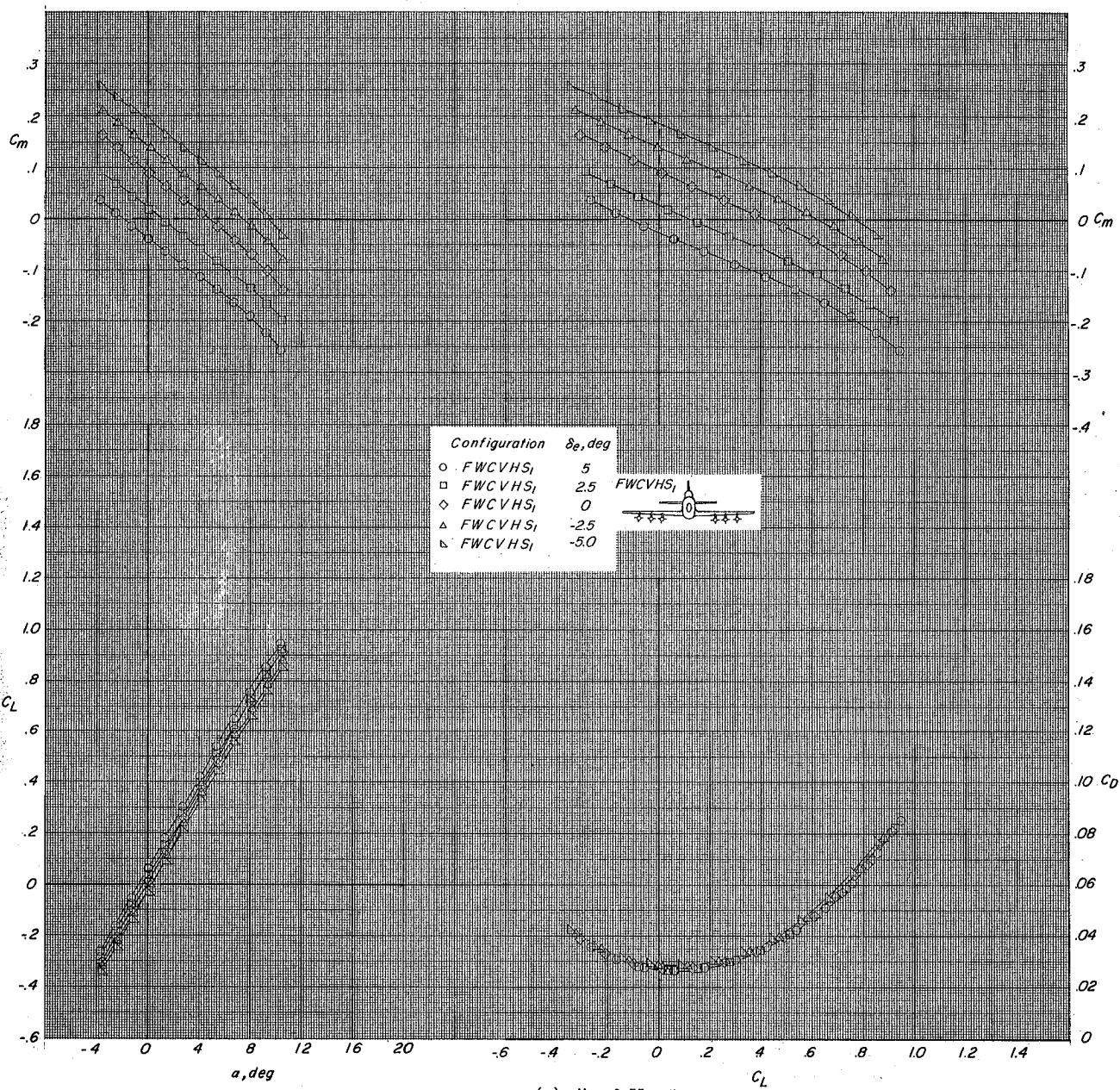


(b) $M = 0.40$
Figure 7.- Continued.

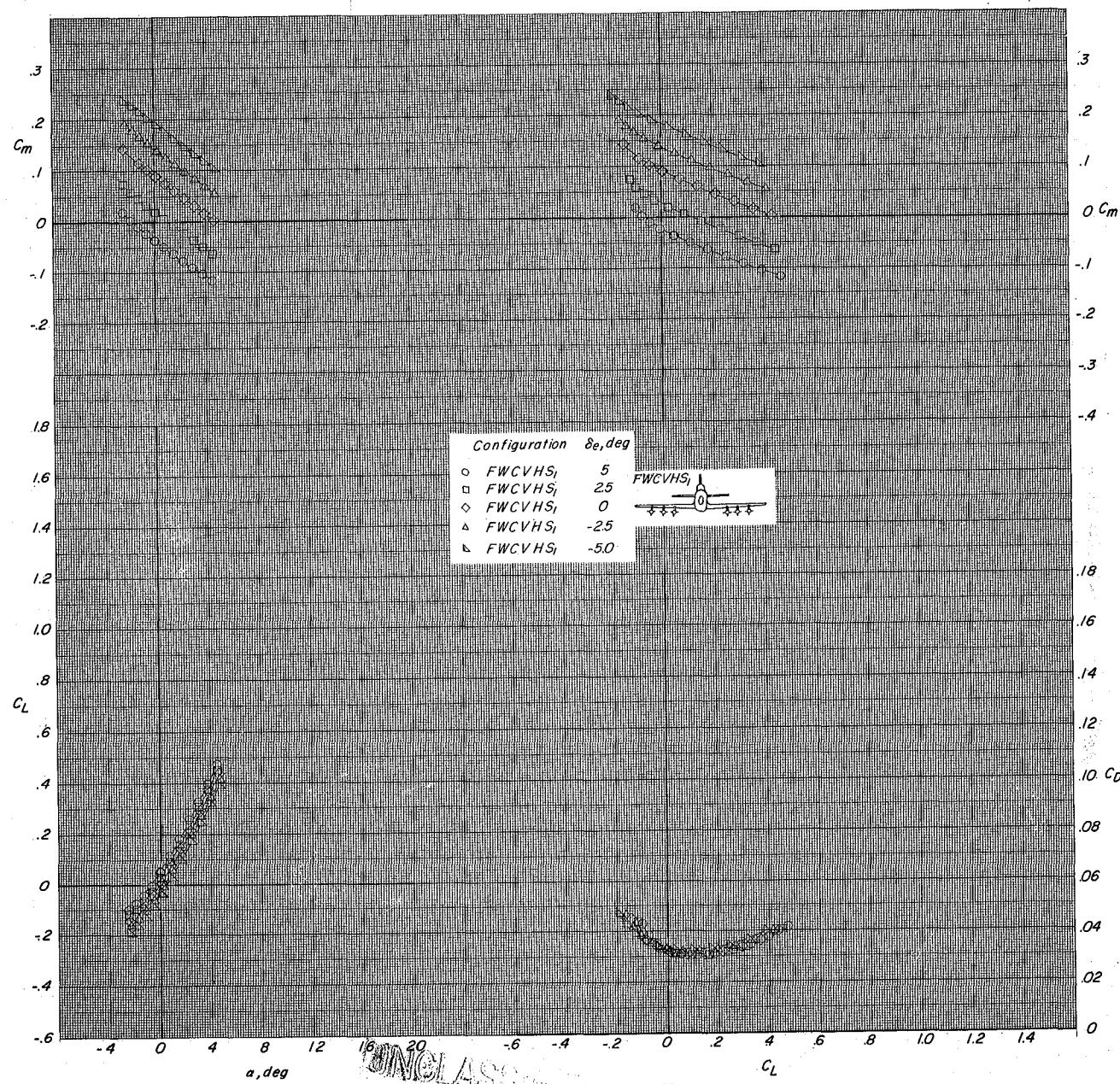
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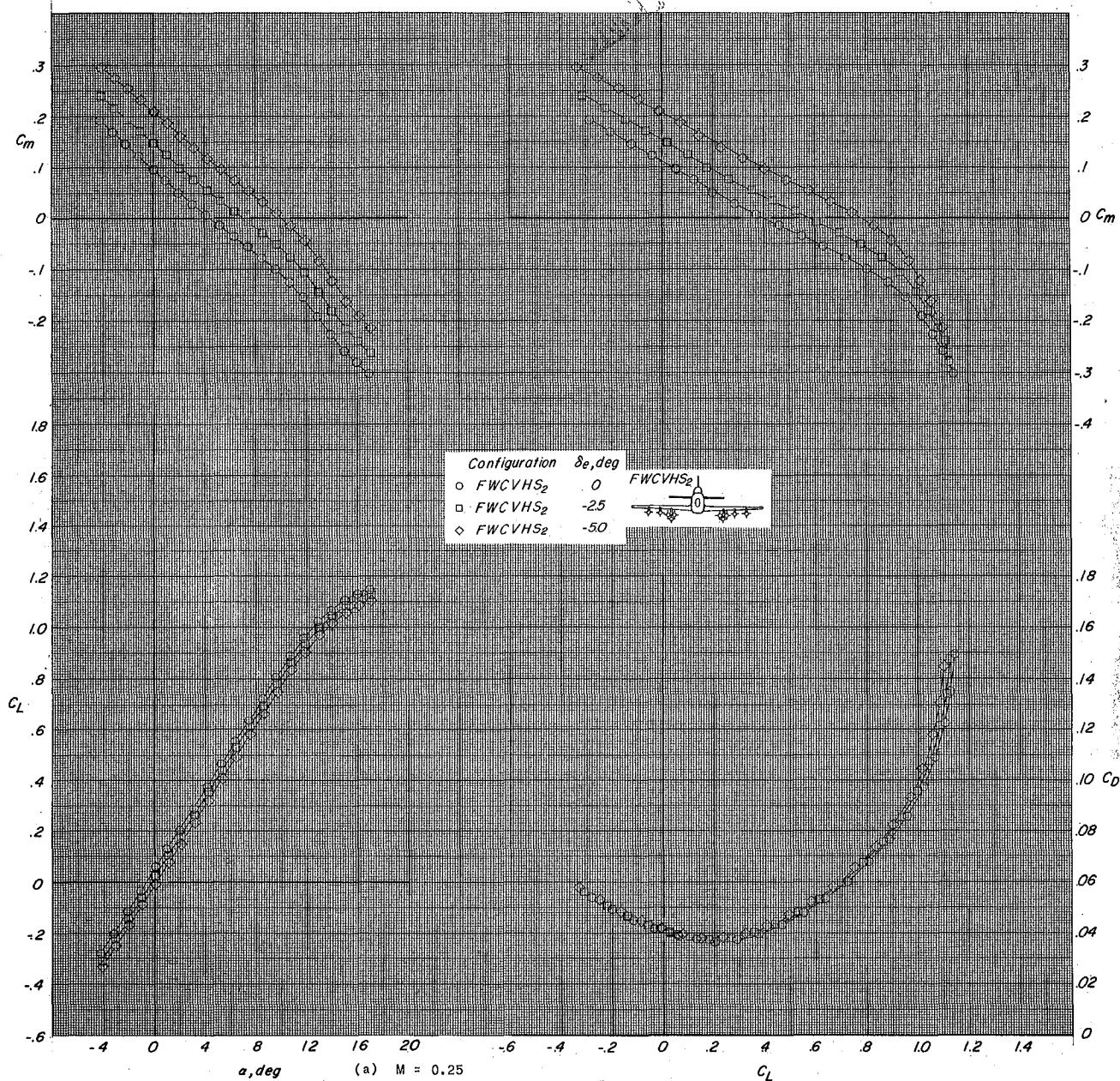


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(d) $M = 0.65$
Figure 7. - Concluded.

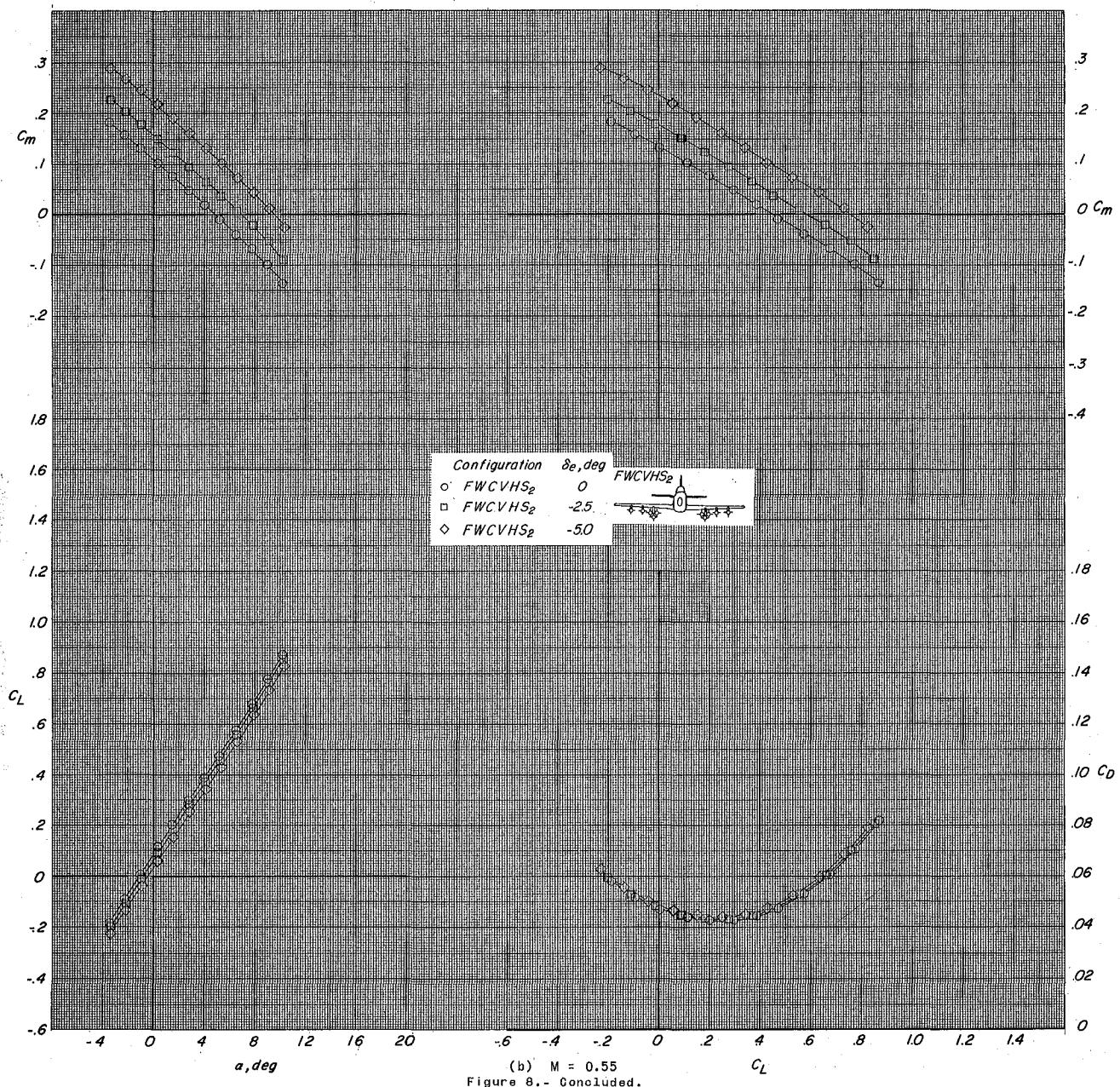
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(a) $M = 0.25$
Figure 8.- Longitudinal control effectiveness of basic configuration FWCVH with ten
M-117 bombs mounted under the wings.

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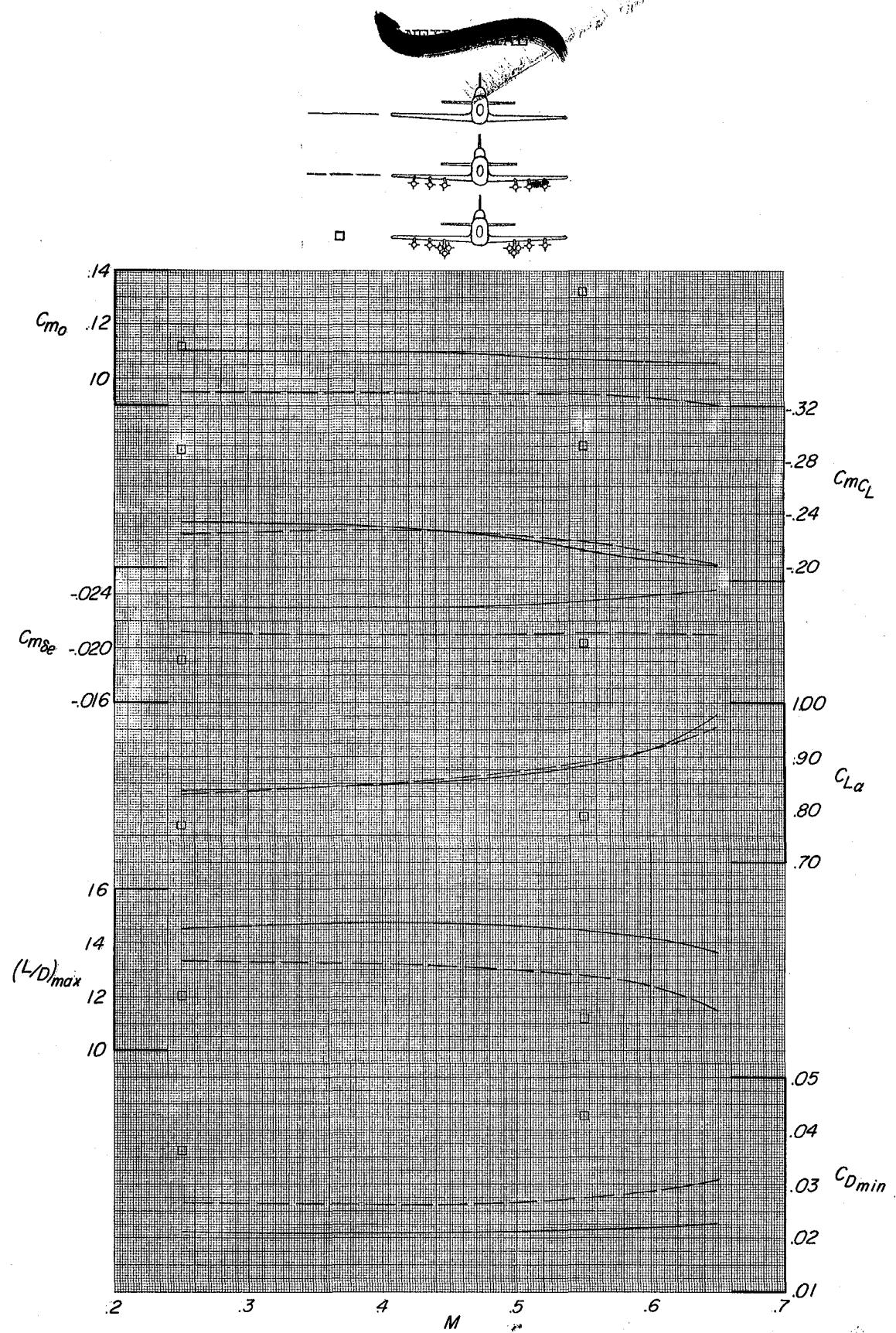
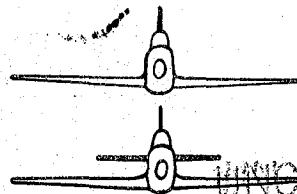


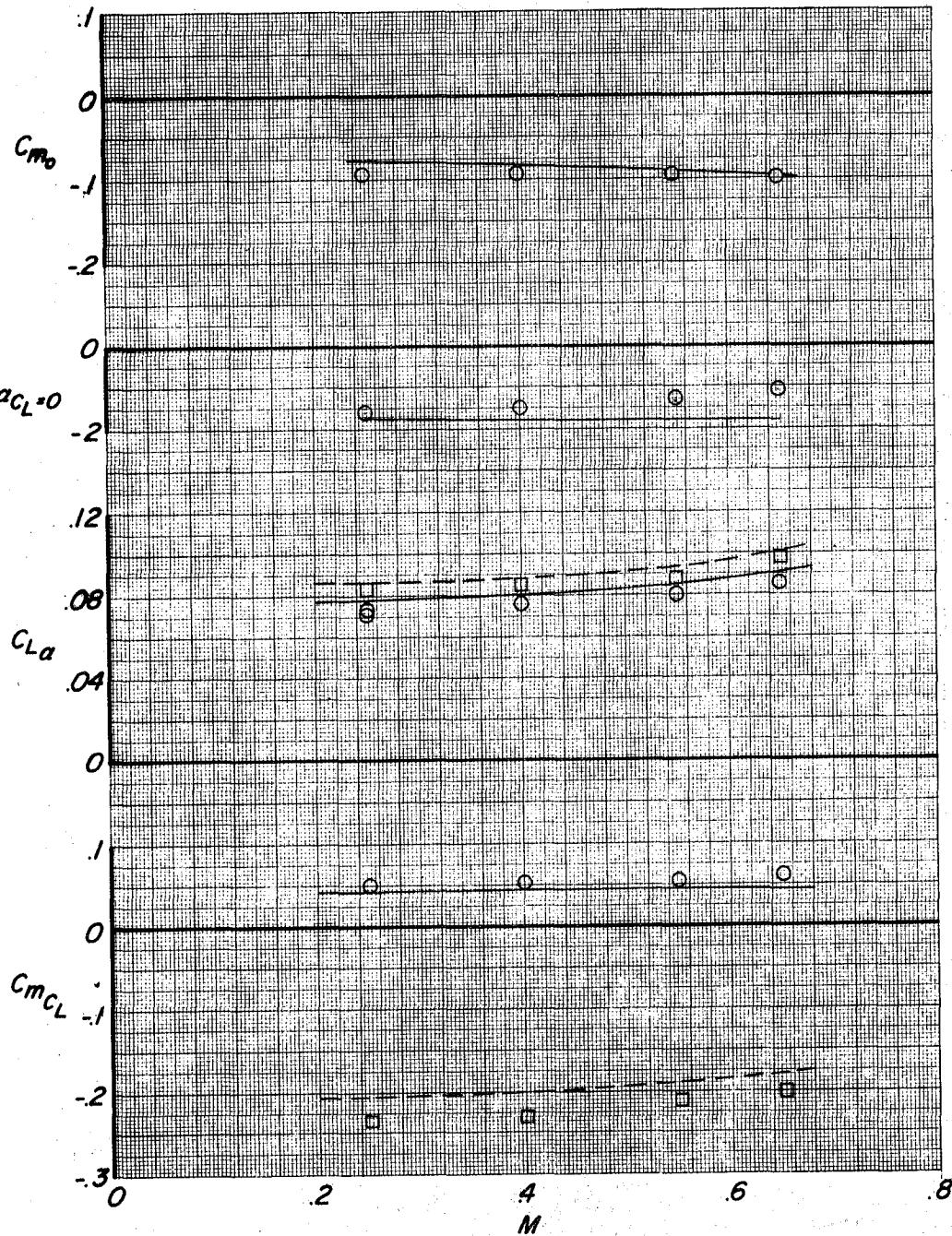
Figure 9.- Summary of the longitudinal aerodynamic characteristics of the FWCVH, FWCVHS₁ and FWCVHS₂ configurations at Mach numbers ranging from 0.25 to 0.65.

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Experiment *Estimated*



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(a) C_{m_0} , $\alpha_{C_L} = 0$, $C_{L\alpha}$, and $C_{m_{C_L}}$ versus Mach number.

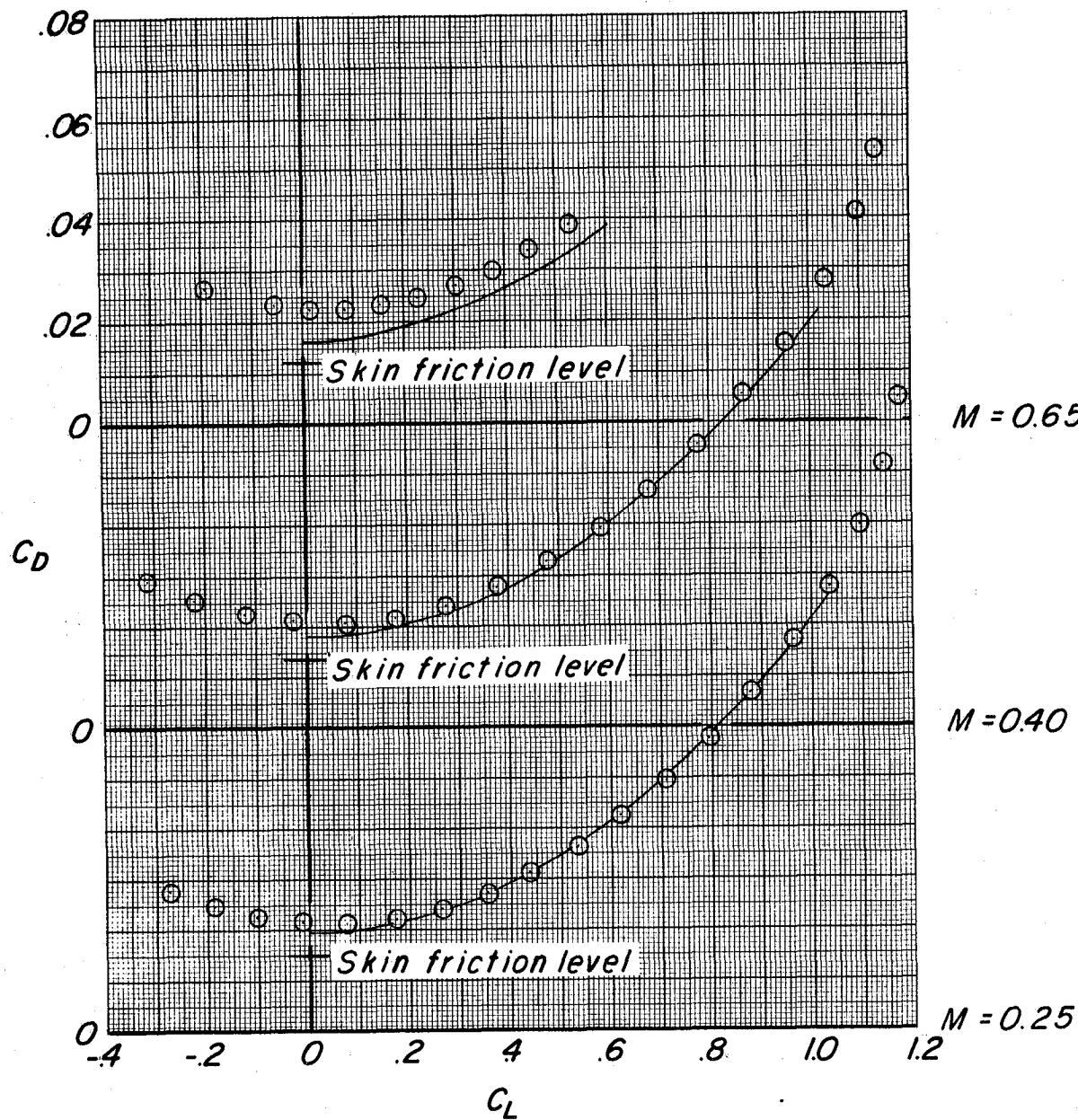
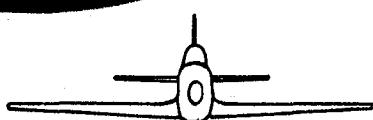
Figure 10.- Comparison of experimental with estimated longitudinal characteristics.

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○ Experiment
— Estimate



(b) C_D versus C_L at $M = 0.25, 0.40$ and 0.65 . FWCVH configuration.
Figure 10. - Continued.

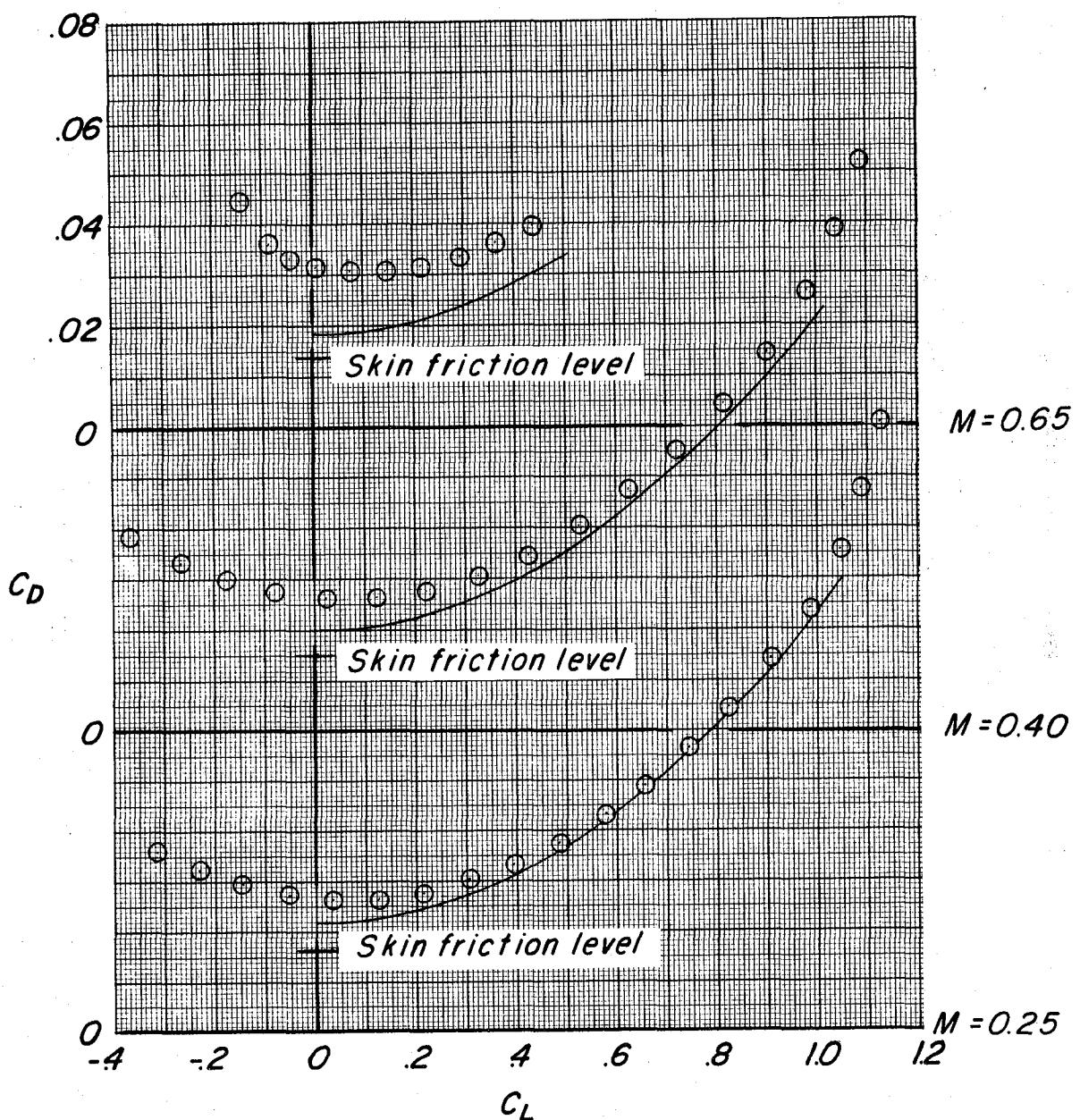
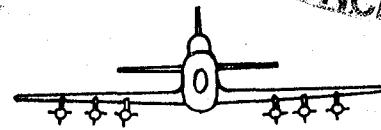
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○ Experiment
— Estimate



(c) C_D versus C_L at $M = 0.25, 0.40$, and 0.65 , FWCVHS₁ configuration.
Figure 10.- Concluded.

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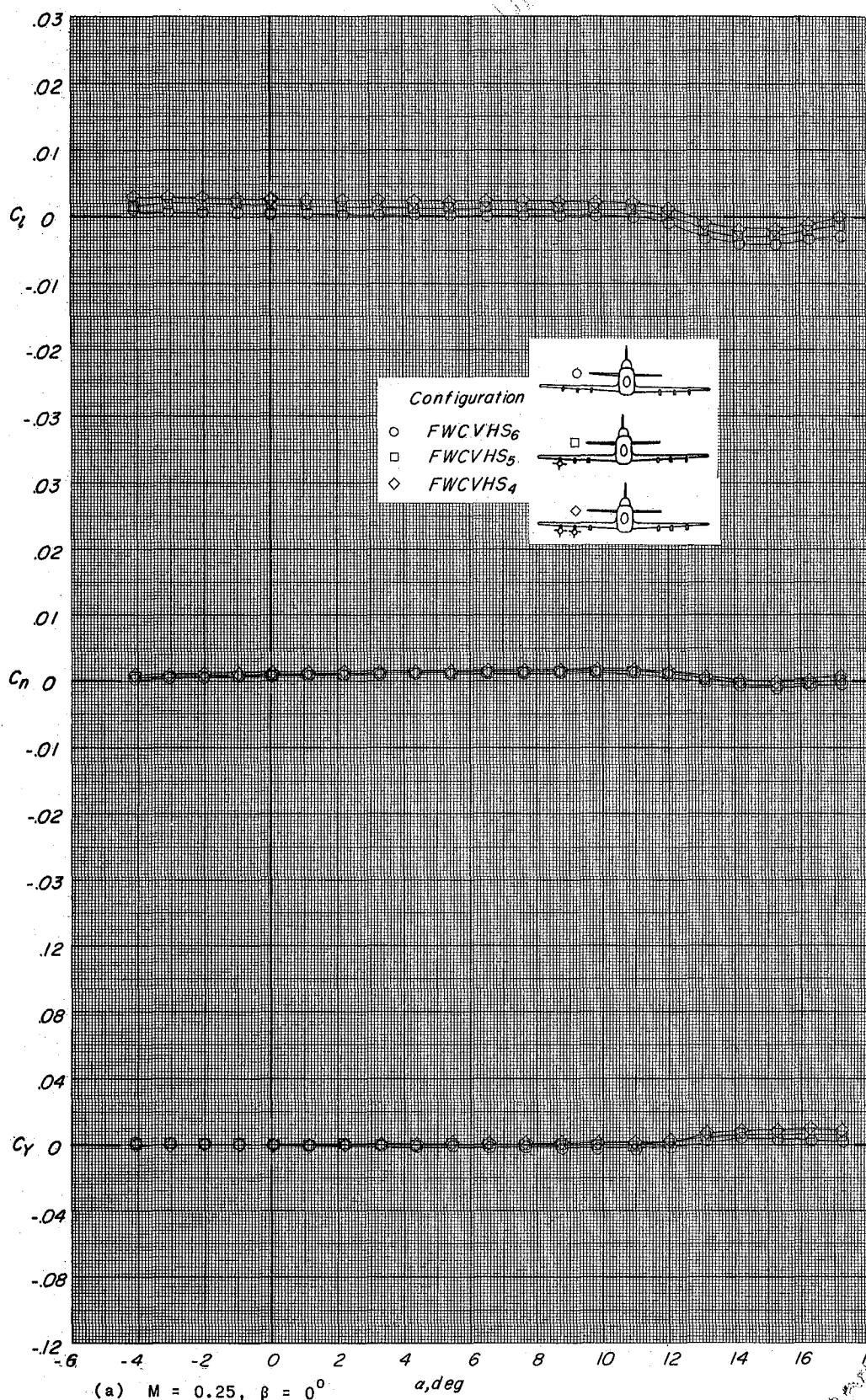
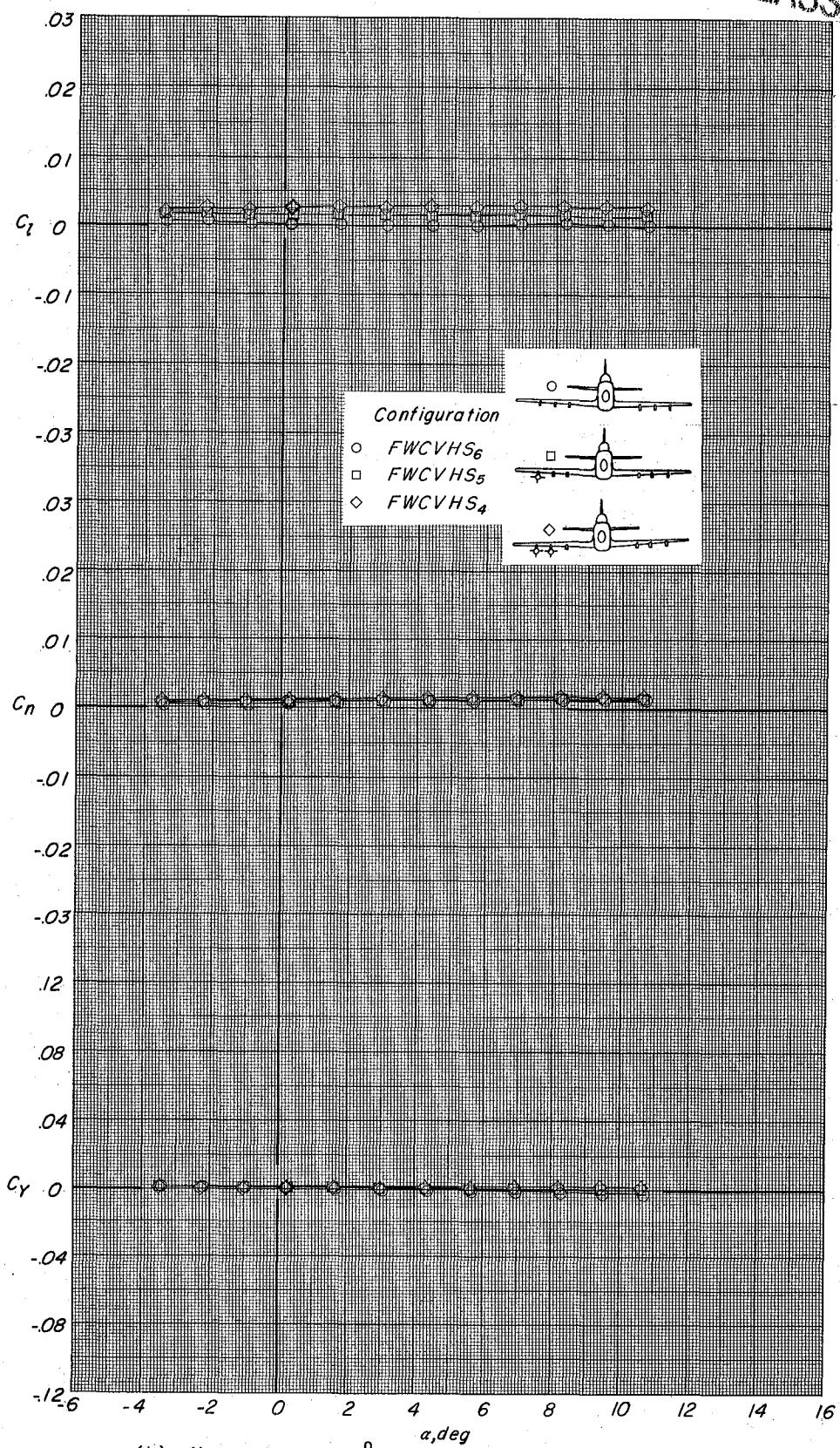


Figure 11.- Effect of asymmetric bomb arrangements on sideslip characteristics.

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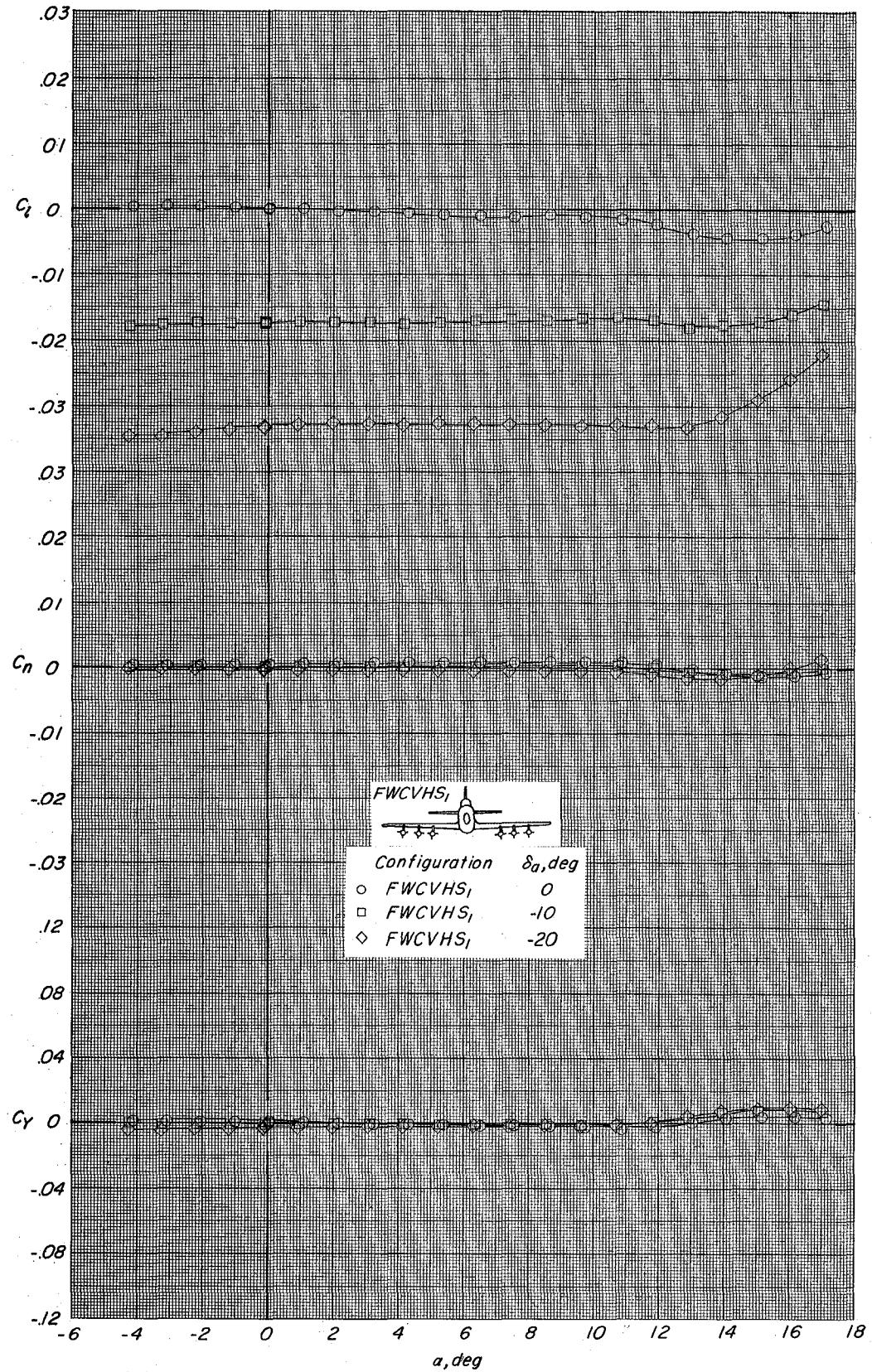


(b) $M = 0.55, \beta = 0^\circ$
Figure 11.- Concluded.

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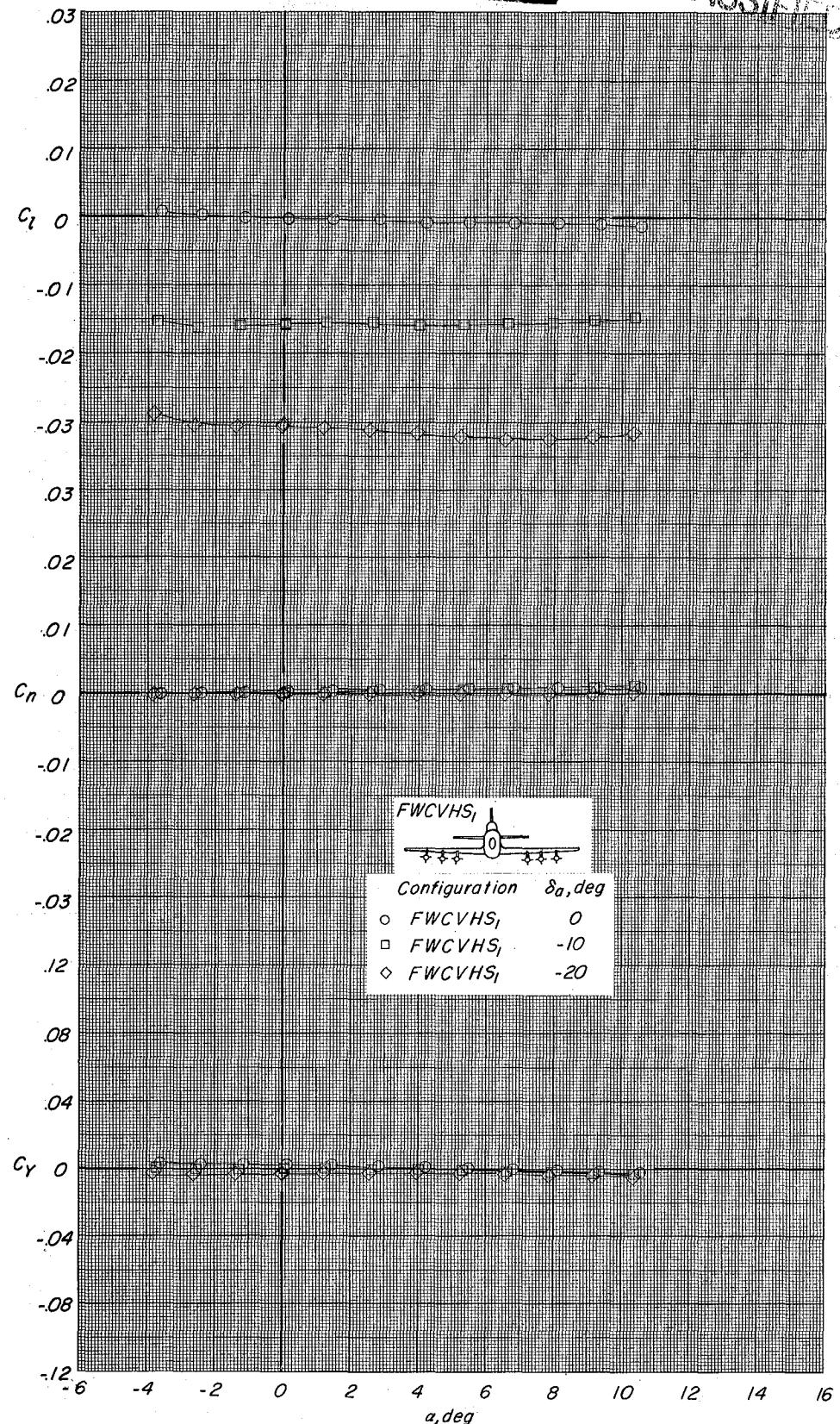


(a) $M = 0.25$

Figure 12.- Aileron control effectiveness of the FWCVHS₁ configuration.

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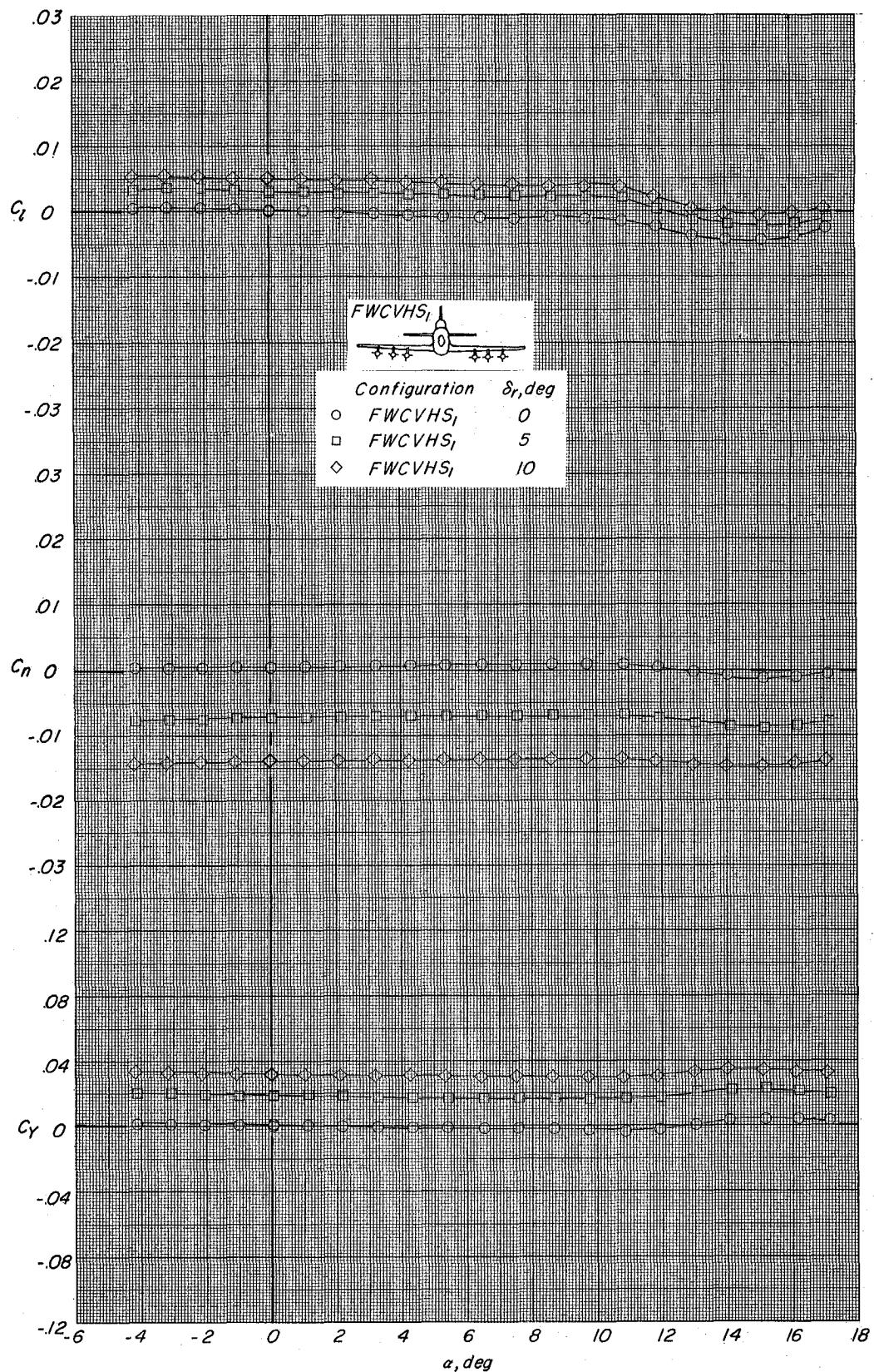
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(b) $M = 0.55$
Figure 12.- Concluded.

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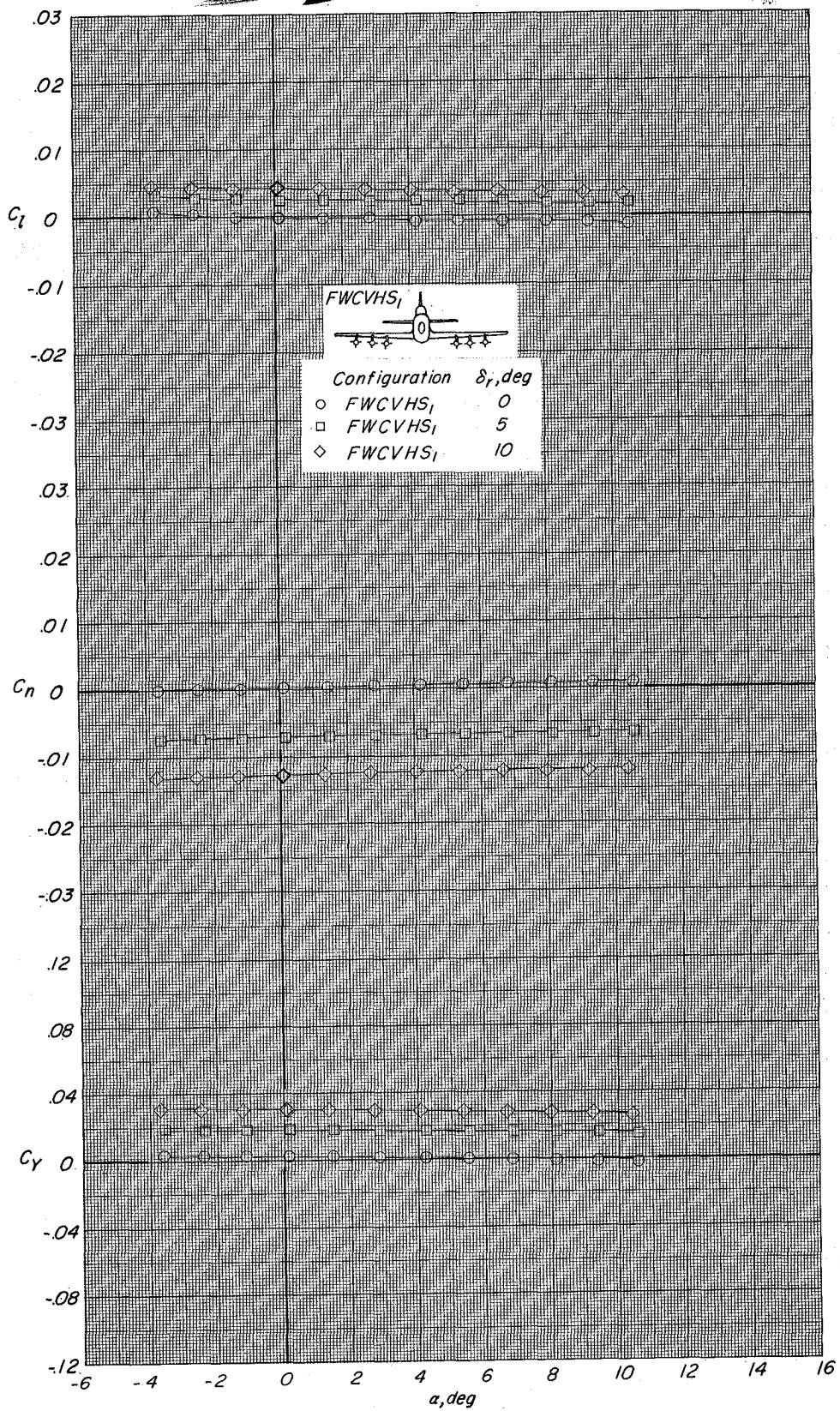
(a) $M = 0.25$

Figure 13.- Rudder control effectiveness of the FWCVHS_I configuration.

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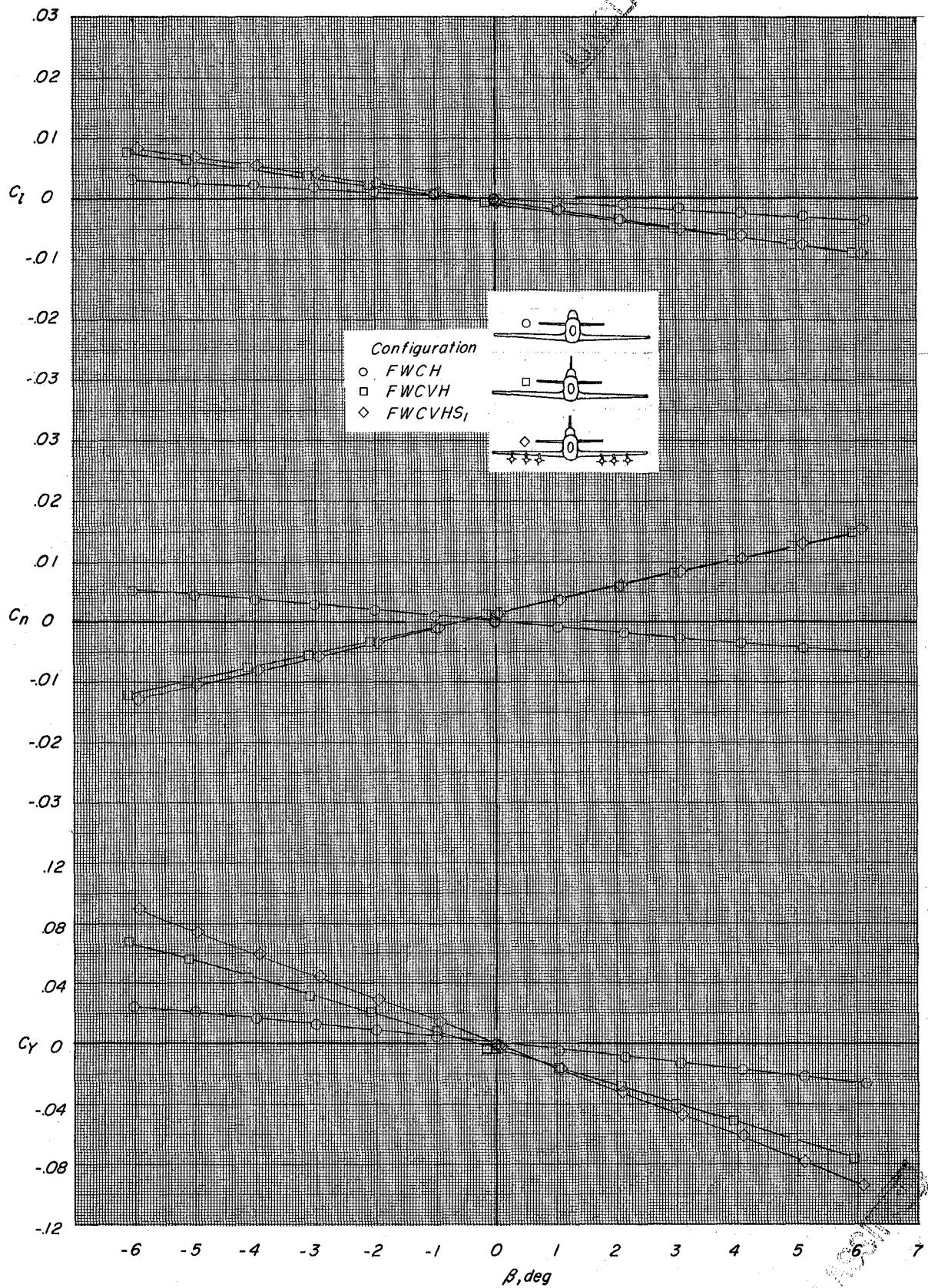
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(b) $M = 0.55$
Figure 13.- Concluded.

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(a) $M = 0.25, \alpha = 4.4^\circ$

Figure 14.- Sideslip characteristics of the FWCH, FWCVH, FWCVHS₁ configurations.

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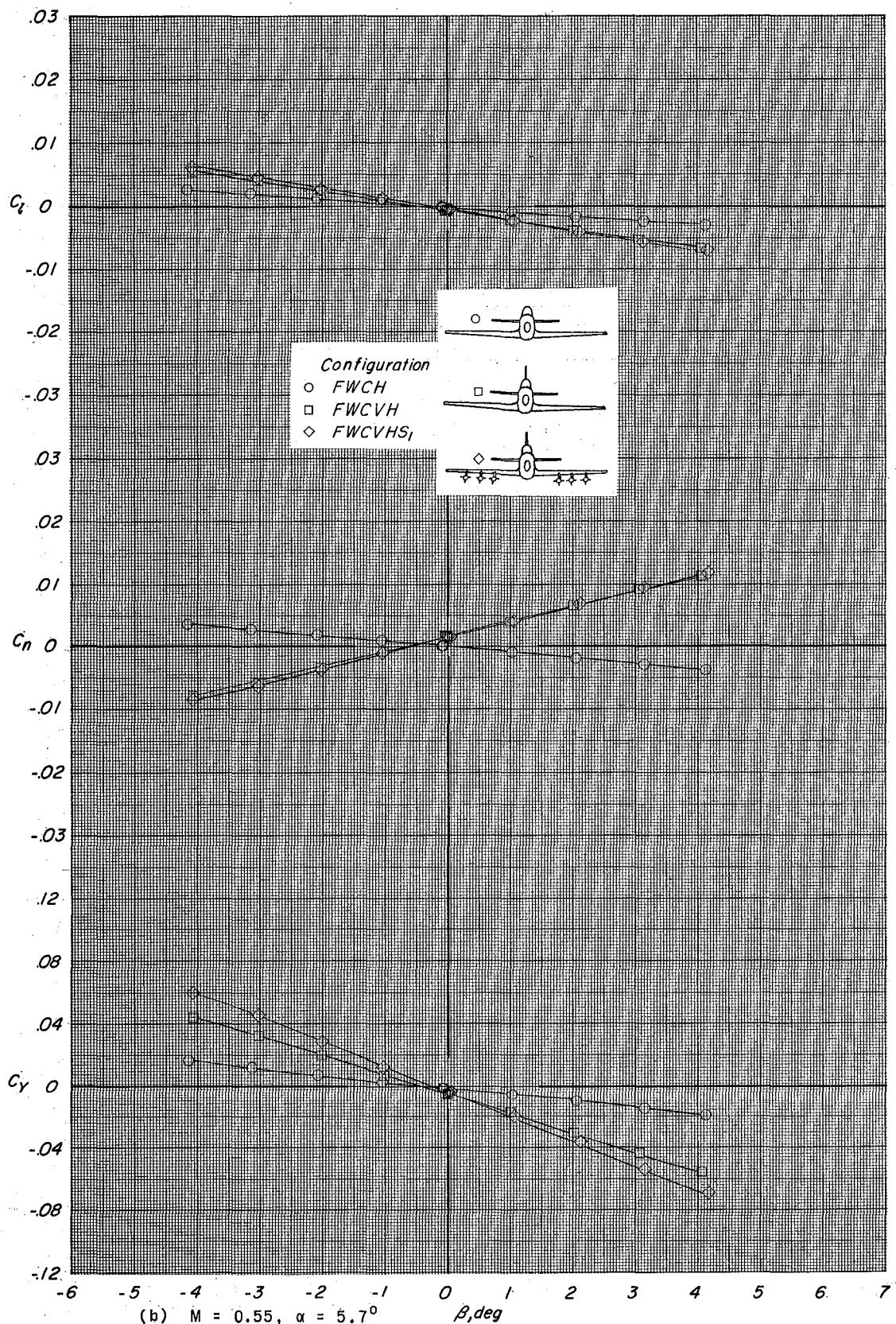


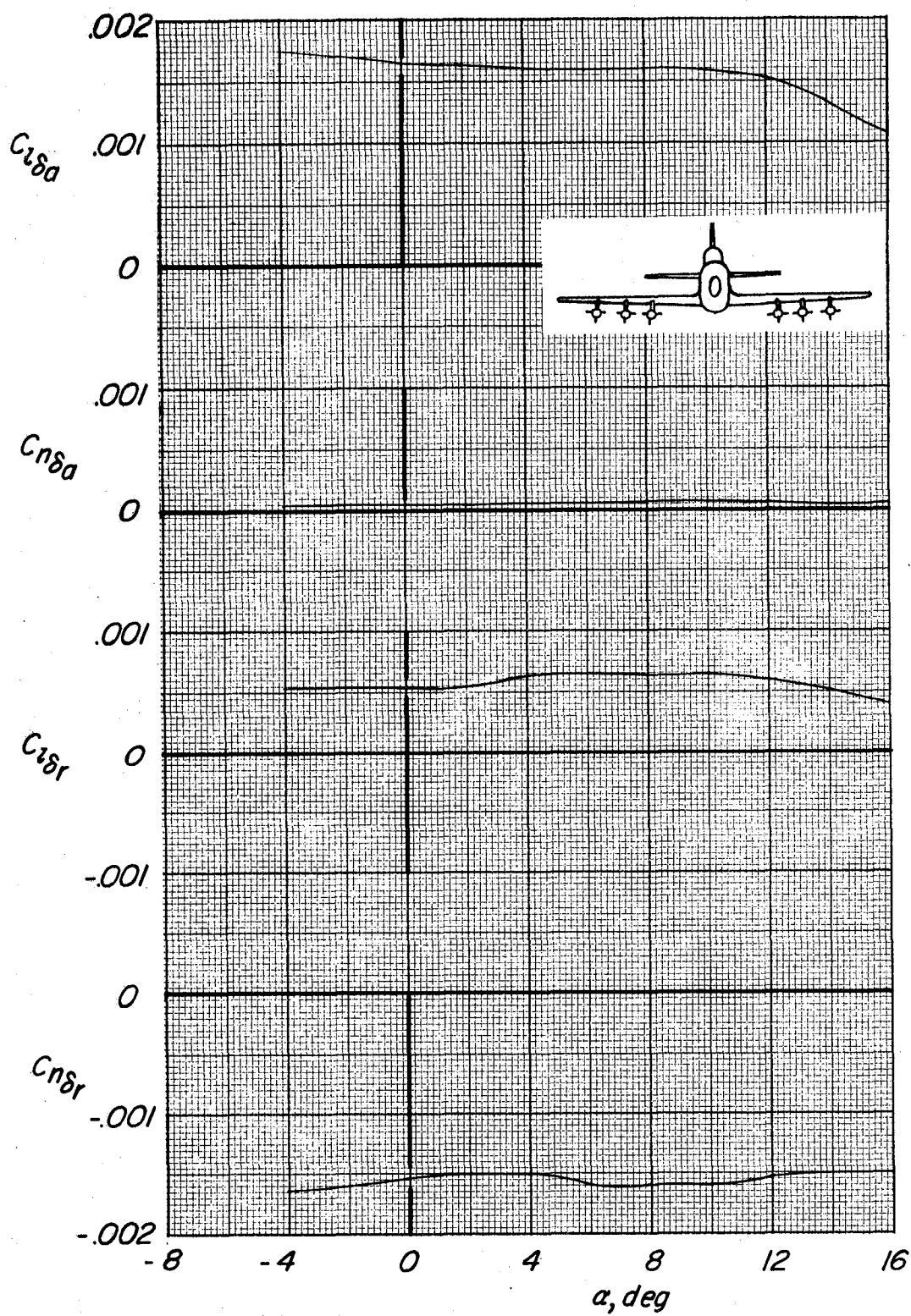
Figure 14.- Concluded.

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(a) $M = 0.25$

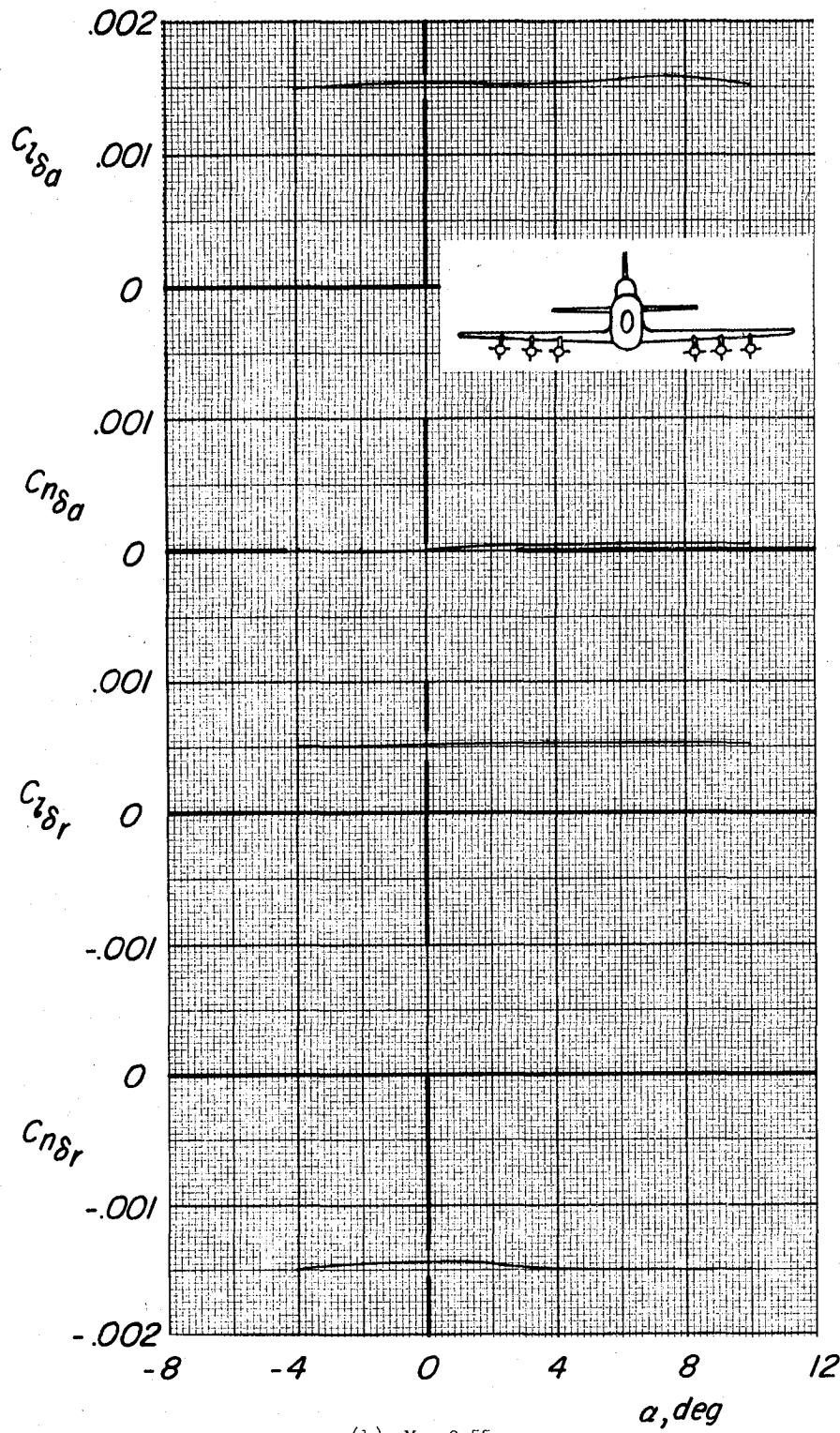
Figure 15.- Summary of lateral-directional control effectiveness of FWVCHS, configuration.

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(b) $M = 0.55$

Figure 15. - Concluded

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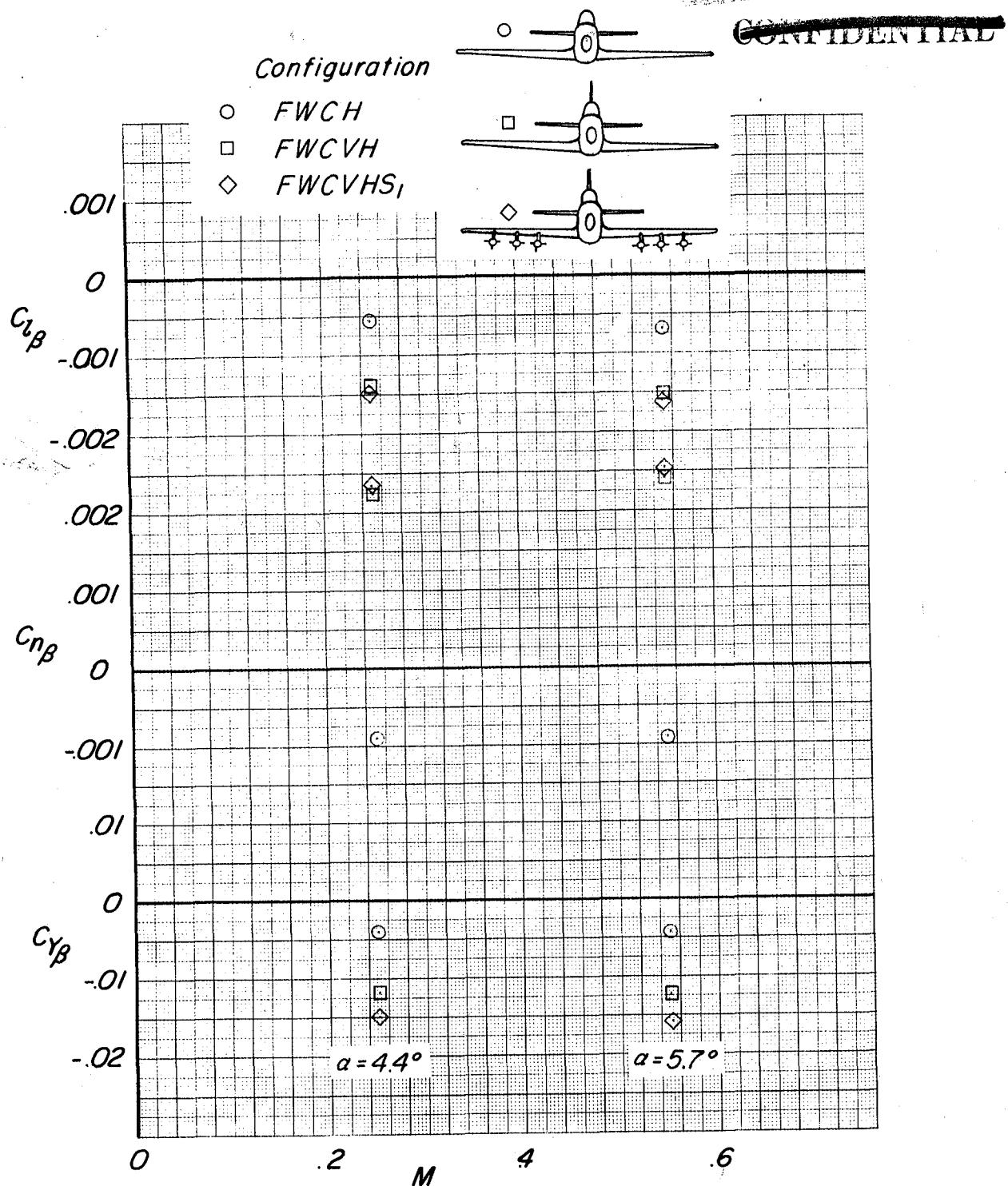


Figure 16.- Summary of sideslip characteristics of the FWCH, FWCVH, and FWCVHS₁ configurations

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