N7976882

EXPERIMENTAL RESULTS OF TESTS TO DETERMINE THE EFFECTS OF ORBITER THERMAL PROTECTION SUBSYSTEM (TPS) TILES ON PANEL FLUTTER CONDUCTED IN THE AMES RESEARCH CENTER 2 X 2 FOOT TRANSONIC WIND TUNNEL(OS4A,OS4B,& OS12)

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HOUSTON, TX

APR 79

April, 1979

DMS-DR-2450
NASA CR-151,775

EXPERIMENTAL RESULTS OF TESTS TO DETERMINE THE EFFECTS OF ORBITER THERMAL PROTECTION SUBSYSTEM (TPS) TILES ON PANEL FLUTTER CONDUCTED IN THE AMES RESEARCH CENTER 2 X 2-FOOT TRANSONIC WIND TUNNEL (OS4A, OS4B AND OS12)

edited by

R. B. Kingsland
Rockwell International, Space Systems Group

Prepared under NASA Contract Number NAS9-13247

by

Data Management Services
Chrysler Corporation Michoud Defense-Space Division
New Orleans, La. 70189

for

Engineering Analysis Division

Johnson Space Center
National Aeronautics and Space Administration
Houston, Texas

WIND TUNNEL TEST SPECIFICS:

Test Number:	ARC 22-041	ARC 22-154	ARC 22-116
NASA Series Number:	OS4A	OS4B	OS12
Model Number:	40-0	40-0	85-0
Test Dates:	September 9, 1974	November 18, 1975	January 19, 1976
	October 9, 1974	January 15, 1976	January 29, 1976
Occupancy Hours:	154		

FACILITY COORDINATOR:

J. J. Brownson
Mail Stop 227-5
Ames Research Center
Moffett Field, CA 94035

Phone: (415) 965-6262

DATA ANALYSIS ENGINEERS:

G. L. Commerford
J. W. Sleison
Mail Code AB97
Rockwell International
Data Systems Group
12214 Lakewood Boulevard
Downey, CA 90241

Phone: (213) 922-2017

PROJECT ENGINEERS:

M. A. Kotch
R. B. Kingsland
Mail Code AD38
Rockwell International
Space Systems Group
12214 Lakewood Boulevard
Downey, CA 90241

Phone: (213) 922-5030

F. W. Boltz
A. R. Gross
Ames Research Center
Moffett Field, CA 94035

Phone: (415) 965-6262

DATA MANAGEMENT SERVICES:

Prepared by: Liaison--D. W. Hersey
Operations--G. R. Lutz

Reviewed by: G. G. McDonald

Approved: J. L. Glynn, Manager
Data Operations

Concurrence: N. D. Kemp, Manager
Data Management Services

Chrysler Corporation Michoud Defense-Space Division assumes no responsibility for the data presented other than display characteristics.

EXPERIMENTAL RESULTS OF TESTS TO DETERMINE THE EFFECTS OF ORBITER THERMAL PROTECTION SUBSYSTEM (TPS) TILES ON PANEL FLUTTER CONDUCTED IN THE AMES RESEARCH CENTER 2 X 2-FOOT TRANSONIC WIND TUNNEL (OS4A, OS4B AND OS12)

edited by

R. B. Kingsland
Rockwell International, Space Systems Group

ABSTRACT

This report presents test description, data, and an analysis of the panel/TPS flutter tests OS4A, OS4B and OS12. These tests were conducted in the Ames Research Center 2 x 2-Foot Transonic Wind Tunnel. Test OS4A took place during September and October, 1974 and OS4B during November, December, 1975 and January, 1976. Test OS12 followed OS4B in January, 1976.

The purpose of these tests was to verify flutter predictions made for panels with and without thermal protection material.

(THIS PAGE INTENTIONALLY BLANK.)

TABLE OF CONTENTS

	Page
ABSTRACT	iii
INDEX OF MODEL FIGURES	3
INDEX OF DATA FIGURES	4
INTRODUCTION	6
NOMENCLATURE	11
REMARKS	13
CONFIGURATIONS INVESTIGATED	21
INSTRUMENTATION	27
TEST FACILITY DESCRIPTION	29
TEST PROCEDURE	30
DATA REDUCTION	31
RESULTS AND DISCUSSION	33
REFERENCES	46
TABLES	
I. TEST CONDITIONS	48
II. TEST OS4A RUN LOG	49
III. DATA SET/RUN NUMBER COLLATION SUMMARY (OS4B)	68
IV. DATA SET/RUN NUMBER COLLATION SUMMARY (OS12)	73
V. EFFECT OF TPS TILES ON PANEL NATURAL FREQUENCIES	76
VI. DESCRIPTION OF PANELS USED IN TEST OS4B	77
VII. OS4B PRESSURE LOCATIONS	78
VIII. OS12 PRESSURE LOCATIONS	79

TABLE OF CONTENTS (Concluded)

		Page
TABLES (Continued)		
IX.	OS4 PANEL GROUND VIBRATION TEST RESULTS WITH CAVITY	80
X.	OS4 PANEL FLUTTER PREDICTIONS BASED ON MEASURED MODES	81
XI.	GROUND VIBRATION TEST RESULTS FOR THE PANELS FOR TEST OS4B WITHOUT CAVITY	82
XII.	COMPARISON OF MEASURED AND ANALYTICAL NATURAL FREQUENCIES FOR PANELS P_8 AND P_9	83
XIII.	TEST CONDITIONS FOR PANELS P_{11} AND P_{12} WITH BOUNDARY LAYER THICKNESSES OF 1.0 INCH AND 0.25 INCH	84
FIGURES		
	MODEL	85
	DATA	100
APPENDIX A		
APPENDIX B		

INDEX OF MODEL FIGURES

Figures	Title	Page
1.	OS4 and OS12 axis definitions.	85
2.	Model sketches.	
	a. Isotropic Fixed Edge Panel	86
	b. Typical TPS Installation	87
	c. Orthotropic Simply Supported Panel - OS4	88
	d. Orthotropic Simply Supported Panel - OS4B	89
	e. Schematic of Typical OS12 Panel Configuration	90
	f. Instrumentation Locations	91
	g. Wayne-Kerr Transducer Locations	92
	h. OS4B Static Pressure Orifice Locations	93
	i. OS12 Static Pressure Orifice Locations	94
	j. Thermocouple Locations	95
	k. Strain Gauge Locations	96
	l. Block Diagram of System Used to Reduce Panel Response Data	97
3.	Model photographs.	
	a. Test OS12 Configuration P_{12} and Shock Generator	98
	b. Test OS12 Configuration P_{13} and Shock Generator	99

INDEX OF DATA FIGURES

Figures	Title	Page
4.	Data figures.	
	a. Dispersed Trajectory with Safety Margin	100
	b. Qualitative Variation of Panel Response (@ $\Delta P = 0$) vs Dynamic Pressure at a Fixed Mach Number	101
	c. Typical Convergence of Multiples of Sub-flutter Response with Dynamic Pressure	102
	d. Typical Variation of Frequency and Amplitude of Dominant Panel Response Mode with Cavity Differential Pressure	103
	e. Static Calibration of Panel P_1, Pressure vs. Displacement	104
	f. Static Calibration of Panel P_2, Pressure vs. Displacement	105
	g. Static Calibration of Panel P_3, Pressure vs. Displacement	106
	h. Static Calibration of Panel P_4, Pressure vs. Displacement	107
	i. Static Calibration of Panel P_5, Pressure vs. Displacement	108
	j. Flutter Boundary for Isotropic Bare Panel P_1 Dynamic Pressure vs. Mach Number	109
	k. Flutter Boundary for the Orthotropic Bare Panel P_4 Dynamic Pressure vs. Mach Number	110
	l. Static Calibration of Panel P_6, Pressure vs. Displacement	111
	m. Static Calibration of Panel P_7, Pressure vs. Displacement	112
	n. Static Calibration of Panel P_8, Pressure vs. Displacement	113

INDEX OF DATA FIGURES (Concluded)

Figures	Title	Page
4.		
	o. Static Calibration of Panel P_9, Pressure vs. Displacement	114
	p. Flutter Boundary for Isotropic Panel with 3 x 3 x 1 inch Tiles P_6, Dynamic Pressure vs. Mach Number	115
	q. Flutter Boundary for Orthotropic Panels P_8 and P_9 Dynamic Pressure vs. Mach Number	116
	r. Comparison of Analysis and Test Flutter Boundaries for Panels P_8 and P_9, Dynamic Pressure vs. Mach Number	117
	s. Flutter Boundary for Orthotropic Panels P_8 and P_{10} Dynamic Pressure vs. Mach Number	118
	t. Streamwise Pressure Variation on Instrumented Panel at M = 1.2	119
	u. Streamwise Pressure Variation on Instrumented Panel at M = 1.4	120
	v. Grid Pattern on FRSI Panel, P_{11} at M = 1.2 and 1.4	121

INTRODUCTION

The space shuttle orbiter will experience widely varying thermal and aerodynamic environments typical of both aircraft and spacecraft. The thermal protection subsystem (TPS) is designed to limit the temperature of its aluminum and graphite epoxy structures to a nominal value of 350°F during ascent and entry. The TPS must also endure exposure to non-heating environments during prelaunch, launch, on-orbit, landing, and turnaround operations similar to those encountered by conventional aircraft. Furthermore, the TPS must sustain the mechanical forces induced by deflections of the airframe as it responds to the external environment.

There are four distinct types of TPS used on the space shuttle. First there is coated reinforced carbon-carbon (RCC) used on the nose cap and wing leading edges where temperatures exceed 2300°F. Second, there is high-temperature reusable surface insulation (HRSI) for regions of surface temperature between 1200°F and 2300°F. The third type is low-temperature reusable surface insulation (LRSI) for regions exposed to temperatures between 700°F and 1200°F. Finally, there is flexible reusable surface insulation (FRSI) for areas not exceeding 700°F.

The RCC is made up of structural segments and is not considered in this study. The HRSI and LRSI are conceptually similar to each other. Both insulations are fabricated in the form of tiles of low density, high purity silica fibers made rigid by coating with a ceramic bonding. The tiles are bonded to a strain-isolation pad (SIP) of Nomex fiber felt and the total composite is then bonded directly to the orbiter structure.

The differences between HRSI and LRSI tile are found in the area, thickness, and the coating material and pigmentation. For the purposes of this investigation, however, no distinction will be made between these two types of TPS. The Nomex fiber felt material used for the SIP has insulation qualities of its own and has been found to be an adequate TPS when the temperature is less than 700°F. FRSI is nothing more than SIP material of thicknesses up to 0.4 inch, coated with a silicone elastomeric film for waterproofing. Tiny vent holes are spaced at 6-inch intervals in the film to allow outgassing during ascent.

The aeroelastic clearance of any vehicle which flies transonically must include an evaluation of panel flutter susceptibility. The presence of TPS over the outer surface of the space shuttle adds a new dimension to panel flutter analyses. Two thoughts come to mind immediately when considering the flutter of panels with TPS. First, the concept of the SIP infers that the TPS adds no structural stiffness to the panel since it is "strain isolated". The implication of this is that the TPS modifies the bare panel frequencies by the addition of mass only. Thus, the coated panel would have lower frequencies and therefore lower dynamic pressure at flutter. However, the tiles are attached to the structure by means of a felt pad which undoubtedly adds a considerable amount of structural damping to the bare panel. The addition of damping would raise the flutter dynamic pressure.

The purpose of doing panel flutter tests on panels with TPS was to

establish some boundary on the difference between the flutter characteristics of these panels and otherwise equivalent bare panels. Once this difference was established and understood, it might be possible to develop a criterion to determine the required stiffness of a bare panel which would preclude flutter of that panel when TPS was added.

The original OS4A test was designed to address the problem of panel flutter with TPS in the form of tiles (i.e., HRSI and/or LRSI). Bare panels were designed to flutter within the operating range of the Ames Research Center 2 x 2-foot wind tunnel. Additional tests of duplicate panels with TPS followed. The test was only partially successful and was followed by a similar test, OS4B. The knowledge gained from the OS4A program was incorporated in the design of the hardware for OS4B which proved successful.

The concept of FRSI was established during 1975 and resulted in the definition of a new test, OS12. This test had the objective of demonstrating that the FRSI would not flutter within the required flight margins. An additional panel was added to the OS4B program to address the problem of a flexible panel with FRSI.

The basic test procedures were patterned after a previous NASA panel flutter test discussed in Reference 1. The major purpose of test OS4A was to establish the effect of tile type TPS on panel flutter. It was considered essential that a given panel should flutter both with and without TPS so that the effect of the tile could be assessed. In the initial

test, OS4A, no flutter was obtained for the tiled panel configurations. Consequently, it was necessary to redo the test using a new design which would flutter. The second test series was designated OS4B.

Flexible Reusable Surface Insulation (FRSI) is the same felt material used to strain isolate the HRSI and LRSI from the shuttle structure except that it is coated with an elastomeric film for waterproofing. As such, it was not expected to have a large influence on the flutter of the structure. However, the question arose whether FRSI was flutter free in and of itself. The silicone rubber film coating acted as a membrane supported on an elastic foundation (the felt). The possibility of flutter of the FRSI, independent of the structure upon which it was attached, dictated the requirement for the subject test, OS12.

The initial concern was simply whether or not the FRSI itself was flutter free up to a dynamic pressure 50% greater than the dispersed flight trajectory shown in Figure 4a. In planning a suitable test program to investigate flutter of FRSI, it was recognized that this same test could be used to verify the ability of the material to withstand the differential pressure loading which results from an aerodynamic shock. The film coating of the FRSI has tiny holes spaced every six inches which allow the internal pressure in the material to vent to the atmosphere during ascent. Various time-dependent pressure loadings had been applied to the material to demonstrate adequate venting but no discontinuous shock loading had been applied. A second purpose was therefore added to

OS12, i. e., to demonstrate that the FRSI could withstand a shock loading equal to the maximum differential pressure which it would experience on the vehicle. A nominal 0.4-inch thickness of FRSI was selected for a test specimen. This material was attached to a "rigid" substrate so that only the elasticity of the FRSI was significant.

NOMENCLATURE

SYMBOL	MNEMONIC	DESCRIPTION
f	F	frequency, H_z
m	MACH	freestream Mach number
N	N	number of tiles
p	P	pressure, psia
P_∞	P	freestream static pressure, psia
P_1		bare simple panel
P_2		simple panel with 1.0-in. TPS thickness
P_3		simple panel with 2.0-in. TPS thickness
P_4		bare built-up panel
P_5		built-up panel with 1.0-in. TPS thickness
Panels P_1 through P_5 were used during Test OS4A		
P_6		Isotropic panel with clamped edges, one-inch thick TPS tiles, and 0.160-inch thick SIP. Tiles 2.975 inches square. (The metal part of this panel is P_1)
P_7		Isotropic panel with clamped edges, 1.85-inch thick TPS tiles, and 0.160-inch thick SIP.
P_8		Orthotropic panel, rotationally restrained edges, bare.
P_9		Orthotropic panel, rotationally restrained edges, one-inch thick TPS tiles and 0.160-inch thick SIP.
P_{10}		panel P_8 with Nomex material
Panels P_6 through P_{10} were used during Test OS4B		
P_{11}		9 x 26 panel with Nomex material
P_{12}		18 x 26 panel with Nomex material

NOMENCLATURE (Concluded)

SYMBOL	MNEMONIC	DESCRIPTION
P_{13}		instrumentation panel, no Nomex
Panels P_{10} through P_{13} were used during Test OS12		
Pt_∞	PT	freestream total pressure, psia
ΔP	DP	differential pressure, psi
q_∞	Q	freestream dynamic pressure, psf
SG		shock generator
T	T	temperature, ^oF
T_∞	T	freestream static temperature, ^oF
Tt_∞	TT	freestream total temperature, ^oF
W	W	wall position, inches
δ	DEL	panel normal deflection, inches
δ^*	DELSTR	boundary layer thickness, inches
ρ	RHO	freestream density, slugs/ft^3

SUBSCRIPTS

c	cavity
i	number of antinodes in streamwise direction
j	number of antinodes in cross-stream direction
p	plenum
s	test section static
x	streamwise direction
y	cross-stream direction

REMARKS

The bare simple panel (P_1) was installed and upon acquisition of the first panel flutter boundary, it was changed for the simple panel with 1-inch TPS tiles (P_2). During tunnel purging operations, an operational error resulted in an apparent overpressure of the panel, with subsequent weakening of the tiles. Two tiles were lost early in the first run at a q_∞ of between 300-400 psf. Subsequent inspection of the panel revealed surface cracks in two additional tiles, and the panel was replaced with the simple panel with 2-inch tiles (P_3).

The panel was tested over the entire available tunnel operating range. Flutter did not occur, nor were any tiles lost. The built-up panel with 1-inch TPS tiles (P_5) was next installed. Clearance of the panel from flutter within the available operating limits was underway when all of the tiles suddenly separated from the panel. The test was concluded with the bare built-up panel (P_4). Roughly 60% of the desired flutter information had been obtained when the panel was apparently overpressurized during a wind-off vibration survey with selected applied ΔP's.

The following is a detailed description of panel P_5, the tests conducted on that panel and data available after the tiles had separated from the panel.

Panel P_5 of test OS4A consisted of 12 RSI tiles, 6 inches square by 1-inch thick, bonded with a .090-inch SIP to a stiffened aluminum substrate panel. The substrate panel consisted of a .032-inch aluminum sheet approximately 26.85 inches long and 20.8 inches wide. The sheet was reinforced by 5 hat-section stringers running in the streamwise direction,

spaced at 3-inch intervals, with 1 stringer on the streamwise centerline. Each stringer was fit to the panel with an epoxy bond, and 2 flush rivets at each end.

The aluminum panel was riveted to 4 C-shaped edge-channels along the periphery of the panel. The C-shaped channels were 1 inch high and 1.35 inches wide at the top and bottom flanges. The top flange and vertical of the C-shaped channels were .050-inch thick, while the bottom flange was .180-inch thick. The channels were installed with the flanges indented, so that the "C's" faced outward. This reduced the active panel area to 24.15 inches by 18.10 inches, the area of the RSI tiles.

Four wood strips, approximately 1.1 inches thick were bonded to the edges of the panel over the top flange of the C-channels, bringing the entire top surface of the panel flush, except for the gaps between tiles.

The entire panel assembly was supported by a massive aluminum support frame. The support frame was fastened to the tunnel sidewall by a 3-point support designed to eliminate stresses induced by the heating of the tunnel sidewall as the tunnel was operated. The panel backup cavity of the same overall dimensions as the panel, and with an effective depth of 12.5 inches, also was attached to the support frame.

Panel instrumentation consisted of 4 strain gauges, 3 thermocouples, and a non-contacting capacitive-type displacement probe. Two strain gauges were oriented in the streamwise direction, upstream and downstream, and 2 were oriented in the cross-stream direction, left and right. Each gauge

properly consisted of an active bending-type strain gauge, epoxy-bonded to the cavity side of the panel together with a non-bonded, thermal-compensating dummy gauge. One thermocouple was located at the panel center point, on the cavity side, while the other two were on the inner upstream and downstream panel support frame sides, along the streamwise centerline. The Wayne-Kerr (W-K) displacement probe was situated 6 inches upstream from the cross-stream centerline and was 4.5 inches to the left of the streamwise centerline. It was set approximately 0.040 inch from the panel surface.

Additional instrumentation of importance on this model was a 1 psid statham pressure transducer, located on the backside of the panel cavity, and referenced to the tunnel static line. It was used to define a cavity pressure greater than tunnel static as a positive ΔP.

Installation and testing of the panel in the tunnel was begun on Thursday afternoon, October 3, 1974. A vibration survey of the first 6 frequencies of the panel was made after installation and compared with previously obtained results. No anomalies were noted.

It had been recognized that, due to the stiffening effect of the RSI tiles on the panel, no flutter was expected within tunnel limits. Nonetheless, it was decided to run the panel test within the available tunnel conditions for two reasons: to ensure that our optimism about flutter was not in error due to some unforeseen effect of the tiles, and to obtain subflutter response data which could prove valuable in extrapolating to a

panel flutter boundary.

The panel was tested at M=1.1, and in steps in total pressure of 20, 30, and 40 inches of Hg. Further measurements were made at M = 1.05, and steps of 20, 30, 40, and 50 inches of Hg.

For test operations, the panel cavity contained a pneumatically operated vent, which vented the cavity to the test section plenum, and 2 pneumatically operated flutter stoppers (6-inch square foam pads) which pressed gently against the cavity side of the panel and limited panel vibration. This was known as the flutter stopper system. Additionally, a second vent was available in the pressure controller which regulated ΔP; this vent also opened to the plenum.

Usual procedure during a run was to have the flutter stoppers applied with the vent open, while accelerating through M = 1. Additionally, the ΔP controller was disengaged; its vent was also open. Once past M = 1, the flutter stoppers were retracted, with the ΔP controller still disengaged. Once on condition, the ΔP controller was engaged. (All vents closed.) With a Beckman point being taken to note tunnel conditions, the ΔP was swept through its range while the panel response was observed and noted with an RMS meter attached to the W-K displacement probe. Once the maximum panel response was noted, the pressure controller was disengaged, and the next test condition set.

ΔP was monitored with a Newport amplifier, DVM, set at ±10,000 counts, i.e., ±1 psid. An operational limit of ±2500 counts (±.25 psid) was

observed to avoid yielding the panel due to overpressure.

The ΔP, strain-gauge, and W-K signals were recorded on magnetic tape during a ΔP sweep. Additionally, the ΔP, W-K, and a streamwise and a cross-stream gauge were recorded continuously on a 4-channel strip-chart recorder.

Two items of interest were noted during testing. First, the W-K signal seemed erratic at high total pressures (high dynamic pressures). It was felt at the time (and later refuted) that this was due to the W-K signal cable flapping in the airflow in the plenum chamber. Secondly, the panel response at $M = 1.05$, $H_g = 50$ inches appeared greater than was expected from a straight-line fit of the responses at lower pressures. It was suggested to the morning crew that they go back and recheck this point, then attempt to obtain 50 inches at $M = 1.1$, and see if the higher response remained at a different Mach number.

On the morning of Friday, October 4th, the point at $M = 1.05$, $H_g = 50$ inches was repeated, with the same response observed. The tunnel was then set at $M = 1.1$, $H_g = 50$ inches, and a ΔP sweep made. A higher response was also noted at this Mach number.

At the conclusion of the ΔP sweep, the test engineer was holding a constant, slightly negative ($\sim -.05$ psid) indicated ΔP while the maximum response was being recorded. The panel had been in this condition for ~15 sec., when the NASA test engineer, observing the panel, noted that

the trailing edge of the right upstream tile appeared to be loose and lifting. He called this out to the test crew, while starting the motion picture camera, set up to observe the panel response, on manual trigger. While he was running the camera for 5-8 seconds, he was joined at the observation window by the test technician, and chief mechanic. About this same time the NASA engineer called for a tunnel shutdown.

The high-intensity lamp for the camera caused a glare on the observation window which made it impossible to view the panel. The NASA engineer then turned off the light and camera. By this time the test engineer was returning to the equipment console to activate the flutter stoppers for tunnel shutdown. In what was described as a "blink of the eye," all of the tiles suddenly separated from the panel. After the tiles had separated, tunnel shutdown occurred in a brisk, but non-emergency fashion.

Inspection of the panel showed that the tiles failed in the core section, near the SIP bond line. Several scars in the paint on the opposite test section side wall indicated that some tiles had traversed the test section as rapidly as they had been carried downstream, and stuck with impressive impact.

Upon removal from the tunnel, the panel was observed to have yielded, now having an "oil can" condition. Additionally, the panel was separated from the stringers near the W-K probe, and the panel had impacted the W-K probe with sufficient force to create a local dent in the panel.

Examination of the strip-chart recording, together with recordings

made by playing back the tape recording into the strip-chart recorder, brought forth several points:

1. Prior to panel failure, the recording appeared nominal, except for the erratic W-K trace. ΔP and strain gauge traces were constant and within bounds.

2. Approximately 2.5 seconds before what appeared to be tile separation, the ΔP trace began to drift in a negative direction. At the same time, both the streamwise and cross-stream strain gauges began to drift in a manner which appeared to indicate the panel bulging into the test section (a positive direction).

3. This drift increased, still within bounds, until both the ΔP and strain-gauge signals abruptly changed levels. After this time, the ΔP signal fluctuated on the negative side.

4. Tunnel shutdown (not recorded on tape) appeared to occur several seconds later, on a sudden jump in response, with fairly quick decay.

The negative ΔP, together with an apparent bulge of the panel into the test section, suggests what the ΔP controller did not drive the panel, but that an aerodynamic force acting on the panel caused an increase in the cavity volume, with a subsequent reduction in cavity pressure. However, this is contraindicated by subsequent examination of ΔP sweeps earlier in the run. In these cases, an indicated negative ΔP resulted in an apparent panel motion into the test section and vice versa. This, then, suggested a sign reversal, either with the strain gauges or the ΔP transducer.

The sign of the ΔP transducer was checked twice: First, a line was attached to the reference side of the transducer, and a vacuum applied to simulate a $+ \Delta P$, then a pressure was applied for a $-\Delta P$. Second, because

the ΔP transducer was attached to the cavity, it was rechecked with another panel installed and the ΔP controller engaged. In this way a pressure was applied to the metric side of the transducer. Positive pressure for $+\Delta P$, and vice versa. In both cases, the checks agreed with the assumed sign for ΔP.

The strain gauges were examined in three ways. First, an examination was made of the recorded traces of flutter stopper application following the run. Applying the flutter stoppers pressed the panel slightly into the test section. Second, a record of the measured strain gauge output vs. ΔP, which was recorded in a pretest study, was examined. Finally, the panel was reconnected to the strain gauge cabling, and the panel was pressed in an "into the test-section" and an "into the cavity" direction. Again, all three checks agreed with the assumed sign convention.

CONFIGURATIONS INVESTIGATED

Complete model installation details are available in References 2, 3, and 4 and will not be repeated here. There were two panel configurations in the OS4A test. The first was an isotropic panel with fixed edge boundary conditions as depicted schematically in Figure 2a, where the important panel dimensions are shown. The active portion of the panel was .050-inch thick, chem milled from a solid .188-inch thick sheet. The panel was attached to the support frame with counter-bored buttonhead screws to produce a clamping force without introducing mid-plane stresses. Three identical panels were fabricated as shown in Figure 2a. The first panel was designated as P_1 and was tested bare. The second and third panels were coated with 6 by 6-inch HRSI tiles of 1.0 and 2.0-inch thicknesses, respectively, and designated P_2 and P_3. The HRSI tiles were installed as shown in Figure 2b.

The second panel configuration is given in Figure 2c. This panel was orthotropic with five hat-shaped stiffeners running in the streamwise direction. The stiffeners were riveted at two points on each end and bonded to the panel in between with epoxy. The panel was .032-inch aluminum which resulted in a stiffness in the streamwise direction (stiffeners effective) approximately the same as that of the .050 inch isotropic panel. The panel was riveted to a channel section which allowed rotational flexibility of the panel edges and thus approached the simply supported edge boundary conditions. Two panels of this type were constructed. The first was tested bare and designated P_4. The second was covered with

6 by 6-inch HRSI tiles of 1-inch thickness exactly as previously shown in Figure 2b and was designated P_5. Panels P_2, P_3, and P_5 had wooden frames bonded to their edges so that they were flush with the tiled surface.

All the test panels were nominally 18 inches wide by 24 inches in the streamwise direction. The panels were backed by a sealed rectangular cavity with the same dimensions as the panel and with an effective depth of 12.0 inches (where effective depth is defined as the actual volume minus the volume occupied by instrumentation and hardware all divided by the panel area). It was possible to vary the pressure within the sealed cavity during the test. This capability could be used to eliminate flutter when it occurred, because differential pressure across the panel was equivalent to panel stiffening.

Another device was present within the cavity which served to prevent damage to the panels. This was a pair of mechanical flutter stoppers consisting of double-acting pneumatic cylinders topped with sponge rubber pads, which, when the cylinders were activated, pressed the pads against the panel surface and mechanically stopped the flutter motion. At non-test conditions, the flutter stoppers were in place against the panel and the cavity was vented to the plenum. When the test conditions were reached, the flutter stoppers were retracted and the cavity was sealed and capable of sustaining a pressure difference across the panel area.

Modifications to OS4A Design for OS4B

The inability to achieve flutter of the tiled panels in the OS4A test was the result of the unexpected increase in the overall panel stiffness which occurred when the tiles were added to the bare panels. The assumption that the SIP isolated the tile from the panel was erroneous for the panel size and stiffness used in OS4A.

An extensive analytical investigation of the effects of both FRSI and HRSI on panel vibration and flutter characteristics was undertaken to shed light on the aforementioned problem. The results of this study are reported in Reference 5, and only a brief description will be given here. In analyzing the vibration characteristics of tiled (either HRSI or LRSI) panels, the following assumptions were made:

1. Thin-plate theory was valid for both the tiles and the metallic substrate.
2. The SIP was modeled by springs connecting the tiles to the substrate.
3. Small-displacement theory was used, i.e., a linear analysis.
4. Galerkin's technique was used for modal solutions.
5. Free-free modes were used for the tiles.

Inasmuch as the tile elastic modes were of much greater frequency than the substrate modes, only the rigid body tile modes were included in the vibration analyses. The panel shown in Figure 2d was analyzed for the substrate alone and then with various size tiles of 1.0 inch thickness with the resulting panel natural frequencies given in Table V. N_x

and N_y represent the number of tiles in the streamwise and cross-stream directions. Ideally, the tiles should alter the bare panel frequencies only to the extent that they add mass. The original OS4A test used nominal 6 by 6-inch tiles ($N_x = 4$, $N_y = 3$) and by comparing line 3 to line 2 in Table V it can be seen that this size tile added appreciable stiffness. However, when the tile size was reduced to 3 by 3 inches ($N_x = 8$, $N_y = 6$), the panel frequencies approached those of the bare panel with tile mass only.

On the basis of this study, the decision was made to reduce the tile size to 3 by 3 inches for test OS4B. Between the time of the original OS4A test and the planning of OS4B, the nominal SIP thickness was increased from the 0.090 inch shown in Figure 2b to 0.160 inch and the modulus of elasticity was reduced. The new SIP was used in the preceding analysis and in the subsequent test, OS4B.

Two of the details of the orthotropic panel design in test OS4A which also presented problems were the hat stiffeners and the C-shaped channels around the periphery. The hat stiffeners were riveted near the edges and bonded with epoxy cement in between. For ease of fabrication and consistency of the streamwise section properties, this design was changed to chem milled integral stiffeners as shown in Figure 2d. It should also be noted that the thickness of the vertical web of the C-channel was reduced from .050 inch as in OS4A to .025 inch in the new design. This change was made so that the orthotropic panel edge

conditions would more closely approximate the desired simply supported boundary conditions.

Complete documentation of the design and instrumentation details for test OS4B is given in Reference 3. Five panels designated P_6 through P_{10}, as described in Table VI, were tested. Panels P_6 and P_7 had the same substrate design as the original panels P_1 through P_3 (cf. Figure 2a) with only the tile configuration, as discussed earlier, changed. Two different thicknesses of tiles (1.0 and 1.85 inches) were bonded to the surface in exactly the same manner as the original tiles shown in Figure 2b, where the OS4B dimensions are shown parenthetically. Panel P_8 was the new orthotropic bare panel design shown in Figure 2d, while panel P_9 was that same orthotropic panel with 1.0-inch thickness of 3 by 3-inch HRSI attached. Panel P_{10} (which is not discussed in Reference 3) was fabricated during the course of the tests by adding a 0.4-inch thickness of FRSI to panel P_8 after tests on it were completed.

Three panels were used for test OS12. Each of the panels was surrounded by a frame which, in turn, was bolted to a rigid substrate as shown in Figure 2e. The rigid substrate was nonimally a 1.0-inch thick aluminum plate. The framed panel on its rigid substrate fit, as a unit, into the same movable test section wall which was used for tests OS4A and OS4B.

Two of the three test panels were made of FRSI material. Panels P_{11} and P_{12} were 9 by 26 inches and 18 by 26 inches respectively, with the

frame size adjusted to center the panels on identical substrates. The interior edges of the frames were chamfered so that a bead of RTV cement could be blended into the surface film of the FRSI and the frame to form a continuous surface. The third panel, P_{13}, was a solid aluminum plate 20.88 by 26.98 inches which was instrumented along the streamwise centerline with static and dynamic pressure transducers.

A shock generator was required to establish a pressure discontinuity along the side wall of the tunnel where the test panels were located. A 2.5-inch diameter cylinder with a hemispheric nose of the same diameter was mounted on the sting support in the center of the tunnel. This device created a parabolic-shaped shock at the test panels where the magnitude of the pressure discontinuity was established using the instrumented panel. The shock generator was positioned so that the parabolic shock would fall within the boundaries of the test panels both at $M = 1.2$ and 1.4.

INSTRUMENTATION

Panel displacement was measured with a noncontacting capacitance-type transducer which produced an output voltage linearly proportional to the panel displacement. The instrument had a range of 0.100 inch with a flat frequency response from 0 to 10,000 H_z. It was usually positioned near the center of the panel from top to bottom, about six inches downstream of the panel leading edge with a nominal gap of 0.050 inch (Figures 2f and 2g).

Steady surface static pressures and total pressures from the boundary layer probes were measured with conventional strain gauge differential pressure transducers connected to the orifices by short lengths of tubing and referenced to freestream static pressure. Locations are given in Tables VII and VIII, and Figures 2h and 2i.

Iron-constantan thermocouples were used to measure temperatures at the center of the panel and at two points on the panel frame. These instruments were used to insure that equilibrium temperature was achieved between the panel and frame. Locations are given in Figure 2j.

The panels were also equipped with bending strain gauges at the edges in both the streamwise and cross-stream direction. These instruments yielded information regarding panel deformation and stress level for all tests but were particularly useful when the panel was deformed in a shape such that the deflection at the capacitive transducer was small (i.e., near a node). Locations are given in Figure 2k.

Because test OS12 was primarily a proof test, very little instrumen-

tation was used. The instrumented panel contained 26 static pressure taps spaced 1 inch apart along the panel centerline. There were also 4, Kulite-type, unsteady pressure transducers spaced along the centerline of the panel beginning 11.96 inches back from the leading edge and spaced 4.0 inches on centers.

There was instrumentation downstream of all the test panels which was used to define the boundary layer. A movable total head probe as used in tests OS4A and OS4B was included to determine steady portion of the total pressure. In addition, a stationary rake with 5 Kulite-type unsteady pressure transducers provided the dynamic portion of the total pressure at positions between 0.125 and 1.220 inches above the surface of the panels.

The FRSI panels, P_{11} and P_{12}, were fabricated with a grid of RTV rubberized cement superimposed on the normal silicone rubber membrane coating. The RTV grid was maroon in color with lines 1/8-inch wide and 1.0 inch apart in both the streamwise and cross-stream directions. The purpose of the grid was to enhance the viewing and photographic capability and thus increase the possibility of being able to identify small deformations of the FRSI. High-speed motion picture (400 frames/second) films of the FRSI were obtained at all test points.

TEST FACILITY DESCRIPTION

The Ames Research Center 2 x 2-foot wind tunnel was used for these tests. The tunnel, which is discussed in Reference 6, is of the continuous flow type with porous test section walls surrounded by a plenum chamber. Mach number is continuously variable over the range from 0.6 to 1.4 and dynamic pressure is continuously variable over the range from 200 to 1500 psf.

The tunnel can be operated so that one section of the side wall moves up to 1.0 inch into the airstream. The upstream edge of the movable wall is a sharp edged splitter plate which scoops off all or part of the tunnel sidewall boundary layer. It is possible to position the wall to achieve a boundary layer thickness, δ^*, from 0.25 to 1.0 inch in the panel test region. A rectractable boundary layer total pressure probe was employed downstream of the test panel to measure boundary layer thickness.

TEST PROCEDURE

Procedure during a run was to have the flutter stoppers applied with the vent open, while accelerating through $M = 1$. Additionally, the ΔP controller was disengaged; its vent was also open. Once past $M = 1$, the flutter stoppers were retracted, with the ΔP controller still disengaged. Once on condition, the ΔP controller was engaged. (All vents closed.) With a static point being taken to note tunnel conditions, the ΔP was swept through its range while the panel response was observed and noted with an RMS meter attached to the W-K probe. Once the maximum panel response was noted, the pressure controller was disengaged, and the next test condition set.

DATA REDUCTION

Flutter Boundary Definition

The criteria used in many past works to define the flutter boundary experimentally have either not been stated at all or only imprecisely. The problem is discussed thoroughly in Reference 2, where results are presented in the form of a scatter band for each flutter point, i.e., an upper and lower bound for each flutter point is stated. While this is perhaps the most satisfactory method to date for presenting experimental results, it leaves the flutter boundary uncertain within the width of the scatter band, and, of course, there remains arbitrariness in selection of the upper and lower limits.

In this test, the flutter boundary was determined by the method first described in Reference 5, which is as follows: At dynamic pressures well below that for flutter, the panel response to pressure disturbances from the turbulent boundary layer increases approximately linearly with dynamic pressure, as indicated in Figure 4b. In this figure, the panel amplitude in the mode which becomes the flutter mode is shown as a function of dynamic pressure. This subflutter response is used as a reference level to define the flutter point systematically. The straight lines labeled 2X, 3X, etc. in Figure 4b are multiples of the subflutter response. Their intersection with the amplitude response curve define values of dynamic pressure necessary to produce panel amplitudes which are these multiples of the subflutter response.

Figure 4c shows dynamic pressure as a function of the multiples of

the subflutter response for the same conditions as shown in Figure 4b. As the multiple increases, the difference in dynamic pressure between successive multiples decreases; that is, the dynamic pressure appears to be converging to a limit. Furthermore, it appears that the 6X multiple results in a dynamic pressure very close to this limiting dynamic pressure and is, therefore, arbitrarily defined herein as the flutter boundary.

Test Data Reduction

Dynamic data recorded on magnetic tape during this test was reduced at the Structural Dynamics Lab using the data reduction system shown in block diagram form in Figure 2ℓ. This system automatically tracks and filters a dominant response peak as its frequency and amplitude vary with differential pressure.

The system outputs voltages proportional to the frequency it is tracking and to the amplitude of that frequency. These quantities are automatically plotted as functions of differential pressure between the cavity and the freestream, for fixed Mach numbers and dynamic pressures. A representative plot produced by this system is shown in Figure 4d.

RESULTS AND DISCUSSION

OS4A Test Results

Static stiffness calibrations of the five panels were conducted by pressurizing the sealed cavity in the laboratory. The static deflection versus pressure (δ/P) for each of the panels is given in Figures 4e through 4i. By comparing the slopes of the curves, it can be seen that tiles add an appreciable amount of stiffness to the panels. The deflection per unit pressure is inversely proportional to the effective plate flexural rigidity.

The design of the panels discussed in the Configurations Investigated section was based on flutter analyses of the isotropic bare panel configuration, P_1. At the time of this test, no analytical procedure was available for predicting the frequencies and mode shapes of panels with HRSI tiles. The design concept of tiles attached to the structure by a strain isolation pad (SIP) implied that the stiffness of the tile did not affect the panel stiffness.

Table IX shows the results of the ground vibration survey of the five panels. It is clear from examining column f_{11} alone, that the addition of tiles increased the stiffness of the panels markedly as previously indicated by the static calibrations. For example, the addition of 1.0 inch of TPS to panel P_1 more than doubles the mass per unit area. However, the first mode frequency of panel P_2 increased by more than 50 percent. For these two facts to be true simultaneously implies that panel P_2 was nearly five times as stiff as panel P_1. Comparison of δ/P from Figures

4e and 4f indicates a stiffness increase of approximately 5.2 times that of panel P_1. Similarly, the addition of thicker, 2.0-inch tiles to P_1 (i.e., panel P_3) resulted in a further increase in the fundamental mode frequency although somewhat less than the previous case. The same phenomenon existed when tiles were added to the orthotropic panel P_4. It should also be noted when comparing the frequencies of panels P_4 and P_5, that the frequencies of the modes involving cross-stream deformation (i.e., columns f_{12}, f_{22} and f_{32} of Table IX) were increased to an even greater extent than the frequency of the fundamental mode.

The flutter calculations which were used in the design of the bare panels were redone using the measured natural frequencies for each of the five panels. Table X shows the results of these calculations. These data indicate that the dynamic pressure required to obtain flutter for the tiled configurations of panels P_2, P_3 and P_5 was well beyond the capability of the wind tunnel. Despite these findings, the panels were tested in the wind tunnel.

The test procedure was to maintain a constant nominal Mach number while increasing the dynamic pressure in steps. At each step, the flow conditions were maintained until the panel temperature was stabilized to the frame temperature. Until this point, the flutter stoppers were in place against the panel and the cavity behind the panel was vented to the plenum. When the temperatures were equal, the flutter stoppers were retracted, which also sealed the cavity vent. The pressure within the

cavity was then varied to obtain a differential pressure of ±50 psf between the cavity and the freestream static pressure. The panel response was recorded continuously during the cycling of the cavity pressure. This procedure was employed to insure obtaining a zero differential pressure across the panel and thus relieving any stiffening effects resulting from tension in the panel. At low dynamic pressure, the observed panel response is similar to random noise with the maximum response occurring at zero differential pressure. Using this zero ΔP response and plotting it versus dynamic pressure for a given Mach number yields results similar to those shown in Figure 4b. Incipient panel flutter is somewhat arbitrarily defined by that dynamic pressure at which the response is equal to some multiple of the subflutter response.

Using this procedure, the flutter boundaries were obtained for the panels P_1 and P_4 as indicated in Figures 4j and 4k. The two lower solid curves in Figure 4j were obtained with the side wall moved 1.0 inch into the airstream. In this configuration, the boundary layer thickness is approximately 0.25 inch. The lower curve represents the flutter boundary as defined by 3 times the subflutter response while the curve above it represents an amplitude of 6 times the subflutter response. The uppermost dashed curve is the flutter boundary with the test panel flush with the wind tunnel wall which results in a boundary layer of approximately 1.0 inch in thickness. This curve has been faired through the two data points so that it has a shape similar to the boundary obtained with the

thinner boundary layer and by ratioing the effect of boundary layer thickness at M = 1.2 as determined in Reference 1. Figure 4k shows the 3-times and 6-times subflutter response boundaries for the built-up orthotropic panel with simply supported edges and with a coundary layer of 0.25 inch. Once again the dashed portion of the curve is implied at Mach numbers where no flutter was obtained.

Also shown in the figures are the analytical estimates of the flutter boundaries made prior to the tests. It can be seen from Figure 4j (and also Reference 1) that increased boundary layer thickness has a stabilizing effect on the flutter of panels. Inasmuch as the analysis used to predict the flutter dynamic pressure did not include the effect of boundary layer, the analytical prediction is conservative (i.e., analysis predicts a lower dynamic pressure at flutter than experiment).

The remaining panels of test OS4A were also tested despite the fact that the predicted flutter dynamic pressure (Table X) was far in excess of the tunnel capability. The tiles on panel P_2 failed as a result of an operational error. The tunnel test section is pumped down prior to startup so that the normal shock which passes through the test section at M = 1 will have minimum strength. During this procedure, the flutter stoppers should have been in place with the cavity vented to the plenum chamber. However, the flutter stoppers were inadvertently left in the off position at the end of the preceding run which resulted in a sealed cavity. In this mode, the cavity was at atmospheric pressure. When the

test section was pumped down prior to the start of the next run, the panel differential pressure built up forcing the panel to deform into the evacuated test section and overstressing the tiles, thus causing a failure.

Panel P_3 was tested to the tunnel limits with no failure or flutter of the panel. Panel P_5 was then installed and tested to the maximum tunnel dynamic pressure (1350 psf) at M = 1.05. The Mach number was increased to M = 1.10 and a series of runs was conducted at increments of dynamic pressure. At q_∞ = 1400 psf all tiles were lost without any indication of a flutter condition. Subsequent investigation of the failure was inconclusive but all evidence pointed to a static as opposed to a dynamic mode of failure. The most probable cause of failure was conjectured to be similar to the failure of panel P_2. The differential pressure ΔP, which was monitored during the test was the difference between the cavity pressure and the plenum pressure. However, the actual ΔP was the difference between the cavity pressure and the average free-stream static pressure over the panel. The evidence suggested that the freestream static pressure was significantly different from the plenum static at certain test conditions including those at the time of failure. Thus, the cause of the failure was labeled as a steady-state overpressure of the panel as a result of differences between the indicated and actual differential pressure across the panel.

OS4B Test Results

The static stiffness calibrations of panels P_6 through P_9 are shown

in Figures 4ℓ through 4o. The slopes of these curves in deflection per unit pressure (δ/P) are inversely proportional to the effective panel flexural rigidities. Contrary to test OS4A, the tiles have not added appreciable stiffness to the bare panels as reflected in the fact that the δ/P's for panels P_6 and P_7 are approximately equal to that of panel P_1 from OS4A. Similarly, the δ/P's for panels P_8 and P_9 are within 10 percent of being equal. No static calibration of panel P_{10} was made because it was fabricated during the course of the test. However, panel P_{10} was just panel P_8 with 0.4 inch of FRSI added and the stiffness of the panel should not have varied by a measurable amount.

A ground vibration survey was conducted on each of the five panels. The results of this survey are presented in Table XI. As discussed in the preceding section, the tiles altered the frequencies primarily by the addition of mass. The results for panel P_1 without cavity effects from test OS4A are included in Table XI for comparison purposes.

Table XII gives a comparison of the measured frequencies with those obtained by the analysis of Reference 5. The agreement between the two results is considered to be excellent.

The flutter tests proceeded in very much the same manner as in the OS4A tests. The experimental flutter boundary for panel P_6 (isotropic with 3 by 3 by 1-inch tiles) is shown in Figure 4p. The flutter boundaries for the equivalent bare panel as previously shown in Figure 4j are repeated for comparison. The upper dashed curve is the flutter boundary

for the bare panel with a boundary layer thickness of approximately 1.0 inch while the middle curve is the boundary for the same panel with approximately 0.25 inch boundary layer. The lowest curve is the flutter boundary obtained for panel P_6 with a 1.0-inch boundary layer. The two additional points at M = 1.2 represent the reduction in flutter dynamic pressure (q_F) for panel P_6 when the boundary layer thickness was reduced to approximately 0.75 inch and 0.5 inch. The most significant aspect of Figure 4p is the large reduction in q_F for the tiled panel relative to the bare panel, particularly at higher Mach numbers.

Based on the results for panel P_6 it was expected that panel P_7 (isotropic with 3 by 3 by 1.85-inch tiles) would flutter at even lower dynamic pressure because of its lower frequencies. The initial series of tests showed no appreciable response at M = 1.4 for dynamic pressures up to 850 psf. However, during the course of the test, it was observed that the tiles had a tendency to move statically in the streamwise direction. The first three rows of tiles moved aft a distance proportional to dynamic pressure until at 600 psf the gaps between the tiles were completely closed. This stacking up of the tiles resulted in a stiffening of the panel so testing was stopped.

The Mach number was reduced to 1.2 in an attempt to obtain flutter at low dynamic pressure before the tiles began to touch. Once again, the first three rows moved aft and touched at 600 psf. The test was continued to a dynamic pressure of 1200 psf. At this point the

deformation of the tiles was so great that it appeared they were ready to tear off and there was still no indication of any dynamic response. When the test was stopped, it was observed that the tiles did not return to their original position. A subsequent investigation showed that the SIP had been stressed beyond its elastic limit and the testing of this panel was terminated.

The orthotropic bare panel, P_8, was tested with results indicated by the circular symbols in Figure 4q. The equivalent panel with 3 by 3 by 1-inch tiles, P_9, was also fluttered with the results noted by the square symbols in Figure 4q. The additional points at M = 1.15 and 1.3 show the effect of reducing the boundary layer thickness. Here it can be seen that the presence of the tiles increased the flutter speed. Flutter analyses of these two configurations were conducted as discussed in Reference 5. Figure 4r shows the results of these studies. The two-dimensional aerodynamic theory used in the analyses does not predict the increasing flutter dynamic pressure that is consistently observed at low Mach number. Otherwise, the bare panel analytical results are in very good agreement with the test. The tiled panel analyses were obtained by applying a stiffness modification to the bare panel results, and the comparison with test is only fair. Three-dimensional analyses may be required to obtain improved correlation with the test results.

The final panel of this test was P_{10} which was panel P_8 with 0.4 inch of FRSI. The edges of the FRSI were surrounded by a wooden frame

which was fastened to the frame of the substrate and sealed along the freestream edges with RTV-type rubberized cement. The FRSI added a moderate amount of mass but virtually no stiffness to the basic substrate. Because stiffness changes are usually more important in panel flutter than mass changes, the overall flutter characteristics of panel P_{10} were expected to be similar to those observed for panel P_8. Figure 4s shows the results which were obtained. An increase of the flutter dynamic pressure of less than 10 percent was observed for $M > 1.2$ while a small decrease was noted for $M < 1.15$. For all practical purposes, the FRSI has very little effect on the substrate flutter characteristics.

OS12 Test Results

The instrumented panel, P_{13}, was tested first to establish the basic boundary layer profiles at the panel locations. These data together with similar data obtained for FRSI panels P_{11} and P_{12} were used to compute skin friction drag. The tests were performed with the movable wall flush with the side wall, and with the movable wall moved 1.0 inch into the airstream which resulted in boundary layer thicknesses of approximately 1.0 and 0.25 inch, respectively. A second series of tests was performed using the instrumented panel with the shock generating apparatus in place. Figure 4t shows the pressure distribution results of these tests at $M = 1.2$. The uppermost solid curve is for the maximum dynamic pressure capability of the wind tunnel with the movable wall section flush with the tunnel sidewall. The dashed curve is maximum dynamic pressure with

the wall moved 1.0 inch into the airstream. The lower solid curve is again with the wall flush but at the same dynamic pressure as that for the dashed curve. The maximum differential pressure across the shock was obtained at 1660 psf dynamic pressure and was equal to 2.5 psi. Figure 4u gives a similar set of results at M = 1.4 where the maximum shock strength was approximately 1.8 psi at a dynamic pressure of 1384 psf.

Three flutter proof tests were performed on panels P_{11} and P_{12}. Table XIII presents a matrix of dynamic pressures and Mach numbers at which tests were conducted. Panel P_{11} was 9 by 26 inches (Aspect Ratio = 2.89) while panel P_{12} was 18 by 26 inches (Aspect Ratio = 1.44). The third value of dynamic pressure given at each Mach number in Table XIII represents the level required to demonstrate the 50-percent margin of safety for panel flutter based on the dispersed trajectory. These tests were performed both with flush panels corresponding to a boundary layer thickness of 1.0 inch and with the panels moved 1.0 inch into the wind tunnel which yielded a boundary layer thickness of 0.25 inch. In all cases, the panels were completely steady with no indication, either visually or from high-speed photography, of any motion of the FRSI. These tests, therefore, served as verification of the freedom from flutter of the FRSI material up to the required margin of saftey.

Table XIII also shows that tests were conducted on panels P_{11} and P_{12} at dynamic pressures far in excess of the required margin of safety with the panels flush with the tunnel sidewall. At Mach numbers of 0.6

and 0.9 tests were run up to the maximum dynamic pressure capability of the wind tunnel. Supersonic tests at M = 1.2 and 1.4 were also run beyond the margin of safety but only to the level of the maximum dynamic pressure capability of the tunnel when the shock generator was present. These additional supersonic tests were run because subsequent tests were planned with the shock generator wherein the portion of the panel forward of the shock would be subjected to the same test conditions.

During the high dynamic pressure subsonic tests no motion of the panel was detected. However, at Mach 1.2 and 1.4, a waveform was observed in the FRSI beginning at a dynamic pressure of approximately 1300 psf. The amplitude of the wave increased with increasing dynamic pressure. The disturbance was concentrated at two thirds of the panel length with a lesser disturbance at the panel leading edge. High-speed films were taken when these disturbances were observed but prints of the film were not available until after the test was completed. Analysis of the film at one frame per second showed a motion of the grid on the FRSI with a period much less than 0.0025 seconds (the period between film frames). In the analysis of Reference 5, flutter frequencies were predicted on the order of 1000 H_z. A plausible explanation of the fact that surface ripples were seen in the test at this high frequency is that there was a standing wave in the material which was visible because of shadows resulting from the lighting. Figure 4v shows a schematic reproduction of the waveform observed while the test was in progress. The observed

waves do not present any material problem but are of interest to the extent that a similar phenomenon is predicted by analyses.

The final series of tests subjected FRSI panels, P_{11} and P_{12}, to the shock environments which were defined in Figures 4t and 4u. Here, the object of the test was to verify that the FRSI could withstand a discontinuous pressure of 2.5 psi. No failure of the rubber film coating occurred at any of the test conditions although the previously described wave motions were again observed at dynamic pressures in excess of 1300 psf.

Conclusions and Recommendations

1. Excellent comparison was achieved between the analytic and experimental natural frequencies and mode shapes for flat panels both with and without TPS. Therefore, the effects of TPS on the vibration characteristics of any panel can be computed by the methods of Reference 5 if the material properties are defined adequately.

2. Good agreement between analytical and experimental panel flutter instabilities were obtained for panels without TPS. Present analytical techniques are adequate.

3. FRSI had only a small effect on the flutter characteristics of flat flexible panels. Its effect can be estimated by modifying the bare panel frequencies by the addition of mass only, i.e., FRSI adds negligibly to the stiffness.

4. HRSI and LRSI tile types of TPS can have appreciable effects on panel frequencies and mode shapes. The SIP mechanical properties are very important in computing vibration characteristics and therefore efforts should be made to establish these properties within reasonable limits. The ratio of tile area to panel area is also an important parameter.

5. Only fair comparison was obtained between analyses and tests of panels with HRSI tiles. Three-dimensional flutter analyses should be conducted in an attempt to improve the correlation.

RESULTS AND DISCUSSION (Concluded)

6. FRSI material on a rigid substrate is flutter free below a dynamic pressure of 1300 psf at Mach numbers up to M = 1.4.

7. FRSI material can withstand the differential pressure loading resulting from the presence of a shock wave up to at least 2.5 psi.

8. Qualitative agreement was obtained between analyses and tests of FRSI on a rigid substrate. Flutter was observed at frequencies of the order of 1000 H_z. The panel aspect ratio and boundary layer thickness had no effect on the incipient flutter point.

REFERENCES

1. L. Muhlstein, P. A. Gaspers, and D. W. Riddle, "An Experimental Study of the Influence of the Turbulent Boundary Layer on Panel Flutter," NASA TN D-4486, dated March, 1968.

2. M. A. Kotch, "Pretest Information for Panel/TPS Flutter Tests in the Ames Research Center 2 x 2-Foot Transonic Wind Tunnel," Rockwell International Report SD74-SH-0162, dated May, 1974.

3. R. B. Kingsland, "Pretest Information for Panel/TPS Flutter Tests in the Ames Research Center 2 x 2-Foot Transonic Wind Tunnel (Model 40-0 Test OS4B)," Rockwell International Report SD75-SH-0154, dated July, 1975.

4. R. B. Kingsland, "Pretest Information for Testing of the Shuttle FRSI (NOMEX) Material in the Ames Research Center 2 x 2-Foot Transonic Wind Tunnel," (Test OS12; Model 85-0), Rockwell International Report SD75-SH-0209, dated September, 1975.

5. Ching-Chiang Kuo, "Some Considerations of the Dynamics of the Space Shuttle Vehicle Thermal Protection System" presented at the AIAA/ASME/SAE 17th Structures, Structural Dynamics and Materials Conference, dated May, 1976.

6. J. M. Spiegle and L. F. Lawrence, "A Description of the Ames 2 x 2-Foot Transonic Wind Tunnel and Preliminary Evaluation of Wall Interference," NACA RM A55121, dated 1956.

7. E. H. Dowell and H. M. Voss, "Theoretical and Experimental Panel Flutter Studies in the Mach Number Range 1.0 to 5.0," AIAA Journal, V. 3, No. 12, dated December, 1965, pp 2292-2304.

8. G. L. Commerford and J. W. Sleison, "The Effects of the Orbiter Thermal Protection Subsystem (TPS) On Panel Flutter - Experimental Results from Tests OS4, OS4B and OS12," Rockwell International Report SD74-SH-0129, dated April, 1976.

Model drawings for test OS4A consist of the following:

Drawing No.	Description
SS-A01226	Flutter Test Panel - Assembly and Details
SS-A01227	Movable Wall Assembly and Details - Ames 2x2 TWT
SS-A01228	Model Assembly - Panel Flutter Model 40-0
SS-A01258	Built-up Flutter Test Panel-Assembly and Details

REFERENCES (Concluded)

Model drawings for test OS4B consist of the following:

Drawing No.	Description
SS-A01226	Flutter Test Panel Assembly and Details
SS-A01227	Movable Wall Frame Assembly and Details Ames 2 x 2 TWT
SS-A01228	Model Assembly Panel Flutter Model 40-0
SS-A01229	Installation Panel Flutter Model 40-0
SS-A01258	Flutter Test Panel Assembly and Details
SS-A01268	Damper-Flutter Panel Modification
SS-A01298	Probe Installation Panel Flutter Model 40-0
SS-A01299	Details - Panel Flutter Model 40-0
SS-A01504	Test Panel Assembly - Panels No. 8 and 9 for 40-0 Model
SS-A01505	Pressure Relief Assembly - 40-0 Panel Flutter Model
SS-A01507	Displacement Probe Mounting Assembly - 40-0 Model

TABLE I.

TEST : OS4A, OS4B, & OS12

DATE : 1974,75 &76

TEST CONDITIONS

MACH NUMBER	REYNOLDS NUMBER (per unit length)	DYNAMIC PRESSURE (pounds/sq. ft.)	STAGNATION TEMPERATURE (degrees Fahrenheit)
1.05		271 → 1354	
1.10		279 → 1397	
1.20		293 → 1025	
1.30		301 → 1323	
1.40		301 → 1100	

BALANCE UTILIZED: _____

	CAPACITY:	ACCURACY:	COEFFICIENT TOLERANCE:
NF			
SF			
AF			
PM			
RM			
YM			

COMMENTS:

TABLE II. TEST OS4A RUN LOG

DATE	PANEL	RUN	CORRELATE NUMBER	M	Q (PSF)	WALL HEIGHT (IN.)	REMARKS
9/18/74	1	1	1	1.05	379	1.0	
			2		406		
			3		433		
			4		460		
			5		487		
9/20/74		2	16	1.2	299		
		2	17		499		
		3	21		293		
			22		351		
			23		351		
			24		351		
			25		439		
			26		498		
			27		498		
			28		556		
			29		556		
			30		556		
			31		586		
			32		586		
			33		615		
			34		615		

TABLE II. TEST OS4A RUN LOG (Continued)

DATE	PANEL	RUN	CORRELATE NUMBER	M	Q (PSF)	WALL HEIGHT (IN.)	REMARKS
9/20/74	1	3	35	1.2	615	1.0	
			36		644		
			37		644		
9/23/74		4	43		586		
			44		644		
			45		703		Upstream orifice erratic; switching reference to P_s
			46		761		
9/24/74		5	49		617		
			50		676		
			51		734		Flutter at 76 H_z
			52		766		
			53		706		
			54		677		
			55		824		
		6	56	1.1	284		
9/25/74			57		557		W-K probe moved to 5.0" aft of panel L.E.
			58		557		
			59		557		
			60		507		
			61		507		
			62		507		

TABLE II. TEST OS4A RUN LOG (Continued)

DATE	PANEL	RUN	CORRELATE NUMBER	M	Q (PSF)	WALL HEIGHT (IN.)	REMARKS
9/25/74	1	6	63	1.1	507	1.0	
			64		507		
			65		532		
			66		532		
			67		532		
			68		545		
			69		545		
			70		590		
			71		590		
			72		590		
			73		648		
			74		648		Flutter at 65 H_z
			75		648		
			76		563		
			77		563		
			78		563		
			79		615		
			80		281		
			81		281		
9/26/74		7	82	1.3	602		
			83		602		

TABLE II. TEST OS4A RUN LOG (Continued)

DATE	PANEL	RUN	CORRELATE NUMBER	M	Q (PSF)	WALL HEIGHT (IN.)	REMARKS
9/26/74	1	7	84	1.3	602	1.0	
			85		752		
			86		752		
			87		752		
			88		904		Flutter at 82 H_z
			89		904		
			90		904		
			91		842		
			92		842		
			93		842		
			94		872		
			95		872		
			96		872		
			97		301		
			98		301		
			99		937		
			100		937		
			101		937		
		8	102	1.4	941		RMS meter erratic
			103		941		
			104		941		

TABLE II. TEST OS4A RUN LOG (Continued)

DATE	PANEL	RUN	CORRELATE NUMBER	M	Q (PSF)	WALL HEIGHT (IN.)	REMARKS
9/26/74	1	8	105	1.4	972	1.0	
			106		972		
			107		1033		
			108		1033		
			109		1033		
			110		1094		
			111		1094		
			112		911		Flutter (switching to Ballantine RMS meter)
			113		911		
			114		911		
			115		606		
			116		606		
			117		1100		
			118		1100		
			119		1100		
			120		913		
			121		913		
			122		913		
			123		301		
			124		301		
			125		301		

TABLE II. TEST OS4A RUN LOG (Continued)

DATE	PANEL	RUN	CORRELATE NUMBER	M	Q (PSF)	WALL HEIGHT (IN.)	REMARKS
9/27/74	1	9	134	1.05	279	1.0	
			135		279		
			136		279		
			137		279		
			138		279		
			139		279		
			142		541		
			143		541		
			144		541		
			145		541		
			146		541		
			147		541		
			148		541		
			149		541		
			150		541		
			151		541		
			152		541		
			153		541		
			154		541		
			155		541		
			156		541		

TABLE II. TEST OS4A RUN LOG (Continued)

DATE	PANEL	RUN	CORRELATE NUMBER	M	Q (PSF)	WALL HEIGHT (IN.)	REMARKS
9/27/74	1	9	157	1.05	541	1.0	
			158		650		
			159		650		
			160		650		
			161		703		
			162		703		
			163		703		
			164		730		
			165		730		
			166		730		
			167		758		
			168		758		
			169		758		
			170		785		Flutter at 60 H_z
			171		785		
		10	172	1.1	279	0.0	
			173		279		
			174		279		
			175		559		
			176		559		
			177		559		

TABLE II. TEST OS4A RUN LOG (Continued)

DATE	PANEL	RUN	CORRELATE NUMBER	M	Q (PSF)	WALL HEIGHT (IN.)	REMARKS
9/27/74	1	10	178	1.1	838	0.0	
			179		838		
		11	181		727		Flutter at 60 H_z
			182		727		
			183		727		
			184		754		
			185		754		
			186		754		
			187		783		
			188		783		
			189		783		
			190		810		
			191		810		
			192		837		
			193		837		
			194		837		
			195		391		
			196		391		
			197		391		
		12	198	1.4	611		
			199		611		

TABLE II. TEST OS4A RUN LOG (Continued)

DATE	PANEL	RUN	CORRELATE NUMBER	M	Q (PSF)	WALL HEIGHT (IN.)	REMARKS
9/27/74	1	12	200	1.4	1033	0.0	Flutter at 76 H_z
			201		1033		
			202		1033		
			203		972		
			204		972		
			205		911		
			206		911		
			207		911		
			208		850		
			209		850		
			210		850		
			211		729		
			212		729		
			213		729		
			214		1029	1.0	
			215		1029		
			216		1029		
			217		971		
			218		971		
			219		971		
10/1/74	2	13	220	1.1	287		Lost 2 tiles; cracked

TABLE II. TEST OS4A RUN LOG (Continued)

DATE	PANEL	RUN	CORRELATE NUMBER	M	Q (PSF)	WALL HEIGHT (IN.)	REMARKS
10/1/74	2	13	221	1.1	287	1.0	2 more after 221
10/2/74	3	14	222		558		
			223		558		
			224		558		
			225		838		
			226		838		
			227		838		
		15	228	1.05	271		
			229		271		
			230		541		
			231		541		
			232		541		
			233		812		
			234		812		
			235		812		
			236		1083		
			237		1083		
			238		1083		
			239		1353		
			240		1353		
			241		1353		

TABLE II. TEST OS4A RUN LOG (Continued)

DATE	PANEL	RUN	CORRELATE NUMBER	M	Q (PSF)	WALL HEIGHT (IN.)	REMARKS
10/2/74	3	16	242	1.1	1118	1.0	
			243		1118		
			244		1118		
			245		1377		
			246		1377		
			247		1377		
10/3/74		17	248	1.2	293		W-K not working
			249		293		
			250		586		W-K now working
			251		586		
			252		586		
			253		586		
			254		878		
			255		878		
			256		878		
		18	257	1.3	602		
			258		602		
			259		602		
			260		902		
			261		902		
	5	19	263	1.1	558		

TABLE II. TEST OS4A RUN LOG (Continued)

DATE	PANEL	RUN	CORRELATE NUMBER	M	Q (PSF)	WALL HEIGHT (IN.)	REMARKS
10/3/74	5	19	264	1.1	558	1.0	
			265		558		
			266		838		
			267		838		
			268		838		
			269		1118		
			270		1118		
			271		1118		
		20	272	1.05	541		
			273		541		
			274		541		
			275		812		
			276		812		
			277		812		
			278		1083		
			279		1083		
			280		1083		
			281		1354		Panel oil canning at low frequency
			282		1354		
			283		1354		
10/4/74		21	284		1354		

TABLE II. TEST OS4A RUN LOG (Continued)

DATE	PANEL	RUN	CORRELATE NUMBER	M	Q (PSF)	WALL HEIGHT (IN.)	REMARKS
10/4/74	5	21	285	1.05	1354	1.0	
			286		1354		
		22	287	1.1	1397		
			288		1397		Lost all tiles
10/7/74	4	23	295		838		Flutter at 48 H_z
			296		838		
			297		838		
			298		559		
			299		559		
			300		559		
			301		727		
			302		727		
			303		727		
			304		782		
			305		782		
			306		782		
		24	307	1.2	820		
			308		820		
			309		820		
			310		585		
			311		585		

TABLE II. TEST OS4A RUN LOG (Continued)

DATE	PANEL	RUN	CORRELATE NUMBER	M	Q (PSF)	WALL HEIGHT (IN.)	REMARKS
10/7/74	4	24	312	1.2	585	1.0	
		25	313	1.3	602		
			314		602		
			315		602		
		26	316	1.1	282		
			317		282		
			318		282		
			319		813		
			320		813		Flutter at 46 H_z
			321		813		
			322		800		Flutter at 45 H_z
			323		800		
			324		800		
			325		838		
			326		838		
			327		838		
		27	328	1.2	945		
			329		945		Flutter at 56 H_z
			330		945		
			331		973		
			332		973		

TABLE II. TEST OS4A RUN LOG (Continued)

DATE	PANEL	RUN	CORRELATE NUMBER	M	Q (PSF)	WALL HEIGHT (IN.)	REMARKS
10/7/74	4	27	333	1.2	301	1.0	
			334		301		
			335		301		
			336		1025		Flutter at 60 H_z
			337		1025		
			338		1025		
10/8/74		28	339	1.3	604		
			340		604		
			341		604		
			342		604		
			343		902		
			344		902		
			345		902		
			346		1053		
			347		1053		
			348		1053		
		29	349		752		
			350		752		
			351		752		
			352		1053		
			353		1053		

TABLE II. TEST OS4A RUN LOG (Continued)

DATE	PANEL	RUN	CORRELATE NUMBER	M	Q (PSF)	WALL HEIGHT (IN.)	REMARKS
10/8/74	4	29	354	1.3	1053	1.0	
			355		752		
			356		752		
		30	357	1.05	541		
			358		541		
			359		541		
			360		271		
			361		406		
			362		406		
			363		406		
			364		812		
			365		812		
			366		812		
			367		677		
			368		677		
			369		677		
			370		893		
			371		893		
			372		893		
			373		853		
			374		853		

TABLE II. TEST OS4A RUN LOG (Continued)

DATE	PANEL	RUN	CORRELATE NUMBER	M	Q (PSF)	WALL HEIGHT (IN.)	REMARKS
10/8/74	4	30	375	1.05	853	1.0	
			376		866		
			377		866		
			378		866		
			379		866		
			380		880		
			381		880		
			382		880		
			383		880		
			384		888		
			385		888		
			386		888		
			387		888		
			388		907		
			389		907		
			390		907		
			391		907		
			392		920		
			393		920		
			394		920		
		31	395	1.3	1203		Tunnel shutdown before maximum response recorded

TABLE II. TEST OS4A RUN LOG (Continued)

DATE	PANEL	RUN	CORRELATE NUMBER	M	Q (PSF)	WALL HEIGHT (IN.)	REMARKS
10/8/74	4	31	396	1.3	1203	1.0	
		32	397		1203		
			398		1203		
			399		1143		
			400		1143		
			401		1143		
			402		1143		
			403		1263		
			404		1263		
			405		1263		
			406		1323		
			407		1323		
			408		1323		
			409		1323		
		33	410	1.1	559		
			411		559		W-K pegged
			412		559		
			413		559		
		34	414		559	0.0	
			415		559		
			416		559		

TABLE II. TEST OS4A RUN LOG (Concluded)

DATE	PANEL	RUN	CORRELATE NUMBER	M	Q (PSF)	WALL HEIGHT (IN.)	REMARKS
10/8/74	4	34	417	1.1	838	0.0	
↓	↓	↓	418	↓	838	↓	W-K erratic
			419		838		
			420		1118		
			421		1118		
			422		1118		
			423		978		
			424		978		

TABLE III.

TEST: 054B

DATA SET/RUN NUMBER COLLATION SUMMARY

DATE: 1/30/76

DATA SET IDENTIFIER	CONFIGURATION	M	W	q PSF 300	350	400	450	500	550	600	650	700	750	800	850	950	1000	1050
11	PANEL 6	1.1	0	1	3	5	7	9	11	13	15/17	18	20	22	24/26	25/28	29	30
		M	W	300	350	450	475	500	550	575	600	625	650	700	720	740	750	800
16	PANEL 6	1.15	0	1				3	5	7				9				11
12		1.2	0	1/2				20	16		4/14		12/18	10			8	6
13		1.2	0						17									
13		1.2	.02					1										
13		1.2	1/4					3										
13		1.2	1/2			7		5/15										
13		1.2	3/4			9	11	13										
14		1.3	0		1			3			5	7						
15		1.4	0		1			2			4			6	9/11	8		

1 7 13 19 25 31 37 43 49 55 61 67 73 76

COEFFICIENTS IDVAR (1) IDVAR (2) NDV

α OR β SCHEDULES W-WALL PAS.

NASA-MSFC-MAF

TABLE III. (Continued)

TEST: OS 4 B

DATA SET/RUN NUMBER COLLATION SUMMARY

DATE: 1/30/76

q = PSF

DATA SET IDENTIFIER	CONFIGURATION	M	W			400	500	550	600	650	700	750	800	850	900	1000	1100	1200
26	PANEL 7	12	0				1		2		5/7	9	11	13	15	17	19	21
25	↓	14	0			1	3	5	7	9	11	13	15	17				

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

COEFFICIENTS IDVAR (1) IDVAR (2) NDV

α OR β SCHEDULES W = WALL POS.

NASA-MSFC-MAF

TABLE III. (Continued)

TEST: OS4B

DATA SET/RUN NUMBER COLLATION SUMMARY

DATE: 1/30/76

DATA SET IDENTIFIER	CONFIGURATION	M	W			q PSF 300	400	450	500	550	600	650	660	670	695	700	750	770
10	PANEL B	1.05	0			1												
3		1.1	0			6/20	8	10	12/13	15	17	19						
4		1.15	0			3	5	7	9	11	13	15				17		
9		1.2	0			1	6		8		10	12	14	15				
8		1.25	0			1	3		5		7	9			11			
7		1.3	0			1	3		5		7	9/10				12	14	
6		1.35	0			1	3		5	7	9	11				13	15	
5		1.4	0			1	3	5/9	11	13	15	17				19	21	22

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

COEFFICIENTS IDVAR (1) IDVAR (2) NDV

α OR β SCHEDULES W = WALL POS.

NASA-MSFC-MAF

TABLE III. (Continued)

TEST: 054 B

DATA SET/RUN NUMBER COLLATION SUMMARY

DATE: 1/30/76

DATA SET IDENTIFIER	CONFIGURATION	M	W				350	400	450	500	550	600	650	700	735	750	775	800
										q PSF								
20	PANEL 9	1.15	0									1		3		5		7
19		1.15	3/4												9			
19		1.2	0							1		3		5		7		
22		1.25	0									1		3		5	7	
24		1.25	0													1		
24		1.25	1/2													3		
18		1.3	0					1		3		5	7	9		11		13
23		1.3	0													1/5		3/7
17		1.4	0				1		3		5	7/11	9/13	15				
21		1.4	0							1				3				5

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

α OR β SCHEDULES: W = WALL POS.

COEFFICIENTS

IDVAR (1) IDVAR (2) NDV

NASA-MSFC-MAF

TABLE III. (Concluded)

TEST: 0S4B

DATA SET/RUN NUMBER COLLATION SUMMARY

DATE: 1/30/76

DATA SET IDENTIFIER	CONFIGURATION	M	W						400	500	600	625	640	650	675	700	750	800
											q PSF							
29	PANEL 10	1.1	0							1	3					5	7	
30		1.15	0												2	1		
27		1.2	0						1	3	5			7	9			
32		1.2	0							1/3								
32		1.2	1/4							4	6			8				
32		1.2	1/2							9	11	13	15					
32		1.2	1							17	19							
28		1.3	0						1	3	5					7	9	
31		1.4	0								1					3		5

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

COEFFICIENTS IDVAR (1) IDVAR (2) NDV

α OR β SCHEDULES IV: WING POS.

NASA-MSFC-MAF

TABLE IV.

TEST: OS 12

DATA SET/RUN NUMBER COLLATION SUMMARY

DATE: 10/30/78

	CONFIGURATION	M	W		q - PSFA - 325	450	600	700	900	990	1000	1100	1200	1250	1300	1385	1400	1655
42	P11 + SG	1.2	0															1
41	↓	1.2	1							1								
39		1.4	0													1		
40		1.4	1									1						
34	P11	.6	0		4	3	1							2				
33	↓	.6	1		1	2	3											
35		.9	0		1		2		3									4
36		.9	1		3		2		1									
37		1.2	0		1		2				3		6				5	4
38		1.2	1		3		2				1							
31		1.4	0					1				2	4			3		
32		1.4	1					1				2						

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

COEFFICIENTS IDVAR (1) IDVAR (2) NDV

α OR β SCHEDULES W = WALL POS.

TABLE IV. (Continued)

TEST: OS 12

DATA SET/RUN NUMBER COLLATION SUMMARY

DATE: 10/30/78

	CONFIGURATION	M	W		q - PSFA - 325	450	600	700	900	940	1000	1100	1200	1250	1300	1385	1400	1655
30	P/2 + S.G.	1.2	0										3		2		1	4
29	↓	1.2	1							1								
27	↓	1.4	0													1		
28		1.4	1									1						
18	P/2	.6	0		3	2	1											
17	↓	.6	1		1	2	3											
22	↓	.9	0		4		3		1/2									
21	↓	.9	1		1		2		3									
19	↓	1.2	0		1		2				3							
26	↓	1.2	0															1/2
20	↓	1.2	1		3		2				1							
25	↓	1.2	1							1								
15	↓	1.4	0		1			2				3						
23	↓	1.4	0													1		
16	↓	1.4	1		3			2				1						
24	↓	1.4	1									1						

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

α OR β SCHEDULES

COEFFICIENTS: W = WALL POS.

IDVAR (1) IDVAR (2) NDV

TABLE IV. (Concluded)

TEST: OS 12

DATA SET/RUN NUMBER COLLATION SUMMARY

DATE: 10/30/78

	CONFIGURATION	M	W		q - PSIA - 325	450	600	700	900	940	1000	1100	1200	1250	1300	1385	1400	1455
1	P/3 + S G	1.2	0								2							
2		1.2	0							2								
3		1.2	0							1	2							
6		1.2	0								1							
2		1.2	1							1								
5		1.4	0									1				2		
4		1.4	1									1/2						
10	P/3	.6	0		3	2	1											
9		.6	1		1	2	3											
11		.9	0		1		2		3									
12		.9	1		3		2		1									
14		1.2	0		3		2				1							
13		1.2	1		1		2				3							
7		1.4	0		1/2			3				4						
8		1.4	1		3			2				1						

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

COEFFICIENTS IDVAR (1) IDVAR (2) NDV

α OR β SCHEDULES W = WALL POS.

TABLE V. EFFECT OF TPS TILES ON PANEL NATURAL FREQUENCIES

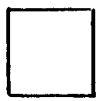
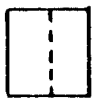
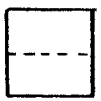
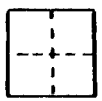
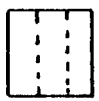
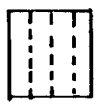
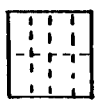
Equivalent Test Panel	Mode Shape / Panel Type								
P-8	Bare	27.6	76.0	54.3	97.9	159.3	178.5	273.0	290.
--	Bare with Tile Mass	18.0	49.5	35.4	63.8	103.8	116.4	177.8	189.1
P-2	$N_x = 4$ $N_y = 3$	40.5	80.9	89	128.6	142.6	190.6	243.1	255.6
--	$N_x = 6$ $N_y = 3$	32.9	65.7	80.3	107.4	120.2	159.8	196.4	232.25
P-9	$N_x = 8$ $N_y = 6$	20.8	55.1	40.	70.7	107.7	123.9	182.2	196.8

TABLE VI. DESCRIPTION OF PANELS USED IN TEST OS4B

Panel	Type	Edge Condition	TPS	SIP Thickness	TPS Thickness
P-6	Isotropic	fixed	3"x3" HRSI	.160	1.0"
P-7	Isotropic	fixed	3"x3" HRSI	.160	1.85"
P-8	Orthotropic	Simply supp.	none	--	--
P-9	Orthotropic	Simply supp.	3"x3" HRSI	.160	1.0"
P-10	Orthotropic	Simply supp.	0.40" FRSI	--	--

TABLE VII. OS4B PRESSURE LOCATIONS

ORIFICE NUMBER	X INCHES	Y INCHES
PORT EDGE		
1	-12	10.7
2	- 9	10.7
3	- 6	10.7
4	- 3	10.7
5	0	10.7
6	3	10.7
7	6	10.7
8	9	10.7
9	12	10.7
STARBOARD EDGE		
11	-12	-10.7
12	- 9	-10.7
13	- 6	-10.7
14	- 3	-10.7
15	0	-10.7
16	3	-10.7
17	6	-10.7
18	9	-10.7
19	12	-10.7

ORIFICE NUMBER	X INCHES	Y INCHES
FORWARD EDGE		
21	-14.475	12
22	-14.475	6
23	-14.475	3
25	-14.475	- 3
26	-14.475	- 6
27	-14.475	-12
AFT EDGE		
31	14.475	12
33	14.475	3
34	14.475	0
35	14.475	- 3
36	14.475	- 6
37	14.475	-12

TABLE VIII. OS12 PRESSURE LOCATIONS

ORIFICE NUMBER	X INCHES	Y INCHES
PORT EDGE		
1	-12	10.7
3	- 6	10.7
5	0	10.7
7	6	10.7
9	12	10.7
STARBOARD EDGE		
11	-12	-10.7
13	- 6	-10.7
15	0	-10.7
17	6	-10.7
19	12	-10.7
FORWARD EDGE		
22	-14.475	6
24	-14.475	0
26	-14.475	- 6
AFT EDGE		
31	14.475	12
33	14.475	3
37	14.475	-12

TABLE IX. OS4 PANEL GROUND VIBRATION TEST RESULTS WITH CAVITY

Panel	Description	Frequency Hz					
		f_{11}	f_{21}	f_{12}	f_{31}	f_{22}	f_{32}
P-1	Isotropic - bare	57.8	79.6	103.0	113.8	131.0	173.2
P-2	Isotropic - 6"x6"x1" tiles	88.5	162.0	174.8	237.0	301.0	339.0
P-3	Isotropic - 6"x6"x2" tiles	96.7	170.2	180.1	236.0	304.0	401.0
P-4	Orthotropic - bare	56.1	96.5	71.9	185.7	128.0	--
P-5	Orthotropic = 6"x6"x1" tiles	86.3	168.5	182.5	262.3	313.4	437.0

TABLE X. OS4 PANEL FLUTTER PREDICTIONS BASED ON MEASURED MODES

M = 1.2

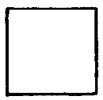
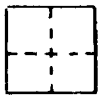
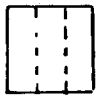
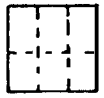
Panel	Flutter Dynamic Pressure PSF
1	533
2	3379
3	5656
4	728
5	4933

TABLE XI. GROUND VIBRATION TEST RESULTS FOR THE PANELS FOR TEST OS4B WITHOUT CAVITY

Panel	Description	Frequency (Hz)							
		f_{11}	f_{21}	f_{12}	f_{22}	f_{31}	f_{32}	f_{41}	f_{42}
P-1	Isotropic - bare	41.5	70.6	99.4	129.7	119.7	176.3	--	--
P-6	Isotropic - 3"x3"x1" tiles	33.4	59.7	69.8	85.2	101.8	--	147.6	--
P-7	Isotropic - 3"x3"x 1.85" tiles	28.6	51.7	60.3	--	81.1	122.1	144.4	--
P-8	Orthotropic - bare	*26.9	77.6	*53.0	114.2	157.6	189.4	268.9	296.7
P-9	Orthotropic - 3"x3"x 1" tiles	*22.0	58.7	*35.7	--	114.2	--	170.4	206.0
P-10	Orthotropic - 0.4" FRSI	*26.0	75.0	*50.0	--	141.0	164.0	224.0	--

* Obtained by impulsive twang

TABLE XII. COMPARISON OF MEASURED AND ANALYTICAL NATURAL FREQUENCIES FOR PANELS P_8 AND P_9

Panel \ Mode Shape		Frequency (Hz)							
		f_{11} 	f_{21}	f_{12}	f_{22} 	f_{31} 	f_{32} 	f_{41}	f_{42}
P-8	Test	26.9*	77.6	53.0*	114.2	157.6	189.4	268.9	296.7
	Anal.	27.6	76.0	54.3	97.9	159.3	178.5	273.0	290.0
P-9	Test	22.0*	58.7	35.7*	--	114.2	--	170.4	206.0
	Anal.	20.8	55.1	40.1	68.0	107.7	123.9	182.4	196.8

* Result obtained from an impulsive twang

TABLE XIII. TEST CONDITIONS FOR PANELS P_{11} AND P_{12} WITH BOUNDARY LAYER THICKNESSES OF 1.0 INCH AND 0.25 INCH

Mach Number	Dynamic Pressure q, PSF				
	q_1	q_2	q_3	q_4	q_5
0.6	325	450	600	1255*‡	--
0.9	325	600	900	1600*‡	--
1.2	325	600	1000	1380*	1660*
1.4	325	700	1100	1380*	--

* With panel flush with sidewall only, i.e. $\delta^* \approx 1.0$ inch

‡ Panel P_{12} only

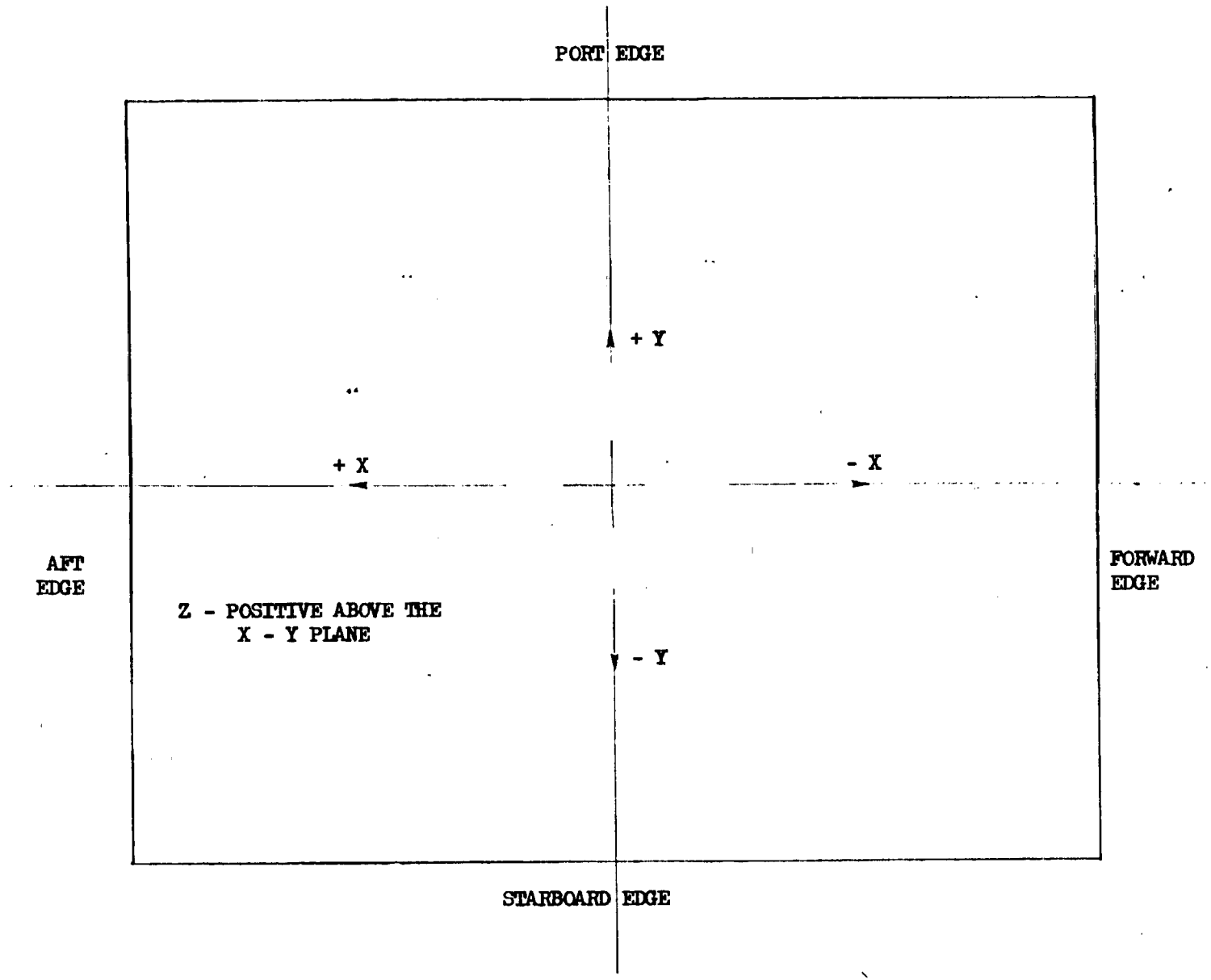
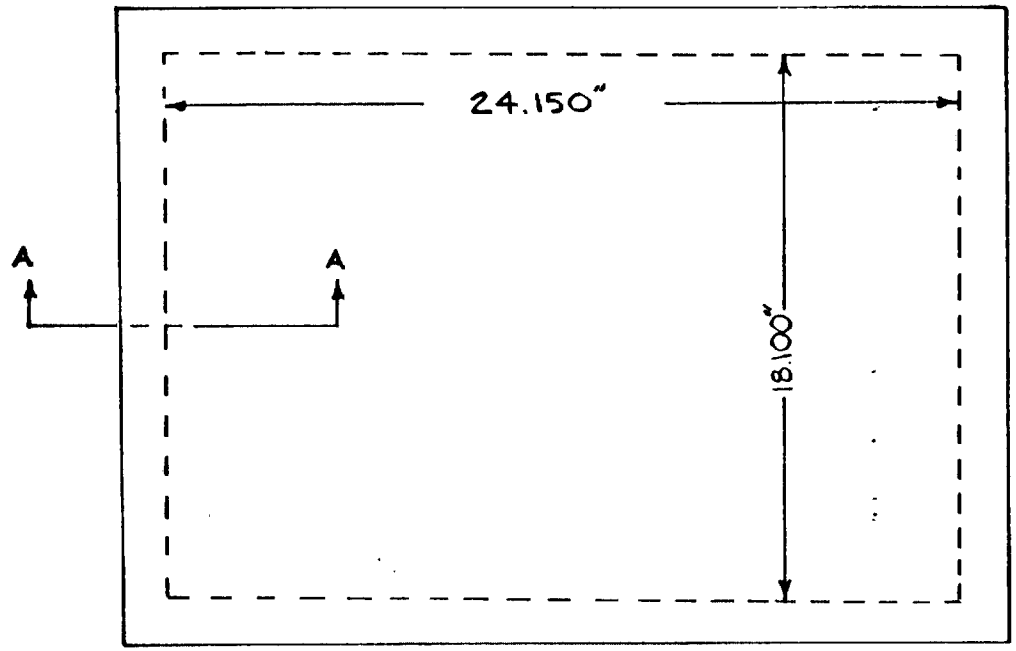
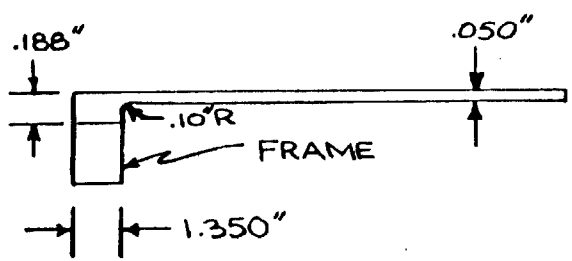


Figure 1. OS4 and OS12 axis definitions.



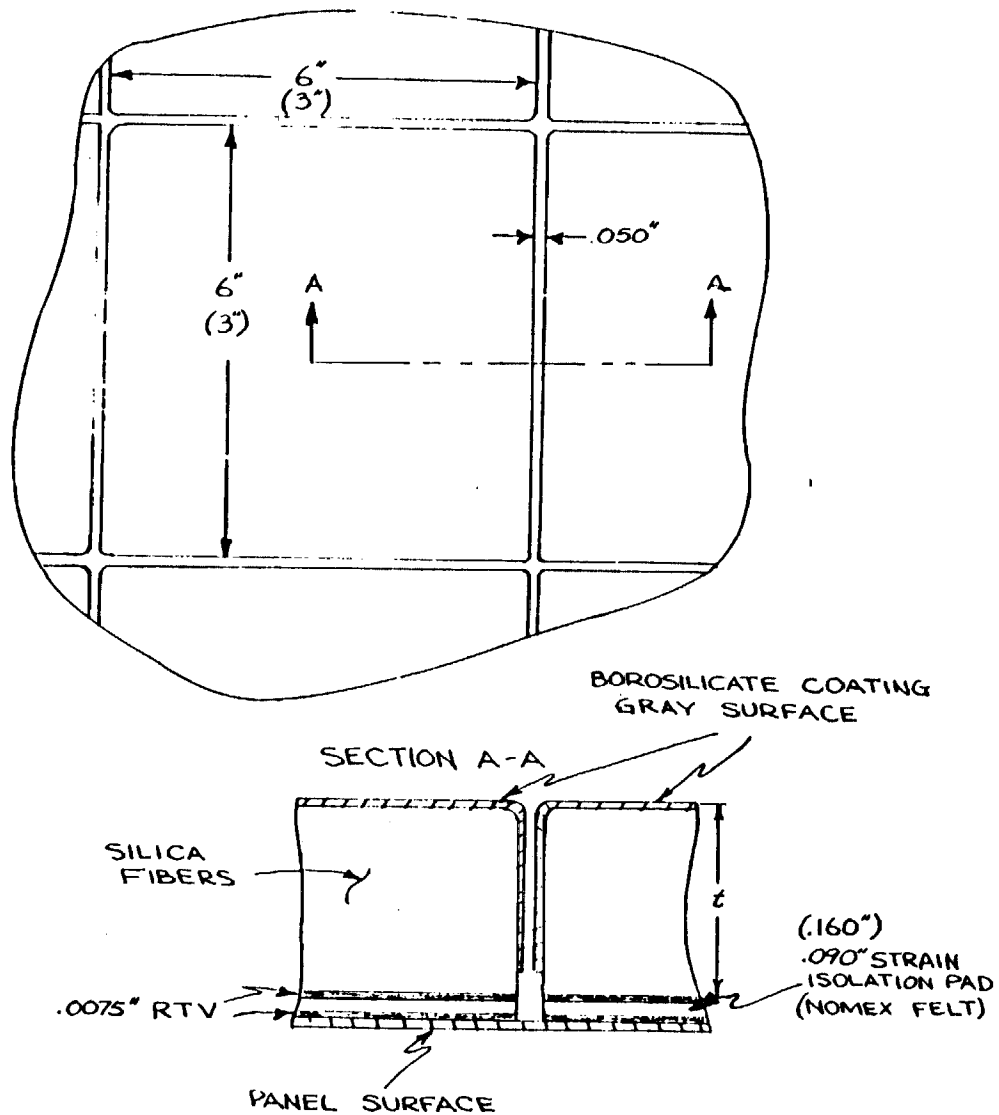
SECTION A-A



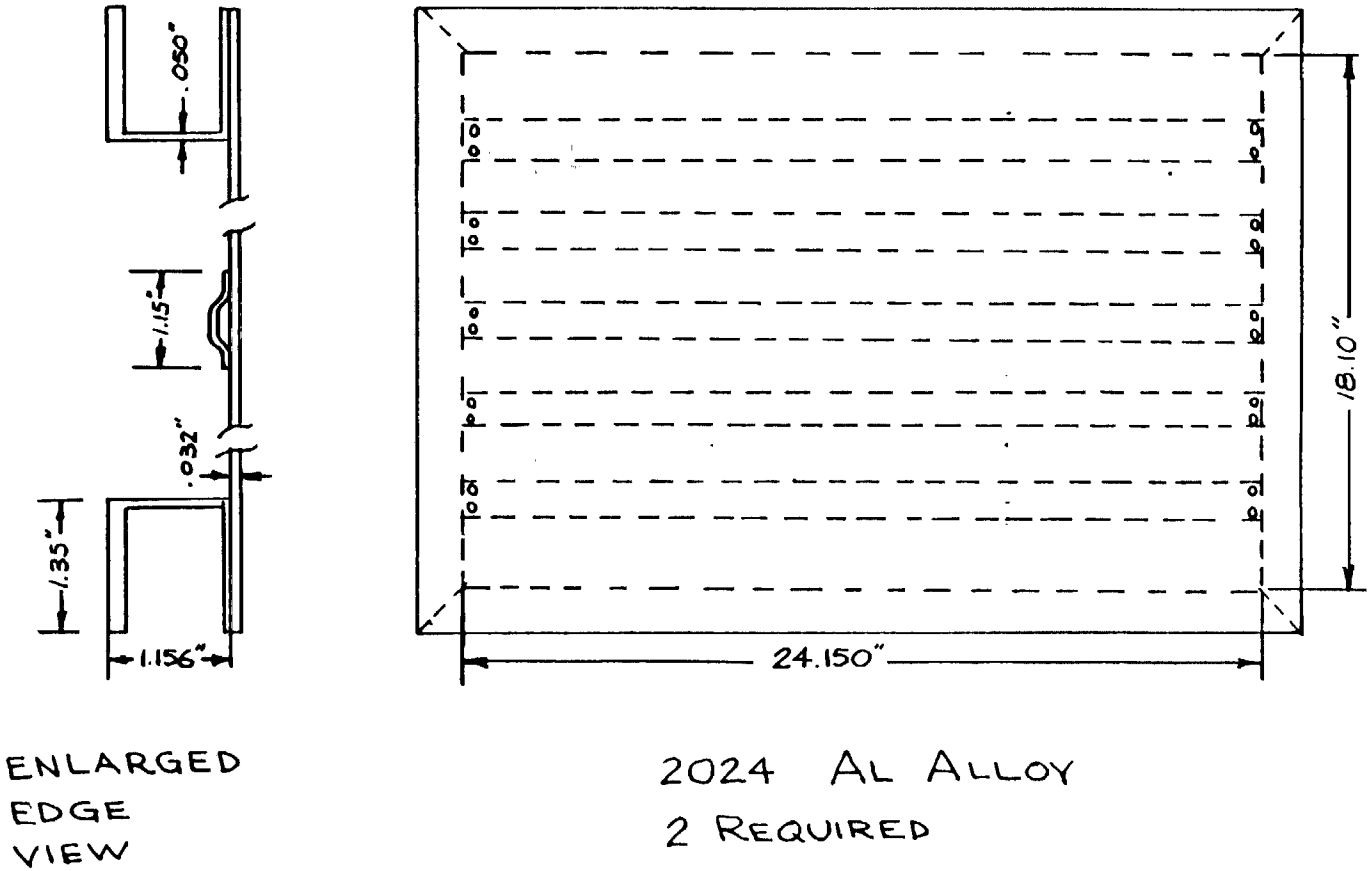
2024 AL ALLOY

3 REQUIRED

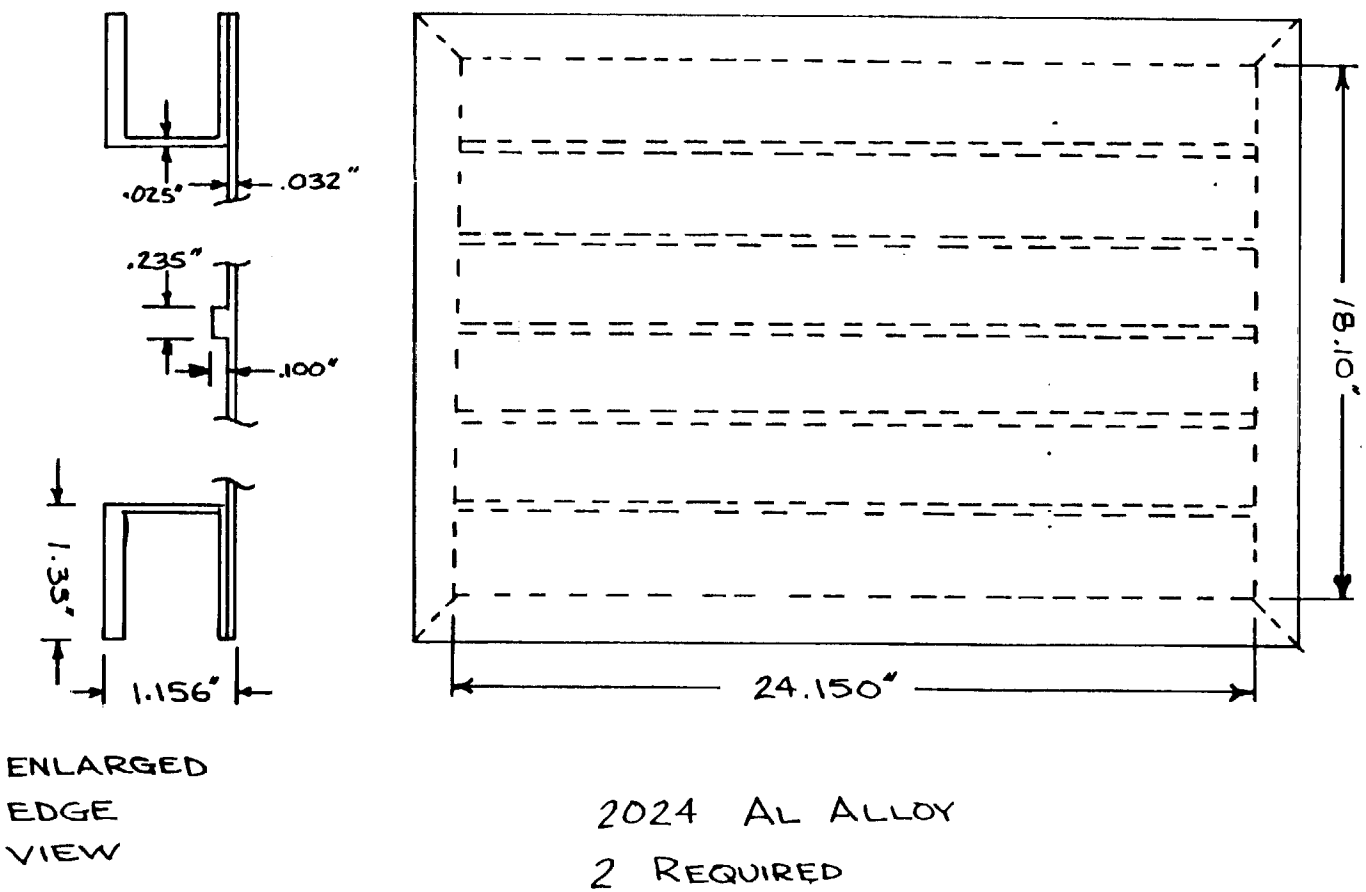
a. Isotropic Fixed Edge Panel
Figure 2. Model sketches.



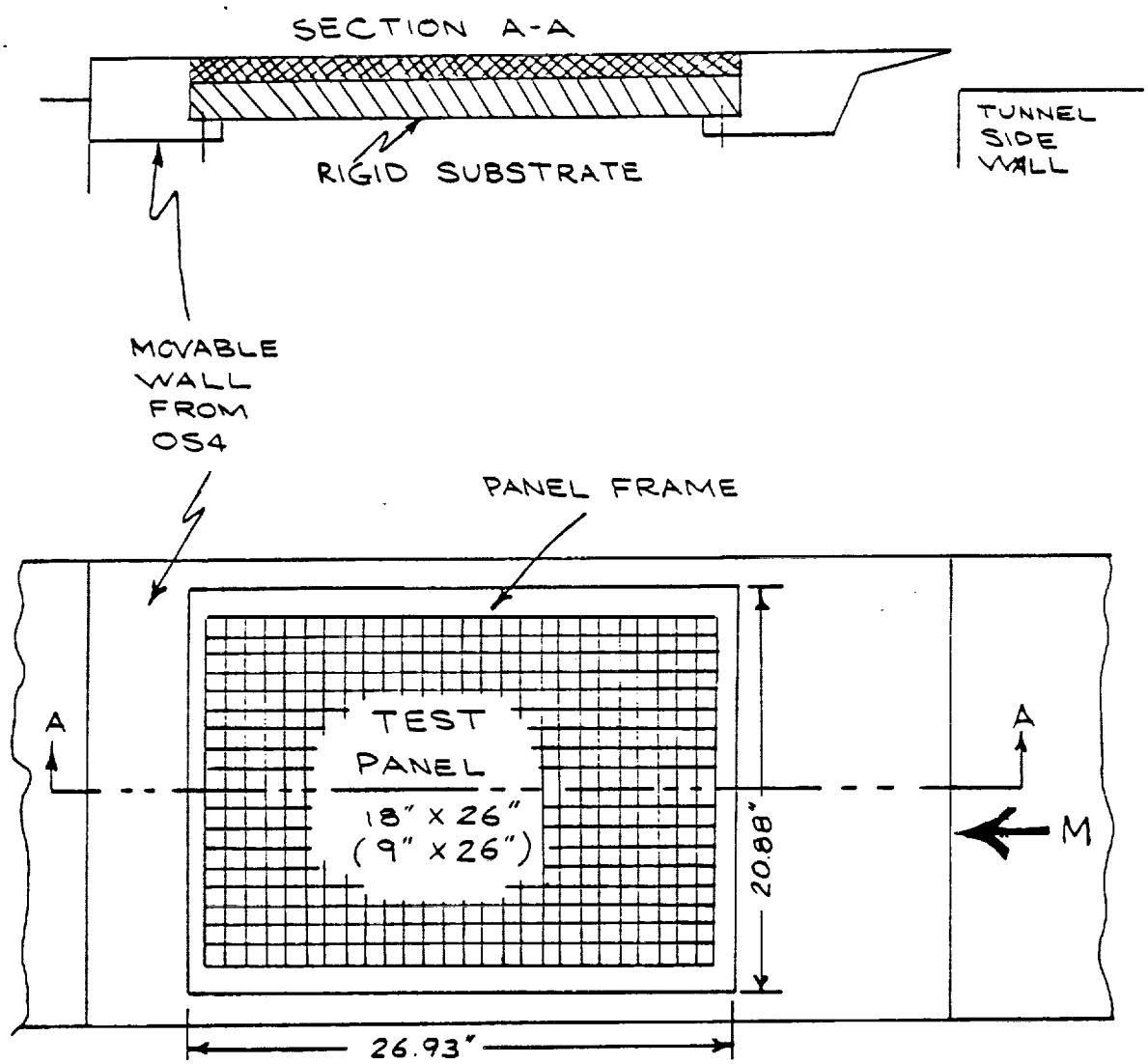
b. Typical TPS Installation
Figure 2. Continued.



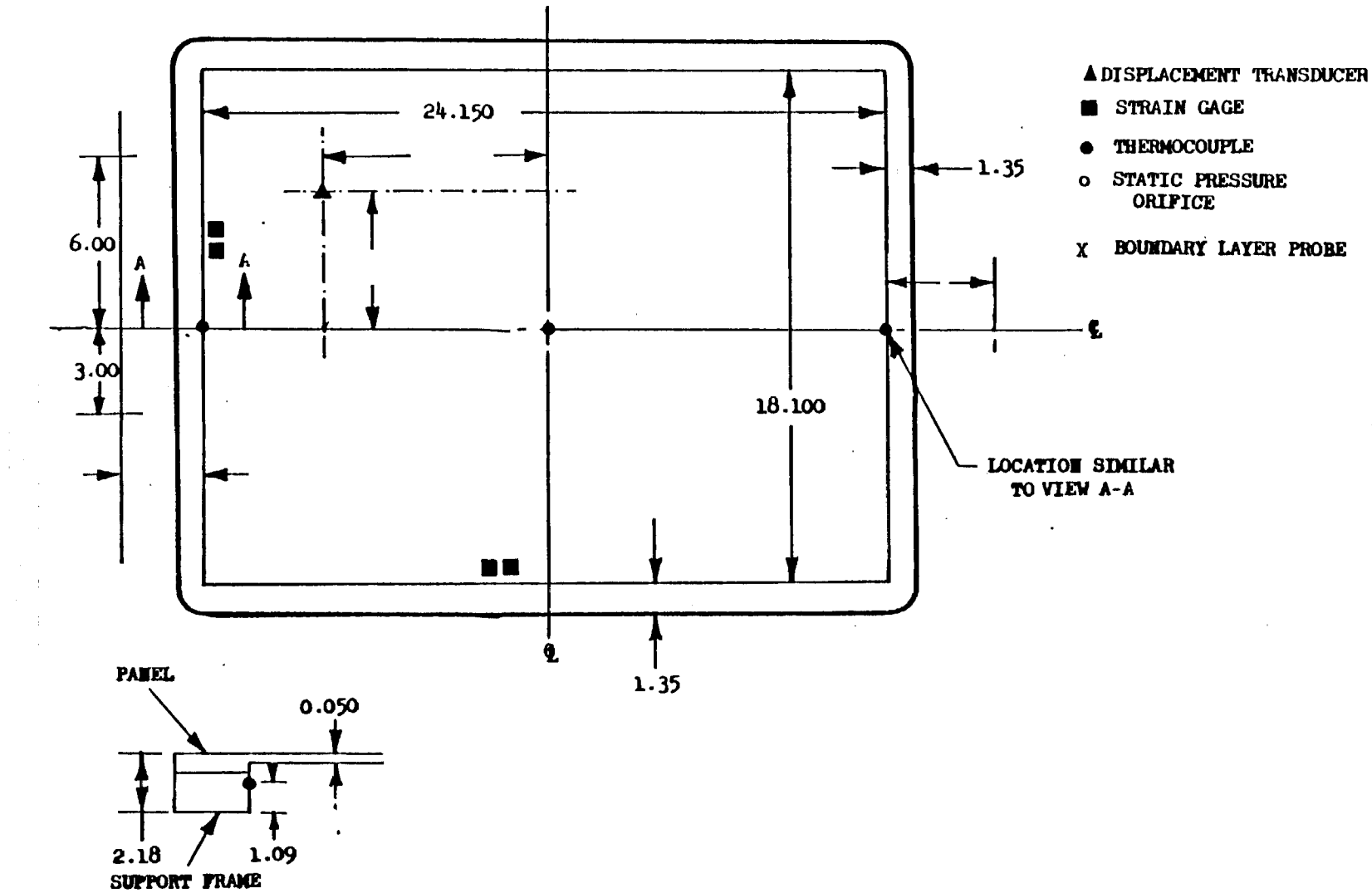
c. Orthotropic Simply Supported Panel - OS4
Figure 2. Continued.



d. Orthotropic Simply Supported Panel - OS4B
Figure 2. Continued.

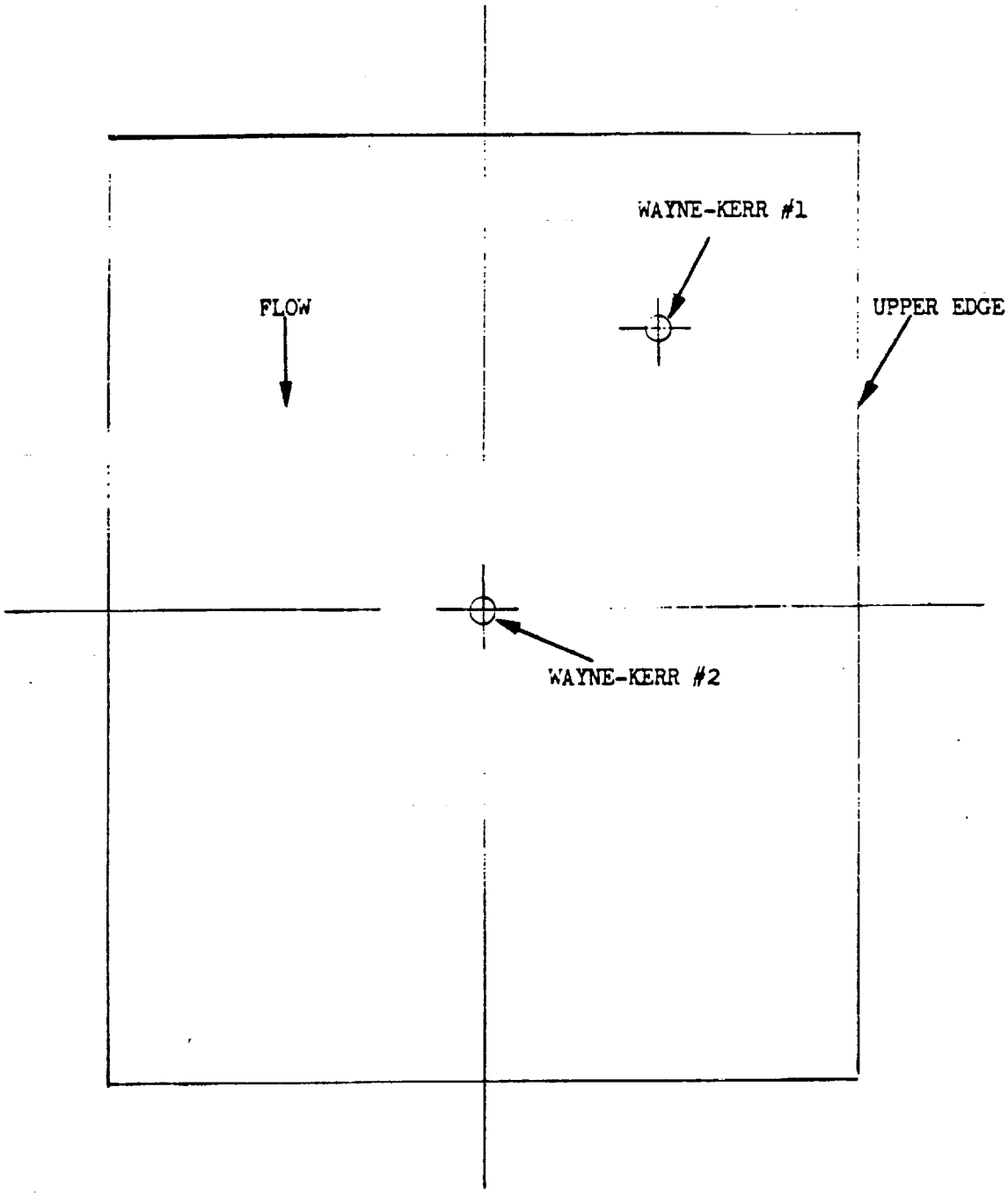


e. Schematic of Typical OS12 Panel Configuration
Figure 2. Continued.

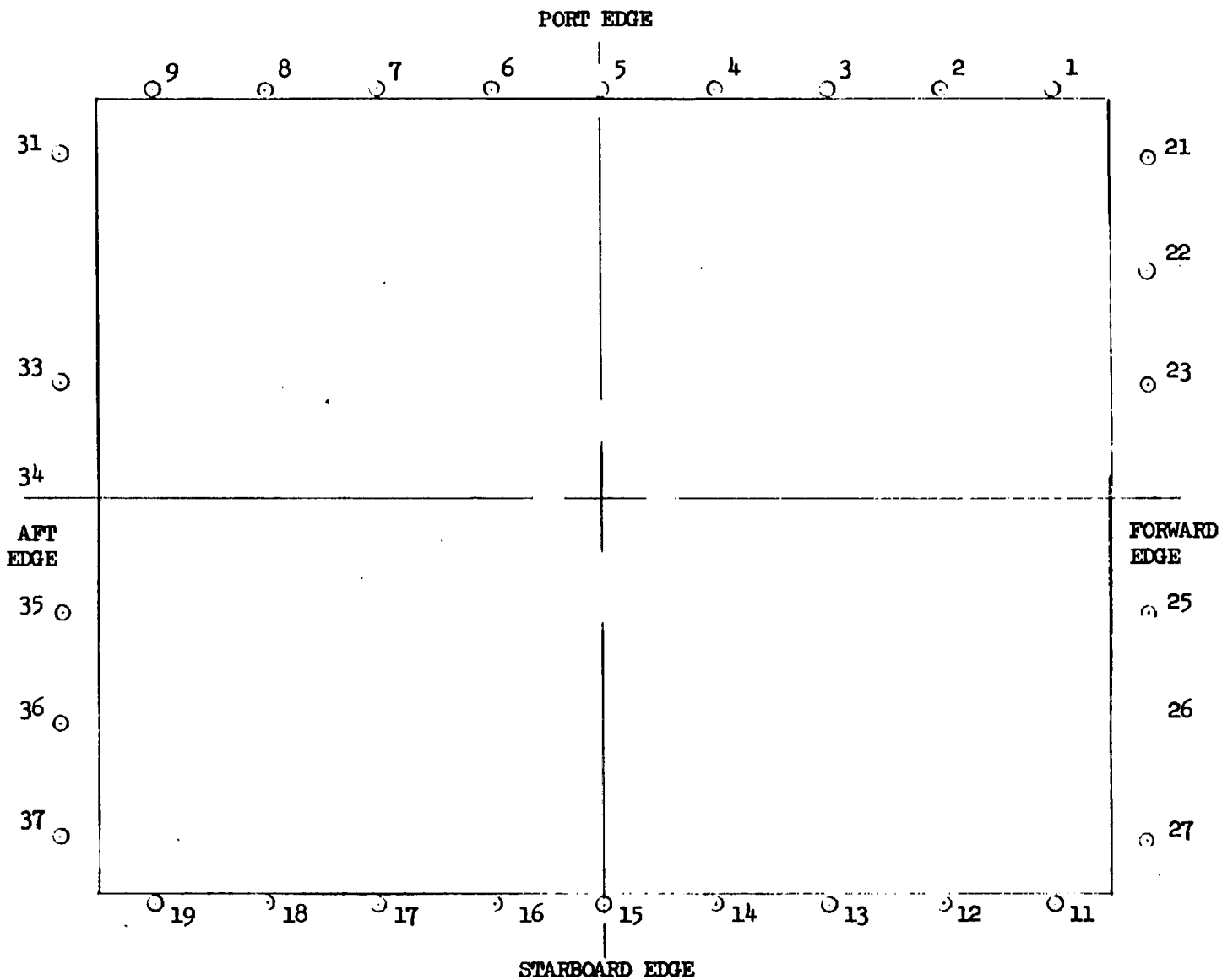


VIEW A-A FRAME THERMOCOUPLE DETAIL

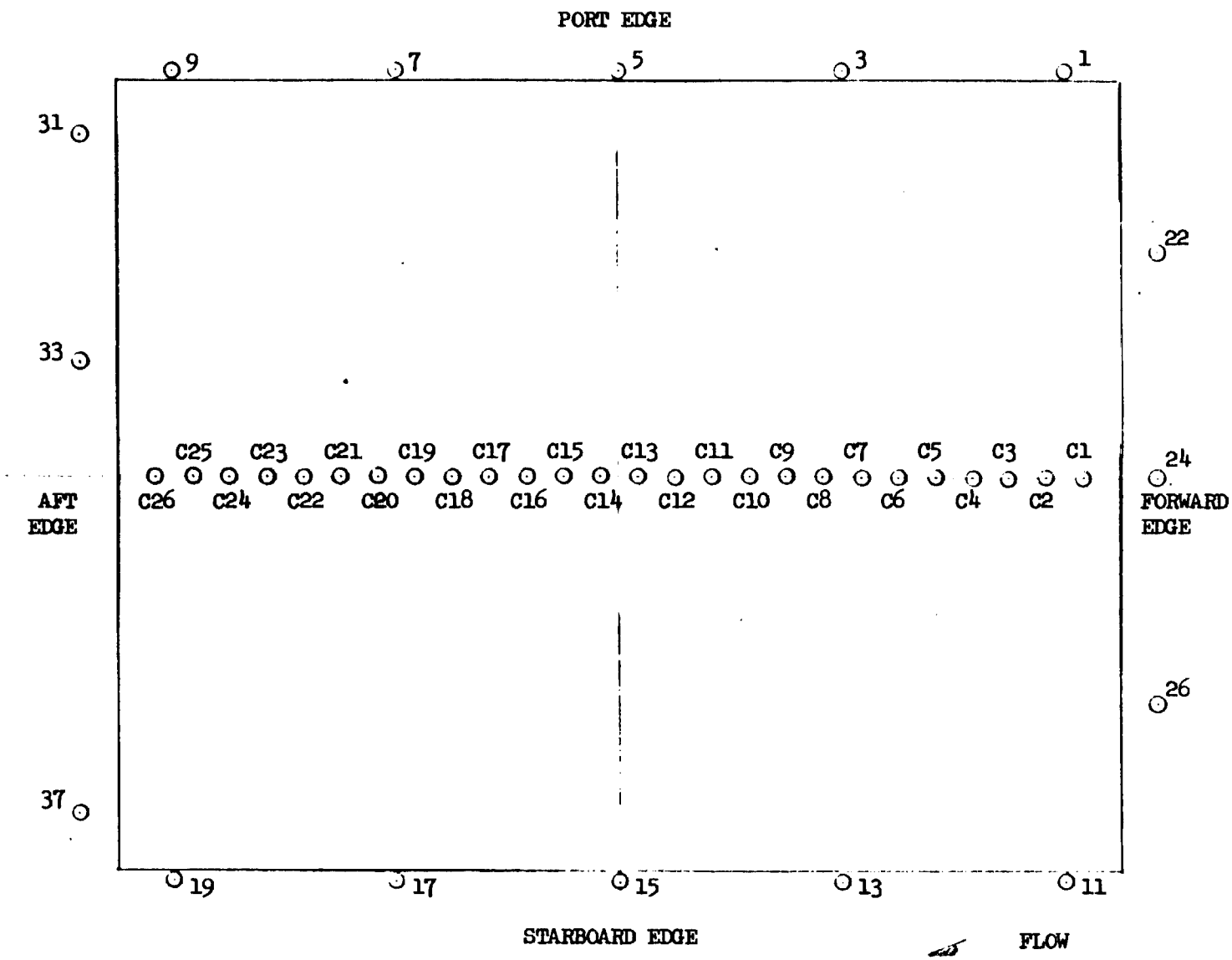
f. Instrumentation Locations
Figure 2. Continued.



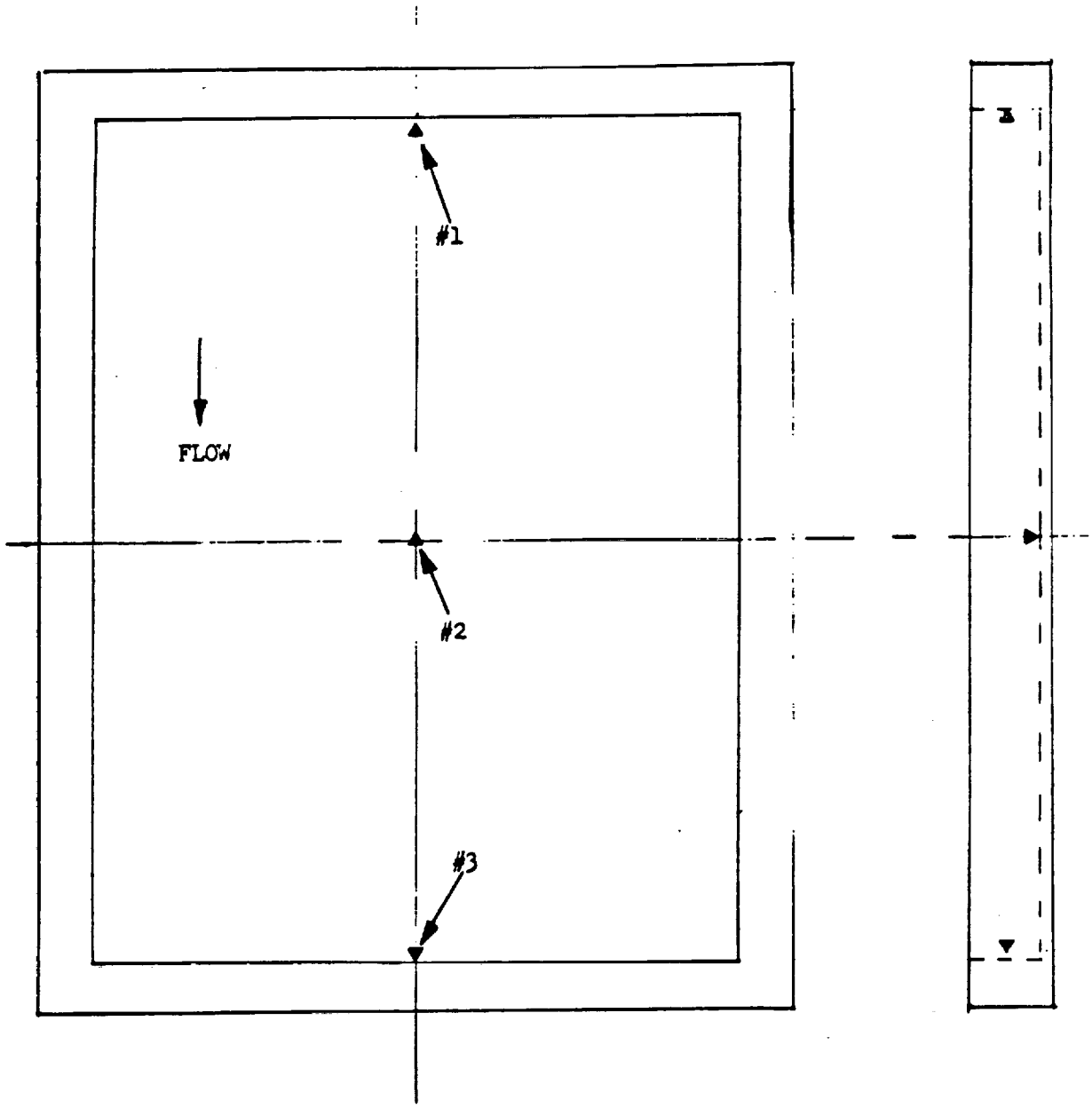
g. Wayne-Kerr Transducer Locations
Figure 2. Continued.



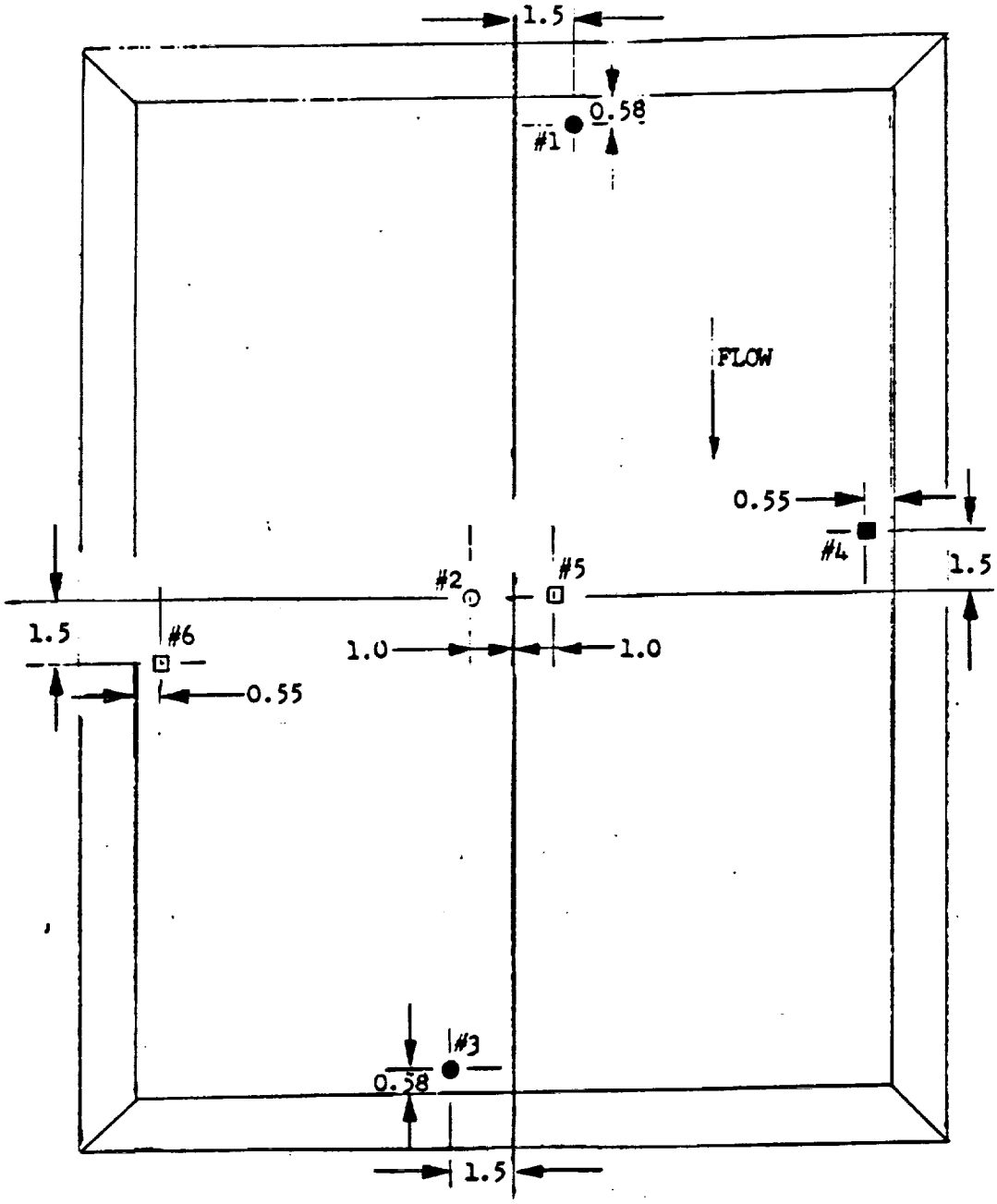
h. OS4B Static Pressure Orifice Locations
Figure 2. Continued.



1. OS12 Static Pressure Orifice Locations
Figure 2. Continued.



j. Thermocouple Locations
Figure 2. Continued.



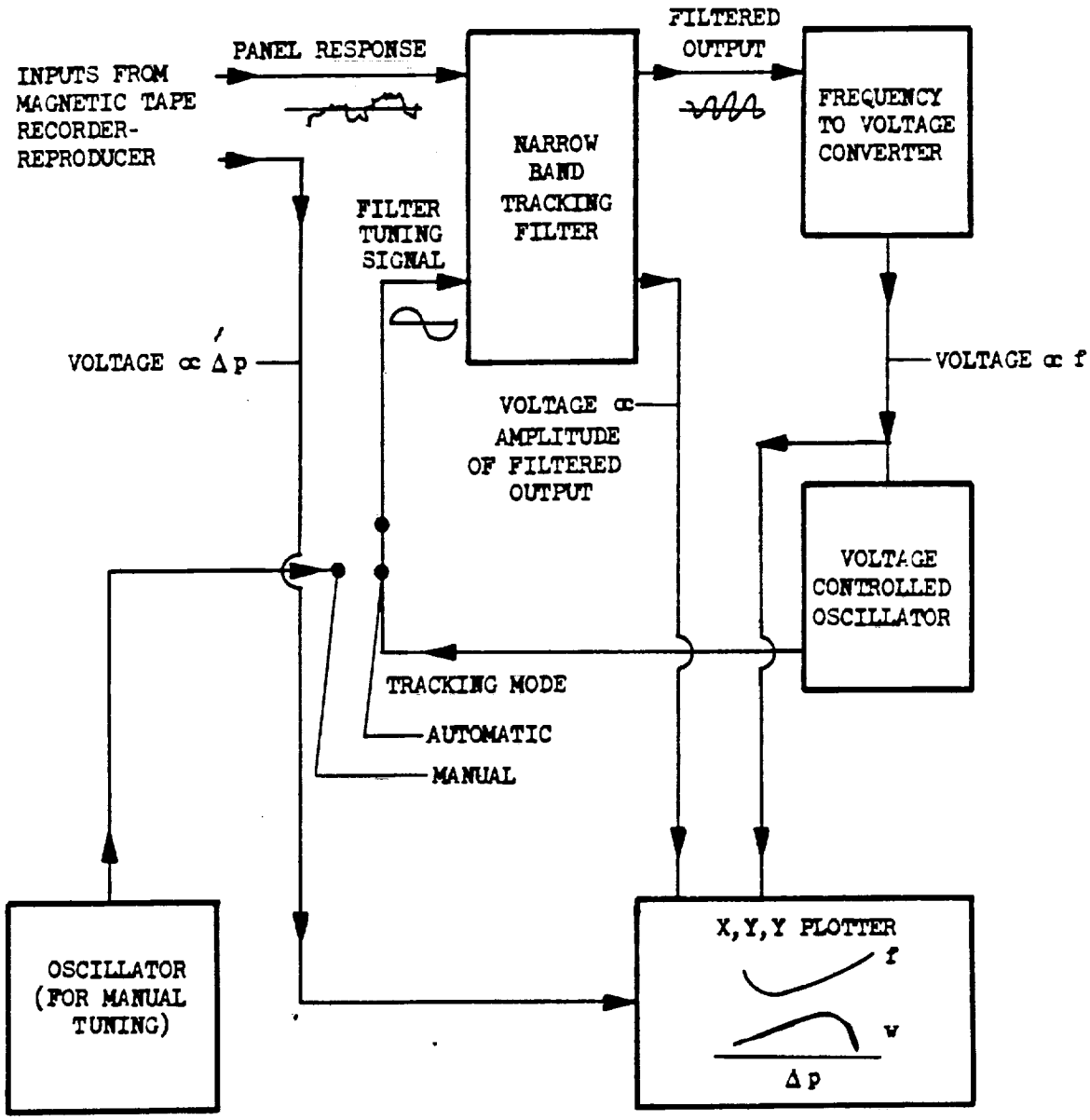
● STREAMWISE STRAIN GAGE BOTH SIDES OF PANEL

○ STREAMWISE STRAIN GAGE BOTTOM OF PANEL

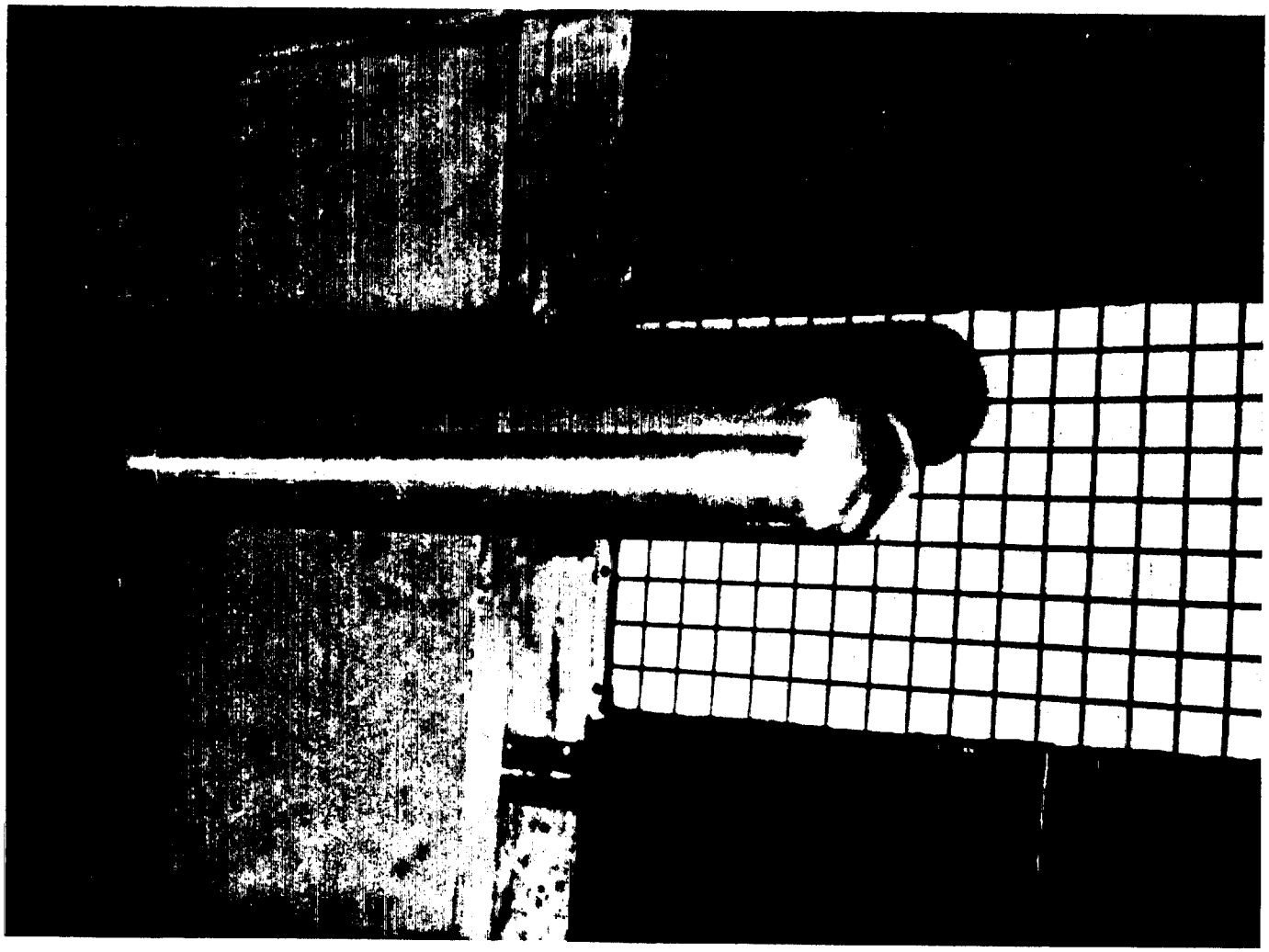
■ CROSS-STREAM STRAIN GAGE BOTH SIDES OF PANEL

□ CROSS-STREAM STRAIN GAGE BOTTOM OF PANEL

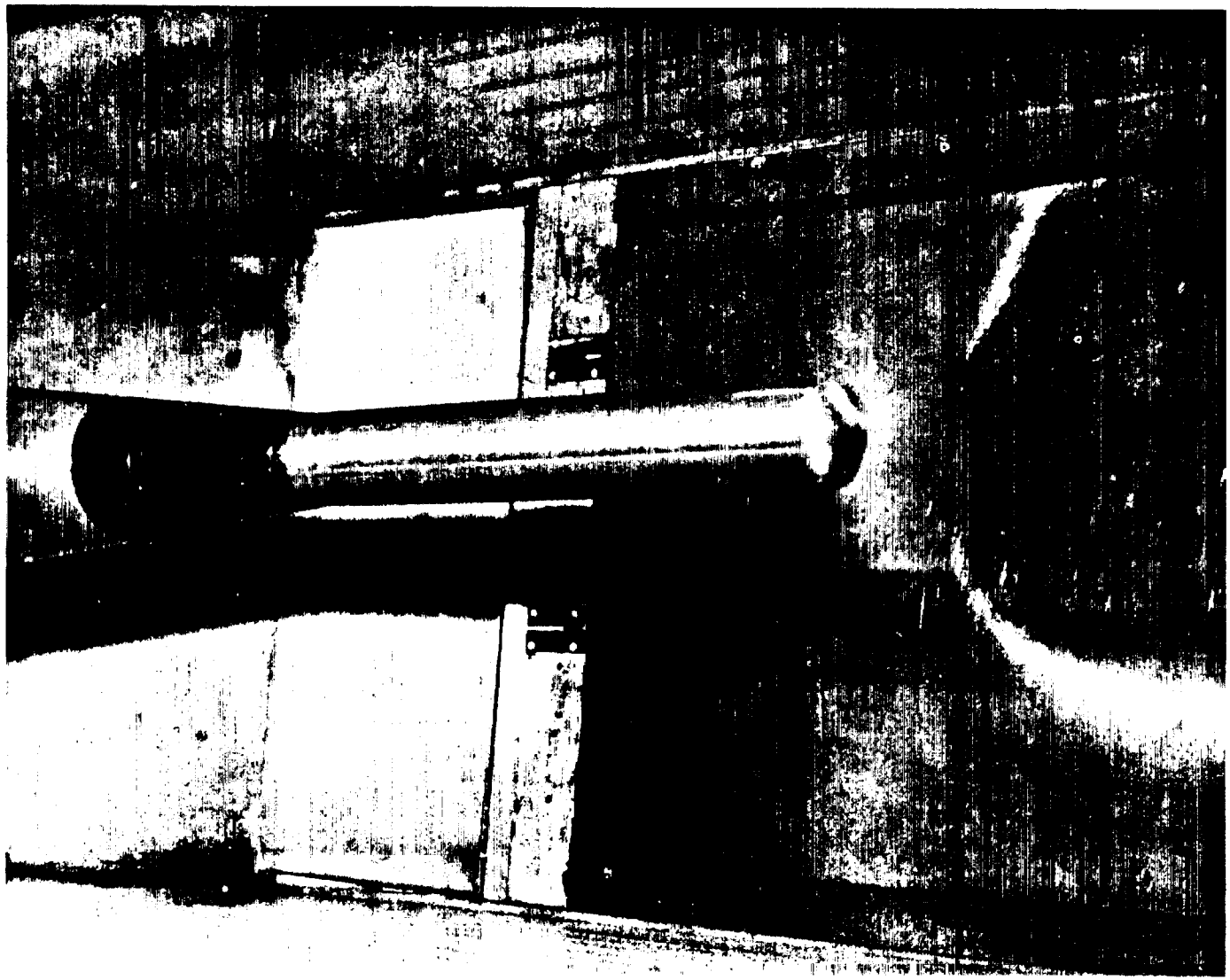
k. Strain Gauge Locations
Figure 2. Continued.



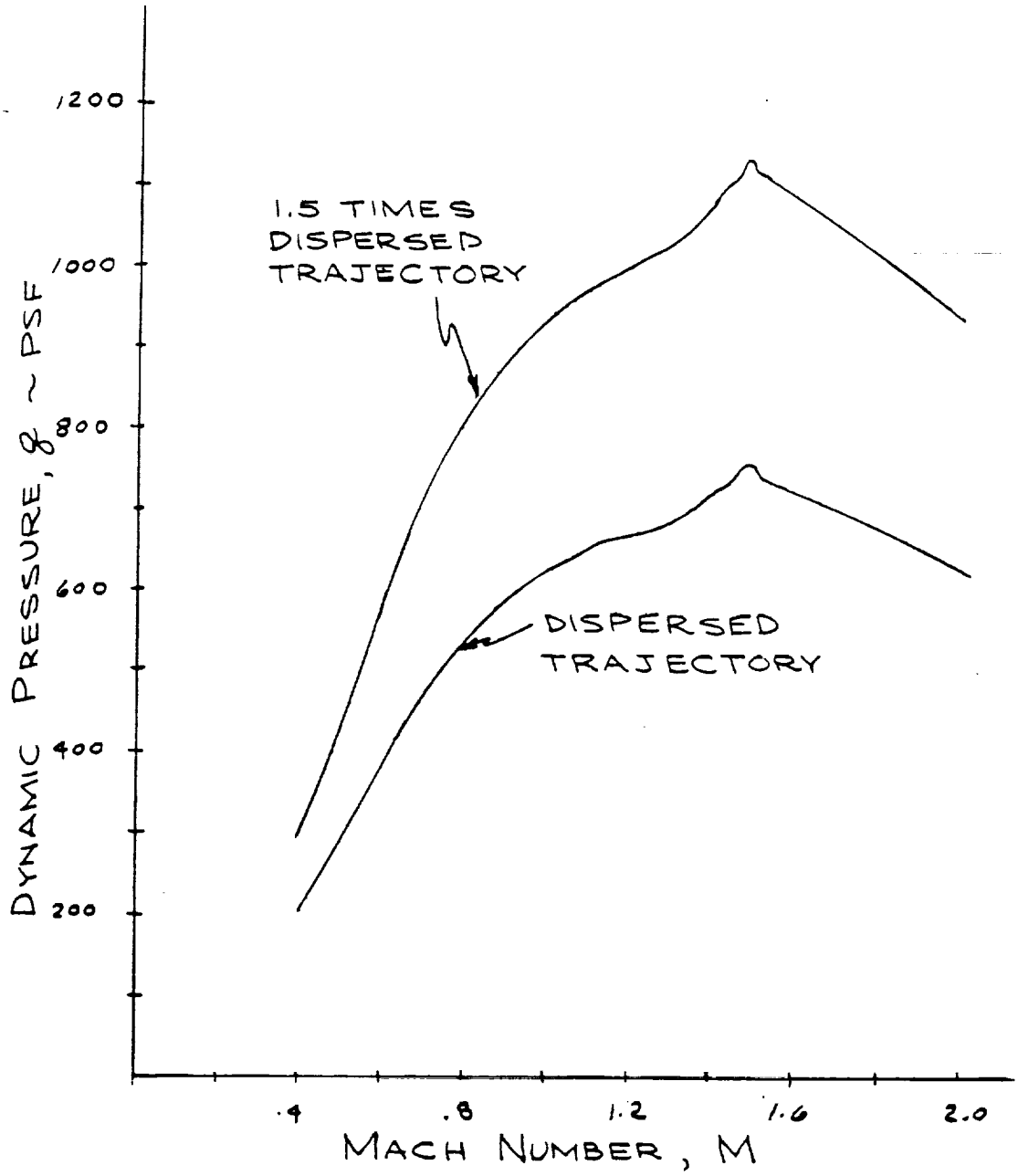
1. Block Diagram of System Used to Reduce Panel Response Data
Figure 2. Concluded.



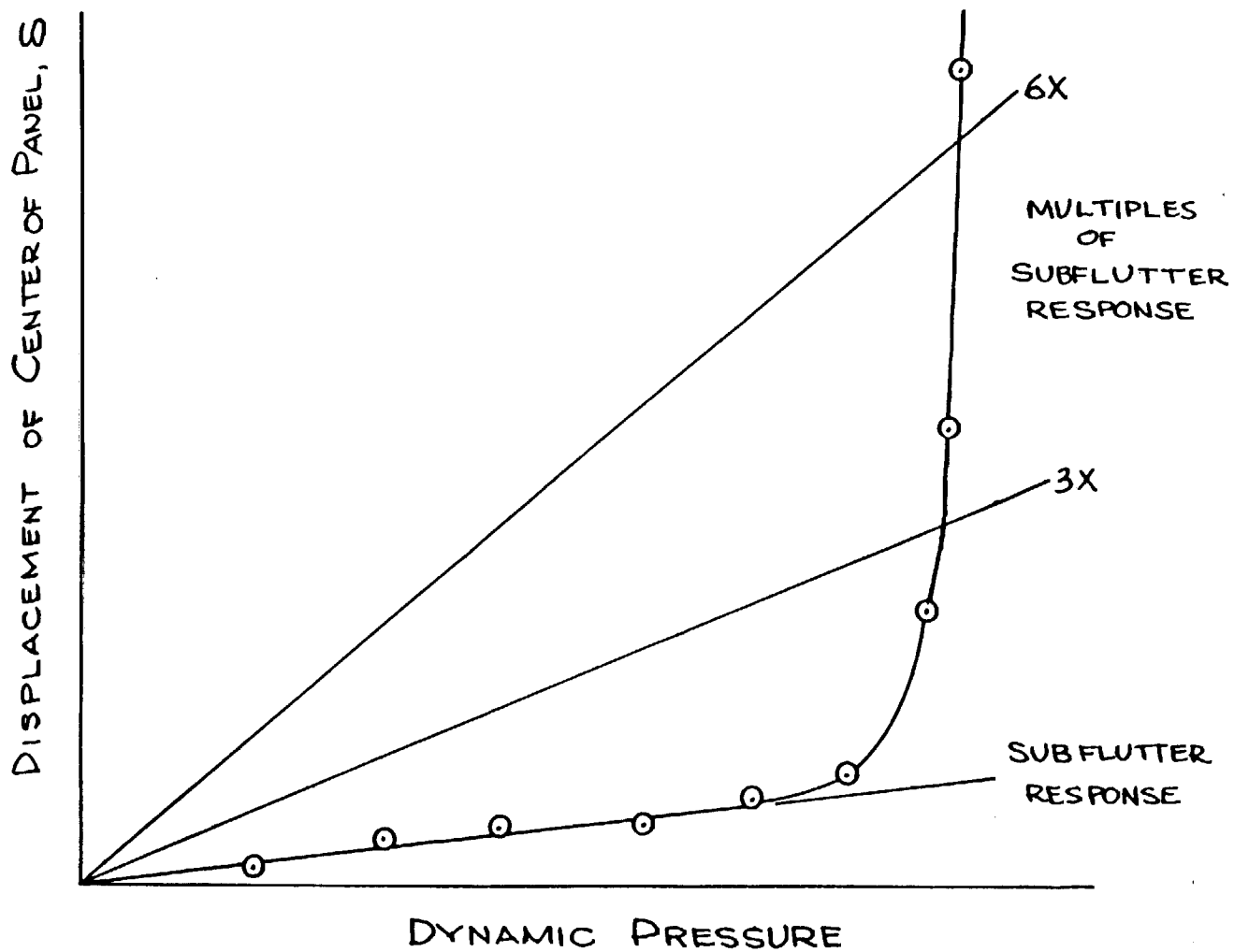
a. Test OS12 Configuration P_{12} and Shock Generator
Figure 3. Model photographs.



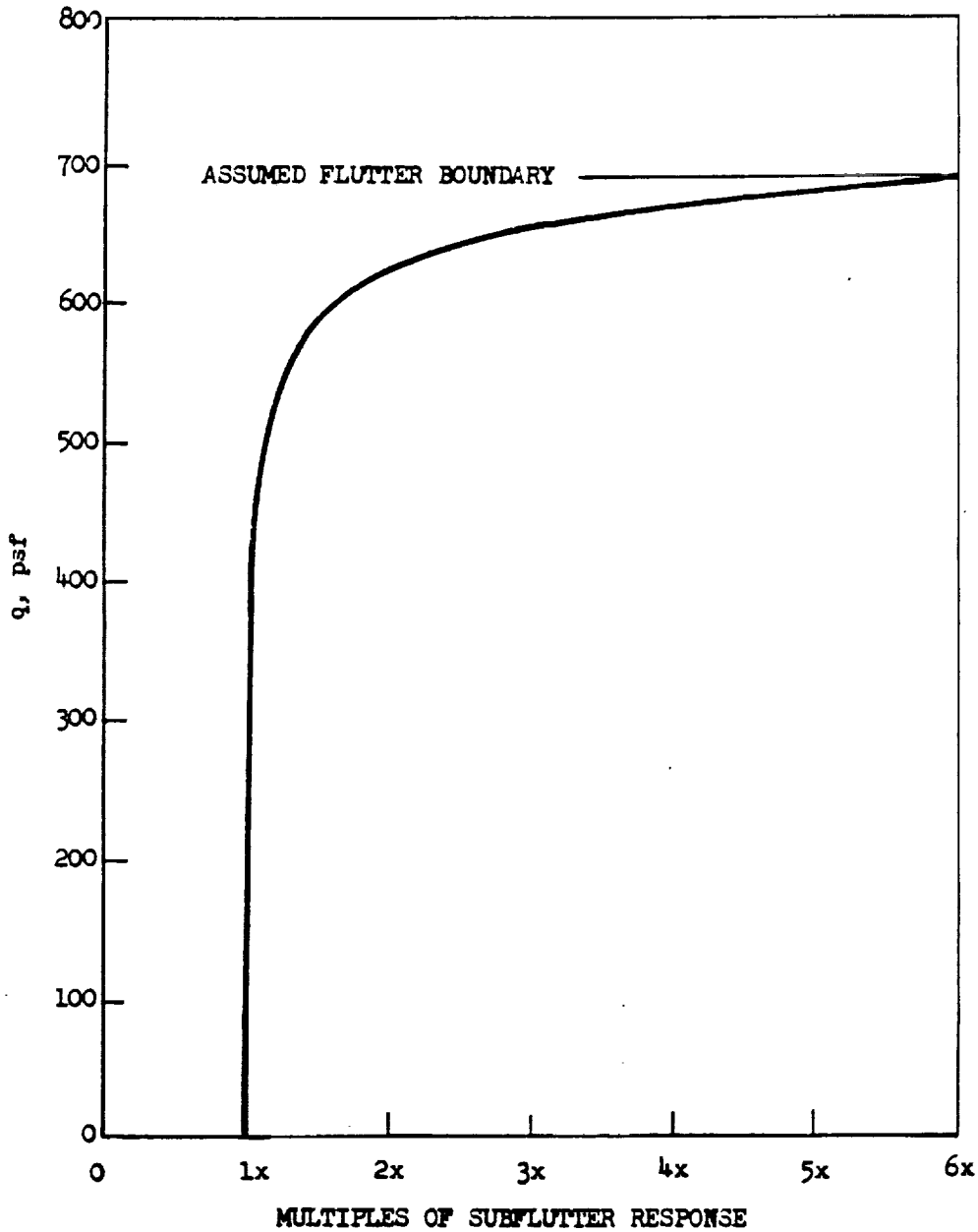
b. Test OS12 Configuration P_{13} and Shock Generator
Figure 3. Concluded.



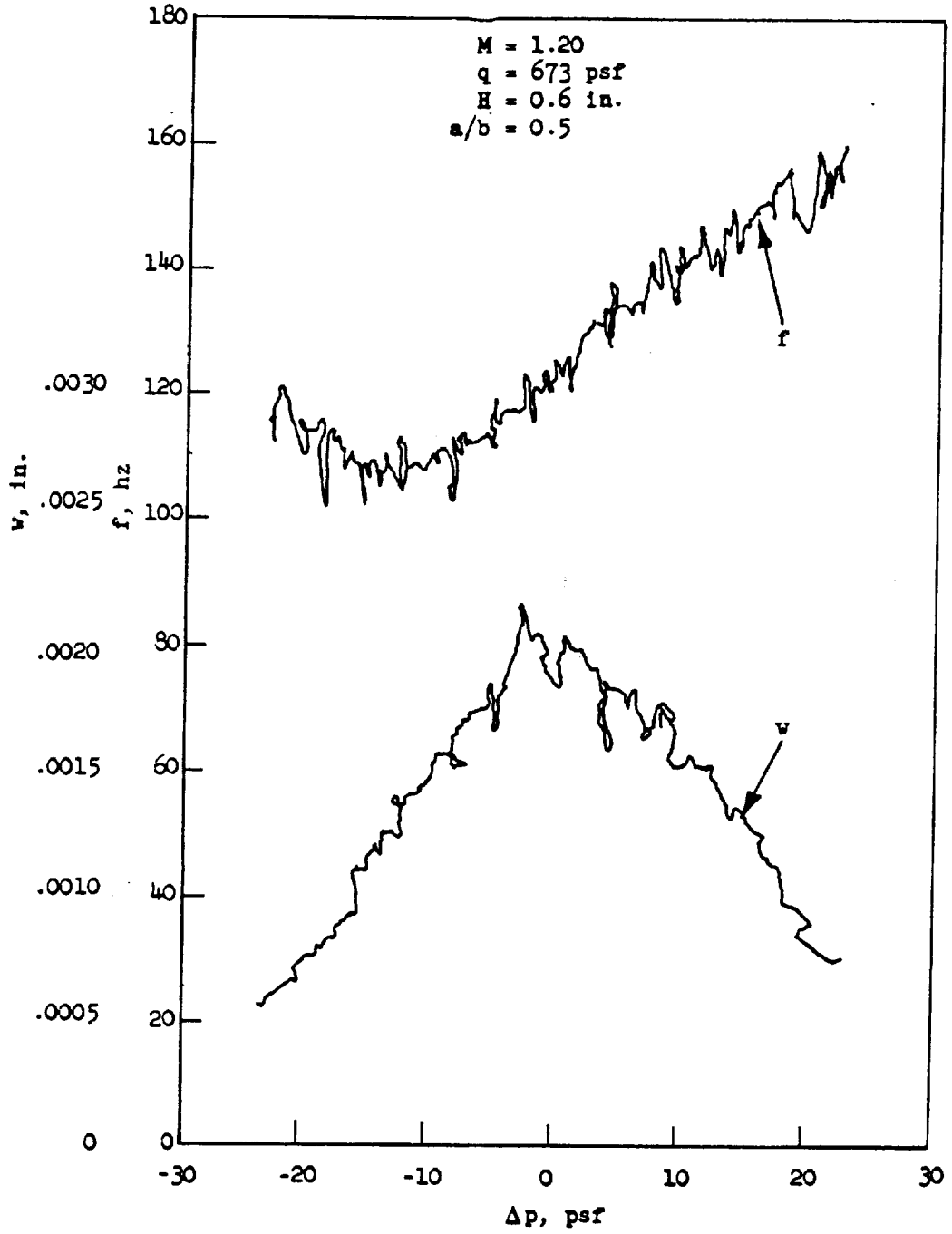
a. Dispersed Trajectory with Safety Margin
Figure 4. Data figures.



b. Qualitative Variation of Panel Response (@ $\Delta P = 0$) vs. Dynamic Pressure at a Fixed Mach Number
Figure 4. Continued.

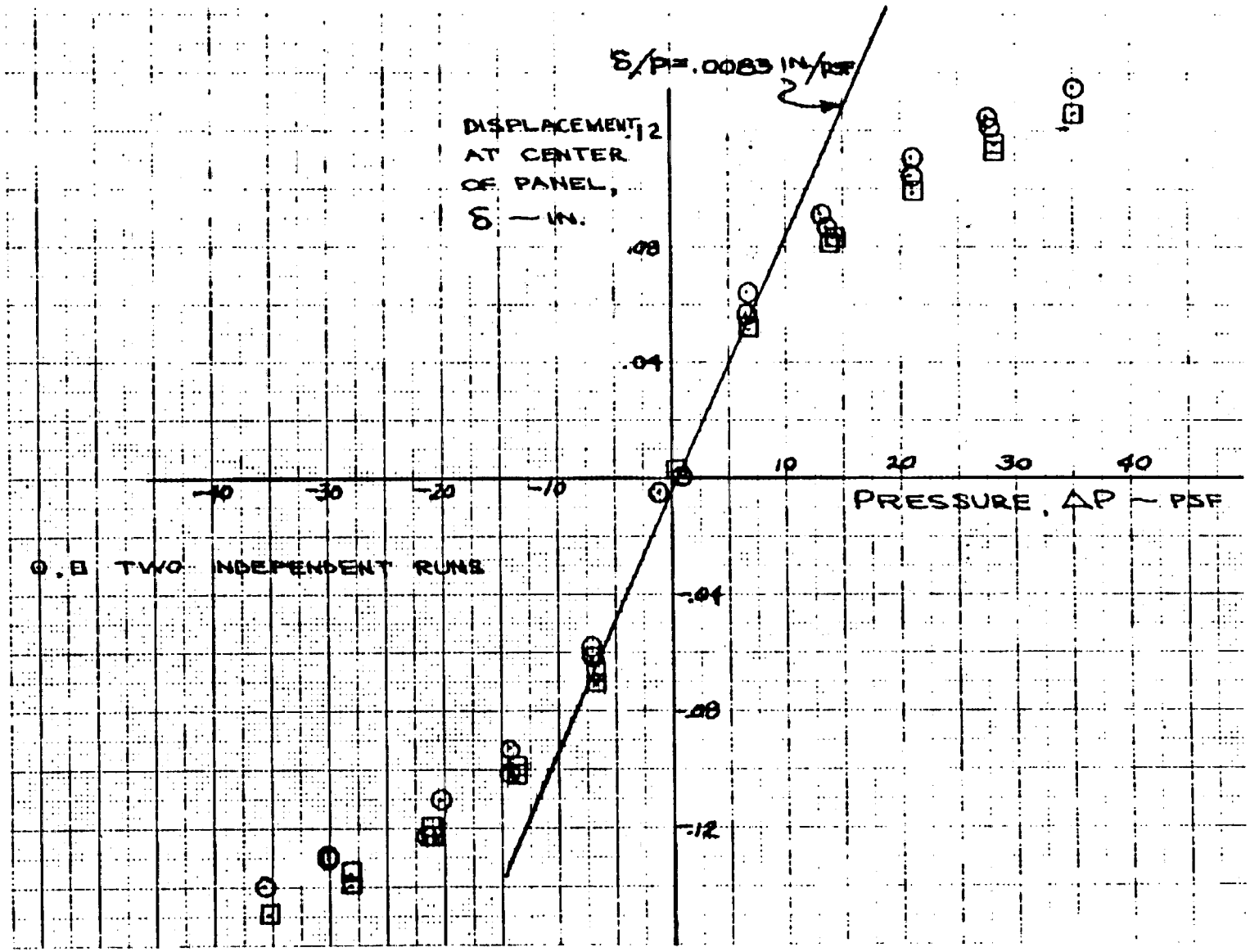


c. Typical Convergence of Multiples of Subflutter Response with Dynamic Pressure
Figure 4. Continued.

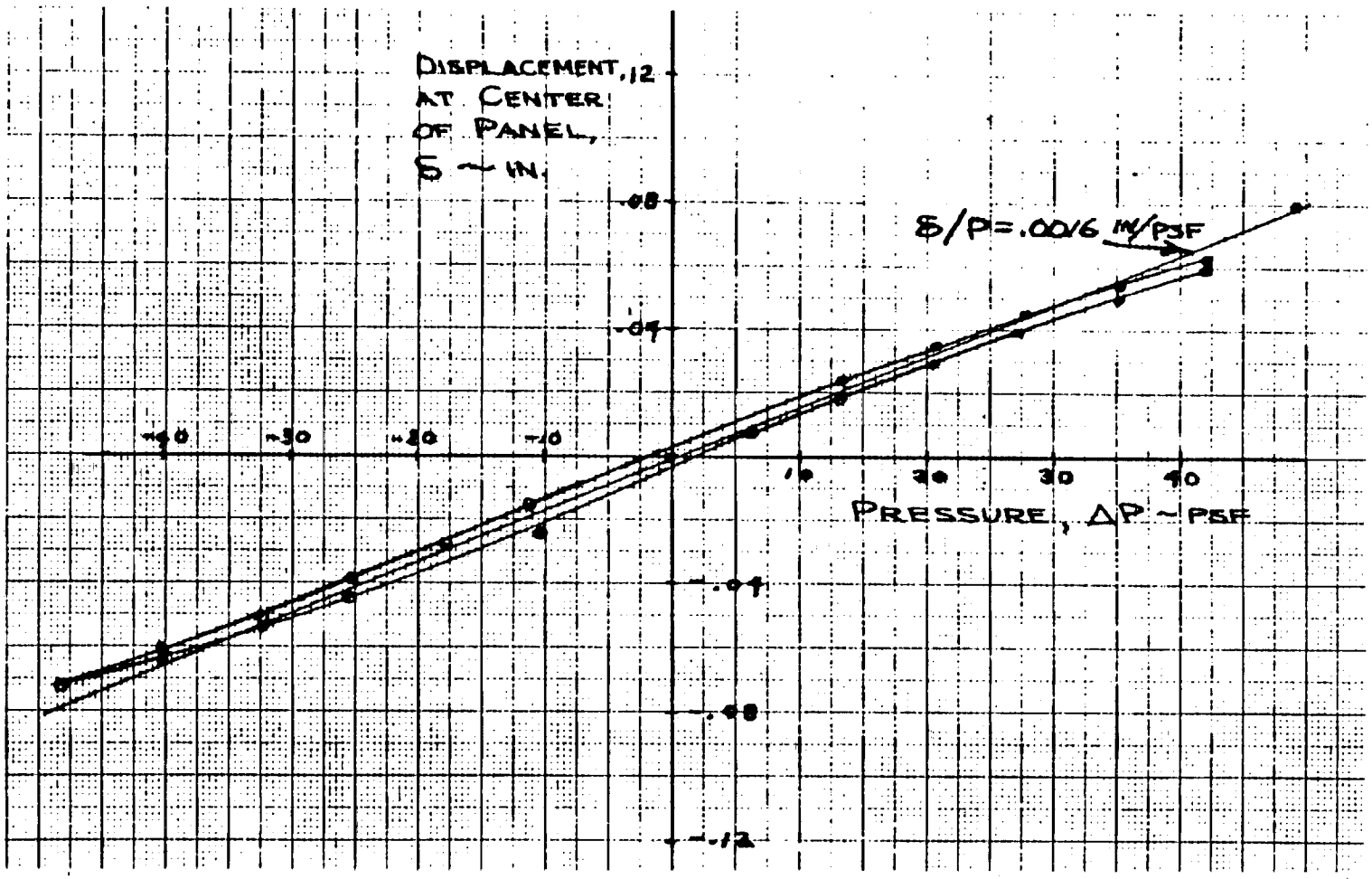


d. Typical Variation of Frequency and Amplitude of Dominant Panel Response Mode with Cavity Differential Pressure

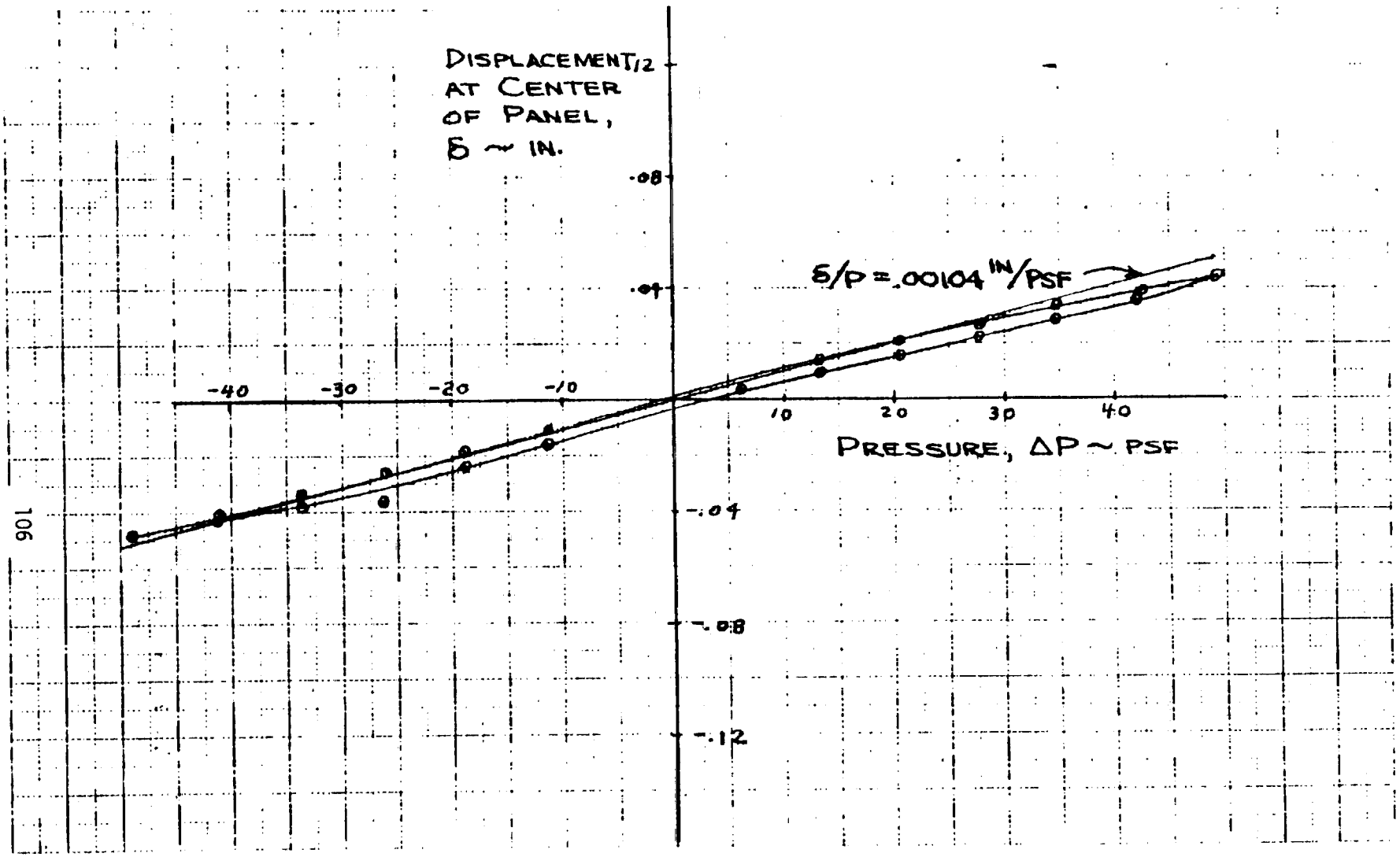
Figure 4. Continued.



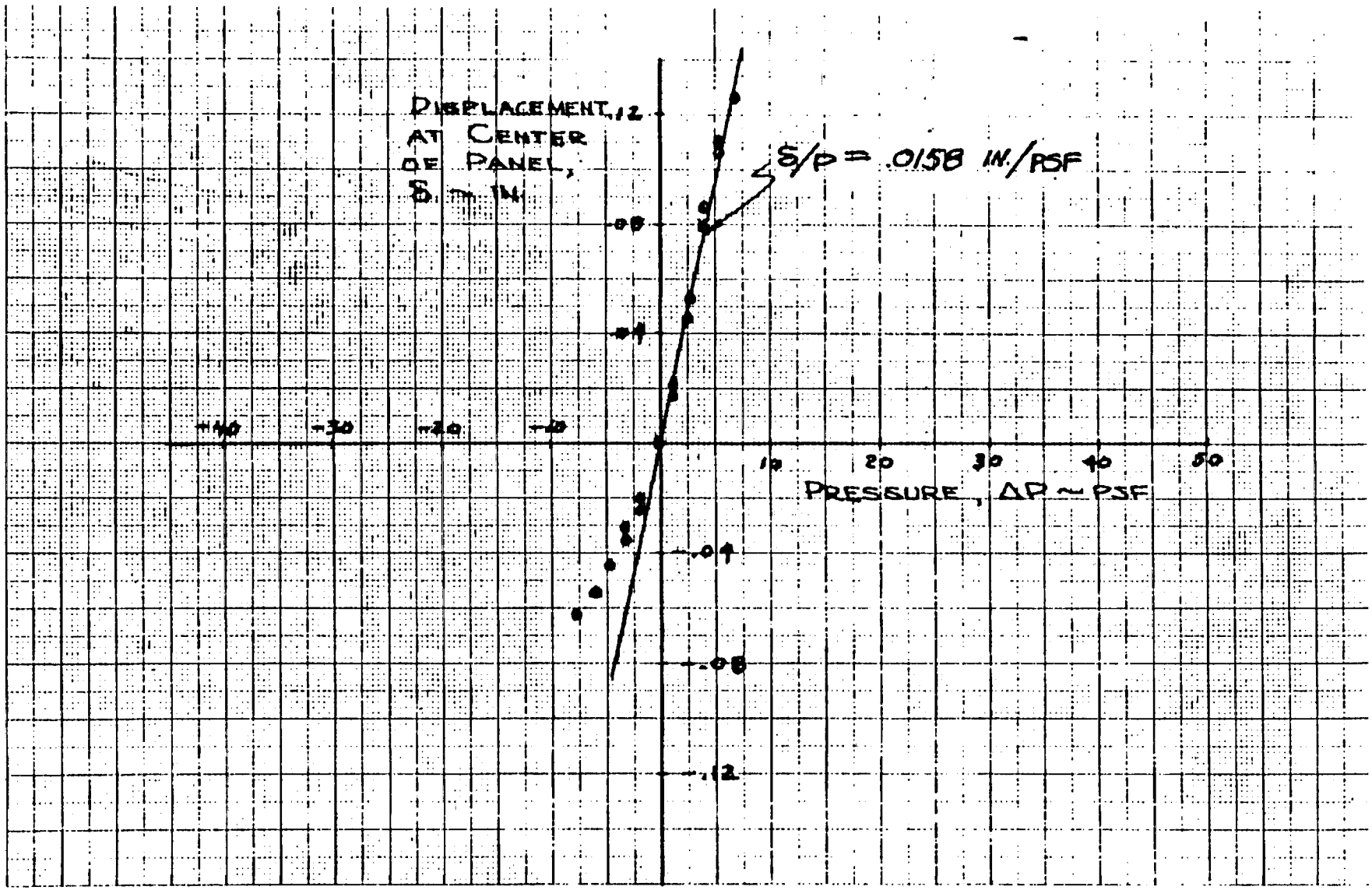
e. Static Calibration of Panel P_1, Pressure vs. Displacement
Figure 4. Continued.



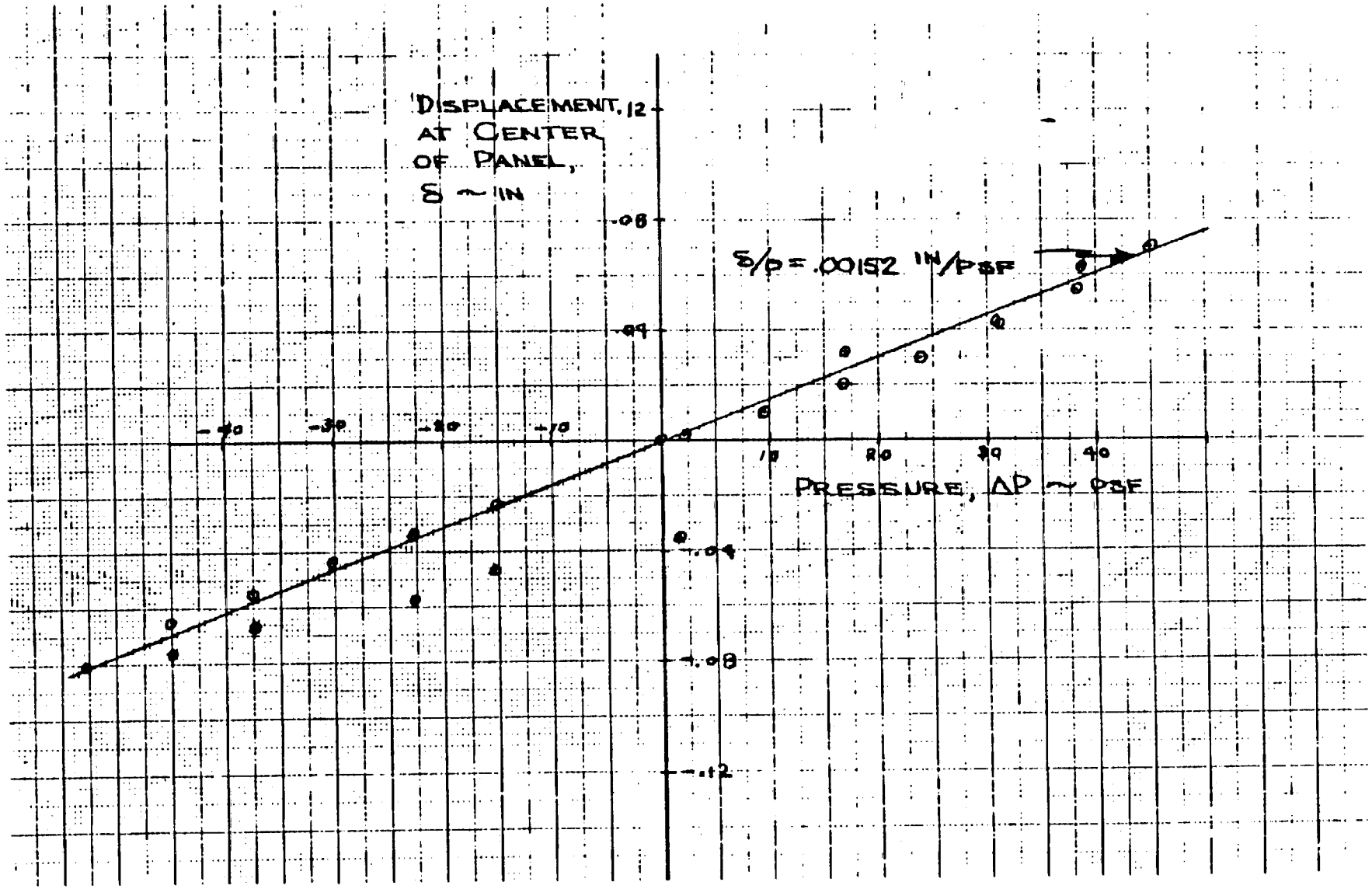
f. Static Calibration of Panel P_2, Pressure vs. Displacement
Figure 4. Continued.



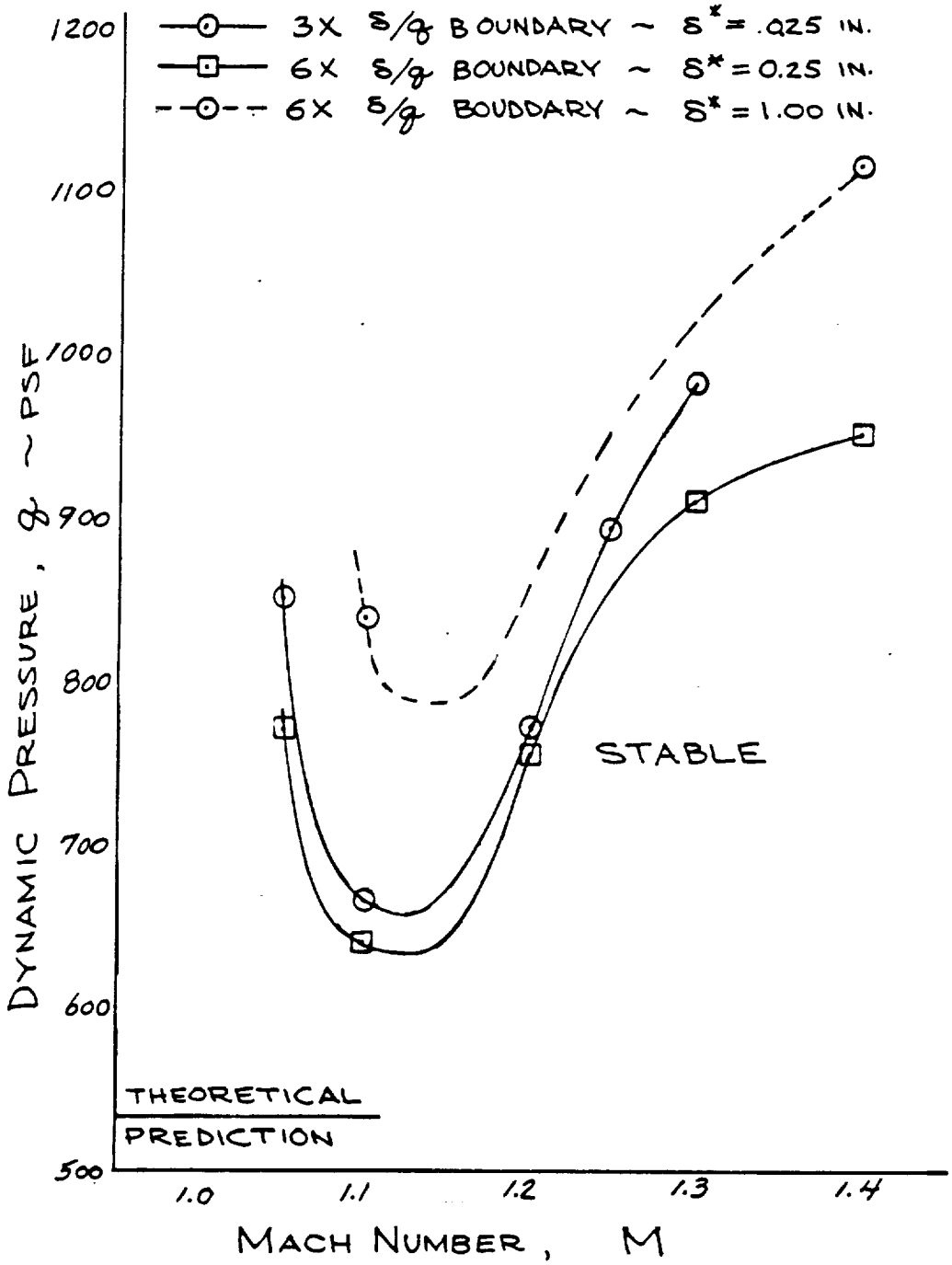
g. Static Calibration of Panel P_3, Pressure vs. Displacement
Figure 4. Continued.



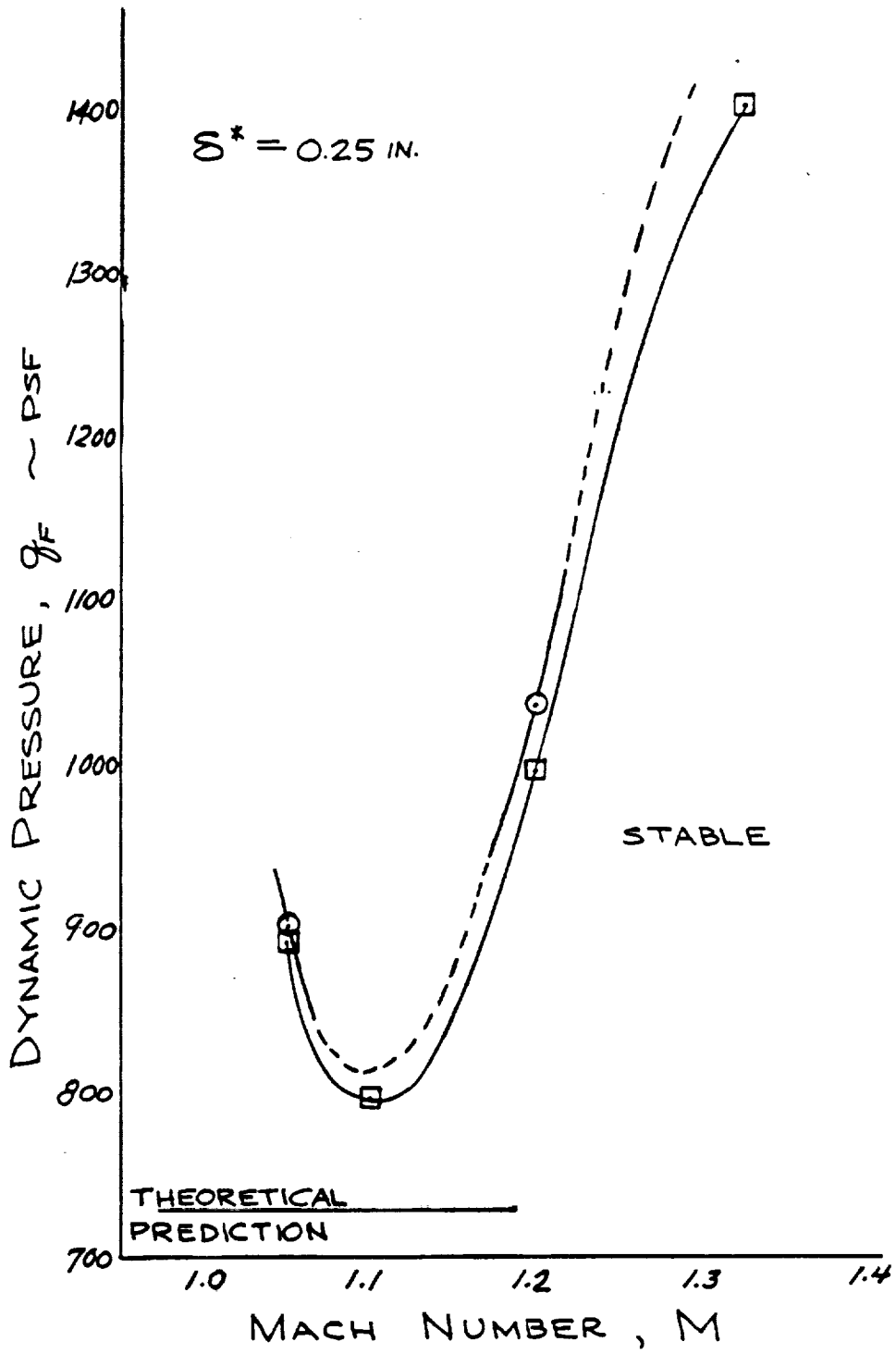
h. Static Calibration of Panel P_4, Pressure vs. Displacement
Figure 4. Continued.



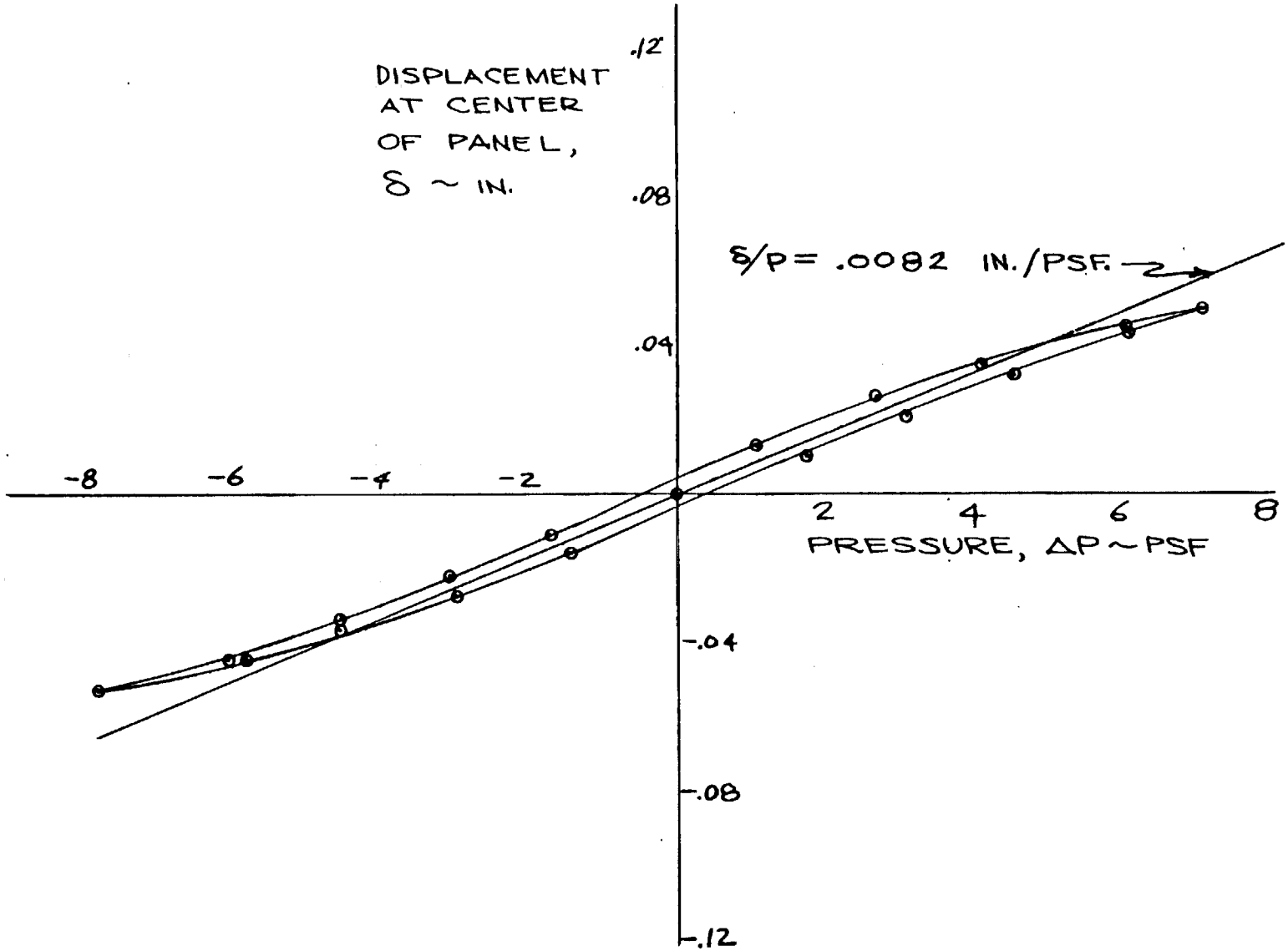
i. Static Calibration of Panel P_5, Pressure vs. Displacement
Figure 4. Continued.



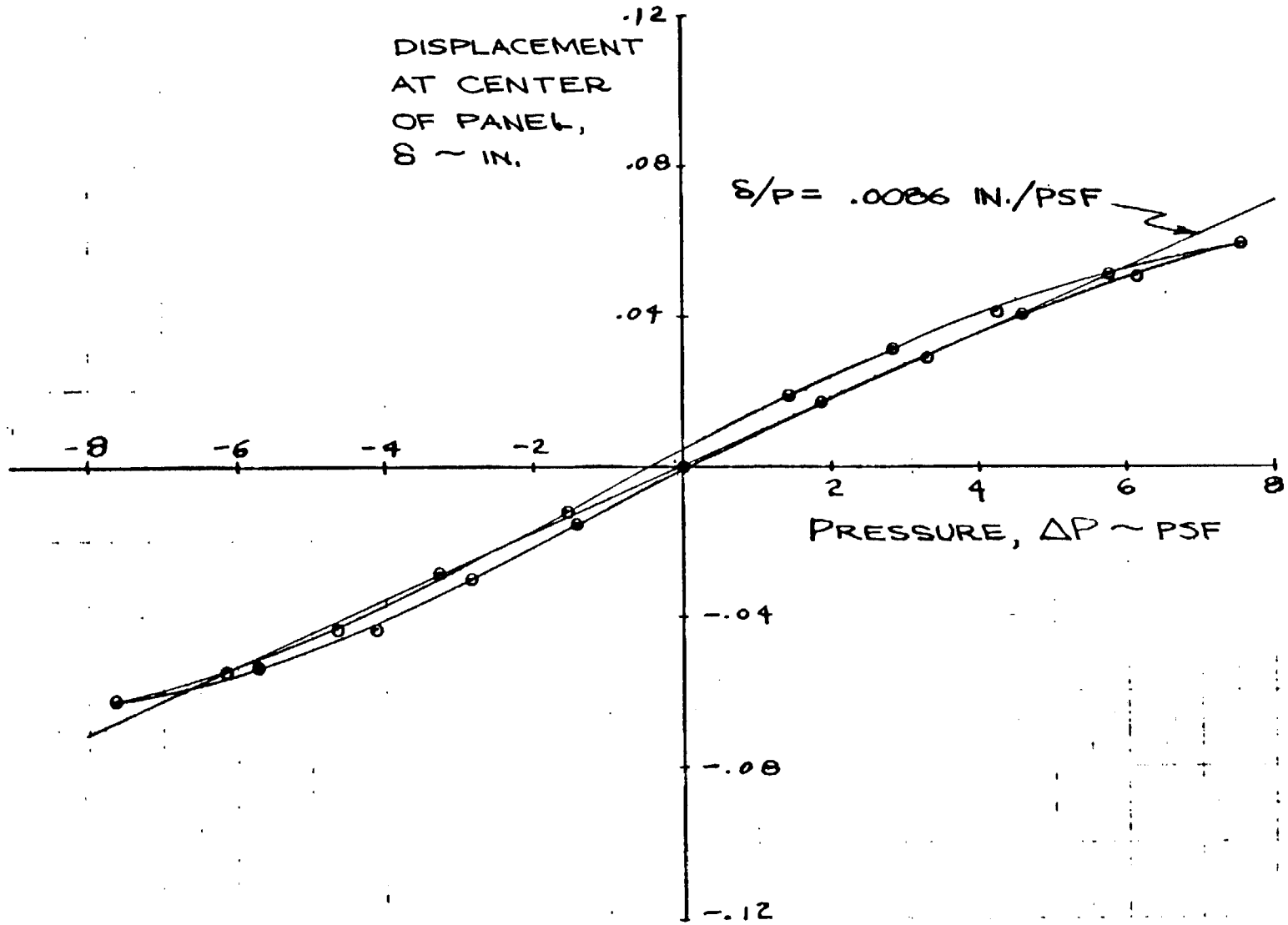
j. Flutter Boundary for Isotropic Bare Panel
P_1 Dynamic Pressure vs. Mach Number
Figure 4. Continued.



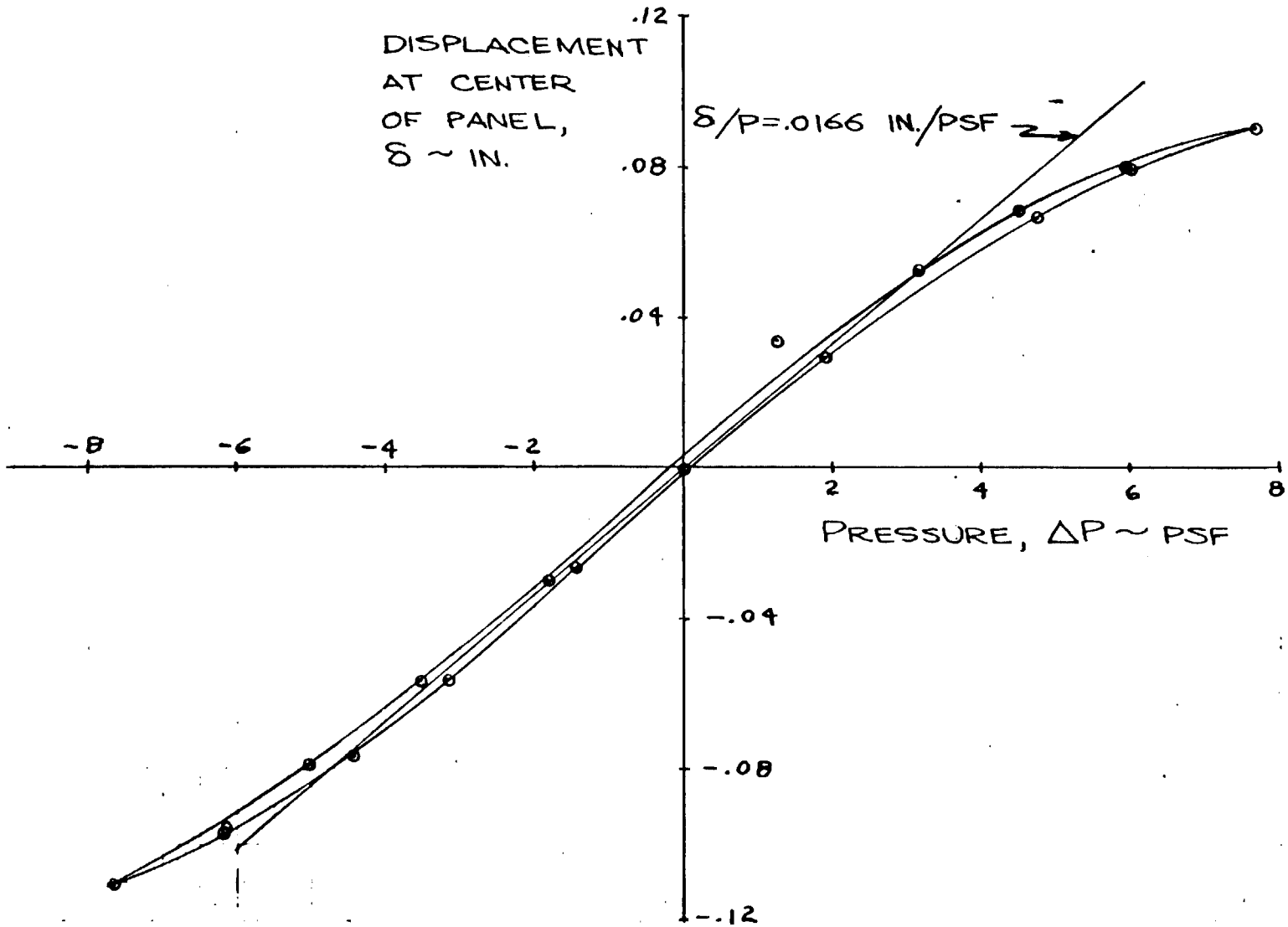
k. Flutter Boudary for the Orthotropic Bare Panel
P_4 Dynamic Pressure vs. Mach Number
Figure 4. Continued.



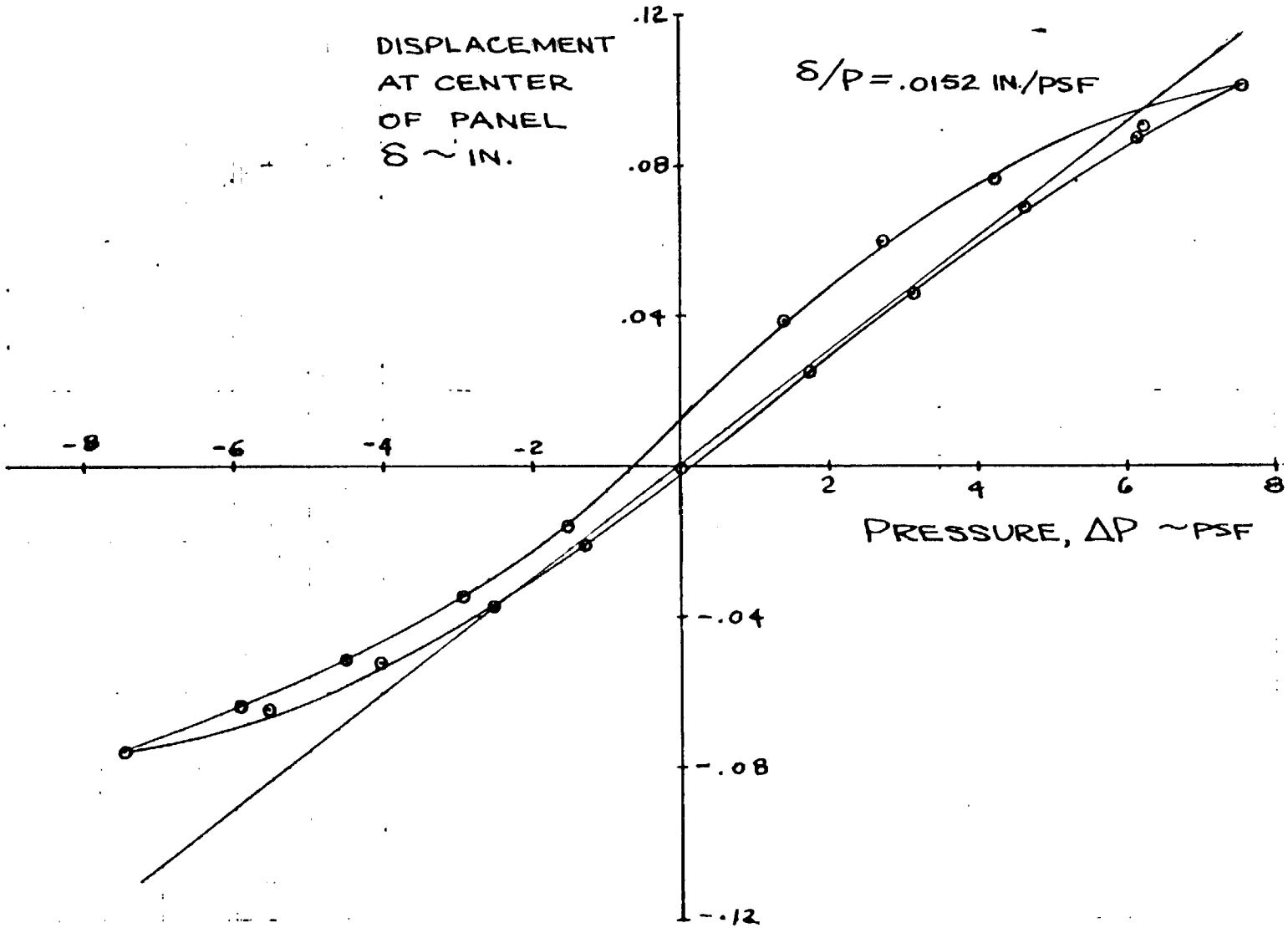
1. Static Calibration of Panel P_6, Pressure vs. Displacement
Figure 4. Continued.



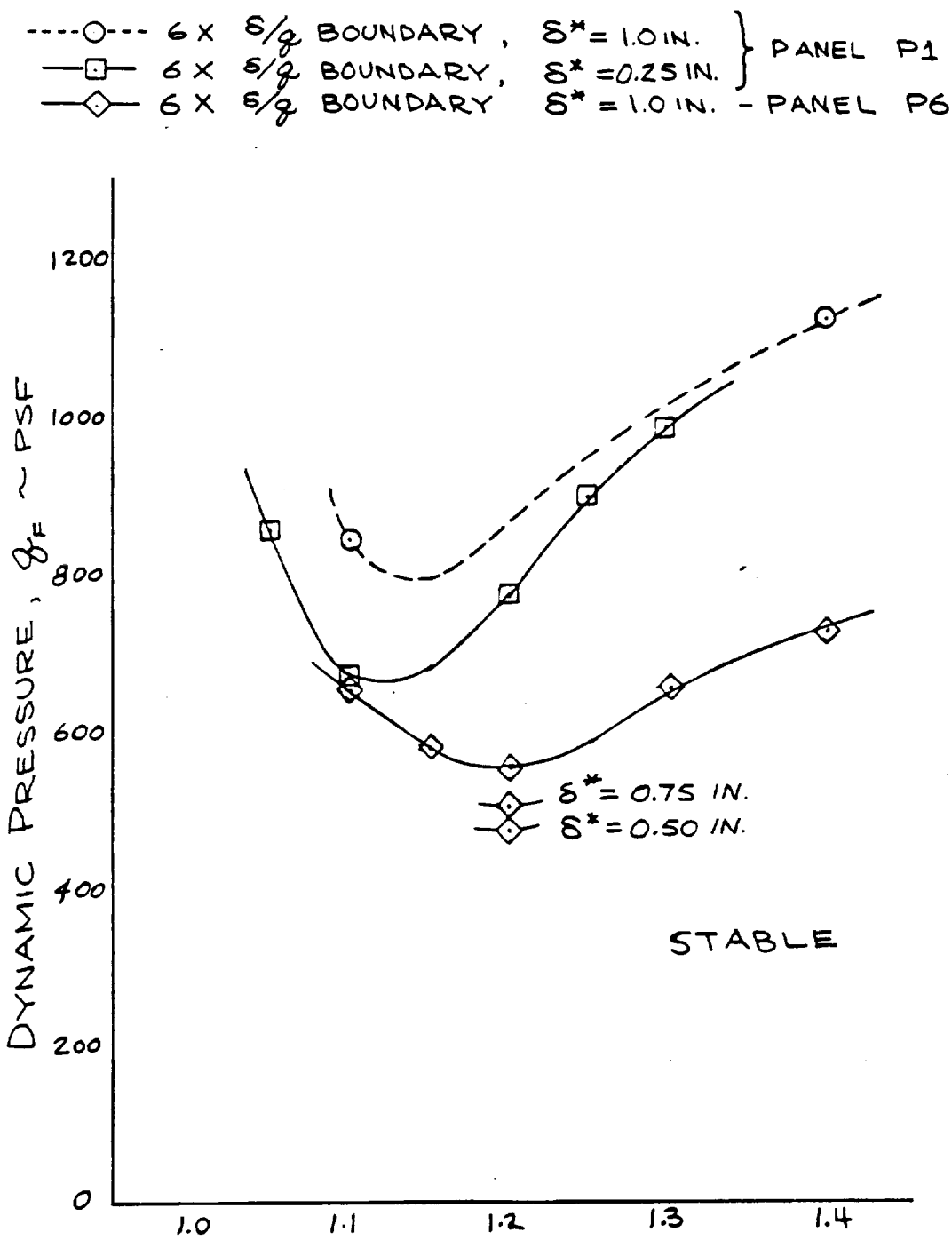
m. Static Calibration of Panel P_7, Pressure vs. Displacement
Figure 4. Continued.



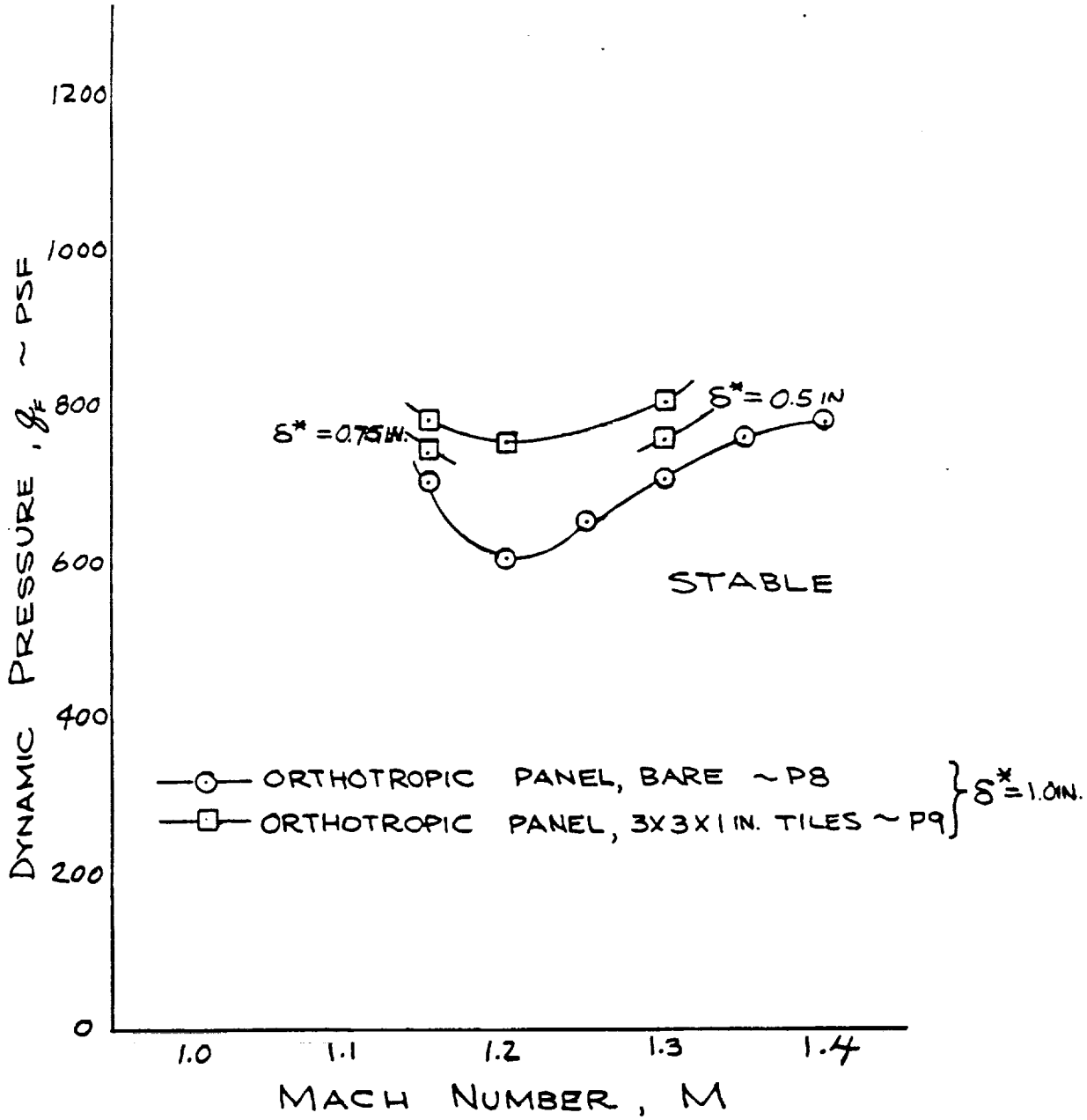
n. Static Calibration of Panel P_8, Pressure vs. Displacement
Figure 4. Continued.



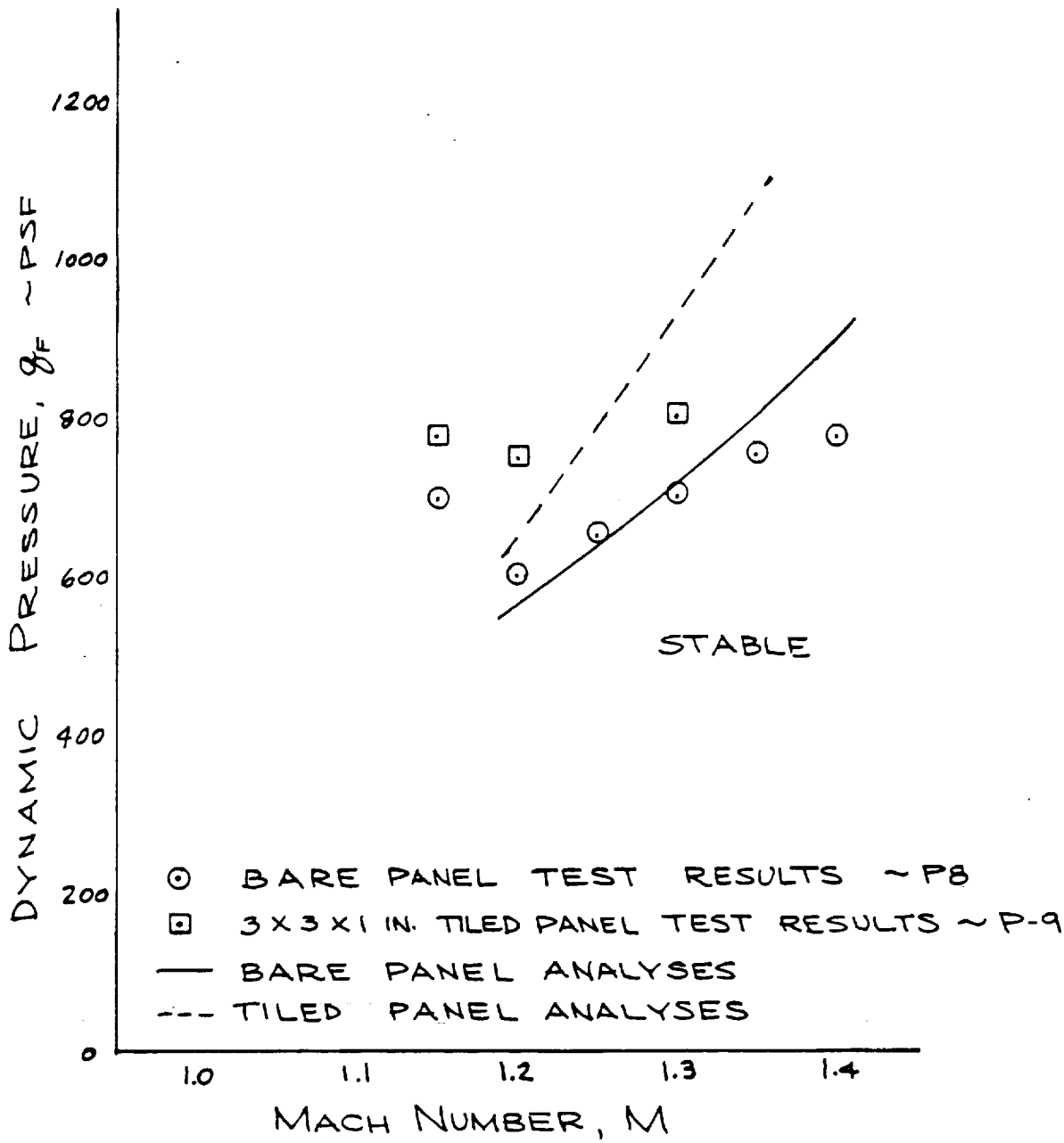
o. Static Calibration of Panel P_9, Pressure vs. Displacement
Figure 4. Continued.



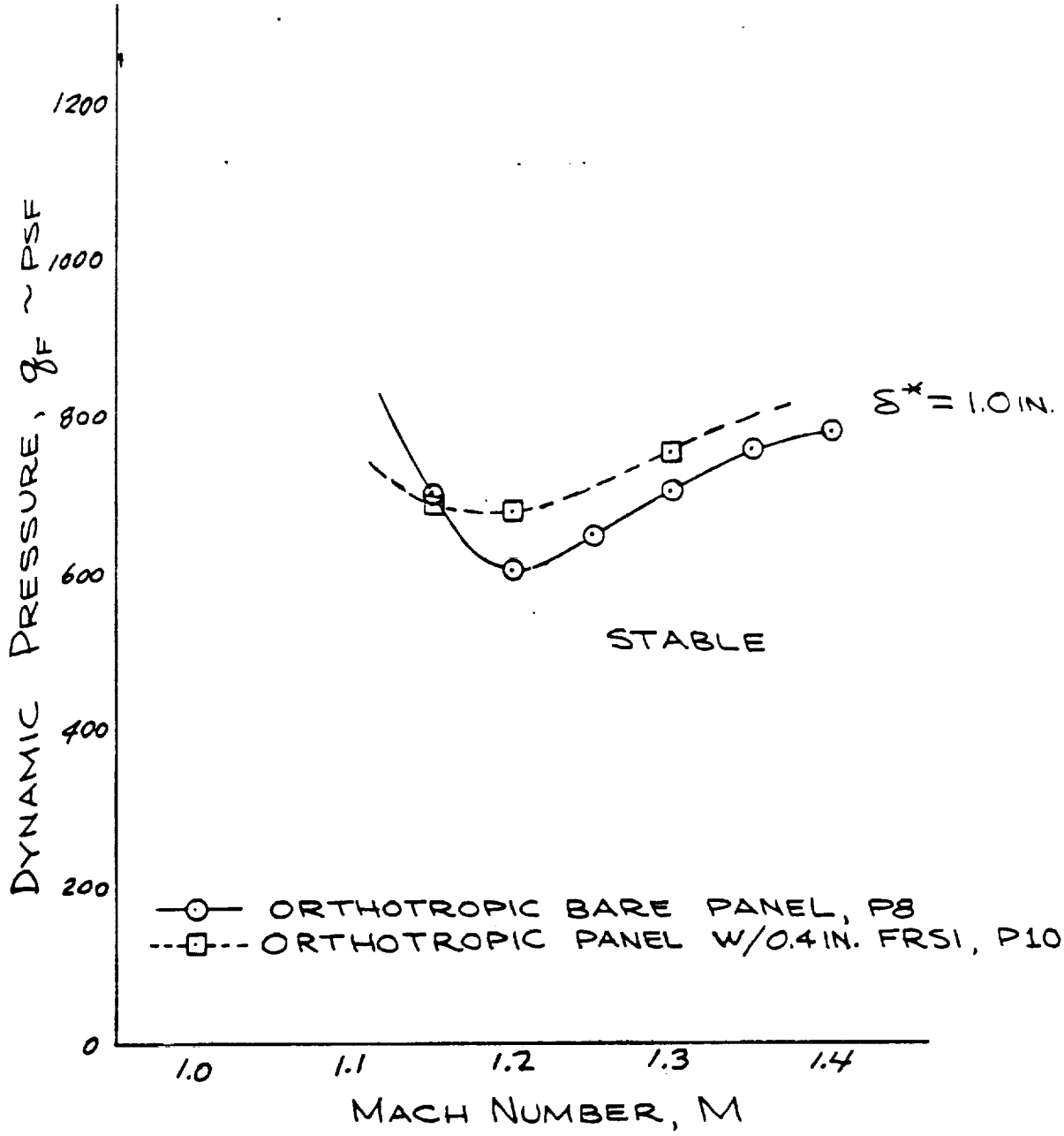
p. Flutter Boundary for Isotropic Panel with 3 x 3 x 1 inch Tiles P_6, Dynamic Pressure vs. Mach Number Figure 4. Continued.



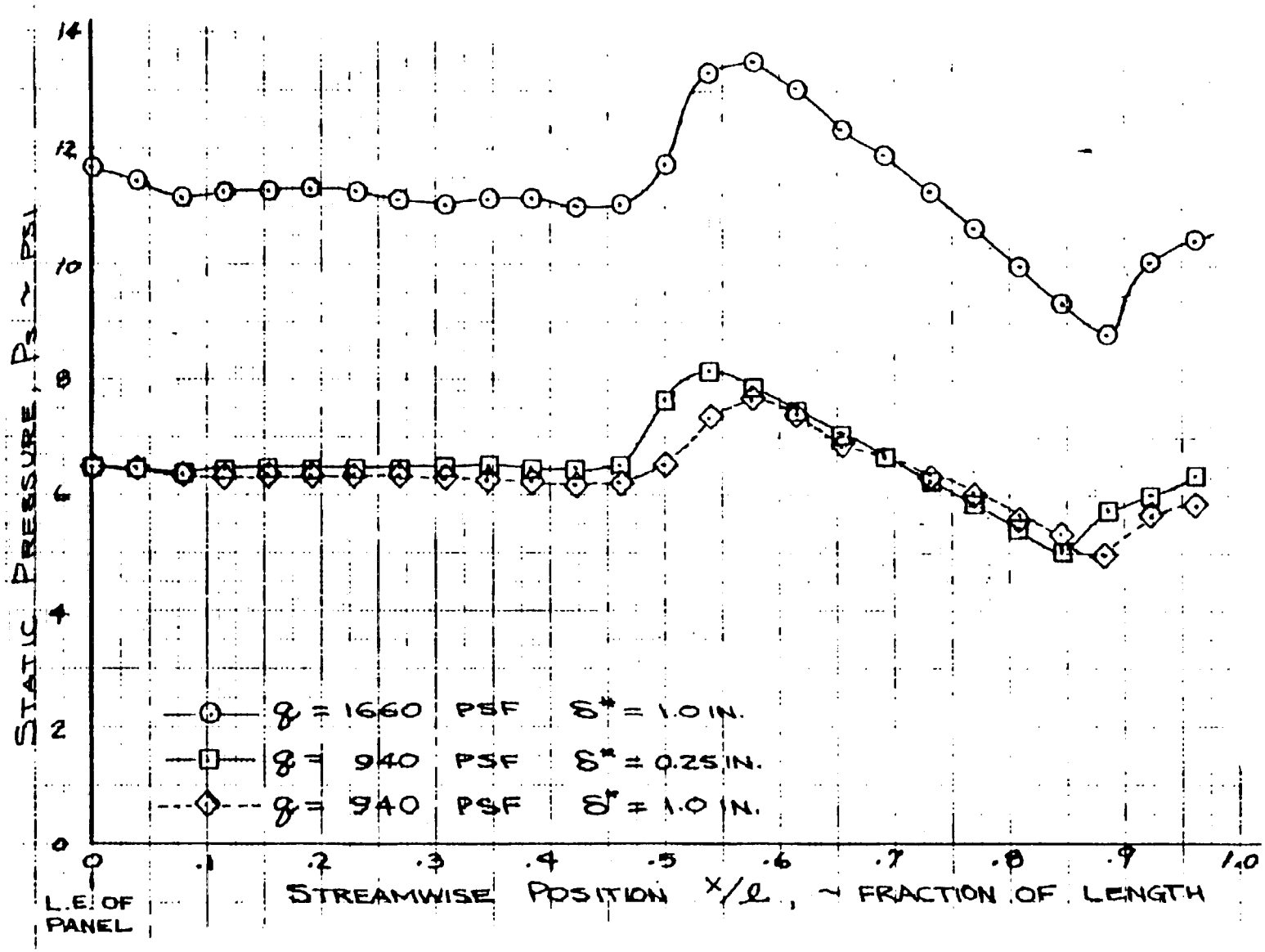
q. Flutter Boundary for Orthotropic Panels P8 and P9 Dynamic Pressure vs. Mach Number
Figure 4. Continued.



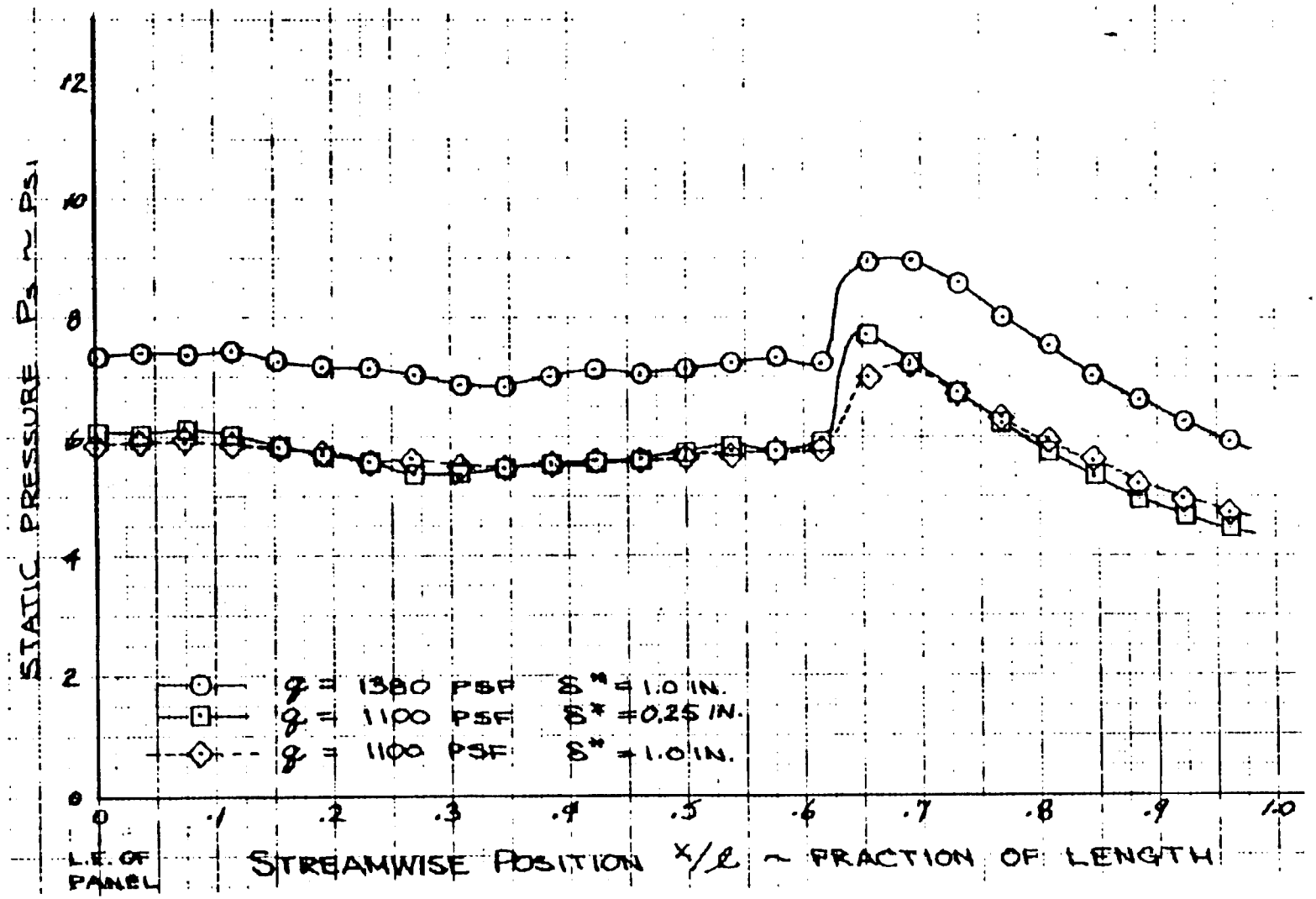
r. Comparison of Analysis and Test Flutter Boundaries for Panels P_8 and P_9, Dynamic Pressure vs. Mach Number
Figure 4. Continued.



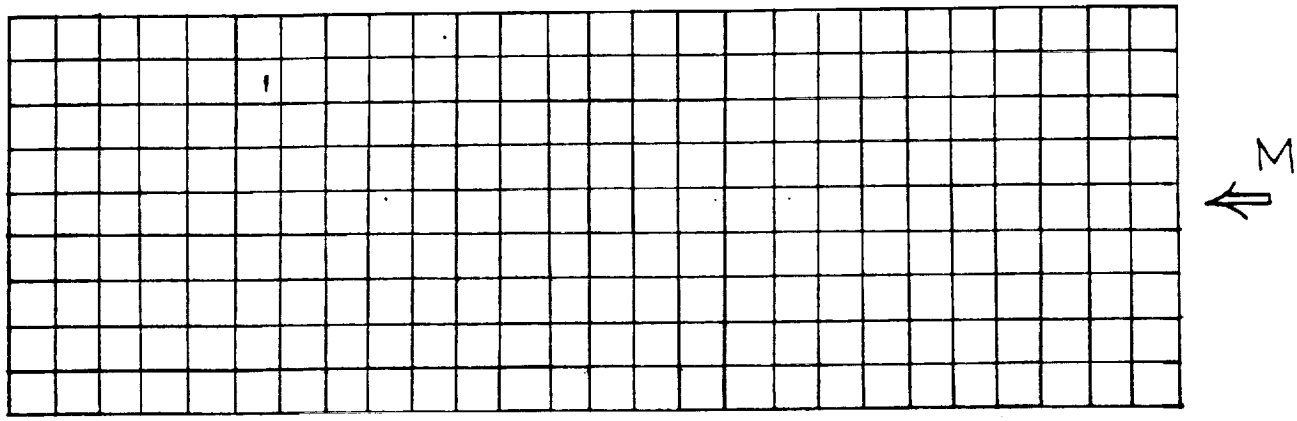
s. Flutter Boundary for Orthotropic Panels P8 and P10 Dynamic Pressure vs. Mach Number
Figure 4. Continued.



t. Streamwise Pressure Variation on Instrumented Panel at M = 1.2
Figure 4. Continued.

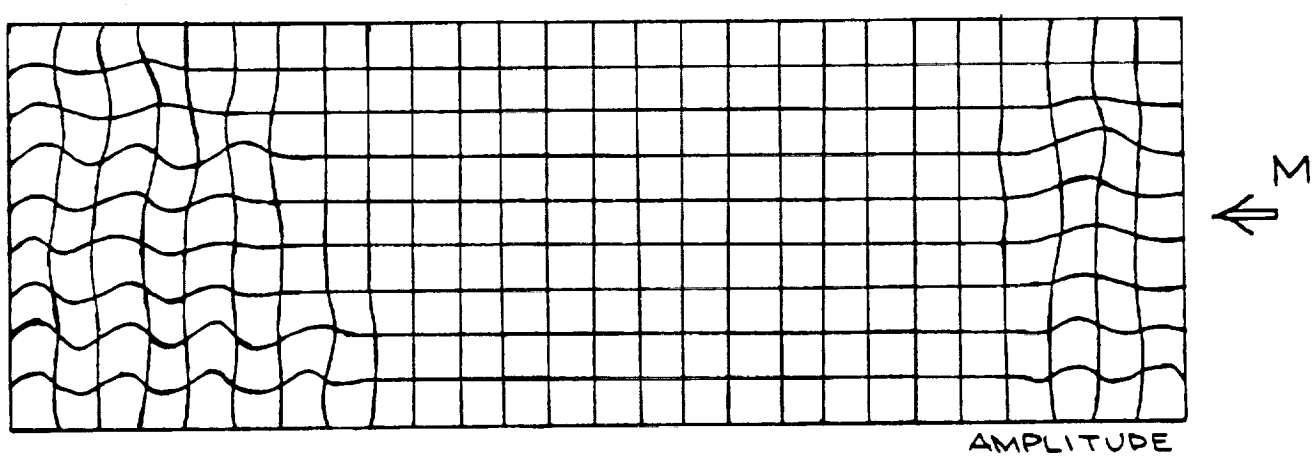


u. Streamwise Pressure Variation on Instrumented Panel at M = 1.4
Figure 4. Continued.



UNDISTORTED

$q < 1300$ PSF



AMPLITUDE EXAGGERATED

DISTORTED

$q > 1300$ PSF

v. Grid Pattern on FRSI Panel, P_{11} at M = 1.2 and 1.4
Figure 4. Concluded.

APPENDIX A

AMES TEST 22-116-1 JAN.1976
NASA SERIES NUMBER OS12

MODEL NUMBER 40-0
SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
1	2	PANEL 3(CALIBRATION) WITH SHOCK GENERATOR

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL	PT	P	TTF	M	Q	T	REYN	RHO
-IN-	PSIA	PSIA	DF	-	PSFA	DF	M/FT	SCF
0.00	16.70	6.92	85	1.20	998	-36	5.204	0.001372

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	6.767	1	-12	6.796	11	-12	6.748	31	9	7.189
24	0	6.924	3	-6	6.793	13	-6	6.716	33	3	6.796
26	-6	6.788	5	0	6.879	15	0	6.799	37	-9	7.192
			7	6	7.184	17	6	7.124			
			9	12	6.301	19	12	6.291			

BOUNDARY LAYER PROBE

POS	Z	PT	POS	Z	PT	POS	Z	PT
NO.	-IN-	-PSIA-	NO.	-IN-	-PSIA-	NO.	-IN-	-PSIA-
1	0.035	9.993	8	0.237	12.395	15	1.022	16.110
2	0.065	10.722	9	0.266	12.396	16	1.155	16.230
3	0.093	11.099	10	0.392	13.148	17	1.287	16.443
4	0.122	11.660	11	0.518	13.830	18	1.418	16.419
5	0.150	11.783	12	0.646	14.782	19	1.549	16.490
6	0.179	12.025	13	0.769	15.264	20	1.676	16.470
7	0.208	12.183	14	0.895	15.695	21	1.804	16.397

CALIBRATION PANEL CENTER LINE PRESSURES

ORIF	X	PSIA	ORIF	X	PSIA
1	-12.5	7.037	14	0.5	7.683
2	-11.5	6.873	15	1.5	8.198
3	-10.5	6.772	16	2.5	8.102
4	-9.5	6.821	17	3.5	7.841
5	-8.5	6.845	18	4.5	7.505
6	-7.5	6.884	19	5.5	7.150
7	-6.5	6.832	20	6.5	6.781
8	-5.5	6.762	21	7.5	6.397
9	-4.5	6.773	22	8.5	6.011
10	-3.5	6.783	23	9.5	5.651
11	-2.5	6.728	24	10.5	5.323
12	-1.5	6.748	25	11.5	6.141
13	-0.5	6.960	26	12.5	6.900

AMES TEST 22-116-1 JAN.1976
NASA SERIES NUMBER 0S12

MODEL NUMBER 40-0
SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
1	3	PANEL 3(CALIBRATION) WITH SHOCK GENERATOR

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL	PT	P	TTF	M	Q	T	REYN	RHO
-IN-	PSIA	PSIA	DF	-	PSFA	DF	M/FT	SCF
0.00	27.72	11.41	102	1.20	1660	-24	8.289	0.002196

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	11.160	1	-12	11.273	11	-12	11.113	31	9	12.226
24	0	11.509	3	-6	11.215	13	-6	10.984	33	3	11.013
26	-6	11.152	5	0	11.237	15	0	11.089	37	-9	11.902
			7	6	11.897	17	6	11.757			
			9	12	10.372	19	12	10.387			

BOUNDARY LAYER PROBE

POS	Z	PT	POS	Z	PT	POS	Z	PT
NO.	-IN-	-PSIA-	NO.	-IN-	-PSIA-	NO.	-IN-	-PSIA-
1	0.043	17.319	8	0.299	21.175	15	1.294	27.159
2	0.079	18.477	9	0.335	21.734	16	1.459	27.112
3	0.115	19.025	10	0.490	23.090	17	1.622	27.153
4	0.152	19.953	11	0.649	23.963	18	1.783	27.113
5	0.190	20.027	12	0.806	25.318	19	1.944	27.113
6	0.227	20.890	13	0.965	26.332	20	2.104	27.099
7	0.263	20.646	14	1.130	26.931	21	2.263	27.150

CALIBRATION PANEL CENTER LINE PRESSURES

ORIF	X	PSIA	ORIF	X	PSIA
1	-12.5	11.681	14	0.5	11.750
2	-11.5	11.476	15	1.5	13.332
3	-10.5	11.169	16	2.5	13.512
4	-9.5	11.252	17	3.5	13.080
5	-8.5	11.276	18	4.5	12.503
6	-7.5	11.301	19	5.5	11.904
7	-6.5	11.274	20	6.5	11.286
8	-5.5	11.139	21	7.5	10.667
9	-4.5	11.031	22	8.5	10.002
10	-3.5	11.134	23	9.5	9.384
11	-2.5	11.071	24	10.5	8.819
12	-1.5	11.004	25	11.5	10.079
13	-0.5	11.068	26	12.5	10.447

AMES TEST 22-116-1 JAN.1976
NASA SERIES NUMBER OS12

MODEL NUMBER 40-0
SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
2	1	PANEL 3(CALIBRATION) WITH SHOCK GENERATOR

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL	PT	P	TTF	M	Q	T	REYN	RHO
-IN-	PSIA	PSIA	DF	-	PSFA	DF	M/FT	SCF
1.00	15.73	6.51	106	1.20	941	-20	4.668	0.001243

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	6.283	1	-12	6.407	11	-12	6.319	31	9	6.619
24	0	6.313	3	-6	6.421	13	-6	6.320	33	3	6.399
26	-6	6.359	5	0	6.423	15	0	6.392	37	-9	6.582
			7	6	6.780	17	6	6.780			
			9	12	5.977	19	12	6.060			

BOUNDARY LAYER PROBE

POS	Z	PT	POS	Z	PT	POS	Z	PT
NO.	-IN-	-PSIA-	NO.	-IN-	-PSIA-	NO.	-IN-	-PSIA-
1	0.043	10.512	8	0.337	14.801	15	1.408	15.411
2	0.085	11.250	9	0.379	15.022	16	1.581	15.522
3	0.127	12.160	10	0.547	15.514	17	1.753	15.582
4	0.169	12.865	11	0.719	15.567	18	1.926	15.613
5	0.212	13.488	12	0.889	15.516	19	2.098	15.613
6	0.255	13.960	13	1.062	15.492	20	2.270	15.613
7	0.296	14.168	14	1.235	15.462	21	2.441	15.603

CALIBRATION PANEL CENTER LINE PRESSURES

ORIF	X	PSIA	ORIF	X	PSIA
1	-12.5	6.460	14	0.5	7.658
2	-11.5	6.444	15	1.5	8.179
3	-10.5	6.383	16	2.5	7.880
4	-9.5	6.421	17	3.5	7.496
5	-8.5	6.472	18	4.5	7.089
6	-7.5	6.476	19	5.5	6.683
7	-6.5	6.474	20	6.5	6.276
8	-5.5	6.471	21	7.5	5.869
9	-4.5	6.503	22	8.5	5.446
10	-3.5	6.508	23	9.5	5.053
11	-2.5	6.449	24	10.5	5.775
12	-1.5	6.454	25	11.5	6.006
13	-0.5	6.495	26	12.5	6.341

AMES TEST 22-116-1 JAN.1976
NASA SERIES NUMBER OS12

MODEL NUMBER 40-0
SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
2	2	PANEL 3(CALIBRATION) WITH SHOCK GENERATOR

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL	PT	P	TTF	M	Q	T	REYN	RHO
-IN-	PSIA	PSIA	DF	-	PSFA	DF	M/FT	SCF
0.00	15.73	6.46	104	1.20	943	-23	4.687	0.001241

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	6.308	1	-12	6.255	11	-12	6.225	31	9	6.773
24	0	6.514	3	-6	6.261	13	-6	6.197	33	3	6.121
26	-6	6.294	5	0	6.268	15	0	6.220	37	-9	6.625
			7	6	6.672	17	6	6.631			
			9	12	5.819	19	12	5.878			

BOUNDARY LAYER PROBE

POS	Z	PT	POS	Z	PT	POS	Z	PT
NO.	-IN-	-PSIA-	NO.	-IN-	-PSIA-	NO.	-IN-	-PSIA-
1	0.039	9.545	8	0.327	12.142	15	1.385	15.466
2	0.080	10.363	9	0.368	12.209	16	1.558	15.520
3	0.120	10.879	10	0.534	13.175	17	1.730	15.501
4	0.161	11.207	11	0.703	14.217	18	1.902	15.519
5	0.203	11.474	12	0.871	14.544	19	2.074	15.417
6	0.245	11.827	13	1.042	15.173	20	2.245	15.457
7	0.286	11.963	14	1.213	15.378	21	2.416	15.418

CALIBRATION PANEL CENTER LINE PRESSURES

ORIF	X	PSIA	ORIF	X	PSIA
1	-12.5	6.478	14	0.5	6.505
2	-11.5	6.481	15	1.5	7.369
3	-10.5	6.341	16	2.5	7.642
4	-9.5	6.295	17	3.5	7.400
5	-8.5	6.352	18	4.5	6.825
6	-7.5	6.350	19	5.5	6.717
7	-6.5	6.350	20	6.5	6.383
8	-5.5	6.318	21	7.5	6.032
9	-4.5	6.232	22	8.5	5.674
10	-3.5	6.246	23	9.5	5.323
11	-2.5	6.229	24	10.5	4.989
12	-1.5	6.182	25	11.5	5.686
13	-0.5	6.205	26	12.5	5.811

AMES TEST 22-116-1 JAN.1976
NASA SERIES NUMBER OS12

MODEL NUMBER 40-0
SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
3	1	PANEL 3(CALIBRATION) WITH SHOCK GENERATOR

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL	PT	P	TTF	M	Q	T	REYN	RHO
-IN-	PSIA	PSIA	DF	-	PSFA	DF	M/FT	SCF
0.00	15.70	6.48	82	1.20	940	-39	4.925	0.001293

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	6.389	1	-12	6.375	11	-12	6.364	31	9	6.745
24	0	6.535	3	-6	6.341	13	-6	6.277	33	3	6.341
26	-6	6.389	5	0	6.430	15	0	6.422	37	-9	6.609
			7	6	6.706	17	6	6.679			
			9	12	5.939	19	12	5.917			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.022	8.991	8	0.220	11.629	15	1.046	15.077
2	0.040	9.451	9	0.251	11.486	16	1.180	15.201
3	0.061	9.877	10	0.386	12.335	17	1.312	15.348
4	0.092	10.431	11	0.518	13.117	18	1.444	15.445
5	0.124	10.770	12	0.651	13.568	19	1.577	15.244
6	0.156	11.030	13	0.781	14.388	20	1.706	15.367
7	0.188	11.249	14	0.913	14.888	21	1.835	15.402

CALIBRATION PANEL CENTER LINE PRESSURES

ORIF	X	PSIA	ORIF	X	PSIA
1	-12.5	6.617	14	0.5	7.057
2	-11.5	6.466	15	1.5	7.721
3	-10.5	6.376	16	2.5	7.626
4	-9.5	6.422	17	3.5	7.346
5	-8.5	6.429	18	4.5	7.033
6	-7.5	6.445	19	5.5	6.707
7	-6.5	6.390	20	6.5	6.358
8	-5.5	6.353	21	7.5	5.989
9	-4.5	6.354	22	8.5	5.628
10	-3.5	6.375	23	9.5	5.281
11	-2.5	6.305	24	10.5	4.974
12	-1.5	6.312	25	11.5	5.702
13	-0.5	6.446	26	12.5	6.262

AMES TEST 22-116-1 JAN.1976
NASA SERIES NUMBER 0S12

MODEL NUMBER 40-0
SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
3	2	PANEL 3(CALIBRATION) WITH SHOCK GENERATOR

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL	PT	P	TTF	M	Q	T	REYN	RHO
-IN-	PSIA	PSIA	DF	-	PSFA	DF	M/FT	SCF
-0.00	16.69	6.88	93	1.20	999	-31	5.106	0.001347

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	6.776	1	-12	6.727	11	-12	6.723	31	9	7.252
24	0	6.951	3	-6	6.723	13	-6	6.624	33	3	6.658
26	-6	6.757	5	0	6.769	15	0	6.715	37	-9	7.070
			7	6	7.118	17	6	7.071			
			9	12	6.271	19	12	6.252			

BOUNDARY LAYER PROBE

POS	Z	PT	POS	Z	PT	POS	Z	PT
NO.	-IN-	-PSIA-	NO.	-IN-	-PSIA-	NO.	-IN-	-PSIA-
1	0.033	9.997	8	0.261	12.546	15	1.148	16.217
2	0.065	10.631	9	0.294	12.650	16	1.293	16.191
3	0.096	11.155	10	0.437	13.456	17	1.438	16.325
4	0.129	11.518	11	0.576	14.329	18	1.585	16.349
5	0.161	11.896	12	0.718	15.012	19	1.729	16.312
6	0.194	12.113	13	0.859	15.544	20	1.874	16.331
7	0.228	12.239	14	1.001	15.839	21	2.021	16.340

CALIBRATION PANEL CENTER LINE PRESSURES

ORIF	X	PSIA	ORIF	X	PSIA
1	-12.5	7.012	14	0.5	7.248
2	-11.5	6.902	15	1.5	8.053
3	-10.5	6.743	16	2.5	8.107
4	-9.5	6.774	17	3.5	7.828
5	-8.5	6.807	18	4.5	7.489
6	-7.5	6.796	19	5.5	7.135
7	-6.5	6.763	20	6.5	6.773
8	-5.5	6.701	21	7.5	6.394
9	-4.5	6.696	22	8.5	5.997
10	-3.5	6.709	23	9.5	5.632
11	-2.5	6.664	24	10.5	5.297
12	-1.5	6.639	25	11.5	6.078
13	-0.5	6.700	26	12.5	6.257

AMES TEST 22-116-1 JAN.1976
NASA SERIES NUMBER OS12

MODEL NUMBER 40-0
SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
4	1	PANEL 3(CALIBRATION) WITH SHOCK GENERATOR

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL	PT	P	TTF	M	Q	T	REYN	RHO
-IN-	PSIA	PSIA	DF	-	PSFA	DF	M/FT	SCF
1.00	17.72	5.57	107	1.40	1100	-53	5.162	0.001148

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	5.791	1	-12	5.670	11	-12	5.752	31	9	4.764
24	0	5.905	3	-6	5.717	13	-6	5.720	33	3	5.543
26	-6	5.793	5	0	5.697	15	0	5.669	37	-9	4.726
			7	6	7.164	17	6	6.720			
			9	12	5.641	19	12	5.609			

BOUNDARY LAYER PROBE

POS	Z	PT	POS	Z	PT	POS	Z	PT
NO.	-IN-	-PSIA-	NO.	-IN-	-PSIA-	NO.	-IN-	-PSIA-
1	0.041	10.886	8	0.343	15.607	15	1.434	16.857
2	0.084	11.662	9	0.386	16.089	16	1.609	16.837
3	0.127	12.596	10	0.558	16.622	17	1.784	16.916
4	0.170	13.072	11	0.732	16.701	18	1.962	16.932
5	0.214	13.884	12	0.904	16.769	19	2.138	16.919
6	0.258	14.348	13	1.082	16.817	20	2.314	16.979
7	0.300	15.097	14	1.258	16.815	21	2.487	17.008

CALIBRATION PANEL CENTER LINE PRESSURES

ORIF	X	PSIA	ORIF	X	PSIA
1	-12.5	6.044	14	0.5	5.774
2	-11.5	6.085	15	1.5	5.866
3	-10.5	6.117	16	2.5	5.775
4	-9.5	5.977	17	3.5	5.938
5	-8.5	5.749	18	4.5	7.641
6	-7.5	5.659	19	5.5	7.238
7	-6.5	5.474	20	6.5	6.743
8	-5.5	5.363	21	7.5	6.234
9	-4.5	5.351	22	8.5	5.754
10	-3.5	5.493	23	9.5	5.322
11	-2.5	5.560	24	10.5	4.971
12	-1.5	5.604	25	11.5	4.707
13	-0.5	5.608	26	12.5	4.457

AMES TEST 22-116-1 JAN.1976
NASA SERIES NUMBER 0S12

MODEL NUMBER 40-0
SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
4	2	PANEL 3(CALIBRATION) WITH SHOCK GENERATOR

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL	PT	P	TTF	M	Q	T	REYN	RHO
-IN-	PSIA	PSIA	DF	-	PSFA	DF	M/FT	SCF
1.00	17.71	5.56	111	1.40	1099	-50	5.114	0.001139

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	5.808	1	-12	5.660	11	-12	5.932	31	9	4.758
24	0	5.906	3	-6	5.746	13	-6	5.756	33	3	5.562
26	-6	5.825	5	0	5.739	15	0	5.691	37	-9	4.744
			7	6	7.154	17	6	6.716			
			9	12	5.666	19	12	5.639			

BOUNDARY LAYER PROBE

POS	Z	PT	POS	Z	PT	POS	Z	PT
NO.	-IN-	-PSIA-	NO.	-IN-	-PSIA-	NO.	-IN-	-PSIA-
1	0.036	10.643	8	0.344	15.653	15	1.446	16.846
2	0.080	11.583	9	0.387	16.225	16	1.625	16.895
3	0.124	12.498	10	0.560	16.681	17	1.802	16.909
4	0.167	13.097	11	0.737	16.741	18	1.983	16.917
5	0.212	13.795	12	0.911	16.767	19	2.161	16.968
6	0.256	14.439	13	1.089	16.830	20	2.341	16.993
7	0.300	15.131	14	1.268	16.851	21	2.488	17.000

CALIBRATION PANEL CENTER LINE PRESSURES

ORIF	X	PSIA	ORIF	X	PSIA
1	-12.5	6.053	14	0.5	5.767
2	-11.5	6.054	15	1.5	5.883
3	-10.5	6.122	16	2.5	5.793
4	-9.5	6.017	17	3.5	5.930
5	-8.5	5.817	18	4.5	7.703
6	-7.5	5.700	19	5.5	7.265
7	-6.5	5.583	20	6.5	6.761
8	-5.5	5.380	21	7.5	6.238
9	-4.5	5.377	22	8.5	5.757
10	-3.5	5.481	23	9.5	5.332
11	-2.5	5.569	24	10.5	4.968
12	-1.5	5.598	25	11.5	4.676
13	-0.5	5.613	26	12.5	4.451

AMES TEST 22-116-1 JAN.1976
NASA SERIES NUMBER 0S12

MODEL NUMBER 40-0
SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
5	1	PANEL 3(CALIBRATION) WITH SHOCK GENERATOR

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL	PT	P	TTF	M	Q	T	REYN	RHO
-IN-	PSIA	PSIA	DF	-	PSFA	DF	M/FT	SCF
0.00	17.72	5.54	100	1.40	1100	-58	5.242	0.001158

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	5.786	1	-12	5.646	11	-12	5.646	31	9	4.908
24	0	5.740	3	-6	5.692	13	-6	5.644	33	3	5.431
26	-6	5.688	5	0	5.639	15	0	5.631	37	-9	4.817
			7	6	6.311	17	6	6.366			
			9	12	5.687	19	12	5.664			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.034	9.911	8	0.321	12.489	15	1.372	16.706
2	0.074	10.714	9	0.361	12.578	16	1.543	16.846
3	0.115	11.012	10	0.526	13.396	17	1.713	16.891
4	0.156	11.276	11	0.694	14.496	18	1.884	16.940
5	0.198	11.726	12	0.860	15.280	19	2.055	17.011
6	0.240	11.977	13	1.030	16.027	20	2.224	17.000
7	0.280	12.260	14	1.201	16.286	21	2.395	17.003

CALIBRATION PANEL CENTER LINE PRESSURES

ORIF	X	PSIA	ORIF	X	PSIA
1	-12.5	5.806	14	0.5	5.656
2	-11.5	5.872	15	1.5	5.638
3	-10.5	5.915	16	2.5	5.793
4	-9.5	5.900	17	3.5	5.743
5	-8.5	5.802	18	4.5	7.012
6	-7.5	5.732	19	5.5	7.219
7	-6.5	5.727	20	6.5	6.793
8	-5.5	5.649	21	7.5	6.381
9	-4.5	5.532	22	8.5	5.986
10	-3.5	5.499	23	9.5	5.612
11	-2.5	5.560	24	10.5	5.258
12	-1.5	5.631	25	11.5	4.980
13	-0.5	5.635	26	12.5	4.733

AMES TEST 22-116-1 JAN.1976
NASA SERIES NUMBER OS12

MODEL NUMBER 40-0
SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
5	2	PANEL 3(CALIBRATION) WITH SHOCK GENERATOR

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL	PT	P	TTF	M	Q	T	REYN	RHO
-IN-	PSIA	PSIA	DF	-	PSFA	DF	M/FT	SCF
0.00	22.29	6.99	103	1.40	1384	-56	6.553	0.001452

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	7.291	1	-12	7.096	11	-12	7.063	31	9	7.224
24	0	7.281	3	-6	7.213	13	-6	7.060	33	3	7.246
26	-6	7.223	5	0	7.150	15	0	7.073	37	-9	7.182
			7	6	8.096	17	6	8.274			
			9	12	7.189	19	12	7.122			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.035	12.600	8	0.325	15.738	15	1.384	20.970
2	0.076	13.475	9	0.366	15.894	16	1.557	21.069
3	0.118	13.913	10	0.532	17.330	17	1.727	21.107
4	0.159	14.438	11	0.702	18.400	18	1.900	21.149
5	0.201	14.573	12	0.870	19.452	19	2.071	21.187
6	0.243	14.996	13	1.041	20.193	20	2.242	21.252
7	0.284	15.410	14	1.213	20.511	21	2.415	21.225

CALIBRATION PANEL CENTER LINE PRESSURES

ORIF	X	PSIA	ORIF	X	PSIA
1	-12.5	7.364	14	0.5	7.128
2	-11.5	7.403	15	1.5	7.237
3	-10.5	7.393	16	2.5	7.321
4	-9.5	7.436	17	3.5	7.259
5	-8.5	7.269	18	4.5	8.951
6	-7.5	7.180	19	5.5	8.970
7	-6.5	7.139	20	6.5	8.593
8	-5.5	7.037	21	7.5	8.010
9	-4.5	6.871	22	8.5	7.553
10	-3.5	6.865	23	9.5	7.031
11	-2.5	7.003	24	10.5	6.610
12	-1.5	7.117	25	11.5	6.281
13	-0.5	7.052	26	12.5	5.965

AMES TEST 22-116-1 JAN.1976
NASA SERIES NUMBER OS12

MODEL NUMBER 40-0
SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
6	1	PANEL 3(CALIBRATION) WITH SHOCK GENERATOR

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL	PT	P	TTF	M	Q	T	REYN	RHO
-IN-	PSIA	PSIA	DF	-	PSFA	DF	M/FT	SCF
0.00	16.71	6.97	80	1.19	997	-40	5.273	0.001392

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	6.792	1	-12	6.792	11	-12	6.781	31	9	7.078
24	0	6.869	3	-6	6.765	13	-6	6.684	33	3	6.810
26	-6	6.822	5	0	6.892	15	0	6.861	37	-9	7.100
			7	6	7.163	17	6	7.119			
			9	12	6.325	19	12	6.291			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.024	9.763	8	0.175	12.006	15	0.450	13.380
2	0.047	10.294	9	0.196	12.045	16	0.491	13.589
3	0.069	10.808	10	0.240	12.616	17	0.531	13.893
4	0.090	11.187	11	0.283	12.610	18	0.572	14.200
5	0.111	11.372	12	0.325	12.950	19	0.614	14.498
6	0.132	11.727	13	0.367	13.151	20	0.655	14.685
7	0.153	11.807	14	0.409	13.346	21	0.695	14.961

CALIBRATION PANEL CENTER LINE PRESSURES

ORIF	X	PSIA	ORIF	X	PSIA
1	-12.5	7.083	14	0.5	7.614
2	-11.5	6.891	15	1.5	8.201
3	-10.5	6.764	16	2.5	8.101
4	-9.5	6.832	17	3.5	7.846
5	-8.5	6.838	18	4.5	7.492
6	-7.5	6.844	19	5.5	7.144
7	-6.5	6.840	20	6.5	6.774
8	-5.5	6.744	21	7.5	6.388
9	-4.5	6.748	22	8.5	6.000
10	-3.5	6.774	23	9.5	5.627
11	-2.5	6.710	24	10.5	5.302
12	-1.5	6.740	25	11.5	6.146
13	-0.5	6.887	26	12.5	6.734

AMES TEST 22-116-1 JAN.1976
NASA SERIES NUMBER OS12

MODEL NUMBER 40-0
SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
7	1	PANEL 3(CALIBRATION)

TUNNEL CONDITIONS

	MEASURED			CALCULATED				
HWALL	PT	P	TTF	M	Q	T	REYN	RHO
-IN-	PSIA	PSIA	DF	-	PSFA	DF	M/FT	SCF
0.00	5.24	1.64	65	1.40	325	-83	1.693	0.000366

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	1.498	1	-12	1.534	11	-12	1.517	31	9	1.524
24	0	1.502	3	-6	1.526	13	-6	1.510	33	3	1.537
26	-6	1.503	5	0	1.526	15	0	1.509	37	-9	1.531
			7	6	1.529	17	6	1.515			
			9	12	1.528	19	12	1.528			

BOUNDARY LAYER PROBE

POS	Z	PT	POS	Z	PT	POS	Z	PT
NO.	-IN-	-PSIA-	NO.	-IN-	-PSIA-	NO.	-IN-	-PSIA-
1	0.020	2.424	8	0.168	2.972	15	0.446	3.547
2	0.042	2.518	9	0.190	3.053	16	0.487	3.745
3	0.062	2.569	10	0.235	3.025	17	0.527	3.643
4	0.083	2.698	11	0.278	3.157	18	0.568	3.861
5	0.104	2.738	12	0.320	3.208	19	0.611	3.844
6	0.126	2.799	13	0.361	3.371	20	0.653	3.967
7	0.147	2.893	14	0.404	3.454	21	0.693	3.958

CALIBRATION PANEL CENTER LINE PRESSURES

ORIF	X	PSIA	ORIF	X	PSIA
1	-12.5	1.528	14	0.5	1.546
2	-11.5	1.537	15	1.5	1.547
3	-10.5	1.540	16	2.5	1.547
4	-9.5	1.544	17	3.5	1.546
5	-8.5	1.544	18	4.5	1.546
6	-7.5	1.544	19	5.5	1.546
7	-6.5	1.544	20	6.5	1.546
8	-5.5	1.545	21	7.5	1.546
9	-4.5	1.544	22	8.5	1.546
10	-3.5	1.544	23	9.5	1.547
11	-2.5	1.544	24	10.5	1.548
12	-1.5	1.544	25	11.5	1.550
13	-0.5	1.546	26	12.5	1.606

AMES TEST 22-116-1 JAN.1976
NASA SERIES NUMBER OS12

MODEL NUMBER 40-0
SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
7	2	PANEL 3(CALIBRATION)

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL	PT	P	TTF	M	Q	T	REYN	RHO
-IN-	PSIA	PSIA	DF	-	PSFA	DF	M/FT	SCF
0.00	5.25	1.64	65	1.40	326	-83	1.695	0.000366

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	1.492	1	-12	1.533	11	-12	1.510	31	9	1.503
24	0	1.487	3	-6	1.523	13	-6	1.501	33	3	1.521
26	-6	1.487	5	0	1.519	15	0	1.497	37	-9	1.521
			7	6	1.523	17	6	1.504			
			9	12	1.520	19	12	1.510			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.029	2.297	8	0.213	3.010	15	0.946	4.420
2	0.054	2.521	9	0.240	3.034	16	1.064	4.582
3	0.081	2.566	10	0.357	3.331	17	1.180	4.408
4	0.107	2.692	11	0.475	3.559	18	1.294	4.781
5	0.133	2.759	12	0.594	3.680	19	1.408	4.772
6	0.160	2.828	13	0.710	3.830	20	1.522	4.661
7	0.187	2.913	14	0.825	4.281	21	1.632	4.670

CALIBRATION PANEL CENTER LINE PRESSURES

ORIF	X	PSIA	ORIF	X	PSIA
1	-12.5	1.536	14	0.5	1.521
2	-11.5	1.521	15	1.5	1.529
3	-10.5	1.521	16	2.5	1.524
4	-9.5	1.526	17	3.5	1.514
5	-8.5	1.528	18	4.5	1.514
6	-7.5	1.531	19	5.5	1.512
7	-6.5	1.536	20	6.5	1.512
8	-5.5	1.531	21	7.5	1.515
9	-4.5	1.519	22	8.5	1.521
10	-3.5	1.515	23	9.5	1.518
11	-2.5	1.512	24	10.5	1.523
12	-1.5	1.499	25	11.5	1.529
13	-0.5	1.524	26	12.5	1.568

AMES TEST 22-116-1 JAN.1976
NASA SERIES NUMBER OS12

MODEL NUMBER 40-0
SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
7	3	PANEL 3(CALIBRATION)

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL	PT	P	TTF	M	Q	T	REYN	RHO
-IN-	PSIA	PSIA	DF	-	PSFA	DF	M/FT	SCF
0.00	11.27	3.53	78	1.40	700	-74	3.524	0.000768

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	3.518	1	-12	3.476	11	-12	3.439	31	9	3.855
24	0	3.505	3	-6	3.540	13	-6	3.502	33	3	3.521
26	-6	3.484	5	0	3.529	15	0	3.520	37	-9	3.530
			7	6	3.536	17	6	3.504			
			9	12	3.540	19	12	3.520			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.027	5.779	8	0.219	7.164	15	0.954	10.336
2	0.053	6.130	9	0.247	7.467	16	1.070	10.483
3	0.080	6.424	10	0.369	7.954	17	1.187	10.654
4	0.108	6.562	11	0.489	8.437	18	1.302	10.654
5	0.135	6.758	12	0.608	9.017	19	1.418	10.712
6	0.162	6.895	13	0.725	9.215	20	1.534	10.725
7	0.191	7.143	14	0.840	9.780	21	1.649	10.744

CALIBRATION PANEL CENTER LINE PRESSURES

ORIF	X	PSIA	ORIF	X	PSIA
1	-12.5	3.608	14	0.5	3.551
2	-11.5	3.611	15	1.5	3.547
3	-10.5	3.692	16	2.5	3.610
4	-9.5	3.675	17	3.5	3.581
5	-8.5	3.667	18	4.5	3.541
6	-7.5	3.634	19	5.5	3.542
7	-6.5	3.660	20	6.5	3.537
8	-5.5	3.634	21	7.5	3.546
9	-4.5	3.548	22	8.5	3.556
10	-3.5	3.537	23	9.5	3.551
11	-2.5	3.572	24	10.5	3.561
12	-1.5	3.556	25	11.5	3.562
13	-0.5	3.550	26	12.5	3.628

AMES TEST 22-116-1 JAN.1976
NASA SERIES NUMBER 0S12

MODEL NUMBER 40-0
SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
7	4	PANEL 3(CALIBRATION)

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL	PT	P	TTF	M	Q	T	REYN	RHO
-IN-	PSIA	PSIA	DF	-	PSFA	DF	M/FT	SCF
0.00	17.71	5.58	92	1.40	1099	-63	5.352	0.001181

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	5.800	1	-12	5.669	11	-12	5.678	31	9	5.970
24	0	5.852	3	-6	5.692	13	-6	5.621	33	3	5.682
26	-6	5.774	5	0	5.707	15	0	5.608	37	-9	5.601
			7	6	5.649	17	6	5.607			
			9	12	5.682	19	12	5.659			

BOUNDARY LAYER PROBE

POS	Z	PT	POS	Z	PT	POS	Z	PT
NO.	-IN-	-PSIA-	NO.	-IN-	-PSIA-	NO.	-IN-	-PSIA-
1	0.038	9.740	8	0.280	12.281	15	1.167	16.847
2	0.073	10.307	9	0.312	12.537	16	1.313	17.018
3	0.107	10.654	10	0.452	13.291	17	1.461	17.020
4	0.142	11.104	11	0.590	13.825	18	1.607	16.918
5	0.177	11.268	12	0.731	15.252	19	1.751	17.088
6	0.212	11.611	13	0.874	15.943	20	1.898	17.116
7	0.247	11.895	14	1.019	16.542	21	2.043	17.109

CALIBRATION PANEL CENTER LINE PRESSURES

ORIF	X	PSIA	ORIF	X	PSIA
1	-12.5	5.863	14	0.5	5.694
2	-11.5	5.922	15	1.5	5.751
3	-10.5	5.921	16	2.5	5.805
4	-9.5	5.892	17	3.5	5.662
5	-8.5	5.852	18	4.5	5.605
6	-7.5	5.728	19	5.5	5.621
7	-6.5	5.704	20	6.5	5.655
8	-5.5	5.617	21	7.5	5.624
9	-4.5	5.519	22	8.5	5.633
10	-3.5	5.548	23	9.5	5.659
11	-2.5	5.610	24	10.5	5.639
12	-1.5	5.654	25	11.5	5.607
13	-0.5	5.626	26	12.5	5.791

AMES TEST 22-116-1 JAN.1976
NASA SERIES NUMBER OS12

MODEL NUMBER 40-0
SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
8	1	PANEL 3(CALIBRATION)

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL	PT	P	TTF	M	Q	T	REYN	RHO
-IN-	PSIA	PSIA	DF	-	PSFA	DF	M/FT	SCF
1.00	17.72	5.56	101	1.40	1100	-57	5.230	0.001158

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	5.856	1	-12	5.663	11	-12	5.644	31	9	5.605
24	0	5.807	3	-6	5.667	13	-6	5.589	33	3	5.821
26	-6	5.848	5	0	5.693	15	0	5.616	37	-9	5.551
			7	6	5.644	17	6	5.539			
			9	12	5.674	19	12	5.622			

BOUNDARY LAYER PROBE

POS	Z	PT	POS	Z	PT	POS	Z	PT
NO.	-IN-	-PSIA-	NO.	-IN-	-PSIA-	NO.	-IN-	-PSIA-
1	0.049	10.799	8	0.373	16.709	15	1.611	17.124
2	0.095	11.784	9	0.420	16.954	16	1.807	17.147
3	0.141	12.903	10	0.617	17.095	17	2.007	17.163
4	0.189	13.825	11	0.814	17.111	18	2.203	17.113
5	0.236	14.686	12	1.013	17.124	19	2.401	17.133
6	0.282	15.429	13	1.214	17.104	20	2.484	17.126
7	0.328	16.142	14	1.413	17.138	21	2.483	17.164

CALIBRATION PANEL CENTER LINE PRESSURES

ORIF	X	PSIA	ORIF	X	PSIA
1	-12.5	5.844	14	0.5	5.651
2	-11.5	5.978	15	1.5	5.777
3	-10.5	6.028	16	2.5	5.753
4	-9.5	5.986	17	3.5	5.636
5	-8.5	5.898	18	4.5	5.609
6	-7.5	5.789	19	5.5	5.610
7	-6.5	5.739	20	6.5	5.628
8	-5.5	5.564	21	7.5	5.627
9	-4.5	5.443	22	8.5	5.633
10	-3.5	5.505	23	9.5	5.607
11	-2.5	5.558	24	10.5	5.614
12	-1.5	5.636	25	11.5	5.596
13	-0.5	5.627	26	12.5	5.626

AMES TEST 22-116-1 JAN.1976
NASA SERIES NUMBER 0S12

MODEL NUMBER 40-0
SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
8	2	PANEL 3(CALIBRATION)

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL	PT	P	TTF	M	Q	T	REYN	RHO
-IN-	PSIA	PSIA	DF	-	PSFA	DF	M/FT	SCF
1.00	11.27	3.52	94	1.40	700	-62	3.382	0.000744

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	3.695	1	-12	3.630	11	-12	3.612	31	9	3.564
24	0	3.667	3	-6	3.587	13	-6	3.523	33	3	3.670
26	-6	3.700	5	0	3.548	15	0	3.546	37	-9	3.562
			7	6	3.580	17	6	3.523			
			9	12	3.582	19	12	3.561			

BOUNDARY LAYER PROBE

POS	Z	PT	POS	Z	PT	POS	Z	PT
NO.	-IN-	-PSIA-	NO.	-IN-	-PSIA-	NO.	-IN-	-PSIA-
1	0.043	6.668	8	0.359	10.552	15	1.433	10.893
2	0.087	7.299	9	0.404	10.768	16	1.606	10.883
3	0.133	7.897	10	0.572	10.867	17	1.779	10.898
4	0.178	8.604	11	0.743	10.828	18	1.954	10.867
5	0.224	9.271	12	0.912	10.876	19	2.128	10.904
6	0.269	9.828	13	1.086	10.877	20	2.303	10.916
7	0.314	10.320	14	1.259	10.883	21	2.476	10.901

CALIBRATION PANEL CENTER LINE PRESSURES

ORIF	X	PSIA	ORIF	X	PSIA
1	-12.5	3.713	14	0.5	3.562
2	-11.5	3.782	15	1.5	3.663
3	-10.5	3.770	16	2.5	3.614
4	-9.5	3.766	17	3.5	3.586
5	-8.5	3.755	18	4.5	3.562
6	-7.5	3.705	19	5.5	3.587
7	-6.5	3.677	20	6.5	3.575
8	-5.5	3.587	21	7.5	3.591
9	-4.5	3.488	22	8.5	3.549
10	-3.5	3.580	23	9.5	3.569
11	-2.5	3.578	24	10.5	3.572
12	-1.5	3.604	25	11.5	3.560
13	-0.5	3.589	26	12.5	3.589

AMES TEST 22-116-1 JAN.1976
NASA SERIES NUMBER 0S12

MODEL NUMBER 40-0
SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
8	3	PANEL 3(CALIBRATION)

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL	PT	P	TTF	M	Q	T	REYN	RHO
-IN-	PSIA	PSIA	DF	-	PSFA	DF	M/FT	SCF
1.00	5.25	1.64	82	1.40	326	-71	1.621	0.000354

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	1.606	1	-12	1.585	11	-12	1.591	31	9	1.621
24	0	1.607	3	-6	1.606	13	-6	1.602	33	3	1.621
26	-6	1.620	5	0	1.614	15	0	1.616	37	-9	1.622
			7	6	1.626	17	6	1.612			
			9	12	1.627	19	12	1.623			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.043	2.812	8	0.341	4.395	15	1.223	5.063
2	0.085	3.092	9	0.383	4.445	16	1.366	5.031
3	0.128	3.365	10	0.519	4.900	17	1.511	5.038
4	0.171	3.429	11	0.659	5.022	18	1.654	5.044
5	0.214	3.816	12	0.797	5.001	19	1.797	5.039
6	0.257	4.142	13	0.936	5.020	20	1.942	5.059
7	0.299	4.372	14	1.080	5.032	21	2.084	5.048

CALIBRATION PANEL CENTER LINE PRESSURES

ORIF	X	PSIA	ORIF	X	PSIA
1	-12.5	1.646	14	0.5	1.622
2	-11.5	1.671	15	1.5	1.610
3	-10.5	1.689	16	2.5	1.650
4	-9.5	1.698	17	3.5	1.630
5	-8.5	1.698	18	4.5	1.621
6	-7.5	1.657	19	5.5	1.621
7	-6.5	1.658	20	6.5	1.626
8	-5.5	1.660	21	7.5	1.626
9	-4.5	1.617	22	8.5	1.622
10	-3.5	1.609	23	9.5	1.614
11	-2.5	1.632	24	10.5	1.611
12	-1.5	1.634	25	11.5	1.611
13	-0.5	1.636	26	12.5	1.620

AMES TEST 22-116-1 JAN.1976
NASA SERIES NUMBER OS12

MODEL NUMBER 40-0
SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
9	1	PANEL 3(CALIBRATION)

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL	PT	P	TTF	M	Q	T	REYN	RHO
-IN-	PSIA	PSIA	DF	-	PSFA	DF	M/FT	SCF
1.00	11.45	8.99	76	0.60	324	40	2.724	0.001509

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	8.952	1	-12	8.945	11	-12	8.948	31	9	8.675
24	0	8.963	3	-6	8.932	13	-6	8.920	33	3	8.695
26	-6	8.949	5	0	8.943	15	0	8.918	37	-9	8.663
			7	6	8.918	17	6	8.902			
			9	12	8.783	19	12	8.823			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.038	10.144	8	0.312	11.122	15	1.130	11.426
2	0.077	10.388	9	0.349	11.159	16	1.265	11.191
3	0.116	10.517	10	0.477	11.242	17	1.399	11.440
4	0.155	10.523	11	0.605	11.412	18	1.534	11.342
5	0.196	10.776	12	0.732	11.295	19	1.666	11.395
6	0.236	10.755	13	0.863	11.259	20	1.799	11.375
7	0.274	10.841	14	0.994	11.386	21	1.931	11.349

CALIBRATION PANEL CENTER LINE PRESSURES

ORIF	X	PSIA	ORIF	X	PSIA
1	-12.5	8.960	14	0.5	8.920
2	-11.5	8.958	15	1.5	8.933
3	-10.5	8.943	16	2.5	8.936
4	-9.5	8.926	17	3.5	8.918
5	-8.5	8.950	18	4.5	8.912
6	-7.5	8.945	19	5.5	8.915
7	-6.5	8.947	20	6.5	8.905
8	-5.5	8.940	21	7.5	8.902
9	-4.5	8.938	22	8.5	8.868
10	-3.5	8.933	23	9.5	8.870
11	-2.5	8.940	24	10.5	8.863
12	-1.5	8.931	25	11.5	8.852
13	-0.5	8.938	26	12.5	8.871

AMES TEST 22-116-1 JAN.1976
NASA SERIES NUMBER OS12

MODEL NUMBER 40-0
SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
9	2	PANEL 3(CALIBRATION)

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
1.00	15.83	12.41	78	0.60	450	42	3.755	0.002077

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	12.340	1	-12	12.375	11	-12	12.349	31	9	11.921
24	0	12.345	3	-6	12.403	13	-6	12.318	33	3	12.006
26	-6	12.344	5	0	12.361	15	0	12.297	37	-9	11.909
			7	6	12.360	17	6	12.288			
			9	12	12.174	19	12	12.149			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.042	14.097	8	0.326	15.434	15	1.184	15.807
2	0.081	14.344	9	0.366	15.442	16	1.325	15.801
3	0.122	14.584	10	0.498	15.733	17	1.468	15.780
4	0.164	14.859	11	0.633	15.739	18	1.610	15.769
5	0.205	15.036	12	0.765	15.764	19	1.750	15.826
6	0.247	15.238	13	0.900	15.683	20	1.888	15.752
7	0.286	15.261	14	1.041	15.814	21	2.026	15.700

CALIBRATION PANEL CENTER LINE PRESSURES

ORIF	X	PSIA	ORIF	X	PSIA
1	-12.5	12.370	14	0.5	12.333
2	-11.5	12.351	15	1.5	12.325
3	-10.5	12.352	16	2.5	12.322
4	-9.5	12.367	17	3.5	12.320
5	-8.5	12.368	18	4.5	12.329
6	-7.5	12.367	19	5.5	12.309
7	-6.5	12.340	20	6.5	12.288
8	-5.5	12.335	21	7.5	12.288
9	-4.5	12.359	22	8.5	12.259
10	-3.5	12.346	23	9.5	12.224
11	-2.5	12.367	24	10.5	12.239
12	-1.5	12.323	25	11.5	12.233
13	-0.5	12.346	26	12.5	12.283

AMES TEST 22-116-1 JAN.1976
NASA SERIES NUMBER OS12

MODEL NUMBER 40-0
SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
9	3	PANEL 3(CALIBRATION)

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL	PT	P	TTF	M	Q	T	REYN	RHO
-IN-	PSIA	PSIA	DF	-	PSFA	DF	M/FT	SCF
1.00	21.09	16.53	79	0.60	600	43	4.988	0.002759

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	16.494	1	-12	16.544	11	-12	16.488	31	9	15.975
24	0	16.525	3	-6	16.495	13	-6	16.454	33	3	16.023
26	-6	16.491	5	0	16.472	15	0	16.443	37	-9	15.900
			7	6	16.490	17	6	16.395			
			9	12	16.259	19	12	16.227			

BOUNDARY LAYER PROBE

POS	Z	PT	POS	Z	PT	POS	Z	PT
NO.	-IN-	-PSIA-	NO.	-IN-	-PSIA-	NO.	-IN-	-PSIA-
1	0.042	18.980	8	0.327	20.522	15	1.177	20.997
2	0.082	19.336	9	0.367	20.811	16	1.315	21.006
3	0.123	19.614	10	0.497	21.089	17	1.456	21.074
4	0.165	19.857	11	0.631	20.941	18	1.595	21.099
5	0.207	20.018	12	0.763	21.074	19	1.734	21.058
6	0.247	20.305	13	0.898	21.000	20	1.873	20.994
7	0.288	20.586	14	1.036	21.068	21	2.014	21.086

CALIBRATION PANEL CENTER LINE PRESSURES

ORIF	X	PSIA	ORIF	X	PSIA
1	-12.5	16.510	14	0.5	16.480
2	-11.5	16.504	15	1.5	16.480
3	-10.5	16.498	16	2.5	16.462
4	-9.5	16.490	17	3.5	16.440
5	-8.5	16.482	18	4.5	16.401
6	-7.5	16.509	19	5.5	16.454
7	-6.5	16.507	20	6.5	16.394
8	-5.5	16.485	21	7.5	16.398
9	-4.5	16.483	22	8.5	16.356
10	-3.5	16.498	23	9.5	16.337
11	-2.5	16.498	24	10.5	16.312
12	-1.5	16.494	25	11.5	16.328
13	-0.5	16.475	26	12.5	16.396

AMES TEST 22-116-1 JAN.1976
NASA SERIES NUMBER 0S12

MODEL NUMBER 40-0
SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
10	1	PANEL 3(CALIBRATION)

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	21.08	16.54	78	0.60	597	42	4.988	0.002766

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	16.535	1	-12	16.527	11	-12	16.517	31	9	16.458
24	0	16.531	3	-6	16.511	13	-6	16.465	33	3	16.457
26	-6	16.537	5	0	16.520	15	0	16.496	37	-9	16.453
			7	6	16.514	17	6	16.500			
			9	12	16.538	19	12	16.542			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.040	18.631	8	0.319	19.438	15	1.148	20.853
2	0.080	18.807	9	0.358	19.707	16	1.284	20.837
3	0.120	19.021	10	0.485	19.848	17	1.420	20.762
4	0.160	19.228	11	0.616	20.155	18	1.557	20.948
5	0.201	19.395	12	0.745	20.308	19	1.691	20.948
6	0.241	19.441	13	0.876	20.435	20	1.825	20.833
7	0.281	19.340	14	1.010	20.729	21	1.961	20.864

CALIBRATION PANEL CENTER LINE PRESSURES

ORIF	X	PSIA	ORIF	X	PSIA
1	-12.5	16.530	14	0.5	16.548
2	-11.5	16.533	15	1.5	16.533
3	-10.5	16.532	16	2.5	16.531
4	-9.5	16.509	17	3.5	16.555
5	-8.5	16.549	18	4.5	16.573
6	-7.5	16.501	19	5.5	16.549
7	-6.5	16.527	20	6.5	16.555
8	-5.5	16.514	21	7.5	16.589
9	-4.5	16.532	22	8.5	16.575
10	-3.5	16.555	23	9.5	16.564
11	-2.5	16.504	24	10.5	16.588
12	-1.5	16.523	25	11.5	16.607
13	-0.5	16.510	26	12.5	16.648

AMES TEST 22-116-1 JAN.1976
NASA SERIES NUMBER OS12

MODEL NUMBER 40-0
SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
10	2	PANEL 3(CALIBRATION)

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL	PT	P	TTF	M	Q	T	REYN	RHO
-IN-	PSIA	PSIA	DF	-	PSFA	DF	M/FT	SCF
0.00	15.79	12.37	75	0.60	451	39	3.776	0.002081

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	12.359	1	-12	12.363	11	-12	12.353	31	9	12.352
24	0	12.359	3	-6	12.357	13	-6	12.335	33	3	12.336
26	-6	12.378	5	0	12.367	15	0	12.335	37	-9	12.335
			7	6	12.374	17	6	12.355			
			9	12	12.381	19	12	12.391			

BOUNDARY LAYER PROBE

POS	Z	PT	POS	Z	PT	POS	Z	PT
NO.	-IN-	-PSIA-	NO.	-IN-	-PSIA-	NO.	-IN-	-PSIA-
1	0.040	13.918	8	0.313	14.699	15	1.132	15.508
2	0.079	14.100	9	0.352	14.745	16	1.267	15.553
3	0.118	14.275	10	0.477	14.918	17	1.402	15.628
4	0.158	14.378	11	0.605	15.028	18	1.536	15.671
5	0.198	14.411	12	0.734	15.213	19	1.670	15.550
6	0.237	14.435	13	0.865	15.097	20	1.804	15.704
7	0.276	14.584	14	0.996	15.400	21	1.938	15.708

CALIBRATION PANEL CENTER LINE PRESSURES

ORIF	X	PSIA	ORIF	X	PSIA
1	-12.5	12.402	14	0.5	12.394
2	-11.5	12.390	15	1.5	12.403
3	-10.5	12.403	16	2.5	12.426
4	-9.5	12.384	17	3.5	12.423
5	-8.5	12.394	18	4.5	12.424
6	-7.5	12.394	19	5.5	12.446
7	-6.5	12.417	20	6.5	12.446
8	-5.5	12.376	21	7.5	12.424
9	-4.5	12.397	22	8.5	12.450
10	-3.5	12.403	23	9.5	12.461
11	-2.5	12.407	24	10.5	12.442
12	-1.5	12.416	25	11.5	12.430
13	-0.5	12.387	26	12.5	12.486

AMES TEST 22-116-1 JAN.1976
NASA SERIES NUMBER OS12

MODEL NUMBER 40-0
SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
10	3	PANEL 3(CALIBRATION)

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL	PT	P	TTF	M	Q	T	REYN	RHO
-IN-	PSIA	PSIA	DF	-	PSFA	DF	M/FT	SCF
0.00	11.40	8.95	69	0.60	323	34	2.756	0.001522

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	8.958	1	-12	8.945	11	-12	8.956	31	9	8.945
24	0	8.958	3	-6	8.938	13	-6	8.946	33	3	8.942
26	-6	8.965	5	0	8.955	15	0	8.959	37	-9	8.944
			7	6	8.970	17	6	8.958			
			9	12	8.949	19	12	8.980			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.041	10.032	8	0.312	10.457	15	1.131	10.892
2	0.079	10.194	9	0.349	10.548	16	1.268	11.056
3	0.118	10.269	10	0.476	10.497	17	1.406	11.270
4	0.157	10.334	11	0.603	10.744	18	1.545	11.316
5	0.197	10.395	12	0.730	10.930	19	1.682	11.319
6	0.236	10.451	13	0.861	10.923	20	1.818	11.321
7	0.274	10.395	14	0.993	11.090	21	1.956	11.270

CALIBRATION PANEL CENTER LINE PRESSURES

ORIF	X	PSIA	ORIF	X	PSIA
1	-12.5	8.972	14	0.5	9.007
2	-11.5	8.980	15	1.5	8.983
3	-10.5	8.981	16	2.5	8.972
4	-9.5	8.980	17	3.5	8.985
5	-8.5	8.980	18	4.5	8.977
6	-7.5	8.977	19	5.5	8.966
7	-6.5	8.977	20	6.5	8.986
8	-5.5	8.980	21	7.5	8.966
9	-4.5	8.983	22	8.5	8.961
10	-3.5	8.988	23	9.5	8.969
11	-2.5	9.002	24	10.5	8.975
12	-1.5	8.992	25	11.5	8.993
13	-0.5	8.997	26	12.5	9.007

AMES TEST 22-116-1 JAN.1976
NASA SERIES NUMBER 0S12

MODEL NUMBER 40-0
SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
11	1	PANEL 3(CALIBRATION)

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL	PT	P	TTF	M	Q	T	REYN	RHO
-IN-	PSIA	PSIA	DF	-	PSFA	DF	M/FT	SCF
0.00	6.74	3.98	68	0.90	326	-6	2.061	0.000737

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	3.960	1	-12	3.972	11	-12	3.983	31	9	4.094
24	0	4.004	3	-6	3.974	13	-6	3.946	33	3	4.093
26	-6	3.972	5	0	3.979	15	0	3.960	37	-9	4.094
			7	6	4.024	17	6	3.998			
			9	12	4.106	19	12	4.107			

BOUNDARY LAYER PROBE

POS	Z	PT	POS	Z	PT	POS	Z	PT
NO.	-IN-	-PSIA-	NO.	-IN-	-PSIA-	NO.	-IN-	-PSIA-
1	0.038	4.973	8	0.286	5.467	15	1.035	6.125
2	0.073	5.075	9	0.320	5.495	16	1.163	6.150
3	0.107	5.157	10	0.438	5.648	17	1.289	6.251
4	0.143	5.297	11	0.553	5.659	18	1.416	6.294
5	0.179	5.343	12	0.673	5.968	19	1.544	6.375
6	0.215	5.340	13	0.792	5.951	20	1.669	6.582
7	0.251	5.504	14	0.911	6.081	21	1.796	6.498

CALIBRATION PANEL CENTER LINE PRESSURES

ORIF	X	PSIA	ORIF	X	PSIA
1	-12.5	3.979	14	0.5	3.970
2	-11.5	3.978	15	1.5	3.987
3	-10.5	3.978	16	2.5	3.982
4	-9.5	3.973	17	3.5	3.997
5	-8.5	3.978	18	4.5	3.995
6	-7.5	3.972	19	5.5	4.010
7	-6.5	3.968	20	6.5	4.027
8	-5.5	3.984	21	7.5	4.049
9	-4.5	3.969	22	8.5	4.039
10	-3.5	3.983	23	9.5	4.071
11	-2.5	3.974	24	10.5	4.104
12	-1.5	3.984	25	11.5	4.130
13	-0.5	3.983	26	12.5	4.149

AMES TEST 22-116-1 JAN.1976
NASA SERIES NUMBER 0S12

MODEL NUMBER 40-0
SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
11	2	PANEL 3(CALIBRATION)

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL	PT	P	TTF	M	Q	T	REYN	RHO
-IN-	PSIA	PSIA	DF	-	PSFA	DF	M/FT	SCF
0.00	12.43	7.33	74	0.90	602	-1	3.743	0.001340

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	7.329	1	-12	7.286	11	-12	7.332	31	9	7.458
24	0	7.307	3	-6	7.273	13	-6	7.288	33	3	7.435
26	-6	7.319	5	0	7.289	15	0	7.273	37	-9	7.436
			7	6	7.370	17	6	7.340			
			9	12	7.512	19	12	7.483			

BOUNDARY LAYER PROBE

POS	Z	PT	POS	Z	PT	POS	Z	PT
NO.	-IN-	-PSIA-	NO.	-IN-	-PSIA-	NO.	-IN-	-PSIA-
1	0.036	9.422	8	0.271	10.408	15	0.991	11.835
2	0.069	9.688	9	0.304	10.512	16	1.115	11.760
3	0.102	9.864	10	0.418	10.782	17	1.236	12.150
4	0.136	9.998	11	0.529	11.142	18	1.357	12.263
5	0.169	10.173	12	0.644	11.187	19	1.479	12.347
6	0.204	10.303	13	0.757	11.539	20	1.600	12.325
7	0.238	10.383	14	0.874	11.721	21	1.720	12.380

CALIBRATION PANEL CENTER LINE PRESSURES

ORIF	X	PSIA	ORIF	X	PSIA
1	-12.5	7.332	14	0.5	7.347
2	-11.5	7.328	15	1.5	7.343
3	-10.5	7.321	16	2.5	7.327
4	-9.5	7.318	17	3.5	7.355
5	-8.5	7.343	18	4.5	7.374
6	-7.5	7.348	19	5.5	7.382
7	-6.5	7.310	20	6.5	7.440
8	-5.5	7.294	21	7.5	7.458
9	-4.5	7.313	22	8.5	7.467
10	-3.5	7.343	23	9.5	7.488
11	-2.5	7.321	24	10.5	7.487
12	-1.5	7.324	25	11.5	7.526
13	-0.5	7.335	26	12.5	7.654

AMES TEST 22-116-1 JAN.1976
NASA SERIES NUMBER OS12

MODEL NUMBER 40-0
SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
11	3	PANEL 3(CALIBRATION)

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL	PT	P	TTF	M	Q	T	REYN	RHO
-IN-	PSIA	PSIA	DF	-	PSFA'	DF	M/FT	SCF
0.00	18.64	11.02	80	0.90	900	4	5.529	0.001993

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	10.961	1	-12	10.959	11	-12	10.931	31	9	11.194
24	0	11.024	3	-6	10.947	13	-6	10.913	33	3	11.174
26	-6	10.960	5	0	10.983	15	0	10.982	37	-9	11.162
			7	6	11.019	17	6	10.971			
			9	12	11.212	19	12	11.225			

BOUNDARY LAYER PROBE

POS	Z	PT	POS	Z	PT	POS	Z	PT
NO.	-IN-	-PSIA-	NO.	-IN-	-PSIA-	NO.	-IN-	-PSIA-
1	0.037	14.365	8	0.277	15.804	15	1.005	18.018
2	0.071	14.667	9	0.310	15.857	16	1.127	18.092
3	0.104	14.963	10	0.425	16.267	17	1.247	18.382
4	0.138	15.075	11	0.537	16.396	18	1.367	18.313
5	0.173	15.196	12	0.654	17.162	19	1.490	18.468
6	0.208	15.353	13	0.768	17.347	20	1.611	18.588
7	0.243	15.747	14	0.886	17.765	21	1.731	18.530

CALIBRATION PANEL CENTER LINE PRESSURES

ORIF	X	PSIA	ORIF	X	PSIA
1	-12.5	10.996	14	0.5	10.977
2	-11.5	11.029	15	1.5	11.021
3	-10.5	11.015	16	2.5	11.013
4	-9.5	11.063	17	3.5	11.014
5	-8.5	11.021	18	4.5	11.049
6	-7.5	11.015	19	5.5	11.044
7	-6.5	11.002	20	6.5	11.177
8	-5.5	10.959	21	7.5	11.126
9	-4.5	11.028	22	8.5	11.158
10	-3.5	10.968	23	9.5	11.256
11	-2.5	11.069	24	10.5	11.290
12	-1.5	11.026	25	11.5	11.365
13	-0.5	10.975	26	12.5	11.553

AMES TEST 22-116-1 JAN.1976
NASA SERIES NUMBER OS12

MODEL NUMBER 40-0
SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
12	1	PANEL 3(CALIBRATION)

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL	PT	P	TTF	M	Q	T	REYN	RHO
-IN-	PSIA	PSIA	DF	-	PSFA	DF	M/FT	SCF
1.00	18.63	10.98	87	0.90	903	10	5.442	0.001962

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	10.969	1	-12	10.931	11	-12	10.935	31	9	10.677
24	0	10.989	3	-6	10.996	13	-6	10.851	33	3	10.709
26	-6	10.953	5	0	10.969	15	0	10.873	37	-9	10.669
			7	6	10.994	17	6	10.916			
			9	12	10.927	19	12	10.954			

BOUNDARY LAYER PROBE

POS	Z	PT	POS	Z	PT	POS	Z	PT
NO.	-IN-	-PSIA-	NO.	-IN-	-PSIA-	NO.	-IN-	-PSIA-
1	0.042	14.754	8	0.298	17.569	15	1.307	18.526
2	0.078	15.186	9	0.334	17.871	16	1.469	18.492
3	0.114	15.676	10	0.490	18.456	17	1.629	18.579
4	0.151	16.013	11	0.651	18.446	18	1.789	18.478
5	0.188	16.408	12	0.812	18.502	19	1.950	18.591
6	0.226	16.906	13	0.976	18.524	20	2.109	18.541
7	0.262	17.235	14	1.143	18.498	21	2.268	18.572

CALIBRATION PANEL CENTER LINE PRESSURES

ORIF	X	PSIA	ORIF	X	PSIA
1	-12.5	11.015	14	0.5	10.953
2	-11.5	11.026	15	1.5	10.968
3	-10.5	10.933	16	2.5	10.976
4	-9.5	10.960	17	3.5	11.033
5	-8.5	10.985	18	4.5	10.991
6	-7.5	10.990	19	5.5	11.054
7	-6.5	10.951	20	6.5	10.995
8	-5.5	10.978	21	7.5	11.018
9	-4.5	10.975	22	8.5	11.020
10	-3.5	10.981	23	9.5	11.061
11	-2.5	11.010	24	10.5	11.049
12	-1.5	10.981	25	11.5	11.143
13	-0.5	10.981	26	12.5	11.294

AMES TEST 22-116-1 JAN.1976
NASA SERIES NUMBER OS12

MODEL NUMBER 40-0
SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
12	2	PANEL 3(CALIBRATION)

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
1.00	12.43	7.35	84	0.90	600	8	3.653	0.001319

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	7.334	1	-12	7.315	11	-12	7.316	31	9	7.188
24	0	7.343	3	-6	7.286	13	-6	7.254	33	3	7.119
26	-6	7.353	5	0	7.294	15	0	7.234	37	-9	7.149
			7	6	7.295	17	6	7.289			
			9	12	7.307	19	12	7.324			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.037	9.796	8	0.274	11.445	15	1.170	12.457
2	0.071	10.092	9	0.307	11.774	16	1.318	12.432
3	0.103	10.258	10	0.446	12.333	17	1.468	12.413
4	0.137	10.616	11	0.586	12.256	18	1.616	12.423
5	0.172	10.836	12	0.728	12.435	19	1.763	12.405
6	0.206	11.021	13	0.873	12.424	20	1.912	12.364
7	0.241	11.383	14	1.020	12.424	21	2.059	12.466

CALIBRATION PANEL CENTER LINE PRESSURES

ORIF	X	PSIA	ORIF	X	PSIA
1	-12.5	7.334	14	0.5	7.303
2	-11.5	7.329	15	1.5	7.317
3	-10.5	7.331	16	2.5	7.333
4	-9.5	7.337	17	3.5	7.353
5	-8.5	7.347	18	4.5	7.355
6	-7.5	7.350	19	5.5	7.347
7	-6.5	7.307	20	6.5	7.340
8	-5.5	7.280	21	7.5	7.350
9	-4.5	7.296	22	8.5	7.353
10	-3.5	7.322	23	9.5	7.390
11	-2.5	7.321	24	10.5	7.359
12	-1.5	7.331	25	11.5	7.416
13	-0.5	7.322	26	12.5	7.533

AMES TEST 22-116-1 JAN.1976
NASA SERIES NUMBER OS12

MODEL NUMBER 40-0
SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
12	3	PANEL 3(CALIBRATION)

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL	PT	P	TTF	M	Q	T	REYN	RHO
-IN-	PSIA	PSIA	DF	-	PSFA	DF	M/FT	SCF
1.00	6.73	3.97	74	0.90	325	-1	2.026	0.000727

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	3.951	1	-12	3.958	11	-12	3.953	31	9	3.884
24	0	3.947	3	-6	3.973	13	-6	3.953	33	3	3.890
26	-6	3.939	5	0	3.966	15	0	3.958	37	-9	3.890
			7	6	3.975	17	6	3.947			
			9	12	3.969	19	12	3.963			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.035	5.172	8	0.258	5.829	15	1.102	6.640
2	0.066	5.271	9	0.289	6.095	16	1.242	6.623
3	0.097	5.431	10	0.423	6.220	17	1.383	6.544
4	0.129	5.547	11	0.554	6.552	18	1.523	6.635
5	0.162	5.691	12	0.690	6.685	19	1.662	6.614
6	0.195	5.781	13	0.826	6.583	20	1.801	6.649
7	0.227	5.772	14	0.961	6.657	21	1.940	6.697

CALIBRATION PANEL CENTER LINE PRESSURES

ORIF	X	PSIA	ORIF	X	PSIA
1	-12.5	3.969	14	0.5	3.965
2	-11.5	3.965	15	1.5	3.965
3	-10.5	3.966	16	2.5	3.966
4	-9.5	3.962	17	3.5	3.966
5	-8.5	3.962	18	4.5	3.968
6	-7.5	3.962	19	5.5	3.968
7	-6.5	3.959	20	6.5	3.970
8	-5.5	3.960	21	7.5	3.976
9	-4.5	3.960	22	8.5	3.980
10	-3.5	3.963	23	9.5	3.982
11	-2.5	3.963	24	10.5	4.002
12	-1.5	3.963	25	11.5	4.039
13	-0.5	3.963	26	12.5	4.101

AMES TEST 22-116-1 JAN.1976
NASA SERIES NUMBER OS12

MODEL NUMBER 40-0
SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
13	1	PANEL 3(CALIBRATION)

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL	PT	P	TTF	M	Q	T	REYN	RHO
-IN-	PSIA	PSIA	DF	-	PSFA	DF	M/FT	SCF
1.00	5.44	2.23	74	1.20	326	-46	1.744	0.000454

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	2.123	1	-12	2.115	11	-12	2.109	31	9	2.133
24	0	2.220	3	-6	2.132	13	-6	2.109	33	3	2.123
26	-6	2.119	5	0	2.120	15	0	2.106	37	-9	2.125
			7	6	2.148	17	6	2.123			
			9	12	2.133	19	12	2.114			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.034	3.170	8	0.266	4.524	15	1.147	5.260
2	0.067	3.434	9	0.298	4.485	16	1.295	5.329
3	0.099	3.628	10	0.435	5.153	17	1.444	5.341
4	0.132	3.678	11	0.572	5.197	18	1.593	5.307
5	0.166	3.989	12	0.712	5.171	19	1.740	5.338
6	0.200	3.927	13	0.854	5.325	20	1.888	5.319
7	0.234	4.110	14	0.998	5.257	21	2.036	5.359

CALIBRATION PANEL CENTER LINE PRESSURES

ORIF	X	PSIA	ORIF	X	PSIA
1	-12.5	2.226	14	0.5	2.084
2	-11.5	2.224	15	1.5	2.079
3	-10.5	2.135	16	2.5	2.046
4	-9.5	2.114	17	3.5	2.083
5	-8.5	2.147	18	4.5	2.155
6	-7.5	2.153	19	5.5	2.143
7	-6.5	2.155	20	6.5	2.153
8	-5.5	2.138	21	7.5	2.169
9	-4.5	2.120	22	8.5	2.166
10	-3.5	2.135	23	9.5	2.092
11	-2.5	2.141	24	10.5	2.039
12	-1.5	2.122	25	11.5	2.130
13	-0.5	2.112	26	12.5	2.221

AMES TEST 22-116-1 JAN.1976
NASA SERIES NUMBER OS12

MODEL NUMBER 40-0
SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
13	2	PANEL 3(CALIBRATION)

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL	PT	P	TTF	M	Q	T	REYN	RHO
-IN-	PSIA	PSIA	DF	-	PSFA	DF	M/FT	SCF
1.00	10.02	4.14	80	1.20	599	-40	3.158	0.000828

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	3.974	1	-12	3.973	11	-12	3.953	31	9	3.926
24	0	4.156	3	-6	3.991	13	-6	3.925	33	3	3.954
26	-6	3.977	5	0	3.964	15	0	3.930	37	-9	3.941
			7	6	3.996	17	6	3.943			
			9	12	3.993	19	12	3.995			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.037	6.390	8	0.281	8.930	15	1.188	9.825
2	0.072	6.731	9	0.314	9.223	16	1.336	9.840
3	0.106	7.065	10	0.456	9.766	17	1.487	9.840
4	0.141	7.486	11	0.599	9.816	18	1.635	9.838
5	0.177	7.902	12	0.742	9.811	19	1.782	9.856
6	0.213	8.282	13	0.888	9.817	20	1.931	9.832
7	0.247	8.562	14	1.037	9.840	21	2.078	9.882

CALIBRATION PANEL CENTER LINE PRESSURES

ORIF	X	PSIA	ORIF	X	PSIA
1	-12.5	4.188	14	0.5	3.899
2	-11.5	4.183	15	1.5	3.873
3	-10.5	3.986	16	2.5	3.826
4	-9.5	3.981	17	3.5	3.916
5	-8.5	4.031	18	4.5	4.013
6	-7.5	4.033	19	5.5	4.012
7	-6.5	4.036	20	6.5	4.031
8	-5.5	3.990	21	7.5	4.109
9	-4.5	3.948	22	8.5	4.016
10	-3.5	3.995	23	9.5	3.877
11	-2.5	3.992	24	10.5	3.818
12	-1.5	3.970	25	11.5	4.084
13	-0.5	3.950	26	12.5	4.076

AMES TEST 22-116-1 JAN.1976
NASA SERIES NUMBER OS12

MODEL NUMBER 40-0
SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
13	3	PANEL 3(CALIBRATION)

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL	PT	P	TTF	M	Q	T	REYN	RHO
-IN-	PSIA	PSIA	DF	-	PSFA	DF	M/FT	SCF
1.00	16.72	6.88	98	1.20	1001	-27	5.054	0.001335

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	6.623	1	-12	6.662	11	-12	6.648	31	9	6.577
24	0	6.933	3	-6	6.686	13	-6	6.553	33	3	6.662
26	-6	6.654	5	0	6.630	15	0	6.574	37	-9	6.521
			7	6	6.651	17	6	6.570			
			9	12	6.676	19	12	6.683			

BOUNDARY LAYER PROBE

POS	Z	PT	POS	Z	PT	POS	Z	PT
NO.	-IN-	-PSIA-	NO.	-IN-	-PSIA-	NO.	-IN-	-PSIA-
1	0.038	10.975	8	0.311	15.550	15	1.290	16.530
2	0.077	11.812	9	0.349	15.853	16	1.450	16.566
3	0.116	12.281	10	0.501	16.529	17	1.609	16.541
4	0.155	12.999	11	0.657	16.576	18	1.766	16.560
5	0.195	13.836	12	0.813	16.569	19	1.926	16.581
6	0.235	14.251	13	0.971	16.538	20	2.084	16.578
7	0.273	14.841	14	1.131	16.561	21	2.242	16.566

CALIBRATION PANEL CENTER LINE PRESSURES

ORIF	X	PSIA	ORIF	X	PSIA
1	-12.5	7.063	14	0.5	6.594
2	-11.5	6.897	15	1.5	6.490
3	-10.5	6.676	16	2.5	6.464
4	-9.5	6.731	17	3.5	6.704
5	-8.5	6.801	18	4.5	6.707
6	-7.5	6.785	19	5.5	6.760
7	-6.5	6.779	20	6.5	6.819
8	-5.5	6.691	21	7.5	6.897
9	-4.5	6.644	22	8.5	6.676
10	-3.5	6.733	23	9.5	6.445
11	-2.5	6.674	24	10.5	6.590
12	-1.5	6.678	25	11.5	6.782
13	-0.5	6.632	26	12.5	6.729

AMES TEST 22-116-1 JAN.1976
NASA SERIES NUMBER 0S12

MODEL NUMBER 40-0
SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
14	1	PANEL 3(CALIBRATION)

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL	PT	P	TTF	M	Q	T	REYN	RHO
-IN-	PSIA	PSIA	DF	-	PSFA	DF	M/FT	SCF
0.00	16.72	6.88	94	1.20	1001	-30	5.102	0.001344

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	6.714	1	-12	6.663	11	-12	6.627	31	9	6.770
24	0	6.928	3	-6	6.673	13	-6	6.595	33	3	6.641
26	-6	6.692	5	0	6.626	15	0	6.554	37	-9	6.616
			7	6	6.660	17	6	6.573			
			9	12	6.605	19	12	6.664			

BOUNDARY LAYER PROBE

POS	Z	PT	POS	Z	PT	POS	Z	PT
NO.	-IN-	-PSIA-	NO.	-IN-	-PSIA-	NO.	-IN-	-PSIA-
1	0.033	10.179	8	0.286	12.607	15	1.218	16.303
2	0.070	10.759	9	0.321	12.620	16	1.372	16.437
3	0.105	11.162	10	0.467	13.359	17	1.527	16.483
4	0.141	11.619	11	0.614	14.451	18	1.681	16.527
5	0.178	11.830	12	0.761	15.081	19	1.835	16.553
6	0.214	11.942	13	0.910	15.664	20	1.990	16.547
7	0.251	12.184	14	1.064	16.263	21	2.143	16.538

CALIBRATION PANEL CENTER LINE PRESSURES

ORIF	X	PSIA	ORIF	X	PSIA
1	-12.5	6.905	14	0.5	6.514
2	-11.5	6.906	15	1.5	6.534
3	-10.5	6.734	16	2.5	6.449
4	-9.5	6.664	17	3.5	6.439
5	-8.5	6.741	18	4.5	6.712
6	-7.5	6.746	19	5.5	6.718
7	-6.5	6.749	20	6.5	6.730
8	-5.5	6.684	21	7.5	6.797
9	-4.5	6.652	22	8.5	6.749
10	-3.5	6.653	23	9.5	6.695
11	-2.5	6.629	24	10.5	6.596
12	-1.5	6.579	25	11.5	6.677
13	-0.5	6.566	26	12.5	6.691

AMES TEST 22-116-1 JAN.1976
NASA SERIES NUMBER 0S12

MODEL NUMBER 40-0
SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
14	2	PANEL 3(CALIBRATION)

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL	PT	P	TTF	M	Q	T	REYN	RHO
-IN-	PSIA	PSIA	DF	-	PSFA	DF	M/FT	SCF
0.00	10.03	4.14	82	1.20	600	-39	3.147	0.000826

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	3.995	1	-12	3.995	11	-12	3.982	31	9	4.165
24	0	4.148	3	-6	3.989	13	-6	3.937	33	3	4.030
26	-6	4.009	5	0	3.979	15	0	3.932	37	-9	4.034
			7	6	3.982	17	6	3.945			
			9	12	3.969	19	12	3.995			

BOUNDARY LAYER PROBE

POS	Z	PT	POS	Z	PT	POS	Z	PT
NO.	-IN-	-PSIA-	NO.	-IN-	-PSIA-	NO.	-IN-	-PSIA-
1	0.031	6.098	8	0.263	7.333	15	1.116	9.604
2	0.064	6.337	9	0.295	7.498	16	1.257	9.807
3	0.096	6.457	10	0.430	8.045	17	1.398	9.940
4	0.129	6.852	11	0.562	8.619	18	1.540	9.868
5	0.163	6.989	12	0.699	8.773	19	1.680	9.962
6	0.197	7.093	13	0.836	9.153	20	1.820	9.916
7	0.231	7.220	14	0.974	9.603	21	1.962	9.871

CALIBRATION PANEL CENTER LINE PRESSURES

ORIF	X	PSIA	ORIF	X	PSIA
1	-12.5	4.133	14	0.5	3.882
2	-11.5	4.133	15	1.5	3.887
3	-10.5	4.007	16	2.5	3.841
4	-9.5	3.996	17	3.5	3.861
5	-8.5	4.036	18	4.5	3.984
6	-7.5	4.030	19	5.5	3.983
7	-6.5	4.018	20	6.5	3.991
8	-5.5	3.988	21	7.5	4.027
9	-4.5	3.951	22	8.5	4.028
10	-3.5	3.942	23	9.5	3.985
11	-2.5	3.945	24	10.5	3.923
12	-1.5	3.921	25	11.5	3.978
13	-0.5	3.899	26	12.5	4.010

AMES TEST 22-116-1 JAN.1976
NASA SERIES NUMBER OS12

MODEL NUMBER 40-0
SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
14	3	PANEL 3(CALIBRATION)

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL	PT	P	TTF	M	Q	T	REYN	RHO
-IN-	PSIA	PSIA	DF	-	PSFA	DF	M/FT	SCF
0.00	5.45	2.24	74	1.20	326	-46	1.744	0.000454

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	2.148	1	-12	2.133	11	-12	2.128	31	9	2.335
24	0	2.212	3	-6	2.132	13	-6	2.114	33	3	2.285
26	-6	2.141	5	0	2.123	15	0	2.112	37	-9	2.285
			7	6	2.138	17	6	2.121			
			9	12	2.136	19	12	2.148			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.031	3.148	8	0.252	3.732	15	1.085	4.949
2	0.063	3.305	9	0.282	3.757	16	1.227	5.060
3	0.094	3.362	10	0.413	4.089	17	1.370	5.111
4	0.126	3.457	11	0.543	4.112	18	1.515	5.134
5	0.157	3.475	12	0.676	4.512	19	1.657	5.140
6	0.189	3.580	13	0.809	4.534	20	1.800	5.335
7	0.221	3.442	14	0.943	4.708	21	1.944	5.276

CALIBRATION PANEL CENTER LINE PRESSURES

ORIF	X	PSIA	ORIF	X	PSIA
1	-12.5	2.200	14	0.5	2.085
2	-11.5	2.200	15	1.5	2.088
3	-10.5	2.174	16	2.5	2.072
4	-9.5	2.128	17	3.5	2.109
5	-8.5	2.144	18	4.5	2.153
6	-7.5	2.151	19	5.5	2.147
7	-6.5	2.149	20	6.5	2.152
8	-5.5	2.143	21	7.5	2.153
9	-4.5	2.141	22	8.5	2.155
10	-3.5	2.139	23	9.5	2.139
11	-2.5	2.112	24	10.5	2.107
12	-1.5	2.114	25	11.5	2.127
13	-0.5	2.098	26	12.5	2.175

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER OS12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
15	1	PANEL 2(L/W)= 1.5

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	5.25	1.67	65	1.39	326	-82	1.696	0.000370

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	1.539	1	-12	1.566	11	-12	1.539	31	9	1.579
24	0	1.549	3	-6	1.581	13	-6	1.562	33	3	1.571
26	-6	1.517	5	0	1.582	15	0	1.566	37	-9	1.564
			7	6	1.591	17	6	1.564			
			9	12	1.581	19	12	1.577			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.029	2.665	8	0.186	2.992	15	0.694	4.009
2	0.054	2.726	9	0.206	3.048	16	0.767	4.040
3	0.078	2.808	10	0.293	3.146	17	0.845	4.367
4	0.100	2.856	11	0.375	3.328	18	0.921	4.302
5	0.123	2.940	12	0.457	3.586	19	1.000	4.543
6	0.145	3.017	13	0.535	3.653	20	1.081	4.635
7	0.165	3.005	14	0.617	3.896	21	1.161	4.495

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER OS12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
15	2	PANEL 2(L/W)= 1.5

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	11.28	3.56	72	1.40	700	-77	3.579	0.000781

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	3.613	1	-12	3.541	11	-12	3.500	31	9	4.340
24	0	3.567	3	-6	3.588	13	-6	3.534	33	3	3.844
26	-6	3.508	5	0	3.557	15	0	3.545	37	-9	3.735
			7	6	3.557	17	6	3.529			
			9	12	3.918	19	12	3.570			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.027	6.185	8	0.171	7.207	15	0.792	10.029
2	0.048	6.409	9	0.193	7.205	16	0.892	10.187
3	0.067	6.560	10	0.295	7.724	17	0.994	10.277
4	0.088	6.681	11	0.395	8.301	18	1.097	10.576
5	0.108	6.804	12	0.495	8.586	19	1.200	10.648
6	0.129	6.937	13	0.596	9.091	20	1.303	10.678
7	0.150	7.054	14	0.695	9.464	21	1.405	10.721

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER 0S12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
15	3	PANEL 2(L/W)= 1.5

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	17.73	5.57	82	1.40	1101	-71	5.481	0.001200

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	5.784	1	-12	5.643	11	-12	5.663	31	9	7.287
24	0	5.703	3	-6	5.645	13	-6	5.593	33	3	6.178
26	-6	5.730	5	0	5.658	15	0	5.613	37	-9	5.816
			7	6	5.598	17	6	5.519			
			9	12	6.502	19	12	5.620			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.033	10.099	8	0.203	11.694	15	1.041	16.659
2	0.057	10.412	9	0.228	11.952	16	1.183	16.936
3	0.082	10.669	10	0.362	12.991	17	1.322	16.989
4	0.106	11.024	11	0.495	14.114	18	1.462	17.084
5	0.130	11.280	12	0.631	14.787	19	1.599	17.155
6	0.154	11.424	13	0.765	15.578	20	1.737	17.140
7	0.178	11.437	14	0.902	16.368	21	1.874	17.133

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER 0S12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
16	1	PANEL 2(L/W)= 1.5

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
1.00	17.70	5.55	97	1.40	1099	-60	5.276	0.001165

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	5.844	1	-12	5.649	11	-12	5.643	31	9	5.607
24	0	5.759	3	-6	5.647	13	-6	5.575	33	3	5.792
26	-6	5.834	5	0	5.690	15	0	5.617	37	-9	5.569
			7	6	5.638	17	6	5.501			
			9	12	5.660	19	12	5.636			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.043	10.974	8	0.304	15.778	15	1.447	17.047
2	0.081	11.657	9	0.340	16.177	16	1.631	17.063
3	0.117	12.376	10	0.520	17.017	17	1.815	17.097
4	0.155	13.049	11	0.703	16.843	18	2.000	17.010
5	0.194	13.985	12	0.887	16.904	19	2.182	17.017
6	0.231	14.533	13	1.074	16.941	20	2.365	16.966
7	0.268	15.231	14	1.261	17.001	21	2.484	16.955

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER 0S12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
16	2	PANEL 2(L/W)= 1.5

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
1.00	11.29	3.55	94	1.40	701	-62	3.394	0.000749

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	3.692	1	-12	3.625	11	-12	3.614	31	9	3.574
24	0	3.647	3	-6	3.567	13	-6	3.548	33	3	3.644
26	-6	3.704	5	0	3.588	15	0	3.557	37	-9	3.562
			7	6	3.592	17	6	3.540			
			9	12	3.602	19	12	3.573			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.039	7.015	8	0.284	10.186	15	1.258	10.917
2	0.074	7.453	9	0.317	10.214	16	1.414	10.983
3	0.109	7.873	10	0.471	10.842	17	1.575	10.951
4	0.143	8.372	11	0.628	10.949	18	1.732	11.019
5	0.179	8.741	12	0.782	10.837	19	1.891	10.978
6	0.215	9.321	13	0.939	10.890	20	2.049	10.976
7	0.249	9.609	14	1.098	10.890	21	2.206	10.967

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER OS12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
16	3	PANEL 2(L/W)= 1.5

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
1.00	5.26	1.65	80	1.40	326	-72	1.635	0.000358

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	1.583	1	-12	1.578	11	-12	1.565	31	9	1.598
24	0	1.557	3	-6	1.610	13	-6	1.580	33	3	1.609
26	-6	1.550	5	0	1.609	15	0	1.604	37	-9	1.601
			7	6	1.619	17	6	1.598			
			9	12	1.609	19	12	1.609			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.035	3.103	8	0.247	4.382	15	1.117	5.068
2	0.066	3.202	9	0.277	4.508	16	1.265	5.079
3	0.095	3.379	10	0.418	4.821	17	1.420	5.091
4	0.125	3.615	11	0.555	5.119	18	1.573	5.094
5	0.156	3.808	12	0.698	5.061	19	1.727	5.126
6	0.186	3.891	13	0.837	5.068	20	1.880	5.119
7	0.217	3.943	14	0.973	5.064	21	2.031	5.110

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER 0S12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
17	1	PANEL 2(L/W)= 1.5

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
1.00	11.45	8.98	77	0.60	326	41	2.722	0.001505

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	8.933	1	-12	8.949	11	-12	8.948	31	9	8.649
24	0	8.941	3	-6	8.948	13	-6	8.928	33	3	8.681
26	-6	8.948	5	0	8.941	15	0	8.937	37	-9	8.629
			7	6	8.931	17	6	8.924			
			9	12	8.799	19	12	8.800			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.033	10.276	8	0.238	11.034	15	1.080	11.340
2	0.063	10.452	9	0.266	10.983	16	1.221	11.425
3	0.091	10.540	10	0.399	11.227	17	1.362	11.402
4	0.120	10.560	11	0.531	11.374	18	1.505	11.406
5	0.150	10.750	12	0.668	11.332	19	1.645	11.427
6	0.179	10.831	13	0.803	11.417	20	1.789	11.307
7	0.209	10.788	14	0.939	11.452	21	1.933	11.326

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER OS12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
17	2	PANEL 2(L/W)= 1.5

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
1.00	15.80	12.37	77	0.60	451	40	3.765	0.002076

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	12.368	1	-12	12.394	11	-12	12.378	31	9	11.991
24	0	12.368	3	-6	12.359	13	-6	12.339	33	3	11.984
26	-6	12.355	5	0	12.355	15	0	12.347	37	-9	11.943
			7	6	12.363	17	6	12.321			
			9	12	12.179	19	12	12.183			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.034	14.280	8	0.256	15.164	15	1.175	15.766
2	0.066	14.366	9	0.287	15.371	16	1.329	15.811
3	0.097	14.617	10	0.429	15.661	17	1.487	15.571
4	0.129	14.765	11	0.571	15.682	18	1.644	15.642
5	0.161	14.848	12	0.719	15.658	19	1.799	15.762
6	0.193	15.028	13	0.868	15.691	20	1.958	15.673
7	0.224	15.040	14	1.018	15.674	21	2.117	15.839

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER 0S12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
17	3	PANEL 2(L/W)= 1.5

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
1.00	21.11	16.54	81	0.60	601	44	4.977	0.002755

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	16.475	1	-12	16.487	11	-12	16.476	31	9	15.929
24	0	16.502	3	-6	16.491	13	-6	16.488	33	3	16.014
26	-6	16.468	5	0	16.447	15	0	16.445	37	-9	15.914
			7	6	16.481	17	6	16.430			
			9	12	16.214	19	12	16.229			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.034	19.175	8	0.258	20.611	15	1.174	21.099
2	0.067	19.496	9	0.288	20.655	16	1.325	20.963
3	0.094	19.565	10	0.431	20.920	17	1.478	21.032
4	0.130	19.815	11	0.574	21.007	18	1.629	21.000
5	0.163	19.990	12	0.721	21.100	19	1.779	21.183
6	0.195	19.948	13	0.870	21.083	20	1.930	21.135
7	0.227	20.331	14	1.021	21.056	21	2.080	21.133

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER OS12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
18	1	PANEL 2(L/W)= 1.5

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	21.09	16.53	80	0.60	601	43	4.987	0.002758

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	16.467	1	-12	16.538	11	-12	16.511	31	9	16.428
24	0	16.489	3	-6	16.501	13	-6	16.464	33	3	16.438
26	-6	16.472	5	0	16.516	15	0	16.499	37	-9	16.390
			7	6	16.548	17	6	16.501			
			9	12	16.535	19	12	16.510			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.034	18.929	8	0.256	19.440	15	1.153	20.828
2	0.066	18.981	9	0.287	19.601	16	1.300	20.886
3	0.097	19.228	10	0.428	19.802	17	1.446	20.978
4	0.130	19.135	11	0.569	20.250	18	1.592	20.232
5	0.161	19.306	12	0.714	20.500	19	1.737	21.115
6	0.194	19.500	13	0.859	20.395	20	1.882	21.027
7	0.224	19.485	14	1.004	20.639	21	2.027	21.146

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER OS12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
18	2	PANEL 2(L/W)= 1.5

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	15.82	12.41	74	0.60	449	38	3.786	0.002092

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	12.359	1	-12	12.406	11	-12	12.385	31	9	12.375
24	0	12.379	3	-6	12.391	13	-6	12.385	33	3	12.329
26	-6	12.374	5	0	12.405	15	0	12.359	37	-9	12.328
			7	6	12.422	17	6	12.392			
			9	12	12.420	19	12	12.420			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.034	14.109	8	0.254	14.621	15	1.146	15.628
2	0.066	14.174	9	0.284	14.735	16	1.296	15.588
3	0.097	14.273	10	0.424	14.888	17	1.447	15.757
4	0.130	14.460	11	0.563	15.106	18	1.600	15.798
5	0.161	14.442	12	0.706	15.184	19	1.749	15.600
6	0.192	14.560	13	0.849	15.425	20	1.898	15.703
7	0.223	14.594	14	0.995	15.427	21	2.047	15.820

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER OS12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
18	3	PANEL 2(L/W)= 1.5

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	11.46	8.99	71	0.60	325	35	2.765	0.001525

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	8.980	1	-12	8.977	11	-12	8.982	31	9	8.995
24	0	8.996	3	-6	8.985	13	-6	8.967	33	3	8.953
26	-6	8.998	5	0	8.988	15	0	8.987	37	-9	8.947
			7	6	8.991	17	6	8.986			
			9	12	8.992	19	12	8.996			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.033	10.129	8	0.245	10.640	15	1.111	11.283
2	0.064	10.261	9	0.274	10.603	16	1.259	11.394
3	0.094	10.351	10	0.410	10.573	17	1.408	11.326
4	0.124	10.443	11	0.544	10.891	18	1.559	11.375
5	0.155	10.406	12	0.684	11.033	19	1.708	11.370
6	0.185	10.404	13	0.823	11.154	20	1.857	11.342
7	0.215	10.539	14	0.964	11.179	21	2.007	11.440

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER OS12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
19	1	PANEL 2(L/W)= 1.5

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	5.44	2.24	57	1.20	325	-59	1.819	0.000470

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	2.142	1	-12	2.125	11	-12	2.122	31	9	2.148
24	0	2.167	3	-6	2.141	13	-6	2.120	33	3	2.146
26	-6	2.147	5	0	2.137	15	0	2.121	37	-9	2.130
			7	6	2.138	17	6	2.131			
			9	12	2.121	19	12	2.136			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.027	3.190	8	0.169	3.600	15	0.730	4.635
2	0.047	3.305	9	0.188	3.657	16	0.816	4.648
3	0.068	3.440	10	0.285	3.755	17	0.902	4.738
4	0.088	3.407	11	0.376	4.049	18	0.991	4.830
5	0.108	3.496	12	0.466	4.139	19	1.083	5.049
6	0.128	3.551	13	0.553	4.262	20	1.169	4.882
7	0.149	3.561	14	0.643	4.426	21	1.257	4.932

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER OS12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
19	2	PANEL 2(L/W)= 1.5

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	10.02	4.14	67	1.20	599	-51	3.265	0.000850

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	4.005	1	-12	4.002	11	-12	3.991	31	9	4.003
24	0	4.133	3	-6	4.011	13	-6	3.980	33	3	3.933
26	-6	4.013	5	0	4.012	15	0	3.963	37	-9	3.935
			7	6	3.993	17	6	3.971			
			9	12	3.993	19	12	3.995			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.244	7.337	8	0.305	7.578	15	0.793	8.909
2	0.253	7.443	9	0.314	7.594	16	0.875	9.415
3	0.262	7.408	10	0.372	7.776	17	0.956	9.329
4	0.271	7.208	11	0.458	8.000	18	1.040	9.249
5	0.279	7.452	12	0.540	8.319	19	1.122	9.714
6	0.287	7.427	13	0.627	8.677	20	1.202	9.631
7	0.297	7.584	14	0.711	8.871	21	1.280	9.551

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER OS12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
19	3	PANEL 2(L/W)= 1.5

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	16.72	6.84	78	1.21	1002	-43	5.295	0.001378

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	6.806	1	-12	6.689	11	-12	6.742	31	9	6.813
24	0	6.958	3	-6	6.702	13	-6	6.707	33	3	6.653
26	-6	6.817	5	0	6.739	15	0	6.690	37	-9	6.748
			7	6	6.764	17	6	6.701			
			9	12	6.782	19	12	6.753			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.021	10.611	8	0.146	11.697	15	0.686	14.906
2	0.039	10.698	9	0.164	11.686	16	0.772	15.208
3	0.058	10.867	10	0.254	12.463	17	0.861	15.777
4	0.076	11.161	11	0.341	12.772	18	0.947	15.873
5	0.094	11.108	12	0.428	13.290	19	1.039	16.197
6	0.111	11.433	13	0.511	13.951	20	1.128	16.168
7	0.128	11.383	14	0.599	14.338	21	1.218	16.332

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER 0S12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
20	1	PANEL 2(L/W)= 1.5

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
1.00	16.70	6.90	88	1.20	999	-34	5.162	0.001360

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	6.587	1	-12	6.538	11	-12	6.543	31	9	6.561
24	0	6.747	3	-6	6.546	13	-6	6.564	33	3	6.498
26	-6	6.550	5	0	6.572	15	0	6.577	37	-9	6.508
			7	6	6.591	17	6	6.530			
			9	12	6.675	19	12	6.664			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.037	11.153	8	0.286	15.059	15	1.267	16.423
2	0.072	11.764	9	0.320	15.342	16	1.425	16.384
3	0.107	12.427	10	0.475	16.319	17	1.584	16.485
4	0.143	12.891	11	0.633	16.472	18	1.742	16.504
5	0.181	13.591	12	0.789	16.467	19	1.903	16.515
6	0.217	13.999	13	0.947	16.396	20	2.063	16.509
7	0.251	14.389	14	1.107	16.358	21	2.223	16.510

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER OS12

MODEL NUMBER 40-O

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
20	2	PANEL 2(L/W)= 1.5

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
1.00	10.04	4.14	87	1.20	601	-36	3.116	0.000819

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	3.883	1	-12	3.845	11	-12	3.874	31	9	3.841
24	0	3.940	3	-6	3.863	13	-6	3.825	33	3	3.847
26	-6	3.897	5	0	3.828	15	0	3.845	37	-9	3.834
			7	6	3.878	17	6	3.825			
			9	12	3.878	19	12	3.888			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.032	6.652	8	0.273	9.193	15	1.259	9.920
2	0.067	7.098	9	0.307	9.376	16	1.420	9.891
3	0.099	7.403	10	0.462	9.914	17	1.579	9.962
4	0.134	7.865	11	0.621	9.888	18	1.737	9.957
5	0.169	8.066	12	0.777	9.983	19	1.897	9.956
6	0.205	8.336	13	0.935	9.946	20	2.056	9.938
7	0.240	8.768	14	1.097	9.931	21	2.215	9.962

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER 0S12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
20	3	PANEL 2(L/W)= 1.5

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
1.00	5.44	2.23	76	1.20	326	-44	1.732	0.000451

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	2.075	1	-12	2.060	11	-12	2.035	31	9	2.073
24	0	2.073	3	-6	2.035	13	-6	2.035	33	3	2.053
26	-6	2.076	5	0	2.033	15	0	2.037	37	-9	2.049
			7	6	2.033	17	6	2.031			
			9	12	2.034	19	12	2.040			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.031	3.403	8	0.267	4.381	15	1.201	5.268
2	0.066	3.485	9	0.300	4.868	16	1.356	5.285
3	0.099	3.804	10	0.447	5.239	17	1.515	5.314
4	0.133	3.850	11	0.595	5.292	18	1.668	5.319
5	0.167	4.146	12	0.744	5.174	19	1.822	5.317
6	0.202	4.100	13	0.894	5.279	20	1.978	5.295
7	0.235	4.387	14	1.046	5.260	21	2.131	5.331

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER OS12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
21	1	PANEL 2(L/W)= 1.5

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
1.00	6.76	3.98	71	0.90	328	-3	2.051	0.000732

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	3.952	1	-12	3.941	11	-12	3.948	31	9	3.936
24	0	3.927	3	-6	3.948	13	-6	3.915	33	3	3.935
26	-6	3.935	5	0	3.956	15	0	3.922	37	-9	3.936
			7	6	3.970	17	6	3.945			
			9	12	3.977	19	12	3.956			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.029	5.270	8	0.248	5.914	15	1.140	6.563
2	0.060	5.411	9	0.279	6.137	16	1.292	6.647
3	0.091	5.452	10	0.420	6.380	17	1.444	6.594
4	0.122	5.584	11	0.559	6.618	18	1.597	6.698
5	0.154	5.716	12	0.701	6.439	19	1.747	6.686
6	0.186	5.821	13	0.845	6.538	20	1.900	6.624
7	0.217	5.819	14	0.989	6.684	21	2.052	6.659

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER 0S12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
21	2	PANEL 2(L/W)= 1.5

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
1.00	12.44	7.34	76	0.90	602	1	3.728	0.001338

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	7.279	1	-12	7.305	11	-12	7.323	31	9	7.239
24	0	7.295	3	-6	7.268	13	-6	7.263	33	3	7.210
26	-6	7.290	5	0	7.316	15	0	7.294	37	-9	7.214
			7	6	7.318	17	6	7.277			
			9	12	7.349	19	12	7.376			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.031	10.101	8	0.253	11.653	15	1.149	12.314
2	0.062	10.274	9	0.284	11.787	16	1.299	12.404
3	0.093	10.502	10	0.425	12.139	17	1.450	12.404
4	0.125	10.720	11	0.565	12.330	18	1.600	12.450
5	0.157	10.967	12	0.708	12.428	19	1.747	12.480
6	0.190	11.183	13	0.852	12.273	20	1.897	12.469
7	0.222	11.424	14	0.998	12.437	21	2.048	12.347

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER OS12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
21	3	PANEL 2(L/W)= 1.5

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
1.00	18.64	11.04	80	0.90	898	5	5.524	0.001995

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	10.932	1	-12	11.002	11	-12	11.002	31	9	10.871
24	0	10.963	3	-6	10.954	13	-6	10.920	33	3	10.818
26	-6	10.942	5	0	10.989	15	0	10.931	37	-9	10.857
			7	6	11.013	17	6	10.975			
			9	12	11.024	19	12	11.006			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.033	15.165	8	0.268	17.474	15	1.201	18.668
2	0.067	15.516	9	0.299	17.909	16	1.353	18.668
3	0.100	15.745	10	0.446	18.558	17	1.508	18.715
4	0.134	16.249	11	0.594	18.676	18	1.661	18.702
5	0.168	16.545	12	0.743	18.678	19	1.815	18.734
6	0.202	17.110	13	0.892	18.633	20	1.971	18.697
7	0.235	17.274	14	1.046	18.679	21	2.125	18.709

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER OS12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
22	1	PANEL 2(L/W)= 1.5

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	18.65	10.98	81	0.90	904	5	5.523	0.001983

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	10.904	1	-12	10.993	11	-12	10.973	31	9	11.286
24	0	10.964	3	-6	10.987	13	-6	10.967	33	3	11.182
26	-6	10.962	5	0	11.019	15	0	10.889	37	-9	11.249
			7	6	11.077	17	6	11.053			
			9	12	11.297	19	12	11.305			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.031	14.031	8	0.251	13.965	15	1.133	15.139
2	0.062	14.009	9	0.280	14.095	16	1.278	15.176
3	0.093	13.895	10	0.419	14.262	17	1.427	15.173
4	0.125	13.869	11	0.555	14.457	18	1.575	15.261
5	0.157	14.031	12	0.696	14.562	19	1.722	15.071
6	0.190	13.924	13	0.839	14.737	20	1.869	15.243
7	0.221	13.986	14	0.984	14.780	21	2.017	15.280

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER OS12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
22	2	PANEL 2(L/W)= 1.5

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	18.66	11.03	75	0.90	900	0	5.601	0.002014

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	10.950	1	-12	10.981	11	-12	11.014	31	9	11.284
24	0	10.982	3	-6	10.934	13	-6	10.952	33	3	11.238
26	-6	10.971	5	0	10.991	15	0	10.939	37	-9	11.207
			7	6	11.082	17	6	11.014			
			9	12	11.350	19	12	11.247			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.026	14.622	8	0.218	15.523	15	0.985	17.951
2	0.054	14.810	9	0.245	15.675	16	1.117	18.331
3	0.081	15.005	10	0.367	16.320	17	1.249	18.356
4	0.109	15.203	11	0.487	16.698	18	1.379	18.494
5	0.136	15.287	12	0.611	17.169	19	1.511	18.547
6	0.163	15.440	13	0.734	17.339	20	1.639	18.633
7	0.190	15.582	14	0.860	17.867	21	1.766	18.630

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER OS12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
22	3	PANEL 2(L/W)= 1.5

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	12.43	7.34	73	0.90	600	-1	3.747	0.001345

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	7.330	1	-12	7.323	11	-12	7.328	31	9	7.576
24	0	7.303	3	-6	7.330	13	-6	7.294	33	3	7.510
26	-6	7.342	5	0	7.309	15	0	7.307	37	-9	7.536
			7	6	7.372	17	6	7.369			
			9	12	7.535	19	12	7.580			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.069	9.884	8	0.248	10.479	15	0.991	12.065
2	0.093	10.057	9	0.273	10.482	16	1.117	12.048
3	0.118	10.106	10	0.393	10.698	17	1.242	12.051
4	0.145	10.167	11	0.511	11.162	18	1.365	12.337
5	0.170	10.273	12	0.632	11.292	19	1.491	12.337
6	0.196	10.386	13	0.749	11.505	20	1.611	12.325
7	0.223	10.340	14	0.871	11.868	21	1.733	12.261

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER OS12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
22	4	PANEL 2(L/W)= 1.5

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
-0.00	6.75	3.99	66	0.90	326	-8	2.072	0.000741

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	3.960	1	-12	3.962	11	-12	3.981	31	9	4.122
24	0	3.976	3	-6	3.962	13	-6	3.963	33	3	4.084
26	-6	3.957	5	0	3.966	15	0	3.958	37	-9	4.092
			7	6	4.008	17	6	4.012			
			9	12	4.113	19	12	4.123			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.185	5.402	8	0.348	5.645	15	1.058	6.379
2	0.208	5.363	9	0.370	5.712	16	1.179	6.398
3	0.232	5.502	10	0.480	5.823	17	1.301	6.516
4	0.255	5.536	11	0.593	5.852	18	1.418	6.518
5	0.277	5.553	12	0.705	6.135	19	1.539	6.556
6	0.301	5.549	13	0.820	6.197	20	1.655	6.359
7	0.324	5.692	14	0.935	6.362	21	1.769	6.470

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER OS12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
23	1	PANEL 2(L/W)= 1.5

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	22.23	7.01	85	1.40	1380	-68	6.830	0.001503

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	7.304	1	-12	7.131	11	-12	7.169	31	9	9.806
24	0	7.341	3	-6	7.264	13	-6	7.314	33	3	8.947
26	-6	7.232	5	0	7.141	15	0	7.146	37	-9	9.179
			7	6	7.209	17	6	7.105			
			9	12	8.972	19	12	7.383			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.423	16.458	8	0.609	19.063	15	1.424	21.429
2	0.449	17.172	9	0.636	18.372	16	1.557	21.525
3	0.475	17.399	10	0.763	19.481	17	1.690	21.518
4	0.500	17.399	11	0.893	20.185	18	1.823	21.488
5	0.527	17.434	12	1.025	20.910	19	1.961	21.611
6	0.553	17.842	13	1.159	21.173	20	2.098	21.620
7	0.580	18.200	14	1.291	21.379	21	2.236	21.624

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER 0S12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
24	1	PANEL 2(L/W)= 1.5

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
1.00	17.71	5.57	95	1.40	1099	-61	5.312	0.001173

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	5.833	1	-12	5.657	11	-12	5.647	31	9	5.688
24	0	5.827	3	-6	5.684	13	-6	5.687	33	3	5.832
26	-6	5.850	5	0	5.724	15	0	5.688	37	-9	5.566
			7	6	5.684	17	6	5.573			
			9	12	5.675	19	12	5.677			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.038	11.008	8	0.287	15.564	15	1.310	17.161
2	0.074	11.702	9	0.322	16.029	16	1.479	17.149
3	0.108	12.412	10	0.480	17.078	17	1.645	17.222
4	0.144	13.088	11	0.645	17.117	18	1.813	17.236
5	0.181	13.633	12	0.809	17.001	19	1.982	17.189
6	0.217	14.543	13	0.975	17.071	20	2.149	17.189
7	0.252	15.022	14	1.144	17.102	21	2.317	17.161

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER 0S12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
25	1	PANEL 2(L/W)= 1.5

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
1.00	15.69	6.50	92	1.20	938	-31	4.805	0.001272

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	6.268	1	-12	6.246	11	-12	6.176	31	9	6.210
24	0	6.503	3	-6	6.290	13	-6	6.189	33	3	6.215
26	-6	6.251	5	0	6.262	15	0	6.245	37	-9	6.172
			7	6	6.257	17	6	6.204			
			9	12	6.346	19	12	6.283			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.033	10.821	8	0.291	14.357	15	1.323	15.548
2	0.070	11.303	9	0.326	14.888	16	1.491	15.487
3	0.107	11.880	10	0.487	15.497	17	1.656	15.591
4	0.143	12.381	11	0.653	15.564	18	1.820	15.561
5	0.181	13.005	12	0.817	15.644	19	1.987	15.608
6	0.218	13.422	13	0.985	15.564	20	2.151	15.642
7	0.255	14.175	14	1.155	15.506	21	2.317	15.614

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER OS12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
26	1	PANEL 2(L/W)= 1.5

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	27.66	11.52	86	1.19	1651	-35	8.598	0.002276

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	11.167	1	-12	11.333	11	-12	11.047	31	9	12.513
24	0	11.292	3	-6	11.328	13	-6	11.161	33	3	11.645
26	-6	11.036	5	0	11.240	15	0	11.042	37	-9	11.776
			7	6	11.231	17	6	11.101			
			9	12	11.464	19	12	11.235			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.027	18.081	8	0.208	20.143	15	0.947	26.719
2	0.054	18.253	9	0.233	20.490	16	1.068	27.219
3	0.080	18.797	10	0.354	21.839	17	1.188	27.455
4	0.104	19.147	11	0.474	23.230	18	1.307	27.482
5	0.130	19.128	12	0.593	24.160	19	1.429	27.597
6	0.156	19.980	13	0.712	24.956	20	1.549	27.602
7	0.182	20.094	14	0.830	26.072	21	1.671	27.624

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER OS12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
26	2	PANEL 2(L/W)= 1.5

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	27.65	11.33	86	1.20	1658	-37	8.589	0.002248

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	11.204	1	-12	11.188	11	-12	11.232	31	9	12.833
24	0	11.394	3	-6	11.196	13	-6	11.103	33	3	12.092
26	-6	11.230	5	0	11.236	15	0	11.131	37	-9	11.897
			7	6	11.154	17	6	11.145			
			9	12	11.341	19	12	11.205			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.027	17.788	8	0.232	20.107	15	1.106	27.053
2	0.057	18.267	9	0.262	20.610	16	1.249	27.279
3	0.085	18.655	10	0.400	21.765	17	1.391	27.263
4	0.115	18.853	11	0.540	23.024	18	1.538	27.208
5	0.144	19.236	12	0.681	24.818	19	1.683	27.313
6	0.173	19.410	13	0.821	25.318	20	1.824	27.294
7	0.202	19.992	14	0.961	26.233	21	1.969	27.301

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER 0S12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
27	1	PANEL 2(L/W)= 1.5 WITH SHOCK GENERATOR

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	22.27	7.03	81	1.40	1382	-71	6.912	0.001518

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	7.272	1	-12	7.101	11	-12	7.120	31	9	7.050
24	0	7.311	3	-6	7.205	13	-6	7.197	33	3	7.336
26	-6	7.221	5	0	7.165	15	0	7.090	37	-9	6.419
			7	6	8.068	17	6	8.201			
			9	12	7.206	19	12	7.180			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.028	13.020	8	0.182	14.752	15	0.863	19.144
2	0.049	13.528	9	0.206	14.830	16	0.972	19.655
3	0.071	13.767	10	0.316	15.708	17	1.085	20.262
4	0.093	13.694	11	0.425	16.452	18	1.199	20.770
5	0.115	14.015	12	0.531	17.486	19	1.315	21.032
6	0.137	14.259	13	0.643	18.252	20	1.432	21.108
7	0.159	14.610	14	0.750	18.671	21	1.550	21.154

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER 0S12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
28	1	PANEL 2(L/W)= 1.5 WITH SHOCK GENERATOR

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
1.00	17.71	5.57	87	1.40	1100	-67	5.418	0.001190

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	5.843	1	-12	5.862	11	-12	5.876	31	9	4.880
24	0	5.933	3	-6	5.911	13	-6	5.893	33	3	5.932
26	-6	6.025	5	0	5.947	15	0	5.911	37	-9	4.836
			7	6	7.355	17	6	7.252			
			9	12	5.758	19	12	5.766			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.042	11.536	8	0.292	15.464	15	1.335	16.935
2	0.077	12.370	9	0.328	15.958	16	1.507	17.010
3	0.112	13.055	10	0.488	17.035	17	1.679	17.026
4	0.149	13.484	11	0.656	16.618	18	1.849	16.977
5	0.186	14.124	12	0.823	16.757	19	2.020	16.958
6	0.223	14.556	13	0.993	16.762	20	2.190	16.951
7	0.258	14.883	14	1.165	17.051	21	2.361	16.992

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER OS12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
29	1	PANEL 2(L/W)= 1.5 WITH SHOCK GENERATOR

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
1.00	15.70	6.48	88	1.20	940	-34	4.858	0.001279

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	6.202	1	-12	6.171	11	-12	6.140	31	9	6.945
24	0	6.469	3	-6	6.225	13	-6	6.191	33	3	6.277
26	-6	6.225	5	0	6.269	15	0	6.248	37	-9	6.927
			7	6	6.841	17	6	6.818			
			9	12	5.784	19	12	5.792			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.035	10.599	8	0.305	14.494	15	1.401	15.553
2	0.074	11.267	9	0.344	14.880	16	1.581	15.568
3	0.112	11.888	10	0.513	15.578	17	1.759	15.616
4	0.151	12.648	11	0.688	15.556	18	1.938	15.578
5	0.191	13.191	12	0.864	15.476	19	2.117	15.590
6	0.230	13.621	13	1.043	15.457	20	2.295	15.610
7	0.268	14.145	14	1.223	15.542	21	2.472	15.615

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER 0S12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
30	1	PANEL 2(L/W)= 1.5 WITH SHOCK GENERATOR

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	23.38	9.63	107	1.20	1400	-20	6.911	0.001837

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	9.251	1	-12	9.121	11	-12	9.078	31	9	9.757
24	0	9.534	3	-6	9.201	13	-6	9.037	33	3	8.766
26	-6	9.227	5	0	9.145	15	0	9.042	37	-9	9.688
			7	6	9.857	17	6	9.785			
			9	12	8.562	19	12	8.563			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.033	14.800	8	0.285	17.843	15	1.314	22.806
2	0.069	15.494	9	0.320	17.940	16	1.485	22.842
3	0.105	15.878	10	0.478	19.217	17	1.653	22.892
4	0.142	16.338	11	0.640	20.821	18	1.820	22.939
5	0.178	16.627	12	0.804	21.796	19	1.988	22.957
6	0.215	16.985	13	0.973	22.441	20	2.151	22.833
7	0.250	17.473	14	1.145	22.648	21	2.320	22.800

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER OS12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
30	2	PANEL 2(L/W)= 1.5 WITH SHOCK GENERATOR

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	21.72	8.96	109	1.20	1300	-18	6.395	0.001704

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	8.613	1	-12	8.486	11	-12	8.440	31	9	9.155
24	0	8.890	3	-6	8.572	13	-6	8.425	33	3	8.216
26	-6	8.596	5	0	8.531	15	0	8.437	37	-9	9.004
			7	6	9.154	17	6	9.118			
			9	12	7.986	19	12	7.967			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.034	13.756	8	0.294	16.419	15	1.333	21.277
2	0.071	14.429	9	0.330	16.658	16	1.503	21.261
3	0.108	14.881	10	0.490	17.571	17	1.670	21.239
4	0.146	15.413	11	0.655	19.156	18	1.836	21.316
5	0.184	15.509	12	0.822	20.347	19	2.002	21.371
6	0.222	16.127	13	0.991	20.708	20	2.168	21.295
7	0.258	16.487	14	1.163	21.156	21	2.335	21.305

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER 0S12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
30	3	PANEL 2(L/W)= 1.5 WITH SHOCK GENERATOR

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	20.06	8.26	104	1.20	1201	-22	5.969	0.001584

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	8.149	1	-12	8.181	11	-12	8.138	31	9	8.455
24	0	8.255	3	-6	8.168	13	-6	8.121	33	3	8.113
26	-6	8.203	5	0	8.390	15	0	8.273	37	-9	8.334
			7	6	8.598	17	6	8.609			
			9	12	7.683	19	12	7.673			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.034	12.724	8	0.289	15.548	15	1.315	19.895
2	0.071	13.458	9	0.325	15.570	16	1.485	19.934
3	0.107	14.117	10	0.484	16.789	17	1.656	19.892
4	0.144	14.407	11	0.648	17.564	18	1.827	19.813
5	0.181	14.677	12	0.811	18.701	19	1.999	19.859
6	0.218	14.855	13	0.977	19.367	20	2.169	19.825
7	0.254	15.296	14	1.147	19.707	21	2.341	19.865

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER OS12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO. SEQ.NO. CONFIGURATION

30 4 PANEL 2(L/W)= 1.5
WITH SHOCK GENERATOR

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	27.67	11.34	106	1.20	1659	-22	8.210	0.002172

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	11.237	1	-12	11.231	11	-12	11.202	31	9	11.779
24	0	11.473	3	-6	11.208	13	-6	11.191	33	3	11.357
26	-6	11.351	5	0	11.388	15	0	11.346	37	-9	11.656
			7	6	11.900	17	6	11.947			
			9	12	10.517	19	12	10.548			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.034	17.098	8	0.298	20.846	15	1.352	27.244
2	0.073	18.020	9	0.335	21.208	16	1.525	27.215
3	0.110	18.978	10	0.499	22.773	17	1.696	27.175
4	0.149	19.376	11	0.667	24.632	18	1.867	27.200
5	0.188	19.500	12	0.836	26.307	19	2.038	27.163
6	0.225	20.352	13	1.007	26.971	20	2.208	27.215
7	0.262	20.312	14	1.180	27.083	21	2.379	27.332

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER 0S12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
31	1	PANEL 1(L/W)= 3.0

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	11.28	3.54	78	1.40	700	-74	3.523	0.000769

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	12.243	1	-12	12.522	11	-12	12.443	31	9	12.121
24	0	12.404	3	-6	12.600	13	-6	12.640	33	3	12.632
26	-6	12.467	5	0	12.632	15	0	12.671	37	-9	12.628
			7	6	12.616	17	6	12.777			
			9	12	12.585	19	12	12.695			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.035	5.612	8	0.308	7.324	15	1.397	10.840
2	0.073	6.190	9	0.347	7.935	16	1.574	10.850
3	0.111	6.456	10	0.519	8.651	17	1.750	10.858
4	0.151	6.847	11	0.694	9.593	18	1.926	10.877
5	0.191	7.123	12	0.868	10.095	19	2.103	10.855
6	0.230	7.267	13	1.044	10.460	20	2.280	10.880
7	0.269	7.540	14	1.220	10.658	21	2.458	10.880

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER 0S12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
31	2	PANEL 1(L/W)= 3.0

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
-0.00	17.72	5.54	91	1.40	1100	-65	5.360	0.001177

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	5.832	1	-12	5.611	11	-12	5.668	31	9	6.051
24	0	5.847	3	-6	5.670	13	-6	5.599	33	3	5.657
26	-6	5.785	5	0	5.676	15	0	5.622	37	-9	5.573
			7	6	5.628	17	6	5.525			
			9	12	5.673	19	12	5.695			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.041	9.121	8	0.324	12.381	15	1.442	17.046
2	0.080	9.932	9	0.366	12.766	16	1.624	17.028
3	0.120	10.630	10	0.541	13.919	17	1.805	17.076
4	0.162	10.852	11	0.720	14.959	18	1.987	17.120
5	0.204	11.420	12	0.898	15.986	19	2.166	17.130
6	0.244	11.695	13	1.079	16.602	20	2.348	17.107
7	0.284	12.198	14	1.260	16.993	21	2.481	17.176

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER 0S12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
31	3	PANEL 1(L/W)= 3.0

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	22.33	7.03	79	1.40	1386	-72	6.958	0.001523

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	7.286	1	-12	7.083	11	-12	7.131	31	9	9.680
24	0	7.323	3	-6	7.157	13	-6	7.068	33	3	7.869
26	-6	7.239	5	0	7.121	15	0	7.088	37	-9	7.979
			7	6	7.151	17	6	6.950			
			9	12	8.451	19	12	7.196			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.042	11.758	8	0.321	15.122	15	1.422	21.424
2	0.081	12.654	9	0.361	15.701	16	1.603	21.479
3	0.120	13.457	10	0.538	17.514	17	1.780	21.454
4	0.162	13.810	11	0.715	18.570	18	1.959	21.507
5	0.203	14.213	12	0.890	20.441	19	2.136	21.540
6	0.243	14.451	13	1.068	20.857	20	2.316	21.549
7	0.282	14.909	14	1.245	21.356	21	2.479	21.562

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER OS12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
31	4	PANEL 1(L/W)= 3.0

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	19.34	6.14	81	1.39	1200	-70	6.010	0.001324

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	6.361	1	-12	6.147	11	-12	6.282	31	9	8.230
24	0	6.533	3	-6	6.303	13	-6	6.311	33	3	8.017
26	-6	6.348	5	0	6.198	15	0	6.215	37	-9	7.266
			7	6	6.286	17	6	6.139			
			9	12	7.715	19	12	6.523			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.041	10.215	8	0.332	13.583	15	1.465	18.637
2	0.081	11.038	9	0.375	13.710	16	1.649	18.697
3	0.123	11.512	10	0.553	15.413	17	1.833	18.619
4	0.166	12.011	11	0.735	16.312	18	2.016	18.718
5	0.209	12.289	12	0.915	17.727	19	2.196	18.718
6	0.250	12.876	13	1.098	18.242	20	2.381	18.807
7	0.290	13.015	14	1.280	18.618	21	2.480	18.785

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER 0S12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
32	1	PANEL 1(L/W)= 3.0

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
1.00	11.27	3.54	81	1.40	700	-71	3.492	0.000765

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	3.693	1	-12	3.585	11	-12	3.591	31	9	3.568
24	0	3.693	3	-6	3.531	13	-6	3.537	33	3	3.609
26	-6	3.701	5	0	3.594	15	0	3.559	37	-9	3.538
			7	6	3.577	17	6	3.508			
			9	12	3.572	19	12	3.533			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.039	5.945	8	0.331	9.879	15	1.475	10.796
2	0.079	6.680	9	0.375	10.283	16	1.661	10.824
3	0.120	7.263	10	0.555	10.805	17	1.846	10.781
4	0.163	7.835	11	0.739	10.808	18	2.033	10.827
5	0.206	8.202	12	0.920	10.780	19	2.218	10.832
6	0.248	8.822	13	1.105	10.784	20	2.405	10.844
7	0.289	9.450	14	1.289	10.710	21	2.483	10.811

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER 0S12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
32	2	PANEL 1(L/W)= 3.0

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
1.00	17.72	5.56	94	1.40	1100	-62	5.320	0.001173

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	5.873	1	-12	5.615	11	-12	5.637	31	9	5.659
24	0	5.858	3	-6	5.638	13	-6	5.624	33	3	5.817
26	-6	5.865	5	0	5.740	15	0	5.666	37	-9	5.554
			7	6	5.645	17	6	5.554			
			9	12	5.636	19	12	5.658			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.038	9.610	8	0.338	15.603	15	1.514	17.038
2	0.079	10.657	9	0.384	16.164	16	1.703	17.073
3	0.121	11.559	10	0.570	17.095	17	1.893	17.015
4	0.166	12.531	11	0.758	17.060	18	2.083	17.169
5	0.210	13.210	12	0.945	17.115	19	2.271	17.058
6	0.252	14.041	13	1.135	17.010	20	2.461	17.052
7	0.295	14.896	14	1.323	16.959	21	2.484	17.058

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER OS12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
33	1	PANEL 1(L/W)= 3.0

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
1.00	11.46	8.99	77	0.60	325	41	2.721	0.001506

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	8.954	1	-12	8.955	11	-12	8.974	31	9	8.648
24	0	8.967	3	-6	8.954	13	-6	8.971	33	3	8.673
26	-6	8.966	5	0	8.975	15	0	8.950	37	-9	8.655
			7	6	8.941	17	6	8.929			
			9	12	8.804	19	12	8.810			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.037	9.860	8	0.346	10.736	15	1.523	11.216
2	0.079	10.067	9	0.392	11.100	16	1.711	11.225
3	0.123	10.350	10	0.577	11.218	17	1.901	11.281
4	0.168	10.401	11	0.765	11.253	18	2.091	11.326
5	0.213	10.566	12	0.953	11.315	19	2.280	11.332
6	0.257	10.548	13	1.143	11.363	20	2.469	11.332
7	0.302	10.589	14	1.331	11.233	21	2.473	11.315

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER 0S12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
33	2	PANEL 1(L/W)= 3.0

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
1.00	15.82	12.39	76	0.60	452	40	3.776	0.002080

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	12.371	1	-12	12.379	11	-12	12.405	31	9	11.938
24	0	12.392	3	-6	12.393	13	-6	12.402	33	3	11.997
26	-6	12.377	5	0	12.383	15	0	12.346	37	-9	11.937
			7	6	12.356	17	6	12.328			
			9	12	12.138	19	12	12.160			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.038	13.574	8	0.337	15.188	15	1.488	15.731
2	0.079	14.046	9	0.380	15.419	16	1.672	15.639
3	0.121	14.351	10	0.562	15.666	17	1.856	15.679
4	0.164	14.558	11	0.748	15.766	18	2.040	15.692
5	0.208	14.652	12	0.931	15.629	19	2.222	15.762
6	0.250	14.809	13	1.118	15.719	20	2.405	15.799
7	0.294	15.106	14	1.301	15.708	21	2.481	15.827

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER 0S12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
33	3	PANEL 1(L/W)= 3.0

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
1.00	21.08	16.54	76	0.60	599	40	5.017	0.002776

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	16.491	1	-12	16.472	11	-12	16.488	31	9	15.914
24	0	16.520	3	-6	16.472	13	-6	16.462	33	3	15.937
26	-6	16.500	5	0	16.468	15	0	16.428	37	-9	15.810
			7	6	16.451	17	6	16.402			
			9	12	16.137	19	12	16.189			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.039	18.442	8	0.336	20.368	15	1.480	21.063
2	0.080	18.879	9	0.380	20.599	16	1.664	21.036
3	0.122	19.328	10	0.560	20.954	17	1.847	20.887
4	0.165	19.636	11	0.745	20.927	18	2.030	21.036
5	0.209	19.887	12	0.927	21.026	19	2.212	21.097
6	0.251	20.128	13	1.112	20.992	20	2.395	20.952
7	0.294	20.276	14	1.295	21.045	21	2.480	21.013

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER 0S12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
34	1	PANEL 1(L/W)= 3.0

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	21.08	16.52	75	0.60	601	39	5.046	0.002782

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	16.499	1	-12	16.518	11	-12	16.509	31	9	16.411
24	0	16.510	3	-6	16.499	13	-6	16.498	33	3	16.371
26	-6	16.510	5	0	16.536	15	0	16.500	37	-9	16.379
			7	6	16.531	17	6	16.485			
			9	12	16.446	19	12	16.515			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.039	18.331	8	0.334	19.595	15	1.475	20.990
2	0.080	18.720	9	0.377	19.699	16	1.659	20.966
3	0.121	18.930	10	0.557	19.916	17	1.843	21.055
4	0.164	19.217	11	0.741	20.325	18	2.027	20.841
5	0.207	19.189	12	0.923	20.613	19	2.210	20.944
6	0.249	19.371	13	1.107	20.792	20	2.394	21.040
7	0.291	19.498	14	1.290	20.885	21	2.478	20.987

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER OS12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
34	2	PANEL 1(L/W)= 3.0

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	44.22	34.69	86	0.60	1255	49	10.284	0.005719

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	34.568	1	-12	34.629	11	-12	34.668	31	9	34.437
24	0	34.669	3	-6	34.663	13	-6	34.571	33	3	34.443
26	-6	34.639	5	0	34.644	15	0	34.525	37	-9	34.349
			7	6	34.653	17	6	34.526			
			9	12	34.566	19	12	34.655			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.039	38.728	8	0.335	41.365	15	1.476	44.081
2	0.080	39.454	9	0.378	41.543	16	1.659	44.073
3	0.121	39.855	10	0.557	42.226	17	1.841	44.112
4	0.164	40.178	11	0.741	42.412	18	2.024	44.217
5	0.208	40.462	12	0.923	43.421	19	2.206	44.128
6	0.250	40.935	13	1.108	43.458	20	2.388	44.161
7	0.293	41.129	14	1.291	43.514	21	2.480	44.208

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER 0S12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
34	3	PANEL 1(L/W)= 3.0

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	15.82	12.41	70	0.60	448	35	3.816	0.002107

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	12.393	1	-12	12.376	11	-12	12.390	31	9	12.342
24	0	12.385	3	-6	12.379	13	-6	12.379	33	3	12.319
26	-6	12.374	5	0	12.409	15	0	12.359	37	-9	12.293
			7	6	12.393	17	6	12.356			
			9	12	12.366	19	12	12.401			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.038	13.605	8	0.335	14.569	15	1.468	15.650
2	0.079	13.951	9	0.378	14.692	16	1.650	15.641
3	0.121	14.140	10	0.557	14.749	17	1.832	15.569
4	0.164	14.239	11	0.740	14.998	18	2.016	15.346
5	0.208	14.170	12	0.917	15.347	19	2.197	15.631
6	0.251	14.380	13	1.101	15.527	20	2.380	15.563
7	0.293	14.534	14	1.284	15.492	21	2.478	15.541

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER 0S12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
34	4	PANEL 1(L/W)= 3.0

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	11.45	8.97	67	0.60	327	31	2.795	0.001534

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	8.957	1	-12	8.952	11	-12	8.948	31	9	8.960
24	0	8.964	3	-6	8.952	13	-6	8.953	33	3	8.916
26	-6	8.962	5	0	8.963	15	0	8.948	37	-9	8.907
			7	6	8.969	17	6	8.950			
			9	12	8.950	19	12	8.960			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.038	9.857	8	0.328	10.550	15	1.457	11.178
2	0.079	10.039	9	0.370	10.602	16	1.640	11.287
3	0.121	10.145	10	0.547	10.706	17	1.821	11.351
4	0.162	10.271	11	0.729	10.867	18	2.004	11.160
5	0.204	10.293	12	0.910	10.865	19	2.186	11.364
6	0.246	10.334	13	1.093	11.149	20	2.369	11.303
7	0.287	10.391	14	1.274	11.198	21	2.479	11.238

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER 0S12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
35	1	PANEL 1(L/W)= 3.0

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	6.76	4.00	61	0.90	326	-12	2.100	0.000750

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	3.956	1	-12	3.968	11	-12	3.979	31	9	4.105
24	0	3.984	3	-6	3.990	13	-6	3.978	33	3	4.069
26	-6	3.984	5	0	3.972	15	0	3.961	37	-9	4.067
			7	6	4.007	17	6	4.006			
			9	12	4.091	19	12	4.077			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.037	4.923	8	0.325	5.522	15	1.428	6.531
2	0.077	4.991	9	0.367	5.590	16	1.605	6.308
3	0.118	5.206	10	0.541	5.796	17	1.782	6.566
4	0.159	5.263	11	0.719	6.031	18	1.961	6.510
5	0.201	5.357	12	0.895	6.254	19	2.137	6.611
6	0.243	5.444	13	1.073	6.402	20	2.315	6.566
7	0.284	5.500	14	1.251	6.352	21	2.478	6.620

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER 0S12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
35	2	PANEL 1(L/W)= 3.0

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	12.44	7.32	67	0.90	603	-7	3.812	0.001357

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	7.316	1	-12	7.337	11	-12	7.273	31	9	7.475
24	0	7.301	3	-6	7.313	13	-6	7.297	33	3	7.442
26	-6	7.319	5	0	7.323	15	0	7.319	37	-9	7.435
			7	6	7.362	17	6	7.358			
			9	12	7.416	19	12	7.493			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.038	9.055	8	0.322	10.420	15	1.424	12.263
2	0.078	9.481	9	0.363	10.667	16	1.602	12.358
3	0.118	9.629	10	0.538	10.900	17	1.778	12.333
4	0.158	9.866	11	0.716	11.158	18	1.957	12.345
5	0.200	9.975	12	0.892	11.651	19	2.134	12.309
6	0.242	10.144	13	1.069	11.973	20	2.313	12.118
7	0.282	10.237	14	1.246	12.148	21	2.477	12.302

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER OS12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
35	3	PANEL 1(L/W)= 3.0

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	18.64	10.99	75	0.90	902	-0	5.602	0.002008

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	10.958	1	-12	10.923	11	-12	10.954	31	9	11.187
24	0	10.928	3	-6	10.983	13	-6	10.869	33	3	11.094
26	-6	11.001	5	0	10.974	15	0	10.854	37	-9	11.090
			7	6	11.101	17	6	10.952			
			9	12	11.143	19	12	11.208			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.038	13.927	8	0.322	15.742	15	1.434	18.509
2	0.077	14.359	9	0.363	15.889	16	1.615	18.548
3	0.117	14.762	10	0.540	16.578	17	1.794	18.570
4	0.158	14.921	11	0.719	17.158	18	1.974	18.530
5	0.200	15.102	12	0.897	17.733	19	2.151	18.566
6	0.241	15.443	13	1.076	18.032	20	2.331	18.654
7	0.282	15.571	14	1.255	18.188	21	2.478	18.464

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER 0S12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
35	4	PANEL 1(L/W)= 3.0

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	34.39	20.33	85	0.90	1661	9	10.065	0.003638

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	20.259	1	-12	20.268	11	-12	20.271	31	9	21.124
24	0	20.418	3	-6	20.203	13	-6	20.229	33	3	21.045
26	-6	20.336	5	0	20.224	15	0	20.206	37	-9	21.019
			7	6	20.498	17	6	20.409			
			9	12	21.056	19	12	21.216			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.040	26.464	8	0.345	29.221	15	1.504	34.271
2	0.083	27.010	9	0.389	29.723	16	1.690	34.248
3	0.125	27.695	10	0.573	31.209	17	1.876	34.288
4	0.169	28.051	11	0.760	32.280	18	2.062	34.302
5	0.213	28.269	12	0.945	32.950	19	2.247	34.278
6	0.257	28.813	13	1.132	33.583	20	2.431	34.333
7	0.301	28.990	14	1.317	34.080	21	2.480	34.381

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER 0S12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
36	1	PANEL 1(L/W)= 3.0

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
1.00	18.63	11.00	83	0.90	900	7	5.485	0.001978

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	10.841	1	-12	10.865	11	-12	10.902	31	9	10.878
24	0	10.903	3	-6	10.873	13	-6	10.817	33	3	10.806
26	-6	10.923	5	0	10.879	15	0	10.841	37	-9	10.750
			7	6	10.974	17	6	10.909			
			9	12	10.919	19	12	10.944			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.037	14.297	8	0.350	17.670	15	1.524	18.593
2	0.080	14.950	9	0.395	17.891	16	1.711	18.555
3	0.124	15.474	10	0.582	18.499	17	1.899	18.627
4	0.169	15.992	11	0.771	18.289	18	2.088	18.590
5	0.215	16.447	12	0.958	18.559	19	2.276	18.503
6	0.260	16.938	13	1.147	18.592	20	2.463	18.571
7	0.304	17.306	14	1.334	18.558	21	2.480	18.587

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER 0S12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
36	2	PANEL 1(L/W)= 3.0

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
1.00	12.42	7.37	79	0.90	597	4	3.685	0.001333

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	7.257	1	-12	7.306	11	-12	7.337	31	9	7.235
24	0	7.326	3	-6	7.308	13	-6	7.273	33	3	7.227
26	-6	7.276	5	0	7.287	15	0	7.267	37	-9	7.237
			7	6	7.367	17	6	7.278			
			9	12	7.363	19	12	7.314			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.037	9.525	8	0.351	11.872	15	1.525	12.452
2	0.081	10.025	9	0.396	12.039	16	1.712	12.493
3	0.126	10.331	10	0.582	12.354	17	1.900	12.499
4	0.171	10.605	11	0.771	12.413	18	2.088	12.424
5	0.216	10.994	12	0.958	12.399	19	2.276	12.384
6	0.261	11.162	13	1.147	12.471	20	2.464	12.427
7	0.306	11.548	14	1.335	12.433	21	2.480	12.476

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER 0S12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
36	3	PANEL 1(L/W)= 3.0

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
1.00	6.76	3.98	70	0.90	327	-4	2.055	0.000734

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	3.951	1	-12	3.939	11	-12	3.958	31	9	3.948
24	0	3.971	3	-6	3.939	13	-6	3.939	33	3	3.948
26	-6	3.962	5	0	3.949	15	0	3.943	37	-9	3.943
			7	6	3.969	17	6	3.959			
			9	12	3.960	19	12	3.980			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.035	5.015	8	0.343	6.215	15	1.497	6.668
2	0.077	5.174	9	0.387	6.131	16	1.682	6.594
3	0.120	5.439	10	0.570	6.511	17	1.867	6.718
4	0.165	5.621	11	0.756	6.557	18	2.053	6.621
5	0.210	5.686	12	0.940	6.508	19	2.238	6.680
6	0.255	5.717	13	1.125	6.667	20	2.424	6.655
7	0.299	6.016	14	1.310	6.650	21	2.482	6.692

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER 0S12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
37	1	PANEL 1(L/W)= 3.0

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	5.44	2.23	65	1.20	326	-53	1.781	0.000461

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	2.145	1	-12	2.121	11	-12	2.118	31	9	2.131
24	0	2.212	3	-6	2.126	13	-6	2.106	33	3	2.092
26	-6	2.144	5	0	2.124	15	0	2.104	37	-9	2.100
			7	6	2.134	17	6	2.114			
			9	12	2.116	19	12	2.120			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.036	2.909	8	0.331	3.859	15	1.458	5.231
2	0.076	3.180	9	0.374	3.889	16	1.638	5.217
3	0.118	3.369	10	0.552	4.096	17	1.818	5.180
4	0.161	3.482	11	0.735	4.304	18	2.000	5.217
5	0.204	3.522	12	0.914	4.616	19	2.179	5.183
6	0.246	3.647	13	1.095	4.860	20	2.360	5.279
7	0.288	3.721	14	1.275	5.116	21	2.479	5.252

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER OS12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
37	2	PANEL 1(L/W)= 3.0

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	10.03	4.13	73	1.20	600	-46	3.215	0.000837

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	4.049	1	-12	4.001	11	-12	4.004	31	9	4.003
24	0	4.180	3	-6	4.007	13	-6	3.964	33	3	3.951
26	-6	4.056	5	0	3.997	15	0	3.960	37	-9	3.950
			7	6	4.004	17	6	3.971			
			9	12	3.981	19	12	4.006			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.037	5.678	8	0.330	7.381	15	1.454	9.733
2	0.077	6.250	9	0.372	7.600	16	1.635	9.825
3	0.119	6.500	10	0.550	8.109	17	1.814	9.850
4	0.161	6.697	11	0.732	8.800	18	1.995	9.871
5	0.204	6.950	12	0.911	9.319	19	2.174	9.881
6	0.246	7.044	13	1.093	9.563	20	2.355	9.843
7	0.288	7.026	14	1.273	9.811	21	2.479	9.906

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER 0S12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
37	3	PANEL 1(L/W)= 3.0

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	16.71	6.87	85	1.20	1001	-37	5.206	0.001364

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	6.763	1	-12	6.714	11	-12	6.721	31	9	6.684
24	0	7.012	3	-6	6.706	13	-6	6.615	33	3	6.615
26	-6	6.802	5	0	6.711	15	0	6.631	37	-9	6.557
			7	6	6.693	17	6	6.621			
			9	12	6.648	19	12	6.704			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.037	9.840	8	0.333	12.572	15	1.472	16.427
2	0.078	10.591	9	0.376	12.925	16	1.655	16.395
3	0.118	11.146	10	0.556	14.020	17	1.837	16.457
4	0.161	11.416	11	0.740	14.806	18	2.020	16.383
5	0.204	11.820	12	0.922	15.518	19	2.203	16.423
6	0.247	12.064	13	1.106	15.691	20	2.386	16.380
7	0.290	12.296	14	1.288	16.336	21	2.480	16.470

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER 0S12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
37	4	PANEL 1(L/W)= 3.0

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	27.69	11.42	96	1.20	1657	-29	8.411	0.002222

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	11.222	1	-12	11.028	11	-12	11.124	31	9	11.865
24	0	11.646	3	-6	11.129	13	-6	10.968	33	3	11.053
26	-6	11.234	5	0	11.078	15	0	10.946	37	-9	11.032
			7	6	11.092	17	6	10.938			
			9	12	11.050	19	12	11.132			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.038	16.985	8	0.355	20.757	15	1.535	27.313
2	0.083	17.768	9	0.401	21.051	16	1.723	27.356
3	0.128	18.704	10	0.588	22.984	17	1.912	27.374
4	0.174	19.117	11	0.778	24.968	18	2.101	27.382
5	0.219	19.686	12	0.967	26.099	19	2.290	27.377
6	0.265	19.964	13	1.156	26.963	20	2.477	27.365
7	0.310	20.594	14	1.345	27.163	21	2.478	27.407

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER 0S12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
37	5	PANEL 1(L/W)= 3.0

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	23.38	9.65	94	1.20	1399	-29	7.124	0.001883

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	9.427	1	-12	9.351	11	-12	9.382	31	9	10.442
24	0	9.747	3	-6	9.337	13	-6	9.276	33	3	9.696
26	-6	9.469	5	0	9.367	15	0	9.228	37	-9	9.559
			7	6	9.362	17	6	9.232			
			9	12	9.438	19	12	9.405			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.038	14.104	8	0.357	17.686	15	1.544	23.135
2	0.082	15.207	9	0.404	18.146	16	1.733	23.201
3	0.127	15.752	10	0.593	19.156	17	1.923	23.206
4	0.173	16.161	11	0.784	21.157	18	2.112	23.179
5	0.219	16.633	12	0.973	22.092	19	2.301	23.252
6	0.265	16.914	13	1.163	22.784	20	2.482	23.231
7	0.311	17.547	14	1.353	23.054	21	2.482	23.227

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER OS12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
37	6	PANEL 1(L/W)= 3.0

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	20.10	8.28	92	1.20	1204	-31	6.156	0.001622

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	8.176	1	-12	8.088	11	-12	8.100	31	9	9.543
24	0	8.413	3	-6	8.095	13	-6	7.979	33	3	8.434
26	-6	8.159	5	0	8.098	15	0	8.000	37	-9	8.708
			7	6	8.078	17	6	7.990			
			9	12	8.156	19	12	8.120			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.038	11.873	8	0.358	15.137	15	1.544	19.753
2	0.082	12.691	9	0.405	15.533	16	1.732	19.743
3	0.128	13.298	10	0.594	16.709	17	1.922	19.752
4	0.174	13.939	11	0.784	18.264	18	2.111	19.743
5	0.220	14.016	12	0.973	18.997	19	2.301	19.824
6	0.266	14.556	13	1.163	19.510	20	2.482	19.833
7	0.312	14.735	14	1.352	19.715	21	2.483	19.808

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER 0S12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
38	1	PANEL 1(L/W)= 3.0

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
1.00	16.71	6.90	95	1.20	999	-29	5.082	0.001344

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	6.681	1	-12	6.655	11	-12	6.605	31	9	6.626
24	0	6.968	3	-6	6.684	13	-6	6.557	33	3	6.634
26	-6	6.678	5	0	6.675	15	0	6.618	37	-9	6.546
			7	6	6.710	17	6	6.592			
			9	12	6.679	19	12	6.755			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.039	10.512	8	0.371	15.604	15	1.572	16.559
2	0.085	11.446	9	0.420	16.048	16	1.762	16.548
3	0.132	12.213	10	0.613	16.589	17	1.955	16.491
4	0.180	12.819	11	0.804	16.589	18	2.146	16.543
5	0.228	13.768	12	0.995	16.545	19	2.338	16.493
6	0.276	14.194	13	1.188	16.531	20	2.486	16.519
7	0.324	14.947	14	1.379	16.508	21	2.486	16.508

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER OS12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
38	2	PANEL 1(L/W)= 3.0

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
1.00	10.02	4.13	88	1.20	600	-35	3.101	0.000815

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	3.964	1	-12	3.948	11	-12	3.946	31	9	3.930
24	0	4.159	3	-6	3.961	13	-6	3.927	33	3	3.925
26	-6	3.951	5	0	3.974	15	0	3.945	37	-9	3.922
			7	6	3.995	17	6	3.945			
			9	12	3.971	19	12	4.002			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.036	6.031	8	0.365	9.199	15	1.558	9.903
2	0.082	6.673	9	0.413	9.582	16	1.747	9.924
3	0.128	7.152	10	0.604	9.905	17	1.939	9.918
4	0.176	7.516	11	0.794	9.814	18	2.129	9.936
5	0.224	8.094	12	0.984	9.922	19	2.320	9.908
6	0.271	8.460	13	1.175	9.887	20	2.485	9.918
7	0.318	8.788	14	1.366	9.880	21	2.485	9.916

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER OS12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
38	3	PANEL 1(L/W)= 3.0

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
1.00	5.44	2.24	78	1.20	326	-42	1.724	0.000450

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	2.122	1	-12	2.119	11	-12	2.107	31	9	2.137
24	0	2.216	3	-6	2.119	13	-6	2.116	33	3	2.126
26	-6	2.121	5	0	2.136	15	0	2.119	37	-9	2.119
			7	6	2.145	17	6	2.126			
			9	12	2.135	19	12	2.127			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.037	3.078	8	0.357	4.596	15	1.530	5.355
2	0.081	3.438	9	0.404	4.861	16	1.717	5.381
3	0.126	3.589	10	0.591	5.340	17	1.906	5.346
4	0.172	3.833	11	0.779	5.294	18	2.094	5.380
5	0.219	3.973	12	0.966	5.350	19	2.282	5.389
6	0.265	4.071	13	1.154	5.347	20	2.470	5.406
7	0.311	4.316	14	1.341	5.325	21	2.473	5.389

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER 0S12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
39	1	PANEL 1(L/W)= 3.0 WITH SHOCK GENERATOR

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	22.26	6.97	88	1.40	1382	-67	6.782	0.001488

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	7.269	1	-12	7.104	11	-12	7.063	31	9	7.998
24	0	7.272	3	-6	7.182	13	-6	7.129	33	3	7.758
26	-6	7.261	5	0	7.158	15	0	7.100	37	-9	6.967
			7	6	8.253	17	6	8.218			
			9	12	7.408	19	12	7.150			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.042	10.515	8	0.360	15.415	15	1.531	21.050
2	0.086	12.747	9	0.406	15.847	16	1.718	21.134
3	0.131	13.526	10	0.592	17.209	17	1.907	21.131
4	0.176	14.084	11	0.781	18.314	18	2.094	21.232
5	0.222	14.421	12	0.967	19.580	19	2.282	21.254
6	0.268	14.828	13	1.156	20.040	20	2.469	21.225
7	0.314	15.014	14	1.342	20.729	21	2.487	21.211

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER 0S12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
40	1	PANEL 1(L/W)= 3.0 WITH SHOCK GENERATOR

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
1.00	17.72	5.56	96	1.40	1100	-61	5.293	0.001168

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	5.856	1	-12	5.723	11	-12	5.783	31	9	4.825
24	0	5.911	3	-6	5.785	13	-6	5.749	33	3	5.634
26	-6	5.925	5	0	5.827	15	0	5.809	37	-9	4.790
			7	6	7.177	17	6	7.045			
			9	12	5.672	19	12	5.749			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.044	8.793	8	0.374	15.486	15	1.565	16.608
2	0.090	11.046	9	0.422	15.929	16	1.755	16.716
3	0.137	12.180	10	0.612	16.511	17	1.946	16.725
4	0.184	12.798	11	0.803	16.530	18	2.136	16.803
5	0.232	13.545	12	0.994	16.475	19	2.327	16.740
6	0.279	14.319	13	1.185	16.490	20	2.491	16.709
7	0.327	14.684	14	1.374	16.659	21	2.492	16.716

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER 0S12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
41	1	PANEL 1(L/W)= 3.0 WITH SHOCK GENERATOR

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
1.00	15.70	6.46	100	1.20	941	-26	4.725	0.001249

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	6.305	1	-12	6.302	11	-12	6.228	31	9	6.661
24	0	6.528	3	-6	6.280	13	-6	6.235	33	3	6.448
26	-6	6.334	5	0	6.349	15	0	6.316	37	-9	6.694
			7	6	6.856	17	6	6.784			
			9	12	5.835	19	12	5.848			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.045	9.317	8	0.378	14.613	15	1.584	15.452
2	0.091	10.419	9	0.427	14.965	16	1.775	15.487
3	0.138	11.389	10	0.620	15.375	17	1.968	15.452
4	0.186	12.236	11	0.812	15.359	18	2.159	15.486
5	0.234	12.985	12	1.005	15.370	19	2.352	15.467
6	0.282	13.473	13	1.198	15.379	20	2.491	15.475
7	0.330	14.104	14	1.389	15.409	21	2.491	15.461

AMES TEST 22-116-1 JAN.1976

NASA SERIES NUMBER 0S12

MODEL NUMBER 40-0

SHUTTLE FRSI (NOMEX) MATERIAL TEST

RUN NO.	SEQ.NO.	CONFIGURATION
42	1	PANEL 1(L/W)= 3.0 WITH SHOCK GENERATOR

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	27.63	11.47	105	1.19	1650	-20	8.204	0.002191

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
22	6	11.203	1	-12	11.178	11	-12	11.219	31	9	11.722
24	0	11.238	3	-6	11.136	13	-6	11.219	33	3	11.257
26	-6	11.283	5	0	11.470	15	0	11.743	37	-9	11.477
			7	6	11.865	17	6	11.914			
			9	12	10.640	19	12	10.583			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.044	15.326	8	0.375	20.902	15	1.581	27.211
2	0.090	17.036	9	0.424	21.795	16	1.772	27.174
3	0.137	18.216	10	0.616	23.734	17	1.965	27.154
4	0.184	19.315	11	0.809	25.179	18	2.156	27.208
5	0.232	19.846	12	1.002	26.379	19	2.348	27.248
6	0.280	20.142	13	1.195	27.080	20	2.490	27.299
7	0.328	20.856	14	1.387	27.267	21	2.490	27.285

APPENDIX B

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
3	6	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	5.25	2.42	54	1.11	302	-48	1.756	0.000493

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
44	51	51	2.454	-0.003	2.451	2.443

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	2.373	1	-12	2.443	11	-12	2.450	31	12	2.580
22	6	2.430	2	-9	2.445	12	-9	2.455			
23	3	2.435	3	-6	2.447	13	-6	2.437	33	3	2.484
			4	-3	2.454	14	-3	2.432	34	0	2.562
25	-3	2.439	5	0	2.455	15	0	2.428	35	-3	2.595
26	-6	2.443	6	3	2.443	16	3	2.430	36	-6	2.594
27	-12	2.428	7	6	2.454	17	6	2.442	37	-12	2.596
			8	9	2.445	18	9	2.458			
			9	12	2.445	19	12	2.471			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
3	8	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	6.99	3.23	61	1.11	402	-42	2.299	0.000649

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
48	54	51	3.319	-0.002	3.316	3.327

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.209	1	-12	3.331	11	-12	3.347	31	12	3.358
22	6	3.313	2	-9	3.331	12	-9	3.333			
23	3	3.318	3	-6	3.331	13	-6	3.316	33	3	3.253
			4	-3	3.316	14	-3	3.300	34	0	3.406
25	-3	3.333	5	0	3.318	15	0	3.307	35	-3	3.426
26	-6	3.309	6	3	3.311	16	3	3.301	36	-6	3.406
27	-12	3.296	7	6	3.322	17	6	3.296	37	-12	3.406
			8	9	3.338	18	9	3.314			
			9	12	3.329	19	12	3.314			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
3	10	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	7.84	3.71	61	1.09	446	-39	2.572	0.000741

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
48	51	48	3.718	-0.008	3.709	3.733

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.610	1	-12	3.738	11	-12	3.742	31	12	3.785
22	6	3.723	2	-9	3.739	12	-9	3.759			
23	3	3.722	3	-6	3.741	13	-6	3.720	33	3	3.663
			4	-3	3.707	14	-3	3.690	34	0	3.779
25	-3	3.707	5	0	3.707	15	0	3.685	35	-3	3.850
26	-6	3.710	6	3	3.699	16	3	3.689	36	-6	3.828
27	-12	3.715	7	6	3.728	17	6	3.685	37	-12	3.850
			8	9	3.726	18	9	3.723			
			9	12	3.709	19	12	3.716			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
3	12	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	8.75	4.07	64	1.11	501	-39	2.849	0.000811

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
48	54	51	4.161	-0.005	4.155	4.176

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.997	1	-12	4.132	11	-12	4.179	31	12	4.259
22	6	4.142	2	-9	4.131	12	-9	4.201			
23	3	4.143	3	-6	4.174	13	-6	4.154	33	3	4.137
			4	-3	4.174	14	-3	4.130	34	0	4.319
25	-3	4.168	5	0	4.175	15	0	4.105	35	-3	4.289
26	-6	4.147	6	3	4.186	16	3	4.116	36	-6	4.287
27	-12	4.152	7	6	4.147	17	6	4.122	37	-12	4.325
			8	9	4.164	18	9	4.132			
			9	12	4.141	19	12	4.145			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
3	13	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	8.75	4.05	64	1.11	502	-39	2.850	0.000809

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
51	54	51	4.163	-0.004	4.159	4.158

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	4.029	1	-12	4.131	11	-12	4.174	31	12	4.199
22	6	4.149	2	-9	4.190	12	-9	4.210			
23	3	4.148	3	-6	4.179	13	-6	4.172	33	3	4.116
			4	-3	4.151	14	-3	4.137	34	0	4.212
25	-3	4.138	5	0	4.149	15	0	4.142	35	-3	4.284
26	-6	4.133	6	3	4.147	16	3	4.105	36	-6	4.280
27	-12	4.119	7	6	4.175	17	6	4.114	37	-12	4.224
			8	9	4.184	18	9	4.143			
			9	12	4.153	19	12	4.145			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
3	15	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	9.59	4.48	64	1.10	549	-38	3.123	0.000892

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
51	54	51	4.544	-0.006	4.538	4.535

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	4.371	1	-12	4.543	11	-12	4.560	31	12	4.591
22	6	4.506	2	-9	4.559	12	-9	4.561			
23	3	4.509	3	-6	4.547	13	-6	4.540	33	3	4.589
			4	-3	4.539	14	-3	4.529	34	0	4.625
25	-3	4.524	5	0	4.551	15	0	4.508	35	-3	4.658
26	-6	4.518	6	3	4.546	16	3	4.488	36	-6	4.646
27	-12	4.522	7	6	4.549	17	6	4.493	37	-12	4.618
			8	9	4.583	18	9	4.519			
			9	12	4.573	19	12	4.524			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
3	17	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	10.52	4.97	68	1.09	598	-34	3.390	0.000980

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
54	54	54	5.011	-0.007	5.004	4.987

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	4.775	1	-12	4.981	11	-12	4.989	31	12	4.992
22	6	4.964	2	-9	5.013	12	-9	5.000			
23	3	4.960	3	-6	5.015	13	-6	4.989	33	3	4.907
			4	-3	5.015	14	-3	4.981	34	0	5.011
25	-3	4.975	5	0	5.003	15	0	4.939	35	-3	5.033
26	-6	4.971	6	3	5.011	16	3	4.965	36	-6	4.998
27	-12	4.928	7	6	5.008	17	6	4.923	37	-12	5.074
			8	9	4.958	18	9	4.944			
			9	12	4.959	19	12	4.959			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
3	19	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	11.39	5.29	71	1.11	653	-34	3.647	0.001041

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
54	58	58	5.413	-0.016	5.397	5.409

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	5.185	1	-12	5.423	11	-12	5.404	31	12	5.385
22	6	5.349	2	-9	5.452	12	-9	5.372			
23	3	5.333	3	-6	5.423	13	-6	5.379	33	3	5.225
			4	-3	5.417	14	-3	5.369	34	0	5.376
25	-3	5.349	5	0	5.427	15	0	5.349	35	-3	5.276
26	-6	5.339	6	3	5.430	16	3	5.360	36	-6	5.433
27	-12	5.354	7	6	5.410	17	6	5.348	37	-12	5.428
			8	9	5.407	18	9	5.338			
			9	12	5.388	19	12	5.383			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
3	20	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	5.26	2.47	64	1.10	300	-38	1.710	0.000490

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
51	54	54	2.480	-0.002	2.478	2.485

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	2.383	1	-12	2.503	11	-12	2.480	31	12	2.556
22	6	2.469	2	-9	2.504	12	-9	2.490			
23	3	2.461	3	-6	2.505	13	-6	2.471	33	3	2.445
			4	-3	2.477	14	-3	2.463	34	0	2.552
25	-3	2.468	5	0	2.468	15	0	2.462	35	-3	2.579
26	-6	2.457	6	3	2.469	16	3	2.466	36	-6	2.594
27	-12	2.460	7	6	2.483	17	6	2.471	37	-12	2.600
			8	9	2.488	18	9	2.473			
			9	12	2.494	19	12	2.482			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
4	3	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	5.12	2.25	58	1.15	300	-51	1.703	0.000462

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
48	58	54	2.268	-0.003	2.265	2.254

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	2.174	1	-12	2.314	11	-12	2.277	31	12	2.409
22	6	2.262	2	-9	2.298	12	-9	2.262			
23	3	2.262	3	-6	2.275	13	-6	2.253	33	3	2.307
			4	-3	2.277	14	-3	2.241	34	0	2.425
25	-3	2.257	5	0	2.262	15	0	2.237	35	-3	2.427
26	-6	2.260	6	3	2.263	16	3	2.239	36	-6	2.454
27	-12	2.244	7	6	2.260	17	6	2.248	37	-12	2.431
			8	9	2.272	18	9	2.255			
			9	12	2.325	19	12	2.288			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
4	5	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	6.81	3.00	61	1.15	399	-48	2.248	0.000611

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
51	58	54	3.032	-0.006	3.026	3.028

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	2.919	1	-12	3.022	11	-12	3.030	31	12	3.159
22	6	3.010	2	-9	3.020	12	-9	3.025			
23	3	3.004	3	-6	3.031	13	-6	3.017	33	3	3.019
			4	-3	3.032	14	-3	2.991	34	0	3.164
25	-3	3.017	5	0	3.033	15	0	2.988	35	-3	3.158
26	-6	2.999	6	3	3.031	16	3	3.001	36	-6	3.202
27	-12	2.994	7	6	3.032	17	6	3.011	37	-12	3.243
			8	9	3.030	18	9	2.995			
			9	12	3.027	19	12	3.033			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
4	7	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	7.68	3.37	64	1.15	450	-45	2.512	0.000684

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
51	58	54	3.402	-0.006	3.396	3.416

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.275	1	-12	3.410	11	-12	3.424	31	12	3.537
22	6	3.413	2	-9	3.408	12	-9	3.410			
23	3	3.400	3	-6	3.398	13	-6	3.396	33	3	3.426
			4	-3	3.399	14	-3	3.387	34	0	3.503
25	-3	3.407	5	0	3.412	15	0	3.372	35	-3	3.530
26	-6	3.384	6	3	3.405	16	3	3.377	36	-6	3.622
27	-12	3.372	7	6	3.404	17	6	3.372	37	-12	3.558
			8	9	3.404	18	9	3.394			
			9	12	3.408	19	12	3.403			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
4	9	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
-0.00	8.53	3.77	64	1.15	499	-45	2.789	0.000763

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
51	54	54	3.785	-0.009	3.775	3.773

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.640	1	-12	3.802	11	-12	3.812	31	12	3.921
22	6	3.781	2	-9	3.769	12	-9	3.809			
23	3	3.790	3	-6	3.769	13	-6	3.780	33	3	3.780
			4	-3	3.769	14	-3	3.758	34	0	3.861
25	-3	3.779	5	0	3.770	15	0	3.738	35	-3	3.923
26	-6	3.766	6	3	3.792	16	3	3.750	36	-6	3.918
27	-12	3.765	7	6	3.801	17	6	3.740	37	-12	3.968
			8	9	3.791	18	9	3.774			
			9	12	3.769	19	12	3.790			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
4	11	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	9.38	4.13	68	1.15	550	-43	3.044	0.000830

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
51	58	54	4.140	-0.005	4.134	4.140

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.953	1	-12	4.135	11	-12	4.169	31	12	4.271
22	6	4.141	2	-9	4.136	12	-9	4.137			
23	3	4.121	3	-6	4.148	13	-6	4.147	33	3	4.138
			4	-3	4.131	14	-3	4.109	34	0	4.268
25	-3	4.141	5	0	4.156	15	0	4.108	35	-3	4.244
26	-6	4.119	6	3	4.154	16	3	4.094	36	-6	4.253
27	-12	4.092	7	6	4.148	17	6	4.110	37	-12	4.254
			8	9	4.141	18	9	4.103			
			9	12	4.111	19	12	4.121			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
4	13	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	10.26	4.51	68	1.15	601	-43	3.327	0.000908

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
54	58	54	4.541	-0.013	4.528	4.538

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	4.341	1	-12	4.531	11	-12	4.550	31	12	4.610
22	6	4.507	2	-9	4.530	12	-9	4.534			
23	3	4.514	3	-6	4.540	13	-6	4.544	33	3	4.546
			4	-3	4.543	14	-3	4.502	34	0	4.651
25	-3	4.544	5	0	4.549	15	0	4.506	35	-3	4.668
26	-6	4.517	6	3	4.554	16	3	4.501	36	-6	4.624
27	-12	4.492	7	6	4.539	17	6	4.483	37	-12	4.637
			8	9	4.551	18	9	4.472			
			9	12	4.551	19	12	4.513			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
4	15	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	11.13	4.90	71	1.15	652	-40	3.579	0.000979

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
58	58	58	4.921	-0.016	4.905	4.897

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	4.690	1	-12	4.896	11	-12	4.919	31	12	4.961
22	6	4.880	2	-9	4.910	12	-9	4.910			
23	3	4.874	3	-6	4.948	13	-6	4.906	33	3	4.879
			4	-3	4.921	14	-3	4.867	34	0	4.996
25	-3	4.902	5	0	4.950	15	0	4.860	35	-3	5.064
26	-6	4.853	6	3	4.950	16	3	4.873	36	-6	5.018
27	-12	4.853	7	6	4.921	17	6	4.847	37	-12	5.003
			8	9	4.890	18	9	4.852			
			9	12	4.868	19	12	4.849			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
4	17	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	11.94	5.28	71	1.15	699	-39	3.839	0.001054

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
58	58	58	5.269	-0.006	5.264	5.233

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	5.027	1	-12	5.269	11	-12	5.265	31	12	5.225
22	6	5.225	2	-9	5.262	12	-9	5.253			
23	3	5.228	3	-6	5.253	13	-6	5.226	33	3	5.134
			4	-3	5.257	14	-3	5.210	34	0	5.325
25	-3	5.257	5	0	5.281	15	0	5.197	35	-3	5.369
26	-6	5.210	6	3	5.269	16	3	5.181	36	-6	5.322
27	-12	5.167	7	6	5.282	17	6	5.181	37	-12	5.313
			8	9	5.235	18	9	5.198			
			9	12	5.213	19	12	5.177			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
5	1	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	4.93	1.55	68	1.40	306	-81	1.580	0.000343

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
51	58	58	1.514	-0.006	1.508	1.518

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	1.458	1	-12	1.497	11	-12	1.499	31	12	1.514
22	6	1.480	2	-9	1.499	12	-9	1.512			
23	3	1.492	3	-6	1.512	13	-6	1.501	33	3	1.415
			4	-3	1.512	14	-3	1.497	34	0	1.480
25	-3	1.481	5	0	1.514	15	0	1.493	35	-3	1.518
26	-6	1.470	6	3	1.515	16	3	1.498	36	-6	1.515
27	-12	1.488	7	6	1.515	17	6	1.498	37	-12	1.573
			8	9	1.512	18	9	1.498			
			9	12	1.518	19	12	1.508			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
5	3	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	6.45	2.02	71	1.40	401	-79	2.052	0.000445

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
51	58	54	1.999	-0.009	1.989	2.008

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	1.925	1	-12	1.972	11	-12	1.979	31	12	2.144
22	6	1.984	2	-9	1.973	12	-9	2.003			
23	3	2.013	3	-6	1.986	13	-6	1.997	33	3	1.886
			4	-3	1.994	14	-3	1.992	34	0	1.961
25	-3	1.995	5	0	1.989	15	0	1.973	35	-3	2.008
26	-6	1.967	6	3	1.991	16	3	1.982	36	-6	2.002
27	-12	1.991	7	6	2.003	17	6	1.978	37	-12	2.018
			8	9	2.015	18	9	2.003			
			9	12	2.019	19	12	1.991			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
5	5	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	7.25	2.27	68	1.40	450	-81	2.323	0.000503

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
51	54	54	2.271	-0.008	2.263	2.249

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	2.179	1	-12	2.385	11	-12	2.253	31	12	2.320
22	6	2.221	2	-9	2.282	12	-9	2.247			
23	3	2.251	3	-6	2.283	13	-6	2.268	33	3	2.100
			4	-3	2.273	14	-3	2.248	34	0	2.171
25	-3	2.225	5	0	2.263	15	0	2.208	35	-3	2.252
26	-6	2.221	6	3	2.261	16	3	2.217	36	-6	2.264
27	-12	2.217	7	6	2.269	17	6	2.226	37	-12	2.246
			8	9	2.269	18	9	2.223			
			9	12	2.271	19	12	2.251			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
5	9	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
-0.00	7.25	2.26	64	1.40	450	-84	2.342	0.000506

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
48	58	54	2.241	-0.010	2.231	2.262

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	2.176	1	-12	2.219	11	-12	2.223	31	12	2.256
22	6	2.231	2	-9	2.219	12	-9	2.255			
23	3	2.246	3	-6	2.223	13	-6	2.229	33	3	2.099
			4	-3	2.237	14	-3	2.244	34	0	2.224
25	-3	2.248	5	0	2.239	15	0	2.215	35	-3	2.267
26	-6	2.201	6	3	2.242	16	3	2.239	36	-6	2.247
27	-12	2.250	7	6	2.245	17	6	2.219	37	-12	2.285
			8	9	2.268	18	9	2.225			
			9	12	2.288	19	12	2.255			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
5	11	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
-0.00	8.05	2.53	68	1.40	500	-81	2.583	0.000561

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
51	58	54	2.544	-0.010	2.535	2.541

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	2.440	1	-12	2.537	11	-12	2.542	31	12	2.651
22	6	2.530	2	-9	2.547	12	-9	2.542			
23	3	2.530	3	-6	2.530	13	-6	2.546	33	3	2.391
			4	-3	2.541	14	-3	2.535	34	0	2.487
25	-3	2.521	5	0	2.540	15	0	2.499	35	-3	2.540
26	-6	2.535	6	3	2.540	16	3	2.505	36	-6	2.527
27	-12	2.503	7	6	2.548	17	6	2.511	37	-12	2.547
			8	9	2.536	18	9	2.535			
			9	12	2.560	19	12	2.510			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
5	13	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
-0.00	8.85	2.78	71	1.40	550	-79	2.814	0.000611

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
54	58	54	2.792	-0.011	2.781	2.777

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	2.678	1	-12	2.788	11	-12	2.762	31	12	2.840
22	6	2.730	2	-9	2.763	12	-9	2.777			
23	3	2.777	3	-6	2.764	13	-6	2.756	33	3	2.604
			4	-3	2.783	14	-3	2.777	34	0	2.671
25	-3	2.725	5	0	2.796	15	0	2.754	35	-3	2.745
26	-6	2.752	6	3	2.790	16	3	2.748	36	-6	2.764
27	-12	2.725	7	6	2.801	17	6	2.756	37	-12	2.780
			8	9	2.801	18	9	2.759			
			9	12	2.820	19	12	2.770			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
5	15	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
-0.00	9.66	3.03	74	1.40	600	-76	3.045	0.000663

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
54	58	58	3.055	-0.016	3.039	3.046

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	2.921	1	-12	3.039	11	-12	3.007	31	12	3.135
22	6	3.118	2	-9	3.043	12	-9	3.054			
23	3	3.059	3	-6	3.044	13	-6	3.090	33	3	2.863
			4	-3	3.058	14	-3	3.033	34	0	2.989
25	-3	3.006	5	0	3.063	15	0	3.015	35	-3	3.036
26	-6	3.048	6	3	3.058	16	3	3.005	36	-6	3.018
27	-12	3.023	7	6	3.052	17	6	3.006	37	-12	3.065
			8	9	3.059	18	9	3.043			
			9	12	3.085	19	12	3.043			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
5	17	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	10.46	3.28	74	1.40	650	-76	3.299	0.000718

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
54	58	54	3.344	-0.019	3.325	3.336

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.211	1	-12	3.357	11	-12	3.383	31	12	3.447
22	6	3.395	2	-9	3.350	12	-9	3.365			
23	3	3.386	3	-6	3.328	13	-6	3.352	33	3	3.150
			4	-3	3.341	14	-3	3.328	34	0	3.259
25	-3	3.363	5	0	3.344	15	0	3.282	35	-3	3.341
26	-6	3.393	6	3	3.344	16	3	3.285	36	-6	3.300
27	-12	3.297	7	6	3.346	17	6	3.319	37	-12	3.350
			8	9	3.317	18	9	3.319			
			9	12	3.339	19	12	3.336			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
5	19	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	11.31	3.54	78	1.40	702	-74	3.535	0.000771

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
58	58	58	3.596	-0.019	3.577	3.588

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.406	1	-12	3.562	11	-12	3.627	31	12	3.774
22	6	3.617	2	-9	3.561	12	-9	3.615			
23	3	3.655	3	-6	3.588	13	-6	3.570	33	3	3.380
			4	-3	3.596	14	-3	3.609	34	0	3.496
25	-3	3.567	5	0	3.588	15	0	3.555	35	-3	3.597
26	-6	3.651	6	3	3.574	16	3	3.542	36	-6	3.582
27	-12	3.538	7	6	3.597	17	6	3.524	37	-12	3.572
			8	9	3.585	18	9	3.562			
			9	12	3.574	19	12	3.601			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 054B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
5	21	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	12.10	3.80	81	1.40	751	-71	3.754	0.000822

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
58	61	58	3.872	-0.038	3.834	3.851

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.727	1	-12	3.876	11	-12	3.898	31	12	3.919
22	6	3.951	2	-9	3.878	12	-9	3.907			
23	3	3.920	3	-6	3.887	13	-6	3.886	33	3	3.681
			4	-3	3.881	14	-3	3.872	34	0	3.729
25	-3	3.932	5	0	3.882	15	0	3.813	35	-3	3.873
26	-6	3.907	6	3	3.903	16	3	3.813	36	-6	3.798
27	-12	3.850	7	6	3.862	17	6	3.781	37	-12	3.839
			8	9	3.856	18	9	3.829			
			9	12	3.846	19	12	3.840			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
5	22	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
-0.00	12.40	3.88	84	1.40	770	-69	3.814	0.000834

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
61	61	61	3.972	-0.027	3.945	3.937

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.776	1	-12	3.984	11	-12	4.012	31	12	4.028
22	6	4.054	2	-9	3.918	12	-9	3.978			
23	3	3.999	3	-6	3.918	13	-6	3.999	33	3	3.771
			4	-3	3.974	14	-3	3.983	34	0	3.835
25	-3	4.009	5	0	3.952	15	0	3.903	35	-3	3.944
26	-6	4.004	6	3	3.963	16	3	3.859	36	-6	3.932
27	-12	3.916	7	6	3.971	17	6	3.859	37	-12	3.940
			8	9	3.944	18	9	3.923			
			9	12	3.948	19	12	3.909			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
6	1	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
-0.00	4.94	1.67	71	1.35	306	-71	1.581	0.000359

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
54	58	58	1.564	-0.002	1.561	1.572

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	1.472	1	-12	1.544	11	-12	1.569	31	12	1.559
22	6	1.532	2	-9	1.547	12	-9	1.569			
23	3	1.539	3	-6	1.549	13	-6	1.557	33	3	1.493
			4	-3	1.557	14	-3	1.548	34	0	1.537
25	-3	1.558	5	0	1.568	15	0	1.549	35	-3	1.559
26	-6	1.538	6	3	1.565	16	3	1.565	36	-6	1.570
27	-12	1.522	7	6	1.570	17	6	1.549	37	-12	1.589
			8	9	1.567	18	9	1.556			
			9	12	1.568	19	12	1.570			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
6	3	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	6.46	2.18	71	1.35	400	-71	2.070	0.000470

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
54	61	58	2.069	-0.002	2.068	2.093

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	1.942	1	-12	2.039	11	-12	2.077	31	12	2.076
22	6	2.061	2	-9	2.044	12	-9	2.073			
23	3	2.043	3	-6	2.045	13	-6	2.052	33	3	1.962
			4	-3	2.056	14	-3	2.049	34	0	2.029
25	-3	2.069	5	0	2.074	15	0	2.052	35	-3	2.056
26	-6	2.044	6	3	2.065	16	3	2.053	36	-6	2.071
27	-12	2.026	7	6	2.082	17	6	2.063	37	-12	2.117
			8	9	2.081	18	9	2.068			
			9	12	2.082	19	12	2.082			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
6	5	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	8.08	2.73	74	1.35	500	-68	2.566	0.000584

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
58	61	58	2.633	-0.008	2.626	2.639

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	2.463	1	-12	2.608	11	-12	2.632	31	12	2.633
22	6	2.616	2	-9	2.625	12	-9	2.628			
23	3	2.589	3	-6	2.627	13	-6	2.603	33	3	2.480
			4	-3	2.627	14	-3	2.597	34	0	2.561
25	-3	2.623	5	0	2.636	15	0	2.593	35	-3	2.595
26	-6	2.590	6	3	2.645	16	3	2.640	36	-6	2.618
27	-12	2.569	7	6	2.640	17	6	2.608	37	-12	2.639
			8	9	2.646	18	9	2.634			
			9	12	2.660	19	12	2.644			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
6	7	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	8.89	3.00	74	1.35	550	-68	2.821	0.000642

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
58	58	58	2.909	-0.009	2.900	2.915

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	2.698	1	-12	2.885	11	-12	2.911	31	12	2.909
22	6	2.884	2	-9	2.890	12	-9	2.903			
23	3	2.855	3	-6	2.892	13	-6	2.867	33	3	2.733
			4	-3	2.900	14	-3	2.872	34	0	2.815
25	-3	2.892	5	0	2.914	15	0	2.869	35	-3	2.862
26	-6	2.866	6	3	2.914	16	3	2.913	36	-6	2.889
27	-12	2.832	7	6	2.917	17	6	2.878	37	-12	2.931
			8	9	2.922	18	9	2.898			
			9	12	2.931	19	12	2.921			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-O

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
6	9	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
-0.00	9.69	3.26	74	1.35	600	-69	3.077	0.000700

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
58	58	58	3.179	-0.008	3.171	3.178

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	2.946	1	-12	3.162	11	-12	3.187	31	12	3.178
22	6	3.147	2	-9	3.157	12	-9	3.166			
23	3	3.108	3	-6	3.153	13	-6	3.134	33	3	2.996
			4	-3	3.171	14	-3	3.124	34	0	3.081
25	-3	3.150	5	0	3.183	15	0	3.118	35	-3	3.117
26	-6	3.124	6	3	3.176	16	3	3.171	36	-6	3.158
27	-12	3.096	7	6	3.187	17	6	3.136	37	-12	3.199
			8	9	3.179	18	9	3.156			
			9	12	3.203	19	12	3.178			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
6	11	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
-0.00	10.49	3.53	81	1.35	650	-64	3.276	0.000748

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
61	61	61	3.447	-0.011	3.436	3.461

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.202	1	-12	3.449	11	-12	3.456	31	12	3.452
22	6	3.437	2	-9	3.436	12	-9	3.449			
23	3	3.399	3	-6	3.437	13	-6	3.421	33	3	3.258
			4	-3	3.433	14	-3	3.404	34	0	3.351
25	-3	3.447	5	0	3.456	15	0	3.404	35	-3	3.390
26	-6	3.414	6	3	3.467	16	3	3.389	36	-6	3.437
27	-12	3.377	7	6	3.460	17	6	3.408	37	-12	3.495
			8	9	3.480	18	9	3.442			
			9	12	3.485	19	12	3.472			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
6	13	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	11.31	3.81	81	1.35	700	-64	3.532	0.000807

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
61	61	61	3.725	-0.008	3.717	3.740

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.458	1	-12	3.692	11	-12	3.732	31	12	3.730
22	6	3.711	2	-9	3.711	12	-9	3.730			
23	3	3.669	3	-6	3.707	13	-6	3.690	33	3	3.509
			4	-3	3.711	14	-3	3.676	34	0	3.618
25	-3	3.723	5	0	3.738	15	0	3.674	35	-3	3.663
26	-6	3.681	6	3	3.732	16	3	3.717	36	-6	3.713
27	-12	3.650	7	6	3.740	17	6	3.681	37	-12	3.769
			8	9	3.749	18	9	3.725			
			9	12	3.764	19	12	3.743			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
6	15	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	12.21	4.12	84	1.35	755	-61	3.781	0.000867

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
61	61	61	4.070	-0.012	4.058	4.057

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.765	1	-12	4.066	11	-12	4.077	31	12	4.035
22	6	4.072	2	-9	4.036	12	-9	4.066			
23	3	4.007	3	-6	4.038	13	-6	4.046	33	3	3.864
			4	-3	4.060	14	-3	4.010	34	0	3.942
25	-3	4.079	5	0	4.099	15	0	4.004	35	-3	4.014
26	-6	4.042	6	3	4.100	16	3	4.044	36	-6	4.047
27	-12	4.022	7	6	4.079	17	6	4.017	37	-12	4.097
			8	9	4.076	18	9	4.060			
			9	12	4.066	19	12	4.070			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
7	1	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
-0.00	4.91	1.77	71	1.30	302	-63	1.578	0.000374

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
54	61	58	1.725	-0.006	1.718	1.716

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	1.660	1	-12	1.718	11	-12	1.730	31	12	1.712
22	6	1.720	2	-9	1.718	12	-9	1.712			
23	3	1.712	3	-6	1.718	13	-6	1.698	33	3	1.602
			4	-3	1.725	14	-3	1.698	34	0	1.725
25	-3	1.710	5	0	1.726	15	0	1.707	35	-3	1.755
26	-6	1.726	6	3	1.729	16	3	1.704	36	-6	1.770
27	-12	1.722	7	6	1.724	17	6	1.699	37	-12	1.889
			8	9	1.723	18	9	1.703			
			9	12	1.718	19	12	1.740			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
7	3	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
-0.00	6.51	2.35	71	1.30	400	-63	2.095	0.000498

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
58	61	58	2.326	-0.011	2.315	2.323

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	2.245	1	-12	2.307	11	-12	2.325	31	12	2.331
22	6	2.323	2	-9	2.312	12	-9	2.301			
23	3	2.310	3	-6	2.312	13	-6	2.289	33	3	2.174
			4	-3	2.325	14	-3	2.307	34	0	2.342
25	-3	2.314	5	0	2.326	15	0	2.296	35	-3	2.358
26	-6	2.337	6	3	2.327	16	3	2.301	36	-6	2.358
27	-12	2.323	7	6	2.327	17	6	2.294	37	-12	2.425
			8	9	2.326	18	9	2.301			
			9	12	2.316	19	12	2.304			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
7	5	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
-0.00	8.12	2.93	74	1.30	500	-61	2.592	0.000616

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
58	61	61	2.877	-0.013	2.864	2.865

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	2.746	1	-12	2.869	11	-12	2.880	31	12	2.861
22	6	2.864	2	-9	2.862	12	-9	2.854			
23	3	2.847	3	-6	2.863	13	-6	2.821	33	3	2.661
			4	-3	2.879	14	-3	2.832	34	0	2.808
25	-3	2.848	5	0	2.875	15	0	2.833	35	-3	2.879
26	-6	2.883	6	3	2.874	16	3	2.842	36	-6	2.880
27	-12	2.872	7	6	2.875	17	6	2.836	37	-12	3.016
			8	9	2.879	18	9	2.846			
			9	12	2.875	19	12	2.858			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
7	7	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	9.76	3.52	78	1.30	600	-58	3.096	0.000735

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
61	61	61	3.500	-0.018	3.482	3.490

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.361	1	-12	3.481	11	-12	3.502	31	12	3.506
22	6	3.500	2	-9	3.474	12	-9	3.483			
23	3	3.476	3	-6	3.471	13	-6	3.436	33	3	3.274
			4	-3	3.499	14	-3	3.459	34	0	3.470
25	-3	3.480	5	0	3.496	15	0	3.437	35	-3	3.494
26	-6	3.522	6	3	3.502	16	3	3.441	36	-6	3.507
27	-12	3.500	7	6	3.502	17	6	3.462	37	-12	3.564
			8	9	3.511	18	9	3.462			
			9	12	3.505	19	12	3.476			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
7	9	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
-0.00	10.58	3.82	78	1.30	651	-58	3.347	0.000798

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
61	61	61	3.763	-0.016	3.747	3.759

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.592	1	-12	3.738	11	-12	3.769	31	12	3.777
22	6	3.764	2	-9	3.739	12	-9	3.744			
23	3	3.741	3	-6	3.738	13	-6	3.701	33	3	3.518
			4	-3	3.761	14	-3	3.708	34	0	3.699
25	-3	3.753	5	0	3.769	15	0	3.707	35	-3	3.735
26	-6	3.765	6	3	3.775	16	3	3.718	36	-6	3.797
27	-12	3.761	7	6	3.765	17	6	3.718	37	-12	3.848
			8	9	3.767	18	9	3.732			
			9	12	3.801	19	12	3.765			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
7	10	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
-0.00	10.57	3.81	78	1.30	650	-58	3.344	0.000797

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
61	61	61	3.762	-0.005	3.756	3.739

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.580	1	-12	3.746	11	-12	3.762	31	12	3.734
22	6	3.741	2	-9	3.743	12	-9	3.741			
23	3	3.737	3	-6	3.753	13	-6	3.706	33	3	3.528
			4	-3	3.756	14	-3	3.701	34	0	3.688
25	-3	3.741	5	0	3.767	15	0	3.696	35	-3	3.734
26	-6	3.767	6	3	3.766	16	3	3.713	36	-6	3.769
27	-12	3.745	7	6	3.767	17	6	3.706	37	-12	3.818
			8	9	3.751	18	9	3.716			
			9	12	3.727	19	12	3.723			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
7	12	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
-0.00	11.40	4.11	81	1.30	701	-56	3.577	0.000853

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
61	64	64	4.084	-0.006	4.078	4.076

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.894	1	-12	4.058	11	-12	4.084	31	12	4.087
22	6	4.067	2	-9	4.056	12	-9	4.068			
23	3	4.062	3	-6	4.074	13	-6	4.019	33	3	3.849
			4	-3	4.079	14	-3	4.030	34	0	4.016
25	-3	4.063	5	0	4.115	15	0	4.029	35	-3	4.109
26	-6	4.092	6	3	4.120	16	3	4.040	36	-6	4.098
27	-12	4.072	7	6	4.089	17	6	4.025	37	-12	4.141
			8	9	4.074	18	9	4.037			
			9	12	4.048	19	12	4.040			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
7	14	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	12.21	4.41	81	1.30	750	-56	3.830	0.000915

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
61	61	61	4.377	-0.020	4.357	4.345

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	4.145	1	-12	4.375	11	-12	4.377	31	12	4.354
22	6	4.347	2	-9	4.353	12	-9	4.356			
23	3	4.314	3	-6	4.353	13	-6	4.313	33	3	4.098
			4	-3	4.378	14	-3	4.322	34	0	4.282
25	-3	4.333	5	0	4.395	15	0	4.305	35	-3	4.340
26	-6	4.373	6	3	4.395	16	3	4.294	36	-6	4.383
27	-12	4.358	7	6	4.377	17	6	4.325	37	-12	4.391
			8	9	4.373	18	9	4.348			
			9	12	4.374	19	12	4.356			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
8	1	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
-0.00	4.93	1.91	71	1.25	300	-55	1.590	0.000396

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
58	61	61	1.891	-0.002	1.889	1.880

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	1.815	1	-12	1.890	11	-12	1.896	31	12	2.091
22	6	1.897	2	-9	1.891	12	-9	1.895			
23	3	1.905	3	-6	1.894	13	-6	1.895	33	3	1.853
			4	-3	1.894	14	-3	1.879	34	0	2.053
25	-3	1.899	5	0	1.890	15	0	1.879	35	-3	2.051
26	-6	1.880	6	3	1.900	16	3	1.876	36	-6	2.045
27	-12	1.864	7	6	1.889	17	6	1.869	37	-12	2.122
			8	9	1.894	18	9	1.884			
			9	12	1.911	19	12	1.915			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
8	3	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
-0.00	6.60	2.53	68	1.25	401	-59	2.145	0.000530

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
54	61	58	2.510	-0.003	2.507	2.516

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	2.396	1	-12	2.511	11	-12	2.506	31	12	2.649
22	6	2.531	2	-9	2.508	12	-9	2.508			
23	3	2.531	3	-6	2.522	13	-6	2.519	33	3	2.387
			4	-3	2.512	14	-3	2.483	34	0	2.614
25	-3	2.530	5	0	2.525	15	0	2.483	35	-3	2.633
26	-6	2.510	6	3	2.525	16	3	2.492	36	-6	2.651
27	-12	2.492	7	6	2.508	17	6	2.468	37	-12	2.738
			8	9	2.519	18	9	2.492			
			9	12	2.511	19	12	2.519			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
8	5	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	8.22	3.17	71	1.25	500	-55	2.650	0.000659

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
58	61	61	3.160	-0.004	3.155	3.159

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.011	1	-12	3.162	11	-12	3.165	31	12	3.388
22	6	3.181	2	-9	3.162	12	-9	3.154			
23	3	3.185	3	-6	3.167	13	-6	3.166	33	3	3.023
			4	-3	3.162	14	-3	3.124	34	0	3.255
25	-3	3.183	5	0	3.178	15	0	3.125	35	-3	3.278
26	-6	3.150	6	3	3.178	16	3	3.133	36	-6	3.286
27	-12	3.141	7	6	3.157	17	6	3.115	37	-12	3.324
			8	9	3.169	18	9	3.144			
			9	12	3.167	19	12	3.142			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
8	7	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
-0.00	9.85	3.78	71	1.25	600	-56	3.177	0.000786

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
54	58	58	3.789	-0.010	3.779	3.788

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.605	1	-12	3.780	11	-12	3.799	31	12	3.918
22	6	3.806	2	-9	3.774	12	-9	3.787			
23	3	3.820	3	-6	3.776	13	-6	3.791	33	3	3.644
			4	-3	3.788	14	-3	3.745	34	0	3.860
25	-3	3.836	5	0	3.809	15	0	3.744	35	-3	3.894
26	-6	3.783	6	3	3.814	16	3	3.749	36	-6	3.915
27	-12	3.760	7	6	3.790	17	6	3.726	37	-12	3.984
			8	9	3.796	18	9	3.770			
			9	12	3.798	19	12	3.769			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
8	9	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
-0.00	10.65	4.13	74	1.25	647	-52	3.406	0.000850

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
58	61	61	4.117	-0.010	4.107	4.131

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.912	1	-12	4.104	11	-12	4.155	31	12	4.219
22	6	4.140	2	-9	4.122	12	-9	4.127			
23	3	4.156	3	-6	4.109	13	-6	4.127	33	3	4.020
			4	-3	4.109	14	-3	4.083	34	0	4.227
25	-3	4.164	5	0	4.137	15	0	4.084	35	-3	4.254
26	-6	4.106	6	3	4.135	16	3	4.084	36	-6	4.291
27	-12	4.098	7	6	4.125	17	6	4.067	37	-12	4.265
			8	9	4.143	18	9	4.108			
			9	12	4.113	19	12	4.089			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
8	11	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
-0.00	11.09	4.28	78	1.25	674	-50	3.517	0.000878

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
61	64	61	4.294	-0.018	4.275	4.288

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	4.068	1	-12	4.277	11	-12	4.309	31	12	4.369
22	6	4.304	2	-9	4.270	12	-9	4.289			
23	3	4.321	3	-6	4.265	13	-6	4.287	33	3	4.090
			4	-3	4.289	14	-3	4.235	34	0	4.321
25	-3	4.328	5	0	4.334	15	0	4.238	35	-3	4.355
26	-6	4.269	6	3	4.329	16	3	4.244	36	-6	4.372
27	-12	4.257	7	6	4.298	17	6	4.219	37	-12	4.441
			8	9	4.292	18	9	4.261			
			9	12	4.267	19	12	4.257			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
9	1	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	5.01	2.07	68	1.20	300	-50	1.630	0.000424

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
54	61	58	1.968	-0.007	1.962	1.969

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	1.893	1	-12	1.959	11	-12	1.973	31	12	1.986
22	6	1.965	2	-9	1.970	12	-9	1.986			
23	3	1.988	3	-6	1.967	13	-6	1.962	33	3	1.880
			4	-3	1.966	14	-3	1.951	34	0	1.989
25	-3	1.993	5	0	1.968	15	0	1.952	35	-3	2.018
26	-6	1.973	6	3	1.970	16	3	1.952	36	-6	2.004
27	-12	1.952	7	6	1.971	17	6	1.954	37	-12	2.041
			8	9	1.961	18	9	1.955			
			9	12	1.963	19	12	1.955			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
9	6	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	6.69	2.76	68	1.20	400	-50	2.174	0.000566

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
51	58	54	2.639	-0.011	2.628	2.646

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	2.520	1	-12	2.749	11	-12	2.642	31	12	2.615
22	6	2.627	2	-9	2.634	12	-9	2.652			
23	3	2.663	3	-6	2.637	13	-6	2.621	33	3	2.525
			4	-3	2.637	14	-3	2.605	34	0	2.638
25	-3	2.672	5	0	2.640	15	0	2.599	35	-3	2.693
26	-6	2.642	6	3	2.640	16	3	2.602	36	-6	2.661
27	-12	2.615	7	6	2.640	17	6	2.606	37	-12	2.680
			8	9	2.626	18	9	2.615			
			9	12	2.628	19	12	2.612			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.025	3.404	8	0.183	4.260	15	0.477	5.124
2	0.046	3.707	9	0.206	4.382	16	0.521	5.182
3	0.069	3.867	10	0.254	4.376	17	0.565	5.247
4	0.091	3.994	11	0.299	4.632	18	0.612	5.281
5	0.113	4.092	12	0.344	4.833	19	0.655	5.389
6	0.136	4.189	13	0.389	4.815	20	0.697	5.378
7	0.160	4.280	14	0.435	4.834	21	0.739	5.711

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
9	8	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	8.35	3.45	71	1.20	500	-48	2.693	0.000702

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
54	58	58	3.265	-0.011	3.254	3.274

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.094	1	-12	3.247	11	-12	3.267	31	12	3.228
22	6	3.260	2	-9	3.270	12	-9	3.276			
23	3	3.304	3	-6	3.271	13	-6	3.250	33	3	3.149
			4	-3	3.263	14	-3	3.225	34	0	3.241
25	-3	3.315	5	0	3.271	15	0	3.230	35	-3	3.332
26	-6	3.271	6	3	3.268	16	3	3.235	36	-6	3.300
27	-12	3.235	7	6	3.267	17	6	3.235	37	-12	3.302
			8	9	3.253	18	9	3.240			
			9	12	3.234	19	12	3.241			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 054B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
9	10	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	10.01	4.12	74	1.20	599	-45	3.202	0.000835

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
58	61	58	3.889	-0.002	3.887	3.888

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.683	1	-12	3.886	11	-12	3.895	31	12	3.840
22	6	3.893	2	-9	3.895	12	-9	3.904			
23	3	3.938	3	-6	3.900	13	-6	3.873	33	3	3.720
			4	-3	3.887	14	-3	3.855	34	0	3.812
25	-3	3.952	5	0	3.903	15	0	3.849	35	-3	3.894
26	-6	3.897	6	3	3.905	16	3	3.848	36	-6	3.892
27	-12	3.861	7	6	3.891	17	6	3.853	37	-12	3.880
			8	9	3.880	18	9	3.859			
			9	12	3.850	19	12	3.849			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
9	12	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	10.86	4.47	78	1.20	650	-43	3.445	0.000900

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
58	61	58	4.237	-0.017	4.220	4.237

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	4.002	1	-12	4.217	11	-12	4.226	31	12	4.169
22	6	4.230	2	-9	4.244	12	-9	4.232			
23	3	4.282	3	-6	4.245	13	-6	4.200	33	3	4.082
			4	-3	4.235	14	-3	4.172	34	0	4.171
25	-3	4.301	5	0	4.251	15	0	4.180	35	-3	4.285
26	-6	4.243	6	3	4.249	16	3	4.181	36	-6	4.255
27	-12	4.192	7	6	4.238	17	6	4.184	37	-12	4.251
			8	9	4.211	18	9	4.198			
			9	12	4.190	19	12	4.195			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
9	14	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	11.03	4.54	78	1.20	660	-43	3.498	0.000914

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
61	61	61	4.298	-0.012	4.286	4.290

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	4.047	1	-12	4.290	11	-12	4.300	31	12	4.222
22	6	4.298	2	-9	4.312	12	-9	4.305			
23	3	4.350	3	-6	4.317	13	-6	4.275	33	3	4.111
			4	-3	4.306	14	-3	4.250	34	0	4.211
25	-3	4.365	5	0	4.321	15	0	4.255	35	-3	4.297
26	-6	4.296	6	3	4.323	16	3	4.252	36	-6	4.297
27	-12	4.260	7	6	4.290	17	6	4.263	37	-12	4.281
			8	9	4.282	18	9	4.259			
			9	12	4.258	19	12	4.245			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
9	15	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	11.20	4.60	78	1.20	671	-43	3.553	0.000927

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
61	61	61	4.368	-0.005	4.362	4.359

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	4.129	1	-12	4.345	11	-12	4.365	31	12	4.297
22	6	4.371	2	-9	4.341	12	-9	4.381			
23	3	4.413	3	-6	4.363	13	-6	4.335	33	3	4.176
			4	-3	4.356	14	-3	4.310	34	0	4.282
25	-3	4.437	5	0	4.384	15	0	4.324	35	-3	4.352
26	-6	4.363	6	3	4.393	16	3	4.325	36	-6	4.352
27	-12	4.318	7	6	4.379	17	6	4.307	37	-12	4.324
			8	9	4.349	18	9	4.330			
			9	12	4.312	19	12	4.304			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-D

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
10	1	PANEL 8 ORTHOTROPIC-SIMPLY SUPPORTED-BARE

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	5.43	2.70	68	1.05	300	-28	1.737	0.000525

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
58	61	58	2.642	-0.007	2.635	2.631

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	2.556	1	-12	2.635	11	-12	2.643	31	12	2.823
22	6	2.651	2	-9	2.635	12	-9	2.638			
23	3	2.649	3	-6	2.638	13	-6	2.626	33	3	2.852
			4	-3	2.638	14	-3	2.628	34	0	2.813
25	-3	2.664	5	0	2.646	15	0	2.627	35	-3	2.845
26	-6	2.664	6	3	2.651	16	3	2.619	36	-6	2.823
27	-12	2.643	7	6	2.645	17	6	2.624	37	-12	2.825
			8	9	2.639	18	9	2.634			
			9	12	2.689	19	12	2.699			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
11	1	PANEL 6 ISOTROPIC-CLAMPED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	5.25	2.48	54	1.09	299	-45	1.750	0.000501

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
54	58	--	2.485	-0.002	2.483	2.461

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	2.390	1	-12	2.499	11	-12	2.469	31	12	2.510
22	6	2.452	2	-9	2.497	12	-9	2.466			
23	3	2.446	3	-6	2.494	13	-6	2.451	33	3	2.518
			4	-3	2.490	14	-3	2.433	34	0	2.522
25	-3	2.445	5	0	2.489	15	0	2.426	35	-3	2.526
26	-6	2.447	6	3	2.480	16	3	2.446	36	-6	2.529
27	-12	2.451	7	6	2.479	17	6	2.442	37	-12	2.513
			8	9	2.471	18	9	2.452			
			9	12	2.469	19	12	2.454			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-O

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
11	3	PANEL 6 ISOTROPIC-CLAMPED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
-0.00	6.13	2.88	58	1.10	350	-43	2.028	0.000580

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
54	58	--	2.894	-0.004	2.890	2.900

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	2.814	1	-12	2.913	11	-12	2.910	31	12	2.935
22	6	2.900	2	-9	2.895	12	-9	2.911			
23	3	2.895	3	-6	2.892	13	-6	2.886	33	3	2.964
			4	-3	2.895	14	-3	2.871	34	0	2.938
25	-3	2.899	5	0	2.884	15	0	2.875	35	-3	2.952
26	-6	2.892	6	3	2.886	16	3	2.882	36	-6	2.933
27	-12	2.886	7	6	2.892	17	6	2.891	37	-12	2.918
			8	9	2.896	18	9	2.890			
			9	12	2.885	19	12	2.910			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
11	5	PANEL 6 ISOTROPIC-CLAMPED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
-0.00	6.99	3.26	58	1.10	401	-44	2.316	0.000657

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
51	54	--	3.313	-0.003	3.310	3.321

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.219	1	-12	3.346	11	-12	3.333	31	12	3.364
22	6	3.325	2	-9	3.318	12	-9	3.339			
23	3	3.310	3	-6	3.310	13	-6	3.302	33	3	3.364
			4	-3	3.310	14	-3	3.289	34	0	3.340
25	-3	3.319	5	0	3.302	15	0	3.291	35	-3	3.345
26	-6	3.319	6	3	3.310	16	3	3.292	36	-6	3.349
27	-12	3.317	7	6	3.315	17	6	3.296	37	-12	3.338
			8	9	3.323	18	9	3.302			
			9	12	3.307	19	12	3.322			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
11	7	PANEL 6 ISOTROPIC-CLAMPED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
-0.00	7.87	3.70	61	1.10	449	-40	2.581	0.000740

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
54	54	--	3.728	-0.003	3.724	3.722

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.625	1	-12	3.786	11	-12	3.775	31	12	3.724
22	6	3.741	2	-9	3.736	12	-9	3.761			
23	3	3.712	3	-6	3.733	13	-6	3.723	33	3	3.756
			4	-3	3.723	14	-3	3.707	34	0	3.718
25	-3	3.720	5	0	3.712	15	0	3.707	35	-3	3.753
26	-6	3.735	6	3	3.720	16	3	3.717	36	-6	3.749
27	-12	3.705	7	6	3.733	17	6	3.718	37	-12	3.691
			8	9	3.748	18	9	3.726			
			9	12	3.724	19	12	3.730			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
11	9	PANEL 6 ISOTROPIC-CLAMPED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
-0.00	8.75	4.12	61	1.10	498	-40	2.869	0.000824

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
54	54	--	4.176	-0.002	4.174	4.191

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	4.045	1	-12	4.224	11	-12	4.195	31	12	4.187
22	6	4.187	2	-9	4.213	12	-9	4.202			
23	3	4.168	3	-6	4.183	13	-6	4.168	33	3	4.203
			4	-3	4.181	14	-3	4.141	34	0	4.152
25	-3	4.185	5	0	4.167	15	0	4.127	35	-3	4.180
26	-6	4.175	6	3	4.153	16	3	4.147	36	-6	4.219
27	-12	4.153	7	6	4.171	17	6	4.149	37	-12	4.181
			8	9	4.185	18	9	4.169			
			9	12	4.163	19	12	4.186			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
11	11	PANEL 6 ISOTROPIC-CLAMPED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
-0.00	9.62	4.49	64	1.10	551	-38	3.133	0.000894

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
58	58	--	4.573	-0.003	4.570	4.593

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	4.426	1	-12	4.638	11	-12	4.621	31	12	4.586
22	6	4.574	2	-9	4.632	12	-9	4.621			
23	3	4.581	3	-6	4.594	13	-6	4.611	33	3	4.621
			4	-3	4.576	14	-3	4.544	34	0	4.579
25	-3	4.586	5	0	4.558	15	0	4.528	35	-3	4.604
26	-6	4.581	6	3	4.557	16	3	4.542	36	-6	4.581
27	-12	4.577	7	6	4.570	17	6	4.557	37	-12	4.574
			8	9	4.589	18	9	4.566			
			9	12	4.571	19	12	4.589			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
11	13	PANEL 6 ISOTROPIC-CLAMPED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	10.51	4.92	68	1.10	601	-35	3.393	0.000972

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
54	54	--	5.016	-0.002	5.015	5.001

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	4.842	1	-12	5.071	11	-12	5.067	31	12	4.997
22	6	5.031	2	-9	5.059	12	-9	5.051			
23	3	4.996	3	-6	5.017	13	-6	5.040	33	3	5.047
			4	-3	5.011	14	-3	4.970	34	0	4.992
25	-3	4.998	5	0	4.987	15	0	4.948	35	-3	5.006
26	-6	5.020	6	3	5.001	16	3	4.964	36	-6	4.987
27	-12	4.986	7	6	5.022	17	6	4.979	37	-12	4.995
			8	9	5.023	18	9	4.982			
			9	12	4.980	19	12	5.007			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
11	15	PANEL 6 ISOTROPIC-CLAMPED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	11.39	5.29	68	1.11	653	-36	3.677	0.001048

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
58	58	--	5.429	-0.002	5.427	5.442

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	5.267	1	-12	5.493	11	-12	5.523	31	12	5.478
22	6	5.438	2	-9	5.487	12	-9	5.517			
23	3	5.435	3	-6	5.450	13	-6	5.462	33	3	5.462
			4	-3	5.429	14	-3	5.397	34	0	5.433
25	-3	5.434	5	0	5.432	15	0	5.379	35	-3	5.488
26	-6	5.455	6	3	5.421	16	3	5.407	36	-6	5.459
27	-12	5.433	7	6	5.429	17	6	5.403	37	-12	5.434
			8	9	5.457	18	9	5.423			
			9	12	5.428	19	12	5.441			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
11	17	PANEL 6 ISOTROPIC-CLAMPED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	11.38	5.36	71	1.09	648	-32	3.640	0.001052

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
61	58	--	5.437	-0.001	5.436	5.437

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	5.249	1	-12	5.532	11	-12	5.477	31	12	5.431
22	6	5.439	2	-9	5.450	12	-9	5.482			
23	3	5.423	3	-6	5.454	13	-6	5.451	33	3	5.520
			4	-3	5.437	14	-3	5.402	34	0	5.436
25	-3	5.431	5	0	5.409	15	0	5.377	35	-3	5.519
26	-6	5.428	6	3	5.419	16	3	5.398	36	-6	5.435
27	-12	5.413	7	6	5.437	17	6	5.407	37	-12	5.376
			8	9	5.441	18	9	5.396			
			9	12	5.430	19	12	5.425			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
11	18	PANEL 6 ISOTROPIC-CLAMPED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	12.26	5.77	71	1.10	698	-32	3.920	0.001131

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
58	58	--	5.846	0.005	5.851	5.860

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	5.668	1	-12	5.966	11	-12	5.947	31	12	5.903
22	6	5.871	2	-9	5.872	12	-9	5.915			
23	3	5.833	3	-6	5.884	13	-6	5.858	33	3	5.934
			4	-3	5.840	14	-3	5.821	34	0	5.890
25	-3	5.864	5	0	5.818	15	0	5.781	35	-3	5.944
26	-6	5.870	6	3	5.839	16	3	5.805	36	-6	5.842
27	-12	5.849	7	6	5.852	17	6	5.788	37	-12	5.893
			8	9	5.869	18	9	5.843			
			9	12	5.829	19	12	5.850			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
11	20	PANEL 6 ISOTROPIC-CLAMPED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	13.13	6.11	74	1.11	753	-31	4.172	0.001194

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
61	61	--	6.231	0.001	6.232	6.275

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	6.041	1	-12	6.385	11	-12	6.286	31	12	6.409
22	6	6.284	2	-9	6.266	12	-9	6.262			
23	3	6.230	3	-6	6.267	13	-6	6.257	33	3	6.424
			4	-3	6.226	14	-3	6.205	34	0	6.426
25	-3	6.250	5	0	6.230	15	0	6.153	35	-3	6.497
26	-6	6.232	6	3	6.221	16	3	6.205	36	-6	6.390
27	-12	6.229	7	6	6.236	17	6	6.194	37	-12	6.298
			8	9	6.246	18	9	6.218			
			9	12	6.202	19	12	6.252			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
11	22	PANEL 6 ISOTROPIC-CLAMPED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	13.99	6.54	78	1.10	800	-27	4.407	0.001269

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
64	64	--	6.660	0.003	6.663	6.680

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	6.460	1	-12	6.800	11	-12	6.771	31	12	6.788
22	6	6.719	2	-9	6.686	12	-9	6.739			
23	3	6.661	3	-6	6.714	13	-6	6.725	33	3	6.874
			4	-3	6.668	14	-3	6.618	34	0	6.766
25	-3	6.690	5	0	6.645	15	0	6.613	35	-3	6.858
26	-6	6.701	6	3	6.638	16	3	6.622	36	-6	6.761
27	-12	6.639	7	6	6.653	17	6	6.610	37	-12	6.700
			8	9	6.660	18	9	6.620			
			9	12	6.657	19	12	6.669			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
11	24	PANEL 6 ISOTROPIC-CLAMPED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
-0.00	14.89	6.97	78	1.10	851	-27	4.688	0.001352

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
64	64	--	7.103	0.011	7.114	7.097

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	6.870	1	-12	7.231	11	-12	7.236	31	12	7.161
22	6	7.134	2	-9	7.106	12	-9	7.179			
23	3	7.077	3	-6	7.150	13	-6	7.161	33	3	7.282
			4	-3	7.099	14	-3	7.055	34	0	7.210
25	-3	7.102	5	0	7.088	15	0	7.040	35	-3	7.241
26	-6	7.071	6	3	7.074	16	3	7.027	36	-6	7.221
27	-12	7.078	7	6	7.107	17	6	7.037	37	-12	7.125
			8	9	7.096	18	9	7.085			
			9	12	7.083	19	12	7.083			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
11	25	PANEL 6 ISOTROPIC-CLAMPED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
-0.00	16.61	7.73	81	1.11	952	-25	5.191	0.001493

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
68	64	--	7.937	0.007	7.945	7.942

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	7.689	1	-12	8.135	11	-12	8.044	31	12	8.186
22	6	7.979	2	-9	7.945	12	-9	8.011			
23	3	7.958	3	-6	7.995	13	-6	8.003	33	3	8.166
			4	-3	7.944	14	-3	7.888	34	0	8.137
25	-3	7.950	5	0	7.914	15	0	7.888	35	-3	8.192
26	-6	7.940	6	3	7.891	16	3	7.870	36	-6	8.112
27	-12	7.946	7	6	7.931	17	6	7.856	37	-12	7.992
			8	9	7.935	18	9	7.905			
			9	12	7.918	19	12	7.926			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
11	26	PANEL 6 ISOTROPIC-CLAMPED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	14.87	6.85	74	1.11	856	-32	4.729	0.001344

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
64	64	--	7.083	0.002	7.086	7.114

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	6.907	1	-12	7.240	11	-12	7.211	31	12	7.273
22	6	7.142	2	-9	7.067	12	-9	7.158			
23	3	7.114	3	-6	7.115	13	-6	7.103	33	3	7.306
			4	-3	7.077	14	-3	7.056	34	0	7.170
25	-3	7.113	5	0	7.057	15	0	7.025	35	-3	7.245
26	-6	7.098	6	3	7.064	16	3	7.035	36	-6	7.211
27	-12	7.072	7	6	7.089	17	6	7.092	37	-12	7.175
			8	9	7.110	18	9	7.086			
			9	12	7.087	19	12	7.160			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 054B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
11	28	PANEL 6 ISOTROPIC-CLAMPED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	16.63	7.81	78	1.10	948	-27	5.233	0.001514

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
64	64	--	7.973	-0.010	7.963	8.268

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	7.629	1	-12	8.153	11	-12	8.101	31	12	8.005
22	6	7.955	2	-9	7.937	12	-9	8.028			
23	3	7.959	3	-6	8.029	13	-6	7.992	33	3	8.153
			4	-3	7.972	14	-3	7.937	34	0	8.265
25	-3	7.955	5	0	7.938	15	0	7.854	35	-3	8.359
26	-6	7.954	6	3	7.944	16	3	7.900	36	-6	8.411
27	-12	7.944	7	6	7.974	17	6	7.908	37	-12	8.239
			8	9	7.978	18	9	7.897			
			9	12	7.958	19	12	7.938			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
11	29	PANEL 6 ISOTROPIC-CLAMPED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	17.51	8.22	81	1.10	999	-24	5.467	0.001584

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
68	64	--	8.384	0.004	8.389	8.391

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	8.099	1	-12	8.575	11	-12	8.544	31	12	8.420
22	6	8.438	2	-9	8.377	12	-9	8.450			
23	3	8.421	3	-6	8.445	13	-6	8.381	33	3	8.547
			4	-3	8.373	14	-3	8.333	34	0	8.502
25	-3	8.395	5	0	8.345	15	0	8.306	35	-3	8.627
26	-6	8.387	6	3	8.361	16	3	8.307	36	-6	8.464
27	-12	8.365	7	6	8.395	17	6	8.341	37	-12	8.383
			8	9	8.368	18	9	8.352			
			9	12	8.358	19	12	8.371			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
11	30	PANEL 6 ISOTROPIC-CLAMPED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
-0.00	18.38	8.65	84	1.10	1048	-21	5.691	0.001655

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
71	68	--	8.762	0.000	8.762	8.793

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	8.459	1	-12	9.025	11	-12	8.959	31	12	8.812
22	6	8.824	2	-9	8.800	12	-9	8.830			
23	3	8.819	3	-6	8.855	13	-6	8.843	33	3	8.986
			4	-3	8.756	14	-3	8.711	34	0	8.943
25	-3	8.805	5	0	8.764	15	0	8.706	35	-3	8.975
26	-6	8.797	6	3	8.737	16	3	8.695	36	-6	8.955
27	-12	8.786	7	6	8.768	17	6	8.681	37	-12	8.796
			8	9	8.758	18	9	8.714			
			9	12	8.729	19	12	8.753			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
12	1	PANEL 6 ISOTROPIC-CLAMPED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	5.01	2.06	51	1.20	300	-63	1.699	0.000437

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
54	58	--	1.955	0.001	1.956	1.957

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	1.885	1	-12	1.994	11	-12	1.968	31	12	1.986
22	6	1.965	2	-9	1.990	12	-9	1.979			
23	3	1.966	3	-6	1.950	13	-6	1.980	33	3	1.996
			4	-3	1.955	14	-3	1.948	34	0	1.999
25	-3	1.968	5	0	1.953	15	0	1.933	35	-3	2.022
26	-6	1.969	6	3	1.947	16	3	1.942	36	-6	2.016
27	-12	1.965	7	6	1.954	17	6	1.942	37	-12	1.966
			8	9	1.950	18	9	1.943			
			9	12	1.948	19	12	1.952			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
12	2	PANEL 6 ISOTROPIC-CLAMPED-3*3*1 TPS

TUNNEL CONDITIONS

HWALL -IN-	MEASURED PT PSIA	P PSIA	TTF DF	M -	CALCULATED Q PSFA	T DF	REYN M/FT	RHO SCF
-0.00	5.02	2.07	54	1.20	300	-61	1.688	0.000435

PANEL TEMP. DEG F FWD	MID	AFT	PRESSURES PSIA PANEL	DIF	BOX	PLENUM
54	58	--	1.966	0.001	1.967	1.968

PANEL STATIC PRESSURES

FORWARD EDGE ORIF	Y	PSIA	PORT EDGE ORIF	X	PSIA	STARBOARD EDGE ORIF	X	PSIA	AFT EDGE ORIF	Y	PSIA
21	12	1.894	1	-12	2.003	11	-12	1.977	31	12	1.988
22	6	1.976	2	-9	2.001	12	-9	1.988			
23	3	2.001	3	-6	1.964	13	-6	1.988	33	3	2.014
			4	-3	1.966	14	-3	1.954	34	0	2.011
25	-3	2.003	5	0	1.963	15	0	1.947	35	-3	2.040
26	-6	1.975	6	3	1.960	16	3	1.950	36	-6	2.011
27	-12	1.960	7	6	1.965	17	6	1.953	37	-12	1.980
			8	9	1.964	18	9	1.950			
			9	12	1.959	19	12	1.968			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.034	2.324	8	0.183	2.719	15	0.623	3.486
2	0.056	2.364	9	0.204	2.787	16	0.691	3.551
3	0.078	2.392	10	0.277	2.952	17	0.756	3.679
4	0.098	2.461	11	0.346	2.994	18	0.823	3.778
5	0.119	2.479	12	0.417	3.122	19	0.890	3.685
6	0.141	2.560	13	0.485	3.245	20	0.953	3.506
7	0.162	2.646	14	0.552	3.387	21	1.019	4.047

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 054B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
12	4	PANEL 6 ISOTROPIC-CLAMPED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	10.02	4.13	64	1.20	599	-53	3.285	0.000852

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
54	58	--	3.989	0.007	3.996	4.006

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.832	1	-12	4.091	11	-12	4.049	31	12	3.990
22	6	4.019	2	-9	4.004	12	-9	4.057			
23	3	4.068	3	-6	3.999	13	-6	3.985	33	3	4.076
			4	-3	3.988	14	-3	3.970	34	0	4.031
25	-3	4.069	5	0	3.989	15	0	3.951	35	-3	4.105
26	-6	4.016	6	3	3.976	16	3	3.961	36	-6	4.017
27	-12	4.003	7	6	3.989	17	6	3.951	37	-12	3.933
			8	9	3.973	18	9	3.950			
			9	12	3.970	19	12	3.981			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.034	4.612	8	0.166	5.110	15	0.657	7.099
2	0.052	4.671	9	0.186	5.259	16	0.729	7.361
3	0.071	4.748	10	0.268	5.641	17	0.803	7.314
4	0.090	4.774	11	0.346	6.142	18	0.879	7.370
5	0.109	4.834	12	0.425	6.389	19	0.951	7.898
6	0.128	4.981	13	0.502	6.563	20	1.026	8.003
7	0.147	5.032	14	0.577	6.881	21	1.099	8.179

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
12	6	PANEL 6 ISOTROPIC-CLAMPED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	13.36	5.51	71	1.20	800	-48	4.309	0.001122

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
58	58	--	5.337	0.008	5.345	5.356

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	5.082	1	-12	5.507	11	-12	5.441	31	12	5.315
22	6	5.369	2	-9	5.353	12	-9	5.428			
23	3	5.426	3	-6	5.362	13	-6	5.342	33	3	5.420
			4	-3	5.342	14	-3	5.319	34	0	5.397
25	-3	5.427	5	0	5.338	15	0	5.295	35	-3	5.514
26	-6	5.374	6	3	5.330	16	3	5.295	36	-6	5.374
27	-12	5.338	7	6	5.332	17	6	5.277	37	-12	5.248
			8	9	5.289	18	9	5.250			
			9	12	5.296	19	12	5.303			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.087	6.272	8	0.161	6.586	15	0.575	9.032
2	0.098	6.244	9	0.172	6.661	16	0.657	9.226
3	0.108	6.327	10	0.222	6.954	17	0.732	9.475
4	0.118	6.354	11	0.272	7.192	18	0.808	9.517
5	0.128	6.412	12	0.334	7.565	19	0.885	9.886
6	0.139	6.494	13	0.416	8.086	20	0.959	10.347
7	0.150	6.533	14	0.497	8.467	21	1.036	10.417

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
12	8	PANEL 6 ISOTROPIC-CLAMPED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
-0.00	12.53	5.16	74	1.20	750	-45	4.008	0.001045

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
61	61	--	5.018	0.011	5.029	5.027

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	4.822	1	-12	5.169	11	-12	5.120	31	12	5.018
22	6	5.039	2	-9	5.038	12	-9	5.087			
23	3	5.107	3	-6	5.036	13	-6	5.071	33	3	5.139
			4	-3	5.018	14	-3	4.999	34	0	5.083
25	-3	5.114	5	0	5.025	15	0	4.983	35	-3	5.180
26	-6	5.078	6	3	5.018	16	3	5.012	36	-6	5.059
27	-12	5.023	7	6	5.018	17	6	4.965	37	-12	4.948
			8	9	4.983	18	9	4.937			
			9	12	4.998	19	12	4.991			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
12	10	PANEL 6 ISOTROPIC-CLAMPED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	11.68	4.81	78	1.20	699	-43	3.706	0.000968

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
64	61	--	4.670	0.011	4.681	4.699

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	4.472	1	-12	4.817	11	-12	4.757	31	12	4.683
22	6	4.714	2	-9	4.694	12	-9	4.744			
23	3	4.765	3	-6	4.683	13	-6	4.676	33	3	4.769
			4	-3	4.671	14	-3	4.666	34	0	4.730
25	-3	4.769	5	0	4.676	15	0	4.644	35	-3	4.836
26	-6	4.764	6	3	4.673	16	3	4.661	36	-6	4.754
27	-12	4.692	7	6	4.668	17	6	4.628	37	-12	4.656
			8	9	4.654	18	9	4.613			
			9	12	4.636	19	12	4.649			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
12	12	PANEL 6 ISOTROPIC-CLAMPED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	10.87	4.47	74	1.20	651	-45	3.476	0.000906

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
61	61	--	4.334	0.009	4.343	4.335

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	4.138	1	-12	4.466	11	-12	4.403	31	12	4.329
22	6	4.359	2	-9	4.353	12	-9	4.392			
23	3	4.406	3	-6	4.351	13	-6	4.333	33	3	4.401
			4	-3	4.339	14	-3	4.310	34	0	4.375
25	-3	4.433	5	0	4.332	15	0	4.297	35	-3	4.471
26	-6	4.419	6	3	4.316	16	3	4.303	36	-6	4.349
27	-12	4.329	7	6	4.329	17	6	4.285	37	-12	4.248
			8	9	4.297	18	9	4.263			
			9	12	4.303	19	12	4.306			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
12	14	PANEL 6 ISOTROPIC-CLAMPED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	10.03	4.13	74	1.20	600	-45	3.207	0.000836

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
61	61	--	3.993	0.008	4.000	4.006

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.810	1	-12	4.116	11	-12	4.056	31	12	3.993
22	6	4.015	2	-9	4.010	12	-9	4.061			
23	3	4.071	3	-6	4.007	13	-6	3.991	33	3	4.067
			4	-3	3.998	14	-3	3.982	34	0	4.041
25	-3	4.084	5	0	3.992	15	0	3.961	35	-3	4.127
26	-6	4.083	6	3	3.978	16	3	3.959	36	-6	4.008
27	-12	3.986	7	6	3.987	17	6	3.951	37	-12	3.932
			8	9	3.972	18	9	3.935			
			9	12	3.970	19	12	3.974			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
12	16	PANEL 6 ISOTROPIC-CLAMPED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	9.19	3.79	74	1.20	550	-45	2.938	0.000767

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
61	61	--	3.650	0.007	3.657	3.657

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.503	1	-12	3.748	11	-12	3.708	31	12	3.631
22	6	3.668	2	-9	3.663	12	-9	3.707			
23	3	3.718	3	-6	3.663	13	-6	3.699	33	3	3.712
			4	-3	3.652	14	-3	3.636	34	0	3.691
25	-3	3.729	5	0	3.649	15	0	3.615	35	-3	3.765
26	-6	3.715	6	3	3.646	16	3	3.622	36	-6	3.669
27	-12	3.641	7	6	3.648	17	6	3.613	37	-12	3.583
			8	9	3.638	18	9	3.608			
			9	12	3.635	19	12	3.632			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
12	18	PANEL 6 ISOTROPIC-CLAMPED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
-0.00	10.86	4.47	74	1.20	650	-45	3.474	0.000905

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
61	61	--	4.296	0.002	4.299	4.310

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	4.104	1	-12	4.418	11	-12	4.363	31	12	4.265
22	6	4.326	2	-9	4.325	12	-9	4.356			
23	3	4.378	3	-6	4.308	13	-6	4.351	33	3	4.352
			4	-3	4.302	14	-3	4.278	34	0	4.321
25	-3	4.394	5	0	4.302	15	0	4.258	35	-3	4.417
26	-6	4.320	6	3	4.273	16	3	4.262	36	-6	4.304
27	-12	4.288	7	6	4.291	17	6	4.245	37	-12	4.222
			8	9	4.266	18	9	4.229			
			9	12	4.261	19	12	4.264			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
12	20	PANEL 6 ISOTROPIC-CLAMPED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	8.35	3.45	74	1.20	500	-45	2.671	0.000698

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
64	61	--	3.314	0.007	3.321	3.322

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.178	1	-12	3.408	11	-12	3.358	31	12	3.299
22	6	3.333	2	-9	3.329	12	-9	3.361			
23	3	3.377	3	-6	3.322	13	-6	3.360	33	3	3.371
			4	-3	3.318	14	-3	3.305	34	0	3.348
25	-3	3.390	5	0	3.317	15	0	3.289	35	-3	3.421
26	-6	3.332	6	3	3.302	16	3	3.286	36	-6	3.339
27	-12	3.305	7	6	3.310	17	6	3.284	37	-12	3.256
			8	9	3.297	18	9	3.283			
			9	12	3.299	19	12	3.311			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
13	1	PANEL 6 ISOTROPIC-CLAMPED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.03	8.35	3.44	74	1.20	500	-45	2.669	0.000696

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
64	64	--	3.306	0.007	3.312	3.317

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.184	1	-12	3.392	11	-12	3.361	31	12	3.304
22	6	3.323	2	-9	3.331	12	-9	3.358			
23	3	3.364	3	-6	3.318	13	-6	3.349	33	3	3.385
			4	-3	3.307	14	-3	3.293	34	0	3.338
25	-3	3.377	5	0	3.302	15	0	3.280	35	-3	3.419
26	-6	3.328	6	3	3.293	16	3	3.284	36	-6	3.344
27	-12	3.304	7	6	3.304	17	6	3.277	37	-12	3.270
			8	9	3.290	18	9	3.266			
			9	12	3.291	19	12	3.290			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.013	3.755	8	0.096	3.966	15	0.587	5.642
2	0.025	3.790	9	0.107	4.039	16	0.675	5.839
3	0.036	3.835	10	0.162	4.193	17	0.760	6.112
4	0.048	3.861	11	0.234	4.477	18	0.847	6.195
5	0.060	3.898	12	0.324	4.900	19	0.928	6.426
6	0.072	3.906	13	0.414	5.170	20	1.013	6.462
7	0.084	3.959	14	0.502	5.508	21	1.096	6.609

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
13	3	PANEL 6 ISOTROPIC-CLAMPED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.25	8.35	3.45	74	1.20	500	-45	2.671	0.000698

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
61	61	--	3.317	0.008	3.325	3.316

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.145	1	-12	3.408	11	-12	3.369	31	12	3.315
22	6	3.322	2	-9	3.332	12	-9	3.364			
23	3	3.385	3	-6	3.322	13	-6	3.355	33	3	3.403
			4	-3	3.319	14	-3	3.306	34	0	3.347
25	-3	3.397	5	0	3.317	15	0	3.290	35	-3	3.427
26	-6	3.331	6	3	3.307	16	3	3.288	36	-6	3.357
27	-12	3.304	7	6	3.315	17	6	3.277	37	-12	3.288
			8	9	3.293	18	9	3.259			
			9	12	3.303	19	12	3.303			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.023	3.851	8	0.186	4.276	15	0.741	6.099
2	0.046	3.953	9	0.209	4.426	16	0.828	6.380
3	0.068	4.001	10	0.301	4.810	17	0.911	6.473
4	0.091	4.013	11	0.392	5.137	18	0.995	6.726
5	0.114	4.081	12	0.481	5.537	19	1.078	6.918
6	0.138	4.155	13	0.567	5.525	20	1.160	6.680
7	0.161	4.234	14	0.657	5.998	21	1.243	7.146

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
13	5	PANEL 6 ISOTROPIC-CLAMPED-3*3*1 TPS

TUNNEL CONDITIONS

HWALL -IN-	MEASURED PT PSIA	MEASURED P PSIA	TTF DF	M -	CALCULATED Q PSFA	CALCULATED T DF	CALCULATED REYN M/FT	CALCULATED RHO SCF
0.50	8.36	3.44	78	1.20	500	-43	2.651	0.000693

PANEL TEMP. DEG F FWD	MID	AFT	PRESSURES PSIA PANEL	DIF	BOX	PLENUM
64	64	--	3.320	0.003	3.323	3.325

PANEL STATIC PRESSURES

FORWARD EDGE ORIF	Y	PSIA	PORT EDGE ORIF	X	PSIA	STARBOARD EDGE ORIF	X	PSIA	AFT EDGE ORIF	Y	PSIA
21	12	3.135	1	-12	3.384	11	-12	3.352	31	12	3.324
22	6	3.322	2	-9	3.289	12	-9	3.383			
23	3	3.393	3	-6	3.305	13	-6	3.301	33	3	3.388
			4	-3	3.321	14	-3	3.306	34	0	3.366
25	-3	3.412	5	0	3.327	15	0	3.289	35	-3	3.453
26	-6	3.327	6	3	3.304	16	3	3.294	36	-6	3.374
27	-12	3.317	7	6	3.319	17	6	3.274	37	-12	3.300
			8	9	3.285	18	9	3.261			
			9	12	3.312	19	12	3.306			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.035	3.829	8	0.210	4.387	15	0.795	6.271
2	0.060	3.967	9	0.237	4.489	16	0.884	6.529
3	0.084	4.013	10	0.333	4.939	17	0.971	6.710
4	0.108	4.033	11	0.430	5.261	18	1.062	6.841
5	0.134	4.112	12	0.522	5.620	19	1.149	6.931
6	0.159	4.199	13	0.617	5.891	20	1.238	7.148
7	0.185	4.255	14	0.706	6.011	21	1.324	7.215

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
13	7	PANEL 6 ISOTROPIC-CLAMPED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.50	7.52	3.09	74	1.20	450	-45	2.406	0.000627

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
64	64	--	2.970	0.004	2.974	2.976

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	2.802	1	-12	3.023	11	-12	2.986	31	12	2.964
22	6	2.959	2	-9	2.941	12	-9	3.018			
23	3	3.031	3	-6	2.954	13	-6	2.956	33	3	3.053
			4	-3	2.972	14	-3	2.957	34	0	3.002
25	-3	3.043	5	0	2.974	15	0	2.942	35	-3	3.088
26	-6	3.037	6	3	2.954	16	3	2.945	36	-6	3.021
27	-12	2.949	7	6	2.968	17	6	2.932	37	-12	2.948
			8	9	2.937	18	9	2.911			
			9	12	2.959	19	12	2.953			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
13	9	PANEL 6 ISOTROPIC-CLAMPED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.75	7.52	3.10	74	1.20	450	-45	2.404	0.000627

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
64	64	--	2.980	0.002	2.982	2.988

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	2.810	1	-12	3.019	11	-12	3.001	31	12	2.977
22	6	2.980	2	-9	2.928	12	-9	3.025			
23	3	3.056	3	-6	2.943	13	-6	2.964	33	3	3.045
			4	-3	2.981	14	-3	2.966	34	0	3.017
25	-3	3.071	5	0	2.985	15	0	2.959	35	-3	3.088
26	-6	3.057	6	3	2.965	16	3	2.955	36	-6	3.056
27	-12	2.982	7	6	2.978	17	6	2.935	37	-12	2.964
			8	9	2.954	18	9	2.928			
			9	12	2.977	19	12	2.983			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
13	11	PANEL 6 ISOTROPIC-CLAMPED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.75	7.96	3.27	78	1.20	477	-43	2.525	0.000659

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
68	68	--	3.146	-0.001	3.145	3.152

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	2.953	1	-12	3.183	11	-12	3.164	31	12	3.146
22	6	3.130	2	-9	3.096	12	-9	3.200			
23	3	3.220	3	-6	3.106	13	-6	3.127	33	3	3.213
			4	-3	3.149	14	-3	3.135	34	0	3.187
25	-3	3.231	5	0	3.155	15	0	3.119	35	-3	3.273
26	-6	3.145	6	3	3.128	16	3	3.119	36	-6	3.213
27	-12	3.146	7	6	3.143	17	6	3.101	37	-12	3.111
			8	9	3.109	18	9	3.092			
			9	12	3.139	19	12	3.136			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
13	13	PANEL 6 ISOTROPIC-CLAMPED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.75	8.36	3.45	78	1.20	500	-48	2.652	0.000694

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
71	71	--	3.307	0.002	3.308	3.314

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.105	1	-12	3.355	11	-12	3.329	31	12	3.295
22	6	3.297	2	-9	3.256	12	-9	3.350			
23	3	3.389	3	-6	3.269	13	-6	3.284	33	3	3.370
			4	-3	3.307	14	-3	3.294	34	0	3.359
25	-3	3.403	5	0	3.308	15	0	3.280	35	-3	3.425
26	-6	3.304	6	3	3.286	16	3	3.284	36	-6	3.382
27	-12	3.311	7	6	3.306	17	6	3.258	37	-12	3.276
			8	9	3.281	18	9	3.249			
			9	12	3.306	19	12	3.299			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
13	15	PANEL 6 ISOTROPIC-CLAMPED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.50	8.36	3.44	78	1.20	500	-43	2.651	0.000693

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
71	71	--	3.314	0.004	3.318	3.321

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.126	1	-12	3.382	11	-12	3.335	31	12	3.303
22	6	3.308	2	-9	3.276	12	-9	3.368			
23	3	3.390	3	-6	3.298	13	-6	3.288	33	3	3.392
			4	-3	3.315	14	-3	3.294	34	0	3.349
25	-3	3.406	5	0	3.315	15	0	3.283	35	-3	3.451
26	-6	3.398	6	3	3.298	16	3	3.283	36	-6	3.384
27	-12	3.318	7	6	3.312	17	6	3.275	37	-12	3.301
			8	9	3.286	18	9	3.251			
			9	12	3.298	19	12	3.298			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
13	17	PANEL 6 ISOTROPIC-CLAMPED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	9.20	3.78	74	1.20	551	-45	2.941	0.000766

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
68	71	--	3.634	0.003	3.637	3.637

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.476	1	-12	3.727	11	-12	3.683	31	12	3.647
22	6	3.651	2	-9	3.663	12	-9	3.687			
23	3	3.700	3	-6	3.643	13	-6	3.669	33	3	3.703
			4	-3	3.635	14	-3	3.618	34	0	3.706
25	-3	3.706	5	0	3.627	15	0	3.597	35	-3	3.757
26	-6	3.704	6	3	3.613	16	3	3.601	36	-6	3.677
27	-12	3.620	7	6	3.632	17	6	3.601	37	-12	3.632
			8	9	3.619	18	9	3.592			
			9	12	3.616	19	12	3.621			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
14	1	PANEL 6 ISOTROPIC-CLAMPED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	5.70	2.06	61	1.30	350	-71	1.880	0.000444

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
61	64	--	1.992	-0.004	1.988	1.991

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	1.925	1	-12	2.022	11	-12	1.997	31	12	1.988
22	6	1.988	2	-9	1.998	12	-9	2.002			
23	3	1.981	3	-6	1.979	13	-6	2.002	33	3	1.992
			4	-3	1.992	14	-3	1.979	34	0	1.992
25	-3	1.987	5	0	2.002	15	0	1.977	35	-3	2.008
26	-6	1.988	6	3	1.984	16	3	1.986	36	-6	2.008
27	-12	1.988	7	6	1.992	17	6	1.977	37	-12	2.003
			8	9	1.998	18	9	1.968			
			9	12	1.986	19	12	1.992			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
14	3	PANEL 6 ISOTROPIC-CLAMPED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	8.13	2.93	64	1.30	500	-68	2.659	0.000628

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
58	61	--	2.867	-0.004	2.862	2.864

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	2.738	1	-12	2.916	11	-12	2.878	31	12	2.851
22	6	2.871	2	-9	2.876	12	-9	2.877			
23	3	2.850	3	-6	2.860	13	-6	2.876	33	3	2.859
			4	-3	2.867	14	-3	2.845	34	0	2.839
25	-3	2.866	5	0	2.886	15	0	2.835	35	-3	2.891
26	-6	2.867	6	3	2.855	16	3	2.849	36	-6	2.868
27	-12	2.866	7	6	2.866	17	6	2.836	37	-12	2.868
			8	9	2.866	18	9	2.833			
			9	12	2.857	19	12	2.860			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
14	5	PANEL 6 ISOTROPIC-CLAMPED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	9.76	3.52	71	1.30	600	-63	3.138	0.000745

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
61	61	--	3.494	-0.010	3.485	3.484

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.341	1	-12	3.557	11	-12	3.539	31	12	3.497
22	6	3.495	2	-9	3.497	12	-9	3.486			
23	3	3.458	3	-6	3.483	13	-6	3.488	33	3	3.494
			4	-3	3.496	14	-3	3.464	34	0	3.491
25	-3	3.492	5	0	3.515	15	0	3.447	35	-3	3.524
26	-6	3.495	6	3	3.479	16	3	3.473	36	-6	3.483
27	-12	3.500	7	6	3.492	17	6	3.453	37	-12	3.481
			8	9	3.484	18	9	3.436			
			9	12	3.465	19	12	3.467			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
14	7	PANEL 6 ISOTROPIC-CLAMPED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	10.19	3.66	74	1.30	627	-61	3.251	0.000771

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
61	61	--	3.637	-0.009	3.628	3.634

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.474	1	-12	3.686	11	-12	3.667	31	12	3.652
22	6	3.637	2	-9	3.629	12	-9	3.632			
23	3	3.617	3	-6	3.616	13	-6	3.622	33	3	3.599
			4	-3	3.642	14	-3	3.589	34	0	3.594
25	-3	3.642	5	0	3.640	15	0	3.589	35	-3	3.667
26	-6	3.643	6	3	3.614	16	3	3.609	36	-6	3.626
27	-12	3.654	7	6	3.631	17	6	3.606	37	-12	3.625
			8	9	3.626	18	9	3.590			
			9	12	3.608	19	12	3.619			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
15	1	PANEL 6 ISOTROPIC-CLAMPED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	5.64	1.77	58	1.40	350	-88	1.855	0.000400

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
54	58	--	1.688	-0.001	1.687	1.686

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	1.669	1	-12	1.695	11	-12	1.674	31	12	1.669
22	6	1.653	2	-9	1.695	12	-9	1.695			
23	3	1.654	3	-6	1.674	13	-6	1.672	33	3	1.684
			4	-3	1.688	14	-3	1.682	34	0	1.680
25	-3	1.640	5	0	1.691	15	0	1.672	35	-3	1.690
26	-6	1.642	6	3	1.680	16	3	1.679	36	-6	1.675
27	-12	1.668	7	6	1.688	17	6	1.677	37	-12	1.665
			8	9	1.691	18	9	1.670			
			9	12	1.688	19	12	1.688			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
15	2	PANEL 6 ISOTROPIC-CLAMPED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	8.06	2.53	64	1.40	500	-83	2.606	0.000565

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
54	58	--	2.544	-0.003	2.541	2.544

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	2.460	1	-12	2.591	11	-12	2.575	31	12	2.530
22	6	2.558	2	-9	2.549	12	-9	2.569			
23	3	2.564	3	-6	2.535	13	-6	2.551	33	3	2.543
			4	-3	2.544	14	-3	2.575	34	0	2.540
25	-3	2.565	5	0	2.554	15	0	2.532	35	-3	2.539
26	-6	2.564	6	3	2.540	16	3	2.532	36	-6	2.521
27	-12	2.544	7	6	2.544	17	6	2.526	37	-12	2.521
			8	9	2.546	18	9	2.523			
			9	12	2.553	19	12	2.556			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
15	4	PANEL 6 ISOTROPIC-CLAMPED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	9.67	3.03	64	1.40	600	-84	3.127	0.000675

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
54	54	--	3.046	-0.005	3.041	3.044

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	2.933	1	-12	3.081	11	-12	3.049	31	12	3.022
22	6	3.049	2	-9	3.047	12	-9	3.056			
23	3	3.061	3	-6	3.017	13	-6	3.026	33	3	3.034
			4	-3	3.043	14	-3	3.049	34	0	3.030
25	-3	3.033	5	0	3.045	15	0	3.015	35	-3	3.043
26	-6	3.028	6	3	3.043	16	3	2.997	36	-6	3.004
27	-12	3.020	7	6	3.049	17	6	3.010	37	-12	2.997
			8	9	3.044	18	9	2.989			
			9	12	3.045	19	12	3.029			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
15	6	PANEL 6 ISOTROPIC-CLAMPED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	11.28	3.54	71	1.40	700	-79	3.587	0.000779

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
54	54	--	3.614	-0.011	3.603	3.590

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.473	1	-12	3.638	11	-12	3.635	31	12	3.579
22	6	3.667	2	-9	3.619	12	-9	3.636			
23	3	3.644	3	-6	3.607	13	-6	3.587	33	3	3.599
			4	-3	3.617	14	-3	3.614	34	0	3.588
25	-3	3.623	5	0	3.620	15	0	3.559	35	-3	3.606
26	-6	3.623	6	3	3.603	16	3	3.541	36	-6	3.529
27	-12	3.569	7	6	3.611	17	6	3.557	37	-12	3.525
			8	9	3.595	18	9	3.541			
			9	12	3.604	19	12	3.585			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
15	8	PANEL 6 ISOTROPIC-CLAMPED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	11.92	3.74	74	1.40	740	-76	3.757	0.000818

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
58	58	--	3.817	-0.018	3.799	3.812

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.674	1	-12	3.880	11	-12	3.864	31	12	3.769
22	6	3.902	2	-9	3.820	12	-9	3.860			
23	3	3.857	3	-6	3.819	13	-6	3.824	33	3	3.802
			4	-3	3.812	14	-3	3.855	34	0	3.795
25	-3	3.861	5	0	3.827	15	0	3.803	35	-3	3.830
26	-6	3.860	6	3	3.819	16	3	3.776	36	-6	3.760
27	-12	3.786	7	6	3.822	17	6	3.760	37	-12	3.742
			8	9	3.800	18	9	3.755			
			9	12	3.808	19	12	3.788			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
15	9	PANEL 6 ISOTROPIC-CLAMPED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	11.60	3.75	78	1.38	720	-71	3.640	0.000809

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
61	58	--	3.835	-0.018	3.817	3.832

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.607	1	-12	3.871	11	-12	3.908	31	12	3.865
22	6	3.870	2	-9	3.841	12	-9	3.903			
23	3	3.928	3	-6	3.855	13	-6	3.896	33	3	3.829
			4	-3	3.838	14	-3	3.875	34	0	3.838
25	-3	3.941	5	0	3.849	15	0	3.779	35	-3	3.968
26	-6	3.889	6	3	3.828	16	3	3.791	36	-6	3.873
27	-12	3.898	7	6	3.832	17	6	3.763	37	-12	3.745
			8	9	3.807	18	9	3.761			
			9	12	3.838	19	12	3.819			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
15	11	PANEL 6 ISOTROPIC-CLAMPED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	11.61	3.65	78	1.40	721	-74	3.630	0.000793

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
61	58	--	3.726	-0.015	3.711	3.721

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.579	1	-12	3.795	11	-12	3.764	31	12	3.688
22	6	3.815	2	-9	3.758	12	-9	3.771			
23	3	3.807	3	-6	3.756	13	-6	3.744	33	3	3.721
			4	-3	3.731	14	-3	3.775	34	0	3.715
25	-3	3.804	5	0	3.742	15	0	3.718	35	-3	3.736
26	-6	3.787	6	3	3.707	16	3	3.699	36	-6	3.669
27	-12	3.682	7	6	3.720	17	6	3.680	37	-12	3.646
			8	9	3.707	18	9	3.671			
			9	12	3.688	19	12	3.694			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 054B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
16	1	PANEL 6 ISOTROPIC-CLAMPED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	5.11	2.27	64	1.14	298	-44	1.670	0.000458

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
58	58	--	2.283	-0.002	2.281	2.258

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	2.245	1	-12	2.331	11	-12	2.317	31	12	2.465
22	6	2.279	2	-9	2.288	12	-9	2.309			
23	3	2.279	3	-6	2.288	13	-6	2.287	33	3	2.431
			4	-3	2.285	14	-3	2.268	34	0	2.410
25	-3	2.273	5	0	2.284	15	0	2.264	35	-3	2.410
26	-6	2.282	6	3	2.274	16	3	2.277	36	-6	2.412
27	-12	2.276	7	6	2.280	17	6	2.280	37	-12	2.418
			8	9	2.271	18	9	2.276			
			9	12	2.314	19	12	2.317			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
16	3	PANEL 6 ISOTROPIC-CLAMPED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	8.53	3.78	64	1.14	498	-44	2.788	0.000764

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
58	58	--	3.758	0.004	3.762	3.807

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.659	1	-12	3.862	11	-12	3.869	31	12	3.986
22	6	3.817	2	-9	3.753	12	-9	3.864			
23	3	3.827	3	-6	3.753	13	-6	3.816	33	3	4.039
			4	-3	3.755	14	-3	3.793	34	0	3.987
25	-3	3.826	5	0	3.752	15	0	3.776	35	-3	4.017
26	-6	3.825	6	3	3.751	16	3	3.785	36	-6	4.008
27	-12	3.824	7	6	3.761	17	6	3.784	37	-12	3.990
			8	9	3.774	18	9	3.773			
			9	12	3.794	19	12	3.822			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
16	5	PANEL 6 ISOTROPIC-CLAMPED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	9.37	4.12	68	1.15	550	-43	3.041	0.000829

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
58	58	--	4.156	0.005	4.161	4.161

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	4.002	1	-12	4.270	11	-12	4.247	31	12	4.338
22	6	4.172	2	-9	4.158	12	-9	4.247			
23	3	4.175	3	-6	4.186	13	-6	4.180	33	3	4.392
			4	-3	4.150	14	-3	4.140	34	0	4.322
25	-3	4.156	5	0	4.166	15	0	4.120	35	-3	4.326
26	-6	4.157	6	3	4.145	16	3	4.126	36	-6	4.324
27	-12	4.157	7	6	4.162	17	6	4.126	37	-12	4.294
			8	9	4.179	18	9	4.125			
			9	12	4.189	19	12	4.180			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
16	7	PANEL 6 ISOTROPIC-CLAMPED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	9.82	4.32	71	1.15	576	-40	3.159	0.000864

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
61	61	--	4.355	0.006	4.361	4.351

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	4.169	1	-12	4.464	11	-12	4.424	31	12	4.521
22	6	4.372	2	-9	4.344	12	-9	4.410			
23	3	4.353	3	-6	4.372	13	-6	4.363	33	3	4.579
			4	-3	4.355	14	-3	4.301	34	0	4.486
25	-3	4.344	5	0	4.332	15	0	4.275	35	-3	4.525
26	-6	4.344	6	3	4.336	16	3	4.297	36	-6	4.510
27	-12	4.343	7	6	4.355	17	6	4.301	37	-12	4.441
			8	9	4.333	18	9	4.307			
			9	12	4.355	19	12	4.364			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
16	9	PANEL 6 ISOTROPIC-CLAMPED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	11.94	5.24	71	1.15	700	-40	3.841	0.001049

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
61	58	--	5.289	0.008	5.297	5.297

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	5.096	1	-12	5.421	11	-12	5.407	31	12	5.469
22	6	5.328	2	-9	5.289	12	-9	5.317			
23	3	5.332	3	-6	5.317	13	-6	5.320	33	3	5.562
			4	-3	5.279	14	-3	5.279	34	0	5.490
25	-3	5.312	5	0	5.258	15	0	5.246	35	-3	5.513
26	-6	5.287	6	3	5.284	16	3	5.274	36	-6	5.456
27	-12	5.285	7	6	5.299	17	6	5.253	37	-12	5.388
			8	9	5.282	18	9	5.250			
			9	12	5.312	19	12	5.311			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
16	11	PANEL 6 ISOTROPIC-CLAMPED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	13.64	6.01	74	1.15	799	-37	4.352	0.001193

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
64	61	--	6.053	0.005	6.058	6.080

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	5.800	1	-12	6.246	11	-12	6.161	31	12	6.229
22	6	6.068	2	-9	6.066	12	-9	6.074			
23	3	6.059	3	-6	6.101	13	-6	6.079	33	3	6.386
			4	-3	6.064	14	-3	6.051	34	0	6.270
25	-3	6.052	5	0	6.046	15	0	5.982	35	-3	6.289
26	-6	6.073	6	3	6.022	16	3	6.004	36	-6	6.190
27	-12	6.009	7	6	6.042	17	6	5.994	37	-12	6.131
			8	9	6.009	18	9	5.979			
			9	12	6.075	19	12	6.022			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 094B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
17	1	PANEL 9 ORTHOTROPIC-SIMPLY SUPPORTED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	5.64	1.77	64	1.40	350	-83	1.824	0.000395

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
64	71	64	1.689	-0.012	1.677	1.659

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	1.595	1	-12	1.693	11	-12	1.689	31	12	1.627
22	6	1.645	2	-9	1.682	12	-9	1.673			
23	3	1.637	3	-6	1.690	13	-6	1.667	33	3	1.629
			4	-3	1.687	14	-3	1.669	34	0	1.627
25	-3	1.625	5	0	1.689	15	0	1.669	35	-3	1.629
26	-6	1.624	6	3	1.690	16	3	1.672	36	-6	1.630
27	-12	1.625	7	6	1.692	17	6	1.672	37	-12	1.631
			8	9	1.695	18	9	1.678			
			9	12	1.698	19	12	1.692			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
17	3	PANEL 9 ORTHOTROPIC-SIMPLY SUPPORTED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	7.25	2.27	68	1.40	450	-81	2.325	0.000504

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
64	71	64	2.231	-0.018	2.213	2.211

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	2.130	1	-12	2.212	11	-12	2.207	31	12	2.212
22	6	2.181	2	-9	2.218	12	-9	2.212			
23	3	2.186	3	-6	2.234	13	-6	2.195	33	3	2.197
			4	-3	2.229	14	-3	2.207	34	0	2.141
25	-3	2.157	5	0	2.223	15	0	2.215	35	-3	2.186
26	-6	2.145	6	3	2.219	16	3	2.215	36	-6	2.184
27	-12	2.182	7	6	2.234	17	6	2.207	37	-12	2.198
			8	9	2.237	18	9	2.223			
			9	12	2.237	19	12	2.239			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
17	5	PANEL 9 ORTHOTROPIC-SIMPLY SUPPORTED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
-0.00	8.87	2.79	71	1.40	550	-78	2.820	0.000614

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
61	68	64	2.765	-0.023	2.741	2.741

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	2.652	1	-12	2.723	11	-12	2.728	31	12	2.738
22	6	2.708	2	-9	2.730	12	-9	2.740			
23	3	2.739	3	-6	2.768	13	-6	2.714	33	3	2.711
			4	-3	2.758	14	-3	2.732	34	0	2.628
25	-3	2.687	5	0	2.738	15	0	2.745	35	-3	2.698
26	-6	2.691	6	3	2.778	16	3	2.744	36	-6	2.704
27	-12	2.713	7	6	2.771	17	6	2.761	37	-12	2.729
			8	9	2.760	18	9	2.739			
			9	12	2.758	19	12	2.776			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
17	7	PANEL 9 ORTHOTROPIC-SIMPLY SUPPORTED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	9.66	3.03	71	1.40	600	-79	3.071	0.000667

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
61	64	64	3.035	-0.026	3.009	3.025

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	2.901	1	-12	3.001	11	-12	2.964	31	12	3.065
22	6	2.988	2	-9	3.024	12	-9	3.020			
23	3	3.022	3	-6	3.041	13	-6	3.019	33	3	3.007
			4	-3	3.033	14	-3	3.007	34	0	2.958
25	-3	3.002	5	0	3.014	15	0	3.024	35	-3	2.978
26	-6	3.020	6	3	3.011	16	3	2.978	36	-6	2.985
27	-12	3.008	7	6	3.036	17	6	3.006	37	-12	3.045
			8	9	3.043	18	9	3.007			
			9	12	3.098	19	12	3.097			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
17	9	PANEL 9 ORTHOTROPIC-SIMPLY SUPPORTED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	10.47	3.28	78	1.40	650	-74	3.273	0.000714

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
61	61	61	3.287	-0.024	3.263	3.270

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.144	1	-12	3.254	11	-12	3.225	31	12	3.264
22	6	3.254	2	-9	3.272	12	-9	3.238			
23	3	3.277	3	-6	3.289	13	-6	3.237	33	3	3.233
			4	-3	3.280	14	-3	3.242	34	0	3.146
25	-3	3.252	5	0	3.267	15	0	3.254	35	-3	3.205
26	-6	3.230	6	3	3.288	16	3	3.247	36	-6	3.226
27	-12	3.253	7	6	3.294	17	6	3.259	37	-12	3.259
			8	9	3.288	18	9	3.284			
			9	12	3.302	19	12	3.316			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
17	11	PANEL 9 ORTHOTROPIC-SIMPLY SUPPORTED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
-0.00	9.67	3.04	78	1.40	600	-74	3.023	0.000660

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
61	61	64	3.126	-0.035	3.091	3.090

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	2.986	1	-12	3.113	11	-12	3.110	31	12	3.469
22	6	3.143	2	-9	3.087	12	-9	3.100			
23	3	3.144	3	-6	3.149	13	-6	3.083	33	3	3.094
			4	-3	3.129	14	-3	3.094	34	0	3.036
25	-3	3.150	5	0	3.087	15	0	3.088	35	-3	3.094
26	-6	3.149	6	3	3.088	16	3	3.077	36	-6	3.086
27	-12	3.138	7	6	3.123	17	6	3.057	37	-12	3.084
			8	9	3.108	18	9	3.123			
			9	12	3.177	19	12	3.119			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
17	13	PANEL 9 ORTHOTROPIC-SIMPLY SUPPORTED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	10.47	3.30	81	1.40	650	-71	3.247	0.000712

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
61	61	64	3.392	-0.036	3.356	3.353

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.259	1	-12	3.386	11	-12	3.384	31	12	3.803
22	6	3.427	2	-9	3.359	12	-9	3.375			
23	3	3.411	3	-6	3.434	13	-6	3.381	33	3	3.355
			4	-3	3.397	14	-3	3.376	34	0	3.386
25	-3	3.428	5	0	3.378	15	0	3.376	35	-3	3.357
26	-6	3.407	6	3	3.355	16	3	3.288	36	-6	3.370
27	-12	3.405	7	6	3.387	17	6	3.339	37	-12	3.357
			8	9	3.396	18	9	3.390			
			9	12	3.380	19	12	3.436			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 054B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
17	15	PANEL 9 ORTHOTROPIC-SIMPLY SUPPORTED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	11.27	3.54	81	1.40	700	-71	3.496	0.000765

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
61	61	64	3.681	-0.044	3.638	3.646

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.530	1	-12	3.664	11	-12	3.665	31	12	3.903
22	6	3.708	2	-9	3.650	12	-9	3.663			
23	3	3.717	3	-6	3.737	13	-6	3.648	33	3	3.643
			4	-3	3.672	14	-3	3.663	34	0	3.586
25	-3	3.740	5	0	3.640	15	0	3.645	35	-3	3.672
26	-6	3.696	6	3	3.635	16	3	3.562	36	-6	3.714
27	-12	3.696	7	6	3.690	17	6	3.621	37	-12	3.616
			8	9	3.680	18	9	3.669			
			9	12	3.685	19	12	3.714			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
18	1	PANEL 9 ORTHOTROPIC-SIMPLY SUPPORTED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	6.51	2.34	74	1.30	400	-61	2.076	0.000493

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
61	64	64	2.226	-0.014	2.212	2.221

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	2.124	1	-12	2.229	11	-12	2.214	31	12	2.207
22	6	2.221	2	-9	2.223	12	-9	2.216			
23	3	2.223	3	-6	2.236	13	-6	2.202	33	3	2.194
			4	-3	2.223	14	-3	2.200	34	0	2.151
25	-3	2.221	5	0	2.223	15	0	2.218	35	-3	2.176
26	-6	2.220	6	3	2.224	16	3	2.219	36	-6	2.191
27	-12	2.220	7	6	2.230	17	6	2.214	37	-12	2.202
			8	9	2.224	18	9	2.228			
			9	12	2.236	19	12	2.247			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
18	3	PANEL 9 ORTHOTROPIC-SIMPLY SUPPORTED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	8.13	2.93	74	1.30	500	-61	2.593	0.000617

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
64	64	64	2.808	-0.017	2.790	2.797

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	2.666	1	-12	2.802	11	-12	2.785	31	12	2.776
22	6	2.800	2	-9	2.798	12	-9	2.793			
23	3	2.796	3	-6	2.816	13	-6	2.764	33	3	2.759
			4	-3	2.802	14	-3	2.764	34	0	2.694
25	-3	2.797	5	0	2.793	15	0	2.783	35	-3	2.726
26	-6	2.792	6	3	2.809	16	3	2.783	36	-6	2.750
27	-12	2.792	7	6	2.813	17	6	2.780	37	-12	2.774
			8	9	2.808	18	9	2.808			
			9	12	2.828	19	12	2.829			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
18	5	PANEL 9 ORTHOTROPIC-SIMPLY SUPPORTED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	9.76	3.52	78	1.30	600	-58	3.086	0.000735

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
64	64	64	3.406	-0.023	3.384	3.391

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.230	1	-12	3.395	11	-12	3.376	31	12	3.364
22	6	3.396	2	-9	3.390	12	-9	3.381			
23	3	3.394	3	-6	3.411	13	-6	3.343	33	3	3.349
			4	-3	3.400	14	-3	3.346	34	0	3.268
25	-3	3.392	5	0	3.389	15	0	3.385	35	-3	3.294
26	-6	3.378	6	3	3.407	16	3	3.381	36	-6	3.331
27	-12	3.378	7	6	3.413	17	6	3.376	37	-12	3.367
			8	9	3.411	18	9	3.408			
			9	12	3.433	19	12	3.451			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-O

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
18	7	PANEL 9 ORTHOTROPIC-SIMPLY SUPPORTED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	10.57	3.81	81	1.30	650	-56	3.317	0.000792

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
64	64	64	3.706	-0.026	3.680	3.677

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.499	1	-12	3.682	11	-12	3.666	31	12	3.655
22	6	3.684	2	-9	3.690	12	-9	3.679			
23	3	3.679	3	-6	3.708	13	-6	3.634	33	3	3.628
			4	-3	3.697	14	-3	3.634	34	0	3.547
25	-3	3.683	5	0	3.684	15	0	3.674	35	-3	3.572
26	-6	3.670	6	3	3.699	16	3	3.673	36	-6	3.609
27	-12	3.670	7	6	3.715	17	6	3.661	37	-12	3.645
			8	9	3.716	18	9	3.711			
			9	12	3.730	19	12	3.754			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
18	9	PANEL 9 ORTHOTROPIC-SIMPLY SUPPORTED-3+3+1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	11.39	4.11	81	1.30	700	-56	3.573	0.000853

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
64	61	64	4.005	-0.029	3.976	3.981

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.781	1	-12	3.980	11	-12	3.960	31	12	3.952
22	6	3.993	2	-9	3.980	12	-9	3.976			
23	3	3.980	3	-6	4.000	13	-6	3.923	33	3	3.922
			4	-3	3.998	14	-3	3.913	34	0	3.826
25	-3	3.985	5	0	3.982	15	0	3.966	35	-3	3.858
26	-6	3.971	6	3	4.000	16	3	3.961	36	-6	3.901
27	-12	3.973	7	6	4.012	17	6	3.956	37	-12	3.961
			8	9	4.024	18	9	4.017			
			9	12	4.043	19	12	4.063			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
18	11	PANEL 9 ORTHOTROPIC-SIMPLY SUPPORTED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	12.20	4.39	84	1.30	750	-53	3.797	0.000907

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
64	61	68	4.281	-0.009	4.272	4.255

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	4.006	1	-12	4.255	11	-12	4.234	31	12	4.228
22	6	4.250	2	-9	4.249	12	-9	4.241			
23	3	4.251	3	-6	4.281	13	-6	4.196	33	3	4.183
			4	-3	4.271	14	-3	4.198	34	0	4.091
25	-3	4.255	5	0	4.256	15	0	4.241	35	-3	4.135
26	-6	4.231	6	3	4.276	16	3	4.227	36	-6	4.175
27	-12	4.231	7	6	4.292	17	6	4.223	37	-12	4.220
			8	9	4.280	18	9	4.280			
			9	12	4.294	19	12	4.303			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 054B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
18	13	PANEL 9 ORTHOTROPIC-SIMPLY SUPPORTED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	13.01	4.69	84	1.30	800	-53	4.049	0.000968

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
64	61	68	4.562	-0.029	4.533	4.540

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	4.279	1	-12	4.540	11	-12	4.518	31	12	4.513
22	6	4.540	2	-9	4.535	12	-9	4.528			
23	3	4.536	3	-6	4.566	13	-6	4.465	33	3	4.467
			4	-3	4.550	14	-3	4.463	34	0	4.340
25	-3	4.535	5	0	4.536	15	0	4.509	35	-3	4.388
26	-6	4.510	6	3	4.559	16	3	4.488	36	-6	4.450
27	-12	4.514	7	6	4.575	17	6	4.507	37	-12	4.515
			8	9	4.598	18	9	4.577			
			9	12	4.620	19	12	4.630			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
19	1	PANEL 9 ORTHOTROPIC-SIMPLY SUPPORTED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	8.36	3.44	78	1.20	500	-43	2.649	0.000692

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
66	65	67	3.308	-0.020	3.288	3.293

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.143	1	-12	3.286	11	-12	3.277	31	12	3.263
22	6	3.316	2	-9	3.297	12	-9	3.314			
23	3	3.355	3	-6	3.309	13	-6	3.284	33	3	3.240
			4	-3	3.302	14	-3	3.270	34	0	3.203
25	-3	3.358	5	0	3.295	15	0	3.287	35	-3	3.239
26	-6	3.353	6	3	3.287	16	3	3.259	36	-6	3.207
27	-12	3.263	7	6	3.314	17	6	3.266	37	-12	3.231
			8	9	3.290	18	9	3.292			
			9	12	3.284	19	12	3.297			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
19	3	PANEL 9 ORTHOTROPIC-SIMPLY SUPPORTED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	10.03	4.12	80	1.20	601	-41	3.165	0.000827

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
67	66	67	3.934	-0.002	3.933	3.936

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.766	1	-12	3.928	11	-12	3.920	31	12	3.890
22	6	3.968	2	-9	3.923	12	-9	3.944			
23	3	4.027	3	-6	3.955	13	-6	3.923	33	3	3.858
			4	-3	3.928	14	-3	3.920	34	0	3.825
25	-3	4.018	5	0	3.925	15	0	3.936	35	-3	3.833
26	-6	3.950	6	3	3.921	16	3	3.901	36	-6	3.857
27	-12	3.900	7	6	3.941	17	6	3.904	37	-12	3.854
			8	9	3.911	18	9	3.912			
			9	12	3.888	19	12	3.917			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
19	5	PANEL 9 ORTHOTROPIC-SIMPLY SUPPORTED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	11.70	4.82	82	1.20	700	-39	3.671	0.000962

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
67	65	68	4.587	-0.019	4.568	4.580

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	4.333	1	-12	4.566	11	-12	4.555	31	12	4.539
22	6	4.615	2	-9	4.574	12	-9	4.597			
23	3	4.683	3	-6	4.610	13	-6	4.542	33	3	4.492
			4	-3	4.578	14	-3	4.523	34	0	4.375
25	-3	4.680	5	0	4.578	15	0	4.565	35	-3	4.347
26	-6	4.598	6	3	4.576	16	3	4.530	36	-6	4.429
27	-12	4.541	7	6	4.597	17	6	4.561	37	-12	4.487
			8	9	4.578	18	9	4.603			
			9	12	4.568	19	12	4.598			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
19	7	PANEL 9 ORTHOTROPIC-SIMPLY SUPPORTED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	12.53	5.14	80	1.20	751	-42	3.956	0.001032

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
65	62	66	4.963	-0.027	4.936	4.936

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	4.691	1	-12	4.930	11	-12	4.913	31	12	4.885
22	6	4.976	2	-9	4.955	12	-9	4.971			
23	3	5.059	3	-6	4.975	13	-6	4.907	33	3	4.866
			4	-3	4.954	14	-3	4.891	34	0	4.759
25	-3	5.041	5	0	4.938	15	0	4.922	35	-3	4.782
26	-6	4.944	6	3	4.927	16	3	4.891	36	-6	4.791
27	-12	4.886	7	6	4.973	17	6	4.919	37	-12	4.868
			8	9	4.945	18	9	4.972			
			9	12	4.943	19	12	4.967			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
19	9	PANEL 9 ORTHOTROPIC-SIMPLY SUPPORTED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.76	12.51	5.47	86	1.15	735	-29	3.881	0.001066

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
73	63	71	5.248	-0.025	5.223	5.238

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	4.900	1	-12	5.274	11	-12	5.298	31	12	5.212
22	6	5.318	2	-9	5.229	12	-9	5.216			
23	3	5.287	3	-6	5.248	13	-6	5.151	33	3	5.133
			4	-3	5.251	14	-3	5.182	34	0	4.997
25	-3	5.403	5	0	5.240	15	0	5.249	35	-3	4.963
26	-6	5.367	6	3	5.225	16	3	5.117	36	-6	5.086
27	-12	5.237	7	6	5.245	17	6	5.209	37	-12	5.185
			8	9	5.323	18	9	5.346			
			9	12	5.282	19	12	5.383			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
20	1	PANEL 9 ORTHOTROPIC-SIMPLY SUPPORTED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	10.22	4.48	66	1.15	600	-44	3.328	0.000905

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
62	67	62	4.483	-0.014	4.469	4.466

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	4.280	1	-12	4.481	11	-12	4.442	31	12	4.405
22	6	4.462	2	-9	4.472	12	-9	4.455			
23	3	4.481	3	-6	4.497	13	-6	4.444	33	3	4.431
			4	-3	4.481	14	-3	4.454	34	0	4.324
25	-3	4.486	5	0	4.470	15	0	4.471	35	-3	4.329
26	-6	4.483	6	3	4.484	16	3	4.463	36	-6	4.349
27	-12	4.435	7	6	4.486	17	6	4.441	37	-12	4.380
			8	9	4.484	18	9	4.508			
			9	12	4.515	19	12	4.518			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
20	3	PANEL 9 ORTHOTROPIC-SIMPLY SUPPORTED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	11.93	5.24	71	1.15	700	-40	3.836	0.001048

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
62	64	62	5.252	-0.026	5.226	5.217

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	4.979	1	-12	5.231	11	-12	5.237	31	12	5.140
22	6	5.218	2	-9	5.231	12	-9	5.240			
23	3	5.218	3	-6	5.233	13	-6	5.203	33	3	5.159
			4	-3	5.232	14	-3	5.199	34	0	5.011
25	-3	5.248	5	0	5.234	15	0	5.202	35	-3	5.051
26	-6	5.245	6	3	5.235	16	3	5.193	36	-6	5.068
27	-12	5.170	7	6	5.271	17	6	5.204	37	-12	5.109
			8	9	5.280	18	9	5.283			
			9	12	5.285	19	12	5.305			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
20	5	PANEL 9 ORTHOTROPIC-SIMPLY SUPPORTED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	12.80	5.61	74	1.15	751	-38	4.085	0.001116

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
63	63	63	5.609	-0.025	5.585	5.590

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	5.316	1	-12	5.549	11	-12	5.568	31	12	5.500
22	6	5.595	2	-9	5.578	12	-9	5.606			
23	3	5.572	3	-6	5.605	13	-6	5.568	33	3	5.506
			4	-3	5.601	14	-3	5.566	34	0	5.328
25	-3	5.615	5	0	5.594	15	0	5.567	35	-3	5.363
26	-6	5.568	6	3	5.585	16	3	5.561	36	-6	5.416
27	-12	5.538	7	6	5.617	17	6	5.561	37	-12	5.480
			8	9	5.605	18	9	5.654			
			9	12	5.632	19	12	5.635			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
20	7	PANEL 9 ORTHOTROPIC-SIMPLY SUPPORTED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	13.65	5.98	77	1.15	801	-36	4.327	0.001184

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
61	59	62	5.963	-0.022	5.941	5.959

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	5.671	1	-12	5.978	11	-12	5.937	31	12	5.848
22	6	5.952	2	-9	5.956	12	-9	5.972			
23	3	5.943	3	-6	5.969	13	-6	5.932	33	3	5.866
			4	-3	5.964	14	-3	5.922	34	0	5.667
25	-3	5.993	5	0	5.940	15	0	5.953	35	-3	5.727
26	-6	5.938	6	3	5.979	16	3	5.938	36	-6	5.751
27	-12	5.904	7	6	5.962	17	6	5.925	37	-12	5.867
			8	9	5.990	18	9	6.028			
			9	12	6.032	19	12	6.004			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
20	9	PANEL 9 ORTHOTROPIC-SIMPLY SUPPORTED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	13.23	5.79	78	1.15	777	-35	4.189	0.001145

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
62	59	63	5.787	-0.027	5.760	5.767

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	5.463	1	-12	5.737	11	-12	5.746	31	12	5.653
22	6	5.764	2	-9	5.776	12	-9	5.762			
23	3	5.775	3	-6	5.775	13	-6	5.734	33	3	5.659
			4	-3	5.778	14	-3	5.738	34	0	5.499
25	-3	5.801	5	0	5.780	15	0	5.742	35	-3	5.553
26	-6	5.799	6	3	5.771	16	3	5.720	36	-6	5.583
27	-12	5.722	7	6	5.796	17	6	5.744	37	-12	5.678
			8	9	5.818	18	9	5.853			
			9	12	5.827	19	12	5.856			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
21	1	PANEL 9 ORTHOTROPIC-SIMPLY SUPPORTED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	8.05	2.52	74	1.40	500	-76	2.538	0.000553

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
64	64	64	2.456	-0.018	2.437	2.438

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	2.320	1	-12	2.453	11	-12	2.407	31	12	2.432
22	6	2.402	2	-9	2.449	12	-9	2.430			
23	3	2.401	3	-6	2.453	13	-6	2.403	33	3	2.419
			4	-3	2.451	14	-3	2.408	34	0	2.360
25	-3	2.370	5	0	2.445	15	0	2.422	35	-3	2.406
26	-6	2.370	6	3	2.448	16	3	2.421	36	-6	2.407
27	-12	2.414	7	6	2.460	17	6	2.422	37	-12	2.423
			8	9	2.446	18	9	2.440			
			9	12	2.456	19	12	2.444			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
21	3	PANEL 9 ORTHOTROPIC-SIMPLY SUPPORTED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	11.27	3.54	78	1.40	700	-74	3.522	0.000769

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
62	61	63	3.533	-0.034	3.498	3.565

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.412	1	-12	3.530	11	-12	3.564	31	12	3.662
22	6	3.587	2	-9	3.529	12	-9	3.551			
23	3	3.589	3	-6	3.531	13	-6	3.536	33	3	3.569
			4	-3	3.532	14	-3	3.547	34	0	3.473
25	-3	3.589	5	0	3.532	15	0	3.561	35	-3	3.504
26	-6	3.588	6	3	3.532	16	3	3.546	36	-6	3.520
27	-12	3.539	7	6	3.534	17	6	3.541	37	-12	3.556
			8	9	3.535	18	9	3.593			
			9	12	3.603	19	12	3.616			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
21	5	PANEL 9 ORTHOTROPIC-SIMPLY SUPPORTED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
-0.00	12.89	4.06	82	1.40	800	-70	3.989	0.000875

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
63	61	65	4.112	-0.045	4.067	4.074

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.940	1	-12	4.156	11	-12	4.082	31	12	4.089
22	6	4.199	2	-9	4.123	12	-9	4.099			
23	3	4.150	3	-6	4.160	13	-6	4.064	33	3	4.061
			4	-3	4.116	14	-3	4.064	34	0	3.954
25	-3	4.118	5	0	4.061	15	0	4.103	35	-3	4.025
26	-6	4.118	6	3	4.086	16	3	4.004	36	-6	4.046
27	-12	4.062	7	6	4.108	17	6	4.052	37	-12	4.083
			8	9	4.087	18	9	4.146			
			9	12	4.150	19	12	4.168			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
22	1	PANEL 9 ORTHOTROPIC-SIMPLY SUPPORTED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	9.87	3.80	79	1.25	601	-50	3.124	0.000778

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
64	63	66	3.769	-0.022	3.747	3.755

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.556	1	-12	3.767	11	-12	3.732	31	12	3.704
22	6	3.792	2	-9	3.755	12	-9	3.741			
23	3	3.812	3	-6	3.762	13	-6	3.740	33	3	3.630
			4	-3	3.762	14	-3	3.735	34	0	3.576
25	-3	3.803	5	0	3.755	15	0	3.743	35	-3	3.581
26	-6	3.802	6	3	3.762	16	3	3.741	36	-6	3.650
27	-12	3.770	7	6	3.775	17	6	3.719	37	-12	3.681
			8	9	3.786	18	9	3.751			
			9	12	3.769	19	12	3.804			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-O

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
22	3	PANEL 9 ORTHOTROPIC-SIMPLY SUPPORTED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	11.51	4.44	78	1.25	700	-50	3.644	0.000909

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
63	62	65	4.408	-0.022	4.386	4.390

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	4.156	1	-12	4.395	11	-12	4.351	31	12	4.284
22	6	4.442	2	-9	4.392	12	-9	4.377			
23	3	4.429	3	-6	4.437	13	-6	4.382	33	3	4.220
			4	-3	4.407	14	-3	4.354	34	0	4.151
25	-3	4.442	5	0	4.389	15	0	4.367	35	-3	4.154
26	-6	4.441	6	3	4.404	16	3	4.365	36	-6	4.257
27	-12	4.387	7	6	4.410	17	6	4.378	37	-12	4.321
			8	9	4.432	18	9	4.403			
			9	12	4.426	19	12	4.453			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
22	5	PANEL 9 ORTHOTROPIC-SIMPLY SUPPORTED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	12.33	4.75	79	1.25	750	-50	3.898	0.000972

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
64	62	64	4.730	-0.023	4.707	4.697

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	4.442	1	-12	4.698	11	-12	4.686	31	12	4.616
22	6	4.762	2	-9	4.723	12	-9	4.714			
23	3	4.757	3	-6	4.757	13	-6	4.711	33	3	4.522
			4	-3	4.734	14	-3	4.691	34	0	4.370
25	-3	4.762	5	0	4.709	15	0	4.699	35	-3	4.442
26	-6	4.761	6	3	4.722	16	3	4.688	36	-6	4.532
27	-12	4.701	7	6	4.727	17	6	4.677	37	-12	4.595
			8	9	4.760	18	9	4.734			
			9	12	4.745	19	12	4.770			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
22	7	PANEL 9 ORTHOTROPIC-SIMPLY SUPPORTED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	12.76	4.91	80	1.25	776	-49	4.021	0.001002

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
64	62	65	4.887	-0.027	4.859	4.860

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	4.580	1	-12	4.890	11	-12	4.819	31	12	4.772
22	6	4.935	2	-9	4.870	12	-9	4.851			
23	3	4.906	3	-6	4.920	13	-6	4.861	33	3	4.692
			4	-3	4.881	14	-3	4.810	34	0	4.535
25	-3	4.921	5	0	4.854	15	0	4.852	35	-3	4.609
26	-6	4.913	6	3	4.876	16	3	4.849	36	-6	4.698
27	-12	4.852	7	6	4.893	17	6	4.844	37	-12	4.809
			8	9	4.930	18	9	4.892			
			9	12	4.925	19	12	4.942			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
22	9	PANEL 9 ORTHOTROPIC-SIMPLY SUPPORTED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
-0.00	13.15	5.07	82	1.25	800	-47	4.125	0.001031

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
66	63	67	5.030	-0.025	5.004	5.007

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	4.734	1	-12	5.022	11	-12	4.976	31	12	4.890
22	6	5.074	2	-9	5.019	12	-9	5.013			
23	3	5.083	3	-6	5.073	13	-6	5.010	33	3	4.818
			4	-3	5.030	14	-3	4.976	34	0	4.673
25	-3	5.073	5	0	5.013	15	0	5.016	35	-3	4.746
26	-6	5.078	6	3	5.020	16	3	4.956	36	-6	4.850
27	-12	5.013	7	6	5.030	17	6	4.978	37	-12	4.928
			8	9	5.073	18	9	5.030			
			9	12	5.089	19	12	5.099			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
23	1	PANEL 9 ORTHOTROPIC-SIMPLY SUPPORTED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	12.20	4.40	83	1.30	750	-54	3.806	0.000910

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
67	64	68	4.317	-0.029	4.288	4.287

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	4.064	1	-12	4.293	11	-12	4.279	31	12	4.272
22	6	4.289	2	-9	4.285	12	-9	4.284			
23	3	4.277	3	-6	4.294	13	-6	4.220	33	3	4.170
			4	-3	4.313	14	-3	4.225	34	0	4.092
25	-3	4.282	5	0	4.292	15	0	4.298	35	-3	4.125
26	-6	4.283	6	3	4.293	16	3	4.229	36	-6	4.191
27	-12	4.279	7	6	4.322	17	6	4.262	37	-12	4.244
			8	9	4.319	18	9	4.309			
			9	12	4.340	19	12	4.352			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
23	3	PANEL 9 ORTHOTROPIC-SIMPLY SUPPORTED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	13.01	4.70	82	1.30	800	-55	4.068	0.000973

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
65	62	66	4.610	-0.031	4.578	4.593

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	4.346	1	-12	4.581	11	-12	4.579	31	12	4.544
22	6	4.607	2	-9	4.586	12	-9	4.555			
23	3	4.582	3	-6	4.590	13	-6	4.503	33	3	4.466
			4	-3	4.598	14	-3	4.510	34	0	4.396
25	-3	4.597	5	0	4.587	15	0	4.584	35	-3	4.459
26	-6	4.592	6	3	4.582	16	3	4.513	36	-6	4.484
27	-12	4.586	7	6	4.621	17	6	4.555	37	-12	4.544
			8	9	4.623	18	9	4.610			
			9	12	4.655	19	12	4.658			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
23	5	PANEL 9 ORTHOTROPIC-SIMPLY SUPPORTED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	12.19	4.40	71	1.30	750	-63	3.925	0.000931

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
64	66	64	4.323	-0.028	4.294	4.297

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	4.080	1	-12	4.296	11	-12	4.290	31	12	4.255
22	6	4.291	2	-9	4.290	12	-9	4.286			
23	3	4.289	3	-6	4.310	13	-6	4.221	33	3	4.227
			4	-3	4.316	14	-3	4.225	34	0	4.132
25	-3	4.294	5	0	4.306	15	0	4.296	35	-3	4.170
26	-6	4.295	6	3	4.300	16	3	4.290	36	-6	4.202
27	-12	4.283	7	6	4.329	17	6	4.273	37	-12	4.254
			8	9	4.321	18	9	4.304			
			9	12	4.332	19	12	4.360			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
23	7	PANEL 9 ORTHOTROPIC-SIMPLY SUPPORTED-3*3+1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	13.01	4.69	76	1.30	800	-60	4.137	0.000984

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
63	64	64	4.589	-0.029	4.559	4.555

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	4.310	1	-12	4.562	11	-12	4.537	31	12	4.505
22	6	4.560	2	-9	4.560	12	-9	4.542			
23	3	4.541	3	-6	4.570	13	-6	4.485	33	3	4.488
			4	-3	4.580	14	-3	4.489	34	0	4.354
25	-3	4.554	5	0	4.570	15	0	4.563	35	-3	4.382
26	-6	4.554	6	3	4.568	16	3	4.517	36	-6	4.448
27	-12	4.531	7	6	4.597	17	6	4.519	37	-12	4.515
			8	9	4.600	18	9	4.580			
			9	12	4.617	19	12	4.628			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
24	1	PANEL 9 ORTHOTROPIC-SIMPLY SUPPORTED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	12.33	4.76	79	1.25	750	-50	3.903	0.000975

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
65	64	65	4.715	-0.022	4.693	4.702

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	4.439	1	-12	4.722	11	-12	4.654	31	12	4.661
22	6	4.759	2	-9	4.709	12	-9	4.698			
23	3	4.779	3	-6	4.758	13	-6	4.699	33	3	4.529
			4	-3	4.718	14	-3	4.675	34	0	4.413
25	-3	4.765	5	0	4.715	15	0	4.714	35	-3	4.459
26	-6	4.762	6	3	4.700	16	3	4.691	36	-6	4.583
27	-12	4.699	7	6	4.712	17	6	4.683	37	-12	4.636
			8	9	4.764	18	9	4.718			
			9	12	4.776	19	12	4.781			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
24	3	PANEL 9 ORTHOTROPIC-SIMPLY SUPPORTED-3*3*1 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.51	12.34	4.75	84	1.25	751	-46	3.852	0.000963

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
68	62	67	4.701	-0.021	4.680	4.676

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	4.362	1	-12	4.734	11	-12	4.678	31	12	4.681
22	6	4.747	2	-9	4.676	12	-9	4.683			
23	3	4.654	3	-6	4.749	13	-6	4.654	33	3	4.596
			4	-3	4.692	14	-3	4.643	34	0	4.502
25	-3	4.739	5	0	4.680	15	0	4.649	35	-3	4.595
26	-6	4.740	6	3	4.685	16	3	4.633	36	-6	4.538
27	-12	4.738	7	6	4.710	17	6	4.659	37	-12	4.587
			8	9	4.752	18	9	4.714			
			9	12	4.707	19	12	4.739			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
25	1	PANEL 7 ISOTROPIC-CLAMPED-3*3*1.85 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	6.44	2.02	63	1.40	400	-85	2.090	0.000452

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
60	62	61	1.893	-0.005	1.888	1.890

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	1.775	1	-12	1.913	11	-12	1.872	31	12	1.873
22	6	1.847	2	-9	1.914	12	-9	1.891			
23	3	1.826	3	-6	1.894	13	-6	1.878	33	3	1.873
			4	-3	1.894	14	-3	1.865	34	0	1.857
25	-3	1.816	5	0	1.889	15	0	1.866	35	-3	1.893
26	-6	1.820	6	3	1.896	16	3	1.866	36	-6	1.866
27	-12	1.865	7	6	1.891	17	6	1.860	37	-12	1.861
			8	9	1.882	18	9	1.873			
			9	12	1.877	19	12	1.868			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-O

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
25	3	PANEL 7 ISOTROPIC-CLAMPED-3*3*1.85 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	8.05	2.53	67	1.40	500	-81	2.584	0.000561

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
61	62	61	2.515	-0.013	2.502	2.519

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	2.490	1	-12	2.477	11	-12	2.484	31	12	2.517
22	6	2.496	2	-9	2.510	12	-9	2.514			
23	3	2.498	3	-6	2.525	13	-6	2.506	33	3	2.495
			4	-3	2.511	14	-3	2.514	34	0	2.459
25	-3	2.488	5	0	2.496	15	0	2.511	35	-3	2.525
26	-6	2.486	6	3	2.505	16	3	2.506	36	-6	2.519
27	-12	2.490	7	6	2.519	17	6	2.496	37	-12	2.496
			8	9	2.510	18	9	2.478			
			9	12	2.498	19	12	2.495			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
25	5	PANEL 7 ISOTROPIC-CLAMPED-3*3*1.85 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	8.86	2.78	67	1.40	550	-81	2.842	0.000616

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
58	58	59	2.728	-0.013	2.716	2.719

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	2.601	1	-12	2.716	11	-12	2.693	31	12	2.696
22	6	2.672	2	-9	2.735	12	-9	2.724			
23	3	2.693	3	-6	2.736	13	-6	2.726	33	3	2.671
			4	-3	2.727	14	-3	2.720	34	0	2.656
25	-3	2.658	5	0	2.724	15	0	2.711	35	-3	2.715
26	-6	2.658	6	3	2.719	16	3	2.710	36	-6	2.700
27	-12	2.695	7	6	2.730	17	6	2.690	37	-12	2.677
			8	9	2.716	18	9	2.691			
			9	12	2.709	19	12	2.700			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
25	7	PANEL 7 ISOTROPIC-CLAMPED-3*3*1.85 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	9.67	3.03	70	1.40	600	-80	3.085	0.000669

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
58	58	59	3.021	-0.014	3.006	3.012

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	2.933	1	-12	3.002	11	-12	2.988	31	12	2.997
22	6	3.007	2	-9	3.062	12	-9	3.026			
23	3	3.009	3	-6	3.045	13	-6	3.019	33	3	2.997
			4	-3	3.018	14	-3	3.020	34	0	2.943
25	-3	2.977	5	0	3.014	15	0	3.029	35	-3	3.013
26	-6	2.968	6	3	3.034	16	3	3.021	36	-6	3.007
27	-12	3.000	7	6	3.024	17	6	2.981	37	-12	3.009
			8	9	3.018	18	9	2.977			
			9	12	3.007	19	12	2.992			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
25	9	PANEL 7 ISOTROPIC-CLAMPED-3*3*1.85 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	10.47	3.30	73	1.40	650	-77	3.317	0.000723

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
50	58	60	3.320	-0.023	3.297	3.307

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.190	1	-12	3.308	11	-12	3.291	31	12	3.312
22	6	3.368	2	-9	3.354	12	-9	3.316			
23	3	3.328	3	-6	3.324	13	-6	3.307	33	3	3.274
			4	-3	3.327	14	-3	3.344	34	0	3.289
25	-3	3.331	5	0	3.302	15	0	3.308	35	-3	3.323
26	-6	3.333	6	3	3.331	16	3	3.301	36	-6	3.286
27	-12	3.285	7	6	3.313	17	6	3.275	37	-12	3.297
			8	9	3.295	18	9	3.280			
			9	12	3.280	19	12	3.291			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
25	11	PANEL 7 ISOTROPIC-CLAMPED-3*3*1.85 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	11.27	3.54	76	1.40	700	-75	3.541	0.000772

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
75	58	61	3.544	-0.019	3.525	3.532

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.370	1	-12	3.522	11	-12	3.486	31	12	3.473
22	6	3.524	2	-9	3.543	12	-9	3.537			
23	3	3.548	3	-6	3.559	13	-6	3.534	33	3	3.459
			4	-3	3.545	14	-3	3.547	34	0	3.461
25	-3	3.536	5	0	3.531	15	0	3.563	35	-3	3.556
26	-6	3.537	6	3	3.564	16	3	3.538	36	-6	3.568
27	-12	3.532	7	6	3.543	17	6	3.488	37	-12	3.500
			8	9	3.530	18	9	3.473			
			9	12	3.541	19	12	3.481			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
25	13	PANEL 7 ISOTROPIC-CLAMPED-3*3*1.85 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	12.07	3.81	78	1.40	749	-73	3.771	0.000826

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
-50	58	63	3.869	-0.020	3.848	3.826

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.691	1	-12	3.845	11	-12	3.899	31	12	3.803
22	6	3.845	2	-9	3.876	12	-9	3.860			
23	3	3.904	3	-6	3.833	13	-6	3.923	33	3	3.820
			4	-3	3.876	14	-3	3.888	34	0	3.788
25	-3	3.876	5	0	3.838	15	0	3.869	35	-3	3.836
26	-6	3.882	6	3	3.871	16	3	3.848	36	-6	3.802
27	-12	3.793	7	6	3.861	17	6	3.792	37	-12	3.783
			8	9	3.825	18	9	3.824			
			9	12	3.791	19	12	3.800			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
25	15	PANEL 7 ISOTROPIC-CLAMPED-3*3*1.85 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	12.87	4.06	78	1.40	799	-73	4.022	0.000881

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
28	55	61	4.104	-0.028	4.076	4.092

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.936	1	-12	4.086	11	-12	4.157	31	12	4.070
22	6	4.204	2	-9	4.119	12	-9	4.117			
23	3	4.186	3	-6	4.159	13	-6	4.102	33	3	4.056
			4	-3	4.101	14	-3	4.162	34	0	4.045
25	-3	4.181	5	0	4.070	15	0	4.094	35	-3	4.124
26	-6	4.109	6	3	4.118	16	3	4.087	36	-6	4.124
27	-12	4.064	7	6	4.107	17	6	4.055	37	-12	4.030
			8	9	4.103	18	9	4.085			
			9	12	4.066	19	12	4.034			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
25	17	PANEL 7 ISOTROPIC-CLAMPED-3*3*1.85 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	13.69	4.29	81	1.40	850	-72	4.250	0.000929

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
46	55	62	4.350	-0.031	4.319	4.339

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	4.183	1	-12	4.371	11	-12	4.303	31	12	4.361
22	6	4.380	2	-9	4.413	12	-9	4.405			
23	3	4.413	3	-6	4.334	13	-6	4.248	33	3	4.331
			4	-3	4.356	14	-3	4.425	34	0	4.250
25	-3	4.363	5	0	4.313	15	0	4.312	35	-3	4.305
26	-6	4.340	6	3	4.372	16	3	4.305	36	-6	4.298
27	-12	4.302	7	6	4.344	17	6	4.296	37	-12	4.270
			8	9	4.350	18	9	4.323			
			9	12	4.319	19	12	4.297			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
26	1	PANEL 7 ISOTROPIC-CLAMPED-3*3*1.85 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	8.35	3.44	76	1.20	500	-44	2.660	0.000694

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
63	61	65	3.290	-0.006	3.284	3.285

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.143	1	-12	3.309	11	-12	3.324	31	12	3.229
22	6	3.302	2	-9	3.336	12	-9	3.351			
23	3	3.340	3	-6	3.316	13	-6	3.305	33	3	3.266
			4	-3	3.292	14	-3	3.287	34	0	3.268
25	-3	3.346	5	0	3.287	15	0	3.264	35	-3	3.335
26	-6	3.344	6	3	3.271	16	3	3.261	36	-6	3.275
27	-12	3.254	7	6	3.288	17	6	3.244	37	-12	3.250
			8	9	3.252	18	9	3.249			
			9	12	3.245	19	12	3.248			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
26	2	PANEL 7 ISOTROPIC-CLAMPED-3*3*1.85 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	10.02	4.13	78	1.20	600	-42	3.174	0.000829

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
64	62	65	3.917	-0.006	3.911	3.912

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.728	1	-12	3.945	11	-12	3.953	31	12	3.843
22	6	3.946	2	-9	3.977	12	-9	3.987			
23	3	3.991	3	-6	3.949	13	-6	3.884	33	3	3.848
			4	-3	3.917	14	-3	3.912	34	0	3.850
25	-3	3.993	5	0	3.917	15	0	3.897	35	-3	3.881
26	-6	3.991	6	3	3.906	16	3	3.893	36	-6	3.859
27	-12	3.884	7	6	3.917	17	6	3.867	37	-12	3.843
			8	9	3.886	18	9	3.870			
			9	12	3.867	19	12	3.860			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
26	5	PANEL 7 ISOTROPIC-CLAMPED-3*3*1.85 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	11.70	4.81	78	1.20	701	-43	3.707	0.000968

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
62	59	63	4.595	-0.006	4.589	4.595

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	4.361	1	-12	4.614	11	-12	4.638	31	12	4.496
22	6	4.614	2	-9	4.644	12	-9	4.674			
23	3	4.679	3	-6	4.621	13	-6	4.549	33	3	4.491
			4	-3	4.599	14	-3	4.589	34	0	4.527
25	-3	4.684	5	0	4.585	15	0	4.546	35	-3	4.585
26	-6	4.679	6	3	4.573	16	3	4.544	36	-6	4.530
27	-12	4.542	7	6	4.591	17	6	4.540	37	-12	4.515
			8	9	4.547	18	9	4.537			
			9	12	4.520	19	12	4.524			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
26	7	PANEL 7 ISOTROPIC-CLAMPED-3*3*1.85 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	11.70	4.82	71	1.20	700	-47	3.769	0.000982

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
53	64	63	4.655	0.003	4.659	4.655

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	4.438	1	-12	4.699	11	-12	4.723	31	12	4.605
22	6	4.666	2	-9	4.719	12	-9	4.790			
23	3	4.740	3	-6	4.709	13	-6	4.621	33	3	4.617
			4	-3	4.656	14	-3	4.674	34	0	4.642
25	-3	4.748	5	0	4.649	15	0	4.653	35	-3	4.742
26	-6	4.746	6	3	4.654	16	3	4.600	36	-6	4.628
27	-12	4.634	7	6	4.654	17	6	4.592	37	-12	4.560
			8	9	4.606	18	9	4.585			
			9	12	4.600	19	12	4.594			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
26	9	PANEL 7 ISOTROPIC-CLAMPED-3*3*1.85 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	12.53	5.16	77	1.20	750	-43	3.985	0.001041

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
62	62	64	4.988	-0.001	4.987	5.000

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	4.747	1	-12	5.041	11	-12	5.066	31	12	4.915
22	6	5.004	2	-9	5.056	12	-9	5.132			
23	3	5.085	3	-6	5.050	13	-6	4.950	33	3	4.968
			4	-3	4.992	14	-3	5.015	34	0	4.982
25	-3	5.093	5	0	4.990	15	0	4.956	35	-3	5.098
26	-6	5.085	6	3	4.980	16	3	4.935	36	-6	4.990
27	-12	4.974	7	6	4.985	17	6	4.927	37	-12	4.882
			8	9	4.966	18	9	4.919			
			9	12	4.930	19	12	4.921			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
26	11	PANEL 7 ISOTROPIC-CLAMPED-3*3*1.85 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	13.38	5.51	80	1.20	801	-41	4.216	0.001104

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
57	61	65	5.316	-0.002	5.314	5.317

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	5.073	1	-12	5.366	11	-12	5.402	31	12	5.242
22	6	5.355	2	-9	5.383	12	-9	5.458			
23	3	5.421	3	-6	5.367	13	-6	5.276	33	3	5.263
			4	-3	5.318	14	-3	5.355	34	0	5.283
25	-3	5.441	5	0	5.313	15	0	5.282	35	-3	5.420
26	-6	5.336	6	3	5.318	16	3	5.282	36	-6	5.266
27	-12	5.293	7	6	5.314	17	6	5.244	37	-12	5.203
			8	9	5.287	18	9	5.234			
			9	12	5.253	19	12	5.238			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 094B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
26	13	PANEL 7 ISOTROPIC-CLAMPED-3*3*1.85 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	14.20	5.85	81	1.20	850	-40	4.472	0.001171

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
63	57	63	5.665	-0.003	5.662	5.664

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	5.386	1	-12	5.741	11	-12	5.751	31	12	5.572
22	6	5.677	2	-9	5.735	12	-9	5.824			
23	3	5.755	3	-6	5.722	13	-6	5.606	33	3	5.588
			4	-3	5.669	14	-3	5.700	34	0	5.642
25	-3	5.779	5	0	5.669	15	0	5.636	35	-3	5.748
26	-6	5.682	6	3	5.669	16	3	5.625	36	-6	5.637
27	-12	5.637	7	6	5.661	17	6	5.593	37	-12	5.510
			8	9	5.647	18	9	5.584			
			9	12	5.586	19	12	5.577			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
26	15	PANEL 7 ISOTROPIC-CLAMPED-3*3*1.85 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
-0.00	15.04	6.19	83	1.20	900	-38	4.704	0.001233

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
67	58	65	6.002	-0.009	5.992	5.991

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	5.696	1	-12	6.066	11	-12	6.097	31	12	5.859
22	6	6.024	2	-9	6.063	12	-9	6.176			
23	3	6.099	3	-6	6.046	13	-6	5.931	33	3	5.886
			4	-3	6.005	14	-3	6.026	34	0	5.946
25	-3	6.111	5	0	5.999	15	0	5.957	35	-3	6.077
26	-6	5.997	6	3	6.007	16	3	5.961	36	-6	5.923
27	-12	5.950	7	6	5.998	17	6	5.926	37	-12	5.857
			8	9	5.930	18	9	5.899			
			9	12	5.922	19	12	5.889			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
26	17	PANEL 7 ISOTROPIC-CLAMPED-3*3*1.85 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
-0.00	16.69	6.87	88	1.20	999	-34	5.160	0.001356

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
85	57	66	6.658	-0.013	6.646	6.646

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	6.328	1	-12	6.729	11	-12	6.759	31	12	6.511
22	6	6.677	2	-9	6.732	12	-9	6.828			
23	3	6.792	3	-6	6.693	13	-6	6.601	33	3	6.522
			4	-3	6.664	14	-3	6.638	34	0	6.565
25	-3	6.805	5	0	6.638	15	0	6.613	35	-3	6.680
26	-6	6.669	6	3	6.661	16	3	6.612	36	-6	6.545
27	-12	6.617	7	6	6.653	17	6	6.565	37	-12	6.468
			8	9	6.570	18	9	6.546			
			9	12	6.543	19	12	6.532			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
26	19	PANEL 7 ISOTROPIC-CLAMPED-3*3*1.85 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
-0.00	18.38	7.56	94	1.20	1101	-30	5.599	0.001476

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
94	57	70	7.300	0.001	7.301	7.303

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	6.950	1	-12	7.409	11	-12	7.445	31	12	7.131
22	6	7.343	2	-9	7.392	12	-9	7.509			
23	3	7.457	3	-6	7.414	13	-6	7.307	33	3	7.147
			4	-3	7.305	14	-3	7.268	34	0	7.194
25	-3	7.476	5	0	7.302	15	0	7.258	35	-3	7.304
26	-6	7.328	6	3	7.353	16	3	7.265	36	-6	7.144
27	-12	7.236	7	6	7.295	17	6	7.251	37	-12	7.104
			8	9	7.225	18	9	7.208			
			9	12	7.183	19	12	7.196			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 054B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
26	21	PANEL 7 ISOTROPIC-CLAMPED-3*3*1.85 TPS

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
-0.00	20.04	8.24	97	1.20	1200	-28	6.073	0.001603

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
71	55	69	7.932	0.007	7.939	7.939

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	7.558	1	-12	8.058	11	-12	8.114	31	12	7.726
22	6	7.987	2	-9	8.027	12	-9	8.177			
23	3	8.108	3	-6	8.080	13	-6	7.965	33	3	7.736
			4	-3	7.923	14	-3	7.869	34	0	7.777
25	-3	8.107	5	0	7.938	15	0	7.890	35	-3	7.900
26	-6	7.978	6	3	7.997	16	3	7.930	36	-6	7.745
27	-12	7.864	7	6	7.941	17	6	7.902	37	-12	7.701
			8	9	7.861	18	9	7.859			
			9	12	7.808	19	12	7.806			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
27	1	PANEL 10 ORTHOTROPIC-SIMPLY SUPPORTED-NOMEX

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
-0.00	6.69	2.76	63	1.20	400	-54	2.202	0.000571

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
65	66	64	2.622	-0.017	2.605	2.602

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	2.491	1	-12	2.622	11	-12	2.610	31	12	2.580
22	6	2.605	2	-9	2.619	12	-9	2.639			
23	3	2.641	3	-6	2.616	13	-6	2.595	33	3	2.492
			4	-3	2.622	14	-3	2.586	34	0	2.539
25	-3	2.643	5	0	2.614	15	0	2.595	35	-3	2.581
26	-6	2.643	6	3	2.595	16	3	2.588	36	-6	2.568
27	-12	2.589	7	6	2.622	17	6	2.602	37	-12	2.553
			8	9	2.605	18	9	2.594			
			9	12	2.612	19	12	2.612			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
27	3	PANEL 10 ORTHOTROPIC-SIMPLY SUPPORTED-NOMEX

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	8.35	3.43	66	1.20	500	-52	2.730	0.000706

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
64	64	62	3.285	-0.021	3.264	3.276

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.131	1	-12	3.296	11	-12	3.283	31	12	3.239
22	6	3.295	2	-9	3.288	12	-9	3.286			
23	3	3.336	3	-6	3.285	13	-6	3.276	33	3	3.105
			4	-3	3.285	14	-3	3.243	34	0	3.169
25	-3	3.334	5	0	3.284	15	0	3.264	35	-3	3.180
26	-6	3.332	6	3	3.280	16	3	3.250	36	-6	3.220
27	-12	3.242	7	6	3.285	17	6	3.268	37	-12	3.215
			8	9	3.283	18	9	3.265			
			9	12	3.283	19	12	3.301			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
27	5	PANEL 10 ORTHOTROPIC-SIMPLY SUPPORTED-NOMEX

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	10.02	4.12	70	1.20	600	-49	3.243	0.000842

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
63	63	62	3.954	-0.025	3.929	3.941

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.766	1	-12	3.957	11	-12	3.941	31	12	3.887
22	6	3.963	2	-9	3.944	12	-9	3.962			
23	3	4.021	3	-6	3.930	13	-6	3.925	33	3	3.723
			4	-3	3.947	14	-3	3.890	34	0	3.786
25	-3	4.009	5	0	3.941	15	0	3.916	35	-3	3.835
26	-6	3.993	6	3	3.926	16	3	3.910	36	-6	3.861
27	-12	3.898	7	6	3.961	17	6	3.925	37	-12	3.868
			8	9	3.926	18	9	3.920			
			9	12	3.942	19	12	3.968			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
27	7	PANEL 10 ORTHOTROPIC-SIMPLY SUPPORTED-NOMEX

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	10.86	4.47	73	1.20	651	-47	3.486	0.000907

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
62	62	63	4.314	-0.026	4.288	4.291

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	4.080	1	-12	4.303	11	-12	4.294	31	12	4.226
22	6	4.303	2	-9	4.299	12	-9	4.346			
23	3	4.364	3	-6	4.288	13	-6	4.265	33	3	4.067
			4	-3	4.314	14	-3	4.237	34	0	4.145
25	-3	4.364	5	0	4.306	15	0	4.258	35	-3	4.210
26	-6	4.342	6	3	4.271	16	3	4.251	36	-6	4.193
27	-12	4.249	7	6	4.315	17	6	4.266	37	-12	4.201
			8	9	4.277	18	9	4.266			
			9	12	4.316	19	12	4.320			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
27	9	PANEL 10 ORTHOTROPIC-SIMPLY SUPPORTED-NOMEX

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	11.30	4.64	76	1.20	677	-44	3.596	0.000937

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
62	62	64	4.482	-0.028	4.454	4.461

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	4.237	1	-12	4.486	11	-12	4.461	31	12	4.399
22	6	4.472	2	-9	4.469	12	-9	4.507			
23	3	4.535	3	-6	4.461	13	-6	4.423	33	3	4.213
			4	-3	4.480	14	-3	4.403	34	0	4.289
25	-3	4.528	5	0	4.474	15	0	4.424	35	-3	4.348
26	-6	4.516	6	3	4.448	16	3	4.412	36	-6	4.373
27	-12	4.425	7	6	4.484	17	6	4.441	37	-12	4.362
			8	9	4.459	18	9	4.434			
			9	12	4.477	19	12	4.495			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
28	1	PANEL 10 ORTHOTROPIC-SIMPLY SUPPORTED-NOMEX

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
-0.00	6.51	2.34	70	1.30	401	-64	2.098	0.000497

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
61	61	62	2.259	-0.014	2.245	2.251

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	2.155	1	-12	2.273	11	-12	2.252	31	12	2.236
22	6	2.237	2	-9	2.244	12	-9	2.236			
23	3	2.234	3	-6	2.233	13	-6	2.210	33	3	2.091
			4	-3	2.258	14	-3	2.213	34	0	2.148
25	-3	2.237	5	0	2.247	15	0	2.248	35	-3	2.170
26	-6	2.239	6	3	2.255	16	3	2.228	36	-6	2.209
27	-12	2.237	7	6	2.260	17	6	2.237	37	-12	2.217
			8	9	2.263	18	9	2.239			
			9	12	2.273	19	12	2.271			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
28	3	PANEL 10 ORTHOTROPIC-SIMPLY SUPPORTED-NOMEX

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	8.12	2.93	73	1.30	499	-61	2.598	0.000618

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
62	63	63	2.840	-0.018	2.822	2.827

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	2.708	1	-12	2.859	11	-12	2.842	31	12	2.821
22	6	2.823	2	-9	2.819	12	-9	2.808			
23	3	2.822	3	-6	2.801	13	-6	2.786	33	3	2.623
			4	-3	2.838	14	-3	2.781	34	0	2.692
25	-3	2.822	5	0	2.826	15	0	2.827	35	-3	2.711
26	-6	2.822	6	3	2.827	16	3	2.806	36	-6	2.775
27	-12	2.821	7	6	2.843	17	6	2.812	37	-12	2.782
			8	9	2.838	18	9	2.819			
			9	12	2.865	19	12	2.853			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
28	5	PANEL 10 ORTHOTROPIC-SIMPLY SUPPORTED-NOMEX

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	9.76	3.51	76	1.30	600	-59	3.096	0.000736

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
63	63	64	3.420	-0.021	3.399	3.406

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.243	1	-12	3.469	11	-12	3.419	31	12	3.386
22	6	3.398	2	-9	3.397	12	-9	3.382			
23	3	3.389	3	-6	3.385	13	-6	3.350	33	3	3.155
			4	-3	3.418	14	-3	3.347	34	0	3.238
25	-3	3.397	5	0	3.412	15	0	3.400	35	-3	3.261
26	-6	3.397	6	3	3.406	16	3	3.374	36	-6	3.328
27	-12	3.390	7	6	3.422	17	6	3.393	37	-12	3.350
			8	9	3.428	18	9	3.398			
			9	12	3.459	19	12	3.455			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
28	7	PANEL 10 ORTHOTROPIC-SIMPLY SUPPORTED-NOMEX

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	11.39	4.11	80	1.30	700	-57	3.584	0.000855

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
64	62	64	4.021	-0.028	3.993	4.004

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.807	1	-12	4.040	11	-12	4.025	31	12	3.975
22	6	3.998	2	-9	3.990	12	-9	3.995			
23	3	3.986	3	-6	3.975	13	-6	3.951	33	3	3.751
			4	-3	4.017	14	-3	3.949	34	0	3.846
25	-3	3.999	5	0	3.986	15	0	4.002	35	-3	3.918
26	-6	3.999	6	3	3.995	16	3	3.996	36	-6	3.925
27	-12	3.998	7	6	4.025	17	6	3.986	37	-12	3.923
			8	9	4.018	18	9	3.967			
			9	12	4.028	19	12	4.024			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
28	9	PANEL 10 ORTHOTROPIC-SIMPLY SUPPORTED-NOMEX

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	12.20	4.40	80	1.30	750	-57	3.836	0.000915

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
60	60	63	4.315	-0.030	4.285	4.296

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	4.102	1	-12	4.342	11	-12	4.319	31	12	4.235
22	6	4.300	2	-9	4.286	12	-9	4.284			
23	3	4.279	3	-6	4.263	13	-6	4.229	33	3	4.023
			4	-3	4.308	14	-3	4.224	34	0	4.122
25	-3	4.298	5	0	4.295	15	0	4.279	35	-3	4.201
26	-6	4.297	6	3	4.293	16	3	4.262	36	-6	4.220
27	-12	4.292	7	6	4.322	17	6	4.266	37	-12	4.211
			8	9	4.310	18	9	4.267			
			9	12	4.316	19	12	4.311			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
29	1	PANEL 10 ORTHOTROPIC-SIMPLY SUPPORTED-NOMEX

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
-0.00	8.76	4.10	76	1.10	500	-28	2.769	0.000798

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
62	62	65	4.186	-0.026	4.160	4.158

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.991	1	-12	4.147	11	-12	4.130	31	12	4.182
22	6	4.148	2	-9	4.180	12	-9	4.179			
23	3	4.138	3	-6	4.174	13	-6	4.153	33	3	3.999
			4	-3	4.186	14	-3	4.134	34	0	4.119
25	-3	4.137	5	0	4.176	15	0	4.129	35	-3	4.145
26	-6	4.137	6	3	4.155	16	3	4.153	36	-6	4.151
27	-12	4.122	7	6	4.186	17	6	4.145	37	-12	4.174
			8	9	4.145	18	9	4.128			
			9	12	4.166	19	12	4.175			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
29	3	PANEL 10 ORTHOTROPIC-SIMPLY SUPPORTED-NOMEX

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
-0.00	10.50	4.93	77	1.10	599	-27	3.311	0.000957

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
63	63	65	5.022	-0.032	4.990	5.007

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	4.814	1	-12	4.988	11	-12	4.961	31	12	5.142
22	6	4.978	2	-9	4.993	12	-9	5.029			
23	3	4.986	3	-6	5.005	13	-6	4.988	33	3	5.036
			4	-3	5.023	14	-3	4.969	34	0	5.191
25	-3	4.989	5	0	5.013	15	0	4.993	35	-3	5.241
26	-6	4.988	6	3	5.012	16	3	5.013	36	-6	5.153
27	-12	4.967	7	6	5.021	17	6	4.983	37	-12	5.055
			8	9	5.001	18	9	4.950			
			9	12	5.007	19	12	5.020			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
29	5	PANEL 10 ORTHOTROPIC-SIMPLY SUPPORTED-NOMEX

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	12.25	5.67	77	1.11	704	-29	3.865	0.001104

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
61	61	64	5.869	-0.040	5.829	5.849

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	5.632	1	-12	5.818	11	-12	5.806	31	12	5.990
22	6	5.837	2	-9	5.868	12	-9	5.883			
23	3	5.825	3	-6	5.841	13	-6	5.872	33	3	6.046
			4	-3	5.861	14	-3	5.825	34	0	6.066
25	-3	5.834	5	0	5.848	15	0	5.816	35	-3	6.130
26	-6	5.834	6	3	5.829	16	3	5.831	36	-6	6.051
27	-12	5.829	7	6	5.878	17	6	5.783	37	-12	5.927
			8	9	5.834	18	9	5.758			
			9	12	5.858	19	12	5.853			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 054B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
29	7	PANEL 10 ORTHOTROPIC-SIMPLY SUPPORTED-NOMEX

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	13.12	6.14	80	1.10	750	-26	4.111	0.001187

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
62	63	65	6.298	-0.048	6.250	6.277

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	6.023	1	-12	6.227	11	-12	6.227	31	12	6.425
22	6	6.261	2	-9	6.258	12	-9	6.310			
23	3	6.241	3	-6	6.264	13	-6	6.284	33	3	6.462
			4	-3	6.304	14	-3	6.275	34	0	6.542
25	-3	6.261	5	0	6.265	15	0	6.273	35	-3	6.646
26	-6	6.258	6	3	6.262	16	3	6.256	36	-6	6.437
27	-12	6.227	7	6	6.291	17	6	6.197	37	-12	6.382
			8	9	6.175	18	9	6.176			
			9	12	6.242	19	12	6.272			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
30	1	PANEL 10 ORTHOTROPIC-SIMPLY SUPPORTED-NOMEX

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	11.94	5.24	80	1.15	701	-33	3.758	0.001031

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
64	65	66	5.235	-0.026	5.209	5.217

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	4.967	1	-12	5.243	11	-12	5.224	31	12	5.221
22	6	5.201	2	-9	5.228	12	-9	5.234			
23	3	5.216	3	-6	5.208	13	-6	5.183	33	3	4.977
			4	-3	5.239	14	-3	5.169	34	0	5.061
25	-3	5.233	5	0	5.219	15	0	5.191	35	-3	5.091
26	-6	5.231	6	3	5.235	16	3	5.196	36	-6	5.176
27	-12	5.163	7	6	5.232	17	6	5.183	37	-12	5.186
			8	9	5.297	18	9	5.256			
			9	12	5.285	19	12	5.303			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
30	2	PANEL 10 ORTHOTROPIC-SIMPLY SUPPORTED-NOMEX

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	11.53	5.07	81	1.15	676	-32	3.622	0.000996

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
65	67	68	5.125	-0.033	5.092	5.101

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	4.890	1	-12	5.121	11	-12	5.110	31	12	5.035
22	6	5.078	2	-9	5.117	12	-9	5.094			
23	3	5.105	3	-6	5.089	13	-6	5.102	33	3	4.723
			4	-3	5.128	14	-3	5.081	34	0	4.893
25	-3	5.106	5	0	5.117	15	0	5.075	35	-3	4.882
26	-6	5.104	6	3	5.096	16	3	5.078	36	-6	5.000
27	-12	5.037	7	6	5.122	17	6	5.086	37	-12	4.990
			8	9	5.158	18	9	5.086			
			9	12	5.264	19	12	5.223			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
31	1	PANEL 10 ORTHOTROPIC-SIMPLY SUPPORTED-NOMEX

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	9.66	3.03	78	1.40	600	-74	3.021	0.000659

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
64	66	66	3.065	-0.025	3.040	3.058

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	2.943	1	-12	3.076	11	-12	3.078	31	12	3.304
22	6	3.076	2	-9	3.067	12	-9	3.047			
23	3	3.096	3	-6	3.033	13	-6	3.035	33	3	2.896
			4	-3	3.060	14	-3	3.024	34	0	2.986
25	-3	3.093	5	0	3.056	15	0	3.025	35	-3	3.017
26	-6	3.093	6	3	3.058	16	3	3.014	36	-6	3.023
27	-12	3.051	7	6	3.071	17	6	3.044	37	-12	3.051
			8	9	3.062	18	9	3.051			
			9	12	3.170	19	12	3.083			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
31	3	PANEL 10 ORTHOTROPIC-SIMPLY SUPPORTED-NOMEX

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	11.27	3.55	81	1.40	700	-71	3.500	0.000767

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
65	67	66	3.599	-0.028	3.571	3.567

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.423	1	-12	3.629	11	-12	3.581	31	12	4.093
22	6	3.631	2	-9	3.564	12	-9	3.568			
23	3	3.611	3	-6	3.574	13	-6	3.545	33	3	3.373
			4	-3	3.597	14	-3	3.552	34	0	3.491
25	-3	3.541	5	0	3.581	15	0	3.554	35	-3	3.531
26	-6	3.543	6	3	3.558	16	3	3.509	36	-6	3.543
27	-12	3.543	7	6	3.600	17	6	3.551	37	-12	3.572
			8	9	3.591	18	9	3.590			
			9	12	3.666	19	12	3.627			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
31	5	PANEL 10 ORTHOTROPIC-SIMPLY SUPPORTED-NOMEX

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.00	12.88	4.04	84	1.40	800	-69	3.961	0.000868

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
66	68	68	4.093	-0.042	4.051	4.056

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.887	1	-12	4.141	11	-12	4.103	31	12	4.656
22	6	4.113	2	-9	4.067	12	-9	4.103			
23	3	4.170	3	-6	4.036	13	-6	4.051	33	3	3.853
			4	-3	4.099	14	-3	4.077	34	0	3.962
25	-3	4.104	5	0	4.104	15	0	4.055	35	-3	4.035
26	-6	4.095	6	3	4.080	16	3	4.009	36	-6	3.991
27	-12	4.018	7	6	4.087	17	6	4.049	37	-12	4.030
			8	9	4.091	18	9	4.092			
			9	12	4.246	19	12	4.066			

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 084B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
32	1	PANEL 10 ORTHOTROPIC-SIMPLY SUPPORTED-NOMEX

TUNNEL CONDITIONS

HWALL -IN-	MEASURED PT PSIA	MEASURED P PSIA	TTF DF	M -	CALCULATED Q PSFA	CALCULATED T DF	CALCULATED REYN M/FT	CALCULATED RHO SCF
0.00	8.35	3.44	80	1.20	500	-41	2.634	0.000690

PANEL TEMP. DEG F FWD	MID	AFT	PRESSURES PSIA PANEL	DIF	BOX	PLENUM
69	69	70	3.314	-0.020	3.294	3.299

PANEL STATIC PRESSURES

FORWARD EDGE ORIF	Y	PSIA	PORT EDGE ORIF	X	PSIA	STARBOARD EDGE ORIF	X	PSIA	AFT EDGE ORIF	Y	PSIA
21	12	3.147	1	-12	3.307	11	-12	3.300	31	12	3.264
22	6	3.302	2	-9	3.312	12	-9	3.332			
23	3	3.351	3	-6	3.306	13	-6	3.296	33	3	3.133
			4	-3	3.313	14	-3	3.264	34	0	3.220
25	-3	3.359	5	0	3.314	15	0	3.277	35	-3	3.268
26	-6	3.356	6	3	3.300	16	3	3.266	36	-6	3.244
27	-12	3.269	7	6	3.316	17	6	3.286	37	-12	3.242
			8	9	3.286	18	9	3.287			
			9	12	3.317	19	12	3.317			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.015	3.752	8	0.171	4.974	15	0.466	5.739
2	0.037	4.257	9	0.193	5.045	16	0.511	5.742
3	0.060	4.436	10	0.240	5.095	17	0.556	5.909
4	0.082	4.616	11	0.285	5.282	18	0.604	6.143
5	0.104	4.782	12	0.331	5.379	19	0.649	5.897
6	0.126	4.863	13	0.375	5.548	20	0.694	6.182
7	0.149	4.939	14	0.421	5.606	21	0.739	6.500

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
32	3	PANEL 10 ORTHOTROPIC-SIMPLY SUPPORTED-NOMEX

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
-0.00	8.35	3.45	77	1.20	499	-43	2.654	0.000695

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
67	67	67	3.317	-0.019	3.299	3.294

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.146	1	-12	3.311	11	-12	3.296	31	12	3.257
22	6	3.296	2	-9	3.317	12	-9	3.333			
23	3	3.343	3	-6	3.319	13	-6	3.277	33	3	3.132
			4	-3	3.319	14	-3	3.265	34	0	3.225
25	-3	3.357	5	0	3.321	15	0	3.270	35	-3	3.268
26	-6	3.354	6	3	3.312	16	3	3.265	36	-6	3.248
27	-12	3.265	7	6	3.316	17	6	3.279	37	-12	3.231
			8	9	3.291	18	9	3.279			
			9	12	3.321	19	12	3.298			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.023	3.984	8	0.237	5.195	15	0.951	6.523
2	0.052	4.452	9	0.268	5.193	16	1.066	6.930
3	0.083	4.606	10	0.383	5.581	17	1.180	6.976
4	0.114	4.830	11	0.497	5.890	18	1.293	7.235
5	0.145	4.933	12	0.615	6.035	19	1.405	7.292
6	0.176	5.041	13	0.728	6.248	20	1.518	7.059
7	0.207	5.065	14	0.840	6.556	21	1.630	7.261

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
32	4	PANEL 10 ORTHOTROPIC-SIMPLY SUPPORTED-NOMEX

TUNNEL CONDITIONS

HWALL -IN-	MEASURED PT PSIA	MEASURED P PSIA	TTF DF	CALCULATED M -	CALCULATED Q PSFA	CALCULATED T DF	CALCULATED REYN M/FT	CALCULATED RHO SCF
0.25	8.35	3.44	78	1.20	500	-42	2.647	0.000692

PANEL TEMP. DEG F FWD	MID	AFT	PRESSURES PSIA PANEL	DIF	BOX	PLENUM
67	69	68	3.305	-0.023	3.282	3.284

PANEL STATIC PRESSURES

FORWARD EDGE ORIF	Y	PSIA	PORT EDGE ORIF	X	PSIA	STARBOARD EDGE ORIF	X	PSIA	AFT EDGE ORIF	Y	PSIA
21	12	3.112	1	-12	3.324	11	-12	3.315	31	12	3.268
22	6	3.293	2	-9	3.312	12	-9	3.330			
23	3	3.358	3	-6	3.296	13	-6	3.291	33	3	3.156
			4	-3	3.302	14	-3	3.249	34	0	3.203
25	-3	3.362	5	0	3.296	15	0	3.270	35	-3	3.299
26	-6	3.360	6	3	3.288	16	3	3.261	36	-6	3.289
27	-12	3.260	7	6	3.308	17	6	3.287	37	-12	3.273
			8	9	3.276	18	9	3.259			
			9	12	3.309	19	12	3.298			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.000	0.006	8	0.001	0.006	15	0.001	0.007
2	0.000	0.006	9	0.001	0.007	16	0.001	0.007
3	0.000	0.006	10	0.001	0.007	17	0.002	0.007
4	0.000	0.006	11	0.001	0.007	18	0.002	0.007
5	0.000	0.006	12	0.001	0.007	19	0.002	0.007
6	0.001	0.006	13	0.001	0.007	20	0.002	0.007
7	0.001	0.006	14	0.001	0.007	21	0.002	0.007

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
32	6	PANEL 10 ORTHOTROPIC-SIMPLY SUPPORTED-NOMEX

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.25	10.04	4.14	82	1.20	601	-39	3.147	0.000825

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
69	72	70	3.949	-0.024	3.924	3.931

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.709	1	-12	3.974	11	-12	3.957	31	12	3.920
22	6	3.952	2	-9	3.951	12	-9	3.950			
23	3	4.023	3	-6	3.934	13	-6	3.902	33	3	3.736
			4	-3	3.946	14	-3	3.887	34	0	3.807
25	-3	4.020	5	0	3.936	15	0	3.899	35	-3	3.892
26	-6	4.016	6	3	3.936	16	3	3.878	36	-6	3.933
27	-12	3.899	7	6	3.951	17	6	3.923	37	-12	3.908
			8	9	3.929	18	9	3.909			
			9	12	3.952	19	12	3.950			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.031	4.920	8	0.229	6.510	15	0.872	8.597
2	0.059	5.423	9	0.257	6.650	16	0.975	8.645
3	0.088	5.649	10	0.363	7.116	17	1.084	8.792
4	0.116	5.903	11	0.470	7.521	18	1.192	8.773
5	0.143	6.078	12	0.573	7.986	19	1.300	8.894
6	0.172	6.238	13	0.679	8.234	20	1.408	8.755
7	0.201	6.369	14	0.765	8.382	21	1.515	8.892

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
32	8	PANEL 10 ORTHOTROPIC-SIMPLY SUPPORTED-NOMEX

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.25	10.86	4.47	86	1.20	650	-37	3.377	0.000886

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
71	74	71	4.270	-0.034	4.237	4.246

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	4.001	1	-12	4.306	11	-12	4.269	31	12	4.249
22	6	4.273	2	-9	4.291	12	-9	4.294			
23	3	4.337	3	-6	4.256	13	-6	4.214	33	3	4.084
			4	-3	4.268	14	-3	4.185	34	0	4.164
25	-3	4.349	5	0	4.280	15	0	4.214	35	-3	4.293
26	-6	4.347	6	3	4.280	16	3	4.209	36	-6	4.246
27	-12	4.220	7	6	4.273	17	6	4.228	37	-12	4.208
			8	9	4.227	18	9	4.222			
			9	12	4.240	19	12	4.241			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.031	5.400	8	0.240	7.138	15	0.934	9.334
2	0.059	5.877	9	0.270	7.229	16	1.049	9.412
3	0.088	6.139	10	0.381	7.913	17	1.164	9.537
4	0.117	6.380	11	0.492	8.310	18	1.279	9.649
5	0.148	6.614	12	0.603	8.800	19	1.395	9.619
6	0.178	6.796	13	0.714	9.038	20	1.512	9.584
7	0.208	6.947	14	0.824	9.291	21	1.628	9.665

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
32	9	PANEL 10 ORTHOTROPIC-SIMPLY SUPPORTED-NOMEX

TUNNEL CONDITIONS

MEASURED HWALL -IN-	PT PSIA	P PSIA	TTF DF	CALCULATED M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.50	8.35	3.44	82	1.20	500	-39	2.623	0.000688

PANEL TEMP. DEG F FWD	MID	AFT	PRESSURES PSIA PANEL	DIF	BOX	PLENUM
70	75	71	3.299	-0.025	3.273	3.278

PANEL STATIC PRESSURES

FORWARD EDGE ORIF	Y	PSIA	PORT EDGE ORIF	X	PSIA	STARBOARD EDGE ORIF	X	PSIA	AFT EDGE ORIF	Y	PSIA
21	12	3.087	1	-12	3.320	11	-12	3.306	31	12	3.267
22	6	3.280	2	-9	3.309	12	-9	3.317			
23	3	3.361	3	-6	3.273	13	-6	3.259	33	3	3.159
			4	-3	3.296	14	-3	3.230	34	0	3.175
25	-3	3.356	5	0	3.280	15	0	3.251	35	-3	3.278
26	-6	3.352	6	3	3.280	16	3	3.256	36	-6	3.296
27	-12	3.263	7	6	3.301	17	6	3.273	37	-12	3.269
			8	9	3.261	18	9	3.266			
			9	12	3.304	19	12	3.300			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.030	4.116	8	0.247	5.643	15	0.964	7.207
2	0.060	4.523	9	0.278	5.801	16	1.084	7.250
3	0.090	4.788	10	0.392	6.129	17	1.202	7.376
4	0.120	4.987	11	0.506	6.861	18	1.321	7.372
5	0.151	5.084	12	0.622	7.033	19	1.441	7.388
6	0.184	5.334	13	0.736	7.178	20	1.562	7.376
7	0.216	5.484	14	0.850	7.249	21	1.680	7.364

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 054B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
32	11	PANEL 10 ORTHOTROPIC-SIMPLY SUPPORTED-NOMEX

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.50	10.02	4.12	86	1.20	600	-36	3.113	0.000817

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
73	78	72	3.918	-0.020	3.898	3.907

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.655	1	-12	3.981	11	-12	3.934	31	12	3.929
22	6	3.934	2	-9	3.937	12	-9	3.922			
23	3	3.990	3	-6	3.909	13	-6	3.903	33	3	3.700
			4	-3	3.914	14	-3	3.846	34	0	3.766
25	-3	3.993	5	0	3.904	15	0	3.885	35	-3	3.802
26	-6	3.992	6	3	3.900	16	3	3.871	36	-6	3.924
27	-12	3.891	7	6	3.922	17	6	3.911	37	-12	3.893
			8	9	3.909	18	9	3.897			
			9	12	3.935	19	12	3.938			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.030	4.886	8	0.250	6.918	15	0.985	8.802
2	0.060	5.523	9	0.280	7.164	16	1.109	8.867
3	0.090	5.727	10	0.398	7.773	17	1.231	8.641
4	0.122	6.056	11	0.514	8.298	18	1.355	8.913
5	0.153	6.320	12	0.634	8.480	19	1.479	8.918
6	0.185	6.536	13	0.749	8.749	20	1.601	8.799
7	0.218	6.581	14	0.866	8.805	21	1.723	8.938

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
32	13	PANEL 10 ORTHOTROPIC-SIMPLY SUPPORTED-NOMEX

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.50	10.46	4.31	89	1.20	626	-34	3.225	0.000849

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
74	80	74	4.108	-0.022	4.086	4.087

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.839	1	-12	4.155	11	-12	4.111	31	12	4.097
22	6	4.113	2	-9	4.131	12	-9	4.117			
23	3	4.176	3	-6	4.092	13	-6	4.081	33	3	3.883
			4	-3	4.104	14	-3	4.019	34	0	3.950
25	-3	4.187	5	0	4.087	15	0	4.060	35	-3	4.032
26	-6	4.185	6	3	4.086	16	3	4.051	36	-6	4.096
27	-12	4.075	7	6	4.113	17	6	4.075	37	-12	4.108
			8	9	4.084	18	9	4.065			
			9	12	4.117	19	12	4.113			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.034	5.197	8	0.276	7.186	15	1.064	9.141
2	0.068	5.818	9	0.309	7.325	16	1.190	9.169
3	0.102	6.133	10	0.435	8.192	17	1.316	9.240
4	0.136	6.272	11	0.559	8.804	18	1.443	9.195
5	0.171	6.591	12	0.688	8.982	19	1.570	9.254
6	0.206	6.861	13	0.812	9.134	20	1.696	9.156
7	0.241	7.146	14	0.935	9.138	21	1.825	9.249

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 0S4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
32	15	PANEL 10 ORTHOTROPIC-SIMPLY SUPPORTED-NOMEX

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
0.50	10.69	4.40	89	1.20	640	-34	3.299	0.000867

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
74	80	73	4.190	-0.026	4.165	4.176

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.931	1	-12	4.254	11	-12	4.200	31	12	4.185
22	6	4.207	2	-9	4.218	12	-9	4.201			
23	3	4.271	3	-6	4.170	13	-6	4.179	33	3	3.971
			4	-3	4.185	14	-3	4.105	34	0	4.038
25	-3	4.280	5	0	4.172	15	0	4.146	35	-3	4.126
26	-6	4.270	6	3	4.175	16	3	4.145	36	-6	4.179
27	-12	4.148	7	6	4.196	17	6	4.170	37	-12	4.193
			8	9	4.163	18	9	4.160			
			9	12	4.212	19	12	4.203			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.034	5.247	8	0.287	7.347	15	1.109	9.366
2	0.070	5.961	9	0.323	7.828	16	1.243	9.440
3	0.105	6.266	10	0.452	8.622	17	1.377	9.486
4	0.140	6.538	11	0.581	8.990	18	1.515	9.496
5	0.178	6.862	12	0.714	9.187	19	1.650	9.457
6	0.215	7.128	13	0.844	9.308	20	1.784	9.474
7	0.251	7.437	14	0.974	9.375	21	1.921	9.496

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER OS4B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
32	17	PANEL 10 ORTHOTROPIC-SIMPLY SUPPORTED-NOMEX

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
1.00	8.36	3.44	86	1.20	500	-36	2.597	0.000682

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
78	86	76	3.349	-0.017	3.332	3.339

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.153	1	-12	3.409	11	-12	3.356	31	12	3.290
22	6	3.327	2	-9	3.370	12	-9	3.374			
23	3	3.407	3	-6	3.334	13	-6	3.363	33	3	3.128
			4	-3	3.353	14	-3	3.302	34	0	3.275
25	-3	3.441	5	0	3.338	15	0	3.321	35	-3	3.317
26	-6	3.424	6	3	3.343	16	3	3.316	36	-6	3.337
27	-12	3.359	7	6	3.345	17	6	3.317	37	-12	3.276
			8	9	3.346	18	9	3.328			
			9	12	3.363	19	12	3.371			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.037	4.357	8	0.309	6.363	15	1.162	7.426
2	0.075	4.783	9	0.346	6.487	16	1.302	7.444
3	0.114	5.116	10	0.480	7.169	17	1.443	7.400
4	0.153	5.279	11	0.616	7.256	18	1.585	7.386
5	0.193	5.452	12	0.750	7.275	19	1.725	7.469
6	0.232	5.774	13	0.884	7.372	20	1.865	7.446
7	0.270	6.151	14	1.021	7.329	21	2.008	7.466

AMES TEST 22-154-1 DEC.1975

NASA SERIES NUMBER 054B

MODEL NUMBER 40-0

SHUTTLE TPS PANEL FLUTTER TEST

RUN NO.	SEQ.NO.	CONFIGURATION
32	19	PANEL 10 ORTHOTROPIC-SIMPLY SUPPORTED-NOMEX

TUNNEL CONDITIONS

MEASURED				CALCULATED				
HWALL -IN-	PT PSIA	P PSIA	TTF DF	M -	Q PSFA	T DF	REYN M/FT	RHO SCF
1.00	10.02	4.14	89	1.20	599	-33	3.088	0.000814

PANEL TEMP. DEG F			PRESSURES PSIA			
FWD	MID	AFT	PANEL	DIF	BOX	PLENUM
80	88	79	4.031	-0.017	4.015	4.028

PANEL STATIC PRESSURES

FORWARD EDGE			PORT EDGE			STARBOARD EDGE			AFT EDGE		
ORIF	Y	PSIA	ORIF	X	PSIA	ORIF	X	PSIA	ORIF	Y	PSIA
21	12	3.790	1	-12	4.111	11	-12	4.035	31	12	4.017
22	6	3.997	2	-9	4.048	12	-9	4.091			
23	3	4.103	3	-6	3.991	13	-6	3.995	33	3	3.775
			4	-3	4.031	14	-3	3.981	34	0	3.949
25	-3	4.163	5	0	4.012	15	0	3.994	35	-3	4.042
26	-6	4.025	6	3	4.044	16	3	4.011	36	-6	4.005
27	-12	4.026	7	6	4.032	17	6	4.027	37	-12	3.971
			8	9	4.030	18	9	4.023			
			9	12	4.111	19	12	4.089			

BOUNDARY LAYER PROBE

POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-	POS NO.	Z -IN-	PT -PSIA-
1	0.036	5.300	8	0.312	7.697	15	1.188	8.898
2	0.075	5.855	9	0.351	8.066	16	1.329	8.959
3	0.114	6.124	10	0.489	8.722	17	1.473	9.008
4	0.153	6.570	11	0.628	8.910	18	1.616	8.983
5	0.194	6.828	12	0.766	8.965	19	1.759	8.958
6	0.234	7.166	13	0.902	8.910	20	1.902	9.014
7	0.273	7.548	14	1.043	8.937	21	2.045	8.983