

Wind-Tunnel Tests of the XV-15 Tilt Rotor Aircraft

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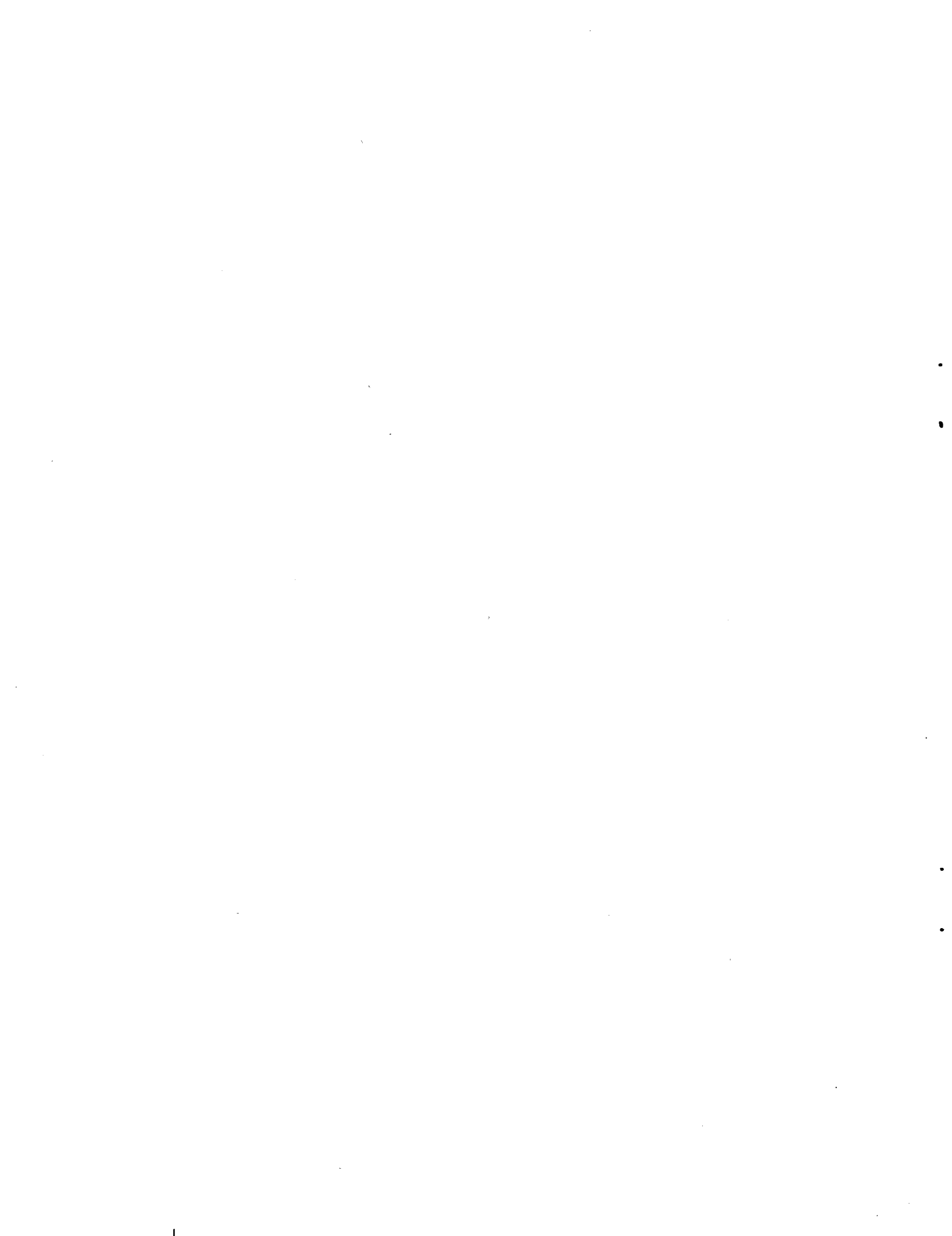


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NOTATION

<u>Symbol</u>	<u>Computer Notation</u>	<u>Description</u>	
b	SPAN	wing span	32.17 ft
c	CBAR	wing chord	5.25 ft
C_D	CD	drag coefficient	D/qS
C_l	CROLL	rolling-moment coefficient	L/qSb
C_L	CL	lift coefficient	L/qS
C_m	CM	pitching-moment coefficient	M/qSc
C_n	CN	yawing-moment coefficient	N/qSc
C_p	CP	power coefficient	$550HP/\pi R^2 \rho (\Omega R)^3$
C_y	CY	side force coefficient	Y/qS
D	DRAG ¹	drag	lb
fe	FE	flat plate drag area	$C_D S \text{ ft}^2$
HP _{mast}	HP	rotor shaft power	hp
L	LIFT	lift	lb
L	ROLL	rolling moment	lb-ft
M	PITCH	pitching moment	lb-ft
N	RPM	rotor rpm	rpm
N	YAW	yawing moment	lb-ft
q	QPSF	dynamic pressure	$(1/2)\rho V^2$, psf
Q_M	R MAST Q L MAST Q	mast torque (R - right) (L - left)	in.-lb
R	R	rotor radius	ft
S	AREA	wing area	sq ft
V	VFPS	velocity	fps

¹U denotes uncorrected values.

<u>Symbol</u>	<u>Computer Notation</u>	<u>Description</u>	
V_K	VKTS	velocity	knots
X	PED POS	pedal position	% (neutral = 50%)
	LONG STK	longitudinal stick	"
	LAT STK	lateral stick	"
	POW LEV	power lever position	"
	MTUN	tunnel mach. no.	
	TEMP	tunnel temperature	°F
	VSNDKTS	speed of sound	knots
Y	SIDE	side force	lb
α	ALFS,C	fuselage angle of attack	deg
i_N	INA	pylon angle ²	deg
μ	V/OR	advance ratio	$V/\Omega R$
ΩR	OMEG*R	rotor tip speed	fps
ρ	RHO	air density	lb sec ² /ft ⁴
σ	SIGMA	rotor solidity ratio ³	0.089
σ'	FOHR,6	density ratio	ρ/ρ_0
ψ	PSI	yaw angle (positive nose right)	deg
δ_f		flap deflection	deg

²relative to fuselage (0° airplane, 90° helicopter)

³blade area/rotor disc area

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SUMMARY

The XV-15 Tilt Rotor Research Aircraft was tested in the Ames 40- by 80-Foot Wind Tunnel for preliminary evaluation of aerodynamic and aeroelastic characteristics prior to flight. The tests were undertaken to investigate the aircraft performance, stability, control and structural loads for flight modes from helicopter through transition and airplane mode up to the tunnel capability of 170 knots. Results from these tests are presented.

INTRODUCTION

The joint NASA/Army XV-15 Tilt Rotor Research Aircraft Project involves design, fabrication, and flight test of two essentially identical aircraft (fig. 1). The overall plan to implement this program is documented in references 1 and 2. A Test and Evaluation Plan, reference 3, outlines the tests to ensure that the XV-15 aircraft will meet the requirements of the Program Plan and the contract Model Specification and Statement of Work. As part of this plan, one of the aircraft was tested in the Ames 40- by 80-Foot Wind Tunnel (fig. 2).

Prior to the wind-tunnel tests, the operation of the aircraft systems was evaluated on a ground tiedown stand at the contractor's facility (fig. 3). After completing about 40 hr of test time, a brief flight evaluation of the aircraft hover characteristics was made (fig. 4). Three hours of flight time in helicopter mode were accumulated from May 3 to 31, 1977. Flight was limited to 40 knots forward and 100 foot altitude. The ground tiedown tests were then resumed for a total of 130 hr accumulated time. The last 5 hr were with systems installed for remote operation in the wind tunnel. This served not only to check the functional operation of the system but also to train personnel in its operation.

Following completion of the remote control checkout on March 11, 1978, the aircraft was prepared for shipment to Ames for the wind-tunnel tests. This involved removal of the wing from the fuselage and mounting it in a shipping cradle. The components were then airlifted on March 23, 1978 to

Ames, reassembled, and the aircraft installed in the wind tunnel on May 4, 1978 (figs. 5 to 8). Testing was conducted to June 23 and consisted of 51 runs in 54 hr of wind-on time. Of this, 19 hr were with rotors on.

The purpose of the wind-tunnel test was to provide an initial assessment of the aerodynamic and aeroelastic characteristics and structural loads within the aircraft and tunnel operating envelope. The tests also served to verify the functional operation of the aircraft systems and on-board instrumentation in a simulated flight environment.

A brief summary of the results of these tests along with a computer print-out of the wind-tunnel scale data is presented in this report. Additional data and analysis including structural loads and structural dynamics are presented in reference 4.

DESCRIPTION OF THE AIRCRAFT

The XV-15 configuration is based on the Bell Helicopter model 301 design. Two aircraft were built and one of these was tested in the wind tunnel. A detailed description of the aircraft and its systems is given in reference 5. Pertinent geometry is shown in figure 1 and table I.

In order that the aircraft could be mounted and operated in the wind tunnel, modifications were incorporated during construction of the ship's structure and hydraulic, fuel, electrical and control systems. For the wind-tunnel tests, the aircraft was provided with remote operation of engine and flight controls and an external supply of fuel, hydraulics, and electrical power. Actuators for remote operation of the flight controls were installed in the aircraft systems as shown in figure 9. The aircraft electrical and hydraulic systems are normally powered from engine driven generators and transmission driven pumps. To provide for operation in the wind tunnel when engines were not running, the D.C. electrical and one of the hydraulic systems (PC-2) were connected to a tunnel source (ref. 6 and fig. 10). For the tests with engines operating, the aircraft systems were used. Prior to tunnel entry, the ship's fuel tanks were purged and inerted with nitrogen and the fuel lines disconnected and capped (ref. 7 and fig. 11). In the tunnel, the fuel lines to the engines were connected directly to the tunnel supply, thus bypassing the aircraft's fuel tank systems.

For tests with rotors off, the blades with pitch links were removed from the rotor hub spindles (fig. 8). To prevent engine compressor windmilling with power off and tunnel wind on, the engine inlet ducts and exhaust were sealed (fig. 12).

During the test, various aircraft configuration changes were made for aerodynamic improvements or to correct problems (vibration, low C_L max and flap effectiveness). These configuration modifications are shown in figure 13 and table II and included pylon strakes, fences, vortex generators, flap tabs, and structural supports.

Because of an interference between the landing gear doors and the tunnel support struts, the entire test was run with the gear retracted and the gear doors closed.

TUNNEL INSTALLATION

The installation of the aircraft in the wind tunnel is shown in figure 14. The aircraft was supported on a system of 3 struts (ref. 8). To accept the loads imposed by attachment to the support struts, additional structure was added to the wing and fuselage in the attachment area during initial construction. In selecting the strut arrangement, consideration was given to dynamic characteristics and rotor/tunnel clearances (ref. 9). To verify predicted mode shapes, frequency and damping of the aircraft as mounted in the tunnel, a dynamic shake test of the combined aircraft, support system and tunnel balance was made after installation and prior to wind on testing. The shake tests were conducted with rotor blades off and with weights attached to the hub spindles to simulate the blade mass. Excitation was applied to one wing tip using an electrohydraulic actuator (fig. 15). Accelerometers and strain gages were used to measure the applied force and structural response. The shake tests were conducted using the procedures and data analysis system described in reference 10. No resonance problems at operating conditions were indicated. Details of the results are presented in reference 4.

Remote operation of the aircraft in the wind tunnel was controlled from a console in the control room (fig. 16). The console contained the controls for operation of the actuators in the aircraft for remote operation of engine and flight control systems. Instruments for monitoring the conditions of the various aircraft systems were removed from the cockpit and installed in the console.

Fuel and hydraulic lines from the tunnel systems were routed inside the right strut and connected to the aircraft systems inside the wing aft of the rear spar (fig. 17). Electrical and instrumentation leads were routed inside the left strut. Because of space requirements, these leads were routed externally on the wing lower surface from the top of the strut to connect with the ship's system inside the fuselage (fig. 18).

To assure safe operation of the tunnel test, an analysis was made to evaluate the safety provisions in the aircraft and for test operation procedures. The results are presented in reference 11. As part of this safety evaluation and prior to the tunnel tests, crew training was conducted during the latter part of the ground tiedown tests at the contractor's facility with the remote systems installed.

In addition, a simulation of the test operation to evaluate significant failure and recovery modes was conducted at Ames using the FSAA flight simulation program. This failure mode evaluation used the aircraft math model that was used for the flight simulation without the automatic flight control systems, FFS, and SCAS, and did not require the use of the FSAA cab. Inputs to the math model were adjusted to correspond to the aircraft as mounted in

the tunnel. Remote operation in a simulated tunnel environment and emergency operating procedures were evaluated. The only significant failure identified that could cause a dangerous condition (high blade flapping and high loads) was a simultaneous dual engine failure at nacelle incidences above 85° (i.e., helicopter mode). Recovery from this failure was to reduce nacelle incidence within 5 sec of the failure. Complete conversion from 95° to 0° can be accomplished in 11 sec. If nacelle incidence is 85° or less at the time of the dual power failure, no corrective action was required.

DATA ACQUISITION AND REDUCTION

The wind-tunnel data acquisition system is a computer-based system that can be operated in either an on-line mode or stand alone with batch processing mode. The components of this system are described in reference 8. The components used for this test and the interface with the aircraft systems is shown in figure 19. The equipment is located in the wind-tunnel computer and control room (fig. 16(a)). Data acquired during the test included static aerodynamic forces, structural loads, and the status of the aircraft systems.

The static forces on the aircraft were measured by the wind-tunnel six-component balance system. Forces and moments were computed about the wind axes and the moment center shown in figure 20. No corrections were applied for support strut tares or tunnel-wall interference. Dimensional data used for reduction to coefficients are given in table I. Angle of attack and yaw are referenced to the fuselage reference line. Some of the data for setting and monitoring test conditions were displayed on a CRT (fig. 21).

Test operations involved monitoring loads in critical structural components and monitoring the condition of the various aircraft systems including the hydraulic, electrical, flight controls, and propulsion systems. Data acquisition, reduction, and display utilized the aircraft on-board instrumentation and the tunnel instrumentation data reduction and display systems.

The aircraft on-board instrumentation system is described in reference 12 and consists of sensors, signal conditioning, encoding (to Pulse-Code-Modulation (PCM) digital format) and recording. During the tunnel test, the aircraft's data system tape recorder was installed in the control room to provide access during test operations. The wind-tunnel data acquisition systems are described in reference 8 and have monitoring, reduction, analysis, display, and recording capabilities. The on-board research instrumentation and the interface with the tunnel systems are listed in table III and shown in figure 19.

Structural loads were displayed for monitoring on the wind-tunnel Peak Detector System (PDS), Cathode Ray Oscilloscope (CRO), brush recorders and a loads panel on the control console. The PDS computes peak-to-peak amplitude of selected dynamic signals in percent of full scale monitoring limit and displays the amplitude on a 50-channel bar graph display on a 20-in. CRT. Each channel was set to alarm when monitoring limits were exceeded. The CRO

displayed, on an 8-in. CRT, the dynamic structural loads from one blade and hub spindle as X-Y pairs (beam vs. chord) and the corresponding pitch link load to allow an on-line assessment of loads with respect to allowables or critical limits. Some selected dynamic loads were displayed and monitored on brush recorders. The remote control console had a panel for display of loads in 12 structural elements for the information of the console operators (fig. 16(c)).

TESTS AND RESULTS

Testing followed the Test Plan of reference 13. A log of the runs completed is given in table IV. The conversion corridor area (the aircraft configuration between the helicopter and the airplane flight modes covered with rotors on) is shown in figure 22. A computer printout of the tunnel-scale data is given in table V. Some of this data is plotted and is shown in figures 23 to 31.

Some of the significant observations are discussed below.

Lift Coefficient

The measured lift characteristics of the XV-15 at all nacelle angles demonstrated an apparent premature flow separation resulting in a reduction of achievable lift at high angles of attack. Inspection of the wing airfoil contours indicate that leading edge out-of-contour and surface irregularities may have contributed to this problem. The addition of vortex generators at the upper-surface quarter-chord location along the full wing span (fig. 13) eliminated the premature stall and retained attached flow up to an angle of attack of 15° . This improvement is shown in figure 24(a) for the airplane mode configuration. The addition of vortex generators at the 60% chord ahead of the flaps had no significant effect on lift up to angles of attack of 10° (fig. 24(b)).

Flap Effectiveness

The lift increment due to flap deflection was improved by the addition of a flap tab. This $3/4$ -in. tab runs the full span of the wing trailing edge and it projects downward approximately normal to the wing chord (fig. 13). The measured lift, drag, and moment data presented in figure 25(a) illustrates the lift increase due to the tab and its impact on drag. At low levels of lift coefficient and flap angles of 0° and 20° there is no effect on drag. As illustrated in figure 25(b), the flap tab provides a significant increase of the incremental lift due to flap deflection at 0° aircraft angle of attack. At high lift coefficients and at a 40° flap angle, a drag increase is apparent, as shown on the C_D and L/D curves of figure 25(a).

Autorotation

Autorotational capability was demonstrated at an 80-knot airspeed with a 95° nacelle angle and 40° flap angle aircraft configuration. The rotor RPM governor was engaged and several rotor speeds were tested. At the zero mast-torque autorotational condition shown in figure 27(g), the minimum rate of descent is computed to be approximately 2450 ft/min at 76% RPM.

Yaw Characteristics

The effect of aircraft yaw on the force and moment coefficients is shown in figures 23(b) and 28. Of note is the yawing coefficient, C_n , which demonstrates a linear variation with yaw angle. A reduction of the slope of C_n around the zero yaw angle measured in model tests of the original single vertical fin configuration of the tilt rotor research aircraft caused concern about its directional stability characteristics. No problem in this area was detected with the full-scale H-tail XV-15.

Drag

A determination of the drag of the XV-15 in a free-air state was not obtained because of the difficulty in establishing the tare and interference corrections with precision and confidence. The measured drag, however, indicated levels greater than expected based on the results of prior small scale tests. A summary of the rotors-off airplane mode drag, as measured by the wind-tunnel balance, is shown in figure 30. The configurations of the XV-15 on the three strut support system, in order of decreasing drag, are: vortex generators on; vortex generators off; and a clean (gaps taped, remote control cables and lines removed) configuration.

An indication of the drag coefficient difference between the three strut and a single strut support system is also presented in figure 30 based on a 1/5 scale model test. It appears that the pretest prediction would underestimate the free-air XV-15 minimum drag by as much as 20%. Comparisons of the clean aircraft configuration data indicate that the anticipated drag reduction at full scale Reynolds numbers is not occurring.

Airflow

The placement of tufts on the aircraft during the wind-tunnel tests revealed several areas of disturbed boundary-layer flow. For all flight modes, the upper-aft portion of the landing gear pod and the fuselage surface aft of the pod showed turbulent flow. Without vortex generators, the upper surface of the wing aft of 60% chord indicated separation when the flaps were deflected. Some separation was also noted on the upper fuselage just aft of the wing above the trailing edge fillet. In helicopter and conversion flight, the upper, or aft surface of the nacelles, showed severely separated flow. (Note that the nacelle is roughly oval in shape and is canted outboard at helicopter and conversion nacelle angles.) During portions of the

conversion envelope (particularly when high oscillatory empennage loads were present), the vertical fin tufts reflected turbulent flow conditions.

Systems Operation

Throughout the wind-tunnel test period, all aircraft components and systems operated well and within acceptable tolerances with the exception of the following items:

Pylon downstop— A failure of the right-hand pylon downstop bracket occurred. This component provides the hard-point that the pylon engages in the aircraft mode to increase the wing/pylon stiffness for aeroelastic stability. The failure was subsequently determined to have resulted from overstress cycle fatigue. The crack appeared to have started prior to the wind-tunnel test. The left-hand downstop also was cracked in the same location. As a result of this failure, only three runs had to be deleted from the planned run schedule. A limited amount of airplane mode testing was conducted by raising the pylons to just off the downstop. Following the wind-tunnel test, a redesign of the downstop bracket and a modification of its rigging/preloading procedure was initiated.

Nose boom vibration— During operation in airplane mode at speeds greater than 150 knots, the nose boom and the pitch and yaw vanes on the nose boom YAPS head vibrated excessively. Between runs 6 and 24, the nose boom YAPS head was removed. The nose boom was then stiffened by adding support wires for the remainder of the test.

Antenna vibrations— Excessive vibrations of the aft-fuselage mounted VOR-LOC antennas occurred during attitude sweeps in airplane mode flaps down. Inspection disclosed a structural failure at the attach point. The vibration was felt to be the result of wing flow separation. The antennas were removed for the remainder of the test.

Flap drive— During a run with flaps down, the flaps could not be extended beyond about 30° while operating at 160 knots. The failure was found to be due to a loose wire.

Engine oil venting— Seepage from the engine oil scavenge lines occurred during initial runs with rotors off while operating in airplane mode at airspeeds greater than 100 knots. The problem was corrected by scarfing the end of the tube. The modification was satisfactory for the remainder of the test up to the maximum test airspeeds.

Empennage loads— Oscillatory load limits were encountered on the empennage structure during helicopter and conversion mode operations. In the helicopter mode, at a nacelle incidence of 90°, the horizontal spar attach lug tension loads increased with increasing airspeed up to approximately 40 knots (as previously indicated by flight test of aircraft no. 1). Above 40 knots, the load amplitude decreased rapidly with airspeed (fig. 31(a)). The addition of a preload strap reduced the loads on the lugs to well below

the design limits. The excitation for these loads is believed to be the tip vortices shed from the inboard edge of the rotor disk. These vortices, which are generated downward in the hover condition, are swept aft as forward flight is initiated, providing a strong oscillatory flow at the empennage at about 40 knots. At higher speeds, the rotor tip vortices pass clear of the empennage.

At the low speed end of the conversion envelope, for nacelle angles around 60° , high vibratory loads appeared on the empennage structure, with the horizontal spar experiencing loads above the infinite life design limits. The placement of struts (shown in figs. 13(a) and (d)) reduced the loads in the horizontal tail structure but resulted in the growth of vertical fin spar and attach fitting loads to beyond its design limits. A series of tests after run 23 examined the effect of various aerodynamic modifications such as wing fences, nacelle strakes, and vortex generators (fig. 13) on the tail loads. Some of these results are shown in figures 31(b) and 31(c). No aerodynamic modification solution was found to be sufficiently effective and suitable for all flight-mode (hover through airplane) conditions. Long streamers attached to the inboard side of the nacelle at the wing/nacelle junction showed that a strong vortex rolls over the forward portion of the wing tip and is swept inboard to the lower half of the vertical fins at 60° nacelle incidence. Subsequent flight tests showed this problem to be less severe than indicated by wind-tunnel tests.

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TABLE I. AIRCRAFT DIMENSIONS
(English Units)

(a) <u>General</u>	Wing	Horizontal Tail	Vertical Tail	(c) <u>Rotor</u>
Area, sq ft	181.0 ^a	50.25	50.5 ^b	Number of blades per rotor 3
Span, ft	32.17 ^c	12.83	7.68	Diameter, ft 25.0
Chord, ft	5.25	3.92	4.09/2.40 ^d	Disc area per rotor, sq ft 491
\bar{c} , ft ^e	5.25	3.92	3.72	Blade chord, in 14.0
Aspect ratio	6.12	3.27	2.33	Blade area per rotor, sq ft 43.75
Incidence, deg	3.0	0	--	Solidity 0.089
Dihedral, deg	2.0	0	--	Blade twist, deg Aerodynamic 45. Geometric 40.9
Sweep \bar{q} , deg	-6.5	0	31.6 ^f	Hub precone angle, deg 2.5
Section (NACA)	64A223 (Mod)	64A015	0009	δ_3 , deg -15.0
Tail length, ft	--	22.4	23.2	Flapping design clearance, deg ± 12
				Blade Lock number 3.83
<u>(b) Movable Aerodynamic Surfaces</u>				
	Flap	Flaperon	Elevator	Rudder
Area aft hinge, sq ft	11.0 ^b	20.2 ^b	13.0	7.5
Span, ft	4.25 ^g	7.86 ^g	11.0	4.66
Chord aft hinge, %	25	25	30	25
Deflection, deg	75 max	-23.8 ^h +13.8	± 20	± 20
Control travel for total surface deflection, in.	--	9.6	9.6	5.0

a	To BL 207	Rotor rpm/tip speed Helicopter 565 rpm/740 fps Airplane 458 rpm/600 fps
b	Total both panels	
c	Between rotor centerlines at tilt axis	
d	Root/tip	
e	Mean aerodynamic chord	
f	Upper	
g	One side along hinge	
h	Measured from flap. Also flaperon droops .625 ^o /deg. flap	

TABLE I.- Concluded.
(Metric units)

(a) General

	Wing	Horizontal Tail	Vertical Tail
Area, sq m	16.81 ^a	4.67	4.69 ^b
Span, m	9.80 ^c	3.91	2.34
Chord, m	1.60	1.19	1.25/.73 ^d
\bar{c} , m ^e	1.60	1.19	1.13
Aspect ratio	6.12	3.27	2.33
Incidence, deg	3.0	0	--
Dihedral, deg	2.0	0	--
Sweep $\frac{c}{4}$, deg	-6.5	0	31.6 ^f
Section (NACA)	64A223 (mod)	64A015	0009
Tail length, m	--	6.83	7.07

(b) Movable Aerodynamic Surfaces

	Flap	Flaperon	Elevator	Rudder
Area aft hinge, sq m	1.02 ^b	1.88 ^b	1.21	.70 ^b
Span, m	1.29 ^g	2.40 ^g	3.35	1.42
Chord aft hinge, %	25	25	30	25
Deflection, deg	75 (max)	-23.8 ^h +13.8	±20	±20
Control travel for total surface deflection, cm	--	24.4	24.4	12.7

(c) Rotor

Number of blades per rotor	3
Diameter, m	7.62
Disk area per rotor, sq m	45.6
Blade chord, cm	35.6
Blade area per rotor, sq m	4.06
Solidity	.089
Blade Twist, deg Aerodynamic Geometric	45. 40.9
Hub precone angle, deg	2.5
δ_3 , deg	-15
Flapping design clearance, deg	±12
Blade Lock number	3.83
Rotor rpm/tip speed Helicopter Airplane	565 rpm/226 mps 458 rpm/183 mps

TABLE II. AIRCRAFT CONFIGURATION LOG

Run No.	Rotors	Nose boom YAW Head	Horizontal Tail Struts	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	REMARKS	
1-5	OFF	ON																			
6		ON/OFF																			Remove wiring Run 6
7-8		OFF																			
9-10																					
11																					
12-13	OFF																				
14-19	ON																				
20-21																					
22-23		OFF																			
24-25		ON																			
26	ON																				
27-29	OFF																				
30																					
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40-41																					
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44																					
45		ON																			
46		OFF																			
47																					
48																					
49																					
50																					
51	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	

FOLDOUT FRAME

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OF POOR QUALITY

FOLDOUT FRAME 2

TABLE III.- INSTRUMENTED PARAMETERS

Measurement no.	Description	Input TSP	PCM word	CRO	HS	TCS	DAS	p-p	DPM	OBS	DAC	
B122	Right bld beam 52.5		B1-10	2	1		29	1			A6	Load panel
B132	Left bld beam 52.5		B1-8		2		30	2			A4	Load panel
B123	Right bld chord 52.5		B1-20	6	3			3			A10	
B133	Left bld chord 52.5		B1-9		4		31	4			A5	
F103	Right pitch link		B1-45	3	5		28	5			A24	Load panel
F060	Left pitch link		B1-21		6		32	6			A11	Load panel
B165	Right conv spindle beam		B1-57		7			7			A27	Load panel
B190	Left conv spindle beam		B2-54		8			8			A29	Load panel
B166	Right conv spindle chord		B2-57		9			9			A30	
B191	Left conv spindle chord		B1-55		10			10			A26	
F611	Right conv actuator load		B1-7		11			11			A3	
F638	Left conv actuator load		A1-5		12			12			C1	
B112	Right yoke beam 9.0		B1-48	1	13			13			A25	
B114	Left yoke beam 9.0		B1-15		14			14			A7	
B113	Right yoke chord 9.0		B1-34	5	15			15			A18	Load panel
B115	Left yoke chord 9.0		B1-16		16			16			A8	Load panel
B109	Right perp mast bending		A1-21		17			17			C4	Load panel

TABLE III.- Continued.

Measurement no.	Description	Input TSP	PCM word	CRO	HS	TCS	DAS	P-P	DPM	ORS	DAC
B141	Left perp mast bending		B1-18		18			18			A9
M107	Right mast torque		B1-6		19		14	19	3		A2
M143	Left mast torque		B1-5		20		15	20	2		A1
D156	Right F/A flapping	T104			21		22	21			AC cons.
D181	Left F/A flapping	T122			22		23	22			AC cons.
D157	Right lat. flapping	T101			23		24	23			AC cons.
D182	Left lat. flapping	T119			24		25	24			AC cons.
B656	Right wing beam 22	T107, 108, 109			25	1	4	25			
B626	Left wing beam 22	T125, 126, 127			26	2	5	26			
B655	Right wing chord 22/	T110, 111, 112			27	3	6	27			
B625	Left wing chord 22	T128, 129, 130			28	4	7	28			
M657	Right wing torsion 22	T113, 114, 115			29	5	8	29			
M627	Left wing torsion 22	T131, 132, 133			30	6	9	30			
E747	Flaperon exciter	T137			31		2				
E746	Collective exciter	T140			32		3				
A150	Right pylon F/A accel.		B1-37		33		16				A19

TABLE III.- Continued.

Measurement no.	Description	Input TSP	PCM word	CRO	HS	TCS	DAS	p-p	DPM	OBS	DAC
AI75	Left pylon F/A accel.		B1-30		34		17				A15
AI51	Right pylon lat. accel.		B1-38		35		18				A20
AI76	Left pylon lat. accel.		B1-31		36		19				A16
AI52	Right pylon vert. accel.		B1-39		37		20				A21
AI77	Left pylon vert. accel.		B1-32		38		21				AI7
RSFAA	Right strut F/A accel.	T004, 005, 006			39	7	10				
LSFAA	Left strut F/A accel.	T010, 011, 012			40	8	11				
RSLAA	Right strut lat. accel.	T001, 002, 003			41	9	12				
LSLAA	Left strut lat. accel.	T007, 008, 009			42	10	13				
B262	Right horiz. beam 8.0		B1-58		43		27	31			A28
B259	Left horiz. beam 8.0		B2-60		44		26	32			A32
B263	Right horiz. chord 8.0		B2-58		45						A31
F052	Right swash plate driver		B1-44		46			33			A23
F142	Left swash plate driver		B1-24		47			34			AI2
F162	Right F/A cyc act load		B1-40		48			35			A22
F187	Left F/A cyc act load		B1-27		49			36			AI3
F163	Right lat. cyc act load		AI-29		50			37			C5

TABLE III.- Continued.

Measurement no.	Description	Input TSP	PCM word	CRO	HS	TCS	DAS	P-P	DPM	OBS	DAC
F188	Left lat. cyc act load		B1-28		51			38			A14
F164	Right collective act load		B1-19		52			39			B1
F189	Left collective act load		B1-29		53			40			B2
B120	Right blade beam 22.8		A1-12		54			41			C2
B130	Left blade beam 22.8		B1-43		55			42			B5
D158	Right collective pitch		B4-82		56						B13 AC cons.
D183	Left collective pitch		B3-79		57						B10
D159	Right F/A cyclic		B5-82		58						B15
D184	Left F/A cyclic		B4-79		59						B12
D160	Right lat. cyclic		A2-72		60						C6 AC cons.
M266	Right horiz. torsion 8.0		B1-59								B6 BNC 1
B124	Right blade beam 75		B1-35								B3 BNC 2
B125	Left blade chord 75		B1-36								B4 BNC 3
B126	Right blade beam 112		A1-16								C3 BNC 4
D185	Left lat. cyc		B5-79								B14 AC cons.
	Shaker excitation										AC cons.
	Az right										AC cons.
	Az left										AC cons.
	NPR right										CTR 1
	NPR left										CTR 2

TABLE III.- Concluded.

Measurement no.	Description	Input TSP	PCM word	CRO	HS	TCS	DAS	P-P	DPM	OBS	DAC
D021	F/A stick pos		B1-78						1		B7
D022	Lat. stick pos		B2-78						7		B8
D023	Power lever pos		B3-78						5		B9
D024	Pedal pos		B4-78						6		B11

TABLE IV.- RUN LOG
(Rotors off)

Run no.	Pt no.	i_N	V_k knots	δ_F	Cntr	Sweep	α trim	Run time	Remarks
3	2-12	90	80	40	1706-1708	α : -12 to +14	-	1:53	Clean A/C
	13-19	90	80	40	1709-1711	ψ : -4 to +16	-8		
	20-25	90	80	40	1712-1718	$\Delta X_{long}, \Delta X_{lat}, \Delta X_{ped}$	-8		
5	2-12	90	60	75	1723-1727	α : -12 to +14	-	1:30	
	13-19	90	60	75	1728-1730	ψ : -4 to +16	-8		
	20-21	90	60	75	1731-1732	ΔX_{lat}	-8		
6	5-10	0_L	160	0	1742-1743	α : -4 to +8	-	2:25	Removed nose boom Removed VHF antennas
	11-17	0_L	122	0	1744-1746	α : -4 to +12	-		
	18-23	0_U	160	40	1747-1749	α : -4 to +8	-		
	24-30	0_U	110	40	1750-1751	α : -4 to +12	-		
7	4-7	0_L	-	0	1755-1757	V: 100 to 178	0	1:26	Dyn. stability
8	3-4, 7	90	-	40	1761-1763	V: 80 to 118	0	1:40	Dyn. stability Dyn. stability Dyn. stability
	5-6, 10	0_U	-	40	1767	V: 111 to 170	0		
	8-9	30	-	40	1765-1766	V: 122 to 170	0		
9	3-14	0_L	80	0	1772-1780	α : -4 to 16	-	2:15	VGs on
	15-25	0_L	80	40	1781-1788	α : -4 to +14	-		
	26-31	-	80	40	1789-1794	i_N : 0 to 90	0		
	32-41	0_L	110	40	1795-1801	α : -4 to +12	-		
	42	0_L	110	0	-	-	0		
10	4-11	0_L	160	0	1803-1807	α : -4 to +8	-	1:08	
	12-15	30	140	40	1808-1810	α : -4 to +2	-		
	16-19	75	100	40	1811-1814	α : -4 to +1	-		
	20-22	60	120	40	1815-1817	α : -4 to -1	-		
11	3-5	75	100	40	1818-1820	α : -4 to 0	-	1:32	Removed helicopter doors
	6-10	0_L	160	0		ψ : -4 to +8	+2		
	11-16	0_L	160	0		$\Delta X_{long}, \Delta X_{lat}, \Delta X_{ped}$	+2		
	17-19	0_L	125	0		ΔX_{lat}	+8		
	20-22	0_L	125	0		ΔX_{lat}	+12		
	23-27	0_L	160	40		ψ : -4 to +8	0		
	28-33	0_L	160	40		$\Delta X_{long}, \Delta X_{lat}, \Delta X_{ped}$	0		
34-36	0_L	110	40		ΔX_{lat}	+8			
12	3-13	90	80	40	1856-1864	α : -12 to +14	-	1:00	Tail strut on
	14-18	75	100	40	1865-1867	α : -4 to +4	-		
13	3-7	75	100	20	1868-1872	α : -4 to +4	-	:45	
	8-10	75	100	0	1873-1875	α : +4 to +8	-		
	10-13	-	100	0	1876-1878	i_N : 75 to 0_L	+8		

TABLE IV.- Continued.
(Rotors on)

Run no.	Pt no.	i_N	V_{knots}	δ_F	Cntr	Sweep	α trim	Run time	Remarks
-	-	90	-	40		Track/balance	0	:10	94% NR
14	3-4	90	-	40		Track/balance	0	:55	
	-	90	-	40		-	0	:02	Xms chip light
15	7	90	40	40	1901		0	1:45	
	8-9	80	-	40	1903-1904	V_{knots} : 40-80	0		
	10-18	-	80	40	1906-1914	i_N : 80-10	0		
	19-22	-	100	40	1915-1918	i_N : 10-0	0		
	23-24	0_L	100	0	1919-1923	Exciter	0		Dyn. stab. 76%
16	-	0_L	120	0		Exciter	0	:20	Oil drain leak
17	3-6	0_L	-	0	1932-1943	V_{knots} : 140-180	0	2:09	Dyn. stability
	7-8	0_L	180	0	1946-1948	Q_m : 60-80%	0		Dyn. stability
18	4-7	0_U	-	40	1952-1956	V_{knots} : 110-170	0	2.25	XMS chip
	8-9	30	-	40	1957-1969	V_{knots} : 150-170	-4		Dyn. stability
	10-16	60	-	40	1970-1977	V_{knots} : 130-151	-7		Dyn. stability
	17	90	80	40	1980	-	-7		Dyn. stability
20	8-15	90	-	40	1989-1997	V_{knots} : 80-100	-8	2:45	Dyn. stability
	16-20	90	80	40	1998-2002	α : -12 to -4	-		
	21-28	90	80	40	2003-2009	ψ : -4 to +16	-8		
	29-34	90	80	40	2010-2014	$\Delta X_{long}, \Delta X_{lat}, \Delta X_{ped}$	-8		
	35-40	90	-	40	2015-2020	V_{knots} : 95-123	-8 to -12		Dyn. stability
	41-44	75	140	40	2021-2024	Q_m : 45-70%	-8		
	45-46	45	160	40	2025-2026				
21	3-10	60	80	40	2027-2034	α : -8 to +7	-	1:00	
	11-16	60	120	40	2036-2041	α : -5 to +3	-		
22	3-5	90	-	40	2052-2057	V_{knots} : 40-80	0	2:08	
	6-10	60	120	40	2058-2062	ψ : -4 to +8	-1		
	11-16	60	120	40	2063-2068	$\Delta X_{long}, \Delta X_{lat}, \Delta X_{ped}$	-1		
	18-28	95	80	40	2070-2082	α : 0 to +12	-		76% NR Autorotation
	29-38	95	80	40	2083-2094	α : 0 to +12	-		94% NR Autorotation
	39	95	80	40	2095		12		102% NR Autorotation
	-	90	60	40	2097-2098		0		Start/stop
23	3-9	0_U	110	40	2099-2104	α : 0 to +12	-	1:20	94% NR
	10-14	0_U	110	40	2105-2109	ψ : -4 to +8	8		
	15-21	0_U	110	40	2110-2115	$\Delta X_{long}, \Delta X_{lat}, \Delta X_{ped}$	8		
	22-27	0_U	160	40	2116-2120	α : -1 to +3	-		Down stop broke
24	3-4	90	-	40	2127-2128	V_{knots} : 60-80	-5, -8	2:05	Struts off/ 6" strake
	5-9	-	80	40	2129-2133	i_N : 90-30	0		
	10-14	60	80	40	2134-2138	α : -4 to +3	-		
	15-16	60	100	40	2140-2141	α : -2 to 0	-		
	17-20	60	120	40	2142-2145	α : -4 to 0	-		
	21	60	120	0	2146	-	0		
	22-24	75	100	40	2147-2149	α : -5 to -2	-		
	25-30	75	100	40	2150-2155	ψ : -4 to +12	-2		
	31-36	75	100	40	2157-2162	$\Delta X_{long}, \Delta X_{lat}, \Delta X_{ped}$	-2		
	37-41	30	140	40	2163-2167	α : -5 to +3	-		
26	3-5	90	40	40	2173-2175	α : -2, -5, -8	-	1:57	Struts on
	6-10	30	140	40	2176-2180	ψ : -4 to +8	-1		
	11-16	30	140	40	2181-2186	$\Delta X_{long}, \Delta X_{lat}, \Delta X_{ped}$	-1		
	17-20	45	100	40	2187-2190	α : 4 to +9	-1		
	21-28	45	100	40	2191-2197	$\Delta X_{long}, \Delta X_{lat}, \Delta X_{ped}$	+8		
	-	-	80	40	-	i_N : 45-80	-1		
	29-33	80	80	40	2198-2203	α : -5 to +3	-		
	34-40	80	80	40	2204-2209	$\Delta X_{long}, \Delta X_{lat}, \Delta X_{ped}$	-1		
	41-46	80	80	40	2210-2215	ψ : -4 to +12	-1		

TABLE IV.- Continued.
(Rotors off)

Run no.	Pt no.	i_N	V knots	δ_F	Cntr	Sweep	α trim	Run time	Remarks
29	3-9	60	120	40	2218-2224	α : -4 to +6	-	1:45	Strut, 6" strake Nose boom on
	10-16	45	120	40	2225-2231	α : -4 to +8	-		
	17-18	45	120	40	2232-2233	ΔX_{lat}	8		
	19-27	0 _u	120	40	2237-2245	α : -4 to 11	-		
	28-29	0 _u	120	40	2247-2248	ΔX_{lat}	8		
	30-37	0 _u	120	20	2249-2256	α : -4 to +10	-		
	38-45	0 _u	120	0	2257-2264	α : -4 to +10	-		
30	3-10	0 _u	120	20	2265-2272	α : -4 to +10	-	1:00	Tab on flap (3/4)
	11-17	45	120	20	2273-2279	α : -4 to +8°	-		
	18-19	45	120	20	2280-2281	ΔX_{lat}	8		
	20-21	0 _u	120	20	2282-2283	"	8		
	22-30	60	120	0	2284-2292	α : -4 to +9	-		
31	3-4	60	120	40	2296-2297	α : -4 to -2	-	:30	Cowl doors off
32	3-12	0 _u	120	0	2298-2307	α : -4 to +12	-	1:00	Strut, strakes 3", 6", 18", wing fence--1/2 chord
	13-14	0 _u	120	0	2308-2309	ΔX_{lat}	8		
	15-22	0 _u	120	40	2310-2317	α : -4 to +10	-		
	23-24	0 _u	120	40	2318-2319	ΔX_{lat}	8		
33	4-10	0 _u	120	0	2320-2326	α : -4 to +8	-	:20	Wing fence removed Wing - pylon gaps taped
	11-12	0 _u	120	0	2327-2332	ΔX_{lat}	8		
34	3-11	60	80	40	2335-2343	α : -4 to +11	-	1:15	
	12-20	60	100	40	2344-2353	α : -4 to +9	-		
	21-28	60	120	40	2354-2361	α : -4 to +8	-		
35	3-7	60	120	40	2362-2366	α : -4 to +6	-	:45	Inboard fairing nacelle cut-off, gap covered
	8-11	60	120	0	2367-2370	α : -4 to +6	-		
	-	-	120	40	2371-	i_N : 0 to 90	0		
36	3-6	60	120	40	2374-2377	α : -4 to +4	-	:35	All strakes on nacelle removed
	7-12	60	120	0	2378-2383	α : -4 to +6	-		
	-	-	120	40	-	i_N : 0 to 90	0		
37	3-6	60	120	40	2386-2388	α : -4 to +4	0	:50	Removed inboard na- celle fairing cover (Left-hand horiz. strut cracked)
	7-10	75	100	40	2389-2392	α : -4 to +4	-		
	11-16	0 _u	160	0	2393-2398	α : -4 to + 11	-		

TABLE IV.- Continued.
(Rotors off)

Run no.	Pt no.	i_N	V knots	δ_F	Cntr	Sweep	α Trim	Run time	Remarks
39	4-5	60	120	40	2401-2402	α : -4 to 0	-	1:45	Nacelle original conf.
	6-8	75	100	40	2403-2405	α : -4 to +4	-		
	9-12	60	120	0	2406-2409	α : -4 to +4	-		
	13-17	-	120	40	2410-2419	i_N : 0 to 90	0		
40	3-6	60	120	40	2421-2425	α : -4 to +4	-	1:10	3" spoiler 24" along blue stripe, out-board nacelle (angle of attack out)
	7-10	60	120	0	2426-2429	α : -4 to +4	-		
	11-15	-	120	40	2430-2440	i_N : 0 to 90	0		
	16-20	0_u	160	0	2441-2447	α : -4 to +10	-		
	21-24	0_u	160	20	2448-2451	α : -4 to +2	-		
41	3-6	0_u	160	40	2454-2457	α : -4 to +6	-	:15	
42	3-5	60	120	40	2460-2462	α : -4 to -1	-	1:50	Emp. strut on
	6-8	60	120	0	2463-2465	α : -4 to -1	-		
	9-13	-	120	40	2466-2475	i_N : 0 to 90	0		
	14-17	75	100	40	2476-2479	α : -4 to +1	-		
43	4-8	0	120	0	2480-2484	α : -4 to 10	-	:45	Inlet fairing and emp. strut on
	9-12	0	120	20	2485-2488	α : -4 to 8	-		
	13-14	0	120	20	2489-2490	ΔX_{lat}	8		
	15	0	120	40	2491	-	-4		
	16-19	60	120	40	2492-2495	α : -4 to 4	-		
44	5-9	0	120	0	2496-2500	α : -4 to 10	-	:50	Rear set VGs
	10-13	0	120	20	2501-2504	α : -4 to 8	-		
	14-15	0	120	20	2505-2506	ΔX_{lat}	-		
	16-21	0	120	40	2507-2511	α : -4 to 8	-		
45	3-8	0	120	0	2514-2519	α : -4 to 11	-	1:25	Low drag VGs
	9-14	0	120	40	2520-2525	α : -4 to 8	-		
	15-19	30	140	40	2526-2531	α : -4 to 8	-		
	20-25	90	80	40	2532-2539	α : -4 to 12	-		
46	5-9	0	120	0	2539-2543	α : -4 to 10	-	:25	Nose boom, pylon strake, tab flap, fuel line removed
	10-13	0	120	40	2544-2547	α : -4 to 8	-		
47	3-7	0	120	0	2548-2552	α : -4 to 10	-	:25	Gaps taped
	8-11	0	120	40	2553-2556	α : -4 to 8	-		
48	3-5	-	80	40	2560-2562	$i_N = 0$ to 90	-4	1:10	Large nacelle strake 15 x 52"
	6-16	60	120	40	2563-2573	$\alpha = -4$ to 10	-		
	17-21	60	120	40	2574-2578	$\psi = -6$ to +8	+6		
	22-26	0	120	40	2579-2583	$\psi = -4$ to +12	+6		
49	3	0	120	40	2586	-	-4	:25	Large nacelle strake 15 x 67" wing fence 12"
	4-8	60	120	40	2587-2591	$\alpha = -4$ to +8	-		

TABLE IV.- Concluded.
(Rotors off)

Run no.	Pt no.	i_N	V_{knots}	δ_F	Cntr	Sweep	α trim	Run time	Remarks
50	3-13	60	120	40	2592-2603	$\alpha = -4$ to $+8$	-	:30	Removed wing fence
51	3-10	0	120	0	-	$\alpha = -4$ to $+10$	-	:30	Removed strake, VGs, strut, gaps taped
52	-	-	-	-		tunnel tare	-	-	

TABLE V.— SCALE DATA

RUN	TEST	565	104	111	114	117	120	123	126	129	132	135	138	141	144	147	150	153	156	159	162	165	168	171	174	177	180	183	186	189	192	195	198	201	204	207	210	213	216	219	222	225	228	231	234	237	240	243	246	249	252	255	258	261	264	267	270	273	276	279	282	285	288	291	294	297	300	303	306	309	312	315	318	321	324	327	330	333	336	339	342	345	348	351	354	357	360	363	366	369	372	375	378	381	384	387	390	393	396	399	402	405	408	411	414	417	420	423	426	429	432	435	438	441	444	447	450	453	456	459	462	465	468	471	474	477	480	483	486	489	492	495	498	501	504	507	510	513	516	519	522	525	528	531	534	537	540	543	546	549	552	555	558	561	564	567	570	573	576	579	582	585	588	591	594	597	600	603	606	609	612	615	618	621	624	627	630	633	636	639	642	645	648	651	654	657	660	663	666	669	672	675	678	681	684	687	690	693	696	699	702	705	708	711	714	717	720	723	726	729	732	735	738	741	744	747	750	753	756	759	762	765	768	771	774	777	780	783	786	789	792	795	798	801	804	807	810	813	816	819	822	825	828	831	834	837	840	843	846	849	852	855	858	861	864	867	870	873	876	879	882	885	888	891	894	897	900	903	906	909	912	915	918	921	924	927	930	933	936	939	942	945	948	951	954	957	960	963	966	969	972	975	978	981	984	987	990	993	996	999
21	42.3	21.0	0.0	50.0	100.0	150.0	200.0	250.0	300.0	350.0	400.0	450.0	500.0	550.0	600.0	650.0	700.0	750.0	800.0	850.0	900.0	950.0	1000.0	1050.0	1100.0	1150.0	1200.0	1250.0	1300.0	1350.0	1400.0	1450.0	1500.0	1550.0	1600.0	1650.0	1700.0	1750.0	1800.0	1850.0	1900.0	1950.0	2000.0	2050.0	2100.0	2150.0	2200.0	2250.0	2300.0	2350.0	2400.0	2450.0	2500.0	2550.0	2600.0	2650.0	2700.0	2750.0	2800.0	2850.0	2900.0	2950.0	3000.0	3050.0	3100.0	3150.0	3200.0	3250.0	3300.0	3350.0	3400.0	3450.0	3500.0	3550.0	3600.0	3650.0	3700.0	3750.0	3800.0	3850.0	3900.0	3950.0	4000.0	4050.0	4100.0	4150.0	4200.0	4250.0	4300.0	4350.0	4400.0	4450.0	4500.0	4550.0	4600.0	4650.0	4700.0	4750.0	4800.0	4850.0	4900.0	4950.0	5000.0	5050.0	5100.0	5150.0	5200.0	5250.0	5300.0	5350.0	5400.0	5450.0	5500.0	5550.0	5600.0	5650.0	5700.0	5750.0	5800.0	5850.0	5900.0	5950.0	6000.0	6050.0	6100.0	6150.0	6200.0	6250.0	6300.0	6350.0	6400.0	6450.0	6500.0	6550.0	6600.0	6650.0	6700.0	6750.0	6800.0	6850.0	6900.0	6950.0	7000.0	7050.0	7100.0	7150.0	7200.0	7250.0	7300.0	7350.0	7400.0	7450.0	7500.0	7550.0	7600.0	7650.0	7700.0	7750.0	7800.0	7850.0	7900.0	7950.0	8000.0	8050.0	8100.0	8150.0	8200.0	8250.0	8300.0	8350.0	8400.0	8450.0	8500.0	8550.0	8600.0	8650.0	8700.0	8750.0	8800.0	8850.0	8900.0	8950.0	9000.0	9050.0	9100.0	9150.0	9200.0	9250.0	9300.0	9350.0	9400.0	9450.0	9500.0	9550.0	9600.0	9650.0	9700.0	9750.0	9800.0	9850.0	9900.0	9950.0	10000.0																																																																																																	

TABLE V.- Continued.

RUN 3 TEST 525										
NO	DATE	ALPHA	BETA	1NA	LIF 10	UNAB	SILICA	PHOSPH	IRON	MULLIN
		Wt	Wt	Wt	LIF 10	Wt	Wt	Wt	Wt	Wt
		Wt	Wt	Wt	LIF 10	Wt	Wt	Wt	Wt	Wt
		Wt	Wt	Wt	LIF 10	Wt	Wt	Wt	Wt	Wt
21	00.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0.117	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	100.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	007.3	0.0171	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	00.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0.117	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	100.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	007.3	0.0171	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23	00.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0.117	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	100.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	007.3	0.0171	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	00.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0.117	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	100.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	007.3	0.0171	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	00.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0.117	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	100.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	007.3	0.0171	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RUN 5 TEST 525										
NO	DATE	ALPHA	BETA	1NA	LIF 10	UNAB	SILICA	PHOSPH	IRON	MULLIN
26	00.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0.117	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	100.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	007.3	0.0171	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27	00.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0.117	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	100.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	007.3	0.0171	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28	00.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0.117	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	100.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	007.3	0.0171	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29	00.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0.117	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	100.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	007.3	0.0171	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30	00.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0.117	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	100.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	007.3	0.0171	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31	00.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0.117	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	100.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	007.3	0.0171	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

PAGE IS OF POOR QUALITY

TABLE V.— Continued.

RUN	S	TEST 575									
		WTS	WST	WOS	WOS	WOS	WOS	WOS	WOS	WOS	WOS
12	100.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
13	100.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
14	100.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
15	100.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
16	100.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
17	100.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
18	100.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
19	100.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
20	100.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
21	100.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
22	100.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
23	100.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
24	100.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
25	100.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
26	100.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
27	100.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
28	100.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
29	100.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	100.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

TABLE V.—Continued

ROW	PSI	RET	POS	LIFF	ORAD	STUR	PSIM	YAW	PLUC
1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
10	101.2	0.0	0.0	10000	4000	1000	1000	1000	1000
	101.3	0.0	0.0	10000	4000	1000	1000	1000	1000
	101.4	0.0	0.0	10000	4000	1000	1000	1000	1000
	101.5	0.0	0.0	10000	4000	1000	1000	1000	1000
	101.6	0.0	0.0	10000	4000	1000	1000	1000	1000
	101.7	0.025	0.0	10000	4000	1000	1000	1000	1000
	101.8	0.050	0.0	10000	4000	1000	1000	1000	1000
	101.9	0.075	0.0	10000	4000	1000	1000	1000	1000
	102.0	0.100	0.0	10000	4000	1000	1000	1000	1000
	102.1	0.125	0.0	10000	4000	1000	1000	1000	1000
	102.2	0.150	0.0	10000	4000	1000	1000	1000	1000
	102.3	0.175	0.0	10000	4000	1000	1000	1000	1000
	102.4	0.200	0.0	10000	4000	1000	1000	1000	1000
	102.5	0.225	0.0	10000	4000	1000	1000	1000	1000
	102.6	0.250	0.0	10000	4000	1000	1000	1000	1000
	102.7	0.275	0.0	10000	4000	1000	1000	1000	1000
	102.8	0.300	0.0	10000	4000	1000	1000	1000	1000
	102.9	0.325	0.0	10000	4000	1000	1000	1000	1000
	103.0	0.350	0.0	10000	4000	1000	1000	1000	1000
	103.1	0.375	0.0	10000	4000	1000	1000	1000	1000
	103.2	0.400	0.0	10000	4000	1000	1000	1000	1000
	103.3	0.425	0.0	10000	4000	1000	1000	1000	1000
	103.4	0.450	0.0	10000	4000	1000	1000	1000	1000
	103.5	0.475	0.0	10000	4000	1000	1000	1000	1000
	103.6	0.500	0.0	10000	4000	1000	1000	1000	1000
	103.7	0.525	0.0	10000	4000	1000	1000	1000	1000
	103.8	0.550	0.0	10000	4000	1000	1000	1000	1000
	103.9	0.575	0.0	10000	4000	1000	1000	1000	1000
	104.0	0.600	0.0	10000	4000	1000	1000	1000	1000
	104.1	0.625	0.0	10000	4000	1000	1000	1000	1000
	104.2	0.650	0.0	10000	4000	1000	1000	1000	1000
	104.3	0.675	0.0	10000	4000	1000	1000	1000	1000
	104.4	0.700	0.0	10000	4000	1000	1000	1000	1000
	104.5	0.725	0.0	10000	4000	1000	1000	1000	1000
	104.6	0.750	0.0	10000	4000	1000	1000	1000	1000
	104.7	0.775	0.0	10000	4000	1000	1000	1000	1000
	104.8	0.800	0.0	10000	4000	1000	1000	1000	1000
	104.9	0.825	0.0	10000	4000	1000	1000	1000	1000
	105.0	0.850	0.0	10000	4000	1000	1000	1000	1000
	105.1	0.875	0.0	10000	4000	1000	1000	1000	1000
	105.2	0.900	0.0	10000	4000	1000	1000	1000	1000
	105.3	0.925	0.0	10000	4000	1000	1000	1000	1000
	105.4	0.950	0.0	10000	4000	1000	1000	1000	1000
	105.5	0.975	0.0	10000	4000	1000	1000	1000	1000
	105.6	1.000	0.0	10000	4000	1000	1000	1000	1000

ORIGINAL PAGE IS OF POOR QUALITY

TABLE V.- Continued.

RUN 4 TEST 525												
PI	ALF324	INA	LI1710	UN4017	SI0270	PI1000	1444	MULL00				
OPSF	PS1	PEP305	LIFT	DN40	SI02	PI100	144	MULL				
MUN	UNO314	LI1710	UN4070	SI0270	PI1000	1444	MULL00					
TEMP	MMU100	CAL314	PI									
VSNOPTS	MMU100	MMU100	EL	CP	CP	UN	CP	UN	CP	UN	CP	UN
4	100.0	0.0	0.0	0000	1301	0.00	0000	1000	0.00	0.00	0.00	0.00
	381.1	0.0	0.0	0000	1301	0.00	0000	1000	0.00	0.00	0.00	0.00
	0.162	0.0	0.0	0000	0300	0.00	0000	0000	0.00	0.00	0.00	0.00
	91.1	0.0000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	581.7	0.0000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	100.0	0.0	0.0	0000	1301	0.00	0000	1000	0.00	0.00	0.00	0.00
	381.1	0.0	0.0	0000	1301	0.00	0000	1000	0.00	0.00	0.00	0.00
	0.162	0.0	0.0	0000	0300	0.00	0000	0000	0.00	0.00	0.00	0.00
	91.1	0.0000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	581.7	0.0000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	100.0	0.0	0.0	0000	1301	0.00	0000	1000	0.00	0.00	0.00	0.00
	381.1	0.0	0.0	0000	1301	0.00	0000	1000	0.00	0.00	0.00	0.00
	0.162	0.0	0.0	0000	0300	0.00	0000	0000	0.00	0.00	0.00	0.00
	91.1	0.0000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	581.7	0.0000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	100.0	0.0	0.0	0000	1301	0.00	0000	1000	0.00	0.00	0.00	0.00
	381.1	0.0	0.0	0000	1301	0.00	0000	1000	0.00	0.00	0.00	0.00
	0.162	0.0	0.0	0000	0300	0.00	0000	0000	0.00	0.00	0.00	0.00
	91.1	0.0000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	581.7	0.0000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	100.0	0.0	0.0	0000	1301	0.00	0000	1000	0.00	0.00	0.00	0.00
	381.1	0.0	0.0	0000	1301	0.00	0000	1000	0.00	0.00	0.00	0.00
	0.162	0.0	0.0	0000	0300	0.00	0000	0000	0.00	0.00	0.00	0.00
	91.1	0.0000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	581.7	0.0000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

TABLE V.— Continued.

ROW	Q	1557	525	1110															
1	00.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	21.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	65.4	0.9835	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	00.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	21.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	65.4	0.9835	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	00.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	21.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	65.4	0.9835	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	00.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	21.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	65.4	0.9835	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	00.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	21.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	65.4	0.9835	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	00.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	21.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	65.4	0.9835	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	00.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	21.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	65.4	0.9835	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

TABLE V.— Continued.

ROW	UNIT	TEST	S25	...	...	...	...	...	...	...	...	...
21	80.2	0.0	...	...	...	...	...	...	...	...	...	...
22	80.2	10.0	...	...	...	...	...	...	...	...	...	...
23	80.2	20.0	...	...	...	...	...	...	...	...	...	...
24	80.2	30.0	...	...	...	...	...	...	...	...	...	...
25	80.2	40.0	...	...	...	...	...	...	...	...	...	...
26	80.2	50.0	...	...	...	...	...	...	...	...	...	...
27	80.2	60.0	...	...	...	...	...	...	...	...	...	...
28	80.2	70.0	...	...	...	...	...	...	...	...	...	...
29	80.2	80.0	...	...	...	...	...	...	...	...	...	...
30	80.2	90.0	...	...	...	...	...	...	...	...	...	...
31	80.2	100.0	...	...	...	...	...	...	...	...	...	...
32	100.5	0.0	...	...	...	...	...	...	...	...	...	...
33	100.5	10.0	...	...	...	...	...	...	...	...	...	...
34	100.5	20.0	...	...	...	...	...	...	...	...	...	...
35	100.5	30.0	...	...	...	...	...	...	...	...	...	...
36	100.5	40.0	...	...	...	...	...	...	...	...	...	...
37	100.5	50.0	...	...	...	...	...	...	...	...	...	...
38	100.5	60.0	...	...	...	...	...	...	...	...	...	...
39	100.5	70.0	...	...	...	...	...	...	...	...	...	...
40	100.5	80.0	...	...	...	...	...	...	...	...	...	...
41	100.5	90.0	...	...	...	...	...	...	...	...	...	...
42	100.5	100.0	...	...	...	...	...	...	...	...	...	...

TABLE V.— Continued.

RUN	Q	TEST	EST	525	104	104	104	104	104	104	104	104	104	104
VALS	ALPS	VALS	ALPS	VALS	ALPS	VALS	ALPS	VALS	ALPS	VALS	ALPS	VALS	ALPS	VALS
91	1.445	0.665	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
92	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
93	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
94	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
95	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
96	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
97	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
98	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
99	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
100	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
101	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
102	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
103	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
104	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
105	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
106	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
107	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
108	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
109	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
110	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

TABLE V.— Continued.

RUN 12	TEST 525										
	WTS	ALLOY	IN	CP	CP	CP	CP	CP	CP	CP	CP
12	99.4	AL50.1	75.0	4011	1973	44	4007	526	694		
	32.9	0.0	47.0	4010	1971	44	4007	527	694		
	0.150	0.0	50.0	4009	2040	44	4006	528	694		
	73	0.2241	49.0	4008	2040	44	4006	529	694		
	671.7	0.9613	50.0	17095	1507	0.0023	0.0024	0.0025	0.0026	0.0027	0.0028
13	99.2	AL50.1	75.0	4005	2039	44	4006	525	692		
	32.0	0.0	47.0	4004	2037	44	4005	526	693		
	0.150	0.0	50.0	4003	2036	44	4004	527	694		
	73	0.2241	49.0	4002	2035	44	4003	528	695		
	669.7	0.9614	50.0	17093	1506	0.0022	0.0023	0.0024	0.0025	0.0026	0.0027
14	99.4	AL50.1	75.0	4001	2034	44	4002	524	691		
	32.9	0.0	47.0	4000	2032	44	4001	525	692		
	0.150	0.0	50.0	4001	2031	44	4002	526	693		
	73	0.2241	49.0	4000	2030	44	4001	527	694		
	671.3	0.9757	50.0	17092	1505	0.0021	0.0022	0.0023	0.0024	0.0025	0.0026
15	99.4	AL50.1	75.0	4000	2031	44	4001	524	691		
	32.9	0.0	47.0	4000	2030	44	4001	525	692		
	0.150	0.0	50.0	4000	2029	44	4001	526	693		
	73	0.2241	49.0	4000	2028	44	4001	527	694		
	671.0	0.9759	50.0	17091	1504	0.0020	0.0021	0.0022	0.0023	0.0024	0.0025
16	99.4	AL50.1	75.0	4000	2030	44	4001	524	691		
	32.9	0.0	47.0	4000	2029	44	4001	525	692		
	0.150	0.0	50.0	4000	2028	44	4001	526	693		
	73	0.2241	49.0	4000	2027	44	4001	527	694		
	669.0	0.9759	50.0	17090	1503	0.0019	0.0020	0.0021	0.0022	0.0023	0.0024
17	99.4	AL50.1	75.0	4000	2030	44	4001	524	691		
	32.9	0.0	47.0	4000	2029	44	4001	525	692		
	0.150	0.0	50.0	4000	2028	44	4001	526	693		
	73	0.2241	49.0	4000	2027	44	4001	527	694		
	668.6	0.9759	50.0	17089	1502	0.0018	0.0019	0.0020	0.0021	0.0022	0.0023
18	99.4	AL50.1	75.0	4000	2030	44	4001	524	691		
	32.9	0.0	47.0	4000	2029	44	4001	525	692		
	0.150	0.0	50.0	4000	2028	44	4001	526	693		
	73	0.2241	49.0	4000	2027	44	4001	527	694		
	668.8	0.9720	50.0	17088	1501	0.0017	0.0018	0.0019	0.0020	0.0021	0.0022

RUN 13	TEST 525										
	WTS	ALLOY	IN	CP	CP	CP	CP	CP	CP	CP	CP
3	100.3	AL50.1	75.0	17.0	1990	44	11290	511	1034		
	32.9	0.0	47.0	17.0	1992	44	11290	512	1034		
	0.150	0.0	50.0	17.0	2000	44	11290	513	1034		
	73	0.2240	49.0	17.0	2000	44	11290	514	1034		
	670.9	0.9838	50.0	17085	1500	0.0018	0.0019	0.0020	0.0021	0.0022	0.0023
4	100.3	AL50.1	75.0	17.0	1990	44	11290	511	1034		
	32.9	0.0	47.0	17.0	1992	44	11290	512	1034		
	0.150	0.0	50.0	17.0	2000	44	11290	513	1034		
	73	0.2240	49.0	17.0	2000	44	11290	514	1034		
	670.9	0.9838	50.0	17085	1500	0.0018	0.0019	0.0020	0.0021	0.0022	0.0023
5	100.3	AL50.1	75.0	17.0	1990	44	11290	511	1034		
	32.9	0.0	47.0	17.0	1992	44	11290	512	1034		
	0.150	0.0	50.0	17.0	2000	44	11290	513	1034		
	73	0.2240	49.0	17.0	2000	44	11290	514	1034		
	670.9	0.9838	50.0	17085	1500	0.0018	0.0019	0.0020	0.0021	0.0022	0.0023
6	100.3	AL50.1	75.0	17.0	1990	44	11290	511	1034		
	32.9	0.0	47.0	17.0	1992	44	11290	512	1034		
	0.150	0.0	50.0	17.0	2000	44	11290	513	1034		
	73	0.2241	49.0	17.0	2000	44	11290	514	1034		
	671.1	0.9830	50.0	17084	1499	0.0017	0.0018	0.0019	0.0020	0.0021	0.0022
7	100.3	AL50.1	75.0	17.0	1990	44	11290	511	1034		
	32.9	0.0	47.0	17.0	1992	44	11290	512	1034		
	0.150	0.0	50.0	17.0	2000	44	11290	513	1034		
	73	0.2241	49.0	17.0	2000	44	11290	514	1034		
	671.1	0.9830	50.0	17084	1499	0.0017	0.0018	0.0019	0.0020	0.0021	0.0022
8	100.3	AL50.1	75.0	17.0	1990	44	11290	511	1034		
	32.9	0.0	47.0	17.0	1992	44	11290	512	1034		
	0.150	0.0	50.0	17.0	2000	44	11290	513	1034		
	73	0.2241	49.0	17.0	2000	44	11290	514	1034		
	671.1	0.9830	50.0	17084	1499	0.0017	0.0018	0.0019	0.0020	0.0021	0.0022
9	100.3	AL50.1	75.0	17.0	1990	44	11290	511	1034		
	32.9	0.0	47.0	17.0	1992	44	11290	512	1034		
	0.150	0.0	50.0	17.0	2000	44	11290	513	1034		
	73	0.2241	49.0	17.0	2000	44	11290	514	1034		
	671.1	0.9830	50.0	17084	1499	0.0017	0.0018	0.0019	0.0020	0.0021	0.0022
10	100.3	AL50.1	75.0	17.0	1990	44	11290	511	1034		
	32.9	0.0	47.0	17.0	1992	44	11290	512	1034		
	0.150	0.0	50.0	17.0	2000	44	11290	513	1034		
	73	0.2241	49.0	17.0	2000	44	11290	514	1034		
	671.1	0.9830	50.0	17084	1499	0.0017	0.0018	0.0019	0.0020	0.0021	0.0022
11	99.4	AL50.1	75.0	17.0	1990	44	11290	511	1034		
	32.9	0.0	47.0	17.0	1992	44	11290	512	1034		
	0.150	0.0	50.0	17.0	2000	44	11290	513	1034		
	73	0.2241	49.0	17.0	2000	44	11290	514	1034		
	671.7	0.9623	50.0	17083	1498	0.0016	0.0017	0.0018	0.0019	0.0020	0.0021
12	100.3	AL50.1	75.0	17.0	1990	44	11290	511	1034		
	32.9	0.0	47.0	17.0	1992	44	11290	512	1034		
	0.150	0.0	50.0	17.0	2000	44	11290	513	1034		
	73	0.2241	49.0	17.0	2000	44	11290	514	1034		
	671.7	0.9623	50.0	17083	1498	0.0016	0.0017	0.0018	0.0019	0.0020	0.0021
13	100.3	AL50.1	75.0	17.0	1990	44	11290	511	1034		
	32.9	0.0	47.0	17.0	1992	44	11290	512	1034		
	0.150	0.0	50.0	17.0	2000	44	11290	513	1034		
	73	0.2241	49.0	17.0	2000	44	11290	514	1034		
	671.7	0.9622	50.0	17083	1498	0.0016	0.0017	0.0018	0.0019	0.0020	0.0021

TABLE V.— Continued.

ROW	TEST	STAT	TEST	STAT	TEST	STAT	TEST	STAT	TEST	STAT	TEST	STAT	TEST	STAT	TEST	STAT	TEST	STAT	TEST	STAT	
4	134.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	134.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	134.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	134.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	134.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	134.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	134.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	134.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	134.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	134.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	134.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	134.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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TABLE V.— Continued.

RUN 19		TEST 525																										
W	ALF	PSI	W	PSI	W	PSI	W	PSI	W	PSI	W	PSI	W	PSI	W	PSI	W	PSI	W	PSI								
10	199.3	-7.0	80.0	13770	2668	2061	6781	7094	6994	306.9	44062	887	2411.0	10698	4441.0	1390.3	1702.0	694.0	0.8895	11.3	0.2845	0.1630	50.0192	1.1103	0.0010	0.0025	0.0010	0.0010
11	19.4	-7.0	80.0	13770	2668	2061	6781	7094	6994	306.9	44062	887	2411.0	10698	4441.0	1390.3	1702.0	694.0	0.8895	11.3	0.2845	0.1630	50.0192	1.1103	0.0010	0.0025	0.0010	0.0010
12	19.3	-7.0	80.0	13770	2668	2061	6781	7094	6994	306.9	44062	887	2411.0	10698	4441.0	1390.3	1702.0	694.0	0.8895	11.3	0.2845	0.1630	50.0192	1.1103	0.0010	0.0025	0.0010	0.0010
13	19.2	-7.0	80.0	13770	2668	2061	6781	7094	6994	306.9	44062	887	2411.0	10698	4441.0	1390.3	1702.0	694.0	0.8895	11.3	0.2845	0.1630	50.0192	1.1103	0.0010	0.0025	0.0010	0.0010
14	19.1	-7.0	80.0	13770	2668	2061	6781	7094	6994	306.9	44062	887	2411.0	10698	4441.0	1390.3	1702.0	694.0	0.8895	11.3	0.2845	0.1630	50.0192	1.1103	0.0010	0.0025	0.0010	0.0010
15	19.0	-7.0	80.0	13770	2668	2061	6781	7094	6994	306.9	44062	887	2411.0	10698	4441.0	1390.3	1702.0	694.0	0.8895	11.3	0.2845	0.1630	50.0192	1.1103	0.0010	0.0025	0.0010	0.0010
16	18.9	-7.0	80.0	13770	2668	2061	6781	7094	6994	306.9	44062	887	2411.0	10698	4441.0	1390.3	1702.0	694.0	0.8895	11.3	0.2845	0.1630	50.0192	1.1103	0.0010	0.0025	0.0010	0.0010
17	18.8	-7.0	80.0	13770	2668	2061	6781	7094	6994	306.9	44062	887	2411.0	10698	4441.0	1390.3	1702.0	694.0	0.8895	11.3	0.2845	0.1630	50.0192	1.1103	0.0010	0.0025	0.0010	0.0010
18	18.7	-7.0	80.0	13770	2668	2061	6781	7094	6994	306.9	44062	887	2411.0	10698	4441.0	1390.3	1702.0	694.0	0.8895	11.3	0.2845	0.1630	50.0192	1.1103	0.0010	0.0025	0.0010	0.0010
19	18.6	-7.0	80.0	13770	2668	2061	6781	7094	6994	306.9	44062	887	2411.0	10698	4441.0	1390.3	1702.0	694.0	0.8895	11.3	0.2845	0.1630	50.0192	1.1103	0.0010	0.0025	0.0010	0.0010
20	18.5	-7.0	80.0	13770	2668	2061	6781	7094	6994	306.9	44062	887	2411.0	10698	4441.0	1390.3	1702.0	694.0	0.8895	11.3	0.2845	0.1630	50.0192	1.1103	0.0010	0.0025	0.0010	0.0010
21	18.4	-7.0	80.0	13770	2668	2061	6781	7094	6994	306.9	44062	887	2411.0	10698	4441.0	1390.3	1702.0	694.0	0.8895	11.3	0.2845	0.1630	50.0192	1.1103	0.0010	0.0025	0.0010	0.0010
22	18.3	-7.0	80.0	13770	2668	2061	6781	7094	6994	306.9	44062	887	2411.0	10698	4441.0	1390.3	1702.0	694.0	0.8895	11.3	0.2845	0.1630	50.0192	1.1103	0.0010	0.0025	0.0010	0.0010
23	18.2	-7.0	80.0	13770	2668	2061	6781	7094	6994	306.9	44062	887	2411.0	10698	4441.0	1390.3	1702.0	694.0	0.8895	11.3	0.2845	0.1630	50.0192	1.1103	0.0010	0.0025	0.0010	0.0010
24	18.1	-7.0	80.0	13770	2668	2061	6781	7094	6994	306.9	44062	887	2411.0	10698	4441.0	1390.3	1702.0	694.0	0.8895	11.3	0.2845	0.1630	50.0192	1.1103	0.0010	0.0025	0.0010	0.0010
25	18.0	-7.0	80.0	13770	2668	2061	6781	7094	6994	306.9	44062	887	2411.0	10698	4441.0	1390.3	1702.0	694.0	0.8895	11.3	0.2845	0.1630	50.0192	1.1103	0.0010	0.0025	0.0010	0.0010

TABLE V.— Continued.

Run	20	1681	528															
PL	WPS	DPSE	MIUN	LCMP	SDORTS	ALPH	PHST	TCFT	QFAC	ALPH	PHST	TCFT	QFAC	ALPH	PHST	TCFT	QFAC	ALPH
MIUN	LCMP	SDORTS	ALPH	PHST	TCFT	QFAC	ALPH	PHST	TCFT	QFAC	ALPH	PHST	TCFT	QFAC	ALPH	PHST	TCFT	QFAC
MIUN	LCMP	SDORTS	ALPH	PHST	TCFT	QFAC	ALPH	PHST	TCFT	QFAC	ALPH	PHST	TCFT	QFAC	ALPH	PHST	TCFT	QFAC
24	74.4	26.2	0.117	91	681.7	90.0	1275.0	176.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0
25	74.4	26.2	0.117	91	681.7	90.0	1275.0	176.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0
26	74.4	26.2	0.117	91	681.7	90.0	1275.0	176.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0
27	74.4	26.2	0.117	91	681.7	90.0	1275.0	176.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0
28	74.4	26.2	0.117	91	681.7	90.0	1275.0	176.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0
29	74.4	26.2	0.117	91	681.7	90.0	1275.0	176.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0
30	74.4	26.2	0.117	91	681.7	90.0	1275.0	176.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0
31	74.4	26.2	0.117	91	681.7	90.0	1275.0	176.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0
32	74.4	26.2	0.117	91	681.7	90.0	1275.0	176.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0
33	74.4	26.2	0.117	91	681.7	90.0	1275.0	176.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0
34	74.4	26.2	0.117	91	681.7	90.0	1275.0	176.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0
35	74.4	26.2	0.117	91	681.7	90.0	1275.0	176.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0
36	74.4	26.2	0.117	91	681.7	90.0	1275.0	176.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0
37	74.4	26.2	0.117	91	681.7	90.0	1275.0	176.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0
38	74.4	26.2	0.117	91	681.7	90.0	1275.0	176.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0
39	74.4	26.2	0.117	91	681.7	90.0	1275.0	176.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0
40	74.4	26.2	0.117	91	681.7	90.0	1275.0	176.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0

TABLE V.— Continued.

WON 21 EST 525														
PI	WPTS	ALPAC	PSI	LONA	SFA	LITR	LITR	LITR	LITR	LITR	LITR	LITR	LITR	LITR
3	119.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	119.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	119.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	119.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	119.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	119.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	119.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	119.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	119.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	119.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	119.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	119.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

TABLE V.— Continued.

RUN 22 TEST 525													
PI	WTS	ALYS	INR	LF77	UNALD	STUE	P11C	TAH	MULL	WPH	WAST	WPH	WAST
DRP	PSI	PEP	POS	LF77	DRAG	STUE	P11C	TAH	MULL	WPH	WAST	WPH	WAST
WPH	WAST	WPH	WAST	WPH	WAST	WPH	WAST	WPH	WAST	WPH	WAST	WPH	WAST
WPH	WAST	WPH	WAST	WPH	WAST	WPH	WAST	WPH	WAST	WPH	WAST	WPH	WAST
33	10.2	0.2	0.0	7130	-3065	-31	+083	+56	+7	505.7	10216.7	740	10211.1
0.102	0.2226	49.9	7062	-3497	-33	-749	-593	-5	0.250	1055.0	1933.5	1055.0	
0.017	0.0189	0.0	1.6310	-0.5300	-0.0188	-0.0025	0.0000			0.01276			
34	10.2	0.2	0.0	7130	-3065	-31	+083	+56	+7	505.7	10216.7	740	10211.1
0.102	0.2226	49.9	7062	-3497	-33	-749	-593	-5	0.250	1055.0	1933.5	1055.0	
0.017	0.0189	0.0	1.6310	-0.5300	-0.0188	-0.0025	0.0000			0.01276			
35	10.2	0.2	0.0	7130	-3065	-31	+083	+56	+7	505.7	10216.7	740	10211.1
0.102	0.2226	49.9	7062	-3497	-33	-749	-593	-5	0.250	1055.0	1933.5	1055.0	
0.017	0.0189	0.0	1.6310	-0.5300	-0.0188	-0.0025	0.0000			0.01276			
36	10.2	0.2	0.0	7130	-3065	-31	+083	+56	+7	505.7	10216.7	740	10211.1
0.102	0.2226	49.9	7062	-3497	-33	-749	-593	-5	0.250	1055.0	1933.5	1055.0	
0.017	0.0189	0.0	1.6310	-0.5300	-0.0188	-0.0025	0.0000			0.01276			
37	10.2	0.2	0.0	7130	-3065	-31	+083	+56	+7	505.7	10216.7	740	10211.1
0.102	0.2226	49.9	7062	-3497	-33	-749	-593	-5	0.250	1055.0	1933.5	1055.0	
0.017	0.0189	0.0	1.6310	-0.5300	-0.0188	-0.0025	0.0000			0.01276			
38	10.2	0.2	0.0	7130	-3065	-31	+083	+56	+7	505.7	10216.7	740	10211.1
0.102	0.2226	49.9	7062	-3497	-33	-749	-593	-5	0.250	1055.0	1933.5	1055.0	
0.017	0.0189	0.0	1.6310	-0.5300	-0.0188	-0.0025	0.0000			0.01276			
39	10.2	0.2	0.0	7130	-3065	-31	+083	+56	+7	505.7	10216.7	740	10211.1
0.102	0.2226	49.9	7062	-3497	-33	-749	-593	-5	0.250	1055.0	1933.5	1055.0	
0.017	0.0189	0.0	1.6310	-0.5300	-0.0188	-0.0025	0.0000			0.01276			
40	10.2	0.2	0.0	7130	-3065	-31	+083	+56	+7	505.7	10216.7	740	10211.1
0.102	0.2226	49.9	7062	-3497	-33	-749	-593	-5	0.250	1055.0	1933.5	1055.0	
0.017	0.0189	0.0	1.6310	-0.5300	-0.0188	-0.0025	0.0000			0.01276			

TABLE V.- Continued.

RUN	20	TEST	525																
PI	VF15	VF20	VF25	VF30	VF35	VF40	VF45	VF50	VF55	VF60	VF65	VF70	VF75	VF80	VF85	VF90	VF95	VF100	VF105
DPSE	PSI	REO	PAN	LIT	PAU	STUE	STUE	STUE	STUE	STUE	STUE	STUE	STUE	STUE	STUE	STUE	STUE	STUE	STUE
HTUN	HTUN	HTUN	HTUN	HTUN	HTUN	HTUN	HTUN	HTUN	HTUN	HTUN	HTUN	HTUN	HTUN	HTUN	HTUN	HTUN	HTUN	HTUN	HTUN
VSNDRTS	VSNDRTS	VSNDRTS	VSNDRTS	VSNDRTS	VSNDRTS	VSNDRTS	VSNDRTS	VSNDRTS	VSNDRTS	VSNDRTS	VSNDRTS	VSNDRTS	VSNDRTS	VSNDRTS	VSNDRTS	VSNDRTS	VSNDRTS	VSNDRTS	VSNDRTS
1	80.0	75.0	70.0	65.0	60.0	55.0	50.0	45.0	40.0	35.0	30.0	25.0	20.0	15.0	10.0	5.0	0.0	0.0	0.0
	111.5	107.5	103.5	99.5	95.5	91.5	87.5	83.5	79.5	75.5	71.5	67.5	63.5	59.5	55.5	51.5	47.5	43.5	39.5
	0.074	0.072	0.070	0.068	0.066	0.064	0.062	0.060	0.058	0.056	0.054	0.052	0.050	0.048	0.046	0.044	0.042	0.040	0.038
	80.1	75.1	70.1	65.1	60.1	55.1	50.1	45.1	40.1	35.1	30.1	25.1	20.1	15.1	10.1	5.1	0.1	0.1	0.1
	0.781	0.745	0.709	0.673	0.637	0.601	0.565	0.529	0.493	0.457	0.421	0.385	0.349	0.313	0.277	0.241	0.205	0.169	0.133
	80.2	75.2	70.2	65.2	60.2	55.2	50.2	45.2	40.2	35.2	30.2	25.2	20.2	15.2	10.2	5.2	0.2	0.2	0.2
	20.5	19.5	18.5	17.5	16.5	15.5	14.5	13.5	12.5	11.5	10.5	9.5	8.5	7.5	6.5	5.5	4.5	3.5	2.5
	0.110	0.108	0.106	0.104	0.102	0.100	0.098	0.096	0.094	0.092	0.090	0.088	0.086	0.084	0.082	0.080	0.078	0.076	0.074
	80.3	75.3	70.3	65.3	60.3	55.3	50.3	45.3	40.3	35.3	30.3	25.3	20.3	15.3	10.3	5.3	0.3	0.3	0.3
	0.779	0.743	0.707	0.671	0.635	0.599	0.563	0.527	0.491	0.455	0.419	0.383	0.347	0.311	0.275	0.239	0.203	0.167	0.131
	80.4	75.4	70.4	65.4	60.4	55.4	50.4	45.4	40.4	35.4	30.4	25.4	20.4	15.4	10.4	5.4	0.4	0.4	0.4
	20.5	19.5	18.5	17.5	16.5	15.5	14.5	13.5	12.5	11.5	10.5	9.5	8.5	7.5	6.5	5.5	4.5	3.5	2.5
	0.110	0.108	0.106	0.104	0.102	0.100	0.098	0.096	0.094	0.092	0.090	0.088	0.086	0.084	0.082	0.080	0.078	0.076	0.074
	80.5	75.5	70.5	65.5	60.5	55.5	50.5	45.5	40.5	35.5	30.5	25.5	20.5	15.5	10.5	5.5	0.5	0.5	0.5
	0.779	0.743	0.707	0.671	0.635	0.599	0.563	0.527	0.491	0.455	0.419	0.383	0.347	0.311	0.275	0.239	0.203	0.167	0.131
	80.6	75.6	70.6	65.6	60.6	55.6	50.6	45.6	40.6	35.6	30.6	25.6	20.6	15.6	10.6	5.6	0.6	0.6	0.6
	20.5	19.5	18.5	17.5	16.5	15.5	14.5	13.5	12.5	11.5	10.5	9.5	8.5	7.5	6.5	5.5	4.5	3.5	2.5
	0.110	0.108	0.106	0.104	0.102	0.100	0.098	0.096	0.094	0.092	0.090	0.088	0.086	0.084	0.082	0.080	0.078	0.076	0.074
	80.7	75.7	70.7	65.7	60.7	55.7	50.7	45.7	40.7	35.7	30.7	25.7	20.7	15.7	10.7	5.7	0.7	0.7	0.7
	0.779	0.743	0.707	0.671	0.635	0.599	0.563	0.527	0.491	0.455	0.419	0.383	0.347	0.311	0.275	0.239	0.203	0.167	0.131
	80.8	75.8	70.8	65.8	60.8	55.8	50.8	45.8	40.8	35.8	30.8	25.8	20.8	15.8	10.8	5.8	0.8	0.8	0.8
	20.5	19.5	18.5	17.5	16.5	15.5	14.5	13.5	12.5	11.5	10.5	9.5	8.5	7.5	6.5	5.5	4.5	3.5	2.5
	0.110	0.108	0.106	0.104	0.102	0.100	0.098	0.096	0.094	0.092	0.090	0.088	0.086	0.084	0.082	0.080	0.078	0.076	0.074
	80.9	75.9	70.9	65.9	60.9	55.9	50.9	45.9	40.9	35.9	30.9	25.9	20.9	15.9	10.9	5.9	0.9	0.9	0.9
	0.779	0.743	0.707	0.671	0.635	0.599	0.563	0.527	0.491	0.455	0.419	0.383	0.347	0.311	0.275	0.239	0.203	0.167	0.131
	81.0	76.0	71.0	66.0	61.0	56.0	51.0	46.0	41.0	36.0	31.0	26.0	21.0	16.0	11.0	6.0	1.0	1.0	1.0
	20.2	19.2	18.2	17.2	16.2	15.2	14.2	13.2	12.2	11.2	10.2	9.2	8.2	7.2	6.2	5.2	4.2	3.2	2.2
	0.110	0.108	0.106	0.104	0.102	0.100	0.098	0.096	0.094	0.092	0.090	0.088	0.086	0.084	0.082	0.080	0.078	0.076	0.074
	81.1	76.1	71.1	66.1	61.1	56.1	51.1	46.1	41.1	36.1	31.1	26.1	21.1	16.1	11.1	6.1	1.1	1.1	1.1
	0.779	0.743	0.707	0.671	0.635	0.599	0.563	0.527	0.491	0.455	0.419	0.383	0.347	0.311	0.275	0.239	0.203	0.167	0.131
	81.2	76.2	71.2	66.2	61.2	56.2	51.2	46.2	41.2	36.2	31.2	26.2	21.2	16.2	11.2	6.2	1.2	1.2	1.2
	20.2	19.2	18.2	17.2	16.2	15.2	14.2	13.2	12.2	11.2	10.2	9.2	8.2	7.2	6.2	5.2	4.2	3.2	2.2
	0.110	0.108	0.106	0.104	0.102	0.100	0.098	0.096	0.094	0.092	0.090	0.088	0.086	0.084	0.082	0.080	0.078	0.076	0.074
	81.3	76.3	71.3	66.3	61.3	56.3	51.3	46.3	41.3	36.3	31.3	26.3	21.3	16.3	11.3	6.3	1.3	1.3	1.3
	0.779	0.743	0.707	0.671	0.635	0.599	0.563	0.527	0.491	0.455	0.419	0.383	0.347	0.311	0.275	0.239	0.203	0.167	0.131
	81.4	76.4	71.4	66.4	61.4	56.4	51.4	46.4	41.4	36.4	31.4	26.4	21.4	16.4	11.4	6.4	1.4	1.4	1.4
	20.2	19.2	18.2	17.2	16.2	15.2	14.2	13.2	12.2	11.2	10.2	9.2	8.2	7.2	6.2	5.2	4.2	3.2	2.2
	0.110	0.108	0.106	0.104	0.102	0.100	0.098	0.096	0.094	0.092	0.090	0.088	0.086	0.084	0.082	0.080	0.078	0.076	0.074
	81.5	76.5	71.5	66.5	61.5	56.5	51.5	46.5	41.5	36.5	31.5	26.5	21.5	16.5	11.5	6.5	1.5	1.5	1.5
	0.779	0.743	0.707	0.671	0.635	0.599	0.563	0.527	0.491	0.455	0.419	0.383	0.347	0.311	0.275	0.239	0.203	0.167	0.131
	81.6	76.6	71.6	66.6	61.6	56.6	51.6	46.6	41.6	36.6	31.6	26.6	21.6	16.6	11.6	6.6	1.6	1.6	1.6
	20.2	19.2	18.2	17.2	16.2	15.2	14.2	13.2	12.2	11.2	10.2	9.2	8.2	7.2	6.2	5.2	4.2	3.2	2.2
	0.110	0.108	0.106	0.104	0.102	0.100	0.098	0.096	0.094	0.092	0.090	0.088	0.086	0.084	0.082	0.080	0.078	0.076	0.074
	81.7	76.7	71.7	66.7	61.7	56.7	51.7	46.7	41.7	36.7	31.7	26.7	21.7	16.7	11.7	6.7	1.7	1.7	1.7
	0.779	0.743	0.707	0.671	0.635	0.599	0.563	0.527	0.491	0.455	0.419	0.383	0.347	0.311	0.275	0.239	0.203	0.167	0.131
	81.8	76.8	71.8	66.8	61.8	56.8	51.8	46.8	41.8	36.8	31.8	26.8	21.8	16.8	11.8	6.8	1.8	1.8	1.8
	20.2	19.2	18.2	17.2	16.2	15.2	14.2	13.2	12.2	11.2	10.2	9.2	8.2	7.2	6.2	5.2	4.2	3.2	2.2
	0.110	0.108	0.106	0.104	0.102	0.100	0.098	0.096	0.094	0.092	0.090	0.088	0.086	0.084	0.082	0.080	0.078	0.076	0.074
	81.9	76.9	71.9	66.9	61.9	56.9	51.9	46.9	41.9	36.9	31.9	26.9	21.9	16.9	11.9	6.9	1.9	1.9	1.9
	0.779	0.743	0.707	0.671	0.635	0.599	0.563	0.527	0.491	0.455	0.419	0.383	0.347	0.311	0.275	0.239	0.203	0.167	0.131
	82.0	77.0	72.0	67.0	62.0	57.0	52.0	47.0	42.0	37.0	32.0	27.0	22.0	17.0	12.0	7.0	2.0	2.0	2.0
	20.2	19.2	18.2	17.2	16.2	15.2	14.2	13.2	12.2	11.2	10.2	9.2	8.2	7.2	6.2	5.2	4.2	3.2	2.2
	0.110	0.108	0.106	0.104	0.102	0.100	0.098	0.096	0.094	0.092	0.090	0.088	0.086	0.084	0.082	0.080	0.078	0.076	0.074
	82.1	77.1	72.1	67.1	62.1	57.1	52.1	47.1	42.1	37.1	32.1	27.1	22.1	17.1	12.1	7.1	2.1	2.1	2.1
	0.779	0.743	0.707	0.671	0.635	0.599	0.563	0.527	0.491	0.455	0.419	0.383	0.347	0.311	0.275	0.239	0.203	0.167	0.131
	82.2	77.2	72.2	67.2	62.2	57.2	52.2	47.2											

TABLE V.- Continued.

RUN 24		TEST 525												MPP		MMAS1	
PR	GPSF	ALP514	INA	CR110	OMAG10	31010	PI1000	18700	PU1000	Y700	WU1000	Y700	WU1000	Y700	WU1000	Y700	WU1000
PR	GPSF	ALP514	INA	CR110	OMAG10	31010	PI1000	18700	PU1000	Y700	WU1000	Y700	WU1000	Y700	WU1000	Y700	WU1000
PR	GPSF	ALP514	INA	CR110	OMAG10	31010	PI1000	18700	PU1000	Y700	WU1000	Y700	WU1000	Y700	WU1000	Y700	WU1000
39	139.5	-1.0	30.0	13950	1290	-100	-437	-1103	-2000	300.0	89330						
	50.3	0.0	30.0	13950	1290	-100	-437	-1103	-2000	300.0	89330						
	0.203																
	100	0.0000															
	630.7	0.0022															
40	139.5	1.0	30.0	13950	1290	-100	-437	-1103	-2000	300.0	89330						
	50.3	0.0	30.0	13950	1290	-100	-437	-1103	-2000	300.0	89330						
	0.203																
	100	0.0000															
	640.3	0.0006															
41	139.5	3.0	30.0	13950	1290	-100	-437	-1103	-2000	300.0	89330						
	50.3	0.0	30.0	13950	1290	-100	-437	-1103	-2000	300.0	89330						
	0.203																
	100	0.0000															
	650.0	0.0000															

RUN 26		TEST 525												MPP		MMAS1	
PR	GPSF	ALP514	INA	CR110	OMAG10	31010	PI1000	18700	PU1000	Y700	WU1000	Y700	WU1000	Y700	WU1000	Y700	WU1000
PR	GPSF	ALP514	INA	CR110	OMAG10	31010	PI1000	18700	PU1000	Y700	WU1000	Y700	WU1000	Y700	WU1000	Y700	WU1000
PR	GPSF	ALP514	INA	CR110	OMAG10	31010	PI1000	18700	PU1000	Y700	WU1000	Y700	WU1000	Y700	WU1000	Y700	WU1000
1	139.5	-1.0	30.0	13950	1290	-100	-437	-1103	-2000	300.0	89330						
	50.2	0.0	30.0	13950	1290	-100	-437	-1103	-2000	300.0	89330						
	0.203																
	100	0.0000															
	671.1	0.0025															
4	139.5	3.0	30.0	13950	1290	-100	-437	-1103	-2000	300.0	89330						
	50.2	0.0	30.0	13950	1290	-100	-437	-1103	-2000	300.0	89330						
	0.203																
	100	0.0000															
	672.0	0.0067															
5	139.5	1.0	30.0	13950	1290	-100	-437	-1103	-2000	300.0	89330						
	50.2	0.0	30.0	13950	1290	-100	-437	-1103	-2000	300.0	89330						
	0.203																
	100	0.0000															
	673.0	0.0073															
6	139.5	1.0	30.0	13950	1290	-100	-437	-1103	-2000	300.0	89330						
	50.2	0.0	30.0	13950	1290	-100	-437	-1103	-2000	300.0	89330						
	0.203																
	100	0.0000															
	674.0	0.0073															
7	139.5	1.0	30.0	13950	1290	-100	-437	-1103	-2000	300.0	89330						
	50.2	0.0	30.0	13950	1290	-100	-437	-1103	-2000	300.0	89330						
	0.203																
	100	0.0000															
	675.0	0.0085															
8	139.5	1.0	30.0	13950	1290	-100	-437	-1103	-2000	300.0	89330						
	50.2	0.0	30.0	13950	1290	-100	-437	-1103	-2000	300.0	89330						
	0.203																
	100	0.0000															
	676.0	0.0085															
9	139.5	1.0	30.0	13950	1290	-100	-437	-1103	-2000	300.0	89330						
	50.2	0.0	30.0	13950	1290	-100	-437	-1103	-2000	300.0	89330						
	0.203																
	100	0.0000															
	677.0	0.0085															
10	139.5	1.0	30.0	13950	1290	-100	-437	-1103	-2000	300.0	89330						
	50.2	0.0	30.0	13950	1290	-100	-437	-1103	-2000	300.0	89330						
	0.203																
	100	0.0000															
	678.0	0.0085															
11	139.5	1.0	30.0	13950	1290	-100	-437	-1103	-2000	300.0	89330						
	50.2	0.0	30.0	13950	1290	-100	-437	-1103	-2000	300.0	89330						
	0.203																
	100	0.0000															
	679.0	0.0085															
12	139.5	1.0	30.0	13950	1290	-100	-437	-1103	-2000	300.0	89330						
	50.2	0.0	30.0	13950	1290	-100	-437	-1103	-2000	300.0	89330						
	0.203																
	100	0.0000															
	680.0	0.0085															
13	139.5	1.0	30.0	13950	1290	-100	-437	-1103	-2000	300.0	89330						
	50.2	0.0	30.0	13950	1290	-100	-437	-1103	-2000	300.0	89330						
	0.203																
	100	0.0000															
	681.0	0.0085															
14	139.5	1.0	30.0	13950	1290	-100	-437	-1103	-2000	300.0	89330						
	50.2	0.0	30.0	13950	1290	-100	-437	-1103	-2000	300.0	89330						
	0.203																
	100	0.0000															
	682.0	0.0085															

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TABLE V.—Continued.

Run	en	TEST 525		INSTRUMENTS		CORRECTIONS		RESULTS		STATISTICS		COMMENTS	
NO.		ALPHA	BETA	ALPHA	BETA	ALPHA	BETA	ALPHA	BETA	ALPHA	BETA	ALPHA	BETA
1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
32	80.0	3.0	80.0	130.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0
33	80.0	3.0	80.0	130.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0
34	80.0	3.0	80.0	130.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0
35	80.0	3.0	80.0	130.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0
36	80.0	3.0	80.0	130.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0
37	80.0	3.0	80.0	130.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0
38	80.0	3.0	80.0	130.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0
39	80.0	3.0	80.0	130.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0
40	80.0	3.0	80.0	130.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0
41	80.0	3.0	80.0	130.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0
42	80.0	3.0	80.0	130.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0
43	80.0	3.0	80.0	130.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0
44	80.0	3.0	80.0	130.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0
45	80.0	3.0	80.0	130.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0	120.0

TABLE V.— Continued.

400	35	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
12	118.5	0.0	45.0	293.1	279.1	1183.1	1318.7	612.1	349.1											
	44.8	0.0	30.0	293.1	279.1	1183.1	1318.7	612.1	349.1											
	0.175	0.0	30.0	293.1	279.1	1183.1	1318.7	612.1	349.1											
	81.1	0.2225	50.0	293.1	279.1	1183.1	1318.7	612.1	349.1											
	678.0	0.9337	50.0	293.1	279.1	1183.1	1318.7	612.1	349.1											
13	119.1	0.0	45.0	293.1	279.1	1183.1	1318.7	612.1	349.1											
	44.8	0.0	30.0	293.1	279.1	1183.1	1318.7	612.1	349.1											
	0.175	0.0	30.0	293.1	279.1	1183.1	1318.7	612.1	349.1											
	81.1	0.2225	50.0	293.1	279.1	1183.1	1318.7	612.1	349.1											
	678.0	0.9337	50.0	293.1	279.1	1183.1	1318.7	612.1	349.1											
14	119.6	0.0	45.0	293.1	279.1	1183.1	1318.7	612.1	349.1											
	44.8	0.0	30.0	293.1	279.1	1183.1	1318.7	612.1	349.1											
	0.175	0.0	30.0	293.1	279.1	1183.1	1318.7	612.1	349.1											
	81.1	0.2225	50.0	293.1	279.1	1183.1	1318.7	612.1	349.1											
	678.0	0.9337	50.0	293.1	279.1	1183.1	1318.7	612.1	349.1											
15	119.7	0.0	45.0	293.1	279.1	1183.1	1318.7	612.1	349.1											
	44.8	0.0	30.0	293.1	279.1	1183.1	1318.7	612.1	349.1											
	0.175	0.0	30.0	293.1	279.1	1183.1	1318.7	612.1	349.1											
	81.1	0.2225	50.0	293.1	279.1	1183.1	1318.7	612.1	349.1											
	678.0	0.9337	50.0	293.1	279.1	1183.1	1318.7	612.1	349.1											
16	119.8	0.0	45.0	293.1	279.1	1183.1	1318.7	612.1	349.1											
	44.8	0.0	30.0	293.1	279.1	1183.1	1318.7	612.1	349.1											
	0.175	0.0	30.0	293.1	279.1	1183.1	1318.7	612.1	349.1											
	81.1	0.2225	50.0	293.1	279.1	1183.1	1318.7	612.1	349.1											
	678.0	0.9337	50.0	293.1	279.1	1183.1	1318.7	612.1	349.1											
17	119.9	0.0	45.0	293.1	279.1	1183.1	1318.7	612.1	349.1											
	44.8	0.0	30.0	293.1	279.1	1183.1	1318.7	612.1	349.1											
	0.175	0.0	30.0	293.1	279.1	1183.1	1318.7	612.1	349.1											
	81.1	0.2225	50.0	293.1	279.1	1183.1	1318.7	612.1	349.1											
	678.0	0.9337	50.0	293.1	279.1	1183.1	1318.7	612.1	349.1											
18	120.0	0.0	45.0	293.1	279.1	1183.1	1318.7	612.1	349.1											
	44.8	0.0	30.0	293.1	279.1	1183.1	1318.7	612.1	349.1											
	0.175	0.0	30.0	293.1	279.1	1183.1	1318.7	612.1	349.1											
	81.1	0.2225	50.0	293.1	279.1	1183.1	1318.7	612.1	349.1											
	678.0	0.9337	50.0	293.1	279.1	1183.1	1318.7	612.1	349.1											

TABLE V.— Continued.

No.	ALFALFA		CORN		SOYBEANS		WHEAT		BARLEY		RICE	
	1945	1946	1945	1946	1945	1946	1945	1946	1945	1946	1945	1946
1	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0
2	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0
3	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0
4	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0
5	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0
6	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0
7	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0
8	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0
9	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0
10	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0
11	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0
12	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0
13	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0
14	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0
15	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0
16	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0
17	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0
18	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0
19	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0
20	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0

TABLE V.- Continued.

RUN	SIZE	TEST DATA											
		WGT	HT	HA	CH	HA	HA	HA	HA	HA	HA	HA	HA
21	10.4	10.0	0.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
22	11.4	10.0	0.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
23	13.0	0.0	0.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
24	14.0	0.0	0.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
31	10.4	10.0	0.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
32	11.4	10.0	0.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
33	13.0	0.0	0.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
34	14.0	0.0	0.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
41	10.4	10.0	0.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
42	11.4	10.0	0.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
43	13.0	0.0	0.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
44	14.0	0.0	0.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
51	10.4	10.0	0.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
52	11.4	10.0	0.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
53	13.0	0.0	0.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
54	14.0	0.0	0.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0

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TABLE V.— Continued.

Year	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960
10	78.5	79.0	79.5	80.0	80.5	81.0	81.5	82.0	82.5	83.0	83.5	84.0	84.5	85.0	85.5	86.0
11	78.5	79.0	79.5	80.0	80.5	81.0	81.5	82.0	82.5	83.0	83.5	84.0	84.5	85.0	85.5	86.0
12	78.5	79.0	79.5	80.0	80.5	81.0	81.5	82.0	82.5	83.0	83.5	84.0	84.5	85.0	85.5	86.0
13	78.5	79.0	79.5	80.0	80.5	81.0	81.5	82.0	82.5	83.0	83.5	84.0	84.5	85.0	85.5	86.0
14	78.5	79.0	79.5	80.0	80.5	81.0	81.5	82.0	82.5	83.0	83.5	84.0	84.5	85.0	85.5	86.0
15	78.5	79.0	79.5	80.0	80.5	81.0	81.5	82.0	82.5	83.0	83.5	84.0	84.5	85.0	85.5	86.0
16	78.5	79.0	79.5	80.0	80.5	81.0	81.5	82.0	82.5	83.0	83.5	84.0	84.5	85.0	85.5	86.0
17	78.5	79.0	79.5	80.0	80.5	81.0	81.5	82.0	82.5	83.0	83.5	84.0	84.5	85.0	85.5	86.0
18	78.5	79.0	79.5	80.0	80.5	81.0	81.5	82.0	82.5	83.0	83.5	84.0	84.5	85.0	85.5	86.0
19	78.5	79.0	79.5	80.0	80.5	81.0	81.5	82.0	82.5	83.0	83.5	84.0	84.5	85.0	85.5	86.0
20	78.5	79.0	79.5	80.0	80.5	81.0	81.5	82.0	82.5	83.0	83.5	84.0	84.5	85.0	85.5	86.0

TABLE V.— Continued.

ROW	ST	TEST	SECS	INR	CL	UP	DOWN	UP	DOWN	UP	DOWN	UP	DOWN
9	49.5	0.0	75.0	2335	2599	-7.0	8662	8662	8662	8662	8662	8662	8662
10	49.5	0.0	75.0	2335	2599	-7.0	8662	8662	8662	8662	8662	8662	8662
11	150.0	0.0	0.0	1055	2209	-7.0	18231	18231	18231	18231	18231	18231	18231
12	150.0	0.0	0.0	1055	2209	-7.0	18231	18231	18231	18231	18231	18231	18231
13	150.4	0.0	0.0	1235	2338	-7.0	5017	2931	2931	2931	2931	2931	2931
14	157.0	0.0	0.0	1275	2599	-7.0	7.4	2197	2197	2197	2197	2197	2197
15	157.0	0.0	0.0	1275	2599	-7.0	7.4	2197	2197	2197	2197	2197	2197
16	157.0	0.0	0.0	1275	2599	-7.0	7.4	2197	2197	2197	2197	2197	2197
17	48.2	0.0	75.0	3375	2969	-7.0	16111	16111	16111	16111	16111	16111	16111
18	48.2	0.0	75.0	3375	2969	-7.0	16111	16111	16111	16111	16111	16111	16111
19	110.7	0.0	0.0	1105	2489	-7.0	15231	15231	15231	15231	15231	15231	15231
20	110.7	0.0	0.0	1105	2489	-7.0	15231	15231	15231	15231	15231	15231	15231
21	110.7	0.0	0.0	1105	2489	-7.0	15231	15231	15231	15231	15231	15231	15231

ORIGINAL PAGE IS OF POOR QUALITY

TABLE V.— Continued.

RUN 59 TEST 525											
Pt	WTS	ALFALC	IN4	LIF10	UNALFO	S1025	P1100	YAN	RULL		
QPSF	PSI	PER POS	CONF	CONF	CONF	S1025	P1100	YAN	RULL		
WTS	ALFALC	LUN 314	LIF10	UNALFO	S1025	P1100	YAN	RULL			
VSNDPTS	RMON	RMAX	CL	CD	CP	CM	CR	CS	CT		
12	116.5	0.0	00.0	50.0	276.0	-33.	820.0	1300.	1207.		
	00.0	0.0	50.0	50.0	276.0	-33.	820.0	1300.	1207.		
	0.174	0.0	50.0	00.0	276.0	-33.	820.0	1300.	1207.		
	74.	0.2225	50.0	00.0	276.0	-33.	820.0	1300.	1207.		
	072.0	0.9325	50.0	0.1281	0.1300	+0.0041	0.1974	0.0000	0.0000		
13	115.4	0.0	00.0	50.0	276.0	-33.	820.0	1300.	1207.		
	00.0	0.0	50.0	50.0	276.0	-33.	820.0	1300.	1207.		
	0.173	0.0	50.0	00.0	276.0	-33.	820.0	1300.	1207.		
	74.	0.2225	50.0	00.0	276.0	-33.	820.0	1300.	1207.		
	073.6	0.9325	50.0	0.1389	0.1300	+0.0193	0.1990	0.0000	0.0000		
14	115.8	0.0	00.0	50.0	276.0	-33.	820.0	1300.	1207.		
	00.0	0.0	50.0	50.0	276.0	-33.	820.0	1300.	1207.		
	0.174	0.0	50.0	00.0	276.0	-33.	820.0	1300.	1207.		
	74.	0.2225	50.0	00.0	276.0	-33.	820.0	1300.	1207.		
	074.2	0.9325	50.0	0.1389	0.1300	+0.0000	0.1990	0.0000	0.0000		
15	115.4	0.0	00.0	50.0	276.0	-33.	820.0	1300.	1207.		
	00.0	0.0	50.0	50.0	276.0	-33.	820.0	1300.	1207.		
	0.173	0.0	50.0	00.0	276.0	-33.	820.0	1300.	1207.		
	74.	0.2225	50.0	00.0	276.0	-33.	820.0	1300.	1207.		
	073.2	0.9325	50.0	0.1389	0.1300	+0.0218	0.1990	0.0000	0.0000		
16	115.9	0.0	00.0	50.0	276.0	-33.	820.0	1300.	1207.		
	00.0	0.0	50.0	50.0	276.0	-33.	820.0	1300.	1207.		
	0.172	0.0	50.0	00.0	276.0	-33.	820.0	1300.	1207.		
	74.	0.2225	50.0	00.0	276.0	-33.	820.0	1300.	1207.		
	074.4	0.9327	50.0	0.1389	0.1300	+0.0173	0.1990	0.0000	0.0000		
17	116.1	0.0	00.0	50.0	276.0	-33.	820.0	1300.	1207.		
	00.0	0.0	50.0	50.0	276.0	-33.	820.0	1300.	1207.		
	0.173	0.0	50.0	00.0	276.0	-33.	820.0	1300.	1207.		
	74.	0.2225	50.0	00.0	276.0	-33.	820.0	1300.	1207.		
	074.9	0.9327	50.0	0.1389	0.1300	+0.0131	0.1990	0.0000	0.0000		
RUN 60 TEST 525											
Pt	WTS	ALFALC	IN4	LIF10	UNALFO	S1025	P1100	YAN	RULL		
QPSF	PSI	PER POS	CONF	CONF	CONF	S1025	P1100	YAN	RULL		
WTS	ALFALC	LUN 314	LIF10	UNALFO	S1025	P1100	YAN	RULL			
VSNDPTS	RMON	RMAX	CL	CD	CP	CM	CR	CS	CT		
3	117.2	0.0	00.0	50.0	276.0	-33.	820.0	1300.	1207.		
	00.0	0.0	50.0	50.0	276.0	-33.	820.0	1300.	1207.		
	0.174	0.0	50.0	00.0	276.0	-33.	820.0	1300.	1207.		
	74.	0.2225	50.0	00.0	276.0	-33.	820.0	1300.	1207.		
	074.7	0.9326	50.0	0.1389	0.1300	+0.0129	0.1976	0.0000	0.0000		
4	117.5	0.0	00.0	50.0	276.0	-33.	820.0	1300.	1207.		
	00.0	0.0	50.0	50.0	276.0	-33.	820.0	1300.	1207.		
	0.174	0.0	50.0	00.0	276.0	-33.	820.0	1300.	1207.		
	74.	0.2225	50.0	00.0	276.0	-33.	820.0	1300.	1207.		
	074.0	0.9326	50.0	0.1389	0.1300	+0.0110	0.1976	0.0000	0.0000		
5	117.6	0.0	00.0	50.0	276.0	-33.	820.0	1300.	1207.		
	00.0	0.0	50.0	50.0	276.0	-33.	820.0	1300.	1207.		
	0.174	0.0	50.0	00.0	276.0	-33.	820.0	1300.	1207.		
	74.	0.2225	50.0	00.0	276.0	-33.	820.0	1300.	1207.		
	074.8	0.9327	50.0	0.1389	0.1300	+0.0131	0.1976	0.0000	0.0000		
6	117.6	0.0	00.0	50.0	276.0	-33.	820.0	1300.	1207.		
	00.0	0.0	50.0	50.0	276.0	-33.	820.0	1300.	1207.		
	0.174	0.0	50.0	00.0	276.0	-33.	820.0	1300.	1207.		
	74.	0.2225	50.0	00.0	276.0	-33.	820.0	1300.	1207.		
	074.2	0.9327	50.0	0.1389	0.1300	+0.0104	0.1976	0.0000	0.0000		
7	118.0	0.0	00.0	50.0	276.0	-33.	820.0	1300.	1207.		
	00.0	0.0	50.0	50.0	276.0	-33.	820.0	1300.	1207.		
	0.174	0.0	50.0	00.0	276.0	-33.	820.0	1300.	1207.		
	74.	0.2225	50.0	00.0	276.0	-33.	820.0	1300.	1207.		
	080.5	0.9327	50.0	0.1389	0.1300	+0.0026	0.1990	0.0000	0.0000		
8	118.0	0.0	00.0	50.0	276.0	-33.	820.0	1300.	1207.		
	00.0	0.0	50.0	50.0	276.0	-33.	820.0	1300.	1207.		
	0.174	0.0	50.0	00.0	276.0	-33.	820.0	1300.	1207.		
	74.	0.2225	50.0	00.0	276.0	-33.	820.0	1300.	1207.		
	080.5	0.9327	50.0	0.1389	0.1300	+0.0000	0.1990	0.0000	0.0000		
9	117.7	0.0	00.0	50.0	276.0	-33.	820.0	1300.	1207.		
	00.0	0.0	50.0	50.0	276.0	-33.	820.0	1300.	1207.		
	0.173	0.0	50.0	00.0	276.0	-33.	820.0	1300.	1207.		
	74.	0.2225	50.0	00.0	276.0	-33.	820.0	1300.	1207.		
	081.1	0.9326	50.0	0.1389	0.1300	+0.0071	0.1976	0.0000	0.0000		
10	118.0	0.0	00.0	50.0	276.0	-33.	820.0	1300.	1207.		
	00.0	0.0	50.0	50.0	276.0	-33.	820.0	1300.	1207.		
	0.174	0.0	50.0	00.0	276.0	-33.	820.0	1300.	1207.		
	74.	0.2225	50.0	00.0	276.0	-33.	820.0	1300.	1207.		
	081.1	0.9326	50.0	0.1389	0.1300	+0.0000	0.1990	0.0000	0.0000		
11	118.3	0.0	00.0	50.0	276.0	-33.	820.0	1300.	1207.		
	00.0	0.0	50.0	50.0	276.0	-33.	820.0	1300.	1207.		
	0.174	0.0	50.0	00.0	276.0	-33.	820.0	1300.	1207.		
	74.	0.2225	50.0	00.0	276.0	-33.	820.0	1300.	1207.		
	081.7	0.9328	50.0	0.1389	0.1300	+0.0000	0.1990	0.0000	0.0000		
12	117.8	0.0	00.0	50.0	276.0	-33.	820.0	1300.	1207.		
	00.0	0.0	50.0	50.0	276.0	-33.	820.0	1300.	1207.		
	0.173	0.0	50.0	00.0	276.0	-33.	820.0	1300.	1207.		
	74.	0.2225	50.0	00.0	276.0	-33.	820.0	1300.	1207.		
	081.7	0.9325	50.0	0.1389	0.1300	+0.0100	0.1990	0.0000	0.0000		

TABLE V.—Continued.

TEST 525										
P.N.	WPTS	ALP301	PSI	IWA	LIFT 10	ORAS10	S10120	P10100	TAP10	WELL10
TEMP	WPTS	WPTS	WPTS	WPTS	WPTS	WPTS	WPTS	WPTS	WPTS	WPTS
13	116.0	0.0	0.0	50.0	2530	2473	-153	17967	190	4890
	88.9	0.0	0.0	50.0	2518	2473	-153	17967	190	4890
	0.174	0.0	0.0	50.0	4161	3141	-160	15055	690	4740
	96.0	0.2213	0.0	50.0	1770	1770	-0.000	0.000	0.000	0.000
	682.3	0.9312	0.0	50.0	110728	0.3756	-0.0195	0.3475	0.0007	-0.0027
14	116.1	0.0	0.0	50.0	2265	3141	-80	1487	417	4693
	88.0	0.0	0.0	50.0	2265	3141	-80	1487	417	4693
	0.174	0.0	0.0	50.0	4161	3141	-160	15055	690	4740
	96.0	0.2213	0.0	50.0	1770	1770	-0.000	0.000	0.000	0.000
	682.3	0.9312	0.0	50.0	110728	0.3756	-0.0195	0.3475	0.0007	-0.0027
15	116.1	0.0	0.0	50.0	2159	3047	-80	13669	417	4693
	88.0	0.0	0.0	50.0	2159	3047	-80	13669	417	4693
	0.174	0.0	0.0	50.0	4161	3047	-160	14430	690	4530
	96.0	0.2209	0.0	50.0	1760	1760	-0.000	0.000	0.000	0.000
	682.3	0.9298	0.0	50.0	110577	0.3756	-0.0195	0.3475	0.0007	-0.0027
16	117.0	0.0	0.0	50.0	2159	3047	-80	13669	417	4693
	88.0	0.0	0.0	50.0	2159	3047	-80	13669	417	4693
	0.174	0.0	0.0	50.0	4161	3047	-160	14430	690	4530
	96.0	0.2209	0.0	50.0	1760	1760	-0.000	0.000	0.000	0.000
	682.3	0.9298	0.0	50.0	110577	0.3756	-0.0195	0.3475	0.0007	-0.0027
17	117.7	0.0	0.0	50.0	2033	2944	-100	12941	417	4693
	86.0	0.0	0.0	50.0	2033	2944	-100	12941	417	4693
	0.174	0.0	0.0	50.0	4067	2944	-160	14000	690	4530
	97.0	0.2180	0.0	50.0	1760	1760	-0.000	0.000	0.000	0.000
	685.0	0.9122	0.0	50.0	110926	0.3756	-0.0208	0.3480	0.0010	-0.0028
18	118.2	0.0	0.0	50.0	1819	2737	-97	1206	3493	4211
	87.1	0.0	0.0	50.0	1819	2737	-97	1206	3493	4211
	0.174	0.0	0.0	50.0	4067	2737	-160	1377	3704	4244
	96.0	0.2169	0.0	50.0	1760	1760	-0.000	0.000	0.000	0.000
	686.0	0.9105	0.0	50.0	110582	0.3756	-0.0202	0.3485	0.0017	-0.0037
19	118.2	0.0	0.0	50.0	1819	2737	-97	1206	3493	4211
	87.0	0.0	0.0	50.0	1819	2737	-97	1206	3493	4211
	0.174	0.0	0.0	50.0	4067	2737	-160	1377	3704	4244
	96.0	0.2169	0.0	50.0	1760	1760	-0.000	0.000	0.000	0.000
	686.0	0.9105	0.0	50.0	110582	0.3756	-0.0202	0.3485	0.0017	-0.0037
20	118.4	0.0	0.0	50.0	20745	3155	-171	15604	702	3204
	87.0	0.0	0.0	50.0	20745	3155	-171	15604	702	3204
	0.174	0.0	0.0	50.0	42800	3155	-160	14774	682	3530
	100.0	0.2158	0.0	50.0	1760	1760	-0.000	0.000	0.000	0.000
	687.3	0.9072	0.0	50.0	110880	0.3756	-0.0123	0.3418	0.0017	0.0072
21	118.8	0.0	0.0	50.0	2237	2237	-150	1707	1845	5907
	86.0	0.0	0.0	50.0	2237	2237	-150	1707	1845	5907
	0.174	0.0	0.0	50.0	4161	2237	-160	14280	2547	6530
	100.0	0.2147	0.0	50.0	1760	1760	-0.000	0.000	0.000	0.000
	688.5	0.9031	0.0	50.0	110807	0.3756	-0.0093	0.3390	0.0042	0.0132
22	119.5	0.0	0.0	50.0	15890	2407	-150	10390	1344	3080
	86.0	0.0	0.0	50.0	15890	2407	-150	10390	1344	3080
	0.174	0.0	0.0	50.0	15040	2407	-160	10305	1344	3155
	100.0	0.2147	0.0	50.0	1760	1760	-0.000	0.000	0.000	0.000
	689.5	0.9015	0.0	50.0	110807	0.3756	-0.0109	0.3254	0.0052	0.0087
23	119.7	0.0	0.0	50.0	19493	2681	-160	11733	1344	3423
	86.0	0.0	0.0	50.0	19493	2681	-160	11733	1344	3423
	0.174	0.0	0.0	50.0	21229	2681	-160	12411	1344	3755
	100.0	0.2147	0.0	50.0	1760	1760	-0.000	0.000	0.000	0.000
	690.1	0.9018	0.0	50.0	110755	0.3756	-0.0102	0.3204	0.0058	0.0070
24	119.8	0.0	0.0	50.0	23765	3039	-160	13301	1407	3570
	86.0	0.0	0.0	50.0	23765	3039	-160	13301	1407	3570
	0.174	0.0	0.0	50.0	40332	3039	-160	13447	1503	3750
	100.0	0.2140	0.0	50.0	1760	1760	-0.000	0.000	0.000	0.000
	691.7	0.9002	0.0	50.0	110701	0.3756	-0.0157	0.3128	0.0031	0.0075

TEST 525										
P.N.	WPTS	ALP301	PSI	IWA	LIFT 10	ORAS10	S10120	P10100	TAP10	WELL10
TEMP	WPTS	WPTS	WPTS	WPTS	WPTS	WPTS	WPTS	WPTS	WPTS	WPTS
3	151.4	0.0	0.0	50.0	11415	1025	-150	22404	272	4127
	76.6	0.0	0.0	50.0	11218	1025	-150	22404	272	4127
	0.174	0.0	0.0	50.0	12927	3314	-171	25104	247	4341
	97.0	0.2160	0.0	50.0	1760	1760	-0.000	0.000	0.000	0.000
	693.4	0.9112	0.0	50.0	113200	0.3756	-0.0112	0.3329	0.0000	-0.0026
4	150.3	0.0	0.0	50.0	10495	3233	-167	10911	514	4080
	76.6	0.0	0.0	50.0	10495	3233	-167	10911	514	4080
	0.174	0.0	0.0	50.0	10194	3233	-160	10444	507	4080
	100.0	0.2150	0.0	50.0	1760	1760	-0.000	0.000	0.000	0.000
	687.3	0.9090	0.0	50.0	111850	0.3756	-0.0134	0.3252	0.0011	-0.0000
5	150.1	0.0	0.0	50.0	10710	3747	-160	10000	1344	4080
	77.1	0.0	0.0	50.0	10710	3747	-160	10000	1344	4080
	0.174	0.0	0.0	50.0	10170	3747	-160	10000	1344	4080
	100.0	0.2147	0.0	50.0	1760	1760	-0.000	0.000	0.000	0.000
	687.3	0.9090	0.0	50.0	111850	0.3756	-0.0173	0.3128	0.0041	-0.0050
6	150.0	0.0	0.0	50.0	10195	3100	-160	10000	1344	4080
	76.6	0.0	0.0	50.0	10195	3100	-160	10000	1344	4080
	0.174	0.0	0.0	50.0	10195	3100	-160	10000	1344	4080
	100.0	0.2147	0.0	50.0	1760	1760	-0.000	0.000	0.000	0.000
	686.0	0.9031	0.0	50.0	111374	0.3756	-0.0173	0.3153	0.0052	-0.0023

TABLE V.— Continued.

PLANT	TEST	SEAS	...	...	...	...	...	...	...
3	114.2	+2.0	50.0	590.1	2242.1	+105.	1577.5	547.1	1000.0
	42.7	0.0	50.0	558.0	2249.7	-124.	1577.5	547.1	1000.0
	0.171	0.0	50.0	572.2	2244.1	+104.	1577.5	547.1	1000.0
	7.1	0.2246	50.0	61.30					
	669.2	0.9530	50.1	177223	0.1374	-0.0136	0.1374	0.0136	0.0136
4	114.5	+2.0	50.0	675.1	2301.1	+84.	1616.1	546.1	1000.0
	42.7	0.0	50.0	675.1	2301.1	+84.	1616.1	546.1	1000.0
	0.171	0.0	50.0	675.1	2301.1	+84.	1616.1	546.1	1000.0
	7.1	0.2246	50.0	61.30					
	670.5	0.9522	50.1	177495	0.1374	-0.0136	0.1374	0.0136	0.0136
5	114.3	+2.0	50.0	723.1	2357.1	+77.	1624.2	546.1	1000.0
	42.7	0.0	50.0	723.1	2357.1	+77.	1624.2	546.1	1000.0
	0.171	0.0	50.0	723.1	2357.1	+77.	1624.2	546.1	1000.0
	7.1	0.2246	50.0	61.30					
	670.5	0.9523	50.2	177490	0.1374	-0.0136	0.1374	0.0136	0.0136
6	115.7	+2.0	50.0	855.1	2382.1	+61.	1650.7	1682.	1244.
	43.5	0.0	50.0	855.1	2382.1	+61.	1650.7	1682.	1244.
	0.171	0.0	50.0	855.1	2382.1	+61.	1650.7	1682.	1244.
	7.1	0.2246	50.0	61.30					
	671.1	0.9527	50.1	177496	0.1374	-0.0136	0.1374	0.0136	0.0136
7	115.9	+2.0	50.0	225.1	2396.1	+18.	1326.1	1545.	2344.
	43.6	0.0	50.0	225.1	2396.1	+18.	1326.1	1545.	2344.
	0.171	0.0	50.0	225.1	2396.1	+18.	1326.1	1545.	2344.
	7.1	0.2246	50.0	61.30					
	671.7	0.9583	50.1	177495	0.1374	-0.0136	0.1374	0.0136	0.0136
8	116.0	+2.0	50.0	280.1	2411.1	+85.	1293.1	1626.	1468.
	43.7	0.0	50.0	280.1	2411.1	+85.	1293.1	1626.	1468.
	0.171	0.0	50.0	280.1	2411.1	+85.	1293.1	1626.	1468.
	7.1	0.2246	50.0	61.30					
	671.7	0.9581	50.1	177492	0.1374	-0.0136	0.1374	0.0136	0.0136
9	116.0	+2.0	50.0	776.1	2440.1	+60.	1621.1	612.	724.
	43.5	0.0	50.0	776.1	2440.1	+60.	1621.1	612.	724.
	0.171	0.0	50.0	776.1	2440.1	+60.	1621.1	612.	724.
	7.1	0.2246	50.0	61.30					
	673.0	0.9588	50.1	177497	0.1374	-0.0136	0.1374	0.0136	0.0136
10	116.0	+2.0	50.0	764.1	2367.1	+134.	1686.1	746.	777.
	43.5	0.0	50.0	764.1	2367.1	+134.	1686.1	746.	777.
	0.171	0.0	50.0	764.1	2367.1	+134.	1686.1	746.	777.
	7.1	0.2246	50.0	61.30					
	673.0	0.9588	50.1	177491	0.1374	-0.0136	0.1374	0.0136	0.0136
11	116.2	+2.0	50.0	741.1	2742.1	+103.	1474.1	1975.	149.
	43.8	0.0	50.0	741.1	2742.1	+103.	1474.1	1975.	149.
	0.171	0.0	50.0	741.1	2742.1	+103.	1474.1	1975.	149.
	7.1	0.2246	50.0	61.30					
	673.9	0.9530	50.1	177495	0.1374	-0.0136	0.1374	0.0136	0.0136
12	116.4	+2.0	50.0	846.1	2366.1	+66.	1512.1	644.	731.
	43.5	0.0	50.0	846.1	2366.1	+66.	1512.1	644.	731.
	0.171	0.0	50.0	846.1	2366.1	+66.	1512.1	644.	731.
	7.1	0.2246	50.0	61.30					
	673.9	0.9531	50.1	177495	0.1374	-0.0136	0.1374	0.0136	0.0136
13	116.2	+2.0	50.0	845.1	2376.1	+66.	1473.1	157.	744.
	43.5	0.0	50.0	845.1	2376.1	+66.	1473.1	157.	744.
	0.171	0.0	50.0	845.1	2376.1	+66.	1473.1	157.	744.
	7.1	0.2246	50.0	61.30					
	674.2	0.9512	50.2	177490	0.1374	-0.0136	0.1374	0.0136	0.0136
14	96.4	+4.0	75.0	1770.1	2305.1	+55.	1115.1	344.	445.
	31.8	0.0	50.0	1770.1	2305.1	+55.	1115.1	344.	445.
	0.147	0.0	50.0	1770.1	2305.1	+55.	1115.1	344.	445.
	8.1	0.2246	50.0	61.30					
	674.9	0.9538	50.2	177492	0.1374	-0.0136	0.1374	0.0136	0.0136
15	94.1	+2.0	75.0	463.1	2304.1	+71.	1042.1	141.	500.
	31.7	0.0	50.0	463.1	2304.1	+71.	1042.1	141.	500.
	0.147	0.0	50.0	463.1	2304.1	+71.	1042.1	141.	500.
	8.1	0.2246	50.0	61.30					
	674.9	0.9538	50.1	177492	0.1374	-0.0136	0.1374	0.0136	0.0136
16	94.1	+2.0	75.0	544.1	2304.1	+71.	1042.1	141.	500.
	31.7	0.0	50.0	544.1	2304.1	+71.	1042.1	141.	500.
	0.147	0.0	50.0	544.1	2304.1	+71.	1042.1	141.	500.
	8.1	0.2246	50.0	61.30					
	674.9	0.9538	50.2	177491	0.1374	-0.0136	0.1374	0.0136	0.0136
17	94.2	+2.0	75.0	544.1	2375.1	+71.	1042.1	141.	500.
	31.8	0.0	50.0	544.1	2375.1	+71.	1042.1	141.	500.
	0.147	0.0	50.0	544.1	2375.1	+71.	1042.1	141.	500.
	8.1	0.2246	50.0	61.30					
	674.9	0.9538	50.1	177493	0.1374	-0.0136	0.1374	0.0136	0.0136

TABLE V.— Continued.

ROW	W	TEST	CP	W	TEST	CP	W	TEST	CP	W	TEST	CP
1	117.5	0.0	50.0	117.5	0.0	50.0	117.5	0.0	50.0	117.5	0.0	50.0
2	117.5	0.0	50.0	117.5	0.0	50.0	117.5	0.0	50.0	117.5	0.0	50.0
3	117.5	0.0	50.0	117.5	0.0	50.0	117.5	0.0	50.0	117.5	0.0	50.0
4	117.5	0.0	50.0	117.5	0.0	50.0	117.5	0.0	50.0	117.5	0.0	50.0
5	117.5	0.0	50.0	117.5	0.0	50.0	117.5	0.0	50.0	117.5	0.0	50.0
6	117.5	0.0	50.0	117.5	0.0	50.0	117.5	0.0	50.0	117.5	0.0	50.0
7	117.5	0.0	50.0	117.5	0.0	50.0	117.5	0.0	50.0	117.5	0.0	50.0
8	117.5	0.0	50.0	117.5	0.0	50.0	117.5	0.0	50.0	117.5	0.0	50.0
9	117.5	0.0	50.0	117.5	0.0	50.0	117.5	0.0	50.0	117.5	0.0	50.0
10	117.5	0.0	50.0	117.5	0.0	50.0	117.5	0.0	50.0	117.5	0.0	50.0
11	117.5	0.0	50.0	117.5	0.0	50.0	117.5	0.0	50.0	117.5	0.0	50.0
12	117.5	0.0	50.0	117.5	0.0	50.0	117.5	0.0	50.0	117.5	0.0	50.0
13	117.5	0.0	50.0	117.5	0.0	50.0	117.5	0.0	50.0	117.5	0.0	50.0
14	117.5	0.0	50.0	117.5	0.0	50.0	117.5	0.0	50.0	117.5	0.0	50.0
15	117.5	0.0	50.0	117.5	0.0	50.0	117.5	0.0	50.0	117.5	0.0	50.0
16	117.5	0.0	50.0	117.5	0.0	50.0	117.5	0.0	50.0	117.5	0.0	50.0
17	117.5	0.0	50.0	117.5	0.0	50.0	117.5	0.0	50.0	117.5	0.0	50.0
18	117.5	0.0	50.0	117.5	0.0	50.0	117.5	0.0	50.0	117.5	0.0	50.0
19	117.5	0.0	50.0	117.5	0.0	50.0	117.5	0.0	50.0	117.5	0.0	50.0
20	117.5	0.0	50.0	117.5	0.0	50.0	117.5	0.0	50.0	117.5	0.0	50.0

TABLE V.— Continued.

RUN 26 TEST 525											
PT	WKTS	ALFSLC	INA	L1F10	UNAG10	SIDE10	PITCH10	YAW10	ROLL10	TEST 525	
										PSI	PDS
WTUN		LUNG STR		L1F10		SIDE10		PITCH10		YAW10	
1840		1840		1840		1840		1840		1840	
VSXOKTS		PCHN		CL		CH		CA		CROLL	
21	116.9	0.0	0.0	3391	1222	74	3392	339	-125		
	20.0	0.0	0.0	3392	1222	74	3392	339	-125		
	0.114	0.2277	0.0	3392	1222	74	3392	339	-125		
	74	0.2281	0.0	3392	1222	74	3392	339	-125		
	676.2	0.9597	0.0	3392	1222	74	3392	339	-125		
22	116.9	0.0	0.0	4073	1432	74	4073	407	-131		
	20.0	0.0	0.0	4073	1432	74	4073	407	-131		
	0.114	0.2281	0.0	4073	1432	74	4073	407	-131		
	74	0.2281	0.0	4073	1432	74	4073	407	-131		
	676.2	0.9597	0.0	4073	1432	74	4073	407	-131		
23	116.9	0.0	0.0	5073	1432	74	5073	507	-131		
	20.0	0.0	0.0	5073	1432	74	5073	507	-131		
	0.114	0.2281	0.0	5073	1432	74	5073	507	-131		
	74	0.2281	0.0	5073	1432	74	5073	507	-131		
	676.2	0.9597	0.0	5073	1432	74	5073	507	-131		
24	116.9	0.0	0.0	5973	1432	74	5973	597	-131		
	20.0	0.0	0.0	5973	1432	74	5973	597	-131		
	0.114	0.2281	0.0	5973	1432	74	5973	597	-131		
	74	0.2281	0.0	5973	1432	74	5973	597	-131		
	676.2	0.9597	0.0	5973	1432	74	5973	597	-131		
25	116.9	0.0	0.0	6325	2067	74	6325	632	-131		
	20.0	0.0	0.0	6325	2067	74	6325	632	-131		
	0.114	0.2281	0.0	6325	2067	74	6325	632	-131		
	74	0.2281	0.0	6325	2067	74	6325	632	-131		
	676.2	0.9597	0.0	6325	2067	74	6325	632	-131		
RUN 26 TEST 525											
PT	WKTS	ALFSLC	INA	L1F10	UNAG10	SIDE10	PITCH10	YAW10	ROLL10	TEST 525	
										PSI	PDS
WTUN		LUNG STR		L1F10		SIDE10		PITCH10		YAW10	
1840		1840		1840		1840		1840		1840	
VSXOKTS		PCHN		CL		CH		CA		CROLL	
5	116.9	0.0	0.0	730	1068	-21	1068	107	243	243	243
	20.0	0.0	0.0	730	1068	-21	1068	107	243	243	243
	0.114	0.2281	0.0	730	1068	-21	1068	107	243	243	243
	74	0.2281	0.0	730	1068	-21	1068	107	243	243	243
	673.6	0.9538	0.0	730	1068	-21	1068	107	243	243	243
6	117.1	0.0	0.0	3040	973	-21	973	973	198	198	198
	20.0	0.0	0.0	3040	973	-21	973	973	198	198	198
	0.114	0.2281	0.0	3040	973	-21	973	973	198	198	198
	74	0.2281	0.0	3040	973	-21	973	973	198	198	198
	676.2	0.9520	0.0	3040	973	-21	973	973	198	198	198
7	117.1	0.0	0.0	6105	1035	-21	1035	1035	207	207	207
	20.0	0.0	0.0	6105	1035	-21	1035	1035	207	207	207
	0.114	0.2281	0.0	6105	1035	-21	1035	1035	207	207	207
	74	0.2281	0.0	6105	1035	-21	1035	1035	207	207	207
	676.2	0.9502	0.0	6105	1035	-21	1035	1035	207	207	207
8	117.2	0.0	0.0	8675	1271	-21	1271	1271	254	254	254
	20.0	0.0	0.0	8675	1271	-21	1271	1271	254	254	254
	0.114	0.2281	0.0	8675	1271	-21	1271	1271	254	254	254
	74	0.2281	0.0	8675	1271	-21	1271	1271	254	254	254
	675.5	0.9485	0.0	8675	1271	-21	1271	1271	254	254	254
9	117.3	0.0	0.0	9405	1331	-21	1331	1331	266	266	266
	20.0	0.0	0.0	9405	1331	-21	1331	1331	266	266	266
	0.114	0.2281	0.0	9405	1331	-21	1331	1331	266	266	266
	74	0.2281	0.0	9405	1331	-21	1331	1331	266	266	266
	675.5	0.9485	0.0	9405	1331	-21	1331	1331	266	266	266
10	117.3	0.0	0.0	9835	1373	-21	1373	1373	271	271	271
	20.0	0.0	0.0	9835	1373	-21	1373	1373	271	271	271
	0.114	0.2281	0.0	9835	1373	-21	1373	1373	271	271	271
	74	0.2281	0.0	9835	1373	-21	1373	1373	271	271	271
	676.7	0.9490	0.0	9835	1373	-21	1373	1373	271	271	271
11	117.4	0.0	0.0	1035	1403	-21	1403	1403	277	277	277
	20.0	0.0	0.0	1035	1403	-21	1403	1403	277	277	277
	0.114	0.2281	0.0	1035	1403	-21	1403	1403	277	277	277
	74	0.2281	0.0	1035	1403	-21	1403	1403	277	277	277
	676.7	0.9497	0.0	1035	1403	-21	1403	1403	277	277	277
12	117.4	0.0	0.0	10590	1403	-21	1403	1403	277	277	277
	20.0	0.0	0.0	10590	1403	-21	1403	1403	277	277	277
	0.114	0.2281	0.0	10590	1403	-21	1403	1403	277	277	277
	74	0.2281	0.0	10590	1403	-21	1403	1403	277	277	277
	676.7	0.9497	0.0	10590	1403	-21	1403	1403	277	277	277
13	117.5	0.0	0.0	11255	1453	-21	1453	1453	282	282	282
	20.0	0.0	0.0	11255	1453	-21	1453	1453	282	282	282
	0.114	0.2281	0.0	11255	1453	-21	1453	1453	282	282	282
	74	0.2281	0.0	11255	1453	-21	1453	1453	282	282	282
	677.4	0.9429	0.0	11255	1453	-21	1453	1453	282	282	282

TABLE V.- Continued.

RUN 49 TEST 525													
PTS	A.F.S.C	INC	CL	DRAG	SIDE	PITCH	YAW	ROLL					
QPSF	PSI	PED POS	LONG STA	LONG STA	LONG STA	LONG STA	LONG STA	LONG STA	LONG STA	LONG STA	LONG STA	LONG STA	LONG STA
TEMP	WIND	LAT STA	CL	CL	CL	CL	CL	CL	CL	CL	CL	CL	CL
VS0015	WIND	NUM LEV	CL	CL	CL	CL	CL	CL	CL	CL	CL	CL	CL
117.3	4.0	00.0	8065.	3077.	+130.	18112.	551.	-510.					
45.0	0.0	50.0	8065.	3077.	+130.	18112.	551.	-510.					
0.170	0.0	50.0	4878.	3126.	+141.	18767.	517.	-528.					
71.	0.2294	50.1		08.42									
009.2	0.9631	50.0	0.5731	0.3780	-0.0187	0.0234	0.0020	-0.0014					
117.2	0.0	00.0	7130.	3255.	+150.	13521.	900.	-301.					
44.8	0.0	50.0	7130.	3255.	+150.	13521.	900.	-301.					
0.170	0.0	50.0	7401.	3379.	+143.	14050.	705.	-340.					
72.	0.2290	50.2		72.00									
009.9	0.9633	50.1	0.8191	0.4013	-0.0170	0.0372	0.0037	-0.0015					
117.5	4.0	00.0	9725.	3504.	+101.	7777.	871.	-038.					
44.9	0.0	50.0	9725.	3504.	+101.	7777.	871.	-038.					
0.170	0.0	50.1	10115.	3680.	+105.	8089.	900.	-072.					
73.	0.2285	50.1		70.93									
070.5	0.9615	49.9	1.1900	0.6301	-0.0124	0.1002	0.0033	-0.0032					
117.7	0.0	00.0	10900.	3732.	-97.	5172.	1370.	-238.					
45.0	0.0	50.0	10900.	3732.	-97.	5172.	1370.	-238.					
0.170	0.0	50.0	11358.	3889.	+101.	5100.	1437.	-248.					
74.	0.2281	50.0		82.90									
071.1	0.9597	50.0	1.3391	0.4505	-0.0119	0.1219	0.0053	-0.0009					
117.8	0.0	00.0	11900.	3901.	-99.	2101.	1591.	-052.					
45.0	0.0	50.0	11900.	3901.	-99.	2101.	1591.	-052.					
0.170	0.0	50.0	12507.	4070.	+103.	2277.	1601.	-081.					
75.	0.2277	50.2		81.50									
071.7	0.9579	50.0	1.4711	0.6839	-0.0122	0.0510	0.0061	-0.0025					
117.9	0.0	00.0	10505.	3859.	+100.	7701.	1000.	+031.					
45.0	0.0	50.1	10505.	3859.	+100.	7701.	1000.	+031.					
0.170	0.0	50.0	11071.	4030.	+104.	8123.	10430.	-039.					
76.	0.2273	50.3		85.81									
072.4	0.9501	50.0	1.3004	0.4711	-0.0103	0.1010	0.0050	-0.0013					
118.0	0.0	00.0	10700.	3702.	+72.	8992.	7022.	-270.					
45.0	0.0	50.0	10700.	3702.	+72.	8992.	7022.	-270.					
0.170	0.0	50.0	11275.	3972.	+101.	7227.	6107.	-243.					
77.	0.2200	50.3		83.85									
073.0	0.9503	50.0	1.3219	0.4022	-0.0104	0.1011	0.0099	-0.0100					
117.9	0.0	00.0	10905.	3712.	-97.	5910.	1370.	-200.					
44.9	0.0	50.0	10905.	3712.	-97.	5910.	1370.	-200.					
0.170	0.0	50.0	11402.	3850.	+91.	6151.	1001.	-278.					
77.	0.2200	50.2		82.03									
073.0	0.9503	50.0	1.3405	0.4505	-0.0107	0.1103	0.0053	-0.0010					
117.5	0.0	00.0	10750.	3703.	-70.	8004.	+020.	1145.					
44.9	0.0	50.0	10750.	3703.	-70.	8004.	+020.	1145.					
0.170	0.0	50.0	11204.	3855.	-70.	7500.	+215.	1000.					
77.	0.2200	50.1		82.51									
073.0	0.9503	50.0	1.3234	0.4509	-0.0091	0.1100	0.0050	-0.0009					
117.4	0.0	00.0	10555.	3602.	+52.	8330.	-035.	1701.					
44.8	0.0	50.0	10555.	3602.	+52.	8330.	-035.	1701.					
0.170	0.0	50.1	11004.	3790.	+05.	8151.	-077.	1070.					
76.	0.2203	50.2		80.70									
073.0	0.9522	50.0	1.3307	0.4003	-0.0103	0.1151	0.0050	-0.0000					
118.0	0.0	00.0	9905.	3550.	+33.	7305.	1410.	000.					
44.9	0.0	50.0	9905.	3550.	+33.	7305.	1410.	000.					
0.170	0.0	50.0	10421.	4037.	+35.	7000.	1400.	001.					
79.	0.2250	50.1		85.70									
074.2	0.9504	50.0	1.2101	0.4735	-0.0041	0.1110	0.0050	-0.0037					

TABLE V.- Concluded.

PT	HRIS	ALFS.C	INA	L1F1/U	UNAG/U	SIUE/U	P1CPL/U	PAR/U	WDL/U
ORF	PS	PEQ	POS	L1F1	Q4W	SIUE	P1CPL	PAR	WDL
MTUN		LUN	STK	L1F1/U	UNAG/U	SIUE/U	P1CPL/U	PAR/U	WDL/U
ITEM	H=U10U	LAT	STK	FE	CE	CY	CM	CN	EWOL
VSNOX13	WMOU	POW	LEV	FL	CC	CV	CM	CN	EWOL
3	118.2	-4.0	0.0	-110.	803.	-85.	9575.	1083.	+560.
	44.9	0.0	50.0	-110.	803.	-85.	9575.	1083.	-560.
	0.176		50.0	-110.	803.	-85.	10064.	1081.	-520.
	78.	0.2260	50.0		17.87				
	675.0	0.9509	50.0	-0.0135	0.0987	-0.2080	0.2240	0.0072	-0.0019
4	118.4	-2.0	0.0	1480.	762.	-85.	7300.	1877.	+45.
	45.0	0.0	50.0	1480.	762.	-85.	7300.	1877.	-45.
	0.176		50.0	1502.	762.	-85.	7783.	1881.	+40.
	80.	0.2252	50.0		16.94				
	678.9	0.9474	50.0	0.1810	0.0930	-0.0555	0.1725	0.0072	-0.0002
5	118.6	0.0	0.0	3050.	734.	-59.	5000.	1805.	+340.
	44.9	0.0	50.0	3050.	734.	-59.	5000.	1805.	-340.
	0.176		50.0	3251.	734.	-63.	6140.	1878.	+413.
	82.	0.2244	50.0		16.33				
	678.1	0.9439	50.0	0.3769	0.0902	-0.0033	0.1300	0.0071	-0.0015
6	118.6	2.0	0.0	4570.	754.	-91.	3317.	1800.	+577.
	45.0	0.0	50.0	4570.	754.	-91.	3317.	1800.	-577.
	0.176		50.0	4802.	754.	-98.	3514.	1807.	+612.
	82.	0.2244	50.0		16.77				
	676.1	0.9439	50.0	0.5014	0.0920	-0.0112	0.0775	0.0069	-0.0022
7	118.5	4.0	0.0	5980.	810.	-78.	1850.	1543.	+1300.
	44.9	0.0	50.0	5980.	810.	-78.	1850.	1543.	-1300.
	0.176		50.0	6300.	810.	-83.	1755.	1635.	+1047.
	82.	0.2244	50.0		16.18				
	678.0	0.9439	50.0	0.7374	0.1005	-0.0290	0.0380	0.0059	-0.0052
8	119.0	6.0	0.0	7400.	917.	-80.	-1401.	1707.	+509.
	45.1	0.0	50.0	7400.	917.	-80.	-1401.	1707.	-509.
	0.176		50.0	7855.	917.	-87.	-1487.	1822.	+328.
	81.	0.2239	50.0		20.32				
	678.7	0.9421	50.0	0.9059	0.1123	-0.0105	-0.0320	0.0065	-0.0014
9	118.0	8.0	0.0	8000.	1000.	-110.	-3203.	1555.	410.
	44.9	0.0	50.0	8000.	1000.	-110.	-3203.	1555.	410.
	0.176		50.0	8028.	1000.	-108.	-3502.	1651.	430.
	84.	0.2235	50.0		23.33				
	677.4	0.9404	50.0	1.0441	0.1289	-0.0123	-0.0771	0.0059	0.0040
10	118.8	10.0	0.0	9365.	1219.	-90.	-6201.	1688.	+1334.
	44.9	0.0	50.0	9365.	1219.	-90.	-6201.	1688.	-1334.
	0.176		50.0	9458.	1219.	-100.	-6594.	1780.	+1424.
	84.	0.2235	50.0		27.12				
	677.4	0.9404	50.0	1.1511	0.1408	-0.0120	-0.1050	0.0060	-0.0051

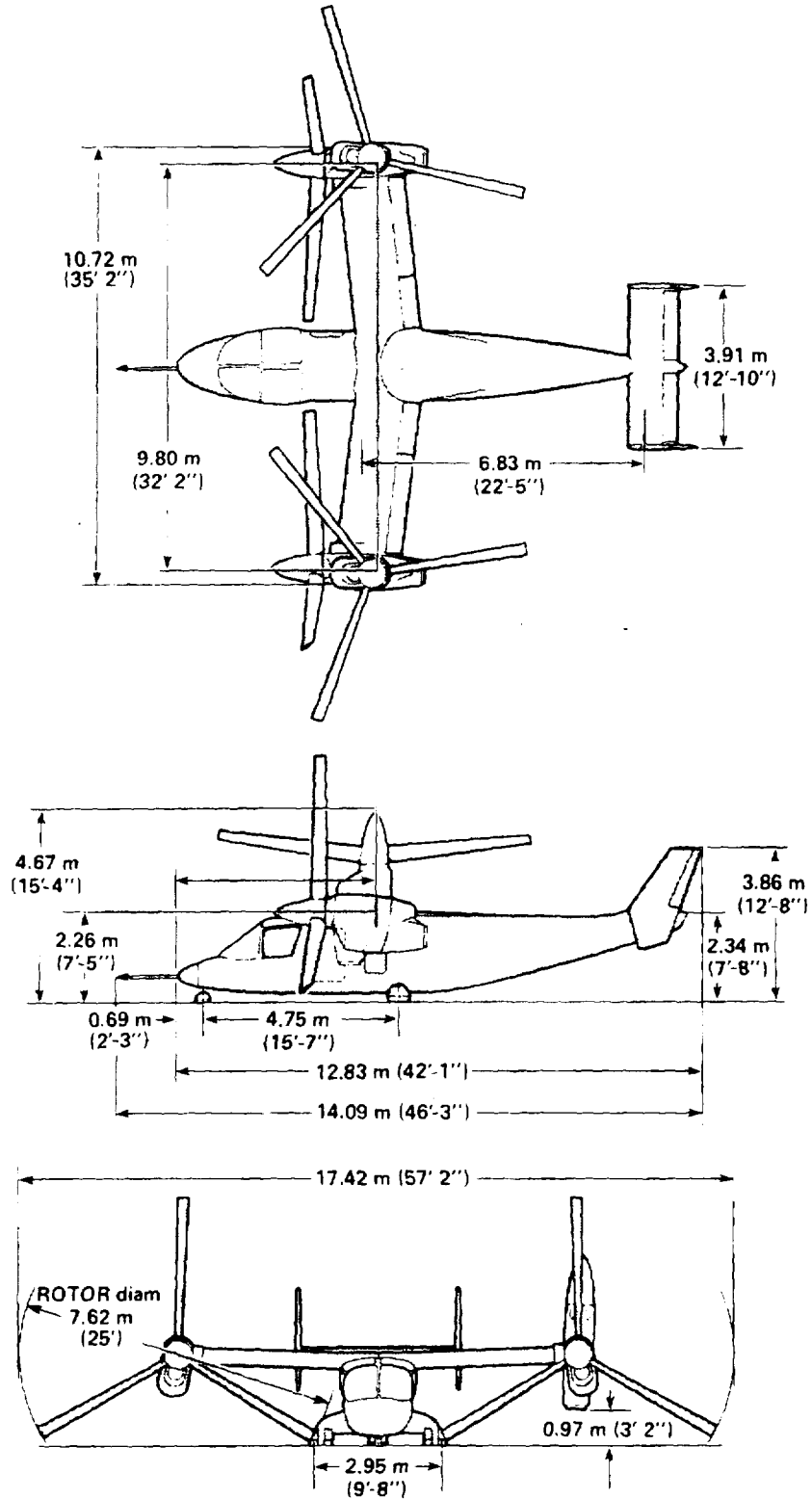
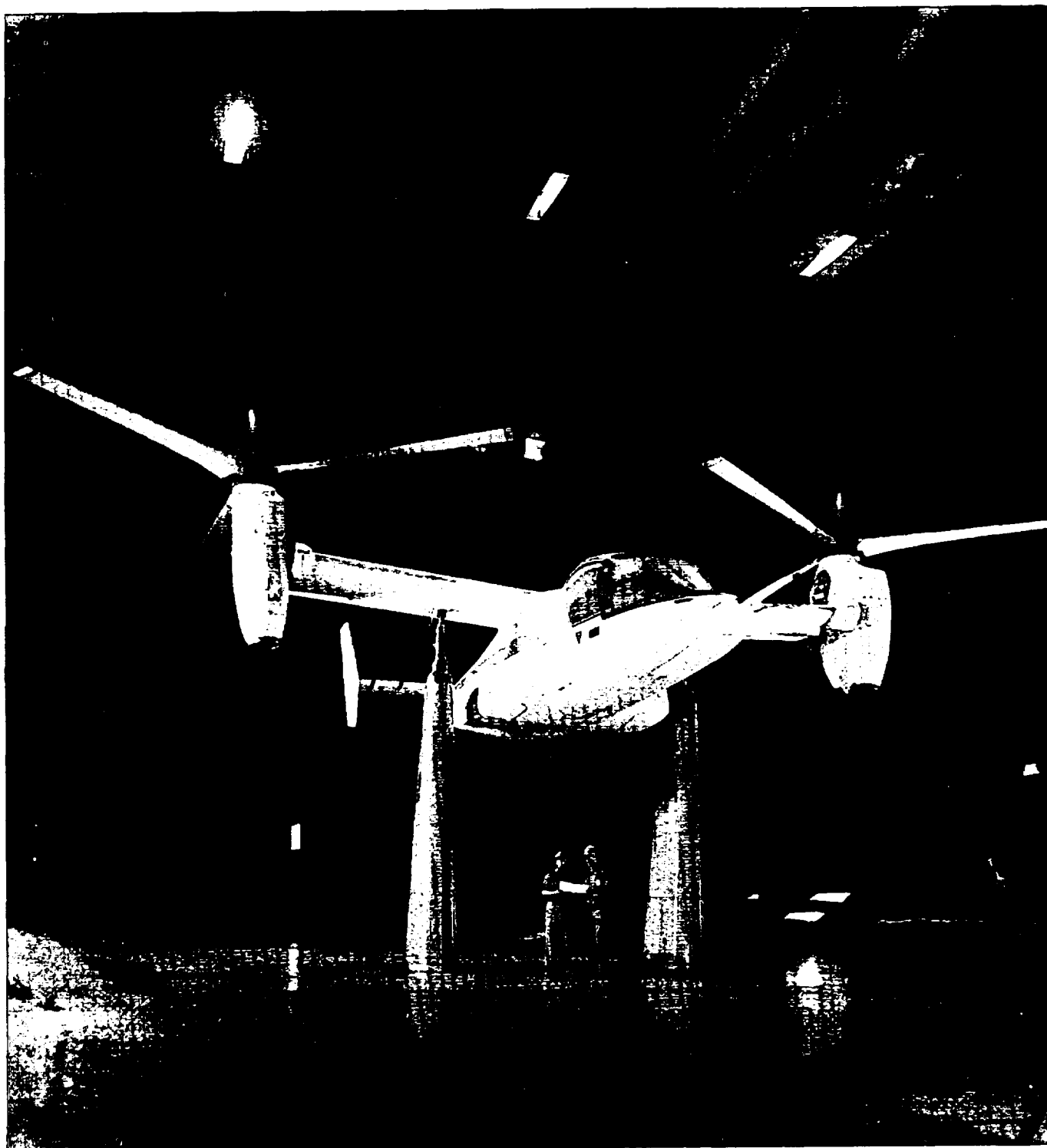


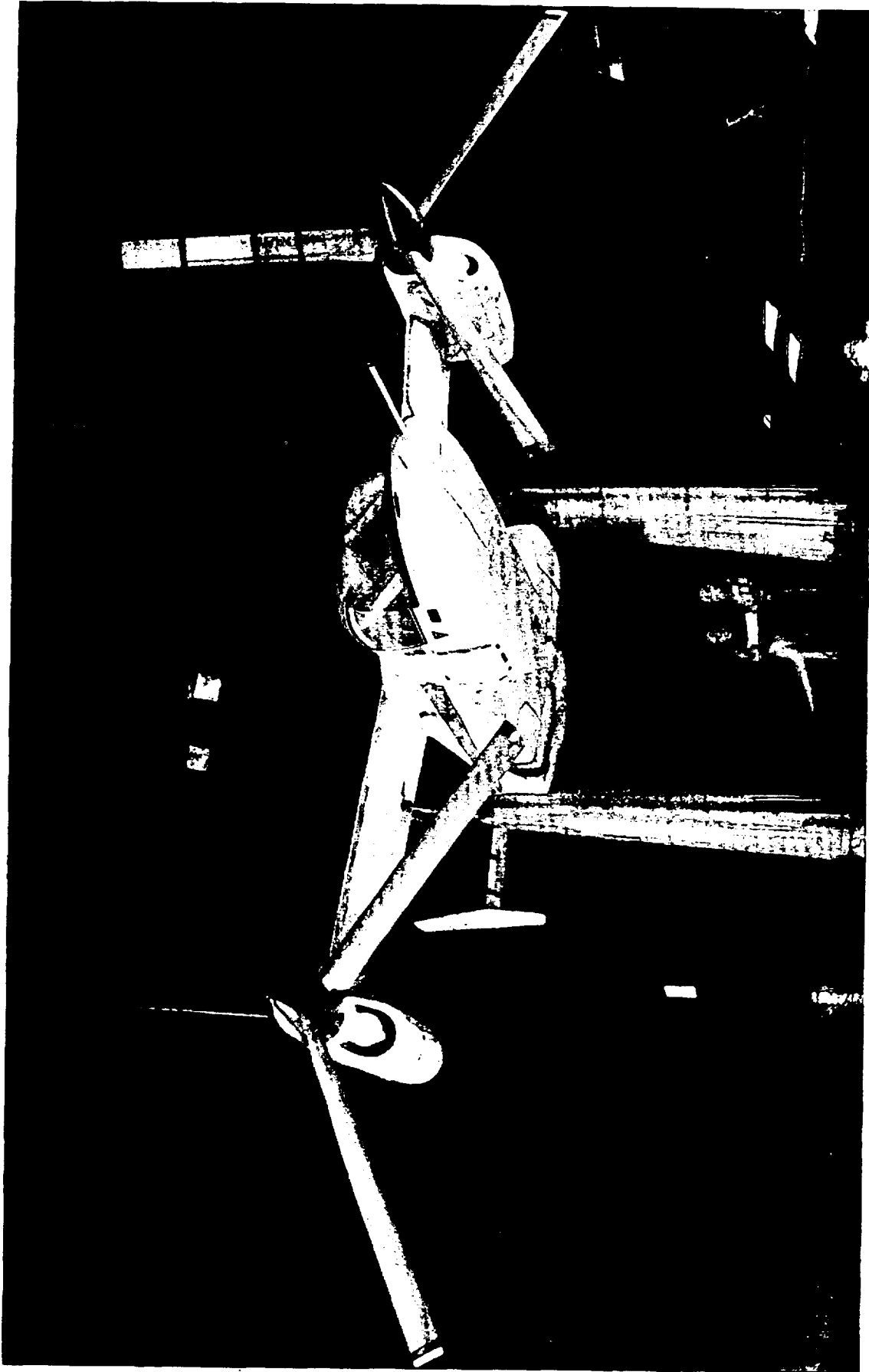
Figure 1.- Aircraft geometry.



(a) Helicopter mode.

Figure 2.— Aircraft mounted in the tunnel.

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(b) Airplane mode.

Figure 2.- Concluded.

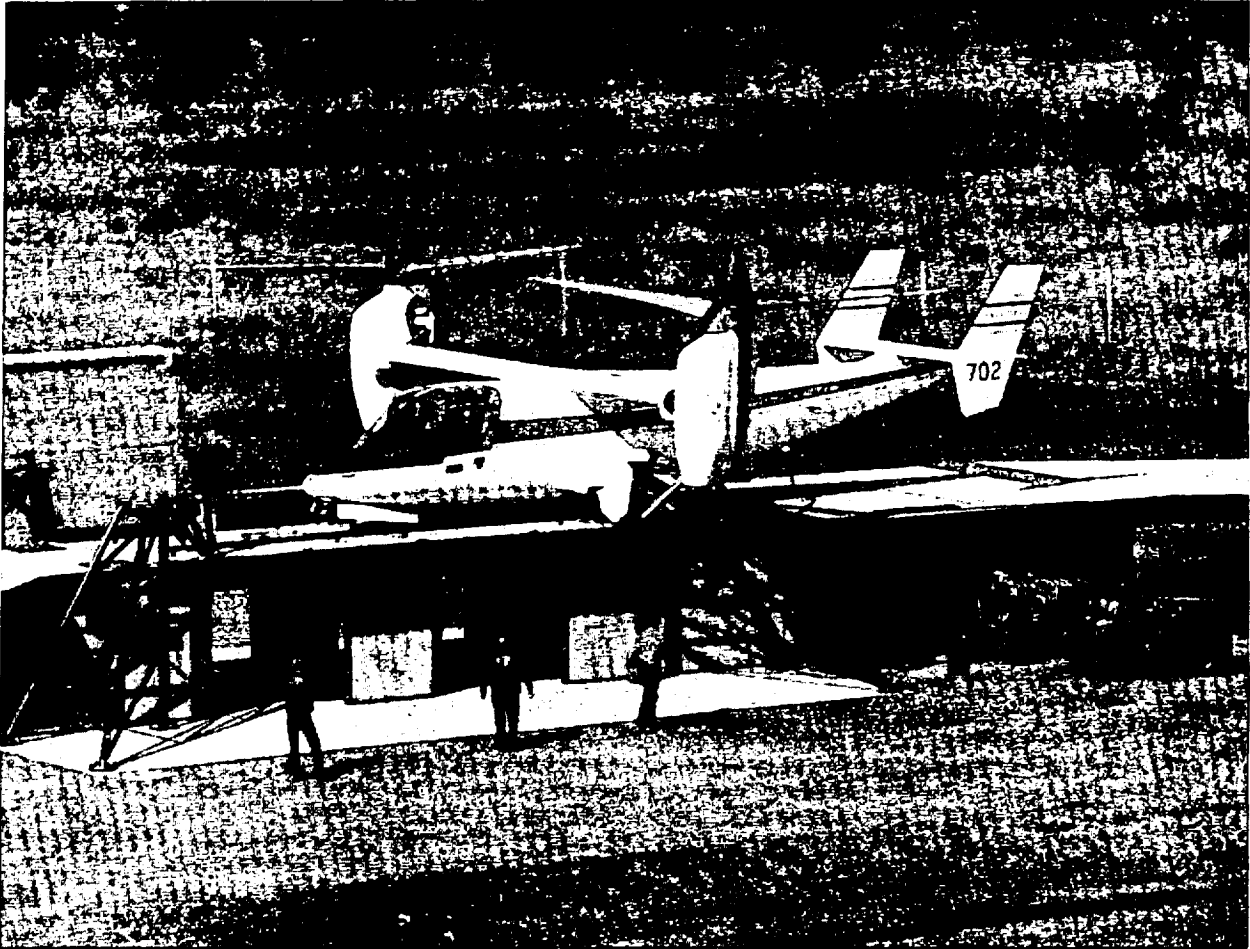


Figure 3.- Aircraft on the ground tie-down stand.

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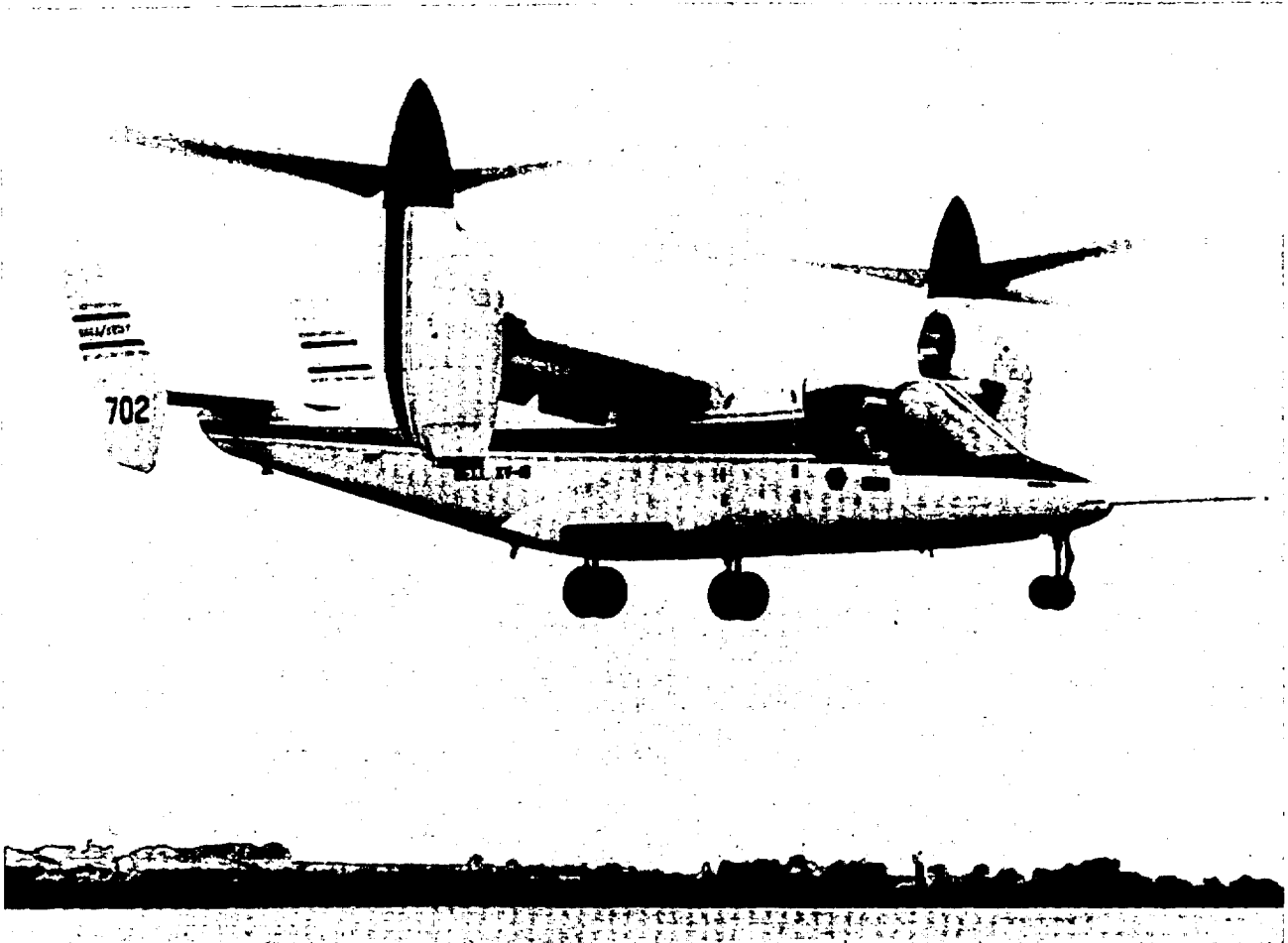
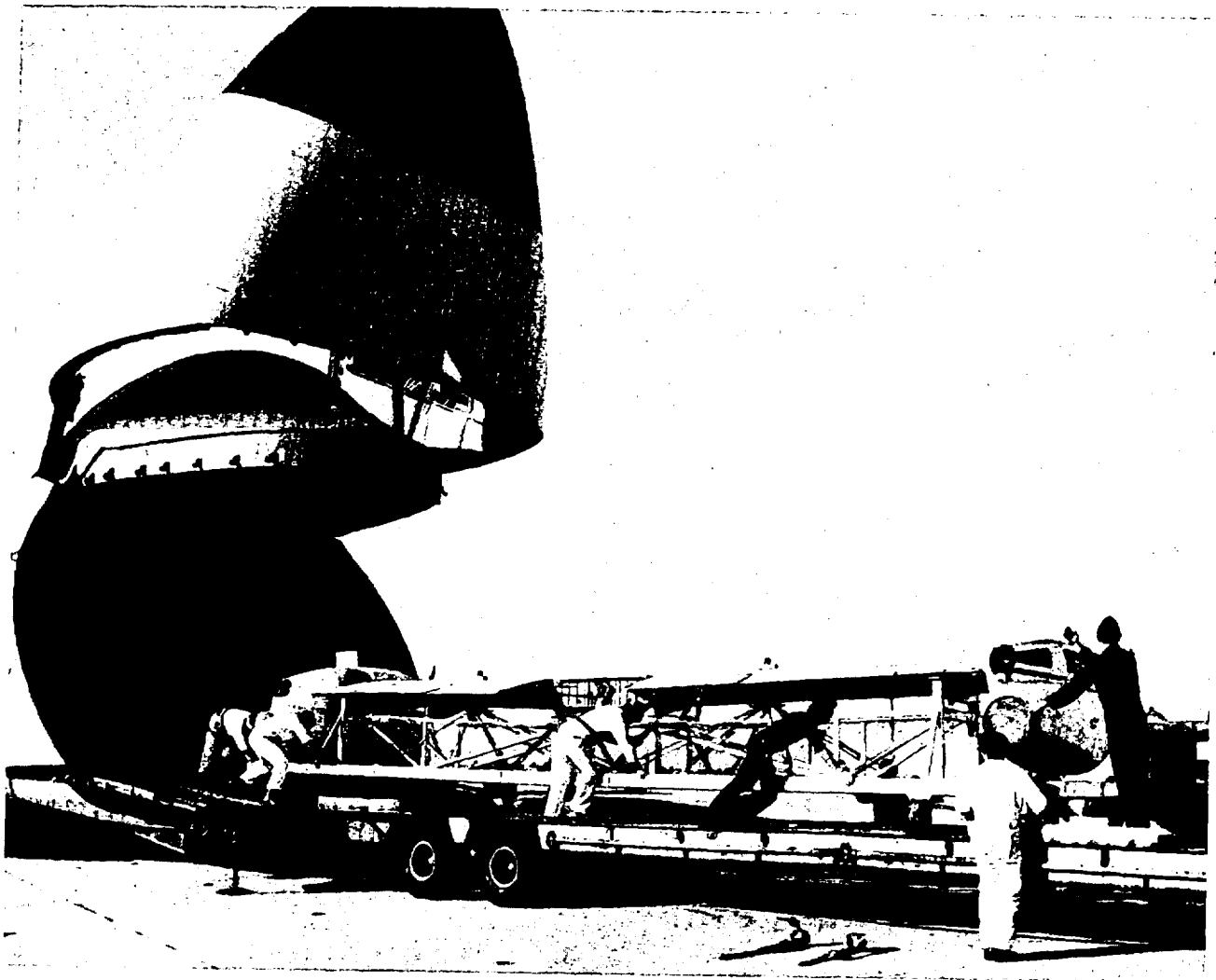


Figure 4.- Aircraft in hover flight.



(a) Wing on shipping cradle.

Figure 5.- Arrival of the aircraft at Ames.

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(b) Fuselage.

Figure 5.- Concluded.

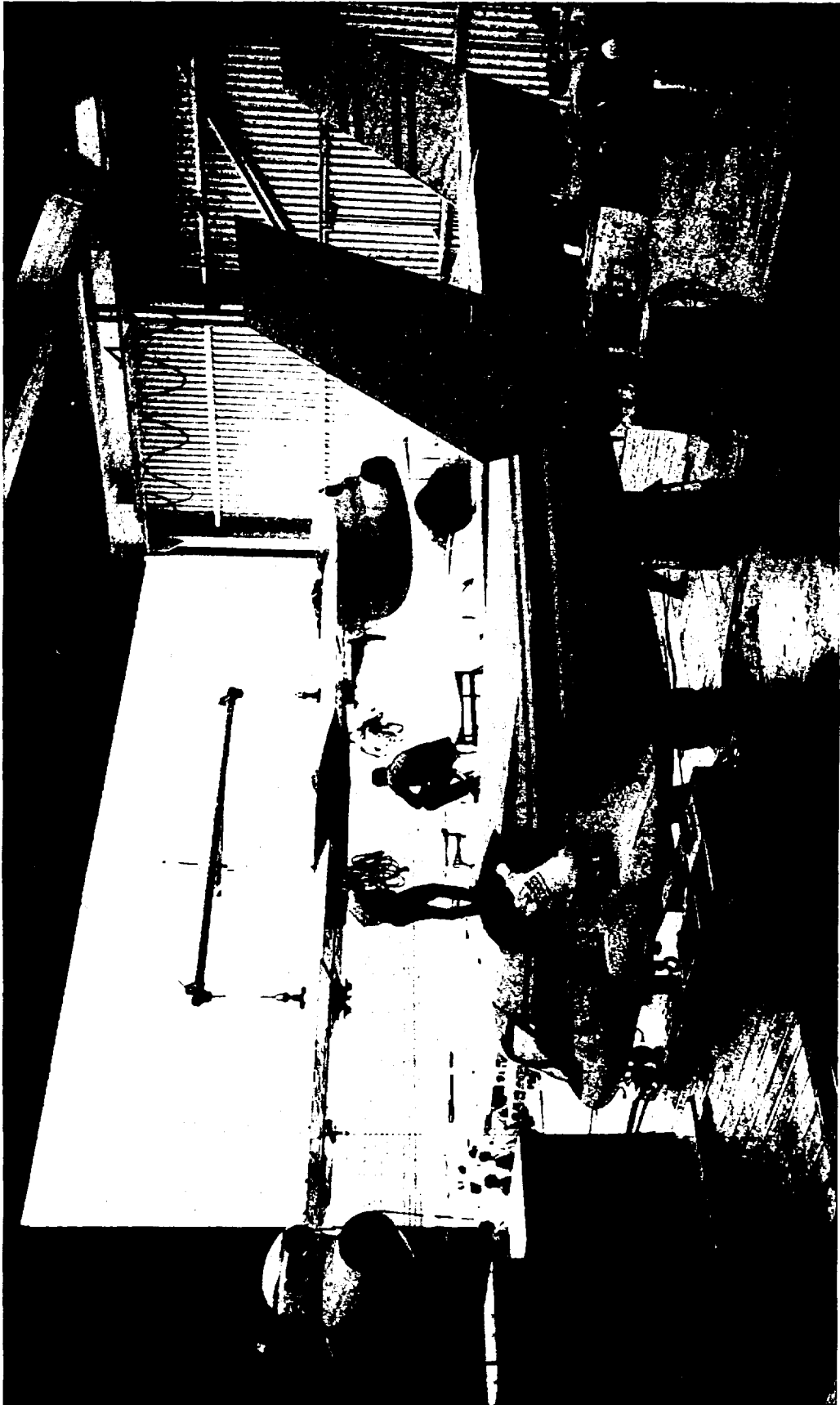


Figure 6.- Assembly of aircraft.

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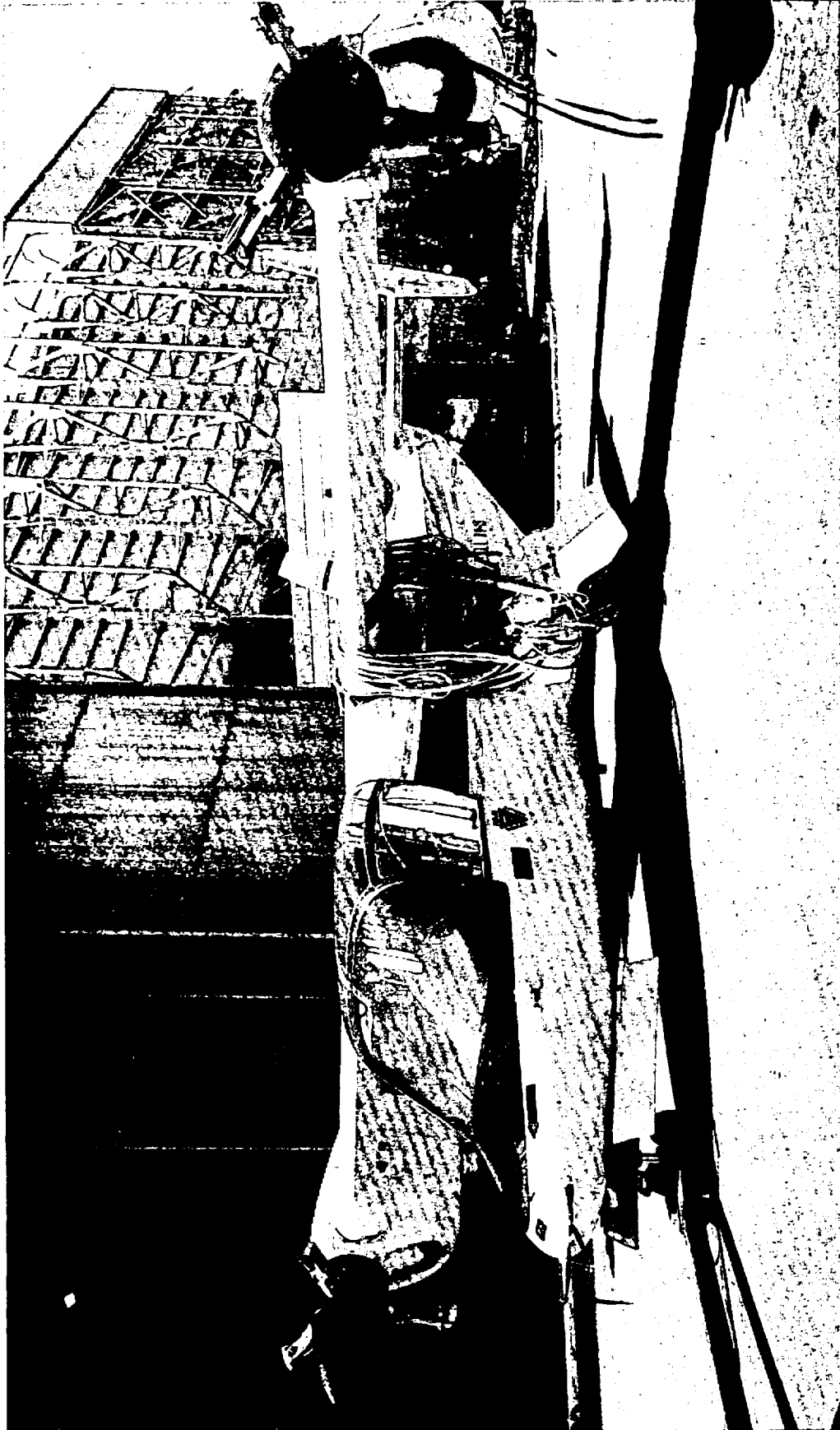


Figure 7.— Moving the aircraft to the tunnel.

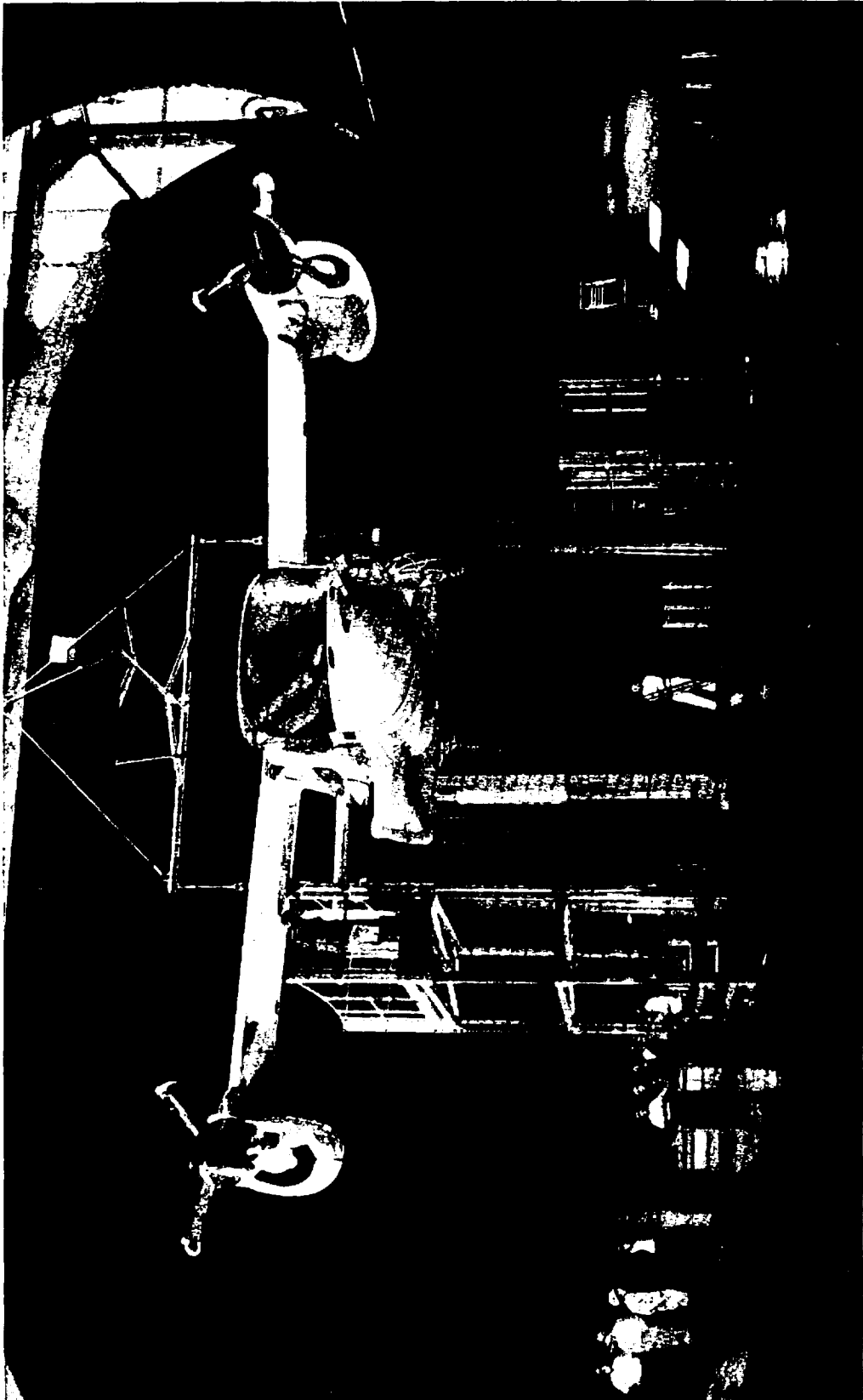


Figure 8.— Installing aircraft on the support struts.

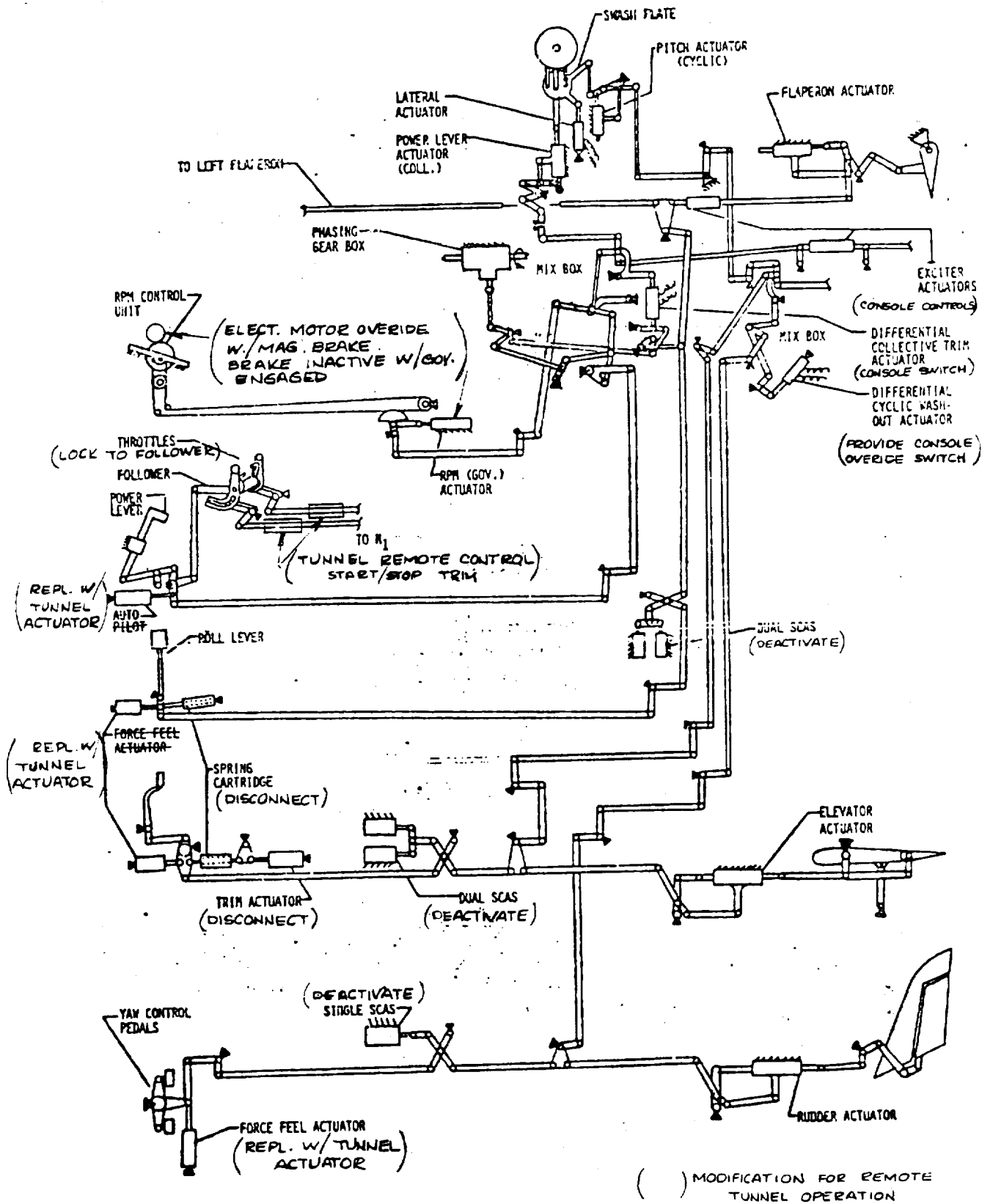


Figure 9.— Control system for remote operation.

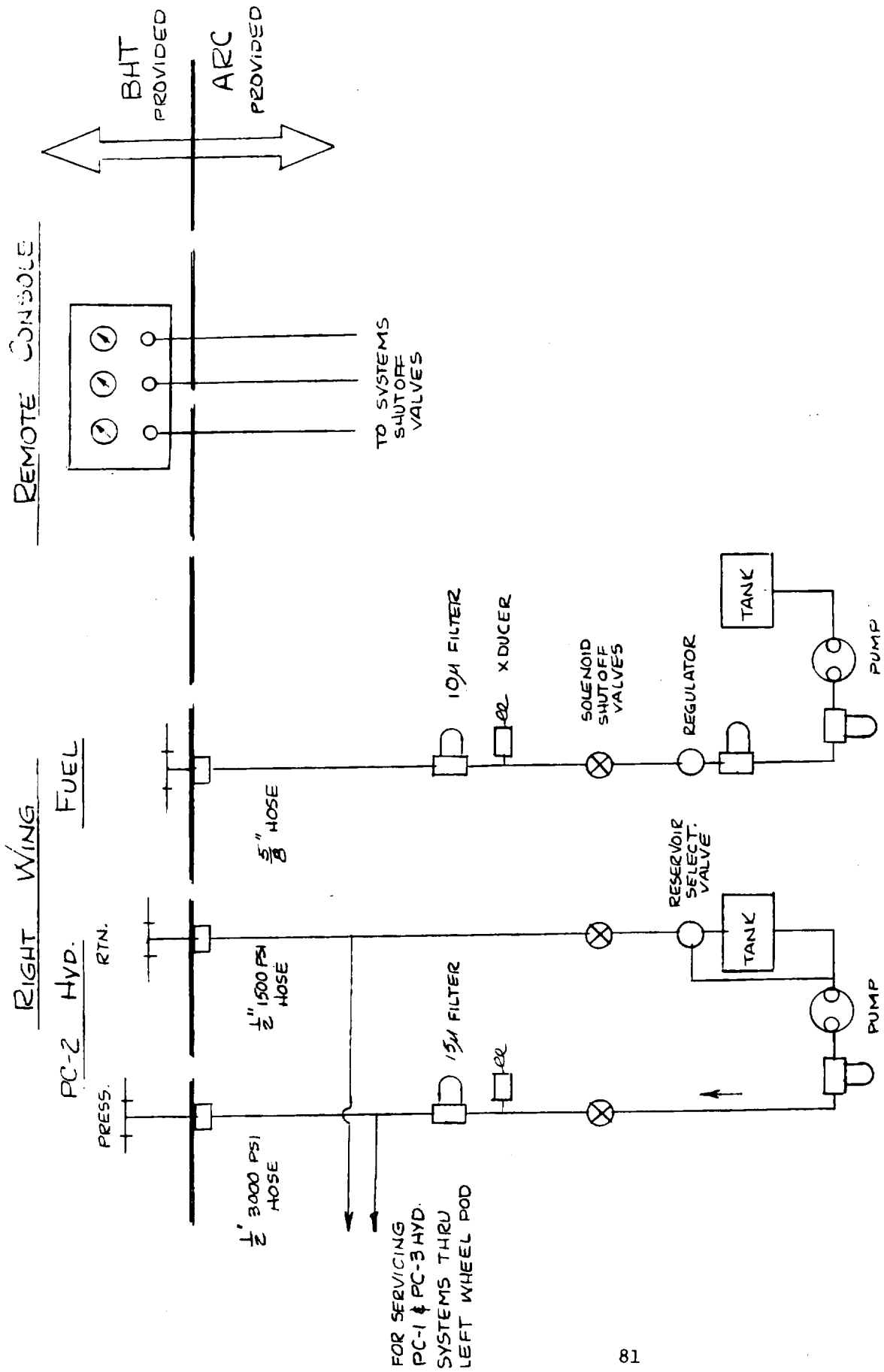


Figure 10.- Aircraft/wind-tunnel interface, hydraulic & fuel systems.

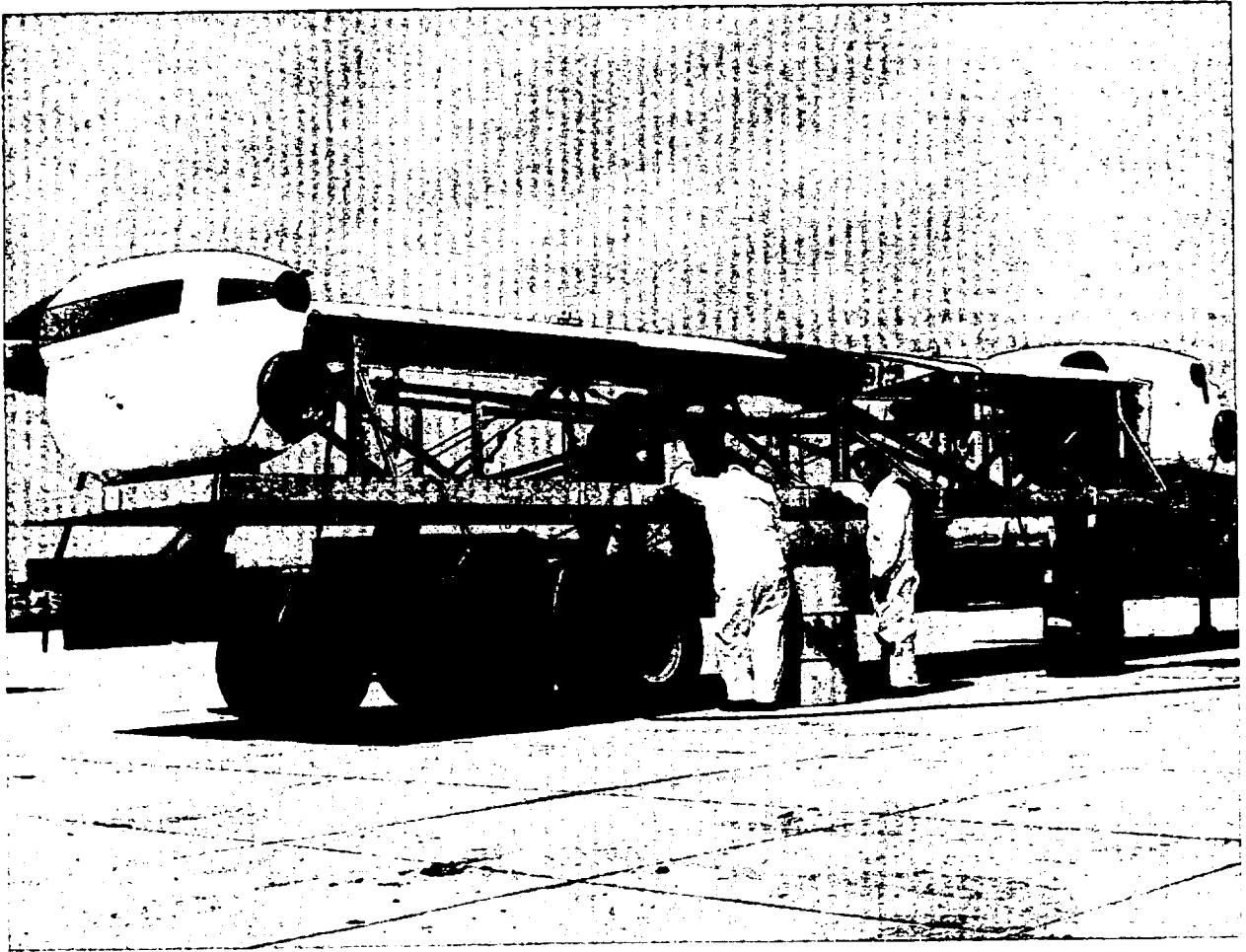
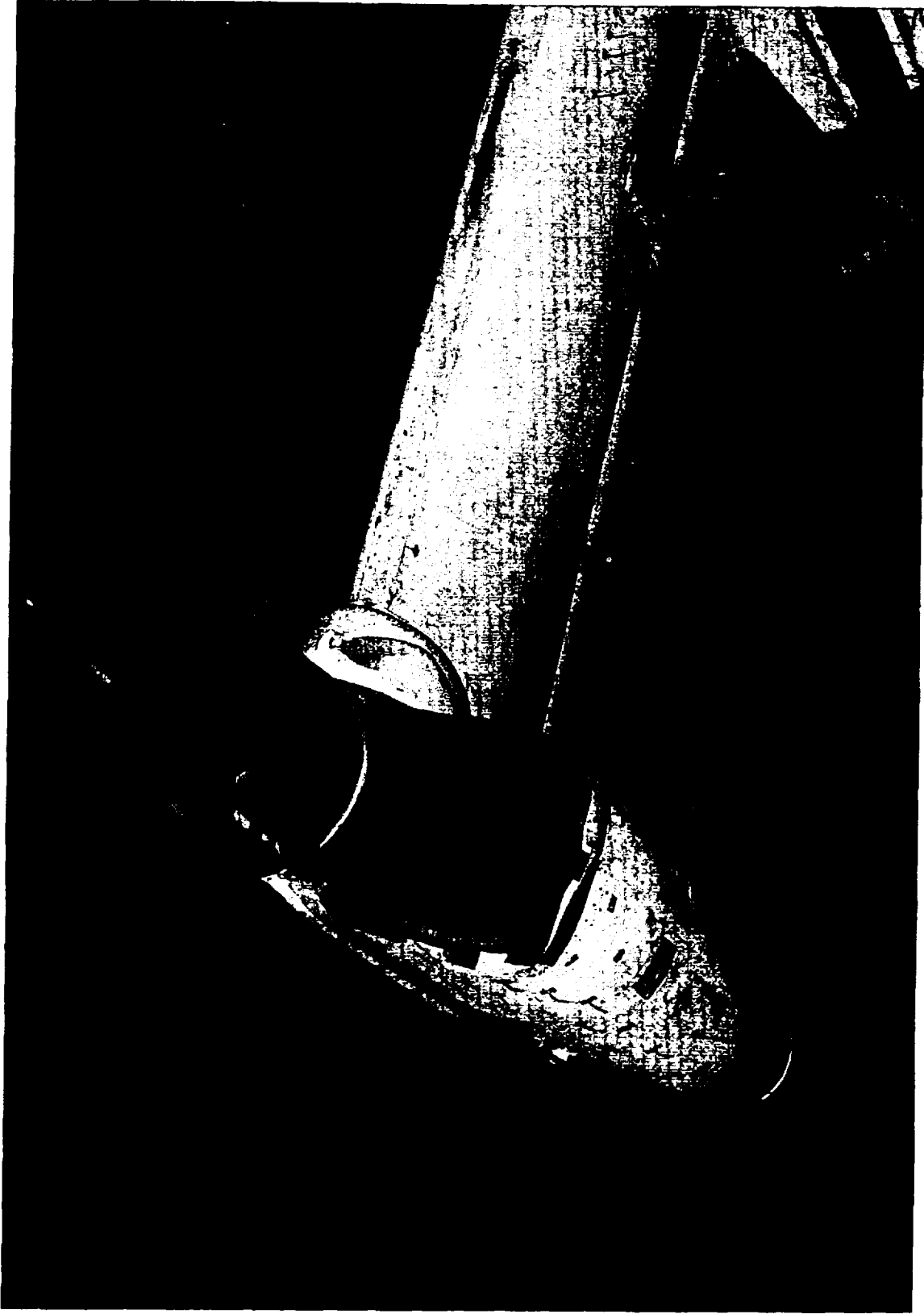


Figure 11.- Purging fuel from tanks.



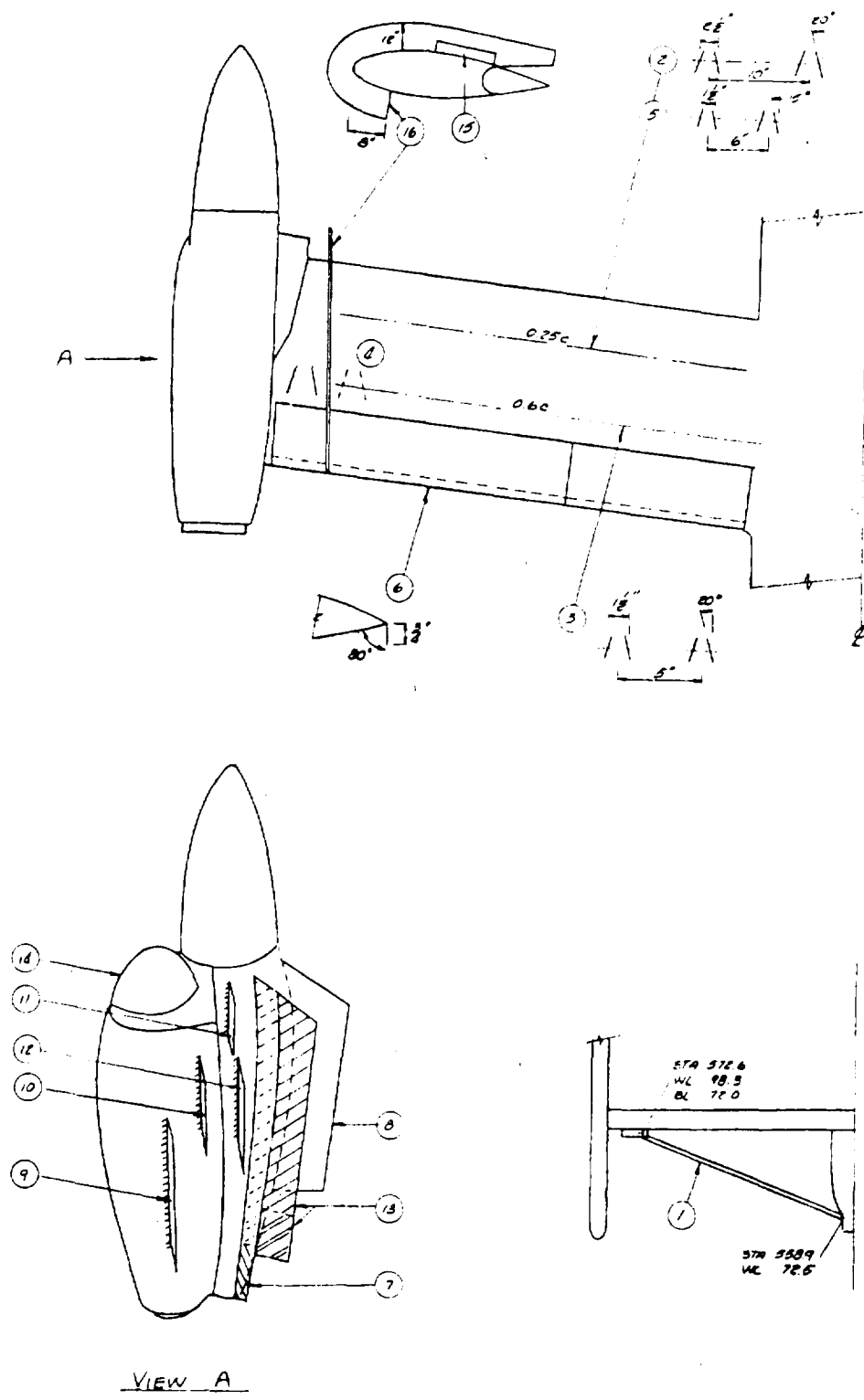
(a) Inlet.

Figure 12.— Engine airflow seals for power-off operation.



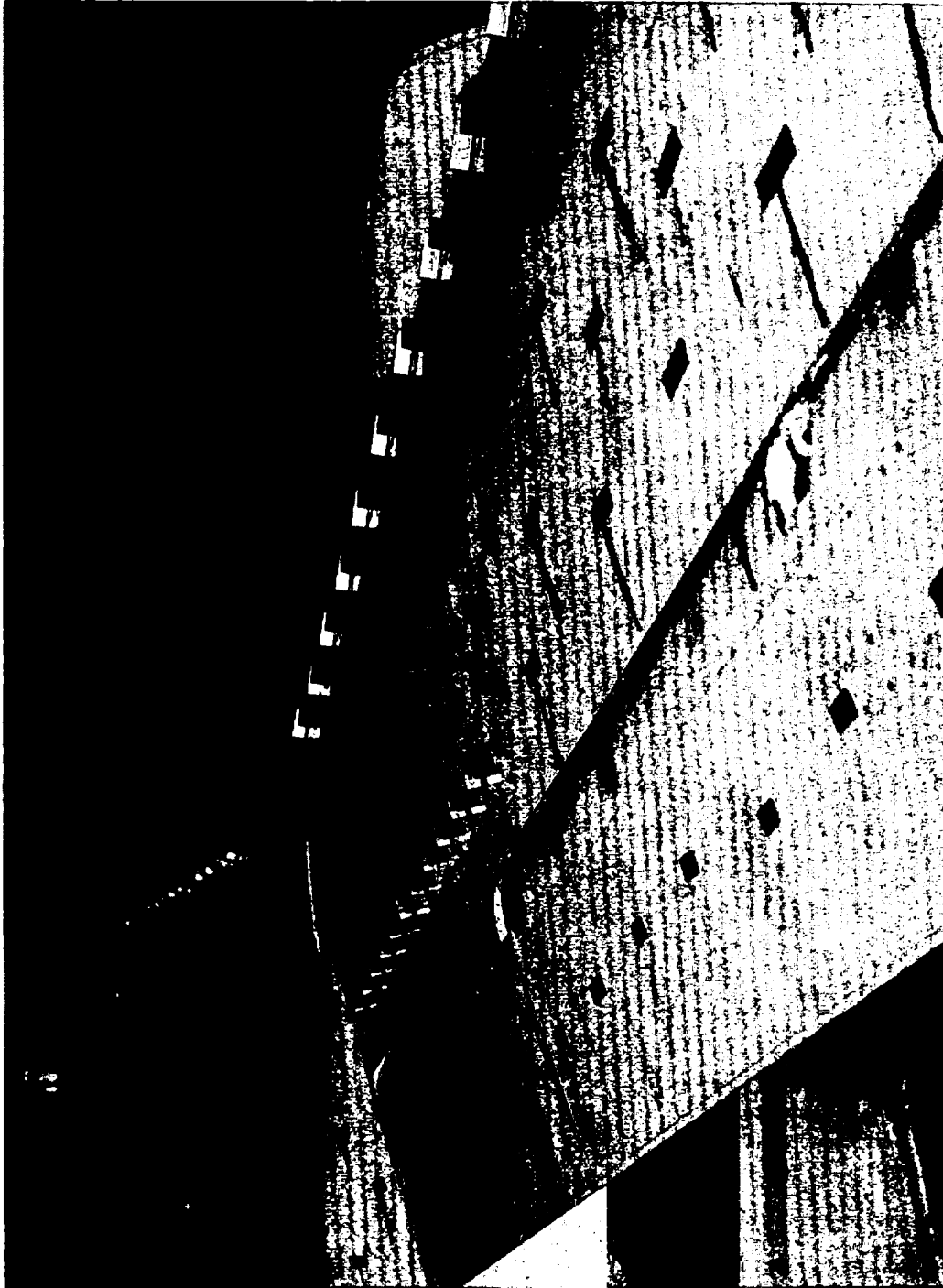
(b) Tail pipe.

Figure 12.- Concluded



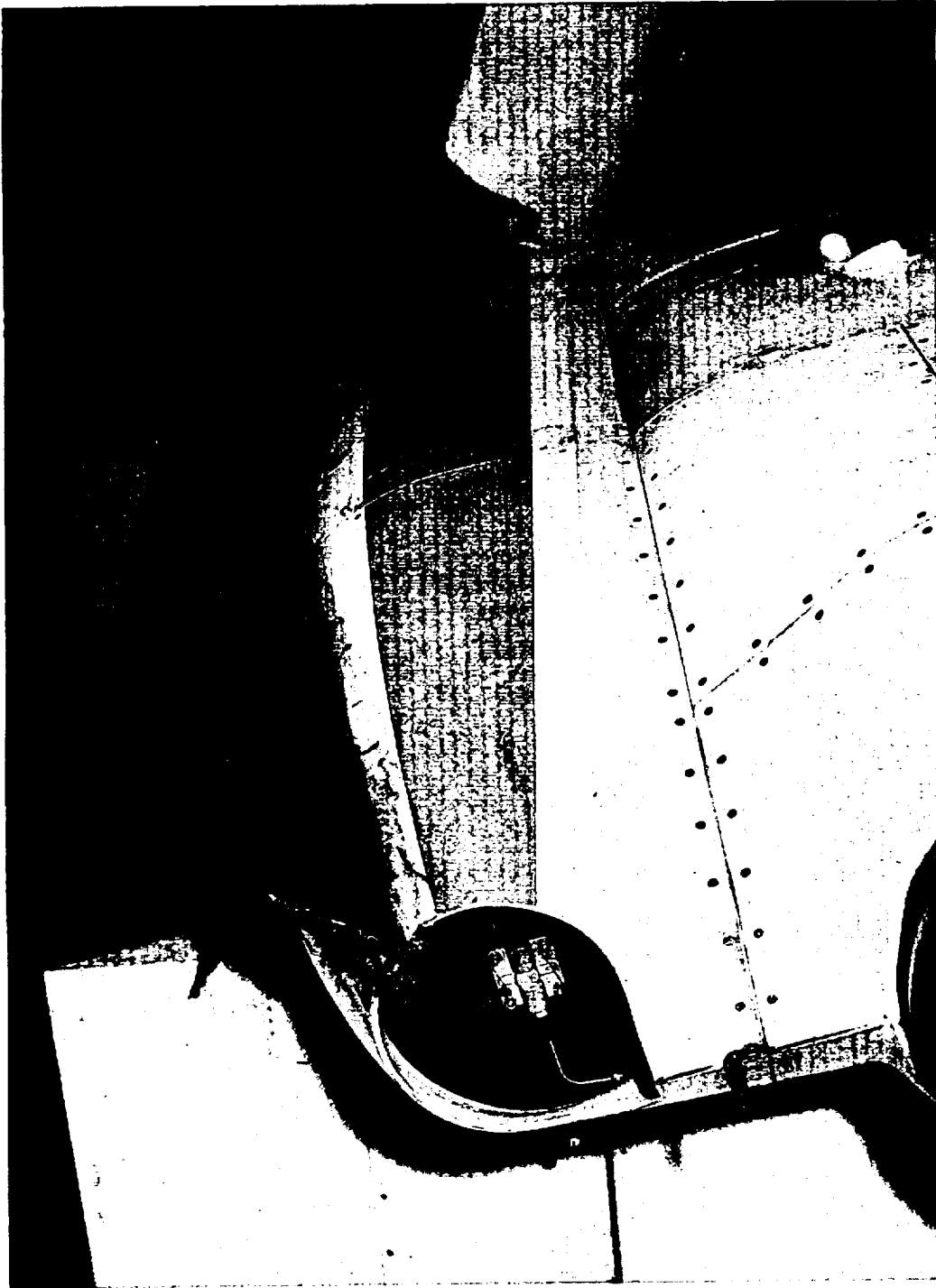
(a) Geometry (ref. Table II).

Figure 13.- Aircraft configuration modifications.



(b) Vortex generators.

Figure 13.~ Continued



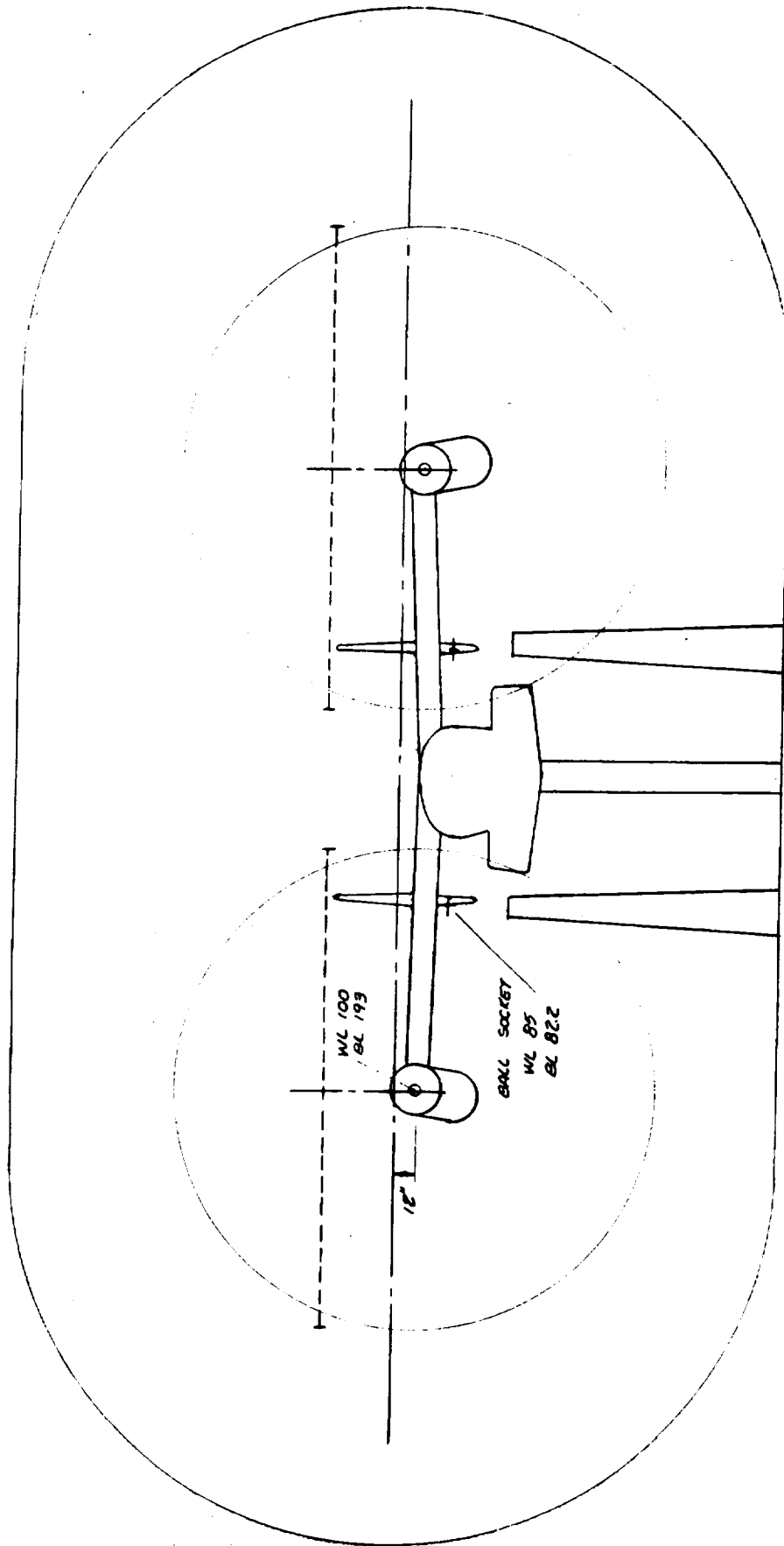
(c) Fence 7.

Figure 13.— Continued.



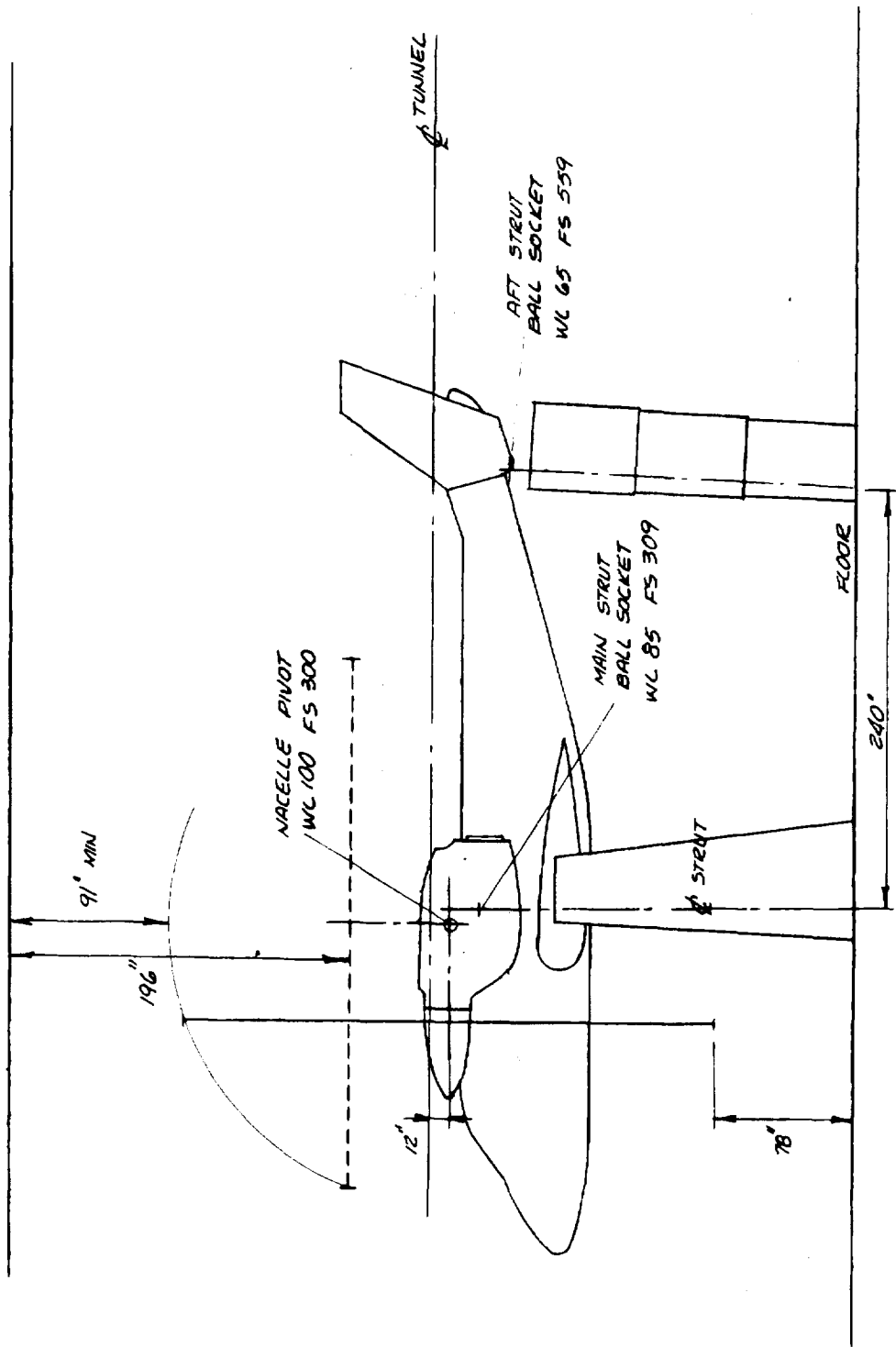
(d) Horizontal tail struts.

Figure 13.- Concluded.



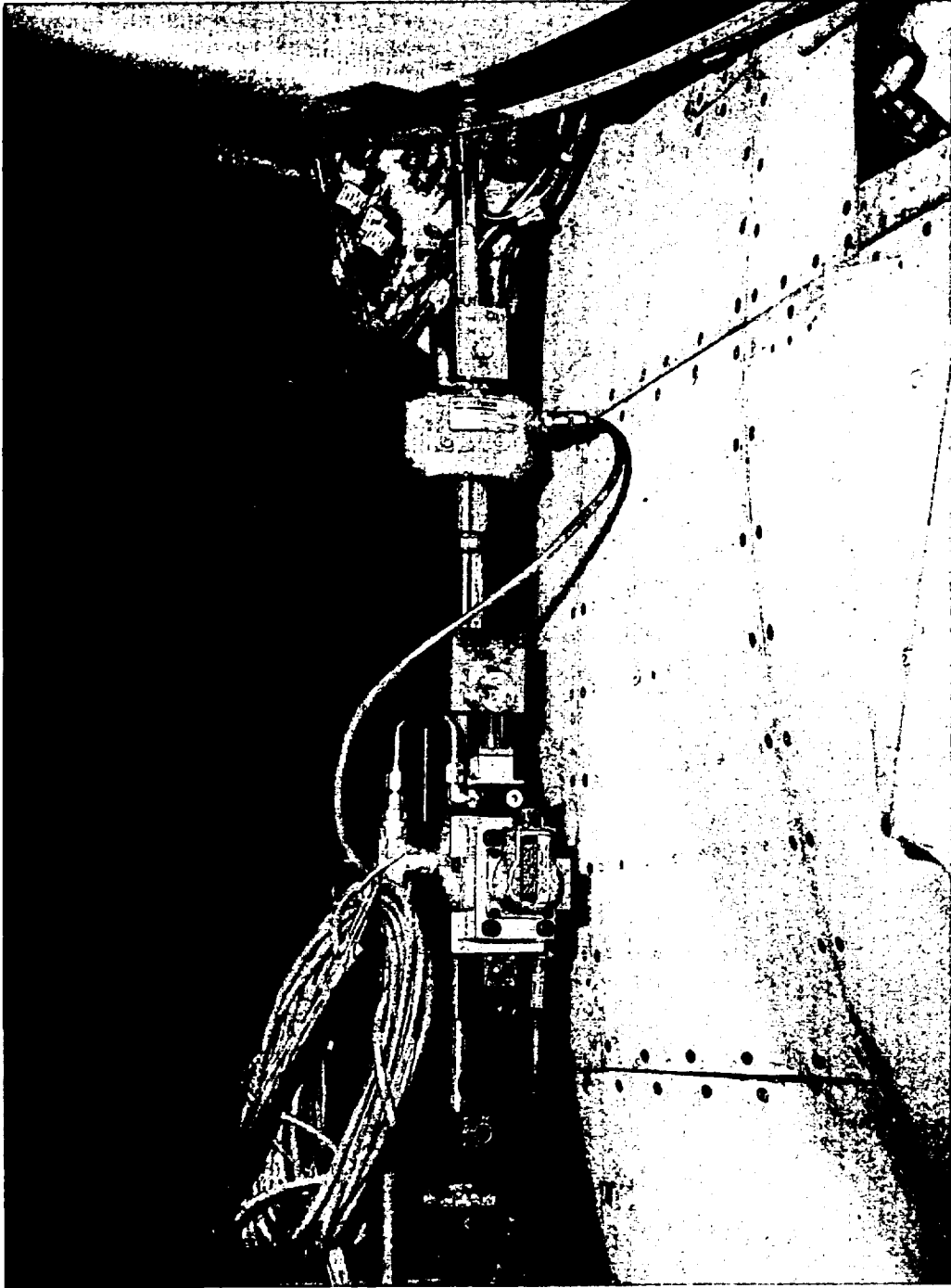
(a) Front view.

Figure 14.— The XV-15 in the 40- by 80-foot wind tunnel.



(b) Side view.

Figure 14.- Concluded.

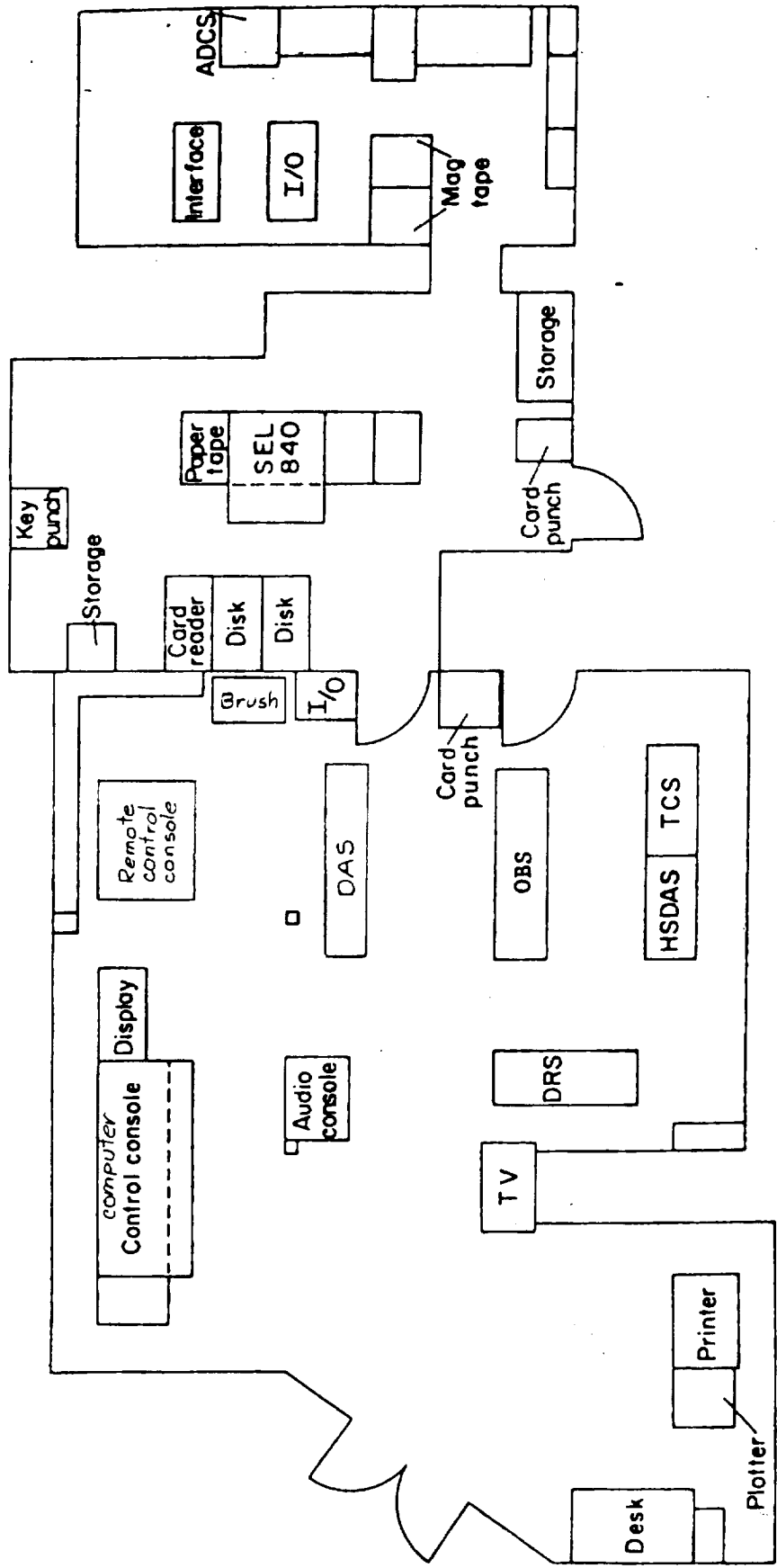


(a) Vertical.

Figure 15.— Shaker installation.



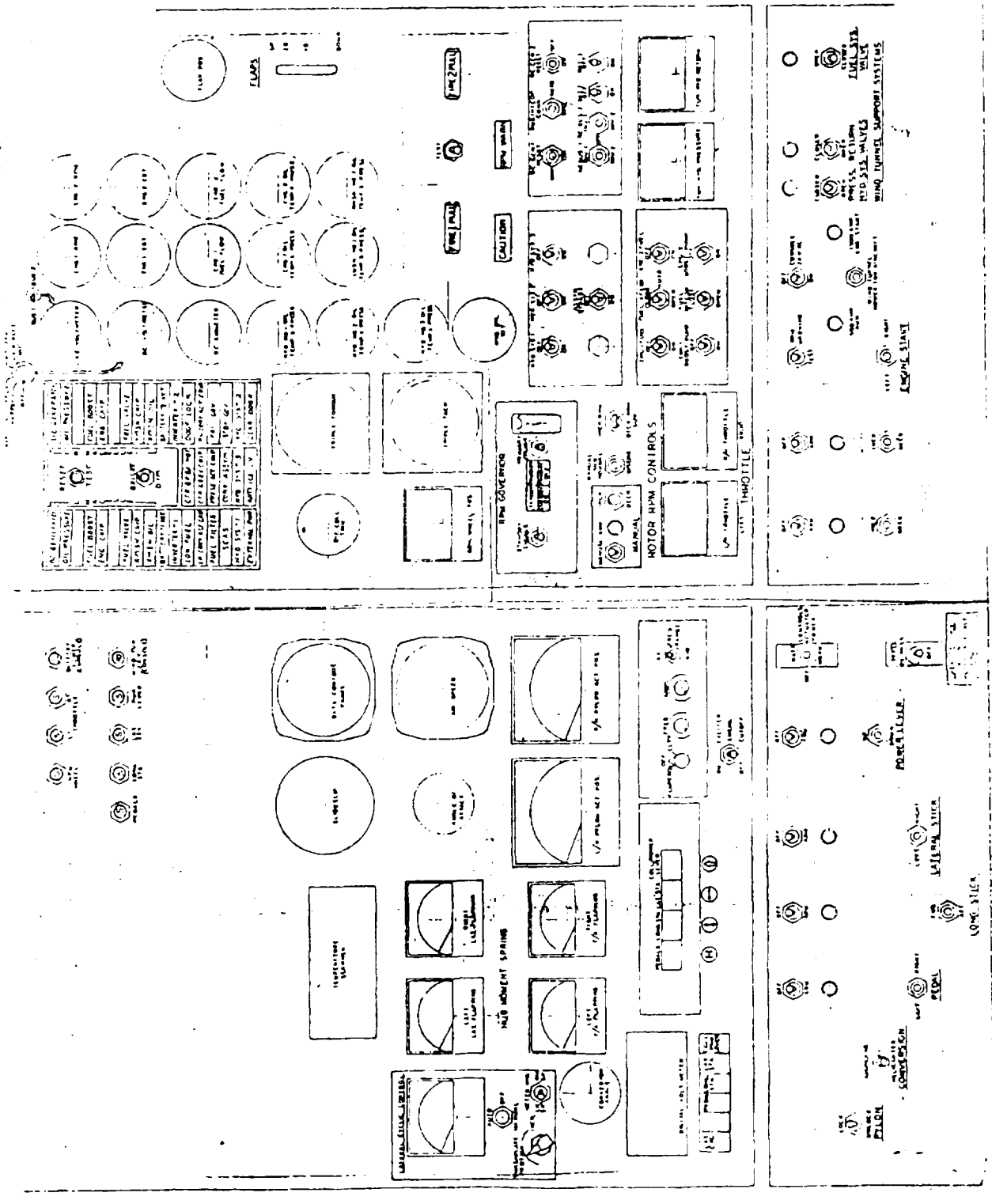
(b) Horizontal.
Figure 15. - Concluded.



(a) Layout of control room.

Figure 16.— Remote operation of aircraft in the tunnel.

2-2



(b) Remote control console.

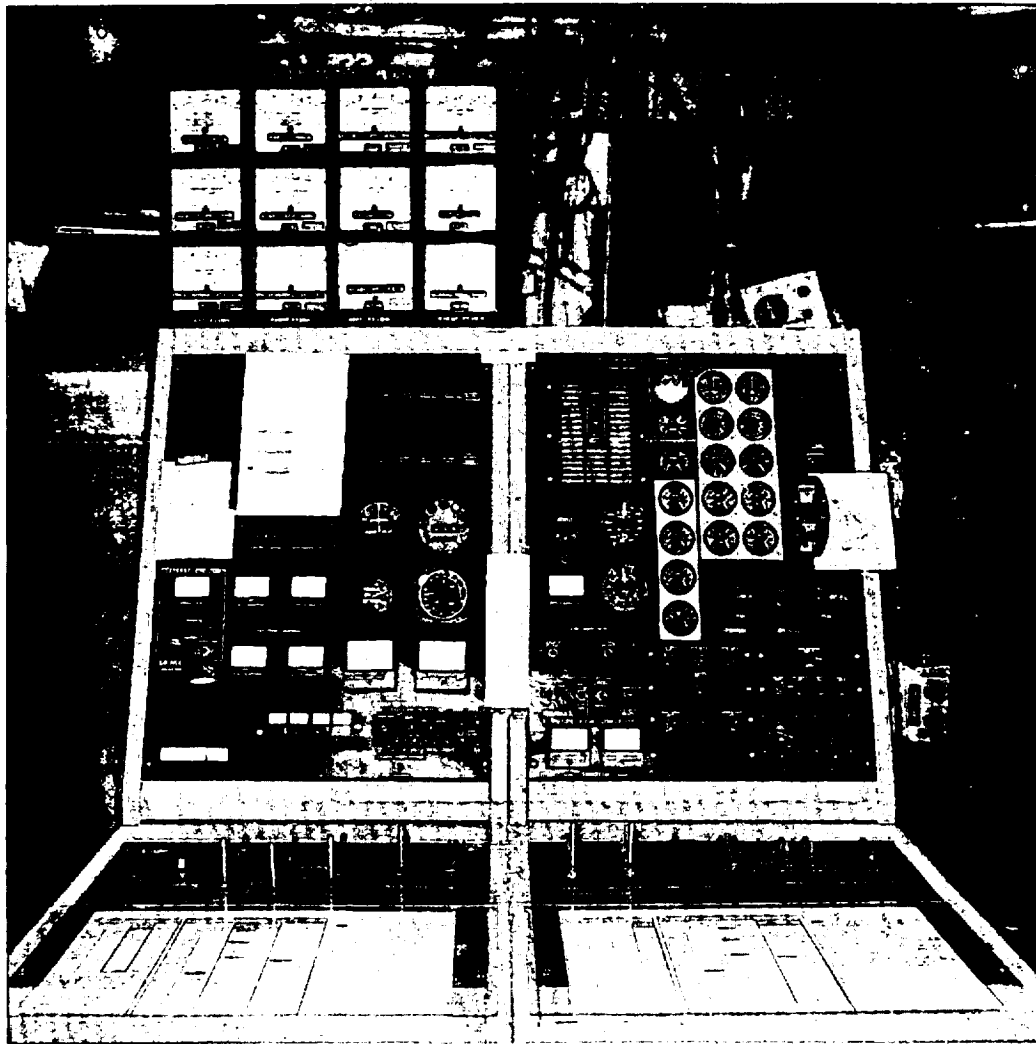
Figure 16.- Continued.

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LH MAST TORQUE M 143	RH MAST TORQUE M 107	LH SPINDLE BENDING B 190	RH SPINDLE BENDING B 165
LH MAST BENDING B 141	RH MAST BENDING B 109	LH RED BLADE PITCH LINK F 060	RH RED BLADE PITCH LINK F 103
LH YOKE CHORD B 115	RH YOKE CHORD B 113	LH RED BLADE BEAM STA. 53 B 132	RH RED BLADE BEAM STA. 53 B 122

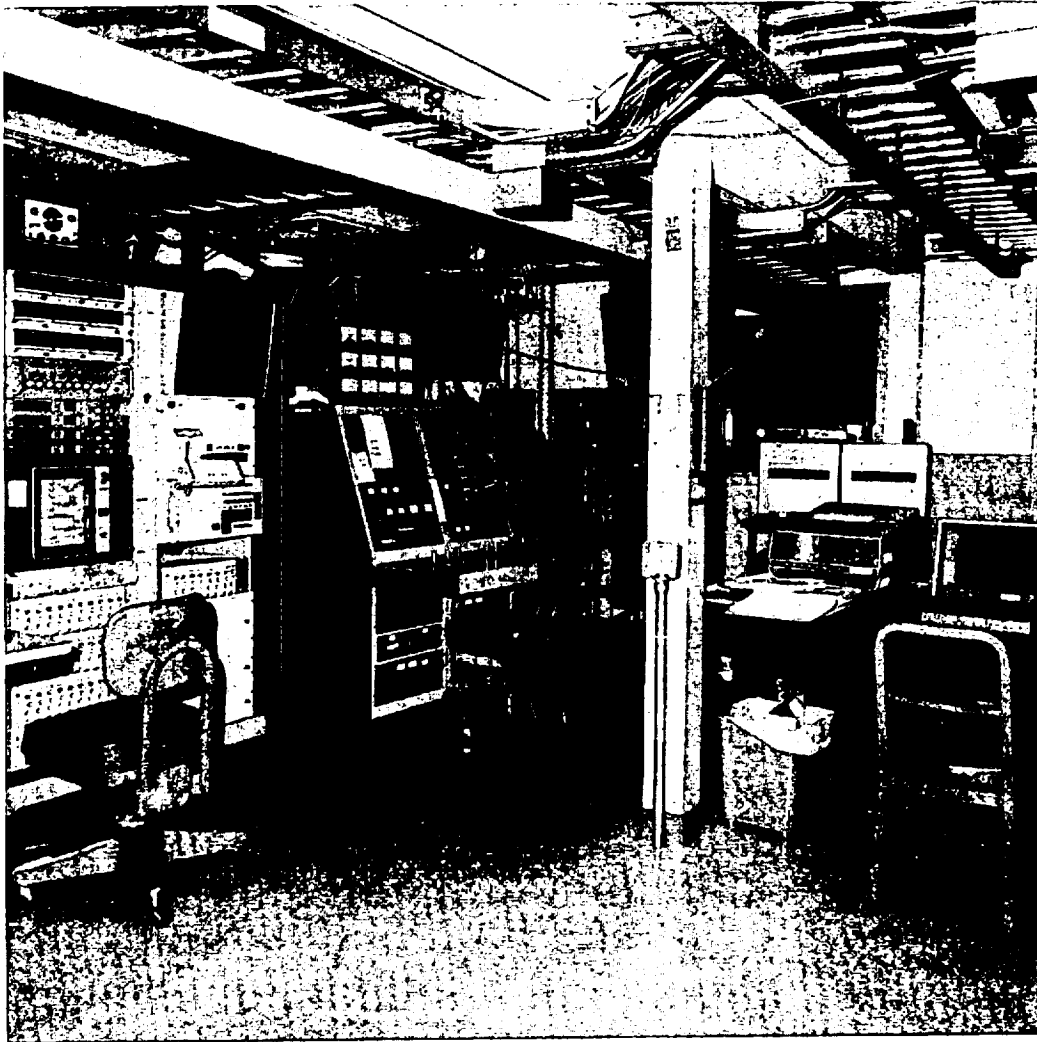
(c) Loads panel on console.

Figure 16.- Continued.



(d) Remote control console.

Figure 16.- Continued.



(e) Control room.

Figure 16.- Continued.

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(f) Control room during test operations.

Figure 16. Concluded.

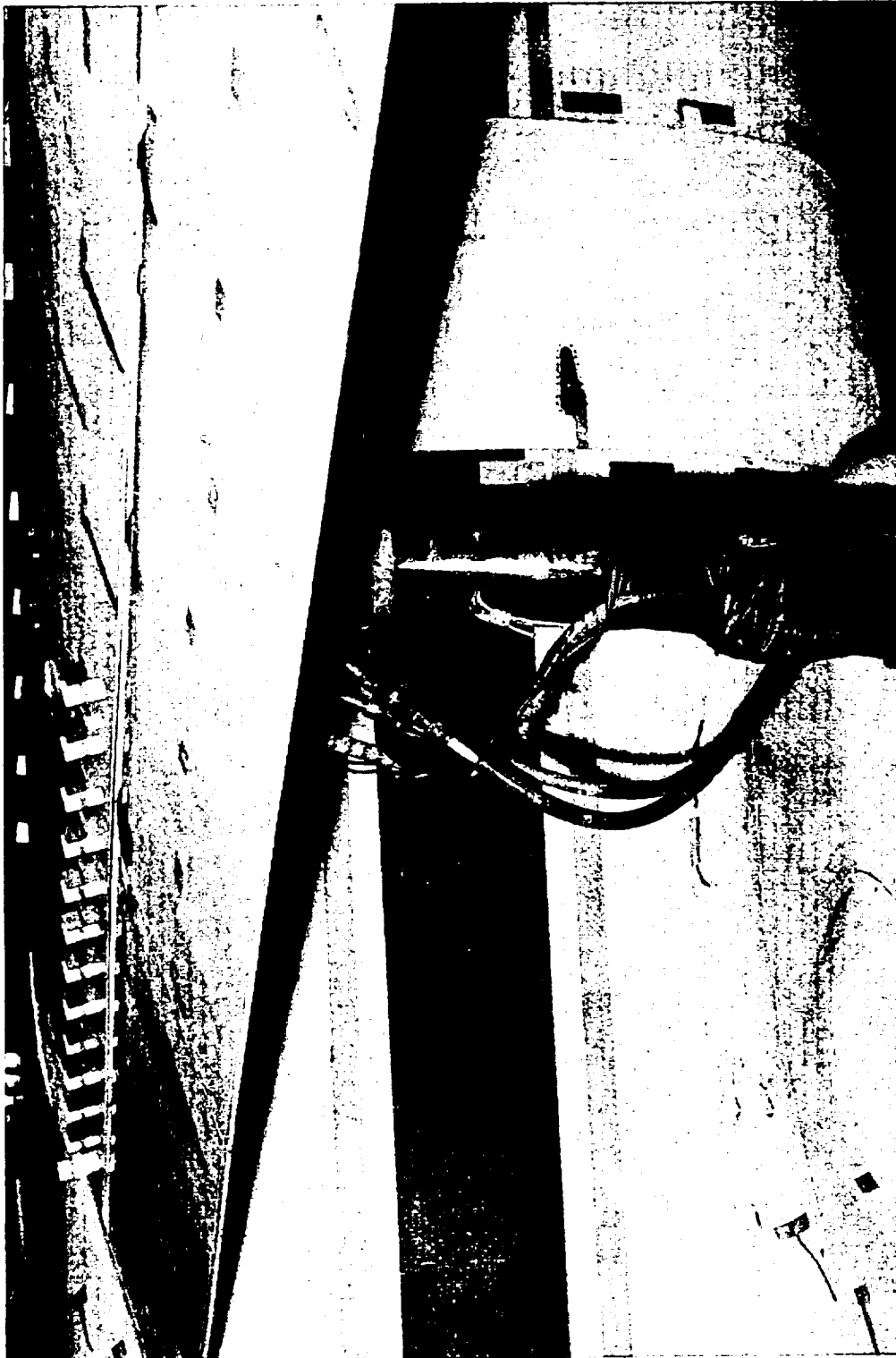


Figure 17.- Right-hand support strut.

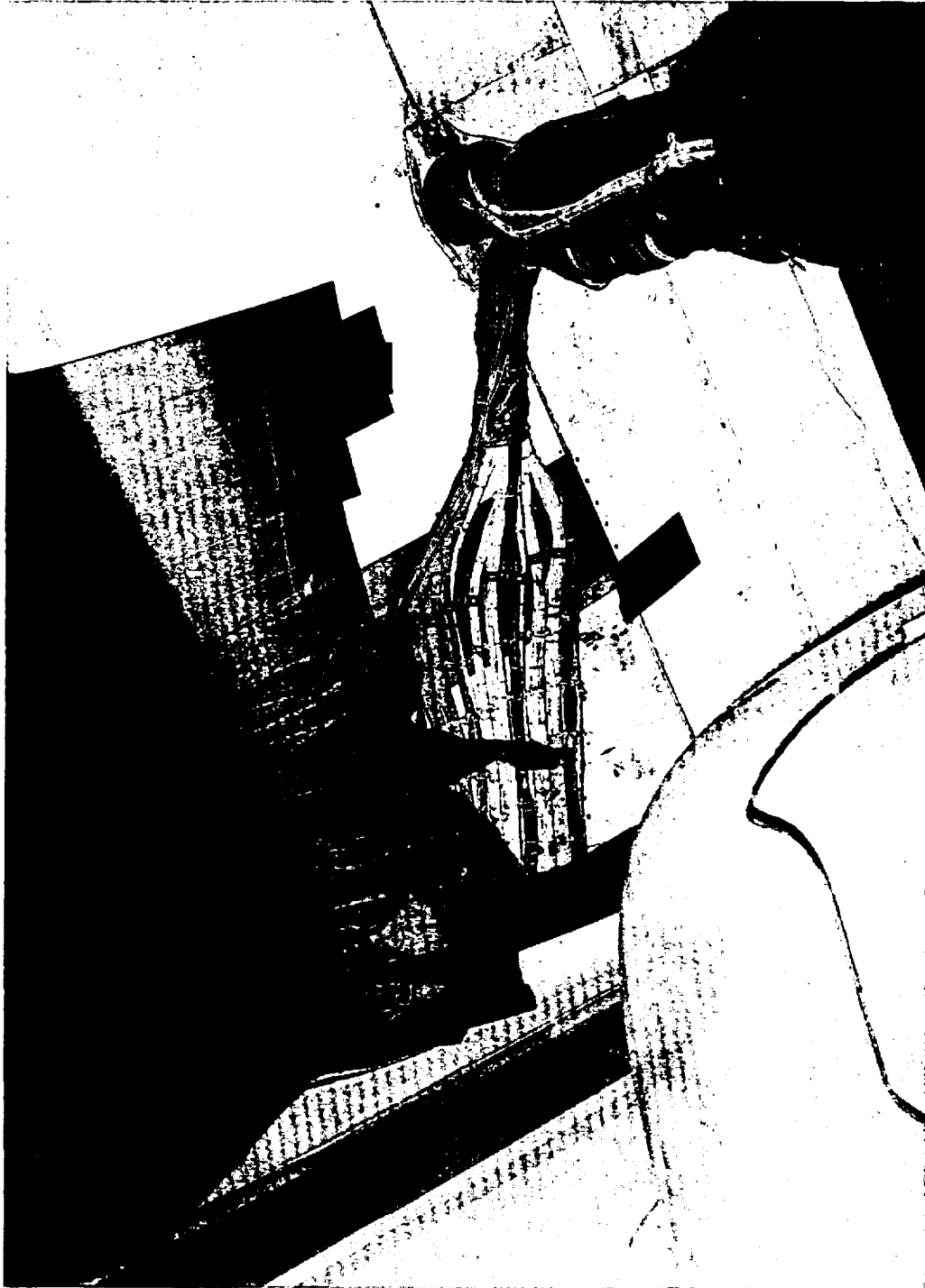


Figure 18.— Left-hand support strut.

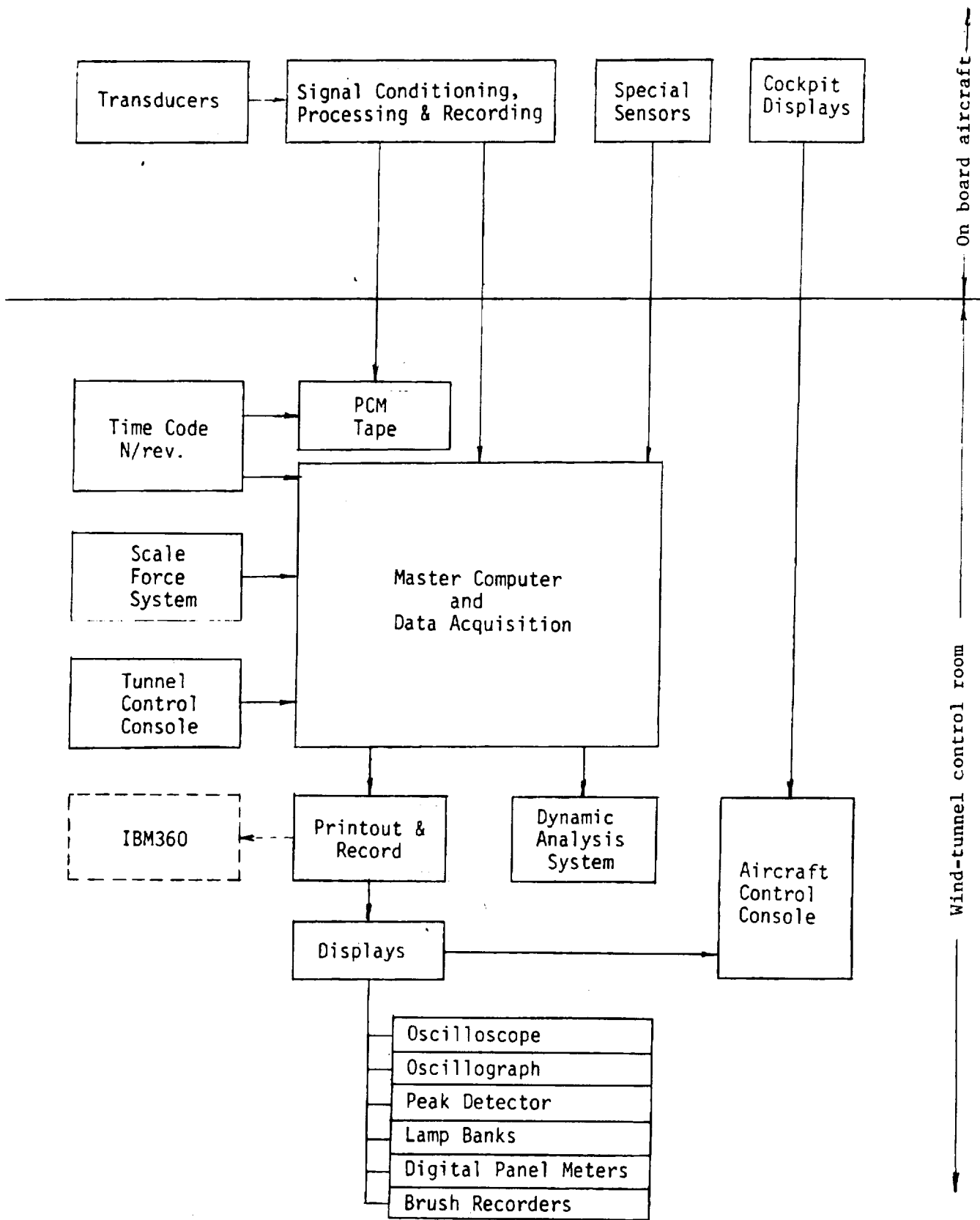


Figure 19.- Data system block diagram.

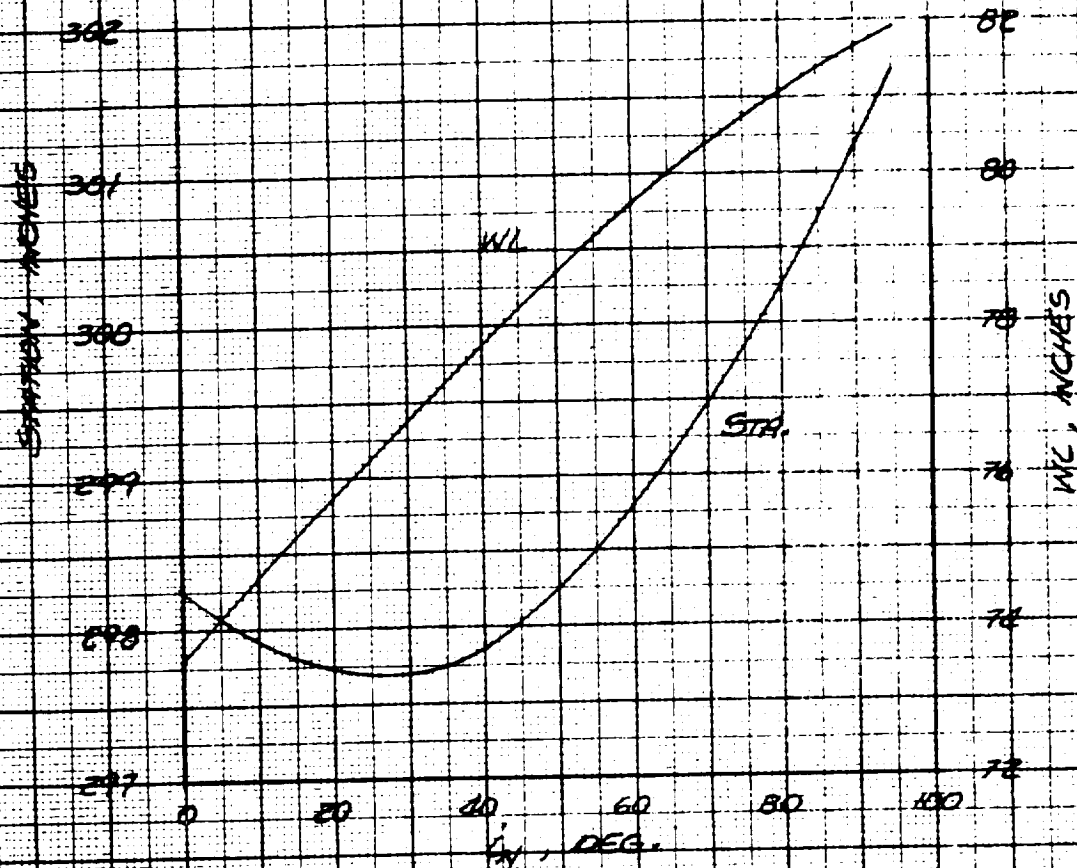


FIGURE 20. - MOMENT CENTER VARIATION WITH WACELLE TILT.

RUN 20 SEQ 19 06-JUN 09:46:20

ALPH	-8.00	MTL	6.209E+04
PSI	0.000	MTR	6.258E+04
I N	90.0		
VKTS	79.7	HPL	556.
RPM	564.	HPR	560.
VOR	0.182	N/6	-4.696E+03
TEMP	88.0	R/6	304
		Y/6	-43.7
COLL	23.1		
LAT	50.6	L/6	1.408E+04
LONG	69.6	D/Q	6.49
PED	40.6	M/6	-4.028E+03
	XV-15	TEST	525

Figure 21. Data display on CRT in control room.

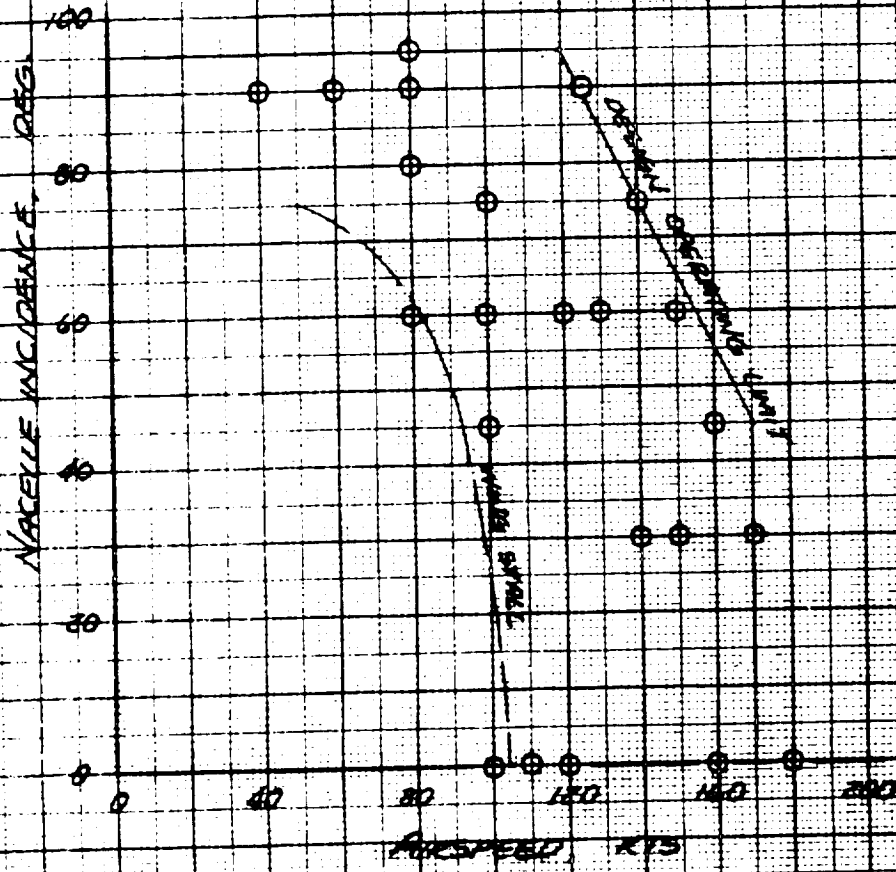


FIGURE 22 - CONVERSION CORRIDOR TEST RESULTS

Run	Time	Temp	Pressure	Altitude
08	"	04	21	△
001	"	.54	21	△
021	"	0.9	88	△
021	"	1.5	82	△
001	"	0.8	01	△
011	10.9	0	0	△
011	10.9	0	0	△
011	10.9	0	0	△
011	10.9	0	0	△
011	10.9	0	0	△

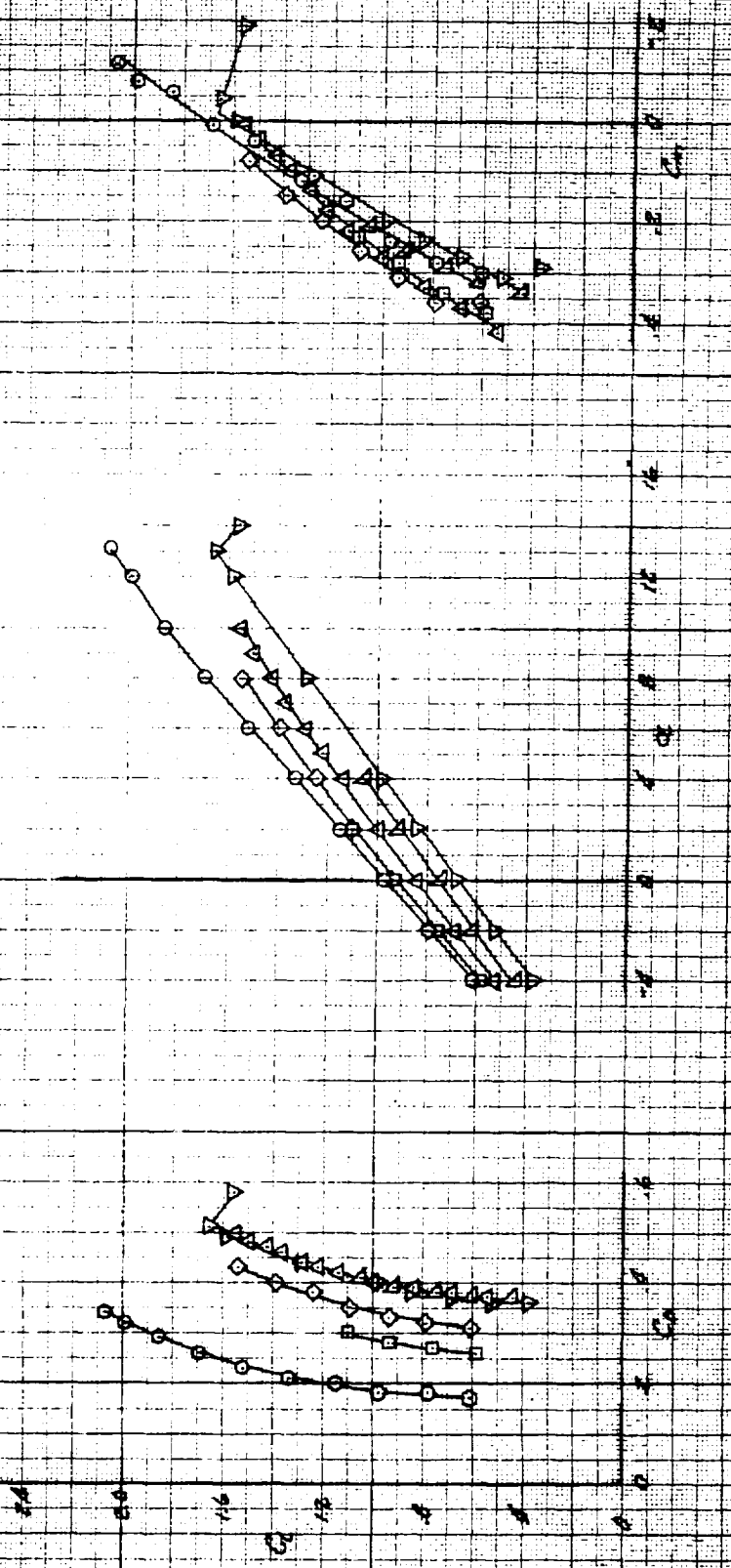
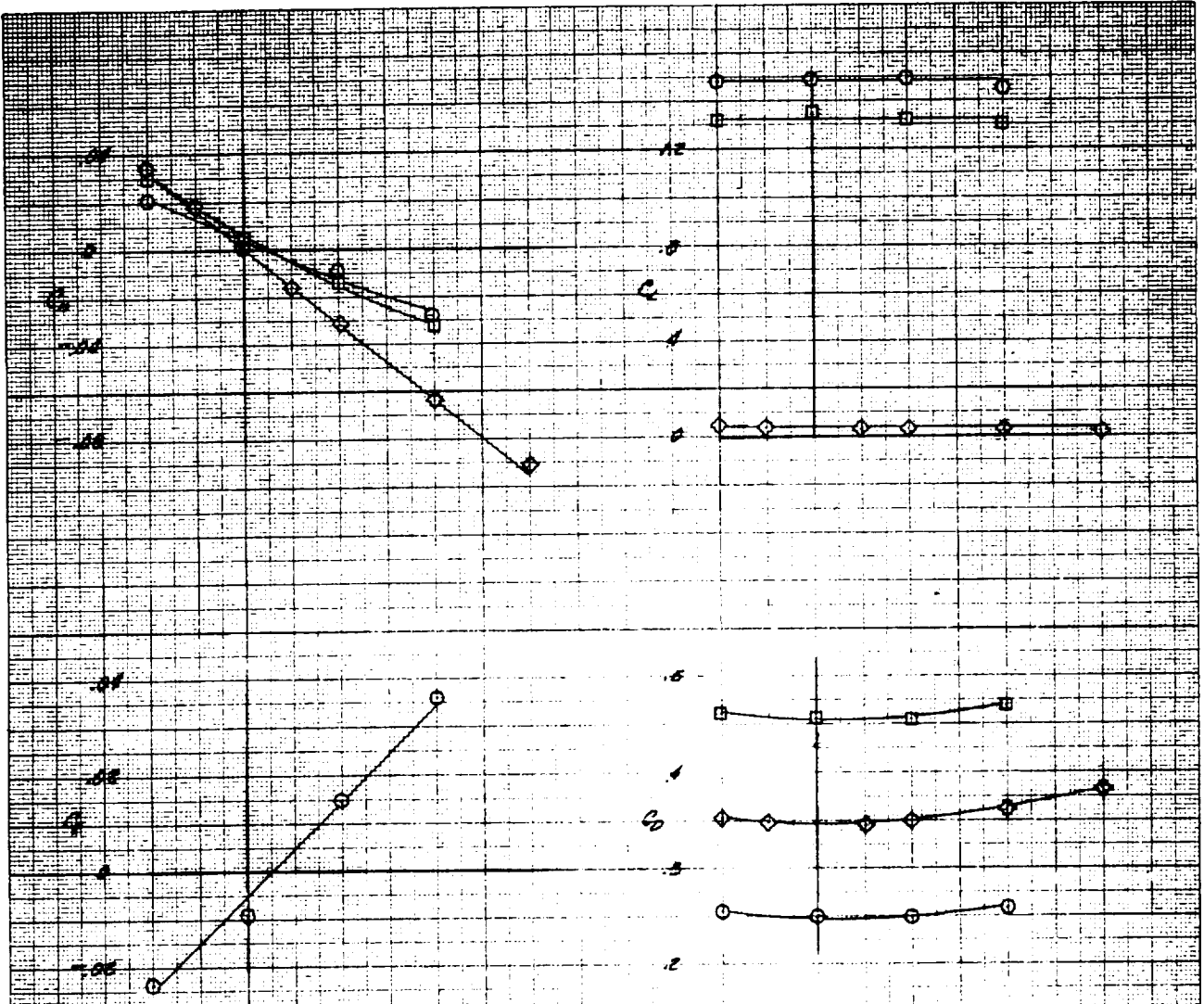
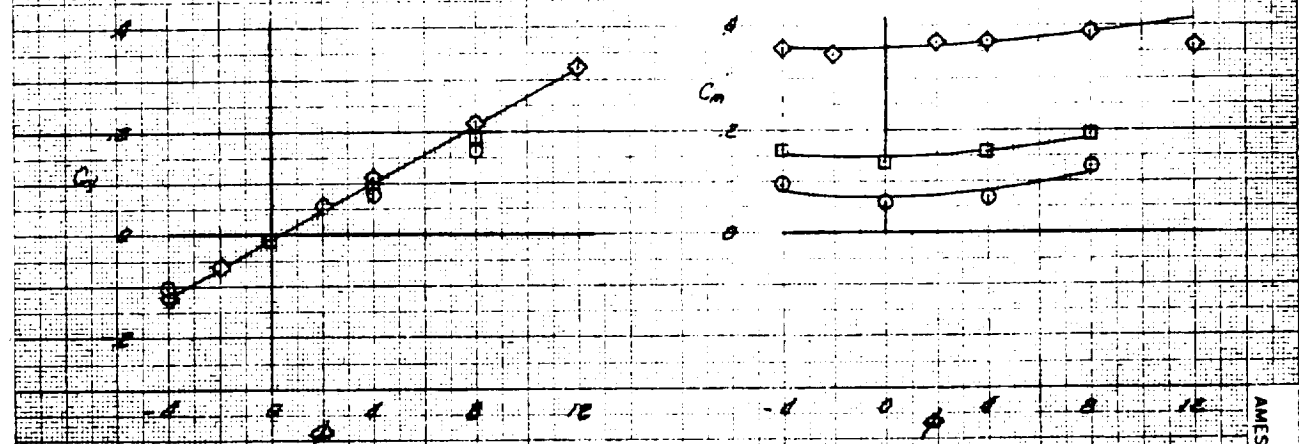


FIGURE 23 - EFFECT OF ANGLE OF INCIDENCE, FREQUENCY AND CONSTRUCTION CHARACTERISTICS



TEST 525

Run	L_1	S_1	α	V_1
○ 22	0	40	6	160
□ 40	60	40	6	120
◇ 8	90	40	-8	80



(14) CHARACTERISTICS IN RAW.
FIGURE 23 - CONCLUDED.

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Run	kw	δ_1	k	vs
6	0	0	120	0.17
7	0	0	80	1.1
16	0	0	120	0.6"

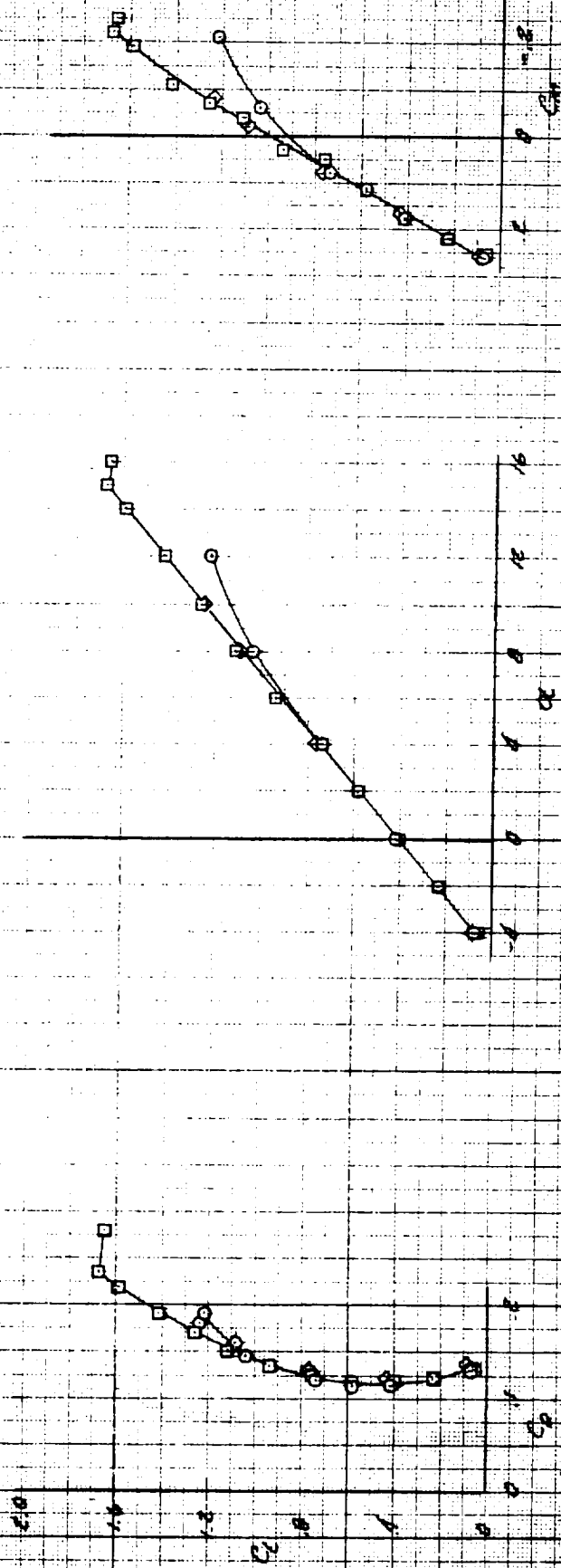
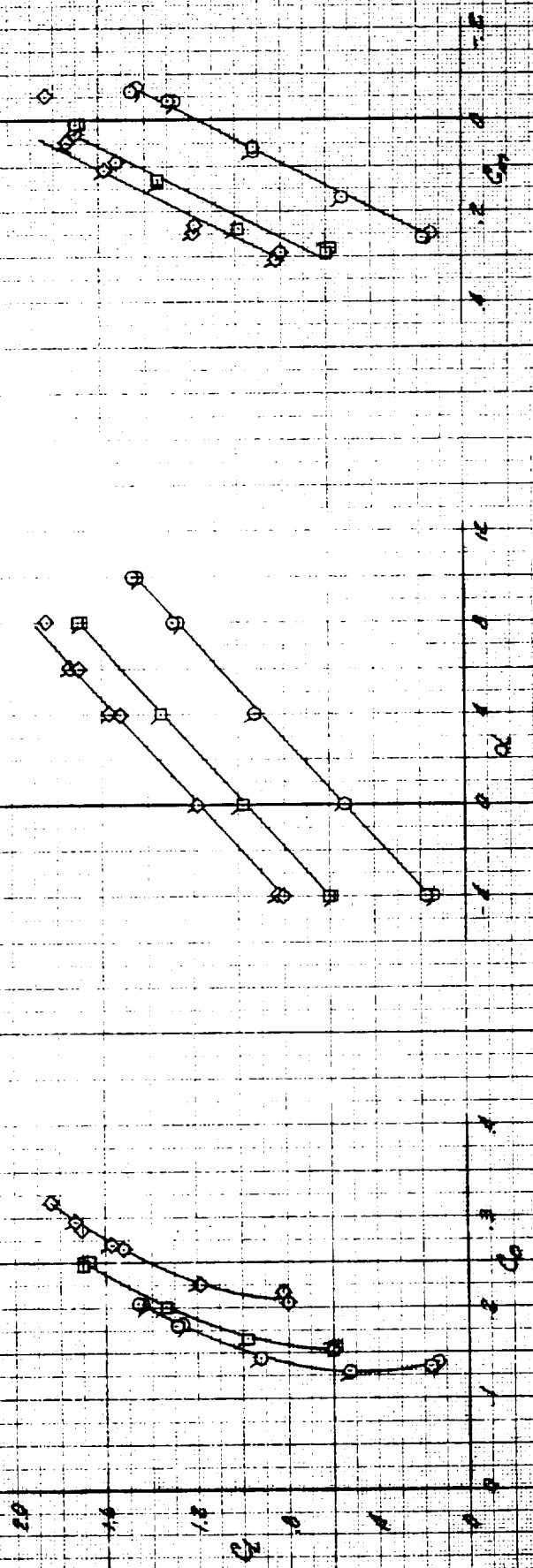


FIGURE 24 - EFFECT OF ROTEX GENERATORS
100 RPM

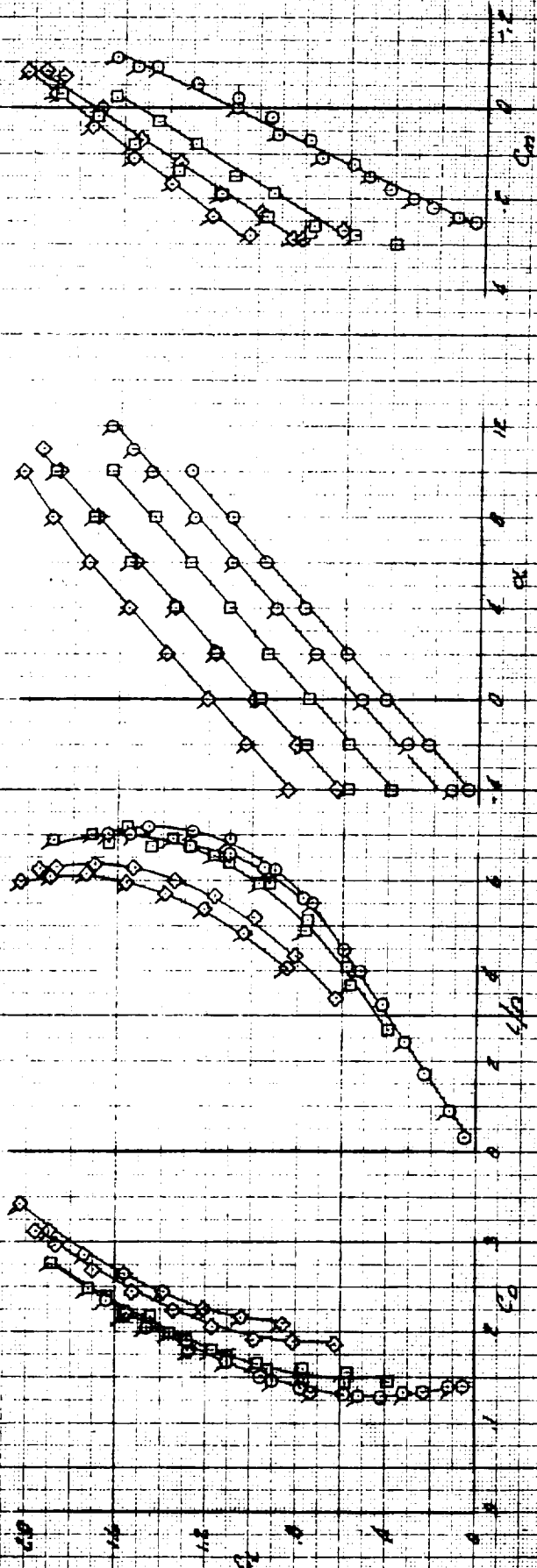
ROW	TEST	VA	VB
69	0	120	.60
63	0	120	.60
64	20	120	.60
65	40	120	.60
67	60	120	.60



141 AT 0-60
FLAME SPEED - CONTINUED

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TEST	PR25	PR25	W/TAB	FLAP
4	1/4	0	0	0
5	0	0	0	0
6	0	20	0	0
7	0	20	0	0
8	0	40	0	0
9	0	0	0	0
10	0	0	0	0

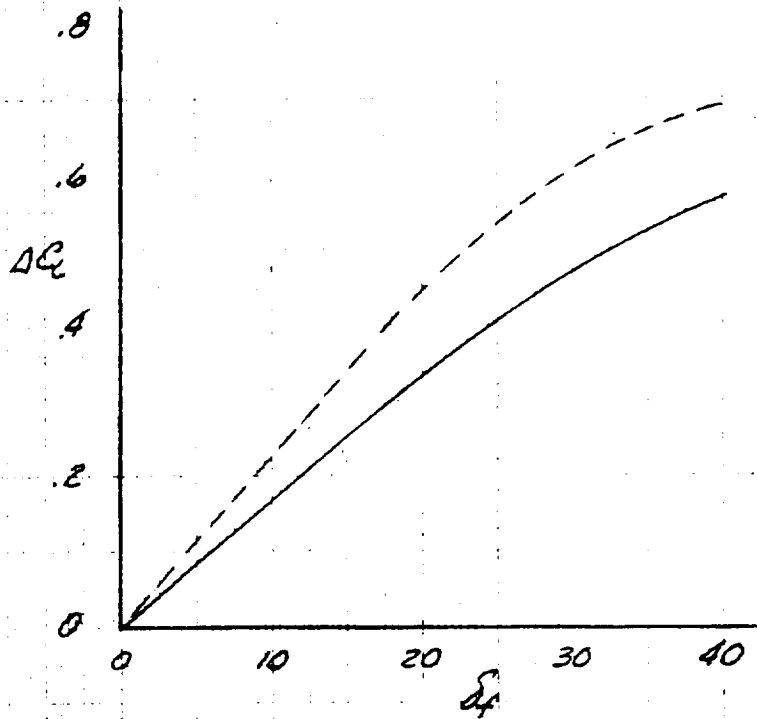


10-1 CONTINUOUS
FIGURE 25 - FLAP EFFECTIVENESS RATIOS OF

TEST 525

— WITHOUT TAB FLAP
- - - WITH " "

$\alpha = 0 - 75^\circ$



(b) FLAP LIFT INCREMENT
FIGURE 25.- CONCLUDED.

TEST 573
RBN 11
 $\omega = 0$ $\delta_1 = 0$ $\delta_2 = 160$ Edges on
 $\alpha = 2^\circ$
O F/A
□ CAT
◇ PED

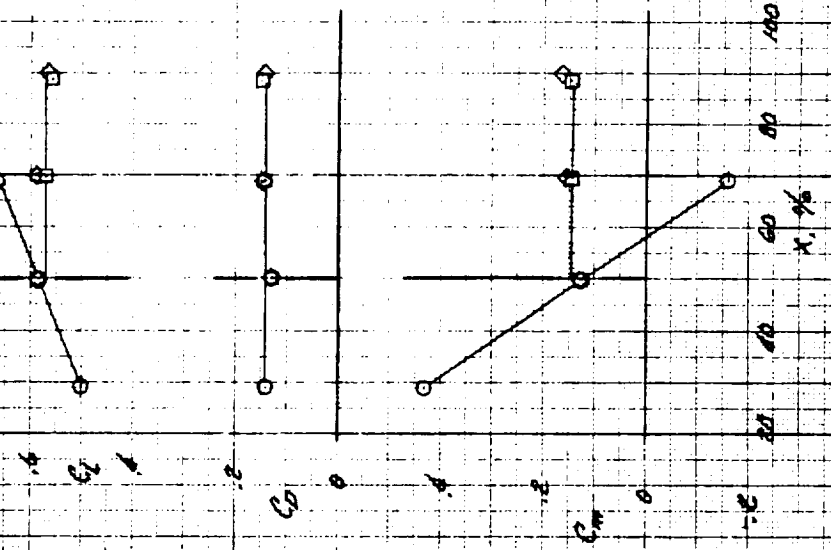
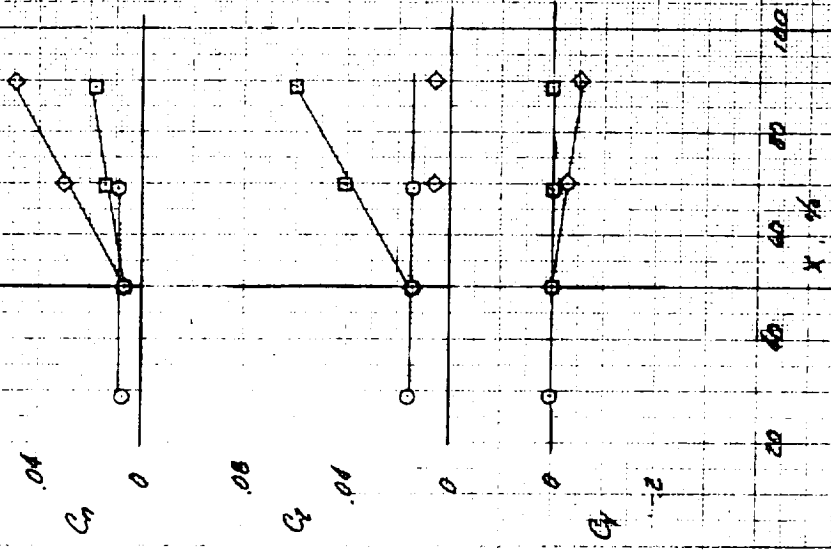
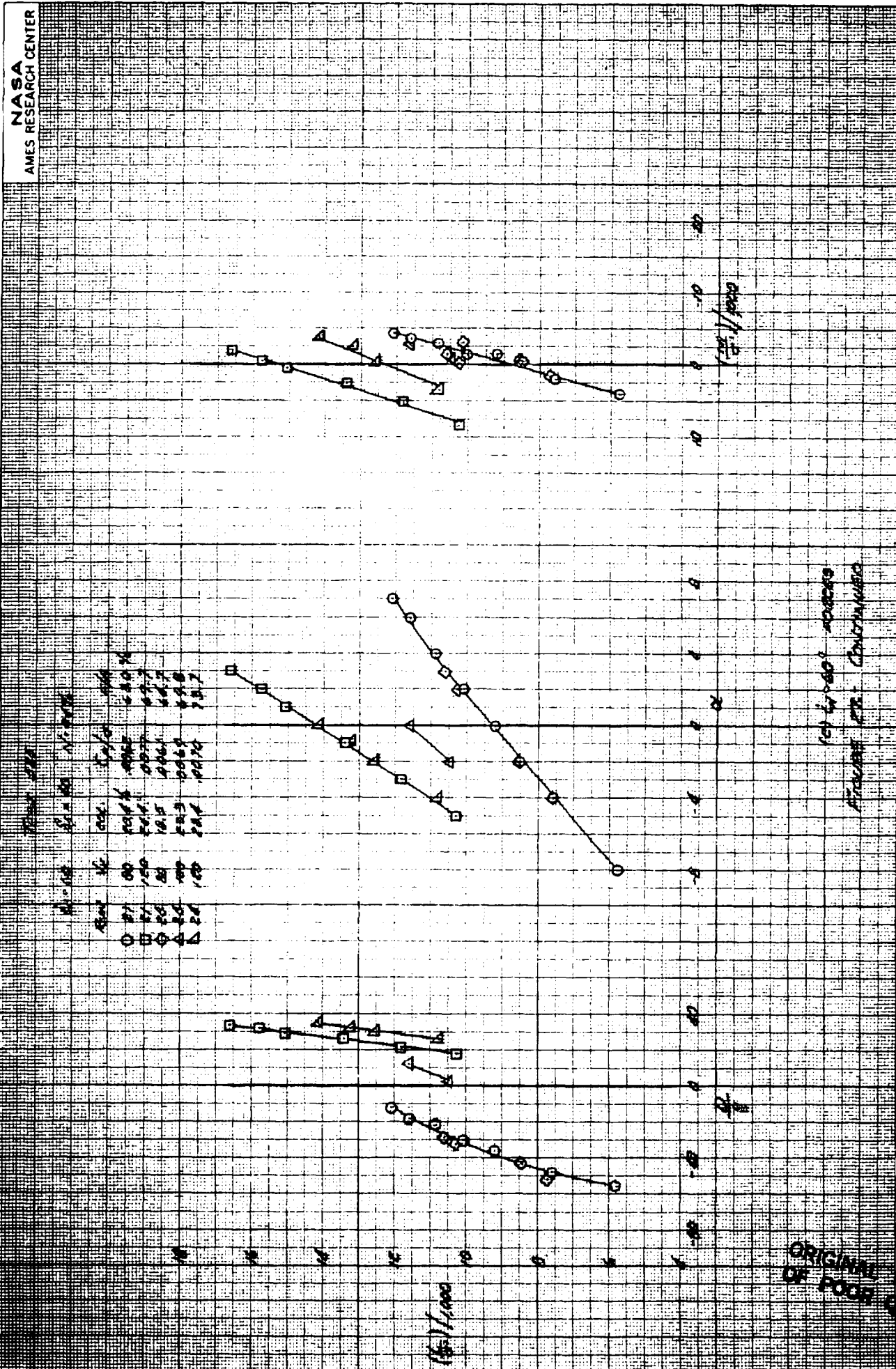


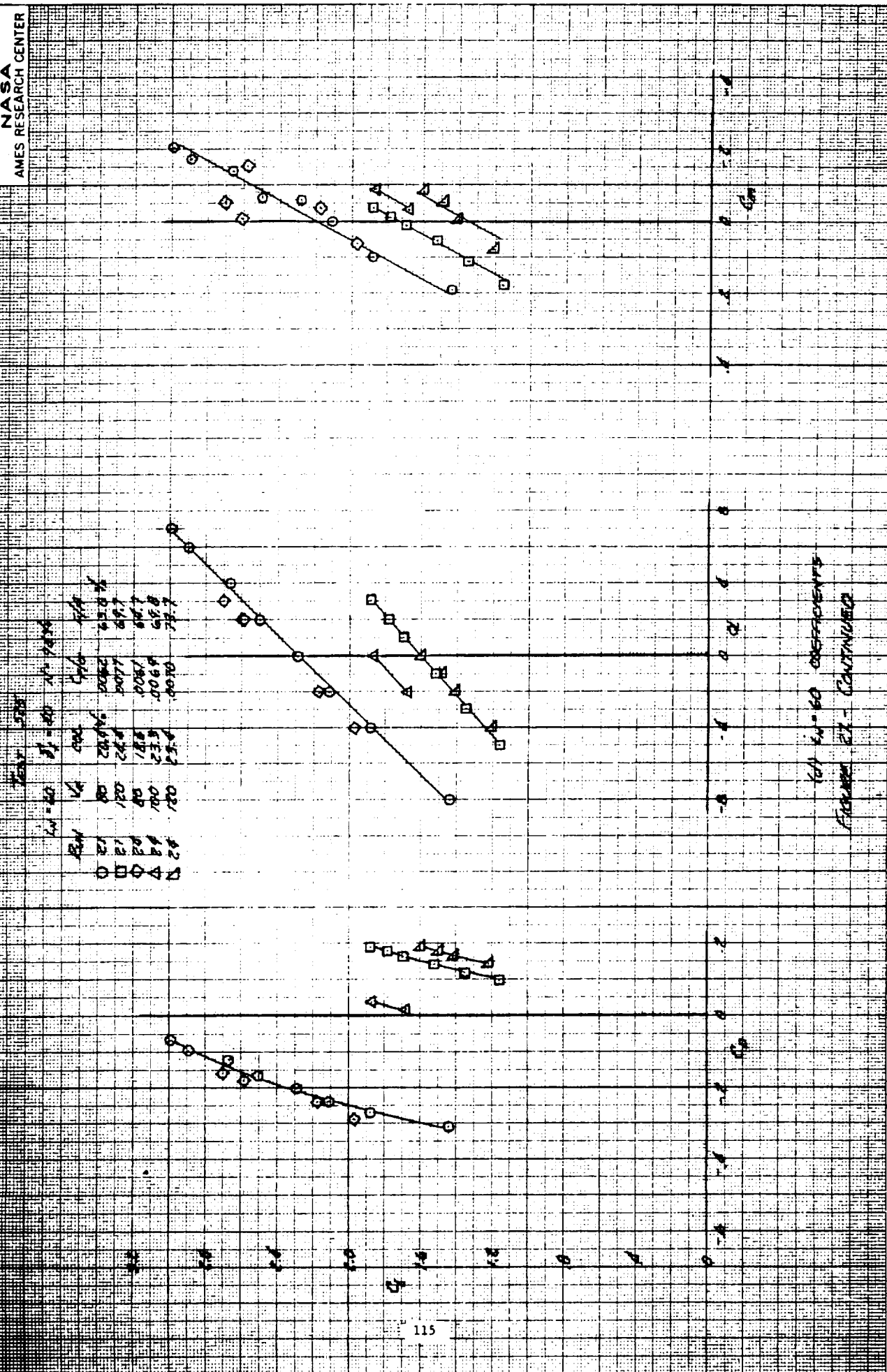
FIGURE 8A - CONTROL EFFECTIVENESS EDGES OFF

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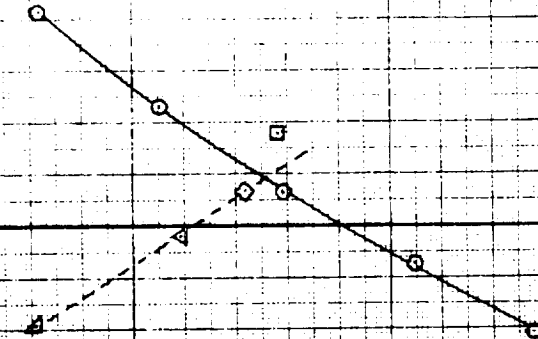
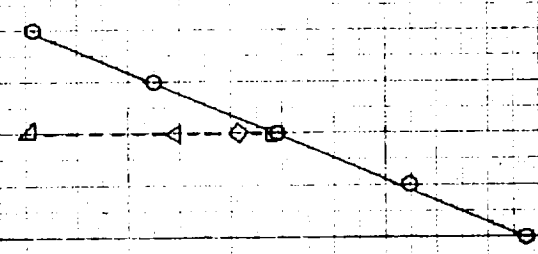
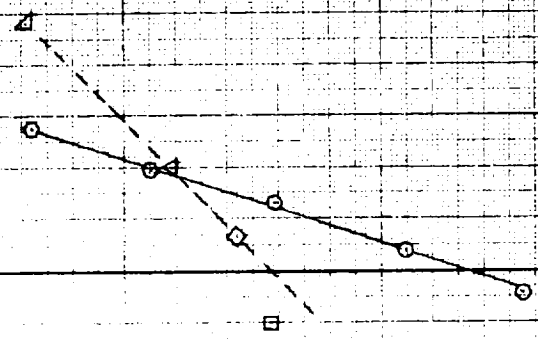
set by 100, 100000
Fractal 100: 100000000

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TEST	REF	REF	REF
1/4	1/4	1/4	1/4
1/2	1/2	1/2	1/2
3/4	3/4	3/4	3/4
1.0	1.0	1.0	1.0
1.25	1.25	1.25	1.25
1.5	1.5	1.5	1.5
1.75	1.75	1.75	1.75
2.0	2.0	2.0	2.0
2.25	2.25	2.25	2.25
2.5	2.5	2.5	2.5
2.75	2.75	2.75	2.75
3.0	3.0	3.0	3.0
3.25	3.25	3.25	3.25
3.5	3.5	3.5	3.5
3.75	3.75	3.75	3.75
4.0	4.0	4.0	4.0
4.25	4.25	4.25	4.25
4.5	4.5	4.5	4.5
4.75	4.75	4.75	4.75
5.0	5.0	5.0	5.0
5.25	5.25	5.25	5.25
5.5	5.5	5.5	5.5
5.75	5.75	5.75	5.75
6.0	6.0	6.0	6.0
6.25	6.25	6.25	6.25
6.5	6.5	6.5	6.5
6.75	6.75	6.75	6.75
7.0	7.0	7.0	7.0
7.25	7.25	7.25	7.25
7.5	7.5	7.5	7.5
7.75	7.75	7.75	7.75
8.0	8.0	8.0	8.0
8.25	8.25	8.25	8.25
8.5	8.5	8.5	8.5
8.75	8.75	8.75	8.75
9.0	9.0	9.0	9.0
9.25	9.25	9.25	9.25
9.5	9.5	9.5	9.5
9.75	9.75	9.75	9.75
10.0	10.0	10.0	10.0
10.25	10.25	10.25	10.25
10.5	10.5	10.5	10.5
10.75	10.75	10.75	10.75
11.0	11.0	11.0	11.0
11.25	11.25	11.25	11.25
11.5	11.5	11.5	11.5
11.75	11.75	11.75	11.75
12.0	12.0	12.0	12.0
12.25	12.25	12.25	12.25
12.5	12.5	12.5	12.5
12.75	12.75	12.75	12.75
13.0	13.0	13.0	13.0
13.25	13.25	13.25	13.25
13.5	13.5	13.5	13.5
13.75	13.75	13.75	13.75
14.0	14.0	14.0	14.0
14.25	14.25	14.25	14.25
14.5	14.5	14.5	14.5
14.75	14.75	14.75	14.75
15.0	15.0	15.0	15.0
15.25	15.25	15.25	15.25
15.5	15.5	15.5	15.5
15.75	15.75	15.75	15.75
16.0	16.0	16.0	16.0
16.25	16.25	16.25	16.25
16.5	16.5	16.5	16.5
16.75	16.75	16.75	16.75
17.0	17.0	17.0	17.0
17.25	17.25	17.25	17.25
17.5	17.5	17.5	17.5
17.75	17.75	17.75	17.75
18.0	18.0	18.0	18.0
18.25	18.25	18.25	18.25
18.5	18.5	18.5	18.5
18.75	18.75	18.75	18.75
19.0	19.0	19.0	19.0
19.25	19.25	19.25	19.25
19.5	19.5	19.5	19.5
19.75	19.75	19.75	19.75
20.0	20.0	20.0	20.0
20.25	20.25	20.25	20.25
20.5	20.5	20.5	20.5
20.75	20.75	20.75	20.75
21.0	21.0	21.0	21.0
21.25	21.25	21.25	21.25
21.5	21.5	21.5	21.5
21.75	21.75	21.75	21.75
22.0	22.0	22.0	22.0
22.25	22.25	22.25	22.25
22.5	22.5	22.5	22.5
22.75	22.75	22.75	22.75
23.0	23.0	23.0	23.0
23.25	23.25	23.25	23.25
23.5	23.5	23.5	23.5
23.75	23.75	23.75	23.75
24.0	24.0	24.0	24.0
24.25	24.25	24.25	24.25
24.5	24.5	24.5	24.5
24.75	24.75	24.75	24.75
25.0	25.0	25.0	25.0
25.25	25.25	25.25	25.25
25.5	25.5	25.5	25.5
25.75	25.75	25.75	25.75
26.0	26.0	26.0	26.0
26.25	26.25	26.25	26.25
26.5	26.5	26.5	26.5
26.75	26.75	26.75	26.75
27.0	27.0	27.0	27.0
27.25	27.25	27.25	27.25
27.5	27.5	27.5	27.5
27.75	27.75	27.75	27.75
28.0	28.0	28.0	28.0
28.25	28.25	28.25	28.25
28.5	28.5	28.5	28.5
28.75	28.75	28.75	28.75
29.0	29.0	29.0	29.0
29.25	29.25	29.25	29.25
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29.75	29.75	29.75	29.75
30.0	30.0	30.0	30.0

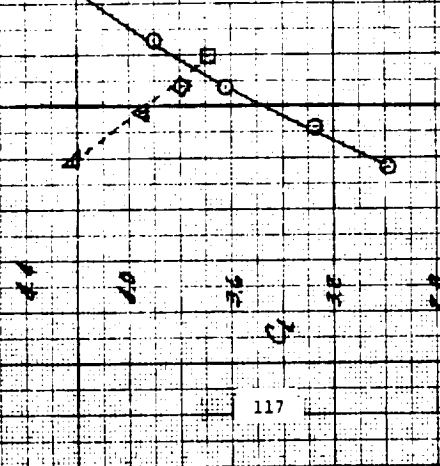
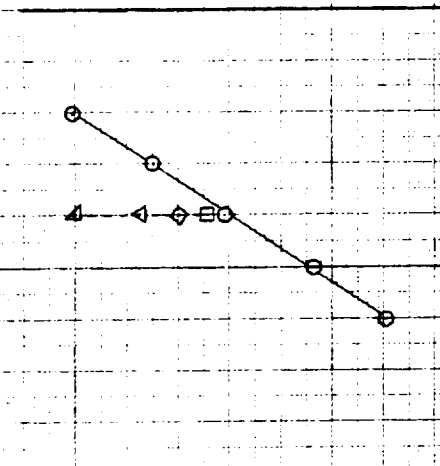
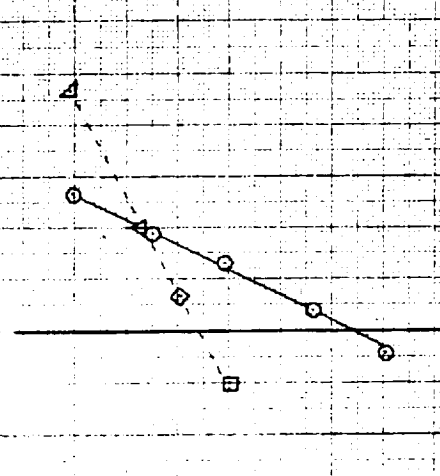
0.1%
 0.2%
 0.5%
 1.0%
 1.5%
 2.0%
 2.5%
 3.0%
 3.5%
 4.0%
 4.5%
 5.0%
 5.5%
 6.0%
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 7.0%
 7.5%
 8.0%
 8.5%
 9.0%
 9.5%
 10.0%



(G) / (G)

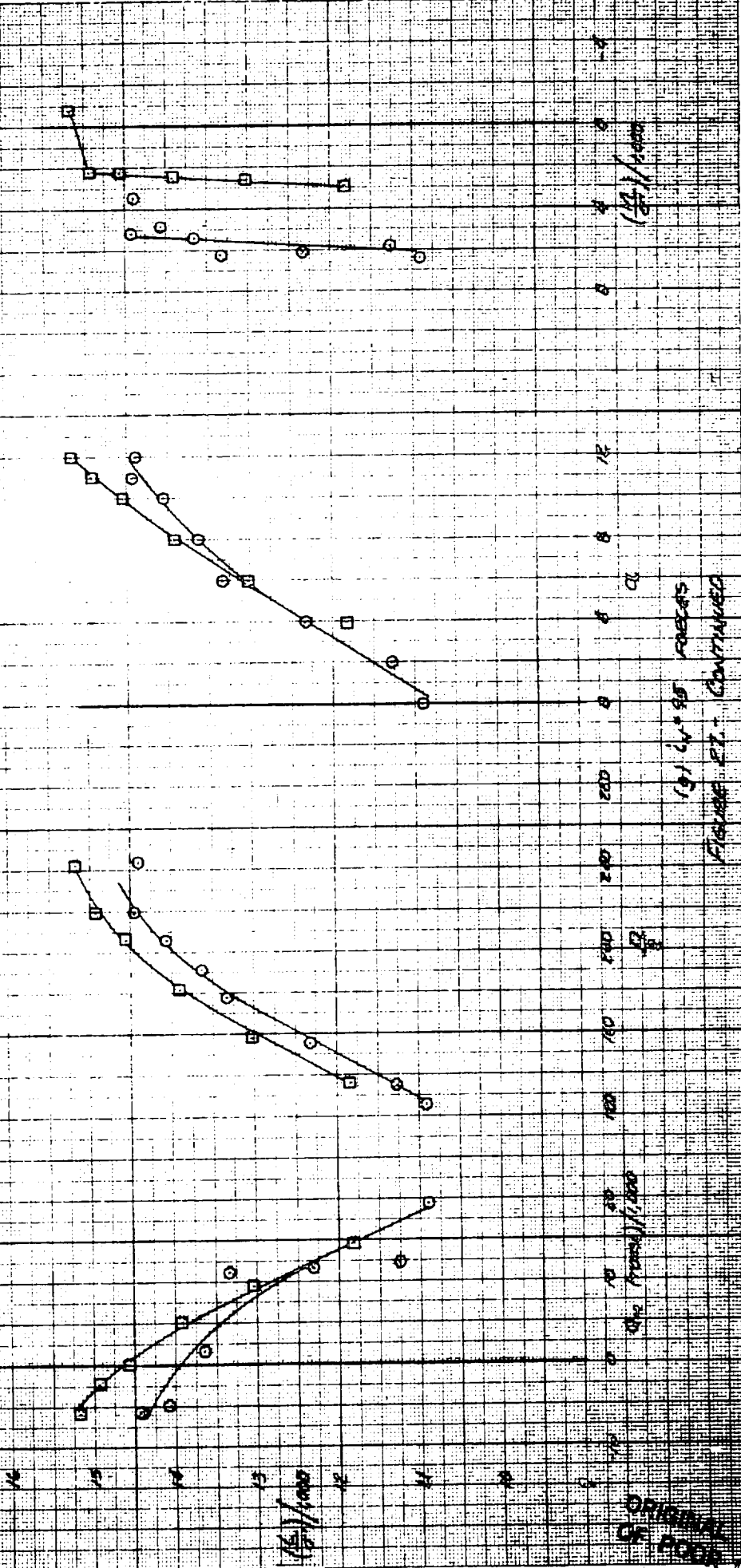
(G) (V) 90° FORCES
 FIGURES 27 - CONTAINED

TEST	SWR	SWR	SWR	SWR	SWR	SWR	SWR	SWR	SWR
SWR	SWR	SWR	SWR	SWR	SWR	SWR	SWR	SWR	SWR
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100



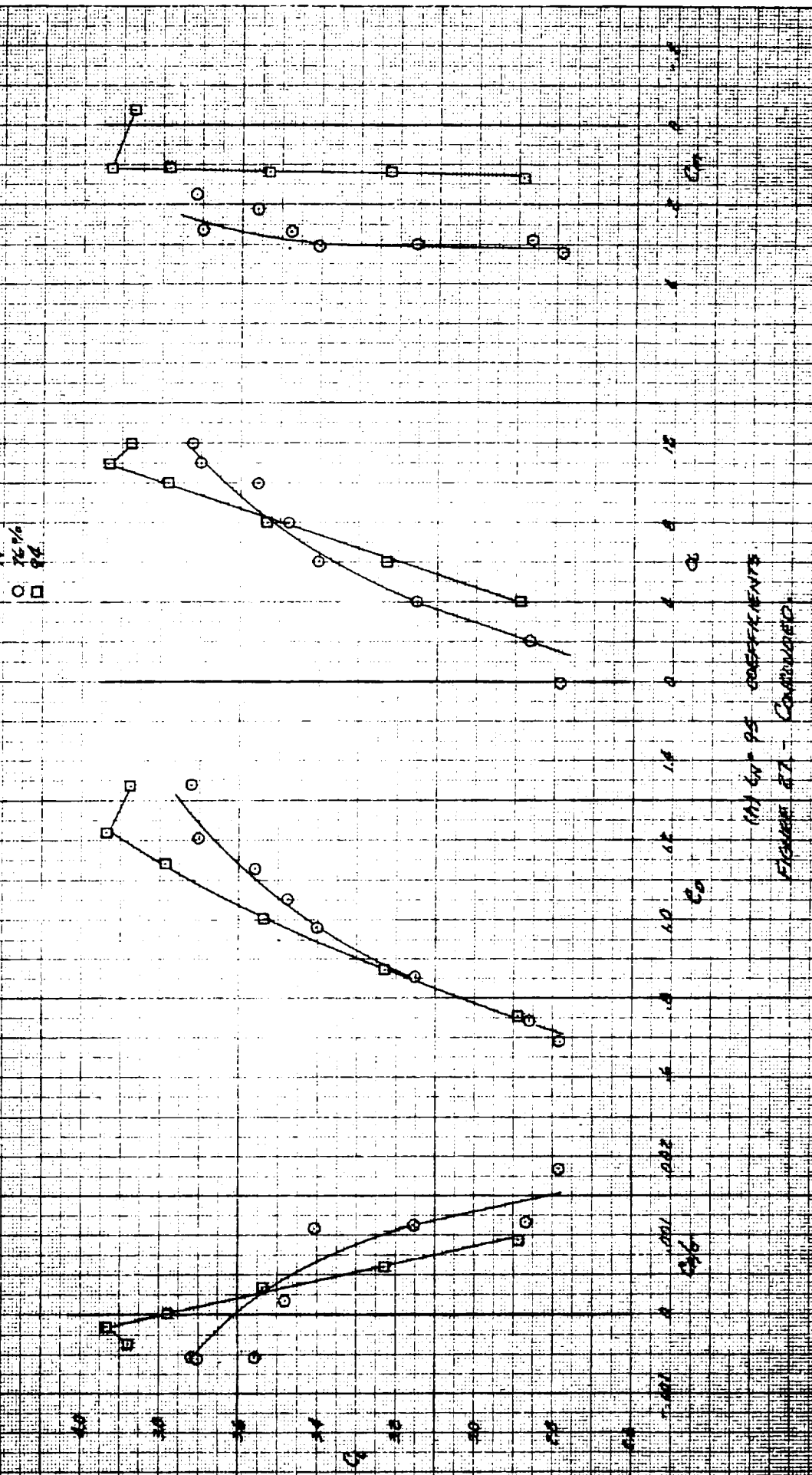
(H) $\alpha = 90^\circ$ MEASUREMENTS
FIGURE 22 - CONTINUED

TEST STDS
RUN 22
 $\omega = 95$ $\delta_1 = 40$ $\delta_2 = 80$ $\text{FA} = 54\%$
N $\delta_1 = 76\%$ $\delta_2 = 96\%$



(3) $\omega = 95$ POINTS
FIGURE F1 - CONTINUED

TEST 525
RUN 22
M 76%
84%
C_d = 0.95 C_d = 0.80 C_d = 0.74



MAY 67 95 COEFFICIENTS
FIGURE 21 - CONTINUED

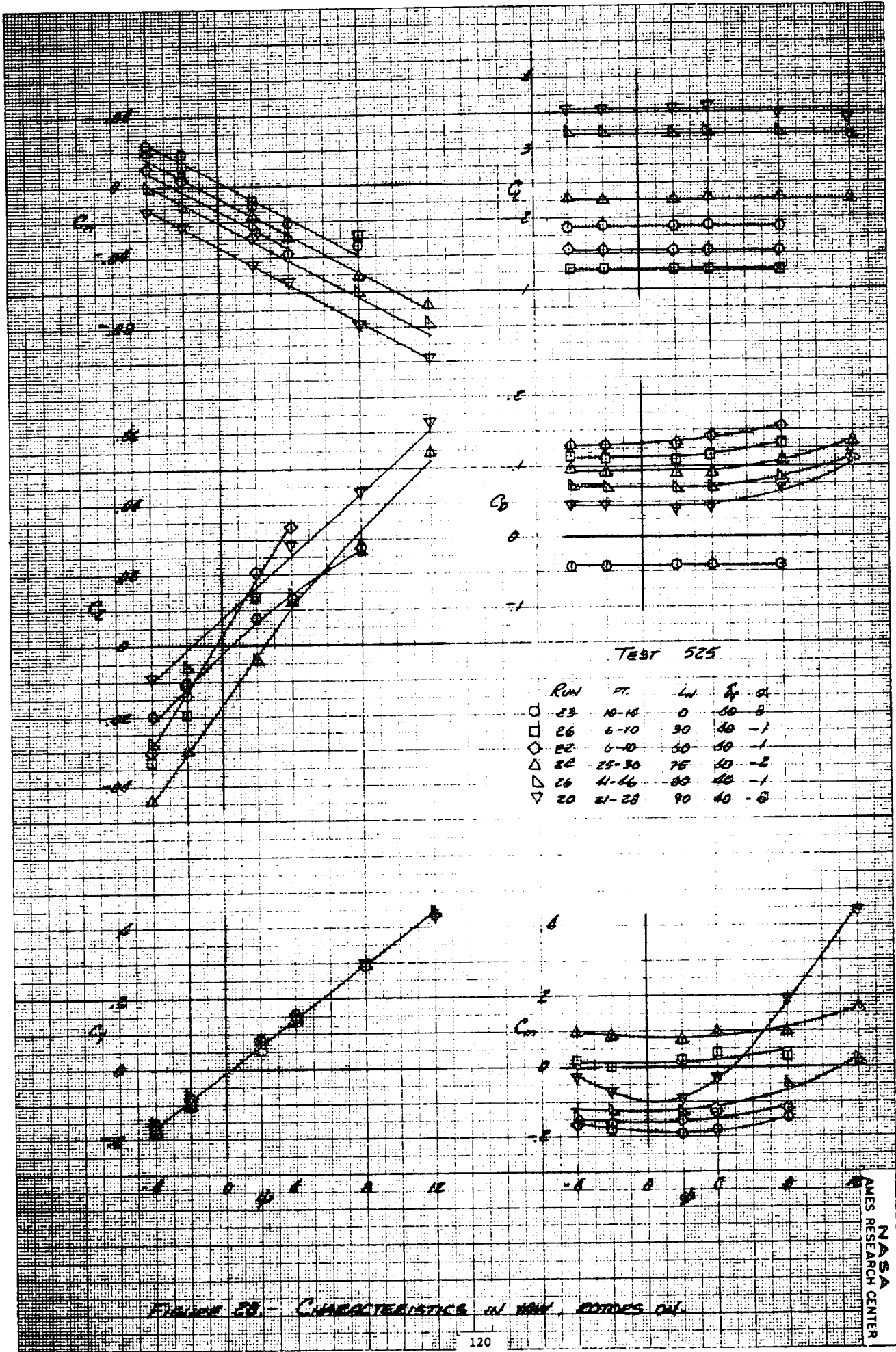


FIGURE 28 - CHARACTERISTICS IN NEW EDITOR'S ON.

TEST 5123

CONF. 24

$M = 0.8$ $U = 100$ $h = 0.01$ $C_{L,0} = 0.125$
 REYNOLDS NO.

○ A/A
 □ C/2
 ◇ P/2

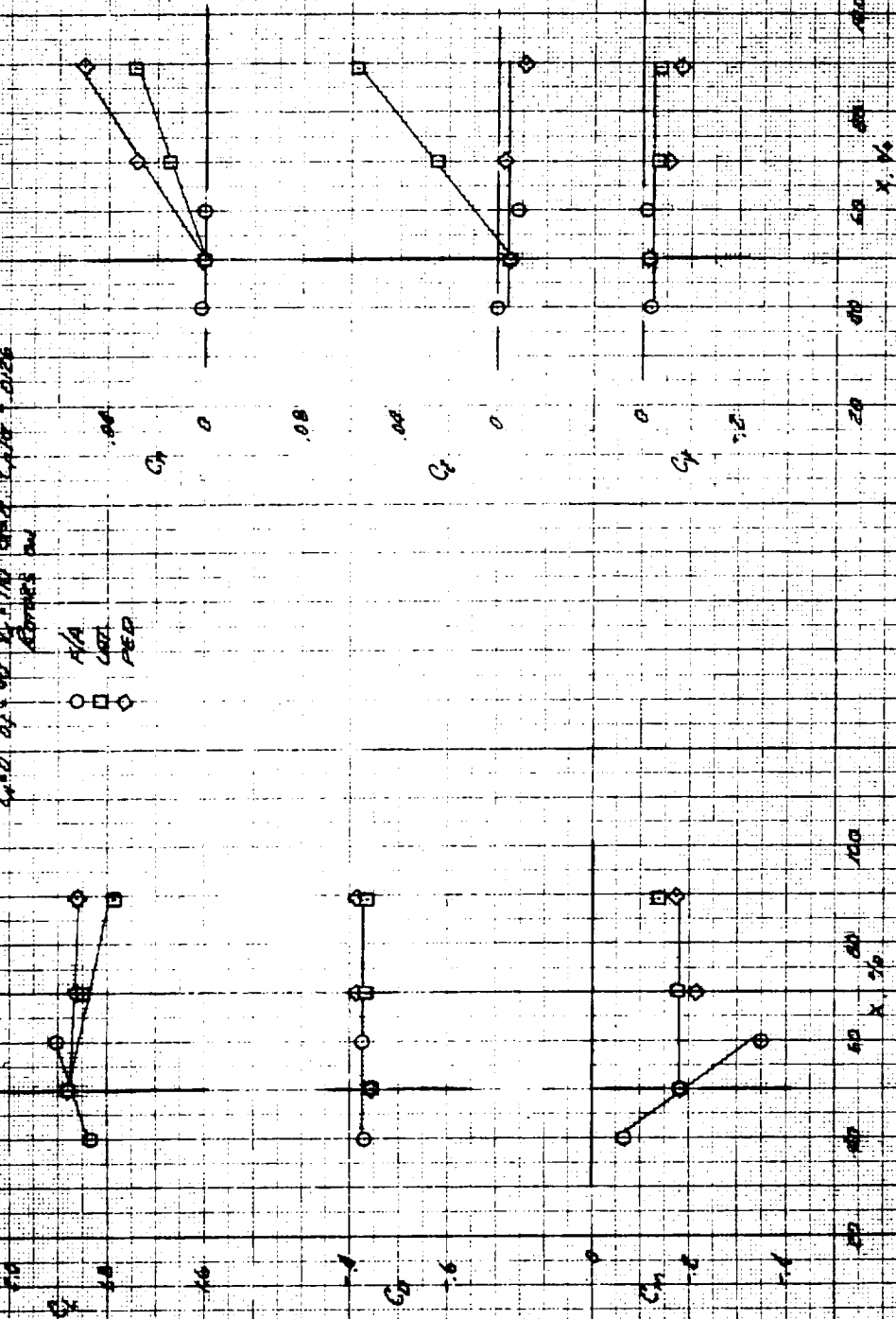


FIGURE 10. CONTROL EFFECTIVENESS, CONTINUED

NO. 1170

ORIGINAL
 POOR

TEST 325

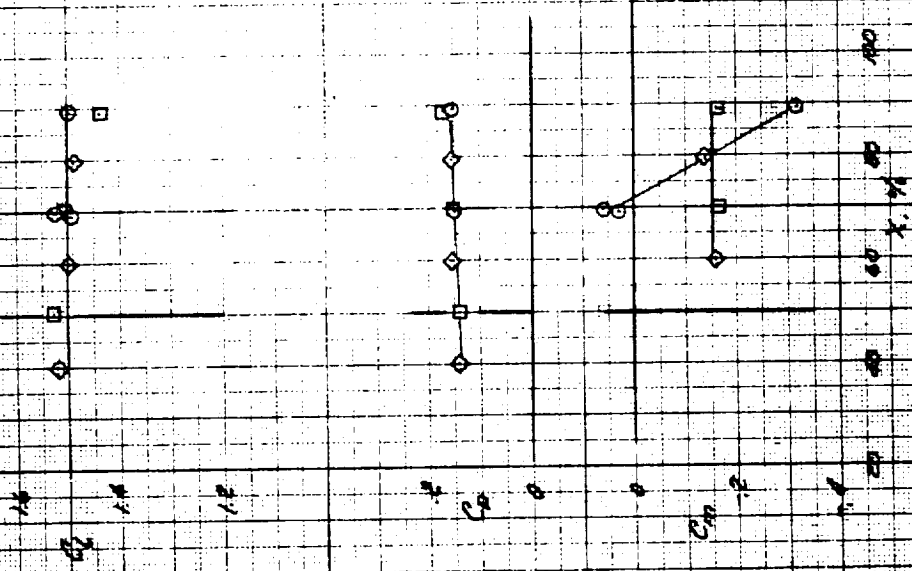
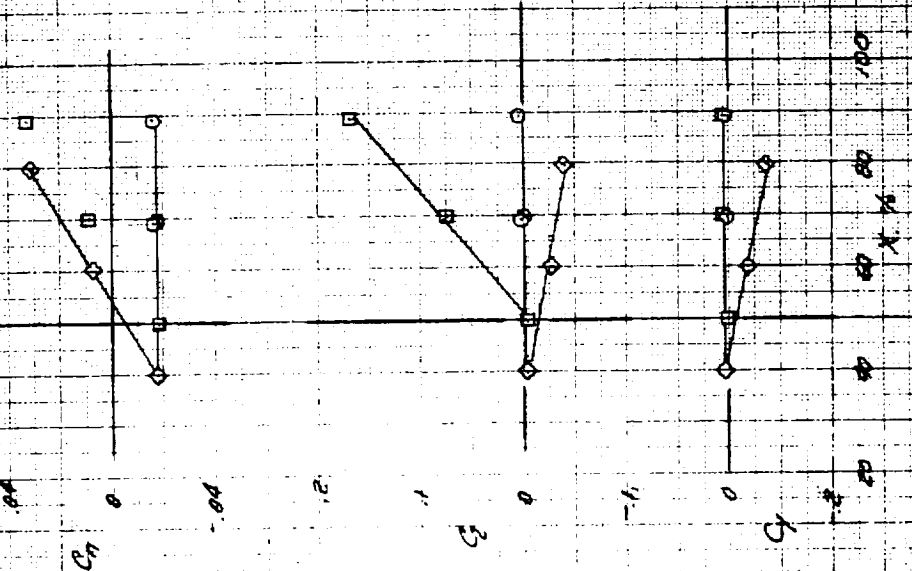
RDW FB

$C_{D1} = 60^{\circ}$ $C_{D2} = 45^{\circ}$ $C_{D3} = 150^{\circ}$ $C_{D4} = 100^{\circ}$ $C_{D5} = 60^{\circ}$

RETURNS ON

F/A
C/D
P/E

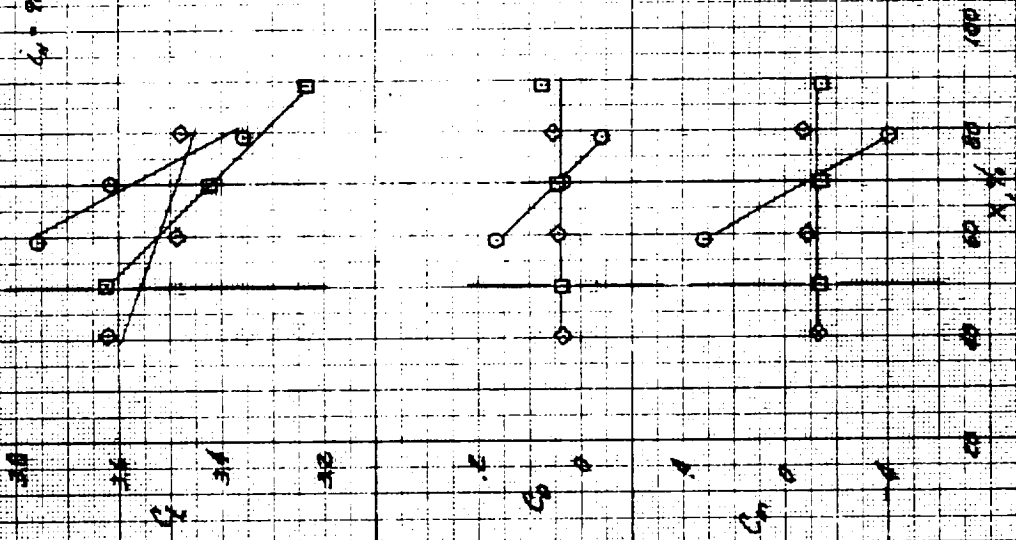
○ □ ◇



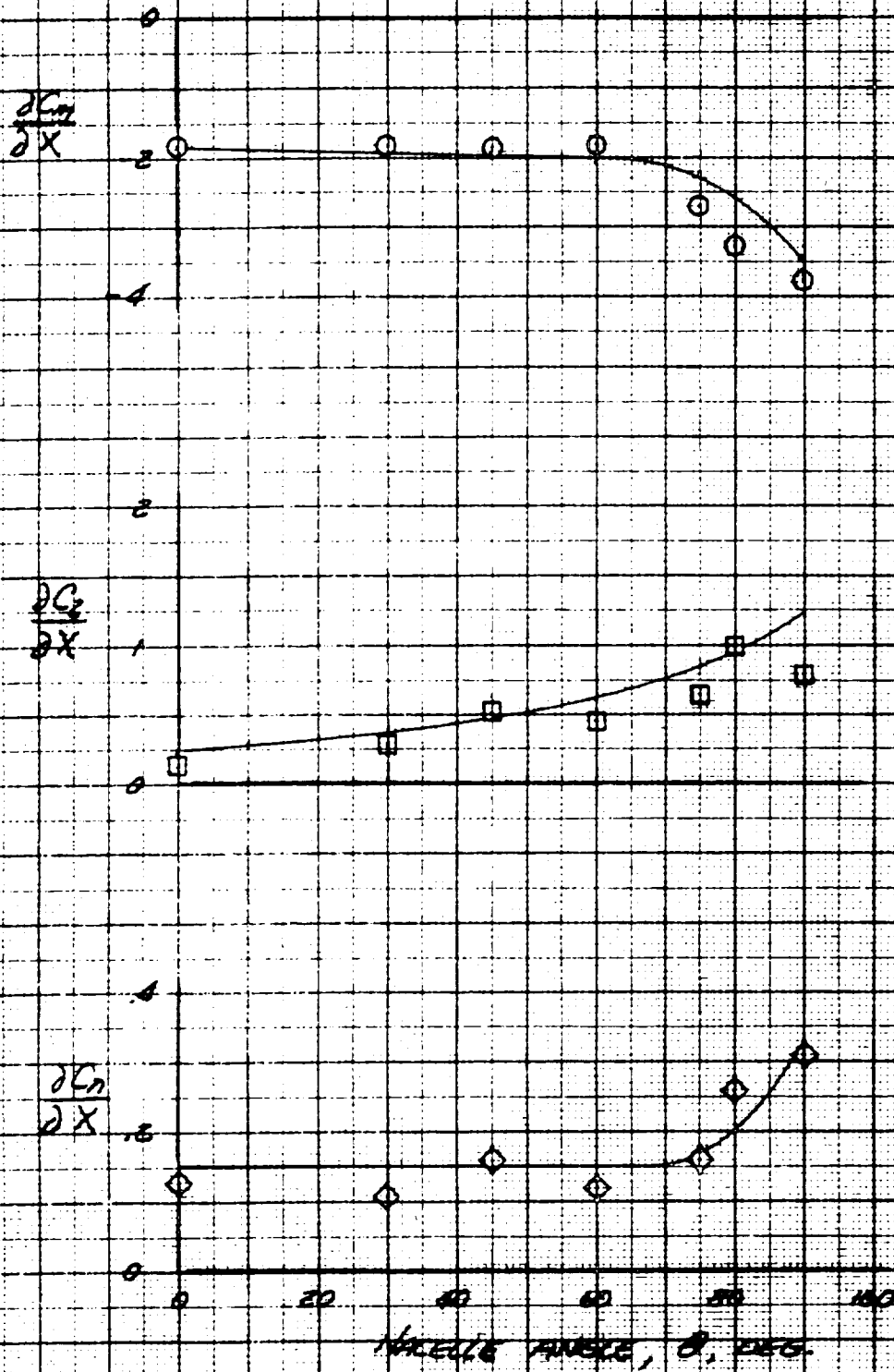
100 $C_{D1} = 60$
RETURNS ON - CONTINUED

TEST 5130
 PLAN CP
 $\alpha = 90^\circ$
 $\alpha = 45^\circ$
 $\alpha = 30^\circ$
 $C_{MA} = 1.0076$
 FORWARD IN

F/A
 LAT.
 PED.



(1) $\alpha = 90^\circ$
 FORWARD IN - CONTINUED



(d) Variation with θ
FIGURE 29. CONTINUED

ORIGINAL PAGE IS
OF POOR QUALITY

TEST	ROW	SEAL	CONDENS	SUPPORT STENTS
▲ ARC 525	10	FULL	V.G. @ .25c	3
◆ " "	6	"	V.G. OFF	3
△ " "	51	"	TAPED RIC OFF	3
○ LSWT 564	116	1/5	CLEAN	3
□ " "	113	"	CLEAN	1

ROTORS OFF, $i_N = 0$, $\delta_L = 0$

NO TRACE OR INTERFERENCE CORRECTIONS

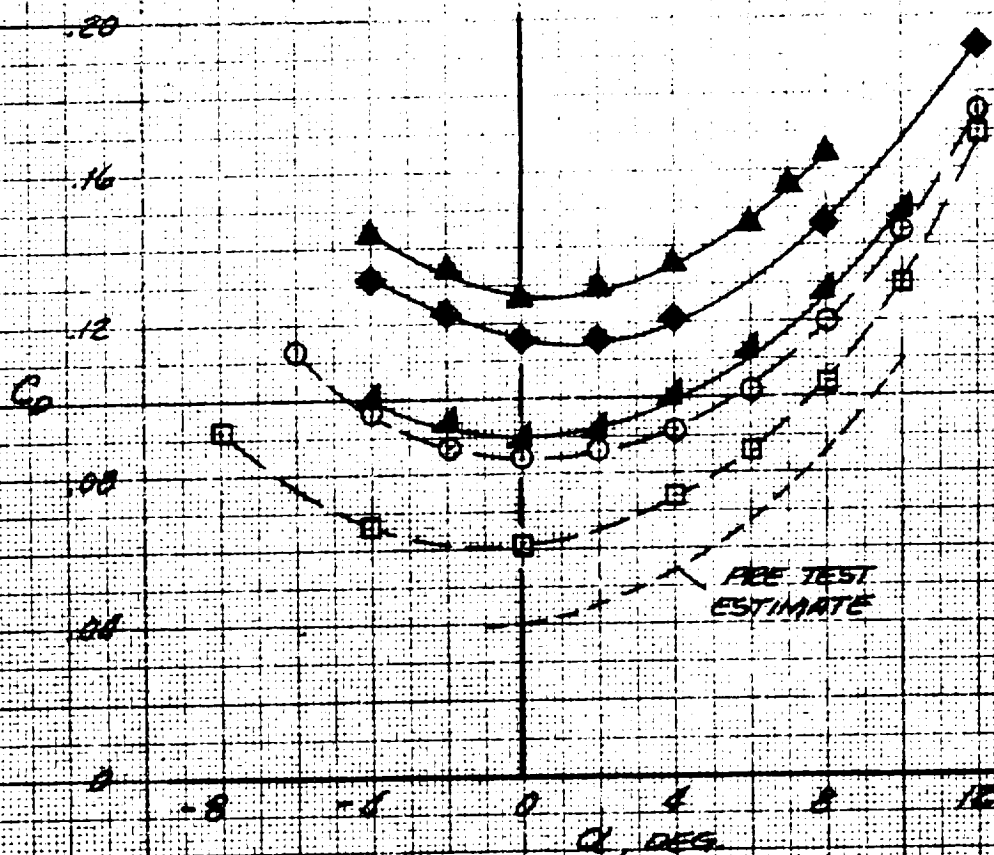
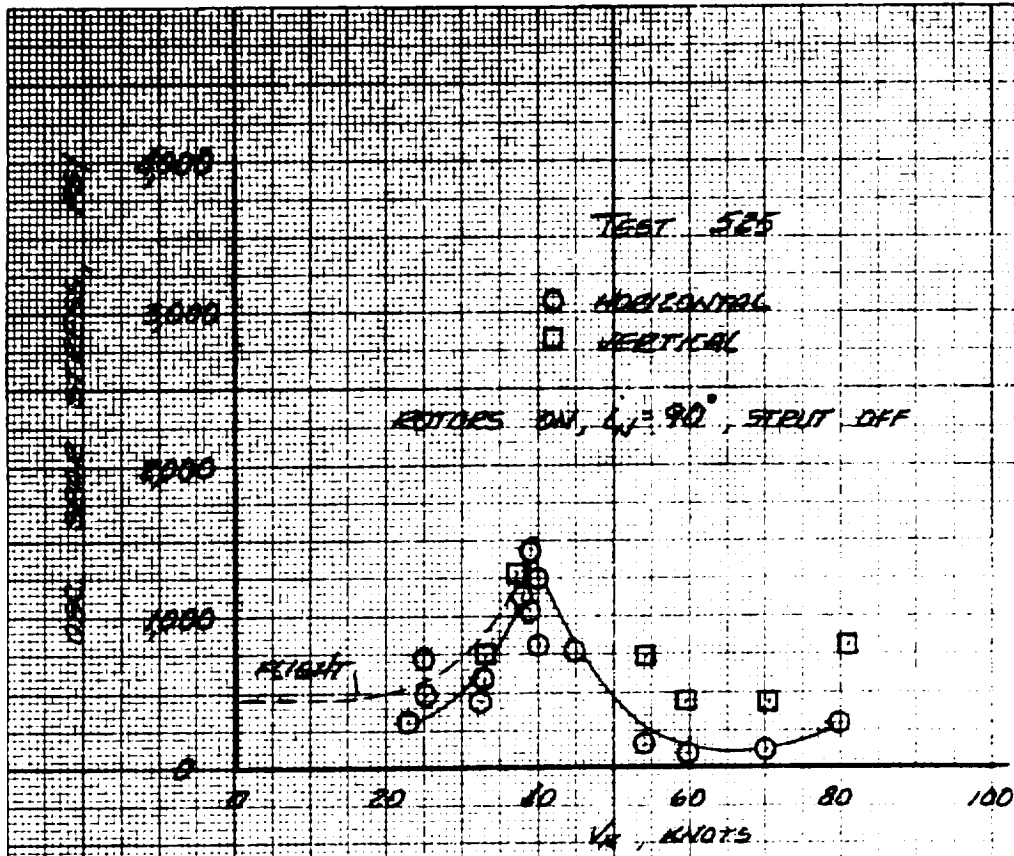
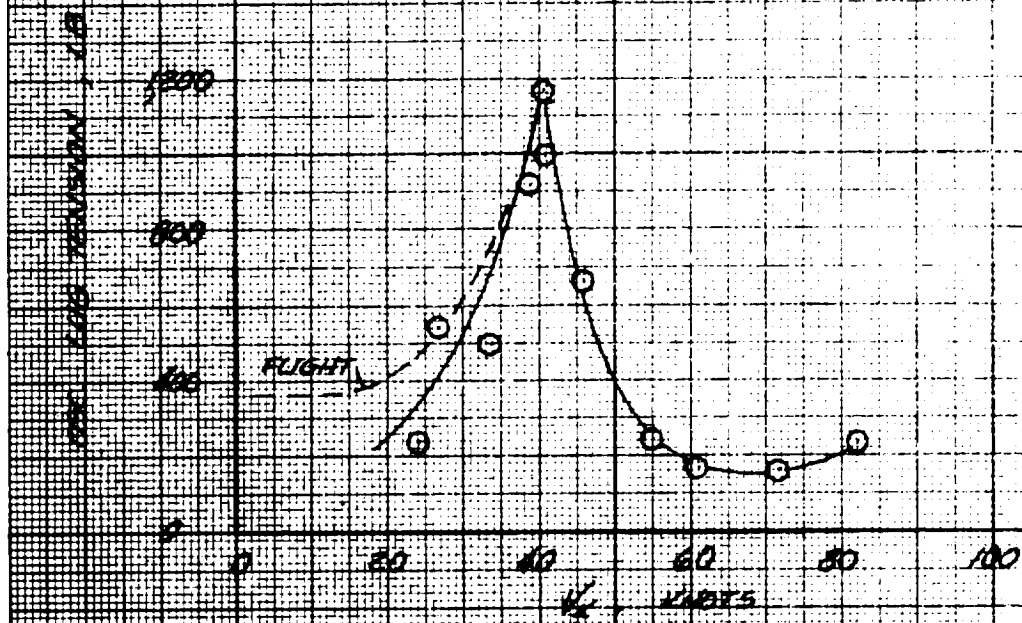


FIGURE 20 - CURVE SUMMARY



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OF POOR QUALITY



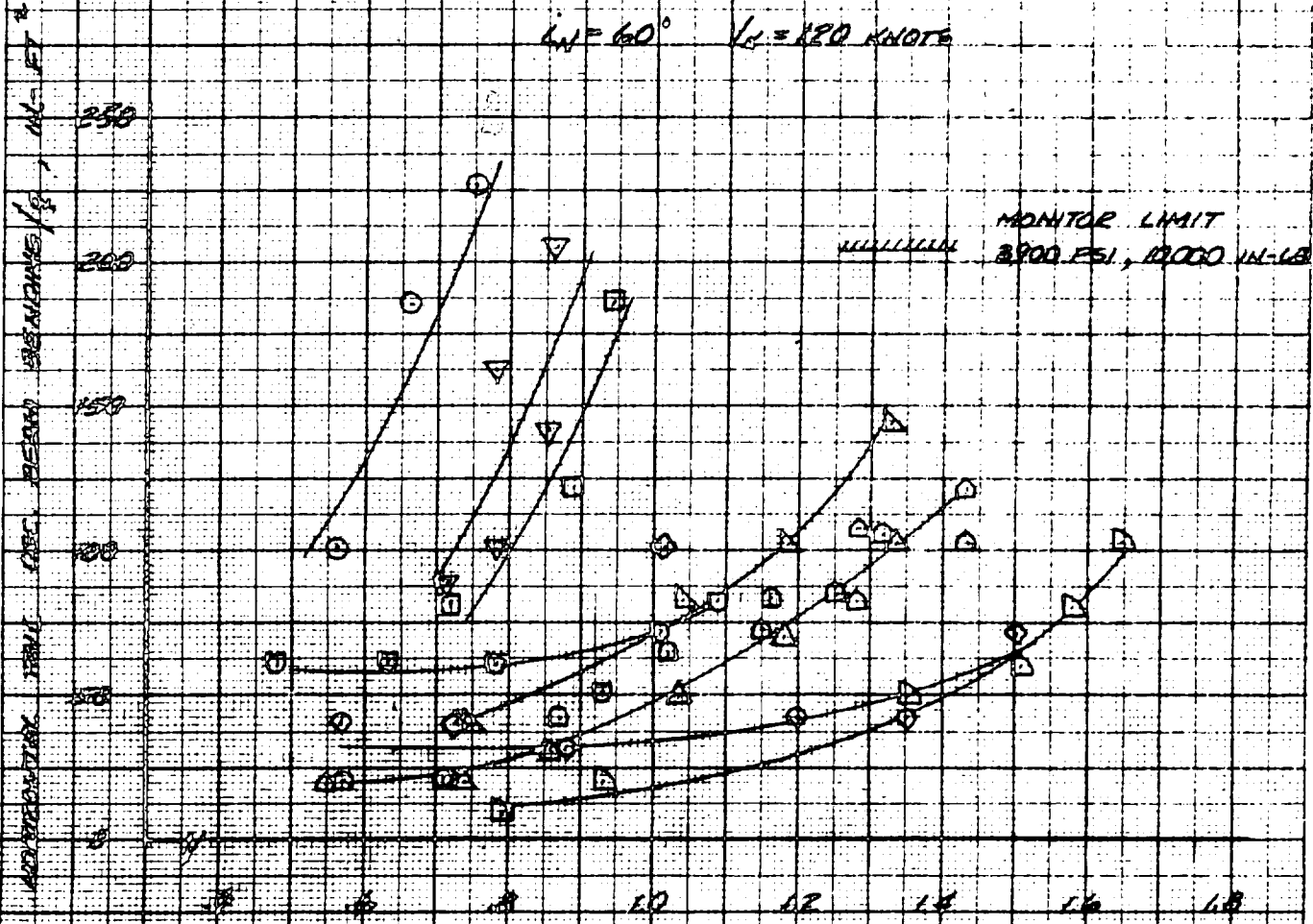
(a) HELICOPTER MODE.
FIGURE 81 - ENGINE SPEED CURVES

TEST 325

	Roll	ROTORS	TAIL STRUT	RAIL STRIKES	WING FENCE	FLAP TAB
○	10	OFF	OFF	OFF	OFF	OFF
○	12	"	"	②	"	⑧
○	39	"	ON	OFF	"	"
△	40	"	"	②	"	"
▽	37	"	"	OFF	"	"
▽	34	"	"	⑧ ⑨	"	"
□	29	"	"	③	"	OFF
□	19	"	"	⑤	⑩	"
□	50	"	"	"	OFF	"
△	26	"	OFF	⑦	"	"
□	21	ON	ON	OFF	"	"

SEE TABLE II

$\alpha = 60^\circ$ $V = 120$ KNOTS



(8) TRANSITION MODE, HORIZONTAL TAIL

FIGURE 31. CONTINUED.

TEST 525

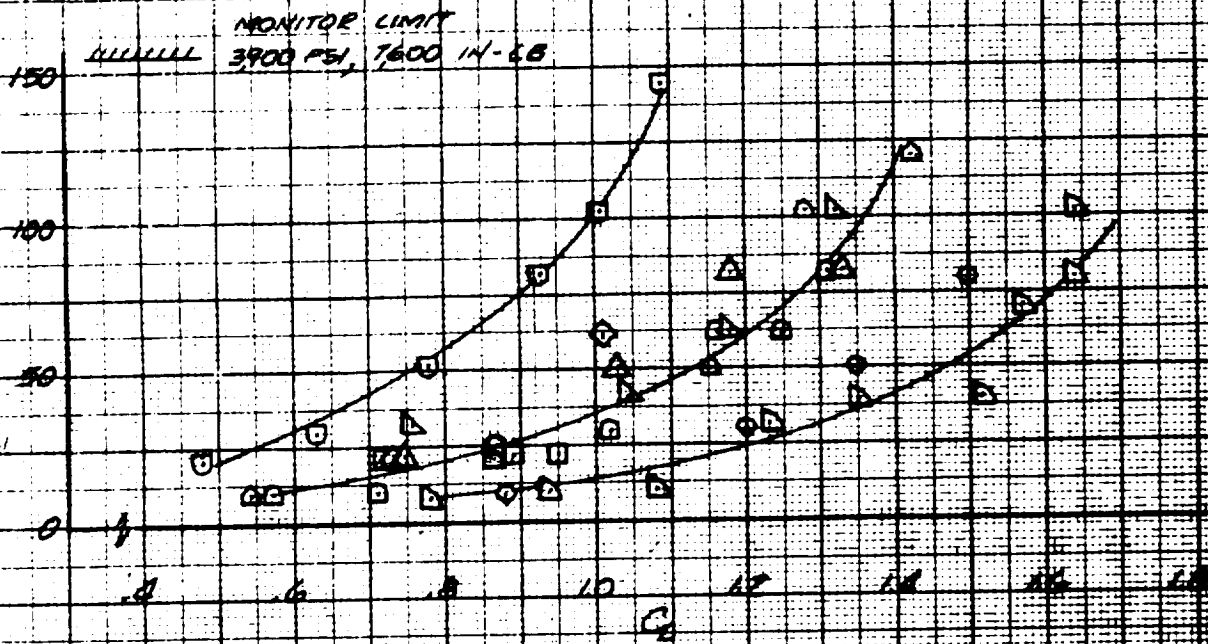
	RUN	ROTORS	TAIL STREETS	FRONT STREETS	WINGS REAR	FLAP TAB
○	10	OFF	OFF	OFF	OFF	OFF
□	12	"	"	12	"	6
◇	29	"	ON	OFF	"	4
△	40	"	"	12	"	"
▽	37	"	"	OFF	"	"
◻	34	"	"	9	"	"
◐	29	"	"	7	"	DEF
◑	49	"	"	13	16	"
◒	50	"	"	"	DEF	"
◓	24	"	OFF	7	"	"
◔	21	ON	ON	OFF	"	"

SEE TABLE II

$\alpha = 60^\circ$ $V_\infty = 120$ KNOTS

ORIGINAL PAGE IS
OF POOR QUALITY

VERTICAL TAIL OSC. BEAM BENDING / Q, IN-FT²



(2) TRANSITION MODE, VERTICAL TAIL
FIGURE 31- (CONCLUDED)

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16. Abstract The XV-15 Tilt Rotor Research Aircraft was tested in the Ames 40- by 80-Foot Wind Tunnel for preliminary evaluation of aerodynamic and aeroelastic characteristics prior to flight. The tests were undertaken to investigate the aircraft performance, stability, control and structural loads for flight modes from helicopter through transition and airplane mode up to the tunnel capability of 170 knots. Results from these tests are presented.					
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