

# AEDC Test Facilities (Nominal Values)

ENGINE TEST FACILITY	Test Section Size		Total Temperature, °R	Speed Range	Pressure Altitude (Nominal), ft	Capacity of Installed Thrust Stand, lb	Primary Use*	
	Cross Section, ft	Length, ft						
Propulsion Development Test Cell T-1	12.3 diam	39 to 57	380 to 1,110	Mach 0 to 3.0	Sea Level to 80,000	30,000	(2) (6) (9)	
Propulsion Development Test Cell T-2	12.3 diam	42 to 50.5	380 to 1,110	Mach 0 to 3.0	Sea Level to 80,000	30,000	(2) (6) (9)	
Propulsion Development Test Cell T-3	12 diam	15	450 to 1,660	Mach 0 to 4.0	Sea Level to 100,000	20,000	(2) (3) (6) (9) (11)	
Propulsion Development Test Cell T-4	12.3 diam	39 to 47.8	380 to 1,110	Mach 0 to 3.0	Sea Level to 80,000	50,000	(2) (6) (9)	
Propulsion Development Test Cell T-5 ***	7 diam	17	395 to 660	Mach 0 to 2.0	Sea Level to 80,000	2,000	(2) (6) (9)	
Propulsion Development Test Cell T-6 ****	3 diam	18	430 to 760	Mach 0 to 3.0	Sea Level to 90,000	None	(1) (3) (4) (6) (7) (11)	
Propulsion Development Test Cell T-7 ***	7 diam	9	395 to 1,110	Mach 0 to 3.0	Sea Level to 80,000	1,000	(2) (6) (9)	
Propulsion Development Test Cell J-1	16 diam	65	395 to 1,210	Mach 0 to 3.2	Sea Level to 80,000	50,000	(2) (3) (6) (9)	
Propulsion Development Test Cell J-2	20 diam	67.3	395 to 1,110	Mach 0 to 3.0	Sea Level to 80,000	50,000	(2) (3) (6) (9)	
Propulsion Development Test Cell J-2A****	18.3 diam	32	(Wall, 144)	Static	450,000	20,000	(1) (5) (11)	
Rocket Development Test Cell J-3	12 diam 17 diam	26 High 20, 30, 40 High	---	Static	125,000	200,000	(1) (5)	
Rocket Development Test Cell J-4	48 diam	82 High	---	Static	100,000	500,000	(1) (5) (11)	
Rocket Development Test Cell J-5 ***	16 diam	50	---	Static	100,000	300,000	(1) (5) (11)	
Rocket Development Test Cell J-6	26 diam	62	---	Static	100,000	500,000	(1) (5) (11)	
Sea Level Test Cell SL-1 ***	24 x 24	50	Ambient	Static	Sea Level	52,500	(2)	
Propulsion Development Test Cell C-1	28 diam	50 to 85	360 to 1,480	Mach 0 to 3.8	Sea Level to 100,000	100,000	(2) (3) (6) (9)	
Propulsion Development Test Cell C-2	28 diam	50 to 85	360 to 1,110	Mach 0 to 3.0	Sea Level to 100,000	100,000	(2) (6) (9)	
von KARMAN GAS DYNAMICS FACILITY	Test Section Size, in.	Total Pressure, psia	Total Temperature, °R	Speed Range	Pressure Altitude, ft	Dynamic Pressure, psf	Reynolds No./ft (x10 <sup>6</sup> )	Primary Use*
Supersonic Wind Tunnel A	40 x 40	1.5 to 200	530 to 750	Mach 1.5 to 5.5	16,000 to 151,000	53 to 1,780	0.3 to 9.2	(6) (7) (14)
Hypersonic Wind Tunnel B	50 diam	20 to 900	700 to 1,350	Mach 6 to 8	98,000 to 180,000	43 to 590	0.3 to 4.7	(6) (7) (14)
Hypersonic Wind Tunnel C	50 diam	200 to 1,900	1,650 to 1,950	Mach 10	132,000 to 188,000	43 to 430	0.3 to 2.4	(6) (7) (14)
Aerothermal Wind Tunnel C	25 diam Free Jet	200 to 2,000	1,220 to 1,900	Mach 8	95,000 to 149,000	132 to 1,322	0.7 to 7.8	(6) (7) (13)
	25 diam Free Jet	20 to 180	720 to 1,660	Mach 4	56,000 to 105,000	231 to 1,928	0.2 to 8.1	(6) (7) (13)
Aerodynamic and Propulsion Test Unit (APTU)	32 diam	20 to 160	700 to 1,000	Mach 2.20	Sea Level to 40,000	900 to 7,300	3.15	(1) (3) (4) (6)
	20 to 300	700 to 1,200	Mach 2.72	10,000 to 70,000	600 to 9,300	3.16		
	36 diam	40 to 300	700 to 1,300	Mach 3.50	35,000 to 75,000	650 to 4,800	1.10	
42 diam Free Jet	20 to 240	700 to 1,150	Mach 2.55	Sea Level to 65,000	700 to 8,500	2.17	(7) (9) (11)	
	50 to 300	700 to 1,600	Mach 4.10	55,000 to 80,000	500 to 2,900	1.6	(12) (13)	
Hypervelocity Range/Track G	120 diam	---	---	To 24,000 fps	Sea Level to 244,000	---	---	(8) (10)
Hypervelocity Impact Range S1	Target Tank 30 diam	---	---	To 32,000 fps	Sea Level to 10 <sup>5</sup> torr	---	---	(10)
Bird Impact Range S3	240 x 144	---	---	200 to 1,400 fps	Sea Level	---	---	(10)
TUNNEL 9	Contoured Nozzle	Reynolds No./ft (x10 <sup>6</sup> )	Supply Pressure Range, atm	Nominal Supply Temp, °R	Usable Run Time, sec			
	7	3.7 to 15.8	180 to 815	3,460	1 to 5			
	8	8.7 to 55.7	135 to 815	1,660	0.2 to 0.75			
	10	0.86 to 21.9	35 to 955	1,810	0.2 to 15			
	14	0.072 to 6.2	7 to 1,295	3,160	0.7 to 15			
16.5	2.65 to 3.2	1,295 to 1,430	3,260	3.0 to 3.5				
Impact, Vibration, and Acceleration Test Unit ****	System	Type	Size	Max. Specimen Weight, lb	Max. g	Remarks	Primary Use*	
	Vibration	Electrodynamic Ling A249	30-in. diam	2,800 at 10 g rms	75	30K-lb Max. Sine Force 32K-lb Max. Random Force 5.2 kHz, 1.0 in. Double Amp	(1)	
		Shock	Electrodynamic Ling A249	30-in. diam	2,000	---		
	Parallel-Pendulum	---	1,000	---	Pulse Shapes: Sawtooth, Half-Sine, etc.			
Acceleration	Centrifuge	17-ft rad	2,000	30	Travel, 2 ft			
AEROSPACE CHAMBERS	Test Section Size		Wall Temp., K	Chamber Empty Pressure, torr	Pressure Altitude, miles (1962 U.S. Std Atm)	Thermal Radiation Simulation	Primary Use*	
Mark I 10V 12V 7V FPCC DWSG BRDF COP SAM SMOG 7A UHV 4 X 10 CROVAC	Cross Section, ft	Length, ft	77	10 <sup>-7</sup>	210	Collimated Solar and Programmed Heat Flux Tungsten Lamps 8-ft-diam Xenon Solar and Programmed Tungsten Lamps	(5)	
	42	(Vert.) 82						
	10	(Vert.) 30						
	12	(Vert.) 35						
	7	24						
	5	5						
	Varies	Varies						
	3	5						
	2	3						
	2	15						
	2	1						
	3	5						
	2	3						
	4	10						
	Varies	1						
	DECADE	10-13k Rad(Si), 10,000 cm <sup>2</sup> target area, 1.5 by 2 m test articles in chamber						
PROPULSION WIND TUNNEL FACILITY	Test Section Size		Total Temperature, °R	Speed Range	Pressure Altitude (Nominal), ft	Dynamic Pressure, psf	Reynolds No./ft (x10 <sup>-6</sup> )	Primary Use*
Propulsion Wind Tunnel 16T Propulsion Wind Tunnel 16S *** Aerodynamic Wind Tunnel 4T	Cross Section, ft	Length, ft	540 to 600	Mach 0.06 to 1.6	Sea Level to 90,000	2 to 1,100	0.2 to 6.0	(6) (9) (14)
	16 x 16	40						
	16 x 16	40						
4 x 4	12.5	540 to 600	Mach 0.2 to 2.0	Sea Level to 65,000	20 to 1,400	2.0 to 7.0	(6) (14)	
USE LEGEND: * Testing of (1) Rockets, (2) Turbojets (3) Ramjets (4) Missile Base Heating Models, (5) Space Environmental Tests, (6) Aerodynamic Models, (7) Aerothermodynamic Models, (8) Aeroballistic Models, (9) Combined Aerodynamic Inlet and Propulsion System Tests, (10) Impact Studies, (11) Free-Jet Expansion of Rocket Exhaust Plumes, (12) Ablative Materials, (13) Ablative and Erosive Materials, (14) Store/Stage Separation								
-- Currently Mothballed --- Standby Status **** Currently Non-Operational								