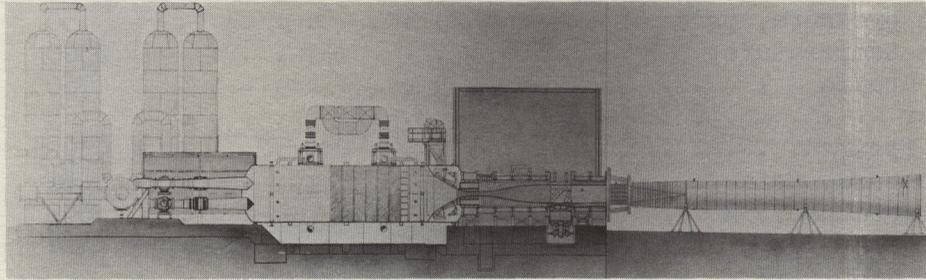


## LANGLEY 9- BY 6-FOOT THERMAL STRUCTURES TUNNEL



L-331-A

The Langley 9- by 6-foot thermal structures tunnel is located in Building 1256 and is under the direction of the Structures Research Division. This tunnel is used primarily for studies of aerodynamic heating and loading. Test medium is air, heated by a metallic-mass heat exchanger. Model mounting consists of sting, floor, or panel mounts. The tunnel has a supersonic two-dimensional contoured nozzle with test section 72 inches by 105 inches and exhausts through diffuser into atmosphere. Examples of operating conditions are as follows:

Stagnation pressure, psia . . . . .	50	50	200	200
Stagnation temperature, °R . . . . .	760	1120	760	1120
Enthalpy, Btu/lb . . . . .	190	285	190	285
Mach number . . . . .	3	3	3	3
Velocity, fps . . . . .	2420	2940	2420	2940
Static pressure, psia . . . . .	1.36	1.36	5.44	5.44
Static temperature, °R . . . . .	270	400	270	400
Static density, slug/cu ft . . . . .	$4.34 \times 10^{-4}$	$2.83 \times 10^{-4}$	$16.8 \times 10^{-4}$	$11.3 \times 10^{-4}$
Dynamic pressure, lb/sq ft . . . . .	1230	1230	4940	4940
Reynolds number per foot . . . . .	$4.85 \times 10^6$	$2.9 \times 10^6$	$18.4 \times 10^6$	$10.6 \times 10^6$
Weight flow, lb/sec . . . . .	1680	1380	6720	5520
Running time, sec . . . . .	60	75	15	18
Maximum model diameter:				
Blunt body, in. . . . .	33	33	33	33
Streamlined body, in. . . . .	47	47	47	47

The 9- by 6-foot thermal structures tunnel (with hot core) is used primarily for studies of aerodynamic heating and loading. The test medium is air plus combustion products, heated by gas-fired central core. Model mounting

consists of sting, floor, or panel mounts. The tunnel has a supersonic two-dimensional contoured nozzle with test section 48 inches by 72 inches and exhausts through the diffuser into the atmosphere. Examples of operating conditions are as follows:

Stagnation pressure, psia . . . . .	50	200
Stagnation temperature, ° R . . . . .	2500	2500
Enthalpy, Btu/lb . . . . .	760	760
Mach number . . . . .	3	3
Velocity, fps . . . . .	4392	4392
Static pressure, psia . . . . .	1.36	5.44
Static temperature, °R . . . . .	893	893
Static density, slug/cu ft . . . . .	$1.27 \times 10^{-4}$	$5.09 \times 10^{-4}$
Dynamic pressure, lb/sq ft . . . . .	1240	4960
Reynolds number per foot . . . . .	$0.5357 \times 10^6$	$2.143 \times 10^6$
Weight flow, lb/sec . . . . .	1198	4792
Running time, sec . . . . .	75+	25+
Maximum model diameter:		
Blunt body, in. . . . .	33	33
Streamlined body, in. . . . .	47	47