July 08

NASA Glenn Research Center Space Ground Test Facility & Capabilities Chart

Combustion & Cryogenics Space Facilities – RCL

Propellants	RCL-11	RCL-21	RCL-22	RCL-24C	RCL-31/32
Volume (Scf)					
GH2	70,000	140,000	140,000		70,000
LH2		16 Lb			
GOX	70,000	60,000	60,000		60,000
LOX	100 Gal	50 Lb			50 Gal
HC		8 Gal			100 Gal
Ethanol	50 Gal	8 Gal			100 Gal
Supply/Pressure(PSI)					
GH2		2,400	2,400		2,400
LH2		1,800			1,800
GOX		2,400	2,400		2,400
LOX	1,100	1,800			1,800
HC		1,000			
Ethanol		1,000			
Max flow (lb/sec)					
GH2	.022	0.3	2.0	0.0045	3.0
LH2		0.3			1.0
GOX	.08	1.0	4.0	0.0023	4.0
LOX		2			7
HC		0.5			
Ethanol		.1			

Combustion & Cryogenics Space Facilities – RCL (cont.)

Cooling	RCL-11	RCL-21	RCL-22	RCL-24C	RCL-31/32
Volume (Scf)					
GH2			140,000		70,000
LH2 (Gal)					200
Water (Gal)	100		2,000		150
Supply Pressure (PSI)					
GH2			2,400		2,400
LH2					1,800
Water			1,200		1,500
Max Flow (lb/sec)					
GH2			1.5		1.5
LH2					1.5
Water (gpm)		50	300	2 (100°C)	200
De-ionized Water		No	Yes	Yes	No
Other Capabilities					
Max Thrust (lbf)	50	300	2,000		2,000
Altitude (ft)	95,000				
NEC, Hazardous Atmospheres	**RCL-12**				
	HAN; Xm46; Chemical/Material Compatibility (Fume Hood)				

Space Simulation Facilities – EPL, EPRB, SMiRF, SPF, *B-2, *K-site

Vacuum Facility	Dimensions (diam x length)	Vacuum System	No Load Pressure (torr)	Pumping Speed liter/sec(air)	Features
VF-1	5ft x 15ft	(2) 35-in ODP	$3x10^{-7}$	40,000	250kJ, 30MW, pulsed capacitor bank
VF-2	3.5ft x 7ft	Turbopump	$1x10^{-6}$	1,950	
VF-3	5ft x 15ft	(4) 35-in ODP	$4x10^{-7}$	80,000	Multiple test ports
VF-4	5ft x 15ft				Currently Non-Operational
VF-5	15ft x 60ft **Access:** 13ft x 30ft	**Cryopanel** 750 W @20K, 33.5 m2 of He surface **Diffusion Pumps** (20) 32-in pumps, -50°F traps	$1x10^{-7}$	3,500,000 (cryo) 250,000 ODP	Leading test bed for Electric Propulsion Thrusters Multiple test ports including 6ft test port
VF-6	25ft x 70 ft	(12) 54-in nude cryotub	$5x10^{-7}$	900,000	30 kW Solar Simulation, -196°C/340kW cold wall 10ft test port
VF-7	10ft x 15ft	(5) 35-in Diffusion Pumps	1×10^{-7}	125,000	Operational in 2005
VF8	5ft x 15ft	(4) 35-in ODP	$4x10^{-7}$	120,000	Portable cold wall for thrusters, multiple test ports
VF-9	2ft x 5ft x 8ft	Roots Blower Pumps	$1x10^{-3}$	3000 cfm	Atomic oxygen production
VF-10	40in x 60in	Turbo pump	$8x10^{-7}$	1,950	Thermal simulation
VF-11	7.25ft x 27ft	(3) 48-in cryotubs (4) 36-in cryotubs	$1x10^{-7}$	270,000	EP Thruster Testbed
VF-12	10ft x 30ft **Access:** 10ft x 16ft	**Cryopanels** 350 W @20K Panel Temps	$8x10^{-8}$	1,000,000	Medium to high power electrostatic thruster test bed. Full performance characterization, diagnostics & power suite available.
VF-13	5ft x 11.5ft	20-in Cryopump & Turbopump	$4x10^{-7}$	10,500	Rapid turnaround with valved pumping system
VF-14	22in x 22in x 36in	Turbopump	$5x10^{-7}$	1,000	
VF-16	10ft x 25ft	(10) 48-in Cryopumps	$7x10^{-8}$	500,000	Electrostatic Propulsion Test Facility
VF-61	3.3ft x 5ft	36-in Cryopump	$3.5x10^{-8}$	30,000	Multiple test ports
VF-67	3.33ft x 10ft	20-in Cryopump	$9x10^{-7}$	10,000	Full LN_2 Flooded Thermal Shroud
CW-19	7ft x 10ft	(2) 35-in ODP	$5x10^{-7}$	25,000	
PIF-H	71in x 72in	36-in cryotub	$1x10^{-6}$	30,000	Space Plasma Test Facility. Thermo Shroud available upon request.
PIF-V	6ft x 9.5ft	(4) 10-in ODP	$5x10^{-7}$	5,300	Space Plasma Test Facility
SMiRF	72 in x 100 in	(3) 10-in ODP	$8.5x10^{-6}$	7,000	Hazardous test capability, thermal shroud launch pressure profile
***SPF**	100ft x 122ft	(10) 52-in Cryopumps (16) 48-in ODP	$1x10^{-6}$	1,300,000	Thermal simulation, large test article handling very low vibration environment
***B-2**	35ft x 55ft	(32) 48-in ODP	$5x10^{-7}$	350,000	Hot firing, thermal simulation; hazardous test capability, altitude simulation, 27-ft. test port
***K-site**	25ft dia	(4) 35-in ODP	$5x10^{-7}$	150,000	Hazardous test capability, thermal shroud vibration testing

ODP: Oil Diffusion Pump

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