Refueling Infrastructure Testing for Lunar Surface Operations

***Facility 1**: Lunar Dust Thermal Vacuum Chamber (JSC)*

***Facility 2**: Potential cryogenic/high-pressure refueling facility (JSC)*

***Facility 3**: Full scale analog operations (in development adjacent to JSC)*

- **Purpose**: end-to-end integrated testing for refueling infrastructure
  - Test components/subsystems in relevant lunar surface environments
  - Build and test full-scale systems with cryogenics and high-pressure gases
  - Operate full-scale systems and vehicles in lunar lighting and terrain analogs; both remotely and via EVA
  - Many components and subsystems are ready for integration
- **Description**: Moonbase analog can be built full-scale at Texas Space Institute
- **Distinctive capabilities**: enables individual components from integrated testing to full-scale operation, all facilities located at or adjacent to Johnson Space Center
- **Potential users**: Moon Base
- **Technology Readiness Level**: 4, moving to 7

FOCUS AREAS	Facility 1	Facility 2	Facility 3
Components (dust tolerant coupler)	X		
Subsystems (e.g. refueling)	X	X	
Integrated operations (rovers, sim EVAs)		X	X
Lunar environment (dust, TVAC)	X		
Cryo/High-pressure gas (LN_2, Helium)		X	
End-to-end full-scale operations			X
Cost	.5-1M	1-3M	1-5M
Starting date	0-1 year	1-2 years	1-2 years

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