

Statement of Work (SOW) for Advanced Suit Glovebox System for Spacesuit Testing

Project Title: Development and Fabrication of an advanced glovebox system for testing and evaluation of advanced spacesuit materials.

Background: The overarching goal of the NASA's Artemis Suit Material Project conducted by the Crew and Thermal System Division Advanced Suit Team, is to develop enabling technologies and potentially a turnkey solution for suit vendors for the outer shell fabric of a lunar suit environmental protection garment (EPG).

In order to thoroughly evaluate candidate technologies, simulation of the lunar surface conditions is necessary. One factor in particular is the effect of regolith on the integrity of spacesuit components. Evaluating state of the art protective outer shell fabrics rigorously enough for lunar exploration requires exposure to regolith "simulants". A glovebox capable of simulating this environment allows for an efficient testbed for evaluating spacesuit components that incorporate these new outer shell fabrics.

Objective:

The Vendor will collaborate with NASA to develop an advanced glovebox system, based on the to meet the requirements of the Advanced Suit Materials project.

Period of Performance: No more than 20 months after ATP. The work will proceed over a defined schedule to ensure iterative feedback and final delivery within the required timeframe to align with NASA's project schedule.

Travel: No travel expenses are required/included in this TO.

Scope of Work:

The following definitions differentiate between requirements and other statements.

Shall: This is the only verb used for the binding requirements, which must be implemented and verified.

Should/May: These verbs are used for stating goals, which must be addressed by the design, but not formally verified.

Will: This verb is used for stating facts or declaration of purpose.

Rationale is provided for most of the requirements. It is important to note that rationale is not binding and is only used to provide additional information or examples in order to clarify intent of the requirement. In the event of an inconsistency between the requirement and the rationale, the requirement is binding and takes precedence.

1. Geometry, Ports, & Interfaces

A. Advanced Suit Glovebox System Shall:

1. Be a cylinder with a 24" ID and be 40" long
2. Include a venting valve
3. Include a vacuum valve
4. Include a vacuum gauge
5. Include an inlet gas port (NPT fitting)
6. Include 4 NW50 bulkhead ports on left door
7. Include 1 DN250CF bulkhead port on right door
8. Include a dust filter for vacuum line
9. Include 2 flanged arm-port interfaces that match TBD NASA provided geometry
10. Provide metallic arm port clamp rings that match TBD NASA provided geometry

2. Internal Glovebox Environment

A. Advanced Suit Glovebox System Shall:

1. Incorporate an oil-less vacuum pump to control internal environment from 760 down to 0.01 Torr.
2. Include a 9 PSID vacuum relief valve
3. Include a vacuum controller
4. Include removable LED lights in top of glovebox main chamber

B. Glovebox System Will:

1. Not preclude the use of removable interior films/liners to protect glovebox walls from sustaining damage from planetary dust simulants

3. Adjustability & Mobility

A. Advanced Suit Glovebox System Shall:

1. Incorporate a height adjustable scissor-lift table with lockable swivel casters

Deliverables:

1. Hardware

A. QTY (2) Advanced Suit Glovebox System

1. Inclusive of all fittings/valves/regulators/controllers/spare parts (as necessary)

2. Meetings: Vendor shall hold the following meetings:

- A. Kick-off. To be held within 1 week of ATP.
- B. Weekly status updates. To be held weekly during the Period of Performance.
- C. Pre-Fabrication Review (PFR) for final product approval. To be held 1 week prior to the start of manufacture of the final deliverables.

3. Data

- A. Advanced Suit Glovebox System drawing(s)
- B. Advanced Suit Glovebox System CAD model(s)