

## SOCOM234-005: Slim Form Cargo Loader/Unloader

### ADDITIONAL INFORMATION

N/A

### TECHNOLOGY AREAS:

Ground Sea | Materials

### MODERNIZATION PRIORITIES:

Trusted AI and Autonomy

### KEYWORDS:

cargo; loader; unloader; transport; 463L; pallet

### OBJECTIVE:

The objective of this topic is to develop applied research toward an innovative capability to lift, load, unload, and transport full-sized, fully loaded 463L pallets and containers from Air Force cargo planes in varying environments, with various terrain. Additionally, the system should only occupy one full pallet position on an aircraft.

IMPORTANT: For SOCOM instructions: please visit: <https://www.defensesbirsttr.mil/SBIR-STTR/Opportunities/>. Go to the bottom of the page and click the tab for “DoD SBIR 23.4 Annual”. Once there, go to “SOCOM SBIR 23.4 – Release 4”.

### DESCRIPTION:

As a part of this feasibility study, the proposers shall address all viable overall system design options with respect to the system being able to conduct all necessary cargo loading and unloading activities. Semi-autonomous interface and interaction is desired. This includes, but is not limited to:

- Lifting a fully loaded 463L pallet from the ground, moving it a distance of approximately 500m,
- Loading 463L pallet into the back of a C-130
- Unloading a fully loaded 463L pallet
- Moving it a distance of 500m, and
- Setting the pallet down on the ground.

Additionally, maximum specifications of the system need to be identified including, but not limited to, length, width, gross vehicle weight, tare weight, and lift capacity.

### PHASE I:

Conduct a feasibility study to assess what is in the art of the possible that satisfies the requirements specified in the above paragraphs entitled “Objective” and “Description.”

The objective of this USSOCOM Phase I SBIR effort is to conduct and document the results of a thorough feasibility study (“Technology Readiness Level 3”) to investigate what is in the art of the possible within the given trade space that will satisfy a needed technology. The feasibility study should investigate all options that meet or exceed the minimum performance parameters specified in this write up. It should also address the risks and potential payoffs of the innovative technology options that are investigated and recommend the option that best achieves the objective of this technology pursuit. The funds obligated on the resulting Phase I SBIR contracts are to be used for the sole purpose of conducting a thorough feasibility study using scientific experiments and laboratory studies as necessary. Operational prototypes will not be developed with USSOCOM SBIR funds during Phase I feasibility studies. Operational prototypes developed with other than SBIR funds that are provided at the end of Phase I feasibility studies will not be considered in deciding what firm(s) will be selected for Phase II.

### PHASE II:

Develop, install, and demonstrate a prototype system determined to be the most feasible solution during the

Phase I feasibility study on a real-world exercise that demonstrates the full capabilities of the system to lift, move, load, and unload a full-sized 463L on and off a C-130 aircraft.

**PHASE III DUAL USE APPLICATIONS:**

This system could be used in a broad range of military and commercial applications where movement of loads from home base operations to an austere environment is required. The loader would be able to move full sized pallets across various terrains, including traditional hard surfaces. These applications apply to the civilian sector, as well since similar pallets are utilized in the civil cargo transportation industry.

**REFERENCES:**

1. US Air Force fact sheet on the C-130: [https://www.af.mil/About-Us/Fact Sheets/Display/Article/1555054/c-130-hercules/](https://www.af.mil/About-Us/Fact%20Sheets/Display/Article/1555054/c-130-hercules/)
2. Airmen loading cargo onto C-130 from the back of a truck: <https://www.defense.gov/Multimedia/Photos/igphoto/2001458195/>
3. US TRANSCOM load planning and documentation: [https://www.ustranscom.mil/dtr/part-iii/dtr\\_part\\_iii\\_app\\_v.pdf](https://www.ustranscom.mil/dtr/part-iii/dtr_part_iii_app_v.pdf)

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