

Astronaut Recovery Work Platform

JACOBS SOLUTIONS INC. | NASA

SUMMARY

NASA's contractor, Jacobs Solutions, needed a work platform for recovery of astronauts from the Orion capsule after splashdown. Spika designed and manufactured a platform able to withstand the corrosion and wave stresses of the ocean environment, while still being lightweight and rapidly assembled.

Jacobs Solutions Inc. provides engineering, technical, professional and construction services, as well as scientific and specialty consulting for a broad range of clients. Jacobs held the Kennedy Space Center (KSC) Engineering and Test contract. They needed a custom work platform for NASA's Artemis program.

One of the key aspects of NASA's Artemis program involves recovery of the Orion capsule after splashdown. The recovery mission includes a highly trained crew of divers and technicians who retrieve the capsule from the ocean using small, rigid hull inflatable boats to tow it back to a San Antonio Class Vessel. A specialized platform and ramp were required to allow the crew to safely disembark the Orion spacecraft within the well deck of the ship.

Spika received a sole source contract for this project due to past performance in designing and building

high quality, unique work platforms for other NASA programs, as well as the ability to meet the rigorous NASA analysis and quality assurance requirements.

The technical requirements for the platform were very demanding and included:

- Being lightweight, movable, and articulated, while also rugged enough to stand up to significant wave induced stresses
- Preventing corrosion in an ocean environment
- ESD prevention
- Rapid assembly to ensure expedited astronaut removal
- The ability to support multiple people at a time for extracting incapacitated astronauts from the





- Orion and carrying them down a ramp
- The ability for the platform to be stored in a low configuration in the belly of the ship
- Extensive analysis, design reviews, and inspections.

To facilitate the incredible strength yet lightness required of the platform, Spika used round aluminum profiles to minimize drag and reduce wave stresses. Handrail was designed to be removed and stored out of water, then rapidly installed. Bar grating decking greatly reduced vertical drag forces.

The coating system was developed as a collaboration between NASA, Spika, and the coating company Wolkerstorfer. It was derived from two completely different industries, aerospace and oil and gas.

Anodization was used to provide superior corrosion protection and act as an excellent pretreatment for paint. Then, a special paint formulation designed to endure the high hydrostatic pressures of deep water while offering abrasion and corrosion resistance to protect components from the saltwater environment was applied. (Read more about this collaboration [here.](#))

The project successfully progressed through all design phases, was manufactured, coated, inspected, and delivered to NASA, along with a comprehensive operation manual and full quality package.