

# Integration and Testing Platform for OSAM-1

NASA

## SUMMARY

NASA required a work platform system to support the integration and test activities for the Servicing Payload (SP) and Space Vehicle (SV) for the OSAM-1. KBR contracted with Spika to satisfy this requirement with a height adjustable work platform system that supported four main SP/SV integration height and access configurations. The Spika stand also incorporated an overhead gantry with a 1,200 lb. capacity to support a “mockup” spacecraft used in the testing of the Servicing Payload.

NASA sought out a work platform to support the integration and test activities for both the Servicing Payload (SP) and Space Vehicle (SV) for the OSAM-1 (On-orbit Servicing, Assembly, and Manufacturing 1) mission. This mission is the first to robotically refuel a satellite not designed to be serviced and will demonstrate assembly and manufacturing technologies and capabilities. OSAM-1 will be the first of multiple planned missions to bring key OSAM technologies to operational status.

The work platform was needed to serve as the walking/working area used to support personnel and equipment during the Integration and Test (I&T) of the Servicing Payload and Space Vehicle. The work platform also had to support a gantry and other MGSE required to perform multiple tests on subsystem functionality for the OSAM-1. The tests



would take place within a Class 10K clean room at the Goddard Space Flight Center in Maryland, USA.

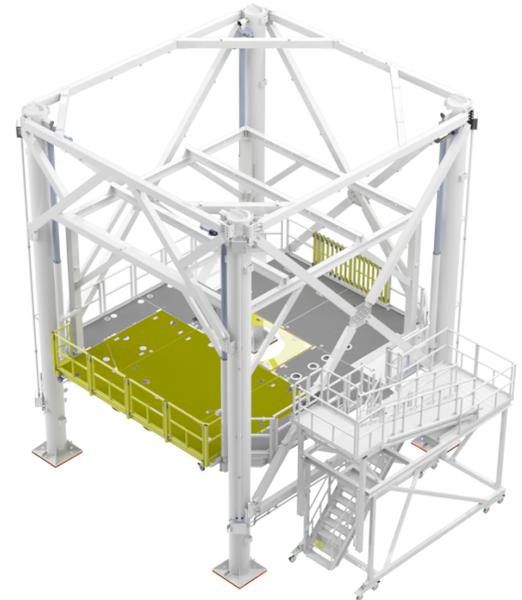
NASA program personnel observed a Spika access product at a supporting spacecraft manufacturing facility. Impressed with the design and build quality of the unit, they chose to reach out to Spika for a new access solution.

At first, Spika proposed a 10' tall, fixed height platform with a reconfigurable deck to support the integration activities detailed in the statement of work. Upon contract award, it was determined that four unique integration activities would be performed at this station, which increased the reconfigurability and versatility requirements of the work platform. Over the course of a year, Spika developed real-time, tailored engineering solutions that satisfied the rigorous and unique requirements for the direct-interfacing flight hardware ground

support equipment (GSE). The resulting design provided access for four primary integration activities that required different deck configurations and keep-out zones, as well as different heights, within a Class 10k clean room environment. Spika, KBR, and NASA met regularly throughout this period to revise the concept and review engineering analyses and other objective quality elements (OQEs) provided by Spika for the program.

The resulting work platform system incorporated:

- A Class 10K clean room compliant work platform system
- A walking/working surface with reconfigurable deck panels and handrails
- An adjustable working surface height from 126"-224" via non-backdrive-able lifting actuators with brake redundancy controlled at ground level
  - A multi-height stair that provided 126"-224" height range via a manual screw jack at ground level
  - A dedicated overhead structure to support a 1200 lb. "mockup" used in testing of the spacecraft
  - A live load capacity of 3,000 lbs. to support 8 people + tools
  - A dead load capacity of 2,000 lbs. to support various tool/material storage
  - Deck-mounted fall arrest posts



- Air casters for system mobility.

Per Spika's NSF-certified ISO 9001:2015 AS9100D quality management program, additional engineering services included:

- Proof Load Test
- NDT weld inspection for all critical welds
- Full system powder coat with critical welds masked
- Full system grounding with grounding studs
- All material subject to approval by OSAM-1 Contamination Control Engineer.

