**U.S. Spacesuit Knowledge Capture –**

Chronicling Spacesuit Design for the Future

Cinda Chullen[[1]](#footnote-1)

NASA Johnson Space Center, Houston, Texas, 77058

Vladenka R. Oliva,[[2]](#footnote-2) Gordon M. Andrews[[3]](#footnote-3)

*Jacobs, Houston, Texas, 77058*

Diana L. Rodgers[[4]](#footnote-4)

*S&K Global Solutions, Houston, Texas 77058*

Robert B. Ibanez[[5]](#footnote-5)

*University Space Research Association, Houston, Texas 77058*

With less than 4 years until the United States is scheduled to land the first woman and next man on the Moon, NASA is leveraging 60 years of experience to build a spacesuit to assist in the success of this and future human space exploration missions. This experience comes from the achievements of retired and employed spacesuit experts, innovations that were conceived from existing ideas and inventions, and a plethora of archived knowledge. The U.S. Spacesuit Knowledge Capture (SKC) Program’s primary function is to capture, archive, and share current and legacy spacesuit-related knowledge with scientists, engineers, and technicians. To capture valuable spacesuit-related knowledge, the program uses various methods that have included hosting and recording classroom and online courses, workshops, and vignettes, and preserving thousands of legacy spacesuit-related files. In 2019, the SKC Program added to its role when it began coordinating the electronic recording of the new spacesuits’ buildup. This new, next-generation spacesuit is named the Exploration Extravehicular Mobility Unit (xEMU) and is a compilation of many components. As each component is tested and assembled into the suit, the SKC Program is chronicling this buildup using high-speed video production and photography that includes time-lapsed images. To complement the recording of the components, the SKC Program plans to record and photograph the design verification testing. In 2020, the SKC Program was given the initiative to research and identify the custodianship of historical spacesuit equipment that resides within the Crew and Thermal Systems Division. These archives will be added to the SKC Program’s expansive archived collection of spacesuit-related knowledge that represents over 5 decades of spacesuit legacy from the Apollo era to the pursuit of Mars and beyond. This paper describes the electronic documentation of the xEMU’s buildup and identifies the SKC Program’s 2020 accomplishments.

1. U.S. Spacesuit Knowledge Capture Program Manager and Project Engineer, Space Suit and Crew Survival Systems Branch, Crew and Thermal Systems Division, NASA Parkway, Houston, TX 77058/EC5. [↑](#footnote-ref-1)
2. U.S. Spacesuit Knowledge Capture Program Administrator and Technical Editor, Science and Exploration Department, 2224 Bay Area Blvd., Houston, TX 77058/JE6WA. [↑](#footnote-ref-2)
3. Strategic Communications Coordinator, Strategic Communications Group, 2224 Bay Area Blvd., Houston, TX 77058/EA13. [↑](#footnote-ref-3)
4. Public Relations Coordinator, 1331 Gemini, Suite 101, Houston, TX 77058/EC511. [↑](#footnote-ref-4)
5. Spacesuit Multimedia Developer, 3600 Bay Area Blvd., Houston, TX 77058/EC511. [↑](#footnote-ref-5)