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DESIGN PROPOSAL FOR AN ANALOG RESEARCH STATION IN THE PAMPAS DE LA JOYA DESERT, PERU

Abstract

Recent studies have shown that Peru has a growing participation in analog missions, with more Peruvians getting involved in projects related to space exploration. A key element for the success of these efforts is the development of habitats and the execution of analog missions. The Pampas de la Joya desert in Arequipa, known for its extreme hyperarid conditions, has been identified through multiple chemical and microbiological studies as a location that closely resembles the conditions of Mars. This makes it an ideal site for conducting space exploration simulations. This proposal aims to design a Martian analog station in the Pampas de la Joya desert to house a team of researchers for conducting scientific experiments, testing space technologies, and developing capabilities for future Mars exploration. The station would consist of a modular, self-sufficient, durable, and adaptable structure, incorporating essential systems for life support, communication, energy, mobility, security, and habitability. The proposal also includes a feasibility analysis, evaluating the technical requirements, necessary resources, and other critical aspects for the success of the project. This research hopes to strengthen international collaboration in the field of analog missions and further enhance Peru's position in space exploration.