DEVELOPMENT OF CLOUD MICRO-ORGANISM CENSUS SAMPLING PLATFORMS. S. S. Limaye[1], D. Sokol[2] and J. Arenberg[2], [1]University of Wisconsin, Madison (1225 West Dayton Street, Madison, WI 53706, USA, sslimaye@wisc.edu), [2]Northrop Grumman Aerospace Corporation (1 Space Park Blvd, Redondo Beach, CA 90278).

Earth, the only inhabited world known has cloud-based life in the form of micro-organisms. Airborne microbes are transported over long distances [1] and bacteria have been found to act as cloud condensation nuclei [2-4]. Much has been investigated about the bacteria in the clouds at a wide range of altitudes [5-7], but much more can be learned by sampling such populations from suitable platforms. Carrying out such surveys on other bodies with atmospheres is also a need for planets such as Venus [8-10] and perhaps Titan. The challenge is the proper design of the mission and technology to carry out such studies. In this paper, we explore the use of a terrestrially based flight platform, to develop and mature the science and technology for such a survey of extra-terrestrial cloud based life. Among the challenges of mission design is long duration flight and the ability to accommodate equipment of sufficient scientific capability to achieve mission goals. We explore and discuss the options for this development using the Northrop Grumman concept for a semi-buoyant platform.

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