

NASA Spaceward Bound: Day 4 & 5

Space suits and The Dawn of Life

The big day finally came around, to view some of the earliest forms of life, and to get out and about in the space suit. Apart from creating a serious fashion statement in the field, there was much serious science that needed to be conducted.

Under the coordination of Dr John Rask, Life Scientist from the NASA Ames Research Center, and assistance from David Willson from Mars Society Australia, a variety of activities were proposed to further understand the operation constraints of the space suit. A busy day was planned for the 6 individuals who were going to be involved in their first 'Extra-Vehicular Activity' in the NASA funded University of North Dakota space suit. The overarching question was to find out the differences with individuals identifying stromatolite structures in the space suit compared to walking the same area in standard field clothing. Each 'subject' was briefed about the suit, associated safety and emergency procedures and then came the suiting-up procedure, which at the beginning of the day took almost an hour, but by the end of day around 15 minutes for each person.

After allowing adequate time for the suit to pressurise, the participant then ran through some flexibility and bending exercises to familiarise themselves with the suit and the added weight, which is around an extra 35 kg.



(Above) Dr Rosalba Bonaccorsi from NASA Ames giving the University of North Dakota pressurised space suit a full work out

The task then allowed each member 15 minutes to walk a pre-determined path to identify the numbers of stromatolites that could be observed, this was monitored and recorded by Dr Simon George from Macquarie University. After this it was important for the same individual to walk the course and identify key features. After an initial discussion it appears that the differences between what individuals observed with and without a space suit was very similar. A range of specialist (Geologists) and non-specialists (Teachers and an undergraduate student) ran through the course, and specialists could identify more, but also were hindered by the suit, felt restricted, towards the end very fatigued and suffered greatly from excessive moisture build-up inside the helmet.

Overall a tremendous opportunity to try the suit, but also a great learning experience for those involved in testing this technical piece of equipment.



(Above) Harry Steel, Science and Engineering student from the University of Sydney ready for his EVA.

A simultaneous activity occurring during this time was cataloguing key features over the dawn of life trail. This involved around 15 people examining areas of stromatolites and looking at distributions of these objects over a specific area. By using a series of field survey techniques the data generated will provide future science expeditions and interested members of the public an opportunity to view some of the most ancient structures and earliest forms of life on Earth.

A key ingredient to Spaceward Bound is education and outreach. In the town of Nullagine local children came along during the daytime to view the space suit testing and ask questions to the scientists-this was a huge success, with the students closely following the proceedings and following the 'astronauts' around. During the evening additional interest was shown by the Nullagine community, with not only the students and some of their parents in attendance, but a sizeable portion of the general community. In an outdoor area at the local school, Dr Chris McKay, Dr Jon Rask, Dr Jonathan Clarke, Mark Gargano and Janine Slocombe explained aspects of the program, the science activities here in the Pilbara and how they link to future missions and Mars itself along with the importance of science and school. As Chris McKay himself summed up, "A perfect Spaceward Bound day, it had everything-the science, the fieldwork, the education, the outreach, all aspects of the program were covered effectively."