



EURO-CARES WP3 Meeting

Designing a European Extraterrestrial Sample
Curation Facility



NHM Vienna, Austria, 13-16 April 2016

Facility or Facilities? That is the Question!

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Mars sample return mission (MSR) will be a wide international cooperation led, *de facto*, by the United-States. The basic hypotheses are i) the mission is returning 500g of Martian samples plus some gas in one return container landing in Utah or Australia, ii) the samples are considered as a unique asset of mankind and are managed by an International Dedicated Committee, iii) MSR is a restricted Earth return mission according to the COSPAR planetary protection policy.

In the former French-US project to return sample in the early two-thousands we began to cope with this question of sample handling and quarantine leading to the edition of the “draft protocol” [1]. The rough functional analysis lead to the description of 4 different activities: opening of the container and sorting/identification of the various samples, quarantine analyses for life detection and biohazard, curation and finally science analysis of the samples.

The opening of the return container as well as the identification and the splitting of the samples will be done in a unique, highly specialized, dedicated facility the Receiving Facility. The level of cleanliness, confinement and safety is summarized under the designation PPL4 (planetary protection laboratory with a Bio-Safety Level 4). We state that the samples can then be moved with the appropriate containment and safety from one PPL4 to another. These curation facilities will have specificity to assume several functions (identification, rough characterization, preservation subsampling...) under strict containment for the very long term. These curations facilities could or would have the possibility to conduct specific, concerted quarantine operations for life detection and biohazard testing during an appropriate period of time. The definition of these functions will lead to specific requirements needed to design these quarantine and curation facilities (Q&CF).

It is likely that the main players (US, Europe, Japan...) will require the handling of some samples in an institutional Q&CF. Europe (ESA as well as EU) could be a major player in this MSR effort and probably will require samples to be handled at home. In this draft protocol we reckoned that 10 years will be require from the formal “go” decision to the end of the certification of the Q&CF.

References:

[1] DRAFT TEST PROTOCOL FOR DETECTING POSSIBLE BIOHAZARDS IN MARTIAN SAMPLES RETURNED TO EARTH; J. D. Rummel, M. S. Race, D. L. DeVincenzi, P. J. Schad, P. D. Stabekis, M. Viso, S. Acevedo; NASA/CP-2002-211842, 2002, pp

Keywords: Mars sample return, Life detection, Biohazard, Planetary protection, Biosafety