

AMY BAKER
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EDUCATION

UNIVERSITY OF WYOMING: B.S. in Chemistry, May 1985; degree certified by the American Chemical Society.

EXPERTISE: PLANETARY PROTECTION (PP): Manage and implement PP requirements in the Assembly, Test, and Launch Environment. Direct and manage PP laboratory setup and required documentation/quality assurance standards. Develop, test and implement new analytical standards for PP applications. Extensive mission and spacecraft assay experience including independent verification of bioburden for the NASA Planetary Protection Office. Manage research projects and training requirements. Sole proprietor of Technical Administrative Services; a technically based service organization specializing in planetary protection.

PROFESSIONAL EXPERIENCE

September 2015-
Current

SETI Project Manager - Develop, manage and implement planetary protection audit activities for the NASA Planetary Protection Office. Perform required final verification assays for planetary missions as required by the Planetary Protection Officer. Principal investigator for U.S. swab/wipe efficiency study. Principal investigator for U.S. Millipore filters demonstration and efficiency study for inclusion as new method for NASA Standard Analytical Tools. Define requirements and write Quality Assurance Protocol for the U.S. and European Space Agency. Provide technical support including the revision of NASA procedure “NASA Standard Procedures for the Microbial Examination of Space Hardware,” and “Planetary Protection Provisions for Robotic Extraterrestrial Missions. Organize and teach Planetary Protection Policies and Practices course.

May 1999-2015

TECHNICAL ADMINISTRATIVE SERVICES OWNER –Technical work supported field testing using a variety of analyses under study for addition to existing planetary protection methods. Managed PP laboratory and personnel for MAVEN and INSIGHT missions. Performed required final verification assays for planetary missions as required by the planetary protection officer. Certification research project (in conjunction with the Jet Propulsion Laboratory and the Marine Biological Laboratory) to qualify *Limulus* Amebocyte Lysate and Adenosine Triphosphate methods for use as biological screening techniques in conjunction with the Standard Assay Methods. Performed field sampling to support research tasks looking for radiation resistant microorganisms. Developed and taught the Planetary Protection Course “Planetary Protection – Policies and Practices.” Provided technical and administrative support including the revision of NASA procedure “*NASA Standard Procedures for the Microbial Examination of Space Hardware,*” which drives all analytical requirements to meet bioburden requirements for planetary bound flight hardware, and “Planetary Protection Provisions For Robotic Extraterrestrial Missions”, which drives all technical and reporting requirements or planetary missions. Provided Technical work shop support.

Feb 1995-
May 1999

LOCKHEED MARTIN ASTRONAUTICS SENIOR ENVIRONMENTAL ENGINEER – Supervisor and Technical Lead of Planetary Protection Laboratory for the Mars '98 Surveyor Program. Managed and directed all laboratory activities including biological monitoring of flight hardware, quality control, method development/verification and launch support at Cape Canaveral Air Force Base.

Oct 1991-
Jan 1995

NATIONAL RENEWABLE ENERGY LABORATORY DEPUTY DIRECTOR HYDROGEN PROGRAM. Managed and coordinated programmatic efforts in critical areas including technology transfer; public outreach; review and analysis of program planning and technical efforts; and subcontract management. Developed planning for congressionally mandated meetings and annual reviews. Initiated meetings and provided support to the International Energy Agency Executive Committee as Secretariat.

Jan 1985-
Oct. 1991

LOCKHEED MARTIN ASTRONAUTICS Chemical Technology Laboratory Lead. Managed and organized workloads for seven people. Performed engineering and laboratory work including gas chromatography, mass spectrometry, atomic absorption and bench scale engineering tests associated with flight hardware.

TECHNICAL HIGHLIGHTS

Verification/Project and Research Assays have been conducted as follows:

Spacecraft: Mars Polar Lander, Mars Climatic Orbiter, Stardust, Genesis, '01 Lander, Mars Odyssey, Mars Exploratory Rovers, Mars Reconnaissance Orbiter, Phoenix, Mars Science Laboratory, MAVEN, INSIGHT, Mars 2020

Facilities: KSC – SAEF-2, PHSF; Marshall Space Center -Space Station Assembly High Bay and Assembly Area; Johnson Space Center – Lunar Receiving Lab, Meteorite Processing Laboratory , Cosmic Dust Laboratory, Genesis Assembly Room 1112

Planetary Protection Swab and Wipe Efficiency Studies: Developed and implemented test plan (with IHA) to validate the U.S. swab/wipe efficiencies. Data was then compared to ESA data to generate numeral efficiencies for mission Bioburden accounting.

Planetary Protection Policies and Practices Training Course: As requested by the Office of Planetary Protection, developed course requirements and curriculum. Manage and teach class on an annual basis.

European Space Agency Quality Assurance Procedure – Drafted planetary protection laboratory quality assurance program for inclusion as ESA standard protocol for future missions (EXOMARS).

Field Testing of Mars Sample Return Mission Microbiological Analytical Methods: Collected field samples and performed lab analysis for the Jet Propulsion Laboratory using four proposed new bioassay methods for planetary protection. Samples were collected on assembly sites and Odyssey, Genesis, and Mars Climatic Orbiter spacecraft.

Amplified Detection of Microbial Contamination for Planetary Protection: Initiated and conducted field sampling at numerous sites including Marshall Space Center, Kennedy Space Center and Lockheed Martin Astronautics to support the development of the Limulus Amebocyte Lysate method development for planetary protection applications.

Final Certification Testing for Total Adenosine Triphosphate and Limulus Amebocyte Lysate: Developed, managed and directed comprehensive test program to qualify new methods based upon EPA quality assurance parameters such as method detection limits, calibration, and sample hold times for methods. Evaluated field data in terms of data quality objectives.

STUDIES AND COMMITTEES

National Academies – Subglacial Lakes Panel Member - tasked to study and recommend environmental and scientific stewardship for the exploration and study of sub-glacial environments in Antarctica

National Academies – Icy Solar System Bodie Panel Member- study assessed risk of contamination of icy bodies in the solar system in the context of using 1) the Coleman-Sagan formulation of contamination risk, 2) evaluating the formulation mathematical terms based upon current planetary knowledge and 3) identified scientific investigations that could reduce the mathematical uncertainty and facilitate the implementation of planetary protection requirements.