Report Sample For A Mission

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WARD KELLEY

Report of the Allied Mission to Observe the Greek Elections National Academies Press

The original charter of the Space Science Board was established in June 1958, three months before the National Aeronautics and Space Administration (NASA) opened its doors. The Space

Science Board and its successor, the Space Studies Board (SSB), have provided expert external and independent scientific and programmatic advice to NASA on a continuous basis from NASA's inception until the present. The SSB has also provided such advice to other executive branch agencies, including the National Oceanic and Atmospheric Administration (NOAA), the National Science Foundation (NSF), the U.S. Geological Survey (USGS), the Department of Defense, as well as to Congress. Space Studies Board Annual Report 2017 covers a message from the chair of the SSB, David N. Spergel. This report also explains the origins of the Space Science Board, how the Space Studies Board functions today, the SSB's collaboration with other National Academies of Sciences, Engineering, and Medicine units, assures the quality of the SSB reports, acknowledges the audience and sponsors, and expresses the necessity to enhance the outreach and improve dissemination of SSB reports. This report will be relevant to a full range of government audiences in civilian space research - including NASA, NSF, NOAA, USGS, and the Department of Energy, as well members of the SSB, policy makers, and researchers.

Apollo 16 Mission Report Createspace Independent Publishing Platform

NASA's space and Earth science program is composed of two principal components: spaceflight projects and mission-enabling activities. Most of the budget of NASA's Science Mission Directorate (SMD) is applied to

spaceflight missions, but NASA identifies nearly one quarter of the SMD budget as "mission enabling." The principal mission-enabling activities, which traditionally encompass much of NASA's research and analysis (R&A) programs, include support for basic research, theory, modeling, and data analysis; suborbital payloads and flights and complementary ground-based programs; advanced technology development; and advanced mission and instrumentation concept studies. While the R&A program is essential to the development and support of NASA's diverse set of space and Earth science missions, defining and articulating an appropriate scale for mission-enabling activities have posed a challenge throughout NASA's history. This volume identifies the appropriate roles for mission-enabling activities and metrics for assessing their effectiveness. Furthermore, the book evaluates how, from a strategic perspective, decisions should be made about balance between mission-related and mission-enabling elements of the overall program as well as balance between various elements within the mission-enabling component. Collectively, these efforts will help SMD to make a good program even better.

Scientific and Technical Aerospace Reports Sage

The focus of this inquiry, by the Science and Technology Committee, was the support by the UK Government for the Beagle 2 project developed as part of the European Space Agency's (ESA) Mars Express mission. The Committee found the Government showed enthusiasm for

this project, but was unable to provide a guaranteed financial backing for the development of a lander, resulting in a failure to secure sufficient sponsorship income, which was subsequently seen to have a detrimental impact on the project's success. The Committee feels, that Government needs to put in place a system that can deal with major financial commitments at short notice. In hindsight, the development of the lander and orbiter separately is seen as wrong, impeding the flexible co-ordination of the mission, leading to tensions between the Beagle 2 consortium, ESA and other contractors. Further, there was a lack of co-ordinated oversight between these three groups, and therefore a failure to identify important weaknesses in the mission. Despite the failure of Beagle, the Committee does see some positive potential for future projects, both in scientific and educational benefits, but that the costs of such projects would benefit from greater participation by other organizations.

Mars Rover Sample Return Mission

National Academies Press

One of the highest-priority activities in the planetary sciences identified in published reports of the Space Studies Board's Committee on Planetary and Lunar Exploration (COMPLEX) and in reports of other advisory groups is the collection and return of extraterrestrial samples to Earth for study in terrestrial laboratories. In response to recommendations made in such studies, NASA has initiated a vigorous program that will, within the next decade, collect

samples from a variety of solar system environments. In particular the Mars Exploration Program is expected to launch spacecraft that are designed to collect samples of martian soil, rocks, and atmosphere and return them to Earth, perhaps as early as 2015. International treaty obligations mandate that NASA conduct such a program in a manner that avoids the cross-contamination of both Earth and Mars. The Space Studies Board's 1997 report Mars Sample Return: Issues and Recommendations examined many of the planetary-protection issues concerning the back contamination of Earth and concluded that, although the probability that martian samples will contain dangerous biota is small, it is not zero.1 Steps must be taken to protect Earth against the remote possibility of contamination by life forms that may have evolved on Mars. Similarly, the samples, collected at great expense, must be protected against contamination by terrestrial biota and other matter. Almost certainly, meeting these requirements will entail opening the sample-return container in an appropriate facility on Earth-presumably a BSL-4 laboratory-where testing, biosafety certification, and quarantine of the samples will be carried out before aliquots are released to the scientific community for study in existing laboratory facilities. The nature of the required quarantine facility, and the decisions required for disposition of samples once they are in it, were regarded as issues of sufficient

importance and complexity to warrant a study by the Committee on Planetary and Lunar Exploration (COMPLEX) in isolation from other topics. (Previous studies have been much broader, including also consideration of the mission that collects samples on Mars and brings them to Earth, atmospheric entry, sample recovery, and transport to the quarantine facility.) The charge to COMPLEX stated that the central question to be addressed in this study is the following: What are the criteria that must be satisfied before martian samples can be released from a quarantine facility?
Assessment of Planetary Protection Requirements for Mars Sample Return Missions National Academies Press
The present Maharashtra Human Development Report (MHDR) 2012 keeps the spirit of the Eleventh and Twelfth Five Year Plans of 'faster, sustainable and more inclusive growth' at the core of its analysis. MHDR 2002 was the state's first effort in focusing on the prevailing human development scenario in the spheres of growth, poverty, equity, education, health and nutrition. Since then the state has come a long way in the last decade, achieving near-complete enrolments at the primary school level, a wide coverage of health infrastructure and initiation of new incentives, to name a few. The 2012 Report goes beyond being just a situation-analysis of the current human development scenario to a more analytical exercise in facilitating a deeper understanding of what and

where the inequalities are, how capabilities can be enhanced, what has been the progress, where the shortfalls are and where the thrust of efforts to promote human development should be. Recognizing the centrality of inclusive growth processes to human development, the need to study human development outcomes disaggregated by gender, rural–urban, regional and social groups is the focal point of this Report. The outcome would be the identification of specific human development goals, evidence-based policy recommendations and directions to how those excluded from the growth and human development processes can be included to reap the benefits of the same.

Leadership and America's Future in Space National Academies Press

The NASA Authorization Act of 2005 directed the agency to ask the NRC to assess the performance of each division in the NASA Science directorate at five-year intervals. In this connection, NASA requested the NRC to review the progress the Planetary Exploration Division has made in implementing recommendations from previous, relevant NRC studies. This book provides an assessment of NASA's progress in fulfilling those recommendations including an evaluation how well it is doing and of current trends. The book covers key science questions, flight missions, Mars exploration, research and analysis, and enabling technologies. Recommendations are provided for those areas in particular need of

improvement.

Leadership and America's Future in Space National Academies Press

The Space Studies Board (SSB) was established in 1958 to serve as the focus of the interests and responsibilities in space research for the National Academies. The SSB provides an independent, authoritative forum for information and advice on all aspects of space science and applications, and it serves as the focal point within the National Academies for activities on space research. It oversees advisory studies and program assessments, facilitates international research coordination, and promotes communications on space science and science policy between the research community, the federal government, and the interested public. The SSB also serves as the U.S. National Committee for the International Council for Science Committee on Space Research (COSPAR). This volume reviews the organization, activities, and reports of the SSB for the year 2010.

On NASA's Mars Sample Return Mission Options National Academies Press

The United States possesses a treasure-trove of extraterrestrial samples that were returned to Earth via space missions over the past four decades. Analyses of these previously returned samples have led to major breakthroughs in the understanding of the age, composition, and origin of the solar system. Having the instrumentation, facilities and qualified

personnel to undertake analyses of returned samples, especially from missions that take up to a decade or longer from launch to return, is thus of paramount importance if the National Aeronautics and Space Administration (NASA) is to capitalize fully on the investment made in these missions, and to achieve the full scientific impact afforded by these extraordinary samples. Planetary science may be entering a new golden era of extraterrestrial sample return; now is the time to assess how prepared the scientific community is to take advantage of these opportunities. Strategic Investments in Instrumentation and Facilities for Extraterrestrial Sample Curation and Analysis assesses the current capabilities within the planetary science community for sample return analyses and curation, and what capabilities are currently missing that will be needed for future sample return missions. This report evaluates whether current laboratory support infrastructure and NASA's investment strategy is adequate to meet these analytical challenges and advises how the community can keep abreast of evolving and new techniques in order to stay at the forefront of extraterrestrial sample analysis.

Columbia Accident Investigation Board Report The Stationery Office

The Apollo 11 Mission, primarily designed to land men on the Moon and return them safely to Earth, signaled a new phase of the manned space program. Based on the success of Apollo

11, the first of a series of missions designed for the systematic exploration of the Moon was successfully accomplished on Apollo 12. The fact that the Apollo 12 astronauts were able to achieve a pinpoint landing at a preselected site, and then spend an extended time on the lunar surface, graphically illustrates the rapid progress of the Apollo program. The Apollo 12 mission added significantly to man's knowledge of the Moon. The precise landing capability allowed the crew to accomplish a wide variety of preplanned tasks and paved the way for planning future missions to smaller, more selected landing areas with the possibility of significant scientific returns. The publication includes chapters on mission description, summary of scientific results, photographic summary of the Apollo 12 Mission, crew observations, passive seismic experiment, lunar surface magnetometer experiment, the solar-wind spectrometer experiment, suprathermal ion detector experiment (lunar ionosphere detector), cold cathode gage (lunar atmosphere detector), the solar-wind composition experiment, Apollo 12 multispectral photography experiment, preliminary geologic investigation of the Apollo 12 landing site, lunar surface closeup stereoscopic photography, preliminary examination of lunar samples, and preliminary results from Surveyor 3 analysis.
Monthly Catalog of United States Government Publications National

Academies
NASA maintains a planetary protection policy to avoid the forward biological contamination of other worlds by terrestrial organisms, and back biological contamination of Earth from the return of extraterrestrial materials by spaceflight missions. Forward-contamination issues related to Mars missions were addressed in a 2006 National Research Council (NRC) book, Preventing the Forward Contamination of Mars. However, it has been more than 10 years since back-contamination issues were last examined. Driven by a renewed interest in Mars sample return missions, this book reviews, updates, and replaces the planetary protection conclusions and recommendations contained in the NRC's 1997 report Mars Sample Return: Issues and Recommendations. The specific issues addressed in this book include the following: The potential for living entities to be included in samples returned from Mars; Scientific investigations that should be conducted to reduce uncertainty in the above assessment; The potential for large-scale effects on Earth's environment by any returned entity released to the environment; Criteria for intentional sample release, taking note of current and anticipated regulatory frameworks; and The status of technological measures that could be taken on a mission to prevent the inadvertent release of a returned sample into Earth's biosphere.
CNSR, Comet Nucleus Sample Return
Springer

Mission and vehicle concepts were developed for obtaining surface and sub-surface samples of Mars, by a roving vehicle, and returning the samples to Earth.

Report of the Allied Mission to Observe the Greek Elections, Including 1, Main Findings of the Planning and Sampling Staff, 2, Statement on the Method Used, 3, Description of the Sample Surveys

National Academies Press

Are we alone in the universe? How did life arise on our planet? How do we search for life beyond Earth? These profound questions excite and intrigue broad cross sections of science and society. Answering these questions is the province of the emerging, strongly interdisciplinary field of astrobiology. Life is inextricably tied to the formation, chemistry, and evolution of its host world, and multidisciplinary studies of solar system worlds can provide key insights into processes that govern planetary habitability, informing the search for life in our solar system and beyond. Planetary Astrobiology brings together current knowledge across astronomy, biology, geology, physics, chemistry, and related fields, and considers the synergies between studies of solar systems and exoplanets to identify the path needed to advance the exploration of these profound questions. Planetary Astrobiology represents the combined efforts of more than seventy-five international experts consolidated into twenty chapters and provides an accessible, interdisciplinary gateway for new students and seasoned researchers

who wish to learn more about this expanding field. Readers are brought to the frontiers of knowledge in astrobiology via results from the exploration of our own solar system and exoplanetary systems. The overarching goal of Planetary Astrobiology is to enhance and broaden the development of an interdisciplinary approach across the astrobiology, planetary science, and exoplanet communities, enabling a new era of comparative planetology that encompasses conditions and processes for the emergence, evolution, and detection of life.

Grading NASA's Solar System Exploration Program National Academies Press

Lists citations with abstracts for aerospace related reports obtained from world wide sources and announces documents that have recently been entered into the NASA Scientific and Technical Information Database.

CML Army Chemical Review

University of Arizona Press

The Space Studies Board of the National Research Council (NRC) serves as the primary adviser to the National Aeronautics and Space Administration (NASA) on planetary protection policy, the purpose of which is to preserve conditions for future biological and organic exploration of planets and other solar system objects and to protect Earth and its biosphere from potential extraterrestrial sources of contamination. In October 1995 the NRC received a letter from NASA requesting that the Space Studies Board examine and provide advice on planetary

protection issues related to possible sample-return missions to near-Earth solar system bodies.

Report

This book focuses on the specific mission planning for lunar sample collection, the equipment used, and the analysis and findings concerning the samples at the Lunar Receiving Laboratory in Texas. Anthony Young documents the collection of Apollo samples for the first time for readers of all backgrounds, and includes interviews with many of those involved in planning and analyzing the samples. NASA contracted with the U.S. Geologic Survey to perform classroom and field training of the Apollo astronauts. NASA's Geology Group within the Manned Spacecraft Center in Houston, Texas, helped to establish the goals of sample collection, as well as the design of sample collection tools, bags, and storage containers. In this book, detailed descriptions are given on the design of the lunar sampling tools, the Modular Experiment Transporter used on Apollo 14, and the specific areas of the Lunar Rover vehicle used for the Apollo 15, 16, and 17 missions, which carried the sampling tools, bags, and other related equipment used in sample collection. The Lunar Receiving Laboratory, which was designed and built at the Manned Spacecraft Center in Texas for analysis and storage of the lunar samples returned from the Apollo lunar landing missions is also described in detail. There are also descriptions of astronaut mission training for sample collecting, with the focus on the specific portions of

the mission EVAs devoted to this activity.

Cosmic Dust Collection Facility: Scientific Objectives and Programmatic Relations

A comparison of the risk associated with two alternative scenarios for a robotic Mars sample return mission was conducted. Two alternative mission scenarios were identified, the Jet Propulsion Lab (JPL) reference Mission and a mission proposed by Johnson Space Center (JSC). The JPL mission was characterized by two landers and an orbiter, and a Mars orbit rendezvous to retrieve the samples. The JSC mission (Direct/SEP) involves a solar electric propulsion (SEP) return to earth followed by a rendezvous with the space shuttle in earth orbit. A qualitative risk assessment to identify and characterize the risks, and a risk analysis to quantify the risks were conducted on these missions. Technical descriptions of the competing scenarios were developed in conjunction with NASA engineers and the sequence of events for each candidate mission was developed. Risk distributions associated with individual and combinations of events were consolidated using event tree analysis in conjunction with Monte Carlo techniques to develop probabilities of mission success for each of the various alternatives. The results were the probability of success of various end states for each candidate scenario. These end states ranged from complete success through various levels of partial success to complete failure. Overall

probability of success for the Direct/SEP mission was determined to be 66% for the return of at least one sample and 58% for the JPL mission for the return of at least one sample cache. Values were also determined for intermediate events and end states as well as for the probability of violation of planetary protection. Overall mission planetary protection event probabilities of occurrence were determined to be 0.002% and 1.3% for the Direct/SEP and JPL Reference missions respectively.
Lalk, Thomas R. and Spence, Cliff A.
Johnson Space Center
Monthly Catalogue, United States Public Documents
The science objectives are summarized for the Cosmic Dust Collection Facility (CDCF) on Space Station Freedom and these objectives are related to ongoing science programs and mission planning within NASA. The purpose is to illustrate the potential of the CDCF project within the broad context of early solar system sciences that emphasize the study of primitive objects in state-of-the-art analytical and experimental laboratories on Earth. Current knowledge about the sources of cosmic dust and their associated orbital dynamics is examined, and the results are reviewed of modern microanalytical investigations of extraterrestrial dust particles collected on Earth. Major areas of scientific inquiry and uncertainty are identified and it is shown how CDCF will contribute to their solution. General facility and instrument concepts that need to be pursued are introduced, and the major development

tasks that are needed to attain the scientific objectives of the CDCF project are identified.
Space Studies Board Annual Report 2010
The Apollo Lunar Samples

Strategic Investments in Instrumentation and Facilities for Extraterrestrial Sample Curation and Analysis