QUARANTINE DOCUMENT SYSTEM

INDEXING PROCEDURE

INTERIM REPORT

Prepared Under
Contract NASw-2062

For
Headquarters
National Aeronautics and Space Administration
Planetary Quarantine Office
Washington, D.C. 20546

March 1972

by
EXOTECH SYSTEMS, INC.
525 School Street, S.W.
Washington, D.C. 20024
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**APPENDIX A**  
A Complete Listing of the Collection

**APPENDIX B**  
Thesaurus Terms
INTRODUCTION

The Quarantine Document System (QDS) is a special purpose information system designed to collect and disseminate material pertinent to the mission of the Planetary Quarantine (PQ) Office of the National Aeronautics and Space Administration. In fulfilling its responsibility for the administration of the NASA Planetary Quarantine Program, the PQ Office must generate, receive and process extensive quantities of information and documentation related to the following:

- Contamination constraints and quarantine requirements
- Space Flight Project plans for fulfillment of such requirements
- Analyses and studies related to the establishment of quarantine requirements and to their fulfillment
- Execution of contamination and sterilization controls
- Verification that operational requirements have been met
- Compliance and certification of quarantine requirements.

To facilitate the handling of this information, the PQ Office contracted with Exotech Systems, Inc. for the design and implementation of the QDS. The basic functions of this system are to systematize the handling of planetary quarantine related information and to provide the NASA Planetary Quarantine Officer with a continuous, up-to-date overview of the status and


progress of pertinent quarantine activities in flight programs. The collection is organized to facilitate rapid access in response to general and specific queries.

An important function in the successful utilization of the QDS is the indexing procedure. Indexing must be sufficiently detailed to facilitate rapid retrieval, but not so complex that information requests must be subjected to specialized interpretation before retrievals can be conducted. A simple, yet effective QDS indexing procedure has been developed based upon a thesaurus of indexing terms evolved through actual use of the system.

This report describes the QDS indexing procedure and the thesaurus of terms used for this purpose.

The QDS consists of 6 functional elements, depicted in Figure 1, and described in the following paragraphs.

ACQUISITION

Acquisition involves identification, location, and collection (of referencing) of documents pertinent to the objectives of the system. Identification is performed through periodic searches of selected listings of potential sources such as:

- Flight project files within the PQ Office
- George Washington University Biological Sciences Communication Project (GWUBSCP) abstracts
Figure 1. Operations Elements of QDS
Does Material Relate to PQ?

No → Discard

Yes

Is Information Pertinent to Review of any of the Following?
(a) PQ Requirement or Constraint
(b) Flight Project PQ Plan
(c) Flight Project Pre or Post-Launch Analysis
(d) Certification for Launch
(e) Request for Deviation

No → Discard

Yes

Does Material Exist in Ready Reference File?

Yes → Discard

No

Catalog, Index and Store

Figure 2. Acquisition Criteria
Exotech Systems, Inc. PQ files
American Institute of Biological Scientists (AIBS) Abstracts for Spacecraft Sterilization Seminars
Planetary Quarantine Advisory Panel (PQAP) meeting notes
PQ Office contractor reports.

The acquisition criterion presented in Figure 2 is used to screen the collected material for retention. Acquisition decisions and status are indicated by means of stamps (see Figure 3) applied to the upper right hand corner of the documents. Copies are made as necessary and collected for entry into the QDS.

<table>
<thead>
<tr>
<th>Stamp Number</th>
<th>Symbol</th>
<th>Significance</th>
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<tr>
<td>1</td>
<td>![Symbol]</td>
<td>Document to be included in QDS</td>
</tr>
<tr>
<td>2</td>
<td>![Symbol]</td>
<td>Copy made for inclusion in QDS</td>
</tr>
</tbody>
</table>

Figure 3. Acquisition Accounting
CATALOGING

Documents selected for inclusion in QDS are cataloged in accordance with standard library practice. Accession numbers are assigned in numerical sequence. A listing is presented as Appendix A.

INDEXING

Indexing is performed in accordance with the procedure described in the following section. The assigned index terms are noted prior to document storage, and maintained in the retrieval request file with the accession numbers of the documents to which each term applies.

The thesaurus of keywords was developed through system use; i.e., each request made for information was screened to identify the terms and types of terms used by the requester. The thesaurus which was evolved has seven broad categories of terms; viz.;

- Medium or Format
- Originator
- Recipient
- Characteristics of content (purpose, status, etc.)
- Related flight projects and planets
- Associated places, organizations, etc.
- Subject Matter
Normally, at least one keyword is assigned from each category; often several are employed, especially in the last three categories cited.

The complete listing of terms currently employed is presented in Appendix B. No attempt has been made to develop an hierarchical arrangement for the subject matter category terms, which are listed in alphabetical order.

STORAGE

Documents are stored in three-ringed loose-leaf binders in a reserved area of the Exotech Systems offices on School Street, S.W. Arrangement is in numerical order by accession number. Withdrawals are carefully controlled; when extensive use is anticipated, copies are supplied.

RETRIEVAL

Document retrieval is effected through the catalog (by accession number, author or corporate author, title, subject) or by searching the keyword index terms. The choice depends upon the extent of identification available at the time of inquiry. Document requests are referred to the designated QDS retrieval operator, who records the request and conducts the search.

A significant aspect of the retrieval process is the interpretation of the request in a form commensurate with quick response to the requester. To
insure rapid and responsive retrieval we have assigned this task to a member of the Exotech Systems, Inc. professional staff who is knowledgable in the planetary quarantine program.
APPENDIX A

A Complete Listing of the Collection

United States space science program. Report to COSPAR. May 1968. 154 p., with 3 appendices. 11th Meeting, Tokyo, Japan.

PQ-2

California Institute of Technology, Pasadena, California. Jet Propulsion Laboratory.


10 Sections Project Document 138; 605-58

1 Author II Title III Project Document IV NASA Contract no. NAS7-100

Contents: Trajectories; Aiming Point Selection Strategies; launch phase considerations; spacecraft maneuver analysis, considerations; orbit determination characteristics, introduction to; orbit determination accuracy, pre-maneuver; orbit determination accuracy, post-maneuver; orbit determination accuracy, encounter; orbit determination, special studies in.

Keywords: Mariner Mars 1969; Orbit; micrometeoroid dislodgement; efflux ejecta; JPL; Report; Maneuver
PQ-3


I. Author II. Title III. Project Document, Appendix IV. NASA Contract no. NAS7-100

Keywords: Mariner Mars 1969; Orbit; micrometeoroid dislodgement; efflux ejecta; JPL; report; maneuver

PQ-4


9 Sections, with 3 appendices. Project Document 610-18, Part 1

I. Authors IV. Title V. Project Document

Contents: Organization and Responsibilities; contamination analysis plan, probability of; documentation; data treatment; subcontractors; planetary quarantine requirements; facilities, services; schedules; technology advancements

Keywords: Mariner; Mars; Planetary Quarantine Plan; MM '71; JPL
2 Sections, with 1 appendix Project Document 610-18, Part III

Contents: Monitoring and Assay, Microbiological; microbial burden on spacecraft, estimation of;

Keywords: Mariner; Mars; Assay, plan; MM '71; JPL
Martin Marietta Corporation, Denver, Colorado.
3 p., 3 Enclosures Martin Marietta Corporation Planetary Quarantine Working Group Minutes of Meeting, March 18, 1970

I Author II Title III MNC-PQWG Minutes

Keywords: Planetary Quarantine Working Group, Meeting, Minutes; Viking, Martin Marietta Corporation

Jet Propulsion Laboratory, Pasadena, California.
Jet Propulsion Laboratory, Pasadena, California, Meeting of Planetary Quarantine Working Group, Dec. 10-11, 1970

I Author II Title III Jet Propulsion Laboratory-Planetary Quarantine Working Group, Meeting

Keywords: Martin Marietta Corporation; Planetary Quarantine Working Group; meeting; Viking; Action items
PQ-9


5 Sections, with 2 appendices General Electric Document No. VOY-C2-TR7

I-II Authors III Title IV Document No.

Contents: Heliocentric, transfer phase; aerocentric phase; further study, recommendations for

Keywords: GE; Mars; Micrometeoroid dislodgement; report; entry; solar wind; efflux ejecta

PQ-10

California Institute of Technology, Pasadena, California, Jet Propulsion Laboratory.


7 p., with 3 Tables and Appendix Project Document 610-18, Part III, (Preliminary)

I-II Authors IV Title V Project Document

Contents: Monitoring and Assay, Microbiological; microbial contamination occurring on spacecraft hardware, assessment of; intramural environment of space hardware assembly, test, and launch facilities, assessment of microbial and particulate contamination in the

Keywords: Mariner; Mars; assay plan; MM '71; JPL
PQ-11 (rev.)
PQ-11

NASA/Langley Research Center, Hampton, Virginia, Viking Project Office.
Viking 75 project: Planetary Quarantine provisions, by L. P. Daspit, Jr.
March 16, 1970.

I-II Authors III Title IV NASA/Langley PQ Provisions

Contents: Requirements; PQ Constraints; Documentation and Data Requirements;
NASA Microbiological Assays

Keywords: Viking; Mars; PQ Provisions; Langley Research Center
Project Plans; Science Package

PQ-11
... NASA Planetary Provisions, Viking 75 Project M75-127-1

PQ-12

NASA/Langley Research Center, Hampton, Virginia, Viking Project Office.
Viking 75 project: Viking mission definition no. 3, (preliminary), by
A. Thomas Young.
March 13, 1970.

I-II Authors III Title IV NASA/Langley Viking Mission Definition

Contents: Science Requirements; scientific objectives; landing sites; lifetime; the use of two spacecraft, strategy for; mission definition schedule

Keywords: Viking; Mars; Langley Research Center; Mission Statement; report
National Aeronautics and Space Administration, Washington, D. C.
Viking '73 investigators.  
Dec. 18, 1969.
5 p.  
NASA News Release No: 69-166

Author II Title III NASA News Release

Keywords: Viking; Mars; science; mission statement; NASA; news release

COSPAR, Panel on Planetary Quarantine.
Report of the panel on planetary quarantine.  
1970.
COSPAR, Panel on Planetary Quarantine Meeting held in Leningrad 
on May 23, 1970

Author II Title III COSPAR Meeting

Keywords: COSPAR; Contamination log; Leningrad; Meeting; N; Pg; minutes 
P; Jovian
Exotech Incorporated, Washington, D.C.
8 p.
Exotech Incorporated, Washington, D.C., Summary Report no. TRSK 70-42

Author II Title III Summary Report IV NASA Contract no. NASw-2062

Keywords: Exotech; N; Mars; P(N); Post-COSPAR; report; PQ requirements
Martin Marietta Corporation, Denver, Colorado, Denver Division.
Contract NAS1-9000, WBS 1.3, Planetary Quarantine Working Group (PQWG) agenda.
Nov. 4, 1970.
1 p.

Martin Marietta Corporation, Denver Division, Memorandum, from A. A. Rothstein, Manager Planetary Quarantine, Viking Project, to Viking Project Office-NASA/Langley, Nov. 4, 1970

Keywords: Martin Marietta Corporation; Viking; Agenda; Planetary Quarantine Working Group; Meeting; Pasadena

PQ-18

NASA/Ames Research Center, Moffett Field, California.
Pioneer F/G planetary quarantine plan.
N.D.
13 p.

NASA/Ames Research Center Document No. PC-204(Draft)

Keywords: Ames; Pioneer F/G; Planetary Quarantine Plan; Jupiter
PQ-19

Roper, W. D.

I Author II Title III GWUBSCP Abstract.

Keywords: GWUBSCP; Spacecraft; Contamination; Thermal Vacuum; JPL

PQ-20

National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications.

I Author II Title III NASA Handbook

Contents: Requirements, planetary quarantine constraints, decontamination, microbiology constraints; Documentation and Data Requirements, planetary quarantine specifications, pre-launch analysis, post-launch analysis; Management, project development plan review

Keywords: NASA; PQ Provisions; directive; report; policy
PQ-21

National Aeronautics and Space Administration, Washington, D. C.
Office of Space Science and Applications.
Planetary quarantine provisions for unmanned planetary missions (Rough Draft).
Nov., 1968.
20 p., with 1 appendix NASA Handbook NHB 8020.12 (Rough Draft)

I Author II Title III NASA Handbook

Contents: Requirements, planning, PQ constraints, decontamination, microbiology constraints; Documentation, data requirements; Management

Keywords: NASA; PQ Provisions; directive; report; policy

PQ-22

Fox, D.
Joint planetary quarantine program/Viking '73 operating agreement for implementation of planetary quarantine requirements. Dec. 8, 1969.
Draft of VPO/PQO "Interface" Agreement, Received from D. Fox on January 19, 1970

I Author II Title III Draft

Keywords: Viking; Interface; Management; Agreement
PQ-23

NASA/Langley Research Center, Hampton, Virginia, Viking Project Office.

Viking project: Planetary quarantine provisions, by L. P. Daspit, Jr.


I-11 Authors III Title IV NASA PQ Provisions

Contents: Applicability; Conflicting Requirements, deviations; Requirements, planning, planetary quarantine constraints, decontamination, microbiology constraints, launch operations constraints; Documentation and Data Requirements, planning documents, pre-launch analysis, post-launch analysis of planetary contamination

Keywords: Viking; Planetary Quarantine Provisions; Viking 75 Project; M75-127-1

PQ-24

NASA/Langley Research Center, Hampton, Virginia, Langley Station.

Viking lander system and project integration. March 1, 1969.

22 p., with 6 Figures NASA/Langley Statement of Work

I Author II Title III NASA/Langley Statement of Work

Contents: Project Objectives, description; Government-furnished Data, equipment, facilities, and support; Contractor Tasks; NASA participation

Keywords: Viking; Integration; Langley Research Center; Report; Lander; RFP

I Author II Title III Unsolicited Proposal

Contents: Proposed Work Statement; (quarantine document system for Viking, design and operation of); Viking, quarantine assurance evaluation studies for; Personnel and Organization

Keywords: Exotech, proposal, studies, support


I Author II Title III MMC Proposal

Keywords: Martin Marietta Corporation; Proposal; Viking
PQ-27

Martin Marietta Corporation, Denver, Colorado.

92 p.

Martin Marietta Corporation, Denver Division, Coordination Draft no. PL-3701009

I Author II Title III NMC Draft

Contents: Applicable documents; Organization and responsibilities; Program controls; Planetary quarantine documentation; PQ analysis; Real time data management; Viking facilities, services; New technology; PQ schedules

Keywords: Viking; Planetary Quarantine Plan; Draft; Langley Research Center; Mars; MMC

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PQ-29

National Aeronautics and Space Administration, Washington, D. C., Planetary Quarantine Office.


I Author II Title III NASA/Washington, Summary

Keywords: Planetary Quarantine Plan; Viking; Review; Comments; Memorandum; Exotech

NASA/Washington, Planetary Quarantine Office Summary of Coordination Draft of PQ Plan (PL-3701009), Jan. 27, 1970

I Author II Title III NASA/Washington, Summary

Keywords: PQ Plan; Viking; Review; Comments; Memorandum; revision; NASA
PQ-32

Sterilization procedures for planetary landers, by Donald G. Fox, Ph.D.

I-II Authors III Title IV Jn. cit.

Keywords: Report; Fox; Sterilization; Viking; thermal radiation; diffusion

PQ-33

NASA/Langley Research Center, Hampton, Virginia, Langley Station.
NASA/Langley Research Center Memorandum from Viking Project Manager to NASA, Code SL, Attn: Mr. W. Jakobowski

I Author II Title III NASA/Langley Memorandum

Keywords: Viking; Requirements; Planetary Quarantine provisions; memo; LRC
PQ-34

Neill, Arthur H.
Report to the committee on space research of the International Council Of Scientific Unions on the probability of contamination of the planet Mars by the U. S. Mariner 1969 mission.
April 8, 1969.

I Author II Title III Draft

Keywords: COSPAR; post-launch; analysis; MM '69; NASA; draft; report

PQ-35

Martin, James S.
Viking planetary quarantine plan.
Feb. 18, 1970.

I Author II Title III Memorandum

Keywords: Memorandum; Viking; Planetary Quarantine Plan; Comments; Deviations; LRC; Martin
PQ-36

California Institute of Technology, Pasadena, California, Jet Propulsion Laboratory.
Letter from Dan Schneiderman, Manager Mariner Mars 1971 Project, to SL/Earl W. Glahn, MM 71 Program Manager, NASA

I Author II Title III Jet Propulsion Lab. Letter

Keywords: JPL; NHB 8020.12; MM '71; Mars; budget; letter; assay

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PQ-37

National Aeronautics and Space Administration, Washington, D. C.
Clarification of NHB 8020.12, paragraph 2.2.4.3.1. Oct. 1, 1970. 1 p.
NASA Memorandum, from SL/Manager, Mariner Mars '71, Planetary Programs to SB/Planetary Quarantine Officer, Bioscience Programs

I Author II Title III NASA Memorandum

Keywords: Memorandum; NHB 8020.12; MM '71; assay; NASA; approval
PQ-38

National Aeronautics and Space Administration, Washington, D. C.
Mariner Mars 1971 planetary quarantine plan - PD 610-18, dated
11 February 1970.
2 p. NASA Memorandum, from SB/Planetary Quarantine Officer,
Bioscience Programs, to SL/Program Manager, Mariner Mars '71 Mis­sion, Planetary Programs

I Author II Title III NASA Memorandum

Keywords: Memorandum; Approval; Mars; Planetary Quarantine
Plan; comments; PQO; MM '71

PQ-39

California Institute of Technology, Pasadena, California, Jet Propulsion
Laboratory.
Response to SB/Deputy Planetary Quarantine Officer's comments on prelimi­nary microbiological assay and monitoring plan. June 18, 1970.
Memorandum on Assay & Monitoring Plan, from A. R. Hoffman/M. R. Christensen,
to N. R. Haynes

I Author II Title III Jet Propulsion Lab. Memorandum

Keywords: JPL; MM '71; Mars; assay; plan; comments;
efficiency factor; Memorandum
PQ-40

National Aeronautics and Space Administration, Washington, D. C.
Reallocation of $P_c$ to Viking 1975.
Aug. 12, 1970.
1 p. NASA Memorandum from Lawrence B. Hall, Planetary Quarantine Officer, to SL/Walter Jakobowski, Viking Program Manager

I Author II Title III NASA Memorandum

Keywords: Viking; Mars; Memorandum; N; P(N); PQO; allocation

PQ-41

National Aeronautics and Space Administration, Washington, D. C.
Reallocation of $P_c$ to Mariner 1971.
Aug. 12, 1970.
1 p. NASA Memorandum from SB/Lawrence B. Hall Planetary Quarantine Officer to SL/Earl Glahn, Mariner '71 Program Manager

I Author II Title III NASA Memorandum

Keywords: Mariner '71; Mars; Memorandum; N; P(N); allocation; PQO; approval
PQ-42

National Aeronautics and Space Administration, Washington, D. C.
1 p. NASA Memorandum from SB/Lawrence B. Hall, Planetary Quarantine Officer to SL/Walter Jakobowski, Viking Program Manager

I Author II Title III NASA Memorandum

Keywords: $P_C$; Mars; Memorandum; Woods Hole; SSB; Viking; PQO; review; value; confidence; approval

PQ-43

Exotech Systems, Inc., Washington, D. C.
Viking meeting September 10 and 11, 1970 at Langley Research Center.

I Author II Title III Exotech Systems, Inc., Memorandum

Keywords: Viking, meeting; LaRC; MMC; Planetary Quarantine Requirements; Math Model; Sterilization; repairs
Neill, Arthur H.
Comments on preliminary microbiological assay and monitoring plan.
May 27, 1970.
2 p. Memorandum, from Arthur H. Neill, SB/Deputy Planetary Quarantine Officer, to SL/Program Manager, Mariner Mars '71, May 27, 1970

I Author II Title III Memorandum

Keywords: MM '71; Memorandum; Comments; Microbiological Assay and Monitoring Plan; estimation; # samples; Neill; PQO

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National Aeronautics and Space Administration, Washington, D. C.,
Office of Space Science and Applications.

Biological sampling for Viking '73 N.D.
1 p. NASA/ Washington Memorandum from SB/Planetary Quarantine Officer to LaRC/Viking Project Manager

I Author II Title III NASA Memorandum

Keywords: Viking; microbiological assay; memorandum; sampling; # samples; agreement; PQO
Dr., Fox, Donald G.
1 p. Minutes of bi-weekly Meeting, from Dr. Donald G.Fox to Memo-

randum For The Record, Jan. 6, 1970

I Author II Title III Minutes

Keywords: Viking; Meeting; Bi-weekly; Minutes; Fox; interface; correspondence

PQ-47

National Aeronautics and Space Administration, Washington, D. C.,
1 p. NASA/Washington Memorandum, from SB/Lawrence B. Hall -
Planetary Quarantine Officer to SL/Walter Jakobowski - Viking Pro-
gram Manager

I Author II Title III NASA Memorandum

Keywords: Viking; Planetary Quarantine Provisions; Comments; P(N);
Memorandum; review; approval; PqO
PQ-48

3 p. PQAC Summary Report, February, 1969

I Title II PQAC Report

Keywords: D-values; PQAC; summary report; \( P_g \); Sneath; error; action; N, recommendations; conservation; ETO; \( P(vt) \)

PQ-49

National Aeronautics and Space Administration, Washington, D.C., Office of Space Science and Applications.
Allocation of \( P \) to Pioneer F. Aug. 12, 1970.
1 p. NASA/ Washington Letter, from SB/Lawrence B. Hall, to SL/Gleen Reiff, Pioneer Program Manager

I Author II Title III NASA Letter

Keywords: Pioneer; \( P(N) \); T; N; Requirement; Jupiter; Memorandum; PQO; \( P(g) \); parameter; values; approval
PQ-50


I Author II Title III MMC Letter

Keywords: Bioburden; MMC; letter; Mated; surface; definitions; VPO; FA cycle; parachute

PQ-51


I Author II Letter

Keywords: Mercury; Venus; MVM '73; Letter; JPL; Planetary Quarantine Plan; Planetary Quarantine Requirements; relaxation; funds
PQ-52

Strobel, G. K.

I Author II Title III Memorandum

Keywords: PQ-53

National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications.
3 p. NASA/Washington, D. C., Office of Space Science and Applications Memorandum, from SB/Planetary Quarantine Officer to SL/Program Manager, Mariner Venus/Mercury '73, Oct. 16, 1970.

I Author II Title III NASA Memorandum

Keywords: Memorandum; Mariner; Venus; Mercury; Planetary Quarantine Plan; guidelines; P(N); Pq; PQO; MVM '73
PQ-54

National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications.
3 p. NASA/Washington, D. C., Letter from Lawrence B. Hall to Dr. Wolf Vishniac, pertaining to Dr. Sneath's "Memorandum on Estimating Probability Parameters", presented to the 1970 COSPAR Panel on Planetary Quarantine

Author II NASA Letter

Keywords: Letter; Vishniac; Sneath; Conservatism; Pg ; error ; Hall

PQ-55

The University of Rochester, Rochester, New York, Department of Biology.
August 17, 1970.
1 p. The University of Rochester, Rochester, N. Y., Dept. of Biology Letter, from Wolf Vishniac to Lawrence Hall pertaining to the definition of planetary contamination

Author II Letter

Keywords: P_c; definition; letter; Vishniac; Antarctic
PQ-56

National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications.

Aug. 27, 1970.

2 p. NASA/Washington, D. C., Office of Space Science and Applications Letter, from Lawrence B. Hall to Dr. Charles R. Phillips

I Author II NASA Letter

Keywords: Venus; P_g; letter; Hall; request; comments; experiments; clouds; aerosols

PQ-57

National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications.

Comments on Pioneer F/G planetary quarantine plan, undated Preliminary Draft PC-204.

Aug. 12, 1970.

2 p. NASA/Washington, D. C., Memorandum, from SB/Lawrence B. Hall to SL/Glen Reiff, Aug. 12, 1970

I Author II Title III NASA Memorandum

Keywords: Pioneer; Jupiter; Memorandum; Planetary Quarantine Plan; Comments; requirements; Hall
PQ-58

National Aeronautics and Space Administration, Washington, D. C.,
Office of Space Science and Applications.
July 31, 1970.
2 p. NASA/Washington, D. C., Office of Space Science and Applications
Letter from Lawrence B. Hall to Dr. Carl Sagan, July 31, 1970

I Author II NASA Letter

Keywords: Letter; Sagan; jupiter; pioneer; Hall; outer planets; requirements

PQ-59

University of Leicester, Leicester, England, Microbial Systematics Unit.
Memorandum on estimating probability parameters, by P. H. A. Sneath.
May 15, 1970.
6 p. COSPAR Panel on Planetary Quarantine, 1970 (Paper by P. H. A. Sneath)

I-II Authors III Title IV Paper

Keywords: Sneath; COSPAR; paper; estimation; error
PO-60

National Aeronautics and Space Administration, Washington, D.C.,
Office of Space Science and Applications.
June 23, 1970.
1 p. NASA/Washington, D.C., Office of Space Science and Applications
Letter, from Lawrence B. Hall to Dean P. Kastel, June 23, 1970.

I Author II NASA Letter

Keywords: SSB; Letter; N; P(N); Hall; outer planets; Jovian

PQ-61

National Aeronautics and Space Administration, Washington, D.C.,
Office of Space Science and Applications.
April 10, 1970.
2 p. NASA/Washington, D.C., Office of Space Science and
Applications, Letter from Lawrence B. Hall to Dean P. Kastel, April
10, 1970.

I Author II NASA Letter

Keywords: SSB; Palo Alto; N; P(N); letter; Hall; allocation
PQ-62

National Aeronautics and Space Administration, Washington, D. C.,
Office of Space Science and Applications.
2 p. NASA/Washington, D. C., Office of Space Science and Applications
Memorandum, from Lawrence B. Hall to SL/Director

I Author II Title III NASA Memorandum

Keywords: Memorandum; requirements; relaxation; Mars; buried; PQO;
sterilization

PQ-63

National Aeronautics and Space Administration, Washington, D. C.,
Office of Space Science and Applications.
SB concurrence on Mariner Mars 1971 project development plan. July
22, 1969.
1 p. NASA/Washington, D. C., Office of Space Science and Applications,
Memorandum, from Orr E. Reynolds, to Director/SL, July 22, 1969

I Author II Title III NASA Memorandum

Keywords: Mariner '71; Mars; Project Plan; Memorandum; approval; PQO
PQ-64

National Aeronautics and Space Administration, Washington, D．C．,
Office of Space Science and Applications.
Meeting of the Space Science Board Annual ad hoc review committee for
1 p． NASA/Washington, D．C．, Office of Space Science and Applications, Memorandum from L．B．Hall to SL/Director, Planetary Programs

I Author II Title III NASA Memorandum

Keywords: SSB; Palo Alto; Memorandum; agenda; meeting; PQO

PQ-65

Exotech Systems, Inc．, Washington, D．C．
Viking meeting September 10 and 11, 1970 at Langley Research Center.
September 14, 1970.
3 p． Exotech Systems, Inc．, Washington, D．C．, Memorandum from
E．J．Bacon to 053 File, Sept. 14, 1970

I Author II Title III Memorandum

Keywords: Viking; Langley Research Center; Planetary Quarantine Re-
requirements; Model; Sterile repair; MMC; Bioburden model; Sterilization model; memo; Bacon; meeting; minutes
PQ-66

Stanford University School of Medicine, Stanford, California, Stanford University Medical Center, Dept. of Community and Preventive Medicine.


3 p. with Enclosure

Stanford University School of Medicine, Stanford, California, Stanford University Medical Center, Dept. of Community and Preventive Medicine, Comments on Sneath's Memorandum, by Byron Wm. Brown, Jr., Aug. 18, 1970

I-II Authors III Title IV Comments

Keywords: Brown; Sneath; Bayesian statistics; parameter estimation; COSPAR; evaluation; comments; safety factors; confidence

PQ-67


September 10, 1970.


I Author II Letter (USAMRDC)

Keywords: USAMRDC; Briefing; AD Little; Hospital; Sterilization; Aug. 11, 1970; Letter; appreciation
Martin Marietta Corporation, Denver, Colorado, Denver Division.
Minutes of planetary quarantine working group meeting, Viking project, contract NAS1-9000.
March 24, 1970.
3 p. Martin Marietta Corporation, Denver Division, Minutes of PQWG Meeting, held March 18, 1970 at MMC.

I Author II Title III Minutes IV Contract no. NAS1-9000

Keywords: Martin Marietta Corporation; Planetary Quarantine Working Group; Viking; Meeting; Minutes; assay

Sandia Laboratories, Albuquerque, New Mexico.
Feasibility of thermoradiation sterilization of spacecraft using Cobalt 60, by R. M. Jefferson.
May, 1970.

I-II Authors III Title IV Abstract

Keywords: GNUSBSC, abstract; radiation; sterilization; Sandia, report
PQ-70

Exotech Systems, Inc., Washington, D. C.

I Author II Title III Exotech Systems, Inc. Report IV NASA Contract no. NASA-2052

Keywords: Report; Exotech; P; SSB; Woods Hole; Mars; implications

PQ-71

Exotech Systems, Inc., Washington, D. C.

I Author II Title III Exotech Systems, Inc., Memorandum

Keywords: Pioneer; P; P(N); Quarantine Period; Jupiter; Bacon; memo; requirements
Q-72

National Aeronautics and Space Administration, Washington, D.C.
1 p. NASA Letter from Lawrence B. Hall, Planetary Quarantine Officer to Dr. Wolf Vishniac, University of Rochester, Dept. of Biology, July 28, 1970.

I Author II NASA Letter

Keywords: SSB; P; Definition of terms; Vishniac; Woods Hole; COSPAR; letter; Hall

Q-73

Martin Marietta Corporation, Denver, Colorado, Denver Division.

I-II Authors III Title IV MMC Report V NASA Contract no. NAS1-9000

Contents: Bio Burden Model; Burden Estimation from Assays - The Sampling Model; description of, verification of; Burden Prediction - The Prediction Model; Sampling Strategy; Applicable Documents

Keywords: Viking; Bio Burden; model; estimation; prediction; Martin Marietta; Control Divg.; report; Nelson
PQ-75

Jet Propulsion Laboratory, Pasadena, California.
Minutes of planetary quarantine meeting at JPL on 6-7 May 1970, by A. A. Rothstein and Richard H. Green. N.D.

I-III Authors IV Title V Minutes (JPL)

Keywords: Viking; Planetary Quarantine Working Group; Meeting; Minutes; allocation

PQ-76

Jet Propulsion Laboratory, Pasadena, California.
Planetary Quarantine Working Group meeting of July 16-17, 1970, by A. A. Rothstein, R. H. Green, and L. P. Daspit, Jr. N.D.

I-IV Authors V Title VI Minutes (JPL)

Keywords: PQWG; Meeting; Minutes; Models; Viking
Martin Marietta Corporation, Denver, Colorado, Denver Division.
Invitation of Viking 73 planetary quarantine working group meeting.
1 p.

Martin Marietta Corporation, Denver Division Letter from
A. A. Rothstein, Manager Planetary Quarantine to NASA Headquarters,
Planetary Quarantine Office (Mr. L. B. Hall)

I Author II Title III MMC Letter

Keywords: Martin Marietta Corporation; Planetary Quarantine Working
Group; Meeting; Ageneda; Viking; minutes

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American Institute of Biological Sciences, Washington, D. C.
Review: Viking planetary quarantine plans.
3 p.

American Institute of Biological Sciences, Washington, D. C.,
Memorandum from Mary Frances Thompson-Coordinator, Special Science Projects to Viking Consultants, Dec. 5, 1969

I Author II Title III AIBS Memorandum

Keywords: AIBS; Planetary Quarantine Plan; Review Schedule; (Viking)

memo
Exotech Systems, Inc., Washington, D. C.
July 22, 1970.

Exotech Systems, Inc., Washington, D. C., Letter from
Lester D. Shubin, Senior Scientist, concerning Re: NASw-2062,
July 22, 1970

I Author II Title III Exotech Systems, Inc., Letter

Keywords: Organic Inventory; Principal Investigators; Letter;
Questionnaire; Shubin; request

COSPAR, Panel on Planetary Quarantine.
COSPAR abstracts at Seattle meeting. March 5, 1971.
COSPAR, Panel on Planetary Quarantine, Abstracts at Seattle Meeting,
March 5, 1971

I Author II Title III COSPAR Abstracts

Keywords: COSPAR; Memorandum; Seattle; Paper; Approval; presentation; Neill
PQ-81

Mitchell, R. T.
Errata to preliminary flight path analysis orbit determination and maneuver strategy Mariner Mars 1969. May 7, 1968.

I Author II Title III Paper

Keywords: Mariner Mars '69; Mars; Jet Propulsion Lab.; orbit; memo; revision; analysis

PQ-82


1. NAS-NRC, Washington, D. C., Space Science Board, Memorandum, (Concerning Review of Sterilization Parameter Probability of Growth (P_g)), from D. P. Kastel, Secretary to Participants, Sterilization Parameter Review: Probability of Growth (P_g), Sept. 17, 1970

I Author II Title III NAS-NRC, Space Science Board, Memorandum

Keywords: Space Science Board; Meeting; Woods Hole; P_g; Conservatism minutes; Kastel; draft
PQ-83

National Aeronautics and Space Administration, Washington, D.C., Office of Space Science and Applications.
Viking project document, M73-109-0.
1 p. NASA/Washington Viking Project Document Memorandum, from SB/Director to SL/Director, March 5, 1969

Keywords: Planetary Quarantine provisions; (Viking); Flight Project Document; Approval; memo; Reynolds

PQ-84

Martin Marietta Corporation, Denver, Colorado, Denver Division.
Contract NAS1-9000, Meeting of planetary quarantine working group.
March 5, 1970.
1 p. with 2 Enclosures Martin Marietta Corporation, Denver Division Minutes, March 5, 1970

Keywords: Viking; MMC; meeting; PQWG; minutes
PQ-85

Exotech Systems, Inc., Washington, D.C.
July 24, 1970.
3 p.
Exotech Systems, Inc., Washington, D.C., Memorandum from S. Schalkowsky to Lawrence Hall, July 24, 1970

I Author II Title III EXI Memorandum

Keywords: Viking; Sterilization Plan; Review; Comments; Memorandum; Overkill; Exotech

IQ-36

NASA/Ames Research Center, Moffett Field, California.
10 p. with Figures NASA/Ames Pioneer F/G Program Document # PC-204

I Author II Title III NASA/Ames Document #

Keywords: Pioneer; Planetary Quarantine Plan; Jupiter; report; analysis; Ames; model


Keywords: P(N); N; Mars; COSPAR; Viking; memo; Bacon; allocation; non-landers; landers

National Aeronautics and Space Administration, Washington, D. C.
Trajectory acceptance and planetary quarantine certification - Mariner 1969 Mars mission. N.D.
1 p. NASA/Washington Memorandum from Orr E. Reynolds, SB/Director of Bioscience Programs to S/Associate Administrator for Space Science and Applications

Keywords: Mariner '69; Mars; Memorandum; pre-launch analysis; approval; Reynolds; certification
National Aeronautics and Space Administration, Washington, D. C.
Planetary quarantine certification of Mariner 1969 mission. N.D.
1 p. NASA/Washington Memorandum from John E. Naugle, S/Associate
Administrator for Space Science and Applications to A/Administrator

I Author II Title III NASA/Washington Memorandum

Keywords: Memorandum; Mariner '69; Mars; Naugle

Horowitz, N. H.
Planetary contamination I: The problem and the agreements, by

I-III Authors IV Title V Jn. Cit.

Keywords: publication; analysis; ZOND; Venus; Mars; bus deflection
Horowitz; science; report; relaxation; history
PQ-91

NASA/Langley Research Center, Hampton, Virginia.

Planetary quarantine working group meeting of January 12-13, 1970

Langley Research Center/Viking Project Office.


Keywords: Planetary Quarantine Working Group; Meeting; Minutes; Charter; Viking

PQ-92

Hagen, C. A.


Keywords: GWUBSCP; abstract; ultraviolet = UV; sterilization; Mars; P(uv)
PQ-93

Reynolds, M. C.
Optimizing thermal and radiation effects for bacterial inactivation, by M. C. Reynolds and D. M. Garst.
November 17, 1970.

I-II Authors III Title IV GWUBSCP Abstract

Keywords: thermal radiation; GWUBSCP; abstract; Sandia; radiation; sterilization

PQ-94

Pflug, I. J.
Dry heat destruction rates for micro-organisms on open surfaces, in mated surface areas and encapsulated in solids of spacecraft hardware.
Nov. 20, 1970.

I Author II Title III GWUBSCP Abstract

Keywords: GWUBSCP; abstract; Minnesota; sterilization; D-value; Pflug; surface; mated; buried
PQ-95

Martin Marietta Corporation, Denver, Colorado.

I-II Authors III Title IV GWUBSCP Abstract

Keywords: GWUBSCP; abstract; bioburden; prediction; model; JPL; MMC

PQ-96

U. S. Dept. of The Army, Frederick, Maryland, Fort Detrick.

I-VII Authors VIII Title IX GWUBSCP Abstract

Keywords: GWUBSCP; abstract; ETO; sterilization; Detrick; Phillips; tests

Keywords: GWUBSCP; abstract; General Electric; aseptic; maintenance; pressurization

Jet Propulsion Laboratory, Pasadena, California.

Keywords: JPL; Mars; entry; GWUBSCP; abstract; Jet Propulsion Laboratory; facility; atmosphere; simulation
PQ-99

Puleo, J. R.

I-IV Authors V Title VI GWUBSCP Abstract

Keywords: Puleo; detection; GWUBSCP; bioburden; Apollo; Abstract

PQ-100

Sandia Laboratories, Albuquerque, New Mexico.

I-IV Authors V Title VI GWUBSCP Abstract

Keywords: GWUBSCP; thermoradiation; sterilization; Sandia; abstract
COSPAR, Panel on Planetary Quarantine.
Potentially harmful effects of space experiments from the panel on planetary quarantine. 1969.
COSPAR, Panel on Planetary Quarantine, Report to the Consultative Group, Prague, May 17, 1969

Author II Title III COSPAR, PQ Panel Report

Keywords: COSPAR; Planetary Quarantine Panel; N; Prague; Planetary Quarantine Requirements; SSB; meeting; minutes; T; deflection
Clarification of NMB 8020.12, paragraph 2.2.4.3.1. Sept. 2, 1970.
2 p. NASA/Washington, Memorandum from SB/Planetary Quarantine Officer Lawrence B. Hall to SL/Program Manager, Mariner Mars 1971, Sept. 2, 1970

Keywords: NMB 8020.12; Memorandum; verification; MM '71; assay; sampling; PQD; clarification; order; scope; PHS


Keywords: SSB; MM '64; pre-launch analysis; impact; Mars; Newell
FQ-105

National Aeronautics and Space Administration, Washington, D. C.
May 8, 1969.

I Author II Title III NASA/Washington Letter

Keywords: SSB; MM'69; Mars; post-launch analysis report; letter; transmittal

FQ-106

California Institute of Technology, Pasadena, California, Jet Propulsion Laboratory.

Mariner Venus 67 prelaunch analysis of contamination probability, by Norman R. Haynes.
May 1, 1967.
23 p. Jet Propulsion Laboratory, Pasadena, California, JPL Project Document 123

I–II Authors III Title IV JPL Document

Contents: Mathematical Model; Contaminating Venus, probability of; Mission profile; accidental vehicle impact, probability of; spacecraft ejecta contaminating Venus, probability of

Keywords: MV '67; prelaunch analysis; Jet Propulsion Laboratory; report
National Aeronautics and Space Administration, Washington, D. C.,
Office of Space Science and Applications.

5 p. NASA/Washington Memorandum, from Orr E. Reynolds, Director, Bioscience Programs, Office of Space Science and Applications to Mr. George Derbyshire, Secretary-Space Science Board of the National Academy of Sciences, Washington, D. C., Jan., 1969

Author II Title III NASA/Washington Memorandum

Keywords: D values; letter; status; SSB; P_c; P_g; letter; Reynolds; Derbyshire

2 p. NASA/Washington Memorandum from Lawrence B. Hall, Lunar and Planetary Quarantine Officer, Bioscience Programs, Office of Space Science and Applications to SL/Director, Jan., 1969

Author II Title III NASA/Washington Memorandum

Keywords: Memorandum; SB; P_r; relaxation; Mars; environment; parameter value
PQ-109

National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications.


1 p. NASA/Washington Memorandum from Orr E. Reynolds, SB Director, Bioscience Programs, Office of Space Science and Applications to SL/ Director, Jan., 1969

I Author II Title III NASA/Washington Memorandum

Keywords: P(N); Mars; MM '71; Memorandum; SB; N; Viking; allocation; T; Reynolds; official

PQ-110

National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications, Bioscience Programs.


1 p. NASA/Washington Memorandum, from SB/Donald C. Fox, Sterility Control Officer to SB/Lawrence B. Hall, Feb., 1969

I Author II Title III NASA/Washington Memorandum

Keywords: Viking; Memorandum; SB; Schedule; contractor; procurement; Fox
PQ-111


I Author II Title III NASA/Washington Memorandum

Keywords: Sampling; Viking; Memorandum; SB; assay; agreement; LaRC

PQ-112


I Author II Title III NASA/Washington Memorandum

Keywords: SB; Memorandum; Viking; Planetary Quarantine Provisions; Approval; Reynolds
PQ-113


I Author II Title III NASA/Washington Memorandum

Keywords: Memorandum; SB; Viking; MAST; sterile insertion; PQQ; problem

PQ-114


I Author II Title III NASA/Washington Memorandum

Keywords: Memorandum; SB; Project plans; approval; sign off; procedure; Reynolds
**PQ-115**

National Aeronautics and Space Administration, Washington, D. C.

1 p. NASA/Washington Memorandum from Donald P. Hearth-SL/Director, Planetary Programs, to SB/Director, Bioscience Programs, July, 1969

I Author II Title III NASA/Washington Memorandum

Keywords: Memorandum; SL; Project Plans; Submittal; procedure; sign off

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**PQ-116**

National Aeronautics and Space Administration, Washington, D. C.


I Author II Title III NASA/Washington Memorandum

Keywords: Viking; Memorandum; SB; Meeting; Schedule; coordination; agreement
PQ-117

National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications.
July 14, 1969.
1 p. NASA/Washington Letter, from Lawrence B. Hall, Planetary Quarantine Officer to Dr. W. H. Pickering, Director Jet Propulsion Lab., Pasadena, Calif., July, 1969

I Author II NASA/Washington, Letter

Keywords: Letter; SB; JPL; support; resident; request

PQ-118

National Aeronautics and Space Administration, Washington, D. C.

I Author II Title III NASA/Washington Memorandum

Keywords: Memorandum; SL; Viking; documents; meeting; LARC; coordination; agreement; procedures
National Aeronautics and Space Administration, Washington, D. C.,
Office of Space Science and Applications.
July 17, 1969.

I Author II NASA/Washington Letter

Keywords: Letter; American Institute of Biological Sciences (AIBS); Viking; Support; Viking Quarantine Evaluation Board (VQEB); request; funds; support; Hall

PQ-120

National Aeronautics and Space Administration, Washington, D. C.,
Office of Space Science and Applications.
July 22, 1969.
1 p. NASA/Washington Letter from Donald G. Fox, Sterility Control Officer to Dr. Martin S. Favero, USPHS-NCDC, Phoenix Labs., Phoenix, Arizona, July 22, 1969

I Author II NASA/Washington Letter

Keywords: Letter; Favero; Viking; assay plan; scope; arrangements; Fox
PQ-121

National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications.
2 p. NASA/Washington Memorandum from Planetary Quarantine Officer/SB Lawrence B. Hall to Director/SL, July 28, 1969

I Author II Title III NASA/Washington Memorandum

Keywords: Memorandum; P_c; P_g; SB; P(N); Mars; Venus; Jupiter; parameter values; SSB; official; approved

PQ-122

National Aeronautics and Space Administration, Washington, D. C.
1 p. NASA/Washington Memorandum from Walter Jakobowski SL/Viking Program Manager, Planetary Programs to SPI/John W. Rosenberry, July 28, 1969

I Author II Title III NASA/Washington Memorandum

Keywords: Memorandum; SL; Viking; Sterilization; Facility; MAST; utilization; rejection
PQ-123


I Author II Title III NASA/Langley Letter

LARC

Keywords: Letter; Viking; Langley Research Center; MAST; utilization; facility; sterile insertion; rejection

PQ-124


2 p. JPL/Pasadena, California Memorandum 2945N-101, July, 1969, from E. J. Sherry to L. B. Hall

I Author II Title III JPL Memorandum

Keywords: Memorandum; Phoenix; Assay; Viking; workload; schedule; JPL; assignment; scope
PQ-125
I Author II Title III NASA/Washington Memorandum
Keywords: Memorandum; SB; Viking; Sterilization; Facility; MAST; sterile insertion; requirement; clarification

PQ-126
I Author II NASA/Washington, Memorandum
Keywords: Memorandum; SB; Viking; Sterilization; facility; MAST; clarification; procedures; agreement; sterile insertion
PQ-127

National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications.
Nov. 24, 1969.
2 p. NASA/Washington Letter from Donald G. Fox, Ph.D., Planetary Quarantine Program Officer to Mr. Sam Schalkowsky, Exotech, Inc., Washington, D. C., Nov., 1969

I Author II NASA/Washington Letter

Keywords: Letter; Fox; Viking; meeting; bioburden; model; agenda; assay; sampling; procedure

PQ-128

National Aeronautics and Space Administration, Washington, D. C., JPL-Martin Co. bioburden math model.

I Author II Title III NASA/Washington Preliminary Agenda

Keywords: Agenda; Viking; bioburden; meeting; model; assay; sampling; statistics
PQ-129

Jet Propulsion Laboratory, Pasadena, California.
August 8, 1969.

I Author II JPL/Pasadena Letter

Keywords: letter; Jet Propulsion Laboratory; resident; support; Pickering; agreement

PQ-130

Exotech Inc., Washington, D. C.
Comments on draft of Mariner Mars '71 PQ plan PD 610-18. March 6, 1970.

I Author II Title III Exotech Inc., Memorandum

Keywords: Memorandum; Exotech; MM '71; PQ plan; comments; review
Exotech Inc., Washington, D. C.
Additional comments on draft of Mariner Mars '71 PQ plan PD 610-18.
March 12, 1970.

I Author II Title III Exotech Inc., Memorandum

Keywords: Memorandum; Exotech; MM '71; PQ Plan; comments; review; burden; arrival; Comments;

Sandia Laboratories, Albuquerque, New Mexico.

I Author II Sandia Laboratories, Letter

Keywords: Viking; Sandia; Letter; assay; fracture; sensitivity; adsorption; vacuum probe
Exotech Incorporated, Washington, D. C.
Visit with Al Hoffman of JPL. March 10, 1970.

I Author II Title III Exotech Inc., Memorandum

Keywords: Memorandum; Exotech; MM '71; Pre-launch analysis; Hoffman; Meeting; micrometeoroid dislodgement

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National Aeronautics and Space Administration, Washington, D. C., Planetary Quarantine Office.
Planetary quarantine office program objectives. N.D.
NASA/Washington, Planetary Quarantine Office Program Objectives

I Author II Title III NASA/Washington Program Objectives

Keywords: Atlanta; PQAC; Program Objectives
PQ-135

National Aeronautics and Space Administration, Washington, D. C.
Headquarters funded projects.

I Author II Title III NASA Headquarters Funded Projects

Keywords: Atlanta; PQAC; Program Objectives; evaluation; review; tasks; contracts

PQ-136


TASK: To participate in Viking design reviews. 1969.

2 p. NASA/Washington Task Description and Planning Sheet,
Referenced from NHB 8020.12 3.2(5), 1969

I Author II Title III NASA/Washington Task Description and Planning Sheet

Keywords: Viking, Task; Task descriptions; planning; Exotech; design review

TASK: Perform surveillance microbiological assays of facilities and hardware.

NASA/Washington Task Description and Planning Sheet, Referenced from NHB 8020.12 Par 3.2(8)(1)

I Author II Title III NASA/Washington Task Description and Planning Sheet

Keywords: Viking, Task; Task descriptions; planning; assay; Exotech

PQ-138

Kereluk, K.

I-III Authors IV Title V GWUBSCP Abstract

Keywords: abstract; George Washington University-Biological Sciences Communication Project = GWUBSCP; ETO; sterilization
Kereluk, K.

I-III Authors IV Title V GWUBSCP Abstract

Keywords: abstract; George Washington University-Biological Sciences Communication Project; Ethylene Oxide = ETO

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Kereluk, K.

I-III Authors IV Title V GWUBSCP Abstract

Keywords: abstract; George Washington University-Biological Sciences Communication Project; Ethylene Oxide; water activity; humidity; D value
Kereluk, K.

Keywords: GWUBSCP; abstract; ethylene oxide; sterilization; humidity; lethality; water activity

Rueter, A.

Keywords: abstract; GWUBSCP; sterilization; ethylene oxide; toxicity; compatibility; lethality
Petersen, N. J.
Microbiological evaluation of the vacuum probe surface sampler, by N. J. Petersen and W. W. Bond.
March 20, 1970.

I-II Authors III Title IV GWUBSCP Abstract

Keywords: George Washington University-Biological Sciences Communication Project; GWUBSCP; abstract; sampling; vacuum probe; surface; Minnesota

Whitfield, W. J.
The vacuum probe sampler, by W. J. Whitfield and M. E. Morris.
March 5, 1970.

I-II Authors III Title IV GWUBSCP Abstract

Keywords: George Washington University-Biological Sciences Communication Project; (GWUBSCP); abstract; Sandia; vacuum probe; sampling; surface
Anon


I Title II GWUBSCP Abstract

Keywords: GWUBSCP; abstract; Sandia; sterilization; radiation; thermoradiation; synergism

U. S. Dept. of The Army, Frederick, Maryland, Headquarters, Fort Detrick.
Quarterly status report from 1 November 1969 to 1 February 1970 on NASA Contract R-35.
1 p. George Washington University-Biological Sciences Communication Project, Department of Medical and Public Affairs, Abstract

I Author II Title III GWUBSCP Abstract

Keywords: GWUBSCP; abstract; Detrick; sterilization; chemicals; progress report
Sandia Laboratories, Albuquerque, New Mexico.

I Author II Title III GWUBSCP Abstract

Keywords: GWUBSCP; Abstract; contamination; control; handbook; NASA; Marshall; Sandia

NASA/Langley Research Center, Hampton, Virginia, Langley Station.
1 p. NASA/Langley Memo. from James S. Martin, Jr./Viking Project Manager to NASA Code SB/Dr. D. G. Fox.

1 Author II Title III NASA/Langley Memorandum

Keywords: Memorandum; Viking; T; clarification; agreement; Martin (J.S.)
National Aeronautics and Space Administration, Washington, D. C.
1 p. NASA/Washington Memorandum from SB/Planetary Quarantine Officer, Lawrence B. Hall to SL/Viking Program Manager, Nov., 1969

Author Title III NASA/Washington Memorandum

Keywords: Viking; Memorandum; SB; T; N; clarification

Cornell University, Ithaca, New York, Center for Radiophysics and Space Research, Space Science Building.
August 18, 1970.

Author Cornell University, Letter

Keywords: Letter; Sagan; Jovian; Planetary Quarantine Requirements; Entry heating; Radiation; RTG
PQ-151

National Aeronautics and Space Administration, Washington, D. C.
1 p. NASA/Washington Memorandum, from SL/Manager of Viking Program, Walter Jakobowski to SL/Director of Planetary Programs, Donald P. Heath, April 9, 1969

I Author II Title III NASA/Washington Memorandum

Keywords: Memorandum; SL; Viking; Planetary Quarantine Provisions; review; comments

PQ-152

The George Washington University Medical Center, Washington, D. C.
Biological Sciences Communication Project.
May 17, 1971.
2 p. Biological Sciences Communication Project, Letter, from Frank D. Bradley, Senior Staff Scientist, to Dr. Vishwanath More, Asst. Professor in Political Science and Law, Johnston College, University of Redlands, May 17, 1971

I Author II Series note

Keywords: George Washington University; Letter; More; International Law; Back Contamination
PQ-153

National Aeronautics and Space Administration, Washington, D.C.

1 p. NASA/Washington Memorandum from SL/Viking Program Manager, Planetary Programs-Walter Jakobowski to SB/Planetary Quarantine Officer-Bioscience Programs, March 1970

I Author II Title III NASA/Washington Memorandum

Keywords: Memorandum; SL; Viking; PQ plan; submittal; deviations

PQ-154

National Aeronautics and Space Administration, Washington, D.C.

1 p. NASA/Washington Memorandum from SB/Planetary Quarantine Officer, Lawrence B. Hall to SL/Viking Program Manager, September, 1969

I Author II Title III NASA/Washington Memorandum

Keywords: Viking; memorandum; Project plan; review; comments; PQO; clean room; assay; amendment
Exotech Incorporated, Washington, D. C.
Notes on thermal radiation sterilization meeting. April 23, 1970.

I Author II Title III Exotech Memorandum

Keywords: memorandum; Exotech; meeting; Sandia; Sterilization; radiation; thermoradiation; status; report; minutes

PQ-156

IN Industrial Research: 41, May, 1970

I Title II Jn. Cit.

Keywords: Viking; Mars; Science; MSGC; news release; publication; characteristics
PQ-157

Estimation of microbial release probabilities from a Martian lander,
by Samuel Schalkowsky and Paul S. Levy. N.D.
9 p., with 6 figures Exotech Incorporated, Washington, D.C.,
Systems Research Division, Report (Prepared for presentation at the May
1970 meeting of the COSPAR Panel on Planetary Quarantine)

I-III Authors IV Title V Exotech Inc. Report VI NASA Contract #
NASW-2062

Keywords: Exotech; Report; P(r); Mars; COSPAR; Leningrad; Schalkowsky;
Levy

PQ-158

Angelotti, R.
Review of the JPL-Martin report on a microbial burden prediction model,
submitted by R. Angelotti, J. Bearman, M. Favero, I. Pflug, S. Schalkowsky,
J. Sivinski and B. Rrown, (Chariman).
15 p. Review Committee Report Submitted for the Use of the Planetary
Quarantine Advisory Committee (PQAC)

I-VII Authors VIII Title IX Review Committee Report

Keywords: Report; Review; bioburden; model; estimation; prediction; JPL;
Angelotti
PQ-159

Exotech Systems, Inc., Washington, D. C.

I Author II Title III ESI Memorandum

Keywords: Mercury; Venus; Comments; Memorandum; PQ plan; MVM '73; Requirements; waiver; review; Exotech

PQ-160

Murray, Bruce C.
Planetary contamination II: Soviet and U. S. practices and policies, (Quarantine can be neither absolute nor unilateral; U. S. policy should acknowledge Soviet practice), by Bruce C. Murray, Merton E. Davies, and Phillip K. Eckman.

I-III Authors IV Title V Jn. Cit.

Keywords: Davies; Status; USSR; P(N); Mars; Venus; history; publication
PQ-161

Sneath, P. H. A., editor.

I Editor II Title III COSPAR Technique Manual Series

Keywords: COSPAR; sterilization; techniques; probability nomenclature

PQ-162

National Aeronautics and Space Administration, Washington, D. C.
Interface of the P.Q. program with the Viking 173 program, project and contractors. Oct. 9, 1969. 2 p. NASA/Washington Memorandum, from Planetary Quarantine Officer Lawrence B. Hall to Planetary Quarantine Staff and Supporting Personnel

I Author II Title III NASA/Washington Memorandum

Keywords: Viking; memorandum; interface; agreements
PQ-163


Author Title NASA/Washington Memorandum

Keywords: deviation; Viking; memorandum; approval

PQ-164


Author Title NASA/Washington Memorandum

Keywords: PQAC; memorandum; Atlanta; agenda
PQ-165


I Author II Title III NASA/Washington Memorandum

Keywords: memorandum; Viking; sterilization; alternative

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PQ-166


Carl-Coran Heden, Letter of March 13, 1970, to the Members of the Panel on Planetary Quarantine

I Author II Letter

Keywords: Letter; Heden; COSPAR; Planetary Quarantine Panel; \( P_g \); \( P_r \); Contamination log
National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications.

Jan. 6, 1969.


I Author II NASA/Washington Letter

Keywords: SSB; letter; Pr; D-values; status; Pg

National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications.

August 20, 1969.


I Author II NASA/Washington Letter

Keywords: SSB; p(H); letter; Prague; Cospar
PQ-169

National Aeronautics and Space Administration, Washington, D. C.
December 4, 1969.

4 p. NASA/Washington Letter from Lawrence B. Hall, Planetary Quarantine Officer, to Mr. George Derbyshire, Space Sciences Board of the National Academy of Sciences, Washington, D. C., Dec. 4, 1969

I Author II NASA/Washington Letter

Keywords: SSB; letter; PQ status; Tc; T-period; H

PQ-170

National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications.
March 24, 1970.

2 p. NASA/Washington Letter from Lawrence B. Hall, Planetary Quarantine Officer-Bioscience Programs to Mr. George Derbyshire, Executive Secretary, Space Science Board of the National Academy of Sciences, Washington, D. C., March 24, 1970

I Author II NASA/Washington Letter

Keywords: Hg; SSB; Woods Hole; letter
PQ-171

National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications.


1 p. NASA/Washington Memorandum from SB/Planetary Quarantine Officer, Lawrence B. Hall to SL/Viking Program Manager, Feb. 20, 1969

I Author II Title III NASA/Washington Memorandum

Keywords: Viking; D values; memorandum; requirements

PQ-172

Jet Propulsion Laboratory, Pasadena, California.

Microbial survival after simulated meteoroid impact, by R. L. Olson, Ph.D., R. H. Green, Ph.D., E. A. Gustan, and A. J. Pilgrim, Ph.D.


I-V Authors VI Title VII JPL Paper

Keywords: Test; micrometeoroid; JPL; dislodgement; survival
PQ-173


I Author II Title III AVCO Corp. Report IV NASA Contract No. NAS8-20682

Contents: Experimental Program; Sterilization Certification Plan; Suggested Areas Requiring Further Investigation

Keywords: AVCO; Mars; Lander; Facility; Test

PQ-174


I Author II Title III AVCO Corp. Report IV NASA Contract No. NAS8-20682

Contents: Experimental Program, survivor studies, transport analysis, effects tests, witness techniques; Sterilization Certification Plan

Keywords: AVCO; Mars; Lander; Facility; Test
PQ-175


I Author II Title III MMC Viewgraphs

Keywords: Martin Marietta; Viking; Mars; VLC; PQ Program; Meeting

PQ-176


I Author II Title III NAS-NRC/SSB Memorandum

Keywords: SSB; Woods Hole; P_g; Report; Mars; Conservatism
National Aeronautics and Space Administration, Washington, D. C.
Models of Mars atmosphere (1967), (NASA Space Environment
Vehicle Design Criteria).
21 p. NASA Special Publication SP-8010

Contents: State-Of-The-Art, Development of models, choice of parameters for models, surface pressure, composition and molecular mass, temperature, density, gravity; Criteria; References

Keywords: Mars; Atmosphere; Model; Density; Gravity; Composition

Viking Project Management.
1973 Viking voyage to Mars.
(Reprint from the November 1969 issue of Astronautics & Aeronautics: 30-59)

Keywords: Viking; Mars; Mission; objectives; Science
PQ-179

Jet Propulsion Laboratory, Pasadena, California.
NASA Viking Orbiter Science Briefing, September 12, 1969

I Author II Title III NASA/VO Briefing

Keywords: Viking; VO; Meeting; Science Package; JPL

PQ-180

NASA/Langley Research Center, Hampton, Virginia, Viking Project Office.
Mars engineering model, by William H. Michael, Jr., George P. Wood, and
A. Thomas Young. Feb. 6, 1969.
128 p. NASA/Langley Viking Project # N73-106-0, Feb., 1969

I-IV Authors V Title VI NASA/Langley Viking Project

Contents: Interplanetary Environment; Magnetic Field; Near-Mars Environ-
ment (300 KM - 35,000 KM); Mars Environment; Orbital, Physical,
and Astrodynamical Data

Keywords: Viking; Mars; Design Criteria; Engineering Model; LaRC
NASA/Langley Research Center, Hampton, Virginia, Viking Project Office.
NASA/Langley Viking Project # M73-115-0, Sept., 1969

I Author II Title III NASA/Langley Viking Project

Contents: Preliminary Design Payload; Mission Description; Spacecraft Description; Environmental Considerations; Special Considerations; Schedule; Appendix, additional orbiter engineering constraints

Keywords: Viking Project Plan; Spacecraft design; mission description; Mars; LaRC

PQ-182

California Institute of Technology, Pasadena, California, Jet Propulsion Laboratory.

I-IV Authors V Title VI JPL Tech. Report

Contents: Capsule Description; Assembly and Test: Sterilization Process Determination; Microbiological Monitoring; Sterilization Test Results; Conclusions; Recommendations for Future Programs

Keywords: JPL; CSAD; Sterilization; Assay; Sterilization Tests
PQ-183

Fox, D.
PQ requirements for planetary missions.
Sections A - E Paper by D. Fox, Aug. 20, 1970

I Author II Title III Paper

Keywords: Pg; Pc; period of biological interest; (Planets)

PQ-184

National Aeronautics and Space Administration, Moffett Field, California,
Office of Advanced Research and Technology (OART), Mission Analysis Div.

I-II Authors III Title IV NASA/OART Working Paper

Keywords: entry heating; Mars; survivability; Ames
PQ-185


Keywords: Boeing; Test; impact; f; g

PQ-186


Contents: Test I; Test II; Test III

Keywords: Boeing; test; impact; f; g
PQ-187

Beckman Instruments, Inc., Fullerton, California, Advanced Technology Operations.

Author II Title III Beckman Instruments, Inc., Tech. Proposal

Contents: Technical Management; Technical Approach; Resumes; Selected References

Keywords: Beckman; proposal; Viking; L

PQ-188

Beckman Instruments, Inc., Fullerton, California, Advanced Technology Operations.
Project Viking planetary quarantine analysis program. N.D.
Beckman Instruments, Inc., Advanced Tech. Operations, Addendum #,
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Author II Title III Beckman Instruments, Inc., Addendum

Contents: Answers to NASA Questions; Beckman Annual Report; ATO Brochure

Keywords: Beckman; proposal; Viking; Meeting; LaRC
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Apollo interior spacecraft sampling.  Dec. 11, 1970.  
2 p.  NASA/Manned Spacecraft Center, Houston, Texas, Letter from  
Charles A. Berry, M.D./Director of Medical Research and Operations, to  

Keywords: bioburden; Houston; Species; Apollo; sampling

Jet Propulsion Laboratory, Pasadena, California.  
Mariner Mars 1971 planetary quarantine plan (Preliminary), Part I,  
Jet Propulsion Laboratory, Pasadena, California  

Contents: Organization and Responsibilities; Probability of Contamina- 
tion, Analysis Plan; Documentation; Data Treatment; Subcon- 
tractor PQ Requirements; Facilities; Schedules; New Technolo- 
gy

Keywords: Planetary Quarantine Plan; MM '71; Jet Propulsion Laboratory
PQ-191

Martin Marietta Corporation, Denver, Colorado, Denver Division.  
Viking '75 project planetary quarantine plan.  
August 20, 1970.  
6 Sections, with appendices, tables, & figures  
Martin Marietta Corporation, Denver Division Coordination Draft # PL-3701009, August 20, 1970

I Author II Title III MCC Coordination Draft IV NASA Contract no. NAS1-9000

Contents: Applicable Documents; Viking Project Integration; Viking Lander Capsule System; Viking Orbiter System

Keywords: PQ Plan; Viking '75; Martin Marietta Corporation

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PQ-192

Exotech Systems, Inc., Washington, D. C.  
Review of planetary quarantine parameter probability of growth (Pg), by Samuel Schalkowsky.  

I-II Authors III Title IV Exotech Systems, Inc., Paper

Keywords: SSB; Woods Hole; Meeting; Minutes; Pg
PQ-193

I Author II Title III NASA/Washington Memorandum

Keywords: Mariner '71; Mars; $P_G$; Memorandum; Woods Hole; SSB

PQ-194

I Author II Title III COSPAR Report

Keywords: COSPAR; report; D values
PQ-195

NASA/Langley Research Center, Hampton, Virginia; Viking Project Office. Viking 75 project. (Viking mission definition no. 3), by A. Thomas Young. March 13, 1970.

37 p. NASA/Langley Research Center, Viking Project Office, Mission Definition No. 3, M75-123-0, March 13, 1970

I-II Authors III Title IV NASA/Langley Mission Definition

Contents: Scientific Objectives; Science Requirements; Landing Sites; Lifetime; Strategy for the Use of Two Spacecraft; Mission Definition Schedule

Keywords: Viking; Project Plan; Langley Research Center; Science Package

PQ-196


3 p. NASA/Washington Memorandum, from SL/Planetary Quarantine Officer, Planetary Programs, OSSA-Lawrence B. Hall to SL/ Mariner Mars '71 Program Manager, Jan., 1971

I Author II Title III NASA/Washington Memorandum

Keywords: Planetary Quarantine Officer; Comments; Mariner; Mars; 1971; Pre-launch Analysis
Martin Marietta Corporation, Denver, Colorado, Denver Division.
Martin Marietta Corporation, Denver Division, Coordination-Copy No. PL-3703005, July 1, 1970

I Author II Title III MMC, Denver Division Coordination-Copy

Keywords: Viking; DRL; Martin Marietta Corporation

PQ-198

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7 Sections, with figures Martin Marietta Corporation, Denver Division, Coordination-Copy, Management Review Draft, No. PL-3701045, Nov. 16, 1970

I Author II Title III MMC, Denver Division Coordination-Copy

Contents: Applicable Documents; Approach to Contamination Control; Major Sources of Organic Contamination and Methods of Control; Additional Sources of Organic Contamination and Methods of Control; Other Contamination Sources and Methods of Control

Keywords: Viking; Contamination Plan; DRL; Martin Marietta Corporation

I Author II Title III AIBS, Planetary Quarantine Advisory Committee, Abstracts

Keywords: American Institute of Biological Sciences (AIBS); Seminar; Atlanta; Agenda

Exotech Systems, Inc., Washington, D. C.

I Author II Title III Exotech Systems, Inc., Memorandum

Keywords: Memorandum; Draft; Exotech; Comments; Mariner; Mars; 1971; Pre-launch Analysis
PQ-201

Martin Marietta Corporation, Denver, Colorado, Denver Division.

I Author II Title III MMC Viking Analyses

Contents: Potential Contamination Events; JPL Analyses (MM71 and Viking); MMC Analyses; Summary

Keywords: MMC; Viking; PQ; Analysis; Model; Ent4y; Ejecta; Recontamination; View Graphs; Planetary Quarantine Working Group

PQ-202

National Aeronautics and Space Administration, Washington, D. C.
March 26, 1970.

I Author II NASA/Washington, Letter

Keywords: Space Science Board; P; P; Mars; Planetary Quarantine Requirements
PQ-203

National Aeronautics and Space Administration, Washington, D. C.
Minutes of conservatism meeting.
Feb. 11, 1971:
2 p. NASA/Washington Memorandum, from SB/Planetary Quarantine Officer--Viking, to Distribution List (concerning the meeting of L. Hall, D. Fox, L. Daspit, J. Stern, R. Green, S. Schalkowsky, A. Neill and E. Bacon at NASA on Jan. 12, 1971 to discuss Conservatism in the Application of PQ Requirements)

Keywords: Memorandum; SB; Viking; Minutes; Conservatism

PQ-204

April 7, 1970.

Keywords: Space Science Board; PQ; Quarantine period; 9 missions; Mars; rate of consumption of $P_c$
PQ-205


I-II Authors III Title IV JPL Report

Contents: Mission Description; Mathematical Model; Analysis and Allocation of PC; Small Population Sources

PQ-206


I Author II Title III NASA Policy Directive

Keywords: Lunar; Biological; Organic; Contamination; Policy; Directive
PQ-207

National Aeronautics and Space Administration, Washington, D.C.
Policy Directive No. NPD 8020.10, Sept. 6, 1967

1 Author II Title III NASA Policy Directive

Keywords: Biological; Contamination; Policy; Directive; NASA

PQ-208

American Institute of Biological Sciences, Washington, D.C.
American Institute of Biological Sciences (AIBS), Planetary Quarantine Seminar, Abstracts, (Semi-Annual NASA Spacecraft Sterilization Technology Seminar, held in Williamsburg, Virginia, Dec. 1, 2, 1970)

1 Author II Title III AIBS, Planetary Quarantine Seminar Abstracts

Keywords: Planetary Quarantine Seminar; Abstracts; Williamsburg; American Institute of Biological Sciences
National Aeronautics and Space Administration, Washington, D. C.,
Space Science and Applications.
7 p. NASA Report, from Homer E. Newell, Associate Administrator
for Space Science Applications, to Professor Harry H. Hess, Chairman,
Space Science Board, National Academy of Sciences, Washington, D. C.

I Author II Title III NASA Report

Keywords: COSPAR; Space Science Board; Post-launch; MM'64

National Aeronautics and Space Administration, Washington, D. C.
9 p. United States/NASA Report to the Space Science Board,
National Academy of Sciences, National Research Council on The
Probability of Contamination of the Planet Venus by the U. S.
Mariner 1967 Mission

I Author II Title III NASA Report

Keywords: COSPAR; Space Science Board; Post-launch; VM'67
PQ-211

National Aeronautics and Space Administration, Washington, D. C.
Post-launch analysis report: Mars Mariner '69.

I Author II Title III NASA Report

Keywords: COSPAR; Space Science Board; Post-launch; MM'69

PQ-212

Nikander, J.
Some problems posed by the Planet Venus, by J. Nikander.

I Author II Title III GWUBSCP Abstract

Keywords: GWUBSCP; Venus; surface; atmosphere
PQ-213

Cameron, R. E.
Bacterial growth in agar subjected to freezing and thawing, by R. E. Cameron, G. B. Blank and N. H. Horowitz.

I-II Authors IV Title V GWUBSCP Abstract

Keywords: GWUBSCP; Horowitz; Bacteria; Growth; Freezing; Thawing

PQ-214

Cornell, R. G.

I-II Authors III Title IV GWUBSCP Abstract

Keywords: GWUBSCP; contamination; models; estimation
PQ-215
Phillips, G. B.

I Author II Title III GWUBSCP Abstract

Keywords: GWUBSCP; sampling; vacuum probe; Becton, Dickinson; NASA; Langley

PQ-216
Martin Marietta Corporation, Denver, Colorado.

I Author II Title III MMC Document Development Status (PQ)

Keywords: Viking; Martin Marietta Corporation; Document; Status
PQ-217

Battelle Memorial Institute, Columbus, Ohio.
1 p. The George Washington University-Biological Sciences Communication Project Abstract, from Battelle Memorial Institute on Research conducted from 1 Sept. 1968 to 30 June 1970

I-III Authors IV Title V GWUBSCP Abstract

Keywords: Battelle; Report; Spacecraft; materials; nutrient; fungicide; Abstract

PQ-218

National Aeronautics and Space Administration, Washington, D. C.
Outbound planetary biological and organic contamination control: Policy and responsibility.
3 p. NASA Policy Directive & NPD 8020.10A

I Author II Title III NASA Policy Directive

Keywords: NPD 8020.10A; Policy Directive; Directive; NASA
PQ-219

Exotech Systems, Inc., Washington, D. C.

I Author II Title III Exotech Systems, Inc., Memorandum

Keywords: Memorandum; Comments; Exotech; Swenson; Survivability; Entry; Jovian

PQ-220

Exotech Systems, Inc., Washington, D. C.

I Author II Title III Exotech Systems, Inc., Memorandum

Keywords: Seattle; Memorandum; Exotech; Listing; Tasks; Semi-Annual Seminar
NASA/GSFC, Greenbelt, Maryland. 
Planetary Explorer/Venus mission. Section 7 - Planetary quarantine. 
NASA/GSFC, Greenbelt, Maryland, Planetary Explorer/Venus Mission, 
Report, Section 7 - Planetary Quarantine

I Author II Title III NASA/GSFC Report

Contents: Requirements; Assessment; Procedures and Facilities; 
Documentation; Orbital Maneuvers; Contamination Danger

Keywords: Planetary Explorer; Analysis; Venus; Report; Goddard 
Space Flight Center (GSFC)

PQ-222

Exotech Systems, Inc., Washington, D.C.  
Review of Section 7 of a Report on Planetary Explorer/Venus 
3 p. Exotech Systems, Inc., Washington, D.C., Memorandum, 
to NASA, Code SL, March 11, 1971

I Author II Title III Exotech Systems, Inc., Memorandum

Keywords: Memorandum; Exotech; Planetary Explorer; Venus; Comments; 
Analysis
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Explorer/Venus mission.

March 11, 1971.

Planetary Quarantine Officer, to GSFC/Paul Marcotte THRU SL/Ronald
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I Author II Title III NASA/Washington, Memorandum

Keywords: Memorandum; SL; Planetary Explorer; Venus; Comments; Phase A

California Institute of Technology, Pasadena, Calif., Jet Propulsion Lab.
March 9, 1971.

2 p. Jet Propulsion Lab., Pasadena, Calif., Letter from Dan
Schneiderman, Manager/ Mariner Mars 1971 Project, to SL/Earl W. Glahn,
MM 71 Program Manager, NASA/Washington, March 9, 1971 and Enclosure
date March 4, 1971

I Author II JPL Letter and Enclosure

Keywords: Letter; JPL; MM '71; Pre-launch Analysis; Revision
PQ-225

NASA/Ames Research Center, Moffett Field, California.

Pioneer program: Pioneer F/G planetary quarantine plan, Revision 1.

7 p. NASA/Ames Research Center, Moffett Field, California, Document No. PC-204, Revision no. 1, Jan. 15, 1971

I Author II Title III NASA/Ames Document

Contents: Scope; Applicable Documents; Planetary Quarantine Requirements; Activities Plan; Contractor Planetary Quarantine Requirements; Documentation; Data Treatment

Keywords: Ames; Pioneer; Planetary Quarantine Plan; Jupiter

PQ-226

Jet Propulsion Laboratory, Pasadena, California.

Planetary quarantine analysis for an outer planets mission, by C. C. Gonzalez and W. Stavro.
Feb., 1971.

1 p. Jet Propulsion Laboratory, Pasadena, California, Abstract, Feb., 1971

I-III Authors IV Title V JPL Abstract

Keywords: Jet Propulsion Lab.; Outer Planet Planetary Quarantine; Seattle; COSPAR; Abstract
PQ-227

Sandia Laboratories, Albuquerque, New Mexico.
April 8, 1971.
1 p. Sandia Laboratories, Albuquerque, New Mexico, Letter from H. D. Sivinski, Manager, Planetary Quarantine Dept. to Lawrence B. Hall, Planetary Quarantine Officer, NASA Headquarters, April 8, 1971

I Author II Sandia Laboratories Letter

Keywords: Sandia; Letter; Seattle; Title; COSPAR; Papers

PQ-228

April 7, 1971.

I Author II U. S. Dept. of Health, Education, and Welfare, Letter

Keywords: Favero; Letter; Phoenix; Seattle; COSPAR; Paper
PQ-229

National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications.
April 14, 1971.
1 p. NASA/Washington, Letter, from Lawrence B. Hall, Planetary Quarantine Officer to Dr. Wolf Vishniac, Dept. of Biology, University of Rochester, April 14, 1971

1 Author II NASA/Washington Letter

Keywords: NASA; Hall; Letter; Seattle; Vishniac; COSPAR

PQ-230

National Aeronautics and Space Administration, Washington, D. C.
1 p. NASA/Washington, Memorandum, from Earl W. Glahn SL/Manager, Mariner Mars '71, to SL/Chief, Planetary Quarantine, April 15, 1971(with 2 attachments)

1 Author II Title III NASA/Washington Memorandum

Keywords: Memorandum; NASA/SL; Mariner Mars '71; Revision A; Planetary Quarantine Plan
PQ-231

The Boeing Company, Seattle, Washington.

I-III Authors  IV Title  V The Boeing Co., Abstract

Keywords: JPL; COSPAR; Seattle; Abstract; D. M. Taylor; Erosion; Release

PQ-232

Jet Propulsion Laboratory, Pasadena, California.
1 p. Jet Propulsion Laboratory, Pasadena, California, Abstract, Feb., 1971

I-III Authors  IV Title  V JPL Abstract

Keywords: COSPAR; Seattle; Abstract; JPL; Mansour; Recontamination
PQ-233

Jet Propulsion Laboratory, Pasadena, California.
A re-evaluation of material effects on microbial release from solids,
by D. M. Taylor, S. J. Fraser, E. A. Gustan, R. L. Olson, and R. H.
Green.
1 p. Jet Propulsion Laboratory, Pasadena, California, Abstract,
Feb., 1971

I-VI Authors VII Title VIII JPL Abstract

Keywords: P_{e}; Jet Propulsion Laboratory; COSPAR; Seattle; Abstract;
Taylor

PQ-234

Naugle, John E.
1 p. Naugle, John E., Letter from, to Mr. Charles H. Townes, Chairman,
24, 1970

I Author II Letter from John E. Naugle

Keywords: NASA; Space Science Board; P_{e}; Letter; Woods Hole
PQ-235


I Author II Title III NASA/Washington Memorandum

Keywords: NASA/SL; Memorandum; Fox; Review; Viking; Planetary Quarantine Plan; Schedule

PQ-236


I Author II U. S. Dept. of Health, Education, and Welfare, Letter

Keywords: Favero; Phoenix; Letter; Buried load; grinder
PQ-237


2 p. NASA/Washington, Letter, from Lawrence B. Hall, Planetary Quarantine Officer, to Mr. Leo Daspit, Viking Program Office, Langley Research Center, Hampton, Va., March 31, 1971

I Author II NASA/Washington, Letter

Keywords: Letter; NASA/SB; Policy; Viking; Allocation; UV

PQ-238


Martin Marietta Presentation on Space Recontamination of Viking and Lander Capsule following Bioshield Release, at Langley Research Center, 1971

I Author II Title III Martin Marietta Presentation

Keywords: Martin Marietta; Presentation; Recontamination; Viking; Bioshield Release; P_c; UV; Langley
National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications.

Reduction in value of F_G for Mars.

1 p. NASA/Washington, Memorandum, from SL/Planetary Quarantine Officer Lawrence B. Hall, to SL/Program Manager, Mariner Mars '71 and SL/Program Manager, Viking '75, Jan. 8, 1971

I Author II Title III NASA/Washington, Memorandum

Keywords: NASA/SL; Memorandum; F_G; Mars

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National Aeronautics and Space Administration, Washington, D. C.

Outbound spacecraft: Basic policy relating to lunar and planetary contamination control.


I Author II Title III NASA Policy Directive

Keywords: Biological; Contamination; Policy; Directive; National Aeronautics and Space Administration
PQ-242

Estimation of encapsulated (buried) microbial burden, by Samuel Schalkowsky.

I-II Authors III Title IV Citation

Denver; buried burden; Exotech; estimation; PQAP

PQ-243

Probability of microbial release, by Samuel Schalkowsky.

I-II Authors III Title IV Citation

Denver; PQAP; Pr; Exotech; Viking; Mars
PQ-244

I-II Authors III Title IV Memorandum

Memorandum; Exotech; Mariner Mars '71; post launch analysis; review

PQ-245
California Inst. of Technology, Pasadena, Calif., Jet propulsion lab.

I-II Authors IV Title V Series note

Mariner Mars '71; post launch analysis; Jet Propulsion Lab; Mars
PQ-246

California Inst. of Technology, Pasadena, Calif. Jet propulsion lab.

a. Results of microbiological assay of MM71-2 (ESF Assay 1), by A. Hoffman.

b. Results of encapsulation microbiological assay of MM71-1, by A. Hoffman.

   JPL Interoffice Memo. IOM 2945-2290, May 18, 1971.

d. Revised spacecraft ejecta efflux estimates for Mariner 71-2, by A. Hoffman.

I-II Authors III-VI Titles VII-X Series notes

Mariner Mars '71; Jet Propulsion Lab.; analysis; memoranda; biological assay; efflux ejecta

PQ-247

Levinthal, Elliott

Viking '75 project mission design requirements, objectives and constraints, document no.
IR-3720055, letter from E. Levinthal of Stanford University Medical Center, Dept. of
2 p.

I Author II Title III Series note

Quarantine period; orbit lifetime; Viking; Levinthal; letter
PQ-248

California Inst. of Technology, Pasadena, Calif. Jet propulsion lab.
Mariner Mars 1971 spacecraft contamination control plan, by M. R. Christensen.

I-II Authors III Title IV Series note

Jet Propulsion Lab.; report; Mariner Mars; contamination control; cleaning

PQ-249

Martin Marietta, Denver, Colo. Denver division, Aerospace group.
Viking 75 project planetary quarantine documentation integration and control status.
6 Sections [PQ Milestone Document; PQ Document Tree; PQ DRL's; PQ DRD's; PQ Document Schedules; PQ Pert Net]. 1971

I Author II Title

Viking; MMC; report; documentation control; PQ schedule; milestones
PQ-250

Martin Marietta Corp., Denver, Colo. Denver div., Viking project.
Viking '75 Project planetary quarantine plan. Draft document.
6 Sections, 2 appendices; figures & tables. DRL Control no. PO-0022, report on contract

I Author II Title III Series note IV Contract

PQ Plan; Viking; Langley; draft

Contents: I. Introduction; II. Applicable Documents; III. Viking Project Integration;
IV. Viking Lander Capsule System; V. Viking Orbiter System; VI. Viking
Launch Vehicle System, Appendix A. Planetary quarantine status (PQS) and
directory (PQD) systems and Appendix B. Planetary quarantine plan glossary.

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Martin Marietta Corp., Denver, Colo., Denver div., Viking project.
Viking lander bioburden tabulation.

I Author II Title

Viking; Langley; burden; prediction; buried; MMC; presentation
PQ-252


I-II Authors  III Title  IV Subject—Developments of NASA PQ Program.  V Series note

Space Science Board; letter; NASA/Hqts.; PQ status; Odishaw

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I Title  II Series note

General Electric; data; management; Viking; Langley
PQ-254

Martin Marietta Corp., Denver, Colo. Denver div., Viking project
   Planetary quarantine requirements, by A. A. Rothstein.
   23 p. [Charts and illustrations] n.d.

I-II Authors III Title IV (Period of Quarantine: 20 years, beginning Jan. 1, 1969)

MMC; Viking; presentation; Langley; PQ requirements; constraints; vu graphs

PQ-257

National Aeronautics & Space Admin., Washington, D.C. Office of Space Sci. & Applications,
   Biosci. programs. PQ program officer.
   Comments on draft Viking planetary quarantine plan, by Lawrence B. Hall.

I-II Authors III Title IV Series note

NASA/Hdqts.; PQ plan; Viking; comments; memorandum

Viking sterilization plan, by Donald G. Fox.

1 p. Memorandum from D. G. Fox to Planetary Quarantine Advisory Committee Members, July 15, 1970.

I-II Authors III Title IV Series note

NASA/Hdqts.; memo; Viking; sterilization plan; comments; PQAP

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National Aeronautics & Space Admin., Washington, D.C. Office of Space sci. and applications.

Planetary programs, Mariner Mars '71, manager.

Letter from Earl W. Glaahn to Dan Schneiderman, May 27, 1970.

1 p. May 27, 1970

I-II Authors III Title IV JPL, Schneiderman)

NASA/Hdqts.; Mariner Mars '71; assay plan; approval; JPL; letter

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I-II Authors III Title IV Series note

NASA/Hdqts.; Mariner Mars '71; assay plan; comments; approval; memo.


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I-II Authors III Title

Jet Propulsion Lab.; Mariner Mars '71; assay; letter
PQ-262

National Aeronautics & Space Admin., Washington, D.C. Office of space sci. and applications.
Biosci. programs, Deputy planetary quarantine officer.
Letter from Arthur H. Neill to CDC-Phoenix Labs, Attention: Dr. Favero, August 4, 1970.

I-II Authors III Title IV Series note

NASA/Hzqts.; Mariner Mars '71; assay; letter

PQ-263

National Aeronautics & Space Admin., Washington, D.C. Office of space sci. and applications.
Bioscience programs, Planetary Quarantine Office.
Planetary quarantine parameters. n.d.
1 p. PQ Parameters for Planets.

I Author II Title III Series note

PG; P_c; NASA/Hzqts.; status; Mars; Venus; Mercury; Jupiter; Saturn; parameters
PQ-264

National Aeronautics & Space Admin., Washington, D.C.
Planetary quarantine status for approved planetary missions, n.d.

I Author II Title III Series note

NASA/Hqts.; PQ constraints; \( P_c \); PQ plans; status; Viking; Mariner Mars; Pioneer; M-V-M

PQ-265

National Aeronautics and Space Admin., Washington, D.C. Planetary Quarantine Officer.
Minutes of conservatism meeting, Memorandum on...

I Author II Title III Memorandum

NASA/Headquarters; memo; conservatism = safety margins; meeting; Viking; buried load; \( P_r \)
PQ-266

1 p. Agenda, [Dec. 1970]

I Author II Title III Series note

NASA/Headquarters; agenda; PQAP; Atlanta; Seattle; program planning

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I Author II Title IV Series note

Exotech; quarterly report; progress
PQ-268

Proposed meeting of Space Science Board ad hoc committee on COSPAR Sterilization Standards.
1 p. Agenda, [April 1971]

I Author II Title III Series note

NASA/Headquarters; program planning; SSB; agenda

PQ-269

California. Institute of Technology, Pasadena, Calif. Jet propulsion lab.
Preliminary analysis on the effect of planetary quarantine on Venus-Mercury 1973,
by W. Stavro.

I-II Authors III Title IV Series note

MVM; JPL; report; bias; Mercury; Venus; maneuver; impact; P(r); memo.
PQ-270

California Institute of Technology, Pasadena, Calif., Jet propulsion lab.

I-II Authors III Title IV Series note

Letter; MVM; P(r); Mercury; Venus; impact; JPL; Green; Clarke

PQ-271

Microbiological contamination log for planet Venus, by E.J. Bacon.

I-II Authors III Title IV Series note

Exotech; log; Venus; contamination
PQ-272


Microbiological contamination log for planet Mars., by E.J. Bacon.

I-II Authors III Title IV Series note

Exotech; log; Mars; contamination

PQ-273


Planetary quarantine policies - 1971, by L.B. Hall.

I-II Authors III Title IV Series note

NASA/Headquarters; Hall; SSB; policy; parameter values; \( P_G \); Mercury; outer planets; deflection; T
PQ-274


I Author II Title III Series note
Exotech; report; N; COSPAR; Mars; P_g; T; P(n)

PQ-275

Definition of probability of planetary contamination, Memorandum from E. Bacon to L.B. Hall. July 24, 1970.

I-II Authors III Title IV Series note
Exotech; memo; P_c; definitions; COSPAR
PQ-276

Hall, Lawrence B.
Recent developments in planetary quarantine, by Lawrence B. Hall.

I Author II Title III Series note

Hall; report; PQ Program; policy; history; status; London; COSPAR

PQ-277

California. Institute of Technology, Pasadena, Calif. Jet propulsion lab.
Letter from D. Schneiderman to E.W. Glahn (MM 71 Program Manager, NASA) and
Memorandum 2945-2225 on Response to NASA comments regarding the preliminary draft
of MM'71 Pre-Launch analysis document, by A.R. Hoffman and R.J. Reichert.

I-IV Authors V Title of Letter VI Title of Memo VII Series note

Letter; JPL Memo; JPL; MM '71; pre-launch analysis; revision; bio-burden; parameterer
values; spacecraft efflux ejecta
PQ-278

L.B. Hall presentation to Space Science Board, August 20, 1971.
9 VuGraphs

I-II Authors III Title

SSB; NASA/Headquarters; L.B. Hall; vu graphs; policy; Pioneer; USSR; Sagan; Mercury;
presentation; parameters; values; model

PQ-279

Sixth quarterly progress report, contract NASw-2062, Planning, evaluation and
analytical studies to implement planetary quarantine requirements, by E.J. Bacon.
Includes Draft Specification.

I-II Authors III Title IV Series note

Exotech; report; status; ETO; m6; specification
Planetary Quarantine Advisory Panel action items/suggestions: June 1971.
4 p. PQAP Action Items/Suggestions (Seattle, Wash.), June 1971

I Title II Series Note

PQAP; Seattle; minutes; meeting; P(r); mb; d-value; suggestions

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Sign off on the Mariner Mars '71 post launch analysis, Memo from L.B. Hall.

I-II Authors III Title IV Series note

Hall; memo; MM'71; post launch analysis; PQO; approval
PQ-284

Hall, Lawrence B.
Potential cost of planetary quarantine. n.d.
1 p.

I Author II Title
report; NASA; cost; Viking; Jovian; Mars

PQ-285

Hall, Lawrence B.
Status of thermoradiation, n.d.
1 p.

I Author II Title
report; NASA; thermoradiation; sterilization; Sandia; Viking; cost
Letter from L.B. Hall to Dr. Elliott C. Levinthal, Stanford University, Sept. 13, 1971.

I-II Authors  III Title

NASA; PQO; letter; Viking; bioshield; UV; g

Questions for PQAP, 9/21/71
1 p.

I Title

PQAP; agenda; KSC; P(r); parameter values; m_b
PQ-288

Documented definitions of planetary contamination, by E.J. Bacon

I-II Authors III Title IV Series note

Exotech; Bacon; memo; definition; Pc; Woods Hole

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PQ-290

Memorandum from E.J. Bacon to Job 053 File on notes — NASA presentation, August 27, 1970.

I-II Authors III Title IV Series note

Exotech; Bacon; memo; presentation; Pg; Viking
PQ-292
(see revised PQ-11)
National Aeronautics and Space Admin., Washington, D.C. Office of space sci. & application
Planetary programs.
Letter from L.B. Hall to E. Bacon on Viking document M75-127-1 revision.

I-II Authors III Title IV Series note

NASA/Headquarters; Hall; Viking; document; review

PQ-293

National aeronautics and space administration, Washington, D.C. Office of space science
and applications.
Letter to Dr. Charles H. Townes, SSB, on planetary quarantine policies.

I Author II Title III Series note

Letter; Naugle; SSB; policy; request; review; P(g); Mercury; outer planets;
bus deflection
PQ-294

National aeronautics and space administration, Washington, D.C. Office of space science and applications. Planetary quarantine officer.
Revised and new planetary quarantine policies, by Lawrence B. Hall.

I-II Authors III Title IV Series note

Hall; memo; policy; revision; authorization; SSB; official

PQ-295

National aeronautics and space administration, Washington, D.C. Office of space science and applications. Planetary quarantine officer.
Telecon with Mr. Dean Kaster - Space Science Board, by A.R. Hoffman.

I-II Authors III Title IV Series note

PQO; Hall; PQO; SSB; Hoffman; memo; policy; review; opinion; P(g); Mars; SAG; Goody
Ad hoc Committee (Outer Planet) for Science Advisory Group.

SAG; report; outer planets; PQ requirements; Jupiter; Saturn; Uranus; Neptune; penalty; Goody

2 pp. Letter to LB Hall, PQO, Code SL

Exotech; letter; comments; review; Viking; PQ provisions; Hall; Bacon
Microbial growth in simulated Martian environment, by E.J. Bacon.
1 page. Memorandum to 053 file, July 20, 1970.

I-II Authors III Title IV Series note

Bacon; Mars; memo; atmosphere; survival; $P_{(uv)}$; $P_{(vt)}$; test; experiment; data

Documented definitions of planetary contamination, by E.J. Bacon.

I-II Authors III Title IV Series note

Bacon; Exotech; memo; Hall; definitions; Woods Hole; $P_c$; contamination
PQ-300

Status review—PQ support project, by E.J. Bacon.

I-II Authors III Title IV Series note

Exotech; Bacon; memo; report; meeting; status; contract; minutes

PQ-301

Microbiological contamination log for planet Mars, December 31, 1971, by E.J. Bacon.

I-II Authors III Title IV Series note

Bacon; report; log; Mars; contamination; COSPAR; Exotech
PQ-302

Microbiological contamination log for planet Venus, by E.J. Bacon.

I-II Authors III Title IV Series note

Bacon; Exotech; COSPAR; report; log; Venus; contamination

PQ-303


I-II Authors III Title IV Series note

Exotech; Bacon; Hall; letter; P(sa); Pioneer; review; comments; evaluation
PQ-304

  Estimation of planetary contamination probabilities by non-landing vehicles, by
  S. Schalkowsky.

I-II Authors; III Title IV Series note

Exotech; Schalkowsky; report; P_c; non-landing vehicles; probability of arrival;
method; analysis

PQ-305

  Exotech review of Viking planetary quarantine plan, by E.J. Bacon.

I-II Authors III Title IV Series note

Bacon; Exotech; memo; Viking; PQ plan; review; schedule; assignment
PQ-306


I-II Authors III Title IV Series note

Schalkowsky; Exotech; memo; Pioneer; prelaunch; comments; Jupiter; Swenson

PQ-307


PQAP's support of NASA's PQ program, by E.J. Bacon.

1 p. Outline by E.J. Bacon for PQAP meeting, Cape Kennedy, Jan. 1972.

I-II Authors III Title IV Series note

Exotech; Bacon; PQAP; Cape Kennedy; note; presentation; orientation
PQ-308


Comments on MM '71 microbiological assay and monitoring plan, by E.J. Bacon.

I-II Authors III Title IV Series note

Exotech; Bacon; Neill; NASA/SB; memo; comments; review; MM '71; assay plan

PQ-309


I-II Authors III Title IV Series note

Exotech; Schalkowsky; memo; Hall; Viking; sterilization plan; review; comments; MMC
PQ-310

Viking meeting September 10 and 11, 1970 at Langley Research Center, by E.J. Bacon.

I-II Authors III Title IV Series note

Exotech; Bacon; memo; minutes; meeting; LRC; Viking; MMC; vu graphs; model; bioshield; models; requirements

PQ-311

Revised PQ requirements for Pioneer F/G, from E.J. Bacon/via S. Schalkowsky.

I-II Authors III Title IV Series note

Exotech; Bacon; Schalkowsky; memo; Hall; PQ requirements; Pioneer; Jupiter; P(N); P(G); T; recontamination; revised
PQ-312

Comments on Pioneer F/G planetary quarantine plan, undated preliminary draft PC-204, from E.J. Bacon/via S. Schalkowsky.

I-II Authors III Title IV Series note

Exotech; Bacon; Schalkowsky; memo; Hall; Pioneer; PQ plan; review; comments

PQ-313

Summary of comments compiled during review of January 14 of coordination draft PQ plan as edited by D. Fox and Exotech.

I Author II Title III Series note (Memorandum on Viking '73 PQ Plan)

PQ plan; Viking; memo; comments; review; draft; Fox; Bacon; Exotech
PQ-314


I-II Authors III Title IV Series note

PQO; memo; Pioneer; certification; launch; Jupiter; compliance; approval; recommendation; pre-launch analysis

PQ-315


I-II Authors III Title IV Series note

COSPAR; Secretariat; letter; MM '71; post-launch analysis
Meeting on mathematical analysis of the probability of contaminating the planets. April 25, 1967.

I Title III Series note

meeting; minutes; policy; model; N; P(N); T; COSPAR; NASA; Schalkowsky

PQ-317

National aeronautics and space administration, Washington, D.C. Space science, Deputy assoc. administrator.
2 p. with note. Letter/SL.

I Author II Title III Series note

Letter; note; Viking; policy; heat sterilization; M; Mars; elimination; review; SSB; Naugle
National aeronautics and space administration, Washington, D.C. Office of space science and applications. Planetary quarantine officer.

...Spacecraft sterilization technology seminar. Letter concerning information discussed at the..., by Lawrence B. Hall. Feb. 23, 1972.

PQ-319

National aeronautics and space administration, Washington, D.C. Office of space science and applications. Planetary quarantine officer.

...Sterilization vs. off-loading science. Note to R.S. Kraemer, by L.B. Hall.
1 p. Note/SL.

I-II Authors III Title IV series note

Note; Hall; off-loading; SSB; decision; heat sterilization; Viking; policy
PQ-320


I-II Authors III Title IV Series note

letter; spores; lifetime; P(\textit{vt}); Hall

PQ-321

Hall, Lawrence B. Rough estimate of minimum P.Q. - Viking, by L.B. Hall. n.d. 2 p. PQ Policy Considerations.

I-Author II Title III Series note

Hall; estimate; PQ (minimum); M; Mars; Viking; policy
PQ-322


Title Series note

COSPAR; SSB; USSR; request; assurance; international agreement; policy

PQ-323


Title Series note

Memo; Hall; SSB; policy; review; P(g); Mars; value; heat sterilization; meeting
PQ-324


I-II Authors III Title IV Series note

Memo; MVM '73; NASA/SL; P(N); Venus; deflection; aim point; atmosphere

PQ-325


I Title II Vu graphs on PQ Parameters, Viking.

Vu graphs; Viking; parameters; P(ν); P(r); Dv; values
APPENDIX B

Thesaurus Terms
CATEGORY 1

Medium

Abstract
Agenda
Document
Draft
DRL
Guidelines
Letter
Memorandum
Minutes
News Release
Paper
Plan
Proposal
Report
Questionnaire
View Graph
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<tr>
<th>Originator/Recipient</th>
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<tbody>
<tr>
<td>AIBS</td>
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<td>Ames</td>
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<td>AVCO</td>
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<td>Apollo</td>
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<tr>
<td>Bacon</td>
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<td>Beckman</td>
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## CATEGORY 4

### Characterization of Contents

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CATEGORY 5

Flight Projects and Planets

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<td>Neptune</td>
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CATEGORY 6

Associated Places, Organizations, etc.

Antarctic
Atlanta
COSPAR
Denver
Houston
Kennedy
Leningrad
Minnesota
Palo Alto
Pasadena
Prague
Seattle
Tokyo
Williamsburg
Woods Hole
CATEGORY 7

Subject Matter

Action
Action Items
Aerosols
Allocation
Analysis
Aseptic
Assay
Assay Plan
Atmosphere
Back Contamination
Bacteria
Bayesian Statistics
Bioburden
Bioburden Model
Biological
Biological Assay
Bioshield Release
Budget
Burden
Bus Deflection
Capsule
Certification
Cleaning
Clouds
Composition
Confidence
Conservatism
Constraints
Contamination
Contamination Control
CSAD
D-Value(s)
Design
Density
Devices
Diffusion
Directive
Dislodgement
Efficiency
Efflux Ejecta
Engineering Model
Entry
Entry Heating
Erosion
Error
Estimation
ETO (ethylene oxide)
Evaluation
Experiment(s)
Facility
FA Cycle
Flight Project Document
Fracture
Freezing
Funds
Fungicide
Gaseous Sterilization
Gravity
Grinder
Growth
Hospital
Impact
Implications
Interface
International
Lander
Lunar
Maintenance
Management
Maneuver
Mated
Materials
Micrometeoroid
Micrometeoroid Dislodgement
Model
N = # of Missions
Nutrient
Objectives
Orbit
Orbit Lifetime
Organic
Organic Inventory
P(c)
P(g)
P(N)
P(r)
P(uv)
P(vt)
Parachute
Parameter
PQ Provisions
Planets
Policy
Post-Launch Analysis
Prediction
Pre-Launch Analysis
Proposal
Radiation
Rate of Consumption of P(c)
Recontamination
Requirements
CATEGORY 7
(Continued)

Relaxation    Value
Release       Verification
Repairs       View Graphs
Resident      VLC
Revision      Workload
RTG           
Sampling      
Schedule      
Science       
Simulation    
Small Population Sources
Solar Wind    
Spacecraft    
Species       
Status        
Sterile Repair
Sterilization 
Sterilization Model 
Sterilization Plan
Sterilization Tests
Submittal = Submission
Support       
Surface       
Survival = Survivability
T = Quarantine Period
Task          
Techniques    
Test          
Thawing       
Thermal Radiation
Thermal Vacuum
UV = Ultraviolet
Vacuum Probe  

B-7