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

TR72-09
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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\textsuperscript{1} 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\textsuperscript{2}. 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
Figure 2. Acquisition Criteria
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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</thead>
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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-ring 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
PQ-1

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

Title: COSPAR meeting

Contents: U.S. organization and facilities; international activities; astronomy (stellar, solar, and planetary); particles and fields; upper atmospheric physics; earth sciences; life sciences; technological development; satellite and rocket launchings, 1967; planned launches for 1968; bibliography on space sciences, 1967.

Keywords: COSPAR; Space Science Board; Tokyo; Report; ETO

PQ-2

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

Preliminary flight path analysis orbit determination and maneuver strategy, Mariner Mars 1969.
February 12, 1968.

Title: Project Document 138; 605-58

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

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

Preliminary flight path analysis orbit determination and maneuver strategy, Mariner Mars 1969

250 p. Project Document 138, Appendix; 605-58

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

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


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

I-III 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
California Institute of Technology, Pasadena, California, Jet Propulsion Laboratory.
June 29, 1970.
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

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Martin Marietta Corporation, Denver, Colorado.
Minutes of planetary quarantine working group, Viking Project, Contract NAS1-9000.
February 16, 1970.
2 p. Letter from W. C. Eberle, Concerning PQ Working Group Minutes

Keywords: Meeting, Minutes; Viking; Martin Marietta Corporation
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 MMC-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-III 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.  
27 p.  

NASA Planetary Quarantine Provisions, 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

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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.  
37 p.  

NASA Viking Mission Definition No. 3, March 13, 1970

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

Contents: Science Requirements; scientific objectives; landing sites; lifet ime; 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.

I Author II Title III NASA News Release

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

COSPAR, Panel on Planetary Quarantine.
COSPAR, Panel on Planetary Quarantine Meeting held in Leningrad on May 23, 1970

I Author II Title III COSPAR Meeting

Keywords: COSPAR; Contamination log; Leningrad; Meeting; N; Pg; minutes Pr; Jovian
Exotech Incorporated, Washington, D. C.
8 p.

Exotech Incorporated, Washington, D. C., Summary Report no. TRSK 70-42

Summary Report IV NASA Contract no. NASw-2062

Keywords: Exotech; N; Mars; P(N); Post-COSPAR; report; PQ requirements

Exotech, Incorporated, Washington, D. C.
5 p., with appendix


I Author II Title III Exotech, Inc., PQ Constraints

Keywords: Exotech; PQ constraints; Mars; Venus; P(N); N; Pre-COSPAR; report
PQ-17


I Author II Title III NASA/Ames Document

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

PQ-18


I Author II Title III NASA/Ames Document

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
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

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

PQ-26


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

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
PQ-30

National Aeronautics and Space Administration, Washington, D. C., Planetary Quarantine Office.
Summary of comments compiled during review of January 14 of Coordination Draft of PQ Plan (PL-3701009).

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-31

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

NASA Memorandum, from SB/Dr. Donald G. Fox.

I Author II Title III NASA Memorandum

Keywords: Memo; Viking; Planetary Quarantine Plan; Review; PQO; comments
PQ-32


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.

I Author II Title III Draft

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

PQ-35

Martin, James S.

I Author II Title III Memorandum

Keywords: Memorandum; Viking; Planetary Quarantine Plan; Comments; Deviations; LRC; Martin
California Institute of Technology, Pasadena, California, Jet Propulsion Laboratory.
1 p. 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

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


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

---

National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications.
Biological sampling for Viking '73
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 Memorandum For The Record, Jan. 6, 1970

I Author II Title III Minutes

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

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

I Author II Title III NASA Memorandum

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


I Title II PQAC Report

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

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PQ-49

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

Allocation of $P_e$ 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
Martin Marietta Corporation, Denver, Colorado, Denver Division. 
Contract NASI-9000 - Classification of questionable burden areas on 
2 p. Martin Marietta Corp. Letter, from Frank W. McCabe to NASA/ 
Langley, Hampton, Virginia, including 1 Enclosure, Aug., 1970. 
I Author II Title III MMC Letter 
Keywords: Bioburden; MMC; letter; Mated; surface; definitions; VPO; 
FA cycle; parachute

California Institute of Technology, Pasadena, California, Jet Propulsion 
Laboratory. 
August 20, 1970. 
2 p. California Institute of Technology, Pasadena, California, Jet 
Propulsion Lab., Letter from W. E. Giberson, Mariner Venus/Mercury '73, 
Project Manager to Mr. N. W. Cunningham, Code SL/NASA/Washington, D. C., 
August 20, 1970 
I Author II Letter 
Keywords: Mercury; Venus; MVM '73; Letter; JPL; Planetary Quarantine 
Plan; Planetary Quarantine Requirements; relaxation; funds
PQ-52

Strobel, G. K.


Keywords: Memorandum; Mariner; Venus; Mercury; Planetary Quarantine requirements; P(N); PQO; MVM '73

PQ-53

National Aeronautics and Space Administration, 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

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

I Author II NASA Letter

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

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

I Author II Letter

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


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.


I Author II Title III NASA Memorandum

Keywords: Pioneer; Jupiter; Memorandum; Planetary Quarantine Plan; Comments; requirements; Hall
Letter from Lawrence B. Hall to Dr. Carl Sagan, July 31, 1970

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

Memorandum on estimating probability parameters, by P. H. A. Sneath.

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.
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.
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.

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.
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; PQQ

PQ-65

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

I Author II Title III Memorandum

Keywords: Viking; Langley Research Center; Planetary Quarantine 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. Comments on Sneath's memorandum on estimating probability parameters by Byron Wm. Brown, Jr., August 20, 1970. 3 p. with Enclosure

I-II Authors III Title IV Comments

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

PQ-67


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.

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

Sandia Laboratories, Albuquerque, New Mexico.

Feasibility of thermodilation sterilization of spacecraft using Cobalt 60, by R. M. Jefferson.

May, 1970.


Keywords: GNBSCP, 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. NASw-2052

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


PQ-71

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

Revised PQ requirements for Pioneer F/G.

July 31, 1970.


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

Keywords: Pioneer; P; P(N); Quarantine Period; Jupiter; Bacon; memo; requirements
NASA Letter from Lawrence B. Hall, Planetary Quarantine Officer to Dr. Wolf Vishniac, University of Rochester, Dept. of Biology, July 28, 1970

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

---


**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
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.

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

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.

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 MNC Letter

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

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 Pro-
jects to Viking Consultants, Dec. 5, 1969

I Author II Title III AIBS Memorandum

Keywords: AIBS; Planetary Quarantine Plan; Review Schedule; (Viking)
memorandum
Exotech Systems, Inc., Washington, D. C.
July 22, 1970.

Lester D. Shubin, Senior Scientist, concerning Re: NASw-2062,

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
Mitchell, R. T.

I Author II Title III Paper

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

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Review of sterilization parameter probability of growth (P\(_g\)). Sept. 17, 1970.

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. March 5, 1969.
1 p. NASA/Washington Viking Project Document Memorandum, from SB/Director to SL/Director, March 5, 1969

I Author II Title III Memorandum (NASA/Washington)

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

I Author II Title III MMC Minutes

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

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

Preliminary review of Viking '75 lander capsule sterilization plan,
July 24, 1970.
S. Schalkovsky to Lawrence Hall, July 24, 1970

I Author II Title III EXI Memorandum

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

IQ-86

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
FQ-87

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


I. Author II Title III ESI Memorandum

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

FQ-88

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

I. Author II Title III NASA/Washington Memorandum

Keywords: Mariner '69; Mars; Memorandum; pre-launch analysis; approval; Reynolds; certification
PQ-89

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

PQ-90

Horowitz, N. H.

I-III Authors IV Title V Jn. Cit.

Keywords: publication; analysis; ZOND; Venus; Mars; bus deflection Horowitz; science; report; relaxation; history
NASA/Langley Research Center, Hampton, Virginia.

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

Langley Research Center/Viking Project Office.


I Author II Title III Minutes (LaRC)

PQWG

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

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Hagen, C. A.


I-IV Authors V Title VI GWUBSCP Abstract

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

Reynolds, M. C.

I-II Authors III Title IV GWUBSCP Abstract

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

PQ-94

Pflug, I. J.

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
Puleo, J. R.
Quantitative and qualitative microbiological profiles of the Apollo 10 and 11 spacecraft, by J. R. Puleo, G. S. Oxborrow, N. D. Fields and H. E. Hall.
November 2, 1970.

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

Sandia Laboratories, Albuquerque, New Mexico.
November 2, 1970.

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

I Author II Title III COSPAR, PQ Panel Report

Keywords: COSPAR; Planetary Quarantine Panel; N; Prague; Planetary Quarantine Requirements; SSB; meeting; minutes; T; deflection

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COSPAR, Panel on Planetary Quarantine.

Interim Report of the Panel on planetary quarantine (Item 12), by Dr. Heden.

COSPAR, Interim Report of the Panel on Planetary Quarantine

I Author II Title III COSPAR Report

Keywords: COSPAR; Contamination log; Leningrad; Jovian; PQ Panel; P(g); meeting; minutes
PQ-103

National Aeronautics and Space Administration, Washington, D. C.
Clarification of NHB 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

I Author II Title III NASA/Washington Memorandum

Keywords: NHB 8020.12; Memorandum; verification; MM '71; assay; sampling; PQO; clarification; order; scope; PHS

PQ-104

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

I Author II Title III NASA/Washington Letter-Report

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


I Author II Title III NASA/Washington Letter

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

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


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

I Author II Title III NASA/Washington Memorandum

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

National Aeronautics and Space Administration, Washington, D. C.,
Further reduction of sterilization requirements. 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

I Author II Title III NASA/Washington Memorandum

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


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


1 p. NASA/Washington Memorandum, from SB/Donald G. Fox, Steril- lity 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

National Aeronautics and Space Administration, Washington, D.C.,
Office of Space Science and Applications.
Biological sampling for Viking '73. Feb. 8, 1969.
1 p. NASA/Washington Memorandum, from SB/Lawrence B. Hall,
Planetary Quarantine Officer to LaRC/Viking Project Manager, Feb.,
1969.

I Author II Title III NASA/Washington Memorandum

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

PQ-112

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

I Author II Title III NASA/Washington Memorandum

Keywords: SB; Memorandum; Viking; Planetary Quarantine Provisions;
Approval; Reynolds
National Aeronautics and Space Administration, Washington, D. C.,
Office of Space Science and Applications.

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

I Author II Title III NASA/Washington Memorandum

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

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

1 p. NASA/Washington Memorandum, from SB/Director, Orr E. Reynolds to SL/Director, June, 1969

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

PQ-116

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

I Author II Title III NASA/Washington Memorandum

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


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


I Author II Title III NASA/Washington Memorandum

Keywords: Memorandum; SL; Viking; documents; meeting; LaRC; coordination; agreement; procedures
PQ-119

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
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

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
NASA/Langley Research Center, Hampton, Virginia, Langley Station.  
Decision concerning use of "MAST" type sterilization facility for the Viking Project.  
July 18, 1969.  

Author: II Title: III NASA/Langley Letter

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

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Jet Propulsion Laboratory, Pasadena, California.  
U.S.P.H.S.'s (N.C.D.C., Phoenix) Involvement in the Apollo Program vs inception of bioassay activity of the Viking project.  
July 31, 1969.  
2 p.  JPL/Pasadena, California Memorandum 2945N-101, July, 1969, from E. J. Sherry to L. B. Hall

Author: II Title: III JPL Memorandum

Keywords: Memorandum; Phoenix; Assay; Viking; workload; schedule; JPL; assignment; scope
National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications.
1 p. NASA/Washington Memorandum, Aug. 1969, from Planetary Quarantine Officer/SB Lawrence B. Hall to Viking Program Manager/SL.

Keywords: Memorandum; SB; Viking; Sterilization; Facility; MAST; sterile insertion; requirement; clarification

National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications.
July 31, 1969.
1 p. NASA/Washington, Memorandum from SB/Planetary Quarantine Officer to SL/Viking Program Manager, July, 1969.

Keywords: Memorandum; SB; Viking; Sterilization; facility; MAST; clarification; procedures; agreement; sterile insertion
PQ-127


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

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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
PQ-131
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;

PQ-132
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

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. N.D.
NASA 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  

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Kereluk, K.  


I-III Authors IV Title V GWUBSCP Abstract  

Keywords: abstract; George Washington University-Biological Sciences Communication Project = GWBSCP; 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.

I-II Authors IV Title V GWUBSCP Abstract

Keywords: GWUBSCP; abstract; ethylene oxide; sterilization; humidity; lethality; water activity
PQ-143

Petersen, N. J.

I-II Authors III Title IV GWUBSCP Abstract

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

PQ-144

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

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

I Author II Title III GWUBSCP Abstract

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


I Author II Title III NASA/Langley Memorandum

Keywords: Memorandum; Viking; T; clarification; agreement; Martin (J.S.)
PQ-149

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

I Author II Title III NASA/Washington Memorandum

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

PQ-150


I Author II Cornell University, Letter

Keywords: Letter; Sagan; Jovian; Planetary Quarantine Requirements; Entry heating; Radiation; RTG
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. Hearth, 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
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

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National Aeronautics and Space Administration, Washington, D. C.
1 p. NASA/Washington Memorandum from SD/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.

I Author II Title III Exotech Memorandum

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


IN Industrial Research: 41, May, 1970

I Title II Jn. Cit.

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


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


I-VII Authors VIII Title IX Review Committee Report

Keywords: Report; Review; bioburden; model; estimation; prediction; JPL; Angelotti
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

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.

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

Author II Title III NASA/Washington Memorandum

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

National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications.
2 p. NASA/Washington, Office of Space Science and Applications, Memorandum, from SB/Planetary Quarantine Officer-Bioscience Programs Lawrence B. Hall to SL/Viking Program Manager-Planetary Programs, March 12, 1970

I Author II Title III NASA/Washington Memorandum

Keywords: deviation; Viking; memorandum; approval

PQ-164

National Aeronautics and Space Administration, Washington, D. C., Office of Space Science and Applications.
2 p. NASA/Washington, Office of Space Science and Applications, Memorandum from SB/Planetary Quarantine Program Officer Lawrence B. Hall to Planetary Quarantine Advisory Committee Chairman and Members, July 15, 1970

I Author II Title III NASA/Washington Memorandum

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


Author II Title III NASA/Washington Memorandum

Keywords: memorandum; Viking; sterilization; alternative

PQ-166


Author II Letter

Keywords: Letter; Heden; COSPAR; Planetary Quarantine Panel; Pₚ; Pᵣ; 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(n); letter; Prague; Cospar
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

Author II NASA/Washington Letter

Keywords: SSB; letter; PQ status; Pg; T-period; N

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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

Author II NASA/Washington Letter

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


I Author II Title III NASA/Washington Memorandum

Keywords: Viking; D values; memorandum; requirements

PQ-172


I-V Authors VI Title VII JPL Paper

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


AVCO Corporation, Applied Technology Division, Report no. AVATD-0081-69-RR

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


AVCO Corporation, Applied Technology Division, Report no. AVATD-0081-69RR

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

Martin Marietta Corporation, Denver, Colorado, Denver Division.
Martin Marietta Corporation Viewgraphs from Martin Marietta Presentation on Viking Planetary Quarantine Program to NASA Headquarters on October 22, 1969

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
PQ-177

National Aeronautics and Space Administration, Washington, D. C.
Models of Mars atmosphere (1967), (NASA Space Vehicle Design Criteria
Environment ).
21 p. NASA Special Publication SP-8010

I Author II Title III NASA SP

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

PQ-178

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

I Author II Title III Reprint

Keywords: Viking; Mars; Mission; objectives; Science
Jet Propulsion Laboratory, Pasadena, California.


NASA Viking Orbiter Science Briefing, September 12, 1969

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.


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 Environment (300 KM - 35,000 KM); Mars Environment; Orbital, Physical, and Astrodynamical Data

Keywords: Viking; Mars; Design Criteria; Engineering Model; LaRC
PQ-181


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

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

PQ-184

National Aeronautics and Space Administration, Moffett Field, California, Office of Advanced Research and Technology (OAR&T), Mission Analysis Div.  
Spacecraft component survivability during entry into the Martian atmosphere, by Byron L. Swenson. (Working Paper)  
March 31, 1969.  

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

The Boeing Company, Seattle, Washington.
Microbial release from solids after simulated hard landings, by S. J. Fraser, R. L. Olson, and R. H. Green. N.D. 9 p. The Boeing Company, Seattle, Washington, Abstract

I-IV Authors V Title VI The Boeing Company Abstract

Keywords: Boeing; Test; impact; f; g

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I-III Authors IV Title V The Boeing Company Final Report

Contents: Test I; Test II; Test III

Keywords: Boeing; test; impact; f; g
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I Author II Title III Beckman Instruments, Inc., Tech. Proposal

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

Keywords: Beckman; proposal; Viking; L

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Keywords: Beckman; proposal; Viking; Meeting; LaRC
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I Author II Title III NASA/Manned Spacecraft Center, Houston, Texas,
Letter

Keywords: bioburden; Houston; Species; Apollo; sampling

PQ-190

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Mariner Mars 1971 planetary quarantine plan (Preliminary), Part I,
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PD 610-18, Part I, Feb. 11, 1970

I-III Authors IV Title V JPL Project Document

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tion, Analysis Plan; Documentation; Data Treatment; Subcon-
tractor PQ Requirements; Facilities; Schedules; New Technolo-
gy

Keywords: Planetary Quarantine Plan; MM '71; Jet Propulsion Laboratory
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Review of planetary quarantine parameter probability of growth ($P_g$),
by Samuel Schalkowsky.
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Aug. 12, 1970.

1 p. NASA/Washington, Memorandum, from SB/Lawrence B. Hall, Planetary Quarantine Officer to SL/Earl Glahn, Mariner 1971 Program Manager, August 12, 1970

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PQ-195

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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-I Authors III Title IV NASA/Langley Mission Definition

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Lifetime; Strategy for the Use of Two Spacecraft; Mission
Definition Schedule

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

PQ-196

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analysis of probability of planetary contamination, PD 610-18,
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
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July 1, 1970.
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Keywords: Viking; DRL; Martin Marietta Corporation

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

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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
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American Institute of Biological Sciences (AIBS), Planetary Quarantine Advisory Committee, Abstracts, (Semi-Annual NASA Spacecraft Sterilization Technology Seminar, held in Atlanta, Georgia, April 15, 16, 1970)

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

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


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; Ejecta; Ejecta; Recontamination; View Graphs; Planetary Quarantine Working Group

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PQ-202


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I. Author II. NASA/Washington, Letter

Keywords: Space Science Board; P; P; Mars; Planetary Quarantine Requirements
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I Author II NAS-NRS, Space Science Board Letter

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PQ-205


I-II Authors III Title IV JPL Report

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PQ-206


I Author II Title III NASA Policy Directive

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

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Outbound planetary biological contamination control: Policy and responsibility.
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Author II Title III NASA Policy Directive

Keywords: Biological; Contamination; Policy; Directive; NASA

PQ-208

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Keywords: Planetary Quarantine Seminar; Abstracts; Williamsburg; American Institute of Biological Sciences
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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

PQ-210

National Aeronautics and Space Administration, Washington, D. C.
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National Academy of Sciences, National Research Council on The
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Keywords: COSPAR; Space Science Board; Post-launch; VM'67
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I Author II Title III NASA Report

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

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

I Author II Title III GWUBSCP Abstract

Keywords: GWUBSCP; Venus; surface; atmosphere
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Keywords: GWUBSCP; Horowitz; Bacteria; Growth; Freezing; Thawing

Cornell, R. G.

Keywords: GWUBSCP; contamination; models; estimation
PQ-215

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

PQ-216

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Author Title III MMC Document Development Status (PQ)

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

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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

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I Author II Title III NASA Policy Directive

Keywords: NPD 8020.10A; Policy Directive; Directive; NASA
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I Author II Title III Exotech Systems, Inc., Memorandum

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

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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

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

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

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

Keywords: Memorandum; Exotech; Planetary Explorer; Venus; Comments;
Analysis
PQ-223

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Toms, March 11, 1971

I Author II Title III NASA/Washington, Memorandum

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

PQ-224

California Institute of Technology, Pasadena, Calif., Jet Propulsion Lab.
March 9, 1971.
2 p. Jet Propulsion Lab., Pasadena, Calif., Letter from Dan
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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

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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

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I-III Authors IV Title V JPL Abstract

Keywords: Jet Propulsion Lab.; Outer Planet Planetary Quarantine; Seattle; COSPAR; Abstract
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Keywords: Favero; Letter; Phoenix; Seattle; COSPAR; Paper
PQ-229

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PQ-230

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Author II Title III NASA/Washington Memorandum

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

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Effects of aeolian erosion on microbial release from solids, by E. A. Gustan, D. M. Taylor and R. H. Green.

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

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

PQ-232

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

I-II Authors IV Title V JPL Abstract

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I-VI Authors VII Title VIII JPL Abstract

Keywords: P; Jet Propulsion Laboratory; CO$S$AR; Seattle; Abstract; Taylor

Naugle, John E.

I Author II Letter from John E. Naugle

Keywords: NASA; Space Science Board; P; 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
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Keywords: Letter; NASA/SB; Policy; Viking; Allocation; UV

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I Author II Title III Martin Marietta Presentation

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I Author II Title III NASA Policy Directive

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

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I-II Authors III Title IV Citation

Denver; buried burden; Exotech; estimation; PQAP

PQ-243

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I-II Authors III Title IV Citation

Denver; PQAP; P_r; Exotech; Viking; Mars
1 p. Memorandum to Lawrence B. Hall, Chief, PQO/NASA from S. Schalkowsky.

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      JPL Interoffice Memo. IOM 2945-2290, May 18, 1971.
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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 Genetics to C.H. Robbins, NASA/Langley Research Center, May 21, 1971.
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I-II Authors  III Title  IV Series note

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

PQ-249

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I Author  II Title

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


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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I Author II Title

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

NASA, Washington, D.C. Office of space sci. & applications, Planetary programs
Letter to Dr. Hugh Odishaw, NAS-NRC, Space Science Board, by Lawrence B. Hall.

I-II Authors III Title IV Subject-Developments of NASA PQ Program. V Series note
Space Science Board; letter; NASA/Hdqts.; PQ status; Odishaw

PQ-253

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I Title II Series note

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

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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

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   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
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I-II Authors III Title IV Series note

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

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I-II Authors III Title IV JPL, Schneiderman)

NASA/Hdqts.; Mariner Mars '71; assay plan; approval; JPL; letter
National Aeronautics & Space Admin., Washington, D.C. Office of space sci. and applications, Biosci. programs, Deputy planetary quarantine officer,

I-II Authors III Title IV Series note

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


I-II Authors III Title

Jet Propulsion Lab.; Mariner Mars '71; assay; letter
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I-II Authors  III Title  IV Series note

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

PQ-263

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  Bioscience programs, Planetary Quarantine Office.
  PQ Parameters for Planets.

I Author  II Title  III Series note

P G; P c; NASA/Hdqts.; 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/Hdqts.; 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]

Author II Title III Series note

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

PQ-267

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Author II Title IV Series note

Exotech; quarterly report; progress
PQ-268

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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.

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
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I-II Authors III Title IV Series note

Exotech; log; Mars; contamination

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I-II Authors III Title IV Series note

NASA/Headquarters; Hall; SSB; policy; parameter values; $P_G$; Mercury; outer planets; deflection; T
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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

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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; parameter values; spacecraft efflux ejecta
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I-II Authors III Title

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

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I-II Authors III Title IV Series note

Exotech; report; status; ETO; m specification
PQ-280

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I Title II Series Note

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

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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

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

Title

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

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

PQ-290

Memorandum from E.J. Bacon to Job 053 File on notes — NASA presentation, August 27, 1970.
PQ-292
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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
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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


I-II Authors III Title IV Series note

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

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I-II Authors III Title IV Series note

PQO; Hall; PQO; SSB; Hoffman; memo; policy; review; opinion; P(g); Mars; SAG; Goody
PQ-296

Ad hoc Committee (Outer Planet) for Science Advisory Group.

I-II Authors III Title IV Series note

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

PQ-297

2 pp. Letter to LB Hall, PQO, Code SL
I-II Authors III Title IV Series note

Exotech; letter; comments; review; Viking; PQ provisions; Hall; Bacon
PQ-298

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

PQ-299

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


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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

I-II Authors III Title IV Series note

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


I-II Authors III Title IV Series note

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

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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


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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

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

Planetary quarantine certification of Pioneer F, by Lawrence B. Hall.

I-II Authors III Title IV Series note

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

PQ-315

Committee on Space Research (COSPAR). Secretariat.

1 p. Letter of transmittal.

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.

National aeronautics and space administration, Washington, D.C. Space science, Deputy assoc. administrator.
2 p. with note. Letter/SL.
PQ-318

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.

I-II Authors III Title IV series note

Letter; Hall; Sagan; request; JPL; papers; seminar; reply

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

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

...Spore longevity. Letter to M.W. Miller concerning..., by Lawrence B. Hall.
1 p. Letter/SL.

I-II Authors III Title IV Series note

letter; spores; lifetime; P(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

1 p.  Draft for Assurance action.

I Title  II Series note

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

PQ-323

National aeronautics and space administration, Washington, D.C.  Office of space science
and applications, Planetary quarantine officer.
Meeting of the NAS committee on space biology and medicine, Space Biology section,
1 p.  Memorandum to SL/H.S. Young.

I-II Authors  III Title  IV 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(uv); 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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## Characterization of Contents

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### Flight Projects and Planets

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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
<p>| 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 | 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 |</p>
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