

AD-A083 001

DEFENSE TECHNICAL INFORMATION CENTER ALEXANDRIA VA
SPACE STATIONS. (U)

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19. KEY WORDS (Continue on reverse side if necessary and identify by block number) <table border="0"> <tr> <td>* Space Stations</td> <td>Life Support</td> </tr> <tr> <td>* Bibliographies</td> <td>Controlled Atmospheres</td> </tr> <tr> <td>* Space Shuttles</td> <td>Aerodynamic Characteristics</td> </tr> <tr> <td>Manned Spacecraft</td> <td>Space Flight</td> </tr> <tr> <td>Rendezvous Spacecraft</td> <td>Control Systems</td> </tr> </table>			* Space Stations	Life Support	* Bibliographies	Controlled Atmospheres	* Space Shuttles	Aerodynamic Characteristics	Manned Spacecraft	Space Flight	Rendezvous Spacecraft	Control Systems
* Space Stations	Life Support											
* Bibliographies	Controlled Atmospheres											
* Space Shuttles	Aerodynamic Characteristics											
Manned Spacecraft	Space Flight											
Rendezvous Spacecraft	Control Systems											
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This bibliography contains unclassified and unlimited citations on Space Stations. These citations provide information emphasizing aerodynamic characteristics, checkout procedures, control systems, telemeter systems, electrical power systems, safety, navigation, space maintenance, space propulsion, and extravehicular activity. It also includes pertinent information on space shuttles and their operational characteristics. Four computer generated indexes are provided.												

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19. Cont.

Space Environments
Physiological Effects
Females
Computer Programs
Maintenance
Checkout Equipment
Foreign Technology
Soft Landings
Non-military Applications
Orbit to Orbit Shuttles

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AD- A083 001

SPACE STATIONS

A DTIC BIBLIOGRAPHY

**DTIC-TOS
Cameron Station
Alexandria, Va. 22314**

APRIL 1980

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MAY 9 1980
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distribution unlimited.

**DEFENSE TECHNICAL INFORMATION CENTER
DEFENSE LOGISTICS AGENCY
Cameron Station
Alexandria, Va. 22314**

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9. PERFORMING ORGANIZATION NAME AND ADDRESS Defense Technical Information Center Cameron Station Alexandria, Virginia 22314		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS PE 656015 ~~658015~~
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FOREWORD

This unclassified/unlimited bibliography consists of 386 selected citations of reports on Space Stations.

These citations provide information emphasizing aerodynamics characteristics, checkout procedures, control systems, telemeter systems, electrical power systems, safety, navigation, space maintenance, space propulsion, and extravehicular activity. It also includes pertinent information on space shuttles and their operational characteristics.

Entries have been selected from references processed into the Defense Technical Information Center's data bank from January 1964 to December 1979.

This report supersedes DDC report bibliographies on Space Stations, AD-703 500, DDC-TAS-70-20-1, dated march 1970 and AD-A010 500, DDC-TAS-75-10, dated May 1975.

Individual entries are arranged in descending AD number sequence. Computer generated indexes of Corporate Author/Monitoring Agency, Subject, Personal Author, and Title are included.

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F O R E W O R D

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These citations provide information emphasizing aerodynamics characteristics, checkout procedures, control systems, telemeter systems, electrical power systems, safety, navigation, space maintenance, space propulsion, and extravehicular activity. It also includes pertinent information on space shuttles and their operational characteristics.

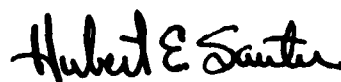
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This report supersedes DDC report bibliographies on Space Stations, AD-703 500, DDC-TAS-70-20-1, dated March 1970 and AD-A010 500, DDC-TAS-75-10, dated May 1975.

Individual entries are arranged in descending AD number sequence. Computer generated indexes of Corporate Author/Monitoring Agency, Subject, Title, and Personal Author are included.

BY ORDER OF THE DIRECTOR, DEFENSE LOGISTICS AGENCY

OFFICIAL



HUBERT E. SAUTER

Administrator

Defense Technical Information Center

C O N T E N T S

FOREWORD iii

AD BIBLIOGRAPHIC REFERENCES 1

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SUBJECT D-1

TITLE T-1

PERSONAL AUTHOR P-1

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-B004 682 22/2

ANALYTIC SERVICES INC FALLS CHURCH VA

Current and Projected Government and
Commercial Space Activities.

(U)

DESCRIPTIVE NOTE: Defense div. note,
APR 75 45P
REPT. NO. ANSER-DDN-75-3 Patton, J. S. ;
CONTRACT: F44620-69-C-0014

UNCLASSIFIED REPORT

DESCRIPTORS: (*Space sciences, Reviews),
Forecasting, Scientific research, Commerce,
International, Peacetime, Industrial research,
Government(Foreign), United States
Government, Space shuttles, Space transportation,
Technology, Space exploration, Remote detectors,
Natural resources, Meteorological satellites,
Communication satellites, Mapping, Monitoring,
Space environments, Scientific satellites,
Military planning, Military applications
IDENTIFIERS: Nonmilitary applications

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This note is a summary of the growing national and international use of outer space for peaceful purposes by government and commercial activities. Emphasis is placed on: (1) The coming use of the Space Shuttle as a lower cost, more efficient space transportation system; and (2) The real and potential benefits that civilian space applications represent in meeting domestic and global economic, energy, and environmental needs. Of special significance are programs incorporating remote sensing systems, such as earth resources and meteorological satellites. The highlights of scientific knowledge obtained from space also are covered. The study concludes by examining the industrial and commercial employment of space now and in the future. This note was prepared to furnish background information in projecting future military exploitation in the space medium. (Author)

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AD-A078 360 6/5 6/19

ADVISORY GROUP FOR AEROSPACE RESEARCH AND DEVELOPMENT
NEUILLY-SUR-SEINE (FRANCE)Recent Advances in Aeronautical and Space
Medicine.

(U)

DESCRIPTIVE NOTE: Conference proceedings,
SEP 79 82P Murray, Raymond M. ;
REPT. NO. AGARD-CP-265

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Presented at the Aerospace Medical
Panel's Specialists' Meeting, Brussels, Belgium,
22-26 Jan 79.

DESCRIPTORS: *Symposia, *Aerospace medicine,
Oxygen equipment, Physiological effects, NATO,
Personnel selection, Payload, Specialists,
Training, Space shuttles, Space environments,
Stress(Physiology), Space crews, Females

(U)

Two papers presented at the meeting of the
Aerospace Medical Panel in Brussels, on the
26 January 1979, provide valuable data gained from
the experience with the selection and training of
Space Shuttle payload Specialists as well as
a review of physiological problems expected during
the forthcoming Space Shuttle operation because
of the environmental stress of space life. Three
other papers given in this meeting session are
intended to update the Aerospace Specialist in
the selection aircrew (including female personnel),
basic science concepts and clinical operational
requirements of advanced oxygen systems designed for
future high-performance combat aircraft and - for the
first time at AGARD meetings - medical and
physiological problems faced during the development
and operation of commercial supersonic vehicles.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A077 675 5/1

AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OH SCHOOL OF SYSTEMS AND LOGISTICS

Space Transportation System Western Launch Site Construction Management Information System - A Case Study.

(U)

DESCRIPTIVE NOTE: Master's thesis,

SEP 79 98P Griffn ,G. Scott ;Mardis, James M. ;

REPT. NO. AFIT-LSSR-4-79B

UNCLASSIFIED REPORT

DESCRIPTORS: *Management information systems, *Construction, Air Force facilities, Launching sites, Space shuttles, Army Corps of Engineers, Theses

(U)

IDENTIFIERS: COEMIS(Corps of Engineers Management Information System)

(U)

The Corps of Engineers Management Information System (COEMIS) is used by the Corps of Engineers in their role as Construction Agents on Air Force projects built under the Military Construction Program.

This research investigates the ability of COEMIS to meet Air Force informational needs by examining the construction management effort in progress on the Western Launch Site Space Transportation System Facilities at Vandenberg Air Force Base, California.

The research concluded that the Corps of Engineers Management Information System can be an effective, efficient management tool which has the capability to meet Air Force needs provided: (1) implementation of real time computer interfaces, (2) Air Force participation in COEMIS, and (3) establishment of a split data base. The results of this study should be applicable to all major Air Force construction projects managed by the Army Corps of Engineers. (Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A076 567 17/7

ARMAMENT DEVELOPMENT AND TEST CENTER EGLIN AFB FL

Proceedings of the Biennial Guidance Test Symposium (9th) Held at Holloman Air Force Base, New Mexico on 10-12 October 1979. Volume I.

(U)

OCT 79 389P

REPT. NO. ADTC-TR-79-11-VOL-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 2, AD-C020 448L.

DESCRIPTORS: *Guidance, *Test methods, Global positioning system, Space shuttles, Inertial systems, Inertial navigation, Inertial guidance, Gyroscopes, Accelerometers, Strapped down systems, Symposia

(U)

These proceedings contain papers included in the Ninth Biennial Guidance Test Symposium. This symposium, hosted by the Central Inertial Guidance Test Facility, is directed toward the exchange of information, stimulation of new ideas, and discussion of recent developments in the field of guidance testing. The papers presented include such topics as the Global Positioning System, the Space Shuttle, Aircraft Inertial Navigators, Component Evaluation, Advanced Guidance Methodology, Missile Guidance Systems and Analysis Techniques.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07
AD-A075 198 22/2

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OH

Artificial Heavenly Palaces.

JUN 79 14P Tain,Shu :
REPT. NO. FTD-ID(RS)T-0610-79

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Edited trans. of Hang K'ung Chih
Shih (China) n12 p27-29 1978, by Fang-Ling
Needham.

DESCRIPTORS: *Space stations, Foreign technology,
Fabrication, Translations, China

Artificial Heavenly Palaces--Translation.

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07
AD-A070 634 9/2 22/2

IBM FEDERAL SYSTEMS DIV HOUSTON TX

Department of Defense Space Transportation
System Orbiter Avionics Software
Integration Study. Analysis of Orbiter
Systems to Meet MASE Requirements.

DESCRIPTIVE NOTE: Special study rept. Feb-Apr 79,
APR 79 61P Ciarnant, L. S. ; Smythe, E.

W. Wolfe, R. H. ; Jr;

REPT. NO. RES-78-11-1

CONTRACT: F04701-76-C-0271

MONITOR: SAMSO TR-79-37

UNCLASSIFIED REPORT

DESCRIPTORS: *Space shuttles, *Data processing,
Department of Defense, Digital computers,
Microprocessors, Display systems, Avionics,
Integrated systems

(U)

This study analyzes the use of the Space Shuttle Orbiter data processing subsystems in satisfying requirements for the integral astronaut participation in selected DoD space shuttle experiments. Key aspect of the study was the analysis, based on system implementation, to determine degrees of data protection from unauthorized use. Typical image processing and enhancing techniques versus display response time for astronaut interactions were assessed. The study concluded that a degree of data protection is achieved with the present orbiter avionics system by isolating one of the five general purpose computers with an out-of-sync procedure. Additional levels of data protection could be achieved only with additional hardware. (Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A070 444 22/2 21/B.2 20/4 20/13

ARNOLD ENGINEERING DEVELOPMENT CENTER ARNOLD AFS TN

Aerothermal Evaluation of the Space Shuttle
Solid Rocket Booster and Solid Rocket
Motor Thermal Protection System.

(U)

DESCRIPTIVE NOTE: Final rept. Dec 77-Jan 79,
MAR 79 63P Ievalts, John O. ; Spinetti,
Robert L. ;
REPT. NO. AEDC-TSR-79-V12

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with ARO,
Inc., Tullahoma, TN.
DESCRIPTORS: *Space shuttles, *Booster rocket
engines, *Aerodynamic heating, Solid propellant
rocket engines, Thermal insulation, Heat transfer,
protuberances, Survival (General), Flight
simulation, Wind tunnel tests, Data bases,
Calibration

IDENTIFIERS: LPN-ARO-V41C-V9
(U)
(U)

Samples of insulation materials under consideration
for use on the various protuberances of the Space
Shuttle Solid Rocket Boosters and Solid
Rocket Motors were tested to evaluate their
survivability at simulated flight heating levels.
Heat transfer calibration data were obtained by use
of the thin-skin technique on several protuberance
configurations. All tests were conducted in the
VKF Tunnel C.

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AD-A070 443 22/2 20/4 20/13

ARNOLD ENGINEERING DEVELOPMENT CENTER ARNOLD AFS TN

Space Shuttle External Tank Instrumentation
Evaluation.

(U)

DESCRIPTIVE NOTE: Final rept.,
FEB 79 33P Stallings, D. W. ;
REPT. NO. AEDC-TSR-79-V11

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with ARO,
Inc., Tullahoma, TN.
DESCRIPTORS: *Space shuttles, *External stores,
*Instrumentation, Ablative materials, Thermal
insulation, Hypersonic flow, Aerodynamic loading,
Heat transfer, Pressure distribution, Flow fields,
Aerodynamic heating, Wind tunnel tests, Flight
simulation, Pressure transducers, Microphones,
Calorimeters

IDENTIFIERS: LPN-ARO-V41C-62
(U)
(U)

Data were obtained on the performance of space
shuttle flight instrumentation under simulated flight
conditions. These conditions included ablating
insulation material. The tests were conducted at a
free-stream Mach number of 10 and tunnel stilling
chamber conditions of 1800 psia and 1900 R.
(Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A070 442 22/2 20/4

ARNOLD ENGINEERING DEVELOPMENT CENTER ARNOLD AFS TN

Data Verification Tests of a 0.03-Scale NASA
Space Shuttle Launch Vehicle at Mach
Numbers from 0.60 to 1.55.

(U)

DESCRIPTIVE NOTE: Final rept.,

NOV 78 51P Black, J. A. ; Graham, R.

E. ;

REPT. NO. AEDC-TSR-78-P54

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with ARD,
Inc., Tullahoma, TN.
DESCRIPTORS: *Launch vehicles, *Space shuttles,
*Aerodynamic characteristics, Scale models, Flow
fields, Angular motion, Angle of attack, Sideslip,
Roll, Elevons, Deflection, Data bases,
Corrections, Wind tunnel tests (U)
IDENTIFIERS: PE65807F, LPN-ARO-P41T-35 (U)

A 0.03-scale model of the NASA Space Shuttle
Launch Vehicle was tested September 19-20 and
September 29-30, 1978, in the Propulsion Wind
Tunnel (16T) at free-stream Mach numbers from
0.60 to 1.55, free-stream dynamic pressures from
387 to 658 psf, angles of attack from -8 to 8 deg, angles
of sideslip from -6 to 6 deg, and roll angles of 0,
180, 90, and -90 deg with nominal inboard elevon
deflections of 10 deg and outboard elevon deflections
of 5 deg. The objectives of the test were to
determine flow angularity on the standard sting
support system (first entry) and high-pitch support
system (second entry), and to provide data throughout
an alpha/beta matrix, and to provide a data base for the
determination of angular corrections to be applied to
previously obtained data if such corrections are
necessary. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A069 194 22/2 20/4

ARNOLD ENGINEERING DEVELOPMENT CENTER ARNOLD AFS TN

Data Verification Tests of a 0.02-Scale NASA
Space Shuttle Launch Vehicle at Mach
Numbers from 0.60 to 1.55.

(U)

DESCRIPTIVE NOTE: Final rept.,

FEB 79 49P Black, J. A. ;

REPT. NO. AEDC-TSR-79-P7

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with ARD,
Inc., Tullahoma, TN.
DESCRIPTORS: *Space shuttles, *Launch vehicles,
*Booster rocket engines, Fuel tanks, External
stores, Expendable, Scale models, Wind tunnel
tests, Aerodynamic characteristics, Pitch(Motion),
Sideslip, Corrections, Angular acceleration,
Data bases, Experimental data, Aerodynamic force
IDENTIFIERS: LPN-ARO-P41T-B1 (U)
(U)

A 0.02-scale model of the NASA Space Shuttle
Integrated Launch Vehicle was tested November
15 and 16, 1978 in the Propulsion Wind Tunnel
(16T) at free-stream Mach numbers from 0.60 to
1.55, free-stream dynamic pressures from 388 to 658
psf, angles of attack from -8 to 8 deg, angles of
sideslip from -6 to 6 deg, and roll angles of 0, 180,
-90, and 90 deg with nominal inboard elevon
deflections of 10 deg and outboard elevon deflections
of 5 deg. The objectives of the test were to
determine applicable angular corrections in the pitch
and sideslip planes and to establish, throughout an
alpha/beta matrix, a data base for the determination
of angular corrections to be applied to previously
obtained data. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07
AD-A069 127 13/2 21/2 1/3

CALIFORNIA UNIV LIVERMORE LAWRENCE LIVERMORE LAB

Annual Report of the Lawrence Livermore Laboratory to the FAA on the High Altitude Pollution Program-1978.

SEP 78 56P Luther, Frederick M. ;
REPT. NO. UCRL-50042-78
CONTRACT: DOT-FA76WAI-653
MONITOR: FAA-AEE 79-04

(U)

UNCLASSIFIED REPORT

DESCRIPTORS: *Air pollution, *Aircraft exhaust, *Supersonic transports, Ozone layer, Stratosphere, Emission, Space shuttles, Nitrous oxide, Reports, Ozone, Simulation, Solar radiation
IDENTIFIERS: Lawrence Livermore Laboratory,
High altitude pollution

(U)

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This report discusses the research done at Lawrence Livermore Laboratory in the area of numerical modeling of the atmospheric response to stratospheric perturbations. The one-dimensional transport-kinetics model was used to simulate observed stratospheric variations and for several assessment studies. The effects of a solar eclipse on stratospheric chemistry have been modeled along with the possible variations due to the 11-year solar cycle. Assessment studies included: potential changes in ozone due to SST and Space Shuttle emissions, chlorofluoromethane and N2O releases, solar power satellite launch vehicle emissions, and massive pulse injections of NOx into the stratosphere. Other studies include the potential effects of stratospheric perturbations on the earth's radiation budget and the resultant climatic implications, and the effect of ozone reductions on erythema dose. Changes to the one-dimensional transport-kinetics model during the past year are included in an appendix along with a listing of the chemical reactions and species used in the model.
(Author)

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AD-A066 278 22/2

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

Space Shuttle,

(U)

AUG 78 14P Gen, Ling Fu ;
REPT. NO. FTC-ID(RS)T-0759-78

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Edited trans. of Hang K'ung Chih Shih (China) n11 p7-10 1977, by Jerry K. Chung.

DESCRIPTORS: *Space shuttles, Space transportation, Reusable equipment, Space missions, Payload, Space maintenance, Translations, China

(U)

Space Shuttle--Translation.

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07
AD-A066 247 14/2 22/2 13/13

GENERAL ELECTRIC CO PHILADELPHIA PA SPACE DIV

Standard Test Rack. Concept Definition
Study. Structural Analysis Report.

(U)

DESCRIPTIVE NOTE: Final rept. 19 Jul-1 Nov 78.
JAN 79 125p
CONTRACT: F04701-77-C-0116
MONITOR: SAMSO TR-78-146

UNCLASSIFIED REPORT

DESCRIPTORS: *Test facilities, *Space shuttles,
*Structural analysis, *Stress analysis, Payload,
Structures, Structural response, Structural
engineering, Space technology, Vibration,
Frequency, Damping, Acceleration, Computerized
simulation
IDENTIFIERS: Standard test racks, Test racks,
NASTRAN computer program

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DoD Standard Test Rack Structural/Dynamic
Analysis for critical loading conditions. NASTRAN
converter model developed for coupled STS/STR
Transient analysis high payload weight capability of
STR investigated. (Author)

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07
AD-A065 866 22/2 22/1

AEROSPACE CORP EL SEGUNDO CA ADVANCED PROGRAMS DIV

Five Year Plan for Space Test
Program.

(U)

DESCRIPTIVE NOTE: Final rept. 1 Jan-28 Aug 78,
AUG 78 181p Wang, H. E. Frank ; Knauss,
R. G. ; Underwood, R. E. ; Weeks, L. H. ;
REPT. NO. TOR-0078(3506-01)-1
CONTRACT: F04701-77-C-0078

UNCLASSIFIED REPORT

DESCRIPTORS: *Space shuttles, *Space technology,
Planning programming budgeting, Space stations,
Military applications, Military planning, Payload,
Space missions, Space exploration, Space
maintenance, Space transportation, Military
satellites, Scientific satellites, Space
environments

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IDENTIFIERS: Space test program

Examined available systems, services, and test
methods afforded by the Shuttle to conduct space
experiments. Assumed pathfinder role for DoD
towards the full utilization of the Shuttle by
developing (1) Common Support Equipment
for astronaut assisted sortie flights, and (2)
cost effective approaches for primary and secondary
free-flying spacecraft. (Author)

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AD-A065 480 9/2 22/2

UNG (MAN T) EL SEGUNDO CALIF

Space Shuttle Digital Computer Simulation
Benchmark.

(U)

DESCRIPTIVE NOTE: Final rept.,
DEC 78 172P Ung, Man T.;
CONTRACT: F04700-78-M-2539
MONITOR: AFFTC TR-78-30

UNCLASSIFIED REPORT

DESCRIPTORS: *Computerized simulation, *Flight
testing, *Space shuttles, Acceptance tests, Flight
simulation, Computer program verification,
Specifications, Flight control systems, Digital
systems, Equations of motion, FORTRAN, Computer
programs, Flow Charting
IDENTIFIERS: PE65807F

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This report was produced to serve as the benchmark
to be used during the acceptance test for the
Simulator for Flight Test and Development
(SAFTD) at Edwards AFB. Afterwards, the
document will be used to train new engineers to use
the simulator. The writing is tutorial in nature
and it stresses the orderly organization of a
computer flight simulation. Model validation is
explained in terms of static and dynamic checks.
The report is not intended to arrive at any
operational conclusion or new discoveries. This
Space Shuttle Simulation, which is aimed at
training and contractual acceptance of procured
hardware, is different from the AFFTC Office of
Advanced Manned Vehicles' Space Shuttle
Simulation, which is used to support Shuttle
development and flight testing. (Author)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07
AD-A065 097 22/2

GENERAL ELECTRIC CO PHILADELPHIA PA SPACE DIV

Standard Test Rack Concept Definition
Study, Manned Interface Definition.

(U)

DESCRIPTIVE NOTE: Final rept. 19 Jul-1 Nov 78,
JAN 79 110P Gross, Murray;
CONTRACT: F04701-77-C-0116
MONITOR: SAMSO TR-78-145

UNCLASSIFIED REPORT

DESCRIPTORS: *Test stands, *Space shuttles,
Missions, Manned spacecraft, Payload, Control,
Automation, Ground support, Requirements

(U)

DoD Standard Test Rack Manned Interface
Definition for Shuttle Sortie Flight
Operations for typical COD experiments and
tests in orbit. Includes ground-based, orbital and
automated control approaches. (Author)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07
AD-A064 773 22/2 22/1

GENERAL ELECTRIC CO PHILADELPHIA PA SPACE DIV

Standard Test Rack Exploitation Study. (U)

DESCRIPTIVE NOTE: Final rept. 7 Jul-31 Dec 77,

DEC 77 402P Engle, William P. ;

CONTRACT: FO4701-77-C-0116

MONITOR: SAMSO TR-77-190

UNCLASSIFIED REPORT

DESCRIPTORS: *Space transportation, *Space shuttles, *Space stations, Payload, Test beds, Test fixtures, Modular construction, Reusable equipment, Configurations, Test equipment, Standardization, Space technology, Military research, Space missions (U)

IDENTIFIERS: Standard test racks, PE63402F (U)

The Standard Test Rack (STR), designed to handle a wide variety of experiments and operational payloads, can fly on the space shuttle with a minimum of lead time and within a small space envelope. It is configured to use left-over space including fitting around the space lab tunnel. Minimum interface with the shuttle support systems provides ability for quick reaction installation on a space availability basis. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07
AD-A064 766 22/2 22/1 5/1

TRW DEFENSE AND SPACE SYSTEMS GROUP REDONDO BEACH CALIF

STS Utilization Study Experiment Assessments. (U)

DESCRIPTIVE NOTE: Technical operating rept. 30 Jun-30 Dec 77.

DEC 77 309P

REPT. NO. TRW-31933-6001-RU-00

CONTRACT: FO4701-77-C-0112

MONITOR: SAMSO TR-77-188

UNCLASSIFIED REPORT

DESCRIPTORS: *Space transportation, *Space shuttles, *Space stations, Test beds, Space missions, Space technology, Military applications, Research management, Department of Defense, Payload, Utilization, Military research, Planning programming budgeting (U)

A study was performed to identify those experiments from DoD laboratories that will be able to use the Space Transportation System (STS). Applicable experiments were assessed to determine the most effective carrier system within the STS. Design suggestions were made to improve experiment compatibility with the STS. The report describes the study, includes the experiment assessments and data on payload accommodation capability of elements of the STS. It is concluded that a considerable amount of DoD space flight experimentation can be projected for the STS flight era. Most experiments will require one of the payload carriers, now under development, to interface with the Orbiter. Many will require the use of special flight support equipment such as a pointing system. In a specific area, it was found that there is basic materials research within DoD that might benefit from space experimentation. (Author) (U)

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A064 681 22/2

TRW DEFENSE AND SPACE SYSTEMS GROUP REDONDO BEACH
CALIF

STS Utilization Study. (U)

DESCRIPTIVE NOTE: Final rept. 30 Jun-30 Dec 77.

DEC 77 61P

REPT. NO. TRW-31933-6002-RU-00

CONTRACT: F04701-77-C-0112

MONITOR: SAMSO TR-77-189

UNCLASSIFIED REPORT

DESCRIPTORS: *Space transportation, *Space shuttles,
Military equipment, Military research, Space
environments, Military requirements, Space flight,
Compatibility

IDENTIFIERS: Space testing (U)

A study was performed to identify those experiments from DoD laboratories that will be able to use the Space Transportation System (STS). Applicable experiments were assessed to determine the most effective carrier system within the STS. Design suggestions were made to improve experiment compatibility with the STS. The report describes the study and includes examples of the experiment assessments. It is concluded that a considerable amount of DoD space flight experimentation can be projected for the STS flight era. Most experiments will require one of the payload carriers, now under development, to interface with the Orbiter. Many will require the use of special flight support equipment such as a pointing system. In a specific area, it was found that there is basic materials research within DoD that might benefit from space experimentation. (Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A063 248 22/2

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

Space Shuttle, (U)

NOV 78 14P Ling-Fu-Keng ;
REPT. NO. FTC-ID(RS)T-1545-78

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Edited trans. of Hang K'ung Chin
Shih (China) n11 p7-10 Nov 77.
DESCRIPTORS: *Space shuttles, Landing fields,
USSR, United States, Rocket launching,
Reusable equipment, Space flight, Costs,
Reduction, Flight control systems, Solid rocket
fuels, Booster rocket engines, Translations,
China

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A063 077 13/10.1

NAVAL OCEAN SYSTEMS CENTER SAN DIEGO CA

A Remote, Unmanned Dewatering System for Recovery of the Solid Rocket Booster of the Space Shuttle Program.

(U)

DESCRIPTIVE NOTE: Research and development technical rept.

AUG 75-JUN 77,

AUG 77 18P

REPT. NO. NOSC/TR-144 Schlosser, A. J. ;

UNCLASSIFIED REPORT

DESCRIPTORS: *Underwater vehicles, *Recovery, *Booster rocket engines, Underwater, Remote control, Water, Removal, Space shuttles, Launching, Cables

(U)

IDENTIFIERS: CURVE(Cable Controlled Underwater Recovery Vehicles)

(U)

The design, fabrication, and testing of a prototype system for dewatering the Solid Rocket Boosters recovered after launch of the NASA Space Shuttle Vehicle are described. A summary of operations conducted with unmanned underwater recovery vehicles (the CURV) provides the background for the development of the design concepts embodied in the dewatering system. (Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A062 377 22/2 20/4

ARNOLD ENGINEERING DEVELOPMENT CENTER ARNOLD AFS TN

Effects of Vertical Tail Flexibility on the Aerodynamic Characteristics of a 0.03-Scale NASA Space Shuttle Orbiter at Mach Numbers from 0.90 to 1.55.

(U)

DESCRIPTIVE NOTE: Final rept.,

AUG 78 29P

REPT. NO. AECC-TSR-78-P29 Black, J. A. ;

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with ARQ, Inc., Tullahoma, TN.

DESCRIPTORS: *Space shuttles, *Vertical stabilizers, *Aerodynamic characteristics, Dynamic pressure, Wind tunnel tests, Scale models, Static loads, Flexible structures, Experimental data

(U)

IDENTIFIERS: Orbiter vehicles, LPN-ARO-P41T-

(U)

34

A 0.03-scale model of the NASA Space Shuttle Orbiter utilizing a flexible and a rigid vertical tail was tested in the Propulsion Wind Tunnel, Transonic (16T) at free-stream Mach numbers from 0.90 to 1.55, free-stream dynamic pressures from 300 to 700 psf, angles of attack from -2 to 12 deg and angles of sideslip from -5 to 9 deg for speedbrake deflections of 25 and 55 deg, and rudder deflections of 0 and 10 deg. The objective of the test was to determine the effects of vertical tail flexibility on the static stability and control characteristics of the Orbiter vehicle.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A061 036 22/2 22/1

AEROSPACE CORP EL SEGUNDO CALIF

Shuttle Impact on Communications Satellites
as Seen from the User Viewpoint.

(U)

DESCRIPTIVE NOTE: Technical rept.,
OCT 77 27P Meyer, Henry ;
REPT. NO. TR-0078(3724-01)-3
CONTRACT: F04701-77-C-0078
MONITOR: SAMSO, GIDEP TR-78-28, E134-0876

UNCLASSIFIED REPORT

DESCRIPTORS: *Space shuttles, Communication
satellites, Space transportation, Payload, Cost
analysis, Launch vehicles, User needs

(U)

The impact of the Space Transportation System (STS) on communication satellites during and beyond the transition period for civilian and military projects is examined. The 15-ft diameter by 60-ft long shuttle cargo bay, its 65,000-lb east launch payload capability, and use of either solid spinning perigee kick systems or the interim upper stage (IUS) constitute the elements that may permit economical use of the STS by payload sharing of the cargo bay. A measure of spacecraft growth in weight and capability plus changes in configuration for STS adaptation can be expected. Profitable cargo bay length utilization and mixed payload integration planning will be some of the most important issues to be resolved. (Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A060 462 22/1 22/4

SPACE AND MISSILE SYSTEMS ORGANIZATION LOS ANGELES
CALIF

Environmental Impact Analysis Process.
Environmental Impact Statement Space
Shuttle Program Vandenberg AFB,
California.

(U)

DESCRIPTIVE NOTE: Final rept.
JAN 78 629P

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Original contains color plates:
All DDC reproductions will be in black and white.
DESCRIPTORS: *Environmental impact statements,
*Environments, Space transportation, Manpower,
Topography, Geomorphology, Geology, Water
resources, Water quality, Tables(Data), Energy
conservation, Construction

(U)

The proposed action comprises construction,
activation, and operation of Space Shuttle
facilities at Vandenberg Air Force Base
(VAFB) and Port Hueneme harbor, California.

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A059 796 22/2 20/4 20/13

ARNOLD ENGINEERING DEVELOPMENT CENTER ARNOLD AFS TN

Infrared and Phase-Change Paint
Measurements of Heat-Transfer on the Space
Shuttle Orbiter.

(U)

DESCRIPTIVE NOTE: Final rept.,
JUN 78 70P Stallings, D. W. ; Carver, D.B. ;
REPT. NO. AEDC-TSR-78-V13
PROJ: 921E
TASK: 01

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with ARD, Inc., Tullahoma, TN.

DESCRIPTORS: *Space shuttles, *Aerodynamic heating, *Heat transfer, Artificial satellites, Orbits, Model tests, Infrared scanning, Phase transformations, Optical coatings, Reynolds number, Free stream, Insulation, Flight simulation, Wind tunnels, Boundary value problems, Test facilities, Test equipment

(U)

IDENTIFIERS: LPN-ARO-V41B-P4A, LPN-ARO-V41B-K7A, PE02202F

(U)

These tests were part of a large program to evaluate the effects of aerodynamic heating on the Space Shuttle Orbiter. The MA-29 test was a blockage study conducted to determine the maximum allowable model size for OH-90. The OH-90 test was specifically designed to study boundary layer transition on the lower surface of the orbiter wing. Gaps and steps in the wing insulation material were simulated to determine the effect of such irregularities on the state of the boundary layer. The final test shift of the OH-90 entry was done in support of the Rockwell OH-103 project. An orbiter forebody model was used to obtain detailed heat-transfer rate data on the forward 20 percent of the 140C Space Shuttle Orbiter configuration.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A059 497 22/2 20/13

ARNOLD ENGINEERING DEVELOPMENT CENTER ARNOLD AFS TN

Heat Transfer Test on the NASA/Rockwell
International Space Shuttle Orbiter at Mach
number 8.0 in AEDC/VKF Tunnel B.

(U)

DESCRIPTIVE NOTE: Final rept. 20 Feb-27 Apr 78,
JUN 78 65P Knox, E. C. ;
REPT. NO. AEDC-TSR-78-V10

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with ARD, Inc., Tullahoma, TN.

DESCRIPTORS: Space shuttles, Heat transfer, Scale models, Hypersonic wind tunnels, Heat flux, Turbulent boundary layer, Angle of attack, Reynolds number, Sweptback wings, Skin friction, Skin(Structural), Mach number, Wind IDENTIFIERS: LPN-ARO-V41B-V2

(U)

(U)

Heat-transfer data were obtained on a 0.0175-scale and on a 0.04-scale model of the NASA/Rockwell International Space Shuttle Orbiter. The data were obtained at mach 8 in the AEDC/VKF Tunnel B at angles of attack from 25 to 42.5 deg and at several free-stream Reynolds numbers from 500,000 to 3,700,000 per ft. (Author)

(U)

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A058 693 20/13 22/3 20/4

ARNOLD ENGINEERING DEVELOPMENT CENTER ARNOLD AIR FORCE
STATION TENNHeat-Transfer Tests on the Nose of the
Shuttle Orbiter External Tank (FH-
15).

(U)

DESCRIPTIVE NOTE: Final rept.,

JUN 78 44P Carver, D. B.; Boylan, D.

E. i.

REPT. NO. AEDC-TSR-78-V11

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with ARO,
Inc., Tullahoma, TN.DESCRIPTORS: *Heat transfer, *Space shuttles,
Atmosphere entry, Nose tips, Thermocouples,
Aerodynamic heating, Supersonic wind tunnels, Wind
tunnel models, Supersonic flow, Data reduction
IDENTIFIERS: LPN-ARD-V41A-20 (U)
(U)

Aerodynamic heating tests were conducted using a
0.0275-scale model of the space shuttle external tank
nose to obtain detailed heat-transfer distributions.
Special emphasis was placed on evaluating
interference heating around the forward fairing,
trays and gaseous oxygen line and brackets. The
thin-skin thermocouple technique was used, and data
were obtained at Mach numbers 3.4, and 5.5 at
(free-stream Reynolds numbers of 3.7 and 5.0
million per ft. Model angle of attack was 0, and +
or - 5 deg, with sideslip angles from -11 to +11
deg. (Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A058 141 22/2

ARNOLD ENGINEERING DEVELOPMENT CENTER ARNOLD AIR FORCE
STATION TENNTest Results from the NASA/Rockwell
International Space Shuttle Integrated
Vehicle Test (IH 85) Conducted in the
AEDC-VKF Tunnel A.

(U)

DESCRIPTIVE NOTE: Final rept.,

JUN 78 44P Nutt, Kenneth W. ;

REPT. NO. AEDC-TSR-78-V15

PROJ: 921E

TASK: 01

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with ARO,
Inc., Tullahoma, TN.DESCRIPTORS: *Space shuttles, *Wind tunnel tests,
*Aerodynamic heating, Scale models, Wind tunnel
models, Convection (Heat transfer), Scaling
factors, Supersonic flight, Angle of attack, Yaw,
Configurations, Tables (Data)
IDENTIFIERS: LPN-ARD-V41A-W5 (U)
(U)

Tests were conducted to obtain convective heat-
transfer-rate distributions on the Space Shuttle
Integrated Vehicle during simulated first and
second stage conditions of the flight profile. The
test model was a 0.0175-scale model (60-QTS).
Model configurations tested included the
Integrated Vehicle and the Orbiter/External
Tank with the Solid Rocket Boosters removed.
The tests were conducted at Mach numbers 3 and 4
using the thin-skin thermocouple technique. The
model was tested at angles of attack of 0, + or -
2.5, and + or - 5 deg and at yaw angles of 0, +
or - 3, + or - 4.5, + or - 5, + or - 7.5, and
+ or - 9 deg. A test description is presented.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A057 080 22/2 20/4

ARNOLD ENGINEERING DEVELOPMENT CENTER ARNOLD AIR FORCE
STATION TENN

NASA/R1 OA 208 and 209 Verification Static-
Stability and Control-Effectiveness Tests of
the Space Shuttle Orbiter Vehicle at Mach
Numbers from 2 to 8.

(U)

DESCRIPTIVE NOTE: Final rept.,
JUN 78 47P Jordan, J. L. ;
REPT. NO. AEDC-TSR-78-V6

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with ARD,
Inc., Tullahoma, TN.

DESCRIPTORS: *Space shuttles, *Aerodynamic
stability, *Wind tunnel tests, Attitude control
systems, Flight control systems, Supersonic flow,
Mach number, Reynolds number, Free stream, Angle
of attack, Flow fields, Sideslip, Schlieren
photography, Flow visualization
IDENTIFIERS: LPN-ARD-V41A/B-P5

(U)
(U)

Static force tests were conducted on a 0.02-scale
high-fidelity Space Shuttle Orbiter Vehicle
model (SSV 102 Orbiter configuration, model 105-
0) across the Mach number range from 2 to 8.
Test data were obtained to verify orbiter stability
and control characteristics in pitch and yaw, and to
verify control effectiveness and trim limits over
this Mach number range. Data were acquired from
Mach 2.0 to 5.5 in increments of 0.5 at a primary
free-stream unit Reynolds number of 4.5 million per
ft. Data were also taken at Mach 8.0 at a primary
free-stream unit Reynolds number of 2.3 million per
ft. Data were obtained in the angle-of-attack range
of -1 to 51 deg and the angle-of-sideslip range of -
10 to +10 deg. Orbiter speedbrake, rudder,
elevator, aileron, and body flap deflections were
varied manually during the tests. Model flow-field
photographs were obtained at various pitch and
sideslip angles.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A056 109 22/3

AEROSPACE CCRP EL SEGUNDO CALIF GUIDANCE AND CONTROL
DIV

Station Keeping of the Space Shuttle in the
Vicinity of a Deployed Payload.

(U)

DESCRIPTIVE NOTE: Interim rept.,
MAY 78 27P Fey, Wayne A. ;
REPT. NO. TR-0078(3451-03)-1
CONTRACT: F04701-77-C-0078
MONITOR: SAMSO, GIDEP TR-78-102.E132-2196

UNCLASSIFIED REPORT

DESCRIPTORS: *Stationkeeping, *Space shuttles,
*Orbits, Visual inspection, Payload, Deployment,
Checkout procedures, Line of sight, Separation,
Range(Distance), Flight maneuvers, Parking
orbit trajectories, Elliptical orbit trajectories
IDENTIFIERS: Space shuttle orbiters

(U)
(U)

It is desirable for the Orbiter of the Space
Shuttle to remain in the vicinity of a payload
after it is deployed in orbit to allow for visual
inspection. A station keeping mode at constant
distance from the payload (as limited by safety
considerations) was devised. Examples of other
station keeping modes are presented: the maximum
distance from the payload tends to be substantially
in excess of the minimum. In all cases, station
keeping orbits are planar ellipses relative to the
payload. The adequacy of visual inspection of the
payload depends on the attitude control mode of the
payload, the station keeping orbit, and the line of
sight required relative to the payload surface.
Multiple station keeping orbits or commanded
rotation of the payload may be required for adequate
visibility. (Author)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A055 465 22/2 17/7 12/1 9/2

AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OHIO SCHOOL OF ENGINEERING

A Kalman Filter Design for the Space Shuttle Orbiter Inertial Measuring Unit During Descent/Reentry Using Global Positioning System Satellite Information.

(U)

DESCRIPTIVE NOTE: Master's thesis,

REPT. DEC 77 183P Van Liere, Dennis A. ;

PROJ: 7071

TASK: 00

UNCLASSIFIED REPORT

DESCRIPTORS: *Space shuttles, *Global positioning system, *Kalman filtering, *Inertial navigation, Descent trajectories, Mission profiles, Space missions, Digital simulation,

Performance(Engineering), Error analysis,

Accuracy, Theses

IDENTIFIERS: PE61102F, WUAFIT70710012

(U)

(U)

This report studies three Kalman Filter implementations for the deorbit/reentry phase of a Space Shuttle Orbiter mission profile. Each design uses measurements from Global Positioning System satellites to update Kalman Filter estimates of selected error states and to bound the Shuttle's INS error growth. Covariance analysis techniques are used to compare the performances of 17-state, 11-state, and 8-state filter designs using a digital computer simulation of a NASA DFT-1 Space Shuttle mission trajectory. A 73-state truth model of the Space Shuttle IMU, the Orbiter GPS receiver Master Tuning Unit, and the GPS satellite constellation is used as a system simulation to examine the performance of the design filters. The results are shown primarily in the form of computer-generated plots of both filter indicated errors and true system errors versus time. It is concluded from the results that an 8-state filter design is able to perform well enough to be a primary candidate for design implementation, and also that further refinements are necessary in the user clock model of the design Kalman Filter.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A053 214 6/16 22/1

AIR FORCE GEOPHYSICS LAB HANSCOM AFB MASS

Role of Nuclear Stars in the Light Flashes Observed on Skylab 4,

(U)

77 9P

C. ; Rothwell, P. L. ; McNulty, P. J. ; Filz, R.

REPT. NO. AFGL-TR-78-0087

PROJ: 2311

TASK: G1

UNCLASSIFIED REPORT

Availability: Pub. in CCSPAR - Life Sciences and Space Research, v15 p129-134 1977.

DESCRIPTORS: *Visual perception, *Flashes, *Space stations, High density, Anomalies, South Atlantic Ocean, Nuclear particles, Particle collisions, Retina, Reprints

IDENTIFIERS: PE61102F, WUAFGL2311G102

(U)

(U)

The astronauts on Skylab 4 observed bursts of intense visual light-flash activity when their spacecraft passed through the portion of the earth's inner trapped radiation belt known as the South Atlantic Anomaly (SAA). Two experimental sessions were carried out on board Skylab 4 to compare the flash rates with the measured flux of Z > or = particles that would pass through the astronaut's eyes. It was concluded that the flash rates, which became as great as 20/min. were anomalously high. A number of alternative explanations for the anomalous flash rates that would be consistent with the accepted SAA flux values and the laboratory data on particle induced visual sensations and found that when one includes the effect of nuclear interactions in and near the retina which result in star formation (the emission of slow protons, neutrons and alpha particles from the nucleus in an evaporation-like process) the apparent anomaly is removed.

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07
AD-A053 213 6/16 22/1

AIR FORCE GEOPHYSICS LAB HANSCOM AFB MASS

Particle Induced Visual Phenomena in Space, (U)

MAR 77 5P McNulty, J. P.; Pease, V.
P.; Bond, V. P.; Filiz, R. C.; Rothwell, P.
L.:

REPT. NO. AFGL-TR-78-0086
PROJ: 2311
TASK: G1

UNCLASSIFIED REPORT

Availability: Pub. in Radiation Effects, v34
p153-156 1977.

SUPPLEMENTARY NOTE: Presented at the International
Conference on Solid State Nuclear Trade
Detectors, Neuberberg/Munich Oct 76.

DESCRIPTORS: *Visual perception, *Flashes, *Space
stations, Threshold effects, Retina, Nuclear
particles, Particle collisions, Reprints
IDENTIFIERS: PE8102F, WUAFGL2311G102 (U)
(U)

There have been a large number of laboratory experiments on particle induced visual sensations which have resulted in a variety of visual phenomena that are similar in appearance to the so-called light flashes described by astronauts on Apollo missions 11 through 17 and Skylab 4. Unfortunately, no direct comparison of the laboratory and space observations have been made by observers who have experienced both. More than one physical mechanism has been shown to be involved in the laboratory phenomena and presumably in the space observations also. A number of models for particle induced visual phenomena are described and a quantitative estimate of their contribution to the space observations is attempted. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07
AD-A050 761 22/2 5/1 5/3

ADVISORY GROUP FOR AEROSPACE RESEARCH AND DEVELOPMENT
NEUILLY-SUR-SEINE (FRANCE)

AGARD Highlights. (U)

MAR 77 55P
REPT. NO. AGARD-HIGHLIGHTS-77/1

UNCLASSIFIED REPORT

DESCRIPTORS: *Military research, *Aerospace systems,
Research management, Periodicals, NATO, Space
transportation, Space shuttles, Turkey, Research
management, Economic analysis, Foreign
technology
IDENTIFIERS: NATO furnished (U)
(U)

This issue highlights the AGARD annual meeting in Istanbul, Sep 76. Articles on the following topics are included: Issues of Science Policy in Turkey; Space Transportation System; and Economics of Research and Development Expenditures and Technical Progress. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A049 177 6/6 6/3 22/4

CIVIL AND ENVIRONMENTAL ENGINEERING DEVELOPMENT OFFICE
TYNDALL AFB FL DETACHMENT 1 (ADTC)Impact of Space Shuttle Support Facilities
Construction on Special Interest Plant
Species (Vandenberg AFB, Ca).

(U)

DESCRIPTIVE NOTE: Final rept. Jun-Sep 77.

SEP 77 61P Wooten, R. C., Jr.; Strutz,

Dennis; Hudson, Ronald;

REPT. NO. CEED0-TR-77-33

PROJ: 2103

TASK: 9

UNCLASSIFIED REPORT

DESCRIPTORS: *Ecology, *Plants(Botany), *Air
Force facilities, *Environmental impact statements,
Vegetation, Extinction, Threat evaluation, Space
shuttles, Ground support, Sites, Construction,
Environmental protection (U)

IDENTIFIERS: Vandenberg Air Force Base,
WUCEED021039P13, PE63723F (U)

This report summarizes the results and conclusions
of studies conducted to evaluate the impact of ground
support facility construction for the Space
Shuttle program at Vandenberg AFB, California
on listed and proposed threatened or endangered plant
species in order to comply with the Endangered
Species Act of 1973. Vegetation surveys were
made in proposed construction site areas. The
listing used to determine threatened and endangered
plant taxa were those plant species proposed as
endangered or threatened in the 1975 Federal
Register (40FR27824-27890) and those listed
as endangered for rulemaking by the US Fish and
Wildlife Service in the June 16, 1976 Federal
Register (41FR24524-24572). The surveys
also included other special interest taxa designated
by the California Native Plant Society as
being rare, endangered, or vascular plants of limited
distribution in California. Three threatened
species (*Castilleja mollis*, *Monardella crista*,
and *Scrophularia atrata*) and two endangered
species (*Cirsium phothophilum* and *Eriogonon*
foliosus var *blochmanae*) were found in a number of
the construction site areas. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A046 210 11/3 22/2

AIR FORCE MATERIALS LAB WRIGHT-PATTERSON AFB OHIO

Results of the Polymeric Films Skylab D024
Experiment.

(U)

DESCRIPTIVE NOTE: Technical rept. Jan 68-Oct 74,
AUG 75 16P Lehn, William L.; Hurley,

Charles J.;

REPT. NO. AFWL-TR-75-165

PROJ: 7349

TASK: 07

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Presented at the AIAA Thermophysics
Conference (10th), 27-29 May 75, Denver, CO.

AIAA Paper no. 75-689.

DESCRIPTORS: *Polymeric films, *Space stations,

*Protective coatings, Thermal stability,

Exposure(General), Recovery, Containers,

hermetic seals, Optical properties, Physical

properties, Electrical properties, Contamination,

Degradation, Solar radiation, Extravehicular

activity, Polyimide resins, Mass spectroscopy

IDENTIFIERS: *Skylab, WUAFML73400703,

PE62102F (U)

Results of an experiment designed to evaluate the
effects of the near earth environment on the
performances and properties of selected polymeric
films were exposed to the Skylab space environment
for varying periods of time during the mission. The
individual specimen holders were retrieved during
EVA by the Astronauts, placed in hermetically
sealed containers, recovered and returned to the
Air Force Materials Laboratory for analysis
and evaluation. Post flight analysis of the three
sets of recovered polymeric films indicated measured
changes in the optical, physical and electrical
properties were due to a combination of excessive
contamination, solar degradation of the contaminant
layer and degradation of the polymer film materials.
The degree of contamination experienced compromises
the measurement of the degradation of the polymeric
film themselves. Experimental results on the
analysis of contamination are also presented.
(Author) (U)

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07
AD-A046 208 11/3 22/2

AIR FORCE MATERIALS LAB WRIGHT-PATTERSON AFB OHIO

SkyLab D024 Thermal Control Coatings and
Polymeric Films Experiment.

(U)

DESCRIPTIVE NOTE: Technical rept. Jan 68-Oct 74,
MAR 75 15P Lehn, William L.; Hurley,
Charles J.;

REPT. NO. AFML-TR-75-77

PROJ: 7340

TASK: 07

MONITOR: GIDEP, GIDEP E046-0915.331.95.37.10-G7-
01

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Presented at the AIAA/AGU

Conference on Scientific Experiments of Skylab, 30
Oct-1 Nov 74, Huntsville, AL. AIAA Paper no.
74-1228.

DESCRIPTORS: *Polymeric films, *Protective coatings,

*Space stations, Thermal resistance,
Extravehicular activity, Space environments,
Recovery, Containers, Hermetic seals, Thermal
properties, Optical properties, Contamination,
Degradation, Solar radiation, Substrates,
Artificial satellites, Experimental data

IDENTIFIERS: *Skylab, *Thermal control coatings,

WUAFML73400703, PE62102F

(U)

(U)

Preliminary results of an experiment designed to
determine the effects of the external Skylab space
environment on the performance and properties of a
wide variety of selected thermal control coatings and
polymeric films are presented. Three duplicate
sets of thermal control coatings and polymeric films
were exposed to the Skylab space environment for
varying periods of time during the mission. The
specimens were retrieved by the Astronauts, placed
in hermetically sealed return containers during
EVA, recovered, and returned to the Air Force
Materials Laboratory for analysis and evaluation.
Post flight analysis of the three sets of recovered
thermal control coatings indicated that measured
changes in specimen thermooptical properties are due
to a combination of excessive contamination and solar
degradation of the contaminant layer.

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07
AD-A045 100 22/3 22/2

TRW DEFENSE AND SPACE SYSTEMS GROUP REDONDO BEACH
CALIF

Department of Defense Space Transportation
System (OOD/STS) Mission Operations Systems
Definition Mission Assessment Report:
Operations Design Mission A.

(U)

DESCRIPTIVE NOTE: Final rept. 1 Oct 76-Sep 77,
SEP 77 194P Cedeon, G. S.; Owen, J. R.

; Tomlinson, R. D.;

REPT. NO. TR-26937-6136-TU-00

CONTRACT: F04701-75-C-0025

MONITOR: SAMSO TR-77-116

UNCLASSIFIED REPORT

DESCRIPTORS: *Space missions, *Space shuttles,
*Synchronous satellites, *Military satellites,
Equatorial orbits, Mission profiles, Space crews,
Space communications, Space transportation,
Department of Defense, Military requirements,
Scheduling, Satellite tracking systems

(U)

This report presents the results of analysis of a
near term OOD geosynchronous near equatorial
payload deployment mission utilizing the Space
Shuttle vehicle, in conjunction with an Interim
Upper Stage (IUS). This issue of the report
concentrates on development of a nominal mission plan
for a particular launch date and time. Such items
as attitude timelines, approximate RCS/DMS
propellant utilization histories, ground tracks, and
ground station coverage timelines are included.
Principal emphasis is placed on development of an
IUS deployment timeline for near term missions.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A042 843 22/2 20/4

VIRGINIA POLYTECHNIC INST AND STATE UNIV BLACKSBURG DEPT
OF AEROSPACE AND OCEAN ENGINEERINGSpace Shuttle Windward Streamline Laminar
Viscous Shock-Layer Flows at Angle of
Attack--Comparison of Theory and Experiment,

(U)

MAY 76 93P Murray, Alvin L.; Waskiewicz,
John D.; Lewis, Clark H.;
REPT. NO. VPI-AERO-044

UNCLASSIFIED REPORT

DESCRIPTORS: *Space shuttles, *Wind tunnel models,
*Laminar boundary layer, *Viscous flow,
*Hypersonic flow, Experimental data, Wind tunnel
tests, Pressure distribution, Angle of attack,
Heat transfer, Stagnation temperature, Shock
waves

(U)

Comparisons have been made between a perfect gas laminar viscous shock layer method and experimental data from the AEDC/vKF Hypersonic Tunnels. The test model was the Rockwell International 139 Shuttle Orbiter, and the data taken included wall pressure distributions, heat-transfer distributions, stagnation temperature and pitot pressure profiles through the shock layer. Comparisons were made at Mach numbers of 8, 11 and 14, with Reynolds numbers ranging from 520,000 to 1.0 x 10 to the 7th power per foot and angles of attack from 0 to 45 degrees. Comparisons showed good to excellent agreement except at very low angles of attack where the axisymmetric solution did not model well the flat bottom of the orbiter.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A041 158 22/2 1/2

NAVAL POSTGRADUATE SCHOOL MONTEREY CALIF

A Mathematical Model for the Longitudinal
Control System of the Space Shuttle
Orbiter.

(U)

DESCRIPTIVE NOTE: Master's thesis,
MAR 77 192P Pierce, Cole Jon;

UNCLASSIFIED REPORT

DESCRIPTORS: *Space shuttles, *Attitude control
systems, Fly by wire control, Orbits, Longitude,
Orientation (Direction), Feedback, Mathematical
models, Computerized simulation, Control theory,
Stability, Response, Computer graphics, Transfer
functions, Equations of motion, Computer programs,
Theses

(U)

IDENTIFIERS: Orbits, Characteristic functions,
IBM 360 computers, HP 9830 computers

(U)

The analysis of a fly-by-wire longitudinal control system, specifically that of the space shuttle orbiter, was undertaken in order to demonstrate the construction of a mathematical model depicting the relationships between forcing function and response. Each facet of modern control theory, including stability, was developed. Several computer programs were written for the HP9830 computer/plotter; these programs are basic to the study of control theory, demonstrate the importance of the transfer function, the characteristic equation, and the various forms of feedback, and will plot time and frequency (Bode) response graphs given the proper inputs. The Continuous System Modeling Program, version III, and the IBM360 were used to analyze the complex control system installed in the orbiter. The demonstration of the model and its interface with the CSMP program was given, and the efficiency of this procedure was made clear. (Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A039 257 22/3 12/1

AEROSPACE CORP EL SEGUNDO CALIF ENGINEERING SCIENCE OPERATIONS

Optimal Three Burn Orbit Transfer. (U)

DESCRIPTIVE NOTE: Technical rept.;

MAR 77 21P Betts, J. T. ;

REPT. NO. TR-0077(2901-03)-1

CONTRACT: F04701-76-C-0077

MONITOR: SAMSO TR-77-79

UNCLASSIFIED REPORT

DESCRIPTORS: *Orbits, *Transfer, *Space shuttles, *Algorithms, Inclined orbit trajectories, Parking orbit trajectories, Nonlinear programming, Simulation, Mathematical models

IDENTIFIERS: Orbit mechanics (U)

This report presents an optimal three burn solution to a class of orbit transfer problems requiring large changes in orbital inclination. A nonlinear programming algorithm was used in conjunction with a simplified trajectory simulation, which used Keplerian orbit transfers and impulsive velocity increments. A number of parametric results were obtained using the simplified simulation. The validity of the simplified simulation was established for specific vehicle configurations with finite burns and oblate earth effects included. The effect of multiple stage rockets has also been treated.

(Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A038 895 20/4 22/3

ARNOLD ENGINEERING DEVELOPMENT CENTER ARNOLD AIR FORCE STATION TENN

Roughness and Wall Temperature Effects on Boundary-Layer Transition on a 0.0175-Scale Space Shuttle Orbiter Model Tested at Mach Number 8. (U)

DESCRIPTIVE NOTE: Final rept.;

APR 77 42P Wannenwetsch, G. D. ;

Martindale, W. R. ;

REPT. NO. AECC-TR-77-19

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with ARO, Inc., Tullahoma, Tenn., Rept. no. ARO-VKF-TR-76-146.

DESCRIPTORS: *Boundary layer transition, *Heat transfer, *Space shuttles, Surface roughness, Heat shields, Aerodynamic heating, Atmosphere entry, Reentry vehicles, Hypersonic vehicles, Wind tunnel models, Hypersonic wind tunnels, Angle of attack, Stagnation temperature, Surface temperature, Walls, Liquid nitrogen, Experimental data, Cooling

IDENTIFIERS: Orbiter vehicles, Wall temperature (U)

Heat-transfer tests were conducted on the Space Shuttle Orbiter Vehicle in the AEDC/VKF Hypersonic Wind Tunnel (B) to determine the location of boundary-layer transition for a simulated reentry phase flight profile. The model was a 0.0175-scale model with simulated randomly misaligned thermal protection system tiles etched into the windward surface. The tests were conducted at a nominal free-stream Mach number of 8, free-stream unit Reynolds numbers ranging from 0.5 million to 3.7 million per ft, and angles of attack of 30, 35, and 40 deg. Values of wall temperature to free-stream stagnation temperature ranged from 0.14 to 0.44. Representative test data and an analysis of the windward surface centerline heat-transfer data are included. Effects of wall temperature, tile roughness, and angle of attack on the location of transition are discussed. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A038 673

22/2 5/1

DEFENSE SYSTEMS MANAGEMENT COLL FORT BELVOIR VA

Operations Management of DOD Space Missions
in the Shuttle Era.

(U)

DESCRIPTIVE NOTE: Study project rept.,
NOV 76 '107P Tringali, Charles J. ;

UNCLASSIFIED REPORT

DESCRIPTORS: *Space missions, *Management planning and control, *Space shuttles, Logistics support, Communication satellites, Space transportation, Department of Defense, Military requirements, Launching

(U)

This report presents a history of the development of the Space Transportation System (STS) to date between the National Aeronautics and Space Administration (NASA) and the executive agency acting for the Department of Defense, the United States Air Force. The STS consists of the NASA-developed space shuttle orbiter, the USAF-developed upper stage, the communications networks and launch base complexes of both agencies, and the satellite payloads developed by many user agencies to be placed in space. The program development is traced chronologically in terms of key joint-agency agreements, management interfaces, and compromises made as implementation of early proposals was accomplished. A proposal is made to develop a joint-agency STS operation authority responsive to national command/policy channels. (Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A038 670

22/2 5/1 14/2

DEFENSE SYSTEMS MANAGEMENT COLL FORT BELVOIR VA

Major Range Acquisitions for the Space
Shuttle/Satellite Control Satellite
Era.

(U)

DESCRIPTIVE NOTE: Study project rept.,
NOV 76 38P Lauck, Robert E. ;

UNCLASSIFIED REPORT

DESCRIPTORS: *Space shuttles, *Ranges(Facilities), *Planning programming budgeting, Test facilities, Air Force planning, Department of Defense, Command and control systems, Space missions, Military requirements

(U)

The 1980's will see a new era in military space activities. The Space Shuttle and Satellite Control Satellite are two systems which will expedite a transition from a research and development orientation to operational exploitation of this fourth medium. The USAF National Ranges (Eastern Test Range, Western Test Range and Satellite Control Facility) will experience extensive changes in their missions and configuration with the advent of these systems. This study examines the directives and regulations governing the planning, programming and budgeting system (PPBS) for these Ranges. A review of potential changes to the Ranges to fully exploit the Shuttle and SCS capabilities is then accomplished. Capabilities which improve the effectiveness of space operations are analyzed, as well as, cost-saving and security improvements. It is concluded that major changes to Range configurations can be expected as a result of the employment of the Shuttle and SCS systems. An assessment of the effectiveness of the PPBS guidance to stimulate the necessary actions to accomplish these changes follows, with the conclusion that the Test and Evaluation (T and E) orientation of these directives and regulations does not provide the best environment for proper Range planning as we approach this new era in space operations.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A037 157 22/2 21/8-2 12/1 9/2

HERCULES INC MAGNA UTAH BACCHUS WORKS

Space Shuttle Response to Acoustic
Combustion Instability in the solid Rocket
Boosters.

(U)

DESCRIPTIVE NOTE: Final rept. Jun 75-Jun 76.

JUN 76 84p Jensen, F. R. ;

CONTRACT: F04611-73-C-0025

PROJ: 5730

TASK: 10

MONITOR: AFRPL

TR-76-62

UNCLASSIFIED REPORT

DESCRIPTORS: *Space shuttles. *Structural response.
*Oscillation. *Acoustics. *Booster rocket engines.
Combustion stability. Mathematical models.
Computerized simulation. Structural analysis.
Instability. Mechanical impedance.
Loads (forces). Displacement. Attachment.
External stores. Combustion
IDENTIFIERS: PE62302F, WUAFRPL573010BY

(U)
(U)

Response of the Space Shuttle vehicle to
unstable acoustic pressure oscillations in the solid
rocket boosters (SRB's) was calculated. The
response was expressed in terms of forces and
displacements at the attach points between the
SRB's and the External Tank (ET), and between
the ET and the Orbiter. The response
calculations satisfied the objectives of the program.
The NASTRAN computer program was used to analyze
the various finite element shuttle models. Finite
element models of the SRB, ET, and Orbiter were
supplied by North American Rockwell. A
detailed finite element model of the solid rocket
motor (SRM) was constructed for use with the cyclic
symmetry option in NASTRAN. The models were
analyzed separately and results were combined to
represent the total structure by using a mechanical
impedance-type approach. Some hand calculations
were performed to estimate the axial connection point
force and displacement. The good agreement between
hand calculation and computer solution provided some
confidence in the computer solution. A maximum
attach point load of 1600 lbs was calculated for a +
or - 1.0 psi pressure oscillation level.

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AD-A034 947

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A034 947 22/2 22/3

AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OHIO SCHOOL OF
ENGINEERINGMaximum Payload Orbital Transfers for a
Space Shuttle Solid-Fuel Upper Stage
Vehicle.

(U)

DESCRIPTIVE NOTE: Waters's thesis,

DEC 76 112p Wocko, John W. ;

REPT. NO. AFIT/GA/MC/76D-11

UNCLASSIFIED REPORT

DESCRIPTORS: *Space shuttles. *Payload analyses.
*orbits. Transfer. Solid rocket fuels. Space
transportation. Earth orbits. Artificial satellites.
Spacecraft defense systems. Reusable equipment.
Solid propellant rocket engines. Booster rocket
engines. Mission profiles. Boundary value problems.
Plane geometry. Mathematical analysis. Computer
programs
IDENTIFIERS: Burner 2, Burner 2 upper Stages.
USV (Upper stage Vehicle), Orbttran

(U)

(U)

A two-stage, solid-fuel proposal for the Interim
Upper Stage Vehicle of the Space
Transportation System has been selected for use
by the Department of Defense. It is the purpose
of this study to investigate the capabilities of such
a vehicle in terms of the maximum payload which can
be delivered to orbit. This optimal payload problem
is examined in light of three energy management
techniques. The first technique, thrust
termination, involves shutting off engine thrust
prior to complete use of propellant. The second
technique investigates the effects on payload of
varying the central angle through which the transfer
is made. The third technique, offloading, examines
the possibility of reducing the amount of available
fuel for either stage prior to the mission to
determine if payloads can be increased. Finite burn
periods are assumed in this study. A multipoint
boundary value problem results from the appearance of
interior constraints in the problem. A numerical
technique is used to generate solutions for a range
of transfers in the special coplanar problem.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A034 758 22/3

AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OHIO SCHOOL OF ENGINEERING

Maximum Payload, Four-Impulse, Non-Coplanar, Orbital Transfers for an Upper Stage Vehicle of the Space Transportation System.

(U)

DESCRIPTIVE NOTE: Master's thesis,
DEC 76 83P Connell, Rodney Alan ;
REPT. NO. AFIT/GA/MC/76D-6

UNCLASSIFIED REPORT

DESCRIPTORS: *Space Transportation, Payload, Space shuttles, Orbits, Equations of motion, Thrust, Fortran, Theses
IDENTIFIERS: *Orbital mechanics

(U)

Payload capabilities were calculated for an expendable upper stage vehicle compatible with the Space Shuttle Vehicle. Analysis was performed for a four-stage vehicle that was modeled with impulsive thrust and transfer trajectories which obey restricted two-body equations of motion. The magnitude of the maximum payload deployed into one of two specified orbits when the other payload is known is solved by breaking the four-impulse transfer into two dual-impulse transfer trajectories. The maximum payload for one transfer depends upon the specified payload of the other transfer. Each of the dual-impulse transfer trajectories is determined by solving a quartic equation in the square root of the semi-latus rectum of the transfer orbit. Maximum payload capability was dependent upon the available impulse, the angle between orbit planes, the difference in the radii of the terminal orbits, the plane changes at departure and arrival points, and the transfer angle. Transfer solutions were programmed on a CDC 6600 digital computer. Computed results indicate that the model vehicle is capable of many non-coplanar orbit-to-orbit transfers that still yield practical payloads. As the transfer angle deviates from the neighborhood around 180 deg and the other geometrical parameters increase, the payload decreases. (Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A034 733 22/2 22/3

ARNOLD ENGINEERING DEVELOPMENT CENTER ARNOLD AIR FORCE STATION TENN

Simulated Thermal Protection Tile Roughness Effects on Windward Surface Heat Transfer on the Rockwell International Space Shuttle Orbiter.

(U)

DESCRIPTIVE NOTE: Final rept. 14 Nov-10 Dec 75,
JAN 77 61P Hube, F. K. ;
REPT. NO. AECC-TR-76-98
PROJ: ARO-V41B-E9A

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with ARO, Inc., Tullahoma, Tenn. Rept. no. ARO-VKF-TR-76-26.

DESCRIPTORS: *Space shuttles, *Aerodynamic heating, Heat transfer, Reentry vehicles, Thermal insulation, Surface roughness, Angle of attack, Manned spacecraft

(U)

Heat transfer tests on the forward half of the 0.04-scale models of the Rockwell International Space Shuttle Orbiter Configuration 140C were conducted at Mach number 8. Infrared scanning was used to determine the influence of simulated thermal protection tile roughness on windward surface heat transfer level and distribution. Tile roughness was in the form of tile surface mismatch and gaps between tiles. Tile height (measured from the smooth body wall) ranged from -0.020 in. (cavity) to 0.025 in. (protuberance), and gap width ranged from 0 to 0.020 in. Data were obtained at angles of attack of 30 to 40 deg at zero side-slip at free-stream Reynolds numbers from 2,200,000 to 15,100,000 based on the total Orbiter scaled length. The infrared system is described, and data are presented which illustrate the influence of the major test parameters.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A033 871 22/2 14/1

DEFENSE SYSTEMS MANAGEMENT SCHOOL FORT BELVOIR VA

Space Shuttle: A Case Study in
Economic Analysis.

(U)

DESCRIPTIVE NOTE: Study project rept.,
APR 76 42P Theurer, Byron ;
PROJ: DSMS-PMC-76-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Report on Program Management
Course.DESCRIPTORS: *Space shuttles, *Economic analysis,
Manned spacecraft, Life cycle costs, Cost
benefits, Space transportation, Cost effectiveness

(U)

This case study reports on an application of economic analysis; provides examples of the methods; draws conclusions and comments on lessons learned. It was developed from NASA and contractor primary references and from the author's experiences. In 1971, NASA was faced with a dilemma. The Space Shuttle Program, which had been established to substantially reduce the cost of space operations, was being designed to reduce principally transportation cost. Issues were surfacing which established that this transportation cost emphasis did not account for Shuttle development cost and the great bulk of the costs of a satellite program. OMB, furthermore, was imposing a peak funding ceiling which precluded developing the then - baselined configuration. Economic analysis performed by MATHEMATICA, Inc., succeeded in establishing the economic worth of Shuttle and pinpointing the most economical configuration. Of particular interest are the explicit treatment of uncertainty in the data base and the innovative methods used to graphically portray results.

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AD-A033 793 9/3 17/2

AERONAUTICAL SYSTEMS DIV WRIGHT-PATTERSON AFB OHIO

Proceedings of the Multiplex Data Bus
Conference Held at Biltmore Towers Hotel,
Dayton, Ohio on 3-5 November 1976.

(U)

DESCRIPTIVE NOTE: Final rept.,
NOV 76 495P Gangl, Erwin C. ;
REPT. NO. ASD-TR-76-22

UNCLASSIFIED REPORT

DESCRIPTORS: *Multiplexing, *Bus conductors,
Conferences, Avionics, Space shuttles, Digital
systems, Fiber optics, Networks, Spacecraft,
Military aircraft, Flight control systems,
Switching, Remotely piloted vehicles, Time
division multiplexing
IDENTIFIERS: *Data buses

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This is a collection of the unclassified papers presented at the AFSC Multiplex Data Bus Conference at the Biltmore Towers Hotel, Dayton, Ohio. The purpose of the conference is to collect data on lessons learned (F-15, B-1, Space Shuttle, etc.) and other newer MUX applications for a MIL-STD-1553A design handbook. Fibre Optics technology data buses, as well as commercial airline requirements in busing, is covered. A detailed abstract cannot be prepared because of the nature of the material. (Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A030 389 20/4 22/2

YALE UNIV NEW HAVEN CONN DEPT OF ENGINEERING AND APPLIED SCIENCE

Nonequilibrium Stagnation Region Aerodynamic Heating of Hypersonic Glide Vehicles, (U)

Ramiro: 75 22P Rosner, Daniel E.; Cibrian,

CONTRACT: AF-AFOSR-2487-73, NAS9-13058

PROJ: AF-9750

TASK: 975002

MONITOR: AFOSR TR-76-0965

UNCLASSIFIED REPORT

Availability: Pub. in Jnl. Progress in Astronautics and Aeronautics, v39 p415-435 1975.

SUPPLEMENTARY NOTE: Presented at the AIAA/ASME Thermophysics and Heat Transfer Conference, 15-17 Jul 74, Boston, Mass., Paper no. 74-755.

DESCRIPTORS: *Aerodynamic heating, *Space shuttles, Surface temperature, Stagnation temperature, Recombination reactions, Dissociation, Laminar boundary layer, Ablation, Oxygen, Nitrogen, Atmosphere entry, Reprints (U)

IDENTIFIERS: Hypersonic glide vehicles (U)

A simple method of predicting aerodynamic heating and corresponding radiation equilibrium surface temperature-time histories for critical locations on Space Shuttle Orbiter-type vehicles is presented. The method is based on a generalization of equations developed earlier by Roshar for predicting energy transfer and radiation equilibrium temperatures of surfaces with arbitrary catalytic activity and total emittance. Recent experimental data for O and N atom recombination probabilities on candidate material surfaces above 1000 K are used to assess chemical nonequilibrium effects for a range of nose radii and a specific Space Shuttle re-entry trajectory. Low catalytic activity will be especially important in locations of large effective nose radius by both increasing oxidation-resistant coating lifetime and reducing energy transfer into the vehicle. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A030 329 8/8 14/5 22/2

COLD REGIONS RESEARCH AND ENGINEERING LAB HANOVER N H

Skylab Imagery: Application Reservoir Management in New England. (U)

DESCRIPTIVE NOTE: Final rept. Apr 73-Sep 75, SEP 76 58P McKim, H. L.; Gatto, L. W.; Merry, C. J.; Haugen, R. K.;

REPT. NO. CREL-SR-76-7

CONTRACT: NASA-T-4646-B

PROJ: NASA-EP-N089

UNCLASSIFIED REPORT

DESCRIPTORS: *Resource management, *Land use, *Aerial photographs, *Space stations, Flooding, Aerial reconnaissance, Manned spacecraft, Photographic images, Land areas, Image processing, Urban planning, Multiband spectral reconnaissance, Mapping, Infrared photography (U)

IDENTIFIERS: *Skylab, Reservoir management, LANDSAT multispectral imagery, EREP(Earth Resources Experimental Package), Earth Resources Experimental Package (U)

The purpose of this investigation was to determine the utility of Skylab S190A and B photography for providing reservoir management information in New England. LANDSAT, Skylab S190A and S190B and RE75/RC8 images were reduced to a common scale of 1:63,360 for a mapping base to demonstrate the extent to which the imagery could be utilized in the preparation of reconnaissance land use maps. These types of maps are required in the baseline evaluation of areas for reservoir management planning and for future environmental planning activities, i.e. permit evaluation and impact statements. Visual interpretations were accomplished on original NASA color infrared S190A/B and RE75/RC8 transparencies and a LANDSAT false color print made in-house. Ancillary data were not used during the mapping exercise to eliminate bias in the comparisons and to ensure the results were derived strictly from interpretations of tones and textures on the photography. Significant findings of this investigation were as follows: (1) S190B imagery is superior to the LANDSAT MSS imagery for land use mapping, (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A029 569 21/8.2 13/2 22/2

ARNOLD ENGINEERING DEVELOPMENT CENTER ARNOLD AIR FORCE
STATION TENNStudies of the Exhaust Products from Solid
Propellant Rocket Motors.

(U)

DESCRIPTIVE NOTE: Final rept. 1 Jul 73-30 Jun 75,
SEP 76 118P Dawbarn, R. ; Kinslow, M. ;
REPT. NO. AEDC-TR-76-49
PROJ: AF-921E, ARO-V34P-05A

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with ARO,
Inc., Tullahoma, Tenn., Rept. no. ARO-VKF-TR-
75-112.

DESCRIPTORS: *Exhaust gases, *Combustion products,
*Solid propellant rocket engines, Hydrogen chloride,
Alumina, Water vapor, Environmental tests,
Particulates, Condensation nuclei, Space shuttles,
Contamination, Hydrochloric acid, Test facilities,
Instrumentation

(U)

This study was undertaken to determine the
feasibility of conducting environmental chamber tests
on the physical processes which occur when a solid
rocket motor exhaust mixes with the ambient
atmosphere. Of particular interest was the
interaction between hydrogen chloride, aluminum
oxide, and water vapor. The program consisted of
three phases: (1) building a small rocket
motor and using it to provide the exhaust species in
a controlled environment; (2) evaluating
instruments used to detect and measure HCl
concentrations and if possible determining whether
the HCl existed in the gaseous state or as an acid
aerosol; (3) monitoring a series of 6.4-percent
scale space shuttle motor tests and comparing the
results to the environmental chamber studies.
Eighteen firings were conducted in an environmental
chamber with the initial ambient relative humidity
set at values from 29 to 100 percent. Two
additional firings were made in a large shed, and
four were made on an open concrete apron. Six test
firings at MSFC were monitored, and the ground
level concentrations are reported.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A028 742 21/8.2 22/2

NAVAL UNDERSEA CENTER SAN DIEGO CALIF

Solid Rocket Booster Dewatering
System.

(U)

DESCRIPTIVE NOTE: Research and development rept. Aug
75-Apr 76,
JUN 76 35P Schlosser, A. J. ;
REPT. NO. NUC-TP-514
MONITOR: GIDEP, GIDEP E060-0566, 347.00.00.00-Y3-
10

UNCLASSIFIED REPORT

DESCRIPTORS: *Solid propellant rocket engines,
*Booster rocket engines, *Recovery vehicles, Space
shuttles, Recovery, Jettisonable equipment
IDENTIFIERS: *Dewatering systems

(U)
(U)

A dewatering system is required for the recovery of
jettisoned solid rocket boosters (SRBs) used in
the National Aeronautics and Space
Administration (NASA) space shuttle program.
The dewatering system will consist of an unmanned
vehicle (nozzle plug); a control console; and
handling, employment, storage, and support systems.
After the nozzle plug (NP) has transitioned to the
SRB, it will be flown into the SRB nozzle for
initial spar mode dewatering. Locking arms are
deployed to hold the NP, and compressed air from
the recovery vessel is forced into the SRB for
rapid, initial dewatering. When the SRB assumes
the log mode, a sewer plug is inflated, sealing the
nozzle, and final dewatering occurs. The SRB is
then ready for towing. (Author)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A027 552

5/1

DEFENSE SYSTEMS MANAGEMENT SCHOOL FORT BELVOIR VA

DOD Participation in the Shuttle Program a
Management Analysis.

(U)

DESCRIPTIVE NOTE: Student project rept.,
MAY 75 55P Baker, James P. ;

PROJ: DSMS-PWC-75-1

UNCLASSIFIED REPORT

DESCRIPTORS: *Research management, *Space shuttles,
*Management planning and control, Cooperation,
Department of Defense, Allocations, Systems
engineering, Space stations, Air Force research,
Air Force budgets, Resource management, History,
Logistics support, Payload, Integrated systems,
Missions, Costs

(U)

IDENTIFIERS: Joint NASA DOD activities,

National Aeronautics and space administration

(U)

This study assesses the potential impact of DOD
participation in the Space Shuttle Program upon
future military space operations. Five key issues
affecting DOD future Shuttle operations are:

(1) Inadequate management interface between
DOD/NASA; (2) DOD/USAF political

considerations in the Shuttle support; (3)
Inadequate USAF funding during early states of
the program; (4) Inadequate integrated
logistics support; and (5) Mission applications
and payload integration problems. Each of these
areas is discussed in detail in the report. The
author concludes that lack of DOD commitment to
the Shuttle Program, in which DOD is a major
user, may cause DOD to be severely limited in its
potential application of the system in the next
decade.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A026 384

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22/2

DEFENSE SYSTEMS MANAGEMENT SCHOOL FORT BELVOIR VA

Management of DOD Space Payload Integration
in the Space Shuttle Era.

(U)

DESCRIPTIVE NOTE: Student project rept.,
MAY 76 59P Steinkamp, Henry W. , Jr;
PROJ: DSMS-PWC-76-1

UNCLASSIFIED REPORT

DESCRIPTORS: *Management planning and control,
*Space shuttles, *Payload analyses, *Spacecraft,
*Launch vehicles, Integrated systems, Space
Systems, Economic analysis, Efficiency,
Effectiveness, Payload, Base lines

(U)

This report reviews the current management of DOD
launch vehicle/spacecraft integration and then shows
how the characteristics of the Space Shuttle will
require changes to this baseline. The study has
been based on a review of NASA and DOD
literature, interviews with knowledgeable USAF
officials and the author's experience in expendable
launch vehicle planning and in Shuttle payload
integration development. The results of the
investigation provided supporting rationale for
establishing a centralized DOD payload/Space
Shuttle integration management structure. An
important question was whether centralized management
would motivate more economical utilization of the
Shuttle. In comparison to management
decentralized to satellite System Program
Offices of Industrial Fund Techniques, it was
concluded that centralization would be more effective
and efficient. (Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A026 267 22/1 22/2

AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OHIO

Astronaut Manual EVA Guidance: An Operational Procedure.

(U)

DESCRIPTIVE NOTE: Master's thesis,
DEC 75 81P Higgins, David Barnett ;
REPT. NO. AFIT-CI-76-33

UNCLASSIFIED REPORT

DESCRIPTORS: *Space shuttles, *Extravehicular activity, Astronauts, Equations of motion, Computerized simulation, Rendezvous trajectories, Space navigation, Theses
IDENTIFIERS: *Two body problem

(U)
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The exact, unperturbed, two-body equations of motion of an astronaut about the center of the earth are derived for an orbiting coordinate system. These equations are used as the equations of the astronaut's motion relative to the space shuttle, which is located at the coordinate origin. A non-pictorial display scheme is developed for use with an interactive computer simulation which uses the above mentioned equations of relative motion. A method of plotting a field of nominal intercept paths is presented along with a procedure for using such a plot as a guidance aid. Simulations using this procedure are described. An appendix contains the description of a light weight, non-mechanical range estimation aid.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A025 080 22/2

ARNOLD ENGINEERING DEVELOPMENT CENTER ARNOLD AIR FORCE STATION TENN

Heat-Transfer Tests of a 0.0175-Scale Model of the Space Shuttle at Mach Numbers 2.5, 3.5, 4.5, and 5.5.

(U)

DESCRIPTIVE NOTE: Final rept. 31 Mar-21 May 75,
JUN 76 35P Nutt, K. W. ; Martindale, W. R. ;

REPT. NO. AECC-TR-75-153
PROJ: AF-9772, ARD-V41A-A4A

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with ARD, Inc., Tullahoma, Tenn., Rept. no. ARD-VKF-TR-75-141.

DESCRIPTORS: *Space shuttles, *Heat transfer, Test methods, Scale models, Model tests, Ascent trajectories, Wind tunnel tests, Mach number, Reynolds number, Booster rocket engines, Solid propellant rocket engines, External stores, Propellant tanks

(U)

Heat-transfer tests were conducted on the Space Shuttle Integrated Vehicle to investigate heat-transfer rates during the ascent phase of the flight profile. The model was a 0.0175-scale, thin skin, thermocouple-equipped model (60-OIS) of the Rockwell International Vehicle 5 configuration. The tests were conducted at nominal Mach numbers of 2.5, 3.5, 4.5, and 5.5 and a free-stream unit Reynolds of 5 million per foot. Two nose configurations were tested on the external tank. Data were obtained with the external tank alone and with the external tank and solid rocket booster in the integrated vehicle configuration. This report presents representative test results and data comparisons with theoretical calculations.

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(Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A024 553 22/2 20/4

ARNOLD ENGINEERING DEVELOPMENT CENTER ARNOLD AIR FORCE
STATION TENNHeat-Transfer Tests on the Rockwell
International Space Shuttle Orbiter with
Boundary-Layer Trips (OH-54).

(U)

DESCRIPTIVE NOTE: Final rept. October 74-Sep 75.

MAY 76 44P

Carver, D. B. ;

REPT. NO. AEDC-TR-76-28

PROJ: AF-921E, ARO-V41B-82A

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with ARO,
Inc., Tullahoma, Tenn. Rept. no. ARO-VKF-TR-
75-165.DESCRIPTORS: *Space shuttles, Aerothermodynamics,
Aerodynamic heating, Heat transfer, Reentry
vehicles, Boundary layer transition, Hypersonic
flow, Hypersonic characteristics, Wind tunnel
models, Model tests, Paints, Flow visualization,
Atmosphere entry, Surface roughness, Spacecraft
components, Configurations, Reynolds number, Flow
fields

(U)

IDENTIFIERS: Trip devices (Wind tunnel models),
Phase change paint

(U)

Aerothermodynamic transition tests on a model of
the forward half of the Rockwell International
Space Shuttle Orbiter Configuration 140C
were conducted at Mach Number 8. Phase-change
paint was used to determine the aerodynamic heating
rates on the windward side of Orbiter models during
simulated atmospheric reentry. The majority of the
data was obtained using spherical trip elements of
varying sizes at three different axial stations along
the model to determine the effect of roughness size
and location on boundary-layer transition.
Additional data were taken with models which had
scale indentations that simulated external tank
attachment rings, nose wheel well doors, and a
surface insulation interface gap. Data were taken
over an angle-of-attack range from 20 to 40 deg at
free-stream Reynolds numbers, based on the total
Orbiter scaled length, from 3.2 to 16.1 million.

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AD-A022 864

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A022 864 22/1

TRW DEFENSE AND SPACE SYSTEMS GROUP REDONDO BEACH
CALIFDepartment of Defense Space Transportation
System Mission Operations System Definition
- Computational Function Allocation.

(U)

DESCRIPTIVE NOTE: Final rept. 1 Mar 75-30 Mar 76.

MAR 76 202P

Baker, K. L. ;

REPT. NO. TRW-26937-6032-TU-00

CONTRACT: F04701-75-C-0025

MONITOR: SAMSO TR-76-39

UNCLASSIFIED REPORT

DESCRIPTORS: *Space missions, *Management planning
and control, Computations, Computers, Space
shuttles, Control systems, Allocations, Department
of Defense

(U)

The document presents a baseline set of
computational functions required by the DCD
Mission Operations System and its interfacing
systems. These requirements are concerned with the
operational use of the Space Shuttle for
achieving the DOD mission objectives without
determining whether the facilities were under NASA
or DOD control. The document addresses the
computational function description and allocation,
comparison with the NASA computational functions
and allocation, external system interfaces, and the
security requirements of each facility.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07
AD-A021 417 22/2 21/8-1 22/1

MCDONNELL DOUGLAS ASTRONAUTICS CO HUNTINGTON BEACH
CALIF

Delta Interim Upper Stage System Study.
Volume II. Technical Report.

(U)

DESCRIPTIVE NOTE: Final rept. 1 Oct 74-30 Jun 75,
JUN 75 534P Dawson, R. P.; Meyers, J.
F.; Doiron, R. C.; Monger, R. G.;
REPT. NO. MDC-G5973-Vol-2
CONTRACT: F04701-75-C-0032
MONITOR: SAMSO TR-75-178-Vol-2

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 1, AD-A021
416.

DESCRIPTORS: *Space shuttles, *Space tugs, *Launch
vehicles, Space transportation, Liquid propellant
rocket engines, Controllable thrust rocket engines,
Configuration management, Logistics management,
Management planning and control

(U)

IDENTIFIERS: Delta launch vehicles, *Restartable
rocket engines, *Orbit to orbit shuttles, Space
transportation system

(U)

The Space Shuttle System will require an
upper stage (Space Tug, or QOS - Orbit-to-
Orbit Shuttle) to achieve maximum
effectiveness. A reusable upper stage, although
highly desirable, requires a greater initial cash
outlay, which would compete for early Shuttle
development program funds. Hence, an expendable
upper stage, to be used in the interim, has been the
subject of various government studies in recent
years. This report describes the results of one of
these studies, that which addressed the use of
Delta launch vehicle hardware to satisfy this
requirement. Basic Delta hardware is described,
along with the changes which would be required to
make it compatible with Shuttle. Both
performance and costs are presented, and conclusions
drawn.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07
AD-A021 416 22/2 21/8-1 22/1

MCDONNELL DOUGLAS ASTRONAUTICS CO HUNTINGTON BEACH
CALIF

Delta Interim Upper Stage System Study.
Volume I. Executive Summary.

(U)

DESCRIPTIVE NOTE: Final rept. 1 Oct 74-30 Jun 75,
JUN 75 56P Dawson, R. P.; Meyers, J.
F.; Doiron, R. C.; Monger, R. G.;
REPT. NO. MDC-G5973-Vol-1
CONTRACT: F04701-75-C-0032
MONITOR: SAMSO TR-75-178-Vol-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 2, AD-A021
417.

DESCRIPTORS: *Space shuttles, *Space tugs, *Launch
vehicles, Space transportation, Liquid propellant
rocket engines, Controllable thrust rocket engines,
Configuration management, Logistics management,
Management planning and control

(U)

IDENTIFIERS: Delta launch vehicles, *Restartable
rocket engines, *Orbit to orbit shuttles, Space
transportation system

(U)

This study provides DOD with the preliminary
design of a Delta IUS system, the identification
of IUS/Orbiter and IUS/Spacecraft interfaces,
and Delta IUS program definition and costs.
The study has shown that with the addition of two
inexpensive propellant tanks and other minor stage
changes, the basic Delta stage can be easily
converted into an IUS stage that can capture all of
the DOD and NASA earth orbital missions with
ample performance margin (4,820 lb to synchronous
orbit). Furthermore, the addition of simple,
low-cost auxiliary stages based on existing solid
propellant motors, the Delta IUS can capture all
of the NASA planetary missions specified. The
combinations of IUS elements proposed - the Tri-
Tank Family approach - provides the flexibility
to select the least expensive IUS suitable for the
mission, thus enhancing cost effectiveness.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A021 415 22/2

GENERAL DYNAMICS/CONVAIR SAN DIEGO CALIF

Centaur Interim Upper Stage (IUS) System
Study. Volume II. Technical.

(U)

DESCRIPTIVE NOTE: Final rept. 1 Oct 74-1 Jul 75.

JUL 75 455P Heald, D. A. ; Nelson, A.

W. ; Harris, R. D. ; Peters, C. F. ;

REPT. NO. CASD-AFS-75-006-Vol-2

CONTRACT: F04701-75-C-0035

MONITOR: SAMSO TR-75-181-Vol-2

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 1, AD-A021 401.

DESCRIPTORS: *Space transportation, *Space shuttles,
*Space tugs, *Management planning and control,
Configuration management, Liquid propellant rocket
engines, Mission profiles, Ground support equipment,
Logistics management, Launch vehicles, Life cycle
costs

(U)

IDENTIFIERS: *Centaur, *Reusable spacecraft,

*Expendable spacecraft

(U)

The IUS programs defined in the study incorporate a primary propulsive stage based on the existing D-1 Centaur vehicle used by NASA for Viking and by DOD for FleetSatComm. The study concludes that lowest development costs are incurred with an expendable Centaur IUS which is 89 percent existing hardware. The principal development tasks for this program would be modifications for compatibility with the Orbiter and SGLS/STDN communications. Lowest life cycle costs can be achieved with a reusable Centaur IUS where added development is required for a wide hydrogen tank and a fuel cell power supply. Trade studies and options including shorter length vehicles and compatibility with NASA planned tracking and Data Relay Satellite (TDRSS) system are also defined. The inherent high performance of cryogenic propellants assures comfortable accommodation of current and future IUS program requirements.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A021 401 22/2

GENERAL DYNAMICS/CONVAIR SAN DIEGO CALIF

Centaur Interim Upper Stage (IUS) System
Study. Volume I. Executive Summary.

(U)

DESCRIPTIVE NOTE: Final rept. 1 Oct 74-1 Jul 75.

JUL 75 60P Heald, D. A. ; Nelson, A.

W. ; Harris, R. D. ; Peters, C. F. ;

REPT. NO. CASD-AFS-75-006-Vol-1

CONTRACT: F04701-75-C-0035

MONITOR: SAMSO TR-75-181-Vol-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 2, AD-A021 415.

DESCRIPTORS: *Space transportation, *Space shuttles,
*Space tugs, *Management planning and control,
Configuration management, Liquid propellant rocket
engines, Mission profiles, Ground support equipment,
Logistics management, Launch vehicles

(U)

IDENTIFIERS: *Centaur, *Reusable spacecraft,

*Expendable spacecraft

(U)

The overall objective of this system study was to provide preliminary design(s), airborne and ground interface definition, substantiated life-cycle cost estimates and total program definitions for a Centaur Interim Upper Stage (IUS) System.

The IUS system consists of a primary propulsive stage (a Centaur version), auxiliary propulsive stage(s) (when required), airborne support equipment, aerospace ground equipment, software, and unique facilities. Six alternative Centaur IUS programs were defined; each satisfying DOD and/or NASA requirements as specified in SAMSO document SR-IUS-100, 'Interim Upper Stage (IUS) System Requirements', Change 3, dated 4 April 1975. The IUS programs defined in the study incorporate a primary propulsive stage based on the existing D-1 Centaur vehicle used by NASA for Viking and by DOD for FleetSatComm.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A020 049 6/5 6/19

SCHOOL OF AEROSPACE MEDICINE BROOKS AFB TEX

Interruption of Denitrogenation by Air-
Breathing.

DESCRIPTIVE NOTE: Final rept. Oct 74-Jul 75,

DEC 75 11P Cooke, Julian P. ;

REPT. NO. SAM-TR-75-45

PROJ: AF-7164

TASK: 716411

UNCLASSIFIED REPORT

DESCRIPTORS: *Decompression sickness, *Respiration,
*Air, *Nitrogen, *Oxygen, Altitude sickness,
Space shuttles, Space crews, Pressure suits, Low
pressure, Mixtures, Interruption, Extravascular
activity, Breathing masks, Chemical composition,
Aerospace medicine

IDENTIFIERS: *Denitrogenation

This study was designed to determine whether or not
a proposed denitrogenation time, interrupted with a
short air-breathing time and when matched with an
additional denitrogenation time equal to the
interruption, would protect from bends
(decompression sickness) during the Shuttle
program. The gas mixtures represent those
obtainable with the personal breathing system.
Using 17 human volunteers, the study showed that a
3-hr denitrogenation time with a 95% O₂-5%
N₂ breathing mixture at 14.5 psia (745 torr)
would protect most humans from bends during a 2-hr
exposure at a suit pressure of 3.8 psia (197
torr) while breathing 92% O₂-8% N₂. A 5-
or 10-min interruptive period with air-breathing
after 1, 2, or 3 hr of denitrogenation at 14.5 psia,
however, even when followed by an additional
denitrogenation period equal to the interruptive
period, will result in an occasional case of bends in
some subjects during the 2-hr exposure at 3.8 psia.
The first symptoms of bends can be expected after
about 40 min. Testing is suggested with a 95%
O₂-5% N₂ gas mixture for both exposures, along
with longer make-up times of denitrogenation.
(Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A019 328 22/3 22/2

AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OHIO SCHOOL OF
ENGINEERINGTime-Optimal Rendezvous for an Upper Stage
Vehicle of the Space Transportation
System.

(U)

DESCRIPTIVE NOTE: Master's thesis,

DEC 75 145P Johnson, Raymond P. ;

REPT. NO. CA/MC/75C-4

UNCLASSIFIED REPORT

DESCRIPTORS: *Space shuttles, *Rendezvous
trajectories, Reusable equipment, Space tugs,
Space transportation, Transfer trajectories,
Boundary value problems, FORTRAN, Computer
programs, Theses, Nonlinear differential equations,
Calculus of variations, Numerical integration
IDENTIFIERS: *Reusable rocket engines, *Upper
stage vehicles, FORTRAN 4 programming language,
Two point boundary value problems

(U)

(U)

This study investigates minimum-time rendezvous
trajectories and thrust control profiles for an upper
stage vehicle of the Space Transportation
System. A numerical technique is presented to
solve the nonlinear two-point boundary value problem
associated with the finite-thrust time-optimal
trajectories. This method serves to reduce the
associated computer burden through the use of a
general-purpose subroutine developed by the
mathematician M.J.D. Powell to solve a system
of nonlinear equations. The general technique uses a
gradient-type iteration when poorer estimates of the
unknowns are encountered and, yet, switches
automatically to the more rapid convergence of a
Newton-Raphson scheme as the estimates are
improved. The discontinuities associated with the
on-off thrust control are overcome through an
iterative determination of the related switching
times.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A019 274 22/2 22/3

TRW SYSTEMS GROUP REDONDO BEACH CALIF

OOD/STS Mission Operations Systems
Definition Mission Assessment Report:
Operations Design Mission B.

DESCRIPTIVE NOTE: Final rept. 1 Mar-16 Dec 75.

DEC 75 262P

REPT. NO. TRW-26937-6050-RU-00

CONTRACT: F04701-75-C-0025

MONITOR: SAMSO TR-75-262

UNCLASSIFIED REPORT

DESCRIPTORS: *Space shuttles, *Space missions,
*Space transportation, Payload, Space crews,
Ground support equipment, Trade off analyses,
Deployment, Space navigation, Solid rocket
propellants, Covariance, Assessment

This report presents the results of analysis of a
near term DOD payload deployment mission utilizing
the Space Shuttle vehicle in conjunction with an
Interim Upper Stage (IUS). This baseline
issue of the report concentrates on development of a
nominal mission plan for a particular launch date and
time. Such items as attitude timelines, approximate
RCS/DMS propellant utilization histories, ground
tracks, ground station coverage timelines and
navigation accuracy at IUS deployment opportunities
are included. Principal emphasis is placed on
development of an IUS deployment timeline for near
term missions. (Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A018 755 22/2 22/3

ARNOLD ENGINEERING DEVELOPMENT CENTER ARNOLD AIR FORCE
STATION TENN

Real Gas Scale Effects on Hypersonic
Laminar Boundary-Layer Parameters Including
Effects of Entropy-Layer Swallowing.

(U)

DESCRIPTIVE NOTE: Final rept. 21 Mar-20 Oct 74.

DEC 75 52P

Martindale, W. R.; Mayne, A. W., Jr.;

Marchand, E. D.;

REPT. NO. AEC-TR-75-2

PROJ: ARO-VC523

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Sponsored in part by National
Aeronautics and Space Administration, Houston,
Tex. Lyndon B. Johnson Space Center. Prepared
in cooperation with ARO, Inc., Tullahoma, Tenn.
Rept. no. ARO-VKF-TR-74-104.

DESCRIPTORS: *Space shuttles, *Atmosphere entry,
Flow fields, Laminar boundary layer, Descent
trajectories, Boundary layer transition, Entropy,
Aerodynamic heating

(U)

Inviscid and viscous (laminar boundary layer)
flow-field calculations under perfect gas hypersonic
wind tunnel and equilibrium real gas flight
conditions are presented for the windward centerline
of the Rockwell International 139 Space
Shuttle Orbiter at 30 deg angle of attack.
Correlation parameters for laminar boundary-layer
edge quantities and surface heat transfer are
developed which properly account for entropy-layer-
swallowing effects under both real and perfect gas
conditions. A cursory examination of chemical
nonequilibrium effects on the inviscid flow field
based on collision shock relaxation is presented.
Some implications of the proposed correlation
parameters in boundary-layer transition are
discussed.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A018 540 22/2 15/5

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

Salyut to be Supplied Automatically. (U)

NOV 75 8P

REPT. NO. FTD-ID(RS)J-2282-75

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Edited trans. of Avia, Maandblad
Voor Lucht- en Ruimtevaart (Netherlands) v33E
n12 p372-373 Dec 74.

DESCRIPTORS: *Space stations, *USSR, *Logistics
support, Automatic, Astronauts, Docking, Food
dispensing, Refueling in flight, Telescopes, Sun,
Lunar environment, Scientific research,
Translations

IDENTIFIERS: Salyut space station, Cosmonauts

In the near future, space stations of the Salyut
type will be supplied automatically by unmanned
Soyuz space ships to be guided from the earth and
automatically coupled to the station. By this means
cosmonauts staying on board a Salyut would not only
be supplied with extra victuals, but also with fuel
for the space station so that it can function for
longer than is now the case. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A018 534 22/2 5/9

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

The Value of an Orbital Minute. (U)

DEC 75 8P

REPT. NO. FTD-ID(RS)I-2398-75

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Edited trans. from Pravda (USSR)
n203(20807) p6, 22 Jul 75, by Roger T.
Crozier.

DESCRIPTORS: *Space stations, *Space crews, *USSR,
*Job analysis, Space flight, Space exploration,
Scientific research, Space environments, Orbits,
Navigation computers, Repair, Health, Skills,
Astronauts, Time, Timeliness, Translations

IDENTIFIERS: Salyut space stations, Salyut 4 space
station, Cosmonauts

The Value of an Orbital Minute--Translation. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

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TRW SYSTEMS GROUP REDONDO BEACH CALIF

Department of Defense Space Transportation
System Mission Operations Systems
Definition Mission Assessment Report:
Operations Design Mission A.

(U)

DESCRIPTIVE NOTE: Final rept. 1 Mar 17-Nov 75.

REPT. NOV 75 294P

CONTRACT: F04701-75-C-0025

MONITOR: SAMSO TR-75-261

UNCLASSIFIED REPORT

DESCRIPTORS: *Space transportation, *Space shuttles,
*Space crews, *Space missions, Solid propellant
rocket engines, Space flight, Synchronous
satellites, Equatorial orbits, Payload,
Deployment, Communication and radio systems,
Planning, Feasibility studies, Surface to space,
Ground support, Ground support equipment,
Satellite attitude, Navigation computers, Doppler
navigation, Space to surface, Landing, Reusable
equipment, Trade off analyses, Department of
Defense

(U)

IDENTIFIERS: *Space transportation system,
*Interim upper stage vehicle, STS(Space
transportation system), IUS(Interim upper
stage)

(U)

This report presents the results of analysis of a
near term DOD geosynchronous equatorial payload
deployment mission utilizing the Space Shuttle
vehicle in conjunction with an Interim Upper
Stage (IUS). This baseline issue of the report
concentrates on development of a nominal mission plan
for a particular launch data and time. Such items
as attitude timelines, approximate RCS/DMS
propellant utilization histories, ground tracks,
ground station coverage time-lines and navigation
accuracy at IUS deployment opportunities are
included. Principal emphasis is placed on
development of an IUS development timeline for near
term missions. (Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A018 177 22/2 21/1

ROCKWELL INTERNATIONAL CORP DOWNEY CALIF SPACE DIV

Space Test Program Standard Satellite
Launch Optimization Study.

(U)

DESCRIPTIVE NOTE: Final rept. 2 Jun-15 Sep 75.

SEP 75 122P Cantor, Myron A. ;

REPT. NO. SD-75-SA-0135

CONTRACT: F04701-75-C-0127

MONITOR: SAMSO TR-75-276

UNCLASSIFIED REPORT

DESCRIPTORS: *Space shuttles, *Payload,
*Launching, Launch vehicles, Manned spacecraft,
External stores, Configuration management,
Artificial satellites

(U)

The primary objective of this study was to
determine the shape and weight of an STP Standard
Satellite which would have a maximum probability of
being launched 'piggy-back' on an STS mission
between 1980-1990. The study was conducted in two
parts. Part 1 consisted of two tasks, Mission
Analysis and System Analysis. In these tasks,
a shuttle mission model was selected, preliminary
STP-STD-satellite capabilities defined and each
shuttle mission examined to determine the excess
volume and weight available.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

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ARNOLD ENGINEERING DEVELOPMENT CENTER ARNOLD AIR FORCE STATION TENN

Viscous Effects on the Static Stability and Axial-Force Characteristics of the NASA Space Shuttle Orbiter at Mach Number 19.

(U)

DESCRIPTIVE NOTE: Final rept.,
DEC 75 35P
REPT. NO. AEDC-TR-75-91
PROJ: ARO-V41F-28A

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with ARO, Inc., Tullahoma, Tenn., Rept. no. ARO-VKF-TR-75-54.

DESCRIPTORS: *Space shuttles, *Orbits, *Static stability, *Hypersonic flow, Hypersonic wind tunnels, Mach number, Reynolds number, Angle of attack, Model tests, Scale models, Viscous flow, Atmosphere entry, Reentry vehicles
IDENTIFIERS: Axial force

(U)
(U)

An experimental program was conducted in the AEDC-VKF hypervelocity wind tunnel (F) at a nominal Mach number of 19 to determine the static stability and axial-force characteristics of a 0.01-scale model of the NASA Space Shuttle Orbiter. The tests were conducted at an angle of attack of 30 deg at free-stream Reynolds numbers (based on model length) from 100000 to 400000. The results are compared to previous AEDC data at Mach numbers 8, 10, and 16. (Author)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

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ARNOLD ENGINEERING DEVELOPMENT CENTER ARNOLD AIR FORCE STATION TENN

Aerothermal Tests of the Space Shuttle External Tank Insulating Material.

(U)

DESCRIPTIVE NOTE: Final rept. 12 Jan-13 Feb 75,
NOV 75 39P
C.: Matthews, R. K.; Harper, D.
REPT. NO. AEDC-TR-75-94
PROJ: AF-921E, ARO-V41C-91A

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with ARO, Inc., Tullahoma, Tenn., Rept. no. ARO-VKF-TR-75-57.

DESCRIPTORS: *Heat shields, *Thermal insulation, *Fuel tanks, *Space shuttles, *External stores, Wind tunnel tests, Aerodynamic heating, Ascent trajectories, Hypersonic flow, Hypersonic characteristics, Surface temperature, Ablation, Erosion

(U)

Aerothermal tests were conducted to evaluate the performance of a candidate material for the insulation of the Space Shuttle external tank. Material samples were exposed to total temperatures and heating rates designed to simulate those experienced during the ascent phase of the Shuttle trajectory. These conditions were obtained in the VKF Hypersonic Wind Tunnel (C), where a large wedge was used to hold the sample and the wedge angle was varied to produce the desired heating rates and pressures on the wedge surface. Photographic coverage of the material performance was obtained at wedge angles from 0 to 38 deg. Selected test results are presented which show the ablation/erosion characteristics of the material. (Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A015 743 20/4 13/4 22/2

ARNOLD ENGINEERING DEVELOPMENT CENTER ARNOLD AIR FORCE
STATION TENNPressure and Heat Transfer Tests on the
NASA Space Shuttle External Tank at Mach
Number 16.

(U)

DESCRIPTIVE NOTE: Final rept. 9 Aug-20 Sep 74.
OCT 75 49P Siler, L. G.; Boudreau, A.

H. i.

REPT. NO. AEDC-TR-75-31
PROJ: AF-921E, ARO-V41F-25A
TASK: 2

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with ARO,
Inc., Tullahoma, Tenn., Rept. no. ARO-VKF-TR-
74-129.DESCRIPTORS: *Aerodynamic heating, *Fuel tanks,
*Space shuttles, Wind tunnel tests, Hypersonic
flow, Pressure distribution, Heat transfer,
Simulation, Tumbling, Angle of attack, Staging,
Separation, Roll, Free stream, Mach number,
Interference, Reynolds number, Test methods

(U)

An experimental test program was conducted in the
AEDC-VKF Hypervelocity Wind Tunnel (F) at
a nominal Mach number of 16 to obtain basic heating
and pressure distribution data on the NASA Space
Shuttle external tank. The tests were conducted
over an attitude range which simulated tank tumbling
after separation from the Shuttle orbiter. The
angles of attack varied from 0 to -180 deg with
combinations of roll from 0 to 90 deg at free-stream
Reynolds numbers (based on model length) from
0.38 x 1,000,000 to 1.10 x 1,000,000. In addition
to surface heat-transfer gages, thermographic
phosphor paint was used to determine the interference
heating factors on and around the various attachment
structures and service ducts.

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AD-A012 876 22/3 22/2

ARNOLD ENGINEERING DEVELOPMENT CENTER ARNOLD AIR FORCE
STATION TENNHeat-Transfer Tests on the Rockwell
International Space Shuttle Orbiter with and
without Simulated Protuberances.

(U)

DESCRIPTIVE NOTE: Final rept. 1 Mar-31 Jul 74.
JUL 75 38P Carter, L. D.; Kaul, C. E.

REPT. NO. AEDC-TR-75-20

PROJ: AF-9705, ARO-VAS26-218A

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with ARO,
Inc., Tullahoma, Tenn. Rept. no. ARO-VKF-TR-
74-126.DESCRIPTORS: *Space shuttles, *Hypersonic flow,
*Aerodynamic heating, Aerothermodynamics,
Atmosphere entry, Heat transfer, Angle of attack,
Wind tunnel models

(U)

(U)

IDENTIFIERS: *Phase change coatings

Aerothermodynamic tests on the forward half of the
Rockwell International Space Shuttle
Orbiter Configuration 140C were conducted at
Mach number 8. The phase-change paint and thin-
skin thermocouple techniques were used to determine
the aerodynamic heating rates on the Orbiter models
during simulated atmospheric reentry. Smooth 0.04-
scale models and models with scaled protuberances and
indentations which simulated the windshields, cargo
bay door hinges, vents, and thruster nozzles were
tested over an angle-of-attack range from 20 to 45
deg at yaw angles from -5 to 5 deg and at Reynolds
numbers, based on the total Orbiter scaled length,
from 2.15 to 15.9 million. Comparisons of the model
heat-transfer rates obtained with a smooth surface
and with scaled protuberances are presented.

(U)

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD-A012 875 22/3 22/2

ARNOLD ENGINEERING DEVELOPMENT CENTER ARNOLD AIR FORCE
STATION TENN

Flow-Field Measurements in the Windward
Surface Shock Layer of Space Shuttle
Orbiter Configurations at Mach Number 8. (U)

DESCRIPTIVE NOTE: Final rept. 29 Sep 73-9 May 74,
JUL 75 53P Martindale, W. R. ; Carter,

L. D. ;
REPT. NO. AEDC-TR-75-5
PROJ: AF-9705, ARO-VA353

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with ARO,
Inc., Tullahoma, Tenn. Rept. no. ARO-VKF-TR-
74-111.

DESCRIPTORS: *Space shuttles, *Hypersonic
characteristics, Flow fields, Atmosphere entry,
Boundary layer, Angle of attack, Wind tunnel
models (U)

Pitot pressure and total-temperature measurements
were made in the windward surface shock layer of two
0.0175-scale space shuttle orbiter models at
simulated re-entry conditions. Corresponding
surface static pressure measurements were also made.
Flow properties at the edge of the model boundary
layer were derived from these measurements and
compared with values calculated using conventional
methods. (U)

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AD-A011 648 22/1 22/2

ARNOLD ENGINEERING DEVELOPMENT CENTER ARNOLD AIR FORCE
STATION TENN

Pitch-, Yaw-, and Roll-Damping
Characteristics of a Shuttle Orbiter at M =
8. (U)

DESCRIPTIVE NOTE: Final rept. 24 Jun-26 Jul 74,
MAY 75 36P Uselton, Bob L. ; Jenke,

Leroy M. ;
REPT. NO. AEDC-TR-74-129
PROJ: AF-9692, ARO-VA498

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with ARO,
Inc., Tullahoma, Tenn. Rept. no. ARO-VKF-TR-
74-100.

DESCRIPTORS: *Space shuttles, *Supersonic
characteristics, Manned spacecraft,
Pitch(Motion), Damping, Yaw, Angle of
attack, Wind tunnel models
IDENTIFIERS: 089 ORBITERS, 089B orbiters (U)
(U)

Wind tunnel tests were conducted for NASA-
Langley at M = 8 to determine the pitch-, yaw-,
and roll-damping characteristics of a modified 089B
shuttle orbiter configuration. Data were obtained
utilizing the small-amplitude forced-oscillation
technique at angles of attack of -4.9 to 26.5 deg at
Reynolds numbers, based on model length, of 1,180,
000 to 4,820,000. The orbiter was dynamically
stable in pitch, yaw, roll, and statically unstable
in yaw for the most reference of the test
configurations. The pitch derivatives were
dependent on Reynolds number while the roll
derivatives were independent of Reynolds number. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 900 190 21/2 22/2

AERJET LIQUID ROCKET CO SACRAMENTO CALIF

Orbit-to-Orbit Shuttle Engine Design
Study. Book 1. Parametric Cycle Study.

(U)

DESCRIPTIVE NOTE: Final rept. 1 Mar-1 Dec 71,
MAY 72 233P Luscher, Werner P. ;
CONTRACT: F04611-71-C-0040
MONITOR: AFRPL TR-72-45-Bk-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Book 2, AD-900
192L.

DESCRIPTORS: (*COMBUSTION CHAMBERS, SPACE PROPULSION),
(*RENDEZVOUS SPACECRAFT, COMBUSTION CHAMBERS), GAS
GENERATING SYSTEMS, THROTTLING, HYDROGEN, TURBOPUMPS,
LIQUEFIED GASES, OXYGEN, FUEL INJECTORS, REGENERATIVE
COOLING, BLEED SYSTEMS, TURBINE BLADES, TRANSIENTS,
EXHAUST GASES, NOZZLE AREA RATIO, STARTING, THRUST, BELL
NOZZLES, SPACE TO SPACE, COMPUTER PROGRAMS (U)
IDENTIFIERS: *ORBIT TO ORBIT SHUTTLES, REUSABLE ROCKET
MOTORS, SPACE SHUTTLES, SPACE TUGS (U)

This report presents the analytical design of
propulsion systems utilizing LOX/Hydrogen
propellants to be used as the propulsion for the
Orbit to Orbit Space Vehicle of 65,000 lb
lift-off weight. The report contains the evaluation
of various engine cycles in the thrust range of 8,000
lb to 50,000 lb thrust for performance, weight and
envelope culminating in the cycle selection and
detail design of a 25,000 lb and 10,000 lb thrust
engine. The engine concepts are described in
sufficient detail to obtain reliable engine weight,
performance, envelope information and methods of
engine control. The impact of various engine design
requirements were evaluated. The engines are
designed to be reusable and capable of starting in
the idle mode operation. The technology
requirements for meeting the engine design and
operating requirements are identified.
(Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 894 424 21/8.1 22/2

ROCKETDYNE CANOGA PARK CALIF

O2/H2 Advanced Maneuvering Propulsion
Technology Program Engine System Studies.
Volume II. 25,000 Pound Thrust Bell
Engine Configuration Design and Analysis.

(U)

DESCRIPTIVE NOTE: Final rept. 1 Feb-1 Oct 71.
DEC 71 503P
REPT. NO. R-8807-2
CONTRACT: F04611-67-C-0116
MONITOR: AFRPL TR-72-4-Vol-2

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 1, AD-890
753L.

DESCRIPTORS: (*CONTROLLABLE-THRUST ROCKET MOTORS,
DESIGN), (*LIQUID PROPELLANT ROCKET ENGINES,
PERFORMANCE(ENGINEERING)), (*RENDEZVOUS SPACECRAFT,
*SPACE PROPULSION), CONFIGURATION, COMBUSTION CHAMBERS,
BELL NOZZLES, NOZZLE AREA RATIO, INJECTORS, COSTS (U)
IDENTIFIERS: REUSEABLE SPACECRAFT, *RESTAURABLE ROCKET
MOTORS, *SPACE SHUTTLES, SPACE TRANSPORTATION (U)

The report describes the results of the O2/H2
Advanced Maneuvering Propulsion Technology
Program Bell Engine study. The objective of
the study was the definition of main rocket engine
systems applicable to advanced cryogenic oxygen/
hydrogen space vehicles. The study described in
this volume was directed toward non-aerospike nozzle
configurations to provide designs for comparison to
the aerospike configuration described in Volume 1.
Preliminary engine designs were prepared for thrust
levels from 8,000 to 50,000 pounds for several nozzle
and engine system configurations. A detailed design
and analysis was carried out for a selected 25,000-
pound-thrust engine configuration. The analysis
included the effects of variations in certain engine
system design conditions, development programs and
costs, failure mode, effects, operational
characteristics, and maintenance plans.
(Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 893 928 22/2 13/2 6/11

ARNOLD ENGINEERING DEVELOPMENT CENTER ARNOLD AIR FORCE
STATION TENNExperimental Investigation of Venting Water
into a Vacuum.

(U)

DESCRIPTIVE NOTE: Final rept. 9 Aug-20 Oct 71,

MAY 72 53P Busby, M. R. ;

REPT. NO. AEDC-TR-72-21

CONTRACT: F40600-72-C-0003

PROJ: AF-921E-2, ARO-VV1137

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with ARO,
Inc., Tullahoma, Tenn. Rept. no. ARO-VKF-TR-
72-2.DESCRIPTORS: (*SPACE STATIONS, *WASTES(SANITARY
ENGINEERING)), WATER, VACUUM, VENTING, SPACE
ENVIRONMENTS, CLOSED ECOLOGICAL SYSTEMS, EXPERIMENTAL
DATA (U)IDENTIFIERS: ENVIRONMENTAL CONTROL SYSTEMS, MANNED
ORBITING LABORATORIES, SKYLAB PROGRAM, WASTE
DISPOSAL (U)

A study was undertaken to investigate the improvement of the venting characteristics for the Skylab environmental control system (ECS) condensate dump system. The appropriate test apparatus was assembled, and a systematic investigation was undertaken. Water venting experiments were conducted in the 4- by 6-ft Research Vacuum Chamber of the von Karman Gas Dynamics Facility. Nineteen nozzle configurations were tested, and a design which reduces the icing problem was found. A nozzle constructed from a 1/4-in.-diam tube with two 0.05-in.-diam orifices is compatible with the presently designed Skylab venting system, and icing during venting has been significantly reduced at pressures that would be encountered in spacecraft operation. (Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 890 753 21/8.1 22/2

ROCKETDYNE CANOGA PARK CALIF

O2/H2 Advanced Maneuvering Propulsion
Technology Program Engine System Studies.
Volume I. Aerospike Engine Configuration
Design and Analysis.

(U)

DESCRIPTIVE NOTE: Final rept. 1 Jan-1 Oct 71.

DEC 71 575P

REPT. NO. R-8807-1

CONTRACT: F04611-67-C-0116

MONITOR: AFRPL TR-72-4-Vol-1

UNCLASSIFIED REPORT

DESCRIPTORS: (*CONTROLLABLE-THRUST ROCKET MOTORS,
DESIGN), (*LIQUID PROPELLANT ROCKET ENGINES,
PERFORMANCE(ENGINEERING)), (*RENDEZVOUS SPACECRAFT,
*SPACE PROPULSION), CONFIGURATION, COMBUSTION CHAMBERS,
TURBOPUMPS, NOZZLE THROATS, NOZZLE AREA RATIO, (U)
REGENERATIVE COOLING, GAS GENERATING SYSTEMS, COSTS
IDENTIFIERS: AEROSPIKE ENGINES, *RESTARTABLE ROCKET
MOTORS, *SPACE SHUTTLES (U)

The engine system design and analysis studies provide a detailed definition of two 25,000-pound-thrust O2/H2 aerospike engines. The single-panel aerospike engine design point corresponds to the demonstrator thrust chamber configuration, specifically, chamber pressure and area ratio equal to 750 psia and 110:1, respectively. A second engine system and component design and operational description also is provided for the selected optimum aerospike engine employing a double-panel thrust chamber cooling circuit. The double-panel aerospike engine design has a chamber pressure and area ratio of 1000 psia and 200:1, respectively. These engine systems are designed to provide 5:1 throttling and off-design mixture ratio operation. The study effort also included the effects of variations in certain design parameters on engine performance, weight, propellant flow balances, life capability, development time and cost, and maintenance requirements. Additional parametric information is provided for design thrust levels between 8000 and 50,000 pounds. (Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 881 744 21/8.1 22/2

PRATT AND WHITNEY AIRCRAFT WEST PALM BEACH FLA FLORIDA
RESEARCH AND DEVELOPMENT CENTERAir Force Reusable Rocket Engine Program (U)
XLR129-P-1, Volume I.

DESCRIPTIVE NOTE: Final rept 6 Nov 67-15 Aug 70.

JAN 71 413P Atherton, Robert R. ;

REPT. NO. PWA-FR-3832-Vol-1

CONTRACT: F04611-68-C-0002

MONITOR: AFRPL TR-71-1-Vol-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 2, AD-881 795.

DESCRIPTORS: (*CONTROLLABLE-THRUST ROCKET MOTORS, DESIGN), (*LIQUID PROPELLANT ROCKET ENGINES, SOGSTER ROCKETS), (*RENDEZVOUS SPACECRAFT, SPACE PROPULSION), COMBUSTION CHAMBERS, ROCKET NOZZLES, INJECTORS, TURBOPUMPS, MANUFACTURING, BUTTERFLY VALVES, CRYOGENIC PROPELLANTS, THRUST VECTOR CONTROL SYSTEMS, CAPTIVE TESTS, COLD FLOW

IDENTIFIERS: LR-129 ENGINES, *REUSABLE ROCKET MOTORS, SPACE SHUTTLES, XLR-129-P-1 ENGINES (U)

The objective of this program was to demonstrate the performance and mechanical integrity of a 250,000 lb thrust reusable rocket engine designated the XLR129-P-1. The program, sponsored by the Air Force Rocket Propulsion Laboratory, was accomplished by Pratt and Whitney Aircraft at the Florida Research and Development Center and consisted of design and analysis of all engine components and the demonstrator engine. Fabrication and testing of the critical major components was also accomplished. The engine was designed to operate with liquid oxygen and liquid hydrogen propellants, uses the staged combustion cycle, includes a variable thrust, and a variable mixture ratio capability. During the third year, fabrication and testing of certain components such as the preburner injector, transition case, and fuel turbopump was accomplished. Critical control system components such as the preburner oxidizer valve, the preburner fuel valve and static seals were also tested and evaluated. These tests demonstrated the feasibility of these components. (Author)

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AD- 879 707 22/2

GOODYEAR AEROSPACE CORP AKRON OHIO

Applications Study of Expandable Space Structures.

(U)

DESCRIPTIVE NOTE: Final rept. Jan-Dec 69,

NOV 70 106P Jurich, Leo ;Hose, Richard

L. ;

REPT. NO. GER-14609

CONTRACT: F33615-69-C-1125

PROJ: AF-8170

TASK: 817004

MONITOR: AFAPL TR-70-45

UNCLASSIFIED REPORT

DESCRIPTORS: (*EXPANDABLE STRUCTURES, DESIGN), (*SPACE STATIONS, EXPANDABLE STRUCTURES), (*MANNED SPACECRAFT, MODULAR SPACE CONSTRUCTION), LAUNCH VEHICLES, CONFIGURATION, DEPLOYMENT, HUMAN FACTORS ENGINEERING, COMPOSITE MATERIALS, INTERFACES, EXTRAVEHICULAR ACTIVITY

IDENTIFIERS: D-21 AIRLOCKS, ORBITAL WORKSHOPS (U)
(U)

The applications study program was directed toward derivation of concept definitions of expandable crew quarters, experiment chambers, and airlocks to determine how the application of such structures might enhance mission operations of representative orbital vehicle configurations. Configuration studies were conducted and four candidate concepts were developed for evaluation. Materials studies were conducted to investigate the relative merits of using an elastic recovery system or a chemically rigidized system as the expandable structural materials. Parametric analysis and trade-off studies were conducted to select an optimum configuration. The studies indicated that the crew quarter, experiment chamber and airlock could best be designed as one integrated expandable structure module. (Author, modified-PL)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZC007

AD- 875 858 9/5 22/2

AEROSPACE CORP EL SEGUNDO CALIF SYSTEMS ENGINEERING OPERATIONS

Integrated Data Bus Study, (U)

JUL 70 20P Stockett, T. E. ;
 REPT. NO. TOR-0059(6759-03)-8
 CONTRACT: F04701-70-C-0059

UNCLASSIFIED REPORT

DESCRIPTORS: (*INTEGRATED CIRCUITS, RELIABILITY(ELECTRONICS)), (*RENDEZVOUS SPACECRAFT, CONTROL SYSTEMS), LIFTING REENTRY VEHICLES, MANNED SPACECRAFT, DATA STORAGE SYSTEMS, DATA TRANSMISSION SYSTEMS, CIRCUIT INTERCONNECTIONS, COMPUTERS, MULTIPLEXING, CONFIGURATION

IDENTIFIERS: EARTH TO ORBIT SHUTTLES, EOS(EARTH TO ORBIT SHUTTLES), FAULTS, ISOLATION, SPACE TRANSPORTATION SYSTEMS, *SPACE SHUTTLES, STS(SPACE TRANSPORTATION SYSTEMS) (U)

The principal component of the Space Transportation System (STS) is the Earth-to-Orbit Shuttle (EOS), which is a large piloted vehicle capable of transporting payloads into low earth orbit and return. A central feature of the EOS is the on-board checkout system, whose operational concepts include pre-flight checkout, in-flight status monitoring, and ground maintenance aids. The OBC is intended to be an integral part of the EOS avionics system. In order to minimize the weight and complexity of the cabling on board the EOS, an Integrated Data Bus (IDB) had been specified. Ideally, only the IDB should be used to interconnect all of the avionics hardware. However, where several components are co-located, there appears to be no objection to the use of subsidiary interconnecting cables (minibusses) provided that such cable runs are very short. Structurally, the IDB may take any convenient form; but, unless some exotic method of data transfer is adopted (such as lasers), the use of standard coaxial cabling is indicated. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z0007

AD- 861 021 21/8 21/2 22/2

ARNOLD ENGINEERING DEVELOPMENT CENTER ARNOLD AIR FORCE STATION TENN

Effects and Control of Contamination From a Scaled MOL Translational Thruster in a Longitudinal Orientation. (U)

DESCRIPTIVE NOTE: Final rept. May-21 Dec 68,
 OCT 69 183P Hill, David W. , Jr.; Smith,
 Date K. ;
 REPT. NO. AEC-TR-69-152
 CONTRACT: F40600-69-C-0001
 PROJ: ARO-SB0721

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with ARO, Inc., Tullahoma, Tenn.

DESCRIPTORS: (*MANNED SPACECRAFT, *ATTITUDE CONTROL SYSTEMS), (*SPACE STATIONS, *CONTROLLABLE-THRUST ROCKET MOTORS), (*COMBUSTION PRODUCTS, CONTAMINATION), SPACE CAPSULES, SHELLS(STRUCTURAL FORMS), SIMULATION, COMBUSTION CHAMBER GASES, EXHAUST GASES, SAMPLING, DEPOSITS, PULSE SPACING MODULATION, OPTICAL GLASS, COLLECTING METHODS (U)
 IDENTIFIERS: MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

A test was conducted to determine the effects and control of contamination produced by a 1-lb scaled Manned Orbital Laboratory thruster. The test required firing the 1-lb translational thruster for 205 sec continuously and pulsing in its longitudinal position and determining the effects of contaminants from the thruster impinging on optical and thermal control surface test specimens located on a flat plate exposed to the thruster exhaust plume. The contamination ejected from the thruster in steady-state operation was much less than that of pulse-mode operation. Fences were used on the test plate to shield specimens from the thruster exhaust plume. In situ reflectance, emittance, and transmittance measurements were made on the optical and thermal control surface test specimens surfaces under vacuum conditions and at atmospheric pressure. Pretest and posttest laboratory measurements were made at atmospheric conditions.

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07
AD- 860 583 22/2

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

A Soviet Space Station Soon, (U)

JAN 69 4P Pfaffe.H. :
REPT. NO. FTD-WT-23-1477-68

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Edited trans. of Berliner Zeitung (East Germany) n188 p4 1968, by M. Balk.
DESCRIPTORS: (*SPACE STATIONS, FEASIBILITY STUDIES), (*SCIENTIFIC SATELLITES, USSR), STRUCTURAL MEMBERS, ASSEMBLY, MATERIALS, LABORATORIES, GRAVITY(ARTIFICIAL), COMMUNICATION SYSTEMS, LIFE SUPPORT, MANNED SPACECRAFT(U)
IDENTIFIERS: TRANSLATIONS (U)

A review of Soviet technical literature is reported on realizable designs for a step forward in the development of space exploration. Such a large space station could consist of a combination of solid and inflatable structural elements, assembled in orbit from structural sections of circular shape or with corners. It would be practical to rotate the station around its axis to generate an artificial gravity in the cabins and research rooms. The effect of the artificial gravity would be sufficient to allow a large number of scientists to work in such a station. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07
AD- 860 371 21/2 21/9.1 22/2

ARNOLD ENGINEERING DEVELOPMENT CENTER ARNOLD AIR FORCE STATION TENN

Effects and Control of Contamination from a Scaled MOL Attitude Control Thruster in a Tangential Orientation. (U)

DESCRIPTIVE NOTE: Final rept. May-21 Dec 68,
OCT 69 111P Hill, David W., Jr.; Smith,
Dale K. :
REPT. NO. AEC-TR-69-146
CONTRACT: F42600-69-C-0001
PROJ: ARO-S8C721

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with ARO, Inc., Tullahoma, Tenn.
DESCRIPTORS: (*MANNED SPACECRAFT, ATTITUDE CONTROL SYSTEMS), (*SPACE STATIONS, LIQUID PROPELLANT ROCKET ENGINES), (*LIQUID PROPELLANT ROCKET ENGINES, COMBUSTION DEPOSITS), SPACE CAPSULES, MONOPROPELLANTS, CONTAMINATION, CRYOPUMPING, HEAT TRANSFER, PULSE DURATION MODULATION, COMBUSTION PRODUCTS, TEST METHODS
IDENTIFIERS: MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES), ROCKET EXHAUST (U)

A test was conducted to determine the effects of contamination produced by a 1-lb-scaled Manned Orbital Laboratory thruster. The test required pulsing the 1-lb attitude control thruster in its tangential position and determining the effects of contaminants from the thruster impinging on optical and thermal control surface test specimens located on a flat plate exposed to the thruster exhaust plume. The thruster was pulsed with durations of 20, 50, 100, and 1000 msec with 1000 msec off time at altitudes above 400,000 ft. In situ reflectance, emittance, and transmittance measurements were made on optical and thermal control surface test specimens under vacuum conditions and at atmospheric pressure. Pretest and posttest laboratory measurements were also made. Significant contamination was produced for the pulse-mode operation, and the amount of contamination produced decreased as the thruster pulse duration increased. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 860 050 21/2 22/4 22/2

AERJET-GENERAL CORP SACRAMENTO CALIF LIQUID ROCKET
DIVProgram Titan IIIM Standard Space Launch
Vehicle Component Development Report for the
Titan IIIM Stage I Combustion Chamber, (U)SEP 69 235P Nord.W. J. ;
REPT. NO. AGC-9180-941-DR-3
CONTRACT: AF 64(695)-941

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also AD-822 493L and AD-385
082L.

DESCRIPTORS: (*MANNED SPACECRAFT, LAUNCH VEHICLES),
(*SPACE STATIONS, LAUNCH VEHICLES), (*COMBUSTION
CHAMBERS, DESIGN), SPACE CAPSULES, ALLOYS,
MANUFACTURING, HEAT TRANSFER, STRESSES, FUEL INJECTION,
PROPELLANT CONTROL, STRUCTURAL PROPERTIES (U)
IDENTIFIERS: GEMINI; *GEMINI B PROJECT; *MANNED
ORBITAL LABORATORIES, NICKEL ALLOY HASTELLOY ALLOY X,
TITAN 3 (U)

The increased thrust, higher engine performance,
and greater reliability requirements of the Titan
IIIM engines for application to the Manned
Orbital Laboratory Program necessitated
extensive redesign of the thrust chamber assembly as
well as other major components for the Stage I
engine. The report encompasses the design and
development of the combustion chamber. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 859 551 22/2 20/4

MCDONNELL DCUGLAS ASTRONAUTICS CO ST LOUIS MO EASTERN
DIVGemini: B Aerodynamic Data Book. Volume
I. Aerodynamic Coefficients. (U)DEC 68 236P
REPT. NO. F203

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Revision of Report dated 8 Mar
67.

DESCRIPTORS: (*MANNED SPACECRAFT, AERODYNAMIC
CHARACTERISTICS), (*SPACE STATIONS, AERODYNAMIC
CHARACTERISTICS), TABLES(DATA), SPACE CAPSULES, DATA
TABLES, ASCENT TRAJECTORIES, ATMOSPHERE ENTRY, RETRO
ROCKETS, EXPERIMENTAL DATA, ADAPTERS, ABORT
IDENTIFIERS: *AERODYNAMIC CHARACTERISTICS, GEMINI,
*GEMINI B PROJECT, *MANNED ORBITING LABORATORIES,
*MOL(MANNED ORBITING LABORATORIES) (U)

The static and dynamic aerodynamic coefficients
that are required to define the aerodynamic behavior
of the several flight configurations of the Gemini
B System Segment of the USAF Manned
Orbiting Laboratory Program are presented in
graphical and tabular form. Sources of information
and methods used in deriving the final coefficients
are provided. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 859 311 14/2 22/2

DOUGLAS AIRCRAFT CO INC HUNTINGTON BEACH CALIF MISSILE AND SPACE SYSTEMS DIV

MOL Ground Test Plan. Qualification Test Plan. Sequence Number B286.

MAY 67 329P
REPT. NO. DAC-57178
CONTRACT: F04695-67-C-0029

(U)

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, CHECKOUT PROCEDURES), (*SPACE STATIONS, CHECKOUT PROCEDURES), SPACE CAPSULES, INSTRUCTION MANUALS, ENVIRONMENTAL TESTS, MAINTENANCE, TEST METHODS, GROUND SUPPORT EQUIPMENT (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

The document defines the qualification ground test program for the engineering development phase of the Manned Orbiting Laboratory (MOL) program. (Author) (U)

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AD- 859 127 22/2

GENERAL ELECTRIC CO PHILADELPHIA PA MISSILE AND SPACE DIV

Verification Test Plan for Environmental Control Unit CEI 109A. Data Item No. UT-454,

(U)

FEB 69 13P Fleckenstein, H. P. ;
CONTRACT: F04695-67-C-0018

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, CONTROLLED ATMOSPHERES), (*SPACE STATIONS, AIR CONDITIONING EQUIPMENT), SPACE CAPSULES, POWER EQUIPMENT, FUEL TANKS, SPACE ENVIRONMENTS, SOLAR RADIATION, REFRIGERATION SYSTEMS, HEATERS, TURBINES, ELECTRICAL EQUIPMENT, TEST METHODS, FLUID FILTERS, FUEL CONSUMPTION (U)
IDENTIFIERS: GEMINI, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

Testing was conducted during design and fabrication of first environmental control unit for design feasibility, verification, and design optimization purposes. These tests will help to determine the most effective method for flow, temperature, and humidity control, as well as the preliminary tests necessary for adjustment and calibration of the overall system. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 859 125 13/6 22/2

AMF YORK PA

Procedural Support Data MOL Mission Module
Transporter.

(U)

NOV 68 65P

REPT. NO. AMF-372-13008

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, TRANSPORTATION),
(*SPACE STATIONS, TRANSPORTATION), (*TRAILERS,
PERFORMANCE(ENGINEERING)), SPACE CAPSULES, GROUND
SUPPORT EQUIPMENT, MAINTENANCE, TEST METHODS, SUSPENSION
DEVICES, GEARS, BRAKES, HYDRAULIC EQUIPMENT, PNEUMATIC
DEVICES (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

The manual contains information pertaining to
ground system test procedures, operation and
maintenance of the MOL Mission Module
Transporter. The MOL Mission Module
Transporter (MMT) is a semi-trailer, which is
used to support and transport the MOL Mission
Module and accessory support equipment. A towing
vehicle (prime mover) is required to move the
MMT. It is designed for either day or night
operation over conventional highways and has the
capability of being loaded with the module onto a
C-133B aircraft for in-flight shipment.
(Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 859 098 5/1 14/4 22/2

GENERAL ELECTRIC CO PHILADELPHIA PA MISSILE AND SPACE
DIVQuality Assurance Plan for CRDL Item No.
R015. Data Item No. UR-418.

(U)

APR 69 131P

PROJ: MP-2973

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, QUALITY CONTROL),
(*SPACE STATIONS, QUALITY CONTROL), (*QUALITY CONTROL,
SPECIFICATIONS), SPACE CAPSULES, MANAGEMENT PLANNING AND
CONTROL, COST EFFECTIVENESS, DESIGN, INVENTORY CONTROL,
PRODUCTION CONTROL, PROCUREMENT, MANUFACTURING,
HANDLING, ENVIRONMENTAL TESTS, NONDESTRUCTIVE TESTING,
VISUAL INSPECTION, ELECTRICAL PROPERTIES, TEST METHODS,
TEST EQUIPMENT, LIFE EXPECTANCY, RELIABILITY,
PERFORMANCE(ENGINEERING), INDUSTRIAL TRAINING, PERSON (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORY, *MOL(MANNED ORBITING
LABORATORY) (U)

The MOL Quality Assurance Plan describes the
Quality program to be undertaken by the General
Electric Company Space Systems Organization
in the fulfillment of its MOL Phase II Contract
with the Space Systems Division of the United
States Air Force. The quality program is
designed to provide effective controls which will
result in contractually compliant end items in all
phases of the contract from customer specifications
through design, procurement, manufacture, test and
flight. The Quality Assurance Plan will
embody all the quality-related specifications and
documents negotiated in the MOL contract as being
applicable to the MOL Program. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07
AD- 859 096 22/4 14/2

GENERAL ELECTRIC CO PHILADELPHIA PA MISSILE AND SPACE
DIV

Checkout System Requirements CITE 400
A. (U)

MAR 69 83P

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, PAYLOAD), (*SPACE STATIONS, PAYLOAD), (*PAYLOAD, CHECKOUT EQUIPMENT), SPACE CAPSULES, COMPUTER PROGRAMMING, DIGITAL COMPUTERS, TELEMETRY SYSTEMS, COMMAND AND CONTROL SYSTEMS, POWER SUPPLIES, COMMUNICATION SYSTEMS, DISPLAY SYSTEMS, CONTROL PANELS, PROGRAMMING LANGUAGES, SPACE NAVIGATION, THERMAL PROPERTIES, VACUUM, RECORDING SYSTEMS
IDENTIFIERS: ENVIRONMENTAL CONTROL, GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

The specification establishes the requirements for performance of the checkout system used to perform tests on the mission payload systems segment of the Manned Orbiting Laboratory. It includes requirements for the checkout system used during environmental testing as well as during ambient testing. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07
AD- 859 095 22/4

SPACE AND MISSILE SYSTEMS ORGANIZATION LOS ANGELES AIR
FORCE STATION CALIF

MOL-CITE Hardware/Software Interface
Definition Document. Revision B. (U)

AUG 68 115P

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, TEST SETS), (*SPACE STATIONS, TEST SETS), COMPUTER PROGRAMMING, DIGITAL COMPUTERS, INTERFACES, CHECKOUT EQUIPMENT
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

The purpose of this document is to describe CITE hardware with respect to its interface with the CITE software. Included are short subsystem descriptions, lists and descriptions of computer-issued CITE commands and controls and CITE status acquisition commands, and descriptions of the CITE interface with computer memory and the interrupt subsystem. The document discusses each CITE subsystem separately. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 859 093

22/4

DOUGLAS AIRCRAFT CO INC HUNTINGTON BEACH CALIF MISSILE
AND SPACE SYSTEMS DIV

CITE Interfaces.

(U)

AUG 68 121P

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, TEST SETS), (*SPACE
STATIONS, TEST SETS), CHECKOUT EQUIPMENT,
INTERCOMMUNICATION SYSTEMS, INTERFACES, SPECIFICATIONS,
COMPUTER PROGRAMMING (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

The document provides interface specifications for
ground support equipment. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 859 092

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14/2

GENERAL ELECTRIC CO PHILADELPHIA PA MISSILE AND SPACE
DIV

Contract End Item Design Performance/
Verification. Test Procedures for MOL
Computer Integrated Test Equipment for
Mission Payload System Segment (MOL-CITE-
MPSS) CDR's Item No. T-050 Data Item No.
UT-451. (U)

APR 69 144P

UNCLASSIFIED REPORT

Availability: microfiche copies only.
DESCRIPTORS: (*MANNED SPACECRAFT, PAYLOAD), (*SPACE
STATIONS, PAYLOAD), (*PAYLOAD, CHECKOUT EQUIPMENT),
SPACE CAPSULES, TEST METHODS, DESIGN, COMPATIBILITY,
DIGITAL COMPUTERS, COMPUTER PROGRAMMING, VISUAL
INSPECTION, RELIABILITY, STANDARDS (U)
IDENTIFIERS: AEROSPACE VEHICLE EQUIPMENT, GEMINI,
*GEMINI B PROJECT, *MANNED ORBITING LABORATORIES,
*MOL(MANNED ORBITING LABORATORIES) (U)

The purpose of the document is to provide a
detailed procedure which specifies the test/analysis
to be conducted on the first article of each specific
configuration to verify the design compatibility with
the mission payload system segment, aerospace vehicle
equipment, and to verify that the design meets the
CEI specification requirements. (Author) (U)

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AD- 857 177 10/2 14/2 22/2

MCDONNELL CO ST LOUIS MO

Operation and Service Manual for Time Code
Generator 52E440027 and Timing Distribution
System 52E440065.

MAR 67 48P

REPT. NO. 85-10-118

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, GENERATORS), (*SPACE STATIONS, GENERATORS), (*TIMING DEVICES, INSTRUCTION MANUALS), SPACE CAPSULES, DESIGN, TOOL KITS, OPERATION, CALIBRATION, MAINTENANCE (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

The purpose of this space technical data report (STDR) is to familiarize personnel with the operation and service instructions for a timing distribution system and a time code generator. The STDR presents a description of the system, its controls and functions and servicing instructions for preventive maintenance. (Author) (U)

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AD- 857 176 10/2 22/2

MCDONNELL CO ST LOUIS MO

Operation and Service Manual for Spacecraft
Battery Charger 52E230075.

MAR 67 33P Cane, Paul T. ;

REPT. NO. 85-10-54

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, BATTERY CHARGERS), (*SPACE STATIONS, BATTERY CHARGERS), (*BATTERY CHARGERS, INSTRUCTION MANUALS), SPACE CAPSULES, DESIGN, OPERATION, CALIBRATION, MAINTENANCE, TEST METHODS, STORAGE (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

The purpose of the space technical data report (STDR) is to familiarize personnel with the operation and service instructions for a spacecraft battery charger. The STDR presents a description of the charger, its controls, and functions and the servicing instructions for preventive maintenance. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07
AD- 857 175 9/1 14/2 22/2

MCDONNELL CO ST LOUIS MO

Operation and Service Manual for Control
Relay EFC Tester 52E230014, (U)

FEB 67 35P Smith, Richard A. ;
REPT. NO. 85-10-49
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, ELECTRIC RELAYS),
(*SPACE STATIONS, ELECTRIC RELAYS), (*ELECTRIC RELAYS,
TEST EQUIPMENT), SPACE CAPSULES, CHECKOUT EQUIPMENT, (U)
INSTRUCTION MANUALS, DESIGN, OPERATION, MAINTENANCE, (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

The purpose of this space technical data report
(STDR) is to familiarize personnel with the
operation and service instructions for a control
relay, EFC (equipment functional check) tester.
The STDR presents a description of the unit, its
controls and functions, and servicing instructions
for preventive maintenance. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07
AD- 857 174 14/2 17/7 22/2

MCDONNELL CO ST LOUIS MO

Operation and Service Manual for IMU
Auxiliary Age Platform Alignment Mount
Reference 52E270006, IMU Test Point Panel
52E270008, Three-Axis Platform Dolly
52E270036, IMU Test Cable Set 52E270053, (U)

FEB 67 79P Price, Harry J. ;
REPT. NO. 85-10-59
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, STABILIZED PLATFORMS),
(*SPACE STATIONS, STABILIZED PLATFORMS), (*STABILIZED
PLATFORMS, CHECKOUT EQUIPMENT), SPACE CAPSULES,
INSTRUCTION MANUALS, ALIGNMENT, MAINTENANCE,
CALIBRATION, MIRRORS, ELECTRONIC EQUIPMENT, GYROSCOPE (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

The purpose of the report is to familiarize
personnel with the operation and service instructions
for the Inertial Measuring Unit (IMU)
Auxiliary Aerospace Ground Equipment (AGE).
The AGE comprises the following end items: the
Platform Alignment Mount Reference, the IMU
Test Point Panel, the Three-Axis Platform
Dolly, and the IMU Test Cable Set. The
report describes the AGE, their components and
functions. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 857 173 10/2 22/2

MCDONNELL CD ST LOUIS MO

Operation and Service Manual for ACPU EFC
Charger/Tester 52E270071, (U)JAN 67 41P Price, Harry J. ;
REPT. NO. 85-10-76
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, BATTERY CHARGERS),
(*SPACE STATIONS, BATTERY CHARGERS), (*BATTERY CHARGERS,
INSTRUCTION MANUALS), TEST EQUIPMENT, SPACE CAPSULES,
CABLE ASSEMBLIES, STORAGE BATTERIES, DESIGN, OPERATION,
CALIBRATION, MAINTENANCE (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *WOL(MANNED ORBITING
LABORATORIES) (U)

The purpose of the space technical data report
(STDR) is to familiarize personnel with the
operation and service of an auxiliary computer power
unit (ACPU) equipment functional checkout (EFC)
charger/tester. The STDR describes the charger/
tester, its panels, assemblies and functions.
(Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 857 172 14/2 19/1 22/2

MCDONNELL CC ST LOUIS MO

Operation and Service Manual for Portable
Pyrotechnic Tester 52E400004, (U)FEB 67 34P Smith, Richard A. ;
REPT. NO. 85-10-87
CONTRACT: FC4695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, EXPLOSIVES
INITIATORS), (*SPACE STATIONS, EXPLOSIVES INITIATORS),
(*EXPLOSIVES INITIATORS, TEST EQUIPMENT), SPACE
CAPSULES, INSTRUCTION MANUALS, CHECKOUT EQUIPMENT,
CONTROL PANELS, ELECTRIC CABLES, ADAPTERS, ELECTRICAL
PROPERTIES, FIRING CIRCUITS (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *WOL(MANNED ORBITING
LABORATORIES) (U)

The purpose of the report is to familiarize
personnel with the operation and service instructions
of the Portable Pyrotechnic Tester. The
report presents a description of the unit, its
controls and functions and servicing instructions for
preventive maintenance. (Author) (U)

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MCDONNELL DOUGLAS CORP ST LOUIS MO

Operation and Service Manual for PCM
Telemetry Ground Station 52E440011.

(U)

APR 68 526P
REPT. NO. B5-10-105
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, TELEMETER SYSTEMS),
(*SPACE STATIONS, TELEMETER SYSTEMS), (*TELEMETER
SYSTEMS, TEST EQUIPMENT), SPACE CAPSULES, INSTRUCTION
MANUALS, CONTROL PANELS, INDICATOR LIGHTS, MAINTENANCE,
CALIBRATION, GROUND SUPPORT EQUIPMENT (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

The purpose of the report is to familiarize
personnel with the operation and service of the PCM
Telemetry Ground Station. The report
describes the ground station equipment racks,
associated panels and their functions. This
equipment is used in conjunction with related
Aerospace Ground Equipment (AGE) to evaluate
telemetry transmissions from the spacecraft and to
verify the spacecraft telemetry equipment during
prelaunch testing. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 857 170 9/1 14/2 22/2

MCDONNELL CC ST LOUIS MO

Operation and Service Manual for Relay
Panel EFC Console 52E230010,

(U)

APR 67 66P Cowan, Jon M. ;
REPT. NO. B5-10-47
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, ELECTRIC RELAYS),
(*SPACE STATIONS, ELECTRIC RELAYS), (*ELECTRIC RELAYS,
RELIABILITY(ELECTRONICS)), SPACE CAPSULES, CONTROL
PANELS, POWER SUPPLIES, ELECTRICAL RESISTANCE,
MAINTENANCE, TEST EQUIPMENT, INSTRUCTION MANUALS (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

The purpose of the report is to familiarize
personnel with the operation and service of the
Relay Panel EFC Console. The report provides
a functional description of the console, functions of
switches, controls and indicators, and operation as
related to Equipment Function Checkout (EFC)
of relay panels in the Gemini B Spacecraft.
(Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 857 169 19/1 22/2

MCDONNELL CO ST LOUIS MO

Operation and Service Manual for Squib Simulator 52E400005.

(U)

JUN 67 28P

REPT. NO. 85-10-88

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, EXPLOSIVES INITIATORS), (*SPACE STATIONS, EXPLOSIVES INITIATORS), (*EXPLOSIVES INITIATORS, MODELS(SIMULATIONS)), SPACE CAPSULES, INSTRUCTION MANUALS, CONTROL PANELS, INDICATOR LIGHTS, MAINTENANCE, CALIBRATION, VOLTAGE (U)
 IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

The purpose of the report is to familiarize personnel with the operation and service instructions of the Squib Simulator. The report presents a description of the simulator, its panels and its function during simulated flight and stray voltage tests and servicing instructions for preventive maintenance. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 857 168 14/2 6/11 22/2

MCDONNELL DCUGLAS CORP ST LOUIS MO

Operation and Service Manual for Standard Temperature Monitor System 52E440044 and Harness Assembly 52E440033.

(U)

DESCRIPTIVE NOTE: Space technical date rept.,
 SEP 67 27P Long,Donald ;

REPT. NO. 85-10-107

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, CONTROLLED ATMOSPHERES), (*SPACE STATIONS, CONTROLLED ATMOSPHERES), (*DETECTORS, TEMPERATURE), SPACE CAPSULES, INSTRUCTION MANUALS, CONTROL PANELS, INDICATOR LIGHTS, MAINTENANCE, CALIBRATION, TEST EQUIPMENT (U)
 IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *VOL(MANNED ORBITING LABORATORIES) (U)

The purpose of the report (STDR) is to familiarize personnel with the operation and service instructions for the Standard Temperature Monitor System and the Standard Temperature Harness Assembly. The report describes the Monitor System and Harness Assembly, its panels, and functions as related to supplying a temperature reference for the spacecraft temperature sensors. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 857 167 14/2 17/7 22/2

MCDONNELL DOUGLAS CORP ST LOUIS MO

Operation and Service Manual for IMU
Pressurization Kit 52E270010.

(U)

DESCRIPTIVE NOTE: Space technical data rept.

SEP 68 22P

REPT. NO. B5-10-61

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, STABILIZED PLATFORMS),
(*SPACE STATIONS, STABILIZED PLATFORMS), (*STABILIZED
PLATFORMS, PRESSURIZATION), SPACE CAPSULES, INSTRUCTION
MANUALS, TEST EQUIPMENT, PRESSURE GAGES, MAINTENANCE, (U)
CALIBRATION, CHECKOUT EQUIPMENT
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

The purpose of the report is to familiarize
personnel with the operation and service instructions
for the Inertial Measuring Unit (IMU)
Pressurization Kit. The pressurization kit is
used to pressurize and/or re-pressurize the Gemini
B Spacecraft IMU package. The report
presents a description of the pressurization kit, its
controls and their functions, and servicing
instructions for preventive maintenance.
(Author) (U)

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AD- 857 166 14/2 17/7 22/2

MCDONNELL DCUGLAS CORP ST LOUIS MO

Operation and Service Manual for Computer
EFC Test Console 52E270023. Volume II.

(U)

JUN 68 411P

REPT. NO. B5-10-64-Vol-2

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 3, Part 1, AD-
856 793 and Volume 3, Part 2, AD-856 794.
DESCRIPTORS: (*MANNED SPACECRAFT, NAVIGATION COMPUTERS),
(*SPACE STATIONS, NAVIGATION COMPUTERS), (*NAVIGATION
COMPUTERS, CHECKOUT EQUIPMENT), SPACE CAPSULES,
INSTRUCTION MANUALS, CONTROL PANELS, INDICATOR LIGHTS,
MAINTENANCE, CALIBRATION, DIGITAL COMPUTERS, GROUND
SUPPORT EQUIPMENT, INERTIAL GUIDANCE, TEST EQUIPMENT (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

The purpose of Volume II of this Space
Technical Data Report (STDR) is to
familiarize personnel with the operation and service
instructions for the Test Program Console
(TPC) which is part of the Computer Equipment
Functional Checkout (EFC) Test Console.
The Computer EFC Test Console is a unit of
the Aerospace Ground Equipment (AGE) for the
Inertial Guidance System (IGS) and Digital
Computer used in the Gemini Spacecraft.
(Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 857 165 17/7 22/4

MCDONNELL DOUGLAS ASTRONAUTICS CO ST LOUIS MO EASTERN DIV

Operation and Service Manual for Computer System Test Console 52E270003. Volume 2. (U)

NOV 68 499P
 REPT. NO. 85-10-58-Vol-2
 CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 1, AD-856 791L.

DESCRIPTORS: (*MANNED SPACECRAFT, NAVIGATION COMPUTERS), (*SPACE STATIONS, NAVIGATION COMPUTERS), (*NAVIGATION COMPUTERS, TEST EQUIPMENT), CHECKOUT EQUIPMENT, GROUND SUPPORT EQUIPMENT, TEST SETS, INSTRUCTION MANUALS, SPACE CAPSULES (U)

IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

Volume II is to familiarize personnel with the operation and service instructions for the Computer System Test Console. This tester, commonly called the Test Console Computer System (TCCS), is a unit of the Aerospace Ground Equipment (AGE) used to control the Digital Computer portion of the Inertial Guidance System in the Gemini Spacecraft during system and pre-launch testing. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 857 164 22/2 14/2

MCDONNELL CC ST LOUIS MO

Operation and Service Manual for Thermocouple Checkout Box 52E440047, (U)

MAR 67 18P Smith, Richard A. ;
 REPT. NO. 85-10-113
 CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, THERMOCOUPLES), (*SPACE STATIONS, THERMOCOUPLES), (*THERMOCOUPLES, TEST EQUIPMENT), CHECKOUT EQUIPMENT, SPACE CAPSULES, INSTRUCTION MANUALS, CONTROL PANELS, OPERATION, MAINTENANCE, MOBILE, STORAGE, TEST METHODS IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

The purpose of the space technical data report (STDR) is to familiarize personnel with the operation and service of a thermocouple checkout box, used for testing spacecraft thermocouples and their associated wiring harnesses. The STDR describes the unit, its controls and their function and contains servicing instructions for preventive maintenance. (Author) (U)

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07
AD- 857 162 22/2

MCDONNELL DOUGLAS ASTRONAUTICS CO HUNTINGTON BEACH CALIF
WESTERN DIV

MOL Effectiveness Program Status Report.
First Quarter 1969. Sequence Number B428.
Data Item No. UR-116. (U)

MAY 69 58P
REPT. NO. DAC-62815
CONTRACT: F04695-67-C-0029

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Report dated 28 Feb 69,
AD-857 161L.

DESCRIPTORS: (*MANNED SPACECRAFT, REVIEWS), (*SPACE STATIONS, REVIEWS), SPACE CAPSULES, SCHEDULING, DESIGN, AERODYNAMIC CONFIGURATIONS, SPACECRAFT COMPONENTS, RELIABILITY, MAINTAINABILITY, ENVIRONMENTAL TESTS, HUMAN FACTORS ENGINEERING, QUALITY CONTROL (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

The report is issued quarterly and is intended as a narrative management summary document which discusses status and progress of significant Effectiveness Program activities. (Author) (U)

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07
AD- 857 161 22/2

MCDONNELL DOUGLAS ASTRONAUTICS CO HUNTINGTON BEACH CALIF
WESTERN DIV

MOL Effectiveness Program Status Report.
Fourth Quarter 1968. Sequence Number B428.
Data Item No. UR-116. (U)

FEB 69 52P
REPT. NO. DAC-62746
CONTRACT: F04695-67-C-0029

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Report dated 1 May 69,
AD-857 162L.

DESCRIPTORS: (*MANNED SPACECRAFT, REVIEWS), (*SPACE STATIONS, REVIEWS), SPACE CAPSULES, SCHEDULING, DESIGN, CONFIGURATION, CONTRACTS, QUALITY CONTROL (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

The report is issued quarterly and is intended as a narrative management summary document which discusses status and progress of significant Effectiveness Program activities. (Author) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 857 160	13/13	20/13	22/2
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MCDONNELL DOUGLAS ASTRONAUTICS CO HUNTINGTON BEACH CALIF
WESTERN DIV

MOL Preliminary Data Report of the MOL
Protuberance Heat Transfer Test (1A11).
Volume I. Data Item Number UT-132.

FEB 69 57P
REPT. NO. DAC-62731
CONTRACT: F04695-67-C-0029

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, EXTENDABLE STRUCTURES), (*SPACE STATIONS, EXTENDABLE STRUCTURES), (*EXTENDABLE STRUCTURES, AERODYNAMIC HEATING), SPACE CAPSULES, MODELS(SIMULATIONS), WIND TUNNELS, THERMOCOUPLES, EXPERIMENTAL DATA, TABLES(DATA), HEAT TRANSFER

IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES), SKIN(STRUCTURAL MEMBER)

Half-scale models of protuberances unique to the MOL vehicle were constructed and tested. These models included the thruster module assembly, VVSA fairing, and equipment fairing. In addition to these protuberances, a thin floor skin was also constructed. The model construction incorporated a precooling system wherein LN2 was circulated through the models prior to each run. (Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMQ7

AD- 857 153	9/1	22/2
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MCDONNELL CC ST LOUIS MO

Operation and Service Manual for Umbilical
Cable Tester 52E200004.

MAR 67 50P Petzold, Michael F. ;
 REPT. NO. 25-10-43
 CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, POWER SUPPLIES),
(*SPACE STATIONS, POWER SUPPLIES), (*ELECTRIC CABLES,
RELIABILITY/ELECTRONICS)), SPACE CAPSULES, INSTRUCTION
MANUALS, CONTROL PANELS, OPERATION, MAINTENANCE, TEST
METHODS, CALIBRATION, STORAGE, ELECTRIC CONNECTORS (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *VOL(MANNED ORBITING
LABORATORIES)

The purpose of the space technical data report (STDR) is to familiarize personnel with the operation and service of an umbilical cable tester. The STDR presents a description of the tester, its controls and functions, and servicing instructions for preventive maintenance. (Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 857 158 21/9.1 22/2

MCDONNELL CO ST LOUIS MO

Operation and Service Manual for Fuel and
Oxidizer Flush and Purge Units 52E420008,
52E420024.

(U)

APR 67 72P

REPT. NO. 85-10-93

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, LIQUID ROCKET
PROPELLANTS), (*SPACE STATIONS, LIQUID ROCKET
PROPELLANTS), (*LIQUID ROCKET PROPELLANTS, PURGING),
SPACE CAPSULES, LIQUID ROCKET OXIDIZERS, NITROGEN,
PROPELLANT TANKS, DRAINAGE, VALVES, MAINTENANCE, GROUND
SUPPORT EQUIPMENT, INSTRUCTION MANUALS (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

The purpose of the report is to familiarize
personnel with the operation and service instructions
for the Fuel Flush and Purge Unit and the
Oxidizer Flush and Purge Unit. The report
contains a description of the units, their controls
and functions; servicing instructions for preventive
maintenance; and applicable safety precautions
associated with their operation. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 857 157 14/2 17/7 22/2

MCDONNELL DOUGLAS CORP ST LOUIS MO

Operation and Service Manual for ACPU System
Tester 52E270086.

(U)

DESCRIPTIVE NOTE: Space technical data rept.

AUG 68 29P

REPT. NO. 85-10-77

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, NAVIGATION COMPUTERS),
(*SPACE STATIONS, NAVIGATION COMPUTERS), (*NAVIGATION
COMPUTERS, CHECKOUT EQUIPMENT), SPACE CAPSULES,
INSTRUCTION MANUALS, CONTROL PANELS, MAINTENANCE,
CALIBRATION, POWER SUPPLIES, TEST EQUIPMENT (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

The purpose of the report is to familiarize
personnel with the operation and service instructions
for the Auxiliary Computer Power Unit (ACPU)
System Tester. The ACPU System Tester is
used to functionally check the operation of the
auxiliary computer power unit in the spacecraft.
The report presents a description of the tester,
its controls and indicators, and service instructions
for preventive maintenance. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07
AD- 857 156 14/3 17/7 22/2

MCDONNELL CO ST LOUIS MO

Operation and Service Manual for Guidance and
Control Recorder Assembly 52E270062, (U)

FEB 67 55P Reynolds, H. ;
REPT. NO. 85-10-73
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, FLIGHT CONTROL
SYSTEMS), (*SPACE STATIONS, FLIGHT CONTROL SYSTEMS),
(*RECORDING SYSTEMS, INSTRUCTION MANUALS), SPACE
CAPSULES, DESIGN, CONTROL, OPERATION, TEST EQUIPMENT, (U)
MAINTENANCE, CHECKOUT PROCEDURES
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

The purpose of this space technical data report
(STR) is to familiarize personnel with the
operation and service instructions for a guidance and
control recorder assembly, used to record spacecraft
guidance and control system parameters during
spacecraft system tests and prelaunch operation.
The STR presents a description of the recorder,
its controls and functions, and servicing
instructions for preventive maintenance.
(Author) (U)

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AD- 857 155 14/2 6/11 22/2

MCDONNELL DUGLAS CORP ST LOUIS MO

Operation and Service Manual for First and
Second Stage Facility N2 Regulators
52E420136, 52E420056. (U)

DESCRIPTIVE NOTE: Space technical data rept.
AUG 68 28P
REPT. NO. 85-10-98
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, CONTROLLED
ATMOSPHERES), (*SPACE STATIONS, CONTROLLED ATMOSPHERES),
(*NITROGEN, CONTROL SYSTEMS), SPACE CAPSULES,
INSTRUCTION MANUALS, GROUND SUPPORT EQUIPMENT, DESIGN, (U)
SAFETY, OPERATION, CALIBRATION, MAINTENANCE
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES), REGULATORS (U)

The purpose of this space technical data report
(STR) is to familiarize personnel with the
operation and service instructions for two first and
second stage facility nitrogen regulators used to
reduce the facility nitrogen supply pressure for use
in the umbilical tower and environmental enclosure at
the launch site. The STR presents a description
of the units, their controls and functions and
servicing instructions for preventive maintenance.
(Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 857 154

22/2

MCDONNELL CO ST LOUIS MO

Operation and Service Manual for Attitude Indicator EFC Console 52E270035, (U)

JAN 67 68P McElvain, M. ;
 REPT. NO. 85-10-67
 CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, ATTITUDE CONTROL SYSTEMS), (*SPACE STATIONS, ATTITUDE CONTROL SYSTEMS), (*ATTITUDE CONTROL SYSTEMS, CHECKOUT EQUIPMENT), SPACE CAPSULES, INSTRUCTION MANUALS, CONTROL PANELS, GROUND SUPPORT EQUIPMENT, FLIGHT CONTROL SYSTEMS, MAINTENANCE, CALIBRATION (U)
 IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *VOL(MANNED ORBITING LABORATORIES) (U)

The purpose of the report is to familiarize personnel with the operation and service of the Attitude Indicator EFC Console. The report presents a description of the console, functions of its components, and preventive maintenance instructions. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 857 153

17/7 22/2

MCDONNELL CO ST LOUIS MO

Operation and Service Manual for Guidance and Control EFC Recorder 52E270069, (U)

JAN 67 27P Cowan, Jon M. ;
 REPT. NO. 85-10-75
 CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, FLIGHT CONTROL SYSTEMS), (*SPACE STATIONS, FLIGHT CONTROL SYSTEMS), (*RECORDING SYSTEMS, TEST EQUIPMENT), SPACE CAPSULES, INSTRUCTION MANUALS, CHECKOUT EQUIPMENT, CONTROL PANELS, GROUND SUPPORT EQUIPMENT, MAINTENANCE, CALIBRATION (U)
 IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *VOL(MANNED ORBITING LABORATORIES) (U)

The purpose of the report is to familiarize personnel with the operation and service of the Guidance and Control EFC Recorder. The report describes the console, its panels and its functions. The Guidance and Control EFC Recorder is used to record guidance and control parameters during EFC tests. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 857 152 9/1 22/2

MCDONNELL CO ST LOUIS MO

Operation and Service Manual for Ratiometer
52E440036, (U)

FEB 67 30P Petzold, Michael F. ;
REPT. NO. B5-10-108
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, TRANSDUCERS), (*SPACE STATIONS, TRANSDUCERS), (*TRANSDUCERS, CALIBRATION), SPACE CAPSULES, CHECKOUT EQUIPMENT, INSTRUCTION MANUALS, CONTROL PANELS, PRESSURE, MAINTENANCE (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES), *RATIOMETERS (U)

The purpose of the report is to familiarize personnel with the operation and service of the Ratiometer. The report presents a description of the unit, its controls and functions, and servicing instructions for preventive maintenance. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 857 151 14/2 22/2

MCDONNELL CO ST LOUIS MC

Operation and Service Manual for
Accelerometer Static Test Unit 52E440039. (U)

FEB 67 20P
REPT. NO. B5-10-110
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, ACCELEROMETERS), (*SPACE STATIONS, ACCELEROMETERS), (*CHECKOUT EQUIPMENT, INSTRUCTION MANUALS), SPACE CAPSULES, CALIBRATION, CONTROL PANELS, MAINTENANCE (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

The purpose of the report is to familiarize personnel with the operation and service of the accelerometer static test unit. The report presents a description of the unit, its controls and functions, and servicing instructions for preventive maintenance. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 857 149 9/5 17/7 22/2

MCDONNELL DOUGLAS CORP ST LOUIS MO

Operation and Service Manual for Computer
Data Display System 58E270803.

DEC 67 128P

REPT. NO. 85-10-81

CONTRACT: F04695-67-C-0023

(U)

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, NAVIGATION COMPUTERS),
(*SPACE STATIONS, NAVIGATION COMPUTERS), (*NAVIGATION
COMPUTERS, DISPLAY SYSTEMS), SPACE CAPSULES, TELEMETER
SYSTEMS, CHECKOUT PROCEDURES, SIMULATION, MONITORS,
INSTRUCTION MANUALS, DESIGN, OPERATION, TEST EQUIPMENT.
VISUAL INSPECTION, MAINTENANCE (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

This manual provides descriptive, operating, and
maintenance data for a computer data display system.
The manual is intended for use primarily by
technical personnel concerned with the operation and
maintenance of the CDDS. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 857 147 14/2 21/8.1 22/2

MCDONNELL DOUGLAS CORP ST LOUIS MO

Operation and Service Manual for Propulsion
Components EFC Console 52E420010.

JUN 68 96P

REPT. NO. 85-10-94

CONTRACT: F04695-67-C-0023

(U)

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, LIQUID PROPELLANT
ROCKET ENGINES), (*SPACE STATIONS, LIQUID PROPELLANT
ROCKET ENGINES), (*LIQUID PROPELLANT ROCKET ENGINES,
CHECKOUT EQUIPMENT), SPACE CAPSULES, INSTRUCTION
MANUALS, CONTROL PANELS, INDICATOR LIGHTS, MAINTENANCE,
CALIBRATION, PNEUMATIC DEVICES, HYDRAULIC EQUIPMENT (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

The purpose of the report is to familiarize
personnel with the operation and service instructions
for the Propulsion Components Equipment
Functional Check (EFC) Console. The
Propulsion Components Adapter Kit,
description and operation are also provided due to
its integral relationship with the console. The
console and adapter kit are used to perform a
complete checkout of the Gemini B Propulsion
System components prior to installation into, or
after removal from the spacecraft. The report
presents a description of the units, their controls
and functions, as related to equipment functional
testing, and servicing instructions for preventive
maintenance. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 857 146 10/3 14/2 22/2

MCDONNELL CO ST LOUIS MO

Operation and Service Manual for Spacecraft
Battery Balancing Unit 52E230131.

(U)

FEB 67 33P

REPT. NO. 85-10-56

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, STORAGE BATTERIES),
(*SPACE STATIONS, STORAGE BATTERIES), (*CHECKOUT
EQUIPMENT, INSTRUCTION MANUALS), SPACE CAPSULES, TEST
EQUIPMENT, CONTROL PANELS, MAINTENANCE (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

The purpose of the report is to familiarize
personnel with the operation and service instructions
of the Spacecraft Battery Balancing Unit.
The report presents a description of the unit, its
controls and functions, servicing instructions for
preventive maintenance. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 857 145 14/2 17/2.1 22/2

MCDONNELL DCUGLAS CORP ST LOUIS MO

Operation and Service Manual for HF and
Audio EFC Test Bench 52E19001.

(U)

SEP 67 143P

Long, Donald ;

REPT. NO. 85-10-34

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, TRANSMITTER
RECEIVERS), (*SPACE STATIONS, TRANSMITTER RECEIVERS),
(*TRANSMITTER RECEIVERS, TEST EQUIPMENT), SPACE
CAPSULES, INSTRUCTION MANUALS, COMMUNICATION AND RADIO
SYSTEMS, VOICE COMMUNICATIONS, HIGH FREQUENCY, GROUND
SUPPORT EQUIPMENT, CONTROL PANELS, INDICATOR LIGHTS,
MAINTENANCE, CALIBRATION (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

The purpose of the report is to familiarize
personnel with the operation and service instructions
for the HF and Audio EFC Test Bench. The
report describes the test bench, its panels, and
functions as related to Equipment Functional
Checkout (EFC) of the Gemini B Voice
Control Center (VCC) and the spacecraft HF
Voice Transmitter/Receiver. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07
AD- 857 144 22/2

MCDONNELL DOUGLAS CORP ST LOUIS MO

Operation and Service Manual for Sequential
System Control and Monitor 52E230004,

(U)

OCT 67 82P McElvain, M. ;
REPT. NO. 85-10-45
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, CHECKOUT PROCEDURES),
(*SPACE STATIONS, CHECKOUT PROCEDURES), (*CHECKOUT
PROCEDURES, INSTRUCTION MANUALS), SPACE CAPSULES,
CONTROL PANELS, INDICATOR LIGHTS, MAINTENANCE,
CALIBRATION, CHECKOUT EQUIPMENT (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

The purpose of the report is to familiarize
personnel with the operation and service of the
Sequential System Control and Monitor. The
report describes the console, its panels, and its
functions. The console is used in conjunction with
related Aerospace Ground Equipment (AGE) to
control and monitor the Gemini B Sequential
System during spacecraft systems test.
(Author) (U)

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MCDONNELL DOUGLAS CORP ST LOUIS MO

Operation and Service Manual for ECS EFC
Coolant Bench 52E180013.

(U)

SEP 67 74P
REPT. NO. 85-10-15
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, COOLING), (*SPACE
STATIONS, COOLING), (*COOLING, CHECKOUT EQUIPMENT),
SPACE CAPSULES, INSTRUCTION MANUALS, CONTROL SYSTEMS,
NITROGEN, VALVES, MEASURING INSTRUMENTS, MAINTENANCE,
GROUND SUPPORT EQUIPMENT (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

The purpose of the report is to familiarize
personnel with the operation and service of the
Environmental Control System (ECS) Equipment
Functional Check (EFC) Coolant Bench.
The report presents a description of the test
bench, its controls and functions, and servicing
instructions for preventive maintenance.
(Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

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MCDONNELL CO ST LOUIS MO

Operation and Service Manual for DC-DC Converter EFC Console 52E440008, (U)

FEB 67 70P Cowan,Jon M. ;
 REPT. NO. 85-10-104
 CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, DC TO DC CONVERTERS), (*SPACE STATIONS, DC TO DC CONVERTERS), (*CHECKOUT EQUIPMENT, INSTRUCTION MANUALS), SPACE CAPSULES, CONTROL PANELS, INDICATOR LIGHTS, MAINTENANCE, CALIBRATION (U)
 IDENTIFIERS: ELECTRIC CONVERTERS, GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

The purpose of the report is to familiarize personnel with the operation and service of the DC-DC Converter EFC Console. The report provides a functional description of the console, functions of switches, controls and indicators, and operation as related to Equipment Function Checkout (EFC) of the Instrumentation DC-DC Converters of the Gemini B Spacecraft. (Author) (U)

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AD- 857 141 17/7 14/2 22/2

MCDONNELL CO ST LOUIS MO

Operation and Service Manual for IMU EFC Test Console 52E270032, (U)

MAR 67 200P Cowan,Jon M. ;
 REPT. NO. 85-10-65
 CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

Availability: Microfiche copies only.
 DESCRIPTORS: (*MANNED SPACECRAFT, STABILIZED PLATFORMS), (*SPACE STATIONS, STABILIZED PLATFORMS), (*INERTIAL GUIDANCE, TEST EQUIPMENT), SPACE CAPSULES, INSTRUCTION MANUALS, DESIGN, OPERATION, CALIBRATION, MAINTENANCE, MONITORS (U)
 IDENTIFIERS: GEMINI, *GEMINI B PROJECT, INERTIAL MEASURING UNITS, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES); (U)

The purpose of this space technical data report (STDR) is to familiarize personnel with the operation and service of an inertial measuring unit (IMU) equipment functional check (EFC) console. The STDR describes the console, its panels, and its functions. The console is used to perform EFC testing of the IMU System components. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 857 140 14/2 22/2

MCDONNELL CO ST LOUIS MO

Operation and Service Manual for Time
Reference System EFC Console 52E270012,

(U)

JAN 67 132P Price, Harry J. ;
REPT. NO. 85-10-62
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, TIMING DEVICES),
(*SPACE STATIONS, TIMING DEVICES), (*TIMING DEVICES,
MONITORS), SPACE CAPSULES, CONTROL PANELS, CHECKOUT
EQUIPMENT, ELECTRONIC EQUIPMENT, INSTRUCTION MANUALS,
GROUND SUPPORT EQUIPMENT, DESIGN, TEST EQUIPMENT, TOOL
KITS, OPERATION, CALIBRATION, MAINTENANCE (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

The purpose of this space technical data report
(STD8) is to familiarize personnel with the
operation and service of a time reference system
(TRS) equipment functional checkout (EFC)
console. This STD8 describes the console, its
panels and its functions. The console is used in
conjunction with related aerospace ground equipment
(AGE). (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 857 139 6/11 14/2 22/2

MCDONNELL DOUGLAS ASTRONAUTICS CO ST LOUIS MO EASTERN
DIV

Operation and Service Manual for ECS EFC High
Pressure Bench 52E180011. (U)

NOV 68 66P
REPT. NO. 85-10-14
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, CONTROLLED
ATMOSPHERES), (*SPACE STATIONS, CONTROLLED ATMOSPHERES),
(*CHECKOUT EQUIPMENT, INSTRUCTION MANUALS), SPACE
CAPSULES, PRESSURE, TEST EQUIPMENT, CONTROL PANELS,
MAINTENANCE, MEASURING INSTRUMENTS, VALVES (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

The purpose of the report is to familiarize
personnel with the operation and service of the
Environmental Control System (ECS) Equipment
Functional Check (EFC) High Pressure Bench.
The report presents a description of the test
bench, its controls and functions, and servicing
instructions for preventive maintenance.
(Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 857 138 6/11 22/2

MCDONNELL DOUGLAS ASTRONAUTICS CO ST LOUIS MO EASTERN DIV

Operation and Service Manual for ECS Primary
O2 and Water System Low Pressure Leak
Rate Tester 52E180194.

DEC 68 26P
REPT. NO. 85-10-32
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, CONTROLLED ATMOSPHERES). (*SPACE STATIONS, CONTROLLED ATMOSPHERES). (*LEAKAGE(FLUID), CHECKOUT PROCEDURES), SPACE CAPSULES, INSTRUCTION MANUALS, OXYGEN, WATER, CONTROL SYSTEMS, PRESSURE, CONTROL PANELS, MAINTENANCE, CHECKOUT EQUIPMENT, SPACECRAFT COMPONENTS (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

The purpose of the report is to familiarize personnel with the operation and service instructions for the Environmental Control System (ECS) Primary O2 and Water System Low Pressure Leak Rate Tester. The two configurations are physically and functionally identical. The report presents a description of the tester, its control and indicator functions, and service instructions for preventive maintenance. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 857 137 14/2 6/11 22/2

MCDONNELL DOUGLAS ASTRONAUTICS CO ST LOUIS MO EASTERN DIV

Operation and Service Manual for ECS Primary
O2 System High Pressure Leak Rate
Tester 52E180193.

DESCRIPTIVE NOTE: Space technical data rept.
DEC 68 21P
REPT. NO. 85-10-20
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, CONTROLLED ATMOSPHERES). (*SPACE STATIONS, CONTROLLED ATMOSPHERES). (*OXYGEN, LEAKAGE(FLUID)), SPACE CAPSULES, INSTRUCTION MANUALS, CONTROL PANELS, MAINTENANCE, CALIBRATION, TEST EQUIPMENT, PRESSURE GAGES (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

The purpose of the report is to familiarize personnel with the operation and service instructions for the Environmental Control System (ECS) Primary O2 System High Pressure Leak Rate Tester. The tester consists of two carrying cuses and is used to determine spacecraft ECS leakages. The report presents a description of the tester, its control and indicator functions, and service instructions for preventive maintenance. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 857 031 22/3 22/2 17/7 9/2

MCDONNELL DOUGLAS ASTRONAUTICS CO ST LOUIS MO EASTERN DIV

Description of Retrograde Time Predict and Orbit Navigation Simulation Program (KAK2) Gemini B. (U)

DESCRIPTIVE NOTE: Guidance and Control Mechanics technical note,

APR 68 35P Carter, J. P. ;
 REPT. NO. McDonnell Douglas-GCTN-73

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, TRANSFER TRAJECTORIES), (*SPACE STATIONS, TRANSFER TRAJECTORIES), (*NAVIGATION COMPUTERS, COMPUTER PROGRAMMING), SPACE CAPSULES, ORBITS, ATMOSPHERE ENTRY, RETRO ROCKETS, TIME, MATHEMATICAL PREDICTION, LANDING FIELDS, COMPUTER PROGRAMS, SOFT LANDINGS, SIMULATION (U)
 IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

The report describes the digital program that has been developed to evaluate the orbit navigation and retrograde time prediction modes of the Gemini B computer software. The formulation of the program performs the same functions (in fortran computer language) as the orbit navigation (ONAV) and retrograde time prediction (RTP) modes. In addition, this program provides the capability to determine retrograde times to land at particular landing sites and can be used, in general, for mission planning purposes. (Author) (U)

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AD- 857 030 22/3 22/2 9/2

MCDONNELL DOUGLAS ASTRONAUTICS CO ST LOUIS MO EASTERN DIV

Program Description for Digital Six-Degree-of-Freedom Reentry Simulation. Gemini B. (U)

DESCRIPTIVE NOTE: Guidance and Control Mechanics technical note,

JAN 69 104P Kraemer, J. W. ;
 REPT. NO. McDonnell Douglas-GCTN-87

UNCLASSIFIED REPORT

Availability: Microfiche copies only.
 DESCRIPTORS: (*MANNED SPACECRAFT, DESCENT TRAJECTORIES), (*SPACE STATIONS, DESCENT TRAJECTORIES), (*ATMOSPHERE ENTRY, COMPUTER PROGRAMMING), SPACE CAPSULES, SIMULATION, INERTIAL NAVIGATION, TERMINAL GUIDANCE, DIGITAL SYSTEMS, ATTITUDE CONTROL SYSTEMS, AERODYNAMIC LOADING, COMPUTER PROGRAMS (U)
 IDENTIFIERS: CLOSED LOOP SYSTEMS, CONTROL, CONTROL SYSTEMS, GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES), SIX DEGREES OF FREEDOM (U)

The report describes a six-degree-of-freedom digital program which is used for simulation of Gemini B reentry and serves as a reference and users guide for the reentry simulation program. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 857 026 13/6 22/2

GENERAL ELECTRIC CO PHILADELPHIA PA MISSILE AND SPACE DIV

Age CEI Design/Performance Verification
Test Plan for CEI No. MOL 104A.
Transporter - Mission Module for the Manned
Orbiting Laboratory (MOL) System. CDRL
Item No. T014/UT-454.

(U)

MAR 69 9P

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, TRANSPORTATION),
(*SPACE STATIONS, TRANSPORTATION), (*TRAILERS,
SPECIFICATIONS), SPACE CAPSULES, TOWED VEHICLES,
CONTROLLED ATMOSPHERES, DETECTORS, SUSPENSION DEVICES,
VEHICLE BRAKES, TEST METHODS, SPECIFICATIONS (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES. *MOL(MANNED ORBITING
LABORATORIES) (U)

The report presents a summary of the overall test
program for the Transporter - Mission Module.
The test plan is based upon the requirements of
CEI Specification CP2004A Part I, dated
19 September 1968. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 857 021 22/4 9/2

GENERAL ELECTRIC CO PHILADELPHIA PA MISSILE AND SPACE DIV

Item Test Plan AGE Test Support
Programs. CEI No. MOL805A. CDRL Item
TBD T086. Data Item No. UT-467.

(U)

JUL 68 39P
REPT. NO. 68SD8056

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, COMPUTER PROGRAMMING),
(*SPACE STATIONS, COMPUTER PROGRAMMING), CHECKOUT
PROCEDURES, SPECIFICATIONS, GROUND SUPPORT EQUIPMENT (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

This document presents CEI MOL 805A, that plan
which establishes the detailed requirements,
criteria, general methods, responsibilities and
overall planning to confirm that the CEI fulfills
the specification. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07
AD- 857 020 22/4 9/2

GENERAL ELECTRIC CO PHILADELPHIA PA MISSILE AND SPACE
DIV

Item Test Plan (Computer Program) for
CEI No. MOL801A. Cite Diagnostic and
Operational Readiness Programs. CDRL Item
No. 8038. Data Item No. UT-413. (U)

JUN 68 13P
REPT. NO. SW2482

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, COMPUTER PROGRAMMING),
(*SPACE STATIONS, COMPUTER PROGRAMMING), CHECKOUT
PROCEDURES, SPECIFICATIONS, GROUND SUPPORT EQUIPMENT (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

The purpose of this Item Test Plan is to
establish the detailed requirements, criteria,
general methods, responsibilities, and overall
planning for the verification of compliance with
design/performance requirements for the Computer
Integrated Test Equipment (CITE) Diagnostic
and Operational Readiness Program (DORP),
CEI No. MOL801A, for the MOL-CITE-MPSS
Checkout System. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07
AD- 857 019 22/4 9/2

GENERAL ELECTRIC CO PHILADELPHIA PA MISSILE AND SPACE
DIV

Computer Program Category I Test Plan for
CEI MOL809A. CDRL Item T108. Data
Item No. UT-467. (U)

APR 68 35P
REPT. NO. 69SD8040

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, COMPUTER PROGRAMMING),
(*SPACE STATIONS, COMPUTER PROGRAMMING), CHECKOUT
PROCEDURES, SPECIFICATIONS, GROUND SUPPORT EQUIPMENT (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

This test plan reflects the total testing of CEI
MOL809A that is required for acceptance.
(Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 857 017 22/2 22/4

GENERAL ELECTRIC CO PHILADELPHIA PA MISSILE AND SPACE DIV

GE-AVE Maintainability Program Plan. CDRL
Item No. R014. Data Item No. UR-
417. (U)

MAR 69 23P
REPT. NO. 69SD8025

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, SPACECRAFT COMPONENTS), (*SPACE STATIONS, MAINTAINABILITY), SPACE CAPSULES, GROUND SUPPORT EQUIPMENT, QUALITY CONTROL, MAINTENANCE, MANAGEMENT PLANNING AND CONTROL, HUMAN FACTORS ENGINEERING, VALUE ENGINEERING, INTERFACES, SCHEDULING (U)
IDENTIFIERS: AEROSPACE VEHICLE EQUIPMENT, AVE(AEROSPACE VEHICLE EQUIPMENT), GEMINI, *GEMINI B PROJECT, MAINTENANCE ANALYSIS, MANAGEMENT INFORMATION SYSTEMS, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

The purpose of this report is to provide a description of how the contractor plans to develop and conduct the maintainability program for the Mission Module System Segment (MMSS-AVE) and to identify the products of such a plan. The concepts and subsequent delineated plan reflect the planning and progress in the maintainability area to assure that all contractual commitments are met. The plan contains a description of the tasks and activities to be performed and the methods to be employed for evaluation of on-orbit and ground maintenance as an integral part of the system effectiveness effort during the design and development phase. In addition, a demonstration plan is included which establishes the means and schedule to verify compliance with required contractual requirements. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 857 015 22/4 9/2

GENERAL ELECTRIC CO PHILADELPHIA PA MISSILE AND SPACE DIV

Item Test Procedures for CEI No.
MOL805A. Age Test Support Programs.
CDRL Item 1087. Data Item No. UT-
468. (U)

FEB 69 26P
REPT. NO. SW2492

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, COMPUTER PROGRAMMING), (*SPACE STATIONS, COMPUTER PROGRAMMING), CHECKOUT PROCEDURES, SPECIFICATIONS, GROUND SUPPORT EQUIPMENT (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

This document includes all the Category I test procedures required to qualify CEI MOL805A. AGE Test Support Programs. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 857 014 13/1 22/2

GENERAL ELECTRIC CO PHILADELPHIA PA MISSILE AND SPACE DIV

CDRL Acceptance Test Plan for Environmental Monitor Unit. Sequence Number T056. Data Item Number UT455. (U)

JAN 69 20P Hillman, R. F. ;

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, AIR CONDITIONING EQUIPMENT). (*SPACE STATIONS, AIR CONDITIONING EQUIPMENT). (*AIR CONDITIONING EQUIPMENT, MONITORS), SPACE CAPSULES, TEMPERATURE, HUMIDITY, PRESSURE, ACCELERATION, VISUAL INSPECTION, DETECTORS, WARNING SYSTEMS (U)
IDENTIFIERS: *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

The function of the Environmental Monitor Unit (EMU) is to sense, alarm and indicate or record the critical environmental parameters during all transport modes of the MOL Mission Module. The test plan describes the tests to which the Environmental Monitor Unit was subjected to verify its functional performance. (Author) (U)

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GENERAL ELECTRIC CO PHILADELPHIA PA MISSILE AND SPACE DIV

CDRL Acceptance Test Plan for Environmental Control Unit. Sequence Number T055. Data Item Number UT-455. (U)

MAR 69 17P Goodhart, F. W. ;

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, AIR CONDITIONING EQUIPMENT). (*SPACE STATIONS, AIR CONDITIONING EQUIPMENT), SPACE CAPSULES, GAS TURBINES, WEIGHT, VISUAL INSPECTION, CALIBRATION, LEAKAGE(FLUID), CONTROL SYSTEMS, ACCELERATION, HUMIDITY, TEMPERATURE, HEATERS, DUCTS, FANS, BLOWERS (U)
IDENTIFIERS: *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

The Environmental Control Unit is an enclosed self-contained system which conditions and circulates air to a shroud-enclosed spacecraft in a closed-loop circulating system in order to control the atmospheric conditions surrounding the spacecraft. The test plan describes the tests to which the Environmental Control Unit (ECU) was subjected to verify its functional performance. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 857 012 13/1 22/2

GENERAL ELECTRIC CO PHILADELPHIA PA MISSILE AND SPACE DIV

CDRL Validation Test plan for Environmental Monitor Unit. Sequence Number T016. Data Item Number UT454.

(U)

FEB 69 21P Trapani, R. G. ;
REPT. NO. 1585-ETP-066

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, AIR CONDITIONING EQUIPMENT), (*SPACE STATIONS, AIR CONDITIONING EQUIPMENT), (*AIR CONDITIONING EQUIPMENT, MONITORS), SPACE CAPSULES, TEMPERATURE, ELECTROMAGNETIC COMPATIBILITY, TEST METHODS, TEST EQUIPMENT, SAFETY, INSTRUCTION MANUALS, WARNING SYSTEMS
IDENTIFIERS: *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES)

(U)

(U)

The report describes the engineering test, utilizing expected extreme temperature and the electromagnetic interference test to be performed on the environmental monitoring unit. The report specifies the tests, test configurations required, test equipment and facilities.

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 903 22/1 22/2

MCDONNELL DOUGLAS ASTRONAUTICS CO ST LOUIS MO EASTERN DIV

Extravehicular Crew Transfer Test Report.

(U)

MAR 69 43P
REPT. NO. H018
CONTRACT: F01695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, *EXTRAVEHICULAR ACTIVITY), (*SPACE STATIONS, EXTRAVEHICULAR ACTIVITY), SPACE CAPSULES, FLIGHT TESTING, SPACE CREWS, SPACE TOOLS, PRESSURE SUITS, PERFORMANCE(ENGINEERING), PERFORMANCE(HUMAN), TRAINING
IDENTIFIERS: EVALUATION, GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES)

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This report contains the results of the third extravehicular crew transfer design and development test series whose objectives were to evaluate Gemini B EV crew transfer equipment, items requiring zero 'g' evaluation, crew ingress, and provide familiarization training for one MOL crewman. The Gemini B segment of the Extravehicular Crew Transfer Vehicle and the Ingress-Egress Vehicle were installed in a KC-135 at Wright-Patterson AFB. A total of 95 maneuvers were completed in three flights. Four crewmen participated in the tests wearing MOL Training pressure suit assemblies. (Author)

(U)

ODC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMD7

AD- 856 902	13/12	5/10	22/2
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MCDONNELL ASTRONAUTICS CO ST LOUIS MO

Analysis of Crew Escape Initiation Response Characteristics Form Titan IIM/Gemini 8 State 'O' Abort Simulation.

APR 68 158P
Seeney, P. J. ; Bull, R. F.

: Bauer, R. J. :

REPT. NO: MCASTRO-G151

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, AEROSPACE SYSTEMS), (*SPACE STATIONS, AEROSPACE SYSTEMS), (*AEROSPACE SYSTEMS, *PERFORMANCE(HUMAN)), SPACE CAPSULES, LAUNCH VEHICLES, SPACE CREWS, ABORT, ASCENT TRAJECTORIES, DISPLAY SYSTEMS, (U)DISPLAY SYSTEMS

IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES), TITAN 3

Extensive study during the USAF Manned Orbiting Laboratory (MOL) Program has identified situations and conditions during the ascent phase that will force a mission abort and has led to selection of crew escape procedures based on launch vehicle and spacecraft flight performance. The success of these procedures and the assurance of crew safety that they represent are highly dependent upon a precise sequence of events that is manually initiated by the crew. The primary objective was to evaluate the crew's capability to respond positively and accurately to initiate abort/escape action under simulated high stress conditions. The secondary objective was to evaluate the overall adequacy of the crew displays relative to malfunction monitoring during Stage 10 operation. The program objectives have been met by the simulation results. The capability of the crew to manually perform the abort/escape functions was established and the adequacy of the controls and displays was demonstrated. (Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

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MCDONNELL AIRCRAFT CO ST LOUIS MO

**Gemini 2 Re-Entry Module/Adapter
Attachment Raising Aerodynamic Heating and
Pressure Tests in the McDonnell
Hypervelocity Impulse Tunnel - Series I.**

(5)

MAY 68 333D

REPT. NO. MAC-0004-VOL-2

CONTRACT: FC4695-67-C-0523

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 1, AD-856 900.
Revision of report dated 29 Dec 67.

DESCRIPTORS: (PLANED SPACECRAFT, REENTRY VEHICLES).
(SPACE STATIONS, REENTRY VEHICLES). (*REENTRY VEHICLES.
*HYPERSONIC CHARACTERISTICS), SPACE CAPSULES, FAIRINGS,
AERODYNAMIC HEATING, AERODYNAMIC LOADING, AERODYNAMIC
CONFIGURATIONS, WIND TUNNEL MODELS, THERMAL

(3)

IDENTIFIERS: GEMINI, •GEMINI B PROJECT, •MANNED ORBITING LABORATORIES, •UNMANNED ORBITING LABORATORIES.

(3)

Tests of a 2 percent Gerani B model were conducted on the McDonnell Hypervelocity Impulse Facility. A total of 25 data producing shots were made at Mach numbers ranging from 13 to 17, and Reynolds numbers per foot ranging from 1.0×10^6 to the design power to 2.0×10^6 to the 6th power. The model was tested at angles of attack ranging from 160 to 170 degrees. The initial three test shots associated in determining the heat transfer and pressure distribution locations by determining the areas of high heating behind the lower re-entry module/adaptor fairing. This was accomplished by the use of thermographic phosphor temperature mapping techniques. The remaining 22 test shots determined the heat transfer rate and pressure distributions on the re-entry module in the area behind the noted fairing and along the windward centerline. (Author)

(5)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 899 14/2 22/2

MCDONNELL DOUGLAS ASTRONAUTICS CO ST LOUIS MO EASTERN DIV

Category I Test Plan Gemini B Procedures Simulator. (U)

SEP 68 SOP
REPT. NO. F650
CONTRACT: F4695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, SIMULATORS), (*SPACE STATIONS, SIMULATORS), (*SIMULATORS, ACCEPTABILITY), SPACE CAPSULES, CONTROL SIMULATORS, FLIGHT SIMULATORS, SPECIFICATIONS, TEST METHODS, PERFORMANCE(ENGINEERING), DESIGN IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

This report defines the examinations and tests which will be performed on the Gemini B Procedures Simulator (GBPS) during the Category I testing period. Category I tests are performed at the contractor's facility and upon successful completion will be the basis for acceptance of the GBPS for shipment to Vandenberg Air Force Base (VAFB) for Category II testing. (Author) (U)

SEARCH CONTROL NO. ZOM07

ST LOUIS MO

Category I Test Plan Gemini B Procedures Simulator. (U)

SEP 68 3753
REPT. NO. F650
CONTRACT: F4695-67-C-0023

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 2, AD-856 901. Revision of report dated 29 Dec 67. DESCRIPTORS: (*MANNED SPACECRAFT, REENTRY VEHICLES), (*SPACE STATIONS, REENTRY VEHICLES), (*REENTRY VEHICLES), *HYPERSONIC CHARACTERISTICS), SPACE CAPSULES, FAIRINGS, AERODYNAMIC HEATING, AERODYNAMIC LOADING, AERODYNAMIC CONFIGURATIONS, WIND TUNNEL MODELS, THERMAL CONDUCTIVITY, ANGLE OF ATTACK, TABLES(DATA) IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

Tests of a 9 percent Gemini B model were conducted in the McDonnell Hypervelocity Impulse Tunnel. A total of 25 data producing shots were made at Mach numbers ranging from 13 to 17, and Reynolds number per foot ranging from 1.0 X 10 to the 6th power to 2.0 X 10 to the 6th power. The model was tested at angles of attack of 160 deg, 165 deg, and 170 deg. The initial three test shots assisted in determining the heat transfer and pressure gage locations by determining the areas of high heating behind the lower re-entry module/adapter fairing. This was accomplished by the use of thermographic phosphor temperature mapping techniques. The remaining 22 test shots determined the heat transfer rate and pressure distributions on the re-entry module in the area behind the noted fairing and along the windward centerline. (Author) (U)

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AD- 856 898 9/2 22/2

MCDONNELL AIRCRAFT CO ST LOUIS MO

Item Test Plan (Computer Program)
Gemini B Procedures Simulator. Sequence
Number 29T. Data Item U-7-216.

DEC 67 38P
REPT. NO. MAC-F573
CONTRACT: F04695-67-C-0023

(U)

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with
Conductron-Missouri, St. Charles. Revision of
Report dated 1 Sep 67.
DESCRIPTORS: (*MANNED SPACECRAFT, SIMULATION). (*SPACE
STATIONS, SIMULATION). (*COMPUTER PROGRAMMING,
SIMULATION). SPACE CAPSULES, MATHEMATICAL MODELS, TEST
METHODS, ACCEPTABILITY, RELIABILITY (U)
IDENTIFIERS: GEMINI. *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES. *MOL(MANNED ORBITING
LABORATORIES) (U)

The plan for item testing of the Gemini P
Procedures Simulator (GBPS) Operational
Computer Program, CEI 58Y010A, is presented
in the report. The criteria and requirements for
qualification of the math models and routines which
comprise the GBPS Operational Computer Program
presented in section four of this report are designed
to verify fulfillment of the performance/design
requirements applicable to this computer program.
The general methods, responsibilities and overall
planning for implementation of this test plan are
presented. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07
AD- 856 897 14/2 22/2

MCDONNELL ASTRONAUTICS CO ST LOUIS MO

Gemini B Spacecraft Systems Test Plan.

(U)

APR 69 125P
REPT. NO. E217
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Revision of Report dated 31 May
68.

DESCRIPTORS: (*MANNED SPACECRAFT, TEST METHODS). (*SPACE
STATIONS, TEST METHODS). SPACE CAPSULES, TESTS,
SPECIFICATIONS, SAFETY, RELIABILITY, QUALITY CONTROL,
TEST EQUIPMENT, CHECKOUT PROCEDURES, SIMULATION, TEST
FACILITIES (U)
IDENTIFIERS: GEMINI. *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES), SPACECRAFT SYSTEMS TEST, SST(SPACECRAFT
SYSTEMS TEST) (U)

The spacecraft systems test (SST) plan as
outlined in the report constitutes the acceptance
test plan for the Gemini B spacecraft utilized in
the MOL program. The report is prepared in two
sections: Section I outlines the overall testing
plan on Gemini B spacecraft and Section II
provides a brief outline of each test. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 896 22/4 22/2

MCDONNELL CO ST LOUIS MO

RCS Propellant Tank Thermostat Test.

DESCRIPTIVE NOTE: Final rept.

MAY 68 16P

REPT. NO. 058-AWC.02

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, CHECKOUT EQUIPMENT),
(*SPACE STATIONS, CHECKOUT EQUIPMENT), (*CHECKOUT
EQUIPMENT, *THERMOSTATS), PROPELLANT TANKS, REENTRY
VEHICLES, FLUOROHYDROCARBONS, LIQUEFIED GASES,
NITROGEN (U)

IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

The propellant and oxidizer tanks of the Gemini
B Reentry Control System incorporate
thermostatically controlled heaters to maintain their
temperature within prescribed limits. Tests were
performed to develop a method to verify operation of
the thermostats while the tanks are installed in the
spacecraft. The tests showed that the thermostats
can be cooled to actuation temperature in four
minutes or less using cold nitrogen gas or a mixture
of Freon 12 and nitrogen. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 895 22/2 20/4

MCDONNELL CO ST LOUIS MO

Wind Tunnel Fluctuating Pressure Tests on a
10 Percent Scale Model of the Gemini B
Spacecraft at Ames Unitary Plan Wind
Tunnel. (U)

DESCRIPTIVE NOTE: Final rept..

OCT 67 51P Gregoine, J. E. ;

REPT. NO. 058-AVD.02

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Revision of report dated 1 Sep
67.

DESCRIPTORS: (*MANNED SPACECRAFT, BUFFETING), (*SPACE
STATIONS, BUFFETING), SPACE CAPSULES, PRESSURE, WIND
TUNNEL MODELS, SCALE, REENTRY VEHICLES, ADAPTERS,
AERODYNAMIC CHARACTERISTICS (U)

IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

A 10 percent scale model of the Gemini B
reentry module and adapter was tested in conjunction
with the Laboratory Vehicle. The test
encompassed a Mach number range of 0.6 through 2.4,
an angle-of-attack range -6 through 6 degrees and an
angle-of-sideslip range -4 through 10 degrees. The
purpose of the test was to obtain wideband buffeting
pressure data needed to perform structural response
analyses of the Gemini B adapter and laboratory
unpressurized forward skirt. Model fluctuating
pressure, schlieren, and tunnel pressure data were
recorded. Overall model sound pressure levels
(RMS) and tunnel conditions are tabulated in the
report for each data point taken. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 894 14/3 22/2

MCDONNELL CO ST LOUIS MO

Vibration Test of a 52-85713-339 Tape Recorder. Volume II.

(U)

DESCRIPTIVE NOTE: Final rept.

AUG 68 102P

REPT. NO. 058-AVB-07-Vol-2

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 1, AD-856 543.
DESCRIPTORS: (*MANNED SPACECRAFT, MAGNETIC RECORDING SYSTEMS), (*SPACE STATIONS, MAGNETIC RECORDING SYSTEMS), (*MAGNETIC RECORDING SYSTEMS, RELIABILITY(ELECTRONICS)), SPACE CAPSULES, ENVIRONMENTAL TESTS, VIBRATION, ACCEPTABILITY (U)

IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

The tape recorder operated mechanically throughout all tests of Revision A of the test request. The peak-to-peak jitter was 20% or higher during all tests. The Department 289 ground station was able to obtain good sync. only for the X-axis shock mounted test. Several signal improvement techniques were attempted both at the Department 289 ground station and at the GSO ground station. There was minor improvement at the Department 289 station and partial improvement at the GSO station. The GSO station improvement was large enough to have permitted manual data reduction had this been a mission tape. Paragraphs 1 thru 4 summarize the results of the test which was run per Revision A of the test request. Retest per Revision B of the test request was completed without mechanical failure. Jitter measured on data recorded during vibration periods was improved by a minimum of 25% over jitter measured in similar periods of the test run per Revision A of the test request. Data reduction however, was only slightly improved over that of Revision A data. The retest is summarized. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 892 13/1 22/2 20/13

MCDONNELL CO ST LOUIS MC

Interface Heat Exchanger Heat Transfer Element Test.

(U)

DESCRIPTIVE NOTE: Final rept.

AUG 68 28P

REPT. NO. 058-ATC.03

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, HEAT EXCHANGERS), (*SPACE STATIONS, HEAT EXCHANGERS), (*HEAT EXCHANGERS, HEAT TRANSFER COEFFICIENTS), SPACE CAPSULES, INTERFACES, COOLANTS (U)

IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

The Interface Heat Exchanger Coldplate, Part Number 58A831057, is a two-circuit coldplate for the Gemini B coolant system. The purpose of the test was to determine the heat transfer coefficient from the interface surface of the coldplate to the coolant fluid in each circuit for the nominal environmental control system operating conditions. The heat transfer coefficient (UA) for the primary circuit, at 140 lbs/hr coolant flow, was 131 Btu/hrF. For the secondary circuit at 140 lbs/hr the UA was 100 Btu/hrF. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 891 6/17 13/1 22/2

MCDONNELL CO ST LOUIS MO

Condensate Wetting of Suit Heat Exchanger Water Separator Plates.

(U)

DESCRIPTIVE NOTE: Final rept.

JUL 67 21P

REPT. NO. 058-ATC.02

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, HEAT EXCHANGERS), (*SPACE STATIONS, HEAT EXCHANGERS), (*HEAT EXCHANGERS, WETTING), (*PRESSURE SUITS, HEAT EXCHANGERS), SPACE CAPSULES, SPACE SIMULATION CHAMBERS, STORAGE IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

It is anticipated that the water separator plates in the suit heat exchanger will become dry during the orbital storage phase of the Gemini 'B' mission. Dry water separator plates provide a path for leakage of cabin atmosphere through the suit heat exchanger condensate outlet line to the water evaporator and then overboard through the relief valve. The purpose of this test was to determine the feasibility of wetting the water separator plates in a dry suit heat exchanger with the condensate normally collected within the unit. This was done by subjecting the heat exchanger to conditions that simulated its operation in the spacecraft and concurrently measuring the water output and gas leakage through the water separator plates. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 890 13/1 22/2 20/4

MCDONNELL CC ST LOUIS MC

Gemini B Interface Heat Exchanger Flow Distribution Test.

(U)

DESCRIPTIVE NOTE: Final rept.,

JAN 67 11P Bushey, C. E. ;

REPT. NO. 058-ATC.01

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Limited number of copies containing color other than black and white are available until stock is exhausted. Reproductions will be made in black and white only.

DESCRIPTORS: (*MANNED SPACECRAFT, HEAT EXCHANGERS), (*SPACE STATIONS, HEAT EXCHANGERS), (*HEAT EXCHANGERS, FLUID FLOW), SPACE CAPSULES, VELOCITY, DISTRIBUTION, CONFIGURATION, INTERFACES, COOLANTS, MODEL TESTS IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

A series of flow tests were conducted to determine the optimum header-core and flow path configuration for uniform velocity distribution through two different heat exchanger configurations, to aid in the design of the Gemini B/Laboratory interface heat exchanger. The flow tests consisted of flowing colored water through a visualization model of different proposed interface heat exchanger loop configurations at a Reynolds Number equivalent to that of coolant fluid flowing at 140 lb/hr and 70F. Motion pictures were taken into a mirror setup, to simultaneously record the flow distribution on both sides of the model. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 889 22/2 20/11

MCDONNELL AIRCRAFT CO ST LOUIS MO

Ultimate Internal and External Pressure Tests of the Reentry Module Structure (Pressure Test of Static Reentry Module I). Volume I.

(U)

FEB 69 28P
REPT. NO. MAC-058-ASB.05
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, REENTRY VEHICLES), (*SPACE STATIONS, REENTRY VEHICLES), (*SPACECRAFT CABINS, FAILURE(MECHANICS)), SPACE CAPSULES, PRESSURE, BUCKLING, RUPTURE, BEAMS(STRUCTURAL) (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

Results are presented for testing conducted to demonstrate the capability of the large pressure bulkhead and centerline beam of the Gemini B spacecraft to withstand ultimate burst pressure and ultimate collapse pressure. The large pressure bulkhead and centerline beam withstood the applied ultimate burst pressure and ultimate collapse pressure without any visible damage or deformation. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 888 1/3 22/2

MCDONNELL CC ST LOUIS MO

Static Test of Recovery Parachute Aft Bridle Fitting and Support Structure.

(U)

DESCRIPTIVE NOTE: Final rept.
MAR 69 21P
REPT. NO. 058-ASB.03
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, PARACHUTES), (*SPACE STATIONS, PARACHUTES), (*PARACHUTES, LOADS(FORCES)), SPACE CAPSULES, FITTINGS, RECOVERY, ATMOSPHERE ENTRY, SUPPORTS (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

Results are presented from a static test conducted to demonstrate the capability of the parachute aft bridle fitting backup structure to withstand the recovery parachute loads. The aft bridle fitting loads were of the same magnitude as those of NASA Gemini and the bridle fitting was identical to that of NASA Gemini. Modification to the fitting backup structure as a result of incorporating a hatch in the large pressure bulkhead was the reason for retesting this area. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 887 22/2

MCDONNELL CO ST LOUIS MO

Static Test of the Hoist Loop Support Fitting. (U)

DESCRIPTIVE NOTE: Final Rept.

MAR 69 17P

REPT. NO. 058-ASB.02

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, FITTINGS), (*SPACE STATIONS, FITTINGS), HOISTS, MECHANICAL CABLES, LOADS(FORCES) (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

Results are presented for a static test conducted to demonstrate the capability of the Gemini B hoist loop support fitting and backup structure to withstand the hoist loads. The Gemini B hoist loop support fitting has been completely redesigned in order to incorporate a hatch in the large pressure bulkhead. (Author) (U)

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AD- 856 886 22/2

MCDONNELL CO ST LOUIS MO

Heat Shield Hatch Acceptance Test for Functional Fit at Temperature. (U)

DESCRIPTIVE NOTE: Final rept.

MAR 69 17P

REPT. NO. 058-ARB.04.02

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, HATCHES), (*SPACE STATIONS, HATCHES), (*HATCHES, PERFORMANCE(ENGINEERING)), SPACE CAPSULES, HEAT SHIELDS, PARKING ORBIT TRAJECTORIES, TEMPERATURE, FASTENINGS, ACCEPTABILITY (U)
IDENTIFIERS: GAPS, GEMINI, *GEMINI B PROJECT, LATCHES, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

The heat shield hatch assembly for Gemini B is designed to provide access to the crew-transfer tunnel during the orbital phase of a mission. The hatch latching mechanism has been successfully tested previously at simulated altitude and temperature. The purpose of the testing described in this report was to demonstrate that there is an acceptable functional fit between the heat shield and the heat shield hatch at operating temperatures. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 885

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MCDONNELL CO ST LOUIS MO

Heat Shield Hatch Mechanism - Simulated
Altitude and Temperature Functional Test.

(U)

DESCRIPTIVE NOTE: Final rept.

AUG 68 107P

REPT. NO. 058-ARB.04

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, HATCHES). (*SPACE STATIONS, HATCHES). (*HATCHES. PERFORMANCE(ENGINEERING)). HEAT SHIELDS, SPACE ENVIRONMENTS, LOADS(FORCES). TORQUE, FASTENERS, LIFE EXPECTANCY, SIMULATION, ALTITUDE, TEMPERATURE IDENTIFIERS: GEMINI, *GEMINI B PROJECT, LATCHES. *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES)

(U)

The heat shield-hatch assembly for Gemini B is designed to provide access to the crew transfer tunnel during the orbital phase of a mission. The purpose of the testing was to demonstrate that the heat shield hatch latching mechanism would function satisfactorily in simulated orbital temperature and pressure environments. (Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 884

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MCDONNELL CO ST LOUIS MO

Hatch Actuator Breech Combustible Material
Evaluation.

(U)

DESCRIPTIVE NOTE: Final rept.

AUG 68 18P

REPT. NO. 058-AMD.01

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, HATCHES). (*SPACE STATIONS, ACTUATORS). SPECIFICATIONS, SPACE CAPSULES. AUTOIGNITION, PRESSURE, SPACE ENVIRONMENTS, CHEMICAL ANALYSIS, EXPLOSIVES IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES)

(U)

A series of tests was performed to confirm that the Gemini B Hatch Actuator Breech combustible compounds were representative of the NASA Gemini compounds and have properties that will preclude autoignition when exposed to the Gemini B high temperature and low pressure usage environment. Testing included high temperature-altitude soaks of Gemini B compounds and a chemical analysis of both Gemini B and NASA Gemini compounds. (Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 883

19/1 22/2

MCDONNELL CO ST LOUIS MO

FLSC Cutter Assembly/Dual Titanium Straps
Gap Test.

(U)

DESCRIPTIVE NOTE: Final rept.,

JUL 67 14P Fannsworth, Craig ;

REPT. NO. 058-AMA.08

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, EXPLOSIVE ACTUATORS),
(*SPACE STATIONS, EXPLOSIVE ACTUATORS), (*EXPLOSIVE
ACTUATORS, STAGING), SPACE CAPSULES, ADAPTERS, SHAPED
CHARGES, CUTTING, PERFORMANCE(ENGINEERING), TITANIUM (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

Six tests were conducted at ambient conditions to
evaluate the cutting performance of the NASA Gemini
52-72704 Flexible Linear Shaped Charge
(FLSC) Cutter Assembly with dual titanium
straps. One test was performed to demonstrate the
effective severance of a dual titanium strap assembly
with a thickness 123 percent of the nominal strap
thickness (0.071 inch). Five tests were
performed to evaluate depth of FLSC cutting as a
function of gap distance between the FLSC and the
strap. The cutter assembly was successfully
initiated, and the strap assembly was completely
severed during each test. FLSC cutting could not
be distinguished from shearing of the strap due to
hot gases and molten lead from the FLSC sheath
washing across the severed surfaces of the strap
assembly. The FLSC severance of straps
demonstrated a Gemini B performance margin of
2.70 minimum in terms of installation gap.
(Author) (U)

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MCDONNELL CO ST LOUIS MC

Gemini B Orbital Storage Test of Reentry
Control System Engine Propellant
Valves.

(U)

DESCRIPTIVE NOTE: Final rept.,

JUL 67 13P Shipp, R. W. ;

REPT. NO. 058-ALC.02

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, REENTRY VEHICLES),
(*SPACE STATIONS, REENTRY VEHICLES), (*REENTRY VEHICLES,
*PROPELLANT CONTROL), (*INTAKE VALVES,
PERFORMANCE(ENGINEERING)), SPACE CAPSULES, SPACE
ENVIRONMENTS, ROCKET ENGINES, THRUST VECTOR CONTROL
SYSTEMS, FLUID FLOW
IDENTIFIERS: COLD WELDING, GEMINI, *GEMINI B PROJECT,
*MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

These tests were conducted to determine the
possible cold welding effects, due to extended
storage in a simulated Gemini B high vacuum and
temperature environment, on a set of Gemini B
Reentry Control System Propellant Valves.
A functional test was performed to verify that the
valves operated within the applicable specification
limits at the beginning and end of the test series.
Results show no significant loss in valve
performance due to the valve storage and valve
cycling tests. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 881 21/2 22/2

MCDONNELL CO ST LOUIS MO

Subscale Rocket Impingement - Blast Shield
and Laboratory Tunnel Specimen.

(U)

DESCRIPTIVE NOTE: Final rept.

FEB 69 49P

REPT. NO. 058-AKA.05

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

Availability: Microfiche copies only.

DESCRIPTORS: (*MANNED SPACECRAFT, SOLID PROPELLANT
ROCKET ENGINES); (*SPACE STATIONS, SOLID PROPELLANT
ROCKET ENGINES); (*EXHAUST FLAMES, EROSION); SPACE
CAPSULES, SPACECRAFT COMPONENTS, AIRFRAMES, MODEL TESTS,
SHIELDING, STRAIN(MECHANICS), SEALS, HEAT EXCHANGERS,
ELECTRICAL EQUIPMENT, RETRO ROCKETS (U)

IDENTIFIERS: *BLAST SHIELDS, *CREW TRANSFER TUNNELS,
GEMINI, *GEMINI B PROJECT, *MODULAR CONSTRUCTION,
*MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

A test program was initiated to evaluate the
capability of representative samples of the Gemini
B Laboratory Module (LM) Transfer Tunnel
and Blast Shield to withstand the pressure,
temperature, and erosive environment caused by the
impingement of the exhaust plume of a subscale (500
pound thrust) solid propellant rocket motor. The
subscale rocket motors enabled the retrorocket local
ballistic properties to be duplicated, but did not
produce the total loading of a full scale retrorocket
motor. During this test program six tests were
performed, one using an LM transfer tunnel test
panel and five using blast shield test panels. In
addition, two trial tests were performed in order
that various pertinent test parameters could be
verified prior to the actual tests. (Author) (U)

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AD- 856 880 22/2 14/2

MCDONNELL CO ST LOUIS MO

Vibration Qualification Test of Shock
Mounted 52-88722-5 Low Range Pressure
Transducer Gemini B-GBQ.

(U)

DESCRIPTIVE NOTE: Final rept.

APR 69 60P

REPT. NO. 058-AHC.01

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, PRESSURE GAGES),
(*SPACE STATIONS, PRESSURE GAGES), (*PRESSURE GAGES,
RELIABILITY), SPACE CAPSULES, DETECTORS, PRESSURE,
ENVIRONMENTAL TESTS, VIBRATION, ACCEPTABILITY
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES), DETECTORS, PRESSURE (U)

Random vibration testing was conducted on a 52-
88722-5 Pressure Transducer to determine the
operating characteristics and the structural adequacy
of the pressure transducer while mounted on
isolators. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 879 13/11 22/2

MCDONNELL CO ST LOUIS MO

Functional Tests on Two Coolant Pump Assemblies.

(U)

DESCRIPTIVE NOTE: Final rept.,
 OCT 67 31P
 REPT. NO. 058-AEI.01.05
 CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, COOLANT PUMPS),
 (*SPACE STATIONS, COOLANT PUMPS), (*COOLANT PUMPS,
 SPECIFICATIONS), SPACE CAPSULES, ELECTRICAL PROPERTIES,
 FAILURE(ELECTRONICS), INVERTERS (U)
 IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
 ORBITING LABORATORIES, *MOL(MANNED ORBITING
 LABORATORIES) (U)

Two prototype coolant pump power inverters and two
 coolant pump assemblies were received with
 instructions to perform electrical tests. The
 tests, which also were performed with a sinusoidal
 power supply, were conducted to evaluate the
 operation of the bread boards with the coolant pumps.
 Two additional coolant pump cartridges were
 received for comparison test purposes with the
 original cartridges installed in the pump assemblies.
 (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 878 9/3 13/11 22/2

MCDONNELL CO ST LOUIS MC

Coolant Pump Power Inverter - Motor
 Running Characteristics.

(U)

DESCRIPTIVE NOTE: Final rept.,
 SEP 67 16P
 REPT. NO. 058-AEI.01.03
 CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, COOLANT PUMPS),
 (*SPACE STATIONS, COOLANT PUMPS), (*COOLANT PUMPS,
 *ELECTRIC MOTORS), SPACE CAPSULES, TORQUE, ELECTRICAL
 PROPERTIES, VELOCITY, INVERTERS (U)
 IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
 ORBITING LABORATORIES, *MOL(MANNED ORBITING
 LABORATORIES) (U)

Tests were conducted to establish the running
 characteristics of a motor used to drive the coolant
 pumps of the Environmental Control System in
 the Gemini spacecraft. Torque, input power, line
 to line voltage, and line current versus speed were
 measured for each of the six different power supplies
 are given. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 877 9/1 22/2

MCDONNELL CO ST LOUIS MO

Evaluation of Wire Characteristics for use on Gemini B. (U)

DESCRIPTIVE NOTE: Final rept., MAY 67 49P Raminand, J. B.; REPT. NO. 058-AED.01

UNCLASSIFIED REPORT

Availability: Microfiche copies only.
DESCRIPTORS: (*MANNED SPACECRAFT, ELECTRIC CABLES), (*SPACE STATIONS, ELECTRIC CABLES), (*ELECTRIC CABLES, RELIABILITY(ELECTRONICS)), SPACE CAPSULES, ELECTRIC CURRENTS, HIGH ALTITUDE, LIQUID IMMERSION TESTS, ELECTRIC INSULATION, DIELECTRIC PROPERTIES, FIRE SAFETY, GAS ANALYSIS, ACCEPTABILITY
IDENTIFIERS: EVALUATION, GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

Results are presented for a group of tests to determine the acceptability of wire bundles fabricated from Raychem 44 wire (with improved accessories), for use in Gemini B spacecraft. Three test specimens were subjected to a massive overload test (at 5.0 psia, 100 percent oxygen atmosphere); two specimens to an altitude immersion test (24 hours at 1.47 x 10 to the -5th power psia, 36 hour soak in simulated sea water); and two specimens to an insulation resistance test (500 Vdc). Each of the test specimens were also subjected to a preliminary dielectric breakdown test at 1500 Vrms. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 876 9/5 22/2

MCDONNELL CO ST LOUIS MO

G.B.Q. Antenna Tests. (U)

DESCRIPTIVE NOTE: Final rept., OCT 67 37P McKee, E. D.; REPT. NO. 058-ADA.04 CONTRACT: FO1695-67-C-0023

UNCLASSIFIED REPORT

Availability: Microfiche copies only.
DESCRIPTORS: (*MANNED SPACECRAFT, *SATELLITE ANTENNAS), (*SPACE STATIONS, SATELLITE ANTENNAS), SPACE CAPSULES, VERY HIGH FREQUENCY, ANTENNA RADIATION PATTERNS, MODEL TESTS
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES), *SPACECRAFT ANTENNAS, STUB ANTENNAS (U)

The purpose of the tests was to determine the radiation distribution of the nose stub antenna mounted on the Gemini Spacecraft with and without the nose fairing and ejection spring, for frequencies peculiar to the Gemini B Qualification vehicle (G.B.Q.). The tests were run at the VHF-Telemetry (259.7 MHz) and Command (X-3) frequencies. The tests were conducted at 500 feet using the ground level range technique with the reflection level reduced to 40 dB. The tests were conducted on a 1/3 scale model of the Gemini B Spacecraft with a section of the Manned Orbital Laboratory using right hand circular (RHC) polarization for VHF-Telemetry and left hand circular (LHC) polarization for the Command Frequency. The data results consists of Radiation Distribution Plots with information printed every two degrees of theta and every two degrees of phi with plus or minus 0.5 dB resolution. Polar plots for principal plane cuts and roll cuts every ten degrees of theta, with integration information for calculation of the isotropic level. Information for contour plots was taken from the RDP's. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 875 13/5 22/1 22/2

MCDONNELL DOUGLAS ASTRONAUTICS CO ST LOUIS MO EASTERN DIV

Extravehicular Crew Transfer Test Report
July 1968.

(U)

MAR 69 8P
REPT. NO. G525-ADJ-1
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Addendum to report dtd 12 Sep 68,
AD- 03 415.DESCRIPTORS: (*MANNED SPACECRAFT, *EXTRAVEHICULAR
ACTIVITY). (*SPACE STATIONS, EXTRAVEHICULAR ACTIVITY),
DESIGN, FLIGHT CREWS, UMBILICAL CORDS(AEROSPACE), FLIGHT
CLOTHING, ACCELERATION (U)IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *VOL(MANNED ORBITING
LABORATORIES) (U)

On 4 December 1968, a zero 'g' test was made at Wright-Patterson AFB to evaluate procedures and equipment. The test objectives were to evaluate: Alternate D-ring designs. EV ingress through the right hatch into the left seat with a ORC in the footwell. Push-off load test to determine maximum loads and velocities attained by crewman in inflated PSA. Two alternate D-ring designs were evaluated during the test, a pivoting slide and a slide loop. (Author)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 849 9/5 22/2

MCDONNELL CC ST LOUIS MO

Gemini B Antenna System Testing.

(U)

DESCRIPTIVE NOTE: Final rept.,

OCT 67 197P McKee, E. D. ;

REPT. NO. 058-ADA-03

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, *SATELLITE ANTENNAS),
(*SPACE STATIONS, SATELLITE ANTENNAS), SPACE CAPSULES,
ANTENNA RADIATION PATTERNS, VERY HIGH FREQUENCY, MODEL
TESTS (U)

IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *VOL(MANNED ORBITING
LABORATORIES), *SPACECRAFT ANTENNAS, STUB ANTENNAS (U)

The purpose of these tests was to determine the radiation distribution of the nose stub antenna mounted on the Gemini B Spacecraft. Tests were performed with and without the nose fairing and ejection spring, at the VHF-Voice (296.8 MHz) and the VHF-Recovery Beacon frequencies (243.0 MHz). Test tests were conducted at a range of 500 feet using the ground level range technique with the reflection level reduced to at least 40 db down. The tests were conducted on a 1/3 scale model of the Gemini B Spacecraft at 729.0 MHz linearly polarized for the Recovery Beacon, and on a 1/3 scale model of the Gemini B Spacecraft and the (Model used in Laboratory was only a section 21 feet long, the actual laboratory is considerably larger) Manned Orbital Laboratory at 830.4 MHz left hand circularly polarized for the VHF-Voice and Recovery Beacon frequencies for a linear signal in horizontal and vertical polarizations. The data results consists of Radiation Distribution Plots with information printed every two degrees of Theta and every two degrees of Phi with plus or minus 0.5 db resolution, polar plots for principal plane cuts and roll cuts for every ten degrees of Theta with integration information for calculation of the isotropic level, and punched tapes. Contour plots were drawn from information obtained from the RDP's. (Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 847 22/2

CONDUCTION-MISSOURI ST CHARLES

Gemini B Procedures Simulator Initial
Version Precision Qualification Test
Procedure CEI 58Y010A GPS Computer
Program,

(U)

MAY 69 37P Banner, Howard A. ;

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, *FLIGHT SIMULATORS),
(*SPACE STATIONS, FLIGHT SIMULATORS), (*COMPUTER
PROGRAMMING, CHECKOUT PROCEDURES), SPACE CAPSULES,
ASCENT TRAJECTORIES, ATMOSPHERE ENTRY, ORBITS, COMPUTER
PROGRAMMING, SPECIFICATIONS, REENTRY VEHICLES (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

The expected sequence of activities are: Orbital
test (nominal mission); Nominal/off-nominal
ascent test; and Reentry test. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 841 22/2 22/4

DOUGLAS AIRCRAFT CO INC HUNTINGTON BEACH CALIF MISSILE
AND SPACE SYSTEMS DIV

MOL Ground Test Plan, Acceptance Test
Plan, Volume I. Ave Components through
Subsystems and Age CEI's Sequence Number
B287. Data Item Number UT-101.

(U)

JUN 68 220P
REPT. NO. DAC-57109
CONTRACT: F03695-67-C-0029

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, SPACECRAFT
COMPONENTS), (*SPACE STATIONS, OPERATIONAL READINESS),
(*CHECKOUT PROCEDURES, OPERATIONAL READINESS), SPACE
CAPSULES, LANDING SITES, GROUND SUPPORT EQUIPMENT,
CONTROLLED ATMOSPHERES, CLOSED ECOLOGICAL SYSTEMS,
ELECTRICAL EQUIPMENT, COMMUNICATION SYSTEMS,
INSTRUMENTATION, ATTITUDE CONTROL SYSTEMS, MAINTENANCE,
TEST METHODS, INTERFACE (U)
IDENTIFIERS: DATA MANAGEMENT, GEMINI, *GEMINI B
PROJECT, MANAGEMENT INFORMATION SYSTEMS, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

This document is divided into four sections.
Section 1 describes the scope and purpose of the
document and defines the terms, procedures, controls,
and acceptance test documentation to be utilized.
Sections 2 and 3 contain the acceptance test
narrative descriptions, and Section 4 is the MOL
Test Summary for acceptance tests. (Author) (U)

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DEFENSE TECHNICAL INFORMATION CENTER ALEXANDRIA VA
SPACE STATIONS.(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 831 13/1 22/2

GENERAL ELECTRIC CO PHILADELPHIA PA MISSILE AND SPACE DIV

Critical Design Review Package for Environmental Control Unit CEI No. MGL-109A.

(U)

AUG 67 269P
REPT. NO. 67SD8106

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, AIR CONDITIONING EQUIPMENT), (*SPACE STATIONS, AIR CONDITIONING EQUIPMENT), (*AIR CONDITIONING EQUIPMENT, DESIGN), SPACE CAPSULES, EXHAUST SYSTEMS, DUCTS, GAS TURBINES, CAPACITORS, CONTROLLED ATMOSPHERES, FANS, FLUID FILTERS, BLOWERS, HEATERS

IDENTIFIERS: *AIR FLOW, *FLOW RATE, GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES)

(U)

The report contains the documentation to substantiate the concepts and adequacy of the Environmental Control Unit (ECU) designs. The environmental control unit provides heating or cooling of the Mission Module, it provides air at near-constant temperature and maintains pressure within the module at 5 plus or minus 3 inches of water above ambient at all normal operating conditions. (Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 820 22/2 22/4

MCDONNELL ASTRONAUTICS CO ST LOUIS MO

Gemini B Procedures Simulator, Performance/Design Requirements.

(U)

JUN 68 88P
REPT. NO. MCASTRO-E734
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Revision of report dated 1 Dec 66.

DESCRIPTORS: (*MANNED SPACECRAFT, *SIMULATORS), (*SPACE STATIONS, *SIMULATORS), (*LAUNCH VEHICLES, FLIGHT *SIMULATORS), SPACE CAPSULES, HUMAN FACTORS ENGINEERING, MISSION PROFILES, SIMULATION, SPACECRAFT COMPONENTS, TRAINING DEVICES, INTERFACES, SPECIFICATIONS

IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES), TITAN 3

(U)

The Gemini B Procedures Simulator (GBPS) will be used for training and procedures development for the Gemini B segment of the Manned Orbiting Laboratory (MOL) program. Set forth in this document are the performance and design requirements for the GBPS. (Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 819

13/12 22/2

MCDONNELL DOUGLAS ASTRONAUTICS CO ST LOUIS MO EASTERN DIV

Gemini B Safety Program Status Report.

(U)

FEB 69 19P

REPT. NO. H019-1

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, SAFETY), (*SPACE STATIONS, SAFETY), SPACE CAPSULES, HAZARDS, FLIGHT CREWS, OPERATION, ABORT, LAUNCHING, REPORTS

IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES)

(U)

(U)

Contents: Safety analyses; Fault hazard analysis; Fault tree analysis; Launch phase safety analysis; Pre-launch/launch operational hazard analysis; Crew safety numerics; Hazard numerics; Operating safety analysis; Interface data exchange; Safety documentation; Hazard reports; Gemini B system safety plan; Safety studies; Ascent aborts; Other studies.

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MCDONNELL ASTRONAUTICS CO ST LOUIS MO

Gemini B Flight Effectiveness Model Report,

(U)

APR 69 245P

Chochohousek, L. D. ;

REPT. NO. MCASTRO-F919

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, OPERATIONAL READINESS), (*SPACE STATIONS, OPERATIONAL READINESS), (*OPERATIONAL READINESS, *MANAGEMENT PLANNING AND CONTROL), SPACE CAPSULES, ELECTRICAL EQUIPMENT, INERTIAL GUIDANCE, CONTROL SYSTEMS, VOICE COMMUNICATIONS, LIFE SUPPORT, EXPLOSIVE ACTUATORS, RETRO ROCKETS, EJECTION SEATS, DISPLAY SYSTEMS, SOLID PROPELLANT ROCKET ENGINES, COMPUTER PROGRAMS

(U)

IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES), TITAN 3

(U)

The report presents the methodology and rationale used to develop quantitative probability estimates for the Gemini B Segment in support of the MOL Flight Effectiveness Model. (Author)

(U)

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 816 22/2 22/4

MCDONNELL ASTRONAUTICS CO ST LOUIS MO

Gemini B Mass Properties Report 3.3
Operational Support Plan for Remote Site
Phase.

(U)

JUN 68 9P
REPT. NO. MCASTRO-G294
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, LOAD DISTRIBUTION),
(*SPACE STATIONS, LOAD DISTRIBUTION), (*LOAD
DISTRIBUTION, CHECKOUT PROCEDURES), SPACE CAPSULES,
WEIGHT, CENTER OF GRAVITY, MISALIGNMENT, RETRO ROCKET(U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

The report presents the procedures for determining
and recording the mass property revisions resulting
from spacecraft changes implemented at the remote
site. The channels through which the data is to
proceed for rapid evaluation and incorporation are
outlined. The procedure which allows for the
contingency requirement to retarget the retrograde
rockets is presented along with the procedure for the
single point check weighing. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 815 5/1 22/2

MCDONNELL DOUGLAS ASTRONAUTICS CO ST LOUIS MO EASTERN
DIV

Gemini B Orbiting Vehicle Effectiveness
Assessment Plan Report.

(U)

DEC 68 20P
REPT. NO. McDonnell Douglas-G867
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, MANAGEMENT PLANNING
AND CONTROL), (*SPACE STATIONS, MANAGEMENT PLANNING AND
CONTROL), SPACE CAPSULES, QUALITY CONTROL, FAILURE,
DOCUMENTS, RELIABILITY, EFFECTIVENESS, SPACECRAFT
COMPONENTS (U)

IDENTIFIERS: FAILURE, RATES, F-25 MANAGEMENT
INFORMATION SYSTEMS, GEMINI, *GEMINI B PROJECT,
MANAGEMENT INFORMATION SYSTEMS, *MANNED ORBITING
LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

This report supplements Report F919, 'Gemini
B Flight Effectiveness Model Report' and is
used in conjunction with F919 to develop the
numerics necessary for presentation in the DV
Effectiveness Assessment. The procedures,
ground rules and assumptions used in the development
of the numerics from receipt of raw data through
transmittal of the resultant assessment, are
presented. Finally, the various steps of
assessment to be followed, dependent upon the status
of the equipment at a given time and the
applicability of test data are defined.
(Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 814 13/12 22/2

MCDONNELL ASTRONAUTICS CO ST LOUIS MO

Gemini B Oxygen Safety Study. Volume
V. Cabin Egress.

(U)

MAY 67 46P

REPT. NO. MCASTRO-F-415-Vol-5
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 4, AD-856 813L and Volume 6, AD-856 862L.
 DESCRIPTIONS: (*MANNED SPACECRAFT, AEROSPACE SYSTEMS), (*SPACE STATIONS, AEROSPACE SYSTEMS), (*AEROSPACE SYSTEMS, RELIABILITY), SPACE CAPSULES, CONFIGURATION, TEST METHODS, ACTUATORS, SPACECRAFT SEATS, OXYGEN MASKS, SPACE CREWS, (U)SPACE CREWS (U)
 IDENTIFIERS: *EMERGENCIES, *ESCAPE SYSTEMS, GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

Equipment/capabilities and procedures for crew egress from the Gemini B during emergency pad conditions and altitude chamber tests are discussed. (Author) (U)

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AD- 856 813 13/12 22/2

MCDONNELL ASTRONAUTICS CO ST LOUIS MO

Gemini B Oxygen Safety Study. Volume
IV. Equipment Review.

(U)

MAY 67 48P

REPT. NO. MCASTRO-F415-Vol-4
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 3, AD-856 812L and Volume 5, AD-856 814L.
 DESCRIPTIONS: (*MANNED SPACECRAFT, FIRE SAFETY), (*SPACE STATIONS, FIRE SAFETY), (*SPACE CAPSULES, *MATERIALS), CONTROLLED ATMOSPHERES, FLAMMABILITY, SPACECRAFT COMPONENTS, ELECTRICAL EQUIPMENT, PRESSURE SUITS, VALVES, VOICE COMMUNICATIONS, COOLANTS, TEST METHODS, IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

The equipment in the baseline Gemini B pressurized cabin is identified and classified in regard to possible fire hazard. This information is tabulated along with details of equipment testing in oxygen. The electrical items that are not hermetically sealed have been tested in oxygen atmosphere. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 812 13/12 22/2

MCDONNELL ASTRONAUTICS CO ST LOUIS MO

Gemini B Oxygen Safety Study. Volume III. Materials Summary.

(U)

MAY 67 107P

REPT. NO. MCASTRO-F415-Vol-3
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 2, AD-856 811L and Volume 4, AD-856 813L.

DESCRIPTORS: (*MANNED SPACECRAFT, FIRE SAFETY), (*SPACE STATIONS, FIRE SAFETY), (*SPACE CAPSULES, *MATERIALS), CONTROLLED ATMOSPHERES, FLAMMABILITY, HAZARDS, PARACHUTES, ELECTRIC CONNECTORS, LIFE RAFTS, SPACECRAFT COMPONENTS, PRESSURE SUITS, GLASS TEXTILES, HALOCARBON PLASTICS, ALUMINUM, LAMINATES, TEST METHODS (U)

IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

The metallic and non-metallic materials used in the present baseline Gemini B pressurized cabin and tunnel areas are identified. A preliminary evaluation has been performed to determine the extent of hazard that exists due to the presence of flammable materials and what action might be taken to reduce this hazard. (Author) (U)

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AD- 856 811 13/12 22/2

MCDONNELL ASTRONAUTICS CO ST LOUIS MO

Gemini B Oxygen Safety Study. Volume II. NASA Gemini Environmental Control System Data.

(U)

MAY 67 23P

REPT. NO. MCASTRO-F415-Vol-2
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 1, AD-856 739 and Volume 3, AD-856 812.

DESCRIPTORS: (*MANNED SPACECRAFT, FIRE SAFETY), (*SPACE STATIONS, FIRE SAFETY), (*SPACE CAPSULES, *MATERIALS), CONTROLLED ATMOSPHERES, ENVIRONMENTAL TESTS, COOLANT PUMPS, PRESSURE SUITS, SPACECRAFT COMPONENTS, CHECKOUT PROCEDURES (U)

IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

The purpose of the present volume of the Gemini B oxygen safety study report is to present the results of a review of the testing performed on the Environmental Control System (ECS) during the NASA Gemini program. The NASA Gemini test program included testing at the material, component, and system levels. Much of the emphasis was placed on complete system testing. (Author) (U)

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 810 9/6 22/2

MCDONNELL DOUGLAS ASTRONAUTICS CO ST LOUIS MO EASTERN DIV

Operation and Service Manual for Telemetry Control and Checkout Console 52E440063.

MAY 69 33P
REPT. NO. B5-10-117
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, TELEMETER SYSTEMS), (*SPACE STATIONS, TELEMETER SYSTEMS), (*TELEMETER SYSTEMS, *CONTROL PANELS), SPACE CAPSULES, CHECKOUT EQUIPMENT, INSTRUCTION MANUALS, MAINTENANCE, GROUND SUPPORT EQUIPMENT (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

The purpose of the Space Technical Data Report (STR) is to familiarize personnel with the operation and service instructions for the Telemetry Control and Checkout Console, 52E440063-11. The STR presents a description of the console, its panels and their controls and functions, and servicing instructions for preventive maintenance. (Author) (U)

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AD- 856 809 9/6 22/2

MCDONNELL DOUGLAS ASTRONAUTICS CO ST LOUIS MO EASTERN DIV

Operation and Service Manual for Split Phase Converter 52E440049.

OCT 68 29P
REPT. NO. B5-10-116
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, TELEMETER SYSTEMS), (*SPACE STATIONS, TELEMETER SYSTEMS), (*TELEMETER SYSTEMS, *PHASE CONTROL DEVICES), TELEMETERING DATA, GROUND SUPPORT EQUIPMENT, PROCESSING, INSTRUCTION MANUALS, MAINTENANCE (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES), SIGNAL PROCESSING SYSTEMS (U)

The purpose of the Space Technical Data Report (STR) is to familiarize personnel with the operation and service of the Split Phase Converter, 52E440049-3. The STR describes the usage, circuit and control functions, and preventive maintenance procedures for the 52E440049-3 configuration. The Split Phase Converter is used to convert the Gemini B Instrumentation System telemetry signal data to a form and amplitude more suitable for hardline transmission to ground monitoring equipment. (Author) (U)

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 808 10/2 9/6 22/2

MCDONNELL DOUGLAS ASTRONAUTICS CO ST LOUIS MO EASTERN DIV

Operation and Service Manual for T/M Remote Displays Power Supply Assembly
52E440052.

(U)

NOV 68 47P

REPT. NO. 85-10-115

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, TELEMETRY SYSTEMS), (*SPACE STATIONS, TELEMETRY SYSTEMS), (*TELEMETRY SYSTEMS, *POWER SUPPLIES), SPACE CAPSULES, GROUND SUPPORT EQUIPMENT, DISPLAY SYSTEMS, DIRECT CURRENT, INSTRUCTION MANUALS, MAINTENANCE (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

The purpose of the Space Technical Data Report (STDR) is to familiarize personnel with the operation and service instructions for the T/M Remote Displays Power Supply Assembly, 52E440052. The power supply assembly supplies regulated dc voltages for operation of all telemetry remote display units. This STDR presents a description of the power supply assembly, its panels and their controls and functions, and servicing instructions for preventive maintenance. The basic document is prepared for the 52E440052-55 configuration. Addendum A of this STDR describes the 52E440052-57 configuration by comparison to the basic unit. (Author) (U)

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MCDONNELL DCUGLAS CORP ST LOUIS MO

Operation and Service Manual for Re-Entry Module Instrumentation Simulator
52E440041.

(U)

AUG 68 79P

REPT. NO. 85-10-112

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, REENTRY VEHICLES), (*SPACE STATIONS, REENTRY VEHICLES), (*REENTRY VEHICLES, MODELS(SIMULATIONS)), SPACE CAPSULES, INSTRUMENTATION, INSTRUCTION MANUALS, CALIBRATION, MAINTENANCE, CONTROL PANELS, MULTIPLEXING, PULSE CODE MODULATION (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES), *REENTRY MODULES (U)

The Re-entry Module Instrumentation Simulator is an operating duplicate of the Instrumentation System in the Gemini B Spacecraft re-entry module, and is used for ground-testing adjoining spacecraft modules while physically separated from the re-entry module. The purpose of the Space Technical Data report is to familiarize personnel with the operation and service of the Re-entry Module Instrumentation Simulator. The various sections explain preparation for use, special tools required, operation, preventive maintenance and calibration. (Author) (U)

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 806 22/2

MCDONNELL DOUGLAS CORP ST LOUIS MO

Operation and Service Manual for Spacecraft
Instrumentation System Test Set 52E440040,

(U)

APR 67 342P McElvain, M. ;
REPT. NO. B5-10-111
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, CHECKOUT EQUIPMENT),
(*SPACE STATIONS, CHECKOUT EQUIPMENT), (*CHECKOUT
EQUIPMENT, CONTROL PANELS), ELECTRONIC EQUIPMENT, SIGNAL
GENERATORS, GROUND SUPPORT EQUIPMENT, WIRING DIAGRAMS,
INSTRUCTION MANUALS, PERSONNEL, MAINTENANCE (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

The report discusses the operation and service of
the spacecraft instrumentation system test set,
52E440040-53. A description of the test set
equipment, functions of its components, and
preventive maintenance instructions is presented.
(Author) (U)

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AD- 856 805 13/7 22/2

MCDONNELL DOUGLAS ASTRONAUTICS CO ST LOUIS MO EASTERN
DIV

Operation and Service Manual for High
Pressure GN2/He Pressurization Panel
58E421218.

(U)

MAY 69 32P
REPT. NO. B5-10-100
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, GROUND SUPPORT
EQUIPMENT), (*SPACE STATIONS, GROUND SUPPORT EQUIPMENT),
(*PNEUMATIC DEVICES, CONTROL PANELS), NITROGEN, HELIUM,
INSTRUCTION MANUALS, PRESSURE GAGES, PRESSURE
REGULATORS, CUT OFF VALVES, HIGH PRESSURE VALVES, LEAK
DETECTORS, CHECKOUT EQUIPMENT (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

The purpose of the Space Technical Data
Report (STDR) is to familiarize personnel with
the operation and service of the High Pressure
GN2/He Pressurization Panel, 58E421218.
The STDR presents a description of the
pressurization panel, its controls and functions, and
servicing instructions for preventive maintenance.
(Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 804 22/4 14/2

MCDONNELL DOUGLAS ASTRONAUTICS CO ST LOUIS MO EASTERN DIV

Operation and Service Manual for Helium Leak Detector Cabinet 52E420097. (U)

JAN 69 37P

REPT. NO. B5-10-99

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, GROUND SUPPORT EQUIPMENT), (*SPACE STATIONS, GROUND SUPPORT EQUIPMENT), (*GROUND SUPPORT EQUIPMENT, *LEAK DETECTORS), HELIUM, HYDROGEN, INSTRUCTION MANUALS (U)

IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

The purpose of the Space Technical Data Report (STDR) is to familiarize personnel with the operation and service instructions for the Helium Leak Detector Cabinet, 52E420097-1 and 52E420097-101. The two configurations are functionally the same with the 52E420097-101 assembly incorporating a modified leak detector with ultra high sensing capabilities for hydrogen leak detection. The information contained in this document pertains to both detectors; however, only the Helium Leak Detector will be mentioned. Addendum A contains information pertaining to the Hydrogen Leak Detector, which differs from that of the Helium Leak Detector. The STDR presents a description of the detector, its control and indicator functions, and service instructions for preventive maintenance. (Author) (U)

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AD- 856 803 13/7 22/2

MCDONNELL DCUGLAS CORP ST LOUIS MO

Operation and Service Manual for Nitrogen and Helium Pressurization Units 52E420013, 52E420014. (U)

MAR 68 39P Reynolds,H.;

REPT. NO. B5-10-96

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, PNEUMATIC DEVICES), (*SPACE STATIONS, PNEUMATIC DEVICES), (*PNEUMATIC DEVICES, INSTRUMENTATION), SPACE CAPSULES, CONTROL PANELS, INDICATOR LIGHTS, INSTRUCTION MANUALS, MAINTENANCE, GROUND SUPPORT EQUIPMENT (U)

IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

The purpose of the Space Technical Data report (STDR) is to familiarize personnel with the operation and service instructions for the Nitrogen Pressurization Unit and the Helium Pressurization Unit. The STDR presents a description of the units, their controls and functions, and service instructions for preventive maintenance. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 802 22/4

MCDONNELL DOUGLAS CORP ST LOUIS MO

Operation and Service Manual for Spacecraft
Sequence Recorder 52E230003, (U)JAN 67 31P Davis, Larry ;
REPT. NO. 85-10-44
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, GROUND SUPPORT EQUIPMENT), (*SPACE STATIONS, GROUND SUPPORT EQUIPMENT), (*GROUND SUPPORT EQUIPMENT, MONITORS), SPACE CAPSULES, INSTRUMENTATION, CALIBRATION, MAINTENANCE, INSTRUCTION MANUALS, CONTROL PANELS, INDICATOR LIGHTS, CHECKOUT PROCEDURES, FLIGHT TESTING (U)

IDENTIFIERS: GEMINI, *GEMINI 8 PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

The Spacecraft Sequence Recorder is intended for use during Spacecraft System Test and prelaunch checkout. The unit selectively monitors events that occur during testing of the Ascent and Abort, Orbit and Separation, Retrograde and Landing - Post Landing Systems and produces a permanent recording of these events. The purpose of the Space Technical Data report is to familiarize personnel with the operation and service of the Spacecraft Sequence Recorder. The data report describes the console, its panels and its function when used in conjunction with related Aerospace Ground Equipment. (Author) (U)

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AD- 856 801 22/4

MCDONNELL DOUGLAS CORP ST LOUIS MO

Operation and Service Manual for C and S
Beacon EFC Test Bench 52E190003, (U)MAR 68 89P Reynolds, H. ;
REPT. NO. 85-10-36
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, *CHECKOUT EQUIPMENT), (*SPACE STATIONS, CHECKOUT EQUIPMENT), (*TEST SETS, RADAR BEACONS), SPACE CAPSULES, RADAR EQUIPMENT, GROUND SUPPORT EQUIPMENT, INSTRUCTION MANUALS, MAINTENANCE, C BAND (U)

IDENTIFIERS: GEMINI, *GEMINI 8 PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

The purpose of the report is to familiarize personnel with the operation and service of the C and S Beacon Equipment Functional Check (EFC) Test Bench, 52E190003. The report describes the test bench, its panels, and functions as related to EFC of the C Band Radar Beacons of the Gemini B Spacecraft. The S Band portion of the test bench is not applicable to the Gemini B Spacecraft and is not described. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 797 14/2 22/2

MCDONNELL DOUGLAS ASTRONAUTICS CO ST LOUIS MO EASTERN DIV

Operation and Service Manual for Rocket Pressure Test Kit 52E400002.

(U)

FEB 69 26P

REPT. NO. 85-10-86

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, RETRO ROCKETS), (*SPACE STATIONS, RETRO ROCKETS), (*RETRO ROCKETS, TEST EQUIPMENT), SPACE CAPSULES, PRESSURIZATION, SEALS, SOLID ROCKET PROPELLANTS, CHECKOUT PROCEDURES, INSTRUCTION MANUALS, MAINTENANCE (U)

IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

The Rocket Pressure Test Kit is used to pressure test the Gemini B Spacecraft retrograde rockets prior to, or after installation into the spacecraft and periodically during storage. The pressure test is performed to verify the integrity of the rocket seals assuring that no degradation (aging) of the solid propellant has occurred. The purpose of the Space Technical Data report (STDR) is to familiarize personnel with the operation and service instructions for the test kit. The STDR presents a description of the test kit, the function of its controls and indicators and service instructions for preventive maintenance. (Author) (U)

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AD- 856 796 14/2 22/2

MCDONNELL DOUGLAS ASTRONAUTICS CO ST LOUIS MO EASTERN DIV

Operation and Service Manual for Air Data System Tester 52E360013.

(U)

JAN 69 38P

REPT. NO. 85-10-83

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, CHECKOUT EQUIPMENT), (*SPACE STATIONS, CHECKOUT EQUIPMENT), (*CHECKOUT EQUIPMENT, INSTRUCTION MANUALS), SPACE CAPSULES, INSTRUMENTATION, GROUND SUPPORT EQUIPMENT, MAINTENANCE, CONTROL PANELS (U)

IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

The purpose of the Space Technical Data report (STDR) is to familiarize personnel with the operation and service instructions for the IR Data System Tester. The tester is used during spacecraft system testing, or for bench tests to check out the spacecraft Air Data System, or system components. The STDR presents a description of the tester, the function of the Control Panel components, and servicing instructions for preventive maintenance. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 795 22/2 22/4

MCDONNELL DOUGLAS CORP ST LOUIS MO

Operation and Service Manual for Hand
Controller Tester Kit 52E270049, (U)

OCT 67 39P Long, Donald W. ;
REPT. NO. 85-10-70
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, ATTITUDE CONTROL
SYSTEMS). (*SPACE STATIONS, ATTITUDE CONTROL SYSTEMS),
(*ATTITUDE CONTROL SYSTEMS, CHECKOUT EQUIPMENT), SPACE
CAPSULES, GROUND SUPPORT EQUIPMENT, INSTRUCTION MANUALS,
LOGIC CIRCUITS, WIRING DIAGRAMS, MAINTENANCE, (U)
CALIBRATION GEMINI, *GEMINI B PROJECT, *MANNED
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

The purpose of this report is to familiarize
personnel with the operation and service instructions
for the Hand Controller Tester Kit,
52E270049. This report describes the Hand
Controller Tester, its panel, and functions as
related to pre-installation and post-installation
checkout of the spacecraft hand controller.
(Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

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MCDONNELL DOUGLAS CORP ST LOUIS MO

Operation and Service Manual for Computer
EFC Test Console 52E270023, Volume III,
Part II, Section IV, List of
Subassemblies and Diagrams. (U)

APR 68 362P
REPT. NO. 85-10-64-Vol-3-Pt-2-Sect-4
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 3, Part 1, AD-
856 793.
DESCRIPTORS: (*MANNED SPACECRAFT, INERTIAL NAVIGATION),
(*SPACE STATIONS, INERTIAL NAVIGATION), (*INERTIAL
NAVIGATION, TEST EQUIPMENT), INSTRUCTION MANUALS,
INSTRUMENTATION, NAVIGATION COMPUTERS, DIAGRAMS
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

This volume contains a list of subassemblies and
diagrams for the ETE 52E270023-143. (U)

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MCDONNELL DOUGLAS CORP ST LOUIS MO .

Operation and Service Manual for Computer
EFC Test Console 52E270023, Volume III,
Part I.

APR 68 446P
REPT. NO. 85-10-64-Vol-3-Pt-1
CONTRACT: F04695-67-C-0023

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UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 3, Part 2,
Section 4, AD-856 794.

DESCRIPTORS: (*MANNED SPACECRAFT, INERTIAL NAVIGATION),
(*SPACE STATIONS, INERTIAL NAVIGATION), (*INERTIAL
NAVIGATION, TEST EQUIPMENT), INSTRUCTION MANUALS,
INSTRUMENTATION, NAVIGATION COMPUTERS (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

The purpose of this volume is to familiarize
personnel with the operation and service instructions
for the Inertial Guidance System (IGS) Bench
Test Equipment (BTE), 52E270023-143 and the
Computer BTE Dolly. (Author) (U)

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AD- 856 792 17/7 22/2

MCDONNELL DOUGLAS CORP ST LOUIS MO

Operation and Service Manual for Inertial
Platform Test Console 52E270020.

SEP 67 171P Long,Donald W. ;
REPT. NO. 85-10-63
CONTRACT: F04695-67-C-0023

(U)

UNCLASSIFIED REPORT

Availability: Microfilm copies only
DESCRIPTORS: (*MANNED SPACECRAFT, STABILIZED PLATFORMS),
(*SPACE STATIONS, STABILIZED PLATFORMS), (*STABILIZED
PLATFORMS, CHECKOUT PROCEDURES), SPACE CAPSULES,
INSTRUMENTATION, INSTRUCTION MANUALS, CALIBRATION,
MAINTENANCE, CONTROL PANELS, INDICATOR LIGHTS, INERTIAL
GUIDANCE (U)

IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

The Inertial Platform Test Console, in
conjunction with auxiliary equipment, is used for
EFC testing and troubleshooting the Gemini B
Inertial Platform. The purpose of the Space
Technical Data report is to familiarize personnel
with the operation and service of the Inertial
Platform test console. It provides a functional
description of the console, its switches, controls
and indicators. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 791 14/2 9/2 17/7 22/2

MCDONNELL DOUGLAS ASTRONAUTICS CO ST LOUIS MO EASTERN DIV

Operation and Service Manual for Computer System Test Console 52E270003. Volume I.

(U)

JAN 69 547P
 REPT. NO. 85-10-58-Vol-1
 CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, INERTIAL GUIDANCE), (*SPACE STATIONS, INERTIAL GUIDANCE), (*INERTIAL GUIDANCE, COMPUTERS), (*COMPUTERS, *TEST EQUIPMENT), SPACE CAPSULES, DIGITAL COMPUTERS, CHECKOUT EQUIPMENT, GROUND SUPPORT EQUIPMENT, INPUT OUTPUT DEVICES, TEST SETS, OPERATION, MAINTENANCE, INSTRUCTION MANUALS (U)
 IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORY, *MOL(MANNED ORBITING LABORATORY) (U)

The purpose of the volume is to familiarize personnel with the operation and service instructions for the Computer System Test Console, 52E270003-603. This tester, commonly called the Test Console Computer System, is a unit of the Aerospace Ground Equipment used to control the Digital Computer portion of the Inertial Guidance System in the Gemini Spacecraft during system and pre-launch testing. The TCCS is manufactured by the International Business Machines (IBM) Corporation of Rockville, Maryland for the McDonnell Company of St. Louis, Missouri. The report presents a description of the TCCS, its controls and functions, and servicing instructions for validation and preventive maintenance. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 790 22/2

MCDONNELL DOUGLAS ASTRONAUTICS CO ST LOUIS MO EASTERN DIV

Operation and Service Manual for Attitude Control System Electronics EFC Console 52E270002.

(U)

OCT 68 112P
 REPT. NO. 8-5-10-57
 CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, CHECKOUT EQUIPMENT), (*SPACE STATIONS, CHECKOUT EQUIPMENT), (*ATTITUDE CONTROL SYSTEMS, INSTRUCTION MANUALS), SPACE CAPSULES, GROUND SUPPORT EQUIPMENT, CARTRIDGES(PAD), ABORT, MAINTENANCE (U)
 IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

The purpose of the Space Technical Data Report (STDR) is to familiarize personnel with the operation and service of the Attitude Control System Electronics (ACSE) Equipment Functional Check (EFC) Console, 52E270002. The STDR describes the console, associated panels and their functions. The console is used in conjunction with related Aerospace Ground Equipment to perform EFC procedures on the Attitude Control Electronics Group and Pad Abort Thruster Electronics. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

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MCDONNELL DOUGLAS CORP ST LOUIS MO

Operation and Service Manual for Spacecraft
Battery Load Bank 52E230073.

(U)

NOV 67 18P Ziemann.H. ;

REPT. NO. B5-10-53

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, CHECKOUT EQUIPMENT),
(*SPACE STATIONS, CHECKOUT EQUIPMENT), (*CHECKOUT
EQUIPMENT, INSTRUCTION MANUALS), SPACE CAPSULES,
MAINTENANCE, GROUND SUPPORT EQUIPMENT (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES), SPACECRAFT BATTERIES (U)

The purpose of this Space Technical Data
Report (STDR) is to familiarize personnel with
the operation and service of the Spacecraft
Battery Load Bank, 52E230073. The STDR
provides a functional description of the load bank,
functions of switches, controls and indicators and
operation as related to checkout of the spacecraft
batteries. (Author) (U)

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AD- 856 788 10/3 22/2

MCDONNELL DOUGLAS ASTRONAUTICS CO ST LOUIS MO EASTERN
DIV

Operation and Service Manual for Blockhouse
Power Backup Battery Rack 52E230049 and
External Power Control and Monitor Backup
Battery Rack 52E230058.

(U)

JAN 69 74P

REPT. NO. B5-10-50

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, GROUND SUPPORT
EQUIPMENT), (*SPACE STATIONS, GROUND SUPPORT EQUIPMENT),
(*GROUND SUPPORT EQUIPMENT, POWER SUPPLIES), STORAGE
BATTERIES, ALKALINE BATTERIES, CONTROL PANELS,
INSTRUCTION MANUALS (U)

IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES), NICKEL CADMIUM BATTERIES (U)

The purpose of the Space Technical Data
Report (STDR) is to familiarize personnel with
the operation and service instructions for the
Blockhouse Power Backup Battery Rack
(52E230049) and the External Power
Control and Monitor Backup Battery Rack
(52E230058). The battery racks supply backup
power for the Launch Control Center and
spacecraft power supply systems. The STDR
presents a description of the battery racks, their
associated panels and their functions, and service
instructions for preventive maintenance.
(Author) (U)

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 787

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MCDONNELL DOUGLAS CORP ST LOUIS MO

Operation and Service Manual for Sequence Control and Monitor Console 52E230012 and Electronic Timer Control Panel 52E270048, (U)

OCT 67 32P McElvain, M. ;
REPT. NO. 85-10-48
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, CHECKOUT EQUIPMENT), (*SPACE STATIONS, CHECKOUT EQUIPMENT), (*CHECKOUT EQUIPMENT, TIMING DEVICES), SPACE CAPSULES, MONITORS, INSTRUCTION MANUALS, MAINTENANCE, SEQUENCES(MATHEMATICS), CONTROL SYSTEMS, GROUND SUPPORT EQUIPMENT (U)

IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

The purpose of the report is to familiarize personnel with the operation and service of the Sequence Control and Monitor Console (52E230012-21) and the Electronic Timer Control Panel (52E270048-13). The STDR presents a description of the console and panel controls and functions. The console is used in conjunction with related Aerospace Ground Equipment (AGE) for checkout of the Gemini B Spacecraft Sequential System. The panel is used to control and monitor the spacecraft Time Reference System (TRS) electronic timer during spacecraft systems tests. (Author) (U)

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MCDONNELL DOUGLAS CORP ST LOUIS MO

Operation and Service Manual for External Power System Control and Monitor 52E230005 Spacecraft and Module Test Power Supply 52E230038 Blockhouse DC Power Supply 52E230008. (U)

OCT 67 87P
REPT. NO. 85-10-46
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, GROUND SUPPORT EQUIPMENT), (*SPACE STATIONS, GROUND SUPPORT EQUIPMENT), (*POWER SUPPLIES, GROUND SUPPORT EQUIPMENT), SPACE CAPSULES, DIRECT CURRENT, CONTROL PANELS, MONITORS, INSTRUCTION MANUALS, MAINTENANCE (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

The purpose of the Space Technical Data Report (STDR) is to familiarize personnel with the operation and service of the External Power System Control and Monitor, 52E230005; Spacecraft and Module Test Power Supply, 52E230038; and Blockhouse DC Power Supply, 52E230008. The STDR describes the console, cabinets, associated panels and their functions. The console and cabinets are used in conjunction with related Aerospace Ground Equipment (AGE) to supply, control and monitor dc power to the spacecraft and associated AGE. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMD7

AD- 856 785 22/4 9/5

MCDONNELL DOUGLAS CORP ST LOUIS MO

Operation and Service Manual for C-Band
Antenna Probe Assembly 52E190012,DEC 67 35P Ziemann, H. ;
REPT. NO. 85-10-38
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, CHECKOUT EQUIPMENT),
(*SPACE STATIONS, CHECKOUT EQUIPMENT), (*SATELLITE
ANTENNAS, *PROBES(ELECTROMAGNETIC)), SPACE CAPSULES,
GROUND SUPPORT EQUIPMENT, C BAND, INSTRUCTION MANUALS,
MAINTENANCE (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES (U)

The purpose of the report is to familiarize
personnel with the operation and service of the C-
Band Antenna Probe Assembly, 52E190012.
The report provides a functional description of the
probe assembly, functions of switches, controls and
indicators and operation as related to assembled
spacecraft systems testing. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMD7

AD- 856 784 22/4 22/2

MCDONNELL DOUGLAS ASTRONAUTICS CO ST LOUIS MO EASTERN
DIVOperation and Service Manual for Dual Gas
Flow Control Panel 58E181228. (U)FEB 69 32P
REPT. NO. 85-10-31
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, LIFE SUPPORT), (*SPACE
STATIONS, LIFE SUPPORT), (*GROUND SUPPORT EQUIPMENT,
INSTRUCTION MANUALS), SPACECRAFT CABINS, MEASURING
INSTRUMENTS, HIGH PRESSURE VALVES, OXYGEN, HELIUM,
PRESSURIZATION, OPERATION, PERSONNEL, SPACE CAPSULES,
MAINTENANCE, PNEUMATIC DEVICES, GAS FILTERS, PRESSURE
REGULATORS, CONTROL PANELS, CHECKOUT EQUIPMENT (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

The report discusses the operation and service of
the dual gas flow control panel, 58E181228. The
report presents a description of the dual gas flow
control panel, its controls and functions, and
servicing instructions for preventive maintenance.
(Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07
AD- 856 783 13/1 16/1 22/2

MCDONNELL DOUGLAS CORP ST LOUIS MO

Operation and Service Manual for Spacecraft
Ground Cooling Auxiliary Refrigeration Unit
52E180172.

DEC 67 65P Reynolds, H. N. ;
REPT. NO. 85-10-29
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, COOLING + VENTILATING
EQUIPMENT), (*SPACE STATIONS, COOLING + VENTILATING
EQUIPMENT), (*GROUND SUPPORT EQUIPMENT, INSTRUCTION
MANUALS), SPACE CAPSULES, HEAT SINKS, REFRIGERATION
SYSTEMS, COOLANTS, FLUOROHYDROCARBONS, PERSONNEL,
OPERATION, MAINTENANCE (U)

IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

The report discusses the operation and service
instructions for the spacecraft ground cooling
auxiliary refrigeration unit, 52E180172. The
report presents a description of the unit, its
controls and their functions, and servicing
instructions for preventive maintenance.
(Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07
AD- 856 782 22/4 22/2

MCDONNELL DOUGLAS ASTRONAUTICS CO ST LOUIS MO EASTERN
DIV

Operation and Service Manual for ECS Coolant
System Leak Rate Tester 52E180150.

FEB 69 28P
REPT. NO. 85-10-27
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, CONTROLLED
ATMOSPHERES), (*SPACE STATIONS, CONTROLLED ATMOSPHERES),
(*AIR CONDITIONING EQUIPMENT, LEAK DETECTORS), SPACE
CAPSULES, GROUND SUPPORT EQUIPMENT, PNEUMATIC DEVICES,
PRESSURIZATION, INSTRUCTION MANUALS, FIRE SAFETY,
MAINTENANCE, CALIBRATION (U)

IDENTIFIERS: ECS(ENVIRONMENTAL CONTROL SYSTEM),
ENVIRONMENTAL CONTROL SYSTEM, GEMINI, *GEMINI B
PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED
ORBITING LABORATORIES) (U)

The purpose of this report is to familiarize
personnel with the operation and service instructions
for the ECS Coolant System Leak Rate
Tester, 52E180150-153. The leak rate tester
provides the capability to leak check the coolant
system pump module prior to installation into the
Gemini B Spacecraft and the entire spacecraft
coolant system after installation into the
spacecraft. This report presents a description of
the leak rate tester, its control panel and
associated equipment, and service instructions for
preventive maintenance. (Author) (U)

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 781 22/4

MCDONNELL DOUGLAS ASTRONAUTICS CO ST LOUIS MO EASTERN DIV

Operation and Service Manual for Spacecraft
ECS Test Console 52E180076.

(U)

OCT 68 54P
REPT. NO. 85-10-24
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, CHECKOUT EQUIPMENT),
(*SPACE STATIONS, CHECKOUT EQUIPMENT), (*CLOSED
ECOLOGICAL SYSTEMS, INSTRUCTION MANUALS), SPACE
CAPSULES, GROUND SUPPORT EQUIPMENT, CONTROL SYSTEMS,
MAINTENANCE (U)

IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

The purpose of the Space Technical Data
Report (STDR) is to familiarize personnel with
the operation and service instructions for the
Spacecraft Environmental Control System
(ECS) Test Console, 52E180076. The test
console provides the capability to functionally test
and monitor the Gemini B Spacecraft
Environmental Control System after installation
into the spacecraft. The STDR presents a
description of the test console, its panels and their
controls, and service instructions for preventive
maintenance. The basic portion of this document
describes the 52E180076-1 configuration.
Addendum A to this document describes the
52E180076-5 configuration by comparison to the
basic document. (Author)

(U)

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 780 22/4 22/2

MCDONNELL DOUGLAS ASTRONAUTICS CO ST LOUIS MO EASTERN DIV

Operation and Service Manual for GOX High
Pressure Regulator Panel 52E180030.

(U)

MAR 69 24P
REPT. NO. 85-10-23
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, CONTROLLED
ATMOSPHERES), (*SPACE STATIONS, CONTROLLED ATMOSPHERES),
(*OXYGEN EQUIPMENT, *PRESSURE REGULATORS), SPACE
CAPSULES, GROUND SUPPORT EQUIPMENT, INSTRUCTION MANUALS,
LEAK DETECTORS, EXPLOSIVE GASES, OXYGEN, FIRE SAFETY,
MAINTENANCE, CALIBRATION (U)

IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

The purpose of this report is to familiarize
personnel with the operation and service instructions
for the GOX High Pressure Regulator Panel,
52E180030-125. The regulator panel provides the
capability of servicing the spacecraft oxygen systems
and controlling delivery pressure to the Spacecraft
Leakage Tester (52E180027) during prelaunch
activities. This report presents a description of
the regulator panel, its controls and service
instructions for preventive maintenance.
(Author)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 779 22/4 22/2

MCDONNELL DOUGLAS ASTRONAUTICS CO ST LOUIS MO EASTERN DIV

Operation and Service Manual for LOX and LN2 Installation Kits 52E180178. (U)

MAR 69 64P

REPT. NO. 85-10-22

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, CONTROLLED ATMOSPHERES). (*SPACE STATIONS, CONTROLLED ATMOSPHERES). (*TRAILERS, LIQUEFIED GASES), SPACE CAPSULES, GROUND SUPPORT EQUIPMENT, NITROGEN, OXYGEN, STORAGE TANKS, HANDLING, LOGISTICS, INSTRUCTION MANUALS, FIRE SAFETY, MAINTENANCE, CALIBRATION (U)

IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORY, *MOL(MANNED ORBITING LABORATORY) (U)

The purpose of this report is to familiarize personnel with the operation and service instructions for the LOX and LN2 Installation Kits, 52E180178. Four service trailers, each comprised of one Converter (52E180028) and one Service Unit (52E180016), make-up the installation kits. This report presents a description of the trailers, Converter, Service Units, their control and indicator functions, and service instructions for preventive maintenance. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 778 22/4 22/2

MCDONNELL DOUGLAS CORP ST LOUIS MO

Operation and Service Manual for Spacecraft Leakage Tester 52E180027. (U)

SEP 68 51P

REPT. NO. 85-10-21

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, LIFE SUPPORT), (*SPACE STATIONS, LIFE SUPPORT), (*GROUND SUPPORT EQUIPMENT, INSTRUCTION MANUALS), SPACE CAPSULES, SPACECRAFT CABINS, PRESSURE SUITS, OXYGEN, NITROGEN, GAS FLOW, CHECKOUT EQUIPMENT, LEAK DETECTORS, PRESSURIZATION, OPERATION, PERSONNEL, MAINTENANCE (U)

IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

The report discusses the operation and service instructions for the spacecraft leakage tester. The tester is used to leakage test the Gemini B Spacecraft cabin section and suit loop. The report presents a description of the tester, its control and indicator functions, and service instructions for preventive maintenance. (Author) (U)

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 777 16/1 22/2

MCDONNELL DOUGLAS CORP ST LOUIS MO

Operation and Service Manual for Spacecraft
Command System Checkout and Monitor
58E190513.

NOV 67 28P Long, Donald W. ;
REPT. NO. 85-10-19
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, CHECKOUT EQUIPMENT),
(*SPACE STATIONS, CHECKOUT EQUIPMENT), (*CHECKOUT
EQUIPMENT, CONTROL PANELS), ELECTRONIC EQUIPMENT,
FREQUENCY MODULATION, MODELS(SIMULATIONS), ELECTRIC
CONNECTORS, SIGNAL GENERATORS, GROUND SUPPORT
EQUIPMENT (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

The report discusses the operation and service
instructions for the spacecraft command system
checkout and monitor, 58E190513. The report
describes the checkout and monitor console, its
panels, and functions as related to closed loop
checkout of the spacecraft FM tone modulated
command system during prelaunch testing.
(Author) (U)

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AD- 856 776 22/4 22/2

MCDONNELL DOUGLAS ASTRONAUTICS CO ST LOUIS MO EASTERN
DIV

Operation and Service Manual for 6000 PSIG
Oxygen Supply Cart 58E181231.

MAY 69 24P
REPT. NO. 85-10-18
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, LIFE SUPPORT), (*SPACE
STATIONS, LIFE SUPPORT), (*GROUND SUPPORT EQUIPMENT,
INSTRUCTION MANUALS), SPACE CAPSULES, OXYGEN, HIGH
PRESSURE VALVES, HANDBOOKS, MEASURING INSTRUMENTS, GAS
FLOW, GAS CYLINDERS, PERSONNEL, OPERATION (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

The report discusses the operation and service
instructions for the 6000 PSIG oxygen supply cart,
58E181231-1. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 775 22/4 22/2

MCDONNELL DOUGLAS CORP ST LOUIS MO

Operation and Service Manual for ECS EFC Low Pressure Bench 52E180010, (U)

MAR 68 102P Petzold, Michael F. ;
REPT. NO. 85-10-13
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, CONTROLLED ATMOSPHERES), (*SPACE STATIONS, CONTROLLED ATMOSPHERES), (*SPACECRAFT COMPONENTS, CHECKOUT EQUIPMENT), SPACE CAPSULES, GROUND SUPPORT EQUIPMENT, CONTROL PANELS, PNEUMATIC DEVICES, ELECTRICAL EQUIPMENT, POWER SUPPLIES, INSTRUCTION MANUALS, PRESSURIZATION, MAINTENANCE, CALIBRATION (U)
IDENTIFIERS: ECS(ENVIRONMENTAL CONTROL SYSTEM), ENVIRONMENTAL CONTROL SYSTEM, GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES), TEST BENCHES (U)

The purpose of the report is to familiarize personnel with the operation and service of the Environmental Control System (ECS) Equipment Functional Check (EFC) Low Pressure Bench, 52E180010. The report presents a description of the test bench, its controls and functions, and servicing instructions for preventive maintenance. (Author) (U)

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AD- 856 774 22/4

MCDONNELL DOUGLAS CORP ST LOUIS MO

Operation and Service Manual for Gemini B/MOL/L/V Electrical Interface Substitute 58E040504. (U)

SEP 68 51P
REPT. NO. 85-10-8
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, CHECKOUT EQUIPMENT), (*SPACE STATIONS, CHECKOUT EQUIPMENT), (*LAUNCH VEHICLES, *CHECKOUT EQUIPMENT), SPACE CAPSULES, GROUND SUPPORT EQUIPMENT, INTERFACES, CONTROL PANELS, SIMULATORS, INSTRUCTION MANUALS, MAINTENANCE, IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES), TITAN 3, TITAN 3M LAUNCH VEHICLES (U) (U)

The purpose of the report is to familiarize personnel with the operation and service of the Gemini B/MOL/L/V Electrical Interface Substitute, 58E040504. The report describes the console, associated panels and their functions. The console is used to electrically simulate the Gemini B Spacecraft when performing functional tests on the Gemini B/MOL Launch Vehicle. (Author) (U)

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MCDONNELL DOUGLAS ASTRONAUTICS CO ST LOUIS MO EASTERN DIV

Operation and Service Manual for Gemini B/
Laboratory Electrical Interface Substitute
58E040503.

(U)

JAN 69 62P

REPT. NO. 85-10-7

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, CHECKOUT EQUIPMENT),
(*SPACE STATIONS, CHECKOUT EQUIPMENT), (*CHECKOUT
EQUIPMENT, CONTROL PANELS), INTERFACES,
MODELS(SIMULATIONS), PERSONNEL, MAINTENANCE,
CALIBRATION, WIRING DIAGRAMS, ELECTRONIC EQUIPMENT,
GROUND SUPPORT EQUIPMENT (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

The report discusses the operation and service of
the Gemini B/Laboratory Electrical
Interface Substitute, 58E040503. The report
describes the cabinet, its panels and their functions
and service instructions for preventive maintenance.
The Gemini B/Laboratory Electrical
Interface Substitute simulates the Gemini B
Spacecraft to permit premate testing of the
Manned Orbiting Laboratory (MOL) vehicle
without the spacecraft. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 772 22/2 17/7 9/2

MCDONNELL DCUGLAS ASTRONAUTICS CO ST LOUIS MO EASTERN
DIV

MOL Baseline Requirements for Central, Test,
and Reentry Modules of the Gemini B
Computer Program. Volume III. MOL
Baseline Equations Document. Part II.
Data Item Number UC-228: Test Module
Requirements.

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68 166P

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 3, Part 1, AD-
856 771 and Volume 3, Part 3, AD-856 741.
DESCRIPTORS: (*MANNED SPACECRAFT, *NAVIGATION
COMPUTERS), (*SPACE STATIONS, NAVIGATION COMPUTERS),
SPECIFICATIONS, COMPUTER PROGRAMMING, INERTIAL
NAVIGATION, TEST METHODS, CHECKOUT PROCEDURES
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

This volume contains the test module
requirements. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 771 22/2 17/7 9/2

MCDONNELL DOUGLAS ASTRONAUTICS CO ST LOUIS MO EASTERN DIV

MOL Baseline Requirements for Central, Test, and Reentry Modules of the Gemini B Computer Program. Volume III. MOL Baseline Equations Document. Part I. Data Item Number UC-228: System Requirements, Central Module Requirements.

(U)

68 144P

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 3, Part 2, AD-856 772 and Volume 3, Part 3, AD-856 741.

DESCRIPTORS: (*MANNED SPACECRAFT, *NAVIGATION COMPUTERS), (*SPACE STATIONS, NAVIGATION COMPUTERS), SPECIFICATIONS, COMPUTER PROGRAMMING, INERTIAL NAVIGATION

(U)

IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES)

(U)

This document contains the requirements for the Central, Test, and Reentry modules of the Gemini B computer software program. The Central module contains the Standby mode, subroutines and other common programming as well as the programming required to use an Auxiliary Tape Memory to reprogram a portion of the computer memory. The Test module contains the software capabilities required to facilitate the calibration and checkout of the Gemini inertial guidance system during prelaunch operations. The Reentry module contains the guidance capabilities that are applicable to the return phase of the mission and contains the orbit navigation, retrograde time determination, and reentry modes. The equations that are to be implemented and the operational requirements are contained herein. (Author)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 770 13/1 16/1 22/2

MCDONNELL DOUGLAS ASTRONAUTICS CO ST LOUIS MO EASTERN DIV

Operation and Service Manual for Coolant Fluid Transfer Kit 52E180184.

(U)

MAR 69 27P

REPT. NO. 85-10-10

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, COOLING + VENTILATING EQUIPMENT), (*SPACE STATIONS, COOLING + VENTILATING EQUIPMENT), (*GROUND SUPPORT EQUIPMENT, INSTRUCTION MANUALS), MAINTENANCE, COOLANTS, FLUID FILTERS, NITROGEN, HANDBOOKS, PRESSURIZATION, PERSONNEL, SPACE CAPSULES

(U)

IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES)

(U)

The report discusses the operation and service instructions for the coolant fluid transfer kit, 52E180184-1. The report presents a description of the transfer kit, its controls and their functions, and service instructions for preventive maintenance. (Author)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 855 769 19/1 22/4 22/2

MCDONNELL DOUGLAS CORP ST LOUIS MO

Operation and Service Manual for Hatch
Actuator Test Fixture 52E040094,

(U)

NOV 67 31P Petzold, Michael F. ;
REPT. NO. 85-10-4
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, EXPLOSIVE ACTUATORS),
(*SPACE STATIONS, EXPLOSIVE ACTUATORS), (*EXPLOSIVE
ACTUATORS, TEST EQUIPMENT), SPACE CAPSULES, SPACECRAFT
CABINS, HATCHES, RELEASE MECHANISMS, CHECKOUT EQUIPMENT,
GROUND SUPPORT EQUIPMENT, INSTRUCTION MANUALS. (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

The purpose of this Space Technical Data
Report (STR) is to familiarize personnel with
the operation and service of the Hatch Actuator
Test Fixture, 52E040094. This STR
presents a description of the test fixture, its
controls and functions, and servicing instructions
for preventive maintenance. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 768 13/12 22/2

MCDONNELL DOUGLAS CORP ST LOUIS MO

Operation and Service Manual for Ejection
Seat Functional Test Fixture 52E040089,

(U)

OCT 67 35P Petzold, Michael F. ;
REPT. NO. 85-10-3
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, EJECTION SEATS),
(*SPACE STATIONS, EJECTION SEATS), (*AEROSPACE SYSTEMS,
INSTRUCTION MANUALS), SPACE CAPSULES, SPACECRAFT SEATS,
SAFETY BELTS, RELEASE MECHANISMS, LOADS(FORCES),
MAINTENANCE, CALIBRATION, (U)CALIBRATION (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

The Ejection Seat Functional Test Fixture
is used to support the spacecraft seat and simulate
flight loads for checkout of the harness release
mechanism. It also provides checkout of the seat/
man separator. The purpose of the Space
Technical Data Report (STR) is to
familiarize personnel with the operation and service
of the Ejection Seat Functional Test
Fixture. The report presents a description of
the test fixture, its controls and functions and
servicing instructions for preventive maintenance.
(Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 767 13/6 22/2

MCDONNELL DOUGLAS CORP ST LOUIS MO

Operation and Service Manual for Spacecraft
Transportation Trailers 52E010016.

(U)

JUN 68 44P

REPT. NO. BS-10-1

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, TRANSPORTATION),
(*SPACE STATIONS, TRANSPORTATION), (*TRAILERS,
INSTRUCTION MANUALS), SPACE CAPSULES, GROUND SUPPORT
EQUIPMENT, CHECKOUT EQUIPMENT, PITCH(MOTION), YAW,
ADAPTERS, REENTRY VEHICLES, ROTATION, MAINTENANCE
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES), REENTRY MODULES (U)

The purpose of the Space Technical Data
report (STDR) is to familiarize personnel with the
operation and service of the Vertical and
Horizontal Transportation Trailers. The
STDR describes the trailers and Pitch Checkout
Adapter Kit which is installed in the
Horizontal Transportation Trailer for pitch and
yaw checkout of the spacecraft. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 756 13/5 22/2

MCDONNELL AIRCRAFT CORP ST LOUIS MO

Test Plan Gemini B Adapter Separation
Test - Abort Mode.

(U)

NOV 68 75P

REPT. NO. WAC-G846

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, ABORT), (*SPACE
STATIONS, ADAPTERS), (*ADAPTERS, SEPARATION), SPACE
CAPSULES, HEAT SHIELDS, BULKHEADS, RETRO ROCKETS, SPACE
CREWS, PACKS(PARACHUTE), TEST METHODS, REENTRY
VEHICLES (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES), REENTRY MODULES (U)

The test described demonstrates the off-the-pad
abort capability of the Gemini B spacecraft. A
simulated Gemini B, including a heat shield and a
large pressure bulkhead, attached to steel structure
will be mounted on the HAFB sled test track. The
adapter, attached between the Gemini and the fixed
laboratory will be severed and the Gemini B
Reentry Module will be propelled down the track
by the retrograde rockets. Data will be collected
during the test which will determine the following:
The test sequence events, the abort environment on
the heat shield, retrograde rocket area, blast shield
and adapter. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 755 22/2 22/4

MCDONNELL AIRCRAFT CORP ST LOUIS MO

Gemini B - Ejection Seat System Test -
Dual Ejection Test Plan.

JUL 68 19P

REPT. NO. MAC-F975

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, REENTRY VEHICLES),
(*SPACE STATIONS, EJECTION SEATS), (*AEROSPACE SYSTEMS,
CHECKOUT PROCEDURES), MODELS(SIMULATIONS),
ANTHROPOMETRY, PHOTOGRAPHY, TEST FACILITIES, OPERATION,
SPACE CAPSULES, (U)SPACE CAPSULES (U)
IDENTIFIERS: EVALUATION, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

The report discusses the general requirements, test
configuration, and procedures of the Gemini B
ejection seat, dual ejection test. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 753 14/4 22/2 22/4

MCDONNELL ASTRONAUTICS CO ST LOUIS MO

Gemini B Effectiveness Assessment Plan.

JAN 68 25P Chochohousek, L. D. :

REPT. NO. MCASTR0-F920

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, RELIABILITY), (*SPACE
STATIONS, RELIABILITY), (*LAUNCH VEHICLES, RELIABILITY),
SPACE CAPSULES, FAILURE, FAILURE(MECHANICS),
FAILURE(ELECTRONICS), PREDICTIONS, QUALITY CONTROL, LIFE
EXPECTANCY, REDUNDANT COMPONENTS, PROBABILITY, GROUND
SUPPORT EQUIPMENT (U)
IDENTIFIERS: FAILURE ANALYSIS, FAILURE, RATES, GEMINI,
*GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, MEAN
TIME BETWEEN FAILURES, *MOL(MANNED ORBITING
LABORATORIES), TITAN 2, TITAN 3 (U)

This report supports the Gemini B Pre-
Ignition and Flight Effectiveness Model
Reports. MAC Reports F921 and F919,
respectively; the latter describe the techniques and
formulae used to develop Gemini B subsystem and
segment probability estimates and MCL System crew
safety estimates based on individual 'black box'
reliability estimates. This Effectiveness
Assessment Plan details the procedures, ground
rules and methods used to determine the 'black box'
estimates based on (1) experience and test
results and (2) generic or 'inherent' failure
rates from handbook sources, and presents the
formulae used to evaluate the success probabilities
for various redundant configurations and equipment
combinations. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 752 9/3 22/2

MCDONNELL ASTRONAUTICS CO ST LOUIS MO

Gemini B Electronic Systems Test Unit
(ESTU) Test Plan.

(U)

APR 67 48P
REPT. NO. E879
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, ELECTRONIC EQUIPMENT),
(*SPACE STATIONS, ELECTRONIC EQUIPMENT), (*ELECTRONIC
EQUIPMENT, TEST METHODS), SPACE CAPSULES, TEST
EQUIPMENT, ELECTROMAGNETIC COMPATIBILITY, ELECTRICAL
EQUIPMENT (U)

IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

The report describes the plan for testing the
Gemini B electrical/electronic systems utilizing
the Gemini B Electronic Systems Test Unit
(ESTU). It establishes the test philosophy,
describes the test article and test complex, defines
the tests to be performed, gives the test
documentation requirements, and presents the program
schedules. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 750 22/2 20/11

MCDONNELL AIRCRAFT CORP ST LOUIS MO

Gemini B Structural Qualification Test
Plan,

(U)

JAN 68 132P Harbison,G. D. ;
REPT. NO. MAC-F746
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, STRUCTURAL
PROPERTIES), (*SPACE STATIONS, STRUCTURAL PROPERTIES),
SPACE CAPSULES, STRUCTURAL MEMBERS, MECHANICAL
PROPERTIES, TEST METHODS, STRESSES, SPECIFICATIONS,
REENTRY VEHICLES, ADAPTERS, PARACHUTES, HEAT SHIELDS (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES), *REENTRY MODULES (U)

The report outlines the current plans for
conducting the structural-qualification tests for the
Gemini 'B' spacecraft. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 749 22/2

MCDONNELL AIRCRAFT CORP ST LOUIS MO

Test Plan for Aerodynamic Heating and Pressure Tests of a 9-Percent Gemini B Re-Entry Configuration Model in the McDonnell Hypervelocity Impulse Tunnel,

(U)

FEB 67 31P Haefner, M. A. ;
REPT. NO. MAC-F373

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, ATMOSPHERE ENTRY), (*SPACE STATIONS, HYPERSONIC TEST VEHICLES), (*REENTRY VEHICLES, HYPERSONIC CHARACTERISTICS), MODELS(SIMULATIONS), CONFIGURATION, HYPERSONIC WIND TUNNELS, FLARED AFTERBODIES, ANGLE OF ATTACK, FAIRINGS, THERMODYNAMICS (U)
IDENTIFIERS: *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES), THERMOGRAPHIC MAPPING (U)

The purpose of this report is to present a test plan for thermodynamic heat transfer and pressure tests of a 9-percent Gemini B model in the hypervelocity impulse tunnel. The model will have interchangeable re-entry module-adaptor interconnect fairings which will simulate the NASA Gemini and Gemini B configurations. (Author) (U)

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AD- 856 746 13/12 22/2

MCDONNELL AIRCRAFT CORP ST LOUIS MO

Gemini B Ejection Seat Functional Test Air Drop Test Plan,

(U)

OCT 67 16P McCauley, D. E. ;
REPT. NO. MAC-F677
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, EJECTION SEATS), (*SPACE STATIONS, EJECTION SEATS), (*EJECTION SEATS, DROP TESTS), SPACE CAPSULES, PACKS(PARACHUTE), SURVIVAL KITS, REDUNDANT COMPONENTS, AUTOMATIC, EXPLOSIVE ACTUATORS, PRESSURE SUITS, AEROSPACE SYSTEMS, ESCAPE SYSTEMS, DISCONNECT FITTINGS, TEST METHODS, SAFETY, SPACE CREWS (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

The objective of the test is to demonstrate that the personnel recovery and survival equipment system conforms with astronautics drawings under conditions simulating those existing, after seat-man separation following emergency ejection. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 743 22/2 20/4

MCDONNELL DOUGLAS ASTRONAUTICS CO HUNTINGTON BEACH CALIF
WESTERN DIV

MOL Rigid Body Fluctuating Pressure Test
(1AL2). Volume I. Sequence Number
B329. MOL Data Item UT-134. (U)

DESCRIPTIVE NOTE: Fluid dynamics final test and analysis
rept..

JAN 69 189P Emerson, T. S. ;
REPT. NO. DAC-62611-Vol-1
CONTRACT: F04695-67-C-0029

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 2, AD-856
554L.

DESCRIPTORS: (*MANNED SPACECRAFT, AERODYNAMIC
CHARACTERISTICS), (*SPACE STATIONS, PRESSURE), SPACE
CAPSULES, SUPERSONIC CHARACTERISTICS, TRANSONIC
CHARACTERISTICS, MODEL TESTS, SCALE, EXTENDABLE
STRUCTURES, SHIELDING (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

Fluctuating pressure data obtained on the surface
of a rigid 10% scale model of the MOL are
analyzed. Space averaged aerodynamic design
criteria in the form of octave band spectra are
derived together with corresponding estimates of
dynamic response. Longitudinal and lateral
correlation lengths are evaluated on the meteoroid
shield. An aerodynamic hypothesis explaining
structural and fluctuating pressure trends is
introduced. When combined with the Reynolds
analogy, it furnishes a synthesis between vehicular
dynamics, aerodynamics and heat transfer. Random
vibration predictions reported are intended to
qualitatively illustrate protuberance disturbance
effects. (Author) (U)

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AD- 856 742 13/12 22/2

AEROSPACE CORP EL SEGUNDO CALIF EL SEGUNDO TECHNICAL
OPERATIONS

Orbiting Vehicle Nonmetallic Materials
Combustion and Atmospheric Contaminant
Control Standard for the MOL Orbiting
Laboratory Program. (U)

DESCRIPTIVE NOTE: Technical operation rept.

MAY 68 75P
REPT. NO. TOR-1001(2107-20)-1-a-rev-1
CONTRACT: AF 04(695)-1001

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Supersedes Rept. no. TOR-
1001(2107-20)-1-A dated Feb 68.

DESCRIPTORS: (*MANNED SPACECRAFT, FIRE SAFETY), (*SPACE
STATIONS, FIRE SAFETY), (*MATERIALS, SPECIFICATIONS),
SPACE CAPSULES, ORGANIC MATERIALS, FLAMMABILITY, ODORS,
ELECTRIC INSULATION, EMBEDDING SUBSTANCES, ORGANIC
COATINGS, TOXICITY, AIR POLLUTION,
THRESHOLDS(PHYSIOLOGY), TEST EQUIPMENT, TEST METHODS,
FIRE SAFETY (U)
IDENTIFIERS: FLASH POINT, GEMINI, *GEMINI B PROJECT,
*MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES), OUTGASSING (U)

This specification delineates the conditions and
requirements for use of nonmetallic materials in the
MOL Orbiting Vehicles with respect to the
flammability and toxicity hazards. The objective is
to provide a high degree of safety. This
specification does not include considerations for
propellants and pyrotechnics. (Author, modified-
PL) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 741 22/2 17/7 9/2

MCDONNELL DOUGLAS ASTRONAUTICS CO ST LOUIS MO EASTERN DIV

MOL Baseline Requirements for Central, Test, and Reentry Modules of the Gemini B Computer Program. Volume III. MOL Baseline Equations Document. Part III. Data Item Number UC-228: Reentry Module Requirements.

(U)

68 90P

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 3, Part 1. AD-856 771 and Volume 3, Part 2. AD-856 772.

DESCRIPTORS: (*MANNED SPACECRAFT, *NAVIGATION COMPUTERS), (*SPACE STATIONS, NAVIGATION COMPUTERS), SPECIFICATIONS, COMPUTER PROGRAMMING, INERTIAL NAVIGATION, ATMOSPHERE ENTRY
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES)

(U)

(U)

This volume contains the reentry module requirements.

(U)

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AD- 856 740 22/2 21/8.2 21/2

MCDONNELL ASTRONAUTICS CO ST LOUIS MO

GEMINI-B Pre-Ignition Effectiveness Model Report,

(U)

MAR 68 132P Payne, L. W. ;
REPT. NO. MCASTRO-F921
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, SYSTEMS ENGINEERING), (*SPACE STATIONS, SPACE CREWS), (*SOLID PROPELLANT ROCKET ENGINES, IGNITION), SPACE CAPSULES, COMPUTER PROGRAMMING, PROBABILITY, FAILURE, SCHEDULING, COMMAND GUIDANCE, CONTROL SYSTEMS, POWER SUPPLIES, LAUNCH VEHICLES, COMMUNICATION AND RADIO SYSTEMS, TRACKING, PULSE CODE MODULATION, DISPLAY SYSTEMS, LIFE SUPPORT, RECOVERY

(U)

IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES), TITAN 3

(U)

The report presents the Gemini B Segment Pre-Ignition Effectiveness Model. The model is the tool for evaluating the pre-ignition effectiveness of the Gemini B in terms of the Probability of Launch-On-Time and the Probability of Prime Flight Crew Safety.
(Author)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 739 13/12 22/2

MCDONNELL ASTRONAUTICS CO ST LOUIS MO

Gemini B Oxygen Safety Study. Volume
I. Summary and Recommendations.

MAY 67 28P

REPT. NO. MCASTRO-F415-Vol-1
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

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SUPPLEMENTARY NOTE: See also Volume 2, AD-856
8111.

DESCRIPTORS: (*MANNED SPACECRAFT, CONTROLLED
ATMOSPHERES), (*SPACE STATIONS, CONTROLLED ATMOSPHERES),
(*FIRE SAFETY, OXYGEN), SPACE CAPSULES, SPACE CREWS,
LIFE SUPPORT, MATERIALS, FLAMMABILITY, ELECTRONIC
EQUIPMENT, ELECTRICAL EQUIPMENT, AEROSPACE SYSTEMS,
ESCAPE SYSTEMS (U)

IDENTIFIERS: *EMERGENCIES, *ESCAPE SYSTEMS, GEMINI,
*GEMINI B PROJECT, *MANNED ORBITING LABORATORIES,
*MOL(MANNED ORBITING LABORATORIES) (U)

In view of the recent accidents related to
spacecraft oxygen systems, a re-evaluation of the
Gemini B baseline for the Manned Orbiting
Laboratory Program was undertaken to identify
potential oxygen hazards and indicate what can be
done to minimize these hazards. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 737 22/2 20/4

MCDONNELL DCUGLAS ASTRONAUTICS CO HUNTINGTON BEACH CALIF
WESTERN DIV

MOL Fluid Dynamics Preliminary Data
Report: Thrustor Plume Tests. Sequence
Number B319. Item Data Number UT-132, (U)

MAR 69 123P Lofland, M. L. ;

REPT. NO. DAC-62749
CONTRACT: F04695-67-C-0029

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, *NOZZLE GAS FLOW),
(*SPACE STATIONS, NOZZLE GAS FLOW), SPACE CAPSULES,
EXHAUST GASES, IMPACT, SURFACES, PANELS, THERMAL
RADIATION, CONTAMINATION, ROCKET NOZZLES (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABCRATORIES, *MOL(MANNED ORBITING
LABORATORIES), PLUVES (U)

An experimental test program was conducted to
assess the effects of rocket exhaust plume
impingement on MOL vehicle surfaces and equipment.
Testing was performed in a vacuum chamber by use of
flat panels to represent vehicle surfaces and a
subscale thruster. The program included surface
heating tests and exhaust contamination
investigations, with emphasis on the latter.
Devices and techniques to control thruster
contamination were evaluated. Test data included
plume mapping and thermal heating measurements; in
situ measurements of thermal radiative and optical
properties of selected contamination specimens;
laboratory analyses of contamination deposits; and
movie and still photographic coverage.
(Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 733 22/2 20/4

MCDONNELL ASTRONAUTICS CO ST LOUIS MO

Gemini B Aerodynamic Data Book. Volume II. Static and Oscillatory Aerodynamic Pressures and Airload Distributions.

MAR 67 37P

REPT. NO. MCASTRO-F203-Vol-2

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, AERODYNAMIC CHARACTERISTICS), (*SPACE STATIONS, AERODYNAMIC CHARACTERISTICS), SPACE CAPSULES, AERODYNAMIC LOADING, DISTRIBUTION, PRESSURE, BUFFETING, OSCILLATION, STATISTICAL DATA, ADAPTERS (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

Contents: Overall aerodynamic data, static pressures and airload distributions; Unsteady pressure intensity and spatial correlations over the adapter. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 693 22/2 9/1

AEROSPACE CORP EL SEGUNDO CALIF MOL SYSTEMS ENGINEERING OFFICE

Wiring Harness Specification, (U)

APR 68 27P Lewotsky, F. ;

REPT. NO. TOR-0158(3107-28)-2

CONTRACT: F04695-67-C-0158

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, ELECTRIC CABLES), (*SPACE STATIONS, ELECTRIC CABLES), (*ELECTRIC CABLES, SPECIFICATIONS), SPACE CAPSULES, SUPPORTS, COMPATIBILITY, FLAMMABILITY, ELECTRIC CONNECTORS, ELECTRIC WIRE (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

The specification covers the general requirements for electrical wiring harnesses external to components which are installed in spacecraft; it shall be used with specification MIL-W-8160 whose requirements it expands. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 691

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AEROSPACE CORP EL SEGUNDO CALIF EL SEGUNDO TECHNICAL OPERATIONS

The Hypersonic Aerodynamic Characteristics of the Gemini Re-Entry Module Based on a Statistical Analysis of Wind Tunnel Test Data.

(U)

JUN 68 67P Pershing, Bernard M. ;
REPT. NO. TOR-0158(3107-15)-8
CONTRACT: FO4695-67-C-0158

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, ATMOSPHERE ENTRY), (*SPACE STATIONS, HYPERSONIC TEST VEHICLES), (*REENTRY VEHICLES, HYPERSONIC CHARACTERISTICS), MODELS(SIMULATIONS), PREDICTIONS, CONFIGURATION, HYPERSONIC WIND TUNNELS, LOADS(FORCES), THEORY, PLASMA SHEATHS, AERODYNAMIC HEATING, HEAT SHIELDS, STATISTICAL ANALYSIS, FLARED AFTERBODIES, ANGLE OF ATTACK IDENTIFIERS: LOADS(FORCES), *GEMINI B PROJECT, GRAPHS(CHARTS), *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

A set of hypersonic aerodynamic characteristics has been obtained for the Gemini re-entry module by a least squares curve fit of the appropriate ground test data to equation forms which are based on the related flow phenomena and simulation requirements. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 690 17/7 22/2 22/4

AEROSPACE CORP EL SEGUNDO CALIF EL SEGUNDO TECHNICAL OPERATIONS

Preliminary Gemini B Guidance Equations for the MOL Mission.

(U)

DESCRIPTIVE NOTE: Technical operating rept.,
A. : JAN 68 88P Hayden, W. L. ; Linquiti, A.
REPT. NO. TOR-0158(3107-15)-7
CONTRACT: FO4695-67-C-0158

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, ALL INERTIAL GUIDANCE), (*SPACE STATIONS, NAVIGATION), SPACE CAPSULES, INJECTION GUIDANCE, MIDCOURSE GUIDANCE, APOGEE, PERIGEE, STEERING, LAUNCH VEHICLES, SUBROUTINES, EQUATIONS IDENTIFIERS: CLOSED LOOP SYSTEMS, CONTROL, CONTROL SYSTEMS, GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES), TITAN 3 (U)

This report provides a description of the guidance equations that are planned for Module III of the Gemini B Computer Program. This module contains the ascent mode, including the Orbit Adjust capability and the Abort Retrotime Predict mode. The equations for the latter are not included in this report. The main logic flow of the equations presented, however, is compatible with, and provides entrance and exit to and from, the Abort Retrotime Predict mode. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 687 13/12 22/2

AEROSPACE CORP EL SEGUNDO CALIF MOL SYSTEMS ENGINEERING OFFICE

MOL Safety Evaluation Based on Apollo 204 Review Board Findings and Recommendations, and Brooks Air Force Base Accident Investigation Board Conclusions.

SEP 67 58P
REPT. NO. TOR-0158(3107-20)-1
CONTRACT: F04695-67-C-0158

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, CONTROLLED ATMOSPHERES), (*SPACE STATIONS, CONTROLLED ATMOSPHERES), (*FIRE SAFETY, REVIEWS), SPACE CAPSULES, OXYGEN, SPACE CREWS, MATERIALS, FLAMMABILITY, TRAINING, MAINTENANCE, ELECTRIC WIRE, SYSTEMS ENGINEERING, ACCIDENTS
IDENTIFIERS: GEMINI, *GEMINI 8 PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

The report narrates the evaluation of the MOL program with respect to each Apollo 204 Review Board finding and recommendation and the conclusions of the Brooks Air Force Base Accident Investigation Board. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 677 9/5 22/2

MCDONNELL CC ST LOUIS MO

Vibration Test of 58T030051-1 Gemini B Adapter Relay Panel Assembly.

DESCRIPTIVE NOTE: Final rept.,
MAR 67 198P Stewart, H. L. ;
REPT. NO. 058-4VB.04

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, PANEL BOARDS(ELECTRICITY)), (*SPACE STATIONS, PANEL BOARDS(ELECTRICITY)), (*PANEL BOARDS(ELECTRICITY)), RELIABILITY(ELECTRONICS)), SPACE CAPSULES, RELAYS, ENVIRONMENTAL TESTS, VIBRATION, ACCEPTABILITY, ADAPTERS, ACCELERATION, STRUCTURAL PROPERTIES
IDENTIFIERS: GEMINI, *GEMINI 8 PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

Vibration testing was conducted on a 58T030051-1 Relay Panel Assembly to determine if the assembly was electrically and structurally capable of withstanding the vibration environment specified in Test Request 058-AVB.04. The vibration-test program was conducted in six phases. Phases 1 and 2 consisted of determining the accelerations in the transverse axes of the exciter systems, without and with the hard-mounted relay panel. Phases 3 and 4 were a frequency-response test and a random-vibration test with the relay panel shock mounted. Phases 5 and 6 were a frequency-response test and a random-vibration test with the relay panel hard mounted. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 675 14/5 22/2

MCDONNELL CO ST LOUIS MO

Vibration Test of the 52-88115-21 Light Assembly, Photographic.

(U)

DESCRIPTIVE NOTE: Final rept.,

OCT 67 11P

REPT. NO. 058-AHF.01 Novak, E. L. ;

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, PHOTOGRAPHIC LIGHTING SYSTEMS), (*SPACE STATIONS, PHOTOGRAPHIC LIGHTING SYSTEMS), (*PHOTOGRAPHIC LIGHTING SYSTEMS, RELIABILITY(ELECTRONICS)), SPACE CAPSULES, VIBRATION, DIRECT CURRENT, ACCELEROMETERS, CHECKOUT EQUIPMENT, VIBRATORS(MECHANICAL), VISUAL INSPECTION

IDENTIFIERS: *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES)

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The report discusses results of vibration testing of a photographic light assembly intended for use on the MOL project.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 674 13/1 22/2

MCDONNELL CO ST LOUIS MC

Interface Heat Exchanger System Test.

(U)

DESCRIPTIVE NCIE: Final rept.

APR 69 15P

REPT. NO. 058-ATC.08

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, *HEAT EXCHANGERS), (*SPACE STATIONS, HEAT EXCHANGERS), SPACE CAPSULES, INTERFACES, HEAT TRANSFER, PERFORMANCE(ENGINEERING) IDENTIFIERS: EVALUATION, GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES)

(U)

(U)

(U)

A production Gemini B/Lab Interface Heat Exchanger Assembly was tested to determine (1) its heat transfer characteristics, and (2) system capability to carry the expected heat loads without excessive MDL loop temperature variation. Data was obtained at ground level and at simulated flight environmental conditions. Interface contact forces were at the low and high ends of the installation tolerances. (Author)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 673 6/17 13/7 22/2

MCDONNELL CO ST LOUIS MO

Reverse Pressure Effect on Suit Demand
Regulator.

(U)

DESCRIPTIVE NOTE: Final rept.

MAR 68 14P

REPT. NO. 058-ATC-06

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, PRESSURE SUITS),
(*SPACE STATIONS, PRESSURE SUITS), (*PRESSURE SUITS,
*PRESSURE REGULATORS), SPACE CAPSULES, PNEUMATIC VALVES,
OXYGEN, ENVIRONMENTAL TESTS, RELIABILITY (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

A Gemini B Suit Oxygen Demand and
Relief Regulator Valve, P/N 52-83700-1171,
was exposed to a simulated cabin pressure of 0.1 psia
for 33 days. The gas supply to the regulator was
closed during the 33 day exposure, permitting the
simulated suit circuit pressure to decay to 0.1 psia.
Following the 33 day exposure the regulator outlet
demand diaphragm was subjected to a reverse
pressurization of 3.5 psi simulating the reactivation
of the Gemini B Environmental Control
System. These tests were performed to
demonstrate that the qualified NASA Gemini
regulator valve would operate satisfactory when
exposed to the Gemini B conditions of orbital
storage and reverse pressure. Functional tests
performed on the regulator before and after the 33
day exposure indicated that the regulator performance
was satisfactory except that the maximum suit
pressure control point after the exposure was out of
specification. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 672 22/2

MCDONNELL CC ST LOUIS MO

Guidance and Control Mechanics Test -
Attitude Control System Analytical
Performance Verification.

(U)

DESCRIPTIVE NOTE: Final rept.

APR 68 75P

REPT. NO. 058-AGF-01

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, *ATTITUDE CONTROL
SYSTEMS), (*SPACE STATIONS, ATTITUDE CONTROL SYSTEMS),
SPACE CAPSULES, STABILIZED PLATFORMS, FLIGHT SIMULATORS,
GIMBALS, GYRO STABILIZERS, TEST METHODS (U)
IDENTIFIERS: CLOSED LOOP SYSTEMS, CONTROL, CONTROL
SYSTEMS, GEMINI, *GEMINI B PROJECT, *MANNED ORBITING
LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

Closed-loop attitude control system analytical
performance verification tests were conducted for the
Gemini B spacecraft and the mated Gemini B-
Manned Orbiting Laboratory (MOL)
configurations. Both manual and automatic modes
were tested. The primary concern was the ability
to control and display accurately attitude and rates
of the Gemini B spacecraft. Tests of the
inertial platform were performed on a 3-Axis
Flight Motion Simulator, driven by an analog
computer. The analog computer also mechanized the
dynamic equations of motion for both configurations.
(Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 671 22/2 11/9

MCDONNELL CO ST LOUIS MO

Physical Properties of Vacuum De-Oiled
DC-325 Ablative Material.

(U)

DESCRIPTIVE NOTE: Final rept.
SEP 68 10P
REPT. NO. 058-AKA.07
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, HEAT SHIELDS), (*SPACE STATIONS, HEAT SHIELDS), (*SILICONE PLASTICS, *ABLATION), SPACE CAPSULES, DEGASIFICATION, OILS, SILICONES, VACUUM, PHYSICAL PROPERTIES
(U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES)
(U)

The purpose of the test was to determine the effects of vacuum de-oiling on the physical properties of DC-325 silicone elastomeric ablative material. Thermal conductivity, Shore A Hardness, size, weight, tensile strength, and elongation were the physical properties measured before and after the vacuum exposure. All physical properties showed appreciable change except thermal conductivity; however, the weight and dimensional changes were slight. (Author)
(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 670 13/11 13/1 22/2

MCDONNELL CO ST LOUIS MO

Coolant Pump Assembly, Low Temperature
Start Test.

(U)

DESCRIPTIVE NOTE: Final rept.
APR 68 16P
REPT. NO. 058-AEI.02
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Limited number of copies containing color other than black and white are available until stock is exhausted. Reproductions will be made in black and white only.
DESCRIPTORS: (*MANNED SPACECRAFT, CONTROLLED ATMOSPHERES), (*SPACE STATIONS, CONTROLLED ATMOSPHERES), (*COOLANT PUMPS, ENVIRONMENTAL TESTS), PERFORMANCE(ENGINEERING), OPERATION, TEST METHODS, ACCEPTABILITY
(U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES)
(U)

Tests were conducted to demonstrate the ability of the Gemini 'B' Environmental Control System Coolant Pumps to start consistently, under low temperature environmental conditions, using two different power sources. (Author)
(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 669 13/5 20/11 22/2

MCDONNELL CO ST LOUIS MO

Tension and Shear Strength of Inserts in the
Gemini B Blast Shield.

(U)

DESCRIPTIVE NOTE: Final rept.

DEC 68 16P

REPT. NO. 058-AKA.04.02

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, SHIELDING), (*SPACE STATIONS, SHIELDING), (*METAL PLATES, DISCONNECT FITTINGS), SPACE CAPSULES, SHEAR STRESSES, TENSILE PROPERTIES, STRUCTURAL MEMBERS, LOADS(FORCES) IDENTIFIERS: *BLAST SHIELDS, GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

Tests were conducted to determine the tension and shear strength of plug inserts installed in the Gemini 'B' blast shield. The test was required because an accurate value of the strength of the plugs cannot be determined analytically. Plug inserts are used on the blast shield to support the interface heat exchanger, guillotine brackets, and the separation spring pads. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 668 13/5 22/2

MCDONNELL CC ST LOUIS MC

Torque Versus Preload. Gemini B RV/
Adapter Tie Strap.

(U)

DESCRIPTIVE NOTE: Final rept.

MAY 68 11P

REPT. NO. 058-ASA.05

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, REENTRY VEHICLES), (*SPACE STATIONS, REENTRY VEHICLES), (*ADAPTERS, *BOLTS), SPACE CAPSULES, TORQUE, LOADS(FORCES), TENSILE PROPERTIES, LOCKING FASTENER DEVICES IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES), REENTRY MODULES (U)

The purpose of the test was to determine nut torque versus tension load in the bolt for a nut and bolt combination of the size and material that is used for the Gemini B Adapter/Reentry Module mating straps. Thirty tests of nut torque versus bolt load measurement were conducted on twelve test assemblies. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 667 13/1 22/2

MCDONNELL CO ST LOUIS MO

Interface Heat Exchanger Interstitial
Material Element Test. Heat Transfer.

(U)

DESCRIPTIVE NOTE: Final rept.,

OCT 67 37P Holtz, Ronald L. ;

REPT. NO. 058-ATC.04

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, HEAT EXCHANGERS),
(*SPACE STATIONS, HEAT EXCHANGERS), (*HEAT EXCHANGERS,
HEAT TRANSFER), SPACE CAPSULES, INTERFACES, HEAT
TRANSFER COEFFICIENTS, SILICONES, GREASES, SILVER,
POWDERS, RELIABILITY (U)
IDENTIFIERS: EVALUATION, GEMINI, *GEMINI B PROJECT,
*MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

The purpose of this test was to evaluate the
interface heat transfer capability of the Gemini
B-MOL interface heat exchanger interstitial
material (a silicone grease - silver powder
mixture) at simulated orbital pressures and
expected temperatures. Tests were conducted with
and without interstitial material between the
interface surfaces of the simulated heat exchanger
and the interface loads simulated were the minimum
and maximum anticipated in the actual installation.
The average interface heat transfer coefficients
obtained were 186 Btu/hr-sq ft F for the clean
surfaces and 661 Btu/hr-sq ft F using
interstitial grease. (Author) (U)

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AD- 856 665 13/11 10/2 22/2

MCDONNELL CO ST LOUIS MO

Coolant Pump Power Inverter - Breadboard
Evaluation Testing.

(U)

DESCRIPTIVE NOTE: Final rept.,

SEP 67 12P Mooney, R. W. ;

REPT. NO. 058-AEI.01.06

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, INVERTERS), (*SPACE
STATIONS, INVERTERS), (*INVERTERS, POWER SUPPLIES),
(*ELECTRIC MOTORS, COOLANT PUMPS), SPACE CAPSULES,
RELIABILITY/ELECTRONICS), CLOSED ECOLOGICAL SYSTEMS
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

Tests were conducted to establish the running
characteristics of a motor (52-83700-403, S/N
123-111) used to drive the coolant pumps of the
Environmental Control System in the Gemini
B spacecraft. The three-phase power sources for
the motor were breadboard models of the spacecraft
high and low power inverters. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 664 22/2 22/1 13/12

MCDONNELL ASTRONAUTICS CO ST LOUIS MO

Gemini B Oxygen Safety Study. Volume
VIII. Inflight Emergency Operations and
Procedures.

(U)

MAY 67 43P

REPT. NO. MCASTRO-F415-Vol-8

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 7, AD-856 663L,
and Volume 9, AD-856 550L.
DESCRIPTORS: (*MANNED SPACECRAFT, FIRE SAFETY). (*SPACE
STATIONS, FIRE SAFETY). SPACE CAPSULES, HAZARDS, OXYGEN,
SPACECRAFT CABINS, FIRE ALARM SYSTEMS, PRESSURIZATION,
RARE GASES, FIRE EXTINGUISHERS, FLAMMABILITY, PRESSURE
SUITS, OXYGEN MASKS, PURGING, ABORT, PARACHUTES,
TRAINING, TIME, DESIGN

IDENTIFIERS: DEPRESSURIZATION, *EMERGENCY PROCEDURES,
GEMINI, *GEMINI B PROJECT, *MANNED ORBITING
LABORATORIES, *MOL(MANNED ORBITING LABORATORIES),
REVISIONS

(U)

Ten fire contingency situations in the Gemini B
and the Laboratory are identified. The
associated crew procedures, equipment requirements
and, in some cases, time lines are analyzed.
Recommendations to increase fire safety are made.

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 663 13/12 22/2

MCDONNELL ASTRONAUTICS CO ST LOUIS MO

Gemini B Oxygen Safety Study. Volume
VII. Simplified Two Gas System.

(U)

MAY 67 31P

REPT. NO. MCASTRO-F415-Vol-7

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 6, AD-856 662L,
and Volume 8, AD-856 661L.
DESCRIPTORS: (*MANNED SPACECRAFT, FIRE SAFETY). (*SPACE
STATIONS, FIRE SAFETY). SPACE CAPSULES, HAZARDS, OXYGEN,
PRESSURE, CONTROLLED ATMOSPHERES, HELIUM, CHECKOUT
PROCEDURES, CHECKOUT EQUIPMENT, GAS FLOW, GAS FILTERS,
CHECK VALVES, CONTROL PANELS, UNBILICAL
CORDS(AEROSPACE), PRESSURE SUITS, VENTING, DETECTORS,
RELIABILITY, AEROSPACE MEDICINE

(U)

IDENTIFIERS: ENVIRONMENTAL CONTROL SYSTEMS, GEMINI,
*GEMINI B PROJECT, MANNED ORBITING LABORATORIES,
*MOL(MANNED ORBITING LABORATORIES), PARTIAL PRESSURE,
REVISIONS

(U)

A simplified two-gas system for the Gemini B is
defined which provides a mixed gas atmosphere in the
cabin and requires no diluent gas make up on board
the spacecraft. The system approach is aimed
primarily at the elimination of the hazard during
ground operations when oxygen pressures are in the 15
to 20 psi range with the present system. Because
of the short duration of the crew occupancy after
lift-off and prior to crew transfer to the
Laboratory, the system provides a mixed gas
atmosphere as long as cabin repressurization is not
required. Supporting technical analyses are
presented including bio-medical considerations, gas
flow rates, atmosphere changes during flight,
monitoring requirements, and reliability evaluation.
Additional testing required is identified.

(U)

(Author)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 662

13/12 22/2

MCDONNELL ASTRONAUTICS CO ST LOUIS MO

Gemini B Oxygen Safety Study. Volume VI. Procedures - Ground Testing and Flight.

(U)

MAY 67 26P

REPT. NO. MCASTRO-F415-Vol-6

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 5, AD-856 814L, and Volume 7, AD-856 663L.

DESCRIPTORS: (*MANNED SPACECRAFT, FIRE SAFETY). (*SPACE STATIONS, FIRE SAFETY). (*FIRE SAFETY, CHECKOUT PROCEDURES). (*SPACE CAPSULES, HAZARDS, OXYGEN, SPACECRAFT CABINS, CONTROLLED ATMOSPHERES, TEST FACILITIES, SPACECRAFT DEBRIS, CLEANING, NITROGEN, HELIUM, LEAKAGE(FLUID), HYPERGOLIC ROCKET PROPELLANTS, PYROTECHNICS, FAILURE, PRESSURE SUITS, HYPOXIA, IDENTIFIERS: EMERGENCY PROCEDURES, GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

The procedures to be used in Gemini B in-plant testing and operations, ground checkout and pre-launch testing and operations are discussed relative to safe operations with respect to fire. The procedures examined consist of those associated with the Environmental Control System (ECS), the Reentry Control System (RCS), and the Pyrotechnic System since these systems present the greatest hazard with respect to fire. The primary area of consideration is inside the pressure cabin, with hatches closed and a 100% oxygen atmosphere. Therefore, principal concern is focused on ECS cabin procedures during in-plant, ground checkout and pre-launch operations. Flight operations are discussed in Volume VIII (AD-856 664). The procedures reviewed are non-technical, since the electrical components do not impose critical or special procedures with respect to fire safety. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 658

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MCDONNELL CC ST LOUIS MO

Re-Entry Module/Adapter Interconnect Fanning Aerodynamic Heating Wind Tunnel Tests AEDC Tunnel B.

(U)

DESCRIPTIVE NOTE: Final rept.,

DEC 67 19P

REPT. NO. 058-ATD-02.01

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, ADAPTERS). (*SPACE STATIONS, ADAPTERS). (*FAIRINGS, HEAT TRANSFER). (*SPACE CAPSULES, WIND TUNNEL MODELS, SCALE, MODEL TESTS, REENTRY VEHICLES, AERODYNAMIC HEATING, CYLINDRICAL BODIES, ANGLE OF ATTACK, HYPERSONIC CHARACTERISTICS, IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

Testing was conducted on three, 9 percent scale Gemini models and a 5.8-inch diameter hemisphere cylinder to obtain qualitative and semi-quantitative information on the local heat transfer rate induced on the Gemini afterbody by the module/adapter interconnect fairing. These models were cast using RTV 60 silicone rubber. A 0.3-inch minimum thickness of rubber was maintained over an aluminum core. The Gemini models were tested at 160, 165, and 170 deg angle of attack. The hemisphere cylinder was tested at 0 deg angle of attack. Testing was conducted at Mach 8 at Reynolds numbers per foot of 3.8, 3.5, 3.0, 2.0, and 1.0 x 10 to the 6th power. Prior to each run, models were coated with paint. Color motion pictures were made during the test to obtain color change data, and still photographs of the models were taken after each run. Forty-seven runs were completed during Series I tests and 27 runs during Series II tests. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMQ7

AD- 856 657 9/1 22/2

MCDONNELL CO ST LOUIS MO

Gemini B Limit Switches. Spacecraft Pressure Effects.

(U)

DESCRIPTIVE NOTE: Final rept.,
JUN 67 12P Woods, T. G. ;
REPT. NO. 058-AEH.01
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, ELECTRIC SWITCHES),
(*SPACE STATIONS, ELECTRIC SWITCHES), (*ELECTRIC
SWITCHES, RELIABILITY(ELECTRONICS)), PRESSURIZATION,
OPERATION, PERFORMANCE(ENGINEERING),
FAILURE(ELECTRONICS), SPACE CAPSULES, SPECIFICATIONS (U)
IDENTIFIERS: *GEMINI B PROJECT, *LIMIT SWITCHES,
*MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

Tests were performed on four limit switches to determine the effects of pressure differentials on their operating characteristics. Each switch was subjected to low pressure environments of 10 psia, 5 psia, and 0.1 psia, and to high pressure environments of 20 psia, 25 psia, and 30 psia. The actuation and reset forces were measured before and after the low and high pressure environments. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMQ7

AD- 856 656 13/5 22/2

MCDONNELL CO ST LOUIS MO

Heat Shield Hatch Acceptance Test for Functional Fit at Temperature.

(U)

DESCRIPTIVE NOTE: Final rept.
DEC 68 18P
REPT. NO. 058-ARB.04.01
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, HEAT SHIELDS), (*SPACE STATIONS, HEAT SHIELDS), (*HEAT SHIELDS, FASTENINGS), HATCHES, SPACE CAPSULES, CONFIGURATION, TORQUE, TEMPERATURE, LOCKING FASTENER DEVICES, TEST METHODS, CHECKOUT PROCEDURES (U)
IDENTIFIERS: CREW TRANSFER TUNNELS, GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

The heat shield-hatch assembly for Gemini B is designed to provide access to the crew-transfer tunnel during the orbital phase of a mission. The hatch latching mechanism has been successfully tested at simulated altitude and temperature (per Test Request 058-ARB.04). The purpose of the testing described in the report was to demonstrate that there is an acceptable functional fit between the heat shield hatch and the heat shield at operating temperatures. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 655 9/1 13/12 22/2

MCDONNELL CO ST LOUIS MO

Massive Overload of Kynar (5M974 and 5M975) Insulated Wire in Air.

(U)

DESCRIPTIVE NOTE: Final rept.,

NOV 67 22P Lamirand, J. B. ;

REPT. NO. 058-AED.03

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*SPACE STATIONS, FIRE SAFETY), (*MANNED SPACECRAFT, FIRE SAFETY), (*ELECTRIC WIRE, FAILURE(ELECTRONICS)), SPACE CAPSULES, FIRE RESISTANT MATERIALS, ELECTRIC INSULATION, DIELECTRIC PROPERTIES, VINYL PLASTICS, HALOCARBON PLASTICS, FLUORINE COMPOUNDS, ELECTRICAL RESISTANCE

(U)

IDENTIFIERS: *GEMINI B PROJECT, *LOADING(ELECTRICAL), *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES), VINYLIDENE FLUORIDE POLYMERS

(U)

Results are presented for a test conducted to evaluate the electrical overload characteristics of wire bundles fabricated from polyvinylidene outer space wire. The two test specimens were subjected to massive overload tests in ambient air. Each test specimen was also subjected to a preliminary dielectric strength test at 1500 Vrms.

(Author)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 654 9/1 13/12 22/2

MCDONNELL CO ST LOUIS MO

Massive Overloads on Teflon, Kapton, and Kynar Insulated Wire in an Oxygen Atmosphere.

(U)

DESCRIPTIVE NOTE: Final rept.,

NOV 67 61P Lamirand, J. B. ;

REPT. NO. 058-AED.02

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

Availability: Microfiche copies only.
DESCRIPTORS: (*MANNED SPACECRAFT, ELECTRIC CABLES), (*SPACE STATIONS, ELECTRIC CABLES), (*ELECTRIC INSULATION, FLAMMABILITY), SPACE CAPSULES, HALOCARBON PLASTICS, CONTROLLED ATMOSPHERES, OXYGEN, ELECTRIC CURRENTS, DIELECTRIC PROPERTIES, COMBUSTION, COMBUSTION PRODUCTS, GAS ANALYSIS, AIR POLLUTION, EMBEDDING SUBSTANCES

(U)

IDENTIFIERS: EVALUATION, GEMINI, *GEMINI B PROJECT, KAPTON, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES)

(U)

Results are presented for a series of overload tests to provide comparative data relating to the flammability characteristics in a 5.0 psia oxygen atmosphere of wire bundles fabricated from Teflon, Kapton (H-Film), and Kynar wire. Six test specimens were subjected to a massive overload test, five specimens to a controlled step-current overload test, and one specimen to a step-current test for the purpose of obtaining a quantitative and qualitative analysis of the chamber atmosphere. Each of the specimens was also subjected to a preliminary dielectric-strength test at 1500 Vrms.

(U)

(Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 653 13/5 22/2

MCDONNELL AIRCRAFT CO ST LOUIS MO

Static Test of the Gemini B Adapter for the
Critical Combination of Ascent Phase Loads
and Elevated Temperature.

(U)

DESCRIPTIVE NOTE: Final rept.

NOV 68 175P

REPT. NO. MAC-058-ASA-04

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, SPACECRAFT
COMPONENTS), (*SPACE STATIONS, ADAPTERS), (*ADAPTERS,
ENVIRONMENTAL TESTS), SIMULATION, AERODYNAMIC HEATING,
LOADS(FORCES), DEFLECTION, THERMAL PROPERTIES,
INTERFACES, BULKHEADS (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, (U)
GRAPHS(CHARTS), *MANNED ORBITING LABORATORIES, (U)
*MOL(MANNED ORBITING LABORATORIES)

The report describes an environmental test
performed on a structural adapter. The purpose of
this test was to demonstrate the structural integrity
of the Gemini 'B' Adapter under the critical
combination of load, elevated temperature, and
temperature differentials between the inner and outer
structural skins of the hat sections. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 652 9/3 13/1 22/2

MCDONNELL CC ST LOUIS MC

Torque vs Motor Input Current for Coolant
Pump Motor, P/N 52-83700-403, S/N 123-
111.

(U)

DESCRIPTIVE NOTE: Final rept.,

JUN 67 4P

REPT. NO. 058.AEI.01.01

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, CONTROLLED
ATMOSPHERES), (*SPACE STATIONS, CONTROLLED ATMOSPHERES),
(*ELECTRIC MOTORS, COOLANT PUMPS), TORQUE, OPERATION,
ELECTRICAL PROPERTIES, SPECIFICATIONS,
FAILURE(ELECTRONICS) (U)
IDENTIFIERS: *GEMINI B PROJECT, *MANNED ORBITING
LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

The test request was initiated to determine the
electrical stall characteristics of either the motors
used in the Coolant Pump Assembly. The
coolant pump motor is a 3-phase, 60 cycle, 12 v rms
unit. It is installed in coolant pump assemblies
to drive the gears of the pump cartridge which
establishes the flow of coolant fluid in the
spacecraft. This system was utilized in the
Gemini 'A' spacecraft, and it is proposed for use
in the Gemini 'B' and Airlock programs. (U)
(Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 651 19/1 22/2

MCDONNELL CO ST LOUIS MO

Dissection of Hatch Actuator Breech
Cartridge, P/N A218-10 (15-1006).

DESCRIPTIVE NOTE: Final rept..

FEB 67 SP Landholt, L. ;
REPT. NO. 058-AMB.01

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, HATCHES), (*SPACE
STATIONS, HATCHES), (*HATCHES, *EXPLOSIVE ACTUATORS),
CARTRIDGES(PAD), SPACE CAPSULES, ASSEMBLY, WEIGHT,
PARTICLE SIZE, EXPLOSIVE CHARGES, NITRATES (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

The A218-10 Cartridge which was qualified for
the NASA Gemini, is a pyrotechnic device which is
used to initiate the breech of the hatch actuator.
In order to fabricate identical cartridges for
Gemini B, it was necessary to ascertain the
nominal particle size and total weight of the BKN03
pyrotechnic material in the output charge of the
cartridge. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 574 22/2 13/11

MCDONNELL CC ST LOUIS MO

Functional Tests on Two Gemini B Coolant
Pump Assemblies.

DESCRIPTIVE NOTE: Final rept..

AUG 67 6P Meier, Craig A. ;
REPT. NO. 058-AEI.01.04
CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, CONTROLLED
ATMOSPHERES), (*SPACE STATIONS, CONTROLLED ATMOSPHERES),
(*COOLANT PUMPS, SPECIFICATIONS), FLUID FLOW, OPERATION,
FAILURE(ELECTRONICS), ELECTRIC MOTORS, MATERIALS, (U)
ACCEPTABILITY (U)
IDENTIFIERS: *GEMINI B PROJECT, *MANNED ORBITING
LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

Two Coolant Pump Assemblies were tested
functionally by the Failure Analysis Laboratory
in accordance with specifications. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 573 11/6 22/2 20/11

MCDONNELL CO ST LOUIS MO

Gemini B Blast Shield: Mechanical
Properties of Aluminum Flexcore.

(U)

DESCRIPTIVE NOTE: Final rept.

AUG 68 19P

REPT. NO. 058-AKA.04

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*ROCKET ENGINES, EXHAUST FLAMES), (*MANNED SPACECRAFT, SHIELDING), (*SPACE STATIONS, SHIELDING), (*METAL PLATES, STRUCTURAL PROPERTIES), SPACE CAPSULES, SHEAR STRESSES, COMPOSITE MATERIALS, SANDWICH CONSTRUCTION, ALUMINUM ALLOYS, GLASS TEXTILES, REINFORCED PLASTICS

(U)

IDENTIFIERS: ALUMINUM ALLOY 5056, ALUMINUM ALLOY 5052, *BLAST SHIELDS, GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES)

(U)

The Gemini B blast shield is a sandwich construction composed of glass fabric reinforced plastic skins adhesively bonded to aluminum flexcore. The object of this test was to determine the plate shear strength and the flatwise bare compressive strength of aluminum flexcore as well as the effect of the flexcore thickness on the plate shear strength. (Author)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 570 13/5 22/2

MCDONNELL CC ST LOUIS MO

Structural and Functional Test of the Gemini
B Adapter Ground Coolant Supply Umbilical
Disconnect.

(U)

DESCRIPTIVE NOTE: Final rept.

NOV 68 13P

REPT. NO. 058-ASA.03

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, GROUND SUPPORT EQUIPMENT), (*SPACE STATIONS, GROUND SUPPORT EQUIPMENT), (*UMBILICAL CORDS(AEROSPACE), *DISCONNECT FITTINGS), SPACE CAPSULES, ADAPTERS, PERFORMANCE(ENGINEERING), COOLANTS, HOSES, SEPARATION, LOADS(FORCES)

(U)

IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES)

(U)

A series of five tests was conducted to demonstrate the capability of the umbilical backup structure to withstand the loads imposed during separation of the coolant, helium, and oxygen lines, and to demonstrate the functional operation of the umbilical disconnect. The umbilical, which is similar to that used on NASA Gemini, is designed to disconnect by the rupture of four frangible unions. Because of changes from the NASA Gemini configuration in coolant hose lengths, lanyard, coolant hose 'pull off' angles, and the addition of hoses for the dual gas system, it was necessary to redesign the umbilical frangible unions for the Gemini B. Satisfactory separation was achieved during each of the five tests. A visual inspection of the umbilical backup structure after each test revealed no structural damage. (Author)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 569 22/2 9/1

MCDONNELL CO ST LOUIS MO

EMI Test of Gemini B Limit Switches. (U)

DESCRIPTIVE NOTE: Final rept.,

MAY 67 29P McDiv, R. P. ;

REPT. NO. 058-AEG.01

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, ELECTRIC SWITCHES),
(*SPACE STATIONS, ELECTRIC SWITCHES), (*ELECTRIC
SWITCHES, RELIABILITY(ELECTRONICS)), SPACE CAPSULES,
OPERATION, SPECIFICATIONS, ELECTRICAL PROPERTIES,
ELECTROMAGNETIC COMPATIBILITY

IDENTIFIERS: *GEMINI B PROJECT, *LIMIT SWITCHES, (U)

*MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

The report presents the results of the conducted
interference test performed on the Limit Switches
used on Gemini B. This test was conducted in
accordance with the required specifications.
(Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 554 20/4 22/2

MCDONNELL DCUGLAS ASTRONAUTICS CO HUNTINGTON BEACH CALIF
WESTERN DIV

MOL Rigid Body Fluctuating Pressure Test

(1AL2). Volume II. Sequence Number

B329. Data Item Number UT-134. (U)

DESCRIPTIVE NOTE: Fluid dynamics final test and analysis
rept.,

JAN 69 323P Emerson, T. S. ;

REPT. NO. DAC-62611-Vol-2

CONTRACT: F04695-67-C-0029

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 1, AD-856
743L.

DESCRIPTORS: (*MANNED SPACECRAFT, AERODYNAMIC LOADING),
(*SPACE STATIONS, AERODYNAMIC LOADING), (*AIRFRAMES,
TURBULENT BOUNDARY LAYER), SPACE CAPSULES, MODEL TESTS, (U)
MACH NUMBER, PRESSURE, WIND TUNNEL MODELS
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES), *PRESSURE LEVELS (U)

The report contains illustrated distributions of
overall and octave band fluctuating pressure levels.
(Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 553 19/1 22/2

MCDONNELL CO ST LOUIS MO

Development Test of Z100 FLSC Cutter
Assembly with Dual Titanium Straps.

(U)

DESCRIPTIVE NOTE: Final rept.,

JUL 67 22P Farnsworth, Craig W. ;

REPT. NO. 058-AMA.07

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, SHAPED CHARGES),
(*SPACE STATIONS, SHAPED CHARGES), (*SHAPED CHARGES,
RELIABILITY), SPACE CAPSULES, SEPARATION, TITANIUM,
FASTENERS, ELECTRIC CABLES, ALUMINUM, PIPES,
ENVIRONMENTAL TESTS

(U)

IDENTIFIERS: GEMINI, GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES)

(U)

Five tests were performed to demonstrate that the
existing flexible linear shaped charge cutter
assembly that was qualified during the NASA Gemini
program can adequately separate the Gemini B
configuration of dual spacecraft to adapter titanium
tension straps, wire bundle, and fluid filled
aluminum tubes after exposure to environmental
conditions. (Author)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 551 13/1 22/2

MCDONNELL CO ST LOUIS MO

Separation Test of Simulated Gemini B
Interface Heat Exchanger Coldplates.

(U)

DESCRIPTIVE NOTE: Final rept.

FEB 68 30P

REPT. NO. 058-ATC.05

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, HEAT EXCHANGERS),
(*SPACE STATIONS, HEAT EXCHANGERS), (*METAL PLATES,
SEPARATION), STAGING, SPACE CAPSULES, INTERFACES,
GREASES, ADHESION, SIMULATION, ALUMINUM
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES)

(U)

(U)

The separation of the interface heat exchanger must
coincide with the Gemini B/MOL separation.
The heat transfer compound used between the two
halves of the interface heat exchanger has exhibited
significant cohesive properties. Therefore, the
testing reported here was conducted to determine the
tensile force required to separate two 112 square
inch aluminum plates which simulated the interface
heat exchanger mating surfaces. (Author)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 548 22/2 20/4

MCDONNELL DOUGLAS ASTRONAUTICS CO SANTA MONICA CALIF
WESTERN DIV

MOL Fluid Dynamics Test Pretest Report:
Test Line Item 1A35. MOL Flutter Test.
LM Meteoroid Shield Half-Scale Model.
Sequence Number B332. Data Item Number
UT-135.

(U)

SEP 68 44P
REPT. NO. DAC-59818
CONTRACT: F04695-67-C-0029

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, FLUTTER), (*SPACE STATIONS, FLUTTER), (*SHIELDING, *FLUTTER), SPACE CAPSULES, METEORITES, EXTENDABLE STRUCTURES, MODEL TESTS, SCALE, SUPERSONIC CHARACTERISTICS (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

The MOL Panel Flutter Model M207 is a 50% scale model of the Laboratory Module of the MDL Orbiting Vehicle. Basically the model consists of a sting supported thick walled hollow duct assembly which forms the base upon which the dynamically scaled meteoroid shield skin assembly and various protuberances are mounted. The purpose of the test is to determine whether the entire meteoroid shield of the MOL Laboratory vehicle is free of destructive flutter in the flight environment. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 546 22/2 20/4

DOUGLAS AIRCRAFT CO INC HUNTINGTON BEACH CALIF MISSILE
AND SPACE SYSTEMS DIV

MOL Rigid Body Fluctuating Pressure Test
(1A12). Volume I. Sequence Number
B325. MOL Data Item UT-133.

(U)

DESCRIPTIVE NOTE: Final data rept..

68 111P Brown, J. J. ;

REPT. NO. DAC-60336

CONTRACT: F04695-67-C-0029

UNCLASSIFIED/REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, AERODYNAMIC CHARACTERISTICS), (*SPACE STATIONS, AERODYNAMIC CHARACTERISTICS), (*TURBULENT BOUNDARY LAYER, PRESSURE), ANGLE OF ATTACK, CALIBRATION, REENTRY VEHICLES, SUBSONIC CHARACTERISTICS, SUPERSONIC CHARACTERISTICS, SPACE CAPSULES, PITCH(MOTION), YAW (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

A wind tunnel test was performed to measure the fluctuating pressures at the surface and around flow perturbing geometrics on a 10% model of the MOL Orbiting Vehicle. The model was tested at 15 mach numbers and various angles of attack. Detail descriptions of the model, test plan, test procedures, and calibrations are included. Some data analysis in the form of comparing disturbed flow and undisturbed flow regions, the impact on current environmental criteria, and extrapolation to full scale conditions are also included. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 545 9/1 22/2

MCDONNELL CO ST LOUIS MO

Immersion Testing of Teflon Bundles. (U)

DESCRIPTIVE NOTE: Final rept.,

JAN 68 30P Laminand, J. B. ;

REPT. NO. 058-AED.05

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, ELECTRIC CABLES),
 (*SPACE STATIONS, ELECTRIC CABLES), (*ELECTRIC CABLES,
 MOISTUREPROOFING), HALOCARBON PLASTICS, SPACE CAPSULES,
 LIQUID IMMERSION TESTS, DIELECTRIC PROPERTIES, (U)
 ELECTRICAL RESISTANCE, ELECTRIC INSULATION (U)
 IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
 ORBITING LABORATORIES, *MOL(MANNED ORBITING
 LABORATORIES) (U)

The report presents the results of an altitude-
 immersion test conducted to provide comparative data
 on the capability of various Teflon insulated wire
 bundles to withstand sea water immersion following
 descent from a simulated orbital environment.
 (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 544 13/12 22/2

DOUGLAS AIRCRAFT CO INC HUNTINGTON BEACH CALIF MISSILE
 AND SPACE SYSTEMS DIVMOL Zero G Development Test Report, DAC
 Line Item 1AJ32, Sequence Number
 B300. (U)

FEB 68 42P

REPT. NO. DAC-60150

CONTRACT: F04695-67-C-0029

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, SAFETY BELTS), (*SPACE
 STATIONS, SAFETY BELTS), (*SAFETY BELTS,
 *WEIGHTLESSNESS), SPACE CAPSULES, DESIGN, CONFIGURATION,
 MOTION, WASTES(SANITARY ENGINEERING), HYGIENE,
 PERFORMANCE(HUMAN), MOBILITY, MODELS(SIMULATIONS),
 PRESSURE SUITS (U)
 IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
 ORBITING LABORATORIES, *MOL(MANNED ORBITING
 LABORATORIES), *RESTRAINT DEVICES (U)

The report outlines the procedures and results of
 tests conducted on the intravehicular restraints and
 locomotion equipment, impact panels, and Personal
 Hygiene/Waste Management Assembly. The
 tests were performed using crew stations mockups of
 representative bays, and the Personal Hygiene/
 Waste Management Assembly and under conditions
 of zero gravity as simulated in the KC-135
 aircraft. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07
AD- 856 543 14/3 22/2

MCDONNELL CO ST LOUIS MO

Vibration Test of a 52-85713-339 Tape Recorder. Volume 1.

DESCRIPTIVE NOTE: Final rept.

AUG 68 99P

REPT. NO. 058-AVB-07-Vol-1

(U)

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 2, AD-856 894.
DESCRIPTORS: (*MANNED SPACECRAFT, MAGNETIC RECORDING SYSTEMS), (*SPACE STATIONS, MAGNETIC RECORDING SYSTEMS), (*MAGNETIC RECORDING SYSTEMS, VIBRATION), MAGNETIC TAPE, OPERATION, ENVIRONMENTAL TESTS, VIBRATION ISOLATORS, SPACE CAPSULES (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

Vibration testing was conducted to determine the recording characteristics of the recorder when mounted with and without isolators and subjected to a vibration environment. The vibration test program was conducted in 5 phases. Test Phases 1, 3, 4, and 5 were conducted with the specimen mounted to the vibration fixture via vibration isolators and test Phase 2 was conducted with the specimen rigidly mounted to the vibration fixture. Low-level (2g peak) sine survey tests (with the tape recorder not operating) were conducted on the tape recorder during test Phase 3, and full-level (10.5g) random vibration tests (with the tape recorder operating) were conducted on the tape recorder during test Phases 1, 2, 4, and 5. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07
AD- 856 542 6/17 22/2

DOUGLAS AIRCRAFT CO INC HUNTINGTON BEACH CALIF MISSILE AND SPACE SYSTEMS DIV

MOL Zero G Development Test Report. DD Form 1423 Data Item UT-(110).

APR 67 23P

CONTRACT: F04695-67-C-0029

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, WEIGHTLESSNESS), (*SPACE STATIONS, WEIGHTLESSNESS), (*PRESSURE SUITS, SPACE CREWS), SPACE CAPSULES, SAFETY BELTS, MODEL TESTS, TEST METHODS, PERFORMANCE(HUMAN), HELMETS, SHOES, GLO IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

The report describes the Pressure Suit Donning Tests performed by the Crew Stations unassisted in a mock-up of the MOL suit stowage area during zero gravity conditions. The object of these tests was to determine the suitability of the space allotted for suit donning under actual zero-g conditions and to evaluate various proposed restraints for suit, helmet, gloves, and boots. (Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 541 9/5 22/2 22/4

MCDONNELL CO ST LOUIS MO

G. B. Q. Antenna Tests.

DESCRIPTIVE NOTE: Final rept.

AUG 68 92P

REPT. NO. 058-ADA.04-Rev-A

CONTRACT: F04695-67-C-0023

(U)

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, SATELLITE ANTENNAS),
(*SPACE STATIONS, SATELLITE ANTENNAS), (*SATELLITE
ANTENNAS, ANTENNA RADIATION PATTERNS), SPACE CAPSULES,
CALIBRATION, RECORDING PAPER (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

The report contains reproductions of recorder
charts depicting the relative power, in decibels, of
spacecraft antenna radiation patterns. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 540 19/1 22/2

MCDONNELL CO ST LOUIS MO

Performance Comparison of Gemini B Z191
MDF Explosive (DIPAM) to NASA Gemini Z191
MDF Explosive (RDX).

DESCRIPTIVE NOTE: Final rept.

JUL 68 11P

REPT. NO. 053-AMA.13

CONTRACT: F04695-67-C-0023

(U)

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, EXPLOSIVE ACTUATORS),
(*SPACE STATIONS, EXPLOSIVE ACTUATORS), (*EXPLOSIVE
ACTUATORS, ENERGY), SPACE CAPSULES, CONTROL SYSTEMS,
REENTRY VEHICLES, FUZES(CORDNANCE), SILVER, LEAD(METAL),
EXPLOSIVES, TEST METHODS (U)
IDENTIFIERS: DIPAM EXPLOSIVE, GEMINI, *GEMINI B
PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED
ORBITING LABORATORIES) (U)

During the *ASA Gemini program, lead sheathed
RDX Mild Detonating Fuse (MDF) was utilized
in the Z191 Severance System of the spacecraft.
Silver sheathed DIPAM MDF is to be used in the
Z191 Severance System of the Gemini B
Spacecraft. The test program was conducted to
correlate the output energy of silver sheathed DIPAM
MDF with that of lead sheathed RDX MDF, and
thereby ensure that the Gemini B Reentry
Control System (RCS) structure will not sustain
structural damage resulting from MDF detonation.
(Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 538 22/2

MCDONNELL CO ST LOUIS MO

Gemini B Large Pressure Bulkhead Hatch
Element Strength Verification Test.

(U)

DESCRIPTIVE NOTE: Final rept.

JUL 68 39P

REPT. NO. 058-ASB.04

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, HATCHES), (*SPACE STATIONS, HATCHES), (*HATCHES, SANDWICH CONSTRUCTION), SPACE CAPSULES, PRESSURIZED CABINS, HONEYCOMB CORES, GLASS TEXTILES, TITANIUM ALLOYS, BONDING, PERFORMANCE(ENGINEERING), ACCEPTABILITY, SHEAR STRESSES

IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES)

(U)

The object of the test was to determine if the bond strengths of the Gemini B large pressure bulkhead hatch meet the requirements of McDonnell drawing number 58A320014. The large pressure bulkhead hatch consists of a fiberglass honeycomb core sandwich with titanium faceplates. (Author)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 537 14/3 22/2

MCDONNELL CO ST LOUIS MO

Vibration Test of a 58A880025-1 Tape Recorder.

(U)

DESCRIPTIVE NOTE: Final rept.

JUL 68 41P

REPT. NO. 058-AHJ.01

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, MAGNETIC RECORDING SYSTEMS), (*SPACE STATIONS, MAGNETIC RECORDING SYSTEMS), (*MAGNETIC RECORDING SYSTEMS, VIBRATION), MAGNETIC TAPE, OPERATION, ANALOG SYSTEMS, POWER SPECTRA, ENVIRONMENTAL TESTS, SPACE CAPSULES

IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES)

(U)

Vibration testing was conducted to determine the operating characteristics of the tape recorder. The tape recorder was subjected to a 10.5 g random vibration spectrum in the three test axes, with the tape recorder mounted to the vibration fixture. (Author)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 536 22/2 22/4

DOUGLAS AIRCRAFT CO INC HUNTINGTON BEACH CALIF MISSILE AND SPACE SYSTEMS DIV

MOL Ground Test Plan: Effectiveness Test Plan. Sequence Number B288. Data Item Number UT-004.

APR 68 143P
REPT. NO. DAC-57180
CONTRACT: F04695-67-C-0029

(U)

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, SPACECRAFT COMPONENTS), (*SPACE STATIONS, SPACECRAFT COMPONENTS), (*SPACECRAFT COMPONENTS, ENVIRONMENTAL TESTS), SPACE CAPSULES, LIFE EXPECTANCY, MAINTAINABILITY, QUALITY CONTROL, EFFECTIVENESS, GROUND SUPPORT EQUIPMENT, STRESSES, LOADS(FORCES), MANAGEMENT PLANNING AND CONTROL

(U)

IDENTIFIERS: GEMINI, *GEMINI B PROJECT, MANAGEMENT INFORMATION SYSTEMS, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES)

(U)

This document defines the proposed Effectiveness Ground Test Program. This document is divided into three sections. Section 1 describes the scope and purpose of the document, provides definitions of terms, and the procedures, controls, and documentation to be utilized. Section 2 contains the effectiveness test narrative descriptions, and Section 3 is the MOL Test Summary. (Author)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 533 9/1 13/12 22/2

MCDONNELL CC ST LOUIS MO

Current Rating of 24 Gauge High Strength Alloy Wire.

(U)

DESCRIPTIVE NOTE: Final rept.

JUN 68 20P

REPT. NO. G58-AED.04

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Limited number of copies containing color other than black and white are available until stock is exhausted. Reproductions will be made in black and white only.

DESCRIPTORS: (*SPACE STATIONS, FIRE SAFETY), (*MANNED SPACECRAFT, FIRE SAFETY), (*ELECTRIC WIRE, ELECTRICAL PROPERTIES), SPACE CAPSULES, THERMAL STABILITY, VACUUM APPARATUS, ELECTRICAL RESISTANCE, TEMPERATURE, THERMOCOUPLES, VINYL PLASTICS, HALOCARBON PLASTICS, FLUORINE COMPOUNDS

(U)

IDENTIFIERS: GEMINI, *GEMINI B PROJECT, LOADING(ELECTRICAL), *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES), POLYIMIDE RESINS, VINYLIDENE FLUORIDE POLYMERS

(U)

Tests were conducted to determine the time for insulated wires, when subjected to a hard vacuum environment, to reach specified temperatures due to various levels of current. (Author)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 529 9/1 22/2

MCDONNELL CO ST LOUIS MO

Small Gage Wire Overload Protection
Evaluation.

(U)

DESCRIPTIVE NOTE: Final rept.

JUL 68 8P

REPT. NO. 058-AEM.01

CONTRACT: F04695-67-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, ELECTRIC WIRE),
(*SPACE STATIONS, ELECTRIC WIRE), (*ELECTRIC WIRE,
FAILURE(ELECTRONICS)), (*CIRCUIT BREAKERS,
PERFORMANCE(ENGINEERING)), (*SPACE CAPSULES, PROTECTION,
HALOCARBON PLASTICS, ELECTRIC CURRENTS, VOLTAGE,
ELECTRIC INSULATION, TEMPERATURE, DISCOLORATION,
ELONGATION, FLAMMABILITY, TEST METHODS,
RELIABILITY(ELECTRONICS))

(U)

IDENTIFIERS: EVALUATION, GEMINI, *GEMINI B PROJECT,
*MANNED ORBITING LABORATORIES *MOL(MANNED ORBITING
LABORATORIES), SMALL GAGE WIRE

(U)

Results are presented for a series of load tests
conducted to determine the degree of protection
afforded 26-gage Teflon wire when protected by a
52-79721-422 Circuit Breaker. Circuit breaker
timeouts were found to fall within the actuation band
anticipated. (Author, modified-PL)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 524 13/12 22/2

AEROSPACE CCRP EL SEGUNDO CALIF MOL SYSTEMS ENGINEERING
OFFICEMOL Fire Safety Activities
(Briefing).

(U)

DESCRIPTIVE NOTE: Status rept.

JUL 67 80P

REPT. NO. TOR-0158(3107-20)-2

CONTRACT: F04695-67-C-0158

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, CONTROLLED
ATMOSPHERES), (*SPACE STATIONS, CONTROLLED ATMOSPHERES),
(*FIRE SAFETY, REVIEWS), SPACE CAPSULES, OXYGEN, SPACE
CREWS, MATERIALS, FLAMMABILITY, FIRE EXTINGUISHERS,
DOORS, FIRE ALARM SYSTEMS, AEROSPACE SYSTEMS, ESCAPE
SYSTEMS

(U)

IDENTIFIERS: *EMERGENCIES, *ESCAPE SYSTEMS, GEMINI,
*GEMINI B PROJECT, *MANNED ORBITING LABORATORIES,
*MOL(MANNED ORBITING LABORATORIES)

(U)

The briefing compares MOL Program design
baseline, procedures, plans, etc. to the Apollo 204
Review Board findings and recommendations.
(Author)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 523 22/2 20/11

MCDONNELL DOUGLAS ASTRONAUTICS CO SANTA MONICA CALIF
WESTERN DIVMOL Mass Properties Report 3.2: Verification
Plan. Sequence Number B256. Data Item
Number S-66.

JAN 69 37P

REPT. NO. DAC-62482

CONTRACT: F04695-67-C-0029

UNCLASSIFIED REPORT

(U)

DESCRIPTORS: (*MANNED SPACECRAFT, LOAD DISTRIBUTION),
(*SPACE STATIONS, LOAD DISTRIBUTION), (*LOAD
DISTRIBUTION, MEASUREMENT), WEIGHT, CENTER OF GRAVITY,
SPECIFICATIONS, MEASURING INSTRUMENTS (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORY, *MOL(MANNED ORBITING
LABORATORY) (U)

The purpose of the Mass Properties
Verification Plan is to identify the critical
mass properties and specify the verification methods
to be used. The specification requirements current
at the time of verification will be considered the
MDCAC-WD standard. The Verification Plan
defines the requirements and methods necessary to
verify critical mass properties until the time of
launch. The Operational Support plan will
establish the field station and on-orbit verification
plan. The weight of the LVSS and Laboratory
Vehicle and center of gravity (CG) of the
Laboratory Vehicle will be the primary
measurements taken which, in turn, will be the basis
for analytically determining the Orbiting Vehicle
(OV) mass properties. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 522 13/12 22/2

AEROSPACE CCRP EL SEGUNDO CALIF MOL SYSTEMS ENGINEERING
OFFICEOrbiting Vehicle Nonmetallic Materials
Combustion and Atmospheric Contaminant
Control Standard for the MOL Orbiting
Laboratory Program. (U)

SEP 67 78P

REPT. NO. TOR-1001(2107-20)-1

CONTRACT: AF 04(695)-1001

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, FIRE SAFETY), (*SPACE
STATIONS, FIRE SAFETY), (*NONMETALS, STANDARDS), SPACE
CAPSULES, SPECIFICATIONS, AIR POLLUTION, FLAMMABILITY,
TOXICITY, COMBUSTION PRODUCTS, FIRE RESISTANT MATERIALS,
INDUSTRIAL PRODUCTION, PROCUREMENT, ACCEPTABILITY,
CARBON MONOXIDE, ORGANIC COMPOUNDS, GORDS, CIRCUIT
INTERCONNECTIONS, ELECTRIC INSULATION, COATINGS,
EMBEDDING SUBSTANCES (U)
IDENTIFIERS: COMPONENTS, GEMINI, *GEMINI B PROJECT,
*MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

This specification delineates the conditions and
requirements for use of non-metallic materials in the
MOL Orbiting Vehicle with respect to the
flammability and toxicity hazards. The objective
is to provide a high degree of safety with due regard
to practical limitations and mission objectives.
The criteria, test methods, and controls described
pertain only to the flammability and toxicity
hazards. Functional and other materials
requirements are not included. Requirements for
control of materials are delineated. This
specification does not include considerations for
propellants and pyrotechnics. It should be noted
that the requirements are specified in terms of the
most severe environment in which the material is
intended to be used. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 521 22/2 22/4

DOUGLAS AIRCRAFT CO INC HUNTINGTON BEACH CALIF MISSILE
AND SPACE SYSTEMS DIVMOL Ground Test Plan: Development Test
Plan. Sequence Number B285. MOL Data
Item Number UT-101.

(U)

JUN 68 549P
REPT. NO. DAC-57177
CONTRACT: F04695-67-C-0029

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, SPACECRAFT
COMPONENTS), (*SPACE STATIONS, SPACECRAFT COMPONENTS),
(*SPACECRAFT COMPONENTS, ENVIRONMENTAL TESTS), SPACE
CAPSULES, QUALITY CONTROL, DESIGN, EFFECTIVENESS, VALUE
ENGINEERING, ACCEPTABILITY, GROUND SUPPORT EQUIPMENT,
STRESSES, LOADS(FORCES), TEST METHODS, MANAGEMENT
PLANNING AND CONTROL

IDENTIFIERS: EVALUATION, GEMINI, *GEMINI B PROJECT,
MANAGEMENT INFORMATION SYSTEMS, *MANNED ORBITING
LABORATORIES, *MOL(MANNED ORBITING LABORATORIES)

(U)

(U)

This document defines the Development Ground
Test program. This document is organized in
five sections. Section 1 describes the scope and
purpose of the document, provides definitions of
terms, and the procedures, controls, and
documentation to be utilized. Sections 2 and 3 are
(Part 1) development tests; Sections 4 and 5
describe the nonmandatory (part 2) development
tests. (Author)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 517 22/2

AEROSPACE CCRP EL SEGUNDO CALIF MOL SYSTEMS ENGINEERING
OFFICEStructural Specification Gemini B
Spacecraft.

(U)

OCT 68 27P
REPT. NO. TOR-0158(3107-15)-11-A
CONTRACT: F04701-68-C-0200, F04695-67-C-0158

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Supersedes Rept. no. TOR-
0158(3107-15)-11 dated Jun 68.
DESCRIPTORS: (*MANNED SPACECRAFT, STRUCTURAL
PROPERTIES), (*SPACE STATIONS, STRUCTURAL PROPERTIES),
SPECIFICATIONS, STRENGTH(PHYSIOLOGY), SAFETY, REENTRY
VEHICLES

(U)

(U)

IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES)

(U)

This document presents the basic requirements
governing the structural design for the Gemini B
Spacecraft of the Manned Orbiting Laboratory
System (MOL). Included herein are the
following: Definitions, abbreviations, and
references; Structural design philosophy; General
conditions and environments for which the spacecraft
structure must be evaluated and/or designed; and
Requirements for establishing loads and other
environmental factors for the structural design
conditions. (Author)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 516 22/2

AEROSPACE CORP EL SEGUNDO CALIF MOL SYSTEMS ENGINEERING OFFICE

Electromagnetic Compatibility Requirements MOL Systems Orbiting Vehicle. (U)

JUN 68 115P Balduw.W. J. ;
REPT. NO. TOR-0200(4107-28)-2
CONTRACT: F04701-68-C-0200

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, ELECTROMAGNETIC COMPATIBILITY), (*SPACE STATIONS, ELECTROMAGNETIC COMPATIBILITY), SPACE CAPSULES, SPECIFICATIONS, DESIGN, QUALITY CONTROL, SAFETY, TOLERANCES(MECHANICS) (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

This specification provides the requirements of an electromagnetic compatibility (EMC) control program for each manned spacecraft composite system procured by the Manned Orbiting Laboratory Systems Program Office (MOL SPO). The EMC control program for each such system shall be used by MOL SPO to establish and maintain 'engineered-in' EMC control from issuance of contractual go-ahead of the program definition phase through the life of the affected system so that the confidence level and degree of probability of system performance in its operational environment will be before the fact. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 515 22/2

DOUGLAS AIRCRAFT CO INC HUNTINGTON BEACH CALIF MISSILE AND SPACE SYSTEMS DIV

MOL Fluid Dynamics Test Pretest Report.
MOL Protuberance Heating Wind Tunnel Model.
Sequence Number 8334. Data Item Number
UT-135. (U)

FEB 63 54P
REPT. NO. DAC-58780
CONTRACT: F04695-67-C-0029

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, EXTENDABLE STRUCTURES), (*SPACE STATIONS, EXTENDABLE STRUCTURES), (*EXTENDABLE STRUCTURES, HEAT TRANSFER), SPACE CAPSULES, AERODYNAMIC HEATING, WIND TUNNEL MODELS, MODEL TESTS, BOUNDARY LAYER, SUPERSONIC CHARACTERISTICS (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED ORBITING LABORATORIES, *MOL(MANNED ORBITING LABORATORIES) (U)

The report outlines objectives and test requirements for wind tunnel testing of several protuberances unique to the MOL vehicle. An important feature of the testing program is the investigation of heating rates on protuberances wholly or partially submerged in a boundary layer. In order to achieve a thick boundary layer, the models are mounted on the floor of the tunnel. A thin, instrumented plate replaces the ordinary tunnel floor plates, in order to investigate the disturbances caused by the protuberances on the surrounding flow fields. A wake heating region of at least 35 inches will be available. The protuberance models and the metric floor plate are constructed of thin nickel shells 1/16 inch thick. Heat transfer data will be collected by applying thin skin temperature response techniques. The models will be tested at Mach numbers of 2.5, 3.0, 3.5, 4.0, 4.5, and 5.0 and unit Reynolds number will be varied to the limits of the tunnel and structural limits of the models. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 513 20/4 22/2

DOUGLAS AIRCRAFT CO INC HUNTINGTON BEACH CALIF MISSILE
AND SPACE SYSTEMS DIV

MOL Rigid Body Fluctuating Pressure Test
(1AL2). Sequence Number 8333. Data
Item UT-135. (U)

DESCRIPTIVE NOTE: Pretest rept.,
JUL 67 79P Brown, J. J. ;
REPT. NO. DAC-60199
CONTRACT: F04695-67-C-0029

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also AD-856 554.
DESCRIPTORS: (*MANNED SPACECRAFT, AERODYNAMIC LOADING),
(*SPACE STATIONS, AERODYNAMIC LOADING), (*AIRFRAMES,
TURBULENT BOUNDARY LAYER), SPACE CAPSULES, AERODYNAMIC
CHARACTERISTICS, PRESSURE, WIND TUNNEL MODELS, MODEL
TESTS, VIBRATION, FATIGUE(MECHANICS), TRANSDUCERS (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES), *PRESSURE LEVELS (U)

The test provides data which will be used to
determine the characteristics of the fluctuating
pressures acting at the surfaces of the Gemini B/
MOL. The pressure characteristics so determined,
will be utilized to (1) perform structural
response studies leading to structural loads
verification and fatigue life predictions, and
(2) assess and establish environmental vibration
criteria. The test specimen is a 'rigid' 3-
dimensional 10 percent scaled model of the orbiting
vehicle. The test environment consists of
simulating the flight parameters within the
limitations of the selected wind tunnels.
(Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 512 22/2

AEROSPACE CORP EL SEGUNDO CALIF MOL SYSTEMS ENGINEERING
OFFICE

Environmental and Test Requirements Gemini
B Spacecraft. (U)

OCT 68 131P
REPT. NO. T06-0158(3107-15)-10-A
CONTRACT: F04701-68-C-0200, F04695-67-C-0158

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Supersedes report dated Jun 68.
DESCRIPTORS: (*MANNED SPACECRAFT, ENVIRONMENTAL TESTS),
(*SPACE STATIONS, ENVIRONMENTAL TESTS), SPACE CAPSULES,
SPECIFICATIONS, TOLERANCES(MECHANICS), TEMPERATURE, TEST
METHODS, CONTROLLED ATMOSPHERES, TEST EQUIPMENT (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJECT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

IAC ACCESSION NUMBER: MCIC-006637
IAC DOCUMENT TYPE: MCIC -HARD COPY--
The specification contains the environmental and
test requirements for the Gemini B Spacecraft
for the United States Air Force Manned
Orbiting Laboratory (MOL) Program. The
document is compatible with the general environmental
criteria for the MOL System and defines the
environmental conditions for the spacecraft and
spacecraft components during all mission phases.
(Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 511 9/2 22/2

DOUGLAS AIRCRAFT CO INC HUNTINGTON BEACH CALIF MISSILE
AND SPACE SYSTEMS DIV

MOL Item Test Plan (Computer Programs).
Computer Program, Compiler, Manned Orbiting
Laboratory, Test Oriented Language.
Sequence Number 8294. (U)

JAN 67 11P
REPT. NO. DAC-60066
CONTRACT: F04695-67-C-0029

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, TEST METHODS), (*SPACE
STATIONS, TEST METHODS), (*COMPILERS, TEST METHODS),
COMPUTER PROGRAMMING, MULTIPLE OPERATION, (U)
SPECIFICATIONS (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJEKT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES), MULTIPROGRAMMING (U)

The plan establishes the detailed requirements,
criteria, general methods, responsibilities, and
overall planning (in accordance with Section 4 of
the Part I Specification for the MOLTOL
Compiler, CEI 207270A), to confirm that CEI
207270A fulfills the requirements of Section 3 of
the Part I Specification, No. CG00488. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 856 509 9/2 22/2

DOUGLAS AIRCRAFT CO INC HUNTINGTON BEACH CALIF MISSILE
AND SPACE SYSTEMS DIV

MOL Item Test Plan (Computer Programs).
Computer Program, Operational, All Systems
Test Equipment Group, Sequence Number
B295, Data Item Number UT-109. (U)

FEB 67 12P
REPT. NO. DAC-60065
CONTRACT: F03695-67-C-0029

UNCLASSIFIED REPORT

DESCRIPTORS: (*MANNED SPACECRAFT, CHECKOUT PROCEDURES),
(*SPACE STATIONS, CHECKOUT PROCEDURES), (*CHECKOUT
PROCEDURES, *COMPUTER PROGRAMMING), SPACE CAPSULES, DATA
TRANSMISSION SYSTEMS, INPUT OUTPUT DEVICES, MULTIPLE
OPERATION, TEST METHODS, SPECIFICATIONS (U)
IDENTIFIERS: GEMINI, *GEMINI B PROJEKT, *MANNED
ORBITING LABORATORIES, *MOL(MANNED ORBITING
LABORATORIES) (U)

The document presents that plan which establishes
the detailed requirements, criteria, general methods,
responsibilities, and overall planning to confirm
that the operational system program fulfills the
requirements of Section 3 of the Part I
Specification. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMQ7

AD- 850 512 22/2 11/4

ARNOLD ENGINEERING DEVELOPMENT CENTER ARNOLD AIR FORCE STATION TENN

Simulated Meteoroid Impact Testing on a Composite Expandable Structure for Spacecraft Airlock Application. (U)

DESCRIPTIVE NOTE: Final rept. 1 Dec 67-29 Aug 68, APR 69 29P Carden, William H. ;
REPT. NO. AEOC-TR-69-14
CONTRACT: F40600-69-C-0001
PROJ: AF-8170, ARO-V50847
TASK: 817034

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with ARO, Inc., Tullahoma, Tenn.
DESCRIPTORS: (*MANNED SPACECRAFT, EXPANDABLE STRUCTURES), (*SPACE STATIONS, METEORITES), HAZARDS, VULNERABILITY, PENETRATION, SIMULATION, COMPOSITE MATERIALS, SABOT PROJECTILES, TERMINAL BALLISTICS, IMPACT, COMBUSTION (U)
IDENTIFIERS: AIRLOCKS, APOLLO, METEORIDS, SPACE HAZARDS (U)

Simulated meteoroid impact tests were conducted on an expandable, elastic recovery, four-layer composite material proposed for flight testing in a dummy airlock configuration aboard a NASA S-IVB Orbital Workshop. The tests were conducted to obtain the ballistic limit of the structure and to determine its behavior during simulated meteoroid perforation while enclosing a typical oxygen-rich spacecraft atmosphere. Spherical aluminum projectiles at a velocity of about 20,000 ft/sec were used on the tests, and perforation occurred for projectile masses greater than about 0.004 gm. The resistance of the structure to perforation was not affected by the presence of oxygen at 5 psia behind the test sample except under certain conditions in which the structure was compressed by the gas pressure together with the clamping arrangement used to fasten the sample to the test tank.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOMQ7

AD- 848 174 20/4 22/2

ARNOLD ENGINEERING DEVELOPMENT CENTER ARNOLD AIR FORCE STATION TENN

Flutter Test of a 0.50-Scale MDL Meteoroid Shield Panel at Mach Numbers from 1.2 to 2.5. (U)

DESCRIPTIVE NOTE: Final rept. 31 Oct-11 Dec 68, FEB 69 40P Riddle, C. D. ;
REPT. NO. AEOC-TR-69-41
CONTRACT: F40600-69-C-0001
PROJ: ARO-PT0767

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with ARO, Inc., Tullahoma, Tenn.
DESCRIPTORS: (*SPACE STATIONS, FLUTTER), (*AIRCRAFT PROTRUSIONS, CYLINDRICAL BODIES), AIRPLANE PANELS, WIND TUNNEL MODELS, MODEL TESTS, AERODYNAMIC LOADING, AERODYNAMIC HEATING, PRESSURE, SURFACES, BOUNDARY LAYER, TURBULENCE, SUPERSONIC CHARACTERISTICS, TRANSONIC CHARACTERISTICS, MANNED SPACECRAFT, METEORS, SHIELDING (U)
IDENTIFIERS: MANNED ORBITAL LABORATORY, METEOROID SHIELDS, SKIN (STRUCTURAL MEMBER) (U)

A 0.50-scale model of the meteoroid shield portion of the MDL laboratory vehicle was tested in Tunnels 16T and 16S of the Propulsion Wind Tunnel Facility. The model consisted of a sting-supported hollow duct assembly about which the dynamically scaled meteoroid shield skin and various protuberances were mounted. The test objective was to determine if the shield was free of destructive flutter in the flight dynamic pressure environment. Principal shield data included measurements of strain, displacement, temperature, noise level, surface pressure, and boundary-layer profile. Data were recorded at nominal Mach numbers from 1.25 to 1.50 in Tunnel 16T and from 1.70 to 2.25 in Tunnel 16S. Dynamic pressure was varied from tunnel minimums to levels that exceeded the scaled flight value. No indications of flutter were observed. (Author)

(U)

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 847 482 22/2 9/2 15/5

LTV AEROSPACE CORP DALLAS TEX MISSILES AND SPACE DIV

Extravehicular Activities System
Effectiveness. Volume III Phase II
Effectiveness Computer Model.

(U)

DESCRIPTIVE NOTE: Final rept. 17 Apr 68-27 Jan 69,
JAN 69 141P Nicks, Robert F. ; Gregory,

Lowell D. ; Dyer, Ray E. ;

REPT. NO. MSD/ES-2601-Vol-3, MSD-00.1115-Vol-3

CONTRACT: F33615-67-C-1499

PROJ: AF-8170

TASK: 817012

MONITOR: AFAPL TR-68-135-Vol-3

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 1, AD-847 481.

DESCRIPTORS: (*SPACE FLIGHT, LOGISTICS), (*SPACE
STATIONS, EXTRAVEHICULAR ACTIVITY), (*SPACE
PLANNING, MANNED SPACECRAFT, SATELLITE ANTENNAS,
ANTENNAS, SYSTEMS ENGINEERING, SATELLITE ANTENNAS,
LIFE SUPPORT, MATHEMATICAL MODELS, COMPUTER PROGRAMS,
FLOW CHARTING, SUBROUTINES, COST EFFECTIVENESS

IDENTIFIERS: AOL(ADVANCED ORBITAL LABORATORIES), (U)

COMPUTERIZED SIMULATION, *MANAGEMENT INFORMATION
SYSTEMS, *MANNED ORBITAL LABORATORIES, TITAN 3

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 847 481 22/2 15/5

LTV AEROSPACE CORP DALLAS TEX MISSILES AND SPACE DIV

Extravehicular Activities System
Effectiveness. Volume I Phase II Summary
Report.

(U)

DESCRIPTIVE NOTE: Final rept. 17 Apr 68-27 Jan 69,
JAN 69 92P Nicks, Robert F. ;

REPT. NO. MSC/ES-2601-Vol-1, MSD-00.1115-Vol-1

CONTRACT: F33615-67-C-1499

PROJ: AF-8170

TASK: 817012

MONITOR: AFAPL TR-68-135-Vol-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 2, AD-395
368L.

DESCRIPTORS: (*SPACE FLIGHT, LOGISTICS), (*SPACE
STATIONS, EXTRAVEHICULAR ACTIVITY), SYSTEMS ENGINEERING,
TELESCOPES, SATELLITE ANTENNAS, ANTENNAS, MANNED
SPACECRAFT, LIFTING REENTRY VEHICLES, DESIGN,
PERFORMANCE(HUMAN), VALUE ENGINEERING, OPTICAL EQUIPMENT
COMPONENTS, COST EFFECTIVENESS, PLANNING (U)

IDENTIFIERS: AOL(ADVANCED ORBITAL LABORATORIES),

*MANAGEMENT INFORMATION SYSTEMS, *MANNED ORBITAL
LABORATORIES, TITAN 3

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AD- 815 716 22/2

GOODYEAR AEROSPACE CORP AKRON OHIO

PRE-PHASE I FOR DESIGN, FABRICATION, AND ORBITAL
TESTING OF A SPACE STRUCTURE. (U)

DESCRIPTIVE NOTE: Final rept. Jan-Oct 66,
JAN 67 368p Hoffman, Thomas L. ;
REPT. NO. GER-12849
CONTRACT: AF 33(615)-3403
PROJ: AF-8170
TASK: 817004
MONITOR: AFAPL TR-66-145

UNCLASSIFIED REPORT

DESCRIPTORS: (*EXPANDABLE STRUCTURES, *SPACE STATIONS),
HONEYCOMB CORES, SANDWICH CONSTRUCTION, PRESSURIZED
CABINS, MATERIALS, WEIGHT, ELASTIC PROPERTIES,
GRAVITY(ARTIFICIAL), EXTRAVEHICULAR ACTIVITY, SPACECRAFT
DOCKING, LAUNCH VEHICLES, RINGS, AIRFRAMES, SPACECRAFT
COMPONENTS, FEASIBILITY STUDIES, HATCHES, SPACE CREWS,
STABILIZED PLATFORMS, ENERGY MANAGEMENT, (U)
SPINNING(MOTION), ACCELERATION (U)
IDENTIFIERS: ROTATION, VELOCITY, APOLLO, SPACECRAFT
RESEARCH, TITAN 3 (U)

This report summarizes the preliminary design and analysis performed by GAC on a large expandable toroidal space structure for orbital testing. The program established preliminary designs, supported by analysis, of two fractional torus concepts, a 138-ft diam elastic recovery materials configuration and a 118-ft diam expandable honeycomb materials configuration. The fractional torus designs comprise 3 identical symmetrically located 8.5-ft diam modules connected together by 3 symmetrically located 4.5-ft diam access tunnels. The torus modules are connected by 5.5-ft diam spokes to a 10-ft diam cylindrical central hub of aluminum honeycomb sandwich construction, which has its 20-ft length perpendicular to the plane of the torus. The expandable components (spokes, modules, and access tunnels) are attached to each other and to the rigid hub with aluminum termination assemblies that provide dual aluminum hatches to compartmentize the structure in the event of depressurization of any component. (U)

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AD- 785 123 22/2 9/2

TRW SYSTEMS GROUP REDONCO BEACH CALIF

Department of Defense Space Shuttle on-
Board Software Requirements. (U)

DESCRIPTIVE NOTE: Technical Operating rept. Mar-Jul
74, JUL 74 440p Unfrig, D. B. ;
REPT. NO. TRW-25475-6006-TU-00
CONTRACT: F04701-74-C-0316
MONITOR: SAM30 TR-74-155

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:
DESCRIPTORS: *Space shuttles, *Computer programming,
*Data processing, Memory devices, Guidance
computers, Navigation computers, Flight control
systems, Systems engineering, Interfaces,
Requirements (U)

This document presents a baseline set of DOD Space Shuttle On-Board Software Requirements prepared under the direction of the Space and Missile Systems Organization (AFSC). These requirements are concerned with the DOD operational use of the space shuttle and pertain to that portion of the software which resides in the orbiter's on-board general purpose computers (five IBM AP-101's) and their two associated mass memories. Emphasis is placed on the payload management and payload handling functions because these functional areas are of particular importance to DOD as an operational user of the space shuttle. Other functions addressed are guidance, navigation, flight control, systems management, displays and controls, flight computer operating system, system interfaces, and mission planning. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 779 915 21/9.1 22/2

TRW SYSTEMS GROUP REDONDO BEACH CALIF

Development of a Zero-G Gauging System.
Volume I.

(U)

DESCRIPTIVE NOTE: Final rept. 16 Jun 72-20 Dec 73,

JAN 74 244P

Bupp, Frank E. ;

REPT. NO. 16740-6003RU-00

CONTRACT: F04611-71-C-0010

PROJ: AF-3058

MONITOR: AFRPL TR-74-5

UNCLASSIFIED REPORT

DESCRIPTORS: *Space shuttles, *Liquid rocket
propellants, *Weightlessness, *Liquid level gages,
Gamma rays, Detectors, Propellant tanks,
Propellant control, Reliability(Electronics)

(U)

Nucleonic techniques using continual gamma-ray
emission phenomena were extensively analyzed in the
application of gauging (storable) propellants in
the Space Shuttle Vehicle Orbital
Maneuvering System (OMS) tanks when under zero-
gravity conditions. Parametric analyses were used
to identify viable gauging concepts which were, in
turn, subjected to subsystem and engineering
tradeoffs. Based on these tradeoffs, a flight-type
nucleonic gauging system was designed, fabricated and
tested. (Modified author abstract)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 778 445 22/3 1/1 16/2

DOUGLAS AIRCRAFT CO LONG BEACH CALIF

The Mark IV Supersonic-Hypersonic
Arbitrary-Body Program. Volume III.
Program Listings.

(U)

DESCRIPTIVE NOTE: Final rept.,

NOV 73 579P

Gentry, Arvel E. ; Smyth,

Douglas N. ; Oliver, Wayne R. ;

CONTRACT: F33615-72-C-1675

MONITOR: AFFDL TR-73-159-Vol-3

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 2, AD-778 444.
DESCRIPTORS: *Hypersonic vehicles, *Supersonic
aircraft, *Space shuttles, FORTRAN, Aerodynamic
characteristics, Flow fields, Supersonic flow,
Hypersonic flow, Aerodynamic forces, Digital
simulation

(U)

The volume contains the source language listings of
the Mark IV Supersonic-Hypersonic
Arbitrary-Body Program (Mod 0 Version).
The program as shown in this listing will operate
on CDC 6500, 6600, and CYBER 74 computers.
With a small converter program, the Mark IV
program can be converted for operation on IBM 360
and 370 types of computers. This converter program
is included with the listings.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 778 444 22/3 1/1 16/2

DOUGLAS AIRCRAFT CO LONG BEACH CALIF

The Mark IV Supersonic-Hypersonic
Arbitrary-Body Program. Volume II.
Program Formulation.

(U)

DESCRIPTIVE NOTE: Final rept..

NOV 73 228P Gentry, Arvel E. ; Smyth,

Douglas N. ; Oliver, Wayne R. ;

CONTRACT: F33615-72-C-1675

MONITOR: AFFDL TR-73-159-Vol-2

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 1, AD-778 443 and
Volume 3, AD-778 445.

DESCRIPTORS: *Hypersonic vehicles. *Supersonic
aircraft. *Space shuttles. FORTRAN. Aerodynamic
characteristics. Flow fields. Supersonic flow.
Hypersonic flow. Aerodynamic forces. Digital
simulation

(U)

The report contains descriptions of the analysis
techniques used within the program. Throughout
these discussions an attempt has been made to
maintain mathematical notations consistent with the
appropriate reference involved. This will assist
the reader in comparing the approaches with the
original reference material at some slight loss in
continuity within the present report. This policy
has also been used in the selection of many of the
program variable names.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 778 443 22/3 1/1 16/2

DOUGLAS AIRCRAFT CO LONG BEACH CALIF

The Mark IV Supersonic-Hypersonic
Arbitrary-Body Program. Volume I. User's
Manual.

(U)

DESCRIPTIVE NOTE: Final rept..

NOV 73 269P Gentry, Arvel E. ; Smyth,

Douglas N. ; Oliver, Wayne R. ;

CONTRACT: F33615-72-C-1675

MONITOR: AFFDL TR-73-159-Vol-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 2, AD-778 444.

DESCRIPTORS: *Hypersonic vehicles. *Supersonic
aircraft. *Space shuttles. FORTRAN. Aerodynamic
characteristics. Flow fields. Supersonic flow.
Hypersonic flow. Aerodynamic forces. Digital
simulation

(U)

The report describes a digital computer program
system that is capable of calculating the supersonic
and hypersonic aerodynamic characteristics of complex
arbitrary three-dimensional shapes. This program
is identified as the Mark IV Supersonic-
Hypersonic Arbitrary-Body Computer Program.
This program is a complete reorganization and
expansion of the old Mark III Hypersonic
Arbitrary-Body Program. The Mark IV
program has a number of new capabilities that extend
its applicability down into the supersonic speed
range. (Modified author abstract)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07
AD- 773 160 22/2 1/3

NATIONAL RESEARCH COUNCIL OF CANADA OTTAWA (ONTARIO)

Dynamic Stability Testing of Aircraft -
Needs Versus Capabilities, (U)

73 17P Orlik-Rueckemann, K. J. ;

UNCLASSIFIED REPORT

DESCRIPTORS: *Aerospace craft, Canada, Dynamics,
Stability, Angle of attack, Wind tunnel models,
Variable sweep wings, Short takeoff aircraft,
Space shuttles (U)

The report presents highlights of a recent survey of the future needs for dynamic stability information for such aerospace vehicles as the space shuttle and advanced high performance military aircraft, indicating the importance of obtaining this information for high-angle-of-attack high-Reynolds-number conditions. A review of the wind-tunnel capabilities in North America for measuring dynamic stability derivatives, reveals an almost total lack of such capabilities for Mach numbers above 0.1 at angles of attack higher than 25 degrees. In addition, capabilities to obtain certain new cross-coupling derivatives and information on effects of the coning motion are almost completely lacking. (Modified author abstract) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07
AD- 772 888 22/3

NATIONAL AERONAUTICAL ESTABLISHMENT OTTAWA (ONTARIO)

Example of Dynamic Interference Effects
between Two Oscillating Vehicles, (U)

MAY 73 4P Orlik-Rueckemann, K. J. ;
Iyengar, S. ;

UNCLASSIFIED REPORT

Availability: Pub. in Jnl. of Spacecraft and
Rockets, Vol. 9, p617-619 Sep 73.
SUPPLEMENTARY NOTE: Presented at the AIAA Atmospheric
Flight Mechanics Conference (2nd) Held at Palo
Alto, Calif., 11-13 Sep 72. Revision of report dated
4 Apr 73.

DESCRIPTORS: *Space shuttles, *Booster rockets,
*Separation, *Interference, Dynamic tests,
Oscillation, Abort, Mathematical models,
Experimental data, Orbits, Vehicles, Canada
IDENTIFIERS: *Abort separation maneuvers (U)
(U)

The principal message of this paper is that the
mutual static interference between two vehicles
flying in the proximity of each other may cause their
instantaneous frequencies to become nearly the same,
and that whenever this happens (even if only for a
short time) a strong and hitherto unaccounted-for
dynamic interference may occur which could alter the
subsequent flight history of one or both of the
companion vehicles. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 772 687 22/2 22/3

ARNOLD ENGINEERING DEVELOPMENT CENTER ARNOLD AIR FORCE STATION TENN

Heat-Transfer Tests of Two Space Shuttle Orbiter Configurations at Mach Number 8. (U)

DESCRIPTIVE NOTE: Final rept. 25 Aug-28 Sep 72.
JAN 74 44P Martindale, W. R.;
REPT. NO. AEDC-TR-73-59
PROJ: AF-921E-1, ARO-VA024

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with ARO, Inc., Tullahoma, Tenn. Rept. no. ARO-VKF-TR-72-198.

DESCRIPTORS: *Space shuttles, *Aerodynamic heating, Manned spacecraft, Heat transfer, Atmosphere entry, Boundary layer transition, Flow visualization, Wind tunnel models (U)

Heat transfer tests were conducted on two Space Shuttle configurations at Mach number 8 to investigate the effects of nose geometry on windward and leeward heating and boundary layer transition. Free-stream Reynolds number based on model length was varied from 1.5 to 7.5 million at angles of attack from 20 to 50 deg. Windward centerline heating rates were in general agreement with calculated values except for laminar rates downstream of the wing/body junction. Differences in the location of the beginning of transition and the length of the transition zone were observed for the two configurations, but it was not clear whether variation in nose shape per se or the abrupt cross-sectional change from the nose to the aft fuselage and wing was the controlling factor. (Author) (U)

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AD- 767 900 20/4

ARNOLD ENGINEERING DEVELOPMENT CENTER ARNOLD AIR FORCE STATION TENN

Wall Temperature Effects on Two- and Three-Dimensional Transonic Turbulent Boundary Layers. (U)

DESCRIPTIVE NOTE: Final rept. Dec 72-Jul 73.
OCT 73 71P Adams, J. C., Jr.; Wayne, A. W., Jr;
REPT. NO. AEDC-TR-73-156
PROJ: ARO-VG005, ARO-VF405

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with ARO, Inc., Tullahoma, Tenn. Rept. no. ARO-VKF-TR-73-100.

DESCRIPTORS: *Turbulent secondary layer, *Wind tunnel models, Reynolds number, Transonic characteristics, Subsonic characteristics, Aerospace craft, Atmosphere entry, Temperature, Transonic airfoils, Computer programming, Flight, Recoverable booster motors, Rendezvous spacecraft, Two dimensional flow, Three dimensional flow, Yaw, Walls, Thermal properties IDENTIFIERS: HIRT flow, Space shuttles, Finite difference theory, High Reynolds number tunnel flow, Space transportation, Reusable spacecraft, Mixing length, Unsteady flow (U)

Wall temperature effects on two- and three-dimensional high Reynolds number turbulent boundary layers are examined for representative high Reynolds number tunnel (HIRT) conditions relative to flight; also considered are hot-wall conditions relative to space shuttle subsonic and transonic flight during earth entry. Results show significant influences of wall-to-stagnation temperature ratio on the location of boundary-layer separation and the friction drag coefficient. The study also indicates how rapid model wall temperature during a full scale test may be of 2 to 10 sec may be undesirable for HIRT testing since unsteady aerodynamic phenomena can be influenced by rapidly changing turbulent boundary-layer wall temperature levels. (Notified author abstract) (U)

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 765 392 22/2

GRUMMAN AEROSPACE CORP BETHPAGE N Y RESEARCH DEPT

Environmental Testing of Closed Pore Insulation (CPI), III - Rain Erosion Testing.

(U)

DESCRIPTIVE NOTE: Research memo.,

JUL 73 29P Russak, Michael A. ;
REPT. NO. RM-573

UNCLASSIFIED REPORT

DESCRIPTORS: (*RAINDROPS, EROSION), (*HEAT SHIELDS, WATER IMPINGEMENT), (*MANNED SPACECRAFT, ATMOSPHERE ENTRY), THERMAL INSULATION, FIBERS, TEST METHODS, MOISTUREPROOFING, ANGLE OF ATTACK
IDENTIFIERS: CLOSED PORE INSULATION, SPACE SHUTTLES

(U)

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The report details the results of simulated rain erosion testing done on Grumman's CPI (Closed Pore Insulation) material to further demonstrate its suitability as a viable TPS material for NASA's shuttle Orbiter. This program was done to assess the resistance of CPI to damage from rain that may be encountered during landing maneuvers following re-entry. This work indicated that while CPI was subject to some weight loss due to erosion, the material remained essentially waterproof during and after exposure, thus avoiding severe heat shield degradation due to excessive water pickup. (Author)

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AD- 765 285 22/2

POLYTECHNIC INST OF BROOKLYN FARMINGDALE N Y DEPT OF AEROSPACE ENGINEERING AND APPLIED MECHANICS

Aerodynamic Characteristics of Two-Dimensional Waverider Configurations, (U)

APR 72 7P Nardo, C. T. ;

REPT. NO. PIRAL-72-32

CONTRACT: AF 49(638)-1623

PROJ: AF-973:

TASK: 978101

MONITOR: AFOSR TR-73-1431

UNCLASSIFIED REPORT

Availability: Pub. in American Institute of Aeronautics and Astronautics Jnl., V10 n9 p1258-1261 Sep 72.

SUPPLEMENTARY NOTE: Prepared in cooperation with Grumman Aerospace Corp., Bethpage, N.Y. Revision of report dated 22 Mar 72.

DESCRIPTORS: (*MANNED SPACECRAFT, *ATMOSPHERE ENTRY), (*REDEZVUS SPACECRAFT, *AERODYNAMIC CHARACTERISTICS), AERODYNAMIC CONFIGURATIONS, TWO DIMENSIONAL FLOW, MANEUVERABILITY, WINGS, CURVE FITTING, ANGLE OF ATTACK, LIFT

IDENTIFIERS: REUSABLE SPACECRAFT, SPACE

TRANSPORTATION, *SPACE SHUTTLES, INVISCID FLOW

(U)

(U)

The analysis of two-dimensional waverider configurations is presented, utilizing a different inviscid approach than those employed in the past. An equivalent wedge angle is postulated and a viscous correction procedure is used in order to obtain improved agreement with available experimental data. It is found that this approach extends the range of applicability of inviscid design procedures to include higher Mach numbers and lower Reynolds numbers. (Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 763 730 20/4 1/1

ARNOLD ENGINEERING DEVELOPMENT CENTER ARNOLD AIR FORCE
STATION TENNNumerical Calculation of the Subsonic and
Transonic Turbulent Boundary Layer on an
Infinite Yawed Airfoil. (U)DESCRIPTIVE NOTE: Final rept. Apr 72-Apr 73,
JUL 73 109P Adams, John C., Jr;
REPT. NO. AEDC-TR-73-112
PROJ: ARO-VF203, ARO-VD205

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with ARO.
Inc., Tullahoma, Tenn. Rept. no. ARO-VKF-TR-
73-52.DESCRIPTORS: (*TURBULENT BOUNDARY LAYER, *AIRFOILS),
(*COMPRESSIBLE FLOW, *MATHEMATICAL MODELS), *ATMOSPHERE
ENTRY, *THREE DIMENSIONAL FLOW, *LIFTING REENTRY VEHICLES,
*THERMODYNAMICS, *RENDEZVOUS SPACECRAFT, *SUBSONIC
*CHARACTERISTICS, *TRANSONIC CHARACTERISTICS, *EQUATIONS OF
*MOTION, *SURFACE TEMPERATURE, *STALLING, *WALLS, *WIND
*TUNNEL MODELS, *MODEL TESTS, *NUMERICAL METHODS AND
*PROCEDURES (U)IDENTIFIERS: BOUNDARY LAYER, EQUATIONS, REUSEABLE
SPACECRAFT, SPACE TRANSPORTATION, SPACE SHUTTLES, EDDY
VISCOSITY (U)

Formulation and application of a three-dimensional compressible turbulent boundary-layer analysis is presented for subsonic and transonic flow over a yawed airfoil of infinite extent. The governing turbulent boundary-layer equations are integrated using an implicit finite-difference procedure in conjunction with a scalar eddy viscosity model of three-dimensional turbulence. Comparisons with other analysis techniques as well as experimental measurements under subsonic wind tunnel conditions are presented to establish and ascertain the basic validity and applicability of the current technique. Also considered are the effects of a hot wall on the transonic, three-dimensional, turbulent boundary layer which have practical application to transonic space shuttle reentry. (Modified author abstract) (U)

AD- 763 730

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 759 578 22/2

ARNOLD ENGINEERING DEVELOPMENT CENTER ARNOLD AIR FORCE
STATION TENNNASA-Convaair ACS Space Shuttle Study at
Mach Number 8.0. (U)

DESCRIPTIVE NOTE: Final rept.,

MAY 73 161P Strike, W. T., Jr.; Best,
J. T., Jr;
REPT. NO. AEDC-TR-73-40
PROJ: ARO-VA023-432A, ARC-VB1264

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with ARO.
Inc., Tullahoma, Tenn. Rept. no. ARO-VKF-TR-
72-140.DESCRIPTORS: (*RENDEZVOUS SPACECRAFT, *ATTITUDE CONTROL
SYSTEMS), *DESIGN, *WIND TUNNEL MODELS, *FLAT PLATE MODELS,
*ATMOSPHERE ENTRY, *AERODYNAMIC HEATING, *HEAT TRANSFER, (U)
*ANGLE OF ATTACK, *SUPERSONIC FLOW (U)
IDENTIFIERS: *REUSABLE SPACECRAFT, *SPACE
TRANSPORTATION, *SPACE SHUTTLES (U)

Some aerothermodynamic design problems of the Space Shuttle attitude control system (ACS) were experimentally studied in a series of tests conducted at Mach number 8, at Reynolds numbers of 1,000,000 and 5,000,000, using a flat plate containing interchangeable, flush-mounted nozzle cavities and lateral jet nozzles. The ACS configurations considered in this test program were a single supersonic nozzle and a cluster of four symmetrically located supersonic nozzles. Also, some preliminary results were obtained with nozzles similar to those on the flat plate used to simulate the yaw controls on a 2-percent-scaled nose section of the Convaair Aerospace B-9U booster. (Author Modified Abstract) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 759 176 22/2 20/4

ARNOLD ENGINEERING DEVELOPMENT CENTER ARNOLD AIR FORCE
STATION TENN

Heat-Transfer and Flow-Field Tests of the
McDonnell Douglas-Martin Marietta Space
Shuttle Configurations.

(U)

DESCRIPTIVE NOTE: Final rept. Jun 71-Jan 72,
APR 73 106P Matthews, R. K.; Eaves, R.
H., Jr.; Martindale, W. R.;
REPT. NO. AEDC-TR-73-53
PROJ: ARO-VT1162

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with ARO,
Inc., Tullahoma, Tenn. Rept. no. ARO-VKF-TR-
72-124.

DESCRIPTORS: (*RENDEZVOUS SPACECRAFT, *AERODYNAMIC
HEATING), MANNED SPACECRAFT, ASCENT TRAJECTORIES,
ATMOSPHERE ENTRY, HEAT TRANSFER, FLOW FIELDS, WIND
TUNNEL MODELS, MODEL TESTS

IDENTIFIERS: *SPACE SHUTTLES

(U)
(U)

Aerothermodynamic tests of Phase B space
shuttle configurations proposed by McDonnell
Douglas--Martin Marietta were conducted at
Mach numbers 8 and 10.5. Test conditions
provided both Mach number and Reynolds number
simulation for typical ascent and reentry
trajectories. This report provides a comprehensive
analysis of the major test results and also presents
data comparisons with theoretical calculations.
Specific areas covered are ascent heating and shock
interference, booster reentry heating and flow
fields, and orbiter reentry analysis which includes
leeward heating, windward shock angles and flow
fields, windward surface heating, and boundary-layer
transition. (Author)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 757 424 22/2 11/7

GRUMMAN AEROSPACE CORP BETHPAGE N Y RESEARCH DEPT

Environmental Testing of Closed Pore
Insulation (CPI). II. Salt Spray
Testing,

(U)

FEB 73 19P Feldman, Carl ; Russak, Michael
;
REPT. NO. RM-570

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also AD-756 204.
DESCRIPTORS: (*THERMAL INSULATION, SALT SPRAY TESTS),
(*RENDEZVOUS SPACECRAFT, AERODYNAMIC HEATING),
ATMOSPHERE ENTRY, MANNED SPACECRAFT, LIFTING REENTRY
VEHICLES, HEAT SHIELDS, HEAT RESISTANT GLASS, SEA WATER,
FLUXES(FUSION), ENVIRONMENTAL TESTS
IDENTIFIERS: CLOSED PORE INSULATION, SPACE
SHUTTLES

(U)

IAC ACCESSION NUMBER: MCIC-086186
IAC DOCUMENT TYPE: MCIC -HARD COPY--

A series of tests was performed on Grumman-
developed surface insulation material, CPI, to
demonstrate its suitability for the shuttle orbiter
thermal protection system. Salt spray testing was
done to determine the effect of sea water mist of
CPI's performance during simulated re-entry thermal
cycling. This type of testing is mandatory because
of the sea coast environment of Cape Kennedy
where the shuttle will be launched. CPI-4 was
tested and the results gave a good indication of the
type and degree of degradation to be expected in
actual use. (Author)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 756 854 22/2 20/4

BOEING CO SEATTLE WASH

Aerodynamic Stability and Control, Data,
Model 844-2035.

FEB 72 195P
REPT. NO. D2-8174
CONTRACT: AF 33(600)-41517

UNCLASSIFIED REPORT

Availability: Available in microfiche only.

DESCRIPTORS: (*LIFTING REENTRY VEHICLES, AERODYNAMIC
CHARACTERISTICS), (*RENDEZVOUS SPACECRAFT, LIFTING
REENTRY VEHICLES), AEROSPACE CRAFT, AERODYNAMIC CONTROL
SURFACES, TRANSONIC FLIGHT, SUPERSONIC FLIGHT,
HYPERSONIC FLIGHT, BRAKING, STABILITY, LANDING
IDENTIFIERS: X-20 SPACECRAFT, SPACE SHUTTLES,
SPACECRAFT MODIFICATION (U)

The aerodynamic stability and control
characteristics of the 844-2035 Dyna Soar glider
are presented. These data are based on wind tunnel
tests, where data are available. Where not
available, theoretical estimates have been made for
the vehicle characteristics. This is the interim
glider configurations. Some vehicle
characteristics peculiar to this configuration are
not satisfactory and will be modified for the final
configuration. The data presented will be revised
as additional wind tunnel data are received and
better estimates of the vehicle characteristics are
made. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 756 204 22/3 22/2

GRUMMAN AERCSpace CORP BETHPAGE N Y RESEARCH DEPT

Environmental Testing of Closed Pore
Insulation (CPI) I - ARC Jet Testing.

DESCRIPTIVE NOTE: Research memo.,
JAN 73 17P Geschwind, G. ; Hershhaft, A. ;
Hoff, M. ; Jenkins, R. ;
REPT. NO. RM-565 (U)

UNCLASSIFIED REPORT

DESCRIPTORS: (*HEAT SHIELDS, THERMAL ANALYSIS),
(*RENDEZVOUS SPACECRAFT, *ATMOSPHERE ENTRY), THERMAL
INSULATION, ELECTRIC ARCS, JETS, THERMAL SHOCK,
ENVIRONMENTAL TESTS (U)
IDENTIFIERS: CLOSED PORE INSULATION, SPACE
SHUTTLES (U)

IAC ACCESSION NUMBER: NCIC-086185

IAC DOCUMENT TYPE: NCIC -HARD COPY--

A series of tests was performed on Grumman-
developed closed pore insulation (CPI) to
demonstrate its suitability for the shuttle thermal
protection system (TPS) in a simulated environment
to be encountered by the heat shield in service.
Arc jet testing performed as part of Contract
NAS 1-10713 was done on material whose composition
had not been optimized. Splash heating was used
instead of profile heating, and a mounting procedure
was initiated that introduced stress raisers into the
specimens ultimately leading to their failure.
Because NASA relies heavily on arc jet testing to
screen potential TPS materials and systems, the
Research Department arc jet was used in a more
realistic re-entry temperature-time profile. CPI-4
(CPI with 4% cobalt oxide), a composition that
was optimized in a previous study, was tested and
gave good results, showing that CPI could survive
thermal cycling similar to that which will be met
during shuttle re-entry operations. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 755 355 22/2 20/4 22/3

ARNOLD ENGINEERING DEVELOPMENT CENTER ARNOLD AIR FORCE
STATION TENNHeat-Transfer Investigation of Langley
Research Center Delta Wing Configurations
at Mach Numbers 8 and 10.5.

(U)

DESCRIPTIVE NOTE: Final rept. Jun-Sep 71,
FEB 73 43P
Matthews, R. K.; Eaves, R. H., Jr.;
Buchanan, T. D.;
REPT. NO. AEDC-TR-72-196
PROJ: AF-ARO-VT1162

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with ARO,
Inc., Tullahoma, Tenn, Rept. no. ARO-VKF-IR-
72-160.

DESCRIPTORS: (*LIFTING REENTRY VEHICLES, *AERODYNAMIC
HEATING), (*RENDEZVOUS SPACECRAFT, *DELTA WINGS), SKIN
FRICTION, ATMOSPHERE ENTRY, ASCENT TRAJECTORIES, DESCENT
TRAJECTORIES, FLOW FIELDS, BOUNDARY LAYER TRANSITION,
WIND TUNNEL MODELS, HYPERSONIC CHARACTERISTICS, HEAT
TRANSFER

IDENTIFIERS: *SPACE SHUTTLES (U)
(U)

Heat-transfer tests for two simple delta wing
configurations submitted by NASA-Langley
Research Center were conducted at Mach numbers
8 and 10.5. Test conditions provided both Mach
number and Reynolds number simulation for typical
lifting body reentry trajectories. This report
presents the major test results and comparisons with
theoretical calculations. Specific test results
include heat-transfer distributions, shock angles,
limited pressure measurements, and boundary-layer
transition results. (Author)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 755 354 22/2 20/4 22/3

ARNOLD ENGINEERING DEVELOPMENT CENTER ARNOLD AIR FORCE
STATION TENNHeat-Transfer and Flow-Field Tests of the
North American Rockwell/General Dynamics
Convair Space Shuttle Configurations.

(U)

DESCRIPTIVE NOTE: Final rept. Jun-Sep 71,
JAN 73 95P
R. K.; Trimmen, L. L.;
Wartindale, W. R.; Matthews,
REPT. NO. AEDC-TR-72-169
PROJ: AF-ARO-VT1162

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with ARO,
Inc., Tullahoma, Tenn, Rept. no. ARO-VKF-TR-
72-123.

DESCRIPTORS: (*LIFTING REENTRY VEHICLES, *AERODYNAMIC
HEATING), (*RENDEZVOUS SPACECRAFT, DELTA WINGS), SKIN
FRICTION, ATMOSPHERE ENTRY, ASCENT TRAJECTORIES, DESCENT
TRAJECTORIES, FLOW FIELDS, BOUNDARY LAYER TRANSITION,
WIND TUNNEL MODELS, HYPERSONIC CHARACTERISTICS, HEAT
TRANSFER

IDENTIFIERS: *SPACE SHUTTLES (U)
(U)

Aerothermodynamic tests of Phase B space
shuttle configurations proposed by North American
Rockwell/General Dynamics Convair were
conducted at Mach number 8. Test conditions
provided both Mach number and Reynolds number
simulation for typical ascent and reentry
trajectories. This report provides a comprehensive
analysis of the major test results and also presents
data comparisons with theoretical calculations.
Specific areas covered are: ascent heating and
shock interference, booster reentry heating and flow
fields, and orbiter reentry including leeside
heating, windward shock angles and flow fields,
windward surface heating, and boundary-layer
transition. (Author)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 754 915 22/2

GRUMMAN AEROSPACE CORP BETHPAGE N Y

Finite Element Modeling and Optimization of Aerospace Structures. (U)

DESCRIPTIVE NOTE: Final rept. 15 Apr 71-15 Apr 72,

AUG 72 58P

CONTRACT: F33615-71-C-1466

PROJ: AF-1467

TASK: 146701

MONITOR: AFFDL

TR-72-59

UNCLASSIFIED REPORT

DESCRIPTORS: (*AEROSPACE CRAFT, OPTIMIZATION), DELTA WINGS, AERODYNAMIC LOADING, LOAD DISTRIBUTION, FUSELAGES, BUCKLING, AIRPLANE PANELS, MATHEMATICAL MODELS (U)

IDENTIFIERS: SPACE SHUTTLES, FINITE ELEMENT ANALYSIS, COMPUTER AIDED DESIGN, DESIGN CRITERIA (U)

The report documents a study made of the optimization of typical aircraft structural components using the Automated Structural Optimization Program (ASOP) described in AFFDL-TR-70-118. The structures examined were a fuselage structure for a proposed space shuttle orbiter and a wing structure for the same vehicle. Examples are given of practical finite element modeling of these structures. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 750 793 22/3 22/2

BELL AEROSPACE CO BUFFALO N Y

Rain Erosion Characteristics of Thermal Protection System Materials at Subsonic Velocities. (U)

DESCRIPTIVE NOTE: Summary technical rept. 3 Apr-30 Jun 72,

AUG 72 118P

CONTRACT: F33615-71-C-1219

PROJ: AF-7342

TASK: 734007

MONITOR: AFML TR-72-145

UNCLASSIFIED REPORT

DESCRIPTORS: (*HEAT SHIELDS, RAIN), (*RENDEZVOUS SPACECRAFT, -HEAT SHIELDS), EROSION, SUBSONIC CHARACTERISTICS, INTENSITY, ANGLE OF ATTACK, COMPOSITE MATERIALS, TEST METHODS (U)

IDENTIFIERS: ABLATIVE MATERIALS, *RAIN EROSION, *SPACE SHUTTLES (U)

IAC ACCESSION NUMBER: MCIC-085105

IAC DOCUMENT TYPE: MCIC -HARD COPY--

The relative rain erosion resistance of low density-thermal protection materials for the space shuttle were evaluated at velocities of 200, 350, and 410 miles per hour, angles of attack of 10, 20, 40, and 90 degrees and rainfall intensities of 1/4, 1/2 and 1 inch per hour on the AFML-Bell rotating arm rain erosion test apparatus. (Author, modified-PL) (U)

IAC SUBJECT TERMS: M--(U)THERMAL PROTECTION, INSULATION, SILICA COMPOSITE, MILLITE COMPOSITE, CARBON/CARBON COMPOSITE, RAIN EROSION, SPACE SHUTTLE VEHICLE;

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07
AD- 748 562 22/2 20/4

NATIONAL RESEARCH COUNCIL OF CANADA OTTAWA (ONTARIO)
Supersonic Dynamic Stability Experiments on
the Space Shuttle.

(U)

72 10P Orlik-Ruckemann, K. J. ;
LaBerge, J. G. ; Hanff, E. S. ;

UNCLASSIFIED REPORT

Availability: Paper copy available from AIAA, 1290
Ave of the Americas, New York, N. Y. 10019.
PC\$2.00/MF\$1.00.

SUPPLEMENTARY NOTE: Presented at the AIAA Aerospace
Sciences Meeting (10th), San Diego, Calif.,
17-19 Jan 72 (AIAA Paper No. 72-135).

DESCRIPTORS: (*RENDEZVOUS SPACECRAFT, SUPERSONIC
CHARACTERISTICS), STABILITY, WIND TUNNEL MODELS, EXHAUST
FLAMES, FLOW FIELDS, FLOW VISUALIZATION, STAGING.

(U)

IDENTIFIERS: PLUMES, ROCKET EXHAUST, SPACE
SHUTTLES

(U)

A wind-tunnel study was performed of the
longitudinal dynamic stability of the shuttle
spacecraft at supersonic speeds. In particular, the
study included the determination of the damping-in-
pitch characteristics of the orbiter and of the
booster, both separately and in a mated launch
configuration, and the investigation of the effect of
a simulated rocket exhaust plume and of the static
and dynamic interference during abort separation.
Static interference is defined here as caused by
the proximity of the second vehicle when that vehicle
is stationary, whereas dynamic interference denotes
the same effect but with the other vehicle performing
an oscillatory motion. (Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07
AD- 747 765 20/4

AIR FORCE FLIGHT DYNAMICS LAB WRIGHT-PATTERSON AFB
OHIO

Recent Notes and Data on Interference
Heating.

(U)

DESCRIPTIVE NOTE: Rept. for Jun 70-Jun 71,
FEB 72 36P Neumann, Richard D. ;
REPT. NO. AFDL-TR-72-12
PROJ: AF-136C
TASK: 136607

UNCLASSIFIED REPORT

DESCRIPTORS: (*AERODYNAMIC HEATING, *HYPERSONIC
CHARACTERISTICS), (*SHOCK WAVES, INTERACTIONS),
MATHEMATICAL PREDICTION, TWO DIMENSIONAL FLOW, THREE
DIMENSIONAL FLOW, REVIEWS, BOUNDARY LAYER, FINS,
AEROSPACE CRAFT, FLAT PLATE MODELS, REENTRY VEHICLES,
RENDEZVOUS SPACECRAFT

(U)

IDENTIFIERS: REUSABLE SPACECRAFT, SPACE
TRANSPORTATION, SPACE SHUTTLES, INTERFERENCE
HEATING

(U)

The report presents recent observations and data
on the shock interaction problem in the aerodynamic
heating of military aerospace vehicles. Information
on both two and three dimensional interactions are
presented, and the literature from July 1967 to
August 1971 is reviewed. Some features of the
interaction observed by various authors have been
investigated in greater depth in order to clarify the
features of the interaction process. Conclusions
from these data relative to current hypersonic
vehicle design studies of the space shuttle are
drawn. (Author)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07
AD- 746 656 22/3

GRUMMAN AEROSPACE CORP BETHPAGE N Y RESEARCH DEPT

Optima' Trajectories for the Flyback Shuttle.

(U)

DESCRIPTIVE NOTE: Research rept.,
JUL 72 41P Moyer, H. Gardner ;
REPT. NO. RE-433

UNCLASSIFIED REPORT

DESCRIPTORS: (*TRAJECTORIES, OPTIMIZATION), (*RENDEZVOUS SPACECRAFT, TRAJECTORIES), COMPUTER PROGRAMMING, RENDEZVOUS TRAJECTORIES, DESCENT TRAJECTORIES, SOFT LANDINGS, LAUNCHING SITES, LANDING FIELDS, MATHEMATICAL MODELS, MANNED SPACECRAFT (U)
IDENTIFIERS: *SPACE SHUTTLES, FORTRAN, FORTRAN 4 (U)
PROGRAMMING LANGUAGE (U)

A new procedure for the optimization of branched-path systems is successfully applied to flyback shuttle trajectories. The boundary and transversality conditions are satisfied by three extremals that meet at an arbitrarily chosen branch point. The position of the branch point is then improved, and the cycle repeated. The performance index for the orbiter branch is the weight placed in orbit. For the booster-return branch it is the square of the distance between the final point and the landing field. The complete family of trajectories representing the various trade-offs between these two indices is calculated for a problem that specifies the landing field as coinciding with the launch site. The computer program also has the capability of handling down-range landing sites, orbital rendezvous and intercept, and aerodynamic load constraints. (Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07
AD- 743 508 22/2 21/8.1

GRUMMAN AEROSPACE CORP BETHPAGE N Y RESEARCH DEPT

Buckling Analysis of Shuttle Disposable Liquid Hydrogen Tank with Floating Rings.

(U)

DESCRIPTIVE NOTE: Research memo.,
MAY 72 29p Winter, Robert ;Crouzet-
Pascal, Jacques ;
REPT. NO. RM-540

UNCLASSIFIED REPORT

DESCRIPTORS: (*SPACE STATIONS, STIFFENED CYLINDERS), (*PROPELLANT TANKS, BUCKLING), STRUCTURAL PROPERTIES, RINGS, STRESSES, LIQUEFIED GASES, HYDROGEN, WEIGHT IDENTIFIERS: SPACE SHUTTLES, CYLINDRICAL BODIES, SHELLS(STRUCTURAL FORMS) (U)
(U)

A scheme for treating so-called floating rings is recommended for use in the buckling analysis of stiffened cylindrical shells. Critical stresses are calculated and compared to those for integral rings, for a design representative of the unpressurized Space Shuttle liquid hydrogen (LH2) tank. The ring rigidity required to prevent general instability is found to be much less than that required by the Shanley criterion, with a correspondingly significant weight saving. There is very little difference in total shell weight between floating and internal rings for equal strength designs. (Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 743 096 20/4 13/2

NATIONAL RESEARCH COUNCIL OF CANADA OTTAWA (ONTARIO) DIV OF MECHANICAL ENGINEERING

Quarterly Bulletin of the Division of Mechanical Engineering and the National Aeronautical Establishment.

(U)

DESCRIPTIVE NOTE: Rept. for 1 Jan-31 Mar 72.

MAR 72 67P

REPT. NO. DME/NAE-1972(1)

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also report dated 31 Dec 71, AD-737 119.

DESCRIPTORS: (*PHYSICS LABORATORIES, REPORTS). (*SCIENTIFIC RESEARCH, CANADA). COMPUTER PROGRAMMING, AIRCRAFT NOISE, FLUID MECHANICS, VIBRATION, SAFETY BELTS, FUELS, LUBRICANTS, WIND TUNNELS, GAS BEARINGS, PLASMAS(PHYSICS), DATA PROCESSING, MATHEMATICAL MODELS, AERODYNAMICS, HYDRODYNAMICS, SPACECRAFT, SHIP HULLS (U)

IDENTIFIERS: SPACE SHUTTLES, UNSTEADY FLOW (U)

:Contents: Aerodynamic and structural noise research at NAE; The dynamics of contained oil slicks; Current projects of the Division of Mechanical Engineering and the National Aeronautical Establishment.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 742 995 22/2

ARNOLD ENGINEERING DEVELOPMENT CENTER ARNOLD AIR FORCE STATION TENN.

Abort Separation Pressure Distributions on McDonnell-Douglas Space Shuttle Configurations at Mach Numbers 2, 3, and 5.

(U)

DESCRIPTIVE NOTE: Final rept.,

MAY 72 174P

Strike, W. T. , Jr;

REPT. NO. AEC-TR-72-46

CONTRACT: F40600-72-C-0003

PROJ: ARO-VA1163

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with ARO, Inc., Tullahoma, Tenn. Rept. no. ARO-VKp-TR-71-247.

DESCRIPTORS: (*RENDEZVOUS SPACECRAFT, SEPARATION). AERODYNAMIC LOADING, PRESSURE, JET FLAMES, SIMULATION, MODEL TESTS, LIFTING REENTRY VEHICLES, SUPERSONIC CHARACTERISTICS, HYPERSONIC CHARACTERISTICS, STAGING, ABORT, LAUNCH VEHICLES (U)

IDENTIFIERS: ORBITER BOOSTER CONFIGURATIONS, DISTRIBUTION, PRESSURE, REUSABLE SPACECRAFT, SPACE TRANSPORTATION, SPACE SHUTTLES (U)

The report summarizes the pressure distributions obtained on the lower surface of an orbiter and upper surface of a booster (adjacent model surfaces) during possible staging and abort maneuvering positions, and for various proposed launch configurations, of a space shuttle vehicle. The results were obtained with and without booster and orbiter plume simulation at nominal free-stream Mach numbers of 2, 3, and 5. A brief description is made of the calibration of nozzles used to generate plumes for the power-on simulation. Results demonstrate the importance of plume simulation in the aerodynamic loading of a vehicle and suggest that plume simulation is needed to evaluate properly the aerodynamic coefficients for space shuttle vehicles. (Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07
AD- 742 984 22/2

AEROSPACE CORP EL SEGUNDO CALIF SYSTEMS ENGINEERING
OPERATIONS

Chemical Orbit-to-Orbit Shuttle Task
Summary.

DESCRIPTIVE NOTE: Final rept. Jul 69-Sep 70,
SEP 70 43P Forslund, Gerald M. ;
REPT. NO. TOR-0059(6758-01)-14
CONTRACT: F04701-70-C-0059
MONITOR: SAMSO TR-72-144

UNCLASSIFIED REPORT

DESCRIPTORS: (*RENDEZVOUS SPACECRAFT, *MISSION
PROFILES), LIQUID PROPELLANT ROCKET ENGINES, SECOND-
STAGE MOTORS, CIRCULAR ORBITS, LUNAR TRAJECTORIES, SPACE
STATIONS, PAYLOAD, DESIGN, COSTS (U)
IDENTIFIERS: OOS(ORBIT TO ORBIT SHUTTLES), ORBIT TO
ORBIT SHUTTLES, REUSABLE SPACECRAFT, SPACE SHUTTLES (U)

The feasibility of a single OOS configuration
capable of performing the combined DOD/NASA
mission requirements has been assessed. Two
vehicle configurations have been identified, either
of which can accomplish the mission spectrum when
operated in a combination of single-stage reusable/
expendable and tandem reusable (two stages)
modes. Supporting mission/operational requirements,
evolutionary vehicle conceptual designs, and
resultant performance have been developed to support
this conclusion. A representative development
program, costing data, and technology for these
vehicles have been specified. A major problem area,
that of utilizing the space-based operational mode,
has been identified and recommended for follow-on
study. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07
AD- 741 899 20/11

TEXAS UNIV AUSTIN DEPT OF AEROSPACE ENGINEERING AND
ENGINEERING MECHANICS

Aeroelastic Stability of Thin Shell
Structures at Subsonic Mach Numbers and the
Active Suppression of Flutter Phenomena. (U)

DESCRIPTIVE NOTE: Final rept. 1 Dec 70-30 Nov 71,
JAN 72 31P Stearman, Ronald O. ;
CONTRACT: AF-AFSR-1998-71
PROJ: AF-9782
TASK: 978201
MONITOR: AFSR TR-72-1010

UNCLASSIFIED REPORT

DESCRIPTORS: (*SHELLS(STRUCTURAL FORMS),
AEROELASTICITY), FLUTTER, STABILITY, RESPONSE, FLOW
FIELDS, AERODYNAMIC CONTROL SURFACES, STALLING, RAILROAD
CARS, HUMAN FACTORS ENGINEERING, MATHEMATICAL MODELS,
WIND TUNNEL MODELS, SPACECRAFT (U)
IDENTIFIERS: SPACE SHUTTLES (U)

Experimental and theoretical research on
aeroelastic stability and response problems has been
carried out this past year in several areas. A
major portion of the research centered around an
investigation on the stability of thin cylindrical
shell structures subjected to a subsonic compressible
flow environment. Other studies were concerned
with the active suppression of interfering lifting
surface flutter phenomenon and the active control of
rapid transit system response for improving ride
quality. Studies were also conducted on the
suppression of stall and stall flutter phenomenon.
A brief description of this research is presented
herein. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 741 202 1/3 5/5

NAVAL AIR DEVELOPMENT CENTER WARMINSTER PA CREW SYSTEMS DEPT

G Protective Tilting Aircraft Seats. (U)

DESCRIPTIVE NOTE: Interim rept.,
 MAR 72 56P VON Beckh,Harald J. ;
 REPT. NO. NADC-72063-CS
 PROJ: F32-451-401, MF51-524.005

UNCLASSIFIED REPORT

DESCRIPTORS: (*AIRCRAFT SEATS, POSITIONING DEVICES(MACHINERY)), (*HUMAN FACTORS ENGINEERING, ACCELERATION TOLERANCE), PROTECTION, ATMOSPHERE ENTRY, MAN MACHINE SYSTEMS, DESIGN, FEASIBILITY STUDIES, NAVAL RESEARCH, LIFTING REENTRY VEHICLES, RECOVERABLE BOOSTER MOTORS, RENDEZVOUS SPACECRAFT (U)
 IDENTIFIERS: REUSABLE SPACECRAFT, SPACE SHUTTLES, SPACE TRANSPORTATION (U)

Several tilting, supinating seats which have been tested in flight and on centrifuges are described and their biomedical adequacy assessed. Only those, which assure unrestricted visibility in all directions will be accepted by the pilots. This can be achieved by an adequate selection of the pivot points, and other design criteria which are synthesized. Concentrated effort of designers, aeromedical investigators and - last but not least - pilots is urged for the realization of such an integrated G protective man-machine system. Supinating seats should also be provided for the crew of winged reentry vehicles (Space-Shuttle). For the passengers multi-directional G protective systems with escape capabilities should be developed. (Author)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 741 191 14/2

OFFICE OF NAVAL RESEARCH LONDON (ENGLAND)

New Shock Tube Laboratory at Aachen,
 Germany, (U)

MAR 72 18P Rangan,Arthur A. ;
 REPT. NO. CARL-R-5-72

UNCLASSIFIED REPORT

DESCRIPTORS: (*SHOCK TUBES, LABORATORIES), WEST GERMANY, TEST FACILITIES, RENDEZVOUS SPACECRAFT, LIFTING REENTRY VEHICLES, RECOVERABLE BOOSTER MOTORS, GAS IONIZATION (U)
 IDENTIFIERS: *REUSABLE SPACECRAFT, *SPACE SHUTTLES, SPACE TRANSPORTATION, GAS DYNAMICS (U)

The report describes the new Shock Tube Laboratory of the Institut für Allgemeine Mechanik, Technische Hochschule, Aachen, Germany. Detailed descriptions of the facilities are given together with a report on EUROMECH no. 29, a Colloquium on High Temperature Gasdynamics which was organized by Prof. Schultz-Grunow in connection with the dedication ceremonies of his new laboratory. (Author)

(U)

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DDC REPORT 818L10GRAPHY SEARCH CONTROL NO. ZOM07

AD- 738 645 22/2 22/1

ARNOLD ENGINEERING DEVELOPMENT CENTER ARNOLD AIR FORCE STATION TENN

Abort Separation, Longitudinal Force, and Moment Characteristics of McDonnell Douglas Booster and Orbiter Space Shuttle Vehicles at Mach Numbers 2.0 to 6.0.

DESCRIPTIVE NOTE: Final rept.,
MAR 72 310P Burt, R. H. ;
REPT. NO. AEDC-TR-72-11
CONTRACT: F40600-72-C-0003
PROJ: AF-921E, ARO-VA1163

(U)

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with ARO, Inc., Tullahoma, Tenn. Rept. no. ARO-VKF-TR-71-196.

DESCRIPTORS: (*RENDEZVOUS SPACECRAFT, ABORT),
(*RECOVERABLE BOOSTER MOTORS, SEPARATION), WIND TUNNEL
MODELS, MODEL TESTS, SCALE, ANGLE OF ATTACK, SIDESLIP,
SIMULATION, COLD FLOW, SUPERSONIC NOZZLES, EXHAUST
FLAMES, FLIGHT CONTROL SYSTEMS, HYPERSONIC
CHARACTERISTICS, SUPERSONIC CHARACTERISTICS (U)
IDENTIFIERS: *SPACE SHUTTLES (U)

Results are presented for abort staging wind tunnel tests which were conducted to determine the aerodynamic characteristics of the McDonnell Douglas booster and orbiter configurations in close proximity. Data were obtained on both scale models over an angle-of-attack range from -10 to +10 deg for zero sideslip angle. Orbiter incidence angle relative to the booster was varied from -10 to +10 deg which provided an orbiter angle-of-attack range from -20 to +20 deg. The models were tested at Mach numbers from 2.0 to 6.0 at several separation distances and power conditions. An annular cold-flow nozzle in each model was used to simulate booster and orbiter plumes at various altitudes along a proposed ascent trajectory. Plume simulation for 100, 50, and 0 percent of full power for the booster and 100, 50, 25, and 1 percent of full power for the orbiter was investigated, with 50-percent booster and 100-percent orbiter power as the nominal conditions. Pitch control effectiveness data were obtained for both booster and orbiter with power on and off. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 737 406 4/1 22/2

MICHIGAN UNIV ANN ARBOR DEPT OF AEROSPACE ENGINEERING

Ionospheric Aerodynamics Related to Space Vehicles, Space Shuttles and Satellites.

DESCRIPTIVE NOTE: Final rept.,
FEB 72 24P Cng.R. S. B. ;
CONTRACT: AF-AFOSR-825-67
PROJ: AF-9783
TASK: 9783C2
MONITOR: AFOSR TR-72-0428

(U)

UNCLASSIFIED REPORT

DESCRIPTORS: (*IONOSPHERE, SPACE ENVIRONMENTS), SPACE STATIONS, SATELLITES(ARTIFICIAL), IONIZATION, MAGNETOHYDRODYNAMICS, ELECTRON DENSITY, SPACE FLIGHT

IDENTIFIERS: SPACE SHUTTLES, FOKKER-PLANCK EQUATIONS (U)

The report summarizes the activities and results obtained during the tenure of the Grant. The relaxation problem of the Fokker-planck collision operator is investigated. Comparison are made between the relaxation times of the Brownian Motion and the B3K collision operators. The AC electrical conductivity and the high-frequency electrical conductivity formulas for a fully ionized gas are derived. A new mechanism of an ionizing wave front is introduced. Its structure and propagation is studied. Criteria for instabilities are found. The effect of a small amount of collisions on the stability of ion acoustic waves, drift waves, etc are considered. (Author)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 735 290 21/9.1 22/4

GENERAL DYNAMICS CORP SAN DIEGO CALIF CONVAIR AEROSPACE DIV

Orbit-to-Orbit Shuttle Propellant Integration and Handling Study.

(U)

DESCRIPTIVE NOTE: Final rept. Jul 70-Aug 71,
DEC 71 284P Heald, Daniel A.; Stone,
Gordon R.; Kaye, Sam;

REPT. NO. GDC-BN270-013-18

CONTRACT: F04611-70-C-0087

PROJ: AF-3058

TASK: 305808

MONITOR: AFRPL TR-71-117

UNCLASSIFIED REPORT

DESCRIPTORS: (*FLUORINE, HANDLING), (*RENDEZVOUS
SPACECRAFT, LIQUID ROCKET OXIDIZERS), LIQUEFIED GASES,
TOXICITY, HAZARDS, STORAGE, PROPELLANT TRANSFER,
LEAKAGE (FLUID), GROUND SUPPORT EQUIPMENT

(U)

IDENTIFIERS: OOS (ORBIT TO ORBIT SHUTTLES), ORBIT TO
ORBIT SHUTTLES, *SPACE SHUTTLES

(U)

The study examines the hazards inherent in the design and operation of ground and vehicle systems for a liquid fluorine space vehicle. The selected tanking system uses LN2 to preclude boiloff in the storage vessel and in the space vehicle propellant tank. Three possible emergency courses of action are provided in the system arrangement. It was concluded that a safe and practical ground fluorine system can be designed, avoiding technology problems, but paying particular attention to eliminate leak and reaction sources. (Author)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 733 896 21/2 21/9 14/2

GRUMMAN AEROSPACE CORP BETHPAGE N Y RESEARCH DEPT

On the Simulation of plumes from High Pressure Hydrogen/Oxygen Rocket Engines.

(U)

DESCRIPTIVE NOTE: Research memo.,

NOV 71 30P Hopkins, Harold; Leng, Jarvis

; Oman, Richard; Konoska, Wayne;

REPT. NO. RM-524

UNCLASSIFIED REPORT

DESCRIPTORS: (*TEST FACILITIES, DESIGN), (*EXHAUST
GASES, *DAMAGE ASSESSMENT), (*RENDEZVOUS SPACECRAFT,
*GASEOUS ROCKET PROPELLANTS), AERODYNAMIC HEATING,
LAMINAR FLOW, TURBULENCE, HEAT TRANSFER, FLAT PLATE
MODELS, ENTHALPY, TEST METHODS

(U)

IDENTIFIERS: ROCKET PLUMES, *SPACE SHUTTLES

(U)

The report describes the Grumman Research Department's technique for achieving Reynolds numbers higher than those achievable by any other known technique, and outlines experiments which can be used to increase the confidence level when extrapolating sub-scale plume impingement heating to full-scale flight conditions. Initial experiments established the feasibility of using a backward-running detonation wave to produce the correct enthalpy and chemistry of the simulated combustion chamber gases. Low pressure tests (up to 1500 psi) are surmized which measured heating on simulated impingement surfaces from one and two engines. (Author)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 731 963 22/1 5/3

INSTITUTE FOR DEFENSE ANALYSES ARLINGTON VA SCIENCE AND TECHNOLOGY DIV

Comparison of Chemical and Nuclear Propulsion for Lunar and Cislunar Transportation Systems, (U)

OCT 70 29P Finke,Reinald G.; Oliver, Robert C.;
REPT. NO. P-687
CONTRACT: DAMC15-67-C-0011
PROJ: ARPA-T-58, ARPA-T-45
MONITOR: IDA/HQ 70-11647

UNCLASSIFIED REPORT

DESCRIPTORS: (*SPACE PROPULSION, COSTS), (*RENDEZVOUS SPACECRAFT, LUNAR TRAJECTORIES), SPACECRAFT NUCLEAR PROPULSION, CRYOGENIC PROPELLANTS, VELOCITY, SPECIFIC IMPULSE, MANNED SPACECRAFT, CARGO, MISSION PROFILES, TRANSFER TRAJECTORIES, PARKING ORBIT TRAJECTORIES, COST EFFECTIVENESS (U)
IDENTIFIERS: NERVA, OOS(ORBIT TO ORBIT SHUTTLES), ORBIT TO ORBIT SHUTTLES, *SPACE SHUTTLES, INCREMENTAL VELOCITY, EARTH TO ORBIT SHUTTLES, EOS(EARTH TO ORBIT SHUTTLES) (U)

Nuclear (NERVA) solid-core propulsion systems are compared to advanced cryogenic (F2/H2 and O2/H2) chemical propulsion systems for an orbit-to-orbit vehicle operating in the earth-moon space. The orbit-to-orbit vehicle is assumed to use propellants delivered by a reusable earth-to-orbit shuttle (EOS). High-velocity-increment missions (lunar and geostationary orbit) are emphasized. Optimum operating regimes for reusable and expendable chemical and nuclear systems are indicated. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 731 771 22/2 22/1

ARNOLD ENGINEERING DEVELOPMENT CENTER ARNOLD AIR FORCE STATION TENN

Dynamic Stability Testing of Space Shuttle Configurations during Abort Separation at Mach Numbers 1.76 and 2. (U)

DESCRIPTIVE NOTE: Final rept.,
OCT 71 65P Usselton,Bob ;Wallace,Arthur R.;
REPT. NO. AEDC-TR-71-193
CONTRACT: F42600-72-C-0003
PROJ: ARO-VT2128

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with ARO, Inc., Tullahoma, Tenn., Rept. no. ARC-WVF-TR-71-115.
DESCRIPTORS: (*RENDEZVOUS SPACECRAFT, SEPARATION), (*MANNED SPACECRAFT, ABORT), WIND TUNNEL MODELS, LAUNCH VEHICLES(AEROSPACE), SPACE FLIGHT, DELTA WINGS, SUPERSONIC CHARACTERISTICS, STABILITY IDENTIFIERS: SPACE SHUTTLES (U)
(U)

Wind tunnel tests were conducted to determine the dynamic and static stability derivatives of an approximately 0.011-scale North American Rockwell straight wing and delta wing orbiters in proximity with an 0.011-scale General Dynamics/Convair delta wing booster. Interference-free data on the orbiter models were also obtained. Measurements were made with a forced-oscillation dynamic balance as the model oscillated plus or minus 1.6 deg at angles of attack ranging from -6.8 to 9.7 deg. Data were obtained at Mach numbers 1.76 and 2 and at free-stream Reynolds numbers, based on orbiter model length, ranging from 2,030,000 to 6,330,000. Gain orbiter configurations were dynamically and statically stable, and in general, not greatly affected when in the proximity of the booster. The present coupling data show fair agreement with data from the National Aeronautics Establishment (NAE), which are the only other known coupling data of this type. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 720 882 11/2

GRUMMAN AEROSPACE CORP BETHPAGE N Y RESEARCH DEPT

Development of Beta-Spoudumene Closed Pore Insulation (CPI).

(U)

DESCRIPTIVE NOTE: Research memo.,
SEP 71 36P Stanislaw, T. S. ;
REPT. NO. RW-517
MONITOR: CIDEP 501.30.00.00-K4-03

UNCLASSIFIED REPORT

DESCRIPTORS: (*SPUDUMENE, *POROUS MATERIALS),
(*REFRACTORY MATERIALS, SPODUMENE), (*HEAT SHIELDS,
SPODUMENE), CERAMIC MATERIALS, THERMAL INSULATION,
REENTRY VEHICLES, FORMS, SILICATES, ALUMINATES, DENSITY,
MECHANICAL PROPERTIES, PHASE DIAGRAMS, MANUFACTURING
METHODS
IDENTIFIERS: SPACE SHUTTLES (U)
(U)

IAC ACCESSION NUMBER: NAC-081080
IAC DOCUMENT TYPE: NAC -HARD COPY--

An investigation was conducted to develop a refractory 2300F water-proof external insulation for the earth orbiting shuttle. Using beta-spodumene as the matrix material, both organic (fugitive) and inorganic pore formers, as well as foaming by means of chemical reaction and the use of a surfactant, were tried over a wide range of composition, processing conditions, and geometries to obtain the desired properties. When pore formers were used, densities obtained on specimens less than 1 inch in diameter were not duplicated on larger sized specimens. Pores were weak, difficult to handle, and exhibited migration to the surface of what is believed to be binder material and other additives. A material was not obtained that possessed all of the desired properties.
(Author)

IAC SUBJECT TERMS: M--(U)HOPKINSON BAR, ALUMINUM, STRAIN-RATE, 1100-C;
(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 720 882 11/2

GRUMMAN AEROSPACE CORP BETHPAGE N Y RESEARCH DEPT

Development of Beta-Spoudumene Closed Pore Insulation (CPI).

(U)

DESCRIPTIVE NOTE: Research memo.,
SEP 71 36P Stanislaw, T. S. ;
REPT. NO. RW-517
MONITOR: CIDEP 501.30.00.00-K4-03

UNCLASSIFIED REPORT

DESCRIPTORS: (*SPUDUMENE, *POROUS MATERIALS),
(*REFRACTORY MATERIALS, SPODUMENE), (*HEAT SHIELDS,
SPODUMENE), CERAMIC MATERIALS, THERMAL INSULATION,
REENTRY VEHICLES, FORMS, SILICATES, ALUMINATES, DENSITY,
MECHANICAL PROPERTIES, PHASE DIAGRAMS, MANUFACTURING
METHODS
IDENTIFIERS: SPACE SHUTTLES (U)
(U)

IAC ACCESSION NUMBER: NAC-081080
IAC DOCUMENT TYPE: NAC -HARD COPY--

An investigation was conducted to develop a refractory 2300F water-proof external insulation for the earth orbiting shuttle. Using beta-spodumene as the matrix material, both organic (fugitive) and inorganic pore formers, as well as foaming by means of chemical reaction and the use of a surfactant, were tried over a wide range of composition, processing conditions, and geometries to obtain the desired properties. When pore formers were used, densities obtained on specimens less than 1 inch in diameter were not duplicated on larger sized specimens. Pores were weak, difficult to handle, and exhibited migration to the surface of what is believed to be binder material and other additives. A material was not obtained that possessed all of the desired properties.
(Author)

IAC SUBJECT TERMS: M--(U)HOPKINSON BAR, ALUMINUM, STRAIN-RATE, 1100-C;
(U)

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(U)

DESCRIPTIVE NOTE: Final rept. Jul 70-Jun 71,
SEP 71 243P DiFranco, Dante A. ;
REPT. NO. CAL-8M-2995-F-1
CONTRACT: F33615-70-C-1753
FROM: AF-690A
MONITOR: AFEDL TR-71-64

UNCLASSIFIED REPORT

DESCRIPTORS: (*DESCENT TRAJECTORIES, SPECIFICATIONS),
(*LIFTING REENTRY VEHICLES, ATMOSPHERE ENTRY), MANNED
SPACECRAFT, RENDEZVOUS SPACECRAFT, FLIGHT CONTROL
SYSTEMS, ANGLE OF ATTACK, AERODYNAMIC CHARACTERISTICS,
METEOROLOGICAL PHENOMENA, FLIGHT PATHS, QUALITY CONTROL,
PRESSURE PATTERN FLIGHT, NONPOWERED FLIGHT, AERONAUTICS
IDENTIFIERS: *SPACE SHUTTLES (U)
(U)

Preliminary handling qualities requirements for lifting re-entry vehicles during terminal flight at low supersonic, transonic, and subsonic speeds are presented and discussed. Included are a preliminary draft of a flying qualities specification for piloted re-entry vehicles and the rationale and backup data upon which the flying qualities requirements are based. Many of the requirements were adapted from, or are similar to, the requirements for piloted airplanes presented in the latest revision of the flying qualities specification for military airplanes, MIL-F-8785B(ASG). Some requirements that are new and unique to lifting re-entry vehicles have been added. The format of the specification is similar to that of MIL-F-8785B(ASG), therefore, comparison of flying qualities requirements of lifting re-entry vehicles and airplanes is facilitated. These flying qualities requirements are preliminary and subject to revisions based on future research and additional discussions with interested contractors and government agencies. (Author)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 729 770 22/2

RAND CORP SANTA MONICA CALIF

The Space Shuttle as an Element in the
National Space Program.

(U)

OCT 70 43P Shaver, R. D. ; Dreyfuss, D.
J. ; Gosch, W. D. ; Levenson, G. S. ;
REPT. NO. RM-6244-1-PR
CONTRACT: F44620-67-C-0345

UNCLASSIFIED REPORT

DESCRIPTORS: (*RENDEZVOUS SPACECRAFT, TRANSPORTATION),
(*RECOVERABLE BOOSTER MOTORS, COST EFFECTIVENESS),
LAUNCH VEHICLES(AEROSPACE), FEASIBILITY STUDIES, COSTS,
BUDGETS, POLAR ORBIT TRAJECTORIES, MANAGEMENT PLANNING,
SYSTEMS ENGINEERING (U)
IDENTIFIERS: *SPACE SHUTTLES, SPACE PROGRAMS, SPACE
TRANSPORTATION SYSTEMS, STS(SPACE TRANSPORTATION
SYSTEMS), COST ANALYSIS (U)

An examination is made of the economic
justification and potential funding problems of the
space transportation system (STS) recommended for
development by the President's Space Task
Group in September 1969. The concept of a two-
stage, fully reusable launch vehicle that can place a
40,000 to 50,000-lb payload into low earth polar
orbit is currently being studied for possible
inclusion in future STS programs. Viewed over the
long term, the shuttle has definite merit, but its
immediate economic justification depends on the pace
that is finally adopted for the national space
program. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 724 113 22/1 17/7

AEROSPACE RESEARCH LABS WRIGHT-PATTERSON AFB OHIO

Optimal Control of Libration Point Space
Station.

(U)

DESCRIPTIVE NOTE: Final rept.,
JAN 71 15P
Isaac R. ; Soward, Walter D. ;
REPT. NO. AR-71-0316
PROJ: AF-7071
TASK: 707100

UNCLASSIFIED REPORT

DESCRIPTORS: (*SPACE STATIONS, ADAPTIVE CONTROL
SYSTEMS), (*SPACE NAVIGATION, N-BODY PROBLEM,
EARTH(PLANET), MOON, SUN, EQUATIONS OF MOTION, NONLINEAR
SYSTEMS, OPTIMIZATION, FEEDBACK (U)
IDENTIFIERS: LIBRATIONS, LIBRATION POINTS, AUTOMATIC,
CONTROL, FOUR BODY PROBLEM, CONTROL THEORY (U)

The report covers the development of a control
system which maintains a space station in close
proximity to one of the earth-moon libration points.
(Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07
AD- 721 971 14/2 20/4 1/1

NATIONAL AERONAUTICAL ESTABLISHMENT OTTAWA (ONTARIO)

On Dynamic Stability Testing of
Unconventional Configurations.

(U)

71 1+P Orlik-Ruckemann, K. J. ;
Adams, P. A. ; LaBerge, J. G. ;

UNCLASSIFIED REPORT

Availability: Paper copy available from AIAA, 1290
Avenue of the Americas, New York, N. Y. 10019.
PC \$2.00 MF \$1.00. No copies furnished by DDC or
NTIS.

SUPPLEMENTARY NOTE: Pub. in Proceedings of the AIAA
Aerodynamic Testing Conference (6th) Albuquerque,
New Mexico, 10-12 Mar 71. AIAA Paper No. 71-276.

DESCRIPTORS: (*WIND TUNNELS, *AERODYNAMICS), WIND TUNNEL
MODELS, STABILITY, OSCILLATION, AERODYNAMIC
CONFIGURATIONS, ANGLE OF ATTACK, EXPERIMENTAL DATA (U)
IDENTIFIERS: SPACE SHUTTLES, *STING MOUNTS (U)

Situations frequently occur when standard wind-
tunnel test equipment, based on the concept of an
all-containing rear-sting support is impractical or
even impossible to use. In this paper some possible
alternative test arrangements are indicated and
descriptions are given of the actual experimental
equipment and procedures. Full- and half-model
techniques are discussed and the experimental
procedures include free- and forced-oscillation
methods. Examples contain cases such as cones at
incidence and combinations of two models in close
proximity (space shuttle), at supersonic and
hypersonic speeds. Comparisons of results obtained
with different methods and techniques are included.
(Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07
AD- 721 713 5/5 6/11

BIOTECHNOLOGY INC FALLS CHURCH VA

Forecast of Human Factors Technology Issues
and Requirements for Advanced Aero-Hydro-
Space Systems.

(U)

DESCRIPTIVE NOTE: Final rept.,

MAR 71 343P Price, Harold E. ; Parker,
James F. , Jr. ;

CONTRACT: N00014/69-C-0327
PROJ: NR-145-258

UNCLASSIFIED REPORT

DESCRIPTORS: (*SPACECRAFT, *HUMAN FACTORS ENGINEERING),
(*SUPERSONIC AIRCRAFT, HUMAN FACTORS ENGINEERING),
(*UNDERWATER VEHICLES, HUMAN FACTORS ENGINEERING),
AIRCRAFT, SPACE BIOLOGY, HUMANS, PERFORMANCE (HUMAN),
ENVIRONMENT, AERONAUTICS, OPERATION, UNDERWATER, SPACE
ENVIRONMENTS, STRESS (PHYSIOLOGY), STRESS (PSYCHOLOGY),
LIFE SUPPORT (U)
IDENTIFIERS: *SPACE SHUTTLES, *HABITABILITY, (U)
*UNDERWATER (U)

Three major new systems planned for the 1970s have
been examined: the supersonic transport, the space
shuttle, and undersea systems, covering both
underwater habitats and deep sea submersibles. The
operation of these systems and the proposed
utilization of man within each system have been
described in detail. Specific issues relating to
the use of man have been discussed. Finally,
research requirements have been recommended that
should receive emphasis if appropriate human factors
and biomedical technology is to be developed to
support the full spectrum of advanced systems to be
developed within the next decade. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 720 136 22/1 7/1

CALIFORNIA UNIV LOS ANGELES DEPT OF CHEMISTRY

Industrial Chemistry; in Space, (U)

MAR 70 5P Libby, W. F. ; Payton, P.

H. ;
CONTRACT: AF-AFOSR-1255-67, NGL-05-007-003
PROJ: AF-9538

MONITOR: AFOSR TR-71-0595

UNCLASSIFIED REPORT

Availability: Pub. in Proceedings of the ASME
Space Technology and Heat Transfer Conference,
Los Angeles, Calif. 21-24 Jun 70. 70-AV/Spt-
2. 5p.DESCRIPTORS: (*CHEMICAL ENGINEERING, *SPACE STATIONS),
(*SOLAR FURNACES, SPACE STATIONS), CRYSTAL GROWTH,
METALLURGY, ASTRONAUTICS (U)Some aspects of chemical manufacture in an orbiting
spacecraft are presented and discussed. The design
and operation of a 100-meter-dia parabolic solar
furnace is considered. Some further subjects of
future chemical interest are also presented.
(Author) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 704 045 22/2 21/3

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

SCIENTIFIC RESULTS FROM THE FLIGHT OF YANTAR
AUTOMATIC IONOSPHERIC LABORATORIES. PART II, (U)JAN 70 16P Artsimovich, L. A. ;
Grodzovskii, G. K. ; Denilov, Yu. I. ; Zakharov,
V. M. ; Krut'sev, N. F. ;
REPT. NO. FTD-HT-23-637-69
PROJ: FTD-41602

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Edited trans. of mono. Nauchnye
Rezultaty Poleta Avtomaticheskikh Ionosfernykh
Laboratorii 'Yantar'. Ch. 2, n.p., 1968 p1-11, by
D. Koolbeck.DESCRIPTORS: (*SPACE STATIONS, SPACE PROPULSION),
(*ELECTRIC PROPULSION, FEASIBILITY STUDIES),
(*PLASMA PHYSICS), USSR, ION ENGINES, INTERACTIONS,
ROCKET LABORATORIES, EXPERIMENTAL DATA, REPORTS
IDENTIFIERS: TRANSLATIONS (U)
(U)To investigate the prospects of controlled flight
in the upper atmosphere, 'Yantar' automatic
ionospheric laboratories with gas plasma ion engines
were launched by means of geophysical rockets to
altitudes of 100-400 km. The complicated
interaction of a gas ion jet and a neutralizer
(electron emitter) with the plasma of the
ionosphere is studied. The data from processing the
results obtained in the experiments are given in the
report. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07
AD- 702 322 22/1 22/2

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO
SPACE OBSERVATIONS: SCIENCE PUSHES BACK ITS
HORIZONS, (U)

DEC 69 9P Efremov, A. ; Zaitsev, Yu. ;
Mikhailov, V. ;
REPT. NO. FTD-HT-23-591-69
PROJ: FTD-7220157

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Edited trans. from Pravda, Moscow
(USSR) p3, 24 Oct 69.

DESCRIPTORS: (*SPACE STATIONS, SPACE ENVIRONMENTS),
MAN-ED, PHOTOMETERS, ULTRAVIOLET RADIATION, X RAYS,
USSR (U)

IDENTIFIERS: SOYUZ SPACECRAFT, TRANSLATIONS (U)

It has long been the dream of scientists to place a laboratory outside the planet for the purpose of observing the phenomena of the Universe unhampered by the interference of the Earth's atmosphere. In the group flight of the 'Soyuz' ('Union') spacecraft an important link has been forged in the realization of this dream. The article tells of research with an, as-yet-unpiloted, observatory which has carried out the first all-around studies of vacuum ultraviolet and soft X-ray radiation in space. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07
AD- 695 043 22/2 22/3

AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OHIO SCHOOL OF
ENGINEERING

OPTIMUM FEEDBACK CONTROL OF A SYNODIC
SATELLITE. (U)

DESCRIPTIVE NOTE: Master's thesis,
JUN 69 101P Seward, Walter D. ;
REPT. NO. GOC/EE/69-17

UNCLASSIFIED REPORT

DESCRIPTORS: (*SYNCHRONOUS SATELLITES, SPACE STATIONS),
(*SPACE STATIONS, FUEL CONSUMPTION), (*FUEL CONSUMPTION,
OPTIMIZATION), ADAPTIVE CONTROL SYSTEMS, DESIGN,
CALCULUS OF VARIATIONS, FEEDBACK, GAIN, EQUATIONS OF
MOTION, PARKING ORBIT TRAJECTORIES,
PERFORMANCE (ENGINEERING), N-BODY PROBLEM, LINEAR
SYSTEMS, STABILITY, COSTS, THESES (U)
IDENTIFIERS: COMPUTER ANALYSIS, LIBRATION POINTS,
*STATIONKEEPING (U)

A control system is devised to minimize the fuel required to maintain a satellite at the three-body libration point between the earth and moon bodies in the planar very restricted four-body model. The problem is formulated as a linear regulator problem of variational calculus for equations of motion linearized about the libration point. The solution yields a linear feedback control system that is optimal with respect to a quadratic performance criterion. A matrix Riccati equation is solved to obtain the feedback gains. The control system is extended to include the nonlinear system dynamics with the steady-state feedback gains of the linear problem. The performance of the resulting control system is analyzed on a digital computer. (U)

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 688 266 22/1 22/2 5/5

GENERAL DYNAMICS/CONVAIR SAN DIEGO CALIF

ASSEMBLY AND MAINTENANCE OF LIGHTWEIGHT METALLIC STRUCTURES IN SPACE. (U)

DESCRIPTIVE NOTE: Final rept. Feb 67-Jul 68.

MAR 69 126P Brazell, Robert R. ;Thomson,

W. G. ;

CONTRACT: F33615-67-C-1302

PROJ: AF-8170

TASK: 817008

MONITOR: AFAPL TR-68-118

UNCLASSIFIED REPORT

DESCRIPTORS: (*SPACE MAINTENANCE, *HUMAN FACTORS ENGINEERING), SPACE STATIONS, CONSTRUCTION, WEIGHTLESSNESS, CONFIGURATION, MISSION PROFILES, MANNED SPACECRAFT, TEST FACILITIES, PANELS, EXTRAVEHICULAR ACTIVITY, WALLS, PIPES, WIRE, FATIGUE(PHYSIOLOGY), ASSEMBLY

IDENTIFIERS: PLATES(STRUCTURAL MEMBERS) (U) (U)

The research described herein was intended to expand the base of knowledge about man's capability to handle structural components and to assemble them into a usable structure in the space environment. Emphasis was placed on structures consisting of tubular supporting elements and large surface panels. Separate test activities were conducted to provide basic information for spacecraft designers and mission planners. Optimum, minimum, and maximum sizes and masses for both tubular elements and flat plates were determined. Data were derived empirically, using Convair's large six-degree-of-freedom simulator and neutral buoyancy simulation techniques. Extensive biononitoring was carried out during testing, on a variety of subjects.

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AD- 688 246 22/1

AIR FORCE AERO PROPULSION LAB WRIGHT-PATTERSON AFB OHIO

NATIONAL CONFERENCE ON SPACE MAINTENANCE AND EXTRAVEHICULAR ACTIVITIES (2ND). 6-8 AUGUST, 1968, LAS VEGAS, NEVADA. (U)

FEB 69 717P

PROJ: AF-3170

TASK: 817012

UNCLASSIFIED REPORT

DESCRIPTORS: (*SPACE MAINTENANCE, SYMPOSIA), (*EXTRAVEHICULAR ACTIVITY, SYMPOSIA), MANNED SPACECRAFT, SPACE STATIONS, ANTENNAS, LUNAR CRAFT, SPACECRAFT DOCKING, MAN MACHINE SYSTEMS, LIFE SUPPORT, SAFETY, PERFORMANCE(HUMAN), MANEUVERABILITY

IDENTIFIERS: APOLLO, GEMINI (U) (U)

Contents: Space maintenance and EVA/space missions; Spacecraft maintainability and reliability; Related man-machine interface problems; Space maintenance technology; Maneuvering-unit technology; Protective systems; and Associated space experiments and simulation.

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 687 326 6/16 11/6 22/2 17/2.1

LIBRARY OF CONGRESS WASHINGTON D C AEROSPACE TECHNOLOGY DIV

FOREIGN SCIENCE BULLETIN, VOLUME 5, NUMBER 4, APRIL 1969. (U)

DESCRIPTIVE NOTE: A monthly review of selected foreign scientific and technical literature.
 APR 69 245P

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Volume 5, no. 3, AD-684 876. Also available on subscription, \$18.00/year, \$22.50/year foreign.

DESCRIPTORS: (*ELECTROPHYSIOLOGY, REVIEWS). (*POWDER METALLURGY, *ALUMINUM), (*SPACECRAFT, REVIEWS), (*MICROWAVE COMMUNICATIONS, MOUNTAINS), ELASTIC PROPERTIES, PLASTIC PROPERTIES, CENTRAL NERVOUS SYSTEM, STRESSES, INDUSTRIES, PHOTOTUBES, ALLOYS, OPTICS, SPACE STATIONS, SATELLITES(ARTIFICIAL), WAVE PROPAGATION, USSR

IDENTIFIERS: ELECTROANESTHESIA, ELECTROSLEEP (U)

Contents. Papers: Electrosleep (cerebral electrotherapy) and electroanesthesia - the international effort at evaluation; Microwave propagation in mountainous terrain; Soviet sintered aluminum powder (SAP) alloys; Soviet orbital assembly technology; Kosmos satellite launches during 1958. Surveys: Investigation of stress concentration by means of the couple-stress theory; Investigations of strength and plasticity at the Institute of Mechanics, Academy of Sciences USSR; VEB Carl Zeiss Jena. Notes: A photodetector with a virtual cathode; Kosmos-261 progress report; Research activity at Soviet higher Educational institutions. Conferences: Second International Symposium on Electrosleep and Electroanesthesia. Book reviews: Equations of State of Solids at High Pressures and Temperatures; Information Storage and Retrieval in Chemistry and Chemical Technology. (U)

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 683 158 22/2

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

PEOPLE AND SPACE, (U)

AUG 68 13P Pokrovskii, G. ;
 REPT. NO. FTC-HT-23-675-68

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Edited trans. of Voennye Znaniya (USSR) v43 no p36-37 1967, by L. Thompson.
 DESCRIPTORS: (*SPACE STATIONS, REVIEWS), FEASIBILITY STUDIES, CENTRIFUGAL FIELDS, SPACE MAINTENANCE, CONSTRUCTION, MIRRORS, FILMS, PNEUMATIC DEVICES, USSR IDENTIFIERS: TRANSLATIONS

A popularized discussion is given of the prospects and proposals for a manned orbiting space station. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 679 660 22/3

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

THE SYNTHESIS OF A SYSTEM FOR OPTIMAL STABILIZATION
OF A SPACE STATION, (U)

FEB 68 16P Letov, A. M. ;
REPT. NO. FTD-WT-23-1281-67

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Edited trans. of National
Conference on Vehicle Guidance and Control of the
American Institute of Aeronautics and Astronautics,
Huntsville, Ala., 14-16 Aug 67. Paper, n.p., 1967
p1-17, by J. Miller.
DESCRIPTORS: (*SPACE STATIONS, STABILIZATION SYSTEMS),
MASS, INERTIA, MOMENTUM, MATHEMATICAL MODELS, NONLINEAR
DIFFERENTIAL EQUATIONS, STABILITY, USSR (U)
IDENTIFIERS: TRANSLATIONS (U)

The report gives the solution to the problem of
synthesizing a system for stabilizing a manned space
station. The stabilization system suppresses the
initial angular momentum of the station which it
acquires at the moment it separates from the booster.
Suppression occurs according to an optimal law
which corresponds to the accepted quality factor
(Q) no matter what the movement of the crew
members. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 658 454 22/1

AIR FORCE AERO PROPULSION LAB WRIGHT-PATTERSON AFB
OHIO

AN ASSESSMENT OF THE PRACTICALITY OF ORBITAL
MAINTENANCE, (U)

AUG 67 23P Van Schaik, Peter N. ;
REPT. NO. AFAPL-CONF-68-3
PROJ: AF-8170

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Presented at the AIAA Conference on
Space Programs Issues of the 70's, Seattle, Wash.,
28-30 Aug 67.
DESCRIPTORS: (*SPACE MAINTENANCE, FEASIBILITY STUDIES),
SPACE STATIONS, MANNED SPACECRAFT, RELIABILITY,
REDUNDANT COMPONENTS, SYSTEMS ENGINEERING,
MAINTAINABILITY, SPARE PARTS, EXTRAVEHICULAR ACTIVITY,
COST EFFECTIVENESS (U)

Spacecraft and space stations orbiting the earth
for long periods of time will incur many malfunctions
requiring redundancy on orbital maintenance.
Redundancy will suffice for the shorter periods
while maintenance becomes a necessity in the long
run. For maintenance to become a reality it must
be both system and cost effective. It will never
become effective unless the spacecraft is
maintainable, spares are interchangeable, and man can
make in-space repairs. Current programs are slowly
advancing the technologies but a concentrated,
comprehensive program is needed to make maintenance a
reality reasonably soon. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 656 747 22/2 13/13

ARCHER DANIELS MIDLAND CO MINNEAPOLIS MINN

SELF-RIGIDIZING EXPANDABLE-SANDWICH AEROSPACE
SHELTERS AND SOLAR COLLECTORS. (U)

DESCRIPTIVE NOTE: Progress rept. for 15 May 66.
MAY 66 30P
CONTRACT: AF 33(615)-2435

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also AD-489 454.
DESCRIPTORS: (*EXPANDABLE STRUCTURES, *SANDWICH
CONSTRUCTION), (*SOLAR COLLECTORS, EXPANDABLE
STRUCTURES), (*SPACE STATIONS, EXPANDABLE STRUCTURES),
HONEYCOMB CORES, FEASIBILITY STUDIES, MIRRORS, PARABOLIC
BODIES, PACKAGING, ENVIRONMENTAL TESTS, DAMAGE,
RADIATION EFFECTS, PLASTICS (U)

The objectives of the program are: (1)
fabrication, space deployment, and rigidification of
a large parabolic solar collector; (2)
fabrication and space deployment of inflatable,
rigidizable space shelter structures. The first
10-foot diameter mirror was completed by addition of
the plumbing attachments to the manifold for the
rigidization task. However, due to some slight
leakage between the inflated sandwich and minor
shell coat, it was decided that this unit will be
rigidized in ambient conditions. The 4-foot
diameter x 8-foot long cylinder was completed,
including impregnation. However, deployment in the
vacuum chamber was unsuccessful because the resin had
already rigidified. (U)

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AD- 655 342 22/2

RAND CORP SANTA MONICA CALIF

ORBITAL BASING: KEY TO LOW COST SPACE OPERATIONS. (U)

JUL 67 25P Sears, G. A. ;
REPT. NO. P-3570

UNCLASSIFIED REPORT

DESCRIPTORS: (*SPACE STATIONS, COSTS), MANNED, RECOVERY,
LIFE EXPECTANCY, TRAFFIC, LAUNCHING, OPERATION. (U)

A comparison is made of some of the operational and
cost-influencing characteristics of low-orbit space
operations conducted from a manned orbital base and
from an earth base. The earth-based mode of
operation is that employed today, whereby expendable
spacecraft are placed in mission orbits with
expendable launch vehicles. In the orbital-basing
concept the spacecraft are based at a manned space
station, are injected into their mission orbits as
required, and subsequently rendezvous with the space
station for rejuvenation and reuse. Reuse has long
been considered the key to lowering the very high
cost of space operations; however, most reuse
concepts studied in depth have involved recovery to
earth of launch vehicles and/or spacecraft. The
reasons why development of reusable systems has not
been initiated are many, prominent among which are
these: (1) Very significant weight penalties
are associated with recovery gear, particularly
orbital recovery gear; (2) refurbishment costs
and useful life of recovered vehicles are difficult
to appraise; and (3) traffic rates are not
foreseen which are adequate to amortize R and D
costs of billions of dollars over a reasonable time
period. These problems are all associated with
recovery, however, and can be avoided by reuse of
equipment on orbit. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 647 646 22/3 22/2 21/4 21/6

LIBRARY OF CONGRESS WASHINGTON D C AEROSPACE TECHNOLOGY
DIVSPACECRAFT UTILIZING THE LIFTING AND BALLISTIC
REENTRY TECHNIQUES. PART I. SPACECRAFT MANEUVERING-
AND DESCENT-SYSTEM HARDWARE: COMPILATION AND ANALYSIS
OF EXTRACTS AND REVIEWS. (U)DESCRIPTIVE NOTE: ATD work assignment no. 52,
JUN 66 65P Dolgich, Aleksander ; Thomas,
Kenneth ;
REPT. NO. ATD-66-81
MONITOR: TT 67-61101

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Compilation and analysis of Extracts
and Reviews is based on Soviet-Satellite-Western
open sources pub. 1963-66. Rept. on Surveys of
Foreign Scientific and Technical Literature.
DESCRIPTORS: (*SPACE PROPULSION, *REENTRY VEHICLES),
SPACECRAFT NUCLEAR PROPULSION, SPACE STATIONS,
BALLISTICS, ATMOSPHERE ENTRY, LUNAR PROBES, ELECTRIC
PROPULSION, PLASMA ENGINES, ION SOURCES, SPACE
NAVIGATION (U)

The compilation and analysis of extracts and reviews is based on Soviet-Satellite-Western open sources published 1963-1966. This report is Part I of a two-part report. Describing various aspects of the Soviet space program, it attempts to reveal the status and trends of Soviet research and development relating to the orbiting, maneuvering, deorbiting, reentry, and recovery of aerospace vehicles utilizing aerodynamic lifting and ballistic reentry techniques. After the introduction which reviews information contained in the report, there are three sections: I. Voskhod-type descent systems; II. Materials on lunar- and planetary-probe descent systems; III. Spacecraft maneuvering systems. In Section I there are five parts: A. General discussion of reentry and landing systems; B. Excerpts from articles on reentry, braking, and landing systems; C. Materials on Voskhod-type soft-landing systems; D. Materials on Voskhod-type ion velocity-vector plotters; E. Materials on cosmonaut-recovery procedures. Section II has two parts:

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AD- 638 705 22/2 20/11

GIANNINI CONTROLS CORP WALVERN PA

EXPERIMENTAL INVESTIGATION OF THE EFFECTS OF
ELASTICITY ON THE STABILITY OF MANNED ROTATING SPACE
STATIONS. (U)DESCRIPTIVE NOTE: Revised ed.
FEB 66 5P Villier, Jacob M. ;
CONTRACT: AF 49(638)-1015,
PROJ: AF-9782,
TASK: 978201,
MONITOR: AFOSR 66-1641

UNCLASSIFIED REPORT

Availability: Published in Journal of Spacecraft and Rockets V3 n6 p943-5 Jun 1966.
SUPPLEMENTARY NOTE: Revision of manuscript submitted 21 Jul 65. Prepared for presentation at the AIA Annual Meeting (2nd), San Francisco, Calif., 26-29 Jul 65.

DESCRIPTORS: (*ELASTIC PROPERTIES, EXPERIMENTAL DATA),
(*SPACE STATIONS, STRUCTURAL PROPERTIES), MANNED,
STABILITY (U)

An experimental investigation of the effects of elasticity on the stability of manned rotating space stations was conducted. The minor deviations between the results and the previously predicted analytic values are well within acceptable experimental error. The stability criterion was thus verified and designers may use it as a guide for stiffness requirements. The parameters involved are general for each configuration so that they may be applied easily. Knowledge of natural vibration modes and spin-up forces enables a structural analyst to determine whether or not his design will exhibit the instability reported by the author of this paper. (Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07
AD- 634 931 22/1

AERONAUTICAL CHART AND INFORMATION CENTER ST LOUIS MO
LINGUISTIC SECTION

THE FLIGHT OF AUTOMATIC INTERPLANETARY STATIONS
'VENUS-2' AND 'VENUS-3'. (U)

MAY 66 16P
REPT. NO. ACID-TC-1033,
MONITOR: TT 66-61646

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Opolete Avtomaticheskikh
Mexnplanetnykh Stantsii 'Venera-2' i 'Venera-3',
trans. from Ekonomicheskaya Gazeta (USSR) n10 1966.
DESCRIPTORS: (*SPACE STATIONS, *VENUS PROBES),
INTERPLANETARY TRAJECTORIES, PLANETARY ATMOSPHERES,
SPACECRAFT COMPONENTS, AUTOMATIC, VENUS(PLANT), USSR (U)

Translation of Russian articles: Flight of automatic
interplanetary stations 'Venus-2' and 'Venus-3'.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07
AD- 631 585 22/2

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

STATION OUTSIDE THE EARTH, (U)

JAN 66 168P Lyapunov, B. V. ;
REPT. NO. FTC-MT-64-531,
MONITOR: TT 66-61106

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Edited machine trans. of mono.
Stantsiya vne Zemli, Moscow 1963 p1-147.
DESCRIPTORS: (*SATELLITES (ARTIFICIAL), USSR), (*SPACE,
USSR), (*SPACECRAFT, USSR), METEOROLOGICAL,
COMMUNICATION SATELLITES (ACTIVE), COMMUNICATION
SATELLITES (PASSIVE), MANNED SPACECRAFT, SPACE FLIGHT,
EXTRATERRESTRIAL BASES, ROCKET PROPULSION,
INTERPLANETARY TRAJECTORIES (U)
IDENTIFIERS: COSMOS SATELLITES, ECHO, MARINER,
TELSTAR, TIROS, VOSTOK (U)

Translation of a 1963 Russian publication on
space stations, satellites, interplanetary routes,
and their value for science and practical use. (U)

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 624 668 22/2 10/2 10/3

PRINCETON UNIV N J

ELECTRICAL POWER SYSTEMS FOR THE MANNED ORBITING LABORATORY.

(U)

DESCRIPTIVE NOTE: Master's thesis,
OCT 65 184P
CONTRACT: AF33(608)-1269
Anderberg, Michael R. ;

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*SPACE STATIONS, ELECTRIC POWER PRODUCTION), (*ELECTRIC POWER PRODUCTION, SPACE STATIONS), (*MANNED SPACECRAFT, POWER SUPPLIES), (*POWER, SPACE STATIONS), AIR FORCE RESEARCH, MISSION, FUEL CELLS, SOLAR CELLS, BATTERY COMPONENTS, ELECTRIC BATTERIES, EXPERIMENTAL DESIGN, ENERGY CONVERSION IDENTIFIERS: MOL(MANNED ORBITING LABORATORIES) (U)

This paper is a detailed design study of possible electrical power systems for the Air Force's Manned Orbiting Laboratory. The mission requirements and details are reviewed to the extent that they are known in the open literature and a set of power requirements is derived. On the basis of reliability, availability, and weight considerations, only solar cells, fuel cells, secondary batteries and combinations thereof are selected for detailed analysis. For the 30 day mission it is concluded that if no experiments are required during the shadow portion of the orbit, the integrated battery/solar cell system is superior by a large margin. If experiments are required in the shadow period, it is found that either the fuel cell system or the battery/solar cell system may be optimum depending on the magnitude and type of power required. It is also found that for a 60 day mission only the battery/solar cell system can be seriously considered. The analysis of the three power systems in support of the design study is developed step by step and may be used as a detailed guide for analyzing the characteristics of these systems for other missions. (Author) (U)

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

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AEROSPACE TECHNOLOGY DIV LIBRARY OF CONGRESS WASHINGTON D C

SOVIET SPACE EXPLORATION AS VIEWED BY EAST GERMAN SPECIALISTS.

(U)

NOV 65 44P
REPT. NO. ATC-65-101
MONITOR: TT, 65-64766
Erleman, Gerhard ;

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Comprehensive report dealing with Soviet space exploration during the period 1960-1964, based on open literature.
DESCRIPTORS: (*ASTRONAUTICS, USSR), LAUNCH, REENTRY VEHICLES, SPACE, MANNED SPACECRAFT, LUNAR CRAFT, LUNAR PROBES, REKREZVOUS TRAJECTORIES, SPACECRAFT DOCKING, SOFT LANDINGS, SPACE, ELECTRIC PROPULSION, COMPUTERS, LASERS, EAST GERMANY (U)

The report deals with Soviet space exploration during the last five years (1960-1964) as viewed by East German specialists. It is based on open literature available at the Aerospace Technology Division of the Library of Congress. The materials have been discussed chronologically in eight sections according to subject. Some East German sources discussed include interesting information not found in Soviet publications. The possible application of parallel connection of launch-vehicle stages (clustering) in the Vostok-type vehicle, the surrounding of a reentering spacecraft with a magnetic field (Vostok-1 and Vostok-2), and the bonding of metals and plastics by nuclear welding are considered to be among the more interesting items in this report. The introduction summarizes the materials contained in the report. Section I, General Remarks and Inferences, contains analyst's conclusions. Sections II through VIII contain a chronological review of materials. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 623 967 5/9 6/5 6/19

SCHOOL OF AEROSPACE MEDICINE BROOKS AFB TEX FLIGHT
NURSING BRANCH

CLINICAL ASPECTS OF AEROSPACE NURSING, (U)

65 4P Respini, Ellen M. ;
MONITOR: SAM , TR-65-221

UNCLASSIFIED REPORT

Availability: Published in Aerospace Medicine
V36 N6 P545-8 Jun 1965. Copies to DDC users
only.SUPPLEMENTARY NOTE: Prepared for presentation at Annual
Scientific Meeting of the Aerospace Medical
Association 27 Apr 65.DESCRIPTORS: (*NURSES, AEROSPACE MEDICINE), (*SPACE,
NURSES), EDUCATION, SPACE FLIGHT, PUBLIC, RADIATION
HAZARDS, ASTRONAUTS, MEDICAL, PHYSICAL FITNESS,
DIAGNOSIS(MEDICINE), HOSPITALS, SPACE STATIONS (U)

The study presents a critical evaluation of the place of the nursing profession in relation to the current state of aerospace medical investigation. It is determined that Clinical Aerospace Nursing can be categorized into four general areas of endeavor: (1) preventive and occupational health nursing, (2) adaptation to the numerous elements of by-products from aerospace investigation (usually termed 'fall-out'), (3) care of the person of the astronaut before and after flight and (4) anticipation of nursing problems to be encountered in the 0-g atmosphere of the space cabin. In order to attain proficiency in the four broad areas cited the nurse must be knowledgeable, if not proficient, in many disciplines such as physics, electronics, engineering and mathematics. She must find her way into the research laboratory and become a part of the team doing the experimentation that is to determine man's ultimate capability in space. In sum, she must acquire a creative, investigative attitude and the educational background to support that attitude. (Author)

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AD- 622 479

JOHNS HOPKINS UNIV SILVER SPRING MD APPLIED PHYSICS
LABNOTE ON DETERMINING THE OVERALL DISTANCE SCALE OF THE
EARTH USING HIGH ALTITUDE SATELLITES, (U)JUL 64 24P Guier, W. H. ;
REPT. NO. CF-3098
CONTRACT: NGA62 0604C

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:
DESCRIPTORS: (*ORBITS, MEASUREMENT), (*SPACE STATIONS,
TRACKING), (*ASTRONOMICAL GEODESICS,
SATELLITES(ARTIFICIAL)), ERRORS, SIMULATION, HIGH
ALTITUDE, GRAVITY, DOPPLER RADAR,
SATELLITES(ARTIFICIAL), EARTH (U)

The note presents the results of a recently completed simulation which indicates that satellite orbits with markedly different altitudes are required to determine accurately both the zeroth order zonal harmonic (the term in the geopotential representing the total force constant of the earth) and the distance scale to be applied to tracking station radii. While the simulation presents only the results for doppler data, the analysis shows that analogous results are to be expected for range data when comparable in accuracy to the doppler data. The results indicate that data which contains biases equivalent to about 5 meters position error cannot determine independently the total mass constant and distance scale factor to better than about 2/100,000 if only satellites of about 1000 km altitude are used. However, it is shown that if one satellite of at least 3000 km altitude is included, the error would be decreased to about 5/1,000,000. Radar range data with a bias error of less than 3 meters should allow the error to be reduced to below 1/100,000 for satellites of 1000 km altitude. (Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 621 861

TRW SPACE TECHNOLOGY LABS REDONDO BEACH CALIF

INSTABILITY OF SPINNING SPACE STATIONS DUE TO CREW MOTION.

(U)

DESCRIPTIVE NOTE: Revised ed.,

NOV 64

6p

Thomson, W. T. ; Fung, Y. C. ;

CONTRACT: AF-AFOSR-352-63

MONITOR: AFOSR 65-2472

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in AIAA Journal V3 n6 p1082-7 Jun 1965 (Copies not available to DDC or Clearinghouse customers). Revision of manuscript submitted 4 May 64.

DESCRIPTORS: (*SPACE STATIONS, STABILITY), SPACE CREWS, MOTION, SPACE FLIGHT, SPINNING(MOTION), EQUATIONS (U)

The stability of a spinning space station due to periodic motions of the crew is considered. It is shown by a few examples that instabilities may occur if the period of an astronaut's motion bears certain ratios to the half-period of the station's spin. For example, if he moves back and forth with a radius of a circular, planar satellite, and if a 1/2 spin occurs when the period of his motion is equal to the integral multiple of the station's spin, a satellite will move with constant speed in a circular path. If the astronauts move constant speed in a circular path, and daily in circumferential directions, the stability of the moving masses are, relative to the satellite, on the larger their amplitude of motion, the larger will be the regions of instability. Generalizations are given which are useful for analyzing other modes of crew motion of for other problems such as passive damping of a spinning satellite. (Author)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 620 866

GIANNINI CONTROLS CORP WALVERN PA ASTRONAUTICS RESEARCH DIV

EXPERIMENTAL INVESTIGATION OF THE EFFECTS OF ELASTICITY ON THE STABILITY OF MANNED ROTATING SPACE STATIONS.

(U)

DESCRIPTIVE NOTE: Technical rept.,

JUN 65

33p

Willner, Jacob M. ; Fruen, Frank

CONTRACT: AF49 638 1015

MONITOR: AFOSR 65-104

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*SPACE STATIONS, STABILITY), (*MANNED SPACECRAFT, STABILITY), ELASTIC PROPERTIES, ROTATION, DYNAMICS, STRUCTURAL PROPERTIES, CONFIGURATION, VIBRATION, MATHEMATICAL ANALYSIS, EXPERIMENTAL DATA, MODEL TESTS

(U)

The report presents the results and conclusions obtained from an experimental program investigating the structural dynamic stability of an elastic model of a manned rotating space station. Stability criteria for this aerospace configuration were theoretically derived and model tests were performed to substantiate these stability criteria and to demonstrate that an elastic instability of such configurations is possible. (Author)

(U)

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 620 625

SCHOOL OF AEROSPACE MEDICINE BROOKS AFB TEX PHYSIOLOGY
BRANCH

DISSOLVED NITROGEN AND BENDS IN OXYGEN/NITROGEN
MIXTURES DURING EXERCISE AT DECREASED PRESSURES, (U)

65 8P Degner, Eugene A. ; Ikels,
Kenneth G. ; Allen, Thomas H. ;

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Pub. in Aerospace Medicine v36 n5
p418-25 May 1965 (Copies not available to DDC or
Clearinghouse customers).

DESCRIPTORS: (*AEROSPACE MEDICINE, DECOMPRESSION
SICKNESS). (*DECOMPRESSION SICKNESS, AEROSPACE
MEDICINE). SPACE STATIONS, MANNED, SIMULATION, OXYGEN,
NITROGEN, PRESSURE BREATHING, FLIGHT SIMULATORS,
PRESSURE SUITS, EXERCISE(PHYSIOLOGY), CHROMATOGRAPHIC
ANALYSIS, BLOOD ANALYSIS, STRESS(PHYSIOLOGY) (U)
IDENTIFIERS: MOL(MANNED ORBITING LABORATORIES) (U)

Four types of simulated orbiting laboratory flights
of 10 to 21 hours' duration, involving 107 man-
flights and 93 analyses of N2 dissolved in blood,
were performed for the purpose of ascertaining the
average intensity and duration of bends pains.
Generally bends occurred most often during transfer
and reconnaissance. Once bends appeared it
reoccurred in subsequent flight stages. This can
be avoided by sufficient breathing of O2 such that
blood N2 falls to levels insufficient,
theoretically, to provide enough N2 molecules to
form seed bubbles. On this basis it can be
predicted that missions in a pure O2 environment
require 120 minutes of O2 breathing at 14.5 psia
before decompression to 5 psia and an additional 375
minutes before a second decompression to 3.5 psia.
At that time one could return to 5 psia O2 or
preferably to 46:50::O2:N2 at 7 psia; the
latter takes 33 minutes of O2 breathing before
recommencing at 3.5 psia. If pressure suits and
locks operated successfully at 5 instead of 3.5 psia,
O2 breathing time could be saved and danger of
bends avoided. (Author) (U)

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 615 665

DOUGLAS AIRCRAFT CO INC SANTA MONICA CALIF MISSILE AND
SPACE SYSTEMS DIV

RADIATION PROTECTION FOR MANNED ORBITING SPACE
STATIONS, (U)

SEP 64 85P Jordan, T. M. ; Koprowski, E. F. ;
Langley, R. W. ;
REPT. NO. SM-46257

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:
DESCRIPTORS: (*SPACE STATIONS, SHIELDING), (*SHIELDING,
SPACE ENVIRONMENTS), SOLAR FLARES, PROTONS, ELECTRONS,
BREMSSTRAHLUNG, TRANSPORT PROPERTIES, COSMIC RAYS,
PROGRAMMING (COMPUTERS), SECONDARY EMISSION, MATERIALS,
ALUMINUM, GRAPHICS, SPHERES, MANNED SPACECRAFT, (U)
RADIATION DOSAGE

Reported are the results of a detailed parametric
investigation of radiation shielding requirements for
first generation manned orbiting space stations.
The radiation sources considered were: trapped
protons, trapped electrons (natural and
artificial) and associated bremsstrahlung, and
solar flare protons. Basic shielding data is
presented for the above radiation sources for
spherical shield configurations. This data is
included because of its general applicability to a
variety of shield configurations. These results
are presented for circular orbits of 100, 200, 400,
and 600 nautical mile altitudes and 28.7, 45, 60, and
90 degree inclinations. In addition, data are
presented for extrapolation of the presented data to
other altitudes. Two specific space stations were
studied. The shielding analysis was based on the
actual vehicle geometry, including onboard equipment
and supplies, and included self shielding effects of
a typical crew member represented by two elliptical
cylinders. Typical results are presented for the
dose received by various critical organs for several
of the circular orbits mentioned above. (Author) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 615 230

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

COLONIZING OUTER SPACE.

(U)

APR 65 13P Lyapunov.B. ;

REPT. NO. FTD-TT-64-1181

MONITOR: TT , 65-62230

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Unedited rough draft trans. of
Krylya Rodiny (USSR) v15 n8 p23-4 1964.

DESCRIPTORS: (*SPACECRAFT, MAINTAINABILITY), SPACECRAFT
CABINS, EXTERRESTRIAL BASES, MANNED SPACECRAFT,
SATELLITES (ARTIFICIAL), USSR (U)

The problems encountered in the establishment of
extraterrestrial stations, manned orbiting stations,
and other 'dwellings in ether' are treated. The
problems include gravity, weightlessness, food,
communication with the earth, solar energy, dangers
from radiation and meteors, and construction
materials. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 615 165

RAND CORP SANTA MONICA CALIF

A MATHEMATICAL MODEL OF SUPPLY SUPPORT FOR SPACE
OPERATIONS. (U)

DESCRIPTIVE NOTE: Memo..

APR 65 28P Freeman,Raoul J. ;Gogenty,
David C. ;Graves,Glenn W. ;Brooks,Robin B.

S. ;

REPT. NO. RM-4520-PR

CONTRACT: AF49 638 70018

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Rept. on Proj. RAND.
DESCRIPTORS: (*MATHEMATICAL MODELS, LOGISTICS),
(*EXTRATERRESTRIAL BASES, LOGISTICS), (*SPACE STATIONS,
LOGISTICS), (*LOGISTICS, MATHEMATICAL MODELS),
SCHEDULING (U)

The Memorandum develops a methodology to evaluate
various aspects of logistics supply support of space
bases. It is assumed that there exists at the
space base a schedule of operations which reflects
the day-to-day living, build-up, and scientific
experimental activities that are to be carried on.
These activities, in turn, set a series of demands
or requirements for products over a time spectrum.
The supply system must deliver products so as to
meet the amounts and times of the product
requirements. Each product or module has an
earliest and latest time by which it must be
delivered. The model plans a series of trips, the
dates at which each is to be sent, and the
composition of the cargoes on each trip which satisfy
the series of requirements over a time spectrum
imposed by the activities at the space base. The
series of trips are an expression of an efficient
plan which simultaneously considers demands for
different products at different future times and
observes the various constraints of the system
(e.g., cargo capacity of spaceships). The
scheduling model can be used in two different
modes: as part of a control system for an actual
space base, or as a planning tool to aid in the
design of a space base and the formulation of
operations schedules. (U)

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AD- 613 081

NORTH AMERICAN AVIATION INC DOWNEY CALIF SPACE AND
INFORMATION SYSTEMS DIVTRANSIENT DYNAMIC RESPONSE OF ORBITING SPACE
STATIONS. (U)MAY 64 363P Tai, C. L. ; Andrew, L. V. ;
Loh, M. M. H. ; Kamrath, P. C. ;

REPT. NO. SID-64-43

CONTRACT: AF33 657 10219

PROJ: 1370

TASK: 137008

MONITOR: AFFDL, IDEP TDR-64-25,347.95.00.00-FL-

28

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*ASTRONAUTICS, SPACE STATIONS), (*SPACE STATIONS, STRUCTURAL PROPERTIES), (*CELESTIAL MECHANICS, SPACE STATIONS), SPACE ENVIRONMENTS, ORBITS, MANNED SPACECRAFT, AERODYNAMIC CHARACTERISTICS, AERODYNAMIC CONFIGURATIONS, EXPERIMENTAL DATA, GRAPHICS (U)

The dynamic responses of thirteen selected configurations, composed of two to three interconnected compartments and subjected to various applied disturbances, were investigated first by approximate exploratory analyses to determine the significant configurations for space stations and the relative significance of transient inputs to each configuration. Then detailed analyses of ten selected combinations of configurations and forcing functions were carried out in depth. In addition, because of the unique dynamic response problems of the cableconnected configuration, the Y-configuration and the Hconfiguration of space stations subjected to the influence of the gravitational gradient and elastic effects, separate detailed analyses of these configurations were conducted. (Author) (U)

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AD- 612 048

LOCKHEED MISSILES AND SPACE CO SUNNYVALE CALIF

A THEORETICAL METHOD FOR PRECISION RENDEZVOUS
STATION-KEEPING. (U)

DESCRIPTIVE NOTE: Revised ed.

DEC 64 24P

REPT. NO. LMSC-6-62-64-23 Eliason, D. W. ;

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Revision of rept. dated 31 Oct 63, rept. no. SA/62-43/2308.

DESCRIPTORS: (*RENDEZVOUS GUIDANCE, SPACECRAFT), (*ASTRONAUTICS, RENDEZVOUS GUIDANCE), (*SPACECRAFT, RENDEZVOUS GUIDANCE), RENDEZVOUS SPACECRAFT, RENDEZVOUS TRAJECTORIES, SPACE STATIONS, NAVIGATIONAL AIDS, OPTICAL SCANNING, ANALOG SYSTEMS, SYSTEMS ENGINEERING, FEASIBILITY STUDIES, THEORY (U)

A method is proposed for maintaining two or more space vehicles in relatively close proximity on orbit without attachment over long periods of time. The proposed system employs a guidance and control configuration normally expected to be present in piloted rendezvous space vehicles as well as a precision optical device. The system is based on the creation of an on-board analogue of the target-vehicle motion. This is possible because of the linearity of the equations of motion with respect to the initial conditions. The on-board analogue is related to the target-vehicle system by a scale factor. The optical device is similar in some respects to devices proposed by several investigators for 'purely gravitational orbit' guidance. This study describes the possible application of such a sensor in deriving accurate relative velocity information for stationkeeping. The characteristics of the device required for system feasibility are discussed and the operational sequence of the technique is described. (Author) (U)

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 609 501

MITRE CORP BEDFORD MASS

VULNERABILITY OF MANNED ORBITAL COMMAND POSTS TO
NATURAL SPACE RADIATIONS. (U)

NOV 64 82P French, F. W. ; Hansen, K. F. ;
REPT. NO. Mitre TM-4073
CONTRACT: AF19 628 2390
PROJ: 611.1
MONITOR: ESD , TDR64 164

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*MANNED SPACECRAFT, SHIELDING),
(*SHIELDING, MANNED SPACECRAFT), (*SPACE ENVIRONMENTS,
MILITARY SATELLITES), (*RADIOBIOLOGY, SPACE
ENVIRONMENTS), MILITARY OPERATIONS, COMMAND AND CONTROL
SYSTEMS, SPACE STATIONS, ORBITS, VULNERABILITY, VAN
ALLEN RADIATION BELT, SOLAR RADIATION, SPACE CREWS,
RADIATION TOLERANCE, DOSE RATE, MODELS (SIMULATION),
MATHEMATICAL ANALYSIS (U)

The shielding requirements for the protection of
the crew of a manned orbital command post against the
natural space radiations are investigated. Two
types of orbits of military importance and of wide
applicability are considered--a long-duration, high-
altitude orbit above the Van Allen Belt and a
short-duration, low-altitude polar orbit below it.
Model environments for both orbits in terms of
solar flare, cosmic, and Van Allen Belt
radiations are postulated. Radiobiological
tolerance criteria are investigated, and a somewhat
unique criteria, based on partial recovery of
sustained somatic damage, is proposed for the long
duration mission. A mathematical description of
the radiation transport of the separate environmental
components through the radiation shield is
formulated. Appropriate simplifications are used to
obtain expressions for the doses due to primary
protons, secondary protons and neutrons, and
bremsstrahlung. Calculations are carried out on
the IBM 7030 computer to obtain dose vs. thickness
curves for different types and amounts of shielding
material.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 603 013

GENERAL DYNAMICS CORP GROTON CONN ELECTRIC BOAT DIV

RESEARCH ON A WASTE SYSTEM FOR AEROSPACE
STATIONS. (U)

DESCRIPTIVE NOTE: Rept. for Apr 63-Jan 64,
MAY 64 BGP wallman, Harold ; Dodson, John
;
REPT. NO. U413 64 056
CONTRACT: AF33 657 11489
PROJ: 6373
TASK: 637305
MONITOR: AMRL TDR64 33

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:
DESCRIPTORS: (*WASTES (SANITARY ENGINEERING), AEROSPACE
CRAFT), (*SPACE STATIONS, WASTES (SANITARY ENGINEERING),
(*CLOSED-CYCLE ECOLOGICAL SYSTEMS, SPACE STATIONS),
URINE, INCINERATORS, DISPOSAL, COLLECTING METHODS,
STORAGE, CONTAINERS), DISTILLING PLANTS, VACUUM
APPARATUS, PYROLYSIS, FREEZE DRYING, METABOLISM, SPACE
BIOLOGY (U)
IDENTIFIERS: FECES (U)

An engineering evaluation was conducted to select
an optimum waste management system for collection,
storage, and/or disposal of feces and urine in a
space station under weightless conditions. Based
on this study, a detailed design of an optimum waste
management system was prepared for a 7-man, 15-day
mission. Tests performed on a breadboard model of
the feces collector demonstrated the feasibility of
the selected approach. (Author) (U)

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 603 012

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

COSMIC RESEARCH, 1964, VOL. 2, NO. 3. (U)

JUL 64 253P

REPT. NO. FTD-TT-64-770

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Unedited rough draft trans. of Kosmicheskie Issledovaniya (USSR) 1964, v. 2, no. 3, p. 355-504.

DESCRIPTORS: (*SPACE FLIGHT, SCIENTIFIC RESEARCH), (*ASTROPHYSICS, SCIENTIFIC RESEARCH), SATELLITES (ARTIFICIAL), AEROSPACE MEDICINE, SPACE PROPULSION, SPACE STATIONS, SPACECRAFT, NUMERICAL INTEGRATION, DIFFERENTIAL EQUATIONS, MATHEMATICAL ANALYSIS, OPTICAL PROPERTIES, CLOUDS, METEOROLOGICAL SATELLITES, PERTURBATION THEORY, MAGNETIC FIELDS, INTERPLANETARY TRAJECTORIES, ORBITS, RADIOACTIVITY, HYPERSONIC FLOW, PRESSURE SUITS, USSR (U)

Contents: Interplanetary flights with constant output engines, the acceleration of a spacecraft within the range of planetary influence, on space-flight trajectories with a constant reaction acceleration vector, optimum trajectories and optimum parameters for space vehicles, method of quickest descent as applied to computation of interorbital trajectories with engines of limited power, radiative heating in hypersonic flow, optical properties of clouds, equation for relevance of information from weather satellites and formulation of inverse problems, analytical representation of the earth's magnetic field in the orbital coordinate system, geographical distribution of radiation intensity in the region of the Brazilian magnetic anomaly at an altitude of about 300 km, investigation of terrestrial radiation belts in the vicinity of the Brazilian magnetic anomaly at altitudes of 235-345 km, the possibilities of replacing the nitrogen in the air with helium in spacevehicle cabins and the effectiveness of using a helium-oxygen mixture for ventilation of a space-pressure suit. (U)

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 602 486

GIANNINI CONTROLS CORP MALVERN PA

THE EFFECT OF ELASTICITY ON THE STABILITY OF MANNED ROTATING SPACE STATIONS. (U)

MAY 64 28P Frueh, Frank J. ;Miller,

Jacob M. ;

REPT. NO. TR02 004

CONTRACT: AF49 638 1015

MONITOR: AFOSR , 64 0991

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:
DESCRIPTORS: (*SPACE STATIONS, STABILITY), (STRUCTURES, AEROLASTICITY), ROTATION, AERODYNAMIC CONFIGURATIONS, DAMPING, JETS, OSCILLATION, AIRSPEED, FLIGHT PATHS, TORQUE, COUPLINGS, FORCE (MECHANICS), DESIGN, EQUATIONS, MATHEMATICAL ANALYSIS, PERFORMANCE (ENGINEERING), MANNED (U)

A basic investigation of the effects of structural flexibility of the rotating space station concept in terms of system stability is presented. The results of the analyses were formed into general stability criteria using the fundamental characteristics of the space station system. The criteria show the relationship between applied forces, configuration flexibility and configuration damping and are presented in a manner suitable for preliminary analysis of future design concepts. For design values of current space station concepts using spin-up jets and wobble rate damper systems and for the assumptions used in the analyses, the stability criteria indicate that no instability of the flexible modes should be encountered. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZON07

AD- 601 899

RAND CORP SANTA MONICA CALIF

ADVANCED SYSTEMS TESTING ON A MANNED ORBITAL SPACE
STATION. (U)

JUN 64 18P Trapp.O. L. :

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:
DESCRIPTORS: (*MANNED SPACECRAFT, FLIGHT TESTING),
(*ELECTRIC PROPULSION, FLIGHT TESTING), (*SPACE FLIGHT,
COSTS), SPACE STATIONS, SATELLITES (ARTIFICIAL), MANNED,
TESTS, FAILURE, LOGISTICS, TEST EQUIPMENT (U)

Consideration is given to the cost of space-station
testing and procedures for estimating these costs
with direct reference to testing an electrical
propulsion system. The advantages of manned-space-
station tests, as compared with conventional flight
tests, are pointed out. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZON07

AD- 601 509

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

NEW DATA ON MARS-1. (U)

MAY 64 9P
REPT. NO. FTC-TT-64-237

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Edited trans. of Stiinta si
Tehnica (Rumania) 1963 v. 15 no. 2, p. 40-41.
DESCRIPTORS: (*SPACE STATIONS, MARS PROBES), (*MARS
PROBES, SPACE STATIONS), SATELLITES (ARTIFICIAL),
INTERPLANETARY TRAJECTORIES, CELESTIAL MECHANICS,
INSTRUMENTATION, TELEMETERING DATA, SPACE ENVIRONMENTS,
SPACECRAFT, SPACE PROBES, USSR (U)

Mars-1 (Interplanetary station): General
description of the interplanetary trajectory,
instrumentation and telemetering data concerning
space environmental conditions. (U)

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07
AD- 472 550

DOUGLAS AIRCRAFT CO INC SANTA MONICA CALIF MISSILE AND
SPACE SYSTEMS DIV

BIOMEDICAL POTENTIAL OF A CENTRIFUGE IN AN ORBITING (U)
LABORATORY.

DESCRIPTIVE NOTE: Final rept. Sep 64-Feb 65,
JUL 65 122P White W. J. ;Nyberg, J. W.
;White, P. D. ;Gimes, R. H. ;Finney, L. M. ;

REPT. NO. SM-48502
CONTRACT: AF04 695 679
MONITOR: SSD TDR-64-209-Suppl.

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Supplement to Rept. no. TDR-64-
209.

DESCRIPTORS: (=CENTRIFUGES, *AEROSPACE MEDICINE), SPACE
STATIONS, ACCELERATION, STRESS(PHYSIOLOGY), SPACE
WEIGHTLESSNESS, WEIGHT, HUMANS, GRAVITY,
EXERCISE(PHYSIOLOGY), CARDIOVASCULAR SYSTEM, SPACE
ENVIRONMENTS, SIMULATION, SPACE, MAINTENANCE PERSONNEL,
MANNED SPACECRAFT, ACCELERATION TOLERANCE (U)

Five studies concerning the potential of a
centrifuge in an orbital laboratory were conducted.
The first three studies include consequences of
heart-to-foot gradients on tolerance to positive
acceleration, a parametric study of the power
requirements of a short radius centrifuge, and a
technique utilizing the centrifuge for determining
body mass in a null gravity state. The salient
generalization from studies in which bed rest was
used as the analog of null gravity were presented.
The fourth study was conducted to study the
influence of periodic centrifugation as a method of
alleviating physiological disturbances, with emphasis
on the cardiovascular system, brought about by 20
days of bed rest. It was shown that motion
sickness in the subjects was not a problem when
exposed to high angular rates of rotation.
Deterioration produced by recumbency was alleviated
by periodic centrifugation, and subjects exposed to
+4GZ four times daily showed less lability of
blood pressure than did those receiving less
acceleration.

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07
AD- 459 966

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DIV

DATA ON THE ELEKTRON SPACE SYSTEM, KOSMOS-26 THROUGH
29, THE ZOND-1, AND THE POLET-2. (U)

DESCRIPTIVE NOTE: Comprehensive report on Surveys of
Soviet-Bloc Scientific and Technical Literature.

MAY 64 24P
REPT. NO. AIC-U-64-55

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (*ASTRONAUTICS, REVIEWS), USSR, SPACE
ENVIRONMENTS, SPACE FLIGHT, INSTRUMENTATION, SPACE
PROBES, LAUNCHING, LIFE SUPPORT, MANEUVERING SATELLITES,
SCIENTIFIC SATELLITES, SPACE STATIONS, SPACECRAFT,
DOCKING, PUBLIC OPINION (U)
IDENTIFIERS: ELEKTRON, KOSMOS, ZOND (U)

Data on the Elektron space system Kosmos-26 through
29, the Zond-1, and the Polet-2.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM07

AD- 438 517

LOCKHEED AIRCRAFT CORP BURBANK CALIF

A STUDY OF AN ORBITAL MAINTENANCE AND MATERIAL
TRANSFER SHUTTLE. (U)

DESCRIPTIVE NOTE: Final technical rept., Feb-Oct 63.

MAR 64 373P Goodall, Ray ;

REPT. NO. LR17031

CONTRACT: AF33 657 10290

PROJ: 8170

TASK: 817010

MONITOR: RTD TOR63 4057

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Report on Design Study for an
Orbital Maintenance and Material Transfer Shuttle.

DESCRIPTORS: (*RENDEZVOUS SPACECRAFT, FEASIBILITY
STUDIES); (*MANNED SPACECRAFT, AIR TRANSPORTATION),
SPACE MAINTENANCE, SPACE CAPSULES, MAINTENANCE
PERSONNEL, LOGISTICS, WEIGHT, TRAINING DEVICES, LAUNCH
VEHICLES (AEROSPACE), TRANSFER TRAJECTORIES, ROCKET
MOTORS (LIQUID PROPELLANT), PERFORMANCE (ENGINEERING),
THRUST, HAZARDS, AVIATION SAFETY, MAINTENANCE, VELOCITY,
SPACE ENVIRONMENTS, HUMAN FACTORS ENGINEERING, COSTS,
SPACE TO SPACE, ADHESIVE TAPES, DESIGN, FLIGHT CONTROL
SYSTEMS, FUEL CONSUMPTION, SATELLITES (ARTIFICIAL),
MANEUVERABILITY, RENDEZVOUS, ACCELERATION, TARGET
DISCRIMINATION, ILLUMINATION, GUIDANCE, SPACE STATIONS,
CONTROL SYSTEMS (U)

A conceptual study of an orbital maintenance and
material transfer shuttle is presented. The
shuttle is a one-man vehicle used for transporting
personnel and materials between other orbiting
vehicles and for performing maintenance and repair on
space stations or unmanned satellites. The
application of the shuttle to existing and proposed
space systems is examined and found to be feasible
and economically advantageous. The trade-offs
between range, duration, propulsion and on-board
power systems are presented and design values
selected. A simple guidance technique using a
short-range radar is formulated. Results of
simulated maintenance experiments conducted with a
worker in a pressure suit are reported and integrated
into the shuttle design. (Author) (U)

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AD- 430 239

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

ON THE WAY TO THE COSMOS, (U)

JAN 64 11P Dobronnavov, V. ;

MONITOR: FTD TT63 975

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Trans. from Krylya Rodiny, No.
6, pp. 20-22, 1957.

DESCRIPTORS: (*SPACE STATIONS, MANNED SPACECRAFT),
WEIGHTLESSNESS, SPACE ENVIRONMENTS, LABORATORY ANIMALS,
ROCKETS, SPACE, RENDEZVOUS SPACECRAFT, THEORY
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