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GEORGE C. MARSHALL SPACE FLIGHT CENTER
HUNTSVILLE, ALABAMA

# FY 1966 SCIENTIFIC AND TECHNICAL REPORTS ARTICLES, PAPERS, AND PRESENTATIONS

Management Services Office



National Aeronautics and Space Administration

NASA

## ABSTRACT

This document presents the formal NASA technical reports, the papers published in technical journals, and the presentations made by MSFC personnel in FY 66. Also included are the papers and presentations of MSFC Contractors. It does not include internal information documents.

It is prepared according to subject category using the NASA subject category list.

All of the NASA series reports herein may be obtained from the Scientific and Technical Information Facility after being announced in STAR or C STAR.

The information in this report will be of invaluable assistance to the scientific and engineering community in helping them to determine what has been published and how they can obtain information on the subjects covered.

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Scientific and Technical Information Branch
Management Services Office

# FOREWORD

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Records kept over the years indicate that the technical information output of MSFC has increased in keeping with the increased missions of the Center.

Since July 1, 1960, when the George C. Marshall Space Flight Center was organized, the reporting of scientific and engineering information has been considered a prime responsibility of the Center. Our credo has been that "research and development work is valuable, but only if its results can be communicated and made understandable to others".

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Huntsville, Alabama

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Blumrich, J. F. R-P&VE-SA

STUDIES IN ADVANCED SPACE VEHICLE CONTAINERS

Paper presented to the SAE Conference at Huntsville, Alabama, June 14-16, 1966.

Bombara, E. L. I-E-Q

DECISION PROCEDURE FOR MINIMIZING COSTS OF CALIBRATION LIQUID ROCKET ENGINES

Paper presented to the 11th Conference on the Design of Experiments in Army Research, Development and Testing, at Hoboken, New Jersey, October 21, 1965.

Bradford, Lynn R-AS-P

MOBILITY AIDS FOR LUNAR SURFACE EXTRA-VEHICULAR ACTIVITY

Oral presentation to the National Conference on Space Maintenance and Extra-vehicular Activity, at Orlando, Florida, March 1-3, 1966.

Brennecke, Margaret, W. R-ME-M

ALUMINUM WELDING METALLURGY AS RELATED TO OUR USE IN MANUFACTURING

Paper presented to the Symposium of American Welding Research Council, at Birmingham, Alabama, October 6, 1965.

Broussard, P. H. R-ASTR-GCB

THEORY AND EXPERIMENTS OF SQUEEZE-FILM GAS BEARING - PART I: CYLINDRICAL JOURNAL BEARING

Paper presented to the ASME-ASLE Joint Conference at San Francisco, California, October 18-20, 1965.

Brown, E. R-ME-M

ONE SIDE BONDED COMMON BULKHEAD

Paper presented to the Adhesive Conference at Huntsville, Alabama, March 19, 1966.

Burns, R. E. R-AERO-GO

AN ANALYTICAL REDUCTION OF THE OPTIMAL TRAJECTORY PROBLEM

Master Thesis for University of Alabama.

Cataldo, C. E. R-P&VE-MM

MATERIALS IN SPACE EXPLORATION

Oral presentation to the National Association of Corrosion Engineers at New Orleans, Louisiana, October 21, 1965.

Cataldo, C. E R-P&VE-MM

METALS RESEARCH

Oral presentation to the U.S. Navy Reserve Officers Seminar at Huntsville, Alabama, May 15, 1966.

Crawford, Ron R-AS-V

STRUCTURAL WEIGHT AND COST COMPARISON OF LARGE SPACE STRUCTURES EMPLOYING BERYLLIUM-ALUMINUM ALLOYS

Paper presented to the AIAA Conference at Orlando, Florida, April 18-20, 1966.

Crawford, Ron R-AS-V

DESIGN CRITERIA FOR TYPICAL PLANETARY SPACECRAFT TO BE STERILIZED BY HEATING

Oral presentation to the National Conference on Spacecraft Sterilization Technology at Pasadena, California, November 16-18, 1965.

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DESIGN REQUIREMENTS FOR STERILIZATION CONTAINERS OF SANITARY LANDERS

Oral presentation to the Second Annual Meeting and Technical Demonstration, AIAA, at San Francisco, California, July 26-29, 1965.

Dalins, Dr. I. R-RP-N

SMALL GLASS SYSTEMS - A COMPARISON WITH METAL SYSTEMS

Oral presentation to the NASA High Vacuum Technology Testing, and Measurement Meeting at Lewis Research Center, Cleveland, Ohio, June 8-9, 1965.

Dalins, Dr. I. R-RP-N

SOME SPECIAL DESIGNS FOR UHV APPLICATIONS

Paper presented to the NASA High Vacuum Technology, Testing, and Measurement Meeting at Lewis Research Center, Cleveland, Ohio, June 8-9, 1965.

Dalton, Charles, C. R-AERO-Y

INFERENCES FROM PHOTOGRAPHIC METEORS

Oral presentation to the Symposium on Meteor Orbits and Dust at Cambridge, Massachusetts, August 9-13, 1965.

Dalton, Charles C. R-AERO-Y

VELOCITY DEPENDENCE OF METEOR LUMINOUS EFFICIENCY AND CONSEQUENT STATISTICAL RESULTS

Paper presented to the AIAA Conference at Los Angeles, California, June 27-29, 1966.

Dearman, Jr., C. C. R-AERO-G

FIRST ORDER SECULAR PERTURBATIONS OF AN ARTIFICIAL EARTH SATELLITE DUE TO THE SUN AND MOON

Oral presentation to the 3rd Southeastern Conference on Theoretical and Applied Mechanics at Columbia, South Carolina, March 31-April 1, 1966.

Demorest, Keith, E. R-P&VE-MEE

THE EFFECT OF VARIOUS LUBRICANTS AND BASE MATERIALS ON FRICTION AT ULTRA HIGH LOADS

Oral presentation to the Joint ASLE-ASME Conference at San Francisco, California, October 18-20, 1965.

Dendy, W. F. R-QUAL-OT

QUALITY ASSURANCE TRAINING PROGRAM

Oral presentation to the Research Seminar for Naval Reserve Officers at Huntsville, Alabama, May 13-15, 1966.

Drummond, Floyd, M. I-E-J

LAUNCH VEHICLE ENGINE DEVELOPMENT

Oral presentation to the Student Space Symposium, University of Missouri at Rolla, Montana, March 25, 1966.

Dyer, M. K. R-QUAL-Q

PRODUCT "TRACEABILITY" FOR NASA SPACE SYSTEMS

Oral presentation to the 20th Annual Technical Conference and Exhibit ASWC at New York City, June 1, 1966.

Edmondson, N. R-RP-N

ASPECTS OF MATHEMATICS AS APPLIED TO PHYSICS

Oral presentation at LeMoyne College, Memphis, Tennessee, December 23, 1965.

Ely, O. P. R-ASTR-IRD

RADIO PROPAGATION EFFECTS OF ROCKET EXHAUST PLASMAS

Paper presented to the International Space Electronic Symposium at Miami Beach, Florida, November 2-4, 1965.

Evans, Herbert R-TEST-T

GAS TURBINE POWERED TOWBOAT (CLERMONT DESIGN. DEVELOPMENT AND EARLY OPERATING EXPERIENCE)

Oral presentation to the Society of Naval Architects and Marine Engineers at Houston, Texas, February 11, 1966.

Farish, Dr. Preston T. I-RM-F

THE SYSTEM SAFETY OBJECTIVES AS RELATED TO MANAGEMENT BASELINES

Paper presented to the Configuration Management Symposium sponsored by the American Society for Quality Control, Philadelphia, Pennsylvania, November 19, 1965.

Farish, Dr. Preston T. I-RM-F

THE INSPECTOR IN THE MANNED FLIGHT AWARENESS PROGRAM

Oral presentation to American Society for Quality Control Annual Meeting at New York, New York, June 3, 1966.

Farmer, Dr. Richard C. R-AERO-AT

THE VERIFICATION OF A MATHEMATICAL MODEL WHICH REPRESENTS LARGE, LIQUID ROCKET-ENGINE EXHAUST PLUMES

Oral presentation to the AIAA Conference at Colorado Springs, Colorado, June 13-17, 1966.

Felker, K. J. R-AERO-YS

DECREASE IN ELECTRON DENSITY IN THE IONOSPHERE FOLLOWING THE PASSAGE OF SATURN I

Paper presented to the AIAA Conference at Miami Beach, Florida, January 24-26, 1966.

Fields, Stanley R-RP-T

THE BEHAVIOR OF SIMULATED LUNAR MATERIALS IN AN ULTRAHIGH VACUUM ENVIRONMENT

Paper presented to the 43rd Annual Meeting of the Alabama Academy of Sciences at Birmingham Southern College, Birmingham, Alabama, April 1-2, 1966.

Fisher, Dr. Carl D. R-P&VE-VAH

IN FLIGHT STERILIZATION OF MASS PROBES

Paper presented to the AIAA Conference at Baltimore, Maryland, March 29, 1966.

Fountain, J. A. R-RP-T

THE IMPROVED GUARDED COLD PLATE THERMAL CONDUCTIVITY APPARATUS

Paper presented to the 5th Conference on Thermal Conductivity at Denver, Colorado, October 22, 1965.

Fritz, C. G. R-P&VE-PEC

BUBBLE COALESCENCE IN A LONGITUDINALLY VIBRATED LIQUID COLUMN

Paper presented to the ASME Conference at Chicago, Illinois, November 7, 1965.

Fritz, C. G. R-P&VE-PEC

DYNAMICS AND MOTION OF BUBBLES IN A LIQUID

Oral presentation to the graduate Seminar, Purdue University, Lafayette, Indiana, February 16, 1966.

Goldston, R. L. I-RM-M

DATA MANAGEMENT AT MARSHALL SPACE FLIGHT CENTER

Oral presentation to the 8th Annual Meeting of AOA at Daytona Beach, Florida, April 28, 1966.

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APOLLO DATA MANAGEMENT

Oral presentation to Data Management Executives, Daytona Beach, Florida, April 28, 1966.

Graham, John MS-T

COMMERCIAL UTILIZATION OF SPACE AGE DEVELOPMENTS

Oral presentation to the Textile Data Processing Association at Jekyll Island, Georgia, May 1-3, 1966.

Grubbs, H. Y. R-P&VE-VA

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Oral presentation to the AIAA Meeting at Bedford, Massachusetts, May 17, 1966.

Grubbs, H. Y. R-P&VE-VA

MANNED LUNAR SURFACE VEHICLE DESIGN CRITERIA

Oral presentation to the 7th Annual Symposium on Human Factors and Electronics, Minneapolis, Minnesota, May 5, 1966.

Hamiter, L. C. R-QUAL-RP

THE FAST SCANNING INFRARED MICROSCOPE, A NEW DIMENSION IN INFRARED NONDESTRUCTIVE TESTING

Oral presentation to the 25th National Convention of the Society for Nondestructive Testing at Detroit, Michigan, October 18-22, 1965.

Hamiter, L. C. R-QUAL-RP

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Paper presented to the IEEE Conference at New York, New York, March 23, 1966.

Harris, Ronald J. R-AS-VP

A MODULAR NUCLEAR VEHICLE SYSTEM WITH MULTI-MISSION CAPABILITY FOR MARS STOP-OVER MISSIONS

Paper presented to the AIAA Meeting at Colorado Springs, Colorado, June 13-15, 1966.

Hill, Kelly R-AERO-YE

ANALYSIS OF DETAILED WIND PROFILES FOR THE LAUNCH OF SATURN AS-201 ON FEBRUARY 26, 1966

Paper presented to the AIAA/AMS Joint Conference at Los Angeles, California, March 28-April 1, 1966.

Hooper, J. W. R-COMP-S

TIMING CONSIDERATIONS B 5500 ALGOL

Oral presentation to the Spring Meeting of Cooperating Users of Burrough's Equipment (CUBE) at Atlanta, Georgia, April, 1966.

Hopson, G. D. R-P& VE-PTD

ROCKET ENGINE CLUSTERING AND VEHICLE INTEGRATION AS INFLUENCED BY BASE THERMAL ENVIRONMENTS

Oral presentation to the 2nd Propulsion Specialist Conference, AIAA, Colorado Springs, Colorado, June 13, 1966.

Horn, H. J. R-AERO-D

THE ITERATIVE GUIDANCE LAW FOR SATURN

Oral presentation to the AIAA Meeting at Baltimore, Maryland, October 27-29, 1965.

Horton, J. C. P& VE-MEV

WEAR AND NOISE CHARACTERISTICS OF BRUSH-COMMUTATOR CONTACTS IN HIGH VACUUM

Oral presentation to the 3rd International Research Symposium on Electrical Contact Phenomena at the University of Maine, Orono, Maine, June 6-10, 1966.

Huffaker, R. M. R-AERO-ATP

INHOMOGENEOUS RADIANT HEAT TRANSFER FROM H-1, F-1, J-2 ROCKET EXHAUST PLUMES

Oral presentation to the 2nd Propulsion Specialist Conference, AIAA, Colorado Springs, Colorado, June 13, 1966.

Huffaker, R. M. R-AERO-ATP

CURRENT RESEARCH ON INFRARED RADIATION FROM ROCKET EXHAUST

Oral presentation to the Symposium on Interdisciplinary Aspects of Radiative Energy Transfer at Philadelphia, Pennsylvania, February 24-26, 1966.

Hunt, Robert M. R-P& VE-S

SATURN V GROUND WINDS PROGRAM

Paper presented to the Meeting on Ground Wind Problems in Relation to Launch Vehicles at Langley Research Center, Hampton, Virginia, June 6, 1966.

Hurst, C. W. R-AERO-GG

EARTH TO MOON TRAJECTORY FOR MAXIMUM TERMINAL MASS

Master Thesis for the Auburn University, Auburn, Alabama.

Jones, Billy P. R-RP-T

THEORY OF THERMAL SIMILITUDE WITH APPLICATIONS TO SPACECRAFT

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Jones, Ira P. R-AERO-AT

SUMMARY OF SATURN I BASE THERMAL ENVIRONMENT

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Jones, R. P. R-AERO-AM

A MONTE CARLO APPROACH TO TRANSITION AND FREE MOLECULAR FLOW PROBLEMS

Paper presented to the 5th International Symposium on Rarefied Gas Dynamics at Oxford, England, June, 1966.

King, J. (Co-Author) R-RP

STUDY OF NERVA ELECTRIC MANNED MARS VEHICLE

Paper presented to the Radio-Isotope Application in Aerospace Symposium at Dayton, Ohio, February 14-16, 1966.

Kingsbury, James E. R-P& VE-M

MATERIALS AND TOOLS FOR SPACE RESEARCH

Oral presentation to the Annual Industrial Arts Conference at Lakeland, Florida, November 7, 1965.

Krause, Dr. F. R. A-AERO-AM

THE CROSSED-BEAM CORRELATION TECHNIQUES

Paper presented to the AIAA Specialist Conference on the Aero-Thermo Chemistry of Turbulent Flows at San Diego, California, December 13-15, 1965.

Krause, Dr. F. R. A-AERO-AM

REMOTE SENSING WITH OPTICAL CROSS CORRELATION METHODS

Oral presentation to the AAP Symposium at Huntsville, Alabama, January 12, 1966.

Krause, Dr. F. R. R-AERO-AM

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Paper presented to the 5th International Congress on Acoustics at Liege, Belgium, September 7-14, 1965.

Krause, Dr. F. R. R-AERO-AM

A TECHNIQUE FOR THE MEASUREMENT OF LOCAL TURBULENT PROPERTIES IN SUPERSONIC SHEAR LAYERS

Papers presented to the 5th International Congress on Acoustics at Liege, Belgium, September 7-14, 1965.

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Kuers, Dr. W. R. R-ME-DIR

MANAGEMENT OF SATURN/APOLLO MANUFACTURING EFFORTS

Oral presentation to the Society of Automotive Engineers at Los Angeles, California, October 4-8, 1965.

Lindberg, J. P. R-AERO-F

SATURN I FLIGHT TEST EVALUATION

Paper presented to the Joint AIAA/ASME Meeting at the University of Tennessee, Knoxville, Tennessee, April 27, 1966.

Lovingood, J. A. R-AERO-G

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Lowe, E. G. R-ASTR-G

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Paper presented to the Symposium on Precision, Sliding Contact Devices at Roanoke, Virginia, November 3, 1965.

Lucas, Dr. W. R. R-P& VE-DIR

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Paper presented to AIAA Conference at San Francisco, California, July 26, 1965.

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DEVELOPMENT OF NONDESTRUCTIVE TESTING TECHNIQUES FOR SATURN HONEYCOMB HEAT SHIELDS

Paper presented to the Metals/Materials Congress at Detroit, Michigan, October 18-22, 1965.

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THE PAST, PRESENT, AND FUTURE OF METALS FOR LIQUID ROCKETS

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DEVELOPMENT OF FOAMED CERAMIC-METAL HONEYCOMB COMPOSITES FOR RADIANT HEATING AND VIBRATIONAL ENVIRONMENTS

Paper presented to the AIAA Conference at Washington, D. C., May 7-12, 1966.

Marsalis, W. E. R-TEST-B

TEST LABORATORY'S CRYOGENIC STORAGE AND TRANSFER FACILITIES

Oral presentation to the Tennessee Valley Chapter of the Cryogenic Society of America, Huntsville, Alabama, June 30, 1966.

Mathur, Dr. S. C. R-P& VE-MEV

SIMPLE LCAO-MO CALCULATIONS FOR HYDROGEN PHTKLOCYANE

Article published in Journal of Chemical Physics, June, 1966.

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MAGNETIC BEHAVIOR OF $NI^{+}$ ION IN THE CRYSTAL OF NICKEL ACETATE TERA-HYDRATE

Article published in Vol. 31 of Physica.

McCampbell, W. R-ME-ME

THE DEVELOPMENT OF A WELD INTELLIGENCE SYSTEM

Paper presented to the American Welding Society Conference at Birmingham, Alabama, October 4-7, 1965.

McDonough, Dr. G. F. R-AERO-D

NON-LINEAR DYNAMICS OF AN ARTIFICIAL GRAVITY ORBITING SYSTEM

Oral presentation to the 5th U.S. National Congress of Applied Mechanics at the University of Minnesota, Minneapolis, Minnesota, June 14-15, 1966.

Mrazek, Dr. W. A. I-DIR

MANNED SPACE AND LUNAR EXPLORATION

Oral presentation to the Aerospace Workshop of the University of Hawaii at Honolulu, Hawaii, June 17, 1966.

Naumann, Dr. Robert J. R-RP-P

RECENT NASA METEOROID PENETRATION RESULTS FROM SATELLITES

Paper presented to the International Symposium on Meteor Orbits and Dust at Cambridge, Massachusetts, August 9-13, 1965.

O'Connor, Edmund, F. I-DIR

THE SATURN LAUNCH VEHICLES

Oral presentation to the AIAA Conference at San Francisco, California, July 26, 1965.

O'Connor, Edmund, F. I-DIR

SATURN VEHICLES FOR THE APOLLO PROGRAM

Oral presentation to the AIAA Regional Meeting at St. Louis, Missouri, October 11, 1965.

O'Connor, Edmund, F. I-DIR

THREE STEPS TO SPACE

Oral presentation to the Society of Professional Engineers at Huntsville, Alabama, May 13, 1966.

Orillion, A. G. R-P&VE-AV

SELECTED METHODS FOR UPRATING SATURN VEHICLES

Oral presentation to the Advanced Launch Vehicle and Propulsion Systems Conference at Huntsville, Alabama, June 14-16, 1966.

Paludan, C. T. R-ASTR-IM

LEAK RATE INSTRUMENTATION FOR SATURN SYSTEMS

Paper presented to the Aerospace Systems Conference at Seattle, Washington, June 11-14, 1966.

Parks, Gordon P. R-ME-MW

OUT-OF-VACUUM ELECTRON BEAM WELDING

Oral presentation to the Saturn Manufacturing Review Meeting at The Boeing Company, Michoud, Lousiana, May 23, 1966.

Paul, David R-AS-VL

THE CHALLENGE OF ALTERNATE APPROACHES TO THE ACHIEVEMENT OF LUNAR EXPLORATION AND EXPLOITATION

Paper presented to the National Aeronautic and Space Engineering and Manufacturing Meeting at Los Angeles, California, October 4-8, 1965.

Perry, Davis R-ASTR-NFS

ACTUATOR PRATICIPATION IN A BENDING MODE IDENTIFICATION SYSTEM

Paper presented to the SAE Meeting at New Orleans, Louisiana, January 19-21, 1966.

Peskar, R. E. R-P&VE-SVR

UTILIZATION OF THE SATURN S-IC BOOSTER AS AN ACOUSTIC SOURCE

Paper presented to the Acoustics Society of America Symposium at St. Louis, Missouri, October, 1965.

Platt, G. K. R-P&VE-PTF

SPACE VHEICLE LOW GRAVITY FLUID MECHANICS PROBLEMS AND THE FEASIBILITY OF THEIR EXPERIMENTAL INVESTIGATION

Master Thesis for the University of Alabama.

Rees, Eberhard, F. DEP-T

MSFC APPROACH IN ACHIEVING HIGH RELIABILITY OF SATURN CLASS VEHICLES

Paper presented to 4th Annual Reliability and Maintainability Conference at Los Angeles, California, July 28-30, 1965.

McDonough, Dr. G. F. R-AERO-D

STABILITY PROBLEMS IN THE CONTROL OF SATURN LAUNCH VEHICLES

Paper presented to the International Conference on Dynamic Stability of Structures at the Northwestern University, Evanston, Illinois, October, 1965.

McDonough, Dr. G. F. R-AERO-D

LIQUID FREE SURFACE INSTABILITY IN VERTICAL RANDOM EXCITATION

Paper presented to the 6th International Symposium on Space Technology and Science at Tokyo, Japan, November 29-December 4, 1965.

McDonough, Dr. G. F. R-AERO-D

DYNAMIC TESTING OF SATURN LAUNCH VEHICLES

Paper presented to the 6th International Symposium on Space Technology and Science at Tokyo, Japan, November 29-December 4, 1965.

McKannan, E. C. R-P&VE-MEE

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Oral presentation to the Society of Aerospace Materials and Aerospace Engineers at Huntsville, Alabama, February 14, 1966.

McKay, Jr., G. H. R-P&VE-PPE

PROBLEMS ARISING FROM CURRENT TRENDS IN PROPULSION SYSTEM DESIGN AND GUIDANCE SCHEMES

Paper presented to the AIAA Propulsion Specialists Conference at Colorado Springs, Colorado, June, 1966.

Middleton, R. L. R-P&VE-PT

CRYOGENIC INSULATION DEVELOPMENT AT MSFC

Oral presentation to the Huntsville Chapter of the Cryogenic Society at Huntsville, Alabama, January, 1966.

Miller, J. L. R-ASTR-EAP

THE CAPILLARY MATRIX FUEL CELL FOR AEROSPACE APPLICATION

Paper presented to the IEEE Power Conference at New Orleans, Louisiana, June 11-15, 1966.

Mrazek, Dr. W. A. I-DIR

LAUNCH VEHICLE SYSTEM ENGINEERING AND TECHNOLOGICAL PROBLEMS

Oral presentation to the German Society for Rocketry and Spaceflight at Munich, Germany, July 19-22, 1965.

Mrazek, Dr. W. A. I-DIR

SATURN/APOLLO PROGRAM

Oral presentation to the Working Group on Extra-terrestrial Resources at Colorado Springs, Colorado, November 30, 1965.

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OUR FUTURE IN SPACE -- THE SATURN FAMILY

Oral presentation to the Long Island Section of AIAA at Deer Park, New York, January 12, 1966.

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Reinfelds, Juris R-RP

APPLICATION OF AN APPROXIMATE SOLUTION OF PARTIAL WAVE DISPERSION RELATIONS TO YAKAWA POTENTIAL SCATTERING

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Rheinfurth, M. H. R-AERO-DC

A NEW APPROACH TO THE EXPLANATION OF FLUTTER MECHANISM

Paper presented to the AIAA Symposium on Structural Dynamics and Aero Elasticity at Boston, Massachusetts, August 30-September 1, 1965.

Ritter, Glen R-ASTR-FA

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Paper presented to the SAE Conference at New Orleans, Louisiana, January 19-21, 1966.

Roberts, W. T. R-AERO-YS

CHEMILUMINESCENT MEASUREMENTS OF UPPER ATMOSPHERIC WINDS

Paper presented to the AIAA Meeting at San Francisco, California, July 26-29, 1965.

Roberts, W. T. R-AERO-YS

DECREASE IN ELECTRON DENSITY IN THE IONOSPHERE FOLLOWING THE PASSAGE OF SATURN I

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Rochelle, W. C. R-AERO-ATB

THEORETICAL AND EXPERIMENTAL INVESTIGATION OF HEATING FROM SATURN SOLID PROPELLANT ROCKET EXHAUST

Paper presented to the AIAA Meeting at Colorado Springs, Colorado, June 13-17, 1966.

Ruppe, Harry R-AS

THE EXPLORATION OF MARS AND VENUS

Paper presented to the National Meeting of the American Astronomical Society at Blackburg, Virginia, August 23-27, 1965.

Rushing, H. W. R-QUAL-PI

INSTRUMENTATION SYSTEM SIGNAL CONDITIONER GAIN CHANGE, OFFSET, AND DRIFT COMPENSATION BY COMPUTER

Paper presented to the Southeastern Conference of the ISA, Augusta, Georgia, April 20, 1966.

Ryan, R. S. R-AERO-DD

A TECHNIQUE FOR ANALYZING CONTROL GAINS USING FREQUENCY RESPONSE METHODS

Oral presentation to the AIAA Meeting at Los Angeles, California, June 27-29, 1966.

Saunders, Grady R-ASTR-I

THE AROD SYSTEM

Paper presented to the 10th Symposium on Space and Ballistic Missile Technology at San Diego, California, August 4-6, 1965.

Schaefer, Herbert R-AS-P

TESTING OF LUNAR SURFACE VEHICLES UNDER SIMULATED LUNAR GRAVITY CONDITIONS

Paper presented to the SAE Conference at Detroit, Michigan, January 10-14, 1966.

Schmidt, D. M. R-QUAL-PC

AUTOMATIC CHECKOUT SYSTEMS FOR STAGES OF THE SATURN V MANNED SPACE VEHICLE

Oral presentation to the IEEE International Convention at New York City, New York, March 21, 1965.

Schock, Richard W. R-P& VE-SVE

A SURVEY OF SHOCK AND VIBRATION ENVIRONMENTS IN THE FOUR MAJOR MODES OF TRANSPORTATION

Paper presented to the 35th Symposium of Shock, Vibration and Associated Environments at New Orleans, Louisiana, October 27-29, 1965.

Schock, Richard W. P-P& VE-SVE

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Paper presented to the 35th Shock and Vibration Symposium, New Orleans, Louisiana, October 26, 1965.

Schuerer, P. H. R-ME-MMP

AEROSPACE APPLICATION OF FUSED SILICA CERAMIC TOOLING

Oral presentation to the Southeastern Section of the American Ceramic Society's Quarterly Meeting at Gatlingburg, Tennessee, July 8-10, 1965.

Schuerer, P. H. R-ME-MMP

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Paper presented to the Engineering Institute at the University of Wisconsin, Madison, Wisconsin, March 10-11, 1966.

Schuler, A. E. R-TEST-ID

THE ROLE OF WEIGHING IN THE DEVELOPMENT AND FIRING OF MISSILES AND SPACE SHIPS

Paper presented to the National Scale Men's Association Conference at Atlanta, Georgia, April 25-28, 1966.

Schwinghamer, R. J. R-ME-M

TOOL EXPERIMENTS FOR ASSEMBLY, MAINTENANCE AND REPAIR IN SPACE

Oral presentation to the National Conference on Space Maintenance and Extra-Vehicular Activity at Orlando, Florida, March 2, 1966.

Schwinghamer, R. J. R-ME-M

NEW DEVELOPMENTS IN MAGNETOMOTIVE FORMING, AND A NEW CONCEPT - MAGNETO - HYDRAULIC FORMING

Paper presented to the ASME Design Engineering Conference at Chicago, Illinois, May 9-12, 1966.

Seitz, R. N. R-COMP-DIR

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Oral presentation to the Mid-Southeastern Chapter ACM Meeting at Huntsville, Alabama, February 11, 1966.

Sharpe, Mitchell R. I-DRR

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Paper presented to the Radio-Isotope Application in Aerospace Symposium at Dayton, Ohio, February 14-16, 1966.

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Article published in the Journal of Mathematical Physics, Vol VI, No. 12, December, 1965.

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AN ACOUSTIC WIND MEASUREMENT TECHNIQUE

Paper presented to the AIAA Conference at Los Angeles, California, June 27, 1966.

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MISSILE RANGE REFERENCE ATMOSPHERES--THEIR ORIGIN AND USE

Paper presented to the 6th National Conference of Applied Meteorology at Los Angeles, California, March 28-31, 1966.

Snoddy, W. C. R-RP-T

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Paper presented to the AIAA Thermo-Physics Specialists Conference at Monterey, California, September 13-15, 1965.

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PROBLEMS IN THE THERMAL DESIGN OF SPACECRAFT

Oral presentation to the AIAA Thermo-Physics Specialists Conference at Monterey, California, September 13-15, 1965.

Steinberg, A. I-E-Q

RELIABILITY AND QUALITY MANAGEMENT

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