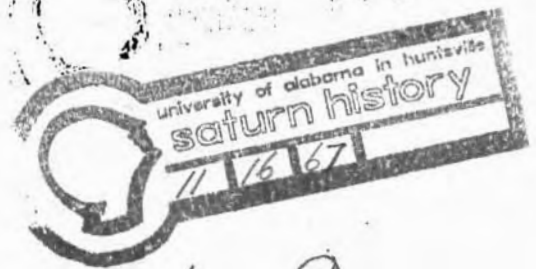


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SATURN HISTORY DOCUMENT
University of Alabama Research Institute
History of Science & Technology Group

Date ----- Doc. No. -----

X.9

NSFC CONTRACTS REPORT

Compiled from NASA Research and Technology
Program Digest- Flash Index for FY 1966

Issued annually by:

W The Office of Advanced Research and Technology
Code RTM, Mac C. Adams, Assoc. Admin.

David L. Christensen
Helper- Huntsville

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SATURN HISTORY DOCUMENT
University of Alabama Research Institute
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Date ----- Doc. No. -----

X 9

ASFC CONTRACTS REPORT

Compiled from NASA Research and Technology
Program Digest- Flash Index for FY 1966

Issued annually by:

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Code RTM, Mac C. Adams, Assoc. Admin.

David L. Christensen
Melpar- Huntsville

TITLES	TECHNICAL CONTACT	OFFICE SYMBOL	BUILDING	PHONE
NUCLEAR ELECTRIC SYSTEMS				
ELECTRIC PROPULSION				
<u>Electrostatic Systems</u>				
Surface Physics with Applications to Ion Rocket Problems	I. Dalins	R-RP-N	4481	876-1891
<u>Component Technology</u>				
Analysis of Electrical Propulsion Power Conditioning Component Technology	L. H. Wood	R-RP-N	4481	876-1629
Study of Electrically Propelled Cargo Vehicles for Sustained Lunar-Supply Operations	J. C. King	R-RP-N	4481	876-4126
Determination of Cesium Distribution in Porous Tungsten	I. Dalins	R-RP-N	4481	876-1891
<u>Mission Analysis</u>				
Low-Acceleration Space Transportation Systems	V. Gradecak	R-FP	4200	876-1287
NUCLEAR POWER SYSTEMS				
<u>Experimental Evaluation and Systems Analysis</u>				
Establish Criteria for Electrical Power Supply for Space Vehicle Instrumentation	E. E. Dungan	R-ASTR-A	4202	876-9296
NUCLEAR ROCKET SYSTEMS				
NUCLEAR VEHICLE TECHNOLOGY				
<u>Radiation Effects</u>				
Development of Gamma and Neutron Radiation Spectrometer	H. Burke	R-ASTR-IMT	4487	876-8434
Nuclear Instrumentation Studies	H. Burke	R-ASTR-IMT	4487	876-8434
Gamma Source and Associated Instrumentation	W. T. White	R-ASTR-B	4487	876-8311

TITLES	TECHNICAL CONTACT	OFFICE SYMBOL	BUILDING	PHONE
Synthesis of Calculation Methods for the Design and Analysis of Radiation Shields for Nuclear Rocket Systems	H. E. Stern	R-RP-N	4481	876-3542
<u>Design Concepts</u>				
Modular Nuclear Vehicle Flight and Static Test Design and Technology	W.Y. Jordan	R-AS-VP	4202	876-0014
S P A C E P O W E R				
SOLAR POWER GENERATION				
<u>Photovoltaic</u>				
Parametric Analysis of Techniques for Megawatt Solar Cell Arrays	V. Gradecak	R-FP	9200	876-1287
CHEMICAL POWER GENERATION				
<u>Batteries</u>				
High Energy Battery Materials	C. B. Graff	R-ASTR-EAP	4487	876-1518
<u>Electric Power Distribution and Control</u>				
Design and Development of Integrated Circuit Power Amplifiers	C.F. Winkler	R-ASTR-RS	4487	877-2168
High Current Switching Devices	W.J. Shockley	R-ASTR-EAC	4487	876- 5947 ⁶⁶⁰¹
Design Analysis and Performance Evaluation on Electrical Contacts for Space Vehicles	W.J. Shockley	R-ASTR-EAC	4487	876- 5947 ⁶⁶⁰¹
Advanced Electrical Control and Distribution Systems	J. Stulting	R-ASTR-EAS	4487	876-5594
Development of Pulse Width Modulated Power Conversion Block	C.E. Winkler	R-ASTR-RS	4487	877-2168
Inverter for Motors	D. Baker	R-ASTR- DIR EAP	4487	876- 1642 ¹⁵¹⁸
S P A C E V E H I C L E S Y S T E M S				

SPACE VEHICLE ENVIRONMENTAL FACTORS

High-Energy Radiation Effects and Shielding

TITLES	TECHNICAL CONTACT	OFFICE SYMBOL	BUILDING	PHONE
Electron Shielding Studies	N. Edmondson	R-RP-N	4481	876-4126
Scaling Laws for Superconducting Magnets	E. W. Urban L. L. LACY	R-RP-N	4481	876-4126
Shielding Data Generation and Calculation Techniques	M. O. Burrell	R-RP-N	4481	876-1891
Investigation of Factors Limiting Construction of Superconducting Magnets for Active Space Shielding	* E. W. Urban	R-RP-N	4481	876-4126
Study of Mechanisms Capable of Producing Gross Instabilities in Large, High Field, Superconducting Magnets	* E. W. Urban	R-RP-N	4481	876-4126
Evaluation of Simulated Radiation Shields	R. A. Potter	R-RP-N	4331	876-8036
Research on Applications of Superconductivity to Active Radiation Shielding Problems	* E. W. Urban	R-RP-N	4481	876-4126
Charged Particle Motion in Magnetic Fields	* E. W. Urban	R-RP-N	4481	876-4126
* The Combined Effect of Space and Nuclear Environmental Parameters on Space Vehicle Materials	E. C. McKannan	R-P&VE-MEE	4612	876-1233
Plasma Shielding Studies	R. N. Seitz	R-RP-N	4481	876-4126
Cross Section Calculations and Study of Space Vehicle Radiation Shielding	N. Edmondson	R-RP-N	4481	876-4126

Meteoroid Environment and Impact Hazard

Canadian Meteor Research	M. J. Smith	R-RP-P	4481	876-2595
Experimental Hypervelocity Impact Research	R. J. Naumann	R-RP-P	4481	876-2595
Meteoroid Detector Development and Calibration	J. B. Dozier	R-RP-P	4481	876- ¹⁸⁶⁵ 5179
Theoretical Formulation of Meteoroid Distribution Functions in Cislunar Space	F. D. Wills	R-RP-P	4481	876-2595

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Development of a Hypervelocity Facility	J. B. Dozier	R-RP-P	4481	876-5179
Physics of Solids Under Conditions Resulting from Hypervelocity Impact	R.J. Naumann	R-RP-P	4481	876-4513
Meteoroid Field Patterns	D. P. Hale	R-RP-N	4481	876-4513
<u>Thermal Radiation Effects and Temperature Control</u>				
Theoretical Study of the Radioactive Emmissivity of Materials	K. Schocken	R-RP-T	4481	876-3391
Directionally Reflective Surface Study	E. R. Miller	R-RP-T	4331	876-4861
* Study of Micrometeoroid Damage to Thermal Control Materials	J. A. Fountain	R-RP-T	4481	876-5557
Thermal Design Studies (thermal similitude) Applicable to Spacecraft	J. R. Watkins	R-RP-T	4481	876-7265
Thermal Similitude Studies Applicable to Spacecraft	J. R. Watkins	R-RP-T	4481	876-7265
Spectral Reflectance and Infrared Detection Under Cryogenic Conditions	K. Schocken	R-RP-T	4481	876-3391
Theory of Thermal and Electrical Conductivity in the Bulk Material and at the Interface of Solid Contacting Systems	H. L. Atkins	R-RP-T	4481	876-0925
Use of Thermal Models for Environmental Testing	J. K. Harrison	R-RP-T	4481	876-3391
Analysis and Correlation of Known Thermal Interface Conductance Experimental Data	H. L. Atkins	R-RP-T	4481	876-0925
* Theoretical Thermal Similitude Studies	J. R. Watkins	R-RP-T	4481	876-7265
Evaluation of Passive Thermal Control Coatings	C. L. Peacock	R-P&VE- ME ^{MER}	4612	876-4589
Feasibility Study of Thermoelectric Control of Space Vehicle Thermal Environment	C. Fritz	R-P&VE-PEC	4619	876-6032

TITLES	TECHNICAL CONTACT	OFFICE SYMBOL	BUILDING	PHONE
Transient Thermal Contact Resistance	H. Atkins	R-RP-T	4481	876-0925
LAUNCH VEHICLE AEROTHERMODYNAMICS				
<u>Aerodynamic Forces, Steady Loads, Stability, and Control</u>				
Experimental Evaluation of Reynolds Number Effects on Viscous Cross-Flow	B. H. Johnson	R-AERO-ADE	4200	877-8526
Aerodynamic Properties of Engine Exhaust Plumes	J. L. Sims	R-AERO-AM	4200	876-2300
<u>Vehicle and Base Heating</u>				
Base Flow and Separation Studies	W. K. Dahm	R-AERO-A	4200	876-4566
Analytical Investigation of Plume Afterburning	R. C. Farmer	R-AERO-AT	4200	876-2060
Base Heating Research	R. C. Farmer	R-AERO-AT	4200	876-2060
Calculations of Three-Dimensional Interaction Regions in Multirocket Vehicles	J. L. Sims	R-AERO-AM	4200	876-2300
<u>Acoustic Noise Propagation</u>				
Study of Absorption of Low Frequency Acoustic Energy in the Atmospheric Media	J. H. Farrow	R-P&VE-SV	4610	876-0462
LAUNCH VEHICLE STRUCTURES				
<u>Advanced Structure/Material Concepts</u>				
Structural Test on New and Unconventional Materials	R. Crawford	R-AS- ^{VG} UG	4202	876-9643
Multicell Tank Manufacturing Technology	L. H. Berge	R-ME- A ^A	4712	876-6827
Development of Solid State Bonding Techniques	W. A. Wilson	R-ME-MM	4712	876-1917
Fusion Spot Welding System (HYDRID, MIG-TIG)	J. D. Bennight	R-ME-ME	4712	876-5243

TITLES	TECHNICAL CONTACT	OFFICE SYMBOL	BUILDING	PHONE
Development of Technology Using Composite Sandwich Structures	W. A. Wilson	R-ME-MM	4712	876-1912
Methods and Techniques for Fabrication, Assembly and Modification in Space	V. H. Yost	R-ME-MMA	4712	876- 3431 ³⁵⁵⁹
<u>Structural Loads</u>				
High Resolution Wind Measuring Systems Evaluation	J.R. Scroggins	R-AERO-Y	4200	876-5645
Analysis of Meteorological Tower Data	J.R. Scroggins	R-AERO-Y	4200	876-5645
Analysis of Detailed Wind Profile Data	J.R. Scroggins	R-AERO-Y	4200	876-5645
Flow Visualization Study of Vortex Shedding	M.F. Platzer	R-AERO-AUU	4200	877-3218
The Dynamics of Shock Induced Separation	J. C. Young	R-AERO-AUE	4200	876-1611
<u>Structural Dynamics</u>				
Establishment of Guidelines for Random and Sinusoidal Vibration Correlation	J. H. Farrow	R-P&VE-SU	4610	876-0462
Theoretical Research on the Pressure Distribution on Non-spinning Multistage Spacecraft Performing Bending Oscillations	M. F. Platzer	R-AERO-AUU	4200	877-3218
Mechanical Analog of Dynamics of Liquid Propellant in "low and zero g" Gravity Fields	R. Ryan	R-AERO-DD	4200	876-0045
Three-Dimensional Analysis of Large Launch Vehicles Including Shell Degrees of Freedom	G. McDonough	R-AERO-DDS	4200	876-6895
Nonlinear Dynamic Analysis of Structures	G. McDonough	R-AERO-DDS	4200	876-6895
Response of An Elastic Space Vehicle to Random Disturbances	G. McDonough	R-AERO-DDS	4200	876-6895
Studies of Liquid Behavior in Randomly Excited Rigid Tanks	R. F. Glaser	R-P&VE- 50	4610	877- 2134 ²¹³⁴ OK
Solution of Non-linear Algebraic Equations	R. Ryan	R-AERO-DD	4200	876- 0045 ⁰⁰⁴⁵ OK

TITLES	TECHNICAL CONTACT	OFFICE SYMBOL	BUILDING	PHONE
Determination of Optimum Anti-slosh Baffle Design	G. McDonough	R-AERO-DD	4200	876-6895
SPACE VEHICLE DESIGN CRITERIA				
<u>Environment Criteria</u>				
Environmental Design Criteria Studies (Space)	R. E. Smith	R-AERO-YS	4200	876-4503
Environmental Design Criteria Studies (Terrestrial)	O. E. Smith	R-AERO-YT	4200	876-7580
ELECTRONICS SYSTEMS				
GUIDANCE SYSTEMS				
<u>Inertial Sensors and Systems</u>				
Study for the Development of Accelerometer Test Methods	H. E. Thomason	R-ASTR-G	4487	876-1470
Design and Development of an Optical Servo Pickup	C. H. Mandel	R-ASTR-G	4487	876-5330
Cryogenic Gyro (Project SPIN)	W. Haeussermann	R-ASTR	4487	876-1642
Three-Axis Pressurized Gas Bearing Gyro	C. H. Mandel	R-ASTR-G	4487	876-5330
Integrated Gas Bearing Research for Government Agencies	W. B. Panzer	R-ASTR-GC	4487	876-4437
Body-fixed Three Axis Reference System (Application of Analytic Platform to Future Missions)	A. K. Neighbors	R-ASTR-G	4487	876-1270
Analysis, Design, and Prototype Development of Squeeze Film Bearings for AB-S Gyros	C. H. Mandel	R-ASTR-G	4487	876-5330
Development of an AB-S Inertial Gyro	C. H. Mandel	R-ASTR-G	4487	876-5330
<u>Active Electromagnetic Devices and Systems</u>				
Advanced Spaceborne Detection, Tracking, and Navigation System and Trajectory Analysis	W. G. Thornton	R-ASTR- BS	4487	876- 5330 ¹⁸⁶⁰
<u>On-Board Determination of Orbital Parameters</u>	G. H. Saunders	R-ASTR-I	4487	876- 8050 ¹²⁹⁶

TITLES	TECHNICAL CONTACT	OFFICE SYMBOL	BUILDING	PHONE
The Application of Statistical Filter Theory to Space Navigation	J, Harden	R-ASTR-A	4202	876-2787
Studies in the Theory and Application of Statistical Filter Theory to Selected Problems of Guidance, Control, and Navigation of Space Vehicles	C,R. MacCrone	R-ASTR-A AS-SP	4202	876- 9557 7526
CONTROL SYSTEMS				
<u>Manned Flight Control Systems</u>				
Computational and Display Requirements for Human Control of Space Vehicle Boosters	J. F. Pavlick	R-ASTR-A	4202	876-9623
Research on Analytical Design Techniques for Manual Booster Control	R. W. Gunderson	R-ASTR-FA	4487	877-2152
<u>Automatic Flight Control Systems</u>				
Development Study on Digital Actuators for Gimbaled Engine Thrust Vector Control	R. J. Alcott	R-ASTR-B	4487	876-8311
Pure Fluid Control System	J. A. Peoples	R-ASTR-NFM	4487	876-3525
Development of an Electrical to Fluid Converter for Pure Fluid Amplifier	J. A. Peoples	R-ASTR-NFM	4487	876-3525
Pneumatic Actuation System	J, A, Peoples	R-ASTR-NFM	4487	876-3525
<u>Advanced Control Theory</u>				
Transmission Concepts in Flexible Launch Vehicle Control	G. McDonough	R-AERO-DDS	4200	876-6895
Analytical Synthesis of Transfer Functions	M.H. Rheinfurth	R-AERO-D	4200	876-6979
Launch Vehicle Adaptive Control System Synthesis Problem	J, C, Blair	R-AERO-GO	4200	876-4033
Research in Theory of Nonlinear Dynamical Systems	C,C, Dearman, Jr,	R-AERO-GS	4200	876-3997

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COMMUNICATIONS				
<u>Information Theory</u>				
Ground Station Requirements for Optical Communication Satellite	E. J. Reinbolt	R-ASTR-R	4487	877-2168
<u>Communication Techniques and Components</u>				
Research Into Optical Superheterodyning Techniques	C. Q. Lee	R-ASTR-RP	4487	876-5290
Phase Variation Characteristics of Low Frequency Transmission	G. H. Saunders	R-ASTR-I	4487	876-1296
Investigation and Analysis of Advanced Telemetry Techniques	W. O. Frost	R-ASTR-IT	4487	876-8774
Short Term Phase Stability Study	B. Reed	R-ASTR-IRT	4487	876-8295
Prototype Development of Optical Fine Tracking and Laser Transmitter System	E. J. Reinbolt	R-ASTR-R	4487	877-2168
Laser Component and Techniques Development	J. L. Randall	R-ASTR-RP	4487	877-2168
Frequency Stabilization and Control of a Laser	J. L. Randall	R-ASTR-RP	4487	877-2168
Development of Narrow Beam, Broadband Optical Communication System	J. L. Randall	R-ASTR-RP	4487	877-2168
<u>Advanced Electronic Devices</u>				
Development of a 10 Ampere Laser Modulator	D. L. Anderson	R-ASTR-RS	4487	877-2168
Development Program for an Array of GaAs Injection Lasers	C. L. Wyman	R-ASTR-RP	4487	876-5290 877-2168
Optical Communications and Tracking Techniques	C. Q. Lee	R-ASTR-RP	4487	876-5290
Suitability of Various Materials for Optical Maser Action	J. L. Randall	R-ASTR-RP	4487	877-2168
Laser Technology as Applied to Space Science and Missions	D. P. Hale	R-RP-N	4481	876-4513

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<u>DATA HANDLING AND PROCESSING</u>				
<u>Flight Readiness and Launch Systems</u>				
Investigation of Adaptive Computer Techniques and Components	L. Griner	R-COMP-RSP	4663	876-6545
<u>Data Processing Systems</u>				
Studies of Random Process Theory and Physics Applications	J. A. Jones	R-COMP-PRV	4663	877-8341
Defining a System of Programs and a Corresponding Language for Trajectory Computation	H. Krenn	R-COMP-RD	4663	877-3945
Integration Subroutine for Second Order Differential Equations	A. E. Anderson	R-COMP-R	4663	877-3945
To Search for Good Algorithms for Discrete Optimization Problems	A. E. Anderson	R-COMP-R	4663	877-3945
An On-Line Self-Programming Computer System for Scientific and Engineering Use	R. N. Seitz	R-RP-N	4481	876-4126
Study of Numerical Differentiation and Numerical Aspects of Finite Difference Methods	R. J. Graham	R-COMP-RRF	4663	876-1795
<u>Advanced Computing Devices</u>				
Fluid Amplifiers and Logic Studies	J. A. Peoples	R-ASTR-NFM	4487	876-3525
New Methods and Applications of Analog Computation	W. K. Polstorff	R-COMP-RS	4663	876-3236
Development of Improved Integration Techniques for Digital Differential Analyzers	H. W. Zeanah	R-COMP-RSD	4663	876-1956
Investigation of Hybrid-Analog-Digital Computation	J. S. Spear	R-COMP-RS	4663	876-2795
Magneto-Optic Mass Memory for High Speed Accession System	G. A. Bailey	R-ASTR-RS	4487	877-2508

TITLES	TECHNICAL CONTACT	OFFICE SYMBOL	BUILDING	PHONE
Integrated Driving and Storage Circuit	G. A. Bailey	R-ASTR-RS	4487	877-2508
Development of Non-Linear Digital Filters and Filtering Techniques	R. J. Graham	R-COMP-RRF	4663	876-1795
Materials Investigation for Computer Storage and Logic Elements	G. A. Bailey	R-ASTR-RS	4487	877-2508
INSTRUMENTATION				
<u>Astrophysical Instrumentation</u>				
Development of Electric Field Meter for Space Application	E. L. Shriver	R-RP-S	4481	876-7571
<u>Engineering Instrumentation</u>				
Cryogenic Temperature Sensor Development	H. D. Burke	R-ASTR-IMT	4487	876-8434
Development of a Direct Digital Output Pressure Transducer	H. S. Harman	R-TEST-IDP	4650	876-2148
Development of Laboratory Standard to Accurately Monitor Low Flow Rates of Hydrogen Gas	H. D. Burke	R-ASTR-IMT	4487	876-8434
Improved Fiber Optics Bundle	P. L. Hassler	R-ASTR-IMS	4487	876-3283
Development of Vibration Spectrum Analyzer for Space Vehicles	A. J. Davis	R-ASTR-IMS	4487	876-3283
Scattering Technique for Gas Velocity and Temperature Measurement	R. M. Huffaker ^{FR}	R-AERO-ATP	4200	876-0431
Infrared Sensing System for Lunar Temperature Studies	H. D. Burke	R-ASTR-IMT	4487	876-8434
Research and Investigation of a Digital Temperature Transducer	H. D. Burke	R-ASTR-IMT	4487	876-8434
Research and Investigation of Wide Band Low Impedance Accelerometers for High Frequency Vibration Applications	T. L. Greenwood	R-TEST-IDE	4650	876-6670

TITLES	TECHNICAL CONTACT	OFFICE SYMBOL	BUILDING	PHONE
Development of Company Mass Spectrometers as Substitutes for Vacuum Gauges	I. Dalins	R-RP-N	4481	876-1891
ELECTRONICS TECHNIQUES AND COMPONENTS				
<u>Materials Research</u>				
Improving Silicon Integrated Device Reliability by Modeling the Processes of Fabrication (Diffusion)	A. M. Holladay	R-ASTR-R	4487	877-2168
<u>Electronic Component Research</u>				
Generation, Detection, and Propagation of Very High Frequency Stress Waves in Solids	J. J. Robinson	R-RP-S	4481	876-7571
Growth and Deposition of Low Temperature Oxide Films on Silicon (low-Pass Filter Semiconductor Phenomena)	A. M. Holladay	R-ASTR-R	4487	877-2168
Study of Processes Arising from Electron Phonon Interactions in Semiconductors	J. C. Ashley	R-RP-N	4481	876-1891
Study Utilizing Energy Beam Fabrication to Improve Junction Topography	D. L. Anderson	R-ASTR-RS	4487	877-2168
Development of 100 Ampere Transistor	D. L. Anderson	R-ASTR-RS	4487	877-2168
<u>Methods and Techniques</u>				
Quality Control Requirements for Integrated Circuits	M. J. Berkebile	R-QUAL-AAR	708	876-2277
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LIQUID PROPULSION TECHNOLOGY				
<u>Subsystems and Components</u>				
Toroidal Engine Systems Analysis	J. Lombardo	R-P&VE-PAA	4610	877-2084
Toroidal Combustion Chamber Evaluation	L. Hein	R-P&VE-PAC	4610	877- 2086 ²⁰⁸⁶

TITLES	TECHNICAL CONTACT	OFFICE SYMBOL	BUILDING	PHONE
Design Criteria for Zero Leakage Connectors for Launch Vehicles	C. C. Wood	R-P&VE-PT	4610	876-7758
Pump Shaft Seal Investigation (Positive Type)	L. Hein	R-P&VE-PAC	4610	877-2086
Two-Stage Pump Inducer Evaluation	L. Hein	R-P&VE-PAC	4610	877-2086
<u>Propellant Evaluation</u>				
Evaluation of Propellant Properties	A. C. Krupnik	R-P&VE-MCC	4612	876- 4945 ⁴⁵⁸²
Slush Hydrogen Fluid Characterization and Instrumentation Analysis	J. L. Vaniman	R-P&VE-PTP	4610	876-7813
<u>Aerothermochemistry and Engineering Data</u>				
High Chamber Pressure Rocket Engine Cooling	M. E. Nein	R-P&VE-PT	4610	876- 7846 ⁷¹²⁹
Cryogenic Slush Utilization	G. K. Platt	R-P&VE-PTF	4610	876-7724
High Pc Combustion Dynamics Investigation	L. Hein	R-P&VE-PAC	4610	877-2086
Head Transfer in LH ₂ Turbo Pumps	J. Vaniman	R-P&VE-PTP	4610	876-7813
Cryogenic Single and Two-Phase Flow Instability	C. C. Wood	R-P&VE-PT	4610	877-2086
Investigations on Spontaneous Phase Changes in Superheated Liquid Hydrogen	H. G. Lackner	R-TEST-ID	4650	877-8258
SOLID PROPULSION TECHNOLOGY				
<u>Subsystems and Components</u>				
Hybrid Motor Design Analysis and Development of High Temperature Nozzle	R. N. Eilerman	R-P&VE-PPS	4610	877-2096
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MATERIALS RESEARCH				

TITLES	TECHNICAL CONTACT	OFFICE SYMBOL	BUILDING	PHONE
<u>Polymers</u>				
Determination of Physico-Chemical Characteristics of Experimental Polymers	A. C. Krupnick	R-P&VE-MCC	4612	876- 4945 ⁴⁵⁸²
<u>Bearings and Lubrication</u>				
Development and Characterization of Dry Film Lubricants for Use in Vacuum	K. E. Demorest	R-P&VE-MEE	4612	876-4241
Experimental Study of Cold Welding in Ultra-High Vacuum as a Function of Surface Contamination	I. Dalins	R-RP-N	4481	876-1891
<u>Fabrication and Processing</u>				
Magnetomotive Shock Wave Studies (Electric Discharge Forming)	R.J.Schwingamer	R-ME-M	4712	876-8864
General Purpose Laser for Drilling and Welding	J. R. Rasquin	R-ME-MEE	4728	876-5918
Vacuum Sealing By Magnetic Pressure	J. D. Bennight	R-ME-ME	4715	876-5243
<u>Solid State Chemistry and Physics of Materials</u>				
Reduction of Imperfections in Epitaxially Grown Silicon	A. M. Holladay	R-ASTR-R	4487	877-2168
Study of the Basic Modes of Heat Transfer in Particulate Materials	C. D. Cochran	R-RP-T	4481	876-3391
Study of Voltage Breakdown in Space Research	I. Dalins	R-RP-N	81	876-1891
<u>Extraterrestrial Materials</u>				
Study of Impact Characteristics of Selected Non-metallic Materials in Vacuum Environment	S. A. Fields	R-RP-T	4331	876-0582
Lunar Landing Site Models--Lunar Resources	H. M. Weathers	R-RP-T	4331	876-0582
Experimental Study of the Effects of Vacuum Conditioning on the Physical Properties of Selected Materials	H. M. Weathers	R-RP-T	4331	876-0582

TITLES	TECHNICAL CONTACT	OFFICE SYMBOL	BUILDING	PHONE
Investigation of the Behavior of Polymeric Materials at Cryogenic Temperatures	J. E. Curry	R-P&VE-MN	4612	876- 2907 ⁵⁴⁷⁶ 2907
Investigation of the Sensitivity of Materials to Liquid Oxygen	C. F. Key	R-P&VE-MCA	4623	876-8591
Development of Lubricants Which Are Compatible with LOX, N ₂ O ₄ , and Fluorine and with Useful Low Temperature Properties	W. Riehl	R-P&VE	4612	876-2636
Leak Detection Techniques Improvement	W. E. Vines	R-QUAL-AE	4708	876-6226
Develop Inspection Techniques for Stainless Steel Tubing	R.W. Neuschaefer	R-QUAL-AE	4752	876-6226
Development of Vulcanizable Elastomers Suitable for use in Contact with Liquid Oxygen	J. E. Curry	R-P&VE-MN	4612	876-2907
Zero-Leakage Design for Duct and Tube Connections for Deep-space Travel	H. W. Fuhrmann	R-P&VE-PM	4610	877-3183
Stage Propellant Tank Proof Testing	F. E. Wells	R-QUAL-A	4708	876-4984
Establishment of Standards of Compatibility for Printed Circuits and Component Lead Materials	M. J. Berkebile	R-QUAL-AAR	4708	876-2277
<u>Electrical Power System</u>				
Development of Flat Conductor Cables, Connection Hardware, Installation Techniques, and Tooling	E. R. VanOrden	R-ASTR-PE	4487	876-3615
Electrical Systems Transient Control	J. Stulting	R-ASTR-EAS	4487	876-5594
<u>Stabilization and Control System</u>				
Structural Loads Relief Control System	R. Lewis	TS-Sc	4200	876-1976
A Model Reference Adaptive Flight Control System for Large Aerospace Boosters	M.R. Borelli	R-ASTR-FC	4487	876-0594
Bending Feedback Suppression and/or Active Control	R. Lewis	TS-SC	4200	876-1976

TITLES	TECHNICAL CONTACT	OFFICE SYMBOL	BUILDING	PHONE
Investigation of Simulated Lunar Materials in the Far IR	K. Schocken	R-RP-T	4481	876-3391
APPLIED MATHEMATICS				
<u>Gravitational and Orbital Mathematics</u>				
Research on Numerical Integration of Second Order Differential Equations	A. E. Anderson	R-COMP-R	4663	877-3945
Research on the Motions of Artificial Satellites	R. L. Holland	R-RP-P	4481	876- ⁵⁴²² 4752
A Study of New Mathematical Methods for the N-Body Problem and Related Problems of Orbital Mechanics	R. F. Arenstorf	R-COMP-T	4663	876-4752
Geomagnetic and Geopotential Fields of Earth and Moon	R. E. Smith	R-AERO-YS	4200	876-4503
Development of Numerical Solutions for Partial Differential Equations Describing Two-Dimensional Moving Boundary Problems	A. E. Anderson	R-COMP-R	4663	877-3945
Analysis of Extraterrestrial Atmospheres and Lifetime Predictions for Orbiting Vehicles	H. F. Kurtz, Jr.	I-MO-0	4202	877-9117 876-9189
Studies in Qualitative Aspects of Hamiltonian System	M. C. Davidson	R-COMP-I	4663	877-8548
<u>Electromagnetic and Radiation Mathematics</u>				
Mathematical Aspects of Dimensional Analysis and Similitude	J. R. Watkins	R-RP-T	4481	876-7265
Development of Techniques for Obtaining Exact Solutions of the Vlasov Non-linear Partial Differential Equations	R. N. Seitz	R-RP-N	4481	876-4126
Analysis of Tracking Techniques for Lunar Space Vehicles	H. F. Kurtz, Jr.	I-MO-0	4202	877-9117 876-9189
TRACKING AND DATA ACQUISITION				
TRACKING AND DATA ACQUISITION				

TITLES	TECHNICAL CONTACT	OFFICE SYMBOL	BUILDING	PHONE
<u>New Tracking and Data Acquisition Systems</u>				
AROD System (Advanced Range and Orbit Determination)	G. H. Saunders	R-ASTR-I	4487	876-1296
<u>Antenna Subsystems</u>				
Design of High Power RF Connector for Space Systems	D. Stone	R-ASTR-IRA	4194	876-2745
Development of a Coaxial R. F. Switch for Space Environments	P. Swindall	R-ASTR-IRA	4194	876-1071
<u>Receivers and Transmitters Subsystem</u>				
SS/FM Ground Station	F. H. Emens	R-ASTR-ITD	4487	876-1253
<u>Spacecraft Subsystems</u>				
Onboard Data Storage for Telemetry Systems	F. H. Emens	R-ASTR-ITD	4487	876-1253
Addressable Time-Division Multiplexing System	F. H. Emens	R-ASTR-ITD	4487	876-1253
SS/FM Data Transmission Equipment	F. H. Emens	R-ASTR-ITD	4487	876-1253
<u>Tracking and Data Acquisition Techniques and Components</u>				
Antenna Research and Development	J. W. Harper	R-ASTR-IR	4487	876-2082
Investigation of Electro-Optic Techniques for Controlling the Direction of a Laser Beam	C. L. Wyman	R-ASTR-RP	4487	876-5290 877-2168
Prototype Tracking System Using Coherent Light Techniques	C. L. Wyman	R-ASTR-RP	4487	876-5290
Study of the Use of Optical Communication Techniques for Descending Spacecraft	J. L. Randall	R-ASTR-RP	4487	877-2168
Random Noise Ranging	G. H. Saunders	R-ASTR-I	4487	876-1296
Band Transponder Development	L. B. Malone	R-ASTR-IRC	4487	876-4388

TITLES	TECHNICAL CONTACT	OFFICE SYMBOL	BUILDING	PHONE
Determination of Vehicle Acceleration by Radio Frequency Measurements	G. H. Saunders	R-ASTR-I	4487	876-1296
METEOROLOGICAL SYSTEMS				
METEOROLOGY				
<u>Meteorological Atmospheric Research</u>				
High Altitude Wind Measurement System	R. E. Turner	R-AERO-Y	4200	876-2767
LUNAR AND PLANETARY EXPLORATION				
SPACE CHEMISTRY				
<u>Geology and Geophysics Studies (Planetary and Interplanetary)</u>				
Investigation of Chemical Kinetics in the Upper Atmosphere	S. Frary	R-RP-N	4331	876-8036
PLANETARY QUARANTINE				
<u>Sterilizable Spacecraft Structures</u>				
Development of Dielectric Windows/Protective Cover Materials for Spacecraft Antennas	E. C. McKannan	P&VE-MEE	4612	876-1233
Sterilization Design Criteria	R. G. Crawford	R-AS-VG	4202	876-9643
<u>Equipment, Facilities, and Procedures for Assembly, Check-Out, Sterilization, and Handling</u>				
Sterilization--Manufacturing Process	R. G. Crawford	R-AS-UG	4202	876-9643
Manufacturing Procedures for Sterilization of Components and Assemblies	F. J. Beyerle	R-ME-MMC	4712	876- 8559 ³⁴³¹
<u>Sterilizable Parts and Subsystems Elements</u>				
Development of Improved Potting and Encapsulating Compounds for Space Applications	W. J. Patterson	R-P&VE-MNP	4612	876-3834

TITLES	TECHNICAL CONTACT	OFFICE SYMBOL	BUILDING	PHONE
SPACECRAFT AND CAPSULE EQUIPMENT DEVELOPMENT <u>Thermal Control System</u> Thermo Electric Cooling	W. E. Kaspareck	R-ASTR-MD	4487	876-3531
GEOPHYSICS AND ASTRONOMY IONOSPHERIC AND RADIO PHYSICS Ionospheric Electron Contact	J. A. Downey	R-RP-S	4481	876-4424
CHEMICAL PROPULSION EXPERIMENTAL ENGINEERING LIQUID LAUNCH VEHICLE PROPULSION <u>High Pressure Engines</u> High Pressure LH ₂ Pump Evaluation High Pressure LOX Pump Evaluation <u>Toroidal Plug Nozzle Engine</u> System Dynamics Investigation (Aerospike) Advanced Engine Design Study (Aerospike)	L. Gross L. Hein J. Lombardo J. Lombardo	R-P&VE-PAC R-P&VE-PAC R-P&VE-PAA R-P&VE-PAA	4610 4610 4610 4610	877-2051 877-2806 877-2084 877-2084
SOLID AUXILIARY ROCKET PROPULSION <u>Systems</u> Development of Combustion Termination Design Criteria and Integration of Malfunction Sensors with Com- bustion Termination	R. N. Eilerman	R-P&VE-PPS	4610	877-2096

TITLES	TECHNICAL CONTACT	OFFICE SYMBOL	BUILDING	PHONE
ADVANCED STUDIES - - - ELECTRONICS EARTH ORBITAL STUDIES <u>General</u> Optical Technology Satellite System	J. L. Randall	R-ASTR-RP	4487	877-2168
APOLLO SUPPORTING DEVELOPMENT SATURN VEHICLE <u>Structural System</u> Development of Improved Heat Shielding Study of Hydrogen Embrittlement of Various Alloys Development of Improved Semiorganic Structural Adhesives for Elevated Temperature Application Development of High Strength, Reinforced Aluminum Casting Alloys Techniques for Determining the Response of Launch Vehicle Structure to the Acoustic Environment Produced by the Booster Development of High Strength Magnesium Alloys for Low Temperature Use Evaluation of Structural Reinforced Plastic Materials for Application at Cryogenic Temperature Development of High Strength Aluminum Alloys in Plate Thicknesses Suitable for Use at -423°F Development of Structural Foams for Cryogenic Application	G. Smith J. G. Williamson J. M. Stuckey J. H. Hess J. H. Farrow H. L. Gilmore J. E. Curry J. H. Hess J. M. Stuckey	R-P&VE-SA R-P&VE-MMC R-P&VE-MNM R-P&VE-MMM R-PVE-SV R-P&VE- ^{MMMA} MMF R-P&VE-MN R-P&VE-MMM R-P&VE-MNM	4610 4612 4612 4612 4610 4612 4612 4612 4612	876-1780 876-1806 876-5904 876-2460 876- 2460 ⁰⁴⁶² 876- 0918 ⁵⁰¹³ 876- 2907 ²⁸⁰⁷ 876- 2460 ⁸⁷⁶ 876-5904

TITLES	TECHNICAL CONTACT	OFFICE SYMBOL	BUILDING	PHONE
Development of Solid State Techniques for Joining Dissimilar Metals	M. G. Olsen	R-P&VE-MMJ	4612	876-8405
Development of Structural Adhesive Systems Suitable for Use with Liquid Oxygen	W. E. Hill	R-P&VE-MN	4612	876-5904
Common Bulkhead and Manufacturing Technology Improvement Program for Saturn Stages	W. A. Wilson	R-ME-MM	4712	876-1917
Development of a Method to Correlate Uniaxial and Biaxial Mechanical Properties of Welded Alloys	W. B. McPherson	R-P&VE-MMP	4612	876-0913
Local Optical Measurements of Turbulent Flow Properties in Ground Tests	F. R. Krause	R-AERO-AM	4200	876-3108
<u>Thermal Control System</u>				
Emission and Absorption Characteristics of Homogeneous H ₂ O and CO ₂	R. M. Huffaker ^{E12}	R-AERO-ATP	4200	876-0431
Synthesis and Evaluation of New High Temperature Resistant Polymers for Coating Applications	J. D. Byrd	R-P&VE-MNP	4612	876-3834
Range of Structure of Ambient Density from 0 to 120 km Altitude	O. E. Smith	R-AERO-YT	4200	876-7580
<u>Propulsion System</u>				
A Study to Advance the State of-the-Art in the Design of Vacuum Jacketed Ducts, Lines, and Bellows	E. O. Walker	R-P&VE-PMD	4610	877-3279
Process Development and Pilot Plant Production of Silane Polymer of Diols	J. D. Byrd	R-P&VE-MNP	4612	876-3834
Study of Vibrations Induced in Thin-Walled Pipes by Fluid Flow	J. H. Farrow	R-P&VE-SV	4610	876-0462
Cryogenic Transfer and Space Vehicle Feed Line Chilldown	J. Vaniman	R-P&VE-PT	4610	876-7813
Cryogenic Container Implosion During Fill	J. Vaniman	R-P&VE-PT	4610	876-7813

TITLES	TECHNICAL CONTACT	OFFICE SYMBOL	BUILDING	PHONE
<u>Guidance and Navigation System</u>				
Multi-Layer Printed Circuitry Development	B. Kennedy	R-ASTR-PR	4487	876- 3615 ⁵⁰⁹⁶
Welding Equipment for Electronic Components	M. J. Berkebile	R-QUAL-AAR	4708	876-2277
Evaluation of Encapsulating Compounds Suitable for Space Vehicle Applications	M. J. Berkebile	R-QUAL-AAR	4708	876-2277
<u>Instrumentation System</u>				
Tracking Accuracy Requirements	J. P. Lindberg	R-AERO-F	4200	876-4575
Development of a Severe Environment Acoustic Transducer	B. E. Erwin	R-P&VE-SUM	4610	876-9411
Development of Seismic Measuring System for Larger Rocket Firing	I. Dalins	R-RP-N	4481	876-1891
Investigate Temperature Response and Compensation on Pressure Transducers	A. E. Schuler	R-TEST-ID	4650	876-4938
Development of Advanced Flight Strain Measuring Techniques	W. B. Cruise	R-ME-MEI	4728	876-7459
Electrical Noise Level Studies	R. A. Lloyd	R-ASTR-MD	4487	876-2537
Development of Cryogenic Mass Flowmeter	C. R. Gibbs	R-TEST-IDF	4650	876-7333
Research and Development of High Frequency, High Temperature Pressure Transducer for Combustion Instability Studies	A. E. Schuler	R-TEST-ID	4650	876-4938
Development of a Thermoelectric Cryogenic Thermometer	A. E. Schuler	R-TEST-ID	4650	876-4938
Development of Flexible Electric Shielded Cable for Use at Cryogenic Temperatures	A. E. Schuler	R-TEST-ID	4650	876-4938
<u>Pyrotechnic System</u>				
Exploding Bridgewire (EBW) Systems	J. Stulting	R-ASTR-EAS	4487	876-5594
<u>Launch System</u>				

TITLES	TECHNICAL CONTACT	OFFICE SYMBOL	BUILDING	PHONE
Prediction of Fluctuating Pressures Around Vehicle Protuberances	J. C. Young	R-AERO-AUE	4200	876-1611
<u>Checkout System</u>				
Improvement in Control of Automated Checkout for Saturn V Stage	R. L. Smith	R-QUAL-T	4708	876-0615
Single-Parameter Testing Methods for Saturn Stage Checkout	M. J. Berkebile	R-QUAL-AAR	4708	876-2277
Integral Sensor Telemetry Devices for Stage Checkout	L. Wilson	R-ASTR-NDF	4487	876-5985
NDT for Hydrogen Embrittlement in High Strength Steels	R. W. Neuschafer	R-QUAL-AE	4708 4752	876-6226 876-6662
Component Status Evaluation by Solenoid Current-Analysis	F. E. Wells	R-QUAL-A	4708	876-4984
Automatic Control of Pneumatic Pressure System Checkout	C. Lovell	R-QUAL-ATT	4708	876-2597
Monitoring Techniques by Acoustical Means for Mechanical Checkout	F. E. Wells	R-QUAL-A	4708	876-4984
<u>Manufacturing and Inspection System</u>				
Development of Techniques for Fabricating Advanced High Strength Alloys	P. H. Schuerer	R-ME-MMP	4712	876-5445
Development of Welded and Brazed Tube Connectors	W. D. Poorman	904-21-21-03		
Electron Beam Welding of Unusual Saturn V Structural Components	W. P. Stanton	R-ME-MW	4728	876-5360
Manufacturing and Assembly Techniques for Separable Fluid System Connections	E. J. Minter	R-ME-MMA	4711 4712	876-1817 2548
Critical Electronic Manufacturing Technology and Equipment Improvement	T. N. Vann	R-ME-MEA	4705	876-2276 6435
Development of Saturn Manufacturing Technology for Welding Methods and Techniques	R. M. Poorman	R-ME-MW	4728	876-5360

TITLES	TECHNICAL CONTACT	OFFICE SYMBOL	BUILDING	PHONE
Advanced Studies of Stationary Processes	J. H. Farrow	R-P&VE-SV	4610	876-0462
Development of Chemical Precision Milling Techniques	W. A. Wilson	R-ME-MM	4712	876-1917
Non-Destructive Testing for Evaluation of Strength of Bonded Materials (Non-Metallic)	J. B. Beal	R-QUAL-AMR	4705	876-0282
Non-Destructive Testing for Evaluation of Strength of Bonded Materials (Metallic)	J. B. Beal	R-QUAL-AMR	4705	876-0282
Improvement of Protective Coatings for the Saturn V Vehicle	W. A. Wilson	R-ME-MM	4712	876-1917
S-IC STAGE				
<u>Propulsion System</u>				
Propellant Droplet Study Under Combustion Conditions	R. J. Richmond	R-P&VE-PAC	4610	877-8586
Combustion Oscillation Damping Devices Investigation	L. Hein	R-P&VE-PAC	4610	877-2806
<u>Instrumentation System</u>				
Development of High Capacity Load Cell	A. E. Schuler	R-TEST-ID	4650	876-4938
<u>Manufacturing and Inspection System</u>				
Saturn V Electronic Connection Improvement Research	T. N. Vann	R-ME-ME	4705	876-2270 6435
Manufacturing and Assembly Techniques for Fluid System Components	E. J. Minter	R-ME-M	4711 4712	876-1817 2898
S-II STAGE				
<u>Propulsion System</u>				
Impact on S-II Stage of Improved J-2 Engine	J. Long	R-P&VE-PAS	4610	877-2043
J-2X Experimental Engine	J. Long	R-P&VE-PAS	4610	877-2043
<u>Manufacturing and Inspection System</u>				

TITLES	TECHNICAL CONTACT	OFFICE SYMBOL	BUILDING	PHONE
Develop Techniques for Age Forming 2014 AIS-11 Tank Skins	W. A. Wilson	R-ME-MM	4712	876-1917
S-IVB STAGE				
<u>Thermal Control System</u>				
U-Effects of Contaminants on Launch Vehicle Subsystems and Components	G. Hopson	R-P&VE-PTD	4610	876-7815
<u>Propulsion System</u>				
Pure Fluid Control System for Rocket Engine	V. Neiland	R-P&VE-PAE	4610	877-2086
Impact on S-IVB Stage of Improved J-2 Engine	J. Long	R-P&VE-PAS	4610	877-2043
<u>Instrumentation System</u>				
Development of a Hydrogen Flame Detector	A. E. Schuler	R-TEST-ID	4650	876-4938
INSTRUMENT UNIT				
<u>Stabilization and Control System</u>				
Microelectric--R&D--Applications	J. C. Taylor	R-ASTR-R	4487	877-2168
<u>Guidance and Navigation System</u>				
Accuracy Monitor for ST124-M Stabilized Platform on Launch Pad	C. H. Mandel	R-ASTR-G	4487	876-5330
Gyro Wheel Power Consumption Monitor for ST-124-M Stabilized Platform	C. H. Mandel	R-ASTR-G	4487	876-5330
Improvement in Automated Checkout for Microelectronics	M. J. Berkebile	R-QUAL-AAR	4708	876-2277
<u>Instrumentation System</u>				
Development of Electronic Component Testing by Infrared Means	M. J. Berkebile	R-QUAL-AAR	4708	876-2277
<u>Manufacturing and Inspection System</u>				

TITLES	TECHNICAL CONTACT	OFFICE SYMBOL	BUILDING	PHONE
Engineering Design, Fabrication, and Installation of Special Tooling and Equipment	J. G. Holland	R-ME-M	4720	876-3219