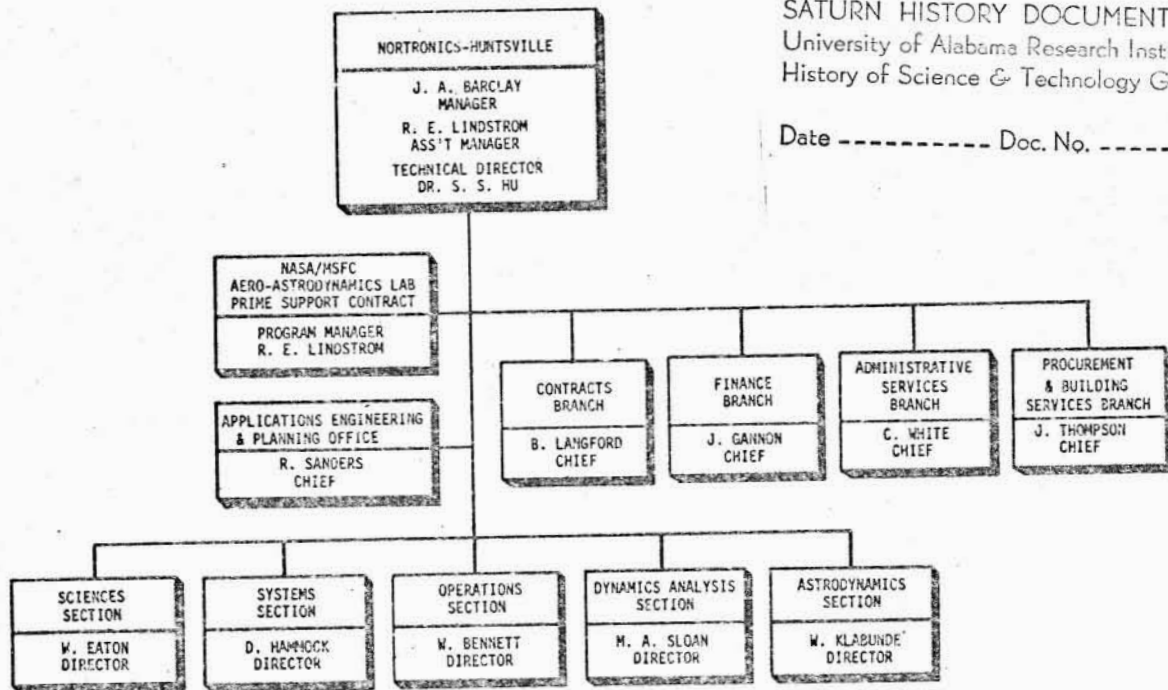


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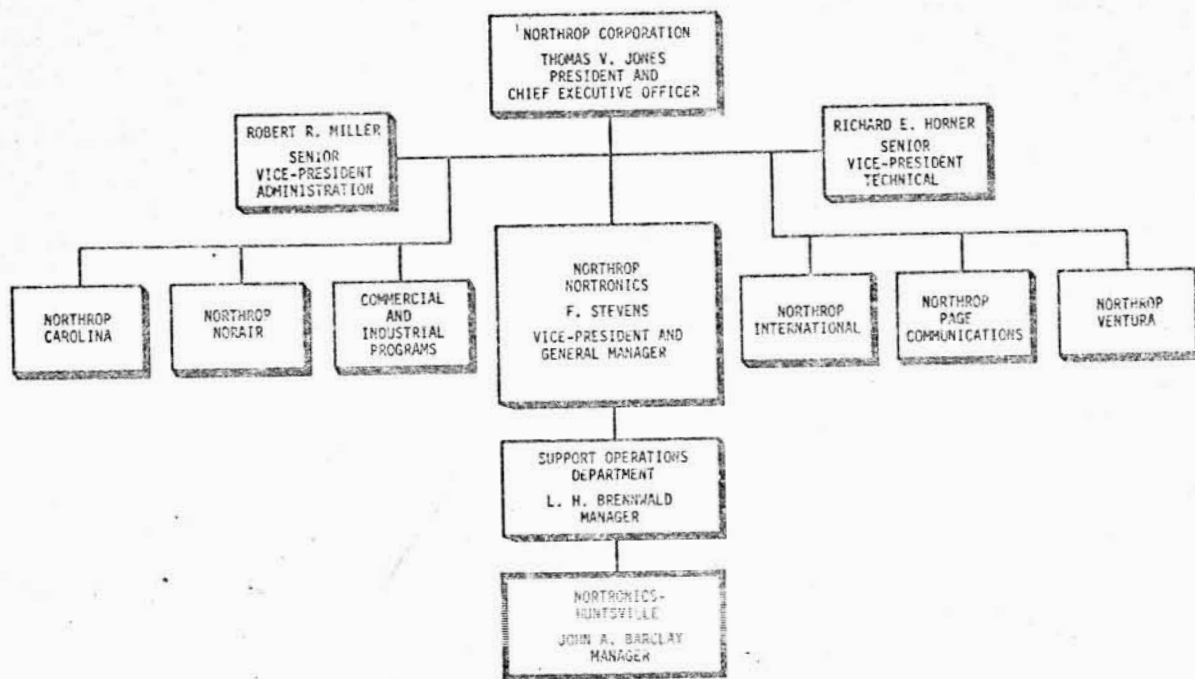
NORTRONICS HUNTSVILLE ORGANIZATION CHART

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

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



NORTHROP CORPORATE ORGANIZATION CHART



MANAGER



MAJOR GENERAL JOHN A BARCLAY (Ret.)

Prior to his retirement from the Army, Major General John A. Barclay was the Deputy Commanding General of the U.S. Army Ordnance Missile Command at Redstone Arsenal Alabama. He was Commanding General of the Army Ballistic Missile Agency during development of Jupiter and Pershing Missiles and the initiation of the Saturn Booster. He established the Huntsville Department of Northrop Space Laboratories in November 1962.

He received a Congressional appointment to the U.S. Military Academy and was commissioned in June 1931. He later graduated from the Massachusetts Institute of Technology with a Master of Science degree in Engineering. He also received an honorary Doctor of Science degree from Auburn University in 1961.

ASSISTANT MANAGER



MR R. E. LINDSTROM

Mr. Lindstrom received the B.S. Degree in Ceramic Engineering from the University of Illinois. Shortly thereafter he was assigned as a G.I. to the "von Braun" team at Redstone Arsenal. He remained at Redstone after his discharge and in 1954 was promoted to Assistant Chief of the Structures and Mechanics Lab. In 1956 he became Project Engineer on the Jupiter C program and in 1958 the Program Manager of the Saturn I from its inception thru the contracting efforts.

He joined Space Craft Inc. as Vice-President and Director in 1963. He served as President from 1964 to August of 1966 when he became Assistant Manager of Nortronics-Huntsville.

TECHNICAL DIRECTOR



DR. STEVE S. HU

Dr. Hu is Technical Director, responsible for technical direction of all five sections of Nortronics-Huntsville. He joined Northrop in 1961.

Dr. Hu received Sc.D. degree from MIT and M.S. degree from Rensselaer Polytechnic Institute. He has been a full professor of Aerospace Engineering and/or lecturer, on part-time basis, at University of Alabama, Auburn University, University of California, University of Southern California, and University of Arizona.

Dr. Hu was a Senior Staff Engineer at Jet Propulsion Lab.; a Senior Technical Specialist at Aerojet General; a Technical Consultant at Nuclear Science Institute; a Systems Engineer at RCA; and an Aeronautical Engineer at United Aircraft. During World War II, Dr. Hu organized the United Motor/China Aircraft Programs which delivered over 1000 "A26" Attack Bomber aftbodies to US Government and over 40,000 precision compressors to Mills.

Dr. Hu published more than 20 technical papers, is the editor of "American Astronautical Science & Technology Series 1967", and the author of "Space Flight Mechanics," 1967". Dr. Hu is a recipient of MIT Salisbury Prize, and also the First National Vice-President of American Astronautical Society.

NORTRONICS-HUNTSVILLE INTERNAL ORGANIZATION

The Nortronics-Huntsville internal organization is made up of five technical sections as illustrated in the organizational chart appearing on Page 4. These five sections, each managed by a Director, have very specific qualifications, capabilities, and areas of interest which are described in the following pages. When a candidate program, such as the Aero-Astrodynamic Support Contract, requires disciplines of more than one of these operating sections, the Program Manager type of operation is established. The Program Manager on any distinct project, may acquire the services of any of the operating sections through the issuance of an internal task order.

Cross communication and close coordination are maintained between these sections through the use of regularly scheduled and spontaneous staff meetings.

THE FIVE SECTIONS

- SCIENCES SECTION
- SYSTEMS SECTION
- OPERATIONS SECTION
- DYNAMICS ANALYSIS SECTION
- ASTRODYNAMICS SECTION

SCIENCES SECTION

BIOGRAPHICAL SKETCH

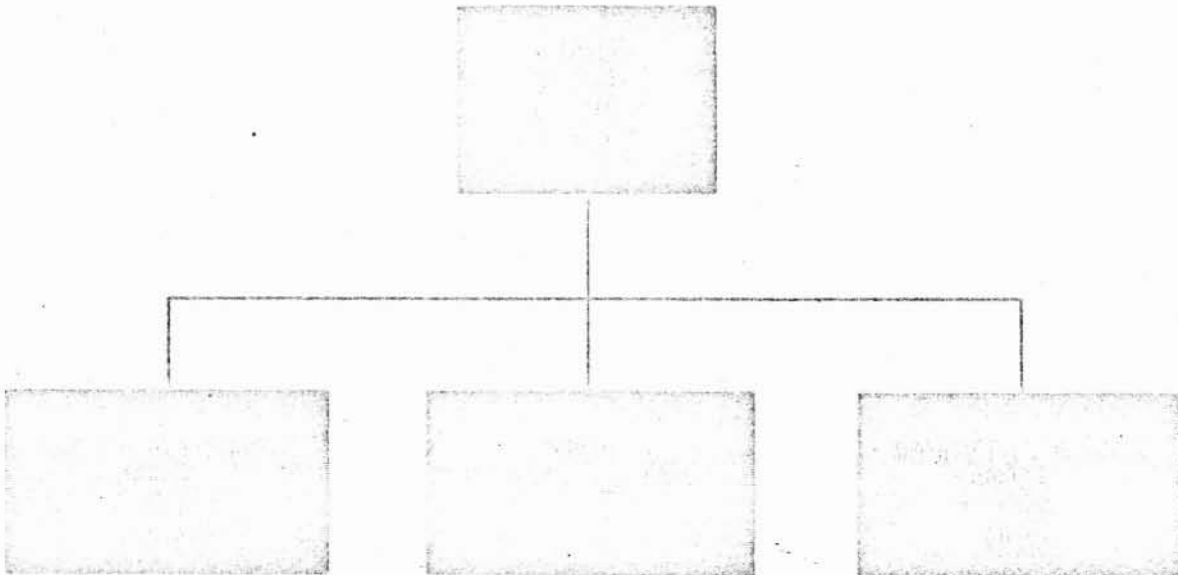


WILLIAM G. EATON , DIRECTOR

Mr. Eaton graduated from the U.S. Naval Academy in 1944 with an Engineering degree and served in World War II in the South Pacific. He completed flight training, was designated a Naval Aviator in 1949, and spent 21 years on active duty. He completed a course in nuclear engineering and received a M.S. degree in Physics from the U.S. Naval Post-Graduate school. Subsequently, he served as head of the Nuclear Weapons Research, Effects, and Test Branch. Upon retiring in July of 1965, Mr. Eaton joined Northrop as Chief, Operations Branch of the Virginia Operations. He transferred to Northrop Space Laboratories in Huntsville as Chief of the Physical and Mathematical Branch. At the present time, Mr. Eaton is Director of the Sciences Section, Nortronics-Huntsville.

AREAS OF ENDEAVOR

Perform research, analysis, and engineering in: Aerodynamics, fluid mechanics, thermodynamics, heat transfer, gas dynamics, astrophysics, space radiation, planetary atmospheres, geophysics, mathematical analysis, scientific programming methods, and applied physics.



SYSTEMS SECTION

BIOGRAPHICAL SKETCH

Mr. Hammock received his B.S. degree in Engineering from the University of Michigan. He joined the Navy Department Bureau of Ships and was promoted to Chief of the Experimental Small Crafts Development Unit. He attended graduate school at the University of Maryland, Mechanical Engineering Department. In December 1957, he joined the Army Ballistic Agency where he organized and developed the Space Vehicle Design Section for the Future Projects Design Branch. His group transferred with the "von Braun" team when the Marshall Space Flight Center was formed in 1960. In 1961, he joined the Manned Spacecraft Center to form the Flight Integration Branch where he organized this branch into Mission Analysis, Space Vehicle Design, and Propulsion Sections. He was later promoted to Assistant Chief of the Spacecraft Technology Division, and Chief, Systems Engineering Division, in the Apollo Programs Office.

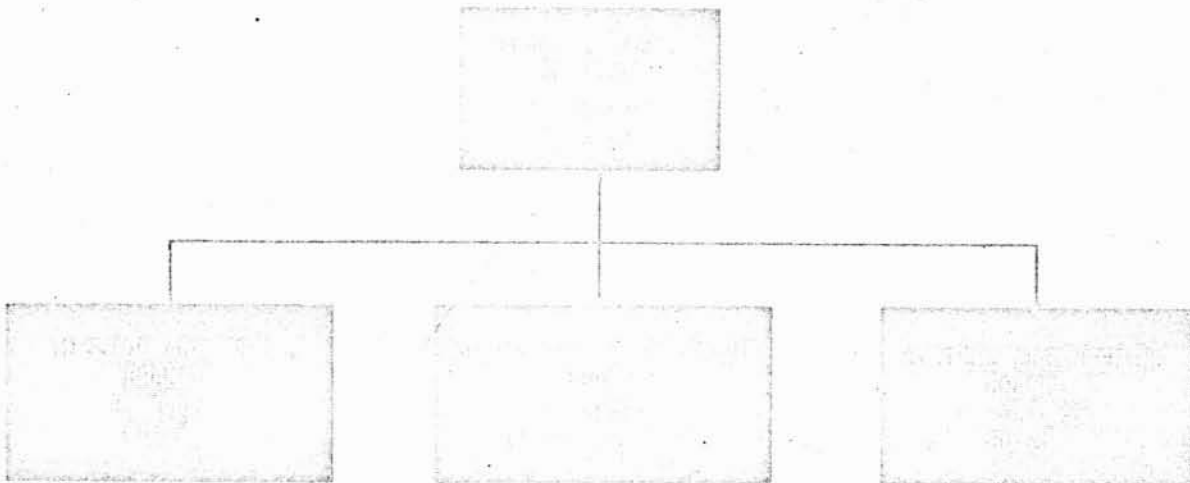
In March 1964, he joined the Space Booster Division of Thiokol as Director of the Advanced Systems Department and later he joined Spacecraft Inc. at Huntsville as Director of the Systems Department. Mr. Hammock joined Northrop Space Laboratories in June 1966 as Director of the Systems Section.



DAVID M. HAMMOCK, DIRECTOR

AREAS OF ENDEAVOR

Perform systems engineering, development, and program management in areas of space systems, subsystem design and development, experiment development, weapon systems, conduct operations analyses pertinent to system and program definition.



OPERATIONS SECTION

BIOGRAPHICAL SKETCH



W. G. BENNETT, DIRECTOR

Mr. Bennett is currently the Director of the Operations Section, and is administering contracts both at Langley Research Center and Marshall Space Flight Center. Prior to this assignment, he served as Northrop's Program Manager for the NIKE-X Program. He worked as Director of Business Administration for Northrop both at Huntsville and at the Ventura Division, and was Configuration Manager at the Guidance and Control Division of Litton Industries. He spent 10 years with General Dynamics in varying capacities, including Chief of Proposal Development and Chairman of the Change Board for the ATLAS Weapons System.

He is a graduate of the U.S. Naval Academy and has done graduate work at Columbia University, the University of California, California Western University, Harbridge House, MIT, and San Fernando Valley State College.

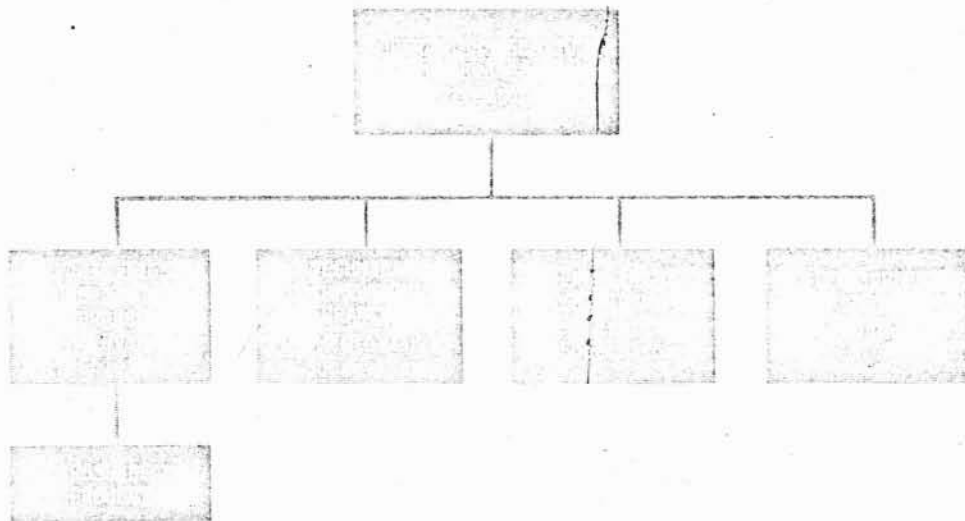
AREAS OF ENDEAVOR

Provide Engineering Support to:

- Aero-Astroynamics Laboratory Systems Office
- Aero-Astroynamics Laboratory Crossed-Beam Project

Operate and Maintain:

- MSFC Wind Tunnel Facilities
- LRC Integrated Life Support and Propellant Test Facilities



DYNAMICS ANALYSIS SECTION

BIOGRAPHICAL SKETCH



MARLIN A. SLOAN JR., DIRECTOR

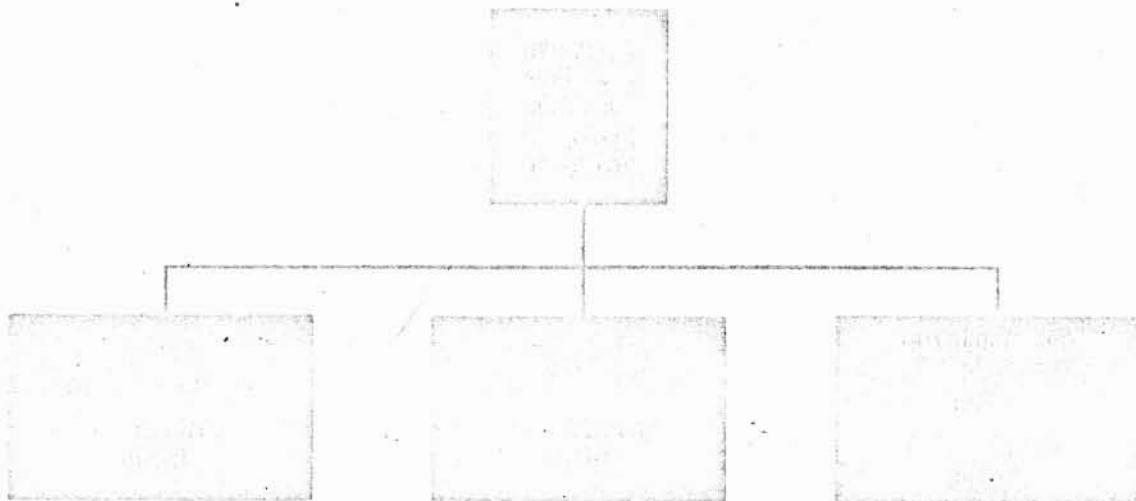
Mr. Sloan has a B.E.E. from Georgia Tech, and a M.S.E.E. from the University of Southern California. He is presently Director of the Dynamics Analysis Section. He is responsible for technical activities in automatic controls, dynamics analysis of controlled vehicles, guidance and flight performance analysis, and structural dynamics studies.

Prior to joining Northrop, he worked for Hughes Aircraft Company, Guidance and Control Division. He participated in guidance and control systems trade-off studies for ballistic missiles. He also performed analysis, functional design and simulation of automatic flight control systems for aircraft. These studies included high speed, low altitude flight (terrain following) pilot assist and automatic landing systems. He was involved in the design and evaluation of the flight test of the control systems for the F-102.

He completed the Hughes Aircraft Company Rotation Training Program with assignments in test equipment, radar transmitters, counter-counter measures, hydraulic test laboratory, and flight dynamics analysis.

AREAS OF ENDEAVOR

Conduct research, analysis, and performance studies of dynamical systems in the areas of control dynamics, guidance and flight performance, and structural dynamics.



ASTRODYNAMICS SECTION

BIOGRAPHICAL SKETCH



WILLIAM A. KLABUNDE , DIRECTOR

Mr. Klabunde received his B. S. in Aeronautical Engineering from Texas A&M in 1950, following which he was employed by Convair, Ft. Worth, in the Flight Test Engineering Department. In 1952, he joined Northrop as an Aerodynamicist and in this capacity gained experience in the prediction of aerodynamic characteristics as well as stability and control analysis. He conducted flight performance studies on various aircraft and assisted in the aerodynamic design of a Laminar Flow Control aircraft wing surface and pumping pod configuration. Following this he conducted studies of the aerodynamic and flight performance characteristics of various missile systems for optimum design.

He joined the Nortronics-Huntsville organization on its inception and has been involved in various space vehicle trajectory optimization studies for advanced design analysis. He became Program Manager of the Aero-Astrodynamic Support Contract in 1965 and in 1967 was appointed Director of the Astrodynamics Section.

AREAS OF ENDEAVOR

Conduct research and analysis in flight trajectory optimization, shaping techniques, planetary entry dynamics and low thrust trajectory mechanics, as well as perform investigations of preflight and post flight trajectories, of Saturn type vehicles and conduct studies involving tracking networks, orbit determination and lifetime characteristics.

