

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WASHINGTON 25, D. C.

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ABE SILVERSTEIN  
NASA'S DIRECTOR OF SPACE FLIGHT DEVELOPMENT

Abe Silverstein is Director of Space Flight Development at the National Aeronautics and Space Administration headquarters in Washington, D. C. Before the NASA was established, on October 1, 1958, he was Associate Director of the Lewis Flight Propulsion Laboratory, Cleveland, Ohio, a research center of the National Advisory Committee for Aeronautics, which formed the nucleus of the NASA.

Silverstein directs those NASA programs aimed at the development of space flight. Development programs under his direction include space probes and manned and unmanned satellite systems. He is also responsible for the development of propulsion systems capable of powering these space vehicles.

Silverstein is a native of Terre Haute, Indiana, where he attended local grammar and high schools. He earned a Bachelor of Science in Mechanical Engineering degree in 1929, and a Mechanical Engineering degree in 1929, and a Mechanical Engineer Professional degree in 1934, from Rose Polytechnic Institute. He was awarded an honorary Ph.D. by Case Institute of Technology in 1958.

Silverstein joined the National Advisory Committee for Aeronautics in 1929, and soon after helped design the Full-Scale Wind Tunnel at the Langley Aeronautical Laboratory. He later was placed in charge of this facility, and directed research

which increased the high-speed performance of most of the combat aircraft of World War II. This work was recognized as a major factor in gaining U.S. air superiority during the war.

In 1943, he was transferred to the Lewis Laboratory at Cleveland to select and train a staff which he directed in research at the Altitude Wind Tunnel. These investigations led to significant improvements in both reciprocating and early turbojet aircraft engines. He also pioneered with large-scale ramjet engines, now used on certain missiles.

At the end of World War II, Silverstein was directing the work at several major research facilities at Lewis. He directed the erection of the \$9 million NACA 8 x 6-Foot Supersonic Wind Tunnel, first operated in 1949, and the \$33 million NACA 10 x 10-Foot Supersonic Wind Tunnel, completed in 1956. These facilities, the largest wind tunnels of their kind in the world, have greatly accelerated the development of supersonic aircraft. In 1952, he was appointed Associate Director of the Lewis Laboratory, a post he held until he was named to the headquarters staff of the NASA.

Silverstein was a member of several NACA committees and subcommittees including: Committee on Aerodynamics, 1946-47; Subcommittee on Self-Propelled Guided Missiles, 1945-47; Subcommittee on Internal Flow, 1947; Subcommittee on High-Speed Aerodynamics, 1945-57; Committee on Power Plants for Aircraft, 1951-57; and the Special Committee on Space Technology, 1958.

He served as Chairman of the Cleveland Section of the Institute of Aeronautical Sciences, 1946-47. He was a member of the Committee on Arrangements for the Joint Meeting of the Institute of the Aeronautical Sciences and the Royal Aeronautical Society, held in New York City, in 1949. The Assistant Secretary of Defense for Research and Development appointed him a member of the Technical Advisory Panel on Aeronautics for the year 1955, and as Chairman of the Ad Hoc Working Group on Rockets for 1956. He was a member of the Scientific Advisory Board of the Chief of Staff, U.S. Air Force, for 1956 and 1957, and Chairman of the OASD Technical Advisory Panel on Aeronautics, Ad Hoc Group on Propulsion for Aircraft and Missiles. He was a member of the Assistant Secretary of Defense's Steering Group of the Advisory Panel on Aeronautics for 1958.

Silverstein was American representative to the Joint Meeting of the Institute of the Aeronautical Sciences and the Royal Aeronautical Society, in London, in 1947. He delivered the annual Wright Brothers Lecture before the IAS in 1949.

He is a member of Tau Beta Pi, and a Fellow of the Institute of the Aeronautical Sciences.

Silverstein, his wife Marion, and their three children, Joseph, Judith, and David, live at [REDACTED] Rollingwood Drive, Chevy Chase, Maryland.

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**DR. ABE SILVERSTEIN**

**Director of Space Flight Programs                      \$21,000**

In coordination with other Program Directors, implements broadly defined objectives by directing, coordinating, and supervising the Space Flight Programs, which include: (a) Theoretical and experimental investigations in the various fields of the space sciences; (b) Technological developments of space flight vehicles, their propulsion, and control; (c) Technological developments and systems developments for space flight operations; (d) specific space flight missions. Directs and supervises the operations of the NASA Goddard Space Flight Center, the Wallops Station, and the contracted research, development, and operational programs conducted at the Jet Propulsion Laboratory. (Appointed October 1, 1958)



Age: 52    Wife: Marion    Children: Joseph (9), Judy (8), and David (3)

Residence: 7205 Rollingwood Drive, Chevy Chase, Md.    Phone: OLiver 6-6190

Education: B.S. in M. E., (1929); Professional Degree in M. E. (1935) -  
Rose Polytechnic Institute

Work Experience:

1958-60 Appointed as "Director of Space Flight Development," October 1, 1958, and organized work about Assistant Directors for (a) Space Sciences, (b) Advanced Technology, (c) Propulsion, and (d) Operations. Title changed January 1, 1960 when the Office of Launch Vehicle Programs was established to handle development and operation of launch vehicles through injection.

1952-58 Associate Director, NACA Lewis Flight Propulsion Laboratory, Cleveland, Ohio (GS-16 to \$19,000, PL-313). Served as full deputy director and supervised the planning and execution of the Laboratory's research programs, with close attention to the re-direction of research from the "more established areas of technology" (e.g. air breathing jet engines using hydrocarbon fuels) to more advanced propulsion concepts (electrical, nuclear, rocket, and investigation of the exotic fuels).

November 18, 1960

- 1949-52 Chief of Research, Lewis (GS-15/16).** Directed a staff of approximately 1000 scientists and support personnel utilizing some 30 major research facilities in fundamental and applied research in the fields of propulsion systems, adaptation of nuclear energy heat sources to aircraft and propulsion, combustion fundamentals and transitional supersonic flow in axial and radial turbines, and the search for new fuels, materials, and structures for aircraft propulsion.
- 1945-49 Chief, Wind Tunnel and Flight Division, Lewis (GS-14/GS-15).** Directed experimental and theoretical research on flight propulsion power plants and their components. Supervised design and construction of major wind tunnel facilities.
- 1943-45 Chief, Engine Installation Research Division, Lewis (GS-13/GS-14).** Pioneered in research on large scale ram-jet engines and developed facility techniques to obtain high altitude performance data at ram-jet inlet velocities near Mach-2.
- 1940-43 Head, Full-Scale Wind Tunnel, NACA Langley Aeronautical Laboratory (GS-11/GS-13).** Supervised aeronautical research done in this tunnel which was successful in increasing the high-speed performance of most of the fighter aircraft used in World War II.
- 1929-40 Aeronautical Research Engineer (GS-5/GS-11), Langley.** In the early 1930's helped plan and design the Full Scale Wind Tunnel.

**Professional Recognition:**

**Has had numerous papers and reports published, covering his research in aerodynamics, facility design, and flight propulsion.**

**Was a member of several NACA committees and subcommittees from 1946 to 1958. Served on the following DOD committees from 1955 to 1958: Technical Advisory Panel on Aeronautics; ad hoc Working Group on Rockets; Scientific Advisory Board (USAF); OASD Technical Advisory Panel on Aeronautics; ad hoc Group on Propulsion for Aircraft and Missiles.**

**Is a Fellow of the Institute of the Aeronautical Sciences, the American Rocket Society; and the American Astronautical Society. Has served on several IAS committees. Was American representative to the Joint Meeting of the IAS and the Royal Aeronautical Society in London (1947). Delivered the annual Wright Brothers Lecture before the IAS in 1949. Was awarded an honorary Eng.D. by Case Institute of Technology in 1958; in 1959 received an honorary Sc.D. from Rose Polytechnic Institute; and in 1960 received an honorary L.H.D. from Yeshiva University.**

Public Information Office  
NASA Lewis Research Center  
Cleveland, Ohio 44135  
252-7700, ext. 415

### BIOGRAPHICAL SKETCH OF DR. ABE SILVERSTEIN

Dr. Abe Silverstein is Director of NASA's Lewis Research Center, Cleveland, Ohio.

He is a native of Terre Haute, Indiana. In 1929 he earned the degree of bachelor of science in mechanical engineering at Rose Polytechnic Institute and in 1934 he received a mechanical engineering professional degree from the same school.

Dr. Silverstein began his scientific career with the National Advisory Committee for Aeronautics in 1929 at the Langley Research Center. There he helped design and later was placed in charge of the Full-Scale Wind Tunnel. In this facility he directed important aerodynamic research which led to increased high-speed performance of most of the combat aircraft of World War II.

In 1943 he was transferred to the Lewis Laboratory at Cleveland. There, as Chief of the Wind Tunnel and Flight Division, he directed research in propulsion aerodynamics in the Altitude Wind Tunnel. These investigations led to significant improvements in both reciprocating and early turbojet engines. He also pioneered in research on large-scale ramjet engines.

Following World War II, Dr. Silverstein was responsible for the conception, design and construction of our nation's first supersonic propulsion wind tunnels. The investigations in these facilities greatly contributed to the development of our present day supersonic aircraft.

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Dr. Silverstein was placed in charge of all research at the Lewis Research Center in 1949 and, in 1952, he was appointed associate director of the Lewis Laboratory.

In May 1958, Dr. Silverstein transferred to NACA Headquarters in Washington to help plan the organization and programs of the NASA. He became Director of NASA's Office of Space Flight Programs in October 1958. He directed NASA programs concerned with mission planning, spacecraft design and development, and in-flight research and operation. Development programs under his direction included space probes and manned and unmanned satellite systems.

Dr. Silverstein returned to Cleveland in November 1961 to become director of the Lewis Research Center, with responsibilities for the research and development of advanced space propulsion and power generation systems.

Dr. Silverstein was U. S. representative to the Joint Meeting of the Aeronautical Sciences and the Royal Aeronautical Society in London in 1947; delivered the annual Wright Brothers Lecture before the Institute of the Aerospace Sciences in 1949, and in 1961 delivered the 49th Wilbur Wright Memorial Lecture in London. He was awarded an honorary engineering degree by Case Institute of Technology in 1959, an honorary Sc.D by Rose Polytechnic Institute in 1959, and an honorary L. H. D. by Yeshiva University in 1960. He was presented the NASA Medal for Outstanding Leadership in October 1961.

He is a member of Tau Beta Pi, a Fellow of the American Institute of Aeronautics and Astronautics, the American Astronautical Society, the Royal Aeronautical Society and the International Academy of Astronautics.

Dr. Silverstein, his wife, Marion, and their three children reside at 21160 Seabury Avenue, Fairview Park, Ohio.

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## BIOGRAPHICAL SKETCH OF ABE SILVERSTEIN

**Dr. Abe Silverstein, retired Director of NASA's Lewis Research Center, Cleveland, Ohio is a native of Terre Haute, Indiana. In 1929 he earned the degree of Bachelor of Science in Mechanical Engineering at Rose Polytechnic Institute, and in 1934 he received a Mechanical Engineering Professional degree from the same school.**

**Dr. Silverstein began his scientific career with the National Advisory Committee for Aeronautics in 1929 at the Langley Research Center. There he helped design and later was placed in charge of the Full-Scale Wind Tunnel. In this facility he directed important aerodynamic research which led to increased high-speed performance of most of the combat aircraft of World War II.**

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**In May 1958, Dr. Silverstein transferred to NACA Headquarters in Washington to help plan the organization and programs of the NASA, subsequently becoming Director of NASA's Office of Space Flight Programs in October 1958. He directed those NASA programs concerned with mission planning, spacecraft design and development, and in-flight research and operation. Development programs under his direction included space probes and manned and unmanned satellite systems.**

Dr. Silverstein returned to Cleveland in November 1961 to take the helm of the Lewis Research Center as its Director. He retired in October 1969. He presently is Director of Environmental Planning, Republic Steel Corporation, Cleveland, Ohio. He is also serving as Technical Advisor for the Lake Erie International Jetport Task Force.

Dr. Silverstein was American representative to the Joint Meeting of the Institute of the Aeronautical Sciences and the Royal Aeronautical Society in London in 1947; delivered the annual Wright Brothers Lecture before the Institute of Aeronautical Sciences in 1948; delivered the 49th Wilbur Wright Memorial Lecture in London in 1961; presented a paper to the International Council of the Aeronautical Sciences Fifth Congress in London in 1966; and delivered the Biennial Theodore von Karman Memorial Lecture at the Tenth Israel Annual Conference on Aviation and Astronautics in Tel Aviv, Israel, in 1968. He was awarded an honorary Engineering Degree by Case Institute of Technology in 1958, an honorary Doctor of Science Degree by Rose Polytechnic Institute in 1959, an honorary Doctor of Humane Letters Degree by Yeshiva University in 1960, and honorary Doctor of Applied Science Degree by John Carroll University in 1967. He was presented the Air Force Exceptional Civilian Service Award in 1960, the NASA Medal for Outstanding Leadership in 1961, the National Civil Service League's Career Service Aware in 1962, the Sylvanus Albert Reed Award of the American Institute of Aeronautics and Astronautics in 1964, the Louis W. Hill Space Transportation Award of the AIAA in 1967, and the Boy Scout Silver Beaver Award, NASA Distinguished Service Medal, and Rockefeller Public Service Award in 1968.

He is a member of Tau Beta Pi, a Fellow of the American Institute of Aeronautics and Astronautics, the American Astronautical Society, and the Royal Aeronautical Society, and a Member of the International Academy of Astronautics and the National Academy of Engineering.

Extremely active in community and civic affairs, Dr. Silverstein is a Trustee of Cleveland State University, Case Western Reserve University and the Cleveland Natural Science Museum and the Carnegie-Mellon University Mechanical Engineering Visiting Committee.

Dr. Silverstein, his wife, Marion, and their three children reside at [REDACTED] Seabury Avenue, Fairview Park, OH 44126.

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August 1973