John F. McCarthy, Jr.

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1925-1986

By William B. Bergen

John McCarthy, a recognized scientist and engineer, died on February 7, 1986. He is remembered for his engineering accomplishments that spanned an unusually broad range and were of considerable significance. Equally important, he was a man known for his willingness to share his knowledge with students and through his many published papers. He was a true contributor in every sense.

Born on August 8, 1925, in Massachusetts, and following military service from 1944 to 1946 and work for Trans World Airlines in Rome, Italy, John enrolled at the Massachusetts Institute of Technology (MIT). There he received his B.S. in 1950 and his M.S. in 1951, both in aeronautical engineering. In 1962 he earned his Ph.D. from the California Institute of Technology.

From 1951 to 1955 John served as project manager in the Aeroelastic and Structures Research Laboratory at MIT where he made major contributions to knowledge in supersonic flutter through his development of techniques for testing in the blowdown tunnel. This work included the design and operation of one of the first variable Mach number supersonic test sections on which he performed some of the earliest successful supersonic flutter tests. He also did extensive research in aerodynamics, loads, aeroelasticity, and vehicle dynamics, being a prolific contributor to the

activities of the Aeroelastic Laboratory at a period of its maximum effectiveness.

In 1955 he became an operations analyst at the headquarters of the Strategic Air Command and in 1961 vice-president of research and engineering in the Space Division of North American Rockwell Corporation where he was responsible for the direction and conduct of research, engineering, and test activities. In his work for the Space Division, he was a key figure in the basic design and testing of the Apollo command and service modules and the Saturn S-11 stage of the Saturn V launch vehicle. He envisaged many of the concepts for these projects, which ultimately culminated in the successful manned lunar landings.

In 1971 after the Apollo program, he became a professor in the Department of Aeronautics and Astronautics at MIT and in 1974 director of MIT's Center for Space Research. During his tenure there, the center pioneered in the successful execution of space experiments to investigate the plasma and x-ray properties of outer space.

He then went on in 1978 to become director of the National Aeronautics and Space Administration's (NASA) Lewis Research Center where he was responsible for the effective accomplishment of the mission and support activities of the Center, including aeronautics, space systems and technology, launch vehicles, and energy programs. In addition, as a member of the U.S. Air Force Scientific Advisory Board and chairman of the Aeronautical Systems Division Advisory Group, he played an important role in many Air Force programs. For example, John headed part of the review of the C-5 transport aircraft when previous reviews had identified the wing structure of the C-5 as marginal and questions had arisen in regard to not only safety but also instrumentation, inspection, and anticipated flight hours. John's review group concluded that the aircraft could be safely flown but that extraordinary measures should be taken to ensure a reasonable life expectancy. The H-Mod recommended by the group and adopted by the Air Force for the wing

more than tripled the structural life of the aircraft. He also led study groups to identify structural modifications to increase the structural life of the B-52D, F-4, A-10, and KC-135 aircraft.

In 1982 John returned to industry as vice-president and general manager of Northrop's Electro-Mechanical Division.

John was a blend of the scientist and engineer. He was an avid technical writer and delivered many papers (over ninety-two publications) in this country and abroad. In 1981 he was elected a member of the National Academy of Engineering. He was also a fellow of the American Institute of Aeronautics and Astronautics (director 1975-76), associate fellow of The Royal Aeronautical Society, and chairman of the Aeronautical Systems Division's Advisory Group of the U.S. Air Force Systems Command from 1971 to 1978. He was a member of the NASA Research Advisory Committee on Space Vehicle Aerodynamics and NASA Research & Technology Advisory Council-Panel of Space Vehicles; Scientific Advisory Group of The Joint Chiefs of Staff; Scientific Advisory Board of the U.S. Air Force; Research and Development Planning Council of the American Management Associations; executive committee of the American Society for Engineering Education-Aerospace Division; The Society of the Sigma Xi; and Sigma Gamma Tau, national honorary aeronautical society. John also served as a consultant for the Office of Director of Defense Research and Engineering, Office of the Secretary of Defense.

His awards included the Apollo Achievement Award from NASA in 1969, the Award for Meritorious Civilian Service from the U.S. Air Force in 1973, Decoration for Exceptional Civilian Service from the U.S. Air Force in 1978, and NASA's Distinguished Service Medal in 1982.

John's steady dedication to the value of an engineer at the top of the decision process for high-technology products served as an example to us all. His quiet understanding of the new problems involving materials and structures under intense use set up new criteria in both his military and

commercial design work that increased the life of critical structures and critical materials by factors of 1.05 to 2.0 or perhaps 3.0 depending on the part and adequacy of its original requirements. However, though his technical contributions were substantial, his major contributions may have been in his ability to lead and inspire other engineers by virtue of his clear insight and technical depth in analyzing engineering problems and his excellent judgment in planning and executing complex engineering tasks.