

Biographical Data

Lyndon B. Johnson Space Center
Houston, Texas 77058

NAME: Walter W. Guy

TITLE: Chief, Automation, Robotics and Simulation Division

EDUCATION: Bachelor of Science Degree in Mechanical Engineering, University of SC, 1959; Master of Science Degree in Mechanical and Aerospace Engineering and Materials Science, Rice University, 1968

SPECIAL HONORS AND AWARDS: Awarded the Victor A. Prather Award, 1974; JSC Certificate of Commendation (Apollo Program); two NASA Exceptional Service Medals, 1975 (Apollo-Soyuz Test Project) and 1981 (Shuttle Program); a Meritorious Presidential Rank Award, 1987; and two NASA Outstanding Leadership Medals, 1992 and 1998.

HONORARY SOCIETIES: Tau Beta Pi, Honorary Engineering Society.

TECHNICAL PAPERS: Vacuum Chamber Heat Transmission Analysis, February 1967, NASA Technical Note NASA TM X-1355; Description of Docking Module ECS for the Apollo-Soyuz Test Project ASME73-ENAs 21; Space Shuttle Life Support System - A Status Report, September 1981, International Astronautical Federation; and Space Station Environmental Control and Life Support - Partially Closed System Will Save Big Money, March 1983, Astronautics and Aeronautics; Design Guide for High Pressure Oxygen Systems, August 1983, NASA Reference Publication #1113; Spacecraft Life Support and Thermal Management, 1987, Marks Standard Handbook for Mechanical Engineers, Ninth Edition.

EMPLOYMENT:

1959-1961 -- NASA Langley Research Center, Hampton, Virginia. Systems Engineering Section, Engineering Division. Involved in the design of pneumatic and hydraulic control systems for the onsite research facilities.

1961-1962 -- Space Task Group, (forerunner of Manned Spacecraft Center), Hampton, Virginia. Mechanical Systems Section, Flight Systems Division. Analytically demonstrated, for the first time, the space radiator approach to heat rejection for the Apollo vehicle, and participated in the overall design of the environmental control system.

1962-1990-- NASA Johnson Space Center (formerly Manned Spacecraft Center), Houston, Texas. Engineering Directorate. Responsible for the design, development and test of

environmental and thermal control systems, as well as astronaut EVA equipment for existing and advanced spacecraft.

1990-Present -- NASA Johnson Space Center, Houston, Texas. Engineering Directorate, Chief, Automation, Robotics and Simulation Division. Mr. Guy supports all major NASA programs, including Space Shuttle, Space Station, and future programs such as the Space Exploration Initiative with robotics devices (including in-space manipulators) and advanced automation systems. In addition to these in-line responsibilities, his Division provides the focus for technology development, evaluation and application in teleoperated robotics, autonomous robotics, and advanced automation systems. He also provides management of several full-scale, robotic, crew training facilities, as well as a Virtual Reality crew training capability for extra-vehicular crew activity and the use of space robotic devices. In addition, he manages the Systems Engineering Simulator -- the Center's largest, real-time, integrated simulation for crew-in-the-loop engineering and operations analyses for Shuttle and Station.

SHUTTLE EXPERIENCE:

Chief, Systems Engineering Branch

Lead, Environmental/Thermal Control & Life Support for NASA's "skunk-works" activity to develop the conceptual design of the Orbiter prior to formal Shuttle Program initiation.

Lead, Environmental/Thermal Control & Life Support for the Technical Committee of the NASA Source Selection Board's proposal evaluation team to select the Orbiter prime contractor.

Lead for the development of analytical trade-off tools for system/subsystem design definition; as well as, the formulation of the thermo-kinematics and fluid flow simulators for system/subsystem performance analyses.

Assistant Division Chief for Test and Development

Established an Atmospheric Revitalization Subsystem (ARS) test facility and conducted subsystem evaluations to demonstrate the viability of the contractor-proposed ARS design to maintain a habitable environment for the Shuttle crew. Also performed LiOH performance testing, which resulted in an entirely new batch screening protocol to ensure consistent carbon dioxide absorption performance under spacecraft operating conditions.

Established a Rotating Equipment Life-test Lab to ensure that the 20,000 hour/100 mission life expectancy could be met for all Orbiter cabin pumps, fans, and centrifugal water separators.

Established an Orbiter Environmental Control System (ECS) Test Facility with high-fidelity cabin geometry and pressurized volume, which was outfitted with cert-class environmental/thermal control and life support hardware/subsystems for system-level testing under both normal and emergency operating conditions.

Conducted numerous Atmospheric Pressure and Composition Control Subsystem test series in the ECS Test Facility, for both positive and negative cabin pressure relief hardware performance, and oxygen/nitrogen partial pressure control effectiveness at various total pressure levels – 8, 9, 10.2, & 14.7 psia.

Deputy Division Chief

Established a cert-class Airlock Test Facility as an adjunct to the ECS Test Facility for the “man-rating” of the Orbiter EVA airlock to support the space-suited crew during the transition from the cabin to the external environs of space.

Conducted a system-level test of the complete Active Thermal Control Subsystem (ATCS) in the large thermal/vacuum chamber at JSC to ensure acceptable integrated-system performance of the various heat sinks and heat sources that compose the ATCS (i.e., sinks: four two-sided space radiators, four single-sided radiators, flash evaporators and ammonia boiler; sources: cabin, fuel cell, hydraulics, electronics, and payload).

Division Chief

Managed the real-time Environmental/Thermal Control and Life Support engineering team, providing technical expertise in support of the Mission Control Center for Shuttle’s space flights.

Directed the development and certification of the Shuttle space suit and portable life support system, as well as the in-space propulsion pack – the Manned Maneuvering Unit.