Bonnie McBride is responsible for planning, coding, and documenting the extremely complex computer programs needed to calculate the thermodynamics and transport properties of advanced combustion systems. She also calculates and compiles the thermodynamic data and transport properties of individual chemical species for use in these codes. As better data become available and code users require extended temperature capabilities, she updates and extends the properties.

The computer programs she developed are used worldwide by the hundreds of universities, government agencies, industries, and technical organizations involved in determining propulsion system performance, analyzing combustion experiments, and conducting other studies that require knowledge of complex chemical equilibria. Two of the programs she developed—the Chemical Equilibrium and Transport (CET) and Properties and Coefficients (PAC)—are internationally recognized as standards for propulsion technology.

As the capabilities of large computers have advanced and more thermodynamic and thermochemical data have become available, Ms. McBride has supervised a team charged with updating and documenting the programs. Recently, the National Institute for Standards and Technology asked Ms. McBride to convert the JANAF (Joint Army, Navy, Air Force) Thermomechanical Tables to the standard coefficient form used in the PAC program. To meet this challenge, which will involve 1,600 chemical species, she will direct the work of an interagency group.

In addition to her exceptional initiative, innovation, and perseverance in developing a number of extremely complicated codes, she personally helps users solve specific problems. For example, she recently helped prepare specialized chemical equilibrium programs for use with computational fluid dynamic codes for reacting systems. And, she developed a program to calculate the thermodynamic properties of special fuels for a Lewis experimental program.

A recognized expert in the physics, mathematics, statistical mechanics, and thermodynamics required to compute properties of combustion species and multicomponent systems, Ms. McBride has authored or coauthored a number of comprehensive scientific papers in the area of thermodynamics.

Robert Evans manages NASA/DOE gas turbine and diesel programs that are internationally recognized as among the Nation's premier efforts in monolithic materials and structural component development. Under his guidance, researchers are striving to determine how ceramic technologies can be used to make transportation in the 21st century more energy efficient and less harmful to the environment. Since these critical and technologically demanding programs began more than a decade ago, they have received more than $110 million in DOE funding.

In 1988, Mr. Evans recognized that ceramic industries in the U.S. lagged behind their foreign competitors in terms of technology. To address this problem, he orchestrated the restructuring of the existing Automotive Gas Turbine (AGT) Program to encourage the development of ceramic component technology and suppliers. The new program, called the Advanced Turbine Technologies Application Project (ATTAP), has accelerated the development of ceramic technologies in the U.S. to rival those of foreign competitors. As a result, U.S. gas turbine industries are now making commitments to incorporate ceramic hardware into their product lines.

With his strong personal conviction that ceramics can be used to solve key energy and environmental problems, Mr. Evans has successfully encouraged diversified and technology-oriented divisions at Lewis to participate in a matrix management organizational structure, with researchers focusing on key technologies.

Mr. Evans is a progressive, highly motivated project manager with excellent technical credentials. He has been praised by the DOE for his skillful management and respected for his exceptional interpersonal skills and continual pursuit of excellence.