



# KEITH H. COATS

1934–2016

Elected in 1988

*“For pioneering work in the development of computer methods for simulation of oil and gas reservoir performance.”*

BY KENT THOMAS

KEITH HAL COATS passed away September 13, 2016, at the age of 81. He was born in Ann Arbor, Michigan, on November 14, 1934, to Hal Begtrup Coats and Florence Hamlin Coats. Keith’s father had grown up in poverty and brought his family out of it by working his way through the University of Michigan to earn a PhD and become one of the world’s first chemical engineers. As a child, Keith was instilled with a strict and conservative set of moral values and behaviors, which he and his wife, Cynthia Nicholas, passed on to their children Brian, Diane, and Steven.

Keith followed his father to the University of Michigan to earn bachelor of science, master of science, and PhD degrees in chemical engineering, as well as a master of science degree in mathematics. Particularly influential professors included Donald Katz, chair of his PhD committee, Joseph Martin in thermodynamics, and R.V. Churchill in mathematics.

One of Keith’s greatest attributes was his humility. He always said that dedication, giving your best, and never quitting were the keys to success at anything. His love of competition, strict upbringing, and intelligence combined to lead to great accomplishments in his academic and professional careers.

A pioneering developer of reservoir simulation software for almost 60 years, he made pivotal contributions to modeling

software that has been used to maximize production, minimize the cost of producing energy, and estimate reserves from petroleum reservoirs for the last 50 years, in addition to creating the reservoir simulation business area.

Keith was also an accomplished teacher and author of over 70 technical papers on reservoir simulation, including contributions to both editions of the *Petroleum Engineering Handbook* (1987 and 2007). He was assistant professor of chemical engineering at the University of Michigan (1959–61), research associate at Esso Production Research Co. (1961–66), and associate professor of petroleum engineering at the University of Texas (1966–70).

In 1968 in Houston he cofounded Intercomp Resources Development and Engineering, Inc., essentially creating the commercial reservoir simulation industry. From 1968 to 1983 he was chair of the board and from 1983 to 1992 he was technical director at Scientific Software-Intercomp. During these years, he developed and published detailed descriptions of a number of increasingly complex black oil, compositional, and thermal reservoir simulation models.

Keith's most productive work was done late at night so that he could work undisturbed. One morning when he was working for Esso Production Research he overslept and missed a meeting called by Human Resources. As he was arriving for the meeting, the attendees were just leaving. The topic of the meeting was...tardiness.

In 1992, while living on Marco Island, Florida, Keith founded Coats Engineering, Inc.; he served as its president until 2005, then as technical director. He thrived on being able to devote 100 percent of his time to his favorite occupation with minimal interference. Although he had developed many reservoir simulators over his career, it was here that he created his greatest and final work, Sensor reservoir simulator, one of the world's most desired software applications. He continued working on Sensor until his death.

He was happiest when working mostly in isolation with very few close friends and associates, such as Ray Pierson, Clayton Evans, and me at Phillips/ConocoPhillips; Curtis

Whitson at Pera/NTNU, the world's leading authority on phase behavior; and Chet Ozgen at Nitec.

Keith was a distinguished lecturer for the Society of Petroleum Engineers (SPE) and received the 1984 Lester C. Uren Award and the 1989 Anthony F. Lucas Gold Medal "in recognition of his pioneering work in numerical simulation models for conventional black oil, gas storage, compositional, thermal, and fractured reservoir engineering applications; and for his sharing of knowledge through his publications and teaching." He was elected to the NAE in 1988 and in 2000 selected by *Hart's E&P Magazine* as one of the "100 most influential people of the petroleum century."

Much of Keith's professional legacy is recorded in his publications and his software and will continue to be represented by the company he founded and in the industry he helped to create.

Keith treasured frequent visitors to his lovely home on Marco Island. He always enjoyed talking with colleagues about work and was a perfect host.

He was predeceased in 2013 by his second wife, Janet Bygate Keener, and in 2014 by grandson Nicholas Coats. He is survived by Cynthia, their children, and six grandchildren.

Keith will be remembered for his incredible knowledge, appreciation for excellence, outstanding achievements, sense of humor, humility, and generosity. We will all miss him.