Memorial to Ted H. Foss
1935–2003

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Dr. Ted H. Foss died September 7, 2003, of complications arising from cardiovascular issues and associated kidney disease. The Foss family held a memorial on September 10, 2003, at the Palmer Memorial Episcopal Church next to Rice University, and an announcement of his passing appeared in the *Houston Chronicle* on September 10, 2003 (see http://www.ela-iet.com/images/THFObit03.jpg).

A person is normally remembered in this way, but Ted was far from normal. Because of his exceptional life as a professional geologist, a more comprehensive memorial is needed to commemorate his outstanding professional career of almost 50 years; he is part of the history of geology as one of those who contributed significantly to it during the twentieth century.

Since I have been closely associated with Ted professionally for the last 30 years, I have been encouraged to write his professional memorial, as difficult as that may be. I am honored to write it and hope I do justice to his memory.

Ted was born on January 1, 1935, in Chicago, Illinois, and lived in many places during his childhood, including St. Petersburg, Florida; Los Alamos, New Mexico; and Corpus Christi, Texas, during which time he attended 13 schools in 12 years. His parents were Irving and Doris Foss, parents from the Great Depression. His father was a carpenter, who, during the period spent in Los Alamos, built wooden models of the atomic bomb for the U.S. Government. Ted's brother, Donald, who worked for the Anheuser-Busch Company, was a SCUBA diving instructor and also a reserve deputy sheriff for Harris County, Texas.

Ted once showed me a photo taken of him during his late high school period. It showed a young, skinny, and beardless Ted sitting on his motorcycle with a pack of Lucky Strikes rolled up in his white, short-sleeved tee shirt. One of the many interesting things about Ted is that he maintained a polite, but in-your-face attitude about motorcycles, the NRA, and smoking throughout his life.

During the spring of 1952, Ted took a Chicago area aptitude test, more or less as a lark. To his surprise, he scored high enough to receive a scholarship, and he sent the scores to the University of Illinois. Within days, he recounted, a Dean from the University called him to advise that he had been accepted. He entered college in the fall of 1952, took a geology course and decided to major in the field because he was interested in all the sciences and geology incorporated them all. Ted worked in the Stratigraphic Laboratory as an undergraduate research assistant for the State Geological Survey, Urbana, Illinois, and graduated with a B.S. degree in 1956. He spent the summers of 1955 and 1956 mapping the igneous and metamorphic rocks in and around Acadia National Park for Dr. Carleton A. Chapman. During his second summer in Maine, he met a charming and witty young lady named Kathryn. Ted reluctantly left Kathryn behind in Maine and returned to the University of Illinois to pursue his Master's degree in the fall of 1956 and worked as a field

geologist for the U.S. Geological Survey in the summer of 1957, based out of Denver, mapping in the Ouray Quadrangle in the San Juan Mountains of Colorado.

In 1957, Drs. John W. Rodgers and John A.S. Adams encouraged Ted to enroll in the advanced degree program at Rice University. Ted began his coursework for a Ph.D. at Rice University in September of 1957, while completing the writing of his master's thesis titled *A textural and mineralogical study of hornblende granite [Maine]*, for which he was awarded a Master's degree from the University of Illinois in 1958.

In December of 1957, Ted married Kathryn in Michigan. They visited his family in Chicago for a few days and then moved to Texas, fulfilling a promise Ted had made to himself during his childhood, to live his life in Florida or Texas once he was "grown up," away from the terrible winters of the north.

Ted spent the summer of 1958 mapping geology in the mountains outside of Ouray, Colorado. In September of 1959, Ted took a position as an Assistant Professor at the Lamar College of Technology in Beaumont, Texas, where he taught numerous geology courses as well as field camp, while also working for Shell Oil Company in the summers of 1959 and 1960 mapping in central and western Montana and Wyoming, including parts of Glacier National Park. In 1964, he finished his Ph.D. His dissertation was titled *Chemical and mineralogical variations in the radial dikes of the Difficulty Creek Intrusive Center, San Juan Mountains, Colorado.*

He taught at Lamar until 1963, when he joined NASA, at the Manned Spacecraft Center in Houston, as Chief of the Geology & Geochemistry Branch of the Science Directorate. He participated in the early design and testing of lunar equipment and exploration techniques. He was responsible for the design and implementation of the astronaut field-training program and related responsibilities, including lunar-mission development, and provided physical science support on the design and construction of the Lunar Receiving Laboratory. He was also responsible for press relations, implementation of the geochemical laboratory, and administration of a large interdisciplinary team of scientists and outside contractors. He taught geology and lunar-sampling methodology to the original Apollo astronauts, taking them to numerous locations around the world, such as Iceland, Hawaii, and other places where the geology might approximate that on the soon-to-be-visited moon. One such location was Meteor Crater, Arizona, where, last I heard, a photo of Ted and the original astronaut trainees hangs in the Visitor's Center.

Although Ted was unassuming about his own public relations, it is to NASA's detriment that Ted's role and his impact on the early NASA build-up to the first lunar landing in 1969 were never appropriately acknowledged, even during the anniversary celebrations a few years ago. Looking back, Ted would have said that it was "just politics and not to be taken too seriously," a common philosophy in his later career as well.

Once, during a trip with his team of astronauts to the Cascade Range in Oregon, a newspaper reporter asked about the possibility of dormant volcanoes in the Cascades erupting in the near future. Ted reluctantly admitted that Mount Hood could indeed erupt again, and soon, since the region was overdue. When asked what would happen if it did, Ted said that Portland probably would be covered in ash. The news story of NASA's chief geologist predicting that Mt. Hood may bury Portland in ash ran in several major newspapers the following day. Later that day, Ted was sternly advised by NASA to stick to discussing only lunar geology in future briefings. As we all know, in 1983, Ted's reluctant prediction came true, although it was nearby Mount St. Helens, not Mount Hood.

A few years later, in 1970, Ted left NASA "in order to do more geology than paperwork." He joined General Crude Oil Company, Division International Paper Corporation, Houston, Texas, as Manager of Mineral Exploration and was responsible for planning, contract negotiations, supervision, and evaluation of major mineral exploration programs within the United States and overseas.

I first met Ted while I worked at General Crude and after GC was acquired by International Paper. He made major mineral discoveries in Alaska (Red Dog, etc.) and also administered overseas projects located in Australia, Jamaica, Bolivia, and Canada, and provided consultation to other departments concerning alternate-energy resources, such as coal-lignite, oil shale, and geothermal energy, and early considerations on associated environmental matters. He also participated in the DOYON land negotiations in Alaska with the Native American tribes.

I remember being present in a meeting once with Ted and a senior manager (a petroleum engineer), who, while being briefed by Ted on the recent results of one the mineral exploration projects in Alaska that Ted was managing, demanded vehemently that Ted give him the azimuth of a particular drill hole after Ted indicated it had none. Ted calmly responded that when a drill hole is vertical it has no azimuth. The red-faced manager departed muttering to himself. Ted just smiled and rolled his eyes.

In 1978, Ted joined Watts, Griffis and McOuat, Inc., (WGM), Houston, Texas, as President of the U.S. subsidiary of a Canadian mining consulting group. He was a member of the boards of WGM's U.S. and Canadian corporations and was responsible for activities within the U.S. and for management of major mineral exploration programs in Alaska, New Mexico, Arizona, Colorado, California, Nevada, South Dakota, Georgia, and Mexico.

In 1983, Ted left WGM to form a new company (Campbell, Foss, and Buchanan, Inc. [CF&B]) with me and an ex-staff member of WGM. He served as Chairman of the Board, Vice President, and also as a Senior Partner. CF&B engaged in domestic and international natural resource management, involving all phases of mineral exploration, mining economics and analyses, and groundwater evaluation. Investigations included exploration programs, reserve analyses, and appraisals and acquisitions for the mining, financial, industrial, and banking communities. In 1986, after screening numerous properties for a Norwegian-Swiss consortium and making new discoveries in the vicinity of one property, the consortium formed Norse Windfall Mines, Inc., near Eureka, Nevada, where CF&B served as the Project Manager and Principal Consultant. Ted served as leader of the CF&B management team that initiated project development, arranged project financing for gold and silver mining and heap-leach extraction, and a multiple mine-central mill project. He also served as a financial and operations consultant, primary negotiator for lease acquisitions, and chief administrator for mine development and production, and was the representative of the Project Manager on the Norwegian-Swiss Joint-Venture Management Committee. CF&B departed the mine project as a result of disagreements with the Joint Venture.

Ted then accepted a teaching position at the University of Houston—Clear Lake City, as Adjunct Professor in Geology and taught graduate-level courses in environmental geology and hydrology over the ensuing three years. In 1989, however, Ted was enticed to join a local environmental consulting company, Envirocorp Services & Technology, Inc., as Director of Geology and Ground Water, where he participated in projects relating to deep-well injection of hazardous waste, groundwater supply, groundwater contamination and remediation, flow and transport computer modeling, environmental assessments and audits, and underground storage tank removal and remediation.

In 1991, I joined DuPont Environmental as Regional Technical Manager and needed to build up the staff with reliable and sound professionals to serve in five sections: Geology, Environmental Services, Deep Well, and Design and Construction Engineering. I recruited Ted to be Manager of the Geology Section. He helped to select and manage 15 to 20 geologists and hydrogeologists during implementation of numerous environmental programs, including RFIs, RIs, FSs, pre-transaction assessments, modeling studies, and served as a DuPont representative on a large Superfund technical committee. He later served as the lead on a major groundwater assessment of a large petrochemical plant in Louisiana and as a strategic reviewer of technical reports for the DuPont

Corporate Superfund Steering Committee. Ted also served as a regular guest lecturer for the Institute of Environmental Technology (IET) in Houston, Texas (see http://www.ela-iet.com/ie03000.htm).

Ted's post-graduate training included the following short courses: Carbonate Sedimentation, University of Miami; Overseas Consulting, Rice University; and Practical Approaches to Ground-Water Hydrology and Contamination (The Pettyjohn Course), at the Oklahoma State University Stillwater, Oklahoma.

His professional registrations and memberships included American Institute of Professional Geologists (C.P.G. No. 6393), The Geological Society of America (Fellow), Society of Economic Geologists (Fellow), AIME—Society of Mining Engineers, Houston Geological Society, and OSHA Supervisor and Manager Certificate.

Ted's awards and associated accomplishments included a Southern Fellowship at Rice University, 1962; research grants from the Geological Society of America and a Sigma Xi Superior Achievement Award, 1963–1964; and National Aeronautics and Space Administration, Washington, D.C., 1969, Certificate of Special Commendation.

He published a number of technical papers on various geological subjects involving paleontology, vulcanology, precious metal mineralization, and on many environmental subjects. He prepared or contributed significantly to hundreds of publications, project reports and economic assessments over the years. He also chaired many conference sessions (for examples, see http://www.aipg-tx.org/anmviewer.asp?a=24, and http://www.ela-iet.com/HGSGAER77.pdf). It was clear to many of his associates that Ted was bankable.

Ted's experience spanned almost 50 years in a range of projects on environmental geology, hydrogeology, groundwater flow, transport and geochemical modeling, natural resource management, supervision and management of large technical groups, contract negotiation and natural resource economics, with specialization in CERCLA and RCRA-driven projects in large industrial sites and mining districts. These activities were combined with university teaching at graduate and undergraduate levels as well as guest lecturing for continuing education programs, such as at the IET, the University of Wisconsin, University of Alaska, University of Texas, University of Alabama, the AAPG 50th Anniversary Meeting, and at the International Press Corps with Neil Armstrong in Reykjavik, Iceland, during the 1960s.

He was also a person of many entertaining stories, most of which were based on his experiences. A doting father, he spent many hours with his three children through the years and more recently with his grandchildren. His oldest son, John, works in marketing for Hewlett Packard, based in Idaho. His youngest son, Bill, followed his father into environmental geology as a profession. Ted's daughter, Diana, is an urban wildlife biologist for Texas Parks and Wildlife in the Houston area.

Toward the end of his life, Ted remained interested in geological projects and was often called in for consultation on new mineral exploration projects. Two weeks before his death, I asked Ted to attend a screening of our presentation on recent projects in Georgia and Guyana. He was in good spirits, although noticeably weak. I asked him if he was up to the meeting. He said, "Of course! Aren't I always?" As was usual in previous projects where Ted and I worked together, his well-considered insight was invaluable. His capacity for work, for helping others in their time of need, his enthusiasm, and overall compassion made for an outstanding professional partner and friend. Ted was also capable of stern admonishments, when appropriate. Once, when asked whether we should pursue criminal charges against an ex-associate for allegedly stealing gold from one of our projects, he said, "Why should we? He will get what's coming to him, sooner or later. He will carry the weight of what he has done for the rest of his life."

Ted's likes and dislikes were specific and without apologies. He enjoyed the singing of the Irish Tenors and Barbara Streisand (if not her politics), the acting and presence of Jamie Lee Curtis and Dolly Parton, and the writing of Arthur C. Clarke and Tony Hillerman. He also enjoyed America's Cup Sailing, crossword puzzles, chicken-fried steak, and, of course, hunting and fishing. He didn't think much of religious zealots, most Democrats, most politicians, the press, and some of the positions taken by NOW. But he was fair-minded to all and philosophical about his social opinions. In this day of diversity and gender sensitivity, he would have made a good politician as well, in the likes of President John Adams of years past.

When one adds up the qualities of Ted's life, one concludes that he was a loving husband, father, and grandfather. He was also a gentleman and about the best friend and professional partner one could have. He was direct and honest and like an older brother I never had. What more could one ask in a man? But Ted is gone now. Only his memory remains. I miss him. I still need his advice and counsel, and I am sure those of you who knew him well feel the same.

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