

## **Randal M. “Randy” Brush**

**EDUCATION:** M.S., Petroleum Engineering  
Stanford University, August 1980

B.S., Chemical Engineering, with honors  
Rice University, May 1978

### **WORK EXPERIENCE:**

*May 1995 - Present*  
*William M. Cobb & Associates, Inc.*  
*Senior Vice President*

- Specializes in reservoir management and simulation studies to define remaining oil and gas reserves and provides ultimate recovery estimates by predicting reservoir performance under alternate development plans and various reservoir drive mechanisms
- Recent projects include several simulation-based waterflood evaluations of both sandstone and carbonate reservoirs; reserves certification using probabilistic techniques; CO<sub>2</sub> miscible and immiscible flood evaluations of both domestic and international properties; analytical screening studies of waterflood candidates; the successful unitization of an East Texas Field waterflood; and serving as an expert witness for drainage issues related to the Austin Chalk , Cotton, Valley, and Travis Peak formations

*1991 - April 1995*  
*ARCO Alaska - Prudhoe Bay Field*  
*Senior Staff Engineer*

- Responsible for the development planning, production forecasting, reserves evaluation, data collection, equity and facility-sharing negotiations for five new fields (15 - 60 MMBO reserves each) in the Prudhoe Bay area
- Advised ARCO management on issues related to production facility sharing with other working interest owners in the Prudhoe Bay area
- Coordinated \$4MM/year R&D program supporting Prudhoe Bay development, including areas of reservoir description, simulation, and geological analysis

**1989 - 1991**

***ARCO Alaska - West Sak Field  
Area Engineer***

- Supervised 10-12 professionals in the development of West Sak heavy oil field through reservoir description, reservoir simulation, technology development (including waterflood, miscible flood, and completion technologies), economic evaluation, and field testing

**1987 - 1989**

***ARCO Alaska - Kuparuk Field  
Lead/Staff Reservoir Engineer***

- Responsible for initiating Kuparuk Field's equity redetermination
- Developed several co-owner buyout proposals

**1983 - 1987**

***ARCO Alaska - Prudhoe Bay Field  
Senior/Lead Engineer***

- Developed detailed, 60-well simulator for miscible gas project
- Evaluated economics of the \$700MM Prudhoe Bay NGL/EOR project
- Developed analytical and simulation-based computer tools used to maximize Prudhoe Bay waterflood performance

**1980 - 1983**

***ARCO E&P Technology  
Research Engineer***

- Performed reservoir engineering analysis of an oxygen in-situ combustion project

**TECHNICAL AND PROFESSIONAL SOCIETIES:**

- Society of Petroleum Engineers (SPE) - Session Chairman at 1999, 2000, 2001, 2002, and 2003 Annual Technical Conference and Exhibition
- Society of Petroleum Evaluation Engineers

**REGISTRATION:**

- Registered Professional Engineer, State of Texas

**PUBLICATIONS:**

- Brush, R.M., Davitt, H.J., Aimar, O.B., and Whiteside, J. M.: “Immiscible CO<sub>2</sub> Flooding for Increased Oil Recovery and Reduced Emissions.” Presented at the SPE/DOE Improved Oil Recovery Symposium, Tulsa, Oklahoma, April 3-5, 2000 SPE 59328
- Brush, R. M.: “Bias in Engineering Estimation.” Journal of Petroleum Technology (February 1982)
- Bird, J. A., Brush, R. M.: “An Analysis of Alaska’s New Severance Tax Law” presented at the International Arctic Technology Conference, Anchorage, Alaska, May 29 – 31, 1991, SPE 22170

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