

Alan A. Burzlaff, P.E.
Managing Partner / Reservoir Engineer



MHA Petroleum Consultants, LLC
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EDUCATION

- B.Sc., Engineering Physics, Colorado School of Mines
- Graduated with High Honors

PROFESSIONAL PROFILE

Forty years of petroleum engineering experience including:

- Reserves Evaluation, Reporting and Reservoir Simulation
- Waterflood Evaluation, Design, Waterflood Surveillance and Optimization
- Steamflood Design and Optimization
- Gas Storage and Compressed Air Energy Storage (CAES)
- Thermal Recovery Process Selection and Application
- International Petroleum Development Studies
- Petroleum Engineering Course Instruction
- Well Test Design, UIC Testing and Pressure Transient Test Analysis
- Unitization and Equity Determination Studies
- Property Evaluation and Economic Analysis

WORK EXPERIENCE

MHA PETROLEUM CONSULTANTS

(2009 – Present) **Managing Partner**

Responsible for consulting projects and in charge of reservoir engineers, geologists and support staff. Manager for projects providing geoscience, reservoir engineering, thermal recovery, reservoir simulation and reserves reporting. Prepare and certify annual reserves estimates and reports. Supervise engineering consulting projects performed by multidisciplinary staff. Evaluated major CA asset sales for acquisition. Directed engineering aspects of large feasibility study associated with using a depleted natural gas reservoir for air storage in a CAES application. Provided well site support for well testing and EPA UIC regulatory compliance testing. Designed and analyzed pressure transient and step rate tests.

SERCO, INC. AND SI INTERNATIONAL INC.

(1995 – 2009) **Director**

Director of Petroleum and Environmental Division operations for Serco and SI International, Inc. Responsible for coordinating petroleum engineering work and quality control. Prepared annual year-end reserves reports and audits. Evaluated California heavy oil properties for application of cyclic and steam drive operations. Engineering consultant on numerous property acquisitions, reserves studies and petroleum exploitation evaluations.

Conducted reservoir engineering tasks associated with preparation of equity redetermination studies for the U.S. Department of Energy (DOE) at Naval Petroleum Reserve No. 1 (NPR-1), Elk Hills Field, CA. Supported DOE NPR-1 office in planning and arranging for privatization of NPR-1. Resulted in the largest government privatization in history.

INTERA INFORMATION TECHNOLOGIES, INC.

(1993 – 1995) **Manager**

Managed office staff of seven professionals. Responsible for management of Department of Energy contract providing reservoir engineering support services to the Naval Petroleum Reserves in California, Elk Hills Field.

(1990 – 1993) **Senior Consultant**

Project manager and industry course instructor (Pressure Transient Analysis, Advanced Well Testing). Analyzed pressure transient tests for wells in U.S., North Sea, Middle East (Arabian Oil Company) and South America, including horizontal well buildup tests. Performed horizontal well simulation study (Eclipse) of a fractured shale reservoir. Prepared study of current horizontal well technology and a manual of standard methods for horizontal well transient testing. Conducted development evaluation and steamflood project design for a giant Russian heavy oil field in Kazakh, S.S.R. Evaluated exploration discovery potential for Vietnamese offshore blocks. Conducted reservoir simulation study of a light oil steamflood project for the Department of Energy.

JERRY R. BERGESON & ASSOCIATES, INC.

(1989 – 1990) **Senior Petroleum Engineer**

Conducted numerous field studies and reserve evaluations in the Rocky Mountain region. Evaluated Stevens Zone reservoir waterflood in Elk Hills Field for Department of Energy. Built 2-D and 3-D simulation models of a waterflood project to understand historical performance and predict ultimate oil recovery. Performed study of future petroleum discoveries in targeted area of Williston Basin for gas transmission company.

TENNECO OIL E & P

(1977 – 1989) **Sr. Petroleum Engineering Specialist**

Directed reservoir engineering effort in the San Juan Basin. Prepared acquisition evaluations and conducted field studies for the Rocky Mountain region. Designed and forecasted recovery for a major Stevens sand waterflood (Yowlumne field, California). Responsible for the reservoir engineering of steam drive projects in Kern River Field, California.

PROFESSIONAL MEMBERSHIPS

Registered Professional Engineer, State of California, #P1386

Society of Petroleum Engineers (SPE)

Past Technical Editor, SPE Editorial Review Committee

PUBLICATIONS

1. Burzlaff, Alan A., "Unitizing and Waterflooding the California Yowlumne Oil Field", SPE paper #11685 presented at the 1983 California Regional Meeting, Ventura, CA; 23-25 March 1983.
2. Burzlaff, Alan A., Harris Jr., B.R, "Thermal Simulation of Elk Hills Light-Oil Steamflood Pilot", SPE paper #24036 presented at the 1992 Western Regional Meeting, Bakersfield, CA; 30 March – 1 April 1992.

3. Burzlaff, Alan A., "Unconventional Oil from California's Monterey Formation - Exploitation Results", SPE paper #169508 presented at the 2014 Western North American and Rocky Mountain Joint Meeting, Denver, CO, April 17-18.
4. Sarwaruddin, Mohammad, Burzlaff, Alan A., "Effect of In Situ Emulsification on Heavy Oil and Water Relative Permeability", SPE-185657 Conference Paper for the SPE Western Regional Meeting, Bakersfield, CA, April 23-27, 2017.