

SAM J. SHOEMAKER, JR., B.Sc., MAusIMM
Senior Mining Engineer

BACKGROUND

Sam Shoemaker is an experienced mining engineer with operating experience in iron, copper and gold mines. He subsequently specialized in detailed mine planning and mine design for open pit operations of Cleveland Cliffs Inc. where he recently held the position of Chief Mine Planning Engineer. Sam has highly developed computer skills and is an experienced user of various mining software packages including Vulcan, Surpac, and Whittle.

EXPERIENCE

Shoemaker Mining Services Inc.
September, 2007 to present
Senior Mining Engineer

Since becoming an independent consultant associated with Micon, Sam has been responsible for the open pit mine design aspects of a wide variety of Micon's study and evaluation projects, including:

- Aurora Energy Inc, Newfoundland, uranium mine prefeasibility study;
- Cleveland Cliffs Inc. Empire Mine, Michigan, iron ore pellet long term plan;
- Gold mine acquisition target, Venezuela, resource and reserve validation and NI-43-101 report;
- Arctic Platinum, Finland, feasibility study;
- Whittle pit optimizations for various clients in gold, nickel, platinum, palladium, and uranium;
- Iron mineral resource estimate, Peru, resource estimate and NI-43-101 report;
- Several iron ore due diligence studies at various locations in North and South America;
- Open pit mine planning including pit design and production scheduling in gold, silver, nickel, platinum, palladium, iron ore, and uranium.

Cleveland Cliffs Inc., Ishpeming, Michigan
February, 2002 to August, 2007
Chief Mining Engineer; Chief Mine Planning Engineer

Responsible for all mine engineering and long range planning activities at the six mining operations of Cleveland Cliffs in North America. This included overseeing and developing long and short range mine plans, economic optimization, 10K ore reserve statements and

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audits, feasibility studies, geologic and grade estimation modeling, and risk analysis. Specific projects have included new long and short range, economically optimized mine plans; Whittle pit optimization projects at Hibbing Taconite, United Taconite, Northshore Mining, the Empire Mine, and Wabush Mines; and reorganization of all mine planning activities across the entire company. Other activities included engineering contract management and due diligence studies.

Directly supervised two engineers while indirectly supervised 40 mine engineers and staff at Cleveland Cliffs North American operations.

Cleveland Cliffs Inc., Palmer, Michigan
January, 2001 to February, 2002

Chief Mine Engineer (Empire Iron Mining Partnership)

Responsible for all mine engineering activities at an open pit iron mining operation. Managed the conversion from Medsystem-based mine planning to a Vulcan-

based system. Rapidly developed new mine plans in order to evaluate future operating scenarios which allowed a timely economic decision to be made concerning future mine activities. Responsibilities included all short and long range mine planning, geology, ore control, implementation of mine plans, surveying, mine reclamation and mine permits. Worked closely with the mill in order to ensure a correct blend to maximize plant productivity and operation. Directly supervised nine engineers, technicians and surveyors.

Cleveland Cliffs Inc., Hoyt Lakes, Minnesota
February, 1998 to December, 2000

Chief Mine Engineer (LTV Steel Mining Company)

Responsible for all mine engineering activities at an open pit iron mining operation. Evaluated, selected and implemented a new mine planning system which greatly improved the productivity of the mining engineering department. Responsibilities included all short and long range mine planning, geology, ore control, implementation of mine plans, surveying, tailings basin design and operation, mine reclamation and mine permits. Worked closely with the mill in order to ensure a correct blend to maximize plant productivity and operation. Directly supervised 10 engineers, technicians and surveyors.

Phelps Dodge Chino Mines Company, Santa Rita, New Mexico
October, 1997 to January, 1998

Long Range Planning Engineer

Responsible for all long range mine planning at the Chino copper mine in southwestern New Mexico. This included checking and validation of geologic models, development of mine economics for pit optimization, various pit optimization studies, detailed long range mine plans, numerous mine plan scenarios, and presentation of the results to senior management.

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Cobre Mining Company, Hanover, New Mexico
January, 1996 to September, 1997
Surface Mine Superintendent

Responsible for the management of all surface mining activities at the Continental open pit copper mine. This included directing the daily operations of the mine contractor, mine planning and ore control, and interfacing with other departments including the mill and underground operations. Worked closely with the mill superintendent to maintain an ore hardness that was within the grinding capability of the plant.

October, 1994 to December, 1995
Mine Planning Engineer

Responsible for completing geologic models, reserve estimates, economic analysis, slope designs, pit optimization, pit design, long term scheduling, short term scheduling and reserve validation.

ManTech Environmental Technology, Ada, Oklahoma
February, 1992 to September, 1994
Project Scientist

Applied geologic modeling techniques as developed in the mining industry to the characterization of subsurface groundwater contamination.

Western Hog Ranch Company, Gerlach, Nevada
September, 1990 to January, 1992
Mine Superintendent/Chief Engineer

Managed and supervised 35 employees in the mining department. Responsibilities included all mining, crushing and leach operations. This open pit mining operation was a small multi-pit gold mine.

FirstMiss Gold, Inc., Golconda, Nevada
February, 1988 to August, 1990
Planning Engineer

Developed phased, incremental and ultimate pit designs for the Getchell open pit gold mine. Worked closely with plant operations to maintain a very narrow blend of ore types as required by the mill.

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TRC Resources, Inc., Redding, California
July, 1983 to November, 1987
Project Engineer

Responsibilities included all mine engineering duties for a small underground exploration project.

Cooksley Geophysics, Inc., Redding, California
January, 1983 to August, 1983
Engineer

Developed a system of computer programs for use in reflection and refraction seismics.

EDUCATION

B.Sc., Mine Engineering, Montana College of Mineral Science and Technology, 1982

PROFESSIONAL MEMBERSHIPS

Montana EIT # 7665
AusIMM Member
SME Founding Reregistered Member
SME Mining and Exploration Executive Committee member
SME Strategic Organization and Governance Committee member

SPECIAL TRAINING

- Looking Glass Experience, Center for Creative Leadership, Greensboro, North Carolina, 2005.
- Basic and Advanced Crystal Ball Training, Decisioneering, Ishpeming Michigan, 2005.
- Chronos and IDS Training, Maptek, Ishpeming, Michigan, 2003.
- Conditional Simulation, Maptek, Denver, Colorado, 2002.
- Vulcan Advanced Training, Maptek, Ishpeming, Michigan, 2001.
- Teams Training, Phelps Dodge, Hurley, New Mexico, 1997.
- Minesight Training, Mintec, Tucson, Arizona, 1995.
- Medsystem Advanced Training, Mintec, Tucson, Arizona, 1995.
- Vulcan Basic Training, Maptek, Denver, Colorado, 1994.
- Integrated Mining and Land Reclamation Planning, University of Wisconsin-Madison, Reno, Nevada, 1991.
- Indicator Kriging, Montana College of Mineral Science and Technology, Reno, Nevada, 1991.

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- A short Course on Geostatistical Ore Reserve estimation, Montana Tech, Reno, Nevada, 1990.
- Surpac Training, Mine Development Associates, Reno, Nevada, 1989.
- MSHA Instructors Course, Mine Safety and Health Administration, Winnemucca, Nevada, 1989.
- Medsystems Training, Mintec, Tucson, Arizona, 1988.

PUBLICATIONS

- Shoemaker, S. J., 2000: "Mining Challenges for the New Millennium at LTV Steel Mining Company." Presented at the SME Minnesota Subsection, Duluth, Minnesota, April 13, 2000.
- Shoemaker, S. J., Ross, R. R., Burden, Ph.D., D. S., and Busche, Ph.D., F. D., 1992, "Computer Assisted Geologic Modeling as a Site Characterization Tool." Presented at GeoTech 92, Denver, Colorado, August 29 - September 1, 1992.
- Bastian, R. J., and Shoemaker, S. J. 1990, "Computerized Production Planning, Grade Control, and Surveying at FirstMiss Gold, Incorporated, Getchell Mine." Presented at Gold Tech 4, Reno, Nevada, September 10 - 12, 1990.