KENT J. MCGREW, P.E.

EDUCATION

M.S./Mineral Dressing Engineering/ Montana Tech/ 1974
B.S./ Mineral Dressing Engineering/ Montana Tech/ 1968
US Army Engineering OCS / Fort Belvoir, VA / Commissioned Dec, 1969 2nd Lieutenant/ US Military Certified Master Blaster / Engineering Staff Officer and Combat Engineer MOS.

PROFESSIONAL REGISTRATIONS/ CERTIFICATIONS

Professional Engineer -Metallurgical Engineering/ AZ 26146
Professional Engineer -Metallurgical Engineering/ CA -1742

PROFESSIONAL AFFILIATIONS

Society for Mining, Metallurgy, and Exploration, Inc.
Chairman of Fourth Western Regional Conference on Precious Metals and the Environment, Sept. 1990
Past Chairman of the Black Hills Section, SME

PUBLICATIONS

"Selenium Reduction via Conventional Water Treatment", Kent J. McGrew, Dr. Jack Murphy, Doug Williams
"Industrial Wastewater Treatment Methodology", in publication, Kent J. McGrew

EXPERIENCE SUMMARY

Mr. McGrew is an expert metallurgical engineer with over 40 years of experience worldwide, serving the mining and mineral processing industry. His expertise includes metals recovery and ion exchange process development and design. He has engineered full-scale and pilot-scale recovery systems for various metals, including gold, uranium, radium, aluminum, copper, zinc, tungsten, vanadium and mercury, as well as non-metallic's including ammonium nitrate and phenols. He has national and international experience in mine operations and mineral processing facilities construction and operations.

REPRESENTATIVE EXPERIENCE

Westmont Gold, Jefferson, South Carolina. Developed the process for the removal of selenium from the Brewer Pit water. Mobilized and operated pilot plant for stabilization of selenium bearing sludge from the original water treatment plant, design and procurement of a 1,000 gpm water treatment plant and consulting services for neutralization of the leach heaps. Pilot plant was later refurbished and sold to Unical for precipitation of seleno-cyanate from sour waters at their Rodeo, California refinery.

Berkeley Pit, Butte Montana. Design and construction of a 1,000 gallon batch treatment plant for all of the reject waters from the Berkeley Pit New Technology Treatment Demonstration Program. Designed and constructed this plant in the Congress, Arizona facility and transported and installed as contracted. Reagent supply and instrumentation support continued throughout the life of this project.

Newmont Gold Quarry, Carlin Nevada. Design consulting, construction and operation of a 50 gpm co-precipitation plant using ferric hydroxide precipitation for removal of arsenic and selenium. Consulted on modifications to a plant and operated the last stages of the development work to finalize design criteria for Cominco Engineering for the construction of a 25,000 gpm treatment facility for a pit dewatering project.

Rawlins Incinerator Plant, Dear Park, Texas. Design and construction of a 10 gpm pilot plant for selenium and antimony removal. This project encompassed laboratory development for the process used by Rawlins and the design criteria for the pilot plant. The plant was constructed in the Congress, Arizona lab and pilot plant facility and transported, installed and operated for the client.

Various Metals Processing and Recovery Projects. Completed process review and throughput verification of a Cyanidation Plant in Guanavaci, Mexico; Capital and operating cost estimate for a selenium ion exchange plant for Unical in Rodeo, CA; and review of a platinum and osmium recovery scheme for Ford Motor Company. Involved in the review of The CalEnergy Zinc Project for approximately one year.

Wharf Resources (USA) Inc., Annie Creek Gold Mine, Lead, South Dakota. Metallurgical Superintendent for gold heap leach design recovery plant and assay lab facilities for the 10,000 TPD Annie Creek Gold Mine. Completed design and construction of plant and leach pad expansions that increased production from 20,000 to 100,000 oz/y. Designs for winter leaching and installation of a 750 Hp solution heating plant innovated winter leaching in the harsh South Dakota climate, turning the Annie Creek Gold Mine into a year-round producer. Duties also included initiation and management of studies for water balance and evaporation modeling, hydrology studies and ultimate fate predictions for possible leakage of cyanide, selenium, arsenic, and nitrate in-stream studies for NPDES permit application, load/unload design and permitting, and land application of neutralized leach solution for disposal. The position also required interfacing with state and local governments regarding plans and specifications for new construction, and presenting amendments to the mining permit before the South Dakota Board of Minerals and Environment. During six years in this position, an excess of 300,000 ounces of gold were produced, and numerous properties were evaluated for acquisition by Wharf.

In-Situ, Inc., Mining/Recovery Division, Laramie, Wyoming. Supervised professional and technical staff with overall project responsibility for mining services, contract R&D and in-house process development efforts. Duties also included the marketing of division services. Project Manager for in-situ gold leaching application for CRA Ltd., Australia. Responsible for the management of the R & D work for gold leaching, recovery, and ground water restoration chemistry for deeply buried alluvial deposits resulting in a non-cyanide gold leaching patent. (Patent No. 4,557,759). Project Manager for the start-up of a gold processing plant and evaluation of processing alternatives for plant expansion, Liberia, West Africa. Provided process development and metallurgical expertise for a wide variety of commodities, including copper, uranium, gold, silver, tungsten, and molybdenum..

Fluor Mining and Metals, Inc., San Mateo, California. Metallurgical Laboratory Manager. Metallurgical test programs for porphyry copper ore from the Philippines, uranium shale from Sweden, and numerous gold ores from the western United States. Also had responsibility for development of lab facilities, initial equipment selection and purchase and marketing of the test lab services. Principal Metallurgical Engineer for conceptual engineering phase of a 4,000 TPD native copper concentrator for Kennecott Ray Mines Division. Supervised design and construction of a 2,000-yd/day gravity concentrator for a placer gold mine in Liberia. Managed process development test work for the Hinobaan property in the Philippines, and completed capital cost estimates for 100,000 and 200,000 TPD Dexing copper project in the People's Republic of China. Work included pilot plant staging overseas and interfacing with the design staff for the writing of process design criteria for the concentrator and low-grade leach operations.

Chemical Separations Corp. (CSC), Oak Ridge, Tennessee. Project Manager for Metal Recovery Applications. Involved in all aspects of piloting, design, construction, and start-up of both fixed bed and CSC's unique Continuous Counter Current IX equipment. Metal applications included, aluminum recovery from bright dip solutions, in-situ uranium recovery operations to include the start-up of the Bingham Canyon CCIX uranium plant for IX extraction from copper leach, tungsten and vanadium recovery from heap leach solutions for Ranchers Uranium, copper extraction for Dow Chemical, and radium recovery via softening and co-precipitation with barium chloride for Argon National Laboratories, and molybdenum recovery from tailings water at the Climax Henderson Mine in Colorado. Provided engineering for the field start-up division for 11 ammonium nitrate extraction plants and start-up for the Vistron ammonium nitrate plant in Lima, Ohio. This plant is currently owned by BP and is still in operation.

Anaconda Copper Company, Weed Heights, Nevada. Senior Metallurgist at 27,000 TPF copper concentrator, vat leach, and dump leach facility. Relief superintendent for crusher, acid plant, and concentrator. Initiated liquid ion-exchange pilot plant and feasibility study for solvent extraction and electrowinning plant construction. Chief Metallurgist for 1,000 TPD copper concentrator at the Caribou Mine in New Brunswick, Canada. Research Engineer at Anaconda Research Labs, Tucson, Arizona. Underground miner in Butte, Montana.

ReagenTech, Inc. / Denver Process Technologies, Inc., Congress Arizona. President (RTI) / Operating Vice President ((DPTI). Provided professional engineer consulting services to the mining and wastewater treatment industries regarding compliance chemistry and treatment processes. Managed treatability test lab, pilot plant construction and rental services, and oversee reagent manufacture, transportation, and application

engineering for heavy metal precipitants and polymers. Completed pilot plant construction and operation, sludge stabilization laboratory and fieldwork, instrumentation R&D, construction and installation in water treatment plants and copper-molybdenum separation plants.

RTI's clients include circuit board factories and plating shops. As part of the supply of precipitation reagents in water treatment facilities of the these factories, RTI has installed instrumentation on the water treatment plants for precipitant addition for the following: Nelco Technologies, Inc., Tempe, AZ; Dynaco, Tempe, AZ; Quality Printed Circuits, Phoenix, AZ; Gilbert Engineering, Phoenix, AZ; Continental Circuits, Phoenix, AZ; Photo Design, Phoenix, AZ. A measurement technique, invented by RTI, generates a linear signal for sulfide ($S^{=}$), which is the basis of instrumentation that RTI builds for the Copper/Molybdenum industry. These tools are installed at: Gibraltar Mine, BC, Canada; Bagdad Copper Mine, Bagdad, AZ; Sierrita Copper Mine, Sahuarita, AZ; Andina Molybdenum Plant, Solidario, Chile; Chuquicamata Molybdenum Plant, Chuquicamata, Chile; SASOL R&D, SA. Application of this technology to the sulfurization of oxide ores and the addition of xanthate collectors to flotation circuits is in progress.

Recent Experiences;

Laboratory testing, design, and construction of a 10 TPH ilmenite recovery pilot plant in Paraguay for CIC Resources Inc. This plant produced 100 tons of high purity ilmenite concentrate using magnetic and gravity separation for electric smelter testing in South Africa. This process recovers ilmenite from the lateritic soil horizon covering the eastern half of Paraguay. This is the first successful recovery of ilmenite from the laterite/clay soil horizon and will eventually generate the largest recoverable titanium reserve in the world. Project work included full scale plant design, capital and operating cost estimates, and 43-101 submittal.

Process engineering, metallurgical testing and design of the Roca Honda uranium plant for Strathmore Resources, LLC. This project has changed ownership to Energy Fuels, Inc. and is currently on hold during transition to the new ownership/management. Pennoni is currently engaged to complete the design of the water treatment plant for dewatering the Roca Honda Uranium Mine, located north of Grants, NM. The process plant included automated filter presses for dewatering tails with a "tube conveyor" to the tailings disposal cell and stacking and spreading systems within the tailings cell.

Ortiz Gold Mine pre-feasibility study which included metallurgical testing and design of a gravity/flotation mill for gold recovery. The plant design included automated filter presses for dewatering tails, conveyor transport to the tailings disposal area and stacking and spreading equipment. The study included CAPEX/OPEX estimates and financial analyses for the determination of the overall project viability. This project is now conducting baseline studies and preparing permit application documents for submission in late 2013.

Wastewater reduction for the Lost Creek Uranium, Rawlins, WY. Work included pilot testing, basic engineering to include flow sheets, plant layout, major equipment list, capital, and operating cost estimates.

Platinum group process review with correlation of fire assay and chemical/instrument analysis results to handheld ZRF field analyzers.

Extensive title research in preparation for sale of the Welsh Family Trust Golden Wave and Senate Metallurgical's Golden Tread patented claims. These properties are adjacent to the Congress Gold Mine and being sold as a 14K oz resource, drilled out by Republic Goldfields on the Golden Wave.