



R J Bowell

Corporate Consultant (Geochemistry & Geometallurgy)

Education: Doctor of Philosophy, University of Southampton, 1988-1991
Bachelor of Science, chemistry/Geology, Class 1 Honours Degree, University of Manchester, 1985-1987

**Registrations/
Affiliations**

Chartered Chemist, RSC (1997); Chartered Geologist, GSL (2001); Chartered Professional European Geologist (2002)
Accreditation auditor, Cyanide code (2005); Past President, International Association of Applied Geochemists (2008 to 2009); President (2005-07); VP (2003-2004); Distinguished International Lecturer (2010-2012) Fellow (1999); Member, Int. Mine Water Association (assoc. editor, MWE); Fellow Royal Society of Chemistry; Fellow Geological Society of London; Fellow Institute of Mining, Metallurgy & Materials; Fellow Society of Economic Geology; Member Mineralogical Society of GB; Member Mineralogical Association of Canada; Member Int. Minewater Association; Member Geological Society of Namibia Associate Editor, Geochemistry, Exploration, Environment, Analysis; Associate Editor, Mine Water and Environment Fellow, Geological

Specialization:

Application of chemistry and mineralogy in mining projects. This includes metal ore, uranium and coal processing; geochemical exploration; geometallurgy, resource evaluation, water chemistry and treatment of mine waste.

Expertise:

Eur. Geol. R. J. Bowell Ph.D., C. Chem MRSC, C. Geol FGS FIMMM

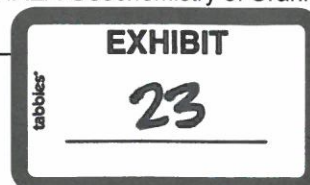
Geochemist with 30 years' experience. Background in applied geology in tropical and deeply weathered terrain's and mining consulting in the fields of due diligence, financial and technical audits, process chemistry, environmental geochemistry, environmental engineering and mineralogy. Specializes in the application of chemistry and mineralogy to solve engineering problems.

Employment Record:

1995-Present	Steffen Robertson and Kirsten (UK), Geochemist, Senior Geochemist (1997); Principal Geochemist (1999); Corporate Consultant (2009)
1994-1995	BHP; Minorco; M'aden; Research Fellow, Aberystwyth and Open University.
1991-1994	Natural History Museum, Senior Research Fellow in Applied Geochemistry. (50% of time contracted to BHP Minerals, Africa & Middle East Group).
1988-1991	PhD Student, University of Southampton; Geologist, Ashanti Goldfields
1987	Graduate, TCL, Namibia

Publications:

Publications in the field of mineralogy, process chemistry, and applied geochemistry, ARD, contaminated land and water treatment available on request. Co-author of technical publications on gold mineralogy and processing (CRC); water management in the mining industry (UK-EA); and arsenic stabilization (MIRO). Senior Editor Reviews in Mineralogy & Geochemistry v79 on Arsenic geochemistry. Contributor to Encyclopaedia of Geochemistry v.13 (Economic Geology) and to IAEA Geochemistry of Uranium.



Languages: English, Spanish (Business)

Key Experience: ISR, Metals

Base *Metal* and Precious Metal

- Review of Gunison Copper Project (2017-2018)
- Independent Engineers Report, Florence Cu-ISR Arizona (2011)
- Geometallurgy and Process Assessment Cu-Au potential ISR, Azerbaijan (2013)
- Process chemistry, Matchless mine evaluation (Cu-Zn), Namibia (2013-2014)
- Process chemistry, Au leaching Evander Goldfields, South Africa (2012)
- Process chemistry, Presika Cu-Zn project, Northern Cape, South Africa (2012)
- Process chemistry, Titon Cu project Northern Cape, ,South Africa (2010)
- Process chemistry, ISR on old Mineria mines for Cu, Zn, Ag; Spain (2006)
- Process chemistry, Florence Cu-ISR project, Arizona (2003, 2011)
- Research into process chemistry for ISR on Front Range Gold Project for Au, Wyoming (2002)
- Process chemistry, In Situ and heap leach copper project, San Manuel, Arizona (4/01-11/01)

Uranium

- Assessment of Kazatomprom ISR operations, Kazakhstan (2017-2018)
- PFS, FS operations review, Lance uranium project Wyoming (2016-2018)
- PEA, Centennial Uranium, Colorado (8/13-6/14)
- PEA, Dewey-Burdock ISR, South Dakota (9/13-4/14)
- PEA, Wyoming ISR (2013-6/14)
- Review & DD Uranium-ISR, Kazakhstan for Luxembourg company (12/11-9/12)
- PEA assessment, Mile 72 Uranium, Namibia (2013)
- Evaluation of the Zarechnoye and Akbastau ISR projects, Kazakhstan (11/08-3/11)
- Due Diligence, Gas Hills project (4/11-9/11)
- ISR assessment, Atomic Energy licences, Niger (2010)
- Evaluation of Dalur ISR, Russia (3/09-6/09)
- ISR assessment, Madaouela, Niger (2009)
- Scoping Study, U-ISR, Engo Valley, Namibia (3/09-4/10)
- Evaluation of ISR projects at Khiagda in Russia (4/08-9/10)
- Process chemistry for vanadium and uranium recovery, assessment of ISL potential and environmental chemistry, Trekkopje operation, Namibia (10/06-3/07)
- Geochemistry, Well design and process recovery assessment of Uranium- ISL project, Kazakhstan (11/06-1/07)
- Scoping study for hydrogeochemical and hydrogeological studies on a potential ISL operation in Wyoming for a Confidential client (5/06-6/06)
- Project evaluation, potential ISR operation, Colorado (2/07)
- Geochemistry for ISL-U project, Inkai, Kazakhstan (3/07-5/07)
- Evaluation of ISL-U & autoclave-U projects, Ukraine (8/07-12/07)
- Process chemistry and mineralogy, Stratz and Hem ISL projects, Czech Republic (4/96-10/97)

Key Experience: Geometallurgy (non-Uranium)

Africa

- Assessment of assay and gold recovery problems from heap leach, Zimbabwe (12/95)
- Process chemistry and mineralogy for nickel-cobalt-copper-PGE's Rustenburg, South Africa (4/97-5/98)
- Mineralogy and process chemistry of PGM and base metal sulfide ores, Hartley mine, Zimbabwe (3/98-4/2000)
- Mineralogy for base metal extraction from an oxide ore, Skorpion zinc mine, Namibia (6/98-11/98)
- Mineralogy, various PGM-Ni projects, Tanzania (2003)

- Metal recovery from base and precious metal slags, residues and flue dust, Tsumeb smelting and processing operations, Namibia (5/05-ongoing)
- Geometallurgy, zinc recovery from clay rich waste, Skorpion Zinc, Namibia (6/08-11/08)
- Geometallurgy, O'kiep project, Northern Cape South Africa (2009-2010)
- Kamana Au, Mali (3/08-5/10)
- Mineralogy and process chemistry for complex Li-Be-Ta-Nb-REE-F pegmatites, Namibia (2/11-10/12)
- Mineralogy and process chemistry for polymetallic deposits, Kuene, Namibia (4/2010-2012)
- Processing assessment, Chingola copper project (2/12-11/12)
- Process assessment, Truzon gold project, Liberia (4/13-2/14)
- Kaokoland Mining, Namibia. Process assessment and heap leach design for copper and gold projects, Namibia (5/14-ongoing)
- Brandberg Li-Cs-Ta-Sn-Be pegmatites, scoping study (2/15-ongoing)

Asia

- Metallurgical and mineralogical assessment of copper and gold project as part of pre-feasibility and feasibility studies, Kazakhstan (12/95-7/96)
- Mineralogy and process chemistry, Udokan Cu project (2010)
- Mghart Au project, Armenia (2010-2011)
- Optimization study, Arava Copper project, Israel (2010-2012)
- Heap Leach optimization study, Copler, Turkey (2015-2016)
- Heap Leach optimization study, Kisladag, Turkey (2016-2017)

Europe

- Metallurgical problems, geology and mineralogy of lead-zinc ore body, Mazzron, Spain (4/96)
- Process chemistry and mineralogy for base metal (zinc-lead), Mazzaron, Spain (4/96)
- Process chemistry and testwork for metal recovery from base metal waste in Bulgaria (9/00-12/00),
- Process chemistry and mineralogy, Nalunaq Au project, Greenland (4/08-2/09)
- Process assessment, RTB Bor Serbia (2012)
- Geometallurgy and Process assessment Cu-Au porphyry, Serbia (2014)

North America

- Assessment of wollastonite resource, Osgood Mountains, Nevada (6/97-11/97)
- Zinc, Cd, Ge and Ga recovery from hydrometallurgical waste, OCK, Bulgaria (10/99-01/01)
- Process chemistry and mineralogy for gold recovery by autoclave and cyanidation processes, Getchell, Nevada (2/97-4/99 & 8-10/01),
- Process chemistry of gold recovery and cyanidation of sulfide ore, Getchell, Nevada (2-7/01),
- Process chemistry and leaching optimisation studies including aeration assessment for Copper-SX-EW and assessment of bio-oxidation pre-treatment, Tonopah project, Nevada (4/01-9/01),
- Process chemistry and evaluation, complex oxide and sulfide heap leach project, Florida Canyon (5/02-3/03)
- Geometallurgy and heap leach optimization low grade heap, Comstock gold (4/03-3/06)
- Process chemistry and optimization evaluation, As-rich Au ores and complex oxide HL ores, Newmont technical services, Gold Quarry, Nevada (4/99-2/01)
- Process chemistry and evaluation, Standard mine heap leach facility and control of cyanide solutions. Apollo Gold, Nevada (7/02-4/03).
- Process chemistry and heap leach optimisation studies including issues related to ore grind, encapsulation, cyanide and lime consumption, alternative reagent and leaching conditions, bio-oxidation pre-treatment for Placer Dome PLS on heaps and ores from Bald Mountain, Cortez and Getchell mines in Nevada (6/02-2/04),
- Process optimization, Penoles operations, Mexico (10/08-2/11)
- Assessment of gold recovery, El Chanate, Mexico (1/09-9/09)
- Long Canyon, Au-heap leach, Nevada (2010)
- Process chemistry, thiosulfate-heap oxide Cu-Au project, Nevada (2011)
- Process chemistry, porphyry Cu-Au project, Arizona (2011)

- Optimization study, Carlota Cu heap leach, Arizona (2012)
- Gold geometallurgy, Cripple Creek, Colorado (2013)
- Geometallurgy and Vanadium
- Assessm2m polyelectrolytic solution production, American Vanadium, Nevada (2/2013-2/2-2015)

South America

- Process chemistry and leaching optimisation studies including aeration assessment for Copper-SX-EW project, Chile (5/01-6/02)
- Process chemistry, copper heap leach, Radimiro, Chile (04/05-06/08).
- Gold geometallurgy study, Verte Norte, Colombia (12/08-5/08).

Australia

- Process chemistry review, Potash solution mining, Kalium Lake, Australia (5-8/18)

Key Experience: Lithium & Salt Solution Mining projects

Africa

- Mineralogy & process chemistry, design and operation bench scale and small pilot plant to recover Li, Sn, Be, W, Cs and Ta-Nb Bikita tin mines, Zimbabwe (5/98; 4/02-5/03)
- Process chemistry Lake Natron solution and evaporation salt mining, Kenya (4/99-10/99)
- Mineralogy and process chemistry for complex Li-Be-Ta-Nb-REE-F pegmatites, Namibia (2/11-10/12)
- Brandberg Li-Cs-Ta-Sn-Be pegmatites, scoping study (2/15-3/16)
- Review of Potash solution mining, Ethiopia (11/15-ongoing)

Europe

- *Geochemical* characterization *Li-Be-B-salt brines, Cornwall, UK (03/00-09/01)*
- *Geochemical* characterization, Boulby Potash, UK (8/01-10/01)
- Geochemistry for Kazan solution mining project, Turkey (10/02)
- Review, Lithium processing options, Europe (6/17)
- Review, Lithium technologies for project, UK (7-9/17)

North America

- Process chemistry, lithium & salt recovery from brine, Paradise Peak, Nevada (10/99-03/02)
- Process chemistry, Lithium project, Nevada (2011-2012)

South America

- Process chemistry, Salar de Rincon Lithium project, Argentina (6/2010-9/16)
- Process chemistry review, Lithium-rich brines, Bolivia & Argentina (2/11-5/11)
- Process chemistry, Salar de Rio Grande Salt project, Argentina (8/2010-2012)
- Process chemistry, Potash project, Brazil (11/11-11/12)
- Review, solution mining for Li and SOP, Argentina (2/13-5/13)
- Process chemistry, Potash solution mining, Argentina (10/13-4/14)
- Process chemistry review, Lithium brines in Argentina and USA (9/15-11/16)

Asia

- Process chemistry review, Haijpar brine workings, India for KCl, MgCl₂, CaCl₂, NaCl, Br (6/17-ongoing)

Key Experience: Uranium projects

Africa

- Geochemistry for tailings water treatment, Rössing uranium mine, Namibia (11/97-5/98)
- Process chemistry for vanadium and uranium recovery, metallurgy, heap leach design, geology, exploration geochemistry, mineralogy, assessment of ISL potential and environmental chemistry, Trekkopje operation, Namibia (10/06-10/08)
- Process chemistry, mineralogy, geology, exploration geochemistry and environmental chemistry, Rystkuil and Beaufort West projects, South Africa (2/07-7/08)
- Geochemistry assessment, Bakouma project, Central Africa Republic (7/07-12/07)
- Process chemistry and evaluation, Uranium-calcrete & sedimentary uranium deposits, southern Botswana (3/08-4/10)
- Exploration geology & strategy, Letlhakane deposit, Botswana (3/08-ongoing)
- Review of oxide-uranium project, Zambia (8/08)
- Review and exploration for a complex uranium-phosphate deposit, Bakouma region, Central African Republic (08/08-4/10)
- Geological assessment of uranium projects in Argentina for Xenon (8/08-10/09)
- Review process chemistry, U-mineralogy and geology, Projects in Niger for Niger Uranium (8/08)
- Review process chemistry, Uranium calcrete project, Namibia (9/08)
- Review U- Projects in Niger for Xenon (10/08)
- Scoping study, Marenica project, Namibia (05/09-2010),
- Madaouela project, Niger (9/09-ongoing, PEA completed 2011, PFS completed 2013, FS initiated 2013)
- Uranium exploration for Urafields in Namibia and South Africa (9/09-10/12).
- Scoping Study, U-ISR, Engo Valley, Namibia (3/09-4/10)
- Regional review, Uranium projects in Africa focused on Namibia, Botswana, Niger & Zambia (2/12-11/13)
- Uranium exploration program, Niger, Pan African Minerals (1/12-4/14)
- Uranium exploration program, Meob Bay, Namibia (2013)
- Uranium exploration program, Brandberg, Namibia (2012-2015)
- PEA assessment, Erongo Uranium, Namibia (2013)
- PEA assessment, Mile 72 Uranium, Namibia (2013)
- PEA Assessment, Rossing North, Namibia (2015-ongoing)
- PEA Assessment, Mutanga project, Zambia (4/2016)
- PEA assessment, Karoo uranium, South Africa (6/16-9/16)
- PFS assessment, Mutanga project, Zambia (11/16-ongoing)

Asia

- Geochemistry, Well design and process recovery assessment of Uranium- ISL project, Kazakhstan (11/06-1/07)
- Geochemistry for ISL-U project, Inkai, Kazakhstan (3/07-5/07)
- Evaluation of the Zarechnoye and Akbastau ISR projects, Kazakhstan (11/08-3/11)
- Review & DD Uranium-ISR, Kazakhstan for Luxembourg company (12/11-9/12)

Europe

- Process chemistry and mineralogy, Stratz and Hem ISL projects, Czech Republic (4/96-10/97)
- Review of geochemistry for Wismut Mine, Germany (with SRK Vancouver office, 5/96 to 4/98)
- Evaluation of uranium project, Poland (8/07-2/10)
- Evaluation of ISL-U & autoclave-U projects, Ukraine (8/07-12/07)
- Evaluation of two autoclave-U facilities, underground and open pit mines (8/07-12/07)
- Metallurgical assessment of Uranium-Gold-Molybdenum project, Elkon, Russia (6/07-5/10)
- Evaluation of Uranium properties, Slovakia (3/08-3/09)
- Exploration geochemistry for ISR projects in Russia and Kazakhstan (4/08-1/10)
- Exploration geochemistry for uranium in Mali, Confidential client (9/08-4/09)

- Evaluation of ISR projects at Khiagda in Russia (4/08-9/10)
- Evaluation of a rubble bio-leach, heap leach and VAT leach projects, Transbaikal, Russia (6/08-6/11)
- Evaluation of Dalur ISR, Russia (3/09-6/09)
- Uranium metallurgy review, Salamanca project, Spain (2012)

North America

- Mineralogy, environmental and process chemistry of uranium-nickel-arsenic rich ore & tailings, Cigar Lake Mine, Canada (4/99-11/99)
- Evaluation of process chemistry for vanadium, molybdenum and uranium recovery, Canon City, Colorado (2/06-6/06)
- Evaluation of vanadium and uranium recovery in tank leach and pressure leach circuits, Confidential client, Colorado & Texas (1/06-7/07)
- Scoping study for hydrogeochemical and hydrogeological studies on a potential ISL operation in Wyoming for a Confidential client (5/06-6/06)
- Project evaluation, potential ISR operation, Colorado (2/07)
- Assessment of Bio-leach and underground mining project U-Th-REE, Elliot Lake, Canada (8/08-4/11)
- Due Diligence, Gas Hills project (4/11-9/11)
- PEA, Centennial Uranium, Colorado (8/13-6/14)
- PEA, Dewey-Burdock ISR, South Dakota (9/13-4/14)
- PEA, Wyoming ISR (2013-6/14)

South America

- *Geochemistry and closure design for the Poços Caldas Uranium mine and mill complex, Minas Geras, Brazil. (11/04-7/06)*
- *Exploration for Uranium in Columbia, Confidential client (4/06-5/07)*
- Evaluation of Uranium projects, Argentina (Uranio & Sur America, 2011-2012)
- PEA, Rio Grande Uranium project, Argentina Uranio (2011)
- *Review of the Macusani project, Peru (2014)*

Key Experience: Rare Earth Elements

Europe

- *Mineralogy and process assessment, Motzfeldt, Nb-Ta-REE-U pegmatites, Greenland (6/10-9/11)*
- *Mineralogy of alkaline intrusions and associated pyrochlore deposit, Kola Penninsular, Russia (6/07-8/07)*
- *Geometallurgy of REE-hosting clay deposits by heap leach and ISR, Ukraine (8/14-ongoing)*

Africa

- *Review of mineralogy, Phalaborwa REE ore (9/01)*
- *Assessment of REE mineralogy, Confidential project in Tanzania (8/10)*
- *Evaluation of Nb-REE, Panda Hills, Tanzania (9/11)*
- *Evaluation of REE project in Madagascar (8/11-4/12)*
- *Geometallurgy, REE-hosting clay deposits, Uganda (10/12-8/13)*

North America

- *Scoping study for U-REE project, Mountain Pass, Nevada (8/06-4/07)*
- *Assessment of Bio-leach and underground mining project and application to REE extraction, Elliot Lake, Canada (8/08- ongoing)*
- *Due Diligence, Avalon REE project, Canada (9/11- 3/12 with SRK Denver)*
- *Due Diligence, desk based study of REE deposits in Europe and Africa (3/12-7/12)*
- *Geometallurgy, confidential Be-REE project- heap leach, stope leach, ISR and conventional technologies, Utah (2012-2013)*
- *Geometallurgy, Mountain Pass project, California (2012-2013)*
- *Geometallurgy, Be-REE recovery from pegmatite and coal waste (2013)*
- *Geometallurgy, Nb-REE deposit, Elk Creek, Nebraska (6/13-8/17)*

South America

- Geochemistry and assessment Morril Ferreiro Th-REE deposit, Minas Gerias, Brazil. (11/04-7/06 with Geotech, Brazil and SRK Fort Collins)
- REE evaluation of a large Potash project in Brazil (1/12-11/12)
- Serra Verde project, Brazil (11/14-1/16)

Key Experience: Litigation work

Europe

- Review of water chemistry as part of a case for the anglers association against the coal authority, (1994)
- Review of uranium project data for a licence dispute, Kazakhstan (2012)

North America

- Expert Witness, Copper Flat project (1996-1999)

South America

- Expert Witness, Las Brisas project (2010-2012)
- Expert Witness, Colombia for Freshfields (2012)

Australia

- Expert Witness, Confidential Uranium project litigation (2013-2014)

Asia

- Expert Witness, Uranium ISR, Kazakhstan (2015)
- Expert Witness Uranium project, Kazakhstan (2016)

Key Experience: Arsenic projects

Africa

- Review of arsenic treatment options, Eastern Transvaal Consolidated, Avgold, South Africa (9-11/98),
- Arsenic trioxide disposal, Tsumeb smelter, Namibia (10/95-4/96)
- Design and evaluation of arsenic treatment options, Geita Gold Mine, Tanzania (8/01-10/01)
- Review of arsenic treatment options, Ghanaian operations, Ashanti Anglogold (9/08-5/10)
- Assessment of arsenic treatment and disposal options for closure, Obuasi, Ghana (7/14-201)

Europe

- Chemistry for arsenic removal for groundwater and pit lake water at the Salsigne gold mine, France (7/96 – 3/97)
- Arsenic treatment, Sappes project, Greece (1999)
- Assessment of arsenic removal from metallurgical process streams, Olympias gold project, Greece (2005)

North America

- Chemistry for arsenic removal for groundwater and pit lake water at the Getchell mine, Nevada (8/95 – 3/99),
- Stabilization of arsenic from metallurgical waste, Getchell mine, Nevada (1999-2002)
- Review of arsenic treatment options, Cameco Uranium Mines, Saskatchewan, Canada (4/99-12/99)
- Arsenic specialist, Giant Mine closure workshop, funded by DIAND, Northwest Territories, Canada (3/2000)
- Arsenic treatment plant evaluation, City of Elko, Nevada (5/02-6/02)
- Review of arsenic control and treatment, Glamis Gold, Nevada (6/02-11/03)
- Arsenic treatment plant, Atlanta gold project, Idaho (11/03-4/05)
- Water treatment assessment for arsenic, California (6/07)

- Assessment of Arsenic geochemistry, Barrick Goldstrike Gold Mine, Nevada (2009-12/11)
- Disposal of As and Hg bearing residues, Donlin Creek, Alaska (6/14-8/14)
- Assessment of As and Sb attenuation, Boulder Valley dewatering project, Nevada (6/14-2015)
- Stibnite project, Idaho (2015-ongoing)
- Arsenic hydrogeochemistry and treatment options, Long Canyon project, Nevada (2016-ongoing)
- Stibnite project, Idaho (2016-ongoing)
- McCoy/Cove, Nevada geochemical assessment (2017-ongoing)
- Ruby Hill, Nevada geochemical assessment (2017-ongoing)

Key Experience:, Hydrogeochemistry, Mine Waste Studies Operating facilities

Africa

- Environmental geochemistry review, Tsumeb Corporation (8/95-6/96)
- Environmental Assessment of ARD, ZCCM properties, Copperbelt (11/97-1/99)
- Assessment and Evaluation of ARD, Ngezi project, Zimbabwe (2/98-11/98)
- Assessment and Evaluation of ARD, Kabanga project, Tanzania (6/98-9/98)
- ARD assessment-evaluation, Nkomati Nickel Mine, South Africa (3/97-11/01)
- ARD geochemistry and testwork for South Deeps Mine, South Africa (1/02-6/02)
- Assessment and Evaluation of ARD open pit and groundwater geochemistry and waste rock geochemistry Geita Mine, Tanzania (2/97-12/04),
- ARD geochemistry and testwork for Nkomati nickel project, South Africa (3/02-4/04)
- Environmental geochemistry, ARD, baseline & ongoing monitoring hydrogeochemistry. Geita Gold Mine, Tanzania (1997 to 2009)
- Review of geochemistry for closure study, Bulyanhulu gold mine Tanzania (3/98-5/98)
- Hydrogeochemistry and ARD assessment-evaluation, Kriel open cast and power station, South Africa (4/97-2/98)
- ARDML assessment, Rystkuil, South Africa (4/07-8/08)
- ARDML assessment, Oromine, Senegal (2009-2010)
- ARDML assessment, Redback mining, Ghana (20110)
- Review of ARDML assessment for all African Barrick Operations, Tanzania (2009)
- Assessment of ARDML at Four mouth balled base metal sulfide operations in Namibia (6/09-3/10)
- Review of ARDML processes at Obuasi gold mine, Ghana (5/09-2/10)
- Review of water management system, Geita Gold mine, Tanzania (11/08-12/09)
- ARD-metal leaching geochemistry and testwork for Siguri gold mine, Guinea (4/08-12/09)
- ARDML assessment, Iron Ore projects, Congo (2011-2012)
- ARDML assessment, Tasiast, Mauritania from waste rock, pit walls, tailings (10/11-6/14)
- ARDML assessment, North Mara mine, including pit lake evaluation Tanzania (2011-2013)
- ARDML assessment, Boa Fe, Morocco (2013)
- ARDML assessment, Putu, Congo (2013)
- ARDML assessment, Idiapriem, Ghana (2013)
- ARDML assessment, Tambao, Burkina Faso (2013)
- ARDML assessment, Lumwana, Zambia (2013-2016)
- ARDML assessment, Buzwagi, Tanzania (2014-2017)
- ARDML review, Essakane, Mali (2015-ongoing)
- ARDML assessment, Rystkuil, South Africa (10/16-2017)

Asia

- Hydrogeochemistry of saline groundwaters in the vicinity of the potential gold mine at Mahd ad Dhab, Saudi Arabia (3/96)
- ARD geochemistry and testwork, base and precious metal deposits, Angouran, Iran (11/02-3/03)
- ARD geochemistry and testwork for the Sukhaybarat gold mine, Saudi Arabia (1/02-6/02)

- Hydrogeochemistry and evaluation of ARD remediation options for three potential gold mines in Kamchatka (1/96 – 11/96)
- ARDML study, Reko Diq Pakistan (12/06-2010)
- ARDML study, Bozshakol copper deposit, Kazakhstan (2010-4/12)
- ARDML study, Khariga copper, Kazakhstan (2010-2011)
- ARDML study, Kazak gold (2012)
- ARDML study of Hrzadan Fe deposit, Armenia (2012-2014)
- ARDML assessment, Kounrad Cu deposit, Kazakhstan (8/14-2016)
- ARDML assessment, Syrymbet, Kazakhstan (9/16-ongoing)

Europe

- ARD Geochemistry, Lisheen, Ireland (8/95 -8/96)
- Passive treatment pilot scheme design and evaluation of performance at abandoned coal mine sites in the Pelenna district, South Wales (8/95-6/96)
- Geochemistry of mine water as part of a closure plan for the St. Salvy Mine, France (9/95-5/96)
- Hydrogeochemistry, hydrogeology and dewatering studies of a potential zinc mine at Lisheen, Ireland (8/95 –4/97)
- Hydrogeochemistry and remediation of ferruginous discharge from abandoned and operating coal mines in South Wales (8/95 –6/97)
- Hydrochemistry of groundwater and ARD in the Polkemmet coalfield, Scotland (5/96-10/96)
- Hydrogeochemistry, monitoring and contaminated land remediation of the abandoned Avoca Mine, Ireland (8/96 – 6/97)
- Review of geochemistry for Wismut Mine, Germany (3/96)
- Hydrogeochemistry and static ARD study for three gold-base metal mines in Greece as part of a new mine development (11/96-3/97)
- Hydrogeochemistry of Sappes project, Greece, and assessment of chemical stability of paste backfill material (10/00-5/02)
- Hydrogeochemistry and static ARD study for three gold-base metal mines in Greece as part of a new mine development (11/96-3/97)
- ARD scoping study and water treatment assessment for Rio Tinto Mines, Spain (9/96-9/98)
- ARD scoping study and water treatment study for Las Cruces project, Spain (11/96-3/97))
- Hydrogeochemistry of Sappes project, Greece, and assessment of chemical stability of paste backfill material (10/00-5/02)
- ARDML study on tailings disposal, Nalunaq, Greenland (3/06-12/06)
- ARD assessment, Aguas Teindas base metal mine, Spain (9/06-5/07)
- ARDML study, Malmbjerg, Greenland (8/05-9/08)
- ARDML study, Fedorovo PGM deposit, Russia (9/07-12/08)
- ARDML study, Sahavaara, Sweden (2010-ongoing)
- ARDML study, Pellivuoma, Sweden (2010-2013)
- ARDML study, Hannukainen, Finland (2011-2014)
- ARDML assessment, Koza gold projects, Turkey (2011-2013)
- ARDML assessment, Cople, Turkey (2011-2014)
- ARDML assessment, Yenipizar, Turkey (2011-2013)
- ARDML study, Corcoesto project, Spain (2012-2013)
- ARDML study, Valve project, Spain (2012-2014)
- ARDML study, Currahinualt Au project, Ireland including paste assessment (2013-ongoing)
- ARDML study, Kisladag, Turkey (2016-2017)

Pacific

- Hydrogeochemistry, storage and discharge of hot saline groundwaters at the operating Emperor Mine, Fiji (9/95 – 12/97) and 9/10-3/12

North America

- Hydrogeochemistry, main underground mine, Getchell Mine, Nevada (10/96 – 9/99)
- Hydrogeochemistry, Turquoise Ridge development, Getchell Mine, Nevada (6/96 – 9/99)
- Hydrogeochemistry and water management of flooded pits at the operating Getchell Mine, Nevada (8/95 – 8/04)
- ARD scoping study for a potential copper mine at Copper Flats, New Mexico (7/96 – 4/99). This work has also involved a comprehensive review of previous studies and management of long term field scale geochemical kinetic testwork into the stability of waste rock piles and tailings material. Additionally, the project has involved being present as an expert witness at public enquiries into the mine development.
- Hydrogeochemistry, San Manuel copper mine complex, Arizona, USA (5/00)
- Arsenic and Waste Rock Geochemistry, Giant Mine closure project, Canada (12/99-6/01)
- Reviewer, ARD assessment, Leviathan Mine, California (6/98-1/99)
- Hydrogeochemistry of lateritic nickel project, Wind Pass, Oregon (1997)
- ARD geochemical modelling and prediction, Hecla Hollister project, Nevada (3/03),
- ARDML assessment, Mount Hope Mo-porphyry deposit, Nevada (2005-2008)
- ARDML study, Goldfields, Nevada (2007-2009 with SRK Reno)
- ARDML study, Creston Molybdenum deposit, Sonora, Mexico (2008-4/12)
- Assessment of Hydrogeochemistry, Goldstrike Gold Mine, Nevada (2009-4/12)
- ARDML study, Centennial Gold Mine, Nevada (2009-2014)
- ARDML assessment, Long Canyon gold, Nevada (2009-2014; 2016-ongoing)
- ARDML assessment, Hycroft gold mine, Nevada (2008-2014)
- ARDML assessment, Round Mountain Gold Hill and WEX expansions (2008-ongoing)
- ARDML assessment, Gemfields, Nevada (2010-2016)
- ARDML assessment, Mineral Ridge, Nevada (2011-2014)
- ARDML assessment, Copper Flat project, New Mexico (2010-ongoing)
- ARDML assessment, Haliburton baryte deposits, Nevada (2012-2016)
- Assessment of Cemented Paste Backfill, Goldstrike Gold Mine, Nevada (2010-3/2011)
- ARDML assessment, Coeur Rochester PAG dump assessment, Nevada (2014-ongoing)
- ARDML assessment, Stibnite project, Idaho (2015-ongoing)
- Baseline geochemical assessment for McCoy/Cove project, Nevada (2017-ongoing)
- Baseline assessment, Grassy Meadows project, Oregon (2017-ongoing)

South America

- Assessment and Evaluation of ARD, Los Pelambres, Chile (9/97-4/2000)
- ARD mineralogy and geochemistry for open pit and waste rock studies, Pascua-Lama project, Chile-Argentina (8/99-11/99)
- ARD geochemistry, El Abra, Chile (4-8/01)
- ARD geochemistry Chiliquimbe, Chile (6-8/01)
- ARD Geochemistry, Pierina project, Peru (7/03-8/03)
- ARD geochemistry, pit lake and waste rock management plans and control and prediction of pyrite oxidization associated fires, Cerrejón Coal Operations, Colombia (11/02-10/03),
- Update project for mine expansion on pit lake, tailings and waste rock geochemistry, Pelambres Mine, Chile (3/03-7/07)
- ARD geochemistry, remediation and mine waste stabilization, Cerro de Pasco and Lago Junin mining areas, Central Highlands, Peru (4/00-7/00)
- ARD geochemistry, pit lake and waste rock management plans and control and prediction of pyrite oxidization associated fires, Cerrejón Coal Operations, Colombia (11/02-10/04)
- ARDML assessment, Los Filos, Mexico (2016 – ongoing)
- ARD assessment, Cerro Moro Argentina (2016-ongoing)
- ARD assessment, Alta Norte, Brazil (2016)
- Hydrogeochemistry, Veladero gold operation, Argentina (9/17-ongoing)
- Hydrogeochemistry, Renova, Brazil (2017-ongoing)

Other

- Organise and participate in ARD workshops in the UK (7/95); Czech Republic (9/96); South Africa (11/97 & 9/01); Romania (12/00); UK (11/02); Ireland (8/03); Nevada (12/11); Kazakhstan (03/14); Russia (9/15); Turkey (4/16)

Key Experience: Waste Rock Geochemistry Characterization, Closed or Abandoned Mining Operations

Europe

- Assessment of ARD and water treatment for the abandoned Parys Mountain complex (07/05-05/06)
- Evaluation of geochemical risk associated with the WHO site in North Cornwall (07/05-09/05)
- Risk assessment for Cornish metal mines, UK (06/05-10/05)
- Cwm Rheidol tailings and mine waste closure assessment. Wales (7/03- 2/04)
- Survey of mine wastes in central Wales to determine ranked risk assessment approach to evaluating environmental impacts (9/95-4/97)
- Geochemistry of acid rock drainage, rock pile stability and mine water chemistry as part of a closure plan for the St. Salvy Mine, France (9/95-5/96)
- Hydrochemistry of groundwater and ARD in the Polkemmet coalfield, Scotland (5/96-10/96)
- Hydrogeochemistry, monitoring and contaminated land remediation of the abandoned Avoca Mine, Ireland (8/96 – 6/97)
- ARD scoping study and water treatment assessment for Rio Tinto Mines, Spain (9/96-9/98)
- Cwm Rheidol tailings and mine waste closure assessment. Wales (7/03- 2/04)
- Closure, reclamation and water treatment assessment for Mynddyd Parys, Wales (4/04-10/04)
- Closure, reclamation and ecotoxicity of mine waste, Cambourne-Redruth mining district, Cornwall (7/04-10/04)

North America

- Geochemistry and closure evaluation, San Manuel tailings and process plant, Arizona (11/03-08/05), for geochemistry work
- ARD geochemistry, San Manuel copper mine complex, Arizona, USA (5/00-08/06)
- Hydrogeochemistry and ARD assessment, Tonopah Copper project (4/01-4/02)
- Term contract to provide Geochemistry services and review, mine closure group, Eastern Operations, Newmont mining company (7/03-01/06)
- Reviewer, Pit Lake and waste rock studies, Tomkin Springs Closure Plan and EIS
- Arsenic and Waste Rock Geochemistry, Giant Mine closure project, Canada (12/99-6/01)
- Reviewer, ARD assessment, Leviathan Mine, California (6/98-1/99)
- Mine waste and site geochemistry, Robinson Copper Mining District, Ely, Nevada (11/98-6/02)

South America

- ARD mineralogy and geochemistry review for open pit and waste rock studies, Pascua-Lama project, Chile-Argentina (8/99-11/99)

Key Experience: Water Treatment

Africa

- Evaluation of water treatment options and ARD mitigation at the Grootelwei Mine, South Africa (2/96; 9/98)
- Geochemistry for tailings design, Panorama Resources Kakanda Mine, Democratic Congo Republic (3/97-4/98)
- Geochemistry of salt removal for water treatment and plant design, Rustenburg Base Metal Refinery, South Africa (4/97-5/98),
- Geochemistry and effluent treatment at tailings facility, Hartley Platinum Mine, Selous, Zimbabwe (9/98-6/99 with SRK Johannesburg & Harare offices), Project manager
- Geochemistry and effluent treatment, Fairview mine, Barberton, South Africa (2/99-5/99)

- Assessment and design of passive and active treatment options, Kukuluma pit, Geita Mine, Tanzania (12/00-2/01),
- Options to treat water in the Kafue and Zambezi water shed: Industrial effluents and mining related impacts (9/99-6/01).
- Process water chemistry and treatment, Trekkopje heap leach project, Namibia (6/07-2/08)
- Review of desalination project, Ashanti operations, Ghana (08/08)

Asia

- Geochemistry for tailings design, Pongkor Mine, Indonesia (8/96-2/98)
- Scoping for effluent treatment at the Goro nickel facility, New Caledonia (6/00-7/00 with SRK Brisbane, Denver and Johannesburg offices)
- Assessment of water treatment, Vatukoula Gold Mine, Fiji (9/10-6/11)

Europe

- Remediation of 10 ferruginous discharge from abandoned and operating coal mines in South Wales using active (HDS, ion exchange and EDR) and passive techniques (8/95 –6/97)
- Passive treatment pilot scheme design and evaluation of performance at abandoned coal mine sites in the Pelenna district, South Wales (8/95-6/96)
- Passive treatment evaluation and design, Garth Tonmawr colliery, Wales (11/95-6/96)
- ARD mitigation in the Polkemmet coalfield, Scotland (5/96-10/97)
- Mine water treatment, St Salvy mine, France (4/94-5/00)
- Reviewer for tailings geochemistry, Tara Mines, Ireland (5/97-9/98, appointed by Department. of Energy, Ireland)
- Water treatment scheme for dewatering of the zinc mine at Lisheen, Ireland (8/95 –4/97)
- Mine water and process water treatment, kaolin and paper operations, Cornwall, UK (8/02-10/02)
- Evaluation of sludge stabilization and stability, Wheal Jane Mine water project, Cornwall, UK (11/02)
- Cwm Rheidol tailings and mine waste closure assessment. Wales (7/03- 2/04)
- Closure, reclamation and water treatment assessment for ARD at Mynddyd Parys, Wales (4/04-10/04)
- Evaluation of water treatment options, Aguas Tenidas mine, Spain (9/03-7/05)
- Ceyelli mine water treatment, Turkey (9/04-9/04 with SRK Ankara)
- Water treatment assessment at the Avoca mine, Ireland (4/04-6/04)
- Mine water treatment, Kaolinite operation, Ukraine (9/06-5/07)
- Mine water treatment, Curraghinalt, Ireland (2016-ongoing)

North America

- Geochemistry for old tailings facility, Getchell, Nevada (8/95-2/98)
- Passive treatment pilot scheme scoping study at the Getchell Mine, Nevada (6/96 – 8/98)
- Passive treatment pilot scheme and hydrochemistry at Big Springs Mine, Nevada (6/96-11/96,)
- Evaluation and design of ARD-HDS treatment plant, Chino mining complex, New Mexico, USA (2/01-8/02)
- Water treatment assessment of passive and active methods, Rain mine, Nevada (5/02- 9/02)
- Passive treatment assessment, Tailings #2 assessment, Carlin operations, Nevada (7/02)
- Evaluation of mine water treatment requirements, Holden project, USA (3/03)
- Review of BioteQ operating system, Bisbee, Arizona (April 2003)
- Assessment and design for HDS water treatment plant at San Manuel, Arizona (6/05-2/06) and domestic water treatment (2/07)
- Passive treatment, Long Canyon Nevada (2016)

South America

- Geochemistry for tailings design, Forteleza, Brazil (7/96-12/97) with SRK Reno office

Key Experience: Environmental Impact, Mine Closure and Contaminated Land

Africa

- Geochemical consulting to AECI for inorganic and organic contaminants at several sites in South Africa (8/95-2/99)
- Geochemistry of contaminated land at a smelter, Tsumeb mining complex, Namibia (8/95-6/96)
- Geochemical consulting for operating and closed cyanide plants, South Africa (4/97-2/98)
- Assessment of mining impact on the environment for a large infrastructure project on the Zambezi River Basin (11/97-9/98)
- Geochemistry for Environmental assessment of Power Station, Gokwe, Zimbabwe (9/98-2/99)
- Geochemistry of Agrochemicals and Pesticide contamination of groundwater around factory, Zimbabwe (11/98-3/99)
- Geochemistry of cyanide contamination of groundwater around cyanide producing factory, Zimbabwe (5/99-10/99)
- Closure cost, preliminary design and assessment, Bulyanhulu mine, Tanzania (7/03-4/04)

Europe

- Closure plan for Perama Hills, Greece (January-April 1999)

North America

- Geochemistry for Closure plan for Copper Flats, New Mexico (6/96-12/96,)
- Geochemistry of nitrogen contamination, Commercial Potato Farms, Nevada (9/98-6/99)
- Geochemistry for closure of mine complexes at Robinson copper mine, Nevada, USA (5/00-10/04)
- Geochemistry and project management for closure of mine and process plant complexes at the San Manuel Copper Mine, Arizona, USA (5/00-6/06)
- Management of pit lakes, open pit closure and waste rock scheduling, Getchell Gold Mine, Nevada (9/01-9/04)
- Closure review of Newmont tailings impoundments, Nevada, USA (5/02-4/04)
- Supplemental EIS, Marigold Mine, Nevada USA (7/02-4/03)
- Geochemistry for EIS preparation, Atlanta Gold Mine, Idaho (10/03-6/06)
- Geochemistry for EIS preparation, Coeur Rochester mine, Nevada (11/04-6/04)
- Review of closure planning and issues, Bingham Canyon, Utah (6/14-10/14)

South America

- Geochemistry and closure design for the Poços Caldas Uranium mine and mill complex, Minas Geras, Brazil. (11/05-6/06)
- Geochemistry for closure, Maricunga mine, Chile (2015-2017)

Key Experience: Involvement in Feasibility Studies

Provided technical involvement in geochemistry, ore mineralogy, process chemistry and environmental assessment to feasibility studies for;

- Lisheen SEDEX lead-zinc deposit, Ireland (1995-1996)
- TVX low sulfidation epithermal gold projects, Kamchatka (1996)
- TVX mesothermal gold-base metal deposit, Olympias, Greece (1996-1997)
- TVX porphyry copper deposit, Skouries, Greece (1997)
- Al Amar gold deposit, Saudi Arabia (1995)
- Al Hajar gold deposit, Saudi Arabia (1995-1996)
- Copper Flat porphyry copper deposit (1996-1998)
- Varvarinskoye, massive sulfide deposit, Kazakhstan (1996-1997)
- Las Cruces massive sulfide deposit, Spain (1997-1999)
- Geita Au-hosted banded iron formation, Tanzania (SRK) (1997-2000)

- Kukuluma Gold Project, Tanzania (1998)
- Skorpion non sulfide zinc deposit, Namibia (1999)
- Kabanga magmatic associated nickel-cobalt-copper deposit, Tanzania (1999-2001)
- Ngezi nickel-platinum-palladium deposit, Zimbabwe (1998)
- Dunrobin Iron Oxide Copper-Gold deposit, Zambia (1997-1998)
- Carlin-type disseminated gold deposit, Turquoise Ridge, Getchell, Nevada (SRK) (1996-2004)
- Los Pelambres porphyry copper deposit, Chile (1998-2003)
- Panorama copper-cobalt tailings re-treatment, Democratic Congo Republic (1999)
- Tengke Fungamure copper-cobalt deposit, Democratic Congo Republic (1999)
- Pascua-Lama epithermal high sulfidation, Chile (1999-2000)
- Goro lateritic nickel deposit, French Caledonia (2000)
- Equatorial Tonopah porphyry copper, Tonopah, Nevada (2000-2001)
- Cerrejon coal deposit, Colombia (2002-2003)
- Sappes epithermal high sulfidation gold deposit, Greece (2002)
- Kevitsa project, Finland, Scandinavian Gold (2003)
- Sasare Iron Oxide Copper-Gold deposit, Zambia (2003-2006)
- Nkomati nickel deposit, Barberton, South Africa (2004)
- Atlanta mesothermal gold deposit, Atlanta, Idaho (2004-2005)
- Mkushi copper-gold deposit, Zambia (2004-2006)
- European Goldfields, Olympias project, Greece (2005)
- Miyabi Banded Iron Formation-gold deposit, Tanzania (2005-2006)
- European Goldfields, Skouries project, Greece (2005-2006)
- Voskhod chromite deposit, Kazakhstan (2005-2006)
- Malmbjerg molybdenum deposit, Greenland (2005- 2008)r
- Mount Hope molybdenum deposit, Nevada (2005-2008)
- Chita porphyry copper deposit, Russia (2005-2008)
- Trekkopje Uranium deposit (2006-2008)
- Elkon uranium-gold-molybdenum Russia (2006-2009)
- Rystkuil uranium, South Africa (2007-2008)
- Reko Diq copper-gold, Pakistan (2006-2010)
- Potash ISR project, Russia (2007)
- Fedorova PGM, Russia (2007-2008)
- Goldfields epithermal gold deposit, Nevada, USA (2008-2010)
- Marenica, Namibia (scoping study, 2009-2010)
- Khiagda U-ISR, Russia (PFS, 6/08-6/10)
- Zarechnoye U-ISR, Kazakhstan (PFS, 11/08-4/10)
- Oromine, shear zone hosted gold deposit, Senegal (2009-2010)
- Madaouela, Niger (Scoping study, PFS, FS 20082010-ongoing)
- Gold Bar, Carlin-Au deposit, Nevada (PFS, FS 9/10-2013)
- Arava Copper project, Israel (scoping, PFS 2010-2011)
- Bozshakol porphyry copper deposit, Kazakhstan (2010-2-12)
- Sahivaara iron deposit Sweden (2010-2014ongoing)
- Hannukainen IOCG, Finland (PFS, FS 2010-2014)
- Rincon Lithium brine project, Argentina (PFS, FS 2010-2015ongoing)
- Cerro Verde potash project, Brazil (scoping study, PFS 2010-11/12)
- Timok, Serbia Scoping study (2014)
- Elk Creek, Nebraska (2015-2015ongoing)
- Montaine d' Or, Guyana (2016-2017)
- Currahinalt, Ireland PFS (2014-2017ongoing)
- Brandberg, Namibia (2015-2016)
- Stibnite (2015-ongoing)

Key Experience: Heap Leach-Cyanide Closure Projects

North America

- Geochemistry for Closure plan for Big Springs Heap Leach, Nevada (6/96-8/96, project with SRK Reno office)
- Geochemistry for scoping of heap leach closure plan, Getchell Mine, Nevada (10/97-2/98, with SRK Reno office)
- Geochemistry for heap leach facility closure project, Toiyabe, Nevada (8/99-8/00 with SRK Reno office)
- Geochemistry for Aurora pit and heap leach facility closure projects (9/99-6/00 with SRK Reno office)
- Geochemistry for heap leach facility closure project, Griffon Peak, Nevada (2/00-9/00 with SRK Reno office)
- Assessment and preliminary design of cyanide treatment options, Colmac Mine, Northwest Territories, Canada (8/00-2/01 with SRK Vancouver)
- Geochemistry for heap leach closure projects, Robinson mining complex, Nevada (9/00-3/01 with SRK Elko & Reno offices)
- Geochemistry for heap leach facility closure project, Yankee Heaps, Bald Mountain, Nevada (9/00-4/01 with SRK Elko office)
- Geochemistry for heap leach facility closure project, Gold Acre Heaps, Cortez, Nevada (4/01-9/04, with SRK Elko office)
- Geochemistry for heap leach facility closure project, Robertson Heaps, Cortez, Nevada (10/01-3/03, with SRK Elko office)
- Geochemistry for Closure plans for LBM pad, pit 1/5 pad, pad 2 & 3 heap leach facilities. Bald Mountain, Nevada (6/04-9/04 with SRK Elko office)
- Geochemistry for Closure plan for Casino Winrock heap leach, Bald Mountain, Nevada (6/04-9/04 with SRK Elko office)
- Geochemistry for closure plans, Santa Fe, Bullfrog and Wood gulch heap leach facilities, Nevada (06/06-04/08 with SRK Reno)
- Geochemistry of process solutions and fate-transport model, Round mountain Gold mine, Nevada (5/07-11/08 with SRK Reno)
- Cyanide-nitrogen species Geochemistry, Round Mountain Gold Mine, Nevada (4/10-2/11 with SRK Reno)

South America

- Geochemistry for closure, Maricunga mine, Chile (2015-2017)

Europe

- Closure plan for Perama Hills heap leach facility, Greece (January-April 1999)

Africa

- Closure planning on gold heap leach facilities at Obuasi (Sansu) and Iduipriem, Ghana (05/08-6/10)

Asia

- Closure plans and geochemistry for the Sukhaybarat gold mine (including heap leach facility), Saudi Arabia (1/02-6/02)

Key Experience: Cyanide audits

Europe

- Review of cyanide characterization, treatment, and prediction methods as a workshop for the Association of Mining Analysts, UK (5/00)
- Technical report, cyanide audit and review of cyanide treatment with reference to the Brae Mara tailings facility failure on behalf of Dresdner (5/00-9/00)
- Cyanide audit as a precursor to accreditation, Cyanide plant, Czech Republic (10/07)

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- Cyanide audit as a precursor to accreditation, transport of cyanide from Czech Republic via Germany to West Africa (10-11/07)
- Cyanide internal audit, Rio Narcea, Spain (2008)
- Cyanide audit, Romania (2009)
- Cyanide audit, Nalunaq, Greenland (2010)
- Sasa, Macedonia (2017)

Asia

- Hambledon mining, Kazakhstan (2011)

Africa

- Cyanide audit, Geita Gold Mine, Tanzania (11/00-3/01)
- Cyanide spill assessment, Geita Gold Mine, Tanzania (2/02-6/02)

Key Experience: Exploration

Africa

- Geochemical exploration for Trio Gold in Ghana (5/96-8/98), Mali (9/97), Benin and Burkina Faso (3/97 – 9/98),
- Geochemical exploration for Nevsun in Ghana (1/97 – 5/97) and Mali (3/97),
- African Resources-Kilembe (copper-cobalt) and regional gold and diamonds, Uganda (9/96-12/96)
- Gold-shear zone deposit, Wassa, Ghana (1/97)
- Gold-shear zone/BIF, Geita Mine, Tanzania (4-6/99)
- Mineralogy of heavy mineral concentrates for diamond exploration in Angola (8/00-11/00)
- Exploration mineralogy and geochemistry of iron oxide copper gold deposits, uranium, porphyry copper, gold, diamonds and nickel. African Eagle in Mozambique, Tanzania & Zambia (6/03-12/07)
- Copper exploration, Namibia (8/07-4/12) Sintez
- Exploration geology & strategy, Letlhakane deposit, Botswana (3/08-ongoing)
- Review of oxide-uranium project, Zambia (8/08)
- Review and exploration for a complex uranium-phosphate deposit, Bakouma region, Central African Republic (08/08-4/10)
- Geological assessment of uranium projects in Argentina for Xenon (8/08-10/09)
- Uranium exploration for Urafields in Namibia and South Africa (9/09-10/12).
- Regional review, Uranium projects in Africa focused on Namibia, Botswana, Niger & Zambia (2/12-11/13)
- Uranium exploration program, Niger, Pan African Minerals (1/12-4/14)
- Uranium exploration program, Meob Bay, Namibia (2013)
- Pegmatite U-Ta-Sn-Li-Cs-Nb-Be exploration, Brandberg, Namibia (10/12-2016)
- Copper exploration review, Zambia (6/13)
- Copper exploration review, Copperzone, Namibia (2016)
- Uranium Exploration, Cobra Resources-Reptile Uranium, Namibia (2015-ongoing)

Asia

- Mineralogical and geochemical work as part of mineral exploration programs for gold shear zone, Mahd a Dhab, Saudi Arabia; (2/96-4/96)
- Mineralogical and geochemical work as part of mineral exploration programs for gold shear zone, Hajar, Saudi Arabia; (3/96-9/96)
- Mineralogical and geochemical work as part of mineral exploration programs for gold shear zone, Sukybarat & satellite prospects including Bulgar, Saudi Arabia; (3/98-4/2000)
- Polymetallic sulfide deposit, Varvarinskoye, Kazakhstan (2/96-6/96)
- Iron oxide-copper-gold project, Afghanistan (2/97)
- Mineralogy and geochemical mapping of the Sonjiapo copper porphyry, China (3/97)

- Mineralogy of Murantau gold deposit, Uzbekistan (4/97)
- Pongkor low sulfidation precious metal deposit-mineralogy and exploration geochemistry, Indonesia (4/97)
- Tin, gold, alluvial heavy mineral sands, diamonds and gemstones, India (2/98)

North America

- Carlin gold deposit, Getchell Mine, Nevada (6/98)
- Carlin gold deposit, Rodeo Creek, Nevada (9/98)
- Assessment of wollastonite resource, Osgood Mountains, Nevada (6/97-11/97)
- Exploration Hydrogeochemistry study for Getchell mine development, Nevada (3/99-9/99),
- Epithermal low and high sulfidation gold, Florida Canyon and Standard Mines, Nevada (8/02-4/03),
- Carlin and epithermal low sulfidation gold, Bald Mountain Mine, Nevada (2/03-6/05),

South America

- Mineralogy for diamond and gold prospects in the Cuiaba Basin, Brazil (7/00-4/01)
- Mineralogy for gold prospects in the Sierra Pelada area, Brazil (7/00-9/00)
- Mineralogy and geochemistry for copper-gold projects, Chile (5/01-12/01)
- Surface geochemistry and mineral alteration mapping, Cerro Corona, Peru (Goldfields). 2002-2003. Work was used for site wide exploration of the district and identified two small satellites to the main deposit.

Europe

- Review exploration geochemistry data, Las Cruces, Spain (3/99-9/99)
- Review, gold, tin and Li-Be-B brine potential, Devon and Cornwall (2000)
- Mineralogy and geochemical mapping, Loverzero, Kola, Russia (4/00-9/00)

Key Experience: Due Diligence/Audits

Africa

Cluff resources, Ghana, Tanzania & Zimbabwe (09/95-01/96)

- Anglovaal/Avgold/Eastern Transvaal Consolidated, South Africa (gold) (9/98-12/98)
- Hartley Platinum, Zimbabwe (10/98-2/99)
- African Eagle AIM listing (2004)
- Eagle Ni (2005)
- Uranium, Namibia (DD for five projects from 2007-2010)
- Uranium, CAR (2008)
- Uranium Niger (2009)
- Copper-gold project, Namibia (2009)
- Base metal project, Namibia (2009)
- Uranium project, Tanzania (2010)
- Uranium-copper-Silver project, Mali (2010)
- Base metal project, Namibia (2010)
- Base metal project, Botswana (2010)
- Gold project, Ghana (2012)
- Potash, Ethiopia (2015-2016)

Europe/Asia

- Minmet/Connary Minerals, UK, Portugal & Brazil (gold) (6/99-9/99)
- OCK Base Metal Smelter, Bulgaria (9/00-12/00)
- KCM Base Metal Smelter, Bulgaria (10/00-11/00)
- Base metal results (tin), UK (3/03-1/04)
- Uranium projects, Ukraine (2/06-5/06)
- Uranium project, Czech Republic (3/06-6/06)

- Confidential assessment of RTB Bor, Serbia (9/06-11/06)
- Uranium projects, Russia, Kazakhstan and overseas ARMZ (11/07-5/10)
- Uranium projects, Slovakia (2/08-09/09)
- Uranium project, Spain (5/2010-8/2010)
- Potash project, Spain (7/2010)
- Uranium, Spain (4-7/17)
- Uranium, Kazakhstan (10/17-ongoing)

North America

- Confidential Carlin Gold Mine, USA (6/01-8/01)
- Confidential Carlin Gold Mine, USA (8/02-9/02)
- Strata Energy, South Africa and USA (2015-2016, update in 2017)
- Nemaska Lithium Canada (4/17-ongoing)
- Gunnison ISR Cu (6/17-11/17)

South America

- Silver project, Bolivia (1996)
- Copper project, Chile (2007)
- Potash project, Argentina (2010)
- Potash project, Brazil (2010)
- Uranium project, Peru (2014)

Other

- Confidential, global mining group (base metals) (7/04-4/05)
- Confidential junior mining company – global projects (base and precious metals) (5/05-1/06)
- Confidential, global closure costs (8/06)

Key Experience: Baseline Assessment

Soil, ARD and water geochemistry as part of EIA's for mining projects for:

Europe

- Aguas Tenidas base metal deposit, Spain (9/04-ongoing)

Asia

- Erdenet copper porphyry, Mongolia, Erdenet (1-3/96)
- Varvarinskoye, polymetallic sulfide deposit, Kazakhstan, KazMinCo (4/96 – 2/98)
- Mahd d' Dhab projects (gold, zinc, polymetallic sulfides, phosphates, magnesite) Saudi Arabia (2/00-9/00)
- Asacha gold-silver deposit, Kamchatka, TVX (1/96 – 11/97)
- Reko Diq, Pakistan (2008-2009)

Africa

- Panorama copper-cobalt tailings retreatment, Democratic Congo Republic, (3/97-1/98, with SRK Johannesburg)
- Tsumeb West, Namibia (1997-1998)
- Tengke Fungamure copper deposit, Democratic Congo Republic (3/97)
- Kabanga Nickel project, Tanzania (6/96-10/98)
- Geita Gold Mine, Tanzania (4/98-9/01 with management of environmental monitoring program through to 2004)
- Trekkopje uranium, Namibia (2006-2008)
- Rystkuil, South Africa (2007-2009)

North America

- San Flippe nickel laterite, Cuba (2/01-4/01)
- Atlanta project, Idaho (10/04- 2007)
- Mount Hope, Nevada (10/05- 2010)

South America

- La Cruz silver-copper deposit, Bolivia, Billiton (9-11/95)
- Surface geochemistry and mineral alteration mapping, Cerro Corona, Peru (Goldfields). 2002-2003.
- Montaine d'Or Guyana (2016)