



STAFF PROFILE



Mariea Kartick, MSc., P.Geo.
Resource Geologist/ Project Manager

EDUCATION

- University of Toronto, Ontario, Canada / 2015
 - Master of Science, Geology
- University of Toronto, Ontario, Canada / 2014
 - Bachelor of Science (Hons.), Geology

EXPERIENCE SUMMARY

Mariea is a Professional Geologist with experience in both mining operations and international consulting. As a Resource Geologist her experience includes mineral resource estimation, technical evaluation of mining projects, independent engineering studies, risk analysis and technical documentation. In addition, she has significant experience in grade control, production sampling and QA/QC procedures from some of the world's largest open pit and underground mines and has a strong understanding of the mining value chain. Her diverse technical background also includes performing quality assurance services to various clients within the Powder River Basin coal mining district of Wyoming and research with Canada's nuclear regulatory body on uranium tailings from legacy mine sites in Ontario during her graduate studies. Mariea is a strong advocate for diversity and inclusion within the mining industry and is a board member of the Women in Mining Denver Chapter Organization.

DEPOSIT TYPES

- Cu Porphyry
- Mo Porphyry
- Volcanogenic Mn
- Base and Precious Metals

LANGUAGES

- English (fluent)
- Spanish (basic)

SOFTWARE & INSTRUMENTATION

- Vulcan (Maptek)
- MineSight 3D (Hexagon)
- Leapfrog Geo (Seequent)
- AcQuire
- GEMS (Geovia)
- Microsoft Office Suite

PROFESSIONAL ASSOCIATIONS

- Professional Geoscientists Ontario
- Society for Mining Metallurgy and Exploration
- Women In Mining USA



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PROFESSIONAL EXPERIENCE:

PROJECT	DETAILS
Manganese (Volcanogenic) Production - Open Pit <i>Mexico</i> Resource Geologist 2020	<ul style="list-style-type: none">Contributed to the successful completion of a NI 43-101 technical document (with review by QP)<ul style="list-style-type: none">Examined historic exploration, drilling portfolio, sample preparation, analyses and securityReviewed QA/QC procedures inclusive of insertion rates and data validation ensuring appropriate for technical reporting standards
Zinc Mining Production <i>Peru</i> Resource Geologist 2020	<ul style="list-style-type: none">Statistical analysis of predictive trends with zinc and associated potential economic mineralization within the deposit<ul style="list-style-type: none">Regression analysis of assay data, resource tabulation and compilation of grade tonnage curvesUpload and manipulation of drill database and ore body wireframes
Gold (Orogenic) Production - Open Pit <i>Brazil</i> Resource Geologist 2019	<ul style="list-style-type: none">Established original Geology model for open pit orogenic Au deposit<ul style="list-style-type: none">Validated drill hole database: survey, collar, assay, lithology, bulk densityCreated wireframes for structural geology and lithologyCollaborated with Principal Geologist (QP) to complete full block model for client
Gold/Silver (Skarn) Production Complex - Open pit and Underground Mines <i>Mexico</i> Resource Geologist 2019	<ul style="list-style-type: none">Performed due diligence and risk analysis of Geology portfolio for multiple open pit and underground mines that constituted an Au/Ag skarn deposit area<ul style="list-style-type: none">Analyzed drill hole database inclusive of historic drillingReviewed sampling, assaying and QA/QC procedures to ensure appropriate and up to technical standardEvaluated geological modelling, wireframes, block model, classification and domaining methodsAssessed estimation methods for each deposit, through statistical and swath plot analysesCompleted risk analysis of site Geology methods and recommendations for improvement where appropriate
Copper Porphyry Production - Open Pit <i>Arizona, USA</i> Resource Geologist 2019	<ul style="list-style-type: none">Resource verification and audit performed on geology portfolio for mining production site<ul style="list-style-type: none">Assessed on site sampling and logging proceduresReviewed how logs were completed and geology recorded



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- Reviewed QA/QC procedures inclusive of insertion rates; blanks, certified standards and duplicates; and sample transport; reviewed density determination methods
- Audited database and geologic models (wireframes, orebody/grade shell, alteration, etc.)

Copper Porphyry Production - Open Pit

Canada

Resource Geologist
2019

- Audited Mineral Resources and Reserves on mid-tier Copper production site and completed risk analysis of geology portfolio
 - Reviewed client database, historical drilling, sample collection and analysis, and specific gravity determination methods
 - Analyzed geology models; lithology/alteration wireframes and grade shells, and block models to verify appropriate for deposit type
 - Investigated geostatistical methodologies and classification scheme, completed statistical analysis of model performance

Technical QA Witness

Wyoming, USA

Quality Assurance Professional
2018-2019

- Performed quality assurance services to various clients within the Powder River Basin, Wyoming
 - Inspected trains, weighing instrumentation and scales for coal utility transportation
 - Assessed accuracy of coal weighing equipment and regulated standards for ASTM and NIST compliance

Copper Porphyry Production – Open Pit

Morenci/Arizona, USA

Ore Control Geologist/
Sampling Supervisor
2015-2018

- Daily Ore Control duties at 800kTon/day open pit operation inclusive of sampling, production modelling, database management and special projects for production needs
 - Logged Blasthole/ drill cutting, diamond drill core and reverse circulation chip samples for mineralogy, alteration and rock type
 - Modelled production block models on a daily basis and collaborated with multiple departments to efficiently support mill/stockpile target needs
 - Monitored QA/QC from production sampling at site, transport to lab and assay returns, inclusive of round robin sampling, field dupes, handling of certified reference material
 - Supported quarterly forecast geological modelling
 - Contributed to metal recovery initiatives with processing team to optimize Cu recovery through increased knowledge of deposit geology, statistics, and process improvements
 - Led daily and monthly safety communications and scheduled safety trainings as the OHSAS Safety Rep for department



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- Supervised a crew of 5 Sampler Technicians in safely sampling and moving >4500lb sample material/day
 - Managed employee schedules, compensation and evaluated performance
 - Audited production sampling methods
 - Optimized efficiency in on site sampling and transport to assay turnaround times by 3-5% through increased communication

Molybdenum Porphyry Production - Underground Mine

Empire/Colorado, USA

Intern Production Geologist
2014

- Graduate Geologist performing daily underground mapping, learning the processes of mine operations and special projects
 - Underground geological mapping critical to mine development and safety
 - Field sampling and surveying (>13,000 ft. AMSL area)
 - Completed intern project of a modelled mine panel using structural geology data indicating weakened structural areas for the Geotechnical team to use for safety during production
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PROFESSIONAL DEVELOPMENT:

DESCRIPTION	TYPE	YEAR
• Maptek Vulcan: Geological Modelling	Training Course	2019
• Maptek Vulcan: Introduction to Vulcan and Plotting	Training Course	2019
• University of Arizona, Lowell Program Short Course on Porphyry, IOCG and Alkaline Cu-Au Deposits	Short Course	2017
• Acquire: GIM Suite Starter Course- Level 1000	Training Course	2017
• Hexagon Mining: Minesight 3-D Block Modelling for Geology	Training Course	2016
• Women in Mining USA, Denver Chapter: Chair, Education, Scholarships & Awards	Volunteer Work	2018- Present