

Competent/Qualified  
Person (CP/QP)  
according to JORC  
Code; CP (Geo)



and NI 43-101



# JULIO M. BRUNA NOVILLO

PhD, MBA, FAusIMM (CPGeo) – Principal Geologist, Consultant and Advisor Technical

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- Nationality: Argentina.

I am a Fellow and Chartered Geologist - FAusIMM CP (Geo), with over 28 years of experience as a Principal Geologist in Exploration, Production, and Consulting. With sound decision-making capabilities, I can communicate a vision and demonstrate confidence that targets are being met on schedule and within budget. These skills have led me to various management positions and experience in countries such as Argentina, Peru, Chile, and Panamá. My work experience includes ten years as an exploration geologist for gold and base metal deposits, ten years as a mine geologist in open-pit mining, and more than seven years as a consulting geologist working in base metals, precious metals, and lithium brines.

## Mineral Resources Geologist with solid geological experience and extensive knowledge in:

- - Strong commitment demonstrated in environment, communities and safety of the daily work with contractors. Continues improvement.
- -Integration of the mining process at different stages: from greenfield-brownfield exploration, PEA, pre-feasibility and feasibility studies to mine production.
- -Strong leadership and management skills in geological studies for projects in phases of PEA, pre-feasibility and feasibility according to international standards (JORC, NI 43-101), including geotechnical, metallurgical, environment and hydrogeological studies (Projects: Bajo de la Alumbrera, Bajo El Durazno and Agua Rica, Argentina).
- -Technical review and audit the basics of recoverable resources model: sampling (database, QA/QC) and 2D-3D geological model (Projects: Buena Fortuna, Salar de Llullaillaco, Peñas Negras, Virginia (Argentina), Cobre Panamá (Panamá), Zafranal, Antamina, Las Bambas, Raúl-Condestable (Perú), Spence, y Los Bronces UG (Chile).
- - Construction of 2D-3D geological models of Cu-Au-Mo porphyry and epithermal deposits, based on data from geological field observations, mapping, cross sections and drill cores ((La Cabeza, Bajo de La Alumbrera, Bajo El Durazno, Bajo San Lucas, Bajo Las Pampitas (Argentina), Zafranal y Raúl-Condestable Perú).
- -Proactively develop and manage exploration strategy, plans and budgets to ensure the mining schedule is achieved at all times.
- - Design, management, and execution of drilling programs. Training, leadership, management, and supervision of work teams.
- - Financial management and budgeting skills. Preparation and cost analysis, planning and implementation of budgets, and estimated (CAPEX, OPEX).
- - Excellent communication skills - verbal and written to liaise with internal and external stakeholders.
- - Strong analytical abilities to solve problems and handle multiple tasks and mentor and support the professional development of the team.

## WORK EXPERIENCE

### Principal Geologist

Principal Geologist, Consultant  
Nov. 2013 to present



- 07/2023 to 10/2023. **"Virginia Silver Project"**. Mirasol Resources Ltd. Santa Cruz, Argentina. [NI 43-101 Technical Report and Updated Mineral Resource Estimate For The Virginia Silver Project In Santa Cruz Province, Argentina, QP responsible for all Sections except Section 14.](#)
- 04/2023 to 06/2023. **"Raul-Condestable Mine"**. Camino Corp. Mala, Perú. Due Diligence of Compañía Minera Condestable's Operations. [Due Diligence of the Raúl and Condestable exploration, resource, and mining operation. Development of the resource-related sections of an updated NI 43-101 Report. Responsibility as QP in Sections 1, 2, 3, 4, 5, 6, 7, and 8.](#)
- 08/2021 to 09/2021. **"Peñas Negras Copper-Gold Project"**. La Rioja, Argentina. Micon Inter. Co Ltd. Sendero Resources Corp. [NI 43-101 Technical Report, QP responsible for all Sections.](#)
- 03/2020 to 04/2021. **"Buena Fortuna Gold Project"**. Morado Mining District, San Juan Argentina. Jolot SAS Company. [NI 43-101 Technical Report, QP responsible for all Sections.](#)
- 02/2021 to 03/2021. **Geological Technical Support on the lithium market and the opportunity of Argentina.** ABECEB Consultant. Argentina. [Catalog of Lithium Projects. Different stages \(exploration, PEA, PFS, FS\).](#)
- 12/2020 to 06/2021. **"La Cabañita Mine"**. Cementos Avellaneda S.A. Olavarría Plant, Bs. As. Diagnosis and Advice on Operational and Design Geotechnics in Open Pit Mine. Final Reports.
- 07/2019 to 08/2019. **"Mariana Lithium Brine Project"**. Litio Minera Argentina S.A. Ganfeng Lithium Co. Update Feasibility Study of the Mariana Lithium Brine Project, Salar de Llullaillaco, Province of Salta, Argentina. Ministerio de Energía y Minería. [Responsible, and signature of the study.](#)
- 07/2018 to 08/2018. **"Los Bronces Project"**. Anglo American. Chile. Review of the Los Bronces Underground Project (LBUG) Pre-Feasibility Study, Level A. This includes databases, QA/QC, geology, and documentation as part of the external team review [Investment Assurance Committee.](#)
- 02/2017 to 12/2019. **Geological Technical Support and Training.** Servicio Geológico Minero Argentino (SEGEMAR). Argentina. Reports of Lithium Brines projects.
- 10/2016. **"Antamina Mine"**. Compañía Minera Antamina S.A. Peru. Audit Geological Model of Antamina. Final report.
- 05/2016. **"Zafranal Project"**. Compañía Minera Zafranal SAC, Peru. (AQM Copper). A firm of the consents of the technical report for AQM Copper (Zafranal Project, Peru Technical Report on the Pre-Feasibility Study). [Responsibility as QP in points 10, 11 and 12 of the Technical Report NI 43-101.](#)
- 10/2015. **"Las Bambas Project"**. Compañía Minera Las Bambas, Peru. (MMG). Ferrobamba, Chalcobamba and Sulfobamba deposits. Technical Review of QA/QC and Geological Model. Final reports.
- 08/2014 to 03/2015. **"Zafranal Project"**. Compañía Minera Zafranal SAC, Peru. (AQM Copper). Geological support for re-logging program and infill drilling. Pre-feasibility study. Final report: Database, QA/QC program, Density and 2D-3D Geological model.
- 02/2015. **"Spence Mine"**. BHP Billiton. Chile. Audit QA/QC and Geological Model of Spence. Final report.
- 09/2014. **"Antamina Mine"**. Compañía Minera Antamina S.A. Perú. Audit Geological Model of Antamina. Final report.
- 08/2014. **"El Peñón Mine"**. Minera Meridian LTD (Yamana Gold Inc.). Chile. Technical visit to the metallurgical plant of the "El Peñón Mine". Final report on sampling processing metallurgical plant.
- 02/2014 to 03/2014. **"Bajo de la Alumbrera Mine"**. Minera Alumbrera Ltd. Argentina. (Glencore-Xstrata). [Updated Reserve Estimate for BLA, 2014. Firm consents to NI-43101 for Yamana Gold Inc.](#)
- 11/2013 to 12/2013. **"Zafranal Project"**. Compañía Minera Zafranal SAC, Peru. (AQM Copper). Reports: QA/QC data analysis, density, proposed DDH infill program, criteria, and procedures used to interpret and obtain the solids models for the updated mineralization zones model.

## ► Superintendent of General Geology

Minera Panamá S.A.

April 2013 to October 2013



“Cobre Panamá” Project. Panamá (First Quantum Minerals LTD).

- Final Report: Analysis and recommendations in the construction of 3D geological models.
- Final Report: Interpretation, definition, and construction of the 3D geological modelling. Realization of the exploratory data analysis (EDA). Interpretation and definition of the domains (or units) of estimation (UGs).
- Was worked with the FQM Mineral Resource group in Perth (Australia) to review and re-building the complete Copper Panamá resource.

## ► Superintendent of Geology and Exploration

Minera Alumbreira Ltd.

Nov. 1998 to March 2013



- 08/2011 to 03/2013 Superintendent of Geology and Exploration

**Agua Rica project. System porphyry Copper-Molybdenum-Gold. Feasibility study: implementation of infill drilling programs.**

- Total=28,500 m DDH (diamond drilling program **completed 3 months**). Geological, geotechnical, structural, and metallurgical logging. Interpretation and geological modelling in 2D-3D from outcrop mapping and diamond drill holes. Select and send samples to Canada for metallurgical testing.
- Survey measurement with Z-Track and Maxibor II. Measurement core sample oriented with Reflex ACT II RD.
- Total=1,500 m RC (reverse circulation drilling + ODEX). Geotechnical (SPT test) and hydrogeological drill holes for condemnation of dumps. Observation and pumping holes. Permeability and airlift tests. Measurement of technical parameters in drill core: density, GSI, RQD, PLT, etc.
- Design, construction, and migration of the database using Acquire software. Sampling drill holes. Design and implementation of QA/QC program, according to the JORC and NI 43-101 standards.
- Preparation and management of budgets (Capex) and cost analysis. Management contracts with drilling companies, chemical laboratories, consultants, auditors, and general contractors. Budget: US\$ 25 million.
- Interdisciplinary work with: geologists, engineers, metallurgists, hydro-geologists, anthropologists, etc., from different countries and companies.
- Preparation of IIA (Environmental Impact Report). Technical responsible for the project against the government province in the EIS (Environmental Impact Statement). Environmental management, interaction with government agencies and communities.
- Formation, management and supervision of exploration teams: 10 geologists, 20 samplers, 70 contractors drilling program. 8 drilling rigs.
- Compliance with safety goals: **LTI=0 (Lost Time Injury)**. Xstrata HSEC standards. Environmental audits before, during, and after drilling campaigns. Safety audits to drilling contractors.
- **Bajo de la Alumbreira Mine. Copper-Gold-Molybdenum Porphyry system: [Annual statement of reserves and resources, according to JORC code and NI 43-101 \(Xstrata Copper, Goldcorp, Yamana Gold\)](#). Member AUSIMM # 992246 (Chartered Professional Geology).**

- 10/2008 to 07/2011 Superintendent of Geology and Exploration

**Disseminated areas with porphyry copper-gold and veins systems (Bajo El Durazno, Bajo La Chilca, Bajo Las Pampitas, Bajo San Lucas and La Josefa-Santo Domingo, in the Province of Catamarca, Argentina).**

- Design and implementation of exploration programs in disseminated areas (Greenfield – Brownfield areas)
- Total=20,000 m diamond drilling program. Geological, geotechnical, and metallurgical logging. Interpretation and geological modelling in 2D-3D from outcrop mapping and diamond drill holes.
- Preparation of IIA (Environmental Impact Report). Technical responsible for the project against the government province in the EIS (Environmental Impact Statement). Environmental management, interaction with government agencies and communities.
- Measurement of technical parameters in drill core: density, GSI, RQD, PLT, etc. and survey measurement with Z-Track and Maxibor II.
- Design, construction, and migration of the database using Acquire software. Sampling drill holes. Design and implementation of QA/QC program according to the JORC and NI 43-101 standards.
- Preparation and administration of budgets (Capex), and cost analysis. Management contracts with drilling companies, chemical laboratories, consultants, auditors, and general contractors. 3-year budget: US\$ 3 million.
- Quantification of recoverable resources of Project “Bajo El Durazno” (Au-Cu). Interpretation and construction of the 3D geological model. Block modelling, using Minesight software. Exploratory data analysis (EDA). Interpretation and definition of the domains (or units) of estimation (UGs).
- Formation, management, and supervision of exploration teams: 8 geologists, 10 samplers, 20 contractors drilling program. 2 drilling rigs.
- Compliance with safety goals: **LTI=0 (Lost Time Injury)**. Xstrata HSEC standards. Environmental audits before, during, and after drilling campaigns. Safety audits for drilling contractors.
- **Bajo de la Alumbreira Mine. Copper-Gold-Molybdenum Porphyry System: grade control, forecast daily, weekly and monthly material sent to a crusher. Perform daily, weekly and monthly control grades. Mining plan weekly, monthly and yearly; database; optimizing the open-pit reserve through the accurate delineation of ore and waste; provision of periodic production and reconciliation reports. [Annual statement of reserves and resources, according to JORC code and NI 43-101. \(Xstrata Copper, Goldcorp, Yamana Gold\)](#). Member AUSIMM # 992246 (Chartered Professional Geology).**

- 06/2005 to 10/2008 Superintendent of Geology and Geotechnical

**Bajo de la Alumbreira Mine. Copper-Gold-Molybdenum Porphyry System: responsible for different areas of the technical services department.**

- **Grade control:** Geological mapping of open pit bench; forecast daily, weekly and monthly material sent to a crusher; perform daily, weekly, and monthly control grade. Mining plan weekly, monthly, and yearly; provision of daily ore mining, and grade control functions, database; optimizing the open-pit reserve through the accurate delineation of ore and waste; provision of periodic production and reconciliation reports. Estimated production reports: monthly, quarterly, and annual. Budgets and annual narratives LOM. Assurance and Quality Control (QA/QC) of the material sent from stocks to the mine and concentrator. Budget: US\$ 0.7 million.
- **Waste control:** classification of rock material as environmental variables. Performing QA-QC samples blast holes of material sent from mine dumps, database using Acquire. Forecast daily, weekly, and monthly material sent to dumps and material for rehabilitation. Monitoring progress in the dumps. Control of rehabilitation sectors in dumps and sampling.

- **Geotechnical:** construction and maintenance of geological & geotechnical models. Geotechnical design and operational. Implementation of automatic monitoring robotic and the use of radar for monitoring walls. Optimization of the final pit: recommendation inter-ramp slopes angles. Database using Acquire. Geotechnical mapping of a bench. Budget: US\$ 0.6 million.
- **Dewatering:** design and implementation of the RC drilling program for monitoring and pumping. Budget: US\$ 7 million.
- **Exploration:** design and implementation of DDH programs for delineation and geotechnical. Geological, geotechnical, and metallurgical logging. Interpretation and geological modelling in 2D-3D Updating the geological and geotechnical model using Minesight software. Design, and implementation of QA/QC program, according to the JORC and NI 43-101 standards.
- **Interdisciplinary work with** Engineering Short and Long Term, Topography, Strategic Planning, Drilling and Blasting, Mine Operations and Services, Environmental, Chemistry Laboratory, Concentrator Plant, Port, etc. The formation, management, and supervision of exploration teams: 8 geologists, 10 samplers and 10 contractors drilling program. 1 drilling rig.
- **Compliance with safety goals:** LTI=0 (Lost Time Injury). Xstrata HSEC standards. Environmental audits before, during, and after drilling campaigns. Safety audits for drilling contractors.

## ▶ Chief Exploration Geologist

IAMGold Argentina S.A.  
Nov. 1999 to March 2000



- "Mesa" project. Province of Santa Cruz (Argentina).

## ▶ Exploration Geologist

AMD S.A.  
August to October 1998

- "La Cabeza" (Don Sixto) project. Province of Mendoza (Argentina).

## ▶ Exploration Geologist

Western Mining Corp.  
January to June 1998

- "Río Frío", "Regalito", "Guanaco Zonzo" and "Fabiana" projects. Valle del Cura. Province of San Juan (Argentina).

## ▶ Exploration Geologist

Minera El Dorado S.A.  
August 1996 to September 1997

- "Peña Negra" and "Laguna Verde" projects. Province of La Rioja and Catamarca (Argentina).

## ▶ Exploration Geologist

High American Gold Inc.  
February 1995 to July 1996

- Various projects. Province of San Juan, Córdoba, La Rioja, Catamarca, Salta, Jujuy (Argentina).

## EDUCATION

### ▶ National University of Catamarca (Argentina)

Ph.D. in Geology. 2013 to 2019. "Geology and Genesis of the Porphyry of Au-Cu of the Bajo El Durazno, Province of Catamarca, Argentine Republic". (Accredited by CONEAU: Resolution No. 429/11)  
<http://editorial.unca.edu.ar/Publicacione%20on%20line/DIGITESIS/Julio%20Novillo/PDF/Tesis%20completa.pdf>



### ▶ Collage of Economy and Business Administration (ESEADE)

MBA (Master in Business Administration). 2006 to 2009. (Accredited by CONEAU)



### ▶ National University of Córdoba (Argentina)

Geologist. 1993.



## PROFESSIONAL CERTIFICATION

### ▶ Canadian Institute of Mining, Metallurgy and Petroleum.

Member CIM # 152176. 2011 to present.



### ▶ Australasian Institute of Mining and Metallurgy.

Fellow AusIMM # 992246 CP (Geo) (Member Chartered Professional Geology). 2008 to present.



### ▶ Society of Economic Geologists.

Fellow SEG # 104383. 2004 to present. Mentoring Prog. Advisor Academic SEG Student Chapter



### ▶ College of Geologists of the Province of Córdoba.

Professional Registry: M.P. N° A-759. 1993 to present.





## LANGUAGES & SOFTWARE



- ▶ *Spanish (Native)*                      ▶ *Acquire, Leapfrog (Intermediate)*                      ▶ *Microsoft Word, Excel (Advanced)*
- ▶ *English (Intermediate)*                      ▶ *Minesight 3D (Intermediate)*                      ▶ *Microsoft PowerPoint (Advanced)*
- ▶ *Data Analyst (MSDA) (Intermediate)*                      ▶ *Microsoft Access, Project (Advanced)*



## DEVELOPING TRAINING WORKSHOPS & COURSES



- 09/2022                      Universidad Católica de Cuyo, Facultad de Derecho y Ciencias Sociales.  
Master in the Mining Business. Economic Evaluation of Reserves. Applicable standards. September 2-3 (8 h). **Speaker.**
- 07/2021                      Latin American Online Seminar: Prácticas Internacionales Estimación de Recursos y Reservas Minerales. Comisión Minera de Chile. Santiago, Chile. The Geological Model. July 1. **Speaker.**
- 04-05/2020                      Cerro Moro Mine (Yamana Gold). Santa Cruz, Argentina.  
Two training workshops: Sampling and QA/QC. Theory 16 h and Practical 16 h (32h, for each training). **Speaker.**
- 10-12/2019                      Farallón Negro Mine. Yacimientos Mineros Agua de Dionisio (YMAD). Catamarca, Argentina.  
Two training workshops: Sampling and QA/QC. Theory 16 h and Practical 16 h (32h, for each training). **Speaker.**
- 08/2019                      College of Geologists of the Province of Córdoba & FCFyN -UNC. Córdoba, Argentina.  
One training course: The Good Technical Practices in the Estimation of Recoverable Resources of Lithium Brines. Theory 4 h and Practical 1 h (5h). **Speaker.**
- 06-11/2019                      Mining Engineering Career. Department of Mining -UNSL. San Luis, Argentina. Postgraduate Course: Specialization in Discrete Simulation Applied to Mine Planning. Deposits Minerals Evaluation I y II. (120 h). **Speaker.**
- 09/2019                      College of Geologists of the Province of Córdoba & FCFyN-UNC. Córdoba, Argentina.  
One training workshop: Functional leadership. Theory 6 h and Practical 6 h (8h). **Speaker.**
- 05/2019                      College of Geologists of the Province of Córdoba & FCFyN-UNC. Córdoba, Argentina.  
One training workshop: Sampling and QA/QC. Theory 16 h and Practical 16 h (32h). **Speaker.**
- 2016 to 2019                      Servicio Geológico Minero Argentino (SEGEMAR). Bs. As., Argentina.  
Ten training courses- workshops: The Fundamentals of the Recoverable Resources Model (3), Sampling (3) and QA/QC (4). Theory 16 h and Practical 16 h (32h, for each training). **Speaker.**
- 2015 to present.                      Universidad Nacional de Córdoba, FCFyN - Department of Applied Geology.  
Geology and Mining Operations (240 h). **Associate Professor by public selection.**
- 2012 to 2013                      Universidad Nacional de Bs. As. FCFE y Naturales.  
Post-graduate of specialization in Mining Geology. Module 2: Prospecting and Exploration (40 h). **Speaker.**
- 09/2009                      Universidad Nacional de San Luis. FCE y Naturales.  
Geology and geotechnical applied to open pit mine. Department of mining (20 h). **Speaker.**
- 2004 to 2009                      Minera Alumbrera Ltd. – Xstrata Copper. Leadership Development Program (LDP). **4 modules** (Leadership, Coaching and Performance Evaluation, Planning & Delegation and Communication). **Facilitator.** Catamarca, Argentina.  
Senior Facilitator. 2006 -2013 (16 Workshops LDP). Facilitator. 2004 – 2006 (10 Workshops LDP).
- 2002 to present.                      Universidad Nacional de Córdoba, FCFyN - Department of Applied Geology.  
Well Drilling and Sludge Injection (40 h). **Assistant Professor by public selection.**  
Drilling Manual for Geologists and Engineers: Author: Chapter 5: Drilling Muds and Chapter 13: Drilling Mining.



## TECHNICAL TRAINING



- 03/2022                      "Mine Reconciliation Standardization - R Factor Series". AusIMM Mining Geology Webinar. R. Hargreaves, Principal Consultant. 1 h.
- 02-03/2019                      "PMO – Project Management Officer". (National Technological University. Regional Faculty of Buenos Aires). 40 h.
- 12/2018                      "Underground Hard Rock Cave Mining Methods". AusIMM Webinar by G. Dunstan, Consultant. 1 h.
- 07/2018                      "Mine Closure – Social Impacts and Opportunities". AusIMM Webinar by Sabrina Genter, Principal Consultant, 1 h.
- 12/2017                      "The application of robust governance processes to provide assurance on the generation and reporting of Exploration Results, Mineral Resources and Ore Reserves". AusIMM Webinar by Mark Noppe FAusIMM (CP), Corporate Consultant and Chair, SRK Consulting (Australasia). 1 h.
- 09/2017                      "Professional Development and Recognition for Community Relations Specialists webinar". AusIMM Webinar by Pam Bourke Consulting. 1 h.
- 06/2017                      "Fundamentals of Professional Ethics: Elements and Examples". AusIMM Webinar by David Abbott Jr. FAusIMM (CP) Geo. 1 h.
- 04/2012 to 04/2013                      "Community Relations Management and Conflict Environmental Social in the Mining Sector". (Camiper&Mining Society of South Africa). 200 h.
- 04/2012                      "International Regulations for the certification of resources and mineral reserves". UNSL. M. Rossi. 24 h.
- 09/2010 to 02/2011                      "Balanced Score Card Applied to the Mining Industry". (Intercade). 40 h.
- 09/2010                      "Management of Mining Projects". (Intercade) 40 h.
- 03/2010                      "Tools for advanced geological modeling". (Mintec, Chile) 36 h.
- 06/2010                      "Public report and Code JORC". Workshop Xstrata Copper (AusIMM – A. Clark). 16 h.
- 03-11/2008                      "Geostatistics Applied to Resources and Reserves Calculation". Level I y II. UNSL. M. Rossi. 60 h.
- 12/2006                      "Basic Statistics and Sampling for Deposit Evaluation". Mine Engineering. University of Chile. 30 h.
- 10/2006                      "Geotechnics Applied to Open Pit Mine". (E-Mining Technology. Chile). 30 h.
- 03/2005                      "Advanced Acquire Training". (Metech Chile). 40 h.
- 03/2004                      "Geostatistic and Modelling of Minesight". (Mintec, Chile). 40 h.
- 05/2003                      "Basic Minesight". (Mintec Chile). 32 h.
- 11/2002                      "Basic Autocad 2000". (Center Kandinsky). Córdoba. Argentina. 40 h.
- 12/1999                      "Workshop Field" of 10 days of duration. Directed by E. Llambías. "Massif North Patagonic and "El Deseado". (Argentina). Handling and interpretation of sampling data (macroscopic and drilling), with PIMA II (Portable Infrared Spectrometer). By Spectral International, Inc. 30 h.
- 12/1997                      "Introduction to linear Geostatistics Applied to Evaluation of Mineral Resources". Superior Professional Council of Geology. Bs. As. Argentina. 30 h.
- 09/1995

## MANAGEMENT TRAINING

- 2004 to 2013 Leadership Development Program (LDP). **Facilitator and trainer of facilitators** from other divisions (Chile and Peru).
- 06/2009 Participation in the design and realization of **Strategic LDP Workshop of Minera Alumbreira Ltd.** (Catamarca, Argentina).
- 08/2008 Workshop: **"Training the Trainer"**. Level I y II (IGH Group, Tucumán, Argentina). 60 h.
- 08/2003 Workshop: **"Professional Supervisor"**. University de Queens, Canada. (Tucumán, Argentina). 30 h.

## CONFERENCES & PUBLICATIONS

- 01/2023 **SEG DISCOVERY – Featured Article No 132 • JANUARY 2023 (ESTADOS UNIDOS)**  
"The Geologic Model: A Subjective but Core Pillar of a Recoverable Resources Model".  
Authors: Bruna Novillo J., Rossi M.; and Bassan J.
- 02/2019 **SME ANNUAL MEETING (DENVER, ESTADOS UNIDOS)**  
"The Risks in the Fundamentals of Recoverable Resources Model".  
Authors: Rossi M.; Bruna Novillo J. and Bassan J.
- 06/2014 **XIX ARGENTINO GEOLOGICAL CONGRESS (CORDOBA, ARGENTINA)**  
"The genetic model of mineralization Agua Tapada, Farallon Negro Volcanic Complex, Catamarca, Argentina".  
Authors: Carrazana A. and Bruna Novillo J.
- 09/2013 **X CONGRESS ON ECONOMIC GEOLOGY (SAN JUAN, ARGENTINA)**  
"Episodes of the mineralization of Mo in Bajo de la Alumbreira mine, Catamarca, Argentina".
- 09/2011 **SPANISH SOCIETY MAGAZINE MINERALOGÍA. MACLA N° 15 (BARCELONA, ESPAÑA)**  
"Mineralogy of Bajo Agua Tapada Project, Catamarca, Argentina".  
Authors: D.G. Torrente, A. Carrazana, J. Bruna Novillo and J.L. Fernández Turiel.
- 11/2010 **REGIONAL CONFERENCE MINESIGHT (SANTIAGO, CHILE)**  
"Using the Minesight Software 3D, in the Fundaments of the Model of Recoverable Resource".  
Authors: J. Bassan and J. Bruna Novillo.
- 08/2010 **CONFERENCE MINING 2010 (SAN JUAN, ARGENTINA)**  
"The Board of Control like Management Tool in the Model of Recoverable Resources".  
Authors: J. Bruna Novillo, J. Bassan and M. Rossi. **Speaker.**
- 08/2010 **CONFERENCE MINING 2010 (SAN JUAN, ARGENTINA)**  
"The System of Veins Intermediate-sulfidation, in Bajo de La Alumbreira Mine, Catamarca, Argentina".  
Authors: N. Montenegro, A. Carrazana and J. Bruna Novillo.
- 08/2009 **XVI MINE ENGINEERING SIMPOSIUM. SIMIN 2009 (SANTIAGO, CHILE)**  
"Fundamentals of the Recoverable Resources Model".  
Authors: J. Bruna Novillo, J. Bassan and M. Rossi.
- 05/2009 **CONFERENCE MINING DAY 2009 (CATAMARCA, ARGENTINA)**  
"Process and Stages of an Exploration Program for Copper Porphyry Deposits".  
Author: J. Bruna Novillo. **Speaker: J. Bruna Novillo. Speaker.**
- 08/2008 **INTERNATIONAL CONFERENCE ON MINING INNOVATION - MININ 2008 (SANTIAGO, CHILE)**  
"Ore Control System in Bajo de La Alumbreira, Catamarca, Argentina".  
Authors: I. Zapata, J. A. Bassan and J. Bruna. **Speaker: J. Bruna Novillo. Speaker.**
- 05/2006 **INTERNATIONAL CONFERENCE ON MINING INNOVATION – MININ 2006 (SANTIAGO, CHILE)**  
"Geotechnical Characterization and Modeling of its Variables in Bajo de La Alumbreira Mine, Catamarca, Argentina".  
Authors: C. Giraud, J. A. Bassan and J. Bruna Novillo.
- 03/2005 **ACQUIRE REGIONAL CONFERENCE (SANTIAGO, CHILE)**  
"Use to Acquire in the Processes of Minera Alumbreira".  
Authors: J. A. Bassan and J. Bruna Novillo.

## PROFESSIONAL ACHIEVEMENTS

### ► Value Creating

- Agua Rica project:** feasibility study with a diamond drilling program of 28,500 m (infill, geotechnical, metallurgical and hydrogeological). Completed in 3 months (10 geologists, 20 samplers, 70 contractors, and 8 drilling rigs). Hydrogeological and condemnation program drilling (including dumps, tunnel, milling, and mining operations). Compliance with safety goals: LTI=0 (Lost Time Injury). Budget: US\$ 25 million.
- Bajo El Durazno project:** extending the life of mine of Bajo de la Alumbreira in 80 Mtonnes (2 years). Exploration, geophysics (MIMDAS), diamond drilling program (15,000 m DDH; infill, metallurgical, and geotechnical), Interpretation, construction 2D-3D geological modelling and quantification of resources & reserves, according to NI 43-101 and JORC Code. Annual budget: US\$ 1 million.
- Bajo de la Alumbreira mine:** from 2004 through 2013, the achievement of safety LTI = 0 (Lost Time Injury), environmental and communities. HSEC Management Standards (Health, Safety, Environment, and Communities). Minera Alumbreira Ltd.
- Bajo de la Alumbreira mine:** consecutive years of increases in mineral reserves. 218 Mtonnes additional ore reserves in the period 2003 to 2008, expansion of the life of the mine in six years. Increase by changes in the geological model, pit design, metal prices, optimizing inter-ramp angles, and double bench. Diamond drilling program: infill, geotechnical, infill, structural, and hydrogeological. Total 38,000 m. Interpretation, construction 2D-3D geological modelling and quantification of resources & reserves. Competent Person according to JORC Code; CP (Geo) and NI 43-101. Annual budget: US\$ 3 million.