# Aldebaran Completes Geological-Structural Model for its Altar Copper-Gold Project

VANCOUVER, CANADA (January 19, 2021) – **Aldebaran Resources Inc.** ("**Aldebaran**" or the "**Company**") **(TSX-V: ALDE)** is pleased to provide a summary of a newly developed geological-structural model for its flagship Altar copper-gold project located in San Juan Province, Argentina. The delivery of the first-ever, geological-structural model for the Altar project, provides a strong foundation for the forthcoming mineral resource estimate, which the Company expects to deliver by the end of Q1 2021. The mineral resource estimate will be the first created by Aldebaran on the Altar project (the 2018 resource estimate was completed by the previous operator). The focus of the updated mineral resource estimate is to highlight the higher-grade portions of the various porphyry centres within the Altar project. In addition, this model will help delineate possible extensions of known higher-grade mineralization and identify new, previously untested, exploration targets. This new, robust model is the result of integrating various new geological, structural, hyperspectral, and geophysical data sets collected by Aldebaran since assuming control of the project (see Dec 3, 2020 press release).

**Dr. Kevin B. Heather, Chief Geological Officer of Aldebaran, commented as follows:** "*The completion of this new geological model represents not only an advancement in our technical understanding of the Altar cluster of copper-gold porphyries, but also an important milestone in our quest to unlock hidden value from the project. The collection and integration of data sets that previously didn't exist at Altar, along with the re-logging of over 115,000 meters of drill core, has highlighted numerous new geological features that we believe are fundamental to controlling the higher-grade copper-gold mineralization and better constraining the arsenic distribution; both of which will ultimately enhance the upcoming mineral resource estimate, as well as be critical in the development of new drill targets moving forward.*"

**Key Takeaways From the Altar Geological-Structural Model**

- The current Altar mineral resource model, released in 2018 and created by the previous operator of the project, is based on a strictly geo-statistical model, and used little geological constraints or inputs. The new Altar geological-structural model offers for the first time a robust, consistent, and more realistic framework on which to calculate a new mineral resource estimate and to base any subsequent economic analyses.
- Altar consists of at least five large, mineralized porphyry centres aligned along a 7-kilometre-long corridor, with strong geological and geophysical indications of potentially several more, yet to be discovered centres:
  - Evidence of multiple, overprinting mineralized intrusive phases within each of those porphyry centres, indicating that there were multiple mineralizing events at Altar.
  - Evidence that all the porphyries at the Altar project are structurally controlled, something that previously had not been identified, and should have material impacts on future drill targets.
- Altar had previously been viewed as a large, low-grade deposit. The Company has identified three distinct zones of higher-grade mineralization and modeled the structural and geological controls of these zones.
- There are two distinct styles of mineralization at Altar which are now properly constrained in the model:
  - Secondary supergene (oxide) mineralization which occurs near surface and could potentially be amenable to SX-EW heap leach technology.
  - Primary hypogene mineralization (sulphides) which occurs throughout the project and could be concentrated and ultimately shipped to a smelter.
- Arsenic, in the previous mineral resource estimate, was unconstrained and because the estimate was based on a geo-statistical model the perception was that there was arsenic throughout the deposit. In reality, geological evidence indicates that arsenic at the Altar project is hosted by narrow, sub-vertical veinlets that occur within distinct structural zones that have now been meticulously modelled in three-dimensions:
  - Constraining the arsenic to these structural zones in the new resource model should reduce the overall arsenic content of the primary (hypogene) copper mineralization.
  - A significant amount of the arsenic at the Altar project occurs within the leach-cap and supergene zones and therefore may reduce the impact of arsenic on a potential copper concentrate, as the leach-cap rocks are not mineralized, and the supergene rocks could potentially be processed by SX-EW heap leach technology, which would not extract the arsenic.

**Methodology**

The new geological-structural model for the Altar project consists of a three-dimensional block measuring 5.2 km (north-south) by 8.0 km (east-west) and ~2.8 km vertically from surface, that was constructed in Leapfrog Geo by integrating and interpreting the following datasets:

- Detailed re-logging of ~115,000 m of historical drill core to capture a systematic and consistent dataset of lithologies, alteration-types, mineralization-types, and timing relationships
- Surface geological and structural mapping
- Detailed ground magnetic data
- High-resolution, satellite-borne hyperspectral data to identify zones of favourable alteration
- Regional and detailed structural mapping and analysis

**Importance of Using a Geological Model Instead of a Geo-statistical Model**

Previous mineral resource grade estimates at Altar for Cu, Au, Ag and As were based primarily on geo-statistical estimation methods with minimal geological constraint. The focus of the Company since acquisition has been to collect and interpret data to generate a comprehensive geologic model including major faults, lithology, oxidation states, high sulfidation zones, alteration zoning, etc. The upcoming mineral resource estimate will represent a proper geologic constrained geo-statistical model that provides a more realistic representation of the grade-tonnage relationships at Altar.

Assuming an acceptable geologic model for an orebody, a geologically constrained resource estimation will always be better than a simple geo-statistically estimated resource because it includes all the geologic knowledge, data and interpretation to properly constrain the mineral resource estimate.

**Lithological Units**

A total of 43 distinct lithological units were defined from either drill core and/or surface geological mapping. These 43 units were then simplified into 23 units based on similar textures and compositions and these were then used in the geological model and the upcoming resource update. Finally, these 23 units were further grouped into six time-stages, based on their spatial and timing relationships. The relationships between the various individual intrusive events with both alteration and mineralization is shown in Figures 1 and 2.

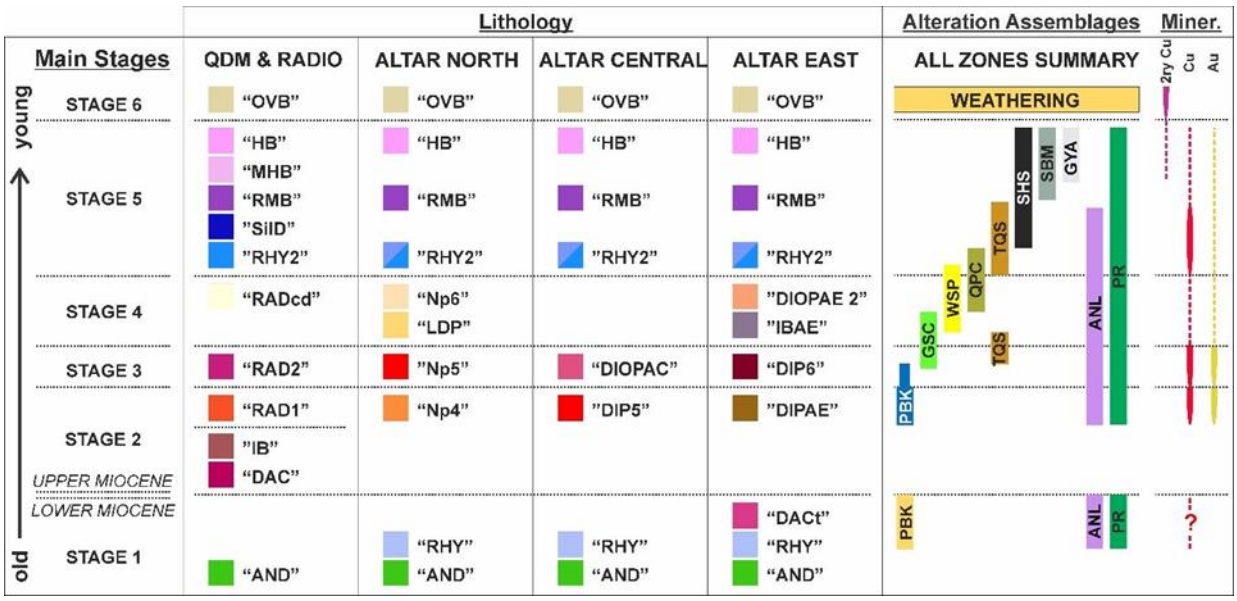


Figure 1: Altar time-space diagram showing the various porphyry centres, magmatic stages, main porphyry intrusion phases in relation to the alteration and mineralization events.

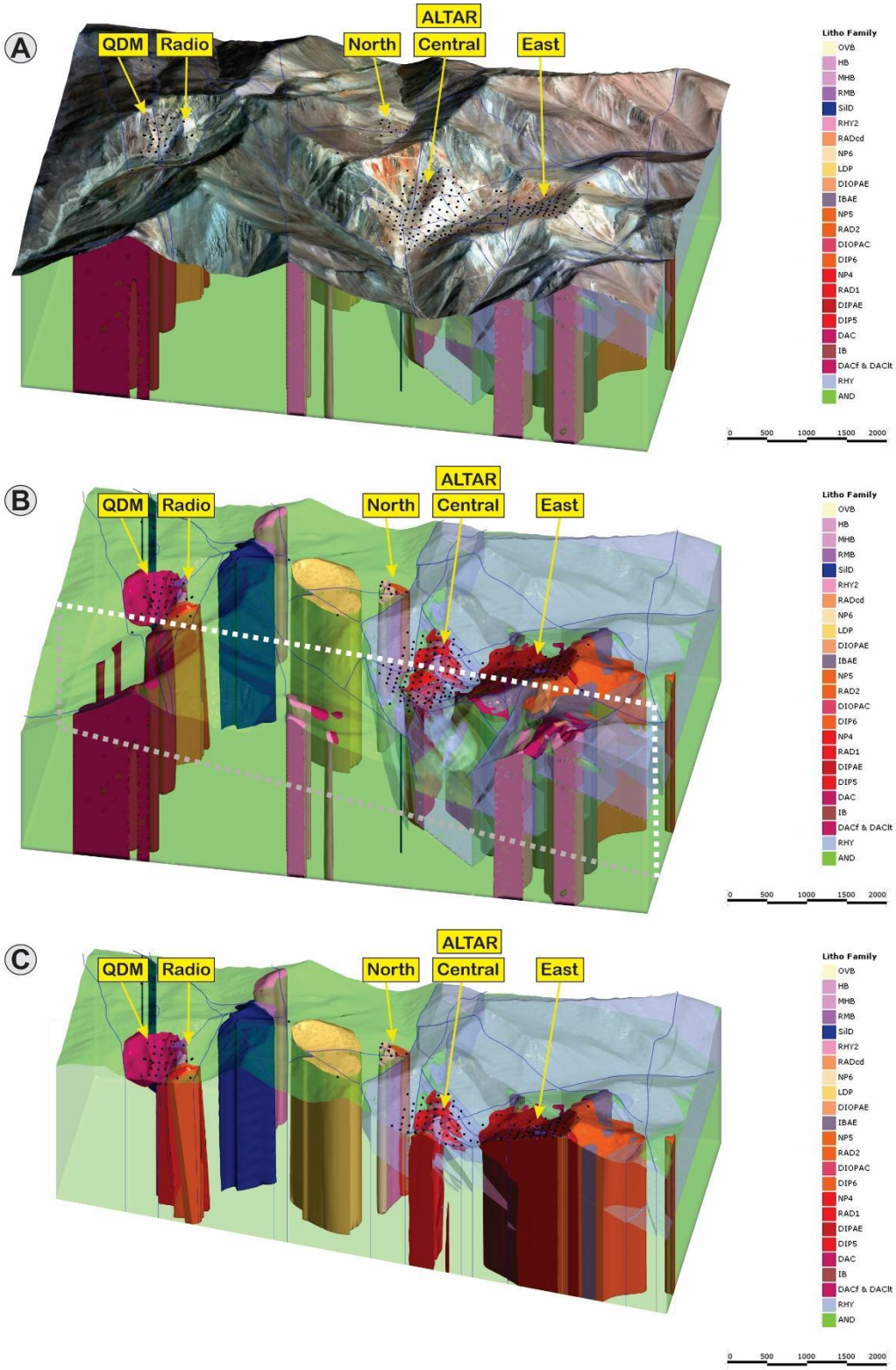


Figure 2: New geological-structural model for the Altar project area. (A) Full project area with google earth image and topography, (B) Full project area with google earth image and topography removed - white dashed line is the cut surface represented in (C), (C) Cut away to expose the porphyry centres at Radio, Altar Central and Altar East.

**Structural Domains**

A total of 35 discrete fault-bounded structural domains have been defined within the Altar project area (Figure 3). These fault blocks have been defined based on regional structural analysis, detailed field mapping and the sub-surface drill holes. All the Altar porphyry centres exhibit a strong structural control in terms of their emplacement, orientations of mineralization, and local post-mineralization fault offsets. The importance of these structural controls was not recognized or fully appreciated prior to Aldebaran's current work. The implications of these structural domains are the identification within each of the porphyry centres of:

- Preferred orientations of higher-grade copper mineralization that can be more easily tested for extensions in the cases where they are currently open.
    - Each of the porphyry centres has its own set of preferred orientations.
- Preferred orientations of structural corridors containing narrow, subvertical quartz-enargite-pyrite veinlet zones, which will better constrain the distribution of arsenic.
    - Each of the porphyry centres has its own set of preferred orientations.
- Post-mineral faulting and offsets, on the order of 10's to potentially 100's of metres in some cases, that have jostled the original mineralization distribution and created opportunities for discovering new mineralization.
    - Upthrown blocks may bring the mineralization closer to surface, while downthrown blocks may have hidden better mineralization below areas where there is currently only shallow drilling.

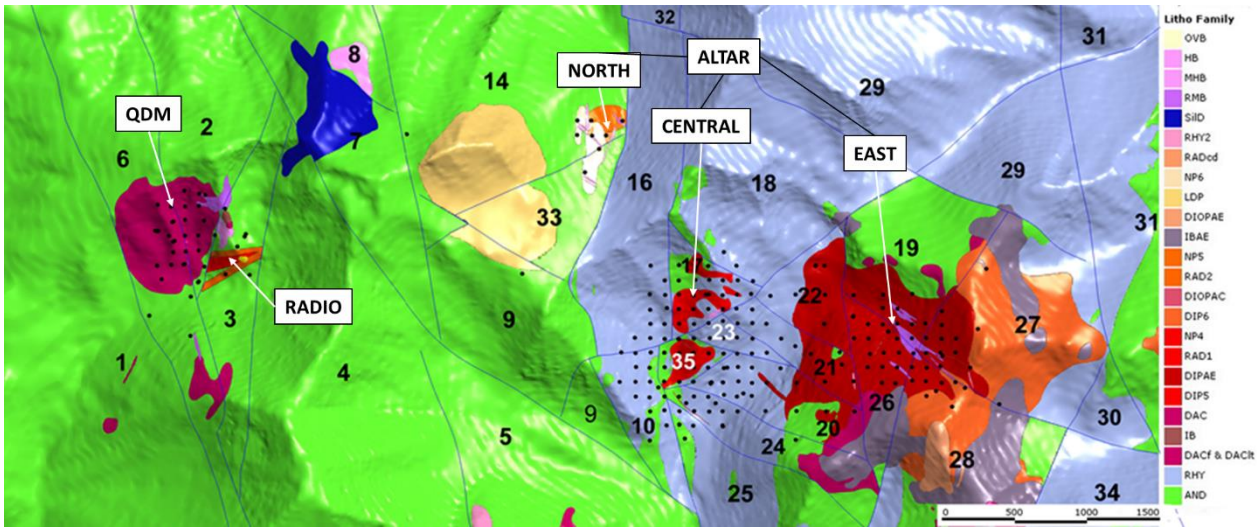


Figure 3: Numbered structural blocks and geological units. Black dots are the drill collars.

**Copper Equivalent (CuEq%) Grade Shell Modeling**

Using the new geological-structural model described above as a framework, grade shells at different cut-offs were modeled for copper, gold, and copper equivalent (Figures 4 and 5). The purpose of these grade shells is to better highlight the distribution and geometry of the higher-grade mineralized zones and will be used as guides for the upcoming mineral resource estimate and to also highlight areas for additional resource extension drilling.

Note: CuEq values were calculated using copper, gold and silver. Metal prices utilized for the calculations are Cu = US$3.00/lb, Au = US$1,400/oz, and Ag = US$18/oz. No adjustments were made for recoveries.

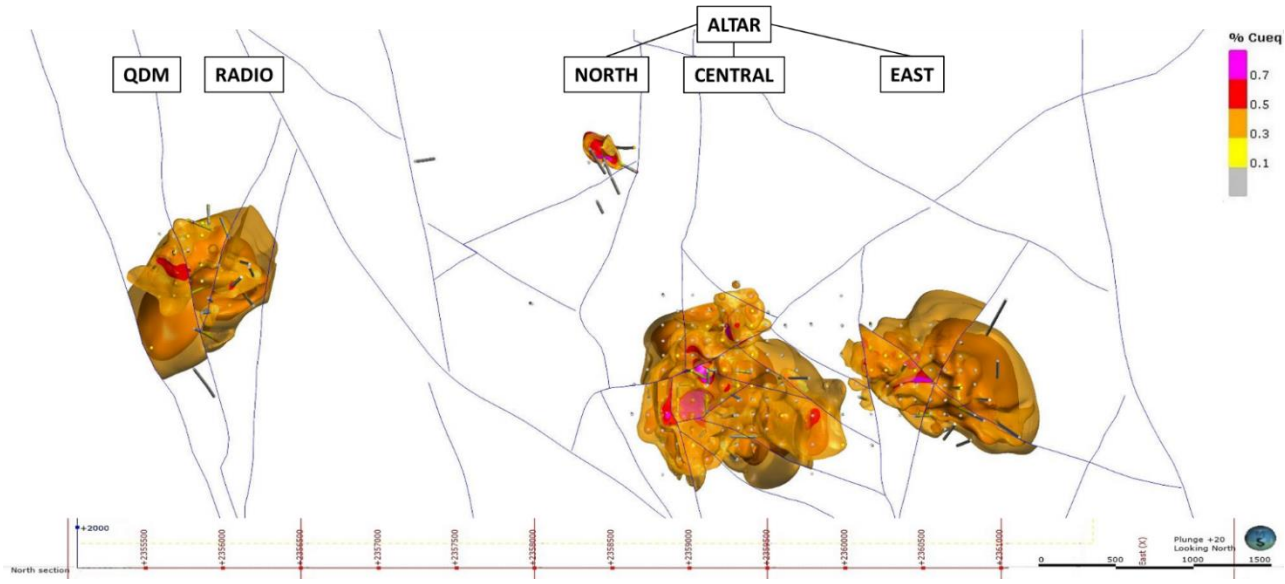


Figure 4: Copper Equivalent (CuEq%) grade shells in plan view.

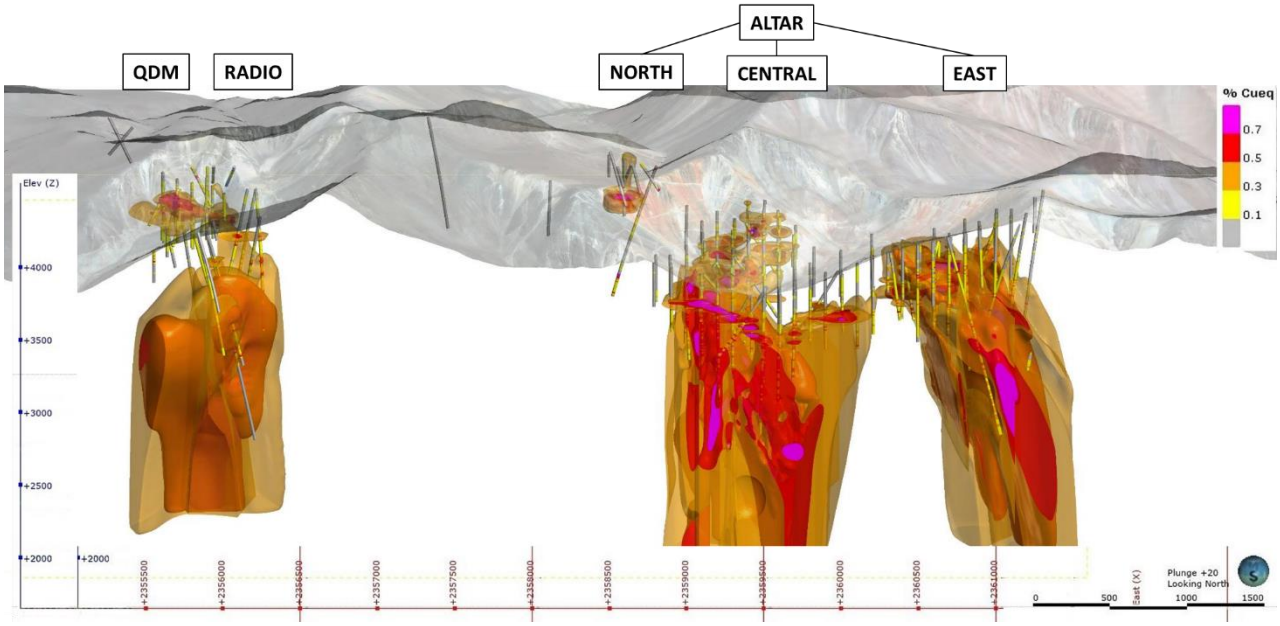


Figure 5: Copper Equivalent (CuEq%) grade shells in section view.

**Secondary (Supergene) Oxide and Sulphide Copper (Cu%) Grade Shells**

Special attention was given to modeling secondary (supergene) copper zones. Most of this style of mineralization occurs at Altar Central, however it is also observed at QDM/Radio and Altar East. Identifying significant supergene mineralization could have material economic impacts on the future development of Altar as SX-EW technology is viewed as being less capital intensive (see Figures 6 and 7).

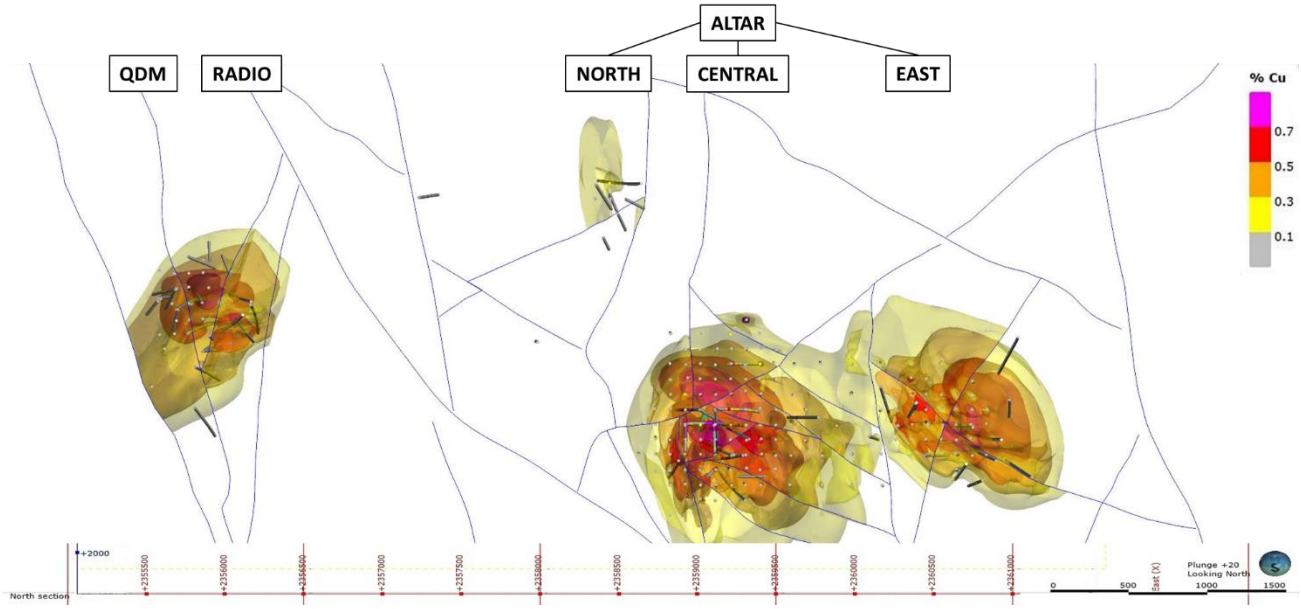


Figure 6: Secondary (supergene) copper (Cu%) plan view map.

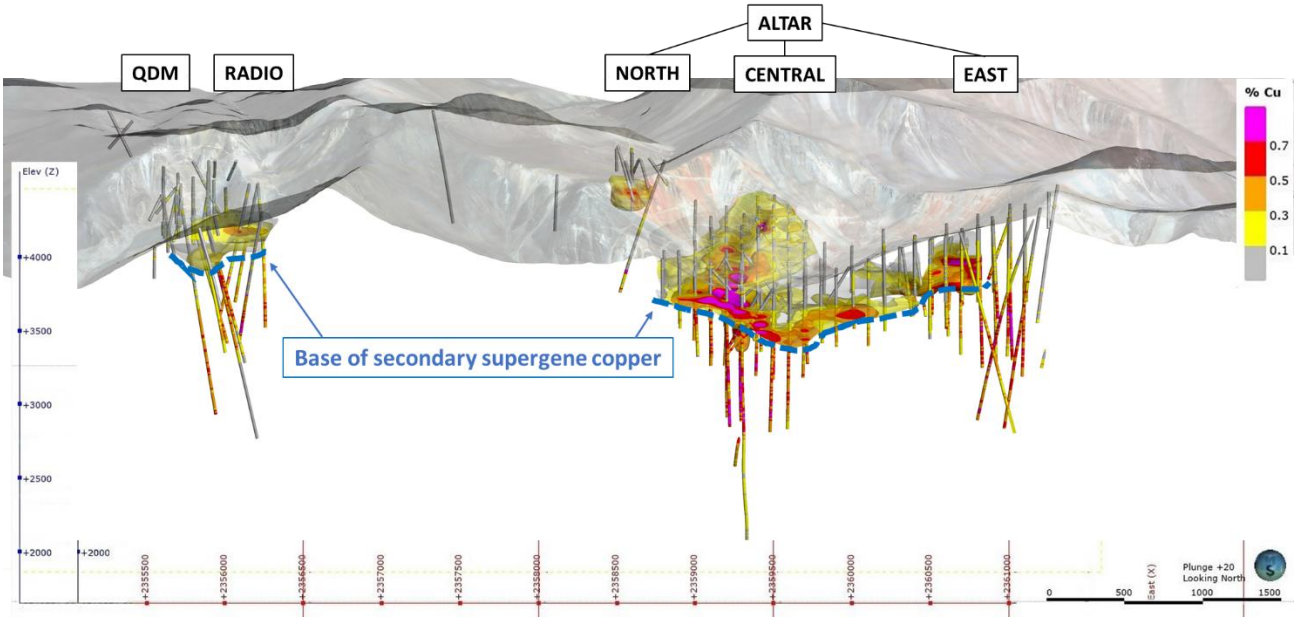


Figure 7: Secondary (supergene) copper (Cu%) cross-section map.

**Primary (Hypogene) Sulphide Copper Distribution**

The primary (hypogene) copper zones amenable to traditional milling and flotation technology make up the bulk of the known mineralization at the Altar Project. Primary copper sulphide minerals include chalcopyrite ($CuFeS_2$) and bornite ($Cu_5FeS_4$) at QDM/Radio and Altar East, and chalcopyrite at Altar Central (Figure 8).

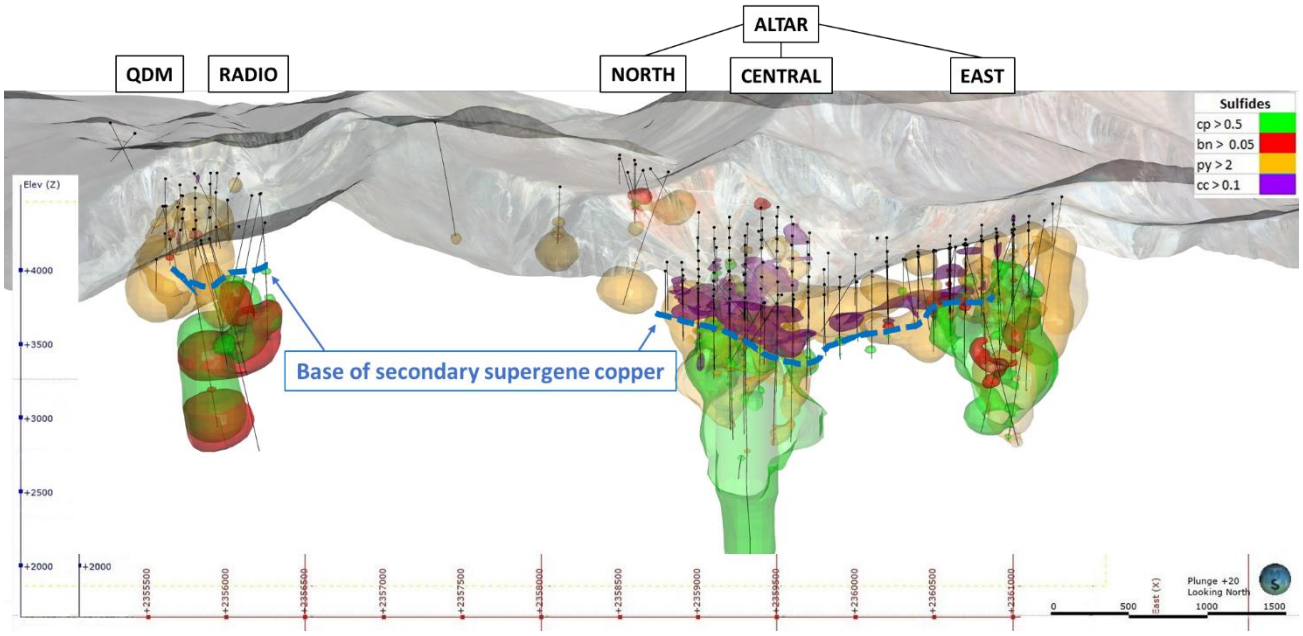


Figure 8: Distribution of sulphide minerals.

**Arsenic Distribution**

Historically, there was a perception that arsenic is a potential issue at Altar. Prior to Aldebaran acquiring Altar, there had been no attempt to geologically constrain and model the arsenic distribution. This, in addition to using a geo-statistical model, resulted in arsenic being artificially spread out in the 2018 resource model. A significant amount of the arsenic at the Altar project occurs within the leach-cap and supergene zones primarily above Altar Central (Figure 9). This realization could have material impacts on the project as the leach-cap rocks will not be processed as they have no mineralization, and the supergene zone could potentially be processed by SX-EW heap leach technology, which would not extract the arsenic. Geological evidence indicates that the arsenic in the primary (hypogene) mineralization is hosted by sub-vertical, centimeter-scale quartz-enargite-pyrite veinlets that occur within narrow, metre- to tens of metre-scale structural zones that have now been meticulously modelled in three-dimensions, which will better constrain the arsenic in the new resource model and reduce the overall arsenic content of the reportable primary (hypogene) copper mineralization.

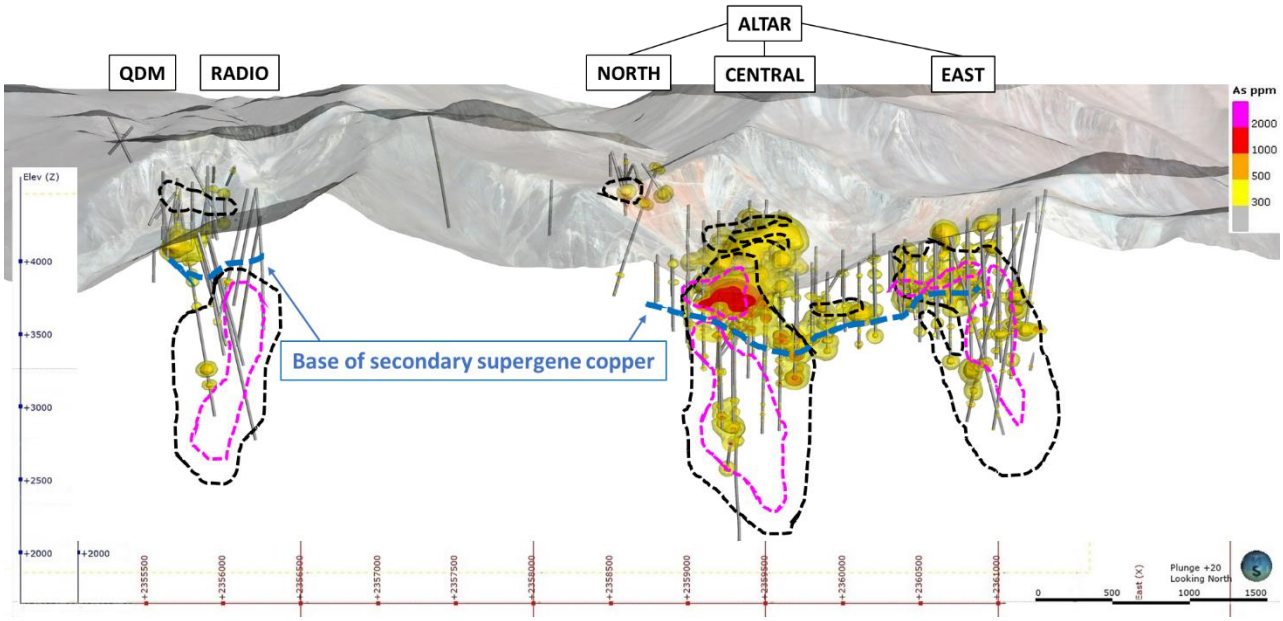


Figure 9: Arsenic distribution relation to the 0.5% Cu (black dashed line) and 0.7% Cu (magenta dashed line) grade shells. Note that most of the high arsenic is found within the leach cap and secondary (supergene) copper zones.

**Alteration Types**

The principal alteration types identified and modelled at Altar are Potassic-Biotite (PB), Potassic-K-Feldspar (PK), Green Sericite ± Chlorite (GSC), Tourmaline-Quartz-Sericite (TQS), White Sericite-Pyrite (WSP), Quartz-Pyrite-Clay (QPC), Sericite-High-Sulphidation (SHS), Sericite-Base Metal Carbonate (SBM), Chlorite (CHL), Gypsum-White Anhydrite (GYA), and Levander Anhydrite (ANL). At least two potassic alteration events have been documented (PBK1 and PBK2), which supports the concept that there are multiple mineralizing porphyry intrusive events. Copper mineralization is associated with both potassic alteration events, as well as with the Green Sericite ± Chlorite (GSC) and the Sericite-High-Sulphidation (SHS) alteration events. Figures 10 and 11 show the distribution and intensity of the potassic (PK + PB) and green sericite-chlorite (GSC) alteration types, which are both intimately associated with copper-gold mineralization.

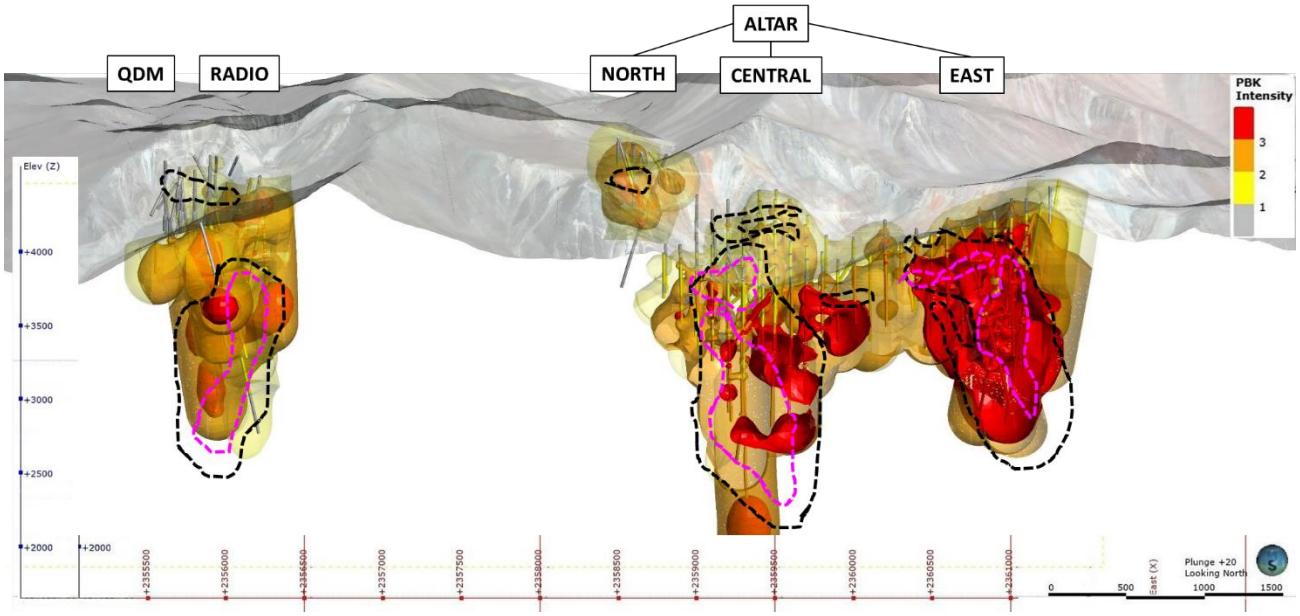


Figure 10: Potassic alteration (PK+PB) in relation to the 0.5% Cu (black dashed line) and 0.7% Cu (magenta dashed line) grade shells.

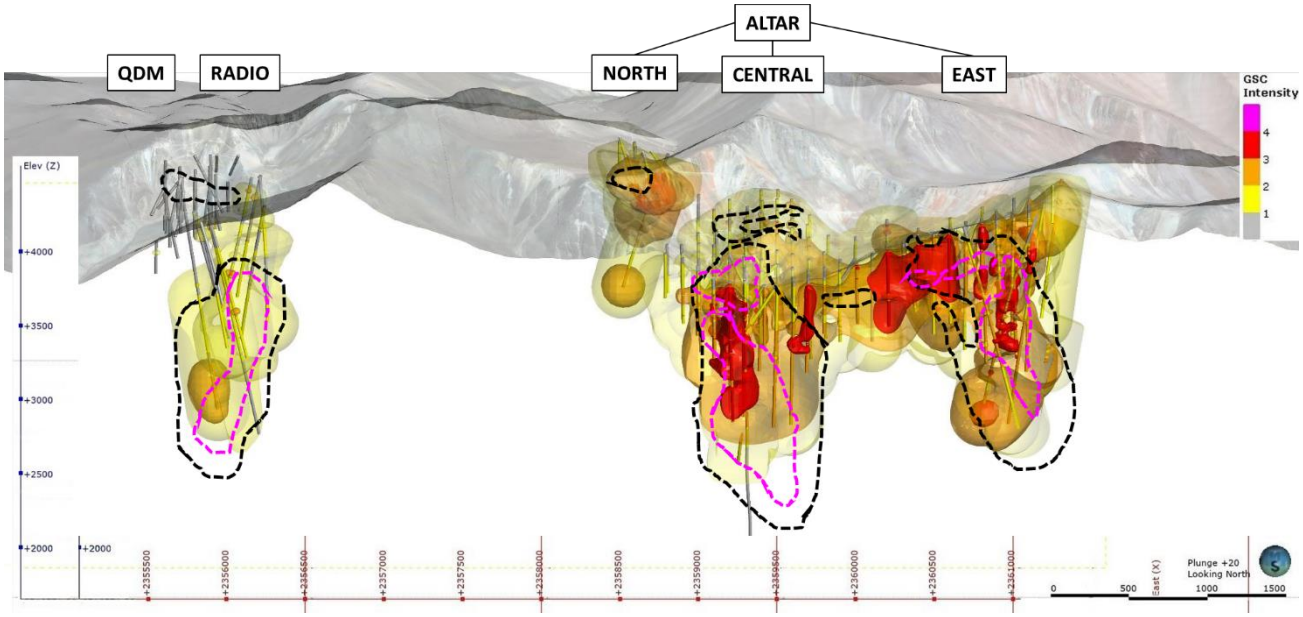


Figure 11: Green sericite-chlorite (GSC) alteration in relation to the 0.5% Cu (black dashed line) and 0.7% Cu (magenta dashed line) grade shells.

**Qualified Person**

The scientific and technical data contained in this news release has been reviewed and approved by Dr. Kevin B. Heather, B.Sc. (Hons), M.Sc, Ph.D, FAusIMM, Chief Geological Officer (CGO) and director of Aldebaran, who serves as the qualified person (QP) under the definitions of National Instrument 43-101.

**ON BEHALF OF THE ALDEBARAN BOARD**

"*John Black*"

John Black
Chief Executive Officer and Director

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**About Aldebaran Resources Inc.**

Aldebaran is a mineral exploration company that was spun out of Regulus Resources Inc. in 2018 and has the same core management team. Aldebaran acquired the Rio Grande copper-gold project located in Salta Province, Argentina from Regulus along with several other early-stage projects in Argentina. Aldebaran also has the right to earn up to an 80% interest in the Altar copper-gold project in San Juan Province, Argentina from Sibanye Stillwater. Altar hosts a large porphyry copper-gold system with mineralization currently defined in three distinct zones. The Altar project forms part of a cluster of world-class porphyry copper deposits which includes Los Pelambres (Antofagasta Minerals), El Pachon (Glencore), and Los Azules (McEwen Mining). A total of 259 drill holes (124,701 m) have been completed at Altar between 1995 and 2019. In mid-2018 an updated NI 43-101 resource was prepared for Altar by Independent Mining Consultants Inc. based on the drilling completed up to 2017. The updated Altar NI 43-101 report is available on Aldebaran's SEDAR profile at www.sedar.com. Aldebaran's primary focus is the Altar project with a view to discovering new zones with higher-grade mineralization.

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*Certain statements regarding Aldebaran, including management's assessment of future plans and operations, may constitute forward-looking statements under applicable securities laws and necessarily involve known and unknown risks and uncertainties, most of which are beyond Aldebaran's control. Often, but not always, forward-looking statements or information can be identified using words such as "plans", "expects" or "does not expect", "is expected", "budget", "scheduled", "estimates", "forecasts", "intends", "anticipates" or "does not anticipate" or "believes" or variations of such words and phrases or statements that certain actions, events or results "may", "could", "would", "might" or "will" be taken, occur or be achieved.*
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