



# cascaderocopper

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## RARE METAL DISCOVERY IN ARGENTINA POTENTIAL FOR LARGE BULK TONNAGE DEPOSIT

*Cascadero Copper (the “Company”) has received final assays from seven core holes completed at Taron. The Company is pleased to announce assays of drill core that confirm values of cesium and rubidium continue to depth in all core holes. The collars of the most northerly and most southerly drill holes are about 1,050 metres apart. All seven drill holes ended in mineralization. The drill holes are within an area of trenching that is 800 metres east west by 1600 metres north south. The Taron Zone is open in all directions.*

### TABLE ONE

**TARON DRILL HOLE ASSAYS FOR CESIUM AND RUBIDIUM <sup>(1)</sup>**

HOLE ID	AZM	DIP	EOH (M) <sup>2</sup>	FROM (M)	TO (M)	INT (M)	CESIUM (PPM) <sup>(3)</sup>	RUBIDIUM (PPM)
TAR-09-1	70°	-50°	142.5	0.0	142.5	142.5	582	108
TAR-09-2	70°	-50°	200.2	8.0 <sup>(4)</sup>	202.5	192.2	267	70
TAR-09-3	70°	-50°	118.0	21.0 <sup>(5)</sup>	118.0	97.0	406	79
TAR-09-4	70°	-50°	132.5	1.5	132.5	131.0	1,177	148
<b>inc</b>				<b>1.5</b>	<b>48.0</b>	<b>46.5</b>	<b>2,224</b>	<b>246</b>
TAR-09-5	70°	-50°	137.5	2.0	137.5	135.5	1,663	181
<b>inc</b>				<b>2.0</b>	<b>48.0</b>	<b>46.0</b>	<b>2,885</b>	<b>280</b>
TAR-09-6	70°	-60°	142.5	4.0	142.5	138.5	944	103
<b>inc</b>				<b>10.0</b>	<b>58.0</b>	<b>48.0</b>	<b>1,651</b>	<b>211</b>
TAR-09-7	250°	-50°	34.0 <sup>(6)</sup>	4.0	26.0	22.0	644	157

**NOTES:**

- |                     |  |
|---------------------|--|
| 1. Weighted Average | 4. Casing to 8 metres                        |
| 2. M = metres       | 5. Casing to 21 metres                       |
| 3. PPM = Gram       | 6. No core recovery from 26.0 to 34.0 metres |

### DETAILS OF THE DRILL PROGRAM

TAR-09-1, 2 and 3 are in the north eastern area and drill collars are ~175 metres apart. TAR-09-4, 5 and 6 are in the southwestern area and the drill collars are ~150 metres apart. These six holes are drilled at an azimuth of 70°. TAR-09-7 was drilled 225 metres east and on the same section as TAR-09-04 but at an azimuth of 250°. TAR-09-03 is the most northerly drill hole and TAR-09-05 is the most southerly and they are ~1,050 metres apart. All core holes dip at -50°. Total core drilled was 907.4 metres and 851.7 metres were assayed in 416 samples mostly in 2-metre intervals.

The drill holes are located on the western part of a plateau at 4,250 metres a.s.l. in the southern part of the Ochaqui basin, northwestern Argentina. The plateau has vertical relief above the local Quebrada of about 80 metres. The seven drill holes had a planned EOH of 200 metres but due to the friable nature of the host lithology six of the seven holes were stopped before reaching planned depth due to lost circulation and caving. Despite difficult drilling conditions, all holes established down dip continuity of mineralization and all holes ended in mineralization. Mineralization variably outcrops and is present in trenches over an area of 800 metres east west by 1,600 metres north south and open in all directions.

Cesium mineralization occurs regionally in outcrop at Taron’s Apacheta Blanca, which is ten kilometres north of Taron and at Tarons’ Punco Zone, which is 6,000 metres south east of the drill holes. In addition to Apacheta Blanca, SALTA holds a

100% interest in six properties in Salta and Catamarca provinces that have cesium mineralization in outcrop. Further work is planned on all cesium properties.

### **GEOLOGY AND MINERALIZATION**

Mineralization at Taron prospect represents a variant of the epithermal-hot spring class of mineral deposits that is highly anomalous in the alkali metals cesium (Cs) and rubidium (Rb). The mineralization is locally associated with anomalous polymetallic mineralization including manganese, cobalt, copper, lead, zinc, arsenic, thallium and silver. Mineralization is hosted by moderately to poorly consolidated to very friable sandstone and conglomerate deposited within a Late Tertiary Graben structure along the eastern margin of the Puna of northwest Argentina. Cesium and rubidium mineralization occurs as amorphous to poorly crystalline minerals that are interstitial to the sandstone and conglomerate clasts. Polymetallic mineralization associated with the cesium mineralization is correlative with the presence of manganese. Alteration associated with the alkali metals comprises opal, opalization and clay minerals.

### **TARON DEPOSIT PROPERTIES**

The properties of the host sediments at Taron appear to offer potential for a relatively low-cost mining operation as its composition consists of a friable mixture of sand, sandstone, tuff, pumice and other polymictic fragments. The overburden in the area of the drill holes is nominal as most mineralization crops out at surface. Inspection of drill core from Taron suggests that drilling and blasting may not be required and the deposit could be mined primarily with a ripper and excavator followed by trommeling of the mineralization and subsequent dissolution of the fines.

### **MINERALOGY**

Initial mineralogy was done in 2006 and ten one-metre samples were delivered to Micron Geological Ltd, North Vancouver. The samples were from a hand dug trench, which cut through a 39 metre vertical section from the plateau and stopped at the alluvium above the Quebrada. Cesium in these samples is present in one main Fe-As mineral or mineraloid. This mineral is not yet definitely identified, but it appears to have the approximate composition: 43% Fe<sub>2</sub>O<sub>3</sub>; 37% As<sub>2</sub>O<sub>3</sub>; 11% Cs<sub>2</sub>O; 3% K<sub>2</sub>O; 4% SiO<sub>2</sub>; and, 1.3% P<sub>2</sub>O<sub>5</sub>. X-ray diffraction patterns were determined on three samples that match the mineral pharmacosiderite, (K, Fe<sup>3+</sup><sub>4</sub> [AsO<sub>4</sub>]<sub>3</sub> [OH]<sub>4</sub> 6-7 H<sub>2</sub>O). It is speculated that the Taron mineral may be a Cs analogue, with Cs replacing K. Minerals with less Cs were also analyzed, possibly indicating other compositions, but these may also be caused by overlapping analysis of adjoining grains. None of the mineral suite at Taron, including cesium, is radioactive.

### **METALLURGY**

SALTA retained SGS Lakefield Laboratory (Lakefield, Ontario) to conduct preliminary metallurgical test work on ten tonnes of samples from Taron. Agitated, vat leaching and flotation tests were conducted in 2006 and 2007. Although the process has not been fully optimized, results to date indicate that the cesium and rubidium are readily dissolved by agitated leaches, by either using acid (H<sub>2</sub>SO<sub>4</sub>) or an alkali (NaOH). The acid process may be dependent on acid conditions and temperature. Under test conditions, cesium extractions higher than 95% can be readily achieved in a few hours. Vat leaching tests at room temperature on -6 mesh material produced slower recovery and were shown to be acid dependent. Acid leaching was successful on the concentrate and the concentrate slimes. Alkaline leaches (NaOH) indicated that the cesium could be solubilized at high pH from both the mineralization and the slimes concentrate. In general, the rubidium and arsenic extraction followed that of cesium. The majority of arsenic in solution is precipitated by ferrous sulphate with low loss of Cs-Rb in the process. More metallurgical work is planned as Taron mineralization includes a suite of anomalous metals, such as copper, zinc, silver, thallium, strontium and manganese. All are present and have important markets. The sampling, trenching and metallurgy cost approximately US\$300,000 and was financed by a major Oilfield Supply company under a Letter Agreement with SALTA.

### **CESIUM MARKETS- VOLUMES AND PRICES**

Cesium and rubidium are Group 1 alkali metals, which includes Lithium (Li), Sodium (Na) and Potassium (K). Sodium and potassium have large volume markets and are commodity priced as there are mines globally and a diverse user market. Lithium has a rapidly growing global market that is estimated at ~US\$800 million annually. Its market is characterized by four producers that control 85% of the world supply and a larger group of consumers. Rubidium has a small market, generally for research, partly due to its high price and limited availability. There are two primary producers of cesium and several consumers such as oil and gas, chemical and pharmaceutical companies. There are at least 47 cesium compounds manufactured for a variety of industrial, chemical and medical applications. Most of these markets are relatively small and the products are expensive. The principal high-volume cesium compounds and industry prices are shown in Table Two below. In general, the price for equivalent rubidium products in Table Two is higher than for cesium.

Currently, Cesium Formate is the largest volume market for cesium. It is typically available in barrels (42 US gallons) and has a density of ~2.3 kg/litre. A barrel contains ~159 litres so a barrel of Cesium Formate (90% solution) would weigh ~365.7 kgs and contain ~218.5 kgs of cesium. There is potential for other high-volume markets such as heavy media separation, cleaning impurities from coal to enable lower harmful emissions, DNA sampling technologies and research on cesium-silica compounds (cesium glass) for long term storage of radio active waste was done. NASA and the US Army

developed and use cesium high-performance alkaline batteries for space craft applications and for extreme weather conditions as these batteries operate in a wider range of temperatures than conventional alkaline or acid batteries.

Cabot Corp (CBT-N) is the major supplier of Cesium Formate to the oil and gas market. It is used both for drilling high-temperature high-pressure oil and gas wells and as a completion fluid. Cabot owns the Bernic Lake mine near Lac Du Bonnet, Manitoba, which is a large cesium bearing pegmatite. The cesium resource is present in the mineral pollucite which is a hydrated aluminosilicate. Pollucite is not a common mineral but it is present in zoned Pegmatites around the world. The production from two mines one in Canada (Bernic Lake, Manitoba) and one in Africa (Bikita, Zimbabwe) supply nearly 100% of the global market. Bernic Lake hosts the majority of the worlds' cesium reserves and is the most economic deposit at present. Cabots' Bernic Lake facility produces a pollucite concentrate that is partly marketed to third parties and is partly used by Cabot for manufacturing Cesium Formate. Cabot is the single largest producer of pollucite and Cesium Formate and Cabot holds a dominant position in cesium mining and marketing.

**TABLE TWO**

**THE PRINCIPAL CESIUM COMPOUNDS AND PRICES <sup>(1)</sup>**

<b>Element - Compound</b>	<b>Linear Formula</b>	<b>Cesium g/kg in Compound</b>	<b>Sale Unit</b>	<b>Sale Unit US\$</b>	<b>US\$/gram Cs <sup>(2)</sup></b>
Cesium Metal ~99.95%	Cs	999.50	5 grams	\$ 252.00	\$ 48.50
Cesium Chloride 99%	CsCl	710.05	1000 kg	\$ 156.98/kg	\$ 0.22
Cesium Hydroxide 99.5%	CsOH.H <sub>2</sub> O	787.5	250 kg	\$ 227.40/kg	\$ 0.29
Cesium Formate ~90%	HCOOCs (dry)	616.8	0.5 kg	\$ 364.50	\$ 1.16

**Notes: 1. Prices from Noah Technologies Corporation and Sigma-Aldrich Inc  
2. In addition to mining costs, includes packaging, freight, processing cost and profit margin**

The reader should be aware that the prices quoted in **Table Two** are for small volumes of cesium compounds, except for Cesium Chloride, which is for a tonne. The price quoted in **Table Two** for Cesium Formate is for 500 grams (0.5 kg), while the majority of sale units of Cesium Formate is either in barrels (~365 kgs) or tonnes (1,000 kgs) but the price for these sale units is not published. In reality, the market price for most industrial minerals is driven by volume and it is industry practice that the larger the sale unit the lower the price per kilogram.

**CESIUM FORMATE – ESTIMATED GLOBAL REVENUE – US\$**

Cesium Formate is a salt (pH = ~8) that is soluble in water and forms a stable compound. It has a density of 2.3 g/cm<sup>3</sup>. Data regarding market size, quantity used in its applications and the price especially for high-volume applications of Cesium Formate are not readily available. Cabot does not sell Cesium Formate. It leases the product job by job to oil and gas companies and with it, Cabot provides engineering and application functions for the drilling and the oil-gas companies. Cabots' revenue in 2008 from Cesium Formate activity amounted to ~US\$80 million. The revenue, however, is based on charging the operating company for the amount of Cesium Formate lost (or not recyclable) during the drilling operation. This loss is estimated to be 10% to 15% of the formate employed. The total number of barrels on the drill platform could exceed 1,000. Given revenue of US\$80 million and an estimated average loss of 12.5 %, implies a market of ~US\$600 million per year if the product employed were sold.

**CESIUM FORMATE PRODUCT INFORMATION**

Cesium Formate is used increasing in the oil and gas exploration industry. Cesium Formate is brine and does not contain solids or oil and it dramatically improves well control, well integrity, as well as increasing the speed of drilling. The high-density formate drilling fluid systems have emerged as viable reservoir drilling and completion fluids for deep high-temperature oil and gas wells both offshore and onshore. Upon their commercialization in the early 1990s, these systems

were shown to possess a unique combination of properties that comprise minimal solids, maintain rheological stability at high temperatures, minimize reservoir damage and satisfy stringent environmental requirements. The formate-based systems exhibit faster penetration rates than the water-based fluids. Cesium Formate eliminates the solids sag problems experienced with barite based drill mud and as a completion fluid, it improves well productivity. Pressure and temperature shifts occur very rapidly in oil drilling and Cesium Formate helps stabilize constant pressure on the formation. Cesium Formate is regularly cited as responsible for increasing production, efficiency and safety. The non-corrosive feature of Cesium Formate is equipment friendly and it minimizes wear and tear on equipment as it is not abrasive and does not sag when the drill column is not rotating. Importantly, Cesium Formate is biodegradable and is recycled.

### **SALTA LETTER AGREEMENT**

While cesium is a rare metal its compounds can also be categorized as an Industrial Mineral. The industrial mineral industry has more vertically integrated business models than does other mining sectors so market penetration into these markets is an issue for junior companies. It becomes important to have either an off-take agreement or a partner that already has market share. Taron is subject to a Letter Agreement between SALTA and a major USA based Oilfield Supply company, which has the right to review the Taron assays from drill core and to propose a mutually agreeable joint venture to further explore and develop the property. The principal components of the agreement include cash payments and a royalty stream from production to SALTA. The Oilfield Supply company has all exploration, development and capital and operating expenditure obligations. The right of the Oilfield Supply company is restricted to acquiring a 100% interest to the cesium and rubidium resource of the Taron deposit.

### **QUALIFIED PERSON AND ASSAY INFORMATION**

The Taron exploration program was supervised and directed by Dr. Tom Richards PhD., P.Geol who is the qualified person for the Company's Argentine exploration programs. SALTA personnel supervised the drill program and conducted all logging and sampling of the drill core. Samples were first taken to the Company's office in the city of Salta then packaged and shipped by SALTA personnel to ACME Analytical Laboratories in Santiago Chile for preparation and then flown to ACME Analytical in Vancouver Canada for assay.

Taron is located in northwestern Argentina and is 100% owned by SALTA Exploraciones SA, which is 99.99% owned by SESA Holdings LLC. Cascadero Copper owns 50% of SESA Holdings LLC.

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