To: Brian & Steve (The two current mine managers at Cantung)

From: Kai Corley-Jory

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Subject: Proposal for the feasibility of re-opening the Cantung tungsten mine in N.W.T. Canada.

**Introduction**

Canada has a long history of tungsten production at the Cantung mine in the N.W.T. sporadically from 1962 onward. However operations ceased in 2015 due to the previous owners going bankrupt. Other countries like China and Russia currently are the largest producers of tungsten in the world. Tungsten has a variety of uses in industrial settings, it is mainly used is in heavy metal alloys to make cutting tools, this gives tungsten a strong export potential as there are few substitutes. The main goals of this report are to showcase the reasons why or why not Cantung could be a profitable enterprise if re-opened. Canada is underutilizing its natural resources when it comes to tungsten in the N.W.T. and I want to know why.

**Statement of Problem**

The Cantung mine in N.W.T. has significant ore reserves and tailings that could be re-processed to produce tungsten. Currently, Cantung isn’t in production, and this is primarily due to the world price of tungsten allowing other countries to sell it at a lower price than it could be produced for from Cantung. Because of this, Canada is missing out on an opportunity to produce and use its own resources domestically or export them.

**Proposed Solution**

There many steps that could be taken towards re-opening and operating the Cantung mine that would make it more profitable than it had been in the past. But another factor we have to look at is the market price of tungsten and the factors that affect it. With new technology for ore processing in addition to the existing infrastructure at Cantung, and additionally the reprocessing of vast tailings dams at the mine, it may be feasibly to re-open the mine. All this coupled with the fact that if the mine were to processes the tungsten and upgrade it further than before, they could vastly increase their profit margin. This alone may make it feasible to open the mine in a tungsten market with a hostile price point.

**Scope**

To assess the feasibility of re-opening Cantung, I plan to look at six areas of interest.

1. What affects the current price of tungsten in both the domestic and foreign markets?
2. What are the current demands of tungsten? Is it in high demand in Canada or more so elsewhere?
3. Which countries around the world are the major producers of tungsten and what are the conditions that allow them to be profitable?
4. What new ore-processing technologies could be applied at Cantung and what would be the implications of this?
5. How big are the ore reserves at Cantung and how long of a mine life would that allow for?
6. Could further processing of the tungsten into a finer concentrate than was done before at the mine make it a more profitable enterprise?

**Methods**

My main resources will include that of myself and my employer for the summer of 2018 (professional geologist and former employee at Cantung) as well as other colleagues and faculty involved in the UBC earth and ocean science faculty and geology department. I will be conducting interviews with my colleagues and former employer with a set of questions addressing the topics mentioned in the scope portion. I will also be conducting a literary review of mine reports from major producers of tungsten around the world, and previous reports done on Cantung. Further, I will have to do economic research on the causes of price fluctuation in the tungsten market, specifically to find out what the international demand for tungsten is. Lastly I will have to research newer technologies that have to do with the processing of tungsten ore and the associated upgrading processes.

**My Qualifications**

I am a 4th year geology student and have experience working in and around the Cantung deposit in the N.W.T. During the summer of 2018, I undertook a field assistant position of a master’s student at UBC doing his thesis on the formation of the Cantung deposit. We spent a month in-and-around the currently closed mine, collecting data and mapping for his thesis project. Since then I have undertaken a directed studies project on the alteration of one rock unit type that intersects the Cantung mine and contains significant tungsten mineralization.

**Conclusion**

Canada has some of the most abundant natural resources of any country in the world. I aim to find out why we aren’t using some of them like tungsten to strengthen our economy. Through covering all the topics mentioned in my scope I hope to determine why these resources aren’t currently being mined and find out what conditions would be necessary to do so. With your approval, I will begin research to address this dilemma and find out if it would be feasible to re-open the Cantung mine for tungsten production.