ALBERTA INNOVATES

ENERGY, AEROSPACE, DEFENCE & ADVANCED MATERIALS

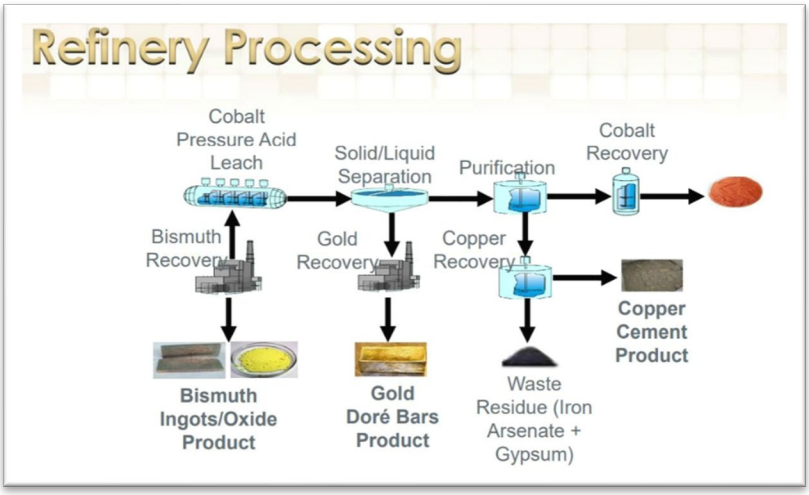
ADVANCED MATERIALS

CRITICAL MINERALS

FUNDING DETAILS

NICO Project Alberta Refinery Process Pilot Plant

Canada's path towards meeting its net zero emissions commitments is driving demand for energy storage, and critical minerals for batteries. Critical mineral supply risks include geographic concentration of critical minerals in politically unstable regions and limited domestic capacity for refining metal concentrates to manufacturer specifications. Fortune Minerals Limited is developing a vertically integrated mineral recovery project (NICO Project), comprised of a planned mine, mill and concentrator in the Northwest Territories (NWT) and a hydrometallurgical refinery in Alberta's Industrial Heartland to process concentrates. This project will pilot and test Fortune's parallel refining process. End products will be cobalt, copper, bismuth, and gold.



RECIPIENT:
Fortune Minerals Ltd.

PARTNERS:
Natural Resources Canada

TOTAL BUDGET:
$1,212,711

AI FUNDING:
$172,670

PROJECT DATES:
SEP 2023-OCT 2025

PROJECT TRL:
Start: 5
End: 6

APPLICATION

The parallel refining processes for recovering a variety mineral from concentrate are expected to be more efficient than independent or sequential recovery of minerals from concentrate. Three of the minerals (cobalt, bismuth and copper) to be recovered are on Canada's Critical Mineral List and in demand for battery manufacturing. The fourth mineral, gold, has a variety of uses in electronics and other sectors.

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PROJECT GOALS

A concentrate production pilot will be set up and operated at SGS Lakefield (Ontario). Project Goals included:

- Establishment of a pilot plant to benchmark and test at least 10 tonnes of ore mined and concentrated from the NICO site in Northwest Territories (NWT).
- Evaluate materials and processes, including characterization, and testing and lab analysis of feed concentrates, intermediary concentrates and end products against quality parameters.
- Separate and test ferric arsenate from the gypsum residue to confirm stability of ferric arsenate for disposal.
- The development of detailed engineering for process design development, innovations in concentrate production, and test work reports.
- Learnings from the project have and will be shared with the mineral industry and associated research sectors in support of the NICO mine and the proposed Alberta refinery.

BENEFITS TO ALBERTA

- Attract investment to develop the NICO mine in the Northwest Territories and the Alberta NICO refinery.
- Potential for the NICO refinery to process minerals from existing and future mines, and mineral rich waste streams within our outside Alberta.
- Help build Alberta's capacity and reputation in the domestic battery value chain.
- Create opportunities for new jobs in a low carbon economy.
- Stimulate related research and highly qualified and skilled personnel (HQSP) development at Alberta post-secondary institutions.
- Reduce Canada's reliance on higher-risk sources of critical minerals.
- Foster economic partnerships between Alberta, the Northwest Territories, and Indigenous groups.

1 Technical Paper / 5 Presentations

1 New Product/Service

>100 Future Jobs

CURRENT STATUS

Oct 2025

Project is now complete with major project goals achieved. The final report for the project has been posted. Key outcomes included improved management of feed variability and down-stream product quality; confirmation of more compact and energy efficient design for concentrate production without sacrificing metal recoveries as supported by test work; validation of Fortune's flowsheet and outcomes regarding metal recoveries and purities; and environmental performance data as it relates to waste characterization for residues generated. Fortune is proceeding with plans to develop the NICO mine and establish a refinery in Alberta.