Search: Geoscience BC's New Minerals Project in West-Central British Columbia (Phases I and II, covering NTS 093E, F, G, K, L, M, N, 103I)

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Madu, B.E. (2016): Search: Geoscience BC's new minerals project in west-central British Columbia (phases I and II, covering NTS 093E, F, G, K, L, M, N, 103I); *in* Geoscience BC Summary of Activities 2015, Geoscience BC, Report 2016-1, p. 39–42.

Introduction

The Search project was conceived by the Geoscience BC's Minerals Technical Advisory Committee to generate high quality regional magnetic data and complementary geoscience for key mineral areas of the province. Geoscience BC has previously conducted similar projects that included regional magnetic surveys, including the TREK, Northern Vancouver Island, QUEST-Northwest and Jennings River projects. The minerals industry will be able to use this new information to focus their exploration efforts in underexplored areas of the province. Communities and First Nations will also benefit from new geoscience information to assist with resource management decisions and realizing economic opportunities.

The project will include up to three years of work, to be accomplished in four phases (Figure 1). Phases I and II of the Search project are based on the successful QUEST-West project of 2008 to 2010. In June 2015, the planning process for Phase I of the Search project was announced and $2.415 million allocated to the project. This budget will permit the completion of Phase I and fund initial Phase II activities.

The project name 'Search' was attractive since it contains the word 'arch' and is a reference to the early phases of the program focusing on the Skeena arch: a paleotopographic high that was eroded into the Bowser and Nechako basins (Tipper and Richards, 1976) and today bridges the span between the Stikine and Quesnel geological terranes. Several active and closed mines, such as Huckleberry, Endako, Bell-Granisle and Equity Silver, are located within the Skeena arch. Proximity to infrastructure, modest topography and skilled labour are a few of the advantages that make developing projects in this region attractive.

Geophysical Program

The QUEST-West project completed airborne time-domain electromagnetic (TDEM) and gravity surveys at a line spacing of 4 and 2 km respectively in this region (Kowalczyk, 2009). Detailed aerial surveys were flown over six known deposits: Morrison, Bell-Granisle, Equity Silver, Endako and Huckleberry (MINFILE 093M 007, 093M 001, 093L 146, 093L 001, 093K 006 and 093E 037; BC Geological Survey, 2015).

Like these recent surveys, an airborne magnetic survey with a line spacing of 250 m creates an opportunity for new geological interpretations at a property-scale for explorers. The regional-scale coverage supports the development of a refined tectonic framework in areas of poor access or low rock outcrop as seen in the TREK project.

Phase I field activities for the Search project began in August 2015 and were officially launched in September, with a media event in Terrace. The planning process identified two blocks to be flown in 2015 and a contract was awarded to Vancouver-based Precision GeoSurveys Inc., who flew both blocks as one (Figure 2), using a stinger-mounted helicopter flying a fixed height drape over the land surface. The survey plan consisted of east-west trending flight lines, with north-south tie lines specified at 2500 m intervals. The total flight line distance, including tie lines, was estimated at 30 000 km. Owing to significant topographic relief and coastal weather conditions, it was expected to be a challenging program to complete. Data acquisition was substantially complete at the time of writing and results are expected to be ready for release at the Mineral Exploration Roundup 2016 conference. Quality assurance and quality control services for the program were provided by PK Geophysics Inc. In addition, Hemmera provided an ungulate management plan to minimize the impact of the program on caribou and goats in the area. Survey pilots and crew tracked ungulate interactions and were empowered to deviate flight patterns to lessen negative effects on animals.

Planning for 2016 Phase II activities is expected to commence in late fall 2015 and continue into 2016.

Geochemical Program

The Search project area has excellent geochemical coverage owing to re-analyses and infill sampling under previous Geoscience BC projects, such as QUEST-West

Keywords: *Search project, airborne survey, geophysics, magnetics, Skeena arch, Stikine terrane, Quesnel terrane*

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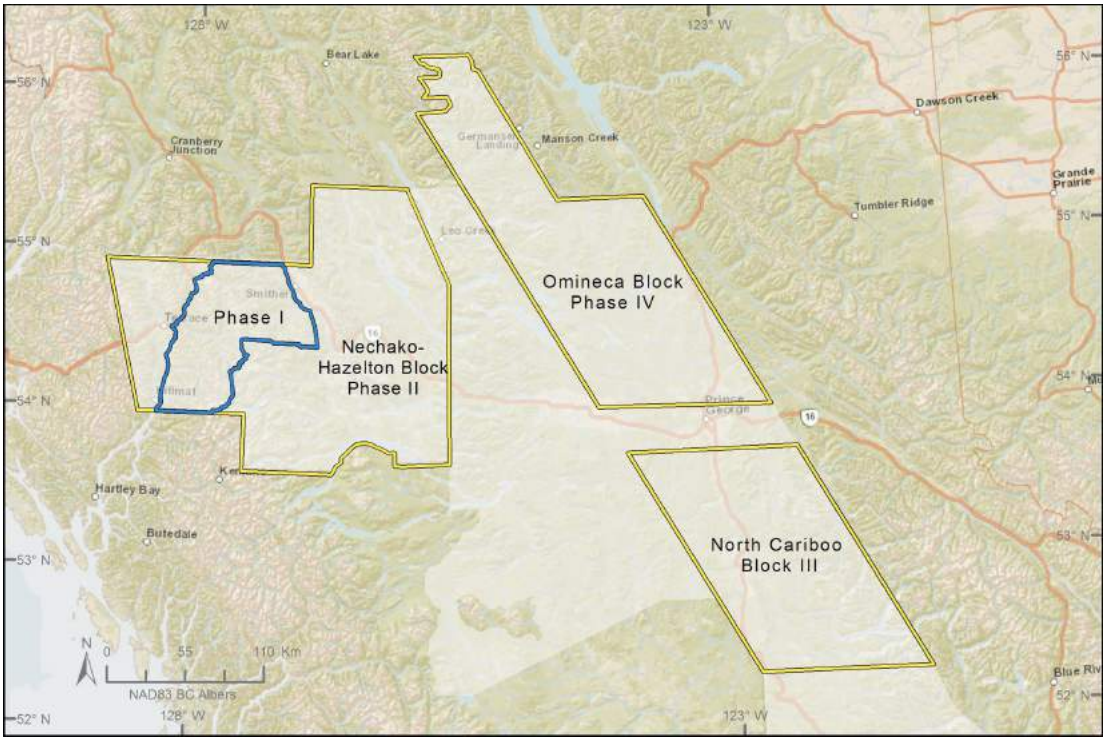

Figure 1. Conceptual location of the four proposed blocks in the Search project and their phased completion. Planning and consultation processes for all phases is expected to alter ultimate activity areas. Blue outline, Search Phase I survey area; yellow outlines, coverage of proposed phases of the Search project; transparent mask, coverage of previous airborne geophysical surveys conducted by Geoscience BC. Background data from GeoBC, 2015a–d.

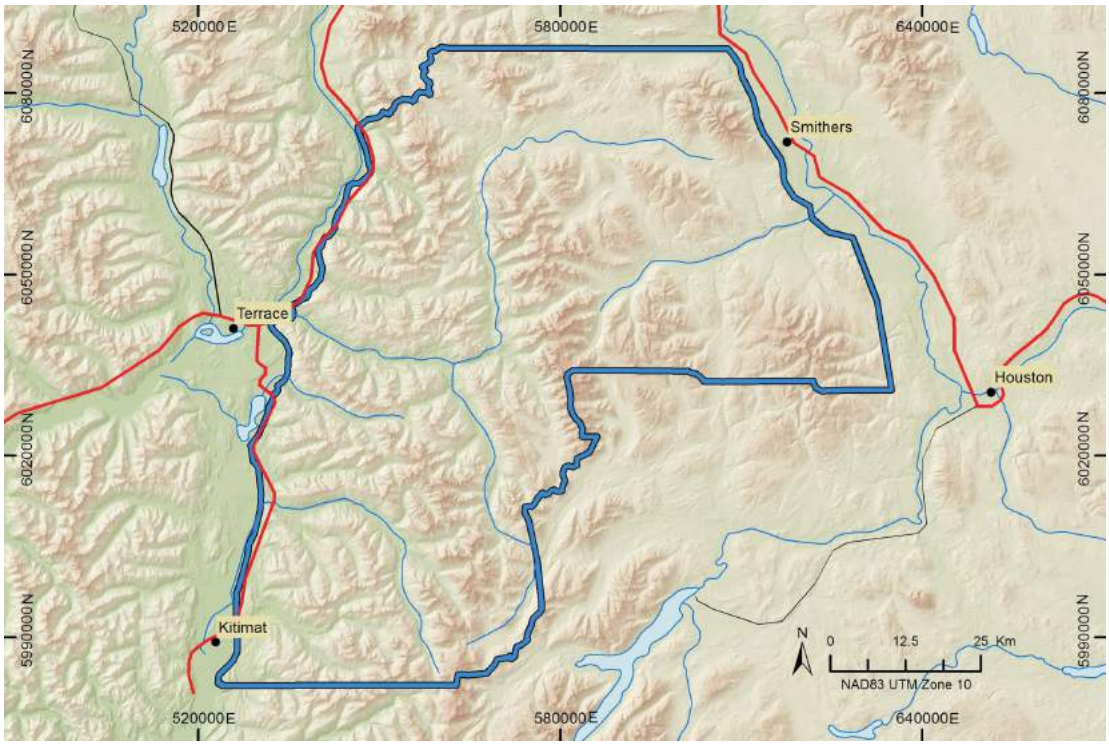

Figure 2. Phase I planning identified a 6700 km^2 target area (outlined in blue) to be flown in 2015. The planned survey will generate approximately 30 000 line-kilometres of new magnetic data. Background data from GeoBC, 2015a–d.

(Jackaman et al., 2009). Phase I of this program did not include funding for new geochemical sample collection; however, it is anticipated that value-added or innovative geochemical proposals will be considered in the future. Additional funds have been allocated for geochemistry work, as a part of Phase II of the Search project. Specific funding allocations for geochemistry would be made available as suitable projects were identified and/or further budget allocations occurred.

Integration Program

A desired outcome when generating large multiparameter datasets is to integrate them into new products with increased value that promote new understanding about the mineral potential of an area. The Search project is expected to stimulate renewed interest since it adds new fundamental information in an already data-rich region. Recent geological mapping by the BC Geological Survey in the Terrace–Kitimat area by Nelson (2009) will benefit from new high quality geophysical information and conversely provide better interpretation of the survey data itself. East of the Terrace area, the Nechako Project of the Geological Survey of Canada's National Geoscience Mapping Program (NATMAP) produced a comprehensive data library of digital geoscience information (Struik et al., 2007*)*. Financial support is planned for integration proposals as the Search project continues.

Summary

The Search project is a multiyear major project for Geoscience BC that is focused on generating new high quality regional magnetic survey data and complementary geoscience for key mineral areas of the province. In 2015, the program was launched with an airborne survey covering 6700 km^2. Data from the survey will be made available through both Geoscience BC's website and its web mapping application—the Earth Science Viewer.

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