

ROUND UP '96

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## DEVONO-MISSISSIPPIAN SYNGENETIC BASE-METAL DEPOSITS: NEW DISCOVERIES, NEW DIRECTIONS

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### Cardiac Creek Zn-Pb-Ag Deposit, Akie Property

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The Akie property, located 270 km northwest of Mackenzie, British Columbia, and 25 km southeast of the Cirque Zn-Pb-Ag-Ba deposit, is currently being explored by Inmet Mining Corporation. Inmet, as operator, holds a 60% interest in the property and joint venture partner Ecstall Mining Corporation holds 40% interest.

The property is situated within the Gataga district of the Kechika trough at the southern extent of the Selwyn basin. Several significant SEDEX-type Zn-Pb-Ag deposits are hosted within the basin, notably Howard's Pass, the Faro (Anvil) camp, MacMillan Pass camp, Driftpile and Cirque deposits. Within the Gataga district, sulphide mineralization is developed within the Gunsteel formation, an Upper Devonian-aged sequence of graphitic shales overlying Silurian-aged calcareous siltstones. Mineralization is typically intercalated within the graphitic shales as fine grained, massive to well bedded pyrite, sphalerite and galena with appreciable barite and carbonate. Remobilized sulphide mineralization occurs as veinlets in the surrounding lithologies.

Inmet optioned the Akie claims in 1992 and has since carried out exploration for SEDEX-type Zn-Pb-Ag mineralization in the form of geological mapping, prospecting, soil and lithogeochemistry, resistivity surveys and drilling. In 1994, Inmet geologists discovered outcropping high grade massive sulphide mineralization in "Cardiac Creek" (16% Zn, 2.8% Pb over 40 cm) and subsequently defined by drilling a significant sheet-like deposit of massive and semi-massive sulphides over a strike length of 1600 metres and dip length of 800 metres. True thicknesses of mineralization range up to 30 metres. The deposit remains open at depth.

The Cardiac deposit conforms to a SEDEX model. Sulphide mineralization is well bedded and stratiform in nature. The host lithologies of carbonaceous and pyritic shale suggests a sediment-starved, reducing environment of deposition. The distribution of coarse footwall breccia units as well as metal and geochemical zonations within the deposit are potentially useful vectoring tools for identifying syngenetic growth structures and the focus to the hydrothermal venting. Future exploration will be directed towards following these vectoring criteria, as well as testing other SEDEX targets on the property.

### The Northern Kechika Trough: New Geologic Insights and Indications of SEDEX Potential

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The Early to Middle Paleozoic Kechika Trough is a southwest-trending extension of the Selwyn Basin. In Paleozoic times it was bounded to the east by the shelf and platform of ancestral North America and to the west by the Cassiar Platform. These basins contain some of the Canadian Cordillera's most important sedimentary exhalative Pb-Zn-Ba deposits, including the Cambrian(?) Anvil camp, the Silurian Howard's Pass deposits and the important Late Devonian Earn-hosted deposits such as the Cirque, Driftpile, Tom and Jason.

The broad stratigraphic signature of the Kechika Trough is similar to the coeval Selwyn Basin. Recent detailed mapping within central and southern Kechika Trough indicates stratigraphic facies variations reflecting a northwestward deepening along the trough axis. This is particularly well developed in rocks of Cambro-Ordovician and Early to Middle Devonian ages. Shallow water clastics and overlying carbonates of Cambrian age disappear northwestward within the trough and are replaced by finer grained siliciclastics reflecting a lower energy, deeper water environment. Early Cambrian alkalic mafic to felsic volcanism occurs in the vicinity of the transition point in the Gataga Mountain area. Overlying carbonates and slates of the Cambro-Ordovician Kechika Group also display facies variations which mimic those in underlying Cambrian rocks. Thick sequences of calcareous slate, slate and limestone overlie thick Cambrian limestone and coarse siliciclastics whereas only thin sections of dark slate sit above more basal Cambrian siliciclastics. Dolomitic siltstone ('Silurian Siltstone') of the Road River Group forms an essentially uniform unit within the trough, but is locally removed along unconformities. Northwest-trending Early and Middle Devonian carbonate reefs of the upper Road River Group are developed in southern Kechika Trough and disappear northward into slates and calcareous slates.