Gold Mineralization and Alkaline Intrusive Rocks at the Hogatza Mine Camp, Northwestern Alaska – Connection or Coincidence?

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The Hogatza Mine Camp, or “Hog River Mine”, on the east flank of the Zane Hills, northwestern Alaska, has produced over 400,000 ounces of placer gold, yet little is known about lode gold source(s) and mineralization in the area. The gold placers occur < 1km down valley from a north-trending alkaline dike swarm, and 5km down valley from the eastern margin of the Zane Hills pluton (ZHP). The ZHP consists largely of granodiorite and is thought to be Late Cretaceous in age. The alkaline dike swarm ranges from granite to syenite, includes nepheline bearing rocks, and is thought to be mid-Cretaceous in age. Both were emplaced into Early Cretaceous massive andesitic to basaltic volcanic rocks. Numerous lode gold prospects are associated with the contacts of both intrusive suites, although their relative contributions towards the placer gold endowment is not known. Potassic and ultrapotassic intrusive rocks occur in a belt extending west from the Hogatza area. The ZHP forms the western limit of a belt of calc-alkaline intrusions; thus, the two magmatic belts overlap in the Hogatza area.

The Spruce Ridge prospect occurs in the western portion of the alkaline dike swarm and is to date the best studied lode prospect. Soil sampling at this prospect shows a broad north-trending Au-Ag-As-Bi-Cu-Te anomaly encompassing localized Ce-Mo-Nb-U-Th anomalies. Known gold mineralization within the Au-Ag-As-Bi-Cu-Te anomaly occurs as tourmaline-bearing felsite to granite, tourmaline-gossan veins, and some fault breccias. Gold values for rock samples in this area range up to 18g/t. A broad subparallel north-trending Ce-Mo-Nb-U-Th soil anomaly lies just east of and adjacent to the Au-Ag-As-Bi-Cu-Te anomaly. This anomaly is associated with larger scale, subparallel intrusions, including syenite, granite and quartz diorite, containing local disseminated sulfides and greisen style alteration. Much of the mineralization style suggests a possible porphyry-epithermal environment.

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