

## DESCRIPTIVE MODEL OF ALASKAN PGE

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APPROXIMATE SYNONYMS Zoned ultramafic Cr-Pt; Kachkanar-type (Cabri and Naldrett, 1984).

DESCRIPTION Crosscutting ultramafic to felsic intrusive rocks with approximately concentric zoning of rock types containing chromite, platinum, and Ti-V-magnetite (see fig. 29).

GEOLOGICAL ENVIRONMENT

Rock Types Dunite, wehrlite, harzburgite, pyroxenite, magnetite-hornblende pyroxenite, two-pyroxene gabbros, hornblende gabbro, hornblende clinopyroxenite, hornblende-magnetite clinopyroxenite, olivine gabbro, norite. Post-erogenic tonalite and diorite are commonly spatially related. Orthopyroxene-bearing rocks absent in Klamath Mountains.

Textures Cumulus textures, poikilitic, mush flow textures, lineated fabrics, layered.

Age Range Precambrian to late Mesozoic, most Paleozoic and Mesozoic.

Depositional Environment Deposits occur in layered ultramafic and mafic rocks that intrude into granodiorite, island arc or ophiolite terranes. Evidence indicates shallow levels of emplacement.

Tectonic Setting(s) Unstable tectonic areas.

Associated Deposit Types PGE placer deposits.

DEPOSIT DESCRIPTION

Mineralogy Assemblage 1: chromite + Pt-Fe alloys + Os-Ir alloys + platinum-iridium ± pentlandite ± pyrrhotite ± native gold ± PGE arsenides. Assemblage 2: Ti-V magnetite ± Pt-Fe alloys ± Os-Ir alloys ± cooperite ± bornite ± chalcopyrite.

Texture/Structure Assemblage 1: clots, pods, schlieren, wisps of chromite in dunite, clinopyroxenite, harzburgite. Assemblage 2: magnetite segregations, layers in wehrlite, pyroxenite, gabbro (see fig. 29).

Alteration None: post-mineralization serpentinization.

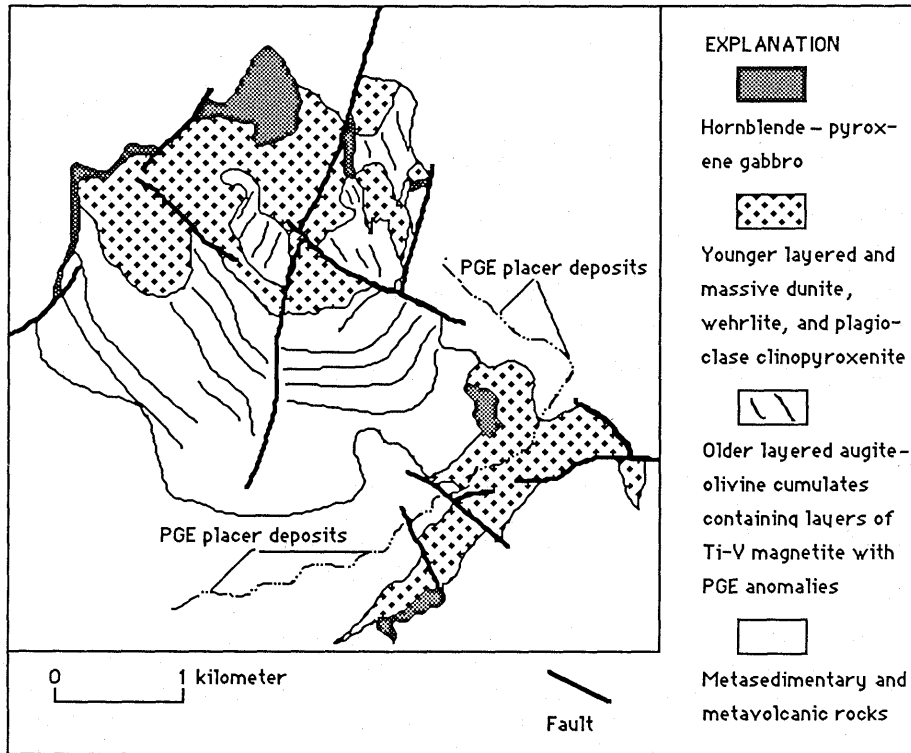
Ore Controls Appear to be restricted to specific rock types by magmatic processes.

Weathering Mechanical weathering produces placers; chemical weathering could produce laterites.

Geochemical Signature Cr, PGE, Ti, V, Cu, Ni, S, As. Assemblage 2 ores in Klamath Mountains are low in Cr and Ni.

EXAMPLES

Urals, USSR	(Duparc and Tikonovitch, 1920)
Duke Island, USAK	(Irvine, 1974)
Guseva-Gora, USSR	(Razin, 1976)
Tin Cup Peak, USOR	Page and others, 1982a)



**Figure 29.** Generalized geologic map of zoned ultramafic complex at Lower Coon Mountain, Calif. (from Gray and Page, 1985). V-rich magnetite layers and anomalous PGE concentrations typical of Alaskan Cr-Pt deposits are associated with plutons of this type.