

DESCRIPTIVE MODEL OF SYNOROGENIC-SYNVOLCANIC Ni-Cu

By Norman J Page

APPROXIMATE SYNONYMS Gabbroid class (Ross and Travis, 1981), gabbroid associated (Marston and others, 1981).

DESCRIPTION Massive lenses, matrix and disseminated sulfide in small to medium sized gabbroic intrusions in greenstone belts.

GEOLOGICAL ENVIRONMENT

Rock Types Norite, gabbro-norite, pyroxenite, peridotite, troctolite, and anorthosite forming layered or composite igneous complexes.

Textures Phase and cryptic layering sometimes present, rocks usually cumulates.

Age Range Archean to Tertiary, predominantly Archean and Proterozoic.

Depositional Environment Intruded synvolcanically or during orogenic development of a metamorphic terrane containing volcanic and sedimentary rocks.

Tectonic Setting(s) Metamorphic belts, greenstone belts, mobile belts.

Associated Deposit Types Komatiitic Ni-Cu, dunitic Ni-Cu, talc-carbonate Ni-Au (no model available).

DEPOSIT DESCRIPTION

Mineralogy Pyrrhotite + pentlandite + chalcocopyrite + pyrite + Ti-magnetite + Cr-magnetite + graphite--by-product Co and PGE.

Texture/Structure Predominantly disseminated sulfides; commonly highly deformed and metamorphosed so primary textures and mineralogy have been altered. Deformation about the same age as the deposit.

Ore Control Sulfides commonly are in the more ultramafic parts of the complex and near the basal contacts of the intrusion.

Weathering Lateritic.

Geochemical Signature Ni, Cu, Co, PGE.

EXAMPLES

Sally Malay, AUWA	(Thorntt, 1981)
Rana, NRWY	(Boyd and Mathiesen, 1979)
Moxie pluton, USMA	(Thompson and Naldrett, 1984)

GRADE AND TONNAGE MODEL OF SYNOROGENIC-SYNVOLCANIC Ni-Cu

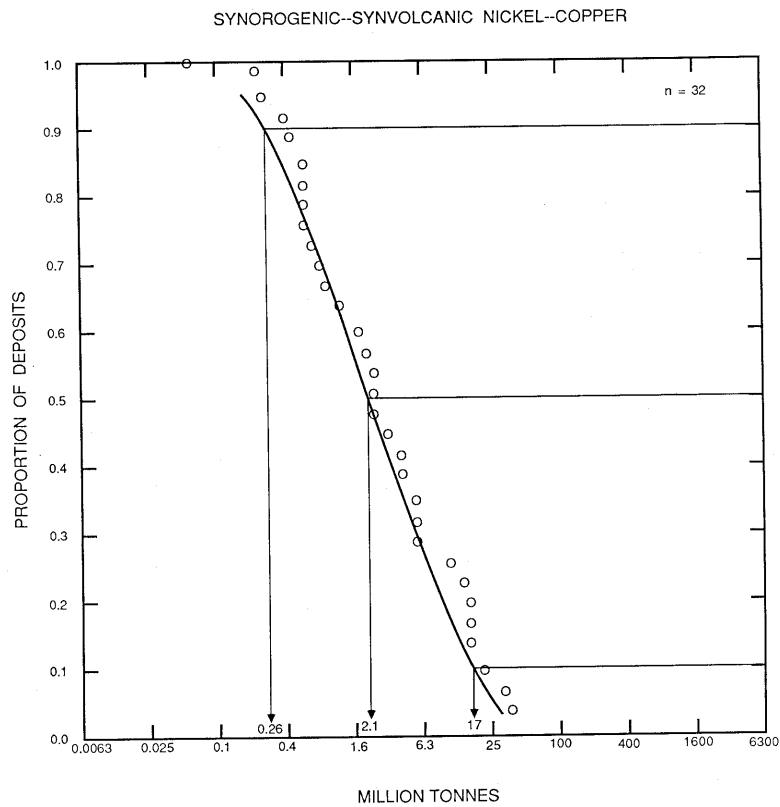
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COMMENTS Pd, Pt, Au, and Co grades are based on reported analyses of samples from the deposits. See figs. 15-18.

DEPOSITS

<u>Name</u>	<u>Country</u>	<u>Name</u>	<u>Country</u>
Bamble	NRWY	Funter Bay	USAK
Carr Boyd	AUWA	Gap	USPA
Empress	ZIMB	Giant Mascot	CNBC
Flaat	NRWY	Hosanger	NRWY

Kenbridge	CNON	Phoenix	BOTS
Kylmakoski	FNLD	Pikwe	BOTS
Lainijaur	SWDN	Renzy	CNQU
Lappuattnet	SWDN	Risliden	SWDN
Laukunkawges	FNLD	Selebi	BOTS
Lorraine	CNQU	Selebi N.	BOTS
Lynn Lake	CNMN	Selkirk	BOTS
Madziwa	ZIMB	Tekwane	BOTS
Makola	FNLD	Thierry	CNON
Mjodvattnet	SWDN	Vakkerlien	NRWY
Montcalm	CNON	Vammala	FNLD
Mt. Sholl	AUWA	Yakobi Island	USAK



**Figure 15.** Tonnages of synorogenic-synvolcanic Ni-Cu deposits.

SYNOROGENIC--SYNVOLCANIC NICKEL--COPPER

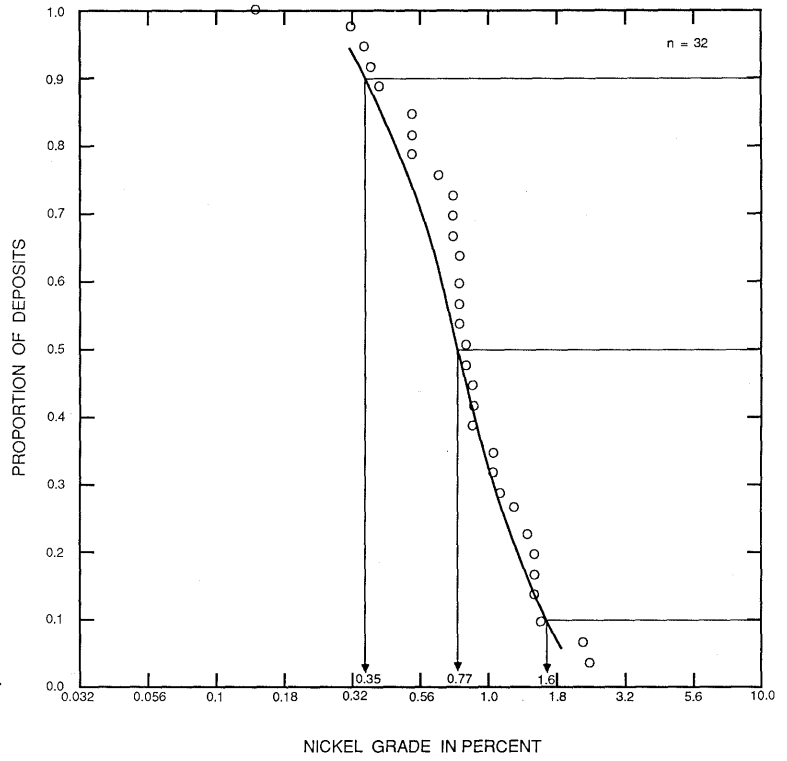


Figure 16. Nickel grades of synorogenic-synvolcanic Ni-Cu deposits.

SYNOROGENIC--SYNVOLCANIC NICKEL--COPPER

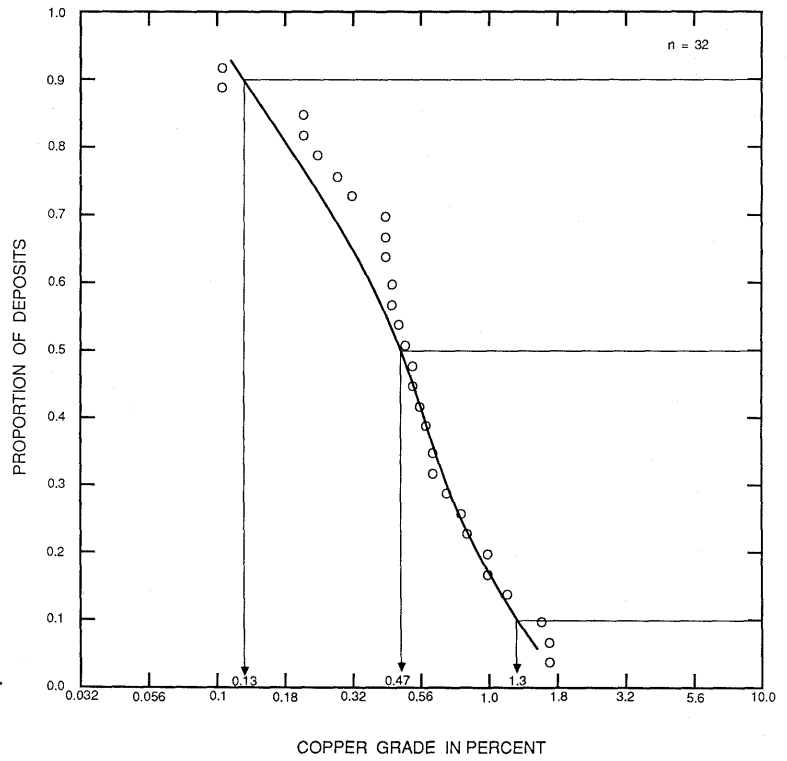
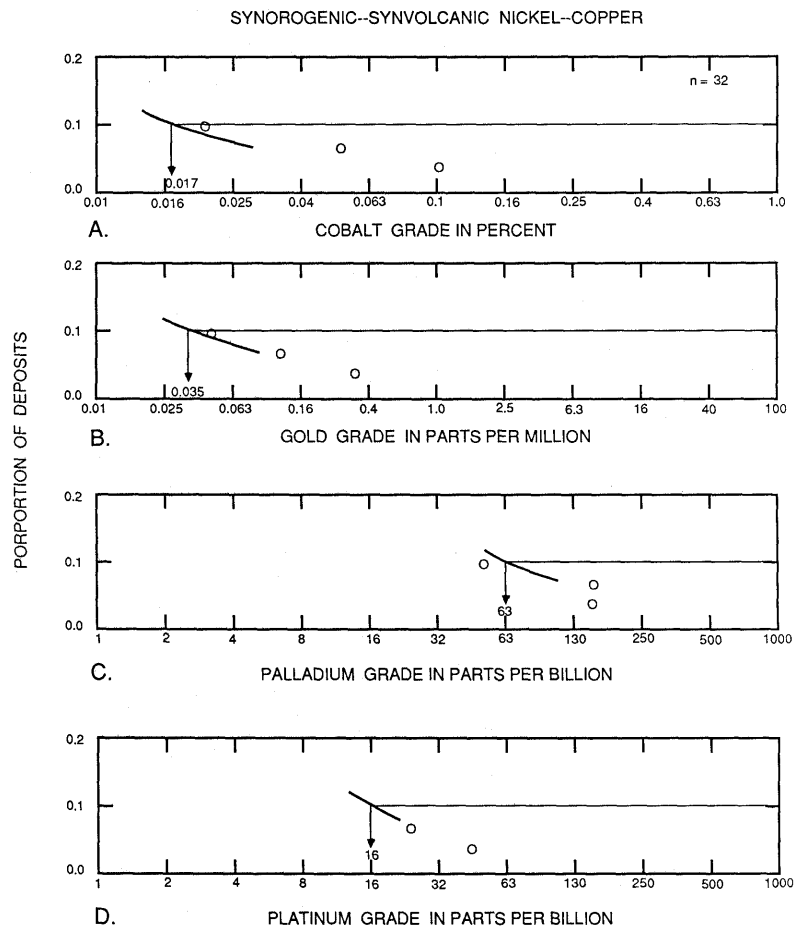


Figure 17. Copper grades of synorogenic-synvolcanic Ni-Cu deposits.



**Figure 18.** By-product grades of synorogenic-synvolcanic Ni-Cu deposits. A, Cobalt. B, Gold. C, Palladium. D, Platinum.