

DESCRIPTIVE MODEL OF Zn-Pb SKARN DEPOSITS

By Dennis P. Cox

DESCRIPTION Sphalerite and galena in talc-silicate rocks.

GENERAL REFERENCES Einaudi and Burt (1982); Einaudi and others (1981).

GEOLOGICAL ENVIRONMENT

Rock Types Granodiorite to granite, diorite to syenite. Carbonate rocks, calcareous elastic rocks.

Textures Granitic to porphyritic; granoblastic to hornfelsic.

Age Range Mainly Mesozoic, but may be any age.

Depositional Environment Miogeoclinal sequences intruded by generally small bodies of igneous rock.

Tectonic Setting(s) Continental margin, late-erogenic magmatism.

Associated Deposit Types Copper skarn.

DEPOSIT DESCRIPTION

Mineralogy Sphalerite + galena + pyrhotite + pyrite + magnetite + chalcopyrite + bornite + arsenopyrite + scheelite + bismuthinite + stannite + fluorite. Gold and silver do not form minerals.

Texture/Structure Granoblastic, sulfides massive to interstitial.

Alteration Mn-hedenbergite + andradite + grossular + spessartine + bustamite + rhodonite. Late stage Mn-actinolite + ilvaite + chlorite + dannernorite + rhodochrosite.

Ore Controls Carbonate rocks especially at shale-limestone contacts. Deposit may be hundreds of meters from intrusive.

Weathering Gossan with strong Mn oxide stains.

Geochemical Signature Zn, Pb, Mn, Cu, Co, Au, Ag, As, W, Sn, F, possibly Be. Magnetic anomalies.

EXAMPLES

- Ban Ban, AUQU (Ashley, 1980)
- Hanover-Fierro district, USNM (Hernon and Jones, 1968)

GRADE AND TONNAGE MODEL OF Zn-Pb SKARN DEPOSITS

By Dan L. Mosier

COMMENTS Zinc grade is correlated with lead grade ( $r = 0.66$ ,  $n = 30$ ) and with copper ( $r = 0.61$ ,  $n = 17$ ). See figs. 61-65.

DEPOSITS

<u>Name</u>	<u>Country</u>	<u>Name</u>	<u>Country</u>
Aguilar	AGTN	El Mochito	HNDR
Ammeberg	SWDN	Falufi	SWDN
Aravaipa	USAZ	Garpenberg Norra	SWDN
Black Hawk	USNM	Garpenberg Odal	SWDN
Dolores	MXCO	Groundhog	USNM

Kalvbacken	SWDN	Shuikoushan	CINA
Kennecott	USNM	Stollberg	SWDN
Langban	SWDN	Svardsio	SWDN
McDame Belle	CNBC	Tetyukhe	URRS
Meat Cove	CNNS	Tienpaoshan	CINA
Mount Hundere	CNYT	Uchucchacua	PERU
Nyseter	NRWY	Ulchin	SKOR
Parroquio-Magistral	MXCO	Washington Camp	USAZ
Rajabasa	INDS	Yanchiachangtze	CINA
Ryllshyttan	SWDN	Yeonhwa I	SKOR
Sala	SWDN	Yeonhwa II	SKOR
Saxberget	SWDN	Zip	CNBC

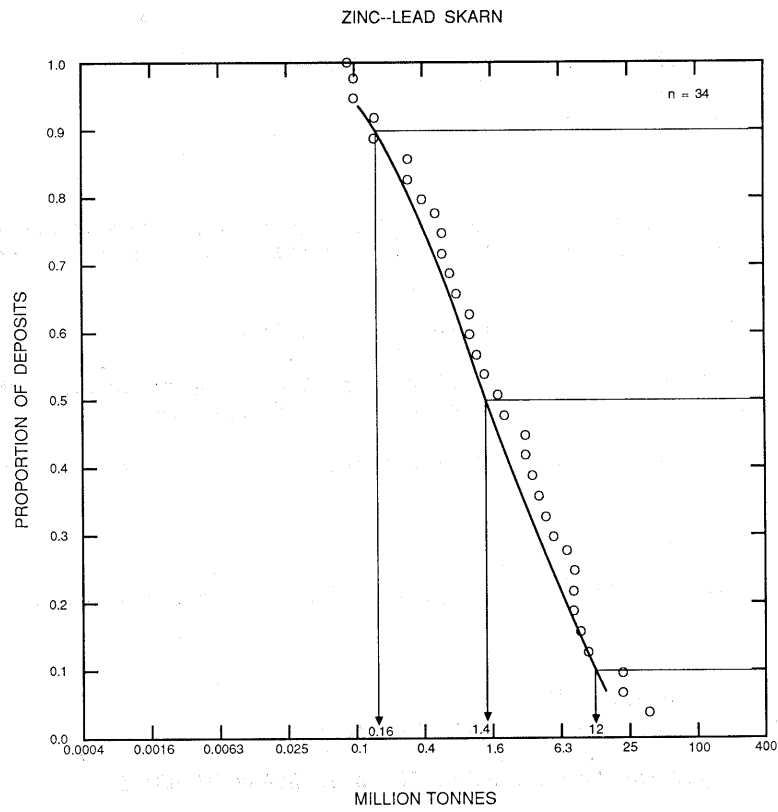
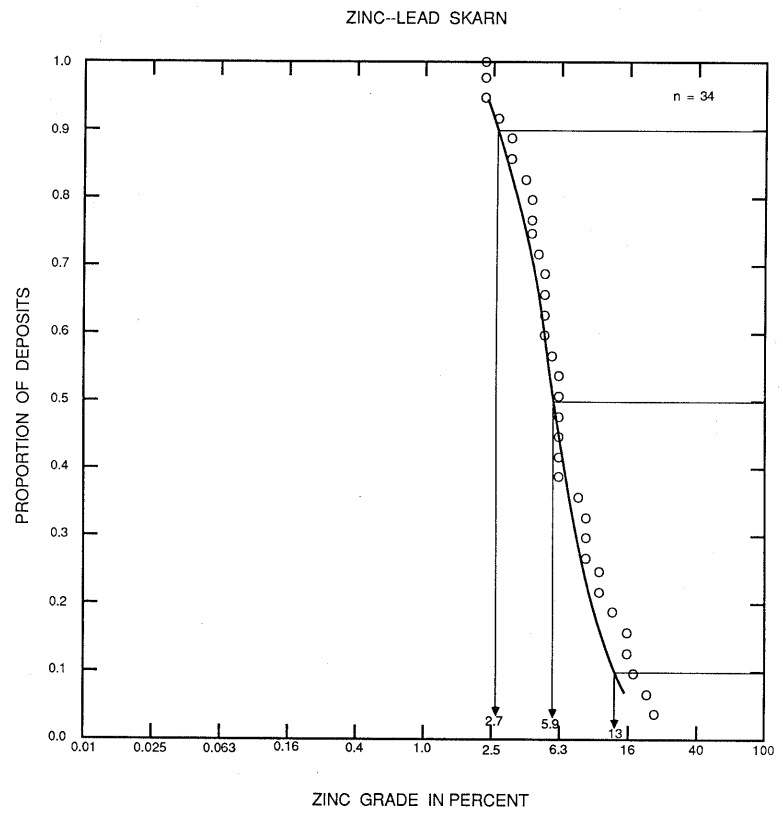
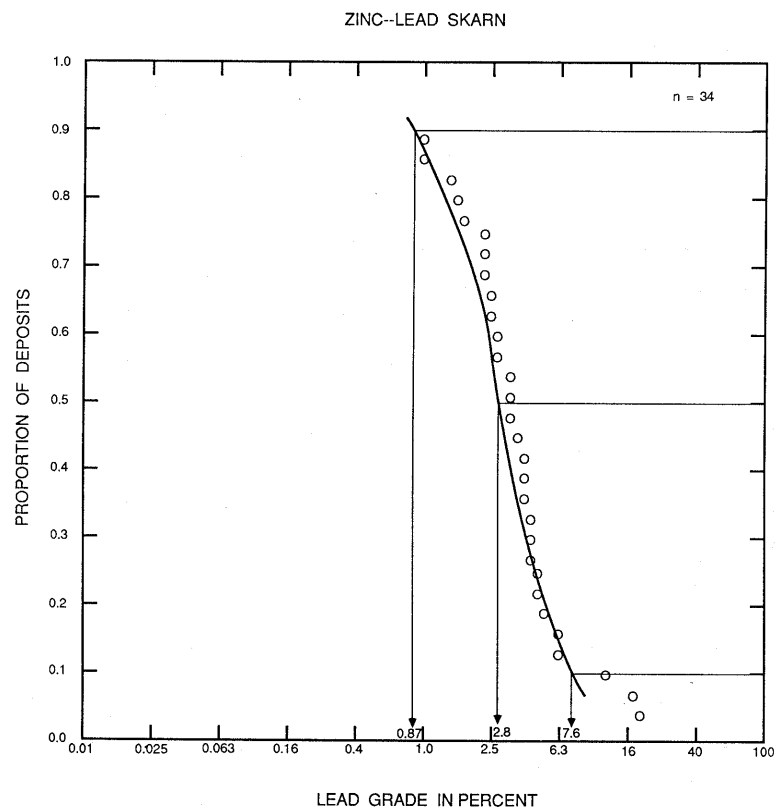


Figure 61. Tonnages of Zn-Pb skarn deposits.



**Figure 62.** Zinc grades of Zn-Pb skarn deposits.



**Figure 63.** Lead grades of Zn-Pb skarn deposits.

ZINC-LEAD SKARN

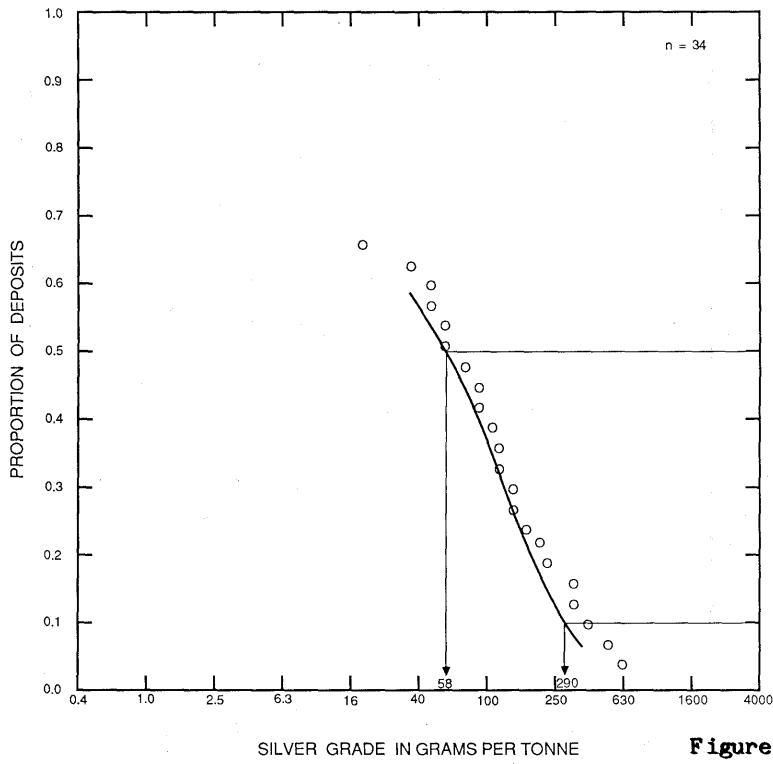


Figure 64. Silver grades of Zn-Pb skarn deposits.

ZINC-LEAD SKARN

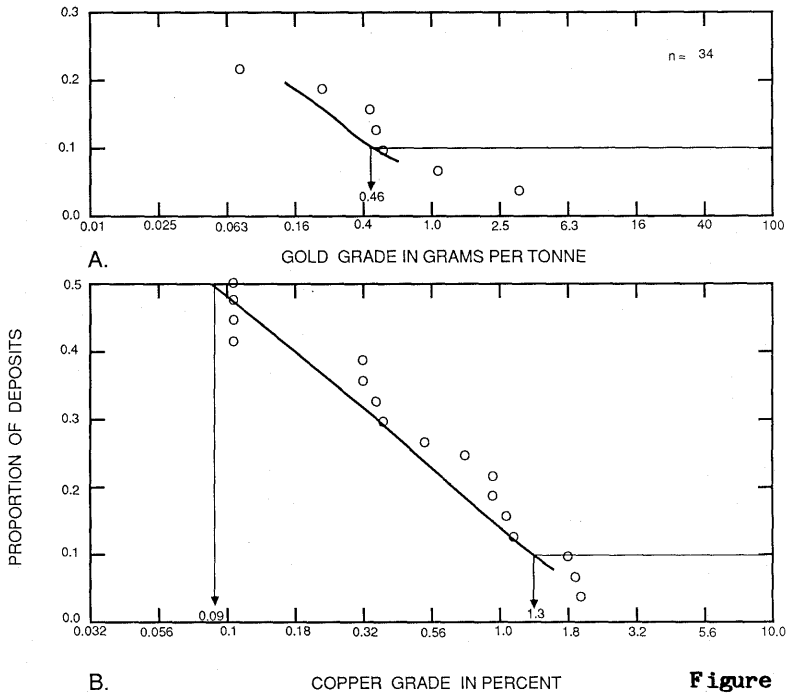


Figure 65. Metal grades of Zn-Pb skarn deposits. A, Gold. B, Copper.