

DESCRIPTIVE MODEL OF Sn VEINS

By Bruce L. Reed

APPROXIMATE SYNONYM Cornish type lodes.DESCRIPTION Simple to complex quartz-cassiterite \pm wolframite and base-metal sulfide fissure fillings or replacement lodes in ore near felsic plutonic rocks (see fig. 34).GENERAL REFERENCE Hosking (1974), Taylor (1979).GEOLOGICAL ENVIRONMENTRock Types Close spatial relation to multiphase granitoids; specialized biotite and(or) muscovite leucogranites common; pelitic sediments generally present.Textures Common plutonic textures.Age Range Paleozoic and Mesozoic most common; may be any age.Depositional Environment Mesozonal to hypabyssal plutons; extrusive rocks generally absent; dikes and dike swarms common.Tectonic Setting(s) Foldbelts and accreted margins with late orogenic to postorogenic granitoids which may, in part, be anatectic; regional fractures common.Associated Deposit Types Sn greisen, Sn skarn, and replacement Sn deposits.DEPOSIT DESCRIPTIONMineralogy Extremely varied; cassiterite \pm wolframite, arsenopyrite, molybdenite, hematite, scheelite, beryl, galena, chalcopryrite, sphalerite, stannite, bismuthinite; although variations and overlaps are ubiquitous, many deposits show an inner zone of cassiterite \pm wolframite fringed with Pb, Zn, Cu, and Ag sulfide minerals.Texture/Structure Variable; brecciated bands, filled fissures, replacement, open cavities.Alteration Sericitization (greisen development) \pm tourmalization common adjacent to veins and granite contacts; silicification, chloritization, hematization. An idealized zonal relation might consist of quartz-tourmaline-topaz, quartz-tourmaline-sericite, quartz-sericite-chlorite, quartz-chlorite, chlorite.Ore Controls Economic concentrations of tin tend to occur within or above the apices of granitic cusps and ridges; localized controls include variations in vein structure, lithologic and structural changes, vein intersections, dikes) and cross-faults.Weathering Cassiterite in stream gravels, placer tin deposits.Geochemical Signature Sn, As, W, B are good pathfinder elements; elements characteristic of specialized granites (F, Rb, Be, Nb, Cs, U, Mo, REE, see model 14b).EXAMPLES

Cornwall, GRBR	(Hosking, 1969)
Herberton, AUQL	(Blake, 1972)

GRADE AND TONNAGE MODEL OF Sn VEINS

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COMMENTS The grade-tonnage model for this deposit type is built with data from 43 deposits, or in some cases, districts. The imprecise definition of what constitutes a deposit has arisen here because many lodes were mined by a number of operators during the second half of the nineteenth century. Data for most deposits and districts consist of past production, although for some

deposits, especially those still operating, reserves are included. Of the 43 deposits in the model, 27 are from Australia. These include most of the small tonnage deposits. This is thought to be an artifact of data reporting. For example, if data were available for many of the small deposits in Cornwall, the deposits would undoubtedly fall within the low tonnage part of the curve. See figs. 42, 43.

DEPOSITS

<u>Name</u>	<u>Country</u>	<u>Name</u>	<u>Country</u>
Aberfoyle	AUTS	Kelapa Kampit	INDO
Adventure Creek	AUQL	Killifreth	GRBR
Bakerville	AUQL	Krupka	CZCL
Basset	GRBR	Levant	GRBR
Bloodwood Creek	AUQL	Maranboy	AUNT
Brownsville	AUQL	Mawchi	BRMA
Cam Brea-Tincroft	GRBR	Mount Nolan Dist.	AUQL
Carocoles	BLVA	Mount Paynter	AUNS
Conrad Lodes	AUNW	Mount Wellington	GRBR
Coolgarra Dist.	AUQL	Mowbray Creek	AUQL
Dargo Range Dist.	AUQL	Nount Wells	AUNS
Dulcoath	GRBR	Nymbool Dist.	AUQL
Emu Creek	AUQL	Ottery Lode	AUNS
Emu Dist.	AUQL	Pahang	MLYS
Geevor	GRBR	Royal George	AUTS
Gleneindale Dist.	AUQL	Silver Valley	AUQL
Grenville	GRBR	South Crofty	GRBR
Gundie	AUNW	Stannary Hills	AUQL
Gurrumba Dist.	AUQL	Watsonville	AUQL
Hales Siding	AUQL	Wheal Jane	GRBR
Herberton	AUQL	Wheal Kitty-Penhalls	GRGB
Irvine Bank	AUQL		

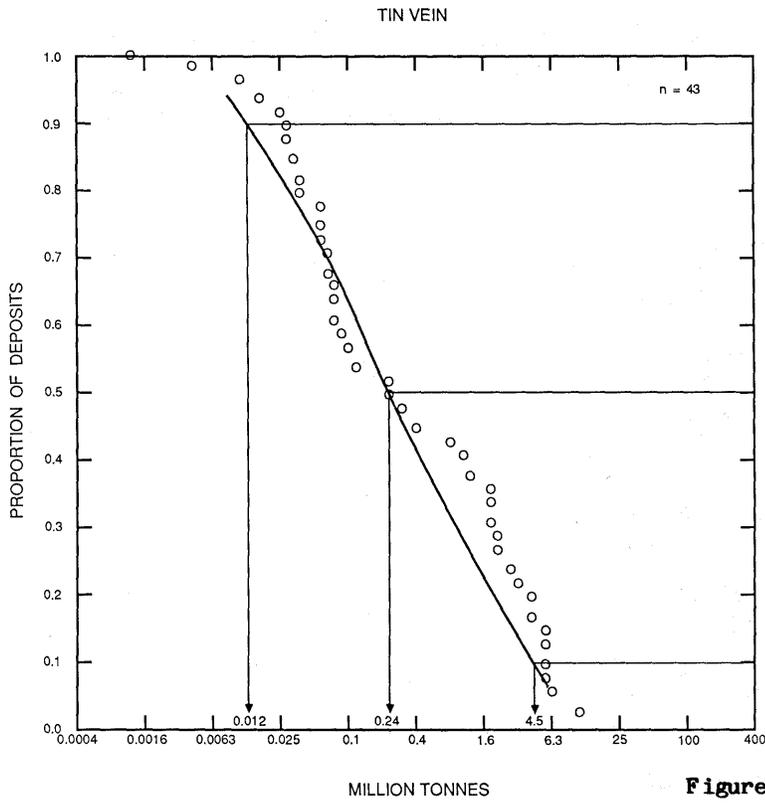


Figure 42. Tonnages of Sn vein deposits.

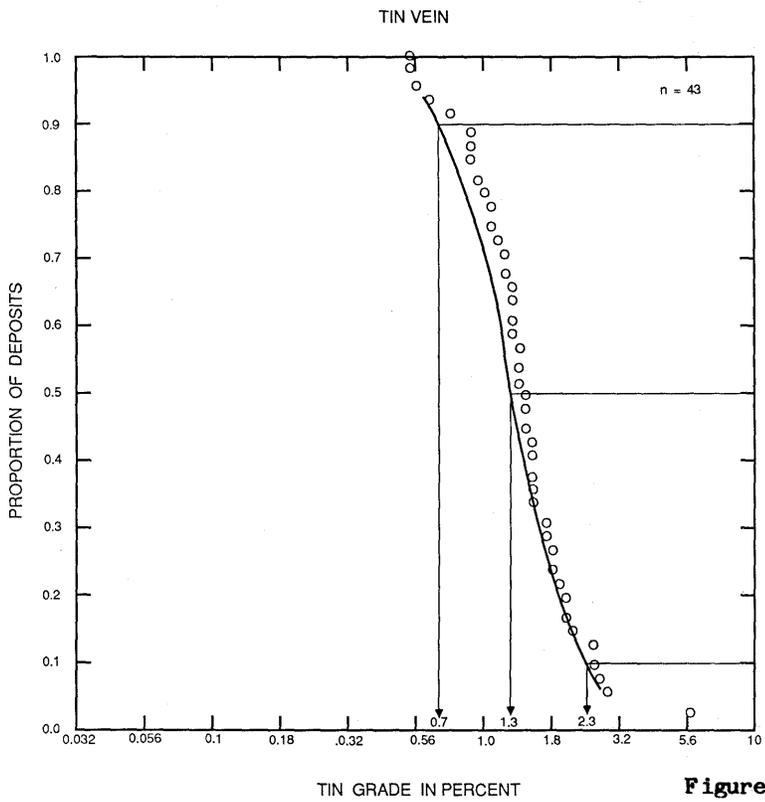


Figure 43. Tin grades of Sn vein deposits.