DESCRIPTIVE MODEL OF SANDSTONE-HOSTED Pb-Zn

By Joseph A. Briskey

DESCRIPTION Stratabound to stratiform galena and sphalerite in multiple, thin, sheetlike ore bodies in arenaceous sedimentary rocks.

GENERAL REFERENCES Bjørlykke and Sangster (1981), Briskey (1982).

GEOLOGICAL ENVIRONMENT

Rock Types Continental, terrigenous, and marine quartzitic and arkosic sandstone, conglomerate, grit, and siltstone. Local evaporates.

Textures Bedding, crossbedding, paleochannels, liquification structures, and intraformational slump breccias. Quartz and subordinate calcite cement.

Age Range Proterozoic to Cretaceus host rocks.

Depositional Environment Host rocks deposited in combined continental and marine environments including piedmont, fluvial, lagoonal-lacustrine, lagoonal-deltaic, lagoonal-beach, and tidal channel-sand bar environments. Commonly succeeded by marine transgressions.

Tectonic Setting(s) Deep weathering and regional peneplanation during stable tectonic conditions, accompanied by marine platform or piedmont sedimentation associated with at least some erogenic uplift. Sialic basement, mainly “granites” or granitic gneisses.

Associated Deposit Types Sediment-hosted Cu.

DEPOSIT DESCRIPTION

Mineralogy Fine- to medium-crystalline galena with sporadic smaller amounts of sphalerite, pyrite, barite, and fluorite. Minor chalcopyrite, marcasite, pyrhotite, tetrahedrite-tennantite, chalcocite, freibergite, bournonite, jamesonite, bornite, linnaeite, bravoite, and millerite. Quartz and calcite are usual gangue minerals, and organic debris occurs in some deposits.

Texture/Structure Clots of galena 0.5 to several centimeters in diameter; disseminations 0.1-1 mm in diameter; locally massive. Ore and gangue minerals are intergranular. Galena bands locally highlight crossbedding, and other sedimentary structures in sandstone. Laisvall has crosscutting curvilinear features resembling roll fronts.

Alteration "Sericite" (white mica?) reported in some deposits; but may only be recrystallized sedimentary illite.

Ore Controls Intergranular porosity. Ore may be massive where localized by porous sedimentary structures (above), impermeable barriers, faults, joints, and fractures. Within or immediately above paleochannels, or less commonly, paleoridges.

Weathering Surface oxidation of galena to cerussite, minor anglesite and pyromorphite, chalcopyrite to malachite, azurite, covellite, and chalcocite and (or) sphalerite to smithsonite, hemimorphite, hydrozincite, and goslarite.

Geochemical Signature: Anomalous amounts of Pb and Zn in host rocks and derivative soils; Ba, F, and Ag are enriched in lowermost parts of some deposits. Zinc tends to increase upward in the deposits. Sialic basement may contain anomalous lead concentrations. Background in sandstone: Pb = 7 ppm; Zn = 16 ppm.

EXAMPLES

Laisvall, SWDN	(Rickard and others, 1979)
Vassbo and Guttusjo, SWDN	(Christofferson and others, 1979)
Largentiere, FRNC	(Samama, 1976; Michaud, 1980)
Zeida-Bou Mia, MRCO	(Schmitt and Thiry, 1977)
Bou-Sellam, MRCO	(Caia, 1976)

Yava (Salmon R.), CNNS	(Hornbrook, 1967; Scott, 1980a, b)
George Lake, CNSK	(Karup-Møller and Brummer, 1970; Sangster and Kirkham, 1974)
Mechernich-Maubach, GRMY	(Bjørlykke and Sangster, 1981)

GRADE AND TONNAGE MODEL OF SANDSTONE-HOSTED Pb-Zn

By Dan L. Mosier

COMMENTS Silver grades tend to be reported for the larger deposits only. See figs. 150-153

DEPOSITS

Name	Country	Name	Country
Belokany-Laura	URRS	Mechernich	GRMY
Bou Mia	MRCO	Oberpfalz	GRMY
Boylen	CNQU	Osen	NRWY
George Lake	CNSK	Sagliden	SWDN
Guttusjon	SWDN	Shertingdal	NRWY
Laisvall	SWDN	Smithfield	CNNS
Largentiere	FRNC	Tregioivo	ITLY
Lovstrand	SWDN	Vassbo	SWDN
Maiva	SWDN	Yava (Silvermine)	CNNS
Maubach	GRMY	Zeida	MRCO

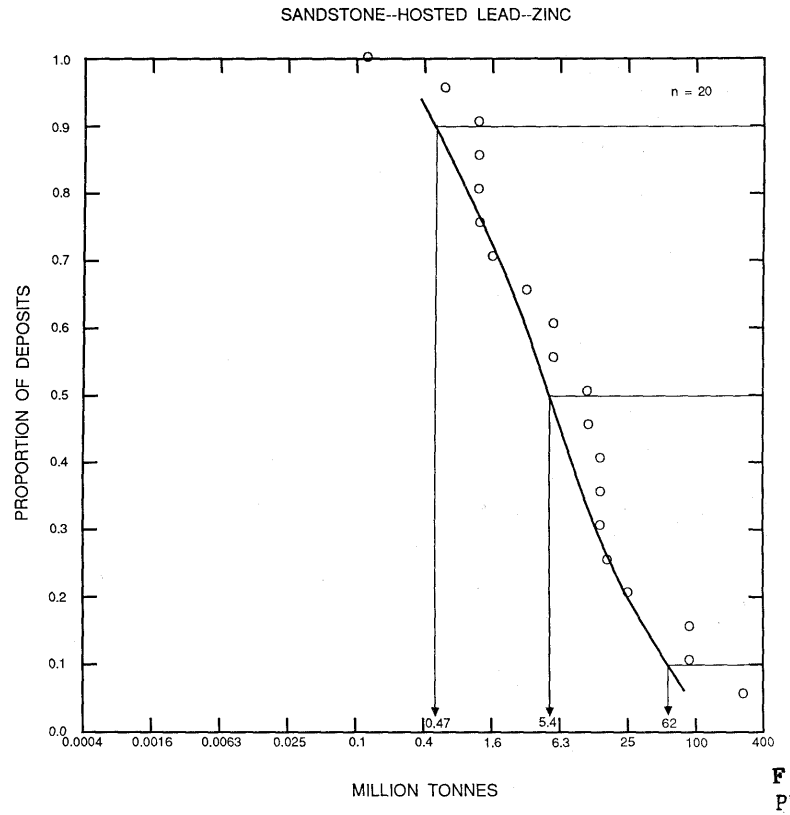

Figure 150. Tonnages of sandstone-hosted Pb-Zn deposits.

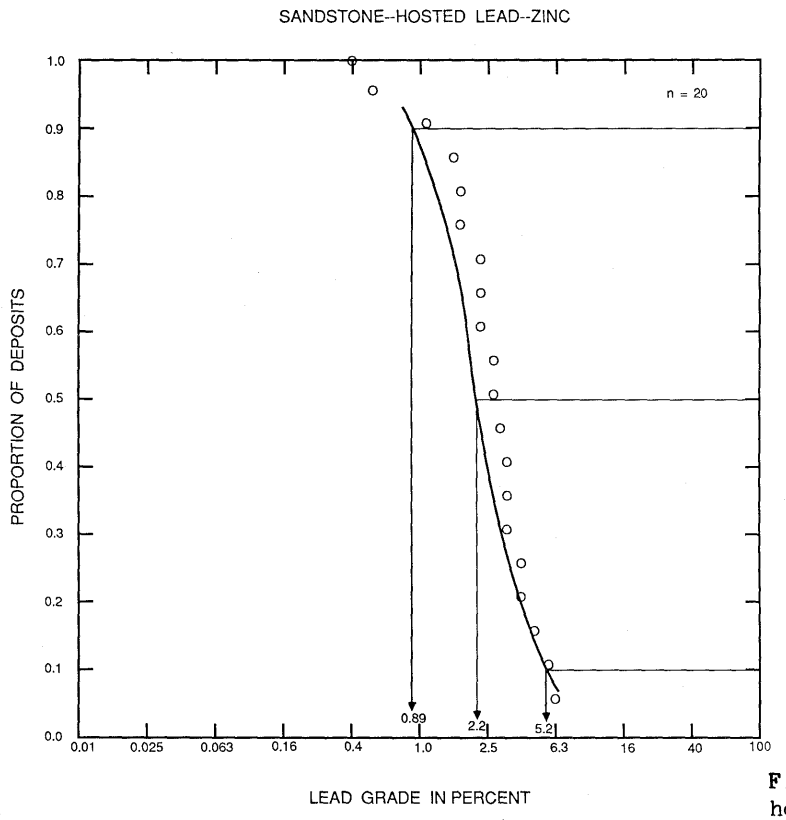

Figure 151. Lead grades of sandstone-hosted Pb-Zn deposits.

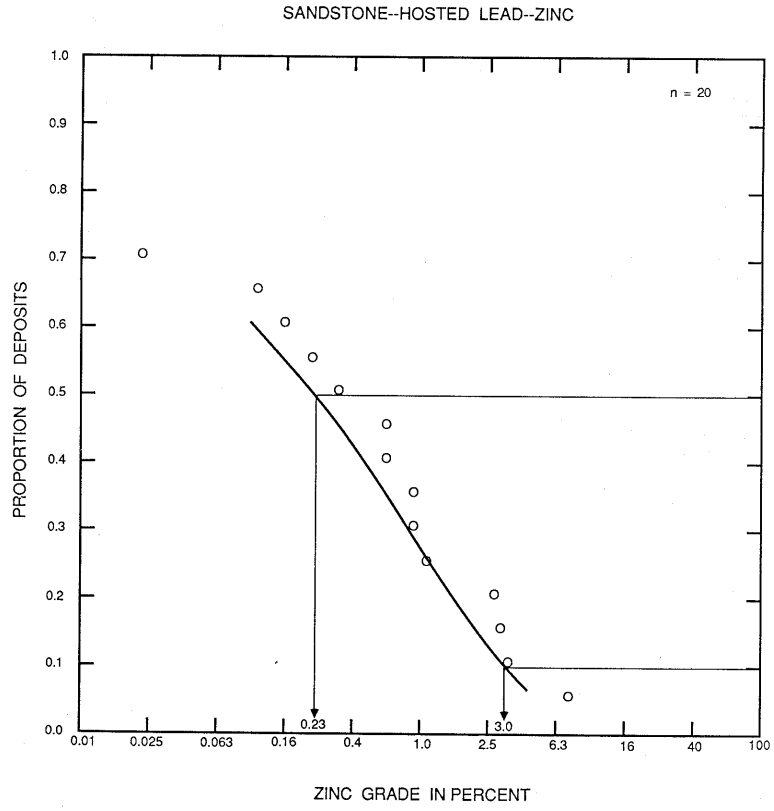

Figure 152. Zinc grades of sandstone-hosted Pb-Zn deposits.

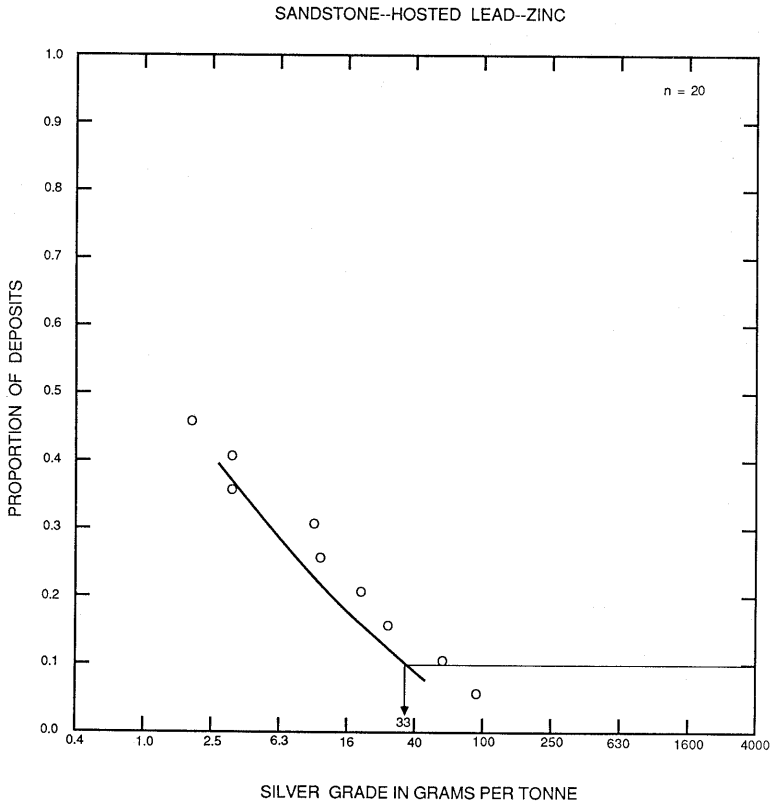

Figure 153. Silver grades of sandstone-hosted Pb-Zn deposits.