

DESCRIPTIVE MODEL OF VOLCANOGENIC U

By William C. Bagby

DESCRIPTION Uranium mineralization in epithermal veins composed of quartz, fluorite, and iron, arsenic, and molybdenum sulfides.

GENERAL REFERENCE Nash (1981).

GEOLOGICAL ENVIRONMENT

Rock Types High-silica alkali rhyolite and potash trachytes. Peralkaline and peraluminous rhyolite host ore.

Textures Porphyritic to aphyric vesicular flows and shallow intrusive rocks,

Age Range Precambrian to Tertiary.

Depositional Environment Subaerial to subaqueous volcanic complexes. Near-surface environment, association with shallow intrusive rocks is important.

Tectonic Setting(s) Continental rifts and associated calderas,

Associated Deposit Types Roll-front uranium in volcanoclastic sediments. Fluorite deposits.

DEPOSIT DESCRIPTION

Mineralogy Coffinite, uraninite, brannerite are most common uranium minerals. Other minerals include pyrite, realgar/orpiment, leucocoxene, molybdenite, fluorite, quartz, adularia, and barite. Gold is present in some deposits. Deposits associated with alkaline complexes may contain bastnaesite.

Texture/Structure Open-space filling in breccias. Uraninite commonly encapsulated in silica.

Alteration Kaolinite, montmorillonite, and alunite are common. Silicification, accompanied by adularia affects wallrocks spatially most closely associated with ore.

Ore Controls Through-going fractures and breccias formed along the margins of shallow intrusives. Vugs in surface flows are of minor importance.

Weathering Near-surface oxidation produces jordisite and a variety of secondary uranium minerals. Supergene uranium enrichment is generally not important.

Geochemical Signature Li and Hg are zoned away from the ore. High anomalous As, Sb, F, Mo ± W occur near and with the ore. Mo is deep, Hg is shallow. REE may be highly anomalous. Anomalously radioactive.

EXAMPLES

Marysvale, USUT	(Kerr and others, 1957)
Aurora prospect, USOR	(Roper and Wallace, 1981)
Rexspar, CNBC	(Joubin and James, 1956)

GRADE AND TONNAGE MODEL OF VOLCANOGENIC U

By Dan L. Mosier

COMMENTS Only deposits with reported sizes greater than 1,000 tonnes are included. See figs. 124, 125.

DEPOSITS

<u>Name</u>	<u>Country</u>	<u>Name</u>	<u>Country</u>
Aurora	USOR	Los Puertos	MXCO
Ben Lomond	AUQL	Lucky Lass	USOR
Bretz	USOR	Macusani	PERU
Buckhorn	USNV	Moonlight	USNV
Coteje	BLVA	Nopal III	MXCO
El Mezquite	MXCO	Novazza	ITLY
El Nopal (Nopal I)	MXCO	Osamu Utsumi	BRZL
Henry district	USUT	Petersen Mtn.	USCA
La Bajada	USNM	Rexspar	CNBC
Laguna Colorado	AGTN	White King	USOR
Laguna del Cuervo	MXCO		

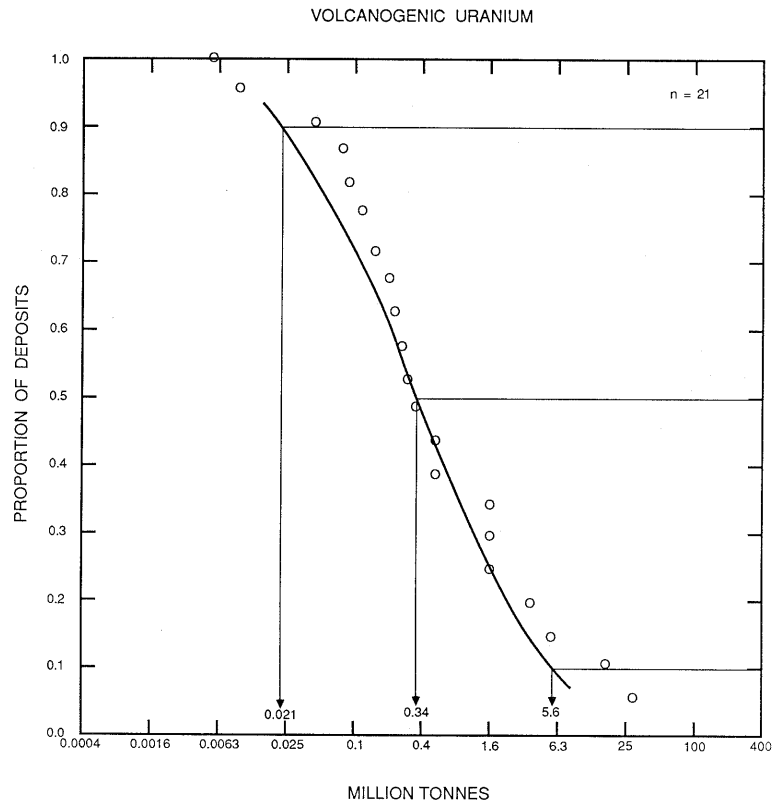


Figure 124. Tonnages of volcanogenic U deposits.

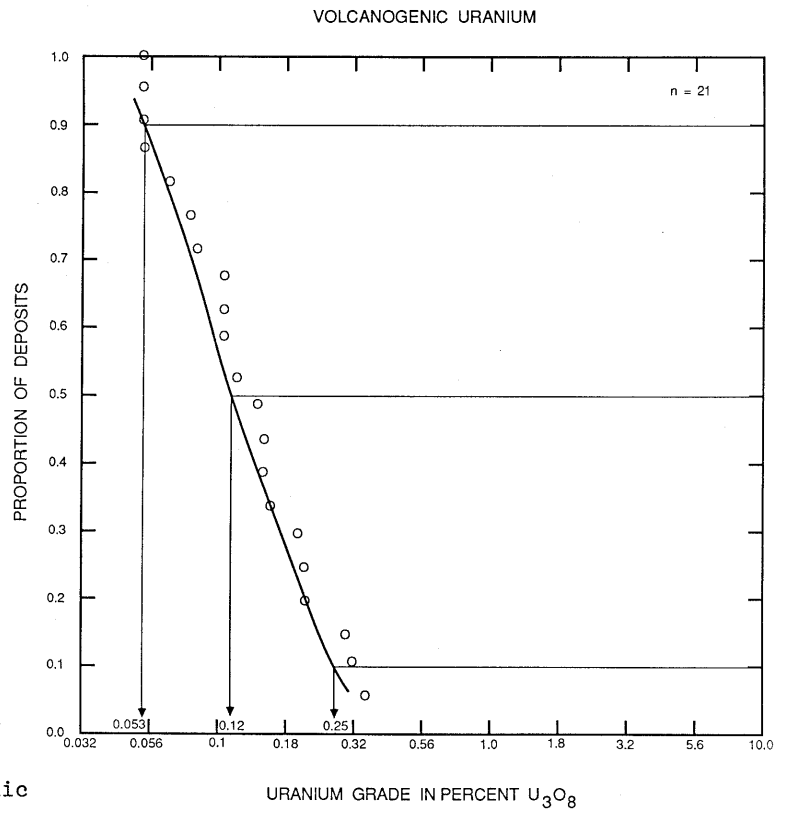


Figure 125. Uranium grades of volcanogenic U deposits.