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TABLE DR1. Characteristics of Selected Porphyry Copper Deposits and Depth Estimates for their Magmatic Sources. All deposits listed have large "background potassic" zones, in which the essential alteration is biotitization of mafic minerals, with low grade Cu. The emphasis in this table is on higher grade zones contained within the larger zones of background potassic alteration.

Deposit; location; "type"*	Pre-ore host rocks	Porphyries closest in age to ore	Higher grade early Cu mineralization	Cu-Fe-S-O assemblage of higher Cu grade	Alteration assemblage of higher Cu grade	Data sources for characteristics	Depth of emplacement of magmatic source	Type of evidence for emplacement depth	Data sources for emplacement depth
Yerington Mine; Yerington district, Nevada, USA "A-vein type"	Quartz monzodiorite and quartz monzonite of Yerington Batholith, ~169 Ma	Sequence of 6 granite porphyries in closely-spaced cluster above porphyritic granite source batholith (~168 Ma; part of Yerington batholith)	Veinlet stockworks of Cu-sulfides, q & mt in and near 1st, 2nd and 4th porphyry intrusions; abundant "A" type granular q veins carry much of the Cu sulfides. Veinlets commonly truncated at porphyry contacts	bn-cc-mt, bn-cp-mt, cp-mt; sec mt more abundant than Cu sulfides; (cp common only in areas of late veins and sericitic alt'n overprinting)	q-Kf-bi-±olig-(rt); bi may be chloritized and feldspars sericitized due to late overprint	J.M. Proffett, unpub., 1966-1976; M.T. Einaudi and others, unpub., 1969-1982; Proffett, 1979;	Top of underlying porphyritic granite source estimated to have been 4 km below surface at time of mineralization	Structural reconstruction of volcanic surface above deposit for time of mineralization; underlying pluton exposed in sectional view due to tilting	Mapping summarized in Proffett, 1977 & Proffett and Dilles, 1984, 1991; see also Dilles and Proffett, 1995
Alumbrera, Argentina "A-vein type"	Andesites of the Farallón Negro Volcanics, ~12.5-8.1 Ma	Sequence of 7 granitic porphyries in closely-spaced cluster, ~7 Ma; Coarse-matrix porphyry ~650 m below surface suggests proximity to magmatic source	Veinlet stockworks of Cu-sulfides, q & mt in and near 1st, 3rd and 4th porphyry intrusions; abundant "A" type granular q veins carry much of the Cu sulfides. Veinlets commonly truncated at porphyry contacts	cp-mt; cp-bn-mt where late alt'n overprint is weak; cp-py-±relict mt where late overprint is strong; sec mt usually > Cu sulfides, but some A-veins lack mt	q-Kf-bi-mt-(rt); q-Kf-bi-(rt); bi may be chloritized and feldspars sericitized due to late overprint	Proffett, 2003	Top of magmatic source below Alumbrera porphyries interpreted as ~3.5 km below surface at time of mineralization	Volcanic rocks of similar age to Alumbrera porphyries project ~2.8 km above deposit surface; drill holes show coarse matrix porphyries similar to Yerington cupolas ~0.7 below deposit surface	Proffett, 2003; (Sasso and Clark, 1998 for radiometric ages).
Batu Hijau, Indonesia "A-vein type"	Middle Miocene andesites.	Sequence of 3-4 tonalite porphyries in closely-spaced, ~3.7 Ma cluster; widening of porphyries and coarsening of matrix ~1 km below surface suggests proximity to magmatic source	Veinlet stockworks of Cu-sulfides, q & mt in and near 1st, and to lesser extent, 2nd porphyry intrusions; abundant "A" type granular q veins carry much of the Cu sulfides. Veinlets commonly truncated at porphyry contacts	bn-dg-mt, bn-cc-mt; bn-cp where late alteration overprint is present, cp-mt, cp-only or cp-py where it is very strong; sec mt usually > Cu sulfides	q-sec olig-bi-(rt); olig is the sec feldspar instead of Kf due to low-K rocks; bi may be chloritized and olig sericitized due to late overprint	P.A. Mitchell, unpub., 1997-1998; J.M. Proffett, unpub., 1997-2004; Clode et al., 1999; Setyandhaka et al.,2008	Top of probable magmatic source below Batu Hijau interpreted to have been ~3-3.5 km below surface at time of mineralization	~6.8 Ma volcaniclastic unit and Plio-Pleistocene sedimentary-volcanic unit project ~2 km above deposit surface; drill holes show widening of porphyries & grain size increase ~1km below deposit surface	Garwin, 2000; Setyandhaka et al.,2008
El Salvador, Chile "A-vein type"	Upper Cretaceous andesitic sedimentary and volcanic rocks; Paleocene-Eocene felsic volcanics & intrusions	Sequence of feldspar porphyries of granodiorite to quartz monzodiorite composition, in closely-spaced cluster, 41-42 Ma	Veinlet stockworks of Cu-sulfides & q in and near earliest feldspar porphyry (K porphyry); abundant "A" type granular q veins carry much of the Cu sulfides. Veinlets commonly truncated at porphyry contacts	cp-bn, cp-py; py present mainly near edge of deposit and with late overprint; mt not present, or alt'd to hm in high grade zones	q-Kf-bi-anh-±olig-(rt)	Gustafson and Hunt, 1975; Gustafson and Quiroga, 1995; Gustafson et al., 2001	Present surface thought to have been ~1-2 km below surface at time of mineralization; evidence unavailable for depth of underlying magmatic source	Depth of present surface below paleosurface based on reasonable estimates for thickness of early Cenozoic volcanic rocks that originally were above the deposit	Gustafson and Hunt, 1975; Gustafson et al., 2001

Ann-Mason Pass; Yerington district, Nevada, USA "Early halo type"	Quartz monzodiorite and quartz monzonite of Yerington Batholith, ~169 Ma	Swarm of granite porphyry dikes above porphyritic granite source batholith (~168 Ma; part of Yerington batholith)	Swarms of thin, early veinlets in subparallel sets with few mm- to few cm-thick alt'n halos, and with most Cu-sulfides diss in the halos; truncation of early veinlets at porphyry contacts is not commonly observed	cp-bn, cp; cp-py in peripheral parts and with late overprint; prim mt partly to completely destroyed; little or no sec mt	Early veinlet halos are ser-q-Kf-bi-(rt); sec Kf between ser and q	J.M. Proffett, unpub., 1966-1976; D.L. Gustafson, unpub. 1971; A. Souverón, unpub., 1975; Dilles, 1984, 1987; Dilles and Einaudi, 1992	Top of underlying porphyritic granite source estimated to have been 5 km below surface at time of mineralization	Structural reconstruction of volcanic surface above deposit for time of mineralization; underlying pluton exposed in sectional view due to tilting	Mapping summarized in Proffett, 1977 & Proffett and Dilles, 1984, 1991; see also Dilles and Proffett, 1995
Bear; Yerington district, Nevada, USA "Early halo type"	Quartz monzodiorite and quartz monzonite of Yerington Batholith, ~169 Ma	Swarm of granite porphyry dikes above porphyritic granite source batholith (~168 Ma; part of Yerington batholith)	Swarms of thin, early veinlets with few mm- to few cm-thick alt'n halos, and with most Cu-sulfides diss in the halos; truncation of early veinlets at porphyry contacts is not commonly observed	cp-bn, cp; cp-py in peripheral parts and with late overprint; prim mt partly to completely destroyed; little or no sec mt	Early veinlet halos are ser-q-Kf-bi-(rt); sec Kf between ser and q	J.M. Proffett, unpub., 1967-1968	Top of underlying porphyritic granite source estimated to have been 5.2 km below surface at time of mineralization	Structural reconstruction of volcanic surface above deposit for time of mineralization	Mapping summarized in Proffett, 1977 & Proffett and Dilles, 1984, 1991
Butte; Montana, USA "Early halo type"	Butte granite of the Boulder batholith, ~74-76 Ma	Steward quartz porphyries, three 3-30 m thick, steep, WNW trending dikes of mafic-poor granite porphyry, ~65-70 Ma (?)	Sets of subparallel, thin, early veinlets with few mm- to few cm-thick EDM alt'n halos with abundant diss Cu sulfides (also "S" or "PGS" halos in upper part of potassic zone); veinlet swarms not closely associated spatially with individual porphyry dikes	cp, cp-bn and cp-py, diss in EDM halos; cp-py in "S" or "PGS" halos; prim mt partly to completely destroyed and sec mt rare or absent in EDM halos, but may occur in the veinlets; mt rare in "S" or "PGS" halos but may occur in the veinlets	EDM halos: sec bi & ser in plag & mafic sites; sec Kf between ser and primary q grains; andal & other Al-silicates may be present; rt in mafic sites; "S" or "PGS" halos lack biotite and may lack Kf	Meyer, 1965; Meyer et al., 1968; J.M. Proffett, unpub., 1971-1974; Brimhall, 1973, 1977; Proffett, 1973; Roberts, 1973, 1975; Rusk et al., 2008	Deepest drill exposures estimated to have been ~7 km below surface during mineralization; magmatic source of fluids and quartz porphyries not exposed and was still deeper	Volcanic roof rocks related to host batholith are >20 km distant, consistent with deep exposure. Fluid inclusion Th in deepest early alteration suggest P≥1.7 kb in orderto be consistent with mineral-based T estimates	Volcanics: Smedes et al., 1973; Fluid inclusions: Roberts, 1973, 1975; also see Rusk et al., 2008; mineral-based T: Brimhall, 1977; Roberts, 1973, 1975; Zhang et al., 1999a & b; Ages: Lund et al., 2005
Chuqui-camata, Chile "Early halo type"	East porphyry, the main and largest intrusion of the Chuqui Porphyry Complex, ~35-36 Ma	Banco porphyry and West porphyry, small intrusions in the Chuqui Porphyry Complex, 34-35 Ma (latest Eocene)	Sets of thin subparallel early veinlets with few mm- to few cm-thick alteration halos that contain abundant diss Cu sulfides; veinlet swarms not closely associated spatially with individual porphyry intrusions	bn-(dg)-(tn)-(cp)-(±mb); cp-bn or cp with late alt'n overprint; no py except with strong late alt'n overprint, generally no mt or hm	Two main types: "K-sil": Kf-q-anh-± Na plag-(rt)-(±ser) ; "Early ser": ser-q-anh-±Kf-(rt). Sec Kf commonly occurs between q and ser	Ossandón et al., 2001; J.M. Proffett, unpub., 2001-2007; Faunes et al., 2005	Direct depth estimate not available; geology consistent with relatively deep magmatic source, which is not exposed, even in deepest exposures	Late Cretaceous-Eocene section 4-5 km thick projects well above Pz-TR metamorphic and granitic hosts of Chuqui Porphyry Complex	Tomlinson and Blanco, 1997; Dilles et al., 1997; Ossandón et al., 2001; J.M. Proffett, unpub., 2005-2007
RT, Chuqui-camata, district, Chile "Early halo type"	RT porphyry (= East porphyry) of the Chuqui Porphyry Complex, ~35-36 Ma	Small intrusions similar to the Banco porphyry and West porphyry of Chuquicamata, 34-35 Ma (latest Eocene)	Sets of thin, subparallel, early veinlets with few mm- to few cm-thick alteration halos that contain abundant diss Cu sulfides; veinlet swarms not closely associated spatially with individual porphyry intrusions	bn-(dg)-(cp)-(±mb); cp present mainly with late alteration overprint; generally no py, mt or hm	Kf-q-ser-bi-(rt)-± andal; sec Kf commonly occurs between q and ser; ser may occur as relict clusters in interior of Kf grains	J.M. Proffett, unpub., 2002-2006	Direct depth estimate not available; geology consistent with relatively deep magmatic source, which is not exposed	Late Cretaceous-Eocene section 4-5 km thick projects well above Pz-TR metamorphic and granitic hosts of Chuqui Porphyry Complex	Tomlinson and Blanco, 1997; Dilles et al., 1997; Ossandón et al., 2001; J.M. Proffett, unpub., 2005-2007

MM, Chuqui-camata, district, Chile "Early halo type"	Triassic granodiorite; Paleozoic and/or Triassic volcanic rocks	MM porphyry, quartz porphyry (late Eocene)	EDM - like vein halos (commonly overprinted by late pyritic-sericitic alt'n)	bn-(dg)-(cp), cp-bn, cp, cp-py; cp and py mainly with late alteration overprint; generally no mt or hm	Kf-q-ser-bi-(rt); sec Kf commonly occurs between q & ser	Sillitoe et al, 1996; J.M. Proffett, unpub., 2001-2007; Müller and Quiroga, 2003	Direct depth estimate not available; geology consistent with relatively deep magmatic source, which is not exposed	Late Cretaceous-Eocene section 4-5 km thick lies just above deposit	Tomlinson and Blanco, 1997; Dilles et al., 1997; Ossandón et al., 2001; J.M. Proffett, unpub., 2005-2007
Lomas Bayas, Chile "Early halo type"	San Cristobal batholith of medium-grained granodiorite, ~61-64 Ma	Lomas porphyry, small granodiorite (and/or granite?) porphyry bodies scattered within the mineralized area	Sets of thin, subparallel early veinlets with few mm- to few cm-thick EDM-type alteration halos that contain oxides after Cu sulfides; veinlet swarms not closely associated spatially with individual porphyry intrusions. Mineralized breccias also present	Cu-oxide minerals, limonite and relict sulfides suggest cp and bn, with local minor py, in EDM veins and halos, and in bx; mt partly to completely destroyed in EDM veins and halos; local minor mt near bx	EDM halos: ser-Kf-sec bi-(rt); Kf common between ser and prim q; Bx: bi-Kf-q-tm; Kf-q-tm; q-tm	Shrake et al., 1996; J.M. Proffett, unpub., 1996	No direct evidence; geology consistent with relatively deep magmatic source, which is not exposed	Large, medium-grained pluton is main host; volcanics of age similar to host are exposed > 12 km to east and > 20 km to NW	Boric et al., 1990; Shrake et al., 1996
Pelambres, Chile "Early halo type"	Large stock of quartz diorite-tonalite; ~10 Ma	Small quartz diorite-tonalite porphyries; ~10 Ma	Sets of thin, subparallel early veinlets with few mm- to few cm-thick alteration halos that contain abundant diss Cu sulfides ("Type 4 veins"); veinlet swarms not closely associated spatially with individual porphyries. Mineralized breccias also present	cp-bn, cp, cp-py; py present only locally, mainly near edge of deposit;	Type 4 vein halos: Kf-q-ser-bi-(rt)-± andal; bx: medium-coarse-grained sec bi, q, Kf; some bx contains alt'n similar to that in Type 4 halos	J.M. Proffett, unpub., 1980-1981; also see Atkinson et al., 1996	No direct evidence; geology consistent with relatively deep magmatic source, which is not exposed	Wall rocks of late Miocene host stock are Lower Cretaceous, but structural relationships not available	Vicente, 1970; Atkinson et al., 1996

Abbreviations: alt'n = alteration; andal = andalusite; anh = anhydrite; bi = biotite; bn = bornite; bx = breccia; cc = chalcocite or digenite; cp = chalcopyrite; dg = digenite; diss = disseminated; EDM = early dark micaceous; hm = hematite; Kf = K-feldspar; mb = molybdenite; mt = magnetite; olig = oligoclase; P = pressure; plag = plagioclase; prim = primary; py = pyrite; PZ = Paleozoic; q = quartz; rt = rutile; sec = secondary; ser = sericite; ser'c = sericitic; T = temperature; Th = fluid inclusion homogenization T; tm = tourmaline; TR = Triassic; ( ) = minor phase; ± = phase not always present; unpub. = unpublished work

* "type" refers to type of high Cu grade zones as described in text

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