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Title: GEOLOGY OF THE RESOLUTION PORPHYRY CU-MO SYSTEM

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Abstract: Geology of the Resolution Porphyry Cu-Mo System

The Resolution deposit is a large porphyry Cu-Mo system of Laramide age located beneath a minimum of 1000m of post-mineral cover rocks in the Superior (Pioneer) district of Arizona. The deposit was discovered in 1996 by underground drilling from workings of the Magma mine during exploration for vein-style mineralization. Exploration results to date indicate a minimum of 1B tons with a grade of over 1% Cu at depths of 1500m to 2000m below surface. Mineralized host rocks of the deposit include Proterozoic siliciclastic, carbonate, and mafic intrusive rocks, Paleozoic carbonates, and a Cretaceous sequence of sedimentary and volcanic rocks which may in part represent a syn-intrusive volcanic pile above the porphyry system. Laramide aged breccias and felsic porphyritic intrusives (~62Ma) within the deposit are strong candidates for early and intramineral phases and are responsible for hypogene sulfide ore deposition. Hypogene alteration characteristics of the deposit include early potassic and propylitic alteration which has been variably overprinted by white phyllosilicate and advanced argillic alteration. Anhydrous and hydrous skarn assemblages have been developed in carbonate rocks. Sulfide mineralization includes abundant early molybdenum, followed by chalcopyrite-pyrite and high sulfidation chalcocite/digenite-bornite-pyrite hypogene enrichment. Supergene effects include a well preserved eastward tilting paleo leached cap developed prior to post-mineral clastic and volcanic rock deposition. The Resolution system is relatively low in arsenic and is uncharacteristically high in fluorine, which is exemplified by topaz and fluorite found in the advanced argillic assemblage. The Resolution project is currently in pre-feasibility and presents many challenges with deep drilling and geological/geotechnical characterization that are essential for safe, efficient and profitable mine design and development.