

Geology and developments of the world-famous Coeur d'Alene mining district

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The Coeur d'Alene mining district in northern Idaho, USA, is one of the world's premier silver districts, with more than 1.2 billion ounces of silver produced. Silver lodes were discovered in 1884 and since that time 18 different mines recorded underground production exceeding one million [Check this number, if it's the total mined from 18 mines it doesn't seem like much or else the ore was very high grade and/or the mines small. Maybe one million tons each?] tons of ore. District production totals 1.24 billion ounces of silver, 8.5 million tons of lead and 3.4 million tons of zinc.

Host rocks for the mineralization are primarily sedimentary rocks of the Proterozoic Belt Supergroup (1,401 – 1,470 my) consisting of fine-grained clastic rocks deposited in shallow water platformal and deltaic environments. Rock types range from argillites to siltites to quartzites and belong to the Prichard, Burke, Revett, St. Regis and Wallace formations. The Coeur d'Alene district lies within the Lewis and Clark shear zone, a belt of faults that together form a major intracontinental plate boundary in the northwestern United States. Deformational features in the sedimentary rocks indicate that the shear zone was active early in the history of the belt sedimentation and re-activated many times. Movement along this shear zone produced numerous regional strike-slip faults, normal faults and intense folding within the sedimentary rocks that impacted the emplacement and ultimate geometry of the mineralized lenses and veins.

Silver, lead and zinc mineralization is localized along steeply-dipping veins, fault-controlled dilatant zones in ductile shear zones, and along fold limbs with associated fractures and shear zones. These deposits broadly fall within the framework of orogenic deposits. Ore minerals are primarily galena, sphalerite and tetrahedrite within a gangue of siderite and quartz. There were two distinct ore forming events in the district: a dominant zinc-lead (low silver) event in the Late Proterozoic and a younger silver-rich tetrahedrite and argentiferous galena event in the Cretaceous. The Proterozoic veins are referred to as Coeur d'Alene veins; whereas, the Cretaceous veins are referred to as Silver Belt veins.

Great mines like Bunker Hill, Sunshine, Galena, Lucky Friday, Star-Morning, Hecla and over 100 more have produced huge quantities of ore. Hecla Mining Company operates the Lucky Friday mine where underground development is accessing high-grade silver-lead-zinc veins to a depth of 10,000 feet, and Americas Silver Corporation is producing galena and tetrahedrite ores from the Galena mine. Additionally, the Bunker Hill, Sunshine and Crescent mines are currently undergoing various exploration and/or development programs.