

## Discovery of a Palladium-Platinum-Gold-Mercury Bitumen in the Boss Mine, Clark County, Nevada

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### Abstract

A bitumen containing high concentrations of sulfur, palladium, platinum, gold, and mercury has been found in the Boss mine, Clark County, Nevada, where rich ores of "invisible" palladium and platinum were mined from 1916 to 1919. The bitumen, analyzed with X-ray energy dispersive spectrometry on areas devoid of discrete particles down to a 40 Å limit, contains 2.74 wt percent Pd + Pt + Au (Pd = 1.85%) and 5.83 wt percent Hg. It is associated with particulate potarite (Pd, Au, Pt)Hg, native gold, plumbojarosite, hydronium jarosite, argentojarosite, florencite, and bismuth oxides. The first four mineral species are also found included in the bitumen. The paragenesis was derivation and formation of bitumen from the local limestone, followed by interaction with the hydrothermal potarite and the supergene jarosite. This type of organic material, highly enriched in platinum group elements, previously had been reported only in Polish Kupferschiefer thucholite.