
Probabilistic Assessment of Sub-level Hanging-Wall Stability at the Stillwater Mine Nye, Montana

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The Stillwater Mine, situated in the Stillwater Complex in south central Montana, USA has produced palladium and platinum from the J-M Reef since 1987. Mining is primarily done by cut-and-fill methods. Over the past 4 years, however, long-hole stoping practices have been playing a larger role in mine production. This amplified utilization of long-hole mining improves productivity and lowers risk during mining activity. Greater reliance on this mining method, however, results in a potential for decreased hanging-wall stability that can result in added dilution or loss of production. It therefore becomes very important to quantify sub-level hanging wall stability. Data has been compiled outlining parameters affecting stability. Subjective assessments of the probability of failure have been applied to each stope. From this assessment, a skeletal graph relating probability of failure to rock parameters vs. stope geometry has been proposed. Classes of sub-level hanging wall stability have been identified and presented in matrix form that can be easily communicated to mine operations and technical staff. Selected references pertinent to this work are given below.

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