Guidelines for Reporting Resources and Reserves for Brine Deposits

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ABSTRACT

GUIDELINES FOR REPORTING RESOURCES AND RESERVES FOR BRINE DEPOSITS

The development of lithium brine deposits involves the geometry of the basin, porosity of the host sediments and lithium grade. The resource estimation entails measuring the content of fluids in the pores of the aquifer; that porosity for reporting lithium brine resources is generally accepted to be only that fluid that can drain under gravity effects, as drainable porosity or specific yield which are different and lower than the total porosity. In advancing resources to the reserves category, consideration has to be given to the dynamic nature of a fluid resource. For instance, in an enclosed basin at a steady state before pumping, various types of fluids can co-exist in equilibrium: dense brine is susceptible to aquifer mixing with less dense fluids due to the effect of seasonal changes, other inflows into the basin, or extraction. Measuring and reporting resources and reserves of a lithium brine deposit therefore has to consider these special measurements and dynamic conditions in addition to the standard considerations of volume and grade. Mineral reserves for chemical compounds contained in brines involve a hydrogeological numerical model that predicts the brine concentrations and chemical changes over time. Obviously, methods and measurements customized to determining chemicals resources in fluids therefore are specialised and distinct from traditional methods used for solid minerals and metals resources and reserves reporting. Adapting these complexities to reporting for National standards has been addressed in various jurisdictions; this paper described how this different type of resource reporting can be adapted to the JORC code 2012.