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NEW U–Pb AGES AND GEOCHEMISTRY FROM THE WHEELER RIVER URANIUM DEPOSITS, ATHABASCA BASIN, CANADA

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The Wheeler River Project hosts the high-grade Phoenix (sandstone-hosted) and Gryphon (basement-hosted) U deposits within the eastern part of the Athabasca Basin. The conditions and timing of mineralization event(s) at each deposit were established from the isotopic ages and geochemistry of uranium oxides from 13 samples. The oldest zones of analyzed UO2 (i.e. 1433 +/-15 Ma, 1340 +/- 17 Ma, 1275 +/-17 Ma) for most of the samples are considered tentatively to be primary mineralization ages. These ages and their chemical contents are different for each sample, indicating different P-T-X conditions and timing for the formation of the UO2 at Wheeler River. This difference is visible between deposits, but also at the scale of one deposit (Phoenix). Younger age determinations within all of the samples are interpreted to reflect secondary fluid events. These new results provide excellent evidence for multiple U events related to changes through time on the Wheeler River property. Such results demonstrates that the evolution of the Wheeler River property, and at a larger scale of the Athabasca Basin, has been complex since the deposition of the basin and could thus explain the exceptional characteristics of the unconformity-related U deposits

Country or International Organization

France

Primary author: Dr MERCADIER, julien (georessources)

Co-authors: Mr VERRAN, Dale (Denison Mines Corporation); Dr ANNESLEY, Irvine R. (ENSG, Universite de Lorraine and Department of Geological Sciences, University of Saskatchewan); Mrs PASCAL, Marjolaine (Denison Mines Corporation)

Presenter: Dr MERCADIER, julien (georessources)

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