Testing the Provenance of Santonian-Maastrichtian lobe of the Ceduna Delta

Thesis submitted in accordance with the requirements of the University of Adelaide for an Honours Degree in Geology

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November 2014
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The Ceduna Delta represents a vast Cretaceous stacked delta system located in the Bight Basin and is currently the focus of considerable petroleum exploration. Two competing models have been suggested for the source of the upper Santonian-Maastrichtian delta lobe. Originally, it was proposed that both the upper and lower lobes of the delta were sourced from the Australian Eastern Highlands via a continent scale river. A recent study suggested that the two lobes had different sources, with the upper lobe instead being sourced proximally from the western Eromanga Basin and within present day South Australia. This new model was primarily based on existing and new, but sparse apatite fission track data. This study tested the two competing models, by comparing the detrital zircon U/Pb age distribution and Lu-Hf isotopic composition of samples from the Late Cretaceous Winton Formation in the eastern Eromanga Basin (part of the proposed source of the upper Ceduna delta) with samples from the Gnarlyknots-1A well within the Ceduna Sub-basin of the Bight Basin. Zircon U/Pb data and hafnium isotopic data from the Gnarlyknots-1A well and eastern Eromanga Winton Formation demonstrates the similarity in provenance of the two formations and that both ultimately are sourced from the Australian Eastern Highlands.

Provenance, U-Pb Age, Hafnium Isotopes, Geochemistry, Ceduna Delta, Bight Basin
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