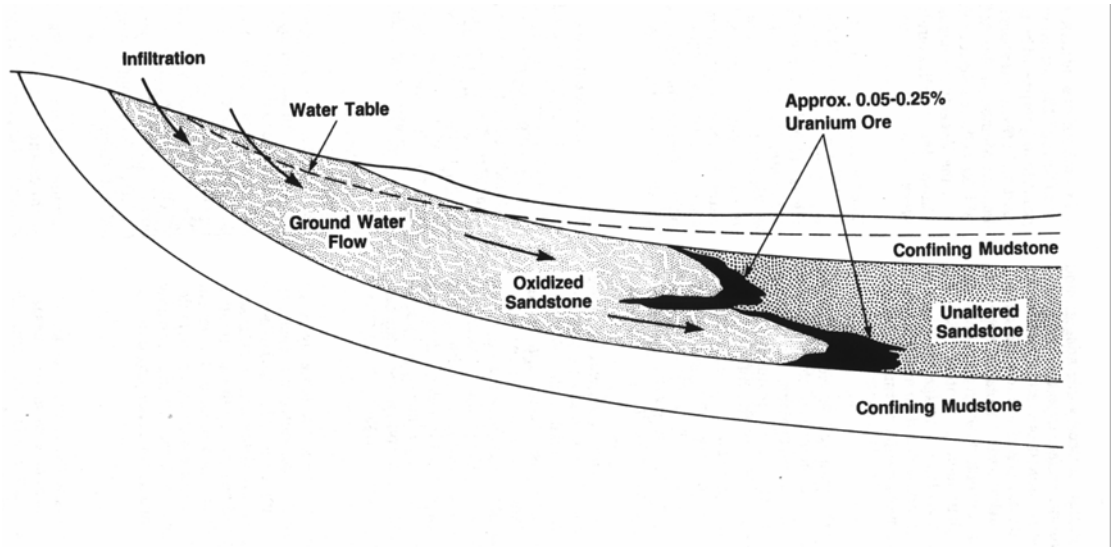
Model 30c	Sandstone-hosted uranium
Alternative Model Name	
Description	Sandstone-hosted uranium; three types of sandstone uranium deposits are recognised on basis of the shape of the orebody, and relationship to depositional or structural environment. These are a) tabular or peneconcordant U; occur as irregularly shaped elongated lenticular masses within selectively reduced sediments, b) b) roll front U; consist or arcuate zones of uranium matrix impregnations that crosscut a permeable sandstone bed between an upper and a lower impermeable beds; c) tectonic-lithologic U deposits; stacked deposits in permeable sandstones against a fault
Commodities	U (V)
% Global Production	About 15%
% Australian Production	Production from Beverley commenced in 2000.
World Class Deposit Size	
World Class Deposit Examples	Grants, US, New Mexico (Turner-Peterson and Fishman 1986); Beverley, South Australia (Heathgate, 1998)
Geological Setting	In intracratonic basins filled with flat-lying continental fluvial sandstones and palaeochannels containing detrital carbon as a potential reductant. Sandstones are interbedded with impermeable mudstones. Less commonly in mixed fluvial-marine environments of coastal plains containing pyrite or marcasite as potential reductants that originated from influx of H_2S into host sands. Also in sandstones adjacent to a permeable fault zone which acts as a channel solutions which enter the faulted sandstone beds and may form ‘stacked deposits’ in redox environments.
Age	Generally post Silurian with onset of widespread vegetation cover. Deposits formed at against physico-chemical barriers such as mafic dykes or sills in sandstones due to abundant supply of divalent iron as a reducing agent, may much older eg the Palaeoproterozoic uranium deposits at Westmoreland.
Components:	
Source	1. Uranium derived from weathering and leaching of uranium-rich granitic/metamorphic provenance adjacent to the basin. 2. Uraniferous tuffaceous sediments interbedded with or overlying the sandstone.
Transport/Pathway	1. Permeable and gently dipping sandstones. 2. Sufficiently oxygenated solutions in arid semi-arid climate to transport uranium in hexavalent state from weathered granitic/metamorphic provenance.

Trap	Chemical trap in the form of oxidation-reduction front provided by carbonaceous matter, pyrite or marcasite derived from influx of H_2S into the sandstones, or physico-chemical-lithological contrasts such as mafic sills and dykes in sandstones.
Other	
Critical Elements	• Gently dipping permeable sandstones interbedded with impervious sediments in intracratonic basins or shelf margins. • Adjacent granitic/metamorphic source areas or interbedded/overlying felsic tuffs as sources for uranium. • Regional redox environments and arid semi-arid climates at the time of deposition. • Preferably younger than Silurian but may be older.
Other Comments	The main sandstone-hosted uranium deposits in Australia are Beverley and Honeymoon in South Australia, Mulga Rock and Oobagooma in Western Australia but there are many other smaller deposits. Sandstone hosted uranium deposits constitute about 7% of Australia's uranium resources.
Key References	Dahlkamp, F.J. 1993 Uranium ore deposits. Springer Verlag Berlin.



Roll front uranium deposits.